START

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PATENT ROOM

Vol. 1125 Number 1

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
April 2, 1991 Volume 1125 Number 1

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Chemical (5,004,478)	307
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290-987 O.G.-91-1

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1118 O.G. 54 on Nov. 27, 1990.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987 and at 1091 O.G. 2 on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar in relation to the German Mark as of Jan. 3, 1991, and was announced in the *Official Gazette* at 1122 O.G. 564 on Jan. 1, 1991.

International PCT fees were changed on March 1, 1991 due to a difference in the exchange rate of the U.S. dollar in relation to the Swiss Franc and were announced in the *Official Gazette* at 1122 O.G. 629S on Jan. 22, 1991.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Apr. 17, 1989 and were announced in the *Official Gazette* at 1100 O.G. 24 on Mar. 7, 1989.

The current schedule of PCT fees (in U.S. dollars) is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	550.00
—Corresponding prior U.S. national application filed	380.00
—Supplemental search fee, per additional invention	150.00
European Patent Office as ISA	1492.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as ISA	400.00
—Additional examination fee, per additional invention	130.00
—ISA not the USPTO	600.00
—Additional examination fee, per additional invention	200.00
International fees	
Basic fee	559.00
Basic Supplemental fee (for each page over 30)	11.00
Designation fee per country or region for the first 10 national or regional offices	135.00
Designation fee for 11th and subsequent designations	No Charge
Handling fee	171.00

U.S. National Stage fees

	Small Entity	Regular
USPTO was IPEA	165.00	330.00
USPTO was ISA but not IPEA	185.00	370.00
USPTO was neither ISA nor IPEA	250.00	500.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	18.00	36.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	60.00	120.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	60.00	120.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	30.00	30.00

Dec. 21, 1990

HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner of Patents and Trademarks.

Status of Appeal Cases

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Assignment to Panel For A Decision Without a Hearing as of February 28, 1991.

Chemical Discipline -	April 2, 1990
Mechanical Discipline -	January 2, 1990
Electrical Discipline -	April 10, 1990

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting the Setting of Hearing Date as of February 28, 1991.

Chemical -	April 2, 1990
Electrical -	No cases awaiting to be set for Hearing
Mechanical -	No cases awaiting to be set for Hearing

Board of Patent Appeals and Interferences Decisions Rendered in Ex Parte Appeals During the Month of February 1991.

Affirmed	194
Affirmed-in-Part	42
Reversed	128
Total Decided	364

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Apr. 17, 1989. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on March 29, 1988 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,733,410 through 4,734,937
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on March 27, 1984 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,438,531 through 4,439,870
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months are set forth in 37 CFR 1.20(e) and (f), as amended Nov. 5, 1990, which are reproduced below:

37 CFR § 1.20 Post-issuance fees and surcharges

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant $245.00

"(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant ..... $495.00"

"(h) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) $415.00
By other than a small entity ..... $850.00"

"(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f)) $835.00
By other than a small enttity ..... $1670.00"

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(k), (l) and (m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 ..... $120.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity(§1.9(f)) $60.00
By other than a small entity ..... $120.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been unavoidable ..... $550.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED JANUARY 20, 1991 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,368,563	06/282,697	1/18/83
4,368,581	06/256,737	1/18/83
4,368,585	06/269,747	1/18/83
4,368,604	06/250,218	1/18/83
4,368,607	06/274,253	1/18/83
4,368,609	06/236,396	1/18/83
4,368,611	06/247,021	1/18/83
4,368,614	06/245,393	1/18/83
4,368,632	06/228,991	1/18/83
4,368,640	06/229,424	1/18/83
4,368,654	06/237,512	1/18/83
4,368,663	06/241,679	1/18/83
4,368,668	06/264,667	1/18/83
4,368,678	06/216,438	1/18/83
4,368,685	06/327,789	1/18/83
4,368,691	06/240,556	1/18/83
4,368,694	06/265,879	1/18/83
4,368,695	06/265,805	1/18/83
4,368,701	06/233,958	1/18/83
4,368,711	06/339,618	1/18/83
4,368,715	06/221,769	1/18/83
4,368,720	06/273,717	1/18/83
4,368,723	06/242,316	1/18/83
4,368,730	06/233,696	1/18/83
4,368,767	06/223,859	1/18/83
4,368,790	06/229,089	1/18/83
4,368,823	06/239,178	1/18/83
4,368,845	06/239,325	1/18/83
4,368,874	06/310,134	1/18/83
4,368,876	06/259,059	1/18/83
4,368,878	06/231,725	1/18/83
4,368,882	06/218,092	1/18/83
4,368,886	06/283,005	1/18/83
4,368,889	06/281,127	1/18/83
4,368,890	06/252,590	1/18/83
4,368,891	06/339,375	1/18/83
4,368,897	06/223,907	1/18/83
4,368,914	06/224,324	1/18/83
4,368,918	06/217,502	1/18/83
4,368,923	06/234,463	1/18/83
4,368,925	06/240,506	1/18/83
4,368,936	06/308,108	1/18/83
4,368,962	06/229,667	1/18/83
4,368,967	06/279,490	1/18/83
4,368,974	06/258,369	1/18/83
4,368,985	06/224,670	1/18/83
4,369,017	06/266,353	1/18/83
4,369,032	06/251,372	1/18/83
4,369,034	06/253,649	1/18/83
4,369,041	06/263,031	1/18/83
4,369,044	06/246,714	1/18/83
4,369,050	06/245,332	1/18/83
4,369,066	06/342,168	1/18/83
4,369,074	06/278,482	1/18/83
4,369,080	06/240,797	1/18/83

Patent Number	Serial Number	Issue Date
4,369,082	06/277,696	1/18/83
4,369,088	06/318,857	1/18/83
4,369,095	06/258,726	1/18/83
4,369,101	06/258,576	1/18/83
4,369,107	06/275,497	1/18/83
4,369,143	06/287,591	1/18/83
4,369,145	06/216,914	1/18/83
4,369,146	06/261,516	1/18/83
4,369,147	06/324,492	1/18/83
4,369,162	06/298,630	1/18/83
4,369,163	06/317,931	1/18/83
4,369,164	06/327,744	1/18/83
4,369,171	06/241,435	1/18/83
4,369,181	06/290,223	1/18/83
4,369,183	06/230,205	1/18/83
4,369,197	06/229,176	1/18/83
4,369,201	06/239,487	1/18/83
4,369,203	06/273,312	1/18/83
4,369,211	06/228,698	1/18/83
4,369,215	06/328,230	1/18/83
4,369,241	06/232,707	1/18/83
4,369,248	06/265,658	1/18/83
4,369,255	06/287,007	1/18/83
4,369,263	06/216,586	1/18/83
4,369,271	06/244,362	1/18/83
4,369,277	06/276,301	1/18/83
4,369,291	06/289,389	1/18/83
4,369,296	06/243,877	1/18/83
4,369,302	06/221,282	1/18/83
4,369,309	06/240,219	1/18/83
4,369,314	06/322,951	1/18/83
4,369,315	06/323,113	1/18/83
4,369,349	06/252,091	1/18/83
4,369,363	06/244,417	1/18/83
4,369,377	06/345,766	1/18/83
4,369,389	06/258,378	1/18/83
4,369,394	06/220,276	1/18/83
4,369,408	06/226,043	1/18/83
4,369,419	06/298,834	1/18/83
4,369,436	06/259,661	1/18/83
4,369,439	06/225,123	1/18/83
4,369,449	06/268,846	1/18/83
4,369,467	06/225,996	1/18/83
4,369,475	06/253,316	1/18/83
4,369,480	06/248,198	1/18/83
4,369,486	06/256,840	1/18/83
4,637,075	06/849,013	1/20/87
4,637,076	06/755,340	1/20/87
4,637,077	06/837,349	1/20/87
4,637,079	06/732,412	1/20/87
4,637,082	06/716,155	1/20/87
4,637,086	06/690,774	1/20/87
4,637,089	06/751,021	1/20/87
4,637,113	06/608,451	1/20/87
4,637,114	06/747,323	1/20/87
4,637,116	06/796,061	1/20/87
4,637,120	06/708,997	1/20/87
4,637,139	06/679,507	1/20/87
4,637,145	06/554,861	1/20/87
4,637,148	06/752,618	1/20/87
4,637,158	06/850,831	1/20/87
4,637,159	06/792,058	1/20/87
4,637,160	06/868,005	1/20/87
4,637,162	06/824,881	1/20/87
4,637,164	06/831,709	1/20/87
4,637,170	06/692,234	1/20/87
4,637,172	06/677,464	1/20/87
4,637,175	06/509,600	1/20/87
4,637,185	06/621,957	1/20/87
4,637,188	06/834,725	1/20/87
4,637,196	06/646,994	1/20/87
4,637,197	06/814,572	1/20/87
4,637,215	06/768,735	1/20/87
4,637,217	06/757,157	1/20/87
4,637,219	06/854,910	1/20/87
4,637,221	06/735,682	1/20/87
4,637,226	06/765,639	1/20/87
4,637,235	06/680,095	1/20/87
4,637,244	06/634,098	1/20/87
4,637,257	06/798,564	1/20/87
4,637,260	06/895,589	1/20/87
4,637,261	06/802,435	1/20/87
4,637,263	06/768,392	1/20/87
4,637,277	06/660,398	1/20/87
4,637,279	06/840,542	1/20/87
4,637,286	06/794,365	1/20/87
4,637,297	06/732,945	1/20/87
4,637,306	06/734,591	1/20/87
4,637,309	06/766,191	1/20/87
4,637,322	06/703,582	1/20/87
4,637,325	06/763,545	1/20/87
4,637,327	06/821,244	1/20/87
4,637,328	06/634,278	1/20/86
4,637,332	06/769,828	1/20/87
4,637,334	06/755,751	1/20/87
4,637,337	06/677,087	1/20/87
4,637,363	06/706,449	1/20/87
4,637,371	06/669,230	1/20/87
4,637,372	06/302,039	1/20/87
4,637,376	06/752,923	1/20/87
4,637,383	06/812,499	1/20/87
4,637,387	06/498,932	1/20/87
4,637,389	06/721,168	1/20/87
4,637,391	06/847,693	1/20/87
4,637,404	06/543,866	1/20/87
4,637,415	06/690,883	1/20/87
4,637,416	06/666,250	1/20/87
4,637,418	06/664,470	1/20/87
4,637,422	06/819,257	1/20/87
4,637,423	06/780,963	1/20/87
4,637,424	06/738,015	1/20/87
4,637,435	06/763,561	1/20/87
4,637,440	06/727,243	1/20/87
4,637,441	06/763,308	1/20/87
4,637,442	06/767,398	1/20/87
4,637,444	06/671,112	1/20/87
4,637,446	06/678,582	1/20/87
4,637,455	06/656,052	1/20/87
4,637,462	06/740,986	1/20/87
4,637,468	06/771,588	1/20/87
4,637,471	06/729,110	1/20/87
4,637,476	06/720,285	1/20/87
4,637,480	06/773,728	1/20/87
4,637,484	06/725,422	1/20/87
4,637,487	06/771,774	1/20/87
4,637,490	06/785,539	1/20/87
4,637,492	06/814,557	1/20/87
4,637,497	06/828,785	1/20/87
4,637,505	06/750,747	1/20/87
4,637,506	06/616,277	1/20/87
4,637,516	06/672,482	1/20/87
4,637,517	06/648,491	1/20/87
4,637,521	06/754,340	1/20/87
4,637,523	06/669,470	1/20/87
4,637,524	06/730,497	1/20/87
4,637,525	06/600,004	1/20/87
4,637,528	06/572,292	1/20/87
4,637,529	06/553,141	1/20/87
4,637,538	06/764,590	1/20/87
4,637,539	06/648,988	1/20/87
4,637,546	06/776,575	1/20/87
4,637,551	06/720,087	1/20/87
4,637,577	06/858,839	1/20/87
4,637,582	06/818,218	1/20/87
4,637,583	06/687,593	1/20/87
4,637,601	06/616,147	1/20/87
4,637,614	06/788,967	1/20/87
4,637,616	06/786,069	1/20/87
4,637,622	06/667,620	1/20/87
4,637,626	06/667,331	1/20/87
4,637,627	06/580,896	1/20/87
4,637,631	06/664,021	1/20/87
4,637,641	06/741,680	1/20/87
4,637,643	06/794,028	1/20/87

Patent Number	Serial Number	Issue Date
4,637,645	06/744,813	1/20/87
4,637,647	06/833,354	1/20/87
4,637,650	06/686,233	1/20/87
4,637,652	06/772,138	1/20/87
4,637,654	06/702,654	1/20/87
4,637,658	06/761,852	1/20/87
4,637,659	06/661,305	1/20/87
4,637,699	06/650,329	1/20/87
4,637,713	06/781,227	1/20/87
4,637,724	06/562,656	1/20/87
4,637,726	06/699,282	1/20/87
4,637,731	06/700,701	1/20/87
4,637,732	06/557,909	1/20/87
4,637,733	06/734,195	1/20/87
4,637,746	06/260,940	1/20/87
4,637,756	06/694,021	1/20/87
4,637,768	06/504,686	1/20/87
4,637,773	06/691,301	1/20/87
4,637,777	06/671,256	1/20/87
4,637,785	06/733,764	1/20/87
4,637,805	06/681,871	1/20/87
4,637,809	06/799,615	1/20/87
4,637,816	06/682,001	1/20/87
4,637,824	06/747,499	1/20/87
4,637,827	06/805,153	1/20/87
4,637,838	06/708,463	1/20/87
4,637,856	06/808,073	1/20/87
4,637,858	06/705,156	1/20/87
4,637,862	06/809,436	1/20/87
4,637,867	06/311,288	1/20/87
4,637,869	06/814,837	1/20/87
4,637,874	06/764,475	1/20/87
4,637,883	06/848,559	1/20/87
4,637,892	06/826,011	1/20/87
4,637,894	06/706,511	1/20/87
4,637,901	06/786,721	1/20/87
4,637,902	06/589,289	1/20/87
4,637,905	06/722,102	1/20/87
4,637,908	06/774,050	1/20/87
4,637,916	06/571,765	1/20/87
4,637,930	06/696,698	1/20/87
4,637,931	06/658,945	1/20/87
4,637,934	06/599,426	1/20/87
4,637,941	06/693,104	1/20/87
4,637,944	06/713,477	1/20/87
4,637,957	06/852,380	1/20/87
4,637,965	06/800,872	1/20/87
4,637,970	06/684,755	1/20/87
4,637,974	06/691,352	1/20/87
4,637,985	06/536,238	1/20/87
4,638,001	06/604,813	1/20/87
4,638,004	06/734,503	1/20/87
4,638,013	06/674,853	1/20/87
4,638,019	06/585,250	1/20/87
4,638,026	06/662,517	1/20/87
4,638,048	06/828,608	1/20/87
4,638,053	06/775,111	1/20/87
4,638,054	06/662,334	1/20/87
4,638,059	06/625,548	1/20/87
4,638,066	06/684,080	1/20/87
4,638,080	06/832,690	1/20/87
4,638,081	06/608,983	1/20/87
4,638,085	06/660,978	1/20/87
4,638,088	06/672,007	1/20/87
4,638,113	06/752,408	1/20/87
4,638,123	06/590,658	1/20/87
4,638,127	06/772,686	1/20/87
4,638,129	06/681,668	1/20/87
4,638,130	06/662,089	1/20/87
4,638,142	06/785,699	1/20/87
4,638,146	06/785,588	1/20/87
4,638,147	06/661,903	1/20/87
4,638,169	06/654,460	1/20/87
4,638,176	06/761,471	1/20/87
4,638,177	06/798,259	1/20/87
4,638,193	06/674,185	1/20/87
4,638,207	06/841,137	1/20/87
4,638,221	06/796,117	1/20/87
4,638,238	06/787,283	1/20/87
4,638,244	06/663,644	1/20/87
4,638,248	06/743,165	1/20/87
4,638,249	06/340,254	1/20/87
4,638,264	06/814,187	1/20/87
4,638,272	06/692,885	1/20/87
4,638,281	06/718,637	1/20/87
4,638,286	06/716,183	1/20/87
4,638,293	06/642,431	1/20/87
4,638,297	06/642,442	1/28/87
4,638,349	06/649,872	1/20/87
4,638,354	06/703,710	1/20/87
4,638,378	06/743,778	1/20/87
4,638,387	06/558,328	1/20/87
4,638,389	06/816,717	1/20/87
4,638,391	06/619,034	1/20/87
4,638,405	06/809,473	1/20/87
4,638,408	06/625,833	1/20/87
4,638,409	06/796,165	1/20/87
4,638,413	06/671,677	1/20/87
4,638,422	06/611,981	1/20/87
4,638,441	06/615,730	1/20/87
4,638,448	06/531,754	1/20/87
4,638,454	06/446,458	1/20/87
4,638,469	06/611,976	1/20/87
4,638,474	06/682,038	1/20/87
4,638,478	06/747,722	1/20/87
4,638,480	06/721,770	1/20/87
4,638,486	06/717,106	1/20/87

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
(4,413,619)	(06/311,959)	(11/08/83)	(10/16/81)	
Re. 32,219	06/578,979	8/05/86	2/10/84	2/22/91
4,328,617	06/262,644	5/11/82	5/11/81	2/15/91
4,361,405	06/217,591	11/30/82	12/18/80	1/31/91
4,566,093	06/582,034	12/03/85	2/21/84	1/22/91
4,574,025	06/566,582	3/04/86	12/29/83	1/31/91
4,554,446	06/552,916	11/19/85	11/18/83	2/15/91
4,584,569	06/650,835	4/22/86	9/17/84	2/22/91
4,583,329	06/699,199	4/22/86	2/07/85	2/25/91

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b).

4,064,376, Re. S. N. 07/526,540, Filed May 21, 1990, Cl. 381/152, SOUND REPRODUCTION SYSTEM AND DEVICE, Kyoto Yamada, Owner of Record: *Bodysonic Kabushiki Kaisha, Tokyo, Japan*, Attorney or Agent: James M. Verna, Ex. Gp.: 235

4,451,205, Re. S. N. 07/656,337, Filed Dec. 24, 1990, Cl. 416/219R, HELICOPTER BLADE AIR FOIL, Keith T. Honda, et al., Owner of Record: *United Technologies Corp., Hartford, Conn.*, Attorney or Agent: Marshall E. Rosenberg, Ex. Gp.: 341

4,638,519, Re. S. N. 07/301,076, Filed Jan. 24, 1989, Cl. 005/455, FLUIDIZED HOSPITAL BED, Jack H. Hess, Owner of Record: *Dynatronics, Inc., Houston, Tex.*, Attorney or Agent: None, Ex. Gp.: 358

4,658,691, Re. S. N. 07/641,604, Filed Jan. 15, 1991, Cl. 84/1.19, ELECTRONIC MUSICAL INSTRUMENT, Masanori Ishibashi, et al., Owner of Record: *Casio Computer Co., Ltd., Tokyo, Japan*, Attorney or Agent: Thomas Langer, Ex. Gp.: 211

4,699,323, Re. S. N. 07/623,393, Filed Feb. 6, 1991, Cl. 239, DUEL SPRAY CONE ELECTROMAGNETIC FUEL INJECTOR, James H. Rush, Owner of Record: *General Motors Corp., Detroit, Mich.*, Attorney or Agent: Charles K. Veenstra, Ex. Gp.: 314

4,740,577, Re. S. N. 07/655,573, Filed Feb. 13, 1991, Cl. 528/51, ENERGY POLYMERIZABLE POLYURETHANE PRECURSORS, Robert J. DeVoe, et al., Owner of Record: *Ciba-Geigy Corp., Hawthorne, N.Y.*, Attorney or Agent: Harry Falber, Ex. Gp.: 153

4,747,198, Re. S. N. 07/658,788, Filed Feb. 21, 1991, Cl. 29/407, METHOD AND APPARATUS FOR DECTECTING HOLD-POSITION OF ELECTRONIC COMPONENT, AND APPARATUS FOR MOUNTING ELECTRONIC COMPONENT, Koichi Asai, et al., Owner of Record: *Fugi Machine Mfg. Co., Ltd., Chiru-Shi, Japan*, Attorney or Agent: James A. Oliff, Ex. Gp.: 326

4,757,503, Re. S. N. 07/551,477, Filed July 12, 1990, Cl. 371/21.1, SELF-TESTING DYNAMIC RAM, John P. Hayes, et al., Owner of Record: *The University of Michigan, Ann Arbor, Mich.*, Attorney or Agent: Vincent P. Kovalick, Ex. Gp.: 236

4,765,323, Re. S. N. 07/658,170, Filed Feb. 20, 1991, Cl. 128/132, REFLECTIVE SURGICAL DRAPE, Robert J. Poettgen, Owner of Record: *OR Concepts, Inc., Roanoke, Tex.*, Attorney or Agent: Randall C. Brown, Ex. Gp.: 331

4,785,455, Re. S. N. 07/615,827, Filed Nov. 15, 1990, Cl. 372/46, LIGHT EMITTING DEVICE WITH IMPROVED ELECTRODE STRUCTURE TO MINIMIZE SHORT CIRCUITING, Masaaki Sawai, et al., Owner of Record: *Hitachi, Ltd., Tokyo, Japan*, Attorney or Agent: Gregory E. Montone, Ex. Gp.: 251

4,787,996, Re. S. N. 07/620,494, Filed Nov. 29, 1990, Cl. 252/51.5R, MANNICH BASE OIL ADDITIVES, Andrew G. Horodysky, Owner of Record: *Mobile Oil Corp., New York, N.Y.*, Attorney or Agent: Michael J. Mloikowski, Ex. Gp.: 119

4,803,540, Re. S. N. 07/653,362, Filed Feb. 6, 1991, Cl. 357/70, SEMICONDUCTOR INTEGRATED CIRCUIT PACKAGES, H. W. Moyer, et al., Owner of Record: *American Telephone & Telegraph Co., New York, N.Y.*, Attorney or Agent: Richard D. Laumann, Ex. Gp.: 258

4,840,616, Re. S. N. 07/652,703, Filed Feb. 8, 1991, Cl. 604/110, SYRINGE HYPODERMIC NEEDLE, Gilbert H. Banks, Owner of Record: *Tranbrook PTY Ltd, Sydney, Australia*, Attorney or Agent: James F. Hann, Ex. Gp.: 331

4,848,459, Re. S. N. 07/591,510, Filed Oct. 1, 1990, Cl. 166/142, APPARATUS FOR INSTALLING A LINER WITH A WELL BORE, Henry W. Blackwell, et al., Owner of Record: *Conoco, Inc., Ponca City, Okla.*, Attorney or Agent: Roy L. Vanwinkle, Ex. Gp.: 356

4,923,442, Re. S. N. 07/602,096, Filed Oct. 23, 1990, Cl. 604/52, BLOOD SUBSTITUTE, Paul E. Segall, et al., Owner of Record: *Cryomedical Sciences, Inc., Berkeley, Calif.*, Attorney or Agent: Elliott L. Fineman, Ex. Gp.: 336

4,945,924, Re. S. N. 07/658,486, Filed Feb. 20, 1991, Cl. 128/849, STERILIZABLE REFLECTIVE SURGICAL DRAPE, Robert J. Poettgen, Owner of Record: *OR Concepts, Inc., Roanoke, Tex.*, Attorney or Agent: Randall C. Brown, Ex. Gp.: 331

4,950,087, Re. S. N. 07/656,516, Filed Feb. 19, 1991, Cl. 383/43, BAG FOR OBJECTS SUCH AS SNACKS, Robert J. Carey, Owner of Record: *Inventor*, Attorney or Agent: R. Gale Rhodes, Ex. Gp.: 241

4,952,074, Re. S. N. 07/654,668, Filed Feb. 13, 1991, Cl. 384/19, PULL-OUT GUIDE FOR DRAWERS, Erich Rock, Owner of Record: *Julius Blum Gesellschaft M.B.H., Hochst, Austria*, Attorney or Agent: Jeffrey Nolton, Ex. Gp.: 245

4,946,186, Re. S. N. 07/655,148, Filed Feb. 14, 1991, Cl. 280/646, TELESCOPIC AND COLLAPSIBLE GOLF CART, Alex Cheng, Owner of Record: *Union Sports Co., Ltd., Taipei*, Attorney or Agent: Philip Furgang, Ex. Gp.: 316

4,957,993, Re. S. N. 07/655,888, Filed Feb. 15, 1991, Cl. 528/26, NOVEL POLYMIDESILOXANES AND METHODS FOR THEIR PREPARATION AND USE, Chung J. Lee, Owner of Record: *Occidental Chemical Corp., Niagara Falls, N.Y.*, Attorney or Agent: Richard D. Fuerle, Ex. Gp.: 151

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

Re. 31,852, Reexam. No. 90/002,284, Requested Feb. 20, 1991, Cl. 370/85.15, DATA TRANSMISSION SYSTEM, Olof Soderblom, Owner of Record: *Inventor, Letherhead, United Kingdom*, Attorney or Agent: Pollock, Vande Sande & Priddy, Ex. Gp.: 260, Requester: W.M. Harding, Houston, Tex.

4,410,917, Reexam. No. 90/002,283, Requested Feb. 20, 1991, Cl. 360/15, METHOD AND APPARATUS FOR RECORDING INFORMATION FROM A MASTER MEDIUM ONTO A SLAVE MEDIUM EMPLOYING DIGITAL TECHNIQUES, Ronald M. Newdoll, Owner of Record: *Accurate Sound Corp., Redwood City, Calif.*, Attorney or Agent: Bell, Seltzer, Park & Gibson, Ex. Gp.: 230, Requester: W.T. Adams, Charlotte, N.C.

4,673,477, Reexam. No. 90/002,285, Requested Feb. 19, 1991, Cl. 204/192.38, CONTROLLED VACUUM ARC MATERIAL DEPOSITION METHOD AND APPARATUS, Subbiah Ramalingam, et al., Owner of Record: *Regents of the University of Minnesota, Minneapolis, Minn.*, Attorney or Agent: N.E. Westman, Ex. Gp.: 110, Requester: Multi-Arc Oberflachentechnik, Fed. Rep. of Germany

4,801,609, Reexam. No. 90/002,282, Requested Feb. 14, 1991, Cl. 514/506, MERCAPTO-ACYLAMINO ACID ANTIHYPERTENSIVES, Martin F. Haslanger, et al., Owner of Record: *Schering Corp., Kenilworth, N.J.*, Attorney or Agent: Schering-Plough Corp., Ex. Gp.: 120, Requester: Owner

4,963,344, Reexam. No. 90/002,281, Requested Feb. 14, 1991, Cl. 424/9, METHOD TO ENHANCE NMR IMAGING USING CHELATED PARAMAGNETIC IONS, Heinz Gries, et al., Owner of Record: *Schering Aktiengesellschaft, Berlin, Fed Rep. of Germany*, Attorney or Agent: Anthony J. Zelano, Ex. Gp.: 120, Requester: Owner

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Errata

In the list of patents which expired on Dec. 16, 1990, due to failure to pay maintenance fees, appearing in the O.G. of Feb. 26, 1991, the following patent should not have appeared:

Patent Number	Serial Number	Issue Date	Filing Date
4,628,827	06/605,232	12/16/86	4/30/84

"All reference to Reexamination Certificate No. B1, 4,729,706(1351st) appearing in the Official Gazette of Sept. 11, 1990 should be deleted since no reexamination certificate was granted."

"All reference to Patent No. 4,983,229 to Thomas W. Tull of Mich. for 'COLD DEFORMATION PROCESS EMPLOYING IMPROVED LUBRICATION COATING' appearing in the Official Gazette of Jan. 8, 1991 should be deleted since no patent was granted.

"All reference to Patent No. 4,990,257 to Atsuo Watanabe of Japan for 'CONCENTRATION OF SOLUTION REVERSE OSMOSIS PROCESS' appearing in the Official Gazette of Feb. 5, 1991 should be deleted since no patent was granted."

"All reference to Patent No. 4,995,841 to Donald R. Coffey of Ariz. for 'WATER SKIER'S SAFTEY SYSTEM' appearing in the Official Gazette of Feb. 26, 1991 should be deleted since no patent was granted."

"All reference to Patent No. 4,996,338 to Hiroshi Maezawa et al. of Ichihara, Japan for 'PROCESS FOR PREPARATION OF ALUMINOXANE' appearing in the Official Gazette of Feb. 26, 1991 should be deleted since no patent was granted."

ADVERSE DECISION IN INTERFERENCE

Patent No. 4,725,129, K. Kondo and Y. Nagae, METHOD OF DRIVING A FERROELECTRIC LIQUID CRYSTAL ELEMENT, Interference No. 102,090, decided Nov. 16, 1990, claims 1-10.

PATENT NOTICES

Certificates of Correction For Week of April 2, 1991

PP. 6,989	4,860,158	4,888,639	4,904,547
Re. 33,153	4,861,549	4,889,001	4,905,659
Re. 33,168	4,861,694	4,889,006	4,905,723
4,500,484	4,863,707	4,889,569	4,906,020
4,710,968	4,865,206	4,890,585	4,906,085
4,743,669	4,865,418	4,891,454	4,906,395
4,761,409	4,865,553	4,891,809	4,906,530
4,767,600	4,866,774	4,892,025	4,906,611
4,771,950	4,868,094	4,892,617	4,906,709
4,793,793	4,869,055	4,892,625	4,906,713
4,794,625	4,869,841	4,892,781	4,906,870
4,795,678	4,870,098	4,892,823	4,906,925
4,805,253	4,870,209	4,893,033	4,907,003
4,808,717	4,870,808	4,893,044	4,907,986
4,810,576	4,872,329	4,893,431	4,908,263
4,810,911	4,872,684	4,893,546	4,908,698
4,812,689	4,874,792	4,894,504	4,908,734
4,818,740	4,874,929	4,894,538	4,909,288
4,821,972	4,875,109	4,895,068	4,909,361
4,826,476	4,875,891	4,895,790	4,909,518
4,830,910	4,876,432	4,896,180	4,909,639
4,834,522	4,876,746	4,896,238	4,910,378
4,837,663	4,877,392	4,896,309	4,910,718
4,838,181	4,877,526	4,897,102	4,911,027
4,838,352	4,880,262	4,897,307	4,911,377
4,839,743	4,880,816	4,897,833	4,912,003
4,840,407	4,881,608	4,898,424	4,912,234
4,842,434	4,883,566	4,898,726	4,913,976
4,843,056	4,884,025	4,898,774	4,914,296
4,843,990	4,885,541	4,898,784	4,914,603
4,845,496	4,885,721	4,899,115	4,916,060
4,849,569	4,886,426	4,900,327	4,917,785
4,852,090	4,886,488	4,901,738	4,918,200
4,853,141	4,886,809	4,902,539	4,948,572
4,853,529	4,886,811	4,902,560	4,948,694
4,855,269	4,887,160	4,902,586	4,950,877
4,855,962	4,887,608	4,902,898	4,957,738
4,858,630	4,887,888	4,903,516	4,962,287
4,859,036	4,888,415	4,904,359	

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Box PATENT APPLICATION	New patent application and associated papers and fees.
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Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
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	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861

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	Nashville: Stevenson Science Library,Vanderbilt University	(615) 322-2775
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	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
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Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

PATENT EXAMINING CORPS

JAMES E. DENNY, Acting Assistant Commissioner
STEPHEN G. KUNIN, Acting Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone Number Area Code 703
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	308-0661
ORGANIC CHEMISTRY GROUP 120—JOHN F. TERAPANE, JR. Director	308-1235
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—BARRY S. RICHMAN, Director	308-0651
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	308-2381
BIOTECHNOLOGY, GROUP 180—EDWARD J. KUBASIEWICZ, Director	308-0196
ELECTRICAL EXAMINING GROUPS	
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PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—CARLTON CROYLE, Director	308-0771
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SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—JOHN KITTLE, Director	308-0861
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	308-0651

Expiration of patents. The patents within the range of numbers indicated below expire during March 1991, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons or have lapsed under the provisions of 35 U.S.C. 151.

Patents: Numbers 3,795,014 to 3,800,328 inclusive
Plant Patents: 3,501 to 3,534 inclusive

OFFICIAL GAZETTE NOTICE

The Trademark Search Library and the trademark portion of the Assignment Search Room will be relocated to the second floor of 2900 Crystal Drive (South Tower Building) in Arlington, Virginia, effective April 8, 1991. In order to facilitate an orderly move, the Trademark Search Library will close to the public on Thursday, April 4 at 5:30 p.m. and will not reopen until Monday, April 8, 1991, at 8:00 a.m. at the new location. The Assignment Search Room will maintain normal business hours from 8:30 a.m. to 5:00 p.m. on Friday, April 5, 1991.

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Theresa A. Brelsford
Assistant Commissioner
for Administration

REEXAMINATIONS

APRIL 2, 1991

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination

B1 3,870,474 (1441st)

REGENERATIVE INCINERATOR SYSTEMS FOR WASTE GASES

Reagan Houston, Avon Lake, Ohio, assignor to Salem Industries

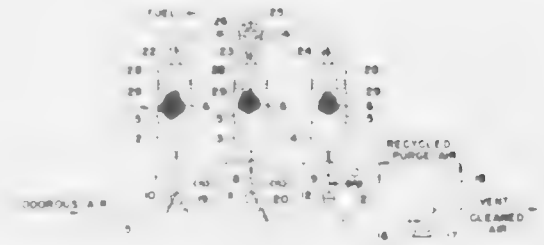
Reexamination Request No. 90/002,038, Jun. 4, 1990.

Reexamination Certificate for Patent No. 3,870,474, issued Mar. 11, 1975, Ser. No. 305,997, Nov. 13, 1972.

Filed Jun. 4, 1990, Ser. No. 305,997

Int. Cl.[5] F23G 7/06

U.S. Cl. 422—171



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT

The patentability of claims **15**–**18**, **19** and **20** is confirmed

Claims **2** and **11**–**12** are cancelled

Claim **1** is determined to be patentable as amended

Claims **3**–**10** and **13**–**14**, dependent on an amended claim, are determined to be patentable

1 A regenerative incinerator system comprising [a plurality of] *at least three* regenerators each containing packing material, directing means for alternately directing the contaminated air or gas through said regenerators first in one direction and then in the reverse direction to purify the contaminated air and transfer heat from the packing material to the air and vice versa, a combustion chamber common to all of said regenerators for receiving the air passing from one regenerator to another to assure complete oxidation of the contaminants in the air prior to being discharged from the system, and purging means *comprising a fan having an intake connectable to the outlet of the regenerator operating with air flow in said one direction and a outlet connectable to a second one of the regenerators operating with air flow in said reverse direction* for purging said *second one of said* regenerators of any contaminated air remaining [in said regenerators] *therein* when the flow of air through said regenerators is reversed [and] *thereby* reintroducing such purged air back into said combustion chamber *under positive pressure* to remove the contaminants from the purged air prior to being discharged from the system

B1 4,198,094 (1442nd)

WORKING CHAIR

Anders Bjerknes, Raaunkelveien 34,, Oslo 8, and Reudi á Porta, St. Olavsgt. 7, Oslo 1, both of Norway

Reexamination Request No. 90/002,112, Aug. 20, 1990.

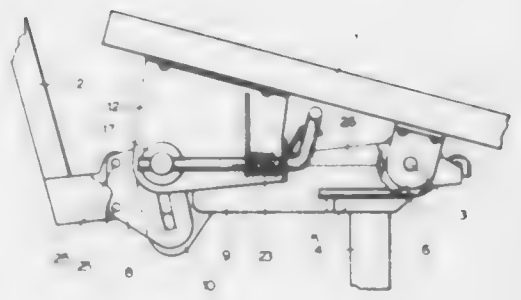
Reexamination Certificate for Patent No. 4,198,094, issued Apr. 15, 1980, Ser. No. 935,417, Aug. 22, 1978.

Filed Aug. 20, 1990, Ser. No. 935,417

Claims priority, application Norway, Aug. 25, 1977, 772943

Int. Cl.[5] A47C 1/00

U.S. Cl. 297—306



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT

The patentability of claims **1**–**9** is confirmed

1 In a working chair including

an underframe, at least one horizontal shaft mounted in said underframe, a seat member pivotable about said horizontal shaft, a back member pivotable about said horizontal shaft, releasable locking means for fixing said seat and back members in a chosen position relative to each other, said locking means comprising a first number of friction plates connected to said underframe, a second number of friction plates connected to said back member, and clamping means for clamping together said first and second numbers of friction plates, the improvement comprising

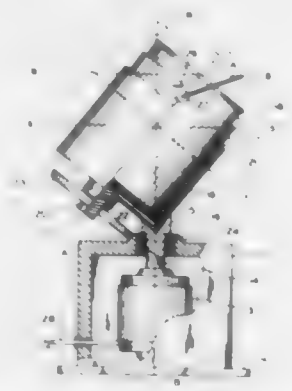
(a) support means for supporting said first number of friction plates at a distance from said horizontal shaft,

(b) a back member carrier fixed to said back member for supporting said second number of friction plates,

(c) a holder attached to the underside of said seat member, said clamping means being mounted in said holder, and

(d) spring-actuated handle means mounted in said holder and normally urged against said clamping means to clamp said numbers of friction plates in a desired relative position, said handle means being manually operable to unclamp said clamping means to permit repositioning of said plates.

B1 4,235,553 (1443rd)
MATERIAL MIXER
John C. Gall, Chicago, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.
Reexamination Request Nos. 90/001,458, Mar. 4, 1988 and 90/001,542, Jun. 28, 1988.
Reexamination Certificate for Patent No. 4,235,553, issued Nov. 25, 1980, Ser. No. 58,034, Jul. 16, 1979.
Continuation-in-part of Ser. No. 945,544, Sep. 25, 1978, abandoned. This application Mar. 4, 1988, Ser. No. 58,034
Int. Cl.⁴ B01F *9/00*
U.S. Cl. 366—208



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT

Claims 1-6 are cancelled

Claim 7 is determined to be patentable as amended

Claims 8-10, dependent on an amended claim, are determined to be patentable

New claims 11-29 are added and determined to be patentable

7. A method of mixing at least partially flowable material *wherein said at least partially flowable material is paint* in a container comprising continuously, non-orbitally rotating the container in one direction about a first axis and simultaneously rotating the container in the same direction about a second axis which is non-perpendicular to the first axis, said first axis non-orbitally rotating about said second axis.

B1 4,349,987 (1444th)
DOLL WHICH RISES FROM PRONE TO STANDING POSITION
Philip D. Bart, 9864 NW. 13th Ct., Coral Springs, Fla. 33065
Reexamination Request No. 90/001,305, Aug. 7, 1987.
Reexamination Certificate for Patent No. 4,349,987, issued Sep. 21, 1982, Ser. No. 169,675, Jul. 17, 1980.
Filed Aug. 7, 1987, Ser. No. 169,675
Int. Cl.⁴ A63H *11/18*
U.S. Cl. 446—355

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT.

The patentability of claims 1-18 is confirmed.

1. A robot doll comprising a torso with a hip part at the bottom thereof, and a 1st axis through said hip part, leg means mounted on said doll and pivotable about said 1st axis, drive means in the torso for causing said leg means and torso to pivot relative to each other, whereby

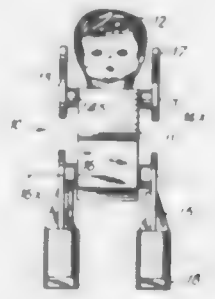
said doll is movable between positions of a series of positions including, with respect to a generally horizontal support surface, at least four positions, namely

(A) prone face-down with leg means and torso generally aligned,

(B) face down with torso and leg means in inverted V-position with hip part elevated,

(C) said inverted V-position with said leg means oriented generally vertically, and

(D) erect position with said leg means and torso generally aligned and vertical, and



1st switch means for activating said drive means to pivot said leg means and torso causing said doll to move from position (A) to position (B), said doll having configuration and weight distribution such that when the doll moves from position (A) to (B) its center of gravity shifts rearward causing said doll to tip rearward into position (C), and

2nd switch means including means for automatically activating said drive means in response to the arrival of said doll at said position (C) to pivot said leg means and torso from pivoted position (C) to said erect position (D), whereby said doll stands

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B1 4,392,580 (1445th)
CLOSURE CAP
Charles S. Ochs, Lancaster, Ohio, assignor to Anchor Hocking Corp., Lancaster, Ohio
Reexamination Request No. 90/001,836, Aug. 31, 1989.
Reexamination Certificate for Patent No. 4,392,580, issued Jul. 12, 1983, Ser. No. 285,610, Jul. 21, 1981.
Filed Aug. 31, 1989, Ser. No. 285,610
Int. Cl.⁴ B65D *41/04*
U.S. Cl. 215—332

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT

Claims 1-13 and 14 are cancelled

[1. In a closure cap having a metal shell with a cover and a depending skirt and having a flowed-in plastisol sealing gasket and inwardly projecting lugs formed on the bottom of the skirt for engaging lugs on a container the improvement comprising said cap skirt having a tapered upper portion extending downwardly and outwardly to the top of a generally cylindrical lower skirt portion, said sealing gasket being positioned in a downwardly facing channel extending radially outwardly to the top of said tapered skirt portion and said tapered upper portion having a radial dimension approximately equal to the radial width of the cap lugs and a vertical dimension greater than half of the skirt height.]

B2 4,459,526 (1446th)
MULTI APERTURED LENS SHOCK WAVE PROBE
Elmer L. Griebeler, West Bloomfield, Mich., assignor to Cleveland Machine Controls, Inc., Valley View, Ohio
Reexamination Request No. 90/001,805, Jun. 30, 1989.
Reexamination Certificate for Patent No. 4,459,526, issued Jul. 10, 1984, Ser. No. 335,331, Dec. 29, 1981.
Reexamination Certificate B1 4,459,526, issued Jul. 11, 1989.
Continuation-in-part of Ser. No. 155,944, Jun. 3, 1980, Pat. No. 4,326,155. This application Jun. 30, 1989, Ser. No. 335,331
Int. Cl.⁴ G05B *19/36*
U.S. Cl. 318—576

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT

The patentability of claims 1-77 is confirmed.

1. A working sensing probe that senses the locus of work to be performed, including the loci of a continuum of such work, without physically contacting the work, comprising

means for generating a sudden pressure wave from the work,

means for receiving the reflection of a sudden pressure wave,

means for limiting the spread of the pressure wave,

means for limiting the angle of sensitivity of the receiver,

means for recognizing the influence of the work on the reflected sudden pressure wave,

and means for translating the recognized influence into an electric signal within the control system.

STATUTORY INVENTION REGISTRATIONS

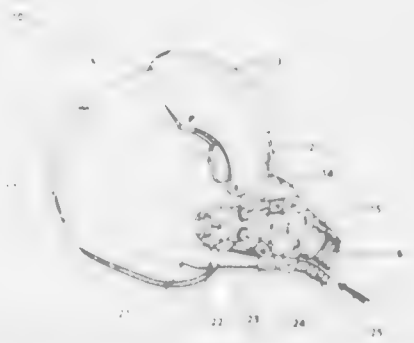
PUBLISHED APRIL 2, 1991

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H902
AIR COOLED HELMET

David G. Rousseau, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 27, 1989, Ser. No. 302,524
Int. Cl.[5] A42B *3/02*
U.S. Cl. 2—414 5 Claims



1. A protective helmet for applying cooled air to the head of a person, comprising

an outer shell,

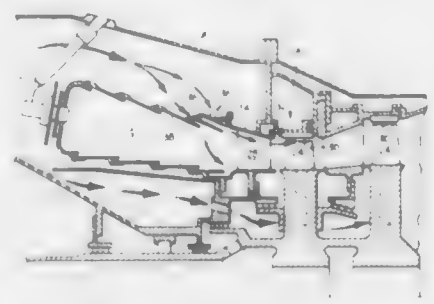
an open cell foam liner, said foam liner having an edge and first and second principal surfaces, said first principal surface affixedly attached to the internal periphery of said outer shell and said second principal surface juxtaposed the normal position of the head of said person when wearing said helmet, said foam liner further having an internal capillary system, said capillary system in fluid communication with a multiplicity f pores opening along said second principal surface, and,

at least one cool air inlet duct affixedly attached to said outer shell, said cool air inlet duct in fluid communication with the internal capillary system of said open cell foam liner.

H903
COOL TIP COMBUSTOR

Barry Weinstein, Georgetown, Mass., assignor to General Electric Company, Lynn, Mass.

Filed May 3, 1982, Ser. No. 374,355
Int. Cl.[5] F02C *1/00*
U.S. Cl. 60—757 5 Claims



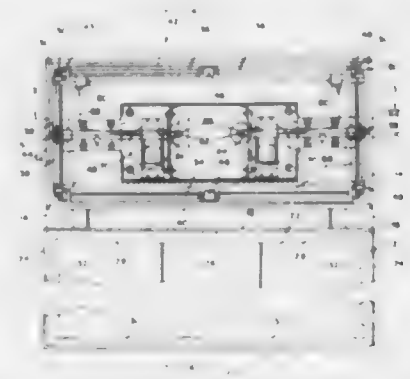
1. In a gas turbine engine having a compressor, a combustor, a turbine section with a turbine nozzle and turbine blades, all in serial flow relationship and disposed radially about an engine centerline, means for cooling tips of said turbine blades comprising

an inner wall section extending radially inwardly and in a downstream direction from a radially outer wall section of a downstream end portion of said combustor, said inner and outer wall sections defining a first annulus therebetween, said outer wall section including a plurality of first inlet air holes in flow communication with said first annulus, said first holes being sized for channeling a predetermined amount of high-pressure cooling air from said compressor, for forming a cooling air film that extends downstream from said first annulus and along a radially outer wall of said turbine section to cool said turbine blade tips.

H904
SAFE SECURE SURVIVABLE DOOR LOCKING ASSEMBLY FOR AN OVERPACK CONTAINER

Albertus E. Schmidlin, Caldwell, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 27, 1989, Ser. No. 441,782
Int. Cl.[5] A45C *13/10*, E05B *63/00*
U.S. Cl. 206—3 14 Claims



1. An overpack container assembly, which comprises:

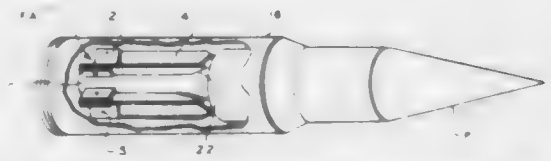
a container body defining a storage chamber provided with peripherally-disposed latching members, and

a door assembly having peripherally-disposed bar means for engaging said peripherally-disposed latching members.

H905
FIN ASSEMBLY

Mark M. Rottenberg, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 13, 1990, Ser. No. 582,733
Int. Cl.[5] F42B *10/14*
U.S. Cl. 244—3.28 3 Claims



1. In a fin assembly adapted for rear mounting on a projectile, said fin assembly comprising a body having a fin hub, which said body has a longitudinal axis and a front adapted for mounting to the projectile and a plurality of angularly spaced

fins pivotally mounted on said body for rotating outwardly form an axial to an extended position, each of said fins having a pivot point and a center of gravity, the center gravity for each fin in the axial position being spaced radially inward from said pivot point,

said body adapted to at least partially receive and retain each of said fins when in said axial position

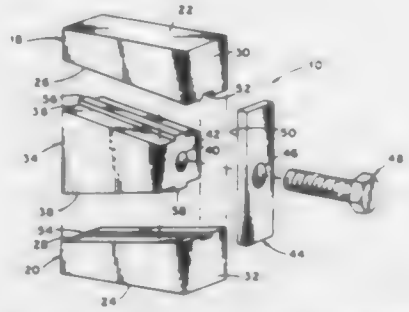
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H906

WEDGE ASSEMBLY FOR ELECTRICAL TRANSFORMER COMPONENT SPACING

Franklin E. Baggett, Paducah, and W. Franklin Cage, LaCenter, both of Ky., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 4, 1990, Ser. No. 532,545
Int. Cl.[5] F16B *2/14*
U.S. Cl. 403—409.1 12 Claims



1 An adjustable wedge assembly device for establishing and maintaining a selected spacing between two opposing surfaces, which comprises:

a pair of spaced apart outer wedge members, each of said outer wedge members being substantially mirror images of each other, each one of said outer wedge members having a first face disposed in a direction opposite to the other outer wedge member so as to contact one of said opposing surfaces to be spaced, and a tapered second face disposed in a direction toward the other outer wedge member, each of said outer wedge members having a first end and a further end, said further ends of said outer wedge members diverging from each other relative to said first ends,

a center wedge member disposed between said outer wedge members, said center wedge member having oppositely disposed tapered edges slidably in contact with said second faces of said outer wedge members, said center wedge member having a first end and a further end, and being provided with a threaded receptor communicating with said first end of said center wedge member,

a washer member disposed against said first ends of said outer wedge members, said washer member being provided with an aperture; and

a threaded bolt member disposed through said aperture of said washer member and threadably engaged with said threaded receptor of said center wedge member, said bolt member having a head disposed against said washer member whereby rotation of said bolt member causes said center wedge member to be moved in a direction toward said first ends of said outer wedge members whereby said center wedge member further separates said pair of outer wedge members to engage said first faces with said surfaces to be separated.

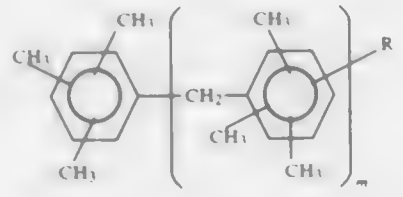
H907

PROCESS FOR PRODUCING CONDUCTIVE GRAPHITE FIBER

Kazuhito Tate, Kanagawa; Koji Tsuchimoto, Chiba, and Kazuhiro Yamagida, Kanagawa, all of Japan, assignors to Mitsubishi Oil Co., Ltd., Tokyo, Japan

Filed Jun. 16, 1988, Ser. No. 207,482
Claims priority, application Japan, Jun. 19, 1987, 62-151237
Int. Cl.[5] C01B *31/04*
U.S. Cl. 423—448 4 Claims

1 A process for producing a graphite fiber which comprises melt-spinning an optically anisotropic pitch, making the resulting fiber infusible, carbonizing the infusible fiber, and graphitizing the carbonized fiber at a temperature of from 2500° to 3000° C., wherein said optically anisotropic pitch is prepared by heat treating a compound represented by formula (I)



wherein R represents a hydrogen atom or a methyl group and m represents an integer of 1 or more

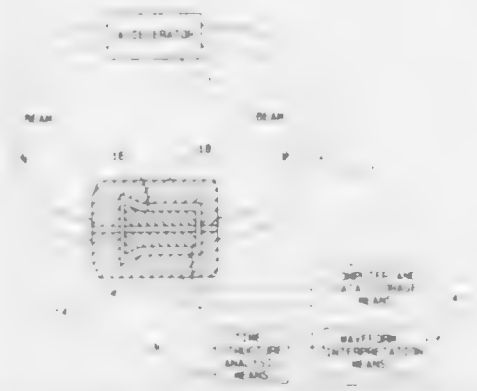
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H908

METHOD AND SYSTEM FOR IMPROVED RESOLUTION OF A COMPENSATED CALORIMETER DETECTOR

John W. Dawson, Willowbrook, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 23, 1989, Ser. No. 355,522
Int. Cl.[5] G01J *1/00*
U.S. Cl. 250—336.1 3 Claims



1 A method of improving the resolution of a calorimeter detector used in high energy physics experiments that includes a means for determining the energy of a particle entering the calorimeter detector, and a means for compensating the output response of the calorimeter detector so that the ratio of the response of the calorimeter detector from a lepton to the response of the calorimeter detector from a hadron having the same energy as the lepton is approximately equal to 1, the improved method comprising

inferring the hadron content of the response of the calorimeter detector based upon the time structure of the output response,

correcting the energy measurement of the calorimeter based on the determination of the hadron content of the calorimeter response

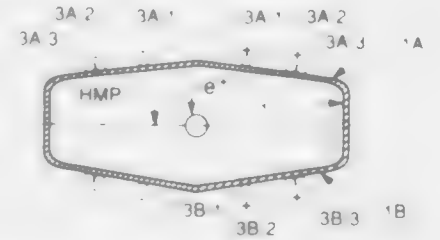
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H909

METHOD OF CORRECTING EDDY CURRENT MAGNETIC FIELDS IN PARTICLE ACCELERATOR VACUUM CHAMBERS

Gordon T. Danby, Wading River, and John W. Jackson, Shoreham, both of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 19, 1990, Ser. No. 505,289
Int. Cl.[5] H01J *23/34, 29/06*
U.S. Cl. 328—233 6 Claims



1 A method of correcting undesired magnetic field aberrations that are produced by eddy currents induced in a metallic vacuum chamber of an accelerator by magnetic fields that are produced by energization of particle beam-positioning electromagnets which are operably mounted adjacent to the vacuum chamber for confining electrically charged particles in stable orbits while the charged particles that enter and exit the vacuum chamber through apertures in its walls are driven by an rf accelerating field, comprising,

(a) attaching correction windings to the outside surface of the vacuum chamber at predetermined locations thereon,

(b) providing secondary coils for supplying electric power to said correction windings, and providing a variable resistor,

(c) electrically connecting said secondary coils in series with the correction windings, with the variable resistor operably positioned in the series circuit between the secondary coils and the correction windings,

(d) providing means for supplying electric power to the secondary coils as a function of a predetermined proportion of the electric power in a beam of charged particles that is accelerated through said vacuum chamber, so that as the electric power in the charged particle beam line varies, the electric power in the secondary coils varies proportionately and,

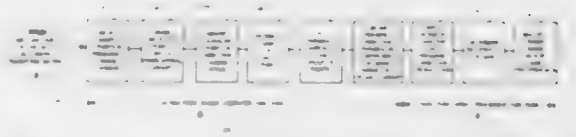
(e) adjusting the variable resistor thereby to cause the resultant current in the correction windings to generate a magnetic flux that effectively cancels eddy current induced aberration flux fields that are induced in the vacuum chamber by the beam confining magnets while the charged particles are accelerated through the chamber

H910

ADAPTIVE TWO DIMENSIONAL SHADING FOR BATCH SYNTHETIC APERTURE RADAR USING PHASED ARRAY ANTENNA

Laurence J. Hindenach, Jessup, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 8, 1989, Ser. No. 363,667
Int. Cl.[5] G01S *13/90*
U.S. Cl. 342—25 14 Claims



1 A method for amplitude equalizing the target return echo signals of a batch processed synthetic aperture pulsed doppler radar in accommodation of beam shape and target range perturbations of the return signal amplitudes over a target scene frame comprising the steps of

storing a target scene frame array of doppler frequency and range domain radar echo signal amplitudes data, said data being organized according to range cells dispersed across said target scene frame,

selecting a predetermined number of points in the doppler frequency and range domain for performing antenna beam shape gain determinations,

transforming the location of said gain determination points from the doppler frequency and range domain into points within the domain of an antenna face related coordinate system,

performing antenna pattern gain determinations at each of said antenna coordinate domain points assuming a predetermined three dimensional beam shape,

incorporating range attenuation effect correction into each of said antenna coordinate domain points gain determinations,

determining the numeric coeffecients for a selected mathematically definable three dimensional gain surface extending in both the frequency and range directions, said gain surface being optimally conformed with said range attenuation effect correction inclusive antenna coordinate domain points;

dividing said mathematically definable three dimensional gain surface into a predetermined number of range associated bands, each band including all of the frequency related gain surface values for a selected span of range values,

ascertaining for the central most range values in each of said range bands, the numerical coefficients of a gain surface resident two-dimensional mathematical curve of gain versus frequency;

computing from each of said two-dimensional mathematical curves the gain values at predetermined range cell locations disposed along each said curve,

generating from said gain values a resolution cell dispersed array of inverse gain magnitude values,

multiplying the amplitude values of said target frame range cell data by range cell respective inverse gain array values.

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue

Re. 33,562

FUEL COMPOSITION

Stephen L. Badger, Jackson, Miss., assignor to Alcofuels, Inc., Vicksburg, Miss.

Original No. 4,405,336, dated Sep. 20, 1983, Ser. No. 288,418, Jul. 30, 1981. Application for reissue Sep. 18, 1985, Ser. No. 777,540

Int. Cl.[5] **C10L** *1/18*

U.S. Cl. 44—438 **7 Claims**

1. A composition comprising

1000 parts by volume of at least 90%/180 proof ethyl alcohol,

60-90 parts by volume of methylisobutyl ketone,

20-50 parts by volume of kerosene,

30-60 parts by volume of xylenes, and

[20-50] *30-60* parts by volume of isopropyl alcohol

Re. 33,563

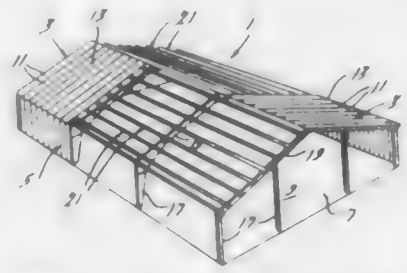
METAL PANEL ROOFING STRUCTURE

Robert E. Heckelsberg, Germantown, Tenn., assignor to AMCA International Corporation, Hanover, N.H.

Original No. 4,213,282, dated Jul. 22, 1980, Ser. No. 875,524, Feb. 6, 1978. Application for reissue Jan. 25, 1982, Ser. No. 342,151

Int. Cl.[5] **E04B** *1/76*

U.S. Cl. 52—404 **5 Claims**



1. In a roof structure having horizontally extending support purlins, the combination of a plurality of elongated roof panels located side by side and supported on said purlins, the lengths of said panels extending transversely to the lengths of said purlins, adjacent panels having edges interlocked with each other to form joints that join the panels together, an insulative layer supported on said purlins between and in contact with said panels and purlins and covering substantially the same total area as said panels, panel mounting clips having upwardly projecting tab portions secured to said panels and base portions bearing against the upper side of said insulative layer and secured to said purlins to provide means for attaching the panels to the purlins, said tab portions extending into said joints to mechanically secure said clip to said adjacent panels, means flexibly attaching said tab portions to said base portions in relatively movable relationship to provide for movement of said panels relative to said purlins, *resilient means for yieldably holding said tab portions in predetermined positions relative to said base portions, said resilient means including means defining an elongated slot extending transversely to said purlins and wherein said tab portion includes holding portion substantially filling the narrower dimension of the slot and being resilient in the direction of said narrower dimension,* and insulative thermal blocks extending lengthwise of and directly over said purlins and bearing against the upper side of said insulative layer on said purlins, said blocks extended between the base portions of adjacent panel mounting clips, said base portions having tangs thereon which project into ends of said thermal blocks holding said blocks in place, said panels being supported on the tops of said thermal blocks

* * * * *

The questions raised in reexamination request No. 90/000,342, filed Mar. 16, 1983, have been considered and the results thereof are reflected in this reissue patent which constitutes the reexamination certificate required by 35 U.S.C. 307 as provided in 37 CFR 1.570(e)

Re. 33,564

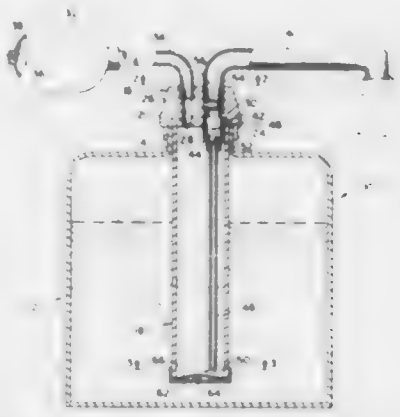
FOAM DISPENSING DEVICE

George W. Ford, Jr., Salt Lake City, Utah, assignor to Ballard Medical Products, Midvale, Utah

Original No. 4,531,660, dated Jul. 30, 1985, Ser. No. 614,704, May 29, 1984. Continuation of Ser. No. 330,254, Dec. 14, 1981, abandoned. Application for reissue Dec. 23, 1985, Ser. No. 812,672

Int. Cl.[5] **B65D** *37/00*

U.S. Cl. 222—209 **14 Claims**



1. A foam dispenser device, comprising

(a) an outer *large* container, for holding *a substantially enlarged quantity of* foamable liquid, having a [discharge] port, [and]

(b) *foam outlet means,*

(c) a foam producing unit mounted to the container and separating the area adjacent the [discharge] *outer container* port and the interior of the container, said [form] *foam* producing unit including,

1 an [inner] *small* container disposed within the outer container, and having an opening communicating with said outer container,

2 a closure for the [inner] *small* container having pressurized air inlet means communicating [with] *air under positive pressure to* the [inner] *interior of the small* container [and foam outlet means] *but not to the interior of the outer container,*

3 foam producing means communicating [with] *foam to* the foam outlet means, said foam producing means including air-receiving means communicating with the air inlet means to receive pressurized air and liquid-receiving means including an inwardly extending conduit having an opening communicating with the interior of the [inner] *small* container to receive liquid,

4 valve means for the inner container opening, said valve means selectively closing said opening when air pressure within the [inner] *small* container is increased, to supply foamable liquid from the [inner] *small* con-

tainer to the conduit of the foam producing means, said valve means selectively opening said opening when air pressure within the [inner] *small* container is decreased to permit flow of foamable liquid from the outer container to the [inner] *small* container, and

[(c) a] (*d*) pump means supplying pressurized air to the air inlet means, said pump means including an opening communicating with ambience and valve means selectively closing said opening when air pressure within the pump means is increased and selectively opening said opening when air pressure within the opening is decreased to admit air into said pump means

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Re. 33,565

PREVENTION AND TREATMENT OF RHEUMATOID ARTHRITIS

Ralph J. Stolle, Lebanon, Ohio, and Lee R. Beck, Birmingham, Ala., assignors to Stolle Research and Development Corporation, Cincinnati, Ohio

Original No. 4,732,757, dated Mar. 22, 1988, Ser. No. 558,909, Dec. 9, 1983. Continuation of Ser. No. 875,140, Feb. 6, 1978, abandoned. Application for reissue Aug. 11, 1988, Ser. No. 231,219

Int. Cl.[5] **A61K** *39/116, 39/085, 39/112, 37/04*

U.S. Cl. 424—87 **4 Claims**

1. A method for the treatment of rheumatoid arthritis caused by a mixed spectrum of infectious bacteria which reside in the gastrointestinal tract, including:

ORGANISMS
Staphylococcus aureus
Staphylococcus epidermidis
Streptococcus pyogenes, A Type 1
Streptococcus pyogenes, A Type 3
Streptococcus pyogenes, A Type 5
Streptococcus pyogenes, A Type 8
Streptococcus pyogenes, A Type 12
Streptococcus pyogenes, A Type 14
Streptococcus pyogenes, A Type 18
Streptococcus pyogenes, A Type 22
Aerobacter aerogenes
Escherichia coli
Salmonella enteritidis

-continued

ORGANISMS
Pseudomonas aeruginosa
Klebsiella pneumoniae
Salmonella typhimurium
Haemophilus influenzae
Streptococcus viridans
Proteus vulgaris
Shigella dysenteriae
Streptococcus, Group B
Diplococcus pneumoniae
Streptococcus mutans
Corynebacterium, Acne, Types 1 & 2

which comprises the oral administration of a quantity of non-fat milk solids equivalent to one quart of immunized cow's milk I_gG, [post-prandially] two times daily, wherein the cow's milk [IgG] includes antibodies produced by the following microorganisms from American Type Culture Collection bacterial antigens

ORGANISM	*ATCC NO
Staphylococcus aureus	11631
Staphylococcus epidermidis	155
Streptococcus pyogenes, A Type 1	8671
Streptococcus pyogenes, A Type 3	10389
Streptococcus pyogenes, A Type 5	12347
Streptococcus pyogenes, A Type 8	12349
Streptococcus pyogenes, A Type 12	11434
Streptococcus pyogenes, A Type 14	12972
Streptococcus pyogenes, A Type 18	12357
Streptococcus pyogenes, A Type 22	10403
Aerobacter aerogenes	884
Escherichia coli	26
Salmonella enteritidis	13076
Pseudomonas aeruginosa	7700
Klebsiella pneumoniae	9590
Salmonella typhimurium	13311
Haemophilus influenzae	9333
Streptococcus viridans	6249
Proteus vulgaris	13315
Shigella dysenteriae	11835
Streptococcus, Group B	
Diplococcus pneumoniae	
Streptococcus mutans	
Corynebacterium, Acne, Types 1 & 2	

PLANT PATENTS

GRANTED APRIL 2, 1991

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing

7,484

MINIATURE ROSE PLANT NAMED 'MOTHER'S LOVE'

Cecilia L. D. Bennett, deceased, late of Chula Vista, Calif. (by Susan M. O'Brien, executor), assignor to Susan O'Brien, Chula Vista, Calif.

Filed Jan. 2, 1990, Ser. No. 460,234

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of miniature rose plant named 'Mother's Love' of hardy, dwarf, vigorous growth, well-branched and attractive in appearance, substantially as illustrated and described, characterized by its hybrid tea-form blooms, ranging from near Empire Rose to near Delft Rose with a base of ranging from near Egyptian Buff to near Amber Yellow, with flowers borne usually one to a stem but occasionally in sprays of 3 to 5 or more

7,485

BOSC PEAR--WIMMERS CULTIVAR

Robert L. Wimmers, 2500 Reed Rd., Hood River, Oreg. 97031

Filed Dec. 21, 1989, Ser. No. 456,850

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—36 **1 Claim**

1. A new and distinct variety of pear tree which is believed to be a whole tree mutation of the standard Bosc pear variety, substantially as illustrated and described, capable of forming quality fruit which (a) assumes a uniform russet appearance at least one month earlier than other known Bosc pear varieties, (b) assumes an attractive bronze coloration when ripened, (c) bears small inconspicuous dots on the fruit surface, (d) exhibits a slightly roughened surface texture, (e) tends to exhibit a higher soluble solids content when ripened than other known Bosc pear varieties, (f) tends to be sweeter than other known Bosc pear varieties, and (g) is ready for picking approximately one week later than the standard Bosc pear variety

7,486

LILY PLANT NAMED WHITE SHEEN

Joseph E. J. van Riet, Koewachtsteenweg 7, 9080 Moerbeke-Waas, Belgium

Filed Feb. 28, 1990, Ser. No. 489,342

Int. Cl.[5] **A01h** *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new cultivar of lily plant named White Sheen, as illustrated and described

7,487

CHRYSANTHEMUM PLANT NAMED TOPACIO

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Feb. 26, 1990, Ser. No. 481,102

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—76 **1 Claim**

1. A new and distinct Chrysanthemum plant named Topacio, as described and illustrated

7,488

CHRYSANTHEMUM PLANT NAMED NAPLES

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Feb. 16, 1990, Ser. No. 481,068

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct Chrysanthemum plant named Naples, as described and illustrated

7,489

CHRYSANTHEMUM PLANT NAMED PASION

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Feb. 16, 1990, Ser. No. 481,103

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—80 **1 Claim**

1. A new and distinct Chrysanthemum plant named Pasion, as described and illustrated

PATENTS

GRANTED APR. 2, 1991

ERRATA

For CLASS	See PATENT NO.
425-185	5,003,665
452-021	5,003,666
452-125	5,003,667
049-479	5,003,792
101-228	5,003,889
280-605	5,004,065
180-068	5,004,081
190-018	5,004,091
220-366	5,004,129
411 366	5,004,361
418 132	5,004,412
137-625	5,004,440
350-096	5,004,447
004-325	5,004,462
526-258	5,004,560
002 408	5,004,567
424-465	5,004,651
435-007	5,004,699
524-089	5,004,759
530-322	5,004,818
536 018	5,004,833
315-224	5,004,947
320 013	5,004,963
354 442	5,005,047
378-035	5,005,075
235 492	4,999,601

PATENTS

GRANTED APRIL 2, 1991

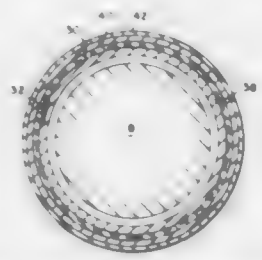
GENERAL AND MECHANICAL

5,003,630

PRESSURE GARMENT

John W. Bassick, Paxton, and Edward A. Dubois, Auburn, both of Mass., assignors to David Clark Company Incorporated, Worcester, Mass.

Filed Oct. 23, 1989, Ser. No. 424,994
Int. Cl.' B64D *10/00*
U.S. Cl. 2—2.1 A 5 Claims



1 In a pressure garment of the type worn by crew members in high performance high altitude aircraft and space vehicles, said garment having a pressure bladder arranged to cover at least a portion of a wearer's body, said pressure bladder being expandable in response to the introduction therein of a pressurized gas to thereby apply pressure to the enveloped portion of the wearer's body, the improvement comprising

said bladder being defined by flexible micro-porous material consisting of at least two layers, one of said layers being hydrophilic and facing inwardly toward the wearer's body, and the other of said layers being hydrophobic and facing outwardly away from the wearer's body, whereupon pressurized gas introduced into said bladder will be retained therein by the hydrophilic layer of said material, and water vapor from the wearer's body will be permitted to pass through the hydrophilic and hydrophobic layers of said material to the exterior of said garment

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5,003,631

FLIGHT HELMET WITH HEADSET

William T. Richardson, Whittier, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Filed Oct. 5, 1989, Ser. No. 417,331
Int. Cl.' A42B *3/30*
U.S. Cl. 2—6 12 Claims

1 A flight helmet with headset custom fit to the head and ears of a particular individual comprising an outer shell of rigid material shaped to cover the head of the wearer and having a peripheral edge lying along the back of the neck and extending forwardly beneath the ears,

an inner layer of resilient elastomeric material,

a conformable liner of thermoplastic material formed with a generally hemispherical shape, said liner being heated to a temperature at which it can be shaped and inserted into the shell which is then placed on and forced into conformity with the head of the individual for whom it will fit,

adhesive means for securing the liner, the layer and the shell together as a unitary structure,

means forming left and right ear apertures in the shell,

left and right ear cups selected to fully cover the ears of said individual, said ear cups being placed in said apertures, respectively, and positioned while the helmet is worn by said individual so that the ear cups are in a proper sealing position relative to the individual's ear positions,

adhesive means for permanently affixing the ear cups to the helmet and liner,

an expandable seal surrounding the ear cups so that between the earcup and the head of the wearer a close, noise isolat-



ing seal is formed completely around each ear between the head and each earcup

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5,003,632

DEVICE FOR CONNECTING A BREATHING MASK TO A HELMET

Jacques Claude, Fresnes, France, assignor to Intertechnique, France

Filed Apr. 7, 1989, Ser. No. 334,509
Claims priority, application France, Apr. 7, 1988, 88 04616
Int. Cl.' A42B *3/00*
U.S. Cl. 2—6 12 Claims



1 A device for connecting a shell of a breathing mask to a helmet, comprising two fasteners each placed on one of a median vertical plane of the helmet and each having

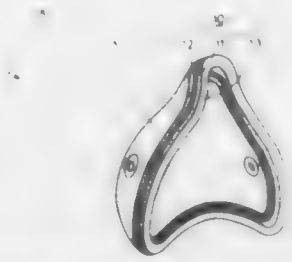
a quick fastening and unfastening attachment unit including a receptacle fixed rigidly to the helmet and an assembly insertable into and positively releasibly lockable in said receptacle in an adjustable position, and

a link constructed to resist vertically directed flexure forces and nonextensible, one of the end portions of the link being permanently connected to the shell by first pivotal connection means allowing rotational movement of the mask with respect to the link about a first axis perpendicu-

lar to the direction of the link and substantially parallel to said median vertical plane and the other end portion of the link being permanently connected to said assembly by second pivotal connection means allowing rotational movement of the link with respect to the attachment unit about a second axis substantially parallel to said first axis

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5,003,633
FACE PROTECTOR
Akira Itoh, Komae, Japan, assignor to Itoh Seiki Co., Ltd., Tokyo, Japan
Filed Oct. 17, 1989, Ser. No. 422,832
Claims priority, application Japan, Jun. 2, 1989, 1-140693
Int. Cl.[5] A62B 7/10, 18/00
U.S. Cl. 2—9 6 Claims



1 A seal device for a face protector used in a state fitted closely to a user's face comprising

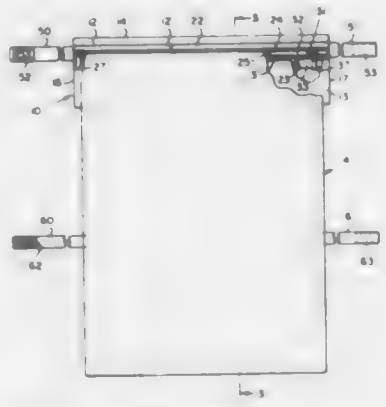
a seal member made of a material which is rigid at room temperature and is softened when heated at a temperature within a range from 40° C. to 65° C. and having a shape formed in situ against and in substantial exact conformity with the user's face by placing the heated and softened material of the seal member directly on the user's face in direct contact therewith,

an airtight elastic member provided between the seal member and the face protector; and

an airtight elastic member secured to the surface of the seal member on the side of the user's face

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5,003,634
BELT TYPE GARMENT WITH FOLDABLE SEAT COVER
Robert J. Briskman, 325 VanVoorhis Ave., Rochester, N.Y. 14617
Filed Apr. 9, 1990, Ser. No. 506,226
Int. Cl.[5] A41D 27/12
U.S. Cl. 2—46 9 Claims



1. A belt type garment, comprising

means defining an elongate, flexible pouch having thereon a pair of confronting, longitudinally extending edges defining therebetween an elongate opening in one side of said pouch,

zipper means on said confronting edges of said pouch for releasably closing said opening,

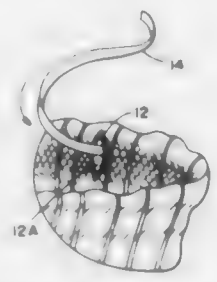
a first set of flexible strap elements projecting from opposite ends, respectively, of said pouch and disposed to be releasably secured around a person's waist to support said pouch above and in registry with the person's seat,

a flexible, waterproof panel secured at one end thereof to one of said confronting edges of said pouch for movement between an operative position in which said panel extends at its opposite end out of said opening and downwardly behind said person's seat, when the pouch is mounted thereabove, and a collapsed position in which said panel is rolled up and positioned within the interior of said pouch, and

a second set of flexible strap elements projecting from opposite sides, respectively, of said panel and disposed to be releasably secured around a person's legs, when said panel is in its operative position, thereby releasably to retain said panel in said operative position

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5,003,635
CLOTHING INCLUDING INSECT REPELLENT STRIPS
James H. Peterson, 1951 Moatview Dr., Greeley, Colo. 80631
Filed Sep. 7, 1989, Ser. No. 404,210
Int. Cl.[5] A41D 13/00; A62B 1/00
U.S. Cl. 2—69 11 Claims



1 An article of clothing to be worn on the human body including a flexible insect-repellent strip which is adapted to conform to the portion of said body covered by said article, wherein said article comprises a stocking having an elastic upper portion, and wherein said flexible strip is carried by said upper portion.

5,003,636
NECKTIE DEVICE
Eugene J. Marcotica, 221 Lyon St., Apt. #1906, Ottawa, Ontario, Canada
Filed Feb. 26, 1990, Ser. No. 484,930
Claims priority, application Canada, Jun. 6, 1989, 601942
Int. Cl.[5] A41D 25/00
U.S. Cl. 2—145 14 Claims



1. A necktie device for enabling the length of a necktie to be substantially correct for a respective wearer, when said necktie is transversely severed intermediate its ends at two spaced-apart locations and the portion therebetween removed, said device comprising:

(a) a pair of tie supports adapted to be secured respectively to the severed ends of said necktie, each of said tie supports having a first elongate part and a second elongate part to receive the associated severed end of said necktie therebetween, and

(b) a connecting unit having a chamber on one side for receiving and securing one of said tie supports and a chamber on the other side for receiving and securing the other of said tie supports, said connecting unit being adapted to fit under a shirt collar of said wearer and to substantially conform therewith

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5,003,637
GLOVES WITH UTILITY ATTACHMENTS
Edward M. Lonon, 155 Sanford St., East Orange, N.J. 07018
Filed Feb. 1, 1988, Ser. No. 115,208
Int. Cl.[5] A41D 19/00
U.S. Cl. 2—160 2 Claims



1 A glove comprising in combination a utility attachment, means for removably applying said utility attachment to the external back surface of said glove, which is constructed to overlie a back of a user's hand, which means comprises in combination a pair of complemental parts of hook and loop fasteners, which adhere when pressed together, one of the parts of said pair being sewn or otherwise secured to the external back surface of said glove, and the other part of said pair being sewn or otherwise secured to a rear surface of said utility attachment,

wherein said utility attachment is a hollow container formed from a sheet of flexible material, said container being constructed and arranged to hold one or more of the following items

cigarette pack, comb, compact, lipstick, nail file, driver's license, medical card, first aid kit, radio, calculator, watch, change purse,

wherein a watch is secured to the outside surface of said container.

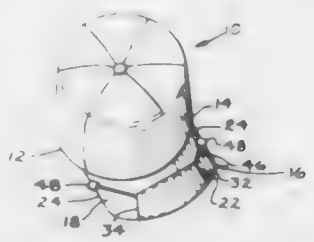
5,003,638
STERILIZED GLOVE
Teruyoshi Miyake, and Tatsuo Yamamoto, both of Tokyo, Japan, assignors to Chyugoku Paalu Distributing Corporation; Shinanen New Ceramic Corporation and Shinagawa Fuel Co., Ltd., all of Tokyo, Japan
Filed Mar. 21, 1990, Ser. No. 496,671
Claims priority, application Japan, Dec. 27, 1989, 1-338949
Int. Cl.[5] A41D 13/10
U.S. Cl. 2—167 6 Claims



1. A sterilized glove comprising:

a glove body, and an organic polymer film layer containing an antibacterial zeolite and formed on the entirety of at least one surface of said glove body in an upheaval shape.

5,003,639
CAP VISOR PROTECTOR
Steven L. White, 325 W. Washington, Apt. 5, Jackson, Mich. 49201
Filed Nov. 20, 1989, Ser. No. 438,244
Int. Cl.[5] A42C 5/00
U.S. Cl. 2—187 6 Claims



1 A visor protector for caps having a visor including a periphery having a front region, lateral regions, and upper and lower sides comprising, in combination, a protective material having first and second portions having first and second ends, respectively, said portions being interconnected by a central region, said material portions including lateral edges intersecting the associated portion end, and attachment means extending from said portions' ends adapted to be affixed to the visor's lateral regions whereby said first and second portions are disposed over the visor upper and lower sides, respectively, and said central region engages the visor periphery front region

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5,003,640
ADVERTISING CAP NAMEPLATE
Anthony Pizzacar, 160 Greenway West, New Hyde Park, N.Y. 11040
Filed Oct. 4, 1989, Ser. No. 417,204
Int. Cl.[5] A42B 1/24
U.S. Cl. 2—199 8 Claims



1 An advertising cap for a user, comprising

(a) a conventional cap having a back, and a headband,

(b) a pair of straps disposed at said back of said conventional cap for adjustment of the size of said headband of said conventional cap, said pair of straps having tops;

(c) means for substantially concealing said pair of straps after said headband of said conventional cap is adjusted, said means for substantially concealing said pair of straps being mounted directly over said pair of straps which are now concealed;

(d) means for removably mounting said concealing means so

that said concealing means may be changed depending upon the preference of the user; and

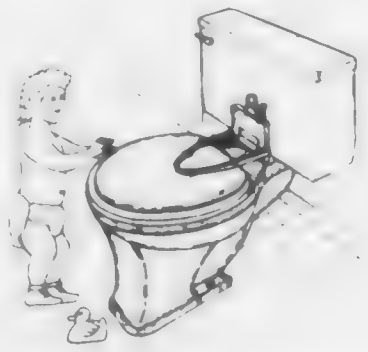
(e) means for advertising being disposed directly onto said concealing means.

5,003,641

TOILET LID SAFETY LOCK

Willis M. Selman, Jr., Rte. 1, Box 67, West, Tex. 76691

Filed Apr. 13, 1990, Ser. No. 508,948
Int. Cl.[5] A47K *13/24*
U.S. Cl. 4—253 8 Claims



1 A toilet lid safety lock for use with a toilet having a water holding tank, a bowl and a seat and a lid pivotally attached to the bowl, the toilet lid safety lock comprising

a substantially rectangular hollow housing having opposing side edges, a top edge, a front face and a rear face,

means for releasably securing said rear face of said housing to a front face of the toilet tank,

a substantially V-shaped counterbalanced locking arm having the free ends thereof pivotally attached to said side edges of said housing, said locking arm including a rigid bridging portion connecting the legs thereof and spaced from the free ends, said bridging portion having a lock receiving portion extending into said housing through an opening in the from face thereof;

a locking bar slidably mounted in said housing and having a handle portion and a locking portion extending into said housing through a slot in said top edge thereof and adapted to be received in said lock receiving portion, said locking bar including a locking notch formed in one edge thereof;

a counterbalanced release lever pivotally attached to said housing, said release lever having a handle portion and an engaging portion extending into said housing through a slot in said top edge thereof, said engaging portion adapted to be engaged in said locking notch of said locking bar;

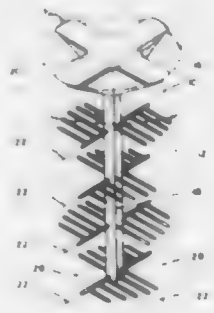
said locking arm being mounted on said housing such that it would be held in a raised position against the toilet tank by the raised toilet lid and would fall to a substantially horizontal position extending over the lid when the lid is lowered, said horizontal position of said locking arm enabling said locking bar to fall with said locking portion thereof entering said lock receiving portion of said locking arm and said engaging portion of said release lever entering said locking notch, thereby locking the toilet lid in a closed position.

5,003,642

FOREIGN MATTER TRAP FOR SHOWER DRAIN

Wendell E. Robb, 3204 S. 85th E. Ave., Tulsa, Okla. 74145, and William S. Hudson, R.R. 2, Box 3, Lawrence, Kans. 66044

Continuation of Ser. No. 734,801, May 15, 1985, abandoned, which is a continuation of Ser. No. 499,284, May 31, 1983, abandoned. This application May 14, 1986, Ser. No. 866,983
Int. Cl.[5] A47K *1/14*, E03C *1/26*
U.S. Cl. 4—287 11 Claims



1 A foreign matter trap for use in a drain, such as a shower or sink drain, in which water flows downwardly through a drain pipe, comprising

a trap element removably positionable in a drain pipe, the trap element having a downwardly extending substantially straight longitudinal member,

a plurality of discrete, spaced apart, parallel horizontal layers of foreign matter catching members extending generally radially from said longitudinal member, each horizontal layer being in a plane perpendicular to said longitudinal member and formed of a plurality of closely spaced apart spicule members, the outer ends of which are in engagement with or in close proximity to the internal circumferential surface of a drain pipe for which the trap is dimensioned, each horizontal layer having at least one discrete area having many closely spaced spicule members and at least one discrete area devoid of spicule members whereby the spicule members of each layer cover less that a complete cross-sectional horizontal circumferential area leaving a portion of at least about 90° of the drain cross-sectional area free of spicule members, the layers being arranged such that the spicule members in adjacent upper layers extend over and above the cross-sectional area of the next lower layer free of spicule members whereby water may continue to flow through the drain even when the spicule members of each layer are completely closed by trapped foreign matter

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5,003,643

FLUSH CONTROLLER FOR A TOILET BOWL

Wilson Chung, 5 fl., No. 126, Alley 69, Lane 285, Sec. 1, Nei Hu Road, Taipei, Taiwan

Filed Nov. 14, 1989, Ser. No. 436,231
Int. Cl.[5] E03D *1/00*
U.S. Cl. 4—313 3 Claims

1. A flush controller for a toilet bowl, said toilet bowl including a water reservoir having an outlet cap, said flush controller comprising:

detecting means for detecting that a user has approached said toilet bowl to within a predetermined effective distance, that said user has remained within said predetermined effective distance for a first predetermined period of time, and that said user has left said predetermined effective distance;

a motor, having an output rotation shaft;

cap control means coupled to said output rotation shaft of said motor for being driven by said motor, said cap control means adapted to be connected to said outlet cap of said water reservoir; and

a control means coupled to said detecting means and said motor

wherein said cap control means includes

a gear assembly engaged with said output rotation shaft of said motor to be driven by said motor,

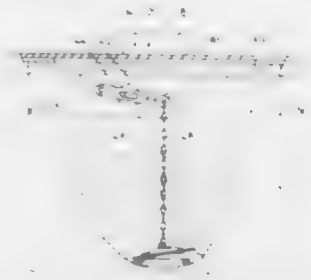
a control wheel connected with said gear assembly for rotation by the driving of said gear assembly, said control wheel having an eccentric pin, and

a control lever of which one end is pivotally connected to said flush controller and the other end is adapted to be connected to said outlet cap of said water reservoir, said control lever having a strip-shaped groove in which said eccentric pin of said control wheel is inserted such that the rotation of said control wheel can move said control lever pivotally between a highest position and a lowest position.

wherein said control means includes.

an original sensor for detecting that said control lever is at its lowest position, and

a midway sensor for detecting that said control lever is at its highest position,



whereby when said detecting means detects that said user has approached said toilet bowl and remained within said predetermined effective distance for said first predetermined period of time, and that said user has left said predetermined effective distance thereafter, said control means actuates said motor to rotate which in turn drives said gear assembly and said control wheel to rotate, moving said control lever pivotally from its lowest position to its highest position so as to open-up said outlet cap, starting the water in said water reservoir to flush, when said midway sensor detects that said lever is at its highest position, said control means stops said motor for a second predetermined period of time to perpetuate the water flushing; at the end of said second predetermined period of time said control means re-actuates said motor to rotate, which in turn drives said gear assembly and said control wheel to rotate again, moving said control lever pivotally from its highest position to its lowest position so as to close said outlet cap, stopping the water flushing, when said origin sensor detects that said control lever is at its lowest position, said control means then stops said motor again, waiting for the next user

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5,003,644

TWO-STAGE WATER DISCHARGE MECHANISM FOR FLUSH TOILET TANK

Chin-Ming Huang, No. 47, Lu Her Road Sec. 1, Lu Kang Chen, Changhua Hsien, Taiwan

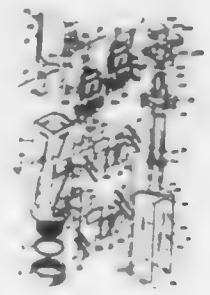
Filed Jan. 17, 1990, Ser. No. 466,525
Int. Cl.[5] E03D *1/14*, *3/12*
U.S. Cl. 4—324 3 Claims

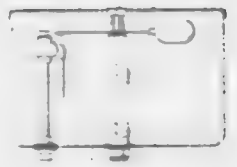
1. An improved two-stage controllable water discharge mechanism for a flush toilet tank comprising.

a hollow pipe fixed set having a rectangular opening at the lower end thereof with an externally threaded discharge tube extended downward from the bottom thereof, and a pair of water intakes disposed at one face thereof with a predetermined distance defined therebetween;

a pair of seals each of which is disposed in association with said water intakes;

a couple of paired protrusion rods disposed on the opposite sides of said fixed set with the side having said intakes







disposed in connection therewith, and each pair of said rods positioned at the same height as said water intakes,

a slot disposed on each face of said fixed pipe at the top end thereof; a pair of float valves having a hollow interior, each said valve provided with a pair of protrusions on each of the opposite sides thereof so that the same can be pivotably associated with said hollow pipe fixed set by connecting levers to seal against said water intakes, the inner side of each said float valve disposed with an escape recess and a slanted recess defined on the opposite side

thereof with a through hole disposed therebetween to permit therebetween communication thereof; and a seal piece disposed in association therewith;

a pivotable sealing lid having an extended rod on the reverse side thereof pivotably disposed in said slanted recess with said extended rod going through the seal piece and into said escape recess so that the seal lid seals against said seal piece;

each said float valve having a density less than the density of water so that the same is buoyant in water and drops due to its own weight when not in water;

a U-shaped inner lining member mounted in engagement with said hollow pipe fixed set; a stop edge and a pair of through holes disposed on the top of said U-shaped inner lining member; a pair of slanted guide members disposed on each of the opposite inner walls of said inner lining member at the middle and bottom portions thereof a pair of slanted slots disposed adjacent to said guide members, an overflow hole being disposed between said through holes;

a long pivot arm and a short pivot arm each provided with a C-shaped unit to which the control petal is pivotably associated by a pin member having two ends slidably disposed in said slanted slots on said inner lining member; a pin hole disposed in the top end of each said pivot arm for connection to actuation arms;

a couple of control petals each having a petal body pivotably connected to said long and short pivot arms; each said control petal resiliently limited by a spring member; said control petals disposed inside said hollow pipe fixed set with the same closely abutting against the water intakes; and a seal ring attached to the face of each control petal; a π-shaped guide element having a slanted guide face attached to said bottom of the respective control petal body with springs fixed a protrusion having a slanted slide face disposed on the front face of each said petal body and in operation;

a pair of actuation arms disposed through said through holes of said inner lining member and pivotably engaged with said long and short pivot arms by pins; a spring being used to enable each said actuation arm to be resiliently operated;

a cover having four downward extended engagement walls in register with said four slots of said hollow pipe fixed set so that the cover is engaged therewith; two extended tubular elements for reception of said actuation arms disposed on the top of said cover; a projection rod disposed between said two tubular elements and having a threaded hole at the top end thereof;

a control button set having a button mounting seat provided with three through holes at the bottom thereof to permit the passing of said two tubular elements and said projection rod of said cover; and a pair of buttons engaged with said mounting seat and said actuation arms whereby an operator can effect the actuation of said actuation arms;

said hollow pipe-shaped fixed set secured to a cistern with said easy control buttons exposed outside the cover of said cistern for easy operation.

5,003,645

BIDET ASSEMBLY WITH DRAINAGE

Nelson Alonso, 1701 SW. 32 Ct., Miami, Fla. 33145

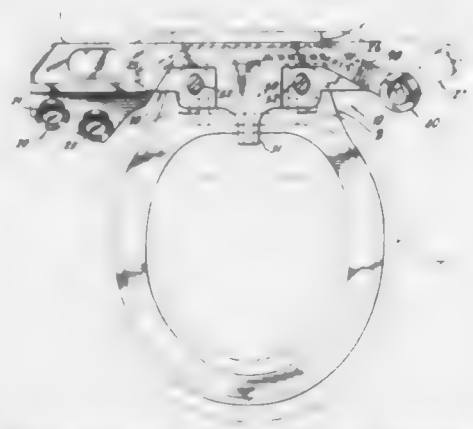
Continuation-in-part of Ser. No. 279,741, Dec. 5, 1988. This application Feb. 7, 1990, Ser. No. 476,201
Int. Cl.[5] A47K *3/22*; E03D *9/08*
U.S. Cl. 4—448 4 Claims

1 A bidet accessory for installation in two-piece toilets having a flanged section in the rear and a bowl, and connected to hot and cold water supplies, comprising:

A. supporting means for holding bidet accessory in place having a substantially elongated shape and mounted to said rear flange and including an internal drainage channel, having two ends, within said supporting means and said drainage channel terminates on one end with a spout that extends over and inside said bowl;

B valve means connected to said hot and cold water supplies for regulating the temperature of the water and including outlets through which said hot and cold water flows to a common outlet and said valve means being mounted to said supporting means and further including hot and cold water inlets connected to said hot and cold water supplies respectively;

C flexible conduit means for routing the water having two ends and connected to said outlet at one of the ends,



D sprayer means for directing the water connected at the other end of said conduit means wherein said sprayer means is hand held and is manually separable from said supporting means; and

E. means for holding said sprayer means and being connected to said support means and to the other end of said drainage channel so that any water remaining in said sprayer means runs down from said sprayer means to said means for holding said sprayer flowing through said drainage channel and into said bowl.

5,003,646

HYDROTHERAPY APPARATUS

Roger A. Stamp, Scappoose, Oreg., and Farrell D. Williams, Midland, Tex., assignors to Hydro Air Industries, Inc., Orange, Calif.

Filed Apr. 14, 1987, Ser. No. 38,046
Int. Cl.[5] A61H *33/02*
U.S. Cl. 4—542 7 Claims

2. A hydrotherapy apparatus for producing a rotating jet of water, comprising:

a supply port;

a water wheel fluidly coupled to said supply port whereby water introduced at said supply port rotatably drives said water wheel;

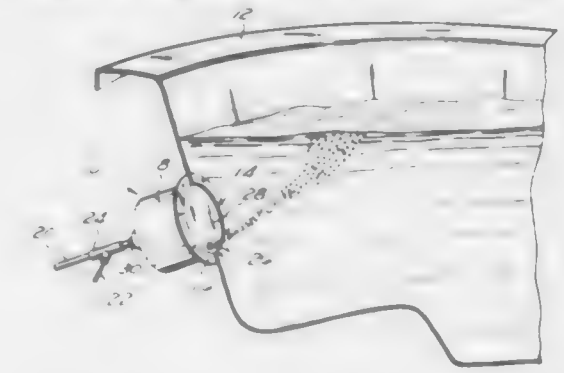
a nozzle connected to a circular plate at a point displaced from the center of said plate for producing a jet of water in a direction substantially perpendicular to said circular plate;

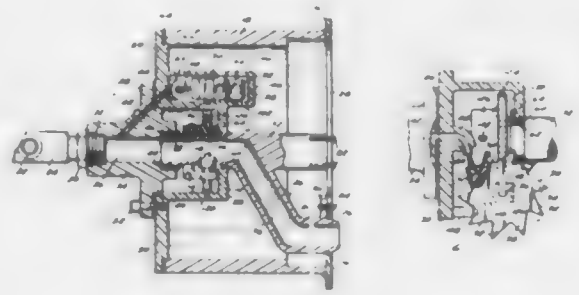
an elongate drive shaft supporting said circular plate;

a coupler for coupling said water wheel to said drive shaft whereby rotation of said water wheel induces rotation of said nozzle at an extremely uniform angular rate, said angular rate being smaller than that of said water wheel;

a tub; and

a cylindrical housing, one end of which is secured to an interior wall of said tub, said circular plate substantially covering said end of said cylindrical housing yet permitting fluid flow from said water wheel around said plate and into said tub, wherein said drive shaft is in fluid communication with the interior cylindrical wall of said cylindrical housing





5,003,647

DISPOSABLE SHOWER LINER

James Williams, 12 Fred St., Burlington, Mass. 01803

Filed Jul. 24, 1989, Ser. No. 384,557
Int. Cl.[5] A47K *3/02*; E04F *13/08*
U.S. Cl. 4—559 6 Claims



4 A disposable shower liner kit comprising in combination

A a liner comprising

(a) a flexible substantially rectangular water impermeable sheet adapted to be removably placed over the walls of a shower,

(b) means at the beginning portion of the sheet for making openings in the sheet adapted to place the beginning portion over water handles and water spigots to contact the sheet against the shower wall, and

(c) a series of spaced apart apertures along the top portion of the liner,

B a magnetic fastening device comprising

(a) a wall mounting member

(i) having a back flat portion adapted for attachment to a shower wall

(ii) bearing a node directed forwardly of the member and

(iii) an upper front portion sloping upwardly toward the rear of the member

(b) an unmounted member for mating with the wall mounted member

(i) bearing an aperture to receive the protruding node on the wall mounting member, and

(ii) an upper portion sloping upwardly toward the mounted member to closely mate with the mounted member

(c) said wall mounting and unmounted members adapted to be magnetically attracted one to the other

whereby when the wall mounting member is attached to the shower wall the shower liner apertures can be hung on its node and maintained securely as close as possible against the shower wall when the unmounted member is placed thereover

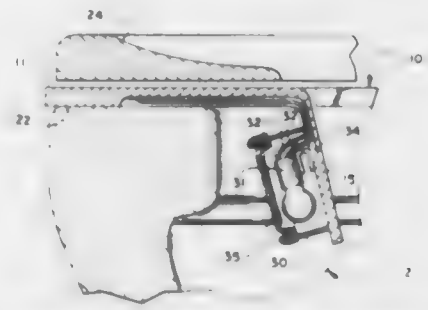
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5,003,648

LIGHT FOR TOILET BOWL

Alexander A. Anderson, 605 Antietam Dr., Stone Mountain, Ga. 30087

Filed Nov. 30, 1989, Ser. No. 443,168
Int. Cl.[5] A47K *1/02*; E03D *1/00*
U.S. Cl. 4—661 5 Claims



1 A light means for use on a toilet rim having front, back and opposite sides, said light means including a web shaped to overlie with the toilet rim from one side, across the back to the opposite side and being receivable on the toilet rim, said web having an outside edge outwardly of the rim and an inside edge inwardly of the rim, at least one holding flange depending from said outside edge of said web, and at least one light flange depending from said inside edge of said web, a light carried by said at least one light flange, and electrical circuit means for connecting said light to a source of power, said at least one holding flange including two holding flanges, one holding flange being located on each side of said web for holding said web in place on a toilet rim, said at least one light flange including two light flanges, one light flange being on each side of said web for lighting both sides of a toilet, and further including a housing at the rear apex of said web, switch means carried by said housing, and a power source in said housing for connection to said circuit means

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5,003,649

NESTABLE COT AND END CONNECTOR THEREFOR

Ray G. Kelly, Kirkwood, Mo., assignor to Angeles Nursery Toys, Inc., Pacific, Mo.

Filed Jan. 5, 1990, Ser. No. 461,326
Int. Cl.[5] A47C *19/00*
U.S. Cl. 5—8 18 Claims

1 A nestable cot comprising

a web of material on which an occupant of the cot can lay,

a frame to which the web of material is attached, said frame including a plurality of rods, one of which extends along each side of the web;

end connectors for connection to the respective ends of adjacent rods to interconnect the rods and complete the frame, each end connector including elongate housing means having a top and an opening at each end in which respective end of adjacent rods are received, each housing

means having an inner face thereof, support means for supporting the cot in an elevated position off the ground, said support means including a pedestal formed intermediate the length of the housing means and disposed inwardly from the inner face thereof, said pedestal from its top extending downwardly a distance sufficient to elevate the web of material off the ground, the height of the pedestal being greater than the distance between the top of the pedestal and the top of the housing means whereby the end connector means on one cot can fit upon the pedestal



of the end connector means of a subjacent cot, the pedestal is hollow and the cot further comprises pad means including a pad having the base and the stem extending upwardly from the base, said stem fitting within the pedestal, the stem being integrally formed with the base and including means for interlocking the pad and the pedestal, and the interlocking means including a flexible latch member formed on one side wall of the stem and having an outwardly projecting finger and the pedestal has a corresponding notch formed an inner wall thereof in which the finger is received

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5,003,650

BUNK BED WITH LADDER

Mario Caya, R.R. #1, Pakenham, Ontario, Canada K0A 2X0

Filed May 8, 1990, Ser. No. 520,508
Claims priority, application Canada, Aug. 29, 1989, 609758
Int. Cl.[5] A47C 19/00; A47D 7/00
U.S. Cl. 5—9.1 4 Claims



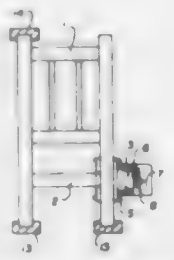
1 An improvement in a bunk bed including a head board having a pair of spaced-apart legs and upper and lower transverse frames, a tail board having a pair of spaced-apart legs and upper and lower transverse frames and connecting members comprising a pair of transversely spaced-apart upper and lower longitudinally-extending outer frames having a generally rectangular cross section, the improvement comprising a bunk bed ladder comprising a pair of spaced-apart upright stiles with a plurality of vertically-spaced-apart steps or rungs therebetween, an upper longitudinally-extending protective rail secured to the inner face of each of said stiles, a lower longitudinally-extending protective rail secured to the inner face of each of said stiles, and a pair or vertically-spaced-apart brackets secured to the inner face of each of said stiles, said brackets each including an upper portion contacting and fixedly-secured to an associated stile, and a lower portion spaced from its associated stile and adapted to be firmly-secured to a longitudinal outer frame member of a bunk bed

5,003,651

CRIB WITH VIBRATION ATTENUATING MEANS

Karl G. Rosén, Karantänsgatan 13, S 442 35 Kungälv, Sweden

Continuation of Ser. No. 162,693, Mar. 1, 1988, Pat. No. filed as PCT SE85/0050 on Dec. 4, 1985, published as WO86/03388 on Jan. 19, 1986. This application Oct. 2, 1989, Ser. No. 415,599
Claims priority, application Sweden, Dec. 10, 1984, 8406250
The portion of the term of this patent subsequent to Jan. 16, 2007, has been disclaimed.
Int. Cl.[5] A47D 9/02
U.S. Cl. 5—109 4 Claims



1 Device for attachment to a crib comprising a housing and a motor having an eccentric weight mounted on a shaft driven by said motor so as to produce vibrations upon actuation of said motor, the frequency of said vibrations being within the range of 800-2000 vibrations per minute, said device having sound generating means, and wherein the device includes vibration attenuating means for attachment to the lower ends and at least an upper end of the crib for attenuation of the vibrations that would be transmitted to the floor supporting the lower ends of the crib and the walls that could be contacting at least an upper end of the crib

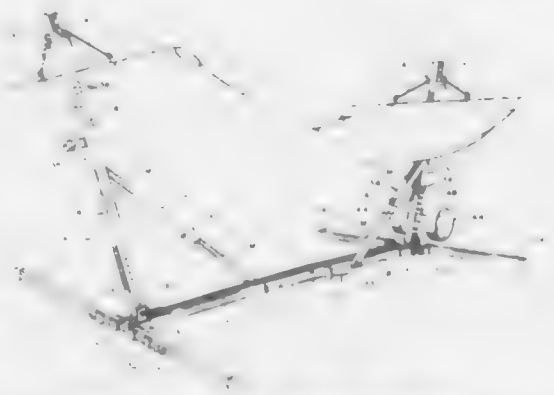
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5,003,652

COLLAPSIBLE HAMMOCK

Lee Bayless, 611 N. Geneva, No. 139, Glendale, Calif. 91206

Filed Jan. 19, 1990, Ser. No. 467,503
Int. Cl.[5] A45F 3/24
U.S. Cl. 5—129 10 Claims



1 A collapsible hammock assembly comprising
(a) a hammock having first and second ends,
(b) first and second hingeably connected base members movable from a first collapsed positioned to a second extended, substantially in-line position,
(c) first and second stabilizing members hingeably connected to said first base member and movable from a first collapsed position wherein said members are disposed closely adjacent to said first base member to a second extended position wherein said members extend generally perpendicularly to said first base member,
(d) third and fourth stabilizing members hingeably connected to said second base member and movable from a first collapsed position wherein said members are disposed closely adjacent to said second base member to a second extended position wherein said members extend generally perpendicularly to said second base member,
(e) a first hammock support assembly for supporting said first end of said hammock pivotally connected to said first base member for movement between a collapsed position to an operative position,
(f) a second hammock support assembly for supporting said second end of said hammock pivotally connected to said second base member for movement between a collapsed position to an operative position,
(g) a first brace assembly having first and second end portions, said first portion being pivotally connected to said first base member and said second end portion being pivotally connected to said first hammock support assembly,
(h) a second brace assembly having first and second end portions, said first end portion being pivotally connected to said second base member and said second end portion being pivotally connected to said second hammock support assembly, and
(i) wheel means connected to one of said first and second hammock support assemblies for rollably transporting said collapsible hammock assembly when in a collapsed configuration

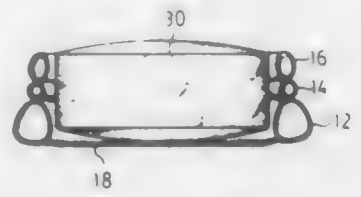
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5,003,653

SEAT ASSEMBLY

Shih L. Mar, 5F-1, No. 212, Ching Hsing Rd., Taipei, Taiwan

Filed Aug. 9, 1990, Ser. No. 564,579
Int. Cl.[5] A47C 27/08
U.S. Cl. 5—449 1 Claim



1 A seat assembly comprising generally an outer air cushion and inner air cushion provided therein, said outer air cushion including three rings superposed and fixed together, each ring having an air tap, a diameter of said lower ring, when taken in cross section, being larger than a diameter of said upper ring which is larger than a diameter of said middle ring; said inner air cushion being expanded and being limited within said outer air cushion when a user is seated thereon, and said inner air cushion completely absorbing a weight of said user and being deformed according to a body of said user so that said user may feel comfortable

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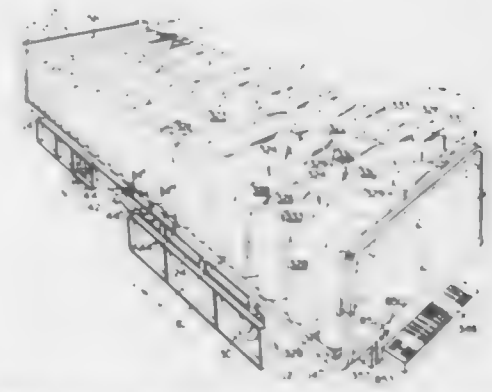
5,003,654

METHOD AND APPARATUS FOR ALTERNATING PRESSURE OF A LOW AIR LOSS PATIENT SUPPORT SYSTEM

John H. Vrzalik, San Antonio, Tex., assignor to Kinetic Concepts, Inc., San Antonio, Tex.

Continuation of Ser. No. 57,965, Jun. 1, 1987, abandoned, which is a continuation-in-part of Ser. No. 905,553, Sep. 9, 1986, abandoned, which is a continuation-in-part of Ser. No. 784,875, Oct. 4, 1985, abandoned, which is a continuation-in-part of Ser. No. 683,153, Dec. 17, 1984, abandoned. This application Sep. 28, 1988, Ser. No. 251,949
Int. Cl.[5] A61G 7/04
U.S. Cl. 5—453 29 Claims

1 A patient support system comprising:
a frame means;
first and second sets of separately inflatable air bags for maintaining low interface pressures between the surface of the air bags and a patient supported on the top surface thereof, the air bags having varying shaped cutouts formed near one end of the top surface thereof, the air bags of said first set of air bags being mounted transversely to said frame means with the cutout closer to a first side of said frame means for receiving one side of the patient when the patient is rolled toward the first side of said frame means, and the air bags of said second set of air bags being mounted transversely to said frame means with the cutout closer to a second side of said frame means for receiving the other side of the patient when the patient is rolled toward the second side of said frame means,
means for selecting a base line pressure in the air bags of said first and second sets of air bags,
means for selecting first and second target pressures to which the air bags of each of said first and second sets of air bags are to be inflated, and



means for sensing the air pressure in the air bags of said first and second sets of air bags and comparing the air pressure in the air bags to the target pressure selected for each of said sets of air bags and, then, alternately inflating the air bags of said first set of air bags to the selected first target pressure when the air pressure in said first set of air bags is lower than the first target pressure selected for said first set of air bags to roll the patient toward the first side of said frame means when said first set of air bags is inflated and inflating the air bags of said second set of air bags to the second target pressure selected for said second set of air bags when the air pressure in said second set of air bags is lower than the second target pressure selected for said second set of air bags to roll the patient toward the second side of said frame means, thereby therapeutically inhibiting the formation and permitting the healing of bed sores and inhibiting the development of pulmonary congestion

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5,003,655

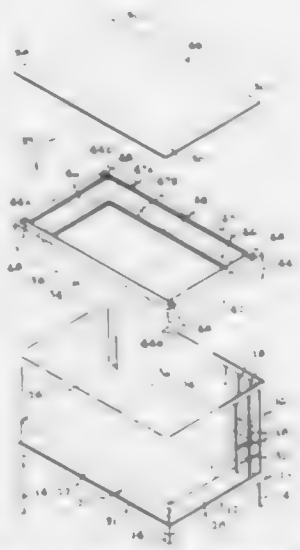
BED SHEET ASSEMBLY

Malakeh B. Kafai, 17248 Van Gogh St., Granada Hills, Calif. 91344

Filed Feb. 16, 1990, Ser. No. 480,812
Int. Cl.[5] A47G 9/04
U.S. Cl. 5—496 7 Claims

1 A bed sheet assembly for a mattress comprising:
a fitted peripheral edge cover having a peripheral side panel for covering the side of the mattress, said panel having upper and lower edge portions extending inward, said upper and lower edge portions for extending continuously about the peripheral edges of the top and bottom surfaces of the mattress when installed thereon, said inner ends of said upper and lower edge portions incorporating elasticized material at least about a portion thereof so as to

cause said upper and lower edge portions to gather together.



a sheet adapted to overlay said mattress, and

means for removably attaching said sheet to said cover

5,003,656

MULTIPURPOSE BICYCLE TOOL

Duane Loppnow, 771 Cabano Dr., Santa Barbara, Calif. 93105

Filed Feb. 21, 1990, Ser. No. 482,514

Int. Cl.[5] B25F 1/00

U.S. Cl. 7—169 **19 Claims**



1 A multifunctional tool for use with bicycles, comprising

a main body section;

a first means connected to said main body section for use in replacing a derailed bicycle chain, and

a second means connected to said main body section for use in removing at least one chain link of a bicycle chain;

said first means comprising a first projecting ear member extending from said main body section, said second means comprising a second projecting ear member extending from said main body section, and a third projecting ear member extending from said main body section,

said main body portion comprising an elongated member defining a front surface face, a rear surface face, a first side edge surface, and a second side edge surface, a first end and a second end; said first projecting ear extending from a first one of said surface; said second projecting ear extending from a second one of said surfaces; said third projecting ear also extending from said second one of said surfaces and spaced therealong from said second projecting ear,

said second projecting ear comprising a bent-member having a first section connected to said second one of said surface, and a second section connected to said first section and extending at an angle with respect thereto, said third projecting ear substantially lying in the same plane as said second section of said projecting ear for gripping links of a chain therebetween

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5,003,657

DEVICE FOR UNBLOCKING INTUBATION TUBES AND TRACHEOTOMY CANNULAS IN VIVO

Richard Boiteau, Paris; Denis Labayle, and Alain Tenaillon, both of L'Hay-les-Roses, all of France, assignors to Medipro, Paris, France

PCT No. PCT/FR88/00364, § 371 Date Mar. 6, 1989, § 102(e) Date Mar. 6, 1989, PCT Pub. No. WO89/00058, PCT Pub. Date Jan. 12, 1989

PCT Filed Jul. 8, 1988, Ser. No. 348,584

Claims priority, application France, Jul. 8, 1987, 87 09671

Int. Cl.[5] B08B 9/02

U.S. Cl. 15—104.33 **12 Claims**



1 A device for preventing, by brushing, the blocking of intubation tubes in intubated patients or of tracheotomy cannulas in trachetomized patients, the device comprising first and second elements each having a distal end adapted to be introduced into an intubation tube or into a tracheotomy cannula, and a proximal end adapted to be controlled by an operator, said first element comprising a flexible central rod, the distal end of said rod being rounded, retractable tube/cannula cleaning means being disposed around the rod in the vicinity of the distal end thereof, said second element comprising a flexible tube in which said first element is received and slidably movable, the retractable tube/cannula cleaning means having a retracted configuration when received inside said second element and a deployed configuration when released from said second element for cooperation with walls of the intubation tube or the tracheotomy cannula, said device being adapted to be inserted by its distal end into the intubation tube or the tracheotomy cannula of the patient, said flexible tube being slidable relative to said rod to release said retractable tube/cannula cleaning means into its deployed configuration

5,003,658

COMPACT SANITARY TOOTHBRUSH

Dennis A. Rolleri, 117 Center St., Nutley, N.J. 07110

Filed Nov. 3, 1988, Ser. No. 266,559

Int. Cl.[5] A46B 1/00

U.S. Cl. 15—185 **5 Claims**



5 A compact toothbrush comprising

a handle having a first handle section and a second handle section,

a brush end with bristles attached to said first handle section

a protrusion with a reservoir forming a terminal end of said second handle section, said reservoir contoured to conform to said brush,

means for connecting and pivotally rotating said first handle section and said second handle section, said means positioned between said brush end and said terminal end and being so positioned that said reservoir will rotate to encompass said bristles

a stop to limit said rotation such that said protrusion and said bristles are diametrically opposed in an open position, and said reservoir engages said bristles in a closed position,

a channel in said second handle section contoured to accept said first handle section and forming a planar surface when the toothbrush is in said closed position, said channel being rectangular in cross section and said first handle section having the same cross section as said cross section of said channel;

toothpaste in said reservoir and wherein said toothbrush is in said closed position, and

a seal attaching to and covering said channel

5,003,659

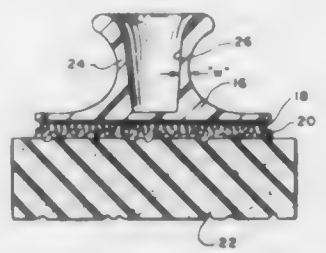
CLEANING APPARATUS

Edwin E. Paepke, S3296 Fox Hill, Baraboo, Wis. 53913

Filed Dec. 5, 1988, Ser. No. 279,538

Int. Cl.[5] A47L 17/08

U.S. Cl. 15—209 D **2 Claims**



1. A kitchen utensil, comprising

(a) a long-lasting, high impact, injection molded generally circular plastic handle which has a shaped side which is contoured with a circumferential, exterior, circular channel to receive at least part of a thumb and a finger of a human hand and which has a smooth surfaces frusto-conical central bore to receive removable means for extending said plastic handle, said plastic handle having one substantially flat surface which is located generally opposite to said shaped side, said removable means having an end with a smooth exterior which is adapted to frictionally fit within said bore, said end of said removable means having an inwardly tapered interior aperture and having almost vertical exterior walls and

(b) a plurality of hook-like elements, adhesively carried by said flat surface of said handle, for removably attaching a cleaning head formed from a plurality of looped members which are adapted to be received by at least one of said hook-like elements

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5,003,660

COSMETIC APPLICATOR AND METHOD OF PRODUCING THE SAME

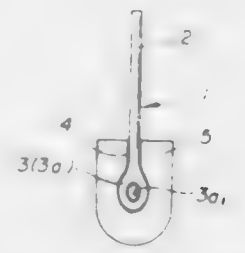
Osamu Oohinata, 40-13, Kameido 4-Cyome, Koutou-Ku, Tokyo-To, and Jun Yanagida, 38-16, Sugamo 5-cyome, Toshima-Ku, Tokyo-To, both of Japan

Filed Apr. 6, 1989, Ser. No. 334,216

Claims priority, application Japan, Apr. 8, 1988, 63-85229

Int. Cl.[5] A46B 15/00

U.S. Cl. 15—244.1 **8 Claims**



1 An applicator serving as a cosmetic accessory comprising

(a) a core rod,

(b) a sponge portion serving as brushing means at one end of said core rod,

(c) disconnection preventive means molded integral with the core rod for preventing said brushing means from being disconnected from the core rod,

(d) said disconnection preventive means having thereon a coating of a rubber-dissolved solution, and,

(e) said sponge portion being integrated with the core rod by foaming, after a film of rubber provided by said coating of the rubber-dissolved solution is dried

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5,003,661

FORCED AIR APPARATUS FOR DIRECTING FILTERED AIR AGAINST A SURFACE

Merlin C. Wilson, Charlotte, N.C., assignor to Textile Air Company, Inc., Charlotte, N.C.

Filed Aug. 3, 1989, Ser. No. 388,999

Int. Cl.[5] A47L 5/14

U.S. Cl. 15—301 **11 Claims**

1 An apparatus for directing air in a predetermined pattern to clean surfaces in the vicinity of textile machines by dislodging accumulated textile fibers, lint and other textile by-products therefrom, comprising

a blower means for generating a stream of air,

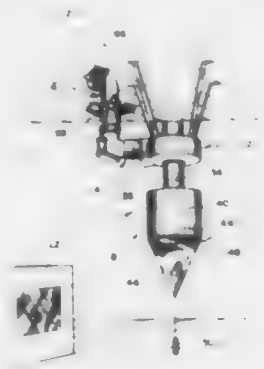
means for supporting said blower means in a substantially fixed disposition relative to the surfaces to be cleaned,

first air directing means movable about an axis and communicated with said blower means for directing said air stream in a direction parallel to a plane during movement of said first air directing means about said axis,

means for moving said first air directing means about said axis; and

second air directing means for selectively changing the direction of said air stream relative to said plane, said second air directing means being movable in response to movement of said first air directing means about said axis.

whereby said air stream is directed in a predetermined pattern to dislodge accumulated fibers, lint and other



textile by-products from the surfaces in the vicinity of the textile machines

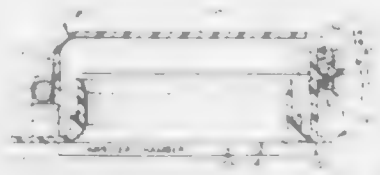
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5,003,662

CONNECTOR FOR A CONVERTIBLE BLOWER-VACUUM

Robert G. Everts, Chandler, Ariz., assignor to Inertia Dynamics Corporation, Chandler, Ariz.

Filed Dec. 15, 1989, Ser. No. 451,729
Int. Cl.[5] A47L 9/02
U.S. Cl. 15—330 6 Claims



1 A connector for releasably connecting a vacuum pipe to the body of an implement convertible to a blower mode or to a vacuum mode, said body having an impeller chamber, and an intake port to the impeller chamber, said connector comprising

a collar around said vacuum pipe, said collar having a plurality of receptacles which include passages therethrough, said receptacles being angularly spaced apart, a locking surface in each said passage, extending only partway along said passage, and an abutment aligned with said locking surface leaving a spacing between them, and

a plurality of stakes on said body each aligned with a respective passage, each stake having a locking face so disposed and arranged as to overhang said locking surface when aligned therewith, and a dimension of thickness substantially equal to said spacing, whereby with the collar angularly positioned with the passages alinged with the stakes and with the stakes to one side of the abutment and locking surfaces, the collar can be pressed against the body with the locking faces at a level above the locking surfaces, and the collar can then be turned to move the stakes into said spacing, thereby holding the stakes with their locking faces overhanging said locking surface to hold the vacuum pipe connected to the body.

5,003,663

UPRIGHT-TYPE ELECTRIC VACUUM CLEANER

Masao Sunagawa; Kazuhiro Kubota; Yoshitaro Ishii, all of Hitachi, and Susumu Satoh, Takahagi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 908,670, Sep. 17, 1986. This application Dec. 21, 1988, Ser. No. 287,157
Int. Cl.[4] A47L 5/30
U.S. Cl. 15—366 2 Claims



1 An upright-type electric vacuum cleaner, comprising

a main body case having an electrically-operated blower chamber, a bag compartment, and a dust filter accommodated in said bag compartment;

a suction port body tiltably supporting said main body case and

an electrically driven rotary brush accommodated in said suction port body, said rotary brush having around an outer periphery thereof spirally arranged bristles and at least a pair of integrally-formed spiral projections, said rotary brush having at all cross sections thereof perpendicular to an axis of said rotary brush a symmetrical configuration with respect to a center of said cross sections, each of said at least a pair of spiral projections being divided into a plurality of spiral pieces in a longitudinal direction of the rotary brush, said projections being provided on the front and rear of the outer periphery of the rotary brush as seen in a plan view taken perpendicular to the center axis of the brush and said projections being symmetrically disposed about the center axis of the brush, the cross-sectional configuration of said projections being such that no undercut portion exists between each projection and an adjacent peripheral portion of said rotary brush so that said rotary brush can be produced by a pair of molds mating in a plane which includes the axis of said rotary brush

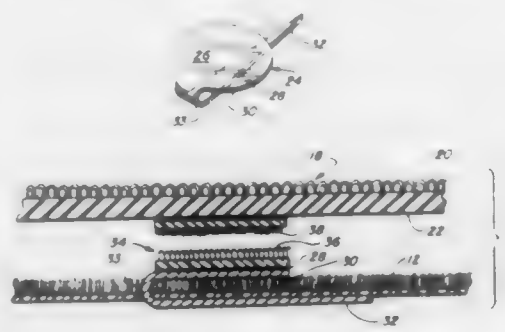
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5,003,664

AUTOMOBILE MAT AND SECURING CLIP

Dorothy Y. Wong, 22W725 Elmwood Dr., Glen Ellyn, Ill. 60137

Filed Aug. 26, 1988, Ser. No. 236,795
Int. Cl.[5] A47G 27/04, B32B 3/06, 7/08
U.S. Cl. 16—6 17 Claims



12 A clip, comprising

a main portion having first and second opposed sides,

a spike joined to said main portion and spaced from the second side of the main portion wherein the spike is capable of insertion into a carpet such that the spike underlies the carpet with the main portion exposed and the second side of the main portion facing the carpet and such that the carpet is disposed between the spike and main portion, and

means for allowing a mat to be secured to the first side of the main portion of the clip

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5,003,665

AUTOMATIC FRONT LEG CUTTER IN A TRANSPORT SLAUGHTERING LINE

Kjell Moritz, Skanör, Sweden, assignor to Skanska Slakterimaskiner, Tomelilla, Sweden

Filed Dec. 16, 1988, Ser. No. 285,256
Int. Cl.[5] A22C 15/00
U.S. Cl. 452—185 5 Claims



1 Automatic front leg cutter in a slaughtering transport line comprising transporting means including a transporting hook for transporting an animal hanging by its hind legs in a slaughtering transport line, the animal constantly moving forward,

stabilizing means for stabilizing the animal including an air bar located close to the hind legs of the animal and a support bar against the neck of the animal,

a pair of lift arms for raising and lifting the front legs of the transported animal,

a plate for contacting and positioning the lifted front legs of the transported animal,

a pair of holders for fixing the positioned and lifted front legs,

cutter means including a pair of cutters for cutting off the fixed front legs and a drive therefor, and

sensitive antenna means activated when the automatic front leg cutter is to be operated whereupon responsive thereto the left arms raise and lift the front legs of an animal being transported by the transporting means, said plate contacts and positions the lifted front legs, said pair of holders fix the positioned and lifted front legs and the pair of cutters of the cutter means cut off the fixed front legs.

5,003,666

METHOD AND APPARATUS FOR MAKING STUFFED CASING PRODUCTS HAVING ONE FLAT END

Alan D. Stall, Naperville, and Vytas A. Randys, Chicago, both of Ill., assignors to Viskase Corporation, Chicago, Ill.

Filed May 29, 1990, Ser. No. 529,300
Int. Cl.[5] A22C 21/00
U.S. Cl. 452—21 24 Claims

1 A method of producing stuffed products having one flat end comprising the steps of:

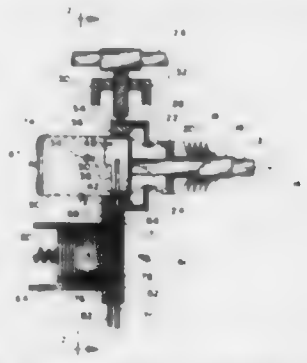
(a) locating a supply of casing to be stuffed on a stuffing horn and drawing a portion of the casing forward from the supply to locate a section of the casing forward of the stuffing horn,

(b) cutting a slit in said section of casing;

(c) inserting a disc having a flat face through said slit and into said section of casing and orienting said flat face substantially perpendicular to the longitudinal axis of the stuffing horn,

(d) drawing said section of casing forward relative to said disc to move said slit from said disc thereby locating said disc within an unbroken perimeter of casing and forming an intermediate longitudinal portion of said casing section between said slit and disc;

(e) gathering said intermediate portion of said casing section towards the longitudinal axis of the stuffing horn and then



closing the gathered casing at a position between said slit and disc thereby capturing said disc within said closed casing; and

(f) stuffing a food product under pressure into said closed casing and against said disc to produce a stuffed product having a leading end defined by the flat face of said disc

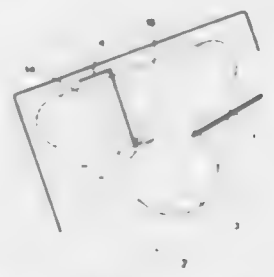
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5,003,667

AUTOMATIC SKINNER FOR NON-SCALY FISH

Mario B. Alinovi, Parma, Italy, assignor to Omer S.a.c. di Mario Baiocchi Alinovi & C., Parma, Italy

Filed May 31, 1990, Ser. No. 531,284
Claims priority, application Italy, Oct. 18, 1989, 40153 A/89
Int. Cl.[5] A22B 5/16
U.S. Cl. 452—125 3 Claims



1 An automatic skinner for non-scaly fish, comprising

a skinning roller (3),

a cleaning roller (2) disposed tangential to the skinning roller;

a blade (1[a]), occupying a plane angled in relation to and directed down and away from the skinning roller,

a fish infeed surface (1), supported by a frame (12) that is angled in relation to a horizontal plane as if rotated about the axis of the skinning roller (3), such that the infeed surface (1) is inclined down toward the roller (3),

oscillating means that serve both to prevent jamming by assisting passage of the fish onto the skinning roller, and to cause the skinned fish to slide away toward a collection receptacle (11);

means by which to tilt the infeed surface support frame, the rollers, the blade and the oscillating means by rotating the support frame about a side of the infeed surface disposed normal to the axis of the skinning roller

5,003,668

TEXTILE SPINNING MACHINE

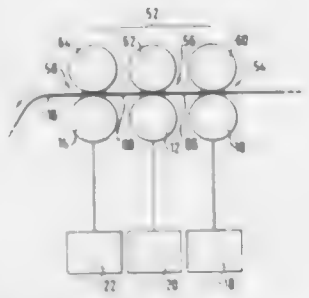
Urs Meyer, Niederglatt, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Jan. 9, 1990, Ser. No. 462,656

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1989, 3900409

Int. Cl.' D01G 31/00

U.S. Cl. 19—0.22 15 Claims



1. A textile machine comprising

at least one drawing system having a plurality of runs forming at least one drawing section, one run of said system having a cylinder with a plurality of circumferentially disposed markings and a second run of said system having a cylinder with at least one marking thereon and being rotatable at a rotary speed different from said cylinder of said one run,

a first pulse generator for responding to said markings of said cylinder of said one run to generate a first output signal having a pulse repetition frequency corresponding to the speed and number of markings of said cylinder of said one run;

a second pulse generator for responding to said one marking on said cylinder of said second run to generate a second output signal having a pulse repetition frequency corresponding to the speed of said one marking, and

an electronic counter having a count input for receiving said first signal and a reset input for receiving said second signal, said counter being reset in response to reception of said second signal during a time interval corresponding to a time between reception of a minimum number of pulses from said first signal and a maximum number of pulses from said first signal, said counter generating a trigger signal for an alarm in response to said second signal not being received in said time interval.

5,003,669

METHOD AND APPARATUS FOR REORIENTING SEED COTTON ON A GINNING APPARATUS

Lambert H. Wilken, College Station; Martin Mehner, Lubbock, both of Tex., and William F. Lalor, Raleigh, N.C., assignors to Cotton Incorporated, New York, N.Y.

Filed May 30, 1990, Ser. No. 530,808

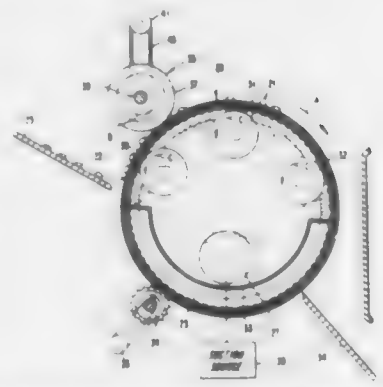
Int. Cl.' D01B 1/06

U.S. Cl. 19—49 16 Claims

1. An apparatus for removing a fiber fraction from seed cotton, comprising:

a plurality of freely rotatable first rollers arranged substantially parallel to one another, said plurality of first rollers being rotatably driven in a continuous path, said continuous path having a first side for receiving the seed cotton and a second side opposite said first side;

a plurality of nip rolls, each of which has an outer peripheral surface that is positioned in abutting relation to the first rollers on the second side of the continuous path for nipping fiber fractions extending between adjacent first rollers, said plurality of nip rolls including a first nip roll which is located closer than the remaining nip rolls to a point at which seed cotton is initially deposited on the first side of the continuous path in the direction of movement of said plurality of first rollers, and a last nip roll which is located farther than the remaining nip rolls from the first nip roll in the direction of movement of the plurality of first rollers; and



reorienting means positioned adjacent the first rollers on the first side of the continuous path for reorienting the position of the seed cotton on the first rollers so that fibers remaining on the seed cotton can be subjected to the nipping action of a nip roll, said reorienting means being located between the first nip roll and the last nip roll

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5,003,670

APPARATUS FOR REDUCING THE STICKINESS OF COTTON FLOCKS

Rene Wacker, Winterthur; Robert Demuth, Nuerensdorf; Fritz Knabenhans, and Othmar Bachmann, both of Winterthur, all of Switzerland, assignors to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Division of Ser. No. 359,494, May 31, 1989, Pat. No. 4,969,234.

This application Apr. 2, 1990, Ser. No. 503,511

Claims priority, application Switzerland, Jun. 3, 1988, 2120/88

Int. Cl.' D01B 5/08, 9/00

U.S. Cl. 19—66 CC 21 Claims



1 An apparatus for reducing the stickiness of fibers of cotton flocks contaminated with honeydew, comprising:

a fiber feeding device by means of which the cotton flocks are compressed to form a fiber batt;

a plurality of heatable rolls;

said fiber batt having a predetermined direction of travel;

said fiber batt being fed to said plurality of heatable rolls;

fiber batt opening and fiber flock infeeding means, for subsequent processing of said fibers, arranged downstream of said plurality of heatable rolls as viewed in said predetermined direction of travel for receiving said fiber batt and for advancing opened fibers toward means for performing said subsequent processing of said fibers;

fiber conveyor means; and

said fiber batt opening and fiber flock infeeding means serving to open said fiber batt into loosened fiber flocks and transferring said fiber flocks to said fiber conveyor means

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5,003,671

DEVICE FOR AFFIXING THE STRAPS OF ARTICLES OF LUGGAGE

Andre Seynhaeve, Senlis, France, assignor to Delsey S. A., Bobigny, France

Filed Jan. 4, 1990, Ser. No. 459,994

Claims priority, application France, Jan. 11, 1989, 89 00257

Int. Cl.' A44C 5/18

U.S. Cl. 24—265 A 7 Claims



1 In an article of luggage having a peripheral lining defining a cavity for containing clothing and the like and including elastic straps selectively connected across the cavity for securing the clothing therein, an improved device for securing one end of a strap to the lining, the device comprising

a generally planar plate having top, bottom and opposed side edges, each side edge including a plurality of spaced teeth extending in the plane of the plate,

a bracket fixed tot he lining and defining a space for fixedly receiving the plate, the bracket including opposed walls disposed to be engaged by the teeth on inserting the plate into the bracket, and

means on the plate for fixing the one end of the strap thereto

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5,003,672

SHOCK CORD AND COVER ASSEMBLY

Ovid Randall, 9 E. Main St., Clifton Springs, N.Y. 14432

Filed May 24, 1990, Ser. No. 527,852

Int. Cl.' F16G 11/00

U.S. Cl. 24—300 1 Claim



1 A shock cord and cover assembly comprising in combination,

a shock cord including an elongate elastomeric cord defined by a predetermined diameter, the elastomeric cord including a hook assembly fixedly mounted to at least one terminal end of the cord, the hook assembly defined by a predetermined length, the hook assembly further including a base fixedly secured to the elastomeric cord with a connecting leg extending upwardly from the base spaced from the elastomeric cord wherein the connecting leg terminates in a hook member directed downwardly projecting towards the base, and

a flexible cover housing, the flexible cover housing slidably mounted about the elastomeric cord to permit selective covering of the hook assembly, and

wherein the flexible cover housing includes a conical main body portion and a narrowed neck body portion defining a forward terminal end of the main body portion, the narrowed neck portion and the conical body portion coaxially aligned defining the flexible cover housing, and

wherein the narrowed neck portion includes a first opening defined by a first diameter, the first diameter is substantially equal to the predetermined diameter to effect surrounding engagement of the elastomeric cord, and

wherein the conical body portion includes a second opening, the second opening defined by a second diameter, the first diameter and second diameter coaxially aligned relative to one another with the second diameter substantially equal to or greater than a predetermined width defined by the hook assembly, and

wherein the flexible cover housing is defined by a cover housing length, the cover housing length equal to or greater than the predetermined length defined by the hook assembly, and

wherein the flexible cover housing includes a fluid absorbent sponge liner coextensively formed throughout an interior surface defined by the flexible cover housing, and

including a conduit directed through the main body portion of the cover housing in fluid communication with the liner, the conduit including a cap selectively securable overlying the conduit to permit directing of a lubricating fluid to the liner

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5,003,673

SNAP FASTENER

Bernhard Nysten, Aachen, Fed. Rep. of Germany, assignor to William Prym-Werke GmbH. & Co. KG, Stolberg, Fed. Rep. of Germany

Filed Jun. 5, 1990, Ser. No. 533,424

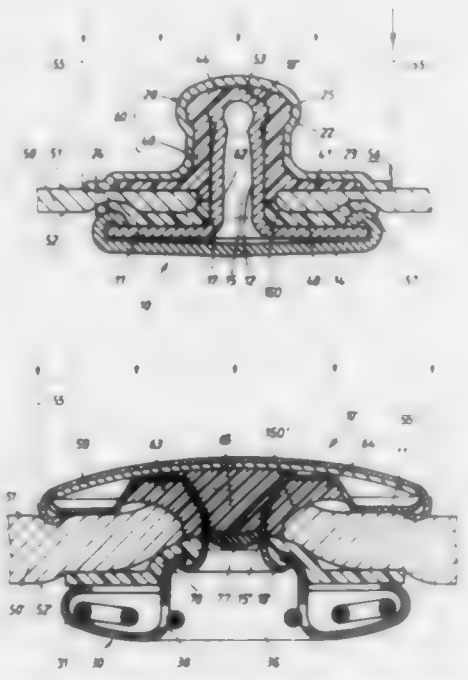
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1989, 3918375

Int. Cl.' A44B 17/00

U.S. Cl. 24—662 30 Claims

1 A snap fastener comprising a male component including a male coupling element having an outer side, an inner side and a cavity with an inlet at said inner side, a first rivet having a deformable first shank extending into said cavity, and a liner at least a portion of which is disposed in said cavity between said male coupling element and said shank; and a female component including a female coupling element having a first side provided with a socket for said male coupling element and a second side provided with an opening in communication with

said socket, a second rivet having a deformable hollow second shank extending into said socket by way of said opening, and



sealing means including a plug in said second shank and a sealing ring surrounding said second shank

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5,003,675

SEPARATOR FOR SEAMING MACHINES

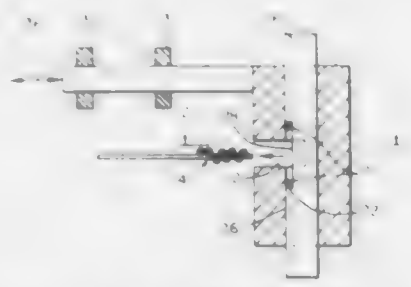
Klaus Enser, and Hans-Eugen Hacker, both of Reutlingen, Fed. Rep. of Germany, assignors to Herman Wangner GmbH & Co. KG, Fed. Rep. of Germany

Filed Mar. 20, 1990, Ser. No. 495,963

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1989, 8903454

Int. Cl.[5] D03D 41/00, 3/04

U.S. Cl. 28—141 6 Claims



1 A separator for successively seizing threads held in an array, comprising a frame having drive means for moving the frame toward and away from said array, at least one plate having means for guided movement in said frame for seizing a thread in said array wherein said plate includes a piercing needle for piercing said thread and seizing said thread

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5,003,676

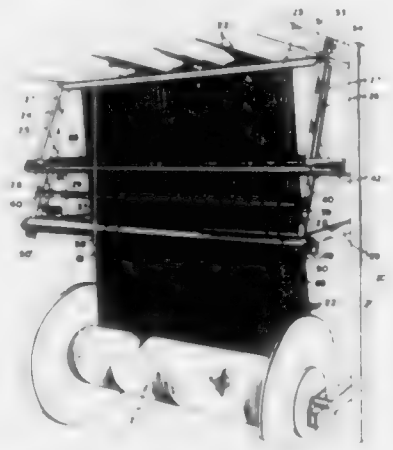
YARN END SPLICING APPARATUS

San M. McFalls, 1830 Beechwood Blvd., Gainesville, Ga. 30501

Filed Mar. 29, 1990, Ser. No. [illegible],929

Int. Cl.[5] D03J 1/18, B65H 69/08

U.S. Cl. 28—209 23 Claims



1. Apparatus for thermal splicing of a plurality of yarn ends from a fresh beam to a plurality of yarn ends severed from a spent beam in a carpet tufting apparatus, wherein each of said plurality of yarn ends from said fresh beam has an associated yarn end from said plurality of yarn ends from said spent beam said associated yarn ends forming a plurality of pairs of associated yarn ends, the apparatus comprising

means for retaining said plurality of associated pairs of yarn ends in a spaced apart manner, said retaining means having means for holding a section of each of said associated pairs in contacting relation, said retaining means being of a predetermined width sufficient to retain all of said associated pairs simultaneously;

heating element means for heating said plurality of associated pairs of yarn ends to a temperature sufficient to melt said yarn ends in a substantially simultaneous manner, said heating element means extending across substantially the entire width of said retaining means, said heating element means being disposed in a substantially stationary position relative to said retaining means and said associated pairs of yarn ends such that said contacting sections of said associated pairs of yarn ends will be heated and melted together by said heating element means

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5,003,674

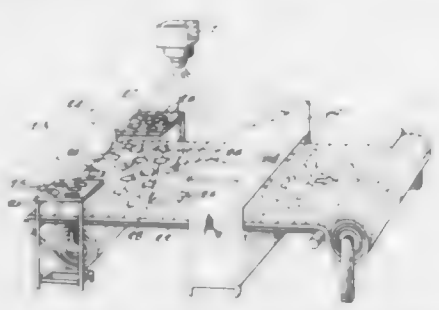
NEEDLE FELTED FABRICS

Samuel Cohen, 146 W. 57th St., New York, N.Y. 10019, and Liora G. Manne, 18 E. 18th St., New York, N.Y. 10003

Filed Aug. 2, 1989, Ser. No. 388,441

Int. Cl.[5] D04H 1/20

U.S. Cl. 28—109 11 Claims



1. The process for producing improved needle-felted fabrics including,

providing a web of base fabric (28),

arranging colored fibers (25) on appropriate and corresponding places on a base fabric (28),

at least some fibers (A, B, C, D,) of one color overlapping some fibers A, B, C, D of another color, so that the colors will blend in the overlapped areas (A-B, B-C, C-D),

lightly securing the various-colored fibers (25) onto the base fabric (28) by pre-needling (29) with felting needles,

permanently securing the pre-needled (29) base fabric and colored fibers (25) by subsequent needling with fine gauge felting needles (31)

5,003,677

METHOD AND APPARATUS FOR PROCESSING A TEXTURED YARN

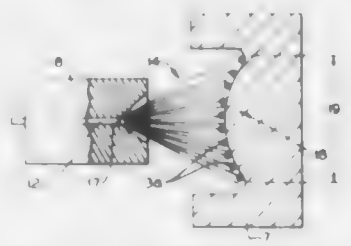
Eberhard Krenzer, Ennepetal-Ruggeberg, Fed. Rep. of Germany, assignor to Barmag AG, Remscheid, Fed. Rep. of Germany

Filed May 31, 1989, Ser. No. 359,101

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1988, 3818609; Jul. 15, 1988, 3824030

Int. Cl.[5] D06B 1/02, D01D 5/22, D02G 1/00

U.S. Cl. 28—220 19 Claims



1 A method of processing a synthetic continuous filament yarn comprising the steps of

advancing the yarn along a path of travel,

guiding the advancing yarn across a fixed guide surface in a tensioned condition, while spreading the advancing yarn laterally as it is guided over the guide surface,

wetting the advancing yarn by directing a jet of liquid onto the yarn as it advances across the guide surface and from a direction generally opposing the guide surface, and

guiding the wetted yarn through an air texturing nozzle to impart bulk to the wetted yarn

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5,003,678

METHOD OF MAKING A CHANNEL SET RING

Suren Oganesyan, 938 Mountain St., Glendale, Calif. 91207

Filed Jan. 22, 1990, Ser. No. 468,075

Int. Cl.[5] B23P 5/00

U.S. Cl. 29—10 7 Claims

1. A method of making set ring comprising the steps of

(a) forming a ring member having an outer cylindrical surface,

(b) forming a groove in the outer cylindrical surface of the ring mounting member, the groove extending at least partially around the circumference of the ring mounting member, and the groove defining a pair of upstanding rims, each having an upper end surface;

(c) machining a plurality of equidistantly spaced depressions in the bottom of the groove,

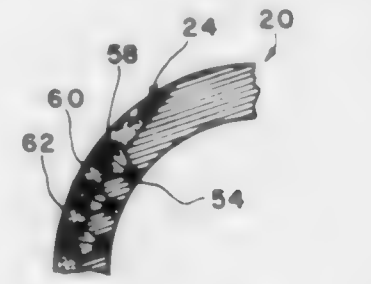
(d) drilling a setting hole centrally in each depression;

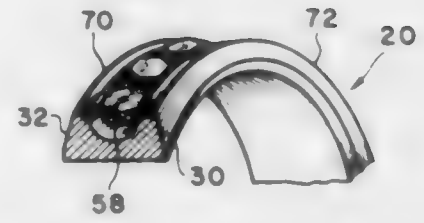
(e) placing a gem in each of the setting holes to obtain a desired orientation of the gems,

(f) applying a sheet of adhesive material to the upper end surfaces of the pair of upstanding rims and to a crown portion of the gems to the thereby hold the gems in place;

(g) rotating the ring mounting member while pressing a roller against the pair of rims, thereby toeing the rims inwardly into engagement with the gems

(h) removing the sheet of adhesive material and





(i) polishing the ring mounting member to form a desired final shape

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5,003,679

METHOD OF MANUFACTURING A DROPLET DEPOSITION APPARATUS

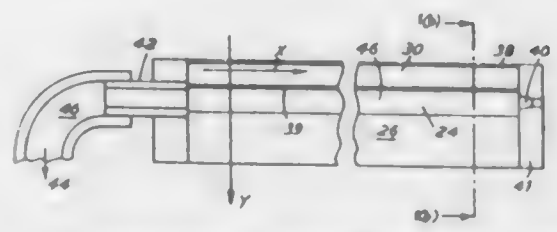
W. Scott Barthy, Chicago, Ill.; Anthony D. Patoe; Stephen Temple, both of Cambridge, England, and A. John Michaelis, Glen Ellyn, Ill., assignors to XAAR Limited, Cambridge, United Kingdom

Division of Ser. No. 140,764, Jan. 4, 1988, Pat. No. 4,879,568. This application Sep. 1, 1989, Ser. No. 401,900

Claims priority, application United Kingdom, Jan. 10, 1987, 8700531; Jan. 10, 1987, 8700533

Int. Cl.[5] H01L 41/22

U.S. Cl. 29—25.35 12 Claims



1. The method of making a multi-channel array pulsed droplet deposition apparatus, comprising the steps of

(a) forming a base wall with a layer of piezo-electric material

(b) forming a multiplicity of parallel grooves in said base wall which extend through said layer of piezo-electric material to afford walls of piezo-electric material between successive grooves, pairs of opposing walls defining between them respective liquid channels

(c) locating electrodes in relation to said walls so that an electric field can be applied to effect shear mode displacement of said walls transversely to said channels

(d) connecting electrical drive circuit means to said electrodes

(e) securing a top wall to said walls to close said liquid channels

(f) providing nozzles and liquid supply means for said liquid channels

5,003,680

TOOL FOR FITTING AND REMOVING BRAKE SHOE RETURNS SPRINGS

Ivan Vesely, Holzkirchen, and Xaver Kreitmair, Dachau, both of Fed. Rep. of Germany, assignors to MAN Nutzfahrzeuge GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 274,188, Nov. 18, 1988, abandoned. This application May 8, 1990, Ser. No. 520,834

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1987, 3740465

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—227 16 Claims



1 A tool for the fitting and removal of brake shoe return springs in a vehicle, said tool comprising an elongated lever having opposite ends and opposite side surfaces, two draw hooks connectable to said lever respectively at the opposite side surfaces of the lever at two different locations for separate and independent pivotal movement about respective axes perpendicular to said lever through an angle of at least 90°, said lever including a hook at one of said ends, a spur on said lever, spaced from said hook and extending parallel to said hook, said hook and spur being selectively active to directly apply force to the brake shoe return springs, enabling said lever to act as a fulcrumed first and second class lever, said two draw hooks being of different lengths and disposed in planes parallel to said lever, means for selectively retaining the jaw hooks relative to said lever and handle means on said lever at the other end thereof extending perpendicularly to said lever

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5,003,681

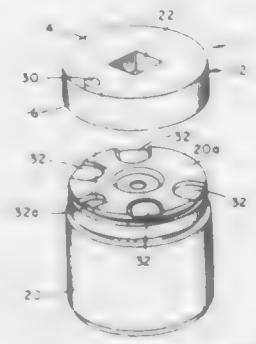
BRAKE TOOL

Paul E. Schley, 5511 E. Cerritos Dr., Orange, Calif. 92669

Continuation of Ser. No. 228,470, Aug. 5, 1988, abandoned, which is a continuation of Ser. No. 52,920, May 22, 1987, abandoned. This application Aug. 6, 1990, Ser. No. 579,337

Int. Cl.[5] B25B *13/06*

U.S. Cl. 29—239 1 Claim



1 In the installation of brake pads in automobiles wherein a brake piston is rotated, said brake piston having a generally flat planar face of a predetermined diameter and at least one shallow depression in the face,

(a) grasping the brake piston with a tool comprising

a cylindrical body member having a side wall and a flat planar working face at one end of the body member which abuts the flat planar face of the piston upon grasping the brake piston with the tool,

said working face being surrounded by an outwardly projecting rim which is an extension of the side wall, said rim being at right angle with respect to the working face and defining a surface area which is slightly greater than the area of the face of the piston and having a diameter slightly greater than the diameter of the face of the piston,

a central opening in the body member adapted to receive a device which, upon insertion into the opening and rotation thereof, coacts with the central opening to rotate the tool, and

a single pin extending outwardly from the working face at a right angle with respect to said flat planar working face and adapted to inserted into said one depression in the face of the piston, said pin, upon rotation of the tool, coacting with the rim, which grips the piston, to rotate the piston when the tool engages the piston, said working face being free of pins other than the single pin.

(b) aligning the single pin with said one depression and bringing the working face of the tool into abutting relationship with the planar face of the brake piston to insert the single pin into said one depression, and

(c) inserting the device into the central opening and rotating the tool to rotate the brake piston

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5,003,682

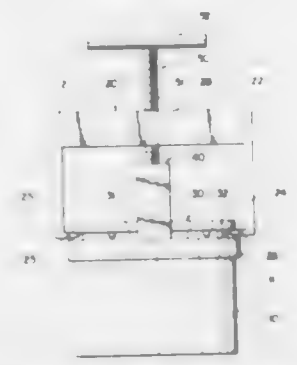
PLUG OR CAP PULLER

Dennis I. Strausbaugh, and Irvin R. Strausbaugh, both of R.D. 3, Box 306, Hanover, Pa. 17331

Filed May 29, 1990, Ser. No. 529,554

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—259 1 Claim



1 A tool means for removing a cap or plug (30) having a lid (32) from a sewer pipe assembly (10) having a widened gasket housing area (11) comprising,

a lower pushing assembly (40) having a central portion, a first lateral edge (41) and a second lateral edge (42),

a first vertical depending arm means (43) extending downwardly from said first lateral edge (41),

a second vertical depending arm means (44) extending downwardly from said second lateral edge (42),

wherein said first and second vertical depending arm means (43, 44) are fixedly formed as a part of said lateral edges (41, 42),

means (45, 46) wherein said lower pushing assembly (40) rests on the upper edge of said widened gasket housing (11),

an upper pulling assembly (20) having a central portion, a first lateral edge (21) and a second lateral edge (22),

wherein said central portion of the upper pulling assembly (20) has an aperture (28) formed therethrough,

a first vertical depending arm means (23) extending downwardly from said first lateral edge (21),

a second vertical depending arm means (24) extending downwardly from said second lateral edge (22),

wherein said first and second vertical depending arm means (23, 24) are fixedly formed as a part of said lateral edges (21, 22),

means (25, 26) wherein extended portions of said upper pulling assembly (20) are fit under the lid (32) of said cap or plug (30),

a screw assembly means (50) having a threaded cylinder (51)

means adapted for extending through said aperture (28) formed in said central portion of the upper pulling assembly (20),

handle means (52) attached to an upper portion of said threaded cylinder (51),

means wherein, upon clockwise rotation of said handle (52), a pushing force is exerted by said lower pushing assembly (40) on the upper edge of said widened gasket housing (11) and wherein a pulling force is exerted by said upper pulling assembly (20) on the underside of the plug lid (32) wherein said plug is removed from said sewer pipe assembly (10),

wherein said means (45, 46) by which said lower pushing assembly (40) rests on the upper edge of said widened gasket housing (11) comprise arms inwardly horizontally extending from said vertical depending arms (43, 44), said means (45, 46) being formed as a unitary construction with said arms (43, 44),

wherein said means (25, 26) by which said upper pulling assembly (20) is fitted under the lid (32) of said cap or plug (30) comprise arms (25, 26) inwardly extending horizontally from said vertical depending arms (23, 24), said means (25, 26) being formed as a unitary construction with said arms (23, 24),

wherein the central portion of said lower pushing assembly (40) includes a recessed area means (48) for receipt of the lower end of said screw cylinder (51),

wherein said means (45, 46) whereby said lower pushing assembly (40) rests on the upper edge of said widened gasket housing (11) comprise shortened arm elements (45, 46) which do not extend to a body (31) of said cap or plug (30)

5,003,683

FORMING BORES IN BENDABLE LAYERED MATERIALS

Cornell Canden, Clawson, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 11, 1989, Ser. No. 448,381

Int. Cl.[5] B23P *17/00*

U.S. Cl. 29—425 2 Claims



1 A method of forming an opening in layered sheet material to be subsequently bent by which the layers are shifted relative to one another in a direction normal to the bend, so that a port-bend circular opening with a desired radius is finally produced to receive a cylindrical fastener, comprising piercing the layered material thereby forming an oblong pre-bend opening which has circular end configurations each with a center point and substantially the same shape as the desired post-bend circular opening, a line extending through the center points of the circular end configurations being aligned in a direction normal to the subsequent bend and with the center points spaced from one another a distance related to the shift caused by the bend bending the layered material along a line substantially normal to a line through the center points of the end configurations, thereby shifting the layers relative to one another in the direction normal to the bend sufficiently so that opposite end configurations in different layers move toward one another a circular opening through the shifted layered material.

5,003,684

METHOD OF MANUFACTURING TUBULAR VIBRATION-INSULATING BUSHING

Masaki Inoue, Aichi, Japan, assignor to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Sep. 27, 1989, Ser. No. 413,239

Claims priority, application Japan, Nov. 29, 1988, 63-301318

Int. Cl.[5] B23P *11/02*

U.S. Cl. 29—447 6 Claims



1 A method of manufacturing a tubular vibration insulating bushing including a cylindrical outer tube, a vibration-insulating rubber member disposed within said outer tube, extending lengthwise along said outer tube, and extending widthwise transversely of said outer tube in such a manner that opposite lateral sides of said rubber member are connected to an inner peripheral surface of said outer tube, and an inner tube embedded in and extending through a central portion of said rubber member in coaxial relation to said outer tube and mounting the same to a holder bracket,

said member comprising the steps of:

forming an outer tube from a resilient material

placing said outer tube in a mold in such a manner that said outer tube is resiliently deformed into an oval cross-section;

pouring a molding material into said outer tube to mold a vibration-insulating rubber member so as to form the bushing, said rubber member extending widthwise along the greatest diameter of said outer tube

subsequently removing the bushing from said mold and

subsequently press-fitting said outer tube into a cross-sectionally circular bore of a holder bracket while deforming said outer tube into a circular cross-section, thereby fixing said outer tube relative to said bracket

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5,003,685

METHOD OF MAKING A CLUTCH FOR A COOLING FAN OF A MOTOR VEHICLE

David J. Settles, Ft. Worth, Tex., assignor to Dayco Products-Eaglemotive, Inc., Fort Worth, Tex.

Continuation of Ser. No. 260,627, Oct. 21, 1988, Pat. No 4,899,863, which is a division of Ser. No. 158,413, Feb. 22, 1988, abandoned, which is a division of Ser. No. 895,976, Aug. 12, 1986, Pat. No. 4,741,091. This application Nov. 22, 1989, Ser. No. 440,572

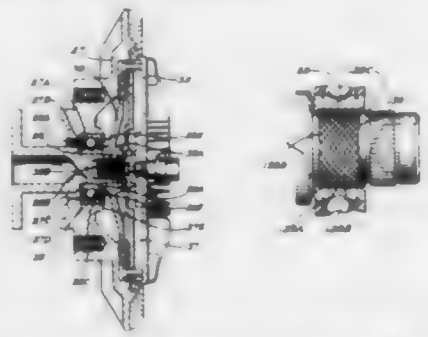
The portion of the term of this patent subsequent to May 3, 2005, has been disclaimed.

Int. Cl.[5] F16D *35/00*

U.S. Cl. 29—525 4 Claims

1 In a method of making a clutch for a cooling fan of a motor vehicle, said clutch comprising a shaft having a first end to be attached to a rotatable member of the motor vehicle and having a second end defined by a cylindrically shaped knurled portion and an adjacent second portion, said knurled portion having protuberances defined by slots formed in the exterior of said shaft, said knurled portion having an outer diameter and having an inner edge adjacent said second portion and an outer edge adjacent said first end, a bearing means having an inner race member press-fitted onto said knurled portion, a housing comprising a body member and a plate member secured to-

gether to form an enclosed chamber for holding a viscous fluid, said housing having means for mounting a fan, said body member having a central opening defined by structural means, said bearing means being disposed in said central opening of said body member and engaging said structural means such that said bearing means supports said body member and hence said housing for rotation, and a drive plate having a central opening defined by inner structure press-fitted onto said second portion of said shaft, the improvement comprising the steps of forming said shaft before using said shaft to form said clutch with a solid ring shaped portion between said knurled portion and



said second portion and next to said inner edge of said knurled portion, forming said solid ring shaped portion to have an outer diameter about equal to that of said outer diameter of said knurled portion by burnishing said protuberances and said solid ring shaped portion to about the same diameter before said bearing means is press-fitted thereon, and then press-fitting said bearing means on said knurled portion of said shaft so that part of said inner race member of said bearing means remains press-fitted on said solid ring shaped portion whereby said solid ring shaped portion is adapted to block the flow of said viscous fluid out of said enclosed chamber by way of said slots which define said protuberances of said knurled portion

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5,003,686

METHOD OF MANUFACTURING A SYNCHRONOUS ELECTRIC MOTOR WITH MAGNETISED ROTAR

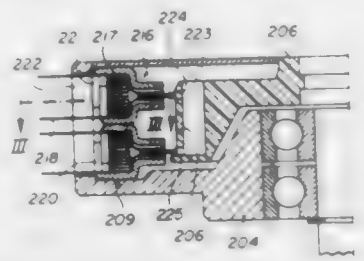
Claude Oudet, Besancon; Gilbert Drey, La Chaux-De-Fonds, and Norbert Veignat, Besancon, all of France, assignors to Portescap, Chaux-DeFonds, Switzerland

Division of Ser. No. 117,200, Aug. 6, 1987, Pat. No. 4,866,323. This application Jul. 3, 1989, Ser. No. 376,174

Claims priority, application Switzerland, Dec. 6, 1985, 5192/85

Int. Cl.[5] H02K 15/02

U.S. Cl. 29—596 12 Claims



1 A method of manufacturing a synchronous electric motor comprising at least one rotor part of an essentially flat annular form, magnetized in such manner as to present at least one series of magnetic pole, disposed regularly along a flat annular zone, the rotor part being fixed by means of at least one rotor-supporting part on a shaft of the motor mounted so as to be rotatable with respect to at least one stator assembly, the stator assembly comprising at least two stator parts of a magnetically permeable material, forming a variable air-gap along at least a portion of an annular space in which are disposed the magnetic poles of the rotor part, the stator assembly also comprising at least one electric control coil coupled with one or more of said pole parts, wherein the fixing of the rotor part on the rotor-supporting part is achieved in such a way as to permit, at the time of assembly the motor, a positioning of the rotor part in the axial direction and also an angular positioning of the rotor part about the direction of the shaft of the motor comprising the steps of

first fitting the motor shaft with the rotor-supporting part,

assembling the shaft with the fitted rotor-supporting part with an assembly of pole parts which have to be disposed facing a corresponding flat annular zone of the respective rotor part, in such manner that the ends of these pole parts, in the axial direction, are disposed in a plane perpendicular to the axis of the motor shaft,

placing the annular rotor part in position by disposing at least one spacer element of determined thickness between the rotor part and the ends of at least one portion of the said pole parts,

fixing the rotor part on the rotor support, and

then withdrawing or removing the spacer element from the space between the rotor part end the said pole parts

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5,003,687
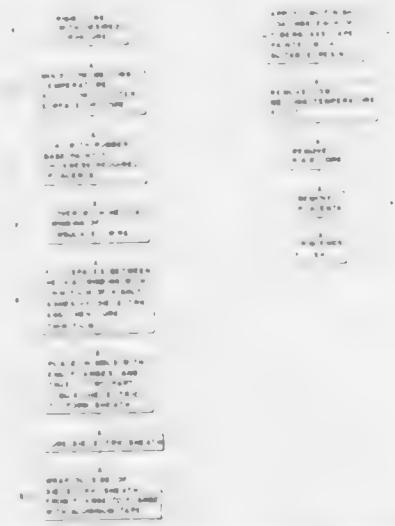
OVERMODED WAVEGUIDE ELBOW AND FABRICATION PROCESS

Roger H. Lapp, Silver Spring, and Theodore F. Paraska, Clarksville, both of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed May 16, 1988, Ser. No. 194,364

Int. Cl.[5] H01P 11/00

U.S. Cl. 29—600 13 Claims



1 A method for fabricating a circular waveguide elbow section comprising the steps of

providing a removable rigid core form having the elbow curvature desired,

coating said core form with a low melt temperature material,

applying a helical winding of insulated wire onto the outer surface of the coated core form,

molding a lining of dielectric material onto the outer surface of said helical winding,

attaching an electrically conductive layer to encapsulate the outer surface of said dielectric lining, and

withdrawing said rigid core form by melting said low melt temperature material by applying heat to said low melt temperature material to release said core form from said winding

5,003,688

METHOD OF PRODUCING A MAGNETIC HEAD CORE HAVING TRACK-WIDTH DEFINING CUT OUTS FORMED ON OPPOSITE SIDES OF A MAGNETIC GAP

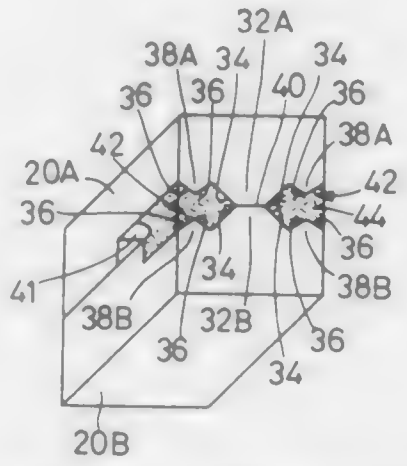
Nobuhiro Terada, Kasugai; Masataka Shimizu, Inuyama, and Soichiro Matsuzawa, Kuwana, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed May 15, 1989, Ser. No. 352,291

Claims priority, application Japan, May 17, 1988, 63-119768

Int. Cl.[5] G11B 5/42

U.S. Cl. 29—603 4 Claims



1 A method of producing a magnetic head core including two ferrite blocks which are bonded together so as to form a magnetic path, said two ferrite blocks having opposed surfaces and comprising respective two protrusions which protrude from respective portions of said opposed surfaces and have opposed end faces cooperating with each other to define a magnetic gap therebetween, said opposed surfaces of said two ferrite blocks cooperating with said two protrusions, to define two cutouts formed on opposite sides of said magnetic gap, such that a spacing provided between said opposed surfaces by each of said two cutouts is larger than said magnetic gap between said end faces, said cutouts defining an effective width of a track of the head core in which said magnetic gap is open, said method comprising the steps of

preparing two ferrite blanks corresponding to said two ferrite blocks, each of said two ferrite blanks having opposed major surfaces,

forming a patterned etching mask on one of opposed major surfaces of said each ferrite blank, said patterned etching mask comprising a relatively wide resist portion corresponding to the corresponding one of said two protrusions, and at least two relatively narrow resist portions corresponding to said two cutouts,

subjecting said one of the opposed major surfaces of said each ferrite blank to an etching operation through said patterned etching mask, to form a corresponding one of said two protrusions and at least one ridge formed on each side of said corresponding one protrusion, such that said corresponding one protrusion has two side surfaces each of which is inclined at an angle of 25°-75° with respect to said end faces defining said magnetic gap; and

bonding together said two ferrite blanks such that the opposed end faces of the two protrusions formed on the etched surfaces of said two ferrite blanks define said magnetic gap therebetween, while said at least one ridge formed one each side of one of said two protrusions cooperates with said at least one ridge formed one each side of the other protrusion, to define said two cutouts

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5,003,689

METHOD AND APPARATUS FOR MANUFACTURING A SURGE ARRESTER

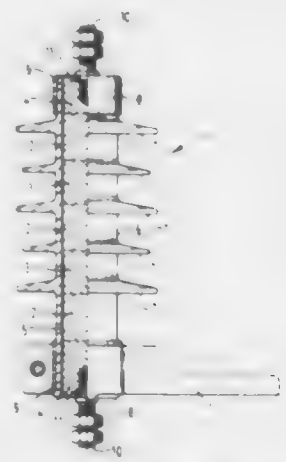
Rodney M. Doone, and Henry J. Colbert, both of Burgess Hill, England, assignors to Bowthorpe EMP Limited, Brighton, England

Continuation of Ser. No. 366,842, Jun. 15, 1989, abandoned, which is a division of Ser. No. 924,486, Oct. 29, 1986, Pat. No. 4,851,955. This application Mar. 5, 1990, Ser. No. 489,862

Claims priority, application United Kingdom, Jan. 29, 1986, 8602112

Int. Cl.[5] H01C 17/02

U.S. Cl. 29—613 9 Claims



8 A method of manufacturing a surge arrester comprising the steps of

(a) assembling terminal blocks, varister blocks and electrically conductive heat sink/spacer blocks in face-to-face contact in a distributed array,

(b) applying forces to said terminal blocks so as to compress together all of the blocks in said array,

(c) while maintaining said blocks in said array, enwrapaping said array of blocks with a pre-preg material of a reinforced rigid plastic material,

(d) curing said plastic material in said pre-preg under mold pressure and evacuation so as to bring said plastic material into intimate bond contact with said blocks free of gaseous entrapments and voids and to encase said blocks within a rigid shell bonded to peripheral surfaces of said blocks, thereby forming a core of encased blocks, and,

(e) introducing said core within a shedded sleeve of mechanically released elastomeric material with a fluid weather-proof sealant therebetween

9 A method of manufacturing a surge arrester comprising the steps of

(a) assembling terminal blocks and varistor blocks in face-to-face contact in a distributed array,

(b) applying forces to said terminal blocks so as to compress together all of the blocks in said array,

(c) while maintaining said blocks in said array, enwrapping said array of blocks with a pre-preg material of a reinforced rigid plastic material,

(d) curing said plastic material in said pre-preg under mold pressure and evacuation so as to bring said plastic material into intimate bond contact with said blocks free of gaseous entrapments and voids and to encase said blocks within a rigid shell bonded to peripheral surfaces of said block, thereby forming a core of encased blocks,

(e) introducing said core within a shedded sleeve of polymeric heat-shrink material with a fluid weather-proof sealant therebetween, and

(f) applying heat to shrink said sleeve of heat-shrink material onto said core in an evacuated chamber so as to avoid

gaseous entrapments and voids between said core and said shrunk sleeve

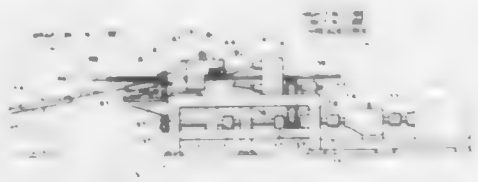
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5,003,690

FINNING AND THREAD ROLLING MACHINE

Ray C. Anderson, 7605 S. Quebec, Tulsa, Okla. 74136

Filed Sep. 9, 1988, Ser. No. 242,291
Int. Cl.' B23P 15/26
U.S. Cl. 29—727 2 Claims



1. A finning and thread rolling machine capable of producing extruded fins, helical wrap-on fins, and threaded rod or bar comprising:

(a) a base

(b) a motor supported by said base;

(c) a drive system means operatively powered by said motor including a transmission for selectively engaging, disengaging and reversing rotational power to a thru-hole power chuck means, to a plurality of finning discs, smooth drive wheels or threaded rolling dies rotatably mounted to a plurality of arbor means and to a tube guide with pressure roll means;

(d) a thru-hole power chuck means operatively driven by said drive system including a plurality of individual jaws for accepting feed stock material therethrough during finning, helical wrapping or threading of said feed stock material wherein each individual jaw of said thru-hole power chuck means attaches to and simultaneously advances, holds stationary or withdraws a plurality of arbor blocks radially about said feed stock material;

(e) a plurality of arbor blocks with rotationally powered arbor means operatively driven by said drive system wherein each arbor block with arbor means is operatively attached to one of said jaws of said thru-hole power chuck means and wherein each of said arbor means further comprise a rotatable tool that can be advanced towards, held in contact with or withdrawn from said feed stock material during the finning, helical wrapping or threading of said feed stock material, said rotatable tool being selected from the group consisting of finning disc, smooth drive wheel and threaded rolling die; and

(f) a tube guide with pressure roll means operatively driven by said drive system for selectively wrapping a helical spiral strip on to said feed stock material

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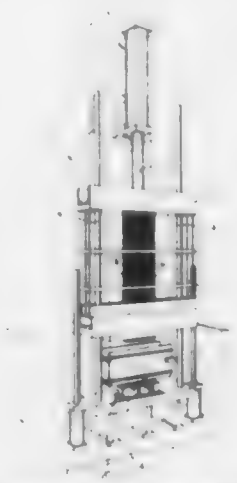
5,003,691

MECHANICAL TUBE EXPANDER WITH HAIRPIN BEND SUPPORT

James G. Milliman, and Lawrence A. Franks, both of Sturgis, Mich., assignors to Burr Oak Tool & Gauge Company, Sturgis, Mich.

Filed Jul. 6, 1990, Ser. No. 549,455
Int. Cl.' B23P 15/26
U.S. Cl. 29—727 18 Claims

1 In a mechanical tube expander for expanding hairpin tubes into interlocked relationship with fins, comprising a frame, means for holding on said frame an assembly of fins loosely stacked on hairpin tubes, a receiver mounted on said frame and adapted for supporting the bent portions of said hairpin tubes, a pressure plate carrying a plurality of expander rods which are aligned with the tubes, said expander rods having tube-expanding means at one end thereof and means for reciprocating said expander rods with respect to said assembly in order to expand the tubes into interlocked relationship with the fins that are stacked thereon, the improvement which comprises said receiver comprises base means, a plurality of upright, elongated, parallel, adjacent receiver posts extending upwardly from said base means, each of said receiver posts having a cavity in its upper end for receiving a portion of the hairpin bend of a hairpin tube, means supporting each of said receiver posts for



individual rotation with respect to said base means about the longitudinal axis thereof, detent means acting between said base means and said receiver posts for releasably locking each of said receiver posts in one of a plurality of circumferentially spaced-apart positions whereby the pattern of the cavities in the upper ends of said receiver posts can be changed by individually rotating said receiver posts

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5,003,692

ELECTRIC COMPONENT MOUNTING METHOD

Yasuo Izumi, Ikoma; Kazumi Ishimoto, Katano, and Yutaka Makino, Kobe, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 16, 1990, Ser. No. 524,055
Claims priority, application Japan, May 17, 1989, 1-123221
Int. Cl.' H05K 3/30
U.S. Cl. 29—834 3 Claims



1 A component mounting method which comprises the steps of

recognizing the position of an electric component retained by a suction nozzle by the effect of a suction force;

recognizing the predetermined mounting position on a support medium such as, for example, a printed circuit board or any other suitable substrate, at a location spaced a predetermined distance from the support medium;

mounting the electric component after the latter has been aligned with the predetermined mounting position on the support medium;

recognizing, through the suction nozzle, the electric component to determine if the electric component has been mounted properly after the suction nozzle has been elevated to a position spaced a predetermined distance upwardly from the support medium; and

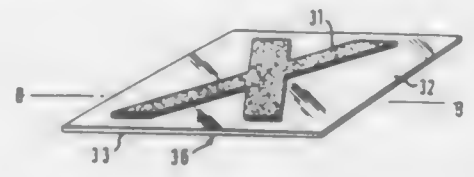
recording in a control data information indicative of an incorrect mounting of the electric component in the event that the latter has been mounted incorrectly.

5,003,693

MANUFACTURE OF ELECTRICAL CIRCUITS

Anthony Atkinson, Gateshead; Richard Gray, South Shields, both of England, and Oscar L. Denes, Greendale, Wis., assignors to Allen-Bradley International Limited, Oxfordshire, England

Division of Ser. No. 71,267, Jul. 1, 1987, Pat. No. 4,912,288. This application Sep. 11, 1989, Ser. No. 443,402
Claims priority, application United Kingdom, Sep. 4, 1985, 8612116; Sep. 3, 1986, 8522003
Int. Cl.' H05K 1/00
U.S. Cl. 29—849 20 Claims



1 A method of providing an electrical circuit in a three dimensionally shaped surface of insulating plastics material, comprising the sequential or non-sequential steps of

(i) providing a carrier, which is a film of insulating plastics material, with a circuit pattern of electro-conductive or electro-resistive, heat-resistant synthetic resin applied to at least one face thereof,

(ii) supporting a face of the carrier

(ii) forming the patterned carrier into a given three-dimensional shape, and

(iv) moulding, by the application of heat and pressure, a substrate of insulating plastics material against the unsupported face of the carrier,

so that the circuit is embedded in a surface of the moulded substrate forming the three-dimensional surface

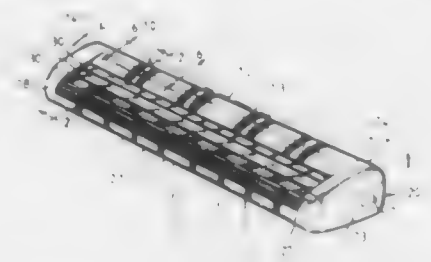
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5,003,694

FLEXIBLE RAZOR HEAD

Evan N. Chen, Fairfield, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 353,840, May 18, 1989, which is a continuation of Ser. No. 115,781, Oct. 30, 1987, Pat. No. 4,854,043. This application Apr. 10, 1990, Ser. No. 507,272
U.S. Cl. 30—49 47 Claims



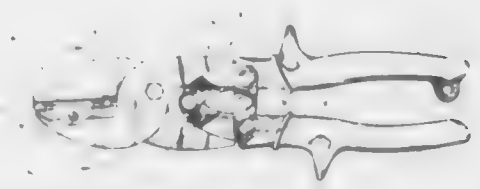
1 A flexible razor head comprising

5,003,695

COMPOUND ACTION ANVIL SNIPS

Dennis E. Lipscomb; Gary L. Wilhelm; Barbara G. Perna, and Waldemar G. Guenthner, all of Statesboro, Ga., assignors to Cooper Industries, Inc., Houston, Tex.

Continuation of Ser. No. 353,199, May 15, 1989, abandoned, which is a continuation of Ser. No. 182,268, Apr. 15, 1988, abandoned. This application Mar. 13, 1990, Ser. No. 494,924
Int. Cl.' B26B 17/00
U.S. Cl. 30—193 31 Claims



1 Cutting snips comprising

a pair of handles,

a pair of cutting blades pivotally connected to each other and to said handles such that a squeeze force on said handles is converted into a closing force for said pair of blades,

an anvil member disposed on the edge of one of the blades in a position to be engaged by the other blade when the blades are closed,

means pivotally attaching said anvil member to said one of said blades so that in use, when engaged by the other blade, the anvil member is pivoted to a position parallel to the other blade,

whereby the cutting snips cut a workpiece such that a smooth or non-jagged edge is provided on the workpiece

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5,003,696

UTILITY KNIFE WITH OPPOSING BLADES

Eli G. Spehar, 19441 Perch Cir., Huntington Beach, Calif. 92646

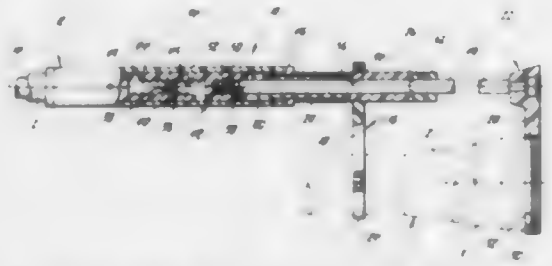
Filed Jul. 5, 1989, Ser. No. 375,866
Int. Cl.' B26B 3/00
U.S. Cl. 30—299 4 Claims



1 A utility knife comprising a pair of cutting blades and a flat plate, said flat plate comprising a front and rear planar faces having left and right guide edges, left and right sides, left and right blade holder means and a top edge, said left and right blade holder means each having an upper and a lower side for supporting therebetween, in compression, one said cutting blade, said left and right side edges, each containing a lever for adjustment of said compression force, said left and right guide

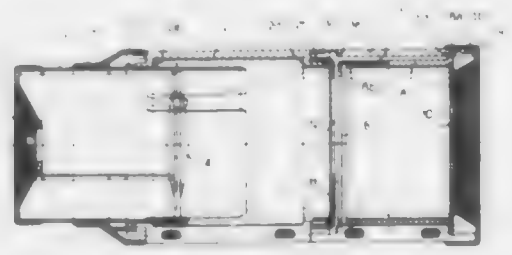
edges, together forming the lower extremity of said flat plate, joined at an interior angle of approximately 160 degrees, whereby said blades protrude from said left and right side edges, in opposition, for cutting a material for cutting while moving said left or, alternately, said right guide surface against said material for cutting.

5,003,697
TELESCOPIC SIGHT LENS PROTECTOR
William B. Hampton, 3659 Glennie Rd., Glennie, Mich. 48737, assignor to William B. Hampton and Jeanne M. Hampton, Glennie, Mich.
Filed Dec. 4, 1989, Ser. No. 445,465
Int. Cl.[5] F41G 1/04, 11/00
U.S. Cl. 33—244 11 Claims



1. A lens protector for a telescopic sight having first and second ends defined by an axis comprising, in combination, a lens cover operating assembly defined by an operating assembly axis substantially parallel to said sight axis, attachment means for fixedly attaching said lens cover operating assembly to said sight so that said lens cover operating assembly is rotatable about said operating assembly axis; a first lens cover assembly fixedly secured to a first end of said lens cover operating assembly for selectively covering said first sight end, and a second lens cover assembly fixedly secured to a second end of said lens cover operating assembly for selectively covering said second sight end, rotation of said lens cover operating assembly about said operating assembly axis selectively moving said lens cover assemblies from closed to open positions relative to said sight ends; said lens cover operating assembly including a rotation and linear motion imparting pinion assembly fixedly positioned on said operating assembly axis, a first lens cover actuator assembly fixedly secured to said first lens cover assembly and axially movable on said operating assembly axis, a second lens cover actuator assembly fixedly secured to said second lens cover assembly and axially moveable on said operating assembly axis, and connection means connecting said first and second lens cover actuator assemblies to said pinion assembly for opposite axial movement on said operating assembly axis and for combined rotational movement about said operating assembly axis whereby selectively moving either of said lens cover assemblies in a first axial direction on said operating assembly axis selectively moves the other of said lens cover assemblies in a second axial direction on said operating assembly axis opposite said first axial direction and selectively rotating either of said lens cover assemblies a predetermined angle about said operating assembly axis selectively rotates the other of said lens cover assemblies said predetermined angle in the same direction about said operating assembly axis so as to simultaneously cover and uncover said sight ends and simultaneously rotate said lens cover assemblies in the same angular direction.

5,003,698
APPARATUS FOR VIEWING A REPRESENTATION OF THE CELESTIAL VAULT
Bernard Vuarnesson, 1 Blvd. St. Michel, 75006 Paris, France
Filed May 1, 1990, Ser. No. 517,302
Claims priority, application France, May 5, 1989, 89 05996
Int. Cl.[5] G01C 17/34
U.S. Cl. 33—268 14 Claims



1 Apparatus for viewing a representation of the celestial vault comprising

a first tube and a second tube,

one of the tubes bearing along a periphery of its outer face a scale of graduations in days of a year,

the other of the tubes bearing along a periphery of its outer face a scale of graduations in hours of a day,

the tubes being axially aligned and rotatable with respect to each other about the tube axes,

a representation of the night sky in the northern hemisphere and another representation of the night sky in the southern hemisphere,

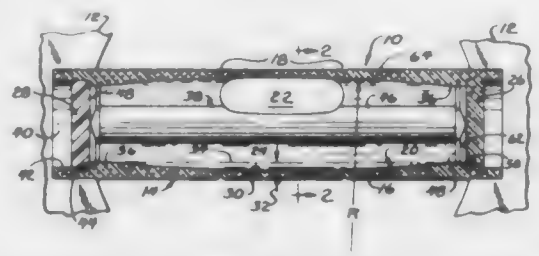
means within the first tube for removably supporting one of the representations cross-wise within the tube,

means within the second tube for viewing the representation, and

means for separably joining the tubes together so that optionally one end of the first tube is adjacent to one end of the second tube, or the other end of the first tube is adjacent to the other end of the second tube

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5,003,699
LEVEL VIAL WITH EXTENDER PITCH RANGE
Randall J. Wright, 3535 Studio Ct., Brookfield, Wis. 53005
Filed Jul. 19, 1982, Ser. No. 399,850
Int. Cl.[5] G01C 9/24
U.S. Cl. 33—379 13 Claims



1 A level vial comprising a body having a bore formed with a barrel shaped portion having opposed ends and wherein the barrel curvature is defined by a first radius of curvature, the barrel shaped portion of the bore having a cross-sectional dimension generally decreasing from the center thereof in axially opposed directions towards the ends thereof, an axially elongated core member disposed within the bore and between the opposed ends thereof in coaxial relationship with the barrel shaped portion of the body and having a maximum cross-sectional dimension and having a second radius of curvature exceeding that of the first radius of curvature of the barrel shaped bore portion, a quantity of fluid disposed within the bore and being insufficient to fill the bore and to provide a bubble therein having a dimension sufficient to simultaneously

contact the surfaces of the barrel shaped bore portion and the core member, means for hermetically sealing the bore to contain the fluid and to maintain the bubble therein, the vial body having a transparent portion and indicator means associated therewith to permit visual bubble observation and for indicating preselected positions of the bubble in the vial and wherein the surfaces of the barrel shaped bore portion and the core member coact with the bubble to produce gradual bubble movement axially within the barrel shaped bore portion without abrupt bubble acceleration and while providing a wide range of visually observable angular measures

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5,003,700
INSTRUMENT FOR INDICATING AN ANGULAR POSITION OF AN OBJECT
Jeng An Liang, 153, Lane 181, Ta-Shing St., Taichung, Taiwan
Filed Apr. 19, 1990, Ser. No. 511,215
Int. Cl.[5] G01C 9/04
U.S. Cl. 33—401 4 Claims



1 An instrument for indicating an angular position of an object comprising a frame body having a base portion and an annular frame fixed together, a face board which has a center hole being fixed to a front end of said annular frame, a first graduation being provided on a radially outward position of said face board; a disc having a first axle fixed to a center thereof, said first axle being rotatably supported in said center hole of said face board; a weight being provided to a lower end of said disc and being substantially symmetric about a vertical axis of said disc so that a mass center of said disc does not coincide with said first axle, and a first pointer being fixed to a front end of said first axle; and said disc being rotated by gravity when said base portion of said frame body is placed against a surface of said object so that a relative position between said first pointer and said first graduation indicates an accurate angular position of said object; a ring portion being formed on a front end of said disc, an inner gear rack being formed on an inner surface of said ring portion; a first pinion being pivoted to said face board and being engaged with said inner gear rack of said disc; a second pinion being pivoted to said face board by a second axle and being engaged with said first pinion; a second pointer being fixed to a front end of said second axle; a second graduation being provided on said face board around said second axle; and a relative position between said second pointer and said second graduation indicating an enlarged rotational angle of said first axle.

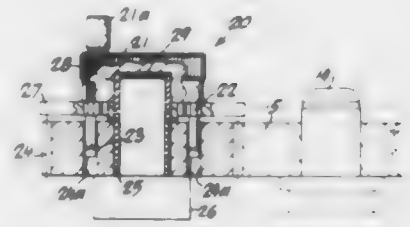
5,003,701
MASONRY CLIP
Robert J. Hughes, 3 S. Maryland Ave., Wilmington, Del. 19804, and Robert C. Williams, 2814 N. Market St., Wilmington, Del. 19802
Continuation-in-part of Ser. No. 174,152, Mar. 28, 1988, abandoned. This application Apr. 14, 1989, Ser. No. 338,588
Int. Cl.[5] G01C 15/10
U.S. Cl. 33—409 2 Claims



1 In combination, a masonry clip and flexible guide line for aligning successive courses of bricks when laying an internal brick wall, and a pole having predetermined reference marks thereon for successive courses of bricks arranged perpendicular to the guide line, the clip comprising a generally planar retainer leg for securing the clip in place and an integrally attached generally planar extension substantially forming a right angle with the retainer leg, the extension having a longitudinal slot therein and the slot having a longitudinal axis perpendicular to the retainer leg, the slot having a near end close to the retainer leg and a far end at the opposite end thereof, and one end of the flexible guide line extending through the slot and attached to the extension at the far end of the slot whereby the guide line may be pulled taut to form an extension of the slot so that the predetermined reference marks on the pole are viewable through the slot for alignment with the guide line

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5,003,702
MASTER GEAR TURNING ASSEMBLY
Sil Han, 321 Sunset Dr., Wilmette, Ill. 60091
Filed Apr. 20, 1989, Ser. No. 341,126
Int. Cl.[5] G01M 13/02
U.S. Cl. 33—501.19 27 Claims



1 A master gear turning assembly for a gear checking system, which is of the type having a master gear rotatably engaged with a workpiece gear and means for measuring deviations of the center distance between the two gears as the master gear is turned, comprising

a master gear arbor having an arbor shaft extending along a center turning axis and projecting in a forward direction facing toward an operator of the gear checking system,

the master gear having a central bore formed therethrough by which it is rotatably mounted on the master gear arbor shaft for engagement with the workpiece gear, wherein said master gear has at least one off-center hole formed in a forward surface thereof facing in the forward direction,

a mounting cap mounted to said master gear arbor shaft adjacent the forward surface of the master gear in alignment with the center turning axis of the master gear arbor shaft and having at least one drive pin projecting in a rearward direction opposite to the forward direction

which is received in the off-center hole in the master gear, and

turning means for turning the mounting cap which in turn drives the master gear through the at least one drive pin,

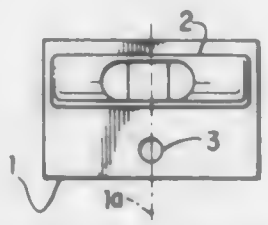
wherein said mounting cap, drive pin, and turning means allow turning of said master gear through a turning force directed about said center turning axis and eliminate the necessity for turning by manual contact with said master gear.

5,003,703

ALIGNMENT INDICATOR FOR MACHINE TOOLS

Carl E. Swanson, 707 E. South St., Corry, Pa. 16407

Filed Sep. 14, 1987, Ser. No. 95,944
Int. Cl.[5] G01B 13/19
U.S. Cl. 33—638 1 Claim



1 An indicator comprising a plate having a planar lower surface adapted to rest on a cylindrical workpiece with the longitudinal axis of the plate above and in alignment with the longitudinal axis of the workpiece, a conical recess in the upper surface of the plate and on the longitudinal axis of the plate for receiving a test pin with a sharp point separated from said lower surface by a thin wall on which the point bears, and means on said plate for indicating inclination of said plate due to misalignment of said pin with the longitudinal axis of the workpiece.

5,003,704

DISTANCE MEASURING DEVICE AND METHOD FOR USE WITH VEHICLES

Barton L. Schubert, Spearman, Tex., assignor to Schubert Farms, Inc., Spearman, Tex.

Filed Mar. 16, 1989, Ser. No. 324,084
Int. Cl.[4] G01C 22/00; G01B 3/12
U.S. Cl. 33—775 8 Claims



1. A means for measuring distance traveled by a vehicle having a wheel coupled to a vehicle axle disposed within a vehicle axle housing, with said wheel having at least one nonmagnetized vehicle wheel bolt which rotates with said wheel defining an orbit through which said at least one nonmagnetized vehicle wheel bolt passes as said wheel rotates to advance said vehicle, comprising:

a proximity sensor of the type adapted for detecting the presence of nonmagnetized metal within a sensing distance and providing an electrical response thereto, coupled to said axle housing a preselected distance from said orbit of said at least one nonmagnetized vehicle wheel bolt wherein said at least one nonmagnetized vehicle wheel bolt is within said sensing distance as it passes by said inductive proximity sensor, for indicating the passage of said at least one nonmagnetized vehicle wheel bolt past said inductive proximity sensor as said wheel is rotated to advance said vehicle, and

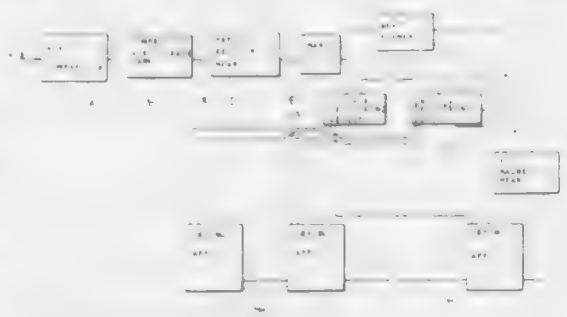
counter means coupled to said inductive proximity sensor for receiving said electrical response and producing a display corresponding to the distance traveled by said vehicle, wherein distance travelled by said vehicle may be measured without requiring the mounting of equipment to said wheel.

5,003,705

DRYING SYSTEM

Shin-Ye Lee, No. 19-2, Szu-Wei St., Shiao-Chia Chen, Tainan Hsien, Taiwan

Filed Jul. 25, 1990, Ser. No. 557,007
Int. Cl.[5] F26B 21/00
U.S. Cl. 34—54 7 Claims



1. A drying system comprising:

a plurality of drying apparatuses;

an air compressor to supply air to said plurality of drying apparatuses,

a compressed air storage tank connected to said air compressor and supplied by the same,

a pressure reducing means connected to said compressed air storage tank,

a heat supplying device;

said pressure reducing means having a first air delivering device and a second air delivering device, said second air delivering device passing through said heat device so that the air coming out of said second air delivering device is heated, said first and said second air delivering devices being connected to said plurality of drying apparatuses, and

an electromagnetic control means connected to said first and said second air delivering devices and controlling the same in such a manner as to let out hot and cool air alternatively from said first and said second air delivering devices.

5,003,706

Patent Not Issued For This Number

5,003,707

PORTABLE BOOT DRYING APPARATUS

Robert J. Chu, 61-57 84th St., Queens, N.Y. 11379

Filed Mar. 19, 1990, Ser. No. 495,367
Int. Cl.[5] F26B 25/00
U.S. Cl. 34—104 10 Claims



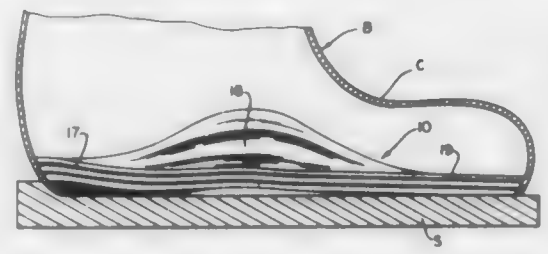
1 Apparatus for use with a portable hair dryer having a tubular discharge end, and for supplying a flow of warm air to a pair of ski boots, comprising an adaptor fitting having a body with a tubular inlet opening and a pair of outlet openings and a communicating passage therebetween, said inlet opening being adapted to internally receive insertion of the discharge end of the hair dryer, and separate lengths of flexible tubing connected to said adaptor at the respective outlet openings, each of said tubing lengths being selected to extend both downwardly into a boot as well as to bend forward with extension at least substantially to the toe end of the interior of a boot, said inlet opening comprising a single counterbore of diameter exceeding that of a dryer discharge end to be used therewith, and an annular insert of flexible yieldable material retained in said counterbore, said insert having a bore which is characterized by a taper which reduces in the direction of dryer flow into said body, said taper ranging from a diameter exceeding that of the dryer discharge end and reducing to a diameter less than that of the dryer discharge end.

5,003,708

CUSTOM INSOLE FOR ATHLETIC SHOES

Peter A. Daley, Steamboat Springs, Colo., assignor to Dynamic Foam Products, Inc., Steamboat Springs, Colo.

Division of Ser. No. 248,612, Sep. 26, 1988, Pat. No. 4,901,390.
This application Dec. 1, 1989, Ser. No. 444,713
Int. Cl.[5] A43B 13/40
U.S. Cl. 36—44 11 Claims



1. A custom insole for footwear comprising:

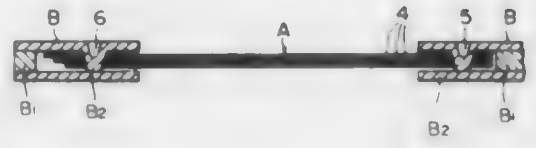
a plurality of layers of thermoformable materials united together at their interfaces, all of said layers being coextensive with one another and conforming in size and contour to the bottom surface of a foot, said layers comprising at least one upper strength layer having a density of about 11 lbs. per cubic foot with a thickness of about $\frac{1}{8}$", and at least one lower filler layer united to said strength layer having a density of about lbs. per cubic foot to 6 lbs. per cubic foot and a thickness of about 1/16", said layers when united together being of substantially uniform thickness and including an upwardly extending arch flange curving upwardly along an arch area between a heel and frontal area of said insole for a distance to laterally support the bone structure in the arch area of the foot.

5,003,709

PRICK-PREVENTING SHOE

Kenji Okayasu, Gyoda, and Hideo Okayasu, Tokyo, both of Japan, assignors to Rikio Co., Ltd., Gyoda, Japan

Continuation of Ser. No. 176,231, Mar. 31, 1988, abandoned.
This application Jan. 10, 1990, Ser. No. 462,989
Int. Cl.[5] A43B 13/42, 13/10
U.S. Cl. 36—107 2 Claims



1 A prick-preventing shoe comprising

a grounding sole,

an inner sole;

a prick-preventing metallic core sandwiched between said grounding sole and said inner sole and shaped to match the shape of at least a portion of said grounding sole, said metallic core being composed of a plurality of amorphous metal foils slidable with respect to each other and stacked in engagement with each other; and

a laminate including three metal members adhered to one another and an intermediate member of said three metal members being shortened to sandwich said metallic core between a remaining upper member and a remaining lower member of said three metal members.

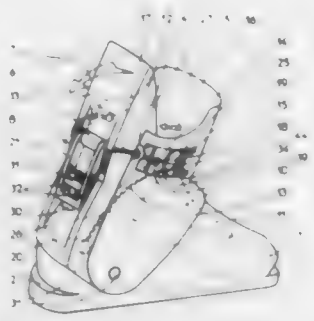
5,003,710
SKI BOOT
Alessandro Pozzobon, Paderno Di Ponzano Veneto, Italy, assignor to Nordica S.p.A., Montebelluna, Italy
Filed May 7, 1990, Ser. No. 519,584
Claims priority, application Italy, May 22, 1989, 82544 A/89
Int. Cl.[5] A43B 5/04
U.S. Cl. 36—117 11 Claims



1. Ski boot comprising a shell, a front quarter and a rear quarter, said rear quarter and said front quarter being articulated to said shell, wherein said front quarter comprises at least a first element and a second element, said first element at least partially overlapping said second element, each of said first element and second element having a lower portion connected to said shell and an upper portion, at least one of said first and second elements having at least one flap at said upper portions, fastening means being provided at said upper portions for fastening said front quarter onto said rear quarter

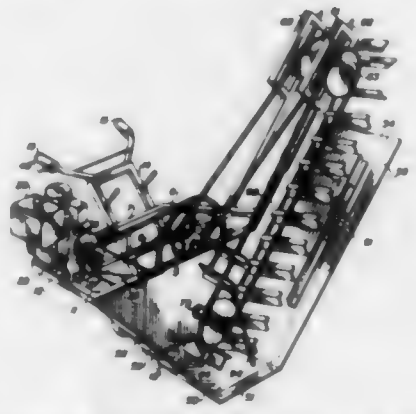
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5,003,711
ALPINE SKI BOOT
Bernard Nerrinck, La Balme-de-Sillingy, and Maurice Bonnet, Rumilly, both of France, assignors to Salomon S.A., Annecy Cedex, France
Filed Jun. 25, 1985, Ser. No. 748,458
Claims priority, application France, Jul. 13, 1984, 84 12099
Int. Cl.[5] A43B 5/04
U.S. Cl. 36—120 180 Claims



1. A ski boot for holding the foot and the lower leg of a skier, wherein said ski boot comprises:
(a) an upper surrounding said lower leg of the skier;
(b) a base for surrounding the foot of the skier;
(c) means for closing said upper on said lower leg of the skier comprising a first traction element;
(d) means for holding said foot in said boot comprising a second traction element; and
(e) means for linking said closing and holding means, wherein said linking means comprises at least one countershaft for changing the direction in which one of said first traction element and said second traction element extends.

5,003,712
APPARATUS FOR CLEANING IRRIGATION DITCH
Rex P. Mitchell, 1263 E. Avila, Casa Grande, Ariz. 85222
Filed Aug. 28, 1989, Ser. No. 400,400
Int. Cl.[5] E02F 5/02, 3/02
U.S. Cl. 37—80 R 15 Claims



1. Apparatus for removing debris from an irrigation ditch bounded by a bottom surface with side members extending upwardly therefrom said apparatus comprising
(a) a frame including a drive wheel for movably contacting the bottom surface of an irrigation ditch;
(b) drive means mounted on said frame and coupled to said drive wheel for propelling said frame along the ditch;
(c) control means affixed to said frame for permitting operator control of said drive means;
(d) a forwardly-extending base member affixed to said frame, said base member having first and second opposing side edges and forward and rear edges;
(e) first and second upwardly-extending side members affixed to said first and second side edges respectively, said base and side members being dimensioned to fit within said ditch;
(f) a frame extension extending laterally from said frame in the direction of said second side member;
(g) transport means for moving the debris, said transport means being mounted on said frame and frame extension spaced adjacent to said second side member and including:
i first and second sprockets affixed to said frame and said frame extension respectively, said first sprocket being located on said frame proximate to the base member, and
ii a chain containing spaced flights and encircling said first and second sprockets; and
(h) coupling means connected to said drive means and including clutch means for controlling movement of said chain for imparting movement to the transport means whereby debris located on said base member is urged by the flights of said transport means upwardly along said second side member for removal from the ditch.

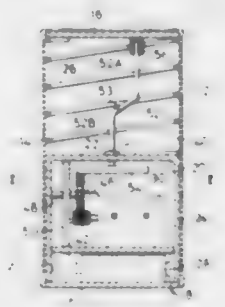
5,003,713
MULTI-ANNUAL CALENDAR
Shalom Adany, 26 Aharon Karon Street, Rishon Lezion, and Amram Levi, Kfar Habad, both of Israel
Filed Aug. 28, 1989, Ser. No. 399,619
Claims priority, application Israel, Aug. 30, 1988, 87610
Int. Cl.[5] G09D 3/08
U.S. Cl. 40—113 3 Claims

1. Apparatus for selectably displaying one of a plurality of predetermined combinations of symbols taken from respective first, second, third, fourth and fifth respective groups of symbols comprising
display means; and
a planar cover for said display means, said planar cover having an arrangement of first display windows, a single second display window, a single third display window, and an arrangement of fourth display windows, said planar cover also defining first, second and third rotation axes respectively associated with said arrangements of first and fourth display windows, said second display window and said third display window, said display means comprising:
a first planar display member on which is provided said first group of symbols and which is mounted for rotation about said first axis in a plane parallel to said cover so as to permit alignment of predetermined symbols of said first group of symbols in registration with respective ones of each of said arrangements of first and second display windows so as to be displayed thereat,
a second planar display member on which is provided said second group of symbols and which is mounted for rotation about said second axis in a plane parallel to said cover so as to permit alignment of one of a plurality of predetermined portions of said second group of symbols, corresponding to a predetermined symbol of said first group of symbols displayed at said one of said arrangement of first windows, in registration with said second window so as to be displayed thereat, said second planar display member further having a fifth display window adjacent to each said predetermined portion of said second group of symbols



a third planar display member on which is provided said third group of symbols, said third planar display member also being mounted for rotation about said second axis in a plane parallel to said cover so as to permit alignment of a number of predetermined symbols of said third group of symbols, supplementary to said displayed portion of said second group of symbols, in registration with a predetermined fifth display window so as to be displayed thereat,
a fourth planar display member on which is provided said fourth group of symbols and which is mounted for rotation about said third axis in a plane parallel to said cover so as to permit alignment of one of a plurality of predetermined portions of said fourth group of symbols, corresponding to a predetermined symbol of said first group of symbols displayed at said arrangement of fourth windows, in registration with said third window so as to be displayed thereat, said fourth planar display member further having a sixth display window adjacent to each said predetermined portion of said fourth group of symbols, and
a fifth planar display member on which is provided said fifth group of symbols, said fifth planar display member also being mounted for rotation about said third axis in a plane parallel to said planar cover so as to permit alignment of a number of predetermined symbols of said fifth group of symbols, supplementary to said displayed plurality of said fourth group of symbols, in registration with a predetermined sixth display window so as to be displayed thereat

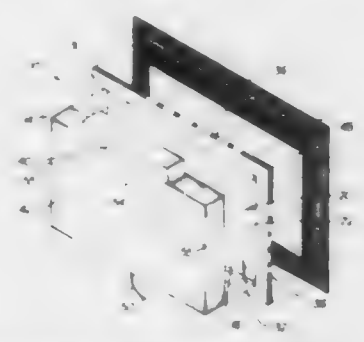
5,003,714
FIGURE MOVING ARTICLE
Yasuta Satoh, and Yasuyuki Moriyama, both of Nagareyama, Japan, assignors to Takara Co., Ltd., Tokyo, Japan
Filed May 10, 1990, Ser. No. 521,738
Claims priority, application Japan, May 11, 1989, 1-54190[U]
Int. Cl.[5] G09F 19/08
U.S. Cl. 40—414 22 Claims



1. A novelty can capable of simulating the appearance of a container, comprising
rigid upper and lower circular lid members of substantially the same size,
a cylindrical flexible casing, shaped to simulate the casing of a can, being attached to, respectively, the upper and lower lid members and extending between them to enclose a space between the upper and lower lid members,
a motor assembly contained between the upper and lower rigid lid embers, operatively connected to relatively move the upper and lower lid members both towards and away from each other in vertical and horizontal directions, the flexible casing member being deformed from and returned to a cylindrical shape during a cycle of relative movement of the upper and lower lid members, and
means for sensing sound contained between the upper lid member and a lower surface of the lower lid member and connected to the motor assembly, whereby the motor assembly can be activated by sound to cause movement of the novelty can

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5,003,715
PAINTED DISPLAY ASSEMBLY
Norm Steiner, 230 174th St., Apt. 717, Miami Beach, Fla. 33160
Filed May 7, 1990, Ser. No. 519,631
Int. Cl.[5] G09F 13/00
U.S. Cl. 40—442 13 Claims



1. A painted display assembly comprising
a a mounting rack having a frame structure and including a plurality of slats interconnected with one another at opposite ends in surrounding relation to an open center,
b a sheet of light transmitting material including an exposed front face and an oppositely disposed rear face, said sheet mounted to said mounting rack around a peripheral edge of said sheet in covering relation to said open center.

c a light assembly including a light source mounted to a light directing means for directing light through said sheet, said light directing means mounted to an opposite side of said mounting rack, congruent to said sheet in surrounding, covering relation to said open center,

d. a main painted portion on said exposed front face including opaque areas of concentrated paint sufficiently blocking the passage of light therethrough and translucent areas of diluted paint, said translucent areas adapted to permit at least partial transmission of light therethrough,

e a secondary painted portion on said rear face comprising secondary dark, opaque painted areas in blocking relation to light passing through said sheet defining a background image, and

f a picture frame mounted to said mounting rack substantially covering a peripheral edge of said exposed front face of said sheet in surrounding relation to a viewing surface on said exposed front face

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5,003,716

FLEXIBLE OUTDOOR FLIP SIGN DISPLAY

Royce M. Dyar, P.O. Box 82, Locust Fork, Ala. 35097

Filed Feb. 27, 1989, Ser. No. 315,797
Int. Cl.' G09F *11/02*
U.S. Cl. 40—503 13 Claims



9 An advertising display comprising a rigid frame supporting a plurality of rotatably mounted elongated display elements, each display element having a first and second axial stub shaft at each end, said stub shafts engaged by said frame and having a lightweight boom disposed between said stub shafts to hold said shafts in spaced relation, means affixed to said boom for supporting a set of inelastic cables in parallel spaced relation to said boom, a flexible panel supported on said cables longitudinally of said display elements, each panel being generally rectangular and substantially the length of said display elements to define a face of said display element, and means operatively connected to said first stub shaft for selectively rotating said display elements such that said faces are positioned in parallel with one third of said faces being co-planar

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5,003,717

CHANGEABLE INFORMATION SCROLL SIGN

Charles E. Trame, Mequon; Robert A. Karsten, Fox Point, and Michael W. Hobach, Oak Creek, all of Wis., assignors to Everbrite, Inc., Greenfield, Wis.

Filed Sep. 18, 1989, Ser. No. 408,993
Int. Cl.' G09F *11/18*
U.S. Cl. 40—518 8 Claims

1 A scrolling sign comprising:

spaced apart support members,

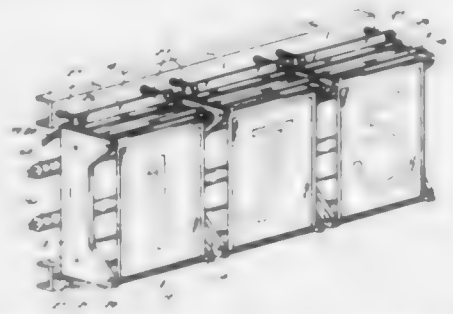
first and second rollers arranged between said support members in spaced apart relationship for rotating about parallel axes and a web on said rollers having opposite end portions fastened to the rollers respectively, and containing a series of indicia to be presented for viewing between rollers,

means on which said rollers are journaled for rotation relative to said support members,

a reversible electric motor including a motor body and a shaft mounted inside of the first of said rollers,

means for connecting said body to said first roller and means for securing said shaft against rotation such that when the motor is energized said first roller is driven rotationally, rotation of said first roller in one direction allowing said web to unwind from said first roller and rotation in the opposite direction allowing said web to wind on said first one roller,

a constant force spirally wound spring disposed inside of the second roller, said spring having opposite ends,



a stationary member inside of said second roller to which member one end of said spring is engaged and means for connecting the other end of said spring to said second roller,

controller means for controlling operation of said electric motor,

operation of said electric motor to rotate said first roller in a direction for winding the web onto said first roller causing the web to unwind from said second roller and to wind said spring for resisting unwinding to maintain tension in said web and operation of said electric motor to rotate said first roller in a direction opposite of said one direction allowing said spring to wind said web onto said second roller and to hold said web in tension when operation of said motor terminates

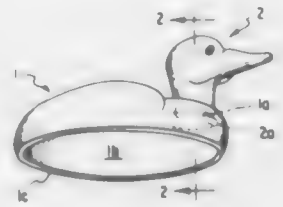
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5,003,718

GAME BIRD DECOYS

Steven A. Lenert, 3506 Woodleaf Dr., Shreveport, La. 71118, and Robert D. Berkley, 29 Echo Ridge, Haughton, La. 71037

Continuation-in-part of Ser. No. 7/115,812, Nov. 2, 1987, abandoned. This application May 8, 1989, Ser. No. 349,946
Int. Cl.' A01M *31/06*
U.S. Cl. 43—3 14 Claims



1 A game bird decoy comprising:

a buoyant open concave shell comprising soft, flexible foam sheet material, said soft, flexible sheet material being foldable and deformable and able to regain its original shape upon release of restraints after being deformed, said shell representing an upper body portion of a game bird including an inner concave surface having a continuous circumferential lower edge extending around the shell at the position of the waterline when the game bird being simulated is sitting in the water, wherein the concave decoy body is open to the water within said circumferential lower edge, and

an outer substantially convex surface of the open concave shell, said convex surface molded to simulate the upper body portion of a game bird

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5,003,719

ELECTROMOTIVE FISH ATTRACTOR

Arthur D. Whitlock, Rte. 3, Box 72 A, Heavyetta, Okla. 74437, and George Spector, 233 Broadway, RM 3815, New York, N.Y. 10007

Filed Dec. 8, 1989, Ser. No. 447,786
Int. Cl.' A01K *93/00*
U.S. Cl. 43—17.5 3 Claims



1 An apparatus for attracting fish which comprises

(a) a housing,

(b) a transparent dome removably attached to and sealed with said housing so as to make interior waterproof,

(c) means carried within said housing for producing a buzzing sound to attract the fish,

(d) means carried within said housing which extends into said dome for producing a series of blinking lights to attract the fish, wherein said buzzing sound means includes

(e) a stator having a set of contacts attached in series thereon,

(f) an electric motor having a stator arm which will make contact with each of said contacts when the stator arm rotates,

(g) a battery for supplying electricity to said electric motor

(h) a switch electrically connected between said battery and said electric motor for operating said electric motor

(i) a buzzer electrically connected between said battery and said contacts for making the buzzing sound when the stator arm touches each of said contacts, and

(j) a variable resistor electrically connected between said buzzer and said contacts to change the volume of the buzzing sound

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5,003,720

FISH LURE

Robert E. Henry, 1729 Greer Dr., W., Newark, Ohio 43055

Filed Dec. 22, 1989, Ser. No. 455,142
Int. Cl.' A01K *85/00*
U.S. Cl. 43—42.39 4 Claims



1 An improved fishing lure apparatus for simulating aquatic movement while being retrieved said apparatus comprising connecting means having front and rear end, said front end of said means having line attaching means, said rear end having pivoting means, fish lure attached to said pivoting connecting means, weight means mounted upon said connecting means, front and rear stop means located at said front and rear of said connecting means so that said stop means limit the movement of said weight means along said connecting means during retrieval of said apparatus

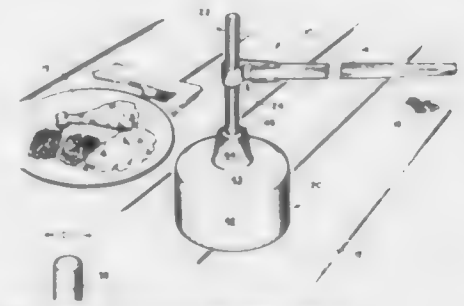
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5,003,721

FLY DETERRENT APPARATUS

James T. Underwood, 960 Albion St., San Diego, Calif. 92106

Filed Jan. 5, 1990, Ser. No. 461,331
Int. Cl.' A01M *1/00*
U.S. Cl. 43—132.1 7 Claims



1 A fly deterrent apparatus comprising

a housing having a top wall,

a vertically oriented shaft having a top end, a bottom end and a predetermined diameter D1, said shaft having a vertical axis,

means for rotatably mounting the bottom end of said shaft in the top wall of said housing,

an elongated wand having a predetermined length, said wand having a front end, a rear end and a longitudinally extending axis, said wand being made of flexible material such that when it is rotated in a horizontal plane its longitudinal axis assumes a curved arc configuration, and

means for detachably connecting the rear end of said wand to said shaft comprising a wand holder having an elongated body portion having a front end, a rear end, and a front face, a vertically oriented tubular member is formed on said rear end and it has a diameter to frictionally engage said shaft, the front face of said wand holder has a horizontally extending concave front face portion that is vertically surrounded by an upper groove, an upper flange, a lower groove and a lower flange

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5,003,722

FLYING GAME BIRD DECOYS

Robert D. Berkley, Haughton, and Terry P. Shaughnessy, Hackberry, both of La., assignors to Packaging Industries Group, Inc., Hyannis, Mass.

Filed Oct. 3, 1989, Ser. No. 416,479
Int. Cl.' A01M *31/06*
U.S. Cl. 43—3 17 Claims

1 A game bird decoy comprising

means for representing a body portion of a game bird comprising flexible foamed sheet plastic material,

means for representing a wing portion of a game bird comprising flexible foamed sheet plastic material, and

means for securing said wing portion means to said body portion means;

wherein said wing portion means is inserted through slits in said body portion means and said securing means comprises a clip for securing the wing portion means and the body portion means together by passing said clip through

slits in said body portion means and said wing portion means respectively.



whereby said game bird decoy simulates a game bird in flight when viewed from above

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5,003,723

FISHING LURE

Davy L. Dutcher, R.D. #5, Upper Front St., Binghamton, N.Y. 13901, and Ronald H. Secoolish, Box 191, Whitney Point, N.Y. 13862

Filed Aug. 17, 1989, Ser. No. 394,920
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.13 19 Claims



1 A fishing lure for simulating the swimming motions and actions of a fish or insect when caused to move back and forth under the tidal action of the sea, comprising:

a substantially flat planar body section having two flat parallel surfaces and substantially perpendicular side surfaces simulative of a body of a fish or insect as viewed in profile having means defining apertures perpendicular to said two flat parallel surfaces disposed therein at distal ends thereof, and first and second attachment portions comprising first and second ring fasteners disposed in said apertures;

said first ring fastener for securing a line to said first attachment portion of said body section, and a hook to said second ring fastener disposed in the aperture of said second attachment portion of said body section; and

at least one articulated wing-like member hinged perpendicular to said flat parallel body surfaces for providing a simulation of motion of a part of said body of said fish or insect, said articulated member having a slot therein for receiving a portion of said flat body section, and lying substantially flush to an outer surface thereto when said articulated member is in a retracted position and movable back and forth over said outer surface of said body section under the influence of the tidal action of the sea, said fishing lure giving the appearance of a swimming fish or insect under said tidal action of the sea by reason of the back and forth movement of said articulated member

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5,003,724

TREE GRATE SYSTEM

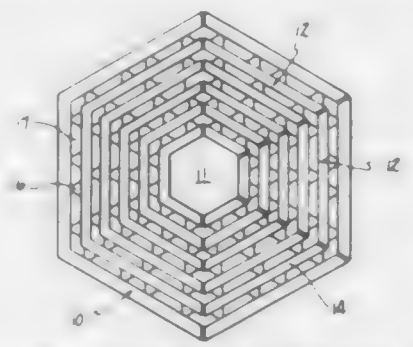
Emile Vestuti, Apartado 80,896, Caracas, 1080-A, Venezuela

Filed Jun. 15, 1989, Ser. No. 366,682
Int. Cl.[5] A01G *17/00*
U.S. Cl. 47—25 17 Claims

1. A tree grate system for covering an opening while enabling water and other materials to be provided to a tree, said system comprising

a substantially planar grill formed by at least two grate panels,

each said panel having an innermost grate element and at least one additional grate element outside of said innermost grate element and means for facilitating removal of a



desired grate element in a clean, presentable manner in order to accommodate growth of a tree trunk,

said removal facilitating means comprising frangible means for providing a clean appearance adjacent each said additional grate element; and

said grill formed by said panels having at least two rings of grate elements defining an opening for said tree trunk

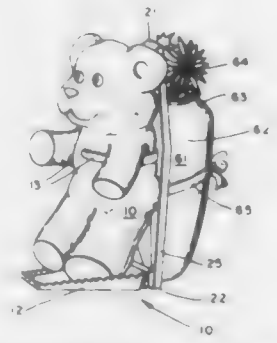
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5,003,725

HOLDER FOR A STUFFED TOY ANIMAL FOR USE WITH A FLORAL ARRANGEMENT

Ricky R. Maddox, 6271 Bannock Rd., Westminister, Calif. 92683

Filed Dec. 20, 1989, Ser. No. 453,604
Int. Cl.[5] A47G *7/02*
U.S. Cl. 47—39 1 Claim



1 A holder for a stuffed toy animal for use with a floral arrangement which includes a vase with an outer surface and a peripheral lip and flowers which are disposed in the vase, said holder comprising

a a back frame having a top member, a bottom member and two side members which have a pair of ribbon slits disposed thereon whereby a ribbon is threaded through said ribbon slits and around the outer surface of the vase in order to tie said holder to the vase for both delivery and display,

b a base platform which is mechanically coupled to said bottom member of said back frame and on which the stuffed toy animal is placed in an upright position relative to said base platform,

c. holding means for holding the stuffed toy animal in its upright position, said holding means being mechanically coupled to said two side members of said back frame; and

d. vase hooking means for hooking the peripheral lip of the vase, said vase hooking means being mechanically coupled to said top member of said back frame and having a screw hole so that once the ribbon has been untied said holder may be mounted on a wall by using a screw through said screw hole so that said vase hooking means secures said holder to the wall in order to display the stuffed toy animal.

5,003,726

METHOD FOR PROTECTING DRIP IRRIGATION HOSES AND OTHER STRUCTURES FROM ROOT INTRUSION

Davies Allport, La Jolla, Calif., assignor to T-Systems Corp., San Diego, Calif.

Continuation of Ser. No. 313,588, Feb. 21, 1989, abandoned. This application Apr. 17, 1990, Ser. No. 511,971
Int. Cl.[5] C05G *3/04*
U.S. Cl. 47—48.5 6 Claims

1 A method of prohibiting the growth of roots into the outlets of a drip irrigation hose having distributed outlets in proximity to planted soil, the method comprising the steps of

supplying water under pressure to the hose for drip irrigation of the soil;

introducing into the hose upstream of the outlets a soil retainable, water transportable substance to form in the vicinity of the outlets localized regions containing the substance, the soil retainable substance also being capable of absorbing a selected root inhibiting water transportable substance; and

introducing into the hose upstream of the outlets the selected root inhibiting substance to distribute such root inhibiting substance to the localized regions for absorption by the soil retainable substance.

5,003,727

APPARATUS FOR IMPROVING DOOR SECURITY

Edwin E. Watten, 1908 S. 40th Ave., Yakima, Wash. 98903

Continuation-in-part of Ser. No. 339,518, Apr. 17, 1989, abandoned. This application Jun. 20, 1990, Ser. No. 540,855
Int. Cl.[5] E06B *1/04*, E05C *21/02*
U.S. Cl. 49—504 4 Claims



1 In combination

a. framing for a door,

b a door jamb mounted to said framing, said door jamb having an exterior side adjacent said framing and an interior side opposite said exterior side,

c a door mounted to said door jamb, said door having locking means, said locking means having an extended portion rigidly extending outwardly from said door when said locking means is in a locked position,

d. strike plate support means fastened to said door jamb, said strike plate support means having a strike box integral with said strike plate support means, said strike box adapted to accept said locking means; and

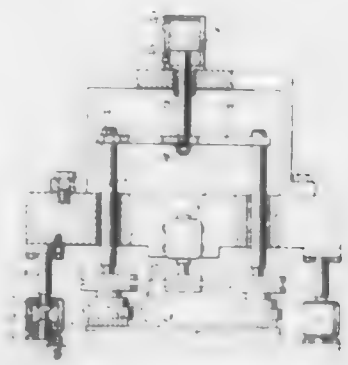
e. a strike plate fastened to said strike box, said strike plate adapted to receive the extended portion of locking means when said door is in a closed position and said locking means is in a locked position.

5,003,728

MACHINE FOR ABRASIVE TREATMENT

Teimuraz N. Loladze; Boris I. Batiashvili; Gennady L. Mamulashvili; David S. Butskhrikidze; Georgy J. Gritsulashvili, and Jury L. Markevich, all of Tbilisi, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky I Proektno-Konstruktorsky Institut Atomnogo Energeticheskogo Machinostroenia USSR, Moscow, U.S.S.R.

PCT No. PCT/SU87/00084, § 371 Date Nov. 7, 1988, § 102(e) Date Nov. 7, 1988, PCT Pub. No. WO88/06949, PCT Pub. Date Sep. 22, 1988
PCT Filed Jul. 31, 1987, Ser. No. 283,369
Claims priority, application U.S.S.R., Mar. 10, 1987, 4201397
Int. Cl.[5] B24B *49/00*
U.S. Cl. 51—165.8 3 Claims



1 A machine for abrasive treatment, said machine comprising

an abrasive tool,

a device for establishing a holding-down force between workpieces and the abrasive tool within a machining zone, said device having a housing with guideways, wherein poppet sleeves each carrying a spindle mounting one of said workpieces are free to reciprocate so as to translate the holding-down force to the abrasive tool, and

a feed mechanism located on the housing,

said poppet sleeves being rigidly interconnected through an elastic member,

said elastic member also being rigidly coupled to said feed mechanism, while said feed mechanism is adapted to damp travel of said elastic member in forward and reverse directions of feed

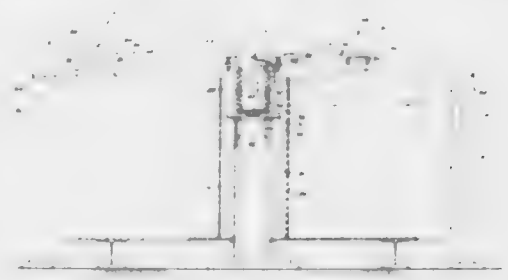
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5,003,729

SUPPORT SYSTEM FOR ABRASIVE JET CUTTING

James E. Sherby, Wilkinsburg Township, Allegheny County, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 11, 1988, Ser. No. 255,219
Int. Cl.[5] B24C *1/00*
U.S. Cl. 51—283 R 19 Claims



1 An apparatus for cutting a sheet whereby vibrations of

selected components of the apparatus are substantially isolated from one another, the apparatus comprising

a base,

a catcher tank,

sheet support means,

edge engaging means,

means for mounting said edge engaging means above said catcher tank,

means for securing said edge engaging means directly to said base, said sheet support means above said tank and directly to said base, and said catcher tank directly to said base, and

wherein said edge engaging means, said sheet support and said catcher tank are mounted independent from one another whereby vibrations of said edge engaging means, said sheet support column and said catcher tank are substantially isolated from one another

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5,003,730

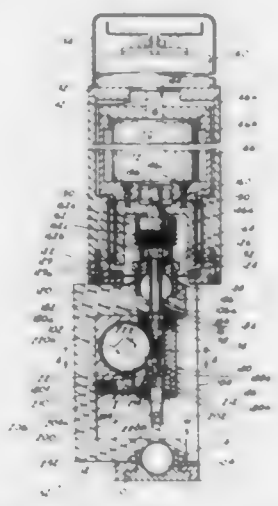
RADIUS DRESSING APPARATUS

James V. Halvorsen, Springfield, Vt., assignor to Bryant Grinder Corporation, Springfield, Vt.

Continuation of Ser. No. 455,911, Dec. 18, 1989, abandoned, which is a continuation of Ser. No. 284,307, Dec. 14, 1988, abandoned, which is a division of Ser. No. 87,813, Aug. 19, 1987, Pat. No. 4,805,585. This application May 14, 1990, Ser. No. 523,193

Int. Cl.[5] B24B 1/00

U.S. Cl. 51—325 5 Claims



1. A method for dressing a radius-defined working surface of a grinding wheel, comprising the steps of:

(a) adjustably mounting a dresser member on a pivotal arm having a pivot axis,

(b) adjusting the position of the dresser member on the arm relative to the pivot axis thereof using a drive mechanism disposed on the pivotal arm and a drive motor operatively connected to the drive mechanism and controlled by a stored wheel dresser computer program that is correlated with workparts to be ground with different radius-defined surfaces by a grinding wheel so as to adjust the position of the dresser member to dress the same or different grinding wheels with working surfaces defined by different radii,

(c) pivoting the arm with the dresser member in an adjusted position on the arm to dress a radius-defined working surface on a grinding wheel, and

(d) repeating steps (b) and (c) to dress a different radius-defined working surface on the same or different grinding wheel without the need to manually reset the position of the dresser member on the pivotal arm.

5,003,731

BELT CONVEYOR SYSTEM FOR A CONVEYOR BELT FASHIONED AS A BRAIDED WEB

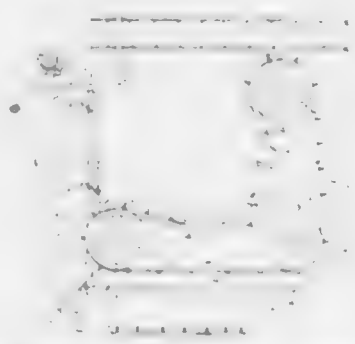
Dieter Dürr, München, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Nov. 21, 1989, Ser. No. 439,986

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1988, 3839380

Int. Cl.[5] B24C 3/08

U.S. Cl. 51—418 9 Claims



1. A belt conveyor system utilizing a conveyor belt fashioned as a braided web comprising a rotating conveyor means (10, 11, 12) including spaced parallel chains (10, 11) joined to one another by a plurality of crossbars (12), the braided web being comprised of a wire mesh connected to the conveyor means (10, 11, 12) in a shape-mating fashion by means of a plurality of dogs (13) each configured as a comb and welded in spaced relation with respect to one another to the crossbars (12), the dogs each projecting into and each being welded to the braided web (1).

5,003,732

ROOF VERGE SYSTEM

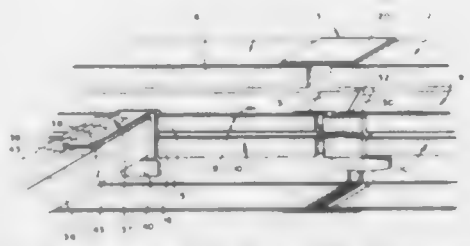
Geoffrey C. Quinnell, Pembury, England, assignor to Marley Tile A.G., Switzerland

Filed Feb. 9, 1989, Ser. No. 307,965

Claims priority, application United Kingdom, Feb. 9, 1988, 8802875

Int. Cl.[5] E04B 7/00

U.S. Cl. 52—94 22 Claims



1. An elongate roof verge member for covering edges of roof covering members at a verge of a pitched roof, comprising an upwardly directed outer portion having longitudinal side edges for concealing the edges of the roof covering members, inwardly directed flanges adjacent said longitudinal side edges of the outer portion, and a first water conducting member on an inner surface of the outer portion, the first water conducting member facing one of the flanges and defining therewith a first gap adapted to receive the edge of a roof covering member having a first thickness, said roof verge member also comprising a second water conducting member facing the other of the flanges and defining therewith an alternative gap adapted to receive the edge of a roof covering member having a second thickness different from the first thickness when the roof verge member is inverted, the alternative gap being of a different size than the first gap, said first and second water conducting members being adapted to conduct water longitudinally along said outer portion

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5,003,733

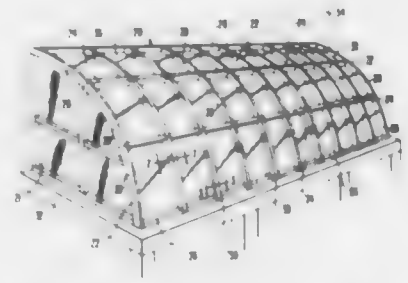
STRUCTURE AND COMPONENTS FOR ENCLOSING SUN SPACES AND THE LIKE AND METHOD FOR ERECTING SAME

Frederick P. Strobl, Jr., 204 N. Shore Dr., Cary, Ill. 60013, and Jack E. Glatt, 134 S. Hills Dr., Barrington, Ill. 60010

Filed Jul. 26, 1989, Ser. No. 385,871

Int. Cl.[5] E04B 1/32

U.S. Cl. 52—86 14 Claims



1. A beam member for supporting sheets of construction material comprising

an elongated, generally planar, central web element, said web element having longitudinally spaced opposite ends and laterally spaced, longitudinally extending opposite edge portions,

an outer flange member rigidly connected to the web element at each of its said edge portions, each of said outer flange members extending longitudinally of the web element along the corresponding edge portion and transversely outwardly away from the web element,

at least an inner flange for each of the outer flange members, each inner flange being rigidly connected to the web element at a location between the outer flange members and extending longitudinally thereof from one of the ends of the web element to the other, each inner flange also extending transversely outwardly away from the web element to present an outer edge and being disposed in laterally spaced, generally parallel relationship relative to a corresponding outer flange member to present an elongated rabbet therebetween that is open at each end and which extends longitudinally of the web element for receiving the edge of a sheet of construction material; and

an end flange extending laterally across the web element between the inner flanges at least one end of the web element in a position which does not cover the open ends of the rabbets, said end flange being rigidly connected to the web element and extending transversely outwardly away from the web element

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5,003,734

ANIMAL GUARD FOR POSTS

Howard Dinsmore, 11 Newbridge Rd., Brookfield, Conn. 06804

Filed Oct. 23, 1989, Ser. No. 424,918

Int. Cl.[5] E04B 1/72

U.S. Cl. 52—101 4 Claims

1. A guard to prevent an animal from climbing a post, comprising:

(a) a central, elongated, hollow, body disposed vertically over said post, and



(b) a plurality of longitudinal, vertical fins, having distal and proximal edges, attached to said body, said fins extending outwardly from the peripheral surface of said body

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5,003,735

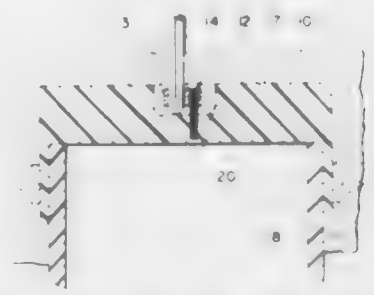
MARKER SCREW CAP

James H. Bates, 8809 Youngdale, San Gabriel, Calif. 91775

Filed Dec. 5, 1989, Ser. No. 446,075

Int. Cl.[5] E04B 1/00; F16L 55/00

U.S. Cl. 52—105 4 Claims



1. A device locating a marker screw which has one end threadably engaged within a recess in a cover of an outlet in a duct and which is adapted to extend outwardly from the cover toward an outer surface of a wall or floor, during and after pouring of the wall or floor to embed the duct means, the other end of said marker screw adapted to be roughly adjusted below the outer surface, said device comprising a tubular holder attached to said marker screw, elongated resilient fibers positioned and connected at one end in said tubular holder with their other end projecting outwardly beyond the outer surface of the poured wall or floor, for resiliently yielding and temporarily bending over upon engagement by means employed in finishing said outer surface, thus facilitating location of said marker screw after the wall or floor has been poured.

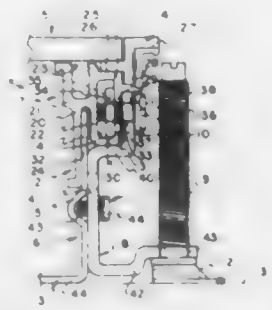
5,003,736
DEPLOYABLE AND COLLAPSIBLE STRUCTURE
Katsuma Okazaki, Yokohama, and Takayuki Kitamura, Yososuka, both of Japan, assignors to Japan Aircraft Mfg. Co., Ltd., Yokohama, Japan
Division of Ser. No. 272,215, Nov. 14, 1988, Pat. No. 4,918,884. This application Feb. 12, 1990, Ser. No. 478,662
The portion of the term of this patent subsequent to Apr. 24, 2007, has been disclaimed.
Int. Cl.[5] E04H *12/20*
U.S. Cl. 52—108 1 Claim



1 A deployable and collapsible structure comprising a pair of end plates, plural longerons arranged parallel to one another and elastically buckled, said longerons being pivoted on the end plates at their both ends, a plurality of radial spacers arranged along the axial direction of the longerons equally spaced from their adjacent ones, paired diagonal cords stretched between two adjacent radial spacers, between the lowest radial spacer and its closest end plate, and between the uppermost radial spacer and its closest end plate; and a pull cord connected to at least one of the end plates, one of the pair of end plates being moved toward the other when the pull cord is pulled, while one of the pair of end plates being separated from the other when the pull cord is loosened, and the longerons being buckled like a coil when the end plates approach each other, while the longerons being deployed like a straight line when the end plates separate from each other; a plurality of post members erected on one of the pair of end plates, one end of one cord of each of the paired diagonal cords stretched between said one of the pair of end plates and the spacer closest to it being attached, respectively, to each of the post members, and a plurality of spring members each being arranged, respectively, on one of the paired diagonal cords stretched between the post members and said closest spacer to allow this diagonal cord to be extended and have a predetermined tension

5,003,737
SIDE RAIL FOR TRENCHDUCT
John P. Peaczak, Parkersburg, W. Va., assignor to Butler Manufacturing Company, Kansas City, Mo.
Filed Oct. 13, 1989, Ser. No. 420,950
Int. Cl.[5] E04B *5/48*
U.S. Cl. 52—126.2 14 Claims

1. A side rail for a trench duct to be supported in a horizontal position over a subfloor
a lower section,
an upper section,
a carrier,
first clamp means, operable for clamping said carrier and said upper section together and further operable for releasing the same;
second clamp means operable for clamping said carrier and said lower section together and further operable for releasing same;
an adjusting screw connected with said carrier to interengage said subfloor when said trenchduct is in said horizontal position
said lower section, said upper section, said carrier and said first and second clamps means functioning as follows



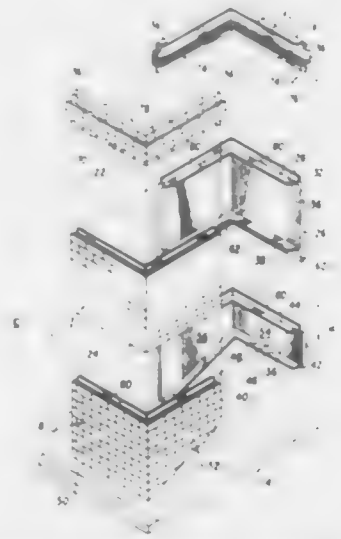
when said first and second clamp means have clamped said upper and lower sections to the carrier, for rotation of said adjusting screw to vertically move said upper and lower sections in unison, and
when said first clamp means has clamped said carrier and upper section together and said second clamp means has released said carrier and lower section, for rotation of said adjusting screw to vertically move the upper section with respect to the lower section.

5,003,738
ARTICLE AND METHOD OF IMPROVING EXTERIOR BUILDING APPEARANCE
Robert Hogeland, R.D. #2, Zimmerman Rd., Newmanstown, Pa. 17073
Filed Jun. 18, 1990, Ser. No. 539,492
Int. Cl.[5] E06B *3/26*; **B44F** *7/00*
U.S. Cl. 52—202 16 Claims



16 An exterior wall of a building, comprising
a wall having an exterior and interior surface;
a frame for supporting one or more glazing panels, said frame being attached to said wall such that it is visible on the exterior surface of said wall;
at least one glazing panel being installed in said frame, said panel being provided with structure on its periphery which simulates a window sash; and
said frame being provided with structure which simulates the outer appearance of a window frame.

5,003,739
CHIMNEY FACADE SYSTEM
R. Wayne Newsome, P.O. Box 39, Columbia, Md. 21045
Continuation of Ser. No. 81,804, Aug. 5, 1987, abandoned, which is a continuation-in-part of Ser. No. 868,090, May 29, 1986, Pat. No. 4,686,807. This application Mar. 9, 1989, Ser. No. 321,645
Int. Cl.[5] E04B *5/48*
U.S. Cl. 52—219 9 Claims



1 A pre-fabricated and modular chimney facade system adapted to be secured to a roof having a predetermined pitch angle of a building structure comprising
(a) a substantially vertically directed chimney stack passing through said building structure roof and being substantially enclosed by said chimney facade system, and,
(b) a substantially vertically directed base housing adapted to be fixedly secured to said roof, said base housing having a lower surface cut to said pitch angle of said roof and a channel formed in an upper section of said base housing extending throughout a periphery thereof, said base housing including an inclined upper surface adjacent said channel for directing liquid thereto

5,003,740
OPEN OFFICE SYSTEM PARTITION PANEL ASSEMBLY
Raymond P. Dull, Spring Lake; Bernard R. Lavas, and William D. Baxter, both of Muskegon, all of Mich., assignors to The Shaw-Walker Company, Muskegon, Mich.
Filed Nov. 23, 1988, Ser. No. 275,718
Int. Cl.[5] E04H *1/06*
U.S. Cl. 52—239 4 Claims

1 An open office system partition panel assembly including
a base,
a panel located above said base and having a framework,
said framework including interconnected top, bottom and end steel channels,
a core positioned inside said framework,
a covering on each exterior side of the framework in the core,
said top, bottom and end channels intersecting one another to form wire raceways around the periphery of the core, with wire non-sagging transitions between the channels,
the top channel opening outwardly and having a removable cap to permit wires to be laid therein,
said top channel including a pair of upstanding side walls, a laterally-extending lip formed on each side wall thereof, aligned openings formed in said lips along the lengths thereof, an elongated cover to close said top channel, said cover having a plurality of outwardly-extending tabs fitting into said openings in the lips to lock the cover to the top channel,
the end channels opening away from the core and having panel connector support rails closing their openings, and



a leg positioned in said base at opposite ends of said panel, with said legs engaging and supporting said panel connector support rails of said end channels, with said panel connector support rails including bracket standards positioned along the opposite sides of the panel

5,003,741
STRUCTURE OF MULTI-FUNCTION FRAME MEMBERS
Kuo-Huei Yeh, 70, Lane 184, Hu-Lin St., Taipei, Taiwan
Filed Jun. 20, 1988, Ser. No. 208,599
Int. Cl.[5] E04B *1/343*
U.S. Cl. 52—280 12 Claims



1 A structure of multi-function frame members comprising a frame portion and a connector portion, wherein the frame portion comprises an octagonal tube having two or more outer sides each provided with a longitudinally extending dovetailed slot therein and having two pairs of mutually opposed longitudinal engaging surfaces extending along the inside of the tube and each engaging surface being provided with a plurality of longitudinal projections extending along the length of the tube; and wherein the connector portion comprises a support member having two or more sides each provided with a leg extending perpendicularly therefrom, the leg being provided with transverse projections thereon and engaging with the engaging surfaces of the tube, with the projections on the

engaging surfaces of the tube and the projections on the legs being mutually perpendicular

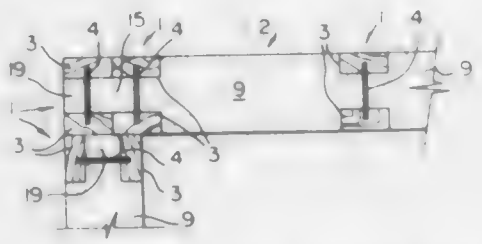
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5,003,742

INSULATED WALL ASSEMBLY

Richard Dettbarn, 7803 G-35 Street S.E., Calgary, Alberta, Canada T2C 1V3

Filed Dec. 21, 1987, Ser. No. 135,641
Claims priority, application Canada, Jan. 1, 1987, 538453
Int. Cl.[5] E04B 7/02, 1/76, E04C 2/20
U.S. Cl. 52—282 6 Claims



1 An insulated wall assembly comprising spaced apart wooden post means of I-shaped cross section, each post means having front and rear surfaces and opposing recesses therebetween; and insulating panel means extending between and interconnecting said post means, said panel means including lateral projections for insertion into the recesses in said post means and front and rear surfaces coplanar with the front and rear surfaces of the post means in the assembled condition

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5,003,743

PANEL SUPPORT MEMBER AND SUPPORT ARRANGEMENT

Gabriel F. Bifano, Miami, and Erenio Reyes, Hialeah, both of Fla., assignors to Vinyl Corporation, Miami, Fla.

Filed Mar. 30, 1990, Ser. No. 502,432
Int. Cl.[5] E04B 5/00
U.S. Cl. 52—282 28 Claims



1 An improved construction panel support member of the type which includes a back flange and a support flange joined to the back flange, the support flange extending outward from the back flange at substantially 90 degrees and being adapted to support a panel, and the back flange being adapted for attaching the support member to a structure in an end-to-end relationship with a second support member attached to the structure, wherein forces disrupt the end-to-end relationship between the support members, the improvement comprising

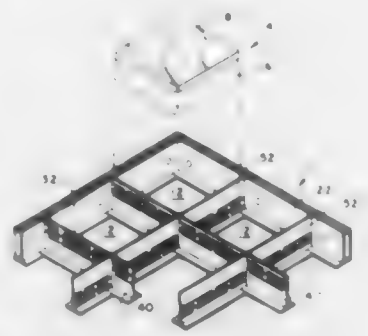
a channel joined to the support flange, the channel being engagable by a member engagable with the second support member.

5,003,744

GLASS-BLOCK PANELS WITH IMPROVED THERMAL CONDUCTION CHARACTERISTICS

John R. Taylor, Irving, Tex., assignor to Innovative Building Products, Inc., Grand Prairie, Tex.

Filed Jul. 31, 1989, Ser. No. 387,229
Int. Cl.[5] E04C 1/42
U.S. Cl. 52—308 5 Claims



1 A glass-block panel, comprising

a perimeter formed from first and second pairs of interchangeable parallel longitudinal perimeter bars interlocked at ends thereof to form a peripheral border,

said perimeter bars each having a tubular rectangular cross-section including a top surface and a base, a plurality of longitudinally spaced vertical slots opening downwardly from said top surface, a longitudinal ridge formed at said top surface between said vertical slots, and a longitudinally extending lateral lip at said base protruding inwardly therefrom,

each of said first pair of said perimeter bars having end slots, said end slots being ones of said vertical slots located in close proximity to said ends thereof of said first pair of perimeter bars,

each of said second pair of said perimeter bars having internal recesses of bifurcated U-shaped formation at said ends thereof, with vertical underslots provided at each of said internal recesses for interfitting engagement with said end slots of said first pair of perimeter bars,

first and second pluralities of partition bars in cooperation with said peripheral border, said first plurality of partition bars extending parallel to and intermediate said first pair of perimeter bars, and said second plurality of partition bars extending parallel to and intermediate said second pair of perimeter bars, to form a grid-like pattern defining a plurality of individual recessed pockets,

each said partition bar including a longitudinal flat stock member, an upper edge, a transverse flange, and two ends, with said flange providing dual lateral shelf lips on each side of said flat stock member;

each of said first plurality of partition bars having a plurality of longitudinally spaced vertical slots extending downwardly from, and open at, said upper edge, and having an underside vertical slot at each of said ends interlocked with one of said slots of said second pair of perimeter bars,

each of said second plurality of partition bars having a plurality of spaced apart underside vertical slots interfitted with said vertical slots of said first plurality of partition bars, and having an underside vertical slot at each of said ends interlocked with one of said slots of said first pair of perimeter bars,

each of said first and second pluralities of partition bars including a plurality of walls defining rows of elongated thermal break slots in said flat stock members, said thermal break slots being spaced horizontally in each said row with gaps between adjacent ones thereof, said thermal break slots being long in a horizontal dimension, with said rows being spaced vertically and with said gaps being staggered vertically between adjacent rows of said slots,

said lips of said perimeter and partition bars being coplanar and defining a common shelf lip support plane within each of said pockets, and

a rectangular glass block inserted into each said pocket in contact with said shelf lips, with at least one compressed resilient stabilizing ring gasket interfitted between each said glass block and each said pocket to seal and stabilize said glass block within said pocket

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5,003,745

DOOR OF CONCAVITY SURFACE

Ho-Tsung Fang, P.O. Box 32-19, Kaohsiung, Taiwan

Filed Jan. 22, 1990, Ser. No. 468,231
Int. Cl.[5] B44F 11/00, B32B 21/04, E04C 2/24, E06B 3/00
U.S. Cl. 52—316 1 Claim



1 A door of concavity surface comprising

a door board having at least a major side wall formed with at least a depressed portion,

at least a thermoplastic sheet attached to the major side wall of the door board and having a surface formed with at least a depressed portion to be fitted in the depressed portion of the major side wall of the door board, and

at least a pattern shaped in the depressed portion of the thermoplastic sheet below a level with the surface of the thermoplastic sheet

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5,003,746

ARCUATE AND CURVILINEAR ASSEMBLIES COMPRISING TANDEMLY ARRANGED BUILDING BLOCKS HAVING DEGREES OF ROTATION

Arthur Wilston, Troy, Pa., assignor to Structural Block Systems, Inc., Troy, Pa.

Continuation of Ser. No. 267,903, Nov. 7, 1988, abandoned. This application May 31, 1990, Ser. No. 532,849
Int. Cl.[5] B37B 1/04
U.S. Cl. 52—589 11 Claims



1 A wall assembly comprising a plurality of repeating building blocks successively arranged in a tandem array within a row, said wall assembly comprising a number of rows, each stacked one above another, said tandem arrays within each row facing in an opposite direction with respect to an adjacent row stacked above and below thereto, for the purpose of enhancing lateral forces such as those produced during an earthquake, each building block of said array being generally rectilinear with the exception of two oppositely disposed distal end walls having arcuate, circumferential male and female mating surfaces, respectively, each arcuate, circumferential male and female mating surface having a radial diameter almost equal to a width of said block to further enhance resistance to said lateral forces, each end wall being rotatively engageable with an arcuate mating end wall of an adjacent block of said assembly at any desired angle of rotation within a limited range of arc defined by circumferential end abutments terminating said arcuate mating surfaces of said mating end walls, each male end wall having means defining a hole for receiving vertical reinforcement, each hole being in registry with a hole of a block of an adjacent row stacked above and below thereto, said vertical reinforcement still further enhancing said wall assembly to resist lateral earthquake forces

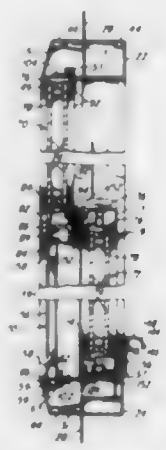
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5,003,747

WINDOW ASSEMBLY OF EXTRUDED PLASTICS MATERIAL

Philip G. Morton, Germantown, Ohio, assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed May 1, 1989, Ser. No. 345,666
Int. Cl.[5] E04C 2/38
U.S. Cl. 52—656 20 Claims



1 A window assembly adapted for use in a vertical wall of a building, comprising a generally rectangular frame supporting a generally rectangular light transmitting window unit, said frame including a pair of elongated vertical jamb members connected by a horizontal head member and a horizontal sill member, each of said members being formed from an extrusion of rigid plastics material, each of said jamb members including an outer portion integrally connected to an inner portion projecting inwardly into the frame from said outer portion, said outer portions of said jamb members having welded mitered corner joints with said sill member and said head member, and said inner portions of said jamb members having substantially right angle end surfaces abutting said horizontal head member and sill member for covering internal flash of said welded mitered corner joints.

5,003,748

METAL FRAME STRUCTURE

Noel R. Carr, Brisbane, Australia, assignor to Supertruss Pty. Ltd., Ashmore, Australia

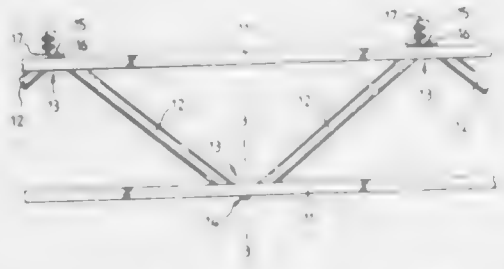
PCT No. PCT/AU88/00196, § 371 Date Jan. 10, 1990, § 102(e) Date Jan. 10, 1990, PCT Pub. No. WO88/10343, PCT Pub. Date Dec. 29, 1988

PCT Filed Jun. 20, 1988, Ser. No. 457,750

Claims priority, application Australia, Jun. 19, 1987, PI2569

Int. Cl.[5] E04C 3/02, 3/30

U.S. Cl. 52—693 7 Claims



1 A frame joint for a truss including a pair of substantially parallel or spaced unitary chords and a plurality of elongated tubular webs secured to each chord by fasteners wherein said frame joint includes a junction of two webs and a respective chord wherein said webs include flattened end portions which overlap each other and an adjacent chord section so as to define at least three relatively narrow structural parts in transverse cross-section which are interconnected by a single pair of fasteners transversely aligned to a longitudinal axis of the adjacent chord

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5,003,749

GROUTING ANCHOR TO BE INSERTED IN A PREDRILLED HOLE

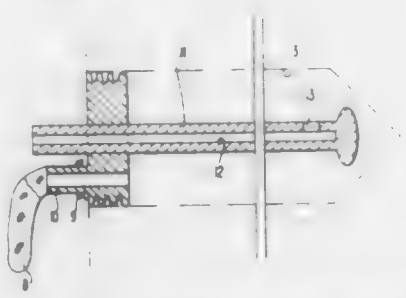
Alfons Harke, Affligem-Hekelgem, Belgium, assignor to International Intec Patent Holding Establishment, Vaduz, Liechtenstein

Filed Feb. 20, 1990, Ser. No. 481,615

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1989, 3905095

Int. Cl.[5] E04B 1/41

U.S. Cl. 52—703 11 Claims



1. Grouting anchor insertable in a predrilled bore hole, the grouting anchor comprising a stopper means for sealing an opening of the predrilled bore hole an inlet opening means provided in said stopper means for receiving a grouting compound, at least one backflow opening means in said stopper means for accommodating the grouting compound, wherein said backflow opening means terminates into an air permeable forward collecting cage adapted to be separated from the means after a curing of the grouting compound.

5,003,750

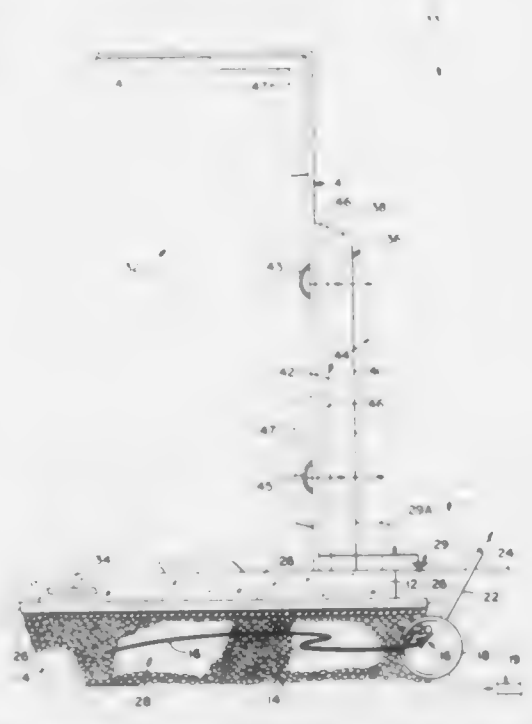
METHOD FOR REDUCING IMMUNOGENIC AND/OR TOXIC SUBSTANCES IN INDOOR AIR

Alex V. Delgado, 6732 N. Hillpark Ave., Parker, Colo. 80134

Filed Nov. 16, 1989, Ser. No. 437,671

Int. Cl.[5] E04B 1/00, 1/70; E02D 17/02; E04F 17/00

U.S. Cl. 52—742 6 Claims



1 A method of constructing a building in order to minimize levels of immunogenic substances in the atmosphere contained in the building, wherein a portion of an overall construction process for the building employs a subprocess of construction comprising

excavating an area of the earth upon which the building will be placed,

laying a gravel bed in the excavated area of the earth and thereby defining a gas permeable path over which gases emanating from underlying areas of the earth can be directed;

surrounding the gravel bed with a pipe having perforations in fluid connection with the gas permeable path defined by the gravel bed;

venting the pipe to the atmosphere;

covering the gravel bed with a gas impermeable material in such a manner that said material establishes a substantially monolithic, gas impermeable barrier to any gases emanating from underlying areas of the earth,

pouring a substantially monolithic layer of concrete over the gas impermeable barrier in order to establish a ground floor of the building;

erecting an array of vertical joist elements, (wherein a major fraction of the individual joist elements comprising the array are made of a metallic material) in order to provide vertical support for an outside wall of said building,

placing a wall forming material on the inside of the vertical joists, and

placing a layer of a metallic, gas impermeable material on the inside of the exterior wall,

electrically grounding the metal studs and metallic, gas impermeable material; and

covering the layer of gas impermeable material with sheets of dry wall in order to form an inside wall surface.

5,003,751

PACKAGING SYSTEM

Akira Ishikawa, and Kazumasa Harada, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 4, 1989, Ser. No. 444,904

Claims priority, application Japan, Dec. 5, 1988, 63-307429

Int. Cl.[5] G65B 11/30

U.S. Cl. 53—215 4 Claims



3 A packaging system which wraps a sheet material around an article supplied at an article supply station and discharges the article at a discharge station, the packaging system comprising

a turret,

means for rotating said turret by 180°,

a pair of article wrapping means provided on the turret at an interval of 180° from each other, each of said article wrapping means for wrapping sheet material around an article while the article wrapping means rotates from the article supply station to the article discharge station, wherein each article wrapping means is alternately positioned at the article supply station and the article discharge station when the turret is stopped,

a sheet supply means for supplying the sheet material to the article wrapping means including,

supply conveyor means for accepting sheet material at one side of the turret and for delivering the sheet material to the article wrapping means at the opposite side of the turret, said supply conveyor means mounted on the turret such that said turret may begin rotating before the conveyor means has delivered the sheet to a wrapping means without interrupting delivery of the sheet

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5,003,752

WRAPPING METHOD AND APPARATUS

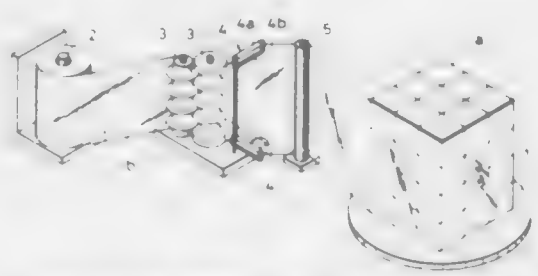
Ryozo Matsumoto, 239-9, Oaza-Tanaka, Sasaguri-cho, Kasuya-gun, Fukuoka-ken, 811-24, Japan

Filed May 15, 1989, Ser. No. 351,585

Claims priority, application Japan, May 16, 1988, 63-119978; Sep. 14, 1988, 63-231000

Int. Cl.[5] B65B 11/04

U.S. Cl. 53—399 5 Claims



1 A method for wrapping a load with a wrapping plastic film from its roll, by creating relative rotation between said roll of film and the load to extract said film from said roll of film onto the load, said method comprising preparing a pair of stretching rolls having vertical axes and disposed between said load and said roll of film, said stretching rolls having alternate peripheral ridges and peripheral grooves and being arranged such that the peripheral ridges on each stretching roll mesh with the peripheral grooves on the other stretching roll, passing said film extracted from said roll of film between said meshed stretching rolls, simultaneously stretching said film laterally and longitudinally by rotating said stretching rolls at different speeds and wrapping said load with said stretched film just after stretching thereof and spreading said film laterally between said stretching rolls and said load to widely wrap said load with the spread and stretched film

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5,003,753

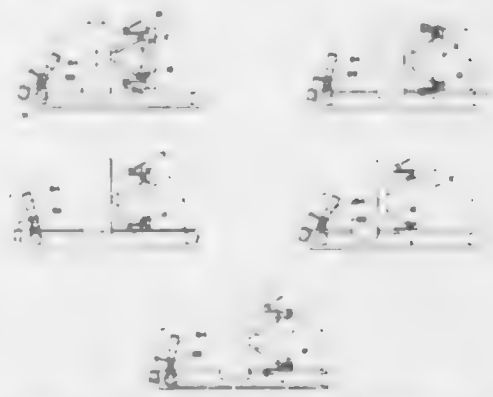
INSIDE HEAD INSERTING APPARATUS AND METHOD

Norman E. Dornblaser, Elma, Wash., and David F. Hildermann, Portland, Oreg., assignors to Haines & Emerson, Inc., Hoquiam, Wash.

Filed Dec. 15, 1989, Ser. No. 451,195

Int. Cl.[5] B65B 51/00, 61/00

U.S. Cl. 53—415 22 Claims



1 A method of securing an oversized, lightweight, flexible head to the inside of a wrapper tube extension of a partially wrapped roll at a first station, the steps comprising

holding the head at multiple spaced locations about an axis of the head,

axially moving the held head into engagement with an end of a partially wrapped roll inside a wrapper tube extension,

radially moving the multiple holding locations of the head outwardly until adjacent the wrapper tube extension, and

securing the head to the wrapper tube extension

5,003,754

AGRICULTURAL BALE SHEATHING APPARATUS AND METHOD

William Stirling, P.O. Box 202, Lower Nicola, B.C., Canada V0K 1Y0

Filed Jan. 16, 1990, Ser. No. 465,484

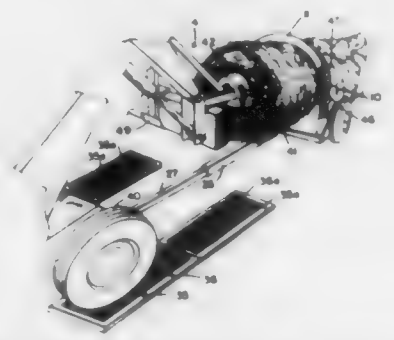
Claims priority, application Canada, Jan. 19, 1989, 588681

Int. Cl.[5] B65B 9/10, 43/42

U.S. Cl. 53—459 14 Claims

12 A method of loading at least one bale of an agricultural product into a flexible bag carried by a sheathing device by means of a loading vehicle separate from the sheating device, said vehicle having a loading device and ground engaging means upon which said vehicle moves, said sheathing device comprising a drum for carrying the flexible bag and immobilizing means for immobilizing the sheathing device during loading, comprising holding open a mouth of the bag with the drum and loading each bale into the bag through the drum by means of the loading device of the loading vehicle, characterised by immobilizing the drum during the loading operation by

moving the ground engaging means to overlie said immobilizing means to immobilize said sheathing device by the weight of



the vehicle, while maintaining the bale movable relative to the drum for loading the bale into the bag through the drum

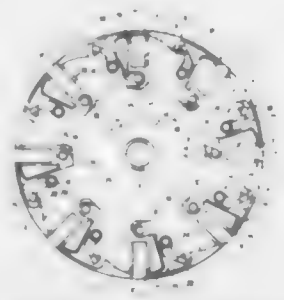
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5,003,755

METHOD AND DEVICE FOR PRODUCING TUBULAR WRAPPINGS

Florenzo Draghetti, Medicina, Italy, assignor to G.D Societa' Per Azioni, Bologna, Italy

Filed Aug. 13, 1990, Ser. No. 566,265
Claims priority, application Italy, Sep. 14, 1989, 3622 A/89
Int. Cl.[5] B65B *11/32*
U.S. Cl. 53—466 10 Claims



1. A method of producing tubular wrappings (49) for products (2) of substantially parallelepiped shape; said method comprising stages consisting in successively feeding sheets (46) of wrapping material over respective peripheral openings (10) formed on a wrapping wheel (1) and enabling access to respective seats (20) formed on said wheel (1); feeding said products (2) successively, and in a substantially radial direction, through respective said openings (10) and into respective said seats (20), insertion of each said product (2) being accompanied by simultaneous insertion of the respective said sheet (46), which is folded in a U about said product (2) inside said seat (20), with two opposite portions (47, 48) projecting outwards of said opening (10); successively folding said two portions (47, 48) about said product (2), so that a second (48) of said portions at least partially overlaps a first (47) of said portions; and stably connecting said two overlapping portions (47, 48) via joining means (36); characterised by rotating said wheel (1) at substantially constant speed about its axis, moving a seat holder element (17) on said wheel and on which element said seat carrying a product and wrapping sheet is mounted in relation to the wheel between a first position, wherein said seat (20) faces substantially radially outwards of said wheel (1), and a second position wherein said seat (20) is aligned with respective said joining means (36) supported on said wheel (1) folding said second portion (48) being folded by moving the respective said seat holder element (17) into said second position, and via interference with folding means (9) supported in a fixed position on said wheel (1) and sealing said projecting portions with said joining means on said wheel while said seat holder is in said second position

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5,003,756

DOG GARMENT WITH FLEA REPELLING MEANS

Joseph A. Mazzotta, Sr., 1970 Lawnridge St., Medford, Oreg. 97504

Filed Mar. 8, 1990, Ser. No. 490,445
Int. Cl.[5] B68C *5/00*
U.S. Cl. 54—79 1 Claim



1. A dog garment comprising

a coat having a size arranged to cover the chest of the dog and a portion of the neck and also to cover the sides and back of the dog,

means on said coat arranged to hold it in place on a dog,

said coat having an inner surface in engagement with the body of the dog,

and a plurality of elongated flea repelling strips and a plurality of holders for said flea strips mounted on the inner surface of said coat and each including a plurality of cross loops,

said loops for each strip being in alignment and arranged to removably hold one of said strips,

said loops being spaced from each other to expose said strip to the dog

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5,003,757

CLOSE-TRIM MOWER DEFLECTOR

Amos G. Hill, Orangeburg, S.C., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

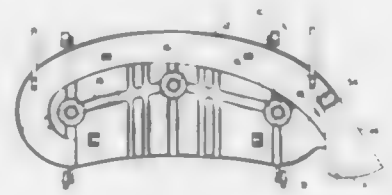
Filed Jan. 23, 1990, Ser. No. 468,755
Int. Cl.[5] A01D *34/67*
U.S. Cl. 56—17.4 10 Claims

1. A close-trim deflector for a mower, said deflector comprising:

a hinging member having first and second hinge axes, said hinging member being pivotably attachable to said mower about said first hinge axis;

a deflecting member pivotably attached to said hinging member about said second hinge axis, said deflecting member being pivotable with said hinging member between a maximum discharge position and a minimum clearance position and being also pivotable about said hinging member between a normal orientation including said maximum discharge position and said minimum clearance position and a raised orientation; and

biasing means acting on said deflecting member and said mower to urge said deflecting member toward said maximum discharge position, said biasing means also acting to urge said deflecting member toward said normal orientation, wherein said hinging member comprises a T-shaped member having a shaft portion and a cross portion, said





shaft portion and said cross portion acting as said first and second hinge axes, respectively

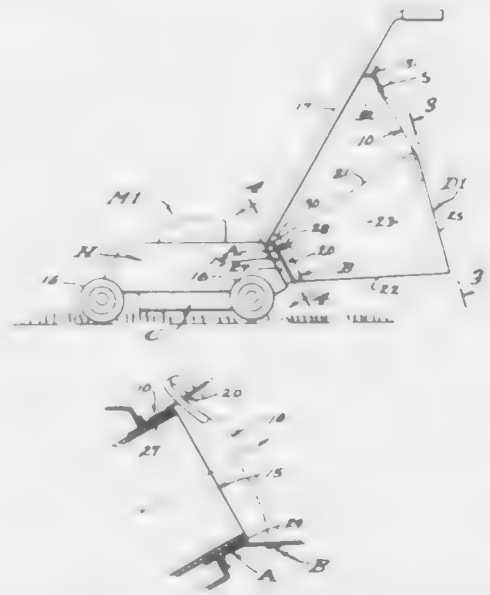
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5,003,758

DISPOSABLE DEBRIS BAG FOR LAWNMOWERS AND SWEEPERS

Arnold Bernstein, 8915 Owensmouth Ave., Canoga Park, Calif. 91304

Filed Feb. 2, 1990, Ser. No. 474,493
Int. Cl.[5] A01D *34/70*
U.S. Cl. 56—202 14 Claims



1. A disposable bag for debris discharging machines having a rearwardly open debris discharge boot from which debris is forceably discharged, and including,

an envelope of flexible thin walled sheet material having a neck portion convergent to a collar portion defining an opening to slidably fit over the rearwardly opening discharge boot of the debris discharging machine,

a primary securement means carried by and for releasably securing the collar portion onto the discharge boot

and a secondary securement means carried by the neck portion rearward of the collar portion for closing the envelope prior to release of the primary securement means

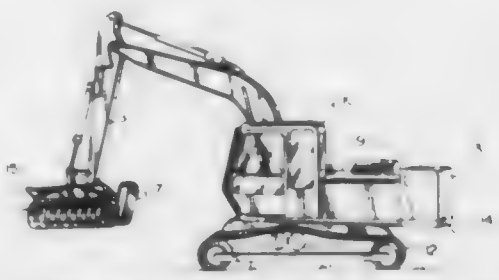
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5,003,759

BRUSH MOWER

John C. Brown, Goffstown, N.H., assignor to JCB Leasing Corp., Weare, N.H.

Filed Dec. 21, 1989, Ser. No. 454,[illegible]
Int. Cl.[5] A01D *25/00; 35/24*
U.S. Cl. 56—249 11 Claims



1. A brush mower head adapted to be carried by an articulating traveling crane comprising:

a casing, adapted to be mounted to said articulating traveling crane for travel over ground to be cleared,

a motor carried by said casing, and

a drum with a center shaft mounted for rotation in said casing about an axis of rotation and powered by said motor, said axis of rotation of said drum in use being generally parallel to said ground,

said drum

being a cylinder having an inner wall and a length at least twice its diameter;

having at least two hammer shafts running end to end parallel to said axis of rotation and being in balanced relationship one to another to minimize rotational imbalance of said drum,

having interior circular reinforcing plates and end plates perpendicular to said axis of rotation and connected to said inner wall of said cylinder, said end plates having outer surfaces,

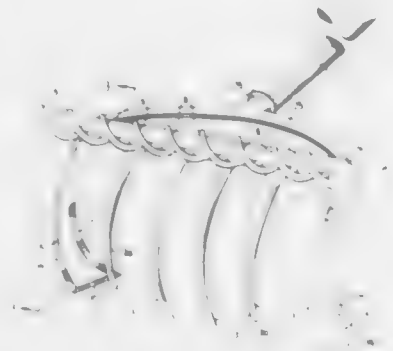
having a series of spaced apart outward facing interior semicircular plates about said hammer shafts affixed to said inner wall and to which of said reinforcing plates as are contiguous thereto, said semicircular plates defining wells about said hammer shafts,

being slotted at said wells, with slots associated with one hammer shaft being offset along the axis of said cylinder from those of another hammer shaft,

having hammers, each with a cutting edge and mounted on said hammer shafts for free rotation thereabout in each of said wells, said hammers when said drum is rotating for mowing protruding by centrifugal force through said slots beyond the surface of said cylinder and presenting the cutting edge of each of said hammers to the brush being engaged, and

being dynamically balanced for rotation at at least 1,000 rpm

5,003,760
GARDEN TOOL
Nancy A. Webb, R.R. #10, Brampton, Ontario, Canada L6V 3N2
Filed Oct. 24, 1989, Ser. No. 425,929
Int. Cl.' A01D 11/06
U.S. Cl. 56—400.06 10 Claims



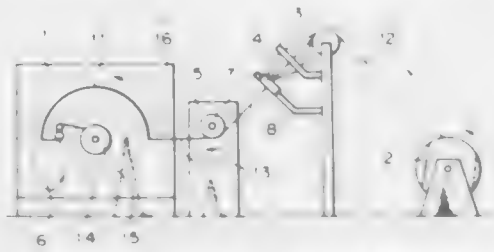
1 A gardening tool having an elongated handle, and a cultivator head attached at one end of the handle and having

(a) a row of relatively long cultivator tines each tapering from its point of connection to the cultivating head towards its tip and extending in a plane of extension and substantially parallel to the others and generally inclined to the axis of the handle,

(b) a row of relatively short rake tines of even length each tapering from its points of connection to the cultivating head towards it tip and disposed parallel to the plane of extension of the cultivator tines, the tips of the rake tines extending in a direction substantially opposite to the tips of the cultivator tines, and

(c) a generally planar blade member connected on an end of the row of cultivator tines and extending substantially parallel to the cultivator tines and a plane of extension of the rake tines and substantially parallel to the handle, the blade member increasing in width downwardly from its point of connection to the cultivator head to its free end, whereby the blade member adjacent its lower end exposes blade edges spaced away form the cultivator tines in the direction longitudinally parallel to the handle

5,003,761
METHOD AND APPARATUS FOR MANUFACTURING COMPACT CONDUCTORS
Kazuo Iura; Kazunori Tsuji, and Kazuhito Saka, all of Mie, Japan, assignors to Sumitomo Wiring System, Ltd., Mie, Japan
Filed Jul. 13, 1989, Ser. No. 379,630
Claims priority, application Japan, Jul. 18, 1988, 63-178670
Int. Cl.' D01H 1/04
U.S. Cl. 57—58.52 6 Claims



1 A method for manufacturing compact conductors, comprising the steps of

supplying a plurality of conductor strands from a supply device,

converging and compacting said plurality of strands together to form a compact conductor by feeding said plurality of strands into a converging and compacting die downstream of said supply device,

feeding said compact conductor about a capstan having a peripheral groove formed therein such that said compact conductor is received in said groove downstream of said converging and compacting die and such that the shape of said compact conductor is preserved, and

imparting a twisting force to said compact conductor by feeding said compact conductor from said capstan downstream to a twist machine

5,003,762
AUTOMATIC FEEDER AND FEEDING METHOD FOR TEXTILE MACHINES
Enzo Scaglia, 21, Via Monte Rosa, Milan, Italy 20149
Filed Jan. 17, 1989, Ser. No. 297,617
Int. Cl.' D01H 9/18, B65H 67/06
U.S. Cl. 57—281 16 Claims



1 An apparatus for feeding bobbins to textile machines, said device comprising,

transport means for the continuous transport and supply of a plurality of bobbins,

winding means for winding a length of sliver on empty ones of said plurality of bobbins,

marking means for marking said wound bobbins with a removable code corresponding to predetermined characteristics of said length of sliver carried on said wound bobbins,

an inlet for transferring said wound bobbins from said winding means to said transport means,

bobbin handling means for loading, unloading and positioning said plurality of bobbins on said textile machines,

a station for inserting said wound bobbins onto said bobbin handling means,

reading means at said inserting station for recognizing said code marked on said wound bobbins

a station for removing said empty bobbins from said bobbin handling means, and

an outlet for transferring said empty bobbins from said transport means to said winding means

5,003,763
APPARATUS AND PROCESS FOR FORMING ALTERNATE TWIST PLIED YARN AND PRODUCT THEREFROM
Donald E. Hallken; Peter Popper, both of Wilmington, Del.; Harold F. Staunton, Avondale, Pa.; and Paul W. Yngve, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation of Ser. No. 322,623, Mar. 13, 1989, abandoned, which is a division of Ser. No. 188,559, Apr. 29, 1988, abandoned, which is a continuation-in-part of Ser. No. 181,847, Apr. 15, 1988, abandoned. This application Aug. 6, 1990, Ser. No. 563,836
Int. Cl.' D01H 13/28
U.S. Cl. 57—297 4 Claims



1 A method for bonding fiber using an ultrasonically energized horn having a surface opposed to a surface of a movable anvil comprising

ply twisting strands together,

placing the ply twisted strands between the horn and anvil,

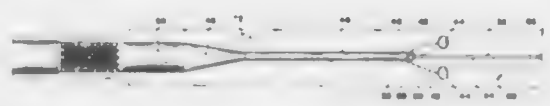
applying tension to the strands,

continuously energizing the ultrasonic horn,

starting the bonding by applying pressure to the ply twisted strands by squeezing them between the horn and anvil,

and stopping the bonding by removing the pressure that was applied to the strands by squeezing

5,003,764
NOZZLE TEXTURIZER FOR YARN MANUFACTURING
Jimmy D. Hosmer, Scottsboro, Ala., assignor to Hosmer Machinery & Engineering, Inc., Scottsboro, Ala.
Filed Oct. 13, 1989, Ser. No. 421,250
Int. Cl.' D01H 7/92
U.S. Cl. 57—333 4 Claims



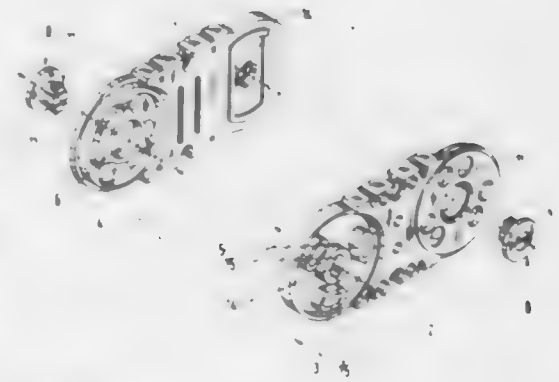
1 A nozzle texturizer comprising an elongated metal body in the form of a generally rectangular block made up of a pair of halves, each half having a surface adapted for mating with a surface of the other half and having a straight bore extending longitudinally therethrough, said bore including an upper tubular region having a diameter adapted to receive a plurality of extruded strands of synthetic fiber material, a middle tubular region communicating with the bottom of said upper region and having a larger diameter than said upper region, and a frustro-conical, downwardly disposed nozzle region for imparting kinking action to said strands when passed therethrough by action of heated compressed air and a plurality of air entry apertures communicating said bore near the junction of said upper and middle regions with the exterior of said body,

each said half block including a pair of apertures offset longitudinally from one another a distance of 0.030 inch at their junctures with said bore, and

one of said passageways in each of said halves being disposed at an angle of 45° with respect to the center line of said bore, and the other thereof being disposed at an angle of 43° with respect to said bore

whereby, upon introduction of compressed air into the bore through said apertures, swirling action will be created, causing said strands to become twisted

5,003,765
GUIDE OR FEEDER CHAIN
Werner Moritz, Siegen, Fed. Rep. of Germany, assignor to Kabelschlepp Gesellschaft mit beschränkter Haftung, Siegen, Fed. Rep. of Germany
Filed Aug. 3, 1990, Ser. No. 562,633
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1989, 3928233
Int. Cl.' F16G 13/16
U.S. Cl. 59—78.1 4 Claims





1 In a guide or feeder chain for power and supply lines, including chain links that each comprise two spaced-apart link members that are disposed parallel to one another and are interconnected by crosspiece means, whereby link members of adjacent chain links, where they overlap, are held against one another by plastic locking pins along pivot axes, the improvement wherein

said locking pins each comprise a shaft having two ends, on one of which is formed a head, and on the other of which are formed radially projecting dogs that are disposed opposite one another,

each link member, concentric to one of said pivot axes, has a locking hole which has radial grooves for receiving said dogs, with said grooves, on one side of said link member, having undercuts that extend away from said groove in the circumferential direction of said locking hole for receiving said dogs,

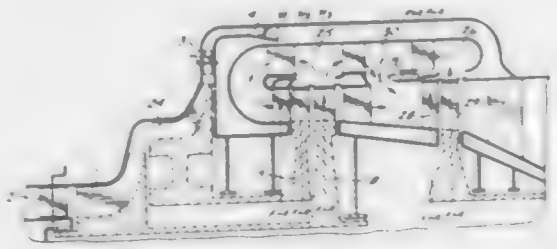
said shafts of said locking pins are provided with axially extending slots to form radially resilient shaft portions on which said dogs are formed,

each dog has an outer surface in which is provided an axially extending groove, and

each link member, at an end of each of said undercuts remote

from said radial grooves thereof, is provided with respective bosses that correspond with said grooves of said dogs

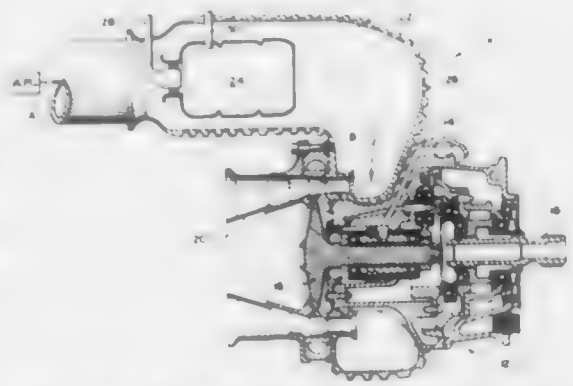
5,003,766
GAS TURBINE ENGINE
Marius A. Paul, 1100 E. Orangethorpe Ave., Ste. 140, Anaheim, Calif. 92801
Continuation of Ser. No. 924,136, Oct. 27, 1986, abandoned, which is a continuation-in-part of Ser. No. 659,328, Oct. 10, 1984, abandoned. This application May 8, 1989, Ser. No. 348,674
Int. Cl.[5] F02C 7/16
U.S. Cl. 60—39.15 17 Claims



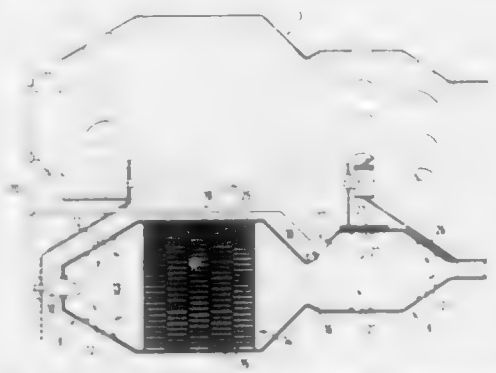
1. A gas turbine engine comprising
means defining an annular combustion chamber in which fuel and air are mixed together and burned to produce combustion gases,
a turbine having turbine blades rotatably driven by the combustion gases, the outer periphery of the turbine being encircled by the annular combustion chamber, the turbine including means defining a plurality of cooling passageways through its blades, the passageways terminating in outlet ports at the outer peripheries of its blades
injection means for injecting liquid fuel into the turbine passageways for cooling the turbine blades and for subsequent entry into the combustion chamber via the outlet ports,
a compressor rotatably driven by the turbine, for compressing air and directing it into the combustion chamber,
discharge means defining first and second channels for discharging the combustion gases from the combustion chamber, the first channel discharging a portion of the combustion gases through the turbine and the second channel discharging the remainder of the combustion gases along a path that bypass the turbine, and
regulating means for regulating the relative proportions of combustion gases that the discharge means discharges through the respective first and second channels

5,003,767
GAS TURBINE STARTER SYSTEM WITH POWER AUGMENTATION
Colin Rodgers, San Diego, Calif., assignor to Sundstrand Corporation, Rockford, Ill.
Continuation of Ser. No. 173,576, Mar. 25, 1988. This application Oct. 10, 1989, Ser. No. 470,006
Int. Cl.[5] F02C 7/27
U.S. Cl. 60—39.142 14 Claims

1. A power augmented gas turbine starter system, comprising
starter means including a casing rotatably mounting a turbine wheel therewithin;
low pressure air supply means communicating with the casing for providing a given volume of low pressure air directly to the starter means; and
combustor means associated with the low pressure air supply means for receiving only a portion of said given volume of low pressure air therefrom and supplying a flow of hot gas to the starter means for augmenting the power thereof



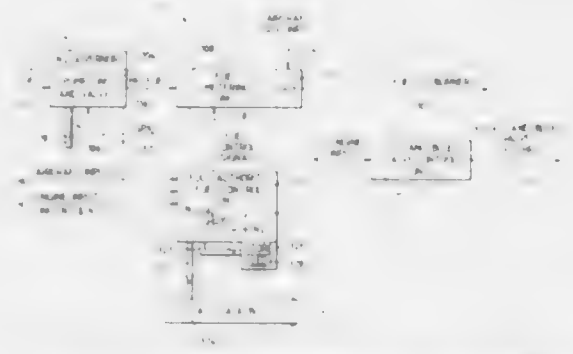
5,003,768
GAS TURBINE INSTALLATION
Guenter Kappler, and Dieter Rist, both of Munich, Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany
Continuation of Ser. No. 285,018, Dec. 16, 1988, abandoned. This application Feb. 14, 1990, Ser. No. 480,377
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1987, 3742891
Int. Cl.[5] F02C 7/057
U.S. Cl. 60—39.23 30 Claims



1. A gas turbine installation operating on a two-stage combustion process, comprising
a combustion chamber,
a compressor for providing a source of air to the combustion chamber,
a compressor drive turbine for driving the compressor,
a work turbine driving a rotary output shaft,
the combustion chamber burning fuel in the compressed air received from the compressor, being located downstream therefrom and upstream of the turbines, and being constructed as a two-stage combustion chamber with a catalyst having a ring shape for catalytic combustion in a first upstream stage connected to the compressor and a flame combustion in an annular stage downstream from the catalytic stage for burning fuel at a higher temperature than a temperature in the catalytic stage
an interior wall of the downstream annular stage defining a closed surface except for air inlet openings which are selectively opened and closed,
the compressor providing compressed air for the second combustion state that by-passes the first combustion stage, and
a fuel supply for the second combustion stage,

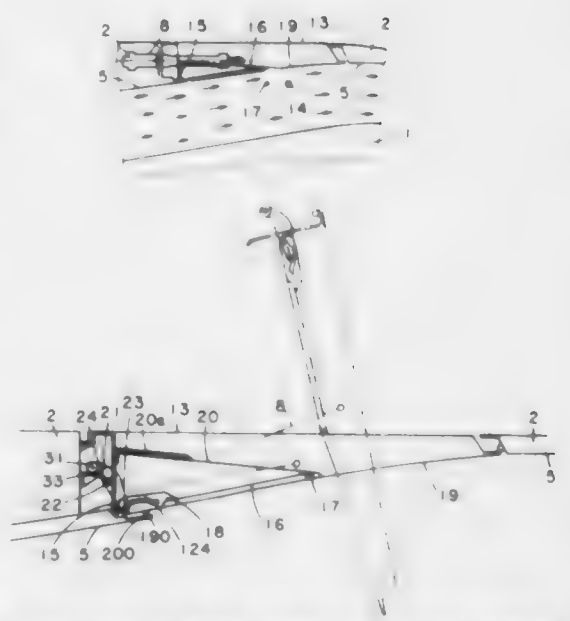
wherein said air and fuel supply are located within an area defined by an inner wall of the downstream annular stage of the combustion chamber

5,003,769
SELF-CHECKING SPEED GOVERNOR ARRANGEMENT
Hugh F. Cantwell, Derby, England, assignor to Rolls-Royce plc, London, England
Filed Jun. 23, 1989, Ser. No. 370,797
Claims priority, application United Kingdom, Jun. 30, 1988, 8815623
Int. Cl.[5] F02C 9/28
U.S. Cl. 60—39.281 14 Claims



1. A self-checking governor arrangement for controlling the rotational speed of a spool in a gas turbine engine, comprising
a displaceable member,
a displacing device which effects displacement of the displaceable member by an amount which varies directly with said rotational spool speed,
a biasing device which contacts said displaceable member to act against said displacement of the displaceable member,
valve means for controlling fuel flow to the engine, the valve means being actuatable by the displaceable member to reduce fuel flow to the engine in dependence upon said displacement of said displaceable member,
switch means actuatable by said displacement of the displaceable member, the biasing device abutting said switch means over at least a portion of said displacement such that said switch means generates a switch signal indicative of when said displaceable member is displaced by a predetermined amount corresponding to a predetermined spool speed within a predetermined normal range of spool speeds experienced by said spool during normal operation of said engine;
sensor means for generating a spool speed signal whose valve varies with said rotational speed of said spool; and
data processing means connected to receive said switch signal and said spool speed signal, said data processing means being adapted to determine whether receipt of the switch signal substantially coincides with receipt of a value of the spool speed signal corresponding to said predetermined spool speed and to output a governor status signal dependent upon the result of said determination

5,003,770
THRUST REVERSER FOR A JET ENGINE OF THE TYPE WITH DOORS EQUIPPED WITH AUXILIARY FLAPS
Robert Schegerin, Jouy en Josas; Bernard Laboure, Velizy, and Robert Standish, Gazeran, all of France, assignors to Societe de Construction des Avions Hurel-Dubois, Meudon la Foret, France
Filed Aug. 22, 1989, Ser. No. 397,126
Claims priority, application France, Aug. 29, 1988, 88 11325
Int. Cl.[5] F02K 1/70
U.S. Cl. 60—226.2 10 Claims



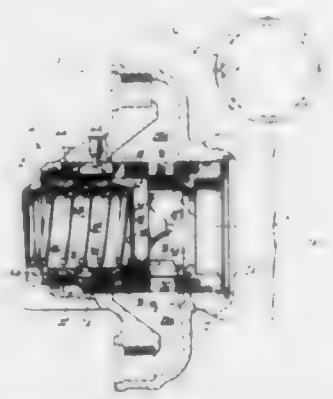
1. A thrust reverser for a jet engine of the type including an external cowling defining a flow channel for the propulsion jet, comprising
(a) at least one tiltable door mounted on the cowling and movable between a closed position aligned with the cowling and a reversal position in which the door extends transversely to the flow channel for deflecting the propulsion jet, the door having a front deflector portion and an upstream door portion set back relative to the front deflector portion, said door being movable between an open position and a closed position, wherein in the closed position of the door the upstream door portion is offset with respect to the flow channel thus forming a vacuum zone,
(b) at least one flap articulated at a downstream end about a shaft mounted on an internal wall of the door for covering the vacuum zone and for being positioned, when the door is in its closed position, in alignment with the flow channel, and when the door is in the open position, retracted against the upstream door portion,
(c) alignment means for aligning the flap with a portion of the cowling defining the flow channel, said alignment means including a lever articulated to the door, one end of which lever cooperates with the flap and an opposing end of which lever cooperates with a stop carried by a fixed part of the cowling; and
(d) resilient means for returning the flap to its retracted position against the door when the door is in the open reversal position.

5,003,771

FUEL DISTRIBUTION VALVE FOR A COMBUSTION CHAMBER

Jervis D. Kester, Farmington, and Clarence P. Redington, Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 13, 1988, Ser. No. 257,490
Int. Cl.[5] F02C 7/264, 9/34
U.S. Cl. 60—243 14 Claims



1 In a valve of the type for distributing fuel in a machine from a source of fuel to a plurality of fuel nozzles in a combustion chamber, the valve including an inlet passage and a plurality of outlet passages for fuel, a wall having a plurality of ports which extend in a first direction and through the wall for placing the inlet passage in flow communication with each outlet passage and including a piston which is slidable in the first direction with respect to the wall, the piston having a first position with respect to the wall at which the piston covers the ports, a second position at which a plurality of the ports are uncovered to the maximum extent of uncoverage in the first direction and a third position between the first position and the second position at which each port is partially covered leaving at least a portion of the port uncovered over the entire distance of the port between the first position and the third position, the improvement which comprises

a plurality of ports which includes at least one first port and more than one second port, the plurality of ports being uncovered at said third position with each port having an uncovered area, each first port having an uncovered area A_1 which is greater than the uncovered area A_2 of each of the second ports to provide a greater fuel flow through said area A_1 and thence to a region of the combustion chamber to provide a fuel rich region of the combustion chamber in comparison to other regions of the combustion chamber in flow communication with said source of fuel through said ports having an area A_2.

5,003,772

TURBO HYDRAULIC UNITIZED ACTUATOR

Jeffrey A. Huber, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 12, 1988, Ser. No. 256,864
Int. Cl.[5] F02K 9/50
U.S. Cl. 60—259 25 Claims

1 A propulsion system having a propulsion engine which combusts propellant received from a storage tank in which a portion of the tank contains propellant in a liquid state and in which an ullage in a remaining portion of the tank contains the propellant in a gaseous state comprising:

a first propellant circuit coupling liquid propellant stored in the portion of the tank storing the propellant in a liquid state to an evaporator for gasifying the liquid propellant;

a second propellant circuit including a first portion coupling the gaseous propellant from the evaporator to the propulsion engine for combustion by the engine and a second portion coupling gaseous propellant to the ullage; and



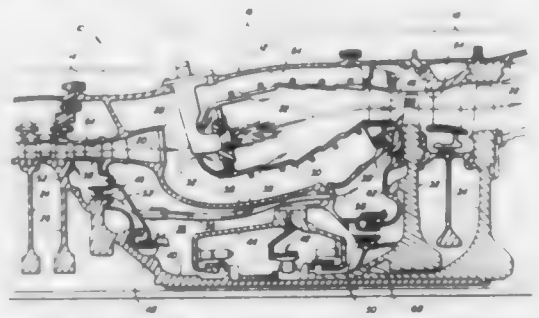
at least one power takeoff disposed in the second portion of the second propellant circuit for providing a power takeoff powered by energy of the gaseous propellant flowing in the second portion of the second propellant circuit

5,003,773

BYPASS CONDUIT FOR GAS TURBINE ENGINE

Barry M. Beckwith, Coventry, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 23, 1989, Ser. No. 370,503
Int. Cl.[4] F02C 7/12
U.S. Cl. 60—262 4 Claims



1 In a gas turbine engine having a rotating compressor section with a final rotating stage, an annular combustor section, and a turbine section all disposed sequentially about a single axis and further including a low pressure compartment disposed radially inward of the compressor section and sealingly isolated from an annular flow of pressurized working fluid passing axially through the engine by an upstream pair of rotating seals disposed in series between the working fluid flow exiting the last compressor stage and non-rotating combustor section inlet, and by a downstream rotating seal disposed between the non-rotating combustor section outlet and a first rotating turbine stage, the upstream pair of rotating seals defining an annular seal compartment therebetween, where the improvement comprises:

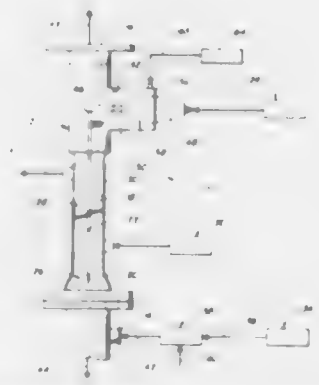
means for venting leakage working fluid from the annular seal compartment to a point in the annular working fluid flow stream prior to the first turbine stage.

5,003,774

APPARATUS FOR SOOT REMOVAL FROM EXHAUST GAS

Robert E. Leonard, Oklahoma City, Okla., assignor to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 107,721, Oct. 9, 1987, Pat. No. 4,908,047. This application Oct. 27, 1989, Ser. No. 427,799
The portion of the term of this patent subsequent to Mar. 13, 2007, has been disclaimed.
Int. Cl.[5] F01N 3/02
U.S. Cl. 60—275 5 Claims



1 An apparatus comprising

a diesel engine producing an exhaust gas stream,

means operatively connected to the diesel engine for receiving the exhaust gas stream and for contacting the exhaust gas stream with water to produce a substantially water saturated gas stream,

means for electrically charging particles and droplets in the water saturated gas stream, and

means for electrostatically attracting and de-entraining soot and soot containing water droplets from the gas stream containing electrically charged particles and droplets to produce a substantially soot free exhaust gas stream, wherein the means for charging particles and droplets and the means for electrostatically attracting and de-entraining soot and soot containing water droplets further comprise

a precipitator having a first outlet opening formed through a portion thereof, a second outlet opening formed through a portion thereof and spaced a distance from the first outlet opening, a flow opening extending a distance therethrough in communication with the first and second outlet openings, and an inlet opening formed through a portion thereof and being in communication with the flow opening and being spaced generally between the first and second outlet openings, the water saturated gas stream being passable into the flow opening by way of the inlet opening,

means for forming an ionizing zone in the flow opening generally near the inlet opening for charging particles and droplets in the water saturated gas stream to produce the gas stream containing the electrically charged particles and droplets, a portion of the gas stream containing electrically charged particles and droplets being passable through the flow opening and from the ionizing zone toward the first outlet opening and another portion of the gas stream containing the electrically charged particles and droplets being passable through the flow opening and from the ionizing zone toward the second outlet opening,

means for forming a first collection zone within the flow opening generally between the ionizing zone and the first outlet opening for attracting and de-entraining soot and soot containing water droplets in the gas stream containing electrically charged particles and droplets passing through the first collection zone to produce a first substantially soot free exhaust gas stream passable from the first collection zone through the first outlet opening, and

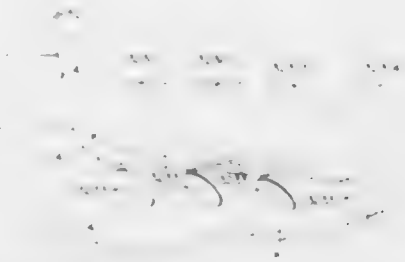
means for forming a second collection zone within the flow opening generally between the ionizing zone and the second outlet opening for attracting and de-entraining soot and soot containing water droplets in the gas stream containing electrically charged particles and droplets passing through the second collection zone to produce a second substantially soot free exhaust gas stream passable from the second collection zone through the second outlet opening

5,003,775

SELF-SUCTIONING PISTON ENGINES

Hans K. Leistritz, Am Schroffen 8, D-7596 Seebach, Fed. Rep. of Germany

Filed Mar. 20, 1989, Ser. No. 325,993
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1988, 3905405
Int. Cl.[5] F02B 27/02
U.S. Cl. 60—313 4 Claims



1 Apparatus for the discharge of waste gases in multicylinder piston engines, comprising

an exhaust path of a tubular line shape for maintaining separate the discharge of each of the individual cylinders of the multicylinder piston engine, each exhaust path including an outlet,

an exhaust nozzle with an end portion formed by one of the outlets and sloping walls diverging from said end portion to another end portion terminating in a conical narrowing portion and the remainder of said outlets being spaced along the longitudinal axis of said exhaust nozzle extending between said end portions, and and

a pipe interconnecting said conical narrowing portion, and a muffler

5,003,776

HYDRAULIC DRIVE SYSTEM

Takashi Kanai, Kashiwa; Masami Ochini, Chiyoda; Morio Oshina, and Mitsuo Sonoda, both of Shimoinayoshi, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 127,275, Dec. 1, 1987, abandoned. This application Jul. 12, 1989, Ser. No. 378,493
Claims priority, application Japan, Dec. 1, 1986, 61-284378; Dec. 1, 1986, 61-284379
Int. Cl.[5] F16H 39/46
U.S. Cl. 60—434 14 Claims

1 A hydraulic drive system for a vehicle having hydraulically powered wheels and a hydraulically powered work means, said hydraulic drive system comprising

(a) an engine,

(b) a first hydraulic pump for running the wheels, said first hydraulic pump being provided with a displacement varying mechanism,

(c) a second hydraulic pump for running the work means, said second hydraulic pump being operatively connected to said engine,

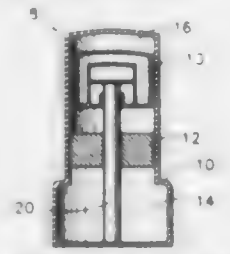
(d) a hydraulic motor operatively connected to said first hydraulic pump,
(e) a hydraulic actuator for actuating said displacement varying mechanism;
(f) an accelerator lever which is under the control of the operator of said hydraulic drive system and which is operatively connected to said engine so that the operator can set a target revolution number for said engine;
(g) a third hydraulic pump for feeding hydraulic fluid to said hydraulic actuator, said third hydraulic pump being operatively connected to said engine,
(h) a hydraulic fluid feeding means operatively connected between said third hydraulic pump and said hydraulic actuator so that a pressure increased responsive to an increase in the degree of operation of said accelerator lever can be transmitted together with hydraulic fluid to said hydraulic actuator,
(i) a low-pressure circuit operatively connected to said hydraulic actuator and to said hydraulic fluid feeding means and adapted to allow the hydraulic fluid from said third hydraulic pump to be discharged therethrough,



(j) a maximum pressure limiting means for bypassing the hydraulic fluid from said hydraulic fluid feeding means to said low-pressure circuit at a pressure value less than the maximum pressure value that said hydraulic fluid feeding means can output to said hydraulic actuator, whereby the maximum value of pressure to be fed to said hydraulic actuator can be limited, and
(k) actuating means under the control of the operator of said hydraulic drive system for selectively actuating said maximum pressure limiting means,
(l) whereby, when actuation of said maximum pressure limiting means is selected by said actuating means and the revolution number of each of said first and second hydraulic pumps is increased based on an increase in the revolution number of said engine by an operation of said accelerator lever, the delivery rate of said second hydraulic pump increases responsive to the increase in the revolution number of said engine, but the delivery rate of said first hydraulic pump is limited to a value less than the maximum pressure value that would otherwise be outputted responsive to a value set by said maximum pressure limiting means.

5,003,777
ASYMMETRIC GAS SPRING
David M. Berchowitz, Athens, Ohio, assignor to Sunpower, Inc., Athens, Ohio
Filed Jun. 25, 1990, Ser. No. 544,196
Int. Cl.' F02G 1/045
U.S. Cl. 60—520 10 Claims

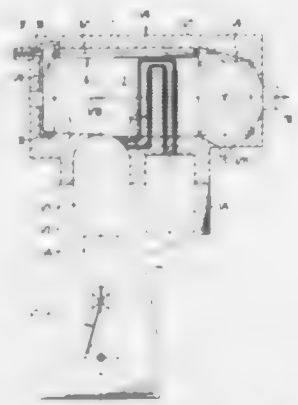
2 In a free piston Stirling machine in which a displacer piston is slidably mounted in a cylinder formed in a housing and a gas spring applies a force to the displacer piston, an improved gas spring comprising a gas spring cylinder wall formed in a gas spring housing, a gas spring piston which is slidably mounted within the gas spring cylinder wall, and having at least one bleed hole formed in the gas spring cylinder wall at the center of the path of reciprocation of the gas spring piston which allows communication between the gas spring cylinder and a gas reservoir, and divides the gas spring cylin-



der wall into a pair of unequal volume gas spring chambers, a relatively smaller chamber and a relatively larger chamber, the gas spring applying a force on the displacer piston which is a function of one spring constant when the gas spring piston is in the larger chamber, a force on the displacer piston which is a function of a higher spring constant when the gas spring piston is in the smaller chamber and no force on the displacer piston while the gas spring piston crosses the bleed hole

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5,003,778
STIRLING ENGINE
Anton Erber, Mühlhausen; Heinz Hoff, Königsbrunn; Günter Reuchlein, Augsburg; Hanno Schaaf, Friedberg, and Gerhard Schiessl, Augsburg, all of Fed. Rep. of Germany, assignors to Man Technologie Aktiengesellschaft, Munich, Fed. Rep. of Germany
Division of Ser. No. 269,639, Nov. 10, 1988, Pat. No. 4,953,354. This application Mar. 8, 1990, Ser. No. 490,739
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1987, 3709926; Feb. 26, 1988, 3806114
Int. Cl.' F02G 1/055
U.S. Cl. 60—517 20 Claims

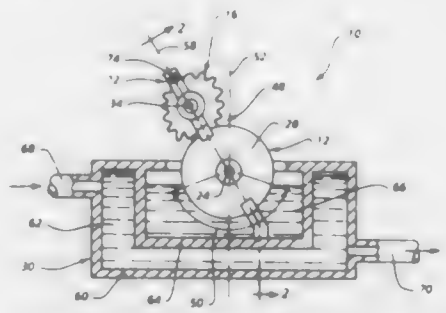


1 The combination of a Stirling cycle engine having a power unit (1/1) including an engine housing (1/2) and a cylinder (1/3)
with
a heater system (1/6) arranged for ducting combustion air, said heater system comprising
a heater system housing (1/7) coupled to said engine housing (1/2),
a thermally insulating lining (8) inside at least part of said heater system housing;
a heater (1/6) located in said heater system housing (1/7),
a burner (1/8),

a combustion air preheater (1/9) through which combustion air (1/11) for said burner passes and through which, further, combustion gases (1/10) from said burner pass for preheating the combustion air, and
a combustion air ducting means (6/1) connected between said preheater (1/9) and the burner (1/8), and
wherein said combustion air ducting means includes
a plurality of tubes or pipes (6/1) located in at least one layer adjacent each other to form a wall structure interiorily of said heater system housing

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5,003,779
GEOTHERMAL ENERGY CONVERSION SYSTEM
David Goldstein, Adelphi, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Continuation-in-part of Ser. No. 444,350, Dec. 1, 1989, Pat. No. 4,938,026. This application Jun. 18, 1990, Ser. No. 539,942
The portion of the term of this patent subsequent to Feb. 3, 2007, has been disclaimed.
Int. Cl.' F03G 7/06
U.S. Cl. 60—527 16 Claims

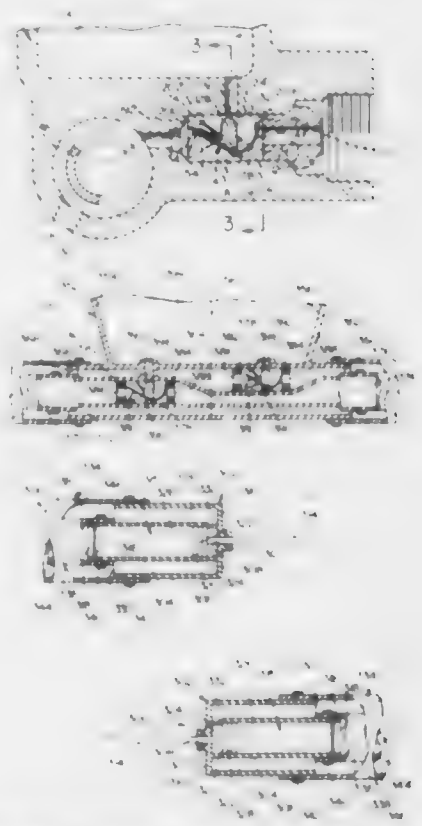


1 In combination with a source of heat energy, means for converting the heat energy into electrical energy including a pair of gears and frame means mounting said gears for rotation in operatively orientated relation to said source, one of said gears comprising a tubular element rotatably mounted by the frame means for exposure to the source of heat energy within a thermal heating region, said tubular element including deformable means in meshing engagement with the other of the gears within a thermally colder region for inducing rotation of the gears

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5,003,780
FLUIDIC VALVE MECHANISM
Ronald L. Shelhause, 519 Bennert, Vandalia, Ohio 45377
Filed Dec. 28, 1989, Ser. No. 458,315
Int. Cl.' B60T 11/26, F15B 7/08
U.S. Cl. 60—585 17 Claims

1 A fluid flow sensitive valve assembly comprising
a housing having a valve mechanism received in a valve chamber formed in said housing, said valve chamber having a cylindrical side wall and axially spaced end walls and first and second ports respectively opening through said end walls and a third port opening through a valve seat formed in said cylindrical side wall at a point axially intermediate said end walls,
said valve mechanism including a valve member located partially within said valve seat and movable relative thereto into seated and unseated positions to respectively close and open said third port,
valve member positioning means pivotally mounted on said valve member and movable with said valve member as said valve member moves between its seated and unseated positions relative to said valve seat,
said valve member and said valve member positioning means having valve mechanism position location points thereon engagable with said valve chamber side wall and one of said valve chamber end walls for locating said valve mechanism in said valve chamber so that said valve member is unseated from said valve seat when there is no fluid flow through said valve chamber and also when there is fluid flow from said second port to said first port through said valve chamber, and said valve member is seated on said valve seat to close said valve seat and said third port when there is fluid flow from said first port to said second port through said valve chamber,
and fluid flow-impinging surfaces on said valve mechanism acting when fluid flow impinges thereon from said first port to said second port to move said valve mechanism from the valve member unseated position to the valve member seated position relative to said valve seat and acting when fluid flow impinges thereon as fluid flows toward said first port in said valve chamber from at least one of said second and third ports to move said valve mechanism from the valve member seated position to the valve member unseated position relative to said valve seat



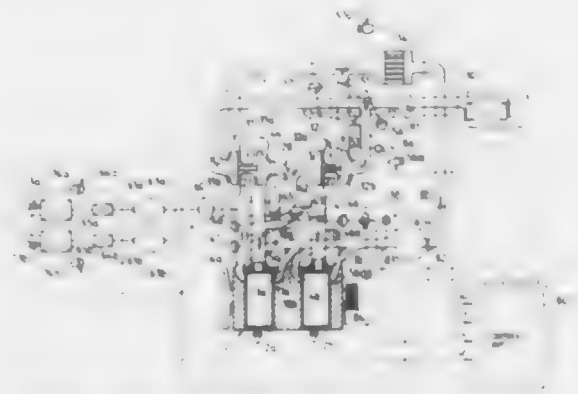
6 A fluid flow sensitive valve mechanism positioned in a valve chamber between first and second inlet-outlet ports opening into said valve chamber, said valve mechanism having a valve member controlling the opening and closing of a third inlet-outlet port opening into said valve chamber by being moved from a third port-opened position to a third port-closed position in response to the flow of fluid into the valve chamber from said first port which impinges on first surface means of said valve mechanism and being moved from the third port-closed position to the third port-opened position in response to the flow of fluid into the valve chamber toward said first port which impinges on second surface means of said valve mechanism, said valve mechanism further having valve mechanism positioning means engagable with at least one wall of said valve chamber while fluid flow is passing through said valve chamber to position said valve member relative to said third port and to position said first and second surface means of said valve mechanism for fluid flow impingement thereon.

5,003,781

AIR SUPPLY AND EXHAUST CONTROL SYSTEMS FOR TURBOCHARGED INTERNAL COMBUSTION ENGINES

Masanori Shibata, Hiroshima; Haruo Okimoto, Aki; Toshimichi Akagi, Hiroshima, and Seiji Tashima, Aki, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed May 18, 1989, Ser. No. 353,752
Claims priority, application Japan, May 23, 1988, 63-125418
Int. Cl.[5] F02B 37/12
U.S. Cl. 60—600 17 Claims



1 An air supply and exhaust control system for an internal combustion engine comprising

a plurality of superchargers including at least first and second turbosuperchargers having respective turbines disposed in portions of an exhaust passage connected with the engine in parallel with each other and respective blowers disposed in an intake passage connected with the engine,

operation prohibiting means including an exhaust cutoff valve provided in the portion of the exhaust passage wherein the turbine of said second turbosupercharger is disposed for closing the portion of the exhaust passage so as to prohibit the second turbosupercharger from working as occasion demands,

exhaust gas flow determining means for generating an output signal corresponding to an exhaust gas flow amount in the exhaust passage,

air supply control means for controlling said operation prohibiting means to prohibit said second turbosupercharger from working when the detection output obtained from said exhaust gas flow detecting means indicates that the exhaust gas flow is less than a first predetermined value,

exhaust gas discharging means connected to a portion of the exhaust passage downstream of the turbine of said first turbosupercharger having a variable exhaust resistance for discharging the exhaust gas from the exhaust passage,

exhaust resistance changing means for changing the variable exhaust resistance of said exhaust gas discharging means, and

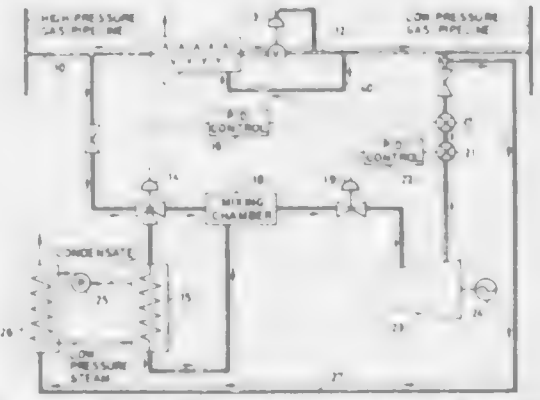
exhaust control means for controlling said exhaust resistance changing means to set the variable exhaust resistance of said exhaust gas discharging means to be relatively large when the detection output obtained from said exhaust gas flow detecting means indicates that the exhaust gas flow is less than a second predetermined value which is smaller than said first predetermined value and to be relatively small when the detection output obtained from said exhaust gas flow detecting means indicates that the exhaust gas flow is equal to or more than the second predetermined value

5,003,782

GAS EXPANDER BASED POWER PLANT SYSTEM

Zoran Kucerija, 46 Butternut Dr., Pittsford, N.Y. 14534

Filed Jul. 6, 1990, Ser. No. 549,090
Int. Cl.[5] F01K 25/10
U.S. Cl. 60—648 3 Claims



1 A method for generating electricity where gas pressure from a high pressure gas transmission line is reduced with a gas expander system capable of operating with fluctuating high pressure gas conditions and maintaining required outlet gas conditions for delivery to a lower pressure gas distribution line, which comprises the steps of supplying a portion of the lower pressure gas to the combustion apparatus of a steam generator, heating feedwater in said steam generator and producing a low pressure steam, condensing the steam in a heat exchanger using the heat of condensation of the steam to heat a portion of high pressure gas in a heat exchanger, mixing the heated high pressure gas with unheated high pressure gas in proportion to controlled variable requirements, reducing the pressure of the combined high pressure gas by passing the gas through a gas expander which produces useful shaft power for driving an electrical generator or for mechanical drive applications

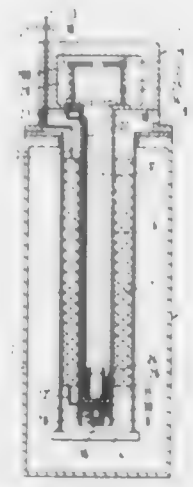
5,003,783

JOULE-THOMSON COOLER

Serge Reale, Grenoble, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Mar. 15, 1990, Ser. No. 493,706
Claims priority, application France, Mar. 15, 1989, 89 03383
Int. Cl.[5] F25B 19/02
U.S. Cl. 62—51.2 16 Claims

1 A Joule-Thomson cooler comprising, in a tubular housing having a first end and a second end, said second end defining a cold chamber, a high pressure working gas conduit having, adjacent said first end, one end connectable to a source of high pressure working gas, and which communicates, adjacent said second end, with an expansion orifice formed in a seat of a closing valve and opening in a low pressure working gas return circuit in heat exchange relationship with the high pressure working gas conduit, a closure member adapted for cooperation with the expansion orifice for reducing the section of passage of the working gas, and actuating means for suddenly shifting the closure member from a first position, in which said expansion orifice is uncovered, to a second position in which said expansion orifice is at least partially covered by said closure member, the actuating means comprising, adjacent said second end, a first capacity means having a first volume and in thermal exchange relationship with the low pressure return circuit and, adjacent said first end, a second capacity means having at least one movable wall portion and having a second volume much greater than the first volume, said first and second capacity mans being in fluid communication with each other and being filled with an auxiliary gas, said movable wall



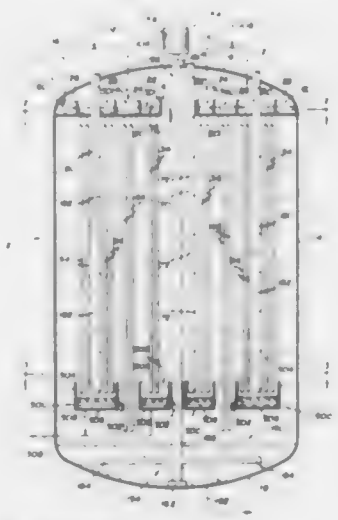
portion being coupled to said closure member for actuating said closure member

5,003,784

APPARATUS AND METHOD OF PRODUCING AN ICE SLURRY AT THE TRIPLE POINT OF A SOLUTION

Gerald E. Engdahl, Wheaton, Ill., and Tushar K. Shah, Houston, Tex., assignors to Chicago Bridge & Iron Technical Services Company, Oak Brook, Ill.

Filed Mar. 21, 1990, Ser. No. 496,940
Int. Cl.[5] B01D 9/04, C02F 1/22
U.S. Cl. 62—124 25 Claims



1 Apparatus comprising

an enclosed vessel in which an ice slurry can be produced at the triple point of an aqueous solution,

a series of spaced apart aqueous liquid cooling surfaces in the vessel,

a series of spaced apart aqueous liquid contact surfaces arranged in substantially alternating arrangement between the cooling surfaces,

inlet means to feed an aqueous feed liquid into the vessel and to the feed liquid contact surfaces,

inlet means to feed a cold liquid coolant into the vessel to cool the cooling surfaces, and

outlet means to remove an ice slurry from the vessel

5,003,785

AIR-CONDITIONING SYSTEM FOR A VEHICLE

Horst Petri, Weissach-Flacht, and Michael Mönig, Hemmingen, both of Fed. Rep. of Germany, assignors to Dr. Ing h.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 22, 1989, Ser. No. 454,859
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1988, 3843898
Int. Cl.[5] F25B 49/00, B60H 1/32
U.S. Cl. 62—131 10 Claims



1 An air-conditioning system for a vehicle having closable vehicle body openings, a passenger compartment of the vehicle being heatable by an air flow of a controllable temperature supplied by the air-conditioning system, the air-conditioning system comprising

interior temperature control means for controlling the temperature of the air flow in an interior temperature control mode as a function of a deviation of an interior temperature of the passenger compartment of the vehicle determined by an interior temperature sensor from a given desired temperature,

blow-out temperature control means for controlling the temperature of the air flow in a blow-out temperature control mode as a function of a deviation of a blow-out temperature of air provided by the air-conditioning system and a desired temperature, and

switching means for detecting a condition of an opened vehicle body opening and for switching the air-conditioning system from the interior temperature control mode to blow-out temperature control mode wherein the temperature of the air flow is controlled as a function of a deviation of a blow-out temperature of air provided by the air-conditioning system and a desired temperature

5,003,786

REFRIGERATING APPARATUS

Kanji Fudono; Hiroshi Ogawa; Toshimasa Takahashi, and Toshio Yamashita, all of Aichi, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 9, 1990, Ser. No. 477,764
Claims priority, application Japan, Apr. 7, 1989, 1-40521[U]
Int. Cl.[5] F25B 49/02, F25D 21/06
U.S. Cl. 62—156 1 Claim

1 Refrigerating apparatus comprising

a refrigerant circuit including a compressor, a condenser, a throttle and an evaporator operatively connected to one another in series so as to sequentially receive refrigerant flowing through the circuit in the apparatus,

a compartment to which said refrigerant circuit is operatively connected,

evaporator fan means operatively associated with said evaporator for circulating air through said compartment and past said evaporator so as to effect a cooling operation in which the air in the compartment is cooled in the apparatus,

electric heater means, including an electric heater, operatively associated with said evaporator for facilitating a

heating operation in which air in the compartment is heated in the apparatus and for heating any frost adhered to said evaporator to effect a defrosting operation in the apparatus;

an overheating preventing temperature detector for detecting the temperature of air in the vicinity of said electric heater;

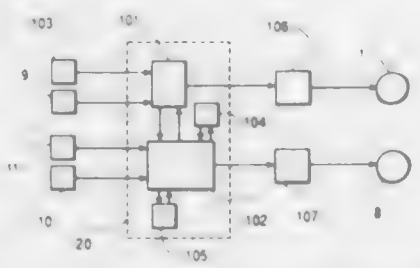
an evaporator outlet refrigerant detector for detecting the temperature of the refrigerant at the outlet of said evaporator; and

a controller for effecting refrigerating cycles in the apparatus which include respective ones of the cooling, the heating and the defrosting operations,

said controller including first timer means for counting time starting from when the controller has commenced operation and for counting time starting from when a said defrosting operation has been completed,

second timer means for counting time starting from when a said defrosting operation is initiated, and

defrost control means operatively connected to said electric heater means, to said evaporator outlet refrigerant detector and to said first timer means for turning said electric



heater on to initiate a said defrost operation once said first timer means has counted a predetermined period of time T_1 if the temperature detected by said evaporator outlet refrigerant detector is less than a predetermined temperature STE1, for turning said electric heater off to terminate a said defrost operation when said second timer means has counted a predetermined period of time T_2, and for turning said electric heater off to terminate a said defrost operation if the temperature detected by said evaporator outlet refrigerant detector is greater than a predetermined temperature STE2,

said defrost control means also operatively connected to said overheating preventing temperature detector for turning said electric heater on to initiate a said defrost operation once said first timer means has counted said predetermined period of time T_1 and if the temperature detected by said overheating preventing temperature detector is less than a predetermined temperature STHK1, and for turning said electric heater off to terminate a said defrost operation if the temperature detected by said overheating preventing temperature detector is greater than a predetermined temperature STHK2.

5,003,787

CELL PRESERVATION SYSTEM

Yury Zlobinsky, Massapequa, N.Y., assignor to Savant Instruments, Farmingdale, N.Y.

Filed Jan. 18, 1990, Ser. No. 466,853
Int. Cl.[5] F25D *17/02*
U.S. Cl. 62—185 11 Claims

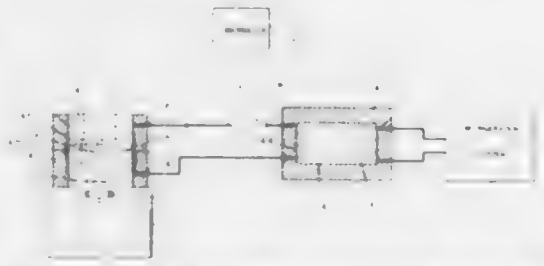
1 A system for cooling a specimen comprising

a specimen vessel in which the specimen to be cooled is received;

a sealed coolant reservoir;

a coolant in said specimen vessel and said coolant filling said reservoir, said specimen vessel having an open top whereby the coolant therein is exposed to ambient environment,

means for circulating a flow of said coolant between said specimen vessel and said coolant reservoir whereby an inflow of coolant from said specimen vessel to said coolant reservoir at a first reservoir location causes an outflow of coolant from a second reservoir location as a return flow to said specimen vessel,



means for cooling said coolant in said coolant reservoir, and

means for controlling said means for circulating to attain a predetermined rate of cooling of said specimen in said specimen vessel

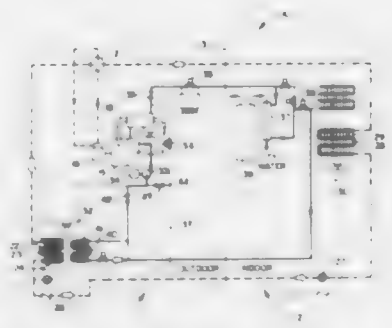
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5,003,788

GAS ENGINE DRIVEN HEAT PUMP SYSTEM

Robert D. Fischer, Columbus, Ohio, assignor to Gas Research Institute, Chicago, Ill.

Filed Sep. 5, 1989, Ser. No. 402,660
Int. Cl.[5] F25B *27/00*
U.S. Cl. 62—238.7 6 Claims



1 A heat pump system selectively operable in cooling or heating modes of operation by reversing a refrigeration vapor compression system by means of reversing valves and having an internal combustion engine prime mover to drive the compressor, and which produces excess heat for rejection, in combination

(a) first heat exchanger means in heat exchange relation with an ambient atmosphere and functioning as a refrigerant vapor condenser in the system cooling mode of operation and as a refrigerant evaporator in the system heating mode of operation,

(b) a second heat exchanger means receiving engine prime mover reject heat and transferring said reject heat to a working fluid,

(c) a third heat exchanger receiving flow of said working fluid and in heat exchange relation with said ambient atmosphere as a radiator of said rejected heat in the cooling mode, and

(d) a working fluid distribution means selectively operable to flow said heated working fluid in heat transfer relation through said first heat exchanger means,

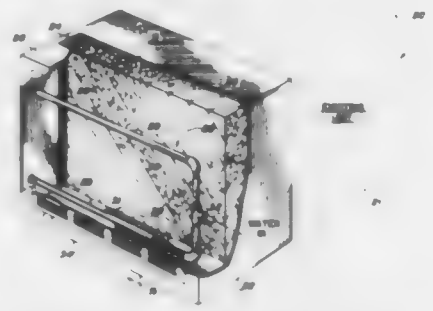
said fluid distribution means flowing said heated working fluid in heat transfer relation to said first heat exchanger means, when the heat pump system is selectively operating in the heating mode of operation and discontinuing said flowing of working fluid to said third exchanger in the heating mode of operation

5,003,789

MIST AIR CONDITIONER FOR EVAPORATIVE COOLER

Manuel Gaona, 6509 S. 28th St., and Stephen M. Gaona, 6509 S. 28th St., both of Phoenix, Ariz. 85040

Filed Mar. 1, 1990, Ser. No. 487,154
Int. Cl.[5] F28D *5/00*
U.S. Cl. 62—304 13 Claims



1 A precooler for air flowing through an ambient air inlet of an associated evaporative cooler comprising

an evaporative cooler pad formed of a fibrous material,

a manifold mounted adjacent to and parallel with an air inlet side of said pad,

said manifold being connected to a source of water under pressure,

at least one nozzle means in said manifold positioned for directing a spray of water in the form of a mist across the inlet side of said pad,

whereby the spray of water across said inlet side of said pad precools the air entering into the inlet of an evaporative cooler when said precooler is juxta-positioned thereto

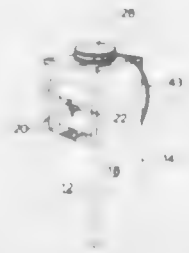
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5,003,790

ADAPTOR TO CONVERT A BOTTLE FED WATER COOLER INTO A DEVICE SUPPLIED WITH PRESSURIZED WATER FROM THE LOCAL PIPING SYSTEM

Robert Goupil, 706 Boulevard Pie XII, Ste-Foy, Quebec, G1X 3S2, Canada

Filed Aug. 16, 1989, Ser. No. 394,485
Int. Cl.[5] B67D *5/62*
U.S. Cl. 62—389 10 Claims



1 An adaptor for converting a water cooler supplied with water from a bottle having a neck, into a water cooler supplied with pressurized water from a local piping system, said cooler supplied with water from a bottle being of the commercially available type including an annular seat defining an opening for receiving the neck of the bottle placed in inverted position on said seat, and a cooled reservoir having an upper, open end through which the neck of the bottle extends to supply water into said reservoir, said adaptor comprising

an annular body;

means for mounting said body on the annular seat of the cooler; and

valve means mounted on the annular body and connected to the local piping system for supplying water into the cooled reservoir, said valve means comprising means for controlling a supply of water into and a level of water in said reservoir, whereby sealing of the cooled reservoir for converting the cooler from a bottle supply mode of operation to a piping system supply mode of operation, is unnecessary

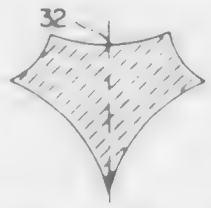
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5,003,791

PRINCIPLES AND APPLIANCES FOR THE CUTTING OF SPHERICAL-FACETED GEMS AND GEMS THUS OBTAINED

Giovanni Colliva, Rua Tenente Azevedo, 104 - São Paulo, Brazil

Division of Ser. No. 829,460, Feb. 12, 1986, Pat. No. 4,686,795, which is a continuation of Ser. No. 527,091, Aug. 29, 1983, abandoned. This application Jun. 9, 1987, Ser. No. 60,015
Claims priority, application Italy, Sep. 16, 1982, 41011 A/82; Aug. 3, 1983, 22408 A/83
Int. Cl.[5] A44C *17/00*
U.S. Cl. 63—32 2 Claims



1 A gemstone having a girdle and a single table facet, a plurality of break facets between the table and the girdle and a plurality of pavilion facets on the side of the girdle opposite the table, the pavilion facets converging toward a culet, all of said pavilion facets being spherically concave

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5,003,792

SHAPED SECTION FOR THE GUIDANCE AND SEALING OF A MOVABLE WINDOW, IN PARTICULAR OF A MOTOR VEHICLE DOOR, AND ITS METHOD OF MANUFACTURE

Francois Mesnel, 6bis, rue Saligmac Fenelon, 92200 Neuilly S/Seine, and Gerard Mesnel, 16, rue Victor Hugo, 78420 Carrieres S/Seine, both of France

Filed Nov. 8, 1989, Ser. No. 433,002
Claims priority, application France, Nov. 8, 1988, 88 14566
Int. Cl.[5] E06B *7/16*
U.S. Cl. 49—479 6 Claims

1 A shaped section for guiding and sealing a movable window, comprising

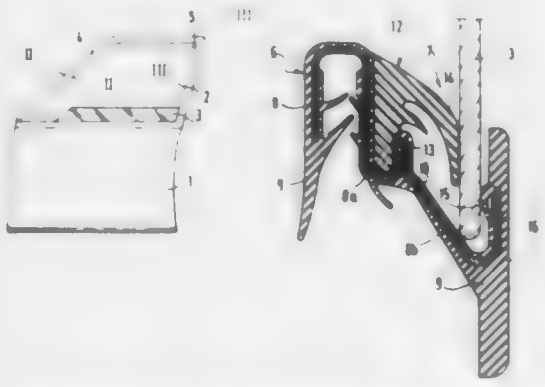
clamping means for fastening said shaped section to a shaped portion of a frame of the movable window,

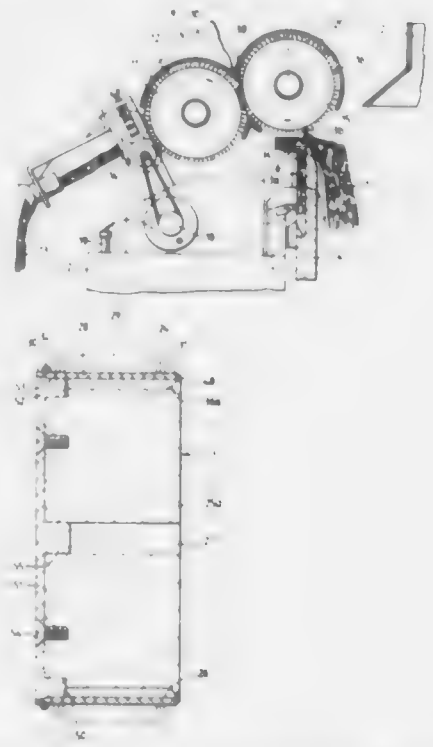
a substantially U-shaped section adapted to receive the movable window, said U-shaped section being adjacent said clamping means,

a base of said U-shaped section including a resilient flexible hinge, said base having a main substantially linear part and a corner portion, and

said corner portion of the base adjacent said flexible hinge

and one the side of said flexible hinge furthest from said clamping means being elongated relative to the main substantially linear part of said base to follow the shape of at least one corner of said frame





5,003,794

METHOD AND MEANS FOR LAUNDERING CONTAMINATED CLOTHING

Steven C. Griffis, 2929 Avenue D, Council Bluffs, Iowa 51501

Filed Mar. 6, 1990, Ser. No. 489,221
Int. Cl.[5] B08B 15/00, D06F 35/00
U.S. Cl. 68—3 R 1 Claim



1. A contaminated clothing laundering facility, comprising,

an enclosure defining a washer side and a dryer side,

said washer side and said dryer side further defining a wash room and a dry room respectively,

a clean room in communication with said washer side and said dryer side and having a first selectively vented exit door which communicates with the area outside of said enclosure, said clean room also having spaced apart second and third flap doors for permitting air to flow outwardly from said clean room,

a shower room on said washer side in communication with said clean room via said first flap door and having a flap door provided therein which permits air to flow outwardly from said shower room,

a first dirty room on said washer side and having a first selectively vented door in communication with said wash room, and a second selectively vented door in communication with said dryer side, said first dirty room being in communication with said shower room via said flap door in said shower room,

a dirty laundry bags room in said washer side and having a first selectively vented exit door provided therein which communicates with the area outside of said enclosure, said dirty laundry bags room also having a flap door provided therein for permitting air to flow outwardly therefrom,

a dirty laundry room adjacent said dirty laundry bags room in communication therewith via said flap door of said dirty laundry bags room, said dirty laundry room also having a selectively vented door provided therein which communicates with said wash room,

a clothes washer in said wash room,

a dirty water disposal means associated with said washer,

an air filtering machine in said wash room for creating a negative pressure within said wash side so that air will be drawn into said wash side through said vented exit doors of said clean room and said dirty laundry bags room,

a clean clothes room on said dryer side in communication with said clean room via said second flap door in said clean clothes room, said clean clothes room having a first flap door provided therein for permitting the flow of air outwardly therefrom,

a second dirty room adjacent said clean clothes room and being in communication therewith via said second flap door of said clean clothes room, said dirty room also being in communication with said first dirty room on said washer side via said second vented door in said first dirty room on said washer side, said second dirty room having a selectively vented door provided therein which communicates with said dry room,

an out room in said dryer side and having a selectively vented exit door provided therein which communicates with the area outside of said enclosure, said out room also having a flap door provided therein for permitting the flow of air outwardly therethrough,

a clean laundry room adjacent said out room and being in communication therewith via said flap door of said out room, said clean laundry room also having a selectively vented door formed therein which communicates with said dry room,

a clothes dryer in said dry area,

a pass-through opening between said dry room and said wash room whereby washed laundry may be passed from said wash room into said dry room for drying, said pass-through opening also providing a means by which air will flow from said dry room into said wash room thereby preventing the airborne movement of contaminants from said wash room into said dry room

5,003,793

CARD WHEEL FOR A KNITTING MACHINE FOR MAKING KNIT GOODS WITH COMBED-IN FIBERS

Eberhard Leins, Filderstadt, and Klaus Kunde, Kohlberg, both of Fed. Rep. of Germany, assignors to Terrot Strickmaschinen GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 4, 1988, Ser. No. 253,073
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1987, 3733594; Jan. 15, 1988, 3801031
Int. Cl.[5] D04B 9/14
U.S. Cl. 66—9 B 13 Claims

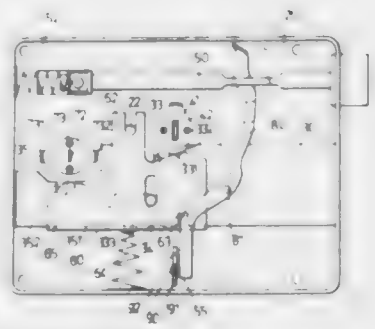
1. Card wheel for a knitting machine for producing knit goods with combed-in fibers, comprising a wheel body with a cylindrical circumferential surface; a flexible card clothing placed on said surface, said clothing consisting of a cloth band and of hooks incorporated into the band, and having on at least one lateral end a holding section free of hooks and running around the entire circumferential surface; and a clamping means surrounding said wheel body and said holding section, said clamping means being placed onto and clamping the holding section with a pressure against the circumferential surface sufficient to prevent only by means of said pressure, slippage of the cloth band and distortions thereof on said surface during operation of the card wheel

5,003,796

MULTI-BOLT DOOR LOCK

Wilson Tom, No. 229, Pei-Tou Rd., Tsao-Tun Chen, Nan-Tu Hsien, Taiwan

Filed Aug. 1, 1989, Ser. No. 388,620
Int. Cl.[5] E05B 59/00
U.S. Cl. 70—107 7 Claims



1 A door lock comprising

a housing,

a first bolt member mounted movably to said housing and biased to a latching position,

means for operating said first bolt member externally,

an elongated second bolt member lying in said housing and mounted movably below said first bolt member, said second bolt member having a forward latching end, an opposite rear end and a longitudinal upper end with a first notched face near said forward latching end;

a pair of first actuating plates provided adjacent said first notched face and turnable about a horizontal axis to push said notched face so that said second bolt member is moved to a latching position or an unlatching position,

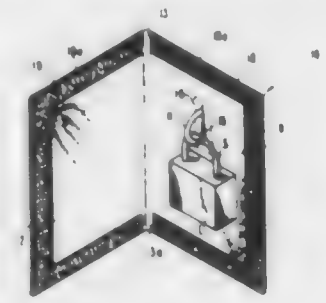
a locking plate cooperatively associated with said second bolt member and biased to move upward to a position in which said locking plate locks said second bolt member against movement, said locking plate releasing said second bolt when member depressed downward;

a second sheet portion having a second inner edge and a second perimeter,

a hinge portion connecting the first and second sheet portions at said first and second inner edges,

said first sheet portion defining a slot, said slot being sized to receive the hasp therethrough in close fit relation, and

means for releasably sealing said first sheet portion to said second sheet portion substantially along the entire length



of said first and second perimeters when said first and second perimeters overlap

wherein said second sheet portion is adapted to fold over onto said first sheet portion along said hinge portion to overlap said first and second perimeters and to define an envelope therebetween to substantially completely enclose the lock and its shackle when the shackle is attached to the hasp and when the hasp is inserted through said slot

5,003,795

LOCK PROTECTOR

A. Chyril Hoke, 207 E. Main, P.O. Box 212, Bainbridge, Ind. 46105

Filed Sep. 1, 1989, Ser. No. 402,493
Int. Cl.[5] E05B 67/38
U.S. Cl. 70—55 18 Claims

1. A lock protector for protecting a lock having a shackle attached to a hasp comprising

a first sheet portion having a first inner edge and a first perimeter,

said second bolt member further including a second notched face in said upper end near said rear end of said second bolt member,

a second actuating plate provided adjacent to said second notched face to push said second notched face so as to move said second bolt member,

a lever pivoted to said second bolt member and having a first end extending upward to engage with said first bolt member and a second end extending downward, and

a third actuating member disposed adjacent to said second end of said lever to actuate said second end so as to move said first bolt member to its unlatching position, thereby enabling the first bolt member to be operated from the outside of the door,

said second end of said lever moving away from said third actuating member when said second bolt member is moved to the latching position thereof, thereby preventing the first bolt member from moving to the unlatching position from the outside of the door

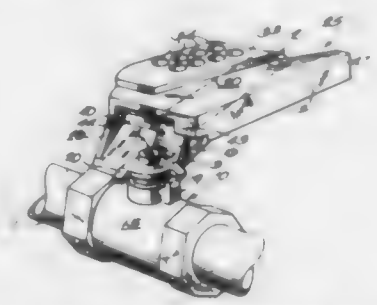
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5,003,797

LOCKOUT DEVICE FOR VALVES WITH LEVER HANDLES

Gary J. Wirth, Milwaukee, and George F. Jambor, Cedarburg, both of Wis., assignors to W. H. Brady Co., Milwaukee, Wis.

Filed Jul. 25, 1990, Ser. No. 557,872
Int. Cl.[5] F16K *35/10*
U.S. Cl. 70—180 **3 Claims**



1 A lockout device for use with a valve of the type having a valve body for connection to a pipeline and a lever handle rotatable between an open position and a closed position, the lever handle including (a) an inboard horizontal panel pivotally attached to the valve body, (b) an outboard horizontal panel, and (c) an inclined intermediate panel extending at an angle between the inboard and outboard panels, said lockout device comprising, in combination

(1) a leg member having upper and lower portions, with a bearing surface along the lower portion of the leg member adapted to bear against the valve body or a pipeline connected to the valve body,

(2) a channel member extending from the upper portion of the leg member at an angle to the bearing surface and including spaced top and bottom walls and at least one side wall defining a channel including an entrance for receiving the inclined intermediate panel of a lever valve handle;

(3) pivot block means at a corner of the entrance to the channel and about which the lockout device is rotatable relative to a lever valve handle extending through the channel, and

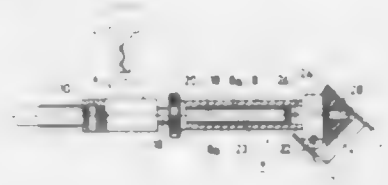
(4) aperture means extending through the top wall and bottom wall of the channel member for receiving a hasp of a lock in engagement with an edge of a lever valve handle extending through the channel.

5,003,798

VEHICLE LOCKING DEVICE

Anatoly Kofman, 8 Tamar Street, Neve Monosson, and Avraham Kavitsky, 78 Jabotinsky Street, Ramat Gan, both of Israel

Filed Feb. 14, 1990, Ser. No. 479,896
Claims priority, application Israel, Feb. 17, 1989, 89318
Int. Cl.[5] E05B *65/12*
U.S. Cl. 70—238 **6 Claims**



1 A vehicle locking device, comprising

a sleeve for removably enclosing one control member of the vehicle,

a pair of locking members relatively movable with respect to each other to a closed position around a second control member of the vehicle, or to an open position to permit removal thereof from said second control member

a lock for locking said locking members in their closed positions,

and a connecting assembly between said sleeve and pair of locking members preventing the sleeve from being removed from the first control member, and the locking members from being removed from the second control member, when the locking members are locked in their closed positions around said second control member,

said connecting assembly including

a block carried at the end thereof adjacent said sleeve to which one end of the sleeve is pivotally mounted about a pivot point laterally spaced from the longitudinal axis of the connecting assembly,

and a pin threadedly received within said end of the sleeve and engageable with said block for fixing the pivot angle of the sleeve with respect to said connecting assembly to permit the locking device to be preset to fit different vehicles

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5,003,799

DEVICE FOR LOCKING SHIFT LEVER OF AUTOMATIC TRANSMISSION

Hajime Imai; Shozo Kito, both of Nagoya; Shoichi Harada, Gifu; Yoshinobu Yokoyama, Inuyama; Syuzi Nakamura, Toyota; Shigetoshi Miyoshi, Toyota, and Tadao Muramatsu, Toyota, all of Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho and Toyota Jidosha Kabushiki Kaisha, both of, Japan

Filed Sep. 13, 1988, Ser. No. 243,759
Claims priority, application Japan, Sep. 14, 1987, 62-140648; Sep. 14, 1987, 62-140649; Oct. 1, 1987, 62-150888
Int. Cl.[5] E05B *65/12*
U.S. Cl. 70—247 **20 Claims**

1 A shift lever locking device for locking an automatic transmission lever which is capable of being selectively moved to and set in one of a plurality of shift positions including at least one non-driving position, said device comprising

a detect pin provided on said shift lever and designed to be moved in one direction in response to pressing of a button provided on said lever;

a detent plate capable of selectively latching said shift lever in cooperation with said detent pin and having a locking recess capable of receiving said detent pin when said detent pin is moved in the other direction after said shift lever is set in said non-driving position,

a movable member, independent of said shift lever and said detent pin and capable of engagement with said detent pin at least when said detent pin is being brought into engagement with said locking recess and movable between a lock position where it engages with said detent pin so as to prevent said detent pin from moving and an unlock position where it is disengageable from said detent pin to allow said detent pin to move, and



a lock member independent of said shift lever and said detent pin and movable between a first position where it prevents said movable member from moving from said lock position and a second position where it allows said movable member to move from said lock position to said unlock position and capable of being moved from said second position to said first position when a predetermined condition is met while said shift lever has been set in said non-driving position

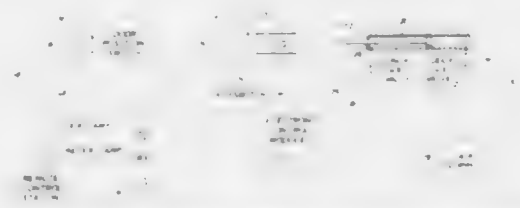
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5,003,800

DOOR LOCK CONTROL SYSTEM FEATURING A REMOTE CONTROL FOR A PNEUMATICALLY POWERED DOOR LOCK MECHANISM

Leszek Bublewicz, San Antonio, Tex., assignor to Phelps-Tointon, Inc., Greeley, Colo.

Filed Jul. 17, 1989, Ser. No. 380,865
Int. Cl.[5] E05B *53/00*
U.S. Cl. 70—264 **6 Claims**



1 A control system for remotely controlling a bolt in a door locking system from the unlock, slamlock, and deadlock positions while still allowing local operation of said bolt, the control system comprising

(a) a door and a door frame adapted for closing or opening by rotating on a hinge supporting said door,

(b) remote control means connected to said bolt for controlling operation of said bolt at a remote location relative to said door locking system, said bolt being controlled between said unlock, slamlock, and deadlock positions,

(c) local control means connected to said bolt for controlling operation of said bolt at a local location relative to said door and door frame, said bolt being movable in said door locking system,

(d) door position switch means connected to said door for determining movement of said door with respect to said door frame, said door position switch means generating a door closed signal when said door is closed and feeding said door closed signal to said remote control means,

(e) bolt position means adjacent to said bolt for determining movement of said bolt into said deadlock position and generating a bolt position signal responsive thereto

(f) powered means connected to said bolt and operated by said remote control means for retracting and extending said bolt, said powered means having

(i) said deadlock position of said bolt,

(ii) said slamlock position of said bolt, and

(iii) said unlock position of said bolt, and

(g) said powered means further comprising

(i) a double acting pneumatically powered piston rod in a cylinder,

(ii) a first solenoid valve delivering air to a first side of said piston rod, and

(iii) a second solenoid valve delivering air to a second side of said piston rod

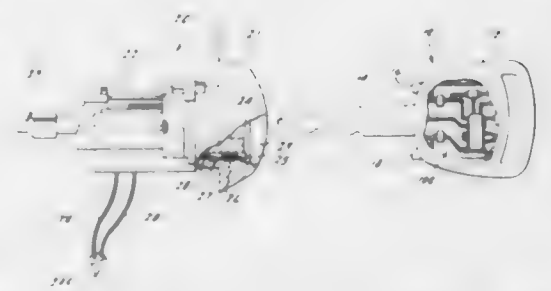
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5,003,801

PROGRAMMABLE KEY AND IMPROVED LOCK ASSEMBLY

Robert P. Stinar, Plymouth; George T. Calvas, Dearborn, and David A. McNamara, Saline, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 20, 1987, Ser. No. 5,070
Int. Cl.[5] E05B *47/00*
U.S. Cl. 70—278 **8 Claims**



1 An improved key for use in a security system which utilizes a tumbler movable lock which is unlocked by the insertions of a key shank cut to correspond to the unlocked tumbler configuration and contains at least one electrical lock terminal for making electrical contact with said key and for supplying electrical power to said key, wherein the improved key comprises

a handle portion connected to said shank and sized for manual gripping of the key

at least one electrical key terminal extending from said handle portion adjacent to and electrically isolated from said shank for making electrical contact with said electrical lock terminal,

means within said handle portion and connected to said at least one electrical key terminal for receiving said electrical power from said lock and providing a predetermined digital code signal to said electrical key terminal

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5,003,802

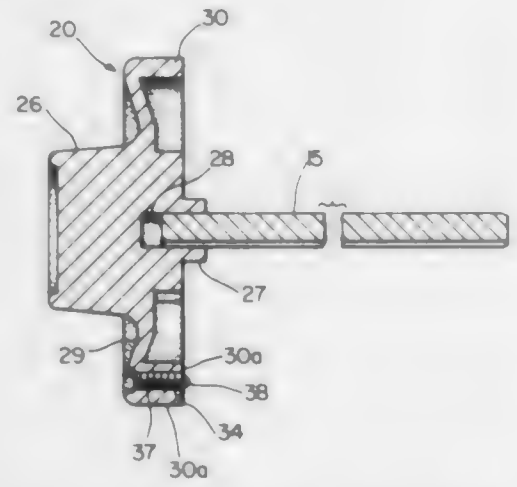
DIAL AND DIAL RING ASSEMBLY WITH DETENTING FEATURE

Scott M. Beatty, Nicholasville, and John R. Bishop, Lexington, both of Ky., assignors to Sargent & Greenleaf, Inc., Nicholasville, Ky.

Filed Nov. 30, 1989, Ser. No. 443,240
Int. Cl.[5] E05B *63/00*
U.S. Cl. 70—333 A **3 Claims**

1 A combination lock dial ring and rotatable dial assembly for combination locks and the like designed to provide limited range top reading of the dial indicia and graduations, compris-

ing a rotatable dial member having a circular dial formation and a knob formation integral therewith projecting centrally forwardly therefrom, the dial formation including an annular disc portion integrally joined to and extending radially outwardly from the radially outermost part of the knob formation, a peripheral flange formation integrally joining said disc portion at its outermost region integrally joining said disc portion at its outermost region having a cylindrical radially outwardly facing surface concentric with a center axis of the dial member, said outwardly facing surface carrying dial graduation marks and numeral indicia for a selected number of different angular dialing positions of the dial member, a dial ring member including a generally circular base wall portion having a fixed index mark and having near its outermost edge a forwardly projecting, generally cylindrical annular shield portion defining a forwardly opening cylindrical well to receive said dial formation nested therein, the shield portion having a circumferential interruption defining an opening for limited range view of the dial graduation marks, the base wall portion immediately radially inwardly of the cylindrical shield portion having an annular detenting land formation defining a ring-like forwardly facing detenting surface having circumferentially spaced detenting recesses in the forma of shallow radially elongated



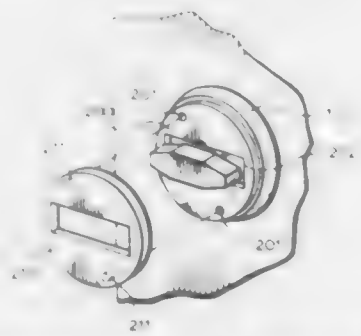
slot-like detenting cavities equalling in numbers said selected number of dialing positions, and said peripheral flange portion of said dial member having an axially elongated, rearwardly opening plunger-receiving bore having a center axis paralleling the axis of rotation of the dial member and housing a resiliently biased detenting plunger means, including a movable plunger having a protruding contact surface resiliently urged into said slot-like detenting recesses of said annular detenting land formation to resiliently urge the dial member to angular positions locating said graduation marks thereon in precise alignment with the fixed index mark on said dial ring, said plunger means including an elongated tubular casing threaded in said plunger-receiving bore for axial adjustment along the plunger-receiving bore upon rotation of said casing, the casing having said plunger supported therein for relative movement axially thereof and enclosing a coil spring captured therein bearing against said plunger, said plunger-receiving bore being a tapped opening, and said casing having a threaded exterior intercoupled with the threaded surface of said tapped opening and a forward end of the casing located within said plunger-receiving core and having a diametrical slot to receive a bit of a tool for rotating the casing for adjustment of the resilient detenting interacting forces between the plunger contact surface and the walls of the detenting cavities

5,003,803

BLOCKING DEVICE FOR LATCH MECHANISM

Robert M. Richards, 3223 Etude Drive, Malton, Ontario, Canada L4T 1S9, assignor to Robert M. Richards, Malton, Canada

Continuation-in-part of Ser. No. 152,231, Feb. 4, 1988, Pat. No. 4,869,086. This application Aug. 2, 1989, Ser. No. 388,405
Claims priority, application Canada, Oct. 19, 1987, 549662
The portion of the term of this patent subsequent to Sep. 26, 2007, has been disclaimed.
Int. Cl.[5] E05B *13/00*
U.S. Cl. 70—416 **15 Claims**



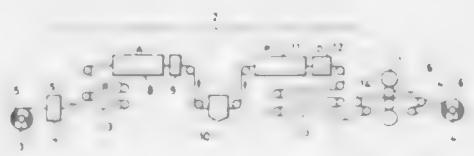
1 A repositionable latch blocking means for use with latchable means, the latchable means having operating means to operate the latchable means between locked and unlocked positions, the latch blocking means comprising at least a first surface, the latch blocking means having fastening means disposed thereupon to fasten the latch blocking means proximate the operating means of the latchable means, so as to position the at least first surface to block the operation of the operating means and thereby prevent the operation of the latchable means between locked and unlocked positions, whereby when the latch blocking means is repositioned, so as to position the at least first surface remote the operating means said repositioning allowing the operation of the latchable means, wherein the fastening means further comprises detent portions on the latch blocking means which engage detent portions on an intermediate member affixed to the latchable means, the detent portions for prevention of the movement of the latch blocking means in use

5,003,804

METHOD FOR PRE-PROCESSING STAINLESS STEEL STRIP INTENDED TO BE COLD-ROLLED

Kazuhito Kesamochi; Ikuo Yarita; Akihiko Fukuhara; Tomio Komatu, and Akira Kishida, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Dec. 19, 1989, Ser. No. 452,967
Claims priority, application Japan, Dec. 23, 1988, 63-323705
Int. Cl.[5] B21B *45/04, 27/10*
U.S. Cl. 72—39 **4 Claims**



1 A method of pre-processing a hot rolled stainless steel strip intended to be cold-processed, comprising the steps of

annealing and pickling the stainless steel strip after completing hot rolling,

conducting the strip between the surfaces of strip processing rolls,

applying to the surfaces of said rolls a liquid lubricant having a viscosity of 1–15 cst and having a thickness of 1 μm or less before said rolls come into contact with said stainless steel strip, and

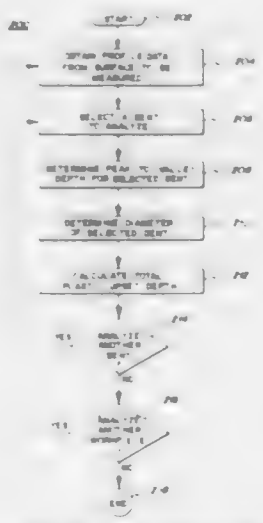
cold rolling said stainless steel strip in the presence of said lubricant at a reduction ration of 5–20%

5,003,805

METHOD AND SYSTEM FOR MONITORING SHOT PEENING

Robert A. Thompson, Quaker Street, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 2, 1990, Ser. No. 473,781
Int. Cl.[5] B24C *1/10*
U.S. Cl. 72—53 **18 Claims**



1 A method for monitoring a peening operation, a system user having predetermined a desired total plastic upset depth for dents in the surface to be peened, said method comprising the steps of

(a) obtaining profile data of a workpiece surface which has been peened, said profile data being obtained in a nondestructive and direct manner,

(b) selecting a dent to analyze,

(c) calculating an actual total plastic upset depth for the selected dent, and

(d) adjusting, if needed, the peening operation so that the actual total plastic upset depth of a subsequently formed dent will be more in conformance with the predetermined desired total plastic upset depth

5,003,806

APPARATUS FOR PRODUCING CURVILINEAR TUBES

Isao Nemoto, 11-24, Higashinarashino 6-chome, Narashino-shi, Chiba-ken, Japan

Filed Oct. 23, 1989, Ser. No. 425,120
Claims priority, application Japan, May 29, 1987, 62-82923[U]
Int. Cl.[5] B21C *25/08*
U.S. Cl. 72—260 **11 Claims**

1 An apparatus for producing curvilinear tubes, the apparatus comprising

(a) a die having an axially symmetric inner surface for passing tube material therethrough,

(b) a core member having an axially symmetrical outer surface and disposed in the die in a spaced relation to the inner surface of the die so that tube producing material passes between a gap defined by the inner surface of the die and the outer surface of the core member, and

(c) positioning means for positioning the die in offset relation to the core member in a plane perpendicular to an axis of the core member wherein the positioning means comprises motor means for displacing the die relative to the core member, and transformation means for transforming a rotational movement of an output shaft of said motor means to a linear movement of the die,

said transformation means including a speed reducing transmission mechanism connected to the output shaft, said transmission mechanism including a worm and a worm



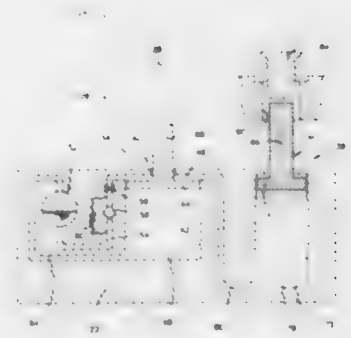
wheel, said worm having a generally cylindrical form tapered from both ends thereof to a central portion thereof, said worm wheel having a plurality of teeth, each of the teeth comprising a disk rotatably supported on said worm wheel and biased toward the worm by resilient means so as to eliminate backlash between said worm and said worm wheel

5,003,807

PRESS ASSEMBLY AND METHOD OF OPERATION

John Terrell, Moreland Hills; Paul M. Kadis, Chardon; Leonard L. Hiney, Ravenna, and Susan E. Pfaff, Seven Hills, all of Ohio, assignors to Teledyne Industries, Inc., Cleveland, Ohio

Filed Oct. 30, 1989, Ser. No. 429,200
Int. Cl.[5] B21D *24/08*
U.S. Cl. 72—351 **193 Claims**



1 A press assembly operable from an open condition to a closed condition to deform a workpiece, said press assembly comprising a first movable member for engaging a first side of the workpiece, a second movable member for engaging a second side of the workpiece, said first member being movable in a first direction toward said second member during operation of said press assembly from an open condition toward a closed condition, said first and second members being movable together in the first direction with at least a portion of the workpiece disposed between said first and second members during operation of said press assembly from the open condition toward the closed condition, a cushion assembly operable toward a retracted condition to provide a yieldable force opposing movement of said second member in the first direc-

tion during operation of said press assembly from the open condition toward the closed condition, and control means for initiating movement of said second member in the first direction prior to movement of said first and second members together in the first direction during operation of said press assembly from the open condition toward the closed condition, said control means including means for transmitting force from said first member to said cushion assembly to initiate operation of said cushion assembly toward the retracted condition prior to movement of said first and second members together in the first direction during operation of said press assembly from the open condition toward the closed condition, said means for transmitting force from said first member to said cushion assembly during operation of said press assembly from the open condition toward the closed condition being operable to transmit force from said cushion assembly to said first member during operation of said press assembly from the closed condition toward the open condition

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5,003,808

SYSTEM FOR TRANSFERRING WORKPIECES THROUGH A SERIES OF WORK STATIONS

John H. Maher, 6742 River Rd., Flushing, Mich. 48433

Continuation-in-part of Ser. No. 210,368, Jun. 23, 1988, Pat. No. 4,887,446. This application Jun. 15, 1989, Ser. No. 365,201

Int. Cl.[5] **B21J** *13/08*

U.S. Cl. 72—405 17 Claims



12 For use in conjunction with an article forming press which includes a ram having an upper die associated therewith adapted to be driven along a path of travel in the Z-axis and engagable with a lower die supported by a bolster for forming a workpiece inserted therebetween, a transfer system for transferring workpieces between work stations aligned linearly along and at a central X-axis perpendicular to the Z-axis, to perform a predetermined sequence of operations on the workpieces, said system comprising:

a transfer rail extending longitudinally in spaced and parallel relation to the X-axis and having a finger operator rail mounted thereupon for movement with respect thereto in a direction parallel to the X-axis, said finger operator rail being mounted entirely between said transfer rail and said central X-axis;

a plurality of workpiece gripping finger operators mounted on the finger operator rail at equally spaced locations thereon corresponding to the spacing of the workstations, said finger operators extending laterally inboard from the transfer rail in a Y-axis, perpendicular to and toward the central X-axis and Z- axis and each terminating in a free end having a workpiece engaging section adapted to engage the workpieces and to transfer them between adjacent work stations;

at least one actuator unit supported independently from the transfer rail and disposed in a location displaced laterally along the Y-axis from the article forming press, said actuator unit having a transfer carriage which extends therefrom in the Y-direction and which is operative to move the transfer rail along both the Y and Z axes;

driven means for said finger operator rail supported independently of and associated to move with said transfer rail, wherein,

said driven means and said actuator unit are powered by motor means which are means stationary with respect to the movement of said finger operator and transfer rails

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5,003,809

METHOD OF MOUNTING AND DEMOUNTING MOLDS TO AND FROM PRESS MOLDING MACHINE

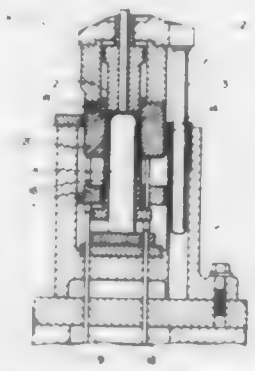
Masayuki Oyama, Kiryu, Japan, assignor to Mitsuba Electric Mfg. Co., Ltd., Kiryu, Japan

Filed Apr. 30, 1990, Ser. No. 516,437

Claims priority, application Japan, May 2, 1989, 1-113261

Int. Cl.[5] **B21D** *37/04*

U.S. Cl. 72—446 9 Claims



1 A method of mounting and demounting at least two, upper and lower dies to and from a press molding machine, said method comprising the steps of

inserting a workpiece into a press position between said upper and lower dies,

pressing or stamping said workpiece at said press position by said upper and lower dies,

maintaining said upper and lower dies at said press position to leave the workpiece after having been pressed or stamped, at said press position between said upper and lower dies, and

mounting and demounting said upper and lower dies to and from said press molding machine, with said workpiece maintained at said press position between said upper and lower dies

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5,003,810

FLUID METER

Peter Jepson, Whitley Bay, and Graham M. Tofield, Northwich, both of England, assignors to Thorn Emi Flow Measurement Limited, Stretford, England

Filed Aug. 26, 1988, Ser. No. 237,389

Claims priority, application United Kingdom, Aug. 28, 1987, 8720356

Int. Cl.[5] **G01F** *25/00, 7/00*

U.S. Cl. 73—3 8 Claims

1. A fluid flow meter for use in domestic gas metering, the meter comprising

solid state flow sensing means for providing an output signal indicative of the flow rate of said fluid;

a fluidic flowmeter for providing a digital output signal indicative of the velocity of said fluid at flow rates above a predetermined level,

calibration means operative at flow rates above said predetermined level for periodically comparing respective output signals of the solid state flow sensing means and the fluidic flowmeter and for producing and storing an error signal dependent upon the difference between said output signals and



means for correcting the output signal of the solid state flow sensing means in dependence upon the error signal stored

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5,003,811

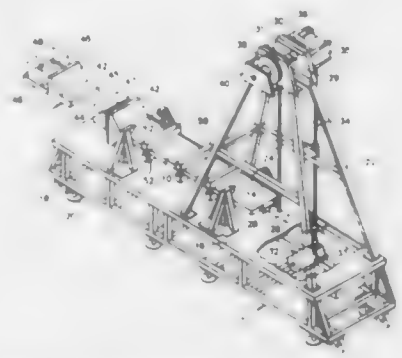
SHOCK TESTING APPARATUS

Leland K. Shannon, San Diego; Ted L. Gentry, and Toby Le, both of Poway, all of Calif., assignors to Cubic Defense Systems, San Diego, Calif.

Filed Apr. 28, 1989, Ser. No. 345,098

Int. Cl.[5] **G01N** *3/30*

U.S. Cl. 73—12 27 Claims



22. A shock testing apparatus, comprising

an elongated beam;

suspension means for suspending the beam for movement in a longitudinal direction;

impact means for impacting a first end of the beam, the impact means comprising a pendulum, mounting means at the opposite end of the beam for mounting a component to be tested;

sensing means for the oscillation of the beam as a result of impact;

drive means for driving the pendulum to a predetermined height; and

control means for releasing the pendulum when the predetermined height is reached

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5,003,812

GAS DETECTING DEVICE

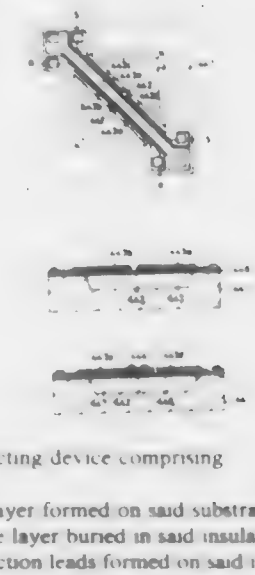
Shinji Yagawara, Yokohama; Junji Manaka, Kawasaki, and Wasaburo Ohta, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 288,279, Dec. 22, 1988, Pat. No. 4,967,589. This application Jul. 30, 1990, Ser. No. 559,148

Claims priority, application Japan, Dec. 23, 1987, 62-325921; Mar. 1, 1988, 63-48408; Mar. 25, 1988, 63-71061; May 10, 1988, 63-114372; May 24, 1988, 63-126836; May 24, 1988, 63-126837; Jul. 6, 1988, 63-169534; Dec. 6, 1988, 63-306850

Int. Cl.[5] **G01N** *27/12*

U.S. Cl. 73—31.06 2 Claims



1. A gas detecting device comprising

a substrate,

an insulator layer formed on said substrate,

a gas sensitive layer buried in said insulator layer,

a pair of detection leads formed on said insulator layer, said pair of detection leads partially overlying said gas sensitive layer, a signal derived from said gas sensitive layer being sent to an external circuit through said pair of detection leads;

a heater member arranged on said insulator layer in the vicinity of said gas sensitive layer; and

an insulation coating layer formed on said pair of detection leads and said heater member, a portion of an upper surface of said gas sensitive layer being exposed to gas through the pair of the detection leads

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5,003,813

METHOD AND APPARATUS FOR MONITORING STORAGE TANK LEAKAGE

William V. Hayes, Bandera, Tex., assignor to Hayes Separations, Inc., Bandera, Tex.

Filed Feb. 20, 1990, Ser. No. 481,899

Int. Cl.[5] **G01M** *3/04*, **G08B** *23/00*

U.S. Cl. 73—49.2 23 Claims

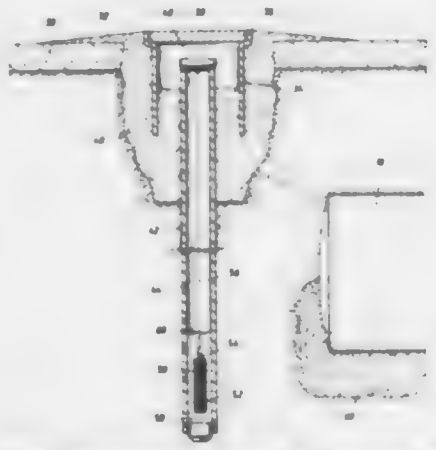
1 A method for testing for hydrocarbon leakage near hydrocarbon handling equipment where the method comprises the steps of

(a) forming a plurality of shallow holes in the near vicinity of hydrocarbon handling equipment to a depth sufficient for exposure to and patterned to intercept in the holes diffused subsurface hydrocarbon migration,

(b) positioning in the holes absorbent cartridges capable of selectively absorbing diffused hydrocarbon migration,

(c) periodically removing the cartridges from the wells and flowing a gas through the cartridges to desorb the hydrocarbons for measuring the absorbed hydrocarbons on the cartridges; and

(d) comparing the measured hydrocarbons on the cartridges with a specified threshold hydrocarbon measurement to



determine hydrocarbon leakage of a specified size from the hydrocarbon handling equipment.

5,003,814

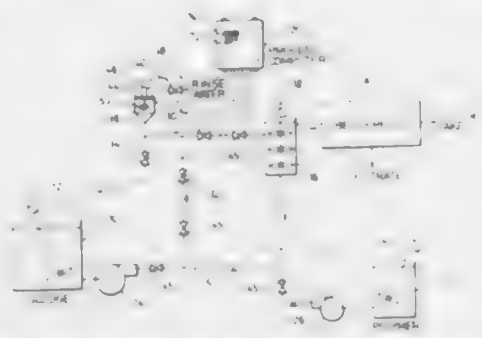
SAMPLING PROCESSES FOR USE IN THE CONTROLLED ADDITION OF CONDITIONING MATERIAL TO SUSPENSIONS, SLUDGES AND THE LIKE AND APPARATUS THEREOF

Paul M. Crawford, Burlington; Herbert W. Campbell, Dundas; Michael J. Myers, Kilbride, and Steven L. Siverns, Hamilton, all of Canada, assignors to Lenon Enviroamental Inc., Ontario, Canada

Continuation-in-part of Ser. No. 187,801, Apr. 29, 1988, abandoned. This application May 1, 1989, Ser. No. 345,256

Int. Cl.[5] G01M *11/10*

U.S. Cl. 73—59 26 Claims



12. Apparatus for sampling suspensions or sludges and for control of the addition of dewatering conditioning material thereto to produce an optimized mixture, the apparatus comprising:

a sampling vessel;

a viscometer having a rotatable rotor protruding into the vessel interior to be immersed in a suspension or sludge therein and adapted to produce a signal representative of the rheology of the suspension or sludge;

pipe and valve means connected to the vessel for charging the vessel interior in a sequence with

(a) unconditioned suspension or sludge;

(b) the same suspension or sludge with added conditioning material; and

(c) water for rinsing the vessel interior,

valve control means connected to said valve means for operation thereof in the said sequence

viscometer operating means for operating the viscometer with the vessel filled with unconditioned and conditioned suspension or sludge to produce respective corresponding unconditioned and conditioned signals representative of the respective shear stress of the suspension or sludge, the unconditioned signal being representative of the solids content of the suspension or sludge;

signal utilizing means receiving the unconditioned and conditioned signals, producing a pump means control signal therefrom and utilizing the unconditioned signal to modify the conditioned signal so as to produce the pump means control signal compensated for change in solids content of the suspension or sludge requiring a change in the rate of addition of conditioning material, and

controllable pump means controlled by the pump means control signal to control the rate of addition of the conditioning material to the suspension or sludge so as to obtain an optimized mixture of sludge or suspension and dewatering conditioning material.

5,003,815

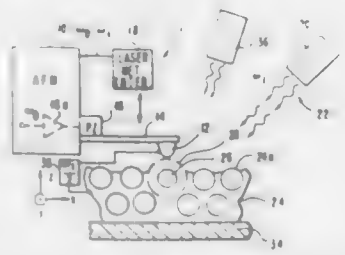
ATOMIC PHOTO-ABSORPTION FORCE MICROSCOPE

Yves Martin, Briarcliff Manor, and Hemantha K. Wickramasinghe, Chappaqua, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 20, 1989, Ser. No. 424,377

Int. Cl.[5] G01B *15/00, 11/30*

U.S. Cl. 73—105 16 Claims



1. Spectroscopic apparatus comprising

means for illuminating a surface of a sample with radiation having a characteristic wavelength selected for being absorbed by atoms or molecules of interest such that the atoms or molecules of interest increase in radius,

means for translating a probe tip proximal to the surface of the sample, the probe tip being mounted such that it experiences a detectable movement in response to being positioned near to an atom or molecule of increased radius, and

means for detecting the movement of said probe tip for indicating the presence of the atoms or molecules of interest

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5,003,816

ENGINE IDLING CONTROL APPARATUS

Masaaki Furuyama, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 27, 1989, Ser. No. 441,260

Claims priority, application Japan, Nov. 30, 1988, 63-303412

Int. Cl.[5] G01M *15/00*

U.S. Cl. 73—117.3 5 Claims

1. An engine idling control apparatus comprising

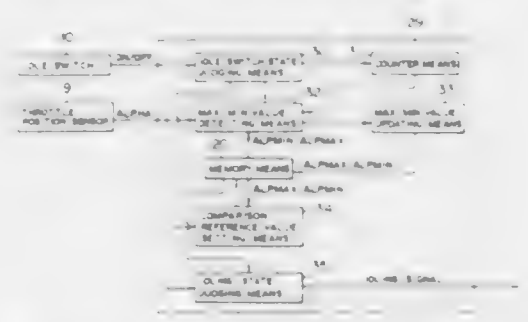
an idle switch responsive to an opening condition of a throttle valve,

idle switch state judging means for judging the idling state responsive to output from said idle switch,

a throttle position sensor for detecting the opening degree of said throttle valve;

learning means for detecting maximum and minimum values of output from said throttle position sensor and for updating the maximum and minimum values, when said idle switch state judging means judges the idling state;

comparison reference value setting means for setting an idling judgement comparison reference value in accordance with the maximum and minimum values updated by said max/min value learning means, and



idling state judging means for judging proper idling state by comparing said idling judgement comparison reference value with output the said throttle position sensor

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5,003,817

APPARATUS AND A METHOD FOR TESTING OF SYNCHRONIZING SYSTEMS

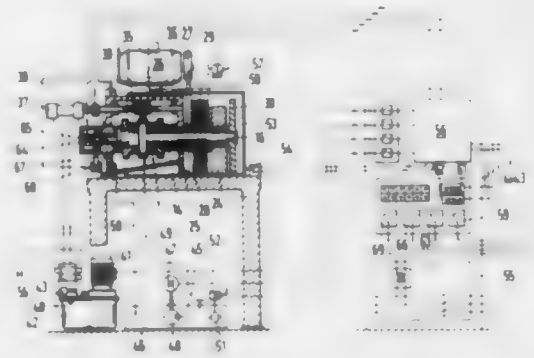
Hermann Pflaum, Maisach, and Richard Strehler, Chieming, both of Fed. Rep. of Germany, assignors to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co., Munich, Fed. Rep. of Germany

Filed Feb. 20, 1990, Ser. No. 482,307

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1989, 3905333

Int. Cl.[5] G01M *19/00*

U.S. Cl. 73—118.1 11 Claims



1. In an apparatus for the testing of synchronizing systems designated for use in gear-shift mechanisms in vehicle transmissions and for the purpose of determining factors influencing at least one of performance, design, materials , lubricants and temperature, said apparatus including:

(a) at least one of a first transmission gear and a first clutch ring having a clutch tooth system and a first synchronizing cone thereon, and a first synchronizing ring mounted on said first synchronizing cone,

(b) a second transmission gear arranged coaxially with respect to said at least one of said first transmission gear and said first clutch ring and having a clutch tooth system and a second synchronizing cone thereon, and a second synchronizing ring mounted on said second synchronizing cone, said first and second synchronizing cones being oriented on mutually opposing sides of said at least one of said first transmission gear and said first clutch ring and said second transmission gear,

(c) a gear-shift sleeve means coaxially arranged between said first and second synchronizing cones, and mounted on a shaft fixed against rotation, however, being axially movable, said gear-shift sleeve means operatively cooperating with a selected one of said first and second synchronizing rings and clutch tooth systems;

(d) a rotatable drive shaft,

(e) a rotary drive means for said drive shaft,

(f) a rotatable driven shaft having a first flywheel mass connected thereto and being rotatable therewith,

(g) means for effecting a back and forth movement of said gear-shift sleeve means into and out of coupling engagement with a selected one of said first and second synchronizing cones to cause an alternate coupling of said driven shaft to said drive shaft, to effect a driven rotation of said driven shaft, and said driven shaft to said fixed shaft, to effect a stoppage of the rotation of said driven shaft,

(h) and collecting and evaluating means for collecting and evaluating relevant data, the improvement wherein

(i) a frame is provided,

(j) said at least one of said first transmission gear and said first clutch ring having said first synchronizing cone thereon being exchangeably arranged at one end of said drive shaft, said drive shaft being rotatably supported in said frame and having a second flywheel mass affixed to an opposite end thereof;

(k) at least one of said second transmission gear and a second clutch ring on said second transmission gear having said second synchronizing cone mounted thereon being supported fixed against rotation, however, exchangeably on a receiving means fixed to said frame, said at least one of said first transmission gear an d said first clutch ring and said second transmission gear and said second clutch ring being arranged and spaced from one another in accordance with their installed arrangement and spacing in the designated gear-shift mechanism, and

(l) said gear-shift sleeve means being exchangeably arranged on an end of said driven shaft which is remote from said first flywheel mass

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5,003,818

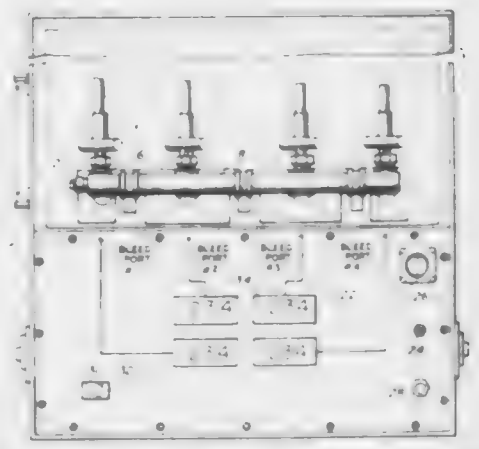
AIRCRAFT BRAKE TESTER

James W. Hoodenpyle, Fort Worth; James P. Robinson, Smithfield, and John W. Wright, Arlington, all of Tex., assignors to Howell Instruments, Inc., Fort Worth, Tex.

Filed Jan. 18, 1990, Ser. No. 466,950

Int. Cl.[5] G01L *5/28*

U.S. Cl. 73—121 12 Claims



1. An aircraft brake tester adapted to test hydraulic pressures in a plurality of aircraft brake lines corresponding to respective cylinders of an aircraft brake, comprising

a plurality of pressure transducers connected to corresponding ones of the aircraft brake lines to output pressure signals corresponding to the hydraulic pressure in each of the plurality of aircraft brake lines,

processing means, connected to the plurality of pressure transducers, for selecting the pressure transducers, for memorizing the pressure signals output by the selected pressure transducers, and for calculating a difference

signal according to the pressure signals corresponding to the selected pressure transducers, and

means for indicating the memorized pressure signals and for indicating the difference signal

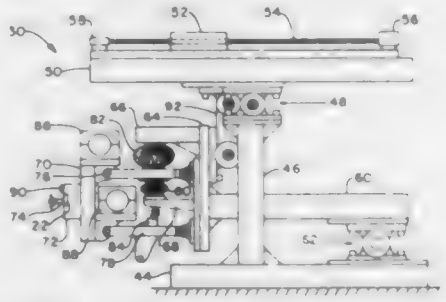
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5,003,819

SUSPENSION SIMULATOR

Gary H. Koopmann, State College, Pa., assignor to Bridgestone/Firestone, Inc., Akron, Ohio

Filed Jan. 2, 1990, Ser. No. 459,854
Int. Cl.[5] G01M 17/02
U.S. Cl. 73—146 19 Claims



3 A suspension simulator for testing a wheel and tire assembly, comprising

a spindle receiving a wheel and tire assembly,

a movable surface in contacting engagement with said tire for simulating a road surface,

suspension means connected to said spindle for replicating a suspension system of a vehicle, said suspension means comprising a pair of frame members pivotally interconnected between a pair of plates, a first one of said plates receiving said spindle, and

a load means connected to said suspension means for imparting a load upon said tire against said movable surface

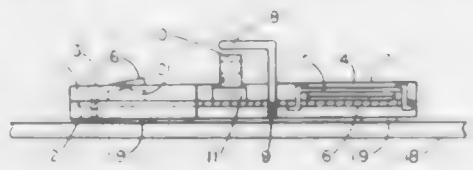
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5,003,820

ELECTRONIC SPEEDOMETER FOR SNOW SKIS

Eric Dittbrenner, 2203 Hastings Dr. #23, Belmont, Calif. 94002

Filed May 24, 1990, Ser. No. 527,934
Int. Cl.[5] G01C 21/10; G01F 1/68
U.S. Cl. 73—181 15 Claims



1 A device for measuring speed between a vehicle adapted to be attached to a human foot or feet and the air through which said vehicle moves, said device comprising of

(a) a thermistor maintained at a higher than ambient temperature and exposed to the airflow through which said vehicle moves,

(b) a thermocouple exposed to said airflow through which said vehicle moves,

(c) a base on which said thermistor and said thermocouple are mounted;

(d) means on said base for supplying electrical current to said thermistor and said thermocouple,

(e) means on said base for reading, combining and converting signals obtained from said thermistor and said thermocouple to a speed reading;

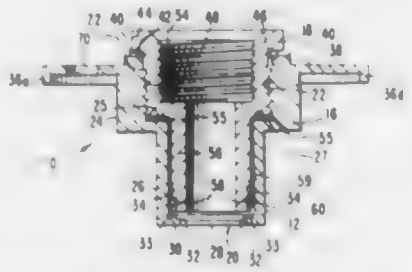
(f) and means for displaying said speed reading digitally

5,003,821

METER BOX OR METER YOKE EXPANSION MECHANISM

Jose M. Rivero-Olmedo, P.O. Box ER, Carolina, P.R. 00628

Continuation-in-part of Ser. No. 328,226, Mar. 24, 1989, Pat. No. 4,884,442, which is a continuation of Ser. No. 251,987, Sep. 29, 1988, Pat. No. 4,872,338, and Ser. No. 170,644, Mar. 16, 1988, abandoned, which is a continuation of Ser. No. 816,903, Jan. 8, 1990, abandoned. This application Dec. 4, 1989, Ser. No. 444,977
Int. Cl.[5] G01F 15/18
U.S. Cl. 73—201 24 Claims



1 An expansion mechanism for connecting a meter within a meter box or yoke, comprising

a hand wheel having a partially threaded axial opening therethrough with an annular rim extending inwardly into said axial opening, said annular rim having an annular surface,

a bushing having a threaded portion cooperating with said partially threaded axial opening in said hand wheel, a sleeve depending from said bushing for axial movement about said annular surface of said annular rim, and means for operatively connecting said bushing to a conduit,

a cup having a tubular surface with an opening at an opposite end thereof and being secured to said annular rim, said tubular surface extending longitudinally from said annular rim, and

an annular gasket positioned about said sleeve for movement with said sleeve whereby threaded movement between said hand wheel and said bushing moves said gasket in continuous sealing engagement axially along said tubular surface

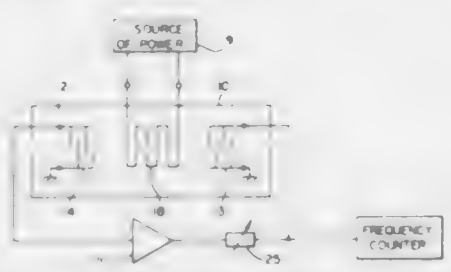
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5,003,822

ACOUSTIC WAVE MICROSENSORS FOR MEASURING FLUID FLOW

Shrinivas G. Joshi, 4344 Regal Ct., New Berlin, Wis. 53151

Filed Oct. 2, 1989, Ser. No. 416,144
Int. Cl.[5] G01F 1/68
U.S. Cl. 73—204.23 18 Claims



1 A surface acoustic wave device for measuring the flow rate of a gas or liquid, comprising

a surface acoustic wave delay line including a substrate having disposed on one of its surfaces a transmitting input transducer and a receiving output transducer spaced from said input transducer to form a propagation path therebetween,

heater means for heating said substrate to a temperature higher than ambient, said heater means disposed on said substrate in said propagation path and having a geometry so as to minimize absorption and reflection of an acoustic wave propagating in said path, and

a source of power for said heater means disposed externally of said delay line

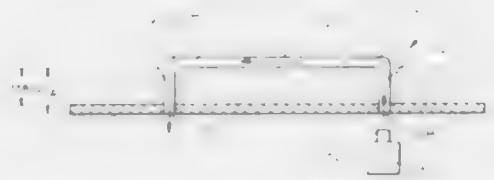
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5,003,823

NONCONTACT ROTATING LIQUID FILM THICKNESS SENSOR

Richard W. Rice, Belvidere, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Aug. 21, 1989, Ser. No. 396,240
Int. Cl.[5] G01F 23/26, G01N 21/41
U.S. Cl. 73—293 8 Claims



1 A noncontact liquid sensor for sensing a select discrete level of a liquid in a container travelling in a select path of movement comprising

an elongated glass rod internal to and attached to said container, the rod being U shaped and having opposite legs each having an end received in an opening through a wall of said container such that said ends have selected paths of movement, the legs having a length corresponding to the discrete level to be sensed, said rod having an index of refraction less than that of the liquid to be sensed,

a light source, and

means for supporting said light source outwardly of the container disposed proximate a point in the select path of movement of one end of said glass rod,

wherein light entering the one end of the glass rod when the one end thereof is proximate said light source exits the other end thereof only if the liquid level is less than the select level

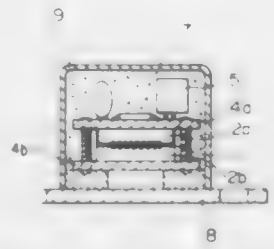
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5,003,824

VIBRATION/ACCELERATION SENSOR

Tetsuji Fukada; Masayuki Wakamiya, both of Suita, and Kikuo Kainou, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 26, 1989, Ser. No. 456,372
Int. Cl.[5] G01D 21/00
U.S. Cl. 73—651 4 Claims



8

1 A vibration/acceleration sensor comprising

a basic sensor unit including a vibration detecting unit containing therein a piezoelectric bending vibrator having upper and lower surfaces, a first thin plate and a second thin plate provided respectively on the upper and lower surfaces of said vibration detecting unit,

a signal processing circuit provided on at least one of said first thin plate and said second thin plate,

a casing means for being mounted onto a body whose vibrations are to be detected, and a resinous material enclosing said basic sensor unit,

and wherein each of said first thin plate and said second thin plate is formed of a resinous material having a low heat transfer coefficient and include a printed circuit board formed of glass epoxy resin

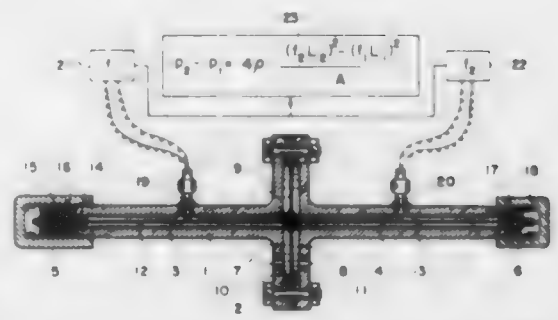
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5,003,825

DIGITAL PRESSURE SENSOR

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Filed Apr. 17, 1987, Ser. No. 39,383
Int. Cl.[5] G01L 11/00
U.S. Cl. 73—704 14 Claims



1 A pressure measuring apparatus comprising in combination

(a) a body including a first pressure receiving chamber including a port and at least one deflective end wall for receiving and containing fluid under a pressure therewithin, and a second pressure receiving chamber including a port and at least one deflective end wall for receiving and containing fluid under another pressure therewithin,

(b) a first elongated tension member with one extremity secured to said at least one deflective end wall of the first pressure receiving chamber and extending therefrom in a first direction through a first cavity separated from the first pressure receiving chamber in a leak proof manner, and anchored to the body at the other extremity opposite to said one extremity,

(c) a second elongated tension member with one extremity secured to said at least one deflective end wall of the second pressure receiving chamber and extending therefrom in a second direction opposite to said first direction through a second cavity separated from the second pressure receiving chamber in a leak-proof manner, and anchored to the body at the other extremity opposite to said one extremity,

(d) means for mechanically linking said one extremity of the first elongated tension member to said one extremity of the second elongated tension member in a tension transmitting relationship, wherein difference in the fluid pressure between the first and second pressure receiving chamber produces difference in tension between the first and second elongated tension members,

(e) means for generating lateral vibrations of the first and second elongated tension members, and

(f) means for detecting natural frequencies of the lateral vibrations of said first and second elongated tension members,

wherein the difference in the fluid pressure between the first and second pressure receiving chambers are determined from the natural frequencies of the lateral vibrations of said first and second elongated tension members

11 A pressure measuring apparatus comprising in combination

(a) a body including a first pressure receiving chamber including a port and at least one deflective and wall for

receiving and containing fluid under a pressure therewithin, and a second pressure receiving chamber including a port and at least one deflective end wall for receiving and containing fluid under another pressure therewithin,

(b) a first elongated tension member with one extremity secured to said at least one deflective end wall of the first pressure receiving chamber and extending therefrom in a first direction through a first cavity separated from the first pressure receiving chamber in a leak-proof manner, and anchored to the body at the other extremity opposite to said one extremity; wherein said first cavity is evacuated and sealed off;

(c) a second elongated tension member with one extremity secured to said at least one deflective end wall of the second pressure receiving chamber and extending therefrom in a second direction opposite to said first direction through a second cavity separated from the second pressure receiving chamber in a leak-proof manner, and anchored to the body at the other extremity opposite to said one extremity; wherein said second cavity is evacuated and sealed off;

(d) means for mechanically linking said one extremity of the first elongated tension member to said one extremity of the second elongated tension member in a tension transmitting relationship, wherein difference in the fluid pressure between the first and second pressure receiving chambers produces difference in tension between the first and second elongated tension members,

(e) means for generating lateral vibrations of the first and second elongated tension members, and

(f) means for detecting natural frequencies of the lateral vibrations of said first and second elongated tension members,

wherein the difference in the fluid pressure between the first and second pressure receiving chambers is determined from the natural frequencies of the lateral vibrations of said first and second elongated tension members.

5,003,826

APPARATUS FOR SUPPORTING A LONG CABLE FOR TENSION TESTING

Kin Y. Wong, Renton, and Douglas Thompson, Redmond, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 12, 1990, Ser. No. 491,761
Int. Cl.[5] G01N 3/08
U.S. Cl. 73—828 6 Claims



1. Apparatus for supporting a cable having a first end which is attachable to a cable testing machine and a second end, the apparatus comprising:

a a frame which is connected to the cable testing machine so as to support the frame in a vertical manner,

b a drum which is connected to the second end of the frame and which supports a portion of the cable which is wound around the drum, and

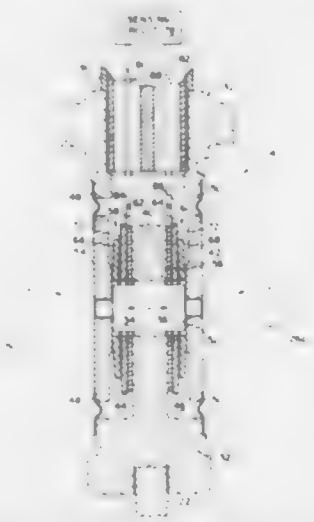
c means, connected to the frame at a location above the drum, for engaging a portion of the cable which is not wound around the drum so as to prevent movement of the wound portion of the cable relative to the drum when the cable testing machine causes the drum to move relative to the first end of the cable in a vertical direction in order to place the first end of the cable under tension, the cable engaging means including a clamp pad which is fixedly connected to the frame and which has a first curved surface, and a clamp which has a second curved surface having a shape that is complementary to the first surface and which is movably connected to the frame so as to engage the cable between the first and second surfaces in a manner that the cable extends from the drum in an upward direction where it is caused to curve between the first and second surfaces so that the cable exits from the cable engaging means in a generally horizontal manner so as to minimize any bending of the cable, the engaging means being connected to the frame in a manner that the cable extends from the drum at a location near a front edge of the frame in a direction toward a rear edge of the frame such that the portion of the cable engaged by the engaging means continues to extend upward and toward the rear edge of the frame.

5,003,827

PIEZOELECTRIC DIFFERENTIAL PRESSURE VORTEX SENSOR

Richard W. Kalinoski, Rumford, R.I.; Gordon W. Chitty, Norfolk, and James H. Vignos, Needham Heights, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed Dec. 22, 1989, Ser. No. 455,058
Int. Cl.[5] G01F 1/32
U.S. Cl. 73—861.24 27 Claims



1 A piezoelectric differential pressure sensor comprising

a sensor housing having a first and second cavity interconnected by a channel;

a spool-like actuator having an axle slideably disposed in the channel for allowing each of two flange members, connected proximate to each end of the axle, to shuttle back and forth relative to said sensor housing in response to forces applied to the flange members;

piezoelectric sensing means disposed in the first cavity between the flange member and the sensor housing, for generating signals in response to force mechanically applied to it by the flange members of said actuator, and

means, interconnected to said sensing elements, for detecting the signals generated by said sensing means

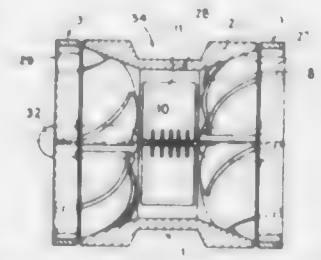
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5,003,828

FLOWMETER FOR GASES

Johannes M. E. van den Burg, Houten, Netherlands, assignor to Mijnhardt B.V., Bunnik, Netherlands

Filed Nov. 14, 1989, Ser. No. 436,375
Claims priority, application Netherlands, Nov. 15, 1988, 8802809
Int. Cl.[5] G01F 1/10
U.S. Cl. 73—861.33 11 Claims



1 A flowmeter for gases, comprising a sensor having a housing which is open at two opposite ends for the infeed and discharge of the gases to be measured, and in which a rotor is rotatable about an axis between two stators which are substantially at right angles to the said axis and which comprise deflection blades, while optical means are provided to detect the rotation of the rotor and convert it into an electrical output signal, wherein each of the stator deflection blades is curved between an inflow edge, where the blade from the hub to the periphery extends substantially in an axial plane, and an outflow edge, where the blade surface at each point thereof forms an angle with the axial direction which angle varies with the distance of each said point from the hub

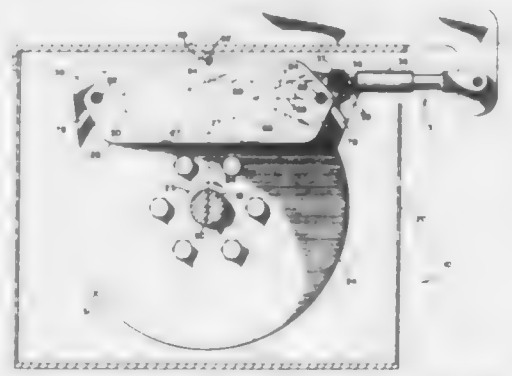
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5,003,829

ENERGY ABSORBING DEVICE AND TORQUE MEASURING APPARATUS THEREFOR

John P. DeConti, 328 Maple St., New Britain, Conn. 06051, and Raymond N. Queenerville, Suffield, Conn., assignors to John P. DeConti, New Britain, Conn.

Filed Sep. 29, 1989, Ser. No. 415,086
Int. Cl.[5] G01L 3/16, F16D 65/853
U.S. Cl. 73—862.12 66 Claims



29 A device for applying and measuring torque to a rotating disc, comprising

(A) at least one pair of opposing friction pads for positionment about the rotating disc so as to frictionally engage the rotating disc and thereby apply a retarding torque to the rotating disc,

(B) a caliper having means for retaining the friction pad pair about the rotating disc,

(C) means connected to the friction pads, for frictionally engaging the pads against the rotating disc, and

(D) a force detector coupled to the caliper so as to be in alignment with the resultant force vector of the friction pad pair,

whereby the force measured by the force detector is a direct measure of the torque applied to the rotating disc by the friction pad pair

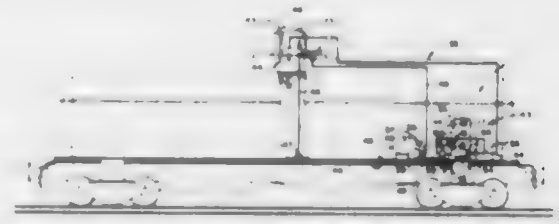
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5,003,830

SAMPLE EXTRACTION SYSTEM

R. Wilson Spencer, P.O. Box 22586, Houston, Tex. 77227

Continuation-in-part of Ser. No. 304,815, Jan. 31, 1989, abandoned, which is a continuation of Ser. No. 55,720, May 29, 1987, Pat. No. 4,800,761. This application Nov. 13, 1989, Ser. No. 435,935
Int. Cl.[5] G01N 1/14
U.S. Cl. 73—863.83 8 Claims



1 In combination with a wheeled transport tank having a reservoir, an improvement comprising a sample extraction system fixedly attached to said wheeled transport tank, including

a a suction line extending into said reservoir,

b a circulating means, for circulating fluid from said reservoir, having a suction port and a discharge port, said suction port being connected to said discharge suction line,

c a discharge line having a first and a second end, connected at said first end to said discharge port,

d a block fitting, including

i an inlet connected to said second end of said discharge line,

ii an outlet,

iii an interior passageway, providing communication between said inlet and said outlet thereby allowing fluid to flow through said block fitting,

iv a pressure reducing means, for causing a pressure drop within said interior passageway, positioned within said interior passageway,

v a sample port,

vi a sample passageway, connecting said interior passageway and said simple port between said inlet and said pressure reducing means,

vii a reentry port, and

viii a reentry passageway, connecting said reentry port and said pressure reducing means,

e a return line, connected on one end to said outlet of said block fitting and terminating within said reservoir,

f a sample container, having an inlet and an outlet,

g a sample inlet line, connected on one end to said sample port, and on the other end to said inlet of said sample container,

h a sample inlet valve, positioned in said sample inlet line,

i a sample exit line, connected on one end to said outlet of said sample container, ad on the other end to said reentry port, and

j at least one sample exit valve, positioned in said sample exit line; and

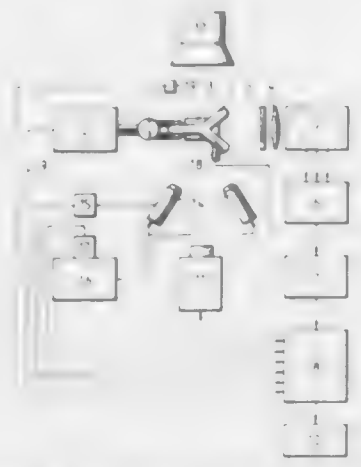
wherein said system defines a closed loop beginning and ending at said reservoir.

5,003,831

PROCESS FOR MONITORING A DEVICE FOR AUTOMATICALLY DETECTING AND EVALUATING SURFACE CRACKS

Rainer Link, Kerpen-Horrem, and Wolfgang Nuding, Troisdorf, both of Fed. Rep. of Germany, assignors to Isotopenforschung Dr. Sauerwein GmbH, Haan, Fed. Rep. of Germany

Filed Dec. 29, 1989, Ser. No. 458,586
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1989, 3907732
Int. Cl.[5] H04N 7/18
U.S. Cl. 73—865.9 10 Claims



1 A process for monitoring a device for automatically detecting and evaluating surface cracks in articles by means of magnetic powder or by a dye penetration process in which a sorting result is triggered by means of an image pick-up device and a digital image processing and control unit, comprising the steps of projecting a typical defect pattern by means of a projector onto a surface of an article to be examined in a pick-up region of the image pick-up device, and establishing a defect indication of the defect pattern

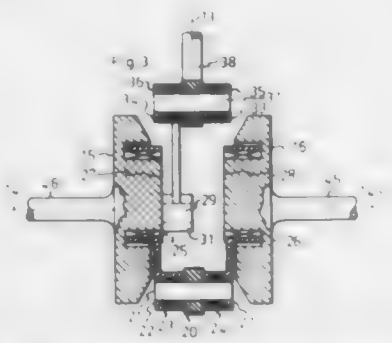
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5,003,832

MOTION TRANSMITTING MECHANISM

Stig G. Carlqvist, Paris, France, assignor to Stig G. Carlqvist Motor Consultant, (C.M.C.) Aktiebolag, Malmo, Sweden

PCT No. PCT/SE88/00030, § 371 Date Jan. 28, 1989, § 102(e) Date Jan. 28, 1989, PCT Pub. No. WO88/05878, PCT Pub. Date Aug. 11, 1988
PCT Filed Jan. 28, 1988, Ser. No. 378,219
Claims priority, application Sweden, Jan. 28, 1987, 8700321
Int. Cl.[5] F16M 21/18
U.S. Cl. 74—51 13 Claims



1 A motion transmitting mechanism for a machine, such as a heat engine, refrigerating machine and heat pump, which is hermetically sealed or provided with a rotary shaft seal, said machine having at least one reciprocating piston connected to the motion transmitting mechanism by means of connecting rods, characterized in that the motion transmitting mechanism has two counterrotating crank systems which are centered along a single center line, whereby lateral forces of the piston counteract each other and thus are eliminated

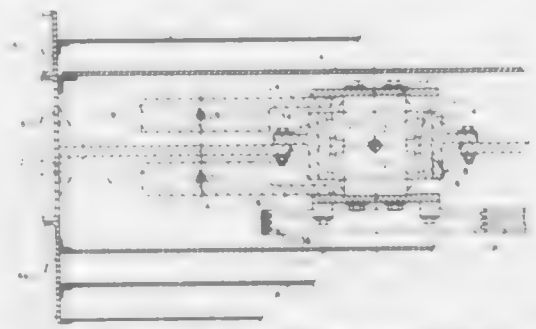
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5,003,833

GYRATING DRIVE FOR PARTICLE SCREENING MACHINE

Luis F. Antezana, P.O. Box 1419, Mercer Island, Wash. 98040

Continuation-in-part of Ser. No. 386,958, Jul. 28, 1989, abandoned. This application Apr. 23, 1990, Ser. No. 512,548
Int. Cl.[5] B07B 1/28
U.S. Cl. 74—87 10 Claims



1 A drive imparting substantially horizontal planar gyrational motion for a particle screening machine having at least two side walls, said drive comprising

a stationary bearing support plate attached to the side walls, said stationary bearing support plate having an opening therein, said stationary support plate and said walls providing structural integrity of said drive during said gyrational motion of said drive;

a stationary hub fixedly mounted to said support plate in registration with said opening,

a bearing assembly mounted in said hub, said bearing assembly including bearings, a rotatable bearing race, and a stationary bearing race,

a rotatable shaft having a first end, a second end and a longitudinal axis, said rotatable shaft journalled for rotation in said bearing assembly and contacting said rotatable bearing race,

a first weight supporting arm connected to said shaft adjacent said first end of said shaft and a second weight supporti g arm connected to said shaft adjacent said second end,

a first weight arranged within the particle screening machine and connected to said first arm and a second weight arranged within the particle screening machine and connected to said second arm, said first and second weight positioned eccentrically with respect to said longitudinal axis of said shaft and rotating therewith in said housing, and

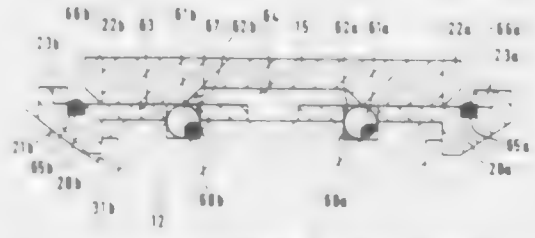
a driving means coupled to said rotatable shaft whereby rotation of said shaft and of said weights imparts gyrational motion to said drive.

5,003,834

SERVO SYNCHRONIZATION WITH MECHANICAL INTER LOCK

Erich R. Muller, Hohe Strasse 15, D-7110 Ohringen-Cappel; Gunther Priwitzer, Hofgartenweg 20, D-7110 Ohringen, and Felix Martin, Hermann-Hageameyer-Strasse 16, D-7113 Neuenstein, all of Fed. Rep. of Germany

PCT No. PCT/DE88/00585, § 371 Date Jul. 21, 1989, § 102(e) Date Jul. 21, 1989, PCT Pub. No. WO89/02995, PCT Pub. Date Apr. 6, 1989
PCT Filed Sep. 21, 1988, Ser. No. 372,344
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1987, 3732525
Int. Cl.[5] F16H 3/38, F16D 23/06
U.S. Cl. 74—339 5 Claims



1 A multi-range transmission, for motor vehicles, with a first gear and a second gear located next to one another on a first shaft and synchronizing means located between the first and second gears and movable axially with respect thereto for synchronizing the speed for the two gears, whereby a synchronizing ring of the synchronizing means, which rotates with the first gear, is rotatable only a limited portion with respect to the first gear and has a circumferential friction surface which, when actuating element is moved axially, can be brought with an opposing friction surface of the second gear, the synchronizing ring has an inclined surface, inclined with respect to a radial plane which contacts an inclined surface of the first gear so that when frictional engagement between the two friction surfaces occurs and axial force directed toward the opposing friction surface is applied to the synchronizing ring, the first gear rotates with and the second gear rotates on the first shaft, the second gear engages a third gear which rotates with a second shaft aligned parallel to the first shaft, and a shift sleeve is movable over the first and second gears to lock the two gears together, wherein a synchronizing ring is provided on each side of the first gear, and blocking means is provided to prevent axial movement of one of the synchronizing rings when the other synchronizing ring is moved

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5,003,835

TORQUE SUPPORT FOR DRIVES RIDING ON TRUNNIONS, PARTICULARLY FOR CONVERTER TILT DRIVES

Wilhelm Ackermann, Essen; Karlheinz Langlitz, Mülheim, and Günter Schmitz, Duisburg, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Aug. 1, 1989, Ser. No. 388,562
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1988, 3827329
Int. Cl.[5] F16H 55/22, 37/06, B29C 39/12, F16F 9/00
U.S. Cl. 74—411 5 Claims

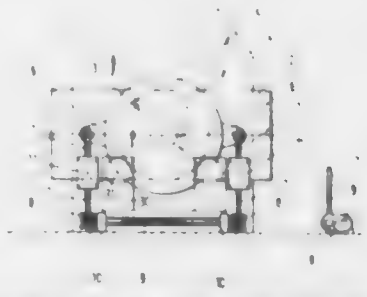
1 A torque support for drives riding on trunnions, in particular for converter tilt drives, including a gear housing mounted on said trunnion which is rotatable about an axis of rotation, a drive motor attached by a flange or bolting to a step-down gearing which engages, via pinion, with a large gear wheel fixed for rotation on the trunnion, said torque support comprising

a pair of guide rods located symmetrically to said axis of rotation of said trunnion, each guide rod (7) comprising a first and second oppositely positioned part (7,7'), said first and second guide rod part having an upper and lower end and a respective free end opposite thereto,

means for pivotally mounting said upper ends on said gear housing,

means for pivotally attaching each of said lower ends to

means for interconnecting said lower ends to each other,



said interconnecting means comprising a member deformable by one of compression-tension or torsion, and

a spring element (11) for connecting said free ends of said first and second guide rod parts in spaced relation from said mounting means, said spring element (11) acting in tension and compression and comprising springs (16, 16') and means for predeterminately pre-stressing said springs

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5,003,836

WORM GEAR MOTOR WITH A BUILT-IN SENSOR

Teruyuki Mitsuya, Nanjyou, and Norio Umezawa, Takefu, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jul. 7, 1989, Ser. No. 376,595
Claims priority, application Japan, Jul. 8, 1988, 63-91329[U]
Int. Cl.[5] F16H 1/16
U.S. Cl. 74—425 2 Claims



1 A worm gear motor having a built in sensor means, comprising

a motor shaft,

a worm gear on said motor shaft,

a rotatably mounted worm wheel in mesh with said worm gear,

a torque transmission plate connected with said worm wheel for rotation therewith and having an output shaft in the center thereof and at least one circumferentially extending notch in a rim portion thereof,

a magnetic disposed on one side of said torque transmission plate in a position along a path of movement of notch during rotation of said torque transmission plate, and

a magnetic sensor mounted separately from said magnet and on the other side of said torque transmission plate opposite said magnet for being exposed to magnetic flux from said magnet when said notch is between said magnet and said magnetic sensor, said magnetic sensor consisting of a reed switch having reeds movable in response to the presence or absence of magnetic flux the magnetic flux from said

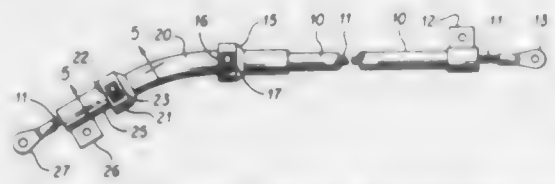
magnet into and out of contact for making and breaking a circuit as said notch and said rim portion pass between said magnet and said reed switch.

5,003,837

CURVED CABLE END CONNECTOR

Anthony J. Italiano, Waukesha, Wis., assignor to Orschlen Co., Moberly, Mo.

Filed Jun. 25, 1990, Ser. No. 542,765
Int. Cl.[5] F16C *1/10*
U.S. Cl. 74—501.5 R 12 Claims



1 A cable end coupling and flexible control cable comprising:

a a flexible control cable movably supported in a flexible conduit and having an end of said cable extending from an end of said conduit,

b. said conduit end terminating in an enlarged female receptacle;

c A relatively rigid elongated coupling having a curved central axis and including an internal passageway extending along said curved axis for the length of said coupling for receiving and permitting movement of said cable through said coupling,

d. said coupling including a male end means for securing said coupling to said female receptacle while permitting rotation of said coupling relative to said conduit

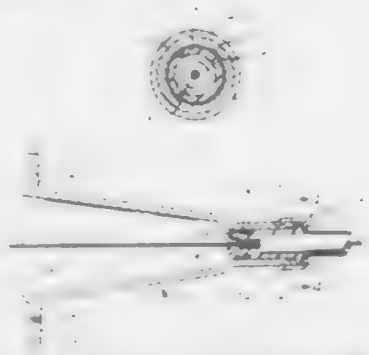
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5,003,838

CABLE ROUTING END FITTING ASSEMBLY

Joseph Pospisil, Royal Oak, and Arthur L. Speane, Bloomfield Hill, both of Mich., assignors to Teleflex Incorporated, Limerick, Pa.

Filed Apr. 10, 1990, Ser. No. 506,940
Int. Cl.[5] F16C *1/10*
U.S. Cl. 74—502.4 15 Claims



1 A motion transmitting remote control assembly (10) of the type for transmitting forces in a curved path by a flexible motion transmitting core element (14), said assembly comprising a first conduit (16) having a first end and a second end and a second conduit (38) having a first end and a second end, a core element (14) slideably supported in both of said first and said second conduits, a male end fitting (20) disposed about the second end of the first conduit (16), a female end fitting (30) disposed about the first end of the second conduit (38) for telescoping engagement with said male end fitting (20) to an assembled position, retaining means (50) for retaining said male end fitting (20) to said female end fitting (30) when in said assembled position, said assembly characterized by locking means (34,32) having locking teeth for providing said telescoping engagement between said male (20) and said female end fittings (30) at incremental rotational positions relative to one another while preventing any relative rotational movement between said male (20) and said female (30) end fittings, whereby said male (20) and female end fittings (30) may be telescoped together in any one of various incremental rotational positions and locked therein

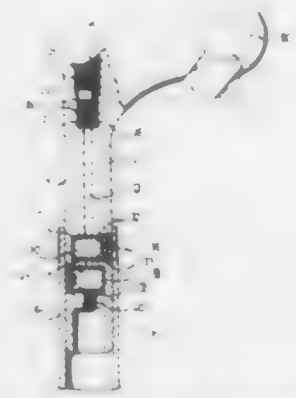
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5,003,839

STEM HAVING A FIXING DEVICE

Wen C. Yang, No. 68, Hai Sheh Rd., Ching Shui Chen, Taichung Hsien, Taiwan

Filed Sep. 21, 1990, Ser. No. 586,602
Int. Cl.[5] B62K *21/18, 21/02*; F16L *17/00*
U.S. Cl. 74—551.1 2 Claims



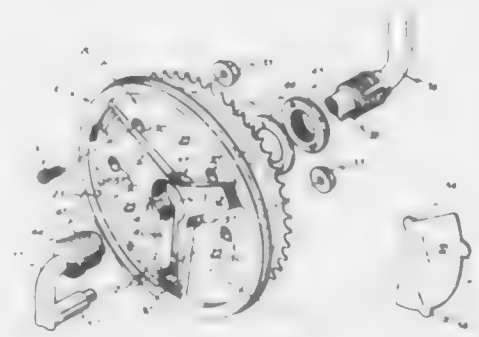
1 A fixing device being provided for fixing a stem to a head tube of a bicycle, said stem having a vertical tube which has an aperture longitudinally formed in a center thereof, a first hole being formed in an upper end of said vertical tube and communicated with said aperture, an inner thread being formed in an upper part of said first hole, a spring being received in an inner end of said first hole, a first bolt being threadedly engaged with said inner thread of said first hole, a lower end of said first bolt being contacted with said spring; a second hole and a third hole which are communicated with said aperture being laterally formed in a lower portion of said vertical tube and each having an open end and a close end, said second hole being located higher than said third hole, said open ends of said second hole and said third hole being opposite with other; a piston which has at least one notch formed in a head portion thereof being received in each of said second hole and said third hole, said head portion of said piston facing said close end of either of said second hole or said third hole; a ring element being fixed to an outer end of each of said pistons; a screw hole being formed in a lower end of said vertical tube and communicated with said third hole, a second blot being threadedly engaged within said screw hole; an oil being filled within said aperture, said first hole, said second hole and said third hole, when said first bolt is threaded into said first hole, said oil being pressurized and having a tendency to flow into a space between said head portion of each of said pistons and said close end of either of said second hole or said third hole so that said head portions of said pistons are pushed outward in order that said ring elements are pushed to engage with an inner surface of said head tube, and so that said stem can be stably and firmly fixed to said head tube.

5,003,840

COVER FOR THE DRIVING SPROCKET OF A BICYCLE

Robert A. Hinschlager, Mendon, Ohio, assignor to Huffy Corporation, Miamisburg, Ohio

Filed Nov. 6, 1989, Ser. No. 432,253
Int. Cl.[5] G05G *1/14*, F16H *55/30*, B62J *13/00*
U.S. Cl. 74—594.2 7 Claims



1 For use on a bicycle having a driving socket of predetermined diameter mounted on a crankshaft, a cover for such sprocket comprising

(a) a main body of circular shape proportioned to overlie such sprocket and having an outer face,

(b) said body including a plurality of spoke portions radiating outwardly from a central hub portion and having radially outer ends,

(c) said spoke portions being of channel shape in section to provide side walls thereon,

(d) said hub portion having a central hole therethrough for receiving said crankshaft,

(e) said body also including a peripheral rim portion connected with said radially outer ends of said spoke portions and cooperating therewith to define a plurality of open areas,

(f) said rim portion having a rearwardly extending radially inner side wall,

(g) said body including a wall portion which forms a back for each of said open areas and is connected with said side walls of adjacent said spoke portions and said rim portions to define therewith a corresponding series of pockets in said outer face of said body,

(h) means for mounting said body on such driving sprocket, and

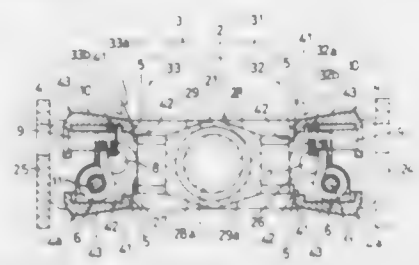
(i) a panel mounted in each of said pockets

5,003,841

BICYCLE PEDAL

Masashi Nagano, Osaka, Japan, assignor to Shimano Industrial Co., Ltd., Osaka, Japan

Filed Aug. 11, 1989, Ser. No. 392,338
Claims priority, application Japan, Aug. 12, 1988, 63-202574
Int. Cl.[5] G05G *1/14*
U.S. Cl. 74—594.4 10 Claims



1 A bicycle pedal comprising

a pedal body supported by a pedal shaft for rotation about an elongated axis (L) of the pedal shaft,

at least one clamp member (4) attached to the pedal body for clamping a cleat (3), the clamp member being displaced in a fore and aft direction from the axis of the pedal shaft to be movable between a cleat clamping position and a cleat release position,

said at least one clamp member (4) is pivotable about a pivot shaft (7, 8) disposed substantially parallel to said axis (L) of the pedal shaft between said cleat clamping position and said cleat release position, and said at least one clamp member defines a guide surface (43) adjacent the axis of said pedal shaft for guiding said cleat (3) from said at least one clamp member (4) toward said axis (L) of the pedal shaft for securing said cleat to said at least one clamp member

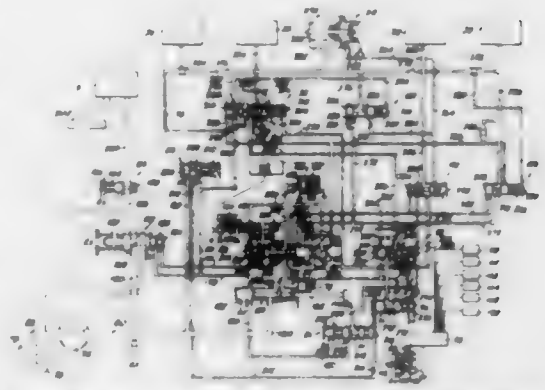
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5,003,842

CONTROL DEVICE FOR AUTOMATIC TRANSMISSION GEAR SYSTEM

Katuhiro Hattu; Takeo Hiramatsu, and Bonnosuke Takamiya, all of Kyoto, Japan, assignors to Mitsubishi Jidoshai Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 463,935, Jan. 8, 1990, abandoned, which is a continuation of Ser. No. 267,667, Nov. 4, 1988, abandoned, which is a continuation of Ser. No. 81,586, Aug. 3, 1987, abandoned, which is a continuation of Ser. No. 912,686, Sep. 26, 1986, abandoned, which is a continuation of Ser. No. 530,642, Sep. 9, 1983, abandoned. This application Sep. 25, 1990, Ser. No. 590,601
Claims priority, application Japan, Sep. 10, 1982, 157644
Int. Cl.[5] B60K *41/06*
U.S. Cl. 74—867 5 Claims



1 A control device for an automatic transmission gear system having a change speed gear assembly with plural gear ratios between an input shaft and an output shaft, comprising

first frictional element means actuated by fluid pressure to obtain one of said gear ratios for lower speed driving,

an actuating means for actuating said first frictional element means, having first fluid chamber means to which fluid pressure is supplied to activate said first frictional element means, and second fluid chamber means from which fluid proportional to fluid pressure supplied to said first fluid chamber is exhausted,

second frictional element means actuated by fluid pressure to obtain another one of said gear rations for high speed driving;

third fluid chamber means to which fluid pressure is supplied to activate said second frictional element means;

a fluid passage which connects said second fluid chamber means with said third fluid chamber means;

an exhaust passage for exhausting fluid from said fluid passage and connected to said fluid passage when shifting from higher to lower speed driving.

an orifice with an unchangeable opening provided in said exhaust passage for regulating amount of fluid to be exhausted,

a synchronization detection means for detecting whether said gear ratios have been obtained,

switching valves for switching fluid passages leading to said frictional element means at a time of shifting between higher and lower speed driving,

a fluid pressure regulating means, having a fluid pressure control solenoid valve, for controlling sum of transmittable torque of said first and second frictional element means by modulating the fluid pressure supplied to said first fluid chamber means during shifting from higher to lower speed driving,

an electronic control device for controlling said fluid pressure control solenoid valve to control said sum of transmittable torque in such a way that, said sum of transmittable torque is decreased when disengagement of the second frictional element means is detected by said synchronization detection means and said sum of transmittable torque is increased when engagement of the first frictional element means is detected by said synchronization detection means

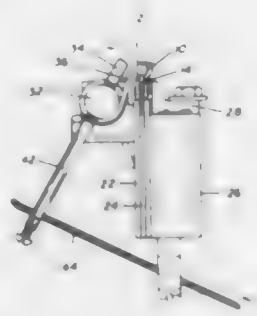
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5,003,843

SAW CHAIN HOLDING MECHANISM FOR GRINDING MACHINES

James E. Shepherd, P.O. Box 2719, White City, Oreg. 97503

Filed May 17, 1990, Ser. No. 524,568
Int. Cl.[5] B23D 63/16
U.S. Cl. 76—78.1 6 Claims



1 Holding mechanism for use with a saw chain grinding machine having a saw chain holding bar with an edge slot which receives the drive tines of cutter elements of the saw chain for supporting the chain in a stationary position for grinding, said holding mechanism comprising

base means arranged to be disposed on a saw chain grinding machine in adjacent relation to a saw chain holding bar,

movable means on said base means arranged for selected movement relative to the saw chain holding bar,

first and second projections on said movable means,

said first projection being arranged to engage and hold a cutter element down and said second projection being arranged to engage and hold a cutter element laterally against a defining side wall of the edge slot of the saw chain holding bar in a selected movement of said movable means,

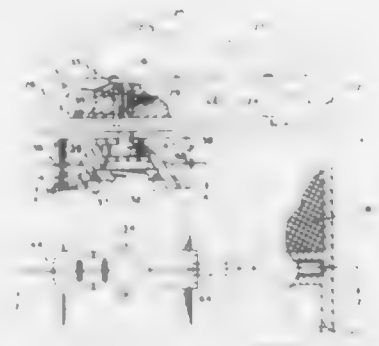
said second projection engaging the cutter element prior to said first projection to position the cutter element against the defining side wall of the edge slot of the saw chain holding bar prior to engagement of the cutter element by said first projection

5,003,844

PORTABLE CONTAINER OPENER

Bennie W. Barrow, 105C Northway Dr., Clarksville, Tenn. 37042

Filed Feb. 12, 1990, Ser. No. 478,448
Int. Cl.[5] B67B 7/18
U.S. Cl. 81—3.2 14 Claims



1 A portable device for removing a threaded cover from a container consisting of a housing having a carrying handle, a vertical portion and a horizontal portion, an electric motor mounted adjacent said horizontal portion in the vertical portion of said housing, said motor having a drive shaft which extends upwardly into said horizontal portion, a power supply adapted to drive said motor, a switch adapted for selective actuation of said motor, a drive mechanism mounted in said horizontal portion of said housing and driveably attached to said shaft of said motor, a driven shaft attached to said drive mechanism for rotation thereby, said shaft being laterally spaced from said vertical portion of said housing and extending downwardly from said horizontal portion of said housing, a first gripping means attached to said driven shaft, said first gripping means being adapted to grip said threaded cover, and a second gripping means attached to the vertical portion of said housing, said second gripping means being adapted to grip said container, whereby upon actuation of said motor by operation of said switch said threaded cover will be rotated relative to said container

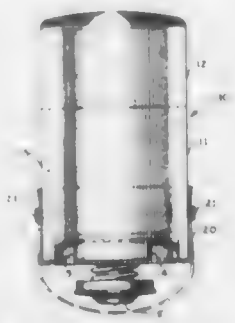
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5,003,845

RADIATOR CAP REMOVER

James P. Roy, 5903 Mieras Rd., and James P. Harris, 1810 Birchfield Rd., both of Yakima, Wash. 98901

Filed Sep. 29, 1988, Ser. No. 250,938
Int. Cl.[5] B67B 7/75
U.S. Cl. 81—3.4 8 Claims



1 An apparatus for removing a lugless radiator cap, the apparatus comprising a cylindrical body having defined within one end of said body a recess adapted to receive said cap, the diameter of said recess being greater than the outer diameter of said cap, said body having attached to its exterior a strap of resilient material, such that said strap may be drawn across said recess, whereby said cap is frictionally engaged by said strap within said apparatus when said apparatus is placed over said cap

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5,003,846

OPTICAL FIBER CABLE-STRIPPING DEVICE

Hiroshi Yagawa, Tokyo, Japan, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 12, 1990, Ser. No. 508,757
Claims priority, application Japan, Apr. 14, 1989, 1-43867
Int. Cl.[5] H02G 1/12
U.S. Cl. 81—9.42 6 Claims



1 A tool for stripping outer and inner jackets from a transmission cable, comprising

upper and lower guide members normally spaced from one another defining an opening therebetween

first and second guide means on said guide members,

operating means connected to said guide members to move them toward and away from one another,

cutting blade means mounted onto said guide members and having first and second cutting sections aligned respectively with said first and second guide means,

a support surface on one of said guide members and a cutting member on the other of said guide members in alignment with said support surface,

said first guide means accommodating an end of the outer jacket of the cable,

hold-down means positioned adjacent said cutting blade means for engaging and holding the cable when the guide members move toward each other causing the first cutting section to cut the outer jacket to the inner jacket whereby upon movement of the tool and cable relative to each other an end section of the outer jacket is stripped from the cable exposing an end section of fused inner jackets,

the exposed end fused inner jackets being slit add separated by said cutting member while being supported on said support surface, and

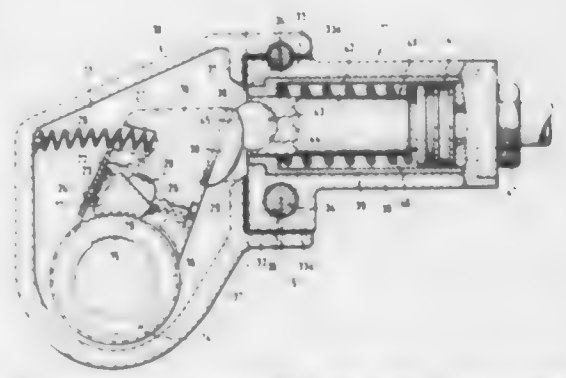
said second guide means accommodating the separated ends of the inner jackets while said hold-down means engages the cable when the guide members move toward each other causing the second cutting section to cut the inner jackets to the transmission members whereby upon movement of the tool and cable relative to each other end sections of the inner jackets are stripped from the cable exposing the transmission members

5,003,847

HYDRAULIC POWER WRENCH

Paul-Heinz Wagner, Haus Nr. 70, D-5203 Much-Birrenbachshöhe, Fed. Rep. of Germany

Continuation of Ser. No. 411,132, Sep. 22, 1989, abandoned. This application Aug. 15, 1990, Ser. No. 569,260
Claims priority, application European Pat. Off., Oct. 1, 1988, 88116273
Int. Cl.[5] B25B 13/46
U.S. Cl. 81—57.39 5 Claims



1 A hydraulic power wrench comprising a wrench head, said wrench head having a chamber and a connecting portion, a rotatable ring member housed in said chamber, lever means having a first end portion in driving relationship to said ring member for imparting rotation thereto, a cylinder housing, said cylinder housing including a fluid motor including movable member means movable along a longitudinal axis thereof for imparting motion to a second end portion of said lever means, said cylinder housing having a connecting portion, said connecting portions being in generally telescopic interconnected relationship to each other, said connecting portions have cooperative male and female locking means for selectively coupling and uncoupling said wrench head and cylinder housing, said cylinder housing and wrench head connecting portions defining a plane of relative telescopic insertion which is transverse to the longitudinal axis of said movable member means, said male and female locking means defining a plane of locking connection which is transverse to the longitudinal axis of said movable member means, said telescopic insertion plane being disposed generally between said locking connection plane and said lever means, said telescopic insertion plane and locking connection plane being in general parallel relationship to each other, said male and female locking means including first and second locking portions carried by respective ones of said connecting portions, said first locking portion including at least one slot having a longitudinal axis, said second locking portion including at least one projection having a longitudinal axis and being slidably received in said slot, said longitudinal axis of said at least one slot and of said at least one projection lying generally transverse to the longitudinal axis of said movable member means

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5,003,848

MECHANICAL TOOL FOR MANIPULATING FITTINGS AND CAPS

Rudolph R. Ceccucci, Jr., 66 Third St., Cohoes, N.Y. 12047

Filed Jun. 22, 1990, Ser. No. 542,023
Int. Cl.[5] B25B 13/16
U.S. Cl. 81—176.2 7 Claims

1 A mechanical tool for manipulating from a coaxial direction a hose fitting or cap having two circumferentially positioned, substantially diametrically opposed outwardly projecting lugs, the hose fitting having a hose connected thereto, said tool comprising

a handle,

said handle having two elongate resilient branches extending from one end thereof, a free end of each branch having an opening therein, said branches being spaced and said openings being sized such that said openings engagably receive a respective one of said cap or fitting lugs when said tool is oriented coaxially to and positioned in contact with one of the cap and hose fitting, said branches being sufficiently elongate to accommodate therebetween a sufficient portion of said hose to allow the tool to engage the hose fitting from a coaxial direction, and



adjustable biasing means disposed between and connected to said branches for adjusting the resiliency of and distance between said branches, said adjustable biasing means being located between said one end of said handle and said free ends of said branches, said biasing means being disposed so as not to interfere with the use of said tool in manipulating the hose fitting or cap from a coaxial direction, said adjustable biasing means allowing said branches to be tensioned to securely engage said fitting or cap when in use and to adjust to engage hose fittings and caps of different diameters

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5,003,849

ALIGNMENT SLEEVE FOR HAND TOOL HAVING A UNIVERSAL JOINT

Warwick W. Lawrie, 116 Westfield Dr., Nashville, Tenn. 37221

Filed May 14, 1990, Ser. No. 523,062
Int. Cl.⁵ B25B *23/00*
U.S. Cl. 81—184 **10 Claims**



1 In an alignment device for a hand tool employing a universal joint having a first end for attachment to the drive means of said tool, a second end for attachment to the driven means of said tool and an intermediate section pivotally attached between said first end and said second end, said device including a resilient, non-metallic sleeve formed into a hollow cylindrical shape for frictional contact with the outer surfaces of said universal joint to limit the magnitude of movement of said universal joint when said universal joint is subjected to lateral forces, the improvement comprising at least one pair of arcuate shaped ribs for interlocking with said intermediate section and one of said first and said second ends for limiting the movement of said sleeve with respect to said universal joint

5,003,850

SCREWDRIVER WITH HOLDING SLEEVE

James J. Harkins, 300 N. River Rd. #310, Manchester, N.H. 03104

Filed Jun. 4, 1990, Ser. No. 521,411
Int. Cl.⁵ B25B *23/00*
U.S. Cl. 81—436 **1 Claim**



1 A screwdriver having a shaft extending along a longitudinal rotational axis, a bit attached to one end of said shaft and extending along said longitudinal rotational axis, a handle attached to a second end of said shaft and extending along said longitudinal rotational axis, a tubular sleeve being co-axial with said shaft and slidable thereon, said bit having a shoulder formed with a bearing surface thereon for engagement with one end of said sleeve, said shaft, bit, and handle being rotatable relative to said sleeve about said longitudinal rotational axis

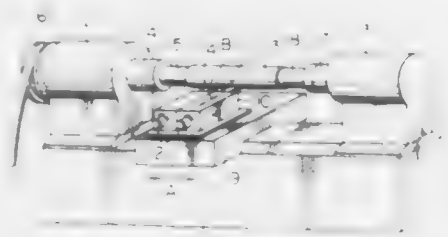
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5,003,851

METHOD OF MANUFACTURING A PHOTORECEPTOR

Sunao Kawada; Takayoshi Hashimoto; Toyotsugu Itoh, all of Hachioji, and Makoto Koyanagi, Fuchu, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Oct. 18, 1989, Ser. No. 423,024
Claims priority, application Japan, Oct. 20, 1988, 63-262837
Int. Cl.⁵ B23B *3/00*
U.S. Cl. 82—1.11 **9 Claims**



1 A method of finishing the surface of a photoreceptor base drum by using a lathe-turning machine, the method comprising the steps of

providing a cutting tool having a rake surface, a front flank surface, and a main cutting edge defined by at least a portion of the juncture of the rake surface and the front flank surface, the main cutting edge including a curved surface having a radius of curvature in the range of about 0.15 to 3.5 μm,

rotating the photoreceptor base drum on its axis in the lathe turning machine,

positioning the curved surface of the main cutting edge into cutting engagement with the surface of the rotating photoreceptor base drum, and

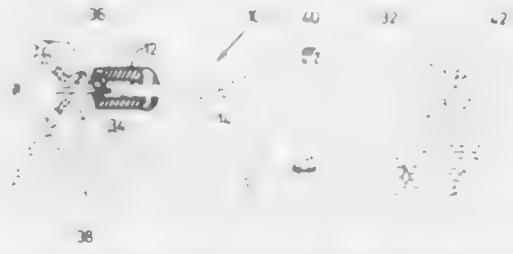
moving the engaged cutting tool in the axial direction of the rotating photoreceptor base drum for providing the surface of the photoreceptor base drum with a mirror-like finish

5,003,852

BUTTON DIE HOLDER

Michael J. Kelly, 10422 Homeland Ave., Whittier, Calif. 90603

Filed Jul. 27, 1987, Ser. No. 78,168
Int. Cl.⁵ B23G *5/00*
U.S. Cl. 82—158 **1 Claim**



1 A new and improved button die holder for use with a metal cutting lathe, said die holder comprising

die housing means for holding a button die

and

guide bar means upon which die housing means is slidably positioned, said guide bar means serving to guide said die housing means and said button die into a thread cutting engagement with a workpiece operably mounted in said lathe, said guide bar means being slidably positionable through substantially an entire length portion of said die housing means, thereby to provide maximum stability to said die during said thread cutting engagement, and wherein said guide bar means is selectively abutable against said button die retained within said die housing means, and wherein said die housing means is of a cylindrical construction and includes a through-extending axially aligned aperture in which said guide bar means is positioned, and wherein said guide bar means is of a cylindrical construction and is designed to be retained within a tailstock associated with said lathe, and wherein said workpiece is retained within a headstock associated with said lathe, and wherein said workpiece extends into an interior portion of said die housing means during said thread cutting engagement, and wherein said interior portion comprises said aperture, and wherein said guide bar means is provided for with an axially aligned forwardly positioned bore which defines a hollow interior portion of said guide bar means, and wherein said guide bar means remains substantially positioned within an entire length portion of said aperture

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5,003,853

CUT-OFF DIE SET

John J. Borzym, Birmingham, and Alexander Borzym, West Bloomfield, both of Mich., assignors to Alpha Industries, Inc., Novi, Mich.

Continuation of Ser. No. 237,527, Aug. 26, 1988, Pat. No. 4,932,297. This application Feb. 2, 1990, Ser. No. 474,535
Int. Cl.⁵ B26D *1/60*
U.S. Cl. 83—318 **8 Claims**

1 In a cut-off die apparatus of the double cut type in which sections of tubing are successively severed from a continuous length of tubing moving along a generally horizontally axial path by a notching cut performed by a notching blade mounted on a cross slide for reciprocal movement horizontally across the tube path followed by a vertical severing cut, the improvement wherein the means mounting the notching blade on the cross slide comprises

(A) means defining a vertical guideway on said cross slide,

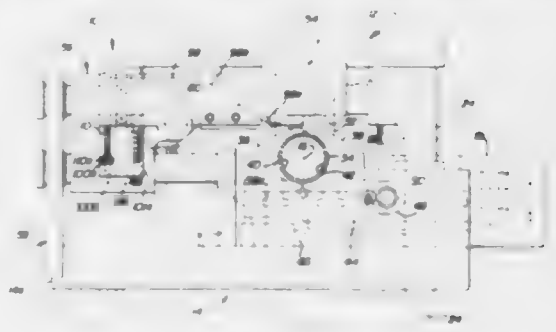
(B) a notching blade holder,

(C) means for securing said notching blade to one end of said holder,

(D) a vertically extending slide member slidably received in said guideway,

(E) means for infinitely varying the vertical adjustment of said notching blade holder, and

(F) means for coupling said notching blade holder to said



slide member operable to sandwich said guideway between said slide member and said notching blade holder thereby locking said slide member in any position of vertical adjustment

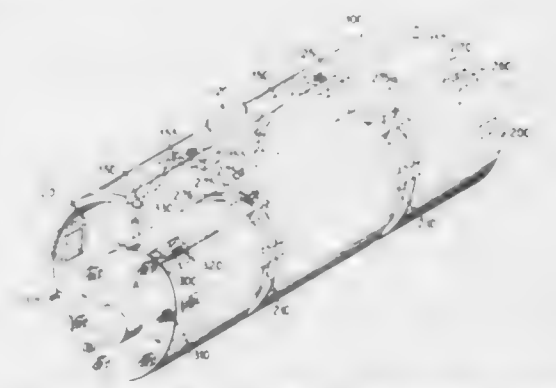
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5,003,854

DEVICE FOR FASTENING A DIE ON A TOOL CARRIER CYLINDER OF A ROTARY MACHINE

Bernard Capdebosco, Saint-Just-Chaleyssin, France, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 23, 1990, Ser. No. 483,621
Claims priority, application France, Feb. 24, 1988, 89 02729
Int. Cl.⁵ B26D *7/26*
U.S. Cl. 83—331 **11 Claims**

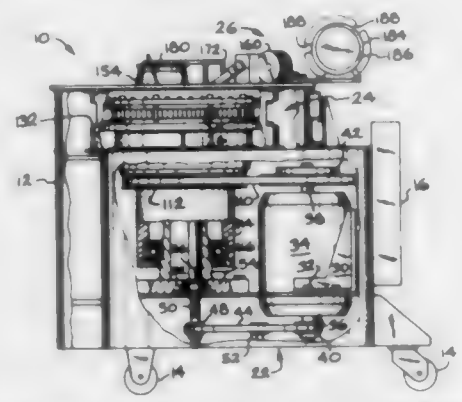


1 A device for fastening a die on a tool carrier cylinder of a rotary machine, said device comprising the die being provided on an inner surface with an adequate number of parallel extending ribs with each rib having a pair of side walls and an inner face and a base extending therebetween, said inner face spaced from being the inner surface of the die, one side wall of each of said ribs facing in the same direction and having an oblique surface portion being oriented outwardly with the inner face of the rib being broader than the base of the rib at each oblique surface portion, said tool carrier cylinder being provided on an outer surface with a first row of circular cross grooves constructed for receiving said ribs of the die, said cylinder having a second row of longitudinal grooves deeper than the first row of grooves, a locking rod being disposed in each of the longitudinal grooves, said longitudinal grooves having means to prevent radial movement of the rods and enabling movement along the length of said longitudinal grooves, each of said locking rods at a level of the circular cross grooves having a cross slot of a size equal to the cross sectional size of each of the ribs, and means for moving said rods to cause second oblique surfaces disposed in the circular

cross grooves and cross slots to engage the oblique surface portions of each of the ribs to hold the ribs in said circular cross grooves and to hold the die on said carrier cylinder

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5,003,855
CHOPPER WITH AUTO FEED
Lawrence F. Ciupak, 1106 Matterhorn Dr., Reynoldsburg, Ohio 43068
Filed Jan. 23, 1989, Ser. No. 299,582
Int. Cl.[5] D01G *1/04*
U.S. Cl. 83—346 18 Claims



1 An apparatus for cutting strands of material into short lengths comprising, in combination,

means for supporting a plurality of circumferentially spaced apart, radially oriented blades about an axis, said blades having inwardly disposed cutting edges,

a first drive shaft disposed on said axis coupled to said supporting means,

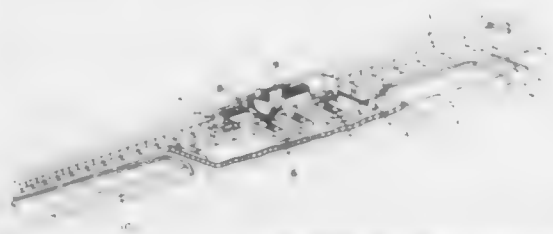
a wheel having an annular surface disposed adjacent said cutting edges,

a second drive shaft coupled to said wheel, and

drive means for revolving said cutting edges at a tangential speed about said axis and rotating said annular surface of said wheel at said tangential speed, said drive means including a motor output and means for positively coupling said motor output to said first drive shaft and said second drive shaft

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5,003,856
PAPER CUTTER
Yasuo Fujimura, Sendai, and Toshio Fujiwara, Kashiwa, both of Japan, assignors to Sumitsu & Company, Limited, Japan
Filed Oct. 2, 1989, Ser. No. 415,611
Claims priority, application Japan, Jul. 7, 1989, 1-175946
Int. Cl.[5] B26D *5/08*
U.S. Cl. 83—576 3 Claims



1 A compact ,high-speed reciprocating paper cutter comprising

a non-magnetic housing having an elongated linear opening in one side wall thereof and a series of permanent magnets mounted within the housing adjacent the opening, said permanent magnets having lines of flux being perpendicular to the opening and having poles of adjacent magnets being reversed,

a driving head slidably mounted within the housing for reciprocal movement parallel to said opening,

a coil set mounted in said driving head having three individual coils mounted in side-by-side relationship adjacent said magnets, said set covering four magnets in the series, each coil having a current flowing in a controllable direction,

sensor means associated with each coil in the set for sensing when the coil is centered between two adjacent magnets,

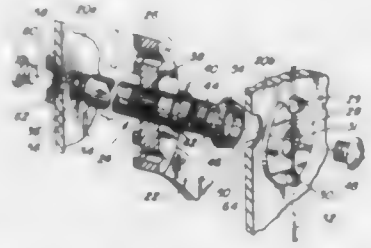
control means responsive to said sensor means for reversing the direction of current flow through each coil when the coil is centered between two adjacent magnets whereby the driving head is moved at high speed linearly along said opening,

a stationary blade secured to the housing having a linear cutting edge extending along the length of the opening, with said cutting edge being angularly offset in relation to said opening, and

a movable blade connected through said opening to the driving head having a flat face that rides in contact against the cutting edge of the stationary blade so that a line of contact between said movable blade and said cutting edge moves up and down across the face of the movable blade as the driving head is moved linearly back and forth along said opening

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5,003,857
SPINDLE FOR HARP
Walter Krasicki, Sr., Niles, and Walter Krasicki, Jr., Park Ridge, both of Ill., assignors to W & W Musical Instrument Company, Chicago, Ill.
Continuation-in-part of Ser. No. 716,126, Mar. 22, 1985, Pat. No. 4,384,996. This application Apr. 13, 1989, Ser. No. 337,485
Int. Cl.[5] G10D *1/04*
U.S. Cl. 84—266 3 Claims



1 In combination with a harp having a base and a neck, a plurality of linkage assemblies secured by spindles between a pair of action plates secured to the neck, a disc secured to each of the spindles and rotatably operated by the spindles to grab a string associated with the disc, and a plurality of foot pedal assemblies supported within the base and coupled respectively with one of the plurality of linkage assemblies for operating them to rotate the spindles and the discs secured thereto, the improvement comprising a spindle for securing the linkage assemblies between the action plates comprising;

a cylindrical body portion having a reduced diameter shaft on one end thereof proportioned to extend into a bore in one of said pair of action plates and to be rotatably retained therein by means of a threaded screw means;

a keeper plate integrally formed with said cylindrical body portion and extending annularly about its peripheral surface to form a stop for said sleeve;

said keeper plate having a chamfered surface;

a sleeve formed of a material having a low coefficient of friction snug-fitted onto said cylindrical body portion and abutting said keeper plate, said sleeve having a chamfered inner surface to matingly engage with the chamfered surface of said keeper plate, and a chamfered outer peripheral surface which corresponds with a chamfered bore formed in the other one of said pair of action plates and into which said sleeve seats;

said sleeve being rotatable relative to said keeper plate formed on said cylindrical body, and being further rotatable relative to said cylindrical body, and being further rotatable relative to said chamfered bore formed on one of said pair of action plates and into which said sleeve seats,

an exteriorly threaded portion on said cylindrical body portion at said other end thereof, said threaded portion being of a reduced diameter to freely extend through said chamfered bore in said other one of said pair of action plates for threadedly receiving a disc thereon,

a threaded bore and said exteriorly threaded portion for receiving therein a threaded disc screw for locking said disc to said spindle,

whereby said keeper plate formed on said cylindrical body portion and spindle freely rotates relative to said sleeve, and said sleeve rotatably moves relative to the bore formed in one of said action plates thereby to minimize the friction normally existing between the spindle and the other end of said pair of action plates

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5,003,858
PORTABLE RESONATING PLATFORM AND T-BAR FOR SECURING THE ENDPIN AND ENHANCING THE TONE OF A CELLO
Frances E. Rowell, P.O. Box 185, Limeport, Pa. 18060
Filed Nov. 15, 1989, Ser. No. 437,362
Int. Cl.[5] G10D *3/02*
U.S. Cl. 84—280 8 Claims



1 A portable resonating platform for enhancing the tone of a cello comprising

a lower spruce plate,

an upper maple plate having an elongated narrow groove extending transversely along its upper surface, the groove being adapted to receive the endpin of a cello in any position along its length,

means for rigidly joining the upper and lower plates together in spaced-apart relation, and

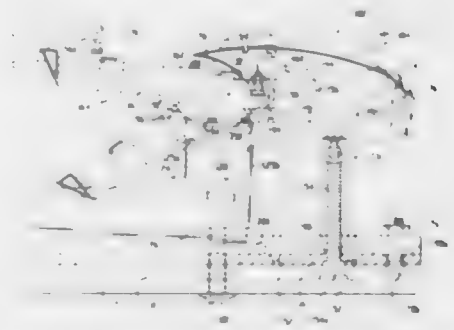
means for preventing the plates from sliding when positioned on a surface

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5,003,859
PERCUSSIVE ACTION MODULAR ELECTRONIC KEYBOARD
Charles Monte, 8519 Woodley Ave., Sepulveda, Calif. 91343; Paul J. White, and Anne C. Graham, both of Los Angeles, Calif., assignors to Charles Monte, Van Nuys, Calif.
Filed Feb. 16, 1989, Ser. No. 311,601
Int. Cl.[5] G10C *3/12*
U.S. Cl. 84—423 R 9 Claims

9 An improved percussive action keyboard for play as a musical instrument of the type having pivoted playing keys having camming surfaces distal from finger contact surfaces thereof, pivoted hammers having cam follower surfaces for following the playing key camming surfaces, hammer stop means for stopping the swing of the hammer in response to depression of its associated key, an improved hammer comprising

a hammer shank having a top rail with hammer weight holding and positioning means, a hammer head positioned at a free end of the hammer for engagement with the

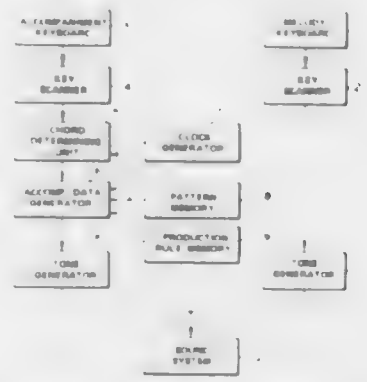


hammer stop means, a hammer journal end with means for mounting the hammer on a flange for pivoted action, and

a user adjustable hammer weight having engagement means for engaging said hammer weight holding and positioning means at a position selectable by the user thereby to set the weight of the hammer

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5,003,860
AUTOMATIC ACCOMPANIMENT APPARATUS
Junichi Minamitaka, Fussa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Dec. 22, 1988, Ser. No. 290,295
Claims priority, application Japan, Dec. 28, 1987, 62-333595
Int. Cl.[5] G01H *7/00, 1/38, 1/28*
U.S. Cl. 84—609 14 Claims



1 An apparatus for automatically providing an accompanimental line formed by a succession of harmonic and nonharmonic tones in response to chords supplied from a musical performance input means, comprising

key determining means for automatically and variably determining a key in a current chord interval as a function of a series of supplied chords from said musical performance input means,

arpeggio line forming means for producing a line of harmonic tones in a current chord interval using members of a current chord supplied from said musical performance input means, and

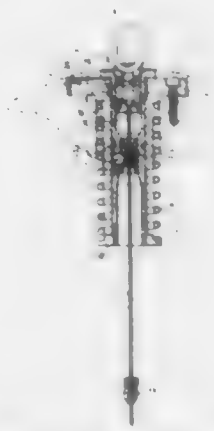
nonharmonic tone adding means for selecting nonharmonic tones from a scale of the determined key from said key determining means and for adding the selected nonharmonic tones to said line of harmonic tones

5,003,861

SAFETY DEVICE FOR RELEASABLE CHARGES

Gérard Joset, Roissy En Brie, France, assignor to Thomson-Brandt Armements, Boulogne Billancourt, France

Filed Jan. 8, 1990, Ser. No. 461,819
Claims priority, application France, Jan. 20, 1989, 89 00684
Int. Cl.[5] B64D 1/04
U.S. Cl. 89—1.55 12 Claims



12 A safety device for preventing a cable from activating a releasable charge before the releasable charge has been released from a carrier on which the charge is carried, said safety device comprising

a stop device engageable with the cable so as to transfer translational movement from the cable to the stop device,

a presence sensor engageable with said stop device by a releasable key such that said presence sensor translates with said stop device when said releasable key is engaged with the presence sensor, and

a releasing means for releasing the presence sensor from translating with the stop device when said presence sensor has translated to a predetermined position within the safety device.

5,003,862

METHOD AND APPARATUS FOR ARMAMENT CONTROL

Mark L. Stromire, 12532 Woodstock Dr., E., Upper Marlboro, Md. 20772

Filed Apr. 28, 1989, Ser. No. 344,958
Int. Cl.[5] F41A 19/05
U.S. Cl. 89—133 7 Claims



1 A control apparatus for synchronous operation of an armament and a plurality of blades rotating in an arcuate path comprising,

a drive shaft to which said blades are fixedly attached providing for the rotation of said blades in a substantially horizontal plane vertically disposed above said armament,

stationary means adjacent to said shaft,

rotating means fixedly attached to said shaft and cooperating with said stationary means,

a mount providing for secure retention of said armament said mount having elevational means and also traversal means,

rotor blade position means for providing a determination of position of said blades, said rotor blade position means includes a plurality of coils on said stationary means and plurality of magnets on said rotating means, said rotor blade position means receives a signal generated in said coils by said magnets and said generated signal indicates position of said blades in said arcuate path

armament aim means providing for an indication of aim of said armament, said indication of aim including both vertical elevation and horizontal traversal and

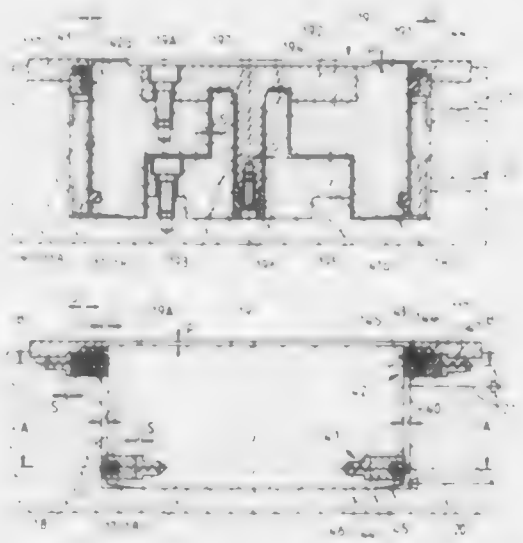
control means receiving said determination of position and said indication of aim to provide synchronous operation of said armament and said rotating blades.

5,003,863

CYLINDER-PISTON UNIT FOR DISPLACING A ROLL AT RIGHT ANGLES TO ITS LONGITUDINAL AXIS

Christian Schiel, and Paul Hafner, both of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

Filed May 1, 1989, Ser. No. 345,437
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1988, 3814754
Int. Cl.[5] F01B 1/02
U.S. Cl. 92—61 10 Claims



1 In a cylinder-piston unit for displacing a bearing housing for a rotatable roll at right angles to the longitudinal axis thereof, the displaceable bearing housing is arranged in a stationary frame accommodating said piston-cylinder unit and is guided therein by means of linear guide-elements extending in the direction of displacement, the improvement wherein

(a) the stationary frame comprises a cylinder-bore, the axis of which runs in the direction of displacement, and which contains an axially-mobile piston, the outer end-face of which engages with the bearing housing,

(b) the diameter of the cylinder-bore is greater than the diameter of the piston, thus providing, between the cylinder-bore and the piston, an annular gap in which resilient sealing rings are arranged,

(c) the difference between the diameters of the cylinder-bore and that of the piston is greater than the greatest possible amount of play of the linear guide-elements at right angles to the direction of displacement of the bearing housing,

(d) the axial length of the piston is less than the depth of the cylinder-bore, and

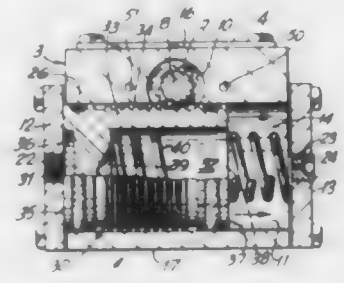
(e) a centering device engages with the piston in such manner that, in the unloaded condition of the cylinder-piston unit, said piston is centered in the cylinder-bore.

5,003,864

GEARED AIR ACTUATOR

John Dyer, Cresskill, N.J., assignor to Hoke Incorporated, Cresskill, N.J.

Filed Dec. 28, 1989, Ser. No. 458,434
Int. Cl.[5] F01B 31/00, 9/00
U.S. Cl. 92—132 5 Claims



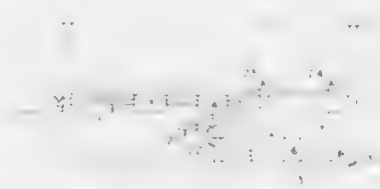
1 A geared air actuator comprising a housing, a piston mounted for movement in said housing, said housing having a front end wall and a rear end wall, said piston having a front wall and a hollow body portion extending rearwardly therefrom, the front wall and the hollow body of the piston being located between said housing front and rear end walls, spring means mounted within the hollow body portion of said piston, means for introducing pneumatic fluid into the housing between said housing front end wall and said piston front wall to bear against the piston front wall and move the piston against the action of the spring means, whereby the spring will move the piston back to its original position upon termination of the introduction of pneumatic fluid into the housing, the front wall of the piston being substantially thinner than the length of the body portion of the piston, the said front wall and the body portion being non-rotationally mounted to each other, a gear thread circumventing a substantial portion of the circumferential outer surface of the body portion, said gear thread being located wholly between the housing front and rear end walls, a pinion rack at right angles to and meshing with the gear thread, said spring means being interposed between the inner surface of the front wall of the piston and the rear end wall of the housing.

5,003,865

PRESSURE CONTROLLED FRESH AIR SUPPLY VENTILATION SYSTEM SOIL GAS PRESSURE AS A REFERENCE, AND METHOD OF USE

Jon E. Traudt, 3316 Augsta, Omaha, Nebr. 68144

Filed Dec. 27, 1989, Ser. No. 457,406
Int. Cl.[5] F24F 11/04
U.S. Cl. 98—1.5 5 Claims



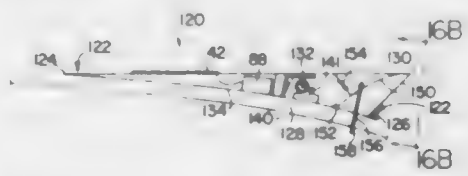
1 A ventilation system for use in a house or building, which house or building sets upon a foundation atop of underlying soil and is equipped with a heating and air conditioning system comprised of a cold air return, a blower fan and a high efficiency particulate filter, which ventilation system comprises, in combination with the heating and air conditioning system, a series combination of a prefilter and an inlet air blower, which prefilter and inlet air blower are attached to one another by way of a common duct, which common duct, at one end thereof, has access to the atmosphere outside the house or building, and which common duct, at the other end thereof, attaches to the cold air return of the heating and air conditioning system of the house or building, which house or building heating and air conditioning system is fashioned such that essentially all air entering the cold air return passes through the high efficiency particulate filter and and is caused by the blower fan of the heating and air conditioning system to circulate through the house or building and either leave through an opening in the house or building, such as an open door or window or by way of an exhaust fan, or return to the cold air return, which ventilation system further comprises a pressure difference monitoring sensor, which pressure difference monitoring sensor monitors the air pressure inside the house or building and also monitors soil gas pressure beneath the foundation of the house or building without significantly altering said soil gas pressure, which pressure difference monitoring sensor produces a signal which is proportional to the difference between the two identified pressures, which signal is used to regulate the operation of the inlet air blower so as to increase air volume flow rate when the air pressure in the house or building is at a level, when compared to the soil gas pressure, lower than a user selected level, so that the air pressure inside the house or building is increased, and to again operate at a reduced air volume flow rate when the air pressure inside the house or building is at, or above, the user selected level with respect to the soil gas pressure.

5,003,866

CAR VENTILATOR

Russell L. Ricci, 225 Kitemaug Rd., Uncasville, Conn. 06382

Division of Ser. No. 326,921, Mar. 22, 1989, abandoned. This application Mar. 29, 1990, Ser. No. 501,954
Int. Cl.[5] B60H 1/26
U.S. Cl. 98—2.02 4 Claims



1 In combination with a motor vehicle having a substantially horizontally disposed roof having a generally streamline contour enclosing a vehicular interior environment from an exterior environment

said roof having an opening formed therein for allowing air to communicate between said interior and said exterior environments,

a scoop-type ventilator supported on said roof and positioned in coincidence with said opening in said roof for moving air between the vehicle interior and exterior environments,

said scoop-type ventilator being comprised of a housing having a leading edge and a rearwardly oriented trailing edge,

extending rearwardly from said leading edge to said trailing edge are two spaced apart side walls oriented substantially vertically and parallel to one another,

said side walls increasing in height proceeding away from said leading edge towards said housing trailing edge,

a top cover member having a substantially planar surface defining the leading edge of said ventilator, each of said side walls being connected to said cover member along

the top edge of each side wall such that said cover member extends substantially horizontally and generally within the same plane as that of the generally streamline contour of said roof,

a base member extending between each of said side walls and being connected at the opposite lower edges of each of said side walls such that said base member gradually slopes downwardly proceeding the way from the housing leading edge toward the housing trailing edge,

said top cover member and each of said side walls and said base member together defining a first opening in said housing adjacent said housing trailing edge,

a second opening formed in said base member and being placed in communication with said opening formed in said roof permitting air to move between said interior environment of said vehicle through said first and second openings and said exterior environment,

a damper disposed adjacent said trailing edge of said ventilator and oriented generally transversely to each of said side walls and being sized such that said damper in a closed position generally blocks the passage of air through said first opening, and

powered impeller means located within said ventilator for positively moving air through said ventilator between said interior and exterior environments

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5,003,867

AIR CONDITIONING SYSTEM FOR GROCERY STORE OR THE LIKE AND DIFFUSER UNITS THEREOF

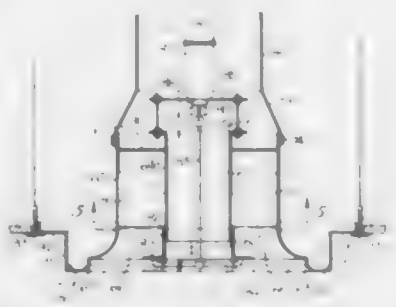
Franc Sodec, Wurselen, Fed. Rep. of Germany; Donald L. Hudson, Matthews, and David T. Bolen, Charlotte, both of N.C., assignors to Hudson Associates, Inc., Charlotte, N.C.

Filed Jun. 2, 1989, Ser. No. 360,406

Int. Cl.[5] **F24F** *13/062, 7/08*

U.S. Cl. 98—31.6 **27 Claims**





11 A grocery store or the like having refrigerated food displays or the like along certain aisles of the store and having a ceiling which is typically of a height of 12 feet or more, the combination therewith of an air conditioning system characterized in that only a single air return conduit is required for properly accommodating the entire store due to the enhanced mixing of the air within the store and the elimination of stagnant air areas, particularly heavy, cool stagnant air heretofore typically present and lying adjacent refrigerated food displays, said air conditioning system including means providing a supply of conditioned air, overhead air supply conduits located above the ceiling and connected to said supply of conditioned air for supplying conditioned air into the store, a single air return conduit for returning air from the store to said supply means for conditioned air, air outlet diffuser units mounted in said ceiling of the store at predetermined locations and connected to said air supply conduits for receiving conditioned air therefrom and for providing a downward flow of conditioned air into the store, a plurality of said air outlet diffuser units being positioned substantially above the aisles adjacent said refrigerated food displays and each being so constructed as to provide a downward flow of conditioned air into the store in such a manner that the shoppers moving about the aisles there below receive conditioned air substantially free of drafts for aiding in shopper comfort, while heavy, cool, stagnant air lying adjacent said refrigerated food displays and the like is induced upwardly into upper regions of the store above the shoppers for effecting mixing thereof in the upper regions of the store with the conditioned air flowing from the diffuser units and also for mixing with that higher temperature air inherently residing in the upper regions of the store above the shoppers, each of said plurality of air diffuser units having a housing with a flared air exit mouth, means defining a tubular air passageway positioned coaxially of said housing and also defining an annular air passageway between itself and said housing, a plurality of vanes mounted in said annular passageway for producing rotational, highly turbulent currents of air flowing from said passageway, said vanes interconnecting said means defining said tubular air passageway and said housing, control means associated with said tubular air passageway for controlling the volume of air passing therethrough and for controlling the flow pattern of the currents of air flowing from said annular air passageway so that as the volume of air passing through said tubular air passageway is increased, the flow pattern of the currents of air flowing from said annular passageway is directed downwardly in a more vertical direction and in a more compact flow pattern and over a smaller area of the store, the upper end of said tubular air passageway and the upper end of said annular passageway each being in fluid communication with one of said overhead supply conduits for receiving conditioned air therefrom, means defining a perforated air diffuser mounted in said housing adjacent the ingress end of said annular passageway and in surrounding relation to said tubular air passageway for diffusing the airflow from said supply conduit into said annular passageway for obtaining a more uniform flow of air to said vanes mounted therein, said perforated air diffuser also serving for apportioning the amount of airflow from said conduit into said annular passageway, both the flared exit mouth of said housing and the lower end of said annular passageway extending below said store ceiling a predetermined distance so as to position the outflow of air from said tubular passageway and the outflow of air from said annular passageway at a predetermined distance below said ceiling so as to avoid air flowing from said annular passageway outwardly along the face of said ceiling and creating an undesirable coanda effect, and mounting means surrounding said housing and serving for individually mounting each of said plurality of air diffuser units in the ceiling of the store

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5,003,868

FOOD PROCESSING APPARATUS

John Higgins, Ennis, and Michael McDonagh, Cratloe, both of Ireland, assignors to Alperk Limited, Shannon, Ireland

Filed Apr. 26, 1990, Ser. No. 513,499

Claims priority, application Ireland, May 1, 1989, 650/89; May 1, 1989, 652/89; May 1, 1989, 653/89

Int. Cl.[5] **A47J** *37/00, 37/12*

U.S. Cl. 99—357 **10 Claims**

1 A food processing apparatus comprising

a central control unit,

a refrigerated compartment including a batch dispensing system operatively connected to the control unit for automatic dispensing batches of food from the refrigerated compartment,

a cooking compartment including a deep-fry cooking chamber comprising

a casing,

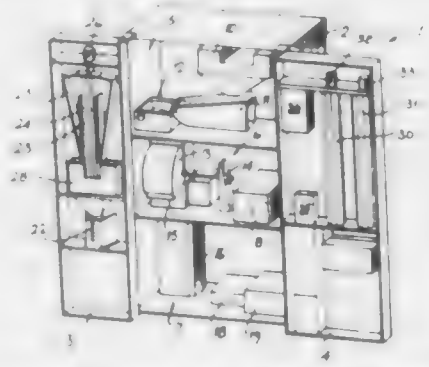
an oil heating means,

a reception opening in the casing for reception of batches of frozen food from the refrigerated compartment,

door means operated by a drive means operatively connected to the control unit for covering the reception opening except when a batch of food is being received,

a food basket mounted in the casing,

drive means for moving the basket between a cooking position in which at least portion of the basket is immersed in oil for cooking and a discharge position for



delivery of food from the basket through a discharge outlet in the casing,

barrier means for the discharge outlet in the casing, the barrier means being movable from a closed position for substantially sealing the casing discharge outlet during cooking and an open position to allow discharge of food from the basket through the casing discharge outlet when the basket is in the discharge position, and

a container dispensing mechanism operatively connected to the control unit for automatically dispensing a container for reception of the discharged cooked food

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5,003,869

PROCEDURE FOR THE METERED ADDITION OF COPPER IONS IN CHEESE PRODUCTION

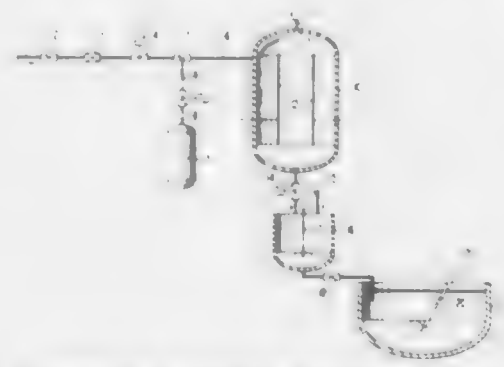
Claus Fabricius, Allerød, Denmark, assignor to Mator AG, Inwil, Switzerland

Division of Ser. No. 365,548, Jun. 13, 1989. This application Aug. 31, 1990, Ser. No. 575,647

Claims priority, application Switzerland, Jun. 14, 1988, 2277/88

Int. Cl.[5] **A23C** *19/00, 19/05, 19/068,* **A01J** *25/00*

U.S. Cl. 99—453 **1 Claim**



1 An apparatus for producing hard cheese using a process which comprises treating raw milk in a stainless steel kettle in the presence of copper ions, enzymes necessary for cheese production and added water to dissolve the enzymes, said apparatus comprising

(a) an electrolyzing tank having a vent and a means for introducing copper ions into added water comprising an anode and a cathode,

(b) means for feeding added water into the electrolyzing tank,

(c) means for adding a metered amount CO_2 to the added water,

(d) a mixing tank having a mixing device,

(e) means for draining the added water from the electorlyzing tank into the mixing tank,

(f) means for adding enzyme to the mixing tank,

(g) a milk kettle having a mixing device, and

(h) means for draining the added water from the mixing tank into the milk kettle

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5,003,870

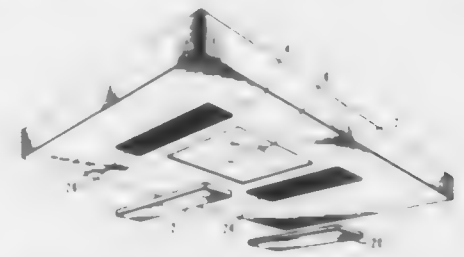
ANTISTRETCH SCREEN PRINTING ARRANGEMENT

Harlan Isaak, Costa Mesa, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 21, 1989, Ser. No. 396,173

Int. Cl.[5] **B05C** *17/06*

U.S. Cl. 101—127.1 **17 Claims**



1 A screen printing apparatus, comprising

frame means,

a screen mesh attached to said frame means, said screen mesh being coated with a photosensitive emulsion and having a predefined pattern area therein formed by removal of portions of said emulsion for screen printing, said screen mesh having an inner screen surface and an outer screen surface, and

two flat elongated strips attached to said outer screen surface and located a short distance outside the pattern area and spaced inwardly from said frame means

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5,003,871

INKING UNIT FOR A ROTARY OFFSET PRINTING MACHINE

Karl-Heinz Franz, Aschaffenburg; Heinrich Ochs, Sinntal, and Kurt Difflipp, Dietzenbach/Steinberg, all of Fed. Rep. of Germany, assignors to Man Roland Druckmaschinen AG, Fed. Rep. of Germany

Continuation of Ser. No. 160,590, Feb. 26, 1988, abandoned. This application Jun. 8, 1990, Ser. No. 535,995

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1987, 3706602

Int. Cl.[5] **B41F** *7/26, 7/36, 31/10*

U.S. Cl. 101—148 **8 Claims**

1 An inking unit for a rotary offset printing machine having a plate cylinder, a damping system and an ink supply system including a plurality of ink transport rolls for delivering ink to a plurality of inking rolls engaging the plate cylinder comprising, in combination,

one of said ink transport rolls being a primary ink distributor roll,

said inking rolls including a front roll pair including a primary ink applicator roll and a secondary ink applicator roll,

means including a first branch roll for conveying ink from said primary ink distributor roll to said primary and secondary ink applicator rolls,

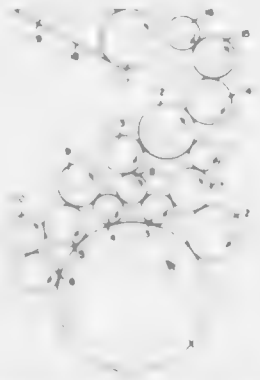
means including a second branch roll for also conveying ink

from said primary ink distributor roll to said primary ink applicator roll,

said first and second branch rolls being disposed respectively in first and second roll trains to define first and second parallel subflow paths of ink conveyed from said primary ink distributor roll to said primary ink applicator roll, said first and second roll trains each having adjacent rolls,

said secondary ink applicator roll being coupled to said first roll train and disposed to engage the plate cylinder after the engagement of said primary ink applicator roll with the plate cylinder,

said inking rolls including at least one further ink applicator roll engaging the plate cylinder after the engagement of said secondary ink applicator roll with the plate cylinder,



a rider roller engaging said secondary ink applicator roll and said further ink applicator roll, said further ink applicator roll being coupled to said first ink subflow path only by said rider roller,

means for enabling at least one of said branch rolls for selective engagement with and disengagement from at least one of the adjacent rolls in the respective one of said first and second roll trains,

and said damping system including means for conveying damping fluid to the plate cylinder in advance of the engagement of said primary ink applicator roll with the plate cylinder, such that increases in the amount of damping fluid conveyed to the plate cylinder automatically decrease the flow of ink in said second subflow path relative to the flow of ink in said first subflow path

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5,003,872

DEVICE FOR APPLYING COLOR TO A BLOCK OF A TAMPON PRINTING MACHINE

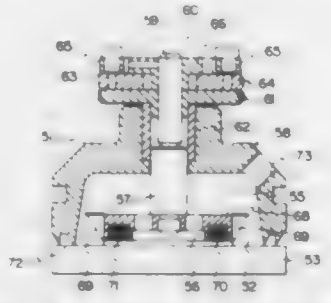
G. Robert Dalferth, Ladwigsburg, Fed. Rep. of Germany, assignor to Morlock Mechanik GmbH

Filed Jun. 23, 1989, Ser. No. 370,462

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1988, 8808059[U]; July 27, 1988, 8809564[U]

Int. Cl.' B41F 31/00

U.S. Cl. 101—163 21 Claims



1. In a device for applying color to a block of a tampon printing machine comprising a coloring and wiping device which includes a bottomless hollow body (51), the hollow body (51) having an open side, the hollow body (51) adapted to be movable relative to the block and to be placed with the open side on the block and pressable against the block by means of a pressing device, the improvement comprising a stirring mechanism (56) being rotatably arranged in the hollow body (51), the pressing device comprising at least one magnet, the stirring mechanism (56) having at least one downwardly open chamber (70), the at least one magnet being mounted in the downwardly open chamber

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5,003,873

FLEXOGRAPHIC PRINTING MACHINE, ESPECIALLY FOR FLEXOGRAPHIC BLANK PRINTING

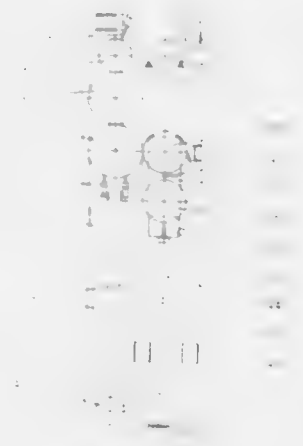
Peter Lauber, Stetten, Switzerland, assignor to Conprinta Ltd., Zurich, Switzerland

Continuation of Ser. No. 189,537, May 3, 1988, abandoned. This application Oct. 27, 1989, Ser. No. 428,050

Claims priority, application Switzerland, May 7, 1989, 01741/87

Int. Cl.' B41F 5/04, 31/30

U.S. Cl. 101—219 8 Claims



1. A printing machine for flexographic web printing comprises at least one printing unit, each of said at least one printing unit being provided with a back-up cylinder, a tension roller and an endless printing belt drawn around said back-up cylinder and said tension roller, an impression cylinder for pressing said web against said back-up cylinder, an ink bath, a first engraved roller and a second engraved roller for transferring ink to said endless printing belt, drive means for drawing said web between said back-up cylinder and said impression cylinder for printing said web with ink transferred from said endless printing belt and positioning means for selectively positioning said first engraved roller and said second engraved roller between a first position wherein said first engraved roller is a working engraved roller positioned so as to pick up ink from said ink bath for transferring ink to said endless printing belt and said second engraved roller is a stand-by engraved roller and a second position wherein said second engraved roller assumes the position of said first engraved roller when in said first position and is the working engraved roller for picking up ink from said ink bath for transferring ink to said endless printing belt and said first engraved roller assumes the position of said second engraved roller when in said first position.

5,003,874

DISTRIBUTOR ROLLER FOR AN INKING UNIT OF A PRINTING PRESS

Rudi Junghans, Wilhelmsfeld, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen, Heidelberg, Fed. Rep. of Germany

Filed Dec. 4, 1989, Ser. No. 445,481

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1988, 3840871

Int. Cl.' B41F 31/14, 31/26 B41L 27/16

U.S. Cl. 101—348 20 Claims



1. A distributor roller for use in a printing press, said distributor roller comprising

an axial shaft member, said axial shaft member having a longitudinal axis,

a casing member substantially encircling said axial shaft member, said casing member being rotatably and axially slideably mounted for rotation about and for axial translation with respect to said axial shaft member,

said casing member having an interior surface substantially surrounding said axial shaft member, said interior surface of said axial shaft member having a cross-section which, when taken substantially transverse to said axial shaft member, is eccentrically disposed with respect to said shaft member,

means for rotating said casing member about said axial shaft member,

an oscillating body member disposed within said casing member, said oscillating body member being pivotally mounted for pivotal movement in a direction substantially transverse to the longitudinal axis of said axial shaft member,

said oscillating body member having at least one engagement surface for engaging said eccentrically disposed interior surface of said casing member,

whereby said oscillating body member is caused to undergo a reciprocating movement in the direction substantially transverse to the longitudinal axis of said axial shaft member upon rotation of said casing member about said axial shaft member, and

conversion means for converting said reciprocating movement of said oscillating body member into a reciprocating axial displacement of said casing member with respect to said axial shaft member.

5,003,875

FOUNTAIN ROLL AND ASSEMBLY FOR CAN DECORATING APPARATUS

Frank L. Shriver, Lakewood, Colo., assignor to Adolph Coors Company, Golden, Colo.

Filed Mar. 13, 1989, Ser. No. 322,514

Int. Cl.' B41F 31/04, 31/06

U.S. Cl. 101—350 18 Claims

1. A fountain roll and assembly for a can decorating apparatus comprising,

a pair of spaced apart fixedly mounted frame members,

pan means for holding a supply of ink,

adjustable support means for adjustably supporting said pan means on said frame members so as to maintain the level of said supply of ink in a plane substantially parallel to the horizontal;

a fountain roll having a generally cylindrical outer peripheral surface for contacting said supply of ink,

mounting means for mounting said fountain roll for rotation about a fixed axis and located so that the lower portion of said outer peripheral surface of said fountain roll as it rotates is immersed in said supply of ink so as to provide a coating of ink on said outer surface,

mounting means for rotating said fountain roll so that said outer peripheral surface is moving upwardly when it leaves said supply of ink,

doctor blade means for contacting said coating of ink on said outer peripheral surface of said fountain roll after it leaves said supply of ink to remove excess ink from said outer peripheral surface and to leave an even layer of ink on said outer peripheral surface,



means for supporting said doctor blade means for movement in at least one linear direction and also in another linear direction perpendicular to said one linear direction,

adjusting means for moving said doctor blade means at least in one linear direction and also in another linear direction perpendicular to said one linear direction,

said pan means having a horizontal cross-sectional configuration that is substantially larger than the horizontal cross sectional configuration of said fountain roll and said doctor blade means so that all of said removed excess ink falls back into said pan means, and

a rotatable and oscillatory ductor roll mounted so that it can be moved into and out of contact with said layer of ink on said outer peripheral surface

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5,003,876

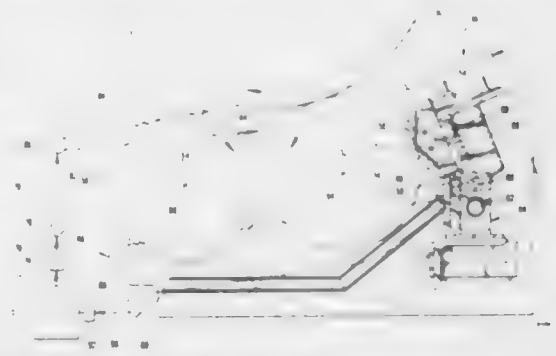
PRINTING APPARATUS WITH DUAL INKING SYSTEM

John R. Harrison, Baltimore, and Michael W. Millard, Baldwin, both of Md., assignors to The Ward Machinery Company, Cockeysville, Md.

Filed Feb. 10, 1989, Ser. No. 310,065

Int. Cl.' B41F 31/04, 31/06, 31/08, B41L 27/10

U.S. Cl. 101—350 21 Claims



1. Printing apparatus, comprising

a frame structure;

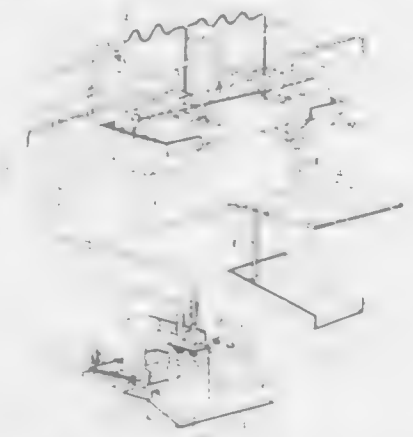
a print cylinder rotatably mounted in said frame structure;
an ink roll rotatably mounted in said frame structure and engageable with said print cylinder for transferring ink thereto;
a wipe roll rotatably mounted in said frame structure,
means for moving said wipe roll into and out of engagement with said ink roll;
a doctor blade head assembly;
means for moving said doctor blade head assembly into and out of engagement with said ink roll;
selection means for actuating said wipe roll moving means and said doctor blade head assembly moving means for selectively engaging either of said wipe roll and said doctor blade head assembly with said ink roll and spacing the other of said wipe roll and said doctor blade head assembly from and out of contact with said ink roll to enable either a wipe roll inking system or a doctor blade inking system to be selected for printing,
means for supplying ink directly to only one of said wipe roll and said doctor blade head assembly at a time, and only while said one is selectively engaged with said ink roll by said selection means; and
said ink supplying means including a valve, actuated by said selection means between two distribution positions, for directing said ink to said one selectively engaged with said ink roll.

5,003,877

PRINTING APPARATUS INKER WITH END DAMS

Tadashi Yano, and Kenichi Hamada, both of Mihara, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 17, 1989, Ser. No. 338,318
Claims priority, application Japan, Apr. 18, 1988, 63-50851[U]
Int. Cl.[5] B41F 31/20, 35/04, B41L 27/22, 41/04
U.S. Cl. 101—363 3 Claims



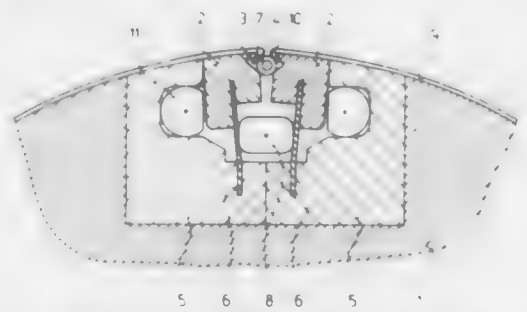
1 A printing apparatus comprising
a pair of ink rolls defining a nip therebetween,
a pair of dams provided in the nip and movable in the direction of the axes of the ink rolls,
said pair of dams defining a segment of said nip located between the dams and defining segments of said nip located outside said dams,
an ink supplying device having an ink pump for supplying an ink to the segment of said nip located between the dams,
an ink recovery device comprising suction means for recovering excess quantities of the ink supplied to said segment of said nip located between said dams,
a washing liquid supplying device for supplying a washing liquid to said ink supplying device and to said ink recovering device via said nip, and
a lubricant supplying device for supplying a lubricating liquid to the segments of said nip located outside said dams.

5,003,878

APPARATUS FOR CLAMPING PRINTING PLATES

Joachim Dorow, Hassloch, and Gerhard Bleckmann, Lampertheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 12, 1988, Ser. No. 142,997
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1987, 3702032
Int. Cl.[5] B41F 13/08, 27/06
U.S. Cl. 101—415.1 1 Claim



1 Apparatus for clamping printing plates for printing presses comprising two clamping strips which are displaceably arranged in a cylinder recess and held by two leaf springs and hook under an end region of the printing plate to be clamped and whose outer contours, in the clamped state, have a curvature corresponding to the cylinder curvature and each of which is bonded by an inner surface terminating at the top in a thrust surface which engages a bent-over edge claw of the printing plate to be clamped,
wherein two cams are rotatably mounted in said recess outwardly of said clamping strips, which cams, upon rotation, displace said clamping strips, respectively, in the clamping direction of the printing plate,
wherein a third cam is rotatably mounted between the leaf springs and in the vertical plane of symmetry of the apparatus, said third cam, upon rotation, engaging said springs in the unclamping direction of the printing plate to displace said clamping strips in the last-mentioned direction, and
wherein a resilient hose filled with a sealing compound and having at least one orifice along its length facing the printing plate to be clamped is inserted between said clamping strips in the region below said thrust surfaces, said inner surfaces of the clamping strips being formed so that as the clamping strips are displaced toward the clamped state under the control of the first-mentioned two cams, said resilient hose is deformed by said clamping strips to force the sealing compound through said orifice out of said hose and toward said end region of the printing plate

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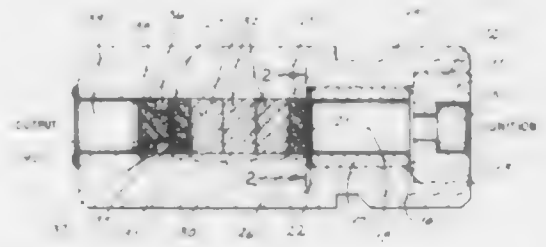
5,003,879

DELAY DETONATOR

Ronald G. Jones, Godfrey, Ill., assignor to Propellex, Edwardsville, Ill.

Filed Nov. 6, 1989, Ser. No. 432,079
Int. Cl.[5] F42C 19/10
U.S. Cl. 102—204 6 Claims

1 A delay detonator for causing output device detonation a predetermined delay period of time following ignition of the detonator, comprising a metal body, a primer fitted at an inner end of the body, a recess opening from the primer into an expansion chamber, a first-fire combustion section including first-fire ignition powder separated from the expansion chamber by a retention screen, a delay column proximate the first-fire combustion section including a delay powder composition to be ignited by the ignition powder, the delay column being of a relatively high length/diameter aspect ratio, a further combustion section including first-fire ignition powder for ignition by the delay column after a delay burn time thereof, and a detonator output assembly at an opposite, outer end of the body for ignition by the further combustion section, the delay



column having a burn time which accounts substantially entirely for said predetermined delay period, being cylindrical in form and of constant diameter, and of a length/diameter aspect ratio of approximately 3:1, containing a tungsten delay composition, and being assembled by three successive charges of delay composition of essentially equivalent weight, loaded at equivalent pressures

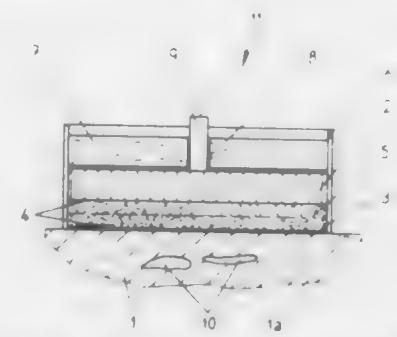
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5,003,880

PROCESS FOR THE IMPACT HEALING OF INNER DISCONTINUITIES OR DEFECTS IN THE SUB-SURFACE REGION OF A CAST COMPONENT

Karl Gut, Benken; Wolfgang A. Matejka, Uhwiesen; Walter Gysel, Schaffhausen, and Urs Gerber, Flurlingen, all of Switzerland, assignors to Georg Fischer AG, Schaffhausen, Switzerland

Filed Apr. 14, 1988, Ser. No. 181,563
Claims priority, application Switzerland, Apr. 14, 1987, 01437/87
Int. Cl.[5] F42B 3/00
U.S. Cl. 102—314 13 Claims



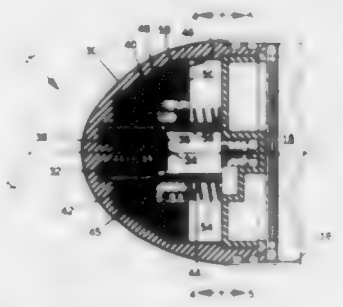
1 A process for the impact healing of inner discontinuities present in sub-surface areas of a cast metal component comprising providing a cast metal component having inner discontinuities in sub-surface area thereof, locating an explosive charge on the surface of the cast metal component over the inner discontinuities and detonating said explosive charge whereby said inner discontinuities are substantially healed without destruction of the cast metal component

5,003,881

AERIAL FLARE AND IGNITER

Stanley J. Herold, Switz City; Charles D. Howard, Edwardsport, and Donald E. LaGrange, Washington, all of Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 7, 1990, Ser. No. 564,234
Int. Cl.[5] F42B 4/28, F42C 15/24, 15/26
U.S. Cl. 102—337 8 Claims



1 An igniter, comprising
actuating means for initiating ignition,
locking means for holding the actuating means from initiating ignition,
inertial mass means,
guide means mounting the inertial mass means for relative movement along a fore-and-aft axis between a safe position and an armed position aft of the safe position under launching forces,
the inertial mass means including setback means for holding the locking means in the safe position,
the inertial mass means also including weight means separable from the setback means for holding the locking means in the armed position,
means biasing the inertial mass means in the safe position,
the guide means including means for guiding the weight means for relative movement to an ignition position forward of the armed position upon application of forward motion retarding forces, and
retention means for restraining the setback means from movement to the ignition position with the weight means,
the weight means including means for releasing the locking means upon movement of the weight means to the ignition position,
thereby enabling the actuating means to initiate ignition

5,003,882

DEVICE FOR TILTING A SUB-MUNITION UNDER A PARACHUTE INTO INCLINED POSITION

Jean-Pierre Frehaut, and Jean-Pierre Pineau, both of Orleans, France, assignors to Thomson-Brandt Armements, Boulogne Billancourt, France

Filed Jan. 9, 1990, Ser. No. 462,557
Claims priority, application France, Jan. 20, 1989, 89 00685
Int. Cl.[5] F42B 10/56, 12/10
U.S. Cl. 102—387 7 Claims

1 Device for tilting a sub-munition under a parachute into an inclined position, comprising a plate intended to be carried under the said parachute, and including primary and secondary means of suspending the said sub-munition from the plate,
the primary means of suspension being formed of an arm with an upper and a lower end hinged to the plate and the sub-munition respectively, about horizontal parallel axes,
the secondary means of suspension having a structure with two positions one position in which the sub-munition is vertical and another in which it is inclined, this structure also comprising a means for guiding the tilting from the vertical to the inclined position along a path such that the

center of gravity of the sub-munition moves downward along a vertical line during said tilting, a means of locking



it in the first position and a means of releasing it from the first position

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5,003,883

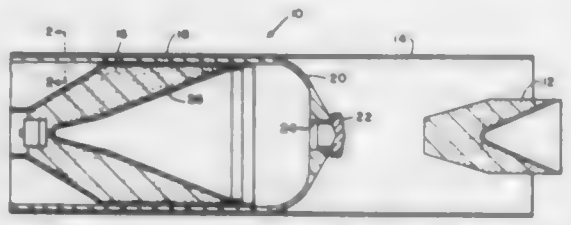
LIGHTWEIGHT BLAST SHIELD

Larry C. Mixon, Madison; George W. Snyder, Huntsville; Scott D. Hill, Toney; Gregory L. Johnson, Decatur; J. Frank Wlodarski; Alexis P. von Spakovsky, both of Huntsville; John D. Emerson, Arab; James M. Cole, and John P. Tipton, both of Huntsville, all of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 23, 1990, Ser. No. 555,951

Int. Cl.' F42B *12/10*

U.S. Cl. 102—476 10 Claims



1 A tandem warhead missile assembly comprising, and elongated composite material housing of wound fiber and epoxy, first and second warheads mounted in said housing in spaced relationship, and a dome shaped composite material blast shield of wound fiber and epoxy, made integral with said housing, separating said first and second warheads and for protecting said second warhead from explosive blast of said first warhead.

5,003,884

HOLLOW OR PROJECTILE CHARGE

Norbert Nisal, and Peter Grösaler, both of Schrobenhausen, Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm Gesellschaft mit beschränkter Haftung

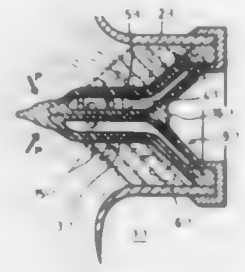
Filed May 24, 1984, Ser. No. 633,784

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1983, 3321035

Int. Cl.' F42B *12/10*

U.S. Cl. 102—476 7 Claims

1. Hollow or projectile charge comprising an explosive material charge, and a lining acted upon by the detonation of said explosive material charge and forming a spike or projectile, wherein the improvement comprises an axially extending inner conductor (4), an axially extending outer conductor (5) encircling and spaced radially outwardly from said inner conductor, said inner and outer conductors forming a coaxial system (3), said explosive material charge (6) laterally enclosing said outer conductor, said lining comprising a double-walled lining (9) at one end of said inner and outer conductors and comprising a first lining wall (9) extending transversely of and outwardly from the one end of said outer conductor with said first lining wall contacting said explosive material charge, and a second lining wall spaced from said first lining wall and extending transversely of and outwardly from the one end of said inner conductor, said inner and outer conductors and said double-walled lining forming a hollow spaced (10), said coaxial



system is electrically open at a location (12) spaced axially from said double-walled lining, electric feed means (8) in spaced relation to said inner and outer conductors at the electrically open location for feeding a high current pulse into said coaxial system so that an electromagnetic field is generated in said hollow space (10), an igniter (7) located in said explosive material charge in the region of the electrically open location (12) and the ignition thereof is initiated after feeding the high current pulse whereby the inner and outer conductors are pressed into contacts closing said hollow space (10), and the detonation of the explosive material charge continues to compress said hollow space until the spike is formed from said double-walled lining (9).

5,003,885

WARHEAD FOR AN AIRBORNE BODY

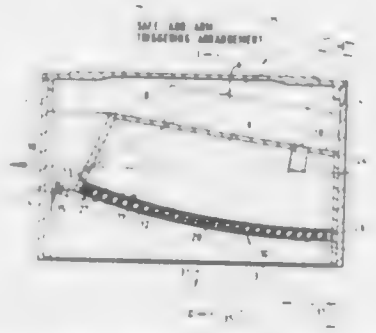
Karl Rudolf, Schrobenhausen, and Konrad Ringel, Leinburg, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Dec. 14, 1989, Ser. No. 451,116

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1988, 3843432

Int. Cl.' F42B *12/32*

U.S. Cl. 102—494 8 Claims



1. A warhead for an airborne body for the attacking of a lightly-armored target through the intermediary of splinters, said warhead including a protective enclosure, a safe-and-arm and triggering arrangement, an explosive charge and splinter-producing insert being arranged within said enclosure, said splinter-producing insert being slightly convexly outwardly

curved and located essentially within a single main plane, said main plane intersecting the longitudinal axis of the warhead at an angle of between about 5° to 30°, said insert, viewed in the direction of flight, having a bottom located below a transverse axis in the region of a rear wall of the warhead and continually rising in the direction of flight, and a triggering location for the explosive charge being in a longitudinal symmetrical axis of the charge proximate the rear wall of said warhead

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5,003,886

PROJECTILE FOR COMBATTING ACTIVELY AND PASSIVELY RECTING ARMOR

Klaus-Dieter Pahnke, Hilden; Rolf Holl, and Wilfried Becker, both of Düsseldorf, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 35,113, Mar. 18, 1987, abandoned. This application Jul. 29, 1987, Ser. No. 81,801

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1986, 3609092

Int. Cl.' F42B *14/06, 12/68*

U.S. Cl. 102—521 6 Claims



1 Sabot-projectile arrangement adapted for being ejected from a gun barrel for the purpose of combatting actively and passively reacting armor, the sabot-projectile arrangement comprising

first and second projectiles, each having a different coefficient of air resistance (c_w),

a discarding sabot comprised of segments which are discarded after the sabot-projectile arrangement leaves a gun barrel, the segments of said sabot defining a receptacle for accommodating said first and second projectiles with their longitudinal axes flush behind one another in order to follow one another in a spaced relationship on a common trajectory, with said first projectile leading said second projectile,

form locking means defining a form locking connection between said receptacle and each of said projectiles, with said form locking connection existing between the leading first projectile disposed in said receptacle and the segments of said sabot being released earlier than when said segments are separated from said second projectile after said sabot-projectile arrangement leaves a gun barrel,

delay means, disposed on said second projectile, for delaying said second projectile with respect to said first projectile when said segments are being separated for creating a desired distance between said two projectiles within narrow distancing limits within which there exists an axial aerodynamic coupling between said two projectiles, and wherein said axial aerodynamic coupling produces a correcting aerodynamic restoring force in the direction toward the trajectory of said leading first projectile, with said restoring force acting on said second projectile transversely to the longitudinal projectile axis of said second projectile, and

actuatable means for varying the c_w coefficient of at least one of said projectiles during flight, wherein actuation of said actuatable means causes the axial aerodynamic coupling between said projectiles to be maintained within said distancing limits

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5,003,887

GAS GENERATOR FOR INFLATING AN INFLATABLE ARTICLE

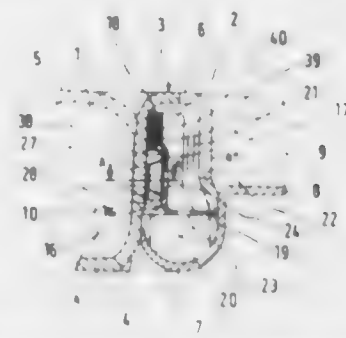
Karl Unterforsthuber, Oberhaching, and Rudolf Koenig, Brucknuehl, both of Fed. Rep. of Germany, assignors to Bayern-Chemie Gesellschaft fuer flugchemische Antriebe mbH, Aschau am Inn, Fed. Rep. of Germany

Filed Dec. 13, 1989, Ser. No. 450,850

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1988, 3842145

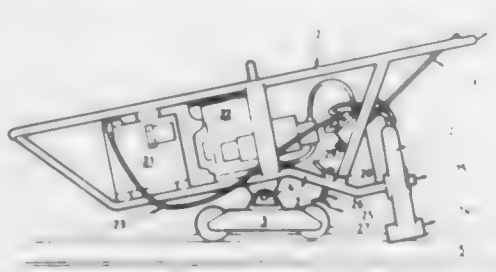
Int. Cl.' B60R *21/26*

U.S. Cl. 102—531 12 Claims



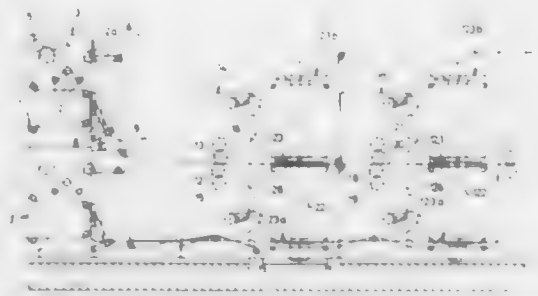
1 A gas generator for inflating an inflatable article, comprising a housing, a reaction chamber in said housing for generating gas, a filter chamber arranged for receiving gas from said reaction chamber, first gas exit opening means (10 to 15) in said reaction chamber for a gas flow from said reaction chamber into said filter chamber, second gas exit opening means (22) in said filter chamber for a gas flow from said filter chamber into said inflatable article, temperature responsive flow control means arranged in said gas generator for influencing a gas flow from said reaction chamber into said inflatable article in such a way that an inflation duration and an inflation pressure are substantially independent of a gas generator temperature, and wherein said reaction chamber (4) has a circular cross-section, wherein said filter chamber has a ring configuration surrounding said reaction chamber, said temperature responsive flow control means comprising a baffle ring (16) extending around said reaction chamber with a radial spacing for guiding a flow of generated gas, a ring slide (28) rotatably surrounding said reaction chamber in said radial spacing, said a temperature responsive drive member (40) connected to said ring slide for driving said ring slide (28) between closing and opening positions in response to temperature changes, said baffle ring (28) having flow ports (24, 25, 26) therein, said ring slide (28) having flow port closing wall sections (32 to 34) for cooperation with said flow ports (24, 25, 26) of said baffle ring (16), said temperature responsive drive member (40) driving said ring slide (28) to close said flow ports (24, 25, 26) in said baffle ring in response to a higher gas generator temperature and to open said flow ports (24, 25, 26) in said baffle ring in response to a lower gas generator temperature

5,003,888
RAIL FASTENER APPLICATOR
Richard W. Martin, Sturt, Australia, assignor to McKay Australia Limited, Maidstone, Australia
Filed Aug. 16, 1989, Ser. No. 394,632
Claims priority, application Australia, Oct. 13, 1988, PJ0937
Int. Cl.[5] E01B *29/32*, B61H *13/00*
U.S. Cl. 104—17.002 4 Claims



4 A rail fastener applicator comprising a frame with wheels mounted for movement along a rail and fastener applicator arms, said frame being rotatable on said wheels in a vertical plane about a pivot point from a position in which the applicator is moved along the rail so that the fastener applicator arms are clear of the rail to a position where the applicator arms contact the fasteners to apply the rail fasteners to the rail, and a single mechanism serving as a dual height adjustment and brake means attached to said frame for engaging the wheels when said frame is in the fastener application position

5,003,889
ROTARY PRINTING MACHINE SYSTEM WITH A WEb PATH CHANGING ARRANGEMENT
Wolfgang Glunz, Augsburg, and Gunnar Rau, Königsbrunn, both of Fed. Rep. of Germany, assignors to MAN Roland Druckmaschinen AG, Offenbach am Main, Fed. Rep. of Germany
Filed Feb. 5, 1990, Ser. No. 475,125
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1989, 3905400
Int. Cl.[5] B41F *13/02*
U.S. Cl. 101—228 9 Claims



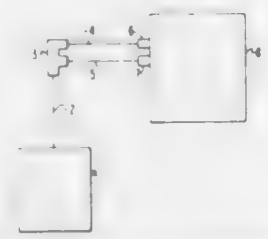
1 In a rotary printing machine system having a plurality of serially, sequentially positioned operating stations (3, 14, 17, 33, 44) through which a substrate web (1, 31, 31') is guided in an essentially horizontal path between a first operating station and a subsequent operating station,
an arrangement for changing the web path in the printing machine system,
comprising, in accordance with the invention,
a pair of vertically spaced web substrate guide elements (23, 26; 123, 126; 53, 56);
positioning means (22; 122; 52) for selectively movably positioning said pair of guide elements between
a printing position in which the substrate web passes between said guide elements without contacting them, and
a lower position (23*a*), and
an upper position (23*b*)
wherein the upper one (23, 123, 53) of the vertically spaced substrate guide elements is of sufficient strength to support an operator to permit the operator to stand thereon when said substrate guide elements are in their lower position (23*a*) to provide access to an upper region of the operating station, and
to provide access to the lower region of said operating station when the substrate guide elements are in their upper position (23*b*), and
a web storage means (8, 9, 10, 38, 39, 40) to provide substrate web length upon displacement of said substrate guide elements from said printing position

5,003,890
STUMP BURNER
Geoffrey C. Newton, 3525 Lombard, Everett, Wash. 98201
Continuation-in-part of Ser. No. 422,872, Oct. 17, 1989, abandoned. This application May 16, 1990, Ser. No. 523,958
Int. Cl.[5] F23D *3/00*, *5/00*
U.S. Cl. 110—239 18 Claims



1 A device for burning a stump by use of a combustible fuel comprising a single elongated blast pipe open at least one end and having an open and unobstructed interior, means for supporting said blast pipe in generally upright position with its open end engaged against the stump for containment of a quantity of the combustible fuel in the bottom portion of said pipe adjacent to the stump, and means for injecting air into said pipe for passage through the fuel to intensify combustion thereof adjacent to the open end of said pipe for burning the stump in the area of said open end of said pipe, said supporting means including upright support legs and a collar slidably receiving said blast pipe for permitting free movement of said blast pipe by gravity downward into the stump as the stump is burned away below said pipe

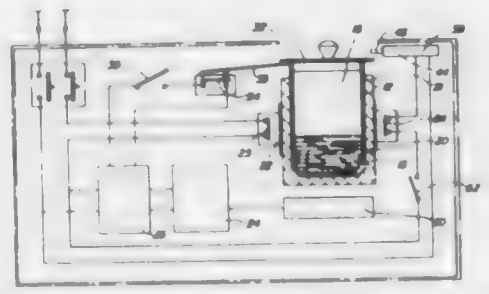
5,003,891
PULVERIZED COAL COMBUSTION METHOD
Shozo Kaneko, and Masaaki Kinoshita, both of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 26, 1990, Ser. No. 485,087
Claims priority, application Japan, Mar. 3, 1989, 1-49874
Int. Cl.[5] F23B *7/00*, F23D *1/02*
U.S. Cl. 110—341 5 Claims



1. A method of combusting coal comprising

pulverizing a quantity of coal;
blowing the pulverized coal into a rotary classifier having a plurality of blade-like classifying vanes spaced from one another about a rotational axis of the classifier, and drive shaft means for rotating the vanes about said rotational axis;
operating the rotary classifier in a manner which separates from the pulverized coal a portion thereof which has a degree of pulverization of 100 mesh residue 1.5% or less;
introducing only said portion of the pulverized coal into a distributor that separates said portion of the pulverized coal and said gas into a thin mixture gas, comprising gas and particles of coal, and a thick mixture gas comprising gas and particles of coal that are larger than those of the thin mixture gas,
injecting the thin mixture gas and the thick mixture gas through respective burner injection ports and into a common furnace at air-to-fuel ratios within ranges of 3–6 and 1–2, respectively, to ignite the mixture gases and thereby combust the coal particles thereof

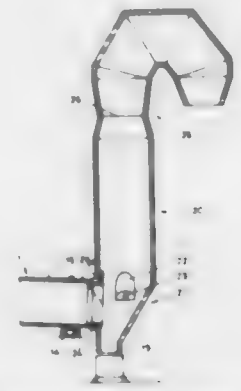
5,003,892
PROCESS FOR STERILE DISPOSAL OF SYRINGES
Jonathan Bricken, New York, N.Y., assignor to D.O.C.C., Inc., New York, N.Y.
Division of Ser. No. 364,019, Jun. 9, 1989, abandoned. This application Apr. 10, 1990, Ser. No. 507,133
Int. Cl.[5] F23G *5/00*; A61L *2/00*
U.S. Cl. 110—346 10 Claims



1 A process for preparing syringes having at least a plastic portion and a needle for sterile disposal comprising
providing a heat conductive container adapted to contain at least one syringe to be prepared for sterile disposal therein,
placing at least one syringe into the heat conductive container; and
applying heat to the heat conductive container in an amount sufficient to melt the at least one syringe so that the plastic of the plastic portion can encapsulate the needle of the syringe to form a molten mass and render the molten mass sterile

5,003,893
METHOD AND PLANT FOR BURNING SPECIAL WASTE
Martin R. Zweifel, Bahnhofstrasse 48, CH-5430 Wettingen, Switzerland
Filed Jul. 28, 1989, Ser. No. 388,031
Claims priority, application Switzerland, Jul. 29, 1988, 2892/88
Int. Cl.[5] F23G *7/06*
U.S. Cl. 110—346 5 Claims

1 Method for the combustion of gaseous, liquid and solid industrial waste, the method comprising the steps of providing a first tubular revolving furnace and connecting a second furnace formed as an elongated, upright combustion chamber to said first tubular revolving furnace in series, providing each of said first and second furnaces with means for introducing waste materials thereinto, supplying only part of the waste into and burning said part in the first tubular revolving furnace and supplying the remainder of the waste including gaseous and liquid waste to the combustion chamber, supplying into said combustion chamber a combustion air and, simultaneously with and in addition to said combustion air, supplying a secondary air into said combustion chamber to obtain a complete burning of the waste, wherein flue gases resulting from combustion of the part of waste in the tubular revolving furnace are



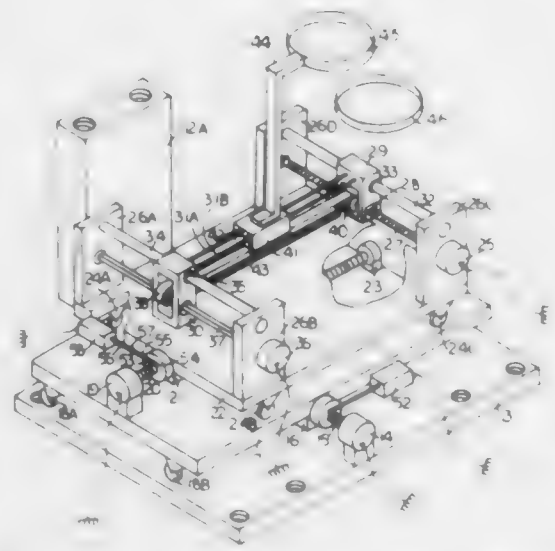
introduced into the combustion chamber and mixed with flue gases resulting from the combustion of the remainder of the waste and wherein the secondary air is supplied approximately tangentially into the combustion chamber so that a vortex flow, which is intensified by a construction provided at an upper end of the combustion chamber, is formed in the combustion chamber

5,003,894
SEEDER CLUTCH FOR TRAMLINES
James G. Lafferty, P.O. Box 7208, Fredericksburg, Va. 22404
Filed Dec. 11, 1989, Ser. No. 448,366
Int. Cl.[5] A01C *7/20*
U.S. Cl. 111—178 11 Claims



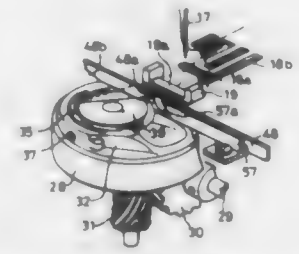
1 The method of forming tramlines in grain fields for guiding field treatment equipment within growing grainfields comprising drilling grain in straight lines across grainfields and forming tractor guiding tramlines devoid of planted grain within the field during the drilling by stopping rotation of selected individual seed meter drums within selected individual seed meter housings during the forming of tractor guiding tramlines while drilling seed, wherein the stopping comprises disengaging individual clutches which connect seed metering drums to a seed meter drive shaft.

5,003,895
EMBROIDERY PANTOGRAPH ASSEMBLY
Lev Talmaker, P.O. Box 240458, Brooklyn, N.Y. 11224-0458
Filed Feb. 19, 1988, Ser. No. 157,614
Int. Cl.[5] D05C 5/02; D05B 21/00
U.S. Cl. 112—103 3 Claims



1. An embroidery pantograph having a stationary plate of a first assembly fixed to an embroidery machine table, and having a first stepping motor controlled by a computer, said stepping motor having an output shaft to be rotated at proper times in one or another direction as required to form an embroidery pattern design by moving a work piece under a machine needle according to a specific pattern that is pre-recorded in a computer memory, said first stepping motor being fixed to one edge of said stationary plate and being connected to a first driving screw; said first driving screw being rotatably supported on another edge of the stationary plate and being coupled to a first lead nut which can reciprocate along said first driving screw during rotation motion generated by said first stepping motor; said first lead nut being fixed to a first movable plate having a set of low friction means to support said first movable plate on top of said first assembly; a second stepping motor being fixed to said first movable plate and having operational features similar to said first stepping motor, said second stepping motor being connected to a second driving screw; said second driving screw being rotatably supported on another edge of said first movable plate and also being coupled with a second lead nut; said second lead nut being capable of reciprocation along said second driving screw during rotary motion generated by said second stepping motor; said second lead nut being fixed to a second movable plate serving as a base for a second assembly, said second movable plate having a set of low friction means to provide support therefor on said first movable plate, said second movable plate being connected to a central block by elements including third and fourth stepping motors having operation features similar to said first and second stepping motors; a set of transmission means to convert rotary motion of output shafts of said third and fourth motors into reciprocating motion of said central block along rectangular X-Y coordinates; low friction means to provide a movable support for said central block with respect to said second movable plate; said central block being connected to a solid bracket with a holding assembly to fix a work piece to be embroidered.

5,003,896
DEVICE FOR GUIDING A LOWER THREAD IN A SEWING MACHINE
Kazumasa Hara; Yasuro Sano; Mikio Koike, and Mitsuru Nishijima, all of Tokyo, Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan
Filed Dec. 16, 1988, Ser. No. 286,383
Claims priority, application Japan, Dec. 18, 1987, 62-191381[U]
Int. Cl.[5] D05B 19/00, 3/02, 57/08
U.S. Cl. 112—121.11 1 Claim

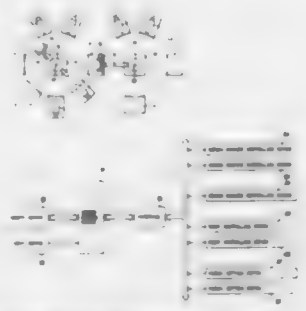


1. A device for guiding a lower thread in a zigzag stitching sewing machine provided with stitch forming means comprising a vertically and laterally movable needle and needle thread catching means cooperating with said needle, a pattern forming means for controlling a lateral reciprocation of the needle, and means for selecting a desired pattern from stored patterns, said guiding device comprising

a lower thread guiding means connected to the pattern selecting means of the sewing machine for determining first and second lower thread drawing positions in accordance with a selected pattern, said lower thread guiding means including a lower thread guiding part which, at one of said first and second positions, acts on the lower thread so as to guide a lower thread drawing position to a center of a needle amplitude; and

a lower thread releasing means connectable, at the other of said first and second positions, with the lower thread guiding means so as to release the lower thread engaged with said lower thread guiding part.

5,003,897
SEWING SYSTEM
Masaaki Yokoe, Nagoya; Yoshikazu Kurono, Aichi, and Koji Hayashi, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Japan
Filed Aug. 18, 1989, Ser. No. 395,521
Claims priority, application Japan, Aug. 20, 1988, 63-206628
Int. Cl.[5] D05B 21/00
U.S. Cl. 112—121.12 7 Claims



5. A sewing system comprising:

a holder for holding a workpiece;

a plurality of sewing machines capable of performing programmed sewing, each of the sewing machines having a reciprocally movable needle, a holding member releasably holding the holder, and driving means effecting relative movement between the needle and the holding member in accordance with a sewing program for the programmed sewing,

a transferring unit disposed substantially equidistantly with respect to each of the plurality of sewing machines for selectively moving the holder to one of the sewing machines,

identification means for identifying a kind of one of the holder and the workpiece,

a memory unit storing therein sewing programs and data indicative of transferring destinations of the holder by means of the transferring unit, the sewing programs and the destination data being stored with respect to every kind of one of the holder and the workpiece, and

a control unit for reading a sewing program and destination data from the memory unit in accordance with a result of identification by means of the identification means, and for transmitting the read sewing program to the sewing machine toward which the holder is transferred, as well as for driving the transferring unit in accordance with the destination data.

6. A sewing system comprising

a holder for holding a workpiece,

a plurality of sewing machines disposed to consist of at least one circular array which defines a central point, each of the sewing machines performing programmed sewing and having a reciprocally movable needle, a holding member releasably holding the holder, and driving means effecting relative movement between the needle and the holding member in accordance with a sewing program for the programmed sewing,

a transferring unit disposed at a position adjacent to the central point of the circular array for selectively moving the holder to one of the sewing machines

identification means for identifying a kind of one of the holder and the workpiece

a memory unit storing therein sewing programs and data indicative of transferring destinations of the holder by means of the transferring unit, the sewing programs and the destination data being stored with respect to every kind of one of the holder and the workpiece, and

a control unit for reading a sewing program and destination data from the memory unit in accordance with a result of identification by means of the identification means, and for transmitting the read sewing program to the sewing machine toward which the holder is transferred, as well as for driving the transferring unit in accordance with the destination data

7. A sewing system comprising

a holder for holding a workpiece,

a plurality of sewing machines capable of performing programmed sewing, each of the sewing machines having a reciprocally movable needle, a holding member releasably holding the holder, and driving means effecting relative movement between the needle and the holding member in accordance with a sewing program for the programmed sewing,

a transferring unit for selectively moving the holder to one of the sewing machines,

identification means for identifying one of the holder and the workpiece,

a memory unit storing therein sewing programs and data indicative of transferring destinations of the holder by means of the transferring unit, the sewing programs and the destination data being stored with respect to every kind of one of the holder and the workpiece, and

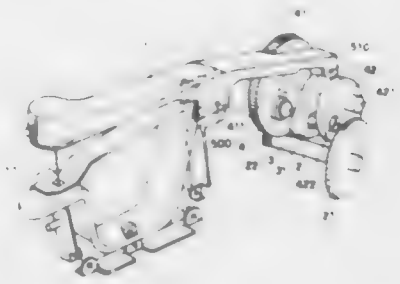
a control unit comprising reading means for reading sewing program and destination data from the memory unit in accordance with a result of identification by means of the identification means, and for transmitting the read sewing program to the sewing machine toward which the holder is transferred, as well as for driving the transferring unit in accordance with the destination data,

judgement means for effecting a decision on employability of the sewing machine associated with the destination data,

a first control means for supplying the sewing program to the sewing machine and for controlling the transferring unit in accordance with the destination data where the decision made in the judgement means reveals that the sewing machine is employable, and

a second control means for searching a substitute sewing machine and supplying the sewing program to the substituted sewing machine as well as for controlling the transferring unit so as to allow the holder to be transferred toward the substituted sewing machine where the decision made in the judgement means reveals that the sewing machine is inoperable

5,003,898
DRIVING STRUCTURE FOR MINI-SEWING MACHINE
Dennis Huang, 2F, No. 1, Lane 9, Ningpo E. Street, Taipei, Taiwan
Filed Mar. 3, 1989, Ser. No. 318,599
Int. Cl.[5] D05B 69/10
U.S. Cl. 112—220 11 Claims



1. An improved driving structure for a mini-sewing machine, comprising in combination

an elongated frame body having a front end and a rear end,

a sewing needle rigidly connectable to the front end of said elongated frame body, and arranged to operatively point downwardly,

a sliding block having a pivotal connection to the rear end of said elongated frame body, and being formed with an elongated slot of a predetermined length near a lower end thereof,

a driving gear of a prearranged diameter exceeding the length of said elongated slot, and a cap disposed on respective opposite sides of said sliding block,

coupling means for coupling said driving gear to said cap,

guiding means eccentrically located on said driving gear and on said cap, respectively, and coupled to one another through the elongated slot of said sliding block for operatively imparting a reciprocal movement to said sliding block, and

driving means for operatively rotating said driving gear, and being adapted to be driven by a motor

5,003,899
APPARATUS FOR DISCONNECTING A NEEDLE BAR AND THREADING ON A SEWING MACHINE
Masao Ogawa, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Sep. 17, 1990, Ser. No. 583,323
Claims priority, application Japan, Oct. 14, 1989, 1-267859
Int. Cl.[5] D05B 55/16, 87/02
U.S. Cl. 112—221 25 Claims

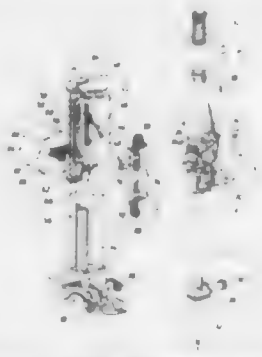
1. A clutch for a sewing machine having a needle bar movably mounted on a frame of the sewing machine, a needle attached to one end of the needle bar, and a sewing transmission for moving the needle bar, the clutch comprising

a needle bar connecting stud connected to the sewing trans-

mission and slidably mounted on the needle bar such that the needle bar connecting stud may move in either direction along an axis of the needle bar;

click means attached to the needle bar for selectively attaching the needle bar connecting stud to or detaching the needle bar connecting stud from the needle bar.

disconnecting means for operating the click means to detach the needle bar connecting stud from the needle bar when



the disconnecting means rotates in a disconnecting direction; and

drive means for moving a drive board relative to the needle bar along a line parallel to the needle bar, where, when the drive means moves the drive board along the line towards the needle, the drive board contacts the disconnecting means and causes the disconnecting means to rotate in the disconnecting direction

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5,003,900

THREAD SECURING DEVICE IN A SEWING MACHINE

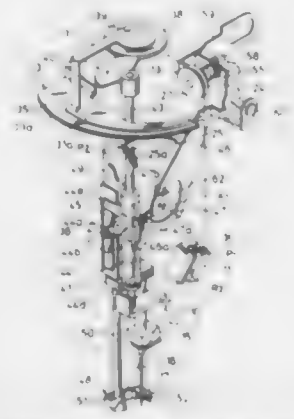
Masao Ogawa, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Continuation of Ser. No. 84,697, Aug. 11, 1987, abandoned. This application Apr. 21, 1989, Ser. No. 342,696

Claims priority, application Japan, Aug. 12, 1986, 61-190269

Int. Cl.[5] D05B 49/00, 87/00

U.S. Cl. 112—242 3 Claims



1. A thread securing device in a sewing machine having a thread source, a needle having a thread eye for carrying an upper thread extending from said thread source, a thread take-up member adapted to move in timed relation to the vertical movement of said needle between a thread loosening position close to a predetermined thread guiding path extending from said thread source to said thread eye of said needle and a thread take-up position spaced away from said thread guiding path, the thread take-up member being operative to catch and hold the upper thread extending along the thread guiding path when said thread take-up member first approaches in the vicinity of the thread loosening position, said thread securing device comprising

thread saving means having a thread saving plate extending horizontally from said thread guiding path, said thread saving plate being capable of saving an amount of the upper thread corresponding to a predetermined amount of the upper thread to be taken up by said thread take-up member during its movement from the thread loosening position to the thread take-up position and capable of feeding the saved amount of the upper thread freely in accordance with the thread take-up movement of the thread take-up member, and

actuating means adapted to catch the upper thread extending along said thread guiding path when said thread takeup member is not holding the upper thread and then supply an amount of the upper thread corresponding to said predetermined amount to said thread saving means.

5,003,901

FEEDING RATE ADJUSTING UNIT OF A SEWING MACHINE

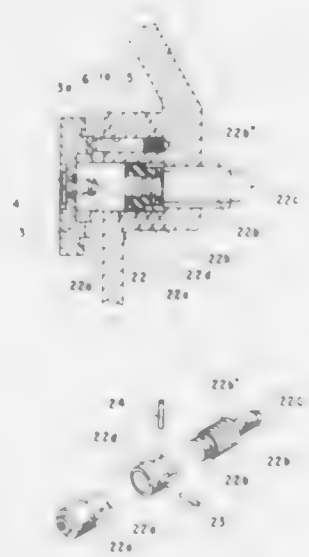
Shuichi Sato, and Yoshiharu Kobayashi, both of Utsunomiya, Japan, assignors to SSMC Inc., Edison, N.J.

Filed Jul. 3, 1989, Ser. No. 374,820

Claims priority, application Japan, Aug. 1, 1988, 63-101094[U]

Int. Cl.[5] D05B 27/22

U.S. Cl. 112—316 4 Claims



1 A unit for adjusting a feeding rate of a sewing machine having a body of an arm, said unit comprising.

a feeding rate adjustment shaft screwed into the body, said shaft having first and second opposite ends, the first end terminating in a tip,

a feeding rate adjusting dial secured to the second end of the shaft and having an inner circumference spaced from and adjacent to the second end of the shaft, the dial having a plurality of teeth spaced apart and disposed along a circle on a surface of the inner circumference;

a stopper receiver bore disposed in the body spaced from and parallel to the shaft,

a stopper in said bore;

spring means disposed in said bore and engaging the stopper to cause the stopper to be in meshing position with one of said teeth;

a feeding adjusting table;

a link,

a feeding adjusting cam connected by the link to the feeding adjusting table.

the feeding adjusting cam having at one end a cam surface provided with a normal feeding control surface and a reverse feeding control surface, the tip end of the feeding rate adjusting shaft engaging the cam surface to thereby vary an inclination angle of the feeding adjusting table, to adjust the feeding rate in a normal or reverse feeding operation accordingly,

the feeding adjusting shaft including a dial securing table secured to the fixing adjusting dial and a cam contact member,

one of said dial securing table and said contact member secured to said body, and

an elastic member disposed between and coupled to the dial securing table and said cam contact member

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5,003,902

SEAM HAVING LIQUID PROOF THREADS STICHABLY SECURING FIRST AND SECOND LIQUID PROOF MATERIALS FOLDABLY ENCLOSING A MELTABLE ADHESIVE POLYMER FILM AND METHOD OF MANUFACTURE OF SAME

Gerald M. Benstock, Belleair Beach; Nathan L. Belkin, and Robert Green, both of Clearwater, Fla., assignors to Superior Surgical Manufacturing Co. Inc., Seminole, Fla.

Filed Oct. 13, 1989, Ser. No. 420,908

Int. Cl.[5] A41D 3/04, 13/00, 13/12, D05B 1/26

U.S. Cl. 112—418 18 Claims



1 A liquid proof seam, comprising

a first liquid proof fabric material,

a second liquid proof fabric material having at least a portion thereof in overlapping relationship with at least a portion of the first material,

a melt adhesive polymer film means having upper and lower opposite facing surfaces disposed between the overlapping portions of the first material and the second material for bonding the overlapping portions together to form a seam area,

first fold means in said first liquid proof fabric material to position portions of said first liquid proof fabric material on said upper and lower surfaces of said polymer film means,

second fold means in said second liquid proof fabric material to position portions of said second liquid proof fabric material on said upper and lower surfaces of said polymer film means,

said positioned portions of said first and second liquid proof fabric material coacting to completely enclose said polymer film means, and

a liquid proof thread means extending through the first nd second materials and the overlapping portions and the film means for fixedly securing the the seam area,

wherein the film means melt bonds the overlapping portions of the first material and the second material together and is disposed in apertures around the thread means

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5,003,903

FLUID FOIL SYSTEM

Eric Olsen, Box 578, Marion, Mass. 02738

Division of Ser. No. 144,657, Jan. 12, 1988, Pat. No. 4,864,949, Continuation of Ser. No. 266,884, May 26, 1981, abandoned. This application Jun. 26, 1989, Ser. No. 372,196

Int. Cl.[5] B63H 9/08

U.S. Cl. 114—102 14 Claims



1 A fluid foil system for imparting energy from a moving fluid medium to a supporting body which body in turn is supported by means other than said moving fluid medium, said system including a fluid foil connected to a mast along a longitudinal axis thereof, said foil supported for free multi-rotational movement with respect to said body, said foil further adapted for lateral tilt in either direction with respect to said mast about said longitudinal axis from a "level" rest position where said foil is generally aligned with the directional flow of said fluid medium to a tilted position wherein said fluid imparts energy to said foil, and structural self-aligning means for said foil connected to both said foil and said mast and adapted to urge said foil to said rest position, wherein said self-leveling means is adapted to automatically return said foil to its rest position when free from other constraints, said system further including foil tilt limiting means separate from said self-leveling means for limiting the extent of lateral tilt which said foil may exhibit

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5,003,904

KEEL ASSEMBLY

William Unger, 1006 - 420 Mill Road, Etobicoke, Ontario, Canada M9C 1Z1, and Lawrence A. Caza, 46655 Russell Road, Sardis, British Columbia, Canada V2R 1B

Filed Apr. 26, 1989, Ser. No. 344,240

Int. Cl.[5] A63C 15/06

U.S. Cl. 114—140 8 Claims

1 A keel assembly for a watercraft comprising

a body having a pair of side faces and a leading edge extending the length of said body, said body having a leading portion and a trailing portion, at least a portion of said leading edge being located on said leading portion,

first connecting means connecting said leading portion with said trailing portion for movement relative thereto,

vane means to be disposed within a flow of water relative to said body, said flow having a direction of travel wherein said vane means extends rearwardly of said leading edge, and

second connecting means joining said vane means with said leading portion, said second connecting means constitut-

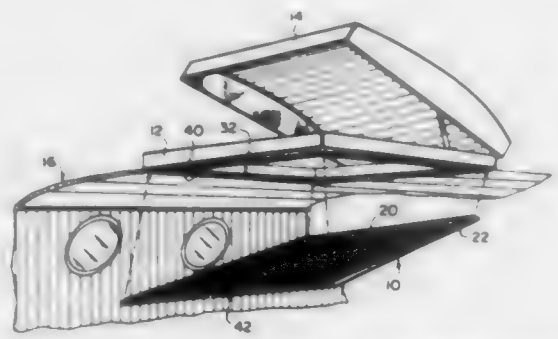
ing means to transmit movements of said vane means to said leading portion to orient said leading portion towards



said direction of travel to offset the effects of a negative pressure region occurring near said leading edge

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5,003,905
COLLAPSIBLE HATCH SCREEN
Peter H. Raynor, 30 E. 3rd St., Patchogue, N.Y. 11772
Filed Dec. 14, 1989, Ser. No. 450,813
Int. Cl.[5] B63B 19/12
U.S. Cl. 114—201 R 7 Claims

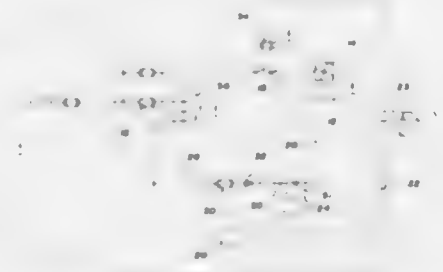


1. A collapsible hatch screen to cover a hatch frame with a hatch cover on a boat comprising
(a) a square shaped screen frame being rigid at all four sides and bendable at all four corners thereof,
(b) a square shaped piece of screening sized to fit within said screen frame,
(c) a square shaped border member which covers said screen frame and is attached to all four edges of said piece of screening so that said screen frame can be folded and rolled up into compact configuration for storage, and
(d) a pouch sized to receive said folded and rolled up collapsible hatch screen for storage when not in use

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5,003,906
APPARATUS AND METHOD FOR AUTOMATIC OPERATION OF A BILGE BLOWER
Phillip R. Sova, Indian River, Mich., assignor to Technological Safety Design, Inc., Indian River, Mich.
Filed Dec. 13, 1989, Ser. No. 450,218
Int. Cl.[5] B63J 2/06
U.S. Cl. 114—211 13 Claims

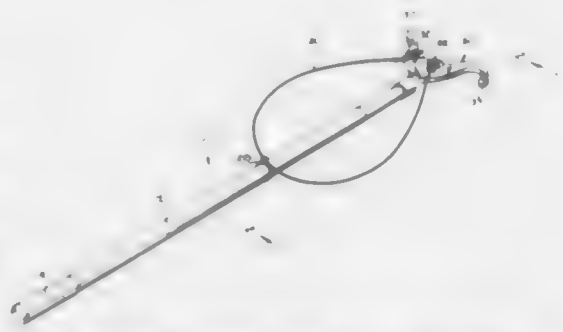
1. In combination with a water craft having an engine compartment, a blower for purging the compartment of noxious vapors, the blower including a manual blower switch for operating the blower, an electrical system for energizing the water craft and the blower switch, and a pressure-sensitive speedometer including an inlet tube, the pressure-sensitive speedometer being responsive to fluid pressure exerted along the inlet tube by movement of the water craft through ambient water, an improvement comprising
a normally closed pressure switch connected to the inlet tube, said pressure switch being continuously openable in response to fluid pressure in the inlet tube at speeds above a predetermined speed of the water craft,
a first electrical path between the electrical system and said pressure switch, and



a second electrical path between said pressure switch and the blower and in parallel with the blower switch,
wherein said pressure switch bypasses the manual blower switch so that the blower is operated pressure responsively by said pressure switch, irrespective of the manual blower switch when the speed of the water craft is below said predetermined speed

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5,003,907
BOAT HOOK
John E. Roach, 5582 N. Range Rd., LaPorte, Ind. 46352, and Kim S. Parrette, 779 E. Lake Mitchell Dr., Cadillac, Mich. 49601
Filed May 20, 1988, Ser. No. 196,665
Int. Cl.[5] B63B 21/04
U.S. Cl. 114—221 R 3 Claims



1. A mooring and maneuvering device comprising
a rigid, elongated pole member having a handle end and a distal end, said distal end having a hook carrying means extending transversely from the longitudinal axis of said pole;
said hook carrying means being generally Y-shaped with projecting legs, one leg of said hook carrying means being elongated and turned outwardly back upon its self to form a hook, and
said hook carrying means having an edge portion extending between its said legs, said edge portion being concave to form a cradle, said distal end carrying a flexible loop means for engagement with a mooring device, said loop means including opposite ends, said loop means ends being pivotally connected to said distal end with said loop means being extensible from said pole member

5,003,908
CONTROL AND LIMITING OF OIL SPILLS FROM AN OCEAN GOING TANKER
Robert A. Wilson, 10 Hillside Pl., Cranford, N.J. 07016
Filed Apr. 17, 1989, Ser. No. 339,202
Int. Cl.[5] B63B 43/16
U.S. Cl. 114—229 1 Claim

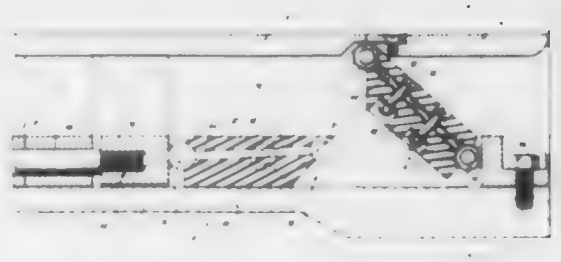


1. An apparatus for limiting the leakage of liquid product form a leak in a tank of a tanker vessel, said tanker vessel having a deck, a keel, a starboard side, and a port side, said apparatus comprising
a first winch and a second winch, said first winch and said second winch being located on said deck, said first winch being further located adjacent said starboard side, and said second winch being further located adjacent said port side,
a first rolled curtion and a second rolled curtain, said first rolled curtain being located in a first recessed covered compartment on said starboard side above said tank at said deck, said second rolled curtain being located in a second recessed covered compartment on said port side above said tank at said deck,
a pair of cables, one of said cables connecting said first winch and said first rolled curtain, the other of said cables connecting said second winch and said second rolled curtain
an opening in said tanker vessel extending from substantially said keel to substantially said deck,
two pair of cable guides, one pair being located adjacent said keel and said opening at said keel, the other pair of said cable guides being located adjacent said deck and said opening at said deck,
said one cable extending form said first rolled curtain along said starboard side to one of said cable guides at said keel, upwardly through said opening to one of said cable guides at said deck, and to said first winch,
said other cable extending from said second rolled curtain along said port side to another of said cable guides at said keel, upwardly through said opening to another of said cable guides at said deck, and to said second winch,
whereby said winches can be used with said cables to unroll downwardly on the sides of said tanker vessel said rolled curtains so as to cover said leak

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5,003,909
SUBMARINE TORPEDO TUBE COLLAPSIBLE CHOKE
Paul E. Moody, Barrington, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jun. 18, 1990, Ser. No. 542,627
Int. Cl.[5] B63G 8/28; F41F 3/10
U.S. Cl. 114—238 12 Claims

1. A bimodal flow restriction device enabling to provide in one mode pump-ejection and in another mode swim-out of a torpedo in a torpedo tube of larger diameter than that of the torpedo defining thereby an annular fluid flow path between the torpedo tube and the torpedo, comprising
means mounted in the torpedo tube for providing a mechanical impediment movable between an open state where the mechanical impediment is free of the annular fluid flow path and a closed state where the mechanical impediment impedes the annular flow path, and



means for selectively moving the mechanical impediment between its open and its closed state

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5,003,910
ANCHOR
Bruce S. Wilkinson, Gloucester, Mass., assignor to Rule Industries, Inc., Burlington, Mass.
Filed Sep. 11, 1989, Ser. No. 405,542
Int. Cl.[5] B63B 21/44
U.S. Cl. 114—304 3 Claims



1. A twin fluke anchor comprising
a shank with a first end and a second end,
a stock,
a pair of fluke elements mounted upon said stock in a manner to pivot as a unit at the second end of the said shank, each said fluke element comprising a fluke defining a fluke surface disposed in a first plane, and a rib disposed generally perpendicular to said first plane and extending in one direction only from said fluke surface, said shank disposed between said ribs, and
a crown comprising a pair of substantially flat crown plates, each said crown plate being supported centrally of said flukes in a position wherein said crown plate is spaced from said first plane of said flukes, each said crown plate sloping upwardly and rearwardly away from said first plane of said flukes in a manner to permit bottom material to flow freely between said inner surfaces of said crown plates and said flukes,
each said fluke element further comprising an integral

bracket extension, said crown plates being mounted upon said bracket integral extensions, and

each said fluke element comprising an integral, jointless unit of said fluke, said rib and said bracket extension formed from a single sheet of stock material

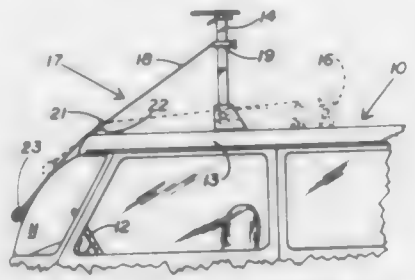
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5,003,911

ANTENNA POSITION WARNING DEVICE

Charles F. Keil, 783 Forestería Ave., Wellington, Fla. 33414

Filed Nov. 7, 1989, Ser. No. 433,007
Int. Cl.[5] G08B 5/02
U.S. Cl. 116—28 R 6 Claims



1 In combination, a recreational vehicle having a front windshield, a roof, and a roof antenna with an adjustable vertical angle, and a warning device mounted on said vehicle to indicate when said antenna is raised, said warning device comprising

(A) a flexible strand,

(B) antenna-connecting means connecting one end of said strand to a location on said antenna that is distanced from said roof when said antenna is raised,

(C) signal-object means for warning of the elevation of said antenna,

(D) means connecting the other end of said strand to said signal-object means and,

(E) guide means for directing said strand whereby the weight of said signal-object means lowers said signal-object means visibly in front of said windshield when said antenna is raised, said signal-object being lowered a distance depending upon the location of attachment of said strand to said antenna.

5,003,912

INTERLOCKING STACKING PLASTIC BARRICADES

Kurt W. Thurston, P.O. Box 1887, Reno, Nev. 89505

Continuation-in-part of Ser. No. 183,382, Apr. 13, 1988, abandoned, which is a continuation of Ser. No. 25,604, Mar. 13, 1987, abandoned. This application Jul. 20, 1989, Ser. No. 383,298
Int. Cl.[5] E01F 13/00
U.S. Cl. 116—63 P 5 Claims



1 An interlocking, stackable plastic barricade constructed from two substantially similar generally planar panel units hinged together to pivot around a common axis of rotation, each of said panel units having left and right edges when an outside face of said hinged barricade is directly viewed by an observer, each of said panel units being one piece, hollow, integrally molded plastic, the invention being characterized by each of said panel units including at least one pair of interlocking means located on said outside face of each of said panel units proximate to said left and right edges of said panel unit, one of said pair of interlocking means being rectangular shaped indentation in and the other a rectangular shaped protrusion from said outside face, said indentation and protrusion being dimensioned and shaped to closely mate together but to be freely separable, said protrusion for each of siad two panel units of said barricade always being located on a predetermined one of said left and right edges, whereby assuming the same lengthwise orientation of a barricade, one folded barricade may be stacked on another, with the interlocking means of said one barricade automatically mating with the interlocking means of an adjacent barricade and facing planar panel units of both barricades abutting each other, and each of said panel units being manufactured by a plastic molding process using an identical die for each panel unit, said die providing for formation of both the overall panel unit and said interlocking means

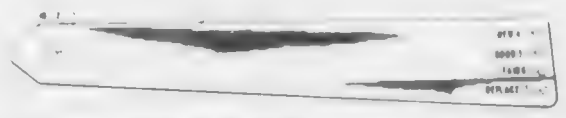
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5,003,913

CHAIN ELONGATION INDICATOR AND METHOD

David G. Jensen, 120 Granada Dr., Apt. #15, Mountain View, Calif. 94043

Filed Jun. 12, 1989, Ser. No. 364,148
Int. Cl.[5] G01D 21/00; G01B 5/02
U.S. Cl. 116—208 3 Claims



2 A chain elongation indicator for a chain having a first link reference point on a first chain link and a second link reference point on a second chain link, comprising:

an indicator body having first and second indicator reference holes, such that the distance between the first and second indicator reference holes corresponds to a predetermined percentage of the distance between first and second link reference points of a non-elongated chain, and such that when the first indicator reference hole is aligned with the first link reference point and the second indicator reference hole is aligned with the second link reference point, chain elongation is observed, and

receiving means extending from the indicator body for receiving the chain so that the first reference point on the first link will be aligned with the first indicator reference hole

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5,003,914

INDICATING INSTRUMENT

Klaus Mayer, Obertshausen, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 287,474, Dec. 19, 1988, abandoned. This application Mar. 8, 1990, Ser. No. 492,376
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1987, 8716940[U]; Feb. 11, 1988, 3804144; Aug. 27, 1988, 3829080
Int. Cl.[5] G01D 13/22
U.S. Cl. 116—332 4 Claims

1 An indicating instrument comprising a transparent elongated light-conducting pointer having a first end and a second end opposite said first end, the pointer having a detent projection located away from both ends of the pointer and extending outward of the pointer;

a pointer shaft with a cap assembly thereon, and

wherein said cap assembly comprises a cap portion and a support portion, the cap portion having a top surface and a bottom surface, said shaft extending from said bottom surface, said support portion extending radially outward from an axis of said shaft and along the top surface of said cap portion, and



said support portion includes an elongated channel having a first end and a second end opposite said first end for receiving said pointer, there being an opening in said channel located away from both ends of the channel, the opening extending through said cap assembly from said channel to said bottom surface, said detent projection extending through said opening to engage with said bottom surface for locking said pointer in said channel.

5,003,915

APPARATUS FOR PRINTING AND FOR FORMING A HOLOGRAM ON SHEET MATERIAL

Salvatore F. D'Amato, Floral Park, N.Y.; Peter Sorbo, Stamford, Conn., and Richard E. Dunning, Claremont, Calif., assignors to American Bank Note Holographics, Inc., Elmsford, N.Y.

Division of Ser. No. 183,005, Apr. 18, 1988, Pat. No. 4,933,120.
This application Aug. 23, 1989, Ser. No. 397,585
Int. Cl.[5] B05C 1/16, B05D 5/06, B29D 11/00
U.S. Cl. 118—46 8 Claims



1 Apparatus for processing a substrate, comprising

means including a source of said substrate for continuously moving said substrate through at least first and second work stations in succession,

one of said first and second work stations including means for repeatedly forming a plurality of discrete surface relief light diffraction patterns on at least one side of said substrate, said diffraction pattern forming means including

a master of said surface relief light diffraction pattern,

a source of a liquid casting resin,

means receiving resin from said source for holding resin between the substrate and the master surface relief pattern in a defined area surrounded by substrate without resin applied thereto and for a period of time without relative movement therebetween,

means including a source of radiation directed at said held resin for curing said resin into a hardened state within said period of time, and

means for separating the substrate from the master after said period of time, thereby to leave the hardened resin in place on said substrate with the surface relief light diffraction pattern of said master contained therein, and

another of said first and second work stations including means for printing a given visual pattern with ink on at least regions of said at least one substrate side not occupied by said hardened resin diffraction pattern

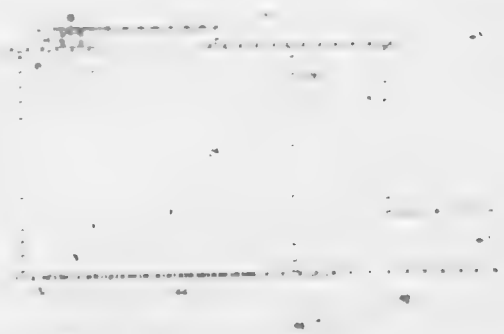
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5,003,916

ADHESIVE SUPPLY UNIT

Paul J. Donley, Monterey, Calif., assignor to Graco Inc., Minneapolis, Minn.

Filed Apr. 8, 1988, Ser. No. 179,518
Int. Cl.[5] B05C 11/10
U.S. Cl. 118—429 1 Claim



1 An adhesive supply unit comprising

a tank having first and second ends, a top and a bottom,

means for heating said tank adjacent said tank bottom,

an electronic control mechanism for controlling the temperature of adhesive from said tank, said control mechanism being located adjacent said tank first end,

a cabinet having a top and substantially containing said tank and said control mechanism,

a fan located in said cabinet top above said control mechanism and oriented so as to blow ambient air from outside said cabinet downwardly across said control mechanism, and

an inlet in said cabinet top for ambient air for said fan, said opening facing away from said tank

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5,003,917

DEVELOPING APPARATUS WITH IMAGE QUALITY CONTROL

Naoki Toyoshi; Tateki Oka, and Hiroshi Goto, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 10, 1989, Ser. No. 391,955
Claims priority, application Japan, Aug. 12, 1988, 63-202491; Aug. 12, 1988, 63-202492; Aug. 12, 1988, 63-202493; Aug. 26, 1988, 63-213309
Int. Cl.[5] G03G 15/08
U.S. Cl. 118—653 15 Claims

1 A developing apparatus for forming a toner image onto an image carrier comprising

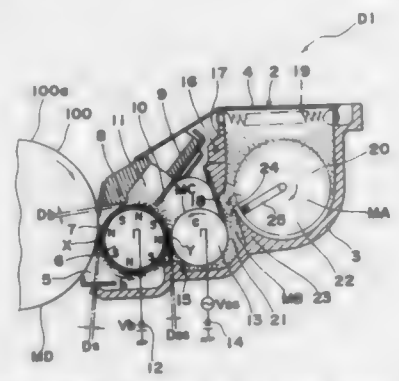
a toner hopper in which toner is accommodated,

a toner supply member adapted to contact the toner accommodated in said toner hopper for supplying the toner to the image carrier,

a toner thickness restricting member held in contact with

said toner supply member so as to form a thin layer of toner by passing toner through a portion between said restricting member and the toner supply member,

a supply section provided in the toner supply and located at the side of the toner supply member for supplying toner to the toner supply member, said supply section accommodating first toner, and



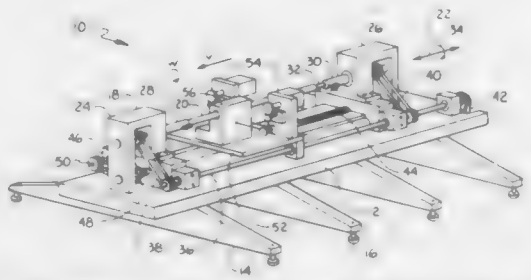
a replenish section provided in the toner hopper and communicated with the supply section for replenishing toner to the supply section, said replenish section accommodating second toner having particle diameters smaller than those of the first toner.

5,003,918

APPARATUS FOR MANUFACTURING ATHERECTOMY TORQUE TUBES

Thomas E. Olson, Poway, and Dennis M. Vigil, San Diego, both of Calif., assignors to InterVentional Technologies, Inc., San Diego, Calif.

Filed Dec. 28, 1989, Ser. No. 458,326
Int. Cl.[5] B05C *11/00*
U.S. Cl. 118—665 **12 Claims**



1. An apparatus for manufacturing atherectomy torque tubes, comprising:

means for winding a wire around a tube liner with a selected pitch and wire separation to provide a wound tube;

means for applying a coating onto said wound tube at a rate which generates a thickness of material to establish an outside diameter for said tube;

means for providing a signal representing a desired outside diameter;

means for measuring said outside diameter of said coated tube and generating a signal representative of an amount of deviation of said measured diameter from said desired diameter; and

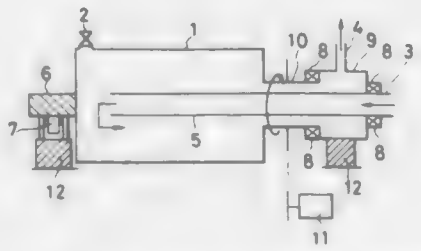
control means coupled to said coating means and said winding means for varying said rate of application of said coating to attenuate said deviation signal, while maintaining said selected pitch and wire separation on said tube.

5,003,919

APPARATUS FOR STABILIZATION TREATMENT OF FERROMAGNETIC METAL POWDER

Tetsushi Yamamoto; Masaru Niwano, and Etsuo Nakagawa, all of Minamata, Japan, assignors to Chisso Corporation, Japan

Continuation of Ser. No. 154,324, Feb. 10, 1988, abandoned. This application Jun. 9, 1989, Ser. No. 364,489
Claims priority, application Japan, Feb. 12, 1987, 62-30558
Int. Cl.[5] B05C *3/08*
U.S. Cl. 118—716 **4 Claims**



1. An apparatus for stabilizing treatment of ferromagnetic metal powder, which apparatus comprises:

a horizontal, cylindrical, rotating type reactor body provided with end walls substantially perpendicular to a cylindrical side wall which forms an inner wall of said reactor body;

a jacket for a heat transfer medium;

a port including a valve for feeding said ferromagnetic metal powder into said reactor body;

a port for withdrawing said ferromagnetic metal powder from said reactor body, which port may be used in common with said feeding port;

a passageway for blowing an oxidizing gas into said reactor body comprising an oxidizing gas inlet in communication with a pipe arranged within said reactor body coaxially with respect to the axis of rotation of said reactor body, said passageway arranged to be in substantial non-contacting relationship with ferromagnetic metal powder and said pipe, having an outlet end, extends longitudinally through said reactor body, said outlet end positioned proximate the side wall remote from said oxidizing gas inlet;

a passageway for withdrawing said oxidizing gas from said reactor body comprising an oxidizing gas outlet in communication with a duct connected to said reactor body and arranged coaxially with respect to the axis of rotation of said reactor body, said passageway arranged to be in substantial non-contacting relationship with ferromagnetic metal powder; and

a plurality of scraping up plates for said ferromagnetic metal powder arranged on said inner wall of said reactor body parallel to the axis of rotation of said reactor body and extending longitudinally from one end of the reactor body to the other end thereof.

5,003,920

ANIMAL LITTER CLEANING APPARATUS

Frank J. Miksitz, Phillipsburg, N.J., assignor to UFI, Inc., Phillipsburg, N.J.

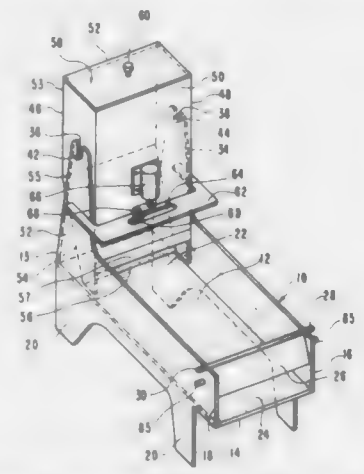
Filed Jul. 13, 1990, Ser. No. 552,304
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—163 **19 Claims**

1. An animal litter apparatus comprising;

a trough to support a bed of litter and having a first charging end and second discharging end;

a litter supply bin having a horizontal slot to define a litter discharge opening in a bottom portion of said bin, said discharge opening having a width and a height, and wherein said supply bin is pivotally mounted above the trough for oscillating movement in a longitudinal direction to the trough,

oscillating means to oscillate said supply bin whereby litter in said supply bin falls by gravity onto said trough during



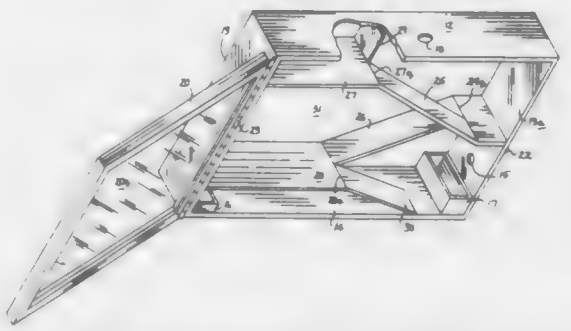
a rearward movement of said bin and incrementally pushes said litter on the trough toward said discharge end of the trough to form a litter bed.

5,003,921

LIVE PICTURE CONSTRUCTION

Darrel C. Tracy, 8407 Dunlap #2, Anchorage, Ak. 99504

Filed Feb. 28, 1990, Ser. No. 486,281
Int. Cl.[5] A01K *63/00*
U.S. Cl. 119—5 **5 Claims**



1. A wall mounted picture organization for maintenance and display of live creatures therewithin, comprising in combination,

a cabinet framework including spaced parallel right and left side walls, spaced parallel top and bottom walls, the walls integrally and orthogonally secured to a rear wall, and

a window framwork including a transparent window mounted thereto, wherein the window framwork is of a perimeter configuration equal to a perimeter configuration defined by forward edge of the walls of the cabinet framework, and

wherein the window framework is pivotally mounted at one end to a forward edge of a wall of the cabinet framework, and where in the window framework includes a latch at an opposed end relative to the one end securable to a latch receiving member mounted on an exterior surface of a wall of the cabinet framework, and

a mounting member secured to a rear surface of the rear wall for securement to a vertical wall surface, and

food and water trough members integrally mounted within the cabinet framwork for support and feeding of the creatures, and

wherein ramp means are integrally mounted within the cabinet framework for affording exercise to the creatures therewithin, wherein the ramp means include a first divider wall medically and orthognoally mounted to an interior surface of the right wall and directed interiorly thereof terminating in a first joinder line, and a first and second ramp mounted at their right ends to the first joinder line, and secon and third divider walls orthogonally mounted to an interior surface of the left side wall terminating in respective second and third joinder lines, and the first and second ramps respectively mounted to the second and third joinder lines at left ends of the respective first and second ramps, and

wherein the trough members are mounted to the bottom wall contiguous with respective opposed interior surfaces of the right and left side walls, and

wherein the bottom wall includes a through-extending bottom wall vent apertures, and the top wall includes a through-extending top wall aperture for providing cooperative ventilation through the cabinet framework, and

including a vertical rib mounted to the second jointer line and to an interior surface of the top wall, and a third ramp mounted to an interior surface of the bottom wall and to the third joinder line to provide geometric integrity to the ramp construction within the cabinet framework, and

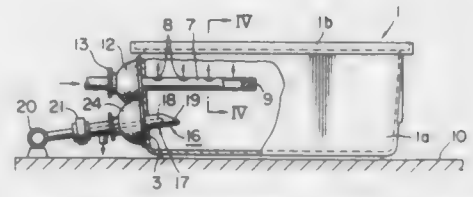
further including a spring biased flexible shade mounted to a forward edge of a top wall of the window framework, wherein the window shade is mounted at an upper end to a spring biased support roll and includes a grasp handle at a lowermost edge of the shade to enable selective extension at the shade overlying the transparent window.

5,003,922

CAGE FOR SMALL EXPERIMENTAL ANIMALS

Motohiro Niki; Etsuko Niki, both of 2-22-11, Yushima, Bunkyo-Ku, Tokyo-To; Misako Kidachi; Atsushi Kidachi, both of 1-3-7, Mitsuji, Taito-Ku, Tokyo-To; Mieko Niki, 2-22-11, Yushima, Bunkyo-Ku, Tokyo-To, all of Japan; Kap J. Lee, and Yun Lee, both of R.R.#1, Box 123, Grand Forks, N. Dak. 58201

Filed Mar. 12, 1990, Ser. No. 492,551
Int. Cl.[5] A01K *1/00*
U.S. Cl. 119—15 **6 Claims**



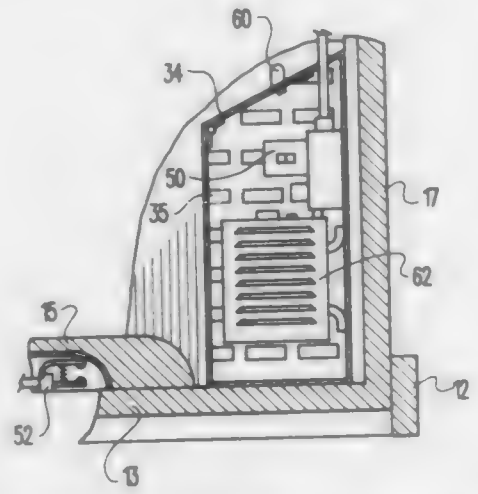
1. A cage for confining and raising experimental animals, comprising:

enclosure means for confining an animal, including a casing and a substantially horizontal lid at the top of the casing, the casing having a side wall with an opening;

an air supply conduit connected to an air supply source and passed through said opening to extend into the enclosure means, said conduit extending in a substantially parallel relation to the lower surface of the lid with a spacing between the conduit and the lid, said conduit having upper and lower surfaces, said lower surface being continuous along its length and said upper surface having air supply holes formed in the conduit at intervals along the length of the conduit and directed upwardly to supply air flows against the lower surface of the lid; and

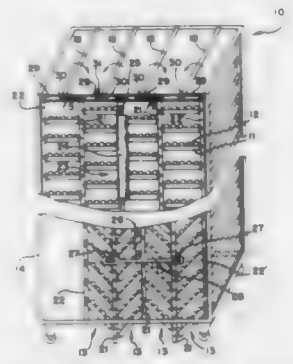
means for exhausting air within the enclosure means.

5,003,923
HEATED PET HOUSE
Sonny D. Morgan, Rte. 1 Box 4, Oceana, W. Va. 24870
Filed Jun. 23, 1989, Ser. No. 370,178
Int. Cl.[5] A01K *1/00*
U.S. Cl. 119—19 1 Claim



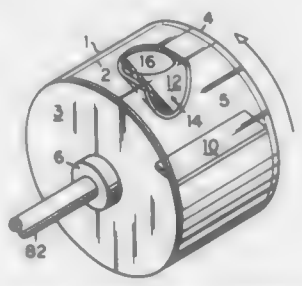
1. A heated pet house, comprising:
a covered enclosure having a hollow interior portion;
a door in a side wall of said enclosure for allowing pet entry and exit;
a hinged roof on said enclosure for allowing human access to said hollow interior portion;
an electrical resistance heating element in said hollow interior portion;
an indicating lamp operably connected to indicate operation of said heating element;
a transformer having a primary stage connected to an AC power source;
first switch means for selectively manually disconnecting said primary stage from said AC power source;
said transformer having a secondary stage connected to a rectifier for producing reduced voltage DC current;
a first relay coil;
a thermostat for connecting said DC current from said rectifier to said first relay coil at a preset temperature within said enclosure;
a second relay coil;
a first pair of relay contacts activated by said first relay coil and operatively connected to connect said second relay coil to said AC power source;
second and third pairs of relay contacts activated by said second relay coil to connect said heating element to said AC power source;
a housing enclosing said heating element and having a back wall provided with spaced, projecting guide runners;
vertical recessed guide tracks in said enclosure for removably receiving said guide runners to facilitate manual removal and installation of said heater;
second switch means operatively connected for connecting said DC current from said rectifier to said first relay coil only when a pet is within said hollow interior enclosure portion; and
said second switch means including a pressure sensitive switch possessing spaced closable contact members separated by a coil spring; and
said closable contact members disposed within a recessed interior portion of a resilient pad disposed on a floor of said hollow interior portion for actuation by a pet's weight on said floor.

5,003,924
EGG INCUBATION CARRIAGE FOR A VENTILATED INCUBATION ENCLOSURE
Pierre Dambre, Chalonnes-sur-Loire, France, assignor to Elevage Avicole de la Bohardiere, Saint-Laurent-de-la-Plaine, France
Continuation-in-part of Ser. No. 262,455, Oct. 25, 1988, abandoned. This application Mar. 26, 1990, Ser. No. 498,840
Claims priority, application France, Oct. 27, 1987, 87 14847
Int. Cl.[5] A01K *41/06*
U.S. Cl. 119—44 4 Claims



1. An egg incubation carriage for a ventilated incubation enclosure has egg-receiving cradles which are superposed in columns, said carriage including a plurality of adjacent pairs of juxtaposed columns with the cradles of each column being tiltable in one direction or the other in alternation while remaining parallel with each other, the carriage being disposed in such a manner that the planes of the cradles are substantially parallel to a direction of a ventilation air flow provided by a fan assembly of the incubation enclosure,
wherein the cradles of each pair of adjacent columns are hinged to a common vertical riser at respective first link points, said risers being pivotally connected at each of their ends to a respective second link points to one another in series so as to form an assembly which is articulated at each of said first and second link points, with adjacent risers being capable of being displaced in alternation in opposite directions while remaining parallel to one another so as to fold up and spread out the articulated assembly, thereby tilting the cradles, with the cradles tilting in opposite directions in adjacent columns,
in such a manner that the cradles can be tilted alternately in opposite directions without splitting up the columns which would establish empty passages between adjacent pairs of columns and interfere with proper ventilation.

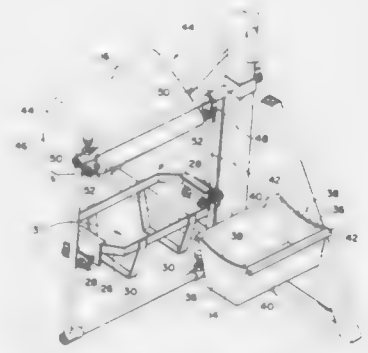
5,003,925
FISH FOOD DISPENSER
John D. Roberts, P.O. Box 568, Lemont, Pa. 16851
Filed Dec. 8, 1989, Ser. No. 447,591
Int. Cl.[5] A01K *1/10*
U.S. Cl. 119—51.04 3 Claims



1. A dispenser of dry fish food comprised of: a casing

mounted on a horizontal power shaft for rotation therewith, a chamber within said casing defined by peripheral and radial walls, said chamber stores dry fish food for dispense, a dispense port through said peripheral wall of said chamber, a chute mounted on said peripheral wall surrounding said dispense port, said chute forming an opening into said chamber, a chute opening, facing opposite to the direction of rotation, a scoop mounted on the peripheral wall within said chamber facing said chute opening, and following it during rotation, and said scoop spaced apart from said chute to allow food to flow freely between; whereby rotation of said casing causes said scoop to pass through the bottom of said chamber and fill with the food stored therein, and continued rotation brings said full scoop to the top of said chamber where its angle of inclination approaches vertical, causing the food to fall from said scoop, and whereby some of the falling food returns to said chamber, and some enters said chute opening and is guided by said chute to said dispense port.

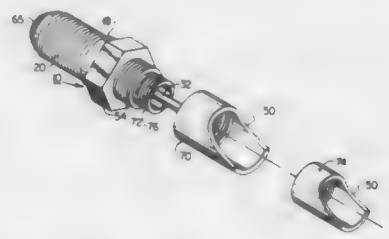
5,003,926
CATTLE FEEDING TROUGH
Lyle A. Bratrud, R.R. #1, Bawlf, Alberta, Canada T0B 0J0
Filed Jun. 14, 1990, Ser. No. 538,001
Claims priority, application Canada, Jun. 15, 1989, 602938
Int. Cl.[5] A01K *5/00, 7/00*
U.S. Cl. 119—62 7 Claims



1. A cattle feeding trough, comprising:
a. a frame having means to support a container and at least one substantially vertical support;
b. a container positioned in the container support means of the frame, the container having opposed end walls, each of the end walls having a concave peripheral edge; and
c. a closure lid pivotally mounted to the vertical support whereby the closure lid is positioned over the container, the closure lid having opposed end walls, each of the end walls having a convex peripheral edge such that the convex peripheral edges of the closure lid end walls can be positioned in close proximity with the concave peripheral edges of the container end walls to protect the contents of the container from the weather while still permitting the closure lid to be pivotally moved aside by cattle seeking access to the contents of the container.

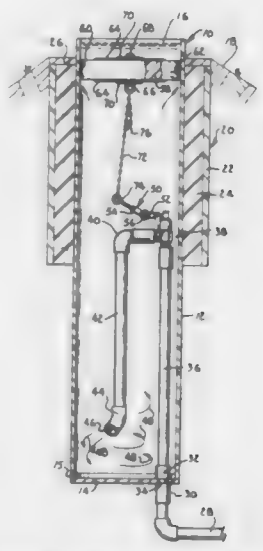
5,003,927
DEMAND TYPE ANIMAL WATERING VALVE
Earl C. Thompson, P.O. Box 549, Hewitt, Tex. 76643
Continuation-in-part of Ser. No. 159,382, Feb. 23, 1988, abandoned. This application Dec. 7, 1988, Ser. No. 280,833
Int. Cl.[5] A01K *7/00*
U.S. Cl. 119—72.5 29 Claims

1. In a demand operable watering valve for animals including:
a tubular body in which the operative components, of the valve are supported, said body being of a first composition defining an inlet end communicating with a flow passage and adapted for connection to a water supply conduit;
a gasket positioned about said flow passage internally of said body; and
operating means supported within said body and cooperating with said gasket to be positionable in a first relation engaging said gasket to prevent water flow outward of said body and to be positionable in a second relation at least partially removed from said gasket to permit water flow received at said inlet end to be dispensed outward of said body;
said operating means including an elongated actuator stem extending from its support within said body to outward of said body and displaceable from a distal end for changing



the position of the operating means between said first and second relations; the improvement comprising:
a relatively short length of a sleeved mouthguard comprising a component separate and functionally independent of said body but secured to the outlet end of said body for protecting a valve portion thereat while exposing the distal end of said stem for potential mouth actuated displacement of said stem by an animal for whom the water is to be demanded;
said mouthguard being of a second composition having hardness properties significantly greater than the hardness properties of said first composition and having a bulk relatively less than the bulk of said first composition.

5,003,928
FREEZE RESISTANT ANIMAL WATERING INSTALLATION
William S. Ketterlin, Rt. 10, Box 322, Columbia, Mo. 65201, and Robert F. Jurgensmeyer, 2712 Surfside Ct., Columbia, Mo. 65203
Filed Nov. 13, 1989, Ser. No. 434,337
Int. Cl.[5] A01K *7/04*
U.S. Cl. 119—73 9 Claims



6. An animal watering installation comprising:
a substantially cylindrical tank having an open top and a

closed bottom, said tank being buried in the ground with the longitudinal axis of said tank oriented generally vertically and with said open top of said tank accessible to animals at ground level;

a thermally insulating collar surrounding an upper portion of said tank;

conduit means adapted to be connected with a source of water and extending into said tank to supply incoming water thereto, said conduit means having a discharge end located within a lower portion of said tank for discharging the incoming water into said tank;

float operated valve means having an open condition wherein water flow through said conduit means and said discharge end thereof is permitted and a closed condition wherein said conduit means is closed to water flow;

an animal accessible buoyant disk in said tank normally floating on the surface of the water therein, said disk being thermally insulated and having a lesser diameter than said tank to permit animals to gain access past said disk to the water in said tank; and

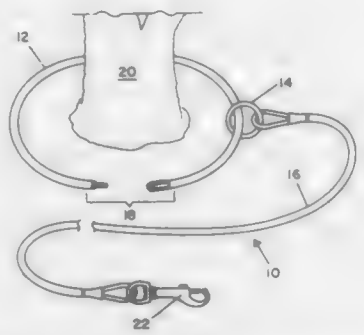
a linkage connecting said disk with said valve means in a manner to effect said closed conditions of said valve means when the float is above a preselected level in the tank and said open condition of said vale means when said float is below a preselected level in said tank.

5,003,929

TANGLE RESISTANT PET TIE APPARATUS AND METHOD

Grant Dean, Marble Falls, Tex., assignor to Ul-Tie-Mate Products, Inc., Marble Falls, Tex.

Filed Feb. 27, 1990, Ser. No. 485,977
Int. Cl.[5] A01K *3/00*
U.S. Cl. 119—120 7 Claims



1. A pet tie apparatus comprising:

(a) an elongated flexible anchor member having a substantially uniform outer cross-sectional size and shape;

(b) connecting means connected to the elongated anchor member of connecting the two ends of the anchor member together around an anchor object so that the anchor member forms a closed anchor ring extending completely around the anchor object, the connecting means forming an elongated anchor connection generally axially aligned with adjacent portions of the anchor member and having an outer cross-sectional size and shape similar to the outer cross-sectional size and shape of the elongated anchor member;

(c) a flexible lead member having a lead end to which a pet collar may be secured and a ring end; and

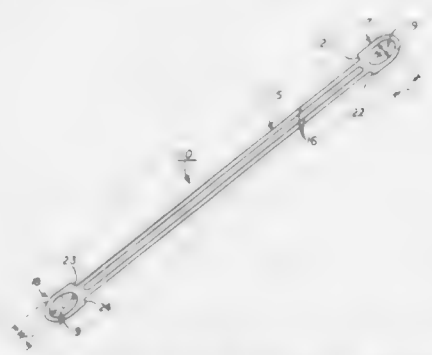
(d) a slip ring member connected to the ring end of the lead member and adapted to be slidably received on the elongated anchor member before being connected to form the closed anchor ring so that the slip ring may slide along the length of the closed anchor ring.

5,003,930

ANIMAL TRAINING COLLAR

Michael R. Shields, 1702 Three Meadows Rd., Greensboro, N.C. 27408

Filed Apr. 23, 1990, Ser. No. 513,067
Int. Cl.[5] A01K *27/00*
U.S. Cl. 119—106 18 Claims



1. An animal training collar comprising: a flexible neck encircling band, said band comprising a plurality of elongated rods, a band receiver, said receiver connected to said band for slidably engaging one end of said band to form a noose, said band having sufficient memory whereby said band will resist efforts to close said noose and said noose will return to a substantially fully open configuration when the effort to close said noose is terminated

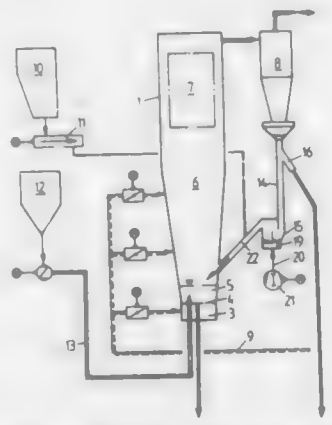
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5,003,931

METHOD OF AND DEVICE FOR MAINTAINING A PARAMETER CONSTANT IN A FLUIDIZED-BED FURNACE

Helmuth Huschauer, Neuss, Fed. Rep. of Germany, assignor to Vereinigte Kesselwerke AG, Düsseldorf, Fed. Rep. of Germany

Filed Sep. 29, 1989, Ser. No. 414,902
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1988, 3833489
Int. Cl.[5] B09B *3/00*
U.S. Cl. 122—4 D 4 Claims



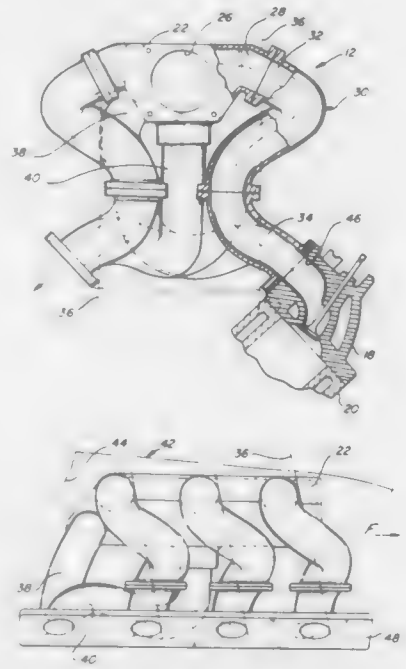
1. A method for maintaining a parameter constant in a fluidized-bed furnace, comprising the steps: supplying solids through a trap; supplying a fluidizing gaseous medium to said trap; fluidizing said solids by said gaseous medium; measuring said parameter; adjusting the volume of said gaseous medium dependent on said measuring step for increasing the volume of said gaseous medium when the parameter measured exceeds a predetermined magnitude and decreasing the volume of said gaseous medium when the parameter measured is below said predetermined magnitude.

5,003,932

INTAKE MANIFOLD

Harold D. Duncan, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 26, 1990, Ser. No. 558,280
Int. Cl.[5] F02M *35/10*
U.S. Cl. 123—52 MB 15 Claims



1. A low profile ram-tube intake manifold for an internal combustion engine having a plurality of intake ports, said intake manifold comprising:

an elongated plenum having an inlet and a plurality of outlets spaced along the length thereof; and

a plurality of substantially symmetrical tubular spiral runners, each having one end communicating with a plenum outlet, and the other end adapted to be attached to an intake port, each of said spiral runners spiraling about an axis at a substantially uniform radius and advancing therealong at a substantially uniform pitch to provide a low manifold profile having a minimal uniform flow resistance for a given runner length, cross-sectional area, and available space.

5,003,933

INTEGRATED INDUCTION SYSTEM

William B. Rush, II, Clarkston; Jack E. Elder, Rochester; Richard K. Shier, Livonia; Jerry B. Foss, Farmington Hills, all of Mich.; Karl J. Haltiner, Jr., Pittsford, and Grant M. Wheeler, Rochester, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 6, 1989, Ser. No. 432,295
Int. Cl.[5] F02M *35/10*
U.S. Cl. 123—52 MC 20 Claims

20. An integrated induction system to provide fluids to the cylinders in an engine, comprising:

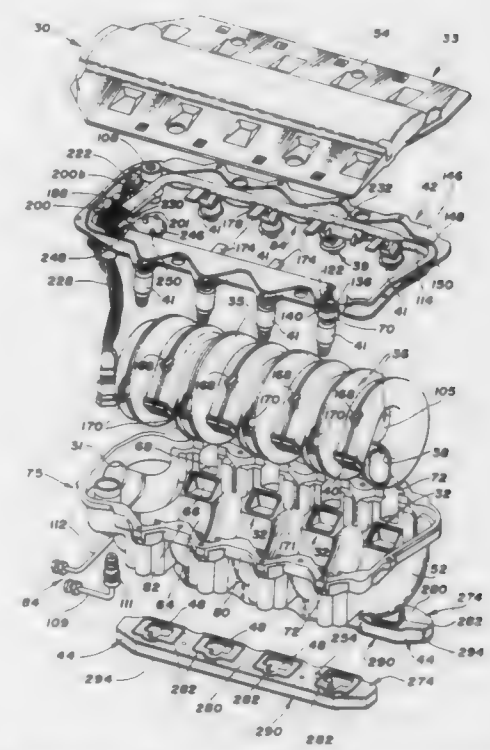
a casing adapted for mounting on the engine, said casing including a plurality of casing members held, together by connecting bolts extending through connecting bores in said casing members, said casing having an air inlet and a plurality of fluid outlets, each of said fluid outlets being adapted to communicate with a respective cylinder;

a plurality of resilient spring clips fixed to each of said connecting bolts and engageable with one of said casing members to hold said casing members together when the pressure inside said casing is below a predetermined limit and to allow said casing members to separate when the pressure inside said casing reaches or exceeds said predetermined limit;

a plurality of air tubes disposed within said casing, said air tubes occupying a portion of the interior of said casing with the unoccupied portion of said casing constituting a plenum, said air tubes being positioned within said casing so that said plenum provides a flow path from said air inlet to said air tubes, one end of each of said air tubes opening from said plenum and the other end of said air tubes engaging said casing adjacent a respective fluid outlet to allow communication between said plenum and the cylinders so that air entering into said plenum through said air inlet is introduced via each of said air tubes into the respective cylinders;

a locator system including a locator tab projecting from the outer surface of each of said air tubes into engagement with said casing to hold said air tubes in said casing;

a fuel injection assembly including a fuel distribution assembly connected to a fuel source, and a fuel injector corresponding to each fluid outlet, said fuel distribution assembly including an injector pod connected to each of said fuel injectors enabling communication between said fuel injectors and the fuel source, said injector pods being mounted on said casing so that each of said fuel injectors is adjacent one of said fluid outlets to facilitate injection of fuel into the air exiting said air tubes adjacent said fluid outlets to cause a mixture of air and fuel to enter the respective cylinders;



a carrier connected to said fuel distribution assembly;

a sensor connected to said carrier to measure the condition of the air inside said casing; and

a distribution mounting disposed between said casing adjacent said fluid outlets, and the engine adjacent the cylinder inlets, said distribution mounting having passages to allow communication between air and fuel contained within said casing and the cylinders, and to allow communication between a supplemental fluid source and the cylinders.

5,003,934

HOOD COVERING THE SPACE BETWEEN CYLINDER BANKS OF AN INTERNAL-COMBUSTION ENGINE WHICH ARE ARRANGED IN A V-SHAPE

Peter Gubon, Lindau; Hans Sudmanns, and Christoph Teetz, both of Friedrichsafen, all of Fed. Rep. of Germany, assignors to MTU Friedrichshafen GmbH, Friedrichshafen, Fed. Rep. of Germany

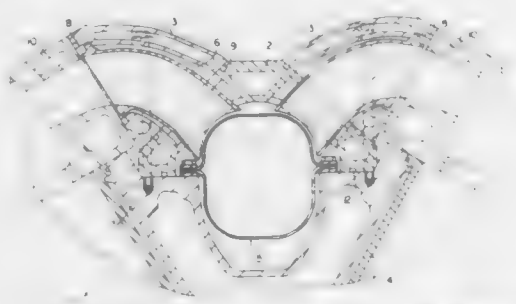
PCT No. PCT/DE89/00404, § 371 Date Mar. 13, 1990, § 102(e) Date Mar. 13, 1990, PCT Pub. No. WO90/00673, PCT Pub. Date Jan. 25, 1990

PCT Filed Jun. 19, 1989, Ser. No. 490,660

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1988, 3823685

Int. Cl.[5] F02M *35/10*

U.S. Cl. 123—52 MV **6 Claims**



1. A hood covering a space between cylinder banks of an internal combustion engine arranged in a V-shape for providing a hermetically sealed enclosure for a ram pipe arranged in an area between the cylinder banks and for exhaust pipes leading fuel gases from cylinders of the cylinder banks to the ram pipe, the internal combustion engine having a crankcase and a cylinder head at each cylinder bank, the head comprising:

contacting surfaces at the crankcase and at each of the cylinder heads;

a central hood part which rests on the crankcase and forms a V-shaped opening between the central hood part and each of the cylinder heads;

outer hood parts which are wedged into each of the V-shaped openings between the central hood part and cylinder heads, to hermetically seal the V-shaped openings; and

fastening means for pulling each of the outer hood parts into an associated V-shaped opening.

5,003,935

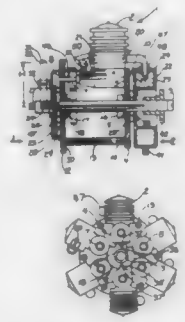
BALANCED RADIAL ENGINE

Michael P. Goldowsky, 7 Greenwood La., Valhalla, N.Y. 10595

Filed Nov. 28, 1988, Ser. No. 276,943

Int. Cl.[5] F02B *75/22*

U.S. Cl. 123—55 R **10 Claims**



1. An internal combustion radial engine composed of an even number of identical and fully functional single cylinder slider crank 2-cycle or 4-cycle engines, each engine comprising a piston, linkage means, carburetor means, and shaft, said engines being positioned in pairs in a common plane, said pistons are in line and diametrally opposed, said engine shafts are parallel to one another and to a central output shaft and having synchronizing means positioned on said engine shafts for coupling said engine shafts to the output shaft whereby diametrally opposite pistons radially move in phase synchronism thereby cancelling all piston and linkage means inertial forces, said output shaft projects from said synchronizing means past a front of the radial engine and said engine shafts project from said engines to the synchronizing means opposite in direction to said output shaft.

5,003,936

CYLINDER OF AN INTERNAL COMBUSTION ENGINE HAVING VARIABLE VOLUME

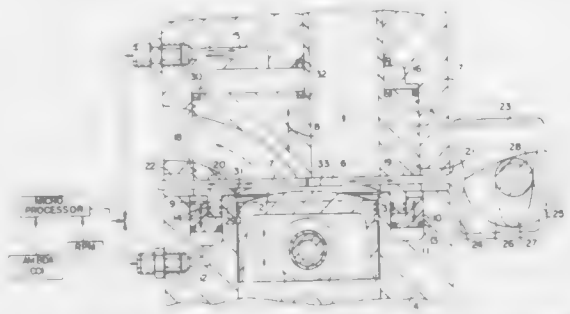
Peter Scherer, Am Zigeunerbergl 1, 8104 Grainau, Fed. Rep. of Germany

Filed Jan. 29, 1990, Ser. No. 472,368

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1989, 3902920

Int. Cl.[5] F02B *19/00*

U.S. Cl. 123—78 AA **19 Claims**



1. In a cylinder of an internal combustion engine comprising a cylinder head having a bore formed therein, a correspondingly shaped insert defining a cylinder chamber arranged in said bore, said insert being sealed by means of ring seals relative to said bore and being movable to alter the volume of the cylinder, the improvement comprising sensing means for continuously measuring the carbon monoxide content of the exhaust from the engine, means for continuously measuring the speed of the engine, and microprocessor means for controlling movement of the cylinder insert, said microprocessor means being responsive to said sensing means to adjust the volume of said cylinder for maximum efficiency at a given engine speed.

5,003,937

VALVE OPERATING SYSTEM FOR INTERNAL COMBUSTION ENGINE

Yukihiro Matsumoto; Kenji Yoshihara; Tetsuya Kajiura; Tomonori Niizato, and Noriyuki Yamada, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1989, Ser. No. 388,123

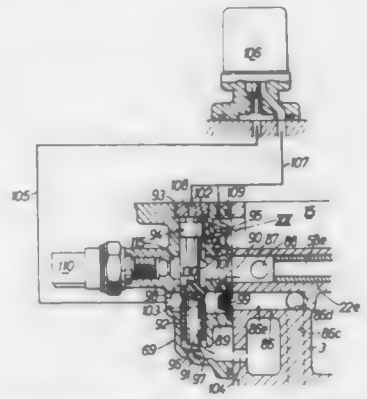
Claims priority, application Japan, Aug. 1, 1988, 63-102101[U]; Oct. 11, 1988, 63-13244[U]

Int. Cl.[5] F01L *1/34, 9/02*

U.S. Cl. 123—90.12 **20 Claims**

1. A valve operating system for an internal combustion engine, including a valve operation mode changing mechanism capable of changing at least one of either the lift amount of opening of an engine valve openably and closably carried in an engine body or the opening or closing timing in accordance with a variation in hydraulic pressure supplied to the changing mechanism, and a selector valve including a valve element slidably received in a housing attached to the engine body to change the supply of hydraulic pressure to the valve operation

mode changing mechanism, wherein the housing of the selector valve is provided with a working oil chamber in communication with the valve element for driving the valve element, toward a position to supply a higher hydraulic pressure to the valve operation mode changing mechanism upon an increase in



oil pressure in said working oil chamber, the valve element biased toward a position to supply a lower hydraulic pressure to the valve operation mode changing mechanism, said working oil chamber being connected through a leak jet to a drain chamber provided in the engine body.

5,003,938

PNEUMATICALLY POWERED VALVE ACTUATOR

Frederick L. Erickson, and William E. Richeson, Jr., both of Fort Wayne, Ind., assignors to Magnavox Government and Industrial Electronics Company, Fort Wayne, Ind.

Filed Dec. 26, 1989, Ser. No. 457,014

Int. Cl.[5] F01L *9/00*

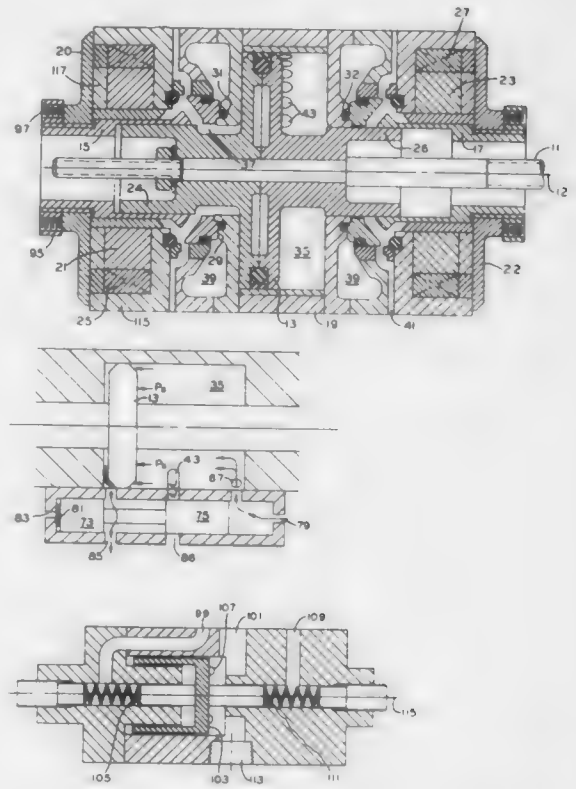
U.S. Cl. 123—90.14 **20 Claims**

6. An electronically controllable pneumatically powered valve actuating mechanism for use in an internal combustion engine of the type having engine intake and exhaust valves with elongated valve stems, the actuator comprising:

a power piston reciprocable along an axis and adapted to be coupled to an engine valve;

pneumatic motive means for moving the piston, thereby causing an engine valve to move in the direction of stem elongation between valve-open and valve-closed positions, the pneumatic motive means including a pair of control valves movable relative to the piston for selectively supplying high pressure air to the piston; and

pneumatic damping means for imparting a first decelerating force to the piston when the engine valve reaches a first separation from one of said valve-open and valve-closed positions to begin reducing engine valve velocity as the engine valve approaches said one position, and for imparting a second lesser decelerating force to the piston when



the engine valve reaches a second lesser separation from said one position.

5,003,939

VALVE DURATION AND LIFT VARIATOR FOR INTERNAL COMBUSTION ENGINES

Brian T. King, 48000 Elkview Rd., RR #2, Sardis, B.C., Canada

Filed Feb. 26, 1990, Ser. No. 486,599

Int. Cl.[5] F01L *1/34*

U.S. Cl. 123—90.16 **8 Claims**

1. A mechanism to variably combine the durations of a pair of valves jointly associated functionally with one of a process of induction and exhaust within the combustion chamber of an Internal Combustion engine having a crankshaft, so as to vary, relative to crankshaft revolution, the duration of said one of a process of induction and exhaust associated functionally with said pair of valves, said mechanism comprising:

a camshaft;

said camshaft having at least two cams;

a first housing fixed relative to said engine;

a first drum rotatably embraced by said first housing, said first drum being of common axis with said camshaft, the periphery of said first drum being interposed between one of said cams and said first housing;

a first rocker arm having a fulcrum end for rotation about a pivot fixed within said drum, and a free end capable of substantially reciprocal motion;

said first rocker arm being reciprocally movable by said cam, to in turn, reciprocate a first valve of said pair;

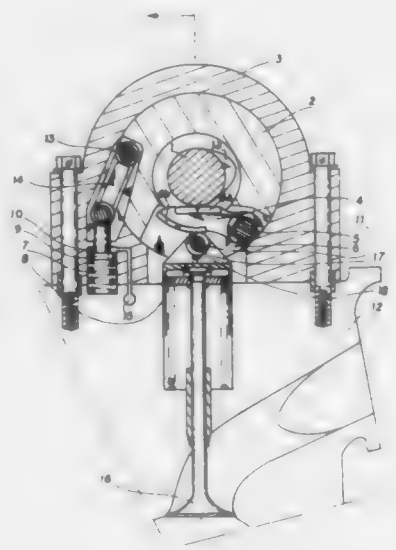
a second housing fixed relative to said engine;

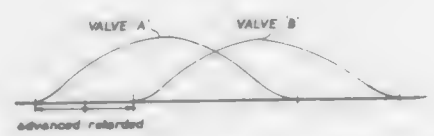
a second drum rotatably embraced by said second housing, said second drum being of common axis with said cam-

shaft, the periphery of said second drum being interposed between another of said cams and said second housing;

a second rocker arm having a fulcrum end for rotation about a pivot fixed within said second drum, and a free end capable of substantially reciprocal motion;

said second rocker arm being reciprocally movable by said cam, to, in turn, reciprocate a second valve of said pair; and





means to rotate said first and said second drums relative to each other, for varying the phasing of said first valve relative to the phasing of said second valve, so as to variably combine the duration of said first valve associated functionally with said first drum, and the duration of said second valve associated functionally with said second drum;

said variably combined durations of said pair of valves varying the duration of said one of a process of induction and exhaust associated functionally with said pair of valves.

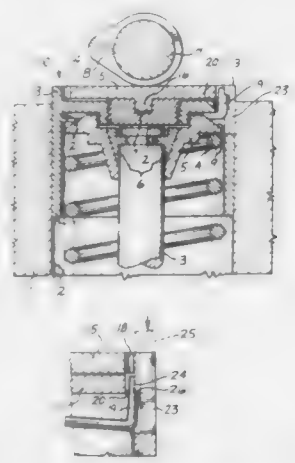
5,003,940

QUICK ADJUST TAPPET ASSEMBLY

William J. Hixson, 4220 NE. 90th, Seattle, Wash. 98115

Filed Jul. 25, 1990, Ser. No. 557,875
Int. Cl.[5] F01L *1/14, 1/20*
U.S. Cl. 123—90.54 **10 Claims**

1. In a tappet assembly interposed between a valve stem and a cam shaft of an engine and including a follower member having a threaded bore in alignment with the valve stem, a threaded plug member received in such bore, a cap member overlying and interconnected with the plug member such that turning the cap member turns the plug member to move it axially of the valve stem for adjusting the effective thickness of the tappet assembly, such cap member having an outer periphery concentric with such bore, and locking means for normally preventing rotation of the cap member relative to the follower member, the improvement comprising the cap member having an outward-opening peripheral notch, and the locking means



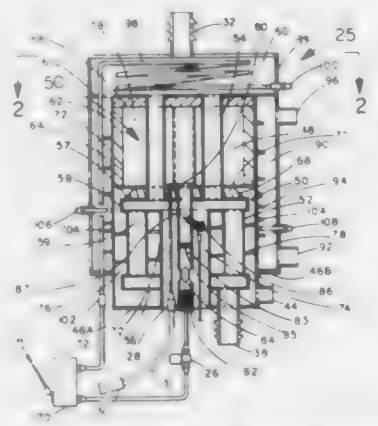
including a locking pin nonrotative relative to the follower member and normally received in said notch.

5,003,941

ENGINE HEATING UNIT

Roy R. Jeffrey, Jr., 1706 Ellison St., and John Devoss, 801 Floydada St., both of Wellington, Tex. 79095

Filed Jun. 4, 1990, Ser. No. 532,742
Int. Cl.[5] F02M *17/02*
U.S. Cl. 123—142.5 R **35 Claims**



1. Apparatus for heating a liquid cooled internal combustion engine comprising:

a vertical fire-box having inlet and exhaust flow paths, said exhaust flow path extending downwardly from said fire-box;

a refractory lining for said fire-box;

combustion means for producing radiant energy and hot gaseous combustion products in said fire-box inlet flow path so as to heat said refractory lining to incandescence;

first engine coolant heat exchanging means positioned in said exhaust flow path for cooling said combustion products;

first connecting means for passing liquid coolant from said engine through said first engine coolant heat exchanging means;

second engine coolant heat exchanging means above said first engine coolant heat exchanging means, cooperating with said combustion means and said incandescent fire-box for heating said engine coolant;

second connecting means for passing liquid coolant from said first engine coolant heat exchanging means through said second engine coolant heat exchanging means; and

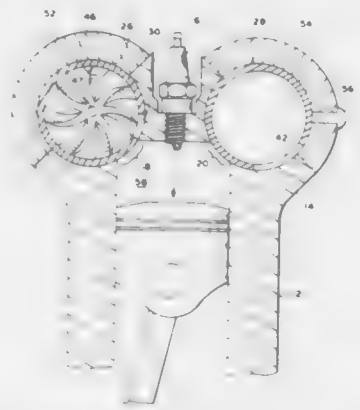
third connecting means for returning liquid coolant from said second coolant heat exchanging means to said engine.

5,003,942

ROTARY VANED VALVES

Gregory R. Hansard, 7045 Toma La., Penngrove, Calif. 94951

Continuation-in-part of Ser. No. 383,732, Jul. 21, 1989, abandoned. This application May 1, 1990, Ser. No. 517,292
Int. Cl.[5] F01L *7/00*
U.S. Cl. 123—190 A **10 Claims**



1. A rotary valve for an internal combustion engine having an intake head surface bearing a plurality of cylinder intake ports and an exhaust head surface bearing a plurality of cylinder exhaust ports, said rotary valve having a tubular-shaped body member having a longitudinal axis and a plurality of circumferentially staggered valve ports conditioned to enable gas flow through said valve, said rotary valve including drive means for rotating said body member about said longitudinal axis, the improvement comprising:

a set of vanes independently mounted inside said rotary valve body member; and

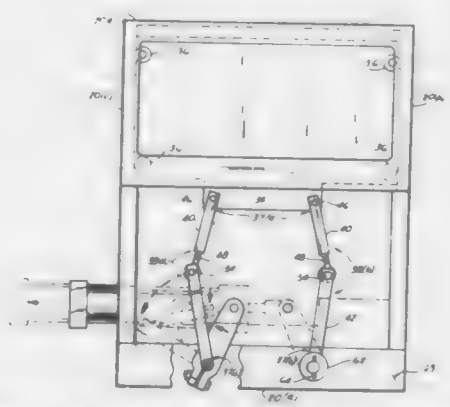
vane drive means for rotating said vanes within said rotary valve body member, wherein when said rotary valve body member rotates, said vanes independently rotate at a greater rotational speed to enhance gas flow through said rotary valve.

5,003,943

ENGINE AIR INTAKE SHUTOFF APPARATUS

Theodore B. Lafferty, Sr., 303 Fabiola Ave., Lafayette, La. 70508

Filed May 26, 1989, Ser. No. 358,068
Int. Cl.[5] F02B *77/00*
U.S. Cl. 123—198 D **16 Claims**



1. Apparatus including an engine air intake shutoff device and an engine air intake structure having an air intake passage, the device comprising:

(a) a frame mounted on the air intake structure for supporting movement of a baffle plate;

(b) a baffle plate moveable over the air intake passage within at least a portion of the frame;

(c) means for slidably moving the baffle plate within at least a portion of the frame between a first position allowing air flow through the air intake passage and a second position blocking air flow through the air intake passage, in response to a signal;

(d) means associated with the frame for sealing the baffle plate within the frame when the baffle plate is in the second position,

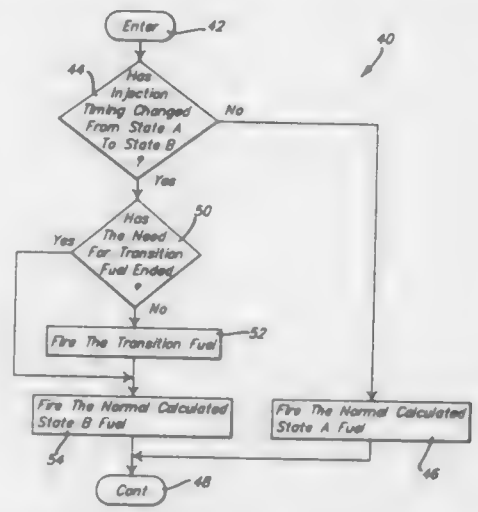
wherein the means for slidably moving the baffle plate further includes a pair of retractable baffle arms, each of the baffle arms affixed at its first end to the baffle plate and at its second end to an operating shaft.

5,003,944

TRANSITION FUEL MULTIPLIER

Richard K. Moote, Ann Arbor; Gregory T. Weber, Farmington Hills, and William O. Robinson, Detroit, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed May 14, 1990, Ser. No. 522,624
Int. Cl.[5] F02D *41/04*
U.S. Cl. 123—299 **2 Claims**



1. In a fuel injection system for an engine of an automotive vehicle including a plurality of cylinders, a spark plug for each of the plurality of cylinders, a distributor electrically connected to the spark plug, a throttle body having a throttle valve connected to the engine to allow or prevent air to the plurality of cylinders, a fuel source, at least one fuel line connected to the fuel source, a plurality of fuel injectors connected to the fuel line for delivering fuel to the plurality of cylinders, a sensor located near the distributor for sensing predetermined states of the distributor (A and B), and an electronic control unit (ECU) electrically connected to the sensor, distributor and fuel injectors for receiving signals from the sensor and outputting signals to fire the distributor and fuel injectors, a method of firing the fuel injectors, said method comprising the steps of:

determining whether injection timing for firing the fuel injectors has changed from predetermined state A to predetermined state B of a distributor reference signal;

firing the fuel injectors for a predetermined time period and delivering a calculated amount of fuel at predetermined state A if injection timing has not changed;

determining whether a need for transition fuel has ended if injection timing has changed;

firing the fuel injectors for another predetermined time period and delivering a calculated amount of transition fuel at predetermined state B if the need for transition fuel has not ended; and

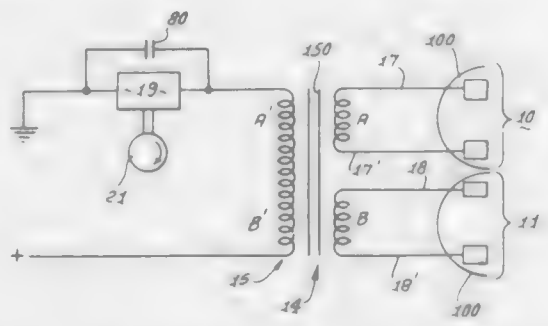
firing the fuel injectors for another predetermined time period and delivering a calculated amount of fuel at the predetermined state B if either said firing of transition fuel has been completed or if the need for transition fuel has ended.

5,003,945

DUAL SPARK PLUG IGNITION SYSTEM FOR MOTORCYCLE INTERNAL COMBUSTION ENGINE

Herbert W. Hoeptner, Morgan Hill, Calif., assignor to Custom Chrome, Inc., Morgan Hill, Calif.

Filed Sep. 28, 1989, Ser. No. 413,337
Int. Cl.[5] F02P *15/02*
U.S. Cl. 123—310 **1 Claim**



1. In an ignition system for a motorcycle two cylinder internal combustion engine, the system including magnetically coupled primary and secondary coil means, two spark plugs at each of the cylinders, a source of electrical current, and a single set of contacts controlling electrical current flow to the primary coil means for producing high voltage outputs from the secondary coil means to be delivered to all four of the spark plugs, said secondary coil means including certain secondary coil means operatively connected via the primary coil means with both of the spark plugs at one cylinder, and other secondary coil means connected via the primary coil means with both of said spark plugs at the other cylinder, a single cam controlling only said contacts, and a single magnetic core between said primary coil means and both said secondary coil means, and wherein said spark plugs include:

two plugs at one cylinder and connected with said certain secondary coil means,

two plugs at the second cylinder and connected with said other secondary coil means,

said primary coil means including certain primary coil means magnetically coupled to said certain secondary coil means, and other primary coil means magnetically coupled to said other secondary coil means, said certain and other primary coil means being connected in series, electrically, said two spark plugs at one cylinder being electrically connected to opposite ends of said certain secondary coil means, and said two spark plugs at the other cylinder are electrically connected to opposite ends of said other secondary coil means, and including

(a) said cam driven by the engine for controlling opening of the contacts, the cam rotatable about a first axis,

(b) carrier means carrying the contacts, and adjustably rotatable about said axis,

(c) and non-rotary support means to which said carrier means is connected, in adjusted position of the contacts,

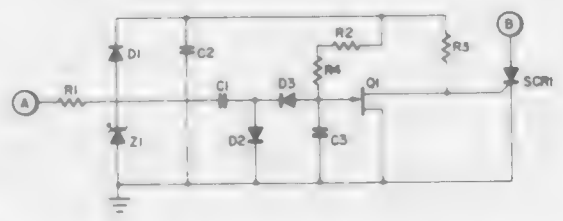
(d) whereby the timing of spark effected ignitions by all the spark plugs may be simultaneously controlled.

5,003,946

ENGINE SPARK CONTROL APPARATUS

Floyd M. Minks, 2700 Partin Settlement Rd., Kissimmee, Fla. 32743

Division of Ser. No. 226,298, Jul. 7, 1988, Pat. No. 4,821,702, which is a continuation of Ser. No. 112,100, Oct. 22, 1987, Pat. No. 4,774,924. This application Apr. 12, 1989, Ser. No. 337,014
Int. Cl.[5] F02P *5/155*
U.S. Cl. 123—335 **7 Claims**



1. A system for controlling the formation of a spark in a combustion engine comprising:

an alternator driven by said engine and having an alternating current output terminal;

a semiconductor switching device connected to said ignition control lead and having a control input terminal;

a network having a network input terminal and a network output terminal;

means connecting said network input terminal to said alternating current output terminal and said network output terminal to said control input terminal so that said ignition system is disabled above a selected engine speed; and

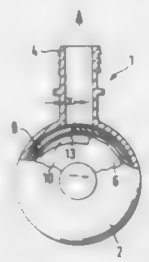
a frequency sensitive control network containing a frequency-to-current converter with means to minimize the effect of changes in the output of said converter caused by changes of voltage of said alternating current output terminal.

5,003,947

ARRANGEMENT FOR APPORTIONING THE IDLING AIR OF INTERNAL-COMBUSTION ENGINES

Heinz Lemberger, Unterföhring, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke AG, Fed. Rep. of Germany

Filed Mar. 21, 1990, Ser. No. 496,935
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1989, 3909396
Int. Cl.[5] F02M *3/00*
U.S. Cl. 123—339 **5 Claims**



1. An arrangement for apportioning the idling air of internal-combustion engines, comprising:

an adjusting motor for driving an adjusting member for changing a flow control cross-section,

and a supplementary device which can be actuated when the internal-combustion engine is rendered inoperative controlling the adjusting member into a minimum opening (measurement "x") of the flow control cross-section,

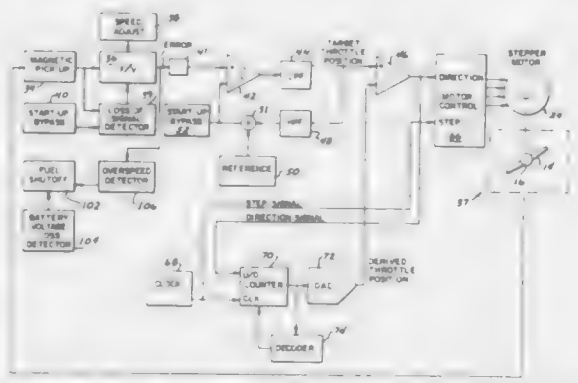
wherein the supplementary device comprises two magnets arranged to mutually affect one another, one of the magnets being configured to be rendered essentially inoperative when the internal-combustion engine is operating.

5,003,948

STEPPER MOTOR THROTTLE CONTROLLER

Jonathan D. Churchill, and William T. Volmary, both of Sheboygan, Wis., assignors to Kohler Co., Kohler, Wis.

Filed Jun. 14, 1990, Ser. No. 538,289
Int. Cl.[5] F02D *11/10, 31/00*
U.S. Cl. 123—352 **8 Claims**



1. In an engine regulator for an internal combustion engine having a stepper motor for controlling the flow rate of air and fuel in response to a electric control signal, a controller for providing step pulses to the stepper motor in response to the electric control signal, the controller comprising:

an oscillator for producing a periodic clock signal;

a sequencer for receiving a direction and the clock signal for producing step pulses for moving the stepper motor in a direction for a predetermined number of steps;

an up/down counter for receiving the direction and clock signals and producing a digital word updated in the direction indicated by the direction signal and in amount by a number indicated by the clock signal; and

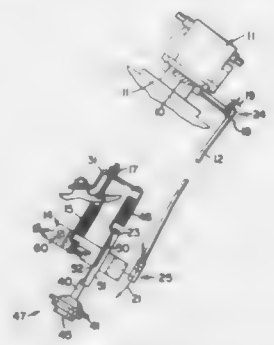
a comparator for comparing the digital word to the electric control signal and producing the direction signal.

5,003,949

GOVERNOR ASSIST MECHANISM

John C. Fanner, Coon Rapids, and Nick V. Halstead, Oak Grove, both of Minn., assignors to Onan Corporation, Minneapolis, Minn.

Filed Apr. 21, 1989, Ser. No. 341,644
Int. Cl.[5] F02D *7/00*
U.S. Cl. 123—382 **16 Claims**



1. An apparatus for assisting a primary governor device on an engine having an intake manifold, said primary governor device being of the type having a control arm and a primary governor arm which control opening and closing of a throttle device, said governor assist apparatus comprising:

(a) an assist spring operatively interconnected to said control arm by linkage means, wherein said linkage means comprises an intermediate link having a first and second end, said first end being interconnected to said assist spring, said intermediate link having a longitudinal slot therein which accommodates the primary governor arm, wherein movement of said intermediate link causes movement of the primary governor arm;

(b) means for disengaging said assist spring with respect to said primary governor device, said disengagement means including:

(i) a vacuum capsule having a first and second chamber, said first chamber being at atmospheric pressure and said second chamber being in fluid communication with the intake manifold so as to have the same pressure as the intake manifold, said first and second chambers being divided by a movable diaphragm; and

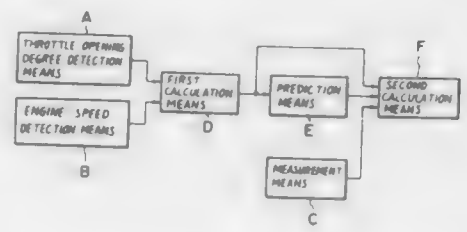
(ii) a diaphragm plunger interconnected to said diaphragm, one end of said diaphragm plunger being operatively interconnected to said assist spring so as to control movement thereof, wherein said ends of said intermediate link are interconnected to said assist spring and said diaphragm plunger by means of hook connections.

5,003,950

APPARATUS FOR CONTROL AND INTAKE AIR AMOUNT PREDICTION IN AN INTERNAL COMBUSTION ENGINE

Senji Kato, Totota, and Hidehiro Oba, Aichi, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jun. 7, 1989, Ser. No. 362,770
Claims priority, application Japan, Jun. 15, 1988, 63-147850; Jul. 30, 1988, 63-191153
Int. Cl.[5] F02D *41/18;* F02P *5/15*
U.S. Cl. 123—422 **24 Claims**



1. An internal combustion engine control apparatus, comprising:

a first detection means for detecting a degree of throttle opening;

a second detection means for detecting an engine speed;

measurement means for measuring a value of one of an amount of intake air taken into the combustion chamber and a physical quantity corresponding to the intake air amount;

prediction means which calculates an intake pipe pressure for a constant state, on the basis of a current degree of throttle opening and a current engine speed, and uses said intake pipe pressure and a constant status to predict a value for a future point in time a certain period in advance of a current time, of one of the amount of intake air taken into the combustion chamber and a physical quantity corresponding to the intake air amount;

a correction means for using the value measured by said measurement means to correct the value predicted by said prediction means; and

a control means for controlling one or both of the fuel injection duration and the spark timing, on the basis of the corrected predicted value and the engine speed.

5,003,951

CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

Satosi Komurasaki, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 6, 1990, Ser. No. 490,897
Claims priority, application Japan, Mar. 7, 1989, 1-52923
Int. Cl.[5] F02D 41/22; F02P 5/15
U.S. Cl. 123—425 4 Claims



1. A control apparatus for an internal combustion engine having a microcomputer for running control of the internal combustion engine according to running information of the internal combustion engine and a signal obtained by processing said running information, comprising:

a signal processing circuit which has a higher operating voltage than that of said microcomputer and which supplies said signal to said microcomputer; and

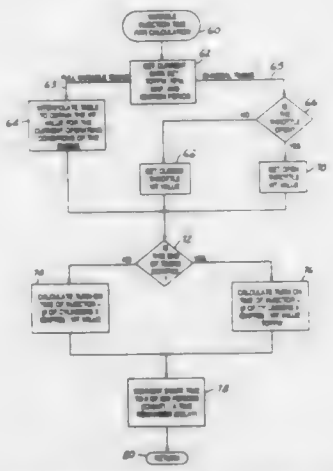
control level change means for lowering the control level in response to an output of said signal processing circuit when the voltage of said signal processing circuit is lower than a predetermined value, wherein said signal processing circuit is a circuit for detecting knocking of the internal combustion engine.

5,003,952

SEQUENTIAL VARIABLE FUEL INJECTION

Michael W. Weglarz, Utica, Mich.; Michael T. Vincent, Sterling, Mass.; James F. Prestel, Rochester, and Paul G. Sisoler, Warren, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed May 14, 1990, Ser. No. 523,094
Int. Cl.[5] F02D 41/04
U.S. Cl. 123—478 1 Claim



1. In a fuel injection system for an engine of an automotive vehicle including a plurality of cylinders, a spark plug for each of the plurality of cylinders, a distributor electrically connected to the spark plug, a throttle body having a throttle valve connected to the engine to allow or prevent air to the plurality of cylinders, a fuel source at least one fuel line connected to the fuel source, a plurality of fuel injectors connected to the fuel line for delivering fuel to the plurality of cylinders, a sensor located near the distributor for sensing predetermined states of the distributor, and an electronic control unit (ECU) electrically connected to the sensor, distributor and fuel injectors for receiving signals from the sensor and outputting signals to fire the distributor and fuel injectors, a method of firing the fuel injectors, said method comprising the steps of:

calculating a desired total injector on time for current engine conditions;

calculating a variable injection time (VIT) and a turn on time based on the VIT; and

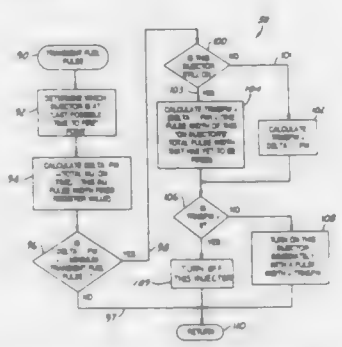
firing the fuel injectors at the calculated turn on time for the calculated total injector on time.

5,003,953

TRANSIENT FUEL INJECTION

Michael W. Weglarz, Utica, Mich.; Michael T. Vincent, Sterling, Mass.; James F. Prestel, Rochester, and Paul G. Sisoler, Warren, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed May 14, 1990, Ser. No. 523,454
Int. Cl.[5] F02D 41/04
U.S. Cl. 123—478 1 Claim



1. In a fuel injection system for an engine of an automotive vehicle including a plurality of cylinders, a spark plug for each of the plurality of cylinders, a distributor electrically connected to the spark plug, a throttle body having a throttle valve connected to the engine to allow or prevent air to the plurality of cylinders, a fuel source, at least one fuel line connected to the fuel source, a plurality of fuel injectors connected to the fuel line for delivering fuel to the plurality of cylinders, a sensor located near the distributor for sensing predetermined states of the distributor, and an electronic control unit (ECU) electrically connected to the sensor, distributor and fuel injectors for receiving signals from the sensor and outputting signals to fire the distributor and fuel injectors, a method of firing the fuel injectors, said method comprising the steps of:

determining which injector is at the last possible time for firing the fuel injector;

calculating a change in pulse width for the fuel injector;

determining whether the calculated change in pulse width is greater than a minimum transient fuel pulse;

firing the fuel injectors if determined not greater;

calculating a transition pulse width if determined greater; and

firing the fuel injectors with the transition pulse width to deliver a calculated amount of fuel.

5,003,954

FAIL-SAFE DEVICE FOR TEMPERATURE SENSORS

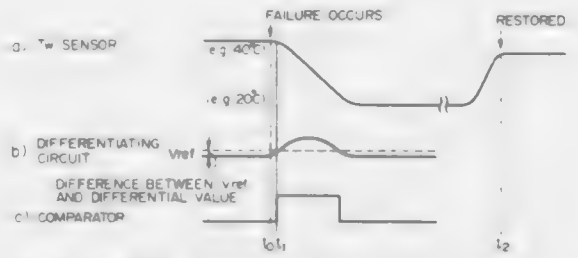
Masahiko Yakuwa; Tomofumi Itoh, and Hisashi Igarashi, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1989, Ser. No. 411,397
Claims priority, application Japan, Sep. 22, 1988, 63-237866
Int. Cl.[5] F02D 41/22
U.S. Cl. 123—479 9 Claims

1. A fail-safe device for a temperature sensor for detecting a temperature of an internal combustion engine, comprising:

renewal means for renewing a value of the temperature of said engine detected by said temperature sensor and storing the renewed value, the stored renewed value being applied to control of operation of said engine;

low temperature region detecting means for determining whether or not the temperature of said engine is in a low temperature region lower than a predetermined value, on



the basis of the detected value of the temperature from said temperature sensor; and

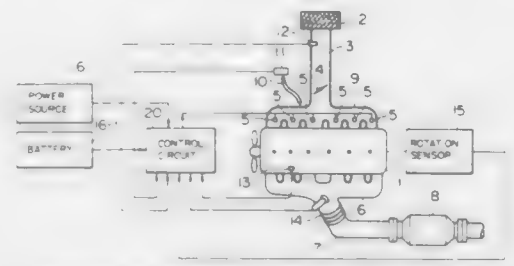
renewal inhibiting means for inhibiting renewal of the detected value from said temperature sensor by said renewal means when the detected value has decreases, while said low temperature region detecting means detects said low temperature region.

5,003,955

METHOD OF CONTROLLING AIR-FUEL RATIO

Hiroshi Haraguchi, Kariya, Japan; Hiroshi Tamura, Torrance, Calif.; Katuhiko Kodama, Obu, and Toshio Kondo, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 11, 1990, Ser. No. 463,438
Claims priority, application Japan, Jan. 20, 1989, 1-012529
Int. Cl.[5] F02D 41/14
U.S. Cl. 123—489 9 Claims



1. A method of controlling the air fuel ratio in internal combustion engines of the type in which a transient correction value for correcting a base fuel quantity in an internal combustion engine in a transient state is corrected in accordance with a transient learning value determined on the basis of a signal supplied from an air-fuel-ratio sensor when the engine is in a transient state, thereby accurately adjusting the air-fuel ratio of a mixture supplied to the engine in a transient state to a target air-fuel, said method comprising the steps of:

updating first learning terms at a first learning speed in response to a signal from said air-fuel-ratio sensor and respectively storing them in a reloadable memory device, said first learning terms being provided for respective different ranges corresponding to different engine temperatures and related to factors causing variation in air-fuel ratio in such a manner that the air-fuel-ratio variate of the variation varies depending upon the engine temperature;

updating second learning terms at a second learning speed which is higher than said first learning speed is response to a signal from said air-fuel-ratio sensor and storing them in said reloadable memory device, said second learning terms being related to factors causing variation in air-fuel ratio in such a manner that the air-fuel-ratio variate of the variation varies in a substantially uniform manner with respect to the engine temperature; and

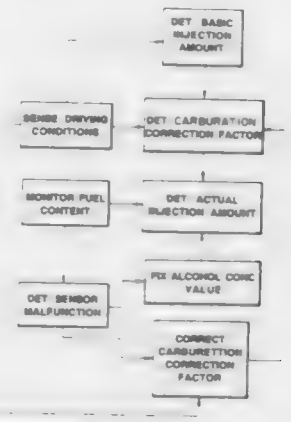
determining said transient learning value on the basis of said first learning terms dependent on the engine temperature and stored in said memory device and of said second learning terms stored in said memory device, and correcting said transient correction value in accordance with the transient learning value thus determined.

5,003,956

ELECTRONIC FUEL INJECTION CONTROL SYSTEM FOR A MULTI-FUEL INTERNAL COMBUSTION ENGINE AND METHOD THEREFORE

Akio Iwamoto, and Yoshiki Yuzuriha, both of Gunma, Japan, assignors to Japan Electronic Control Systems Co., Ltd., Isezaki, Japan

Filed Apr. 12, 1990, Ser. No. 507,845
Int. Cl.[5] F02M 51/00
U.S. Cl. 123—494 2 Claims



1. In an internal combustion engine

means for determining the load on the engine;

means for determining the engine speed;

means for sensing the content of the fuel being supplied to the engine;

diagnostic means for monitoring the operation of fuel content sensing means and for indicating the fuel content sensing means is malfunctioning when the output characteristics vary in a predetermined manner;

means for determining a basic fuel supply amount based on the engine load and engine speed;

means deriving an actual fuel supply amount by correcting the basic fuel amount using a first correction factor based on the sensed content of the fuel and a second correction factor based on the load on the engine, the second correction factor being arranged to be set to a relatively high value when the load on the engine is above a predetermined level and said diagnostic means indicates that the fuel content sensing means is operating normally;

means for setting said first correction factor to a predetermined value upon said diagnostic means indicating said fuel content sensing means is malfunctioning; and

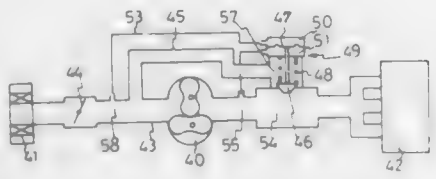
means for incrementally increasing said second second correction factor in lieu of setting said second correction factor to the relatively high value when said diagnostic means indicates that said fuel content sensing means is malfunctioning.

5,003,957

INTERNAL COMBUSTION ENGINE WITH A MECHANICAL SUPER-CHARGER

Toshio Takeda, Nagoya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 23, 1989, Ser. No. 313,945
Claims priority, application Japan, Feb. 23, 1988, 63-38669
Int. Cl.[5] F02D *23/00*
U.S. Cl. 123—564 **1 Claim**



1. An internal combustion engine having a mechanical super-charger, comprising:

a first conduit connecting said engine with a source of air;

a super-charger compressor in said first conduit for compressing air in said first conduit;

a second conduit connected to said first conduit at positions at upstream and downstream sides of said super-charger compressor;

a pressure regulating valve including a valve member positionable in a closed position for fluidically closing communication between said first and second conduits;

a throttle valve positioned in said first conduit upstream of said super-charger compressor and movable between a closed position and an open position;

a diaphragm mechanically connected to said valve member and having first a fluid chamber;

a spring biasing said valve member into the closed position;

means for communicating under all operating conditions said first fluid chamber with a portion of said first conduit at a position downstream of said throttle, wherein said first fluid chamber is on a side of said diaphragm such that movement of said throttle valve to the closed position produces a pressure change in said first fluid chamber for opening said valve member in opposition to said spring, whereby air compressed by said super-charger compressor may be bled to said second conduit;

a second fluid chamber on a side of said diaphragm member opposite said first fluid chamber; and

means for communicating under all operating conditions said second fluid chamber with a portion of said first conduit downstream of said super-charger compressor,

whereby said valve member comprises both means for reducing a load on said super-charger compressor when said throttle valve is closed and means for limiting a maximum air pressure at the downstream side of said super-charger compressor.

5,003,958

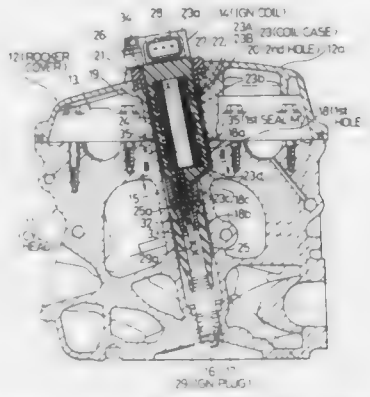
IGNITION COIL MOUNTING STRUCTURE FOR ENGINE

Syuichi Yoneyama; Yoshinori Obana, and Eiichi Fujisawa, all of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 27, 1989, Ser. No. 456,642
Claims priority, application Japan, Dec. 27, 1988, 63-168943[U]; Feb. 23, 1989, 1-43434
Int. Cl.[5] F02P *3/02*
U.S. Cl. 123—635 **11 Claims**

1. An ignition coil mounting structure for an engine, comprising:

(a) a cylinder head formed with a coil mounting hole including a first large-diameter inclined coil mounting hole, a second small-diameter inclined coil mounting hole, and an intermediate partially conical surface for connecting said first and second inclined coil mounting holes in axially eccentric positional relationship with respect to each other; and



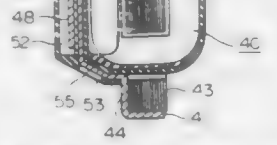
(b) an ignition coil formed with an outer casing so as to be inserted into the coil mounting hole formed in said cylinder head.

5,003,959

IGNITION COIL UNIT FOR AN INTERNAL COMBUSTION ENGINE

Tomokazu Umezaki, and Tadao Takaishi, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1989, Ser. No. 418,077
Claims priority, application Japan, Oct. 7, 1988, 63-252033; Oct. 13, 1988, 63-255831
The portion of the term of this patent subsequent to Aug. 28, 2007, has been disclaimed.
Int. Cl.[5] F02P *3/04;* **H01F** *31/00*
U.S. Cl. 123—647 **7 Claims**



1. An ignition coil unit for an internal combustion engine comprising:

a magnetic iron core;

a primary coil wound around said iron core;

a secondary coil electromagnetically coupled with said primary coil;

a control circuit for controlling a primary electric current flowing through said primary coil;

a single common case containing said iron core, said primary coil, said secondary coil and said control circuit therein; and a heat sink (32; 44) secured to and supported by said iron core.

5,003,960

ELECTRONIC GRILL CONTROL

Joseph J. Hanagan, Freeport, Ill., assignor to The Thermos Company, Inc., Freeport, Ill.

Division of Ser. No. 337,364, Apr. 13, 1989. This application Feb. 15, 1990, Ser. No. 480,303
Int. Cl.[5] F24C *3/08*
U.S. Cl. 126—39 BA **6 Claims**

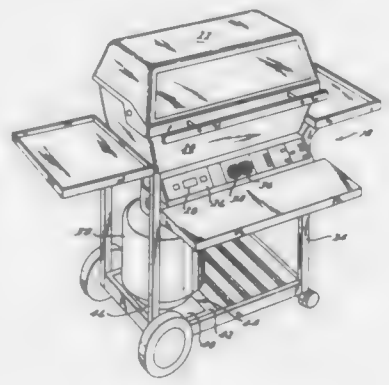
1. In a barbecue grill of the type employing a containment means with at least one burner disposed therein and an electrically actuable means for igniting said burner, the improvement comprising:

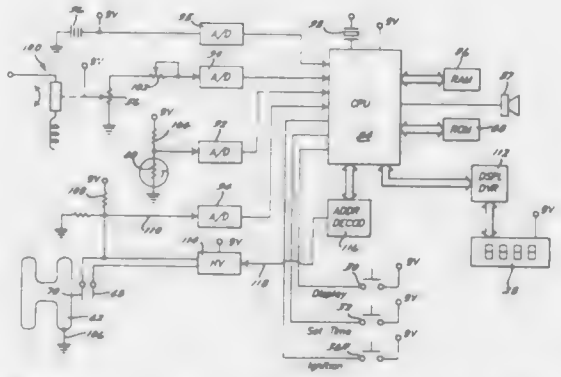
flame sensing means disposed adjacent said burner for providing an electronic flame signal indicative of the presence and absence of flame at said burner;

electronic ignition and control means coupled to said electrically actuable ignition means and receptive of said flame signal for causing said ignition means to ignite said burner and for monitoring said flame signal for the presence and absence of flame;

said electronic ignition and control means having manually actuable means for causing a first ignition event to occur in response to manual actuation whereby said ignition means is actuated;

said electronic ignition and control means having automatic means for selectively causing said second ignition event to occur automatically following said first ignition event whereby said ignition means is again actuated;





said electronic ignition and control means being responsive to said flame signal for causing said second ignition event to occur when said flame signal indicates the absence of flame subsequent to said first ignition event;

said electronic ignition and control means including a microprocessor control system connected to a system ground and an ignition system comprising a pair of spaced apart electrodes for sending and receiving an electrical ignition spark, said electrodes each being isolated from said system ground and being controlled by said microprocessor control system;

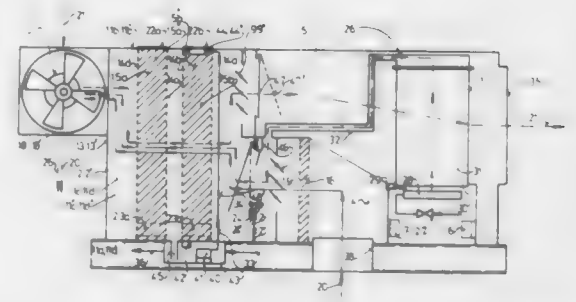
said flame sensing means comprising impedance bridge means coupled to said electrodes for measuring the relative impedance of the air space between said electrodes, said impedance bridge means being coupled to said microprocessor control system which causes said second ignition event to occur.

5,003,961

APPARATUS FOR ULTRA HIGH ENERGY EFFICIENT HEATING, COOLING AND DEHUMIDIFYING OF AIR

Ferdinand K. Besik, 2562 Oshkin Ct., Mississauga, Ontario, Canada L5N 3Z3

Continuation-in-part of Ser. No. 152,808, Feb. 5, 1988, Pat. No. 4,952,283. This application Aug. 16, 1988, Ser. No. 232,856
Int. Cl.[5] F24H *7/04*
U.S. Cl. 126—110 R **20 Claims**



1. Apparatus for ultra high energy efficient heating, cooling and dehumidifying of air, said apparatus comprising:

combustion means for generating useful heat for heating of an air stream, said combustion means including combustion control means and flue gas discharge means,

matrix container means including at least one matrix container for retaining matrix means, with each said container including front, rear and side walls, and screen means separating each said container into first, second, and third consecutive chambers, said first and third chambers having at least one intake-exit opening for intake and for exit of first and second air streams, said second chamber housing said matrix means and having flanged openings for replacement of said matrix means, said matrix container means operating in a short cycle including a sorption and desorption periods,

matrix means including at least a single matrix means including solid materials for removing of particulates and for absorbing heat and moisture from said first air stream and for simultaneously cooling said first air stream during said sorption period, and then releasing said particulates and said heat and moisture into said second air stream and simultaneously heating said second air stream during said desorption period,

air fan means for pumping said two air streams periodically through said matrix container means in preselected time intervals, said air fan means pumping said two air streams alternately and countercurrently to each other through said matrix container means and said matrix means during said sorption and desorption periods to facilitate countercurrent transfer of heat and moisture between said two air streams,

compartment means in communication with said matrix container means, said compartment means housing said combustion means and including an intake and an exit means for intake and exit of said two air streams, and

process control means interconnected with said matrix means and said air fan means, and provided for controlling said operating cycle of said matrix means by regular periodic switching of said air fan means, and for maintaining a continuous operation of said apparatus operating in either of a heating mode, cooling mode, and or a dehumidifying mode.

5,003,962

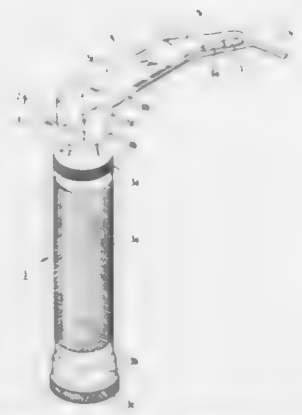
LARYNGOSCOPE WITH DOUBLE-ANGLE BLADE

Jay J. Choi, 7 Moran Rd., West Orange, N.J. 07052

Continuation of Ser. No. 349,836, May 10, 1989, abandoned. This application Jul. 26, 1990, Ser. No. 560,218

Int. Cl.[5] **A61B** *1/06*

U.S. Cl. 128—11 **5 Claims**



1. A laryngoscope for tracheal intubation which comprises in combination:

a handle;

a blade the proximal end of which is coupled so that it extends outward L-fashion from the end of the handle, said blade of substantially flat solid section being shaped in the form of a spatula having a tip, being bent inwardly through a first and second bend toward the principal axis of the handle, forming at least two acute angles in said spatula along the length between the coupling with the handle and the tip so that the extent of the blade or spatula is divided into at least three relatively straight sections, angled inwardly toward one another and

wherein said first bend is formed on said spatula about halfway between its proximal end and its tip, and said second bend is formed more than two-thirds of the distance from said first bend to said tip.

5,003,963

LARYNGOSCOPE

James R. Bullard, 707 Somerset Way, Augusta, Ga. 30909; Richard P. Muller, Bronx, N.Y.; Benedetto Grossi, Stamford, Conn., and John Cristine, Bath, N.Y., assignors to James Roger Bullard, Augusta, Ga.

Division of Ser. No. 315,214, Feb. 23, 1989, Pat. No. 4,905,669, which is a continuation of Ser. No. 101,834, Sep. 28, 1987, abandoned. This application Mar. 5, 1990, Ser. No. 489,272

Int. Cl.[5] **A61B** *1/26*

U.S. Cl. 128—11 **6 Claims**



1. A method of placing an object into the larynx and trachea region of a patient comprising the steps of:

inserting a laryngoscope having a placement device movably connected therewith into the patient;

conecting the object to the placement device; moving a distal portion of the placement device from a first home position proximate a distal region of the laryngoscope to a second extended position, the object to be placed also moving relative with the distal portion of the placement device; and

releasing the object to be placed from the placement device.

5,003,964

ENDOSCOPE AND JIG FOR PROCESSING SIGNAL CONDUCTORS OF ENDOSCOPE

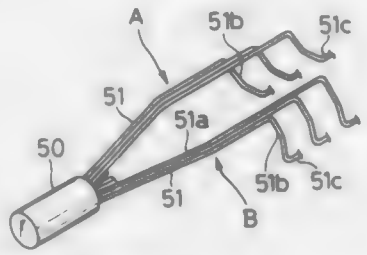
Nobuo Koshikawa, and Masahiro Inoue, both of Tokyo, Japan, assignors to Kabushiki Kaisha Machida Seisakusho, Tokyo, Japan

Filed May 30, 1990, Ser. No. 530,406

Claims priority, application Japan, Jun. 15, 1989, 1-69053[U]

Int. Cl.[5] **A61B** *1/04*

U.S. Cl. 128—4 **7 Claims**



1. An endoscope comprising:

(a) a hollow body having a remotely-manipulating means;

(b) a hollow insertion portion extending from said body;

(c) a hollow bending portion extending from a distal end of said insertion portion, said bending portion being bendable by manipulating said remotely-manipulating means;

(d) a rigid portion mounted on a distal end of said bending portion;

(e) an elongated component part extending from said rigid portion toward said body through said bending portion and said insertion portion;

(f) an electric device attached to said rigid portion; and

(g) signal conductors connected at one ends to said electric device and extending therefrom toward said body through said bending portion and said insertion portion, each of said signal conductors being bent at said bending portion and having an intersecting portion extending in a direction intersecting a longitudinal direction of said bending portion.

5,003,965

MEDICAL DEVICE FOR ULTRASONIC TREATMENT OF LIVING TISSUE AND/OR CELLS

Roger J. Talish, Fairfield; and Arthur L. Lifshey, East Brunswick, both of N.J., assignors to Meditron Corporation, Spring Valley, N.Y.

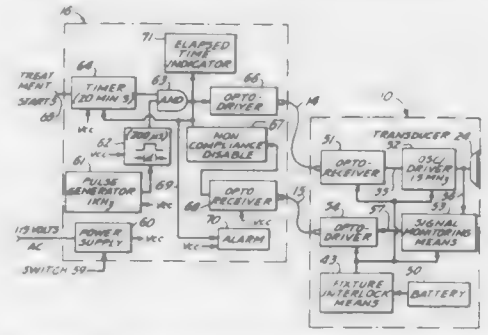
Filed Sep. 14, 1988, Ser. No. 247,105

Int. Cl.[5] **A61B** *17/56*

U.S. Cl. 128—24 AA **28 Claims**

1. For use in the treatment of living tissue and/or cells with ultrasonic radiation, a self-contained treatment-head unit comprising a housing having an external-access port, an ultrasonic generator and a power source connected to said generator and contained within said housing, an ultrasonic transducer connected to said generator and having an active body-application face exposed externally of said housing, said generator being specifically tuned for efficient coupling to said transducer, and

control means for said generator including photo-sensitive device means carried within said housing and adapted via said



port to produce electrical-control signals governing operation of said generator.

5,003,966

SUCTION DEVICE

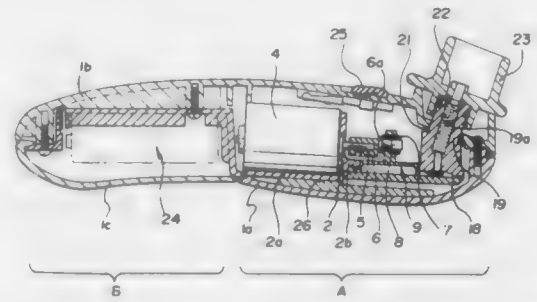
Kenji Saka, Kanagawa; Masao Terai, Hyogo, and Kanji Yamamoto, Osaka, all of Japan, assignors to Kanebo, Ltd., Osaka, Japan

Filed Oct. 13, 1989, Ser. No. 420,865

Claims priority, application Japan, Oct. 15, 1988, 63-134645

Int. Cl.[5] **A61H** *7/00*

U.S. Cl. 128—39 **3 Claims**



1. A facial massage including a suction device comprising a hollow case having a suction opening, a suction pump included in said case and a driving motor for said suction pump, which is characterized in that said suction device comprises a bottom plate, a diaphragm made of flexible material and disposed on said bottom plate, said diaphragm forming a dome section, first and second cutting portions formed at the end part of said diaphragm, a suction valve made of flexible material extending from the wall to the center of the first cutting portion, an exhaust valve made of flexible material extending from the wall to the center of said second cutting portion, a suction cylinder of which the one end opening faces said suction valve and another end opening extends to a suction opening of said hollow case, an exhaust passage of which the one end faces said exhaust valve and the another end extends to outside, first and second long grooves disposed on said bottom plate and extending from the dome section of said diaphragm to said first and second cutting portions, wherein the dome section of said diaphragm is in connection with an eccentric shaft disposed at a driving axis of said motor to move up and down.

5,003,967

HAND TRACTION WRAP

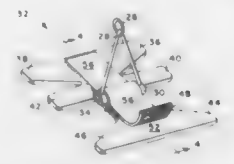
Bernard E. McConnell, 4725 Wellington St., Greenville, Tex. 75401

Filed Mar. 25, 1988, Ser. No. 173,440

Int. Cl.[5] **A61F** *5/10, 13/00;* **A41D** *19/00*

U.S. Cl. 128—77 **1 Claim**





1. A traction wrap assembly for attachment to a patient's hand comprising, in combination:

a flexible base panel member having a proximal end portion, a middle portion and a distal end portion;

first and second proximal flaps extending transversely from the proximal end portion of said base panel member;

first and second middle flaps extending transversely from the middle portion of said base panel member;

first and second distal flaps extending transversely from the distal end portion of said base panel member;

said base panel member being foldable about a patient's hand and fingers in a closed fist position with the proximal end portion of the base panel member overlapping the wrist and the back of the hand, the middle portion of the base panel member overlapping the flexed fingers and knuckles, and the distal end portion of the base panel member overlapping the base of the hand and the wrist;

said first and second proximal flaps being wrappable around a patient's wrist in overlapping engagement with each other;

said middle flaps being foldable along the closed fist and extendable in overlapping engagement with the proximal portion of the base panel member;

the first and second distal flaps being foldable around the wrist and base of the hand in overlapping engagement with the first and second middle flaps and in overlapping engagement with the proximal end portion of the base panel member;

coacting fasteners secured to said flaps and to said base panel member for retaining said base panel member and flaps in wrapped engagement about the patient's closed fist;

a flexible coupling panel having a proximal end portion, a middle end portion and a distal end portion, said flexible coupling panel being foldable about said base panel member for engaging the proximal end portion, middle portion and distal end portion of said base panel member, respectively; and,

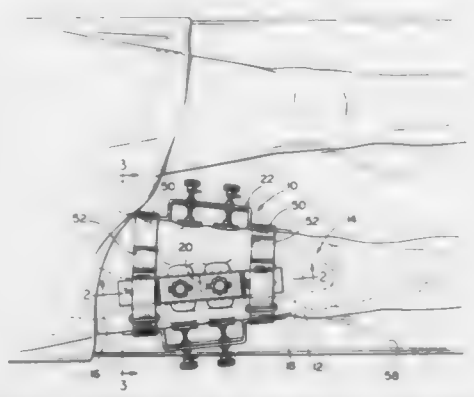
a traction bar confined between the middle portions of said base panel member and said coupling panel member.

5,003,968
HEAD SUPPORT
Suzanne P. Marx, 23649 Duffield Rd., Shaker Hts., Ohio 44122
Filed Apr. 16, 1990, Ser. No. 509,466
Int. Cl.[5] A61F *5/01*
U.S. Cl. 128—87 B 12 Claims



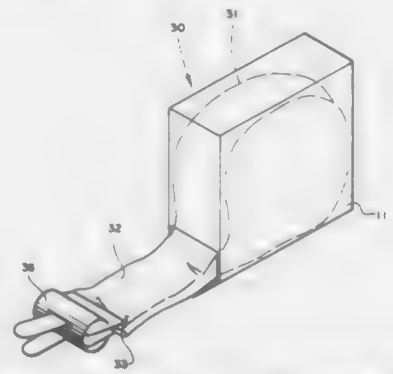
1. A device to flexibly hold a head upright from above, comprising:
a collar adapted to fit over human shoulders;
a helmet adapted to fit a human head and to be retained in place;
elastic support means having a first end and a second end, the first end connected to the helmet, and the second end connected to the collar;
a waistband for attaching the device to the body;
a first strap having a first end and a second end;
a second strap having a first end and a second end;
a breastbone bridge connected to the front of the collar and the first end of the first strap; and
wherein the first end of the second strap is connected to the collar, the second end of the second strap is connected to the back of the waistband, said second strap serving to anchor the back of the collar to the waistband and the second end of the first strap is connected to the front of the waistband, said first strap serving to anchor the breast bone bridge and connected collar to the waistband.

5,003,969
FRACTURE ALIGNMENT DEVICE
Samir N. Azer, Alexandria, Va.; Naser N. Salman, Rockville, Md., and William R. Krause, Richmond, Va., assignors to Orthopedic Designs, Inc., Alexandria, Va.
Filed Feb. 21, 1990, Ser. No. 482,805
Int. Cl.[5] A61F *5/04*
U.S. Cl. 128—87 R 14 Claims



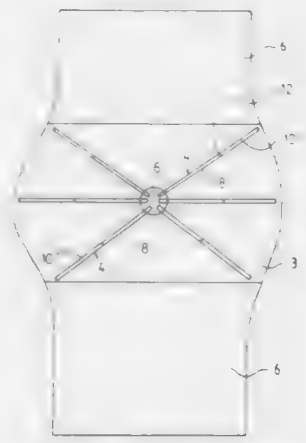
1. A fracture alignment and retention device comprising:
alignment means for aligning bone fragments,
said alignment means including elongated members spaced about the periphery of an extremity of a patient and being substantially radio-transparent,
said alignment means mounted on said elongated members including pressure means for shifting bone fragments with respect to each other in different planes of the bone fragments so as to align the bone fragments along a longitudinal axis, and
said pressure means including radio-opaque means for viewing a location of said pressure means under a fluoroscope and means for securing said elongated member to extremity of the patient.

5,003,970
ROLL FORM MEDICAL BANDAGING PRODUCT, METHOD OF CONSTRUCTING SAME AND CONTAINER FOR ROLL FORM BANDAGING PRODUCT
A. Bruce Parker, Charlotte, and Donna F. Miller, Harrisburg, both of N.C., assignors to Parker Medical Associates, Charlotte, N.C.
Continuation-in-part of Ser. No. 243,585, Sep. 12, 1988, Pat. No. 4,899,738, which is a continuation of Ser. No. 243,584, Sep. 12, 1988, Pat. No. 4,869,046, which is a division of Ser. No. 815, Jan. 6, 1987, Pat. No. 4,770,299. This application Feb. 8, 1990, Ser. No. 477,021
The portion of the term of this patent subsequent to Sep. 13, 2005, has been disclaimed.
Int. Cl.[5] A61F *13/04*; B65D *85/66*
U.S. Cl. 128—90 26 Claims



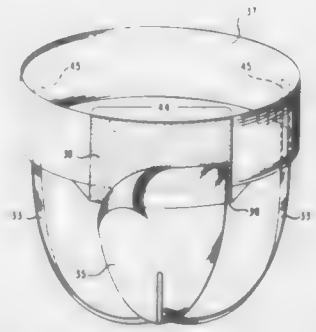
1. A medical bandaging product for being dispensed in predetermined lengths suitable for a given medical use, comprising:
(a) an outer container formed of moisture-impervious material, the container comprising an elongate product dispensing sleeve having a moisture-proof sealable opening on one end and an enlarged product storage package communicating with the dispensing sleeve;
(b) a medical material positioned in the container in substantially moisture-free conditions and sealed therein against entry of moisture until use, the medical material comprising:
(i) a substrate;
(ii) a reactive system impregnated into or coated onto the substrate, the system remaining stable when maintained in substantially moisture-free conditions and hardening upon exposure to sufficient moisture to form a rigid, self supporting structure; and
(iii) a soft, flexible protective wrapping enclosing the substrate along its length to provide a cushioning barrier between the substrate and the skin of a patient when the material is in use;
(c) means for resealing the dispensing sleeve against entry of moisture after a predetermined length of the bandaging product has been dispensed for use to prevent hardening of the substrate remaining in the product container.

5,003,971
EXPANSION SYSTEM FOR A MEDICAL AND SURGICAL DRESSING
John T. Buckley, 175 Sasco Hill Rd., Fairfield, Conn. 06430
Filed Sep. 2, 1988, Ser. No. 239,701
Int. Cl.[5] A61L *15/00*
U.S. Cl. 128—156 28 Claims



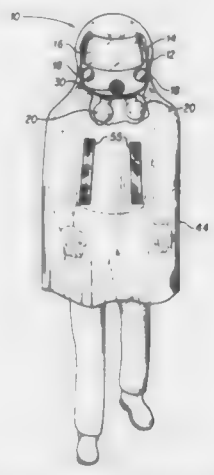
1. A dressing for protecting a wound area on a living being, said dressing comprising:
at least a first layer for covering and protecting said wound area, and
a second layer joined to said first layer, said second layer being oriented outwardly of said first layer relative to said wound area,
said first and second layers including means for expanding said dressing to define an enclosed space between the joined first and second layers of said dressing and said wound area such that said dressing covers but does not directly contact said wound area.

5,003,972
ATHLETIC SUPPORTER
Jeffrey L. Kestler, 249 Long Hill Dr., Morris County, N.J. 07078
Continuation of Ser. No. 114,220, Oct. 30, 1987, abandoned. This application Apr. 3, 1989, Ser. No. 333,725
Int. Cl.[5] A41B *9/12*
U.S. Cl. 128—158 6 Claims



1. A body comprising (1) a waistband, (2) a pouch, a substantial portion of which is stretchable, said pouch attachable to the front portion of said waistband, said pouch configured for supporting a scrotum and penis, and (3) a holding member extending from the bottom of said pouch to said waistband characterized in that said body includes a means for attaching said pouch to said waistband such that said means of attachment provides a plurality of positions attachment extending in the direction from the bottom to the top of said waistband and such that substantial pucker of said waistband and substantial sag of said pouch is avoided.

5,003,973
RESCUE HELMET APPARATUS
Theodore H. Ford, and Mary A. Ford, both of 6416 Lakepoint Pl., Parker, Colo. 80134
Continuation-in-part of Ser. No. 144,069, Jan. 15, 1988, abandoned. This application Apr. 20, 1989, Ser. No. 340,693
Int. Cl.[5] A62B *7/02, 7/08, 17/04*
U.S. Cl. 128—201.25 5 Claims



1. A rescue helmet apparatus, comprising:
a base helmet member having a neck orifice at a lower portion of said helmet member;
a transparent face shield member rigidly affixed and integral with said base helmet member;
said neck orifice of said base helmet member having elastic means for sealing the interior of said base helmet member;
said base helmet member having a lowermost mounting means integral therewith that has receptacle means for an illumination means, said illumination mean being incorporated therein, said illumination means being disposed proximate to a means for providing breathable air;
said means for providing breathable air detachably mounted to said lowermost mounting means whereby a user inhales clean air and is protected from the effects of oxygen-depleted air, smoke or noxious fumes and is further protected from heat and exposure to flame;
a reflective cape overlying said base helmet member, said reflective cape substantially enfolding the shoulders, back and chest of a wearer whereby heat is reflected from said apparatus to thus protect the head, back, chest and shoulders of a wearer of the device; and
said base helmet member substantially rounded and having cushion means interiorly disposed along said neck orifice and longitudinally about the interior of said base helmet member at substantially even intervals.

5,003,974
FIRST-AID GAS MASK
Lin-Her Mou, Fl. 5, No. 6, Lane 394, Long Chang Rd., Taipei, Taiwan
Filed Oct. 27, 1989, Ser. No. 427,494
Int. Cl.[5] A62B *7/10*
U.S. Cl. 128—201.25 1 Claim

1. A first-aid gas mask including a transparent cover, for enclosing the head of a wearer; an air filter and a flexible air pipe, wherein said transparent cover is comprised of a rigid ring having two oppositely positioned notches thereon to permit folding of said transparent cover, and said cover being made of soft transparent and heat resisting material having a

bottom end and an opening therein with an elastic band thereon for fastening around the neck of a wearer, said cover further comprising a rectangular flap extending downward from the bottom end, said rectangular flap having two male snap fasteners thereon and said air filter being comprised of a rectangular case including a flap with two female snap fasteners thereon to fasten with the two male snap fasteners on said rectangular flap, said rectangular case having a top and a bottom and an inner space divided into battery chamber for setting therein of four batteries; a motor room below said battery chamber for a motor and a motor seat with a motor shaft disposed at the bottom; a vane wheel room for containing a vane wheel and a shell, said vane wheel being fixedly mounted on said motor shaft of said motor and covered by said



shell; a filter room below said vane wheel room for containing a filter case, the filter case having active carbon arranged thereinside and a draft chamber vertically set at one side, and elongated draft holes at the bottom of said case, said draft holes communicating with said draft chamber, and an air outlet hole at the top of said case, and wherein said flexible air pipe having one end connected to the air outlet hole of said air filter and having the other end inserted into said transparent cover and disposed at the nose and mouth area of the user who puts on the present gas mask, to provide the user with clean air; and wherein said batteries provide said motor with working power to drive said vane wheel to rotate so as to bring in outside air through said filter case for filtration, and to let the filtrated clean air be delivered through said flexible air pipe to the user for inhalation.

5,003,975

AUTOMATIC ELECTRODE CONFIGURATION OF AN IMPLANTABLE PACEMAKER

Werner Hafelfinger, Valencia; Jason A. Sholder, Northridge; Murray P. King, Simi Valley, all of Calif., and James L. Duncan, Alpharetta, Ga., assignors to Siemens-Pacesetter, Inc., Sylmar, Calif.

Continuation-in-part of Ser. No. 183,197, Apr. 29, 1988. This application Oct. 17, 1989, Ser. No. 422,933

Int. Cl.[5] A61N *1/00*

U.S. Cl. 128—419 PG **29 Claims**

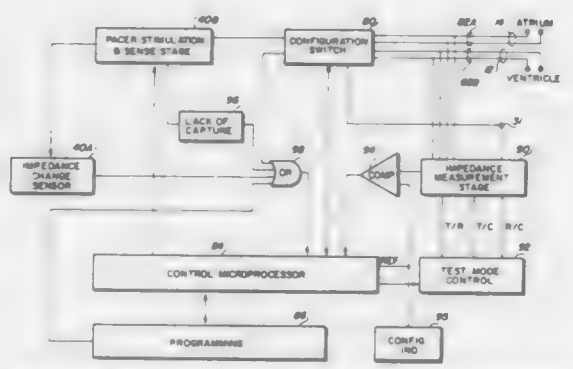
1. In an implantable pacemaker capable of programmably altering an electrode configuration for delivery of stimulation pulses and for sensing intracardiac signals, a system for ensuring operation of the implantable pacemaker despite incorrect programming or broken conductors, the system comprising:

at least two pairs of electrode terminals located in the pacemaker;

a pair of electrodes adapted for contact with body tissue, the pair of electrodes being coupled to at least one pair of electrode terminals;

detection means for detecting an operative electrode configuration by detecting an operative combination of electrodes and electrode terminals; and

programming means for automatically programing the pacemaker's electrode configuration to the operative electrode configuration detected by the detection means, such that



the delivery of stimulation pulses and the sensing of intracardiac signals occurs in the operative electrode configuration.

5,003,976

CARDIAC AND PULMONARY PHYSIOLOGICAL ANALYSIS VIA INTRACARDIAC MEASUREMENTS WITH A SINGLE SENSOR

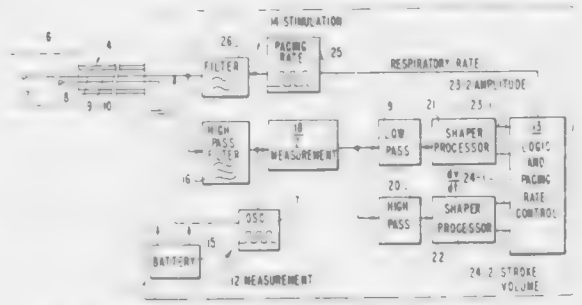
Eckhard Alt, Eichendorffstrasse 52, 8012 Ottobrunn, Fed. Rep. of Germany

Filed Sep. 28, 1988, Ser. No. 250,155

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1987, 3732640

Int. Cl.[5] A61N *1/368*

U.S. Cl. 128—419 PG **27 Claims**



1. Electronic medical instrumentation for determining a plurality of physiological parameters related to a patient's condition, comprising in combination:

a single sensor adapted to be located wholly within the heart including sensor means to detect a signal varying with characteristics of the blood with corresponding signal processing means for producing from the signal detected at said sensor a variable signal including information representative of a plurality of physiological parameters of the patient related to cardiac blood flow parameters, and

physiological activity detection means for processing the variable signal including signal processing means for separating said variable signal into subsignals respectively representative of the plurality of the patient's physiological parameters presented in said variable signal derived from blood characteristics at the in-situ position of the sensor in the heart.

5,003,977

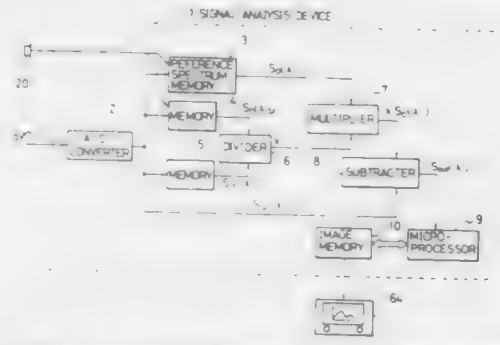
DEVICE FOR ANALYZING FLUORESCENT LIGHT SIGNALS

Susumu Suzuki; Kazuyuki Ishida, both of Hamamatsu, and Takeo Ozaki, Hamakita, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Mar. 9, 1989, Ser. No. 321,296

Int. Cl.[5] A61B *1/06, 6/00*

U.S. Cl. 128—633 **3 Claims**



1. A device for analyzing fluorescent light signals, comprising:

first light-irradiating means for irradiating a normal position of an organism with first laser light;

first light-detecting means for detecting a first spectrum of fluorescence excited by the irradiation of said first laser light;

memory means for storing, as a reference spectrum, the first spectrum of fluorescence detected by said first light-detecting means;

second light-irradiating means for irradiating with second laser light a position to be diagnosed of the organism injected with a fluorescent substance having a strong affinity for tumors;

second light-detecting means for detecting a second spectrum of fluorescence excited by the irradiation of said second laser light;

correction means for correcting said reference spectrum on the basis of a ratio of an intensity of a specific wavelength in the second spectrum detected by said second light-detecting means to an intensity of the same wavelength as said specific wavelength in said reference spectrum; and

extraction means for subtracting the corrected reference spectrum from the detected second spectrum and extracting the difference.

5,003,978

NON-POLARIZABLE DRY BIOMEDICAL ELECTRODE

W. J. Dunseath, Jr., Durham, N.C., assignor to Technology 21, Inc., Durham, N.C.

Continuation-in-part of Ser. No. 196,661, May 20, 1988, Pat. No. 4,865,039, which is a continuation of Ser. No. 989,235, Aug. 20, 1986, which is a continuation-in-part of Ser. No. 767,963, Aug. 25, 1985. This application Sep. 7, 1989, Ser. No. 403,825

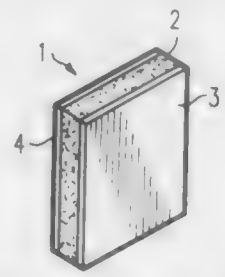
Int. Cl.[5] A61B *5/402*

U.S. Cl. 128—640 **36 Claims**

1. A dry electrode system for the detection of biopotentials existing on the surface of the skin of a living body, comprising:

a dry electrode having opposed sides, one of which is adapted to contact said skin, said dry electrode comprising a non-polarizable conductive substrate having opposed sides, and first and second adhesive layers applied to the opposite sides of said non-polarizable conductive substrate, said first adhesive layer being ionically conductive and adapted to adhere said dry electrode to said skin; and

a non-polarizable electrically conductive contact adhered to by said second adhesive layer and in conductive contact



with said substrate via said second adhesive layer for conducting a biopotential from said dry electrode.

5,003,979

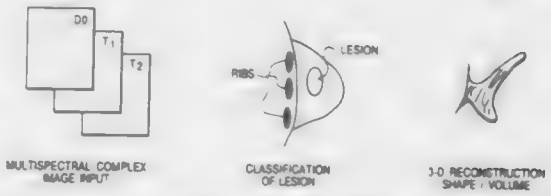
SYSTEM AND METHOD FOR THE NONINVASIVE IDENTIFICATION AND DISPLAY OF BREAST LESIONS AND THE LIKE

Michael B. Merickel; Ann H. Adams, and James R. Brookeman, all of Charlottesville, Va., assignors to University of Virginia, Charlottesville, Va.

Filed Feb. 21, 1989, Ser. No. 313,183

Int. Cl.[5] A61B *5/55*

U.S. Cl. 128—653 A **20 Claims**



11. A noninvasive imaging analysis system for the display of a body part composed of different tissue types of interest of a mammalian live body where the boundary of said tissue types encloses an area or volume and where the boundary shape is of significance using information obtained from multiple image slices produced by a body scan such as MRI and PET comprising:

an electronic digital storage means for storing said information as well as other information;

a computer for processing said information from said storage means;

a graphics display station for displaying an image resulting from said processed information;

said computer for processing including

means for taking multiple sequenced image slices resulting from the body scan and determining the boundary shape of one or more of said tissue types of interest;

means for classifying at least some of said tissue types in said body part by comparing said tissue types to classifier parameters of said tissue types stored in said storage means;

means for determining the boundary shape of one or more of said tissue types of interest which have been classified; and

means for displaying said one or more tissue types of interest including its location, size and boundary shape thereof.

5,003,980

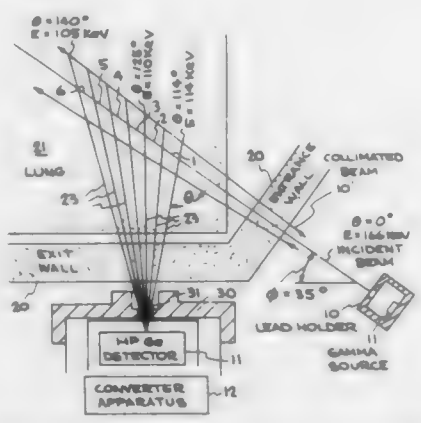
METHOD AND APPARATUS FOR MEASURING LUNG DENSITY BY COMPTON BACKSCATTERING

Billy W. Loo, Oakland, and Frederick S. Goulding, Lafayette, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 167,207, Mar. 11, 1988, abandoned, which is a continuation-in-part of Ser. No. 788,459, Oct. 17, 1985, abandoned. This application Jan. 29, 1990, Ser. No. 470,420

Int. Cl.[5] A61B 6/00

U.S. Cl. 128—653 R 37 Claims



1. A non-invasive method for measuring lung density comprising the steps of:

irradiating a target lung with a single collimated beam of monochromatic photons;

using a single high-resolution detector, detecting photons which are Compton backscattered by the target lung;

measuring energies of the backscattered photons;

determining relative intensities of scattering at successive points along the collimated beam inside the target lung by comparing the intensity of each of the successive points with the intensity of each adjacent point along the collimated beam;

determining attenuation constant of the target lung from the relative intensities; and

determining density of the target lung from the attenuation constant.

18. A Compton densitometer for measuring lung density through a wall of unknown composition and thickness comprising:

source means for producing a single collimated beam of monoenergetic photons adapted for irradiating an associated target lung located behind such a wall of unknown composition and thickness;

a single high-resolution detector means for detecting Compton backscattered photons caused by irradiation of such an associated target lung located behind a wall of unknown composition and thickness with said collimated beam of photons, said detector means being positions at an angle ϕ with respect to the collimated beam so as to receive backscattered photons from and angle θ with respect to the collimated beam; an apparatus operatively connected to said detector means and including: means for measuring energies of the backscattered photons, means for determining relative intensities of scattering at successive points along the collimated beam inside such an associated target lung, means for determining attenuation constant of such an associated target lung from the relative intensities, and means for determining density of such an associated target lung from the attenuation constant when irradiated by said collimated beam of photons from said source.

5,003,981

IDENTIFICATION METHOD FOR THE CUFF SIZE IN A SPHYGMOMANOMETER AND FLOW RESTRICTION MEANS REQUIRED IN IDENTIFICATION

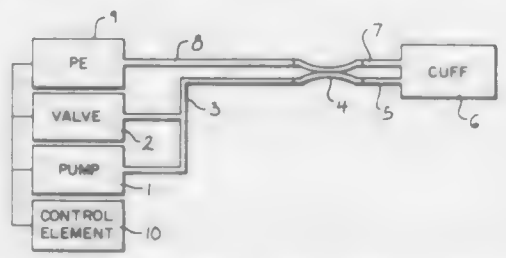
Lauri P. A. Kankkunen, Espoo; Raimo A. T. Piskunen, Vantaa, and Börje T. Rantala, Helsinki, all of Finland, assignors to Instrumentarium Corporation, Finland

Filed Jul. 6, 1989, Ser. No. 376,984

Claims priority, application Finland, Jul. 8, 1988, 883293

Int. Cl.[5] A61B 5/02

U.S. Cl. 128—677 27 Claims



1. Apparatus for identifying a cuff coupled to a sphygmomanometer by connection means, said sphygmomanometer having means for creating a change in the pressure of a fluid in the connection means and having means for sensing fluid pressure phenomena in the connection means, said apparatus comprising:

means operatively associated with the cuff and insertable in the connection means when the cuff is connected to the sphygmomanometer for restricting transfer of fluid pressure changes between a first portion of the connection means and a second portion of the connection means, whereby the sensing means can identify the cuff by means of the fluid pressure phenomena resulting from the presence of the restricting means in the connection means.

5,003,982

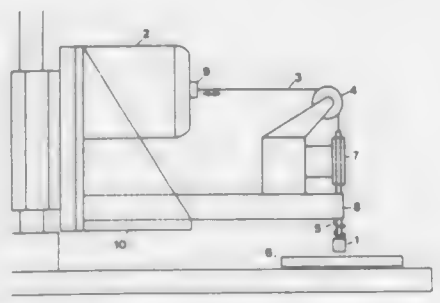
DYNAMIC INDENTATION SYSTEM

Henry R. Halperin, Baltimore, Md., assignor to Johns Hopkins University, Baltimore, Md.

Filed Jul. 28, 1989, Ser. No. 386,249

Int. Cl.[5] A61B 5/02

U.S. Cl. 128—695 12 Claims



1. A system comprising:

a probe having an indentation surface;

displacement means coupled to said probe for repetitively displacing said indentation surface at a rate of about 10 to about 150 Hz to induce a stress in said material; and

means for measuring said stress.

5,003,983

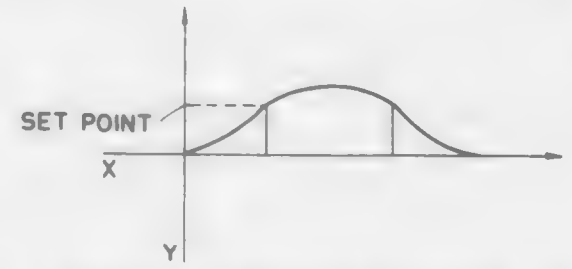
CARDIAC MONITORING SYSTEM

Robert P. Dingwall, Clinton Corners, and Howard T. Bellin, New York, both of N.Y., assignors to Cortec, Inc., New York, N.Y.

Filed Aug. 25, 1988, Ser. No. 236,899

Int. Cl.[5] A61B 5/04

U.S. Cl. 128—704 12 Claims



1. An apparatus for monitoring and converting an EKG waveform comprising electrical sensors for detecting said EKG waveform, a signal conditioning means in communication with said electrical sensors for inverting all negative portions of said detected EKG waveform, a pulse generator means including a low pass filter means for generating pulses having pulse width modulated by a change in location of a ST segment of said EKG waveform, and a comparator means for determining the amount of ST segment deviation from a normal value.

5,003,984

APPARATUS FOR ALERTING A DOCTOR BY RADIO TO PROVIDE AN ALARM FOR A PATIENT

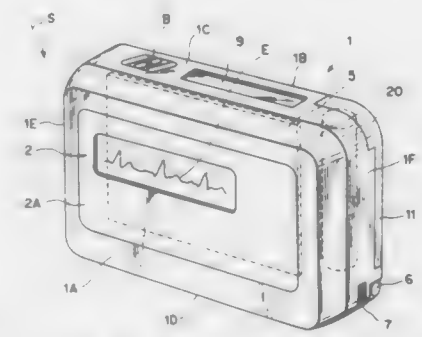
Yoshiya Muraki, and Hiroyuki Koike, both of Tokyo, Japan, assignors to Fukuda Densky Co, Ltd., Tokyo, Japan

Filed Jan. 31, 1990, Ser. No. 473,061

Claims priority, application Japan, Oct. 23, 1989, 1-123851[U]

Int. Cl.[5] A61B 5/04

U.S. Cl. 128—710 10 Claims



1. An apparatus for alerting a doctor which provides an alarm corresponding to a patient by receiving living body information signals S transmitted by radio through a transmitter and providing said doctor with a buzzer sound or a vibration to indicate that the condition of the patient corresponding to the living body information signals S has suddenly changed, said apparatus comprising:

a portable casing having a front plate, a rear plate connected to positioning means for positioning said casing, a top plate, a bottom plate, a left plate, and a right plate;

a circuit plate provided within said casing;

an electric circuit mounted on said circuit plate for receiving said living body information signals S transmitted by radio from said transmitter; and

display means provided on said casing and connected with said electric circuit, said display means displaying said living body information signals S received by said electric circuit, said displayed living body information signals S including at least a wave form E of electrocardiogram signals.

5,003,985

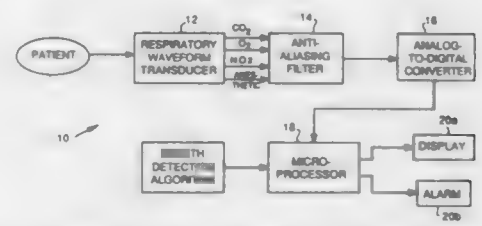
END TIDAL RESPIRATORY MONITOR

Curtis D. White, and Billy L. Carpenter, both of San Antonio, Tex., assignors to Nippon Colin Co., Ltd., Japan

Continuation of Ser. No. 135,005, Dec. 18, 1987, abandoned. This application Oct. 19, 1989, Ser. No. 423,643

Int. Cl.[5] A61B 5/08

U.S. Cl. 128—716 8 Claims



1. An end-tidal respiratory monitor, comprising:

means for detecting a respiratory waveform comprising only expired carbon dioxide produced by a patient during a predetermined time interval and producing an electrical signal representation thereof;

programmable analyzer means adapted to receive said electrical signal representation of said respiratory waveform, said analyzer means further comprising means for calculating the inspiratory, expiratory and respiratory periods of said respiratory waveform of said patient and for producing respective output signals for each said period; and

display means for indicating the respiratory characteristics of said patient corresponding to said respective output signals of said analyzer means.

5,003,986

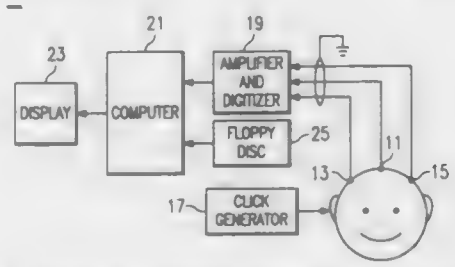
HIERARCHIAL ANALYSIS FOR PROCESSING BRAIN STEM SIGNALS TO DEFINE A PROMINENT WAVE

Terese Finitzo, Dallas, Tex., and Kenneth D. Pool, Jr., 3001 Coronado, Irving, Tex. 75062, assignors to Kenneth D. Pool, Jr. and Electrophysiology Laboratories of Dallas, Inc., both of Dallas, Tex., a part interest

Filed Nov. 17, 1988. Ser. No. 272,714

Int. Cl.[5] A61B 5/04

U.S. Cl. 128—731 36 Claims



32. A method for analyzing brain stem waveform traces using a computerized signal waveform processing system so as to identify a prominent wave, comprising the steps of:

storing and processing digital signals using a program controlled processor;

displaying the processed digital signals;

analyzing said digital signals using a program having instructions carried out by said processor, said analyzation including:

analyzing digital signals of related first and second waveform traces to define primary peaks which satisfy a

predetermined criteria, each said primary peak having associated preceding and succeeding troughs;

if a primary peak is not determined by initial analyzation of said digital signals, filtering said digital signals with a predefined bandpass and again analyzing the filtered digital signals until one said primary peak is found in each said waveform trace;

analyzing said primary peaks to determine secondary peaks;

analyzing said secondary peaks to characterize said secondary peaks according to predefined criteria;

determining reproducibility of said secondary peaks between said first and second waveform traces; and

identifying said prominent wave by employing reproducibility criteria for the secondary peaks of said first and second waveform traces.

5,003,987

METHOD AND APPARATUS FOR ENHANCED DRUG PERMEATION OF SKIN

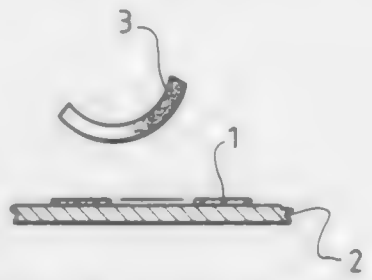
Paul M. Grinwald, 434 Balwyn Road, North Balwyn, Australia 3104

Filed Sep. 8, 1988, Ser. No. 241,354

Claims priority, application Australia, Sep. 11, 1987, PI4342; Nov. 25, 1987, PI5676

Int. Cl.[5] A61B *5/05*

U.S. Cl. 128—734 **25 Claims**



16. A method of skin preparation to facilitate absorption of drugs comprising the following steps:

(a) Removing the outermost layers of the skin by wet or dry abrasion, wherein skin removal is delimited by application to the skin of a single use target masking tape consisting of a disk of adhesive backed tape with a central aperture;

(b) Measuring the change in electrical resistance or impedance of the skin as said outermost layers of the skin are removed; and,

(c) Stopping said skin removal when a pre-determined optimum skin resistance or impedance is achieved to facilitate the absorption of drugs.

5,003,988

MODULAR MULTIPLE FLUID SAMPLE PREPARATION ASSEMBLY

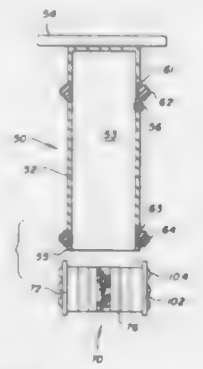
Raouf A. Guirguis, Rockville, Md., assignor to La Mina Ltd., British Virgin Isls.

Continuation-in-part of Ser. No. 369,610, Jun. 21, 1989. This application Aug. 22, 1989, Ser. No. 396,655

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—771 **20 Claims**

1. An apparatus for collecting molecular samples from biological fluids to obtain multiple markers comprising a first container means; a sample collection storage unit removably mounted to said first container means, said sample collection storage unit comprising a container divided into plurality of bead containing compartments, control bead means positioned in one said compartments, at least two different antigen bead means located in at least another of said compartments; and at least two different anti-antibody bead means corresponding to



said antigen bead means located in at least one other of said compartments.

5,003,989

STEERABLE DILATION CATHETER

Charles S. Taylor, San Francisco, and Hilary J. Hampton, Santa Clara, both of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Division of Ser. No. 350,580, May 11, 1989, Pat. No. 4,955,384. This application Jul. 10, 1990, Ser. No. 550,530

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—772 **13 Claims**

1. A steerable dilatation catheter comprising:

(a) a tubular body having an inner lumen extending therein for delivery of inflation fluid therethrough;

(b) an inflatable balloon on a distal portion of the tubular body adjacent a distal end thereof and in fluid communication with the inner lumen of the tubular body;

(c) a core member extending through the interior of the balloon and out the distal end thereof; and

(d) a flexible length of interfitting links disposed about and secured to the portion of the core member extending out of the distal end of the balloon.

5,003,990

APPARATUS FOR IMPLANTING ELECTRODES AND THE LIKE IN ANIMAL BODIES

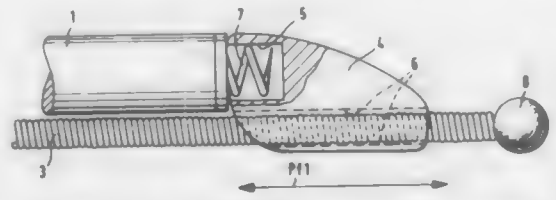
Peter Osypka, Basler Str. 109, D-7889 Grenzach-Wyhlen, Fed. Rep. of Germany

Filed Jul. 28, 1989, Ser. No. 387,515

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1988, 3825631

Int. Cl.[5] A61M *25/01, 1/05*

U.S. Cl. 128—772 **49 Claims**



1. Apparatus for arterial or intravenous implantation of surgical electrodes, catheters and similar slender elongated objects having leading ends into the circulatory system or another cavity of an animal body, especially a human body, comprising at least one elongated flexible guide wire having a proximal end and a distal end; and a discrete carriage guided by and movable along said at least one wire toward and away from said distal end, said carriage having coupling means for releasably holding the leading end of a selected object so that the leading end which is held by said coupling means shares the movement of the carriage toward said distal end during implantation into the animal body and that the implanted leading end remains in the animal body upon separation from the coupling means and subsequent withdrawal of the coupling means and guide wire from the animal body.

5,003,991

HYPERTHERMIA APPARATUS

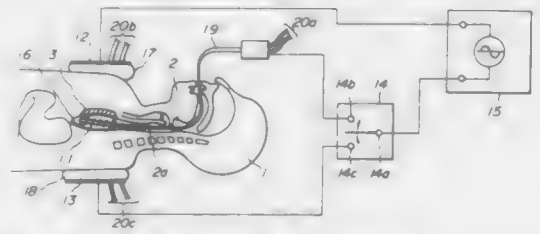
Syuichi Takayama; Takashi Tsukaya; Yasuhiro Ueda; Shinji Hatta, and Masashi Abe, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Mar. 24, 1988, Ser. No. 172,554

Claims priority, application Japan, Mar. 31, 1987, 62-76460; Mar. 31, 1987, 62-76461; Mar. 31, 1987, 62-76463; Apr. 8, 1987, 62-84667; Apr. 17, 1987, 62-94482

Int. Cl.[5] A61N *1/32*

U.S. Cl. 128—784 **11 Claims**



1. A hyperthermia apparatus, comprising:

at least two outside-body electrodes;

at least one inside-body electrode which is insertable into a cavity of a living body;

power source means for supplying high frequency electric power across two selected electrodes, including one of said two outside-body electrodes, to heat a portion of the living body interposed between said two selected electrodes to a desired temperature, said power source means comprising a high frequency power supply circuit with two output terminals, one of said output terminals being connected to a selected one of said two outside-body electrodes; and

selection means for selecting said two selected electrodes, said selection means comprising a switch having a common switching contact connected to the other one of said output terminals and two fixed contacts, one of said two fixed contacts being connected to said inside-body electrode and the other one of said two fixed contacts being connected to the non-selected one of said two outside-body electrodes.

5,003,992

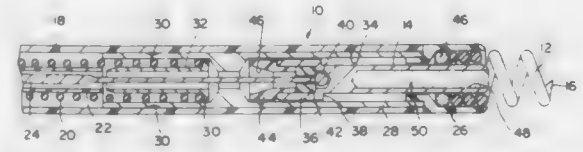
ATRAUMATIC SCREW-IN LEAD

Timothy W. Holleman, 13600 Yancy St. NE., Ham Lake, Minn. 55304; Phong D. Doan, 5598 Park Pl. Dr., Shoreview, Minn. 55126; Kenneth R. Brennen, 160 Talmadge Way, Fridley, Minn. 55432, and John M. Swoyer, 12012 Unity St. N.W., Coon Rapids, Minn. 55433

Filed Aug. 23, 1989, Ser. No. 398,350

Int. Cl.[5] A61N *1/05*

U.S. Cl. 128—785 **11 Claims**



1. A medical electrical lead comprising an elongated insulated conductor having a proximal end and a distal end, an electrical connector mounted to the proximal end of said conductor and an electrode head assembly mounted to the distal end of said conductor, said electrode head assembly comprising:

an electrode head member having a proximal end and a distal end and having a longitudinal lumen open to the distal end of said head member;

a fixation helix extending from the distal end of said head member, axially aligned with the lumen of said head member;

an electrode surface coupled to said conductor exposed to the exterior of said head member adjacent the distal end of said head member; and

a plunger slideably mounted within the lumen of said head member, said plunger having a proximal end and a distal end and having means for dispensing a drug adjacent the distal end of said plunger, said plunger slideable between a first position in which said plunger extends through said fixation helix, the distal end of said plunger located distal to said fixation helix and a second position in which the distal end of said plunger lies adjacent the distal end of said head member, whereby when said fixation helix is screwed into body tissue to bring the distal end of said head member adjacent said body tissue, the distal end of said plunger and its associated means for dispensing a drug are located adjacent body tissue, when said plunger is located in said second position.

5,003,993

METHOD AND APPARATUS FOR PREVENTING AND TREATING ANAEROBIC INFECTIONS

David R. Silver, 719 Washington St., Ste. 104, Newtonville, Mass. 02160

Filed Dec. 20, 1989, Ser. No. 453,598

Int. Cl.[5] A61F *6/02, 5/00*

U.S. Cl. 128—842 **6 Claims**

1. The method of preventing and treating anaerobic infections int he region of the sulcus in uncircumcized human males, said method comprising:

rolling back the foreskin;

providing a radially compliant ring formed of a helically coiled resilient filament of a hard, non-porous material, the relaxed inner diameter of said ring being less than the nominal diameter of the sulcus;

expanding said ring to pass it over the penile head and then seating it in the sulcus behind said head;

releasing the foreskin against said ring thereby allowing air to circulate in the region of the sulcus.

5,003,994

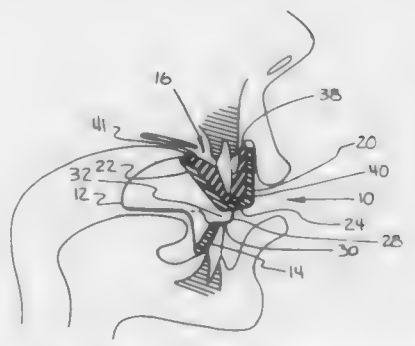
ORAL APPLIANCE FOR IMPROVING BREATHING AND METHODS OF USING AND MAKING SAME

George W. Cook, P.O. Box 70, Holdingford, Minn. 56340

Filed Oct. 10, 1989, Ser. No. 419,076

Int. Cl.[5] A61F *5/56*

U.S. Cl. 128—848 **20 Claims**



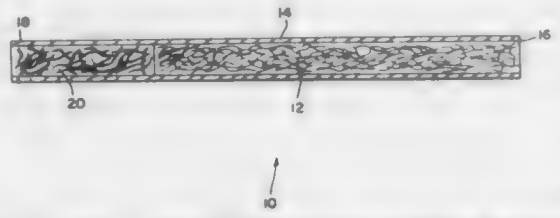
1. An oral appliance for improving breathing during sleep, for reducing apneic events, and for reducing snoring, comprising:

(a) a rigid structural shell
(b) relatively pliable upright tooth socket means for conformably engaging upright inner and outer surfaces of a plurality of maxilla teeth;
(c) generally generally vertical cam structure means projecting downward from a front end of said rigid structural shell for engaging and advancing the mandible structure forward with respect to the maxilla structure; and in which
(d) said pliable tooth socket means is sufficiently soft and pliable so that it does not move a users teeth when the appliance is worn for a period of sleep, so that use of the appliance repetitively for extended periods of sleep is essentially painless.

5,003,995
COMPOSITIONS AND ARTICLES FOR STIMULATING TASTE RECEPTORS

Robert L. Kersey, Morehead City, N.C., assignor to Tripar Incorporated, Stamford, Conn.

Filed Dec. 28, 1989, Ser. No. 458,087
Int. Cl.[5] A24D *1/18*; A24B *15/28*
U.S. Cl. 131—359 **18 Claims**

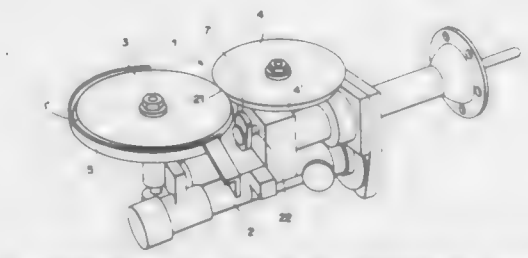


1. A smoking material, which consists essentially of tobacco in admixture with a smoke-enhancing proportion of distiller's dried solubles, said mixture being free of distiller's dried grain.

5,003,996
APPARATUS FOR TRIMMING AND COMPRESSION OF TOBACCO

Bernard Tallier, Georgier, and Otto Hagmann, Neuchatel, both of Switzerland, assignors to Fabriques de Tabac Reunies, S.A., Neuchatel, Switzerland

Filed Aug. 3, 1989, Ser. No. 389,180
Claims priority, application Switzerland, Aug. 10, 1988, 3013/88
Int. Cl.[5] A24C *5/14*
U.S. Cl. 131—84.2 **7 Claims**

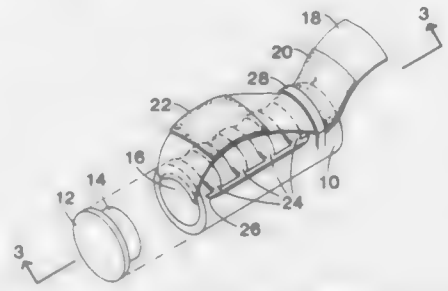


1. Apparatus for the trimming and compression of tobacco for forming a cigarette rod, said apparatus comprising:
conveyor means comprising a suction conveyor arranged for conveying on its lower face an endless stream of tobacco;
compression means consisting essentially of a compression part disposed below said conveyor means, said compression part acting on said stream for forming cyclically distributed compression zones in which the stream is uniformly compressed throughout its thickness, each of said zones corresponding to a tip of a cigarette; and
cutting means comprising a pair of rotating disks disposed below said conveyor means and downstream from said compression means, said disks having plane upper faces and circular peripheral edges defining a permanent zone of mutual contact acting solely as a cutter for portions of said stream lying between said edges.

5,003,997
MANICURING AID FOR INFANTS

Christopher O. Stewart, and Karen Suprise-Mansfield, both of 222 Kearny St., Suite 500, San Francisco, Calif. 94108

Filed Dec. 11, 1989, Ser. No. 448,538
Int. Cl.[5] A45D *29/00*
U.S. Cl. 132—73 **8 Claims**

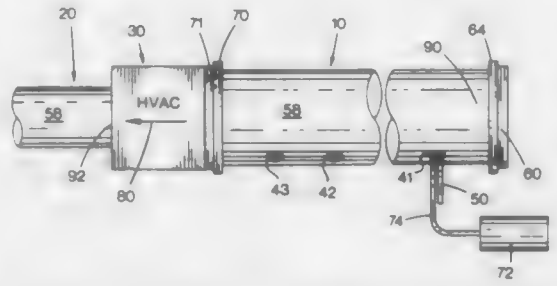


1. A manicuring aid for controlling the finger movement of an infant between the ages of about six months and two years old to facilitate cutting said infant's fingernails, comprising a cylindrical barrel of a size which can be comfortably grasped by a hand of said infant, said cylindrical barrel having a cavity therein, enclosed by an end wall integral with the structure of the barrel and an opposing end wall which is removable to allow access to said cavity, the barrel having four parallel finger grooves oriented orthogonally to the axis of the barrel, a raised fingertip support ledge, an adjustable elastic cloth strap affixed at one end at said cavity adjacent said end wall which is removable, and a loop projecting from the barrel oriented parallel and adjacent to the four finger grooves.

5,003,998
METHOD AND APPARATUS FOR CLEANING AND SANITIZING HVAC SYSTEMS

Donald H. Collett, 4701 NE. 40th Ave., Vancouver, Wash. 98661

Filed Apr. 21, 1989, Ser. No. 341,569
Int. Cl.[5] B08B *5/02*
U.S. Cl. 134—22.12 **18 Claims**

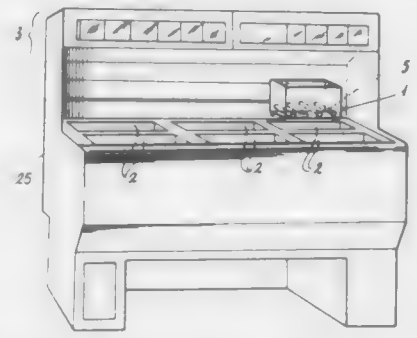


1. A method of cleaning accumulated debris from the interior surfaces of HVAC ductwork in a building without having to disassemble the ductwork, the method comprising:
installing a particle filter substantially transversely across the lumen of the ductwork downstream of the portion of the ductwork to be cleaned;
agitating the accumulated debris on the interior surfaces of the ductwork such that the debris becomes detached from the underlying interior surface of the ductwork, thereby causing the debris to become suspended in air in the lumen of the ductwork; and
moving the air containing suspended debris through the ductwork toward the filter, passing the air through the filter and capturing the debris on the filter.

5,003,999
APPARATUS FOR TREATING SILICON WAFERS IN AN ACID BATH

Silvestro Cardani, Calusco D'Adda, and Flavio Pareschi, Trezzo Sull'Adda, both of Italy, assignors to SGS Thomson Microelectronics S.R.L., Milan, Italy

Filed Oct. 24, 1989, Ser. No. 426,325
Claims priority, application Italy, Nov. 4, 1988, 22510 A/88
Int. Cl.[5] B08B *3/10*; H05B *3/06*
U.S. Cl. 134—105 **19 Claims**



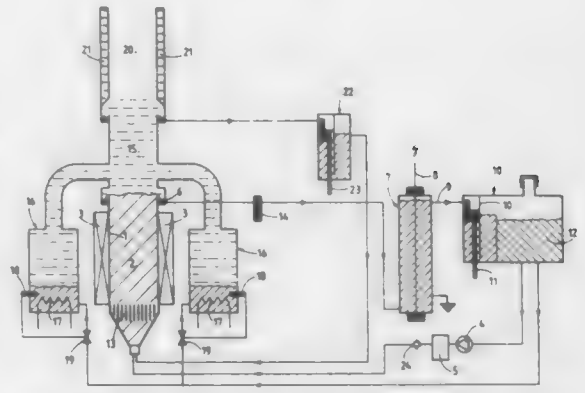
1. An apparatus for treating silicon wafers in an acid bath comprising:
at least one quartz tank having sides and a substantially flat bottom for containing an acid in which silicon wafers are immersed, said tank comprising a plurality of tubular ducts integral with said tank, made of quartz, each said tubular duct being closed at a first end and open at a second end, and horizontally and fixably disposed with its first and second ends being fluid tight in two opposite sides of said tank, such that said tubular ducts are positioned traversing the interior of said tank;
electrical resistance heating members removably received within said tubular ducts, for heating the acid; and
a process bench to which said electrical resistance heater member are removably connected, said tank being positioned in said process bench during use.

5,004,000
APPARATUS FOR RINSING SURFACES WITH A NON-AQUEOUS LIQUID

Serge A. Berruex, En Closelet A, CH-1261 Cheserex, Switzerland

Division of Ser. No. 223,679, Jul. 22, 1988, Pat. No. 4,936,921, Continuation of Ser. No. 57,204, May 11, 1987, abandoned. This application Feb. 2, 1990, Ser. No. 473,873
Claims priority, application Switzerland, Sep. 13, 1985, 3984/85
Int. Cl.[5] B08B *3/12, 13/00*
U.S. Cl. 134—108 **12 Claims**

1. Apparatus for removing a film of aqueous liquid from a hydrophilic surface with a non-aqueous liquid, which comprises:
a rinsing zone containing an inert, non-solvent, non-miscible liquid;
means for applying said inert non-solvent liquid against said surface with a force that is effective to form an emulsion with said aqueous liquid being a discontinuous phase and said inert non-solvent liquid being a continuous phase;

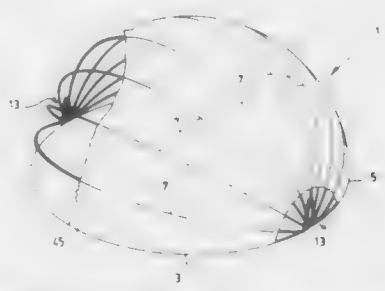


means for recovering the emulsion including an emulsion breaking down device which separates the phases of said emulsion; and
means recycling the recovered inert non-solvent liquid.

5,004,001
FOLDABLE DOME

Victorin Bouchard, 671 Rang 6, St Nazaire de Chicoutimi, Quebec, Canada G0W 2V0

Filed Aug. 8, 1989, Ser. No. 390,867
Int. Cl.[5] E04H *15/18*
U.S. Cl. 135—97 **15 Claims**



1. A foldable dome comprising:
a set of bowed supports made up of a driving bowed support, and end bowed support and intermediate bowed supports, said bowed supports ending into levers projecting out of the planes thereof;
a post supporting said bowed supports on opposite sides of said dome and including, at the top thereof and on each post:
pivot means comprising an axle, transverse to said post, over which said levers on one side of said bowed supports are mounted so as to allow rocking of said bowed supports between a folded position, on one side of said axle, and an unfolded position wherein said bowed supports are disposed around said axle in the form of a dome; said axle dividing said levers of said driving and end bowed supports each into a driven section, on the bowed support side and a driving section on the side away from the bowed supports;
an axially extensible device of which one end is pivotably mounted at the top of said post;
linkage means pivotably connecting another end of said device simultaneously to said lever driving section of said driving bowed support and to said lever driving section of said end bowed support, on opposite sides of said device, and
a sheltering fabric connected successively to adjacent bowed supports so that extension and shortening of said devices causes, through said linkage means, rocking of said bows

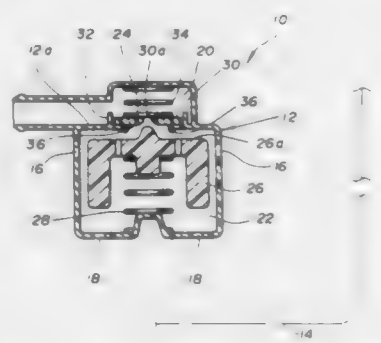
between said positions with driving of said fabric and when said end bowed support is held stationary.

5,004,002

FUEL CHECK VALVE ASSEMBLY FOR FUEL TANK

Jiro Kobayashi, Isehara, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 10, 1990, Ser. No. 506,985
Claims priority, application Japan, Apr. 17, 1989, 1-96658
Int. Cl.[5] F16K *17/36*
U.S. Cl. 137—39 12 Claims



1. A fuel check valve assembly in a fuel tank of a vehicle, comprising:

a valve casing installed in the fuel tank to form a passageway for providing communication between the inside and outside of the fuel tank;

a valve seat installed in said valve casing and having an aperture forming part of said passageway;

a float valve disposed within said valve casing and movable toward and away from said valve seat to open and close said aperture;

said valve seat, with said aperture being closed by said float valve, being movable together with said float valve when a pressure within the fuel tank increases in a predetermined range and solely movable away from said float valve to open said aperture when the pressure within the fuel tank increases beyond said predetermined range; and

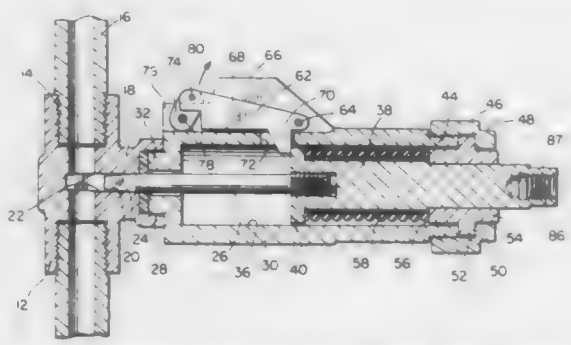
abutment means abuttingly engageable with said float valve for preventing said passageway from being closed by said float valve when the pressure within the fuel tank is higher than said predetermined range.

5,004,003

FIRE CONTROL VALVE WITH PIVOTAL LATCH

Charles H. Gray, Jr., 905 Canton Rd., Kingsport, Tenn. 37660

Continuation-in-part of Ser. No. 192,640, May 11, 1988, Pat. No. 4,890,635. This application Jan. 2, 1990, Ser. No. 459,975
Int. Cl.[5] F16K *31/64*
U.S. Cl. 137—75 10 Claims



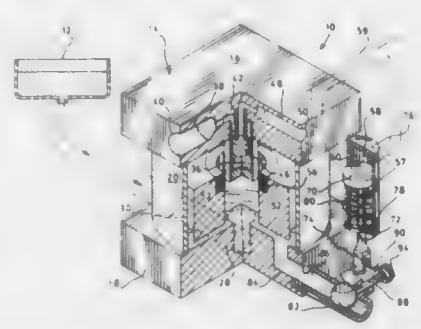
1. A fire control valve comprising a valve body having a flow passage therethrough and adapted to be connected to a flow line through which flammable material flows, said valve body including a valve seat, a valve member selectively engageable with the seat and forming a closure for the flow path when engaged with the seat, spring means biasing the valve member into engagement with the valve seat, means releasably retaining the valve member in a position to enable flow through the flow path, and temperature responsive means disabling the means retaining the valve member in flow enabling position to automatically release the valve member to move to a flow interrupting position in the event temperature conditions exceed a predetermined temperature, said spring means comprising a housing connected to the valve body, an actuator piston in said housing, means connecting the actuator piston to said valve member, a coil compression spring reacting against the piston and housing for moving the piston and valve member to engage the valve member with the valve seat, said means releasably retaining the valve member in a position to enable flow through the flow path including a pivotal latch mounted on the housing and engageable with the actuator piston to retain the actuator piston in a retracted position with the coil spring compressed, said temperature responsive means including a fusible link connecting a portion of the pivotal latch to the housing to retain the pivotal latch in engagement with the actuator piston with the fusible link being rupturable in response to predetermined high temperature conditions to enable the spring biased actuator piston to cam the latch to a released position thereby enabling the valve member to close.

5,004,004

AUTOMATIC DRAIN VALVE

Ernie W. Cummings, Knoxville, Tenn., assignor to Drain-All, Inc., Louisville, Tenn.

Filed Apr. 3, 1990, Ser. No. 503,721
Int. Cl.[5] F16K *31/34*
U.S. Cl. 137—195 3 Claims



1. An automatic drain valve for selectively discharging accumulations of condensables and foreign materials from a pneumatic system, said automatic drain valve comprising:

a reservoir defining a reservoir volume for collecting said condensables and foreign materials, said reservoir including a head portion and a base portion, said base portion being provided with a first passageway defining an inlet for being placed in fluid communications with said pneumatic system and defining a mouth opening into said reservoir volume through which said condensables and foreign materials are communicated to said reservoir volume, said reservoir further including a drainage conduit defining an outlet to facilitate the discharge of said condensables and foreign materials from said reservoir volume, whereby said first passageway and said drainage conduit provide flow through communications with said pneumatic system;

a pneumatic valve operator mounted on the exterior of said reservoir, said valve operator having an actuator arm reciprocatable from a retracted position to an extended position;

a pilot valve housing mounted within said reservoir volume of said reservoir, said pilot valve housing defining a cavity, said cavity being sealed against communication with said reservoir volume;

a pilot valve mounted axially within said cavity of said pilot valve housing, said pilot valve including a sensor tube, a valve seat at a first end of said sensor tube, and an axial moving magnetic valve plug of one polarity for selectively engaging said valve seat;

a buoyant float respondable to liquid in said reservoir volume, said float being provided with a hole for slidably receiving said pilot valve housing, said hole being disposed so as to be substantially coaxially aligned with said mouth of said first passageway, said float being movable within said reservoir volume from a lower position to an upper position;

an annular magnet mounted in said float proximate said pilot valve housing said annular magnet normally having a polarity opposite the polarity of said magnetic vale plug;

a drainage valve for said reservoir, said drainage valve having an inlet and an outlet, said inlet communicating with said outlet of said reservoir, said drainage valve also having a rotatable actuator stem for selectively opening and closing said drainage valve, said stem defining a threaded portion for releasably receiving a threaded fastener, said threaded fastener being tightened by rotating said fastener in a first rotational direction;

a linkage member for connecting said pneumatic valve operator to said drainage valve, whereby said pneumatic valve operator selectively opens and closes said drainage valve, said linkage member having a first end portion pivotally secured to said actuator arm of said valve operator and a second end portion secured to said actuator stem of said drainage valve with said threaded fastener whereby movement of said actuator arm from said retracted position to said extended position pivots said linkage member in a rotational direction corresponding to said first rotational direction for tightening said threaded fastener; and

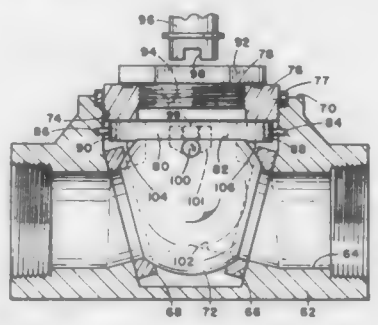
pneumatic means connected between said pilot valve and said valve operator whereby said valve operator quickly opens said drainage valve when said float reaches said upper position and quickly closes said drain valve when said float reaches said lower position, said pneumatic means comprising a first conduit connecting said cavity of said pilot valve housing in fluid communication with a source of filtered air and a second conduit connecting said sensor tube in fluid communication with said pneumatic valve operator.

5,004,005

COMBINATION VALVE

John G. Graves, 3107 Woodward Blvd., Tulsa, Okla. 74105

Continuation-in-part of Ser. No. 390,279, Aug. 7, 1989, Pat. No. 4,928,725. This application Apr. 9, 1990, Ser. No. 506,101
The portion of the term of this patent subsequent to May 29, 2007, has been disclaimed.
Int. Cl.[5] F16K *5/06, 15/03, 15/04*
U.S. Cl. 137—269.5 12 Claims



1. A combination valve comprising:

a valve body having a flow passageway therethrough and means to connect other fluid flow members thereto with such passageway, the body having an opening in the top thereof communicating with said passageway;

a rotating member rotatably received in said body said rotating member having a flow passageway therethrough which is alignable with the body flow passageway by rotatably positioning the member with said body passageway, the rotating member having a top opening therein communicating with said passageway therethrough;

a checking means within said rotating member and movable between a closed position blocking said passageway therethrough and an open position opening said passageway therethrough;

a bonnet member removably closing said body top opening and having a smaller diameter opening therethrough;

stem means rotatably received in said bonnet member and affixed within said valve body to said rotating member;

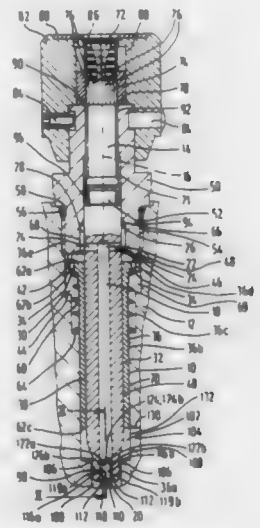
means external of said valve body to rotate said stem means and thereby said rotating member, whereby said member may be rotated to a first position to align the said passageway therethrough with said passageway through said valve body to permit the flow of fluid in one direction, said checking mechanism blocking fluid flow in the opposite direction, and said rotating member may be rotated to a second position to align the said passageway therethrough with said passageway through said valve body to permit the flow of fluid in the opposite direction, said checking mechanism blocking counter fluid flow, and rotated to a third position wherein said passageway therethrough is out of alignment with said passageway through said body to block fluid flow in either direction through said body, and wherein in said third position, said bonnet may be removed to expose said rotating member and to permit access to said checking mechanism.

5,004,006

TWO-WAY FLOW VALVE

Rüdiger Jung, St. Ingbert, Fed. Rep. of Germany, assignor to Flutec Fluidtechnische Gerate GmbH, Fed. Rep. of Germany

Filed Mar. 8, 1990, Ser. No. 490,377
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1989, 3908377
Int. Cl.[5] G05D *7/01*
U.S. Cl. 137—501 17 Claims



1. A flow control valve, comprising:

an inlet and an outlet;

adjustment means for independently varying volume of throughput fluid flow between said inlet and said outlet;

first pressure means for receiving fluid pressure at said inlet, said first pressure means including a compensator bore extending through said adjustment means; and

correcting means, at said outlet, for regulating throughput fluid flow at said outlet, said correcting means including a

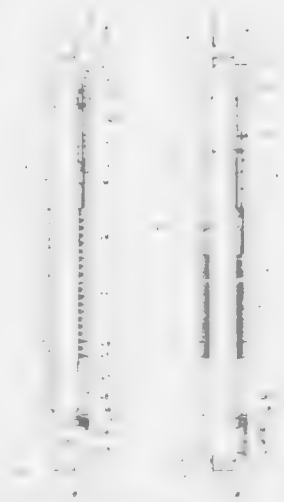
correcting number exposed to fluid pressure at said outlet applying a force thereon in a first direction and an accumulator applying a biasing force on said correcting member in said first direction, said correcting member also being exposed to the fluid pressure at said inlet through said compensator bore to apply force on said correcting member in a second direction opposite to said first direction.

5,004,007

CHEMICAL INJECTION VALVE

Dale V. Johnson, Metairie, and John R. Gordon, New Orleans, both of La., assignors to Exxon Production Research Company, Houston, Tex.

Filed Mar. 30, 1989, Ser. No. 330,680
Int. Cl.[5] G05D *7/01*
U.S. Cl. 137—501 **9 Claims**



1. A valve for injecting chemical fluid from a chemical fluid source into the bore of a tubing string of a well, the valve comprising:

a housing including a flow passage therein for communicating with the tubing string bore and an opening therethrough communicating with the flow passage and the chemical fluid source;

a valve closure including a flapper seat connected to the housing and a flapper pivotally connected to the housing, wherein the flapper is movable from a closed position to an open position wherein the valve is open;

an actuator in the housing for opening the valve closure and movable from a first position, wherein the valve closure is closed; to a second position wherein the valve closure is open;

a flow restrictor in the flow passage, connected to the housing, for creating a pressure differential across the flow restrictor; and

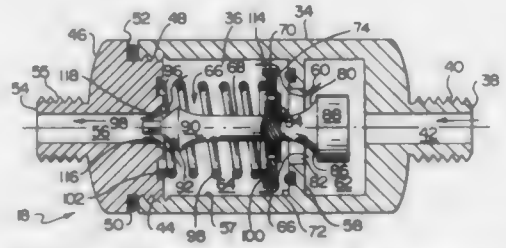
at least one piston connected to the actuator, in communication with the fluid source upstream of the flow restrictor, and adapted to move the actuator from its first position to its second position in response to the pressure of the chemical fluid upstream of the flow restrictor; whereby the pressure differential across the flow restrictor results in sufficient available pressure in the chemical fluid upstream of the flow restrictor to cause the piston to hold the valve open.

5,004,008

VARIABLE AREA REFRIGERANT EXPANSION DEVICE

Alan S. Drucker, Dewitt, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Apr. 2, 1990, Ser. No. 502,896
Int. Cl.[5] G05D *7/01*
U.S. Cl. 137—504 **6 Claims**



1. An expansion device for metering the flow of refrigerant therethrough comprising:

a housing having a flow passage therethrough;

a partition disposed within said flow passage, said partition having a flow metering port extending therethrough, said partition dividing said flow passage into a high pressure portion and a low pressure portion;

an elongated member extending through said metering port, said elongated member and said metering port cooperating to define a flow metering passageway therebetween, said member being configured to vary the cross sectional area of said flow metering passageway in relation to the position of said member to said port;

means for supporting said elongated member within said flow passage and for controlling the axial position of said elongated member within said passage in response to the differential pressure between the refrigerant in said high pressure portion and said low pressure portion, said means for supporting and controlling including stop means forming a part of said elongated member, said stop means being located within said low pressure portion of said flow passage and being adapted to engage said partition to limit the axial movement of said elongated member in a direction going from said low pressure portion to said high pressure portion, and, means for biasing said stop means into engagement with said partition; and

means located within said low pressure portion of said flow passage for shutting off the flow of refrigerant through said expansion device when the pressure of refrigerant in said high pressure portion exceeds a predetermined value.

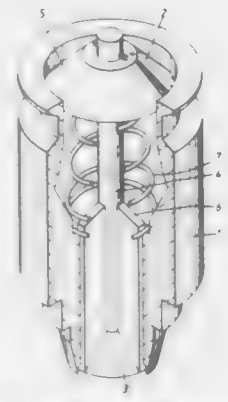
5,004,009

VALVE DEVICE FOR CONTROLLING LIQUID FLOW

Kevin R. Bunce, Baldock, England, assignor to Elopak A/S, Lierstranda, Norway

Continuation of Ser. No. 261,560, Oct. 24, 1988, abandoned. This application Dec. 15, 1989, Ser. No. 451,126
Claims priority, application United Kingdom, Oct. 26, 1987, 8725026
Int. Cl.[5] F16K *27/04, 23/00*
U.S. Cl. 137—512.3 **15 Claims**

1. A valve device for controlling liquid flow, comprising a tubular housing, a valve member extending substantially coaxially in said housing and movable relative to said housing and axially thereof between an open condition in which liquid can flow between said valve member and said housing and a closed condition, and biassing means urging said valve member into said closed condition, said valve member including an obturating portion which, in said closed condition, substantially obturates said tubular housing at a first location, said housing having an internal annular surface part of its internal surface which part gradually diverges outwardly at a gradually increasing angle to the axis of the housing in an axial direction away from said first location, without the diverging surface part discontinuing at any location along said part, the arrangement between such that said obturating portion, in its opening movement, sweeps in said axial direction along said surface and arrives at an equilibrium position at a variable, second location along said



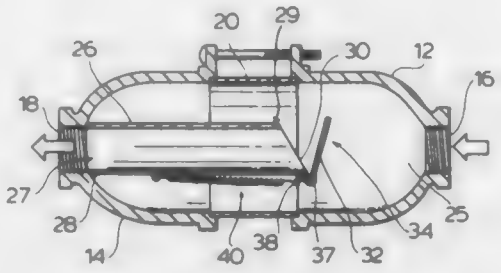
part in which liquid is flowing through between said obturating portion and said part and in which the total force tending to open said valve member is balanced by the total force tending to close the same.

5,004,010

HOSE RUPTURE VALVE

Wilfred Huet, 1259 Lozanne Crescent, Timmins, Ontario, Canada P4N 7C4

Filed Jan. 16, 1990, Ser. No. 465,948
Claims priority, application Canada, Sep. 29, 1989, 614651
Int. Cl.[5] F16K *17/24*
U.S. Cl. 137—513.3 **10 Claims**



1. A hose rupture valve, comprising:

(a) a housing having a longitudinal bore, an inlet port at one end of said housing, and an outlet port at the other end thereof, said ports being adapted so as to be coupled to high pressure fluid hoses;

(b) a vane pivotally mounted within the housing, said vane pivotally moving between an open position allowing flow of fluid through the housing and a closed position sealing off the outlet port when the hose downstream of the outlet port is opened to atmospheric pressure; and

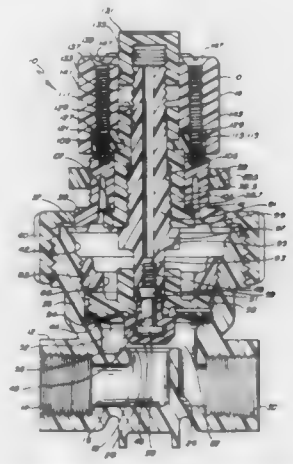
(c) a cylindrical conduit mounted within the housing along the longitudinal axis thereof, said conduit having a proximate end sealingly attached to the outlet port, a bore coaxial with the outlet port, and a distal end through which fluid passing through the valve may flow, the distal end of which is truncated at an acute angle, said vane being pivotally mounted to the forward most extension of the conduit.

5,004,011

POSITION INDICATING CONTROL VALVE

James C. Linder, Shorewood, and Jeffrey J. McKenzie, Watertown, both of Minn., assignors to Fluoroware, Inc., Chaska, Minn.

Filed Aug. 10, 1990, Ser. No. 565,623
Int. Cl.[5] F16K *37/00*
U.S. Cl. 137—556 **19 Claims**



1. A position indicating valve for controlling the flow of fluids which includes a flow housing with a valve seat and a valve poppet, comprising:

(a) a control housing adjoining the flow housing with a centrally located, nonrotating valve stem having inward and outward ends, the stem being connected to the valve poppet at its inward end and being threaded at its outward end with an intermediate portion being oppositely threaded;

(b) an operating handle rotatably mounted to the control housing with a configured central aperture therethrough into which the threaded outward end of the stem extends;

(c) a configured position indicator threadably mounted on the outward end of the stem within the aperture adapted to axially move inwardly and outwardly of the handle as the handle is rotated;

(d) a rotatable coupling interlockable with the handle and threadably mounted to and about the stem at the intermediate portion adapted to move the stem, the valve poppet and the indicator in the same axial direction with rotation of the operating handle.

5,004,012

AUTOMATIC WATER SHUT-OFF APPARATUS FOR BUILDING PROTECTION

David R. Bratten, 322 Greenway Rd., Memphis, Tenn. 38117

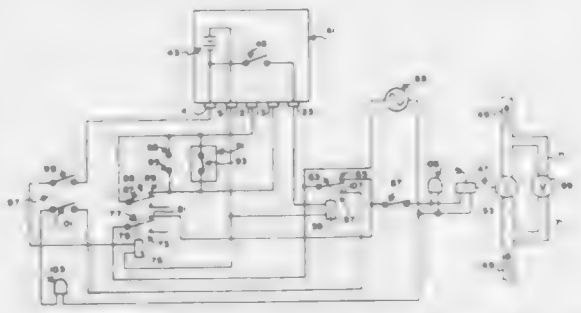
Continuation-in-part of Ser. No. 407,212, Sep. 14, 1989, Pat. No. 4,921,012. This application Apr. 25, 1990, Ser. No. 514,084
The portion of the term of this patent subsequent to May 1, 2007, has been disclaimed.
Int. Cl.[5] G08B *15/00*
U.S. Cl. 137—560 **8 Claims**

1. An automatic water shut-off apparatus for protection of a building from water damage comprising the combination of:

(a) an intrusion alarm system including means for arming said intrusion alarm system to provide an armed condition of said intrusion alarm system in which said building is monitored for intrusion and for disarming said intrusion alarm system to provide a safe condition in which time said building is not monitored for intrusion, and

(b) valve means inserted in the water supply of the building responsive to the condition of said intrusion alarm system for movement into an open position permitting the flow of water through said valve means when said intrusion alarm

system is in said safe condition and for movement into a closed position preventing the flow of water through said



valve means when said intrusion alarm system is in said armed condition.

5,004,013

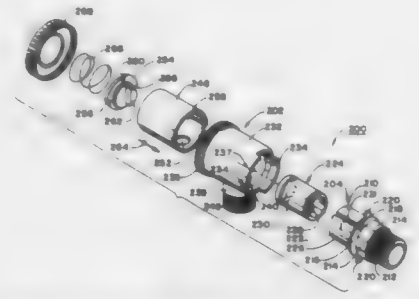
DRIPLESS COUPLING DEVICE

Brook J. Beaston, Wichita, Kans., assignor to Great Plains Industries, Inc., Wichita, Kans.

Continuation-in-part of Ser. No. 367,477, Jun. 16, 1989, which is a continuation of Ser. No. 180,355, Apr. 11, 1988, Pat. No. 4,844,450. This application Jun. 22, 1990, Ser. No. 542,735

Int. Cl.[5] F16L *37/28*

U.S. Cl. 137—614.05 **12 Claims**



1. A dripless coupling device for quick connection and disconnection of a flow conducting members comprising:

a male barrel having a threaded end, a shuttle end and a male barrel port disposed therebetween;

a collar member supported by the male barrel so as to be disposed between the threaded end and the male barrel port thereof, the collar member having a plurality of male tab members extending therefrom;

a male cylinder having a cylinder bore extending through one side thereof and a dial end, the male cylinder disposable within the male member such that the cylinder bore can be selectively moved for registery with the male barrel port;

a female body having a hollow post communicating with a female port formed in one side of the female body, the female body having locking tabs formed on one end thereof and an externally threaded end, the locking tabs adapted to lockingly engage the male tab members on the collar member when the male barrel is positioned within the female body such that in a locked position the male barrel port is in registery with the female port;

a dial retainer liner having a liner port extending through one side thereof, the dial retainer liner positionable within the female body such that the liner port is in registery with the female port of the female body;

a dialer member positionable within the dial retainer liner, the dialer member adapted to selectively rotate the male cylinder when the male cylinder and barrel member are disposed within the female body and secured therein via interconnection of the male tab members and the locking tabs so that the cylinder bore of the male cylinder can be brought into registery with the female port;

seal means supported by the female body for sealingly engaging the dialer member when the barrel member and male cylinder are disconnected from the female body; and

means to form a fluid-tight seal between the seal means and the dialer member while permitting the dialer member to be retracted upon insertion of the male cylinder and the male barrel into the female body.

5,004,014

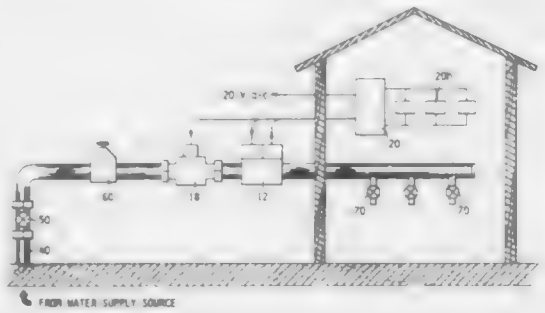
AUTOMATIC FLUID FLOW SENSOR AND FLUID SHUT-OFF SYSTEM

Richard C. Beader, 24031 Mariano St., Woodland Hills, Calif. 91367

Filed Jun. 29, 1990, Ser. No. 545,595

Int. Cl.[5] F16K *31/02*

U.S. Cl. 137—624.12 **10 Claims**



1. An automatic fluid-flow sensor and fluid shut-off system that functions in combination with a water supply source applied through a main water pipe connected in-line with a main water valve and pressure regulator, said system comprising:

(a) an electrical valve connected in line with said main water valve,

(b) a flow-sensing valve connected in-line with said electrical valve, where said flow sensing valve includes an optical path and means including a movable element that remains below the optical path when there is no fluid flow through said flow-sensing valve which causes a no-flow signal to be produced and that interrupts the optical path when there is a fluid flow which causes a flow trigger signal to be produced, and

(c) an electronics control unit having the means to:

(1) control the application of an a-c voltage that turns on said electrical valve,

(2) receive and process the no-flow or flow trigger signals from said flow sensing valve,

(3) start a programmable timer circuit that is directly coupled to receive the no-flow and flow trigger signals from said flow-sensing valve such that when the flow trigger signal is received, upon the lapsing of a preset time, a signal, that is free of microprocessor control, is produced that removes the a-c power being applied to said electrical valve which causes said valve to close and stop the fluid flow.

5,004,015

DIRECTIONAL CONTROL DEVICE

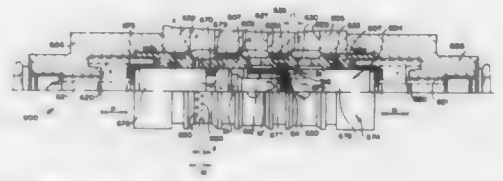
Reinhard Amrhein, Frammersbach; Walter Heid, Neustadt, and Günther Muschong, Wuerzburg, all of Fed. Rep. of Germany, assignors to Mannesmann Rexroth GmbH, Fed. Rep. of Germany

Division of Ser. No. 73,364, Jul. 10, 1987, Pat. No. 4,832,081, which is a continuation of Ser. No. 800,074, filed as PCT EP85/00074 on Mar. 1, 1985, abandoned. This application May 17, 1989, Ser. No. 353,066

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1984, 3407653; Mar. 1, 1984, 8406441[U]; Nov. 14, 1984, 3441650; Nov. 14, 1984, 8433398[U]

Int. Cl.[5] F15B *13/04*

U.S. Cl. 137—625.68 **13 Claims**



1. A direction spool valve comprising:

a main housing member,

a bushing sealingly mounted in said main housing member,

a center bore in said bushing,

a control spool reciprocally mounted in said center bore and adapted to guide pressurized fluid to one of at least one user and to a tank,

a pressure guide element on said control spool,

a bushing seal located in a bushing groove of said bushing for cooperation with said pressure guide element so as to provide a sealing effect for the same, wherein the pressure guide element is an integral part of the control spool and is arranged above a recess in the control spool,

radial bores in the pressure guide element for guiding fluid in a substantially radial direction onto said bushing seal,

wherein an axial width of an area of the radial bores is smaller an axial length L' of an annular land formed between the bushing groove receiving the bushing seal in the bushing and an adjacent annular recess in the bushing,

control bores arranged in the bushing for cooperation with a spool seal in the control spool element being arranged adjacent to a land having a width L which is larger than an axial width of the control bores.

5,004,016

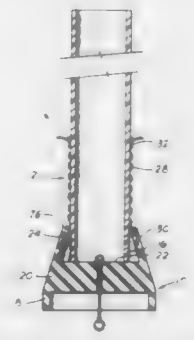
PIPE THREAD PROTECTOR DEVICE

Justin J. Kliewer, 404 S. First, Fairview, Okla. 73737

Filed Jan. 10, 1990, Ser. No. 463,256

Int. Cl.[5] B65D *59/06*

U.S. Cl. 138—96 T **2 Claims**



1. A pipe thread protector device comprising:

a shoe constructed for fitting around, and abutting against, the threaded end of an elongated section of pipe having a thread on one end thereof, said shoe being constructed of an elastomeric material and including a frustoconical portion positioned for surrounding the threads on the pipe when the pipe end abuts an internal surface in the shoe; and

an elongated tubular woven wire mesh constriction sleeve having one of its ends connected to said shoe and positioned relative to said shoe for extending coaxially around a threaded pipe when the frustoconical portion of said shoe extends around the threads of said pipe, said woven wire mesh constriction sleeve being constructed so that said sleeve undergoes a reduction in diameter when a tensile force is applied to the sleeve tending to elongate the sleeve, and undergoing an increase in diameter when a compressive force is applied to opposite ends of the sleeve.

5,004,017

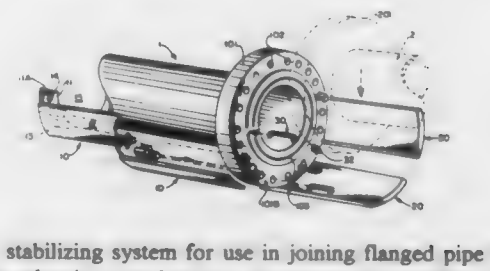
PIPE STABILIZING SYSTEM FOR UNDERWATER USE IN JOINING FLANGED PIPE SECTIONS

Loran L. White, 629 E. School St., Lake Charles, La. 70605

Filed Apr. 18, 1985, Ser. No. 724,511

Int. Cl.[5] F16L *1/04*

U.S. Cl. 138—106 **7 Claims**



1. A stabilizing system for use in joining flanged pipe sections together in an underwater environment, comprising:

a first flanged pipe section located in the water a significant depth;

a second flanged pipe section to be flanged together to said first pipe section located adjacent to said first pipe section;

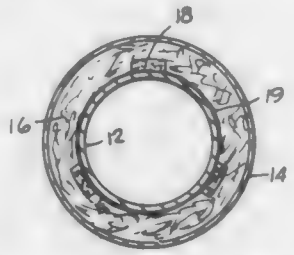
at least one flange stabilizing element attached to said first flanged pipe section, said flange stabilizing element being attached to a flange of said first pipe section, said flange stabilizing element(s) having a pipe fastening portion with a flange stabilizing portion affixed thereto and extending out from said pipe fastening portion and past said first pipe section a distance substantially in excess of the thickness of one flange, providing laterally spaced lines of stabilization adjacent to the flange of said first pipe section at a different vertical position than a bottom center-point of said first pipe section thereby defining a curved stabilizing area consistent with the curvature of a flange of said second pipe section and having sufficient strength to adequately resist movement of the flange of said second pipe section past it; said flange stabilizing portion providing means for guiding and stabilizing said second pipe section in making up the underwater connection between said pipe sections using at least one diver, the stabilizing element preventing the second flanged pipe section from moving around without restriction adjacent the flange interfaces thereby assisting the diver(s) in connecting the flanged pipe sections; said flange of said first flanged pipe section having a plurality of bolt holes in it; said pipe fastening portion including a circular opening aligned with a flange bolt hole; and there being further included a locking key with downwardly extending, vertically disposed ends inserted through said circular opening and the flange bolt hole with which it is aligned, effectively locking the stabilizing element to the flange of said first pipe section; said locking key being removable from said circular opening and the aligned bolt hole after the flanged pipe sections are connected together.

5,004,018

INSULATED EXHAUST PIPE AND MANUFACTURE THEREOF

David W. Bainbridge, Littleton, Colo., assignor to Manville Corporation, Denver, Colo.

Filed Jul. 31, 1989, Ser. No. 386,754
Int. Cl.[5] F16L *9/14;* F01N *3/00*
U.S. Cl. 138—149 7 Claims



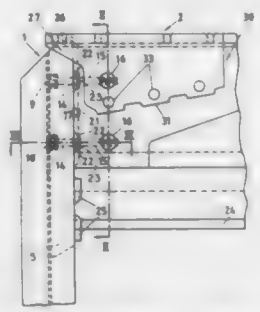
1. An insulated pipe for use in the exhaust system of a vehicle powered by an internal combustion engine, comprising:
an inner metallic tube;
an outer metallic tube spaced from and concentrically arranged with respect to the inner metallic tube; and
refractory fiber insulation filling the space between the inner and outer tubes;
a major portion of the insulation comprising relatively low density refractory fiber insulation which is subject to degradation from vibration;
a minor portion of the insulation comprising a plurality of relatively high density refractory fiber insulation strips extending substantially continuously along the length of the inner tube;
the high density strips being circumferentially spaced from each other and having a radial thickness to provide a means to inhibit movement of the low density fiber during operation of the vehicle to thereby prevent degradation thereof.

5,004,019

HARNESS FRAME WITH DETACHABLE CORNER CONNECTIONS

Daniel Blontrock, Roeselare, Belgium, assignor to N.V. Verbrugge, Roeselare, Belgium

Filed Sep. 6, 1989, Ser. No. 403,453
Claims priority, application Belgium, Sep. 9, 1988, 8801039
Int. Cl.[5] D03C *9/06*
U.S. Cl. 139—91 18 Claims



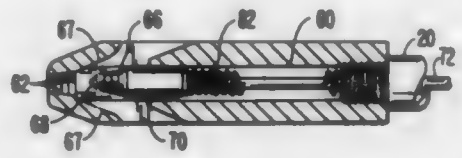
1. A harness frame for weaving machines, comprising:
(a) a pair of spaced vertical beams (1);
(b) at least one horizontal beam (2) extending between said vertical beams, each of said vertical beams including in horizontal cross-section a central portion (6), an attachment portion (8) intermediate said central portion and the associated horizontal beam, and a guide portion (7) on the opposite side of said central portion from said attachment portion, said portions extending longitudinally of said vertical beam; and
(c) means connecting the ends of said horizontal beam with the associated vertical beam, respectively, said vertical beam attachment portion being bifurcated to define a pair of leg portions (12) which terminate adjacent the associated end of said horizontal beam, the extremities of said leg portions including inwardly directed projections (13), respectively, said connecting means including:
(1) a connecting member (5) mounted between said leg portions and in engagement with the adjacent surfaces of said inwardly directed projections, and
(2) at least one screw (3,4) having at one end an enlarged head portion (11) arranged in an opening (10) contained in said vertical beam central portion, said enlarged head portion being in engagement with the adjacent end of said connecting member, said screw extending at its other end through a bore contained in said connecting member and between said projections, said screw terminating in threaded engagement with said horizontal beam, whereby upon tightening said screw, said connecting member and said vertical beam are drawn into tight engagement with the associated end of said horizontal beam.

5,004,020

WIRE TWISTING APPARATUS

Charles I. Meinershagen, Redding, Calif., assignor to NewTech Products, Inc., Palo Cedro, Calif.

Continuation of Ser. No. 146,464, Jan. 21, 1988, Pat. No. 4,880,038. This application Nov. 14, 1989, Ser. No. 436,286
The portion of the term of this patent subsequent to Nov. 14, 2006, has been disclaimed.
Int. Cl.[5] B21F *7/00, 15/04*
U.S. Cl. 140—93.6 2 Claims



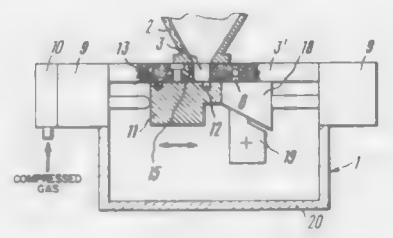
1. A wire twisting apparatus capable of one handed operation, said apparatus comprising:
a handle adapted to be grasped by the hand of a user;
a shaft coupled to said handle, said shaft having an axial bore and a wire receiving apertured tip portion with a tapered wall region forming a seat;
tapered plug means retractably received in said tip portion in normal contact with said seat, the tapers of said wall region and said plug means being substantially identical, said wall region and said plug means each having a taper angle lying in the range from about 5° to about 30°, said tip portion having an axially extending open slot intersecting the aperture in the tip portion and extending longitudinally therefrom for a distance along said tip portion and a depth which intersects the bore in the tip portion for enabling a pair of wire ends to be positioned between said plug means and said seat without requiring insertion through said apertured tip portion;
means extending along said axial bore and coupled to said tapered plug means for enabling retraction of said tapered plug means relative to said seat so that a pair of wire ends can be received between said plug means and said seat via said slot, said retraction enabling means including means for normally biasing said plug means toward said seat; and
means for retaining a pair of wire ends received between said plug means and said seat, said retaining means including a roughened portion of said plug means and a roughened portion of said seat, each roughened portion having a ridged surface with peripherally extending contour lines.

5,004,021

ARRANGEMENT FOR CONVEYING POWDER TO THE BARREL OF A GAS DETONATION APPARATUS

Vladimir J. Ulyanitsky, ulitsa Tereshkovoi, 6, kv. 129; Tamara P. Gavrilenko; Jury A. Nikolaev, both of ulitsa Ilicha, 19, kv. 9, and Alexandr I. Buteev, ulitsa Zolotodolinskaya, 15, k. 39, all of Novosibirsk, U.S.S.R.

PCT No. PCT/SU89/00008, § 371 Date Sep. 18, 1989, § 102(e) Date Sep. 18, 1989, PCT Pub. No. WO89/06570, PCT Pub. Date Jul. 27, 1989
PCT Filed Jan. 18, 1989, Ser. No. 415,369
Claims priority, application U.S.S.R., Jan. 19, 1988, 4409712
Int. Cl.[5] B65B *1/08;* B67D *5/00*
U.S. Cl. 141—67 3 Claims



1. Apparatus for feeding powder to the barrel of a gas detonation apparatus comprising a housing (1), a hopper (2) containing the powder and communicating with an interior space of the housing (1), and a slide valve (11) provided inside the housing (1) and having a powder-metering recess (12) and a drive (9) which moves the slide valve from a first extreme position to a second extreme position, the housing (1) having passages (3, 4, 7) for feeding compressed air and for conveying the powder from the hopper (2) to the powder-metering recess (12) and from the powder-metering recess (12) to the barrel (19), said passages having openings (5, 6, 8) in an internal wall of the housing characterized in that the slide valve (11) is positioned in an upper part of the housing (11) and means (14) is provided resiliently urging the slide valve against said wall of the housing having the openings (5, 6, 8) of the passages (3, 4, 7), the powder-metering recess (12) being located at a surface of the slide valve (11) in contact with said wall of the housing (1), a shut-off unit (18) being further provided which is connected to the slide valve (11) and which blocks one of said openings (8) of the passage (7) for conveying the powder from the powder-metering recess (12) to the barrel (19') in the first extreme position of the slide valve (11), and the powder-metering recess in the second extreme position of the slide valve (12) communicates with the opening (8) of the passage (7) for conveying the powder to the barrel (19').

5,004,022

METHOD AND AN ARRANGEMENT FOR FILLING LARGE SACKS

Börje Carlsson, Hjälmarsvik, PL 7178, S-732 00 Arboga, Sweden

PCT No. PCT/SE88/00175, § 371 Date Sep. 29, 1989, § 102(e) Date Sep. 29, 1989, PCT Pub. No. WO88/07965, PCT Pub. Date Oct. 20, 1988
PCT Filed Apr. 8, 1988, Ser. No. 435,409
Claims priority, application Sweden, Apr. 14, 1987, 8701568
Int. Cl.[5] B66F *9/00;* B65B *3/16*
U.S. Cl. 141—114 5 Claims

2. An arrangement for filling large sacks (10) with manageable material with the aid of a mechanical shovel, for the purpose of transporting or storing said material, comprising a movable shovel loader (1) equipped with driving seat a tiltable mechanical shovel (5) which can be raised and lowered with the aid of lifting arms and which has an open side through which the shovel can scoop up material, characterized in that a shovel defining wall which is located opposite said open side and which forms the bottom of the shovel when said open side faces upwards, is at least partially funnel-shaped (8); the funnel-shaped part includes a passageway through which said material can flow from said shovel through said passageway (9) is provided with a closure means (12); in that the arrangement further comprises means (11) for attaching a sack (10) to the



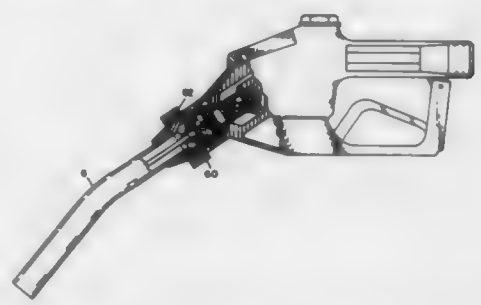
shovel (5) so that said passageway (9) connected thereto projects into the mouth of the sack (10); and in that said sack attachment means have the form of suspension means (11) which enable a filled sack (10) to be lifted and transported whilst hanging from the shovel.

5,004,023

GASOLINE NOZZLE WITH EMERGENCY SHUT-OFF

Anthony Monticup, Jr., 3 Martin Ct., Clifton Park, N.Y. 12065, and Franklin L. Gubernick, 1420 Nott St., Schenectady, N.Y. 12308

Filed Mar. 30, 1990, Ser. No. 494,127
Int. Cl.[5] B67D *5/373*
U.S. Cl. 141—208 9 Claims



1. An improved liquid dispensing nozzle of the type having a liquid inlet, a nozzle body having a manually operated liquid control valve and a liquid outlet, wherein the improvement comprises:
an emergency shut-off means operatively connected to the nozzle and including means for stopping the flow of liquid should the liquid outlet be separated from the nozzle body;
an automatic shut-off means operatively connected to the nozzle which functions to stop liquid flow once a container that is receiving liquid from the nozzle outlet becomes full; and
wherein the automatic shut-off means includes a venturi means and wherein the emergency shut-off means includes a valve means biased towards a closed position and wherein the venturi means includes means for maintaining said valve means in an open position that allows liquid flow whereby separation of said liquid outlet from said nozzle body causes the venturi means to at least partially move away from a centerpoint of said nozzle body and

thereby allow the valve means to move to a closed position which stops the flow of liquid.

5,004,024

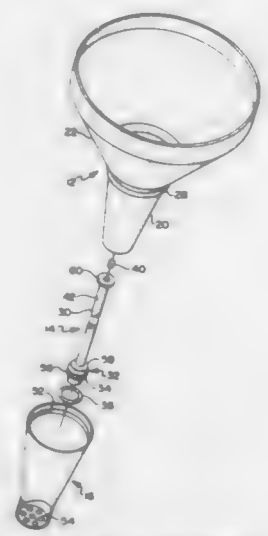
SEALABLE FUNNEL FOR MEASUREMENT AND SPILL PREVENTION

Leonard D. Rezmer, 1135 S. 9 Mile Rd., Kawkawlin, Mich. 48631; John R. Kaczmarczyk, 4099 W. Dodge, Clio, Mich. 48420; Gerald R. Kaczmarczyk, G 6447 N. Saginaw, Clio, Mich. 48420, and Donald J. Kaczmarczyk, 6460 Estrelle, Mt. Morris, Mich. 48458

Continuation-in-part of Ser. No. 325,308, Mar. 17, 1989, abandoned. This application Nov. 27, 1989, Ser. No. 441,942

Int. Cl.[5] **B65B** *39/00*; **B67C** *11/00*

U.S. Cl. 141—298 **4 Claims**



1. A sealable funnel assembly comprising:

(a) a funnel body comprising a stem portion and a cup portion, the stem portion having a hollow bore formed therethrough, the cup portion being connected to one end of the stem portion and communicating with the hollow bore, the opposite end of said stem portion defining a valve seat therewithin;

(b) a core member comprising an elongated handle portion extending through said cup portion and stem portion, the core member further comprising an enlarged lower sealing portion attached to the handle portion, the lower sealing portion dimensioned to fit sealingly inside the valve seat of the hollow bore to temporarily prevent fluid flow therethrough, said core member having a vent passage formed therethrough; and

(c) sealing means surrounding said stem portion and removably secured thereto for sealingly engaging with an inlet of a receptacle, said sealing means including a portion extending over the opposite end of said stem portion to limit downward movement of said sealing portion with respect to said funnel body.

5,004,025

METHOD AND APPARATUS FOR SLOWLY DISPENSING A SOLUTION FOR UNCLOGGING DRAINS

David L. Robbins, 504 Cleveland St., Rocky Mount, N.C. 27803

Filed Sep. 27, 1989, Ser. No. 413,207

Int. Cl.[5] **B08B** *3/08*

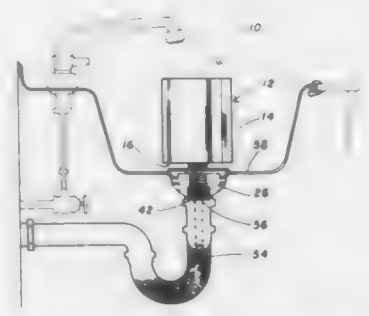
U.S. Cl. 141—364 **5 Claims**

2. An anti-clogging solution container and drop dispenser device containerizing dispensing anti-drain clogging solution into an inlet of a clogged drain comprising:

(a) a container having a main body portion with a side wall structure, a top, and a bottom;

(b) a dispenser section connected to the top of the main body portion, wherein the dispenser section provides a means for dispensing an anti-drain clogging solution into a drain pipe inlet in a relative slow manner over an extended period of time whereby the clogs and sediment within the drain are exposed to and are slowly dissolved by the solution;

(c) the dispensing section including a neck extending from the top and a drain dispenser secured to the neck. the neck having a remote end and having threads that extend substantially the entire distance from the remote end of the neck to the top of the container; and



(d) an adjustable support collar threaded on the neck between the top and the dispenser and movable back and forth thereon between the top and the dispenser for supporting the container above the drain inlet, the collar having a circumferential bearing surface for engaging and resting upon the drain inlet and wherein the position of the container and dispenser can be adjusted by rotating the supprt collar about the neck such that the container and dispenser can both be moved up and down with respect to the drain inlet.

5,004,026

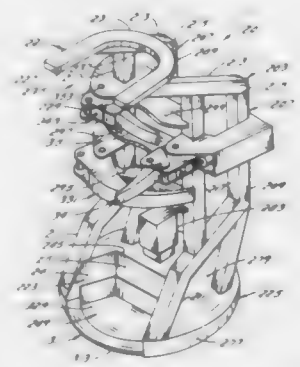
FELLING HEAD

Charles MacLennan, 153 Cote St., Charles, Hudson, Quebec J0P 1J0; Douglas D. Hamilton, 5858 Cote des Neiges, Suite 215, Montreal, Quebec H3S 1Z1, and Robert M. Palfy, 320 5th Street, Laval, Quebec H7N 1Z4, all of Canada

Filed Oct. 6, 1989, Ser. No. 417,765

Int. Cl.[5] **A01G** *23/08*

U.S. Cl. 144—3 D **6 Claims**



1. A felling head having: a frame; tree cutting means at the bottom of the frame; two vertically spaced-apart, U-shaped, fixed cradles on the frame above the tree cutting means, each cradle having a closed base and an open mouth opening away from the frame; a retaining arm pivotally mounted on the frame between the cradles; means for moving the retaining arm between an open position where it is to one side of the mouth of the cradles and a closed position where it extends across the mouth of the cradles so as to close the cradles and to thereby loosely hold a cut tree within the cradles; a pair of grapple arms pivotally mounted on the frame between the cradles, one grapple arm on each side of the cradles; means to move the grapple arms between an open position where each is to one side of the cradles, and a closed position where each extends across the cradles to overlap and to tightly hold a cut tree against the base of the cradles; and means on the frame below the cradles for supporting a cut tree by its butt end while loosely retained in the cradles and before it is held by the grapple arms.

5,004,027

BISCUIT JOINER

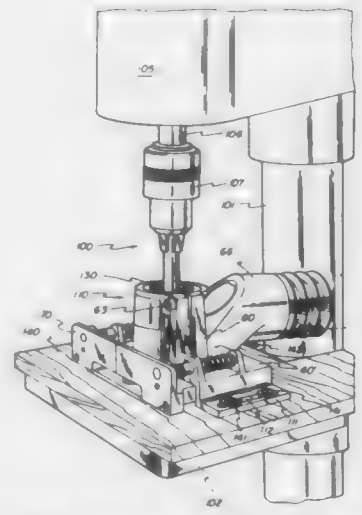
John G. Legler, Huber Heights; Harold E. Folkerth, Dayton; David D. Flora, Arcanum, and Barry L. Hile, Tipp City, all of Ohio, assignors to Shopsmith, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 392,183, Aug. 10, 1989, Pat. No. 4,926,916. This application May 18, 1990, Ser. No. 525,950

The portion of the term of this patent subsequent to May 22, 2007, has been disclaimed.

Int. Cl.[5] **B27C** *5/00*, *1/00*

U.S. Cl. 144—136 R **15 Claims**



1. Apparatus for cutting slots in wood workpieces to be oined by disk-like biscuits of predetermined dimensions inerted in such slots, comprising:

(a) a power tool including a frame supporting a worktable and drive means above said worktable having a drive spindle depending therefrom in perpendicular relation with said worktable,

(b) a rotary saw blade carried by an arbor drivingly connected with said drive spindle and thereby fixed laterally with respect to said worktable,

(c) a housing mounted on said tool in enclosing and laterally fixed relation with said saw blade and having an open front aligned with said saw blade,

(d) said housing and said saw blade being so proportioned that in said mounted positions thereof, said saw blade projects through said open front of said housing,

(e) means for effecting relative vertical adjustment of said drive means and said worktable to establish a predetermined space between said saw blade and said worktable,

(f) a guide for workpieces to be slotted having a face for engagement by each such workpiece,

(g) means mounting said guide on said housing at said open front thereof for linear movement toward and away from said saw blade,

(h) said guide having a slot therethrough aligned with and for receiving said saw blade therethrough,

(i) stop means establishing an outer limit position of said guide wherein said saw blade does not project beyond the plane of said guide face, and

(j) stop means for establishing an inner limit position of said guide establishing the maximum depth of the slot cut by said saw blade in a workpiece moved on said worktable with said guide to said inner limit position,

(k) whereby upon movement of said guide toward said housing by a workpiece sliding on said worktable in engagement with said guide, said saw blade will cut a slot in said workpiece at the level determined by said means for effecting relative adjustment of said drive means and said worktable.

5,004,028

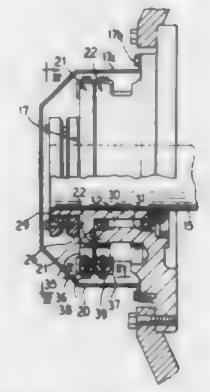
SHEAR HUB

James Adams, Memphis, Tenn.; Richard Gobel, Scappoose, and Bryan Lanham, Gresham, both of Oreg., assignors to Beloit Corporation, Beloit, Wis.

Filed Jun. 25, 1990, Ser. No. 543,255

Int. Cl.[5] **B27C** *1/00*

U.S. Cl. 144—176 **14 Claims**



8. An apparatus for slicing wood chips such as in a pulp preparation procedure comprising in combination:

a power input rotary drive shaft means;

a rotor having anvil means for carrying wood chips against cutting knives and adapted to be driven by said shaft;

a power rotation clutch means connected between said shaft and said rotor accommodating relative rotation with forced stalling of the rotor;

the clutch means including;

a driven hub secured to the rotor;

a driving hub secured to the shaft;

and shear pin means between said hubs of a strength to transmit normal rotational operating power and to shear upon forced stalling of the rotor.

5,004,029

SAW TABLE APPARATUS

William C. Garner, P.O. Box 552, Tonganoxie, Kans. 66086

Filed Apr. 16, 1990, Ser. No. 509,709

Int. Cl.[5] **B25H** *1/16*, *1/06*

U.S. Cl. 144—287 **1 Claim**

1. A saw table apparatus comprising, in combination,

a table plate member defining a planar top surface spaced from and overlying a planar bottom surface, and

a first wing plate hingedly mounted to the plate member at a first end of the plate member arranged orthogonally to the plate member in a first position and aligned with the plate member in a lowered second position, and

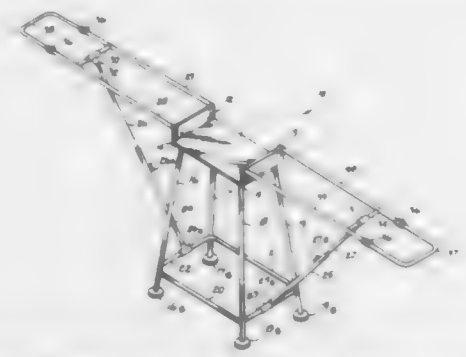
a second wing plate hingedly mounted at a second end of the plate member opposed to the first end, wherein the second end is arranged parallel to the first end, with a second elongate hinge pivotally mounting the second wing plate to the second end of the plate member, wherein the second wing plate is arranged orthogonally relative to the

plate member in a first position and aligned with the plate member in a second position, and

a first, second, third, and fourth leg member each integrally mounted and downwardly extending from the bottom surface of the plate member, and each leg member of an equal length to support the plate member at a spaced relationship relative to lower terminal ends of each leg member, and

a rung framework fixedly mounted to the first, second, third, and fourth leg members, wherein the rung framework defines a rung plane underlying and parallel to the top surface of the plate member, the rung framework including a first end rung underlying and parallel the first end of the plate member, and a second end rung underlying and parallel the second end of the plate member, and

the first wing plate includes a first framework mounted orthogonally to and extending exteriorly of a rear surface of the first wing plate, and a second framework mounted orthogonally to and extending exteriorly of a rear surface of the second wing plate, wherein the first and second framework defines a first and second framework plane, and the first and second framework planes are aligned coextensively relative to one another when the first and second wing plates are in the first position, wherein the first and second framework planes are arranged to and spaced above the top surface of the table plate member when the first and second frameworks are in the raised first position, and



the first framework includes a first and second tube each parallel relative to one another and defined by an equal length, wherein each first and second tube are fixedly mounted to the rear surface of the first wing plate, and the first and second tubes include a friction collet mounted to each first and second tubes from the first wing plate, and the first and second tubes each receive through the respective friction collet mounted to each first and second tube a first "U" shaped extension member leg of a first "U" shaped extension member reciprocatably mounted within the first and second horizontal tube, and

the second framework includes a third and fourth horizontal tube fixedly and orthogonally mounted to the rear surface of the second wing plate, and the third and fourth horizontal tube includes a friction collet mounted to each free terminal end of each horizontal tube spaced from the second wing plate, and the third and fourth horizontal tube receives a second "U" shaped extension member leg of a second "U" shaped extension member through each collet associated with each third and fourth horizontal tube, and

the first and second horizontal tube includes a first brace orthogonally and fixedly mounted between the first and second tube, including a first wing leg member pivotally mounted to the first brace, the first wing leg member telescopingly received within a first tube leg, wherein the first tube leg is pivotally mounted at its lower terminal end to the first end rung, and

the third and fourth horizontal tube includes a second brace fixedly and orthogonally mounted therebetween, including a second wing leg member pivotally mounted at its upper terminal end to the second brace, and wherein a lower terminal end of the second wing leg member telescopingly receivable within a second tube leg, the second tube leg including a lower terminal end, the lower terminal end of the second tube leg pivotally mounted orthogonally relative to its longitudinal length to the second end rung, and

further including a "U" shaped yoke, the "U" shaped yoke including a bottom leg fixedly mounted to the bottom surface of the plate member, and a second leg spaced above and parallel to the top surface of the plate member, and the second leg slidably receiving a saw therealong, wherein the "U" shaped yoke is removably mounted to the plate member, and

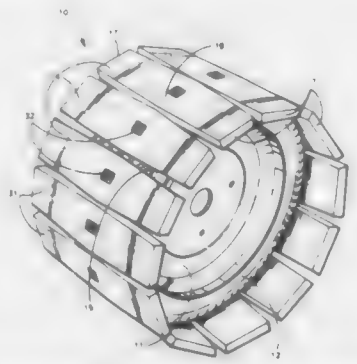
the apparatus further includes a power miter saw assembly mounted on the top surface of the plate member, wherein the power miter saw includes a support base, the support base defined by a predetermined height, the predetermined height equal to a further height defined by each first and second wing plate, the power miter saw spaces above the first and second framework when mounted on the plate member.

5,004,030

PNEUMATIC TIRE WITH PIVOTABLE GROUND PADS

Hugh R. McLaughlin, Aberdour, Bray Road, Foxrock, County Dublin,

Filed Dec. 21, 1989, Ser. No. 454,591
Claims priority, application Ireland, Dec. 21, 1988, 3835/88
Int. Cl.[5] B60C *27/20, 7/22;* **B62D** *55/07;* **B60D** *15/10*
U.S. Cl. 152—225 R **8 Claims**



1. A traction device, comprising: a pneumatic tire for mounting on a wheel hub, the tire having a plurality of ground engaging pads disposed around the periphery of the tire, each pad being capable of at least a limited degree of rotational displacement about a radial axis relative to the tire, whereby the tire may turn through the limited rotation relative to any pad currently in ground contact, and means for returning each pad to its undisplaced position when the pad has moved out of contact with the ground.

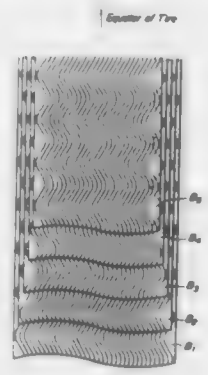
5,004,031

PNEUMATIC TIRE WITH A STRIP REINFORCING LAMINATE HAVING FILAMENTS ARRANGED TOGETHER IN AN UNDULATING FORM

Kuninobu Kadota; Yoshihide Kohno, and Hiroyuki Koseki, all of Kodaira, Japan, assignors to Bridgestone Corp., Tokyo, Japan

Filed Mar. 7, 1989, Ser. No. 320,422
Claims priority, application Japan, Mar. 9, 1988, 63-53672; Sep. 19, 1988, 63-232254
Int. Cl.[5] B60C *9/28, 9/22;* **B32B** *25/02*
U.S. Cl. 152—538 **27 Claims**

10. A pneumatic tire comprising; a toroidal carcass extended between at least a pair of bead cores as a casing reinforcement; a belt reinforcing a crown portion of said toroidal carcass comprised of a strip reinforcing laminate comprising of plural strips with each strip comprising filaments arranged together in an undulating form in the same plane as a reinforcing element and covered with a high molecular weight material having a modulus of elastitcity lower than that of the reinforcing element, each reinforcing element in each of said strips



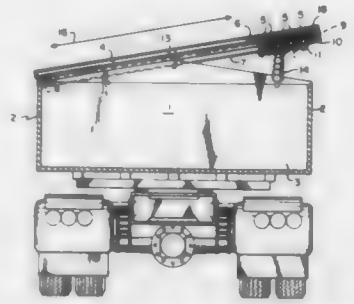
having interlaced portions on at least two reinforcing elements in the adjoining strip, and said reinforcing elements in all of said strips being aligned in the same direction and phases in said undulating form between said reinforcing element in one of said strips and said reinforcing element in another adjoining strip are shifted so that a shifting quantity is ⅓–½λ where λ is a wavelength of said reinforcing element.

5,004,032

COVER FOR A LOAD-CARRYING SPACE, PREFERABLY FOR VEHICLES

Helge L. Pedersen, Frobjerg DK-5560, Aarup, Denmark

Continuation of Ser. No. 163,284, Dec. 23, 1987, abandoned, which is a continuation-in-part of Ser. No. 851,139, Mar. 20, 1986, abandoned. This application May 25, 1989, Ser. No. 357,664
Claims priority, application Denmark, Jul. 13, 1984, 3597/84
Int. Cl.[5] B60P *7/04*
U.S. Cl. 160—84.1 **5 Claims**



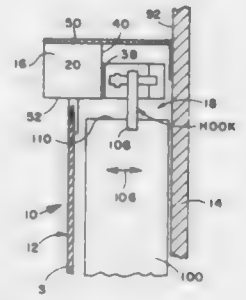
1. Cover for a load-carrying space, preferably for vehicles and comprising a flexible cover material adapted to being moved mechanically across an open load-carrying space and to being removed to provide an open load-carrying space, said cover material being secured at intervals to a number of supporting strips having a longitudinal direction extending across the load-carrying space, and said strips capable of sliding at right angles to their longitudinal direction, one supporting strip forming a drawstrip driven by a driving means, the supporting strips at each end being controlled in guide rails, the guide rails adapted to being situated at end wall of the load-carrying space, each guide rail being divided into a first and a second rail part, said first and second rail parts being connected by means of a hinge, the first part of each guide rail, at an end lying most distant from the hinge, adapted being fixed to an upper edge of a first side wall of the load-carrying space such that a longitudinal direction of said first part forms an acute angle to a bottom of the load-carrying space with the hinge being positioned considerably higher up than the side walls of the load-carrying space, means being provided for turning said second part of each guide rail around the hinge between a position where a free end is adapted to abut an upper edge of the other side wall and a position where said second part of each guide rail extends in continuation of said first part, one side edge of the cover material being attached at said free end of the second part of the guide rails, the opposite side edge being attached to the drawstrip, and wherein the drawstrip is placed at the side of the cover material turning toward the first guide rail part and wherein the driving means for drawing are endless chains, driven by a joint driving shaft driven by a motor.

5,004,033

GAP BRIDGING ASSEMBLY FOR USE WITH VERTICAL BLIND ASSEMBLIES

Frank M. Stipkovits, 4584 Lower Mountain Rd., Lockport, N.Y. 14094

Filed May 4, 1990, Ser. No. 519,673
Int. Cl.[5] E06B *9/38*
U.S. Cl. 160—178.1 **5 Claims**



1. In combination:

(A) a vertical blind assembly which includes

(1) a headrail mounted on a wall adjacent to a window

(2) a plurality of vertically oriented slats pendently supported from said headrail and spaced from said window to define a gap; and

(B) a gap-bridging assembly which includes

(1) a bracket assembly which has

(a) an L-shaped body having a short leg and a long leg,

(b) said short leg having adhesive on one surface attaching said short leg to a rear surface of the headrail,

(c) said long leg extending from said headrail and contacting said wall,

(d) said long leg including

(i) an elongated slot,

(ii) two spaced apart mounting projections, and

(iii) a U-shaped section having two legs and projection-receiving slots defined in said legs which slidably receive said spaced apart mounting projections,

(2) a J-shaped hook slidably mounted on said long leg in said elongated slot, said hook including a top portion and a curved bottom portion, and a T-shaped projection mounted on said body portion, said T-shaped projection including a body attached at one end to said hook top portion and extending through said long leg elongated slot and a cap portion on said body that engages said long leg adjacent to said long leg slot on a side of said long leg that is opposite to the side on which said hook is located; and

(3) an elongated gap-bridging vane having a hook-receiving slot defined in one and extending from said L-shaped bracket body between said vertical blind slats

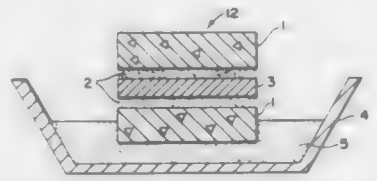
and said wall in said gap and being oriented to be perpendicular to a plane containing said wall, vane being pendently supported from said hook for movement therewith.

5,004,034

METHOD OF SURFACE BONDING MATERIALS TOGETHER BY USE OF A METAL MATRIX COMPOSITE, AND PRODUCTS PRODUCED THEREBY

Eugene S. Park, Hockessin, Del., and Michael K. Aghajanian, Bel Air, Md. and Christopher R. Kennedy, Newark, Del. assignors to Lanxide Technology Company, LP, Newark, Del.

Filed Nov. 10, 1988, Ser. No. 269,307
Int. Cl.[5] B22D *19/14*
U.S. Cl. 164—97 45 Claims



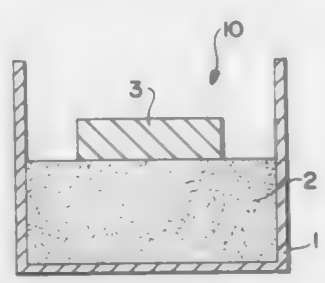
1. A method for bonding a plurality of bodies, comprising:
providing a substantially nonreactive filler between at least a portion of at least two bodies which are to be bonded;
spontaneously infiltrating at least a portion of the filler with molten matrix metal to form a metal matrix composite between said at least two bodies; and
cooling said molten matrix metal, thereby bonding said at least two bodies together.

5,004,035

METHOD OF THERMO-FORMING A NOVEL METAL MATRIX COMPOSITE BODY AND PRODUCTS PRODUCED THEREFROM

John T. Burke, Hockessin, and Marc S. Newkirk, Newark, both of Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Filed Nov. 10, 1988, Ser. No. 269,375
Int. Cl.[5] B22D *19/14*
U.S. Cl. 164—97 40 Claims



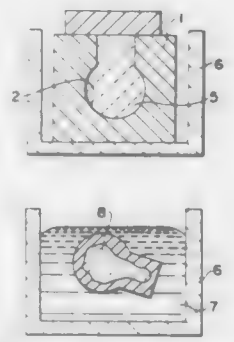
1. A method for making a metal matrix composite, comprising:
forming a permeable mass consisting essentially of a substantially non-reactive filler;
spontaneously infiltrating the filler with molten matrix metal to form an infiltrated mass; and
thermo-forming said infiltrated mass at a temperature above the liquidus temperature of the matrix metal.

5,004,036

METHOD FOR MAKING METAL MATRIX COMPOSITES BY THE USE OF A NEGATIVE ALLOY MOLD AND PRODUCTS PRODUCED THEREBY

Kurt J. Becker, Newark, Del., assignor to Lanxide Technology Company, LP, Newark, Del.

Filed Nov. 10, 1988, Ser. No. 269,295
Int. Cl.[5] B22D *19/14*
U.S. Cl. 164—97 43 Claims



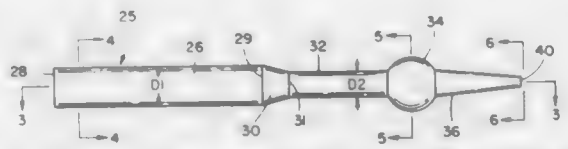
1. A method for making a metal matrix composite, comprising:
forming a cavity in a solid matrix metal;
placing a substantially non-reactive filler in the cavity;
inducing the filler to become self-supporting and to conform substantially to the shape of the cavity;
melting the matrix metal; and
spontaneously infiltrating at least a portion of the filler with the molten matrix metal thereby forming a metal matrix composite body.

5,004,037

LONG SPAN SPRUE TUBE FOR INVESTMENT CASTING

Ronald Castaldo, 19 Pitts Ave., Mastic, N.Y. 11950

Filed Aug. 7, 1989, Ser. No. 390,104
Int. Cl.[5] B22C *7/02, 9/04*
U.S. Cl. 164—244 6 Claims



1. A long span sprue tube forming a sprue passage in a casting investment to pass a fluid casting material into a pattern cavity in said casting investment, comprising:
a cylindrical first section having a first outside diameter, a free first end and an axially spaced second end;
a tapered second section having a wider end and an axially spaced narrower end, said wider end being equal in diameter to said first diameter and integral with said second end of said first section, said narrower end having a second outside diameter smaller than said first outside diameter;
a cylindrical third section having axially spaced third and fourth ends, said third end being integral with said narrower end of said tapered section, said third section having a uniform diameter equal to said second diameter;
a bulbous portion formed integrally with said fourth end, said bulbous portion forming a chamber constituting a reservoir for said casting material in said sprue passage, said bulbous portion having a fifth end spaced from said fourth end; and
a tapered tip section integral with said fifth end and having a free end adapted for attachment to a pattern prior to embedment thereof in said casting investment, all of said sections being disposed in axial alignment to form an axially straight sprue passage in said casting investment

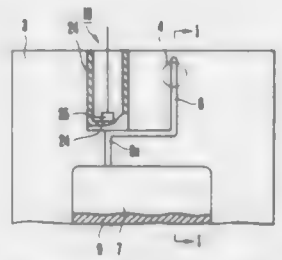
communicating with said pattern cavity therein when said pattern and said sprue tube sections are all burned out of said casting investment, whereby said fluid casting material can flow smoothly without turbulence through said sprue passage to said pattern cavity, and whereby velocity of said casting material entering said sprue passage increases in successive steps in said sprue passage, until said casting material reaches said pattern cavity to fill the same completely.

5,004,038

DEGASSING APPARATUS FOR MOLD

Minoru Kuriyama, Yamaguchi, Japan, assignor to UBE Industries, Ltd., Ube, Japan

Filed Nov. 28, 1989, Ser. No. 442,213
Claims priority, application Japan, Nov. 29, 1988, 63-299447; Dec. 6, 1988, 63-306885
Int. Cl.[5] B22D *17/14*
U.S. Cl. 164—305 5 Claims



1. A degassing apparatus for a mold comprising:
a degassing valve located at an end portion of a degassing passage extending from a mold cavity, wherein said degassing passage has a bent portion;
an acoustic wave detecting unit, arranged midway along said degassing passage, for detecting an acoustic wave generated when a molten metal collides against a wall surface of said passage, and thereby detecting passing of the molten metal, wherein said acoustic wave detecting unit is disposed adjacent to said bent portion; and
a valve closing unit for closing said valve when a detecting signal level is higher than a reference signal level.

5,004,039

REFRACTORY MATERIAL

Roy C. Feagin, Boca Raton, Fla., assignor to Remet Corporation, Chadwicks, N.Y.

Continuation of Ser. No. 246,029, Sep. 14, 1988, abandoned, which is a continuation of Ser. No. 110,059, Oct. 15, 1987, abandoned, which is a continuation of Ser. No. 941,527, Dec. 17, 1986, abandoned, which is a continuation of Ser. No. 693,068, Jan. 22, 1985, abandoned, which is a division of Ser. No. 487,704, Apr. 21, 1983, abandoned, which is a continuation of Ser. No. 246,315, Mar. 23, 1981, Pat. No. 4,415,673. This application Mar. 9, 1989, Ser. No. 320,877
The portion of the term of this patent subsequent to Nov. 15, 2000, has been disclaimed.
Int. Cl.[5] B22C *9/02*
U.S. Cl. 164—361 20 Claims

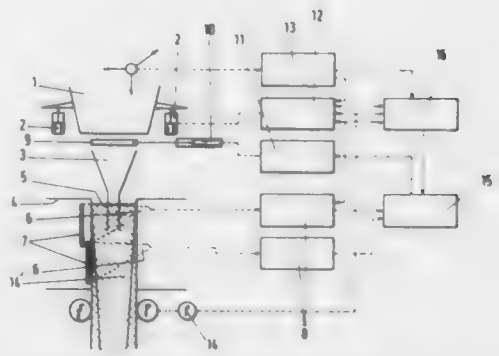
1. A refractory casting mold having a shape necessary to produce a desired cast article comprising the reaction product obtained by mixing an acid-stabilized, aqueous, colloidal zirconia sol, with an active refractory material capable of gelling said sol in an amount effective to gel said sol after a suitable non-gel working period, to thereby form an aqueous mixture capable of gelling within a predetermined working period, shaping said aqueous mixture prior to gelation thereof into the desired casting mold shape, without grinding and while retaining water, permitting said aqueous mixture to gel in the presence of at least some water, thereafter allowing water to evaporate and to produce the casting mold.

5,004,040

METHOD OF CONTINUOUS CASTING

Fritz-Peter Pleschiutschnigg, Duisburg; Lothar Parschat, Ratingen; Hans U. Franzen; Manfred Pfluger, both of Duisburg, and Josef Glaser, Düsseldorf, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Feb. 14, 1990, Ser. No. 480,099
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1989, 3905328
Int. Cl.[5] B22D *11/16, 11/18*
U.S. Cl. 164—453 1 Claim



1. A method of continuously casting steel in which a melt is introduced, through a movable immersion nozzle having an outer lower edge, from a movable distributor into a mold of rectangular cross-section having an upper edge, a distance between the broad sides of about 40 to about 100 mm and a distance between the narrow sides of between about 200 and about 2000 mm, and from which mold the casting is withdrawn, the melt introduced into the mold defining a bath of steel therein, said method comprising the steps of:
(a) controlling the start of the casting process in connection with the withdrawal of the casting by
(1) starting the withdrawal of the casting upon reaching a desired height of the surface of the bath of the steel in the mold, and
(2) driving the casting from the mold at a desired casting removal speed via a control element in a predetermined manner;
(b) measuring the position of the bath level as it ascends in the mold during the continuous casting;
(c) adjusting the position of the immersion nozzle in relation to the ascending bath level from a first position to a desired operating position by changing the position of the distributor, and
(d) determining the desired operating position of the immersion nozzle with respect to the upper edge of the mold as a function of the temperature of the steel melt, the quality of the steel, the K-value of the solidification of the casting, the speed of withdrawal of the casting and the bath level, so as to establish, during the casting, a spacing of the outer lower edge of the immersion nozzle between a solidification front of the casting and the bath level.

5,004,041

HEAT TRANSFER SYSTEM WITHOUT MASS TRANSFER

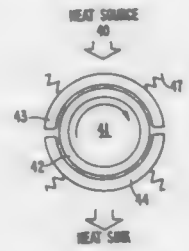
Marc J. Jaeger, Gainesville, Fla., assignor to The University of Florida, Gainesville, Fla.

Division of Ser. No. 199,355, May 26, 1988, Pat. No. 4,880,049. This application Aug. 23, 1989, Ser. No. 397,407
Int. Cl.[5] F28D *19/00*
U.S. Cl. 165—8 1 Claim

1. A heat-transfer system comprising:
at least a pair of zones constructed of heat-conductive material, each of said zones having a first solid surface adapted for positioning at respective locations of differing temper-

atures between which it is desired to transfer heat and each having a second solid, continuous surface adapted to slidably engage the exterior solid, continuous surface of a cylindrical element rotating about its longitudinal axis;

a cylindrical element having at least the solid, continuous exterior surface thereof constructed of a heat-conductive



material and being positioned such that the solid, continuous surface thereof slidably engages said solid, continuous second surfaces of said zones when rotated about its longitudinal axis; and

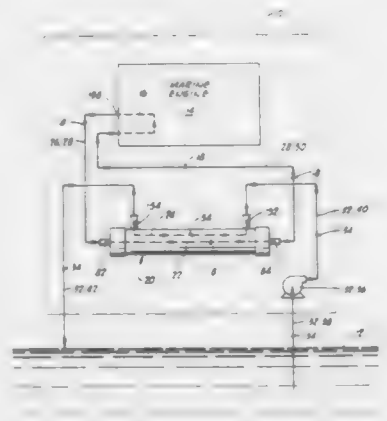
means for establishing rotation of said cylindrical element about its longitudinal axis.

5,004,042

CLOSED LOOP COOLING FOR A MARINE ENGINE

Lee W. McMorries, IV, and James B. Saatkamp, both of Stillwater, Okla., assignors to Brunswick Corporation, Skokie, Ill.

Filed Oct. 2, 1989, Ser. No. 415,566
Int. Cl.[5] B63H *21/10, 21/38;* F28F *9/06, 21/06*
U.S. Cl. 165—41 13 Claims



1. A marine power system having closed loop cooling, comprising:

a marine engine having a cooling fluid passage defined therein through which a cooling fluid stream may pass;

a shell and tube heat exchanger having a tube side flow path and a shell side flow path defined therein;

cooling fluid conduit means for connecting said cooling fluid passage to said tube side flow path so that said cooling fluid stream from said engine is directed through said tube side flow path of said heat exchange;

a raw water supply means for directing a raw water stream from a body of water through said shell side flow path and then back to said body of water, so that excess heat from said engine is transferred to said cooling fluid stream, the from said cooling fluid stream in said tube side flow path to said raw water stream in said shell side flow path of said heat exchanger, and then to said body of water as said raw water stream returns thereto;

wherein said heat exchanger includes an outer shell and a bundle of tubes received in said shell, said shell side flow path being defined between and contacting an interior surface of said shell and outer surfaces of said tubes, said outer shell being constructed of a non-metallic corrosion resistant material;

wherein said bundle of tubes includes a plurality of straight parallel tubes held between two spaced bundle bases, said tubes having open ends adjacent each of said bundle bases;

wherein said heat exchanger further includes a hot and a cold end ca connected to first and second ends of said shell, respectively, said hot and cold end caps having a tube side inlet and a tube side outlet, respectively, defined therein;

wherein said tubes are constructed to a metal suitable for efficient heat transfer; and

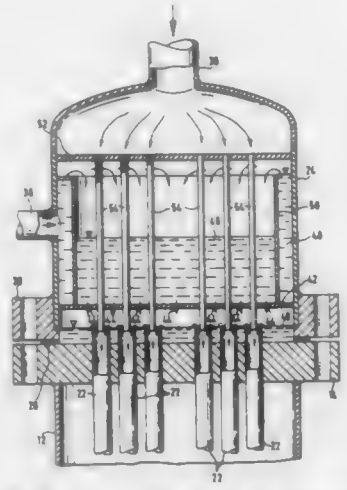
wherein said bundle bases and said end caps are made of non-metallic corrosion resistant materials.

5,004,043

INTERNAL TUBULAR FALLING FILM APPARATUS FOR THE EVAPORATION OF LIQUIDS AND FOR THE ABSORTION OR DEGASSING OF SOLUTIONS OF TWO OR MORE SUBSTANCES

Vinko Mucic, Walldorf; Kurt Thieme, Bergisch-Gladbach, and Jürgen Engelmann, Overath-Steinenbrück, all of Fed. Rep. of Germany, assignors to TCH Thermo-Consulting-Heidelberg GmbH, Heidelberg, Fed. Rep. of Germany

PCT No. PCT/EP88/00217, § 371 Date Nov. 2, 1988, § 102(e) Date Nov. 2, 1988, PCT Pub. No. WO88/07653, PCT Pub. Date Oct. 6, 1988
PCT Filed Mar. 17, 1988, Ser. No. 274,932
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1987, 3709652
Int. Cl.[5] F28D *3/04, 3/02*
U.S. Cl. 165—118 6 Claims



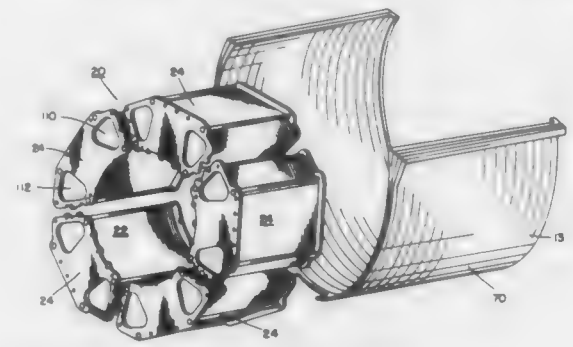
1. Apparatus for the evaporation of liquids or for the absorption or degassing of solutions of two or more substances, having a completely closed upright pressure tank provided with at least one inlet and one outlet, through which tank a thermal transfer fluid can flow, the interior of the tank containing a plurality of vertical tubes parallel to and spaced from one another whose ends are brought sealingly through horizontal plates closing off the pressure tank at the bottom and at the top such that they open into a bell disposed in a pressure-tight manner on the bottom and top of the pressure tank, the upper ends of the tubes protruding into the bell each by the same amount above the upper side of the top horizontal plate and an inlet for liquid or solution being provided on the upper bell plus a connection for the infeed and outfeed of evaporated liquid or gaseous solution component, and an outlet for liquid or liquid solution being provided on the bottom bell, while at a distance above the upper mouths of the tubes and below the liquid or solution inlet a dividing plate parallel to the top plate of the pressure tank is inserted into the upper bell and contains a plurality of perforations of small diameter offset from the mouths of the tubes, characterized in that, at a distance above the perforated dividing plate (42; 142) and above the inlet (36; 136) for the liquid or solution, and below the connection (38; 138) for feeding in or carrying away evaporated liquid or gaseous solution component, an additional dividing plate (52; 152) is inserted into the bell (24; 124), and that the space formed between the perforated dividing plate and the additional dividing plate contains a number of vertical tubes (54; 154) aligned with the tubes passing through the pressure tank, whose ends are brought sealingly through the lower perforated dividing plate and the additional upper dividing plate.

5,004,044

COMPACT RECTILINEAR HEAT EXHANGER

John J. Horgan, Wethersfield, and Val S. Ociepka, Bridgeport, both of Conn., assignors to Avco Corporation, Providence, R.I.

Filed Oct. 2, 1989, Ser. No. 415,990
Int. Cl.[5] F28F *9/22, 3/00;* F02C *7/10*
U.S. Cl. 165—145 19 Claims



19. An annular heat exchanger comprising:

a plurality of rectilinear heat transfer portions, each portion having a first fluid inlet side, an opposite first fluid outlet side, and two lateral sides;

means for conduiting a second fluid into and out of said heat transfer portions comprising lateral side portions located between heat transfer portion lateral sides and having a general triangular shape with second fluid inlet and outlet conduits therein, said first fluid inlet sides defining a center aperture and said lateral side portions being substantially separate from said center aperture such that said first fluid inlet sides form substantially the entire first fluid inlet area to the heat exchanger and the location of the lateral side portions allow the heat exchanger to have a relatively small size.

5,004,045

VEHICLE RADIATOR WITH CLAMPING FIXTURE TO REDUCE DEFORMATION DURING BRAZING AND METHOD OF MAKING

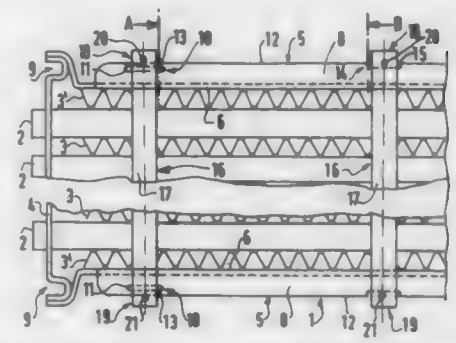
Philippe Le Gauyer, Paris, France, assignor to Valeo Thermique Moteur, Le Mesnil-St-Denis, France

Filed Mar. 8, 1990, Ser. No. 490,297
Claims priority, application France, Mar. 20, 1989, 89 03588
Int. Cl.[5] F28D *1/00;* B23K *31/00*
U.S. Cl. 165—149 9 Claims

1. A method of manufacturing a heat exchanger comprising a bundle including a plurality of tubes, a plurality of fins alternating with said tubes, at least one end beam terminating said bundle and extending along it, and at least one collector plate closing an end of the bundle, said at least one end beam comprising outwardly projecting portions thereof, the method including the steps of:

providing deformable means on said projecting portions of said at least one end beam;

disposing a clamping means in the vicinity of said at least one collector plate and in line with said deformable means;



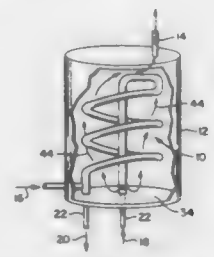
and securing the components of the bundle together by welding.

5,004,046

HEAT EXCHANGE METHOD AND APPARATUS

Brian C. Jones, Windsor, Conn., assignor to Thermodynetics, Inc., Windsor, Conn.

Filed Jun. 11, 1990, Ser. No. 535,755
Int. Cl.[5] F28D *7/12*
U.S. Cl. 165—156 22 Claims



6. Apparatus for transferring thermal energy between a pair of isolated liquids comprising:

reservoir means for temporarily storing a quantity of a first liquid;

heat exchanger means for defining a pair of fluidically isolated flow paths, said heat exchanger means being at least in part immersed in said reservoir, said heat exchanger means including:

an inner conduit, said inner conduit defining a first flow path for a second liquid, said first flow path having first and second ends;

an intermediate conduit, said intermediate conduit in part comprising a spirally fluted tube in intimate contact with the exterior of said inner conduit whereby a double wall separation is defined between the interior of said inner conduit and the exterior of said fluted tube, said fluted tube cooperating with said inner conduit to define a first spiralled space therebetween; and

an outer conduit, the interior of said outer conduit being in intimate contact with said fluted tube, said outer conduit cooperating with said fluted tube to define a second spiralled space between said outer conduit and fluted tube, said second space comprising a portion of a second flow path, said outer conduit being sealed to said intermediate conduit at a first end of said outer conduit, said second flow path communicating with the interior of said reservoir means;

means for delivering said first fluid to the interior of said outer conduit at a point adjacent to said outer conduit first end whereby said first fluid flows along said second flow path and is discharged into said reservoir means;

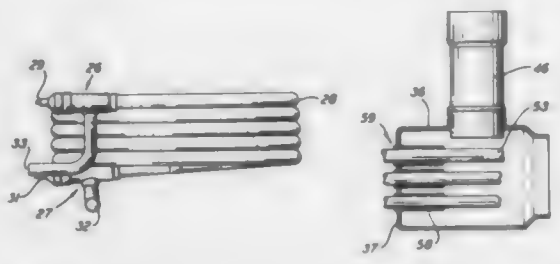
means for delivering said second fluid to said inner conduit at a first end of said first flow path, said delivering means extending into said reservoir means;
means for receiving said second fluid from said inner conduit at the second end of said first flow path, said receiving means extending into said reservoir means;
means for withdrawing said first liquid from said reservoir means; and
means for venting said first spiralled space to the exterior of said reservoir means.

5,004,047

HEADER FOR A TUBE-IN-TUBE HEAT EXCHANGER

Paul R. Meier, Tyler, Tex., and Brian D. Mueller, Syracuse, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Continuation of Ser. No. 365,880, Jun. 14, 1989, abandoned.
This application Jul. 30, 1990, Ser. No. 561,500
Int. Cl.[5] F28F *9/18*; F28D *7/14, 7/02*
U.S. Cl. 165—158 11 Claims



8. An improved header structure for a tube-in-tube heat exchanger of the type having an outer jacket for containing an outer fluid flow and for containing at least one inner tube adapted to conduct an inner fluid flow, a header providing outer fluid flow communication into the jacket and to the outer surface of said at least one inner tube, and a manifold plate disposed in the header for separating the outer and inner fluid flows, comprising:

a single piece header and manifold plate combination wherein the manifold plate is integrally formed as one end of said header and has at least one opening formed therein for receiving said at least one inner tube to be secured therein wherein said at least one inner tube has a nominal thickness which is less than 0.016 inches and wherein said manifold plate is relatively thin so as to be susceptible to deformation;

a cap which is secured to said header one end to form a manifold for containing the inner fluid flow and for providing fluid communication with a conduit to be connected thereto; and a reinforcing sleeve disposed around said at least one inner tube near said at least one opening to restrict said tube from internal deformation when said manifold plate is caused to deform.

5,004,048

APPARATUS FOR INJECTING DISPLACEMENT PLUGS

Robert E. Bode, 14911 Wunderlich, Apt. #1903, Houston, Tex. 77069

Filed Nov. 15, 1989, Ser. No. 437,458
Int. Cl.[5] E21B *33/16*
U.S. Cl. 166—70 6 Claims

1. An apparatus for injecting cement displacement plugs into a well bore for cementing casing comprising:

(a) a well bore casing with an upper inlet and a lower outlet;

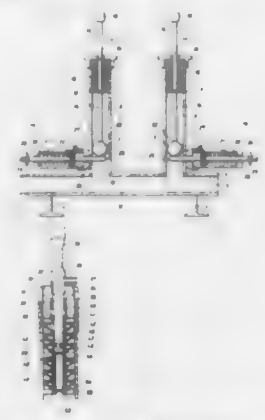
(b) a manifold comprising a housing provided with an inlet and an outlet connected by a flow passage through the housing;

(c) at least one launching cylinder comprising a housing provided with an interior bore connected with said flow passage;

(d) a spring loaded injection piston mounted within said launching housing;

(e) pick up means for insertion into said interior bore;

(f) releasable retaining means for selectively releasing said pick up means;



(g) means for remote mounting of said manifold and means for connection of said manifold to said well bore; and,

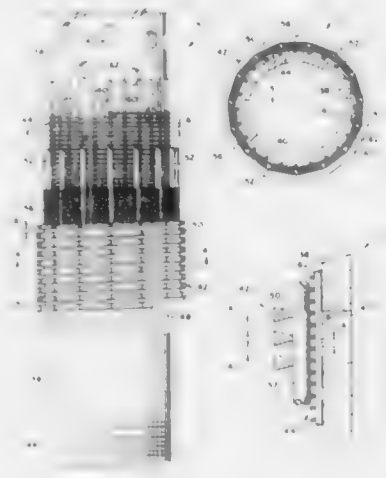
(h) means for a remote actuation of said injection piston, and means for remote actuation of said retaining means.

5,004,049

LOW PROFILE DUAL SCREEN PREPACK

Bryant A. Arterbury, Houston, Tex., assignor to Otis Engineering Corporation, Carrollton, Tex.

Filed Jan. 25, 1990, Ser. No. 470,177
Int. Cl.[5] E21B *43/08*
U.S. Cl. 166—228 11 Claims



1. A sand screen assembly for separating particulated material from formation fluid comprising, in combination:

a perforated mandrel;

an inner wire screen mounted onto said perforated mandrel, said inner wire screen having circumferentially spaced, longitudinally extending inner rib wires engaging said mandrel and an inner screen wire wrapped externally about said inner rib wires in a longitudinally spaced pattern, said inner screen wire being welded to said inner rib wires at substantially all points of contact therewith, thereby defining longitudinally spaced inner screen apertures for conducting fluids through said inner screen;

a fluid-porous, particulate-restricting member mounted onto said mandrel in radially spaced relation with respect to said inner wire screen, thereby defining a prepack annulus therebetween said fluid-porous, particulate-restricting member including circumferentially spaced, longitudinally extending outer rib wires and a screen wire wrapped externally about said outer rib wires in a longitudinally spaced pattern thereby defining longitudinally spaced screen apertures for conducting formation fluids through said outer screen, said longitudinally extending outer rib wires being disposed in said prepack annulus; and,

a permeable gravel deposit disposed within said prepack annulus.

5,004,050

METHOD FOR WELL STIMULATION IN THE PROCESS OF OIL PRODUCTION AND DEVICE FOR CARRYING SAME INTO EFFECT

Olga N. Sizonenko, ulitsa Inzhenernaya, 13, kv. 2, Nikolaev; Rafkhat A. Maxutov, Leninsky prospekt, 67, kv. 164, Moscow; Pavel P. Maljushevsky, Oktyabrsky prospekt, 33, kv. 41; Georgy G. Gorovenko, ulitsa Skorokhodova, 54, kv. 20, both of Nikolaev; Alexei V. Sokolov, prospekt Mira, 112, kv. 255, Moscow; Diana N. Lyapis, ulitsa Naberezhnaya, 5, kv. 20, Nikolaev; Vladimir I. Schekin, prospekt Lenina, 10a, kv. 97, Nikolaev, and Natalya I. Kuskova, Oktyabrsky prospekt, 5, kv. 27, Nikolaev, all of U.S.S.R.

Filed Jan. 12, 1990, Ser. No. 457,828
Int. Cl.[5] E21B *43/24*
U.S. Cl. 166—248 22 Claims



1. A method for well stimulation in the process of oil and/or gas and/or gas-condensate production, which comprises periodically generating shock waves propagating through the producing formation by initiating an electric discharge in a fluid filling in the well in a gap between electrodes positioned in the well, introducing a current-conducting fluid, comprising a dielectric fluid and a current-conducting powder material, into the gap between the electrodes and initiating the electric discharge between the electrodes.

5,004,051

METHOD AND MEANS FOR CLEANSING AND STORING DRILL CUTTINGS FROM DRILLING OPERATIONS IN THE SEA BOTTOM

Finn Rosendahl, Jar; Svein Fjeld, Oslo, both of Norway; Mamdouh M. Salama, and Michael P. Gillen, both of Ponca City, Okla., assignors to Norwegian Contracts A/S, Stabekk, Norway and Conoco Inc., Ponca City, Okla.

Filed Sep. 12, 1989, Ser. No. 406,355
Int. Cl.[5] E21B *43/34*
U.S. Cl. 166—357 22 Claims

1. A subsea storage structure for storing drill cuttings from a drilling operation in a sea bottom and for separating oil and other contaminating fluids from such drill cuttings, said structure comprising:

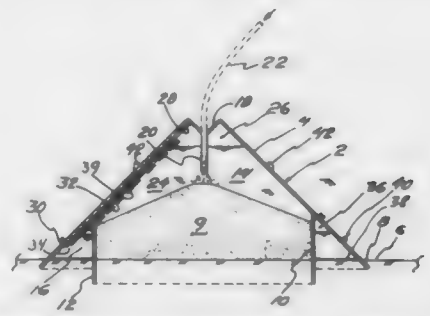
a generally upwardly converging tank defined by an outer shell having an interior;

an inner wall sealingly connected to said shell inwardly thereof and dividing said interior into a central chamber and an annular chamber surrounding said central chamber;

wherey said tank may be positioned on the sea bottom with said chambers filled with sea water;

upper inlet means in said tank for introducing drill cuttings into said central chamber such that the drill cuttings settle to the bottom thereof while displacing sea water therein upwardly above such settled drill cuttings and such that oil and other contaminating fluids will separate from the settled drill cuttings and will rise upwardly through and accumulate above the sea water positioned above the settled drill cuttings, thereby performing a first separation step;

a pipe sealingly extending through said inner wall and having an inlet end at an intermediate level of said central



chamber and an outlet end at an intermediate level of said annular chamber and forming means for passing sea water displaced by the drill cuttings entering said central chamber from said central chamber to be said annular chamber, whereby any oil and other contaminating fluids remaining in such sea water passed into said annular chamber by said pipe will rise up and accumulate in an upper portion of said annular chamber above the sea water therein, thereby performing a second separation step; and

outlet means, extending from said annular chamber and communicating with ambient sea water surrounding said structure, for discharging from said annular chamber to the ambient sea water that sea water displaced by the sea water entering said annular chamber through said pipe after separation of any oil and other contaminating fluids from that sea water.

5,004,052

HORSESHOE

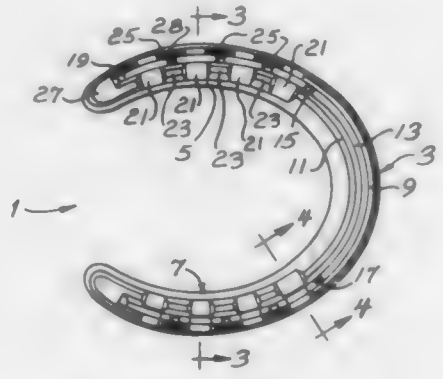
Arthur I. Appleton, 22 Indian Creek Island, Miami Beach, Fla. 33154

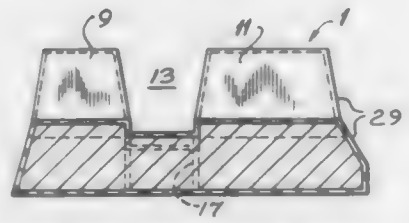
Filed Oct. 28, 1988, Ser. No. 263,904
Int. Cl.[5] A01L *1/00*
U.S. Cl. 168—4 7 Claims

1. An improved horseshoe comprising:

a. a traction surface having a plurality of calks, the traction surface including a toe portion and integrally formed side

portions extending from opposite sides of the toe portion, and





b. a coating of Teflon formed over the traction surface, whereby dirt and mud will not build up on the traction surface.

5,004,053

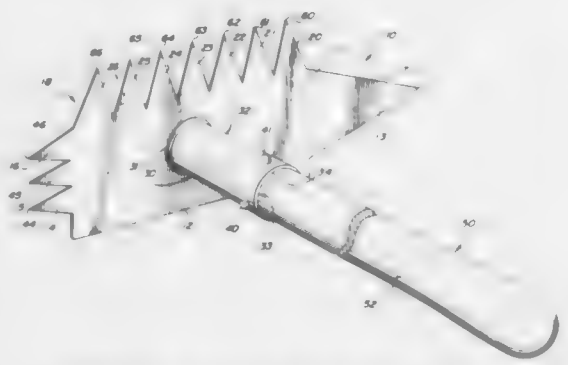
MULTIPLE USE CULTIVATING TOOL

Gregg Martell, 8644 Cavel St., Downey, Calif. 90242

Filed Oct. 10, 1989, Ser. No. 418,552

Int. Cl.[5] A01B *1/20*

U.S. Cl. 172—375 **9 Claims**



1. A multiple use cultivating tool comprising:

a generally planar tool head having first and second surfaces said second surface having a flat generally rectangular-shaped tamping surface free of protrusions extending over a majority of said second surface;

a handle support extending from said first surface;

an elongated handle joined to said handle support;

a first plurality of teeth extending from a first side of said tool head;

a second plurality of teeth extending from a third side of said tool head;

a straight edge portion extending from a fourth side of said tool head; and

an elongated pick blade extending from a second side of said tool head,

said tamping surface, said first plurality of teeth, said second plurality of teeth, said straight edge portion and said pick blade being coplanar.

5,004,054

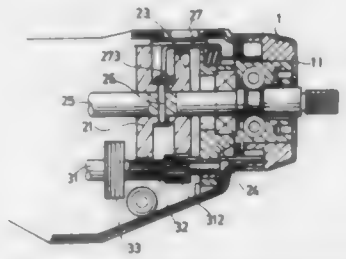
ELECTRIC DRILL WITH SPEED AND TORQUE CONTROL

Dony Sheen, Taya Hsiang, Taiwan, assignor to Regitar Power Tools Co., Ltd., Taichung Hsien, Taiwan

Filed Jul. 2, 1990, Ser. No. 547,033

Int. Cl.[5] B23Q *5/00;* **F16D** *7/06*

U.S. Cl. 173—12 **2 Claims**



1. An electric drill with a speed and torque control comprising:

a speed control mechanism having a transmission axle fixedly connected with a chuck and a hole for receiving a pin;

a pinion disposed on said transmission axle and having a neck on one side thereof, said neck being provided with two notches for adapting to one half of said pin;

a gear rotatably slidably mounted on said transmission axle and having two notches for adapting to the other half of said pin;

a pusher having a protuberance extending at one end and on outward leg and an inward leg extending from the other end and disposed above said pinion in a way that said legs are located as close as possible so that when said pusher is moved leftward, said outward leg will push said gear leftwards thereby separating the notches of said pinion from said said pin;

resilient means forcing said pinion and gear to engage with said pin;

a torque control mechanism having a driven gear connected with an output shaft of a motor and a plurality of recesses in each of which is received a steel ball;

a clutch having a plurality of recesses corresponding to the recesses of said driven gear in each of which is also received a steel ball;

a spline having threads meshed with said gear and a gear engaged with said pinionn and fixedly connected at the end with clutch;

a pressing member disposed on said spline;

resilient means fitted between said clutch and said pressing member for urging said clutch against said driven gear;

an adjuster ring rotatably mounted on said transmission axle, said adjuster ring having at the inner side with an inner rack and an outer rack adapting to said pusher and an end of said pressing member so that when said adjuster ring is turned, said gear will be moved to engage or disengage from said transmission axle thereby adjusting output speed and said pressing member will be urged against or away from said driven thereby adjusting output torque.

5,004,055

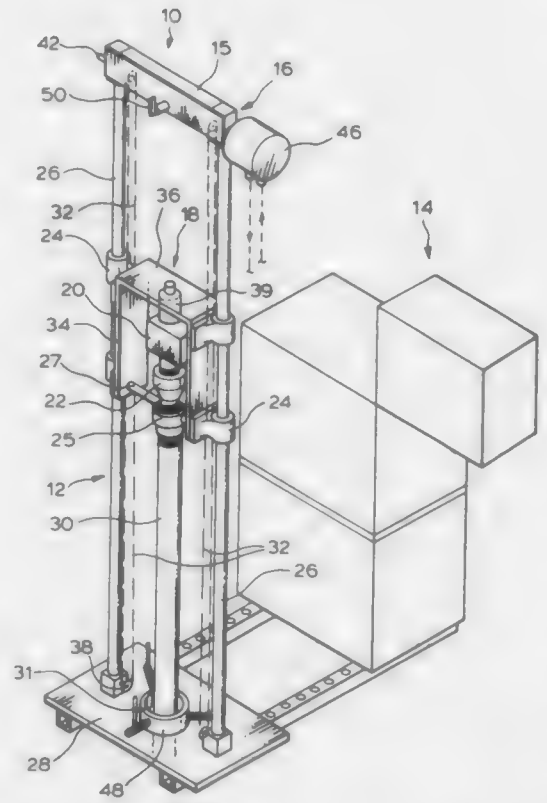
VIBRATORY CORE DRILL APPARATUS FOR THE RECOVERY OF SOIL OR SEDIMENT CORE SAMPLES

John Porritt, Picton, and Hugh Scott, Wellington, both of Canada, assignors to Meta-Probe Inc., Picton, Canada

Filed Apr. 14, 1989, Ser. No. 338,716

Int. Cl.[5] E21B *7/24, 25/00*

U.S. Cl. 175—20 **13 Claims**



1. A vibratory core drill apparatus for applying force to a sampling tube, comprising

(a) a drill stand;

(b) a carriage assembly mounted to the drill stand in a vertically sliding fashion;

(c) carriage drive means for driving the carriage assembly up and down by the application of vertical force thereto;

(d) vibratory drive means contained within the carriage assembly for applying a vertical vibratory force to the sampling tube;

(e) coupling means for coupling and decoupling the sampling tube to the vibratory drive means without rotation of the vibratory drive means; and

(f) support means mounted within the carriage assembly for supporting the coupling means within the carriage assembly wherein the support means comprises a yoke having an annular portion sized to receive the coupling means and two axial side arms pivotally mounted to the carriage assembly so as to allow the support means to pivot about the longitudinal axis of the side arms.

5,004,056

PERCUSSION-ROTARY DRILLING TOOL

Yakov A. Goikhman, ulitsa Gladkova, 14, kv. 49, Krasnoyarsk; Georgy M. Krjukov, ulitsa 2 Sinichkina, 11, kv. 145, Moscow; Melis I. Onotsky, ulitsa Pavla Andreeva, 28, kv. 332, Moscow; Georgy M. Sorokin, Leninsky prospekt, 67, korpus 2, kv. 334, Moscow; Alexei V. Filatov, ulitsa Startovaya, 31, kv. 51, Moscow; Viktor V. Tsarapkin, Leninsky prospekt, 91, kv. 351, Moscow; Vadim P. Yakimov, ulitsa Gilyarovskogo, 36, kv. 74, Moscow; Geannady A. Smirnov, ulitsa Partizana Zheleznyaka, 24, kv. 6, Krasnoyarsk; Ivan I. Nikiforov, ulitsa 60-letia Oktyabrya, 44, kv. 74, Krasnoyarsk; Alexandr I. Burdukovsky, ulitsa Schorsa, 50, kv. 32, Krasnoyarsk; Sergei V. Daibov, Kyshtym, and Alexandr S. Kurdjukov, Kyshtym, all of U.S.S.R.

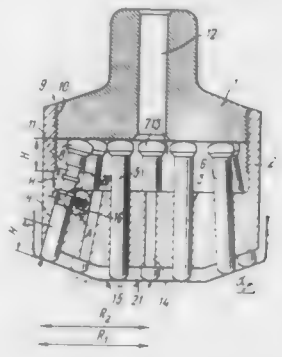
PCT No. PCT/SU88/00285, § 371 Date Jan. 23, 1990, § 102(e) Date Jan. 23, 1990, PCT Pub. No. WO89/11580, PCT Pub. Date Nov. 30, 1989

PCT Filed Dec. 28, 1988, Ser. No. 455,367

Claims priority, application U.S.S.R., May 23, 1988, 4429566; Nov. 18, 1988, 4603481

Int. Cl.[5] E21B *10/40, 10/62*

U.S. Cl. 175—293 **9 Claims**



1. A percussion-rotary drilling tool comprising a body (1) designated to interact with a percussion-rotary device and having at least one through channel (12) to pass a working medium used for removing slime from a borehole (15) and a casing (2) shaped as a sleeve with a working end and having through holes situated along concentric circles, said through holes accomodating rock-crushing elements (5,6) arranged in a manner allowing axial displacement thereof, portions of said rock-crushing elements (5,6) extending beyond said working end of the casing (2) and situated along one of the concentric circles forming a separate concentric row, said rock-crushing elements (5,6) having shanks (8,7) interacting with the body (1), said casing including a means (9) for its axial displacement with respect to the body (1) and having at least one through channel (14) to pass a working medium used for removing slime from the borehole (15), characterized in that each rock-crushing element (6) in the row being the most remote from the axis of the casing (2) comprises a means (16) for fixing it in the casing (2), and the length of axial displacement of the casing relative to the body (1) is at least equal to the length (H) of the wearable portion of the rock-crushing element (6).

5,004,057

DRILL BIT WITH IMPROVED STEERABILITY

Gordon A. Tibbitts, Salt Lake City, and Mark L. Jones, Midvale, both of Utah, assignors to Eastman Christensen Company, Salt Lake City, Utah

Continuation of Ser. No. 146,290, Jan. 20, 1988, abandoned. This application Aug. 14, 1989, Ser. No. 394,169

Int. Cl.[5] E21B *10/46*

U.S. Cl. 175—408 **6 Claims**

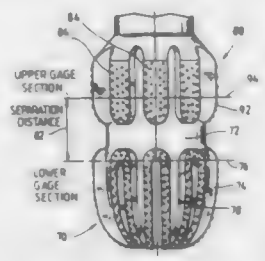
1. A drill bit having improved steerability for drilling deviated portions of boreholes in earth formations, comprising:

(a) a body member;

(b) a plurality of cutting elements on said body member adapted to penetrate said formation and form a borehole when said drill bit is rotated within said formation; and

(c) a first gage cutting section on said drill bit, said first gage cutting section having a plurality of gage cutting portions peripherally spaced on the first gage cutting section of the bit;

(d) a second gage cutting section on said drill bit, said second gage cutting section having a plurality of gage cutting portions peripherally spaced on the gage cutting section



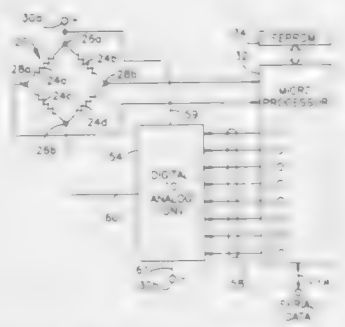
of the bit, said gage cutting portion of said second gage cutting section being longitudinally spaced from gage cutting portions of said first gage cutting section, thereby defining a gap between longitudinally adjacent gage cutting portions of said first and second gage cutting sections, whereby at least one gage cutting portion of said first and second gage cutting sections functions as a fulcrum around which said bit may deflect, said longitudinal spacing facilitating deflection of said bit by enhancing the lateral cutting capability of said bit.

5,004,058

WEIGH SCALE USING MULTIPLE DIGITAL LOAD CELLS

Stephen R. Langford, Joplin; James R. Stone, and William C. Bagley, both of Webb City, all of Mo., assignors to Cardinal Scale Manufacturing Company, Webb City, Mo.

Filed Mar. 27, 1990, Ser. No. 500,024
Int. Cl.[5] G01G *3/14*; G01L *25/00, 1/22*
U.S. Cl. 177—25.13 **15 Claims**



1. A weigh scale comprising:

load receiving means for receiving a load to be weighed;

a plurality of load cells for placement in supportive relationship with said receiving means,

each of said load cells including means for receiving an excitation voltage from a source thereof and means for producing a load cell output in accordance with the load weight supported;

digital signal means for producing a plurality of digital excitation signals corresponding to and representative of selected excitation voltages for said respective load cells; and

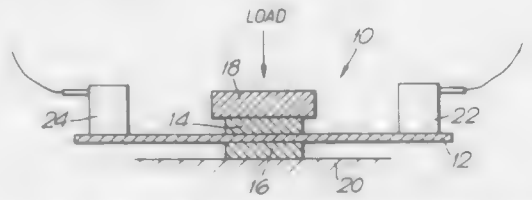
excitation control means coupled with said load cells and with said digital signal means for receiving said digital signals and responsive thereto for controlling the respective excitation voltages of said load cells in accordance with the corresponding digital signal.

5,004,059

STRESS WAVE LOAD CELL

John R. Webster, Derby, England, assignor to Rolls-Royce plc, London, England

Filed Feb. 15, 1990, Ser. No. 480,661
Claims priority, application United Kingdom, Mar. 14, 1989, 8905821
Int. Cl.[5] G01G *3/14*; G01L *1/10*
U.S. Cl. 177—210 R **10 Claims**



1. A stress wave load cell comprising a propagation member which allows the propagation of stress waves therethrough, the propagation member having at least one surface,

at least one damping member arranged such that when a load is applied to the load cell a damping load is applied on the at least one surface of the propagation member by the damping member, the damping load applied by the damping member increasing with the load,

at least one transducer acoustically coupled to the propagation member, the at least one transducer being arranged to launch a stress wave signal into the propagation member,

at least one means acoustically coupled to the propagation member to detect the stress wave signal after it has propagated through the propagation member and been damped by any damping load applied by the damping member on the propagation member, the at least one means to detect the stress wave signal being arranged to convert any detected stress waves into an electrical signal,

a processor being arranged to process the electrical signal to give an electrical output signal as a measure of the load applied on the load cell.

5,004,060

TRACKED VEHICLE WITH AN EPICYCLIC STEERING DIFFERENTIAL

Rino Oreste Barbagli, and Giorgio De Castelli, both of Borgaretto, Italy, assignors to Fiatgeotech S.p.A., Modena, Italy

Filed Oct. 27, 1988, Ser. No. 263,300
Int. Cl.[5] B62D *11/18*
U.S. Cl. 180—6.44 **2 Claims**

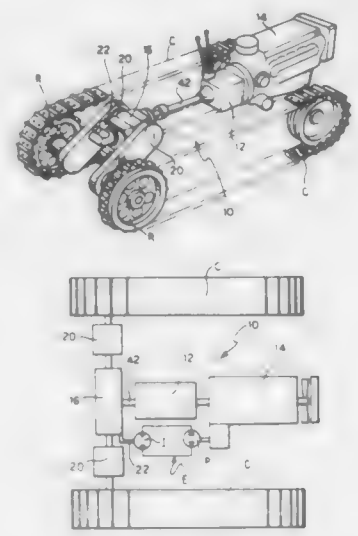
1. A tracked vehicle including an internal combustion engine, track drive wheels, an epicyclic steering differential driven by the engine and adapted to rotate the drive wheels, and a reversible auxiliary motor operatively associated with the differential for operating the steering of the vehicle, wherein:

a differential includes first and second epicyclic trains having a common central axis and each provided with a sun gear, a planet carrier and a ring gear mutually cooperating with each other;

the internal combustion engine being connected for rotation with the planet carrier of the first epicyclic train and the ring gear of the second epicyclic train respectively, the planet carrier of the first epicyclic train and the ring gear of the second epicyclic train being connected for rotation with each other about the central axis,

the auxiliary motor being connected for rotation with the sun gears of the first and second epicyclic trains respectively, the sun gears being connected for rotation with each other about the central axis,

the differential having output means connected with the ring gear of the first epicyclic train and the planet carrier of the second epicyclic train, and



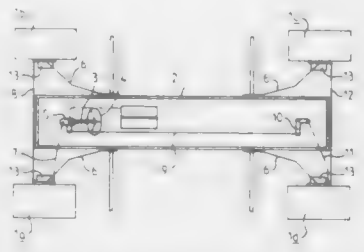
speed reduction means connected between the output means and the drive wheels.

5,004,061

ELECTRICALLY POWERED MOTOR VEHICLE

Jean-Claude Andruet, S.C. Michèle Béroud, Portigliolo, 20138 Coti Chiavari, France

Filed May 31, 1989, Ser. No. 359,143
Claims priority, application France, May 31, 1988, 88 07243
Int. Cl.[5] B60K *1/00*
U.S. Cl. 180—65.5 **13 Claims**



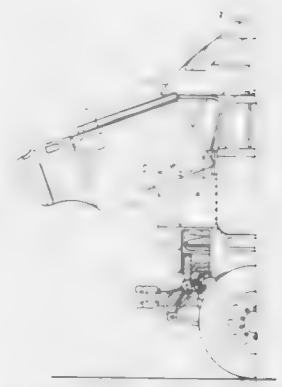
1. A motor vehicle including at least two axles and wheel assemblies, one in front and one in the rear of the motor vehicle, at least one of which is driven and at least one of which steers, the power to said vehicle being supplied by an on-board source of electrical energy, wherein each wheel of the driven axle and wheel assembly is equipped with an electric back-geared motor assembly supplied by the source of electrical energy, said motor assembly being connected to a chassis of the vehicle by two suspension elements articulated on the motor assembly on a first side and on the chassis on a second side, an output shaft of said motor assembly comprising the axle of the corresponding wheel, wherein each axle and wheel assembly includes two wheels that are symmetrical with respect to the median longitudinal plane of the vehicle, and the suspension elements are suspension triangles.

5,004,062

VEHICLE NOSE PIVOTAL HINGE ASSEMBLY

John Foot, Fremont, Calif., assignor to Paccar Inc., Bellevue, Wash.

Filed Sep. 14, 1988, Ser. No. 244,722
Int. Cl.[5] E05D *7/10*
U.S. Cl. 180—69.21 **1 Claim**



1. In a vehicle having a cab section and a frontal nose for gaining access into the cab section, the improvement comprising two hinge assemblies on opposite sides of said cab section for pivotally connecting said nose to said cab section for movement of the nose between a closed position and an open position, each of said hinge assemblies including:

(a) a pivot bolt extending out from one side of said cab section and including two axially extending annular surfaces, one of which is closest to said cab section and a second annular surface which is larger in diameter than the first inner annular surface;

(b) a bushing block including a groove for receiving the larger of said annular surfaces, said groove, including a horizontal section having an entry, and an upwardly angled section extending from said horizontal section;

(c) a bushing plate having a groove corresponding to the bushing plate groove yet smaller so that it receives the inner, smaller annular surface of said bolt while retaining the outer larger annular section of the groove within the bushing block groove; and

(d) a fastening means including a segment configured to extend partially within said bushing block groove including a surface of complimentary shape to engage the bolt therein in order to fasten said bolt within the groove and serve as a bearing surface for said bolt.

5,004,063

STEERING SYSTEM FOR THE REAR WHEELS OF A VEHICLE

Algis Oslapas, Dearborn Heights, and Manfred Rumpel, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1988, Ser. No. 290,209
Int. Cl.[5] B62D *7/14*
U.S. Cl. 180—79.1 **11 Claims**

1. A steering system for the rear wheels of a vehicle having a longitudinal axis, comprising:

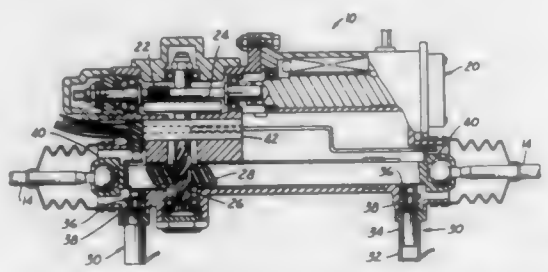
an electric motor driven, dual-range steering gear for steering said rear wheels, with said steering gear being operable within greater and lesser angular steering ranges, with each such angular steering range having a different predetermined maximum steering angle; and

control means for operating said steering gear, with said control means comprising:

means for sensing at least one vehicle operating parameter; and

means responsive to said at least one vehicle operating pa-

rameter for permitting said steering gear to extend only to the maximum steering angle of said lesser angular steering range in the event that a threshold of said at least one vehicle operating parameter has been exceeded, said means comprising at least one electromechanical travel limiting block adapted to positively engage a sliding member contained within said steering gear so that when said at least one vehicle operating threshold has been exceeded, said travel limiting block engages said sliding member to permit said steering gear to extend only to said maximum steering angle of said lesser angular steering range.

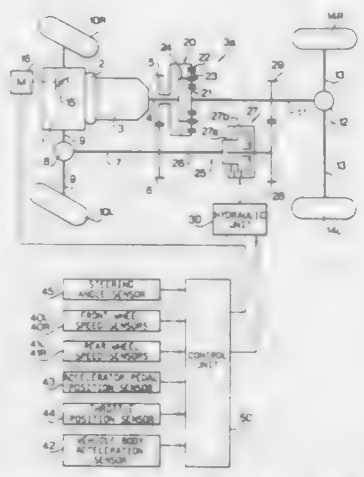


5,004,064

TRACTION CONTROL SYSTEM FOR A FOUR-WHEEL DRIVE MOTOR VEHICLE

Kazunari Tezuka, and Haruo Fujiki, both of Tokyo, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 20, 1988, Ser. No. 260,802
Claims priority, application Japan, Oct. 27, 1987, 62-271003
The portion of the term of this patent subsequent to Mar. 26, 2008, has been disclaimed.
Int. Cl.[5] B60K *23/08*
U.S. Cl. 180—197 10 Claims



1. In a power transmitting system for a four-wheel drive vehicle having a central differential for splitting torque of an engine at a predetermined ratio, power trains for transmitting the split torques from output members of the central differential to front and rear wheels respectively of the vehicle, a throttle actuator for changing opening degree of a throttle valve of the engine, and a torque split control device including a clutch provided between the output members of the central differential for changing torque distribution ratio of the torques transmitted to the front and rear wheels, the improvement in the system comprising:

front-wheel speed sensors for detecting right and left front-wheel speeds and for producing right and left front-wheel sped signals;

rear-wheel speed sensors for detecting right and left rear-wheel speeds and for producing right and left rear-wheel speed signals;

first calculator means responsive to the right and left front-wheel and rear-wheel speed signals for producing a front-axle speed signal and a rear-axle speed signal;

two-wheel slip detecting means responsive to the front-axle speed signal and the rear-axle speed signal for producing a two-wheel slip signal when the front wheels are slipping with respect to the rear wheels or the rear wheels are slipping with respect to the front wheels;

four-wheel slip detecting means responsive to the front-axle and rear-axle speed signals and a vehicle body acceleration signal only at non-existence of the two-wheel slip signal for producing a four-wheel slip signal;

actuator means responsive to the two-wheel slip signal for controlling engaging of the clutch controlling the torque distribution ratio so as to reduce the torque to the slipping wheels; and

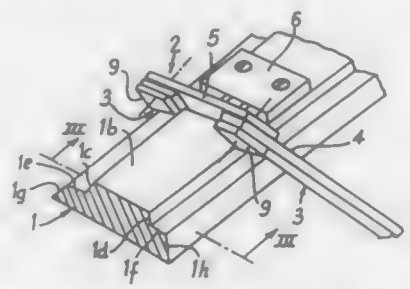
actuating means being responsive to the four-wheel slip signal for actuating the throttle actuator so as to reduce the opening degree of the throttle valve.

5,004,065

SKI BRAKE

Gilles R. Goud, Annecy Cedex, France, assignor to Salomon S.A., Annecy Cedex, France

Filed May 18, 1989, Ser. No. 353,757
Claims priority, application France, May 18, 1988, 88 06651
Int. Cl.[5] A63C *7/10*
U.S. Cl. 280—605 7 Claims



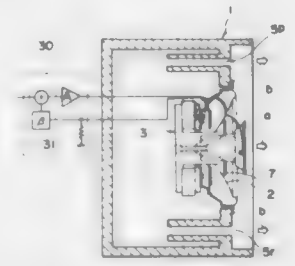
1. Ski brake to be mounted on a ski, said ski having on its upper part, a longitudinal rib defined by an upper surface and two sides being connected, respectively, to upper edges of the ski which extend as far as the side edges of the ski, the ski brake comprising two braking elements mounted laterally with respect to the ski and being movable between an active braking position in which the braking elements project under a lower plane of the ski, and an inactive skiing position in which the braking elements are raised and located above the upper edges of the ski, a pedal journalled on the ski for movement about a transverse axis, said braking element being journalled on the pedal for movement about a journal axis from the active braking position past intermediate position to the inactive position when a ski boot is inserted, an elastic mechanism for biasing the pedal and the braking elements towards the active braking position, and retraction means for moving each said braking element towards the interior of the ski during the last portion of the pivoting path of the brake between the intermediate position and the inactive position, said retraction means of each braking element comprising a support ramp and an activation member mounted on the pedal for cooperating with said support ramp when the pedal approaches the ski, said support ramp being formed by a surface of the rib, said activation member being connected to the braking element so as to pivot the braking element, about its respective axis, in the direction of the interior of ski, said pedal overlying the upper surface of the rib when the brake elements are in the inactive position.

5,004,066

ACOUSTIC APPARATUS

Kazunari Furukawa, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Mar. 30, 1989, Ser. No. 330,470
Claims priority, application Japan, Apr. 4, 1988, 63-81343
Int. Cl.[5] H04R *7/00*
U.S. Cl. 181—160 7 Claims



1. An acoustic apparatus, comprising:

a cabinet having an internal cavity defining a Helmholtz resonator having an open port therein;

a vibrator arranged in said Helmholtz resonator, said vibrator having one surface which drives said Helmholtz resonator and having another surface which directly radiates an acoustic wave, wherein said open port is arranged coaxially with said vibrator; and

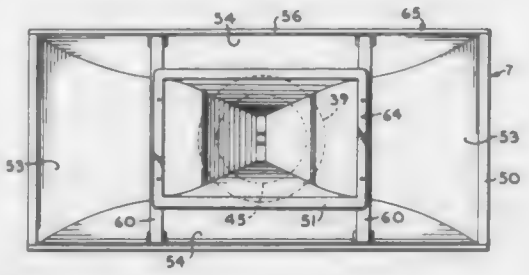
a vibrator driver for driving said vibrator to cancel air counteraction from said resonator when said resonator is driven.

5,004,067

CINEMA SOUND SYSTEM FOR UNPERFORATED SCREENS

Eugene T. Patronis, 1774 Northridge Rd., Dunwoody, Ga. 30350

Filed Jun. 30, 1988, Ser. No. 213,522
Int. Cl.[5] G10K *11/10*
U.S. Cl. 181—188 9 Claims



1. A speaker arrangement comprising:

(a) a middle frequency horn defined by wall means providing a throat portion, a mouth portion spaced forwardly of said throat portion and a projection axis extending forwardly from said throat portion through said mouth portion, said middle frequency horn being configured to have a principal frequency response in a relatively middle frequency range of a hearing spectrum of a human;

(b) a middle frequency driver acoustically coupled to said middle frequency horn along said projection axis;

(c) a high frequency horn mounted coaxially within said middle frequency horn in front of said middle frequency driver, said high frequency horn defined by wall means providing a throat portion and a mouth portion, and being configured to have a principal frequency response in a relatively high frequency range of said human hearing spectrum;

(d) a high frequency driver acoustically coupled to said high frequency horn along said projection axis;

(e) said high frequency horn wall means including opposite upper and lower walls and opposite side walls, said side walls being spaced apart farther than said upper and lower walls such that said high frequency horn has a high frequency dispersion pattern which is more lateral with respect to said projection axis than elevational; and

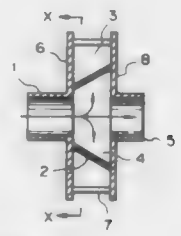
(f) said middle frequency horn wall means including opposite upper and lower walls and opposite side walls, said side walls being spaced apart farther than said upper and lower walls, said wall means being contoured such that at a lower end of said middle frequency range with said high frequency horn mounted therein said middle frequency horn and driver cooperate to behave acoustically as a direct radiator and at a middle and a higher end of said middle frequency range said middle frequency horn and driver cooperate to behave acoustically as a sectoral horn having a dispersion pattern similar to said high frequency dispersion pattern.

5,004,068

MUFFLER

Toshitsugu Sase, Kanagawa; Michiaki Matsuda, Tokyo; Kiyoshi Yanagisawa, and Mitsuru Maeda, both of Kanagawa, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Dec. 6, 1989, Ser. No. 446,766
Claims priority, application Japan, Dec. 6, 1988, 63-306950
Int. Cl.[5] F01N *1/02*
U.S. Cl. 181—276 4 Claims



1. A muffler comprising:

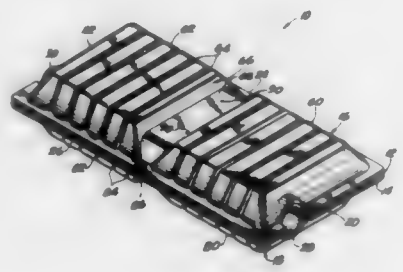
a barrel having first and second side plates mounted to opposing ends thereof to form a substantially enclosed cavity;

an inlet tube attached to said first side plate and communicating with said substantially enclosed cavity;

an outlet tube attached to said second side plate and communicating with said substantially enclosed cavity;

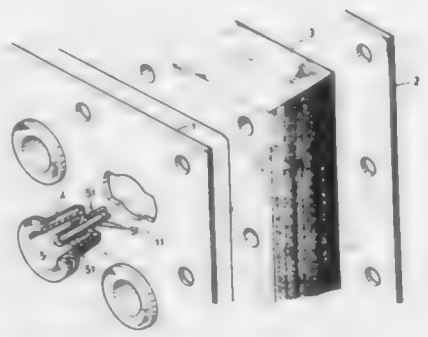
a perforated tube mounted within said substantially enclosed cavity and having a first end connected to said first side plate in direct fluid communication with said inlet tube and a second end connected to said second side plate in direct fluid communication with said outlet tube, said perforated tube having substantially a funnel shape, one of said first and second ends of said perforated tube having an inside diameter which is greater than or equal to an inside diameter of said inlet tube and greater than or equal to an inside diameter of said outlet tube, another of said first and second ends of said perforated tube having an inside diameter which is greater than said inside diameter of said inlet tube, greater than said inside diameter of said outlet tube and greater than said inside diameter of said one of said first and second ends of said perforated tube, said perforated tube dividing said substantially enclosed cavity into an inner resonance cavity which is substantially void of sound absorbing material and an outer resonance cavity which is substantially void of sound absorbing material.

5,004,069
STAMP FORMED MUFFLER WITH TRANSVERSE BAFFLE TUBE
Bennie A. Van Blaircum, Whitehouse; Jon W. Harwood, Toledo, and Mark S. Kimmet, Ottoville, all of Ohio, assignors to AP Parts Manufacturing Company, Toledo, Ohio
Filed Jan. 26, 1990, Ser. No. 471,288
Int. Cl.[5] F01N *1/02, 7/18*
U.S. Cl. 181—282 17 Claims



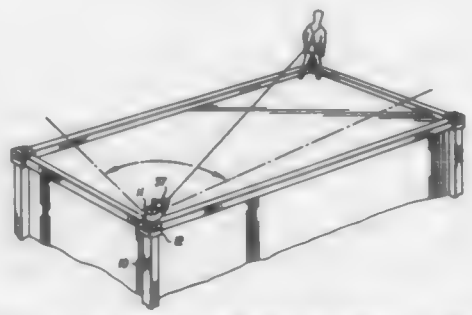
1. A stamp formed muffler comprising:
first and second plates secured in face-to-face relationship, said plates being stamp formed to define an array of tubes therebetween, said tubes comprising an inlet to the muffler and an outlet from the muffler, selected portions of said tube intermediate said inlet and said outlet including communication means formed through at least one of said plates for permitting communication of exhaust gases from said tubes; and
an external shell formed to define a plurality of chambers therein, an elongated baffle crease being formed in said external shell intermediate the chambers thereof, said external shell being securely connected to one of said plates such that the chambers surround selected communication means in said plate, said baffle crease extending substantially parallel to a selected one of said tubes and being disposed in direct abutting contact with said selected tube such that the baffle crease and the tube in contact therewith define a baffle for separating the chambers of the muffler.

5,004,070
ACOUSTIC BOARD
Hong-Jen Wang, 14-3, Fu-Hsing I Road, Kao-Hsiung City, Taiwan
Filed Aug. 16, 1990, Ser. No. 568,029
Int. Cl.[5] E04B *1/82*
U.S. Cl. 181—286 2 Claims



1. An acoustic board comprising:
a framework;
a front panel formed with a plurality of openings and fitted on one side of said framework;
a rear panel fitted on another side of said framework thereby forming a space between said front panel and said rear panel;
a plurality of sound collecting cylinders having an open front end and a closed second end, each fitted within respective openings of said front panel and having said open end aligned with said openings of the front panel; and
a plurality of silencers formed with a plurality of perforations and extended through and supported in an opening provided in said second end of the sound collecting cylinder.

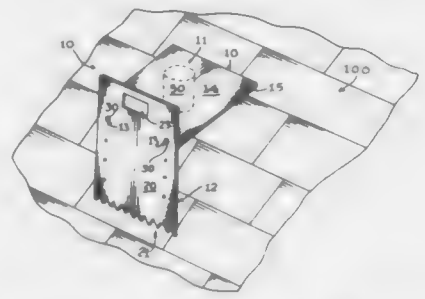
5,004,071
ADAPTOR BRACKET
Bobby J. Mallard, Virginia Beach; Richard H. Knapp, Norfolk; W. J. Roper, Virginia Beach, and Daniel R. Harrison, Norfolk, all of Va., assignors to Specialized Shipping Products, Ltd., Norfolk, Va.
Filed Apr. 13, 1990, Ser. No. 520,652
Int. Cl.[5] A62B *35/00*
U.S. Cl. 182—3 17 Claims



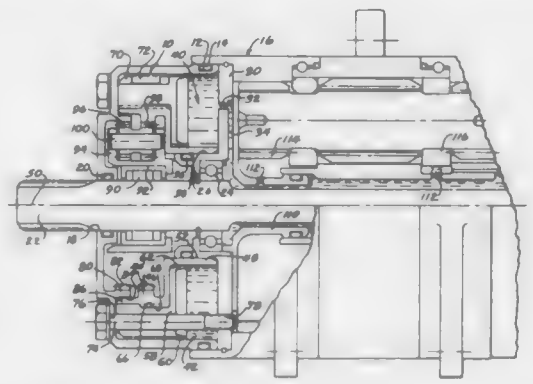
1. An adaptor bracket for rotatably securing a retractable lifeline block to a corner casting mounted on a frame, said adaptor bracket comprising
cylindrical means;
a shaft rotatably mounted and axially movable within said cylinder means, said shaft terminating in a substantially rectangular head extending outwardly from said cylindrical means;
a cap and handle secured to the end of said shaft opposite said head;
spring means secured between said cap and said cylindrical means, whereby rotation and depression of said cap, handle, shaft, and head relative to said cylinder while said cylinder is immobile creates a tension and torque bias in said spring;
means for releasably securing said head in said spring-biased position; and
means for rotatably mounting a housing about said cylindrical means.

5,004,072
WORK PLATFORM APPARATUS FOR ROOFS
Russell C. Launer, 9051 W. Temple Pl., Littleton, Colo. 80123
Filed Jan. 19, 1990, Ser. No. 467,440
Int. Cl.[5] E04G *5/08, 3/12*
U.S. Cl. 182—45 1 Claim

1. An adjustable support apparatus for pitched roofs having varying pitch angles wherein the apparatus consists of:
a horizontal support unit including a generally elongated flat rectangular platform member having a pair of spaced recesses formed on one edge; and a tapered surface on the opposite edge;
a vertical support unit including a generally elongated flat rectangular panel member having a plurality of spaced and vertically aligned pairs of apertures; wherein the panel member has an upper end and a lower end; and, the lower end is provided with a toothed gripping surface; wherein the panel member is further provided with a handle opening formed proximate to but spaced from said upper end; and, fastening means dimensioned to be releasably received in said recesses and through a selected one of said plurality of pairs of apertures for operatively connecting the horizontal support unit to the vertical support unit at a 90° angle.

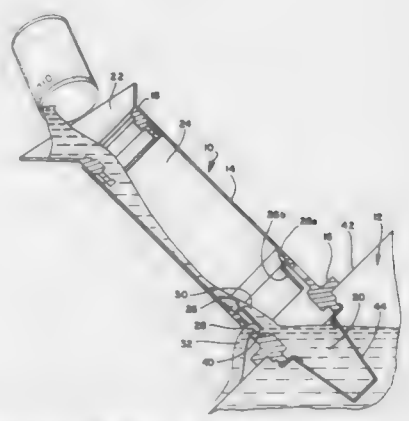


5,004,073
AUTOMATIC LUBRICATION DEVICE FOR MECHANICAL ACTUATION SYSTEMS
Duane H. Grimm, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.
Filed Nov. 22, 1989, Ser. No. 440,074
Int. Cl.[5] F01M *9/10*
U.S. Cl. 184—6.12 11 Claims



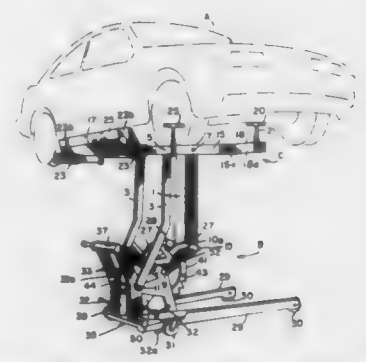
1. A self lubrication mechanism having a bidirectional rotary input comprising;
a housing;
a rotary input shaft journaled for bidirectional rotation within and extending from said housing;
a one-way clutch within said housing and coupled to said shaft, said clutch having an output element that is rotated by said shaft for one direction of rotation of said shaft and which may remain stationary for the opposite direction of rotation of said shaft;
a pair of coupled planetary gears in said housing and rotatable in response to rotation of said clutch output;
a fixed ring gear meshed with one of said planet gears;
a rotatable ring gear meshed with the other of said planet gears and rotatable in response to rotation of said planet gears;
a variable volume, lubricant reservoir with in said housing and having an outlet from which lubricant may exit to be directed to a component to be lubricated; and
means responsive to rotation of said rotatable ring gear for progressively decreasing the volume of said reservoir to thereby direct lubricant through said outlet.

5,004,074
OVERFILL FILLER PIPE ASSEMBLY
Gordon Jewess, San Diego, Calif., assignor to Sundstrand Corporation, Rockford, Ill.
Filed Jan. 3, 1990, Ser. No. 460,305
Int. Cl.[5] F16N *21/00*
U.S. Cl. 184—105.1 20 Claims



1. A filler pipe assembly for a liquid containing reservoir, comprising:
an elongated filler pipe having one end integral with said liquid containing reservoir and the other end remote from said liquid containing reservoir, said elongated filler pipe having a liquid-supplying opening at the end thereof integral with said liquid containing reservoir and a liquid-receiving opening at the end thereof remote from said liquid containing reservoir together with a liquid passageway extending therebetween, said elongated filler pipe being adapted to receive liquid in said liquid-receiving opening and direct liquid into said liquid containing reservoir;
said elongated filler pipe having a liquid overfill opening at a point remote from said liquid-receiving opening; and
means forming a one-way barrier relative to said liquid overfill opening for directing liquid introduced at said liquid-receiving opening past said liquid overfill opening and into said liquid containing reservoir while allowing liquid in said liquid containing reservoir to escape through said liquid overfill opening in the event of introduction of liquid in a quantity sufficient to reach said liquid overfill opening in an overfill condition.

5,004,075
LIFTING DEVICE FOR OBJECTS
Anthony Ascenzo, 70 Commercial St., Boston, Mass. 02109
Filed Aug. 30, 1989, Ser. No. 400,505
Int. Cl.[5] B60S *13/00*
U.S. Cl. 187—8.41 20 Claims



14. A lift device for elevating an object entirely from a

surface, said device being adapted to approach the object to be lifted perpendicularly to its longitudinal axis, said device comprising:

a base including means for movably supporting said lift device on a surface, said base comprising a power section and a floor stand, said floor stand being substantially horizontally disposed and comprising legs extending therefrom, said power section including a pair of spaced-apart struts, the ends of said struts being attached to and extending upwardly from said base and disposed adjacent said power section;

carriage means for holding said object including a pair of substantially parallel spaced-apart central support beams, said central support beams being arranged on a plane substantially parallel to said legs;

means on the ends of said central support beams to accommodate objects of different dimensions;

a main structural arm disposed between said struts and said central support beams, one end of said main structural arm being pivotably attached to said central support beams and the other end being pivotably attached at pivot points between said struts;

support arm means connected to said lift device at said central support beams and said struts, one end of said support arm means being attached by a pivot distantly from the attachment of said main structural arm to said central support beam, the other end of said support arm being attached by another pivot to said brace means at a point distantly located from the pivots, whereby rotation of said carriage around the pivot between said central support beams and the main structural arm is limited and said carriage can be maintained on a horizontal plane;

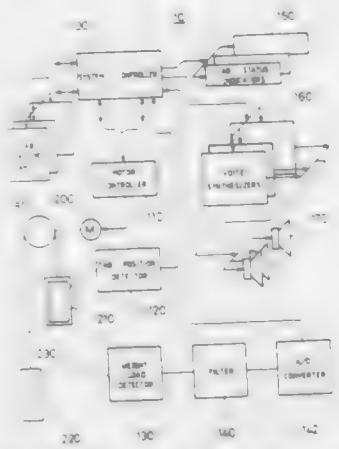
means to lift said carriage, said means connecting said power section and main structural arm, opposite ends of said lift means being pivotably attached to said main structural arm and to said power section.

5,004,076

APPARATUS FOR CONTROLLING AN ELECTRIC ELEVATOR

Hai C. Chen, 4F, No. 85, Chiang nan St., Nei hu, Taipei, and Felix W. H. Yeh, No. 392, Yen pin St., Chia yi City, both of Taiwan

Filed Apr. 18, 1989, Ser. No. 339,981
Int. Cl.[5] B66B *3/00*
U.S. Cl. 187—130 10 Claims



1. An apparatus for controlling an electric elevator having a cab adapted to load and transport people and/or goods to each of the floors of a building into which the elevator is mounted, and an electric motor for driving said cab to ascend and descend to said floors, said controlling apparatus comprising:

a motor controller for controlling the rotation of said driving motor of said elevator and therefore controlling the transfer of said cab from one floor of said building to another;

position detecting means for determining current position of said cab and for generating a cab position signal representing said current position;

load detecting means for determining the weight load of said cab and for generating a first weight load signal representing detected current weight load in said cab;

cab calling means for generating a cab calling signal in response to a selection made on said cab calling means by one or more people waiting to be transported by said cab to arrive on floor which said people intend to reach;

cab status indicating means for indicating current position, running direction and weight load of said cab; and

system controlling means, coupled to said motor controller, said position detecting means, said weight load detecting means, said cab calling means and said cab status indicating means, for receiving said cab position signal from said position detecting means, said first weight load signal from said weight load detecting means, and said cab calling signal from said cab calling means, for generating in accordance with said first weight load signal one of a plurality of second weight load signals including at least one full-load signal, for actuating said cab status indicating means to indicate current position, running direction and weight load of said cab in accordance with said cab position signal and said one second weight load signal, and for enabling said motor controller to actuate the driving motor of the electric elevator in accordance with said cab calling signal;

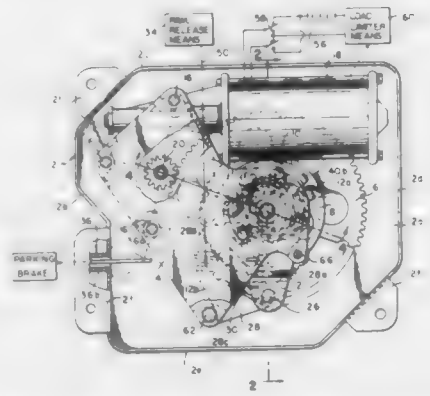
whereby current condition of weight load in said cab may be presented to a person or people waiting for said cab who then may know in advance in accordance with the indication of said cab condition indicating means whether or not the cab has a sufficient weight load capacity to transfer him/her or them.

5,004,077

ELECTROMECHANICAL PARKING BRAKE SYSTEM

Harold L. Carlson, Moberly; Michael D. DeWitt, Columbia; Louis Martel, Jr., Moberly; Larry W. Kelley, Salisbury, and Jeffrey E. Tayon, Moberly, all of Mo., assignors to Orscheln Co., Moberly, Mo.

Filed Sep. 13, 1989, Ser. No. 405,549
Int. Cl.[5] B60T *1/00*
U.S. Cl. 188—2 D 8 Claims



1. Parking brake apparatus for operating the parking brake cable of a vehicle between non-tensioned brake-released and tensioned brake-engaged condition, respectively, comprising:

(a) a housing (2) provided with a stationary main pivot shaft (4);

(b) an annular cable track member (10) journalled on said pivot shaft, said cable track member being adapted for connection with one end of the parking brake cable;

(c) drive means for alternately rotating said cable track member in opposite directions on said pivot shaft toward brake-engaged and brake-released positions relative to said housing, respectively, said drive means including:

(1) a gear sector member (6) rotatably mounted on said pivot shaft;

(2) reversible electric gear motor means (18) connected with said housing and including an output shaft having a driving pinion (20) in enmeshing engagement with said gear sector member;

(3) pawl ratchet means normally connecting said gear sector member with said cable track member, said pawl and ratchet means including:

(a) a ratchet (8) connected with one of said cable track and sector members;

(b) a pawl (28) pivotally connected with the other of said members; and

(c) spring means (30) normally biasing said pawl toward engagement with said ratchet; and

(4) means (58) for alternately operating said motor means in opposite directions, respectively; and

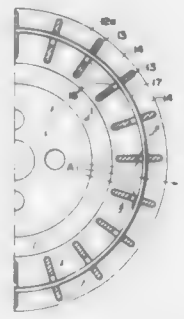
(d) means (34,62) for releasing said pawl from said ratchet, thereby to disconnect said cable track member from said drive means.

5,004,078

VENTILATED DISK AND PROCESS FOR MAKING SAME

Toshio Oono, and Hiroki Uemura, both of Aichi, Japan, assignors to Aisin Takaoka Co., Ltd., Toyota, Japan

Filed Oct. 18, 1989, Ser. No. 422,896
Claims priority, application Japan, Nov. 9, 1988, 63-146219[U]; Nov. 9, 1988, 63-146220[U]; Nov. 9, 1988, 63-146221[U]
Int. Cl.[5] F16D *65/12;* F16F *15/14*
U.S. Cl. 188—218 A 16 Claims



1. A ventilated disk comprising:

a pair of mutually opposing disk portions;

a plurality of substantially radially extending ribs formed integral with said disk portions and interposed therebetween;

a plurality of said ribs being formed to have at least one radially extending oblong hole penetrating the rib in a circumferential direction, said oblong holes defining at least one circular array along a circle whose center is the center of said disk portions; and

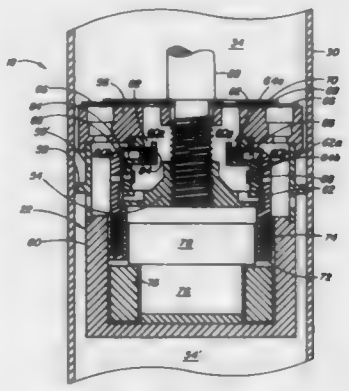
at least one annular damping member extending throughout said oblong holes defining the said at least one circular array, said annular damping member being in intimate engagement with an outer end portion and side portions of each of said oblong holes.

5,004,079

SEMI-ACTIVE DAMPER VALVE MEANS AND METHOD

Douglas E. Ivers, Cary, and Charles M. Nobles, Fuquay-Varina, both of N.C., assignors to Lord Corporation, Erie, Pa.

Filed Feb. 10, 1989, Ser. No. 310,144
Int. Cl.[5] F16F *9/50, 9/46*
U.S. Cl. 188—282 24 Claims



1. Semi-active damper means, comprising:

a hydraulic damper assembly switchable between high and low damping states wherein the damping coefficient of said damper assembly is respectively relatively high and relatively low, said damper assembly having relatively movable members defining a pair of interconnected chambers containing hydraulic fluid, relative movement in compression and extension of said movable members creating a fluid pressure differential and causing flow of said fluid between said chambers;

valve means for regulating said flow of fluid between said interconnected chambers, said valve means being operable between first and second conditions, wherein in said first condition said fluid flow is restricted to a relatively greater extent such that said damping coefficient of said damper assembly is relatively high, and wherein in said second condition said fluid flow is restricted to a relatively lesser extent such that said damping coefficient of said damper assembly is relatively low;

valve drive means movable between first and second positions for when actuated imparting forces to said valve means tending to cause transition thereof between said first and second conditions, said valve means also being subject to biasing forces by said fluid pressure differential such that transition from said first condition to said second condition is automatically deferred until said biasing forces are at a preselected low magnitude;

relative velocity switching means for automatically switching said damper assembly from one to the other of said damping states, without transition of said valve drive means from one to the other of said first and second positions, upon transition of said damper assembly between compression and extension and extension and compression of said movable members.

5,004,080

CONTROLLING CIRCUIT FOR ACTUATOR

Shunichi Wada, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

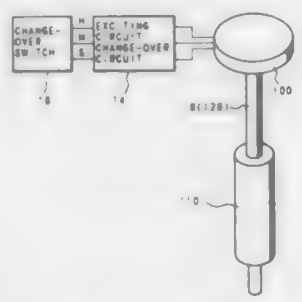
Filed Apr. 9, 1990, Ser. No. 506,419
Claims priority, application Japan, Apr. 21, 1989, 1-102717
Int. Cl.[5] F16F *9/46*
U.S. Cl. 188—299 10 Claims

1. A controlling circuit for an actuator which is provided with a rotating shaft to be stopped in each of a plurality of rotational positions, a rotor which is connected to said rotating shaft and in which the even number of magnetic poles of permanent magnet are arranged with equal interval, and a stator

which is arranged to be positioned around said rotor and in which electro-magnets whose number is one and half times of the number of magnet poles of said permanent magnet are arranged with equal interval, comprising:

a change-over switch having a plurality of switching elements each of which corresponds to each of rotational position for designating each of rotational positions of said rotating shaft by selecting each of said switching element; and

a plurality of exciting circuit forming means each of which is



connected to each said switching element, respectively, and which forms an exciting circuit so that said plurality of electro-magnets is selectively magnetized in order to rotate said rotating shaft to be in a designated rotational position by connecting each of switching elements to a power source,

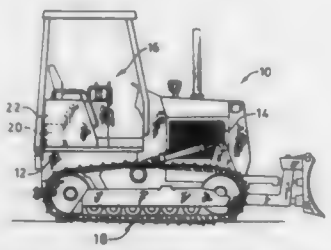
wherein said each exciting circuit forming means comprises electrifying switching means for forming said exciting circuit for a predetermined duration from the time when switching elements to which each of themselves is connected have been connected to a power source.

5,004,081

BATTERY RESTRAINT SYSTEM

Bruce C. Custer, Metamora, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Dec. 20, 1989, Ser. No. 453,747
Int. Cl.[5] B60R *16/04*
U.S. Cl. 180—68.5 **13 Claims**



1. A battery restraint system for securing a battery to a frame structure, comprising:

first and second spaced apart strap assemblies, each including a flexible non-metallic strap having a first end portion and a second end portion, a bracket secured to each of said first end portions, and said second end portion defining a loop;

a tensioning bar having first and second end portions and a center portion, said first and second end portions being adapted to engage respectively said first and second loops;

first means for securing said brackets to said frame structure;

second means for securing said center portion of said tensioning bar to said frame structure; and

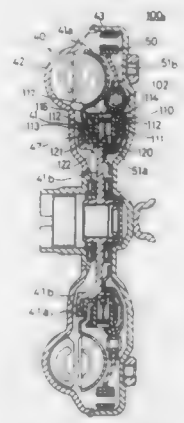
tensioning means for applying a substantially constant downward force on said tensioning bar and said first and second strap assemblies.

5,004,082

STARTING DEVICE OF AN AUTOMATIC TRANSMISSION FOR VEHICLE

Shiro Sakakibara, Toyokawa, and Takashi Furuya, Chiryu, both of Japan, assignors to Aisin AW Co., Ltd., Anjo, Japan

Filed Dec. 30, 1988, Ser. No. 292,240
Claims priority, application Japan, Mar. 23, 1988, 63-70158
Int. Cl.[5] F16H *45/02*
U.S. Cl. 192—3.26 **14 Claims**



1. A starting device for an automatic transmission of a vehicle having an engine, the transmission having an input shaft and the engine having an output shaft, comprising:

a hydraulic coupling disposed between said output shaft of said engine and said input shaft of said automatic transmission, said hydraulic coupling having an input side and an output side, said output side of said hydraulic coupling comprising a turbine runner and a hub which are rotatable relative to each other;

a lock-up clutch connecting said output shaft of said engine and said output side of said hydraulic coupling, said output side of said hydraulic coupling being connected to said input shaft of said automatic transmission;

a slip clutch connected in series with said lock-up clutch, said slip clutch being disposed between said output shaft of said engine and said output side of said hydraulic coupling, said slip clutch including a plurality of friction plates and biasing means for applying a predetermined biasing force to said plurality of friction plates to urge said friction plates together; and

cam means, disposed in a power transmission path at said output side of said hydraulic coupling, for generating an axial force proportional to a torque transmitted between said power transmission path and for applying said axial force to said plurality of friction plates of said slip clutch so that said slip clutch has a torque capacity proportional to said applied torque, said cam means comprising an operating-side cam and an operated-side cam which are rotatable relative to each other, said operating-side cam being connected to said turbine runner and said operated side cam being connected to said hub.

5,004,083

COUPLING FOR A BICYCLE

Oskar R. Lohman, Smedevaegen 16, S-131 33 Nacka, Sweden

PCT No. PCT/SE88/00191, § 371 Date Nov. 29, 1989, § 102(e) Date Nov. 29, 1989, PCT Pub. No. WO88/07955, PCT Pub. Date Oct. 20, 1988
PCT Filed Apr. 13, 1988, Ser. No. 424,227
Claims priority, application Sweden, Apr. 13, 1987, 8701526-9
Int. Cl.[5] F16D *41/24, 67/00*
U.S. Cl. 192—5 **14 Claims**

1. Coupling means for a bicycle having a drive wheel, a drive wheel hub, and a pedal crank assembly which operates a drive transmission and a brake activating means, said coupling means comprising:

a first freewheel coupling associated with the pedal crank assembly for torque transfer to the brake activating means at reverse rotation of the pedal crank;

a second freewheel coupling associated with the drive wheel hub of the bicycle for torque transfer to the drive wheel upon forward rotation of the pedal crank assembly;



a third freewheel coupling associated with the drive transmission and adapted to be activated upon a reverse rotation of the drive wheel; and

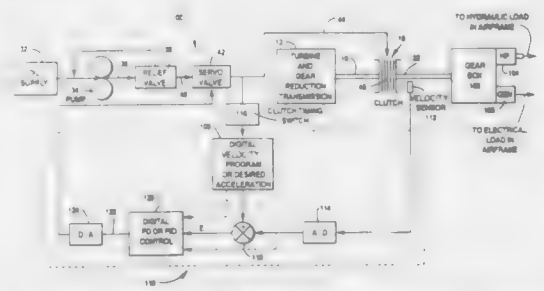
shifting means associated with said third freewheel coupling for preventing engagement of said second freewheel coupling when said third freewheel coupling is activated.

5,004,084

CLOSED LOOP CONTROL OF A HYDRAULICALLY CONTROLLED CLUTCH

Kourosh Mehr-Ayin, Vista, and Paul A. Schuh, San Diego, both of Calif., assignors to Sundstrand Corporation, Rockford, Ill.

Filed May 24, 1989, Ser. No. 356,273
Int. Cl.[5] F16D *43/284*
U.S. Cl. 192—0.033 **37 Claims**



1. A control system for a hydraulically controlled clutch for coupling a source of rotary power to a load for accelerating the load from a first velocity to a second velocity within a time measured from a beginning of the acceleration and ending between first and second times measured from the beginning of acceleration with the load being variable during the acceleration of the load from the first velocity to the second velocity comprising:

a source of pressurized hydraulic fluid;

a servo valve, having an inlet coupled to the source of pressurized fluid and an outlet coupled to the hydraulically controlled clutch, the servo valve being responsive to a control signal to vary the pressure of hydraulic fluid applied to the hydraulically controlled clutch to vary the coupling between the source of rotary power and an output shaft which is coupled to the load;

a sensor for producing a velocity signal proportional to the velocity of the output shaft;

a stored program controlling a programmed acceleration of the load from the first velocity to the second velocity within a time interval measured from the beginning of the acceleration and ending between the first and second times; and

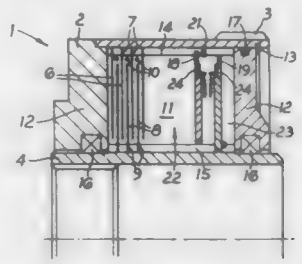
a controller, responsive to the stored program and the velocity signal, for producing the control signal which is a function of a difference between the velocity signal and a desired velocity of the output shaft during acceleration from the first velocity to the second velocity produced by the stored program.

5,004,085

FLUID FRICTION COUPLING WITH CLOSING SLIDE

Herbert Taureg, Heusef, Fed. Rep. of Germany, assignor to Viscodrive GmbH, Lohmar, Fed. Rep. of Germany

Filed Mar. 7, 1990, Ser. No. 490,146
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1989, 3908090
Int. Cl.[5] F16D *31/00, 43/24*
U.S. Cl. 192—58 B **6 Claims**



1. A fluid friction coupling, comprising:

a first coupling part formed as a housing having an interior;

at least one second coupling part formed as a hub rotatably received within the first coupling part;

a set of plates associated with each coupling part, each set of plates being non-rotatingly connected to its associated coupling part, the plates associated with the first coupling part being interleaved with those associated with the second coupling part in a main chamber defined in the interior of the first coupling part;

a viscous medium at least partially filling a portion of the interior of the first coupling part which is not occupied by the plates, the interior of the first coupling part also defining an additional receiving chamber for the viscous medium;

at least one separating plate associated with one of the coupling parts and provided with at least one aperture so as to separate the receiving chamber from the main chamber;

a cover for said aperture mounted on said separating plate so as to be movable between a first position in which it closes the aperture and a second position in which the aperture is opened; and

spring means for biasing the cover to its first position, the cover being arranged to move to its second position under centrifugal force against the action of said spring means when a predetermined rotational speed of the separating plate is exceeded.

5,004,086

CLUTCH ASSEMBLY FOR A MOTOR VEHICLE

Rainer Petzold; Walter Fritz, both of Friedrichshafen, and Norbert Wiencek, Hagnau, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

PCT No. PCT/EP88/00545, § 371 Date Dec. 19, 1989, § 102(e) Date Dec. 19, 1989, PCT Pub. No. WO88/10376, PCT Pub. Date Dec. 29, 1988
PCT Filed Jun. 21, 1988, Ser. No. 445,616
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1987, 3721318
Int. Cl.[5] F16D *25/14*
U.S. Cl. 192—85 C **13 Claims**

1. A drive train for a motor vehicle, comprising:

a gearbox formed with an input shaft rotatable about an axis of rotation;

an engine spaced from said gearbox and formed with an engine shaft coaxial with said input shaft;

a clutch arranged in a torque transmission path between said engine and input shafts spaced from said gearbox and having an engaged position and a disengaged position; said clutch being provided with a clutch housing and with

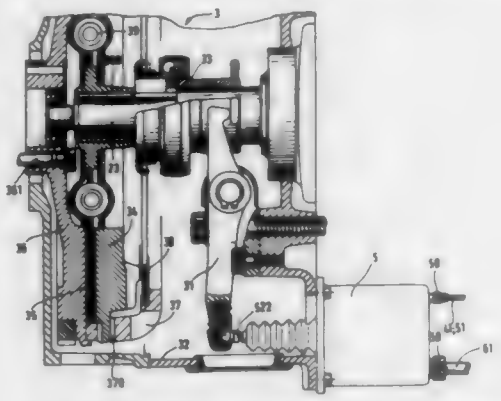
release means for releasing said engaging position of said clutch;

an actuating unit mounted on said clutch and including:

an actuating unit directly connected with said clutch housing,

a piston and cylinder unit including a cylinder formed in said actuating housing and a piston movable back and forth in said cylinder parallel to said axis of rotation and connected with said releasing means for displacing said clutch into said disengaged position,

a plurality of solenoid values operatively connected with said piston and cylinder unit for actuating said piston,



a single pressure supply connection mounted on said actuating housing for interconnecting said piston and cylinder unit and said valves with an external pressure supply source,

a travel measuring device operatively connected with said solenoid valves mounted in said housing for controlling said engaged and disengaged positions of the clutch, and

a single plug junction mounted on said actuating housing for connection to said measuring device said solenoid valves for selective operation thereof.

5,004,087

FRICTION CLUTCH

Lothar Huber, Altschweier, Fed. Rep. of Germany, assignor to Luk Lamellen Und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

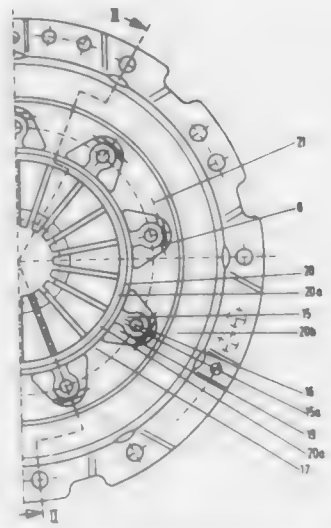
Filed Jul. 21, 1989, Ser. No. 384,129

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1988, 3825197

Int. Cl.[5] F16D *13/50*

U.S. Cl. 192—89 B 9 Claims

1. A friction clutch, particularly for use in motor vehicles, comprising a cover having a first side and a second side; an axially movable pressure plate adjacent the first side of said cover; at least one diaphragm spring including means for biasing said pressure plate; a first seat between said cover and said spring; a second seat, said spring being disposed between said seats; and means for connecting said second seat and said spring to said cover, including a plurality of beams and elongated torsion bars integral with said cover and with said beams, each of said beams including a free end and a second end which is integral with one of said torsion bars and each of said torsion bars including a median portion integral with the second end of the respective beam and two outer portions flanking the median portion, said beams being elastically stressed in the axial direction of said pressure plate and the magnitude of stress upon each beam being dependent upon the



cross-sectional area and the length of the respective torsion bar.

5,004,088

TORSIONAL VIBRATION DAMPER

John S. Bolton, Knowle, England, assignor to Automotive Products plc, Leamington Spa, England

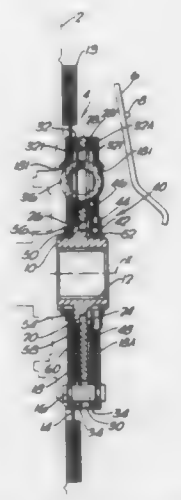
PCT No. PCT/GB88/00109, § 371 Date Nov. 1, 1989, § 102(e) Date Nov. 1, 1989, PCT Pub. No. WO88/08092, PCT Pub. Date Oct. 20, 1988

PCT Filed Feb. 22, 1988, Ser. No. 411,510

Claims priority, application United Kingdom, Apr. 9, 1987, 8708536

Int. Cl.[5] F16D *3/14*

U.S. Cl. 192—106.2 10 Claims



1. A rotary coupling device comprising a hub having an annular flange mounted thereon, a coaxial annular driven plate mounted on the hub for limited rotational movement relative to the hub flange, a coaxial annular floating plate also mounted on the hub for limited rotational movement relative to both the hub flange and the driven plate, and at least two sets of spring means each housed in a respective set of aligned spring windows each spring window having two opposed circumferential

ends formed by respective window edges in the hub flange, the driven plate and the floating plate and which resist the relative rotational movement therebetween so that said spring means determines an "at-rest" state when the driven plate is subject to no external torsional loads, wherein in each of said two sets of spring windows the hub flange window, the driven plate window and the floating plate windows are of different circumferential lengths and are arranged so that in the "at rest" state, for a first set of spring windows all the window edges at one circumferential end of the respective windows in said first set are in circumferential alignment, and for the second set of spring windows all the window edges of the respective windows in said second set are in alignment at the the other of said two opposed circumferential ends to said first set of windows, so that during an initial phase of rotational movement of the driven plate relative to the hub flange the two spring means act in series and in a later phase of said rotational movement the two spring means act in parallel.

5,004,089

CLUTCH DRIVEN PLATES AND METHOD OF PRODUCING THE SAME

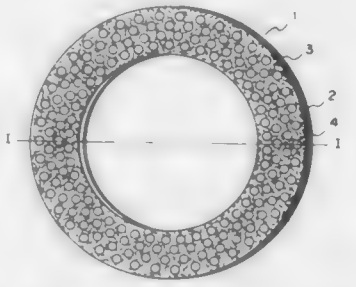
Yasuhiro Hara, Shimodate; Mitsuhiro Inoue, Oyama; Hideo Baba, Shimodate; Tadashi Okazaki, Oomiya, and Shigeru Kudo, Katsuta, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Nov. 2, 1989, Ser. No. 430,248

Claims priority, application Japan, Nov. 22, 1988, 63-295738; Jan. 20, 1989, 63-12075; Jan. 20, 1989, 63-12076; Jul. 26, 1989, 63-193392; Jul. 26, 1989, 63-193393

Int. Cl.[5] F16D *69/02*

U.S. Cl. 192—107 M 3 Claims



1. A clutch drive plate comprising a clutch facing plate molded from a clutch facing material comprising a fiber, a binder and a friction modifier and a back-up plate carrying the clutch facing plate, wherein a number of dimples are formed on the surface of the clutch facing plate and the total area of the openings in the dimples is equal to or smaller than the area of the surface of the clutch driven plate exclusive of the openings of the dimples, the volume percentage of the total volume of the dimples in the clutch facing plate is not less than 20% of the volume of a clutch facing plate without dimple, and each dimple is so distributed as to be spaced equally in the circumferential direction on the surface of the clutch facing plate.

5,004,090

ROTATION DEVICE WITH A SEALING PLATE

Motoaki Kuribara, Gumma, and Ikuo Fujino, Ashikaga, both of Japan, assignors to Mitsuba Electric Mfg. Co., Ltd., Gumma, Japan

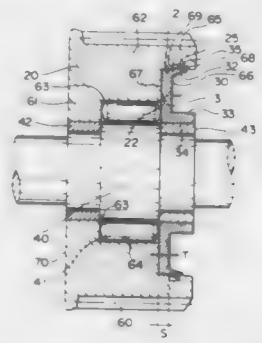
Filed Nov. 18, 1987, Ser. No. 122,155

Claims priority, application Japan, Nov. 19, 1986, 61-275557

Int. Cl.[5] F16D *41/06;* F16J *15/34;* F16C *33/76*

U.S. Cl. 192—112 7 Claims

1. A sealing arrangement for disposing between first and second parts of a mechanism, the first and second parts being adapted to rotate relative to each other, the rotating device including: a substantially cylindrical inner member adapted to be connected to the first part of the mechanism; a substantially hollow cylindrical outer member coaxially and rotatably disposed on the inner member and adapted to be connected to the second part of the mechanism, the outer member having front and rear end portions, the front end portion substantially fitting around the inner member, the rear end portion being spaced from the inner member so that an inner space receiving a lubricating agent is defined by the inner member and an inner face of the rear end portion, the inner space opening to a rear end face of the outer member; and an annular extension extending rearward away from an outer periphery of the rear end face of the outer member, the annular extension having an annular groove circumferentially formed therein, said annular groove having an opening facing radially inward, the groove having front and rear internal walls defining the groove, the front wall being located closer to the rear end face of the outer member than is the rear wall; the sealing arrangement including a substantially annular sealing plate, which rotatably fits around the inner member and fixedly fits in the annular extension, for closing the opening of the inner space and for aligning the axes of the outer and inner members with each other, the sealing plate comprising:



an annular plate body having one and the other faces and covering the opening of the inner space with the one face thereof in contact with the rear end face of the outer member;

an annular peripheral wall extending rearward away from an outer periphery of the other face of the plate body; and

an annular ridge extending from the peripheral wall and protruding into the groove of the annular extension so that the annular ridge is engaged with at least the rear wall of the groove of the annular extension and so that the one face of the plate body is attached to the rear end face of the outer member so as to hermetically seal the inner space, the rear end face of the outer member and the front wall of the groove defining a distance therebetween which is at least equal to a thickness of the plate body of the sealing plate.

5,004,091

COMPRESSION-MOLDED CARRYING CASE

Bradford J. Natbo, Taunton; George L. Andrade, South Dartmouth; John M. Wheaton, North Dartmouth, all of Mass., and Wayne I. Schmitt, Coventry, R.I., assignors to American Tourister, Inc., Warren, R.I.

Filed Apr. 16, 1990, Ser. No. 509,208

Int. Cl.[5] A45C *3/00, 13/00*

U.S. Cl. 190—18 R 2 Claims

1. A carrying case comprising,

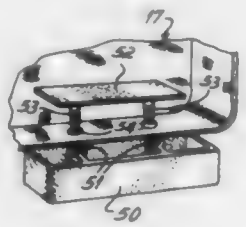
two dish-shaped shells having four sides, said shells being formed of a compression-molded fabric-foam-fabric laminate,

each said shell having a rectangular major wall and a perpendicular wall extending around the perimeter of said major wall,

means hinging said shells together along one side of each of said rectangular shells,

cooperating zippers stitched to the remaining three opposed edges of said shells,

a plurality of bumper feet mounted on an exterior side of said shell, each bumper foot having two holes opening onto said shell,



a plate mounted on the interior of said shell opposite each foot,

two serrated posts projecting from said plate and projecting into said foot holes to secure said plate to said foot with said shell side sandwiched therebetween.

5,004,092

PROCESS AND APPARATUS FOR THE BUFFER STORAGE AND CONVERSION OF FLAT PRODUCTS PREFERABLY OCCURRING IN STREAM FORMATION

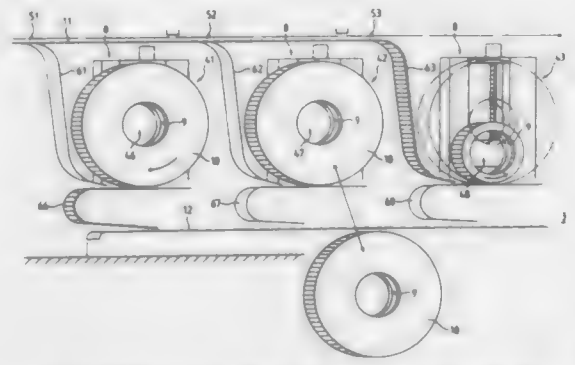
Jacques Meier, Bäretswil, Sweden, assignor to Ferag AG, Hinwil, Switzerland

Filed Dec. 23, 1988, Ser. No. 288,942

Claims priority, application Switzerland, Feb. 17, 1988, 580/88

Int. Cl.[5] B65G *37/00*

U.S. Cl. 198—347.3 **10 Claims**



1. An apparatus for the buffer storage of flat articles such as printed products occurring in the form of stream formations, comprising the combination of a main inlet location and a main outlet location;

buffer storage means having at least two roll modules, said roll modules (41–45) being successively arranged with respect to a feed direction and each said roll module having a roll mount (46–50) and a roll with a winding plane oriented substantially parallel to a vertical plane, each said roll mount being freely accessible from at least one side;

a first and second group of switch points (51–55, 56–60) interconnecting said buffer storage means with said main inlet and outlet; and

common feed means (11) and common removal means (12) operatively associated with each of said roll modules, said feed and removal means being substantially parallel to said winding plane.

5,004,093

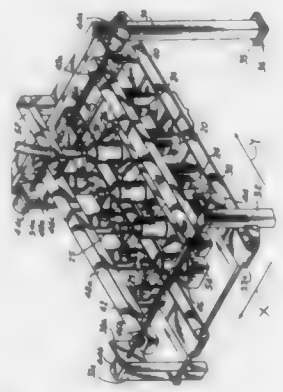
STRAIGHT LINE SORTING AND/OR FILL-TO-WEIGH MACHINE

Robert C. Blezard, Harwich Port, Mass., assignor to Charles Packaging Corporation, Lincoln, R.I.

Filed Nov. 8, 1989, Ser. No. 433,499

Int. Cl.[5] B65G *47/52*

U.S. Cl. 198—430 **32 Claims**



1. In a machine:

an input conveyor capable of transporting containers in an infeed direction;

a group of stations displaced from and to one side of said conveyor;

a mechanism having a longitudinal axis parallel to said infeed direction and mounted for movement transversely to said axis between said conveyor and said stations with said axis remaining parallel to said infeed direction;

said mechanism supporting drive means for effecting movement along said longitudinal axis relative to said mechanism;

a plurality of paired gripping devices, said devices being supported along and by said drive means with each pair comprising an upstream gripper and a downstream gripper and;

differential drive means operatively connected to one of each pair of grippers whereby the movement of a downstream gripper in the direction of said longitudinal axis is slower than the movement of the upstream gripper in that direction when said mechanism and said drive means position said grippers to grip a container while being moved by said conveyor.

5,004,094

APPARATUS FOR TRANSPORTING STACKS OF PAPER SHEETS TO PROCESSING MACHINES

Eckhard Brandt, Norderstedt, Fed. Rep. of Germany, assignor to E.C.H. Will GmbH, Hamburg, Fed. Rep. of Germany

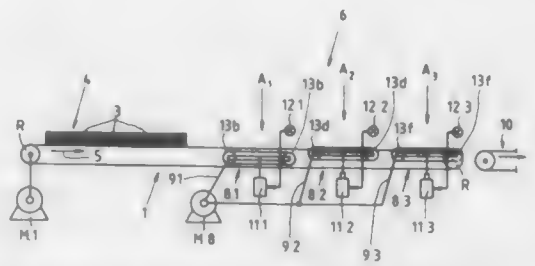
Filed Apr. 8, 1987, Ser. No. 36,001

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1986, 3612021

Int. Cl.[5] B65G *47/26*

U.S. Cl. 198—460 **22 Claims**

1. Apparatus for delivering discrete commodities to a processing machine, particularly for delivering spaced-apart stacks of paper sheets to a packing machine, comprising a first conveyor arranged to receive groups of commodities and to advance such groups in a predetermined direction along a predetermined path; first prime mover means for driving said first conveyor; a gathering conveyor occupying a portion of said path and arranged to convert the commodities into a row on normally closely adjacent and/or actually abutting commodities and to advance the row in said direction, said gathering conveyor having a plurality of sections disposed one behind the other in said direction, means for individually moving said sections between first positions at a first level in which the commodities in said portion of said path are carried by said first conveyor and are out of contact with said sections and second positions at a different second level in which the commodities in said portion of said path are disengaged from said first conveyor by and rest on the respective sections, and second prime



mover means for driving said sections in said direction; and singularizing conveyor means arranged to receive successive commodities of the row from said gathering conveyor and to advance the received commodities in substantially uniformly spaced-apart positions toward the processing machine.

5,004,095

APPARATUS FOR USE IN VARIABLE OPERATING TEMPERATURES

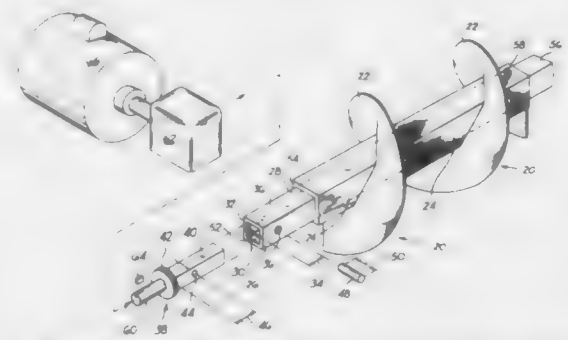
James M. Lapeyre, New Orleans; Peter G. Weber, LaPlace, and Christopher G. Greve, Covington, all of La., assignors to The Laitram Corporation, New Orleans, La.

Continuation of Ser. No. 58,917, Jun. 5, 1987, abandoned. This application May 9, 1989, Ser. No. 352,666

The portion of the term of this patent subsequent to Sep. 25, 2007, has been disclaimed.

Int. Cl.[5] B65G *33/32*

U.S. Cl. 198—660 **12 Claims**



1. Conveying apparatus for use in any environment having variable temperatures including a molded plastic screw conveyor, said plastic screw conveyor including an axial member extending a selected length, and a flight member helically encircling more than 360° of said axial member, and extending said selective length, said apparatus comprising:

a molded plastic screw conveyor having a first coefficient of expansion and including an elongated axial member extending said selected length between a pair of ends, said axial member further defining an aperture having a cross-section of a first non-circular shape extending co-axially therethrough said screw conveyor including a flight member which helically encircles more than 360° of said axial member and extends between said pair of ends;

an elongated drive shaft having a second coefficient of expansion which is different than said first coefficient of expansion, and having a perimeter cross-section of a sec ond non-circular shape extending axially through and cooperating with said aperture of said screw conveyor to allow axial motion between said screw conveyor and said drive shaft so as to accommodate variations in length due to temperature changes, said drive shaft further including an aperture extending co-axially from at least one end of, and into said drive shaft, said aperture and said drive shaft being smaller than said perimeter cross-section and having a cross-section of a third non-circular shape;

a journal plug having a mounting end and a drive end and defining an aperture extending axially therethrough;

a retainer means cooperating with said mounting end of said journal plug and defining an aperture therethrough in register with said journal plug aperture, at least one of said cooperating journal plug and said retainer means defining a perimeter cross-section such that rotation of said journal plug causes rotation of said drive shaft; and

attaching means extending through the aperture of said retainer means and the aperture of said journal plug for applying compressive axial force to said cooperating retainer means and journal plug to cause radial expansion of said cooperating retainer means and journal plug within said drive shaft aperture thereby increasing said perimeter cross-section so as to retain said journal plug in said drive shaft aperture.

5,004,096

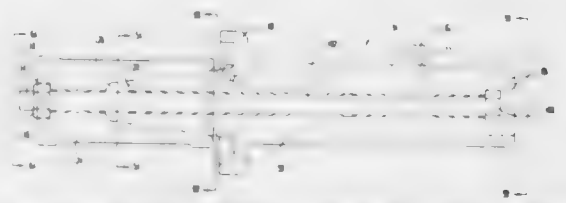
SCREW CONVEYOR COUPLING APPARATUS

James M. Lapeyre, New Orleans; Peter G. Weber, LaPlace, and Christopher G. Greve, Covington, all of La., assignors to The Laitram Corporation, Harahan, La.

Continuation of Ser. No. 58,393, Jun. 5, 1987, abandoned. This application Apr. 3, 1989, Ser. No. 332,392

Int. Cl.[5] B65G *33/32*

U.S. Cl. 198—666 **10 Claims**



1. Screw conveying apparatus including a modular screw conveyor having a multiplicity of integrally formed modules, said modular screw conveyor also including a combination axial member extending a selected length, and a flight member helically encircling more than 360° of said combination axial member and extending said selective length, said apparatus comprising:

at least two substantially similar integrally molded plastic modules, each module including an elongated axial member extending between a pair of ends and defining an aperture having a cross-section of a first non-circular shape extending coaxially therethrough, each module further including a flight member which helically encircles not more than 360° of said axial member and extends between said pair of ends, at least one end of one of said at least two modules formed to cooperate with an adjacent end of the other one of said at least two modules;

said multiplicity of modules being aligned coaxially such that, except for modules on the extreme ends, each end of each module is in axial confronting relationship with an end of an adjacent module and such that said aperture of each of said multiplicity is in register with the aperture of an adjacent module so as to define a modular screw conveyor having an elongated aperture of a non-circular cross-section extending said selected length and including a light member which encircles more than 360° of said combination axial member and substantially extends the length of said aligned modules;

an elongated drive shaft having a perimeter cross-section of a second non-circular shape extending axially through and cooperating with the in-register apertures of said aligned multiplicity of modules such that rotation of said drive shaft causes rotation of said screw conveyor, said drive

shaft further including an aperture extending coaxially from at least one end of, and into said drive shaft, said aperture in said drive shaft being smaller than said perimeter cross-section and having a cross-section of a third non-circular shape;

a journal plug having a mounting end and a drive end and defining an aperture extending axially therethrough;

a retainer means cooperating with said mounting end of said journal plug and defining an aperture therethrough in register with said journal plug aperture, at least one of said cooperating journal plug and said retaining means defining a perimeter cross-section such that rotation of said journal plug causes rotation of said drive shaft; and

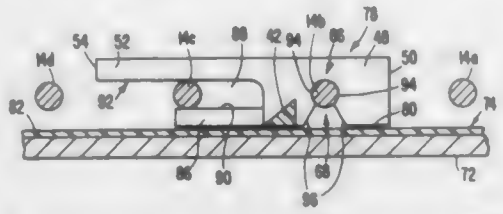
attaching means extending through the aperture of said retainer means and the aperture of said journal plug for applying compressive axial force to said cooperating retainer means and journal plug to cause radial expansion of said cooperating retainer means and journal plug within said drive shaft aperture thereby increasing said perimeter cross-section so as to retain said journal plug in said drive shaft aperture.

5,004,097

REPLACEABLE SNAP-ON MODULAR OVERLAY FOR ROD AND LINK TURN-CURVE CONVEYOR BELTS

Gerald C. Roinestad, Williamsburg, and Michael R. Straight, Winchester, both of Va., assignors to Ashworth Bros., Inc., Fall River, Mass.

Filed Jan. 30, 1990, Ser. No. 472,062
Int. Cl.[5] B65G *17/42*
U.S. Cl. 198—803.01 **8 Claims**



1. In a conveyor system having at least one ware transport section and made up of a succession of overlays for transporting articles, each overlay having an overlay body providing an upper overlay surface with leading and trailing edges and upon which said articles are supported, each overlay being supported and moved along by a belt of spaced rod members extending transversely of the direction of travel of said belt which slides upon at least one rail, the improvement comprising in combination:

forward support means depending from said overlay body for supporting said overlay body on said spaced rod members;

said forward support means including a rod member engaging means operable to receive an attachment rod member when said overlay body is moved relatively toward said attachment rod member in a direction normal to said upper overlay surface;

said rod member engaging means including at least one pair of spaced resilient legs depending from said overlay body and each of said at least one pair of legs providing an opening for receiving said attachment rod member;

holding and bearing means in said opening on each pair of said legs for holding said attachment rod member received in said opening with a snap fit and providing bearing support for loads transmitted through said forward support means; and

an anti-tipping means forwardly depending from said overlay body an effective anti-tipping distance and in slideable contact with said rail for preventing said overlay from pivoting about said attachment rod member out of the plane of said belt while said overlay travels through said transport section;

said leading edge of said upper overlay surface lying forwardly of said opening in said rod member engaging means;

said trailing edge of said upper overlay surface lying rearwardly of a trailing rod member while in said transport section and said rod members are parallel to each other;

said overlay body comprising

a backbone member extending transversely of the direction of travel of said belt when said overlay is installed, and

a plurality of rib members attached to said backbone member, said rib members being substantially parallel to each other and transversely spaced from each other, each of said rib members having an upper rib surface and a rib leading edge and a rib trailing edge which define said upper overlay surface and said leading and trailing edges of said overlay body, respectively,

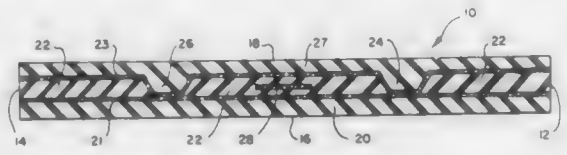
wherein said plurality of rib members are oriented relative to said backbone member to allow interdigitation thereof with rib members of overlays immediately ahead and behind said overlay on said belt.

5,004,098

CONVEYOR BELT

Gary C. Marshall, Oil City, Pa., assignor to Joy Technologies Inc., Pittsburgh, Pa.

Filed Apr. 21, 1989, Ser. No. 341,613
Int. Cl.[5] B65G *15/34*
U.S. Cl. 198—847 **6 Claims**



1. A stretchable conveyor belt, comprising:

a. an elongated elastomeric body having spaced-apart edges, edge portions along said edges, a load-carrying belt surface on one side of said body extending between said edges and a drivable surface on the other side of said body;

b. a first layer of reinforcing cords extending from one of said edges to the other of said edges laid on a bias to the transverse axis of the belt;

c. a second layer of reinforcing cords coextensive with and positioned above said first layer and laid at an opposite bias angle to the cords of said first layer; and

d. stretch limiting means provided between said first and second layers in the lateral center of said belt and extending less than one-half of the width of said belt, said stretch limiting means having the property of stretching a predetermined distance when subject to tension and then having a rapidly increasing resistance to further elongation of the belt in operation, said stretch limiting means comprising an elongated fabric member constructed of angularly woven, high strength fibers.

5,004,099

PAPER ITEM RECEPTACLE

Dewey Carpenter, 5780 SW. 14th St., Plantation, Fla. 33317, and Kathryn Ehster, 925 Crowsnest Cir., #36, Orlando, Fla. 32825

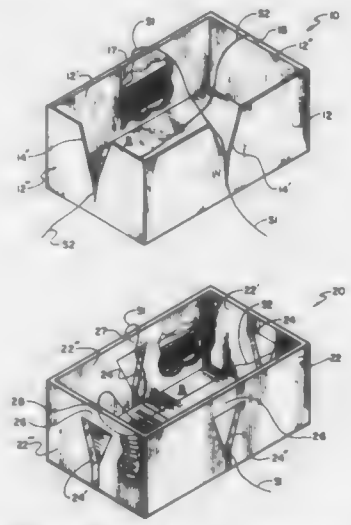
Filed Sep. 5, 1989, Ser. No. 402,679
Int. Cl.[5] B65B *13/02*
U.S. Cl. 206—83.5 **3 Claims**

1. A paper item storage receptacle adapted to receive a stack of paper items to be recycled, comprising:

a generally rectangular, open-top container having four vertical adjoining aide walls and a bottom horizontal panel connected therebetween;

wherein each of two of said side walls define a generally V-shaped cutout therein;

at least one segment of tie string having free ends is disposed within at least one of said V-shaped cutouts and draped across the bottom panel of said receptacle, said segment of tie string adapted to secure the stack of paper items in a



secured bundle once the free ends of said segment of tie string are connected together;

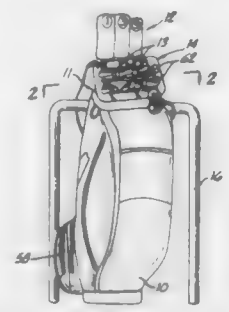
wherein the V-shaped notches are truncated by handle means for holding said receptacle.

5,004,100

GOLF CLUB AND BAG SECURITY DEVICE

Donald E. Smith, 8325 Leeds St., Downey, Calif. 90242

Filed Apr. 3, 1990, Ser. No. 503,703
Int. Cl.[5] A63B *55/00, 57/00*
U.S. Cl. 206—315.2 **23 Claims**



1. A security device for releasably securing a plurality of golf clubs therein, each golf club having a head disposed at the end of a shaft, the shaft having a narrow region near the head and a wider region farther from the head, the device comprising:

a plate and arm shaped for cooperative engagement so that, when arranged in an engaged position, portions of their respective perimeters mutually define a through-cut slot closed at each end for securing the club shafts, the length of the slot being substantially greater than its width and the width of the slot being greater than a single club's narrow region and less than a single club's wider region;

said plate and arm each having a first connecting portion and a second connection portion, said first connecting portions each having a hole defined therein for receiving a padlock shackle and aligned in opposed relationship with the hole of the other when said plate and arm are arranged in said engaged position;

said plate comprising a plurality of tongues connected at one end of the plate and extending therefrom so as to define a number of said slots equal to one less than the number of tongues, said arm connecting the ends of at least two of said tongues when arranged in said engaged position; and

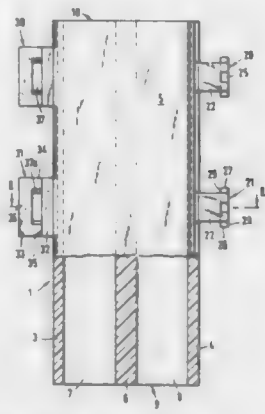
means for joining said second connecting portions when said plate and arm are arranged in said engaged position.

5,004,101

BELTABLE PLASTIC CASING FOR ELECTRIC PLUG CONNECTORS

Andreas Neumann, Wuppertal, and Michael Wiese, Remscheid, both of Fed. Rep. of Germany, assignors to Grote & Hartmann GmbH & Co. KG, Wuppertal, Fed. Rep. of Germany

Filed Nov. 2, 1989, Ser. No. 430,766
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1988, 8814029[U]
Int. Cl.[5] B65D *85/24, 73/02*
U.S. Cl. 206—343 **15 Claims**



1. An individual casing comprising:

said casing being fabricated from plastic;

said casing being provided with casing chambers for reception of electric plug connectors;

said casing having a bottom wall and first and second side walls connected to said bottom wall, said first and second side walls being parallel to each other, said first and second side walls being perpendicular to said bottom wall;

inner surfaces of said bottom wall and said first and second side walls providing walls for said casing chambers;

a cover wall disposed on said first and second side walls opposite said bottom wall to provide a top wall for said casing chambers;

said first and second side walls having snap-together engagement means to securely connect said casing to other casings in a side-by-side arrangement to form a casing belt which can be wound into a coil;

said snap-together engagement means including a first rest arrangement on said first side wall and a second rest arrangement on said second side wall;

said first arrangement including at least one hook-shaped rest finger, said rest finger including a first connecting strip molded to an outer surface of said first side wall and a rest strip molded to said first connecting strip, said first connecting strip projecting perpendicularly outward from said outer surface of said first side wall, said rest strip extending vertically upward from said first connecting strip in a direction toward said cover wall, said rest strip being disposed parallel to said first side wall;

a vertical length of said first side wall being disposed between said bottom wall and said cover wall, said vertical length being longer than said rest strip;

said second rest arrangement including at least one lug member, said lug member including a second connecting strip molded to an outer surface of said second side wall and a bow portion molded to said second connecting strip; and

said bow portion being provided with recess means for receiving a rest strip of a hook-shaped rest finger of a first

adjacent casing in a snap-together relationship to securely connect said individual casing and said first adjacent casing together;

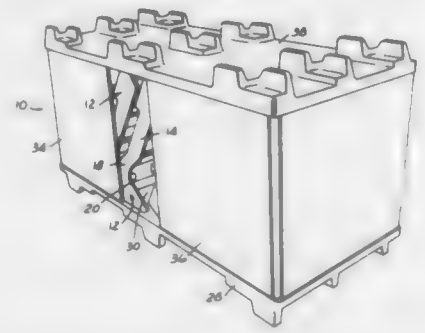
and said rest strip of said hook-shaped rest finger of said individual casing can be received in a bow portion of a lug member of a second adjacent casing in a snap-together relationship to securely connect said individual casing and said second adjacent casing together whereby said second adjacent casing, said individual casing and said first adjacent casing are disposed in a side-by-side arrangement to form a casing belt.

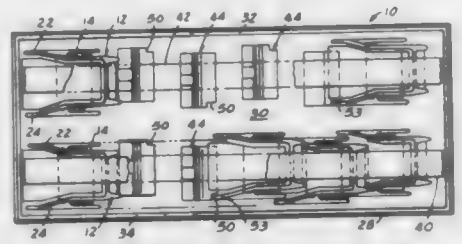
5,004,102

RACK FOR TRANSPORTING VEHICLE CENTER CONSOLE ASSEMBLIES

Lawrence J. Timmins, Riverview, and Duane K. Krause, Grosse Pointe Woods, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Jul. 30, 1990, Ser. No. 559,773
Int. Cl.[5] B65D *19/00*
U.S. Cl. 206—386 **5 Claims**





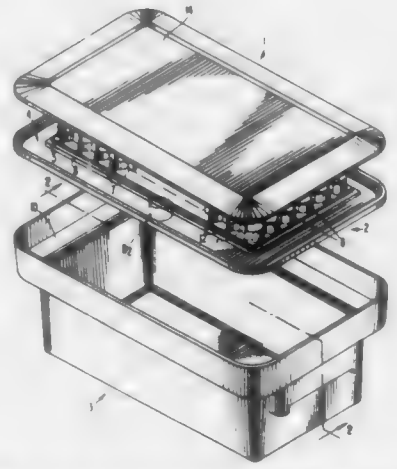
1. A shipping rack including a base having a generally horizontal loading surface, a plurality of spaced apart supports secured on the loading surface, each support being for receiving and supporting a vehicle center console assembly which includes an elongated body having a longitudinal axis, an enlarged portion at one end of the elongated body having a recess therein, the recess being partially defined by a pair of spaced apart side walls each of which terminates in an outer edge which is at an acute angle with respect to the longitudinal axis of the elongated body, the supports each being a block-like member having an exterior configuration matching the interior configuration of the recess of the enlarged portion of the vehicle center console assembly to receive a vehicle console assembly thereon with the outer edges of said side walls resting on the shipping rack loading surface and the longitudinal axis of the elongated body at an acute angle with respect to the loading surface, the supports being arranged in at least one row on the shipping rack loading surface, each support being spaced apart longitudinally on the shipping rack loading surface with respect to adjacent supports and being spaced apart slightly laterally on the shipping rack loading surface with respect to adjacent supports, each support having a vertical notch in one corner, the notches of adjacent supports being provided in alternating corners to receive alternating corners of the side walls of a vehicle center console assembly mounted on adjacent supports and laterally secure the vehicle center console in place and prevent contact therebetween.

5,004,103

TOOL STORAGE BOX

Peter J. Connors, Radnor, Pa.; Sean Scully, Nanuete; Frank Bria, West Nyack, both of N.Y., and John ReFalo, III, Basking Ridge, N.J., assignors to Remcon Plastics, Inc., Conshohocken, Pa.

Filed Sep. 11, 1989, Ser. No. 405,025
Int. Cl.[5] B65B *85/20*
U.S. Cl. 206—372 **18 Claims**



1. A storage and tote box for tools, the storage and tote box comprising:

container means for accommodating a plurality of tools,

tray means adapted to be disposed in said container means for suspending the respective tools in the said container means,

a plurality of through hole means provided in said tray means for accommodating at least a body portion of the respective tools,

means provided on an upper surface of the tray means for supporting an upper portion of the respective tools above an upper surface of the tray means,

means provided in said tray means for positionally locking the respective tools relative to said tray means, and

means provided on said tray means for preventing said tools from contacting each other in a suspended position including an extension means provided on a lower surface of the tray means at each of said through hole means for engaging a portion of the body of the respective tools, and wherein said extension means includes mean for positionally locking the respective tools relative to the tray means.

5,004,104

MULTI-UNIT PACKAGE PARTICULARLY FOR PARALLELEPIPED CARTONS

Alain Saulas, Chateauroux, France, assignor to The Mead Corporation, Dayton, Ohio

Filed Mar. 30, 1990, Ser. No. 502,606
Claims priority, application United Kingdom, Mar. 30, 1989, 8907185
Int. Cl.[5] B65D *5/04*
U.S. Cl. 206—526 **6 Claims**

1. A pair of nested carton blanks, each of said blanks being adopted to form a package for accommodating a plurality of parallelepiped cartons, and comprising:

a top wall panel;

a bottom wall panel;

a pair of spaced side wall panels interconnecting said top wall panel and said bottom wall panel to form a tubular structure in which said parallelepiped cartons may be accommodated, each of said side wall panels having upper, lower and end edges;

an end wall panel connected to each of said end edges to at least partially close the ends of said tubular structure;

said tubular structure having corners formed by one of said side wall panels and an adjacent one of said end wall panels, said corners defining upper and lower corner portions and extending a full height of the cartons to be accommodated therein;

each of said upper and lower edges of each of said side wall panels defining a recess into said side wall panel adjacent each of said corners;

said recesses each being sized and positioned to correspond to said upper and lower corner portions, whereby said recesses of one of said blanks may receive said upper and lower corner portions of another one of said blanks so that said blanks may be nested when in a flat form.

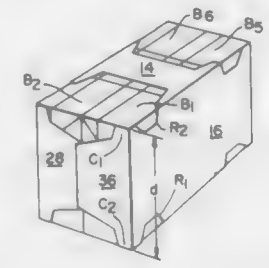
2. A package including a wrapper and a plurality of substantially identical parallelepiped cartons of a predetermined height, said wrapper comprising:

a top wall panel;

a bottom wall panel;

a pair of spaced side wall panels interconnecting said top wall panel and said bottom wall panel to form a tubular structure in which said parallelepiped cartons may be accommodated, each of said side wall panels having upper, lower and end edges;

an end wall panel connected to each of said end edges to at least partially close the ends of said tubular structure;



said tubular structure having corners formed by one of said side wall panels and an adjacent one of said end wall panels, said corners defining upper and lower corner portions and extending said height of said cartons to be accommodated therein;

each of said upper and lower edges of each of said side wall panels defining a recess into said side wall panel adjacent each of said corners;

said recesses each being sized and positioned to correspond to said upper and lower corner portions, whereby said recesses of said wrapper may receive said upper and lower corner portions of an adjacent and substantially identical wrapper so that said wrappers may be nested when in a flat form.

6. A package including a wrapper and a plurality of substantially identical parallelepiped cartons of a predetermined height, said wrapper comprising:

a top wall panel;

a bottom wall panel;

a pair of spaced side wall panels interconnecting said top wall panel and said bottom wall panel to form a tubular structure in which said parallelepiped cartons may be accommodated, each of said side wall panels having upper, lower and end edges defining a width extending between said edges;

an end wall panel connected to each of said end edges to at least partially close the ends of said tubular structure;

said tubular structure having corners formed by one of said side wall panels and an adjacent one of said end wall panels, said corners defining upper and lower corner portions and extending said height of said the cartons to be accommodated therein;

said top and said bottom panels each having a width less than said width of said side wall panels;

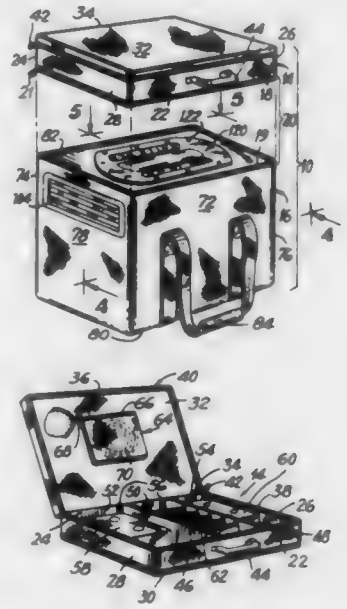
each of said end wall panels, said top and said bottom panels being formed whereby an end wall panel of said wrapper may be positioned adjacent one of said top and said bottom panels of an adjacent and substantially identical wrapper so that said wrappers may be nested when in a flat form.

5,004,105

PACKAGING ARRANGEMENT FOR TRANSPORTING AUDIO SYSTEM COMPONENTS TO AND FROM AN OUTDOOR MARINE SITE

Tommyca Freadman, 16 Glen Dr., Goshen, N.Y. 10924

Filed Mar. 16, 1990, Ser. No. 495,261
Int. Cl.[5] B65D *85/30*
U.S. Cl. 206—576 **24 Claims**



1. A packaging arrangement for transporting audio system components to and from an outdoor site, particularly a marine location, comprising:

(a) a pair of weather-resistant carrying containers, each having an interior;

(b) a first sound-transmitting speaker removably mounted in the interior of one of the containers;

(c) a second sound-transmitting speaker mounted in the interior of the other of the containers; and

(d) detachable connector means for securing the containers together for transport of both containers carrying their respective speakers as an integrated cargo unit to and from the site, and for detaching the secured containers for independent transport of each detached container carrying its respective speaker as an individual cargo unit to and from the site, said detachable connector means including connector portions engaging each other when the containers are secured together, and disengaged apart from each other when the containers are detached.

11. A packaging arrangement for transporting audio system components to and from an outdoor site, particularly a marine location, comprising:

(a) a pair of weather-resistant carrying containers, each having an interior, one of the containers having a plurality of partitions removably mounted within, and subdividing,

the interior of said one container to form individual storage compartments;

(b) a first sound-transmitting speaker removably mounted in the interior of said one container;

(c) a second sound-transmitting speaker mounted in the interior of the other of the containers; and

(d) detachable connector means for securing the containers together for transport of both containers carrying their respective speakers as an integrated cargo unit to and from the site, and for detaching the secured containers for independent transport of each detached container carrying its respective speaker as an individual cargo unit to and from the site.

14. A packaging arrangement for transporting audio system components to and from and outdoor site, particularly a marine location, comprising:

(a) a pair of weather-resistant carrying containers, each having an interior, one of the containers including a cover mounted for movement between open and closed positions in which access is permitted and denied respectively, and a pouch mounted on the cover and having an access opening through which cables pass for storage in the pouch;

(c) a first sound-transmitting speaker removably mounted in the interior of said one container;

(c) a second sound-transmitting speaker mounted in the interior of the other of the containers; and

(d) detachable connector means for securing the containers together for transport of both containers carrying their respective speakers as an integrated cargo unit to and from the site, and for detaching the secured containers for independent transport of each detached container carrying its respective speaker as an individual cargo unit to and from the site.

16. A packaging arrangement for transporting audio system components to and from an outdoor site, particularly a marine location, comprising:

(a) a pair of weather-resistant carrying containers, each having an interior and a carrying handle;

(b) a first sound-transmitting speaker removably mounted in the interior of one of the containers;

(c) a second sound-transmitting speaker mounted in the interior of the other of the containers; and

(d) detachable connector means for securing the containers together for transport of both containers carrying their respective speakers as an integrated cargo unit to and from the site, and for detaching the secured containers for independent transport of each detached container carrying its respective speaker as an individual cargo unit to and from the site.

17. A packaging arrangement for transporting audio system components to and from an outdoor site, particularly a marine location, comprising:

(a) a pair of weather-resistant carrying containers, each having an interior;

(b) a first sound-transmitting speaker removably mounted in the interior of one of the containers;

(c) a pair of second sound-transmitting speakers, a frequency cross-over network, an electrical amplifier and means for conducting waste heat away from the amplifier, all mounted in the interior of the other of the containers; and

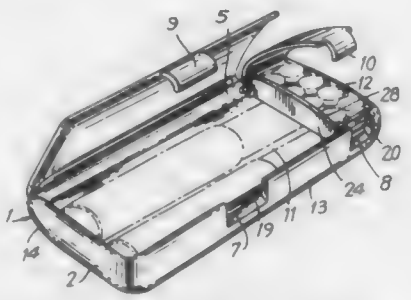
(d) detachable connector means for securing the containers together for transport of both containers carrying their respective speakers as an integrated cargo unit to and from the site, and for detaching the secured containers for independent transport of each detached container carrying its respective speaker as an individual cargo unit to and from the site.

5,004,106

MULTI-COMPARTMENT CONTAINER

Judith E. Blumstock, and Leslie P. Morgan, both of New York, N.Y., assignors to Protection Protection, Inc., New York, N.Y.

Filed Feb. 14, 1990, Ser. No. 480,115
Int. Cl.[5] B65D *69/00*
U.S. Cl. 206—581 **9 Claims**



1. A multi-compartment container comprising:

(a) a body member made of one piece of molded plastic shaped to form an elongated box-like shape having a flat bottom side and four upwardly disposed sides thereon wherein said four sides and said bottom form a first compartment;

(b) a partition attached inside to at least one of said sides of said body member forming a second compartment nested within the first compartment, said partition providing a side and bottom for the second compartment wherein the bottom of the second compartment defines a space between the bottom of the second compartment and the bottom of the first compartment so that the first compartment being larger than said second compartment extends under said second compartment when the container is in a normal position whereby an elongated article can extend substantially along the bottom of the first compartment;

(c) first and second cover members attached to said body member,

said first cover member being larger than said second cover member and permitting access to said first compartment and

said smaller second cover member permitting access to said second compartment.

5,004,107

EARTHQUAKE BRACED RACKS

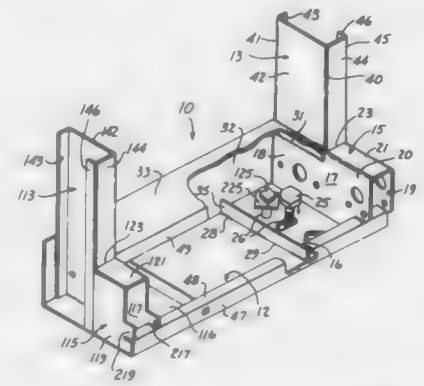
Richard W. Sevier, Goleta, and James J. Keenan, Santa Barbara, both of Calif., assignors to Hendry Mechanical Works, Goleta, Calif.

Filed May 5, 1989, Ser. No. 347,672
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—26 **29 Claims**

1. In a method of bracing an electronic equipment rack including a horizontal frame member and a vertical frame member against earthquake damage, the improvement comprising in combination the steps of:

providing a metal gusset for said horizontal and vertical frame members wherein the gusset has a first leg fitting against said horizontal frame member to extend along part of that horizontal frame member, a second leg integrally connected to and extending from a lateral edge of the first leg and fitting against said vertical frame member for a first part of said second leg to extend along part of that vertical frame member, a third leg spaced from and extending in parallel to a second part of said second leg, and a fourth leg extending between and integrally connected to lateral edges of said second and third legs to abut against another part of said vertical frame member; and

carrying solid metal from said vertical frame member to said horizontal frame member by intimately connecting said



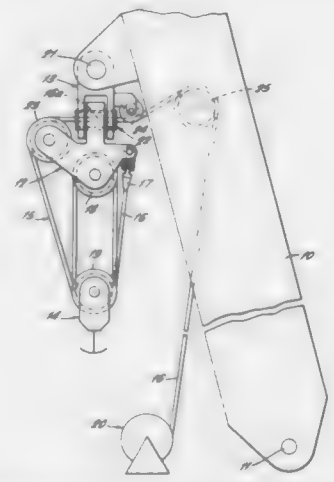
gusset to said vertical and horizontal frame members by overlap welding.

5,004,108

CRANES

Hendrik Van Ketel, Maassluis, Netherlands, assignor to 501 Heerema Engineering Service B.V., Leiden, Netherlands

Filed Mar. 22, 1989, Ser. No. 327,337
Claims priority, application United Kingdom, Apr. 8, 1988, 8808233
Int. Cl.[5] B66C *23/06;* **B66D** *03/08*
U.S. Cl. 212—255 **4 Claims**



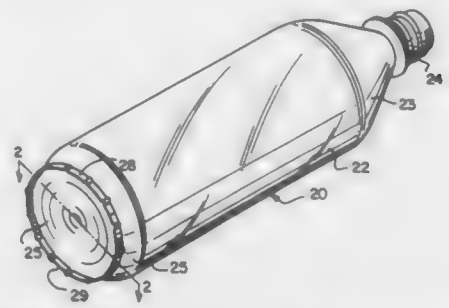
1. In a crane of the kind having a boom or sheerleg which is mounted for pivotal movement about a first horizontal axis, an upper block assembly suspended from said boom or sheerleg, a lower block assembly, a cable system suspending the lower block assembly from the upper block assembly and having at least one cable extending therebetween, and winching means remote from said upper and lower block assemblies for winching in and paying out said cable to raise and lower the lower block assembly, the improvement comprising a joint assembly between the upper block assembly and the boom or sheerleg having first pivotal connection means between the joint assembly and the boom or sheerleg for pivotal movement of the joint assembly and upper block assembly about a second axis parallel to the first axis, and said second pivotal connection means comprises a hollow shaft to allow said cable to pass through the connection means and guide means mounted on respectively said upper block assembly and joint assembly for guiding the cable leading between said cable system and the winching means through said hollow shaft along the third axis so that a part of said cable extends in the direction of said third axis at a position perpendicular to said second axis.

5,004,109

BLOWN PLASTIC CONTAINER HAVING AN INTEGRAL SINGLE THICKNESS SKIRT OF BI-AXIALLY ORIENTED PET

Harold D. Bartley, Springfield, and William R. Gaiser, Dayton, both of Ohio, assignors to Broadway Companies, Inc., Dayton, Ohio

Division of Ser. No. 157,449, Feb. 19, 1988, Pat. No. 4,861,260. This application Jul. 3, 1989, Ser. No. 374,704
Int. Cl.[5] B65D *1/02, 23/00*
U.S. Cl. 215—1 C **2 Claims**



1. A blow-molded carbonated beverage bottle formed from a preform of PET material, comprising:

a top,

a cylindrical side wall of generally uniform thickness,

a generally spherical pressure bottom,

said bottom having a generally constant thickness across its width corresponding to said side wall thickness,

a single thickness annular support skirt formed as an integral part of said bottom and extending generally axially of said bottle from said bottom at a location radially inward of said side wall,

said skirt being formed of bi-axially oriented PET material and having a radial thickness about the same as that of said bottom, and

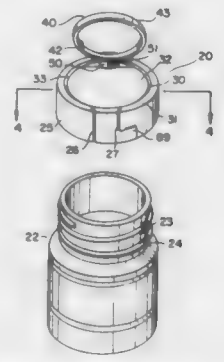
said skirt terminating at a lower surface defining means for supporting the bottle in an upright position.

5,004,110

RETORTABLE CLOSURE FOR PLASTIC CONTAINER

Thomas W. Osip, Worthington, Ohio; Jerold W. Montgomery, Libertyville, Ill., and Paul A. Pezzoli, Worthington, Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Aug. 3, 1989, Ser. No. 388,889
Int. Cl.[5] B65D *51/20*
U.S. Cl. 215—232 **15 Claims**



1. A closure for plastic containers having an annular lip, said closure comprising a generally cylindrical side wall, said side

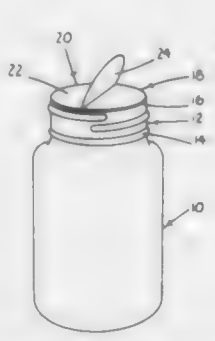
wall having an outer surface and an inner surface, said closure having retaining means located adjacent said inner surface for cooperative engagement with said lip, and a top, said top having a center portion removal means, an annular rim portion and a center portion, said center portion removal means secured to said center portion and said center portion removal means comprising a ring and a ring base said ring having an inner ring wall, said ring base including a pair of angled outer walls flanking a central outer wall, said central outer wall and angled outer walls featuring an area of depression, said top having a lower surface attached to a heat sealable barrier, said heat sealable barrier able to be secured to said container and comprising an impervious layer between layers of a heat sealable material, said side wall having a top edge and a bottom edge, said side wall having a plurality of score lines including a first score line which extends from said top edge to said bottom edge and a second score line which extends from said top edge to a score line terminus, said score line terminus being located between said top edge and said bottom edge, said score line terminus being a raised portion of said side wall, said top having a top score line extending only partially therethrough.

5,004,111

INTERNALLY DELAMINATING TABBED INNERSEAL FOR A CONTAINER AND METHOD OF APPLYING

Theresa A. McCarthy, West St. Paul, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Feb. 27, 1989, Ser. No. 314,392
Int. Cl.[5] B65D *51/18*
U.S. Cl. 215—232 **28 Claims**



1. An improved easy opening innerseal for use with a container of the type having an opening defined by an upper rim, comprising:

a body portion having an upper surface and adapted for fitting over an upper rim of a container, said body portion including membrane means for preventing passage of fluid through said body portion; and means adapted for bonding said body portion against the upper rim of the container; said bonding means having a first bonding portion for bonding against the container rim with a first bonding force and a second bonding portion which is adhered to said first bonding portion with a second bonding force which is less than said first bonding force, said first bonding portion being fabricated of a material which has a rupture strength that is less than either of said second bonding force and said first bonding force; and

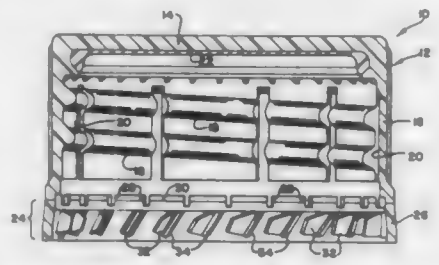
means separate from said body portion and connected to said upper surface of said body portion for grasping by a user, so that said body portion may be removed from a container by pulling said upper grasping means, wherein a first part of said first bonding portion will delaminate from said second bonding portion over the container rim and remain adhered to the rim, while a second part of said first bonding portion will remain adhered to said second bonding portion, thereby exposing the opening.

5,004,112

TAMPER-INDICATING PLASTIC CLOSURE

Stephen W. McBride, Brownsburg, Ind., assignor to H-C Industries, Inc., Crawfordsville, Ind.

Filed Apr. 10, 1990, Ser. No. 507,301
Int. Cl.[5] B65D *41/34*
U.S. Cl. 215—252 **10 Claims**



1. A tamper-indicating closure for a container having an annular locking ring, comprising:

a plastic closure cap having a circular top wall portion, and a depending cylindrical skirt portion; and

an annular pilfer band depending from and at least partially detachably connected to said skirt portion by frangible means,

said pilfer band including a plurality of circumferentially spaced, inwardly extending flexible projections, each of said projections being movable about respective, non-horizontal hinge means,

said pilfer band further including interference means operatively associated with said circumferentially spaced flexible projections, said flexible projections being engageable with said interference means during removal of said closure from said container for fracturing said frangible means.

5,004,113

PLUG AND BLOOD CIRCULATION DEVICE WITH THE PLUG

Atsuhiko Nogawa, Fuji, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1989, Ser. No. 304,593
Claims priority, application Japan, Feb. 3, 1988, 63-23354
Int. Cl.[5] B01D *13/00*
U.S. Cl. 215—358 **13 Claims**

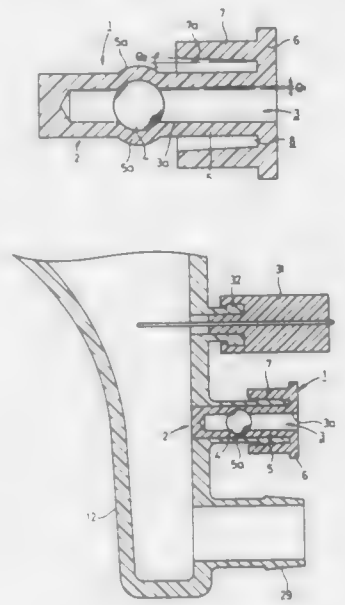
2. A plug comprising:

a plug body having a column member made of a soft resilient material;

a core made of a material harder than said soft material of the plug body and disposed in said column member, said core displacing a portion of said column member outwardly and forming an outwardly bulging portion of said column member;

said column member having a partition wall at one end thereof, said partition wall and an outer wall surface of said column member jointly defining therebetween a groove receptive of a projection of a female member into which the plug body can be fitted;

[illegible] partition wall having a length measured parallel to said outer wall surface which is substantially longer than a



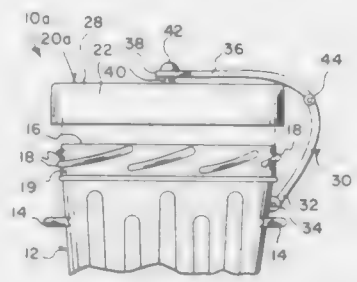
width of said groove measured perpendicular to said outer wall surface.

5,004,114

TRASH CAN WITH TETHERED COVER

Rosemarie Terbrusch, R.D. 4 Blueberry La., South Salem, N.Y. 10590, and George Spector, 233 Broadway #3815, New York, N.Y. 10007

Filed Nov. 2, 1989, Ser. No. 430,7[illegible]
Int. Cl.[5] B65D *55/16, 41/06*
U.S. Cl. 220—296 **1 Claim**



1. A trash container comprising:

(a) a pail with a vertical axis having a pair of carry handles and an open top for receiving trash therein;

(b) a first engaging means disposed on outer surface about the open top of said pail;

(c) a cover having a center and a depending skirt being of a size to fit about the open top of said pail;

(d) a second engaging means disposed on inner surface of the depending skirt of said cover and adapted to interlock with said first engaging means to tightly secure said cover to the open top of said pail so that it will prevent an animal from entering through the open top of said pail to eat the trash therein; wherein said first engaging means is a plurality of interrupted twist threads while said second engaging means is an appropriately aligned plurality of lug wedge shaped members which are interlocked by rotation of said cover in a plane substantially perpendicular to the vertical axis of said pail over which said cover is placed; further comprising:

(e) a U-shaped arm having a distal end pivoted about a horizontal axis to side of said pail below said twist threads and a proximate end which terminates into a washer-like portion;

(f) a pivot pin having an enlarged head fits through the washer-like portion of said U-shaped arm and into center of said cover, allowing said cover to rotate about said vertical axis;

(g) a hinge connecting said distal end and said proximate end whereby said proximate end can bend away from said pail for removal of said cover;

(h) a pointer disposed onto the washer-like portion; and

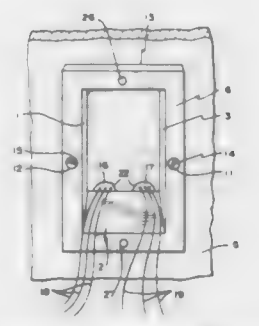
(i) a marker line disposed onto the top surface of said cover extending radially from said pivot pin so as to line up with said pointer to indicate that said lug wedge-shaped members are in proper alignment with said twist threads when said cover is placed over the open top of said pail.

5,004,115

ACOUSTICALLY INSULATING ELECTRICAL BOX

Ghislain L'Heureux, 911, Rang St-Antoine, St Féréol Les Neiges, Quebec, Canada G0A 3R0

Filed Apr. 25, 1989, Ser. No. 342,909
Int. Cl.[5] H02G *3/08*
U.S. Cl. 220—3.3 **12 Claims**



1. In the combination of an electric box with a building wall or ceiling board having a front surface and an opening therein, said electric box comprising:

(a) a box-like wall structure having an open face and comprising at least one aperture through which electrically conducting wires enter the electrical box;

(b) means for attaching the said wires to the box-like structure; and

(c) a planar flange extending outwardly around all of the open face of the box-like wall structure, said planar flange having a back surface and being so dimensioned as to extend over the front surface of the wall or ceiling board when said box-like wall structure is inserted into said board opening,

the improvements wherein

the box-like wall structure of said electric box is non perforated except for said at least one aperture; and

said combination further comprises:

(e) means for sealing said at least one aperture with the electrically conducting wires therein to prevent transmission of acoustic waves through the said at least one aperture of the box-like wall structure; and

(f) fastener means for attaching the said electrical box directly on said board with the said flange and board overlapping each other around all of the board opening and with a sealing compound pressed between the box flange and said board around all of the board opening, fastener means comprising a plurality of fasteners U-shaped in cross-section and each defining two leg members with respective, coaxial holes, each U-shaped fastener being positioned on a corresponding edge of the board opening with the leg members thereof on opposite sides of the board, the fastener means further comprising screws each driven through the box flange, the said board and the

coaxial holes of a corresponding one of said U-shaped fasteners, in order to fixedly attach the electrical box to the board while pressing the sealing compound between the back surface of the flange and the front surface of the board to form an acoustic wave-tight joint between said flange and said board;

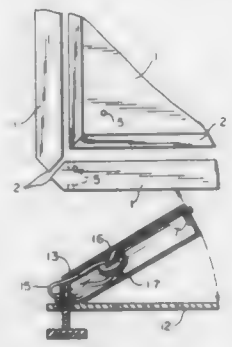
whereby said non-apertured box-like wall structure with each of said at least one aperture sealed by said sealing means and with said sealing compound pressed between said flange and said board around all of the board opening to form an acoustically insulating combination preventing the existence of direct structural acoustic short circuit.

5,004,116

MODULAR SECTIONAL CONTAINER WHICH CAN BE TRANSPORTED MANUALLY, FOR CONSERVING SUBSTANCES, IN PARTICULAR FOR ALIMENTARY USE

Andrea Cattarozzi, Via della Mattonaia, 21, Florence, Italy

Filed Aug. 29, 1989, Ser. No. 400,207
Claims priority, application Italy, Sep. 2, 1988, 11716/88[U]
Int. Cl.[5] A47F *5/00*; B65D *6/12*
U.S. Cl. 220—4.34 **2 Claims**



1. Modular sectional container for conserving substances and which can be transported manually comprising:

panels made of insulating material, each panel forming a wall thereof, wherein a perimetral edge of each panel is V-shaped and defined by two converging faces of said edge, having an angle of 90° between them, there being formed along the edge of each panel two continuous grooves to accommodate tridimensionally extending sealing means having a shape as that of said container in a vicinity of corners of said panel and on edge surfaces of said panels and wherein there is provided an engaging seat for a connection means that joins at least three panels together;

wherein said connection means are angle elements having three orthogonal faces from each of which projects a male connecting element designed to be engaged inside said engaging seat of the panel located adjacent and mounted rotatably on said angle element so as to be anchored inside said seat by means of rotation through a predetermined angle;

wherein there is provided a base element comprising folding legs designed to be fixed, in an extended position, to one of said panels in a region of said engaging seats on its external surface; and

wherein extractable ties for binding said panels in a stacked and compact form are accommodated inside said legs.

5,004,117

SAFETY CYLINDER CAP

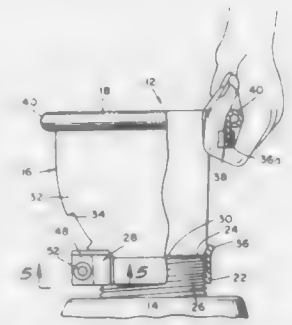
Sakae Kitsuda, 1-3-5 Nishiyawata, Hiratsuka, Japan

Filed Sep. 25, 1989, Ser. No. 412,162
Int. Cl.[5] B65D *25/00*
U.S. Cl. 220—83 P **7 Claims**

4. A safety cap for use in connection with a cylinder for containing a compressed gas, said safety cap comprising a generally bell shaped body, including:

(a) a first end having a first opening of a first size, said first end being generally circular in shape and including a including a peripherally extending rounded bead;

(b) a generally cylindrically shaped second end having a second opening of a second size smaller than said first size, said second end being internally threaded for interconnection with said cylinder;



(c) a curved side wall interconnecting said first and second ends, said curved side wall having a first aperture and a second oppositely disposed larger aperture, said second aperture having an edge portion disposed proximate said rounded bead;

(d) adjustment means for adjusting the size of said second opening; and

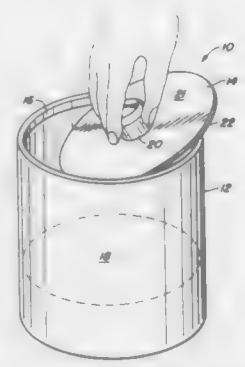
(e) gripping means disposed within said second aperture proximate said edge portion for engagement by the fingers of a person lifting the cylinder.

5,004,118

CONTAINER COVER

Eric England, and Rick DiSalvo, both of P.O. Box 148, Fairfax, Calif. 94930

Filed Dec. 4, 1989, Ser. No. 445,177
Int. Cl.[5] B65D *88/34*
U.S. Cl. 220—216 **7 Claims**



1. A cover for placement on the surface of the liquid contents of a container, said container having an inside diameter, said cover comprising:

a disc portion having a top surface and a bottom surface, said disc portion bottom surface conditioned to rest upon said liquid surface, said disc portion having a diameter slightly less than said container inside diameter;

a handle portion attached to said disc portion top surface;

a reservoir chamber attached to said disc portion, said reservoir chamber conditioned to contain a quantity of a thinning agent; and

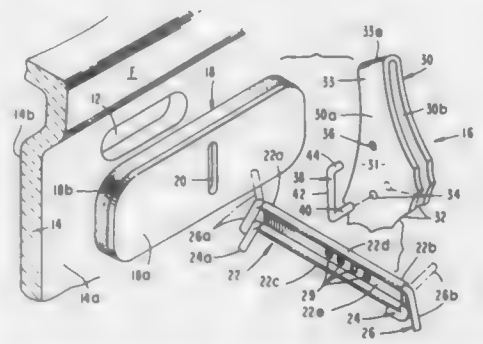
perforations enabling passage of said thinning agent from said reservoir chamber to said disc portion bottom surface, so that said thinning agent is in contact with said liquid contents of said container.

5,004,119

DRAIN SEALING APPARATUS

Lawrence F. Irwin, Sylmar, Calif., assignor to Augerscope, Inc., Sylmar, Calif.

Filed Jul. 31, 1989, Ser. No. 386,633
Int. Cl.[5] B65D *45/00*
U.S. Cl. 220—247 **10 Claims**



1. An apparatus for sealably closing an aperture provided in a wall having spaced apart first and second surfaces, comprising:

(a) wall engaging means for sealably engaging the first surface of the wall at a location surrounding the aperture, said wall engaging means comprising a sealing member having an aperture therethrough and including a first rigid surface and a second yieldably deformable surface for engagement with said first surface of said wall;

(b) actuating means operably associated with said wall engaging means for moving said sealing member into sealable engagement with the first surface of the wall, said actuating means comprising:

(i) a cam support member having first and second ends and an elongated web-like intermediate portion;

(ii) a first locking element connected to said cam support member and extending outwardly from the first end thereof for insertion into the aperture provided in the wall;

(iii) an outwardly extending second locking element rotatably connected to said cam support member for insertion into the aperture provided in the wall and for movement from a first position to a second position for engagement with the second surface of the wall;

(iv) cam means rotatably connected to said cam support member for engagement with said rigid surface of said sealing member to urge said sealing member into pressural engagement with the first surface of the wall when said second locking element is in said second position.

5,004,120

DEVICE TO PROTECT THE ENDS OF FLUID TANKS MADE OF COMPOSITE MATERIALS

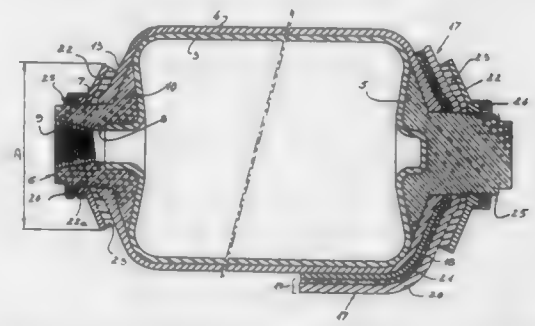
Claude L. Hembert, Quartier les Maurels, 83400 Hyeres, France

Filed May 16, 1990, Ser. No. 524,191
Claims priority, application France, May 18, 1989, 89 06761
Int. Cl.[5] B65D *25/02*
U.S. Cl. 220—414 **2 Claims**

1. A tank for containing fluid under pressure, comprising:

an inside shell 3 for ensuring imperviousness to the pressurized fluid and made of molded synthetic material; an outside shell 4, concentric with said inside shell, ensuring mechanical tolerance and made of resin reinforced by a filament winding; and at least one metal end piece having an annular collar with a frustoconical surface between said shells reinforcing at least the end of the tank endowed with an opening, with bonding between the ends of the two shells; and wherein said metal end piece further comprises a cylindrical portion coaxial with the longitudinal axis of the tank; and

a truncated protective metal collar 22 having the same conicity as said frustoconical surface of the annular collar of the joining piece and having an outside diameter at least



equal to that of said annular collar, said protective collar being solitary with a collet 22*a* screwed on a threading 25 provided on the outside part of said cylindrical portion; a washer 23, made of elastic material inserted between the protective collar 22 and the outside surface of the end of the tank, and a pinch nut 24 screwed on said cylindrical portion over said protective collar 22.

5,004,121

CONTROLLED HEATING BAKING PAN

David J. Howe, Milford, Mass., assignor to Proctor & Gamble Company, Cincinnati, Ohio

Filed Jan. 22, 1990, Ser. No. 467,932
Int. Cl.[5] B65D *90/04*
U.S. Cl. 220—458 **15 Claims**



1. A non-metallic paper fiber baking pan of unitary construction having a bottom wall and an endless connected side wall extending therearound at an angle to the bottom wall forming an inside corner edge portion of the pan, a portion of the pan along said inside corner edge portion and at least a portion of the side wall being thicker than other portions of the pan.

5,004,122

ARTICLE DISPENSING PACKAGE

Timothy M. Poynter, 331 Tusculum Ave., Cincinnati, Ohio 45226

Filed Jan. 18, 1989, Ser. No. 298,408
Int. Cl.[5] B65D *83/04*
U.S. Cl. 221—155 **3 Claims**

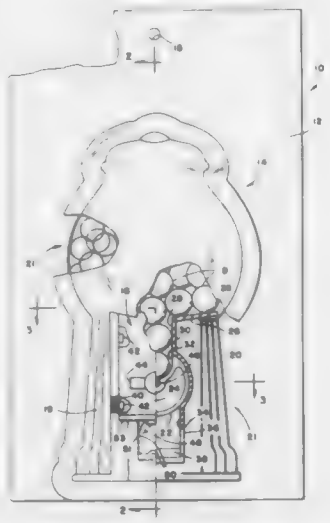
1. A display package from which articles may be dispensed, said package comprising

a relatively rigid backing sheet,

a transparent, relatively rigid, blister piece secured to said backing sheet and having a protruding portion which defines, in part, a chamber in which the articles are disposed,

the protruding portion of the blister piece having a flange disposed in a given plane from which the remainder of the blister piece protrudes, said flange being secured to the backing sheet,

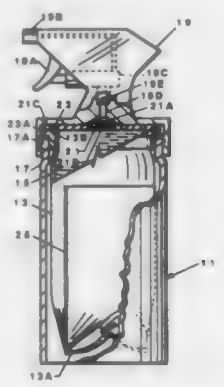
whereby the blister piece, in combination with the blister sheet forms the article chamber,
the protruding portion of the blister piece having, in elevation, the outline of an article vending machine, including an upper bowl portion, which comprises the article chamber, and a base portion,
the base portion of the blister piece having an opening formed therein, and
manually operable means, mounted on the backing sheet and disposed beneath the article chamber, for dispensing articles therefrom,
the dispensing means comprising
a housing registered with the opening in the base portion and disposed within said base portion, and



a feeder wheel rotatably mounted in said housing and having a pocket, which, in an upper position receives an article from the article chamber with said passageway, said feeder wheel being rotatable to a bring the pocket to a lower discharge position, in which the article is discharged through the opening in the base portion of the blister piece,
whereby the article may be dispensed from the package,
said housing having a front plate disposed in the opening in the blister piece and
the side edges of said opening being formed by reversely folded portions of the blister piece to provide structural strength.

5,004,123
FLUID DISPENSER WITH NON-VENTING ASPIRATOR AND BAG
William R. Stoody, 8659 Summerdale Rd., San Diego, Calif. 92126
Filed Aug. 7, 1989, Ser. No. 390,111
Int. Cl.[5] B65D *35/22*
U.S. Cl. 222—94 **21 Claims**

1. A portable non-venting pump fluid dispenser system for isolated containment and dispensing of fluid product, which comprises:
a collapsible bag, for containment of said fluid, having an open upper end and a closed distal end;
a finger operated non-venting pump, having an inlet check valve which closes against back flow of fluid product, which facilitates said dispensing and closes said dispenser system;

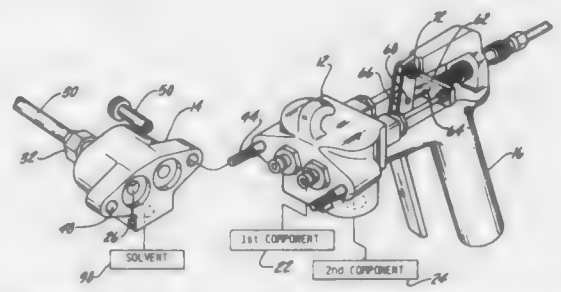


and a valve means which blocks back flow of air into said bag being disposed between said check valve and interior of said bag.

5,004,124
METHOD AND APPARATUS FOR DISPENSING A FLUID SUBSTANCE
Philip S. Stefaniak, Hanover Park, Ill., and Daniel H. Fine, Leonia, N.J., assignors to The Trustees of Columbia in The City of New York, New York, N.Y.
Filed Dec. 8, 1988, Ser. No. 281,494
Int. Cl.[5] B67D *5/52*
U.S. Cl. 222—136 **65 Claims**

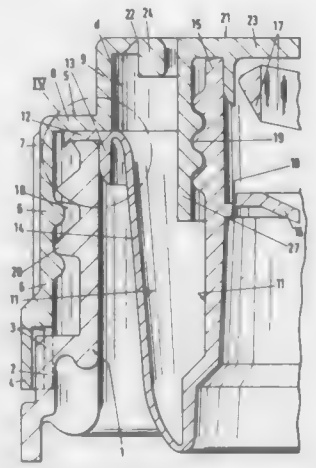
1. A non-compressible fluid substance dispenser comprising an elongate body for containing an amount of a fluid substance to be dispensed by said dispenser, including a fluid dispensing aperture,
means for ejecting a fluid substance from said fluid dispensing aperture, said ejecting means comprising a first elongate member having an outer surface of a first surface hardness, and
means for actuating said ejecting means, said actuating means comprising a physically deformable elongate lever member having integral contacting means for engaging and physically deforming said outer surface to effect actuation of said ejecting means, said contacting means having a second surface hardness, said second surface hardness being greater than said first surface hardness to enable the physical deformation of said outer surface by said contacting means, such that force applied to the lever member reversibly physically deforms the lever member, causing the contacting means to contact, physically deform and firmly grip said first elongate member, and causing the contacting means to move toward said fluid dispensing aperture thereby causing said first elongate member to move toward said fluid dispensing aperture while maintaining a firm grip on the outer surface of said first elongate member.

5,004,125
MULTIPLE COMPONENT FLOW GUN
Ronald E. Standlick, Rochester, Mich., assignor to Jesco Products Company, Inc., Sterling Heights, Mich.
Continuation of Ser. No. 817,152, Jan. 6, 1986, which is a continuation of Ser. No. 748,707, Jun. 25, 1985, abandoned, which is a continuation of Ser. No. 411,902, Aug. 26, 1982, abandoned. This application Nov. 1, 1989, Ser. No. 430,765
The portion of the term of this patent subsequent to Feb. 20, 2007, has been disclaimed.
Int. Cl.[5] B67D *5/60*
U.S. Cl. 222—145 **12 Claims**



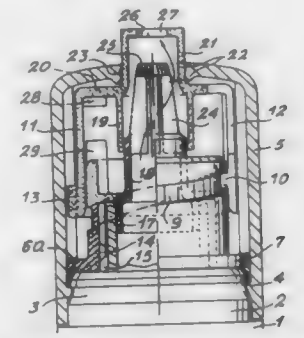
11. In a system for mixing and dispensing two or more fluids, a gun comprising:
a housing having at least two inlet chambers;
first means to fluidly interconnect a first fluid to one inlet chamber and a second fluid to the other inlet chamber;
a mixing tube;
second means to fluidly connect said two inlet chambers to said mixing tube; and
said housing being formed of two parts, said two parts being detachably secured along a plane, the dispensing ratio of said first and second fluids being measurable when said two parts are detached.

5,004,126
PLASTIC CLOSURE FOR A PLASTIC CONTAINER
Konrad Klesius, Maria-Oberndorf-Strasse 5, 6501 Bodenheim, Fed. Rep. of Germany
Filed Sep. 8, 1988, Ser. No. 241,651
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1987, 3730225
Int. Cl.[5] B67B *5/00*
U.S. Cl. 222—153 **18 Claims**



1. A plastic closure adapted to be screwed onto the neck (1) of a plastic container with a screw-on ring (5) and with an insert portion (11) comprising a flexible bellows (14) and a pour spout (15), with frame cap (21) adapted to be screwed on to an external thread (19) on the spout, characterized in that the frame cap (21) is integral with the screw-on ring (5), and the top wall (23) of the cap (21) is moulded so that it projects a distance (d) from the top wall (8) of the ring (5), said top wall (8) of said ring (5) provided with at least one raised, outwardly protruding retaining piece (9) of a height approximately equal to the distance (d) to the top wall (23) of the cap (21).

5,004,127
CAP WITH A ROTATING CASING FOR FLASKS, TUBES AND SIMILAR CONTAINERS
Simone Morel, 11 rue du Faubourg de Paris, 51210 Montmirail, Marne, France
Filed May 10, 1989, Ser. No. 350,280
Claims priority, application France, May 11, 1988, 88 06381; Mar. 17, 1989, 89 03544
Int. Cl.[5] B67D *5/32*
U.S. Cl. 222—521 **15 Claims**



1. A cap for a neck of a container, said cap comprising a casing having a dispensing aperture, means for rotatably mounting said casing to said neck and for preventing axially longitudinal movement of said casing relative to said neck, a bell shaped member between said casing and said neck, said bell shaped member having an open position and a closed position, means of said bell shaped member and said casing for slidably connecting said bell shaped member to said casing, a sheath connected to said neck at one end and terminated by a stopper at the other end, helicoidal guiding means of said bell shaped member and said sheath for connecting said bell shaped member to said sheath, said bell shaped member having a neck part slidably disposed within said aperture upon rotation of said casing, and said neck part having an opening which is closed by said stopper when said bell is in said closed position.

5,004,128
FLEXI-NOZZLE
Thomas Richichi, and Paul Richichi, both of 1462 Coolidge St., North Bellmore, N.Y. 11710
Filed Feb. 7, 1989, Ser. No. 307,047
Int. Cl.[5] B67D *3/00*
U.S. Cl. 222—527 **5 Claims**

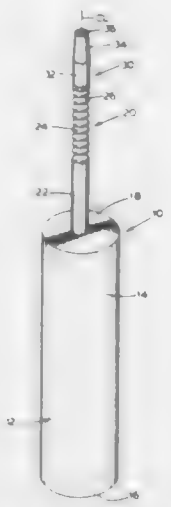
1. A single-use monolithic container for sealant-type materials comprising:
(A) a monolithic container body having a rear end and a forward end, said container body storing sealant-type material and having at least a portion thereof adapted to be moved by a calker-type element to force the sealant material out of the body;
(B) a monolithic dispensing means on said body forward end and being monolithic with said body and forming a one-piece construction therewith, said dispensing means including an elongate body having a body overall length and including
(1) a non-deformable base section attached at a rear end thereof to said container body forward end to extend outwardly of said container body forward end for ¼ of the body overall length and having a forward end,
(2) a nozzle section on said elongate body forward end,

said nozzle section extending for ¼ of the body overall length and including

(a) a cylindrical entrance section and

(b) a conical dispensing section on said cylindrical entrance section, said conical dispensing section having an exit port and being shaped to converge from said entrance section towards said exit port,

(c) a flexible connecting section connecting said base section to said nozzle section and extending for ½ of the body overall length, said connecting section including a multiplicity of accordion folded portions,



said connecting section being formed of flexible material which is ductile enough to permit said connecting section to be bent with respect to said container body and stiff enough to permit a bent connecting section to retain a bent condition as material from said container body is forced from said container body through said dispensing means, and

(3) a material passage in said dispensing means connecting the interior of said dispensing means to the interior of said container body for conducting sealant material from said container body to and through said dispensing means.

5,004,129

SELF-VENTING CONTAINER

Eugene W. Loch, Fort Wayne; David D. Ball, Yoder, and George F. Mack, Fort Wayne, all of Ind., assignors to ITT Corporation, New York, N.Y.

Filed Jan. 18, 1990, Ser. No. 466,900
Int. Cl.[5] B65D *51/16*
U.S. Cl. 220—366 **11 Claims**

1. A self-venting container comprising:

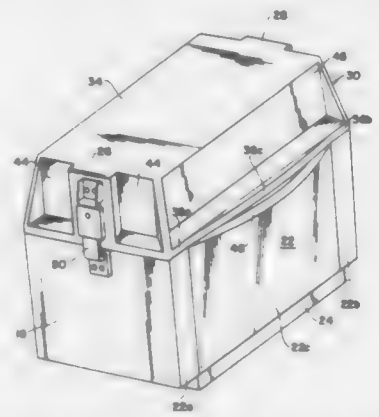
a rectangular bottom portion formed with a base and a pair of opposed bottom side walls and a pair of opposed bottom end walls, each of said walls being joined substantially perpendicularly to said base and to adjacent ones of said bottom side walls and bottom end walls so as to form a rectangular enclosure with an outer peripheral edge;

a rectangular top portion formed with a lid and a pair of opposed top side walls and a pair of opposed top end walls, each of said walls being joined substantially perpendicularly to said lid and to adjacent ones of said top side walls and top end walls so as to form a rectangular enclosure with an outer peripheral edge matched to said bottom portion outer peripheral edge; and

holding means for connecting said bottom portion in sealing contact with said top portion and securing the container in a closed condition,

wherein each of said bottom side walls is formed with a bottom central section joined with two bottom end sections on opposite ends thereof so as to form a cantilevered bottom side wall structure; and

wherein said central and end sections of said bottom side walls are constructed of a flexible material exhibiting a predetermined elongation percentage, such that the respective central sections thereof bow outwardly with a



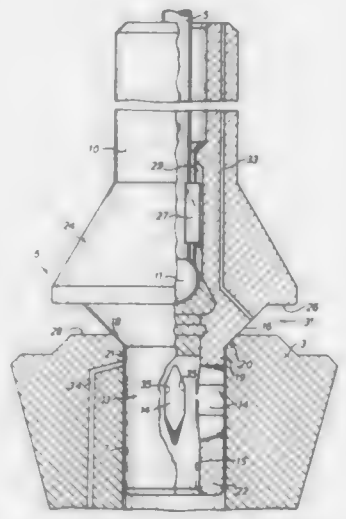
cantilever effect relative to the end sections when excessive internal pressures in the container are exerted on the walls thereof, thereby creating a gap between the central sections of the bottom side walls and said top portion in order to allow excessive pressures contained in the container to escape, thus alleviating the internal pressures without causing a safety hazard.

5,004,130

OUTLET AND FLOW CONTROL DEVICE FOR METALLURGICAL VESSELS AND PROCESS

Arthur Vaterlaus, Rüschlikon, Switzerland, assignor to Arva AG, Rüschlikon, Switzerland

PCT No. PCT/CH87/00161, § 371 Date Aug. 31, 1988, § 102(e) Date Aug. 31, 1988, PCT Pub. No. WO88/04209, PCT Pub. Date Jun. 16, 1988
PCT Filed Nov. 27, 1987, Ser. No. 229,858
Claims priority, application Switzerland, Dec. 1, 1986, 4782/86; Sep. 30, 1987, 3805/87
Int. Cl.[5] B22D *41/10*
U.S. Cl. 222—590 **20 Claims**



1. An outlet valve structure to control flow of a metallic melt, adapted for installation in the bottom (2) of a vessel (1) containing the melt, said valve structure comprising

an essentially vertically positioned outlet pipe (3) having a vertical bore (7) therethrough;

a first sealing part (18) formed at an upper end portion of the vertical bore (7);

stopper means (6) comprising a plug (13), said plug (13) being formed with a second sealing part (16) dimensioned and shaped to fit against said first sealing part (18), said first and second sealing parts forming a first seal (20) for the melt;

a central longitudinal discharge opening (15) formed in said plug (13), said opening (15) having a lower open end discharging into said vertical bore (7);

at least one radially directed aperture (14) communicating with said discharge opening (15);

an operating rod (5) extending in vertical direction within, and outside of said vessel (1);

a hollow sleeve or stem (10) extending from said stopper means (6) and surrounding said operating rod, with radial play or clearance;

coupling link means (11) permitting limited relative deflection in a vertical and a horizontal plane located between the stopper means (6) and at least one end of the rod (5) to permit limited movement of the plug (13) with respect to the link means (11) and self alignment of said first seal (20); and

an arm means (23) coupled to the upper end of the rod (5), said arm means being positioned outside of the upper portion of the vessel, said arm means selectively transferring vertical reciprocating and rotational movement to said rod to control, respectively and selectively, vertical reciprocation of the plug (13) between the lowered position on said first seal (20) and a raised open position permitting communication between the interior of said melt containing vessel (1) and said radially directed aperture (14) and hence said discharge opening (15) and selective orientation of the radial position of said aperture with respect to said vessel.

17. A process for selectively withdrawing, or inhibiting withdrawal of molten metal, forming a melt, from a vessel, wherein the vessel includes

an outlet pipe having a vertical downwardly directed bore through which said melt can flow through gravity, and

a first sealing part formed at an upper end of the vertical bore;

and wherein

stopper means are provided, comprising a plug, the plug having a second sealing part arranged thereon, dimensioned and shaped to fit against said first sealing part to form a first seal for the molten metal;

said plug being formed with a central longitudinal discharge opening having a lower open end discharging into said vertical bore, and an essentially radially directed aperture means connecting said discharge opening with the interior of the vessel,

said process comprising the steps of

imparting to the molten metal a predominantely horizontal direction of flow in the area near said outlet pipe, and varying the angular orientation of said flow with respect to said vessel by rotating the essentially radially directed aperture means within said plug, during flow of the melt through said aperture means, said opening, and said vertical bore.

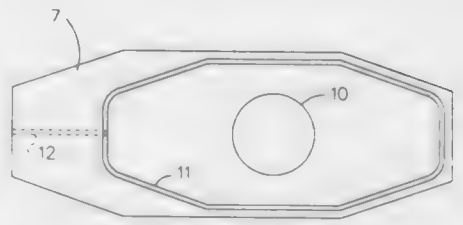
5,004,131

MOLTEN METAL SLIDE GATE VALVE

Thomas J. Russo, Kingsville, Md., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Apr. 16, 1990, Ser. No. 509,683
Int. Cl.[5] B22D *41/08*
U.S. Cl. 222—600 **2 Claims**

1. A slide gate valve for controlling the flow of molten metal comprising a stationary upper refractory plate member having a molten metal orifice, a reciprocable lower refractory slide plate having a molten metal orifice and movable in contact with the bottom face of said upper refractory plate member, the bottom face of said upper refractory plate member having



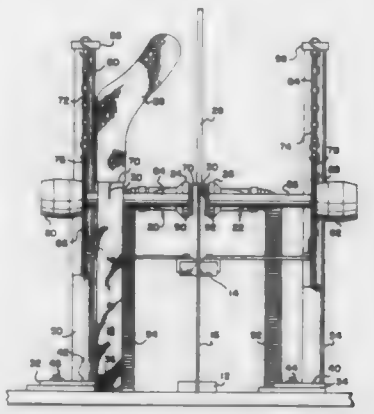
a shallow open groove extending around the entire periphery of said molten metal orifice and means for introducing a flow of a nonoxidizing gas into said groove.

5,004,132

METHOD AND APPARATUS FOR PRODUCING SOCKS

George E. Hollowell, Hildebran, and Hugh D. Sample, Newton, both of N.C., assignors to Neuville Industries, Inc., Hildebran, N.C.

Filed Jan. 24, 1990, Ser. No. 468,751
Int. Cl.[5] A41H *43/00*; **D05B** *65/00*
U.S. Cl. 223—1 **17 Claims**



1. A method of finishing socks utilizing a blocking machine of the type having a plurality of movable, flat sock blocking forms to receive previously knit socks having a free yarn end and to transport the socks through the blocking machine, comprising the steps of:

providing a clipping head on each side of the blocking forms in position to contact the socks on the forms;

passing the sock blocking forms with socks respectively thereon between the clipping heads; and,

operating the clipping heads to sever the free year end from each sock prior to blocking.

5,004,133

DETACHABLE ARTICLE CARRIER ASSEMBLY

Philip W. Wyers, 6476 S. Ivy Ct., Englewood, Colo. 80111

Filed Apr. 20, 1989, Ser. No. 341,124
Int. Cl.[5] B60R *9/10*
U.S. Cl. 224—42.45 R **12 Claims**

1. Bicycle carrier apparatus comprising:

a trailer hitch tongue with an aperture,

a bicycle carrier assembly detachably mounted to said tongue, said carrier assembly including

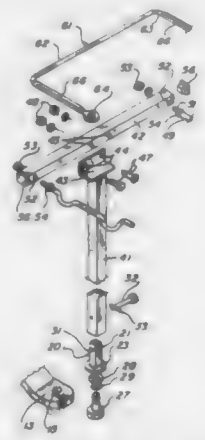
a generally vertically extending solid male stub shaft with a central internally threaded throughbore positioned in alignment with said aperture,

a removable fastener having a head portion and an externally threaded shaft portion that extends through said aperture

and threads into said stub shaft to rigidly fasten said stub shaft to said hitch tongue,

a bicycle carrier member detachably mounted to said stub shaft, said carrier member including a generally vertically extending column portion having a hollow lower end portion defining a female socket slidably telescoping over said stub shaft and an upper portion on said column portion for engaging a bicycle to be carried, said column portion being at least five times longer than said stub shaft, said female socket sized and having an internal shape of a corresponding complementary shape with the external shape of said stub shaft to provide co-operating complementary mating surfaces in a close-fitting relationship, said stub shaft having a washer affixed at the bottom end, said washer projecting laterally out from the bottom end of said stub shaft, the external dimension of said washer being greater then the external dimension of said column portion, said stub shaft extending a sufficient distance upwardly into said female socket to provide the sole support for holding said column portion of said tongue in a generally vertical position, and

a locking member extending through said column portion and said stub shaft to prevent said carrier member from becoming separated from said stub shaft.



5,004,134

BACKPACK SYSTEM FOR BEACH RELATED ACTIVITIES

Thomas P. Barry, P.O. Box 10591, Marina del Rey, Calif. 90291

Filed Feb. 6, 1990, Ser. No. 475,742
Int. Cl.[5] A45F *3/04*
U.S. Cl. 224—209 **6 Claims**

1. A backpack system comprising in combination:

(a) a substantially rectangular pliant cloth shell having four sides and a bottom with a top opening at the upper portion of said shell, said top opening enclosed by a cover, said cover secured to said shell by a first closure means to secure articles within said shell;

(b) a carrying means attached to said shell to secure said shell to the user's shoulders and back in a substantially upright position;

(c) a plurality of exterior pockets of the same material as said shell, and attached to said shell, said exterior pockets each having a pocket closure means for retaining a plurality of objects within said exterior pockets;

(d) an umbrella retaining assembly comprising

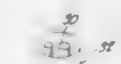
(i) an umbrella, enclosed within a sheath to form a substantially cylindrical body,

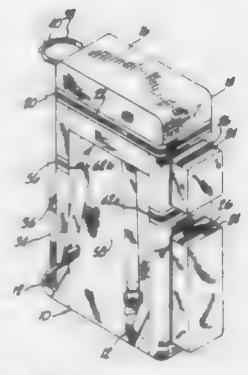
(ii) an external pouch attached to said shell and having substantially vertical sides culminating in a first opening, said first opening engaging said umbrella,

(iii) an attachment collar, attached to said cover and disposed in combination with and in a substantially concentric manner with said first opening to secure said umbrella to said shell;

(e) a connector assembly, comprising

(i) a beach chair of a substantially tubular construction,





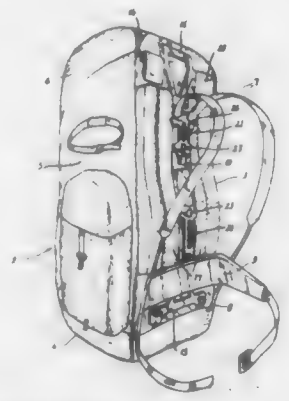
(ii) a plurality of connectors attached to said cover, each connector having an easy open capability to releasably secure said beach chair to said cover.

5,004,135

ADJUSTABLE FRAME FOR BACKPACK

Francois Dufournet, Aix Les Bains, and Philippe Verneréy, Annecy, both of France, assignors to Societe Anonyme Dite: Millet, Seynod, France

Filed Jul. 11, 1989, Ser. No. 378,287
Claims priority, application France, Jul. 11, 1988, 88 09844
Int. Cl.[5] A45F *3/08*
U.S. Cl. 224—210 **7 Claims**



1. A backpack comprising:

a front panel adapted to lie against a back of a wearer of the backpack;

a vertical generally S-shaped guide rail fixed to the front panel generally centrally thereon and having a generally straight upper portion having an upper end provided with an upper crosspiece secured to the front panel and a generally straight lower portion lying somewhat ahead of the upper portion and having a lower end provided with a lower crosspiece secured to the front panel;

a pair of cushions flanking the rail, secured to the panel, and projecting forward therefrom past the rail;

an upper slide displaceable vertically along the rail and provided with latch means for arresting it at any of a plurality of locations therealong;

shoulder straps adapted to engage over shoulders of the wearer of the backpack and having upper ends secured to the upper slide;

a lower slide displaceable vertically along the rail and provided with latch means for arresting it at any of a plurality of locating therealong; and

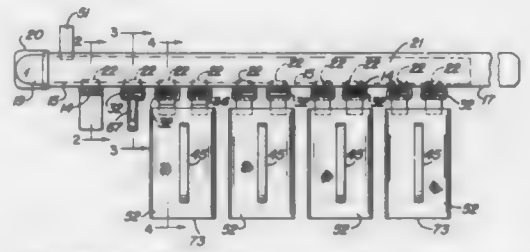
a belt adapted to engage around a torso of the wearer of the backpack and secured to the lower slide.

5,004,136

JANITORIAL UTILITY BELT FOR CARRYING SPRAY BOTTLES, GLOVES, DUSTERS, AND CLEANING TOWELS

Robert P. Leath, 405 Foxpark Dr., Pomona, Calif. 91767

Filed Jan. 23, 1989, Ser. No. 299,932
Int. Cl.[5] A45F *5/00*
U.S. Cl. 224—253 **7 Claims**



1. A janitorial utility belt comprising;

a belt adapted to encircle a user's waist, said belt having an upper edge and a lower edge,

a plurality of flat web elements attached to said belt at spaced points therealong, each web element extending downwardly beyond the lower edge of the belt and then upwardly to a fixed connection with the belt to form a loop,

a plurality of rigid connector rings, each ring comprising two vertically spaced suspension portions, each ring having its upper suspension portion extending transversely through one of said loops for attachment of said ring to the belt,

at least one hollow pouch adapted to receive therein a liquid-containment bottle and having an open upper end,

flexible strap means associated with each pouch, said strap means having lower end portions thereof attached to the associated pouch at the pouch upper end, said strap means being adapted to extend upwardly from the associated pouch, about a lower suspension portion on the associated connector rings, and then downwardly toward the pouch, said strap means having first and second facing surfaces thereof located below the associated ring, fibrous loop means extending along one of said facing surfaces, and fibrous hook means extending along the other facing surface, the two fibrous means being adapted to interlock and thereby detachably adhere the two facing surfaces together.

5,004,137

STRUCTURE OF GOLF SCORE BOARD

Jiin-Tang Wu, No. 35-1, Jih Hsin Street, Tu Cheng Hsiang, Taipei Hsien, Taiwan

Filed Jan. 12, 1990, Ser. No. 464,065
Int. Cl.[5] B60R *9/00*; B65D *85/00*
U.S. Cl. 224—274 **1 Claim**

1. A golf score board comprised of:

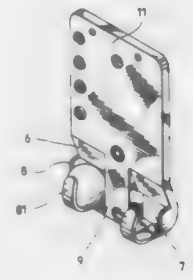
a planar member made of resilient material and having an end portion;

two openings located at said lower portion; each of said openings being bound by side walls defining a top edge, a bottom edge, an inner side edge and an outer side edge, said openings are sized so as not to allow a golf ball to pass therethrough;

said planar member including a dividing wall portion located between said openings;

a slanted face located adjacent each of said top edges of said openings, said faces extending from said planar member and slanting rearwardly and downwardly from said planar member to said top edges;

said side walls of said outer and bottom side edges of said openings extending orthogonally with respect to said planar member;



said side walls of said inner side edges of said openings extending from said planar member to said inner side edges;

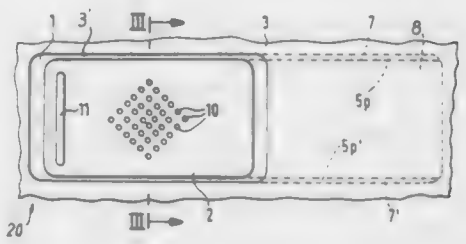
a hook-like projection extending from each of said side walls of said bottom edges and outwardly of said planar member and overlying said openings so as to curve toward said openings; whereby a golf ball can be resiliently held between said slanted faces, said side walls and said hook-like projections and be easily removed therefrom.

5,004,138

AUTOMOBILE SUN VISOR WITH BUILT-IN AIR FRESHENER BOX

Carlos Gabas, Barcelona, Spain, assignor to Industrias Techno-Matic S.A., Barcelona, Spain

Filed Nov. 6, 1989, Ser. No. 431,923
Claims priority, application Spain, Nov. 7, 1988, 8803274[U]
Int. Cl.[5] A61L *9/12*
U.S. Cl. 224—312 **5 Claims**



1. Automobile sun visor with built-in air freshener box comprising a sun visor body provided with a box recess and a body surface and having a main axis and a main hollow container having a plurality of upper edges, said hollow container being mounted in said box recess so as to be incorporated in said sun visor body with said upper edges in the vicinity of said body surface, said container being generally aligned with said main axis of said sun visor body and said hollow container having opposing lateral guideways adjacent opposing ones of said upper edges and being provided with a sliding cover mounted in said lateral guideways located close to said upper edges, said guideways having extensions extending beyond said container sufficiently to allow for a major portion of said cover to be received in said extensions, when said cover is moved in an opening direction, and said hollow container also being pro-

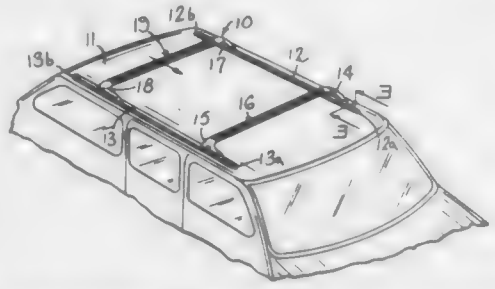
vided with means for holding an air freshener element in said hollow container.

5,004,139

VEHICLE ARTICLE HOLDER

Manfred Storm, and Greg J. Storm, both of Cheshire, Conn., assignors to Hagus, U.S.A., Inc., Clinton, Conn.

Filed Sep. 15, 1989, Ser. No. 408,072
Int. Cl.[5] B60R *9/00, 9/048*
U.S. Cl. 224—324 **20 Claims**



10. An article carrier for a motor vehicle comprising a pair of side rails adapted to be mounted to the roof of a vehicle in spaced apart relationship and extend longitudinally of the length of the vehicle,

said side rails defining a guideway therein defined by upper and lower walls having upper and lower facing surfaces, a pair of stanchions, said stanchions supporting a cross rail therebetween generally perpendicular to said side rails,

each of said stanchions of said pair having a bottom wall with engaging means integral therewith extending therefrom and received in said guideways and slidable therein, said guideways capturing said engaging means therein and permitting only sliding movement of said engaging means therein.

a recess defined in said bottom wall of said stanchions, a clamping member received in said recess, said clamping member being rotatable in said recess and having a camming portion extending into said guideway, said upper and lower surfaces being defined by upper and lower walls each having a longitudinal passage therein, and a guide member extending from said clamping members into the longitudinal passages of said lower walls, said camming portion having means thereon arranged to engage one of said upper and lower surfaces when in a first position to clamp said stanchion in said side rails and when in a second position to permit sliding movement of said stanchion engaging means in said guideways of said side rails.

5,004,140

ELECTRICALLY-OPERATED TACKER

Fusao Fushiya; Yoshio Yokoyama, both of Nagoya, and Akihito Hara, Aichi, all of Japan, assignors to Makita Electric Works, Ltd., Aichi, Japan

Filed Apr. 23, 1990, Ser. No. 513,572
Claims priority, application Japan, Apr. 24, 1989, 1-103638; Apr. 18, 1990, 2-102469
Int. Cl.[5] B25C *1/06*
U.S. Cl. 227—8 **16 Claims**

1. An electrically-operated tacker comprising

(a) a driving means initially located in a starting position immediately before a first extreme position for driving a tack into an object to be tacked,

(b) means for urging the driving means toward a second extreme position opposite to the first extreme position such that the driving means can spring from the first extreme position to the second extreme position to drive the tack,

(c) an operating means for moving the driving means from the second extreme position to the starting position against an action of the urging means,

(d) an electric motor for operating the operating means,

(e) a power source for supplying an electric current to the motor,

(f) a switch for making or breaking an electrical connection between the power source and the motor, the switch having a push button,

(g) a trigger means which can be directly depressed by an operator,

(h) a first depressing element connected to the trigger means for depressing the push button of the switch to start the tacker when the trigger means is depressed by the operator,

(i) a control member of a resilient material for maintaining the first depressing element in an operative position where the first depressing element can depress the push button, the control member being movable between a safety position where a first end of the control member is out of engagement with the first depressing element and a second, opposed end of the control member is out of a housing and an operating position where the first end of the control member is in engagement with the first depressing element and the second end of the control member is in the housing,

(j) a safety means for normally maintaining the control member in the safety position where the control member does not allow the push button of the switch to be depressed if the trigger means is depressed,

the first end of the control member locating the first depressing element to the operative position when the first



end thereof comes into engagement with the first depressing element,

(k) a first cooperative element which is moved as the operating means moves and is located to engage with the control member, at substantially the same time that the driving means springs from the first extreme position to the second extreme position, such that the first end of the control member is forced out of the engagement with the first depressing element to displace the first depressing element from the operative position to an inoperative position where the first depressing element no longer depresses the push button,

(l) a second depressing element connected to the trigger means,

the second depressing element coming into engagement with the push button which has already been depressed by the first depressing element, at the same time that the driving means moves away from the first extreme position, and holding the push button depressed after the first depressing element has been displaced to the inoperative position,

(m) a second cooperative element which is moved as the operating means move,

(n) a third cooperative element which is moved as the driving means moves and is operatively associated with the second cooperative element,

the second cooperative element coming into engagement with the third cooperative element, after the driving means has reached the second extreme position, and remaining in the engagement with the third cooperative element until the driving means comes to a substantially middle position,

(o) a fourth cooperative element which is moved as the driving means moves and is operatively associated with the first cooperative element,

the first cooperative element coming into engagement with the fourth cooperative element, at substantially the same time that the second cooperative element disengages from the third cooperative element, and moving the fourth cooperative element to return the driving means to the starting position where the fourth cooperative element is still engaged by the first cooperative element to hold the driving means in the starting position,

(p) a release means provided in conjunction with the second depressing element, and

(q) a fifth cooperative element which is moved as the driving means moves and is operatively associated with the release means,

the fifth cooperative element coming into engagement with the release means, at substantially the same time that the driving means reaches the starting position, to operate the release means to disengage the second depressing element from the push button, thereby switching the tacker off, and

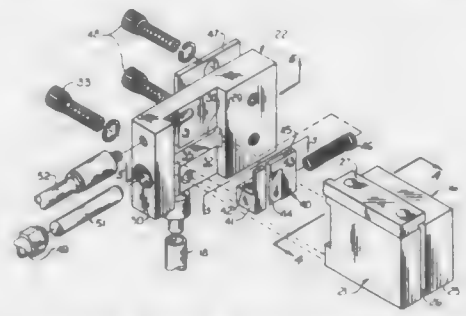
the first cooperative element moving the driving means for a slight distance to the first extreme position, when the trigger is depressed, and then disengaging from the fourth cooperative element to allow the driving means to spring to the second extreme position by the action of the urging means.

5,004,141

FASTENER FEEDING AND DRIVING APPARATUS

Alfred Young, Hickory, and Fred E. Church, Newton, both of N.C., assignors to Design Tool, Inc., Hickory, N.C.

Continuation-in-part of Ser. No. 260,239, Oct. 20, 1988. This application Jan. 30, 1990, Ser. No. 472,602
Int. Cl.[5] B23P *11/00;* **B25C** *1/04*
U.S. Cl. 227—112 **18 Claims**



1. An automatic fastener feeding and driving apparatus comprising

a source of pressurized air, and air supply line connected to said source,

fastener supply means including an outlet chute, and vibratory means for serially supplying fasteners along said chute,

fastener feeding means connected to said outlet chute for serially delivering fasteners from said chute to a fastener delivery line, and including a slide mounted for movement between a pick-up position engaging the leading fastener in said chute and a discharge position wherein the engaged fastener is moved into said fastener delivery line,

a fastener driver comprising a housing which includes a forward barrel portion, said barrel portion having a fastener inlet opening which is connected to said fastener delivery line for receiving a fastener into said barrel portion, and a plunger which is mounted for longitudinal movement within said housing so as to be adapted to move forwardly through said barrel portion and drive a fastener which is positioned in said barrel portion into a workpiece,

air valve means operatively connected to said air supply line and to said fastener feeding means, and being selectively movable between a first position wherein said feeding means is moved to its pick-up position, and a second position wherein said feeding means is moved to its discharge position and air is injected into said fastener delivery line from said source of pressurized air to deliver a fastener therein through said inlet opening and into said barrel portion of said driver, and

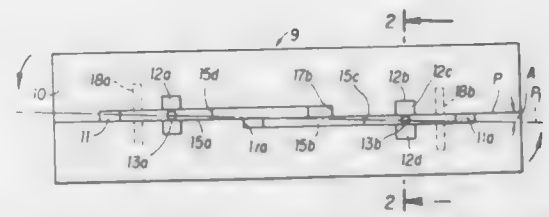
trigger means mounted on said driver for when closed causing said plunger to rapidly move forwardly through said barrel portion of said driver and causing said air valve means to move to its first position, and when open causing said air valve means to move to said second position and said plunger to return in the rearward direction.

5,004,142

GUIDE ANVIL INCLUDING MOVABLE CLINCHING WINGS FOR STAPLER

Paul Olesen, Bellmore, N.Y., assignor to Swingline Inc., Long Island City, N.Y.

Filed Jan. 23, 1989, Ser. No. 300,510
Int. Cl.[5] B25C *7/00*
U.S. Cl. 227—155 **2 Claims**



1. An anvil unit having a stationary portion and movable portions for guiding and clinching a staple having a crown and two legs including drive means for driving the staple in a vertical plane comprising

a. a stationary anvil portion having side-by-side vertical parallel slots each angled to the vertical plane which slots each in turn include a guide means for guiding each staple leg;

b. a slot end of each slot positioned between the guide means of each slot and such slot ends being spaced apart a distance with each slot connected together over such distance;

c. sloping surfaces on each guide means for guiding the staple leg into a slot;

d. a pivotal clinching anvil wing portion positioned in each of the slots to pivot for engaging and thereafter bending the leg to a clinch position, each of said anvil wing portions adjacent one another during such pivotal movement; and

e. power means for moving the clinching wing portions to clinch the staple legs.

5,004,143

METHOD OF MANUFACTURING CLAD BAR

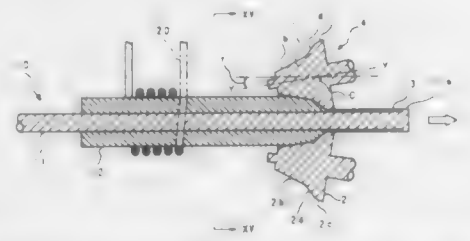
Kazuyuki Nakasuji, and Chihiro Hayashi, both of Amagasaki, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Jul. 28, 1987, Ser. No. 79,143
Claims priority, application Japan, Jul. 31, 1986, 61-181635; Aug. 8, 1986, 61-187318; Nov. 14, 1986, 61-272580
Int. Cl.[5] B23K *20/04*
U.S. Cl. 228—126 **30 Claims**

1. A method of manufacturing a clad bar, in which a colum-

nar core member is fitted in a cylindrical outside layer member having a greater resistance to deformation than the columnar core member to bond them to each other, comprising:

heating an assembly obtained by fitting the core member in the outside layer member; and



elongating the heated assembly by a rotary mill having three or more cone type rolls to finish the assembly to a desired size with the interface between the core member and the outside layer member being characterized by diffusion bonding.

5,004,144

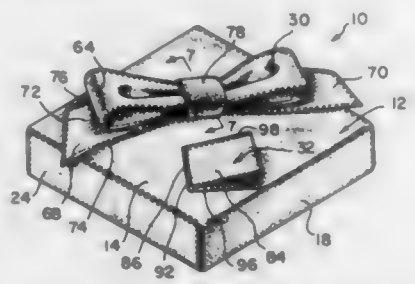
REUSABLE FABRIC GIFT WRAP

Betty J. Selga, 4859 Briercrest Ave., Lakewood, Calif. 90713

Filed Sep. 8, 1989, Ser. No. 404,821

Int. Cl.[5] B65D *65/06*

U.S. Cl. 229—87.190 **10 Claims**



1. A reusable article for enveloping gifts comprising an expansive quilted fabric wrap having opposite surfaces and having overlock stitches of thread extending about its entire perimeter wherein said surfaces are reversible and when unfolded said wrap is adapted to receive a gift therein and defines a cruciform having two pairs of outwardly directed foldable flaps, the flaps in each pair being directed in mutually opposite directions and the pairs of flaps residing in mutually perpendicular disposition when said flaps are unfolded, and releasable flexible hook and loop fastening means are secured to each of said pairs of flaps of said fabric wrap for holding said fabric wrap shut to encase said gift therewithin with one of said opposite surfaces selectively and alternatively disposed as an outer exposed surface and with the other of said opposite surfaces selectively and alternatively disposed as an inner concealed surface.

5,004,145

CARTON HANDLING DEVICE

E. Esnalls Patterson, 2053 Cressman Rd., Box 605, Skippack, Pa. 19474

Filed Aug. 15, 1990, Ser. No. 567,616

Int. Cl.[5] B65D *5/46*

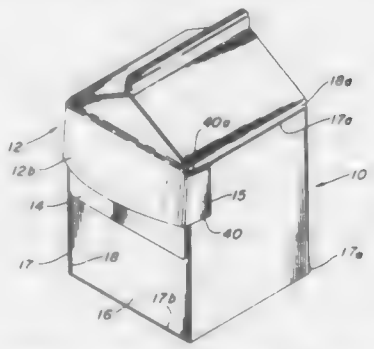
U.S. Cl. 229—117.26 **10 Claims**

1. A biodegradable handling assembly comprising:

(a) a member having side panels and a bottom area for holding dry or. alternatively, liquid measure;

(b) means attached to said member for pouring said dry or liquid measure therefrom;

(c) a handle means horizontally attached and extending across one said side panel of said member; and



(d) said handle means being formed into a pouch-like opening to accommodate partial insertion of the fingers for ease of transporting from place to place and for pouring from said member.

5,004,146

PORTABLE, COLLAPSIBLE CELLULAR RACK

Maurice Thominet, and Rosemarie Thominet, both of 704 Crane Blvd., Libertyville, Ill. 60048

Filed Aug. 17, 1989, Ser. No. 395,355

Int. Cl.[5] B65D *5/48*

U.S. Cl. 229—120.31 **3 Claims**



1. A portable collapsible cellular rack for use and storage within an automobile trunk having an operative erect condition exposing cells sized to hold one grocery bag within each of said cells in an upright position against movement during transit, said rack fabricated of corrugated fiberboard strip stock, comprising a pair of Z shaped cross partitions having fold lines for hinging near each end, and having a medial oversized slot in said cross partitions for engaging a Z shaped middle partition also having fold lines for hinging near each end, and having appropriately located oversized slots for interlocking with said medial slot of each said cross partition, and each said cross partition and said middle partition having each hinged end permanently attached at guide marks on a rectangular strip having four folded corners for hinging, and having a folded end for interconnection forming a perimeter of two short and two long side panels, to thereby form said open cells within the area bounded by said perimeter and occupied said partitions for upright transit of grocery bags, whereby following said operative erect condition, said rack is quickly closed

by turning on either one of said long side panels of the perimeter and collapsing in an accordion manner for relatively flat stowing in said automobile trunk so as to be readily available for convenient use by reversing said described procedure for closing, all without the need for any tools, added parts, or hardware.

5,004,147

PACK MADE FROM BOARD

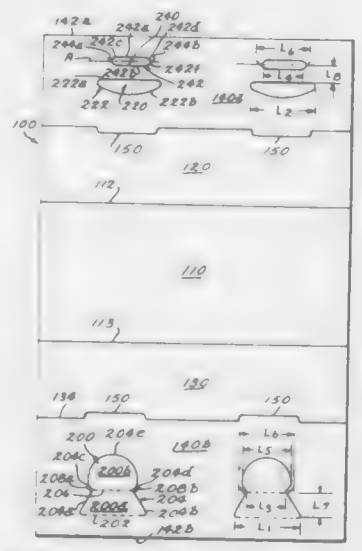
Patrick Bienaime, Troissereux, France, assignor to Unilever Patent Holdings B.Y., Rotterdam, Netherlands

Filed Sep. 21, 1989, Ser. No. 410,625

Claims priority, application France, Oct. 27, 1988, 88 14032

Int. Cl.[5] B65D *5/42*

U.S. Cl. 229—198.2 **10 Claims**



1. A pack made from a board material for packaging one or more objects, said pack comprising a blank having a first panel which will serve as a top panel in use, said first panel having opposite edges and a side panel hingedly connected to each said opposite edge, said side panels each having an edge spaced from said hinged connection to said first panel, a base panel comprising two portions, each of said portions having an edge hingedly connected to said spaced edge of one of said side panels, said two portions having interengaging means for securing said two portions together to define said base panel, said interengaging means comprising on one of said portions a pair of tabs formed by die-cutting into said one portion with said tabs being hingedly connected to said one portion by respective first folding lines, each said portion having a free edge with said first folding lines extending parallel to said free edge of said respective portion of said base panel, each said tab having a second folding line which extends parallel to said first folding line with said second folding line defining a section of each tab having projections extending from said section, said tab having a body portion disposed between said folding lines thereof with said body portion having the shape of a trapezoid which tapers from said first folding line to said second folding line so that the length of the second folding line is less than the length of said first folding line, the free end of the tab having a convex circular section having opposite ends connected to said second fold line each by straight edges with said straight edges extending divergingly from said second folding line, said other portion of said base panel including openings each for receiving a said tab.

5,004,148

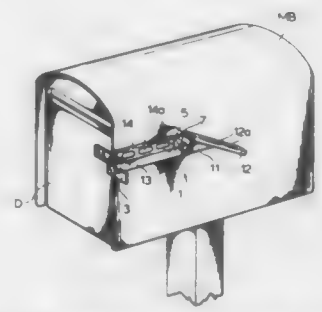
AUTOMATIC FLAG FOR RURAL MAILBOX

Ron Windrem, R.R. #5, Lindsay, Ontario, Canada K9V 4R5

Filed Apr. 12, 1990, Ser. No. 507,778

Int. Cl.[5] B65D *91/00*

U.S. Cl. 232—35 **3 Claims**



1. A mailbox with an automatic mailbox flag comprising an elongated arm of at least substantially uniform weight distribution from end to end of said arm, said arm being provided with a mounting opening off-center of said arm thereby providing a short arm end and a long arm end and said short arm end being bent to provide a flag portion on said arm, and both said long end and said short end of said arm being provided with reflectors, the reflector on said long end of said arm being visible from the side of said mail box, the reflector on said short end of said arm being mounted on said flag portion and being visible from the front of said mailbox.

5,004,149

CENTRAL AIR CONDITIONING SYSTEM HAVING COMPENSATING CONTROL FUNCTION FOR TOTAL HEAT LOAD IN A PLURALITY OF ROOMS

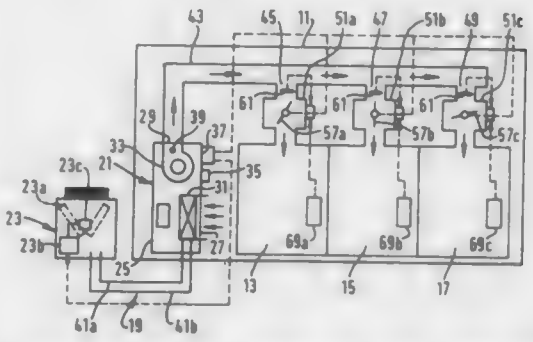
Hidetoshi Narikiyo; Yukifumi Gotou, and Yoshihiro Chuma, all of Shizuoka, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Nov. 8, 1989, Ser. No. 433,654

Claims priority, application Japan, Jan. 24, 1989, 1-14602; Jan. 24, 1989, 1-14603

Int. Cl.[5] F24F *7/00*

U.S. Cl. 236—49.3 **10 Claims**



2. A central air conditioning system wherein conditioned air is channeled through a main duct to a plurality of rooms to be air-conditioned, the system comprising:

air conditioning means for generating conditioned air at a target temperature Tfs having an original value and for forcibly supplying the conditioned air to the main duct;

air volume control means having a damper, corresponding to each room, for regulating the amount of the conditioned air from the main duct to the corresponding room, the air volume control means including air volume sensor means for detecting the amount of the conditioned air fed through the damper, the air volume sensor means outputting a maximum air amount signal Sfmax when the maxi-

mum amount of the conditioned air through the damper is detected, the air volume sensor means also outputting a minimum air amount signal Sfmin when the minimum amount of the conditioned air through the damper is detected;

room temperature sensor means, corresponding to each room, for detecting an actual room temperature Ta of the corresponding room; and

control signal producing means for producing a first value of a modified target temperature Tfm different from the original value and for changing the target temperature Tfs from the original value to the first value of the modified target temperature Tfm to establish the target temperature Tfs of the conditioned air from the air conditioning means when it is detected during the operation that either a first condition exists wherein the minimum air amount signal Sfmin is outputted from at least one of the air volume sensor means or a second condition exists wherein the maximum air amount signal Sfmax is outputted from each air volume sensor means, the control signal producing means further producing successive values of the modified target temperature Tfm and changing the target temperature Tfs to successive values of the modified target temperature Tfm until the actual room temperature Ta in each room reaches the corresponding desired room temperature Ts.

5,004,150

INSTALLATION FOR HEATING, VENTILATION OR AIR-CONDITIONING OF A LONG-DISTANCE BUS

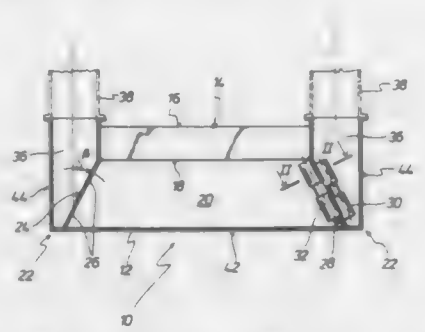
Juergen Koehler, Spiegelslustweg, Fed. Rep. of Germany, assignor to Konvekta GmbH, Schwalmstadt, Fed. Rep. of Germany

Filed Feb. 20, 1990, Ser. No. 482,334

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1989, 3907051; Apr. 8, 1989, 3911515

Int. Cl.[5] B60H *1/02*

U.S. Cl. 237—12.3 A **7 Claims**



1. An installation for heating, ventilation or air-conditioning of a bus comprising a housing (12) which transversely with respect to the longitudinal direction of the bus has a heat exchanger (14) and radial-flow blowers (28, 30, 32) which are arranged in superposed and displaced relationship one behind the other for conveying air through the heat exchanger (14), wherein downstream of the heat exchanger (14) the housing (12) has a collecting chamber (20) which is communicated by way of two lateral corner regions (22) with longitudinal ducts (36) to which are connected roof ducts (38) which extend in the longitudinal direction of the bus, characterised in that the radial blowers (28, 30, 32) are arranged in the form of suction blowers in two groups which are spatially separated from each other downstream of the heat exchanger (14), wherein the blowers (28, 30, 32) of each group of blowers are arranged with their outlet openings (34) at respective openings (26) through an associated partitioning wall (24) which extends over the respective corner region (22) between the housing (12) and the heat exchanger (14) and separates the collecting chamber (20) from the associated longitudinal duct (36), and that the partitioning walls (24) with the blowers (28, 30, 32) disposed on the openings (26) therethrough are inclined through an angle α relative to the horizontal and are inclined through an acute angle β relative to the longitudinal direction in regard to their orientation (40) between the collecting chamber (20) and the two lateral longitudinal ducts (36).

5,004,151

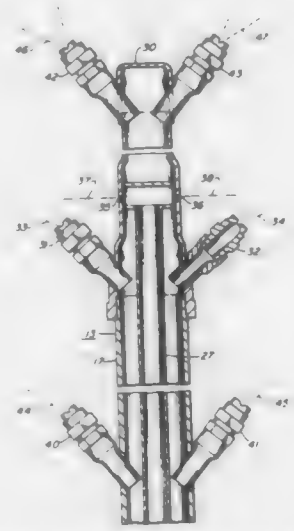
METHOD AND APPARATUS FOR MAKING SNOW

Herman K. Dupre, c/o Seven Springs, Champion, Pa. 15622

Filed Nov. 20, 1989, Ser. No. 438,615

Int. Cl.[5] F25C *3/04*

U.S. Cl. 239—2.2 **24 Claims**



1. A method of making snow comprising the steps of:

supplying water under pressure to a first point of discharge above ground;

discharging the supplied water through a first nozzle into the ambient atmosphere in the form of a spray when the atmosphere has a temperature lower than the freezing point of water;

independently supplying air under pressure to a second point of discharge above ground;

discharging the supplied air under pressure into ambient atmosphere in the form of a jet steam directed into the throat of said sprayed water thereby forming a plume of atomized water to produce snow; and

discharging the supplied water through at least one additional nozzle positioned adjacent to said first nozzle into the ambient atmosphere in the form of an additional spray directed into said plume.

5,004,152

ACOUSTIC MONITORING OF TWO PHASE FEED NOZZLES

Charles L. Baker, Thornton, Pa.; George D. Cody, Princeton, N.J.; Craig A. Joseph, Martinez, and Uri Sela, Walnut Creek, both of Calif., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Filed Oct. 30, 1989, Ser. No. 428,553

The portion of the term of this patent subsequent to Apr. 25, 2006, has been disclaimed.

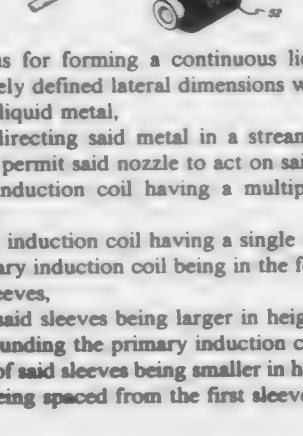
Int. Cl.[5] G01H *3/00*

U.S. Cl. 239—8 **6 Claims**

1. A passive acoustic nozzle monitoring process for correcting the operating conditions of a feed nozzle injecting a liquid gas mixture into a process vessel or chamber so as to maintain the correct mixing of said liquid and gas exiting the nozzle comprising:

(a) determining an initial time variation of the vibrational signal over an initial time period from a vibrational sensor in close proximity to said nozzle when said nozzle is performing at a standard mixing or flow condition which is the desired operating state of the nozzle;

(b) determining a time variation of the vibrational signal over a later time period from said vibrational sensor in close proximity to said nozzle;



(c) comparing said initial time variation of said vibrational signal with said time variation of said vibrational signal taken at a later time, so as to determine a change in said vibrational signal; and

(d) correcting the flow state of the nozzle by changing the variables controlling the relative volumes of gas and liquid entering the nozzle so as to return said nozzle to said desired operating state.

5,004,153

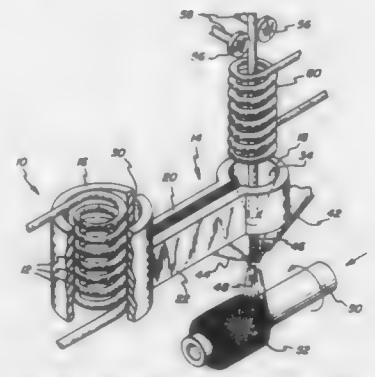
MELT SYSTEM FOR SPRAY-FORMING

Thomas F. Sawyer, Charlton, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 2, 1990, Ser. No. 487,095

Int. Cl.[5] B05O *1/24*

U.S. Cl. 239—81 **5 Claims**



1. Apparatus for forming a continuous liquid metal melt stream of closely defined lateral dimensions which comprises,

a source of liquid metal,

means for directing said metal in a stream to a magnetic nozzle to permit said nozzle to act on said stream,

a primary induction coil having a multiplicity of helical windings,

a secondary induction coil having a single winding,

said secondary induction coil being in the form of two connected sleeves,

the first of said sleeves being larger in height and diameter and surrounding the primary induction coil,

the second of said sleeves being smaller in height and diameter and being spaced from the first sleeve,

each of said sleeves having an axially aligned slit in the portion of the wall surface thereof facing the other sleeve,

said sleeves being connected by a pair of side by side parallel strip conductors having a height approximating that of the second sleeve,

and said second sleeve having an internal conical surface terminating in an opening slightly larger than that of the desired diameter of the stream of metal to pass therethrough,

whereby a high density flux is developed along the axis of the second sleeve to cause said second sleeve to serve as a magnetic funnel and to to control the dimensions of a liquid metal stream passing therethrough.

5,004,154

HIGH PRESSURE FUEL INJECTION DEVICE FOR ENGINE

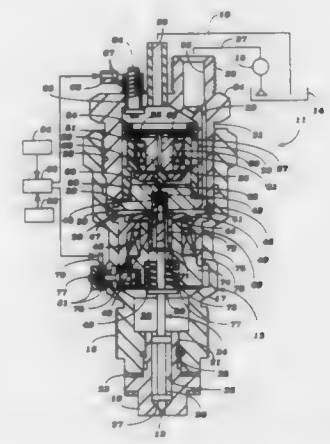
Takeo Yoshida, and Hajime Kishida, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Oct. 16, 1989, Ser. No. 422,031

Claims priority, application Japan, Oct. 17, 1988, 63-259563; Feb. 20, 1989, 1-39650

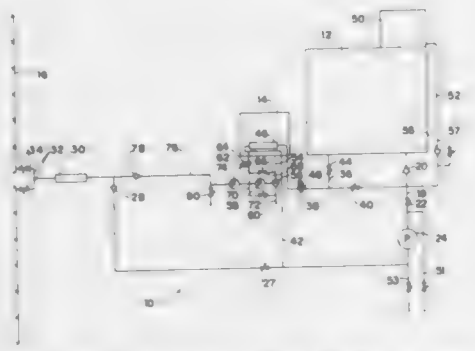
Int. Cl.[5] F02M *47/02*

U.S. Cl. 239—96 **14 Claims**



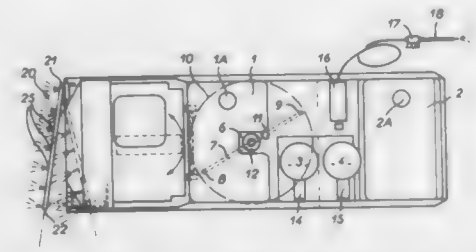
1. An accumulator type of injection nozzle comprised of an accumulator chamber supplied with high pressure fuel from a fuel inlet, a nozzle port leading from said accumulator chamber, an injector valve means for moving said injector valve in response to fuel pressure relative to said nozzle port between a closed position and an open position for controlling the discharge of fuel from said accu mulator chamber through said nozzle port, said means for moving said injector valve in response to fuel pressure comprising a control chamber for receiving pressurized fuel from said fuel inlet, said control chamber having a relief passage, an actuating member supported for movement within said control chamber and associated with said injector valve for retaining said injector valve in its closed position when said control chamber is pressurized and for movement of said injector valve to its opened position when pressure is relieved in said control chamber, and relief valve means moveable between a closed position for closing said relief passage and maintaining pressure in said control chamber and an opened position for opening said relief passage and relieving said control chamber pressure for effecting fuel discharge through said nozzle port and actuating means associated with said relief valve means for urging said relief valve means to one of its positions when said actuating means is energized, and variable stop means associated with said injector valve for varying the open position of said injector valve to either of at least two selected positions relative to said nozzle port for controlling the amount of fuel discharged by said injector valve.

5,004,155
AGRICULTURAL SPRAYER
Norm Dashevsky, General Delivery, Brunkild, Manitoba, Canada R0G 0E0
Filed Jan. 30, 1990, Ser. No. 472,283
Int. Cl.[5] B05B *9/00*
U.S. Cl. 239—127 4 Claims



1. A system for supplying measured quantities of fluid additive to a carrier liquid flow in an agricultural sprayer of the type having a carrier liquid tank, a spray boom assembly for spraying mixed carrier liquid and additive onto a field, a supply line leading from the carrier liquid tank to the boom and carrier pump means for pumping carrier liquid through the supply line, said system comprising:
an additive circulating circuit including circulating pump means, means connected to the circulating pump means for supplying additive from a bulk supply thereof to the circulating pump means, and means connected to the circulating pump means for receiving pressurized additive from the circulating pump means and for returning pressurized additive to the bulk supply thereof;
an additive metering and injecting circuit comprising metering pump means, means connecting the metering pump means to the circulating pump means for receiving pressurized additive therefrom and means connected to the metering pump means and the supply line for receiving metered quantities of the additive from the metering pump means and injecting the additive into the supply line.

5,004,156
WASHING DEVICE MOUNTED ON A MOTOR VEHICLE AND COMPRISING A ROTARY WASHING ARM WHICH DELIVERS JETS OF PRESSURIZED HOT WATER FOR CLEANING VARIOUS SURFACES
Gérard Montanier, 24 Boulevard Emile-Genevoix, 93230 Romainville, France
PCT No. PCT/FR88/00501, § 371 Date Jun. 9, 1989, § 102(e) Date Jun. 9, 1989, PCT Pub. No. WO89/03456, PCT Pub. Date Apr. 20, 1989
PCT Filed Oct. 10, 1988, Ser. No. 368,300
Claims priority, application France, Oct. 9, 1987, 87 13956
Int. Cl.[5] B05B *1/24;* E01H *1/10*
U.S. Cl. 239—130 25 Claims



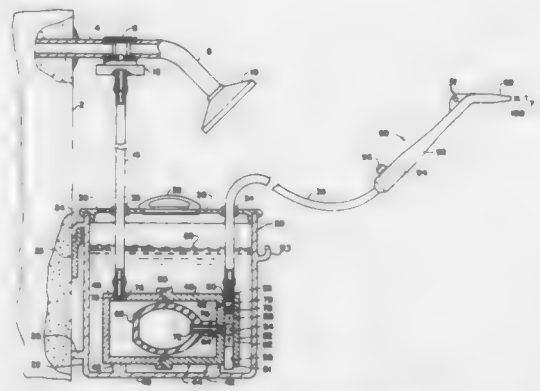
1. A washing device mounted on a motor vehicle comprising at least one cold water tank, means carrying water from said at least one cold water tank to means for heating, said means for heating comprising a high-pressure boiler adapted to deliver hot water at a pressure of 100 to 250 bars, means for supplying the pressurized hot water to a rotary cleaning arm fitted with at least one nozzle capable of directing a jet of pressurized hot water to a surface to be cleaned, and a protective casing surrounding said rotary cleaning arm.

5,004,157
SPRINKLER SYSTEM
Ely A. Martell, 60 Grandview Dr., So. Yarmough, Mass. 02341
Filed Sep. 5, 1989, Ser. No. 402,518
Int. Cl.[5] B05B *15/10*
U.S. Cl. 239—205 6 Claims



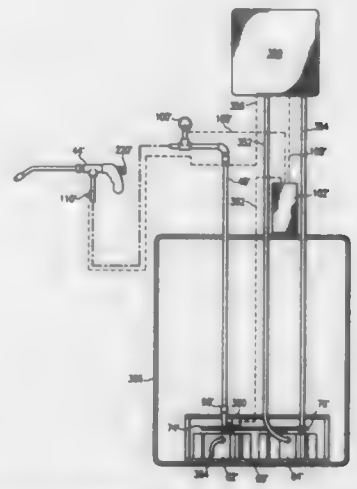
1. A sprinkler unit with a preset spray pattern for use in an underground sprinkler system, comprising:
a base mount having a substantially vertical cylindrical shape and internally formed into a cylindrical well having a plurality of longitudinal lands and having an open top end and a bottom end with an inlet for receiving water under pressure; and
a sprinkler head assembly positioned in said base mount through said base mount's top end for vertical movement relative to said base mount and in response to said water pressure, wherein the sprinkler head assembly is comprised of:
a hollow, generally cylindrical main shaft with a top end and a bottom end concentrically positioned within said base mount and having an internal radial flange with a central opening, wherein said main shaft bottom end terminates in an outwardly extending radial flange with a plurality of notches corresponding to and cooperatively engaging the internal base mount lands, whereby said main shaft may be installed within said base mount in only one position;
an outer cap with a central opening radially positioned about said main shaft and removably attached to said base mount, wherein said central opening contains a radial groove into which a resilient O-ring seal is positioned thereby preventing dirt and grime from entering and water from escaping between the main shaft and outer cap;
a spring, having a top and a bottom, positioned about said main shaft and inside said base mount, wherein said spring bottom rests on said main shaft base mount bottom flange and said spring top abuts against said outer cap, and normally acts to retract said sprinkler head assembly with a force smaller that exertible by said water pressure;
an elongated, generally cylindrical filter concentrically positioned within said main shaft and having an upper portion, lower portion, and closed bottom, said upper portion having a diameter greater than the diameter of the main shaft internal flange central opening and said lower portion having a diameter less than the diameter of the main shaft internal flange central opening, and said lower portion having a plurality of narrow longitudinal slots along most of its length; and
a nozzle assembly removably attached to said main shaft comprised of:
an inner cap with a central opening removably attached to said main shaft;
a spray head shaft with two ends, one end of which terminates in a spray head and the other end of which terminates in a radial flange, wherein said spray head shaft is vertically and longitudinally positioned concentrically through said inner cap central opening for vertical movement relative to said inner cap in response to said water pressure;
an orifice unit concetrically positioned about said spray head shaft and abutting said inner cap; and
a spring with two ends positioned about said spray head, one end of which rests on said radial flange and the other end of which abuts against said orifice unit, and normally acting to retract said spray head shaft into said inner cap with a force smaller that exertible by said water pressure.

5,004,158
FLUID DISPENSING AND MIXING DEVICE
Stephen Halem, 47 Sargent St., and Philip R. Lichtman, 3 Valley Spring Rd., both of Newton, Mass. 02158
Filed Aug. 21, 1989, Ser. No. 396,520
Int. Cl.[5] B05B *7/32*
U.S. Cl. 239—310 26 Claims



1. A device for dispensing a predetermined quantity of a selected additive in liquid form and mixing it with a selected diluting liquid comprising:
a container for holding a supply of said selected additive;
a positive displacement pump comprising a vessel, displacement means within said vessel subdividing the interior of said vessel into a first variable volume additive-containing compartment and a second variable volume diluting liquid-containing compartment, a first port for admitting said additive to said first compartment, a second part for admitting said diluting liquid to said second compartment, first means including an inlet passageway communicating with the interior of said container and a first check valve for conveying additive from said container into said first compartment via said first port, second means including a discharge passageway and a second check valve for conveying additive out of said first compartment via said first port;
means for conveying said diluting liquid from a supply line into said second compartment via said second port; and
means for admixing said diluting liquid with said additive as said additive is discharged from said first compartment via said first port, said second check valve, and said discharge passageway.

5,004,159
METHOD AND APPARATUS FOR APPLYING SINGLE OF MULTICOMPONENT MATERIALS
Kenneth J. Kistner, Midlothian, Tex., assignor to Specified Equipment Systems Company, Inc., Dallas, Tex.
Continuation-in-part of Ser. No. 147,880, Jan. 25, 1988. This application Jan. 17, 1989, Ser. No. 296,734
Int. Cl.[5] B05B *7/24, 7/16*
U.S. Cl. 239—337 7 Claims

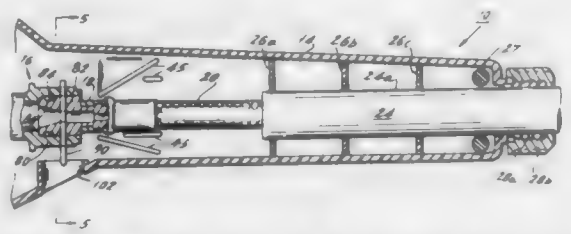


1. A system for pumping a fluid comprising:
a gear pump having two or more gears operating in a gear housing for receiving and pumping said fluid,
a discharge line from said pump for receiving said pumped fluid,
a dispenser connected on said line for selectively discharging fluid pumped through said line when said dispenser is in its opened position, and
a torque motor for driving said gear pump,
a closed chamber substantially enclosing said gear pump and said torque motor containing pressurized noncompressible fluid, said chamber being fully submerged within the fluid being pumped.

5,004,160
ATTACHMENT SYSTEM FOR LIQUID SPRAY LANCE
Robert C. Berfield, Jersey Shore, Pa., assignor to Shop-Vac Corporation, Williamsport, Pa.
Filed Mar. 16, 1990, Ser. No. 494,751
Int. Cl.[5] B05B *15/06*
U.S. Cl. 239—525 8 Claims

1. An attachment system for a liquid spraying lance, comprising:
a pump housing containing a pump outlet coupling that vibrates along with the housing when a pump operates;
a spray lance attachable to the housing at a location spaced from the pump outlet coupling, the lance having a liquid inlet coupling for flow communication with the pump outlet coupling;
a sleeve having first and second end portions respectively anchored to the housing and to the lance and selectively detachable from each of them;

a hose extending through the sleeve, the hose having an intermediate portion; at opposite ends of the hose, a hose inlet coupling and spaced from it a hose outlet coupling are provided for respective detachable connection to the pump outlet coupling and to the lance inlet coupling;



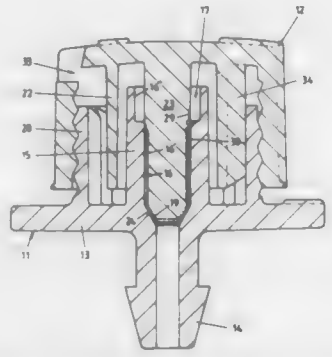
the sleeve being rigid relative to the intermediate portion of the hose while the intermediate portion of the hose being sufficiently flexible and unrestrained as to substantially insulate the housing and the pump outlet coupling from transferring vibration to the lance inlet coupling.

5,004,161

ADJUSTABLE MINIATURE WATERING DEVICE

William E. Antel, Murray Bridge, Australia, assignor to Antelco Pty. Ltd., Australia

Filed Oct. 23, 1989, Ser. No. 425,795
Claims priority, application Australia, Oct. 24, 1988, PH1124
Int. Cl.[5] B05B *15/00*
U.S. Cl. 239—542 **6 Claims**



1. An improved miniature watering unit comprising:

a generally cylindrical body having first walls forming a central axial bore extending therethrough and second walls defining an annular chamber surrounding said first walls and coaxially therewith, said bore having a lower small diameter bore portion and an upper large diameter bore portion;

inlet means communicating with said small diameter bore portion for attachment to a source of pressurized water;

at least one water outlet opening communicating with said large diameter bore portion;

a rotatable cap threadably mounted on said body and having

a centrally located stem depending from the top wall of said cap disposed to insertingly engage coaxially with said bore and

a generally cylindrical outer peripheral skirt and an inner peripheral skirt spaced radially from said outer skirt, each said skirt depending from the top wall of said cap,

said stem having an upper sealing engagement surface intermediate to its ends disposed to engage in sealing relationship with the upper end of said small diameter bore portion, and a reduced thickness section extending between said engagement surface and the lower end of said stem, being shaped and dimensioned such that an arcuate orifice of variable circumferential width is formed between said stem and the upper edge of said small diameter bore portion as said cap is rotated relative to said body to raise or lower said stem within said bore, whereby the adjustment in width of said orifice in turn adjusts the rate of water flow from said unit, and

said inner skirt projecting into said annular chamber and dividing it axially such that water exiting from the open upper end of said bore follows an elongated flow path prior to its discharge through outlet orifices formed around the upper periphery of said cap; and

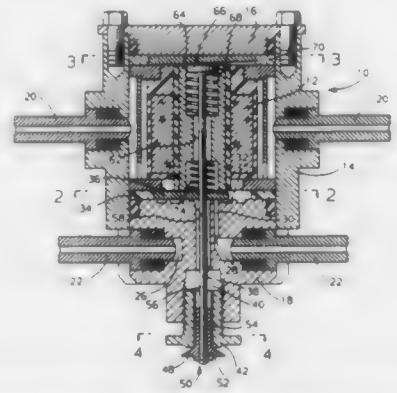
ratchet means co-operable between said cap and said body arranged to provide a step-by-step rotational adjustment of said cap with respect to said body.

5,004,162

SOLENOID ACTUATED VALVE ASSEMBLY

Ernest R. Stettner, Spencerport, and Donald D. Stoltman, Henrietta, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 21, 1989, Ser. No. 369,506
Int. Cl.[5] F02M *61/04*
U.S. Cl. 239—585 **9 Claims**



1. A solenoid actuated valve assembly comprising first and second valve members, first and second valve seats, a first spring biasing the first valve member to engage the first valve seat, a second spring biasing the second valve member to engage the second valve seat, and a solenoid coil, and wherein the first and second valve members include an armature mechanism effective when the coil is energized with a selected current to displace the first valve member from the first valve seat while the second spring maintains the second valve member in engagement with the second valve seat, the armature mechanism being further effective when the coil is energized with a current higher than the selected current to displace both the first valve member from the first valve seat and the second valve member from the second valve seat.

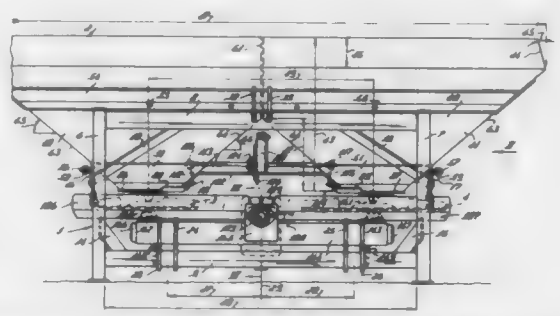
5,004,163

DEVICES FOR SPREADING GRANULAR AND/OR POWDERY MATERIAL

Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. van der Lely N.V., Maasland, Netherlands

Filed Oct. 30, 1979, Ser. No. 89,755
Claims priority, application Netherlands, Oct. 31, 1978, 7810805
Int. Cl.[5] A01C *17/00*
U.S. Cl. 239—661 **106 Claims**

1. A device for spreading granular and powdery materials comprising a frame which includes means so constructed and arranged to connect to a three-point lifting device of a tractor, a hopper for the material to be spread which is carried by said frame and at least two rotatable distributing means drivable in opposite rotational directions about upwardly extending rotary axes, characterized in that when portions of said distribution means are moving nearest each other they are moving generally in the direction of said connection means for a tractor's three-point lifting device, said hopper having two side-by-side funnel-shaped parts, feeding means being provided at the bottom of each said funnel-shaped part for performing the function of feeding material from said hopper to each said distributing means, each said distributing means receiving material from said feeding means eccentrically with respect to its corresponding said rotary axis and comprising at least one ejection means performing the function of spreading the material so received within a predetermined sector which extends over substantially equal distances on either side of a vertical plane passing through the center of the device parallel to its intended direction of operative travel and away from said connection



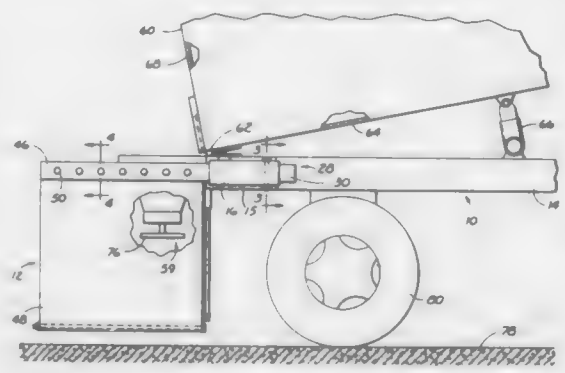
means for a tractor's three-point lifting device; said ejection means of one said distributing means being angularly offset with respect to said ejection means of the other said distributing means so that material is ejected in an alternating sequence from said distributing means, said distributing means being driven in a manner cooperating with the disposition of said feeding means and so constructed and arranged that in operation each of said distributing means performs the function of spreading material across said sector relative to its corresponding said rotary axis which coincides throughout its greater extent with the sector across which the other said distributing means spreads material.

5,004,164

SALT TRUCK

George W. Ruane, 5660 Delhi Rd., Cincinnati, Ohio 45238

Filed Jul. 21, 1989, Ser. No. 383,917
Int. Cl.[5] A01C *17/00*
U.S. Cl. 239—666 **5 Claims**



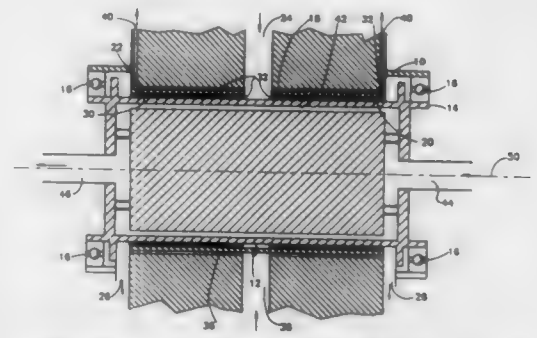
1. The combination of a truck including a bed, a salt bin mounted on the bed, there being a discharge opening in the bin, and a salt distributing spinner device mounted on the bed and receiving salt from the discharge opening, the spinner device distributing salt circumferentially of the spinner device with a guide support mounted on the bed, the guide support having an elongated opening having an axis extending lengthwise of the direction of advance of the truck, a staff mounted in the opening in the guide support and extending longitudinally in the direction of the axis of the opening with an end portion of the staff extending cantileverwise from the guide support in opposed relation to the salt distributing device, and a guide member having a flexible rubberlike panel attached to the end portion of the staff and extending downwardly from the staff into the path of salt projected sidewise of the direction of truck advance to catch and stop travel beyond the side line of the truck of the salt sidewise of the direction of truck advance.

5,004,165

DISPERSION APPARATUS

Benzion Landa, Edmonton, Canada; Haim Hochman, Ramat Gan, and Naseem Yacoub, Herzelia, both of Israel, assignors to Spectrum Sciences B.V., Wassenaar, Netherlands

Continuation-in-part of Ser. No. 306,077, Feb. 6, 1989, abandoned. This application Aug. 30, 1989, Ser. No. 400,721
Int. Cl.[5] B02C *17/16*
U.S. Cl. 241—21 **30 Claims**



1. Apparatus for dispersion of solids in liquids comprising:

(a) first and second relatively movable elements having respective first and second surfaces having a separation distance therebetween and arranged so as to define a dispersing volume therebetween;

(b) a multiplicity of separate dispersing elements disposed within the dispersing volume, said dispersing elements having a cross-section that is circular in shape and having a diameter which is between 2 and 100 microns less than said separation distance;

(c) means for supplying a solid suspended in liquid to the dispersing volume and for removing a dispersed form of said solid suspended in liquid from the dispersing volume after dispersing; and

(d) means for effecting relative movement between said first and second surfaces whereby movement is imparted to said dispersing elements mainly by means of hydrodynamic forces created by said relative movement, thereby subjecting the solids to high shear forces operative to break up and disperse said solid in said liquid.

5,004,166

APPARATUS FOR EMPLOYING DESTRUCTIVE RESONANCE

John G. Sellar, 6045 E. Evans Pl., Lakewood, Colo. 80227

Filed Sep. 8, 1989, Ser. No. 405,000
Int. Cl.[5] B02C *19/18*
U.S. Cl. 241—36 **4 Claims**

1. An apparatus for fracturing a mass of material such as rock, using resonant frequencies wherein, the apparatus comprises:

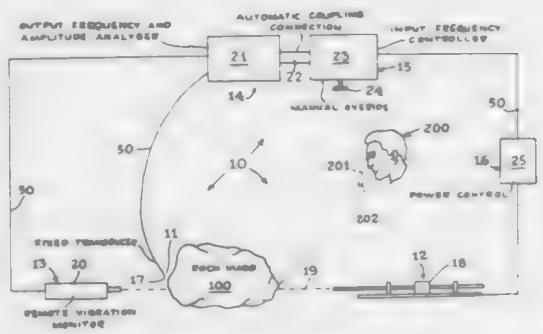
means for determining the resonant frequency for a given mass of material:

non-contacting sub-ultrasonic frequency generating means for generating frequencies in the sub-ultrasonic range;

means for monitoring changes in the resonant frequency of the mass of material as fracturing takes place;

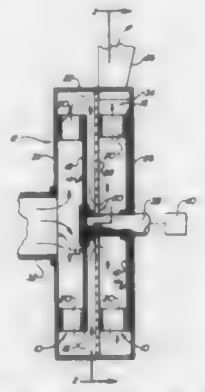
energy generating means; and, control means operatively associated with the means for monitoring or the non-con-

tacting frequency generating means for varying the output of the energy generating means in response to the input of



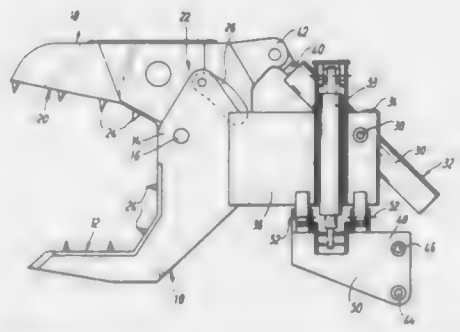
the means for monitoring changes in the resonant frequency of the mass such that fracturing of the mass of material will continue.

5,004,167
PNEUMATIC GRINDING MILL
Dwight H. McGee, 304 Oakridge Blvd., Lynchburg, Va. 24502
Filed Nov. 29, 1989, Ser. No. 429,007
Int. Cl.[5] B02C *13/28*
U.S. Cl. 241—91 **5 Claims**



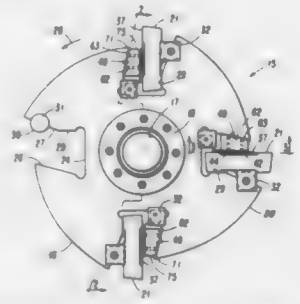
1. Multi-stage milling apparatus for reducing the size of grain kernels and particles comprising:
(a) substantially cylindrical housing means including first and second, flat, circular end walls joined by a cylindrical side wall, and a flat, circular interior wall, parallel to and between said first and second end walls dividing the interior of said housing means into first and second, side-by-side compartments;
(b) first and second rotor means respectively positioned within said first and second compartments, each of said rotor means including a single, flat, circular plate and a plurality of open-ended metal tubes of rectangular cross section having a surface perpendicular to said rigid surface in contact with said one side of said rotor plates, said tubes being fixedly attached to and supported solely by one side of said plate in closely spaced relation about the periphery thereof, each of said tubes having a rigid surface substantially perpendicular to said one side of said plate;
(c) a product inlet conduit connected to said first end wall and communicating with said first compartment through an opening in and concentric about the central axis of said first end wall;
(d) a drive shaft connected to rotary drive means and extending through openings in and concentric about the central axis of each of said second end wall, said second rotor plate, and said interior wall, said drive shaft being fixedly connected to both said first and second rotor plates, said second end wall and second rotor plate openings being substantially the same diameter as said drive shaft and said interior wall opening being substantially larger than the diameter of said drive shaft, whereby said first and second compartments communicate through said interior wall opening;
(e) said first rotor means being supported by said drive shaft within said first compartment with said first rotor plate parallel to and spaced from both said first end wall and said interior wall with said tubes extending from said first rotor plate substantially to said first end wall, said first rotor plate having a diameter less than that of said cylindrical side wall, providing a first annular space between the periphery of said first rotor means and said cylindrical side wall;
(f) said second rotor means being supported by said drive shaft within said second compartment with said second rotor plate parallel to and closely adjacent said second end wall within said tubes extending from said second rotor plate substantially to said interior wall, said second rotor plate having a diameter less than that of said cylindrical side wall, providing a second annular space between the periphery of said second rotor means and said cylindrical side wall; and
(g) a product outlet conduit communicating with said second annular space through an opening in said cylindrical side wall, rotation of said first and second rotor means by said drive shaft creating an air stream drawing product from said inlet conduit into said first compartment for impact with said first rotor plate and radially outward movement for impact with said perpendicular surface of said first rotor tubes, into said first annular space, through the space between said first rotor plate and said interior wall, through said interior wall opening into said second compartment for impact with said second rotor plate and radially outward movement for impact with said perpendicular surface of said second rotor tubes, into said second annular space and thence into and through said outlet conduit.

5,004,168
CRUSHING APPARATUS
Brian Purser, c/o The Dudley Shearing Machine Manufacturing Co. Ltd., Nevada Lane, Hot Lane Industrial Estate, Burslem, Stoke-on-Trent, Great Britain ST6 2BY
Filed Nov. 13, 1989, Ser. No. 435,339
Int. Cl.[5] B02C *1/10*
U.S. Cl. 241—101.7 **12 Claims**



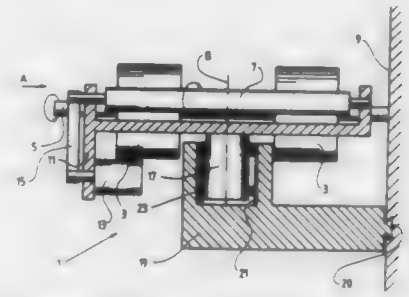
1. An apparatus for breaking relatively brittle material such as stone, comprising:
(a) a first jaw having a material engaging surface and a free end;
(b) a second jaw having first and second relatively angled material supporting surfaces and a free end on said first material supporting surface;
(c) mounting means for stationarily mounting the second jaw in a fixed position on a supporting structure;
(d) connecting means for pivotally connecting said first jaw to said stationary second jaw in opposing relation adjacent an end opposite the respective free ends for pivotal movement of said first jaw relative to said stationary second jaw between:
(1) a relatively open material receiving position wherein the respective free ends of said first and second jaws are each widely spaced-apart to define a material entry plane between the jaws and to receive a quantity of material to be broken, the first material supporting surface of said second jaw residing generally perpendicular to the material entry plane and the second material supporting surface of said second jaw residing generally parallel to the material entry plane to collectively define a large material accommodating space within the first and second jaws; and
(2) a relatively closed material breaking position wherein the free ends of said first and second jaws are closely adjacent to or abutting each other at an angle to force the material into the space between the jaws, and said engaging and supporting surfaces of the first and second jaws oppose each other in spaced-apart relation to define between them a relatively large dimension material holding space to prevent reduction of the breaking action by entrapment of material particles between the first and second jaws; and
(e) powered means for accomplishing movement of said pivoting first jaw to and from said stationary second jaw.

5,004,169
IMPELLER BAR ASSEMBLY WITH ADJUSTABLE LOCKING MECHANISM
David A. Ostergaard, Cedar Rapids, Iowa, assignor to Cedarapids, Inc., Cedar Rapids, Iowa
Filed Nov. 22, 1989, Ser. No. 440,597
Int. Cl.[5] B02C *13/28*
U.S. Cl. 241—192 **13 Claims**



1. A rotor assemblage for an impact crusher comprising
a rotor having a body portion, a plurality of radial recesses peripherally evenly spaced and extending axially parallel across the body portion of the rotor, each recess having a width defined by a space between angularly displaced leading and trailing side walls and having a radial depth defined by the radial length of such side walls to a base of such recess, and means in the trailing side wall of each recess for seating an impeller bar against the respective trailing side wall in a position to extend substantially radially from the respective recess with a leading surface of such impeller bar radially outwardly converging with the leading side wall of such recess,
a plurality of impeller bars, each having at least one seat complementary with the seating means in the trailing side walls of the recesses within the rotor and adapted to become located within one of the recesses to extend substantially radially therefrom with the leading surface of the impeller bar converging radially outwardly with the respectively adjacent leading side wall of the recess, and
means for locking each of the impeller bars in position against the seating means, the locking means including at least one first wedge of mean width operable in each respective one of the recesses and engageable between a respective one of the impeller bars and the leading side wall of the recess, and comprising the improvement of:
said first wedge including a first body portion having a leading surface engageable with the leading side wall of the respective recess and a converging surface disposed opposite said leading surface, a support plate disposed adjacent the converging surface of said first wedge and having a trailing surface facing and engageable with the respective impeller bar, means for supporting directional movement of said support plate with respect to said first body portion of said first wedge when the wedge is not in wedging engagement between said leading side wall of the recess and the impeller bar, said directional movement maintaining said support plate parallel to said converging surface of said first wedge, and at least one of a plurality of shims of predetermined thickness selectively insertible in and removable from between said converging surface and said support plate of said first wedge upon directional movement of said support plate out of contact with said converging surface, whereby the mean width of the first wedge is selectively adjustable.

5,004,170
APPARATUS FOR COMPENSATING SAG OF THE MANDREL OF A WINDING MACHINE
Felix Graf, and Peter Busenhart, both of Winterthur, Switzerland, assignors to Maschinenfabrik Rieter AG, Winterthur, Switzerland
Filed Nov. 1, 1989, Ser. No. 430,164
Claims priority, application Switzerland, Nov. 4, 1988, 4103/88; Jun. 2, 1989, 02079/89
Int. Cl.[5] B65H *54/02, 54/42*
U.S. Cl. 242—18 R **5 Claims**



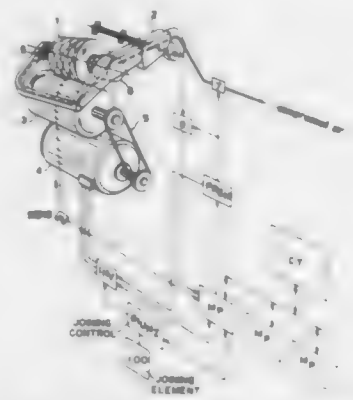
1. A yarn winding machine comprising
a rotatable mandrel for receiving a sleeve onto which the yarn may be wound during rotation of the mandrel to build up a yarn package, said mandrel being supported so as to provide a free end thereof onto which sleeves may be inserted and removed axially of the mandrel;
a contact roll generally parallel to said mandrel for pressing against the yarn package being built up during rotation of said mandrel;
mounting means for rotatably mounting said contact roll; and
a carrier for said mounting means, said carrier being movable bodily in a direction to position said contact roll closer to or farther from said mandrel so that said contact roll will continue to contact the building yarn package during a package winding operation, said carrier being connected to said mounting means through a connection that includes a peg projecting from one of said mounting means and carrier, an opening in the other of said mounting means and carrier surrounding and spaced from said peg, and a member of flexible resilient material in surrounding relation to said peg in the space between and contacting said peg and said opening.

5,004,171

HIGH-PRODUCTIVITY BOBBIN WINDING METHOD AND DEVICES FOR ITS IMPLEMENTATION

Luigi Colli; Roberto Badiali, and Nereo Marangone, all of Pordenone, Italy, assignors to Savio S.p.A., Pordenone, Italy

Continuation of Ser. No. 256,776, Oct. 11, 1988, abandoned.
This application May 10, 1990, Ser. No. 522,173
Claims priority, application Italy, Nov. 13, 1987, 22624 A/87
Int. Cl.[5] B65H *54/22, 63/00, 67/08*
U.S. Cl. 242—35.6 R 8 Claims



1. A method for winding yarn onto a rotating bobbin driven by a drive roller and supported by a carrier arm when the yarn feed is broken and the bobbin is brought to rest each time the yarn breaks, comprising:

(a) restoring the broken yarn feed by means of an intervention cycle wherein said cycle has a first portion and a second portion wherein said first portion comprises the steps of:

(1) raising the rotating bobbin from the drive roller when the yarn feed is broken;

(2) braking the rotating bobbin and the drive roller independently until the bobbin stops rotating; and

wherein said second portion comprises joining the broken yarn; and

(b) interposing a variable time delay between the commencement of said bobbin braking step of said first portion and the commencement of said joining step of said second portion of said intervention cycle by means of a timer device wherein said variable time delay is determined by the amount of yarn wound on the bobbin, wherein the amount of yarn wound on the bobbin is determined by measuring the amount of time required for said braked bobbin to come to rest in a preceding time the yarn breaks.

5,004,172

TAKE-UP APPARATUS FOR AMORPHOUS METAL RIBBON

Masaaki Tanahashi; Hiroyuki Hagiwara, both of Kumagaya, and Hiroyuki Fujii, Kounosu, all of Japan, assignors to Hitachi Metals Ltd., Tokyo, Japan

Filed Jun. 21, 1989, Ser. No. 369,410
Claims priority, application Japan, Feb. 17, 1989, 1-37694
Int. Cl.[5] B65H *20/14, 18/00*
U.S. Cl. 242—54 R 17 Claims

1. A take-up apparatus for an amorphous metal ribbon comprising, in combination:

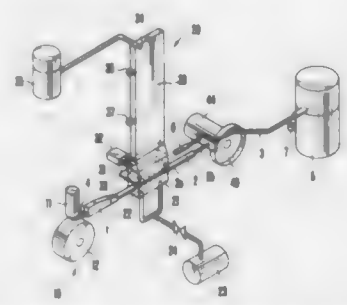
a first, second and third guide means providing a passage for an amorphous metal ribbon;

a storage means connected between said first and second guide means;

a take-up drum connected to said storage means through a second guide means; and

first gas suction means connected to said take-up drum through a third guide means to provide a flow of gas to draw said ribbon through said guide means, said storage means and said take-up drum

said storage means comprising a channel portion providing a passage for the ribbon, a storage container mounted on said channel portion and provided with an opening and



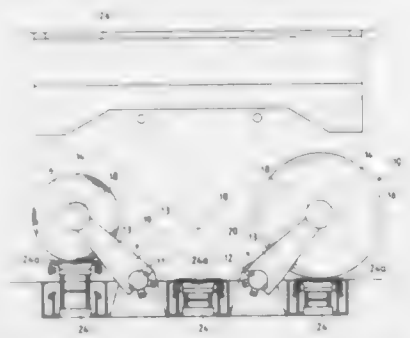
closing mechanism adjacent the channel portion, a second gas suction means disposed on a side of the storage container opposite to the opening and closing mechanism and a gas blowing means for introducing a gas under pressure to the channel portion for directing said ribbon into said storage container.

5,004,173

METHOD OF CONTROLLING WEB FEEDING DEVICE

Hideshi Kawai, Kasugai, Japan, assignor to Isowa Industry Company Ltd., Nagoya, Japan

Filed Apr. 10, 1989, Ser. No. 335,347
Claims priority, application Japan, Apr. 16, 1988, 63-94331
Int. Cl.[5] B65H *19/02*
U.S. Cl. 242—57 21 Claims



15. Apparatus for mounting a web roll, having a web of material coiled about an axis thereof, upon a pair of axially opposed center blocks, comprising:

support means;

a pair of arms, having said center blocks mounted upon end portions thereof, pivotably mounted upon said support means about a pivotal axis thereof and translatably movable along said pivotal axis so as to move said center blocks toward and away from each other between a first position at which said center blocks are axially spaced from each other so as to permit said web roll to be interposed between said center blocks during said loading and mounting of said web roll upon said center blocks of said arms, and a second position at which said center blocks are axially spaced from each other so as to permit said center blocks to engage opposite end portions of said web roll whereby said web roll will be mounted upon said center blocks;

a lifting device vertically movable within a vertical plane from a lowered position at which a web roll is deposited thereon to an elevated position at which said web roll can be mounted upon said center blocks;

means for pivotably moving said pair of arms, and said center blocks disposed thereon, from a first position displaced from said vertical plane of movement of said lifting device to a second position at which said center blocks intersect and are aligned with said vertical plane within which said lifting device is movable so as to await the arrival of said web roll elevated by said lifting device; and

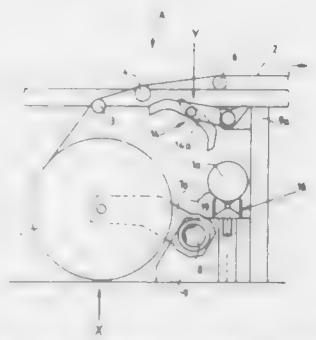
means for moving said lifting device, vertically upwardly within said vertical plane from said lowered position toward said elevated position, until said axis of said web roll is aligned with the respective axes of said axially opposed center blocks disposed at said waiting position at which time said vertical movement of said lifting device is terminated.

5,004,174

APPARATUS FOR MANIPULATING ROLLS OF CONVOLUTED PAPER WEBS AND THE LIKE

Robert Deutschle, Bokholt-Hanredder, Fed. Rep. of Germany, assignor to E. C. H. Will GmbH, Hamburg, Fed. Rep. of Germany

Filed Jul. 26, 1989, Ser. No. 385,811
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1988, 3825673
Int. Cl.[5] B65H *19/12*
U.S. Cl. 242—58.6 19 Claims



1. Apparatus for removing expired paper rolls from an unwinding station of a paper processing machine wherein a remnant of the web on an expired roll is severed from the already unwound length of the web and wherein the remnant of the web projects or tends to project from the roll subsequent to severing of the remnant from the already unwound length of the web, comprising conveyor means defining a predetermined path for axial movement of expired rolls; means for rotatably supporting discrete rolls at said unwinding station, said supporting means including means for confining the rolls at said unwinding station to rotation about a predetermined axis and said conveyor means comprising a plurality of rolling elements forming at least one file extending in substantial parallelisms with said predetermined axis; means for convoluting the projecting remnants around the respective expired rolls, said convoluting means being adjacent a portion of said path; and means for transferring discrete expired rolls from said unwinding station into said path, including means for moving expired rolls substantially at right angles to the axes of expired rolls.

5,004,175

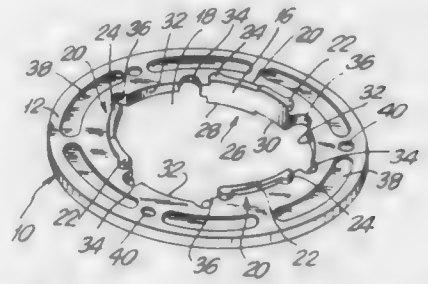
WINDING CORE FOR MAGNETIC TAPE ADAPTED FOR STACKING

Jaeduck Lee, Inchon, Rep. of Korea, assignor to Saehan Media Corporation, Rep. of Korea

Filed Aug. 9, 1989, Ser. No. 391,429
Claims priority, application Rep. of Korea, Mar. 28, 1989, 3463[U]
Int. Cl.[5] B65H *75/18*
U.S. Cl. 242—68.5 1 Claim

1. A winding core for magnetic tape, adapted to be sandwiched between a first like upper and a second like lower sandwiching core for stacking, comprising:

an annular body having top and bottom substantially annular body surfaces, an outer circumferential body surface for winding therearound and an inner circumferential surface, a plurality of projections equidistantly located around said inner circumferential surface and extending in outward directions from said top and bottom annular body surfaces, said projections each having first and second circular extensions, the first circular extension being higher than the second circular extension, and a corresponding plurality of recesses in said inner circumferential surface having circular notches in opposite edges thereof, said



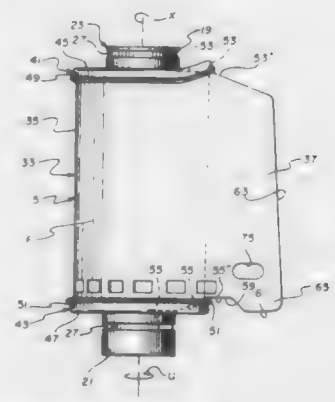
recesses and notches and said projections and circular extensions being of a shape and dimension such that when the winding core is stacked between the first like upper core and the second like lower core, the projections and circular extensions from the bottom surface of the first upper core mate with corresponding recesses and notches of the winding core which is being sandwiched and the projections and circular extensions from the top surface of the second lower core mate with corresponding recesses and notches of the winding core which is being sandwiched and the higher and lower circular extensions from the bottom surface of the first upper core engage with corresponding lower and higher circular extensions from the top surface of the second lower core respectively.

5,004,176

FILM CASSETTE

John J. Niedospial, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 8, 1990, Ser. No. 490,232
Int. Cl.[5] G03B *1/04, 17/26*
U.S. Cl. 242—71.1 8 Claims



1. A film cassette comprising (a) a spool core supported for rotation in a film unwinding direction to thrust a leader section of a film roll coiled about said spool core to the exterior of said cassette and in a film winding direction to return said leader to the exterior of the cassette, and (b) a pair of flanges arranged in spaced relation along said spool core to radially confine the leader and constructed of flexible material to allow them to be

flexed apart to permit the leader to readily escape the confinement of the flanges when the spool core is rotated in the unwinding direction, is characterized in that:

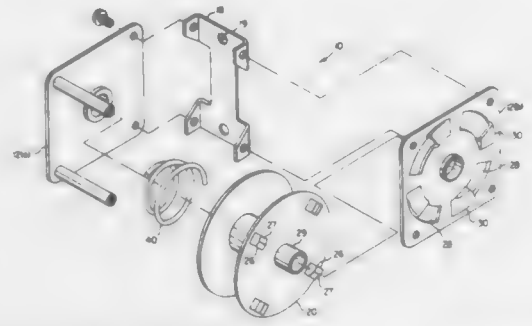
said leader has respective edge means for flexing said flanges apart one after the other, rather than simultaneously, when said spool core is rotated in the unwinding direction, whereby said leader can more easily overcome any resistance said flanges may present to movement of the leader outwardly of the flanges.

5,004,177

APPARATUS FOR BLOCKING A WINCH

James S. Somers, Dallas, Tex., assignor to Concord Industries, Inc., Addison, Tex.

Filed Nov. 28, 1989, Ser. No. 442,222
Int. Cl.[5] B65H *23/06, 75/00, 75/26;* **B66D** *5/32*
U.S. Cl. 242—99 **15 Claims**



1. A blocking winch comprising:

a reel having a central axis and including at least one blocking pin extending substantially parallel to the central axis and away from one end of said reel;

a frame for rotatably supporting said reel, said frame comprising opposed sideplates joined together to form said frame, one of said sideplates including at least one blocking aperture and a blocking disengaging ramp formed adjacent to and extending arcuately away from at least one blocking aperture along an arch corresponding to one direction of rotation of said reel;

a spring adapted for engagement with said frame and said reel for causing at least one blocking pin to engage at least one blocking aperture; and,

means for engaging said reel whereupon said spring is compressed to enable rotation of said reel.

5,004,178

SEAT BELT APPARATUS

Kyoji Kobayashi, and Takeo Furuya, both of Yokohama, Japan, assignors to Jidosha Denki Kogyo K.K., Kanagawa, Japan

Filed Oct. 16, 1989, Ser. No. 422,349
Claims priority, application Japan, Oct. 17, 1988, 63-261257; Oct. 17, 1988, 63-261258
Int. Cl.[5] B60R *22/42, 22/46*
U.S. Cl. 242—107 **3 Claims**

1. A seat belt apparatus comprising:

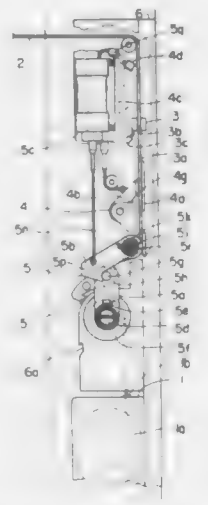
a sensor for sensing shock applied on a vehicle body;

take-up means secured to a base on said body;

a webbing having one end secured to said take-up mechanism for winding thereon and another end capable of being secured to the vehicle body upon being pulled out from the take-up mechanism;

webbing detecting means provided with a magnet attached to said webbing at a predetermined position and a switch means operable by said magnet and attached to the base for detecting a pulled out length of webbing;

restraining means for restraining the webbing between a damping member and a damping arm, and for releasing said webbing from restraint only for a predetermined time according to a switching operation or sensing of a shock by said sensor; and



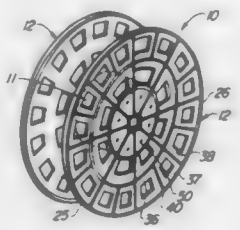
webbing fold-up means for folding-up the webbing upon sensing a shock applied on the vehicle body when said detecting means detects that said webbing is pulled-up longer than a predetermined length.

5,004,179

MOLDED SECTIONAL REEL

James S. Salloum, Oxford, Mich., assignor to Creative Techniques, Inc., Troy, Mich.

Continuation of Ser. No. 232,116, Aug. 15, 1988, Pat. No. 4,895,316. This application Sep. 1, 1989, Ser. No. 401,868
The portion of the term of this patent subsequent to Jan. 15, 2008, has been disclaimed.
Int. Cl.[5] B65H *75/14, 75/22*
U.S. Cl. 242—118.6 **18 Claims**



1. A reel formed of a central hub with radially outwardly extending flanges on the opposite ends of the hub, comprising

the hub being a plastic molded, thin-wall, relatively wide ring having an exterior wall surface, about which a reeled article may be wound, and an interior wall surface defining a hollow open cylindrical interior space, and opposite, narrow, annular edges defining the opposite ends of the ring;

said flanges being formed of generally flat, disk-like plastic moldings having a central portion for overlying the ends of the hub and an outer portion for extending radially outwardly of the hub;

means forming a grooved seat on each of the faces of the flanges adjacent to the hub ends, with said means being shaped to engage their adjacent thin-wall relatively wide ring hub ends for positioning the hub ends and flanges against movement relative to each other;

a number of elongated passageways integrally molded on the interior surface of the hub wall, with the passageways being circumferentially spaced apart and being arranged

parallel to the axis of the hub said passageways extending a desired distance radially inward from said interior surface of the hub wall and maintaining said hollow open cylindrical interior space;

elongated fasteners extending through the passageways and through corresponding aligned openings formed in the flange portions overlapping the ends of the hub, and with the fasteners rigidly securing the flanges to the hub;

said flanges being formed of plastic molded, substantially identical, radial sections, with each section having an exterior peripheral edge defining a portion of the periphery of the flange and having an outer portion forming part of the flange between the flange peripheral edge and the hub, and an inner portion overlapping a portion of the hub;

the adjacent radially directed edges of each section being formed to interengage with each other and being fastened together to form the rigid complete flanges;

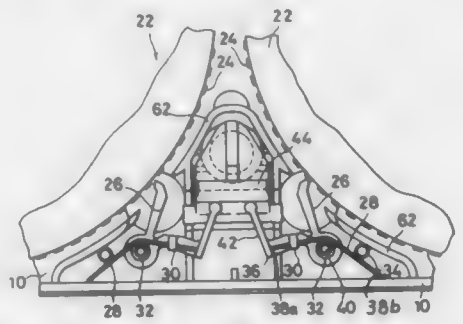
whereby different flange sections may be interchanged and fastened together and to the hub for forming an assembled reel.

5,004,180

MAGNETIC TAPE CASSETTE

Masatoshi Okamura; Takashi Namioka, and Haruo Shiba, all of Nagano, Japan, assignors to TDK Corporation, Japan

Continuation of Ser. No. 334,214, Apr. 6, 1989, abandoned. This application Jul. 26, 1990, Ser. No. 558,779
Claims priority, application Japan, Apr. 11, 1988, 63-47709
Int. Cl.[5] G11B *23/04*
U.S. Cl. 242—198 **7 Claims**



1. A magnetic tape cassette comprising:

a casing;

a pair of reel hubs rotatably arranged in said casing and having a magnetic tape wound thereon;

said reel hubs each being provided with a locked portion through which said reel hub is selectively locked;

a pair of hub braking levers arranged in said casing so as to be pivotally moved in said casing to be respectively engaged with said locked portion of each of said reel hubs; and each of said reel hubs further comprising;

a respective spring for impinging on each of said pair of hub braking levers, each respective spring constantly urging said hub braking lever in a direction of engaging said hub braking lever with said locked portion of said reel hub;

each of said hub braking levers being provided thereon with an urging element for urgingly holding one side portion of said spring in a longitudinal direction thereof and with a support element for supporting an intermediate portion of said spring;

a pivot element mounted on an inner surface of said casing, said support element being pivotally mounted on said pivot element to project therefrom such that each of said hub braking levers can be pivotally mounted about said pivot element;

said casing being provided thereon with a holding element for holding the other side of said spring in the longitudinal direction thereon;

said urging element, support element and holding element being arranged so as to cooperate together to hold said spring deflected in a normal state and cause said spring to be further deflected about said support element when said hub braking lever is urged through said urging element;

each of said hub braking levers being provided thereon with a contact element for abuttedly holding the end of the portion of the spring located to one side of the intermediate portion of the spring, said portion oriented in a longitudinal direction of the spring, to prevent displacement of said spring;

and the cassette casing abuttedly contacts the end of the portion of the spring located to the other side of the intermediate portion of the spring, said portion oriented in a latitudinal direction of the spring such that displacement of the spring is prevented.

5,004,181

CORDLESS ELECTRIC FISHING REEL

Arthur D. Fowles, 14526 SW. 42 Ave. Rd., Ocala, Fla. 32673

Filed Oct. 27, 1989, Ser. No. 427,774
Int. Cl.[5] A01K *89/00*
U.S. Cl. 242—225 **3 Claims**



1. A cordless electric fishing reel in combination with a fishing pole, the fishing pole including an elongate hollow handle in alignment with the fishing reel, and

an electric motor mounted within the handle, and

the fishing reel including rewind gearing coupled to an output shaft, the output shaft coaxially aligned with a ratchet means mounted in alignment with the reel for uni-directional rotative coupling of the output shaft with the electric motor, and

switch means mounted on the handle for selective actuation of the electric motor, and

including a battery pack mounted within the handle in electrical communication to the switch means and to the electric motor, and

wherein a first sun gear is mounted to the electric motor, the first sun gear medially mounted to a series of first planetary gears, the first planetary gears coupled to a second sun gear, the second sun gear coupled medially to a second series of planetary gears, and the second planetary gears coupled to a planetary output shaft, wherein the planetary gear output shaft is coupled to the ratchet means, and

wherein the ratchet means includes a ratchet input shaft integrally mounted to a ratchet support plate, the ratchet support plate including a plurality of pawl levers diametrically opposed relative to one another biased exteriorly of the ratchet support plate, and the pawls mounted interiorly of an internally geared ratchet drum, wherein a first rotation of the output shaft couples the output shaft to the planetary gear output shaft, wherein a second rotation in a reverse rotation relative to the first rotation disengages the planetary gear output shaft in association with the output shaft wherein the switch means includes a lever mounted orthogonally relative to the elongate hollow handle, and wherein the switch means includes an oval opening formed medially of the switch means for unobstructed reception of the planetary gear output shaft therethrough, wherein a lowermost end of the switch means includes a plurality of contacts for electrical association of the battery pack with the electric motor.

5,004,182

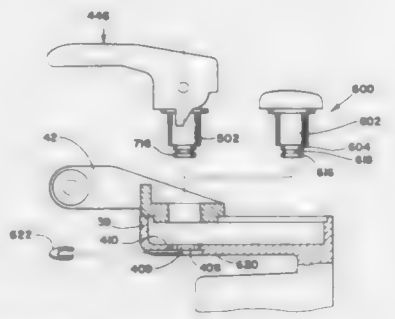
CONVERTIBLE BAIL OPENING SYSTEM

Richard R. Councilman, Collinsville, Okla., assignor to Zebco Corporation, Tulsa, Okla.

Continuation of Ser. No. 208,836, Jun. 15, 1988, abandoned, which is a continuation of Ser. No. 922,396, Oct. 23, 1986, abandoned. This application Jan. 3, 1990, Ser. No. 462,848

Int. Cl.[5] A01K *89/01*

U.S. Cl. 242—232 14 Claims



1. In combination:

a fishing reel having a line-carrying spool, a rotor, a crank handle operable through a gear train to rotate the rotor and thereby direct line onto the spool, and a bail on the rotor and having associated first and second arms attached to the rotor for rotation relative thereto so as to thereby be movable between a closed retrieving position and an open casting position;

a first post;

a trigger;

means on the first post for mounting the trigger for movement relative to the first post between a first position and a second position;

cooperating means on the first post and rotor for removably attaching the post to the rotor so that the post supports one of the first and second arms on the rotor for rotation relative to the rotor about said post;

cooperating means on the trigger and bail for causing the bail to be moved from the retrieving position towards the casting position in response to said trigger being moved from said first position to said second position with said first post attached to the rotor;

a bail supporting member having a second post and having no means as on said first post for mounting a trigger thereon; and

cooperating means on the second post and rotor for removably attaching the second post to the rotor to support the one of the first and second arms on the rotor for rotation relative to the rotor about the second post on the bail supporting member,

whereby with the second post on the bail supporting member attached to the rotor the bail must be manually moved by a user from the closed position to the open position and a user can selectively, interchangeably attach and use one of the trigger and associated first post and bail supporting member and second post so that the reel can be used with and without a trigger at the desire of a user.

5,004,183

SWITCHED COMPARATOR SYSTEM FOR OBTAINING DYNAMIC RANGE

Bobby R. Jarrett, Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 23, 1975, Ser. No. 579,190

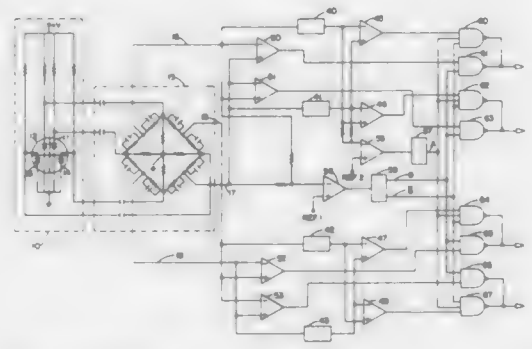
Int. Cl.[5] F41G *7/00*

U.S. Cl. 244—3.11 12 Claims

1. A switched comparator device for obtaining dynamic range in a bang-bang system comprising:

means for monopulse summing of an input signal and having outputs representative of the sums;

a low level bank of comparators operatively connected to the outputs of said summing means;



a high level bank of comparators operatively connected to the outputs of said summing means; and

means to electrically multiplex either said high level or low level bank of comparators.

5,004,184

SYSTEM OF VEHICLE GUIDANCE BY CONTINUOUS GAS JETS

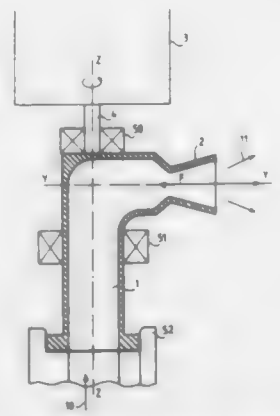
Marc Bernard, Marcilly en Villette, France, assignor to Thomson-Brandt Armements, Boulogne Billancourt, France

Filed Feb. 23, 1990, Ser. No. 483,644

Claims priority, application France, Mar. 3, 1989, 89 02785

Int. Cl.[5] F42B *10/66*

U.S. Cl. 244—3.22 5 Claims



1. A guidance system using continuous gas jets to control the pitch, yaw, and roll of a vehicle, said guidance system comprising: a gas generator and three nozzles which can be continuously supplied form the gas generator, the nozzles being positioned at substantially 120° in a same plane transverse to a longitudinal axis of the vehicle, said nozzles being located at the periphery of the vehicle, each of the nozzles supplying a thrust and being mobile in rotation about a first axis substantially parallel to said longitudinal axis, the thrust of each of the nozzles being contained substantially within the transverse plane, wherein an angle of deflection of each of the nozzles is contained within a predetermined maximum angle of deflection.

5,004,185

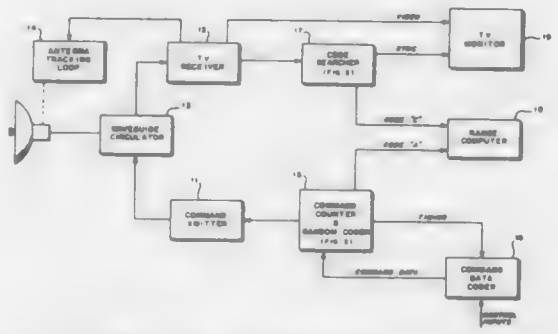
AIR-SURFACE-MISSILE DATA LINK SYSTEM

John C. Lockhart, Jr., Oreland, Pa.; Standish C. Hartman, Flemington, N.J.; Bruce R. Meuron, Willow Grove, and Joseph B. Lyons, Jr., Philadelphia, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 31, 1964, Ser. No. 394,388

Int. Cl.[5] F41G *7/00*

U.S. Cl. 224—3.14 6 Claims



1. An aircraft-missile communications system in which an aircraft and a missile interchange information by coded signals comprising:

first code means in the aircraft to generate a first digital code sequence;

transmitter means in the aircraft to transmit said first digital code sequence;

receiver means in the missile to receive said first digital code sequence;

second code means in the missile to generate a second digital code sequence the same as said first digital code sequence and having scan sync information contained therein;

synchronizer means in the missile to synchronize said second digital code sequence with said first digital code sequence;

transmitted means in the missile to transmit said second digital code sequence;

receive means in the aircraft to receive said second digital code sequence third code means in the aircraft to generate a third digital code sequence the same as said second digital code sequence and having scan sync information contained therein; and

synchronize means in the aircraft to synchronize said third digital code sequence with said second digital code sequence.

whereby said digital codes are synchronized for the interchange of information between the aircraft and the missile.

5,004,186

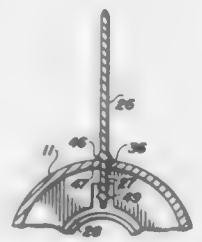
FINLOCK ALIGNMENT MECHANISM FOR ROCKETS

Paul C. Hans, Scottsdale, Ariz., and Gary C. Rosenfield, Las Vegas, Nev., assignors to Aerotech, Inc., Las Vegas, Nev.

Filed Jun. 1, 1990, Ser. No. 531,938

Int. Cl.[5] F42B *10/06*

U.S. Cl. 244—3.25 14 Claims



1. For use in a recreational rocket having a body portion and a motor tube mounted therewith, a finlock mechanism comprising a finlock ring member disposed in circumscription about the motor tube within the body portion, a plurality of rocket fins, each said fin having a body portion and a root portion, said root portion being extendible through said rocket body portion for snap-lock engagement within said ring member to hold said fin body portion in truly aligned and secure surface-to-surface engagement with said rocket body portion.

5,004,187

SYMMETRICAL, TWO DIMENSIONAL, SUPERSONIC AND HYPERSONIC AIR INTAKE FOR THE COMBUSTION AIR OF AN AIRCRAFT ENGINE

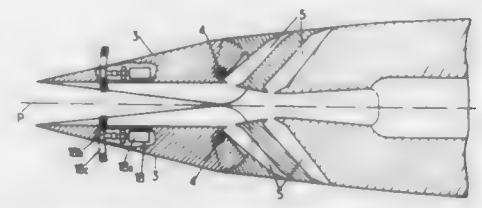
Francois Falempin, Saint Michel sur Orge, France, assignor to Office National D'Etudes et de Recherches Aerospatiales, France

Filed Jul. 28, 1989, Ser. No. 386,110

Claims priority, application France, Aug. 4, 1988, 88 10558

Int. Cl.[5] B64D *33/02*

U.S. Cl. 244—53 B 3 Claims



1. Two dimensional air intake, operating at supersonic and hypersonic speed ranges for ensuring the combustion air supply of an aircraft engine, comprising two pivoting front flaps (3) forming respective visors, the front flaps defining an open inlet therebetween having a variable inlet section and being disposed symmetrically on respective sides of a longitudinal plane (P), each front flap (3) being movable about a pivoting axis (4) situated in the vicinity of the air intake wall which extends the front flap considered, characterized by the fact that the pivoting axis (4) of each front flap (3) is situated immediately adjacent a first boundary layer trap (5) disposed in the air intake wall which extends said front flap (3).

5,004,188

AIRBRIDGE

Peter Donneky, Wiltshire, England, and Peter T. Gacs, Portola Valley, Calif., assignors to GEC Mechanical Handling Limited, England

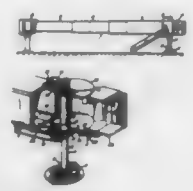
PCT No. PCT/GB88/00640, § 371 Date Jun. 5, 1989, § 102(e) Date Jun. 5, 1989, PCT Pub. No. WO89/00946, PCT Pub. Date Feb. 9, 1989

PCT Filed Aug. 3, 1988, Ser. No. 339,618

Claims priority, application United Kingdom, Aug. 3, 1987, 8718300

Int. Cl.[5] B64D *9/00*

U.S. Cl. 244—137.002 4 Claims



1. An airbridge, comprising:

a telescopic passageway extending along a longitudinal axis between a passenger terminal end and an aircraft end;

a cabin assembly at the aircraft end of the passageway pivotably coupled to the passageway by a horizontal transverse pivot, said cabin assembly having a floor and a top;

a wheeled elevating support structure for the cabin assembly in the form of a single vertical, extendible elevator leg, said leg having an upper end which projects through the cabin assembly between the floor and the top of the cabin assembly substantially through the longitudinal axis of the passageway, said upper end of the leg being secured to the cabin assembly for effecting the raising or lowering of the latter, and of the adjacent end of the passageway, and leveling means for varying the relative angular position of the cabin assembly and the passageway for maintaining the floor of the cabin assembly and the axis of the elevating support structure substantially horizontal and substantially vertical, respectively, through varying angles of inclination of the passageway; and

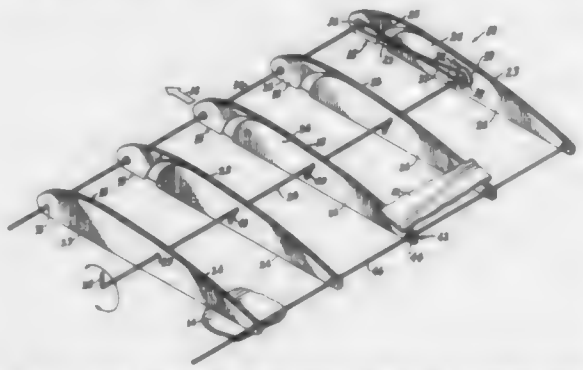
said cabin assembly being offset partially to one side of the longitudinal axis of the passageway to provide a path which permits traversal of passengers through the cabin assembly on one side of the elevator leg.

5,004,189

RECONFIGURABLE AIRFOIL

Dale J. Igram, 4308 Brookside Dr., Kokomo, Ind. 46902

Continuation-in-part of Ser. No. 238,473, Aug. 31, 1988, abandoned. This application Aug. 30, 1989, Ser. No. 400,782
Int. Cl.[5] B64C *3/44*
U.S. Cl. 244—219 8 Claims



1. An airfoil having an upper panel means and a lower panel means, operatively interconnected, and which are spaced apart and shaped to have aerodynamic airfoil property when in forward motion relative to the surrounding air, the airfoil having means for changing the spacing of the panel means, thereby to change the aerodynamic property, and the airfoil also carries a flap panel means which extends from the lower panel means to the upper panel means, the flap panel means being movably interconnected tothe lower panel means and is slidable with respect to the upper panel means;

the flap panel means being positioned along the forward edge of the upper panel means and the lower panel means;

a set of stationary support means to which the lower panel means are connected;

a set of movable support means to which the upper panel means are connected;

a first rotatable shaft means;

the said first rotatable shaft means being fixedly located with respect to the lower panel means and stationary support means, but rotatable with respect thereto;

means for rotating the first rotatable shaft means;

drive means which are operatively carried by the first rotatable shaft means; and

driven means carried by the movable support means, and drivable by the drive means to move the upper panel means with respect to the lower panel means for achieving the same shape-changing of the airfoil in correspondence to the rotation of the said first rotatable shaft means;

in a combination which includes a second rotable shaft means whose axis is fixedly located with respect to the lower panel means and the stationary support means, but is rotatable thereto, and non-rotatable with respect to the flap panel means;

and one of the said second rotatable shaft means and the flap panel means carries a driven means;

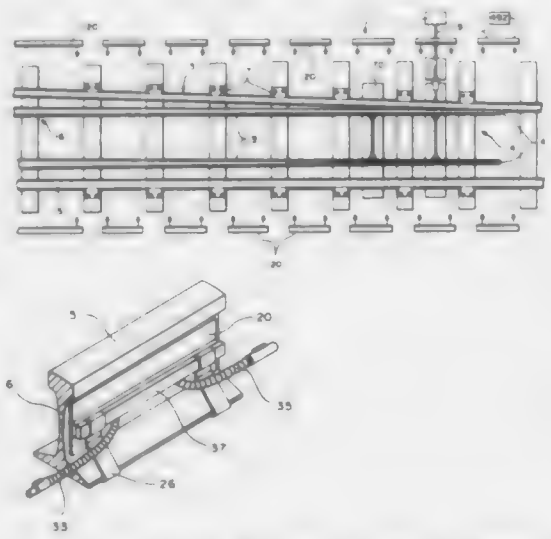
and a drive transmission means operatively interconnecting the driving means and the driven means which is carried by one of the second rotatable shaft means and flap panel means, for co-ordinating movement of the upper panel means and the flap panel means.

5,004,190

RAIL HEATING APPARATUS

Garry L. Montierth, Newark; Stephen A. Logan, Redwood City, and Raymond J. Scott, Redwood City, all of Calif., assignors to Bylin Heating Systems, Inc., Redwood City, Calif.

Filed Nov. 6, 1987, Ser. No. 118,212
Int. Cl.[5] E01B *7/24*
U.S. Cl. 246—428 20 Claims



1. A rail heating system for heating a railroad rail having a contoured web, the rail being supported by support means that holds the rail in place, the rail heating system comprising:

a heating pad having a flexible contact surface with sufficient flexibility to deform to match the contour of said rail web;

clip means for pressing the heating pad contact surface into contact with a portion of the rail web and deforming the contact surface to match the contour of the contacted portion of the rail web.

11. A rail switch heating system for heating a railroad switch having a point area and a heel area, the switch including a switch rail point, a stock rail having a web, support means for holding the stock rail in place, the support means effectively dividing the stock rail into a plurality of rail segments, and a switch rod for moving the switch rail point between a first position and a second position, the rail heating system comprising:

a plurality of side heaters, each said side heater having a flexible contact surface with sufficient flexibility to deform to match the contour of said rail web and being adapted for attachment to a single rail segment;

clip means for securing the side heaters to the stock rails and pressing the flexible contact surface into contact with the rail web along its entire length;

and

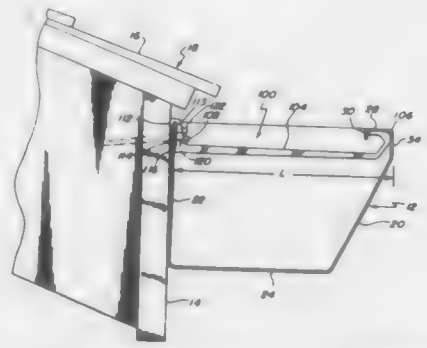
power receiving means for connecting said side heaters to an external power supply.

5,004,191

RAIN GUTTER SUPPORT AND MOUNTING BRACKET

Darrell Corry, 18371 Edgewood, Villa Park, Calif. 92667

Filed Oct. 10, 1989, Ser. No. 418,490
Int. Cl.[5] E04D *13/00*
U.S. Cl. 248—48.2 8 Claims



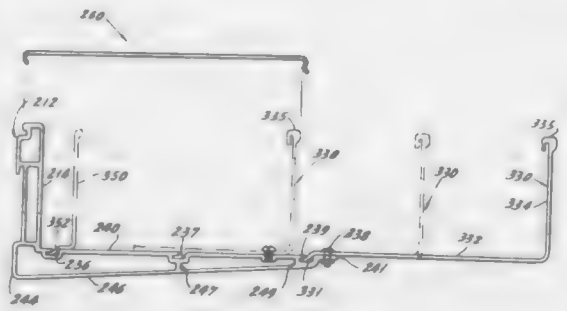
1. A support and mounting bracket for rain gutters having an exposed side and a mounting side, said mounting side having formed at the upper end an L-shaped lip with a horizontal surface and a vertical surface, said support and mounting bracket comprising an elongate, slender and substantially straight body portion which terminates at an outer end portion with an upwardly extending angle region configured for fitting within said lip of the rain gutter so as to support the exposed side of the rain gutter and which terminates at an inner end portion having a hooked region into which an upper edge of the mounting side of the rain gutter fits upwardly, said outer end portion of the bracket body portion being formed having a lower ramping surface means which is sloped upwardly and outwardly for encircling the bracket outer end portion to be pushed downwardly past an upper, outer edge region of a rain gutter when the upper edge of the mounting side of the rain gutter is positioned in the hooked region of the bracket inner end portion, said ramping surface flexing regions of said upper edge region of the rain gutter outwardly and said inner end region being formed with a downwardly and outwardly inclined aperture through which an elongate attachment, such as a nail or screw, can be installed to mount the rain gutter to a facia plate or the like.

5,004,192

SIDE SUPPORTED CABLE TRAY

Isidore Handler, 2960 Kinloch Rd., Wantagh, N.Y. 11793

Filed Aug. 2, 1988, Ser. No. 227,377
Int. Cl.[5] F16L *3/00*
U.S. Cl. 248—49 24 Claims



1. A section of a cable tray for being mounted to an upstanding surface, the cable tray section comprising an upstanding wall mounting section for being attached to an upstanding surface and a tray floor for supporting cable placed on the tray floor, the tray floor being attached to the wall mounting section and extending transversely to it and away from the wall mounting section in an outward direction;

the cable tray section having opposite longitudinal ends, each end adjoining the end of an adjacent cable tray section, for defining an elongate cable tray of a plurality of the cable tray sections;

the wall mounting section having a top part above the floor, the top part having an external wall for being mounted to the upstanding surface to which the cable tray section is to be attached; means for mounting the external wall to the upstanding surface; the wall mounting section having an internal wall spaced outward from the external wall and also facing outward from the wall mounting section toward the tray floor, the external wall and the internal wall being attached integrally to each other and being spaced apart for defining a hollow interior space of the wall mounting section, whereby the external wall and the internal wall define a truss for stiffening the wall mounting section; the internal and external walls extending down to the tray floor;

the wall mounting section having opposite ends, the hollow interior spaced of the wall mounting section being shaped for receiving a splice shunt block which extends into the hollow interior space at the adjacent ends of neighboring cable tray sections;

an additional support for the cable tray section and integrally formed with the cable tray section, the additional support comprising; an integral extension of the wall mounting section extending below the tray floor; an additional strut connected integrally to the extension below the floor, extending outward from the extension and extending beneath the floor, and being spaced from the floor and extending up to contact the underside of the floor outward from the internal wall, so that the additional support is shaped for extending partway across the floor to strengthen the floor, and the additional support cooperates with the tray floor to provide a truss support for stiffening the floor;

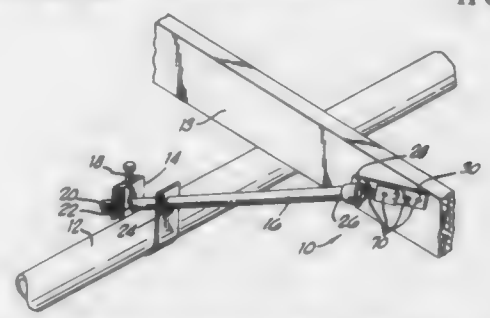
the wall mounting section, the additional support and the tray floor being integral for the truss support of the floor to transfer the load to the truss of the wall mounting section to prevent deformation of the tray floor, of the wall mounting section and of the location where they meet.

5,004,193

ADJUSTABLE LOAD BOLT ADAPTER BRACKET ASSEMBLY

Kraig A. Kirschner, P.O. Box 3365, South El Monte, Calif. 91733

Filed Jun. 11, 1990, Ser. No. 537,907
Int. Cl.[5] F16L *3/00*
U.S. Cl. 248—59 11 Claims



1. An adjustable bracket assembly for selective use with a varying number of fasteners to secure a bracing element to affixed structure, said assembly comprising:

an attachment member having means thereon for engaging the bracing element and defining a flat plate portion extending from said means and having a pair of axially aligned fastener receiving apertures therein;

and an adapter plate for cooperation with said attachment member to provide additional fastener receiving apertures for the securement of the bracing element to the structure,

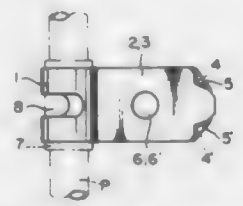
said plate defining a first portion having a first fastener receiving aperture disposed therein, a second portion vertically offset from said first portion and extending parallel to said first portion and defining a pair of fastener receiving apertures therein, a first engagement member projecting from said first portion toward said second portion and being vertically offset from said second portion so as to engage the extended end of said attachment member upon said second portion of said adapter plate being disposed on said flat plate portion of said attachment member and the apertures in said second portion being disposed over and aligned with the apertures in said attachment member, and a pair of second engagement members projecting from said second portion toward said first portion and being vertically offset from said first portion so as to engage the extended end of said attachment member upon said first portion of said adapter plate being disposed on said flat plate portion of said attachment member and the aperture in said first portion being disposed over and aligned with one of the apertures in said attachment member, whereby said bracket assembly can accommodate either two, three or four fasteners for securing the bracing element to the structure.

5,004,194

PIPE/WIRE GRIPPING AND FIXING CLAMP

Hideaki Watanabe, Mishima, Japan, assignor to Usui Kokusai Sangyo Kaisha, Ltd., Japan

Filed May 11, 1990, Ser. No. 523,055
Claims priority, application Japan, May 15, 1989, 1-121178
Int. Cl.[5] F16L *3/08*
U.S. Cl. 248—74.5 **6 Claims**



1. A pipe/wire gripping and fixing clamp comprising an elongated unitary metallic band, having opposed first and second ends and being formed to define a curved gripping wall intermediate the ends, a first attaching wall extending from the gripping wall to the first end of the metallic band, the first attaching wall being cut at the first end to define oblique edges, a second attaching wall extending from the gripping wall to the second end of the metallic band, the second attaching wall defining corners at the second end, said corners being folded toward the first attaching wall to define triangular hooks for latching the oblique edges of the first attaching wall, said attaching walls each being provided with attaching apertures disposed to be in register when the oblique edges of the first attaching wall are latched by the triangular hooks of second attaching wall, whereby a member to be fixed may be gripped in the engaging wall by engaging the oblique edges with the triangular hooks and pressing the attaching walls toward one another into superposed alignment.

5,004,195

RACK FOR FLEXIBLE COLLECTION BAGS

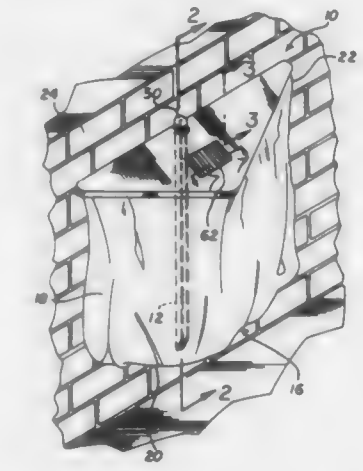
Jonothon M. W. McIntyre, North Hollywood, Calif., assignor to Lomac Corporation, Encino, Calif.

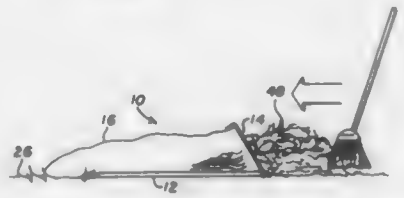
Continuation-in-part of Ser. No. 379,287, Jul. 13, 1989. This application Mar. 21, 1990, Ser. No. 498,264
Int. Cl.[5] B65B *67/04*
U.S. Cl. 248—99 **21 Claims**

1. A rack for supporting a flexible collection bag in an open configuration, the rack comprising:

a stake including a lower end, a receiving slot adjacent to an upper end thereof, and an inner surface;

a bag support ring having a primary plane and including a rear support member and at least one front support member which lie in the primary plane, wherein the rear support member includes an integral U-shaped support anchor offset from the primary plane, the support anchor





being inserted through the stake receiving slot and engaging the stake inner surface to fix the bag support ring relative to the stake; and

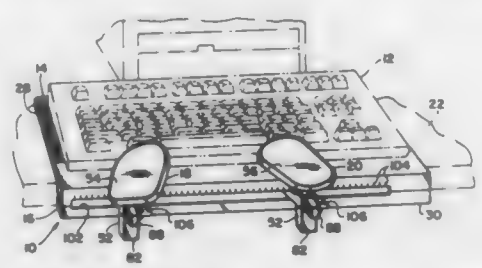
a cap slidably positioned over the upper end of the stake to substantially enclose the stake receiving slot and prevent unintended disassociation of the bag support ring from the stake.

5,004,196

KEYBOARD ACCESSORY

Clifford Gross, Deer Park, N.Y., assignor to Biomechanics Corporation of America, Melville, N.Y.

Filed Nov. 15, 1989, Ser. No. 436,704
Int. Cl.[5] A47F *7/100*
U.S. Cl. 248—118.3 **11 Claims**



1. A wrist support for a keyboard operator comprising a wrist-supporting member having a pad at its upper end having an operative position in supporting relation beneath said operator's wrist and having connected in depending relation therefrom a cylindrical post, said cylindrical post having a vertical orientation of an array of spaced horizontally oriented notches thereon, a housing having a cylindrical opening to receive in projected relation therein said post, and a spring-biased pawl pivotally mounted on said housing in facing relation to said

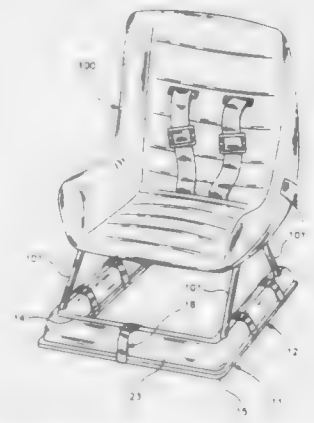
array of notches and normally biased into contact with said post, whereby the interengagement of said pawl in a selected one of said notches maintains said pad in a corresponding selected vertical position preparatory to use by said operator; including a rectangular support plate having upper and lower edges mounted in bearing means for opposite direction transverse movements, and a leg connected in spanning relation between said bracket and said support plate to additionally impart said transverse movements to said pad incident to the positioning thereof.

5,004,197

PROTECTIVE APPARATUS FOR A CHILD RESTRAINT SEAT

Karl R. Weekley, 935 Landmark, Pevely, Mo. 63070

Filed Jan. 8, 1990, Ser. No. 461,753
Int. Cl.[5] A47C *3/02*
U.S. Cl. 248—188.9 **9 Claims**



1. A protective apparatus for a child restraint seat comprising:

a. a first base with three sequentially connected C-shaped arms;

b. a channel formed within the C-shaped arms to receive a portion of the legs of the child restraint seat;

c. a longitudinally oriented opening in the C-shaped arms allowing access to the channel;

d. a second base having a bottom wall and three sequentially connected side walls connected to the bottom wall forming a chamber to receive the first base;

e. the side walls having an overhanging lip to secure the first base within the chamber; and

f. an entrance port in the second base allowing the first base to be placed within the chamber.

5,004,198

FIXTURE-MOUNTING POST AND ASSEMBLY METHOD THEREFOR

Paul A. Jager, Muskegon, Mich., assignor to Interior Specialists Corporation, Spring Lake, Mich.

Filed Mar. 6, 1990, Ser. No. 489,360
Int. Cl.[5] E04G *5/06*; A47G *29/02*
U.S. Cl. 248—225.1 **23 Claims**

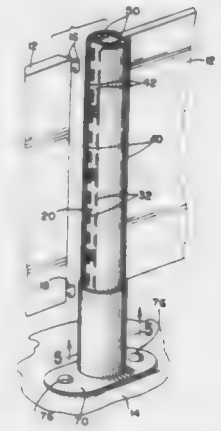
1. A fixture-mounting post for mounting one or more fixtures, said post comprising

(a) an elongate member defining at least one mounting means for mounting at least one fixture,

(b) an elongate shroud having opposite ends and being disposed around said member, said shroud having at least one pair of elongate edges extending to at least one of said ends, said edges being separated from each other to permit access to said mounting means,

(c) a sleeve enclosing a portion of said shroud at said one end, and

(d) resiliently compressible means compressed between said member and the enclosed portion of said shroud for pressing said enclosed portion outwardly to effect tight fit between said enclosed portion and said sleeve.

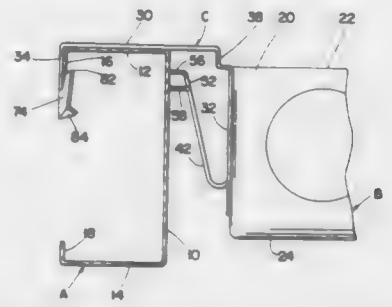


5,004,199

BRACKET

Eugene J. Suk, Pittsburgh, Pa., assignor to American Electric FL Industries, Inc., Division, Memphis, Tenn.

Filed May 14, 1990, Ser. No. 522,987
Int. Cl.[5] H02G *3/00*; F16B *2/00*
U.S. Cl. 248—231.8 **28 Claims**



28. A bracket for mounting electrical boxes to wall studs, said bracket including a web having a pair of first and second opposed flanges extending therefrom and between which a wall stud is receivable, said first flange having a free end portion remote from said web, a resilient arm extending from said free end portion of said first flange back toward said web in inwardly inclined spaced relationship to said first flange, said arm having an arm terminal end portion adjacent said web, and stud gripping means on said arm terminal end portion and on said second flange for gripping a stud therebetween, said second flange having opposite side edges and a terminal end, extensions extending outwardly from said side edges adjacent said terminal end, said stud gripping means on said second flange being on said extensions and comprising a plurality of barbs on each of said extensions spaced-apart longitudinally of said second flange, said plurality of barbs on each said extension including an initial barb located closest to said web and a terminal barb located closest to said terminal end of said second flange, and said terminal barbs extending inwardly of said second flange a greater distance than said initial barbs.

5,004,200

SHELF BOARD FITTING

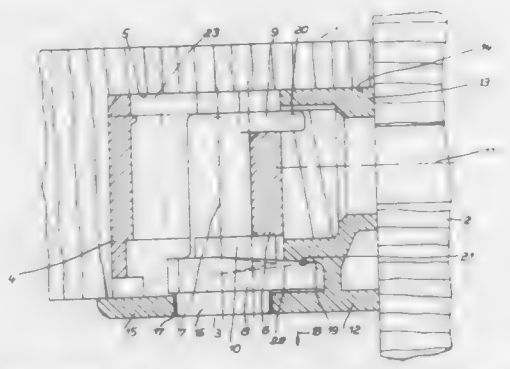
Rüdiger Walz, Nagold-Hochdorf, Fed. Rep. of Germany, assignor to Häfele KG, Nagold, Fed. Rep. of Germany

Filed Oct. 17, 1989, Ser. No. 422,764

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1988, 8813183

Int. Cl.[5] A47B *57/04*

U.S. Cl. 248—250 10 Claims



1. In a fitting for a board, particularly for a shelf board, the fitting including a support member having a groove, the support member being attached to the board, and a fastening member which engages in the groove of the support member and is adapted to be inserted in a wall component in a direction of insertion, the improvement comprising the fastening member having a groove-like recess which extends transversely of the direction of insertion of the fastening member, a locking disk being rotatably mounted in the support member for engaging the recess of the fastening member, wherein the locking disk is rotatable between a locked position and an unlocked position of rotation, the locking disk releasing the fastening member when the locking disk is in the unlocked position of rotation.

5,004,201

INTERLOCK SHELVING BRACKET AND STANDARD COVER

Walter L. Bessinger, Grand Haven, Mich., assignor to Knape & Vogt Manufacturing Company, Grand Rapids, Mich.

Filed Jul. 14, 1989, Ser. No. 381,148

Int. Cl.[5] A47G *29/02*

U.S. Cl. 248—243 18 Claims

1. A shelving standard, cover and bracket assembly comprising:

vertical standards to be mounted to a wall in spaced parallel relationship to each other;

said standards each having a front face and a pair of spaced side faces;

said standard front face having a plurality of vertically spaced elongated slots and intermediate webs for attachment of cantilever brackets thereto;

an elongated cover on each of said standards;

said cover having a pair of legs for engaging said standard side faces;

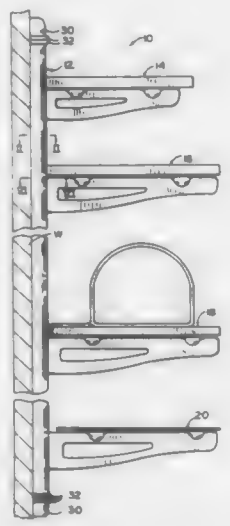
said cover having a plurality of vertically spaced elongated slots to generally align with said standard slots, and intermediate webs between said slots;

said cover slots having greater length than said standard slots and said standard webs having a greater length than said cover webs, whereby portions of said standard webs at said front face remain exposed adjacent said standard slots;

cantilever brackets each having side walls and having at least two rear lugs projecting from one end thereof to be inserted through said cover slots and through said standard slots to anchor on and engage behind said standard webs;

said lugs extending rearwardly and then downwardly;

said bracket having a rear edge surface area spaced forwardly of said lugs, said surface area having receiving



portions defining cavities to receive both said standard webs and said cover webs, and having an abutment portion to engage said exposed standard web portions.

5,004,202

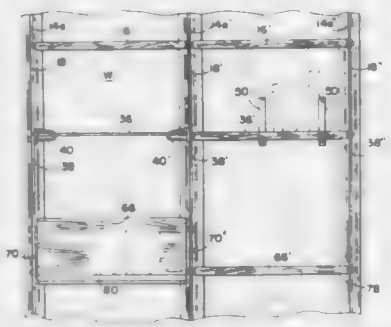
BOOK END BRACKET AND SHELVING SYSTEM

William E. Stumpf, Minneapolis; Casey L. Carlson, Edina, both of Minn.; Richard S. Knape, Grand Rapids, and Walter L. Bessinger, Grand Haven, both of Mich., assignors to Knape & Vogt Manufacturing Company, Grand Rapids, Mich.

Filed Jul. 14, 1989, Ser. No. 381,122

Int. Cl.[5] A47G *29/02*

U.S. Cl. 248—243 14 Claims



1. A shelf assembly capable of having the shelf in a flat position or a tilted display position, comprising:

a pair of vertical slotted standards for mounting to a wall in spaced relationship;

at least one pair of cantilever brackets, each having lugs on one end for engagement in said slotted standards, and each having means forming two pairs of connector receiving openings therein, the openings of each pair being the seam distance apart, one pair being in a horizontal plane to hold a shelf in horizontal position and the other pair being in a diagonal plane to hold a shelf in a diagonal position; and

a shelf having a pair of mounting connectors at the ends thereof, said connectors being of dimensions to be received by either of said alternate pairs of openings and being spaced apart the same distance as said openings in said pairs, for alternate mounting of said shelf in horizontal or tilted diagonal orientation;

said shelf having reinforcing beams recessed into the underside thereof, said beams having channels therein, and said connectors being telescopically slidably received in said channels; and

said connectors are mounting pins having flexible peripheral projections causing a friction fit in said channels.

5,004,203

SUPPORTING ARM

Albert Fabius, Ingelandeweg 1, 1069 WE Amsterdam, Netherlands

Filed Dec. 26, 1989, Ser. No. 457,311

Claims priority, application Netherlands, Dec. 23, 1988, 8803162

Int. Cl.[5] E04G *3/00*

U.S. Cl. 248—285 15 Claims



1. Supporting arm provided with telescoping members which cooperate by means of roller bearings for supporting a load in an essentially horizontally displaceable manner, wherein the telescoping members consist of sections with a closed polygonal cross section, and all roller bearing races are internal or external section faces with a generally planar surface.

5,004,204

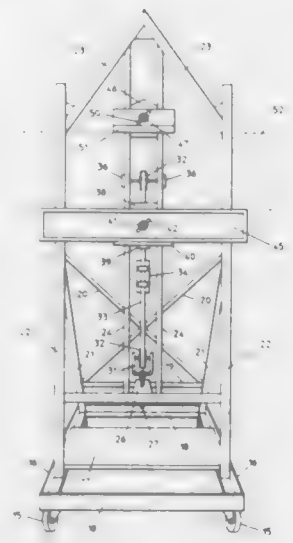
STUDIO EASEL

Charles T. Cook, 357 Richfield Dr., Apt. 1, San Jose, Calif. 95129

Filed Jul. 18, 1989, Ser. No. 381,266

Int. Cl.[5] A47B *97/04*

U.S. Cl. 248—449 1 Claim



1. An artist's easel, comprising:

a base, a vertical upright frame, and a canvas tray holder, said base and said frame supporting said canvas tray holder in equilibrium,

a rectangular horizontal base frame having casters,

said upright frame being mounted on said rectangular horizontal base frame,

a base support shelf positioned between said horizontal base frame members with a plurality of holes at the back ends of said horizontal base frame members for vertical or inclined positioning of said upright frame,

a cross brace and a rear brace member having thereon a pair of inclined segments supporting said upright segments and connected at pivot points to said upright segments, the opposite ends of said inclined segments connected to holes on said horizontal base frame members, respectively, and secured by a pair of quick release pins,

a crossbar fixed between and near the lower ends of said upright segments,

a pair of parallel spaced apart vertical angle bars connected at mid-center of said crossbar and near the top ends of said upright segments,

a pair of brace members being connected to said uprright segments, respectively, and converging upwardly to the top ends of said vertical angle bars, respectively, and then terminating together in a triangular fashion,

a continuous endless V-belt stretched between a pair of pulleys and positioned vertically between the center and plane of said vertical angle bars, a top one of said pulleys being connected by brackets to each outer side of said vertical angle bars, respectively, and a lower one of said pulleys being mounted in a U-bracket,

a fastening member from the base of said U-bracket extending through a hole in a lower bracket mounted at midpoint of said crossbar and secured by an adjustable member for adjusting tension on said V-belt,

a rectangular slidable block positioned in said channel formed by said vertical angle bars and connected to the front length of said V-belt, and circumferentially opposite this point is an attached counterbalanced weight,

an angle bracket having vertical and horizontal portions, said vertical portion being attached to the back side of said rectangular slidable block, said horizontal portion being attached to the center and bottom side of a canvas tray saddle block,

a canvas tray holder resting on the top side of said canvas tray saddle block,

an adjustable fastening member extending forward through centers of said vertical portion of said angle bracket and said rectangular slidable block and the vertical plane of said canvas tray holder, respectively, for braking and clamping action between surface of said canvas tray holder against the surfaces of said upright segments, and between the surface of said rectangular slidable block and against the inside channel surfaces formed by said angle bars,

a top canvas holder connected to a top slidable block positioned in said channel formed by said vertical angle bars, said top canvas holder being connected to said top slidable block by a releasable fastening member extending through the center of said top slidable block and forward through the center of said top canvas holder, clamping said top canvas holder to said vertical angle bars at any desired height,

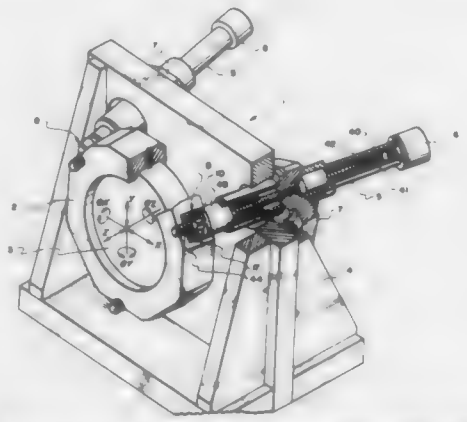
whereby said canvas tray holder will remain in equilibrium at all times, regardless of the weight applied thereon, up to a reasonable limit, without having to add to said fixed counterbalanced weight, and whereby said canvas tray holder can easily be moved to different working heights during the day, giving the artist the opportunity to move from standing to sitting positions at will and without awkward time-consuming mechanical heights adjustments.

5,004,205

HIGH-RANGE AND RESOLUTION DETERMINATE MOUNT AND POSITIONER

Donald G. Brown, Newbury Park, and Andrew F. Onufrak, Canoga Park, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 4, 1990, Ser. No. 533,201
Int. Cl.[5] A47G *1/24*
U.S. Cl. 248—476 12 Claims



1. A high range and resolution determinate mount and positioner comprising:

three bipods each with a differential roller screw actuator, each actuator having a stepper motor,

a tube connected to and turned by the stepper motor, the tube having a plurality of grooves on its inside surface,

a shaft having a first threaded portion with a first pitch and a second threaded portion with a second pitch, the shaft having a spline for engaging the grooves in the tube,

a first threaded roller with a first pitch for directly engaging the first threaded portion of the shaft, the first threaded roller fixed to the actuator so that the shaft moves relative to the actuator and the threaded roller remains fixed,

a second threaded roller with a second pitch for directly engaging the second threaded portion of the shaft, the second threaded roller fixed to a roller sleeve, which can move relative to the actuator and provide a linear movement directly proportional to the number of turns of the stepper motor and the relative pitch of the threads on the shaft to form a differential roller screw actuator,

a single-axis flexure attached to each actuator and to a support, and

a two-axis coincident flexure attached to each actuator and to an object to be moved.

5,004,206

VEHICLE SEAT MOUNTING STRUCTURE

Scott Anderson, 26450 SE. Highway 224, Eagle Creek, Oreg. 97022

Filed Jan. 26, 1990, Ser. No. 470,581
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—585 18 Claims

1. A vehicle seat mounting structure having front and rear sides, comprising

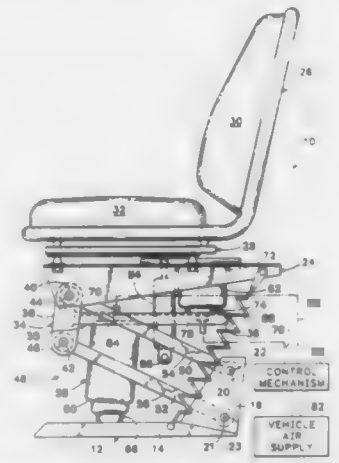
a base frame securable to a vehicle chassis, a seat frame disposed above the base frame for carrying a seat, and a mechanism operatively interposed between said frames for controlling relative motion therebetween to produce downward tilting of the seat with vehicle movement, tending to throw the seat toward the front side of the mounting structure, said mechanism comprising:

a sub frame including a reaction member;

upper and lower elongated link means having one set of the ends pivoted said base frame and another set of ends pivoted on said sub frame;

means connecting said seat frame and said sub frame; and

first and second cushioning means, with one of said cushioning means located between said base frame and said reaction member, and the other of said cushioning means located between said reaction member and seat frame.

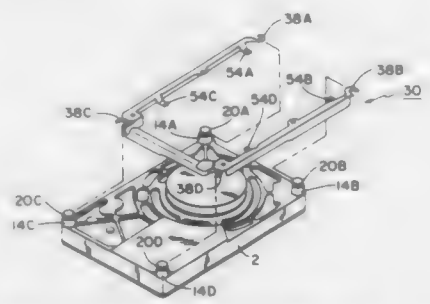


5,004,207

SHOCK MOUNTING STRUCTURE AND MAGNETIC DISK APPARATUS

Jun Ishikawa, Fujisawa, and Kazuhiko Takada, Yamato, both of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 25, 1989, Ser. No. 427,151
Claims priority, application Japan, Nov. 11, 1988, 63-283759
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—632 5 Claims



1. A shock-mounting structure comprising:

a shock absorbing member at least partially consisting of an elastic material with a vibration damping function, having a groove at the side, and being fixed to a vibration-isolated object;

a frame including an elastic frame part, one end which is fixed, and the other end of which is free;

a hook provided on said frame part so that said hook can be fitted into said groove of said shock absorbing member; and

a fixing member mounted to said frame part to fix said frame to said shock absorbing member with said hook being fitted into said grooves of said shock absorbing member.

5,004,208

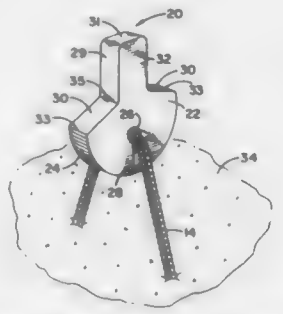
REMOVABLE RECESS FORMING INSERT

George T. Domizio, 106 Punkup Rd., Oxford, Conn. 06483

Filed Jan. 25, 1990, Ser. No. 469,959
Int. Cl.[5] E04G *15/04*
U.S. Cl. 249—91 16 Claims

1. A removable recess forming insert for supporting a hoisting stirrup made of a length of reinforcing bar immersed below the surface level of a wet concrete mixture during curing, and for forming a recess to allow access to said stirrup by a lifting hook after said wet concrete mixture hardens thereby forming a liftable concrete unit, said insert being composed of continuous, solid elastomeric material comprising in combination:

A. a vertically elongated mold body shaped to form said recess for stirrup access having substantially flat front and back surfaces, said front surface being disposed in parallel with said back surface, having a bottom surface extending from said front surface to said back surface, said bottom surface having a curved shape, and incorporating disengageable means for gripping said hoisting stirrup and alternately releasing said stirrup to detach the mold body from the concrete unit after curing, said gripping means having a stirrup eye extending from said front surface to said back surface forming a cylindrical hole therethrough, said hole having an axis substantially parallel to said bottom surface,



B. a mold thumb protruding vertically from said mold body and forming an upstanding griping projection by which said mold body may be seized and disengaged from the concrete unit after curing, and

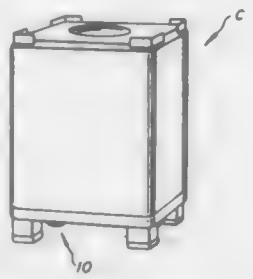
C. mold shoulders extending inwardly from opposite ends of the bottom surface of said mold body to said mold thumb.

5,004,209

DRY DISCONNECT COUPLING AND SAFETY CAP FOR PORTABLE TANKS

Louis J. Paquette, New Baltimore, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 365,592, Jun. 13, 1989, abandoned. This application Mar. 9, 1990, Ser. No. 490,922
Int. Cl.[5] F16K *51/00*
U.S. Cl. 251—144 68 Claims



1. A dry disconnect coupling for draining fluid from a container, comprising:

fitting means for mounting to the drain of the container;

plug means movably secured in said fitting means and having a first flow position and a second non-flow position;

first coupling means engageable with said fitting means and cooperating with said plug means;

said first coupling means including actuating means for causing said plug means to assume said first flow position or said second non-flow position;

said first coupling means including plug drive means for said plug means;

said plug drive means having a plug engaging and a plug non-engaging position;

said first coupling means including valve means cooperating with said plug drive means;

each of said plug drive means and said valve means including rotating means for causing axial translation of said plug drive means and said valve means relative to said first coupling means and to each other; and

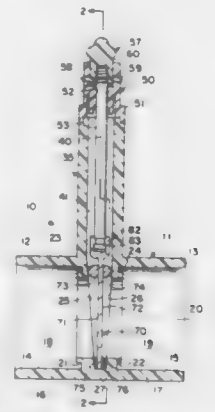
means for permitting said plug drive means to rotate when said valve means is stationary to thereby permit proper alignment and seating of said plug means in said drain when said plug means is moved to said second non-flow position.

5,004,210

GATE VALVE

Russell J. Sarno, Tarzana, Calif., assignor to Magic Plastics, Burbank, Calif.

Filed Aug. 28, 1989, Ser. No. 400,229
Int. Cl.[5] F16K *3/02*
U.S. Cl. 251—279 10 Claims



1. A gate valve comprising:

a unitary molded body having a pair of flow conduits, each having an internal wall defining a flow passage with a central axis, said axes being coincident, a pair of seat mounts between said flow passages, said seat mounts each supporting a respective valve seat, said valve seats facing each other and being spaced apart from one another to form the walls of a groove with a bottom, said valve seats being fully circumferential and each lying in a respective plane, said planes tapering toward each other as they extend across said flow passages, a riser having an actuation axis normal to said central axis, with a plurality of internal walls forming a slide passage extending along said actuator axis;

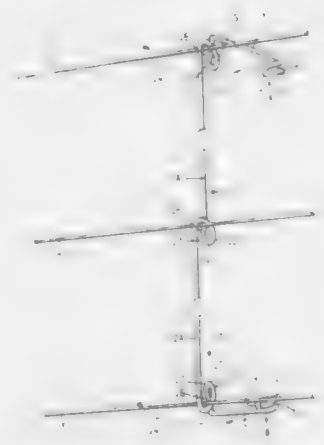
a cap closing said riser and having a shaft passage therethrough;

an actuator rod slidingly and sealingly fitted in said shaft passage, extending along said actuation axis projecting into said slide passage and past said cap;

an imperforate gate having a first and a second face, and a seal on each of said faces, said seals forming a planar line of sealing contact with said seats when fully inserted into said groove, said groove being aligned with said slide passage to enable the gate to be moved into said slide passage to open said valve; and

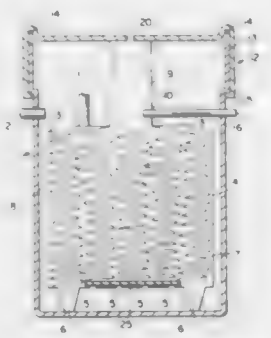
in which said cap and said gate are releasably joinable by latch means which tend to restrain the gate in its most open position until overcome.

5,004,211
FENCE DROPPER
Ernest Rayner, GPO Box 327, Katherine, N.T. 0851, Australia
Filed Aug. 25, 1989, Ser. No. 398,652
Claims priority, application Australia, Aug. 26, 1988, PJ0064
Int. Cl.[5] E04H *17/02*
U.S. Cl. 256—47 **7 Claims**



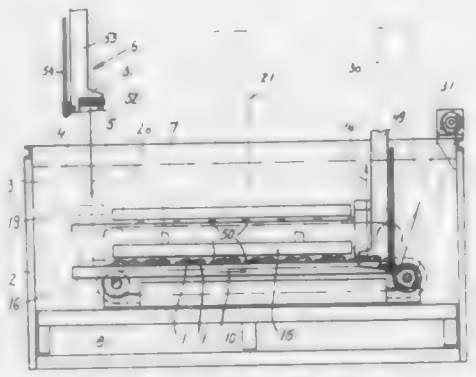
1. A fence dropper formed by bending a length of rod and adapted to engage at least the top and bottom wires of a multi-strand wire fence, said fence dropper comprising a central generally linear portion having loops formed at either end and arm portions extending from the loops parallel to one another laterally of the central portion and terminating at their free ends in wire engagement means, the loops being shaped to engage the top and bottom wires by longitudinal movement of the dropper laterally relative to each wire with the arms orientated at right angles to the wires, and to provide vertical restraint for each wire when the central portion of the dropper is rotated about its own axis until the arms are substantially parallel to the wires.

5,004,212
APPARATUS WITH IMPROVED FLOW-THROUGH CHARACTERISTICS FOR THE RECOVERY OF SILVER FROM SILVER-CONTAINING WASTE FLUIDS
Carlos D. Gutierrez, Spartanburg, S.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Jan. 29, 1990, Ser. No. 471,305
Int. Cl.[5] C22B *3/02*
U.S. Cl. 266—170 **8 Claims**



1. An improved apparatus for the recovery of silver from waste, silver-containing fluids comprising outer and inner elements, said inner element being insertable and fitable within said outer element so as to provide space between said inner and said outer elements when said inner element is placed within said outer element, and wherein said inner element comprises a necked top mated to a bottom container, said container having at least one foot element located on a bottom portion and having a plurality of holes within said bottom portion to permit fluid to rise from the bottom portion to the necked top, said top having an exit mating means and a gas vent therein, said outer element comprising a top section and a bottom section, said top section having a mating and joining means with said bottom section, and said bottom section having a fluid inlet and a fluid outlet, wherein said outlet connectably joins with said exit mating means in said necked top of said inner element.

5,004,213
LEAF-SPRING HARDENER
Helmut Schulte, Ennepetal-Voerde, Fed. Rep. of Germany, assignor to Luhn & Pulvermacher GmbH & Co., Hagen, Fed. Rep. of Germany
Filed Jan. 17, 1990, Ser. No. 466,029
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1989, 3901752
Int. Cl.[5] C21D *1/62*
U.S. Cl. 266—116 **11 Claims**



1. In combination with an apparatus for bending leaf-spring blanks, an apparatus for hardening the bent blank and comprising:

a vessel containing a bath of a hot treatment liquid and defining a longitudinal treatment path below a surface of the liquid;

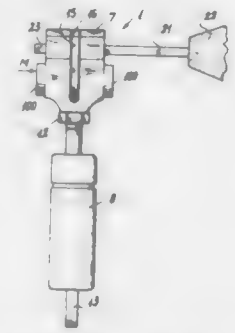
a center guide extending longitudinally along the path in the bath and including at least one normally stationary upper center guide element and spaced therebelow at least one normally stationary lower center guide element defining with the upper center guide element a longitudinally extending center gap;

a pair of side guides extending longitudinally along the path and spacedly horizontally flanking the center guide, each side guide having a normally stationary upper side guide element and a normally stationary lower side guide element spaced therebelow and defining with the respective upper side guide element a respective longitudinally extending side gap;

loading means for engaging the blank in the bending apparatus generally centrally, for removing the engaged blank from the bending apparatus, and for depositing the blank in the bath between the upper and lower guide elements with a center of the blank engaged in the center gap and ends of the blank engaged in the side gaps, whereby the blank is constrained against deforming by engagement with the guide elements; and

conveyor means including center and side pushers displaceable longitudinally along the respective guides for engaging the blank engaged therein and displacing same along the path through the guides between the upper and lower elements.

5,004,214
DEVICE FOR ADJUSTING THE BACKREST AND/OR THE SEAT OF CHAIRS
Luciano Marchina, Ospitaletto, Italy, assignor to Mara S.R.L., Italy
Filed Sep. 13, 1989, Ser. No. 406,759
Claims priority, application Italy, Sep. 15, 1988, 21878/88[U]
Int. Cl.[5] F16F *5/00*
U.S. Cl. 267—64.12 **3 Claims**



1. A device for adjusting the inclination of the backrest and seat of chairs, said device comprising:

a gas spring comprising an inside valve member, a valve extension member integral thereto, and a valve drive shaft extending from said valve extension member, said gas spring connected at one end to a support for said backrest;

a head comprising a first body portion having a threaded hole therethrough, said valve extension member being threadable into said hole to operatively connect said head to the other end of said gas spring, and said head having a second body portion integral with and adjoining said first body portion, said second body portion having a slot therethrough, said head being connected to said chair seat;

a first pin disposed in said head, said first pin oriented substantially transversely to said slot and said first pin passing through said slot;

a rocker member disposed in said slot and pivotable about said first pin, said rocker member having a first edge along a front surface transverse to said slot and a second edge along a bottom surface transverse to said slot;

a second pin disposed in said head and oriented substantially parallel to said slot and substantially transverse to said first pin;

a rod disposed to be pivotable about said second pin;

a handgrip connected to one end of said rod such that upward movement of said handgrip causes said rod to contact said first edge of said rocker member and to pivot said rocker member about said first pin, causing said second edge of said rocker member to impinge upon said valve drive shaft, thus lowering said shaft to open said inside valve member of said gas spring whereupon said backrest and said seat can be manually repositioned.

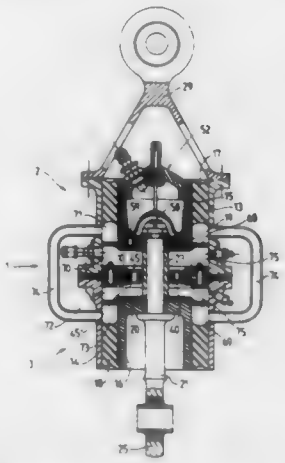
5,004,215
RESILIENT RETURN STRUT OF THE ELASTIC-HYDRAULIC TYPE WITH INCORPORATED LINEAR DAMPING BY THROTTLING A HIGH-VISCOSITY FLUID
Jacques A. Aubry, Cabries, and Jean J. Mondet, Vitrolles, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France
Division of Ser. No. 328,371, Mar. 24, 1989, abandoned. This application May 17, 1990, Ser. No. 525,301
Claims priority, application France, Mar. 24, 1988, 88 03880
Int. Cl.[5] F16F *5/00*
U.S. Cl. 267—140.1 **52 Claims**

1. Resilient return strut of the elastic-hydraulic type with incorporated linear damping, by throttling a hydraulic fluid, intended in particular for a blade of an aerodyne rotor of a rotary-wing aircraft, and comprising:

(a) first and second rigid elements (**25, 29**), each provided with articulation means (**26, 32**) for connecting one of said rigid elements to a first part, as a blade or a part-joining said blade to a rotor hub, and the other of said rigid elements to a second part, such as said rotor hub;

(b) a hydraulic damper (**1**) comprising two damper chambers (**34, 35**), of inversely variable capacities, said damper chambers being delimited within a tubular body (**12**) which is unitary with one of said rigid elements (**29**) and being separated from one another by a transverse partition (**10**), constituting a piston, said partition being mounted in said tubular body (**12**) and being unitary with one of said rigid elements (**29**), and which are filled with a hydraulic fluid intended to flow from one to the other of the damper chambers (**34, 35**) through at least one narrow connecting passage (**39**) between these chambers (**34, 35**) when the rigid elements (**25, 29**) are displaced one in relation to the other substantially along the general axis (A—A) of the strut, so as to produce a linear damping effect on the relative displacement of the rigid elements (**25, 29**);

(c) a device (**52**) for compensation of thermal expansion of the hydraulic fluid, comprising an auxiliary chamber (**58**) containing a volume of hydraulic fluid, said auxiliary chamber being permanently connected with at least one of



the damper chambers (**34**) through a damper base (**19**) which partially delimits the auxiliary chamber (**58**) and is adjacent to a damper chamber (**34**);

(d) at least one resilient return device (**2** or **3**) comprising a sleeve (**17** or **18**) made of an elastically-deformable material and attached so as to be water-tight by its internal and external lateral surfaces, respectively, between two rigid tubular sections, internal (**15** or **16**) and external (**13** or **14**) respectively, each of said tubular sections being substantially coaxial with said general axis (A—A) of the strut and unitary with one of said first and second rigid elements (**25, 29**), respectively, such that the sleeve (**17** or **18**) is deformed by shearing when said first and second rigid elements (**25, 29**) are displaced relative to one another substantially along said general axis (A—A) of the strut, and such that the sleeve (**17** or **18**) exerts on said rigid elements a resilient return effect tending to return them to an initial relative position, in which arrangement said sleeve (**17** or **18**) also forms a fluid-tight closure seal sealing the hydraulic damper (**1**);

(e) wherein the damper chambers (**34, 35**) are delimited axially between first and second resilient return devices (**2, 3**) having external rigid tubular sections (**13, 14**) arranged longitudinally on either side of said tubular damper body (**12**), said external rigid tubular sections (**13, 14**) being substantially coaxial one with the other and with said tubular body (**12**) and being unitary with said tubular body

(12) while constituting a single external tubular armature (4) which is unitary with one (29) of said two rigid elements, and in which arrangement the internal rigid tubular sections (15, 16) of the resilient return devices (2, 3) are substantially coaxial one with the other, are arranged longitudinally while leaving clearance on either side of said transverse partition (10) of the damper (1), and are unitary with one another and with the other rigid device (15), with which said external tubular armature (4) does not form a single piece, while forming a single internal armature (28) comprising a central part (23) which passes axially through the two damper chambers (34, 35) and secures the two internal tubular sections to one another, while being enclosed by the transverse partition (10) which is annular in shape and unitary with one of the armatures (4), and in such a way that said sleeves (17, 18) made of an elastically-deformable material each provide the fluid-tight sealing of one of the two damper chambers (34, 35) respectively, on opposite sides of the transverse partition (10), said narrow connecting passage being a narrow annular passage (39) delimited by radial throttling play between said transverse partition (10) and that one (28) of the armatures with which said transverse partition (10) does not form one piece, and through which the highviscosity hydraulic fluid, which is contained in the damper chambers (34, 35) and in the auxiliary chamber (58), is throttled; and

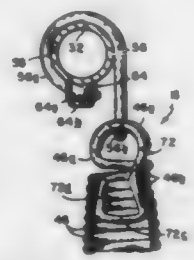
(f) wherein each of the two damper chambers (34, 35) delimited on either side of said transverse partition (10) in the tubular damper body (12) is subdivided by a rigid transverse wall (68, 69) unitary with that one of the two armatures with which said transverse partition (10) is not unitary, into two chambers of which one, in an internal axial position and adjacent to said transverse partition (10), is a working chamber (70, 72) operating under dynamic pressure, and of which the other, in an external axial position and directly adjacent to the elastically-deformable sleeve (17, 18) on the corresponding side, is a compensation chamber (71, 73) which controls variations in volume resulting from deformations in the elastically-deformable material, and which is permanently connected with the other chamber of the same kind and in the external axial position by means of at least one conduit (74).

5,004,216

SPRING CONNECTION ASSEMBLY

Robert J. Boudreau, Bedford, Pa., assignor to Hedstrom Corp., Bedford, Pa.

Filed Jan. 5, 1990, Ser. No. 461,229
Int. Cl.[5] F16F 01/12; A63G 17/00
U.S. Cl. 267—179 8 Claims



1. A spring connection assembly for use in a bouncing toy to connect a seating platform to a support therefor, said assembly including

an elongated support member having a longitudinal axis;

eyelet means rotatably mounted to said support member for free rotation about said member axis;

a coil spring having two ends and an integral spring hook at one end thereof, said hook being hooked to said eyelet means; and

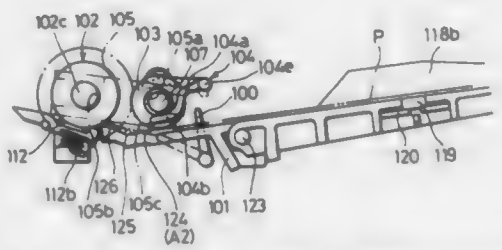
clip means secured to said spring one end, said clip means including a hook portion extending generally parallel to said spring hook, said hook portion being hooked through said eyelet means in the opposite sense from said spring hook.

5,004,217

PAPER FEEDING DEVICE

Atsushi Kano, Amagasaki; Masayuki Mizuno, Osaka; Masabu Kajiwara, Takasago; Kenji Sakane, Gojo; Yuji Abe, Hirakata, and Kazuo Nakamura, Sakai, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 264,069, Oct. 28, 1988, which is a division of Ser. No. 177,903, Apr. 1, 1988, Pat. No. 4,813,612, which is a continuation of Ser. No. 866,505, May 23, 1986, abandoned. This application May 7, 1990, Ser. No. 518,323
Claims priority, application Japan, May 24, 1985, 60-112399; May 30, 1985, 60-117175; Sep. 9, 1985, 60-197621; Sep. 10, 1985, 60-139322; Feb. 28, 1986, 61-29950
Int. Cl.[5] B65H 3/06
U.S. Cl. 271—10 2 Claims



1. A document feeding device for an image-forming machine, to feed a document in a document-feeding direction into the image-forming machine from a document tray mounted on the image-forming machine, said document feeding device comprising:

a preliminary feed roller unit;

first mounting means rotatably mounting said preliminary feed roller unit on the image-forming machine adjacent the downstream end of the document tray, with respect to the document-feeding direction, when the document tray is mounted on the image-forming machine, while permitting said preliminary feed roller unit to freely move up and down with respect to the document tray;

a second feed roller unit;

second mounting means rotatably mounting said second feed roller unit on the image-forming machine downstream of said preliminary feed roller unit, with respect to the document feeding direction;

drive means responsive to presence of a stack of one or more documents on the document tray for rotating said preliminary feed roller unit to feed the top document of the stack in the document-feeding direction from the document tray toward said second feed roller unit; and

a guide member mounted on the image-forming machine and including means responsive to rotation of said preliminary feed roller unit during feeding of documents from the stack for moving said preliminary feed roller unit up with respect to the document tray, against the downward force of gravity,

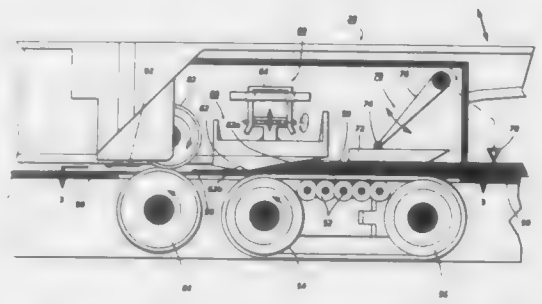
whereby upon placement of a stack of one or more documents on the document tray, said preliminary feed roller unit is moved up in a substantially horizontal position and rotated to feed the top document of the stack toward the image-forming machine and into contact with the second feed roller regardless of the height of the stack of documents.

5,004,218

RETARD FEEDER WITH PIVOTAL NUDGER SKI FOR REDUCED SMUDGE

Peter A. Sardano, Fairport, and Irvin J. Kazmierczak, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 6, 1990, Ser. No. 475,493
Int. Cl.[5] B65H 3/04
U.S. Cl. 271—35 8 Claims



1. In a retard type sheet separating and feeding apparatus for separating and sequentially feeding individual sheets of paper or the like from the bottom of a sheet stack in a sheet feeding direction through a sheet feeding path including a retard nip defined by a retard member and an opposing frictional bottom sheet feeding member engaging the bottom of the stack, assisted by a normal force applying member for pressing on the top of the stack with a normal force, the improvement wherein:

said normal force applying member comprises a ski member with a relatively large and substantially planar stack engagement ski area, and a ski pivotal mounting system providing vertical movement of said ski into pressing engagement of said ski area with the top of the stack with a normal force perpendicular said sheet feeding path in response to the loading of a sheet stack into said sheet separating and feeding apparatus,

said ski pivotal mounting system also providing self-adjusting tilting of said ski area about orthogonal axes of movement for self-leveling of said ski area relative to said sheet feeding path to allow said ski to adjust to different stack heights and to maintain adequate total normal force while preventing high pressure concentrations which could increase smearing by providing a large ski area of contact with evenly applied low pressure thereover,

wherein said ski pivotal mounting system includes a pivoted actuating arm, and wherein said normal force applying ski member is mounted to the end of said pivoted actuating arm by a dual axis gimbaled mounting allowing said ski member to freely self-level by said pressing engagement with the top of the sheet stack for uniformly normal distributed application of said normal force thereto.

5,004,219

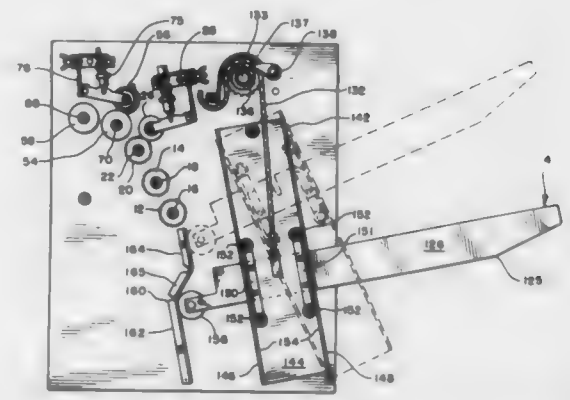
UP-FEED CONVEYOR SYSTEM

Edward S. Godlewski, 129 Spruce St., Wooddale, Ill. 60191

Continuation of Ser. No. 7,125,923, Nov. 27, 1987. This application Mar. 20, 1989, Ser. No. 325,572
Int. Cl.[5] B65H 3/06
U.S. Cl. 271—116 21 Claims

1. A conveyor system comprising a first conveyor and a second conveyor in feeding relation thereto for feeding stock items positioned on edge in a stack upon said second conveyor and delivering said items sidewise to the first conveyor, said first conveyor comprising a series of sets of rollers said sets being mounted on parallel axes spaced longitudinally of said first conveyor in engagement with the item at the adjacent end of the stack and operative to slough off the end item from the stack and deliver the same to associated pull-out mechanism, said items having leading and trailing end portions,

and said rollers comprising means for non-rotationally frictionally engaging and trailing end portion of each successive item as the end item thereahead is being discharged by the first conveyor and thereby exposing the trailing end portion of the next item for engagement with said means to restrain and prevent the end item from dragging the next item to discharge therewith.

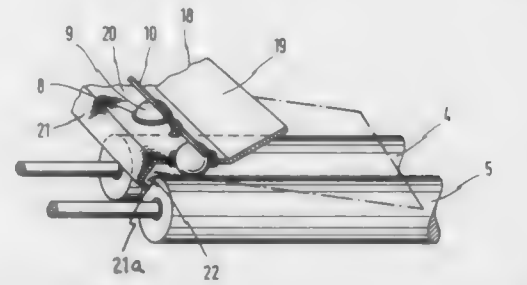


5,004,220

METHOD AND APPARATUS FOR CHANGING THE DIRECTION OF SHEET CONVEYANCE

Jürgen Dreschel, Karben; Peter Hö, Oppenhofen, and Stephan Mös, Bad Nauheim, all of Fed. Rep. of Germany, assignors to Bell & Howell GmbH, Friedberg, Fed. Rep. of Germany

Continuation of Ser. No. 309,907, Feb. 14, 1989, abandoned, which is a continuation of Ser. No. 201,256, May 25, 1988, abandoned, which is a continuation of Ser. No. 884,449, Jul. 11, 1986, abandoned. This application Sep. 7, 1989, Ser. No. 404,001
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1985, 352040
Int. Cl.[5] B65H 29/00
U.S. Cl. 271—184 8 Claims



1. An apparatus for changing the direction of conveyance of paper sheets traveling between a first processing station and a second processing station, said apparatus comprising:

a feeding conveyor having a discharge end from which paper sheets are fed in a first direction, said discharge end being movable;

a receiving deck upon which the direction of conveyance of paper sheet is changed from said first direction to a second direction, said receiving deck provided with:

(1) a plurality of driven conveyor rollers having apices disposed approximately in the plane of the deck; and

(2) a guide ruler substantially fixed to said receiving deck for laterally guiding a paper sheet at an edge thereof which is a leading edge with respect to said first direc-

tion wherein the axes of the conveying rollers are not at right angles to said second direction, but wherein the axes of the conveying rollers are so inclined that the rollers tend to move the paper in a direction that has a component which is directed toward the guide ruler, and wherein the guide ruler has a flange which

(i) depends below the level of the apices of the rollers proximate those end faces of the conveying rollers which face the guide ruler and

(ii) extends continuously along the beneath said plurality of driven conveyor rollers; and

(iii) continuously and uninterruptedly prevents said paper sheet from descending beneath said flange; and

means for adjusting the position of the discharge end of said feeder conveyor in a direction parallel to said first direction of conveyance so that the position of said discharge end relative to the guide ruler can be adjusted in accordance with the size of the paper sheets to be conveyed.

5,004,221

DEVICE FOR CONVEYING PLATE-LIKE MATTER WITHIN A ROTARY PRINTING MACHINE

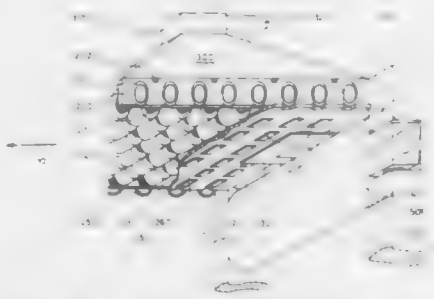
Charles Stark, Prilly, Switzerland, assignor to Bobst SA, Lausanne, Switzerland

Filed Oct. 11, 1989, Ser. No. 419,715

Claims priority, application Switzerland, Oct. 12, 1988, 3807/88

Int. Cl.[5] B65H *29/24*

U.S. Cl. 271—194 **11 Claims**



1. A device for conveying sheets within a rotary printing machine having printing units with cylindrical plate cylinders for printing sheets, said device including a horizontal frame having two lateral beams connected to one another by crossbars, at least one cross shaft being mounted for rotation between said lateral beams, each cross shaft being provided with rollers spaced along the shaft, a lower plate provided on a lower surface of the lateral beams, said plate having a separate rectangular aperture for each roller, said apertures allowing a lower portion of the rollers to extend through the plate and below a lower surface of said plate, means for forming a suction including a collector hood being connected to an upper side of the lateral beams, drive means for rotating each cross shaft, each of said apertures having a size greater than the size of the roller extending therethrough to leave a small gap surrounding each of the rollers, a downstream edge of each aperture of the lower plate being bent toward an axis of the roller, said rollers being positioned with the lower edge forming a plane for engaging an upper surface of a sheet being conveyed through the rotary printing machine and said frame including means for adjusting a vertical position of the rollers relative to an axis of the printing plate cylinder, as required by changes in the thickness of said sheet.

5,004,222

APPARATUS FOR CHANGING THE DIRECTION OF CONVEYING PAPER

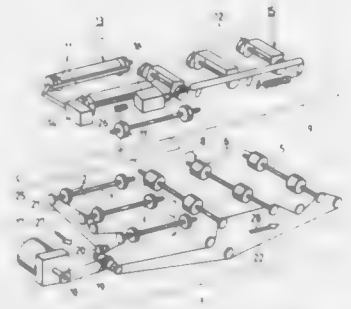
Kenji Dobashi, Saitama, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 193,099, May 12, 1988, abandoned. This application Jun. 12, 1989, Ser. No. 364,151

Claims priority, application Japan, May 13, 1987, 62-114767

Int. Cl.[5] B65H *5/00*

U.S. Cl. 271—225 **4 Claims**



1. An apparatus for changing the direction of paper of varying sizes and thicknesses conveyed therethrough comprising:

a lower guide plate;

first driving rollers for conveying the paper in a first direction so as to pull the paper into said lower guide plate;

second driving rollers for conveying the paper in a second direction perpendicular to the first direction so as to send out the paper from said lower guide plate;

first idle rollers selectively movable into and out of abutting engagement with said first driving rollers to selectively hold the paper between said first idle rollers and said first driving rollers;

second idle rollers selectively movable into and out of abutting engagement with said second driving rollers to selectively hold the paper between said second idle rollers and said driving rollers;

first means for moving said first idle rollers into engagement with said first driving rollers to convey the paper in said first direction;

second means for moving said second idle rollers into engagement with said second driving rollers when said first idle rollers are out of engagement with said first driving rollers to convey the paper in said second direction;

a driving source for generating a driving force; and

a clutch means for selectively communicating said driving force to said first and second driving rollers to rotate the first and second driving rollers simultaneously.

5,004,223

DOCUMENT CONVEYANCE APPARATUS FACILITATING CONVEYANCE BELT REPLACEMENT

Susumu Okui, Hachioji, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Oct. 31, 1989, Ser. No. 429,502

Claims priority, application Japan, Nov. 2, 1988, 63-278751

Int. Cl.[5] B65H *5/02*; **B65G** *23/44*

U.S. Cl. 271—275 **8 Claims**

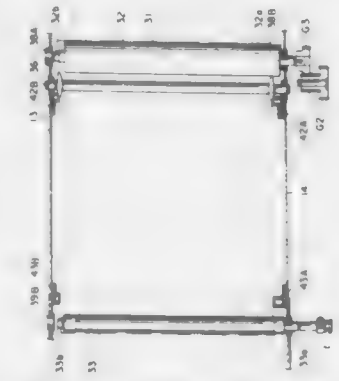
4. An apparatus for conveying a document to an exposing surface of a copier and conveying said document from said exposing surface, comprising:

a frame;

a pair of driving rollers, each having an axis of rotation, said driving rollers being rotatably mounted on the frame and supported at each end by the frame, each of said driving rollers being movable in the direction of its axis of rotation to remove one end of each of said driving rollers from said frame;

a positioning member mounted on a corresponding one of said driving rollers for positioning said corresponding driving roller in the direction of its axis of rotation;

means for driving at least one of said driving rollers; and



a conveyance belt mounted on said driving rollers and capable of being driven by said driving rollers.

5,004,224

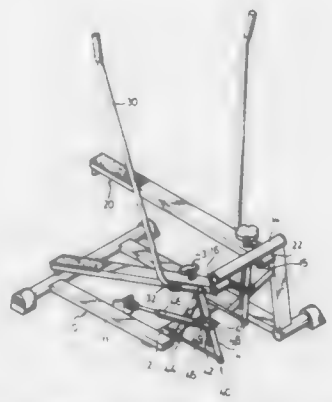
STEPPING EXERCISER

Teresa Wang, 2 Fl., No. 20-1, Alley 6, Lane 670, Ta Ya Rd., Taichung, Taiwan

Filed Jun. 1, 1990, Ser. No. 531,565

Int. Cl.[5] A63B *23/04*

U.S. Cl. 272—70 **1 Claim**



1. A stepping exerciser comprising a frame body; a pair of treadles, a front end thereof being pivoted to a front end of said frame body; a handlebar being substantially vertically coupled to said front end of each said treadle and extending upwards; a rod being fixed to said front end of each said treadle and extending downwards, a lower end of said rods being coupled together by a pair of link rods and a lever, a middle portion of said lever being pivoted to a base of said frame body; and a pair of hydraulic cylinders being substantially laterally coupled between said frame body and said rods; one of said treadles being rotated upwards when an other treadle is depressed downwards by a user so that said user may simulate stepping; a lug being pivotally coupled to a front end of each of said hydraulic cylinders, an opening and a screw hole being formed in each said lug, said rod being slidably received in said opening of said lug; a bolt being rotatably supported on said front end of each said treadle, said bolt being threadedly engaged with said screw hole of a respective lug; and a rotation of said bolt causing said lug to move up and down along said bolt so that the resistance of said hydraulic cylinders can be adjusted.

5,004,225

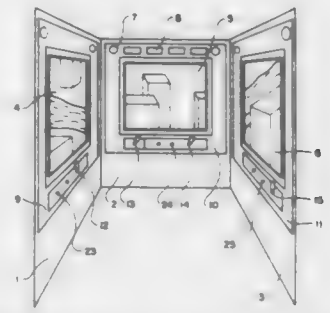
SIMULATED OBSERVATION FLIGHT APPARATUS

Yuri Krukovsky, 43 Saint Marks Pl. #6D, New York, N.Y. 10003

Filed Nov. 1, 1989, Ser. No. 431,733

Int. Cl.[5] H63G *31/16*

U.S. Cl. 272—18 **10 Claims**



1. Simulated observation apparatus comprising an enclosed elevator cabin transporting passengers to an observation deck comprising;

display screen means mounted on at least one wall of the cabin for displaying a changing picture simulating real-life panoramic external views of the cabin;

display storage means for generating a changing picture signal and supplying the picture signal to the display screen means; and,

control means for operating the display storage devices to generate the changing picture during at least one of ascent and descent of the cabin.

5,004,226

APPARATUS FOR EXERCISE OF THE HUMAN BODY

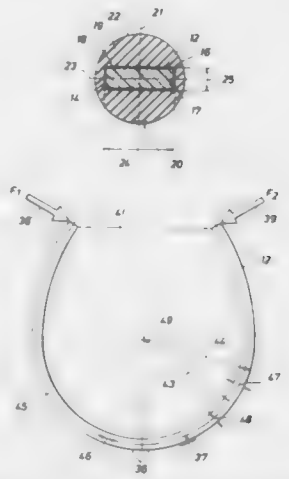
Gordon L. Brown, Jr., Bristol, Tenn., assignor to Morrison Molded Fiber Glass Company, Bristol, Va.

Continuation-in-part of Ser. No. 172,927, Mar. 25, 1988, Pat. No. 4,863,159. This application Jun. 26, 1989, Ser. No. 371,143

The portion of the term of this patent subsequent to Sep. 5, 2006, has been disclaimed.

Int. Cl.[5] A63B *21/02*

U.S. Cl. 272—93 **5 Claims**



1. An apparatus for use in the exercise of the human body, said apparatus comprising:

filament matrix means of a selected length having a neutral axis defined therethrough, said filament matrix means having an oblong cross-section with a major axis of a

selected width and a minor axis of a selected height defined therethrough, wherein the width of the cross-section is from 2–7 times the height, said filament matrix means having;

two ends,

filaments, a portion of said filaments being oriented at an angle of less than 3 degrees from said neutral axis, a portion of said filaments containing glass fibers, said filaments constituting from about 35 volume percent to about 70 volume percent of said filament matrix means and having an ultimate elongation design value from about 2 percent to about 6 percent, and

a resin system constituting from about 30 volume percent to about 65 volume percent of said filament matrix means, and having an ultimate elongation design value from about 4 percent to about 12 percent, wherein the length and cross-section of said filament matrix means, and percentage of the volume of said filaments and said resin system included within said filament matrix means, and the ultimate elongation design value of said filaments and said resin system, are selected such that the maximum elongation in said filaments and said resin system, when the distance separating the ends of the filament matrix means is minimized by the application of force to said two ends, is less than the ultimate elongation design value of said filaments and said resin system,

an outer protective sheath formed from an elastomeric material attached to said filament matrix means along the length thereof and having an outer circular cross-section and two ends terminating proximate said ends of said filament matrix means,

two hand grips, one hand grip defined about each end of said outer protective sheath and positioned parallel to said neutral axis, and

hand retention means operatively connected to one end of each of said hand grips, said hand retention means sized to allow the passage of a hand therethrough.

5,004,227

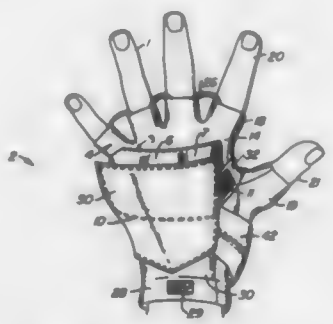
EXERCISE APPARATUS

Ned Hoffman, Berkeley, Calif., assignor to Sports-Mitt International, Berkeley, Calif.

Continuation-in-part of Ser. No. 289,191, Dec. 23, 1988, Pat. No. 4,923,418. This application Aug. 25, 1989, Ser. No. 398,360

Int. Cl.[5] A63B *21/065*

U.S. Cl. 272—119 **18 Claims**



1. An exercise glove comprising:

a mitt having a backhand portion and a palm portion;

a plurality of finger sleeves integrally formed with said mitt; and

a loop disposed between adjacent finger sleeves for facilitating removal of the glove,

said loop extending axially with respect to said adjacent finger sleeves.

3. An exercise apparatus for retaining a weight on a user's hand comprising:

a support having a backhand portion:

an insert pocket disposed on said backhand portion; for receiving the weight;

a strap means mounted across said insert pocket for removably securing the weight within said insert pocket to the user's hand, said strap means including a first band having first and second free ends, said first free end configured to wrap around the user's metacarpal bone of the little finger and said second free end is configured to wrap between the user's metacarpal bones of the index finger and thumb, said free ends converging at the palm of the user's hand, said strap means further including an auxiliary band extending from said first band at an angle thereto, away from the user's fingers and toward the user's wrist; and

means mounted to said backhand portion for retaining said first band across said insert pocket.

5,004,228

LEG STRETCHING APPARATUS

Scott Powers, 5704 Euper La., Fort Smith, Ark. 72903

Filed Apr. 20, 1989, Ser. No. 341,432

Int. Cl.[5] A63B *21/00*

U.S. Cl. 272—125 **5 Claims**



1. A leg stretching apparatus to allow a user to stretch hamstring and lower back muscles, which apparatus comprises: a foot support strap having two ends; a pair of handgrip placement straps, one of said handgrip placement straps extending from each said end of said foot support strap, and each handgrip placement strap terminating in an adjustable clip means; a plurality of handgrips, each handgrip having a hole therethrough to slidably receive one of said handgrip placement straps, whereby said handgrips are retained on said handgrip placement straps by said clip means and adjustment of said clip means will determine the position of said handgrips along each said handgrip placement strap.

5,004,229

PORTABLE EXERCISE DEVICE

Charles F. Lind, 2210 E. Sherwood Rd., Arlington Hts., Ill. 60004

Filed Nov. 3, 1988, Ser. No. 266,642

Int. Cl.[5] A63B *21/00*

U.S. Cl. 272—127 **8 Claims**

1. An exercise device, comprising the combination of

a substantially unitary cross member;

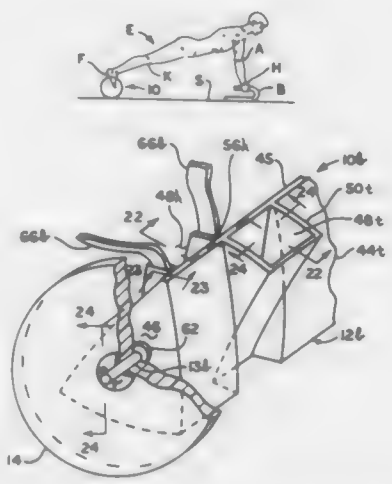
a pair of wheels, and means rotatably connecting the wheels to the cross member adjacent its opposite ends, for rotation about an axis extended between the cross member ends, said wheels holding the cross member above a support surface in an unstable rotatable manner;

said cross member having first and second alternate pairs of separate feet-holding forms thereon, each pair of feet-holding forms being laterally spaced apart and between the wheels, and having transverse walls disposed between an imaginary cylinder defined between the wheel peripheries and the wheel axis and engaged below the wheel axis

by the exerciser's feet to vertically support them on the cross member above the support surface;

each of said first pair of feet-holding forms also having walls extended upwardly aways from its transverse support wall and being open upwardly effective in modes of exercise with the exerciser generally facing toward the support surface to receive the toe-ends of the exerciser's feet and firmly hold them to the cross member and stabilize the cross member on its wheeled support; and

each of said second pair of feet-holding forms also having walls extended upwardly away from its transverse support wall and being open upwardly and rearwardly effective in



modes of exercise with the execises generally facing away from the support surface to receive the heel-ends of the exerciser's feet and firmly hold them to the cross member and stabilize the cross member on its wheeled support;

whereby the exerciser can assume different bridged positions each generally having his/her hands on the support surface and his/her feet alternatively in the first or second pair of feet-holding forms of the exercise device, and whereby the exerciser can modify the bridged positions by moving at the waist, hips, knees, elbows and/or shoulders, with the hands being stationary or moving along the support surface and the exercise device moving along the support surface.

5,004,230

METHOD AND APPARATUS FOR EXERCISING OR TESTING ROTARY TORSO MUSCLES

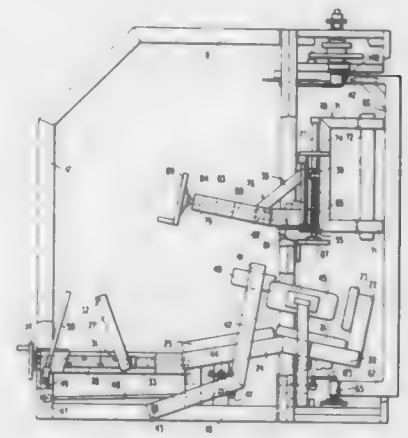
Arthur Jones, 1155 NE. 77th St., Ocala, Fla. 32670

Continuation-in-part of Ser. No. 361,055, Jun. 5, 1989, and a continuation-in-part of Ser. No. 307,706, Feb. 8, 1989, and a continuation-in-part of Ser. No. 307,473, Feb. 8, 1989, and a continuation-in-part of Ser. No. 236,367, Aug. 25, 1988, Pat. No.

Int. Cl.[5] A63B *21/00*

U.S. Cl. 272—134 **17 Claims**

1. Apparatus for testing and/or exercising rotary muscles of a portion of the human body, the apparatus comprising in combination, a seat for receiving a subject in seated position, a movement arm rotatable about a generally vertical axis in response to forces generated by said muscles, means on the movement arm for securing the upper torso of the subject to the movement arm against movement relative to the movement arm, and resistance means connected to the movement arm for opposing rotation of the movement arm in one direction in response to forces generated by said rotary muscles and wherein said means for securing the upper torso includes at least one pad engageable with the chest area of the subject, a



backrest engageable by the upper back of the subject and a headrest engageable by the head of the subject.

5,004,231

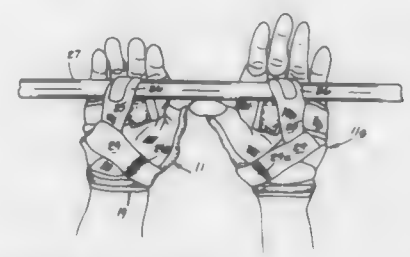
EXERCISE GLOVE

Don Alread, 11960 SW. 12th St., Pembroke Pines, Fla. 33025

Filed Feb. 26, 1990, Ser. No. 485,032

Int. Cl.[5] A63B *21/00*

U.S. Cl. 272—143 **8 Claims**



1. An exercise glove comprising,

a back web surface overlying a palm web surface wherein the glove further includes four finger sockets and a thumb socket integrally mounted to the back and palm web surfaces wherein each socket includes a through-extending aligned opening directed through each of the sockets to an interior cavity defined by the glove wherein each of the thumb and finger sockets includes a free forward annular terminal edge, and a lower terminal end of the glove includes a discontinuous wrist engaging edge with a split web directed into the back surface from the wrist engaging edge, and

a first flexible strap and a second flexible strap selectively securable together overlying the split web wherein each first and second strap include engagement means for securing the first and second straps together, and

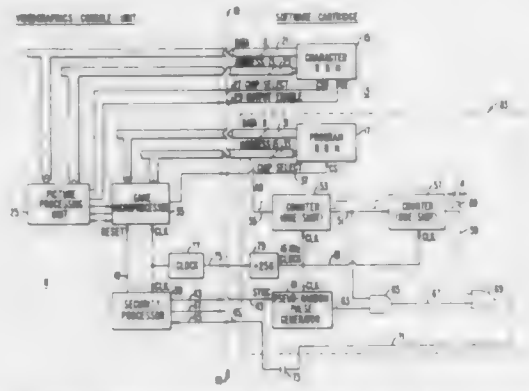
further including a loop strap defining a loop diagonally overlying the palm web surface and terminating medially thereof and secured at its lower terminal end to a rear terminal end of the second strap, and an elongate flexible strap directed through the loop and secured at its rear terminal end to a rear terminal end of the first flexible strap.

5,004,232

COMPUTER GAME CARTRIDGE SECURITY CIRCUIT

John J. Wong, Atherton, and Paul S. Lui, Sunnyvale, both of Calif., assignors to Macronix, Inc., San Jose, Calif.

Filed Oct. 13, 1989, Ser. No. 421,1[illegible]
Int. Cl.[5] A63F 9/22; H04L 9/00
U.S. Cl. 273—435 18 Claims



14 A method of activating a computer video game system to function with a game memory cartridge wherein the computer system including a microprocessor operating upon initialization by holding the microprocessor in a inactive state for a time and then to cycle it between inactive and active states until the cartridge communicates a proper security signal to the computer system over a security circuit, comprising the following steps occurring in the cartridge:

recognizing when the computer system microprocessor is inactive or active,

holding a security signal from the cartridge inactive while the computer system microprocessor is sensed to be inactive, and

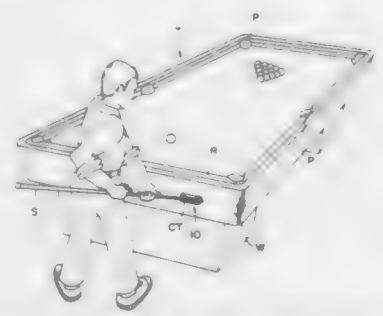
generating a security signal on said security circuit when the computer system microprocessor is recognized to be active, said security signal being in the form of a sequence of pulses on the security circuit wherein the first pulse of the sequence occurs substantially simultaneously with the microprocessor switching to its said active state from its inactive state, whereby the computer system reset signal allows the microprocessor to operate.

5,004,233

DEVICE FOR HOLDING CHALK FOR APPLICATION TO TIPS OF POOL CUES

Donnie C. Phillips, Rte. 1, Honea Path, S.C. 29654

Filed Feb. 23, 1990, Ser. No. 484,178
Int. Cl.[5] A63B 71/00
U.S. Cl. 273—21 16 Claims



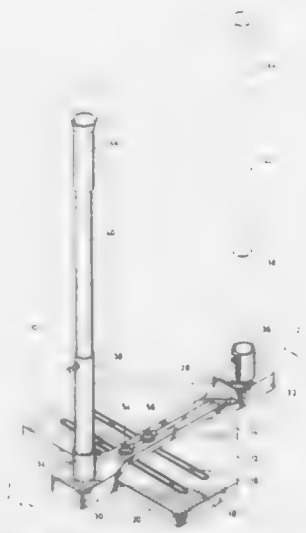
1. An improved device for holding chalk for application to pool cues comprising an elongated housing, said housing having a plurality of spaced apart walls, one of said walls defining an elongated opening therealong, said opening extending substantially the length of said housing and being adequate in size to permit passage of a tip of a pool cue therethrough along the length of same, said housing defining a chamber within said walls for receipt of a plurality of cubes of cue chalk therein, each said cube being exposed behind said opening for contact with a cue tip passing therethrough, said chamber extending at least a major portion of the length of said housing, means for locking said chalk cubes within said housing against removal, and means for mounting said device on a surface to present said chalk behind said opening for application of said chalk to a cue stick.

5,004,234

ADJUSTABLE BATTING TEE

Ray A. Hollis, 6715 Greenvale La., Houston, Tex. 77066

Filed Jun. 6, 1990, Ser. No. 534,030
Int. Cl.[5] A63B 69/40
U.S. Cl. 273—26 R 2 Claims



1. An adjustable batting tee, comprising:

a home plate having first and second open slots, said slots being parallel and spaced apart:

a horizontal support member of a given length and having first and second ends and also having a first pedestal at one of its said ends and having a third open slot along at least a portion of the length of said horizontal support member, said first pedestal having means to mount a batting tee thereto;

first and second fastener means connecting said horizontal support member to said home plate, the first said fastener means being in said first slot, the second said fastener means being in said second slot, and each of said first and second fastener means being in said third slot, whereby upon loosening said first and second fastener means, said first pedestal can be re-positioned with respect to said home plate.

5,004,235

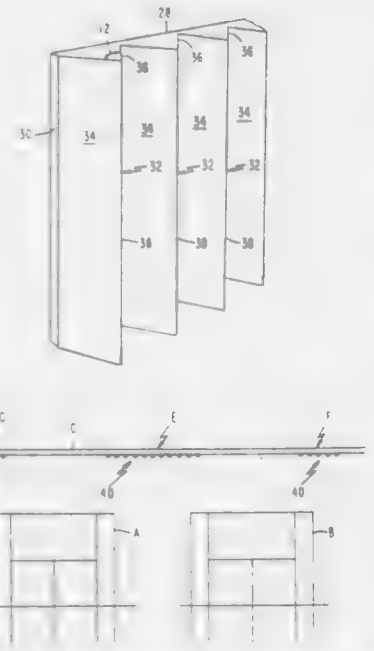
SURFACE UNIT ON PERIPHERAL WALL OF TENNIS COURT FIELD

Tamio Suga, 8-W, Tokiwa Muranouchicho, Ukyo-ku, Kyoto-shi, Kyoto, 615, Japan

PCT No. PCT/JP88/00017, § 371 Date Dec. 6, 1988, § 102(e) Date Dec. 6, 1988, PCT Pub. No. WO89/06151, PCT Pub. Date Jul. 13, 1989
PCT Filed Jan. 8, 1988, Ser. No. 283,328
Int. Cl.[5] A63B 61/00
U.S. Cl. 273—29 A 10 Claims

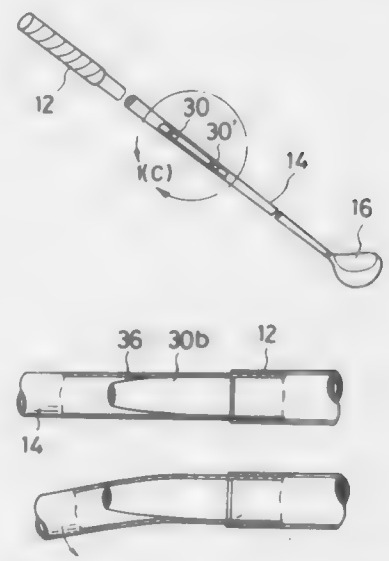
1. A surface unit for controllably repelling a tennis ball in a rebound-reducing manner, supported at a substantially vertical wall at the periphery of a tennis court, comprising:

a plurality of elongate ball-repelling members comprising a ball rebound-reducing material, said repelling members each being triangular in cross-section and attached to extend vertically in parallel on said surface of said peripheral wall, each member having a base attached to said wall and a vertical ridge line formed at the intersection of two planar ball-repelling sides extending from said base; and



said repelling members further being attached to said wall such that the distance between said ridge lines of adjacent repelling members are equal to the diameter of a tennis ball.

tion; so that, when said hollow tubular club-shaft bends during operation an inner surface of said tubular club-shaft contacts



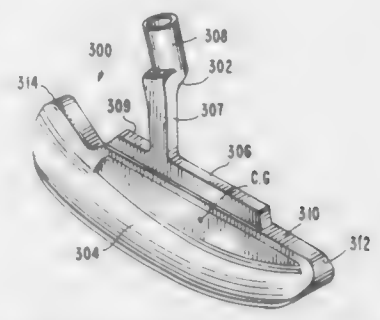
said tapered surface of said at least one cylindrical member to control the whippiness of said golf club.

5,004,237

PUTTER WITH L-SHAPED HOSEL

Anthony J. Antonious, 205 E. Joppa Rd., Towson, Md. 21204

Filed Jun. 9. 1989, Ser. No. 364,085
Int. Cl.[5] A63B 53/02
U.S. Cl. 273—80.2 7 Claims



1. A putter type golf club head having a shaft connecting means and a club head including a heel, toe, ball striking face and top ridge, wherein the improvement comprises:

a hosel for connecting said club head body to said shaft connecting means; said hosel including a vertical hosel member connected to said shaft connecting means and a horizontal hosel member connected and perpendicular to said vertical hosel member whereby 90 degree angle between said horizontal and vertical hosel members is formed; said horizontal hosel member lying above said top ridge and having an upper surface unattached to said club head body and a lower surface integrally formed with and attached to said top ridge of said club head body and providing an extended connection between said hosel and said club head body in the heel-to-toe direction of the club head; said horizontal hosel member being comprising a first component extending from said vertical hosel member toward said toe and a second component extending from said vertical hosel member toward said heel.

5,004,236

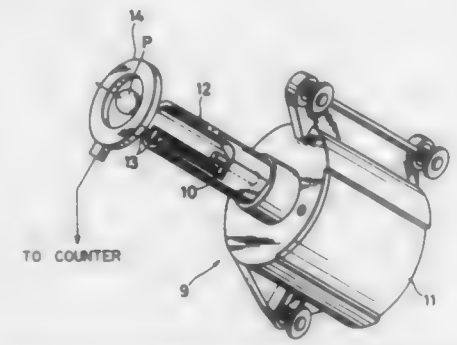
BALANCE SHAFT

Makoto Kameshima, 11-17 Miyagidai 2-chome, Funashi-shi, Chiba-pref., Japan

Continuation of Ser. No. 31,126, Mar. 30, 1987. This application Aug. 16, 1988, Ser. No. 233,846
Claims priority, application Japan, Apr. 2, 1986, 61-76286; Sep. 5, 1986, 61-207738
Int. Cl.[5] A63B 53/00
U.S. Cl. 273—80 B 5 Claims

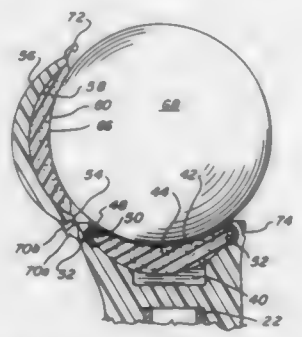
1. A golf club, comprising a balance shaft having a first and a second end, a club head attached to the first end and a grip attached to the second end, said balance shaft comprising a hollow tubular club-shaft having an inner diameter, and at least one substantially cylindrical member within the club-shaft, each of said at least one cylindrical member having a tapered surface so as to form a large-diameter portion and a small-diameter end, only the large-diameter portion being fixed to the club-shaft, the small-diameter end having a diameter smaller than the inner diameter of the club-shaft and being located closer to the first end than is said large-diameter por-

5,004,238
BALL-SHOOTING GAME MACHINE
Kazuo Okada, Tokyo, Japan, assignor to Universal Company, Ltd., Japan
Filed Oct. 6, 1989, Ser. No. 418,346
Claims priority, application Japan, Oct. 13, 1988, 63-258159
Int. Cl.[5] A63F *7/00*
U.S. Cl. 273—121 B 9 Claims



1. A ball-shooting game machine for playing a game by shooting balls from a ball shooter to a game zone over a game board, comprising a winning ball production control, a shot ball detection means for providing an output signal every time a predetermined number of balls is shot from said ball shooter, means for generating a random number in response to said output signal from said shot ball detection means and means for activating said winning ball production control to effect an advantageous state to a player depending upon the random number generated.

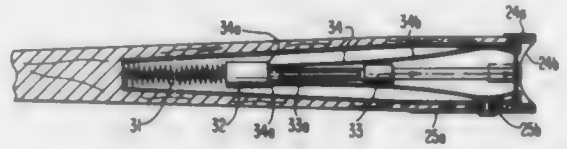
5,004,239
GOLF CLUB AND GOLF BALL CLEANING DEVICE
Rick L. Wettstein, 10909 W. 65th Way, Arvada, Colo. 80004
Filed Feb. 14, 1990, Ser. No. 479,937
Int. Cl.[5] A46B *15/00*; A63B *53/00, 57/00*
U.S. Cl. 273—162 F 11 Claims



9. A device for cleaning golf balls comprising in combination a golf club having a shaft with a head at one end, a grip at the opposite end, and further including a concave recess formed in said opposite end, said recess containing means for absorbing moisture thereby forming a golf ball cleaning surface incorporated into said grip.

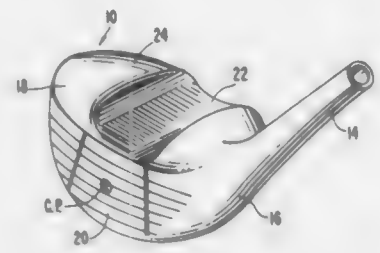
5,004,240
GOLF BALL RETRIEVER
Jack K. Tsukamoto, 1976 Paula Dr., Honolulu, Hi. 96816
Filed Apr. 18, 1990, Ser. No. 510,559
Int. Cl.[5] A63B *53/00, 53/14*
U.S. Cl. 273—162 E 15 Claims

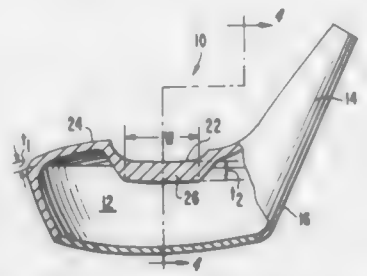
1. A retrofittable module for use with a golf club to retrieve golf balls, said retrofittable module comprising:
an elongated housing having a side wall, a closed end, and an open end;
a plurality of curved, resilient prongs;
connecting means for connecting said prongs together;
axial biasing means contacting said housing for biasing said prongs in an axial direction parallel to the longitudinal axis of the housing toward said open end; and



actuating means for actuating said module from a first position having said prongs substantially disposed within said housing wherein said prongs are in a biased relationship with said side wall to a second position having said prongs substantially extending out of said housing through said open end, wherein movement from said first position to said second position results from the cooperation between said axial biasing means and said biased relationship between said prongs and said side wall.

5,004,241
METAL WOOD TYPE GOLF CLUB HEAD WITH INTEGRAL UPPER INTERNAL WEIGHTED MASS
Anthony J. Antonious, 205 E. Joppa Rd., Towson, Md. 21204
Continuation-in-part of Ser. No. 311,737, Feb. 17, 1989, abandoned. This application Mar. 5, 1990, Ser. No. 489,253
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 H 7 Claims

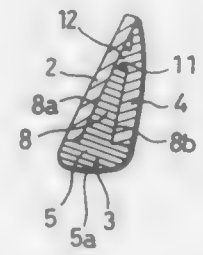


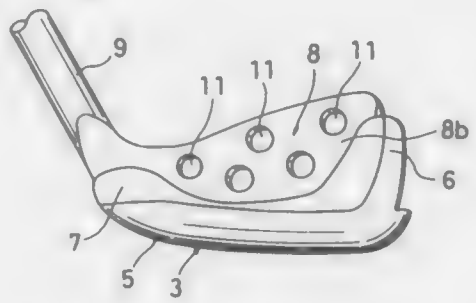


1. A metal wood type golf club head formed of a hollow interior metal shell having inner and outer wall surfaces and a first wall thickness, said club head including a hosel, heel, toe, upper surface, rear surface, ball striking face with a center of percussion thereon wherein the improvement comprises:
an elongated mass integrally formed with said inner wall surface and under said upper surface and extending beyond said inner wall surface into the interior of said metal shell, said elongated mass located between a point adjacent said ball striking face and a second point adjacent said rear surface in a front to rear direction; said elongated means and said metal shell having a second thickness at least twice the thickness of said first wall thickness, said elongated mass centrally disposed relative to the ball striking face between said heel and said toe;

said elongated mass positioning the center of gravity of said club head in a direction toward said upper surface and above and behind said center of percussion on said ball striking face.

5,004,242
IRON GOLF CLUB HEAD AND METHOD OF PRODUCING THE SAME
Takeshi Iwanaga, Kobe, and Akio Ohnishi, Kakogawa, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan
Filed Apr. 25, 1990, Ser. No. 514,309
Claims priority, application Japan, Jun. 12, 1989, 1-149230
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—169 9 Claims

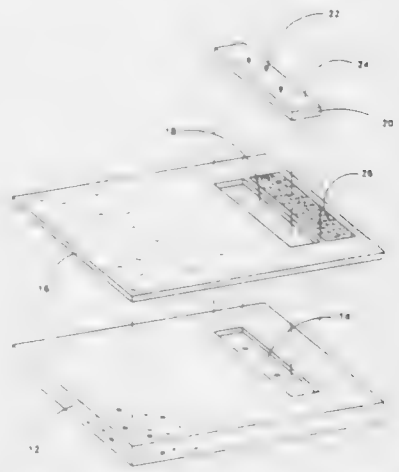




1. An iron golf club head comprising:
a core member made of a metallic material having a large specific weight, said core member having an exposed integral sole portion, an integral riser wall portion, and an integral shaft connecting portion, said riser wall portion being formed with at least one through-hole extending between front and rear surfaces thereof;
a composite striking face member fixed to said front surface of said riser wall portion, said, striking face member having a specific weight smaller than that of said core member;
a cladding made of a lightweight metal, said cladding covering all surfaces of said riser wall portion and said shaft connecting portion except for a surface portion of said riser wall portion on which said striking face member is fixed, said cladding having at least one integral projection fitting into said through-hole for connection to said striking face member.

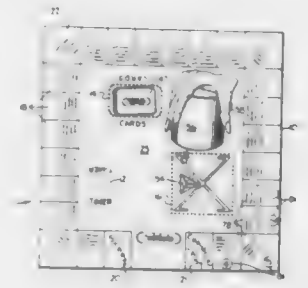
5,004,243
GOLF PRACTICE APPARATUS
Stephen J. Dlouhy, 101 Seven Oaks Road, Council Bluffs, Iowa 51503
Filed Oct. 16, 1989, Ser. No. 422,041
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—195 A 14 Claims

1. A golf practice apparatus for use on a rigid support base having a cavity formed therein comprising,
a mat,
a tee pad having upper and lower surfaces and a thickness generally equal to the depth of said support base cavity plus the thickness of said mat,
said tee pad being operative to be penetrated at numerous positions on said upper surface by a golf tee to any selective depth for removably receiving and supporting said tee, and



said tee being adapted for placement adjacent said mat whereby a ball on a tee supported by said pad is positioned to be struck by a club of a golfer on said mat.

5,004,244
MEMORY GAME
Gary K. Johnson, 10701 W. 71st Pl., Shawnee, Kans. 66203
Filed Aug. 20, 1990, Ser. No. 570,605
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—240 10 Claims





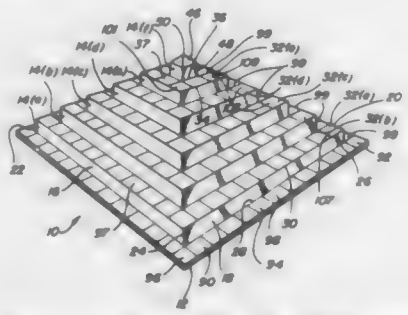
9. A method of playing a memory development game by one or more players, comprising the steps of: (a) first randomly selecting a sliding scale of values for certain people categories and randomly selecting a plurality of pairs of alphabetic characters; (b) then competitively recording the names of known persons, each of whom have initials matching one pair of said plurality of pairs of alphabetic characters during a given interval of time; and (c) then totaling the score of each player by summing the values of each of the recorded names as respectively indicated by the selected values for the appropriate people categories.

5,004,245

METHOD AND APPARATUS FOR PLAYING A GAME

Dean P. Schumacher, 4922 Stamford Dr., West Bloomfield, Mich. 48033; William F. Blume, 26 Gramercy Park South, Apt. 9F, New York, N.Y. 10003, and John C. Bonds, 730 N. LaSalle, Chicago, Ill. 60610

Filed Mar. 1, 1990, Ser. No. 487,345
Int. Cl.[5] A63F 3/00
U.S. Cl. 273—241 15 Claims



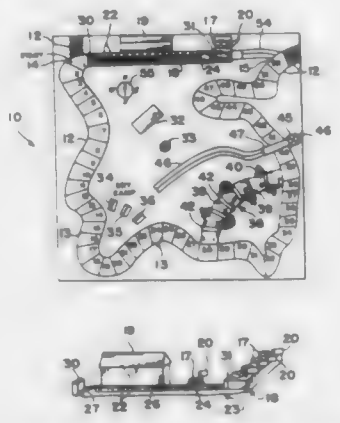
1. A method for playing a game, said game having a game board, a plurality of game players, and a plurality of tokens associated therewith, said method comprising the steps of:
(a) defining a plurality of hand symbols;
(b) causing two of said plurality of game players to generate one of said plurality of hand symbols; and
(c) selecting said one of said plurality of tokens to be moved by comparing said hand symbols formed by said first and second plurality of game players.

5,004,246

INTERNATIONAL WHITE-WATER RAFTING GAME

Frances S. Merrill, 214 Archers Mead, Williamsburg, Va. 23185; Richard L. Miller, and Patricia M. Miller, both of Rte. 3, Box 1063, Hayes, Va. 23072

Filed Sep. 4, 1990, Ser. No. 576,785
Int. Cl.[5] A63F 3/00, 9/14
U.S. Cl. 273—246 14 Claims



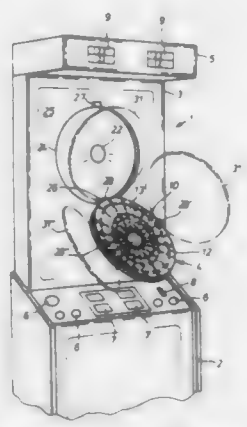
8. A board game for at least two players comprising:
a game board having a simulated waterway graphically displayed thereon and divided into a plurality of spaces by a plurality of spaced lines;
said waterway simulating a fast flowing stream having a bowman push-off start space and a pick-up finish line space and including graphic illustrations of white water rapids, water falls, and other hazards;
a plurality of water raft game pieces manually movable along the waterway and positionable in the spaces formed by said plurality of lines;
an equipment lodge and a ready ramp area on said game board for said plurality of game pieces;
a miniature flag representing a nation of the world releasably carried by each said water raft game piece;
means effecting gravity launch of each game piece includes a miniature railroad segment having an incline portion terminating adjacent said bowman push-off start space, a flat car disposed and movable on said railroad segment, a barrier positioned between said bowman push-off start space and said railroad segment to stop movement of said flat car at that point, whereby when a water raft game piece is transported by said flat car and said flat car is stopped by said barrier, the momentum of said game piece carried by said flat car will cause said game piece to be gravity launched over said barrier and onto said game board at the bowman push-off start space, and,
means operable by each player determining the number of spaces on said waterway his game piece may be moved at a time.

5,004,247

ELECTRONIC DART BOARD

Wilhelm Menke, Wiesbaden, Fed. Rep. of Germany, assignor to NSM Apparatebau GmbH & Co. KG, Bingen, Fed. Rep. of Germany

PCT No. PCT/DE87/00608, § 371 Date Jul. 19, 1989, § 102(e) Date Jul. 19, 1989, PCT Pub. No. WO88/05521, PCT Pub. Date Jul. 28, 1988
PCT Filed Dec. 24, 1987, Ser. No. 392,925
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1987, 3702135; Jul. 15, 1987, 3723298
Int. Cl.[5] F41J 5/04; A47B 88/00
U.S. Cl. 273—376 14 Claims



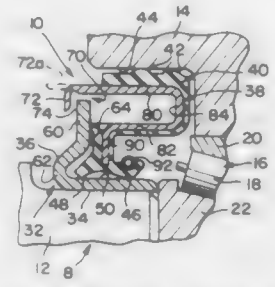
1. In a dart game including a dart target disk attached in an opening in the front wall of a housing, with said dart target disk including movable segments which are assigned different numbers of points and are provided with holes to receive the darts so as to actuate, by way of an elastic support, a group of switches disposed between said support and a carrier plate when a dart strikes a segment, permitting by way of electrical and/or electronic components automatic recording, counting and display of the points earned, the improvement comprising:
a first support means for supporting a unit on said dart target disk, said unit including said elastic support, said group of switches, and said carrier plate;
a second support means for supporting said dart target disk on said front wall;
said dart target disk together with said unit being pivotable about said second support means for movement between a generally vertical position and a position in which said dart target disk and unit extend outwardly relative to the front wall and thereafter said unit being pivotable about said first support means to an unfolded position in which said unit is unfolded away from the dart target disk.

5,004,248

UNITIZED SEAL WITH UNITIZING JOINT REMOTE FROM SEAL LIP

Edward J. Messenger, and George Fedorovich, both of Longview, Tex., assignors to Garlock Inc., Palmyra, N.Y.

Filed Aug. 25, 1983, Ser. No. 526,285
Int. Cl.[5] F16J 15/34
U.S. Cl. 277—37 26 Claims



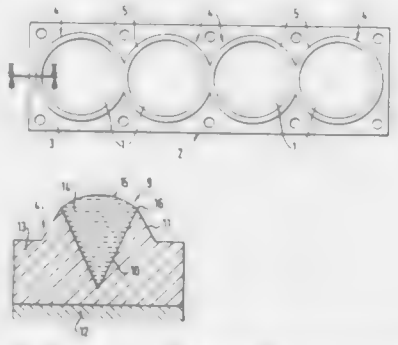
1. A unitized seal for providing a sealing action between first and second relatively movable members which includes no more than two unitary stampings, comprising a one piece wear sleeve adapted to be mounted on said first member, said wear sleeve including one of said unitary stampings which includes a first section having a wear surface provided thereon and a second section extending angularly away from said first section and terminating at a terminal end portion radially spaced from said wear surface, said terminal end portion including an inner surface, an outer surface extending in spaced relation to said inner surface, and a terminal end surface extending between said inner and outer surfaces, a one piece reinforcing shell adapted for assembly with said one piece wear sleeve and including sealing means secured to said one piece reinforcing shell and adapted to engage said wear surface when said reinforcing shell is assembled with said one piece wear sleeve, said reinforcing shell being the remaining unitary stamping and a part of said reinforcing shell forming a unitizing rollover portion for engagement with the terminal end portion of the second section of said wear sleeve to form therewith a unitizing joint remote from said wear surface, said rollover portion extending above and over said terminal end surface and along the outer surface of said terminal end portion, when said reinforcing shell is operatively assembled with said wear sleeve.

5,004,249

FLAT GASKET AND PROCESS FOR ITS PRODUCTION

Peter Grosch, Finningen; Gerhard Haas, Munich, and Ingo Kremer, Senden, all of Fed. Rep. of Germany, assignors to Reinz-Dichtunga-Gesellschaft mbH, Neu-Ulm, Fed. Rep. of Germany

Filed Feb. 10, 1989, Ser. No. 308,522
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1988, 3804436
Int. Cl.[5] F02F 11/00; F16J 15/00; B23P 15/06
U.S. Cl. 277—207 R 14 Claims



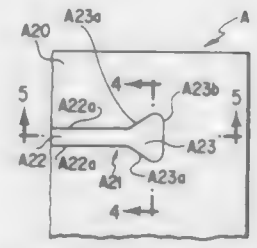
1. A flat gasket, with at least one through opening, which is provided with a metallic border resting on a rim of the opening, the border having a U-shaped cross-section with opposing legs, wherein at least one of the legs (5,6) of the border (4) is provided at least zonally on its outer surface with a structure having at least one depression containing an impregnating agent solution said depression being formed with a shape and level difference such that in the unloaded state and as a result of its surface tension, the impregnating agent solution (14) is kept in the depression with outwardly curved meniscus (15).

5,004,250

METAL PLATE WITH A BEAD

Tsunekazu Udagawa, Ichikawa, Japan, assignor to Ishikawa Gasket Co., Ltd., Tokyo, Japan

Filed Mar. 21, 1990, Ser. No. 496,997
Int. Cl.[5] F16J 15/00; F16K 41/00
U.S. Cl. 277—236 5 Claims



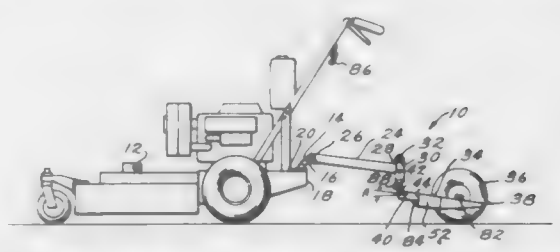
1. A metal plate for a gasket, comprising,
an elastic plate with an outer surface, and
at least one bead formed on the elastic plate, said bead having a bead body to provide surface pressure thereat and a bead end portion terminated inside the elastic plate, said bead body projecting outwardly relative to the elastic plate and having first side edges to define a width of the bead body therebetween, said width of the bead body being substantially constant so that the bead body with the constant width extends for a predetermined distance inside the elastic plate, said bead end portion having second side edges connected to the first side edges, respectively, distance between the second side edges increasing as distance from an end of the bead body increases so that surface pressure at the bead end portion, when the metal plate is compressed, can gradually decrease as it approaches an end of the bead end portion.

5,004,251

SULKY APPARATUS ATTACHABLE TO A SELF-PROPELLED POWER MOWER

James D. Velke, and William R. Wright, both of Gaithersburg, Md., assignors to Lawn-Wright, Inc., Gaithersburg, Md.

Filed Mar. 1, 1990, Ser. No. 487,156
Int. Cl.[5] B62D 63/00
U.S. Cl. 280—32.7 18 Claims



1. Sulky apparatus attachable to a self-propelled vehicle, such as a power mower, for transporting an operator, said apparatus comprising:
hinge means, defining a first pivot axis for attachment to said

mower with said first axis in a normally substantially horizontal position;

a first rigid arm, defining first and second ends, said first end connected to said hinge means for substantially pivotal movement about said first axis;

pivot means attached to said second end of said arm, said pivot means defining a second normally substantially vertical pivot axis;

operator supporting means attached to and in operative relationship with said pivot means for freely rotating substantially horizontally about said second axis;

a wheel rotatably mounted on said operator supporting means;

said pivot means enabling unlimited movement of said supporting means and said wheel completely about said pivot axis; and

said wheel and said supporting means of predetermined sizes normally to permit free movement of said wheel and said supporting means beneath said arm as said supporting means and said wheel rotate about said second axis and past said arm.

5,004,252

SHOPPING BASKET ACCESSORY

Wayne Kraper, 775 Springwood St., "A", Corona, Calif. 917[illegible]

Filed Jul. 24, 1989, Ser. No. 383,640
Int. Cl.[5] B62B *3/02, 5/00*
U.S. Cl. 280—33.992 **6 Claims**



1. A shopping basket accessory comprising:

partition means for covering a bin area of a conventional shopping cart and for providing a solid writing surface proximate a handle on said conventional shopping cart, said partition means comprising a depending member disposed on a forward edge thereof and shaped for partially encircling a basket wire proximate said handle;

means, mounting said partition means to a movable, generally vertical divider disposed within said conventional shopping cart, for enabling said partition means to be stored in a parallel relationship with the divider and lifted to a position extending between the divider and the shopping cart handle, said means mounting said partition member including bracket means, disposed on a back side of said partition means, for enabling the partition means to slide in a general vertical direction relative to the divider from a storage position at which the partition means is on a front side of the divider to a storage position at which the partition means is on a back side of the divider; and

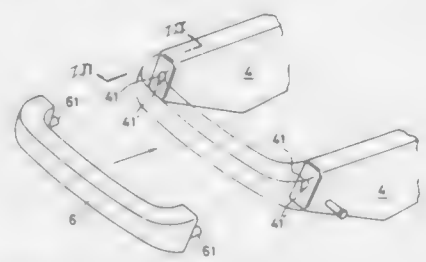
latch means for temporarily locking said partition means between the divider and the handle in order to provide a secure bin proximate said handle for temporary storage of a purse, said latch means comprising a tab slidably mounted to said depending member and extending therethrough, said tab having a lower portion shaped for partially encircling said basket wire proximate said handle when the tab is slid to a locked position and upper portion means, accessible from a top side of said depending means, for enabling sliding of said lower portion into the locked position.

5,004,253

GUARD ATTACHMENT/REMOVAL STRUCTURE IN BABY CARRIAGE

Shinroku Nakao; Yoshiyuki Suzuki, both of Kanagawa, and Hitoshi Kato, Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan

Filed Aug. 14, 1987, Ser. No. 85,599
Claims priority, application Japan, Aug. 18, 1986, 61-125712[U]; Aug. 18, 1986, 61-125713[U]
Int. Cl.[5] B62B *9/12*
U.S. Cl. 280—47.38 **4 Claims**



1. A carriage, comprising:

a rollable seat structure for accommodating a passenger and having two armrests on opposite lateral sides of a seat for said passenger, each said armrest having a fitting hole facing a forward direction from a forward surface of said armrest; and

a guard for constraining said passenger in said forward direction having two fitting pipes on opposite ends thereof fittable into said fitting holes, each said fitting pipe having an engagement projection projectable beyond a lateral surface of said fitting pipe and at least partially retractable into said fitting pipe;

supports with insertion holes for inserting respective ones of said fitting pipes, said supports being disposed within said armrests at a back surface of said fitting holes, wherein each of said supports includes an engagement hole connected with said insertion hole and fittable with a respective one of said engagement projections;

opening operation buttons for releasing an engagement of said engagement projections fitted into said engagement holes; and

elastic supporting arms, each connected at one end to one of said supports and at another end to one of said opening operation buttons, said buttons being normally disposed in said engagement holes.

5,004,254

DRAG BAR MOUNTING STRUCTURE FOR A GOLF BAG DRAG CARRIAGE

Jiin-Tang Wu, No. 35-1, Jih Hsin St., Tu Cheng Hsiang, Taipei Hsien, Taiwan

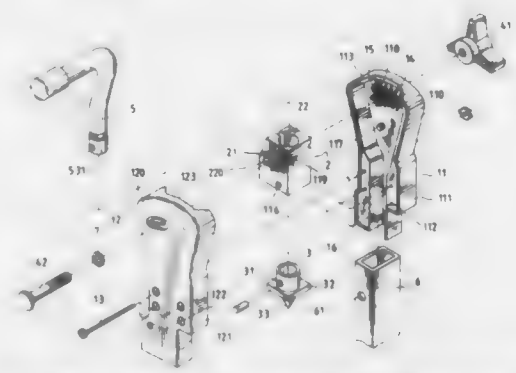
Filed May 10, 1990, Ser. No. 521,633
Int. Cl.[5] B62B *1/12*
U.S. Cl. 280—47.315 **4 Claims**

1. A drag bar mounting structure for a golf bag drag carriage, comprising:

a drag bar having a handhold on its top end for holding by hand;

a mounting device for securing said drag bar to a frame bar of a frame of a golf bag drag carriage, including two opposite mounting sheels connected together by means of a plurality of fastening elements; said two opposite mounting shells each having a unitary pin extending from its inner wall surface at a lower position thereof; a circular guide post extending inwardly from its inner wall surface at a middle position thereof, a notch on its topmost edge, a transversely curved and raised strip on its inner surface near its top, a rectangular hole transversely piercing its inner wall surface, and a plurality of radial and convex stripes on its inner wall surface;

a swinging block made of resilient plastic material through a shape molding process and having a key hole extending vertically through its length, a plurality of concave stripes radially arranged on a portion of opposing sides of said swinging block, a groove extending through said swinging block and intersecting said stripes, a guide post hole horizontally passing through a lower portion of said swinging block beneath said concave stripes, and a pivot hole horizontally passing through said swinging block above said guide post hole and adjacent said stripes;



a positioning member secured to a bottom end of said drag bar by means of rivet joint and having a conical bottom end inserted in a top of said frame bar and a rectangular flange for preventing said drag bar from moving away from said mounting device; and

an adjusting device including a screw rod inserted through said rectangular hole of said two opposite mounting shells and said pivot hole of said winging block, and connected with a swivel knob; said adjusting device permitting said mounting device to squeeze said swinging block for retaining said drag bar in position;

wherein said drag bar is received in said key hole of said swinging block between said two opposite mounting shells, said circular guide posts of said two opposite mounting shells are respectively received in opposite ends of said guide post hole of said swinging block, said two raised strips of said two opposite mounting shells are respectively received in opposite ends of said groove of said swinging block, and said convex stripes of said two opposite mounting shells respectively engage said concave stripes of said swinging block.

5,004,255

PAINTERS PALETTE

Beatrice E. Briggs, 403 Kansas Dr., Goshen, Ind. 46526

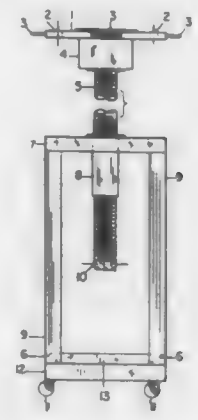
Filed Dec. 21, 1988, Ser. No. 244,337
Int. Cl.[5] B62B *3/10*
U.S. Cl. 280—79.5 **5 Claims**

1. A painter palette comprising an upper holding and carrying platform 1, a middle supporting platform 7, a lower supporting platform 12;

said upper holding and carrying platform having four holes adapted to cooperate with structure depending from an accessory placed on said upper platform;

said upper platform further including a center circle opening holding and carrying a bucket 4 adapted to hold a paint can, said bucket including a brim 6 fastened to the upper supporting platform 1;

a center support spine screw bolt 5 fastened to the bottom center of said holding and carrying bucket, and having a hole 10 in the bottom end for a pin or bolt;



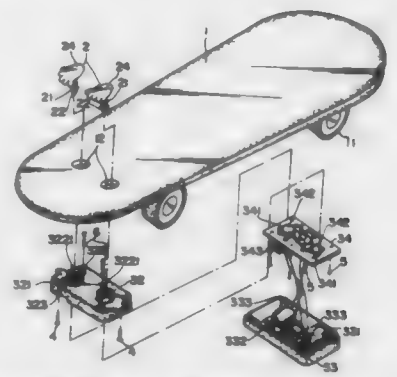
said middle platform including a center support spine screw nut 8 to cooperate with the center spine screw bolt 5 to reinforce, support, raise and lower said upper holding and carrying platform 1.

5,004,256

SOUND AND/OR LIGHT GENERATING DEVICE FOR SKATEBOARDS

John Won, P.O. Box 10780, Taipei, Taiwan

Filed Jan. 10, 1990, Ser. No. 463,213
Int. Cl.[5] B62M *1/00*
U.S. Cl. 280—87.042 **18 Claims**



1. A combination of a skateboard and sound generating device for said skateboard which comprises:

said skateboard containing at least one hole in the board;

an electronic box affixed onto said hole of said skateboard from the bottom, and comprising an electricity means disposed therein;

a sound generating means; and

a first switch means controlling said electricity means to supply electricity to said sound generating means;

said first switch means comprising an operating element disposed on the upper shell of said box and extending through said hole of said skateboard located in the footstep area on said skateboard; whereby stepping

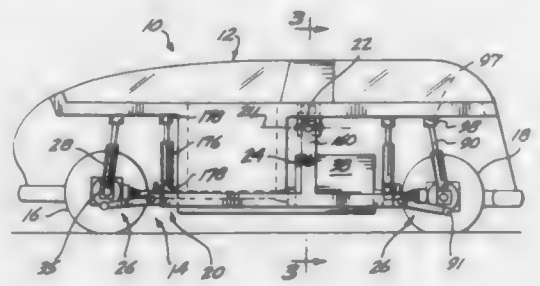
on said operating element of said first switch means results in the transmission of electricity from the electricity means in the electronic box to said sound generating means to thereby generate sound.

5,004,257

VEHICLE SUSPENSION SYSTEM

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Filed Sep. 21, 1988, Ser. No. 247,162
Int. Cl.[5] B62D 9/02
U.S. Cl. 280—112.2 9 Claims



1. A suspension system for a vehicle having a body, comprising:
(a) vehicle support means on opposite sides of the front and rear of the body;
(b) a tie structure interposed between the vehicle support means and the body;
(c) first means for interconnecting the tie structure to the vehicle support means;
(d) second means for pivotally interconnecting the tie structure and the body about a transverse pitch axis and a longitudinal roll axis, both axes being located at effective elevations above the reaction center of the vehicle, whereby upon forces being imposed on the vehicle during turning, braking and accelerating, the body tilts downwardly about the axes relative to the tie structure in the direction opposite to the direction of the resultant forces acting on the vehicle during cornering, braking and acceleration;
(e) load control means operably interconnecting the tie structure, the vehicle support means and the body to permit the pitch and roll axes to shift relative to the vehicle support means in the direction of the resultant of the forces imposed on the vehicle during cornering, braking and accelerating, thereby to preclude the roll axis and pitch axis to serve as the reaction center of the vehicle; and,
(f) wherein the load control means include first load control devices interconnected between the tie structure and the vehicle support means and second load control devices interconnected between the body and one of the tie structure and the vehicle support means, the first and second load control devices having load-carrying capacities selected to cause the pitch and roll stiffness of the tie structure to be greater than the pitch and roll stiffness of the body.

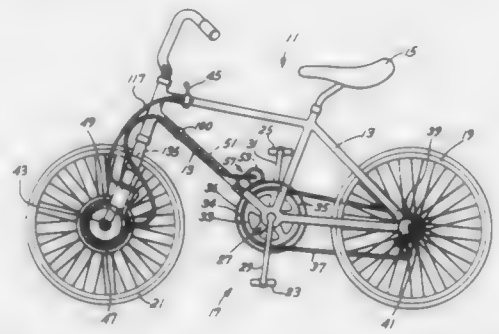
5,004,258

KIT FOR CONVERTING A BICYCLE TO A DUAL WHEEL DRIVEN CYCLE

Billie J. Becoat, 914 Hampton, Alton, Ill. 61604

Continuation of Ser. No. 98,498, Sep. 18, 1987, Pat. No. 4,895,385. This application Sep. 8, 1989, Ser. No. 404,695
The portion of the term of this patent subsequent to Jan. 23, 2007, has been disclaimed.
Int. Cl.[5] B62M 1/02
U.S. Cl. 280—259 17 Claims

1. A kit for converting a bicycle having a frame, a first motive means including pedals, pedal gear, and chain, a pedal-chain driven first wheel and a non-driven second wheel, into a dual wheel driven bicycle, comprising:
a sprocket connectable in a fixed relation to the second wheel for conjoint movement therewith;
a drive gear means mountable with respect to the frame in the area of said first motive means, said drive gear means including a rotatable drive gear connectable to the first motive means for receiving power therefrom to rotate said drive gear;
a cable gear mountable with respect to the frame and meshable with said sprocket for driving said sprocket; and
a rotatable drive cable drivingly connectable at one end to said drive gear and at its opposite end to said cable gear



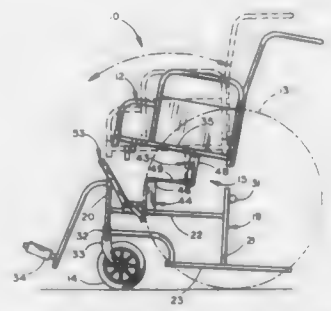
for transferring the rotational motion of said drive gear to the second wheel, said rotatable drive cable being elongated and having an elongated internal axis extending between said one end and said opposite end, said rotatable drive cable rotatable about said elongated internal axis for transferring said rotational motion of said drive gear to said second wheel.

5,004,259

ROCKING WHEELCHAIR

Robert C. Ayers, Burbank, and Ted Lee, Playa Del Rey, both of Calif., assignors to Rx Rocker Corporation, Newbury Park, Calif.

Filed Nov. 15, 1989, Ser. No. 436,755
Int. Cl.[5] B62M 1/14; B62J 1/02
U.S. Cl. 280—304.1 9 Claims



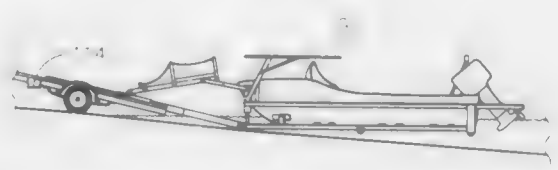
1. An improved wheelchair that permits a user to rock while seated in the chair, said wheelchair comprising:
(a) a frame formed of spaced part rigid side members connected together by cross braces, each of said side members including upper and lower tubular members;
(b) a pair of main wheels connected with said frame and at least one of which serves as a driving wheel for the chair;
(c) at least one caster wheel pivotally connected with said frame;
(d) a seat portion having opposite support members;
(e) a rocking assembly for supporting said seat portion in a rockable relationship to said frame, said assembly having:
1. a first rigid strap means attached to and extended between said upper members of said frame;
2. a second rigid strap means attached to and extended between said support members of said seat portion;
3. spring means connected to said first and second strap means to normally maintain said seat portion in a desired alignment when the chair is unoccupied and to permit the seat to yieldably rock with respect to said frame
(f) at least one brake and seat lock assembly attached to said frame and which in one position concurrently locks the seat and permits the wheels to move and in an opposite position concurrently locks the wheels and permits the seat to rock.

5,004,260

TRAILERED BOAT CRADLE

George M. Smyly, Sr., 1903-B Carlton St., N., Charleston, S.C. 29405

Continuation-in-part of Ser. No. 305,275, Feb. 2, 1989, Pat. No. 4,911,459. This application Dec. 28, 1989, Ser. No. 458,519
Int. Cl.[5] B60P 3/10
U.S. Cl. 280—414.1 13 Claims



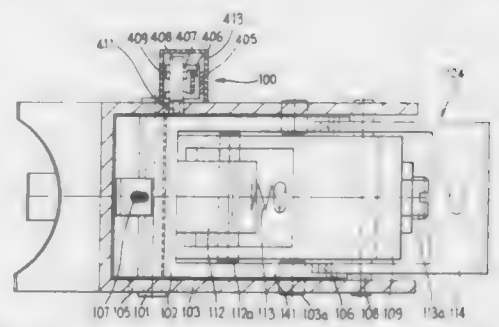
8. An improved launcher/retriever boat cradle comprising:
a. a boat keel support platform including keel guide/support blocks;
b. a buoyant wheeled cross tee member including boat transom support blocks and boat keel guide/support blocks, said buoyant wheeled cross tee member secured to the aft end of said boat keel support platform;
c. angle members including rollers, said angle members including edges extending above rollers such that said boat keel support platform upon said rollers is aligned within said extending edges;
d. a folding stabilizer pivotally secured to two vertical members of a second cross tee, said second cross tee secured to a forward vertically secured member of said boat keel support platform, said folding stabilizer also pivotally secured to a stabilizer platform, said stabilizer platform including side support members, said side support members having a slippery entrapment upon two rails, said folding stabilizer having platforms to walk upon and hand rails;
e. a push/pull rod pivotally connected to forward end of said boat keel support platform;
f. launcher and retriever cables counter wound on a reversible drum winch, said retriever cable via a forward pulley is attached to the free end of said push/pull rod and said launcher cable via a forward pulley and aft pulley is also attached at said free end of said push/pull rod;
g. whereby movements of said push/pull rod, keel support platform, stabilizer and stabilizer platform are accomplished;
h. extended railings for guiding and surroundingly engaging the hull of a boat being included with said boat keel support platform and said two cross tees; and
i. wherein said launcher/retriever boat cradle can be combined with a trailer, wherein the improvement comprises:
j. a multi-wheeled, buoyant keel support platform;
k. additional hand rails fixedly attached at the vessel bow end of said cradle;
l. an angled step fixedly attached to said combined trailer;
m. supports fixedly attached at sides of said cradle, said supports having stepping blocks fixedly attached thereto;
n. a forward keel/hull alignment guide fixedly attached to said multi-wheeled keel support platform, said guide conforming to the shape of particular hull designs;
o. hull protecting material upon vessel contact surfaces of said cradle; and
p. a telescoping push/pull rod having outer surfaces of a second component registrable with the inner surfaces of a first component, said first component having an apertured fare end cover plate, an end of an elongated channel member being welded perpendicular to the inner surface thereof, said channel member having a stop for said second component member fixedly attached thereto, said channel member having longitudinally spaced-apart coplanar pulleys rotatingly secured between the lateral sides thereof, said second component having an aft and cover plate fixedly attached thereto, said second component having apertured plates fixedly attached thereto, said plates providing means for pivotally bolting said multi-wheeled keel support platform to said second component, said retriever cable extending directly from a reversible drum winch, passing through said first component cover plate aperture, extending between lateral sides of said channel member, the end thereof being fixedly attached to said second component, said launcher cable extending from said drum winch, training about a pulley secured below said winch, extending aft below said rollers, training about an aft pulley located between said roller supporting angle members, training about said channel member coplanar pulleys, the end thereof being fixedly attached to said second component.

5,004,261

ANTI-THEFT DEVICE

Klaus Hölzl, Vienna, Austria, assignor to TMC Corporation, Baar/Zug, Switzerland

PCT No. PCT/EP88/00547, § 371 Date Apr. 11, 1989, § 102(e) Date Apr. 11, 1989, PCT Pub. No. WO89/01355, PCT Pub. Date Feb. 23, 1989
PCT Filed Jun. 22, 1988, Ser. No. 348,661
Claims priority, application Austria, Aug. 11, 1987, 2024/87
Int. Cl.[5] A63C 11/02
U.S. Cl. 280—612 17 Claims



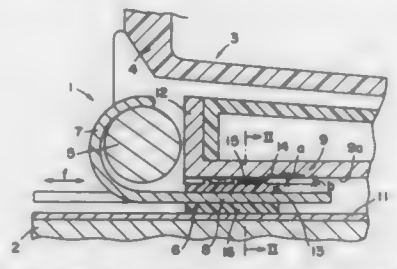
1. In an anti-theft device for a safety ski binding comprising a jaw having at least one sole retainer adapted to be selectively brought into a detent position and into an open position, and at least one mechanically or electronically releasable detent means having a holding position for holding said sole retainer against a resilient force in said detent position and having a release position for permitting said sole holder to move to its open position free of said resilient force, the improvement comprising blocking means adapted to be selectively brought into an open or blocking position in response to control signals generated by a transmitting circuit and sent to a receiving circuit coupled to control means for controlling movement of said blocking means, and including means for permitting said blocking means to assume said blocking position only when said sole retainer is in said open position, wherein when said blocking means is in said blocking position said blocking means prevents said detent means from returning from said release position to said holding position.

5,004,262

FRONT BINDING FOR CROSS-COUNTRY SKI BOOT

Marc Provence, Thorens les Glieres, and Gerard Grailliat, Annecy, both of France, assignors to Salomon S. A., Chavanod, France

Filed Nov. 8, 1989, Ser. No. 433,094
Claims priority, application France, Nov. 8, 1988, 88 14551
Int. Cl.[5] A63C 9/00
U.S. Cl. 280—615 8 Claims



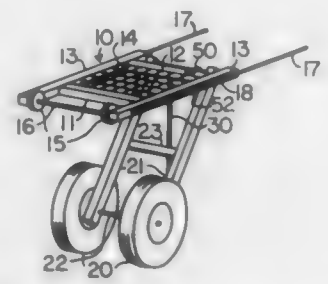
1. A front binding for a cross-country ski boot (3), comprising a locking slide (6) mounted for longitudinal movement in a slide (9, 11) fixed to a ski, said binding comprising, between said locking slide (6) and at least one sliding surface (9a, 11) of said slide (9, 11), a sliding piece (13) of synthetic material, said sliding piece having, on a face thereof subjected to friction resulting from relative movement between said locking slide (6) and said at least one sliding surface (9a, 11), at least one transverse projection (14) of relatively flexible material, said at least one projection being deformed in such a way as to always be applied with a predetermined pressure against a sliding surface on which said at least one projection slides during longitudinal movement of said locking slide (6).

5,004,263

UTILITY CART

Phillip W. Hubbard, P.O. Box 5287, Valdosta, Ga. 31603

Filed Jul. 20, 1990, Ser. No. 556,003
Int. Cl.[5] B62B 1/20
U.S. Cl. 280—645 12 Claims



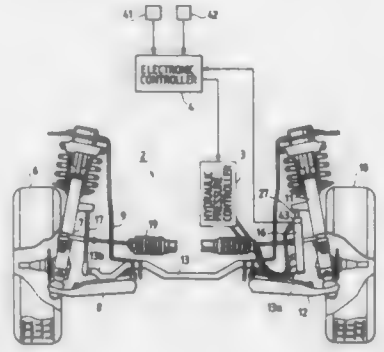
1. A cart comprising:
(A) platform means providing a relatively horizontal surface capable of supporting a load, said platform means having a front end and a rear end;
(B) roller means attached to said front end of said platform means, a portion of said roller means extending below said platform means;
(C) positionable handle means extending rearward from each side of said platform means;
(D) one or more leg members pivotally attached to the rear of said platform means, said leg member or members can be pivoted from a downward position below the level of said platform means, through and between said handle means, to an upright vertical position above the level of said platform means;
(E) wheels mounted on said one or more leg members;
(F) support means pivotally attached to the rear of said platform means, said support means can be pivoted from a downward position below the level of said platform means, through and between said handle means, to an upright vertical position above the level of said platform means;
(G) releasable upward locking means to maintain said one or more leg members and said support means in the upright vertical position.

5,004,264

POSITION CONTROL DEVICE AND AUTOMOTIVE SUSPENSION SYSTEM EMPLOYING SAME

Tetsuji Kozaki; Hiroshi Ishikawa; Hideaki Yasui; Mamoru Shimamoto, all of Nagoya; Katsuhiko Hibino, Toyoake, and Motoshi Suzaki, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 27, 1989, Ser. No. 386,041
Claims priority, application Japan, Jul. 29, 1988, 63-191936; Aug. 18, 1988, 63-204933
Int. Cl.[5] B60G 11/32, 17/00
U.S. Cl. 280—707 16 Claims



1. A position control device for a cylinder assembly, comprising:
adjusting means for adjusting the stroke position of the cylinder assembly in response to a control signal;
predicting means for predicting the stroke position of the cylinder assembly based on said control signal;
position detecting means for detecting when the cylinder assembly has actually reached a predetermined stroke position;
correcting means for correcting the predicted stroke position of the cylinder assembly into said predetermined stroke position when it is detected by said position detecting means that the cylinder assembly has actually reached said predetermined stroke position; and
control means for applying said control signal to said adjusting means so that the predicted stroke position as corrected by said correcting means will be equalized to a target stroke position for the cylinder assembly.

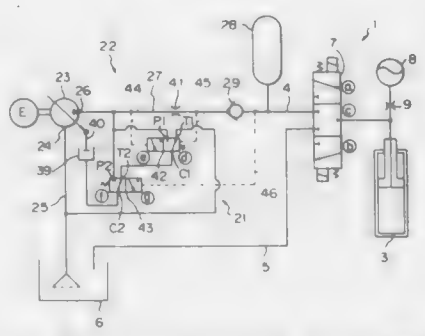
5,004,265

SUSPENSION SYSTEM

Yoich Mizutani, Kanagawa, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Filed Sep. 19, 1989, Ser. No. 409,095
Claims priority, application Japan, Sep. 20, 1988, 63-235400
Int. Cl.[5] B60G 17/00
U.S. Cl. 280—707 5 Claims

1. In a suspension system designed to effect attitude control of a vehicle and including a suspension unit to be disposed between a vehicle body and a wheel and adapted to receive and discharge a pressure fluid to effect said attitude control and a pressure source mechanism including a reservoir and a pump for supplying the pressure fluid to said suspension unit from said reservoir, the improvement wherein:
said pump comprises a variable displacement pump adapted to be activated in response to the rotation of an engine of the vehicle, the displacement volume of said pump being controllable; and
said pressure source mechanism further comprising a control mechanism having a restrictor provided in a line connected to a discharge side of said variable displacement



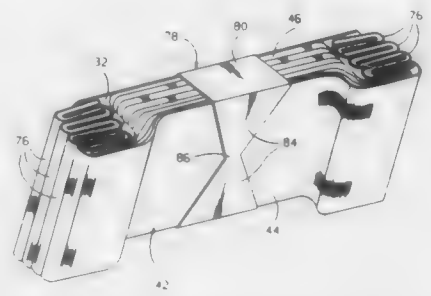
pump to effect control such that, when a difference between the pressure of the pressure fluid at upstream and downstream sides of said restrictor is greater than a predetermined value, said displacement volume of said pump is reduced so as to maintain the discharge of said pump at a substantially constant level.

5,004,266

OCCUPANT RESTRAINT SYSTEM

Gregory A. Miller, Troy; Jeffery L. Pearson, Rochester, and John D. Horsch, Rochester Hills, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 23, 1990, Ser. No. 527,477
Int. Cl.[5] B60R 21/20
U.S. Cl. 280—743 4 Claims



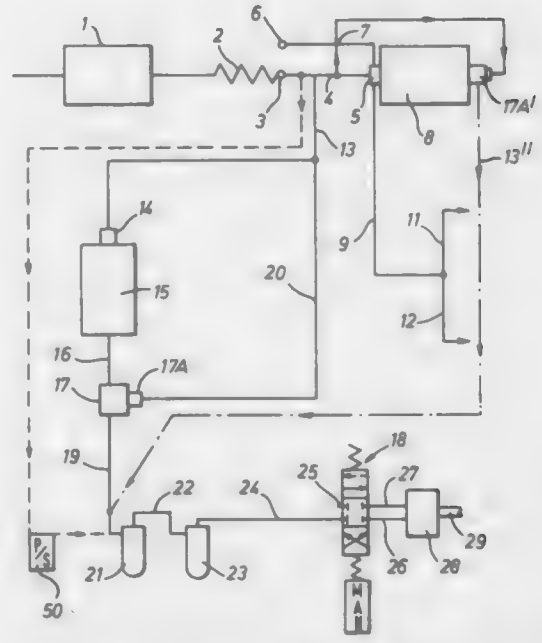
1. An occupant restraint system for a vehicle occupant comprising, a source of pressure fluid, support means, an inflatable occupant restraint cushion mounted to the support means and including an upper wall portion facing the occupant, a lower wall portion secured to the support means to mount the cushion thereon, a spaced pair of folded side wall portions interconnecting the upper and lower wall portions, and a spaced pair of end wall portions interconnecting the upper and lower wall portions, and a rupturable band having its end portions secured to the support means and extending over the upper wall portion and one spaced pair of wall portions, the rupturable band having a weakened portion intermediate the end portions thereof and opposite the upper wall portion, the weakened portion being ruptured by the force of the cushion thereagainst upon inflation of the cushion from the source of pressure fluid and the attainment by the cushion of a predetermined internal pressure.

5,004,267

POWER OPERATED SUPPORT OR LANDING LEGS

Philip V. Busby, 2 Sunderland Avenue, Pembroke Dock, Dyfed, Wales

Continuation of Ser. No. 203,541, May 27, 1988, abandoned, which is a continuation of Ser. No. 790,076, Oct. 22, 1985, abandoned. This application Jun. 8, 1989, Ser. No. 366,193
Claims priority, application United Kingdom, Oct. 23, 1984, 8426750
Int. Cl.[5] B60S 9/02
U.S. Cl. 280—766.1 15 Claims



1. A system for selective extension and retraction of a support leg of equipment adapted to be coupled to an apparatus for moving said equipment when said support leg is retracted, said system comprising:
(i) an air motor;
(ii) an actuating member of the support leg, said motor and actuating member being adapted to be mechanically coupled to one another such that selective operation of said air motor extends and retracts said leg;
(iii) means for mounting the system on the equipment so that a drive line from the motor to the actuating member is non-linear;
(iv) first and second air reservoirs operatively connected by an air line to said apparatus for receiving air therefrom, an output of said first reservoir being operatively connected to brakes of said equipment and, said second reservoir being operatively connected with said air motor;
(v) a check valve located at an inlet of said second air reservoir;
(vi) an automatic brake protection valve connected between the output of said second air reservoir and said air motor, said automatic brake protection valve being controlled by a pilot connected to said air line at a location upstream of said check valve for automatically closing the flow of air between said second reservoir and said air motor if the air pressure in said air line should drop below a predetermined pressure level; and
(vii) directional control valve means pneumatically connected between said automatic brake protection valve and said air motor, wherein air is retained in said second air reservoir, according to said predetermined pressure level, when the equipment is disconnected from said apparatus.

5,004,268

MECHANISM FOR POSITIONAL ADJUSTMENT OF ANCHOR FOR WEBBING IN PASSIVE SEAT BELT SYSTEM FOR VEHICLE

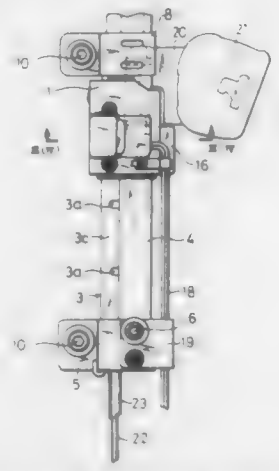
Kazuo Yamamoto, Sagamihara, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 27, 1989, Ser. No. 427,689

Claims priority, application Japan, Oct. 28, 1988, 63-140900[U]

Int. Cl.[5] B60R *22/00*

U.S. Cl. 280—804 **7 Claims**



1. A mechanism for the positional adjustment of an anchor for a webbing in a passive seat belt system adapted to be mounted in a vehicle, comprising:

a slide rail for guiding a slider which carries the webbing fastened thereon;

an adjustment base fitted on the slide rail so that the adjustment base overlies in a contiguous relation a part of the outer periphery of the slide rail, said adjustment base defining a plurality of interlocking holes at predetermined longitudinal intervals therein and having a first surface and a second surface, said first surface extending in a lengthwise direction of the vehicle when the adjustment base is mounted on the vehicle and said second surface extending substantially at a right angle relative to the first surface;

an anchor base transversely surrounding the slide rail and adjustment base for guided movement along the slide rail and adjustment base, said anchor base being engageable with the slider at an occupant-restraining position; and

a latch supported of the adjustment base and engageable with one of the plural holes formed in the adjustment base so as to lock the anchor base on the adjustment base, thereby determining the position of the anchor base relative to the adjustment base.

5,004,269

STEPPED TOP FLUID STORAGE TANK

J. Eugene Pelt, Ardmore, Okla., assignor to Spade leasing, Inc., Springer, Okla.

Filed Dec. 1, 1989, Ser. No. 444,393

Int. Cl.[5] B60P *3/22*

U.S. Cl. 280—837 **5 Claims**

1. A fluid storage tank having a top, an underside, a front end and a rear end, and further including:

a pair of substantially parallel side walls;

a rear wall;

a forward wall;

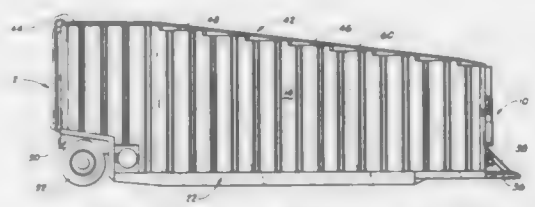
a floor; and

a ceiling which includes:

a flat substantially monoplanar rear panel adjacent said rear wall and extending forwardly toward said forward wall and extending substantially normal to said rear wall;

a stepped topped closure subassembly extending from said rear panel to said forward wall and inclined downwardly toward said floor and including:

a plurality of substantially contiguous steps each including



a step plate and a riser plate extending normal to said step plate, said riser plate being joined at an edge thereof to the step plate of the contiguous step; and

a plurality of parallel rub bars extending fore-and-aft above said ceiling and joined to said steps at the exposed edges thereof where the step plate and riser plate are joined to each other.

5,004,270

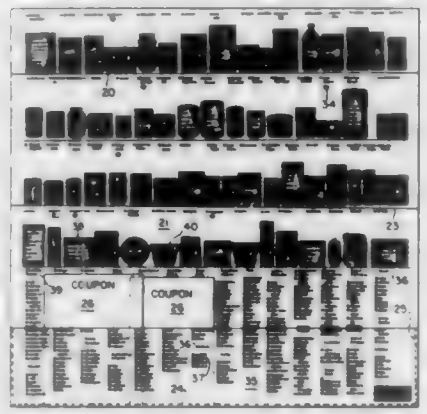
BUYING GUIDE

Malcolm Schaul, 9 Jack La., Marlboro, N.J. 07746, and James Broderick, 2930 Point East Dr., Bld. E Apt. E 601, N. Miami Beach, Fla. 33160

Filed Aug. 17, 1989, Ser. No. 395,501

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—48.1 **3 Claims**



1. A promotional device including an insert having coupons, said device including;

a buying guide and check list article, said article detachably secured to said device,

said article including at least one sheet having a first side, said first sheet including indicia representing lists of consumer products, said indicia including indicator means for indicating to the consumer that said coupons are available in said insert for said indicated products.

5,004,271

GREETING CARD SYSTEM

Richard Platt, 7115 Richmond Hwy., Apt. 83, Alexandria, Va. 22306

Filed Mar. 29, 1989, Ser. No. 330,371

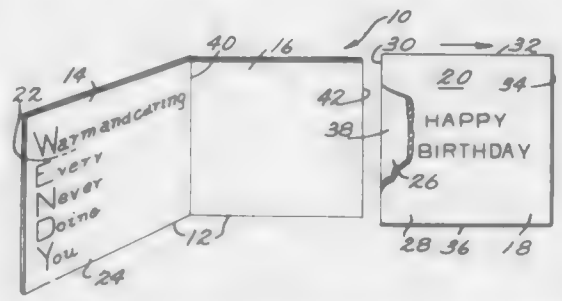
Int. Cl.[5] B42D *15/02*

U.S. Cl. 283—65 **6 Claims**

1. A greeting card system comprising:

a foldable sheet member defining first and second panels;

a separate sleeve element for removably fitting over and around said second panel, said sleeve element comprised of first and second sheet elements, each of said sheet elements defining a plurality of edges and a separate free, exposed edge, said sheet elements connected to each other substantially along said plurality of edges with said exposed edges positioned in opposed relationship with each other of form a slit-like opening in said sleeve element



contiguous with and between said exposed edges, and said sleeve element having a first printed message thereon; and

wherein said first panel defines opposed front and rear surfaces, said front surface having a second printed message thereon and said rear surface having a plural-lined third message thereon which uses letters of a predetermined portion of said second message as first letters of each line of said third message.

5,004,272

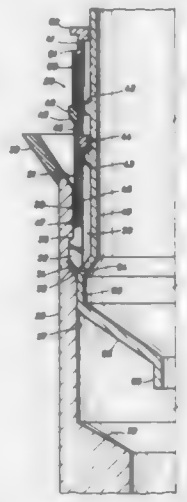
TENDON BOTTOM CONNECTOR FOR A TENSION LEG PLATFORM

Robert M. Kipp, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Sep. 15, 1989, Ser. No. 408,004

Int. Cl.[5] F16L *35/00*

U.S. Cl. 285—24 **7 Claims**



1. For use with a floating tension-leg platform having a plurality of anchoring tendons extending from the platform with the lower ends of the tendons being connected in tension to anchor means fixedly secured to the ocean floor in deep water, said connection being made by underwater-actuatable and remotely-connectable and releasable tendon connector means, said connector means comprising

first and second connector portions with said second portion adapted to be inserted into said first portion and to be slidably moved therein in an axial direction,

said first connector portion forming a cylindrical receptacle having an open top end with the bottom end secured to said ocean floor anchor means,

a first inwardly-directed camming surface formed around the upper end of said receptacle and adapted to be contacted by latches carried by the second connector portion for retracting the latches,

a circumferential latching groove formed in the inner wall of said cylindrical receptacle and axially displaced from said first camming surface,

a latching shoulder formed on the upper side of said latching groove adapted to seat latches against upward movement,

a second camming surface formed on the lower side of said latching groove and being directed downwardly and inwardly,

said cylindrical receptacle having a bore of reduced diameter below said latching groove,

said second connector portion forming a tubular member adapted to be fixedly carried at the end of a tendon to be inserted downwardly into and latched in said first connector portion.

a latching sleeve carried outwardly on said tubular member for limited axial movement thereon between spaced-apart stop means carried thereon,

a plurality of depending collet spring fingers secured at their upper ends to the lower end of said latching sleeve for limited radial movement relative to the axis of said tubular element,

outwardly-extending latches affixed to the free ends of the collet spring fingers, the diameter of the circle formed by the latches being equal to the diameter of the receptacle at the lower side of the latching groove,

said cylindrical receptacle having a vertical bore therethrough for receiving said tubular element and the latching sleeve and radially movable latches carried thereby,

said cylindrical receptacle bore having a bore extending below the first camming surface to the latching groove of a diameter to force the latches radially inwardly until they are moved downwardly to a position opposite the latching groove into which they are moved by the collet spring fingers,

said receptacle bore adjacent to and below the termination of the latching groove being slightly reduced in diameter to force the latches radially to a second and further retracted position, and

a latch hold-back sleeve carried outwardly on the latches of said latching sleeve and independently axially movable thereon between abutment means so as to drop by gravity into blocking engagement with said latches and against one of the abutment means to hold the latches in a radially retracted and inoperative state when the latches are forced into said second and further retracted position by the reduced bore portion of the receptacle, at which time the first and second connector portions of said connect means may be pulled apart.

5,004,273

TIEBACK THREAD WITH ANGULAR FREEDOM

Benton F. Baugh, 14626 Oak Bend, Houston, Tex. 77079

Filed Jun. 26, 1989, Ser. No. 371,599

Int. Cl.[5] F16L *35/00*

U.S. Cl. 285—27 **19 Claims**

9. A pipe connection comprising a male threaded member, a female threaded member, and a pivot point,

said male threaded member having a male thread profile, a first stop shoulder, and a first centerline,

said female threaded member having a female thread profile, a second stop shoulder, and a second centerline,

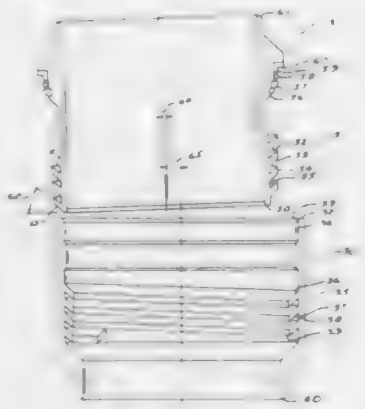
said male thread profile having a first primary bearing surface, a first secondary bearing surface, a first major diameter, and a first minor diameter,

said female thread profile having a second primary bearing surface, a second secondary bearing surface, a second major diameter, and a second minor diameter,

said pivot point being located at or about the centerline of said female threaded member,

said male thread profile and said female thread profile being configured such that when the pipe connection is partially engaged arcuate lines can be drawn about said pivot point and pass between said first and second primary bearing surfaces and between said first and second secondary bearing surfaces,

such that contact between said first and second primary bearing surfaces or contact between said first or second secondary bearing surfaces does not limit the freedom to



be axially misaligned of said first centerline of said male threaded member relative to the said second centerline of said female member relative to the said second centerline of said female threaded member,

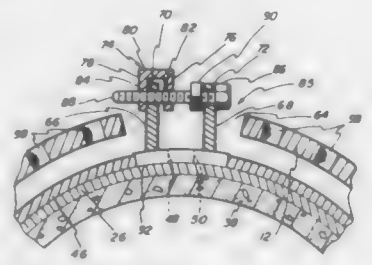
and such that when said first stop shoulder contacts said second stop shoulder and further rotation is imparted to said male threaded member relative to said female threaded member, said male threaded member is caused to be axially aligned with said female threaded member.

5,004,274

SNAP RING JOINT ASSEMBLY

Kevin R. Bass, Beavercreek, Ohio, assignor to Price Brothers Company, Dayton, Ohio

Filed Jan. 3, 1990, Ser. No. 460,428
Int. Cl.[5] F16L *49/00*
U.S. Cl. 285—288 11 Claims



1. A pipe assembly comprising:

a first pipe section having a first end portion for receiving a second end portion of a second pipe section to be connected to said first pipe section, wherein the outer circumference of said second end portion is smaller than the inner circumference of said first end portion;

a split locking ring having first and second spaced ends, said locking ring being located within said first end portion for engaging and locking said second end portion of a second pipe section located within said first end portion to said first pipe section;

a slot formed in said first end portion;

a first and second lug attached to respective ones of said first and second ends of said locking rings, each said lug extending through said slot and including means defining a hole in an end of each of said lugs;

a fastener extending through said holes in said lugs, said fastener having a lead and a threaded shank;

a U-shaped nut having first and second legs and a base portion connecting said legs, said legs extending radially inwardly from and on either side of an end of a first one of said lugs such that said first leg is located between said lugs;

means defining an aperture in each of said legs, said aperture in one of said legs including threads and said threaded shank passing through said apertures and engaging said threads in said one leg;

a second threaded nut located on said threaded shank between said first and second lugs; and

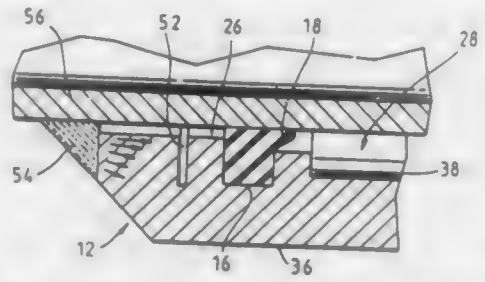
wherein said second nut may be rotated about said threaded shank to cause said nut to engage said second lug and said first leg to engage said first lug whereby said first and second ends of said locking ring are pushed apart, and said threaded shank may be rotated to cause said fastener head to engage said second lug and said second leg to engage said first lug whereby said first and second ends of said locking ring are drawn together.

5,004,275

CLAMP

Jack E. Miller, Houston, Tex., assignor to International Clamp Company, Houston, Tex.

Division of Ser. No. 237,308, Aug. 26, 1988, Pat. No. 4,895,397, which is a continuation of Ser. No. 840,329, Mar. 14, 1986, Pat. No. 4,790,058. This application Jul. 13, 1989, Ser. No. 364,628
Int. Cl.[5] F16L *21/06*
U.S. Cl. 285—373 27 Claims



17. A clamp for pipeline repair, the clamp comprising a plurality of clamp members to be clamped to each other about a pipeline to be repaired to complete the clamp, each clamp member having a sealing zone for receiving seal means and each clamp member having a radially extending heat protection groove that is separate from the sealing zone and spaced between the sealing zone and a peripheral zone to the sealing zone during welding of the peripheral zone and thereby provide protection for seal means when positioned in the sealing zone.

5,004,276

PUSH TO CLOSE LATCH FOR SELF-CLEANING OVEN

Roger T. Hanley, Newington, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Jan. 22, 1990, Ser. No. 468,255
Int. Cl.[5] E05B *47/00*
U.S. Cl. 292—126 19 Claims

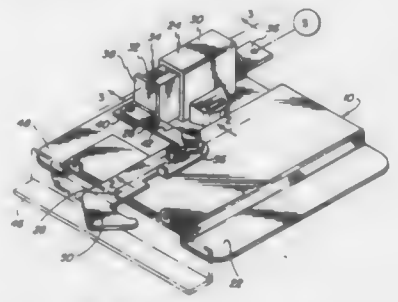
1. In an oven door latching system for use with a stove having an oven door, a latch assembly including;

(a) a base member adapted to be mounted on the stove adjacent the oven opening;

(b) a latch bolt having its one end pivotally mounted on a pivot pin on said base member and having a latch arm at the other end engageable with the associated oven door;

(c) a positioning device mounted on said base member comprising (i) a housing, (ii) a positioning slide reciprocatable therein, and (iii) means biasing one end of said slide outwardly of said housing, said slide having a plurality of recessed camming surfaces thereon, said device also including a follower member in said housing and having a follower arm at one end thereof adapted to follow said camming surfaces, means mounting said follower member in said housing, said one end of said follower member being movable arcuately relative to said housing and slide, said slide camming surfaces defining two stable positions for said follower arm, said positions being spaced apart in said slide in the direction of motion of said slide and at which said follower arm will seat and releasably lock said slide;

(d) a lever having one end pivotally mounted to said one end of said positioning slide, said lever being pivotally



mounted on said pivot pin at a point spaced from its said one end;

(e) means connecting said latch bolt and said lever adjacent said pivot pin whereby, when said positioning slide is moved, pivotal motion is imparted to said lever and said connecting means enables pivotal motion of said latch bolt; and

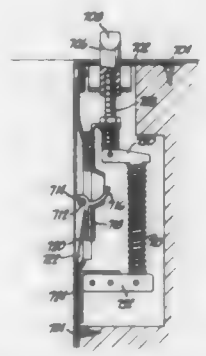
(f) actuatable means for acting on said positioning slide to move said one end of said slide towards said housing against the biasing pressure of said biasing means, said movement thereby producing displacement of said slide relative to said follower arm between its said stable positions and concurrent motion of said lever to enable movement of said bolt between an oven door latching position and an oven door unlatching position.

5,004,277

FLUSH BOLT MECHANISM FOR DOUBLE DOORS

Andrew B. Campbell, San Marino, and Ira J. Simon, Long Beach, both of Calif., assignors to Triangle Brass Manufacturing Company, Los Angeles, Calif.

Continuation of Ser. No. 226,467, Aug. 1, 1988, abandoned. This application May 29, 1990, Ser. No. 530,467
Int. Cl.[5] E05B *65/00*; E05C *1/16*
U.S. Cl. 292—166 14 Claims



1. A semiautomatic flush bolt for flush mounting on the free edge of one of a pair of swinging doors and operation between an engaged position with a securing surface and a disengaged position, the semiautomatic flush bolt comprising:

a frame member having a surface for mounting essentially flush with the free edge of one of the pair of swinging doors;

said frame member including a track; said track comprising a pair of rails;

a bolt-slide assembly;

said bolt-slide assembly including a sliding member and a link member, said link member having a first end and a second end, said sliding member slidably engaged with said track;

a control member pivotally mounted to said frame member at a pivot axis substantially normal to said pair of rails in contact with said bolt-slide assembly for controlling the position of said bolt-slide assembly; and

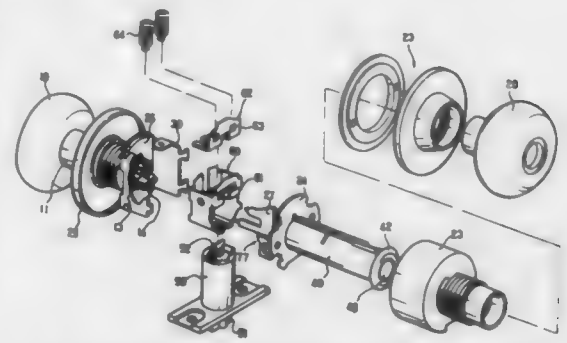
a spring coaxially surrounding said link member providing both position bias and override bias for the semiautomatic flush bolt.

5,004,278

DOOR LOCK HAVING SECURITY DEVICE

Cheong J. Kang, 522-8, Songnae-1 Dong, Kangdong-ku, Seoul, and Seok J. Kang, 7-12 Seokgyo-Dong Cheongju, Chung Cheong Bukdo, both of Rep. of Korea

Filed Nov. 20, 1989, Ser. No. 439,442
Claims priority, application Rep. of Korea, May 25, 1989, 7012
Int. Cl.[5] F05C *1/08*
U.S. Cl. 292—169.18 6 Claims



1. In a door knob latch set having a locking mechanism of the push knob variety, including:

an outer handle, said outer handle being coupled with an outer rotating tube and an inner rotating tube, said outer rotating tube and said inner rotating tube having arcuate projections projecting from the end opposite said outer handle, and said inner rotating tube having an elastic support plate covering said end opposite said outer handle;

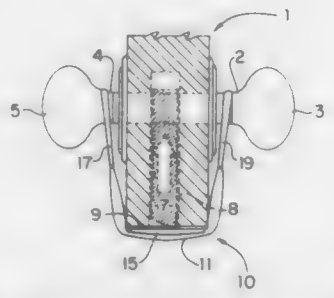
an inner handle having a push knob centrally disposed therethrough, said push knob being attached to a first end of a shaft, said shaft passing through a movable pipe and having at a second end a first leading end and a second leading end; and

a cylinder, said cylinder having therethrough a latch elastically supported by a spring, said latch being connected at one end with a lower portion of a runner, said runner being coupled at an upper portion with a lock plate, said runner being coupled on a first side with said outer rotating tube, and said runner being coupled on a second side opposite said first side with said movable pipe;

THE IMPROVEMENT WHEREIN said lock plate is provided with at least one insertion slot, said arcuate projections of said inner rotating tube and said outer rotating tube being respectively provided with a centrally located insertion slot; and a security device being provided, said security device including a locking plate having a first integral locking pin and a second integral lock-

ing pin, two circular rods coupled with said locking plate, two springs installed on said circular rods, and a spring washer installed to the ends of said circular rods, said security device being inserted into said movable pipe adjacent to said inner handle, said security device having a knob projecting out from said inner handle and around said push knob, whereby said security device may be manipulated back and forth into said moveable pipe.

5,004,279
DOOR LATCH HOLDER
Ruth Radcliff, P.O. Box 2881, Warner Robins, Ga. 31099
Filed Jul. 20, 1989, Ser. No. 382,223
Int. Cl.[5] E05C *19/18*
U.S. Cl. 292—288 **3 Claims**



1. In a door having a door body, an edge with a recess guiding a retractable latch, said latch being operated by either one of two door knobs on said door body, the improvement comprising a door latch holder having:

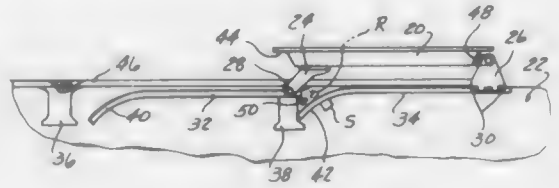
(a) a holder body having a front face and a rear face and a prescribed thickness substantially perpendicular to said faces therebetween, said holder body having two lateral sides at side terminations of said faces, said rear face adapted to overlie said edge and said latch;

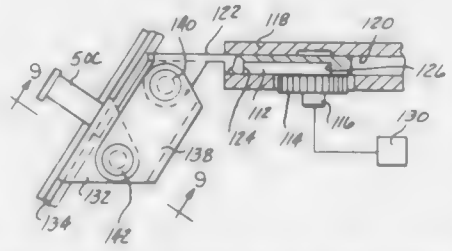
(b) attachment means comprising a loop attached on each said side of said body, each said loop mountable over a respective said door knob;

(c) said holder with said loops mounted over said knobs restraining said latch in a retracted position.

5,004,280
VARIABLE POWER DRIVE FOR SLIDING DOOR
William W. Schap, Jackson, Mich., assignor to ITT Corporation, New York, N.Y.
Continuation of Ser. No. 318,565, Mar. 3, 1989, abandoned. This application Feb. 7, 1990, Ser. No. 476,206
Int. Cl.[5] E05B *15/02*
U.S. Cl. 292—341.16 **9 Claims**

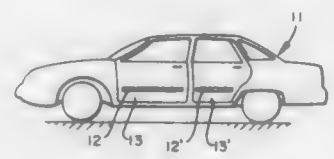
1. A striker assembly in combination with a fixed frame defined a vehicle door opening adapted to be opened or closed by a sliding door, said striker assembly comprising a striker pin mounted to a vertical portion of said fixed frame for movement along a first fixed linear path between a door closed position adjacent an inner edge of said frame and a ready position adjacent an outer edge of said frame, and drive means for moving said striker pin between said two positions, said drive means comprising actuation means drivingly engaging a slide member for movement along a second fixed linear path angularly offset from said first linear path, and means interconnect-

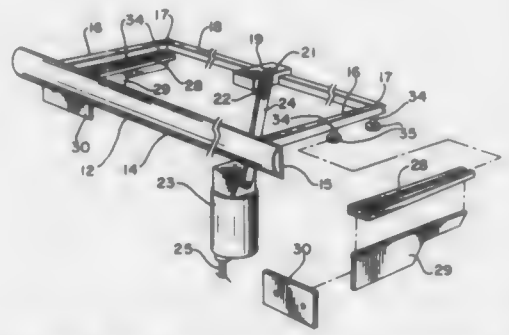




ing said slide member and striker pin to effect sychronized displacement thereinbetween.

5,004,281
AUTOMOBILE SIDE DOOR EXTENDABLE AND RETRACTABLE BUMP PROTECTOR
Toshio Yamazaki, 7725 Manderville, #205, Dallas, Tex. 75231
Filed Jan. 9, 1989, Ser. No. 294,189
Int. Cl.[5] B60R *19/38*
U.S. Cl. 293—118 **9 Claims**





5. A vehicle side door extendable and retractable bump protector comprising: elongate bumper guard means extending substantially the front to rear length of a vehicle side door; spaced parallel bars extending from inside the vehicle side door and moveable back and forth through openings in the door outer skin surface mounting said elongate bumper guard means on the bar outer ends; drive means within said vehicle side door; and interconnect means between said drive means and said spaced parallel bars for driving of said elongate bumper guard means from a retracted position adjacent the door outer skin surface to an extended position; wherein said drive means is resilient spring means; and said interconnect means includes connection of spring end means to said spaced parallel bars and connection of said resilient spring means to structure of the door; and wherein a cross member interconnects the rear ends

of said spaced parallel bars; latch means for latched holding of said cross member and thereby holding of the door extendable and retractable elongate bumper guard means in the retractable position and manual latch means including linkage structure interconnecting said latch means and a door window sill mounted latch activating button.

5,004,282
NEW AND USEFUL IMPROVEMENTS IN UTILITY STREET COVER REMOVAL TOOLS AND METHODS
Scott G. Perry, North Berwick, Me., assignor to Perry Equipment Corporation, North Berwick, Me.
Filed Dec. 22, 1989, Ser. No. 454,895
Int. Cl.[5] B65G *7/12*
U.S. Cl. 294—16 **13 Claims**



1. A device for removing utility street covers comprising

a shaft having

an interior hole extending from one end of said shaft,

a downward oriented combined claw hook—chisel point at the other end of said shaft,

an impact surface at said one end, and

a pivoted hammer arm receptacle mounted on the outside of said shaft below the mid-point along the length of said shaft,

and a rod-like weighty hammer arm that is removeably slideably positionable within said hole, said hammer arm having

a handle at its upper end with an impact surface at the lower end of said handle for impinging upon said impact surface on said shaft when said hammer arm is moved to its point of greatest penetration into said interior hole in said shaft, and

a downward oriented claw hook at its lower end,

said hammer arm receptacle

having a tubular hole into which said hammer arm may be slideably moveably positioned,

being mounted on said shaft with the axis of said tubular hole substantially in the same imaginary flat plane as the axis of said interior hole in said shaft, and

being adapted to pivot with respect to said shaft to enable an imaginary line representing an extension of the axis of said tubular hole with respect to that of said shaft when a hammer arm is positioned within said tubular hole to move among one of intersection above said receptacle, and one of parallelism, and one of intersection below said receptacle,

whereby, such a hammer arm positioned within said shaft may be used to impel the claw hook-chisel point on said shaft downward through foreign matter in one or more of the access apertures of a utility street cover to a desired extent by repeatedly slideably moving said hammer arm vertically upward, and then downward until its impact surface collides with that of said shaft, and whereby said hammer arm may be removed from said shaft and slid into position within said tubular hole in said receptacle to form, with said shaft, a double armed extraction device for simultaneously penetrating access apertures on substantially opposite sides of a utility street cover and hooking the underside of same with said claw hooks, and thereafter removing same from its seat.

5,004,283
ROTARY WEED EXTRACTOR
John F. Sullivan, Dallas, Tex., assignor to Robert S. Scheurer, Wichita Falls, Tex.
Continuation of Ser. No. 295,224, Jan. 9, 1989, abandoned. This application Jun. 1, 1990, Ser. No. 532,184
Int. Cl.[5] A01B *1/16*; A01D *9/06*
U.S. Cl. 294—61 **4 Claims**



2. A tool for extracting weeds comprising, in combination:

a spike block;

a plurality of spikes attached to said spike block;

a torque bar attached to said spike block;

an ejector carriage coupled to said torque bar for movement between retracted and extended positions relative to said spike block, said carriage having an ejector plate disposed between said spikes, a push plate movably coupled onto said torque bar, and a side panel connecting said push plate to said ejector plate; and,

wherein said ejector carriage has an interior shoulder portion disposed between said push plate and said ejector plate, said interior shoulder portion being engagable by said spike block as said carriage is moved to an extended position relative to said spike block.

5,004,284
METHOD AND APPARATUS FOR SUPPORTING A SHEET OF GLASS
Premakaran T. Boaz, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Nov. 22, 1989, Ser. No. 440,165
Int. Cl.[5] B66C *1/48*
U.S. Cl. 294—118 **15 Claims**

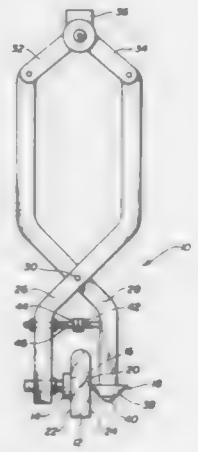
1. A method of supporting a sheet of glass, including the steps of:

providing a first support element, having a flat support surface,

providing a second support element, having a sharp support edge,

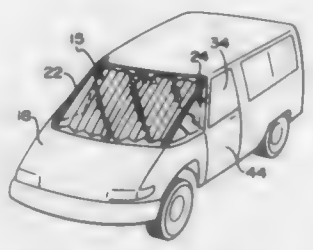
moving said first and second support elements toward each other such that said flat support surface of said first sup-

port element is brought into contact with a first side of a sheet of glass, and said sharp support edge of said second support element is brought into contact with a second side of a sheet of glass, and



limiting the movement of said first and second support elements, such that when the glass is heated, the sharp support edge will dig into the surface of the glass only to a predetermined depth.

5,004,285
SUN-SHIELD
Mark Bennett, 29992 Deerfield, New Baltimore, Mich. 48047
Filed Feb. 12, 1990, Ser. No. 479,049
Int. Cl.[5] B60J *3/00*
U.S. Cl. 296—1.1 **6 Claims**



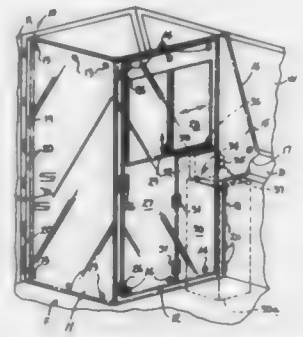
1. A foldable sun-shield for use with a vehicle, the vehicle having a windshield, a dashboard, and two wing window panels, each wing window panel being disposed along each side of the vehicle and disposed in an essentially vertical orientation the windshield being disposed at an inclined angle relative to a horizontal plane, the sun-shield comprising:

(a) a front panel comprising a plurality of foldable panels, the foldable panels being generally foldable along longitudinal edges thereof, the front panel being made of a generally rigid and opaque material, the front panel having a length substantially equal to the height of the windshield, the front panel having an unfolded position and a folded position, the width of the front panel in the unfolded position being essentially as wide as the windshield;

(b) a first and a second side panel each having a length and a height, the first side panel being foldable affixed to an end of the front panel, the second side panel being foldable affixed to an end of the front panel opposite the first side panel, and,

wherein each side panel is mountable upon the top of the dashboard, thereby supporting the sun-shield in a position adjacent to the windshield.

5,004,286
TRANSPORT VEHICLE PROTECTIVE SHIELD
Sylvester R. Taylor, III, and Joann Taylor, both of 2288 S. Holly, Fresno, Calif. 93706
Filed Sep. 18, 1989, Ser. No. 408,668
Int. Cl.[5] B60R *27/00*; **B62D** *47/02, 33/06*
U.S. Cl. 296—24.1 **6 Claims**



1. A transport vehicle protective shield in combination with a transport vehicle, wherein the vehicle includes a driver compartment, and a coin-receiving appliance mounted vertically, relative to a floor portion of the vehicle, adjacent the driver compartment, the compartment bounded by a side wall extending to a forward windshield with a dashboard panel underlying the windshield extending to the floor and the compartment defined by an overlying roof defining a predetermined distance between the roof and the floor, the shield comprising

a first transport panel integrally and orthogonally secured to a second transparent panel to define an "L" shaped shield, and

a third panel coextensively and integrally mounted to a forward vertical edge of the second panel, and

the second panel including a door member hingedly mounted to the second panel, and

a latch means mounted to secure the door member to the second panel, and

the first panel mounted to the side wall and the third panel mounted to the dashboard panel to enclose the driver compartment, and

wherein the first panel, and the second panel, and the third panel are each of a vertical height equal to the predetermined distance, and

wherein the door member includes a window slidably mounted within the second panel, the window including a latch to secure the window in a closed orientation relative to the door member, and

further including a displacement door hingedly mounted to the door member, the displacement door mounted within a lowermost corner of the door member and remote from a series of hinges mounting the door member to the second panel.

5,004,287
LOCKING DEVICE FOR REMOVABLE TAILGATE ASSEMBLY
Pat Doyle, P.O. Box 924128, Houston, Tex. 77292-4128
Filed Jul. 25, 1989, Ser. No. 384,503
Int. Cl.[5] B62D *25/00*
U.S. Cl. 296—57.1 **6 Claims**

1. In combination with a pickup truck having a truck body and a tailgate mounted on the truck body, such tailgate being attached by a hinge mechanism having an axis, such hinge mechanism comprising a pin member connected to the truck body and a receiving cup connected to the tailgate for removable engagement of the pin member within the receiving cup, such hinge mechanism allowing rotation of the tailgate about the axis of the hinge mechanism, a locking device comprising:

a lock bolt housing connected to the tailgate member;

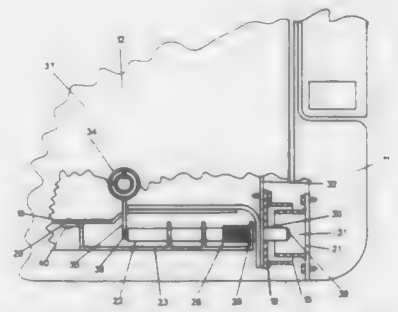
a lock bolt contained within the lock bolt housing;

said lock bolt being laterally movable with relation to the said tailgate member and lock bolt housing;

said lock bolt housing and lock bolt being so located on the tailgate with relation to the receiving cup and pin member of the hinge mechanism that a central axis of the lock bolt, coincides with a central axis of the receiving cup and a central axis of the pin member;

an opening provided at the central axis of the receiving cup, such opening having a diameter slightly larger than a diameter of the lock bolt;

an opening provided at the central member, such opening having a diameter slightly larger than the diameter of the lock bolt;

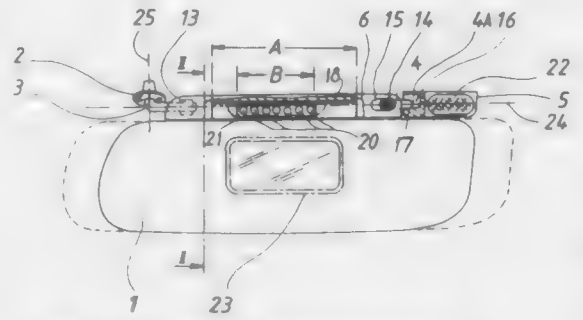


means for providing lateral movement of said lock bolt in the direction of the central axis of the lock bolt through the receiving cup opening into the pin member opening;

means for providing lateral movement of said lock bolt in the direction of the central axis of the lock bolt out of the receiving cup opening;

wherein said lock bolt may be moved along its axis in relation to said receiving cup and pin member thereby causing the said lock bolt to be received within the pin member opening and thereby preventing disengagement of the pin member from the receiving cup while the lock bolt is so received.

5,004,288
SUN VISOR FOR MOTOR VEHICLE HAVING A SLIDABLE MAIN BODY
Lothar Viertel, Altforweiler; Peter Kaiser, Wermelskirchen, both of Fed. Rep. of Germany, and Patrick Welter, La Chambre, France, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany
Filed Dec. 19, 1989, Ser. No. 452,784
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1988, 3842706
Int. Cl.[5] B60J *3/02*
U.S. Cl. 296—97.11 **18 Claims**



1. A sun visor for motor vehicles comprising:

a sun visor body for blocking light and having a first longitudinal top edge and an opposite second longitudinal bottom edge;

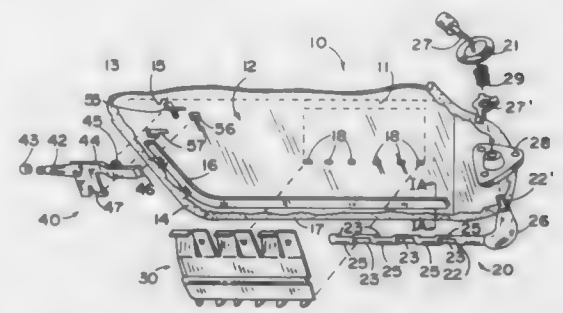
a first slide bearing element coupled to the visor body along the first longitudinal edge thereof, the coupling between the visor body and the first slide bearing element prohibiting the relative rotation of the visor body around the first longitudinal edge with respect to the first slide bearing element;

an elongate carrier body above the first top edge of the visor body for carrying the visor body, the carrier body including a third longitudinal bottom edge extending parallel to the first longitudinal edge of the sun visor body and an opposite fourth longitudinal top edge; a second slide bearing element arranged on the third longitudinal bottom edge of the carrier body; the first and second slide bearing elements being engaged for enabling translation of the visor body along the first longitudinal edge with respect to the carrier body while prohibitng rotation of the visor body around the carrier body;

the height of the visor body between the first and second edges being substantially greater than the height of the carrier body between the third and fourth edges;

the carrier body having opposite end regions; a bearing hole being defined in the carrier body at one end region for receiving a sun visor shaft about which the carrier body may be rotated.

5,004,289
VISOR TORQUE CONTROL
Mike L. Lanser, and Tony J. Elenbaas, both of Holland, Mich., assignors to Prince Corporation, Holland, Mich.
Filed Sep. 27, 1989, Ser. No. 413,235
Int. Cl.[5] B60J *3/00*
U.S. Cl. 296—97.12 **16 Claims**



1. A visor torque control for a generally cylindrical visor pivot rod having a given diameter comprising:

a member having a generally planar body located generally on a plane with a plurality of spaced tips extending outwardly from one edge thereof and offset from the plane of said member; and

a plurality of alternately staggered elongated spring arms formed on an edge of said body opposite said tips and having a longitudinal axis, said arms including means between adjacent pairs of said arms for holding said cylindrical pivot rod in alignment.

5,004,290
SUN BLIND FOR USE IN AUTOMOBILE
Youngchol Kim, Sajic Royal Apt. 2 cha, 1-208, 632-4, Sajic, 2-dong, Rep. of Korea
Filed Oct. 3, 1989, Ser. No. 416,[illegible]12
Claims priority, application Rep. of Korea, Oct. 7, 1988, 1[illegible]22
Int. Cl.[5] B60J *1/20*
U.S. Cl. 296—99.1 **5 Claims**

1. A sun blind for use on an automobile, comprising:

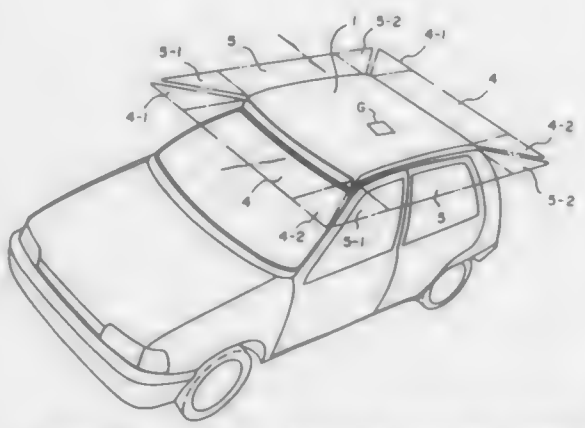
a base (3) with opposite sides and opposite ends, said base having a pair of main side panel guides (3-1), one on each side of said b[illegible], extending in a side direction;

a main side panel (5) slidably mounted to each main side panel guide for movement in the side direction, each main

side panel having a pair of corner side panel grooves (5-3, 5-4) therein, extending transversely to the side direction;

a pair of corner side panels (5-1, 5-2) for each main side panel, each corner side panel having at least one upper roller (5-5, 5-6) and at least one lower roller (5-7, 5-8), said lower roller of each corner side panel being engaged within one of said corner side panel grooves;

a middle frame (2) having opposite sides and opposite ends, said middle frame being positioned over and being connected to said base with said main side panels and said corner side panels between said middle frame and said base, said middle frame having a pair of corner side panel grooves (2-8, 2-10) on each side of said middle frame, each corner side panel groove extending at an acute angle to said side direction with the corner side panel grooves on each respective side of said middle frame extending in opposite acute angles, said upper roller of each corner side panel being engaged for guiding movement in a respective one of said corner side panel grooves so that movement in a side direction of said main side panels causes movement of said corner side panels at said acute angles, said middle frame having an upper surface with a pair of main end panel guides (2-1, 2-4), one at each end of said middle



frame and each extending in an end direction, said middle frame including a pair of corner end panel grooves (2-3, 2-6) at each end thereof, said corner end panel grooves on each respective end of said middle frame extending at opposite acute angles with respect to said end direction;

a main end panel (4) slidably mounted in each main end panel guide for movement in the end direction, each main end panel having a pair of corner end panel grooves therein extending transversely to the end direction;

a pair of corner end panels (4-1, 4-2) for each main end panel, each corner end panel having at least one upper roller and at least one roller, said upper roller of each corner end panel being engaged for sliding along one corner end panel groove in one of said main end panels, and said lower roller of each corner end panel being engaged for movement along one of said corner end panel grooves of said middle frame for movement of said corner end panels at the acute angles of said corner end panel grooves with movement of said main end panels; and

drive means connected to said main side panels and to said main end panels for movement of said main side panels in the side direction and movement of said main end panels in the end direction.

5,004,291

TOP FRAMEWORK OF A FOLDING TOP FOR VEHICLES

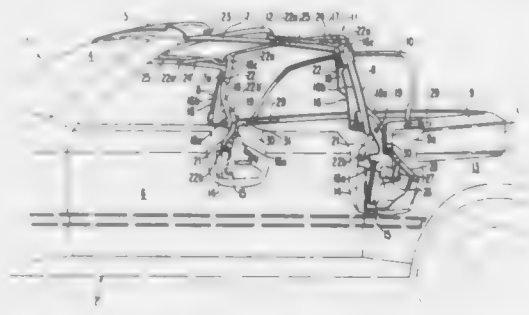
Theodor Bauer, Altenriet, and Gerhard Zweigart, Aidlingen, both of Fed. Rep. of Germany, assignors to Daimler-Berg AG, Fed. Rep. of Germany

Filed Jul. 25, 1988, Ser. No. 223,368

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1987, 3724532

Int. Cl.[5] B60J *7/12*

U.S. Cl. 296—116 **22 Claims**



1. Top framework of a folding top for a vehicle comprising:

a main bow pivotable about a horizontally extending vehicle transverse axis, the main bow having a top member and side struts extending outwards and downwards from the top member when the main bow is in an upright position, each side strut having a strut section which extends downwardly more steeply than a lateral contour of the vehicle and with an inward offset therefrom;

a roof skin retaining rail linked laterally outside of each of the strut sections of the main bow on each side of the vehicle, each of the roof skin retaining rails being transferable between a roof skin stretching position lying essentially flush with a surface plane of a side wall of the folding top when the main bow is in the upright position and a folding position moved closer to an associated strut section;

a lateral roof frame positioned at each side of the main bow adjacent to an associated side strut of the main bow when the main bow is in the upright position;

further framework means connected to at least one of the lateral roof frames for coupling each of the lateral roof frames to the main bow so that during a shifting of the main bow from the upright position, each of the lateral roof frames is forcibly controlled into a stowage position adjacent to and substantially parallel to the strut section of the associated side strut of the main bow; and

a front roof frame interconnecting each of the lateral roof frames and including hinge means for permitting deflection of ends of the lateral roof frames remote from the hinge means transversely outwards as the main bow is shifted from the upright position to the stowage position.

5,004,292

VEHICLE WINDOWSILL PROTECTIVE CONVERING AND ARM REST APPARATUS

G. Kent Horne, 9529 N. 34th La., Phoenix, Ariz. 85051

Filed Jan. 9, 1990, Ser. No. 462,235

Int. Cl.[5] B60J *9/00*

U.S. Cl. 296—153 **11 Claims**

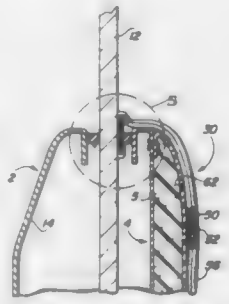
6. Sill covering and arm rest pad apparatus for a vehicle having a window movable upwardly and downwardly, a door panel, a gasket extending between the window and the door panel, a bottom on the gasket, and a sill on the door panel adjacent to the window, the sill covering and arm rest pad apparatus comprising, in combination:

base element means, including

a base element disposed between the window and the gasket and extending above and below the gasket,

a top edge on the base element, above the gasket and

stop means spaced apart from the top edge and disposed against the bottom of the gasket for preventing the



apparatus from moving as the window is moved upwardly; and

pad means disposed generally parallel to and against the base element and secured to the base element adjacent to the top edge of the base element for covering the sill and the door panel adjacent to the sill.

5,004,293

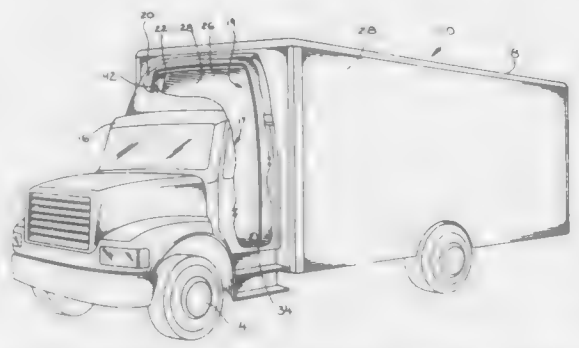
CARGO TRUCK BODY

John F. Thomas, Goshen, Ind., assignor to Cargo Master Incorporated, Goshen, Ind.

Filed Mar. 21, 1990, Ser. No. 496,763

Int. Cl.[5] P60P *3/32*

U.S. Cl. 296—166 **4 Claims**



1. A truck for hauling cargo, said truck comprising a frame, a cab defining a passenger compartment mounted on said frame, and a body defining a cargo compartment mounted on said frame and having a front wall spaced from a rear wall of said cab, said cab rear wall and body front wall having aligned openings therethrough to define a passage to permit travel between the cab and the body, and a flexible boot connected between said cab rear wall and said body front wall, said boot spanning a gap between the cab rear wall and body front wall and constituting means for absorbing vibrational forces generated by said cab during road travel and an interior cover sheet overlying said boot, fastener means for securing said cover and boot to said body front wall and cab rear wall.

5,004,294

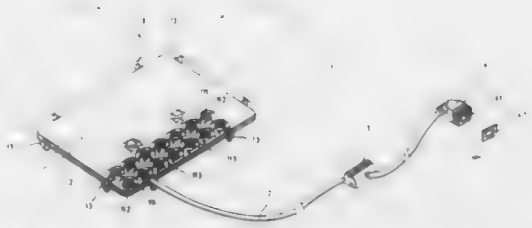
BUILT-UP TYPE AIR-CONDITIONING CUSHION ASSEMBLY

Peir-Kuen Lin, 4th Fl., No. 49, An Leh Street, Sanchung City, Taipei Hsien, Taiwan

Filed Jun. 28, 1989, Ser. No. 372,635

Int. Cl.[5] A47C *7/72*

U.S. Cl. 297—180 **9 Claims**



1. An air-conditioning cushion assembly comprising:

an assembly of a plurality of block-shaped elements each having a top defining a center hole therethrough, a bottom, and a side extending between said top and said bottom, each of said block-shaped elements defining a chamber therein communicable with the center hole defined by the top, and said plurality of block-shaped elements being interconnected in a side-by-side manner in said assembly such that at least some of said bock-shaped elements have the sides thereof located at a lateral side of the assembly;

ventilation means extending between the sides of each of said block-shaped elements and defining tunnels placing the chambers of said plurality of block-shaped elements in open communication with one another;

connecting means extending from the side of at least one of said some of said block-shaped elements and open to each said chamber defined therein for freely allowing said assembly to be connected to another said assembly in a manner in which the chambers defined in said plurality of block-shaped elements are placed in communication with chambers defined in block-shaped elements of said another assembly; and

a vent pipe connected to said assembly, and open to the chambers defined in said block-shaped elements thereof, for allowing air to pass therethrough into each said chamber.

5,004,295

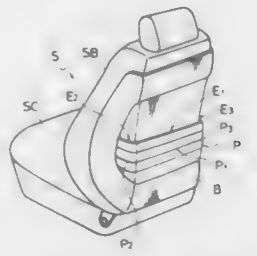
POCKET IN AUTOMOTIVE SEAT

Nobuhiro Inoue, Akishima, Japan, assignor to Tachi-S Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1989, Ser. No. 447,610

Int. Cl.[5] A47C *7/62*

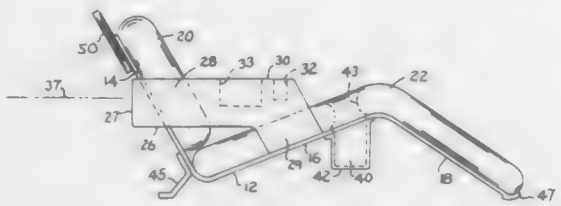
U.S. Cl. 297—191 **10 Claims**



1. A pocket in an automotive seat, in which said seat includes a seat back and a back board securely attached to a rear portion of said seat back, said pocket comprising:

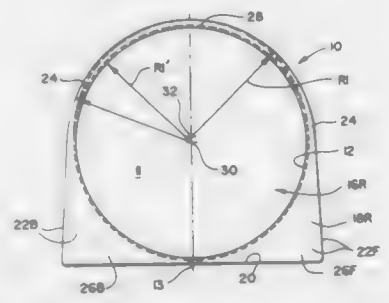
a pocket frame having a plurality of studs integrally formed therewith, said studs being fixed to said back board; and
a pocket trim cover assembly which is securely attached by said pocket frame to said back board;
wherein said back board is formed in a generally U-shaped configuration in section, such as to encompass the central and both lateral walls of said rear portion of said seat back, and comprises a central wall and a pair of lateral walls, and has formed therein, a plurality of holes through which are inserted said plurality of studs of said pocket frame;
wherein said pocket frame is formed in a generally upright U-shaped configuration, such as to encompass a central and both lateral walls of said back board, and
wherein said pocket trim cover assembly is fixedly secured between said back board and said pocket frame via said studs, whereby there are defined a central pocket at said central wall of said back board, and a pair of lateral pockets respectively at said both lateral walls of said back board;
said socket trim cover assembly being formed with a plurality of holes, said plurality of holes being so adapted that said plurality of studs are inserted therethrough, and wherein said pocket trim cover assembly is folded around said pocket frame and secured thereto by means of said studs of said pocket frame and a plurality of fixing means.

5,004,296
FLOATING LOUNGE CHAIR
James N. Ziegenfuss, Jr., 2525 Apt. 6 Royal Palm Ave., Ft. Myers, Fla. 33901
Filed Aug. 2, 1989, Ser. No. 388,521
Int. Cl.[5] A47C *7/62*
U.S. Cl. 297—194 **3 Claims**



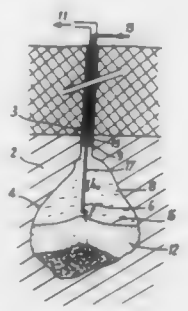
1. A chair adapted to support a person in an semi-prone position while the chair is floating in the water, comprising:
a rigid concave shell structure that includes an S-shaped panel having two reverse curves therein for defining an upwardly-inclined rear section adapted to support a person's back area, an intermediate section adapted to support a person's buttocks and upper leg areas, and a declining front section adapted to support a person's lower leg areas;
said shell structure further including two arm rest panels attached along opposite side edges of the intermediate section of said S-shaped panel; each arm rest panel being formed of a closed cell rigid plastic foam material; each arm rest panel having an upper face extending above a plane of the intermediate section of the panel that has sufficient size to support a person's lower arm, and at least one cavity formed in said upper face for containment of a beverage container;
air-inflated cushion means secured to the S-shaped panel for cushionably supporting a person in the chair; said cushion means extending along substantially the entire length of said S-shaped panel to form a support surface for a person's back, buttocks and leg areas; rigid leg means (45) extending downwardly from said concave shell structure at the rear section thereof, whereby the chair is adapted to support a person out of the water with said leg means and said front section of the panel resting on the land surface; and an upwardly-opening compartment means (40) extending downwardly from the intermediate section of said panel for containment of a number of canned beverages within reach of a person seated in the chair.

5,004,297
PORTABLE, SAFETY, PLAY CHAIR
Marcella H. Schmitt, 190 S. Wood Dale Rd. #706, Wood Dale, Ill. 60191
Continuation-in-part of Ser. No. 328,088, Mar. 23, 1989. This application Jul. 7, 1989, Ser. No. 376,417
Int. Cl.[5] A42C *3/02*
U.S. Cl. 297—270 **25 Claims**



1. A portable, safety, play chair, comprising: a chair body including
a smoothly curved wall closed inwardly upon itself to form upper and lower portions having a length and extending between a pair of opposite sides of the wall, and
an opening at one of said sides of the wall for entry of a person to repose within the closed curved wall; and
a base for supporting the chair body against tipping and rolling movement including a relatively thin, substantially planar foot attached to the lower portion of the curved wall in underlying relationship therewith and extending across said length and laterally from the one side of the wall to resist tipping of the chair body.

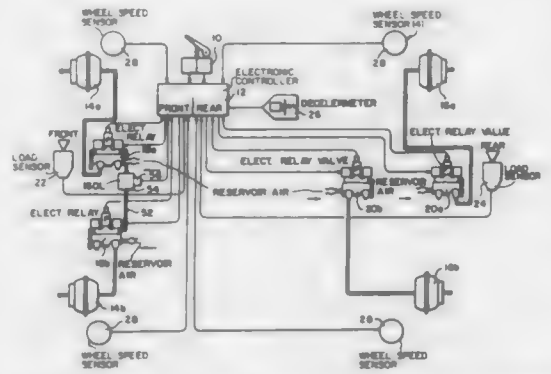
5,004,298
METHOD OF RAPIDLY ABANDONING LARGE CAVITIES WASHED-OUT IN ROCK SALT
Alain Boulanger, Levallois-Perret, and André J. Rousseau, Neuilly-sur-Seine, both of France, assignors to Geostock S.A.R.L., Cedex and ESYS S.A., Paris, both of, France
Filed Jun. 2, 1989, Ser. No. 360,816
Claims priority, application France, Jun. 2, 1988, 88 07336
Int. Cl.[5] B09B *3/00;* **E21B** *43/28, 47/04*
U.S. Cl. 299—5 **20 Claims**



1. A method of rapidly abandoning a cavity washed out in rock salt and initially filled with brine, said method comprising the following steps:
(a) injecting quantities of a mixture into said cavity, the density of said mixture being greater than that of the brine, and the mixture being capable of setting, with equivalent quantities of said brine being simultaneously displaced upwardly and expelled from said cavity,

(b) continuing such injection and brine expulsion until said cavity is completely filled with said mixture;
(c) maintaining communication between the outside and said filled cavity during a waiting period whose length is exclusively determined by the time required for the injected mixture to set and for said rock salt to creep into and close shrinkage voids that develop in the set mixture, without regard to the establishment of thermal equilibrium in and surrounding the cavity; and
(d) thereafter sealing said cavity.

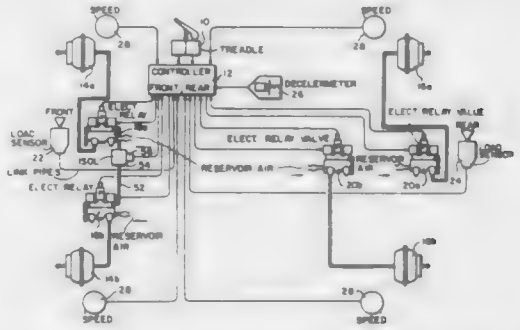
5,004,299
ELECTRONIC BRAKING SYSTEM
Malcolm Brearley, Solihull, and Richard B. Moseley, Leamington Spa, both of England, assignors to Lucas Industries public limited company, Birmingham, England
Filed Mar. 6, 1990, Ser. No. 487,901
Claims priority, application United Kingdom, Mar. 8, 1989, 8905311
Int. Cl.[5] B60T *8/88, 8/32*
U.S. Cl. 303—15 **15 Claims**



1. In a vehicle dual wheel braking system in which a respective electronically controlled pressure adjustment channel is provided for each of the wheels at the opposite ends of an axle of the vehicle for setting the braking pressures individually for each wheel in dependence upon a common electrical signal representative of the braking demand level set by a driver of the vehicle, each channel comprising a pressure control loop containing a pressure controller, a pressure control valve which adjusts the supply of fluid from a reservoir to the brake actuators for applying and releasing the brakes by solenoid control of the inlet and exhaust functions of the pressure control valve, and a feedback transducer which supplies a signal representative of the control pressure in the pressure control valve, the improvement comprising respective fault monitoring means for detecting the presence of faults in the signals provided by the two feedback transducers, and means responsive to said fault monitoring means such that if a feedback signal fault is detected in one of said two channels the individual pressure control on that channel is disabled and the solenoids controlling inlet and exhaust functions of the pressure control valve of that channel are energised from an alternative mechanism of control which does not rely upon the output signal from the faulty feedback transducer.

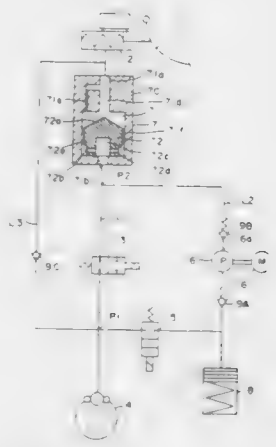
5,004,300
ELECTRONIC BRAKING SYSTEM
Malcolm Brearley, Solihull, and Richard B. Moseley, Leamington Spa, both of England, assignors to Lucas Industries Public Limited Company, Birmingham, England
Filed Mar. 6, 1990, Ser. No. 489,037
Claims priority, application United Kingdom, Mar. 8, 1989, 8905311.0
Int. Cl.[5] B60T *8/32, 8/88*
U.S. Cl. 303—15 **10 Claims**

1. In a vehicle braking system in which a respective electronically controlled pressure adjustment channel having a local pressure control element is provided for each wheel, the improvement wherein, for avoiding serious brake unbalance under fault conditions which would cause either loss of braking or excessive braking at one wheel, a link pipe means connects the pressure control elements of the respective brake



circuits associated with the two wheels at opposite ends of an axle whereby the pressure control elements are influenced in such a manner that a correctly functioning channel attempts to influence a faulty channel in such a direction as to reduce the pressure unbalance.

5,004,301
MODULATOR FOR USE IN AN ANTI-LOCK BRAKE CONTROL SYSTEM
Shinji Yamada; Teruhisa Kohno, and Koji Takata, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Sep. 29, 1989, Ser. No. 414,255
Claims priority, application Japan, Sep. 30, 1988, 63-248717
Int. Cl.[5] B60T *8/42*
U.S. Cl. 303—115 **7 Claims**



1. In an anti-lock brake control system for an automobile comprising:
a master cylinder;
a main fluid passage communicating between the master cylinder and at least one wheel brake;
a recirculating passage branched off from the main fluid passage for recirculating a fluid medium back to the main fluid passage via a recirculation point located upstream of a branch point with respect to the direction of flow towards the wheel brake;
a pump disposed in the recirculating passage for recirculating the fluid medium;
a pressure adjusting means for reducing a brake pressure of the wheel brake by discharging the fluid medium from the wheel brake to the recirculating passage, and for increas-

ing the brake pressure by supplying the fluid medium through the main fluid passage to the wheel brake; and

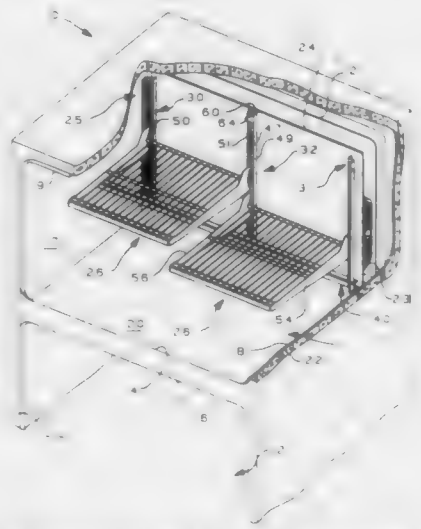
an anti-lock modulator provided with a fluid chamber formed therein, said fluid chamber having a first port communicating with the master cylinder at the upper end thereof and a second port communicating with the pump at the lower end thereof, and with a movable element vertically movably accommodated in said fluid chamber, said movable element being normally located at a lower position in said fluid chamber by gravity and moved upwards by the flow of the fluid medium discharged from the pump, said movable element reducing an effective area of the main fluid passage when said movable element is moved upwards in said fluid chamber.

5,004,302

SHELF SUPPORT SYSTEM FOR SPLIT CANTILEVER SHELVES

George E. Stocking; Richard A. Stich; John K. Besore, and Clarence W. Denham, all of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Mar. 14, 1988, Ser. No. 167,701
Int. Cl.[5] A47B *81/00*
U.S. Cl. 312—214 **20 Claims**



1. In a refrigerator having a freezer compartment including a top wall, a bottom wall, a rear wall, a pair of substantially parallel side walls, evaporator means disposed in the freezer compartment forward of the rear wall, and a cover disposed forward of the evaporator means, a shelf support system including:

first support means secured to one of the side walls of the freezer compartment forward of the cover;

second support means secured to the other of the side walls of the freezer compartment forward of the cover;

third support means disposed between said first support means and said second support means and forward of the cover;

each of said first support means, said second support means, and said third support means having receiving means to receive a portion of a shelf to adjustably support a shelf between said first support means and said third support means or between said second support means and said third support means;

first extending means extending between said first support means and said second support means adjacent their bottoms for supporting said third support means adjacent its bottom, said first extending means being secured to each of said first support means, said second support means, and said third support means;

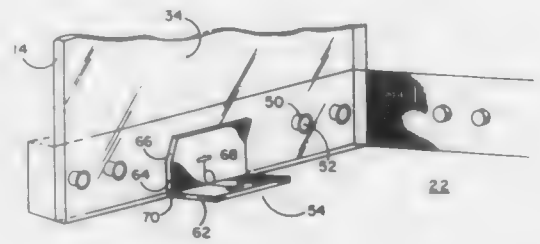
and supporting means for supporting said third support means adjacent its upper end, said supporting means being supported by at least one of the walls of the freezer compartment.

5,004,303

DISPLAY CASE

Joseph Conway, 50 Tower Rd., Newton, Mass. 02164

Filed Jan. 22, 1990, Ser. No. 468,181
Int. Cl.[5] A47F *3/00*
U.S. Cl. 312—140 **7 Claims**



1. A case comprising:

a display case portion having a top and side elements having tops and bottoms including channel members to retain such members together set up in a closed structure such elements adapted to be dismantled;

at least one door located within on one of said elements;

a storage case having a top, bottom and sides with an opening defined therein on one of said sides;

said storage case adapted to receive and contain said dismantled top and side elements when each is positioned therein;

said storage case further including a recess defined in its top, said recess having sides, said recess, when facing upwards, forming a base for said display case elements;

means for retaining the bottoms of said side elements to the sides of said recess for retention of said side elements when in their set-up mode;

wherein said retaining means include:

retaining members to hold the bottoms of said side elements against the sides of said recess, said retaining members including a plurality of protrusions extending from the sides of said recess and a plurality of mating apertures defined in the bottoms of said side elements, said apertures adapted to receive said protrusions;

locking means which are adapted to be positioned against the bottoms of said side elements, said locking means adapted to hold sides against the sides of said recess and said protrusions within said apertures to lock said side elements in place;

wherein said locking means comprises a plurality of structures, each adjacent said front, rear, and first and second side elements, said structure including:

a first member affixed to the base of said recess;

a second member hingeably attached to said first member;

a spring member urging said first member away from said second member; and

said second member adapted to be depressable to a downward non-engaging position and when released, to be forced by said spring against said front, rear and first and second side elements depending upon said locking means' position in said recess.

5,004,304

ARRANGEMENT FOR DISPLACEABLE SUPPORTING ARTICLES OF FURNITURE

Hans Segerpalm, Hagersten, and Ante Eklund, Vallentuna, both of Sweden, assignors to Swede Space Design AB, Stockholm, Sweden

PCT No. PCT/SE88/00286, § 371 Date Nov. 13, 1988, § 102(e) Date Nov. 13, 1988, PCT Pub. No. WO88/09138, PCT Pub. Date Dec. 1, 1988
PCT Filed May 26, 1988, Ser. No. 438,425
Claims priority, application Sweden, May 26, 1987, 8702215
Int. Cl.[5] A47B *53/00*
U.S. Cl. 312—201 **8 Claims**



1. An arrangement for supporting an guiding articles of furniture, such an enclosed shelving systems, cabinets and the like, comprising:

(a) a pair of parallel, horizontally disposed, laterally spaced rails (3,4) disposed on a floor surface or the like, each rail having a cross-section defining a flat, horizontal upper surface (5) flanked by and integral at opposite side edges with a pair of ramp surfaces (7) sloping outwardly and downwardly toward the floor surface at an acute angle,

(b) a carriage (2) having a width at least equal to the lateral spacing between the rails, and adapted to carry the articles of furniture,

(c) a plurality of runner wheels (6) individually journalled to opposite undersides of the carriage for rolling engagement with the upper surfaces of the rails, and

(d) a plurality of guide wheels (8) individually journalled to opposite undersides of the carriage for rolling engagement with inner, facing ones of the ramp surfaces of the rails, an axis of each guide wheel extending substantially parallel to an associated one of the ramps surfaces,

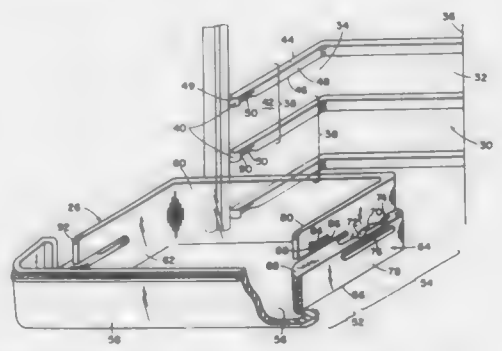
(e) wherein the ramp surfaces enable the transverse passage of wheeled carriages and minimize any stumbling hazard presented by the rails.

5,004,305

REFRIGERATOR DOOR SHELVES

Lou D. Montuoro, Cedar Rapids; Toni L. Vandarakis, Iowa City, and Richard L. Johnson, Cedar Rapids, all of Iowa, assignors to Amana Refrigeration Inc., Amana, Iowa

Filed Jun. 7, 1990, Ser. No. 534,220
Int. Cl.[5] A47B *81/00*
U.S. Cl. 312—214 **10 Claims**



1. Refrigerator door apparatus comprising:

a door liner having opposing side panels each comprising at least a pair of substantially horizontal ribs forming therebetween a guide channel, said guide channels facing each other from said opposing side panels;

a shelf comprising substantially horizontal side runners each adapted for being received in sliding engagement into a respective one of said guide channels wherein said shelf is substantially horizontally slidable to an inward position in said guide channels where said shelf is supported by said liner;

said shelf further comprising means for latching said shelf to said liner when said shelf is positioned at said inward position; and

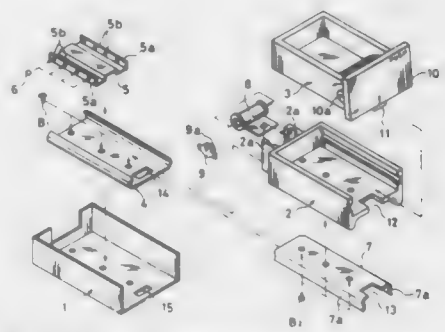
at least one of said ribs having a notch and said latching means comprising a flexible finger with a tab wherein, as said shelf is being slideably inserted in said guide channels, said tab engages said one rib thereby bending said finger away from said rib until said tab aligns with said notch at which point said finer flexes back as said tab enters said notch to latch said shelf in said inward position.

5,004,306

DRAWER DEVICE

Tsutomu Oshida, Yokohama, Japan, assignor to Nifco, Inc., Yokohama, Japan

Filed Dec. 14, 1989, Ser. No. 450,482
Claims priority, application Japan, Dec. 14, 1988, 63-162024[U]
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—319 **15 Claims**



1. A drawer device, comprising:

a stationary case open at the top and front ends thereof;

a guide piece disposed within said stationary case and rotatably supporting a plurality of balls arranged along opposite side wall portions thereof in a reciprocating sliding direction;

a slide piece disposed within said guide piece and in contact with said balls;

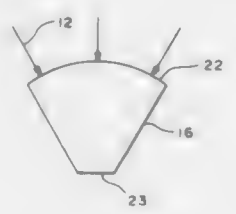
a movable case fixed to said slide piece;

a front cover mounted upon said movable case;

a spring interposed between said movable case and said stationary case for biasing said movable case in an ejection direction out of said stationary case; and

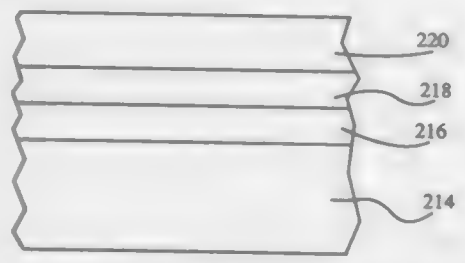
latch means for latching said front cover of said movable case to a recess defined within a front portion of said stationary case for releasably latching said movable case within said stationary case in an accommodated state and for releasing said movable case from said latched state so as to permit said movable case to be ejected from said stationary case under the influence of the biasing force of said spring.

5,004,307
NEAR FIELD AND SOLID IMMERSION OPTICAL MICROSCOPE
Gordon S. Kino, Santa Clara County, and Scott M. Mansfield, San Mateo County, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.
Filed Apr. 12, 1990, Ser. No. 508,224
Int. Cl.[5] G02B *1/02, 7/02, 13/14, 21/02*
U.S. Cl. 350—1.2 **6 Claims**



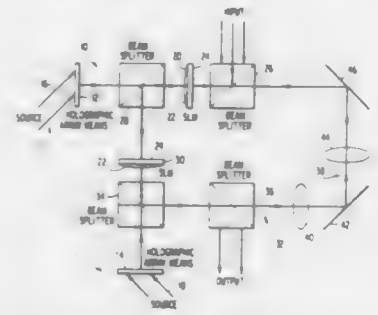
1. In an optical microscope including an objective lens closely spaced to an object to be viewed, the improvement comprising a high refractive index solid immersion lens having a spherical surface facing said objective lens and a flat front surface spaced from the spherical surface and passing through the geometrical center of the spherical surface disposed between the objective lens and the object being viewed to increase the resolution of the microscope by the factor 1/n where n is the refractive index of the solid immersion lens.

5,004,308
RUGATE REFLECTOR
Randolph L. Hall, Newbury Park, Calif., and Christopher D. Johnson, Lawrenceville, Ga., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed May 23, 1990, Ser. No. 527,626
Int. Cl.[5] G02B *5/28*
U.S. Cl. 350—1.7 **8 Claims**



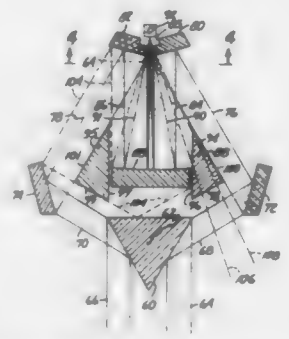
1. An optical reflector for selectively reflecting light within a predetermined range of wavelengths, comprising:
a substrate;
an absorbing layer deposited on the substrate for absorbing light within a broad range of wavelengths; and
a rugate film deposited on the absorbing layer and adapted to reflect wavelengths of light within the predetermined range.

5,004,309
NEURAL PROCESSOR WITH HOLOGRAPHIC OPTICAL PATHS AND NONLINEAR OPERATING MEANS
H. John Caulfield; Charles F. Hester; Jason M. Kinser, and Joseph Shamir, all of Huntsville, Ala., assignors to Teledyne Brown Engineering, Ala.
Continuation-in-part of Ser. No. 233,575, Aug. 18, 1988, abandoned. This application Jun. 13, 1989, Ser. No. 365,441
Int. Cl.[5] G03H *1/12*
U.S. Cl. 350—3.68 **20 Claims**



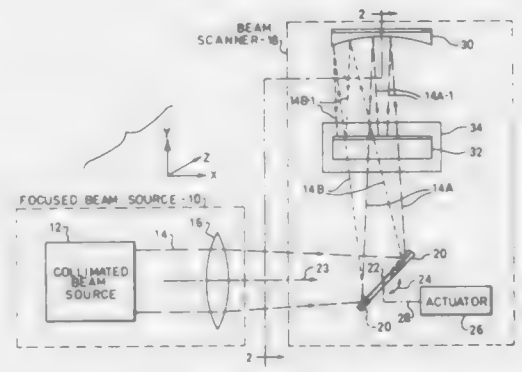
1. An apparatus for simulating a highly interconnected neural network, said apparatus comprising:
means for applying input signals;
page-oriented holographic means for providing first optical signals indicative of first predetermined interconnection weights;
first spatial light modulating means responsive to input signals from said input-signal applying means for modulating first optical signals provided by said holographic means to provide first modulated optical signals and;
means for detecting first modulated optical signals provided by said spatial light modulating means and for performing a nonlinear transformation of a parameter of said first modulated optical signals; and
means adapted to direct said detection signals to said first spatial light modulating means as input signals.

5,004,310
WIDE ANGLE LINE SCANNER
William L. McCracken, Wayland; Paul D. McDonald, Waltham, and Roger S. Kirschner, Newton, all of Mass., assignors to Honeywell Inc., Minneapolis, Minn.
Filed May 19, 1989, Ser. No. 353,977
Int. Cl.[5] G02B *26/08, 27/00*
U.S. Cl. 350—6.8 **13 Claims**



1. A scanner comprising:
a rotatable member having a first reflecting surface, radiation being presented to the first reflecting surface from one of a plurality of different directions depending upon the rotational position of the rotatable member, the radiation received being reflected as a first beam along a first direction;
a second member having a second reflecting surface and mounted to receive the first beam and to reflect the radiation as a second beam along a second direction;
a third member having a third reflecting surface and mounted to receive the second beam and to reflect the radiation as a third beam;
radiation detector means mounted to receive the third beam and to produce an output in accordance with the radiation received; and
radiation blocking means mounted adjacent to both the first and second beams so as to block any radiation from reaching the detector means other than that reflected by the rotatable member from a desired one of the plurality of directions.

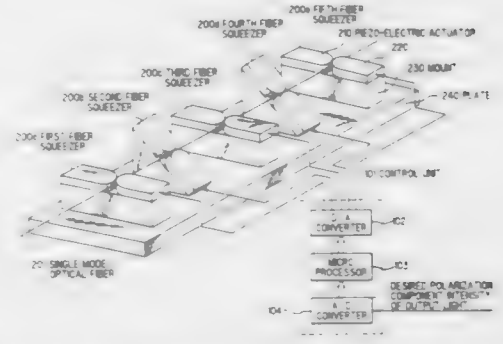
5,004,311
BEAM SCANNING METHOD AND APPARATUS
Norman A. Peppers, Belmont, Calif., assignor to SRI International, Menlo Park, Calif.
Filed Oct. 27, 1989, Ser. No. 428,344
Int. Cl.[5] G02B *26/08*
U.S. Cl. 350—6.9 **22 Claims**



1. A scanning system for scanning a focused beam comprising:
a focused beam source means for producing a focused radiant energy beam having a beam axis;
a cylindrical mirror upon which the focused radiant energy beam is directed and from which the beam is reflected along a reflected beam axis, the beam axis along which the focused radiant energy beam is directed onto the mirror extending substantially through the focus of said mirror; and
means for scanning the focused radiant energy beam across the cylindrical mirror for translational movement of the reflected beam axis, the focused radiant energy beam from the focused beam source being astigmatic for at least partial compensation of a focus defect produced by reflection of the beam by the cylindrical mirror.

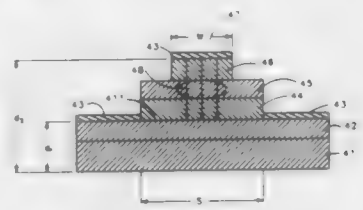
5,004,312
METHOD FOR CONTROLLING A POLARIZATION OF LIGHT
Haruhito Shimizu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Mar. 12, 1990, Ser. No. 491,908
Claims priority, application Japan, Mar. 10, 1989, 64-58731
Int. Cl.[5] E02F *1/03*
U.S. Cl. 350—96.13 **3 Claims**

1 A method for controlling a polarization of light, comprising steps of:
generating first to fifth birefringences for a propagating light in series having main axes of 0°, 45°, 0°, 45° and 0° relative to an arbitrary direction on a surface orthogonal to a propagating direction of said light;
changing magnitude of said first to fifth birefringences to generate first to fifth phase differences ϕ_1, ϕ_2, ϕ_3, ϕ_4 and ϕ_5 corresponding thereto between each of polarizations corresponding to said main axes and each of polarizations orthogonal to said main axes; and
controlling said second to fourth phase differences ϕ_2, ϕ_3 and ϕ_4 among said first to fifth phase differences ϕ_1, ϕ_2, ϕ_3, ϕ_4 and ϕ_5 to be appropriate values, thereby transforming said propagating light having an arbitrary polarization at an input terminal to said propagating light having another arbitrary polarization at an output terminal;
wherein, in a case where one of said second to fourth phase differences ϕ_2, ϕ_3 and ϕ_4 reaches an operating limitation,



one or both of said first and fifth phase differences ϕ_1 and ϕ_5 are controlled to be appropriate values along with remaining two phase differences among said second to fourth phase differences ϕ_2, ϕ_3 and ϕ_4, and said one of said second to fourth phase difference ϕ_2, ϕ_3 and ϕ_4 is then restored to be inside an operating range by an arbitrary value, so that said controlling of said second to fourth phase differences ϕ_2, ϕ_3 and ϕ_4 restarts to provide said propagating light having said another arbitrary polarization at said output terminal.

5,004,313
LOW LOSS, LOW DISPERSION VELOCITY-MATCHED TRAVELLING WAVE MODULATOR
Michael R. Ty Tan, Mountain View, and Shih-Yuan Wang, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Dec. 1, 1988, Ser. No. 280,101
Int. Cl.[5] G02B *6/10;* **G02F** *1/01*
U.S. Cl. 350—96.14 **8 Claims**



1. A travelling wave modulator comprising:
a substrate:
a semiconducting, electrooptic waveguide, formed on a first side of said substrate, for propagating a travelling wave optical signal of phase velocity v_o;
a pair of electrodes, consisting of a first electrode and a second electrode, located on the same side of said substrate as is formed said waveguide, formed parallel to said waveguide and positioned such that an electrical travelling wave signal travelling along said electrodes with a phase velocity v_m produces an electrical field that penetrates through said waveguide;
on the same side of said substrate as are formed said pair of

electrodes, at least one intentionally doped conducting layer;

the conductivity of said at least one intentionally doped conducting layer being selected to adjust the difference between v_m and v_o so that a figure of merit of the modulator is optimized.

5,004,314

OPTICAL SIGNAL MODULATION DEVICE

Richard C. Booth, Woodbridge; Alan R. Beaumont, Ipswich; Barbara E. Daymond-John, Woodbridge; David G. Cunningham, Felixstowe, and William A. Stallard, Colchester, all of England, assignors to British Telecommunications public limited company, London, England

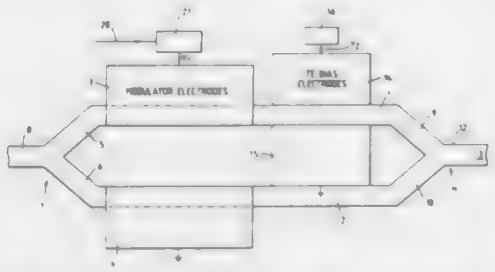
PCT No. PCT/GB87/00738, § 371 Date Jun. 24, 1988, § 102(e) Date Jun. 24, 1988, PCT Pub. No. WO88/03278, PCT Pub. Date May 5, 1988

PCT Filed Oct. 20, 1987, Ser. No. 209,622

Claims priority, application United Kingdom, Oct. 24, 1986, 8625486

Int. Cl.[5] G02B *5/174*

U.S. Cl. 350—96.14 **15 Claims**



1. An optical signal modulation device comprising:

first and second optical waveguides connected at one ends thereof to an optical signal splitting device which couples portions of an incoming optical signal into the waveguides and at the other ends thereof to an optical signal combining device which causes optical signals received from the waveguides to interfere;

first modulating means responsive to a first control signal for causing a relative phase shift between signals in the first and second optical waveguides, the first modulating means causing relative phase shifts in both TM mode and TE mode signals; and

second modulating means responsive to a bias signal, for causing a relative phase shift between signals of one mode in the first and second waveguides and to leave signals of the other mode substantially unaffected whereby the transfer characteristics of the two modes may be shifted relatively to one another in use in accordance with the bias signal such that the minima of the transfer characteristics of the TE and TM modes are substantially coincident at a predetermined magnitude of the first control signal.

5,004,315

OPTICAL CABLE AND OPTICAL CABLE LINE

Hiroshi Miyazaki, Ichihara, Japan, assignor to Furukawa Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 663,491, Oct. 22, 1984, abandoned. This application Jun. 25, 1990, Ser. No. 542,797

Claims priority, application Japan, Oct. 20, 1983, 58-196914

Int. Cl.[5] G02B *6/26, 6/42*

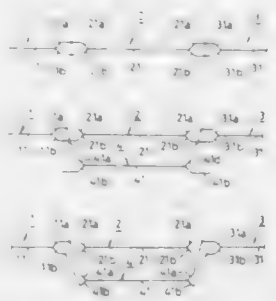
U.S. Cl. 350—96.15 **1 Claim**

1. An optical cable line comprising:

at least three optical cables, each of said cables having two opposite ends and being continuous between said two ends, and each of said two ends being bifurcated to form continuous core wires centrally located between said two ends,

a first bifurcation of one end of a first cable of said cables being connected to a first bifurcation of one end of a second cable of said cables and a second bifurcation of said one end of said first cable being connected to a second bifurcation of said one end of said second cable,

a first bifurcation of one end of a third cable of said cables being connected to a first bifurcation of the other end of said second cable and a second bifurcation of said one end



of said third cable being connected to a second bifurcation of said other end of said second cable,

optical information being transmitted simultaneously through both bifurcations of said one end of said first cable to both bifurcations of said one end of said second cable as well as simultaneously through both bifurcations of said other end of said second cable to both bifurcations of said one end of said third cable.

5,004,316

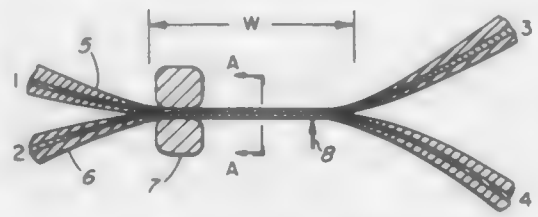
COUPLER FABRICATION TECHNIQUES FOR DISSIMILAR FIBERS

Kenneth O. Hill, Kanata; Derwyn C. Johnson, Ottawa, and Robert G. Lamont, Nepean, all of Canada, assignors to Her Majesty the Queen in Right of Canada as represented by the Minister of Communications, Ottawa, Canada

Filed Jan. 9, 1986, Ser. No. 817,507

Int. Cl.[5] G02B *6/26*

U.S. Cl. 350—96.15 **3 Claims**



1. A fused twin biconical taper fiber optic splitter comprised of a pair of monomodal or quasi monomodal optical fibers hard fused at respective narrowed waists, the index of refraction of the cladding of one fiber being different from the index of refraction of the cladding of the other, whereby coupling from one fiber to the other can be obtained at a predetermined wavelength or band of wavelengths depending on the refractive indexes and biconical tapers of the splitter.

5,004,317

WIRE BOND CONNECTION SYSTEM WITH CANCELLATION OF MUTUAL COUPLING

Kenneth P. Jackson, Danbury, Conn., and Norman Raver, Yorktown Heights, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jan. 3, 1990, Ser. No. 460,418

Int. Cl.[5] G02B *6/36;* **H08K** *1/18*

U.S. Cl. 350—96.20 **4 Claims**

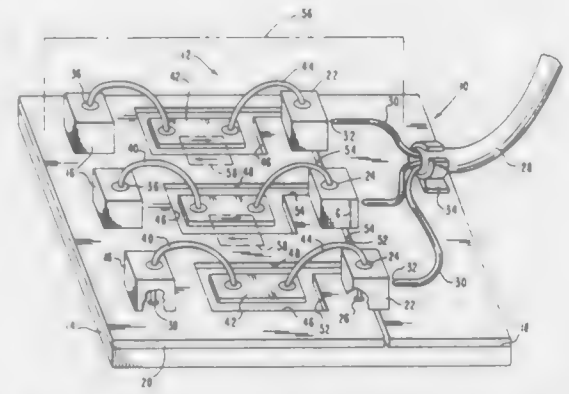
4. An electro-optical transmitter for the generation and transmission of optical signals via optical fibers, the system

including an array of solid-state lasers positioned for applying light to the optical fibers, an array of laser driver modules electrically connected to said lasers for exciting the lasers to generate light signals, the lasers and the drivers constituting an electrical circuit; and

wherein in said electrical circuit, said drivers and said lasers are mounted on a circuit board having an electrically conductive cladding, the electrical circuit including a system for interconnecting the drivers to the lasers via parallel signal channels with prevention of crosstalk among the channels;

said interconnection system comprises a plurality of wire segments arranged side-by-side and spaced apart in an array, each of said wire segments having a first end and a second end, the first ends of the wire segments being connection to a first terminal in each of respective ones of said lasers;

a plurality of electrically conductive pads arranged side-by-side in a plane of said cladding and spaced apart in an array facing said array of wire segments, each of said pads being surrounded by an insulating border insulating the pad from the cladding, each of said pads having a first end portion and a econd end portion opposite the first end portion, the second end portions of said pads being connected to a first terminal in each of said drivers;



an array of conductive strips formed in said cladding and located in said cladding plane between successive ones of said pads, said borders being separated from each other by said conductive strips, said conductive strips extending from said lasers to said drivers to provide electrical connection between a second terminal in each of said lasers and a second terminal in a corresponding one of each of said drivers; and

wherein the second ends of said wire segments are connected to the first end portions in respective ones of said pads for communicating signals in respective ones of said signal channels, each of said wire segments forming a first partial loop disposed in a plane perpendicular to said cladding plane, the first loops providing magnetic coupling with a first mutual inductance among successive ones of said wire segments, there being segments of said borders contiguous said strips, each of said border segments defining a second partial loop parallel to said cladding plane in respective ones of said signal channels, the second loops providing magnetic coupling with a second mutual inductance among successive ones of said pads, the second mutual inductance tending to cancel the first mutual inductance for prevention of crosstalk among said signal channels.

5,004,318

SMALL OPTICAL FIBER SWITCH

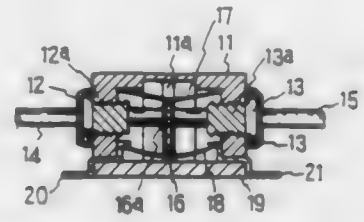
Shigeo Ohashi, Tokyo, Japan, assignor to Nihon Kaiheiki Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 30, 1990, Ser. No. 472,104

Claims priority, application Japan, Sep. 6, 1989, 1-104710

Int. Cl.[5] G02B *6/26, 6/34*

U.S. Cl. 350—96.20 **9 Claims**



1. A small swtich comprising

a casing,

optical fibers having ends in said casing,

vertically movable means positioned at and spaced from said ends of said optical fibers for transmitting or blocking a light beam,

positioning means for moving said vertically movable means,

said positioning means having first and second ends connected to a power source so that electricity may be transmitted through said positioning means thereby changing the position of said positioning means and vertically moving said vertically movable means, and

resilient means for positioning said vertically movable means in an initial position.

5,004,319

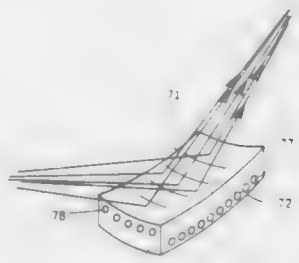
CRYSTAL DIFFRACTION LENS WITH VARIABLE FOCAL LENGTH

Robert K. Smither, Hinsdale, Ill., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Dec. 29, 1988, Ser. No. 291,916

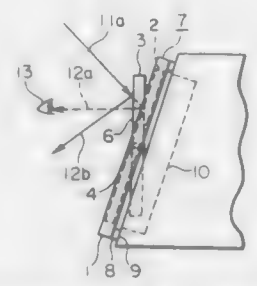
Int. Cl.[5] G02B *26/00, 27/44, 5/18;* **G21K** *1/06*

U.S. Cl. 350—162.21 **19 Claims**



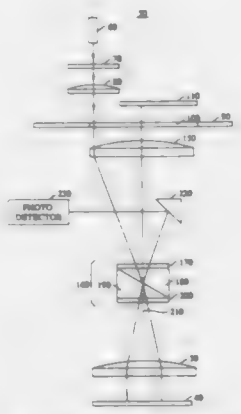
1. A focusing element having a pair of opposite major surfaces separated from each other, the improvement comprising means for altering the focal length of said focusing element to provide a focusing element with any one of a plurality of predetermined focal lengths, said means including means for changing heat transfer in selected portions of said major surfaces by controlled quantities.

5,004,320
ANTI-REFLECTION DEVICE FOR A VDT
Takao Nagai, and Hiromi Kusano, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan
Filed Dec. 5, 1988, Ser. No. 279,798
Claims priority, application Japan, Dec. 10, 1987, 62-314617
Int. Cl.[5] G02B *27/00*
U.S. Cl. 350—276 R 17 Claims



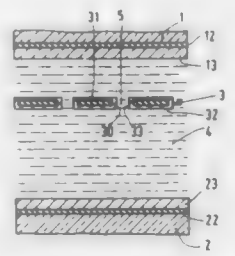
12. An anti-reflection device for a visual display terminal comprising:
an inner frame rotatably supported by a visual display terminal for rotation about a non-horizontal axis; and
an anti-reflection film mounted on the inner frame.

5,004,321
RESOLUTION CONFOCAL MICROSCOPE, AND DEVICE FABRICATION METHOD USING SAME
Martin Feldman, Berkeley Heights, and Princess E. Simpson, Plainfield, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jul. 28, 1989, Ser. No. 387,248
Int. Cl.[5] G02B *21/00*; G03C *5/00*
U.S. Cl. 350—320 3 Claims



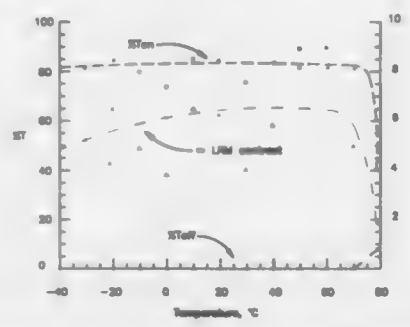
1. A method for fabricating a device, comprising the steps of:
forming a patterned resist on a substrate;
optically imaging at least a portion of at least one feature in said patterned resist via a lens;
transferring the pattern in said patterned resist into said substrate and
completing the fabrication of said device in said substrate wherein
said imaging step includes the substeps of passing the same light beam through said lens three or more times to impinge two or more different regions of said feature with said light beam.

5,004,322
METHOD OF MANUFACTURING AN IMPROVED ELECTROSCOPIC FLUID DISPLAY
Antonius G. H. Verhulst; Jacob Bruinink, and Emanuel J. W. M. Lenders, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Division of Ser. No. 191,298, May 6, 1988, Pat. No. 4,923,283.
This application Jan. 24, 1990, Ser. No. 469,130
Claims priority, application Netherlands, May 7, 1987, 8701072
Int. Cl.[5] G02B *27/00, 26/02*
U.S. Cl. 350—320 7 Claims



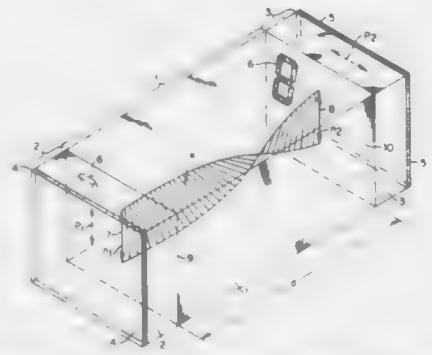
1. A method of manufacturing an electroscopic fluid display by providing a first structured electrode layer on a lower substrate; providing a first insulating layer on the lower substrate which is provided with the first structured electrode layer; providing a polymer layer on the first insulating layer; providing a second insulating layer on the polymer layer; providing a second structured electrode layer on the second insulating layer; selectively etching the second insulating layer using the second structured electrode layer as a mask; underetching the second insulating layer via the second structured electrode layer and, thus, selectively etching the polymer layer; providing an identically structured third insulating layer on the second structured electrode layer, the second structured electrode layer having such a pattern and the underetching being carried out such that a series of rotatable perforated electrodes is obtained, said perforated electrodes being interconnected by resilient connecting pieces which are supported by respective polymer supports; providing a fourth insulating layer on a transparent substrate; and finally, interconnecting the substrates in a tightly sealed manner, such that the third and the fourth insulating layers contact each other, wherein prior to underetching, the third insulating layer is applied by anodizing the second structured electrode layer, thus simultaneously providing side surfaces of the second structured electrode layer with insulating material.

5,004,323
EXTENDED TEMPERATURE RANGE POLYMER DISPERSED LIQUID CRYSTAL LIGHT SHUTTERS
John L. West, Monroe Falls, Ohio, assignor to Kent State University, Kent, Ohio
Filed Aug. 30, 1988, Ser. No. 238,551
Int. Cl.[5] G02F *1/13*
U.S. Cl. 350—346 22 Claims



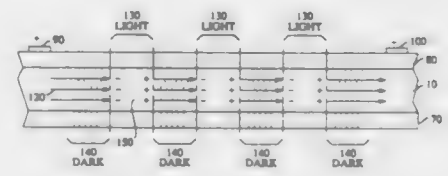
5. An extended temperature range polymer dispersed liquid crystal light shutter electrically switchable between a transmissive and an opaque state over a working temperature range of about −40° C. to about 100° C., said shutter including a polymer-dispersed liquid crystalline material comprising a highly cross-linked transparent matrix having phase-separated microdroplets of liquid crystal dispersed therein, the liquid crystal capable of existing in a supercooled liquid crystalline state at temperatures below its freezing point.

5,004,324
LIQUID CRYSTAL DISPLAY
Frans Leenhouts, Kaiseraugst, and Martin Schadt, Seltisberg, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.
Continuation of Ser. No. 356,564, May 24, 1989, abandoned, which is a continuation of Ser. No. 94,572, Sep. 9, 1987, abandoned. This application Jan. 18, 1990, Ser. No. 465,593
Claims priority, application Switzerland, Sep. 12, 1986, 3671/86
Int. Cl.[5] G02F *1/13*
U.S. Cl. 350—347 R 9 Claims



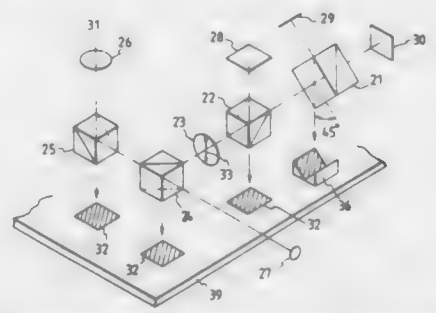
1. A liquid crystal display (LCD) cell having a high mulitplex ratio, short switching time and a display picture which is relatively unaffected by variations in plate spacing of the LCD cell, said LCD cell comprising:
a highly twisted nematic liquid crystal layer having a positive dielectric anisotropy Δn, a pitch P and a twist angle ϕ having an absolute value in a range between about 160° and about 260° for a right-hand twist or left-hand twist;
a front plate located in front of the liquid crystal layer, said front plate including an inward surface contacting the liquid crystal layer, the inward surface having a surface orientation and also including first electrode means;
a rear plate located rearward of the liquid crystal layer, said rear plate including an inward surface contacting the liquid crystal layer, the inward surface having a surface orientation and also including second electrode means;
a front polarizer located in front of aid front plate, said front polarizer having a polarization direction; and
a rear polarizer located rearward of said rear plate, said rear polarizer having a polarization direction;
wherein,
an angle ϕ between the surface orientation of the inward surface of the front plate and the polarization direction of the front polarizer is within the range of 0° to 360°;
an angle ψ between the polarization direction of the front polarization and the polarization direction of the rear polarizer is in the range of about 0° to about 180°;
said front and rear plates are spaced apart by an optical path difference of Δn·d in the range of about 0.4 to about 0.6 μm which produces a substantially low inherent color in the LCD cell so that a neutral display is achieved; and a ratio d/P of plate spacing d to pitch P is in the range of about 0.2 to about 0.8.

5,004,325
OPTICAL PROCESSING USING A MULTILAYER HETEROSTRUCTURE
Alastair M. Glass; Wayne H. Knox, both of Rumson, N.J., and David D. Nolte, West Lafayette, Ind., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jan. 16, 1990, Ser. No. 465,274
Int. Cl.[5] G02F *1/01*
U.S. Cl. 350—354 11 Claims



1. Apparatus comprising:
a photoconductive, photorefractive medium;
means for illuminating the medium with spatially varying electromagnetic radiation; and
means adapted for forming an applied electric field within the medium,
characterized in that
the medium comprises a semi-insulating, monolithic, multilayer heterostructure having at least four layers;
the heterostructure has a lateral extent greater than its thickness; and
the heterostructure has an areal distribution of deep levels, capable of localizing photocarriers, over essentially all of its lateral extent, such that when spatially varying electromagnetic radiation of a suitable wavelength is absorbed by the medium, photocarriers are localized by the deep levels, causing a spatially varying internal electric field and a spatially varying distribution of refractive index variations within the medium.

5,004,326
MAGNETO-OPTICAL INFORMATION REPRODUCING APPARATUS HAVING A POLARIZING BEAM SPLITTER DISPOSED WITH AN INCLINATION OF 45 DEGREES
Kenichi Sasaki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 2, 1989, Ser. No. 317,958
Claims priority, application Japan, Mar. 3, 1988, 63-48772
Int. Cl.[5] G02F *1/29*
U.S. Cl. 350—375 21 Claims



15. A magneto-optical information reproducing apparatus comprising:
means for applying a light beam polarized in a predetermined direction to a recording medium on which information is magnetically recorded;
first dividing means for dividing the reflected or transmitted light beam from the medium modulated into a polarized state in conformity with the information by the magneto-optical effect into two light beams polarized in directions orthogonal to each other, said first dividing means being

disposed so that the directions of polarization of the divided two light beams form an angle of 45° with respect to the predetermined direction of polarization of the applied light beam;

detecting means for detecting the divided two light beams; and

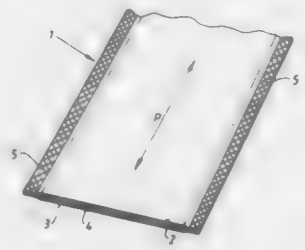
second dividing means for dividing part of the light beam before entering said first dividing means, said second dividing means being integrally formed with said first dividing means.

5,004,327

LIGHT-POLARIZING MATERIAL IN THE FORM OF SHEETS OR OF A WEB AND A METHOD FOR THE MANUFACTURE OF THE MATERIAL

Ake Rosén, Ulvögatan, Sweden, assignor to Svecia Antiqua Limited, Kent, England

Filed Nov. 30, 1988, Ser. No. 277,703
Claims priority, application Sweden, Dec. 1, 1987, 8704791
Int. Cl.[5] G02B *1/08, 5/30*
U.S. Cl. 350—398 **3 Claims**



1. A light-polarizing element for use in a security document to permit authentication of the security document, comprising:

a layer of water-absorbing polymer material that contains polarizing crystals, said polarizing crystals being absorbed in the water-absorbing polymer material and being oriented in a predetermined direction by mechanical stretching of the water-absorbing polymer layer, said layer of water-absorbing polymer material being manufactured from polyvinyl alcohol and containing between about 1% and 4% iodine and between about 37% and 39% water, wherein the percentages are based on the total weight of the polymer, said polarizing crystals being water-soluble iodine crystals; and

two outer transparent layers of thermoplastic material, said layer of water-absorbing polymer material being laminated between said two outer transparent layers with edge zones of one of said two outer transparent layer being sealed to edge zones of the outer of said two outer transparent layers in a liquid-tight manner.

5,004,328

SPHERICAL LENS AND IMAGING DEVICE USING THE SAME

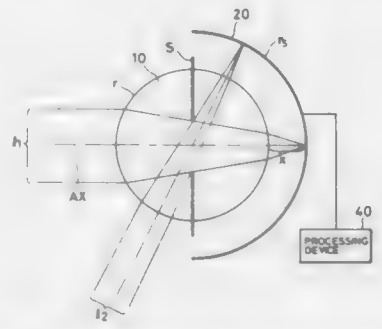
Masayuki Suzuki, and Jun Hattori, both of Atsugi, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1987, Ser. No. 103,126
Claims priority, application Japan, Sep. 26, 1986, 61-229083; Oct. 13, 1986, 61-243686; Oct. 13, 1986, 61-243687; Oct. 13, 1986, 61-243688
Int. Cl.[5] G02B *3/00*
U.S. Cl. 350—416 **16 Claims**

1. An imaging system comprising:

a spherical lens with a curved image plane formed by a spherical shell-shaped lens composed of a medium with a refractive index n_1 and a sphere-shaped lens composed of a medium with a refractive index n_2 that is smaller than n_1 ($n_2 < n_1$) and positioned inside said spherical shell-shaped lens to constitute a concentric sphere therewith;

imaging means having a light-receiving surface curved along the curved image plane of said spherical lens and adapted to pick-up the image formed by said spherical lens with said light-receiving surface, wherein said spherical lens and imaging means are mutually movable along the optical axis; and



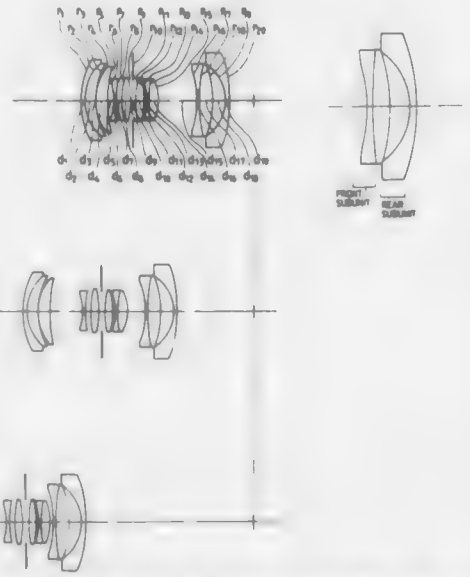
processing means for processing image signals output from said imaging means.

5,004,329

VARI-FOCAL LENS SYSTEM

Hirofumi Tsuchida, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 13, 1990, Ser. No. 552,296
Claims priority, application Japan, Jul. 14, 1989, 1-180180
Int. Cl.[5] G02B *15/14, 13/18*
U.S. Cl. 350—427 **12 Claims**



1. A vari-focal lens system comprising a plurality of lens units including a rearmost lens unit having a negative refracting power, said negative lens unit comprising, in the order from the object side, of a front subunit comprising a negative lens element and a positive lens element and a rear subunit comprising at least one negative lens element arranged with an airspace reserved from said front subunit, and said negative lens unit comprising at least one aspherical surface having negative refractive power weakened from the optical axis toward the marginal portion thereof, and said vari-focal lens system satisfying the following conditions (1), (2) and (3):

$$-8 < \phi_N/\phi_T < -3 \quad (1)$$

$$-0.2 < \phi_F/\phi_N < 0.5 \quad (2)$$

$$0.5 < \phi_B/\phi_N < 1.2 \quad (3)$$

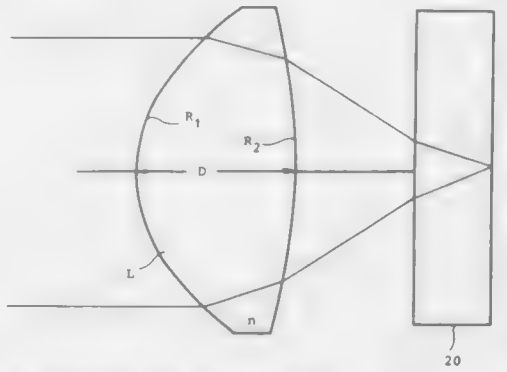
wherein the reference symbol ϕ_N represents the refractive power of said negative lens unit, the reference symbol ϕ_F designates the refractive power of said front subunit, the reference symbol ϕ_B denotes the refractive power of said rear subunit and the reference symbol ϕ_T represents the refractive power of said vari-focal lens system as a whole at the tele position thereof.

5,004,330

ASPHERICAL GLASS LENS ELEMENT FORMED BY A LOW DISPERSION GLASS MATERIAL

Isao Ishibai, and Hitonobu Otsu, both of Tokyo, Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Mar. 16, 1990, Ser. No. 494,983
Claims priority, application Japan, Mar. 17, 1989, 1-66846
Int. Cl.[5] G02B *13/18*
U.S. Cl. 350—432 **5 Claims**



1. An aspherical lens element which is formed by a glass material and which has an optical axis, a focal length f, a thickness D along said optical axis, and first and second aspherical convex surfaces, said first and said second aspherical convex surfaces having first and second apexes through which said optical axis passes, first and second radii r_1 and r_2 of curvature at said first and said second apexes, and first and second coefficients k_1 and k_2 of cones, respectively, and being determined by first and second predetermined formulae, respectively, wherein each of said first and said second formula are given by:

$$z_i = [C_i Y^2/[1+(1-(1+K_i)C_i^2 Y^2)^{\frac{1}{2}}]] + E_i Y^4 + F_i Y^6 + G_i Y^8 + H_i Y^{10},$$

where i takes 1 and 2 corresponding to said first and said second convex surfaces, respectively; Y is representative of an incident height from the optical axis; z_i is representative of a distance between a point placed on an i-th convex surface of said first and said second convex surfaces at the incident height Y and a tangential plane which is tangential to said i-th convex surface at the apex of said i-th convex surface; C_i is representative of curvature of the apex of said i-th convex surface and is equal to a reciprocal of each radius r_i; k_i is representative of a coefficient of cone of said i-th convex surface; E_i, F_i, G_i, and H_i are representative of aspherical coefficients of said i-th convex surface which are proportional to fourth, sixth, eighth, and tenth power of the incident height Y, respectively;

said aspherical lens element being defined by:

$$1.5 < (f/D) < 1.9,$$

$$-0.4 < (r_1/r_2) < -0.2,$$

and

$$10 < k_1 \cdot k_2 - 1000E_1 < 30,$$

said glass material being specified by:

$$1.44 < n < 1.55,$$

and

$$75 < \nu < 90,$$

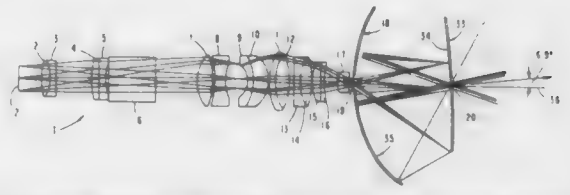
where n is representative of a refractive index of said glass material and ν an Abbe number of said glass material.

5,004,331

CATADIOPTRIC PROJECTOR, CATADIOPTRIC PROJECTION SYSTEM AND PROCESS

Eric C. Haseltine, Manhattan Beach, and Helene H. Jones, Culver City, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 3, 1989, Ser. No. 347,111
Int. Cl.[5] G02B *17/00, 5/10, 27/14*
U.S. Cl. 350—443 **10 Claims**



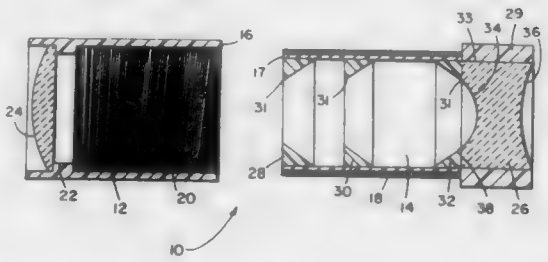
1. A catadioptric projector for producing areas-of-interest displays having resolution of substantially less than 10 arc minutes per line and including: entrance pupil means for receiving beams of substantially collimated light; means for imaging said entrance pupil means onto an opening in the surface of aspheric mirror means, said means for imaging being linked to said entrance pupil means; aspheric mirror means linked to said means for imaging and including an opening for transmitting light received from said means for imaging; and spherical mirror means having an opening for receiving and for transmitting light from said aspheric mirror means.

5,004,332

TELEMICROSCOPE WITH AT LEAST ONE LIGHT ABSORBING ANNULAR BAFFLE FITTING

D. Brandon Edwards, Virginia Beach, Va., assignor to Edwards Optical Corporation, Virginia Beach, Va.

Filed Apr. 25, 1989, Ser. No. 343,030
Int. Cl.[5] G02B *21/20, 23/18, 7/04, 9/10*
U.S. Cl. 350—453 **20 Claims**



1. A telemicroscope comprising:

a tubular barrel having an inner diameter of less than about 16.0 millimeters;

a front lens and a rear lens fitted to the tubular barrel;

an aperture stop and a field stop between the front lens and rear lens; and

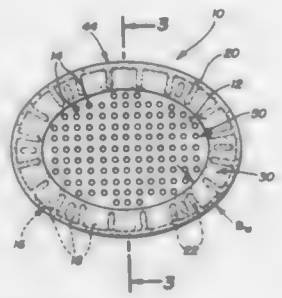
at least one light absorbing annular baffle fitting within the circumference of the tubular barrel and being positioned between the aperture stop and the field stop, the baffle having an outer diameter substantially equal to the inner diameter of the tubular barrel, and having an inner surface which tapers to an inner edge.

5,004,333

INTEGRALLY FORMED TWO-PIECE EYESHIELD

Daniel E. Bruhl, Jr., Fort Worth, Tex., assignor to Trident Medical Products, Inc., Ft. Worth, Tex.

Filed Jul. 28, 1989, Ser. No. 386,276
Int. Cl.[5] G02C *7/16*; A61F *3/00*
U.S. Cl. 351—45 12 Claims



1. An eyeshield adapted to cover a person's eye after the eye has been medically treated, such that the eye might be physically protected while the eye is healing, comprising:

a. a relatively thin but substantially firm and foraminous member having a concave interior surface adapted to be juxtaposed with a person's eye so as to vault the eye and shield it from contact with errant bodies until such time as the eye has healed, and said foraminous member having a thickness as measured from its frontal and exterior surface to its rearward and interior surface, and also having a peripheral edge formed from generally curved segments, and said foraminous member having a plurality of discrete apertures of a sufficient quantity and size as to foster sight and to foster ventilation of both the eye and the facial area immediately surrounding said eye; and

b. a relatively thick border member mounted around the peripheral edge of said foraminous member so as to envelop the same, said border member being integrally molded in contact with said foraminous member so as to be permanently affixed thereto, and said border member having an average thickness that is substantially greater than the average thickness of said foraminous member, and the border member being significantly softer than the foraminous member.

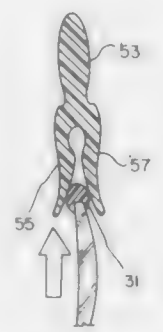
5,004,334

AUXILIARY NOSEPIECE FOR EYEGLASSES

Nadine Miele, 2725 W. El Alba Way, Chandler, Ariz. 85224

Filed May 25, 1990, Ser. No. 528,539
Int. Cl.[5] G02C *7/06*
U.S. Cl. 351—54 6 Claims

1. In a pair of eyeglasses having a frame and a first nosepiece for supporting said eyeglasses on a user's nose, an auxiliary nosepiece comprising mounting structure mounting said auxiliary nosepiece on said frame and a second nosepiece attached to said mounting structure and extending in a direction opposite to a direction of extension of said first nosepiece, whereby



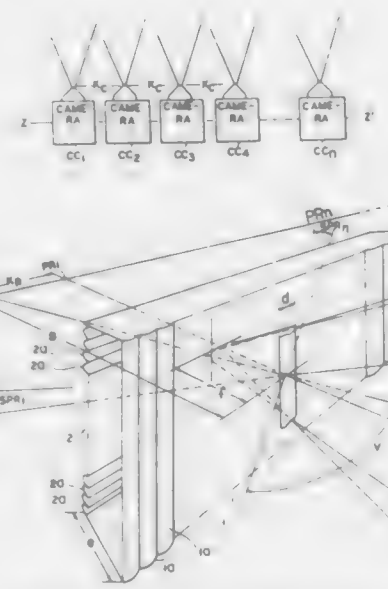
said eyeglasses may be supported with said second nosepiece engaging said user's nose in an upside down configuration.

5,004,335

SYSTEM FOR REPRODUCING THREE-DIMENSIONAL, THAT IS FOUR-DIMENSIONAL, IMAGES AND, PARTICULARLY MOVING IMAGES BY PROJECTION, WITHOUT THE USE OF COHERENT LIGHT

Juan D. Montes, Urbanizacion Las Cabanas II, Chalet No. 9 Las Rozas, Madrid, Spain

Continuation-in-part of Ser. No. 138,665, Dec. 28, 1987, abandoned. This application Sep. 21, 1988, Ser. No. 247,368
Claims priority, application Spain, Dec. 29, 1986, 8603612
Int. Cl.[5] G03B *35/00*
U.S. Cl. 352—58 19 Claims



1. In a system for reproducing images three-dimensionally, the system having first projectors spaced from each other a first distance along a horizontal line, the first projectors being for projecting the images, the images being from respectively corresponding cameras spaced along a horizontal line, this projecting of the images being over a second distance onto an optical member from which the images are observed, the improved optical member comprising:

first optical sheet means comprising vertical cylindric lenses, the aperture of each vertical cylindric lens being at least equal to a first value of the quotient obtained by dividing the first distance by the second distance and less than twice the first value for providing the images with horizontal parallax; and

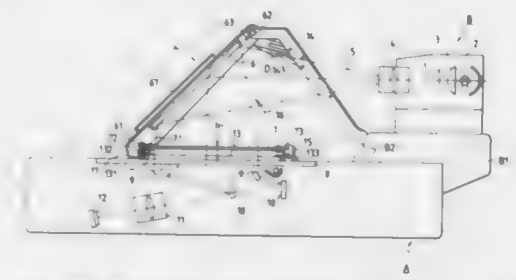
second optical sheet means comprising lens means for vertically expanding the images provided by the first optical sheet means.

5,004,336

TRANSMISSIVE ORIGINAL PROJECTING APPARATUS

Yasutsugu Saijo, Tokyo; Kazuyoshi Chiku, and Shigeyoshi Onoda, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1989, Ser. No. 404,519
Claims priority, application Japan, Sep. 8, 1988, 63-223568; Sep. 16, 1988, 63-231935; Sep. 22, 1988, 63-238195; Dec. 8, 1988, 63-159013[U]
Int. Cl.[5] G03B *21/00*
U.S. Cl. 353—122 63 Claims



1. A transmissive original projecting apparatus having:

an illuminating unit for illuminating a transmissive original and emitting a light beam conforming to the transmissive original, said illuminating unit having a light source and a lens;

a parallel light projection lens for making the light emitted from said illuminating unit into parallel light; and

connecting means for integrally connecting said illuminating unit and said parallel light projection lens together,

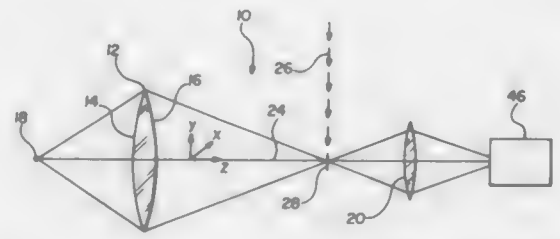
said connecting means movably supporting said illuminating unit, said illuminating unit being movable to a first position for forming a projection optical path to said parallel light projection lens and a second position in which said illuminating unit is contained in said projection optical path side.

5,004,337

MODIFIED FOUCAULT FOR TESTING AN IMAGING DEVICE IN TERMS OF THE ENCIRCLED ENERGY TEST

Thomas W. Dey, Springwater, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 31, 1990, Ser. No. 531,988
Int. Cl.[5] G01B *9/00*
U.S. Cl. 356—124 5 Claims



1. A method suitable for testing a specified transverse ray aberration tolerance in an imaging device, the imaging device being tested in a modified Foucault knife-edge test assembly, which assembly comprises:

(a) an imaging device to be tested;

(b) a source of radiation energy that can be directed along a reference axis to the imaging device;

(c) a photodetector aligned on the source reference axis, for detecting and measuring the radiation energy imaged by the imaging device; and

(d) a knife-edge capable of being positioned in a series of knife-edge position steps, for cutting the radiation imaged by the imaging device, thereby producing a variable radiation energy function, as measurable by the photodetector, the knife-edge comprising a substrate comprising an opaque region;

the method comprising the steps of:

(1) normalizing energy radiation levels of the assembly;

(2) positioning the knife-edge opaque region in three degrees of freedom, for reducing the radiation energy measured by the photodetector;

(3) positioning the knife-edge opaque region in three degrees of freedom, until the photodetector measures a minimum radiation energy; and

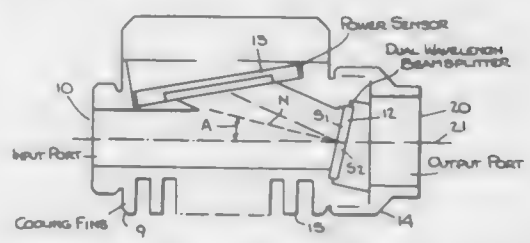
(4) comparing the step 3 minimum energy against a test specification value.

5,004,338

METHOD AND APPARATUS FOR ATTENUATION AND MEASUREMENT OF LASER POWER AT THE END OF A LASER GUIDE

Clifford E. Morrow, 576 Hatchery Rd., North Kingstown, R.I. 02852

Filed Mar. 1, 1989, Ser. No. 317,575
Int. Cl.[5] G01J *1/04*; A61B *17/36*; B23K *26/02*
U.S. Cl. 356—218 18 Claims



1. Apparatus for providing accurate delivery and measurement of low levels of laser power at the end of a laser guide comprising:

a housing disposed at the end of the laser guide having an input and an output, said input receiving an input laser beam of a higher level of laser power than is provided at the output;

a laser power level attenuation device disposed in the housing for attenuating the input beam and providing an attenuated output beam to the output, said attenuation device further providing a reflected beam, said attenuation device comprising a duel wavelength beam splitter for providing said attenuated output beam and reflecting said reflected beam and further for transmitting a visible guide beam for guiding an operator in the placement of the attenuated output beam; and

a power sensor disposed in the housing receiving the reflected beam for measuring a power level of the reflected beam, thus providing a measurement related to the power level of the output beam, said power sensor further absorbing the energy of said reflected beam.

5,004,339

METHOD AND APPARATUS FOR DETERMINING PHYSICAL CHARACTERISTICS OF OBJECTS AND OBJECT SURFACES

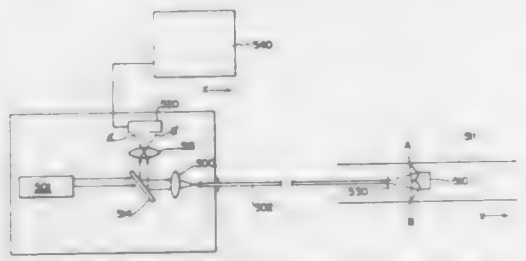
Timothy R. Pryor; Omer L. Hageniers; Walter J. Pastorius; Nicholas Liptay-Wagner, and Donald A. Clarke, all of Windsor, Canada, assignors to Diffracto Ltd., Windsor, Canada

Continuation of Ser. No. 820,922, Jan. 21, 1986, abandoned, which is a continuation of Ser. No. 735,609, May 20, 1985, abandoned, which is a continuation of Ser. No. 592,360, Mar. 22, 1984, abandoned, which is a continuation of Ser. No. 295,622, Aug. 24, 1981, Pat. No. 4,506,980, which is a continuation of Ser. No. 15,792, Feb. 27, 1979, Pat. No. 4,305,661. This application Dec. 22, 1986, Ser. No. 943,844

The portion of the term of this patent subsequent to Dec. 15, 1998, has been disclaimed.

Int. Cl.[5] G01B 21/88

U.S. Cl. 356—241 5 Claims



1. Apparatus for determining a characteristic of the inside surface of a bore comprising:

a guided wave fiber optic element capable of insertion into a bore;

a laser light source for directing light onto the proximal end of said fiber optic element;

means for directing light emanating from the distal end of said fiber optic element onto the inside surface of said bore and for directing light reflected from the inside surface of said bore onto the distal end of said fiber optic element; and

photodetector means capable of generating an output signal dependent upon light incident thereon,

means for directing light emanating from the proximal end of said fiber optic element onto said photodetector means whereby the output signal of said photodetector provides an indication of a characteristic of an inside surface of a bore.

5,004,340

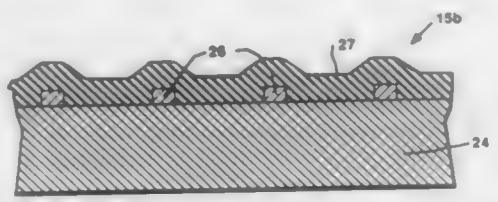
CALIBRATION TARGET FOR SURFACE ANALYSIS SCANNER SYSTEMS

Barclay J. Tullis, Palo Alto, and James B. Kruger, Half Moon Bay, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 27, 1988, Ser. No. 186,879

Int. Cl.[5] G01N 21/88

U.S. Cl. 356—243 11 Claims



1. A calibration target which reduces the amount of light scattered by particles contaminating the target's surface, for use with a surface analysis scanner of the type which detects particles adjacent to a surface by scanning a beam of monochromatic light across the surface and detecting light which is scattered by such adjacent particles, said target comprising:

a calibration target substrate having an upper surface;

an antireflectance film coating at least a portion of the upper surface of the calibration target substrate; and

a plurality of reference features interposed between the upper surface of the calibration target substrate and the antireflectance film,

wherein light from a surface analysis scanner which impinges upon the upper surface of the target is not substantially scattered by particles contaminating the target surface so that such contaminating particles are not detected by the surface analysis scanner and

wherein the antireflectance film and the reference features are of such indices of refraction and thicknesses so as to produce maximum reflectance of the scanning beam from said features.

5,004,341

ACTIVE OPTICAL GYROMETER EMPLOYING A PHASE CONJUGATION

Gilbert Grynberg; Michel M. E. Pinard, both of Paris, and Marc A. F. Faucheux, Orsay Cedex, all of France, assignors to Quantel, S.A., Courtabooouf-Orsay Cedex, France

Filed Sep. 26, 1988, Ser. No. 249,557

Claims priority, application France, Sep. 25, 1987, 87 13321

Int. Cl.[5] G01C 19/64

U.S. Cl. 356—350 15 Claims



1. An active conjugation ring gyrometer with an optical bias, comprising:

three main mirrors arranged so as to form a closed geometrical path therebetween, a resonant cavity being defined within said closed geometrical path;

a cell mounted in said cavity and containing a non-photorefractive type optically non-linear medium;

laser means for producing two pumping laser beams and for directing said two pumping laser beams in a colinear, oppositely directed manner to irradiate said medium;

means for modulating the intensity of at least one of said two pumping laser beams to produce an optical bias;

said medium defining a means for producing, from said two pumping laser beams, a coherent auto-oscillation of two conjugated counter-rotative waves by way of a four wave mixture without electrical excitation of said medium;

interference means for causing interference of said two counter-rotative waves; and

means for detecting a beat produced by said interference of said two counter-rotative waves.

5,004,342

MEASURING DEVICE HAVING A LASER AND A RING RESONATOR

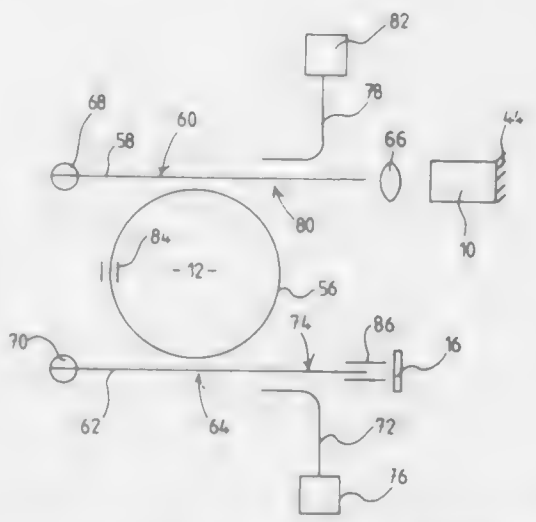
Walter Bernard, Meersburg; Joachim G. Heppner, Tamm, and Karl H. Schwarz, Owingen, all of Fed. Rep. of Germany, assignors to Bodenseewerk Geratetechnik GmbH, Uberlingen, Fed. Rep. of Germany

Filed Apr. 13, 1988, Ser. No. 181,214

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1987, 3712815

Int. Cl.[5] G01B 9/02; G01C 19/64

U.S. Cl. 356—350 23 Claims



1. A measuring device with a laser and a ring resonator for measuring a quantity by which the optical path lengths of the ring resonator for two light waves propagating in opposite directions in the ring resonator are changed in opposite directions, comprising

(a) a passive ring resonator defining a first direction of propagation of light and a second, opposite direction of propagation of light,

(b) a laser arranged outside the ring resonator and means for optically coupling said laser with said ring resonator to provide a first light wave propagating in said ring resonator in said first direction of propagation of light and a second light wave propagating in said ring resonator in said second direction of propagation of light,

(c) said coupling means coupling said laser with said ring resonator in optically unisolated manner, whereby the ring resonator is part of a resonator cavity of the laser,

(d) first detector means for providing a first signal indicative of the intensity of said light wave propagating in said ring resonator in said first direction of propagation of light, and providing a first output signal.

(e) second detector means for providing a second signal indicative of the intensity of said light wave propagating in said ring resonator in said second direction of propagation of light, and providing a second output signal,

(f) modulator means controlled by said first signal for influencing said ring resonator, when said laser and ring resonator system deviates from resonance due to said quantity to be measured, to match the frequency of the laser with the optical path length for the light wave propagating in said first direction of propagation of light, and

(g) output means for providing from said second output signal a signal indicative of said quantity.

5,004,343

MULTIPLE RING PATHS IN ONE BLOCK

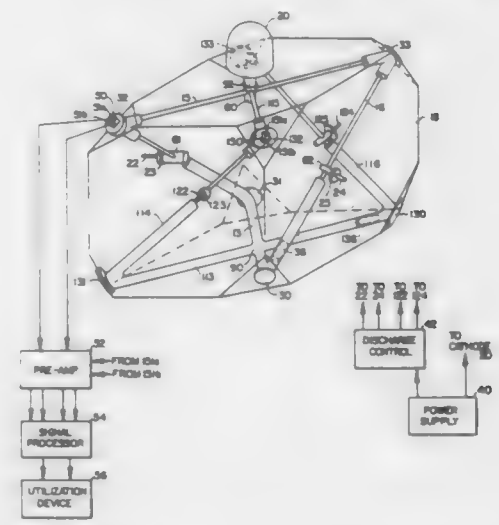
Terry A. Dorschner, Newton Centre, and Irl W. Smith, Newton, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 912,133, Mar. 14, 1986, abandoned, which is a continuation of Ser. No. 412,402, Aug. 27, 1982, abandoned. This application Oct. 27, 1988, Ser. No. 263,965

The portion of the term of this patent subsequent to Mar. 21, 2006, has been disclaimed.

Int. Cl.[5] G01C 19/64; H01S 3/101

U.S. Cl. 356—350 26 Claims



1. In combination:

a single supporting block;

means, disposed on said block, for providing a plurality of nonplanar ring resonators within said block, such nonplanar ring resonators comprising equiangular skew rhombus rings having equal length path segments, all of the path segments of said plurality of ring resonators being substantially distinct;

means for producing a beam of electromagnetic energy in each one of the plurality of nonplanar ring resonators; and

wherein the paths of each one of the plurality of nonplanar ring resonators are arranged to provide circular birefringence to the beam of electromagnetic energy produced in such resonator.

5,004,344

APPARATUS AND METHOD FOR CORRECTING RING LASER GYROSCOPE PHASE ERRORS AT TURNAROUND

Daniel A. Tazartes, West Hills; John G. Mark, Pasadena, and Anthony Mathews, Calabassas, all of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Continuation-in-part of Ser. No. 189,047, May 2, 1988, Pat. No. 4,875,774. This application Sep. 11, 1989, Ser. No. 405,515

The portion of the term of this patent subsequent to Oct. 24, 2006, has been disclaimed.

Int. Cl.[5] G01B 9/02

U.S. Cl. 356—350 22 Claims

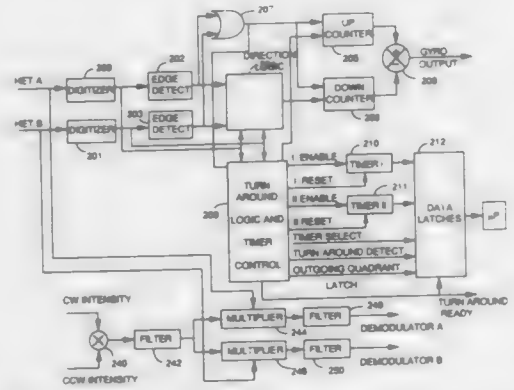
1. A system for compensating for turnaround phase errors in measurements of rotations with a dithered ring laser gyroscope that includes a frame having a cavity therein for guiding a pair of counterpropagating light beams and means for producing a pair of heterodyne signals that are processed to determine an angle of rotation, comprising:

means for determining the direction of rotation of the frame;

means for detecting turnarounds in direction of rotation of the frame;

means for determining the heterodyne phase at turnaround;

means for determining the heterodyne phase acceleration at turnaround;
means for determining the amplitude of backscattered light in the cavity;
means for determining the phase of backscattered light in the cavity; and



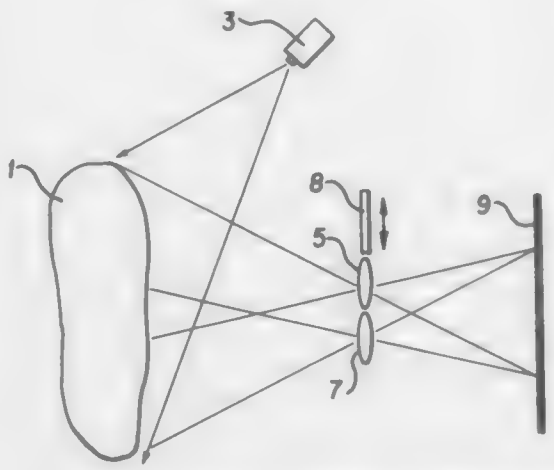
means for calculating a phase correction to compensate for turnaround-induced errors in measurements of phase differences between the two beams as a function of the heterodyne phase and acceleration at turnaround and as a function of the amplitude and phase of the backscattered light in the cavity.

5,004,345

DUAL-LENS SHEARING INTERFEROMETER

Yau Y. Hung, 625 Cambridge Dr., Rochester, Mich. 48063

Filed Dec. 5, 1988, Ser. No. 279,820
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—353 **7 Claims**



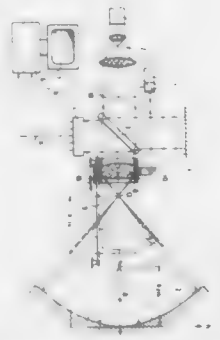
1. A method of analyzing a test object, comprising the steps of:
(a) directing a beam of at least partially coherent light onto the object, to obtain a reflected beam,
(b) passing the reflected beam simultaneously through a pair of optical elements, the optical elements being spaced apart from each other and having distinct optical axes, so that the optical elements produce a pair of laterally-displaced images of the object on a detecting means, the detecting means being singly exposed such that said images therefore with each other to form a single interference pattern,
(c) deforming the object, and repeating steps (a) and (b) while the object is deformed, and
(d) comparing the interference patterns formed during the two iterations of step (b).

5,004,346

METHOD OF EXAMINING AN OPTICAL COMPONENT

Michael Kühel, Oberkochen, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Oct. 26, 1989, Ser. No. 426,772
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1988, 3836564
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—360 **15 Claims**



1. A method for examining an optical test component which supplies aspherical wavefronts, the method being carried out with the aid of an interferometer having a collimator generating a test wave, the collimator being displaceable relative to the optical test component, the method comprising the steps of:
making interferograms for different positions of the collimator at which component regions of the test wave are adapted to the test component;
measuring the relative position between the collimator and the test component with high precision for said different positions;
electronically registering the interferograms by means of an image sensor and storing said interferograms as light path length differences $L_{act}(h)$ between the test beam and the comparison beam of the interferometer for the individual image points of each interferogram;
computing desired light path length differences $L_{des}(h)$ for the different positions of the collimator;
comparing the interferometrically measured light path length differences $L_{act}(h)$ to said desired light path length differences $L_{des}(h)$ with the phase errors $\Delta\phi(h)$ being formed for the individual image points; and,
computing the errors of the aspheric form of the wavefront of the test component as a whole from the comparisons and the phase errors.

5,004,347

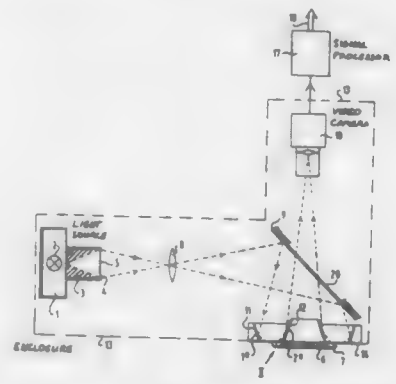
METHOD AND AN APPARATUS FOR INSPECTING THE EDGE OF A LID

Nicholaas C. Swart, Deventer, Netherlands, assignor to Heuft-Qualiplus B.V., Deventer, Netherlands

Filed Nov. 20, 1989, Ser. No. 439,591
Claims priority, application Netherlands, Nov. 21, 1988, 8802869
Int. Cl.[5] G01N *21/88*
U.S. Cl. 356—394 **13 Claims**

1. A method for inspecting the bent edge of a lid comprising the steps of:
placing the lid in a path of light;

directing the light toward the bent edge of the lid, such that the bent edge casts a shadow onto the lid;
monitoring the shadow of the bent edge of the lid;



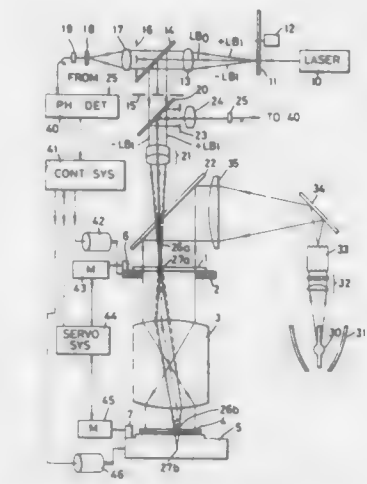
comparing the shadow of the bent edge of the lid with a reference to determine if the bent edge is flawed; and generating a rejection signal if the bent edge is flawed.

5,004,348

ALIGNMENT DEVICE

Nobutaka Magome, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 469,713, Jan. 24, 1990, abandoned, which is a continuation of Ser. No. 192,784, May 10, 1988, abandoned. This application Jun. 12, 1990, Ser. No. 536,939
Claims priority, application Japan, May 15, 1987, 62-118500
Int. Cl.[5] G01B *11/26*
U.S. Cl. 356—401 **16 Claims**



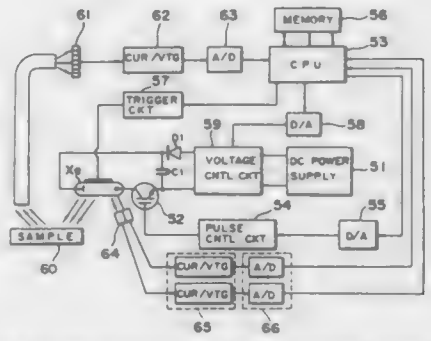
1. An alignment device for relatively aligning a mask and a substrate by arranging said mask and said substrate in substantially conjugate relation with respect to light of a first wavelength through an imaging optical system and detecting diffracted lights from a first alignment diffraction grating formed on said mask and a second alignment diffraction grating formed on said substrate, comprising:
an illumination light source for irradiating light of a second wavelength essentially different from said first wavelength to said first diffraction grating and said second diffraction grating;
a detection optical system provided between said illumination light source and said mask;
said detection optical system having an aberration along an optical axis corrected in accordance with a chromatic aberration of said imaging optical system caused by the light of said second wavelength; and
an orientation control means for controlling the orientation of the light of said second wavelength such that said first diffraction grating and said second diffraction grating are illuminated from different directions when the light of said second wavelength is directed through said detection optical system.

5,004,349

LIGHTING APPARATUS AND COLOR MEASURING APPARATUS USING THE SAME

Tsuyoshi Sato, Otta; Masahito Inaba, and Naoya Takata, both of Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 4, 1989, Ser. No. 333,318
Claims priority, application Japan, Apr. 5, 1988, 63-86173; Aug. 22, 1988, 63-207816
Int. Cl.[5] G01J *3/46*; **H05B** *37/02*
U.S. Cl. 356—402 **14 Claims**



1. Color measuring apparatus for measuring color of a sample comprising:
a light source positioned so as to illuminate the sample;
means for detecting color temperature of light coming from the light source without passing through the sample and without being reflected by the sample;
means for storing a relationship between a plurality of color temperatures and a plurality of emission time periods of the light source;
means for comparing the color temperature detected by the detecting means with a predetermined color temperature and for providing a comparison result representative thereof;
means for determining a certain time period on the basis of both the relationship stored in the storing means and the comparison result of the comparing means;
means for energizing the light source during the time period determined by the determining means;
means for detecting light from the sample illuminated by the light source; and
means for measuring a color of the sample in accordance with the light detected by the detecting means.

5,004,350

ROLLER FOR FORMING A DOUGH BALL INTO A PIZZA SHELL

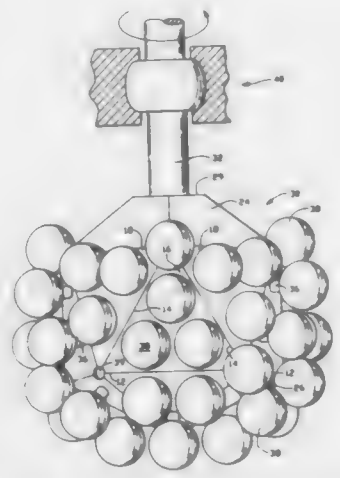
Eugene L. DeChristopher, 20 Ahlstrom Rd., Cotati, Calif. 94928

Filed Jul. 12, 1990, Ser. No. 551,316
Int. Cl.[5] B29B *1/06*
U.S. Cl. 366—69 **6 Claims**

1. A roller for kneading and shaping a dough ball into a pizza shell comprising:
a polyhedron core formed from a flat blank of a semirigid sheet material;
said core having a central, circumferential row of alternately upright and inverted isosceles triangular panels joined by score lines; and

a bottom row of inverted isosceles triangular panels with their bases coinciding with the second bases of the upright isosceles triangular panels of said central row;

first complementary fastening means on the endmost panels of said central row releaseably secured together to form a central ring;



second complementary fastening means releaseably securing the side edges of said bottom row of panels together to form a shell with said central row of panels;

at least one pedestal secured to the outer face of each of said triangular panels;

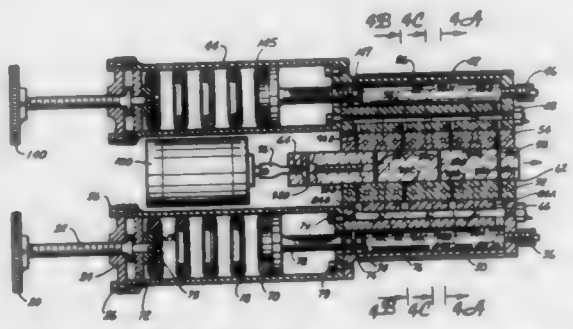
a ball carried on the top of each of said pedestals.

5,004,351

REACTION INJECTION MOLDING MACHINE

Timothy A. Salaba, Burnsville, and Debra L. Wilfong, Lake Elmo, both of Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Apr. 18, 1988, Ser. No. 182,910
Int. Cl.[5] B01F *15/04*
U.S. Cl. 366—152 16 Claims



1. An apparatus for metering and mixing at least two fluid reagents and collecting a resultant product in at least a first collection vessel, the apparatus comprising:

a plurality of reservoirs, each reservoir being adapted to contain a selected fluid reagent;

means coupled to each reservoir for pressurizing the reagent contained therein to a desired pressure;

a plurality of jet nozzles in fluid communication with each reservoir for developing streams of reagent expelled from the reservoirs;

a valving rod including a plurality of mixing heads for opening selected sets of jet nozzles to one another for mixing, the mixing heads directing streams of reagents into impinging contact and for further directing the resultant product to a selected collection vessel; and

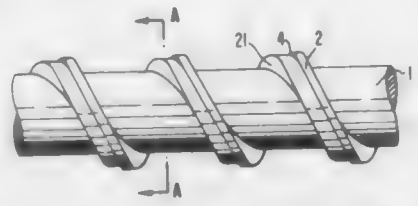
means for positioning the valving rod against each of the plurality of jet nozzles in closure positions for closing all of the jet nozzles and in opening positions to bring at least a first set of the jet nozzles into fluid communication with one another through a selected mixing head for mixing of reagents expelled through the jet nozzles.

5,004,352

PLASTICIZING SCREW

Yukio Tamura; Kiyoshi Kinoshita; Tetsuo Uwaji, and Takashi Mizuno, all of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 126,962, Nov. 30, 1987, abandoned.
This application May 23, 1989, Ser. No. 356,604
Claims priority, application Japan, May 25, 1987, 62-127322
Int. Cl.[5] B29B *1/04*; B01F *7/08*
U.S. Cl. 366—343 34 Claims



1. A plasticizing screw having means for generating lubricating pressure between a screw flight and a cylinder comprising a land formed in a crest portion of a screw flight of the plasticizing screw, the crest portion having a radially outermost peripheral portion extending continuously along the entire trailing edge of the screw flight, a helical line passing along the land lying in a cylinder having a diameter which is less than that of said radially outermost peripheral portion, the land having a width taken in a plane perpendicular to a rotation axis of the screw which is greater than one-half the overall circumferential width between leading and trailing surfaces of the crest portion of the screw flight, the land having a moderate inclination with respect to the outer diameter of the screw flight, a helical line passing along a terminal end of the land lying in a cylinder having a diameter equal to the outer diameter of the screw flight, the terminal end of the land being located between the leading and trailing surfaces of the screw flight, and the greatest depth to which said land extends in the crest portion being about 0.5 mm as measured radially inwardly from a radially outermost peripheral portion of the screw flight whereby the screw flight crest portion can be prevented from coming into contact with a cylinder wall surface upon rotation of the screw.

5,004,353

FLUID MIXING ACCESSORY

Jeffrey J. Martin, 1016 North Cavalier, Moore, Okla. 73160

Filed Nov. 15, 1989, Ser. No. 438,614
Int. Cl.[5] B01F *15/00*
U.S. Cl. 366—349 21 Claims

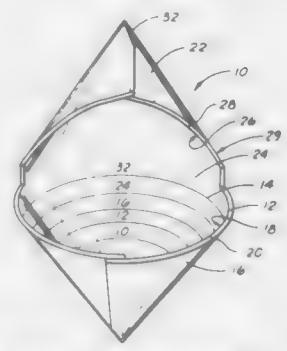
1. A fluid mixing accessory comprising:

a funnel having a mouth and a bottom;

a mixing receptacle having a mouth and a bottom;

a connecting portion between the mouth of the funnel and the mouth of the mixing receptacle; and

wherein the funnel, the mixing receptacle and connecting portion are relatively disposed so that fluid contained in the mixing receptacle can be transferred across the connecting portion to the funnel; and



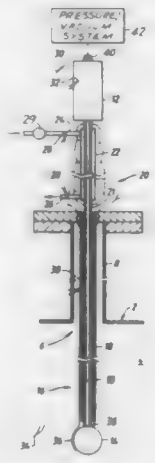
wherein the diameter of the funnel and mixing receptacle gradually diminishes from the mouth to the bottom.

5,004,354

HEAT TRANSFER MEASUREMENT

Donald B. Utton, Altrincham, and Stephen R. Windebank, Brooklands, both of England, assignors to NNC Limited, England

Filed Aug. 3, 1989, Ser. No. 389,128
Claims priority, application United Kingdom, Aug. 16, 1988, 8819442
Int. Cl.[5] G01K *17/10, 17/02*
U.S. Cl. 374—29 22 Claims



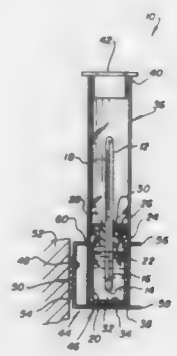
1. A method of measuring a heat transfer coefficient, comprising the steps of: exposing a surface having a temperature to an environment having a different temperature and in which heat transfer takes place between the exposed surface and the environment by at least one of condensation, convection, and radiation mechanisms, the exposed surface having a predetermined area; transporting heat transferred to the exposed surface to a location external to said environment by passage of a working fluid having a heat content along a heat pipe; measuring the heat content of the working fluid at said external location; determining a temperature difference between the temperature of the exposed surface and the temperature of the environment; and determining the heat transfer coefficient from said heat content, said temperature difference and said predetermined area.

5,004,355

TEMPERATURE MEASURING APPARATUS

Wayne L. Ryan, Omaha, Nebr., assignor to Streck Laboratories, Inc., Omaha, Nebr.

Filed Oct. 4, 1989, Ser. No. 417,045
Int. Cl.[5] G01K *5/002*
U.S. Cl. 374—194 9 Claims



6. A temperature measuring apparatus comprising:

a tubular bulb thermometer having a bulb containing an expandable fluid at one end and indicia along said thermometer adjacent the other end;

a cylindricai receptacle for said thermometer, said receptacle including an isothermal liquid bath therein in which said bulb of said thermometer is immersed and directly contacting and a seal means in a top thereof for sealing about said thermometer while leaving said indicia outside of said receptacle;

a cylindrical member which surrounds said receptacle and said thermometer, said cylindrical member including a transparent portion adjacent said indicia of said thermometer, a bottom against which said receptacle rests, and a removable liquid-tight cap;

a holder means for holding said cylindrical member adjacent a vertical wall of an environment to be measured, said holder means including (a) a U-shaped bracket having a center part which is mounted to the wall such that an upper leg of said U-shaped bracket extends horizontally from the wall and above a lower leg of said U-shaped bracket, said upper leg including an aperture therein which is spaced from said center part and through which said cylindrical member extends with said bottom of said cylindrical member resting on said lower leg, and (b) a mounting means attached to said center part for removably mounting said bracket to the wall.

5,004,356

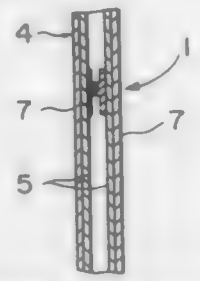
FASTENER AND WRAPPING BAG HAVING THE SAME

Kazufumi Matsui, Himeji, Japan, assignor to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed Nov. 28, 1989, Ser. No. 443,000
Claims priority, application Japan, Nov. 29, 1988, 63-303391
Int. Cl.[5] B65D *33/24*
U.S. Cl. 383—63 14 Claims

6. A wrapping bag having a bag body, and a fastener comprising a pair of fastener elements which are engagable with each other and which have respective portions thereof welded to said bag body, at least said portions of said fastener elements

which are welded to said bag body being mainly made of ethylene vinyl acetate copolymer resin containing 1 to 9% vinyl acetate by weight and having a melt index of 0.5 to 6.0 g/10 minutes, and said bag body being formed into a bag shape.



5,004,357

BEARING PART FOR A GAS BEARING

Hooykaas, Carel W. J., Rotterdam, Netherlands, assignor to Pelt & Hooykas B.V., Rotterdam, Netherlands

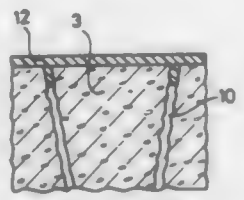
Continuation of Ser. No. 189,237, May 2, 1988, abandoned, which is a division of Ser. No. 908,370, Sep. 19, 1986, Pat. No. 4,741,629. This application Aug. 10, 1989, Ser. No. 393,090

Claims priority, application Netherlands, Sep. 27, 1985, 8502650

The portion of the term of this patent subsequent to May 3, 2006, has been disclaimed.

Int. Cl.[5] F16C *32/06*

U.S. Cl. 384—121 **5 Claims**



1. A gas bearing part (2) for a gas bearing (1) for supporting another bearing part (3) said bearing parts being movable with respect to each other, when a gas gap is maintained between the bearing part (2) and said another bearing part (3), wherein said bearing part (2) is non-sintered and comprises a granite-like substance or a metal having gas leakage channels (10) in the surface of its working face, which gas leakage channels (10) are sealed by a film of a non-brittle lubricant-free gas leakage channels sealing polymer (9, 12).

5,004,358

DEVICE ENABLING THE REVOLUTIONARY SPEED TO BE MEASURED BETWEEN TWO PARTS IN RELATIVE ROTATION SUCH AS THE SUPPORTS OF A VEHICLE WHEEL

Angelo Varvello; Angelo Vignotto, and Roberto Moretti, all of Turin, Italy, assignors to RIV-SKF Officine di Villar Perosa S.p.A., Turin, Italy

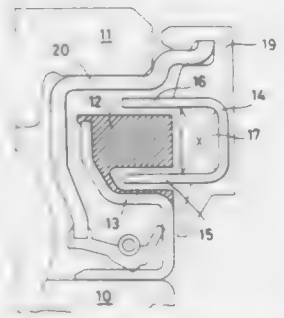
Filed Apr. 9, 1990, Ser. No. 506,112

Claims priority, application Italy, Dec. 15, 1989, 68093 A/89

Int. Cl.[5] F16C *19/00*

U.S. Cl. 384—446 **7 Claims**

1. Device enabling the speed to be measured between two parts in relative rotation such as the supports of a vehicle wheel and in particular between rings of a rolling bearing for the support of a vehicle wheel, characterized by the fact that first shield integral with a rotating ring of the bearing carries a magnetized ring with pairs of alternate poles, which is placed in front of, in operation, a passive sensor borne by a second shield attached to the fixed ring of the bearing; the sensor being inductive with n pole pieces in a number proportional to the pairs of alternate poles of the magnetized ring; the configurations of shields and sensor being such that the elements measuring the relative speed are integral with the shields and protected outwards.



5,004,359

ROLLER BEARING

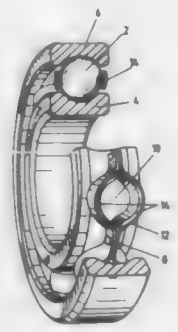
Bo O. Jacobson, Zeist, Netherlands, assignor to SKF Industrial Trading and Development Co. B.V., Nieuwegein, Netherlands

Continuation of Ser. No. 355,972, May 23, 1989, abandoned. This application Jul. 27, 1990, Ser. No. 560,283

Claims priority, application Netherlands, May 31, 1988, 8801389

Int. Cl.[5] F16C *33/44*

U.S. Cl. 384—526 **6 Claims**



1. Roller bearing equipped with rollers held between an inner and an outer race of the bearing and kept separate from one another by a bearing cage which is formed by an annular component consisting of one or more parts in which, along the circumference and at equal distances from one another, partially or fully enclosed openings have been formed in which each contain a rolling bearing, characterized in that the walls of the openings are coated entirely or partially with a rubber coating and that the size of the rubber-coated openings is smaller than the size of the rollers to such a degree that the rubber coating around the mounted rollers is elastically deformed.

5,004,360

CARRIAGE DEVICE FOR AN ELECTRONIC TYPEWERITER USING A TWO-ROW DAISY WHEEL

Chang S. Ahn, Kyungki, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed May 31, 1989, Ser. No. 359,840

Claims priority, application Rep. of Korea, May 31, 1988, 6630/1988

Int. Cl.[5] B41J *1/24*

U.S. Cl. 400—144.2 **9 Claims**

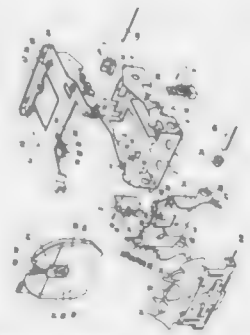
1. A carriage device for an electronic typewriter comprising:

a slant bracket rotatably mounted on a forward end of a main frame around a rail for pushing and rotating a knob;

a toggle spring having one end connected to one side wall plate of said main frame and the other end thereof connected to one side wall plate of said slant bracket, said toggle spring resiliently supporting the slant bracket in forward and rearward position;

an eccentric stopper and a stop member mounted on the side wall plate of the main frame, respectively, for restricting the forward and rearward rotation of said slant bracket;

a print wheel loading means including a pair of supporting members formed at both lower ends of said slant bracket and structured in a manner such that when a print wheel case is inserted at the position where the slant bracket is retracted, the upper end thereof is supported by the supporting member of the slant bracket so that a print wheel shaft is smoothly entered into a central hole of a hub of a print wheel;



a hammering means including a solenoid fixed to a hammer guide of the slant bracket so that an operational rod hits a hammer lever, whereby a spoke of the print wheel is hit by the hammer lever so as to be typed;

a print wheel elevation and rotation member for moving upward and downward and rotating the print wheel to a typing position;

a print ribbon carrying member for carrying a print ribbon;

a correction tape up/down and carrying member for moving upward and downward and carrying a correction tape;

a first drive motor for driving the print ribbon carrying member and correction tape up/down and carrying member; and

a sensing means interconnected with a cam gear for detecting the carrying condition of the correction tape and print ribbon by sensing the rotation of the cam gear.

5,004,361

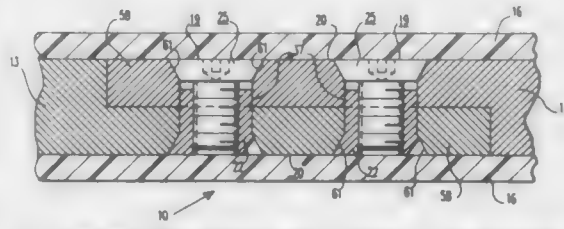
FASTENER FOR USE AT CRYOGENIC TEMPERATURES, AND TOOL THEREFOR

Philip D. Winnie, N. Huntingdon, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 7, 1989, Ser. No. 404,137

Int. Cl.[5] F16B *35/00, 23/00*

U.S. Cl. 411—366 **16 Claims**



1. A fastener for securing two members and operable at cryogenic temperatures, said two members having a predetermined combined thickness with axially aligned holes therethrough for receiving said fastener which comprises:

a generally cylindrical nut having a neck portion with an internally threaded bore therethrough, and a first substantially flat head portion axially adjacent one end of the neck portion;

a generally cylindrical bolt having an externally threaded body portion adapted to engage the internally threaded bore of the nut, and a second substantially flat head portion axially adjacent one end of the body portion, the nut and bolt cooperating in such a manner that said respective head portions are disposed at opposite ends of an assembled fastener; and

wherein each of said head portions of said nut and bolt have outer circumferential surfaces which are inwardly tapered toward said neck and body portions, respectively, and said holes of said two members each have a corresponding and oppositely tapered portion adjacent one surface for respectively receiving said tapered head portions of said nut and bolt, the length of a fully assembled fastener being not greater than the combined thickness of said two members, and the fastener being made of a material having a predetermined coefficient of thermal expansion such that said assembled fastener maintains a predetermined contact pressure between said two members and said flat head portions of said nut and bolt remain flush with said respective surfaces of each of said two members as said two fastened members are cooled to cryogenic temperatures whereby frictional heating of said two members is prevented.

5,004,362

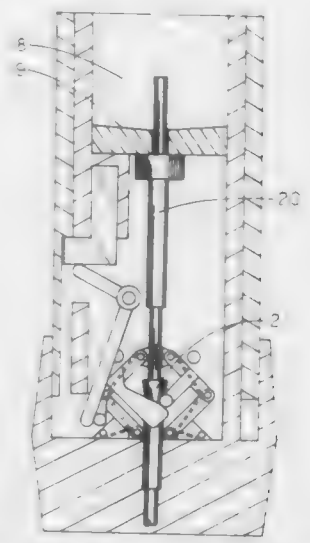
MECHANICAL PENCIL

Leon Robert Palmer, 81 Pennsylvania Ave., Somerset, Mass. 02726

Filed May 29, 1990, Ser. No. 529,584

Int. Cl.[5] B43K *21/22*

U.S. Cl. 401—53 **7 Claims**



1. A mechanical pencil provided with a lead-advancing device comprising of a plurality of separate and equally opposing spring clip mechanisms pivotally fastened for extendability and bearing against the lead with pivotally attached lead grippers for advancing and retaining said lead in place firmly during the writing process; one of said spring clip mechanisms serving as a leader and provided with a mechanical means to cause the remaining mechanisms to serve as its follower and perform a mirror-image of its motions as the said leader and follower spring clip mechanisms are caused simultaneously to pivotally lift away from bearing on exactly opposite sides of lead, pivotally move to their extended-most position for regrasping the lead at the higher position and advance the lead as the spring-loaded set of mechanisms contract to their rest position; the extension motion of the leader and follower

spring clip mechanisms being caused by a pivotally fastened driver-lever whose shorter arm is forced downward by sliding contact against the bottom flat surface of a slider which serves as an extension of the bearing surface in the recessed section in the inside wall of the external longitudinally slidable sleeve; the longer arm of said driver-lever bearing with sliding contact on the cylindrical projection of the tail section of the leader spring clip for causing the lead advancing mechanisms to simultaneously lift away from the lead, extend and regrasp the lead then contract and thereby advance the lead to a suitable writing length beyond the pencil tip with a single pressing of the writing tip against a writing surface without interrupting the writing process and thereby eliminating the need for the writing hand to change position in order to reach to and depress the opposite end of pencil to advance the lead.

5,004,363

APPLICATOR DEVICE FOR COSMETIC USES

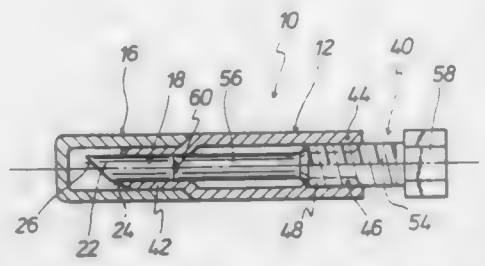
Gerhard Hüttner, Geroldsgrün; Peter Krückel, Heroldsberg, and Gerhard Möck, Kirchehrenbach, all of Fed. Rep. of Germany, assignors to Schwan-Stabilo Schwanhausser GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Mar. 12, 1990, Ser. No. 491,861

Claims priority, application Fed. Rep. of Germany, May 23, 1989, 3916670

Int. Cl.[5] A45D *40/04*

U.S. Cl. 401—75 **5 Claims**



1. An applicator device for cosmetic uses comprising: an elongate plastic casing having a front end and a rear end and including a tubular element of an axial lengthwise extent substantially of between 20 and 60 mm and an outside diameter substantially of between 3 and 8 mm; a pasty stick of cosmetic material, of an axial lengthwise dimension substantially of between 5 and 20 mm and a diameter substantially of between 2 and 5 mm, the stick being disposed in the tubular element of the casing at the front end thereof and providing an application portion adapted to project out of the front end of the casing; a plastic feed spindle having a forward end which bears against the end of the stick which is inward of the casing and a rearward larger diameter end which projects out of the casing, the spindle comprising an external screwthread means at a spacing from said forward end of said spindle towards said rearward end thereof; means guiding the spindle in the front end portion of the casing; the casing in a rear end portion therof internally comprising an integrally formed holding portion having a threaded portion engaged with said external screwthread means on said spindle; an actuating member on the rearward end portion of the spindle which projects out of said tubular element; and a closure cap adapted to fit on to the front end of the casing wherein the spindle with its external screwthread means comprises a harder plastic material than the tubular element with its holding portion.

5,004,364

DEVICE FOR ADVANCING AND RETRACTING WRITING ELEMENT IN WRITING INSTRUMENT

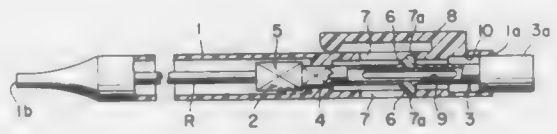
Yoshihiro Tomura, Oomiya; Keiji Maruhashi, Isesaki, and Nobuyuki Ozawa, Ootn, all of Japan, assignors to Kabushiki Kaisha Pilot, Tokyo, Japan

Filed Apr. 17, 1990, Ser. No. 510,080

Claims priority, application Japan, Jul. 7, 1989, 1-79599

Int. Cl.[5] B43K *24/08*

U.S. Cl. 401—110 **4 Claims**



1. In a device for advancing and retracting a writing element in a writing instrument, comprising a cylinder having a front opening through which the writing element advances and retracts and a rear opening, a knocking rod disposed in the cylinder and having a front end and a rear end exposed from the rear opening of the cylinder for knocking operation, said front end being formed as a cam portion, stationary cam means provided on an inner surface of the cylinder and having front sloping cam surfaces and guide grooves, said front sloping cam surfaces and guide grooves being arranged alternately in the circumferential direction of said inner surface of the cylinder in such a manner that the guide grooves extend from the cam surfaces axially of the cylinder toward said rear opening, and a rotary cam follower provided in the cylinder and engaging said guide grooves for guided movement axially of the cylinder, said writing element being resiliently urged rearwardly of the cylinder against said cam follower, said rotary cam follower being disposed in front of said knocking rod so as to be acted upon by said cam portion when the knocking rod is pushed, said cam portion being shaped to impart a rotary force to the rotary cam follower while acting on the cam follower whereby when the knocking rod is pushed, until the cam follower is disengaged from the guide grooves, and is then released, the rotary cam follower is rotated to abut on said front sloping cam surfaces, thereby to maintain the writing element in an advanced position, and whereby when the knocking rod is pushed and released next time, the rotary cam follower is moved off the front sloping cam surfaces and is then engaged under rotary force into the guide grooves to be moved rearward along the grooves to allow the writing element to move back to a retracted position:

the improvement comprising:

engaging projections integrally formed on the outer surface of the knocking rod so as to project radially outwardly of the rod, said projections being arranged in circumferentially spaced apart disposition, said rod having slots extending axially thereof between adjoining engaging projections thereby to make the engaging projections resiliently displaceable radially inward upon being forced radially inward; and

guide means in the form of slots provided in the cylinder to extend axially thereof and engaging said projections to guide the projections and hence the knocking rod therealong, said guide means having at a rear end thereof stop means for abutting said projections to prevent the knocking rod from slipping out of the rear opening of the cylinder.

5,004,365

DROP-WEIGHT AND TUBULAR WRITING INSTRUMENT

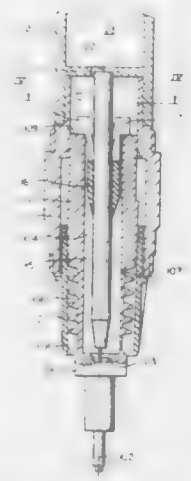
Peter Felgentreu, Hamburg, Fed. Rep. of Germany, assignor to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.

Division of Ser. No. 347,215, May 4, 1989. This application May 4, 1990, Ser. No. 519,499

Claims priority, application Fed. Rep. of Germany, May 7, 1988, 3815712; Oct. 15, 1988, 3835146

Int. Cl.[5] B43K *8/00, 15/00*

U.S. Cl. 401—258 **14 Claims**



1. A tubular writing instrument having a drop weight body (**115**) located in an inner bore chamber (**104, 111**) of a housing (**101, 110**) which is connected with a writing fluid supply chamber (**123**) and which has in its front end a cleaning wire (**116**) extending into the writing tube (**102**) and having a drop weight retainer (**121**) to limit the displacement of the drop weight body (**115**) in the direction towards the writing fluid supply chamber (**123**), characterized in that a bush element (**116**) is fixed upon the drop weight body (**115**) and clampingly held at least during assembly, said bush element further having a radially outward extending shoulder area (**117**) provided between the drop weight retainer (**121**) and an abutment area (**109**) of the housing (**101, 110**) that is located between the bush element and the writing tube (**102**).

5,004,366

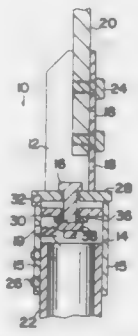
BREAK-AWAY COUPLING

George H. Simmons, 814 Weeksianding Rd., Cape May, N.J. 08204

Filed Nov. 2, 1989, Ser. No. 430,827

Int. Cl.[5] F16D *9/00*

U.S. Cl. 403—2 **26 Claims**



1. A break-away coupling for mounting an elongated member, comprising:

two opposingly fixed engagement members connectable to one another end-to-end, a first engagement member being a lower member attachable relative to the ground and a second engagement member being an upper member attachable to said elongated member;

said engagement members having facing flange plates, each flange plate having an opening aligned with an opening of the other said flange plate;

a shear bolt projecting through said openings in said flange plates and fixing said flange plates together; and,

an anti-pivot pin engaging between the opposingly fixed engagement members across a plane of abutment thereof, each of the engagement members having a contour defining a portion of a pin receptacle for receiving the anti-pivot pin at a point spaced radially from an axis defined by the shear bolt,

whereby when said elongated member is struck with force, said shear bolt breaks and said engagement members disconnect without damage.

5,004,367

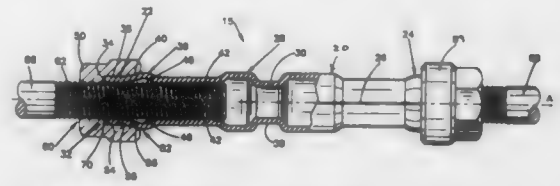
TURNBUCKLE ASSEMBLY

Ruey E. Wood, Jr., Mount Clemens, Mich., assignor to TRW Inc., Lyndhurst, Ohio

Filed Dec. 1, 1989, Ser. No. 444,563

Int. Cl.[5] F16B *7/06*

U.S. Cl. 403—46 **13 Claims**



1. A turnbuckle assembly comprising:

a sleeve having a sleeve axis and an end portion, said end portion including an open end, an outer spacing surface, and an inclined outer surface spaced axially from said open end by said outer spacing surface, said inclined outer surface extending radially outwardly with respect to said sleeve axis in an axial direction away from said open end; and

a nut having a nut axis, nut threads, an open end receivable coaxially onto said end portion of said sleeve, an inner spacing surface receivable over said outer spacing surface of said sleeve, and an inclined inner surface spaced axially from said nut threads by said inner spacing surface, said inclined inner surface extending radially with respect to said nut axis to operatively register in surface contact with said inclined outer surface of said sleeve.

5,004,368

PIVOT ARM FOR APPARATUS, PARTICULARLY MEDICAL APPARATUS

Ewald Warga, Hegel-Str. 6, D-7130 Mühlacker 3, Fed. Rep. of Germany

Filed Mar. 16, 1989, Ser. No. 324,005

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1988, 3809266

Int. Cl.[5] F16B *7/10*

U.S. Cl. 403—166 **21 Claims**

1. A pivot arm, one end of which is to be mounted on a stationary support or other such carrier or attachment of an apparatus, particularly a medical apparatus to be pivoted up and down as well as in a plane, comprising:

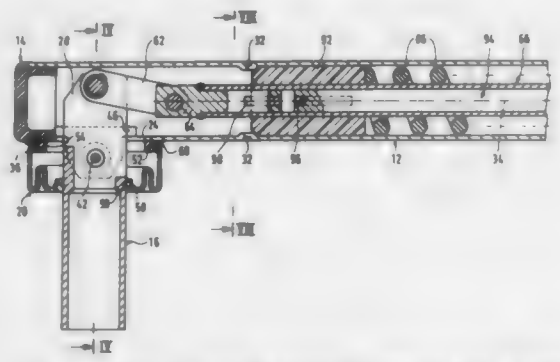
first and second mounting supports that are always parallel to one another and are connected with each other by at least one cross-member that is hinged to both supports by means of parallel pivot axles;

said cross-member forming a spring housing in which a

helical compression spring is indirectly supported against the spring housing and a connecting rod that holds a spring support which is fixed relative to the rod adjacent said second mounting support, said spring and connecting rod being coaxially arranged within said spring housing, wherein;

said connecting rod is hinged to said first mounting support by means of at least a first coupling wherein:

said cross-member forming said spring housing comprises a



single, hollow, primarily tubular member that is essentially closed on all sides and housing a second coupling between the rod end nearest the spring support and the adjacent second mounting support, whereby both couplings are always arranged parallel to each other within said spring housing; and

said tubular member includes an opening for each mounting support, each opening being located along one of said sides and directed transverse to said connecting rod, said tubular member being closed at opposite ends thereof.

5,004,369

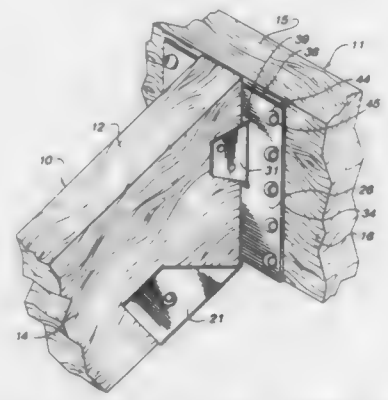
SLOPE AND SKEW HANGER

Daniel E. Young, Owatonna, Minn., assignor to United Steel Products Co., Montgomery, Minn.

Filed Jun. 23, 1989, Ser. No. 370,689

Int. Cl.[5] F16B *7/08*

U.S. Cl. 403—232.1 **10 Claims**



1. A slope and skew hanger for mounting a supported wooden member relative to a supporting wooden member in which said supported member includes top and bottom edges, a pair of spaced parallel sides joining said top and bottom edges and an end and in which said supporting member includes a front face, said hanger comprising:

a seat portion including

a seat member adapted for engagement with the bottom edges of said supported member, said seat member having a seat end and a pair of parallel seat edges extending from said first end and

a pair of seat sides integrally connected with said seat member and extending upwardly from said seat member along said pair of seat edges at substantially right angles to said seat member, each of said seat sides including a nail opening to receive a nail for connecting said seat sides to said sides of said supported member; and

a connection portion adapted for connection to a portion of said supported member and the front face of said supporting member and being integrally joined with said seat portion along a first bend line defined by said seat end, said connection portion having top and bottom outer edges, a pair of outer side edges and a closed integral opening having continuous top and bottom opening edges and a pair of opening side edges, said connection portion further including

a pair of side connection brackets adapted for connection with said front face of said supporting member, each of said side connection brackets having an outer side edge coinciding respectively with an outer side edge of said connection portion, top and bottom edges coinciding respectively with portions of said top and bottom outer edges of said connection portion, an inner edge coinciding respectively with an opening side edge and at least one nail opening to receive a nail for connecting said side connecting bracket to said front face of said supporting member,

a single piece, continuous top connection strip integrally connected with a top portion of each side connection bracket adjacent to said top edge of said connection bracket and including an outer edge coinciding with a portion of said top outer edge of said connection portion and an inner edge coinciding with said top opening edge of said internal opening,

a bottom connection strip integrally connected with a bottom portion of each side connection bracket adjacent to said bottom edge of said connection bracket and including an outer edge coinciding with said first bend line and an inner edge coinciding with said bottom opening edge of said internal opening, and

a pair of connection flanges adapted for connection to opposite sides of said supported member, each of said flanges being integrally connected with and extending outwardly from a corresponding one of said side connection brackets along a second bend line, each of said second bend lines defined by a portion of said inner edge of said corresponding one of said side connection brackets, each of said flanges further including at least one nail opening to receive a nail for connecting said flange to one of said sides of said supported member, each of said side connection brackets further being bendable relative to said top and bottom connection strips along respective third bend lines defined by said inner edge of each of said side connection brackets.

5,004,370

HOLLOW SHAFT HAVING DRIVE ELEMENTS WITH AXIALLY VARIED MATERIAL PROPERTIES BEING SECURED ON THE HOLLOW SHAFT BY EXPANSION OF THE HOLLOW SHAFT

Helmut Swars, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Emitec Gesellschaft für Emissionstechnologie mbH, Lohmar, Fed. Rep. of Germany

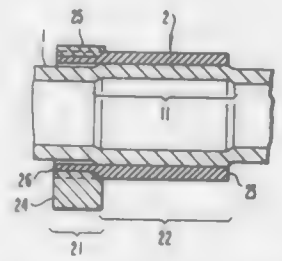
Filed May 19, 1988, Ser. No. 196,150

Claims priority, application Fed. Rep. of Germany, May 25, 1987, 3717534

Int. Cl.[5] B25G *3/28*

U.S. Cl. 403—277 **16 Claims**

1. Assembly, comprising a hollow shaft, and drive elements partly formed of brittle material and each including, as viewed in axial succession along said hollow shaft, a first region containing material of relatively low ductility, and a second rotationally symmetrical region containing material of relatively high ductility and being axially non-symmetrically connected to said first region, said hollow shaft having expanded sections



only opposite said second regions securing said drive elements on said hollow shaft.

5,004,371

OFFICE PARTITION, PANEL-TO-PANEL QUICK-LOCKING MECHANISM

Thomas V. Sorensen, Sparks, Nev., assignor to The Gunlocke Co., Avon, N.Y.

Filed Mar. 4, 1988, Ser. No. 164,187

Int. Cl.[5] F16B *9/00;* **H47G** *5/00*

U.S. Cl. 403—327 **5 Claims**

1. In a panel for use in constructing a partition wall, the improvement, comprising:

a vertical post at one end of the panel;

a tab extending from said post;

a slot within said post, said slot adapted to receive a tab from an adjoining panel;

a locking bar in juxtaposition to said slot and adapted for making securing engagement with said tab from the adjoining panel, said locking bar being biased into said securing engagement;

means connected to said locking bar for urging said locking bar from said securing engagement when manually actuated;

a spring received by said vertical post and engaging said locking bar, said spring biasing said locking bar into said securing engagement, said locking bar being slidably received within a channel in said vertical post; and

a pull ring secured to one end of said locking bar for allowing manual actuation of said locking bar against biasing of said spring.

5,004,372

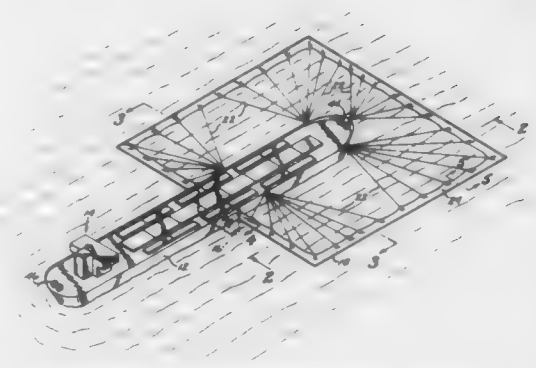
SPILL CONTAINMENT SYSTEM

Gerald M. Dickie, 2178 Lomina Ave.; Steve L. Liles, 1925 Pattix Ave., both of Long Beach, Calif. 90815, and Alan H. Woldvedt, 17274 Bellder Dr., Downey, Calif. 90242

Filed Jan. 27, 1990, Ser. No. 544,739

Int. Cl.[5] B63B *43/16*

U.S. Cl. 405—63 **7 Claims**



1. A deployable device for containing cargo leaking from a watercraft, comprising:

a sealing boot transversely positionable about the watercraft's hull and of sufficient length to extend from a point above the waterline on one side of the hull, underneath the hull to a point above the waterline on the opposite side of the hull, for sealingly engaging said hull upon deployment;

an impermeable liner, contiguously affixed to said sealing boot and dimensioned so as to be extendable substantially beyond the periphery of said watercraft; and

a buoyant boom, contiguously affixed to the periphery of said liner.

5,004,373

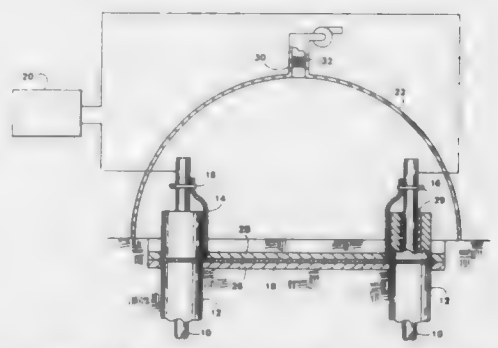
METHOD FOR INITIATING IN-SITU VITRIFICATION USING AN IMPREGNATED CORD

John G. Carter, Richland, Wash., assignor to Battelle Memorial Institute, Richland, Wash.

Filed Dec. 8, 1988, Ser. No. 282,120

Int. Cl.[5] E02D *3/11;* **G21F** *9/16*

U.S. Cl. 405—131 **13 Claims**



1. A method for initiating the in-situ vitrification of soil, comprising the following steps:

impregnating a cord composed of dielectric fibers with a conductive material in finely divided form, whereby the conductive material enters interstices among the fibers of the cord,

positioning the cord so that it is in thermally-conductive contact with the soil and connecting the cord between a pair of electrode that extend into the soil, and energizing

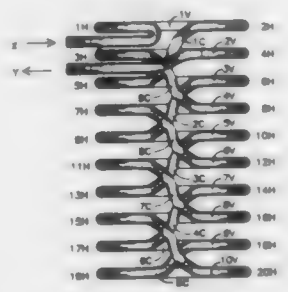
the cord with an electric current for heating the cord and starting the vitrification process.

5,004,374

METHOD OF LAYING OUT A PATHWAY FOR PIPING

Bettie Grey, 900 Ficklen Rd., Fredericksburg, Va. 22405

Filed Feb. 28, 1990, Ser. No. 486,393
Int. Cl.[5] F16L *1/00*
U.S. Cl. 405—154 9 Claims



1. A method of laying out a continuous pathway for piping, said piping for allowing a flow of a medium therethrough, comprising the steps of:

(a) laying out a pathway in a torus shape which spirals vertically and includes a plurality of interconnected vertically descending and ascending levels;

(b) providing a separate length of piping for each of a plurality of horizontal levels;

(c) numbering in sequence, beginning with number 1, a beginning port and an ending port of each separate length of piping on each horizontal level;

(d) numbering in sequence, beginning with number 1, each level of piping for each of said vertically descending and ascending levels;

(e) positioning an inlet port and an outlet port of said continuous pathway proximate each other at adjacent levels; and

(f) flowing a medium through said pathway such that a flow of said medium descends on a plurality of odd-numbered vertical levels and said flow of said medium ascends on a plurality of even-numbered vertical levels up to said outlet port, and such that said flow of said medium moves through said pathway on substantially alternating vertical levels.

5,004,375

BASEMENT PILES AND BASEMENT CONSTRUCTION METHOD ASSOCIATED THEREWITH

Yuan-Ho Lee, No. 851, Chung-San Rd., Nan-Pao Tsun, Kuei-Jen, Hsian, Tainan Hsieng, Taiwan

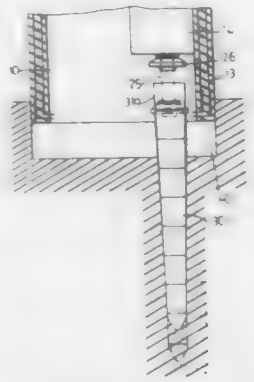
Filed Jun. 22, 1989, Ser. No. 370,254
Int. Cl.[5] F02D *5/00*
U.S. Cl. 405—230 4 Claims

1. A method of constructing a basement of a building on a construction site comprising the steps of:

pre-forming the basement construction of a building on a construction site;

providing a plurality of hydraulic devices to be associated with said pre-formed basement;

providing a plurality of piles, each being driven by one of said hydraulic devices into the construction site one by one; and



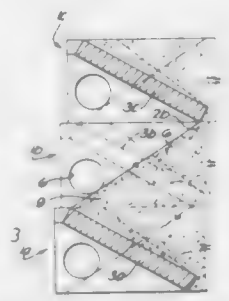
manipulating each of said hydraulic devices simultaneously to sink the pre-formed basement into the construction site.

5,004,376

FACING SYSTEM

Henri Vidal, 8 Bis, Boulevard Maillot, 92200 Neuilly-sur-Seine, France; Santiago Muelas-Medrano, Madrid, Spain, and Pierre Segrestin, St Cyr L'Ecole, France, assignors to Henri Vidal, Neuilly-sur-Seine, France

Filed May 30, 1989, Ser. No. 358,619
Claims priority, application United Kingdom, Jun. 3, 1988, 8813146
Int. Cl.[5] E02D *29/02, 17/00*
U.S. Cl. 405—284 11 Claims



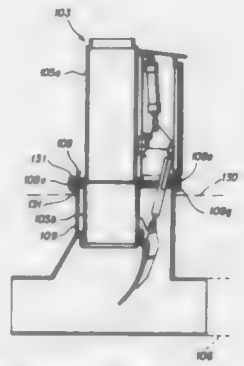
1. A facing system for a frictionally stabilized earth structure, said facing system having a front and a rear and comprising: an assembly of sloping facing panels each of which has a substantially horizontal upper edge and a lower edge situated rearward of said upper edge and substantially parallel thereto; means for supporting said facing panels to form a series of superimposed substantially horizontal tiers thereof, the sloping facing panels in said tiers being laterally spaced to define lateral spaces between adjacent facing panels, and the facing panels in said tiers being positioned vertically above corresponding lateral spaces between facing panels in the tier below, whereby earth immediately behind said facing system in contact with said facing panels forms an open sloping surface from the lower edge of each facing panel through the lateral space in the tier immediately below to the upper edge of the facing panel vertically below said lateral space, the slope of said surface being less than the angle of repose of the earth; earth retaining means provided on each side of each said facing panel for restraining lateral movement of the earth of said slope; and said panels and/or said support means being provided with means for attachment to frictional stabilizing members embedded in the earth of said structure.

5,004,377

ISOLATED INSERTION CHUTE FOR SUCTION-OPERATED GARBAGE DISPOSAL SYSTEMS

Per Naumburg, Borgmyvägen 5, Djursholm, Sweden S–182 65

PCT No. PCT/SE88/00404, § 371 Date Feb. 1, 1990, § 102(e) Date Feb. 1, 1990, PCT Pub. No. WO89/01450, PCT Pub. Date Feb. 23, 1989
PCT Filed Aug. 10, 1988, Ser. No. 460,170
Claims priority, application Sweden, Aug. 17, 1987, 8703188
Int. Cl.[5] B65G *53/46*
U.S. Cl. 406—120 22 Claims



1. Isolated insertion chutes (**103**; **203**) of the kind which at spaced intervals are connected to an underground suction conveying conduit communicating with a refuse suction system, the upper end of each chute above ground comprising a closable insertion opening and the lower end of each chute below ground being connected to the suction conveying conduit and being closable by means of a valve means (**116**) provided at said lower end and having valve operating means (**112**), characterized in that the insertion chute (**103**; **203**) consists of an upper chute portion (**103***a*; **203***a*) and a lower chute portion (**103***b*; **203***b*), in that the insertion chute comprises at least one connecting flange (**108***a*, **108***e*; **208***a*) in the transition area between the upper chute portion (**103***a*; **203***a*) and the lower chute portion (**103***b*; **203***b*), in that the lower chute portion (**103***b*; **203***b*) is received in a branching (**109**) extended from the suction conveying conduit (**106**) and at its upper end also having a connecting flange (**108***g*; **208***g*), said at least one connecting flange (**108***a*, **108***e*; **208***a*) of the insertion chute (**103**; **203**) being releasably connected to the connecting flange (**108***g*; **208***g*) of the branching (**109**), in that the branching (**109**) has such a length in relation to the depth of the suction conveying conduit (**106**) below the ground surface, that the flange joint (**108**; **208**) formed by the connecting flanges (**108***a*, **108***e*, **108***g*; **208***a*, **208***g*) is positioned above the ground surface (**130**), and in that the valve operating means (**112**) is mounted to the insertion chute (**103**; **203**), whereby the insertion chute with valve means (**116**) and valve operating means (**112**) is dismountable from the suction conveying conduit (**106**) from the ground level, for maintenance and repair work.

5,004,378

CLAMPED CUTTING TOOL

Tatsuo Arai, Kitamoto, and Katsumi Haga, Tokyo, both of Japan, assignors to Mitsubishi Metal Corporation, Tokyo, Japan

Filed May 18, 1989, Ser. No. 353,696
Claims priority, application Japan, May 19, 1988, 63-66152[U]; May 31, 1988, 63-72508[U]; Apr. 28, 1989, 1-50352[U]
Int. Cl.[5] B23C *5/22*
U.S. Cl. 407—106 11 Claims

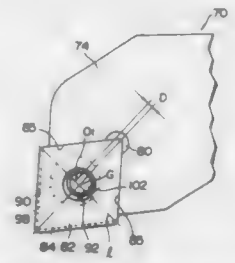
1. A clamped cutting tool comprising:

a tool-holder including a forward end portion having an insert receiving recess formed therein, said recess having a bottom wall and at least two side walls extending upwardly from said bottom wall, said bottom wall including a pin-receiving hole of a circular cross-section formed therein so as to extend downwardly;

a shim member having a bore of a circular cross-section formed therethrough, said shim member being disposed on said bottom wall of said recess in such a manner that said bore communicates with and is concentric to said pin-receiving hole of said tool-holder;

a cutting insert having an aperture with a circular cross-section formed therethrough, said insert being disposed on said shim member in such a manner that said aperture communicates with said bore of said shim member; and

a locking pin of a circular cross-section for clamping said cutting insert in said tool-holder, said locking pin having a rod portion, a head portion, and a radially outwardly protruding flange portion disposed between said rod portion and said head portion;



said locking pin being formed so that said flange portion is concentric to said rod portion while said head portion is eccentric to said flange portion, said pin being inserted through said aperture of said cutting insert and said bore of said shim member into said pin-receiving hole of said tool-holder for rotation, with said rod portion and said flange portion being received in said pin-receiving hole of said tool-holder and said bore of said shim member, respectively, so that said head portion is held in abutting engagement with said aperture of said cutting insert to press said insert against said side walls of said holder;

said shim member and said cutting insert being in a form of a figure which is bilateral about at least an axis and radially symmetric and has a center point of radial symmetry; and

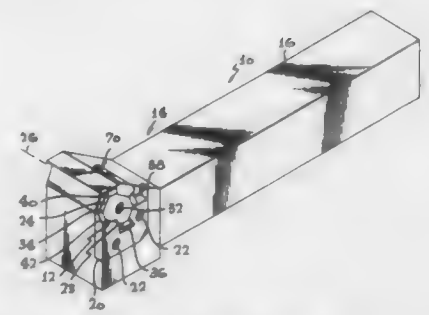
said aperture of said cutting insert being located on said center point, and said bore of said shim member being located on said axis but not being on said center point.

5,004,379

THREADING INSERT

Roger W. Little, 11015 4½ St., Santa Fe, Tex. 77510

Filed Jan. 23, 1990, Ser. No. 468,546
Int. Cl.[5] B23P *15/28*
U.S. Cl. 407—113 7 Claims



1. A threading apparatus comprising:

an insert having a mount portion with at least three straight insert locating sides lying on the sides of an imaginary regular polygon, said insert having a radially outwardly extending arm at each of the corners of said imaginary polygon, with each arm having an outer edge and a pair of opposite sides that extend in a largely radially outward

direction from the axis of said polygon, and with each arm forming a cutting edge at the intersection of the outer edge and each of the sides of the arm;

a tool holder having a recess that holds said insert, said recess having walls forming a plurality of straight holder positioning surfaces that abut said insert location sides and having a clamp that presses said insert firmly at one of said insert location sides against positioning surfaces, whereby to accurately locate said insert.

5,004,380

CUTTING INSERT

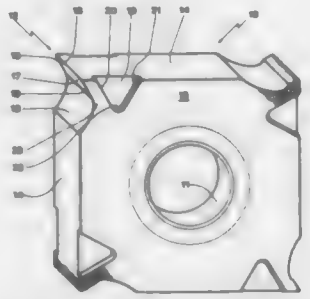
Ingemar Heeman; Karl G. Y. Post, and Lars E. Norgren, all of Sandviken, Sweden, assignors to Santrade Limited, Lucerne, Switzerland

Continuation of Ser. No. 565,215, Dec. 23, 1983, abandoned. This application Jul. 10, 1987, Ser. No. 71,918

Claims priority, application Sweden, Dec. 27, 1982, 8207421

Int. Cl.[5] B23B *27/00*

U.S. Cl. 407—114 **7 Claims**



1. A replaceable slot-cutting milling insert for a rotary slot milling tool, said insert having the configuration of a parallelepiped with two parallel side surfaces and four end surfaces extending therebetween to define four corners, and wherein each said corner comprises a major cutting edge provided at the juncture between two adjacent end surfaces and perpendicular to the side surfaces, two minor cutting edges defined by the lines of juncture between said side surfaces and one end surface, each of said minor cutting edges being perpendicular to an adjacent major cutting edge, and a concave chip receiving surface in the end surface adjacent each of said cutting edges, said side surfaces having a direction of wear, and means for reducing wear in the side surfaces at each corner comprising recess means in the side surfaces located behind each of said minor cutting edges in the direction of wear and a narrow flange separating each recess from its associated minor cutting edge.

5,004,381

DRILLING MACHINE FOR PLANAR FACE AND/OR END FACE DRILLING ON PANEL-TYPE WORKPIECES OR PANEL BLANKS

Erwin Jenkner, Linden Strasse 13, D-7261 Gechingen, Fed. Rep. of Germany

Filed Mar. 16, 1988, Ser. No. 168,649

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1987, 8704263[U]

Int. Cl.[5] B23B *39/16*

U.S. Cl. 408—31 **5 Claims**

1. A drilling machine for planar face or end face drilling on panel-type workpieces or panel blanks, said drilling machine comprising:

a workpiece supporting table having a supporting surface thereon;

a workpiece advancing device operably associated with said workpiece supporting table;

said workpiece advancing device further having a front end;

a workpiece slider operably associated with said workpiece advancing device and advanceable along a direction of advance;

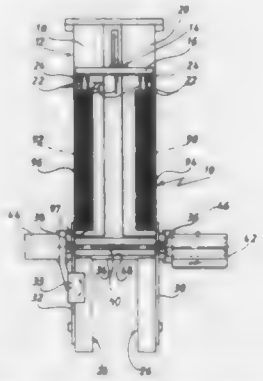
a drilling device, having an operating side, positioned at a front end of said workpiece advancing device;

said drilling device further being displaceable and immobilizable along a direction of displacement transverse to said direction of advance and parallel to said supporting surface of said workpiece supporting table;

said drilling device being further operably positioned transversely to said direction of advance of said workpiece slider;

means for displacing said drilling device along said direction of displacement transversely to said direction of advance and parallel to said supporting surface;

said drilling device having one or more drilling units operably associated with said drilling device for planar face drilling, and one or more drilling units operably associated with said drilling device for end face drilling;



said one or more drilling units for end face drilling having associated therewith at least one drill spindle for end face drilling in said direction of advance of said workpiece slider, which is adjustable in a direction perpendicular to said workpiece supporting surface;

two workpiece aligning tables operably associated with said drilling device and positioned proximate to said operating side of said drilling device, in spaced, parallel relation to each other, opposite said workpiece advancing device, each said workpiece aligning table having a plurality of sides so as to enable substantially continuous operation of said drilling device upon workpieces positioned on said two workpiece aligning tables, in alternating fashion;

at least one housing side stop operably associated with each of said workpiece aligning tables at a side thereof; and

a clamping device operably associated with said workpiece supporting table for fixing workpieces or panel blanks thereon.

5,004,382

MIST-SPOUTING TYPE DRILLING DEVICE

Yousuke Yoshino, Kawagoe, Japan, assignor to Yoshino Seiki Inc., Kawagoe, Japan

Continuation of Ser. No. 318,136, Mar. 2, 1989, abandoned. This application Mar. 7, 1990, Ser. No. 492,306

Claims priority, application Japan, Mar. 3, 1988, 63-50423; Apr. 2, 1988, 63-44829[U]; Apr. 2, 1988, 63-44830[U]; Dec. 5, 1988, 63-158388[U]; Dec. 6, 1988, 63-158637[U]

Int. Cl.[5] B23B *51/06*

U.S. Cl. 408—60 **6 Claims**

1. A portable drilling device comprising:

(a) a rotary drill having:

(i) a cutting bit at its distal end;

(ii) a mist flow passage extending its axial length;

(iii) at least one aperture in its distal end for the ejection of mist, said at least one aperture being in communication with said mist flow passage; and

(iv) an aperture at its proximal end for the introduction of mist into said mist flow passage, said aperture being in fluid communication with said mist flow passage;

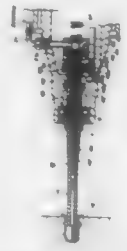
(b) a drill driving means having:

(i) first means for detachably gripping said rotary drill;

(ii) second means for rotating said rotary drill;

(iii) a mist chamber in fluid communication with said aperture in the proximal end of said rotary drill when said rotary drill is gripped by said first means; and

(iv) a mist supplying hole leading from the exterior of said drill driving means to said mist chamber;



(c) third means for atomizing water to create mist, said third means being;

(i) in fluid communication with said mist supplying hole and

(ii) integrally mounted on said drill driving means;

(d) a throat nozzle received in said mist flow passage; and

(e) an elastic sleeve disposed between said throat nozzle and said mist flow passage in tightly contacting engagement with each.

5,004,383

TUBE REAMING AND DEBURRING DEVICE

Albert O. Elliott, Jr., Duffield, Va., assignor to Richard Huff and Amanda Huuf, both of Johnson City, Tenn.

Filed Dec. 27, 1989, Ser. No. 457,867

Int. Cl.[5] B23B *51/00*

U.S. Cl. 408—211 **10 Claims**

9. A tube reaming and deburring device for reaming and deburring the end of a tube, said tube end defining inner and outer edges, said device comprising:

a handle member; and

an inner edge cutting assembly for being supported on said handle including a first blade support member having a forward portion defining a conical surface and a rearward portion, and including a plurality of elongated, replaceable blade members mounted on said conical surface, each said blade member defining first and second end portions and having at least one cutting edge for engaging said inner edge of said tube end, said first blade support member being provided with a plurality of blade mounting grooves radially disposed in said conical surface for releasably receiving said blade members, said forward portion of said first blade support member being provided with a first coaxial threaded receptor for receiving a screw, said screw having a head portion for engaging said first end portions of said blade members as said screw is seated in said threaded recess thereby releasably holding said blade members in said grooves.

5,004,384

DRILL

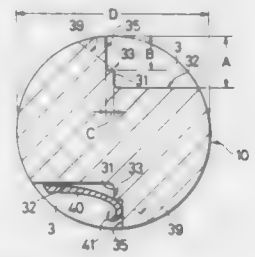
Toshiaki Hosoi, 9-10, Kaminminami 5-chome, Hirano-ku, Osaka-shi, Osaka-fu, Japan

Filed Mar. 6, 1989, Ser. No. 319,582

Claims priority, application Japan, Mar. 11, 1988, 63-58974; Apr. 12, 1988, 63-89568

Int. Cl.[5] B23B *51/02*

U.S. Cl. 408—230 **5 Claims**



1. A drill comprising:

a shank formed with flutes for discharging chips therethrough;

a pair of cutting edges formed at one end of said shank, said cutting edges including an inner edge portion extending from the center of rotation of the drill to an intermediate point and an outer edge portion extending from said intermediate point to the periphery of the drill, said inner edge portion and said outer edge portion being continuous;

said flutes being approximately L-shaped in cross section and being defined by a forward wall positioned forward with respect to the direction of rotation of the drill and a rearward wall positioned rearward with respect to the direction of rotation of the drill, said rearward wall being disposed generally at an angle of 85° to 100° relative to said forward wall such that said forward wall substantially prevents the produced chips from curling, said forward wall having an inner portion and an outer portion, said inner portion being disposed radially inwardly of said outer portion, said outer portion being positioned forwardly of said inner portion with respect to the direction of rotation of the drill, said flute having a radial depth in cross section of 0.25 to 0.40 times the diameter of the drill.

5,004,385

CHAMFERING MACHINE

Katsunobu Kishi, Tokyo, Japan, assignor to Nitto Kohki Co., Ltd., Tokyo, Japan

Filed Feb. 21, 1990, Ser. No. 482,499

Claims priority, application Japan, Feb. 27, 1989, 1-21855[U]

Int. Cl.[5] B23C *5/14*

U.S. Cl. 409—180 **7 Claims**

1. A chamfering machine comprising:

a rotary shaft having a shoulder which includes a first projecting portion, and a threaded terminal end;

a guide base oriented perpendicularly with respect to said rotary shaft;

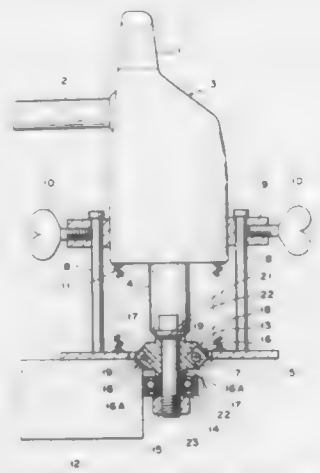
adjusting means for allowing adjustable movement between said rotary shaft and said guide base so as to achieve a selected relative positional relationship therebetween;

a cutter detachably mounted on said rotary shaft, for chamfering an edge of a workpiece;

a guide detachably mounted on said rotary shaft, for contacting a lateral face of said workpiece; and

fixing means having a lock nut defining a second projecting portion threaded onto said terminal end of said rotary shaft, for positionally fixing said guide to said rotary shaft so as to maintain a selected vertical positional relationship between said guide and said cutter, wherein

said cutter includes a holder and cutting tips fixed to said holder, said holder defining recessed portions at both ends



thereof that are engageable with respective ones of said first and second projecting portions.

5,004,386

PROTECTIVE COVER FOR RAILCAR HITCH

Kenneth D. Schmidt, and Jan D. Holt, both of St. Charles, Mo., assignors to ACF Industries, Inc., Earth City, Mo.

Filed Oct. 2, 1989, Ser. No. 415,716
Int. Cl.[5] B60P *3/073*
U.S. Cl. 410—62 **11 Claims**



1. A protective cover for a trailer hitch for use on a railcar, the hitch having a support means, a hitch head carried by the support means, a locking mechanism for latching the hitch in an upright, erect position, and a release mechanism for releasing the hitch from its erect position thereby to allow the hitch to move toward a retracted position, said cover comprising:

a cover plate overlying at least a portion of said locking mechanism and said release mechanism when the hitch is in either its erect or retracted position;

means for pivotally mounting said cover plate adjacent said support means for permitting movement of said cover plate with the support means as the hitch is erected and retracted; and,

means for maintaining said cover plate in its proper position relative to the support means as the hitch is erected and retracted.

5,004,387

ROLLOUT STOP

Tom M. Jensen, Kirkland, and Thomas H. Shorey, Mill Creek, both of Wash., assignors to The Boeing Company, Seattle, Wash.

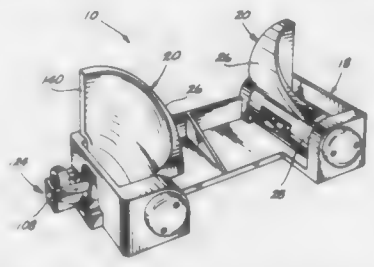
Filed Nov. 17, 1989, Ser. No. 438,604
Int. Cl.[5] B60P *1/64*
U.S. Cl. 410—69 **15 Claims**

1. A stop assembly allowing a body to pass over it in one direction but obstructing passage in the opposite direction, said stop assembly comprising:

a frame;

a stop rotatably mounted in said frame and having a vane normally extending upwardly into the path of movement of a body;

said vane having a camming surface engagable with a first side of and the bottom of the body for causing said vane to rotate out of the path of the body upon engagement therewith, said vane rotating about an axis lying substantially parallel to the direction of movement of the body;



means for rotating said vane back into the path of the body after the body has passed beyond the vane; and

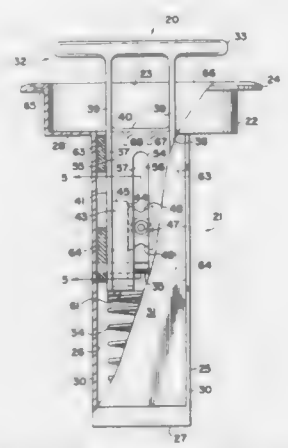
said vane having an abutment surface oriented substantially parallel to said first side of the body and engagable with the body after said vane has been rotated back to its normal upright position to prevent backward movement of the body.

5,004,388

RETRACTABLE CLEAT DEVICE

Halford S. Harris, South Pine Ave., Live Oak, Fla. 32060

Filed Dec. 5, 1988, Ser. No. 279,994
Int. Cl.[5] B63B *21/04*
U.S. Cl. 410—107 **6 Claims**



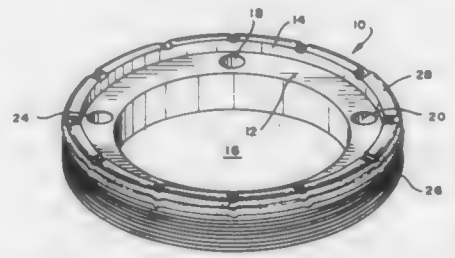
1. A retractable device for installation in a deck of a boat comprising an elongated vertical hollow unitary housing adaptable for mounting in and to a deck, said housing having a top surface adapted to be mounted flush with the deck, an elongated retractable member slidably positioned in said housing and movable vertically therein, said member having an upper surface substantially flush with said top surface of said housing in a retracted position; mounting means between said housing and said member for limiting the vertical movement of said member, selective operating means for moving said member from a first position wherein an upper end portion of said member is retracted in said housing to position said upper surface flush with said top surface and a second position wherein said member upper end portion is upraised above said top surface of said housing, said selective operating means disposed within said housing and being lockable by a downward force on said upper portion to dispose said upper surface substantially below said top surface of said housing and subsequent release to assume said first position and being thereafter releasable by another downward force on said upper end portion to dispose said upper surface substantially below said top surface and subsequent release to assume said second position, said housing having a plurality of interior surfaces, said interior surfaces being located spacedly away from said retractable member to allow movement of said member within said housing and for ease of assembly of said member through said top surface of said housing while said housing is mounted in the deck.

5,004,389

EXTERNALLY THREADED SELF-LOCKING NUT

J. William Spinger, Huron, and Eugene Schlett, Sandusky, both of Ohio, assignors to Industrial Nut Corp., Sandusky, Ohio

Continuation-in-part of Ser. No. 205,957, Jun. 13, 1988, abandoned. This application Jan. 12, 1990, Ser. No. 464,050
Int. Cl.[5] F16B *39/34*
U.S. Cl. 411—304 **6 Claims**



1. A self-locking nut for threaded engagement with an internally threaded cylindrical member, said nut including:

(a) an annular body member;

(b) the outer periphery of said annular body member being threaded for a part of the height thereof, and lying in spaced relation to one end of the body member;

(c) said one end of said annular body member being bent outwardly to provide a collar, thereby forming a peripheral groove between said threaded part of the annular body member and said collar; and

(d) an elastic ring mounted in the peripheral groove and adapted to coact with the mating threads of an internally threaded cylindrical member;

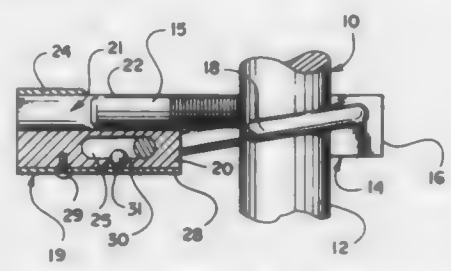
(e) said annular body member collar being crimped to form at least one indentation which engages said elastic ring to form an outwardly extending protuberance on the outer periphery of said elastic ring for creating increased frictional resistance between the outer periphery of said elastic ring and the mating threads of the internally threaded cylinder, to resist relative movement between the nut and the cylindrical member.

5,004,390

LOCK FOR RETAINER PIN

Carlyen F. Cumble, 1169 Cole Dr., Lilburn, Ga. 30247

Filed Jan. 8, 1990, Ser. No. 462,052
Int. Cl.[5] F16B *21/02*
U.S. Cl. 411—340 **7 Claims**



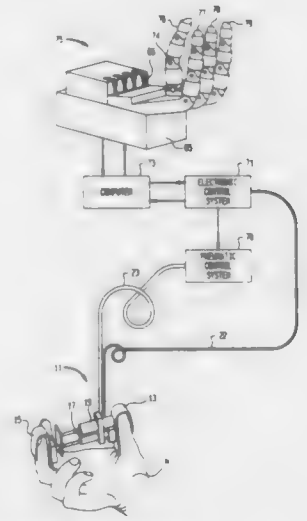
1. In a retainer pin including a pin, a head at one end of said pin, and a ring pivotally mounted on said head, said ring being pivotal between a closed position in which a portion of said ring lies against said pin and an open position in which said ring is moved away from said pin, the combination therewith of locking means for said ring, said locking means comprising means for securing said portion of said ring with respect to said pin for preventing motion of said ring away from said pin, said locking means further including a body, said body defining a slot receiving said ring therethrough, said ring being slidable within said slot for allowing said body to be selectively moved to a locking position and to an unlocking position, said locking means further including a detent extending into said slot for inhibiting sliding motion of said ring in said slot, thereby inhibiting motion of said body between said locking position and said unlocking position.

5,004,391

PORTABLE DEXTROUS FORCE FEEDBACK MASTER FOR ROBOT TELEMANIPULATION

Grigore C. Burdea, New York, N.Y., assignor to Rutgers University, New Brunswick, N.J.

Filed Aug. 21, 1989, Ser. No. 396,476
Int. Cl.[5] B25J *3/00*
U.S. Cl. 414—6 **20 Claims**



11. A robot system comprising:

a first support having means for connecting the first support to the thumb of the user's hand;

a second support spaced from said first support and having means for connecting the second support to a finger of the user's hand;

displacement means connected to and extending between said supports, wherein said displacement means includes a sensing means, responsive to linear displacements of said supports with respect to each other, for providing an electrical output signal that is a function of the linear distance between said supports and a slide means for permitting linear displacements of said supports with respect to each other whereby said displacement means can extend adjacent the palm and between the fingers of the user's hand;

a robot hand having end effectors; and

control means connected to the output signal of said sensing means by a flexible line for transmitting said output signal to said control means, and said control means connected to said robot hand for moving the end effectors a predetermined distance with respect to each other in response to the value of the output signal.

5,004,392

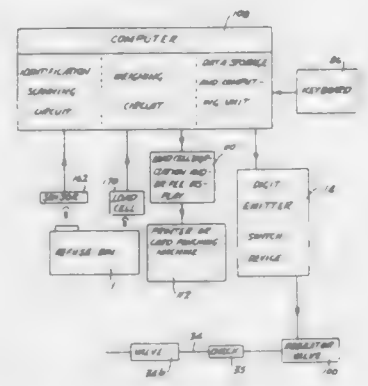
DEVICE FOR EMPTYING CONTAINERS, ESPECIALLY REFUSE BINS

Jakob Naab, Mainz, Fed. Rep. of Germany, assignor to Zöller-Kipper GmbH, Mainz-Laubenheim, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 131,025, Dec. 10, 1987, abandoned, which is a continuation of Ser. No. 788,939, Oct. 18, 1985, Pat. No. 4,722,656. This application Dec. 28, 1988, Ser. No. 291,240

Int. Cl.[5] B65F *3/04*

U.S. Cl. 414—21 2 Claims



2. A device for emptying refuse bins (1) into a collecting container (2), said device comprising in combination:

(a) a tipping frame (6) for holding a refuse bin (1), said tipping frame being movable between a first, bin-receiving position and a second, bin-emptying position,

(b) a source (33) of pressurized fluid,

(c) a fluid-actuated motor (9) for shifting said tipping frame between said first and second positions,

(d) valve means (36) connected with said source (33) of pressurized fluid and said fluid-actuated motor (9),for controlling the shifting movement of the tipping frame (6) between said first and second positions by the fluid-actuated motor (9),

(e) said valved means (36) comprising an actuating mechanism,

(f) sensing means on said tipping frame, for sensing the weight of loaded refuse bins,

(h) a regulator valve connected in series with said valved means (36), and

(i) electronic control means driven by said sensing means, for opening said regulator valve by a predetermined amount which automatically varies in accordance with the weight of said loaded refuse bins, such that the speed of the shifting of movement can be correlated to the weight of the bin being emptied.

5,004,393

AUTOLOADER MAGAZINE FOR TAPE CARTRIDGES AND METHOD THEREFOR

Harold A. Lunka, Broomfield, and Christian P. Marlowe, Nederland, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Sep. 29, 1989, Ser. No. 414,704

Int. Cl.[5] B65G *1/00*

U.S. Cl. 414—331 27 Claims

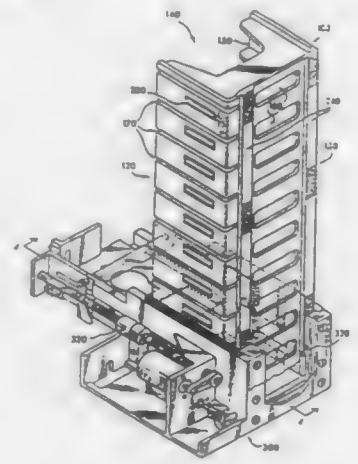
1. A magazine for holding a plurality of magnetic tape cartridges to be loaded in an autoloader, said magazine comprising a rectangular box-shaped body having an open front wall, a rear wall and two side walls,

said body comprising a plurality of vertically-spaced horizontal shelves forming cartridges receiving slots opening into said front wall for insertion of said cartridges,

said body further comprising means to retain said cartridges in said cartridge receiving slots after said insertion,

means to vertically drive said magazine in said autoloader to a selected tape cartridge,

means to release said retention means from said selected cartridge, and



means in each of said cartridge receiving slots to allow direct access from the engagement means of said autoloader to said cartridges retained in said cartridge receiving slots wherein said access means comprise a horizontal slot formed across the full length of one of said side walls in each of said cartridge receiving slots in said body.

5,004,394

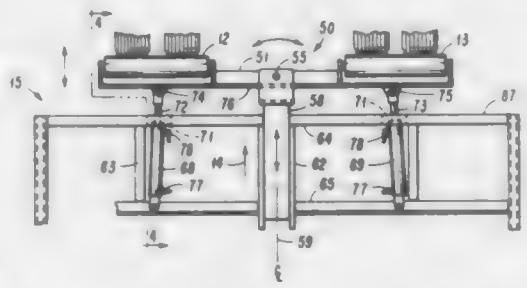
VEHICLE POSITIONING METHODS AND APPARATUS WITH IMPACT DAMPER

Jon D. Goodwin, Cedar Rapids, and Joseph E. Musil, Ely, both of Iowa, assignors to Cedarapids, Inc., Cedar Rapids, Iowa

Filed Dec. 8, 1989, Ser. No. 448,055

Int. Cl.[5] B65G *67/02*

U.S. Cl. 414—346 20 Claims



10. In road construction material receiving apparatus for receiving material from a supply vehicle, apparatus for positioning a material supply vehicle with respect to the material receiving apparatus, comprising:

a support frame mounted to the material receiving apparatus;

means for engaging the rear of tires of the material supply vehicle in rolling contact;

means, mounted to the material receiving apparatus, for supporting the tire engaging means for displacement with respect to the support frame of the material receiving apparatus; and means, interposed between the support means of the tire engaging means and the support frame of the material receiving apparatus, for resiliently receiving and storing energy in response to displacement of the tire engaging means toward the support frame of the material receiving apparatus resulting from engagement of the engaging means with rear tires of the material supply vehicle.

5,004,395

APPARATUS FOR THE EMPTYING OF A PACKAGE BAND AND AN ARRANGEMENT FOR IT

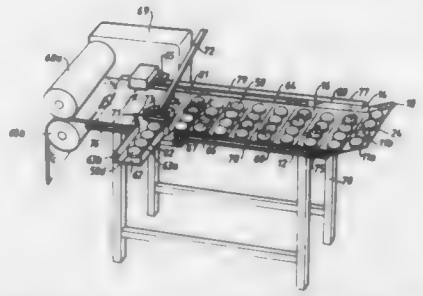
Sven-Olof Berg, Haverdal; Ingemar Broden, Halmstad, and Odvar Johansen, Partille, all of Sweden, assignors to Pronova AB, Halmstad and Aktiebolaget SKF, Goteborg, both of, Sweden

Continuation of Ser. No. 217,363, Jul. 11, 1988, Pat. No. 4,946,339. This application Mar. 27, 1990, Ser. No. 499,907

Claims priority, application Sweden, Jul. 13, 1987, 8702839

Int. Cl.[5] B65B *69/00*

U.S. Cl. 414—412 9 Claims



1. Apparatus for discharging articles from a package which has two walls of flexible material in adjoining relation, first and second sealed edge regions extending longitudinally of the package, a succession of transverse joints spaced longitudinally of the package at which the walls are joined together to form a succession of pockets longitudinally of the package and in which the articles are contained, said apparatus comprising

a support base, means for advancing the package longitudinally with one of said walls resting on said support base, the package being advanced so that successive pockets move past a work station,

means for forming an opening at one of the edges of the package before each of the pockets reaches the work station,

a discharge device at said work station for discharging articles from the pockets in the package, means for transversely moving said discharge device to expel the articles from the pockets at the work station,

means for holding the package relative to the support base to prevent transverse movement of the package while the articles are being expelled from the pockets, and

said discharge device including means for pressing said discharge device against the other of said walls as the discharge device travels transversely to move the walls closer together thereby urging the articles from the pockets through the opening formed in the package.

5,004,396

APPARATUS FOR THE FEEDING OF (PACK) BLANKS TO A PACKAGING MACHINE

Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed Jul. 31, 1989, Ser. No. 387,666

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1988, 3827915

Int. Cl.[5] B65B *43/12*

U.S. Cl. 414—417 17 Claims

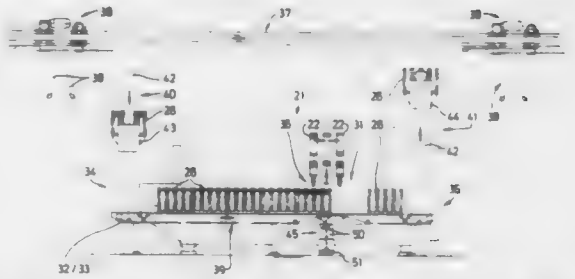
1. An apparatus for feeding pack blanks to a blank magazine of a packaging machine, especially for producing hinge-lid packs for cigarettes, comprising:

a) a plurality of transport cassettes (26) each having several chambers (29), each of said chambers (29) being capable of holding at least one blank stack (22);

b) an above ground conveyor means (37, 38) for transporting the cassettes (26) in a first step;

c) a vertical conveyor means (40) for receiving the cassettes (26) from said above ground conveyor means (37, 38) and feeding the cassettes to a delivery station (34) in a second step;

d) a cassette conveyor means (31), having the delivery station (334), an emptying station (36) and a discharge station (35), and for conveying a corresponding one of the cassettes (26) being in the delivery station (34) to the emptying station (36) and after emptying to the discharge station (35); and



e) a vertical conveyor means (41) for receiving the one cassette which is in the discharge station (335) and transporting the one cassette with an upwardly directed movement; so that

f) said above ground conveyor means (37, 38) receives the one cassette (26) which has been upwardly transported by the vertical conveyor means (41) and transports the one cassette away.

5,004,397

ATTACHMENT HOLDER FOR INTERCHANGEABLE EQUIPMENT ON THE SUPERSTRUCTURE OF A MOBILE SHOVEL EXCAVATOR

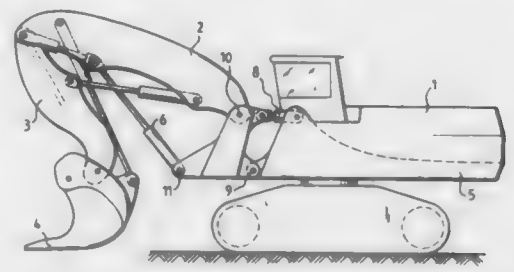
Dieter Schwappach, Dortmund, Fed. Rep. of Germany, assignor to O&K Orenstein & Koppel Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Jun. 28, 1989, Ser. No. 373,933

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1988, 3822247

Int. Cl.[5] E02F *3/36*

U.S. Cl. 414—686 6 Claims



2. An attachment holder for operating equipment on a superstructure of a mobile shovel excavator having an attachment bearing bracket with first bearings, the operating equipment comprising a boom and boom ram having respective second bearings normally connected to said first bearings of the attachment bearing bracket, comprising

an attachment holder, appliable subsequently to the excavator, coupled to the attachment bearing bracket and having, in a forward direction, means comprising pivot shafts for connecting said second bearings of the boom and the boom ram therewith, said pivot shafts being horizontally offset, and said attachment holder has means comprising connection points for connecting said attachment bearing bracket thereto, said connection points being rearwardly spaced from said pivot shafts, and

at least one adjusting cylinder connected to one of said

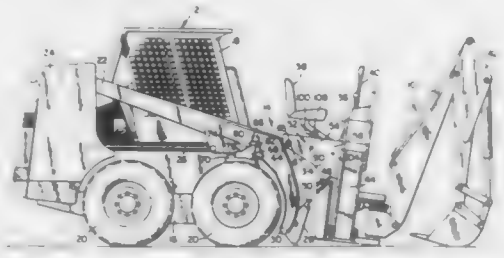
connection points and one of said first bearings movably coupling the attachment holder to the attachment bearing bracket.

5,004,398

BACKHOE MOUNTING DEVICE FOR A SKID STEER LOADER

Oryn B. Wagner, Bismarck, and Terry J. Alm, Mandan, both of N. Dak., assignors to Clark Equipment Company, South Bend, Ind.

Filed Feb. 13, 1990, Ser. No. 479,383
Int. Cl.[5] E02F 3/28
U.S. Cl. 414—723 30 Claims



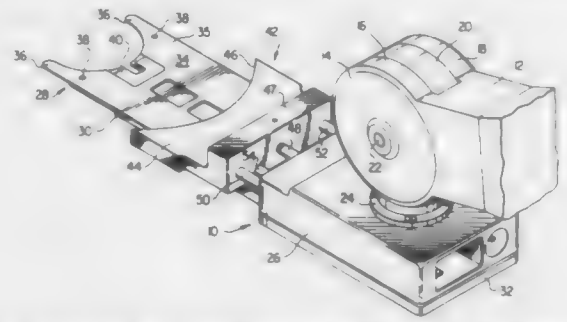
1. A mounting device for attaching an implement to a pair of spaced actuating arms on an off road vehicle, comprising:
- a carrier frame mounted to the implement;
- a mounting frame secured to the arms for engaging the carrier frame;
- a lug assembly secured to the implement;
- a hook assembly secured to the vehicle for releasibly receiving the lug assembly; and
- an over center locking assembly movably mounted on the implement for releasibly locking the lug assembly to the hook assembly.

5,004,399

ROBOT SLICE ALIGNING END EFFECTOR

Harold W. Sullivan, Dallas, and Pat M. McConnell, Lucas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 93,327, Sep. 4, 1987, abandoned. This application Jul. 11, 1989, Ser. No. 378,496
Int. Cl.[5] B25J 11/00
U.S. Cl. 414—729 34 Claims



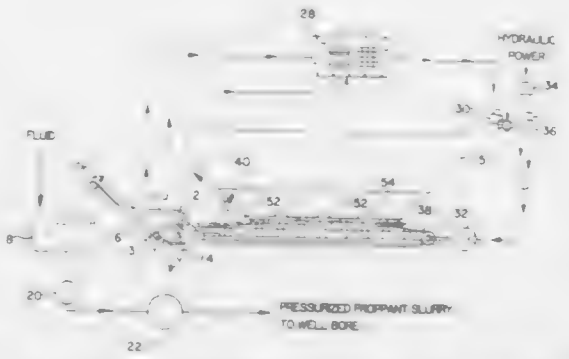
1. Apparatus for positioning a semiconductor slice relative to a slice carrier, comprising:
- a horizontal platform for supporting a semiconductor slice thereon;
- means for tilting said platform away from the horizontal, thereby to cause sliding of said slice on said platform; and
- an indexer disposed laterally adjacent said platform, and positioned to receive at least one side of said slice thereagainst, such that said slice is positioned on said platform in a predetermined location.

5,004,400

AUTOMATIC RATE MATCHING SYSTEM

Wayne A. Handke, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Apr. 13, 1989, Ser. No. 337,501
Int. Cl.[5] B65G 65/32
U.S. Cl. 414—786 9 Claims



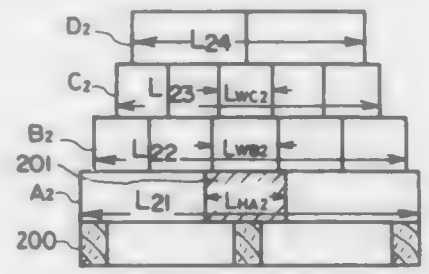
1. A method of controlling the delivery of bulk material into a vessel from which delivered bulk material moves, comprising steps of:
- (a) generating a control signal for controlling the speed of a means for delivering bulk material to the vessel at an adjustable rate between a minimum rate and a maximum rate;
- (b) designating a direction of change in the level of bulk material in the vessel;
- (c) generating, in response to the level of bulk material in the vessel, output signals from a plurality of sensors disposed in the vessel;
- (d) determining, in response to the output signals, the highest sensor detecting the presence of bulk material in the vessel; and
- (e) controlling the control signal in response to the highest sensor determined to be detecting the presence of bulk material in the vessel, including:
  - (i) in response to said highest sensor being above a mid-range of the sensors, changing the control signal so that the speed of the means for delivering is decreased a predetermined amount;
  - (ii) in response to said highest sensor being within an upper region of the mid-range of the sensors, changing the control signal to a calculated average control signal in response to a designated increasing level of bulk material in the vessel and maintaining the control signal as is in response to a designated decreasing level of bulk material in the vessel;
  - (iii) in response to said highest sensor being within a lower region of the mid-range of the sensors, changing the control signal to a calculated average control signal in response to a designated decreasing level of bulk material in the vessel and maintaining the control signal as is in response to a designated increasing level of bulk material in the vessel; and
  - (iv) in response to said highest sensor being below the mid-range of the sensors, changing the control signal so that the speed of the means for delivering is increased a predetermined amount.

5,004,401

LAYER PALLETIZING METHOD

Akira Tsubone; Masanori Tomiyoshi; Junichi Yokomizo, all of Fukuoka; Nobuhiro Tanaka, Saitama; Hideyuki Moriguchi, Saitama, and Eiji Hirata, Saitama, all of Japan, assignors to Kao Corporation, Tokyo and Seibu Electric and Machinery Co., Ltd., Kasuya, both of, Japan

Continuation of Ser. No. 919,011, Oct. 15, 1986, abandoned. This application Feb. 27, 1989, Ser. No. 316,521
Claims priority, application Japan, Oct. 15, 1985, 60-230273; Mar. 13, 1986, 61-56569; Mar. 24, 1986, 61-65520; Mar. 26, 1986, 61-65823
Int. Cl.[5] B65G 57/26
U.S. Cl. 414—786 2 Claims



1. A method for palletizing goods of different types in a load with units of layers which is characterized in that a unit load is formed based on the dimensional relation among layer area dimensions of said goods, dimensions of void spaces which are not occupied with said goods and dimensions of said goods and comprising the steps of:
- (a) first on a bottom layer having a selected area dimension, establishing a first layer of goods corresponding to said selected area dimension,
- (b) establishing subsequent layers vertically above the bottom layer of goods, layers of goods being piled in the unit of layers by holding at opposed pairs of sides, front-back and left-right, a layer of goods in the unit load with pressure by two pairs of palletizers, holding one opposed pair of sides, then releasing such pressure, holding the other opposed pair of sides, and then again holding at both opposed pairs of sides with pressure,
- (c) exchanging a vertically upper layer of goods with an immediately subjacent layer when an item of goods of said immediately subjacent layer falls into a void occurring in a layer immediately under said subjacent layer, and
- (d) where an unbalanced condition would result from the arrangement of step (c), removing and rearranging the layer having the void instead of exchanging the two layers that would have been placed immediately above said layer having the void.

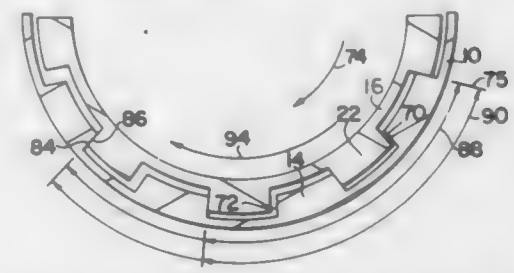
5,004,402

AXIAL COMPRESSOR STATOR CONSTRUCTION

Herbert L. Burchette, West Palm Beach; Lee E. Hansen, Lake Park; James C. West, West Palm Beach, all of Fla., and Glen A. Nawrocki, Phoenix, Ariz., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 5, 1989, Ser. No. 402,744
Int. Cl.[5] F28F 7/00; F01D 9/00
U.S. Cl. 415—137 10 Claims

1. A stator construction for an axially split casing compressor comprising:
- an axially tapered semicircular casing section of low alpha material having, a circumferentially running axially extending upstream facing casing slot, a plurality of circumferentially spaced inwardly radially extending casing stop lugs;
- a partial circular shroud ring of a second higher alpha material in which a plurality of stator vanes are positioned, and a circumferentially running axially extending shroud tongue slideably fit within said casing slot for circumferentially guiding movement of said shroud ring relative to said casing during thermal expansion, and a plurality of circumferentially spaced outwardly radially extending shroud stop lugs, splined with said casing stop lugs;
- said casing stop lugs and said shroud stop lugs having mutually abuttable surfaces, the distance between abuttable surfaces of said casing lugs being greater than the distance between abuttable surfaces of said shroud lugs at room



temperature, and with only one shroud stop lug of said partial circular shroud ring in contact with a casing stop lug as installed at room temperature; and
- the distance between said abuttable surfaces of said casing lugs being substantially equal to the distance between abuttable surfaces of said shroud lugs at a preselected operating temperature, and substantially all shroud stop lugs in contact with a casing stop lug when said shroud expands and is circumferentially guided.

5,004,403

PRESSURE RESPONSIVE DRIVERS FOR RECIPROCATING PUMP AND METHOD

Samuel W. Culbertson, Arvada, and Keith G. Williams, Longmont, both of Colo., assignors to Binks Manufacturing Company, Franklin Park, Ill.

Continuation-in-part of Ser. No. 162,481, Mar. 1, 1988, abandoned. This application Jul. 27, 1989, Ser. No. 386,456
Int. Cl.[5] F04B 9/06
U.S. Cl. 417—53 14 Claims



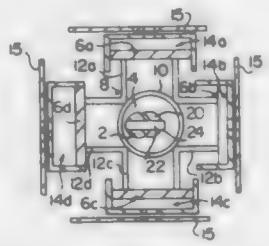
1. A pressure responsive driver for coupling a reciprocating output from a motor means to a reciprocable piston of a pump having a fluid inlet and a fluid outlet, wherein the pressure of fluid at the pump outlet is in accordance with the magnitude of reciprocation forces exerted on the piston, said pressure responsive driver comprising reciprocable input means adapted for connection to the motor means output for being reciprocated thereby; reciprocable output means adapted for connection to the pump piston to reciprocate the piston; and means for coupling said input means to said output means, said coupling means including a single spring for transferring reciprocation forces exerted on said input means by the motor means output from said input means to said output means in both directions of reciprocation and being responsive to the magnitude of transferred reciprocation forces to limit transferred reciprocation forces to a predetermined magnitude while said input means is reciprocated by the motor means output, whereby reciprocation forces exerted on the pump piston are limited to said predetermined magnitude to limit the pressure of fluid at the pump outlet to a selected maximum pressure.

5,004,404

VARIABLE POSITIVE FLUID DISPLACEMENT APPARATUS WITH MOVABLE CHAMBERS

Michel Pierrat, 2355 24th St., Boulder, Colo. 80302

Continuation-in-part of Ser. No. 238,093, Aug. 29, 1988, Pat. No. 4,907,950. This application Feb. 3, 1989, Ser. No. 305,810
The portion of the term of this patent subsequent to Mar. 13, 2007, has been disclaimed.
Int. Cl.[5] F04B *1/10*
U.S. Cl. 917—53 **11 Claims**



10. The method of positively displacing a fluid comprising the steps of

drawing said fluid into first and second displacement chambers having first and second pistons, respectively, slidably mounted therein,

moving each of said pistons along an orbital path and thereby modifying the volume of said chambers, said first and second pistons being positioned in a common cross-sectional plane,

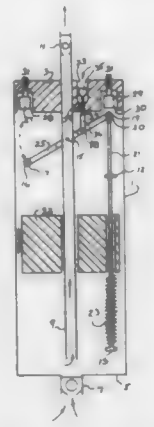
and restricting each of said chambers from movement in a direction parallel with the sliding movement of said piston in said chamber while permitting movement of each of said chambers in another direction.

5,004,405

PNEUMATICALLY POWERED SUBMERSIBLE FLUIDS PUMP WITH INTEGRATED CONTROLS

Michael K. Breslin, 1615 Vendola Dr., San Rafael, Calif. 94903

Filed Aug. 2, 1989, Ser. No. 388,688
Int. Cl.[5] F04F *1/06*
U.S. Cl. 417—131 **5 Claims**



1. Apparatus for the pumping of fluids using compressed gases comprising:

an outer casing having an inlet with a means to allow fluid in and not out,

a hollow fluid discharge tube having its lower end open near the lowermost area of said casing and extending upward and having a means to allow fluid out of said casing and not in,

a housing having the means for mounting air valves and magnets,

a pivoting arm having means to be fixed in said chamber on a pivot pin and having steel rollers fixed too both ends, said pivot arm pivots through an arc during the activation of said pump, the end points of said arc are determined where said steel rollers on said pivot arm contact said housing,

two magnets which are positioned in said housing in a position to attract at least one of said steel rollers at each extreme of said arc,

said pivot arm having means to attach to an air inlet poppet valve assembled in a conduit, in said housing, which connects a pressurized air source to said chamber and also having means to attach to an air exhaust poppet valve assembled in a conduit, in said housing, which connects said chamber with atmospheric pressure,

said air inlet poppet valve being machined to mate against an input valve machined face when lowered vertically by said pivot arm to completely shut off said gasses from entering said chamber and when raised by said pivot arm to rise of f said input valve machined face and allow said gasses to enter said chamber,

said air exhaust poppet valve being machined to mate against against an exhaust valve machined face,

said pivot means to raise and lower said poppet valves onto and off of said machined faces,

said means for attachment valves being offset from the longitudinal centerline of said pivot arm,

said pivot arm having means for a control rod to be

said pivoting arm having means for a control rod to be connected to one of its ends via a pivot pin and extending downward,

said control rod having a stop near its upper extremity and another at its lower extremity and said float being positioned between said stops,

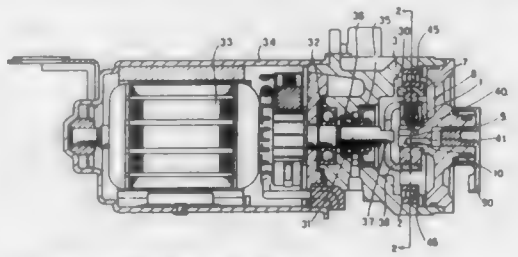
whereby said pivot arm at each extreme of said arc is held in position by at least one of said magnets, and whereby movement of said float against said stops actuates said control rod, thereby pivoting said pivot arm of said valve means through said arc to cause said pivot arm to rest alternately at each extreme of said arc to alternately pressurize and exhaust said chamber through actuation of said poppet valves.

5,004,406

RADIAL PISTON PUMP

Masatoshi Kuroyanagi, Kariya; Masahiko Suzuki, Hoi; Kazuma Matsui, Toyohashi; Makoto Imaeda, Okazaki; Kouzi Nagai, Anjo, and Yoshiaki Ito, Chita, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 22, 1989, Ser. No. 327,081
Claims priority, application Japan, Mar. 23, 1988, 63-68683
Int. Cl.[5] F04B *1/10*
U.S. Cl. 417—273 **9 Claims**



1. A radial piston pump comprising;

a housing in which a cylindrical cylinder chamber is formed,

a rotor rotatably provided within said cylinder chamber in such a manner that a center axis of said rotor is offset from a center axis of said cylinder chamber, said rotor having a working chamber formed therein,

a piston reciprocably provided within said working chamber formed within said rotor,

a bearing provided within said cylinder chamber, an outer race of said bearing being supported by said housing nd an inner face of said bearing being functionally connected with said piston,

a pintle portion provided at the center axis portion of said rotor so that said rotor is rotatably supported by said pintle portion,

a suction groove formed at an outer surface of said pintle portion so that said working chamber will face to said suction groove at certain positions of said rotor, and

a discharge groove formed on an outer surface of said pintle portion so that said working chamber will face to said discharge groove at certain positions of said rotor,

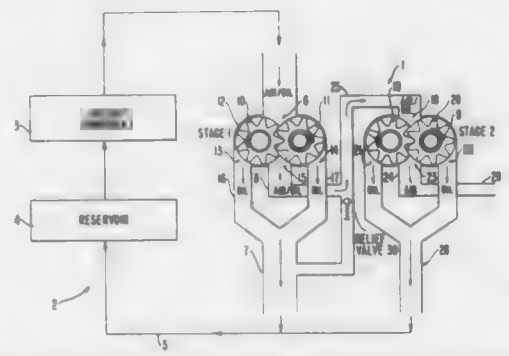
said pintle portion including means for forming a first delay angle at a front side of said suction groove, said first delay angle being more than 40° between a first portion, at which said piston is at a bottom dead point within said working chamber, and a second portion, at which a front edge of said working chamber contacts with said suction groove so that a forcing point at which a pressing force caused by said piston is focused is gradually moved in accordance with a rotation of said rotor.

5,004,407

METHOD OF SCAVENGING AIR AND OIL AND GEAR PUMP THEREFOR

Richard M. Hutchison, New London, Wis., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Sep. 26, 1989, Ser. No. 412,341
Int. Cl.[5] F04C *2/18, 15/02*
U.S. Cl. 418—1 **15 Claims**



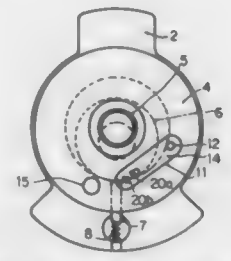
1. A gear pump comprising first and second intermeshing gears capable of being rotatable driven for pumping a liquid, means for housing said first and second intermeshing gears, said housing means including and inlet means for communicating the gear pump with a source of liquid which may contain a gas, the rotation of the intermeshing gears and the resulting centrifugal force on the liquid being pumped causing separation of liquid from the gas where the liquid supplied to the gear pump through said inlet means contains a gas, wherein said housing means further includes first outlet means for discharging only liquid which has been separated from the gas when the liquid supplied to the gear pump contains a gas, and second outlet means for discharging gas and any remaining liquid, wherein said second outlet means in located in said housing means adjacent a mesh zone of the inter meshing gears on a side of the gears opposite to that of the inlet means, and wherein said first outlet means is located in said housing means intermediate said second outlet means and said inlet means such that the first outlet means is located upstream with respect to the travel direction of the gears and the liquid pumped thereby from the mesh zone of the gears and said second outlet means.

5,004,408

DISCHARGE SYSTEM FOR ROTARY ROLLING PISTON COMPRESSOR

Caio M. F. N. Da Costa, Joinville, Brazil, assignor to Empresa Brasileira De Compressores S/A Embraco, Joinville, Brazil

Filed Oct. 4, 1989, Ser. No. 417,786
Claims priority, application Brazil, Oct. 4, 1988, PI8805216
Int. Cl.[5] F04C *29/08*
U.S. Cl. 418—15 **8 Claims**



1. A rotary rolling piston compressor with improved discharge system comprising:

a housing,

an annular cylinder mounted within said housing;

a bearing and a sub bearing on opposite faces of said cylinder;

a rolling piston eccentrically mounted on a crankshaft rotating within said bearing and sub bearing for rotation within said cylinder;

means within the cylinder defining a discharge chamber and a compression chamber,

discharge valve means on one of said bearing and sub bearings having a discharge outlet in communication with the volume of the cylinder discharge chamber, said discharge outlet having spaced first and second inlets with the second inlet being closer to the chamber defining means and the first inlet located radially inward of the second inlet and angularly displaced relative to the second inlet toward the direction of piston rotation,

the separation and the dimensioning of said first and second gas inlets being such relative to the piston and to each other that the closing of the second inlet by the piston starts upon the end of the closing of the first inlet, the reopening of the first inlet only starts after the reopening of the second inlet and the reopening of the first inlet is completed only after the end of the reopening of the second inlet.

5,004,409

DISPLACEMENT MACHINE

Raoul S. Nakhmanson, Sauerbruchstrasse 49, D-6204 Taunusstein (Neuhof), Fed. Rep. of Germany

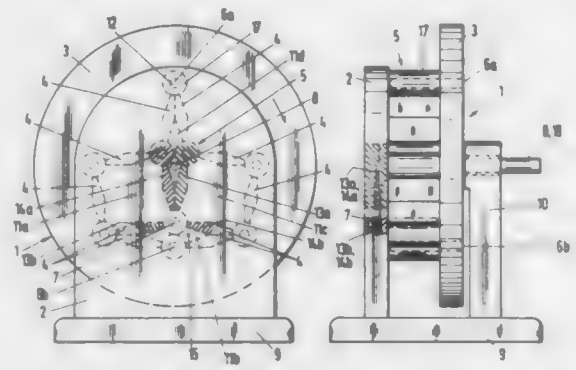
Filed Mar. 22, 1989, Ser. No. 327,243
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1988, 3809478; Apr. 28, 1988, 3814311
Int. Cl.[5] F01C *1/00*
U.S. Cl. 418—58 **27 Claims**

1. An apparatus comprising at least two working chambers with variable volume and at least one inlet opening and one outlet opening for gaseous or liquid media, comprising:

a first stationary plate and a second plate which is arranged parallel to the first plate spaced therefrom, and which is rotatably mounted via its central axis with respect to the first plate;

a plurality of elongated wall elements which are disposed between said plates, and which bear slidingly and sealingly on said plates and together with the plates from the working chambers, each wall element being articulately sealingly connected at its end points (articulation points) to at least one further wall element in such a manner that said wall elements form a movable grid which is rotatably secured with respect to at least one point on the first plate

and with respect to at least two points on the second plate in such a manner that upon rotation of the second plate the



working chambers alternately assume their minimum and maximum volume; and

a shaft mounted in the axis of rotation of the second plate.

5,004,410

HIGH FREQUENCY NOISE SUPPRESSOR FOR HERMETIC ROTARY COMPRESSORS

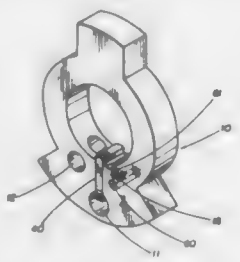
Caio M. F. N. Da Costa, Joinville, Brazil, assignor to Empresa Brasileira de Compressores-S/A-Embraco, Joinville-SC, Brazil

Continuation-in-part of Ser. No. 305,480, Feb. 1, 1989, abandoned. This application Feb. 27, 1990, Ser. No. 488,515

Claims priority, application Brazil, Apr. 2, 1988, PI 8800513

Int. Cl.[5] F04C *29/06, 18/356*

U.S. Cl. 418—63 **9 Claims**



1. A suppressor for reducing pulsating noises in a hermetic rotary compressor comprising:

a housing,

a cylinder within said housing,

a bearing on each face of the cylinder,

a piston with an eccentric portion rotating within said cylinder,

a slot in the cylinder,

a vane having a portion riding on the piston eccentric portion to be reciprocated inn the slot, said vane in cooperation with the bearings dividing the space in the cylinder surrounding the piston into a suction chamber and a compression chamber, the vane being tiltable toward one side or the other of the slot depending upon the position of the piston and the pressure differential between the two chambers,

a sound muffling resonating cavity formed in one of the cylinder and bearings, the volume of the sound muffling resonating cavity selected relative to the volume of the compression chamber and frequency of the noise to be muffled to achieve muffling of pulsations of sound of a given frequency,

said vane when tilted toward the compression chamber side providing communication between the compression chamber and the sound muffling resonating cavity and closing the communication when tilted toward the compression chamber side.

5,004,411

APPARATUS FOR THE INTEGRAL MOULDING OF A SYNTHETIC PLASTICS PART

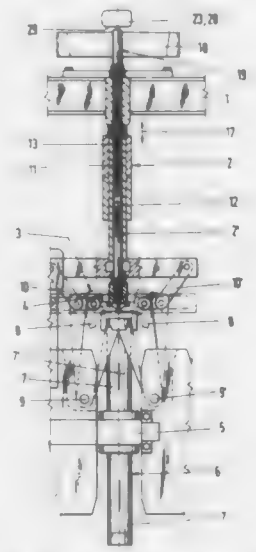
Wilhelm Reil, Bensheim, Fed. Rep. of Germany, assignor to Tetra Pak Holdings & Finance S.A., Pully, Switzerland

Filed Apr. 3, 1990, Ser. No. 503,634

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1989, 3911246

Int. Cl.[5] B29C *45/48, 45/50, 45/56*

U.S. Cl. 425—117 **6 Claims**



1. An apparatus for the integral molding of a synthetic plastics part on a portion of flexible strip-like material with a total injection molding unit with a nozzle, a driven extruder worm, plasticising cylinder and with a synthetic plastics injection unit, the nozzle being connected to the plasticising cylinder and being surrounded at least partially on the outside by two movable outer mold parts, an inner mold part consisting of a movable mandrel, wherein the plasticising cylinder and the nozzle are stationary on the machine frame and in that the extruder worm is driven by an electric motor and the synthetic plastics injection unit comprises a driven two-armed lever which is subject to the action of a control force unit and which is in contact with the extruder worm which is adapted for movement in the direction of its longitudinal axis.

5,004,412

GEAR MACHINE FOR USE AS A PUMP OR MOTOR

Angelo Zanardi, Corticella; Daniele Mei, Bologna, and Vittorio Toselli, Pianoro, all of Italy, assignors to Sauer-Sundstrand S.p.A., Via Villanova, Italy

Filed Oct. 5, 1989, Ser. No. 417,729

Claims priority, application Italy, Aug. 4, 1988, 3408 A/88

Int. Cl.[5] F04C *15/00*

U.S. Cl. 418—132 **16 Claims**

1. A gear machine comprising:

a substantially cylindrical casing having first and second end faces;

a first cover mounted on said casing and opposing said first end face;

a second cover mounted on said casing and opposing said second end face;

a diaphragm arranged between said first cover and said first end face of said casing, said diaphragm contacting said first end face along its entire periphery;

first and second bushes mounted inside said casing and between said second cover and said diaphragm, said first bush being adjacent to said diaphragm and said second bush being adjacent to said second cover, each of said first and second bushes having first and second end faces;

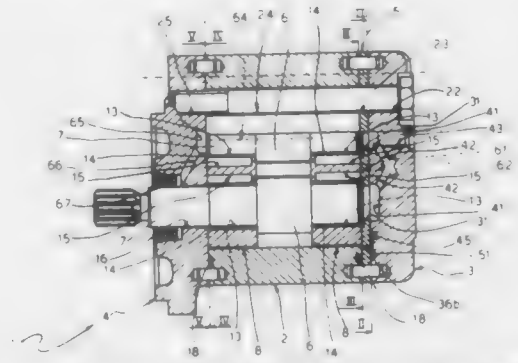
a first shaft rotatably supported by said first and second bushes at first and second relatively axially displaced portions thereof;

a second shaft rotatably supported by said first and second bushes at first and second relatively axially displaced portion thereof and having a third portion which extends outside said casing;

a first gear wheel mounted on said first shaft and having first and second end faces;

a second gear wheel mounted on said second shaft and having first and second end faces, said first and second gear wheels being in mutual engagement; and

means for exerting a pressure on said diaphragm in excess of



a predetermined threshold pressure for urging said diaphragm against said first end face of said first bush,

wherein said first bush is arranged such that upon start-up of said gear machine its second end face is separated from said first end faces of said first and second gear wheels by a first clearance, a central portion of said diaphragm does not move said first bush toward said first and second gear wheels during a start-up period of said gear machine, and said central portion of said diaphragm flexes and correspondingly moves said first bush toward said first and second gear wheels in response to urging by said pressure exerting means to narrow the distance therebetween to a second clearance less than said first clearance after said start-up period of said gear machine.

5,004,413

TABLET MAKING MACHINES

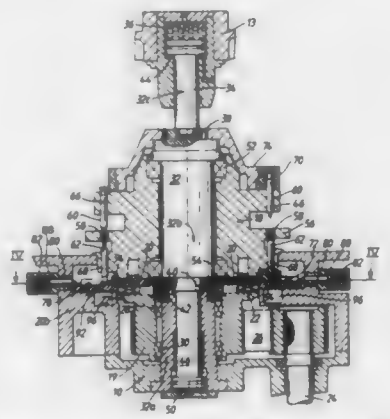
Douglas R. Stopforth, Aigburth, England, assignor to Manesty Machines Limited, Liverpool, England

Filed Aug. 22, 1989, Ser. No. 397,104

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1988, 8815075

Int. Cl.[5] B30B *11/08*

U.S. Cl. 425—182 **4 Claims**



1. In a tablet making machine comprising a frame including a frame proper and a fixed spindle for a rotor mounted on the frame, the fixed rotor spindle being fixed to the frame proper at its opposite ends, a rotor carried by bearings mounted on an intermediate axially extending portion of the spindle, the rotor including a die table carrying dies and opposed pairs of punches, one pair for each die, guided in punch guides of the rotor, the positions of the punches being controlled by first and second fixed cam means carried by the frame, said first fixed cam means controlling one set of corresponding punches of each pair and said second fixed cam means controlling the other set of corresponding punches of each pair, the improvement in that the intermediate, axially extending portion of the spindle is a separate portion of the spindle, which is normally fixed in position between fixed opposite end portions of the spindle by releasable means which, when released, allows the intermediate portion of the spindle to be removed transversely from the machine, together with the rotor and the rotor bearings.

5,004,414

APPARATUS FOR FILTERING PLASTICIZED MATERIALS IN EXTRUDERS AND LIKE MACHINES

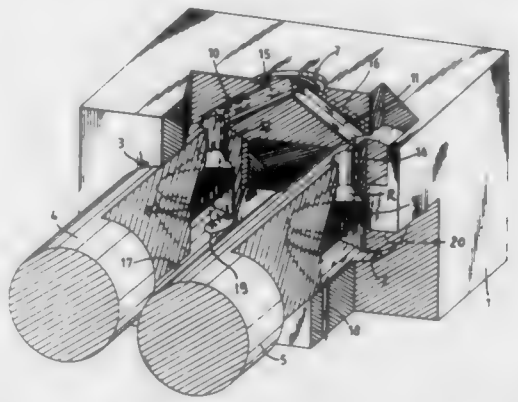
Rolf-Rüdiger Stude, and Ladger Wilken-Treukamp, both of Münster, Fed. Rep. of Germany, assignors to Kreyenborg Verwaltungen und Beteiligungen KG, Münster, Fed. Rep. of Germany

Filed Dec. 5, 1989, Ser. No. 446,557

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1988, 3840904

Int. Cl.[5] B29C *47/34;* **B01D** *33/35*

U.S. Cl. 425—185 **6 Claims**



1. Apparatus for filtering a flowable plastic material, comprising a housing having an inlet and an outlet for the plastic material and first and second passages extending between said inlet and said outlet; first and second carriers respectively mounted in said first and second carriers respectively mounted in said first and second passages and movable relative to said housing between first and second positions, each of said carriers having a chamber and filter means provided in the chamber for filtering said plastic material, each chamber communicating with said inlet and said outlet in the first position of the respective carrier so that a stream of plastic material can flow from said inlet, through the filter means in a first direction and into said outlet; through the filter means in a first direction and into said outlet; and means for flushing plastic material out of said chambers and out of the respective carriers, including means for establishing paths along which plastic material can flow through said filter means in a second direction counter to said first direction in the second positions of said carriers so that said plastic material in the respective carriers is completely expelled from the respective carriers before the carriers reassume said first positions wherein said paths are in fluid communication with said inlet and said outlet irrespective to the positions of said carriers.

5,004,415

APPARATUS FOR PRODUCING CONCRETE ROOF TILES

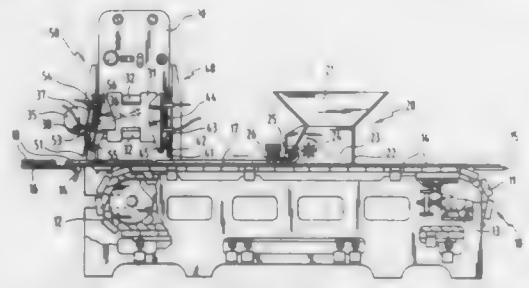
Hans E. Schulz, Bad Soden; Jurgen Braas, Friedrichsdorf, and Friedrich Echl, Mainburg, all of Fed. Rep. of Germany, assignors to Braas & Co. GmbH, Oberursel, Fed. Rep. of Germany

Continuation of Ser. No. 870,932, Jun. 5, 1986, abandoned. This application Mar. 29, 1989, Ser. No. 329,660

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1985, 3522846

Int. Cl.[5] B28B *5/04, 11/14*

U.S. Cl. 425—297 11 Claims



1. Apparatus for making concrete roof tiles from a continuous strip of fresh concrete, comprising:

conveyor means for moving a continuous row of displaceable pallets having concrete thereon along a predetermined path;

a shaper roller and slipper means positioned on said path for compacting and profiling said concrete;

a cutting station positioned on said path and downstream of said shaping and rolling means, said station including a cutting knife for cutting said concrete into individual roof tile moldings of equal length, and a trimming tool for forming individual roof tile moldings;

said cutting knife means including a precompacting tool attached thereto and being formed from a strip matching the profile of a compacted layer of fresh concrete, said precompacting tool being set back from the cutting edge of the cutting knife to compress the adjacent front edge portion of concrete at the same time that said cutting knife cuts said concrete; and

an indentation tool positioned on said path to penetrate into the layer of fresh concrete after it has been cut to contact the concrete and compact the front edge portion over the entire cross section thereof.

5,004,416

INJECTION NOZZLE FOR USE IN AN INJECTION MOULDING DEVICE

Anthonie Van Den Brink, Westmaas, Netherlands, assignor to Eurotool B.V., 'S-Gravendeel, Netherlands

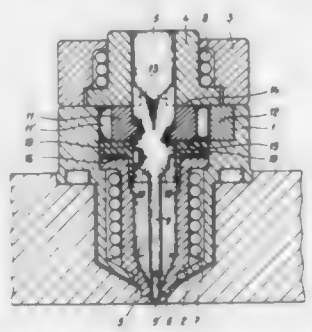
Filed Oct. 30, 1989, Ser. No. 431,311

Claims priority, application Netherlands, Nov. 15, 1988, 8802810

Int. Cl.[5] B29C *45/23*

U.S. Cl. 425—564 5 Claims

1. In an injection nozzle for use in a device for moulding an article made of a thermoplastic material in an injection mould, said injection nozzle comprising a nozzle with at least one feed channel running therethrough, a first end of said injection nozzle operable to receive thermoplastic material and a second end of said injection nozzle connected to an outflow aperture, said second end having a seat mating with an end of an upwardly and downwardly moving shut-off pin running through the feed channel, moving means for moving the pin upwardly and downwardly, said moving means comprising a ring provided with an internal screw thread which engages in such a way with an element which is connected to the pin that, through rotation of the ring, the pin moves upwardly and downwardly and means for setting the ring in rotary motion; the improvement wherein said element connected to the pin projects essentially radially outwardly relative to the pin, said element being situated in the feed channel and permitting passage of the thermoplastic material through said feed channel and said outflow aperture when the rotary motion of the ring moves the pin upwardly, said element being located between the first end of said injection nozzle and the outflow aperture, and end faces of the ring being in sealing contact with sealing faces provided in the nozzle.



5,004,417

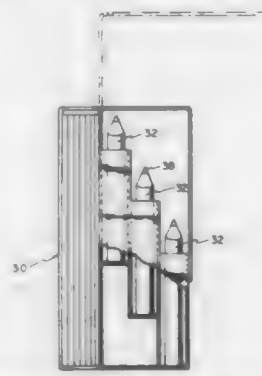
COLOR DENTAL KIT AND METHOD OF USE

Michael Giaramita, 7000 Bay Pkwy., Apt. 6H, Brooklyn, N.Y. 11204

Filed Sep. 12, 1988, Ser. No. 243,415

Int. Cl.[5] A61C *19/10*

U.S. Cl. 433—26 9 Claims



1. A color dental kit for use in specifying color characteristics of individual synthetic teeth, dental elements such as crowns and the like comprising, a plurality of color pencils for coloring of an image of a synthetic tooth in gingival and incisal shades simulating those shades in nature, and including sheets of paper divided into light and dark incisal tones.

5,004,418

DENTAL INSTRUMENT MAT

Paul D. Porteous, 607 Island View Dr., Port Hueneme, Calif. 93041

Filed Jan. 3, 1990, Ser. No. 460,524

Int. Cl.[5] A61G *15/00*

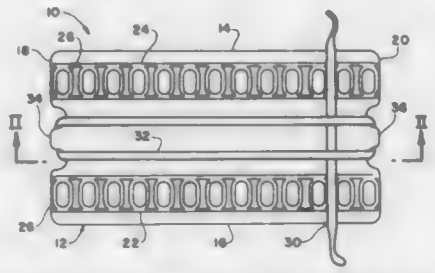
U.S. Cl. 433—77 9 Claims

1. A dental instrument mat comprising:

a base portion having two opposite sides and two opposite ends;

a pair of racks formed longitudinally along the two opposite sides, each rack having a plurality of spaced apart teeth, the teeth of each rack being laterally aligned with the teeth of the other rack to define a plurality of laterally disposed holding slots, each being capable of holding a dental instrument, said holding slots being substantially free of frictional constraining means for holding said dental instruments; and

removable retaining means, detachably coupled to the base portion, for tautly engaging an upwardly disposed surface of each dental instrument and downwardly biasing the same, to thereby positionally maintain dental instruments in the holding slots which are substantially free of frictional constraining means.



5,004,419

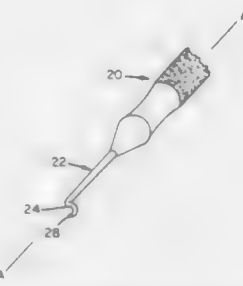
SCALERS FOR PERIODONTAL USE

Joseph M. Kline, 3501 N. Valley St., Arlington, Va. 22207

Continuation-in-part of Ser. No. 348,416, May 8, 1989, abandoned. This application Jan. 26, 1990, Ser. No. 470,785

Int. Cl.[5] A61C *17/00*

U.S. Cl. 433—143 18 Claims



13. In a scaler having a handle and at least one working end portion for scaling the surface of teeth wherein the surface of the teeth have a generally arcuate configuration the improvement comprising, the working end having a cutting blade extending therefrom, said working end extending longitudinally outwardly with respect to the central elongated axis of the handle said cutting blade having an inner concave portion and an outer convex portion, said outer convex portion of said cutting blade being rounded, said inner concave portion including a cutting edge which is arcuately shaped in a plane oriented transversely with respect to the central elongated axis of the handle so as to be complimentary to the arcuate surface of a tooth, whereby said cutting edge portion will continuously contact an arcuate segment of the surface of the tooth during scaling.

5,004,420

DENTAL BRIDGE AND MANNER FOR PREPARATION

Per O. Söderberg, Stockholm, Sweden, assignor to Astra Meditec Aktiebolag, Mölndal, Sweden

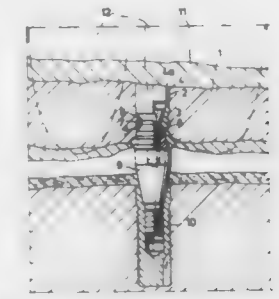
Filed Apr. 20, 1988, Ser. No. 183,891

Claims priority, application Sweden, Apr. 22, 1987, 8701653

Int. Cl.[5] A61C *13/12*

U.S. Cl. 433—172 10 Claims

1. A dental assembly comprising a bridge component and a plurality of sockets that are adapted to be attached to anchoring elements affixed to a patient's jawbone, each socket being of a material selected from the group consisting of titanium and an alloy of titanium, having a retention portion embedded in the bridge component that is shaped to lock the socket mechanically against axial movement, and being cast in place in the bridge component to form the mechanical lock, and the bridge component being of a gold alloy having a melting point not greater than 1050° C.



5,004,421

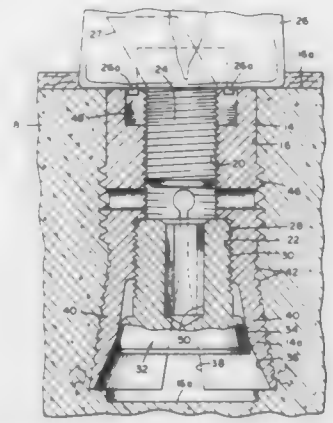
DENTAL IMPLANT AND METHOD OF USING SAME

Sargon Lazarof, 15215 Magnolia Blvd., #126, Sherman Oaks, Calif. 91403

Filed Jul. 27, 1990, Ser. No. 558,494

Int. Cl.[5] A61C *8/00*

U.S. Cl. 433—173 15 Claims



1. A dental implant for securement within a bore provided in the jaw bone of a patient, said implant comprising:

(a) an elongated hollow body receivable within the bore provided in the jaw bone of the patient, said body having first and second internal threads said first internal threads being adapted to threadably receive a prosthetic component, said hollow body including:

(i) means for resisting rotation of said hollow body within the bore upon the exertion of a rotational force tending to retract said hollow body from the bore;

(ii) a skirt portion movable from a first retracted position to a second expanded position; and

(b) expander means including a shank portion having external threads mateable with said second internal threads of said body for moving said skirt portion from said first retracted position to said second expanded position upon rotation of said shank portion.

5,004,422

ORAL ENDOSTEAL IMPLANTS AND A PROCESS FOR PREPARING AND IMPLANTING THEM

Robert H. Propper, 401 N. Garfield, Alhambra, Calif. 91801

Filed Nov. 9, 1989, Ser. No. 435,073

Int. Cl.[5] A61C *8/00*

U.S. Cl. 433—175 9 Claims

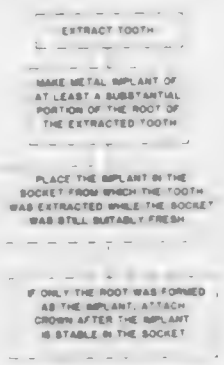
1. The process of providing an endosteal implant for the

human jaw, comprising the following steps in the order recited:

a. extracting a tooth to leave a socket for later reception of an endosteal implant, said socket having a socket wall and the property of remaining suitably fresh for a sufficient period of time;

b. promptly after its extraction, preparing a model of at least the major portion of the root of said extracted tooth;

c. from said model preparing an implant comprising a replica of said model, said implant having an outer surface made of material having the property of osseointegration with bony structure forming said socket;



d. within the period of time the socket remains suitably fresh, removing material from said socket which has accumulated since the extraction, and exposing the bony structure forming said socket wall without significant removal of any bony structure which remained after the extraction so as to minimize change of shape of the socket wall; and

e. inserting and retaining said implant into said socket in surface-to-surface contiguity with a substantial area of the socket wall, whereby to provide for osseointegration of the contiguous areas of the implant and socket wall.

5,004,423

TRAINING AID FOR SUCH SIDE ARMS AS REVOLVERS AND PISTOLS

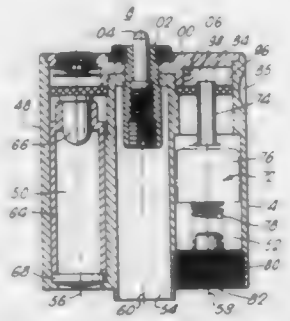
Kurt U. Bertrams, Bearather Strasse 1, D-4l010, Düsseldorf, Fed. Rep. of Germany

Filed Jun. 23, 1989, Ser. No. 370,533

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1988, 3822054

Int. Cl.[5] F41G *3/00*

U.S. Cl. 434—22 **20 Claims**



1. In a training aid (**10**) for such side arms as revolvers and pistols that have a barrel and hammer and comprise a transmitter (**18**) in the form of a replaceable cylinder (**14**, when the weapon is a revolver) or of a replaceable insert (**114**, when the weapon is a pistol or similar piece) and a receiver (**16**), wherein the transmitter has a release (**22**) that is activated by the impact of the weapon's hammer (**20**) and causes the transmitter to emit simultaneously with the impact a brief and narrowly collimated beam (**24**) of infrared light, the receiver is positioned at a desired distance away and produces a signal when it receives the beam, the beam of infrared light is generated by a diode (**66**) accommodated in a tube, and the release is at one end of the tube and means (**68**, **70**, or **168**) that focuses the beam is at the other end, the improvement wherein the tube is accommodated in or consists of a housing (**48** or **148**) that is externally shaped like a conventional cylinder or insert and has at least two adjacent cylindrical chambers (**50** & **52** or **150** & **172**) with their axes (**56** and **58**) paralleling that (62) of the weapon's barrel, wherein each chamber accommodates a tube (**64**), a diode, or a system of batteries (**72** & **172**) and is demarcated at one end by a plate (**96** or **196**) that is accommodated in another chamber (**84** or **184**) and has electronic circuitry (FIG. **9**) for the transmitter mounted on it and wherein the three chambers constitute mutually displaced spaces enclosed in the one-piece housing (**49** or **148**).

5,004,424

APPARATUS FOR DEMONSTRATING AND STUDYING THE OPERATION OF A FUEL CELL

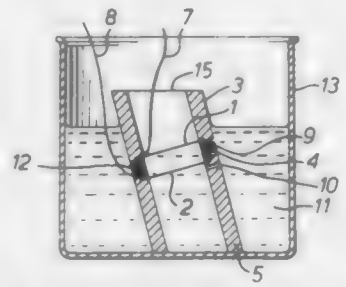
James Larminie, Oxford, United Kingdom, assignor to Johnson Matthey Public Limited Company, England

Continuation of Ser. No. 259,732, Oct. 19, 1988, abandoned. This application Aug. 13, 1990, Ser. No. 566,892

Claims priority, application United Kingdom, Oct. 20, 1987, 8724543

Int. Cl.[5] G09B *23/18*

U.S. Cl. 434—301 **15 Claims**



1. Apparatus for demonstrating and studying the operation of a fuel cell comprising;

a first catalysed electrode which is permeable to oxygen but impermeable to liquid;

a second catalysed electrode;

means for providing an electrical connection to each of the electrodes; and

a housing for holding the first and second electrodes in spaced relationship to each other, the housing being configured such that, when partially immersed in a liquid mixture of fuel and electrolyte, the liquid mixture can circulate freely in contact with one side of the first electrode and both sides of the second electrode, and the other side of the first electrode is exposed to ambient atmosphere.

5,004,425

MAGNETIC SNAP ASSEMBLY FOR CONNECTING GROUNDING CORD TO ELECTRICALLY CONDUCTIVE BODY BAND

Roland Hee, Manilla, Philippines, assignor to JES, L.P., Carlsbad, Calif.

Filed Oct. 10, 1989, Ser. No. 419,409

Int. Cl.[5] H01R *4/66*

U.S. Cl. 439—37 **5 Claims**

1. An antistatic body band and ground cord assembly for conducting static electricity away from the wearer's skin, the assembly comprising:

(a) a body having an upper surface and a lower surface, the lower surface having a recess formed therein;

(b) a conductive bottom plate disposed partially within the recess of said body and having an aperture formed therein;

(c) an elastic strip having first and second ends and having conductive fibers woven therein, the first end of said strap having an aperture formed therein and being captured intermediate said bottom plate and said body, the second end of said strap being attachable to said body;

(d) a ferromagnetic flange disposed upon the upper surface of said body, said flange having a generally planer upper surface, a raised ferromagnetic lug formed upon the upper surface, and a conductive shaft formed upon the lower surface of said flange, the shaft extending downward through said body;

(e) a rivet extending through the aperture formed in said bottom plate and through the aperture formed in said elastic strip, said rivet being attached to the shaft o said flange;



(f) a magnetic connection member having a substantially planar lower surface and a recess formed within the lower surface such that said connection member may couple with said flange, said lug being received within said recess;

(g) a conductive ground cord attached at one end to said connection member;

(h) wherein said magnetic connection member releasably attaches said ground cord to said flange and provides electrical conduction therebetween; and

(i) wherein said bottom plate, said rivet, said shaft, and said flange cooperate to provide electrical conduction from said elastic strap and from the wearer's skin to said magnetic connection member, and also cooperate to attach themselves and said body and the first end of said elastic strap together.

5,004,426

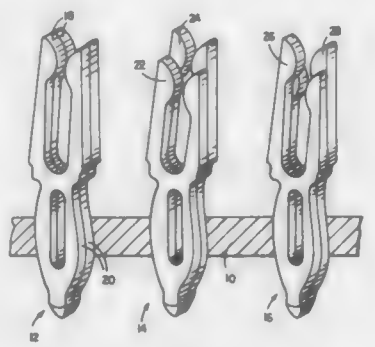
ELECTRICALLY CONNECTING

Roy Barnett, Nashua, N.H., assignor to Teradyne, Inc., Boston, Mass.

Filed Sep. 19, 1989, Ser. No. 409,145

Int. Cl.[5] H05K *1/00*

U.S. Cl. 439—82 **5 Claims**



1. An electrical connector comprising

a contact support with a plurality of holes therethrough and a plurality of contacts extending through at least one of said holes,

each said contact being a forked contact having opposing, integral tines and a space for receiving a mating contact between said tines,

contacts sharing the same hole having their tines and spaces extending in the same direction from said support and being adjacent to each other.

5,004,427

ELECTRICAL CONNECTORS

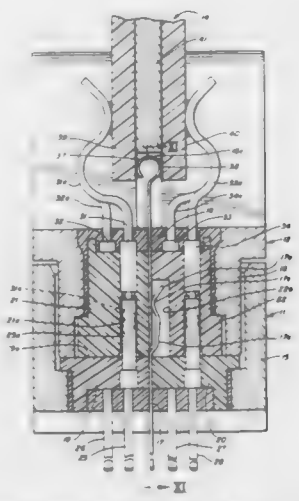
Richard J. Lindeman, Wood Dale, Ill., assignor to Labinal Components and Systems, Inc., Elk Grove Village, Ill.

Continuation of Ser. No. 297,303, Jan. 13, 1989, abandoned, which is a division of Ser. No. 947,317, Dec. 29, 1986, Pat. No. 4,806,110, which is a continuation-in-part of Ser. No. 876,179, Jun. 19, 1986, Pat. No. 4,710,133. This application May 3, 1990, Ser. No. 518,295

The portion of the term of this patent subsequent to Dec. 1, 2004, has been disclaimed.

Int. Cl.[5] H01R *4/66*

U.S. Cl. 439—101 **12 Claims**



1. An electrical connector arranged for low-loss transmission of electrical signals along a plurality of impedance controlled paths between very high speed integrated circuits of first and second circuit means, said connector comprising: first and second ground plane means arranged for coupling to ground means of first and second circuit means and defining highly conductive planar surfaces in first and second ground planes in spaced generally parallel relation to each other, a plurality of signal contact elements arranged in spaced parallel relation to each other and in at least one contact element plane located between and in generally parallel relation to said first and second ground planes, each of said contact elements having a generally uniform spacial relationship to said ground planes with a certain inductance per unit length between each of said contact elements and said ground planes, said contact elements cooperating with said ground planes to define signal propagation paths in the form of electrical transmission lines having characteristic impedances which are functions of the inductances of said elements per unit length and the capacitances per unit length between said elements and said ground plane means, connector means for coupling of opposite ends of each of said contact elements to circuits of said first and second circuit means, and support means of a dielectric insulating material for supporting said signal contact elements in a certain fixed and electrically insulated relation to each other and to said first and second ground planes such that all of said contact elements have the same spacial relationship to said highly conductive surfaces in said first and second ground planes and such as to obtain a certain characteristic impedance which is

the same for all of said plurality of signal propagation paths and which is substantially uniform along the full length of each of said plurality of signal propagation paths through said connector, wherein said first and second ground plane means define planar surfaces of very low inductance and resistance which interconnect the ground plane means of the first and second circuit means to prevent a build-up of any substantial potential difference between the interconnected first and second circuit means and to enhance propagation of very high speed signals between said first and second circuit means.

5,004,428

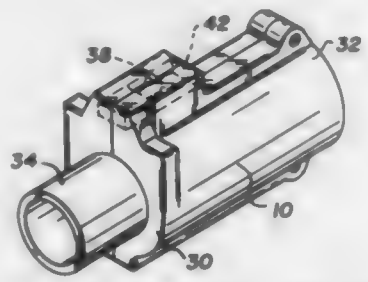
VACUUM SYSTEM ATTACHMENT

Theodore R. Hayden, 10291 Springhill Crescent, Richmond, British Columbia V7E 1W7, Canada

Continuation of Ser. No. 462,904, Jan. 5, 1990, abandoned, which is a continuation of Ser. No. 236,929, Aug. 25, 1988, abandoned. This application Jun. 11, 1990, Ser. No. 537,167

Int. Cl.[5] H01R *4/60*

U.S. Cl. 439—191 2 Claims



1. An endpiece for a vacuum hose of a central vacuum system comprising:

a body having first and second ends;

a nozzle projecting outwardly from the first end and adapted to be received in an inlet valve of a central vacuum system;

an opening in the second end to receive the vacuum hose;

a pathway through the body communicating the nozzle and the opening in the second end;

connector means on the body, generally adjacent the first end comprising a pair of prongs located in a protective cavity formed integrally with the body that opens toward said second end and extends away from the inlet valve to allow connection to an electrical power source;

the second end being electrical connected to the connector means whereby electrical current is conducted from the connector means to the second end of the body.

5,004,429

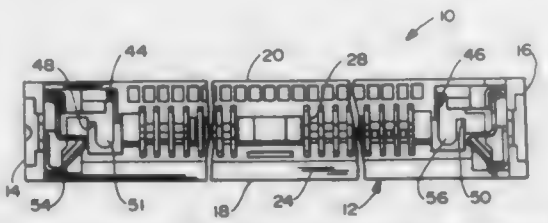
METAL LATCH FOR SIMM SOCKET

Masanori Yagi, Sagamihara, Japan; Anthony M. DiViesti, Park Ridge; Kent E. Regnier, Lombard, both of Ill.; Shoji E. Yamada, Tokyo, Japan, and Alan S. Walse, LaGrange, Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Jul. 16, 1990, Ser. No. 553,016

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—326 22 Claims



1. A latch for use in a socket, said socket being mountable to a circuit board and having a housing defining a slot for receiving an edge of a generally planar circuit module, a plurality of electrically conductive terminals mounted in the housing for engaging the edge of the module inserted into said slot, said housing including at least one rear wall for defining a range of rotational movement of the module in the slot of the housing, the latch being operative for retaining the module in an alignment substantially adjacent the rear wall of the housing, wherein the improvement comprises:

said latch being formed from a metallic material and comprising a housing engaging port for securely engaging the latch to the housing, a board engaging portion for securely engaging the latch and the housing to the circuit board and a deflectable module engaging portion for releasably engaging the module in a selected alignment relative to the rear wall of the housing.

5,004,430

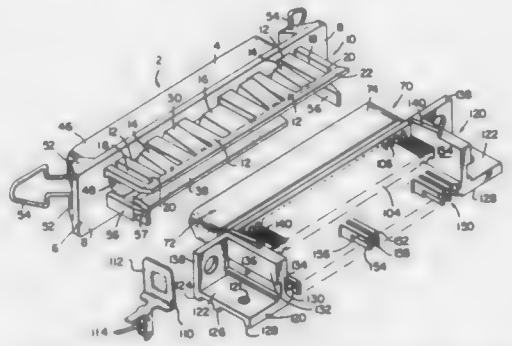
PANEL MOUNT ELECTRICAL CONNECTOR

Henry L. DelGuidice, Winston-Salem, and Edward K. Marsh, Kernersville, both of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 17, 1986, Ser. No. 932,073

Int. Cl.[5] H01R *13/627*

U.S. Cl. 439—350 16 Claims



1. An electrical connector for interconnecting a plurality of conductors and being mountable to a panel having an opening therethrough, the connector comprising:

a first connector portion profiled for mounting on a first side of a panel, the firt connector portion comprising means for latching the first connector portion to the panel, the first connector portion being profiled as a front mating face for receiving a matable electrical connector, and including a wall means mountable against the first side of the panel and a nose portion which extends away from the first side of the wall, the nose portion including an opening therethrough profiled for overlying the opening in the panel;

a second connector portion comrising an insulative housing and a plurality of terminals, the insulative housing and the first connector portion and the first connector portion together.

5,004,431

REINFORCED CONNECTOR LATCH

Mario Previato; Silvio Barbieri, and Roberto Martucci, all of Padova, Italy, assignors to Molex Incorporated, Lisle, Ill.

Continuation-in-part of Ser. No. 306,718, Feb. 6, 1989, Pat. No. 4,900,263. This application Oct. 27, 1989, Ser. No. 428,080

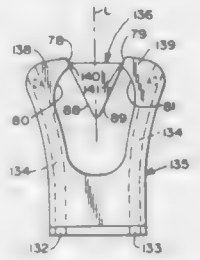
Int. Cl.[5] H01R *13/627*

U.S. Cl. 439—358 16 Claims

1. An improved latching means for assisting the mating of a connector assembly having first and second connectors adapted to be mated along a longitudinal mating axis, said latching means comprising:

at least one deflectable cantilevered latch arm constructed from a first material, said latch arm coupled to said first connector;

spring means, constructed from a second material comprising a steel wire insert running substantially throughout the length of said latch arm, for developing and releasing stored energy during the mating of said connectors, said



second material being more resilient than said first material; and

catch means, coupled to said second connector, for engaging and deflecting said latch arm during the mating of said connectors, whereby said latching means employs said stored energy in urging said connector to remain in a fully mated configuration.

5,004,432

ELECTRICAL CONNECTOR

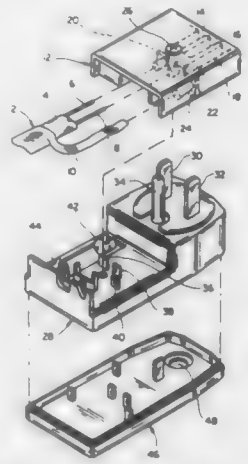
Donald L. Tucker, Redwood City, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Oct. 2, 1989, Ser. No. 415,820

The portion of the term of this patent subsequent to Mar. 26, 2008, has been disclaimed.

Int. Cl.[5] H01R *4/24, 19/08*

U.S. Cl. 439—417 19 Claims



1. An electrical connector for a first electrical lead comprising a first conductor and a second conductor, which connector comprises

(1) a conductor-receiving member which comprises

(a) a first channel in which the first conductor can be placed, and

(b) a second channel in which the second conductor can be placed; and

(2) a conductor-connecting member which comprises

(a) a first conductor-contact section,

(b) a first connection-making section,

(c) a second conductor-contact section, and

(d) a second connection-making section;

the conductor-receiving member and the conductor-connecting member being

(i) movable relative to each other between a unique mated configuration and a demated configuration;

(ii) such that in the demated configuration, the first conductor can be placed in the first channel and the second conductor can be placed in the second channel;

(iii) such that if the first conductor has been placed in the first channel and the second conductor has been placed in the second channel, the conductor-receiving member with the conductors placed therein and the conductor-connecting member can then be brought into the mated configuration, in which mated configuration the first conductor makes physical and electrical contact with the first conductor-contact section and the second conductor makes physical and electrical contact with the second conductor-contact section; and

(iv) such that they cannot be brought into the mated configuration if the first conductor or the second conductor has been placed in direct physical contact with the respective conductor-contact section instead of being placed in the respective channel; and

(3) closure means for maintaining the conductor-receiving member and the conductor-connecting member in the mated configuration.

5,004,433

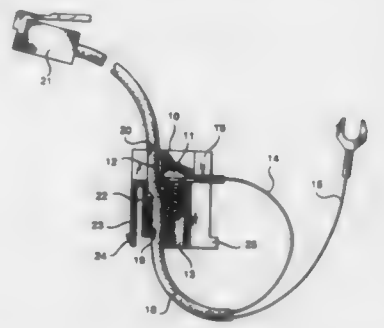
INTERCONNECTION DEVICE

Bassel H. Daoud, Parsippany, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 28, 1989, Ser. No. 399,644

Int. Cl.[5] H01R *11/05*

U.S. Cl. 439—502 7 Claims



1. An interconnection device comprising:

means for electrically coupling the device to an outside circuit, said means disposed within an insulating housing;

a pair of wires with ends connected to said means an opposite ends terminating in a plug member adapted for insertion in a socket to provide electrical connection to another outside circuit; and

a recess within said housing adjacent to said means and including therein a portion of said wires so as to provide strain relief for said wires, the recess including a section extending from a top surface of the housing and a section extending from a bottom surface of the housing and where the recesses are offset in the direction from the bottom to the top surface so as to engage and deform the cable into a serpentine configuration to provide strain relief.

5,004,434

PRINTED CIRCUIT BOARD EDGE CONNECTOR

Richard E. Aiello, Tobaccoville; Donald G. Stillie, Winston-Salem, and Christopher L. Allgood, Lewisville, all of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 493,065, Mar. 12, 1990, abandoned. This application Sep. 28, 1990, Ser. No. 590,541

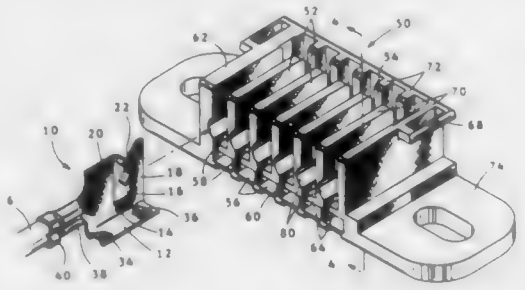
Int. Cl.[5] H01R *23/70*

U.S. Cl. 439—636 4 Claims

1. An electrical connector for electrically interconnecting signals from discrete wires to circuits on a circuit board, the connector comprising:

a. housing having spaced walls defining channels for receiving terminals, each having a concave cutout facing into respective said channels and further a circuit board-receiving slot intersecting said channels normal to said walls and located inwardly from the ends of said walls;

terminals having a base, a pair of coplanar arms bent upwardly from one edge of said base with a slot between said arms, a cantilever contact spring arm attached at one end to one of said arms and having a contact surface transverse



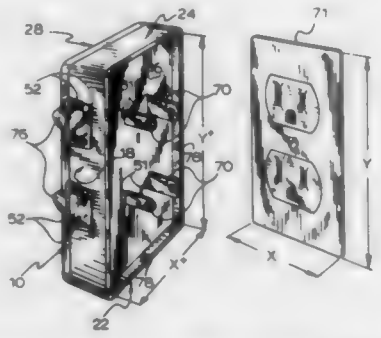
to the plane of said arms and wire attaching means attached to a free edge of one of said arms and extending outwardly therefrom, said terminals disposed in said channels with said slots being in alignment with said slot in said housing and said wire attaching means being received in said concave cutouts and said contact surfaces on said contact spring arm protruding resiliently into said board-receiving slot to electrically engage a circuit board therein.

5,004,435

MULTIPLE SOCKET ATTACHMENT

Jean-Claude Jammet, 4237 Louis Payette, Chomedey, Laval, Québec, Canada H7T 4Y2

Filed Dec. 26, 1989, Ser. No. 457,102
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—652 **8 Claims**



1. A multiple socket attachment adapted to be inserted in a conventional electric wall outlet for electrically bridging the wall outlet and the prongs of an appliance cord plug, said attachment comprising:

a rectangular base plate having a central longitudinal axis;

two lateral ledges parallel to said axis extending perpendicularly from said base plate on one side thereof;

at least one insulating unit longitudinally extending from one of said ledges to the other, each of said unit comprising:

a pair of adjacent parallel and substantially identical transversal sections, each of said sections comprising:

a flat wall extending between said two lateral ledges, the flat walls of said pair of sections being parallel;

an irregular wall parallel to said flat wall also extending between said two lateral ledges; the irregular walls of said pair of sections being located between said flat walls for defining two parallel transversal insulating channels; each of said irregular walls defining a longitudinal insulating channel, off-center from said central longitudinal axis of said base plate and extending from said transversal insulating channel towards said irregular wall of said adjacent transversal section, said base plate having a slot therethrough in line with each of said longitudinal insulating channels;

said base plate, said lateral ledges, said flat walls and said irregular walls being made of insulating material.

a pair of linear conductive strips, each of said strips extending edgewise inside said transversal insulating channels between said lateral ledges, and having a spring clip at each end, each of said clips facing an aperture in said lateral ledges for gripping one of said prongs of said appliance cord plug; and

a pair of L-shaped prongs, each of said L-shaped prongs being electrically linked to each of said conductive strips, said L-shaped prongs being secured to said strip at 90° therewith and extending on the opposite side of said base plate through one of said slots,

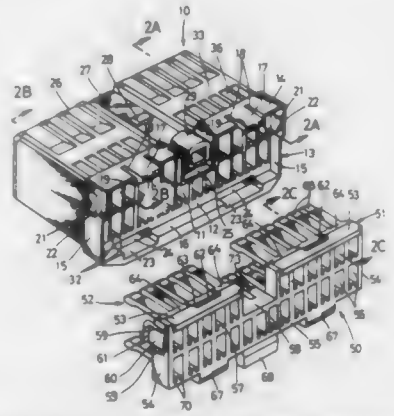
whereby said L-shaped prongs are adapted to be inserted in said conventional electrical wall outlet and said conductive strips electrically link said L-shaped prongs to said spring clips, said spring clips being adapted to receive said prongs of said appliance cord plugs for providing electrical current.

5,004,436

ELECTRICAL CONNECTOR

Koji Aoyama, Tokyo, Japan, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 25, 1990, Ser. No. 470,022
Claims priority, application Japan, Mar. 5, 1989, 1-52669
Int. Cl.[5] H01R *13/436*
U.S. Cl. 439—752 **8 Claims**



1. In an electrical connector comprising a dielectric housing having a frame section and a plurality of terminal-receiving cavities to receive electrical terminals, and a dielectric latching member having a frame section provided with openings equal in number to said terminal-receiving cavities and latching arms extending from said frame section into said terminal-receiving cavities and equal in number to said terminal-receiving cavities, the electrical connector being characterized in that:

said housing and said latching member have first latching means at both sides of said housing and said latching member for initially latching said latching member to said housing at a first position;

said terminal-receiving cavities and said openings are aligned in such a manner that the electrical terminals may be inserted through said openings into said terminal-receiving cavities with said latching member in the first position;

said housing and said latching member being provided with slide means to move said latching member forwardly and downwardly to position the front ends of said latching arms adjacent with sections of the electrical terminals inserted in said terminal-receiving cavities in moving said latching member from the first position to a second position; and

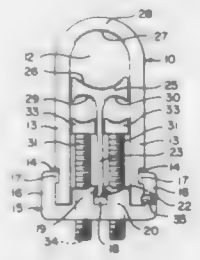
said housing and said latching member including second and third latching means at upper and lower ends between both sides of said housing and said latching member for secondary latching of said latching member to said housing in the second position and wherein said third latching means comprise resilient latching members having hooks positioned at the lower section of the frame section of said latching member and the lower portion of said frame section of said housing having grooves and openings with said latching member disposed in said grooves and said hooks extending through said openings and engaging said frame section of said housing at the second position.

5,004,437

ELECTRICAL CONNECTOR BLOCKS

Gerard S. Walter, Glenshaw, and John Hagan, Gibsonia, both of Pa., assignors to Walter Electrical Manufacturing Company, Pittsburgh, Pa.

Continuation of Ser. No. 734,481, May 16, 1985, abandoned, which is a continuation-in-part of Ser. No. 691,502, Jan. 14, 1985, Pat. No. 4,640,571. This application Mar. 20, 1987, Ser. No. 28,200
Int. Cl.[5] H01R *4/36*
U.S. Cl. 439—811 **1 Claim**



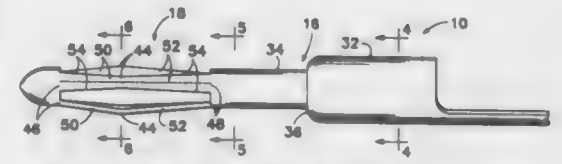
1. An electrical connector block comprising a generally U-shaped housing having a pair of generally parallel elongate sidewalls separated by a trough open on the side opposite the bottom of the U-shaped housing, a groove on each sidewall opposite the trough and spaced from the open side of the trough, at least two cap means having depending arms adapted to slide along the sides of the parallel sidewall over the open trough, said arms having inturned flanges engaged in the grooves of the sidewall, at least one screw member threadingly engaged in each said cap means, each of said screw members carrying a separate clamp member pivoted on the end thereof and independently movable between the sidewalls for clamping at least one wire between each clamp member and a portion of the trough, wherein at least one of said cap means is provided with a pair of depending members between the sidewalls forming a channel intermediate the sidewalls, an inturned flange on each depending member extending partially across the channel to form a trackway, an inverted T-shaped member having an enlarged end on the stem thereof adapted to be supported on said trackway and move vertically in the channel so that the head of the T can move toward and away from the bottom of the U-shaped member, a pair of screw members in the cap means adjacent each of said depending members, a pivotal clamp member on the end of each screw member between a sidewall and the stem of the T member, a clamping surface on the T head facing the bottom of the trough and a clamp surface on the opposite side of the T head between the stem and sidewall whereby a large wire may be clamped between the T head and bottom of the trough and two smaller wires between the clamp member on the screw members and the clamp surfaces on the opposite side of the T head.

5,004,438

FLEXIBLE PIN TYPE CONTACT

Michael K. Cabourne, Fullerton, Calif., assignor to Precision Interconnect Corporation, Portland, Oreg.

Filed Jul. 3, 1990, Ser. No. 548,291
Int. Cl.[5] H01R *13/05*
U.S. Cl. 439—825 **4 Claims**



1. An electrical pin type contact formed from a metal sheet for wiping engagement with the inner surface of a tubular metal socket, said pin type contact comprising:

(a) a sleeve member having a generally cylindrically formed front end;

(b) a plurality of elongate arm members extending forwardly from and integrally attached to said front end at circumferentially-spaced locations thereon, each respective arm member including forward and rearward elongate opposed arm portions each laterally tapering so as to narrow toward the other to form an intermediate narrowed arm section between said opposed arm portions, the corresponding arm portions of said elongate arm members diverging flexibly from each other as they approach said intermediate narrowed arm sections so that said narrowed arm sections can establish said wiping engagement;

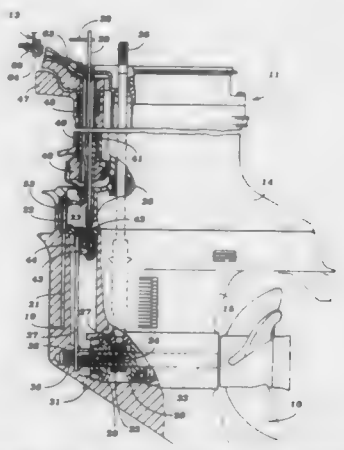
(c) each respective forward and rearward arm portion including opposed elongate edges, said opposed edges of said arm member being folded inwardly toward each other so that said edges cannot wipingly engage the inner surface of said tubular metal socket.

5,004,439

SPEED DETECTING DEVICE FOR MARINE PROPULSION UNIT

Akihiro Onoue, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jan. 24, 1990, Ser. No. 469,219
Claims priority, application Japan, Jan. 24, 1989, 1-13076
Int. Cl.[5] G01P *5/16*
U.S. Cl. 440—2 **7 Claims**



1. A marine outboard drive comprised of a housing assembly comprised of at least a lower unit housing containing a propulsion device and an upper unit housing containing a drive shaft for driving said propulsion device, said lower unit housing and said upper unit housing having respective surfaces facing each other, means for securing said lower unit housing and said

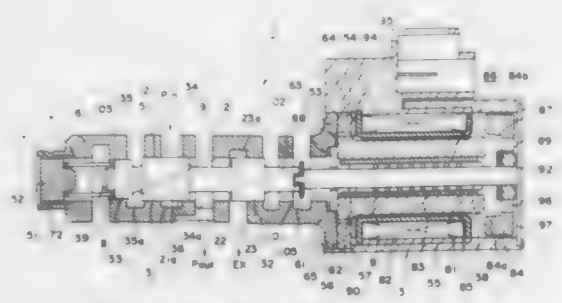
upper unit housing to each other with said surfaces in abutment with each other, and conduit means for conveying a water pressure signal from said outboard drive to a remotely positioned indicator comprising a first conduit section formed in said lower unit housing and extending from an inlet normally positioned below the water line and exposed externally of said lower unit housing to an outlet formed in the surface of said lower unit housing, a second conduit section formed in said upper unit housing and comprised of an inlet formed in said surface of said upper unit housing and communicating with said first conduit outlet when said upper and lower unit housings are affixed together, said second conduit having an outlet formed internally within said upper unit housing, and a flexible conduit having its inlet end connected in communication with said second conduit opening in a manner which permits said upper and said lower unit housings to be assembled when said flexible conduit is in place, the outlet end of said flexible conduit conveying the pressure signal to the remotely positioned indicator.

5,004,440

PRESSURE CONTROL VALVE

Akira Suzuki, Aichi, Japan, assignor to Aisin AW Kabushiki Kaisha, Japan

Filed Dec. 1, 1989, Ser. No. 444,435
Claims priority, application Japan, Dec. 30, 1988, 63-335291
Int. Cl.[5] F15B *13/044*
U.S. Cl. 137—625.65 **8 Claims**



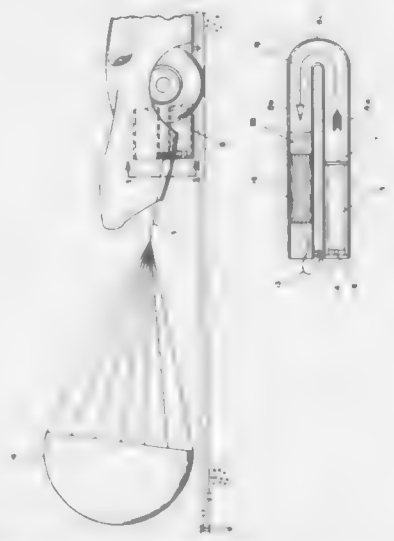
1. A pressure control valve comprising:
a valve sleeve having a support port, an output port, and an exhaust port;
a spool valve having first and second ends and slidably mounted in said valve sleeve;
a spring mounted under compression in said valve sleeve and bearing against said first end of said spool valve for applying a biasing force to said spool valve in a first direction;
spring adjustment means for selectively varying the compression in said spring and said biasing force;
an electromagnet including a cylindrical core with a central opening and a plunger mounted in said central opening for sliding movement relative to said core responsive to electromagnetic force generated by said electromagnet, said plunger being coaxial with said spool valve and having one end abutting said second end of said spool valve to urge said spool valve in a second direction;
control means for controlling said electromagnetic force responsive to an electric signal;
axial adjustment means, located at the point of abutment between said second end of said spool valve and said abutting end of said plunger, for receiving and retaining one or more shims for adjusting the axial spacing between said second end of said spool valve and said abutting end of said plunger; and
an opening in said valve sleeve providing access to the point of abutment between said plunger and said spool valve.

5,004,441

MODEL ROCKET CAR

Jeffrey L. Hammerly, 420 NW. 49th St., Fort Lauderdale, Fla. 33309, and David S. Rosenthal, 1225 Riverside Dr. #505, Coral Springs, Fla. 33071

Filed Dec. 4, 1989, Ser. No. 445,777
Int. Cl.[5] A63H *17/00*
U.S. Cl. 446—211 **4 Claims**



1. A model rocket car comprising:
a miniature vehicle having means for engagement with a support surface;
a "U"-shaped " tube on said vehicle having first and second rearwardly-facing openings and a reversely bent closed passageway between said openings;
a model rocket engine positioned in said tube in front of said first opening, said engine having an exhaust nozzle at its rear end which is open toward said first opening and means at its front end for discharging pressurized gas into said passageway, said engine having ignitable charge means therein for first discharging through said exhaust nozzle at its rear end to propel the car forward and after a burning time for discharging from its front end into said passageway in the tube;
a folded parachute positioned in said tube in front of said second opening to be blown rearward out of said tube and to open in response to the time-delayed discharge from said front end of the engine;
an externally disposed eyelet;
and a flex line connecting said parachute to said eyelet to limit the rearward movement of the parachute when blown out of said tube, whereby said parachute upon opening brakes the forward movement of the vehicle.

5,004,442

EDUCATIONAL TOYS

Jerome H. Lemelson, and Dorothy Lemelson, both of 48 Parkside Dr., Princeton, N.J. 08540

Filed Jun. 27, 1988, Ser. No. 212,186
Int. Cl.[5] G09B *00/00*
U.S. Cl. 446—302 **20 Claims**

1. An educational toy comprising in combination:
(a) a series of figure toys, each representative of the same living being at a different stage in its growth and development,
(b) each of said figure toys having a head portion and a torso portion connected to said head portion,

(c) the head portion of each of said figure toys having a facial portion,



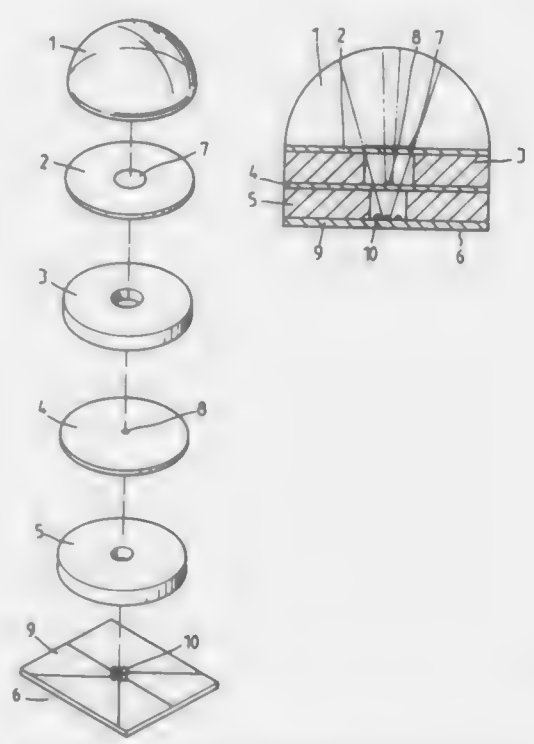
(d) each of said facial portions of each of said figure toys being shaped and decorated to correspond to the same individual at said different stages of its growth.

5,004,443

ELECTRONIC EYEBALL OF DOLL

Michael Su, No. 6, Lane 327, Nan San Road, Chung Ho City, Taipei Hsien, Taiwan

Filed Jan. 22, 1990, Ser. No. 468,251
Int. Cl.[5] A63H *3/38*
U.S. Cl. 446—392 **1 Claim**



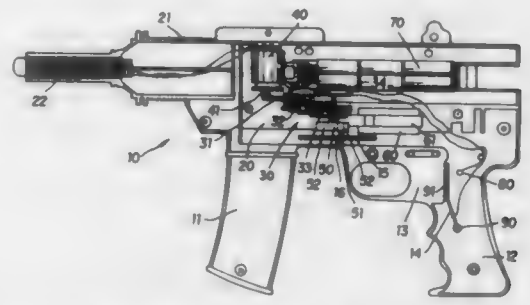
1. An electronically operated doll eyeball comprising:
(a) a substantially transparent, hemispherically contoured convex lens;
(b) a diaphanous screen plate member secured to said convex lens and having a centrally located aperture formed therethrough, said diaphanous screen plate member having a paper member of predetermined color attached thereto and covering said centrally located aperture;
(c) a first disc member having a centrally located first through opening;
(d) a second disc member having a centrally located second through opening;
(e) a transparent film plate member sandwiched between said first and second disc members and secured thereto on opposing sides thereof, said transparent film plate member having a substantially opaque member of predetermined contour secured thereto at a central location; and,
(f) means for illuminating said convex lens, said means for illuminating including a board member mounted to said second disc member and having a plurality of positionally located lighting members mounted thereto, said lighting members being actuated singularly or in combination to provide a changing imaging location of said opaque member on said convex lens dependent upon which of said lighting members is actuated, said opaque member being imaged centrally on said convex lens when all of said lighting members are deactuated.

5,004,444

TOY SUBMACHINE GUN

Hsieh C. Chih, 8F.-5, No. 140, Min Chuan East Rd., Taipei, Taiwan

Filed Aug. 9, 1989, Ser. No. 391,753
Int. Cl.[5] A63H *5/04*
U.S. Cl. 446—406 **4 Claims**



1. A toy submachine gun comprising:
a body housing having a magazine housing and a pistol grip;
a trigger movably connected to said pistol grip;
a plate spring mounted in said body housing and urging against said trigger;
a contact contacting with said plate spring when said trigger is triggered, and mounted in said body housing;
a motor electrically connected to said contact and said plate spring to be energized when said trigger is triggered;
a reduction gear assembly driven by said motor and having an extension shaft;
a rotating arm driven by said shaft and having an eccentrical shaft;
a groove provided in said body housing and capable of reciprocatingly guiding therein said eccentrical shaft;
a sound box;
a striking plate spring capable of engaging with said rotating arm so that each time after said striking plate spring and said arm engage, said striking plate spring will strike said sound box to sound; and
a casing reciprocatingly mounted on said body housing, and mounting therein said motor, said reduction gear assembly and said rotating arm.

5,004,445

DOLLHOUSE WITHIN A DOLLHOUSE

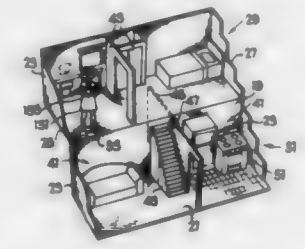
Paula M. Coleman, and Mark T. Luecke, both of Chicago, Ill., assignors to Lewis Galloob Toys, Inc., South San Francisco, Calif.

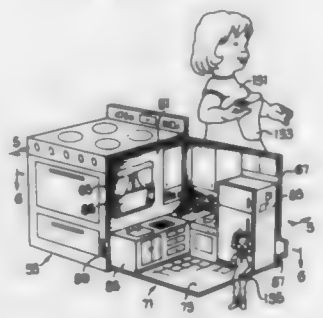
Filed Feb. 6, 1990, Ser. No. 475,709
Int. Cl.[5] A63H *3/52*
U.S. Cl. 446—478 **4 Claims**

1. A toy sized for use with a dollhouse, said toy including:
a hollow container formed of at least two sections,
said sections being connected to each other to permit said sections to be moved between open and closed positions relative to each other,
means applied to the exterior of said hollow container to

provide said container with the appearance of an appliance, a fixture or a piece of furniture that would be found in a house,

means located in the interior of at least one section of said hollow container which means simulate on a small scale a room setting containing at least some of the appliances, fixtures and furnishings which would normally be found in the same type of room of a house as the appliance,





fixture or piece of furniture whose appearance is shown on the exterior of said hollow container, said appliances, fixtures and furniture small scale simulating means being located in at least one of said sections so as to be concealed from view when the sections are moved to their closed positions relative to each other and to be visible in their conventionally oriented positions when the sections are moved to their open positions relative to each other.

5,004,446

DEVICE AND METHOD FOR COLLECTING BEE VENOM BY ATTRACTING AND ELECTROCUTING INJURIOUS BEES

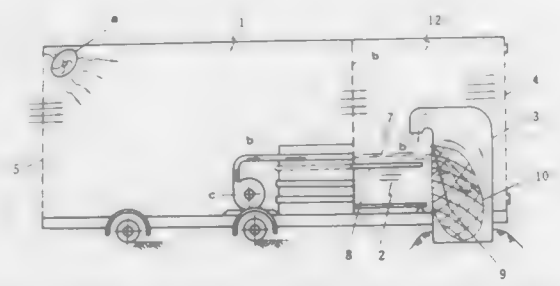
Li Guong-Hong, Highway Transportation Administration Station, Xinyang City, China

Filed Jan. 6, 1989, Ser. No. 294,346

Claims priority, application China, Feb. 14, 1988, 88100579

Int. Cl.[5] A01K *57/00*

U.S. Cl. 449—1 **13 Claims**



9. A method for attracting insects and collecting insect residue, then electrocuting insects, which method comprises:

(a) placing a substance for attracting insects on a collection apparatus, including an electric grid (7) and a residue receiving plate (8);

(b) passing a low voltage electric current through said electric grid to stimulate insects to deposit a residue on the receiving plate;

(c) then passing a high voltage electric current through the electric grid to electrocute the insects thereon;

(d) blowing the dead insects from the grid into a treating container (3); and

(e) removing insect residue from the receiving plate.

5,004,447

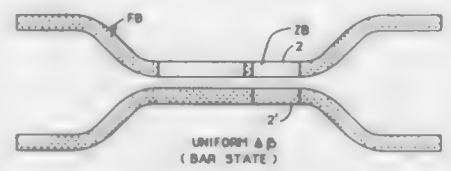
LOW LOSS SEMICONDUCTOR DIRECTIONAL COUPLER SWITCHES INCLUDING GAIN METHOD OF SWITCHING LIGHT USING SAME

Richard A. Soref, Newton Centre, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 6, 1989, Ser. No. 403,636

Int. Cl.[5] G02B *6/10, 6/26;* **H01L** *27/12*

U.S. Cl. 350—96.14 **19 Claims**



1. An interferometric directional coupler switch comprising:

(a) a pair of first and second index-guided laser-like multilayered semiconductor waveguides for switching light beams having a wavelength on the longer wave side of the gain spectrum of said waveguides, said light beams traveling along a longitudinal axis of said coupler switch;

(b) a centralized first waveguide portion wherein the first and second waveguides are in close coupling relationship and at least one non-centralized waveguide portion wherein said waveguides are not in a closely coupled relationship, said centralized and non-centralized waveguide portions being tandemly positioned along said longitudinal axis;

(c) first forward biasing means for intermittently injecting sufficient carriers through said centralized first waveguide portion for producing a carrier refraction and gain effect therein great enough to change the state of said directional coupler switch; and

(d) second forward biasing means for continuously injecting sufficient carriers through said non-centralized waveguide portion for producing carrier induced gain of light intensity therein.

5,004,448

TENSIONER

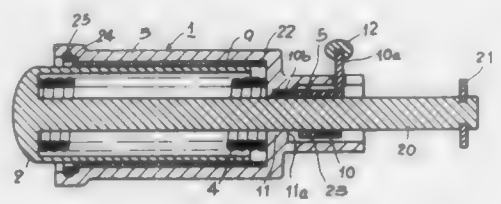
Juji Ojima, Aikawa, Japan, assignor to NHK Spring Co., Ltd., Yokohama, Japan

Filed Dec. 12, 1989, Ser. No. 448,850

Claims priority, application Japan, Dec. 29, 1988, 63-331952

Int. Cl.[5] F16B *2/02, 21/00;* **F16D** *3/26*

U.S. Cl. 474—111 **5 Claims**



1. A tensioner comprising

a casing,

a tension rod movably mounted in the casing,

a compressing spring mounted in the tension rod between one end of the casing and one end of the tension rod for energizing the tension rod in an advancing direction, and a friction brake having a coil portion, one end of the coil portion being latched with a rear end of an axially tapered surface formed on the casing for producing a wedging effect, while another end of the coil portion being an operation end being fixable in a locking position for preventing advancement of the tension rod and in an open position for releasing the tension rod.

5,004,449

SEALED TENSIONER

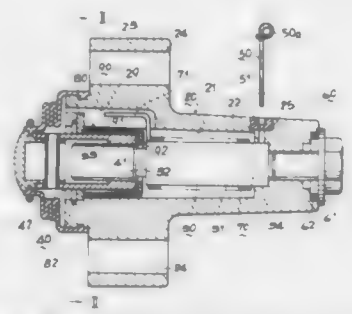
Juji Ojima, Aikawa, Japan, assignor to NHK Spring Co., Ltd., Yokohama, Japan

Filed Dec. 15, 1989, Ser. No. 451,159

Claims priority, application Japan, Dec. 30, 1988, 63-331596; Dec. 7, 1989, 1-318349

Int. Cl.[5] F16H *7/12*

U.S. Cl. 474—138 **5 Claims**



1. A tensioner device comprising a casing, a rotary body in the casing, a tensioner body in the casing having a threaded connection with the rotary body whereby rotation of the rotary body provides translatory movement of the tensioner body relative to the casing, a spring mechanism within the casing for urging the rotary body to rotate in a direction moving the tensioning body outwardly relative to the casing and a locking mechanism for selectively holding the rotary body against rotation by the spring mechanism, the locking mechanism comprising a pin hole in the casing, a locking pin received in said hole for releasable arresting engagement with the rotary body, and a seal element of resilient material in the pin hole, the seal element having an outer peripheral surface in sealing engagement with a wall surface of the pin hole, the seal element further having a throughbore defining an inner peripheral surface, the locking pin being received in said throughbore and said inner surface being in sealing engagement around the locking pin for preventing egress of fluid from the casing through the pin hole.

5,004,450

BELT FOR A CONTINUOUSLY VARIABLE TRANSMISSION

Tohru Ide, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan and Van Doorne's Transmissie B.V., Tilburg, Netherlands

Filed Oct. 27, 1989, Ser. No. 428,342

Claims priority, application Japan, Nov. 4, 1988, 63-280201; Nov. 4, 1988, 63-280202

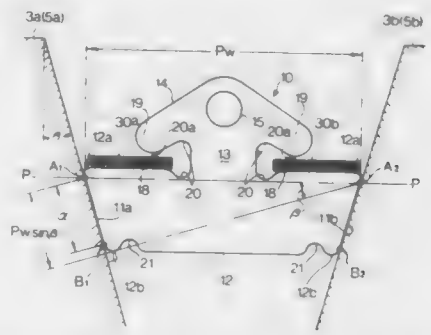
Int. Cl.[5] F16G *1/22*

U.S. Cl. 474—242 **5 Claims**

1. A belt for a continuously variable transmission having a drive pulley and a driven pulley, the belt being engaged with both said pulleys, said belt comprising a plurality of metal elements arranged on an endless carrier, each of said pulleys forms a groove with an angle with respect to a line perpendicular to a rotational axis of said pulley for inserting said elements therein, each of said elements has a body portion of trapezoid shape, both sides of said trapezoid shape contact an inside of said groove, and said carrier supports said elements at a pitch width which is a longer base length of said trapezoid, the improvement in the belt wherein:

each element has a contact length of said both sides with said groove which is shorter than said pitch width multiplied by the sine of said angle; and

corners of said element at the shorter base length of said



trapezoid are formed inside an arc having a radius of said pitch width multiplied by the cosine of said angle, the center point of the radius of the arc being an end point of the contact length of an opposite of said side at the longer base length of said trapezoid, whereby said elements are accurately and regularly kept in said groove without inclination.

5,004,451

FOLDING APPARATUS WITH IMPROVED WEB TRANSPORT

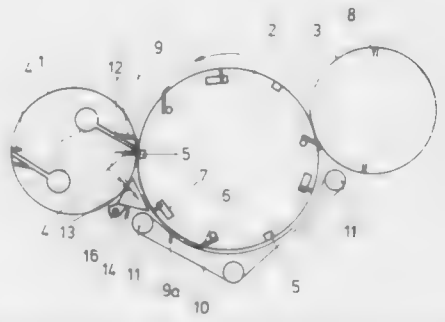
Sebastian Prüm, Kaiserslautern, Fed. Rep. of Germany, assignor to Albert-Frankenthal AG, Frankenthal, Fed. Rep. of Germany

Filed Jan. 18, 1990, Ser. No. 477,437

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1989, 3904076

Int. Cl.[5] B31F *1/00, 7/00*

U.S. Cl. 493—359 **8 Claims**



1. A mechanism for an adjustable folding apparatus comprising:

a knife cylinder;

means for causing the knife cylinder to rotate at a speed independent of the supply of a web to be processed;

a mating cylinder with which said knife cylinder is adapted to cooperate at a cutting nip for the production of cut sections from the web and which is provided with grippers to engage and hold leading edges of said cut sections;

a conveyor belt trained about said mating cylinder on a peripheral part thereof extending from said cutting nip, at least one of said knife cylinders forming said cutting nip being provided with ports coming after cutting means on said one cylinder, said ports being adapted to produce a flow of air, said flow of air being directed towards said mating cylinder with said grippers, said ports including blowing ports which are at least present in said knife

cylinder in a part of the periphery thereof arranged after said mating knives and directed towards said mating cylinder, said ports having means for connection with a compressed air supply; and

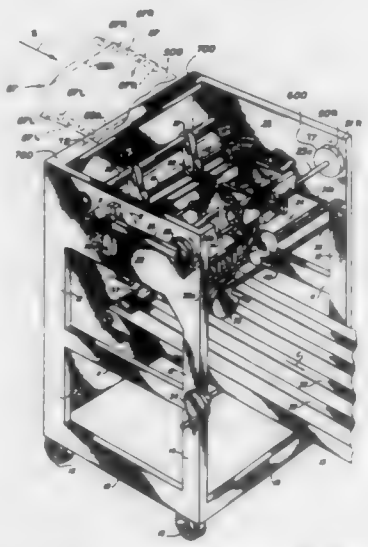
a stationary deflecting means arranged in a widening gap following said cutting nip and ahead of said conveyor belt, said deflecting means including deflector lugs which have spaces between them such that the blowing ports are aligned with the spaces.

5,004,452

CONTINUOUS FORM STATIONERY FOLDING MACHINE WITH PERFORATION ALIGNMENT APPARATUS

Earnest B. Bunch, Jr., 9619 N. 21st Dr., Phoenix, Ariz. 85021

Filed Apr. 11, 1989, Ser. No. 336,079
Int. Cl.[5] B65H *45/20, 45/105*
U.S. Cl. 493—414 **1 Claim**



1. In combination with apparatus for producing continuous form stationery by folding a strip of paper along transverse lines of weakening formed therein, said apparatus including

a frame,

oscillating guide means mounted on said frame for alternately distributing said successive lines of weakening in said paper in substantially opposite directions,

means for feeding said paper into said guide means at a predetermined speed,

folding means carried on said frame and operatively associated with said oscillating guide means for urging said paper distributed by said guide means into a folded condition, said folding means including first and second spaced apart sets of spirals shaped and dimensioned and rotatably driven to receive paper from said oscillating guide means to fold the paper along the transverse lines of weakening,

gear train means for transmitting motive power to said oscillating guide means, feeding means, and folding means such that generally synchronized movement thereinbetween is maintained,

power means to drive said gear train means,

the improvement comprising means for positioning said strip of paper in said apparatus such that a line of weakening is distributed by said guide means when said guide means is in a selected operative position, said positioning means including:

(a) a first fixed positioning mark on said apparatus adjacent said strip of paper moving through said apparatus;

(b) a second fixed positioning mark on said apparatus adjacent a portion of said gear train means;

(c) a rotating shaft in said gear train means and having a portion adjacent said second fixed position mark; and,

(d) indicator means on said rotating shaft, said indicator means rotating simultaneously with said shaft during operation of said apparatus and including a reference mark;

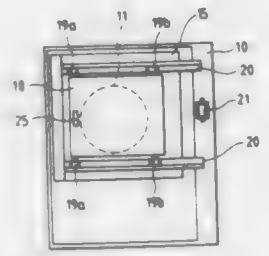
said indicator means being positioned on said rotating shaft such that when said reference mark is aligned with said second mark one of said lines of weakening is adjacent said first positioning mark.

5,004,453

CENTRIFUGE

Hiroshi Hayasaka, and Akio Nagata, both of Katsuta, Japan, assignors to Hitachi Koko Company, Limited, Japan

Filed Jul. 27, 1989, Ser. No. 385,743
Claims priority, application Japan, Jul. 29, 1988, 63-101310[U]; Jul. 29, 1988, 63-191231; Jul. 29, 1988, 63-191232; Jul. 29, 1988, 63-101311[U]; Sep. 9, 1988, 63-119108[U]
Int. Cl.[5] B04B *7/02*
U.S. Cl. 494—39 **11 Claims**



1. A centrifuge, comprising:

(a) an outer frame defining therein a rotor chamber;

(b) a centrifuge rotor detachably disposed in said rotor

(c) a door slidably mounted on said frame for opening and closing said rotor chamber, said door projecting outwardly from said frame when it is disposed in an open position;

a pair or parallel spaced guide rails mounted on said frame for guiding therealong said door, said guide rails having respective rear ends terminating short of a rear end of said frame; and

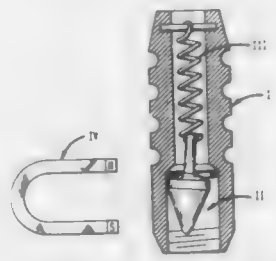
a guide roller rotatably mounted on said frame adjacent to the rear end thereof and rollingly engageable with the underside of said door for supporting said door when said door projects outwardly from said frame.

5,004,454

AUXILIARY INTRA-URETHRAL MAGNETIC VALVE FOR PERSONS SUFFERING FROM URINARY INCONTINENCE

Mordechay Beyar, Caesaria, and Amnon Foux, Haifa, both of Israel, assignors to Technion Research and Development Foundation Ltd., Hiafa, Israel

Filed Feb. 7, 1990, Ser. No. 476,211
Claims priority, application Israel, Feb. 15, 1989, 089297
Int. Cl.[5] A61F *2/02, 2/04*
U.S. Cl. 600—30 **6 Claims**



1. An auxiliary urethral valve for insertion into the urethra of a person unable to control his or her bladder function, having a proximal end and a distal end, the valve including a spring-supported, ferromagnetic valve member adapted to be opened by a magnetic field created by a magnet positioned outside the body of the wearer, said valve comprising:

a tubular casing of a diameter coextensive with the dimension of the urethral duct and made of a nonmagnetic and innocuous material, said tube being lengthwise perforated by a throughgoing passage provided with an inwardly protruding valve seat,

a valve member of a ferromagnetic, innocuous material comprising a valve surface corresponding to said valve seat of said tubular casing, a solid valve body extending from said valve surface and tapering towards its distal end and a spring-engaging portion extending from said valve body in proximal direction,

a tension spring having its distal end fastened to said spring-engaging portion of said valve member and its proximal end fastened to said casing, so dimensioned as to urge said valve member onto said valve seat at normal pressure in the bladder and to permit said valve member to be lifted of said seat by overpressure;

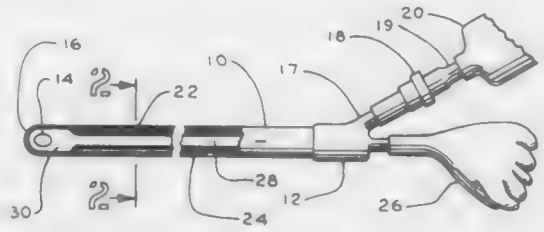
means for opening said valve at normal bladder pressure being effected by tilting of said valve member by a magnetic field, whereby a first portion of said valve surface is lifted off said valve seat and a second portion remains in contact with said valve seat opening a passage for urine from the bladder into the open.

5,004,455

INFECTION-RESISTANT CATHETER

Eugene C. Greenwood, 2956-B Pepper Tree La., Costa Mesa, Calif. 92626, and John Hyatt, 7 Jade Cove, Corona Del Mar, Calif. 92625

Filed Jul. 17, 1989, Ser. No. 380,526
Int. Cl.[5] A61M *3/00*
U.S. Cl. 604—43 **3 Claims**



1. A catheter comprising:

an elastomeric tubular device for passing into the human body containing

a first channel passing through the entire length of said catheter, open proximate one end to the outside of said catheter for receiving fluid, and a means at the other end to contain or dispose of said fluid, and

one or more secondary channels generally parallel to said first channel with closed ends proximate the open end of said first channel, with slits or punctures through the wall to the periphery of said catheter, said slits or punctures being dimensionless and closed by elastic memory until pressurized from within said secondary channel or channels.

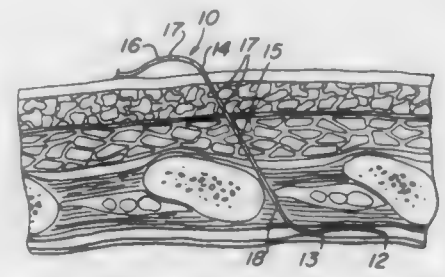
5,004,456

IN-DWELLING CATHETER

Carl N. Botterbusch, Reading, and Paul L. Frankhouser, Wyomissing, both of Pa., assignors to Arrow International Investment Corporation, Wilmington, Del.

Filed Mar. 10, 1989, Ser. No. 321,768
Int. Cl.[5] A61M *25/00, 25/06*
U.S. Cl. 604—53 **11 Claims**

1. Equipment for administration of fluids, such as an anesthetic or the like, into an elongated body space having a relatively narrow clear space in the direction of access thereto, said equipment comprising a catheter having a first elongated body portion extending proximally from the distal tip and a second elongated body portion extending proximally of said first body portion and joined thereto, said first body portion being formed of a relatively soft bio-compatible resin material and said second portion being of relatively stiff bio-compatible resin material, a lumen extending lengthwise of the catheter having an exit port in said first body portion in the region of the distal tip, the exterior of said second body portion having a reference means for indicating the position of the distal tip of the catheter within the elongated body space, the material of



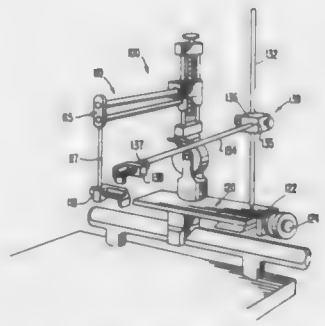
said first body portion being yieldable upon contact with body tissue within said space without irritation thereto and the material of said second body portion being resistant to collapse and kinking, said reference means comprising a plurality of reference marks disposed on said second body portion, the first of said reference marks being offset from the distal tip of the catheter by an amount equal to the length of an insertion needle used in placement of the catheter and a second of said reference marks placed proximally of the first by an amount equivalent to the insertion length of said first body portion within said body space.

5,004,457

TISSUE TRANSPLANTATION SYSTEM

Richard J. Wyatt, Washington, D.C.; William J. Freed, Ft. Washington, and Richard A. Staub, Waldorf, both of Md., assignors to The United States of Americas as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Dec. 2, 1988, Ser. No. 278,821
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—158 **4 Claims**



1. A method for transplanting donor tissue into a brain, comprising:

providing a first cannula including an open elongated tube having a distal end adapted to penetrate brain tissue;

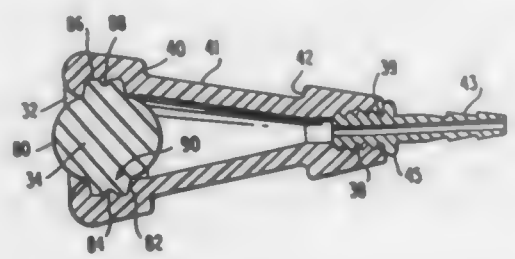
penetrating a brain with the first cannula to a predetermined depth to create a transplant site and fixing said first cannula in space relative to the brain;

providing an elongated second cannula having an outer diameter slightly smaller than the inner diameter of said first cannula, and a reducible volumetric portion;

filling said reducible volumetric portion of the second can-

nula with a predetermined quantity of donor tissue to be transplanted;
placing the second cannula within the first cannula such that said reducible volumetric portion of the second cannula is located in the vicinity of the transplant site:
fixing said second cannula against movement away from said transplant site;
axially withdrawing said first cannula in a direction away from said transplant site and along said second cannula; and
depositing said donor tissue in said brain at said transplant site, and axially withdrawing said second cannula.

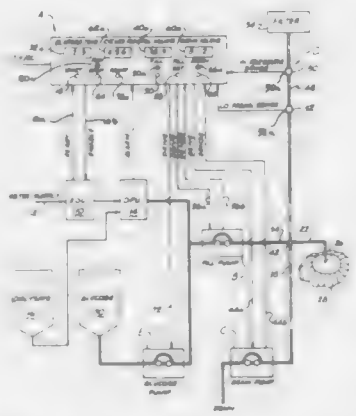
5,004,458
IMPLANTABLE DEVICE
Edward J. Sampson, Carlisle, Mass., assignor to Shiley Infussaid, Inc., Norwood, Mass.
Continuation-in-part of Ser. No. 242,445, Sep. 9, 1988, abandoned, which is a continuation-in-part of Ser. No. 89,113, Aug. 25, 1987, abandoned. This application Jan. 24, 1990, Ser. No. 469,895
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—175 **20 Claims**



1. A body implantable access device comprising: a cylindrical hollow port, said part having an inlet an internal cavity and an outlet, a self sealing septum disposed in and covering said inlet said septum having a shaped target face and positioned in said port at substantially a right angle to said outlet such that a needle puncturing said target face of said septum will be substantially in line with said outlet.

5,004,459
CONTINUOUS CYCLIC PERITONEAL DIALYSIS SYSTEM AND METHOD
Alan M. Peabody, 102 Meadow Creek Ct., Greer, S.C. 29651; Olin S. Anderson, Jr., 1216 Morven Rd., and Henry H. Morton, 100 Covington St., both of Wadesboro, N.C. 28170
Continuation-in-part of Ser. No. 858,645, May 2, 1986, Pat. No. 4,747,822, which is a continuation-in-part of Ser. No. 840,142, Mar. 17, 1986, Pat. No. 4,718,890, which is a continuation-in-part of Ser. No. 629,130, Jul. 9, 1984, Pat. No. 4,586,920. This application May 31, 1988, Ser. No. 200,624
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—29 **19 Claims**

1. A continuous cycle peritoneal dialysis process comprising:
providing a source of a generally continuous and unlimited supply of sterilized dialysis fluid;
providing an inflow line for connection to a catheter adapted for implantation into the peritoneal cavity of a patient;
providing an outflow line for connection to said catheter;
using pump means for pumping sterilized dialysis fluid from said source to said catheter through said inflow line during a fill cycle and for pumping said fluid from said catheter to a drain through said outflow line during a drain cycle;
monitoring a function of a volume of said sterile dialysis fluid in said peritoneal cavity by determining a high level signal for said dialysis fluid inflow corresponding to a comfortable and efficient cavity distension level of said patient, and setting a low level signal for said dialysis fluid outflow corresponding to a low volume level for dialysis; and controlling said pump means in response to said high level signal to pump a calibrated fill volume of fluid into said cavity and in response to said low level signal to pump a calibrated drain volume of fluid from said cavity continuously in alternating fill and drain cycles;
delivering said drain volume of fluid pumped out of said cavity to a disposal means so that a single pass of said dialysis fluid occurs through said peritoneal cavity of said patient during said fill and drain cycles;



calibrating said fill volume and drain volume so that a prescribed amount of dialysis fluid is left in said abdominal cavity between said fill and drain cycles;
mixing glucose with said dialysis fluid prior to pumping said fluid into said cavity;
determining the amount of fluid removed from said peritoneal cavity of said patient; and
adjusting the amount of glucose mixed to vary the glucose concentrate of said fill volume fluid in response to amount of fluid removed from said patient.

5,004,460
NON-REUSABLE SYRINGE
Carlos V. Gimeno, Lorenzo Carbonell, 03003 Alicante, Spain
Filed Sep. 7, 1988, Ser. No. 241,382
Claims priority, application Spain, Jan. 7, 1988, 8800026
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—228 **13 Claims**

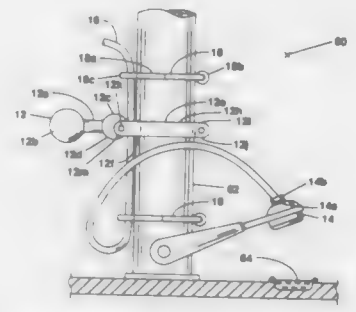


1. A single use self-destructible syringe having a barrel part defining a longitudinal axis and plunger part with a plunger stem having a rupture point, the plunger stem being adapted to move forward and backward relative to the barrel part, characterized in that the syringe comprises:
Means for turning said plunger part relative to said barrel part during forward motion of said plunger part defining the action of injecting;
Means for blocking the turning of one segment of the plunger stem on one side of the rupture point as the plunger part advances during the action of injecting so that sufficient torque is generated between said one segment and the remainder of the stem to break said stem at said rupture point at the end of the injecting action; and
Clutch means on one end of the plunger stem, for coupling said turning means to the plunger stem during the action of injecting and for uncoupling said turning means from the plunger stem during the backward movement thereof so as to prevent turning of said plunger stem thereby to avoid breaking of the plunger stem at the rupture point during the loading of the syringe.

5,004,461
METHODS FOR RENDERING PLASTICS THROMBORESISTANT AND PRODUCT
Joseph E. Wilson, 9827 Brockbank, #136, Dallas, Tex. 75220
Filed Mar. 23, 1989, Ser. No. 327,686
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—265 **8 Claims**

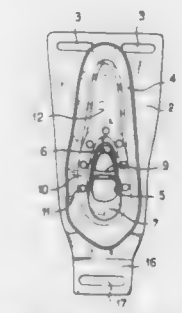
1. A thromboresistant polymeric article for use in contact with blood or blood products, the polymeric article comprising:
a polymeric body formed with at least one exposed surface for contacting blood or blood products, the polymeric body having bonded thereto an antithrombotic agent selected from the group consisting of 3-hydroxypyridine, 8-hydroxyquinoline, L-hydroxyproline, 2-(3,5-di-t-butyl-2-hydroxyphenyl)-5-chlorobenzotriazole, 1-hydroxybenzotriazole, and the compound which comprises an equiproportional mixture of dihydroergocornine methane sulfonate, dihydroergocristine methane sulfonate and α- and β-dihydroergocryptine methane sulfonate in the ratio of 1.5-2.5:1.0.

5,004,462
ADJUSTABLE WATER-LEVEL FLUSHING APPARATUS
Leo M. Mahler, 8 E. Gainsborough Rd., Thousand Oaks, Calif. 91360
Filed Mar. 5, 1990, Ser. No. 488,149
Int. Cl.[5] E03D *1/14*
U.S. Cl. 4—325 **10 Claims**



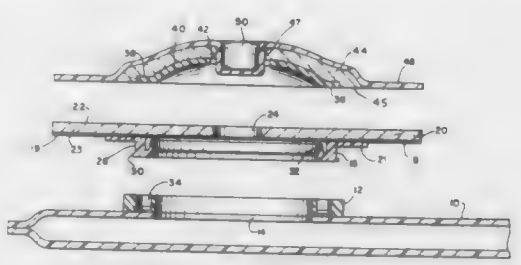
1. An adjustable water-level toilet flushing apparatus for use in a toilet water tank having a hollow flapper valve pivotally attached to an overflow tube and a drain with a valve seat, said apparatus comprising:
(a) a water-level release assembly adapted to be attached to the overflow tube at a level selected to effect a low-level flush, said assembly having first occluding means to occlude a hose, located between said assembly and the outer wall of the overflow tube, when the water level is above said assembly and conversely, to remove the occlusion the hose when the water level drops to the level of said assembly,
(b) a modified toilet flapper valve having an air vent hose bore on its upper surface,
(c) an air vent hose having an upper end, and a lower end that is inserted into and hermetically attached by an attachment means, to the air vent hose bore on said toilet flapper valve, where said hose is routed upwardly and through said first occluding means such that when the water level is above said assembly the hose is occluded to trap air and allow the toilet flapper valve to remain buoyant and conversely, when the water level drops to the level of said assembly, the occlusion is removed from the hose to allow said hose to vent at which time, the toilet flapper valve prematurely drops to seal the drain in the toilet water tank, and
(d) means to selectively circumvent the low-level flush and allow a full-level flush by controlling the passage of air via second occluding means connected to the upper end of said air-vent hose such that when the upper end is occluded, the air trapped in said air vent hose maintains the toilet flapper valve buoyant and conversely, when the occlusion is removed, said hose is vented, and the toilet flapper valve drops to seal the drain in the toilet water tank.

5,004,463
PERMANENT RECEPTACLE FOR COLLECTING URINE FROM WOMEN
Pierre Nigay, Compiegne, France, assignor to Kilrush Limited, London, United Kingdom
PCT No. PCT/FR88/00530, § 371 Date Apr. 30, 1990, § 102(e) Date Apr. 30, 1990, PCT Pub. No. WO89/04156, PCT Pub. Date May 18, 1989
PCT Filed Oct. 28, 1988, Ser. No. 477,913
Claims priority, application France, Oct. 30, 1987, 87 15093
Int. Cl.[5] A61F *5/44;* **A61B** *5/00;* **A47K** *11/00*
U.S. Cl. 604—329 **3 Claims**



1. A permanent urine-collecting receptacle for women, of the type having a plate and a bevelled oblong duct for cooperating with the urethra, characterized in that the plate has a raised flexible lip (**4**) shaped so as to surround the female organs, said duct (**5**) being located in the interior zone of said lip and being surrounded by a channel (**10**) and, on one said only, by a dish (**12**), and the duct (**5**) and the channel (**10**) communicating with a collecting chamber (**8**) adjoining the plate, said receptacle being formed from a semi-flexible material.

5,004,464
CONVEX ADAPTER FOR OSTOMY DEVICE
Walter F. Leise, Jr., Yardley, Pa., assignor to E.R. Squibb & Sons, Princeton, N.J.
Filed Aug. 28, 1989, Ser. No. 399,613
Int. Cl.[5] A61F *5/44*
U.S. Cl. 604—338 **25 Claims**



1. An adapter for use with an ostomy device of the type including means having an adhesive coated body side for attaching a collection pouch to the body, the adapter comprising a member having a substantially convex surface and a layer

of adhesive which overlaps the edge of said member, said member being situated between said adhesive layer and said attaching means with said convex surface adjacent said adhesive layer exposing a substantial portion of said adhesive layer, at least a part of said exposed adhesive layer portion directly contacting said body side of said attaching means.

5,004,465

DISPOSABLE ABSORBENT ARTICLE

Ingela Ternström, Mölnlycke, and Mats Eriksson, Vastra Frölunda, both of Sweden, assignors to Molnlycke AB, Gothenburg, Sweden

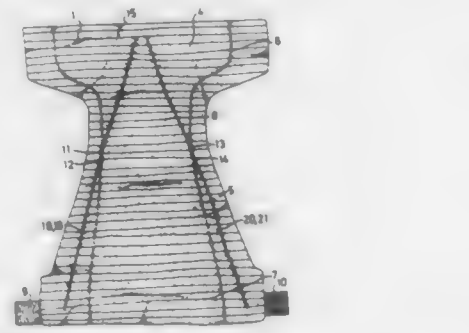
PCT No. PCT/SE87/00009, § 371 Date Jun. 21, 1989, § 102(e) Date Jun. 21, 1989, PCT Pub. No. WO88/05269, PCT Pub. Date Jul. 28, 1988

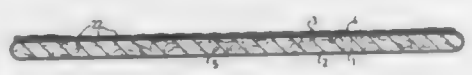
PCT Filed Jan. 18, 1988, Ser. No. 377,856

Claims priority, application Sweden, Jan. 19, 1987, 8700179

Int. Cl.[5] A61F *13/16*

U.S. Cl. 604—385.1 9 Claims





1. In a disposable absorbent article such as a diaper, a sanitary napkin, an incontinence protection garment, a wound dressing or the like comprising a liquid impermeable surface layer (2) and a liquid permeable surface layer (4) encasing an absorbent core (5) therebetween, and having elastic members (11-14) applied thereto; the improvement wherein the liquid permeable layer (4) is composed of at least two separate webs (3,4), said at least two webs (3,4) being joined together by means of a bonding pattern constituted by substantially parallel bonding lines at least crossing the elastic members (11-14) in order to cooperate with these members, whereby the liquid permeable surface layer (4) on its side turn away from the absorbent core (5) has air-filled channels and a soft, wavy surface.

5,004,466

ELASTICIZED UNIT AND GARMENT

Masashi Uda, Minoo, and Jun Oohira, Kagawa, both of Japan, assignors to Toyo Elizai Kabushiki Kaisha, Kawanoe, Japan

Division of Ser. No. 196,612, May 20, 1988, Pat. No. 4,908,089, which is a division of Ser. No. 68,222, Jun. 30, 1987, Pat. No. 4,776,911. This application Sep. 25, 1989, Ser. No. 412,126

Claims priority, application Japan, Jun. 30, 1986, 61-153660; Nov. 11, 1986, 61-269423; Feb. 13, 1987, 62-31958

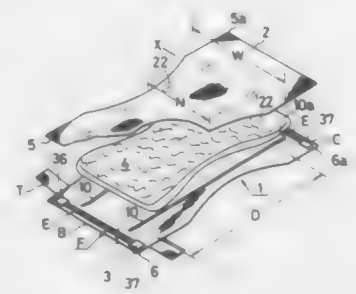
Int. Cl.[5] A61F *13/15*

U.S. Cl. 604—385.2 5 Claims

1. A garment for providing a sealed tight fit with the skin of a wearer, the garment comprising:

a base fabric material; and

at least one elasticized fabric unit comprising a pair of tape members and a plurality of elastic strands fixed to the tape members,



the elasticized fabric unit being fixed to the base material with the elastic strands being in a stretched state.

5,004,467

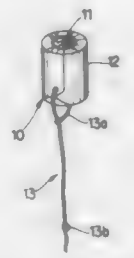
TAMPON

Alfred Hinzmann, Weems; Timour T. Shu; Wojciech S. Drewnowski, both of Richmond, and Peter M. Preisner, Quinton, all of Va., assignors to Hauni Richmond, Inc., Richmond, Va.

Filed Oct. 4, 1989, Ser. No. 416,997

Int. Cl.[5] A61F *13/15*

U.S. Cl. 604—904 7 Claims



1. A tampon comprising a compressible substantially cylindrical pledget of absorbent material, said pledget having a peripheral surface and two end faces; and a foraminous envelope for the pledget, said envelope completely surrounding said peripheral surface and at least one end face of the pledget and comprising a bottom end wall adjacent said at least one end face and a tubular wall surrounding said peripheral surface and comprising a plurality of sections including two substantially semicylindrical sections having overlapping marginal portions extending from said at least one end face at least to the other of said end faces.

5,004,468

SKIN GRAFT PREPARATION APPARATUS

Robert W. Atkinson, Dover, Ohio, assignor to Zimmer, Warsaw, Ind.

Filed Jul. 3, 1989, Ser. No. 374,833

Int. Cl.[5] A61B *17/322*

U.S. Cl. 606—132 17 Claims

1. A skin graft preparation apparatus, comprising:

(a) a housing;

(b) support means on said housing for supporting roller means;

(c) roller means supported on said support means and comprising a guide roller and a cutting roller;

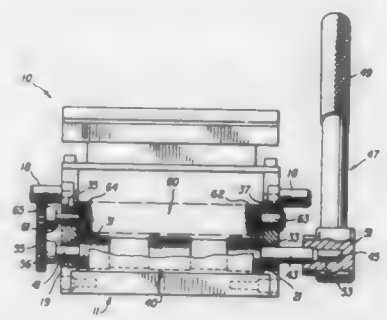
(d) openable cover means on said support means for allowing, in an open position thereof, removal and replacement of said cutting roller;

(e) actuator means for said roller means including an actuator coupled to one of said rollers and drive means drivingly coupling said rollers together whereby rotations of one of said rollers result in rotations of another of said rollers;

(f) said guide roller including laterally adjacent cylindrical regions of differing diameters; and

(g) carrier means having a first face and a second face, said first face having a stepped surface and said second face being substantially flat whereby said carrier means has adjacent regions of differing thicknesses;

(h) said carrier means being insertable between said rollers with said first face facing said guide roller with at least one of said adjacent regions of said carrier means having a



greater thickness at least partially engaging an aligned one of said adjacent regions of said guide roller having a lesser diameter and with a piece of skin on said second face whereby movement of said actuator means in a prescribed direction results in movement of said carrier means in a direction of motion between said rollers and engagement of said cutting roller with said piece of skin to cut a desired pattern of cuts thereon;

(i) said adjacent regions of said carrier means being elongated in said direction of motion.

5,004,469

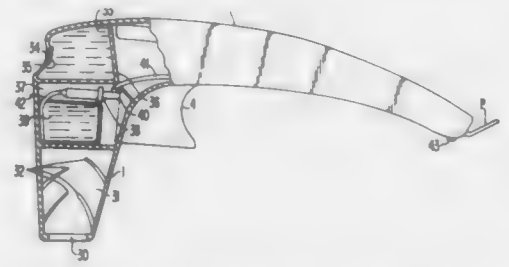
IMPROVEMENTS IN AUTOMATIC MECHANICAL SUTURING GUNS

Beniamino Palmieri, Modena, and Rodolfo Garlati, Olginate, both of Italy, assignors to Ricerche Biomediche S.r.l., Milan, Italy

Filed Mar. 7, 1989, Ser. No. 319,686

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—139 12 Claims



1. Automatic mechanical suturing gun having a gun body and in which a trigger is provided to allow a surgeon to cause delivery and application of suture stitches through an outlet of the gun body to a wound, comprising:

clamping means for clamping together the margins of the wound, said clamping means being arranged adjacent the outlet;

control means, mounted externally of the gun body in a position easily accessible to the surgeon, for actuating said clamping means;

driving means for transmitting movement of said control means to said clamping means;

housing means for containing and retaining gauze tampons;

first dispensing means for containing and dispensing a disinfectant liquid; and

second dispensing means for containing and dispensing a suture adhesive.

5,004,470

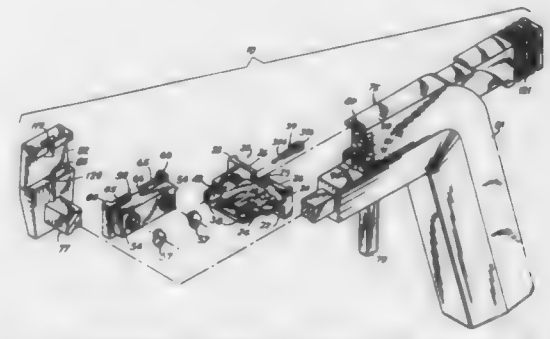
EARPIERCING CARTRIDGE ASSEMBLY

Samuel J. Mann, Englewood, N.J., assignor to Inverness Corporation, Fair Lawn, N.J.

Continuation of Ser. No. 471,689, Jan. 29, 1990, abandoned, which is a continuation of Ser. No. 193,472, May 13, 1988, abandoned. This application Jun. 21, 1990, Ser. No. 541,454

Int. Cl.[5] A61B *17/34*

U.S. Cl. 606—188 14 Claims



1. An earpiercing cartridge assembly for piercing an ear comprising: a first and second earring stud and stud cartridge means for releasably supporting both of said earring studs; first and second clutches and a clutch cartridge means for releasably supporting both of said earring clutches; earpiercing instrument means including a push rod, for slideably supporting and positioning said stud cartridge means with respect to said push rod, said stud cartridge means including positioning means associated therewith and cooperating with said earpiercing instrument means so that said stud cartridge means is slideably displaceable relative to said earpiercing instrument means, without requiring removal from said earpiercing instrument means so that each of said first and second earring studs is adapted to be selectively slideably displaced into coaxial alignment with said push rod.

5,004,471

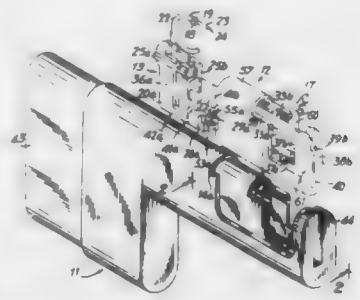
STERILE EAR PIERCING ASSEMBLY

Samuel J. Mann, Englewood, N.J., assignor to Inverness Corporation, Fair Lawn, N.J.

Filed Feb. 8, 1990, Ser. No. 477,081

Int. Cl.[5] A61B *17/34;* **A44C** *7/0*

U.S. Cl. 606—188 12 Claims



1. An ear piercing assembly comprising in combination:

an abstractly-shaped piercing earring including a piercing pin and an ornamental head which is asymmetrically oriented around the axis of the piercing pin and from which the piercing pin projects;

a cartridge adapted to receive said piercing earring and substantially envelope said piercing earring, said cartridge including clamping means for supporting and positioning said piercing earring in said cartridge; and

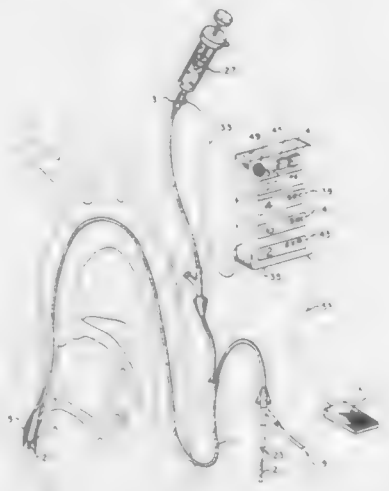
a housing means for receiving and guiding said cartridge and permitting said cartridge to be stored in a position which is substantially retained in said housing and is displaceable from said housing, said housing including camming means for engaging said clamping means when said cartridge is partially displaced from said housing and displacing said clamping means from said piercing earring so that said piercing earring is released from said cartridge as the piercing is completed.

5,004,472

MEDICAL PRESSURE SENSING AND DISPLAY SYSTEM

William D. Wallace, 5038 Memory La., Salt Lake City, Utah 84117

Continuation of Ser. No. 230,783, Aug. 10, 1988. This application Aug. 13, 1990, Ser. No. 566,046
Int. Cl.[5] A61M *29/02*
U.S. Cl. 606—194 **8 Claims**



1. A system for measuring fluid pressure in a balloon of a catheter, said balloon being adapted for inflation inside a vessel in a human body, said catheter having an inflation lumen providing a fluid path between the interior of the balloon and an external source of fluid for inflating the balloon, said system comprising:

a pressure transducer in fluid communication with the interior of the balloon, said pressure transducer including means for providing an electrical signal which is a function of the pressure in the interior of the balloon;

electronic digital display means operatively connected to said transducer and responsive to the electrical signal from the pressure transducer for digitally displaying the balloon pressure measured by the pressure transducer; and

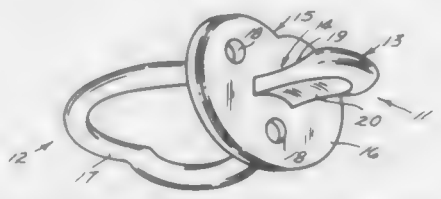
means for timing the actual duration of the application of pressure to the interior of the balloon for each inflation of the balloon, said timing means being responsive to a predetermined initiation signal to initiate timing, said electronic digital display means including means operatively connected to and responsive to the timing means for digitally displaying the actual duration of the application of pressure to the interior of the balloon for each inflation of the balloon.

5,004,473

SIMULATED NIPPLE FOR INFANTS

S. Javad Kalantar, Okemos, Mich., assignor to Phyb U.S.A., Inc., Lansing, Mich.

Filed May 11, 1989, Ser. No. 350,632
Int. Cl.[5] A61J *17/00*
U.S. Cl. 606—234 **9 Claims**



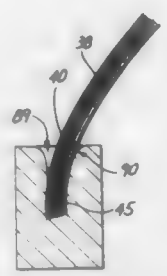
1. A simulated hollow nipple structure having an integral hollow tip portion, an integral hollow connecting throat portion and an integral expanded based portion characterized in that said tip portion is relatively bulbous, defining a terminal reservoir which opens rearwardly into said throat portion, said throat portion defining a throat passage with a cross section defined by a relatively flat upper surface and a concavo-convex undersurface externally arched forming an elongate inverted trench extending longitudinally of said nipple structure and in depression of said throat passage.

5,004,474

PROSTHETIC ANTERIOR CRUCIATE LIGAMENT DESIGN

David M. Frank, Lake Forest, Calif.; David S. Brookstein, Wellesley, and John Skelton, Sharon, both of Mass., assignors to Baxter International Inc., Deerfield, Ill.

Filed Nov. 28, 1989, Ser. No. 442,093
Int. Cl.[5] A61F *2/08*
U.S. Cl. 623—13 **83 Claims**



1. An artificial ligament device having a generally multilayered or tubular woven ligament and being adapted for joining the ends of two bones, at least one of the bones having a tunnel extending therethrough, said device comprising:

(a) a ligament having

(1) an intra-articular region adapted for disposition between the respective ends of the two bones;

(2) at least one bend region juxtaposed to the intra-articular region and adapted for encasement within a bone block and being located generally where the ligament exits and runs within the bone block; and

(3) at least one end region juxtaposed to the bend region and adapted for fixed encasement within the bone block;

a plurality of warp yarns extending at least through the bend region; and

a fill yarn woven through the warp yarns in a density dependent upon the number of picks per inch in the weave; and

a pick density in the bend region being not greater than one-third the pick density in the intra-articular region; and

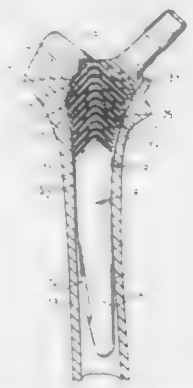
(b) at least one bone block adapted for insertion into the bone tunnel and having fixedly encased therein the end region and a portion of the bend region, said bone block providing a permanent bend radius for the bend region at the point of exit from the bone block.

5,004,475

HIP PROSTHESIS

Dirk V. Vermeire, Pierrelaan 19, B-2160 Brecht, Belgium

PCT No. PCT/BE89/00011, § 371 Date Jan. 12, 1990, § 102(e) Date Jan. 12, 1990, PCT Pub. No. WO89/08436, PCT Pub. Date Sep. 21, 1989
PCT Filed Mar. 15, 1989, Ser. No. 445,854
Claims priority, application Belgium, Mar. 15, 1988, 8800297
Int. Cl.[5] A61F *2/36*
U.S. Cl. 623—23 **18 Claims**



1. Stem for a hip prosthesis having a femur end to be received in the femur and a head end for connection to a hip head, which stem is provided for medial support on the pubic arch (S_1) with a curved, smooth medial stem support part, is provided for lateral support on the lateral cortex (S_2) with a lateral stem support part, and is provided for lateral support on the greater trochanter (S_3) with a lateral comb-like stem support part located between the lateral stem support part and the head end and comprising a number of combs, the comb connecting onto the lateral side protruding laterally relative thereto, and which stem is provided on the ventral and dorsal side at the point of the metaphysial portion with at least one groove which consists of groove portions converging in the direction of the head end and enclosing an apex.

5,004,476

POROUS COATED TOTAL HIP REPLACEMENT SYSTEM

Stephen D. Cook, New Orleans, La., assignor to Tulane University, New Orleans, La.

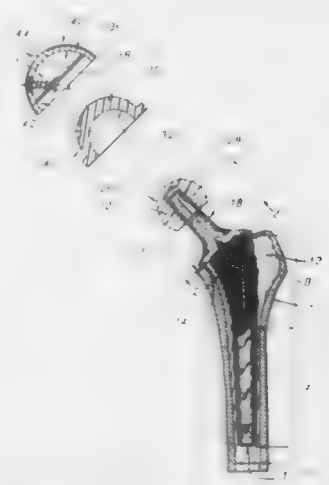
Filed Oct. 31, 1989, Ser. No. 445,920
Int. Cl.[5] A61F *2/36*
U.S. Cl. 623—23 **25 Claims**

1. A hip joint prosthesis comprising, in combination:

an inert metal alloy intramedullary stem having posterior, proximal anterior and distal anterior surfaces defined by respective confluent arcs which enable said stem to anatomically conform to the femoral canal, the stem having a medial collar adjacent an upper end of a proximal portion, the collar extending medially outwardly from the stem for engagement with the calcar region of the femur, said upper end terminating in a tapered shaft adapted to receive a femoral head component, the stem having a smooth distal portion with a lower end flattened to form an anterior stem tip to avoid impingement with the cortices, thereby preventing distal loading and consequent mid-thigh pain; a porous coating of metal beads providing a porous surface of interconnected three dimensional pores over the proximal portion of the stem and an underside of said medial collar, said coating adapted to mechanically interlock the proximal stem area with both soft cancellous and hard cortical bone tissue of the femur;

an inert metal alloy femoral head having a smooth substantially spherical outer bearing surface and adapted to be attached to the tapered shaft of the stem, intraoperatively;

an inert metal alloy acetabular cup for attachment to the acetabulum having a substantially hemispherical shape and inner and outer surfaces, with a porous coating of metal beads affixed to substantially all of said outer surface to thereby provide a porous surface of interconnected three dimensional pores, said inner surface being substantially smooth; and



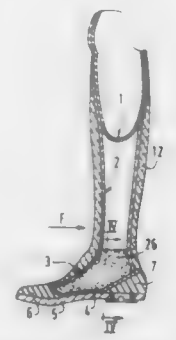
an inert high density polymeric bearing having a substantially hemispherical shape and adapted to be attachably received within said cup and to receive the femoral head so as to permit said femoral head to articulate freely therein.

5,004,477

PROSTHESIS FOR LEG AMPUTATION AND A PROCESS FOR ITS MANUFACTURE

Michel Palfray, Seurre, France, assignor to Etablissements Proteor, France

Filed Oct. 20, 1989, Ser. No. 424,525
Claims priority, application France, Oct. 21, 1988, 88 13840
Int. Cl.[5] A61F *2/66, 2/60*
U.S. Cl. 623—53 **6 Claims**



1. A prosthesis for amputation of the leg, which comprises, in monobloc form;

a socket (1) of a thermosettable resin;

a hollow leg element (2) rigidly integral with the socket, likewise of a thermosettable resin;

a hollow foot part (3) rigidly integral with the leg element (2), and in which is lodged a rigid core (26) of a foamed material, this foot part being likewise of a thermosettable material, wherein the core (26) of the hollow foot part comprises two corner-shaped parts (26*b*) of a flexible material, each with a ridge arranged essentially longitudinally along the foot part;

a sole element (4) of a thermosettable resin, closing the hollow foot part at its base; and

below the sole element (4), a heel corner (7), a metatarsus (6) and an actual elastomer sole (5).

5,004,478

MOTOR FUEL FOR INTERNAL COMBUSTION ENGINES

Hans-Henning Vogel, Frankenthal; Hans P. Rath, Gruenstadt; Claus P. Jakob, Viernheim, and Knut Oppenlaender, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 31, 1989, Ser. No. 429,814

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1988, 3838918

Int. Cl.[5] C10L *1/18*

U.S. Cl. 44—398 **3 Claims**

1. A motor fuel containing an amino or amido containing detergent and, as a fuel-detergent-enhancing additive in the form of a base oil, 50 to 5000 ppm of a mixture of:

(a) a polyether obtained by the reaction of (1) one mole of a starter selected from the group consisting of aliphatic and aromatic mono-, di- or poly- alcohols, amines, amides and alkylphenols and (2) at least about 8 moles of propylene oxide or butylene oxide and having a total molecular weight of not less than 500, and

(b) an ester of a carboxylic acid selected from the group consisting of adipic, phthalic, isophthalic, terephthalic and trimellitic acid and a long-chain alkanol or polyol, the ester having a minimum viscosity of 2 mm^2/s at 100° C. and a molecular weight from 370 to 1500 and wherein the weight ratio of (a) to (b) is from 20:80 to 80:20.

5,004,479

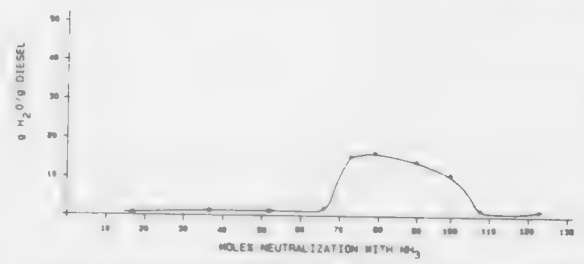
METHANOL AS COSURFACTANT FOR MICROEMULSIONS

Steven G. Schon, Philadelphia, and Edward A. Hazbun, Media, both of Pa., assignors to Arco Chemical Technology, Inc., Wilmington, Del.

Filed Jun. 9, 1986, Ser. No. 872,371

Int. Cl.[5] C10L *1/32*

U.S. Cl. 44—302 **10 Claims**



1. A microemulsion fuel composition consisting essentially of:

(a) at least 50% of weights of a petroleum hydrocarbon fuel;

(b) about 2.0 to about 40% by weight water; and

(c) a surface active amount of a surfactant consisting essentially of a combination of

(1) methanol and

(2) fatty acid partially neutralized to within 20 mol % of the optimum netralization value with a nitrogenous base selected from ammonia, (mono) ethanol amine or (mono) isopropanol amine; the weight ratio of partially neutralized fatty acid to methanol being in the range 0.5:1 to 8.0:1.

5,004,480

AIR POLLUTION REDUCTION

Diane D. Kanne, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed May 31, 1988, Ser. No. 200,757

Int. Cl.[5] C10L *1/18*

U.S. Cl. 44—387 **48 Claims**

1. A method for reducing the levels of air pollution resulting at least in part from the combustion of diesel fuel in diesel engines, said method comprising:

(a) deriving, in an oil refinery, a diesel fuel from a whole crude or a fraction thereof;

(b) then blending at least 10 volume percent of the diesel fuel produced per day from said refinery with dimethyl carbonate so as to provide a diesel fuel composition containing dimethyl carbonate in a concentration of at least about 0.5 volume percent, followed by;

(c) delivering a major portion of said blended fuel composition to storage facilities supplying fuel for use with said diesel engines; and

(d) combusting said blended fuel in said engines.

5,004,481

FUEL COMPOSITIONS CONTAINING SULFUR-BRIDGED PHENOLIC ANTIOXIDANTS

William Y. Lam, Ballwin, and Gregory P. Liesen, St. Louis, both of Mo., assignors to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 389,329, Aug. 3, 1989, Pat. No. 4,946,610.

This application May 4, 1990, Ser. No. 519,416

Int. Cl.[5] C10L *1/24*

U.S. Cl. 44—435 **5 Claims**

1. A fuel composition comprising a liquid fuel and from about 0.05 to 5.0 weight percent of a liquid, sulfur-bridged hindered phenol product prepared by the process comprising reacting a liquid mixture of phenols, which mixture contains at least two different hindered phenols each phenol having at least one hydrogen in the ortho or para position, with a sulfur chloride, in amounts of from about 0.45 to 0.55 mole of sulfur chloride per mole of phenol, in the presence of an amount of a nitrogen containing polar modifier which is effective to reduce the copper corrosion properties of said product and recovering the liquid, sulfur-bridged hindered phenol product.

5,004,482

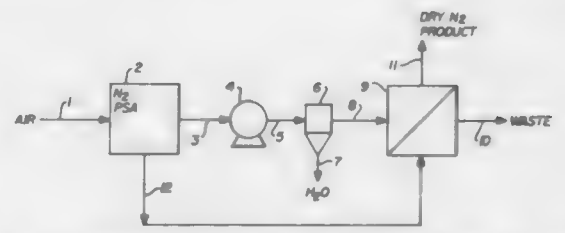
PRODUCTION OF DRY, HIGH PURITY NITROGEN

Oscar W. Haas, Cheektowaga; Ravi Prasad, East Amherst, and James Smolarek, Boston, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed May 12, 1989, Ser. No. 350,772

Int. Cl.[5] B01D *53/22, 53/04*

U.S. Cl. 55—16 **21 Claims**



1. An improved process for the production of dry, high purity nitrogen from air comprising:

(a) passing a wet, high purity nitrogen from a pressure swing adsorption system or wet feed air stream to a dryer membrane system capable of selectively permeating water from said wet stream;

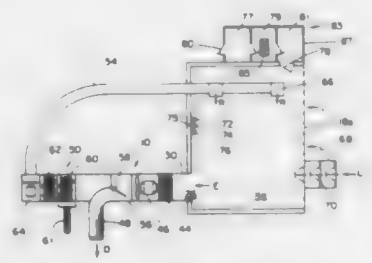
(b) passing relatively dry purge gas to the low pressure permeate side of said dryer membrane system to facilitate the carrying away of water vapor from the surface of the membrane and maintaining the driving force for removal of water vapor through the membrane from the high purity nitrogen or feed air stream for enhanced moisture removal therefrom, said relatively dry purge gas comprising waste gas from said pressure swing adsorption system or nitrogen product gas, whereby the provision of said purge gas on the permeate side of the dryer membrane system facilitates the desired moisture removal with minimum loss of product gas.

5,004,483

PARTICULATE ABATEMENT AND ENVIRONMENTAL CONTROL SYSTEM

Joe C. Eller; James E. Leavens, and Charles H. Wyatt, all of Houston, Tex., assignors to Enviro-Air Control Corporation, Houston, Tex.

Filed Apr. 25, 1990, Ser. No. 514,092
Int. Cl.[5] B01D *50/00*
U.S. Cl. 55—20 **20 Claims**



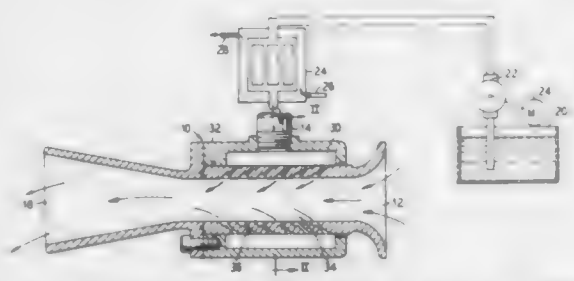
1. A method of providing an improved temporary working environment during removal of hazardous particulate material or during the encapsulation of the hazardous particulate material, the method comprising:
- defining a working space substantially sealed from space exterior of the working space;
- powering a portable air moving unit for exhausting air including hazardous particulate material from the defined working space to maintain a negative pressure within the working space with respect to the space external of the working space;
- monitoring the level of negative pressure within the working space;
- filtering the exhausted air to remove the hazardous particulate material;
- discharging a minority portion of the exhausted air to the space exterior of the working space;
- powering a portable conditioning unit to condition a majority portion of the exhausted air, the majority portion of the exhausted air being defined by the exhausted air less the discharged air;
- returning the conditioned air to the working space; and
- regulating the ratio of the minority portion of the discharged air to the majority portion of the conditioned air in response to the monitored level of negative pressure.

5,004,484

AIR STRIPPING OF LIQUIDS USING HIGH INTENSITY TURBULENT MIXER

Thomas E. Stirling, Sugarloaf, and John R. Ackerman, Hazleton, both of Pa., assignors to Barrett, Haentjens & Co., Hazleton, Pa.

Continuation-in-part of Ser. No. 238,474, Aug. 31, 1988, abandoned. This application Jun. 12, 1989, Ser. No. 364,588
Int. Cl.[5] B01D *19/00*
U.S. Cl. 55—53 **19 Claims**



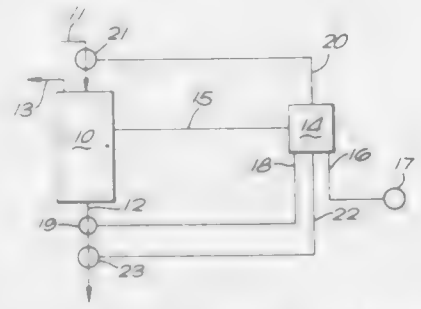
10. A method for removing dissolved gases and volatile organic chemicals from a liquid comprising:
- supplying a stream of pressurized liquid having contaminants therein to be removed to a contacting chamber having an inlet opening open to atmosphere and a discharge opening lying along an axis of said chamber; and
- introducing said pressurized liquid through a plurality of passages having a length to diameter ratio of at least 10 to 1 open to said contacting chamber in the form of individual jets directed in an axial, angled direction perpendicular to the axis to form large surface areas in the liquid phase and turbulently mixing the liquid within said jets so as to cause air to be aspirated into said contacting chamber through said inlet opening in a manner to enhance a turbulent mixing of said air and liquid in said contacting chamber.

5,004,485

MOLECULAR SIEVE-TYPE GAS SEPARATION SYSTEMS

Humphrey A. S. Hamlin, Montacute, and Michael W. Harral, Yeovil, both of England, assignors to Normalair-Garrett (Holdings) Ltd., Yeovil, England

Filed Mar. 26, 1990, Ser. No. 498,393
Claims priority, application United Kingdom, Apr. 3, 1989, 8907447
Int. Cl.[5] B01D *53/04*
U.S. Cl. 55—160 **12 Claims**



1. An on-board oxygen generating system for an aircraft, comprising a molecular sieve-type gas separation system arranged to deliver oxygen-enriched air as product gas to an outlet by adsorbing nitrogen from air fed to the system, the system including at least two sieve beds and control means for cyclically subjecting each said sieve bed to a charge/adsorption on-stream phase followed by a purge/desorption regeneration phase, the control means providing for a range of selectable cycle times and including means sensitive to the oxygen content of the product gas, means responsive to aircraft altitude to display a desired oxygen content of said product gas at an altitude within an operating range, and comparator means for comparing the displayed desired oxygen content with the sensed oxygen content of the product gas and adapted to adjust the cycle time in the sense required to null the difference between said displayed and sensed oxygen contents of the product gas.

5,004,486

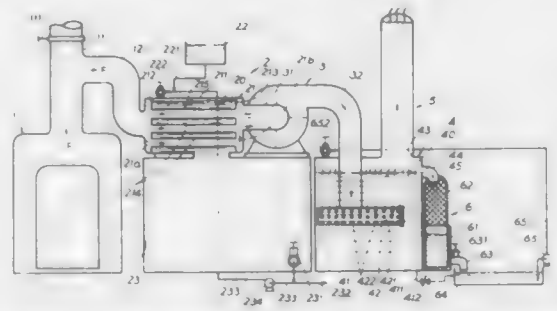
SUBMERGED-TYPE GAS CLEANING SYSTEM

Chun-Teh Chen, P.O. Box 55-1670, Taipei, Taiwan

Filed Jul. 2, 1990, Ser. No. 546,768
Int. Cl.[5] B01D *47/00*
U.S. Cl. 55—222 **4 Claims**

1. A submerged-type gas cleaning system comprising:
- a combustion equipment producing flue gas when burned, having a by-pass gas duct branched from a main stack of the combustion equipment;
- a cooling means connected to said by-pass gas duct of the combustion equipment for pre-cooling the flue gas passing therethrough;
- an exhaust fan having an inlet duct connected to said cooling means and an outlet pipe;

- a bubbling dust separating means for receiving a precooled flue gas from the outlet duct of the exhaust fan, having a bubbling dust separator submerged under a water level in a bubbling water tank for removing dust laden in the gas when bubbled through the bubbling dust separator;
- a stack for discharging treated gas mounted on said bubbling water tank; and



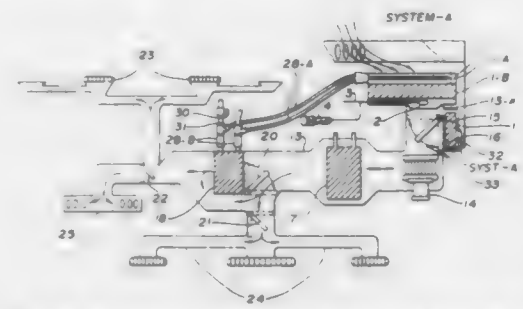
- a dust collection means for recovering dust, smoke or particulate matters separated from the water;
- said bubbling dust separator including a closed hollow body drilled with a plurality of perforations in the hollow body communicated with the outlet duct of the exhaust fan for bubbling flue gas through the perforations for rubbing off dust, smoke or particulate matters therefrom.

5,004,487

FILTER ASSEMBLY FOR PROTECTING MOTOR VEHICLE OCCUPANTS FROM POLLUTION

Thaddeus Kowalczyk, 8163 Lochdale, Dearborn Heights, Mich. 48127

Continuation-in-part of Ser. No. 337,943, Apr. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 239,386, Sep. 1, 1988, abandoned. This application Feb. 27, 1990, Ser. No. 485,230
Int. Cl.[5] B01D *46/12*
U.S. Cl. 55—269 **3 Claims**



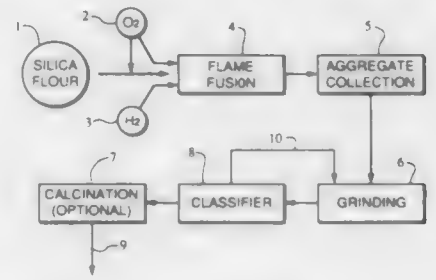
1. In an air purification system for protecting motor vehicle occupants from pollution, the system adapted for a motor vehicle having a passenger compartment and a source of hot liquid for heating, and comprising:
- a plenum in communication with the passenger compartment of the vehicle, the plenum having
- a first air inlet adapted to receive outside air from outside the passenger compartment into said plenum,
- a second air inlet adapted to receive inside air from said passenger compartment into said plenum, and
- a blower operable to move air from said plenum into said passenger compartment,
- a filter with at least one replaceable filter element, located in said plenum downstream of the air inlets, for removing pollutants from the outside and/or from the inside air,
- door means located upstream of said filter and downstream of said air inlets, adapted to assume a plurality of positions in said plenum in blocking relationship to air being moved through said first air inlet and/or the second air inlet to selectively admit the outside air and/or the inside air to said blower, and
- a hot liquid heater located upstream of said filter in the path of the outside air and adapted to raise the temperature of the outside air for protecting said filter from freezing and for keeping it dry, the heater having heat exchange means fort hot liquid from said hot liquid source.

5,004,488

PROCESS FOR PRODUCING HIGH PURITY FUSED QUARTZ POWDER

Vikram P. Mehrotra, and Ray E. Barker, both of Terre Haute, Ind., assignors to Pitman-Moore, Inc., Lake Forest, Ill.

Filed Mar. 20, 1989, Ser. No. 331,692
Int. Cl.[5] C03B *20/00*
U.S. Cl. 65—18.2 **11 Claims**



1. A process for converting low density silica flour particles into high density fused silica particles of high purity, said process comprising:
- feeding silica flour particles to a heating zone;
- heating said silica flour particles in a flame to a temperature sufficient to form fused silica particles from said silica flour particles, said fused silica particles having a relatively higher bulk density than said silica flour particles;
- controlling the flame temperature and the residence time of said silica flour particles in said flame to collect aggregates of said fused silica particles which exhibit a honeycomb-shaped structure that is surface bonded and less than 25% coalesced to facilitate a subsequent grinding step;
- grinding said aggregates into ground fused silica particles.

5,004,489

PROCESS FOR PRODUCING A GLASS-METAL CONNECTION

Frédéric Rotman, Tokyo, Japan; Yannick Rancon, Velizy, France; Philippe Queille, Viroflay, France, and Michel Olivier, Beynes, France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris, France

Filed Feb. 22, 1990, Ser. No. 483,177
Claims priority, application France, Feb. 22, 1989, 89 02277
Int. Cl.[5] C03C *27/02*
U.S. Cl. 65—32.2 **11 Claims**

1. A method of bonding together a glass part and a metal alloy part, said metal alloy part comprising iron and nickel, comprising the following successive steps:
- subjecting said glass part and said metal alloy part to an oxidation phase under a first atmosphere which is substantially inert and contains from 2 to 8% of water vapor and less than 1% of hydrogen at a first temperature of from 600° to 800° C.;
- bonding said glass part and said metal alloy part together under a second atmosphere at a second temperature greater than the first temperature,
- wherein at least said first atmosphere is obtained by a catalytic reaction of a mixture of hydrogen and oxygen in proportions selected so as to obtain the desired content of water vapor and hydrogen.

5,004,490
METHOD OF MAKING GLASS SUBSTRATE COATED WITH TIN OXIDE

Franklin I. Brown, Riverview, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 10, 1987, Ser. No. 83,479
Int. Cl.[5] C03C *25/02*
U.S. Cl. 60—60.52 7 Claims

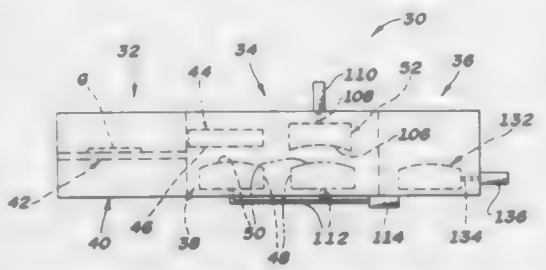
1. In a method of applying a tin oxide coating to a selected surface of a glass substrate in which said selected surface of said glass substrate is heated to a temperature sufficiently hot so that a heat decomposable tin-containing material coming into the vicinity of said selected surface will be heat decomposed permitting said tin contained in said tin-containing material to be oxidized and deposited as tin oxide on said selected surface, and in which a tin-containing material is applied in an oxygen containing ambient to said heated selected surface of said glass substrate, the improvement comprising:

forming said tin-containing material of a coating material containing alkyltin alkoxides of the general formula $RSn(OR^1)_3$ where R and R^1 are alkyl groups containing from 1-6 carbon atoms, whereby a coating film of oxidized tin is deposited on said selected surface of said glass substrate.

5,004,491
GLASS SHEET FORMING METHOD AND APPARATUS UTILIZING LOWER FULL SURFACE VACUUM MOLD AND UPPER RING MOLD

Ronald A. McMaster, Perrysburg, and Donivan M. Shetterly, Toledo, both of Ohio, assignors to Glasstech, Inc., Perrysburg, Ohio

Filed May 22, 1990, Ser. No. 527,144
Int. Cl.[5] C03B *23/03*
U.S. Cl. 65—106 21 Claims



1. Apparatus for forming a flat glass sheet, comprising:

a heating conveyor for heating the flat glass sheet to a sufficiently high temperature to permit forming thereof;

an upper topside transfer device having a downwardly facing flat surface for receiving the heated flat glass sheet from the heating conveyor;

a lower vacuum mold having an upwardly facing full surface with at least a portion thereof having an upwardly convex shape for receiving the heated flat glass sheet from the downwardly facing flat surface of the topside transfer device; and

an upper ring mold for forming and sealing the periphery of the heated glass sheet against the surface of the lower vacuum mold at which a vacuum is drawn within the sealed periphery of the glass sheet to fully form the glass sheet to the shape of the vacuum mold surface, and the upper ring mold including an enclosure defining a chamber in which a vacuum is drawn to permit the upper ring mold to lift the formed glass sheet upwardly from the lower vacuum mold after the vacuum actuated forming.

5,004,492
GLASS SHEET CONVEYING AND BENDING APPARATUS

John W. Borer, Toledo; William J. Skilliter, Genoa, both of Ohio, and Lowell J. Conner, Lathrop, Calif., assignors to Libbey-Owens-Ford Co., Toledo, Ohio

Filed Aug. 29, 1989, Ser. No. 400,465
Int. Cl.[5] C03B *23/03*
U.S. Cl. 65—289 17 Claims



1. Apparatus for press bending heat-softened glass sheets comprising a conveyor means having rolls for moving a sheet to be bent along a predetermined, generally horizontal to a press bending station, said press bending station including a vertically movable bending member having a continuous peripheral shaping rail conforming to the marginal outline of the glass sheet to be bent, at least one stub roll extending transversely of said conveyor means outside said shaping rail and having an inner end adjacent said shaping rail, at least one auxiliary roll independent from said stub roll and disposed entirely within the outline of said peripheral shaping rail, means beneath said shaping rail for driving said auxiliary roll, and means operable to selectively raise and lower said bending member for moving said shaping rail between a lowered position below said stub roll and said auxiliary roll and a raised position thereabove whereby said shaping rail lifts a sheet to be bent from said stub and auxiliary rolls for pressing between said shaping rail and a mating press member and deposits the bent sheet on said stub and auxiliary rolls for advancement out of said press bending station, spaced bearing rails along either side of said conveyor means for carrying the rolls of said conveyor means, a base member extending transversely of said conveyor means and removably supported at its ends upon said bearing rails, and means mounting said at least one auxiliary roll upon said base member.

5,004,493
METHOD FOR INDUCING RESISTANCE IN PLANTS USING ENVIRONMENTALLY SAFE ANTIOXIDANTS

Dale M. Norris, 101 S. Rock Rd., Madison, Wis. 53705

Filed Jun. 10, 1988, Ser. No. 205,157
Int. Cl.[5] A01N *43/08, 43/16*
U.S. Cl. 71—88 15 Claims

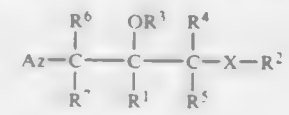
1. A method for increasing the resistance of a plant to pests or pathogens comprising the steps of administering to the surface of said plant an amount of one or more environmentally safe antioxidants effective to induce said resistance, said antioxidants being selected from the group consisting of ascorbates and tocopherols.

5,004,494
HETEROCYCLIC COMPOUNDS

Balasubramanyan Sugavanam; Paul A. Worthington, both of Berkshire, and John M. Clough, Buckinghamshire, all of England, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 7,352, Jan. 27, 1987, abandoned, which is a continuation of Ser. No. 353,941, Mar. 2, 1982, abandoned. This application Jan. 18, 1989, Ser. No. 298,835
Claims priority, application United Kingdom, Mar. 18, 1981, 8108412; Oct. 16, 1981, 8131301; Oct. 29, 1981, 8132682
Int. Cl.[5] A01N *43/653;* C07D *249/08*
U.S. Cl. 71—92 7 Claims

1. Triazole compounds having the general formula (I):



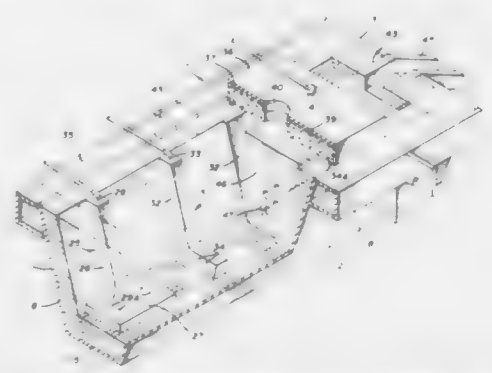
(I)

wherein R^1 is halophenyl and R^2 is hydrogen, C_1–C_6 alkyl or phenyl substituted with halogen R^3 is hydrogen; R^4 is hydrogen and R^5 is or C_1–C_6 alkyl; R^6 and R^7 are hydrogen; X is SO or SO_2; and Az is a 1,2,4- or 1,3,4-triazole ring; and isomers, acid addition salts and metal complexes thereof.

5,004,495
METHOD FOR PRODUCING ULTRA CLEAN STEEL

Micheal D. Labate, 115 Hazen Ave., Ellwood City, Pa.

Filed Feb. 5, 1990, Ser. No. 475,341
Int. Cl.[5] C21B *3/04, 7/072*
U.S. Cl. 75—10.22 12 Claims

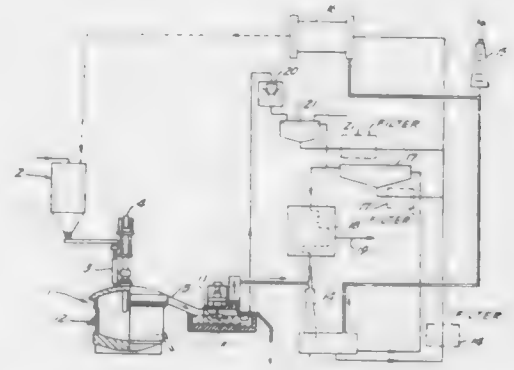


1. A process of treating molten steel to remove inoluble nonmetallic inclusions to produce clean and ultra clean steel comprising the steps of pouring molten steel into an insulated tundish having an insulated cover, maintaining a neutral atmosphere in said covered insulated tundish, stirring the molten steel with inert gas within said insulated covered tundish so as to precipitate said insoluble nonmetallic inclusions and moving same to the surface of the molten steel, maintaining and increasing molten steel temperature in said covered tundish, directing the insoluble nonmetallic inclusions from the tundish, pouring clean and ultra clean steel from the insulated tundish.

5,004,496
METHOD AND APPARATUS FOR TREATMENT OF DUST RECOVERED FROM OFF GASES IN METALLURGICAL PROCESSES

Jan A. Aune, Langhus, and Thor Pedersen, Oslo, both of Norway, assignors to Elkem a/s, Norway

Division of Ser. No. 209,492, Jun. 20, 1988, Pat. No. 4,957,551, which is a continuation-in-part of Ser. No. 40,307, Apr. 20, 1987, abandoned. This application Jul. 20, 1990, Ser. No. 555,653
Claims priority, application Norway, Apr. 2, 1987, 871369
Int. Cl.[5] C22B *7/02;* F27D *17/00*
U.S. Cl. 75—10.28 17 Claims



1. A method for treatment of dust precipitated from waste gas of a metallurgical process comprising the following steps:

(a) smelting said dust in combination with a reducing agent and a flux in a gastight electrothermic smelting furnace to produce an inert slag phase, a metal phase and a gas phase;

(b) tapping said furnace to remove said inert slag phase and said metal phase;

(c) oxidizing said gas phase in an afterburner;

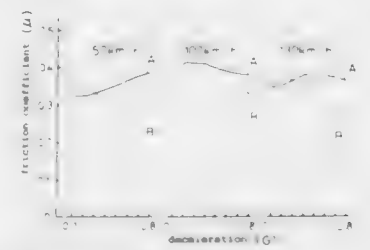
(d) cooling the oxidized gas phase, and

(e) removing any unreacted dust from said cooled, oxidized gas phase.

5,004,497
FRICTION MATERIAL

Katsuhiro Shibata; Yuichi Azuma, and Tsuguya Suzuki, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 12, 1989, Ser. No. 406,394
Claims priority, application Japan, Sep. 12, 1988, 63-228079
Int. Cl.[5] B22F *1/00*
U.S. Cl. 75—229 8 Claims



5. A friction material, comprising:

0.85 to 30% by weight of carbon fibers; and

2 to 20% by weight of para-aramid fibers including fibrillar fibers;

$AF < 1.67\ CF$ where AF is the aramid fiber content by weight and CF is the carbon content by weight.

8. A friction material according to claim 5, further comprising:

10 to 50% by weight of at least one substance selected from

the group consisting of copper, nickel, copper-zinc alloy, iron and copper-tin alloy;

5 to 20% by weight of at least one substance selected from the group consisting of graphite, molybdenum disulfide, zinc sulfide, lead sulfide, antimony trisulfide, mica and boron nitride;

10 to 50% by weight of a combination of at least one substance selected from the group consisting of silicon dioxide, alumina, mulite, magnesia (MgO), zirconium oxide and Spinel-structered ferrite (Fe_3O_4) and at least one substance selected from the group consisting of barium sulfate, calcium carbonate and cupric oxide;

3 to 20% by weight of at least one substance selected from the group consisting of melamine dust, polyimide dust, cashew dust and phenol dust; and

8 to 15% by weight of phenol resin.

5,004,498

DISPERSION STRENGTHENED COPPER ALLOY AND A METHOD OF MANUFACTURING THE SAME

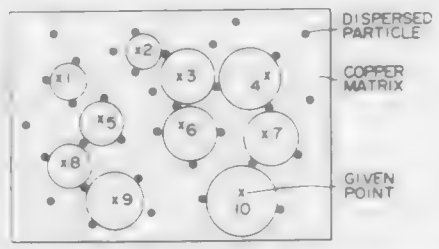
Keizo Shimamura, Kawasaki; Kagetaka Amano, Atsugi; Tatsuyoshi Aisaka, Ebina; Satoshi Hanai, and Kohsoku Nagata, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 10, 1989, Ser. No. 419,103

Claims priority, application Japan, Oct. 13, 1988, 63-257685; Oct. 27, 1988, 63-269328; Oct. 27, 1988, 63-269329; Oct. 27, 1988, 63-269330; Oct. 27, 1988, 63-269331; Oct. 27, 1988, 63-269333

Int. Cl.[5] **C22C** *29/12*

U.S. Cl. 75—233 **15 Claims**



9. A dispersion strengthened copper alloy produced by a method comprising the following steps:

mechanically pulverizing and mixing a powder of copper oxide having particle diameters of 5 μμm or less, and a raw material having particle diameters of 1 μμm or less which is chemically more stable than the copper oxide in a reducing atmosphere, to yield a mixed powder having particle diameters of 0.05 μμm or less;

selectively reducing the copper oxide contained in the resulting mixed powder, while maintaining said mixed powder at a temperature not higher than 1065° C.;

shaping the selectively reduced mixed powder; and

sintering the shaped body obtained to form a sintered body containing a copper matrix and dispersed particles.

5,004,499

RARE EARTH-IRON-BORON COMPOSITIONS FOR POLYMER-BONDED MAGNETS

Mohammad H. Ghandehari, Brea, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 115,829, Nov. 2, 1987, Pat. No. 4,834,812. This application May 26, 1989, Ser. No. 358,275

The portion of the term of this patent subsequent to May 31, 2005, has been disclaimed.

Int. Cl.[5] **H01F** *1/053*

U.S. Cl. 75—254 **21 Claims**

1. A composition for preparing a permanent magnet, said composition prepared by a method comprising the steps of:

(a) mixing a particulate alloy, containing at least one rare earth metal, iron, and boron, with at least one particulate additive metal having a melting temperature less than about 800° C.

(b) compacting the mixture to form a shape.

(c) heating the compacted shape at a temperature in the range from about 700° C. to less than 850° C. to form a heat-treated compact composition having magnetic properties, and

(d) crushing said heat-treated compact composition obtained from step (c) to produce a heat-treated compact powder composition having grain sizes of diameter less than 25 microns.

5,004,500

CHLORINATION PROCESS FOR RECOVERING GOLD VALUES FROM GOLD ALLOYS

Wendell E. Dunn, Jr., Spearfish; Dan D. Carda, Rapid City, and Timothy A. Storbeck, Spearfish, all of S. Dak., assignors to Auric-Chlor, Inc., Rapid City, S. Dak.

Filed Feb. 13, 1989, Ser. No. 310,233

Int. Cl.[5] **C22B** *11/06*

U.S. Cl. 75—422 **11 Claims**

1. A process for purifying a gold alloy comprising:

(a) reacting the gold alloy with chlorine at a temperature less than about 700° C. to form a metallic gold/metal chloride mixture; and

(b) washing the metallic gold/metal chloride mixture sequentially with air agitated hydrochloric acid and water to remove metal chlorides other than silver chloride from the mixture.

5,004,501

TWO PHASE CEMENT MIXTURE, PARTICULARLY SUITABLE FOR OTHOPAEDICS

Giovanni Faccioli, Monzambano; Basilio M. De Bastiani, Montegrotto; Bruno Magnan, Verona, and Renzo Soffiatti, Nogara, all of Italy, assignors to Tecres Spa, Bussolengo, Italy

Filed May 16, 1989, Ser. No. 352,569

Claims priority, application Italy, Jun. 1, 1988, 84950 A/88

Int. Cl.[5] **C09K** *3/00;* **A61F** *5/04, 2/00;* **C08K** *3/00*

U.S. Cl. 106—35 **5 Claims**

1. A two phase cement mixture which is particularly suitable for orthopaedic uses, comprising a solid powder phase and a liquid phase, wherein the solid phase comprises a polymer, polymethyl methacrylate ($-(C_5H_8O_2)_n-$) and a catalyst, benzoyl peroxide ($C_{14}H_{10}O_4$), while the liquid phase comprises a monomer, monomethyl methacrylate $C_5H_8O_2$, an accelerator, N-N-dimethyl-p-toluidine $C_9H_{13}N$ and a stabilizer, hydroquinone, characterized in that:

(a) the polymer consists of particles of spherical shape only;

(b) the spherical particles are present in proportions with diameters ranging up to 87 μm; and

(c) particles having diameter up to 0.90 μm comprise between 0.6% and 2.0% of the polymer.

5,004,502

NON-IRRITATING DETACKIFYING COMPOSITION

Chaudhary M. Ramzan, 91 Oak Bluff Rd., Milford, Conn. 06460

Filed Aug. 23, 1990, Ser. No. 571,207

Int. Cl.[5] **C09K** *3/00*

U.S. Cl. 106—287.13 **10 Claims**

1. A detackifying composition which is highly effective, non-toxic and provides for the painless removal of adhesive bandages from the skin, such composition comprising:

A. between about 20% and 90% by weight/volume of a volatile, low viscosity silicone fluid,

B. between about 10% and 70% by weight/volume of a paraffinic solvent selected from the group consisting of normal paraffinic solvents and isoparaffinic solvents; and

C. between about 1% and 20% by weight/volume of an isobutylene butene copolymer wherein said isobutylene butene copolymer is further defined as comprising an average molecular weight ranging between about 300 and 475 and a specific gravity ranging between 0.8 and 0.9 when measured by ASTM Standard D-1298 at 15.5° C.

5,004,503

DISTRIBUTION OF POWDER FOR MAKING COATED GLASS

Hideo Kawahara, Toyonaka; Nobuhiro Sakata, Nishinomiya, both of Japan; Jean-Claude Coulon, Mercurey, and Patrick Lovera, Chatenay Malabry, both of France, assignors to Saint-Gobain Vitrage, Courbevoie, France

Filed Aug. 2, 1983, Ser. No. 519,710

Claims priority, application Japan, Aug. 2, 1982, 57-134859

Int. Cl.[5] **C09K** *3/00;* **B32B** *17/06*

U.S. Cl. 106—287.18 **8 Claims**

1. A powder mixture for coating glass with homogenous coatings of uniform thickness which comprises:

(a) a composition which comprises dibutyltin oxide, dibutyltin difluoride, the acetylacetonates of Fe, Cr, Co, Ti, Al, Sn, Cu or In, or a mixture thereof, or other compound of the metals Fe, Cr, In, Co, Ti, Al, Sn and Cu or a mixture thereof, which are capable of being converted into a metal oxide or oxides upon contact with hot glass, and

(b) a water-repellent, anhydrous product having a base of finely-divided silica, wherein the proportion of product (b) added is between about 0.5 to 5%, based on the total weight of the powder.

5,004,504

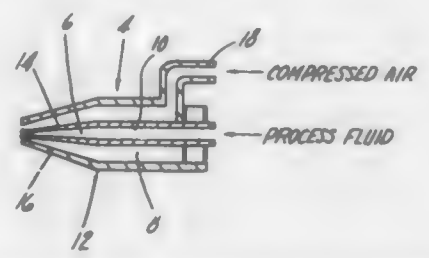
TRANSPARENT IRON OXIDE PIGMENTS

Rodney G. Schroeder, and Anand S. G. Sharangpani, both of Holland, Mich., assignors to BASF, N.J.

Filed Feb. 26, 1990, Ser. No. 485,025

Int. Cl.[5] **C09C** *1/22*

U.S. Cl. 106—456 **13 Claims**



1. A process for conversion of yellow transparent iron oxide to red transparent iron oxide comprising the steps of

atomizing an aqueous mass of yellow transparent iron oxide in a two fluid atomizing nozzle comprising a central conduit and an annular conduit surrounding said central conduit wherein said aqueous mass of yellow transparent iron oxide is passed through said central conduit and an atomizing fluid is forced under pressure through said annular conduit,

spraying the atomized pigment into a spray drying chamber wherein said atomized pigment is dried and calcined by heated air forming a plurality of minute discrete pigment particles and

recovering the minute discrete red pigment particles from the spray drying operation.

5,004,505

MAGNESIUM OXYCHLORIDE CEMENT COMPOSITIONS AND METHODS FOR MANUFACTURE AND USE

Russell I. Alley, and George E. Caine, both of Salt Lake City, Utah, assignors to CAC, Inc., Salt Lake City, Utah

Filed Nov. 4, 1988, Ser. No. 267,443

Int. Cl.[5] **C04B** *9/02*

U.S. Cl. 106—685 **42 Claims**

1. A composition for repairing damaged concrete surfaces produced by combining ingredients comprising:

a magnesium oxide composition having a weight percent of the concrete repair composition in the range from about 15% to about 30%, said magnesium oxide composition containing salt or mineral impurities other than magnesium oxide, the total amount of said impurities being in the range from about 5% to about 20% of the magnesium oxide composition;

a magnesium chloride brine solution having a specific gravity in the range from about 20° Baumé to about 30° Baumé, said magnesium chloride brine solution having a weight percent of the concrete repair composition in the range from about 15% to about 25%, said magnesium chloride brine solution containing salt or mineral impurities other than magnesium chloride, the total amount of said impurities being in the range from about 5% to about 20% of the magnesium chloride brine solution;

acid having a weight percent of the magnesium chloride solution in the range from about 1% to about 10%; and

a combination of different sized aggregate particles selected to minimize voids and interstitial spaces between said aggregate particles thereby forming a dense concrete repair composition, wherein the ratio of magnesium oxide to aggregate particles is in the range from about 1:2 to about 1:5.

5,004,506

WELAN GUM IN CEMENT COMPOSITIONS

Floyd L. Allen, Escondido; Glen H. Best, San Diego, and Thomas A. Lindroth, Spring Valley, all of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 366,063, Jun. 14, 1989, Pat. No. 4,963,668, which is a continuation of Ser. No. 181,844, Apr. 15, 1988, abandoned, which is a continuation-in-part of Ser. No. 47,748, May 7, 1987, abandoned. This application Apr. 2, 1990, Ser. No. 502,974

Int. Cl.[5] **C08B** *37/00;* **E21B** *33/00*

U.S. Cl. 106—729 **10 Claims**

1. A hydraulic cement composition comprising dry cement and 0.01–0.9% (wt) welan gum, based on the weight of the dry cement, whereby a cement slurry made therefrom is an improved suspension.

5,004,507

AQUEOUS-ALCOHOL FRUCTOSE CRYSTALLIZATION

Thomas P. Binder, and Robert M. Logan, both of Clinton, Iowa, assignors to Archer Daniels Midland Company, Decatur, Ill.

Continuation-in-part of Ser. No. 283,188, Dec. 12, 1988, Pat. No. 4,895,601. This application Oct. 31, 1989, Ser. No. 429,757

The portion of the term of this patent subsequent to Jan. 23, 2007, has been disclaimed.

Int. Cl.[5] **C13F** *1/02, 1/04*

U.S. Cl. 127—58 **24 Claims**

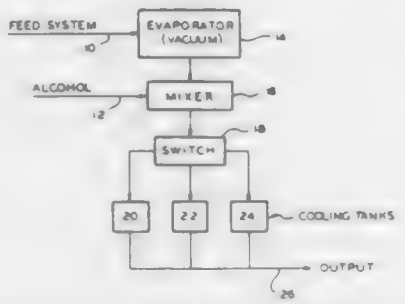
1. A continuous process for crystallizing fructose comprising the steps of:

(a) supplying an unseeded incoming aqueous fructose feed stream at a temperature in the order of about 130°–180° F.;

(b) placing said feed stream in an evaporator having an internal temperature in the range of about 105°–130° F.;

(c) continuing an evaporation within said evaporator until there is a crystallization of about 5–40% w/w of the total dry solids of fructose in said feed stream;

(d) discharging the partially crystallized magma content of said evaporator into a mixer and adding alcohol to said mixer with a mixture ratio in the range of from about 3 to 1 by weight to about 1 to 3 by weight of alcohol to said partially crystallized fructose feed stream;



(e) discharging the mixture from said mixer into at least one holding tank;
(f) cooling said mixture in said holding tank over a period of approximately 10–24 hours to a final temperature in the range of about 60°–80° F.; and
(g) removing and drying the contents of said holding tank.

5,004,508

THERMALLY DISSIPATED SOLDERING FLUX

Everitt W. Mace, Hutto; Janet Sickler, Georgetown, and Varadarajan Srinivasan, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 12, 1989, Ser. No. 449,647
Int. Cl.[5] B23K *34/35*
U.S. Cl. 148—22 **13 Claims**

1. A thermally dissipated no clean soldering flux adapted for use in assembling chips to integrated circuit boards where the stand off height of the chips to the boards is on the order of about 0.002 inches to 0.004 inches, the flux comprising:
from about 10 to about 20% by weight of camphor as a flux base;
from about 1 to 5% by weight of an organic activator;
the remainder being substantially at least one organic diluent; and
wherein the flux is characterized by the absence of halogen and rosin components and is thermally dissipated, in use, leaving no visible residue which would require a post cleaning step.

5,004,509

LOW RESIDUE SOLDERING FLUX

Samuel V. Bristol, Kokomo, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed May 4, 1990, Ser. No. 519,076
Int. Cl.[5] B23K *35/34*
U.S. Cl. 148—23 **44 Claims**

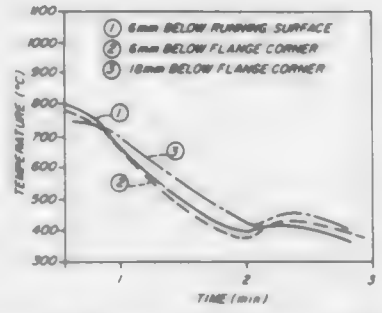
1. Low residue soldering flux comprising rosin and an activating amount of an essentially non-subliming dibasic acid mixture containing by weight about 15–30% succinic acid, 40–63% glutaric acid and 10–30% adipic acid.

5,004,510

PROCESS FOR MANUFACTURING HIGH STRENGTH RAILROAD RAILS

Meng W. Yu; Shihuai Su; Yue Z. Chen, all of Panzhihua; Zheng, Licheng, Chongqing; Kebin Ji, Panzhihua; Shou R. Ling, Panzhihua; Jian C. Lin, Panzhihua; Jianhui Deng, Panzhihua, and Kunwu Zhang, Panzhihua, all of China, assignors to PanZhiHua Iron & Steel Co., Sichuan Province, China

Filed Jan. 30, 1989, Ser. No. 302,907
Int. Cl.[5] C21D *9/04*
U.S. Cl. 148—146 **15 Claims**



1. A method of treating in a heat treating zone a steel rail comprising a base connected by a web to a rail head having a top providing a running surface, a pair of lower jaws comprising bottom surfaces of the rail head, and two rail head side surfaces extending substantially normal to the top surface and defining with the top surface and the lower jaws, a pair of generally rounder upper rail head corners and a pair of generally rounded lower rail head corners, said method comprising, in the following order the steps of:
(a) inductively preheating the entire rail from a starting temperature in the range from ambient temperature to below about 500° C. to a preheat temperature in the range from about 500° C. to about 550° C.;
(b) further inductively heating the rail head to a temperature in the range from the A_{c3} temperature of the steel to about 100° C. above the A_{c3} temperature;
(c) cooling the rail to a temperature below the A_{c3} temperature, and
(d) thereafter quenching the rail head in at least two steps by directing a first plurality of streams of cooling fluid against the top running surface and in a direction substantially normal thereto and second and third pluralities of cooling fluid streams against the side surfaces and the lower jaw surfaces in directions off-set from directions respectively normal to such surfaces such that overlapping of the top and side cooling streams at the top corners of the rail head and consequent overcooling of the top corners are substantially avoided, and wherein the cooling medium of a first quenching step is a gas and the cooling medium of at least one subsequent quenching step comprises a liquid.

5,004,511

PROCESS FOR PRODUCING NON-WOVEN FABRICS OF CARBON FIBERS

Tatsuya Tamura, and Akio Takamatsu, both of Kamisumachi, Japan, assignors to Petoca Ltd., Tokyo, Japan

Filed Feb. 23, 1989, Ser. No. 313,835
Claims priority, application Japan, Feb. 26, 1988, 63-41975
Int. Cl.[5] B32B *11/02*
U.S. Cl. 156—89 **2 Claims**

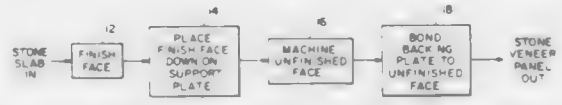
1. A process for producing non-woven fabrics of carbon fibers which comprises mixing spun pitch fibers with infusibilized pitch fibers or carbonized pitch fibers, shaping the mixture into a sheet, insufficiently infusibilizing the shaped mixture and thereafter carbonizing the shaped mixture in an atmosphere of an inert gas to mutually fix the component fibers by utilizing the adhering property of the insufficiently infusibilized pitch fibers during the carbonization.

5,004,512

METHOD OF MAKING A STONE VENEER PANEL

Frank Fodera, 12 Azalea Rd., Winchester, Mass. 01890

Filed Aug. 21, 1989, Ser. No. 396,359
Int. Cl.[5] B32B *31/00*; E04C *2/00*
U.S. Cl. 156—153 **14 Claims**



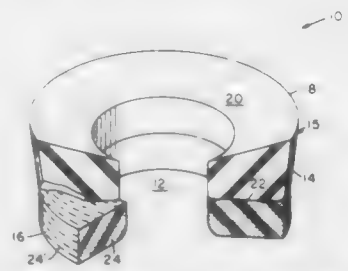
1. A method of making a stone veneer panel comprising:
first finishing one face of a slab of stone material;
then placing the slab finished face down on a support plate;
machining an unfinished face to obtain a predetermined thickness of the slab; and
bonding a backing sheet to said unfinished face of said stone slab to produce a composite stone veneer panel.

5,004,513

METHOD FOR FORMING A FIBER COMPOSITE SEALING ELEMENT

Steve Bemis, Houston, and Erwin E. Stocker, Cypress, both of Tex., assignors to The Gates Rubber Company, Denver, Colo.

Division of Ser. No. 934,074, Nov. 24, 1986. This application Sep. 26, 1988, Ser. No. 249,059
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—191 **3 Claims**



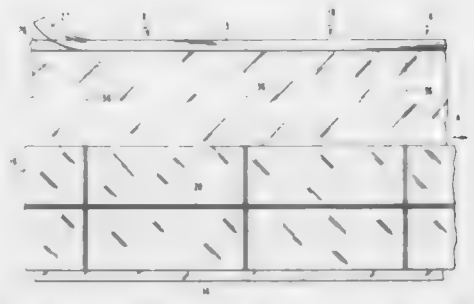
1. A method for producing a piston rubber sealing element having a cylindrical body comprising a sealing lip portion of relatively low stiffness and a reinforced base portion of relatively high stiffness, comprising the steps of:
forming a stock comprising an uncured elastomer and discrete reinforcing fibers having an aspect ratio from about 10 to about 1 into a composite sheet in which the fibers are substantially aligned unidirectionally in the sheet longitudinally thereof;
rolling up such sheet on itself on a mandrel about its axis into a multilayered sandwich in the form of a volute roll with the fibers of the sheet oriented generally in the direction of rolling and thereby generally concentrically in relation to the axis of the mandrel, with a portion of the fibers being positioned circumferentially at the outer diameter of the volute roll;
forming a separate mass of uncured elastomeric material;
positioning at least a portion of the volute roll sandwich and mass of uncured elastomeric material in a mold cavity of desired shape; and
pressurizing and heating the volute roll sandwich and mass of elastomer together in the mold to cure the same into an integral chemically bonded sealing element in which the cured sandwich with oriented fibers serves as the reinforced base portion, and the cured elastomer mass serves as the sealing lip portion.

5,004,514

METHOD OF MAKING PROTECTIVE BOOK COVERINGS

Joseph S. Pugliese, Lewisburg, and Charles L. Garman, Jersey Shore, both of Pa., assignors to Brodart Co., Williamsport, Pa.

Division of Ser. No. 330,213, Mar. 29, 1989, Pat. No. 4,893,837. This application Sep. 14, 1989, Ser. No. 407,296
Int. Cl.[5] B32B *31/18*
U.S. Cl. 156—251 **5 Claims**



1. A method of making protective book coverings, comprising the steps of:
providing a length of relatively wide plastic sheet material having two parallel longitudinal edges,
providing a length of relatively narrow plastic sheet material having two parallel longitudinal edges,
placing a face of the narrow length of material against a face of the wide length of material with the longitudinal edges of both lengths parallel to one another, the narrow material being closer to one of the longitudinal edges of the wide material than to the other,
heat sealing the two lengths of material together along a line parallel to the longitudinal edges of the material, the heat seal line being spaced from both longitudinal edges of the narrow length of material, and the heat seal line weakening the two lengths of material so that they can be torn along that line, and
heating and severing both lengths of material along lines transverse to the longitudinal edges thereof, the heat serving to seal together the two lengths of material along said transverse lines, and the severing serving to produce individual book coverings, each covering having two pockets, for accommodating the front and rear covers of a book, and a section extending from one of the pockets long enough to wrap around the spine of a book when a book cover is placed within that pocket.

5,004,515

AUTOMATIC PAPER FEEDER

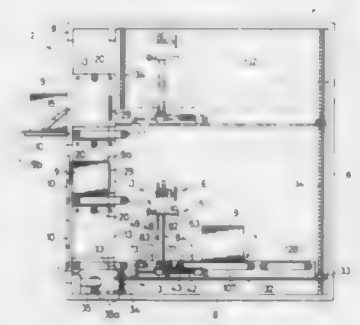
Yukichi Nebashi, and Takaaki Wada, both of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Apr. 22, 1988, Ser. No. 184,917
Int. Cl.[5] B32B *31/00*; B31F *5/00*
U.S. Cl. 156—350 **7 Claims**

1. An automatic paper feeder which automatically couples a plurality of pieces of folded long paper to each other and then continuously feeds said pieces, comprising:
a conveyance means for conveying said long paper;
sliders;
a beam supported by said sliders so that said beam can be moved perpendicularly to the surface of said long paper;
suction members disposed on said beam and juxtaposed along the width of said long paper;
a detection means for detecting the uppermost layer of said folded long paper; and

a restrictor disposed on said beam and having a reference surface which faces in the direction reverse to that of conveyance of said long paper, said reference surface contacting said long paper so that said long paper is pushed in for sure positioning; control means, and

means for moving said beam toward a surface facing in the direction of conveyance of said long paper responsive to said control means when the uppermost layer of said folded long paper is detected by said detection means to



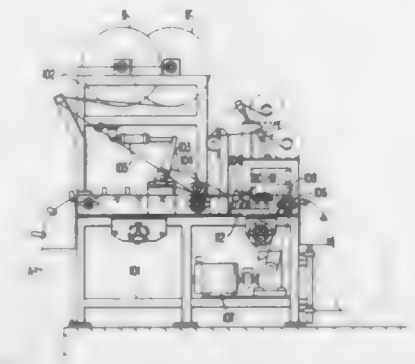
position the edge to be coupled of said long paper below said suction members, wherein said restrictor having the reference surface restricts said long paper and is movable between a position in which said restrictor is protruded toward the paper suction surfaces of said suction members and a position in which said restrictor is retracted away from said paper suction surfaces; and when said long paper is set in a position to be coupled, said restrictor is in said position in which said restrictor is retracted away from said paper suction surfaces.

5,004,516

APPARATUS FOR BONDING ADHESIVE RUBBER TAPE TO BOTH EDGES OF A STEEL CORD FABRIC

Yukihiro Koga, and Yukio Koyama, both of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 7, 1989, Ser. No. 334,547
Claims priority, application Japan, Apr. 7, 1988, 63-84064
Int. Cl.[5] B31F *5/08*
U.S. Cl. 156—463 **3 Claims**



1. An apparatus for applying adhesive rubber tape along at least one of two respectively opposing edges of a steel cord fabric, comprising:

feed means, including rotatably driven feed rollers, for feeding the steel cord fabric along a feed path;

supply means for supplying the adhesive rubber tape to said feed means; and

folding/bonding means, for folding and bonding the adhesive rubber tape along the at least one edge of the steel cord fabric, comprising

means, including a press roller, for pressing about half of the width of the adhesive rubber tape onto an upper surface of the steel cord fabric along the at least one edge thereof to bond the adhesive rubber tape to the steel cord fabric,

means, including oblique rollers having surfaces formed of elastic material which is conformable to the shape of the edges of the steel cord fabric, for folding an unbonded portion of the adhesive rubber tape about the edges of the steel cord fabric, said oblique rollers comprising at least two oblique rollers on at least one side of the path of the steel cord fabric, each of said oblique rollers being inclined at a different angle relative to the path of the steel cord fabric, one of said at least two oblique rollers on the at least one side of the path being mounted at an angle relative to the path such that it faces the upper surface of the steel cord and another of said at least two oblique rollers on the at least one side of the path being mounted at an angle relative to the path such that it faces a lower surface of the steel cord fabric,

means, including a taper roller, for press-fitting the folded portion of the adhesive rubber tape onto the steel cord fabric to bond the adhesive rubber tape in position about the at least one edge of the steel cord fabric, and

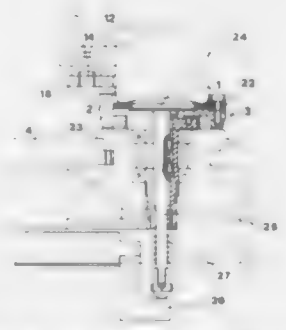
means for forcing said taper roller to rotate in synchronism with said driven feed rollers even if slippage occurs between the steel cord fabric and said taper roller.

5,004,517

DEVICE FOR THE ALIGNMENT OF BOTTLES PROVIDED WITH A REFERENCE MOLDING IN ROTARY LABELING MACHINERY

Ireneo Orlandi, San Giorgio Di Mantova, Italy, assignor to Alfa Costruzioni Meccaniche S.p.A., Mantova, Italy

Filed Nov. 14, 1989, Ser. No. 437,076
Claims priority, application Italy, Dec. 14, 1988, 40182 A/88
Int. Cl.[4] B65C *9/00*
U.S. Cl. 156—567 **4 Claims**



1. A device for the alignment of bottles incorporating a positively engageable reference (2), in rotary labeling machines, comprising:

a circular turntable, rotatable about a vertical axis,

a plurality of peripheral dishes (3) distributed uniformly about the periphery of the circular turntable, each rotatable about a vertical axis;

a mechanical stop (18) capable of alternating movement between an at-rest position and a position of engagement with the reference (2) afforded by a bottle occupying one of the rotatable dishes (3);

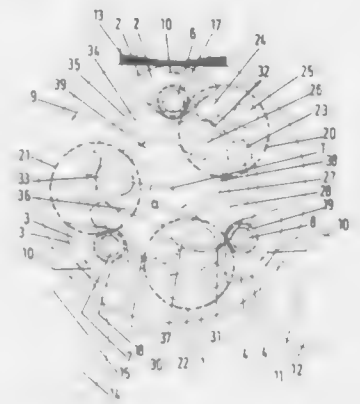
mechanical means by which to produce alternating movement of the mechanical stop each time a bottle is presented on one of the rotatable dishes.

5,004,518

LABELLING MACHINE FOR OBJECTS SUCH AS BOTTLES OR THE LIKE

Rudolf Zodrow, Düsseldorf, Fed. Rep. of Germany, assignor to ETI-TEC Maschinenbau GmbH, Erkrath, Fed. Rep. of Germany

Filed Apr. 7, 1989, Ser. No. 335,478
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1988, 3811869; Mar. 15, 1989, 3908378
Int. Cl.[5] B65C *3/16*
U.S. Cl. 156—568 **11 Claims**



1. Labelling machine for supplying labels to bottles or the like; said labelling machine including a plurality of stations located one behind another along a track; the plurality of stations including an adhesive application station, a label feed station, and a label transfer station; said labelling machine comprising:

a rotating support mounted on a central axis for rotation by each of the plurality of stations;

at least one extracting means for the labels;

said extracting means including a drive shaft means and being mounted ar said drive shaft means for rotation on said rotating support for movement by each of the stations during each rotation of said rotating support;

means for rotating said extracting means including cam means and follower means;

said cam means including a first cam disc and a second cam disc;

said first cam disc and said second cam disc being disposed below said rotating support at said central axis;

said first cam disc being an outside cam and including a first outer cam surface extending about said central axis;

said second cam disc being an outside cam and including a second outer cam surface extending about said central axis;

said first cam disc being disposed axially above said second cam disc;

means for operably connecting said follower means to said drive shaft means;

said follower means being mounted for rotation about a follower axis on said rotating support to cause said rotation of said extracting means;

said follower means including a follower support element disposed in a plane axially above said first cam disc;

said follower means including a first pair of followers aligned with said first cam disc for making contact with said first outer cam surface and a second pair of followers aligned with said second cam disc for making contact with said second outer cam surface;

each of said first pair of followers and said second pair of followers having said followers thereof being mounted on said followers support element at substantially opposite sides of said follower axis;

said follower means rotating about said cam means for producing said rotation of said extracting means;

said first pair of followers and said second pair of followers defining a moving equivalent cam surface;

said first cam disc and said second cam disc defining a fixed equivalent cam surface;

said moving equivalent cam surface being for rotation about said fixed equivalent cam surface with point by point rolling contact therebetween when said follower means is rotated about said cam means;

each of said followers including a center of rotation which is radially located within said moving equivalent cam surface; and

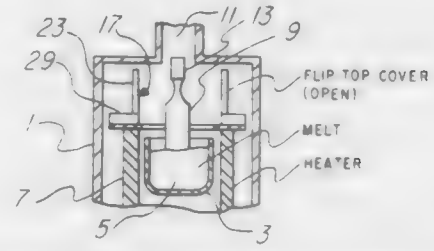
at least a portion of at least one of said followers lying outside of said moving equivalent cam surface.

5,004,519

RADIATION HEAT SHIELD FOR SILICON MELT-IN MANUFACTURING OF SINGLE CRYSTAL SILICON

Farouk A. Hariri, Sherman, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 941,008, Dec. 12, 1986, abandoned. This application Sep. 12, 1988, Ser. No. 244,623
Int. Cl.[5] C30B *15/00, 35/00*
U.S. Cl. 156—620.4 **11 Claims**



1. A method of melting silicon in a crucible, comprising the steps of:

(a) providing an open top crucible having silicon therein;

(b) covering the open top of said crucible with a heat radiation shield;

(c) heating said silicon to provide a melt thereof in said crucible;

(d) uncovering said crucible by an amount sufficient to allow single crystal silicon to be pulled from the crucible; and

(e) wherein step (d) includes moving said crucible in a vertical direction to uncover said crucible by lifting said heat radiation shield.

5. A furnace for melting silicon, comprising:

a crucible having an open top and movable in a vertical direction;

a heater for heating said crucible positioned adjacent thereto;

a radiation shield positioned over the open top of said crucible and covering the open top thereof and pivotally movable to an open position in response to vertical upward movement of said crucible; and

wherein said shield includes a plurality of segments each separately pivotally movable and having a counterweight positioned at an edge of each of said segments such that when said shield is in an open position exposing the open top of said crucible, said counterweights maintain corresponding segments in the open position and when said shield is in a closed position covering the open top of said crucible, said counterweights maintain corresponding segments in the closed position.

5,004,520

METHOD OF MANUFACTURING FILM CARRIER

Masahiro Tsuji; Susumu Kawauchi, both of Kangawa, and Hiroshi Nakayama, Tokyo, all of Japan, assignors to Nippon Mining Co., Ltd., Tokyo, Japan

Division of Ser. No. 160,479, Feb. 25, 1988. This application Dec. 1, 1989, Ser. No. 444,575

Claims priority, application Japan, Mar. 4, 1987, 62-47540; Jul. 7, 1987, 62-167896; Jul. 7, 1987, 62-167897

Int. Cl.[5] C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—630 24 Claims



1. A method for manufacturing a film carrier for mounting semiconductor chips or other electronic components in place, said method comprising:

(a) providing a roller copper alloy foil, wherein rolled copper alloy foil comprises a composition consisting essentially of a total of 0.005 to 1.5% by weight of one or more selected from the group consisting of

P	0.005–0.05	wt %,	B	0.005–0.05	wt %,
Al	0.01–0.5	wt %,	As	0.01–0.5	wt %
Cd	0.01–0.5	wt %,	Co	0.01–0.5	wt %,
Fe	0.01–0.5	wt %,	In	0.01–0.5	wt %,
Mg	0.01–0.5	wt %,	Mn	0.05–0.2	wt %,
Ni	0.01–0.5	wt %,	Si	0.01–0.5	wt %,
Sn	0.01–0.5	wt %,	Te	0.01–0.5	wt %,
Ag	0.01–1	wt %,	Cr	0.01–1	wt %,
Hf	0.01–1	wt %,	Zn	0.01–1	wt % and
Zr	0.01–1	wt %			

and the remainder Cu with inevitable impurities,

(b) laminating said rolled copper alloy foil onto a resin base film, and

(c) etching said rolled copper alloy foil.

5,004,521

METHOD OF MAKING A LEAD FRAME BY EMBOSSING, GRINDING AND ETCHING

Toru Makino, Shizuoka, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Nov. 20, 1989, Ser. No. 438,318

Claims priority, application Japan, Nov. 21, 1988, 63-294270; Nov. 21, 1988, 63-294271

Int. Cl.[5] C23F *1/00*

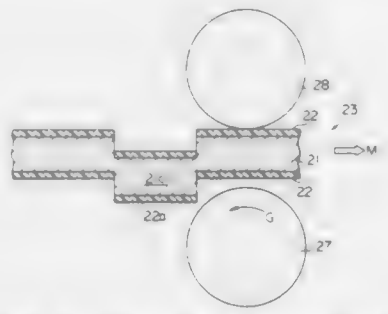
U.S. Cl. 156—645 11 Claims

1. A process of shaping a thin metal film into a lead frame, comprising the steps of:

(a) preparing a thin metal film, an etchant effective to etch the metal film and a protective material resistive to etching by the etchant;

(b) coating the entire surface of said metal film with a film of said protective material having a thickness, so as to form a multiple level structure having the metal film and a protective film;

(c) embossing a predetermined pattern on said multiple level structure by displacing a part of said multiple level structure, the distance of said displacement being greater than the thickness of said protective film so as to thereby break slits in said protective film, said slits exposing said metal film, said slits being substantially consistent with a profile of said predetermined pattern; and



(d) removing said part of said multiple level structure by grinding a portion of said protective material from said part, and then using said etchant to etch a hollow space in said metal film of said multiple level structure, by etching said metal film to the extent that a profile of said hollow space is substantially consistent with the profile of said predetermined pattern.

5,004,522

METHOD OF TREATING PHOTOGRAPHIC PROCESS WASTE LIQUOR THROUGH CONCENTRATION BY EVAPORATION

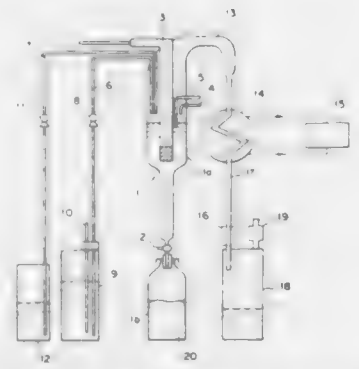
Shigeharu Koboshi; Kazuhiro Kobayashi; Nobutaka Goto; Masayuki Kurematsu, and Naoki Takabayashi, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 126,213, Nov. 27, 1987, abandoned. This application Dec. 20, 1989, Ser. No. 453,014

Claims priority, application Japan, Dec. 3, 1986, 61-288328

Int. Cl.[5] B01D *1/00*

U.S. Cl. 159—47.003 5 Claims



1. A method of treating photographic process waste liquor through concentration by evaporation, consisting essentially of the steps:

(a) supplying waste liquor to an evaporating vessel;

(b) evaporating liquid from photographic process waste liquor by heating directly an upper part of the photographic process waste liquor with a heating means immersed in the liquor;

(c) maintaining at least a 5° C. differential between the temperature of the photographic process waste liquor in the heated upper part of the waste liquor and the temperature at a bottom part of the photographic process waste liquor thereby concentrating the photographic waste liquor whereby solute precipitates;

(d) allowing solute which precipitates from the photographic process waste liquor to settle toward said bottom part;

(e) collecting the solute in a settling-depositing chamber from the bottom part of the waste liquor; and

(f) removing the solute from the settings depositing chamber thereby to restrain formation of noxious gases.

5,004,523

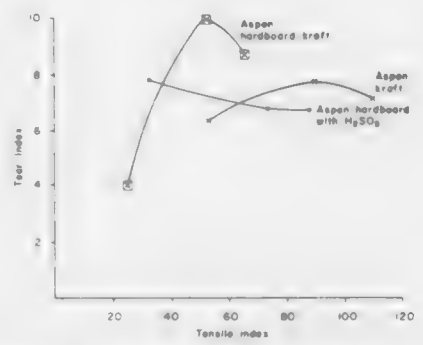
DELIGNIFICATION OF LIGNOCELLULOSIC MATERIALS WITH MONOPEROXYSULFURIC ACID

Edward L. Springer, Madison, and James L. Minor, Middleton, both of Wis., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 30, 1989, Ser. No. 330,547

Int. Cl.[5] D21C *3/04*

U.S. Cl. 162—76 2 Claims



1. A method of fractionating lignocellulosics by oxidative alteration of the lignin component followed by its extraction, the lignocellulosics being defiberized, destructured or ground prior to treatment, the method comprising:

(a) treating the lignocellulosic with an acidic oxidative aqueous solution having a pH range of 0 to 1.8, a sulfuric acid weight concentration of 0.16% to 11% based on solution, a monoperoxysulfuric acid weight concentration of 0.5% to 9% based on solution, at a temperature of up to 100° C. for a time period of up to 290 hours and a solution to wood ratio of 1:1–25:1, to form a lignocellusic residue;

(b) separating the lignocellulosic residue from the solution;

(c) extracting the lignin from the lignocellulosic residue.

5,004,524

REFRACTORY OXYCOMPOUD/REFRACTORY HARD METAL COMPOSITE AND USED IN MOLTEN SALT ALUMINUM PRODUCTION CELLS

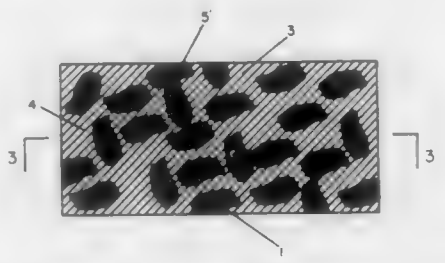
Jean-Jacques Duruz, Geneva, Switzerland, assignor to Moltech Invent S.A., Luxembourg

PCT No. PCT/EP88/00817, § 371 Date Apr. 28, 1989, § 102(e) Date Apr. 28, 1989, PCT Pub. No. WO89/02423, PCT Pub. Date Mar. 23, 1989

PCT Filed Sep. 8, 1988, Ser. No. 350,478

Int. Cl.[5] C25C *7/00*

U.S. Cl. 204—243 R 13 Claims



13. An aluminum reduction cell comprising a component having an aluminum-wettable surface in contact with molten aluminum during operation of the cell and which does not serve to conduct electric current, characterized in that the component comprises a solid body consisting of fused refractory oxycompound cast as a solid block having a multiplicity of discrete lumps or pieces of aluminum-wettable Refractory Hard Metal cast in aluminum wettable the surface of the block, the Refractory Hard Metal lumps or pieces being separated by fused refractory oxycompound, the surface of said block being rendered wettable by molten aluminum by said discrete lumps or pieces of Refractory Hard Metal.

5,004,525

COPPER ELECTROPLATING COMPOSITION

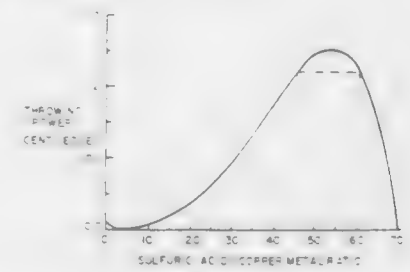
Roger F. Bernards, Wellesley; Gordon Fisher, Sudbury, and Wade Sonnenberg, Foxboro, all of Mass., assignors to Shipley Company Inc., Newton, Mass.

Continuation of Ser. No. 235,051, Aug. 23, 1988, Pat. No. 4,897,165. This application Nov. 20, 1989, Ser. No. 438,020

The portion of the term of this patent subsequent to Jan. 30, 2007, has been disclaimed.

Int. Cl.[5] C25D *3/38*

U.S. Cl. 204—52.1 4 Claims



1. An aqueous acid copper plating solution comprising one or more bath soluble copper salts in a concentration sufficient to provide a total copper ion content in an amount varying between 1 and 10 grams per liter and sufficient to support plating, acid as an electrolyte and a surfactant conforming to the formula

$$R—O—(CH_2CH_2O)_nH$$

where R is an aryl or alkyl group containing from about 2 to 20 carbon atoms and n is an integer whereby the molecular weight of the surfactant is at least 500,000.

5,004,526

PROCESS FOR EFFECTING ELECTROCHEMICAL REACTION

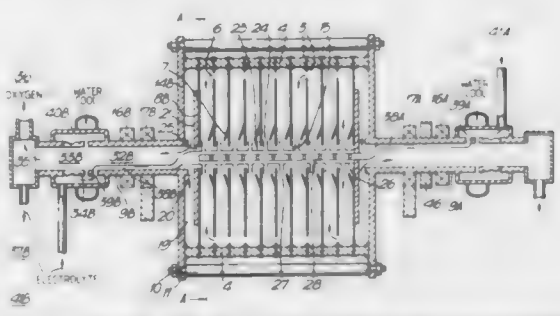
Colin Ramshaw, Norley, United Kingdom, assignor to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 322,716, Mar. 13, 1989, Pat. No. 4,931,166. This application Mar. 2, 1990, Ser. No. 487,183

Claims priority, application United Kingdom, Mar. 14, 1988, 8805991

Int. Cl.[5] C25B *3/00*

U.S. Cl. 204—73 A 5 Claims



1. A process for effecting electrochemical reaction between a first liquid phase and second liquid phase in an electrode

assembly comprising an electrode impermeable to the two phases, said process comprising:

(a) rotating and electrically charging the electrode assembly,

(b) containing the first phase within a cell bounded by said impermeable electrode;

(c) charging the second phase to the cell by supplying the second phase to an annular weir provided on one face of the electrode in such a way as to form a thin film of said second liquid phase over said one face of the electrode, and

(d) removing a reaction product of the two phases from the electrode.

5,004,527

CONTINUOUS ELECTROLYTIC PRODUCTION OF ALKALI METAL PERCHLORATES

Jean-Christophe Millet, Saint-Genis-Laval, and Michel Jaccaud, Lyons, both of France, assignors to Atochem, Puteaux, France

Filed Nov. 9, 1989, Ser. No. 435,289

Claims priority, application France, Nov. 9, 1988, 88 15137

Int. Cl.[5] C25B *1/26, 1/28*

U.S. Cl. 204—82 **15 Claims**

1. A process for the continuous production of an alkali metal perchlorate, comprising continuously electrolyzing an aqueous solution electrolyte of a corresponding alkali metal chlorate in a single electrolytic stage with a platinum anode, while maintaining said electrolyte homogeneous and compositionally uniform over time by the continuous and simultaneous introduction of alkali metal chlorate and water thereto in equal quantities to the chlorate and the water which are continuously withdrawn from the single electrolytic stage, wherein the composition of the electrolyte is such that alkali metal perchlorate can be directly separated therefrom by crystallization, and continuously directly separating desired alkali metal perchlorate from such solution of electrolysis.

5,004,528

METHOD AND APPARATUS FOR ELECTRO CHEMICAL MACHINING

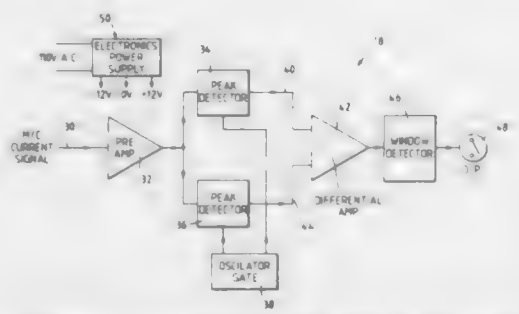
David R. England, Bristol, England, assignor to Rolls-Royce plc, London, England

Filed Feb. 2, 1990, Ser. No. 473,734

Claims priority, application United Kingdom, Feb. 14, 1989, 8903275

Int. Cl.[5] B23H *3/02*

U.S. Cl. 204—129.2 **5 Claims**



5. A method of disabling an electro chemical machining tool comprising: monitoring, in a series of successive time periods, current fed to the machine tool; detecting the maximum value of the current for each time period; comparing the maximum value of the current for each of at least some of the time periods with the maximum value of the current for a respective successive time period, to obtain a current difference; and disabling the electro chemical machine when the current difference is greater than a predetermined value, wherein the comparison operation compares the maximum value of the current of each time period with the maximum value of the current in the immediately succeeding time period.

5,004,529

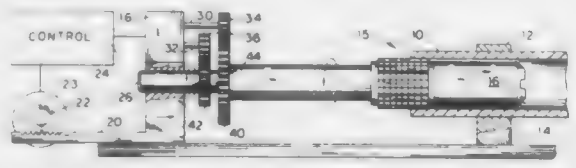
ELECTROCHEMICAL ETCHING APPARATUS

Alexander Vishnitsky, Henrietta, N.Y., assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 18, 1989, Ser. No. 423,766

Int. Cl.[5] B23H *9/00, 3/04*

U.S. Cl. 204—212 **9 Claims**



1. Electrochemical etching apparatus comprising:

first control means;

second control means;

first and second spaced apart axially aligned relatively rotatable positioning means coupled to said first and second control means respectively, and adapted for independent rotational movement;

rotatable electrode means disposed between said first and second positioning means; and

means extending between said first and second positioning means for aligning said electrode means to a position intermediate the positions of the first and second positioning means.

5,004,530

DISCHARGE MACHINING APPARATUS WITH LIQUID FLOW CONTROL

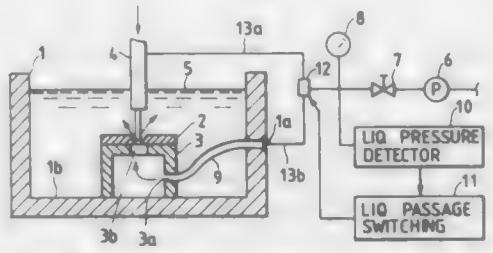
Hidehiko Tanaka, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 19, 1989, Ser. No. 381,927

Claims priority, application Japan, Jul. 20, 1988, 63-178980

Int. Cl.[5] B23H *3/10, 7/36, 9/14*

U.S. Cl. 204—224 M **5 Claims**



1. A discharge machining apparatus, comprising: a machining tank (1), a machining table (3) disposed in said tank and having an aperture (3*b*) in an upper surface thereof, a hollow tipped machining electrode (4) adapted to machine a workpiece (2) disposed over said aperture on said machining table by means of electric discharge between said electrode and said workpiece, a machining liquid supply system for normally supplying machining liquid to a machining zone between said electrode tip and said workpiece through a first machining liquid supply passage extending from pump means (6) down through said hollow electrode tip, through said machining zone, and up through a space defined between an outer peripheral surface of said machining electrode and said workpiece to flush away particles sputtered from the workpiece, means for detecting a pressure drop in said first machining liquid supply passage to a value smaller than a predetermined value caused by a breakthrough in a bottom of the workpiece over the aperture, and means responsive to an output of said detecting means to supply machining liquid through a second machining liquid supply passage extending from said pump means up through the machining table aperture and workpiece breakthrough, through the machining zone, and up through said space between the outer peripheral surface of the electrode and the workpiece to continue the flushing away of said particles.

5,004,531

TREATMENT OF CONCENTRATED INDUSTRIAL WASTEWATERS ORIGINATING FROM OIL SHALE AND THE LIKE BY ELECTROLYSIS POLYURETHANE FOAM INTERACTION

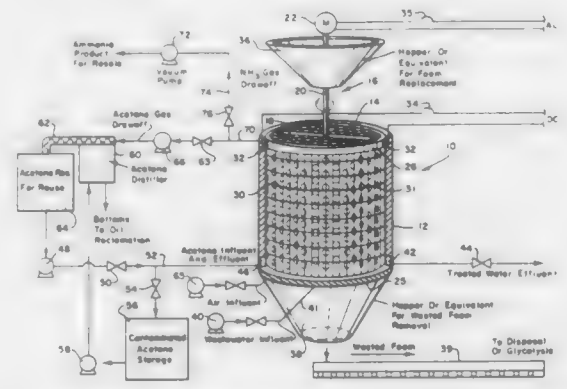
Joan E. Tiernan, 38 Clay Ct., Novato, Calif. 94947

Division of Ser. No. 148,721, Jan. 26, 1988, Pat. No. 4,929,359.

This application Mar. 3, 1989, Ser. No. 318,571

Int. Cl.[5] C02F *1/461*

U.S. Cl. 204—307 **7 Claims**



1. Appartus for removing pollutants from a liquid, said apparatus comprising, in combination:

a vessel for receiving said liquid to be treated;

shapes of ionized polyurethane foam disposed within said vessel for removing pollutants from said liquid to be treated;

means for applying a low level electrical current through said shapes and said liquid in said vessel which creates an electrolysis reaction with said liquid that enhances pollutant removal; and

means for producing relative motion of said liquid over said ionized polyurethane foam shapes for aiding removal of pollutants from said liquid.

5,004,532

AMPEROMETRIC CELL

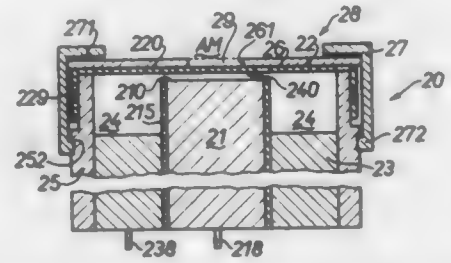
John M. Hale, Meinier, Switzerland, assignor to Orbisphere Corporation, Switzerland

Continuation of Ser. No. 743,155, Jun. 10, 1985, abandoned.

This application Mar. 27, 1987, Ser. No. 31,222

Int. Cl.[5] G01N *27/40*

U.S. Cl. 204—415 **4 Claims**



1. A membrane-enclosed amperometric cell for use in determining the concentration of an electroactive species of interest in an ambient medium; said cell comprising:

a working electrode having a sensing area defined by an essentially circular outer periphery;

a film of a liquid electrolyte covering said sensing area and being in electrolytic contact with counter electrode, said film having a substantially uniform thickness;

a polymer membrane that is substantially impermeable to said electrolyte but permeable to said electroactive species, said membrane extending in substantially conforming manner over said sensing area and said electrolyte film thereon, and said membrane having a substantially uniform thickness;

a barrier layer that is substantially impermeable to said electroactive species and is arranged between said ambient medium and said sensing area;

said barrier layer positioned between said ambient medium and said polymer membrane in sealing engagement with the latter;

said barrier layer having at least one opening positioned relative to said sensing area so that direct access of said electroactive species to said sensing area is limited to a portion of said sensing area within an inner periphery that is coaxial with said outer periphery and together with the latter defines a circumjacent margin having a width that is at least three times greater than said thickness of said polymer membrane; said electrolyte film on said sensing area which confronts said barrier layer circumjacent margin being of a width and thickness that is effective to prevent lateral diffusion of said electroactive species through said electrolyte film beyond said circular outer periphery of said sensing area.

5,004,533

PROCESS FOR TREATING AN ORGANIC STREAM CONTAINING A NON-DISTILLABLE COMPONENT TO PRODUCE AN ORGANIC VAPOR AND A SOLID

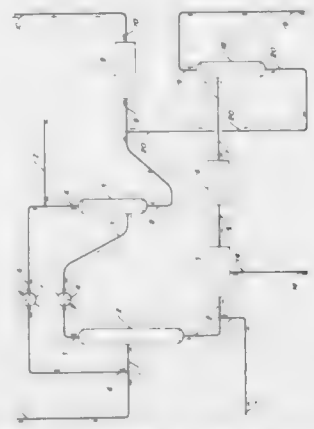
Tom N. Kalnes, La Grange, and Robert B. James, Jr., Northbrook, both of Ill., assignors to UOP, Des Plaines, Ill.

Filed Mar. 12, 1990, Ser. No. 491,768

The portion of the term of this patent subsequent to Apr. 4, 2006, has been disclaimed.

Int. Cl.[5] C10B *55/00*

U.S. Cl. 208—50 **22 Claims**



19. A process for treating an organic stream containing a non-distillable component to produce distillable organic compounds and a solid which process comprises the steps of:

(a) contacting said organic stream containing a non-distillable component with a first hydrogen-rich gaseous stream having a temperature greater than the organic stream in a flash zone at flash conditions thereby increasing the temperature of the organic stream and vaporizing at least a portion thereof to produce an organic vapor stream comprising hydrogen and a heavy stream comprising said non-distillable component;

(b) reacting at least a portion of said heavy stream compris-

ing said non-distillable component in the presence of hydrogen in a pyrolysis zone at pyrolysis conditions to produce a thermally stabilized volatile organic stream comprising hydrogen and a solid;

(c) contacting at least a portion of said organic vapor stream comprising hydrogen produced in step (a) and at least a portion of said thermally stabilized volatile organic stream comprising hydrogen produced in step (b) with a hydrogenation catalyst in a hydrogenation reaction zone at hydrogenation conditions;

(d) separating at least a portion of said organic vapor stream comprising hydrogen produced in step (a) to produce a second hydrogen-rich gaseous stream;

(e) recycling at least a portion of said second hydrogen-rich gaseous stream recovered in step (d) to provide at least a portion of said first hydrogen-rich gaseous stream utilized in step (a); and

(f) recovering distillable hydrocarbonaceous compounds from the effluent of said hydrogenation reaction zone.

5,004,534

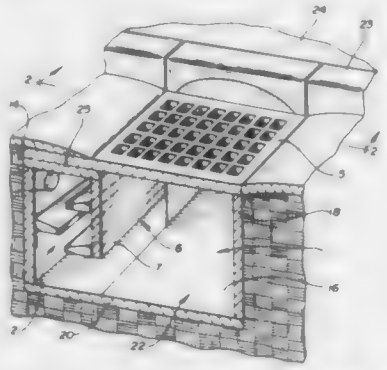
CATCH BASIN

Vincenzo Buzzelli, 226 Terrace Ave., Jersey City, N.J. 07307

Filed May 16, 1988, Ser. No. 194,548

Int. Cl.[5] B01D *21/00*

U.S. Cl. 210—164 **4 Claims**



1. In a catch basin having an inlet zone and an outlet zone separated by a vertical baffle wherein:

(i) the vertical baffle is positioned in such a manner that liquid is permitted to flow from the bottom of the inlet zone to the bottom of the outlet zone;

(ii) the vertical baffle provides an inner wall for the outlet zone; and

(iii) the outlet zone has an outer wall parallel to the vertical baffle, said outer wall having an outlet port at its upper end, the improvement comprising;

locating a series of at least three alternating baffles in the outlet zone, said alternating baffles being parallel, and bearing a spaced relationship, to each other; the odd numbered baffles in the series being attached at right angles to the vertical baffle; the even numbered baffles in the series being attached at right angles to the outer wall; and each baffle in the series extending just beyond the midpoint between the vertical baffle and the outer wall, the first baffle in the series being attached to the bottom of the vertical baffle and the last baffle in the series being attached to the vertical baffle at a point below an imaginary line running from the bottom of the outlet port to the vertical baffle, said imaginary line being parallel to the alternating baffles.

5,004,535

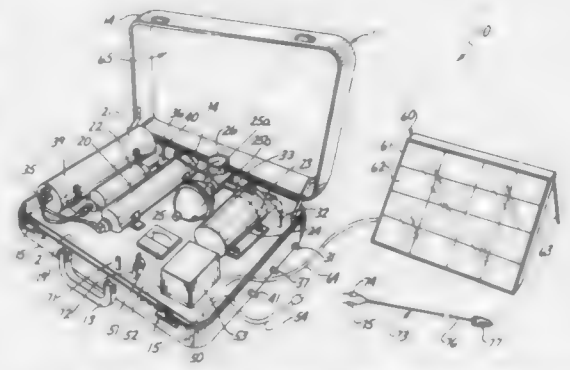
WATER PURIFICATION SYSTEM

Robert S. Bosko, and Thomas C. Barnes, both of Hermosa Beach, Calif., assignors to Aquatec Water Systems Incorporated, Anaheim, Calif.

Filed Apr. 17, 1989, Ser. No. 339,392

Int. Cl.[5] B01D *61/10*

U.S. Cl. 210—90 **8 Claims**



1. A reverse osmosis water purification system, comprising:

a support structure in the form of a suitcase-like component;

purification means mounted on the support structure for producing product water and waste water from feedwater by reverse osmosis, the purification means including a prefilter, a reverse osmosis membrane, and a post filter connected in series;

a diaphragm pump mounted on the support structure for pumping feedwater from a separate source;

inlet means on the support structure for coupling the feedwater from the separate source to the diaphragm pump;

accumulator means mounted on the support structure and coupled to the pump for accumulating the feedwater from the pump for coupling to the prefilter;

first outlet means on the support structure for outletting the product water from the post filter;

second outlet means on the support structure for outletting the waste water from the purification means;

a battery mounted on the support structure for powering the diaphragm pump;

a solar panel mounted on the support structure for powering the diaphragm pump; and

means mounted on the support structure for enabling a user to connect the diaphragm pump to an external source of electrical power.

5,004,536

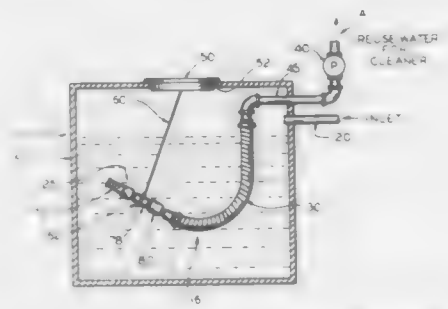
WATER RECLAMATION APPARATUS

Edward Geisler, 150 Pfaff Dr., Frankfort, Ill. 60423

Filed Apr. 25, 1989, Ser. No. 343,047

Int. Cl.[5] B60S *3/00*; **B01D** *29/00*

U.S. Cl. 210—136 **18 Claims**



13. A vehicle washing water reclamation system comprising:

a vehicle washing water reclamation tank for holding water to be recycled,

means for pumping water out of said tank,

conduit means for conveying water from said reclamation tank, a first end of said conduit means extending beneath the level of said water in said reclamation tank, a second end of said conduit means being coupled to said pumping means;

filter means coupled to the first end of said conduit means for preventing debris in the reclamation tank from entering said conduit means; and

first and second individual one-way valve means, operatively connected in series within said conduit means, for allowing water to flow from said reclamation tank through said conduit means and for preventing water from flowing back into said reclamation tank form said conduit means under conditions where one of said valve means is held in an open position, constructed and arranged to retain water in said conduit means at all times, including periods when said pump is not activated.

5,004,537

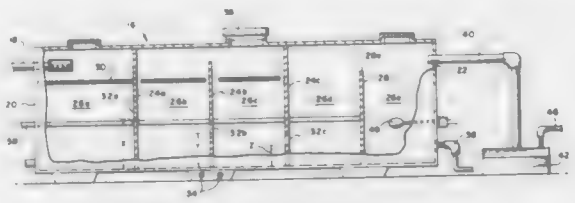
OZONE WATER PURIFICATION SYSTEM

James J. Brown, 43 Oregon La., Boca Raton, Fla. 33487

Filed Dec. 19, 1989, Ser. No. 452,307

Int. Cl.[5] C02F *1/78*

U.S. Cl. 210—192 **8 Claims**



1. A water purification tank comprising:

(a) a plurality of baffle members extending across the tank to divide the interior of the tank into a plurality of chambers;

(b) contaminated water inlet means in fluid communication with an upstream chamber;

(c) a water passage defined by each of the baffles to allow water to pass through each baffle member into an adjacent downstream chamber, the height of each passage from the bottom of the tank being progressively lower from an upstream to a downstream direction;

(d) a water level control baffle extending across the tank downstream of a baffle member, the water level control baffle being spaced from a top of the tank to define an overflow weir to control the water level within the tank, wherein each of said baffle members extends from the bottom of said tank to a point above the water level and each of said passages has an upper extent below the water level;

(e) ozone distribution means connected to an ozone source, said ozone distribution means extending through at least one chamber to distribute ozone into the water located in the at least one chamber; and,

(f) water outlet means located downstream of the water level control baffle.

5,004,538

CONTROL ARRANGEMENT FOR THE CHROMATOGRAPHY OF LIQUID

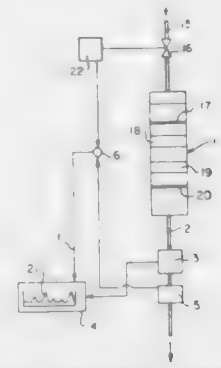
Helmut Apfel, Loheweg 5, 8039 Puchheim, Fed. Rep. of Germany

Continuation of Ser. No. 245,300, Sep. 16, 1988, abandoned. This application Mar. 2, 1990, Ser. No. 492,319

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1986, 3608227

Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—198.2 **5 Claims**



1. A control arrangement for a liquid chromatograph to compensate for non-uniform flow rates past a chromatograph detector, said arrangement comprising:

(a) a separation column having an inlet for receiving a solvent and an outlet for discharging an eluate, said separation column being adapted to be charged with a specimen to be separated into its individual fractions;

(b) a detector for detecting each fraction of the specimen in the eluate and for generating a detector signal proportional to the substance concentrations of the fractions as well as the volume of each fraction;

(c) an analyzing device having an integrator for integrating said detector signal over a given time interval to provide an integrator output value indicative of the quantity of substance to be determined contained in the specimen;

(d) a flow meter for determining the actual flow rate of eluate past said detector for a given time period and for generating a signal representative of a desired flow rate;

(e) a standard flow rate signal generator for providing a standard signal representative of a desired flow rate;

(f) a comparator for generating a correction factor signal equal to the ratio of said actual flow rate signal to said standard signal for a given time interval; and

(g) compensating means for compensating for variations in the actual flow rate from the standard flow rate by directly correcting the integrator output value as a function of the correction factor to alter the time interval of the integrator to correspond to the actual flow rate of eluate past the detector to permit the integrator of the analyzing device to operate correctly in real time even when the actual flow rate deviates from the desired flow rate.

5,004,539

SUPERCONDUCTING MAGNETIC SEPARATOR

Joseph G. Colwell, Jr., Thomson, Ga., assignor to J. M. Huber Corporation, Borger, Tex.

Filed Oct. 12, 1989, Ser. No. 420,760

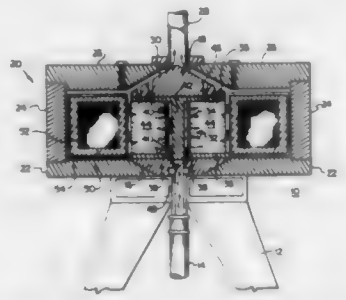
Int. Cl.[5] B01D *35/06*

U.S. Cl. 210—222 **6 Claims**

1. A superconducting magnetic separator which comprises a support, a separator canister, an inlet tube for injecting into said canister a slurry of water and kaolin which contains at least some ferromagnetic particles, an outlet tube for conducting the slurry from the canister, and a superconductor magnet comprising at least one superconductor coil, and Dewar means containing said coil for maintaining said superconductor coil at

or below a threshold temperature at which superconductance takes place, and defining a cylindrical space coaxial with said coil in which said canister is contained,

said canister comprising first and second axial pole pieces disposed on opposite ends of said canister, one of which includes means for conducting the slurry into the canister and one of which includes means for conducting the slurry from the canister; a support post extending axially from the first to the second pole piece to resist the high compressive forces imposed on the canister by the superconductor magnet, said post having at least one axial



passage therein communicating with one of said inlet and outlet tubes, and a plurality of openings through a radial surface from said at least one axial passage, and a packing of ferromagnetic material filling said canister outside said post such that the slurry flow is conducted in said axial passage, through said openings and through said packing to contact the ferromagnetic particles with said packing so that said particles are removed magnetically from said slurry; and ferromagnetic means disposed outside said superconductor magnet to define a flux return path between said pole pieces.

5,004,540

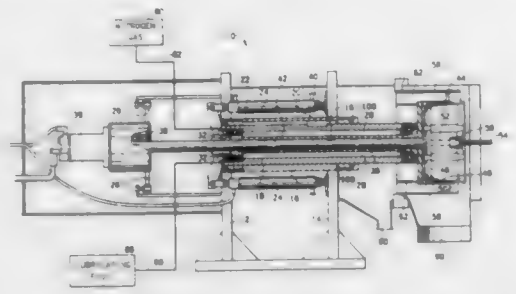
INVERTIBLE FILTER-TYPE CENTRIFUGE WITH IMPROVED BEARING AND SEAL ASSEMBLY

James B. Hendricks, Lakeside, Calif., assignor to Ketema Process Equipment Division, Santee, Calif.

Filed Dec. 1, 1989, Ser. No. 445,010

Int. Cl.[5] B01D *33/067*

U.S. Cl. 210—232 **12 Claims**



1. In an invertible filter centrifuge having a housing defining a centrifuge chamber with a perforated drum mounted in said chamber on the front end of a hollow shaft which is rotatably mounted at said front end by a front bearing assembly and slideably mounted on a central shaft, said central shaft having a base plate mounted on a front end thereof, a filter cloth disposed with one end attached to the drum and the other end attached to said base plate and normally disposed in an operative position within said drum, and double acting piston means for displacing the drum axially for displacing and inverting the filter cloth therefrom, the improvement comprising:

means for contacting bearings in said bearing assembly with a quantity of lubricating fluid;

a nitrogen gas pressurized seal disposed between said bearing assembly and said centrifuge chamber for inhibiting the passage of contaminants therebetween, said pressurized seal comprising a pair of opposed annular lip seals axially spaced along and contacting an outer surface of said hollow shaft; and

means for introducing a quantity of pressurized nitrogen gas between said lip seals.

5,004,541

FLUID PURIFICATION SYSTEM

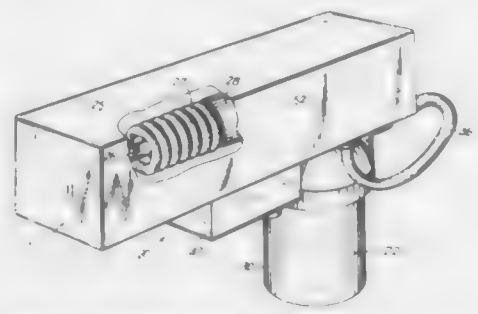
John R. Noll, Middlebury, and Stephen V. Montvila, Brookfield, both of Conn., assignors to Electrolux Water Systems, Inc., Marietta, Ga.

Continuation-in-part of Ser. No. 183,658, Apr. 19, 1988, abandoned, which is a continuation of Ser. No. 915,238, Oct. 3, 1986, Pat. No. 4,769,131, which is a continuation-in-part of Ser. No. 861,569, May 6, 1986, abandoned. This application Sep. 2, 1988, Ser. No. 240,251

The portion of the term of this patent subsequent to Nov. 6, 2007, has been disclaimed.

Int. Cl.[5] B01D *17/06, 35/06*

U.S. Cl. 210—251 **15 Claims**



1. A liquid purification system comprising:

an inlet to said system for supply of liquid to be purified;

means for emitting ultraviolet radiation;

a first conduit directly connected at one end thereof to said inlet for receiving the liquid to be purified, said first conduit having an outlet port at the other end and being transparent to the emitted ultraviolet radiation for allowing said ultraviolet radiation to impinge on the liquid throughout flow of the liquid through said first conduit,

liquid purification means, coupled to said outlet port of said first conduit, for purifying the irradiated liquid and for bringing purified, irradiated liquid to an outlet of said purification means;

a second conduit connected at one end thereof to said purification means for receiving the purified irradiated liquid, said second conduit having an outlet port at the other end and being transparent to the ultraviolet radiation emitted by said source for allowing said ultraviolet radiation to impinge on the processed liquid throughout flow of the liquid through said second conduit to the outlet port of said second conduit and a system outlet directly connected to said outlet port of said second conduit for delivering purified, twice irradiated liquid to a user, said system being arranged from inlet to outlet so as to prevent entry of external sources of contamination; and wherein the size of said means for emitting ultraviolet radiation and the size of said conduits are chosen to assure extinction of undesirable microorganisms, bacteria and viruses in liquid flowing through said conduits.

5,004,542

FILTER MEMBRANE WITH FLEXURE

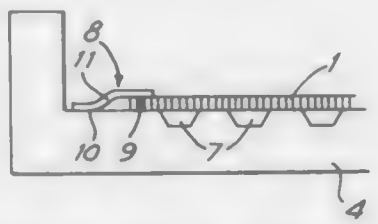
Nicholas Lyons, Horsham; William R. S. Baxter; Adrian M. Woodward, both of Cambridge, and Roger W. Clarke, Cambridge, all of England, assignors to Alcan International Limited, Montreal, Canada

Continuation of Ser. No. 143,452, Jan. 12, 1988, abandoned. This application Jun. 22, 1990, Ser. No. 545,112

Claims priority, application United Kingdom, Jan. 16, 1987, 8701055

Int. Cl.[5] B01D *65/00*

U.S. Cl. 210—356 **12 Claims**



1. A filter comprising a housing, a filter membrane made of porous material for filtering fluid passing through said filter, and a sheet of flexible impermeable material attached to the perimeter portion of the membrane and to the housing, to thereby mount the membrane relative to the housing in such a way as to allow the membrane to float with respect to the housing, said sheet of flexible material having

(a) two lines of securement:

(i) a first line of securement securing the flexible sheet to the membrane, and

(ii) a second line of securement securing the flexible sheet to the housing, said second line of securement being spaced, along the surface of the sheet, from the first, and

(b) a sheet portion, in the space between the two lines of securement, constituting a region of flexure operable to isolate the membrane from relative movement between the membrane material and the housing.

5,004,543

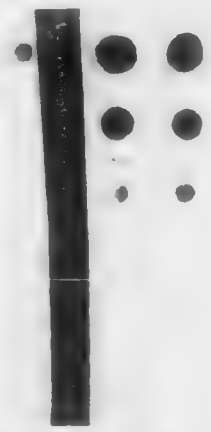
CHARGE-MODIFIED HYDROPHOBIC MEMBRANE MATERIALS AND METHOD FOR MAKING THE SAME

Malcolm G. Pluskal, Bedford; David Wang, Lexington, and Michael J. Steuck, North Reading, all of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Jun. 21, 1988, Ser. No. 209,307

Int. Cl.[5] B01L *67/00*

U.S. Cl. 210—490 **18 Claims**



15. A filtration material which comprises a hydrophobic, microporous membrane coated with a cross-linked, cationic polymer such that the ion exchange capacity of the coated membrane is provided by fixed, formal positive charge groups associated with the polymer, thereby providing a filtration material having both ionic and hydrophobic surface effects.

5,004,544

REACTION BONDED SILICON NITRIDE FILTRATION MEMBRANES

Robert A. Hay, Dudley; Craig A. Willkens, Sterling, and Arsenault, Normand P., Holden, all of Mass., assignors to Norton Company, Worcester, Mass.

Filed Nov. 13, 1989, Ser. No. 434,651

Int. Cl.[5] B01D *71/02*

U.S. Cl. 210—490 **23 Claims**

1. A supported filtration membrane comprising an effective separating layer consisting essentially of in situ formed silicon nitride having an effective pore diameter of about 1,000 nm or less and bonded to a porous support having substantially greater permeability than said effective separating layer.

5,004,545

CERAMIC FOAM FILTER APPARATUS

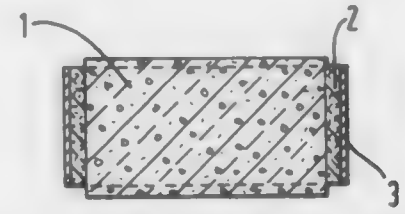
Hans-Peter Wahl, Velen; Rudolf Schlueter, Velen-Ramsdorf; Wolfgang P. Kaettliz, Borken, and Rolf Loos, Zuelpich, all of Fed. Rep. of Germany, assignors to Foseco International Limited, Birmingham, England

Filed Jun. 28, 1990, Ser. No. 544,945

Claims priority, application United Kingdom, Jul. 22, 1989, 8916839

Int. Cl.[5] C22B *9/02, 21/06*

U.S. Cl. 210—510.1 **7 Claims**



1. A ceramic foam filter having its peripheral surface surrounded by a gasket made from fibrous material and having metallic foil fixed to the gasket around the outer peripheral surface of the gasket.

5,004,546

PROCESS FOR MEASURING STABLE-TYPE GLYCATED HEMOGLOBIN IN A SAMPLE

Hiroaki Takahashi, Sagamihara; Haruo Okada, Tokyo; Katsuya Matsumoto, and Masuo Umino, both of Atsugi, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

Division of Ser. No. 79,435, Jul. 30, 1987, Pat. No. 4,879,039. This application Sep. 1, 1989, Ser. No. 401,879

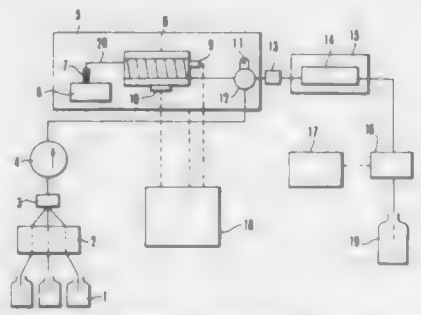
Claims priority, application Japan, Jul. 30, 1986, 61-177599

Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—635 **3 Claims**

1. A process for measuring the amount of stable-type glycated hemoglobin in a sample using high performance liquid chromatography, comprising heating to a temperature of at least 45° C. a sample diluted with a hemolysis agent containing

a reagent comprising potassium phthalate for the removal of unstable-type glycated hemoglobin to achieve the removal of



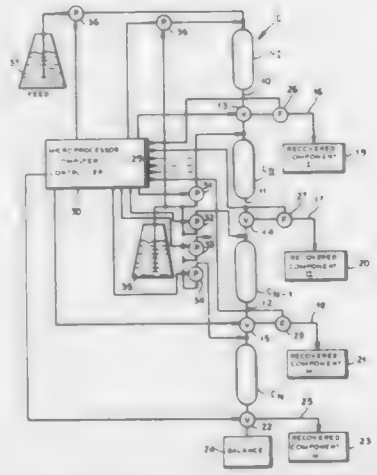
the unstable-type glycated hemoglobin, and analyzing the sample by high performance liquid chromatography.

5,004,547

METHOD AND APPARATUS FOR BIOAFFINITY SEPARATION

Hay Grunfeld; Noah Lotan, and Samuel Sideman, all of Haifa, Israel, assignors to Technion Research & Development Foundation Ltd., Haifa, Israel

Filed Jul. 5, 1989, Ser. No. 376,552
Claims priority, application Israel, Jul. 6, 1988, 87004
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—635 12 Claims



1. A method of bioaffinity separation for recovering simultaneously a plurality of bioactive components of a liquid feed which comprises the steps of:

(a) introducing a liquid feed containing a plurality of bioactive components into a first of a plurality of bioaffinity retention stages in cascade constituting respective column segments of a separation column packed with sorbent containing at least one biospecific substance so that said segments are loaded with said substance to different degrees along the length of the column;

(b) passing an eluant through said column segments in cascade to elute simultaneously and concurrently the components of said feed from the biospecific substance in each column segment;

(c) automatically connecting an outlet from each column segment to a respective collector upon passage of faster-eluting components of said feed to a successive column segment of the cascade to recover in each collector a slower-eluting component of said feed in an eluate;

(d) measuring the volume and flow rate of said eluate collected in each collector of a respective column segment and automatically feeding a corresponding makeup stream of said eluant to a successive column segment; and

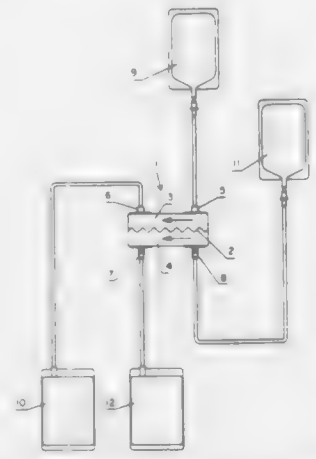
(e) controlling the automatic connection of said outlets from said column segments to the respective collectors with preprogrammed control of timing subsequent to the inception of elution by a computer for selective recovery of said components of said feed at the respective collectors.

5,004,548

METHOD AND APPARATUS FOR RINSING AND PRIMING AN EXCHANGER

Gerard Richalley, Lyons, and Jacques Burtin, Feyzin, both of France, assignors to Hospal Industrie, Cedex, France

Filed Dec. 9, 1988, Ser. No. 282,245
Claims priority, application France, Dec. 11, 1987, 87 17608
Int. Cl.[5] B01D *61/24, 63/00*
U.S. Cl. 210—646 20 Claims



1. A method for rinsing and priming an exchanger divided into first and second compartments by a semi-permeable membrane, the first compartment intended for circulating blood to be treated and the second compartment intended for circulating a purifying liquid, comprising the steps of:

(a) circulating a sterile solution through the first compartment to rinse the same;

(b) circulating a sterile solution through the second compartment to rinse the same; and

(c) depositing a protein film on at least one side of the semi-permeable membrane by circulating a sterile albumin solution through the first compartment.

5,004,549

METHOD FOR INHIBITING SCALE FORMATION USING CALCIUM HYPOCHLORITE COMPOSITIONS

Richard B. Wood, Bristol; Richard M. Mullins, Madison, and John A. Wojtowicz, Cheshire, all of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Oct. 10, 1989, Ser. No. 419,237
Int. Cl.[5] C02F *1/76*
U.S. Cl. 210—699 5 Claims

1. A method for inhibiting scale formation in a dispensing means for adding calcium hypochlorite to water to form an aqueous solution of calcium hypochlorite which comprises:

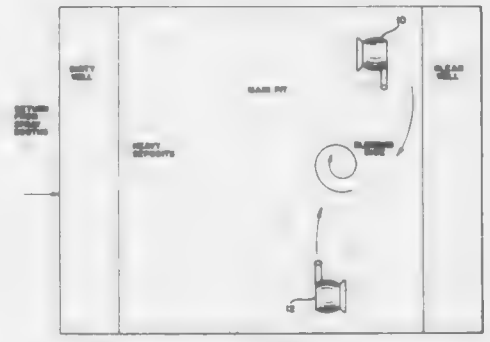
adding to the dispensing means a solid calcium hypochlorite composition comprising hydrated calcium hypochlorite and an alkali metal salt of phosphonobutane polycarboxylic acid having a concentration of at least about 0.005 percent by weight an available chlorine concentration of at least 50 percent by weight and a water content of at least 4 percent by weight, and contacting the solid calcium hypochlorite composition with water to form the aqueous solution of calcium hypochlorite.

5,004,550

METHOD OF PAINT SLUDGE CONVERSION FOR DISPOSAL

John A. Beckman, Plymouth, Mich.; Shu-Jen Huang, Naperville, Ill., and Abdol R. Ebrat, Farmington, Mich., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation-in-part of Ser. No. 318,308, Mar. 3, 1989, Pat. No. 4,929,382. This application Jan. 26, 1990, Ser. No. 470,388
Int. Cl.[5] C02F *11/14*
U.S. Cl. 210—710 8 Claims



1. A method for removal of sludge from a pit employed to collect paint wastes and residues generated in a wet spray booth operation, containing a mixture of accumulated sludge and water comprising the steps of:

(a) adding a detackification agent comprising:

(1) a water soluble cationic polymeric coagulant comprising a water soluble polymer formed by the reaction of epichlorohydrin, diethylamine and ammonia and having a number average molecular weight of about 50,000, and

(2) an aqueous colloidal silica sol having an average particle size between about 1 and 150 nm, the weight ratio of said polymeric coagulant to said silica sol being in the range of 1:5 to 5:1 to form a sludge mixture;

(b) admixing with at least a portion of the sludge mixture of step (a):

(2) sufficient caustic to raise the pH of the mixture to a value in the range of about 8.5 to 12,

(2) sufficient hydrocarbon oil to produce a total solids to liquid volume ratio of about 1:2 to 1:3, and

(3) a liquid emulsifier having a volume ratio to the oil of about 1:3 to 1:11;

(c) recirculating the resulting sludge composition in at least a portion of said pit until a pumpable liquid dispersion system is produced, said dispersion system being comprised of:

(1) an aqueous continuous phase, and

(2) a disperse system dispersed in such continuous phase comprised of particles and liquid droplets; and

(d) removing the dispersion from the pit.

5,004,551

CATALYTIC OXIDATION OF HAZARDOUS WASTES

Kerry L. Sublette, Tulsa, Okla., assignor to ABB Environmental Services Inc., Portland, Me.

Filed Jun. 22, 1990, Ser. No. 542,102
Int. Cl.[5] C02F *1/72*
U.S. Cl. 210—763 12 Claims

1. A process of treating water or solids contaminated with at least one chlorinated phenol, comprising:

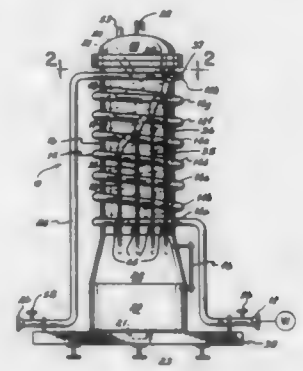
oxidizing said at least one chlorinated phenol in the presence of an effective catalytic amount of at least one of a corrin- or porphyrin-metal complex.

5,004,552

APPARATUS AND METHOD FOR SEPARATING WATER FROM CRUDE OIL

Ahmed M. Al-Yazdi, ADCO, P.O. Box 270, Abu Dhabi - VAE, United Arab Emirates

Filed Jun. 14, 1990, Ser. No. 537,695
Int. Cl.[5] B01D *21/26*
U.S. Cl. 210—789 24 Claims



14. The method of separating a heavy phase and a light phase in a fluid mixture, comprising,

passing the mixture through a vertical, spiral tubular coil, at a velocity sufficiently high that the heavy phase is concentrated toward the outside of the turns of the coil as the mixture flows around the spiral and the light phase is concentrated toward the inside of the turns,

withdrawing a fraction of the fluid from at least one upper turn of the coil, said fraction being withdrawn from the outside of said coil if the heavy phase is to be removed and from the inside of said coil if the light phase is to be removed,

conducting the withdrawn fraction downwardly to a settling tank,

permitting the withdrawn fraction to further separate into the heavy phase and the light phase, and

admitting light phase from the top of said settling tank to said coil adjacent the top of the coil if the heavy phase is to be removed, and heavy phase from the bottom of said settling tank to said coil adjacent the top of said coil if the light phase is to be removed.

5,004,553

WELL WORKING COMPOSITIONS, METHOD OF DECREASING THE SEEPAGE LOSS FROM SUCH COMPOSITIONS, AND ADDITIVE THEREFOR

Roy F. House, Houston, Tex.; Andree H. Wilkinson, and Jack C. Cowan, both of Lafayette, La., assignors to Venture Innovations, Inc., Lafayette, La.

Filed Oct. 16, 1989, Ser. No. 421,751
Int. Cl.[5] C09K *7/00*
U.S. Cl. 252—8.51 11 Claims

1. An additive for decreasing the seepage loss of fluid from a well working fluid in contact with a fluid permeable formation which comprises ground oat hulls wherein at least about 95% of the particles are less than about 590 microns, and at least about 90% of the particles are greater than about 74 microns.

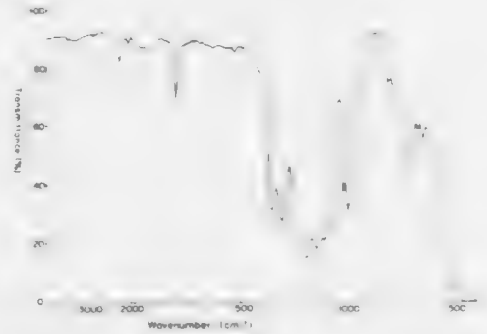
3. An additive for decreasing the seepage loss of fluid from a well working fluid in contact with a fluid permeable formulation which comprises a mixture of from about 50% to about 98% by weight ground oat hulls and from about 2% to about 50% by weight of a particulate material selected from the group consisting of ground corn cobs, hydrophobic organophilic water wettable cotton, ground citrus pulp, ground cotton burrs, and mixtures thereof; wherein the ground oat hulls has a particle size distribution such that at least 95% of the particles are less than about 590 microns and at least about 90% of the particles are greater than about 74 microns.

5,004,554

FLUORINE-CONTAINING POLYETHER AND LUBRICANT COMPRISING THE SAME

Takashi Tohzuka; Ikuo Yamamoto, both of Osaka, and Yoshihiko Misugi, Hyogo, all of Japan, assignors to Daikin Industries Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 340,217, Apr. 19, 1989, abandoned. This application Jul. 24, 1990, Ser. No. 556,418
Claims priority, application Japan, Apr. 19, 1988, 53-97681
Int. Cl.[5] C10M *105/54*
U.S. Cl. 252—54.6 **6 Claims**



1. A fluorine-containing polyether of the formula:

$$R_f^1CF_2CF_2COOR_f^2 \quad (I)$$

or

$$R_f^2OCO—CF_2CF_2R'_f^1CF_2CF_2—COOR_f^2 \quad (II)$$

wherein R_f^1 and R'_f^1 are each a group containing a perfluoroalkyl polyether group, in which the perfluoroalkyl polyether group contains at least one repeating unit selected from the group consisting of a repeating unit of the formula:

$$—C_3F_6O— \quad (a)$$

a repeating unit of the formula:

$$—C_2F_4O— \quad (b)$$

and
a repeating unit of the formula.

$$—CF_2O— \quad (c)$$

provided that at least one of the repeating units (a) and (b) is contained and the total number of the repeating units (a), (b) and (c) is at least three, and R_f^2 is a fluorine-containing alkyl group or a fluorine-containing ether group.

5,004,555

HEAT CYCLE TREATMENT FOR IMPROVING THE PERFORMANCE OF PIEZOELECTRIC CERAMICS

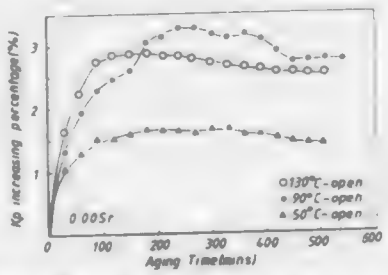
Syh Y. Cheng, Taichung, and Hong W. Wang, Kaohsiung, both of Taiwan, assignors to Industrial Technology Research Institute, Taiwan

Filed Oct. 31, 1989, Ser. No. 429,704
Int. Cl.[5] C04B *35/49, 35/00*
U.S. Cl. 252—62.9 **10 Claims**

1. A process for the electromechanical coupling factor (Kp) of a polarized piezoelectric ceramics by thermal cycle treatment, said process comprising the steps of:

(a) keeping said polarized piezoelectric ceramics at a temperature of from 50° to 130° C. for from 10 to 60 minutes;

(b) cooling said polarized piezoelectric ceramics to room temperature rapidly;



(a) repeating steps (a) and (b) until the electromechanical coupling factor of said polarized piezoelectric ceramics saturates.

5,004,556

BUILT THICKENED STABLE NON-AQUEOUS CLEANING COMPOSITION AND METHOD OF USE

Michel Julemont, Heusy; Germaine Zocchi, Villers aux Tours; Nunzio Mineo, Liege, and Pierre Fonsny, Fays, all of Belgium, assignors to Colgate-Palmolive Company, Piscataway, N.J.

Continuation of Ser. No. 63,199, Jun. 17, 1987, Pat. No. 4,846,992. This application Apr. 21, 1989, Ser. No. 341,404
The portion of the term of this patent subsequent to Jul. 11, 2006, has been disclaimed.
Int. Cl.[5] C11D *3/075, 3/395, 3/12*
U.S. Cl. 252—99 **15 Claims**

1. A non-aqueous liquid fabric treating composition which comprises a non-aqueous liquid comprising a nonionic surfactant, fabric-treating solid particles selected from the group consisting of detergent builders, bleaching agents, antistatic agents, and mixtures thereof suspended in said non-aqueous liquid, and an organophilic clay, in an amount from about 0.2% to about 1% by weight, based on the weight of the composition, as a stabilizing agent to inhibit settling of the suspended particles, said organophilic clay comprising a swelling smectite clay modified with a nitrogen containing compound including at least one long chain hydrocarbon having from about 8 to about 22 carbon atoms.

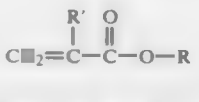
5,004,557

AQUEOUS LAUNDRY DETERGENT COMPOSITIONS CONTAINING ACRYLIC ACID POLYMERS

Madukkarai K. Nagarajan, Avon Lake; Fred J. Wherley, Middleburg Heights, and Jody W. Frimel, Vermillion, all of Ohio, assignors to The B. F. Goodrich Company, Brecksville, Ohio

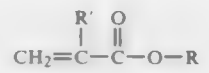
Continuation-in-part of Ser. No. 30,317, Mar. 26, 1987, abandoned, which is a continuation-in-part of Ser. No. 766,330, Aug. 16, 1985, abandoned. This application Nov. 3, 1988, Ser. No. 266,760
Int. Cl.[5] C11D *3/37*
U.S. Cl. 252—174.24 **8 Claims**

1. A liquid, non-enzymatic detergent composition devoid of boric acid or equivalent thereof that is clear or translucent, has pH or 8 to 10, is pourable at room temperature, and provides soil anti-redeposition function and improved cleaning performance comprising 10 to 40% of at least one surfactant selected from the group consisting of anionic sulfonate and sulphate surfactants, nonionic surfactants, cationic surfactants, amphoteric surfactants, and mixtures of such surfactants; 1 to 10% of at least one water-soluble sequester builder; and 0.1 to 2% of a water-soluble active agent having molecular weight in excess of about 100,000 selected from the group consisting of homopolymers of monounsaturated monocarboxylic and dicarboxylic acids of 3 to 5 carbon atoms and salts of such acids, copolymers thereof with 1 to 10% of one or more copolymerizable monomers, and mixtures of such homopolymers and copolymers; said copolymerizable monomers are selected from alkyl acrylates represented by the following formula



where R^1 is selected from hydrogen, methyl group, and ethyl group; and R is selected from alkyl groups of 10 to 30 carbon atoms, alkyl groups of 1 to 9 carbon atoms, alkoxy groups of 1, haloalkyl groups of 1 to 9 carbon atoms, cryanoalkyl groups of 1 to 0 carbon atoms, cyanoalkyl groups of 1 to 9 carbon atoms; acrylic nitriles of 3 to 10 carbon atoms, acrylic amides with at least one hydrogen on the amide nitrogen with olefinic unsaturation in the alpha-beta position to the carbonyl carbon; α-olefins of 2 to 12 carbon atoms; dienes containing 4 to 10 carbon atoms; vinyl esters and allyl esters; vinyl aromatics; vinyl and allyl ethers and ketones; cyanoalkyl acrylates; vinyl chloride; vinylidene chloride; esters of maleic and fumaric acids; and mixtures thereof; and remainder to 100% by weight of water; amounts are based on the weight of said composition.

5. A liquid, non-enzymatic detergent composition devoid of boric acid or equivalent thereof, devoid of guar material, and devoid of dialkyl sulphosuccinate, that is clear or translucent, has pH of 8 to 10, is pourable at room temperature, and provides soil anti-redeposition function and improved cleaning performance comprising 10 to 40% of at least one surfactant selected from the group consisting of anionic sulfonate and sulphate surfactants, nonionic surfactants, cationic surfactants, amphoteric surfactants, and mixtures of such surfactants; 1 to 10% of at least one water-soluble sequester builder; and 0.1 to 2% of a water-soluble active agent having molecular weight in excess of about 100,000 selected from the group consisting of homopolymers of monounsaturated monocarboxylic and dicarboxylic acids of 3 to 5 carbon atoms and salts of such acids, copolymers thereof with 1 to 10% of one or more copolymerizable monomers, and mixtures of such homopolymers and copolymers; said copolymerizable monomers are selected from alkyl acrylates represented by the following formula



where R^1 is selected from hydrogen, methyl group, and ethyl group; and R is selected from alkyl groups of 10 to 30 carbon atoms, alkyl groups of 1 to 9 carbon atoms, haloalkyl groups of 1 to 9 carbon atoms, cyanoalkyl groups of 1 to 0 carbon atoms, cyanoalkyl groups of 1 to 9 carbon atoms; acrylic nitriles of 3 to 10 carbon atoms, acrylic amides with at least one hydrogen on the amide nitrogen with olefinic unsaturation in the alpha-beta position to the carbonyl carbon; α-olefins of 2 to 12 carbon atoms; dienes containing 4 to 10 carbon atoms; vinyl esters and allyl esters; vinyl aromatics; vinyl and allyl ethers and ketones; cyanoalkyl acrylates; vinyl chloride; vinylidene chloride; esters of maleic and fumaric acids; and mixtures thereof; and remainder to 100% of water; amounts are based on the weight of said composition.

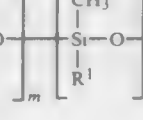
5,004,558

SULFONE PEROXYCARBOXYLIC ACIDS

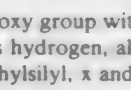
David R. Dyroff; Daniel P. Getman, both of St. Louis, and Joan K. Glascock, Creve Coeur, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 168,033, Mar. 3, 1988, Pat. No. 4,824,591, which is a division of Ser. No. 97,274, Sep. 17, 1987, Pat. No. 4,758,369, which is a continuation-in-part of Ser. No. 926,592, Nov. 3, 1986, abandoned. This application Dec. 8, 1988, Ser. No. 281,440
Int. Cl.[5] C11D *3/395, 7/38;* **C07C** *409/42*
U.S. Cl. 252—95 **48 Claims**

1. A bleaching detergent composition comprising a detergent surfactant and an effective amount of a compound represented by the formula:



wherein A and B are peroxycarboxylic acid compatible organic moieties bonded to the sulfur atom by a carbon atom, where only one of A and B at the same time contains from 1 to 4



groups bonded to carbon atoms.

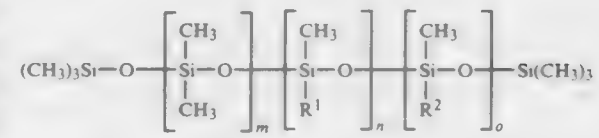
5,004,559

POLYOXYALKYLENE-POLYSILOXANE BLOCK COPOLYMERS AS DEMULSIFIERS FOR WATER-CONTAINING OIL

Götz Koerner, and Dietmar Schaefer, both of Essen, Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Division of Ser. No. 69,296, Jul. 2, 1987, abandoned. This application Nov. 16, 1988, Ser. No. 271,995
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1986, 3622571
Int. Cl.[5] B01D *17/05*
U.S. Cl. 252—345 **3 Claims**

1. A method of demulsifying water-containing crude oil emulsions, which comprises admixing the water-containing crude oil with an effective amount to demulsify of a polyoxyalkylene-polysiloxane mixed block polymer of the general formula



wherein
R^1 is alkyl with 6 to 28 carbon atoms;
R^2 is a polyether of the general formula

$$-M-(C_2H_4O)_x(C_3H_6O)_yR^3$$

wherein M is an alkyleneoxy group with up to 4 carbon atoms or an oxygen atom, R^3 is hydrogen, alkyl with 1 to 4 carbon atoms, acyloxy or trimethylsilyl, x and y are whole numbers, which are selected so that the molecular weight of the R^2 group is not greater than 1,000, the ratio by weight of oxyethylene to oxypropylene groups being 100:0 to 50:50,
m=0 to 20.
n=10 to 50 and
o=10 to 50.

5,004,560

BASIC POLYPYRRYLENEMETHINES AND SALTS THEREOF, AND A PROCESS FOR THEIR PREPARATION

Hermann Brüsaling, Burghausen, and Richard Becker, Emmerting, both of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

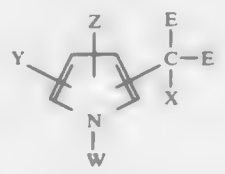
Filed Mar. 17, 1988, Ser. No. 169,474

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1987, 3710657

Int. Cl.[5] **C08F** *26/06;* **H01B** *1/06*

U.S. Cl. 526—258 **20 Claims**

1. A process for the preparation of a polypyrrylenemethine polymer composition, or a salt thereof, comprising a polymer compound having conjugated double bonds and constructed from at least five five-membered heterocyclic rings wherein in each of said five-membered heterocyclic rings there is one nitrogen atom as the only heterocyclic atom, said five-membered heterocyclic rings being bonded to one another in pairs;



(III)

wherein,

X, Y and Z represent, independently of one another, identical or different monovalent radicals selected from the group consisting of hydrogen, an alkyl radical having from 1 to 18 carbon atoms, a phenyl radical and a phenyl radical which is substituted by a member selected from the group consisting of a halogen, a nitro-group, an alkyl group having 1 to 4 carbon atoms, a phenyl radial and a combination thereof, wherein Y and Z are bonded to the carbon atoms of the heterocyclic ring which are not substituted by groups of the formula C-X, Y and Z are further capable of being a substituent of the formula —COOR, wherein R represents a member selected from the group consisting of a hydrogen atom, a phenyl group and an alkyl group having from 1 to 18 carbon atoms;

and the radical of the formula—CXE_2 is in the 2-, 3-, 4- or 5-position on the pyrrole ring.

wherein,

W represents a substituent selected from the group consisting of a hydrogen atom, an alkyl group having from 1 to 18 carbon atoms and a phenyl radical; and

E represents the same or different monovalent radicals selected from the group consisting of a halogen atom, an alkoxy radical having 1 to 6 carbon atoms, and alkylsulfonate radical having 1 to 8 carbon atoms and an arylsulfonate radical, or both E radicals represent the oxygen atom of a carbonyl group, via polycondensation.

5,004,561

ELECTROMAGNETIC WAVE-SHIELDING THERMOPLASTIC RESIN COMPOSITION

Isao Nomura, and Kenichi Narita, both of Hiratsuka, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation of Ser. No. 6/948,141, Dec. 29, 1986, abandoned. This application Jan. 23, 1989, Ser. No. 300,210

Claims priority, application Japan, Mar. 31, 1986, 61-71052; Mar. 31, 1986, 61-71053; Sep. 9, 1986, 61-210681; Sep. 9, 1986, 61-210682; Sep. 9, 1986, 61-210683; Sep. 9, 1986, 61-210684; Sep. 9, 1986, 61-210685

Int. Cl.[5] **H01B** *1/06*

U.S. Cl. 252—511 **9 Claims**

1. An electromagnetic wave-shielding thermoplastic resin composition comprising

(A) 100 parts by weight of a thermoplastic resin selected from the group consisting of polypropylene resins, polystyrene resins, acrylonitrile/styrene/butadiene copolymer resin, polybutylene terephthalate resins, polyphenylene ether resins and linear aliphatic polyamide resins, wherein said linear aliphatic polyamides are polymers of monomers selected from the group consisting of combinations of diamines having 6 to 12 carbon atoms with dicarboxylic acids having 6 to 12 carbon atoms, lactams having 6 to 12 carbon atoms and aminocarboxylic acids having 6 to 12 carbon atoms,

(B) 100 to 200 parts by weight of electrically conductive glass fibers,

(C) 15 to 25 parts by weight of carbon black selected from the group consisting of thermal black channel black, acetylene black and furnace black, and

(D) 15 to 25 parts by weight of natural scale-like graphite

5,004,562

LATEX/SOL OR GEL SYSTEMS

Charles L. Kissel, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Feb. 1, 1989, Ser. No. 305,451

Int. Cl.[5] **B01J** *13/00*

U.S. Cl. 252—518 **199 Claims**

1. A process for preparing a sol or gel composition containing at least 0.001 weight percent of at least one salt in the form of anions, cations, and colloidal salt particulates and prepared by heating an admixture comprising at least one nonaqueous solvent, at least one stabilizer and said salt, is subsequently admixed with a latex of a polymer.

5,004,563

ANTISTATIC TEXTILE COMPOSITIONS AND SOL/GEL/POLYMER COMPOSITIONS

Charles L. Kissel, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 305,451, Feb. 1, 1989. This application Apr. 28, 1989, Ser. No. 345,029

The portion of the term of this patent subsequent to Apr. 2, 2008, has been disclaimed.

Int. Cl.[5] **H01B** *1/06*

U.S. Cl. 252—518 **83 Claims**

1. A textile composition comprising a textile material suffused with sufficient added salt from a sol or gel composition containing a nonaqueous solvent and said salt in the form of anions, cations and colloidal salt particulates to provide at least 5 percent greater electrical conductivity to said textile composition than that of said textile composition without added salt.

5,004,564

N-ALKYLGLYCAMINO COMPOUNDS, A PROCESS FOR PRODUCING THEM, AND THEIR USE

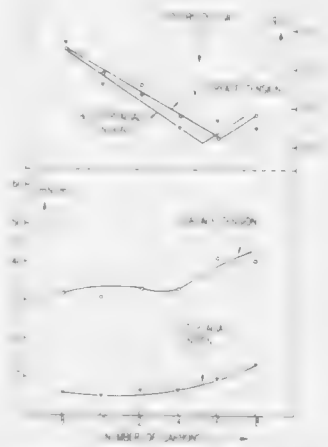
Heike Kelkenberg, Gladbeck, Fed. Rep. of Germany, assignor to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Apr. 4, 1990, Ser. No. 503,960

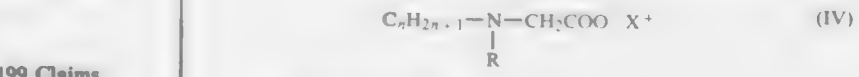
Claims priority, application Fed. Rep. of Germany, May 9, 1989, 3915121

Int. Cl.[4] **C11D** *1/18, 3/32, 7/32;* **C07C** *229/12*

U.S. Cl. 252—546 **6 Claims**



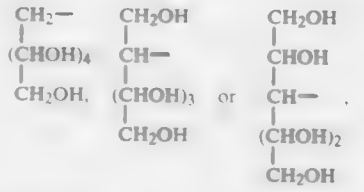
1. An N-Alkylglycamino compound of formula (IV):



(IV)

wherein n is 8–24,

R is



and x is Na, K, or H.

5,004,565

METHOD AND COMPOSITIONS PROVIDING ENHANCED CHEMILUMINESCENCE FROM 1,2-DIOXETANES

Arthur P. Schaap, Detroit, Mich., assignor to The Board of Governors of Wayne State University, Detroit, Mich.

Continuation-in-part of Ser. No. 887,139, Jul. 17, 1986. This application Jul. 27, 1988, Ser. No. 224,681

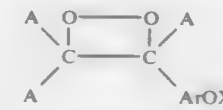
Int. Cl.[5] **C08F** *8/00;* **C09K** *3/00;* **B01J** *13/00*

U.S. Cl. 252—700 **35 Claims**

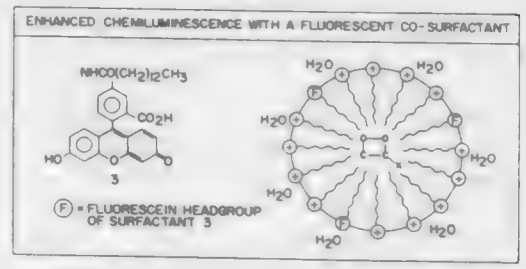
1. A composition which generates light upon triggering which comprises in admixture:

(a) a fluorescent compound; and

(b) a stable 1,2-dioxetane of the formula:



wherein ArOX represents an aryl group substituted with an X-oxy group which forms an unstable oxide intermediate 1,2-dioxetane compound when triggered to remove X by an activating agent so that the unstable 1,2-dioxetane



compound decomposes and releases electronic energy to form light and two carbonyl containing compounds of the formula:



and

wherein X is a chemically labile group which is removed by the activating agent to form the unstable oxide intermediate 1,2-dioxetane and wherein A are passive organic groups which allow the light to be produced wherein the stable 1,2-dioxetane is decomposed with the activating agent wherein the dioxetane and the fluorescent compound are provided in a closely spaced relationship in the presence of a surfactant, micelle, liposome, reversed micelle, microemulsion, film, including a monolayer, or polymer and wherein the fluorescent compound accepts the electronic energy generated upon decomposition of the unstable oxide intermediate and produces a more intense light than is produced by the triggering of the dioxetane alone.

5,004,566

PROCESS FOR FABRICATION OF LIPID MICROSTRUCTURES FROM DRY ORGANIC SOLVENT

Joel M. Schnur, Burke, Va.; Alan S. Rudolph, Bowie, and Mary A. Testoff, Greenbelt, both of Md., assignors to Geo-Centers, Inc., Fort Washington, Md.

Continuation-in-part of Ser. No. 11,838, Feb. 6, 1987, Pat. No. 4,877,501. This application Oct. 4, 1989, Ser. No. 416,915

Int. Cl.[5] **C07F** *9/00;* **C11B** *3/00*

U.S. Cl. 260—403 **14 Claims**

1. Process for forming tubular microstructures of selected shape and dimension from surfactants comprising the steps of:

selecting a lipid which self-assembles into a tubular microstructure;

selecting a lipid solvating organic solvent in which the tubules form;

removing essentially all water from the selected organic solvent;

dissolving the selected lipid in the dried organic solvent;

allowing the dissolved lipid to grow into the tubular microstructures in the dried organic solvent for a selected period of time and at a temperature below the melting point of the selected lipid.

5,004,567

PROCESS FOR PRODUCING FLUORINE-CONTAINING ALIPHATIC CARBOXYLIC ACIDS

Mitsuru Takahashi; Hideo Shuyama; Osamu Miyano, and Yukihiro Tsutsumi, all of Yamaguchi, Japan, assignors to Tosoh Corporation, Yamaguchi, Japan

Continuation of Ser. No. 110,017, May 27, 1986, abandoned, which is a continuation of Ser. No. 866,839, Oct. 13, 1987, abandoned. This application Jul. 22, 1988, Ser. No. 222,302

Claims priority, application Japan, May 27, 1985, 60-112219; Nov. 29, 1985, 60-269078; Dec. 27, 1985, 60-292438

Int. Cl.[5] **C07C** *51/15;* **C11C** *3/00*

U.S. Cl. 260—408 **1 Claim**

1. A process for producing a fluorine-containing aliphatic carboxylic acid having general formula (II) from a fluorine-containing aliphatic halogen compound having general formula (I) which process comprises the reaction of (I) at from 0°-100° C. with carbon dioxide in the presence of 1-10 equivalents of powdered zinc per equivalent of atoms of halogen other than fluorine in (I) in an organic solvent selected from the group consisting of dimethyl formamide, N-methylpyrrolidone, N,N-dimethylacetamide and dimethylsulfoxide followed by hydrolysis of the reaction product:

$$X-R_f-X' \quad (I)$$

$$Y-R_f-Y' \quad (II)$$

where, in formulae (I) and (II), X and X' independently denote a fluorine, chlorine, bromine or iodine atom, but X and X' do not both represent fluorine atoms at the same time, Y and Y' are carboxyl groups which substitute and combine at the combining site of X and X' in (I), and R_f is a saturated or unsaturated fluorine-containing straight or branched chain aliphatic group which contains 1 to 20 carbon atoms when either X or X' is a fluorine atom while otherwise R_f contains 3 to 20 carbon atoms, and when X or X' is a fluorine atom, the corresponding Y or Y' is also a fluorine atom, which process involves controlling the concentration of carbon dioxide in the organic solvent at a level of 0.3 to 5 mol/l.

5,004,568

CARBONYLATION OF ALLYLIC ETHERS TO ESTERS

Ronnie M. Hanes, Milford, and Jack Kwiatek, Cincinnati, both of Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Oct. 3, 1985, Ser. No. 783,587

Int. Cl.[5] **C09F** *5/08*

U.S. Cl. 260—410 **25 Claims**

1. A method for the production of esters comprising reacting an allylic ether with carbon monoxide to obtain an ester, said reaction conducted in the presence of a catalytically effective amount of a halide of a Group VIII noble metal and a Group IB metal halide, said Group IB metal halide present in an amount sufficient to prevent said halide of a Group VIII noble metal from being converted into said Group VIII noble metal during said reaction.

5,004,569

PROCESS FOR THE PRODUCTION OF CARBOXYLIC ACID ESTERS

Helmut-Martin Meier, Ratingen; Klaus Kircher, Leverkusen, and Klaus Berg, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Continuation of Ser. No. 45,399, May 4, 1987, abandoned. This application Dec. 6, 1988, Ser. No. 281,887

Claims priority, application Fed. Rep. of Germany, May 14, 1986, 3616137

Int. Cl.[5] **C09F** *5/08;* **C11C** *3/00, 3/02*

U.S. Cl. 260—410.6 **2 Claims**

1. A process for the production of a carboxylic acid ester, which comprises reacting a carboxylic acid with an alcohol in the presence, as an esterification catalyst, of a neutral phosphite compound which is a phosphorous acid ester of at least one monoalcohol containing at lease one oxetane group and at least one polyhydroxy compound selected from the group consisting of an aliphatic polyalcohol free of oxetane groups, a cycloaliphatic polyalcohol free of oxetane groups and a polyhydroxyaryl compound free of oxetane groups.

5,004,570

OIL BLEACHING METHOD AND COMPOSITION FOR SAME

David D. Brooks, Crystal Lake; Shirley A. Brophy, Ingleside, and George R. Goss, Quincy, all of Ill., assignors to Oil-Dri Corporation of America, Chicago, Ill.

Filed Dec. 5, 1988, Ser. No. 280,127

Int. Cl.[5] **C11B** *3/06*

U.S. Cl. 260—427 **11 Claims**

1. A method of bleaching a triglyceride oil having color impurities, the method comprising the steps of:

producing a slurry by combining in a suitable vessel the oil, a neutral bleaching clay and a chelating polycarboxylic acid having an even number of carboxyl groups, the carboxyl groups being paired and the carboxyl groups in each pair being available to form an eclipsed conformation;

maintaining the resulting slurry with agitation at an elevated temperature and at a pressure no greater than atmospheric pressure for a time period sufficient to reduce the amount of color impurities of the oil, the elevated temperature being below the thermal decomposition temperature of the oil;

recovering a bleached oil from the slurry; and

producing a spent bleaching composition that resists spontaneous combustion

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5,004,571

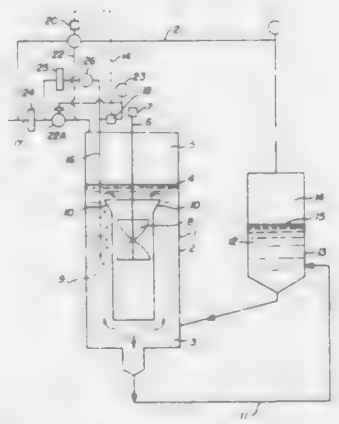
LIQUID LEVEL CONTROL IN GAS-LIQUID MIXING OPERATIONS

Lawrence M. Litz, Pleasantville, N.Y.; Mark K. Weise, North Haledon, N.J., and David A. Haid, Westport, Conn., assignors to Union Carbide Industrial Gases Technology Corporation, Danbury, Conn.

Filed Mar. 30, 1990, Ser. No. 516,775

Int. Cl.[5] **B01F** *3/04*

U.S. Cl. 261—91 **13 Claims**



1. In a process for mixing a gas and a liquid in a mixing vessel having a hollow draft tube with an axial flow, down-pumping impeller means positioned therein for vortex development and the ingestion of gas from an overhead space within the mixing vessel into the body of liquid therein, said gas-liquid mixing operation resulting in liquid volume changes within the mixing vessel, the improvement comprising:

(a) maintaining a secondary volume capacity, within or external to said body of liquid within the mixing vessel, for the accommodation of said liquid volume changes during the course of the gas-liquid mixing operation, with communication being provided between said body of liquid in the mixing vessel and said secondary volume capacity so that liquid can be passed from said body of liquid in the mixing vessel to said secondary volume capacity;

(b) monitoring the liquid level of said body of liquid in the mixing vessel throughout the course of the gas-liquid mixing operation; and

(c) modulating the pressure in the gas space of said secondary volume capacity in response to changes in the liquid level that occur with respect to said body of liquid in the mixing vessel so as to maintain the desired liquid level of the body of liquid for vortex development and gas ingestion while the total volume of liquid is changing over the course of said gas-liquid mixing operation, whereby the secondary volume capacity is effectively utilized to accommodate volume changes that occur throughout the gas-liquid mixing operation so that the desired liquid level can be maintained for proper vortex development and gas ingestion from the overhead gas space in said mixing vessel.

5,004,572

METHOD OF PRODUCING SKIN TUBE FOR ANNULAR FOAM PRODUCT, AND ASSEMBLY OF THE SKIN TUBE AND CORE STRUCTURE

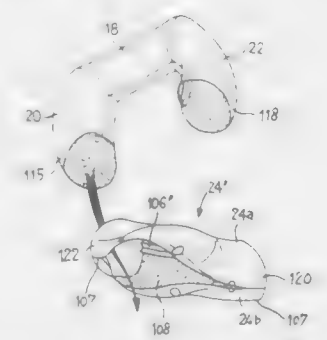
Kazunori Kurimoto, Konan, Japan, assignor to Tokai Chemical Industries, Ltd., Aichi, Japan

Filed Nov. 17, 1988, Ser. No. 272,411

Claims priority, application Japan, Nov. 20, 1987, 62-294469

Int. Cl.[5] **B29C** *67/22*

U.S. Cl. 264—46.6 **16 Claims**



1. A method of preparing an annular skin tube for a foam product, which has an opening defined by an annular inner periphery thereof, comprising steps of:

preparing a plurality of tubular skins each having at least one linearly joined edge portion;

joining together said plurality of tubular skins end to end, at opposite ends thereof except at least one set of unjoined ends of at least one selected pair of adjacent tubular skins, so as to prepare an intermediate skin tube such that a nominal outside of said intermediate skin tube is exposed;

providing an unjoined portion in an outer periphery of said intermediate skin tube, adjacent to said at least one set of unjoined ends; and

joining the unjoined ends of each of said at least one selected pair of the adjacent tubular skins of said intermediate skin tube, while end portions including said unjoined ends are superposed on each other and are passed through said unjoined portion outwardly of said intermediate skin tube such that one of said end portions is turned inside out; and

passing said one of the end portions back through said unjoined portion inwardly to expose a nominal outside thereof, whereby said intermediate skin tube is formed into said annular skin tube.

5,004,573

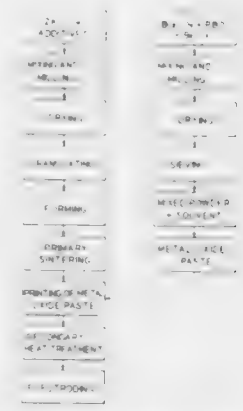
FABRICATION METHOD FOR HIGH VOLTAGE ZINC OXIDE VARISTOR

Myung H. Oh; Kyung J. Lee; In J. Chung; Nam Y. Lee, and Myung S. Kim, all of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Rep. of Korea

Filed Nov. 2, 1989, Ser. No. 430,463

Int. Cl.[5] **C04B** *41/81*

U.S. Cl. 264—61 **9 Claims**



1. A method for fabricating the high voltage zinc oxide varistor having a high breakdown voltage and good voltage-current characteristics comprising;

preparing a zinc oxide mixture comprising zinc oxide and a further oxide selected from the group consisting of antimony oxide, cobalt oxide, manganese oxide, chromium oxide, and mixtures thereof;

sintering the zinc oxide mixture at a temperature of 1200 to 1350° C. under conditions and for a period of time effective to form a primary sintered varistor body;

coating the surface of the primary sintered varistor body with a metal oxide past comprising bismuth oxide as a major ingredient and a second ingredient selected from the group consisting of B_2O_3, zinc oxide or mixtures thereof in an amount effective to form a coated primary sintered varistor body; and

heat treating the coated primary sintered varistor body at a temperature of 1000 to 1200° C. under conditions and for a period of time effective to print the metal oxide paste on the surface of the primary sintered body and diffuse the bismuth oxide to the grain boundaries of the zinc oxide in the sintered varistor body to obtain said high voltage zinc oxide varistor.

5,004,574

METHOD OF MAKING A COMPOSITE STRUCTURAL ELEMENT

Hartley Sandt, 2425 Dogwood La., Orange Park, Fla. 32073

Filed Dec. 28, 1987, Ser. No. 138,151

Int. Cl.[5] **B29C** *39/10*

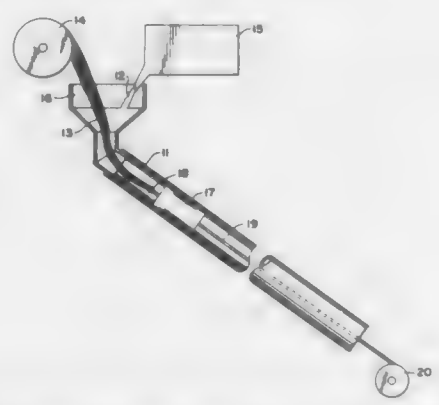
U.S. Cl. 264—101 **15 Claims**

1. A process for preparing an elongated structural element comprising the steps of:

(1) preparing a hollow external solid walled casing of a tubular material being an integral part of the structural element;

(2) filling the entire interior of the external casing with a plastic material in liquid form while generally simultaneously distributing throughout the plastic material a plurality of elongated continuous strands of fiber rein-

forcement material substantially parallel to each other and extending lengthwise of the casing; and



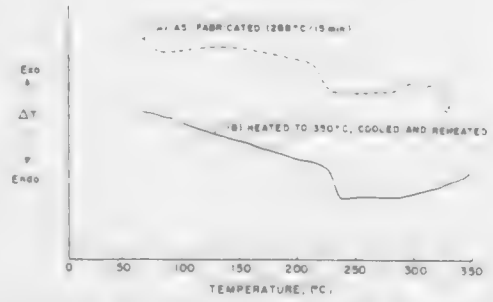
(3) solidifying the plastic material with the strands of fiber reinforcement material embedded therein.

5,004,575

PREPARING COMPOSITE MATERIALS FROM MATRICES OF PROCESSABLE AROMATIC POLYIMIDE THERMOPLASTIC BLENDS

Norman J. Johnston, Newport News; Terry L. St. Clair, Poquoson; Robert M. Baucom, Newport News, and John R. Gleason, Hampton, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 105,846, Oct. 8, 1987, abandoned.
Filed Oct. 21, 1988, Ser. No. 262,268
Int. Cl.[5] B29C *67/14*; C08G *73/14*
U.S. Cl. 264—136 **4 Claims**



1. A process for preparing a composite material, which process comprises blending an insoluble aromatic polyimide powder with an aromatic polyamic acid solution,

said blending resulting in a slurry,

said aromatic polyamic acid solution comprising a first aromatic polyamic acid dissolved in a solvent selected from the group consisting of aprotic solvents, protic solvents and ether solvents, wherein a ratio of said polyimide powder to said first polyamic acid is between 1:10 and 10:1 by weight,

which process further comprises preparing a prepreg from substrate fibers and said slurry, by impregnating said substrate fibers with said slurry,

which process further comprises removing said solvent from said prepreg, wherein said polyamic acid acts to bind said polyimide powder to said substrate fibers, and

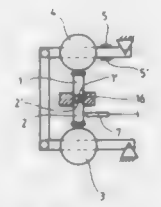
which process finally comprises consolidating said prepreg into a finished composite material by the addition of heat, wherein both said polyamic acid and said polyimide powder comprise a matrix for said finished composite.

5,004,576

PROCESS AND APPARATUS FOR MONITORING PRESSING FORCES IN A TABLET PRESS

Juergen Hinzpeter, Schwarzenbek, and Hans-Dieter Gruedelbach, Moelln, both of Fed. Rep. of Germany, assignors to Wilhelm Fette GmbH, Schwarzenbek, Fed. Rep. of Germany

Filed May 3, 1989, Ser. No. 347,335
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1988, 3823417
Int. Cl.[5] B29C *43/02*
U.S. Cl. 264—40.5 **8 Claims**



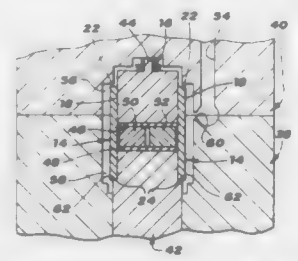
1. In a process for monitoring a pressing force acting successively and periodically on each of a plurality of piston pairs of a tablet press in succession, each of said piston pairs consisting of an upper and lower piston acting pairwise in said piston pair, in which an average value of said pressing force formed from a plurality of successive measurement results of said pressing force is compared with two adjustable tolerance bounds for said average value, said average value of said pressing force being further correlated with two adjustable individual value limits which follow the course of said average value or are fixed, maxima of said pressing force on said individual ones of said piston pairs being compared with said adjustable individual value limits, the improvement wherein a piston pair average value of said pressing force is associated with individual ones of said piston pairs, said piston pair average values for each individual one of said piston pairs being formed from the measurement results of said pressing force for said each individual one of said piston pairs over a predetermined number of cycles of said tablet press, piston pair average value limits are associated with said individual ones of said piston pairs, said piston pair average value of said pressing force is compared with said piston pair average value limits for said individual ones of said piston pairs and said piston pair is indicated, when said piston pair average value exceeds said piston pair average value limits so that said press may be stopped and said piston pair examined.

5,004,577

FRAME AND MAGNET ASSEMBLY FOR A DYNAMOELECTRIC MACHINE

Robert W. Ward, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 447,541, Dec. 6, 1989. This application May 25, 1990, Ser. No. 528,407
Int. Cl.[5] H22K *21/36*; B29C *45/14*; B32B *1/08*
U.S. Cl. 264—112 **3 Claims**



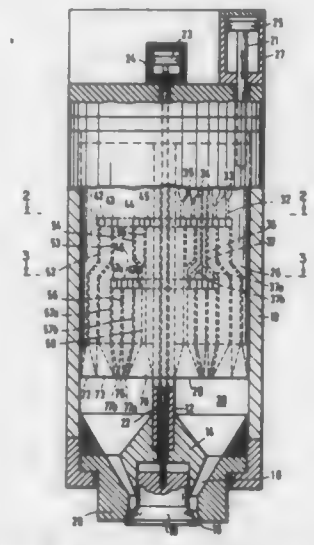
1. A method of manufacturing a frame and permanent magnet assembly for a dynamoelectric machine where a permanent magnet is carried by and secured to the frame, and wherein the frame is comprised of iron powder particles that are bound together by a thermoplastic material, the steps comprising, molding said iron powder particles that are coated with a thermoplastic material to a permanent magnet in such a manner that the molded coated iron powder particles form a frame that is interlocked to said permanent magnet.

5,004,578

PROCESS AND APPARATUS FOR PRODUCING HOLLOW BODIES OF THERMOPLASTIC MATERIAL

Otto Eiselen, Königswinter, Fed. Rep. of Germany, assignor to Drupp Kautex Maschinenbau GmbH, Bonn, Fed. Rep. of Germany

Filed Jun. 30, 1989, Ser. No. 375,167
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1988, 3822524
Int. Cl.[5] B29C *49/04, 49/22*
U.S. Cl. 264—514 **12 Claims**



1. In a process for producing hollow bodies from thermoplastic material, the wall of which is in the form of a laminate including a plurality of interconnected layers of at least two plastic materials of different nature, by means of extrusion blow molding, the step of producing tubular preforms whose wall comprises a corresponding number of layers in an intermittent mode of operation using an extrusion unit including at least first and second extruders extruding the at least two plastic materials and a common extrusion head which is connected to the first and second extruders and which includes an annular storage chamber for receiving a preform laminate, an annular piston positioned for reciprocation in at least part of the storage chamber for emptying the storage chamber and an extrusion opening on a side of the storage chamber opposite the annular piston and through which the preform laminate is extruded by the annular piston emptying the chamber to form the tubular preforms, wherein all flows of the plastic materials which pass into the extrusion head for forming the individual layers of the laminate pass into and are guided through the annular piston and are each put therein into an annular cross-sectional shape, and wherein at least a plurality of flows of different material leave the annular piston at its side facing towards the extrusion opening flowing individually out of an end face of the annular piston directly into the storage chamber and combine in the storage chamber only after flowing separately beyond the end face of the piston to form the preform laminate.

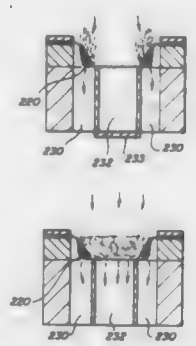
6. Apparatus for producing hollow bodies from plastic material comprising a wall in the form of a laminate formed by a plurality of interconnected layers of at least first and second plastic materials of different natures by means of extrusion blow molding, said apparatus comprising an extrusion unit including at least first and second extruders extruding the at least first and second different plastic materials and a common extrusion head which is connected to the first and second extruders and which includes a storage chamber for receiving a preform laminate, an annular piston positioned for reciprocating in at least part of the storage chamber for emptying of the storage chamber and an annular extrusion opening on a side of the storage chamber opposite the piston for extrusion of the preform laminate by the annular piston during the emptying of the storage chamber, wherein the annular piston has therewithin a plurality of duct systems comprising feed ducts for receiving flows of the plastic materials from the at least first and second extruders, distributor ducts which communicate with the respective feed ducts and in which the respective flows of material are put into a plurality of flows of annular cross-sectional configuration, and a plurality of annular outlets which communicate with the respective distributor ducts, each outlet being located at an end face of the annular piston which faces towards the extrusion opening, the outlets at said end face of the annular piston opening separately from each other directly into the storage chamber whereby at least a plurality of separate annular flows pass through the outlets and combine in the storage chamber only after flowing beyond the end face of the piston to form the preform laminate.

5,004,579

METHODS AND APPARATUS FOR SELECTIVE PLACEMENT OF FIBROUS MATERIAL IN FORMED FIBROUS ARTICLES

Martin Wisliński, Edison; Roger Bergquist, Ringoes; Manfred Schroeder, Freehold; Theodore Weir, Mahwah; Matthew Monetti, Howell, and Paul Fung, South River, all of N.J., assignors to McNeil-PPC-Inc., Milltown, N.J.

Filed May 26, 1989, Ser. No. 359,011
Int. Cl.[5] D04H *1/72*; B27N *3/04*
U.S. Cl. 264—517 **27 Claims**



1. Apparatus for forming fibrous articles having at least two distinct portions of fibrous materials, comprising:

(a) first means for defiberizing a first fibrous material;

(b) duct means for entraining and transporting the defiberized first fibrous material to a first airlaying location;

(c) second means for defiberizing a second fibrous material;

(d) duct means for entraining and transporting the defiberized second fibrous material to a second airlaying location;

(e) airlaying apparatus, comprising:

(i) first forming chamber in communication with a duct means, creating a first airlaying location;

(ii) second forming chamber in communication with a duct means, creating a second airlaying location;

(iii) cavity transport means, having an interior section;

(iv) a plurality of deposition cavities disposed on the cavity transport means, at least a portion of each of the deposition cavities comprising a foraminous surface;

(v) vacuum chamber means, disposed in the interior section of the cavity transport means, in communication with a least a portion of the foraminous surface of a deposition cavity;

(vi) air handling means for creating a controlled pressure

differential between the airlaying locations and the interior section of the cavity transport means; and

(f) ejection means for removing a fibrous article from the airlaying apparatus

whereby the first defiberized material is deposited in at least a portion of a deposition cavity and the second defiberized material is deposited in at least a portion of the same deposition cavity resulting in an article having at least two distinct portions of fibrous materials having a greater proportion of one of said fibrous materials in one lateral planar portion of said article than in another lateral co-planar portion.

15. Deposition cavity apparatus for forming an airlaid article, in communication with a duct carrying a stream of air-entrained fibrous material to an airlaying location, comprising: a frame portion in sealing engagement with the duct; and a foraminous portion, foramen in said foraminous portion being of a size sufficient to retain the air-entrained fibrous materials, whereby an airlaid article is formed in the region of the foraminous portion and further comprising apparatus for creating a negative pressure in a first portion of a deposition cavity and a positive pressure in a second portion of a deposition cavity.

16. A method of forming fibrous articles having at least two distinct portions of fibrous materials, comprising the steps of:

(a) defiberizing a first fibrous material;

(b) entraining and transporting the defiberized first fibrous material to a first airlaying location;

(c) defiberizing a second fibrous material;

(d) entraining and transporting the defiberized second fibrous material to a second airlaying location;

(e) airlaying the fibrous materials by transporting the first fibrous material to a first forming chamber in communication with a duct means, creating a first airlaying location; transporting the second fibrous materials to a second forming chamber in communication with a duct means, creating a second airlaying location; creating a controlled pressure differential between the airlaying locations and a vacuum chamber; passing the first and second air entrained fibers through a deposition cavity, at least a portion of the deposition cavity comprising a foraminous surface; and ejecting the fibrous article from the airlaying apparatus, whereby the first defiberized material is deposited in at least a portion of a deposition cavity and the second defiberized material is deposited in at least a portion of a deposition cavity resulting in an article having at least two distinct co-planar portions of fibrous materials.

5,004,580

METHOD AND APPARATUS FOR PACKING PERMANENT MAGNET POWDER

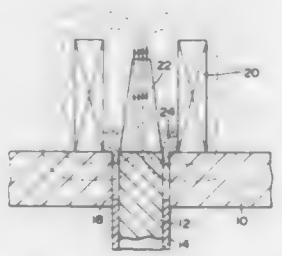
Yoshio Matsuo; Hirofumi Nakano, both of Toyohashi; Masakuni Kamiya, Hamamatsu, and Kezuo Matsui, Toyohashi, all of Japan, assignors to Fuji Electrochemcial Co. Ltd., Tokyo, Japan

Filed Apr. 13, 1990, Ser. No. 508,421

Claims priority, application Japan, Apr. 15, 1989, 1-95916; Apr. 24, 1989, 1-104056

Int. Cl.[5] **B22F** *1/00*

U.S. Cl. 419—65 **10 Claims**



1. A method of packing a permanent magnet powder comprising:

providing a mold having a cylindrical molding space with a central axis and an opening;

providing a solenoid coil having a central axis near said opening of said cylindrical molding space so that said central axis of said solenoid coil substantially coincides with said central axis of said mold space;

providing a magnetic pole means extending along said central axis of said solenoid coil;

supplying a permanent magnet powder above said opening of said molding space; and

applying an alternating current magnetic field by said solenoid coil passing through at least part of said mold and molding space for packing said permanent magnet powder into said molding space.

5,004,581

DISPERSION STRENGTHENED COPPER-BASE ALLOY FOR OVERLAY

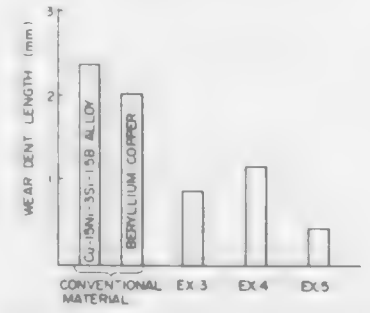
Soya Takagi; Kazuhiko Mori; Minoru Kawasaki, all of Toyota, and Shinji Kato, Miyoshi, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 30, 1990, Ser. No. 559,941

Claims priority, application Japan, Jul. 31, 1989, 1-196784; Aug. 30, 1989, 1-221613

Int. Cl.[5] **C22C** *9/02, 9/04/9/06, 9/08*

U.S. Cl. 420—487 **11 Claims**



1. A dispersion strengthened copper-base alloy for a wear-resistant overlay formed on a metal substrate consisting essentially of, by weight %,

Ni: 5 to 30%;

B: 0.5 to 3%;

Si: 1 to 5%;

Fe: 4 to 30%;

at least one metal selected from the group consisting of 3 to 15% of Sn and 3 to 30% of Zn; and

the remainder being Cu and unavoidable impurities, and having a structure in which particles of boride and silicide of the Fe-Ni system are dispersed in a Cu-base matrix and Cu-base primary crystals contain Sn and/or Zn in a solid solution state.

5. A dispersion strengthened copper-base alloy (for a wear-resistant overlay formed on a metal substrate) consisting essentially of, by weight %,

Ni: 5 to 30%;

B: 0.5 to 3%;

Si: 1 to 5%;

Fe: 4 to 30%;

Pb: 2 to 20%; and

the remainder being Cu and unavoidable impurities, and having a structure in which particles of boride and silicide are dispersed in a Cu-base matrix, and nonsoluble Pb particles are uniformly dispersed between Cu-base α phase dendrites.

5,004,582

BIOCHEMICAL ANALYSIS APPARATUS

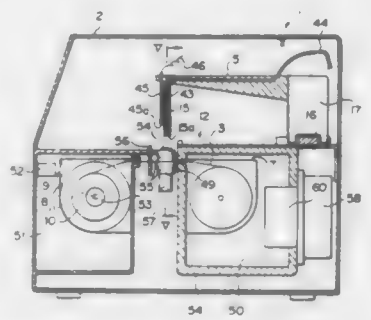
Yukihide Miyata; Hideo Ishizaka, both of Kanagawa; Yoshio Saito, Saitama, and Takashi Koizumi, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 14, 1988, Ser. No. 219,027

Claims priority, application Japan, Jul. 15, 1987, 62-176563; Feb. 10, 1988, 63-29842; Mar. 19, 1988, 63-66354

Int. Cl.[5] **G01N** *33/48, 33/50, 35/04*

U.S. Cl. 422—56 **13 Claims**



1. A biochemical analysis apparatus comprising:

i) a sample accommodating means for accommodating a liquid sample,

ii) a test film accommodating means for accommodating a plurality of long test films, each of said long test film containing a reagent which reacts with said liquid sample to give rise to a change in optical density, and controlling an unused length of each of said long test films at a predetermined temperature and humidity so that deterioration of each of said long test films is controlled,

iii) a test film conveyance means for sequentially pulling out each of said long test films accommodated in said test film accommodating means,

iv) a sample application means for taking up said liquid sample accommodated in said sample accommodating means and sequentially applying a predetermined amount of said liquid sample onto a portion of each of said long test films at the position to which each of said long test films has been pulled out sequentially of said test film accommodating means,

v) an incubator for maintaining the portion of each of said long test films, having said predetermined amount of said liquid sample applied thereon by said sample application means, at a predetermined temperature for a predetermined time, and

vi) a detection means for irradiating light to said portion of each of said long test films, having said predetermined amount of said liquid sample applied thereon, and measuring the optical density given rise to by a reagent-sample reaction during or after the passage of said predetermined time.

5,004,583

UNIVERSAL SENSOR CARTRIDGE FOR USE WITH A UNIVERSAL ANALYZER FOR SENSING COMPONENTS IN A MULTICOMPONENT FLUID

Vinodhini Guruswamy, and Donald A. Elliott, both of Bethesda, Md., assignors to MedTest Systems, Inc., College Park, Md.

Continuation-in-part of Ser. No. 8,554, Jan. 29, 1987, Pat. No. 4,762,594. This application Aug. 8, 1988, Ser. No. 229,503

Int. Cl.[5] **G01N** *21/27, 21/63, 27/333*

U.S. Cl. 422—58 **16 Claims**

1. A re-useable cartridge for facilitating analytical measurement of a solution, comprising:

(a) a housing,

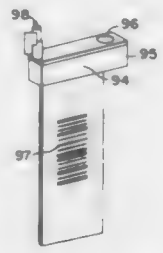
(b) a chamber having a cross-section for containing a predefined volume of solution, said chamber having a first end and a second end being disposed within said housing,

(c) an inlet port in fluid communication with said chamber, said port being located proximate to said first chamber end,

(d) a waste reservoir of preselected volume in fluid communication with said chamber and located proximate to said second chamber end,

(e) inlet ports for introducing fluids directly into said chamber,

(f) means for positively forcing fluid in said chamber to flow out of said chamber and into said reservoir,



(g) means for substantially preventing fluid back-flow from said reservoir to said chamber,

(h) sensor elements having cross-sections disposed in said housing and interfacing with said chamber at a preselected location between said first end and said fluid backflow preventing means; and

(i) means for conveying signals generated by said sensor elements through and out of said housing.

5,004,584

DEVICE FOR TESTING FLUIDS

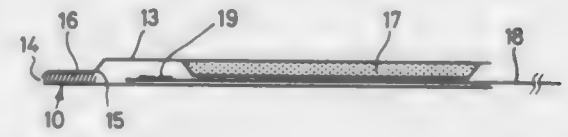
Gerard A. Rayman, 10 Sternes Way, Stapleford, Cambridge, United Kingdom

Filed Jun. 23, 1988, Ser. No. 210,228

Claims priority, application United Kingdom, Jun. 26, 1987, 8714979; Mar. 8, 1988, 8805431

Int. Cl.[5] **G01N** *31/22*

U.S. Cl. 422—58 **10 Claims**



1. A device for testing a fluid by a reaction of a component of the fluid with a regeant carried by a test probe, the device comprising:

a sleeve member having a first and second end;

a first chamber formed at the first end of the sleeve member, the chamber being adapted to be filled with the fluid by capillary action when the first end of the sleeve member is immersed in a source of the fluid;

a probe member adapted to be inserted into the sleeve member and axially movably received in the sleeve member;

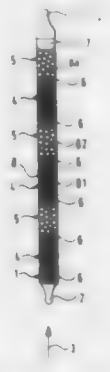
a fluid testing surface on the probe member, the fluid testing surface being adapted to be inserted into the first chamber to react with the fluid in the first chamber; and

a second chamber formed in the sleeve member, the second chamber being separate from the first chamber and being adapted to remove fluid from the fluid testing surface on the probe member as the probe member is moved axially through the second chamber.

5,004,585
COLORIMETRIC DETECTOR TUBE

Rainer Bommer, Lübeck, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany

Filed Sep. 1, 1988, Ser. No. 239,318
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1987, 3729079
Int. Cl.[5] G01N *31/22*
U.S. Cl. 422—58 5 Claims



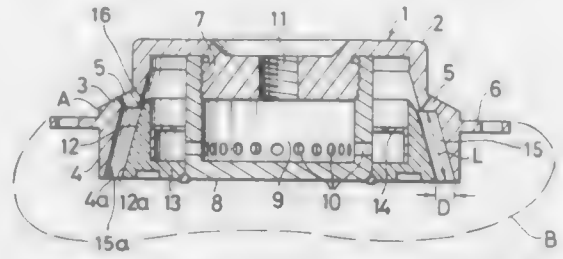
1. A colorimetric detector tube for detecting hydrogen, the detector tube comprising:
- a tubular housing having first and second openable ends which can be opened to allow a stream of a gas to be detected to pass therethrough;
- a porous charge disposed in said housing between said ends;
- a pretreatment substance arranged on said charge so as to define a plurality of separate pretreatment regions arranged sequentially along the length of said charge so as to be in shaped relationship to each other;
- indicator means arranged on saic charge so as to define a plurality of indicating regions alternating with said pretreatment regions;
- said pretreatment substance in each of said pretreatments regions being selected to coact with the gas to form a product which reacts with said indicator means to form a stepwise coloration in one or more of said indicating regions depending upon the amount of the gas passing into the tube whereby an overall indication of the detector tube is determined by an addition of the individual linear colorations in the respective indicating regions;
- said charge being a granular carrier substrate and said pretreatment substance being impregated into said carrier substrate in said pretreatment regions;
- said indicator means being impregnated into said carrier substrate in said indicating regions; and
- said pretreatment substance being palladium and said indicator means including $Mg(ClO_4)_2$.

5,004,586
GAS GENERATING APPARATUS FOR INFLATING AIR BAG

Minoru Hayashi; Koichi Kobari; Kimiharu Sato, and Kishimoto Junichi, all of Fukushima, Japan, assignors to Nippon Koki Co., Ltd., Tokyo, Japan

Filed Jan. 29, 1988, Ser. No. 150,029
Claims priority, application Japan, Feb. 10, 1987, 62-29339
Int. Cl.[5] B60R *21/30*
U.S. Cl. 422—164 15 Claims

1. A gas generating apparatus for inflating an air bag, comprising:
- a housing body (1) having opposite sides, one of which opens toward an air bag when a portion (6) of the body is connected to such air bag;
- a combustion chamber (9) formed centrally within said housing body, wherein high-pressure gas is generated upon combustion of a gas generating agent contained within the body;
- the housing body having a partition (12) which forms a mixing chamber (15) in ring-like configuration concentrically disposed so as to be spaced apart from a discharge (15*a*) opening of said housing body by a desired interval, said combustion chamber communicating with said mixing chamber whereby said high-pressure gas from said combustion chamber is introduced into said mixing chamber;
- a nozzle (16) of ring-like configuration provided wherein said housing body for ejecting said high-pressure gas



flowing from said combustion chamber toward an entrance opening of said mixing chamber formed by said partition; and
- an air intake means (5) formed in said housing body in close proximity to said nozzle and opening from the side of the housing body opposite from such air bag, whereby said high pressure gas ejected by said nozzle causes air to be drawn through said air intake means into said mixing chamber and mixed therein with said high-pressure combustion gas for cooling thereof.

5,004,587
APPARATUS AND METHOD FOR OZONE PRODUCTION

Ernest J. Tacchi, Mobile, Ala., assignor to Aqua Pura Group, Madison, Miss.

Filed Feb. 5, 1990, Ser. No. 475,432
Int. Cl.[5] B01J *19/08*
U.S. Cl. 422—186.19 14 Claims

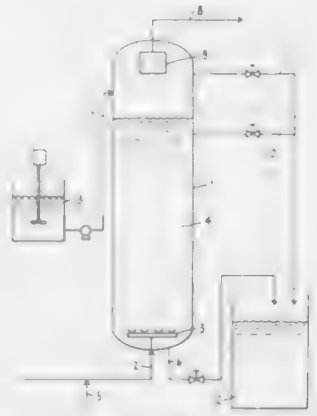


1. An apparatus for producing ozone which comprises,
- a vessel containing a fluid counter-electrode, said counter-electrode being in communication with the external surface of a flexible dielectric tubing which forms a corona discharge chamber, said corona discharge chamber having a passageway therethrough for acceptance of a flexible high tension electrode means and for acceptance of dry oxygen hearing gas; .
- a transformer having one end of its secondary winding ohmically connected to said flexible high tension electrode means and the ground potential end of said secondary winding is electrolytically connected to said fluid counter-electrode and the primary winding of said high voltage transformer is ohmically connected to a source of current for driving said transformer;
- a power source controller means ohmically connected to said transformer and said corona discharge chamber whereby said power source controller means modulates the amplitude, duration, and interval of power application to said primary winding of said transformer and said corona discharge chamber; and
- a heat exchanger means having an electrically conductive metallic member forming a reservoir through which a coolant fluid flows, said metallic member being ohmically connected to ground potential and said metallic member is immersed in said fluid counter-electrode to form an electrolytic junction therewith.

5,004,588
PROCESS FOR REMOVAL OF HYDROGEN SULFIDE FROM GASEOUS STREAM

Scott P. Nisula, Alameda, and Christopher P. O'Callaghan, San Rafael, Gerald A. Bogaczyk, Alta Loma, all of Calif., assignors to Chevron Research & Technology Company, San Francisco, Calif.

Continuation of Ser. No. 144,409, Jan. 15, 1980, abandoned.
Filed Jun. 1, 1990, Ser. No. 530,446
Int. Cl.[5] C01B *17/16, 17/02, 31/20*
U.S. Cl. 423—226 12 Claims



1. A process for removing hydrogen sulfide from a gaseous stream which comprises contacting said hydrogen sulfide containing gaseous stream with an aqueous solution comprising a water soluble oxidized polyvalent metal chelate catalyst to convert the hydrogen sulfide to particulate elemental sulfur and reduce the polyvalent metal chelate catalyst, said contacting taking place in the presence of sufficient oxygen for oxidizing the reduced polyvalent metal chelate catalyst to its oxidized state, wherein the aqueous solution contains an effective amount of a dispersing agent for maintaining the particulate elemental sulfur in dispersed suspension in the aqueous solution, thereby forming a suspension of the particulate elemental sulfur in said aqueous solution, continuing said contacting until the suspended particulate elemental sulfur reaches at least about 2 percent by weight of the aqueous solution, discarding at least a portion of the aqueous solution containing the suspension of particulate elemental sulfur, and replacing the discarded aqueous solution with fresh aqueous solution and said water soluble oxidized polyvalent metal chelate catalyst for contact with additional hydrogen sulfide containing gaseous stream.

5,004,589
PROCESS FOR PREPARING SODIUM TRIPOLYPHOSPHATE

George W. Cadwallader, Maryland Heights; Louis A. Highfill, Union, both of Mo.; Gregory D. Kurdys, Temperance, and Richard S. Turigliatto, Southgate, both of Mich., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 29, 1989, Ser. No. 442,968
Int. Cl.[5] C01B *15/16, 25/26*
U.S. Cl. 423—315 19 Claims

1. A process for preparing granular sodium tripolyphosphate which comprises:
- (a) drying a solution of sodium orthophosphate,
- (b) sizing said dried orthophosphate to a predetermined particle size, whereby at least about 95%, by weight, has a particle size of from −14 mesh to about +100 mesh, and
- (c) calcining the dried, sized orthophosphate whereby sodium tripolyphosphate is formed having the size distribution approximately that of the orthophosphate feed material.

5,004,590
CARBON FIBERS

Warren C. Schimpf, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

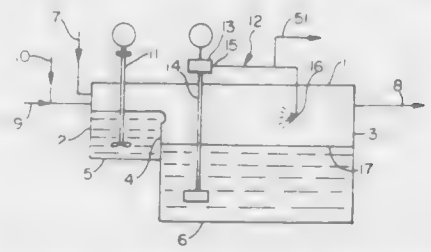
Filed Aug. 5, 1983, Ser. No. 520,785
Int. Cl.[4] D01F *9/12*
U.S. Cl. 425—447.2 2 Claims

1. Polyacrylonitrile-based carbon fiber in the form of a filament bundle characterized by Modulus and Tensile Strength in the Impregnated Strand Test respectively between about 42 million and 50 million psi and between about 600,000 and 900,000 psi, and Short Beam Shear Strength between about 15,000 and 19,000 psi in the Laminate Test, and wherein said carbon fiber has been electrolytically surface treated at 0.5 columns per inch per approximate 12,000 filaments.

5,004,591
CATALYTIC PROCESS FOR REMOVAL OF HYDROGEN SULFIDES FROM LIQUID SULFUR

Jacques Maurice, Pau; Romain Fouque, Poey de Lescar, and Jean-Louis Auriol, Pau, all of France, assignors to Societe Nationale Elf Aquitaine (Production), Paris La Defense, France

Division of Ser. No. 171,878, file as PCT FR87/00268 on Jul. 8, 1989, published as WO88/00570 on Jan. 28, 1988, Pat. No. 4,897,251.
This application Aug. 25, 1989, Ser. No. 398,789
Claims priority, application France, Jul. 10, 1986, 86 10063
The portion of the term of this patent subsequent to Jan. 30, 2007, has been disclaimed.
Int. Cl.[5] B01J *31/02, 31/04;* C01B *17/027*
U.S. Cl. 423—578 R 25 Claims



1. In a process for the removal of H_2S present in liquid sulfur in a dissolved state or combined as hydrogen polysulfides wherein a catalyst system comprising at least one basic compound is admixed with the liquid sulfur and the H_2S is separated from the liquid sulfur, the improvement which comprises including in the catalyst system at least one surfactant compound and wherein said H_2S is separated as a gas.

5,004,592

STEAM REFORMING PROCESS

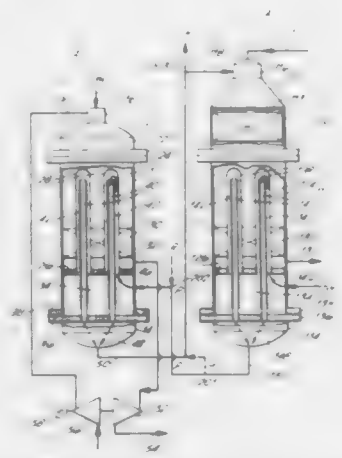
Alwyn Pinto, Cleveland, England, assignor to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 767,067, Aug. 19, 1985, Pat. No. 4,750,986, which is a division of Ser. No. 591,328, Mar. 19, 1984, abandoned. This application May 23, 1988, Ser. No. 197,515

Claims priority, application United Kingdom, Mar. 25, 1983, 8308343

Int. Cl.[5] **C01B** *3/38*

U.S. Cl. 423—652 **3 Claims**



1. In a process for producing raw ammonia synthesis gas by the steps of:

(a) primary reforming a hydrocarbon feedstock with seam to give a gas containing carbon oxides, hydrogen, methane and unreacted steam by passing a mixture of the feedstock and steam over a heated catalyst;

(b) reacting the product of step (a) catalytically with an oxygen/nitrogen mixture to decease the content of methane and introduce nitrogen; and

(c) obtaining the endothermic heat required for step (a), part from the hot effluent of step (b) and part from an external heat supply means, by carrying out step (a) in a first stage giving a partially primary reformed gas which is then subjected to further primary reforming in a second stage, with one of the stages being heated from an external heat supply means and the other stage heated by the hot effluent of step (b); the improvement comprising effecting the first stage of step (a) by passing a mixture of the hydrocarbon feedstock and steam over a catalyst, heating the catalyst by indirect heat exchange with both the hot effluent of step (b) and the partially primary reformed gas produced in the first stage, thereby cooling both the hot effluent from stage (b) and the partially reformed gas, and then passing the resusltant cooled partially primary reformed gas to the second stage of step (a), heating the second stage using the external heat supply means.

5,004,593

HEXAMETHYLMELAMINE FORMULATION EXHIBITING REDUCED NEUROTOXICITY

Matthew M. Ames, and John S. Kovach, both of Rochester, Minn., assignors to Mayo Foundation for Medical Education and Research, Rochester, Minn.

Filed Apr. 17, 1989, Ser. No. 339,481

Int. Cl.[5] **A61K** *31/71, 31/66, 31/53, 33/24*

U.S. Cl. 424—10 **7 Claims**

1. A method for reducing the peripheral neuropathy associated with chemotherapy with hexamethylmelamine comprising intravenously administering a stabilized solution of an effective antineoplastic amount of hexamethyl-melamine (HMM) to a cancer patient in need thereof; wherein said HMM is dissolved in an aqueous emulsion comprising about 2–20% of an edible oil; about 0.1–7% of a phosphatide and about 1–10% glycerol, so that peripheral neuropathy is reduced from that observed when the same amount of HMM is orally administered.

5,004,594

BENZYLIDENECAMPHOR SULPHONAMIDES DERIVED FROM AMINO ACIDS AND THEIR APPLICATION IN COSMETICS, PARTICULARLY AS SUNSCREENS

Herve Richard; Madeleine Leduc, both of Paris; Serge Forestier, Claye Souilly, and Gerard Lang, Saint Gratien, all of France, assignors to L'Oreal, Paris, France

Filed Dec. 21, 1988, Ser. No. 287,054

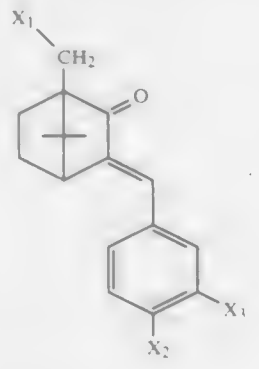
Claims priority, application Luxembourg, Dec. 22, 1987, 87089

Int. Cl.[4] **A61K** *7/021, 7/40, 7/42, 9/12*

U.S. Cl. 424—47 **15 Claims**

1. A cosmetic sunscreening composition for protecting the skin and hair from ultraviolet rays, said composition comprising in a cosmetically acceptable medium and in an amount effective to protect the hair and skin from ultraviolet rays, at least one sulphonamide derived from 3-benzylidenecamphor and having the formula

(I)



wherein

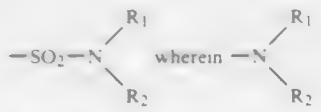
X_1 represents hydrogen or Y,

X_2 represents hydrogen, halogen, C_1-C_4 alkyl, C_1-C_4 alkoxy, Y or Z,

X_3 represents hydrogen, halogen, C_1-C_4 alkyl, C_1-C_4 alkoxy, Y or Z,

or X_2 and X_3 together form an alkylenedioxy group wherein the alkylene moiety contains 1 or 2 carbon atoms,

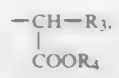
Y represents



represents an amino acid residue, esterified or not, wherein

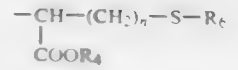
R_1 and R_2 represent hydrogen, alkyl or hydroxyalkyl, with the proviso that at least one of R_1 and R_2 represents:

(a)



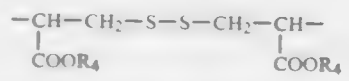
wherein R_3 represents hydrogen, alkyl, hydroxyalkyl, amidoalkyl, aminoalkyl, aralkyl, aryl or alkyl substituted by a heterocyclic ring, or $-(CH_2)_n-COOR_5$ wherein n is 1 to 6 and R_5 represents hydrogen, alkyl or aralkyl or R_3 together with R_1 or R_2 and the nitrogen atom to which they are attached form a heterocyclic ring, and R_4 represents hydrogen, alkyl, aralkyl or aryl,

(b)



wherein n and R_4 have the meanings given above and R_6 represents hydrogen, alkyl, aralkyl or aryl, or

(c)

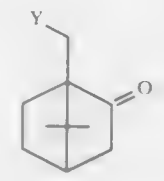


to which two 3-benzylidenecamphor-10-sulphonamide or 3-benzylidenecamphor-3'-sulphonamide or 3-benzylidenecamphor-4'-sulphonamide residues are attached,

R_4 has the meaning given above or an alkali metal or $N^+(R_7)$ wherein R_7 represents hydrogen, C_1-C_4 alkyl or C_2-C_4 hydroxyalkyl,

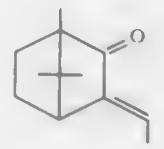
Z represents one of the following

(a) Z_1 which has the formula



wherein Y has the meaning given above, or

(b) Z_2 which has the formula



with the proviso that one of X_1, X_2 and X_3 is different from the other two and that

(α) when X_1 represents hydrogen, X_2 and X_3 are different from each other and cannot be Z_2, one of the two necessarily being Y or Z_1,

(β) when X_1 represents Y, X_2 and X_3 are not simultaneously Y or Z_1 or Z_2, and

(γ) when R_1 or R_2 represents a divalent group of formula (c) in the radical Y, only one of X_1, X_2 and X_3 can be Y, and X_2 and X_3 cannot be Z_1, and in the above,

alkyl represents a straight or branched chain C_1–C_{20} radical,

aryl represents phenyl or a higher homologue thereof unsubstituted or substituted by hydroxy, alkoxy or dialkylamino and which contains 1–20 carbon atoms,

aralkyl represents benzyl or a higher homologue thereof unsubstituted or substituted by hydroxy, alkoxy or dialkylamino and which contains 1–20 carbon atoms, and

alkyl substituted by a heterocyclic ring represents a histidine or tryptophan residue.

5,004,595

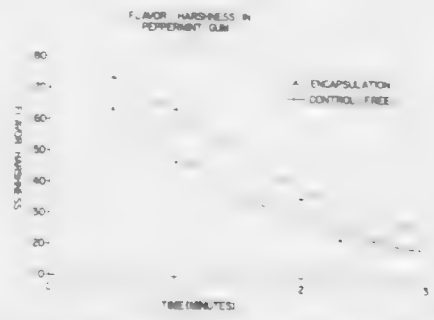
MULTIPLE ENCAPSULATED FLAVOR DELIVERY SYSTEM AND METHOD OF PREPARATION

Subraman R. Cherukuri, Towaco; Tommy L. Chau, Bridgewater; Krishna P. Raman, Randolph, and Angel M. Orama, Stanhope, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 452,660, Dec. 18, 1989, which is a continuation-in-part of Ser. No. 329,742, Mar. 28, 1989, Pat. No. 4,933,190, which is a continuation-in-part of Ser. No. 945,743, Dec. 23, 1986. This application Mar. 30, 1990, Ser. No. 503,331

Int. Cl.[5] **A23G** *3/30*

U.S. Cl. 424—48 **22 Claims**



1. A free-flowing particulate delivery system for providing enhanced flavor and sweetness to comestible compositions, said delivery system comprising:

(a) a core comprising a flavor in particulate form; and

(b) an encapsulating matrix for said core, said matrix comprising an outer coating of a hydrophilic polymer containing an intense sweetener, said outer coating prepared from a solution of the hydrophilic polymer and said intense sweetener, with said intense sweetener being present in the polymer solution in an amount ranging from about 0.1% to about 50% by weight of said solution, the outer coating present in an amount of from about 2% to about 100% by weight of said core;

(c) wherein the encapsulating matrix protects the flavor in the core and permits higher concentrations of flavor to be included without imparting bitterness to the resulting flavor delivery system, and promotes consistent taste release.

5,004,596

ANHYDROUS TOOTHPASTE OR DENTAL CREAM COMPOSITION

Francis E. Cocherell, 809 Silver Maple Dr., Azusa; Homer C. Harper, 15102 E. Chetney, Baldwin Park, both of Calif. 91702, and George Hsieh, 23943 Sunset Crossing Rd., Covina, Calif. 91765

Continuation-in-part of Ser. No. 139,064, Dec. 21, 1987, Pat. No. 4,812,306, which is a continuation of Ser. No. 819,583, Jan. 17, 1986, abandoned. This application Jan. 17, 1989, Ser. No. 297,172

The portion of the term of this patent subsequent to Mar. 14, 2006, has been disclaimed.

Int. Cl.[5] **A61K** *7/26, 7/18*

U.S. Cl. 424—52 **7 Claims**

1. A chemically stable anhydrous tooth paste or dental cream composition of:

(a) a powdery mixture comprising about 10% to about 90% by total weight of the composition of one or more anhydrous inorganic salts selected from the group consisting of sodium bicarbonate, magnesium sulfate and sodium chloride, about 0.02% to about 25% by total weight of the composition of a flavoring oil, about 0.1% to about 60% by total weight of the composition of glycerin, and about 0.2% to about 25% by total weight of the composition of a powdery absorbent, said flavoring oil and said glycerin

being present in said powdery mixture in solid form absorbed into said absorbent, and

(b) said powdery mixture being uniformly present in about 6% to about 90% by total weight of the composition of a vegetable oil carrier that has been sufficiently hydrogenated to provide cream or paste consistency to the composition.

5,004,597

ORAL COMPOSITIONS COMPRISING STANNOUS FLOURIDE AND STANNOUS GLUCONATE

Satyanarayana Majeti; Christopher B. Guay, and Mark M. Crisanti, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 97,010, Sep. 14, 1987, abandoned. This application Sep. 13, 1989, Ser. No. 406,855

Int. Cl.[5] A61K *7/16, 7/18, 7/24*

U.S. Cl. 424—52 **16 Claims**

1. An oral composition effective in treating plaque/gingivitis comprising:

(a) a safe and effective amount of stannous fluoride;

(b) a safe and effective amount of stannous gluconate; and

(c) a pharmaceutically acceptable carrier

wherein the pH of said composition is from about 3.0 to about 4.79 and said composition is substantially free of a calcium ion source(s).

5,004,598

STABLE AND QUICK-BREAKING TOPICAL SKIN COMPOSITIONS

Robert Y. Lochhead, Avon Lake; Janet Y. Castaneda, Lorain, and Wilfred J. Hemker, Berea, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 928,755, Nov. 10, 1986, abandoned. This application May 31, 1989, Ser. No. 358,924

Int. Cl.[5] A61K *7/15, 7/42, 7/44, 7/50*

U.S. Cl. 424—59 **10 Claims**

1. A storage-stable oil-in-water emulsion composition comprising water, oil, and a lightly crosslinked modified polymer wherein in said emulsion, water forms the continuous phase and oil forms the discontinuous phase in the form of oil droplets dispersed in the water, said modified polymer is a copolymer having a major portion of a monoolefinically unsaturated carboxylic acid monomer or its anhydride of 3 to 6 carbon atoms and a minor portion of a long chain acrylate or methacrylate ester monomer, said emulsion having the characteristic of breaking quickly on contact with an electrolyte, wherein said modified polymer defines a viscosity of 100 to 50,000 cps when measured in the form a 0.2 weight percent aqueous mucilage at pH of about 7.2 to 7.6,

and wherein the components of said composition are given below in weight parts:

Mineral Oil	.1 to 60
Modified Polymer	.05 to 3
Water	45 to 100

5,004,599

METHOD OF TREATING NAILS

Richard K. Scher, 913 Gardner Dr., P.O. Box P107, Bay Shore, N.Y. 11706

Filed Mar. 31, 1989, Ser. No. 332,354

Int. Cl.[5] A61K *7/04*

U.S. Cl. 424—61 **3 Claims**

1. A method of treating nail units of animals including humans comprising topically applying to the nail unit of an animal a preparation comprising tretinoin to promote growth of the nail unit, the tretinoin being present in said preparation in an amount between 0.025 and 50% by weight.

5,004,600

DEODORIZING AGENT

Atsushi Suzuki, Kamifukuoka, Japan, assignor to Cleanlite Aire Inc., Mississauga, Canada

Continuation-in-part of Ser. No. 884,137, Jul. 10, 1986, abandoned. This application Mar. 26, 1990, Ser. No. 498,664

Claims priority, application Japan, Jul. 12, 1985, 60-153738

Int. Cl.[5] A61L *9/04*

U.S. Cl. 424—76.3 **20 Claims**

1. A composition useful for the treatment of air for the deodorization thereof comprising 100 parts by weight glyoxal, from about 35 to about 65 parts by weight of an organic water soluble polyol and from about 60 to about 100 parts by weight of calcium chloride, in aqueous solution.

5,004,601

LOW-MELTING MOLDABLE PHARMACEUTICAL EXCIPIENT AND DOSAGE FORMS PREPARED THEREWITH

Wallace C. Snipes, Pine Grove Mills, Pa., assignor to Zetachron, Inc., State College, Pa.

Continuation-in-part of Ser. No. 257,569, Oct. 14, 1988. This application Oct. 31, 1988, Ser. No. 264,747

Int. Cl.[5] A61K *9/20, 31/74*

U.S. Cl. 424—78 **7 Claims**

1. A low-melting pharmaceutical excipient consisting essentially of

Low MW Polyethylene glycol (M.P. about 37° C.)	75–90%
Medium to high MW polyethylene glycol	0–4%
Polyethylene oxide (MW 100,000–5,000,000)	0–4%
Colloidal silica	10–20%

5,004,602

CONTINUOUS RELEASE PHARMACEUTICAL COMPOSITIONS FORMED BY FREEZE DRYING ACETIC ACID SOLUTIONS OF POLYLACTIDE

Francis G. Hutchinson, Lymm, United Kingdom, assignor to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 640,855, Aug. 15, 1984, abandoned. This application May 12, 1986, Ser. No. 861,839

Claims priority, application United Kingdom, Feb. 16, 1981, 8104734

Int. Cl.[5] A61K *31/74, 9/50*

U.S. Cl. 424—78 **1 Claim**

1. A process for the manufacture of a pharmaceutical composition comprising (a) from 50% to 99.9% of a polyactide which is a polymer of lactic acid alone, a copolymer of lactic acid and glycolic acid wherein the ratio of glycolide to lactide units is from 0 up to 3:1, a mixture of such polymers, a mixture of such copolymers, or a mixture of such polymers and copolymers, the lactic acid being either in racemic or in optionally active form, and such polylactide being either soluble in benzene and having an inherent viscosity of from 0.093 (1 g. per 100 ml. in chloroform) to 0.5 (1 g. per 100 ml. in benzene), or insoluble in benzene and having an inherent viscosity of from 0.093 (1 g. per 100 ml. in chloroform) to 4 (1 g. per 100 ml in chloroform or dioxan), and (b) from 0.001% to 50% of a pharmacologically active polypeptide which has a molecular weight at least that of tetragastrin, which is not significantly hydrolyzed under the conditions encountered within the composition during the period of use envisioned, and which contains four or more amino acid residues, said polypeptide being uniformly dispersed in said polylactide, which composition, when placed in an aqueous physiological-type environment absorbs water and exhibits two successive phases of release of polypeptide, the first phase being release by initial diffusion through aqueous polypeptide domains communicating with the exterior surface of the composition, and the second phase being release consequent upon degradation of the polylactide, characterized in that the diffusion phase and the degradation-induced phase overlap in time, said composition being further characterized by the fact that, when placed in an aqueous physiological type environment, water diffuses into the polylactide and is partitioned between polypeptide and polyactide to form aqueous polypeptide domains, said domains increasing with increasing absorption of water until the continuity of said domains reaches a sufficient level to communicate with the exterior surface of the composition, whereupon polypeptide starts to be released from said composition by diffusion through aqueous polypeptide channels formed from said domains, which second phase continues until substantially all of the remaining polypeptide is released, said process comprising:

dissolving said polylactide and said polypeptide in glacial acetic acid,

freeze drying the resulting solution, and

shaping the resulting freeze dried powder at an elevated temperature.

5,004,603

FEEDING LIVESTOCK

Barry A. Thompson, 4 Gilstrap Close, Beacon Heights, Newark Notts., United Kingdom, assignor to Rene Pich; Hubert Issaurat, both of, France and Barry A. Thompson, United Kingdom

Filed Mar. 11, 1987, Ser. No. 24,575

Claims priority, application United Kingdom, Mar. 11, 1986, 8605969; Apr. 25, 1986, 8610199; Jul. 8, 1986, 8616564

Int. Cl.[5] A61K *31/78, 9/50;* **A23K** *1/18*

U.S. Cl. 424—81 **21 Claims**

1. A method of feeding a ruminant comprising administering to said ruminant a feed-conversion rate increasing non-toxic amount of a swollen water swellable water insoluble polymer material in an amount equivalent to at least 0.04 kg swollen polymer per day per 100 kg ruminant body weight.

5,004,604

IMMUNO-SUPPRESSIVE MATERIAL AND PROCESS FOR PREPARING SAME

Peter Terness, and Gerhard Opelz, both of Heidelberg, Fed. Rep. of Germany, assignors to Fresenius A. G., Bad Homburg, Fed. Rep. of Germany

Filed Mar. 25, 1988, Ser. No. 178,643

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1986, 3626110.6

Int. Cl.[5] A61K *37/66, 35/14*

U.S. Cl. 424—85.5 **6 Claims**

1. A process for the production of an immuno-suppressive serum containing IS-IgG comprising the steps of:

(a) incubating animal cells with homologous or heterologous antibodies, which specifically bind to said cells, whereby said cells are coated with said antibodies,

(b) washing said incubated cells,

(c) multiply injecting said cells into a recipient animal,

(d) after a predetermined incubating time, taking the blood from the recipient animal and separating the serum therefrom.

5,004,605

LOW PH PHARMACEUTICAL COMPOSITIONS OF RECOMBINANT BETA-INTERFERON

Susan Hershenson, San Francisco, and Jody Thomson, Albany, both of Calif., assignors to Cetus Corporation, Emeryville, Calif.

Filed Dec. 10, 1987, Ser. No. 131,375

Int. Cl.[5] C07K *15/26*

U.S. Cl. 424—85.6 **16 Claims**

1. A stable pharmaceutical composition of matter suitable for parenteral administration to mammals that is at a pH range of from about 2 to about 4 comprising a therapeutically effective amount of a recombinant interferon-β protein dissolved in an inert carrier medium comprising as a stabilizer/solubilizer an effective amount of polyethylene glycol polymers having an average molecular weight from about 190 to about 1600 daltons in the substantial absence of detergents and at a pH between 2 and 4.

5,004,606

NON-COVALENT ANTIBODY-ANTHRACYCLINE IMMUNOCOMPLEXES

James M. Frincke, Olivenhain; Richard M. Bartholomew, San Diego, and Robert O. Dillman, Solana Beach, all of Calif., assignors to Hybritech Incorporated, San Diego, Calif.

Filed Sep. 24, 1986, Ser. No. 911,269

Int. Cl.[5] A61K *37/00, 39/00*

U.S. Cl. 424—85.8 **14 Claims**

1. A composition for treating in vivo a disorder associated with chronic lymphocytic leukemia, cutaneous T-cell lymphoma, or other human T-cell neoplasm, comprising a non-covalent immunocomplex of an anthracycline agent and a monoclonal antibody or antigen-recognizing fragment thereof, said anthracycline agent is selected from the group consisting of doxorubicin, doxorubicin-14-valerate, morpholinodoxorubicin and derivatives thereof, and said antibody or antibody fragment being selected to bind an antigen recognized by a T101 antibody and enhance the in vivo cytotoxicity of said agent.

5,004,607

METHOD OF IMMUNIZING POULTRY

William L. Ragland, and Mohamed G. Elfaki, both of Athens, Ga., assignors to University of Georgia Research Foundation, Inc., Athens, Ga.

Continuation of Ser. No. 89,350, Aug. 25, 1987, abandoned. This application Jan. 11, 1989, Ser. No. 296,319

Int. Cl.[5] A61K *39/00;* **C12N** *1/00*

U.S. Cl. 424—88 **14 Claims**

1. An improved method of immunizing poultry against a disease comprising the steps of:

(a) first inoculating the poultry with a poultry vaccine preparation, wherein the first inoculation is intracoelomic, and

(b) subsequently inoculating the poultry with a poultry vaccine preparation.

5,004,608

AMEBIASIS VACCINE

Jonathan I. Ravdin, Earlysville, and William A. Petri, Jr., Palmyra, both of Va., assignors to The University of Virginia Alumni Patents Foundation, Charlottesville, Va.

Continuation of Ser. No. 143,626, Jan. 13, 1988, abandoned. This application Dec. 29, 1989, Ser. No. 456,579

Int. Cl.[5] A61K *39/02, 39/00*

U.S. Cl. 424—88 **5 Claims**

1. The process of immunizing against *Entamoeba histolytica* comprising

using 170K Dalton purified galactose specific lectin protein of *E. hostolytica* in vaccinating the host with the vaccine, eliciting a host immune response against the vaccine, and immunizing the host against invasive amebiasis by *E. histolytica* trophozoites.

Continuation of Ser. No. 199,250, May 26, 1988, abandoned, which is a continuation of Ser. No. 919,149, filed as PCT JP85/00673 on Dec. 6, 1985, published as WO86/03973 on Jul. 17, 1986, Pat. No. 4,851,345.

5,004,609

FIBRINOPHILIC UROKINASE COMPLEX

Shigeru Hayashi, and Kaneo Yamada, both of Tokyo, Japan, assignors to Shiseido Company Ltd., Tokyo, Japan

Filed Sep. 5, 1989, Ser. No. 403,895

Claims priority, application Japan, Jan. 14, 1985, 60-4530

Int. Cl.[5] A61K *37/547;* **C12N** *9/00*

U.S. Cl. 424—94.3 **8 Claims**

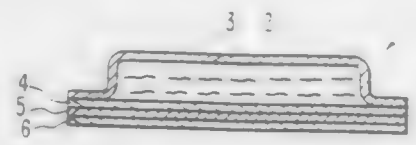
1. A purified urokinase complex substantially free of urine, said complex comprising urokinase and a urokinase inhibitor, said complex having a molecular weight of 97,500±3,000, and

said complex having plasminogen activator activity and fibrin affinity.

5,004,610
SUBSATURATED NICOTINE TRANSDERMAL THERAPEUTIC SYMSTEM

James L. Osborne, Mountain View; Melinda Nelson, Sunnyvale; David J. Enscore, Satatoga; Su I. Yum, and Robert M. Gale, both of Los Altos, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 206,546, Jun. 14, 1988, abandoned, and a continuation-in-part of Ser. No. 2,561, Jun. 13, 1989, abandoned. This application Jun. 14, 1990, Ser. No. 537,672
Int. Cl.[5] A61F 13/02
U.S. Cl. 424—448 29 Claims



1. A medical device for the transdermal administration of nicotine, said device being adapted to deliver nicotine during a predetermined nicotine administration period of at least about eight hours at a rate within the range of about 250–4000 μg/hr for a substantial portion of said administration period, said device comprising, in combination:

a. nicotine reservoir comprising said nicotine dissolved in a solvent at a concentration less than saturation and at an initial equilibrated nicotine loading sufficient to prevent the concentration of nicotine in said solvent from decreasing by more than 75% during said administration period;

b. nicotine release rate controlling means disposed in the path of nicotine migration from said reservoir to the skin, said rate controlling means being permeable to nicotine and substantially impermeable to said solvent;

c adhesive means disposed in the path of nicotine migration from said release rate controlling means to the skin; and

d. removable release liner means on said adhesive.

5,004,611
PRO-LIPOSOME COMPOSITIONS

Steven Leigh, Croydon, England, assignor to Phares Pharmaceutical Research NV, Curacao, Netherlands Antilles

Continuation of Ser. No. 709,796, Mar. 8, 1985, abandoned. This application Mar. 21, 1988, Ser. No. 171,148
Claims priority, application United Kingdom, Mar. 8, 1984, 8406038; Mar. 16, 1984, 8406919
Int. Cl.[4] A61K 37/22
U.S. Cl. 424—450 25 Claims

1. A pro-liposome composition comprising a uniform mixture of:

(a) at least one membrane lipid and

(b) at least one non-aqueous liquid consisting essentially of a water-miscible organic liquid which is a solvent for the lipid and

(c) a biologically active compound and which, upon a step consisting essentially of the addition of a sufficient amount of water, spontaneously forms liposomes,

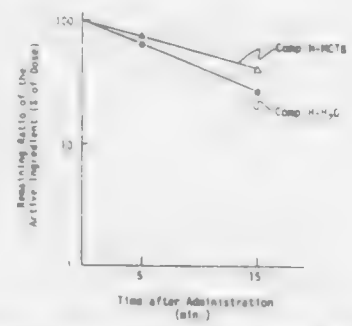
the proportion by weight of (a) to (b) being from 40:1 to 1.20 and

component (c) being present in an amount sufficient that a predetermined biologically effective dosage of the biologically active compound is associated with the liposomes.

5,004,612
PHARMACEUTICAL COMPOSITIONS COMPRISING ESTERS OR AMIDES AS ACTIVE INGREDIENTS

Soonih Kim; Kazuhisa Takeda, and Seiei Sasatani, all of Osaka, Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 180,933, Apr. 13, 1988, Pat. No. 4,889,723. This application Oct. 5, 1989, Ser. No. 417,537
Claims priority, application Japan, Apr. 13, 1987, 62-88785
Int. Cl.[5] A61K 37/22
U.S. Cl. 424—450 7 Claims



1. A pharmaceutical composition consisting essentially of a prolinal or thiazolidine derivative having at least one amido bond suspended or dissolved in a middle chain glyceride of a fatty acid of 4 to 10 carbon atoms or mixtures thereof.

5,004,613
ORAL SUSTAINED RELEASE PHARMACEUTICAL FORMULATION AND PROCESS

Galen W. Radebaugh, Chester, N.J.; John L. Murtha, Holland, and Robert Glinecke, Glenside, both of Pa., assignors to McNeil-PPC, Inc., Milltown, N.J.

Continuation-in-part of Ser. No. 299,178, Jan. 19, 1989, which is a continuation-in-part of Ser. No. 78,138, Jul. 27, 1987, Pat. No. 4,820,522. This application Aug. 11, 1989, Ser. No. 392,748
The portion of the term of this patent subsequent to Apr. 11, 2006, has been disclaimed.
Int. Cl.[5] A61K 9/22
U.S. Cl. 424—465 20 Claims

1. A process of preparing a pharmaceutical-sustained release shaped and compressed tablet characterized by a slow release of pharmaceutical active upon administration comprising the following steps:

(A) forming a granulating agent by dissolving 5–25 parts by weight of the total composition of povidone in water or in an alcohol-water mixture;

(B) blending together, in parts by weight of the total composition, the following ingredients, with sufficient pharmaceutical active to comprise about 68 to 94 percent by weight of the total composition, in dry powder form, 5–25 parts by weight hydroxyethyl cellulose and 5–25 parts by weight of a wicking agent;

(C) adding and mixing the granulating agent from Step A to the blended powders from Step B, to form a wet granulation;

(D) drying the wet granulation of Step C;

(E) milling the dried granulation from Step D;

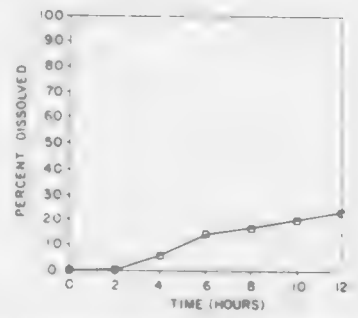
(F) thoroughly blending the milled dried granulation from Step E with the following parts by weight of the total composition of ingredients in dry powder form: 1–15 parts by weight erosion promoter, 5–45 parts by weight wicking agent, 0–10 parts by weight lubricant and 0–5 parts by weight glidant; and

(G) compressing the final granulation from Step F into a tablet or tablet layer.

5,004,614
CONTROLLED RELEASE DEVICE WITH AN IMPERMEABLE COATING HAVING AN ORIFICE FOR RELEASE OF DRUG

John N. Staniforth, Bath, England, assignor to Forum Chemicals Ltd., Redhill, England

Filed Aug. 25, 1989, Ser. No. 398,632
Int. Cl.[5] A61K 9/22
U.S. Cl. 424—466 27 Claims



1. A device for controlled release of an active agent, comprising

a core comprising an active agent and a release modifying agent; and

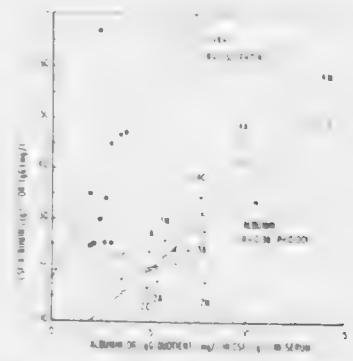
an outer coating covering said core, the thickness of said coating being adapted such that it is substantially impermeable to the entrance of an environmental fluid present in an environment of use and substantially impermeable to the exit of said active agent during a dispensing period, said coating including an orifice extending substantially completely through said coating but not penetrating said core and communicating from said environment of use to said core for allowing the release of said active agent into said environment of use, said orifice having an area from about 10 to about 60 percent of the face area of said device, the rate limiting step for the release of said active agent substantially being the exit of said active agent through said orifice via one or more of dissolution, diffusion or erosion of said active agent in solution or suspension, said release modifying agent enhancing or hindering the release of said active agent depending upon the solubility and/or effective solubility of said active agent in said environment of use.

5,004,615
METHODS FOR DIAGNOSING, MONITORING AND CONTROLLING THE ONSET AND PROGRESSION OF CERTAIN DEMENTIAS AND IMPEDING MEMORY LOSS OR IMPROVING IMPAIRMENT OF MEMORY

J. Leslie Glick, Potomac, Md., assignor to Bionix Corporation, Potomac, Md.

Continuation of Ser. No. 322,382, Mar. 13, 1989, Pat. No. 4,985,256, which is a division of Ser. No. 203,174, Apr. 27, 1988, Pat. No. 4,837,164. This application Jul. 25, 1990, Ser. No. 557,235
The portion of the term of this patent subsequent to Jan. 15, 2008, has been disclaimed.
Int. Cl.[5] A61K 33/06, 33/10; C01F 5/02, 5/40
U.S. Cl. 424—692 30 Claims

1. A method for impeding loss of memory or improving impairment of memory comprising orally administering Mg alone or in combination with another anti-memory loss agent to a subject whose dietary intake of Mg is below the normal intake of about 200 to 450 mg/day, such that the supplemental



daily intake of Mg in the subject is in an amount of from about 200 to 1,620 mg/day.

5,004,616
PROCESS FOR PREPARING MICROWAVE-REHEATABLE FRENCH FRIED POTATOES AND PRODUCT THEREOF

Sudhakar P. Shanbhag, Carlisle; Joseph J. Cousminer, Stoneham, and Gerald Milani, Uxbridge, all of Mass., assignors to Horizons International Foods, Inc., Burlington, Mass.

Continuation-in-part of Ser. No. 248,854, Sep. 28, 1988, Pat. No. 4,931,296, which is a continuation-in-part of Ser. No. 193,370, May 12, 1988, abandoned. This application Feb. 22, 1990, Ser. No. 483,598
The portion of the term of this patent subsequent to Jun. 5, 2007, has been disclaimed.
Int. Cl.[5] A23L 1/217
U.S. Cl. 426—102 21 Claims

1. A process for preparing french fried potatoes suitable for subsequent reheating in a microwave oven to obtain a product having a crisp exterior and a tender interior, comprising

finish frying potato strips, and thereafter

coating said potato strips with toasted potato granules to provide a thin coherent coating of said potato granules on said potato strips, and

coating said finish fried potato strips with from about 0.8 to about 1.2 percent by weight fat-encapsulated salt.

5,004,617
METHOD OF HEATING FOOD

Robert F. Bowen, Burlington; Kenneth W. Dudley, Sudbury, and Joseph C. Maiellano, Jr., Chelmsford, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Division of Ser. No. 197,716, May 23, 1988, Pat. No. 4,917,006. This application Jan. 11, 1990, Ser. No. 448,408
Int. Cl.[5] A23L 1/00
U.S. Cl. 426—233 4 Claims

1. A method of regulating the temperature of a grill for supporting food to be cooked, comprising the steps of:

providing a grill that expands when heated;

placing food on said grill;

applying heat to said grill to cook said food; and

reducing said heat applied to said grill in response to expansion of said grill.

5,004,618

PROCESS FOR PREPARING MARINADED PROTEINACEOUS PRODUCT AND PRODUCT PRODUCED THEREBY

Lawrence L. Buckholz, Jr., Middletown, and Robin Kasper-Lehmann, Elberon, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 457,162, Dec. 26, 1989, Pat. No. 4,942,047, which is a continuation-in-part of Ser. No. 371,074, Jun. 26, 1989, abandoned, which is a continuation-in-part of Ser. No. 114,057, Oct. 29, 1987, abandoned. This application Jun. 8, 1990, Ser. No. 535,539

The portion of the term of this patent subsequent to Jul. 17, 2007, has been disclaimed.

Int. Cl.[5] A23L *1/31, 1/315*

U.S. Cl. 426—[illegible]1 **12 Claims**

1. A process for preparing a marinaded proteinaceous food product consisting of the steps of:

(a) providing a meat muscle tissue inner food core having an outer surface;

(b) preparing a marinade mixture consisting of:

(i) from about 3 up to about 6% by weight of said marinade mixture of an inorganic non-toxic phosphate salt;

(ii) water;

(iii) from about 10% up to about 70% by weight of said marinade mixture of a reaction flavor produced by admixing:

1. 30–80% of a macerated meat;
2. 0.05–1.5% of cysteine hydrochloride;
3. 0.1–1.5% of thiamine hydrochloride;
4. optionally, 2–30% of a polysaccharide and/or a reducing sugar metabolite; and, optionally,
5. an inorganic salt other than a phosphate to form an admixture and then heating said admixture;

(iv) optionally, from about 5 up to about 15% by weight of said marinade mixture of a non-toxic edible salt other than a phosphate salt; and

(v) optionally, from about 5 up to about 30% by weight of said marinade mixture of tomato paste and/or a spice;

(c) coating the resulting mixture prepared in (b) onto said outer surface and simultaneously causing the mixture of (b) to be in intimate contact with substantially the entirety of said outer surface for a period of time sufficient to cause said meat muscle tissue inner food core to permanently absorb or adsorb said reaction flavor from the mixture (b); and then

(d) cooking the resulting coated meat muscle tissue inner core.

5,004,619

PRODUCTION METHOD OF FORMING SOLID STATE FOOD MATERIAL COMPLETELY WRAPPED AND SEALED IN A CLAYISH STATE FOOD MATERIAL

Masao Kobayashi, 413-2, Nittazuka, Fukui-shi, Fukui-ken, Japan

Division of Ser. No. 156,802, Feb. 17, 1988, Pat. No. 4,854,842. This application May 23, 1989, Ser. No. 355,681

Claims priority, application Japan, Feb. 25, 1987, 62-43629

Int. Cl.[5] A23P *1/08, 1/10*

U.S. Cl. 426—297 **3 Claims**

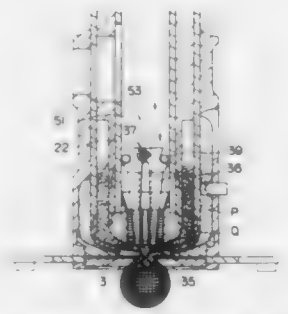
1. A method for forming wrapping and sealing a solid state food material with a state food material, thereby forming a globular product, comprising the steps of:

injecting clayish state food material into a cylindrical mold cavity, thereby forming a cylinder of clayish state food material, the cylinder having an annular side wall and a bottom resting on a gate covering a bottom of the mold cavity;

placing the solid state food material into the cylinder of clayish state food material;

pushing the solid state food material towards the bottom of the cylinder while opening the gate;

closing the gate to thereby envelope the solid state food material in the clayish state food material; and



inspiring and expiring air through an air path provided in a push piston used in the pushing step.

5,004,620

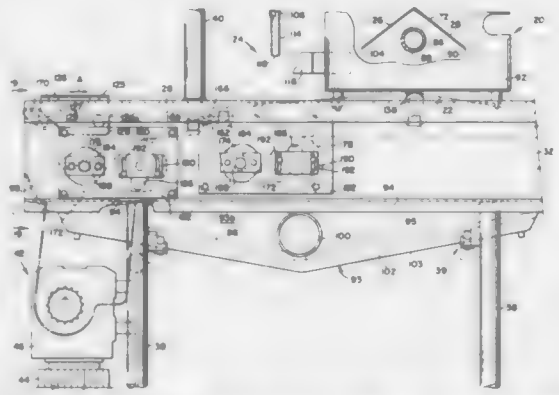
METHOD AND APPARATUS FOR ENROBING CONFECTIONS

Jay G. Straight, Richmond, and Henry P. Moore, Glen Allen, both of Va., assignors to Eskimo Pie Corporation, Richmond, Va.

Filed Apr. 27, 1990, Ser. No. 515,559

Int. Cl.[5] A23G *3/00;* **B05C** *5/00*

U.S. Cl. 426—304 **32 Claims**



32. A method for enrobing confections with an enrobing material, said method comprising:

a. providing a pair of first and second transversely extending, longitudinally spaced curtains of liquid enrobing material for contacting confections at longitudinally spaced positions in a conveying direction to coat top and side surfaces of the confections with enrobing material;

b. directing a first curtain of air against the top surfaces of the confections between the first and second enrobing material curtains to provide a smooth first layer of enrobing material on the confections and to remove excess enrobing material;

c. directing a second curtain of air against upper surfaces of the confections downstream of the second enrobing material curtain to provide a smooth second layer of enrobing material on the confections; and

d. contacting bottom surfaces of the confections with enrobing material to substantially completely enrobe the confection with enrobing material.

5,004,621

METHOD OF PROCESSING A FOOD PRODUCT HAVING A LIQUID CONTENT

Franco Sommi, and Pier L. Arelli, both of Parma, Italy, assignors to Manzini, S.p.A, Parma, Italy

Filed Mar. 29, 1989, Ser. No. 329,976

Claims priority, application Italy, Feb. 3, 1989, 19311 A/89

Int. Cl.[5] A23F *3/00*

U.S. Cl. 426—386 **13 Claims**

1. A method for processing a food product having a liquid, comprising:

(a) deaerating the food product;

(b) disintegrating said deaerated food product;

(c) heating said disintegrated food product to a temperature for forming an evaporate containing flavor substances;

(d) condensing and collecting said evaporate of the food product to thereby form a condensate; and

(e) recovering said flavor substances from said evaporate; wherein the above steps (a) through (e) are substantially immediately after one another.

5,004,622

PROCESS FOR COOKING AND SHAPING MEAT PIECES

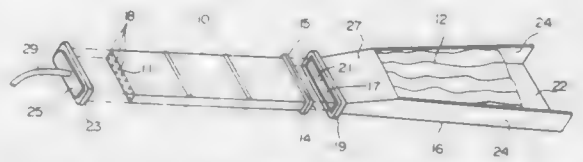
Paul Choquette, Longueuil, Canada, assignor to Corporation Salaison Melrose, Montreal, Canada

Division of Ser. No. 261,039, Oct. 21, 1988, abandoned. This application May 15, 1990, Ser. No. 523,573

Claims priority, application Canada, Sep. 29, 1988, 578876

Int. Cl.[5] A22C *7/00*

U.S. Cl. 426—513 **3 Claims**



1. A process for cooking and shaping a precut uncooked piece meat in a cooking and shaping mold including an inlet and perforated wall means generally opposite to said inlet, said process comprising the steps of:

placing the uncooked piece of meat adjacent said inlet of the cooking and shaping mold;

producing a vacuum in said cooking and shaping mold through said perforated wall means in order to drive the piece of meat in said cooking and shaping mold through the said inlet; and

applying heat to said piece of meat after it has been driven into said mold in order to cook said piece of meat.

5,004,623

AQUEOUS FOAMING COMPOSITION AND METHOD FOR HOMOGENINZINGLY INCORPORATING WATER INTO LIPOPHILIC MATERIALS

Claude Giddey, Geneva, and Georges Dove, Carouge/GE, both of Switzerland, assignors to Battelle Memorial Institute, Carouge/GE, Switzerland

Continuation-in-part of Ser. No. 204,478, Jun. 20, 1988, abandoned. This application Oct. 3, 1989, Ser. No. 416,300

Claims priority, application Switzerland, Jun. 26, 1987, 2409/87

Int. Cl.[5] A23L *1/00*

U.S. Cl. 426—564 **20 Claims**

1. A method for intimately and homogeneously incorporating water into lipophilic materials containing physiologically acceptable fats, comprising the steps of thoroughly blending said material brought to a fluidized state with a foam consisting of fine bubbles of air or of a physiologically acceptable gas dispersed in said water, then removing the air or gas from the blend

wherein the foam is obtained by whipping an aqueous solution of a physiologically acceptable foaming agent in the presence of air or a gas, or by pressure-dissolving said air or gas in the solution and releasing suddenly the pressure, said foamers having sufficient foaming capacity to provide aqueous foams of density 0.2 g/cm^3

and wherein said foaming agent is an amphipatic compound comprising at least a hydrophilic group and a hydrophobic lipophilic group said lipophilic group containing the lipophilic material, thus enabling the water in the foam to become intimately mixed with the lipophilic material.

5,004,624

SEMI-MOIST PET FOOD HAVING FREE GRAVY AND PROCESS FOR PREPARATION THEREOF

Francis L. Koschak, Irvine, and Felicisimo S. Sarno, Cerritos, both of Calif., assignors to Star-kist Foods, Inc., Long Beach, Calif.

Continuation of Ser. No. 474,986, Mar. 14, 1983, abandoned. This application Jul. 17, 1989, Ser. No. 380,769

Int. Cl.[5] A23K *1/00*

U.S. Cl. 426—623 **1 Claim**

1. A process for preparing a shelf-stable semi-moist nutritionally balanced pet food having free gravy consisting of the steps of:

intermixing milled farinaceous and proteinaceous ingredients with 0.25 to 2.0 percent by weight of vital wheat gluten binder, said binder capable of imparting structural integrity to kibs formed with said intermixture when immersed in an aqueous solution;

forming kibs with said intermixture having a water activity of less than 0.9;

preparing a liquid gravy having a water activity of less than 1.0 but greater than the water activity of the kibs;

combining the kibs and gravy in a ratio of more than about 1.2 parts by weight gravy to 1 part by weight kibs; and

packaging said combination and allowing said water activities in said components to equilibrate prior to consumption wherein said equilibrated semi-moist pet food has a water activity of less than 0.9 and a pH of less than about 4.7.

5,004,625

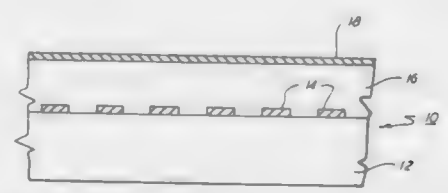
SOLID STATE LIGHT MODULATOR INCORPORATING METALLIZED GEL AND METHOD OF METALLIZATION

Efim S. Goldburt, and Richard E. Hemmer, both of Briarcliff Manor, N.Y., assignors to North American Philips Corporation, New York, N.Y.

Division of Ser. No. 84,260, Aug. 11, 1987. This application May 3, 1988, Ser. No. 347,311

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—38 **11 Claims**



1. A method for metallizing the surface of a silicon and oxygen containing gel, the method comprising:

(a) pretreating the surface with an oxygen-containing plasma, followed by

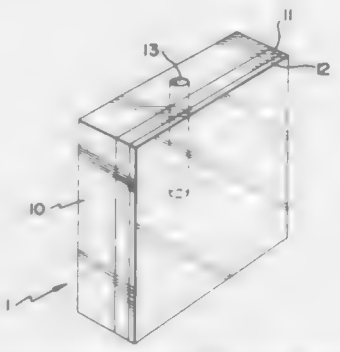
(b) forming a metal layer on the treated surface.

5,004,626

ANODES AND METHOD OF MAKING

Dennis F. Doug, Kingston, Canada, and Richard E. Loftfield, Jacksonville, Fla., assignors to Huron Technologies, Inc., Kingston, Canada

Continuation-in-part of Ser. No. 923,363, Oct. 27, 1986, abandoned. This application May 31, 1989, Ser. No. 359,263
Int. Cl.[5] B05D 5/12
U.S. Cl. 427—58 12 Claims



1. A method for making an electrode suitable for use in an electrochemical process, comprising:

providing a base formed at least partially of at least one valve metal or alloy thereof,

applying to said base a first composition which is a barrier precursor forming composition comprising a compound of ruthenium, a compound of a film-forming metal and a solvent, to form a coated layer on said base,

thereafter subjecting said coated base to heating at a temperature from room temperature up to about 280° C. for a sufficient period of time to dry said coated base without significant decomposition or oxidation of said compound of ruthenium and said compound of film-forming metal,

then, without baking the coated base to decompose and oxidize therein said compound of ruthenium and said compound of film-forming metal, applying to said coated base at least one coating from a second composition, different from the first, which second composition contains a solvent and an organic reducing agent and is a noble metal compound containing composition capable of forming an electrocatalytic coating, and thereafter

baking the said base to which said second composition is applied at a temperature of 300°-600° C.

5,004,627

POLYIMIDES FOR MOLD RELEASE

J. Kenneth Presswood, and Alethea H. O'Quinn, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Oct. 10, 1989, Ser. No. 419,395
Int. Cl.[5] B05D 3/02
U.S. Cl. 427—133 22 Claims

1. A method for treating the working surface of a mold in order to improve its release characteristics comprising

(a) coating said working surface with a polyamic acid solution consisting essentially of the reaction product of 2,2-bis[4-(aminophenoxy)phenyl]hexafluoropropane and an aromatic tetracarboxylic acid or dianhydride or ester derivative thereof; and

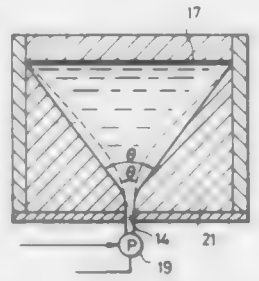
(b) applying sufficient heat to cure the coating such that the polyamic acid is converted to a polyimide.

5,004,628

COATING METHOD AND APPARATUS

Fumitaka Terai; Kimio Yukawa; Mineo Suyefuji; Hiroki Saito, and Shigeru Yamaguchi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 196,404, May 20, 1988, abandoned. This application Jan. 26, 1990, Ser. No. 470,399
Claims priority, application Japan, May 22, 1987, 62-124034
Int. Cl.[5] B05D 1/26
U.S. Cl. 427—389.9 2 Claims



1. A coating method comprising the steps of:

(a) supplying a polyacrylic amide coating solution 13% in density and 12 cps in viscosity at room temperature to an inlet of a coating head;

(b) causing the solution to flow through the head from the inlet along a flow path increasing in width at an angle of divergence equal to 40° while decreasing in thickness at an angle of convergence equal to 0.35° to a slot opening in the head; and

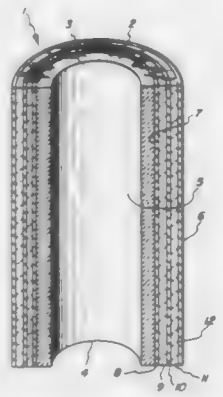
(c) extruding the solution from the slot opening onto a moving web of polyethylene terephthalate film at a coating speed of 1 m/mm to form a coating of a desired width and thickness.

5,004,629

TRANSFER TUBE

Paul S. Svec, Scotia; Marcus P. Borom, Schenectady; Lawrence E. Szala, Scotia; Milivoj K. Brun, Ballston Lake; Steven A. Miller, Amsterdam, all of N.Y., and David P. Mourer, Danvers, Mass., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 367,411, Jun. 16, 1989, Pat. No. 4,966,201. This application May 23, 1990, Ser. No. 527,471
Int. Cl.[5] B05D 1/18, 5/02
U.S. Cl. 427—204 15 Claims



1. A process for producing a transfer tube useful for transfer of molten metal comprised of a high density hollow tube, having directly bonded to its outer surface wall a continuous multi-layered ceramic oxide sentered shell with a maximum density of about 80% of theoretical and wherein at least about 75 weight % of said shell is comprised of polycrystalline phase, said shell having a thermal conductivity significantly lower than that of said high density tube, which comprises:

(a) providing a high density polycrystalline hollow tube comprised of ceramic oxide, said high density tube having two open ends and a density of at least about 90% of its theoretical density;

(b) forming an alkaline aqueous slurry having a solids content ranging from about 45% to about 60% by volume of the total volume of said slurry, said solids content being comprised of particles of slurry-forming size of ceramic oxide, solid polymer which thermally decomposes at an elevated temperature below 800° C. and colloidal silica, said ceramic oxide ranging about 93% to about 96% by weight of said solids content, said polymer ranging from zero to about 2% by weight of said solids content, and said colloidal silica ranging from about 3% to about 6% by weight of said solids content, said slurry having a pH ranging from about 9 to 12, said slurry having a specific gravity at about 20° C. ranging from about 2.2 g/cc to about 2.7 g/cc and a viscosity at about 20° C. ranging from about 9 to about 15 seconds as measured with a No. 4 Zahn cup;

(c) plugging both open ends of said high density tube with solid polymeric material which thermally decomposes at an elevated temperature below about 800° C.;

(d) immersing said plugged tube into said slurry;

(e) recovering said tube from said slurry forming a wet coating of slurry on the exposed outer surface wall of said tube leaving no significant portion thereof exposed;

(f) contacting the resulting wet coated tube with coarse ceramic oxide particles to form a coating thereof on said wet coating of slurry leaving no significant portion thereof exposed, said coarse ceramic oxide particles being of a size which forms said coating thereof on said wet coating of slurry, the average size of said coarse ceramic oxide particles being significantly larger than the average size of the ceramic oxide particles in said slurry, said ceramic oxide particles permitting production of said polycrystalline phase;

(g) drying the resulting coated tube to permit said silica particles to combine with water to produce a dimensionally stable silica gel which binds the ceramic oxide particles;

(h) immersing the resulting dry coated tube into said slurry to coat said tube;

(i) recovering the coated tube from said slurry forming a wet coating of slurry on the coating of coarse ceramic oxide particles leaving no significant portion of said coating of coarse ceramic oxide particles exposed;

(j) drying the resulting coated tube to permit said silica particles to combine with water to produce a dimensionally stable silica gel, said silica gel thermally decomposing at an elevated temperature to silica;

(k) firing the resulting coated tube to a temperature sufficient to decompose any organic polymer, remove any elemental carbon and produce the sintered shell directly bonded to the outer surface wall of said transfer tube, said firing being carried out in an atmosphere or a partial vacuum which has no significant deleteriuos effect thereon; and

(l) before or after step (k) providing said high density tube with ends free of shell material.

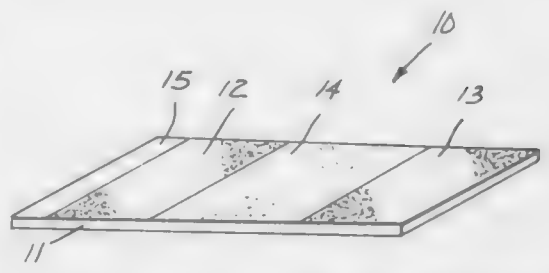
5,004,630

PROCESS OF MAKING ZONE ADHESIVE/RELEASE COATED TAPE

Stephen P. Polski, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 8, 1990, Ser. No. 520,535
Int. Cl.[5] B05D 5/10
U.S. Cl. 427—208.8 7 Claims

1. A process for forming an adhesive closure tab with release surfaces adjacent adhesive surfaces comprising the steps of, coating a continuous region of a tape backing with a soluble low adhesion backsize composition, drying said low adhesion backsize composition, solvent zone coating an adhesive on at least one strip of said tape backing previously coated with said



low adhesion backsize thereby slightly dissolving said backsize so as to promote adherence of said adhesive to said backsize.

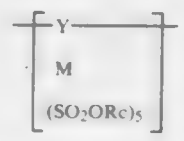
5,004,631

SURFACE TREATMENT WITH SULFONATE ESTER POLYMER

Martyn Humphries, Manchester; Jozef Nemcek, Chester; John C. Padget, Frodsham, and Christopher C. Mollett, Littleton, Nr Chester, all of England, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 376,145, Jul. 5, 1989, Pat. No. 4,970,269, which is a continuation of Ser. No. 5,801, Jan. 22, 1987, abandoned. This application Aug. 27, 1990, Ser. No. 572,604
Claims priority, application United Kingdom, Jan. 22, 1986, 8601451; Apr. 21, 1986, 8609702
Int. Cl.[5] B05D 1/00
U.S. Cl. 427—385.5 1 Claim

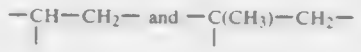
1. Method of treating a surface which method comprises applying to the surface a water-erodible coating composition thereby to form on the surface a water-erodible coating, which composition is a paint composition comprising at least one erodible polymer, wherein said at least one erodible polymer is a polymer which comprises one or more repeat units A each comprising at least one hydrolysable sulphonate ester group pendant to the main chain backbone of the polymer, wherein said repeat unit A has the formula:



I

wherein

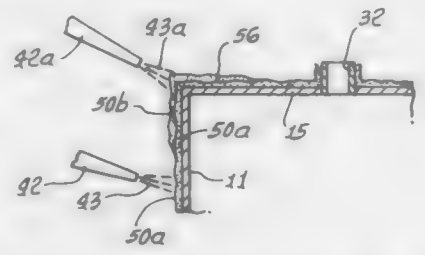
Y, which is the repeat units A of formula I may be the same or different, is a group in the main chain backbone and is selected from



s is an integer of 1 or 2 corresponding to the number of SO_2ORc groups in repeat unit A of formula I;

Rc, which in the same repeat units A of formula I may be the same or different, is a group selected from one or more of alkyl, aryl, alkaryl, aralkyl, alkenoxyalkyl and poly(alkenoxy) alkyl groups and wherein each SO_2ORc group is joined via an intermediary M to the group Y; and wherein M represents an intermediary n a repeat unit A of formula I which is selected from —alkylene—, —CO—O—(alkylene)—, —CO—NH—(alkylene)—, —NH—CO— (alkylene)—, —(arylene)—, —(alkylene)—(arylene)—, (alkylene)—O—(alkylene)—(alkylene)—O—(arylene)—, —(arylene)—O—(arylene)—, —(arylene)—O—(alkylene)—, —alkenoxy—, and —polyalkylenoxy—groups.

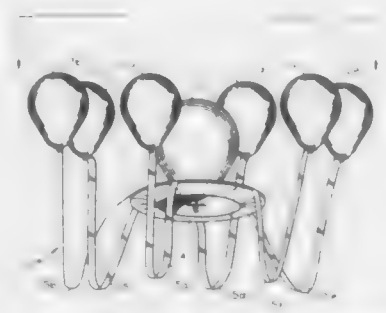
5,004,632
FIRE RESISTANT TANK CONSTRUCTION
David C. McGarvey, San Gabriel, and Jerry E. Buffalini, Corona, both of Calif., assignors to LRS, Inc., South El Monte, Calif.
Division of Ser. No. 331,548, Mar. 31, 1988. This application Mar. 9, 1990, Ser. No. 491,272
Int. Cl.[5] B05D *1/36, 7/00*
U.S. Cl. 427—410 12 Claims



1. In the method of providing fire resistant tank apparatus adapted for transportation and installation above ground to receive and dispense a liquid hydrocarbon or hydrocarbons, or the like, the steps that include:
(a) providing a metallic tank having lightweight upright side wall means, a top wall and a bottom wall,
(b) providing first means on the top wall defining access porting to the tank interior,
(c) providing second means projecting beneath said bottom wall to support the tank at an above ground installation site,
(d) applying fire resistant material onto the tank walls, and allowing the said material to harden in situ to form a relatively lightweight shell enclosing the tank, said material applied closely adjacent said first and second means,
(e) said application step continued to provide shell thickness between about ¼ inch and 1 inch,
(f) said fire resistant material being characterized as charring in response to flame impingement thereon,
(g) the tank walls having thickness maintained between about ¼ inch and 1 inch,
(h) said fire resistant material being maintained free of retention to said tank by metallic bands with clips.

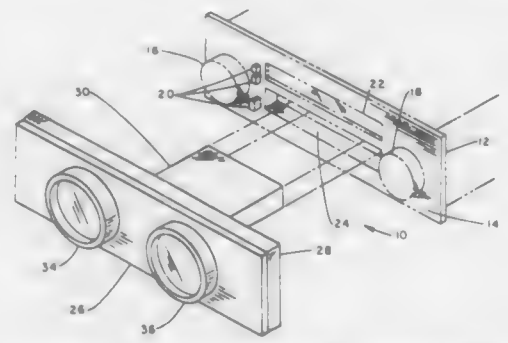
3. The method of claim 1 wherein said material has an epoxide resin base.

5,004,633
BALLOON DECORATIVE DEVICES, METHODS AND KITS
Craig J. Lovik, 8565 Custer School Rd., Custer, Wash. 98240
Filed May 24, 1989, Ser. No. 357,322
Int. Cl.[5] A63H *27/10;* B64B *1/40*
U.S. Cl. 428—9 21 Claims



1. An ornamental arrangement of decorative balloons comprising, in combination:
(a) a light-weight support element formed of paperboard in a plate configuration and sized to support a novelty item;
(b) a plurality of first decorative balloons inflated with a lighter-than air inflation medium, said plurality of first decorative balloons being independent of one another and capable of independent movement with respect to one another; and,
(c) a corresponding plurality of flexible streamers for securing said plurality of first decorative balloons to said support element with respective different ones of said streamers having a first inboard end secured to said support element at one of a plurality of points spaced about the periphery thereof and a second outboard end separably attached to the constricted neck portion of respective different ones of said plurality of first decorative balloons; whereby said support element is suspended from said plurality of first decorative balloons and defines a hanging basket capable of supporting one or more stuffed animals, floral arrangements, gifts and similar novelty items.

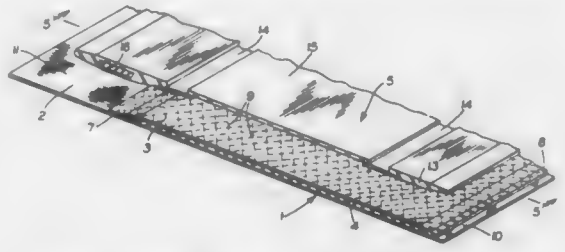
5,004,634
PROTECTIVE COVER FOR AUTOMOTIVE TAPE PLAYER
Shane L. Anthony, 3140-K S. Peoria St., Ste. 257, Aurora, Colo. 80014
Filed Jan. 26, 1990, Ser. No. 470,969
Int. Cl.[5] F41H *3/00*
U.S. Cl. 428—31 20 Claims



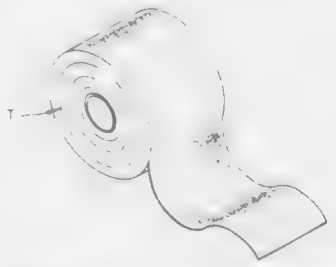
1. A protective device for concealing the visible area of an automotive tape player mounted to a dashboard and having a tape cartridge opening and a plurality of control knobs, comprising:
a face plate sized to substantially cover the visible exterior portion of the tape player;
a generally tubular shaped extension member attached to said face plate and formed with a size and shape corresponding to said face plate and with a depth sufficient to enclose the control knobs of the tape player;
a mounting blank sized to be placed in the tape cartridge opening of the tape player;
adjustable fastening means for adjustably and hingedly attaching said mounting blank to said face plate such that said mounting blank may be inserted into the tape cartridge opening of the tape player and said face plate may be centered over the visible exterior portion of the tape player regardless of the positioning of the tape cartridge opening on the tape player and said face plate may be adjusted to conform to the dashboard, and said face plate may be folded flat against said mounting blank for storage.

5,004,635
CONTOURED LINER FOR PREASSEMBLED TIRE COMPONENTS
Stephen T. Griebling, Akron, Ohio, assignor to Bridgestone/-Firestone, Inc., Akron, Ohio
Filed Sep. 2, 1988, Ser. No. 239,907
Int. Cl.[5] B65D *85/671*
U.S. Cl. 428—33 13 Claims

1. The combination of a strip of material having a sticky surface of the nature of unvulcanized rubber wherein said strip is irregular in transverse contour having raised and depressed areas, and a separable liner thereon, said liner, comprising:
(a) a flexible base formed of a woven fabric;
(b) a flexible cover formed of a knitted fabric extending generally coextensive with a portion of the base; and
(c) a compressible filler interposed between the base and cover to provide the liner with an irregular transverse contour having raised and depressed areas which generally coincide with the depressed and raised areas, respectively, of the strip to form a generally symmetrical thickness transverse contour when placed in overlying relationship whereby said strip and liner form a general symmetrical roll when wound onto a supporting reel.



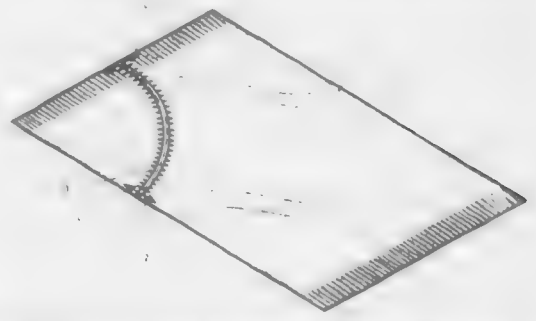
5,004,636
ROLL-TYPE TOILET TISSUE HAVING HEMORRHOID-TREATING MEDICATION THEREIN
Michael Parris, 39 Wilder Rd., Monsey, N.Y. 10952
Filed Jul. 20, 1989, Ser. No. 382,212
Int. Cl.[5] B32B *5/16*
U.S. Cl. 428—43 1 Claim



1. A roll of toilet tissue product comprising:
at least three layers;
one layer being sandwiched between the other two layers;
said one layer being formed of hemorrhoid treating medication including alcohol and powder; and
the other two layers comprising paper and having a porosity selected to permit said hemorrhoid-treating medication to flow therethrough for application by contact with the area to be treated.

5,004,637
SANITARY TEARING TOWEL
Chuen-Rong Liao, No. 10, Alley 3, Lane 127, Lei Chung St., Taichung City, Taiwan
Filed Aug. 17, 1989, Ser. No. 395,772
Int. Cl.[5] B32B *3/10*
U.S. Cl. 428—43 2 Claims

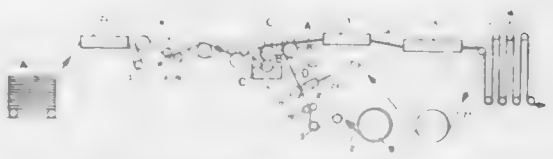
1. A sanitary tearing towel comprising at least one set of tearing lines defined by an area of weakness suitable for tearing, and tearing indication marks adjacent to said tearing lines indicating the position of said tearing lines, said tearing lines being provided to enable the severance of a portion of said towel to indicate previous use, wherein said tearing lines and



tearing indication marks are located in an arc near a corner of said sanitary tearing towel

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5,004,638
FABRIC LAMINATION OF UNITARY BACKED HOT CONSTRUCTED CARPET TILE
Raymond W. Goss, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.
Continuation-in-part of Ser. No. 880,611, Jun. 30, 1986, abandoned. This application Jul. 1, 1987, Ser. No. 68,393
Int. Cl.[5] D03D *27/00;* D04H *11/00;* D05C *17/00*
U.S. Cl. 428—95 10 Claims



1. In a method for increasing flexibility and durability of carpet tile having
(a) a primary carpet facing component; and
(b) a tile backing component comprising a tile base and at least one intermediate characterizing component arranged between said tile base and said facing component;
the improvement comprising utilizing, as tile base, a flexible layer comprising an adhesive coating deficient in tile weight, strength and bulk; and
incorporating, as intermediate characterizing component of the tile backing component, at least one adhesive/scrim layer combination; said intermediate characterizing component providing a substantial amount of at least tile weight and strength complementary to said primary facing component and said tile base, to obtain desired carpet tile characteristics.
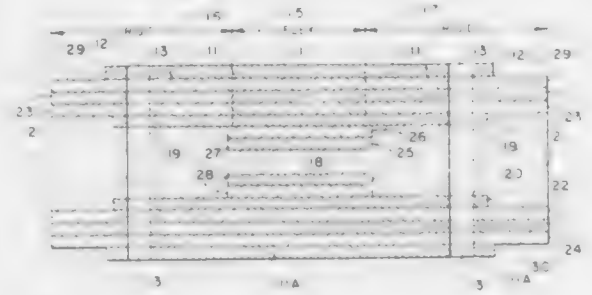
4. A carpet tile comprising, in combination,
(A) a primary tile facing component; and
(B) a tile backing component comprising
(1) an externally arranged flexible tile base comprising an adhesive layer;
(2) a characterizing component having at least one adhesive/scrim combination arranged intermediate said tile base and said primary facing component; and
(3) at least one adhesive or sizing layer arranged between said primary facing component and said characterizing component,
said characterizing component, alone or in combination with said adhesive layer, providing at least one of weight and strength complementary to said primary facing component and said flexible tile base to obtain the desired tile.

5,004,639

RIGID FLEX PRINTED CIRCUIT CONFIGURATION

Jay Desai, Corona, Calif., assignor to Sheldahl, Inc., Northfield, Minn.

Filed Jan. 23, 1990, Ser. No. 468,646
Int. Cl.[5] B44C 1/22; C23F 1/02; B32B 3/10; H05K 1/00
U.S. Cl. 428—138 20 Claims



1. A process for fabricating a rigid-flex printed circuit structure having rigid and flexible sections comprising the steps of:
acquiring a first pair of conductor layers laminated on opposite surfaces of a central insulator layer wherein said insulator layer is further processed to be of a first composition in the rigid sections and of a second composition in the flexible section;
forming first conductor patterns in said first pair of conductor layers by imaging and etching;
laminating a first pair of dielectric film layers over said first conductor patterns in both said rigid and said flexible sections;
laminating a second pair of conductor layers on said pair of first dielectric film layers;
drilling holes through the rigid section;
plating through the holes with conductor material to form a conductive lining therein said lining connecting conductors in the conductor patterns of the conductor layers where they meet the holes.

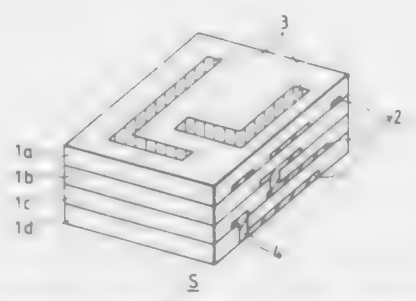
18. A multi-layer flexible circuit board made according to the process of claim 1.

5,004,640

MULTILAYERED CERAMIC SUBSTRATES AND METHOD FOR MANUFACTURING THE SAME

Seiichi Nakatani; Satoru Yuhaku, both of Osaka; Tsutomu Nishimura, Kyoto; Yukio Terada, Osaka, and Yasuyuki Baba, Niihama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Mar. 10, 1989, Ser. No. 321,702
Claims priority, application Japan, Mar. 11, 1988, 63-58752
Int. Cl.[5] B32B 3/00
U.S. Cl. 428—195 5 Claims



1. A multilayered ceramic substrate which comprises a multilayered structure having electrode patterns of copper and ceramic layers laminated alternately, the ceramic layers consisting essentially of 45 to 60 wt % of Al_2O_3, 24 to 33 wt % of SiO_2, 2.4 to 3.3 wt % of B_2O_3, 1.2 to 1.65 wt % of Na_2O, 0.8 to 1.1 wt % of K_2O, 3.2 to 4.4 wt % of CaO, 1.2 to 1.65 wt % of MgO and 7.2 to 9.9 wt % of PbO.

5,004,641

ELECTROCONDUCTING SEMICONDUCTOR AND BINDER OR BINDER PRECURSOR COATED IN A SUBBING LAYER

Syunichi Kondo, and Syu Watarai, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 10, 1989, Ser. No. 335,357
Claims priority, application Japan, Apr. 11, 1988, 63-88377; Apr. 11, 1988, 63-88378
Int. Cl.[4] B32B 27/40, 27/38
U.S. Cl. 428—208 20 Claims

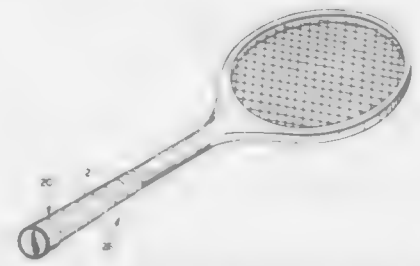
1. An electroconductive element comprising a support, a subbing layer, and an electroconductive layer, where in said electroconductive element is transparent, wherein the electroconductive layer is formed by coating, on the subbing layer, a solution comprising:
(A) a compound semiconductor,
(B) a solvent dissolving the compound semiconductor, wherein said subbing layer is swelled by said solvent and
(C) a resin or a resin precursor soluble in the solvent selected from the group consisting of epoxy resins and isocyanate compounds.

5,004,642

SELF-ADHERENT FOAM WRAPPING MATERIAL

Janene Youngs, R.R. 4 P.O. Box 954, Harrisburg, Ill. 62946

Filed Aug. 16, 1990, Ser. No. 568,024
Int. Cl.[5] B32B 3/26
U.S. Cl. 428—222 5 Claims



1. Wrapping material comprising an elongated strip formed of cushioned foamed material, said foamed material including a quantity of plasticizer incorporated therein in excess of the amount normally needed to soften the material wherein said strip adheres to itself and to an applied surface without use of a separate adhesive.

2. The wrapping material of claim 1 wherein said applied surface is a sporting equipment grip, said strip of sufficient tack to improve the grip of a user.

5,004,643

SILICONE POLYMER-INTERNALLY COATED WEBS

J. Michael Caldwell, Escondido, Calif., assignor to Sili-Tex, Inc., San Marcos, Calif.

Continuation-in-part of Ser. No. 167,630, Mar. 14, 1988, and a continuation-in-part of Ser. No. 167,643, Mar. 14, 1988, abandoned, and a continuation-in-part of Ser. No. 167,797, Mar. 14, 1988, abandoned, and a continuation-in-part of Ser. No. 167,869, Mar. 14, 1988, abandoned. This application Mar. 10, 1989, Ser. No. 319,778
Int. Cl.[5] B32B 5/32; D06M 15/643, 15/70
U.S. Cl. 428—246 27 Claims

1. A flexible porous web which has an internally located coating that is comprised of a curable silicone polymer composition, said coating being positioned in an approximately planar region extending through the web in a direction generally parallel to and spaced from at least one major surface thereof, said web, upon curing the said curable composition thereof, being breathable and highly water repellent and exhibiting a hand and flexibility comparable to the hand flexibility of an untreated web.

24. A process for producing a porous web that is internally coated with a silicone polymer composition comprising the steps of continuously and successively;
(a) tensioning a porous web;
(b) uniformly applying, under pressure, to one surface of said tensioned web a curable silicone polymer composition; and
(c) applying a transverse shear force uniformly and laterally across and against said surface and concurrently wiping away excess portions of silicone polymer from said surface;
where, an internal layer of silicone polymer is formed in an approximately planar region extending through said web in a direction generally parallel to space from at least one major surface thereof.

5,004,644

SUPPORT MATERIAL FOR PHOTOGRAPHIC COATINGS

Ralf-Burkhard Dethlefs, Bissendorf; Bernd Scholz, Osnabruck; Wolfram Wysk, Belm, and Elke Miefert, Herford, all of Fed. Rep. of Germany, assignors to Felix Schoeller Jr. GmbH & Co. KG, Osnabruck, Fed. Rep. of Germany

Filed May 23, 1988, Ser. No. 197,454
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1987, 3720518
Int. Cl.[5] B32B 5/16; G03C 1/85
U.S. Cl. 428—323 12 Claims

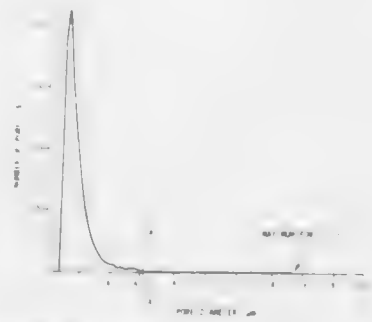
1. Support material for photographic coatings comprising a paper or other film material coated on at least one side with a polyolefin resin coating, said polyolefin coating containing a fluorine containing polymer effective to facilitate separation of the coating from a chill roll during manufacture of the support material.

5,004,645

BARRIER PRODUCTS

Alan Tallentire, Cheshire, and Colin S. Sinclair, Manchester, both of Great Britain, assignors to DRG (UK) Limited, Bristol, Great Britain

PCT No. PCT/GB87/00833, § 371 Date Jul. 13, 1989, § 102(e) Date Jul. 13, 1989, PCT Pub. No. WO88/03972, PCT Pub. Date Jun. 2, 1988
PCT Filed Nov. 20, 1987, Ser. No. 381,675
Claims priority, application United Kingdom, Nov. 22, 1986, 8628808
Int. Cl.[4] B32B 9/00
U.S. Cl. 428—323 15 Claims



1. An air-permeable barrier material comprising porous material having pores with a range of sizes wherein a pore modifying agent is selectively incorporated in a minor proportion of the total number of the pores, said minor proportion being at the upper end of said range of sizes; said modifying agent being such as to provide zones of high surface area within said pores at the upper end of said range in such a way as to restrict the passage of air-borne particles through said pores at the upper end of said range; and wherein the pore modifying agent comprises particles of substantially uniform size, at least 90% of said particles having diameters falling within a three-fold size range.

5,004,646

PROCESS FOR TREATING METAL SURFACES

Harold L. Benham, and James A. Mitchell, both of Middlesex, England, assignors to The British Petroleum Company p.l.c., London, England

Filed Mar. 14, 1989, Ser. No. 329,723
Claims priority, application United Kingdom, Mar. 19, 1988, 8806590
Int. Cl.[5] B32B 15/00, 7/12
U.S. Cl. 428—344 19 Claims

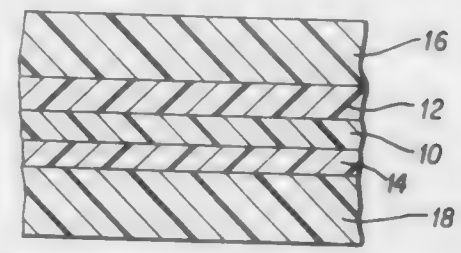
1. A composite structure which comprises in sequence: (a) a metal article, (b) a layer of a compound of formula (I), (c) a layer of a polymer having adhesive properties and copolymerisable with the compound of formula (I).

5,004,647

OXYGEN BARRIER BIAXIALLY ORIENTED FILM

Gautam P. Shah, Simpsonville, S.C., assignor to W. R. Grace & Co.-Conn., Duncan, S.C.

Continuation of Ser. No. 842,321, Mar. 21, 1986, abandoned. This application May 27, 1988, Ser. No. 199,899
Int. Cl.[5] B30B 7/12
U.S. Cl. 428—349 7 Claims



1. An oriented multilayer film comprising:
(a) a cross-linked core layer comprising an ethylene vinyl alcohol copolymer;
(b) two cross-linked interior layers each comprising an adhesive polymeric material; and
(c) two cross-linked outer layers each comprising a blend of (1) from about 70%, by weight, to about 80%, by weight of a linear low density polyethylene and (2) from about 20%, by weight, to about 30%, by weight, of a very low density polyethylene.

5,004,648

FIBER OF A FLUOROCARBON POLYMER AND A PROCESS FOR PRODUCING THE SAME

Toshioki Hane, Suzuka, and Shigeki Katayama, Yokohama, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 26, 1988, Ser. No. 236,926
Claims priority, application Japan, Aug. 26, 1987, 62-210336
Int. Cl.[5] D02G 3/00
U.S. Cl. 428—364 4 Claims

1. A fiber of a fluorocarbon polymer having pendant groups represented by at least one formula selected from the group consisting of:

$-SO_3X$ and $-CO_2X$

wherein X is at least one member selected from the group

consisting of H, NH_4, an alkali metal and an alkaline earth metal,

said fiber having a tensile strength at break of at least 1.0 g/denier.

5,004,649

RESIN LAMINATES AND A PROCESS FOR PRODUCTION THEREOF

Komei Yamasaki, Sodegaura, and Keisuke Funaki, Ichihara, both of Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1989, Ser. No. 327,815

Claims priority, application Japan, Apr. 13, 1988, 63-89141; Nov. 26, 1988, 63-297221

Int. Cl.[5] B32B *15/08*; B05D *1/00*

U.S. Cl. 428—461 8 Claims

1. A metallized laminate comprising

a layer of styrene-based polymer having mainly syndiotactic configuration, said layer having two surfaces; and

a metal layer, said metal layer being disposed on a first of said surfaces.

5,004,650

RUBBER-COATED GASKET MATERIAL

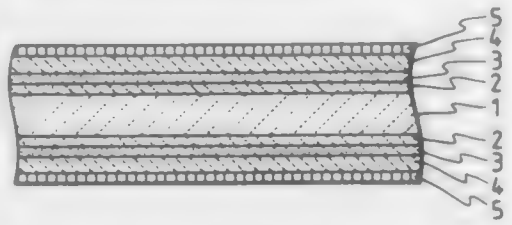
Masaaki Ashizawa; Kazuo Nishimoto; Atsushi Oomura, all of Kanagawa, and Shuji Ito, Saitama, all of Japan, assignors to Nichias Corporation, Tokyo, Japan

Filed May 11, 1989, Ser. No. 350,796

Claims priority, application Japan, Jul. 19, 1988, 63-179844

Int. Cl.[5] B32B *15/06*; B05D *1/36*

U.S. Cl. 428—463 5 Claims



1. In a rubber-coated gasket material which has a rubber layer formed on one or both sides of a metal sheet, the improvement wherein said rubber layer has incorporated therein a nitrile rubber containing a carboxyl group in such an amount that the proportion of a carboxylic monomer as calculated in term as of a monomer content in the rubber component is in the range of 2–15 wt. % and which rubber layer is formed in a thickness of 10–300 μm per side, and bonded to a metal sheet with a primer layer based on a phenolic resin being interposed between the rubber layer and the metal sheet.

5,004,651

STABILIZING SYSTEM FOR SOLID DOSAGE FORMS

Wallace E. Becker, Franksville, Wis., assignor to Abbott Laboratories, Abbott Park, Ill.

Filed Jan. 24, 1989, Ser. No. 301,579

Int. Cl.[5] A61K *9/20*

U.S. Cl. 424—465 14 Claims

1. A pharmaceutical preparation in a solid dosage form comprising estropipate and tromethamine in a weight ratio of estropipate to triomethamine from about 0.375 to about 6.0

5,004,652

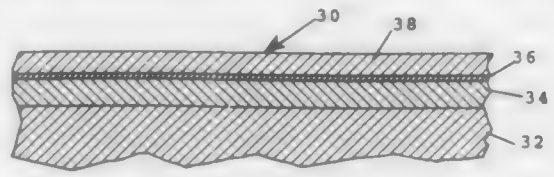
HIGH-COERCIVITY THIN-FILM RECORDING MEDIUM AND METHOD

Brij B. Lal, San Jose, and Atef H. Eltoukhy, Saratoga, both of Calif., assignors to HMT Technology Corporation, Fremont, Calif.

Filed Aug. 15, 1990, Ser. No. 567,598

Int. Cl.[5] G11B *5/62, 5/70, 5/66*

U.S. Cl. 428—611 10 Claims



1 A magnetic recording medium comprising

a substrate;

a1. sputtered chromium underlayer on the substrate; and

a sputtered magnetic layer composed of an alloy containing between 70–80 atom percent cobalt, 10–20 atom percent chromium, atom percent platinum, and 2≧10 atom percent tantalum, on the chromium underlayer.

5,004,653

PRELIMINARY MATERIAL FOR THE PRODUCTION OF COMPOSITE MATERIAL PARTS AND METHOD OF MAKING

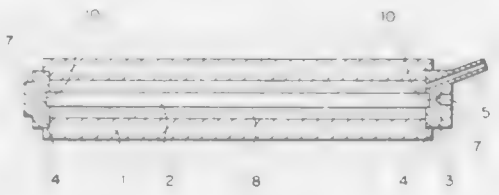
Walter Kroisenbrunner, Kapfenberg, Austria, assignor to Boehler Ges. m.b.H., Kapfenberg, Austria

Filed Oct. 5, 1989, Ser. No. 416,676

Claims priority, application Austria, Oct. 7, 1988, 2479/88

Int. Cl.[5] B32B *15/00*

U.S. Cl. 428—615 20 Claims



1 Preliminary material for the production of composite material parts by hot-forming treatment or hot isostatic pressing treatment, comprising:

a tubular outer part;

stepped ends on said tubular outer part forming sealing surfaces at said ends and having a smaller dimension than the outer diameter of said outer part;

at least one inner part within said outer part;

a residual cavity between said outer part and said at least one inner part;

sealing parts at said ends of said outer part projecting at least partially into said ends of said outer part and having sealing surfaces thereon engaging said sealing surfaces on said outer part, said sealing parts comprising a material having a thermal coefficient of expansion at least equal to that of said outer part and deformation resistance substantially equal to that of said outer part at the treatment temperature for forming the composite material, and said material of said sealing parts having a distortion temperature exceeding said treatment temperature by at least 90° C.; and

a roughness on at least one of said sealing surfaces of said outer member and said sealing surfaces of said sealing parts;

so that a surface pressure exists at said sealing surfaces when said sealing parts and outer part are at substantially the same temperature.

5,004,654

ALUMINIUM BATTERIES

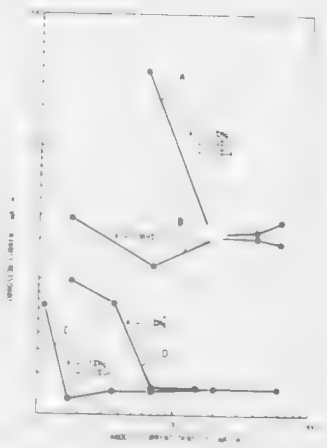
John A. Hunter, Banbury; Geoffrey M. Scamans, Cropredy, both of England; Wilfred B. O'Callaghan, and Paul A. Wycliffe, both of Kingston, Canada, assignors to Alcan International Limited, Montreal, Canada

Filed Aug. 4, 1989, Ser. No. 389,619

Claims priority, application United Kingdom, Aug. 9, 1988, 8818857; Mar. 23, 1989, 8906777

Int. Cl.[5] H01M *4/24, 4/46*

U.S. Cl. 429—50 10 Claims



1. An aluminum battery comprising a cathode, an aqueous alkaline electrolyte and an anode which is an alloy of aluminum containing 0.01–5% of magnesium and/or 0.01–0.05% calcium but no added gallium, wherein at least one of the electrolyte and the anode contains tin, any tin in the electrolyte being present as stannate at a concentration of 0.001 to 0.01M and any tin in the anode being present at a concentration of greater than 0.005%.

5,004,655

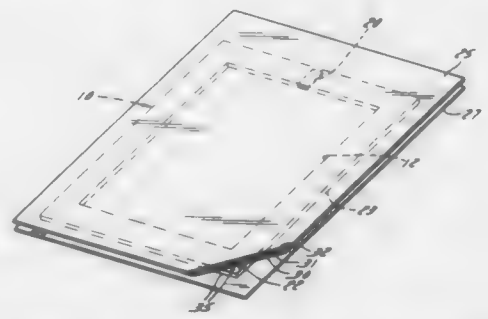
THIN BIPOLAR LEAD-ACID BATTERY WITH INDIVIDUAL CELL VENT

James S. Symanski, Grafton, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

Filed Dec. 14, 1989, Ser. No. 450,550

Int. Cl.[5] H01M *2/12, 2/14*

U.S. Cl. 429—82 17 Claims



1. A battery cell including a vent for permitting the escape of gases from said cell and for preventing the entry of moisture or oxygen into said cell, said cell comprising:

a spacer comprising a rigid member having generally planar surfaces and a cut out portion whereby a frame is formed, at least one passageway extending through said member;

film sheeting covering both of said surfaces of said member and extending beyond the periphery thereof;

means for adhering said sheeting to said member; and

means for joining said film sheeting to each other except at the extending area adjoining said passageway.

5,004,656

FLAT TYPE SEALED BATTERY WITH HERMETIC SEALING STRUCTURE

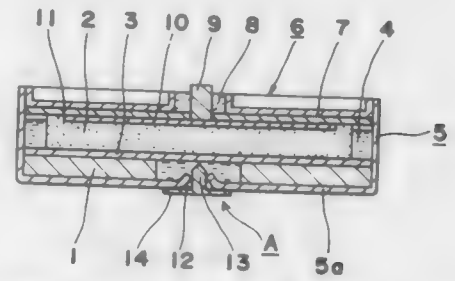
Kiyoshi Sato; Hirokazu Yoshikawa, both of Ibaraki; Shigeru Ikenari, Suita, and Kenichi Yokoyama, Takatsuki, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Aug. 28, 1989, Ser. No. 400,165

Claims priority, application Japan, Aug. 29, 1988, 63-214575; Aug. 29, 1988, 63-214576; Aug. 29, 1988, 63-214580; Aug. 29, 1988, 63-214581

Int. Cl.[5] H01M *2/08*

U.S. Cl. 429—162 2 Claims



1. A flat disc type sealed battery comprising

a batter vessel having a bottom wall with a taper cylindrically shaped electrolyte charging opening formed in the central portion thereof including an aperture in a side of a lower edge portion of said electrolyte charging opening,

a battery lid member for covering an upper opening of said batter vessel,

power generating components of said batter which are enclosed by sealing said batter vessel and battery lid member,

a first sealing member having a tapered shaped for sealing said electrolyte charging opening after electrolyte is charged into said battery vessel, and

a second sealing member for covering said aperture in the side of said lower edge portion of said electrolyte charging opening, an outer peripheral portion of said second sealing member being welded to said bottom wall of said battery vessel, said first and second sealing members being connected as one body, said first sealing member having an outer diameter greater than an inner diameter of said electrolyte charging opening.

5,004,657

BATTERY

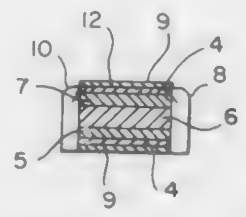
Tetsuya Yoneda, Tenri, and Shin Sato, Kashihara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 242,613, Sep. 9, 1988, abandoned. This application Dec. 12, 1989, Ser. No. 449,450

Claims priority, application Japan, Sep. 9, 1987, 62-225977

Int. Cl.[5] H01M *4/52, 10/36*

U.S. Cl. 429—193 4 Claims



1. A battery comprising a cell tablet and a pair of current collector plates disposed respectively on the upper face and lower face of said cell tablet; said cell tablet having a positive-electrode powder composition, a solid electrolyte powder composition, and a negative-electrode powder composition in this order, and further having an electron-conductive means in

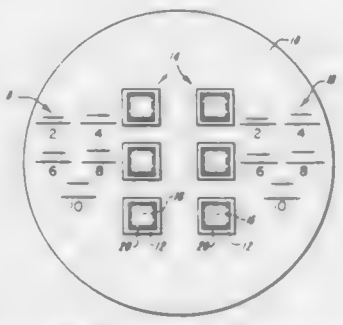
the inside or on the surface of at least one of said positive-electrode powder composition and said negative-electrode powder composition, wherein said cell tablet is formed into a four- or five-layered tablet by the application of pressure, thereby reducing the internal resistance of said battery; wherein said positive-electrode powder composition comprises a positive active material, an electroconductive material, a binding agent, and a solid electrolyte; said negative-electrode powder composition comprises a negative active material, an electroconductive material, a binding agent, and a solid electrolyte; and said solid electrolyte powder composition comprises a solid electrolyte; wherein said positive active material is manganese dioxide or nickel oxide; said negative active material is selected from the group consisting of TiNi, $TiNiB_{0.01}$, $TiNiMm_{0.01}$, $LaNi_5$, and TiFe; said electroconductive material is acetylene black; said binding agent is present in said positive-electrode powder composition and said negative-electrode powder composition in an amount of 3 to 20% by weight; and said solid electrolyte comprises an acid hydrate selected from the group consisting of $SnO_2 \cdot 3H_2O$ and $Sb_2O_5 \cdot nH_2O$ (n=3 to 6), in an amount of 10 to 60% by weight; wherein said electron-conductive means is selected from the group consisting of metals, metal alloys, metal-coated materials, electroconductive polymers, and electroconductive ceramics.

5,004,658

ADJUSTMENT OF THIN FILM CAPACITORS

Richard A. Hjulstrom, Kingston, N.Y., assignor to Electro-Films, Inc., Warwick, R.I.

Division of Ser. No. 210,034, Jun. 22, 1988, Pat. No. 4,894,316. This application Jun. 12, 1989, Ser. No. 365,086
Int. Cl.[5] G03F *1/00, 9/00*
U.S. Cl. 430—5 3 Claims



1. For use in a system for adjusting during fabrication the capacitance value of thin film capacitors formed on a substrate and having metallized capacitor plates, a mask comprising:

a first plurality of patterns each defining a selected metallized area on the substrate to form a corresponding capacitor plate on the substrate; and

a second plurality of patterns for defining a corresponding plurality of adjustment patterns on the substrate, the second plurality of patterns being cooperative with adjustment patterns formed on the substrate to provide a selected offset of the capacitor plate metallized areas on the substrate with said first plurality of patterns for removal of selected portions of the capacitor plate metallized areas.

5,004,659

DYE IMAGE RECEIVING MATERIAL

Leon L. Vermeulen, Herenthout; Robert S. Pauwels, Brasschaat; Willy P. De Smedt, Mechelen, and Ludovicus H. Vervloet, Kessel, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Mar. 19, 1990, Ser. No. 495,159
Claims priority, application European Pat. Off., Mar. 20, 1989, EP89200708.9
Int. Cl.[5] G03C *5/54*
U.S. Cl. 430—14 11 Claims

9. A laminar article comprising a dye image in an image receiving layer which is enveloped between a vinyl chloride polymer support and a resin cover sheet fixed to the image receiving layer by lamination using pressure and heat, wherein said image receiving layer is free from gelatin and contains (1) a cationic polymeric mordant, and (2) colloidal silica applied from an aqueous acidic colloidal sol having a pH of not more than 4, and containing hydrated silica in combination with a smaller amount of colloidal alumina, the amount of said colloidal material to said mordant in the image-receiving layer being in a weight ratio range from 1/5 to $\frac{1}{2}$, and silica (SiO_2) being present at a coverage of at least 0.5 g per m2.

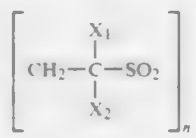
5,004,660

MASTER DISC AND METHOD OF MANUFACTURING A MATRIX

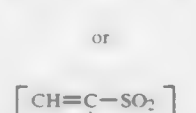
Maarten A. Van Andel; Johannes P. J. G. Van Liempd, and Josephus M. Wijn, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 223,457, Jul. 21, 1988, abandoned. This application Oct. 17, 1989, Ser. No. 425,382
Claims priority, application Netherlands, Jul. 23, 1987, 8701736
Int. Cl.[5] G03C *1/00, 3/00*
U.S. Cl. 430—17 9 Claims

1. A master disc for the manufacture of matrices which in turn are used in the manufacture of optical information carriers, said master disc comprising a substrate plate provided on one side with a layer of a radiation-sensitive substance in which an optically readable information track formed of pits or grooves is provided, said radiation-sensitive substance being a polysulphone which corresponds to the formula



or



where X_1 and X_2 are equal or unequal and each represent a hydrogen atom, an alkyl group having 1 to 6 carbon atoms or an aryl group, or where they together represent one substituent, which is bonded to the carbon atom of the main chain with a double bond, and where n has a value from 50 to 5000 and said layer of said radiation-sensitive substance is provided with a radiation-absorbing colorant.

5,004,661

PHOTOCONDUCTIVE MEMBER HAVING SYMMETRICAL AND UNSYMMETRICAL SQUARAINE COMPOSITIONS

Kock-Yee Law, Fairport, and F. Courtney Bailey, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 30, 1989, Ser. No. 358,930
Int. Cl.[5] G03G *5/06*
U.S. Cl. 430—59 23 Claims

1. A photoconductive imaging member comprised of a photogenerating layer comprised of the squaraine compounds obtained by a process which comprises a cycloaddition, reduction alkylation and condensation reaction wherein there is reacted a nitroarylacetyl halide with a tetraalkoxy olefin and a trialkylamine in a solvent, followed by the reaction of the resulting nitroaryl dione with hydrogen in the presence of an aldehyde and a catalyst in a solvent; and thereafter reacting the formed dialkylaminoaryl hydroxycyclobutene dione with N,N-dialkylaniline in an alcohol, and a hole transport layer.

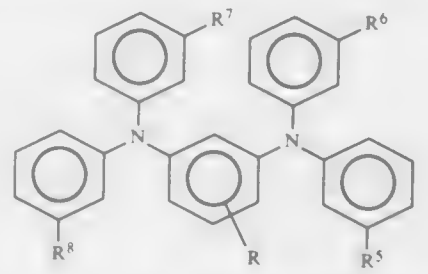
5,004,662

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MATERIAL CONTAINING M-PHENYLENEDIAMINE COMPOUND

Nariaki Mutoh, Daito; Yasuyuki Hanatani, Sakai, and Toshihiko Nishiguchi, Moriguchi, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jul. 27, 1989, Ser. No. 385,433
Claims priority, application Japan, Jul. 27, 1988, 63-187312
Int. Cl.[5] G03G *5/09*
U.S. Cl. 430—59 7 Claims

1. An electrophotographic photosensitive material containing in a photosensitive layer an m-phenylenediamine compound represented by the following general formula [I]:



(I)

wherein R^5, R^6, R^7 and R^8 are groups substituted at meta-positions to the nitrogen atoms and represent a hydrogen atom, an alkyl group, an alkoxyl group or a halogen atom, with the proviso that at least two of R^5, R^6, R^7 and R^8 represent an alkyl group, alkoxyl group or a halogen atom, and R represents a hydrogen atom, an alkyl group, an alkoxyl group or a halogen atom.

5,004,663

PHOTOCONDUCTIVE IMAGING MEMBERS WITH POLYPHOSPHAZENE BINDERS

Santokh S. Badesha, Pittsford; Milan Stolka; Damodar M. Pai, both of Fairport, and Martin A. Abkowitz, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 28, 1989, Ser. No. 386,322
Int. Cl.[5] G03G *5/047*
U.S. Cl. 430—59 38 Claims

1. A photoconductive imaging member comprised of a photogenerating layer, and a hole transport layer containing a polyphosphazene resinous binder.

5,004,664

TONER AND DEVELOPER COMPOSITIONS CONTAINING BIODEGRADABLE SEMICRYSTALLINE POLYESTERS

Timothy J. Fuller, West Henrietta, N.Y.; Robert H. Marchessault, Montreal, and Terry L. Bluhm, Oakville, both of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 27, 1989, Ser. No. 316,070
Int. Cl.[5] G03G *9/087, 9/083*
U.S. Cl. 430—106.6 23 Claims

1. A toner composition comprised of biodegradable semicrystalline polyester resin particles and pigment particles.

2. A toner composition in accordance with claim 1 wherein the semicrystalline polyester is comprised of a polyhydroxyalkanoate, copolymers thereof, or blends of polyhydroxyalkanoates and pigment particles.

6. A toner composition in accordance with claim 2 wherein the pigment particles are carbon black, magnetite, mixtures thereof, magenta, cyan, yellow, or mixtures thereof.

5,004,665

TONER CONTAINING POLYMERIC-MAGNETIC COORDINATION COMPLEX

Junji Ohtani; Masahiro Anno; Eiichi Sano; Junji Machida, and Fumio Masuda, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 278,780, Dec. 2, 1988, abandoned. This application Oct. 11, 1989, Ser. No. 420,722
Claims priority, application Japan, Dec. 2, 1987, 62-304965; Apr. 28, 1988, 63-106002; Apr. 28, 1988, 63-106003; Apr. 28, 1988, 63-106004
Int. Cl.[5] G03G *9/08*
U.S. Cl. 430—106.6 9 Claims

1. A toner for electrophotography comprising a resin, a colorant and a polymeric-magnetic coordination complex.

5,004,666

TONER FOR USE IN DEVELOPING ELECTROSTATIC IMAGES

Makoto Tomono, Hino; Noriyoshi Tarumi, Tama, and Masayuki Sato, Ohtsuki, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 147,024, Jan. 19, 1988, Pat. No. 4,921,771, which is a continuation of Ser. No. 65,093, Jun. 18, 1987, abandoned, which is a continuation of Ser. No. 801,376, Nov. 22, 1985, abandoned, which is a continuation of Ser. No. 550,992, Nov. 14, 1983, abandoned, which is a continuation of Ser. No. 279,673, Jul. 1, 1981, abandoned, which is a continuation of Ser. No. 50,475, Jun. 20, 1979, abandoned, which is a continuation of Ser. No. 741,408, Nov. 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 408,008, Oct. 19, 1973, abandoned. This application Mar. 29, 1990, Ser. No. 501,611
Claims priority, application Japan, Oct. 21, 1972, 47-104865; Oct. 23, 1972, 47-105289
The portion of the term of this patent subsequent to May 1, 2007, has been disclaimed.
Int. Cl.[5] G03G *9/08*
U.S. Cl. 430—110 13 Claims

1. A toner for developing electrostatic images comprising

(a) a styrene homopolymer or copolymer of styrene with at least one acrylic comonomer, and

(b) about 1.0 to about 10 parts by weight of polypropylene per 100 parts by weight of said styrene homopolymer or copolymer, said polypropylene having a number average molecular weight of about 3,000 to about 4,000.

5,004,667

PHOTOSENSITIVE MATERIAL, AND IMAGE FORMATION PROCESS AND IMAGE FORMATION APPARATUS USING SAME

Kozo Arahara; Tetsuro Fukui; Hiroshi Fukumoto, all of Kawasaki; Masato Katayama, Yokohama, and Yoshio Takasu, Tama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 9, 1988, Ser. No. 281,757
Claims priority, application Japan, Dec. 15, 1987, 62-317116
Int. Cl.[5] G03C *11/12*
U.S. Cl. 430—255 11 Claims

1. An image formation process comprising the steps of:

(a) subjecting a non-adhesive photosensitive material capable of becoming adhesive in response to light exposure and heat development comprising a silver halide, an organic silver salt, a reducing agent and a polymer which is capable of becoming adhesive at room temperature due to pH change, to imagewise exposure to form a latent image;

(b) heating said photosensitive material to promote a change in the pH value of said polymer to form an adhesive pattern of said photosensitive material corresponding to said imagewise exposed pattern;

(c) electrifying said photosensitive material to amplify said change in the pH value; and

(d) transferring said adhesive pattern corresponding to said imagewise exposed pattern of said material to a transferring medium.

5,004,668

IMAGE-RECEIVING SHEET MATERIAL AND PROCESS FOR THE FORMATION OF TRANSFERRED IMAGE

Tomizo Namiki; Tamotsu Suzuki, and Masashi Katayama, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 16, 1990, Ser. No. 494,295

Claims priority, application Japan, Mar. 17, 1989, 1-65067

Int. Cl.[5] G03C *1/90, 11/12;* **B32B** *27/32;* **C09J** *7/02*

U.S. Cl. 430—256 **8 Claims**

1. An image-receiving sheet material which is used in a transfer image-formation process comprising: (A) transferring an image formed on an image-forming layer of a transferable and light-sensitive material onto an image-receiving sheet material, and then (B) retransferring said image from said image-receiving sheet material onto a permanent support, wherein said image-receiving sheet material comprises: (1) a support, and (2) provided thereon an image-receiving layer which comprises at least two layers each comprising a composition containing an organic high polymer, wherein at least one of at least two layers of said image-receiving layer is to be transferred onto the permanent support and which contains a matting agent comprising a composite three-dimensional resin particles prepared by a process comprising at least: (a) emulsion-polymerizing a polyfunctional monomer having at least two unsaturated groups differing in copolymerizability from each other with a polymerizable monomer containing a cross-linkable monomer capable of reacting with one of said at least two unsaturated groups of said polyfunctional monomer to obtain three-dimensional resin particles in which another of said at least two unsaturated groups of said polyfunctional monomer remains, and (b) forming a substantially linear polymer chain by graft-polymerizing at least one radical-polymerizable monomer capable of reacting with said another of said at least two unsaturated groups of said polyfunctional monomer.

8. A process for the formation of a transferred image comprising: (1) transferring an image formed on an image-forming layer made of a transferable and light-sensitive material onto an image-receiving sheet material of claim 1, and then (2) retransferring said image onto a permanent support.

5,004,669

LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Taketoshi Yamada; Takeshi Habu, and Yasuhiko Takamuki, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Oct. 27, 1989, Ser. No. 427,694

Claims priority, application Japan, Oct. 31, 1988, 63-276552; Oct. 31, 1988, 63-276560; Dec. 27, 1988, 63-332038; Dec. 28, 1988, 63-330854; Dec. 28, 1988, 63-330863

Int. Cl.[5] G03C *1/06, 1/84*

U.S. Cl. 430—264 **26 Claims**

1. A light sensitive silver halide photographic material comprising:

a transparent support having an upper surface and a lower surface and having

a silver halide emulsion layer on the upper surface, and having on the lower surface

a first subbing layer containing a latex polymer,

a second non-gelatin layer containing a conductive polymer, and

a third gelatin layer containing a conductive polymer and a backing dye, wherein said lower surface of the support is subjected to corona discharge treatment.

5,004,670

HIGH-CONTRAST DEVELOPMENT PROCESS FOR SILVER HALIDE PHOTOGRAPHIC MATERIAL

Eiichi Okutsu; Mitsunori Hirano, and Morio Yagihara, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 6, 1989, Ser. No. 306,422

Claims priority, application Japan, Feb. 5, 1988, 63-25484; Feb. 10, 1988, 63-29622; Feb. 23, 1988, 63-40480

Int. Cl.[5] G03C *5/26, 5/30*

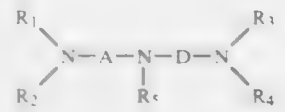
U.S. Cl. 430—265 **3 Claims**

1. A high-contrast development process which comprises subjecting a silver halide photographic material to light and developing the exposed silver halide photographic material containing at least a hydrazine derivative with a developer having a pH of from 10.0 to 12.3 and containing:

(a) a dihydroxybenzene developing agent;

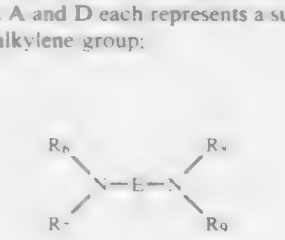
(b) at least 0.3 mol/liter of a sulfite, and

(c) at least one of the compounds represented by formulae (I-1), (I-2), (I-3), or (I-4):



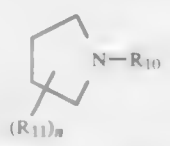
(I-1)

wherein R_1, R_2, R_3, R_4, R_5 each represents an alkyl goup having from 1 to 5 carbon atoms or a hydroxyalkyl group, provided that R_1 and R_2, or R_3 and R_4 may combine with each other to form a nitrogen-containing heterocyclic ring; and A and D each represents a substituted or unsubstituted alkylene group;



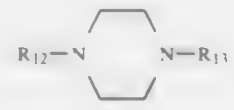
(I-2)

wherein R_6, R_7, r_8, and R_9 each represents an alkyl group having from 1 to 5 carbon atoms or a hydroxyalkyl group, provided that the R_6 and R_7, or R_8 and R_9 may combine with each other to form a nitrogen-containing heterocyclic ring, and E represents a substituted or unsubstituted alkylene group,



(I-3)

wherein R_{10} represents a hydroxyalkyl group; R_{11} represents a hydrogen atom or an alkyl group; and n represents an integer of from 0 to 3, and



(I-4)

wherein R_{12} represents an unsubstituted alkyl group and R_{13} represents a hydroxyalkyl group.

5,004,671

OPTICAL RECORDING MEDIUM AND OPTICAL RECORDING METHOD

Yukuo Nishimura, Sagamihara; Ken Eguchi, Atsugi; Haruki Kawada, Atsugi; Yoshinori Tomida, Atsugi; Takashi Nakagiri, Tokyo; Kenji Saito, Tokyo; Toshiaki Kimura, Sagamihara; Hiroshi Matsuda, Atsugi; Kunihiro Sakai, Yamato, and Toshihiko Miyazaki, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

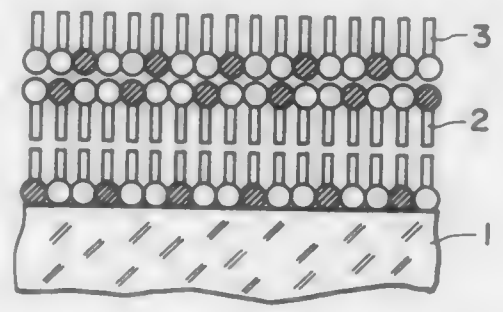
Continuation of Ser. No. 899,909, Aug. 25, 1986, abandoned.

This application Dec. 20, 1988, Ser. No. 287,551

Claims priority, application Japan, Aug. 27, 1985, 60-187735; Aug. 27, 1985, 60-187737; Aug. 27, 1985, 60-187739; Dec. 3, 1985, 60-270786; Dec. 3, 1985, 60-270789; Dec. 4, 1985, 60-271349; Dec. 13, 1985, 60-281636; Dec. 13, 1985, 60-281637; Dec. 13, 1985, 60-281638; Dec. 16, 1985, 60-282211; Dec. 16, 1985, 60-282213; Dec. 25, 1985, 60-290483; Dec. 25, 1985, 60-290484; Dec. 25, 1985, 60-290487; Dec. 25, 1985, 60-290488; Dec. 26, 1985, 60-291902; Dec. 26, 1985, 60-291904; Dec. 26, 1985, 60-291905; Jan. 8, 1986, 61-675; Jan. 9, 1986, 61-1332; Jan. 13, 1986, 61-3675; Jan. 14, 1986, 61-4175; Jan. 20, 1986, 61-7839; Jan. 20, 1986, 61-7840; Jan. 29, 1986, 61-15859

Int. Cl.[5] G03F *7/025;* **G03C** *1/72, 5/16*

U.S. Cl. 430—286 **52 Claims**

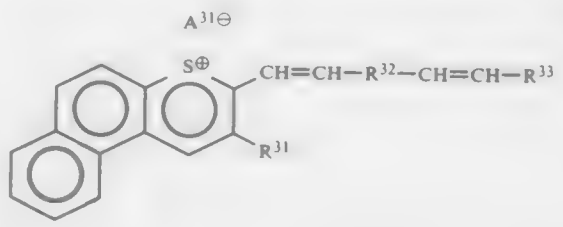


1. An optical recording medium comprising a diacetylene compound and at least one compound selected from the group consisting of: (i) azulenium salt compounds, represented by the formula (II):



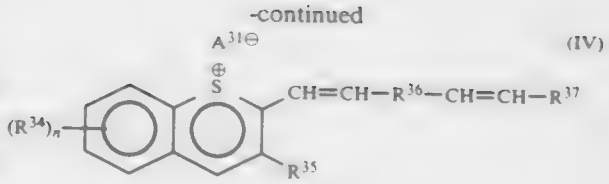
(II)

wherein R^{11} to R^{17} each represent a hydrogen atom, a halogen atom or a monovalent organic radical, and A^{11} represents a divalent organic radical; (ii) diene compounds represented by the formula (III) or the formula (IV) shown below:



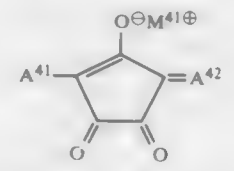
(III)

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(IV)

wherein R^{31} represents an alkyl group, a phenyl or styryl group which may have a substituent, R^{32} and R^{36} represent arylene groups which may have a substituent for forming conjugated double bond systems with the two adjacent —CH=CH— groups, R^{33} and R^{37} represent phenyl or naphthyl groups which may have a substituent, R^{34} represents an alkoxy group, R^{35} represents an alkyl group and $A^{31}\ominus$ represents an anion residue; and (iii) croconic methine compounds having the following basic structure:



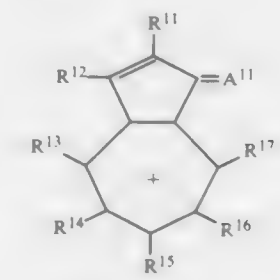
wherein $M^{41}\oplus$ represents a cation and A^{41} and A^{42} represent substituents containing an aromatic ring and/or a heterocyclic ring; wherein either said diacetylene or at least one compound selected from the group consisting of said azulenium salt compounds, diene compounds, and croconic methine compounds has a Langmuir-Blodgett film structure.

11. An optical recording method comprising:

(a) a step of irradiating a diacetylene compound with a polymerizing radiation to form a polydiacetylene compound; and

(b) a step of writing onto an optical recording medium by irradiating with a radiation beam corresponding to recording information, said recording medium containing said polydiacetylene compound and at least one compound selected from the group consisting of

(i) azulenium salt compounds represented by the formula (II):

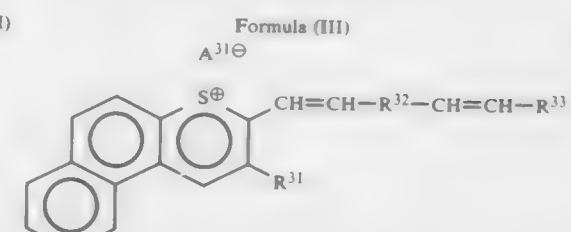


(II)

wherein R^{11} to R^{17} each represent a hydrogen atom, a halogen atom or a monovalent organic radical, and A^{11} represents a divalent organic radical;

(ii) diene compounds represented by the formula (III) or the formula (IV) shown below:

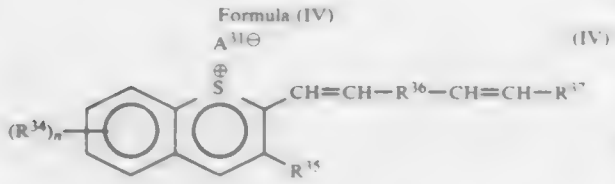
Formula (III)



(III)

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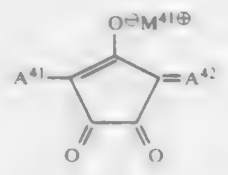
Formula (IV)



(IV)

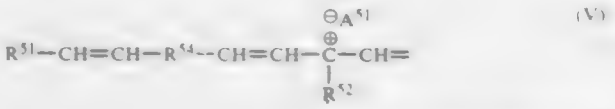
wherein R^{31} represents an alkyl group, a phenyl or styryl group which may have a substitutent, R^{32} and R^{36} represent arylene groups which may have a substitutent for forming conjugated double bond systems with the two adjacent —CH=CH— groups, R^{33} and R^{37} represent phenyl or naphthyl groups which may have a substitutent, R^{34} represents an alkoxy group, R^{35} represents an alkyl group and $A^{31(-)}$ represents an anion residue;

(iii) croconic methine compounds having the following basic structure:

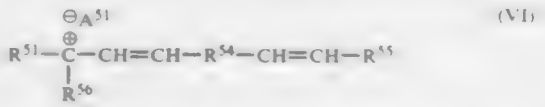


wherein $M^{41(+)}$ represents a cation and A^{41} and A^{42} represent substituents containing an aromatic ring and-/or a heterocyclic ring, and

(iv) polymethine compounds represented by the formula (V) or the formula (VI) shown below:



(V)



(VI)

wherein R^{51}, R^{52} and R^{53} each independently represent an aryl group which may have a substituent, R^{54} and R^{55} represent arylene groups which may have a substituent for forming conjugated double bond systems with the adjacent two —CH=CH— groups, R^{56} represents hydrogen or an aryl group which may have a substituent and $A^{51(-)}$ represents an anion residue to cause color change of the polydiacetylene compound.

22. An optical recording medium, comprising a polydiacetylene compound and at least one compound selected from the group consisting of azulenium salt compounds, pyrylium dyes, diene compounds, and croconic methine compounds wherein either said polydiacetylene or at least one compound selected from the group consisting of azulenium salt compounds, pyrylium dyes, diene compounds, and croconic methine compounds has a Langmuir-Blodgett film structure.

5,004,672

ELECTROPHORETIC METHOD FOR APPLYING PHOTORESIST TO THREE DIMENSIONAL CIRCUIT BOARD SUBSTRATE

Eugene D. D'Ottavio, Sudbury; Robert E. Hawkins, Northboro; Stephen S. Rodriguez, Monument Beach, and James Rychwalski, Medway, all of Mass., assignors to Shipley Company Inc., Newton, Mass.

Filed Jul. 10, 1989, Ser. No. 377,123
Int. Cl.[4] G03C 1/68, 5/00
U.S. Cl. 430—314 **5 Claims**

1. A process for forming a three dimensional circuit board comprising the steps of:

(a) providing a molded three dimensional circuit board substrate free of metal on its surface;

(b) metallizing the three dimensional surface of the circuit board substrate;

(c) building up the metallized surface with a metal selected from the group of copper, nickel, tin or mixtures thereof;

(d) electrophoretically applying a photoresist composition to the built up, metallized surface whereby photoresist is evenly deposited on all surfaces of the metallized surface;

(e) exposing and developing the photoresist in a desired image pattern;

(f) removing metal bared by development by contact with an etchant, and

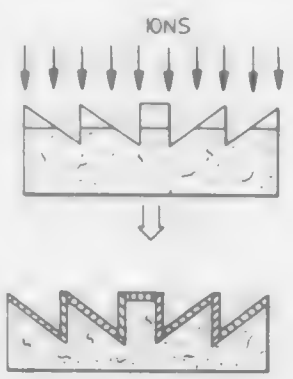
(g) removing the remaining undeveloped photoresist

5,004,673

METHOD OF MANUFACTURING SURFACE RELIEF PATTERNS OF VARIABLE CROSS-SECTIONAL GEOMETRY

Nickolas P. Vlannes, Troy, N.Y., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Continuation of Ser. No. 40,055, Apr. 20, 1987, abandoned. This application Dec. 12, 1989, Ser. No. 449,644
Int. Cl.[4] G03C 5/00; B44C 1/00; G02B 5/18
U.S. Cl. 430—325 **20 Claims**



1. A method of manufacturing in the surface of a solid substrate a three-dimensional surface relief pattern of desired variable cross-sectional geometry, comprising the steps of:

(a) depositing on said surface of said substrate a uniform thickness layer of radiation-sensitive resist material;

(b) determining a pattern of transmission density for each point of a mask of variable transmission density said transmission density for each point of said mask of variable transmission density determined based upon the desired variable cross-sectional geometry at a corresponding point of said surface of said substrate to compensate for the non-linear absorption characteristics of transferring said pattern to said resist material;

(c) producing a mask of variable transmission density having said determined pattern of variable transmission density;

(d) placing said mask between a source of radiation and said resist-covered substrate;

(e) exposing said mask and said resist-covered substrate to radiation;

(f) chemically developing said resist material, thereby removing a portion of said resist material and leaving remaining resist material corresponding to said pattern of variable transmission density, and

(g) etching said surface of said substrate and said remaining resist material by bombarding said substrate and said remaining resist material with a directional beam of reactive ions until said remaining resist material has been removed and a portion of said substrate has been removed, thereby forming a three-dimensional surface relief pattern in said substrate corresponding to the pattern of said remaining resist material.

11. A method of manufacturing in the surface of a solid substrate a three-dimensional surface relief pattern of desired variable cross-sectional geometry, comprising the steps of:

(a) depositing on said surface of said substrate a uniform thickness layer of radiation-sensitive resist material;

(b) determining a pattern of exposure intensity for each point of said resist material, said exposure intensity for each point of said resist material determined based upon the desired variable cross-sectional geometry at a corresponding point of said surface of said substrate to compensate for the non-linear absorption characteristics of transferring said pattern to said resist material;

(c) exposing said resist-covered substrate to radiation having said pattern of exposure intensity;

(d) chemically developing said resist material, thereby removing a portion of said resist material and leaving remaining resist material corresponding to said pattern of exposure intensity, and

(g) etching said surface of said substrate and said remaining resist material by bombarding said substrate and said remaining resist material with a directional beam of reactive ions until said remaining resist material has been removed and a portion of said substrate has been removed, thereby forming a three-dimensional surface relief pattern in said substrate corresponding to the pattern of said remaining resist material.

20. In a method of manufacturing in the surface of a solid substrate a three-dimensional surface relief pattern of desired variable cross-sectional geometry including the steps of depositing a uniform thickness layer of radiation-sensitive resist material on the substrate, exposing the resist-covered substrate to a pattern of radiation, chemically developing the exposed resist material, and etching the surface of the substrate and the remaining resist material with a directional beam of reactive ions, the improvement comprising the step of:

determining the pattern of radiation exposure intensity for each point of said resist material based upon the desired variable cross-sectional geometry at a corresponding point of said surface of said substrate to compensate for the non-linear absorption characteristics of transferring the pattern to the resist material and to compensate for the unequal etch rates of the substrate and the resist material during etching.

5,004,674

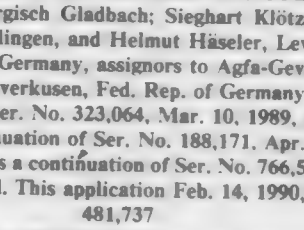
SILVER HALIDE PHOTOSENSITIVE MATERIAL

Keiichi Adachi; Kazunobu Katoh, both of Kanagawa, and Kouichi Kawamura, Shizuoka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 13, 1989, Ser. No. 421,024
Claims priority, application Japan, Oct. 14, 1988, 63-258562
Int. Cl.[4] G03C 1/46
U.S. Cl. 430—333 **6 Claims**

1. A silver halide photosensitive material comprising a support having thereon a layer containing (a) an organic compound which releases a free radical on contact with light rays and (b) a compound which undergoes a change in the absorption spectrum by changing from a colored state to a colorless state due to the action of the released free radical,

wherein the organic compound which releases a free radical on contact with light is a compound shown by the general formula (I):



(I)

wherein Y represent Cl or Br, n is an integer from 1 to 3, and R represents an aromatic group which may or may not be substituted, and

wherein the compound which changes from a colored state to a colorless state is an oxonol dye or a benzylidene dye.

5,004,675

METHOD FOR PROCESSING A SILVER HALIDE PHOTOSENSITIVE MATERIAL FOR COLOR PHOTOGRAPHY

Hiroyuki Yoneyama; Osamu Takahashi; Kazuaki Yoshida, and Takatoshi Ishikawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 3, 1989, Ser. No. 416,797
Claims priority, application Japan, Oct. 3, 1988, 63-249238
Int. Cl.[4] G03C 7/46, 7/407
U.S. Cl. 430—377 **25 Claims**

1. A method for processing a silver halide color photosensitive material which comprises developing an image-wise exposed color photographic light-sensitive material comprising a support having thereon at least one light-sensitive silver halide emulsion layer containing a silver halide comprising at least 80 mol % silver chloride; at least one emulsion layer thereof comprising a dispersion of a mixture of (i) at least one oil-soluble non-diffusible cyan coupler capable of forming a substantially non-diffusible cyan dye by coupling with the oxidized form of a developing agent, and (ii) a water-insoluble polymer,

in a color developer solution comprising a primary amine color developing agent, and having a chloride ion concentration of from 3.5×10^{-2} to 1.5×10^{-1} mol/l, and a bromide ion concentration of from 3.0×10^{-5} to 1.0×10^{-3} mol/l.

5,004,676

PROCESS FOR THE PRODUCTION OF COLOR PHOTOGRAPHIC IMAGES COMPRISING REPLENISHING THE DEVELOPING SOLUTION

Heinz Meckl, Bergisch Gladbach; Sieghart Klötzer, Cologne; Erich Wolff, Solingen, and Helmut Häseler, Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 323,064, Mar. 10, 1989, abandoned, which is a continuation of Ser. No. 188,171, Apr. 26, 1988, abandoned, which is a continuation of Ser. No. 766,539, Aug. 19, 1985, abandoned. This application Feb. 14, 1990, Ser. No. 481,737
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1984, 3431860
Int. Cl.[5] G03C 5/24, 7/00, 7/30
U.S. Cl. 430—398 **3 Claims**

1. In a process for the production of color photographic images by development of an exposed silver halide recording material in a development bath of a predetermined volume containing a developing agent comprised of 4 to 40 mmol/l of at least one p-phenylenediamine derivative and/or its salt with an inorganic acid the improvement which comprises a silver halide recording material containing at least 90 mol-% of silver chloride, adding to said bath a replenisher containing 0.02 to 0.04 mol/l of said p-phenylenediamine derivative and water in

an amount to maintain and not exceed said predetermined volume of said development bath.

5,004,677

METHOD FOR PROCESSING A SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Shinji Ueda, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 21, 1989, Ser. No. 313,280
Claims priority, application Japan, Feb. 19, 1988, 63-36543
Int. Cl.[5] G03C *7/16*
U.S. Cl. 430—382 **23 Claims**

1. A method for processing a silver halide color photographic material which comprises, after color development of an imagewise exposed silver halide color photographic material, processing the developed silver halide color photographic material by subjecting the developed silver halide color photographic material to a desilvering step, said desilvering step having a processing time of 1 to 4 minutes, said desilvering step including processing the developed silver halide color photographic material with a bleaching solution having a pH of from 5.3 to 2, wherein the silver halide color photographic material contains at least one DIR coupler having at its coupling active position a group which forms a development inhibitor or precursor thereof when released from the coupling active position of the coupler upon a coupling reaction with an oxidation product of an aromatic primary amine color developing agent which is formed upon a color development reaction, and further decomposes into a compound having substantially no effect on photographic properties once discharged into a color developing solution wherein the half-life period of the development inhibitor or precursor thereof at pH 10.0 is not more than 4 hours, and wherein the bleaching solution contains, as a bleaching agent, a ferric complex salt of 1,3-diaminopropanetetraacetic acid.

5,004,678

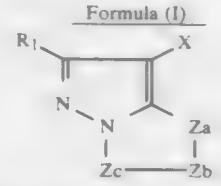
SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Nobuo Seto, and Masakazu Morigaki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 5, 1989, Ser. No. 375,712
Claims priority, application Japan, Jul. 8, 1988, 63-170544
Int. Cl.[5] G03C *7/38*
U.S. Cl. 430—548 **20 Claims**

1. A silver halide color photographic material comprising a support having thereon at least one silver halide emulsion layer, the silver halide color photographic material containing at least one pyrazoloazole type coupler represented by general formula (I) and at least one compound represented by general formula (II):

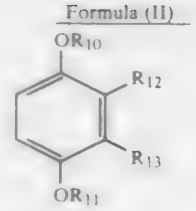
Formula (I)



(I)

wherein R_1 represents a hydrogen atom or a substituent; X represents a hydrogen atom or a group capable of being released upon a coupling reaction with an oxidation product of an aromatic primary amine developing agent; Za, Zb and Zc each represents a methine group, a substituted methine group, =N- or -NH-, one of the Za—Zb bond and the Zb—Zc bond being a double bond and the other being a single bond; when the Zb—Zc bond is carbon-carbon double bond, the Zb—Zc bond may be a part of a condensed aromatic ring; Rl or X may also form a polymer including a dimer or more; and when Za, Zb or Zc is a substituted methine group, the substituted methine group may form a polymer including a dimer or more;

Formula (II)



(II)

wherein R_{10} and R_{11}, which may be the same or different, each represents an aliphatic group or an aromatic group; R_{12} and R_{13}, which may be the same or different, each represents an aliphatic group, an aliphatic oxy group, an aromatic oxy group, an aliphatic thio group, an aromatic thio group, a nitrogen-containing heterocyclic group, an acylamino group, an aliphatic amino group or an aromatic amino group, or R_{12} and R_{13} may combine with each other to form a 5-membered or 6-membered hetero ring; and the aliphatic group or the aromatic group described above may be substituted.

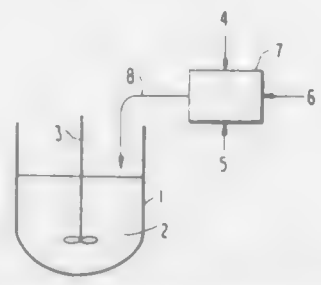
2. The silver halide color photographic material as claimed in claim 1, wherein the pyrazoloazole type coupler is a bis coupler or a polymer coupler containing a coupler moiety represented by general formula (I).

5,004,679

SILVER HALIDE PHOTOGRAPHIC MATERIAL AND PROCESS FOR THE PREPARATION THEREOF

Hiroyuki Mifune, and Shigeharu Urabe, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 9, 1990, Ser. No. 462,382
Claims priority, application Japan, Jan. 9, 1989, 1-2465
The portion of the term of this patent subsequent to Nov. 7, 2006, has been disclaimed.
Int. Cl.[5] G03C *1/005*
U.S. Cl. 430—567 **14 Claims**



1. A silver halide photographic material comprising at least one silver halide emulsion layer on a support, wherein light-sensitive silver halide grains in said at least one silver halide emulsion layer are obtained by charging previously prepared silver halide particles having a fine grain size into a reaction vessel which allows at least one of nucleation and crystallization of said light-sensitive silver halide grains so that at least one of nucleation and crystallization is effected in said reaction vessel, and said light-sensitive silver halide grains are subjected to chemical ripening in the presence of a silver halide solvent, wherein said silver halide particles having a fine grain size are formed by mixing an aqueous solution of a water-soluble silver salt and an aqueous solution of a water-soluble halide in a mixer provided outside said reaction vessel which allows at least one of nucleation and crystallization of light-sensitive silver halide grains, wherein an aqueous solution of protective colloid is charged into the mixer at a concentration of at least 2 wt % in at least one of the following ways:

(a) singly,

(b) in the aqueous solution of a water-soluble silver salt, and

(c) in the aqueous solution of a water-soluble halide.

5,004,680

HIGH-SPEED AND WELL-PRESERVABLE SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Toshihiko Yagi, Shiroyama; Kenji Kumashiro, Hachioji, and Hideki Takiguchi, Sagamihara, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jun. 1, 1989, Ser. No. 359,615
Claims priority, application Japan, Jun. 28, 1988, 63-161174
Int. Cl.[5] G03C *1/08, 1/34*
U.S. Cl. 430—603 **17 Claims**

1. A silver halide photographic light-sensitive material comprising a support having thereon a photographic component layer including at least one silver halide emulsion layer, in which said silver halide emulsion layer comprises silver halide grains, each of which is comprised of two or more phases different in the silver iodide content, wherein the average silver iodide content of said grain is higher than the silver iodide content of the external phase of said grain, and to at least one layer included said photographic component layer is added elementary sulfur in a step of the manufacturing process of said silver halide photographic light-sensitive material.

5,004,681

PRESERVATION OF FETAL AND NEONATAL HEMATOPOIETIC STEM AND PROGENITOR CELLS OF THE BLOOD

Edward A. Boyse, New York, N.Y.; Hal E. Broxmeyer, Indianapolis, Ind., and Gordon W. Douglas, New York, N.Y., assignors to Biocyte Corporation, New York, N.Y.

Filed Nov. 12, 1987, Ser. No. 119,746
Int. Cl.[5] A01N *1/02;* **A61K** *35/14*
U.S. Cl. 435—2 **9 Claims**

1. A composition comprising:

(a) a plurality of viable human neonatal or fetal hematopoietic stem cells derived from the blood; and

(b) cryopreservative.

5,004,682

METHOD AND KIT FOR DETECTING LIVE MICROORGANISMS IN CHLORINE- OR BROMINE-TREATED WATER

Katherine P. Roberts, Derby; Jon R. Geiger, West Hartford, and Jayne F. Carney, Wallingford, all of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Nov. 2, 1987, Ser. No. 115,313
Int. Cl.[5] C12Q *1/68, 1/02;* **G01N** *1/18;* **C12N** *1/06*
U.S. Cl. 435—6 **14 Claims**

1. A method for selectively detecting the presence of live microorganisms in a mixture of live and dead microorganisms in chlorine- or bromine-treated water, and avoiding false-positive detection of said dead microorganisms, which comprises:

(a) lysing live microorganisms present in a sample of chlorine- or bromine-treated water and rendering constituent nucleic acid molecules single-stranded to provide single-stranded target nucleic acid molecules;

(b) contacting said single-stranded target nucleic acid molecules with single-stranded labelled probe nucleic acid molecules containing a sequence complementary to nucleic acid molecules of an indicator microorganism selected from the group consisting of *Escherichia coli, Legionella pneumophila,* and *Campylobater jejuni* to form labelled hybridized probe/target nucleic acid molecules;

(c) separating said labelled hybridized probe/target nucleic acid molecules from said single-stranded nucleic acid molecules using separation means; and

(d) selectively detecting, by means of said label, nucleic acid molecules of said live microorganisms in said treated water.

5,004,683

MEANS FOR DETECTING AND ANALYZING NEUROANATOMY

Jonathan T. Erichsen, Stony Brook; Craig Evinger, Huntington, and Harvey J. Karten, Setauket, all of N.Y., assignors to The Research Foundation of State University of New York, Albany, N.Y.

Continuation of Ser. No. 892,191, Jul. 31, 1986, abandoned. This application Oct. 6, 1988, Ser. No. 254,447
Int. Cl.[5] G01N *33/53, 33/567, 33/577;* **A61K** *49/00*
U.S. Cl. 435—7.21 **2 Claims**

1. A process for tracing a neuroanatomical pathway in non-human animals comprising:

inserting or injecting atoxic fragment C of tetanus toxin in an amount sufficient to react with an antibody into a neuroanatomical pathway of an active neural circuit of said animal,

permitting said atoxic fragment to transport directly and/or transsynaptically through the neural circuit,

removing a section containing said neuroanatomical pathway from the animal,

preparing the section for immunoreaction with antibody,

immunohistochemically localizing said transported fragment C within the neural circuit with a monoclonal antibody produced by a hybridoma cell line said monoclonal antibody being specific for transported fragment C,

said localizing comprised of allowing said transported fragment C and said monoclonal antibody to form in vitro a detectable immunohistochemical reaction product at areas in the neural circuit to which fragment C has been transported so that the neuroanatomical pathway is thereby traced.

5,004,684

METHOD FOR ATP EXTRACTION

William J. Simpson, Salfords, and John R. M. Hammond, Oxted, both of England, assignors to Lumac BV, Landgraaf, Netherlands

Filed Sep. 19, 1988, Ser. No. 246,455
Claims priority, application United Kingdom, Sep. 22, 1987, 8722252
Int. Cl.[5] C12Q *1/66;* **C12N** *1/06*
U.S. Cl. 435—8 **5 Claims**

1. In a method for the assay of ATP from a microorganism which comprises contacting a sample containing said microorganism with an ATP releasing agent consisting essentially of an effective amount to release ATP of a cationic surface active agent, and thereafter determining the ATP released into the sample using a luciferin-luciferase reagent, the improvement which comprises eliminating the distorting effect of the releasing agent on the ATP assay, by addition of an amount of a non-ionic surface active agent to be effective as a neutralizing agent for the releasing agent after addition of said releasing agent and before said ATP assay.

5,004,685

DRY-TYPE MULTILAYER ANALYTICAL ELEMENT

Fuminori Arai, and Asaji Kondo, both of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 18, 1987, Ser. No. 86,514
Claims priority, application Japan, Aug. 19, 1986, 61-193705
Int. Cl.[5] C12Q *1/26*
U.S. Cl. 435—25 **18 Claims**

1. A dry multilayer analytical element for the determination of an analyte in an aqueous liquid sample by measuring the amount of hydrogen peroxide produced from the interaction of the analyte with an oxidase, comprising, in this order, a light-transmissive water-impermeable support, a chromogen-containing layer which produces an optically detectable change from the interaction of hydrogen peroxide, and a peroxidatively active substance-containing layer, said element further comprising an oxidase which reacts with the analyte to prou-

duce hydrogen peroxide, and a ferrocyanide, with the proviso that the ferrocyanide is in a layer separate from the chromogen-containing layer and is not interposed between the support and the chromogen-containing layer.

5,004,686

PROCESS FOR PRODUCING HUMAN EPIDERMAL GROWTH FACTOR AND ANALOGS THEREOF

Charles M. Cohen, Medway, and Roberto Crea, Boston, both of Mass., assignors to Creative Biomolecules, Inc., Hopkinton, Mass.

Division of Ser. No. 832,337, Feb. 24, 1986, Pat. No. 4,743,679. This application Jan. 4, 1988, Ser. No. 140,739

Claims priority, application Australia, Feb. 5, 1987, 69011/87; Canada, Feb. 5, 1987, 529101; European Pat. Off., Feb. 20, 1987, 87301490.6; Japan, Feb. 27, 1987, 62-41229

Int. Cl.[5] **C12N** *1/21, 9/52, 15/12, 15/63, 15/70;* **C12P** *21/06*

U.S. Cl. 435—69.1 **9 Claims**

1. A method for producing an epidermal growth factor or a biologically active analog of an epidermal growth factor comprising the steps of:

A. constructing a vector including a DNA sequence encoding a fused polypeptide having the formula:

X—Glu—EGF

wherein X is a leader sequence oligopeptide which serves to promote expression of said fused polypeptide in said host cell, Glu is a linking glutamyl residue, and EGF is the amino acid sequence of an epidermal growth factor or an active analog thereof, said EGF being attached at its N-terminal end to said linking Glu residue, and said linking Glu residue being attached to the C-terminal end of said leader sequence oligopeptide;

B. transfecting a microbial host cell with said vector;

C. expressing said DNA sequence in said host cell to produce a fused polypeptide;

D. isolating said fused polypeptide from said host cell; and

E. treating said fused polypeptide with *Staphylococcus aureus* V8 protease under conditions and for a time suitable to preferentially cleave said fused polypeptide at said linking glutamyl residue to release said EGF.

5,004,687

INSECT VIRUS VECTOR WITH BROADENED HOST RANGE

Lois K. Miller, Moscow, Id., assignor to University of Georgia Research Foundation, Inc., Athens, Ga.

Filed May 21, 1985, Ser. No. 736,478

Int. Cl.[5] **C12N** *15/86, 15/00, 7/01*

U.S. Cl. 435—69.1 **8 Claims**

5. A method for producing an exogenous gene product in insect cells which method comprises culturing insect cells which are incapable of permitting replication of an unmodified baculovirus which cells have been infected or transfected with a recombinant baculoviral expression vector which comprises a gene coding for the exogenous gene product wherein transcription of said gene is controlled by a promoter of an LTR selected from the group consisting of retroviral LTRs and transposable element LTRs.

5,004,688

PURIFICATION OF HEPATITIS PROTFINS

William S. Craig, and Robert S. Siegel, both of San Diego, Calif., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 15, 1988, Ser. No. 181,934

Int. Cl.[5] **C12P** *21/06;* **C12N** *15/00;* **C07K** *13/00*

U.S. Cl. 435—69.3 **8 Claims**

1 A process for recovering hepatitis B surface antigen from *Pichia pastoris* cells comprising:

(a) lysing said yeast cells in the presence of a buffered chaotropic salt, wherein said chaotropic salt is selected from the group consisting of sodium thiocyanate, potassium thiocyanate, sodium iodide, potassium iodide, sodium hypochlorite, lithium chloride, lithium bromide, guanidiniium hydrochloride, guanidinium thiocyanate, and urea, wherein said chaotropic salt is present in the concentration of from about 1 molar to about 8 molar, and wherein said chaotropic salt is buffered by a buffer system having a pH within the range of about 6 to about 8;

(b) subjecting the hepatitis B surface antigen-containing supernatant obtained in step (a) to conditions suitable to precipitate lipids and contaminant proteins from said supernatant wherein said precipitation of lipids and contaminant proteins is accomplished by heating said hepatitis B surface antigen-containing supernatant to a temperature range of about 45° to about 55° C. for a period of time ranging from about 10 to about 30 minutes.

(c) subjecting the hepatitis B surface antigen-containing supernatant obtained in step (b) to diafiltration wherein said diafiltration is conducted with a membrane having a molecular weight exclusion limit within the range of about 5,000 to about 500,000;

(d) contacting the hepatitis B surface antigen-containing retentate obtained in step (c) with silica wherein said silica has an accessible surface area with the range of 100 m^2/gm to 500 m^2/gm and wherein, when the initial particle concentration is ≧1% of the total extractable protein from the lysed cell extract, then for every 1 mg of hepatitis B surface antigen activity present in said hepatitis B surface antigen-containing supernatant, there is utilized 50–100 mg of silica, and wherein, when the initial particle concentration is <1% of the total extractable protein from the lysed cell extract, then for every 1 mg of hepatitis B surface antigen activity present in said hepatitis B surface antigen-containing supernatant, there is utilized a corresponding proportional increase in silica from a base of 50–100 mg of silica per 1%;

(e) washing contaminant proteins from the resulting silica-adsorbed hepatitis B surface antigen with a buffer having a pH within the range of about 6 to about 8;

(f) eluting the hepatitis B surface antigen from the silica with a buffered eluant having a pH within the range of about 9.5 to about 11.0 containing from 0.5 to 8 molarity of urea;

(g) subjecting the hepatitis B surface antigen-containing fraction obtained in step (f) to gel filtration step suitable to separate said hepatitis B surface antigen from contaminant proteins, rein said hepatitis II surface antigen-containing fraction is subjected to gel filtration on a polar matrix selected from the group consisting of agarose gels, dextran gels, and polyacrylamide gels, and wherein said polar matrix has a molecular weight exclusion of at least 1 million and said hepatitis B surface antigen is eluted through said polar matrix with a buffer having a pH within range of about 6 to about 9; and

(h) subjecting the hepatitis B surface antigen containing fraction obtained in step (g) to an anion exchange chromatography step suitable to separate said hepatitis B surface antigen from contaminant proteins wherein said ion exchange chromatography is conducted with an anion-exchange resin utilizing a diethyl aminoethyl cation and wherein said hepatitis B surface antigen is eluted from said anion exchange resin by utilizing a buffer having a pH within the range of about 6 to about 9 and an electrolyte concentration ranging from 0 molarity to 0.3 molarity.

5,004,689

DNA SEQUENCES, RECOMBINANT DNA MOLECULES AND PROCESSES FOR PRODUCING HUMAN GAMMA INTERFERON-LIKE POLYPEPTIDES IN HIGH YIELDS

Walter C. Fiers, Destelbergen, Belgium, and Bernard Allet, Onex, Switzerland, assignors to Biogen, Massachusetts, Cambridge, Mass.

Continuation-in-part of Ser. No. 920,720, Oct. 17, 1986, abandoned, which is a continuation of Ser. No. 722,743, Apr. 12, 1985, abandoned, which is a continuation of Ser. No. 467,466, Feb. 17, 1983, abandoned, which is a continuation-in-part of Ser. No. 800,069, Nov. 14, 1985. This application Mar. 27, 1987, Ser. No. 31,042

Claims priority, application United Kingdom, Feb. 22, 1982, 8205203; Mar. 16, 1984, 8406910; May 24, 1984, 8413297

Int. Cl.[5] **C12P** *21/00;* **C12N** *1/20, 15/00*

U.S. Cl. 435—69.51 **12 Claims**

1. An expression vector for producing IFN-γ type polypeptides in hosts transformed with it comprising a DNA sequence encoding a polypeptide of the IFN-γ type, said DNA sequence being operatively linked to an expression control sequence comprising the promoter-operator regions and Shine-Dalgarno sequence of a trp operon and further comprising the DNA sequence ATCGATACT between the Shine-Dalgarno sequence and the translational start sequence of the DNA sequence encoding a polypeptide of the IFN-γ type.

5,004,690

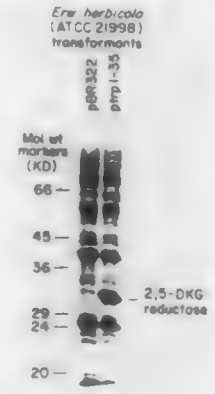
ASCORBIC ACID INTERMEDIATES AND PROCESS ENZYMES

David R. Light, San Francisco, and William H. Rastetter, San Mateo, both of Calif., assignors to Genetech, Inc., San Francisco, Calif.

Continuation of Ser. No. 135,888, Dec. 21, 1987, which is a division of Ser. No. 620,652, Jun. 14, 1984, Pat. No. 4,758,514, which is a continuation-in-part of Ser. No. 508,409, Jun. 28, 1983, abandoned. This application Jul. 17, 1989, Ser. No. 380,788

Int. Cl.[5] **C12P** *7/60;* **C12N** *15/00*

U.S. Cl. 435—138 **1 Claim**



1. A method of using a DNA sequence encoding 2,5-diketogluconic acid (2,5-DKG) reductase for effecting the conversion of 2,5-DKG into 2-keto-L-gulonic acid (2-KLG) which comprises expressing said DNA sequence in host cells transformed with an expression vehicle containing said DNA sequence and contacting a mixture comprising 2,5-DKG with 2,5-DKG reductase produced by said expression.

5,004,691

METHOD FOR PRODUCING THE ACCI RESTRICTION ENDONUCLEASE AND METHYLASE

Shu-zi Chen, Cambridge, and Geoffrey G. Wilson, Boxford, both of Mass., assignors to New England Biolabs, Inc., Beverly, Mass.

Filed Dec. 17, 1987, Ser. No. 133,957

Int. Cl.[5] **C12N** *15/52, 9/22, 1/21*

U.S. Cl. 435—172.3 **9 Claims**

1. Isolated DNA coding for the AccI restriction endonuclease, wherein the isolated DNA is obtainable from the vector pSC161RMO/P17.

5,004,692

CLONING AND EXPRESSION OF PHOSOPHOLIPASE C GENES

J. Yun Tso, Menlo Park, and Cary L. Queen, Palo Alto, both of Calif., assignors to Protein Design Labs, Inc., Mountain View, Calif.

Filed Dec. 15, 1987, Ser. No. 132,387

Int. Cl.[5] **C12N** *9/00, 9/14*

U.S. Cl. 435—183 **18 Claims**

10. A process for producing a Clostridium Phospholipase C polypeptide comprising the steps of:

(a) forming a vector comprising a nucleotide sequence coding for said polypeptide, said sequence operably linked to an expression control sequence;

(b) transforming or transfecting a host cell with the vector; and

(c) maintaining the host cell under conditions suitable for expression of the nucleotide sequence.

5,004,693

PSEUDORABIES VIRUS RECOMBINANTS AND THEIR USE IN THE PRODUCTION OF PROTEINS

Lynn W. Enquist, Greenville; Alan K. Robbins, and Mary E. Whealy, both of Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 886,691, Jul. 18, 1986. This application Oct. 20, 1989, Ser. No. 424,784

Int. Cl.[5] **C12P** *21/00;* **C12N** *15/00, 7/00*

U.S. Cl. 435—235.1 **3 Claims**

1. A recombinant pseudorabies virus comprising an EcoRI site inserted into the viral genome.

5,004,694

COMPLEMENT-DEPENDENT CYTOLYTIC ANTI-*TRICHOMONAS VAGINALIS* MONOCLONAL ANTIBODIES

Neomi Moav, Tel Aviv, and Enrica Draghi, Rehovot, both of Israel, assignors to Interpharm Laboratories Ltd., Ness-Ziona, Israel

Filed Sep. 4, 1987, Ser. No. 93,431

Claims priority, application Israel, Sep. 5, 1986, 79950

Int. Cl.[5] **C12N** *5/00;* **A61K** *39/00*

U.S. Cl. 435—240.27 **13 Claims**

1. An anti-*Trichomonas vaginalis* monoclonal antibody of the subclass IgG_3 which:

(a) fixes complement;

(b) lyses *Trichomonas vaginalis* in the presence of exogenous complement; and,

(c) agglutinates but does not lyse *Trichomonas vaginalis* in the absence of exogenous complement.

5,004,695

MICROBIOLOGICAL PROCESS FOR PREPARING 9α-HYDROXY-4-ANDROSTENE-3,17-DIONE

Antonia Jekkel nee Bokany; Karoly Albrecht; Gabor Ambrus; Tibor Lang; Istvan M. Szabo; Éva Ilköy; Kalman Könczöl; Imre Moravcsik; Gabor Hantos; Emilia Simonovits; Zsuzsanna Lengyel nee Szemenyei; Zsuzesanna Vida, all of Budapest, and Éva Csajagi, Pécs, all of Hungary, assignors to Richter Gedeon Vegyeszeti Gyar R.T., Budapest, Hungary

Filed Nov. 5, 1987, Ser. No. 116,872

Claims priority, application Hungary, Nov. 18, 1986, 4757/86

Int. Cl.[5] **C12N** *1/20;* **C12P** *33/16, 33/18*

U.S. Cl. 435—253.1 **2 Claims**

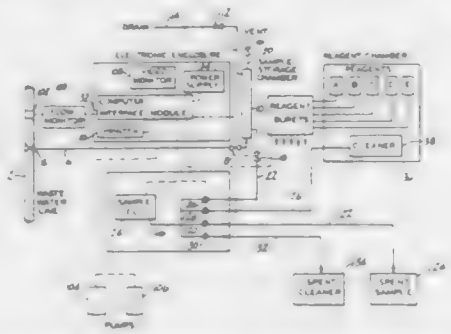
1. A strain of the genus Mycobacterium having all of the identifying characteristics of *Mycobacterium roseum* NCAIM B (P) 000339.

5,004,696

AUTOMATIC TOTAL REDUCERS MONITORING AND ADJUSTMENT SYSTEM

Jack L. Clinkenbeard, Anaheim, Calif., assignor to Ashland Oil, Inc., Russell, Ky.

Filed Mar. 24, 1988, Ser. No. 172,682
Int. Cl.[5] C01N 21/00, 31/00
U.S. Cl. 436—51 10 Claims



1. A process for monitoring or adjusting, or concentration of total reducer constituents in an aqueous medium, comprising the steps of:

(1) adding a predetermined aliquot of said total reducers-containing water to a sample cell, said sample cell equipped with means for transmitting light of variable intensity through the filled sample cell and means for sensing the presence or absence of said light transmission after passing through said filled sample cell;

(2) adding to said aliquot-filled sample cell predetermined amounts of a pH 5.0–5.5 buffer reagent, an optional methyl red indicator, an optional hydrochloric acid solution and a starch indicator;

(3) activating said light transmission means in said sample cell in order to send light of a sufficient intensity through said filled sample cell to be sensed by said light sensing means;

(4) then titrating an iodine solution into said filled sample cell at a predetermined rate of addition while sensing the presence or absence of said light transmission in said cell;

(5) measuring the time taken from the start of the iodine titration until the absence of said light sensing through said filled cell is detected;

(6) translating this time measurement into either the concentration of total reducer constituents in said water medium or into the amount of an oxidant chemical to be fed into said water medium, or both; and

(7) based on said translation, sending either a first output signal to at least one monitoring means or a second output signal to at least one process adjustment means location whereby said concentration of total reducer constituents in said water medium is adjusted, or sending both first and second signals

5,004,697

CATIONIZED ANTIBODIES FOR DELIVERY THROUGH THE BLOOD-BRAIN BARRIER

William M. Pardridge, Pacific Palisades, Calif., assignor to Univ. of CA, Calif. and Alkermes, Pa.

Filed Aug. 17, 1987, Ser. No. 85,627
Int. Cl.[5] A61K 39/00
U.S. Cl. 436—547 9 Claims

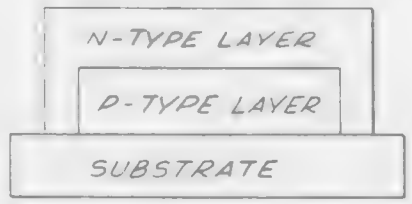
1. In a diagnostic composition comprising one or more antibodies for administration to an individual for neurodiagnostic purposes, said antibodies having a relatively low transfer rate across the blood-brain barrier, wherein the improvement comprises cationizing said antibodies to provide cationized antibodies having an isoelectric point of between about 8.0 and 11.0, said cationized antibodies having increased rates of transfer across said blood-brain barrier.

5,004,698

METHOD OF MAKING PHOTODETECTOR WITH P LAYER COVERED BY N LAYER

Paul R. Norton, Santa Barbara; Michael Moroz, and Carol S. Talley, both of Goleta, all of Calif., assignors to Santa Barbara Research Center, Goleta, Calif.

Division of Ser. No. 804,711, Dec. 5, 1985, Pat. No. 4,914,495.
This application Jan. 16, 1990, Ser. No. 464,840
Int. Cl.[5] H01L 31/18
U.S. Cl. 437—3 27 Claims



1. A method for making a photodetector comprising epitaxially growing a body of semiconductor material on an electrically insulating substrate; subdividing said body into a plurality of photodetectors; annealing the resulting plurality of semiconductor bodies attached to said substrate for a time sufficient to form a region of first conductivity type substantially completely overlying the top and sides of a region of second conductivity type of each of said bodies, and said photodetector having a detectivity of at least about $2 \times 10^{17} \lambda (\eta/Q_B)^{1/2}$cmHz$^{1/2}$/Watt where the radiation incident on said photodetector is in the range of about 1 to about 25 microns or more, and where λ is the wavelength of radiation incident on said photodetector, Q_B is the background photon flux, and η is the quantum efficiency

5,004,699

METHOD TO DETECT FUNGI AND YEASTS

Mark A. Winters, Mountain View, Calif., assignor to SRI International, Menlo Park, Calif.

Continuation of Ser. No. 111,389, Nov. 20, 1987, abandoned.
This application Oct. 24, 1989, Ser. No. 426,538
Int. Cl.[5] G01N 33/53; C12Q 1/04
U.S. Cl. 435—7.31 19 Claims

1. A method for determining the presence of chitin-containing organisms in a sample which method comprises:

(a) attaching a sample containing a fluid and nonfluid component and suspected of containing chitin-containing organisms onto a solid phase;

(b) contacting said sample attached on the solid phase with a composition of anti-chitin antibodies which selectively binds chitin; and

(c) detecting said antibodies bound to chitin present in the sample whereby the presence of chitin-containing organisms is determined.

5,004,700

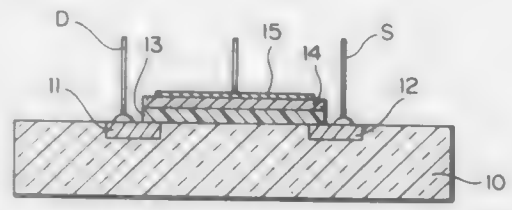
HUMIDITY SENSOR

Brian C. Webb, Sunbury-on-Thames; Derek G. Pedley, Amersham; Stephen J. Prosser, Thame, all of United Kingdom; Masaya Hijikigawa, and Hisatoshi Furubayashi, both of Yamatokoriyama, Japan, assignors to EMI Limited, Hayes, United Kingdom and Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 237,693, Aug. 26, 1988, abandoned, which is a continuation of Ser. No. 641,693, Aug. 17, 1984, abandoned.
This application Aug. 1, 1990, Ser. No. 561,377
Claims priority, application United Kingdom, Aug. 19, 1983, 8322418
Int. Cl.[5] H01L 21/288; G01N 27/12
U.S. Cl. 437—42 13 Claims

1. A method of fabricating a humidity sensor comprising the steps of:

providing a host device constituting a semi-conductor substrate and the gate insulator of an insulated gate field effect transistor, the gate insulator having an exposed surface;



forming a layer of an aqueous solution of polyvinyl alcohol on the exposed surface of the gate insulator;

subjecting said layer to heat treatment to cause crystallization and/or stabilization of the polyvinyl alcohol; and

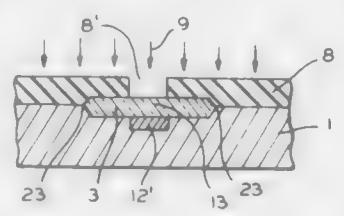
forming a gate electrode on said layer so treated.

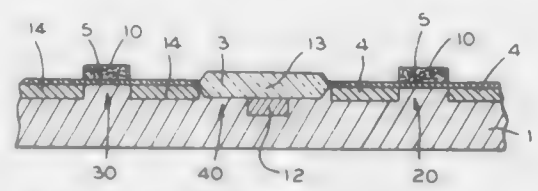
5,004,701

METHOD OF FORMING ISOLATION REGION IN INTEGRATED CIRCUIT SEMICONDUCTOR DEVICE

Kazumasu Motokawa, Yamaguchi, Japan, assignor to NEC Corporation, Japan

Filed Jan. 27, 1989, Ser. No. 303,721
Claims priority, application Japan, Jan. 29, 1988, 63-19984
Int. Cl.[5] H01L 21/76
U.S. Cl. 437—47 7 Claims





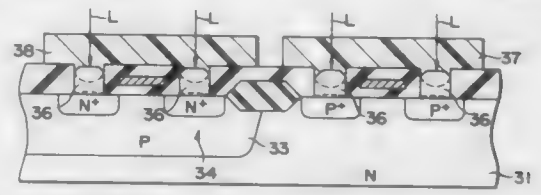
1. A method of manufacturing an isolation region in an integrated circuit semiconductor device comprising the steps of forming a first mask pattern made of anti-oxidant material on a surface of a semiconductor substrate of one conductivity type, forming selectively a field oxide layer by a heat treatment under an oxidizing atmosphere on a field region of said substrate between first and second circuit element forming regions of said substrate by using said first mask pattern as a mask, forming a second mask pattern on said substrate including said field oxide layer, thereafter, introducing ions of impurity of said one conductivity type by ion-implantation into a portion of said substrate under a part of said field oxide layer through said field oxide layer by using said second mask pattern as a mask, carrying out a first lamp annealing during a first time period for an activation of said implanted impurities of said one conductivity type to form a channel stopper region of said one conductivity type having a higher impurity concentration than said substrate in said portion of said substrate abutted against the bottom of said part of said field oxide layer wherein said portion of said substrate forming said channel stopper region is separated from said first circuit element forming region by a first distance and from said second circuit element forming region by a second distance which is substantially the same value as said first distance.

5,004,702

PREPARATION METHOD OF SELECTIVE GROWTH SILICON LAYER DOPED WITH IMPURITIES

Shuichi Samata, and Yoshiaki Matsushita, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 17, 1989, Ser. No. 338,794
Claims priority, application Japan, Oct. 19, 1987, 62-263128
Int. Cl.[5] H01L 21/225
U.S. Cl. 437—57 7 Claims



3. A method of manufacturing a semiconductor device in a single reactive furnace chamber comprising the steps of:

providing a semiconductor substrate having a region of the first conductivity type and a region of the second conductivity type;

forming an insulating film on said semiconductor substrate;

forming a first opening and a second opening in said insulating film, said first opening being connected to said region of the first conductivity type, and said second opening being connected to said region of the second conductivity type;

placing said substrate in the reactive furnace chamber;

selectively growing a first semiconductor layer in said first opening and a second semiconductor layer in said second opening;

removing said substrate from the reactive furnace chamber; and

forming a first diffusion source layer containing impurities of the first conductivity type on said first semiconductor layer, and a second diffusion source layer containing impurities of the second conductivity type on said second semiconductor layer;

diffusing impurities to said first semiconductor layer from said first diffusion source layer, and diffusing impurities to said second semiconductor layer from said second diffusion source layer; and

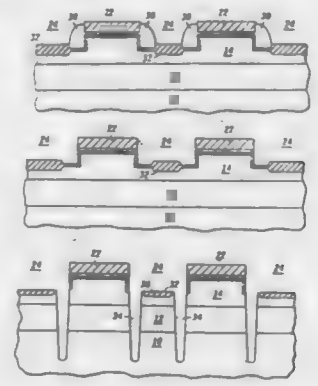
removing said first diffusion source layer and said second diffusion source layer.

5,004,703

MULTIPLE TRENCH SEMICONDUCTOR STRUCTURE METHOD

Peter J. Zdebel, Mesa, and Barbara Vasquez, Chandler, both of Ariz., assignors to Motorola, Schaumburg, Ill.

Filed Jul. 21, 1989, Ser. No. 382,947
Int. Cl.[5] H01L 21/76
U.S. Cl. 437—67 14 Claims



1. A method of forming a multiple trench semiconductor structure comprising the steps of:

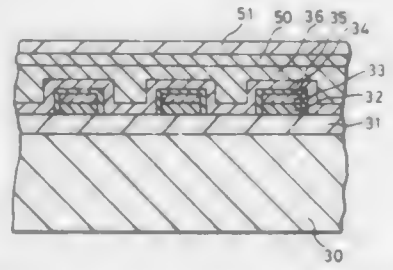
providing a semiconductor substrate,
forming a blanket buried layer in said semiconductor substrate;
forming a dielectric layer on said semiconductor substrate;
forming at least one opening in said dielectric layer; and in the following order:
forming an oxide layer on the bottom and sidewalls of said at least one opening;
forming sidewall spacers in said at least one opening;
forming a dielectric lens in said at least one opening between said sidewall spacers;
removing said sidewall spacers; and
forming trenches in said at least one opening where said sidewall spacers were formerly disposed.

5,004,704

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE HAVING A PHOSPHO SILICATE GLASS LAYER AS AN INTERLAYER INSULATING LAYER

Satoshi Maeda, Ooita, and Shizuo Sawada, Kanagawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Oct. 30, 1989, Ser. No. 428,903
Claims priority, application Japan, Nov. 28, 1988, 63-298223
Int. Cl.[5] H01L *21/441*
U.S. Cl. 437—195 **12 Claims**



1. A method for forming a multilevel interconnection structure on a substrate having a main surface, comprising the steps of:
forming a first wiring layer on the main surface of the substrate;
forming an oxide layer on the first wiring layer;
forming a first Boron-doped Phospho Silicate Glass (BPSG) layer on the oxide layer;
heating the substrate in steam;
forming a second Boron-doped Phospho Silicate Glass layer on the first BPSG layer;
heating the substrate in steam; and
forming a second wiring layer on the second BPSG layer.

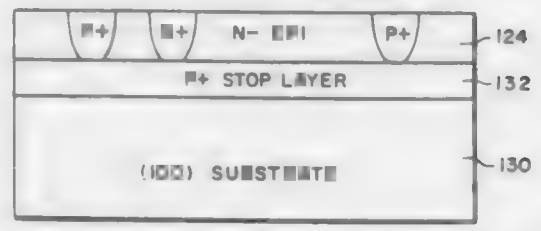
5,004,705

INVERTED EPITAXIAL PROCESS

Scott C. Blackstone, Needham, Mass., assignor to Unitrode Corporation, Lexington, Mass.

Filed Jan. 6, 1989, Ser. No. 295,045
Int. Cl.[5] H01L *21/20, 21/76*
U.S. Cl. 437—225 **69 Claims**

6. A method of semiconductor fabrication, comprising the steps of:
growing an epitaxial layer on a substrate to form a first wafer;
diffusing a first doping substance in the epitaxial layer to provide a first diffusion region;
diffusing a second doping substance in the epitaxial layer to provide a second diffusion region;
diffusing a third doping substance in the epitaxial layer to provide a third diffusion region, said third doping substance being of the same plurality as said second doping substance, and said second diffusion region being in electrical contact with said third diffusion region;
bonding the surface of said first wafer having the epitaxial layer and the diffusions to a second wafer; and



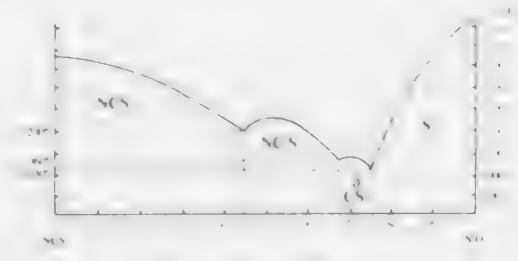
removing at least a portion the substrate of said first wafer, revealing said first and second diffusion regions.

5,004,706

PRODUCING MOLTEN GLASS AND BATCH COMPONENTS THEREFOR

Clive F. Dickinson, Lancashire, England, assignor to Pilkington plc, Merseyside, England

Filed Dec. 7, 1988, Ser. No. 280,815
Claims priority, application United Kingdom, Dec. 10, 1987, 8728892
Int. Cl.[5] C03C *6/00*
U.S. Cl. 501—27 **19 Claims**



NCS = Sodium Calcium Silicate
NCS = Sodium Dicalcium Trisilicate
βCS = Beta Wollastonite
S = Silica

1. A method of producing a molten glass wherein silica is heated with a batch component which provides the major portion of the sodium in the resultant molten glass and which comprises a crystalline sodium alkaline earth silicate, which has Na_2O, alkaline earth oxide, and SiO_2 components in a molar ratio of 1:1:1.

5,004,707

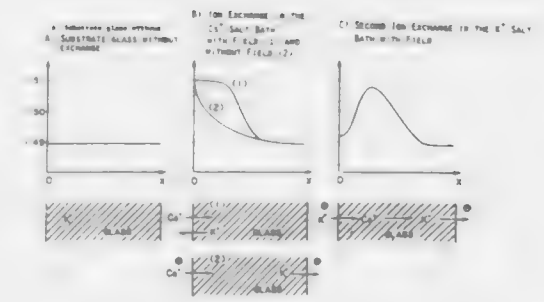
LIGHTWAVE GUIDE PRODUCED FROM SPECIAL SUBSTRATE GLASSES BY ION EXCHANGE AGAINST CS^+ IONS

Ludwig Ross, Klein-Winternheim, and Werener Schumann, Mainz, both of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Continuation of Ser. No. 267,651, Nov. 1, 1988, abandoned, which is a continuation of Ser. No. 821,435, Jan. 22, 1986, abandoned. This application Nov. 16, 1989, Ser. No. 437,295
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1985, 3501898; Jul. 10, 1985, 3524605
Int. Cl.[5] C03C *13/04*
U.S. Cl. 501—37 **16 Claims**

1. Lightwave guide, characterized in that it is produced from a substrate glass consisting essentially of the following composition, in mol %:

SiO_2	45–72
B_2O_3	8–25
Al_2O_3	1–25



Li_2O	0–1
Na_2O	0–2
K_2O	6–18
MO	0–1

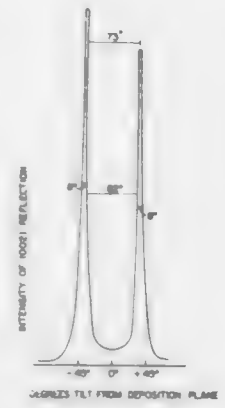
(MO-MgO, CaO, SrO, BaO, ZnO, PbO), in which a portion of the O^{2-} ions present in the glass is replaced by 1–15 mol % F^- ions to facilitate diffusion of Cs^+ ions therein, and in which a lightwave conductive zone has been produced by incorporating Cs^+ ions into the substrate glass by an ion-exchange of K^+, Li^+ and/or Na^+ ions against Cs^+ ions to effect a refractive index gradient within the glass.

5,004,708

PYROLYTIC BORON NITRIDE WITH COLUMNAR CRYSTALLINE MORPHOLOGY

Arthur W. Moore, North Olmstead, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 2, 1989, Ser. No. 318,349
Int. Cl.[5] C04B *35/58*
U.S. Cl. 501—96 **19 Claims**



1. A pyrolytic boron-nitride composition comprising boron nitride and a trace amount of zirconium, the composition having a bimodal X-ray rocking curve for the 002 plane with a peak X-ray intensity between −35° and −37° and a peak X-ray intensity between +35° and +37° from the angle corresponding to deposition plane, each of the two peak intensities having a FWHM less than 30°, wherein the rocking curve has an X-ray intensity at the zero degree angle corresponding to the deposition plane of less than about 20 percent of either of the two peak intensities.

5,004,709

HIGH SURFACE AREA SILICON NITRIDE AND USE THEREOF

Gerald T. Stranford, Palatine; Stephen T. Gonczy, Mt. Prospect, and Roy T. Mitsche, Wauconda, all of Ill., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Mar. 16, 1989, Ser. No. 324,132
Int. Cl.[5] C04B *35/56, 35/58*
U.S. Cl. 501—97 **32 Claims**

1. A ceramic article formed by reacting a shaped mixture comprising a major portion of silicon and a minor portion of iron and rare earth oxide with nitrogen at a temperature and for a time sufficient to form a crystalline and continuous silicon nitride phase, the article having a surface area of at least 3.5 m^2/g, a thermal expansion coefficient smaller than 6×10^{-6} m/m/°C. measured in the range of 20°–800° C. and a porosity of at least 30%.

5,004,710

METHOD FOR THE CHEMICAL PREPARATION OF ZIRCONIA ALLOY POWDERS AND ARTICLE

Michael P. Anderson, Gillette, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Jun. 8, 1987, Ser. No. 59,504
Int. Cl.[5] C04B *35/48*
U.S. Cl. 501—103 **19 Claims**

1. A method for producing a metallic oxide ceramic article having good fracture toughness, said method comprising forming a solution of a metal compound whose oxide is present in said metal oxide ceramic article, precipitating said metal from said solution in the form of a hydrophilic colloid of a hydroxide of said metal, forming spherical particles by spray atomization of a slurry of said colloid into a cryogenic liquid, calcining said particles to convert said metal hydroxide to a ceramic oxide and compacting and sintering said calcined particles to form a ceramic article having good fracture toughness.

5,004,711

PROCESS OF PRODUCING COLLOIDAL ZIRCONIA SOLS AND POWDERS USING AN ION EXCHANGE RESIN

Raymond J. Grodek, Seven Hills, Ohio, assignor to Harshaw/-Filtrol Partnership, Cleveland, Ohio

Continuation of Ser. No. 130,800, Dec. 9, 1987, abandoned. This application Oct. 13, 1989, Ser. No. 423,525
Int. Cl.[5] C01G *25/02;* **C04B** *35/48*
U.S. Cl. 501—103 **19 Claims**

13. A method of preparing spherical colloidal size zirconium oxide particles comprising
(A) preparing a liquid mixture comprising at least one zirconium salt and a compatible liquid vehicle;
(B) contacting said liquid mixture with an anionexchange resin for a period of time sufficient to form a hydrous zirconium oxide sol having a pH of at least about 5.0;
(C) recovering the hydrous zirconium oxide sol from the resin; and
(D) drying the hydrous zirconium oxide sol of (C) and thereafter calcining the dried sol at a temperature of from about 550° C. to about 1100° C. to form the spherical colloidal size zirconium oxide particles wherein the zirconium oxide particles are substantially uniform particles with diameters in the range from 0.01 micron to 2.0 microns.

5,004,712

METHOD OF PRODUCING OPTICALLY TRANSPARENT YTTRIUM OXIDE

Brian P. Borglum, North Andover, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Nov. 25, 1988, Ser. No. 276,975
Int. Cl.[5] C04B *35/50;* **B29D** *11/00*
U.S. Cl. 501—126 **19 Claims**

1. A method of densifying a body having a substantially

closed porosity density, consisting essentially of yttrium oxide, to substantially full density, comprising the step of:

heating said closed porosity body to an elevated temperature at an elevated isostatic pressure until said body is substantially fully dense while said body is disposed adjacent an oxygen supplying ceramic media which provides an oxygen partial pressure to maintain O_2 stoichiometry in said body.

5,004,713

FREQUENCY STABLE NPO CERAMICS

Pronob Bardhan, Corning, and Chyang J. Yu, Painted Post, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Jul. 5, 1989, Ser. No. 375,701
Int. Cl.[5] C04B *35/46*
U.S. Cl. 501—134 **13 Claims**

1. Bismuth-containing, temperature-stable dielectric ceramics that are stable over a wide range of frequency which are defined by the formula

$$Bi_2O_3\ xTiO_2$$

wherein x ranges between 4 and 5 and at least part of the Ti^{4+} ion is replaced with a single pair of mixed ions selected from the group consisting of

(1) $A_{\frac{1}{2}}^{2+}B_{\frac{1}{2}}^{5+}$,
(2) $R_{\frac{1}{2}}^{3+}C_{\frac{1}{2}}^{6+}$,
(3) $A_{\frac{1}{2}}^{2+}C_{\frac{1}{2}}^{6+}$,
(4) $R_{\frac{1}{2}}^{3+}B_{\frac{1}{2}}^{5+}$,
(5) $M_{\frac{1}{2}}^{1+}B_{\frac{1}{2}}^{5+}$, and
(6) $M_{2/5}^{1+}C_{3/5}^{6+}$,

wherein:

M^{+} is selected from the group consisting of Li^{+}, Na^{+}, K^{+}, Cu^{+}, and Ag^{+};

A^{2+} is selected from the group consisting of Mg^{2+}, Zn^{2+}, Ni^{2+}, Co^{2+}, Cu^{2+}, and Cd^{2+};

R^{3+} is selected from the group consisting of Cr^{3+}, Mn^{3+}, Fe^{3+}, Al^{3+}, Ga^{3+}, Zn^{3+}, Tl^{3+}, Sb^{3+}, As^{3+}, Y^{3+}, Lu^{3+}, Yb^{3+}, Tm^{3+}, Er^{3+}, Ho^{3+}, Dy^{3+}, Tb^{3+}, Gd^{3+}, Eu^{3+}, and Sm^{3+};

B^{5+} is selected from the group consisting of Nb^{5+}, Ta^{5+}, and V^{5+}; and

C^{6+} is selected from the group consisting of W^{6+} and Mo^{6+}.

5,004,714

METHOD OF MODIFYING CERAMIC COMPOSITE BODIES BY A POST-TREATMENT PROCESS AND ARTICLES PRODUCED THEREBY

Terry D. Claar; William B. Johnson, both of Newark, Del., and Robert A. Rapp, Columbus, Ohio, assignors to Lanxide Technology Company, LP, Newark, Del.

Filed Jan. 13, 1989, Ser. No. 296,966
Int. Cl.[5] C04B *35/10*
U.S. Cl. 501—134 **5 Claims**

1. A method of producing a self-supporting ceramic composite body comprising producing a first composite body by:

selecting a parent metal;

heating said parent metal in a substantially inert atmosphere to a temperature sufficient to permit infiltration of molten parent metal into a mass comprising boron carbide and reacting molten parent metal with said boron carbide to form at least one boron-containing compound;

continuing said infiltration reaction for a time sufficient to produce said first composite body comprising at least one parent metal boron-containing compound; and

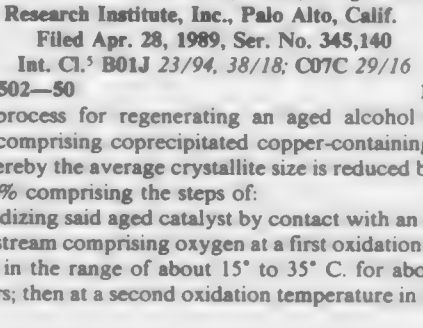
contacting said first composite body with a source of a second metal, thereby reacting at least a portion of said first composite body with said second metal to modify at least one property of the first composite body in at least a portion thereof, thereby producing said self-supporting body.

5,004,715

DIELECTRIC CERAMIC COMPOSITION AND A MULTILAYER CERAMIC CAPACITOR AND A METHOD OF MANUFACTURING A MULTILAYER CERAMIC CAPACITOR

Yasuhiko Hakotani, Nishinomiya; Seiichi Nakatani, Hirakata; Satoru Yuuhaku, Osaka; Tsutomu Nishimura, Uji, and Toru Ishida, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 22, 1990, Ser. No. 483,462
Claims priority, application Japan, Feb. 23, 1989, 1-43701
Int. Cl.[5] C04B *35/46*
U.S. Cl. 501—136 **6 Claims**



1. A ceramic composition comprising lead magnesium niobate ($Pb(Mg_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$) in an amount of 75.0 to 97.0 mol % and copper oxide in an amount of 3.0 to 25.0 mol % in terms of cupric oxide (CuO).

5,004,716

SYNTHETIC STEVENSITE AND PROCESS FOR PREPARATION THEREOF

Masahide Ogawa; Teiji Sato; Masanori Tanaka, and Noriyuki Takahashi, all of Niigata, Japan, assignors to Mizusawa International Chemicals, Ltd., Tokyo, Japan

Division of Ser. No. 150,613, Feb. 1, 1988. This application Apr. 2, 1990, Ser. No. 503,300
Claims priority, application Japan, Feb. 2, 1987, 62-20476
Int. Cl.[5] C04B *33/00*
U.S. Cl. 501—141 **4 Claims**

1. A process for producing synthetic stevensite, which comprises hydrothermally treating a fluorine-ion-free aqueous composition containing as metallic components only basic magnesium carbonate and a silica-sodium component selected from the group consisting of (i) sodium silicate, (ii) sodium silicate and amorphous silica, and (iii) amorphous silica and sodium hydroxide, the solids concentration of the aqueous composition being 5 to 15% by weight, the hydrothermal treatment being carried out at a temperature of 100° to 300° C. under a pressure of 0 to 100 $kg/cm^2 \cdot G$, and the resulting synthetic stevensite being non-toxic to humans.

5,004,717

PROCESS FOR IN-SITU REGENERATION OF AGED METHANOL CATALYSTS

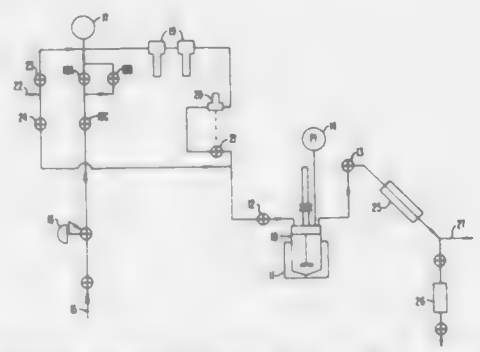
Sunggyu Lee, Akron, Ohio; Sawant Ashok, New Delhi, India, and Conrad J. Kulik, Newark, Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Apr. 28, 1989, Ser. No. 345,140
Int. Cl.[5] B01J *23/94, 38/18;* C07C *29/16*
U.S. Cl. 502—50 **11 Claims**

1. A process for regenerating an aged alcohol synthesis catalyst comprising coprecipitated copper-containing crystallites, whereby the average crystallite size is reduced by at least about 50% comprising the steps of:

A. Oxidizing said aged catalyst by contact with an oxidizing gas stream comprising oxygen at a first oxidation temperature in the range of about 15° to 35° C. for about 1 to 2 hours; then at a second oxidation temperature in the range of about 40° to 70° C. for about 3 to 5 hours; then at a third oxidation temperature in the range of about 130° to 170° C. for about 2 to 5 hours; then at a fourth oxidation temperature in the range of about 190° to 230° C. for about 2 to 4 hours;

B. Contacting said aged catalyst with a stream of inert gas and allowing said aged catalyst to cool below a temperature of about 150° C.;



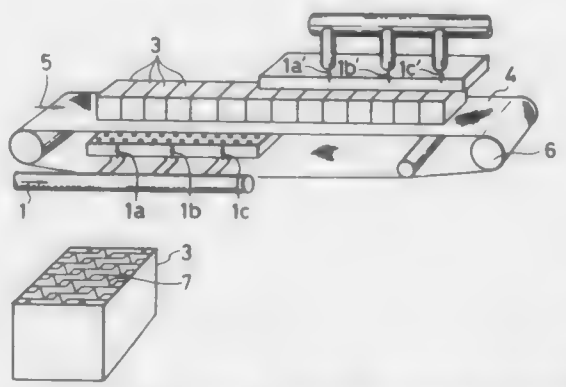
C. Reducing said aged catalyst by contact with a reducing gas stream for a period of time and at a temperature sufficient to reduce copper oxides contained in said catalyst and wherein the gas streams in steps A, B and C are added at flow rates of about 0.5 to about 3 SLPM/liter of reactor volume.

5,004,718

PROCESS FOR CALCINING A DENITRATING CATALYST

Nobuyoshi Ishida; Takashi Michimoto; Katsutaro Miyake, and Toshio Ichige, all of Kure, Japan, assignors to Babcock-Hitachi Kabushiko Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 134,367, Dec. 17, 1987, abandoned. This application Aug. 21, 1989, Ser. No. 396,472
Int. Cl.[5] B01J *27/053, 8/00*
U.S. Cl. 502—217 **11 Claims**



1. A process for calcining a sulfate containing denitrating catalyst used in exhaust gas denitration to uniformly reduce the sulfate content therein to a predetermined level, the process comprising the steps of:

arranging a plurality of catalyst units on a reticulate belt in a calcining furnace, the catalyst units formed subsequent to mixing oxides of metals including Ti, W and/or Mo and V in sulfuric acid, wherein the resulting catalysts include sulfate in excess of 7% by weight;

continuously moving the reticulate belt within the furnace;

flowing fresh hot air at a temperature in the range of about 350° C. to 600° C. through the denitrating catalyst units in a first hot air direction at a rate of about 0.1 to 0.9 m/sec to separate the sulfate from the catalyst units, resulting in first sulfate-contaminated air;

exhausting the first sulfate-contaminated air from the furnace;

flowing fresh hot air through the denitrating catalyst units in a second direction directly opposite the first hot air direction to pass fresh hot air at a temperature in the range of about 350° C. to 600° C. through the catalyst units in a second direction at a rate of about 0.1 to 0.9 m/sec to separate sulfate from the catalyst units, resulting in second sulfate-contaminated air;

exhausting the second sulfate-contaminated air from the furnace; and

controlling the rate of hot air flow in the first and second directions so that the content of sulfate group is uniformly reduced to about 4 to 7 percent by weight of the catalyst.

5,004,719

MOLDED ARTICLES BASED ON PYROGENICALLY PRODUCED ZIRCONIUM DIOXIDE METHOD FOR THEIR MANUFACTURE, AND USE THEREOF

Klaus Deller, Hainburg; Manfred Ettlinger, Karlstein; Rainhard Klingel, Alzenau, and Helmfried Krause, Rodenbach, all of Fed. Rep. of Germany, assignors to DEGUSSA Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 305,397, Feb. 2, 1989, abandoned. This application Feb. 23, 1990, Ser. No. 488,381
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1988, 3803898
Int. Cl.[5] B01J *21/06, 21/16*
U.S. Cl. 502—242 **4 Claims**

1. A molded article formed by pressing a composition comprising pyrogenically produced zirconium dioxide into a desired shape and firing, said molded article having the following properties:

outside diameter	2–15 mm
BET surface area per DIN 66 131	30–50 m^2/g
total pore volume	0.3–0.8 ml/g
pore size distribution	no pores < 10 nm, at least 80% of pores in 10–17 nm range
crushing strength	40–300 N
composition	at least 92% ZrO_2, remainder one or more of SiO_2, Al_2O, HfO_2.

4. A catalyst comprising the catalyst support formed of the molded article of claim 1 having a catalytically active substance deposited thereon.

5,004,720

PROCESS FOR PRODUCING A SUPERCONDUCTOR OF AN OXIDE SYSTEM FROM ACETYLACETONATES

Toshio Kobayashi; Fusaoki Uchikawa; Kenji Nomura; Masao Morita, and Shouichi Yokoyama, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

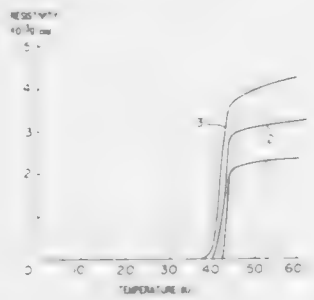
Filed Aug. 24, 1988, Ser. No. 235,542
Claims priority, application Japan, Aug. 24, 1987, 62-210923; Aug. 24, 1987, 210932; Aug. 24, 1987, 62-210935; Aug. 24, 1987, 62-210936; Aug. 24, 1987, 62-210949; Mar. 31, 1988, 63-81715; Apr. 18, 1988, 63-96277
Int. Cl.[5] C04B *35/00;* H01B *12/00, 13/00;* H01L *39/12*
U.S. Cl. 505—1 **9 Claims**

1. A process for producing a superconductor of an oxide system, which comprises:

(a) uniformly mixing metal elements for constituting the oxide system at least partly in the form of acetylacetonates

in a solvent, to obtain a substantially homogeneous mixture,

(b) hydrolyzing said mixture with an alkaline substance, to form a gelled hydrolyzate,



(c) washing said gelled hydrolyzate to remove said alkaline substance therefrom,

(d) drying said washed hydrolyzate, and

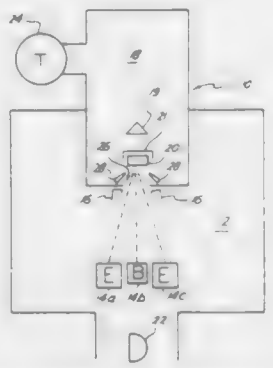
(e) sintering said dried hydrolyzate to form said superconductor of an oxide system.

5,004,721

AS-DEPOSITED OXIDE SUPERCONDUCTOR FILMS ON SILICON AND ALUMINUM OXIDE

A. L. DeLozanne, Austin, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex. and Motorola, Inc., Schaumburg, Ill.

Filed Nov. 3, 1988, Ser. No. 266,546
Int. Cl.[5] B05D *5/12, 3/06;* **C23C** *14/08*
U.S. Cl. 505—1 **12 Claims**



1. A method of preparing an as-deposited oxide superconductor film on a silicon or an aluminum oxide substrate which comprises the steps of:

(A) emplacing a substrate in a first vacuum chamber so that the substrate faces an opening in the first chamber which connects the first chamber to a second vacuum chamber;

(B) conductively heating the substrate to a temperature between 500° and 600° C.;

(C) introducing into the second vacuum chamber metallic superconductor precursor components in their gas states, said components dispersing through the opening into the first vacuum chamber;

(D) evacuating the first and second vacuum chambers at different rates to establish a greater vacuum in the second vacuum chamber than in the first vacuum chamber by a factor of between one and two orders of magnitude;

(E) directing a stream of plasm-excited oxygen over the substrate as the superconductor molecules are deposited, said oxygen pressure over the substrate being about one order of magnitude higher than the pressure in the first chamber; and

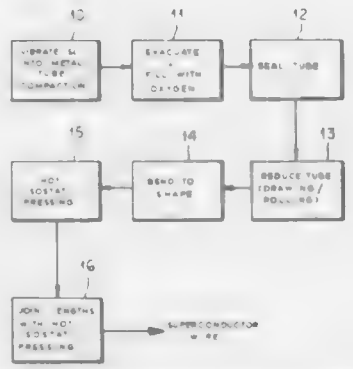
(F) allowing sufficient time for the production of the oxide superconductor film without need of post-annealing.

5,004,722

METHOD OF MAKING SUPERCONDUCTOR WIRES BY HOT ISOSTATIC PRESSING AFTER BENDING

Richard L. Tallman, Idaho Falls, Id., assignor to International Superconductor Corp., Riverdale, N.Y.

Filed Jan. 19, 1989, Ser. No. 300,285
Int. Cl.[5] H01L *39/24*
U.S. Cl. 505—1 **13 Claims**



1. A method of making a superconducting wire, comprising the steps of:

(a) introducing a ceramic superconductive material into a metal tube;

(b) evacuating ambient air from said tube after introduction of said superconductive material into said tube;

(c) backfilling said tube with oxygen;

(d) thereafter sealing said tube;

(e) subjecting said tube with said material contained therein and after sealing to cross section reduction and elongation, thereby compacting said tube against said material and compacting said material within said tube;

(f) thereafter bending said metal tube containing said superconductive material into a useful shape having at least one bend; and

(g) thereafter hot isostatically compressing said tube and said superconductive material within said tube at a pressure and temperature and for a duration sufficient such that said tube is collapsed onto said material and voids and cracks in said superconductive material in said tube are healed.

5,004,723

PREPARATION OF SUPERCONDUCTING EPITAXIAL FILM USING THE METHOD OF LIQUID-PHASE EPITAXIAL GROWTH

Ru-Shi Liu; Yao-Tsung Huang; Jau-Jier Chu, and Jiuh-Ming Liang, all of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Taiwan

Filed Jan. 31, 1989, Ser. No. 305,004
Int. Cl.[5] B01D *9/00;* **H01L** *39/12*
U.S. Cl. 505—1 **4 Claims**

1. LPE growth of super conducting oxide films comprising the steps of:

(a) melting the oxides of bismuth, calcium, strontium, and copper or the oxides of thallium, calcium, barium, and copper at temperature in the range of 900° C. to 950° C. to form a melt;

(b) contacting the melt in (a) with magnesium oxide or single crystalline materials;

(c) lowering the temperature of the melt at a rate of 0.3°-2° C./min. until the temperature is within the range of 820° C. to 890° C.;

(d) separating the melt and the magnesium oxide substrate or single crystalline material to obtain a superconducting epitaxial film; and



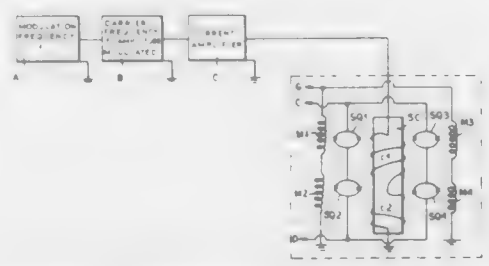
(e) cooling said film in (d) until the temperature thereof is at room temperature, whereby a superconducting epitaxial film having a thickness of 40 to 150 μm is obtained.

5,004,724

SUPERCONDUCTIVE QUANTUM INTERFERENCE DEVICE FOR THE NON-DESTRUCTIVE EVALUATION OF METALS

Dilip K. De, Winston-Salem, N.C., assignor to International Superconductor Corp., Riverdale, N.Y.

Filed Mar. 9, 1989, Ser. No. 321,263
Int. Cl.[5] G01N *27/82*
U.S. Cl. 505—1 **15 Claims**



1. A method of nondestructive evaluation of locations of flaws in a metal body, comprising the steps of:

(a) positioning a high-critical-temperature superconductive quantum interference device having a pair of insulated junctions in a superconductor loop in a flux-sensing relationship to a location adjoining said body;

(b) relatively displacing said body and said location;

(c) while said body and said location are relatively displaced, exciting said body with a modulated alternating current and detecting with said device flux irregularities representing flaws in said body;

(d) establishing locations of said flaws by the relative positions of said location and said body upon the detection of said flux irregularities, a plurality of said devices being connected in series are juxtaposed with said body;

(e) demodulating a signal generated by the series-connected devices to form an output; and

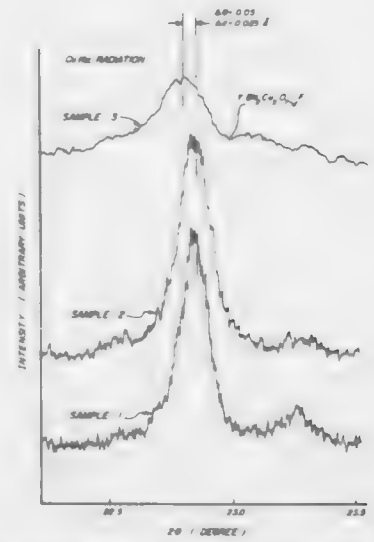
(f) connecting respective modulating coils inductively coupled to the respective high-critical-temperature superconductive quantum interference devices and connected to said output in a feedback path to form a flux-locked loop with said high-critical-temperature superconductive quantum interference devices.

5,004,725

PARAMETRICALLY MODIFIED SUPERCONDUCTOR MATERIAL

Stanford R. Ovshinsky, Bloomfield Hills, and Rosa Young, Troy, both of Mich., assignors to Ovonic Synthetic Materials Company Inc., Troy, Mich.

Continuation of Ser. No. 43,279, Apr. 27, 1989, abandoned. This application Nov. 27, 1989, Ser. No. 441,847
Int. Cl.[5] C04B *35/00*
U.S. Cl. 505—1 **1 Claim**



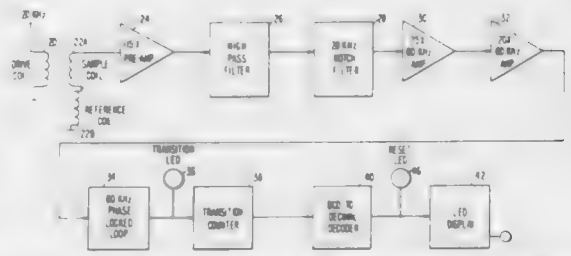
1. In a perovskite defect oxide superconductor composition having a phase of the $Y_1Ba_2Cu_3O_7$ with an X-ray crystallographic peak at about 22.85 degrees two theta, the improvement wherein the composition further comprises F, said F being incorporated into the defect oxide superconductor phase in an amount sufficient to shift the x-ray cyrstallographic peak 0.05 degrees two theta to about 22.80 degrees two theta, and change the interplanar spacing corresponding to said peak by about 0.025 Angstrom.

5,004,726

APPARATUS AND METHODOLOGY FOR THE NON-CONTACT TESTING OF MATERIALS FOR SUPERCONDUCTIVITY BY DETECTING ODD HARMONICS ABOVE A THRESHOLD

Avner A. Shaulov, Monsey; Samuel P. Herko, Ossining; Donald R. Dorman, Tarrytown, and Rameshwar N. Bhargava, Ossining, all of N.Y., assignors to North American Philips Corp., New York, N.Y.

Filed Jul. 14, 1989, Ser. No. 380,162
Int. Cl.[5] G01R *33/12;* **G01N** *27/72;* **H01L** *39/00*
U.S. Cl. 505—1 **11 Claims**



1. A device for determining if a sample of material is a superconductor, comprising:

means for inducing an alternating magnetic field in the sample of material to be tested;

means for measuring the amplitude of the odd numbered

harmonic component of the magnetic field induced in the sample to be tested;

means connected to said measuring means for determining if the amplitude of the odd numbered harmonic has exceeded a predetermined threshold amplitude; and

means connected to said amplitude determining means for indicating that the threshold amplitude has been exceeded to indicate that a superconducting transition has occurred.

5,004,727

Patent Not Issued For This Number

5,004,728

METHODS OF INCREASING MILK YIELDS IN RUMINANTS

William Chalupa, Malvern; David S. Kronfeld, Coatesville, both of Pa.; Paul L. Schneider, Milwaukee, Wis., and David Sklan, Rehovot, Israel, assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Mar. 11, 1988, Ser. No. 166,709

Int. Cl.[5] **A61K** *37/36*

U.S. Cl. 514—12 **26 Claims**

1. A method for improving the production of milk from a lactating ruminant animal comprising:

administering to the animal somatotropin in an amount sufficient to increase production of milk; and

generally coextensive in time within said administration, supplementing the food supply for the animal with a long chain fatty acid or long chain fatty acid salt selected to be substantially inert with respect to the rumination of the animal; said administration and said supplementation each being in amounts sufficient to effect the improvement in production.

5,004,729

AROMATIC ESTERS OF MACROLIDIC AND LINCOSAMIDIC ANTIBIOTICS AND PHARMACEUTICAL AND COSMETIC COMPOSITIONS CONTAINING THEM

Michel Philippe, Antony, and Henri Sebag, Paris, both of France, assignors to Societe Anonyme Dite: L'Oreal, Paris, France

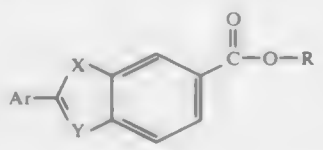
Filed Nov. 3, 1988, Ser. No. 266,862

Claims priority, application Luxembourg, Nov. 4, 1987, 87038

Int. Cl.[5] **A61K** *31/70;* **C07H** *15/16, 17/08*

U.S. Cl. 514—29 **9 Claims**

1. An aromatic ester of a macrolide or lincosamide having the formula



(I)

wherein

R represents a macrolide selected from the group consisting of:

erythromycin A substituted in the 2′ position,

roxithromycin substituted in the 2′ position,

oleandomycin substituted in the 2′ position,

oleandomycin substituted in the 4″ position,

oleandomycin substituted in the 2′ and 4″ positions,

josamycin substituted in the 9 position,

josamycin substituted in the 2′ position,

josamycin substituted in 9 and 2′ positions,

spiramycin (I) substituted in the 2′ position,

spiramycin (I) substituted in the 4″ position,

spiramycin (I) substituted in the 2′ and 4″ positions,

spiramycin (II) substituted in the 2′ position,

spiramycin (II) substituted in the 4″ position,

spiramycin (II) substituted in the 2′ and 4″ positions,

spiramycin (III) substituted in the 2′ position,

spiramycin (III) substituted in the 4″ position,

spiramycin (III) substituted in the 2′ and 4″ positions,

or R represents a lincosamide selected from the group consisting of:

lincomycin substituted in the 3 position,

clindamycin substituted in the 3 position,

lincomycin substituted in the 2, 4 and 7 positions and

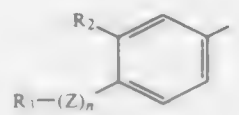
clindamycin substituted in the 2 and 4 positions,

Y represents CH or a nitrogen atom,

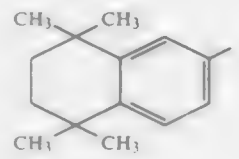
when Y represents CH, X represents a vinylene radical, an oxygen atom, a sulfur atom or NR_1 wherein R_1 is hydrogen or methyl,

when Y represents a nitrogen atom, X represents a sulfur atom, an oxygen atom or NH,

Ar represents an aromatic radical having one of the following formulas:

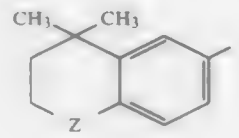


(a)



(b)

and



(c)

wherein

n is 0 or 1,

R_2 and R_3 represent hydrogen, linear or branched alkyl having 1–15 carbon atoms or cycloalkyl having 5–10 carbon atoms, and

Z is an oxygen atom or a sulfur atom,

and mixtures and salts of said esters.

3. A pharmaceutical or cosmetic composition for the treatment of dermatoses comprising in an anhydrous vehicle, as the active component, a pharmaceutically or cosmetically effective amount of at least one ester of claim 1.

5,004,730

POLYCYCLIC AROMATIC ESTERS OF MACROLIDIC AND LINCOSAMIDIC ANTIBIOTICS AND PHARMACEUTICAL AND COSMETIC COMPOSITIONS CONTAINING THEM

Michel Philippe, Antony, and Henri Sebag, Paris, both of France, assignors to L'Oreal, Paris, France

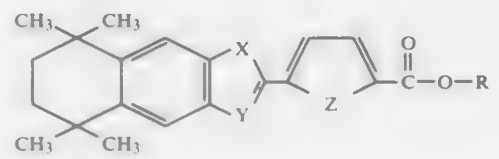
Filed Nov. 3, 1988, Ser. No. 266,599

Claims priority, application Luxembourg, Nov. 4, 1987, 87040

Int. Cl.[5] **A61K** *31/70;* **C07H** *15/16, 17/08*

U.S. Cl. 514—029 **9 Claims**

1. An polycyclic aromatic ester of a macrolide or lincosamide having the formula



(I)

wherein

R represents a macrolide selected from the group consisting of:

erythromycin A substituted in the 2′ position,

roxithromycin substituted in the 2′ position,

oleandomycin substituted in the 2′ position,

oleandomycin substituted in the 4″ position,

oleandomycin substituted in the 2′ and 4″ positions,

josamycin substituted in the 9 position,

josamycin substituted in the 2′ position,

josamycin substituted in the 9 and 2′ positions,

spiramycin (I) substituted in the 2′ position,

spiramycin (I) substituted in the 4″ position,

spiramycin (I) substituted in the 2′ and 4″ positions,

spiramycin (II) substituted in the 2′ position,

spiramycin (II) substituted in the 4″ position,

spiramycin (II) substituted in the 2′ and 4″ positions,

spiramycin (III) substituted in the 2′ position,

spiramycin (III) substituted in the 4″ position,

spiramycin (III) substituted in the 2′ and 4″ positions,

or R represents a lincosamide selected from the group consisting of:

lincomycin substituted in the 3 position,

clindamycin substituted in the 3 position,

lincomycin substituted in the 2, 4 and 7 positions and

clindamycin substituted in the 2 and 4 positions,

Y represents CH or a nitrogen atom,

when Y represents CH, X represents vinylene radical, an oxygen atom, a sulfur atom or NR,

when Y represents a nitrogen atom, X represents an oxygen atom, a sulfur atom or NH,

Z represents a vinylene radical, an oxygen atom, a sulfur atom, or NR_2 and

R_1 and R_2 represent hydrogen or methyl and the mixtures and salts of said esters.

3. A pharmaceutical or cosmetic composition for the treatment of dermatoses comprising in an anhydrous vehicle, as the active component, a pharmaceutically or cosmetically effective amount of at least one ester of claim 1.

5,004,731

UNSATURATED CYCLOALIPHATIC ESTERS OF MACROLIDIC AND LINCOSAMIDIC ANTIBIOTICS AND PHARMACEUTICAL AND COSMETIC COMPOSITIONS CONTAINING THEM

Michel Philippe, Antony, and Henri Sebag, Paris, both of France, assignors to Societe Anonyme Dite: L'Oreal, Paris, France

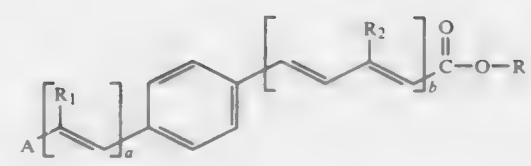
Filed Nov. 3, 1988, Ser. No. 266,598

Claims priority, application Luxembourg, Nov. 4, 1987, 87036

Int. Cl.[5] **A61K** *31/70;* **C07M** *15/16, 17/08*

U.S. Cl. 514—29 **9 Claims**

1. An unsaturated cycloaliphatic ester of a macrolide or lincosamide having the formula



(I)

wherein

R represents a macrolide selected from the group consisting of:

erythromycin A substituted in the 2′ position,

roxithromycin substituted in the 2′ position,

oleandomycin substituted in the 2′ position,

oleandomycin substituted in the 4″ position,

oleandomycin substituted in the 2′ and 4″ positions,

josamycin substituted in the 9 position,

josamycin substituted in the 2′ position,

josamycin substituted in the 9 and 2′ positions,

spiramycin (I) substituted in the 2′ position,

spiramycin (I) substituted in the 4″ position,

spiramycin (I) substituted in the 2′ and 4″ positions,

spiramycin (II) substituted in the 2′ position,

spiramycin (II) substituted in the 4″ position,

spiramycin (II) substituted in the 2′ and 4″ positions,

spiramycin (III) substituted in the 2′ position,

spiramycin (III) substituted in the 4″ position,

spiramycin (III) substituted in the 2′ and 4″ positions,

or R represents a lincosamide selected from the group consisting of:

lincomycin substituted in the 3 position,

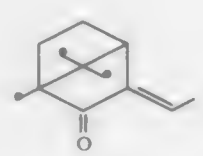
clindamycin substituted in the 3 position,

lincomycin substituted in the 2, 4 and 7 positions and

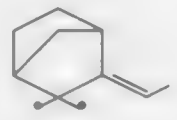
clindamycin substituted in the 2 and 4 positions,

R_1 and R_2, each independently, represent hydrogen or alkyl having 1–4 carbon atoms,

a and b are 0 or 1 with the proviso that at least one of a and b is equal to 1,
and A represents a radical selected from the group consisting of

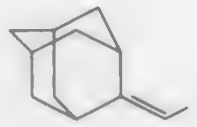


(i)



(ii)

and



(iii)

and the isomers, mixtures and salts of said ester.

3. A pharmaceutical or cosmetic composition for the treatment of dermatoses comprising in an anhydrous vehicle, as the active component, a pharmaceutically or cosmetically effective amount of at least one ester of claim 1.

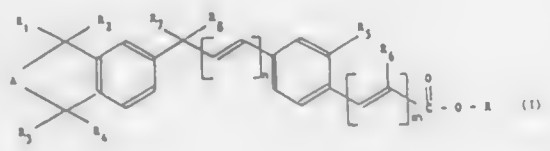
5,004,732

POLYAROMATIC ESTERS OF MACROLIDIC AND LINCOSAMIDIC ANTIBIOTICS AND PHARMACEUTICAL AND COSMETIC COMPOSITIONS CONTAINING THEM

Michel Philippe, Antony, and Henri Sebag, Paris, both of France, assignors to Societe Anonyme Dite: L'Oreal, Paris, France

Filed Nov. 3, 1988, Ser. No. 266,596
Claims priority, application Luxembourg, Nov. 4, 1987, 87037
Int. Cl.[5] A61K *31/70;* **C07H** *15/16, 17/08*
U.S. Cl. 514—29 **9 Claims**

1. A polyaromatic ester of a macrolide or lincosamide having the formula



(I)

wherein
R represents a macrolide selected from the group consisting of:
erythromycin A substituted in the 2′ position,
roxithromycin substituted in the 2′ position,
oleandomycin substituted in the 2′ position,
oleandomycin substituted in the 4″ position,
oleandomycin substituted in the 2′ and 4″ positions,
josamycin substituted in the 9 position,
josamycin substituted in the 2′ position,
josamycin substituted in the 9 and 2′ positions,
spiramycin (I) substituted in the 2′ position,
spiramycin (I) substituted in the 4″ position,
spiramycin (I) substituted in the 2′ and 4″ positions,
spiramycin (II) substituted in the 2′ position,
spiramycin (II) substituted in the 4″ position,
spiramycin (II) substituted in the 2′ and 4″ positions,
spiramycin (III) substituted in the 2′ position,
spiramycin (III) substituted in the 4″ position,
spiramycin (III) substituted in the 2′ and 4″ positions,
or R represents a lincosamide selected from the group consisting of:
lincomycin substituted in the 3 position,
clindamycin substituted in the 3 position,
lincomycin substituted in the 2, 4 and 7 positions and
clindamycin substituted in the 2 and 4 positions,
n and m are 0 or 1 with the proviso that n and m are not simultaneously equal to 1,
A represents methylene or ethylene, unsubstituted or substituted by lower alkyl having 1–4 carbon atoms,
R_1, R_2, R_3 and R_4, each independently, represent hydrogen or alkyl having 1–6 carbon atoms, or R_1 and R_3 taken together from methylene or ethylene when A represents ethylene,
R_7 represents hydrogen, hydroxy, alkoxy having 1–4 carbon atoms or acyloxy having 1–4 carbon atoms,
R_8 represents hydrogen or alkoxy having 1–4 carbon atoms, or
R_7 and R_8 taken together form an oxo or methano radical, and
R_5 and R_6 represent hydrogen or methyl, or
R_5 and R_6, taken together, form a vinylene radical,
and the isomers, mixtures and salts of said esters.

3. A pharmaceutical or cosmetic composition for the treatment of dermatoses comprising in an anhydrous vehicle, as the active component, a pharmaceutically or cosmetically effective amount of at least one ester of claim 1.

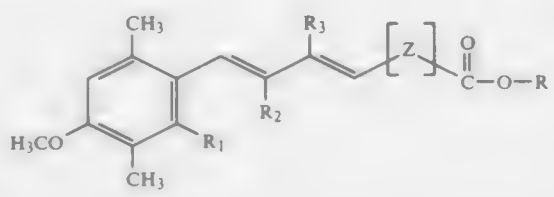
5,004,733

ESTERS OF THE ETRETINIC TYPE OR RELATED TO MACROLIDIC AND LINCOSAMIDIC ANTIBIOTICS AND PHARMACEUTICAL AND COSMETIC COMPOSITIONS CONTAINING SAID ESTERS

Michel Philippe, Antony, and Henri Sebag, Paris, both of France, assignors to Societe Anonyme Dite: L'Oreal, Paris, France

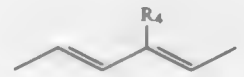
Filed Nov. 3, 1988, Ser. No. 266,611
Claims priority, application Luxembourg, Nov. 4, 1987, 87035
Int. Cl.[5] A61K *31/70;* **C07H** *15/16, 17/08*
U.S. Cl. 514—029 **9 Claims**

1. An ester of the etretinic type or related to a macrolide or lincosamide having the formula

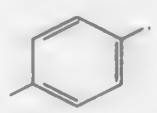


(I)

wherein
R represents a macrolide selected from the group consisting of:
erythromycin A substituted in the 2′ position,
roxithromycin substituted in the 2′position,
oleandomycin substituted in the 2′ position,
oleandomycin substituted in the 4″ position,
oleandomycin substituted in the 2′ and 4″ positions,
josamycin substituted in the 9 position,
josamycin substituted in the 2′ position,
josamycin substituted in the 9 and 2′ positions,
spiramycin (I) substituted in the 2′ position,
spiramycin (I) substituted in the 4″ position,
spiramycin (I) substituted in the 2′ and 4″ positions,
spiramycin (II) substituted in the 2′ position,
spiramycin (II) substituted in the 4″ position,
spiramycin (II) substituted in the 2′ and 4″ positions,
spiramycin (III) substituted in the 2′ position,
spiramycin (III) substituted in the 4″ position,
spiramycin (III) substituted in the 2′ and 4″ positions,
or R represents a lincosamide selected from the group consisting of:
lincomycin substituted in the 3 position,
clindamycin substituted in the 3 position,
lincomycin substituted in the 2, 4 and 7 positions and
clindamycin substituted in the 2 and 4 positions,
R_1 represents methyl,
R_2 represents hydrogen, or R_1 and R_2 together form a vinylene (—CH=CH—) radical,
R_3 represents hydrogen or alkyl having 1–4 carbon atoms, and
Z represents a divalent radical (1) of the formula



wherein R_4 represents hydrogen or alkyl having 1–4 carbon atoms or (2) of the formula the isomers, mixtures and salts of said ester.



3. A pharmaceutical or cosmetic composition for the treatment of dermatoses comprising in an anhydrous vehicle, as the active component, a pharmaceutically or cosmetically effective amount of at least one ester of claim 1.

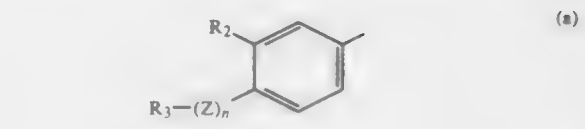
5,004,734

DIAROMATIC ESTERS OF MACROLIDIC AND LINCOSAMIDIC ANTIBIOTICS AND PHARMACEUTICAL AND COSMETIC COMPOSITIONS CONTAINING THEM

Michel Philippe, Antony, and Henri Sebag, Paris, both of France, assignors to Societe Anonyme Dite: L'Oreal, Paris, France

Filed Nov. 3, 1988, Ser. No. 266,597
Claims priority, application Luxembourg, Nov. 4, 1987, 87039
Int. Cl.[5] A61K *31/70;* **C07H** *15/16, 17/08*
U.S. Cl. 514—29 **9 Claims**

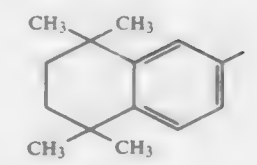
1. A diaromatic ester of a macrolide or lincosamide having the formula



(I)

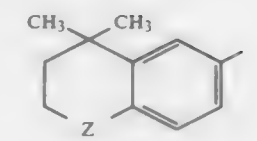
wherein
R_1 represents a macrolide selected from the group consisting of:
erythromycin A substituted in the 2′ position,
roxithromycin substituted in the 2′ position,
oleandomycin substituted in the 2′ position,
oleandomycin substituted in the 4″ position,
oleandomycin substituted in the 2′ and 4″ positions.
josamycin substituted in the 9 position,
josamycin substituted in the 2′ position,
josamycin substituted in the 9 and 2′ positions,
spiramycin (I) substituted in the 2′ position,
spiramycin (I) substituted in the 4″ position,
spiramycin (I) substituted in the 2′ and 4″ positions,
spiramycin (II) substituted in the 2′ position,
spiramycin (II) substituted in the 4″ position,
spiramycin (II) substituted in the 2′ and 4″ positions,
spiramycin (III) substituted in the 2′ position,
spiramycin (III) substituted in the 4″ position,
spiramycin (III) substituted in the 2′ and 4″ positions,
or R_1 represents a lincosamide selected from the group consisting of:
lincomycin substituted in the 3 position,
clindamycin substituted in the 3 position,
lincomycin substituted in the 2, 4 and 7 positions and
clindamycin substituted in the 2 and 4 positions,
Ar represents an aromatic radical selected from

(a)



(b)

and



(c)

wherein
n is 0 or 1,
R_2 and R_3 represent hydrogen, linear or branched alkyl having 1–15 carbon atoms or cycloalkyl having 5–10 carbon atoms, and
Z is an atom of oxygen or sulfur.

and mixtures and salts of said esters.

3. A pharmaceutical or cosmetic composition for the treatment of dermatoses comprising in an anhydrous vehicle, as the active component, a pharmaceutically or cosmetically effective amount of at least one ester of claim 1.

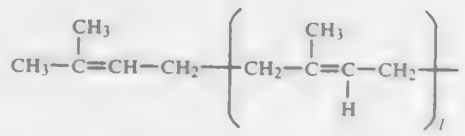
5,004,735

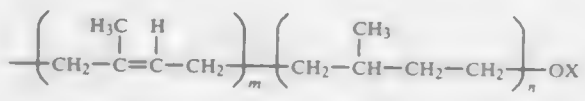
PHARMACEUTICAL COMPOSITIONS FOR THE INHIBITION OF TUMOR METASTASIS

Yasushi Okamoto, Tokyo; Yoshiyuki Tahara, and Yoshio Mishima, both of Saitama, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

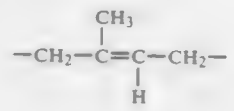
Filed Jun. 29, 1989, Ser. No. 373,909
Claims priority, application Japan, Jul. 13, 1988, 63-172638
Int. Cl.[5] A61K *31/66, 31/045*
U.S. Cl 514—134 **8 Claims**

1. An oily emulsion for the inhibition of lung metastasis in a mammal which comprises an an active ingredient an effective amount to inhibit lung metastasis of one or more of polyprenols and polyprenyl phosphates of the formula

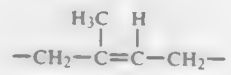




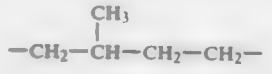
wherein



represents a trans-isoprene unit,



represents a cis-isoprene unit,



-continued

represents a dihydroisoprene unit, l is an integer of 2 to 8, m is 0 or an integer of 5 to 18, n is 0 or 1, the sum of l and m is the range of 8 to 20, X represents a hydrogen atom or $—PO_3MM'$ wherein M and M' may be the same or different and each is a hydrogen atom or a monovalent cation or both M and M' together form a divalent cation.

5,004,736

PROCEDURE FOR OBTAINING THE PREPARATION FOR THE TREATMENT OF THE DISEASE PSORIASIS: DRUG FOR THE TREATMENT OF PSORIASIS AND ITS APPLICATION

Pero Visnjic, Mose Pijade 3, 58300 Makarska, Yugoslavia

Continuation of Ser. No. 875,221, Jun. 17, 1986, abandoned. This application Jun. 23, 1989, Ser. No. 370,121
Claims priority, application Yugoslavia, Feb. 14, 1986, 221/86
Int. Cl.[5] A61K *31/62, 31/56*
U.S. Cl. 514—161 **2 Claims**

1. A process for preparing a medicinal ointment for the treatment of psoriasis, consisting of the steps of:

preparing a vehicle for a medicinal ointment by homogenizing the ingredients, melting at 150° C., and cooling to 85°–90° C., with stirring for 20 minutes,

emulsifying the vehicle with demineralized sterile water, sterilizing the resultant emulsion 30 minutes at 85°–90° C., cooling the emulsion to 60° C.,

adding 9-fluoro-11β,17,21-trihydroxy-16β-methyl-pregna-1,4-diene-3,20-dion-17,21-dipropionate and 6,9-difluoro-11,16,17,21-tetrahydroxy-pregna-1,4-diene-3,20-dion-21-acetate-16,17-acetonide dissolved in suitable sterile solvents to the emulsion, while stirring, said 9-fluoro-11β,17,21-trihydroxy-16β-methyl-pregna-1,4-diene-3,20-dion-17,21-dipropionate and, 6,9-difluoro-11,16,17,21-tetrahydroxy-pregna-1,4-diene-3,20-dion-21-acetate-16,17-acetonide being added in a ratio of 1:1; and then

adding the following ingredients, while stirring: gentamycin sulfate, vitamin A palmitate wherein the gentamycin sulfate is added in an amount equivalent to at least 35000 IU/100 g of the ointment, and wherein vitamin A palmitate is added in an amount equivalent to 30000 IU/100 g of the ointment, and 2,4-dihydroxy-N-(3-hydroxypropyl)-3,3-dimethylbutanamide, 0.5 g per 100 g of ointment; and then

adding salicylic acid at 7% by weight of the ointment; and homogenizing and cooling the resulting medicinal ointment.

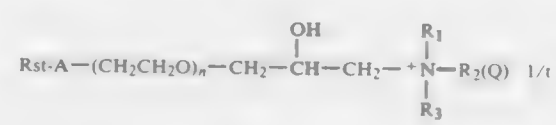
5,004,737

QUATERNARY AMMONIUM-SUBSTITUTED STEROL DERIVATIVES

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Filed Sep. 22, 1989, Ser. No. 411,411
Int. Cl.[5] A61K *31/575;* **C07J** *41/00*
U.S. Cl. 514—182 **6 Claims**

1. A quaternary ammonium-substituted sterol compound of the following formula (I):



(I)

wherein Q represents an anion of a strong inorganic acid, R_1 represents alkyl or a monounsaturated alkenyl group having up to 18 carbon atoms; R_2 and R_3, the same or different from each other, are methyl or ethyl groups; t is the valence of Q; A represents an oxygen atom; n is an integer of 0 to 25; and Rst represents a sterol selected from the group consisting of sitosterol, campesterol, stigmasterol, cholesterol, and lanosterol or a stanol obtained by the reduction of the double bond between carbon atoms 5 and 6 of said sterols.

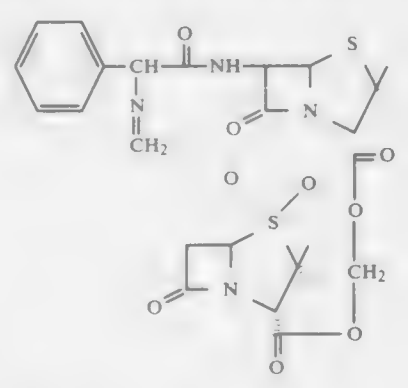
5,004,738

1,1-DIOXOPENICILLANOYL OXYMETHYL D-6-(α-(METHYLENEAMINO) PHENYLACETAMIDO)-PENICILLANATE AND A PROCESS FOR THE PREPARATION THEREOF

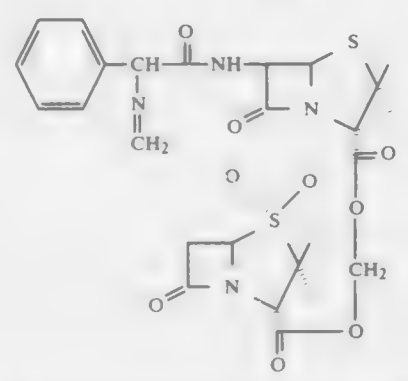
Young Sul Kim, Cosmos Mansion 1002, #302-62 Ichon-Dong, Yongsan-Ku, Seoul, Rep. of Korea

Filed Jul. 24, 1989, Ser. No. 383,435
Claims priority, application Rep. of Korea, Jun. 20, 1989, 89-8501
Int. Cl.[5] A61K *31/43;* **C07D** *499/08, 499/32*
U.S. Cl. 514—195 **8 Claims**

1. A pharmaceutical compound of 1,1-dioxopenicillanoyl oxymethyl-D-6-[α-(methyleneamino) phenylacetamido]-penicillanate or pharmaceutically acceptable salt thereof represented by the following formulas (I) and (I'):



(I)



(I')

wherein Me is hydrochloride, sulfuric acid, phosphoric acid, maleic acid, succinic acid, methanesulfonic acid, or p-toluenesulfonic acid.

6. The method for treating a bacterial infection in a mammal in need thereof which comprises administrating orally to said mammal an antibacterially effective amount of the pharmaceutical compound of claim 1.

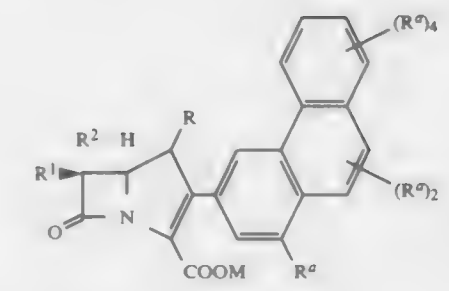
5,004,739

2-PHENANTHRENYL CARBAPENEM ANTIBACTERIAL AGENTS

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Filed Jun. 26, 1990, Ser. No. 544,286
Int. Cl.[5] C07D *481/04;* **A61K** *31/40*
U.S. Cl. 514—210 **13 Claims**

1. A compound of the formula:



(I)

wherein:

R is H or CH_3;

R^1 and R^2 are independently H, $CH_3—$, $CH_3CH_2—$, $(CH_3)_2CH—$, $HOCH_2—$, $CH_3CH(OH)—$, $(CH_3)_2C(OH)—$, $FCH_2CH(OH)—$, $F_2CHCH(OH)—$, $F_3CCH(OH)—$, $CH_3CH(F)—$, $CH_3CF_2—$, or $(CH_3)_2C(F)—$;

R^q is a member selected from the group consisting of—OH, $—OCH_3$, —CN, $—C(O)NH_2$, $—OC(O)NH_2$, CHO, $—OC(O)N(CH_{33\ 3})_2$, $—SO_2NH_2$, $—SO_2N(CH_3)_2$,

(a) a trifluoromethyl group: $—CF_3$;

(b) a halogen atom: —Br, —Cl, —F, or —I;

(c) C_1–C_4 alkoxy radical: $—OC_{1-4}$ alkyl, wherein the alkyl is optionally mono-substituted by R^q, where

R^j is a member selected from the group consisting of —OH, $—OCH_3$, —CN, $—C(O)NH_2$, $—OC(O)NH_2$, CHO, $—OC(O)N(CH_{33\ 3})_2$, $—SO_2NH_245$, $—SO_2N(CH_3)_2$, $—SOCH_3$, $—SO_2CH_3$, —F, $—CF_3$, $—COOM^a$ (where M^a is hydrogen, alkali metal, methyl or phenyl), tetrazolyl (where the point of attachment is the carbon atom of the tetrazole ring and one of the nitrogen atoms is mono-substituted by M^a as defined above) and $—SO_3M^b$ (where M^b is hydrogen or an alkali metal);

(d) a hydroxy group: —OH;

(e) a carbonyloxy radical: $—O(C═O)R^s$, where

R^s is C_{1-4} alkyl or phenyl, each of which is optionally mono-substituted by R^q as defined above;

(f) a carbamoyloxy radical: $—O(C═O)N(R^y)R^z$ where

R^y and R^z are independently H, C_{1-4} alkyl (optionally mono-substituted by R^q as defined above), together a 3- to 5-membered alkylidene radical to form a ring (optionally substituted with R^q as defined above) or together a 2- to 4-membered alkylidene radical, interrupted by —O—, —S—, —S(O)— or $—S(O)_2—$, to form a ring (where the ring is optionally mono-substituted with R^q as defined above);

(g) a sulfur radical: $—S(O)_n—R^s$ where n=0–2, and R^s is defined above;

(h) a sulfamoyl group: $—SO_2N(R^y)R^z$ where R^y and R^z are as defined above;

(i) azido: N_3

(j) a formamido group: $—N(R^t)(C═O)H$, where

R^t is H or C_{1-4} alkyl, and the alkyl thereof is optionally mono-substituted by R^q as defined above;

(k) a (C_1–C_4 alkyl)carbonylamino radical: $—N(R^t)(C═O)C_{1-4}$ alkyl, where R^t is as defined above, and the alkyl group is also optionally mono-substituted by R^q as defined above;

(l) a (C_1–C_4 alkoxy) carbonylamino radical: $—N(R^t)(C═O)OC_{1-4}$ alkyl, where R^t is as defined above, and the alkyl group is also optionally mono-substituted by R^q as defined above;

(m) a ureido group: $—N(R^t)(C═O)N(R^y)R^z$ where R^t, R^y and R^z are as defined above;

(n) a sulfonamido group: $—N(R^t)SO_2R^s$, where R^s and R^t are as defined above;

(o) a cyano group: —CN;

(p) a formyl or acetalized formyl radical: —(C═O)H or $—CH(OCH_3)_2$;

(q) (C_1–C_4 alkyl)carbonyl radical wherein the carbonyl is

acetalized: $-C(OCH_3)_2C_{1-4}$ alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;
(r) carbonyl radical: $-(C=O)R^x$, where R^x is as defined above;
(s) a hydroximinomethyl radical in which the oxygen or carbon atom is optionally substituted by a C_1–C_4 alkyl group: $-(C=NOR^z)R^y$ where R^y and R^z are as defined above, except they may not be joined together to form a ring;
(t) a (C_1–C_4 alkoxy) carbonyl radical: $-(C=O)OC_{1-4}$ alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;
(u) a carbamoyl radical: $-(C=O)N(R^y)R^z$ where R^y and R^z are as defined above;
(v) an N-hydroxycarbamoyl or N(C_1–C_4 alkoxy)carbamoyl radical in which the nitrogen atom may be additionally substituted by a C_1–C_4 alkyl group, $-(C=O)-N(OR^y)R^z$ where R^y and R^z are as defined above, except they may not be joined together to form a ring;
(w) a thiocarbamoyl group: $-(C=S)N(R^y)(R^z)$ where R^y and R^z are as defined above;
(x) carboxyl: $-COOM^b$, where M^b is as defined above;
(y) thiocyanate: —SCN;
(z) trifluoromethylthio: $-SCF_3$;
(aa) tetrazolyl, where the point of attachment is the carbon atom of the tetrazole ring and one of the nitrogen atoms is mono-substituted by hydrogen, an alkali metal or a C_1–C_4 alkyl optionally substituted by R^q as defined above;
(ab) an anionic function selected from the group consisting of: phosphono $[P(=O)(OM^b)_2]$; alkylphosphono $\{P(=O)(OM^b)-[O(C_1-C_4$ alkyl$)]\}$; alkylphosphinyl $[P(=O)(OM^b)-(C_1-C_4$ alkyl$)]$; phosphoramido $[P(=O)(OM^b)N(R^y)R^z$ and $P(=O)(OM^b)NHR^x]$; sulfino (SO_2M^b); sulfo (SO_3M^b); acylsulfonamides selected from the structures $CONM^bSO_2R^x$, $CONM^bSO_2N(R^y)R^z$, $SO_2NM^bCON(R^y)R^z$; and SO_2NM^bCN, where R^x is phenyl or heteroaryl, where heteroaryl is a monocyclic aromatic hydrocarbon group having 5 or 6 ring atoms, in which a carbon atom is the point of attachment, in which one of the carbon atoms has been replaced by a nitrogen atom, in which one additional carbon atom is optionally replaced by a heteroatom selected from O or S, and in which from 1 to 2 additional carbon atoms are optionally replaced by a nitrogen heteroatom, and where the phenyl and heteroaryl are optionally mono-substituted by R^q, as defined above; M^b is as defined above; and R^y and R^z are as defined above;
(ac) C_5–C_7 cycloalkyl group in which one of the carbon atoms in the ring is replaced by a heteroatom selected from O, S, NH or N(C_1–C_4 alkyl) and in which one additional carbon atom may be replaced by NH or N(C_1–C_4 alkyl), and in which at least one carbon atom adjacent to each nitrogen heteroatom has both of its attached hydrogen atoms replaced by one oxygen thus forming a carbonyl moiety and there are one or two carbonyl moieties present in the ring;
(ad) C_2–C_4 alkenyl radical, optionally mono-substituted by one of the substituents (a) to (ac) above and phenyl which is optionally substituted by R^q as defined above;
(ae) C_2–C_4 alkynyl radical, optionally mono-substituted by one of the substituents (a) to (ac) above;
(af) C_1–C_4 alkyl radical;
(ag) C_1–C_4 alkyl mono-substituted by one of the substituents (a)–(ac) above;
(ah) a 2-oxazolidinonyl moiety in which the point of attachment is the nitrogen atom of the oxazolidinone ring, the ring oxygen atom is optionally replaced by a heteroatom selected from —S— and NR^t (where R^t is as defined above) and one of the saturated carbon atoms of the oxazolidinone ring is optionally mono-substituted by one of the substituents (a) to (ag) above;

M is selected from:
(i) hydrogen;
(ii) a pharmaceutically acceptable esterifying group or removable carboxyl protecting group; or
(iii) an alkali metal or other pharmaceutically acceptable cation.

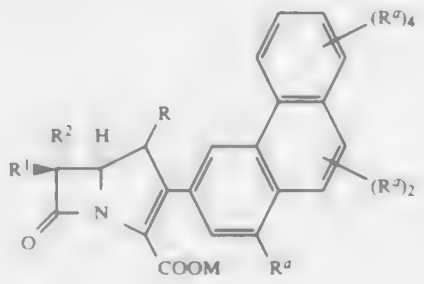
5,004,740

2-PHENANTHRENYL-CARBAPENEM ANTIBACTERIAL AGENTS

Frank P. Dininno, Old Bridge; Thomas N. Salzmann, North Plainfield, and Mark L. Greenlee, Rahway, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 26, 1990, Ser. No. 543,990
Int. Cl.[5] **C07D** *487/04;* **A61K** *31/40*
U.S. Cl. 514—210 **21 Claims**

1. A compound of the formula:


(I)

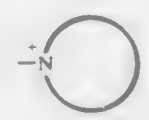
wherein:
R is H or CH_3;
R^1 and R^2 are independently H, CH_3—, CH_3CH_2—, $(CH_3)_2CH$—, $HOCH_2$—, $CH_3CH(OH)$—, $(CH_3)_2C(OH)$—, $FCH_2CH(OH)$—, $F_2CHCH(OH)$—, $F_3CCH(OH)$—, $CH_3CH(F)$—, CH_3CF_2—, or $(CH_3)_2C(F)$—;
R^q are independently selected from the group consisting of hydrogen and the radicals set out below, provided that one but not more than one R^q is selected from Type I substituents, the remaining non-hydrogen substituents being selected from Type II, and in total not more than four R^q radicals are other than hydrogen:

I.

(a)

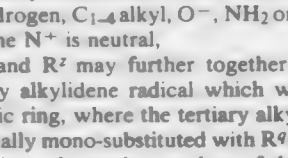


where
A is $(CH_2)_m$—Q—$(CH_2)_n$, where m is 0 to 6 and n is 1 to 6 and Q is a covalent bond, O, S, SO, SO_2, NH, $-SO_2NH-$, $-NHSO_2-$, —CONH—, —NHCO—, $-SO_2N(C_1-C_4$alkyl$)-$, $-N(C_{1-C4}$alkyl$)SO_2-$, $-CON(C_1-C_4$alkyl$)-$, $-N(C_{1-C4}$alkyl$)CO-$, —CH=CH—, —CO—, —OC(O)—, —C(O)O— or $N(C_{1-C4}$alkyl) and $(CH_2)_m$ is attached to the phenanthrenyl moiety;



is a 5- or 6-membered monocyclic heterocycle or an 8-, 9- or 10-membered bicylic heterocycle, the heterocycle containing a first nitrogen in an aromatic 5- or 6-membered first ring, with attachment of the heterocycle to A by way of said first nitrogen and said first nitrogen is quaternary by virtue of the attachment and ring bonds, with the first ring containing 0 or 1 of either O or S, with the first ring containing 0 to 3 additional nitrogen atoms, with the first ring optionally fused to a 3- or 4-membered moiety to form the optional second ring, with the the moiety containing at least one carbon atom, with the moiety containing 0 or 1 of either O or S, with the moiety containing 0 to 2 nitrogen atoms, and with the moiety being saturated or unsaturated and the second ring aromatic or non-aromatic;
R^c is R^q as defined under II below, hydrogen, or $-N-R^yR^z$ (where R^y and R^z are defined in II below), but independently selected from R^q and from each other if more than one R^c is present, and is attached to a carbon ring atom or a nitrogen heteroatom the valency of which is not satisfied by the ring bonds;

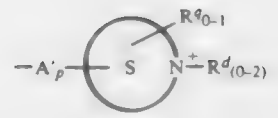
(b)



where



is a 5- or 6-membered monocyclic heterocycle or an 8-, 9- or 10-membered bicyclic heterocycle, the heterocycle containing a
first nitrogen in an aromatic 5- or 6-membered first ring, with said first nitrogen quaternary by virtue of a substituent R^d in addition to the ring bonds thereto, with said first nitrogen neutral in the absence of a substituent Rd, with attachment of the heterocycle to A′ by way of a carbon atom of a ring, with the first ring containing 0 or 1 of either O or S, with the first ring containing 0 to 2 additional nitrogen atoms, with the first ring optionally fused to a 3- or 4-membered moiety to form the optional second ring, with the moiety containing at least one carbon atom, with the moiety containing 0 or 1 of either O or S, with the moiety containing 0 to 2 nitrogen atoms, and with the moiety being saturated or unsaturated and the second ring aromatic or non-aromatic;
R^c is defined above;
R^d is hydrogen, NH_2, O^- or C_1–C_4alkyl (where the alkyl group is optionally mono-substituted with R^q as defined under IIc below);
A′ is $(CH_2)_m$—Q—$(CH_2)_n$, where m is 0 to 6 and n is 0 to 6, Q is given above, and when m and n are 0 then Q is not a covalent bond;
(c) $-A_p-N^+R^y(R^w)_{(0-1)}(R^z)$ where
R^y and R^z are as defined under II below,
R^y and R^z may further be together a C_2–C_4 alkylidene radical to form a ring (optionally mono-substituted with R^q as defined below) interrupted by $N(O)R^e$ or $N^+(R^e)_2$ (where R^e is hydrogen, C_1–C_4alkyl, or C_1–C_4alkyl substituted with R^q defined below),
R^w is hydrogen, C_{1-4} alkyl, O^-, NH_2 or absent in which case the N^+ is neutral,
R^w, R^y and R^z may further together form a C_5–C_{10} tertiary alkylidene radical which with N^+ forms a bicyclic ring, where the tertiary alkylidene radical is optionally mono-substituted with R^q as defined below and where the tertiary carbon of the tertiary alkylidene radical is optionally replaced with nitrogen, N^+R^e (where R^e is defined above), or $N^+—O^-$,
p is 0 or 1, and
A is as defined above;
(d)



where



is a 5- or 6-membered monocyclic heterocycle or an 8-, 9- or 10-membered bicyclic heterocycle, the heterocycle containing a
first nitrogen in a first ring, with the first ring saturated or unsaturated and non-aromatic, with the first nitrogen quaternary by virtue of one or two substituents R^d in addition to the ring bonds thereto, with the first nitrogen alternatively neutral by virtue of zero or one substituents R^d in addition to the ring bonds thereto, with attachment of the heterocycle to A′ by way of a carbon atom or non-quaternary nitrogen atom of a ring, with the first ring containing in addition to carbon and the first nitrogen 0 to 1 of a member selected from the group consisting of the non-quaternary nitrogen of attachment, O, S, S(O), $S(O)_2$ and NR^e where R^e is defined above, with the first ring optionally fused to a 2-, 3- or 4-membered moiety to form the optional second ring, with the moiety optionally containing in addition to carbon the non-quaternary nitrogen of attachment, and with the moiety saturated or unsaturated and the second ring non-aromatic;
R^d is defined above and where more than one R^d is present on a nitrogen, at least one R^d is hydrogen or C_1–C_4alkyl;
A′ is defined above; and
p is defined above;
R^q is defined below;

II.

(a) a trifluoromethyl group: $-CF_3$;
(b) a halogen atom: —Br, —Cl, —F, or —I;
(c) C_1–C_4 alkoxy radical: $-OC_{1-4}$ alkyl, wherein the alkyl is optionally mono-substituted by R^q, where
R^q is a member selected from the group consisting of —OH, $-OCH_3$, —CN, $-C(O)NH_2$, $-OC(O)NH_2$, CHO, $-OC(O)N(CH_3)_2$, $-SO_2NH_2$, $-SO_2N(CH_3)_2$, $-SOCH_3$, $-SO_2CH_3$, —F, $-CF_3$, $-COOM^a$ (where M^a is hydrogen, alkali metal, methyl or phenyl), tetrazolyl (where the point of attachment is the carbon atom of the tetrazole ring and one of the nitrogen atoms is mono-substituted by M^a as defined above) and $-SO_3M^b$ (where M^b is hydrogen or an alkali metal);
(d) a hydroxy group: —OH;
(e) a carbonyloxy radical: $-O(C=O)R^z$, where
R^z is C_{1-4} alkyl or phenyl, each of which is optionally mono-substituted by R^q as defined above;
(f) a carbamoyloxy radical: $-O(C=O)N(R^y)R^z$ where
R^y and R^z are independently H, C_{1-4} alkyl (optionally mono-substituted by R^q as defined above), together a 3- to 5-membered alkylidene radical to form a ring (optionally substituted with R^q as defined above) or together a 2- to 4-membered alkylidene radical, interrupted by —O—, —S—, —S(O)— or $-S(O)_2-$, to

form a ring (where the ring is optionally mono-substituted with Rq as defined above);
(g) a sulfur radical: $-S(O)_n-R^z$ where n=0–2, and R^z is as defined above;
(h) a sulfamoyl group: $-SO_2N(R^y)R^z$ where R^y and R^z are as defined above;
(i) azido: N_3
(j) a formamido group: $-N(R^t)(C=O)H$, where R^t is is H or C_{1-4} alkyl, and the alkyl thereof is optionally mono-substituted by R^q as defined above;
(k) a (C_1–C_4 alkyl)carbonylamino radical: $-N(R^t)(C=O)C_{1-4}$ alkyl, where R^t is as defined above, and the alkyl group is also optionally mono-substituted by R^q as defined above;
(l) a (C_1–C_4 alkoxy) carbonylamino radical: $-N(R^t)(C=O)OC_{1-4}$ alkyl, where R^t is as defined above, and the alkyl group is also optionally mono-substituted by R^q as defined above;
(m) a ureido group: $-N(R^t)(C=O)N(R^y)R^z$ where R^t, R^y and R^z are as defined above;
(n) a sulfonamido group: $-N(R^t)SO_2R^s$, where R^s and R^t are as defined above;
(o) a cyano group: —CN;
(p) a formyl or acetalized formyl radical: —(C=O)H or $-CH(OCH_3)_2$;
(q) (C_1–C_4 alkyl)carbonyl radical wherein the carbonyl is acetalized: $-C(OCH_3)_2C_{1-4}$ alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;
(r) carbonyl radical: $-(C=O)R^s$, where R^s is as defined above;
(s) a hydroximinomethyl radical in which the oxygen or carbon atom is optionally substituted by a C_1–C_4 alkyl group: $-(C=NOR^z)R^y$ where R^y and R^z are as defined above, except they may not be joined together to form a ring;
(t) a (C_1–C_4 alkoxy)carbonyl radical: $-(C=O)OC_{1-4}$ alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;
(u) a carbamoyl radical: $-(C=O)N(R^y)R^z$ where R^y and R^z are as defined above;
(v) an N-hydroxycarbamoyl or $N(C_1$–C_4 alkoxy)carbamoyl radical in which the nitrogen atom may be additionally substituted by a C_1–C_4 alkyl group: $-(C=O)-N(OR^y)R^z$ where R^y and R^z are as defined above, except they may not be joined together to form a ring;
(w) a thiocarbamoyl group: $-(C=S)N(R^y)(R^z)$ where R^y and R^z are as defined above;
(x) carboxyl: $-COOM^b$, where M^b is as defined above;
(y) thiocyanate: —SCN;
(z) trifluoromethylthio: $-SCF_3$;
(aa) tetrazolyl, where the point of attachment is the carbon atom of the tetrazole ring and one of the nitrogen atoms is mono-substituted by hydrogen, an alkali metal or a C_1–C_4 alkyl optionally substituted by R^q as defined above;
(ab) an anionic function selected from the group consisting of: phosphono [$P(=O)(OM^b)_2$]; alkylphosphono {$P(=O)(OM^b)$-[$O(C_1$–C_4 alkyl)]}; alkylphosphinyl [$P(=O)(OM^b)$-(C_1–C_4alkyl)]; phosphoramido [$P(=O)(OM^b)N(R^y)R^z$ and $P(=O)(OM^b)NHR^x$]; sulfino (SO_2M^b); sulfo (SO_3M^b); acylsulfonamides selected from the structures $CONM^bSO_2R^x$, $CONM^bSO_2N(R^y)R^z$, $SO_2MN^bCON(R^y)R^z$; and SO_2NM^bCN, where
R^x is phenyl or heteroaryl, where heteroaryl is a monocyclic aromatic hydrocarbon group having 5 or 6 ring atoms, in which a carbon atom is the point of attachment, in which one of the carbon atoms has been replaced by a nitrogen atom, in which one additional carbon atom is optionally replaced by a heteroatom selected from O or S, and in which from 1 to 2 additional carbon atoms are optionally replaced by a nitrogen heteroatom, and where the phenyl and heteroaryl are optionally mono-substituted by R^q, as defined above; M^b is as defined above; and R^y and R^z are as defined above;
(ac) C_5–C_7 cycloalkyl group in which one of the carbon atoms in the ring is replaced by a heteroatom selected from O, S, NH or $N(C_1$–C_4 alkyl) and in which one additional carbon atom may be replaced by NH or $N(C_1$–C_4 alkyl), and in which at least one carbon atom adjacent to each nitrogen heteroatom has both of its attached hydrogen atoms replaced by one oxygen thus forming a carbonyl moiety and there are one or two carbonyl moieties present in the ring;
(ad) C_2–C_4 alkenyl radical, optionally mono-substituted by one of the substituents (a) to (ac) above and phenyl which is optionally substituted by R^q as defined above;
(ae) C_2–C_4 alkynyl radical, optionally mono-substituted by one of the substituents (a) to (ac) above;
(af) C_1–C_4 alkyl radical;
(ag) C_1–C_4 alkyl mono-substituted by one of the substituents (a)–(ac) above;
(ah) a 2-oxazolidinonyl moiety in which the point of attachment is the nitrogen atom of the oxazolidinone ring, the ring oxygen atom is optionally replaced by a heteroatom selected from —S— and NR^t (where R^t is as defined above) and one of the saturated carbon atoms of the oxazolidinone ring is optionally mono-substituted by one of the substituents (a) to (ag) above;
M is selected from:
(i) hydrogen;
(ii) a pharmaceutically acceptable esterifying group or removable carboxyl protecting group;
(iii) an alkali metal or other pharmaceutically acceptable cation; or
(iv) a negative charge which is balanced by a positively charged group.

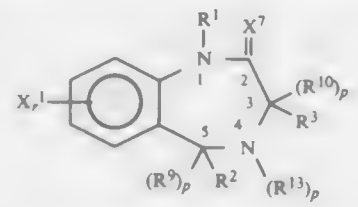
5,004,741

METHODS OF ANTAGONIZING CCK OR GASTRIN WITH BENZODIAZEPINE ANALOGS

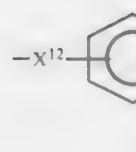
Ben E. Evans, Lansdale; Mark G. Bock, and Roger M. Freidinger, both of Hatfield, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 26,420, Mar. 16, 1987, Pat. No. 4,820,834, which is a continuation-in-part of Ser. No. 741,972, Jun. 10, 1985, abandoned, which is a continuation-in-part of Ser. No. 705,272, Feb. 25, 1985, abandoned, which is a continuation-in-part of Ser. No. 624,854, Jun. 26, 1984, abandoned. This application Nov. 9, 1988, Ser. No. 269,212
Int. Cl.[5] A61K *31/55*
U.S. Cl. 514—221 **15 Claims**

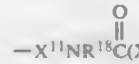
1. A method of antagonizing the binding of cholecystokinins to cholecystokinin receptors or antagonizing the binding of gastrin to gastrin receptors which comprises contacting said cholecystokinin receptors or said gastrin receptors, respectively, with a compound represented by the formula:



wherein
R^1 is H, C_1–C_6 linear or branched alkyl, loweralkenyl, lower alkynyl, $-X^{12}COOR^6$, $-X^{11}$-cycloloweralkyl, $-X^{12}NR^4R^5$, $X^{12}CONR^4R^5$, $-X^{12}CN$, or $-X^{11}CX_3^{10}$;
R^2 is H, loweralkyl, substituted or unsubstituted phenyl (wherein the substituents may be 1 or 2 or halo, loweralkyl, loweralkoxy, loweralkylthio, carboxyl, carboxyloweralkyl, nitro, $-CF_3$, or hydroxy), 2-, 3-, 4-pyridyl



$-X^{12}SOCH_3$, $-X^{12}SO_2CH_3$, or $-X^{12}COOR^6$;
R^3 is $-X^{11}NR^{18}(CH_2)_qR^{16}$,



$-X^{11}NR^{18}C(X^{11})_qR^7$, $-X^{11}CX^9X^{11}R^7$

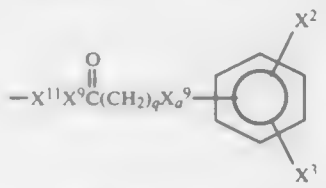
$NH(CH_2)_{2-3}NHR^7$, $-NH(CH_2)_{2-3}NHCOR^7$,



$-X^{11}X^9CCHCH_2R^7$,
$NHCOOR^{14}$,



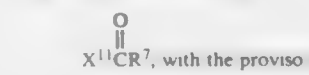
$-X^{11}X^9CX_a{}^9(X^{11})_nR^7$, $-X^{11}X^9C(=O)-CH(NH_2)-CH_2R^7$,



$-X^{11}X^9C(=O)(CH_2)_qX_a{}^9$



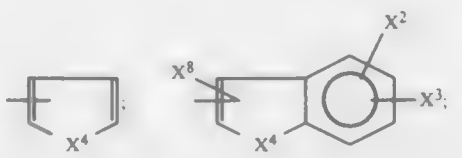
$-X^{11}NR^{18}SO_2(CH_2)_qR^7$ or



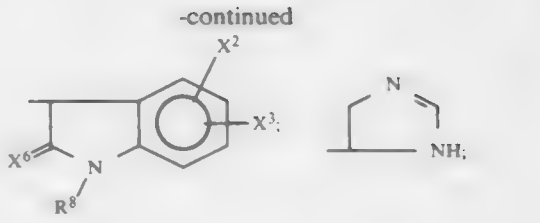
$X^{11}CR^7$, with the proviso that R^{10} is not

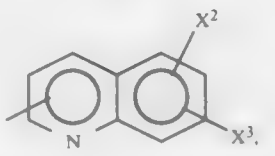
H or $-CH_3$ when R^3 is $X^{11}CR^7$;

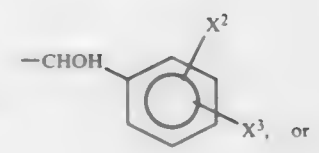
R^4 and R^5 are independently R^6 or in combination with the N of the NR^4R^5 group form an unsubstituted or mono or disubstituted, saturated or unsaturated, 4–7 membered heterocyclic ring or benzofused 4–7 membered heterocyclic ring, wherein said heterocyclic ring or said benzofused heterocyclic ring may contain a second heteroatom selected from O and NCH_3 and the substituent(s) is/are independently selected from C_{1-4} alkyl;
R^6 is H, loweralkyl, cycloloweralkyl, substituted or unsubstituted phenyl, or substituted or unsubstituted phenylloweralkyl wherein the phenyl or phenyloweralkyl substituents may be 1 or 2 of halo, loweralkyl, loweralkoxy, nitro, or CF_3;
R^7 is α- or β-naphthyl, substituted or unsubstituted phenyl (wherein the substituents may be 1 or 2 of halo, $-NO_2$—, —OH, $-X^{11}NR^4R^5$, loweralkyl, CF_3, CN, SCF_3, C≡CH, CH_2SCF_3, O $OCCH_3$, $OCHF_2$, SH, SPh, PO_3H, loweralkoxy, or loweralkylthio, COOH); 2-, 3-, 4-pyridyl,

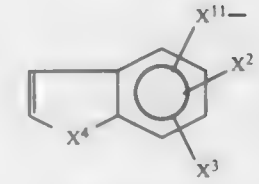


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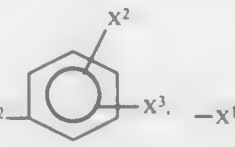


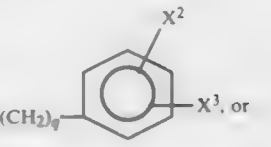




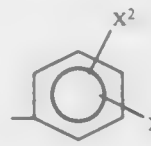


R^8 is H, loweralkyl, cycloloweralkyl, $-X^{12}CONH_2$, $-X^{12}COOR^6$, $-X^{12}$-cycloloweralkyl, $-X^{12}NR^4R^5$,





R^9 and R^{10} are independently H, —OH, or $-CH_3$;
R^{11} and R^{12} are independently loweralkyl or cycloloweralkyl;
R^{13} is H, loweralkyl, acyl, O, or cycloloweralkyl;
R^{14} is loweralkyl or phenylloweralkyl;
R^{15} is H, loweralkyl,



X^3, or $-NH_2$;

R^{16} is alpha and beta napthyl or 2-indolyl;
R^{18} is H, or loweralkyl;
p is 0 when its adjacent - - - is unsaturated and 1 when its adjacent - - - is saturated except that when R^{13} is 0, p=1 and is unsaturated;
q is 0–4;
r is 1 or 2;
X^1 is H, $-NO_2$, CF_3, CN, OH, loweralkyl, halo, loweralkylthio, loweralkoxy, $-X^{11}COOR^6$, or $-X^{11}NR^4R^5$;
X^2 and X^3 are independently H, —OH, $-NO_2$, halo, loweralkylthio, loweralkyl, or loweralkoxy;
X^4 is S, O, CH_2, or NR^8;
X^5 is H, CF_3, CN, $-COOR^6$, NO_2, or halo;
X^6 is O or HH; X^7 is O, S, HH, or NR^{15} with the proviso that

X^7 can be NR^{15} only when R^1 is not H;
X^8 is H, loweralkyl; X^9 and X_a^9 are independently NR^{18} or O;
X^{10} is F, Cl, or Br;
X^{11} is absent or C_{1-4} linear or branched alkylidene;
X^{12} is C_{1-4} linear or branched alkylidene; - - - is a saturated or unsaturated bond; with the proviso that when X^1 is Cl in the seven position, R^1 is H and R^2 is unsubstituted phenyl, then R^3 is not $NHCO(CH_2)_2C_6H_5$ or $NHCOC_6H_5$
and the pharmaceutically acceptable salts thereof

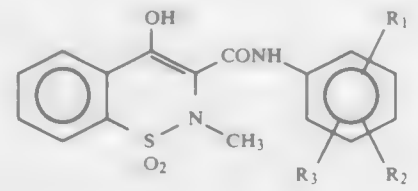
5,004,742

BENZOTHIAZINE-1,1-DIOXIDE DERIVATIVES

Toshio Satoh; Yasunori Niiro; Hisao Kakegawa, and Hitoshi Matsumoto, all of Tokushima, Japan, assignors to Nippon Hypox Laboratories Incorporated, Tokyo, Japan

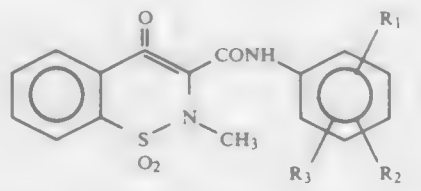
Filed Aug. 14, 1989, Ser. No. 392,899
Int. Cl.[5] **A61K** *31/54;* **C07D** *279/02*
U.S. Cl. 514—226.5 **6 Claims**

1. A benzothiazine-1,1-dioxide derivative represented by the formula (I):



(I)

or the formula (II):



(II)

[in the formulas (I) and (II), R_1 is a carboxyl group or a tetrazoyl group, and R_2 and R_3, which can be the same or different, are each an atom or substituent selected from the group consisting of a hydrogen atom, a halogen atom, a hydroxyl group, a nitro group, a cyano group, a trifluoromethyl group, a mercapto group, a lower alkyl group, a lower alkoxy group, a lower alkylcarbonyl group, a lower alkylcarbonyloxy group and a lower tioalkoxy group], or a pharmacologically acceptable salt thereof.

3. A pharmaceutical composition comprising, as the active hyaluronidase-inhibiting ingredient, an effective amount of a benzothiazine-1,1-dioxide derivative or a pharmacologically acceptable salt thereof as defined in claim 1 together with a pharmaceutically acceptable carrier or diluent.

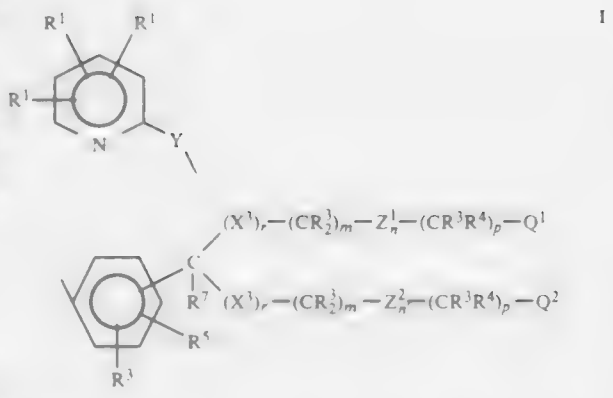
5,004,743

PYRIDYL STYRENE DIALKANOIC ACIDS AS ANTI-LEUKOTRIENE AGENTS

Robert N. Young, Senneville; Robert Zamboni, Longueuil, and Jacques Y. Gauthier, Laval, all of Canada, assignors to Merck Frosst Canada, Inc., Kirkland, Canada

Filed Nov. 25, 1987, Ser. No. 125,637
Int. Cl.[5] **C07D** *211/72, 211/70, 211/68, 279/10*
U.S. Cl. 514—227.8 **10 Claims**

1. A compound of the formula:

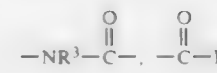


I

wherein:
R^1 is H, halogen, C_1–C_8 alkyl, C_2–C_8 alkenyl, C_2–C_8 alkynyl, $—CF_3$, $—SR^2$, $—S(O)R^2$, $—S(O)_2R^2$, $—NR^3R^3$, $—OR^3$, $—COOR^3$, $—(C═O)R^3$, $—C(OH)R^3R^3$, —CN, $—NO_2$, $—N_3$, substituted or unsubstituted phenyl, substituted or unsubstituted benzyl, substituted or unsubstituted 2-phenethyl, or substituted or unsubstituted pyridyl;
R^2 is C_1–C_8 alkyl, C_2–C_8 alkenyl, C_2–C_8 alkynyl, $—CF_3$, substituted or unsubstituted phenyl substituted or unsubstituted benzyl, or substituted or unsubstituted 2-phenethyl;
R^3 is H or R^2;
R^4 is H, halogen. $—NO_2$, —CN, $—OR^3$, $—SR^3$, NR^3R^3, or C_1–C_8 alkyl;
CR^3R^4 may be the radical of a naturally occurring amino acid selected from the group consisting of alanine, asparagine, aspartic acid, arginine, cysteine, glutamic acid, glutamine, glycine, histidine, isoleucine, leucine, lysine, methionine, phenylalanine, proline, serine, threonine, tryptophan, tyrosine and valine;
R^5 is H, halogen, $—NO_2$, $—N_3$, —CN, $—SR^2$, $—NR^3R^3$, $—OR^3$, C_1–C_8 alkyl, or $—(C═O)R^3$;
R^6 is $—CH_2CONR^{12}R^{12}$;
R^7 is H or C_1–C_4 alkyl;
R^{10} is $—SR^{11}$, $—OR^{12}$, or $—NR^{12}R^{12}$;
R^{11} is C_1–C_6 alkyl, $—(C═O)R^{14}$, unsubstituted phenyl, or unsubstituted benzyl;
R^{12} is H, R^{11}, or two R^{12} groups joined to the same N may form pyrrolidine, piperidine, morpholine, thiamorpholine, piperazine, or N-methylpiperazine;
R^{13} is C_1–C_8 alkyl, C_2–C_8 alkenyl, C_2–C_8 alkynyl, $—CF_3$, or unsubstituted phenyl, benzyl, or 2-phenethyl;
R^{14} is H or R^{13};
R^{15} is R^3 or halogen;
R^{16} is H, C_1–C_4 alkyl, or OH;
m and m′ are independently 0–8;
n and n′ are independently 0 or 1;
p and p′ are independently 0–8;
m+n+p is 1–10 when X^2 is O, S, S(O), or $S(O)_2$;
m+n+p is 0–10 when X^2 is CR^3R^{16};
m′+n′+p′ is 1–10 when X^3 is O, S, S(O), or $S(O)_2$;
m′+n′+p′ is 0–10 when X^3 is CR^3R^{16};
r is 0 or 1 when Z^1 is HET ($—R^3$, $—R^5$);
r is 1 when Z^1 is $—CONR^3$;
r′ is 0 or 1 when Z^2 is HET($—R^3$,$—R^5$);
r′ is 1 when Z^2 is $CONR^3$;
s is 0–3;
Q^1 and Q^2 are independently $—COOR^3$, tetrazole, $—COOR^6$, $—CONHS(O)_2R^{13}$, —CN, $—CONR^{12}R^{12}$, —CHO, $—CH_2OH$, $—COCH_2OH$, or $—NHS(O)_2R^{13}$;
X^1 is O, S, $—S(O)—$, $—S(O)_2—$, $—NR^3$, or $—CR^3R^3—$;
X^2 and X^3 are independently O, S, S(O), $S(O)_2$, or CR^3R^{16};
Y is $—CR^3═CR^3—$, $—C═C—$, $—CR^3R^3—X^1—$, $—X^1—CR^3R^3—$, $—CR^3R^3—X^1—CR^3R^3—$,



C═O.



O, S, or NR^3;
Z^1 and Z^2 are independently $—CONR^3—$or $—HET(—R^3-,—R^5)—$;
HET is



substituted phenyl, benzyl, 2-phenethyl, or pyridyl means 1 or 2 substituents on the aromatic ring selected from C_1–C_6 alkyl, R^{10}, NO_2, halogen. $—COR^7$, $—COR^{10}$, SCF_3, CN, and CF_3;
and the pharmaceutically acceptable salts thereof.

6. A method of preventing the synthesis, the action, or the release of SRS-A or leukotrienes in a mammal which comprises administering to said mammal an effective amount of a compound of claim 1.

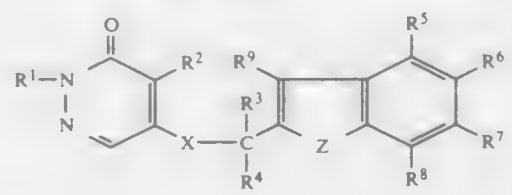
5,004,744

PYRIDAZINONES AS PESTICIDES

Joachim Weissmüller, Monheim; Klaus-Günther Tietjen, Langenfeld; Wilhelm Stendel, Wuppertal, and Ulrike Wachendorff-Neumann, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 22, 1989, Ser. No. 440,544
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1988, 3841850; Jul. 18, 1989, 3923659
Int. Cl.[5] **A01N** *43/58;* **C07D** *401/00, 237/00*
U.S. Cl. 514—247 **7 Claims**

1. A substituted pyridazinone of the formula



(I)

in which
R^1 represents straight-chain or branched alkyl having 1 to 8 carbon atoms; or represents straight-chain or branched halogenoalkyl having 1 to 6 carbon atoms and 1 to 13 identical or different halogen atoms, or represents cycloalkyl which has 3 to 7 carbon atoms or cycloalkylalkyl which has 3 to 7 carbon atoms in the cycloalkyl moiety and 1 to 4 carbon atoms in the straight-chain or branched alkyl moiety, each of which is optionally substituted on the cycloalkyl moiety by at least one substituent selected from the group consisting of alkyl having 1 to 4 carbon atoms and halogen; or represents aralkyl which has 6 to 10 carbon atoms in the aryl moiety and 1 to 4 carbon atoms in the straight-chain or branched alkyl moiety and which is optionally substituted on the aryl by at least one radical selected from the group consisting of halogen, cyano, nitro, in each case straight-chain or branched alkyl, alkoxy or alkylthio, each of which has 1 to 4 carbon atoms, or in each case straight-chain or branched halogenoalkyl, halogenoalkoxy or halogenoalkylthio, each of which has 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms,
R^2 represents fluorine, chlorine, bromine or iodine, or represents straight-chain or branched alkyl having 1 to 4 carbon atoms,
R^3 and R^4 independently of one another each represents hydrogen, or represents straight-chain or branched alkyl having 1 to 4 carbon atoms,
R^5, R^6, R^7, R^8 and R^9 independently of one another each represents hydrogen or halogen or represent in each case straight-chain or branched alkyl, alkoxy or alkylthio, each of which has 1 to 4 carbon atoms, or represent in each case straight-chain or branched halogenoalkyl, halogenoalkoxy or halogenoalkylthio, each of which has 1 to 4 carbon atoms and each of which has 1 to 9 identical or different halogen atoms,
X represents oxygen or sulphur and
Z represents a radical of the formula $—CH═CH—$, $—CH_2—O—$, —O— or —S—.

7. A method of combating pests which comprises applying thereto or to a habitat from which it is desired to exclude them a pesticidally effective amount of a compound according to claim 1.

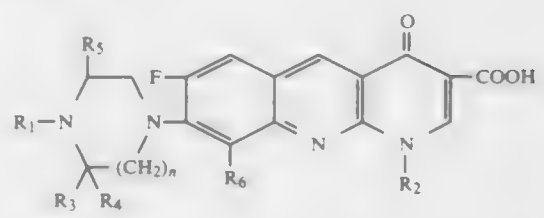
5,004,745

BENZO[1,8]NAPHTHYRIDINE DERIVATIVES, THEIR PREPARATION AND THE COMPOSITIONS WHICH CONTAIN THEM

Michel Antoine, Paris; Michel Barreau, Montgeron; Jean-Francois Desconclois, Paris; Philippe Girard, Arpajon, and Guy Picaut, Chevilly Larue, all of France, assignors to Laboratoire Roger Bellon, Seine, France

Filed Jan. 16, 1990, Ser. No. 465,483
Claims priority, application France, Jan. 16, 1989, 89 00430; Jul. 28, 1989, 89 10218
Int. Cl.[5] **A61K** *31/495, 31/395;* **C07D** *401/14*
U.S. Cl. 514—254 **8 Claims**

1. A benzo(b)(1,8)naphthyridine compound, comprising the formula:



wherein,
R_1 represents a hydrogen atom or an alkyl or hydroxyalkyl radical,
R_2 represents a hydrogen atom or an alkyl, fluoroalkyl, cycloalkyl, alkoxy or alkylamino radical,
R_3 represents an alkyl radical, and
R_4 and R_5 are different and represent a hydrogen atom or an alkyl radical, or
R_3 represents a hydrogenation or an alkyl or cycloalkyl radical and
R_4 and R_5 are hydrogen atoms,
R_6 represents a hydrogen or fluorine atom and n is equal to 1 or 2,
the alkyl radicals containing 1 to 4 carbon atoms in a straight or branched chain and the cycloalkyl radicals containing 3 to 6 carbon atoms, or a pharmaceutically acceptable metal salt thereof, its addition salts with nitrogenous bases or its acid

addition salts as well as its hydrated forms and, where appropriate, its isomers and their mixtures.

8. A pharmaceutical composition comprising an effective amount of at least one compound according to claim 1, in the pure form or in combination with one or more compatible diluents or adjuvants.

5,004,746

ANTI-RETROVIRAL CASTANOSPERMINE ESTERS

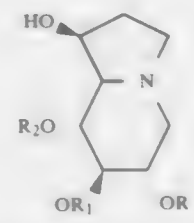
Paul S. Liu; Sai P. Sunkara, both of Cincinnati, and Terry L. Bowlin, Maineville, all of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed Sep. 29, 1987, Ser. No. 102,070

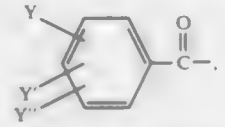
Int. Cl.[5] A61K *31/44*

U.S. Cl. 514—299 28 Claims

1. A method of treating a retroviral infection in a patient in need thereof which comprises administering to the patient an anti-retrovirally effective amount of a castanospermine ester of the formula:



wherein R, R_1 and R_2 are each independently hydrogen, $C_{1\text{-}10}$ alkanoyl, cyclohexanecarbonyl, $C_{1\text{-}6}$ alkoxyacetyl,



naphthalenecarbonyl optionally substituted by methyl or halogen; phenyl($C_{2\text{-}6}$ alkanoyl) wherein the phenyl is optionally substituted by methyl or halogen; cinnamoyl; pyridinecarbonyl optionally substituted by methyl or halogen; dihydropyridine carbonyl optionally substituted by C_1-C_{10} alkyl; thiophenecarbonyl optionally substituted by methyl or halogen; or furancarbonyl optionally substituted by methyl or halogen;

Y is hydrogen, $C_{1\text{-}4}$ alkyl, $C_{1\text{-}4}$ alkoxy, halogen, trifluoromethyl, $C_{1\text{-}4}$ alkylsulfonyl, $C_{1\text{-}4}$ alkylmercapto, cyano or dimethylamino; Y′ is hydrogen $C_{1\text{-}4}$ alkyl $C_{1\text{-}4}$ alkoxy, halogen or it is combined with Y to give 3,4-methylenedioxy; Y″ is hydrogen, C_{104} alkyl, $C_{1\text{-}4}$ alkoxy or halogen; with R, R_1 and R_2 being selected in such a way that at least one of them, but not more than two of them, is hydrogen; or a pharmaceutically acceptable salt thereof.

5,004,747

ISOQUINOLINONES

Michael J. Ashton; Andrew W. Bridge, both of Chelmsford; Robert K. Chambers, Little Waltham; Donald I. Dron, Upminster; Garry Fenton, Brentwood; Neil V. Harris, Tilbury; David J. Lythgoe, Gidea Park; Ian M. McFarlane, Dagenham; Christopher G. Newton, Chelmsford; David Riddell, Billericay; Christopher Smith, Benfleet; Keith A. J. Stuttle, Rochford, and Malcolm P. Toft, Romford, all of England, assignors to May & Baker Limited, Dagenham, England

Continuation of Ser. No. 302,389, Jan. 26, 1989, abandoned. This application Mar. 15, 1990, Ser. No. 494,956

Claims priority, application United Kingdom, Jan. 27, 1988, 8801772; Aug. 12, 1988, 8819221

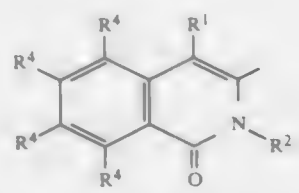
Int. Cl.[5] A61K *31/47*; C07D *405/06*

U.S. Cl. 514—309 17 Claims

1. An isoquinolinone derivative of the formula:

$$A—X—R^3 \quad (I)$$

wherein A represents a group of the formula:

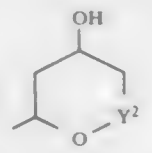


(II)

wherein R^1 and R^2, which may be the same or different, each represents a cycloalkyl group containing from 3 to 8 carbon atoms, or represents a straight- or branched-chain alkyl, alkenyl or alkynyl group containing up to 6 carbon atoms, which may be substituted by up to 3 halogen atoms or by a cycloalkyl group containing from 3 to 8 carbon atoms, or represents an optionally substituted aryl or heteroaryl group, and the symbols R^4 may be the same or different and each represents a hydrogen or halogen atom or represents an optionally substituted straight- or branched-chain alkyl, alkenyl or alkynyl group containing up to 6 carbon atoms, or an optionally substituted aryl or heteroaryl group or a group of the formula R^6O— wherein R^6 represents a straight- or branched-chain alkyl group containing up to 6 carbon atoms, an aryl or an arylalkyl group containing 1 or 2 carbon atoms in the alkyl moiety, X represents an ethylene or vinylene group, R^3 represents a group of the formula:

$$—Y^1—CH_2—CH(OH)—CH_2—COOR^5 \quad (III)$$

wherein Y^1 represents a carbonyl or hydroxymethylene group or a group of the formula $—C(OR)_2—$ wherein the symbols R each represent a branched or unbranched alkyl group containing up to 6 carbon atoms or together represent a branched or unbranched alkylene chain containing 2 to 5 carbon atoms and R^5 represents a hydrogen atom or an optionally substituted alkyl group containing up to 6 carbon atoms, or R^3 represents a lactol or lactone ring of the formula:



(IV)

wherein Y^2 represents a carbonyl or hydroxymethylene group, or a pharmaceutically acceptable salt thereof when R^5 represents a hydrogen atom.

17. A pharmaceutical composition useful in the treatment of hypercholesterolaemic and hyperlipoproteinaemic states, of atherosclerosis and associated conditions and of fungal infections which comprises, as active ingredient, an effective amount of an isoquinolinone derivative of general formula I as defined in claim 1, or a pharmaceutically acceptable salt thereof, in association with a pharmaceutically acceptable carrier or coating.

5,004,748

SUBSTITUTED PYRIDINE-2,4-DICARBOXYLIC ACID DERIVATIVES AND MEDICAMENTS BASED ON THESE COMPOUNDS

Ekkehard Baader, Taunus; Martin Bickel, Bad Homburg; Dietrich Brocks, Wiesbaden; Volkmar Günzler, Marburg-Cappel; Stephan Henke, Bad Soden am Taunus, and Hartmut Hanauske-Abel, Dexheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

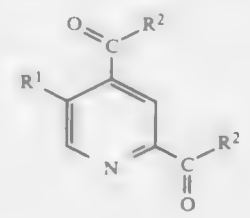
Filed Mar. 4, 1988, Ser. No. 164,406

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1987, 3707429

Int. Cl.[5] A61K *31/44*; C07D *213/79*

U.S. Cl. 514—350 6 Claims

1. A substituted pyridine-2,4-dicarboxylic acid derivative of the formula I



(I)

in which:

R^1 is a substituent of the formula $—OR^3$, or $—N(R^3)_2$, in which R^3 is hydrogen or C_1-C_9-alkyl, C_1-C_9-alkenyl, C_1-C_9-alkynyl or C_1-C_9-alkylcarbonyl, the radicals thereof being optionally mono- or disubstituted by halogen, hydroxyl, nitro, cyano, amino, C_1-C_4-alkoxy, carboxyl, C_1-C_4-alkoxycarbonyl, C_1-C_4-alkylcarbonyloxy or C_1-C_4-alkyl-or C_1-C_4-dialkyl-amino, or optionally substituted by phenyl, naphthyl, thienyl, furyl, pyrrolyl or pyridyl, the aryl or heteroaryl radicals being optionally monosubstituted by halogen, carboxyl, amino, C_1-C_4-alkyl- or C_1-C_4-dialkylamino or hydroxyl, and the two substituents R^3 in $—N(R^3)_2$ being the same or different, and

R^2 denotes a substituent of the formula $—OR^4$ in which R^4 denotes hydrogen or C_1-C_{12}-alkyl, which is optionally mono- or disubstituted by halogen, hydroxyl, cyano, carboxyl, C_1-C_4-alkoxy, C_1-C_4-alkoxycarbonyl, C_1-C_4-alkylcarbonyloxy, or C_1-C_4-alkyl- or C_1-C_4-dialkylamino, or is optionally substituted by phenyl, which is optionally mono-, di- or trisubstituted by halogen, C_1-C_4-alkyl or C_1-C_4-alkoxy, the substituents being the same or different in the case of polysubstitution, or

R^4 denotes cyclohexyl, which is optionally benzo-fused, or

R^4 denotes phenyl, naphthyl, thienyl, furyl, pyrrolyl or pyridyl, the phenyl, naphthyl and pyridyl radicals being optionally mono-, di- or trisubstituted and the thienyl, furyl and pyrrolyl radicals being optionally monosubstituted by halogen, C_1-C_4-alkyl or C_1-C_4-alkoxy, the substituents being the same or different in the case of polysubstitution,

and the two radicals R^2 bonded to the pyridine skeleton via the carbonyl group in the 2- and 4- position being the same or different, and the alkyl radicals with more than 2 carbon atoms being optionally branched, or the physiologically tolerated salt, excluding 5-methoxypyridine-2,4-dicarboxylic acid-dimethyl ester.

5,004,749

CONCENTRATED AQUEOUS SOLUTION OF GLUTARALDEHYDE AND 1,2-BENZISOTHIAZOLIN-3-ONE

Russell J. Jerusik, Wilmington, Del., and Paul F. Mahon, Oldham, England, assignors to Imperial Chemical Industries plc, London, England and ICI Americas Inc., Wilmington, Del.

Filed Apr. 20, 1989, Ser. No. 340,935

Int. Cl.[5] A10N *43/80*

U.S. Cl. 514—372 14 Claims

1. A composition comprising 1,2-benzisothiazolin-3-one and water, which composition further comprises a buffering agent such that the pH of the composition is between about 3.0 and 7.0, and a sufficient amount of glutaraldehyde such that a greater amount of such 1,2-benzisothiazolin-3-one is in solution than would be present in solution if such glutaraldehyde were not present.

5,004,750

BENZOFURAN AND BENZOTHOIPHENE DERIVATIVES, OF TETRAZOLE AND ANTI-HYPERURICEMIA USE THEREOF

Tsuyoshi Tomiyama; Akira Tomiyama, both of Hanishina, and Koichi Kubota, Matsumoto, all of Japan, assignors to Kotobuki Seiyaku Company Limited, Nagano, Japan

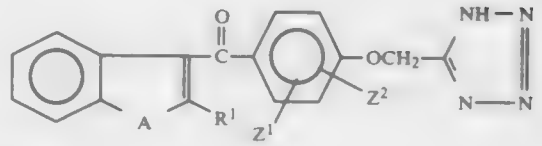
Division of Ser. No. 891,276, Jul. 28, 1986, Pat. No. 4,797,415, which is a continuation-in-part of Ser. No. 543,292, Oct. 19, 1983, abandoned. This application Dec. 6, 1988, Ser. No. 280,564

Claims priority, application Japan, Oct. 19, 1982, 57-182130

Int. Cl.[5] C07D *407/12, 409/12*; A61K *31/38, 31/41*

U.S. Cl. 514—382 16 Claims

1. A compound of the formula



wherein

A is oxygen or sulfur,

R^1 is lower alkyl and

Z^1 and Z^2 are each selected from a hydrogen atom or a lower alkyl group.

10. A method of treating hyperuricemia which comprises administering to a patient suffering from hyperuricemia a compound defined in claim 1 in an amount effective to inhibit hyperuricemia.

5,004,751

HYDANTOIN DERIVATIVES

Ei Mochida, Toshima; Kimihiro Murakami, Shizuoka; Kazuo Kato, Mishima; Katsuaki Kato, Koganei; Jun Okuda, and Ichitomo Miwa, both of Nagoya, all of Japan, assignors to Mochida Pharmaceutical Co., Ltd., Tokyo, Japan

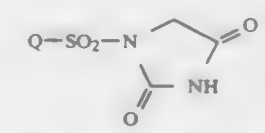
Continuation-in-part of Ser. No. 235,557, Aug. 24, 1988. This application Oct. 24, 1989, Ser. No. 426,021

Claims priority, application Japan, Aug. 28, 1987, 62-214549; Feb. 25, 1989, 1-43422

Int. Cl.[5] C07D *233/30*; A61K *31/415*

U.S. Cl. 514—390 8 Claims

1. A hydantoin derivative represented by the formula (I):



(I)

or a non-toxic salt, solvate or solvate of a non-toxic salt

thereof; wherein Q represents a furyl group, a thienyl group, a benzofuryl group or a benzothienyl group, optionally substituted by one or more substituents which are the same or different and selected from a group consisting of a halogen atom, a lower alkyl group, a nitro group, a cyano group, an optionally protected carboxy group, an optionally protected carboxymethyl group, a halogenated lower alkyl group, a lower alkylthio group, a lower alkylcarbonyl group, a lower alkoxy group, a lower alkylsulfinyl group, a lower alkylsulfonyl group, an optionally protected hydroxy group, an optionally protected amino group, a carbamoyl group and a phenyl group.

5,004,752

NOVEL 9-HALOPROSTAGLANDINS, PROCESSES FOR THEIR PREPARATION, AND THEIR USE AS MEDICINAL AGENTS

Bernd Radusechel; Werner Skuballa; Helmut Vorbrueggen; Olaf Loge, and Ekkehard Schilliner, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation of Ser. No. 114,342, Oct. 30, 1987, abandoned, which is a continuation of Ser. No. 940,690, filed as PCT DE86/00122 on Mar. 19, 1986, abandoned. This application May 8, 1989, Ser. No. 350,951

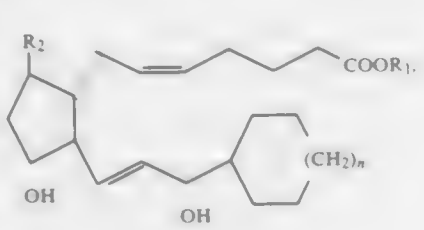
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1985, 3510978

Int. Cl.[5] **C07C** *177/00;* **A61K** *31/557*

U.S. Cl. 514—530 **12 Claims**

1. A 9-Halo-15-cycloalkyl prostaglandin derivative of Formula I

(I)



wherein

R_1 is hydrogen or methyl,

R_2 is chlorine,

n is 0 or 1, or when R_1 is hydrogen, a salt thereof with a physiologically compatible base or a cyclodextrin clathrate thereof.

5,004,753

CARBOXYLIC ACID ESTERS, METHOD FOR THEIR PRODUCTION AND INSECTICIDES CONTAINING THEM AS ACTIVE INGREDIENT

Ken Otaka, Takarazuka; Noritada Matsuo, Itami; Kazunori Tsushima, Nishinomiya, and Toshihiko Yano, Ashiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

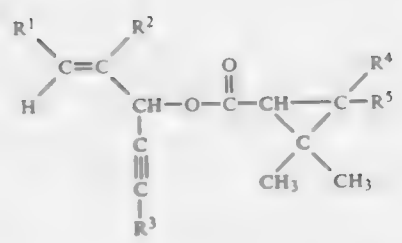
Continuation of Ser. No. 186,933, Apr. 27, 1988, abandoned. This application Apr. 20, 1990, Ser. No. 512,506

Claims priority, application Japan, May 12, 1987, 62-116219

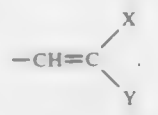
Int. Cl.[5] **A01N** *53/00*

U.S. Cl. 514—531 **6 Claims**

1. A compound represented by the formula



wherein R^1 represents halogenated C_1–C_4 alkyl, R^2 represents fluorine or methyl, R^3 represents hydrogen, R^4 represents hydrogen or methyl, and when R^4 is hydrogen, R^5 represents a group of the formula



in which X and Y are the same or different and represent methyl, fluorine, chlorine, bromine or trifluoromethyl, and when R^4 is methyl, R^5 represents methyl.

5,004,754

BIOFUNGICIDAL COMPOSITION

J. André Fortin, Neufchatel; Kelvin K. Ogilvie, Canning; Youla S. Tsantrizos, Ville St-Laurent, and Harry H. Kope, Quebec, all of Canada, assignors to Universite Laval, Cite Universitaire, Canada

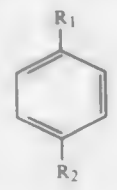
Filed Jun. 5, 1989, Ser. No. 361,052

Int. Cl.[5] **A01N** *37/10;* **A61K** *31/19;* **C07C** *59/84, 59/50*

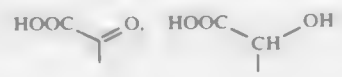
U.S. Cl. 514—570 **9 Claims**

1. A method of destroying phytopathogenic fungi which comprises administering to a plant infected with said fungi at a concentration of at least 30 μg/ml a compound of formula I

(I)



wherein R_1 is selected from the group consisting of



R_2 is —H or —OH and mixtures thereof.

5,004,755

PHARMACEUTICAL USE OF LAEVOROTATORY BASIC DERIVATIVE OF 9,10-ETHANOANTHRACENE

Angelo Storni, Rheinfelden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 274,907, Jun. 18, 1981, abandoned. This application Aug. 28, 1987, Ser. No. 100,145

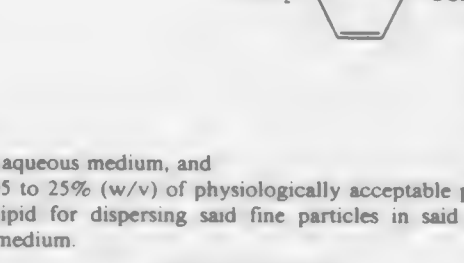
Claims priority, application Switzerland, Feb. 2, 1979, 1046/79; Jan. 8, 1980, 93/80

Int. Cl.[5] **A61K** *31/135*

U.S. Cl. 514—653 **9 Claims**

1. A method of treating a dysphoric condition characterized by anxiety, depression or excitability in a warm-blooded animal in need of such treatment comprising administering, enterally or parenterally, to said animal a therapeutically effective amount for said condition of a compound of the formula

(I)



which is R-(−)-alpha-[(methylamino)methyl]-9,10-ethanoanthracene-9(10H)-ethanol, substantially free of the S-(+) antipode thereof, or a pharmaceutically acceptable salt thereof.

5,004,756

ANTI-CANCER ACTIVITY POTENTIATOR

Osamu Ogawa, Shiki; Ikuo Kishi, Ichikawa; Yoshiyuki Tahara, Tsurugashima, and Masanori Sugita, Sakado, all of Japan, assignors to Lederle (Japan) Ltd. and Nisshin Flour Milling Co., Ltd., both of Tokyo, Japan

Filed Aug. 8, 1989, Ser. No. 390,875

Claims priority, application Japan, Aug. 11, 1988, 198795

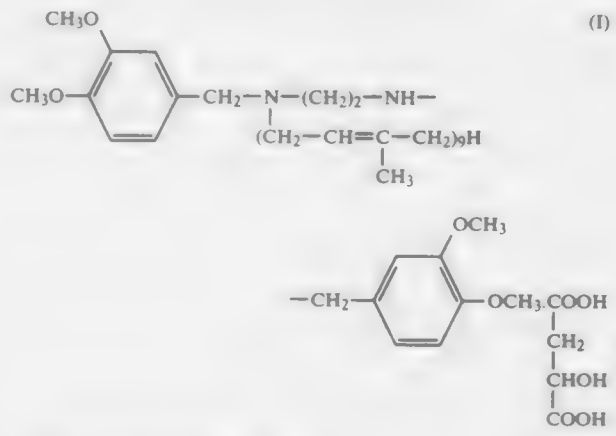
Int. Cl.[5] **A61K** *31/135*

U.S. Cl. 514—655 **8 Claims**

1. A intravenously injectable oil-in-water type micro-emulsion having an action of potentiating the activities of anti-cancer agents, said micro-emulsion comprising

fine particles of a mean diameter of not more than 1 micron of a vegetable oil or a triglyceride of a medium-chain fatty acid having 8 to 12 carbon atoms containing 0.1 to 10% (w/v) of N-solanesyl-N,N'-bis(3,4-dimethoxybenzyl)-ethylenediamine malate of formula (I) below,

(I)



an aqueous medium, and

0.05 to 25% (w/v) of physiologically acceptable phospholipid for dispersing said fine particles in said aqueous medium.

5,004,757

VIRUCIDAL LOW TOXICITY COMPOSITIONS

Raymond M. G. Boucher, Houston, Tex., assignor to Wave Energy Systems, Inc., Houston, Tex.

Filed Dec. 20, 1988, Ser. No. 286,738

Int. Cl.[5] **A61K** *31/115, 31/11*

U.S. Cl. 514—694 **16 Claims**

1. A method of deactivating viruses on an animate or inanimate surface which comprises applying to said surface an effective amount of a virucidal liquid composition comprising:

(a) a solvent consisting of water or a lower alkanol;

(b) a saturated monoaldehyde or dialdehyde containing from 2 to about 6 carbon atoms;

(c) an anionic surfactant with a negatively-charged hydrophilic group selected from the group consisting of alkyl sulfates, alkyl sulfonates, alcohol sulfates, alkyl aryl sulfonates, dialkyl sulfosuccinates, and mixtures thereof;

(d) buffer salts in sufficient amounts to stabilize the Ph of the virucidal solutions inside the range of from about 4 to about 7.4 wherein the ratio by weight of anionic surfactant to dialdehyde is no less than about 1 to 4 and no more than about 10 to 11.

5,004,758

WATER SOLUBLE CAMPTOTHECIN ANALOGS USEFUL FOR INHIBITING THE GROWTH OF ANIMAL TUMOR CELLS

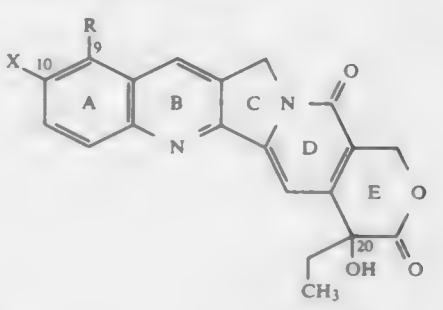
Jeffrey C. Boehm, King of Prussia, Pa.; Sidney M. Hecht, Charlottesville, Va.; Kenneth G. Holden, Malvern, Pa.; Randall K. Johnson, Ardmore, Pa., and William D. Kingsbury, Wayne, Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 127,148, Dec. 1, 1987, abandoned. This application Nov. 2, 1988, Ser. No. 266,460

Int. Cl.[5] **A61K** *31/47;* **C07D** *491/22*

U.S. Cl. 514—283 **35 Claims**

1. A compound of the formula:



wherein:

X is hydroxy; hydrogen; $—CH_2NH_2$; or formyl;

R is hydrogen when X is CH_2NH_2 or formyl; or R is —CHO or $—CH_2R^1$ when X is hydrogen or hydroxy;

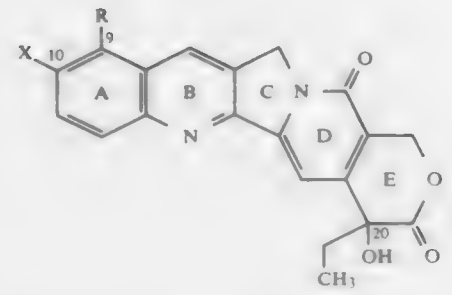
R^1 is $—O—R^2$; $—S—R^2$; $—CH_2NH_2$; cyano; $—N—R^2(R^3)$; or $—N^+—R^2(R^3)(R^4)$, provided that when R^1 is $—N^+—R^2(R^3)(R^4)$ the compound is associated with a pharmaceutically acceptable anion;

R^2, R^3 and R^4 are the same or different and are selected from H; C_{1-6} alkyl; C_{2-6} hydroxyalkyl; C_{1-6} dialkylamino-C_{2-6} alkyl; C_{1-6} alkylamino-C_{2-6} alkyl; C_{2-6} aminoalkyl or a 3–7 member unsubstituted carbocyclic ring; and

when R^1 is $—N—R^2(R^3)$, the R^2 and R^3 groups may be combined together with the nitrogen atom to which they are bonded to form a heterocyclic ring provided that such heterocyclic ring is selected from morpholino, N-methylpiperazinyl, or 4'-piperidinopiperidinyl;

or a pharmaceutically acceptable salt, hydrate or solvate thereof.

26. A method of inhibiting the growth of animal tumor cells sensitive to a compound of the formula:



wherein:

X is hydroxy; hydrogen; $—CH_2NH_2$; or formyl;

R is hydrogen when X is CH_2NH_2 or formyl; or R is —CHO or $—CH_2R^1$ when X is hydrogen or hydroxy;

R^1 is —O—R^2; —S—R^2; $—CH_2NH_2$; cyano; —N—$R^2(R^3)$; or $—N^+—R^2(R^3)(R^4)$, provided that when R^1 is $—N^+—R^2(R^3)(R^4)$ the compound is associated with a pharmaceutically acceptable anion;

R^2,R^3 and R^4 are the same or different and are selected from H; C_{1-6} alkyl C_{2-6} hydroxyalkyl; C_{1-6} dialkylamino-C_{2-6} alkyl; C_{1-6} alkylamino-C_{2-6} alkyl; C_{2-6} aminoalkyl or a 3–7 member unsubstituted carbocyclic ring; and

when R^1 is —N—$R^2(R^3)$, the R^2 and R^3 groups may be combined together with the nitrogen atom to which they are bonded to form a heterocyclic ring provided that such heterocyclic ring is selected from morpholino, N-methylpiperazinyl, or 4'-piperidinopiperidinyl;

or a pharmaceutically acceptable salt, hydrate or solvate thereof, wherein such method comprises administering to an animal afflicted with said tumor cells, an effective, tumor cell growth inhibiting amount of such compound.

5,004,759

STABILISATION OF POLYPHENYLENE ETHERS WITH MACROCYCLIC POLYALKYLPIPERIDINE COMPOUNDS

Francis Mutterer, St. Louis, France, and Kurt Berger, Allschwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 12,533, Feb. 9, 1987, abandoned. This application Jun. 28, 1988, Ser. No. 213,512

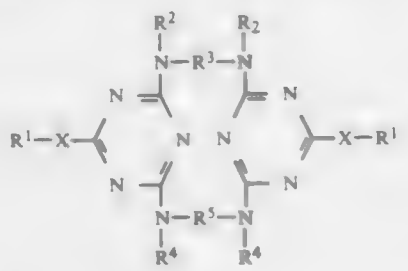
Claims priority, application Switzerland, Feb. 14, 1986, 596/86

Int. Cl.[5] C08K *5/349.2, 5/349.3*

U.S. Cl. 524—89 **6 Claims**

1. A stabilised composition comprising a polyphenylene ether with an effective light stabilizing amount of a compound of formula I

I

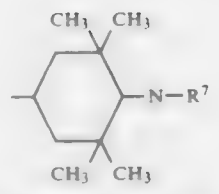


wherein

X is —O—, —S— or $—N(R^9)—$,

R^1 is hydrogen, C_1–C_{12}alkyl, C_2–C_4hydroxyalkyl, C_3–C_{12}alkoxyalkyl, C_3–C_{12}alkenyl, C_5–C_8cycloalkyl, phenyl, naphthyl, C_7–C_{12}alkylphenyl, C_7–C_{10}phenylalkyl or a group of formula II

II



R^2 is C_1–C_4alkyl, C_2–C_4hydroxyalkyl, C_3–C_{12}alkoxyalkyl, C_3–C_6alkenyl, C_5–C_8cycloalkyl, phenyl, naphthyl, C_7–C_{12}alkylphenyl, C_7–C_{10}phenylalkyl or a group of formula II,

R^3 is C_2–C_8alkylene, C_2–C_8azaalkylene or C_2–C_8oxaalkylene, C_6–C_8cycloalkylene, phenylene, diphenylene or xylylene,

R^4 has one of the meanings assigned to R^2,

R^5 has one of the meanings assigned to R^3,

R^6 is C_1–C_{12}alkyl, C_3–C_6alkenyl, C_2–C_4hydroxyalkyl, C_3–C_6alkoxyalkyl, C_5–C_8cycloalkyl, phenyl, naphthyl, C_7–C_{12}alkylphenyl, C_7–C_{10}phenylalkyl or a group of formula II, or R^1 and R^6, when taken together, are tetramethylene, pentamethylene or 3-oxapentamethylene, and

R^7 is hydrogen, C_1–C_4alkyl, allyl, benzyl or acetyl, with the proviso that at least one of R^1, R^2, R^4 or R^6 is a group of formula II.

5,004,760

BIOCIDAL FOAMS

Robert T. Patton; Walter L. Vaughn, both of Lake Jackson, and Thomas J. McKeand, Jr., Clute, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 16, 1990, Ser. No. 481,913

Int. Cl.[5] C08J *9/00*

U.S. Cl. 521—149 **15 Claims**

1. A foam structure having biocidal characteristics comprising a polymeric foam having incorporated therein a biocidal effective amount of biocidal particles and/or fibers comprising a water insoluble thermoplastic copolymer comprising an alpha olefin and an alpha, beta-ethylenically unsaturated carboxylic acid, said copolymer having at least one cationic biocidal agent ionically bonded thereto.

5,004,761

PROCESS FOR CONTINUOUSLY PREPARING ACRYLIC POLYMER GEL

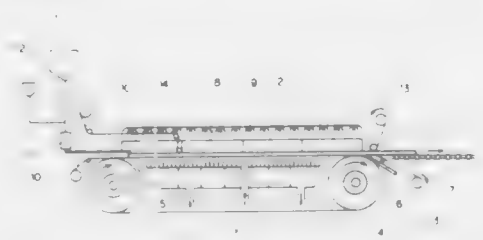
Akira Yada, Kusatsu, and Shusaku Matsumoto, Kyoto, both of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Jul. 25, 1988, Ser. No. 223,851

Claims priority, application Japan, Jul. 28, 1987, 62-188230

Int. Cl.[5] C08F *2/50, 20/56*

U.S. Cl. 522—3 **7 Claims**



1. A process for continuously preparing an acrylic polymer gel using a photopolymerization apparatus including a movable support and a gas tight chamber having a light permeable upper part which comprises:

(a) decreasing the dissolved oxygen in a monomer solution of at least one acrylic monomer containing a photopolymerization initiator to at most 1 mg/liter,

(b) maintaining the concentration of oxygen in the gas phase inside a gas tight chamber arranged over a moving support at not more than 1% by volume,

(c) continuously feeding a synthetic resin film onto the moving support from one end of the moving support,

(d) continuously feeding the monomer solution in the form of a thin layer onto the resin film on the moving support,

(e) irradiating the layer of the monomer solution with a light energy to initiate the polymerization and to cause the monomer solution to become substantially nonflowable,

(f) continuously feeding a synthetic resin film and bringing the resin film into contact with the upper surface of the layer of the monomer solution when the monomer solution has become substantially nonflowable,

(g) continuing the polymerization by the irradiation of light energy to produce a polymer in the form of gel, and

(h) continuously peeling off the resin films on the both sides of the produced sheet-like polymer at the other end of the moving support and continuously taking out the sheet-like polymer from the moving support.

5,004,762

RADIATION CURABLE COMPOSITIONS BASED ON 4-ACETOXYSTYRENE AND 4-HYDROXYSTYRENE HOMOPOLYMERS

Balaram Gupta, North Plainfield, N.J., assignor to Hoechst Celanese Corp., Somerville, N.J.

Filed Nov. 22, 1989, Ser. No. 441,130

The portion of the term of this patent subsequent to Oct. 4, 2005, has been disclaimed.

Int. Cl.[5] C08F *261/12, 261/02, 112/24, 120/16*

U.S. Cl. 522—121 **6 Claims**

1. A radiation curable composition comprising a blend of (A) about 30 to about 80 weight percent of a homopolymer of 4-acetoxystyrene, a homopolymer of 4-hydroxystyrene, or mixtures thereof; (B) about 20 to about 70 weight percent of a polyethylenically unsaturated radiation polymerizable compound; and (C) about 0 to about 40 weight percent of a monoethylenically unsaturated radiation polymerizable monomer, wherein the weight percents are based on the total weight of (A), (B) and (C).

5,004,763

WATER BASE ERASABLE INK COMPOSITIONS

Kiyotaka Imagawa, Osaka, Japan, assignor to Sakura Color Products Corporation, Osaka, Japan

Continuation of Ser. No. 288,578, Dec. 22, 1988, abandoned. This application Aug. 22, 1990, Ser. No. 569,764

Claims priority, application Japan, Dec. 25, 1987, 62-331021; Nov. 15, 1988, 63-288235; Nov. 15, 1988, 63-288238

Int. Cl.[5] C09D *11/10*

U.S. Cl. 523—161 **10 Claims**

1. A water base erasable ink composition consisting essentially of:

(a) water as a solvent in amounts of 50–90% by weight;

(b) a pigment dispersed in water in amounts of 1–30% by weight;

(c) an aqueous emulsion of a fatty acid ester in dry amounts of 1–20% by weight; and

(d) a water-solubilized vinyl acetate-acrylic acid copolymer which is film forming at room temperatures in amounts of 0.1–15% by weight.

5,004,764

COMPOSITION FOR VIBRATION DAMPER, PROCESS FOR MANUFACTURE THEREOF, AND VIBRATION DAMPER

Yohzoh Yamamoto; Shuichi Ishiwata, both of Ichihara; Kenji Yokoyama, and Kimio Hasegawa, both of Tokyo, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd. and NEC Environment Engineering, Ltd., both of Tokyo, Japan

Filed Feb. 9, 1989, Ser. No. 308,006

Claims priority, application Japan, Feb. 12, 1988, 63-031416; Feb. 12, 1988, 63-031417; Feb. 12, 1988, 63-031418

Int. Cl.[5] C08L *63/04, 63/02*

U.S. Cl. 523—400 **11 Claims**

1. A composition for a vibration damper, which comprises:

100 parts by weight of a resin-forming component comprising (a) a compound containing an epoxy group and having an epoxy equivalent value of 50 to 2000,

and (b) a curing component comprising (i) a polyhydric phenol as a first curing compound and (ii) a second curing compound selected from the group consisting of an acid hydrazide and a urea derivative;

50 to 500 parts by weight of a scaly filler;

200 parts by weight or less of a powdery filler; and

100 parts by weight or less of a fibrous filler, wherein the amount of the hydroxyl group of the polyhydric phenol is 0.6 to 1.3 equivalents per equivalent of the epoxy group of the epoxy group-containing compound, and the amount of the second curing compound incorporated is 1 to 10 parts by weight per 100 parts by weight of the epoxy group-containing compound.

5,004,765

LOW PROFILE MOLDING SYSTEM

Kenneth E. Atkins, S. Charleston; Robert R. Gentry, St. Albans, and Raymond C. Gandy, Hurricane, all of W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 175,987, Mar. 31, 1988. This application Nov. 6, 1989, Ser. No. 431,831

Int. Cl.[5] C08K *7/14, 7/06;* **C08L** *67/07, 67/06*

U.S. Cl. 523—434 **17 Claims**

1. A molding additive composition comprising:

(a) about 25 to 70 weight percent of a thermosetting unsaturated polyester or a vinyl ester;

(b) about 5 to about 25 weight percent of a low profile additive;

(c) about 35 to 70 weight percent of a crosslinking monomer which is olefinically unsaturated and crosslinkable with said thermosetting polyester or said vinyl ester; and

(d) about 1 to 5 weight percent of a silicon oxyalkylene copolymer flow control agent wherein the silicon oxyalkylene copolymer contains a functional group having olefinic unsaturation and is reactive with the thermosetting polyester or vinyl ester and wherein the silicon oxyalkylene copolymer has a molecular weight less than that of the low profile additive.

5,004,766

Patent Not Issued For This Number

5,004,767

POLYMER COMPOSITIONS

Frank Krause, Kleve, and Reinhard Kniewske, Fallingbostel, both of Fed. Rep. of Germany, assignors to Cerestar Holding B.V., Sas Van Gent, Netherlands

Filed Mar. 17, 1989, Ser. No. 324,828

Claims priority, application United Kingdom, Mar. 21, 1988, 8806692

Int. Cl.[5] C08L *3/02; C08K 5/04, 5/07*

U.S. Cl. 524—30 **10 Claims**

1. An aqueous acrylate polymer dispersion which has a total solids content of 30 to 60% by weight and which has been made by polymerizing one or more acrylate monomers, optionally together with other olefinically unsaturated monomer(s), in the presence of a dextrin, said dextrin being the degradation product produced by heating a starch, with or without the addition of chemical reagents, at least 70% of said dextrin having a molecular weight in the range of 1000 to 25,000 and not more than 10% of said dextrin having a molecular weight above 25,000.

5,004,768

ADHESIVE COMPOSITIONS AND SELF-ADHESIVE SHEET MATERIALS

Mahinder S. Mahil, Thorley, and John M. Cruden, Harlow, both of England, assignors to Harlow Chemical Company Limited, Essex, England

Filed Jul. 1, 1988, Ser. No. 214,291

Claims priority, application United Kingdom, Jul. 3, 1987, 8715736

Int. Cl.[5] C08L *3/02, 5/16*

U.S. Cl. 524—30 **5 Claims**

1. A composition comprising: from 4% to 30% dextrin, from 1% to 15% of a surfactant and from 65% to 95% of a polymer having at least 75% by weight of its repeating units derived from an acrylate of at least one saturated aliphatic alcohol having from 4 to 12 carbon atoms, the percentages being by weight, based on the total weight of dextrin, surfactant and polymer, and the composition being capable of acting as a pressure-sensitive adhesive.

5,004,769

USE OF NONIONIC CELLULOSE ETHERS IN JOINT-SEALING MATERIALS AND COATING MATERIALS

Helmut Loth, Essen; Klaus Helpenstein, Moenchengladbach; Tore Podola, Monheim, and Bernhard Knop, Monheim-Blee, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf-Holthausen, Fed. Rep. of Germany

Filed Apr. 24, 1989, Ser. No. 342,408

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1988, 3814078

Int. Cl.[5] C08L *33/08, 1/26;* **C09D** *3/81;* **C09K** *3/10*

U.S. Cl. 524—43 **18 Claims**

1. A joint-sealing or coating composition consisting essentially of:

(a) an aqueous dispersion containing from about 40 to about 70% by weight of polyacrylate or acrylate copolymers; and

(b) from about 0.4 to about 6% by weight of a nonionic cellulose ether selected from the group consisting of hydroxyethyl cellulose, hydroxyethyl-methyl cellulose, hydroxypropyl-methyl cellulose and hydroxypropyl cellulose having a Brookfield viscosity in a 2% aqueous solution at about 20° C. of at least about 3,000 mPa.s, based on the solids content of said dispersion.

5,004,770

POLYMERIC SUBSTRATES STABILIZED WITH N-SUBSTITUTED HINDERED AMINES

Frank P. Cortolano, Valhalla; Raymond Seltzer, New City, and Ambelal R. Patel, Ardsley, all of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 259,955, Oct. 19, 1988, abandoned. This application Oct. 3, 1989, Ser. No. 416,621

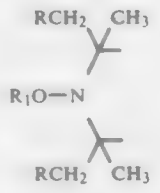
Int. Cl.[5] C08K *5/3435*

U.S. Cl. 524—99 **23 Claims**

1. A stabilized composition comprising

(a) an organic polymer containing hetero atoms, double bonds or aromatic rings and

(b) an effective stabilizing amount of a substituted hindered amine derivative containing the group



wherein R is hydrogen or methyl, and R_1 is hydrogen, C_1–C_{18} alkyl, C_2–C_{18} alkenyl, C_2–C_{18} alkynyl, C_5–C_{12} cycloalkyl, C_6–C_{10} bicycloalkyl, C_5–C_8 cycloalkenyl, C_6–C_{10} aryl, C_7–C_9 aralkyl, C_7–C_9 aralkyl substituted by alkyl or aryl, or



wherein D is C_1–C_{18} alkyl, C_1–C_{18} alkoxy, phenyl, pheny substituted by hydroxy, alkyl or alkoxy, or amino or amino mono- or disubstituted by alkyl or phenyl.

5,004,771

AQUEOUS DISPERSIONS OF CROSSLINKABLE SILICONES/SILICONATES

Michel Feder, Illfurth, and Jean-Marc Frances, Villeurbanne, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Oct. 11, 1989, Ser. No. 419,701

Claims priority, application France, Oct. 11, 1988, 88 13617

Int. Cl.[5] C08K *5/54*

U.S. Cl. 524—161 **14 Claims**

1. A composition of matter which comprises an aqueous dispersion of a silicone crosslinkable into elastomeric state by elimination of water therefrom under ambient conditions, said silicone dispersion comprising:

(A) 100 parts by weight of an oil-in-water emulsion of an α,ω-(dihydroxy)polydiorganosiloxane, stabilized with at least one anionic or nonionic surface-active agent, or admixture thereof;

(B) 0.to 15 parts by weight, calculated as the solids content, of an alkali or alkaline earth metal organosiliconate in aqueous solution; and

(C) 5 to 250 parts by weight of a nonsiliceous inorganic filler material; and said dispersion having a pH higher than 7 and a solids content of at least 40%, said aqueous dispersion being devoid of any curing catalyst.

5,004,772

ASPHALT ROOFING COMPOSITIONS ESPECIALLY ADAPTED FOR COLD APPLICATIONS

Kenneth F. Grzybowski, Temple Terrace, and Brian J. Anthony, Tampa, both of Fla., assignors to Gardner Asphalt Corporation, Tampa, Fla.

Filed Nov. 20, 1989, Ser. No. 438,846

Int. Cl.[5] C08L *9/00, 11/00, 95/00;* **C08K** *5/01*

U.S. Cl. 524—62 **3 Claims**

1. A roofing composition especially adapted for cold applications consisting essentially of:

		Parts By Weight (Based on Total Composition)
1.	asphalt having a	20–90
2.	synthetic hydrocarbon copolymer elastomer	1–30
3.	an organic hydrocarbon solvent for said asphalt and at least partially for said synthetic copolymer elastomer which is miscible with cyclohexanone	0–30
4.	cyclohexanone	4–35
5.	inert filler	0–30
6.	fiber	0–20

5,004,773

COMPOSITIONS BASED ON VINYLIDENE FLUORIDE POLYMERS, WHICH HAVE A REDUCED SMOKE-PRODUCING CAPACITY

Anthony Simoens, Vedrin, and Etienne Hannecart, Tervueren, both of Belgium, assignors to SOLVAY & Cie (Société Anonyme), Brussels, Belgium

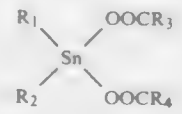
Filed Apr. 9, 1987, Ser. No. 36,381

Claims priority, application France, Apr. 21, 1986, 86 05839

Int. Cl.[5] C08K *5/00*

U.S. Cl. 524—178 **9 Claims**

1. Compositions based on vinylidene flouride polymers, which have a reduced smoke-producing capacity, characterized in that they contain, as smoke-reducing agent, an effective amount of dialkyltin dicarboxylate of general formula:



in which R_1 and R_2, which may be identical or different, represent alkyl radicals containing from 1 to 6 carbon atoms and R_3 and R_4, which may be identical or different, represent alkyl radicals containing from 8 to 20 carbon atoms; and wherein the polymers comprise at least 90 mole percent of vinylidene fluoride.

5,004,774

THERMOSETTING POLYIMIDE RESIN COMPOSITION

Jong K. Yeo; Chung S. Kim; Dong J. Lee, and Sung H. Jang, all of Chungcheongnam, Rep. of Korea, assignors to Lucky, Ltd., Seoul, Rep. of Korea

Filed Dec. 23, 1988, Ser. No. 289,308

Claims priority, application Rep. of Korea, Dec. 29, 1987, 87-15197; Dec. 31, 1987, 87-15568

Int. Cl.[5] C08K *5/24, 5/54*

U.S. Cl. 524—262 **8 Claims**

1. A thermosetting polyimide resin composition, comprising

(1) 20 to 60 parts by weight of a modified bismaleimide resin prepared by the Michael addition reaction of bismaleimides with aromatic primary diamines and aromatic secondary diamines;

(2) 40 to 80 parts by weight of an inorganic filler;

(3) 0.8 to 25 parts by weight of silicone oil; and

(4) 0.5 to 5.0 parts by weight of a mixed catalyst composed of organic peroxides and imidazole compounds.

5,004,775

POLYIMIDE RESIN LAMINATES

Larry D. Olson, Viroqua, and Jeffrey R. Kamla, West Salem, both of Wis., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

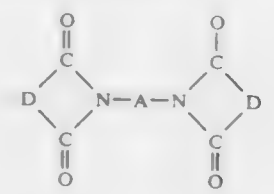
Continuation-in-part of Ser. No. 187,158, Apr. 28, 1988, Pat. No. 4,876,325. This application Sep. 28, 1989, Ser. No. 413,883

Int. Cl.[5] C08L *79/08*

U.S. Cl. 524—371 **10 Claims**

1. A thermosetting resin composition consisting essentially of

(a) a bisimide having the formula:



where:

A comprises at least one of alkylene radicals having 1 to 20 carbon atoms, cycloalkylene radicals having 4 to 40 carbon atoms, heterocyclic radicals containing at least one of O, S, or N, phenylene or polycyclic aromatic radicals.

D is a divalent radical containing a carbon-carbon double bond

(b) a polyphenol;

(c) dicyandiamide, where the weight of (a), (b), and (c) are 80 to 98%/1 to 10%/and 0.1 to 10%, respectively, based on the total weight of (a), (b), and (c) and (d) octabromodiphenyl oxide in an effective amount up to about 5 weight percent.

5,004,776

STABILIZED CHLORINE-CONTAINING RESIN COMPOSITION

Masahiko Tadenuma, Akigawa; Tetsuhiro Miyagi, Akishima, and Tadashi Miyazawa, Sagamihara, all of Japan, assignors to Akishima Chemical Industries Co., Ltd., Tokyo, Japan

Filed Jul. 19, 1989, Ser. No. 382,484

Claims priority, application Japan, Apr. 27, 1989, 1-106068

Int. Cl.[5] C08K *11/00*

U.S. Cl. 524—377 **26 Claims**

1. A thermally stabilized chlorinecontaining resin composition comprising a chlorine-containing resin and a stabilizer consisting essentially of (a) an overbased alkaline earth metal carboxylate or phenolate complex, (b) zeolite, (c) calcium hydroxide and (d) a complex obtained by reacting hydrates of at least one metal perchlorate $Me(ClO_4)_n$ in which n is 1 or 2 selected from the group consisting of $NaClO_4$, $Mg(ClO_4)_2$, $Ca(ClO_4)_2$ and $Ba(ClO_4)_2$ with at least one compound selected from the group consisting of aliphatic dihydric and trihydric alcohols and their lower alkyl, phenyl, and benzyl monoethers at a weight ratio of 10:90 to 70:30, the complex being liquid at ordinary temperature.

26. A composition according to claim 1, wherein the component (d) of the stabilizer is a complex represented by q wherein $Me(ClO_4)_n$ is as defined in claim 1 and R is the residue of aliphatic dihydric or trihydric alcohols or their lower alkyl, phenyl or benzyl monoethers and p is an integer of 1 to 3, and q is an arbitrary number of 1–6.

5,004,777

IMIDE POLYMERS

Michael P. Hallden-Abberton, Maple Glen; Newman M. Bortnick, Oreland; Leslie A. Cohen, Langhorne, all of Pa.; William T. Freed, Stockton, N.J., and Harry C. Fromuth, Trevose, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 452,991, Dec. 19, 1989, Pat. No. 4,954,574, which is a continuation of Ser. No. 108,383, Nov. 23, 1987, abandoned, which is a division of Ser. No. 770,034, Aug. 27, 1985, Pat. No. 4,727,117. This application May 24, 1990, Ser. No. 527,980

Int. Cl.[5] C08K *3/18*

U.S. Cl. 524—433 20 Claims

1. A blend of at least one thermoplastic polymer and a second polymer containing glutarimide units wherein the degree of imidization, by weight, on said polymer is from about 1% to about 95%, and the degree of imidization and the acid and anhydride functionality on said polymer, expressed in milliequivalents per gram of total imidizable and imidized polymer units are as set forth below;

when the degree of imidizaton on said polymer is	the milliequivalents of acid and anhydride per gram are
from about 1% to about 10%	0 to about 0.20
above about 10% to about 20%	0 to about 0.28
above about 20% to about 30%	0 to about 0.32
above about 30% to about 40%	0 to about 0.31
above about 40% to about 50%	0 to about 0.28
above about 50% to about 60%	0 to about 0.28
above about 60% to about 70%	0 to about 0.27
above about 70% to about 80%	0 to about 0.28
above about 80% to about 90%	0 to about 0.33
and above about 90% to about 95%	0 to about 0.40.

5,004,778

PROCESS FOR THE PREPARATION OF ULTRASTRETCHABLE POLYMER MATERIAL, ULTRASTRETCHABLE MATERIAL, AS WELL AS A PROCESS FOR THE MANUFACTURE OF OBJECTS

Geert N. Waagen, Baarn; Cornelis W. M. Bastiaansen, Dongen, and Robert Kirschbaum, Sittard, all of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed May 23, 1988, Ser. No. 197,361

Claims priority, application Netherlands, May 22, 1987, 8701219

Int. Cl.[5] C08L *23/04;* C08K *5/01*

U.S. Cl. 524—474 14 Claims

1. Process for the preparation of ultrastretchable polymer material starting from ethylene polymer particles with a low entanglement density and an average molecular weight (MW) higher than 400,000, wherein a mixture of the ethylene polymer particles and a process auxiliary agent, is compressed to a coherent material at a temperature below the melting point of the pure polymer and less than 30° C. below the dissolution temperature for a mixture consisting of the quantities of polymer and process auxiliary agent being used and wherein said dissolution temperature is below the melting point of the pure polymer and wherein the process auxiliary agent and the ratio of the process auxiliary agent to polymer are chosen to provide an ultrastretchable polymer material.

7. Process according to claim 1, characterized in that the process auxiliary agent is xylene, decaline, paraffin oil or paraffin wax.

5,004,779

PROCESS FOR THE PREPARATION OF AQUEOUS, OXIDATIVELY DRYING ALKYD RESINS AND THEIR USE IN OR AS AQUEOUS LACQUERS AND COATING COMPOUNDS

Harald Blum, Wachtendonk; Jürgen Meixner, Krefeld; Manfred Schreckenberg, Krefeld; Lothar Fleiter, Krefeld, and Wolfgang Wellner, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 10, 1990, Ser. No. 462,785

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1989, 3901190

Int. Cl.[5] C08G *63/76, 63/48, 18/42;* C09D *3/72*

U.S. Cl. 524—591 8 Claims

1. A process for the preparation of aqueous, oxidatively drying alkyd resins having a solids content above 40% by weight which comprises reacting components:

(a) from 70 to 88% by weight of an alkyd resin having a hydroxyl number of from 100 to 200 and an acid number not greater than 5, prepared by reacting:

(a1) from 40 to 70% by weight of a monocarboxylic acid containing at least 60% by weight of at least one unsaturated fatty acid capable of oxidative drying,

(a2) from 7 to 20% by weight of a dicarboxylic acid component which is at least one dicarboxylic acid, at least one dicarboxylic acid anhydride, or both,

(a3) from 0 to 10% by weight of a diol, and

(a4) from 10 to 30% by weight of one at least trifuntional polyol component:

(b) from 4 to 7% by weight of a 2,2-bis(hydroxymethyl)alkane carboxylic acid; and

(c) from 10 to 23% by weight of a diisocyanate component containing at least one organic diisocyanate having a molecular weight between 168 and 294;

said process being a one-step synthesis in a 70 to 95% by weight organic solution which comprises introducing components (a) and (b) into a reaction vessel, homogenizing components (a) and (b) with organic solvent, reacting homogenized components (a) and (b) with component (c) at a temperature between 50° to 120° C. in the presence of from 0.01 to 2.5% by weight of a catalyst, whereby a resin having a molecular weight of between 10,000 to 70,000 and an acid number between 18 and 36 is obtained, which resin contains free hydroxyl groups but no free isocyanate groups, and thereafter dispersing or dissolving the reaction mixture in water to achieve a product having from 45 to 100% of the carboxyl groups in the product converted into carboxylate groups during the reaction or during the dispersing or dissolving of the reaction mixture.

5,004,780

CYCLIC MONOPEROXYKETAL

Kazuo Matsuyama, Gamagori; Takashi Sugiura, Nagoya, and Takeshi Komai, Chita, all of Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

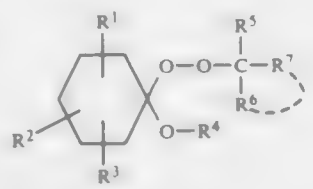
Filed Mar. 8, 1989, Ser. No. 320,591

Claims priority, application Japan, Mar. 10, 1988, 63-54752; Mar. 10, 1988, 63-54753

Int. Cl.[5] C08L *67/06;* C08F *4/34;* C07C *409/18*

U.S. Cl. 525—27 19 Claims

1. A cyclic monoperoxyketal represented by the following general formula



(I)

wherein R^1, R^2 and R^3 represent hydrogen atoms, or same or different alkyl groups having 1–3 carbon atoms, R^4 represents an alkyl group having 1–5 carbon atoms, R^5 represents an alkyl group having 1–3 carbon atoms, and R^6 and R^7 may be separate groups, in which R^6 represents an alkyl group having 1–3 carbon atoms and R^7 represents an alkyl group having 2–10 carbon atoms, a cycloalkyl group or an aryl group, or may be combined into a cycloalkylene group having 3–12 carbon atoms.

5,004,781

SYNTHETIC POLYSTYRENE RESIN AND ITS USE IN SOLID PHASE PEPTIDE SYNTHESIS

Hans Rink, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 171,049, Mar. 21, 1988, Pat. No. 4,859,736. This application May 17, 1989, Ser. No. 353,311

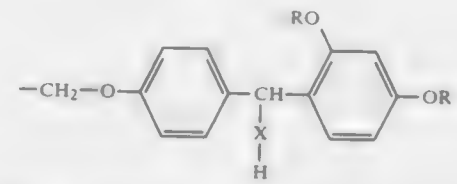
Claims priority, application Switzerland, Mar. 30, 1987, 1214/87

Int. Cl.[5] C08F *283/00;* C08G *63/48, 63/91*

U.S. Cl. 525—54.11 8 Claims

1. A process for the manufacture of peptides or peptide amides, characterised in that

(a) a synthetic resin based on polystyrene which is cross-linked with from 0 to 5 mol % of divinyl benzene and wherein benzene rings of the skeletal structure are substituted by groups of the formula



(I)

in which X represents —O— or —NH— and R represents C_1-C_4-alkyl is reacted with a compound of formula W^1—AM^1—Y—H, in which Y represents —O— or —NH—, W^1 represents an N-terminal amino-protecting group and AM^1 represents the acyl radical of an amino acid sequence, consisting of from 1 of 25 amino acid residues, in which functional groups are protected or unprotected, or with a reactive functional derivative thereof, for the purpose of attaching the W^1—AM^1—residue to the —X— group of the resin,

(b) the N-terminal protecting group W^1 is removed,

(c) the freed N-terminal amino group is acylated by reaction with an acid of formula W^2—AM^2—OH, in which W^2 represents an N-terminal amino protecting group and AM^2 represents the acyl radical of an amino acid sequence, consisting of from 1 to 25 amino acid residues, in which functional groups are protected or unprotected, or with a reactive functional derivative thereof,

(d) the operation of alternate removal according to (b) and acylation according to (c) is repeated as required until the desired amino acid sequence is obtained, and

(e) the resulting peptide or peptide amide, prior to, after, or with simultaneous removal of any protecting group, is detached from the resin by acidolysis with a mild acidic agent selected from the group consisting of trifluoroacetic acid, a lower alkanecarboxylic acid, a pyridinium salt, and mixtures thereof with an inert organic diluent.

5,004,782

THERMOPLASTIC RESIN COMPOSITION

Kentaro Mashita; Takeshi Fujii, and Tadayuki Oomae, all of Chiba, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Continuation of Ser. No. 67,437, Jun. 29, 1987, abandoned, which is a continuation of Ser. No. 768,154, Aug. 22, 1985, abandoned. This application Sep. 29, 1989, Ser. No. 414,574

Claims priority, application Japan, Aug. 31, 1984, 59-183250

Int. Cl.[5] C08L *51/06, 23/14, 23/12*

U.S. Cl. 525—64 8 Claims

1. A thermoplastic resin composition consisting essentially of:

(1) 100 parts by weight of a resin composition (D) defined below, and

(2) 2 to 30 parts by weight of copolymer (C) consisting of:

(a) 99.9 to 50% by weight of ethylene and 0.1 to 50% by weight of an unsaturated epoxy compound selected from the group consisting of glycidyl acrylate, glycidyl methacrylate, glycidyl itaconate, allyl glycidyl ether, 2-methylallyl glycidyl ether and p-styryl glycidyl ether, or

(b) 99.9 to 50% by weight of ethylene, 0.1 to 50% by weight of said unsaturated epoxy compound defined above and an ethylenically unsaturated compound selected from the group consisting of vinyl acetate, methyl acrylate, ethyl acrylate, methyl methacrylate, vinyl chloride, vinylidene chloride, and isobutyl vinyl ether,

said resin composition (D) beig composed of 50 to 90 wt. % of polypropylene resin (A) which is 5-100% by weight of a grafted polymer consisting of a polypropylene and 0.05 to 20 wt. % of an unsaturated carboxylic acid or anhydride thereof, selected from the group consisting of acrylic acid, methacrylic acid, maleic acid, itaconic acid, maleic anhydride and itaconic anhydride, and

95-0% by weight of a polypropylene, and 50 to 10 wt. % of saturated polyester resin (B) composed of a dicarboxylic acid moiety, wherein at least 40 mol % of said dicarboxylic acid moiety is terephthalic acid, and a diol moiety.

5,004,783

BLENDS OF HIGH NITRILE COPOLYMERS AND THERMOPLASTIC POLYMERS

Elena S. Percec, Pepper Pike, Ohio, and Doreen Y. Takigawa, Los Alamos, N. Mex., assignors to The Standard Oil Company, Cleveland, Ohio

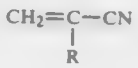
Filed Aug. 22, 1988, Ser. No. 235,015

Int. Cl.[5] C08L *33/20, 51/04, 33/26, 39/04*

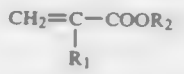
U.S. Cl. 525—77 9 Claims

1. A polymer blend comprising:

a high nitrile copolymer prepared by the polymerization of 100 parts by weight of (A) from 60 percent to 90 percent by weight of at least one nitrile having the structure

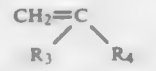


wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen, and (B) from 10 percent to 40 percent by weight based on the combined weights of (A) and (B) of at least one member selected from the group consisting of (1) an ester having the structure

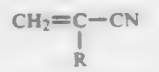


wherein R_1 is hydrogen, an alkyl group having from 1 to 6 carbon atoms, or a halogen, and R_2 is an alkyl group having

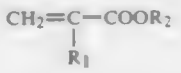
from 1 to 30 carbon atoms, (2) an alpha-olefin having the structure



wherein R_3 and R_4 are alkyl groups having from 1 to 7 carbon atoms, (3) a vinyl ether selected from the group consisting of methyl vinyl ether, ethyl vinyl ether, the propyl vinyl ethers, and the butyl vinyl ethers, (4) vinyl acetate, (5) styrene, and (6) indene, in the presence of from 0 to 40 parts by weight of (C) a rubbery polymer of a conjugated diene monomer selected from the group consisting of butadiene and isoprene and a comonomer selected from the group consisting of styrene, a monomer having the structure



wherein R has the foregoing designation, and an ester having the structure



wherein R_1 and R_2 have the foregoing respective designations, said rubbery polymer containing from 50 percent to 100 percent by weight of polymerized conjugated diene and from 0 percent to 50 percent by weight of comonomer; and

a compatible thermoplastic homopolymer or copolymer containing polar groups, consisting of the polymerization product formed from monomers selected from the group consisting of alkylacrylamides, unsaturated carboxylic acid anhydrides, vinyl pyrrolidones, heterocyclic ring compounds containing two hetero atoms, lactones and phosphorus-containing monomers that form highly crystalline polymers.

5,004,784

POLYMER BLENDS CONTAINING ISOCYANATE REACTING AGENTS

Gia Huynh-Ba, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 5, 1988, Ser. No. 177,663

Int. Cl.[5] C08L *23/00, 59/00, 67/02, 77/00*

U.S. Cl. 525—123 **40 Claims**

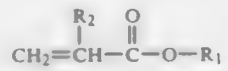
1. A composition consisting essentially of

(a) 0–95 weight percent of at least one thermoplastic polymer with a minimum number average molecular weight of 10,000 and a flexural modulus of greater than 150 kpsi, which has at least one functional group capable of reacting with an isocyanate group or which is end-capped with groups that can be removed between the melting point or glass transition temperature of the thermoplastic polymer and the decomposition point of the thermoplastic polymer to expose said at least one functional group;

(b) 100–5 weight percent of at least one thermoplastic polymer selected from the group consisting of polyesters and ethylene copolymers, wherein the thermoplastic polymer has a minimum number average molecular weight of 10,000, a flexural modulus of less than 150 kpsi, and at least one functional group capable of reacting with an isocyanate group or is end-capped with groups that can be removed between the melting point or glass transition temperature of the thermoplastic polymer and the decomposition point of the thermoplastic polymer to expose said at least one functional group, and wherein the ethylene copolymer is of the formula E/X/Y where

E is the radical formed from ethylene and E comprises 40–90 weight percent of the ethylene copolymer,

X is the radical formed from



where R_1 is an alkyl group with 2–8 carbon atoms and R_2 is a hydrogen, methyl, or ethyl group and X comprises 10–40 weight percent of the ethylene copolymer, and

Y is selected from the group consisting of glycidyl methacrylate and glycidyl acrylate and

Y comprises 0.5–20 weight percent of the ethylene copolymer,

and provided that when component (b) is present at greater than 95%, component (b) consists of at least two polymers that are incompatible with each other; and

(c) 0.3–5 weight percent, based upon the weight of (a) and (b) above, of at least one isocyanate reacting agent with functionality less than three;

provided that in a blend of component (a) with component (b), component (a) and (b) are incompatible with each other, and further provided that in all blends, there be at least 5 weight percent of component (a) or component (b) that is incompatible with at least one other polymer in the blend.

5,004,785

LIGHT-DIFFUSING METHACRYLIC RESIN AND PROCESS FOR PRODUCTION THEREOF

Kozo Ida, Tokyo, and Tetsuya Horiuchi, Otake, both of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Nov. 28, 1988, Ser. No. 276,955

Claims priority, application Japan, Nov. 30, 1987, 62-302085

The portion of the term of this patent subsequent to Oct. 6, 2007, has been disclaimed.

Int. Cl.[5] C08F *265/04, 267/06*

U.S. Cl. 525—305 **14 Claims**

1. A light-diffusing methacrylic resin comprising a dispersion of crosslinked fine particles in a substrate polymer comprising mainly methyl methacrylate, said crosslinked fine particles being obtained by copolymerizing at least either a phenyl group containing vinyl or a phenyl group containing (meth)acrylate with a polyfunctional monomer copolymerizable therewith, and said resin being characterized in that

(1) the difference between the refractive indexes of the crosslinked fine particles and the substrate polymer is 0.02 to 0.15,

(2) the concentration by weight of the polyfunctional monomer in the crosslinked fine particles is 5 to 20%,

(3) the average particle diameter of the crosslinked fine particles in the light-diffusing methacrylic resin is 5 to 20 μ, the percentage of particles having a particle diameter of 2 μ or less being less than 1% by weight in the total amount of the crosslinked fin particles to be mixed, the percentage of particles having a particle diameter of 30 μ or more being less than 0.5% by weight of the total amount of the crosslinked fine particles to be mixed, and

(4) the concentration by weight of the crosslinked fine particles in the light-diffusing methacrylic resin is 0.08 to 10%.

5,004,786

PROCESS FOR PRODUCING SULFOMETHYLAMIDE POLYMERS

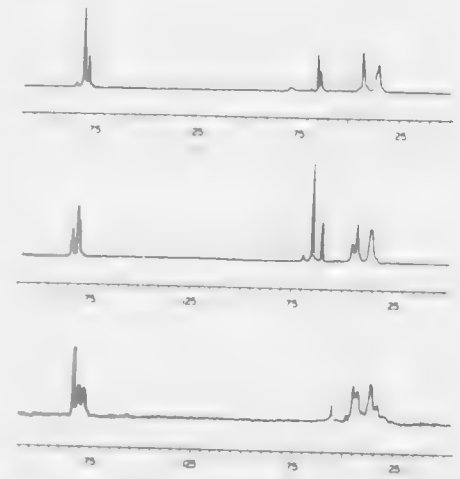
Dodd W. Fong, Naperville, and David J. Kowalski, LaGrange Park, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation of Ser. No. 179,442, Apr. 8, 1988, abandoned, which is a continuation of Ser. No. 4,841, Jan. 12, 1987, Pat. No. 4,762,894. This application Oct. 6, 1989, Ser. No. 418,984

The portion of the term of this patent subsequent to Jun. 5, 2007, has been disclaimed.

Int. Cl.[5] C08F *8/34*

U.S. Cl. 525—344 **1 Claim**



1. A method of reacting polyacrylamide with formaldehyde and bisulfite to produce a terpolymer containing sulfomethyl acrylamide/acrylamide/acrylate, wherein the initial pH of the reaction mixture is less than about 12, and wherein the polyacrylamide, formaldehyde, and bisulfite reactants are heated together and agitated, and the reaction temperature is maintained at from 110° C. to about 250° C.

5,004,787

VULCANIZABLE RUBBER COMPOSITION WITH TRIAZINE THIOLS

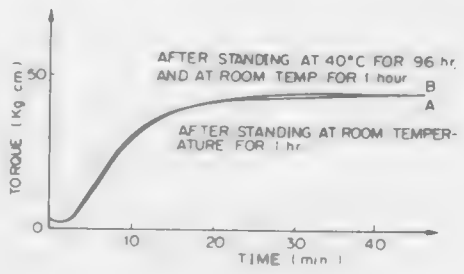
Tetsuo Tojo, Chiba; Keiji Okada, Ichihara; Takashi Nakahara, and Yoshiharu Kikuchi, both of Ichihara, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed May 19, 1988, Ser. No. 195,908

Claims priority, application Japan, May 22, 1987, 62-123665

Int. Cl.[5] C08C *19/22*

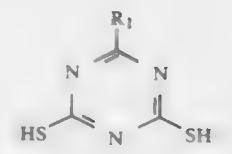
U.S. Cl. 525—332.1 **15 Claims**



1. A vulcanizable rubber composition comprising:

(a) a chlorine-containing rubber;

(b) as a vulcanization agent, a triazinethiol having the formula:

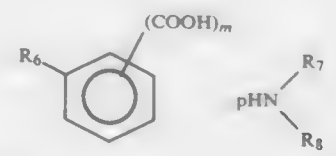


(II)

wherein R_1 represents $—NR_4R_5$, $—OR_4$ or $—SR_4$, where R_4 and R_5 independently represent a hydrogen atom, an alkyl group or an aryl group, the vulcanization agent present in a ratio of 0.001 to 0.025 mol per 100 g of the chlorine-containing rubber; and

(c) as a vulcanization aid, at least one component selected from the group consisting of:

(c-1) aromatic carboxylic acid amine salts having the formula:



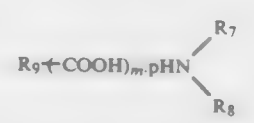
(III)

wherein m is a number of 1 to 3, p is a number of 1 to 3; m≧p;

R_6 represents a hydrogen atom, an alkyl group, a halogen, a nitro group, a cyano group or a hydroxy group;

R_7 and R_8 each represent a hydrogen atom, an alkyl or cycloalkyl group or an aryl group, and R_7 and R_8 may be bonded to each other to form a ring,

(c-2) aliphatic carboxylic acid amine salts having the formula:

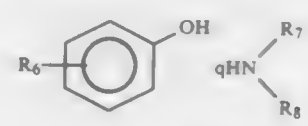


(IV)

wherein m, p, R_7, and R_8 are as defined above;

R_9 represents a monovalent to trivalent hydrocarbon group or a direct bond, and

(c-3) phenolamine salts having the formula:



(V)

wherein R_6, R_7 and R_8 are as described above, and g represents a number of 1 or 2.

5,004,788

CYANATO GROUP CONTAINING PHENOLIC RESINS, PHENOLIC TRIAZINES DERIVED THEREFROM

Sajal Das, Parsippany, and Dusan C. Prevorsek, Morristown, both of N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

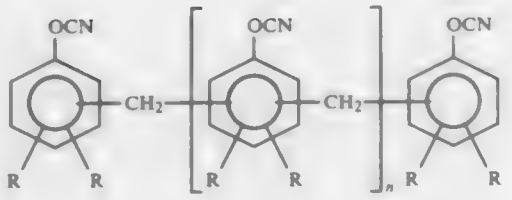
Division of Ser. No. 104,700, Oct. 5, 1987, Pat. No. 4,831,086. This application Mar. 1, 1989, Ser. No. 317,385

The portion of the term of this patent subsequent to May 16, 2006, has been disclaimed.

Int. Cl.[5] C08G *8/28;* **C08L** *61/06*

U.S. Cl. 525—504 **31 Claims**

1. A cyanato group containing phenolic resin of the formula



wherein n is o or an integer of 1 or more,

R is the same or different and is selected from hydrogen and methyl groups, the resin having a residual amount of phenyl cyanate of less than 2% by weight and said resin having a gel time of greater than 1 minute at 155° C.

5,004,789

NEW RESIN COMPOSITIONS BASED ON PHENOLIC RESINS

Francois Boinot, Lievin; Michel Cousin, Loison S/Lens; Pierre-Michel Francois, Bethune, and Francois Michel-Dansac, Bully-Les-Mines, all of France, assignors to Societe Chimiques des Charbonnages S.A., Paris La Defense, France

Filed Jun. 4, 1987, Ser. No. 58,055

Claims priority, application France, Jun. 5, 1986, 86 08127

Int. Cl.[5] C08C *8/28;* C08K *3/38;* B32B *3/02*

U.S. Cl. 525—506 29 Claims

1. In a composition suitable for the manufacture of phenolic prepreg mats, said composition comprising a phenol formaldehyde resin of the resol type, the improvement wherein said composition contains, as an additive to said resin (a) triethanolamine borate or (b) a mixture of an amine and boric acid or boric anhydride, the atomic ratio of boron atoms/nitrogen atoms in the boric acid or anhydride/amine mixture being between ¼ and 4.

5,004,790

FLUORINATED SURFACTANT MONOMERS FOR POLYMER SURFACE MODIFICATION

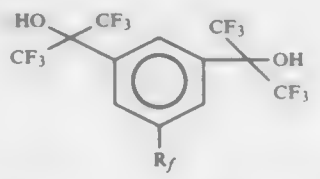
Daniel F. Harnish, Morristown; Donald Pickens, Mendham, and Andrew M. Zweig, West Orange, all of N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Feb. 15, 1989, Ser. No. 311,316

Int. Cl.[5] C08F *12/20*

U.S. Cl. 526—242 7 Claims

1. A resin obtained by the reactive curing of a composition comprising a blend of at least one functionalized fluorinated monomer and at least one co-reactive non-fluorinated monomer, said fluorinated monomer being derived from compounds of the formula:



where R_f=H or C_nF_{2n+1} and n=1—18

5,004,791

ORGANOSILOXANE-CONTAINING POLYSACCHARIDES

Robert L. Billmers, Stockton, N.J., assignor to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Division of Ser. No. 318,579, Mar. 3, 1989, Pat. No. 4,973,680. This application Sep. 10, 1990, Ser. No. 580,438

Int. Cl.[5] C08B *11/00, 37/16, 31/02, 33/02*

U.S. Cl. 527—300 12 Claims

1. A polysaccharide graft polymer, comprising the structure:

Sacch-O-(-C)$_m$(M-)$_n$,

wherein Sacch- is a polysaccharide; m is zero or one; G is the residue of a polymerizable, unsaturated monomer which is bonded to the polysaccharide by an ether or ester linkage; n is greater than one; and M is the residue of one or more polymerizable, unsaturated, monomer(s), at least one of which is a siloxane-containing monomer, which have been grafted to the polysaccharide by free radical polymerization.

5,004,792

METHOD FOR EXTENDING THE WORKING LIFE OF ORGANOSILOXANE COMPOSITIONS CURABLE BY A PLATINUM CATALYZED HYDROSILATION REACTION

Myron T. Maxson, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 103,991, Oct. 1, 1987, abandoned, which is a continuation-in-part of Ser. No. 899,111, Aug. 22, 1986, abandoned. This application Jun. 27, 1988, Ser. No. 211,613

Int. Cl.[5] C08G *77/06*

U.S. Cl. 528—15 6 Claims

1. In a method for extending the working life at 25 degrees C. of a curable organosiloxane composition comprising

A. at least one triorganosiloxy terminated polydiorganosiloxane containing at least two vinyl radicals per molecule,

B. an amount sufficient to cure said composition of a organohydrogensiloxane containing at least two silicon bonded hydrogen atoms per molecule,

C. a platinum hydrosilation catalyst in an amount sufficient to promote curing of said composition at a temperature of at least 100 degrees C., and

D. an amount of inhibitor for said catalyst sufficient to extend the working time of said composition at room temperature, where said inhibitor is a vinyl-containing polydiorganosiloxane that constitutes at least a portion of said triorganosiloxy-terminated polydiorganosiloxane,

the improvement comprising selecting as the inhibitor portion of said triorganosiloxy terminated polyorganosiloxane at least one polydiorganosiloxane containing in each molecule at least one sequence of at least two organovinylsiloxane units and represented by the average formula

$$R^3R^4MeSi(OSiMeR^2)_x[(OSiR_1V_1)_y]_zOSiR^3R^4Me \quad (I)$$

where Me represents methyl, Vi represents vinyl, R^1, R^2 and R^3 individually represent methyl, phenyl or $—CH_2CH_2Rf$, R^4 is selected from the group consisting of R^1 and vinyl radicals, Rf represents a perfluoroalkyl radical containing from 1 to 8 carbon atoms, the value of x is at least 4, the value of y is from 2 to 5, and the value of z is at least 1, and where said catalyst-inhibiting portion of the triorganosiloxy-terminated polydiorganosiloxane is prepared by polymerizing in the presence of an acid catalyst a first cyclic diorganosiloxane containing repeating units of the formula ViR^1SiO, a second cyclic diorganosiloxane containing. repeating units of the formula MeR^2SiO and an organosilicon compound comprising at least one unit of the formula R^3R^4MeSiX or $R^3R^4MeSiO_{\frac{1}{2}}$, where X represents a hydrolyzable atom or group.

5,004,793

ROOM TEMPERATURE-CURABLE COMPOSITION

Hisayuki Nagaoka; Michio Zenbayashi, and Chiyuki Shimizu, all of Gunma, Japan, assignors to Toshiba Silicone Co., Ltd., Tokyo, Japan

Filed Jul. 3, 1989, Ser. No. 374,796

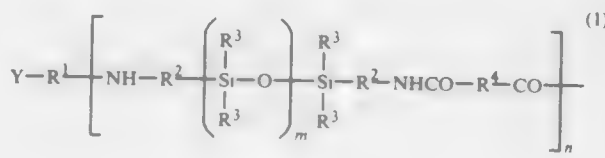
Claims priority, application Japan, Jul. 1, 1988, 63-164391

Int. Cl.[5] C08G *77/06*

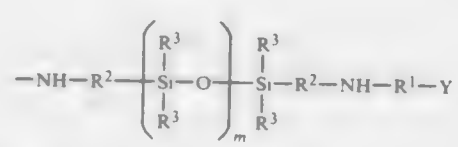
U.S. Cl. 528—15 10 Claims

1. A room temperature-curable composition comprising

(a) 100 parts by weight of a siloxane-amide block copolymer represented by the formula (1)



(1)



wherein

Y represents a hydrolyzable group containing organosilyl group of the formula $—SiR^5_aX_{3-a}$

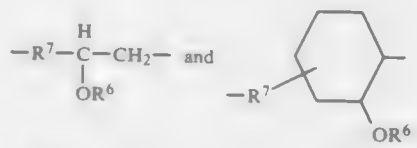
in which

R^5 represents a substituted or unsubstituted monovalent hydrocarbon group,

a is an integer of 0, 1 or 2, and

X is directly bonded to the silicon atom and represents a hydrolyzable group or a hydroxyl group,

R^1 represents a divalent group selected from the group consisting of



and

in which

R^6 represents a hydrogen atom, a substituted or unsubstituted monovalent hydrocarbon group, or an organosilyl group of the formula $—SiR^8_bX_{3-b}$

in which

R^8 represents a substituted or unsubstituted monovalent hydrocarbon group,

b is an integer of 0, 1. 2, or 3, and

X is the same as defined above, and

R^7 represents a substituted or unsubstituted divalent hydrocarbon group which has 1 to 8 carbon atoms and may contain an ether bond including an oxygen or sulfur atom,

R^2 represents a substituted or unsubstituted divalent hydrocarbon group,

R^3 represents a substituted or unsubstituted monovalent hydrocarbon group,

R^4 represents a substituted or unsubstituted divalent aromatic hydrocarbon group, and

m and n each independently is a number of 1 or more;

(b) 0 to 25 parts by weight of a crosslinking agent; and

(c) 0.01 to 3 parts by weight of a curing catalyst.

5,004,794

ISOCYANATE PREPOLYMERS

Winfried Emmerling, Erkrath; Juergen Wichelhaus, Wuppertal, and Tore Podola, Monheim, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Dec. 4, 1987, Ser. No. 128,662

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1986, 3641776

Int. Cl.[5] C08G *18/10*

U.S. Cl. 528—52 18 Claims

1. A process for the preparation of isocyanate prepolymers comprising the steps of

A. reacting a polyether and/or a polyester containing 2 hydroxyl groups and having a number average molecular weight of from about 500 to about 5000 with a diisocyanate in a molar ratio of from about 1 : 0.7 to about 1 : 1.3 until the content of free isocyanate groups in the resulting product is between about 0.4 and about 0.8% by weight; and

B. adding to the reaction mixture in step A a low molecular weight triol and the same or a different diisocyanate or a polyfunctional isocyanate, with the quantities of such components adjusted to produce a prepolymer having between about 1.5 and about 3.5% by weight of isocyanate groups, based on the weight of the prepolymer.

5,004,795

ALIPHATIC-AROMATIC POLYAMIDE-IMIDES

Wilfried Zecher; Aziz El-Sayed, both of Leverkusen; Wilfried Haese, Moenchengladbach; Burkhard Köhler, and Rolf-Volker Meyer, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

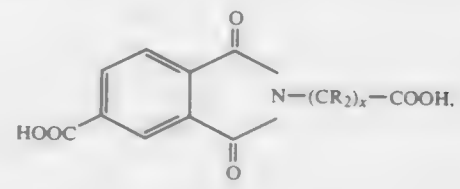
Filed Aug. 21, 1989, Ser. No. 396,145

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1988, 3829960

Int. Cl.[5] C08G *18/38*

U.S. Cl. 528—73 8 Claims

1. A process for the preparation of shaped articles, comprising shaping polyamide-imides obtained by condensation of organic diisocyanates with imidocarboxylic acids (I) of the formula



(I)

in which

R independently of one another represent Hydrogen (H) or C_1–C_6-alkyl and

x represents the number 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 or 12,

at temperatures of 50° to 380° C., optionally in a solvent and optionally in the presence of a catalyst.

5,004,796

PREPARATION OF POLY(ARYLATE) USING A NON-SOLVENT

Richard Vicari, Chatham; John R. Costanza, Plainfield; Ronald R. Lamonte, Flanders, and Ralph M. Miano, Summit, all of N.J., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Jan. 12, 1990, Ser. No. 464,395

Int. Cl.[5] C08G *63/02, 63/18, 63/00, 67/00*

U.S. Cl. 528—179 30 Claims

1. In a process for the production of polyarylates by reacting under esterification conditions a reaction mixture of a diester of a dihydric phenol, at least one aromatic dicarboxylic acid and

an inert diluent, the improvement wherein said diluent is a poly(fluorinated alkylene oxide).

5,004,797

PARTLY FLUORINATED CARBOXYLIC ACIDS AND DERIVATIVES THEREOF, PROCESSES FOR THEIR PREPARATION AND THEIR USE

Freimund Röhrscheid, Kelkheim; Günter Siegemund, and Jürgen Lau, both of Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

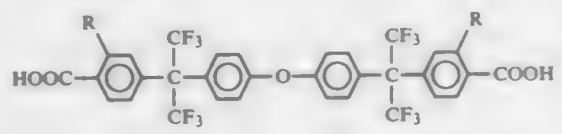
Filed Nov. 23, 1988, Ser. No. 275,405

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1987, 3739796; Nov. 24, 1987, 3739797; Nov. 24, 1987, 3739800

Int. Cl.[5] C08G *63/12*

U.S. Cl. 528—206 23 Claims

1. A compound of the formula



(I)

in which R represents hydrogen or —COOH, and the acid chloride of the compound of formula (I) with the proviso that R is hydrogen, and the dianhydride of the compound of formula (I) with the proviso that R represents the radical —COOH.

5,004,798

POLYACETAL COPOLYMERS OF TRIOXANE AND TRIMETHYLOLPROPANE FORMAL DERIVATIVES

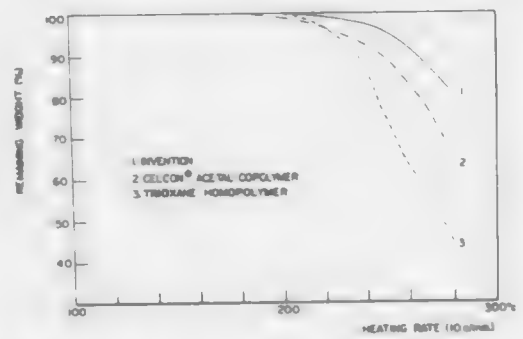
Jerry A. Broussard, Summit; Andrew B. Auerbach, Livingston, both of N.J.; Nan L. Yang, Staten Island, N.Y.; James L. Paul, Summit, N.J.; Yong C. Zheng, New York, and Chong L. Zhang, Staten Island, both of N.Y., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed May 12, 1989, Ser. No. 350,799

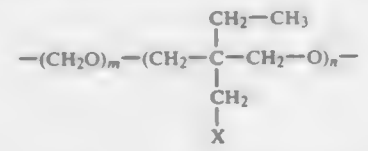
The portion of the term of this patent subsequent to Dec. 4, 2007, has been disclaimed.

Int. Cl.[5] C08G *4/00*

U.S. Cl. 528—230 17 Claims



1. As essentially linear acetal copolymer of the formula:



where X is an ester radical or a hydroxyl radical obtained by hydrolyzing an ester radical, and m and n are each integers such that m+n is between 5 to 20000, and the mole ratio of units of subscript n to the units of subscript m is between about 1:5000 to 1:1, and wherein said acetal copolymer is the reaction product of trioxane and an ester derivative of trimethylolpropane formal.

5,004,799

PELLETIZED SULFUR CONCRETE AND METHOD OF PREPARING SAME

Dennis E. Kohls, Salina, and Francis M. Moser, Sabetha, both of Kans., assignors to Reece Construction Company, Inc., Scandia, Kans.

Filed Sep. 20, 1989, Ser. No. 409,677

Int. Cl.[5] C08K *3/00;* C08L *47/00*

U.S. Cl. 528—389 1 Claim

1. A concrete product comprising discrete, substantially solid pellets of modified sulfur concrete which can be melted to form a coherent pourable mass of such concrete, said pellets having an average diameter of from ¼ to 1 inch and a bulk density of from about 100 to 155 pounds/cu.ft., said modified sulfur concrete comprising respective quantities of aggregate, mineral filler and sulfur cement, said sulfur cement comprising sulfur reacted with a plasticizer including a blend of dicyclopentadiene and oligomers of cyclopentadiene.

5,004,800

AROMATIC POLYTHIOETHERIMIDE

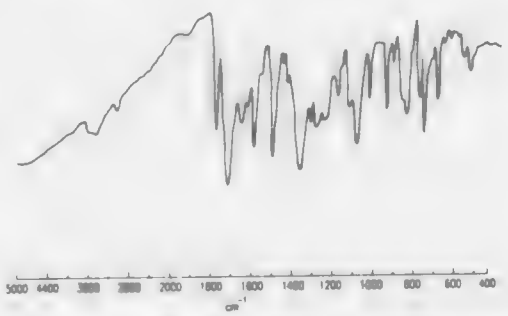
Makoto Terauchi; Chikako Ikeda, and Mitsutoshi Aritomi, all of Ibaraki, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Jun. 9, 1988, Ser. No. 204,278

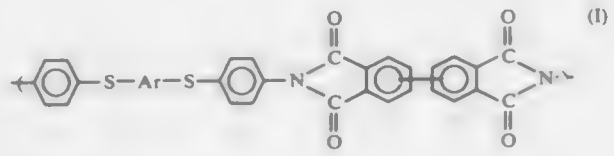
Claims priority, application Japan, Jun. 12, 1987, 62-146754

Int. Cl.[5] C08G *69/26, 69/28*

U.S. Cl. 528—351 6 Claims

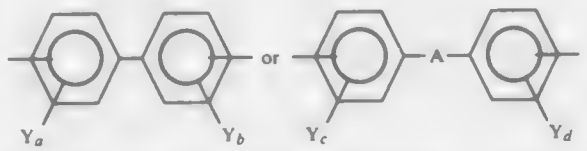


1. A melt-moldable aromatic polythioetherimide, comprising at least 50 mol % of a repeating unit having the formula (I):



(I)

wherein Ar represents:



wherein A represents O, CO, SO, SO_2 or C_yH_{2y}, y represents an integer of from 1 to 10; Y represents an alkyl group having form 1 to 20 carbon atoms, an aralkyl group having from 7 to 20 carbon atoms, a cycloalkyl group having from 3 to 20 carbon atoms, an aryl group having from 6 to 20 carbon atoms, a halogen atom or a nitro group; and a, b, c and d each represents 0 or an integer of from 1 to 4, with the total of the repeating unit or units being 100 mol %.

5,004,801

POLYMER OF DITHIOETHER-LINKED PHTHALONITRILE

Teddy M. Keller, Alexandria, Va., and Thomas R. Price, deceased, late of Fort Washington, Md. (by Carolyn R. Price, legal representative), assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 21, 1988, Ser. No. 274,216

Int. Cl.[5] C08G *83/00*

U.S. Cl. 528—360 6 Claims

1. A polymer of a phthalonitrile monomer represented by the formula:



wherein A is selected from the group consisting of an aliphatic hydrocarbon having from 2 to 30 carbon atoms, a cyclic hydrocarbon having from 4 to 30 carbon atoms, and mixtures thereof.

5,004,802

100KDA PROTEIN FROM BLOOD WHICH BINDS TO AND INHIBITS THE ACTIVITY OF PLASMINOGEN ACTIVATORS

Cornelis Kluft, Sassenheim, Netherlands, assignor to Nederlandse Centrale Organisatie Voor Toegepast-Natuurwetenschappelijk Orderzoel, The Hague, Netherlands

Filed Jul. 11, 1986, Ser. No. 884,418

Claims priority, application Netherlands, Jul. 12, 1985, 8502017

Int. Cl.[5] A61K *37/02;* C07K *15/06, 15/14*

U.S. Cl. 530—380 1 Claim

1. A protein called plasminogen activator binding protein purified so as to be free from contamination with materials that interfere with the plasminogen activator binding activity of the protein, having at least the following properties;

(a) it has a molecular mass of about 100,000 daltons as determined by gel chromatography on ULTROGEL ® ACA 44;

(b) it has an electrophoretic mobility in agarose at pH 8.6 equal to that of plasma β-globulins;

(c) it migrates to an isoelectric point of from 6.5 to 7.5;

(d) the protein binds specifically and reversibly to urokinase having a free active center;

(e) the protein binds specifically and reversibly to t-PA having a free active center and specific Kringle-2; and

(f) the protein is thermostable so that it remains its plasminogen activator binding activity when heated to up to at least 56° C.

5,004,803

PRODUCTION OF PROCOAGULANT PROTEINS

Randal J. Kaufman, Boston, and Debra Pittman, Arlington, both of Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Filed Nov. 14, 1988, Ser. No. 270,882

Int. Cl.[5] C07K *13/00;* C12N *5/06;* C07H *15/12;* C11N *15/64*

U.S. Cl. 530—383 5 Claims

1. A DNA encoding a procoagulant-active protein characterized by a peptide sequence of human Factor VIII except within the B domain where it is characterized by peptide sequence of human Factor V.

5,004,804

METHOD AND COMPOSITION FOR PREPARATION OF FACTOR VIIIC

George Kuo; Frank Masiarz, both of San Francisco; Martha Truett, Oakland, and Pablo Valenzuela, San Francisco, all of Calif., assignors to Nordisk Gentofte, Gentofte, Denmark

Filed Jan. 12, 1984, Ser. No. 570,062

Int. Cl.[5] C07K *15/28*

U.S. Cl. 530—387 3 Claims

1. Monoclonal antibodies prepared in response to an immunogen and specifically binding to said immunogen, said immunogen consisting of a protein composition substantially free of other proteins and consisting of a complex of an 80kd and 77kd protein calcium bridged with a 92.5kd protein exhibiting a biological activity of Factor VIIIC.

5,004,805

HEPATOCYTE GROWTH FACTOR

Eiichi Gohda, 1-51-2-31 Kinkodai; Hirohito Tsubouchi, 1925 Harara-cho, both of Kagoshima-shi, Kagoshima-ken; Hiroyuki Nakayama, Kagoshima; Shuichi Hirono, Kagoshima; Kozo Takahashi, Kagoshima; Shuji Hashimoto, 6-49-3 Murasakibaru, and Yasushi Daikuhara, 4-14-10-41 Meiwa, both of Kagoshima-shi, Kagoshima-ken, all of Japan, assignors to Shuji Hashimoto; Yasushi Daikuhara; Eiichi Gohda; Hirohito Tsubouchi, all of Kagoshima and Mitsubishi Kasei Corporation, Tokyo, all of, Japan

Filed Jun. 4, 1987, Ser. No. 58,211

Claims priority, application Japan, Jul. 14, 1986, 61-166495

Int. Cl.[5] C07K *7/10, 15/00*

U.S. Cl. 530—399 3 Claims

1. A substantially purified and isolated human hepatocyte growth factor, comprising a proteinaceous substance which exhibits the following physicochemical properties and physiological activity:

(i) having a molecular weight which is estimated to be approximately 76,000–92,000 by SDS-PAGE analysis, under non-reductive conditions;

(ii) having HGF activity;

(iii) said HGF activity being inactivated by heat treatment for 10 minutes at 80° C.;

(iv) said HGF activity being lost by digestion with trypsin or with chymotrypsin; and

(v) having such a high affinity for heparin that when adsorbed by Heparin-Sepharose column, said growth factor is not eluted therefrom below 0.8M NaCl in a PBS(−) buffer at pH 7.4 containing 0.013% Triton X-100.

5,004,806

NITROCELLULOSE FILTRATION TO REMOVE PROTEINS FROM POLYNUCLEOTIDES

Viola T. Kung, Menlo Park, Calif., assignor to Molecular Devices Corporation, Palo Alto, Calif.

Filed Oct. 17, 1988, Ser. No. 258,895

Int. Cl.[5] C12N *15/10;* C07K *3/18, 3/26, 3/28*

U.S. Cl. 530—415 20 Claims

1. A method for quantitatively removing microgram quantities of proteins from a solution containing picogram quantities of polydeoxyribonucleotides having at least about 300 nucleotides per strand and microgram quantities of proteins comprising filtering the solution through a nitrocellulose membrane at neutral or basic pH.

5,004,807

COPPER FORMAZAN REACTIVE DYES CONTAINING A MONOFLUOROTRIAZINE OR MONOCHLOROTRIAZINE GROUP

Klaus Pandl, Ludwigshafen, and Manfred Patsch, Wachenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

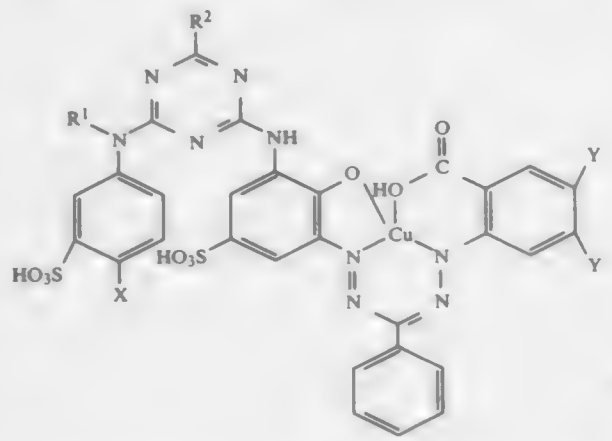
Filed Nov. 4, 1988, Ser. No. 267,347

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1987, 3737536

Int. Cl.[5] C09B *62/095, 50/00, 67/24;* **D06P** *3/66*

U.S. Cl. 534—618 **2 Claims**

1. A copper formazan reactive dye of the formula



where X is cyano, Cl, C_1–C_4-alkyl or C_1–C_4-alkoxy, one of the two radicals Y and Z is hydrogen and the other is hydroxysulfonyl, R^1 is hydrogen and R^2 is fluorine or chlorine, or a salt thereof.

5,004,808

AMINOALKYL-DERIVATIVES OF HYDROXYALKYL-CELLULOSES

Mansour Yalpani, and Magdy M. Abdel-Malik, both of Kirkland, Canada, assignors to Domtar Inc.

Filed Jul. 7, 1988, Ser. No. 216,129

Int. Cl.[5] C08B *11/02, 11/145, 11/193, 11/20*

U.S. Cl. 536—56 **32 Claims**

1. A product comprising a water soluble, (high molecular weight) (aminoalkyl) aminoalkyl - derivative of hydroxyalkyl cellulose,

said aminoalkyl derivative being selected from the group consisting of: amide and amine linked by an alkyl having at least one carbon atom, to the oxygen of the hydroxy group of said hydroxyalkyl cellulose, thereby replacing said hydrogen of the hydroxy group of said hydroxyalkyl, said hydroxyalkyl being a side chain of said cellulose, (said molecular weight being at least 50,000 daltons) said alkyl of said aminoalkyl derivative and said alkyl of said hydroxyalkyl may contain other compatible functional groups and at least one of the hydrogen of said NH_2 of said amino being optionally substituted with alkyl and alkyl having other functional groups said other functional groups not hindering the functionality of the amino groups nor the portioning properties of said aminoalkyl derivatives.

5,004,809

NITROXIDE LABELED NUCLEOTIDES AND NITROXIDE LABELED HYBRIDIZATION PROBES

Albert M. Bobst, and Gary T. Pauley, both of Cincinnati, Ohio, assignors to University of Cincinnati, Cincinnati, Ohio

Filed Feb. 4, 1986, Ser. No. 826,064

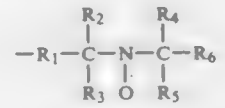
Int. Cl.[5] C07H *17/00*

U.S. Cl. 536—29 **11 Claims**

1. A 5'-triphosphate nucleotide wherein the base is selected from the group consisting of uracil and cytosine,

said base substituted at the C-5 position of the pyrimidine ring with a carbon atom,

said carbon atom further substituted with a nitroxide containing moiety wherein said nitroxide containing moiety has the following formula:



wherein R_1 represents C_1–C_{15} alkylene;

R_2 and R_4 represent a moiety selected from the group consisting of C_1–C_{15} alkyl and C_2–C_{15} alkylene;

R_3, R_5, R_6 represents C_1–C_5 alkyl.

5,004,810

ANTIVIRAL OLIGOMERS

Kenneth G. Draper, Madison, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed Sep. 30, 1988, Ser. No. 252,225

Int. Cl.[5] C07H *15/12, 47/00*

U.S. Cl. 536—27 **3 Claims**

1. An oligomer capable of hybridizing to the second translation initiation region downstream from the 5' end of messenger RNA coding for a herpes simplex virus Vmw65 transactivating protein and substantially inhibiting translation of such messenger RNA, which oligomer comprises bases substantially complementary to such translation initiation region linked by a backbone comprising ribose phosphate, deoxyribose phosphate, ribose alkylphosphonate, deoxyribose alkylphosphonate, ribose arylphosphonate or deoxyribose arylphosphonate.

5,004,811

TETRAPYRROLE AMINOCARBOXYLIC ACIDS

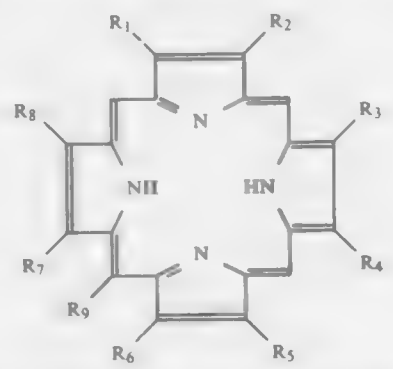
Jerry C. Bommer, Ogden, and Bruce F. Burnham, Logan, both of Utah, assignors to Nippon Petrochemicals Company, Ltd., Tokyo, Japan

Filed Dec. 24, 1987, Ser. No. 137,750

Int. Cl.[5] C07B *47/00*

U.S. Cl. 540—145 **32 Claims**

1. A fluorescent mono-, di-, tri- or tetramide of amino acid and a carboxy containing tetrapyrrole compound of the formula:

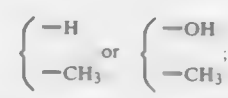


I

or the corresponding di- or tetrahydrotetrapyrroles, said amide

linkage being formed between the amino group of the amino acid and a carboxy-containing substituent attached to the tetrapyrrole; wherein

R_1 is methyl,

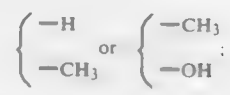


R_2 is H, vinyl, ethyl,

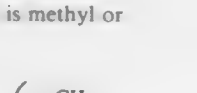


$CH_2CH_2CO_2H$, or =CHCHO;

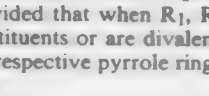
R_3 is methyl,



R_4 is H, vinyl, ethyl,



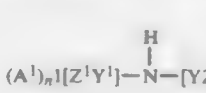
$CH_2CH_2CO_2H$, =CHCHO, or



R_5 is methyl;

R_6 is H, $CH_2CH_2CO_2H$, $CH_2CH_2CO_2R$ or CO_2H;

R_7 is $CH_2CH_2CO_2H$, $CH_2CH_2CO_2R$ or



R_8 is methyl or

R_9 is H, COOH, CH_2COOH or methyl;

provided that when R_1, R_2, R_3, R_4, R_7 and R_8 represent two substituents or are divalent and attached to the same carbon, the respective pyrrole ring to which attached is a dihydropyrrole;

with the proviso that at least one of R_1–R_9 includes a free carboxyl group; and salts thereof; and wherein the amino acid has the formula:

II

wherein

each A^1 and A may be the same or different and are selected from the group consisting of COOH, SO_3H or OH with the proviso that said compound contains at least one COOH or SO_3H;

Z^1 and Z are independently an alkylene chain containing from 0–5 carbon atoms in the principal chain and up to a total of 8 carbon atoms;

Y^1 and Y are independently an alkylene chain containing from 0–5 carbon atoms in the principal chain and up to a total of 8 carbon atoms with the proviso that when both A and A^1 are other than SO_3H, then one of Y^1 or Y must contain at least one carbon atom in the principal chain; or

Y^1 and Y taken together with the nitrogen to which they are attached form an N-heterocycle containing from 4–9 ring carbon atoms and up to a total of about 15 carbon atoms; or

Y^1Z^1 or YZ individually may form a cycloalkyl group containing from 5 to 10 ring carbon atoms and up to a total of about 16 carbon atoms;

n^1 and n are independently 0, 1 or 2; and

$n^1+n=2$.

5,004,812

DIRECT POSITIVE DIMETHINE CYANINE DYES CONTAINING 1-ARYL-2-HETEROARYL INDOLE NUCLEUS

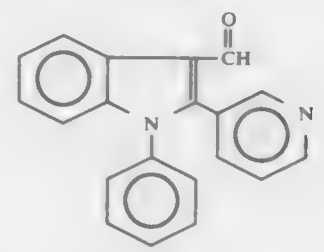
Thomas D. Weaver, Rochester, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 304,574, Jan. 31, 1989, Pat. No. 4,927,933, Division of Ser. No. 66,552, Jun. 26, 1987, Pat. No. 4,839,271. This application Jan. 22, 1990, Ser. No. 479,484

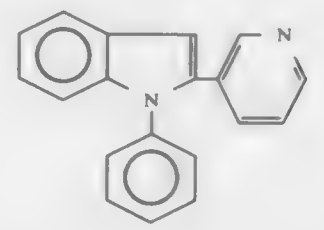
Int. Cl.[5] C07C *401/00*

U.S. Cl. 546—201 **2 Claims**

1. 3-formyl-1-phenyl-2(3-pyridyl)-1H-indole having the formula:



2. 1-phenyl-2-(3-pyridyl-1H-indole having the formula:



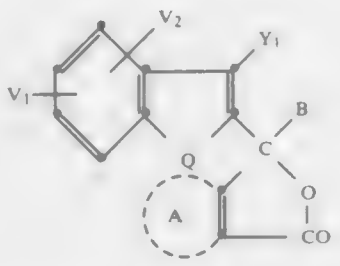
5,004,813

CHROMOGENIC PHTHALIDES AND AZAPHTHALIDES

Rox Phaff, Rheinfelden, and Davor Bedekovic, Biel-Benken, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

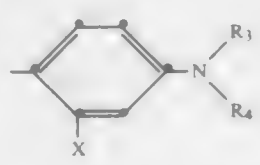
Division of Ser. No. 113,840, Oct. 26, 1987, Pat. No. 4,876,357.
This application Aug. 24, 1989, Ser. No. 398,203
Claims priority, application Switzerland, Oct. 28, 1986, 4268/86; Jan. 5, 1987, 2148/87
Int. Cl.[5] C07D *405/04, 407/04*
U.S. Cl. 548—463 9 Claims

1. A chromogenic phthalide or azaphthalide of the formula



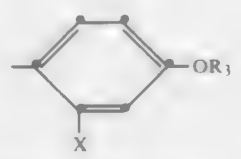
(I)

in which V_1 and V_2 are each, independently of the other, hydrogen, halogen, lower alkyl, lower alkoxy, (lower alkoxy)-carbonyl or $-NR_1R_2$, at least one of the radicals V_1 and V_2 being lower alkoxy or $-NR_1R_2$, A is an unsubstituted or halogen-, cyano-, nitro-, (lower alkyl)-, (lower alkoxy)-, (lower alkyl)thio-, (lower alkyl)-amino- or di(lower alkyl)amino-substituted benzene, naphthalene, pyridine, quinoline, pyrazine or quinoxaline ring, B is a substituted phenyl radical of the formula



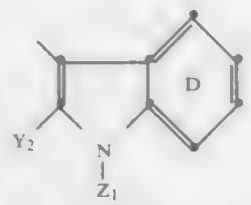
(Ia)

or



(Ib)

a 3-indolyl of the formula



(Ic)

Q is —O—, R_1, R_2, R_3 and R_4 are each, independently of the others, hydrogen, unsubstituted or halogen-, hydroxy-, cyanoor (lower alkoxy)-substituted alkyl having at most 12 carbon atoms, cycloalkyl having 5 to 10 carbon atoms or unsubstituted or halogen-, cyano-, (lower alkyl)- or (lower alkoxy)ringsubstituted phenalkyl or phenyl, or the substituent pairs (R_1 and R_2) and (R_3 and R_4) are each, independently of each other, together with the nitrogen atom joining them a five- or six-membered, heterocyclic radical, Y_1 is hydrogen, lower alkyl, cycloalkyl, phenalkyl or phenyl, Y_2 is hydrogen, lower alkyl or phenyl, Z_1 and is hydrogen, unsubstituted or halogen-, hydroxyl-, cyano- or (lower alkoxy)-substituted alkyl having at most 12 carbon atoms, acyl having 1 to 12 carbon atoms or unsubstituted or halogen-, cyano-, (lower alkyl)- or (lower alkoxy)-substituted benzyl, X is hydrogen, halogen, lower alkyl, C_1–C_{12}-alkoxy, C_1–C_{12}-acyloxy, benzyl, phenyl, benzyloxy, phenyloxy, halogen-, cyano-, (lower alkyl)- or (lower alkoxy)-substituted benzyl or benzyloxy, or the group $-NT_1T_2$, T_1 and T_2 are each, independently of the other, hydrogen, lower alkyl, cycloalkyl, unsubstituted or halogen-, cyano-, (lower alkyl)or (lower alkoxy)-substituted benzyl or acyl having 1 to 12 carbon atoms and T_1 is also unsubstituted or halogen-, cyano-, (lower alkyl)- or (lower alkoxy)-substituted phenyl, and the benzene nucleus D is unsubstituted or substituted by halogen, cyano, lower alkyl, lower alkoxy, (lower alkoxy)carbonyl, amino, mono(lower alkyl)amino or di(lower alkyl)amino.

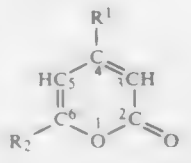
5,004,814

SUBSTITUTED α-PYRONES AND PROCESS FOR THEIR PREPARATION

Vratislav Kvita, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 16, 1989, Ser. No. 421,573
Claims priority, application Switzerland, Nov. 15, 1988, 4224/88
Int. Cl.[5] C07D *309/38*
U.S. Cl. 549—294 3 Claims

1. An α-pyrone of formula I



(I)

wherein R^1 is chloro or bromo and R^2 is hydrogen, chloro or bromo.

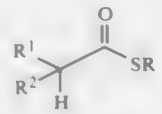
5,004,815

METHOD FOR SYNTHESIZING β-LACTONES AND ALKENES

Rick L. Danheiser, Watertown, and James S. Nowick, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Apr. 26, 1989, Ser. No. 343,909
Int. Cl.[5] C07D *305/12*
U.S. Cl. 549—328 24 Claims

1. A method for producing a β-lactone comprising: combining a thiol ester having the general formula:



wherein R_1 and R_2 are selected from the group consisting of: H, alkyl, aryl, alkenyl and alkynyl groups; and wherein R is selected from the group consisting of alkyl and aryl groups; with a ketone or aldehyde, a base and a solvent under conditions sufficient to cause addition of the thiol ester to the ketone or aldehyde to form an adduct, and subsequent cyclization of the adduct to form the corresponding β-lactone.

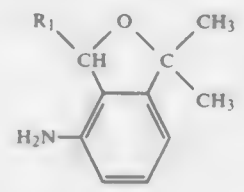
5,004,816

AMINOPYRROLE INTERMEDIATES FOR FUNGICIDES

Tatsuya Mori; Tadashi Ohsumi; Shigeo Nakamura; Kiyoto Maeda; Sumio Nishida, and Hirotaka Takano, all of Hyogo, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 259,283, Oct. 18, 1988, Pat. No. 4,877,441.
This application Jul. 20, 1989, Ser. No. 382,854
Claims priority, application Japan, Nov. 6, 1987, 62-281563; Nov. 6, 1987, 62-281564; Nov. 6, 1987, 62-281565; Jul. 15, 1988, 63-177751; Jul. 29, 1988, 63-191919; Jul. 29, 1988, 63-191920; Aug. 2, 1988, 63-193598
Int. Cl.[5] C07D *307/81*
U.S. Cl. 549—462 1 Claim

1. A substituted 4-amino-2-oxaindan having the formula:



wherein R_1 stands for a methyl or ethyl group.

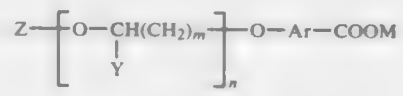
5,004,817

POLYOXYALKYLENE-ETHER DERIVATIVES HAVING ORGANIC ACID END-GROUPS, THEIR ALKYL ETHERS AND THEIR ALKALI METAL AND ALKALINE-EARTH METAL SALTS

Catia Bastioli, Novara; Salvatore Garlisi, Vercelli; Dario Fornara, Novara, and Vittorio Bellotti, Fontaneto D'Agogna, all of Italy, assignors to Montefibre, S.p.A., Milan, Italy

Filed Feb. 27, 1989, Ser. No. 315,568
Claims priority, application Italy, Feb. 29, 1988, 19576 A/88
Int. Cl.[5] C07D *303/12*; C07C *65/21*
U.S. Cl. 549—557 9 Claims

1. Compounds having the formula (I):



(I)

wherein:

M is an alkali or alkaline-earth metal of a C_1–C_{18} alkyl group;

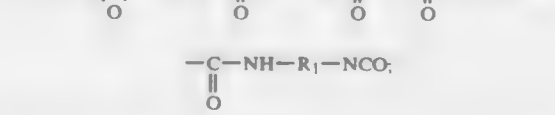
Ar is a simple or condensed aromatic ring having from 6 to 14 carbon atoms, optionally substituted with halogen atoms, C_1–C_8 alkyl, C_1–C_8 alkoxy, nitro groups; or Ar represents two or more aromatic nuclei bound either by a simple bond or by an —O—, —S—, $-SO_2-$, —SO—, —CO—, —CS—, or —NH— group;

Y is H or CH_3;

m is 1 when Y = $-CH_3$, or an integer from 1 to 5, including both values, when Y=$-CH_3$, or an integer from 1 to 5, including both values, when Y=H;

n is a number ranging from 20 to 500 including both values; and

Z is selected from the class consisting of H; a C_1–C_{18} alkyl, benzyl; allyl;



wherein R is a non-substituted phenyl group or a phenyl group substituted with halogen atoms or a C_{10}–C_{40} alkyl group; and R_1 is a non-substituted phenylene or a phenylene substituted with halogen atoms or a C_{10}–C_{40} alkylene group.

5,004,818

METHOD FOR PREPARATION OF NEPHRITOGENOSIDE

Seiichi Shibata, 40-11, Takadanobaba 4-chome, Shinjuku-ku, Tokyo, Japan

Filed Jul. 18, 1989, Ser. No. 381,493
Claims priority, application Japan, Jul. 21, 1988, 63-180378
Int. Cl.[5] C07K *9/00*
U.S. Cl. 530—322 10 Claims

1. A method for preparation of nephritogenoside, which comprises:

(a) treating nephritogenoside-containing animal organ tissue containing many microvessels with a nonionic surface active agent in an EDTA containing physiological salt solution;

(b) washing the precipitates thus obtained in a physiological salt solution and water in succession to remove said nonionic surface active agent, EDTA, and salt components;

(c) digesting the washed precipitates with trypsin;

(d) centrifuging the digested liquid to recover the supernatant liquid; and

(e) subjecting the supernatant liquid to a chromatography treatment to separate nephritogenoside.

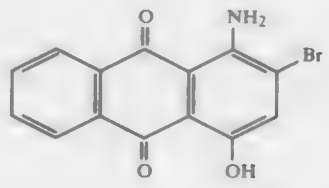
5,004,819

PREPARATION OF 1-AMINO-2-BROMO-4-HYDROXYANTHRAQUINONE

Gerhard Epple, Weisenheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

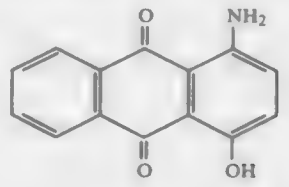
Filed Nov. 17, 1989, Ser. No. 437,660
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1988, 3841988
Int. Cl.[5] C07C *97/24*
U.S. Cl. 552—244 4 Claims

1. A process for preparing 1-amino-2-bromo-4-hydroxyanthraquinone (I)



(I)

by brominating 1-amino-4-hydroxyanthraquinone (II)



(II)

in a solvent consisting essentially of an inert aprotic organic liquid.

5,004,820

PREPARATION OF CHIRAL METALLOCENE DIHALIDES

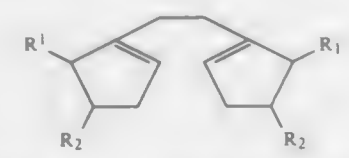
Stephen L. Buchwald, and Robert B. Grossman, both of Somerville, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 7, 1989, Ser. No. 390,062
Int. Cl.[5] C07F *00/00*
U.S. Cl. 556—53 **3 Claims**

1. A process for preparing a chiral metallocene dihalide compound

comprising reacting a compound represented by the formula:

I



wherein both R_1 and R_2, which can be the same or different, represent a hydrocarbyl radical such as alkyl, alkenyl, aryl, alkylaryl, or arylalkyl radicals having from 1 to 20 carbon atoms, and R_2 also represents hydrogen, or R_1 and R_2 are joined together with the two carbon atoms of the cyclopentadienyl ring form a C_4–C_6 ring; with potassium hydride followed by condensation with MX_4 or its bis(tetrahydrofuran) adduct,

wherein X is a halogen selected from the group consisting of chlorine, bromine and iodine, and M represents zirconium or hafnium, except M is not zirconium when X is bromine, and recovering the resulting product.

5,004,821

PRODUCTION OF PHENYLARSINES

Hartmut Hofmann, Gottingen, Fed. Rep. of Germany, assignor to PPM Pure Metals GmbH, Langelsheim, Fed. Rep. of Germany

Division of Ser. No. 336,415, Apr. 11, 1989, abandoned. This application Dec. 27, 1989, Ser. No. 456,233
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1988, 3812180
Int. Cl.[5] C07F *9/66*
U.S. Cl. 556—70 **6 Claims**

1. A process for the production of a phenylarsine, comprising

mixing phenylarsonic acid with substantially pure zinc in chip or tablet form in a solvent;

cooling the mixture while adding substantially pure hydrochloric acid thereto, said hydrochloric acid being added at a slow rate such that the formation of hydrogen is only slight to form the phenylarsine;

separating and drying the phenylarsine by phase separation and extraction; and

all of the foregoing steps being performed in the absence of oxygen.

5,004,822

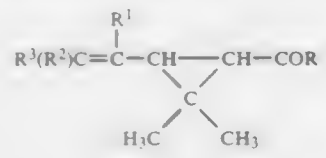
INSECTICIDES

Michael Elliott, Harpenden; Norman F. Janes, Luton, and David A. Pulman, Harpenden, all of England, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 430,612, Sep. 30, 1982, abandoned, which is a continuation of Ser. No. 185,871, Sep. 10, 1980, abandoned, and a continuation of Ser. No. 185,988, Sep. 10, 1980, abandoned, each is a continuation of Ser. No. 764,895, Feb. 2, 1977, abandoned, which is a division of Ser. No. 497,056, Aug. 13, 1974, Pat. No. 4,024,163, which is a continuation-in-part of Ser. No. 363,318, May 24, 1973, abandoned. This application Feb. 19, 1987, Ser. No. 16,289
Claims priority, application United Kingdom, Dec. 21, 1971, 59184/72; May 25, 1972, 24809/72; May 25, 1972, 24810/72; Jun. 30, 1972, 30838/72; Apr. 30, 1973, 20539/73
Int. Cl.[5] C07F *1//10*
U.S. Cl. 556—115 **12 Claims**

1. A single isomer of the formula

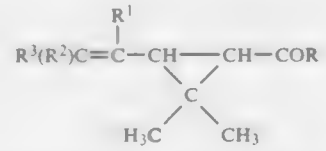
II



having 1R,cis configuration, wherein R^1 represents hydrogen, R^2 and R^3 each represent fluorine or each represent chlorine or each represent bromine and R represents OH, Cl, lower alkoxy or O^-M^+ where M^+ is an alkali metal, silver or triethylammonium ion.

4. A mixture of isomers of a compound of the formula:

II



said mixture comprises the 1R,cis isomer of said compound and at least one other different isomer of said compound, wherein R^1 is hydrogen or a methyl group, R^2 and R^3 independently represent a halogeno group with the proviso that R^2 and R^3 do not both represent chlorine in a racemic mixture, and R represents OH, Cl, lower alkoxy or O^-M^+ where M^+ is an alkali metal, silver or triethylammonium ion.

5,004,823

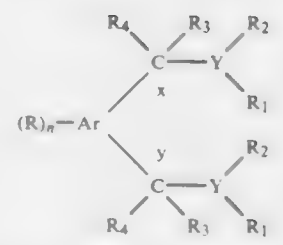
LOW PRESSURE RHODIUM CATALYZED HYDROFORMYLATION OF OLEFINS

Thomas J. Devon; Gerald W. Phillips; Thomas A. Puckette; Jerome L. Stavinoha, and Jeffrey J. Vanderbilt, all of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 288,596, Dec. 22, 1988, Pat. No. 4,960,949. This application Feb. 23, 1990, Ser. No. 483,839
Int. Cl.[5] C07F *15/00, 9/66, 9/90, 9/94*
U.S. Cl. 556—136 **4 Claims**

1. The catalyst comprising rhodium complexed with:

(a) a ligand of the formula



wherein

Ar is selected from aromatic ring compounds having 6 up to 14 carbon atoms;

the x bonds and the y bonds are attached to adjacent carbon atoms on the ring structure;

each R, when present as a substituent, is independently selected from alkyl, alkoxy, aryloxy, aryl, aralkyl, alkaryl, alkoxyalkyl, cycloaliphatic, halogen (except Cl, Br or I on the aromatic nucleus on the carbon atom adjacent to the carbon atoms bearing the x and/or y bonds), alkanoyl, alkanoyloxy, alkoxycarbonyl, formyl, carboxylate moieties, sulfonic acid derivatives, or amino moieties;

n is a whole number in the range of 0–4 wherein Ar is phenyl; 0–6 wherein Ar is naphthyl; and 0–8 where Ar is phenanthryl or anthracenyl;

each R_1 and R_2 is independently selected from alkyl, aryl, aralkyl, alkaryl, cycloaliphatic radicals and substituted derivatives thereof;

each R_3 and R_4 is independently selected from hydrogen and the R_1 substituents;

each of the above alkyl groups or moieties is straight or branched chain of 1–20 carbons, preferably 1–8 carbons;

each aryl group contains 6–10 ring carbons;

each cycloaliphatic group contains from 4–8 ring carbons; and

each Y is independently selected from elements P, As, Sb and Bi;

in a molar ratio of ligand/Rh of about 1/1;

(b) H in an atomic ratio of H/Rh of about 1/1; and

(c) carbon monoxide in a molar ratio of CO/Rh of about 2/1.

5,004,824

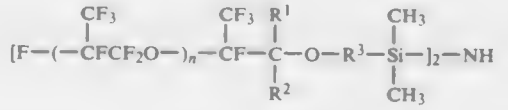
FLUORINE-CONTAINING ORGANOSILICON COMPOUND

Akio Takaoka, and Hiroshi Inomata, both of Takasaki, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 28, 1989, Ser. No. 372,528
Claims priority, application Japan, Jun. 29, 1988, 63-162172
Int. Cl.[5] C07F *7/10*
U.S. Cl. 556—412 **2 Claims**

1. A fluorine-containing organosilicon compound represented by Formula (I):

(I)



wherein n represents an integer from 1 to 4, R^1 and R^2 may be the same or different and each represent a hydrogen atom or a fluorine atom, and R^3 represents an alkylene group having 1 to 6 carbon atoms.

5,004,825

PROCESS FOR PREPARING DI(FLUOROALKYL CONTAINING GROUP-SUBSTITUTED ALKYL) PHOSPHATE SALT

Tutomu Yoshida, and Shigeharu Iida, both of Osaka, Japan, assignors to Daikin Industries Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 184,673, Apr. 22, 1988, abandoned. This application Jul. 18, 1989, Ser. No. 381,324
Claims priority, application Japan, Apr. 22, 1987, 62-100868
Int. Cl.[5] C07F *9/02*
U.S. Cl. 558—131 **10 Claims**

1. A process for preparing a di(fluoroalkyl containing group-substituted alkyl) phosphate salt of the formula:

$$[R_f\text{—}A^1_k\text{—}(CH_2)_m\text{—}O]_2PO\text{—}OA^2 \quad \text{(I)}$$

which comprises hydrolyzing a mon-sec. or tert.-alkyl or alkenyl di(fluoroalkyl containing group-substituted alkyl) phosphate of the formula:

$$[R_f\text{—}A^1_k\text{—}(CH_2)_m\text{—}O]_2PO\text{—}OR \quad \text{(II)}$$

with a base selected from the group consisting of an alkali hydroxide, an ammonium hydroxide and an amine, at a temperature of 80° to 100° C., the base being used in an amount of 1 to 10 equivalents per mole of the alkyl or alkenyl di(fluoroalkyl containing group-substituted alkyl) phosphate (II), wherein

each R_f is independently a perfluoroalkyl group or ω-hydroperfluoroalkyl group having 3 to 21 carbon atoms and may be linear, branched, cyclic or a combination thereof,

each A^1 is independently a divalent group which is selected from the group consisting of —COO—, SO_2—, —O—, $—(CH_2)_3—O—$, —S—, $—(CH_2)_p—NR'—$, $—CH_2CH(OR')—$, —CO—NR′— or $—SO_2—NR'—$in which R′ is a hydrogen or an alkyl group having 1 to 5 carbon atoms, and p is a integer of 1 to 6,

A^2 is an alkaline metal or an ammonium group which may be substituted with an alkyl and/or hydroxyalkyl group,

R is a secondary or tertiary alkyl or alkenyl group having 3 to 9 carbon atoms,

k is 0 to 1, and

m is an integer of 1 to 4.

9. A process for preparing a di(fluoroalkyl containing group-substituted alkyl) phosphate salt of formula (I)

$$[R_f\text{—}A^1_k\text{—}(CH_2)_m\text{—}O]_2PO\text{—}OA^2 \quad \text{(I)}$$

which comprises:

reacting a secondary or tertiary alcohol with phosphoryl trihalide in a molar ratio of the secondary or tertiary alcohol to the phosphoryl trihalide of 0.9:1 to 1:1 at a temperature of room temperature to 70° C. to produce a phosphoryl monoalkoxide dihalide,

reacting the phosphoryl monoalkoxide dihalide with a fluoroalkyl containing group-substituted alcohol in a molar ratio of said dihalide to the fluoroalkyl containing group-substituted alcohol of 1:2 to 1.2:2 at a temperature of 80° to 100° C. to produce a mono sec.- or tert.-alkyl di(fluoroalkyl containing group-substituted alkyl) phosphate of formula (II)

$$[R_f\text{—}A^1_k\text{—}(CH_2)_m\text{—}O]_2PO\text{—}OR \quad \text{(II)}$$

and

hydrolyzing the mono-sec.- or tert.-alkyl di(fluoroalkyl containing group-substituted alkyl) phosphate of formula (II) with a base at a temperature of 80° to 100° C., the base being used in an amount of 1 to 10 equivalent per mole of the alkyl or alkenyl di(fluoroalkyl containing group-substituted alkyl) phosphate of formula (II),

wherein each R_f is independently a perfluoroalkyl group or ω-hydroperfluoroalkyl group having 3 to 21 carbon atoms

and may be linear, branched, cyclic or a combination thereof,

each A^1 is independently a divalent group which is selected from the group consisting of —COO—, SO_2—, —O—, $—(CH_2)_3—O—$, —S—, $—(CH_2)_p—NR'—$, $—CH_2C-H(OR')—$, —CO—NR'— or $—SO_2—NR'—$ in which R' is a hydrogen or an alkyl group having 1 to 5 carbon atoms, and p is a integer of 1 to 6,

A^2 is an alkaline metal or an ammonium group which may be substituted with an alkyl and/or hydroxyalkyl group,

R is a secondary or tertiary alkyl or alkenyl group having 3 to 9 carbon atoms,

k is 0 to 1, and

m is an integer of 1 to 4.

10. A process for preparing a di(fluoroalkyl containing group-substituted alkyl) phosphate salt of the formula:

$$[R_f—A^1_k—(CH_2)_m—O]_2PO—OA^2 \quad (I)$$

which comprises reacting a secondary or tertiary alcohol of the formula:

$$ROH \quad (V)$$

with a phosphoryl trihalide of the formula:

$$POX_3 \quad (VI)$$

in a molar ratio of the secondary or tertiary alcohol to the phosphoryl trihalide of 0.9:1 to 1:1 at a temperature of room temperature to 70° C. to produce a phosphoryl monoalkoxide dihalide of the formula:

$$RO—POX_2 \quad (IV)$$

and reacting the phosphoryl monoalkoxide dihalide of the formula (IV) with a fluoroalkyl containing group-substituted alcohol of the formula:

$$R_f—A^1_k—(CH_2)_m—OH \quad (III)$$

in a molar ratio of said dihalide to the fluoroalkyl containing group-substituted alcohol of 1:2 to 1.2:2 at a temperature of 80° to 100° C. to produce an alkyl ester of di(fluoroalkyl containing group-substituted alkyl) phosphate of the formula:

$$[R_f—A^1_k—(CH_2)_m—O]_2PO—OR \quad (II)$$

and then hydrolyzing the alkyl ester of di(fluoroalkyl containing group-substituted alkyl) phosphate of the formula (II) with a base selected from the group consisting of an alkali hydroxide, an ammonium hydroxide and an amine, at a temperature of 80° to 100° C., the base being used in an amount of 1 to 10 equivalent per mole of the alkyl or alkenyl di(fluoroalkyl containing group-substituted alkyl) phosphate of formula (II), wherein each R_f is independently a perfluoroalkyl group or ω-hydroperfluoroalkyl group having 3 to 21 carbon atoms,

each A^1 is independently a divalent group which is selected from the group consisting of —COO—, SO_2—, —O—, $—(CH_2)_3—O—$, —S—, $—(CH_2)_p—NR'—$, $—CH_2C-H(OR')—$, —CO—NR'— or $—SO_2—NR'—$ in which R' is a hydrogen or an alkyl group having 1 to 5 carbon atoms, and p is a integer of 1 to 6,

A^2 is an alkaline metal or an ammonium group which optionally have an alkyl and/or hydroxyalkyl substituent,

R is a secondary or tertiary alkyl or alkenyl group having 3 to 9 carbons,

each X is independently halogen,

k is 0 to 1, and

m is an integer of 1 to 4.

5,004,826

SUBSTITUTED PROPANE-PHOSPHONOUS ACID COMPOUNDS

John G. Dingwall, Pantaleon; Josef Ehrenfreund, Allschwil, both of Switzerland; Roger G. Hall, Manchester, and James Jack, Cheshire, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

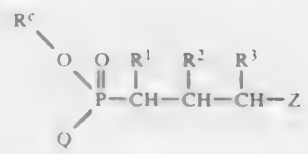
Division of Ser. No. 203,851, Jun. 7, 1988, Pat. No. 4,908,465, which is a division of Ser. No. 940,836, Dec. 12, 1986, Pat. No. 4,772,738, which is a division of Ser. No. 787,300, Oct. 15, 1985, Pat. No. 4,656,298. This application Dec. 1, 1989, Ser. No. 444,466

Claims priority, application United Kingdom, Dec. 10, 1984, 8425872

Int. Cl.[5] **C07F** *9/30, 9/32*

U.S. Cl. 558—169 **1 Claim**

1. A compound having the formula II



(II)

in which one of the groups R^1, R^2 and R^3 represents hydrogen, C_1–C_8alkyl, C_3–C_6-cycloalkyl, phenyl either unsubstituted or substituted by halogen, C_1–C_4alkyl, C_1–C_4alkoxy and/or trifluoromethyl, or phenyl-C_1–C_4alkyl either unsubstituted or substituted in the phenyl moiety by halogen, C_1–C_4alkyl, C_1–C_4alkoxy and/or trifluoromethyl, and the other two are hydrogen, Q denotes a group having the formula

$$—C(C_1\text{-}C_4\text{alkyl})(OR^a)OR^b,$$

in which R^a and R^b are each C_1–C_4alkyl, R^c is C_1–C_4alkyl and Z denotes $—NH_2$, or a pharmaceutically acceptable salt thereof.

5,004,827

CATALYTIC VAPOR PHASE PROCESS FOR PRODUCING DIHYDROCARBYL CARBONATES

Gerald L. Curnutt, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 871,725, Jun. 6, 1986, abandoned. This application Sep. 17, 1987, Ser. No. 97,882

Int. Cl.[4] **C07C** *68/00, 69/96*

U.S. Cl. 558—277 **13 Claims**

1. A process comprising contacting oxygen, carbon monoxide and an alkanol, which can be vaporized under the reaction conditions, in the vapor phase, in the presence of a heterogeneous catalyst which consists essentially of a metal halide or a mixed metal halide impregnated on activated carbon under reaction conditions sufficient to produce a dihydrocarbyl carbonate.

5,004,828

HYDROXY-FUNCTIONAL POLYESTER DILUENTS AS ADDITIVES IN COATING COMPOSITIONS

John Mathai, Chicago, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Filed Apr. 27, 1987, Ser. No. 43,051

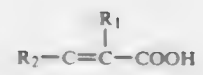
Int. Cl.[5] **C07C** *69/52*

U.S. Cl. 560—224 **2 Claims**

1. A hydroxy-functional polyester diluent having a number average molecular weight less than about 500 characterized as having an average of at least one hydroxyl group per molecule and an average of at least one polymerizable double bond per molecule derived from the reaction of:

(a) at least one triol having a molecular weight less than about 200,

(b) at least one low molecular weight unsaturated monocarboxylic acid having the formula:



wherein R_1 is either hydrogen or an alkyl group of 1 to 3 carbon atoms and R_2 is an aliphatic group of 1 to 4 carbon atoms or an aryl group, and

(c) at least one low molecular weight saturated monocarboxylic acid having the formula:

R—COOH

wherein R is hydrogen or a branched alkyl or straight chain alkyl or cyclic alkyl of 1 to 6 carbon atoms;

said triol being present in a stoichiometric amount to provide excess hydroxyl groups and said unsaturated monocarboxylic acid being present in amounts sufficient to provide at least one ethylenically unsaturated group for each molecule of triol.

5,004,829

METHOD OF PREPARING TRIFLUOROMETHANESULFONIC ACID ANHYDRIDE

Minoru Aramaki, Tokyo; Takashi Suenaga; Hiroaki Sakaguchi, and Takanori Hamana, both of Ube, all of Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Apr. 9, 1990, Ser. No. 506,206

Claims priority, application Japan, Apr. 10, 1989, 1-90375

Int. Cl.[5] **B01D** *3/34;* **C07C** *303/00, 303/44*

U.S. Cl. 562—113 **17 Claims**

1. A method of preparing trifluoromethanesulfonic acid anhydride, comprising the steps of:

reacting trifluoromethanesulfonic acid with phosphorus pentaoxide and removing trifluoromethanesulfonic acid anhydride formed by the reaction by distillation while leaving a residue of the distillation;

adding an aqueous solution of phosphoric acid to the residue of said distillation so as to obtain a fluidic mixture; and

subjecting said fluidic mixture to distillation to thereby recover unreacted trifluoromethanesulfonic acid contained in said residue.

5,004,830

PROCESS FOR OXIDATION OF ALKYL AROMATIC COMPOUNDS

Chang M. Park, and Wayne P. Schammel, both of Naperville, Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Nov. 29, 1989, Ser. No. 443,556

Int. Cl.[5] **C07C** *51/215*

U.S. Cl. 562—413 **6 Claims**

1. A batch, semi-continuous or continuous liquid phase process for production of aromatic polycarboxylic acid by oxidation in at least two reactors of an alkyl aromatic hydrocarbon wherein the alkyl group of said alkyl aromatic hydrocarbon contains from 1 to 5 carbon atoms and the number of alkyl groups is from 2 to 4, in the presence of a bromine-cobalt-manganese catalyst, which process comprises:

(a) preparing in a first reactor a liquid reaction mixture containing water, an aliphatic C_2–C_6 monocarboxylic acid and said alkyl aromatic hydrocarbon, wherein water concentration is in the range of from about 0 to about 15 wt.%, wherein mole ratio of bromine to cobalt plus manganese of said catalyst is in the range of from about 0.25 to about 1.2,

(b) injecting an oxygen-containing gas into said first reactor at a rate of from about 1.5 to about 2.7 moles of oxygen per alkyl group,

(c) oxidizing in said first reactor said alkyl aromatic hydrocarbon in an exothermic reaction at a temperature of from about 200° F. to about 350° F. at a reactor pressure of from about 150 psig to about 500 psig, and oxygen partial pressure is at least 1.5 psia, to prepare mono-acids and mono-aldehydes,

(d) controlling said temperature and said pressure within said ranges by means of a liquid phase heat exchanger, wherein a portion of said liquid reaction mixture is removed from said first reactor, cooled in said heat exchanger and returned to said first reactor as a liquid,

(e) transferring a portion of first reactor liquid phase to a second oxidation reactor, wherein water concentration is in the range of from about 0 to about 20 wt.%, wherein mole ratio of bromine to cobalt plus manganese of said catalyst is in the range of from about 0.25 to about 1.2, 1

(f) injecting an oxygen-containing gas into said second reactor at a mole ratio of from about 1.5 to about 2.7 moles of oxygen per alkyl group,

(g) oxidizing said portion of first reactor liquid phase in said second oxidation reactor and in succeeding oxidation reactors necessary to complete said oxidation of said alkyl aromatic hydrocarbon at a temperature within the range of from about 275° F. to about 450° F. pressure within the range of from about 75 psig. to about 450 psig and oxygen partial pressure of at least 1.5 psia, wherein temperature and pressure in said second reactor are controlled by means of a liquid phase heat exchanger wherein a portion of the reaction mixture in said second reactor is removed from said second reactor, cooled in said heat exchanger, and returned to said second reactor as a liquid,

(h) recovering said aromatic polycarboxylic acid as product.

5,004,831

RECOVERY OF HUMIC ACIDS

Johannes Dekker, Pretoria, and Izak J. Cronje, Verwoerdburg, both of South Africa, assignors to National Energy Council, Pretoria, South Africa

Filed Nov. 16, 1989, Ser. No. 437,174

Claims priority, application South Africa, Nov. 16, 1988, 88/8555

Int. Cl.[5] **C07C** *65/01*

U.S. Cl. 562—475 **5 Claims**

1. A method of recovering humic acid from oxidized coal including the steps of mixing the material with aqueous alkali, heating the mixture to a temperature above 100° C. and below 180° C. under sufficient pressure to prevent evaporation of the water, and maintaining the elevated temperature for a time sufficient to extract a substantial amount of the available humic acids from the material.

5,004,832

PREPARING ALPHA-ARYLALKANOIC ACIDS

Graziano Castaldi, Briona, and Claudio Giordano, Vicenza, both of Italy, assignors to Zambon S.p.A., Vicenza, Italy

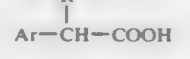
Division of Ser. No. 891,348, Jul. 31, 1986, Pat. No. 4,824,970. This application Feb. 6, 1989, Ser. No. 306,755

Claims priority, application Italy, Jul. 31, 1985, 21803 A/85

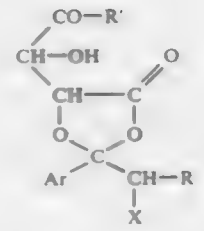
Int. Cl.[5] **C07C** *63/36, 63/04;* **C07D** *333/22*

U.S. Cl. 562—490 **2 Claims**

1. A process for preparing alpha-arylalkanoic acids of formula



in which Ar represents 4-isobutyl-phenyl, 3-phenoxy-phenyl, 2-fluoro-4-diphenylyl, 4-(2-thienylcarbonyl)-phenyl, 6-methoxy-2-naphthyl, 5-bromo-6-methoxy-2naphthyl, 6-hydroxy-2-naphthyl, 4-chloro-phenyl or 4-difluoromethoxy-phenyl, and R represents a C_1–C_4 alkyl or their immediate precursors, comprising heating a compound of formula



wherein

Ar represents 4-isobutyl-phenyl, 3-phenoxy-phenyl, 2-fluoro-4-diphenylyl, 4-(2-thienylcarbonyl)-phenyl, 6-methoxy-2-naphthyl, 5-bromo-6-methoxy-2-naphthyl, 6-hydroxy-2-naphthyl, 4-chloro-phenyl or 4-difluoromethoxy-phenyl;

R represents a C_1–C_4 alkyl;

R′ represents a hydroxyl or an alkoxy C_1–C_4;

X represents a chlorine, bromine or iodine atom,

in a protic polar solvent or in an aprotic dipolar solvent in the presence of a substance having a high dielectric constant, in a neutral or slightly alkaline environment

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5,004,833

KS-501 DERIVATIVES

Toru Yasuzawa, Sakai; Satoshi Nakanishi, Machida; Chikara Murakata, Asaka, all of Japan; Hiroshi Kase, Eastham, England; Hiroshi Sano, and Koji Yamada, both of Machida, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

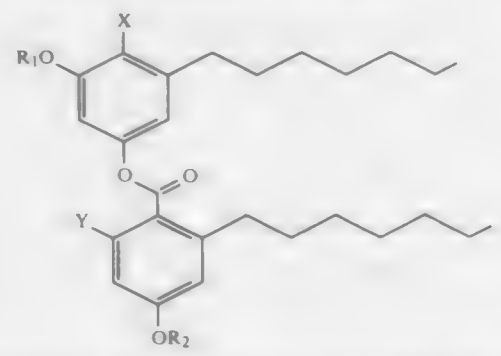
Filed Sep. 15, 1989, Ser. No. 408,192

Claims priority, application Japan, Sep. 21, 1988, 63-237316; Sep. 21, 1988, 63-237317

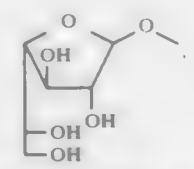
Int. Cl.[5] **C07H** *15/00*; **A61K** *31/715*

U.S. Cl. 536—18.2 **4 Claims**

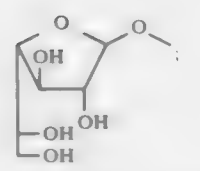
1. A compound represented by the formula



wherein X represents a hydrogen atom or $COOR_3$ wherein R_3 represents an alkyl group having 1 to 4 carbon atoms, Y represents hydroxy or



and R_1 and R_2 are the same or different and represent a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, provided that when R_1, R_2 and X are simultaneously hydrogen atoms, Y does not represent



or a pharmaceutically acceptable acid addition salt thereof

5,004,834

PREPARATION OF POLYAMIDES FROM UNSTABLE DIAMINES

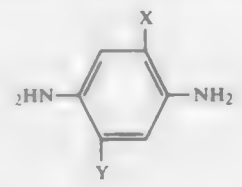
Robert S. Irwin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 5, 1990, Ser. No. 505,342

Int. Cl.[5] **C07C** *231/02*

U.S. Cl. 564—142 **4 Claims**

1. A process for preparing high molecular weight polyamides comprising forming a slurry of the dihydrochloride of



where X is Cl, Br or lower alkyl and Y is Cl, Br, lower alkyl or hydrogen in a solvent for the diamine, reacting the dihydrochloride with a tertiary amine in an amount at least equivalent to the HCl of the dihydrochloride to form free diamine in solution and treating the solution with an aromatic diacid chloride to form the polyamide.

5,004,835

SUBSTITUTED DICARBOXYLIC ACID-BIS(3,5-DICARBAMOYL-2,4,6-TRIIODOANILIDES), PROCESS FOR THEIR PRODUCTION AS WELL AS X-RAY CONTRAST MEDIA CONTAINING THEM

Peter Blaszkiewicz, and Ulrich Speck, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

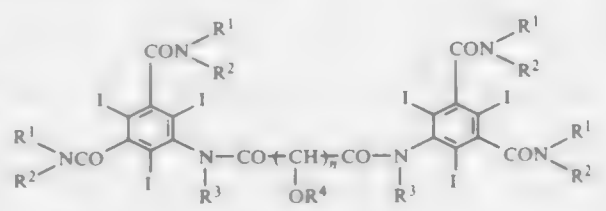
Filed Nov. 15, 1988, Ser. No. 271,464

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1987, 3739098

Int. Cl.[5] **C07C** *63/24, 103/78*

U.S. Cl. 564—153 **17 Claims**

1. A substituted dicarboxylic acid-bis(3,5-dicarbamoyl-2,4,6-triiodoanilide), of the formula



wherein

R^1 is hydrogen, a C_1–C_4 alkyl or R^2, wherein R^1 and R^2 may be the same or different,

R^2 is a straight-chain or branched-chain C_2–C_8 monohydroxyalkyl or polyhydroxyalkyl,

R^3 is a hydrogen atom, C_1–C_4 alkyl or R^2, wherein R^2 and R^3 are the same or different,

R^4 is a hydrogen atom, C_1–C_4 alkyl, and

n = 1 or 2

5,004,836

AROMATIC POLYETHERS CONTAINING KETO GROUPS IN SIDE CHAINS

Hans-Rytger Kricheldorf, Hamburg; Ulrich Delius, Ahrensburg, and Rolf Wehrmann, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

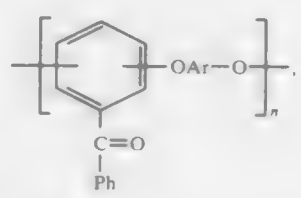
Filed Nov. 13, 1989, Ser. No. 435,045

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1988, 3838644

Int. Cl.[5] **C07C** *49/213*

U.S. Cl. 568—333 **3 Claims**

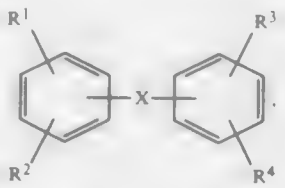
1. Aromatic polyethers containing keto groups in the side chains and corresponding to formula (I)



(I)

wherein

Ar stands for C_6–C_{30}-aryl group optionally substituted with C_1–C_4 alkyl, C_6–C_{14}-aryl, C_7–C_{24}-aryl, C_7–C_{24}-alkaryl, or a group of the formula (Ia)



(Ia)

wherein

X denotes a chemical bond, an oxygen atom, a sulfur atom, a sulphone group, a carbonyl group, or a C_3–C_{20}-alkylene group, and R^1 to R^4 denote, independently of one another, hydrogen, C_1–C_{20}-alkyl, methyl, C_6–C_{14}-aryl or halogen, and

Ph stands for phenyl optionally substituted with X–C_1–C_4-alkyl or X–C_6–C_{14} aryl, wherein X stands for oxygen or sulfur and

n stands for an integer from 3 to 250.

5,004,837

PROCESS FOR PREPARING A CYCLOALKANONE AND/OR CYCLOALKANOL

Henricus A. C. Baur, Herten, and Ubaldus F. Kragten, Beek, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Oct. 20, 1989, Ser. No. 424,706

Claims priority, application Netherlands, Oct. 21, 1988, 8802592

Int. Cl.[5] **C07D** *45/53*

U.S. Cl. 568—342 **8 Claims**

1. Process for preparing a cycloalkanone and/or cycloalkanol by oxidation of a cycloalkane with 5–12 carbon atoms using oxygen to form a cycloalkylhydroperoxide, followed by a decomposition of the cycloalkylhydroperoxide in the presence of an organic metal complex, characterized in that the decomposition of the cycloalkylhydroperoxide is carried out in the presence of a phthalocyanine or porphyrin metal complex immobilized on a carrier material.

5,004,838

INOSOSE DERIVATIVES, PRODUCTION AND USE THEREOF

Satoshi Horii, and Hiroshi Fukase, both of Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

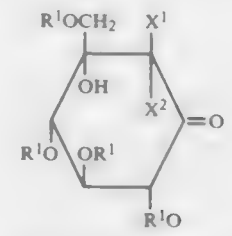
Division of Ser. No. 90,974, Aug. 31, 1987, Pat. No. 4,898,986. This application Sep. 29, 1989, Ser. No. 414,247

Claims priority, application Japan, Sep. 9, 1986, 61-212952; Nov. 5, 1986, 61-263462; Jan. 6, 1987, 62-779

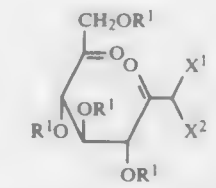
Int. Cl.[5] **C07C** *45/45*

U.S. Cl. 568—347 **1 Claim**

1. A process of preparing an inosose compound represented by the formula



wherein X^1 and X^2 are both halogen; or X^1 is $—SQ^1$ and X^2 is $—SQ^2$ (each of Q^1 and Q^2 is lower alkyl or Q^1 and Q^2 may form lower alkylene) and R^1 is a protective group for hydroxyl, which comprises treating a compound represented by the formula



wherein X^1 and X^2 are both halogen; or X^1 is $—SQ^1$ and X^2 is $—SQ^2$ (each of Q^1 and Q^2 is lower alkyl or Q^1 and Q^2 may form lower alkylene) and R^1 is a protective group for hydroxyl, with a base or silica gel at about −78° C. to the boiling point of a solvent included therewith for about 1 to 18 hours.

5,004,839

PREPARATION OF UNSATURATED KETONES FROM ACETONE AND PARAFORMALDEHYDE (II)

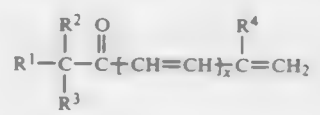
Joseph Pugach, Monroeville Borough, and Jeffrey S. Salek, Oakdale Borough, both of Pa., assignors to Aristech Chemical Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 425,269, Oct. 23, 1989, abandoned. This application Apr. 13, 1990, Ser. No. 508,454

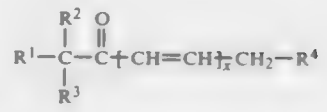
Int. Cl.[5] **C07C** *45/45*

U.S. Cl. 568—390 **31 Claims**

1. Method of making a compound of the formula



comprising reacting a ketone of the formula



with paraformaldehyde in the presence of a secondary amine catalyst, a halogen acid, and a solid catalyst selected from the

group consisting of nonsoluble oxides of elements of Groups IB, IIIA, IVA, IVB, VA, VB, VIB and VIII of the periodic table, where R^1, R^2, R^3 and R^4 are independently selected from hydrogen, alkyl and aromatic groups having 1 to about 15 carbon atoms including unsaturated groups provided that if both R^1 and R^2 are unsaturated, they should have a total of at least 4 carbon atoms and also provided that R^1, R^2, R^3 and R^4 may form parts of the same carbon or heterocyclic ring which may have substitutions, the total number of carbon atoms thereof being up to about 30, and x is 0 or 1.

5,004,840

PROCESS FOR PREPARING SEMI-CARONIC ALDEHYDES

Alain Krief, Wepion, and Willy Dumont, Salet-Anhee, both of Belgium, assignors to Roussel Uclaf, Paris, France

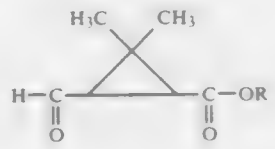
Filed Dec. 9, 1988, Ser. No. 282,382

Claims priority, application France, Dec. 11, 1987, 87 17296

Int. Cl.[5] C07C *45/58*

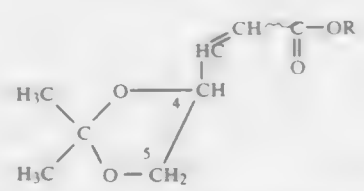
U.S. Cl. 568—486 **19 Claims**

1. A process for the preparation of compounds of the formula



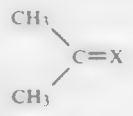
I

with cis or trans structure in racemic or optically active form wherein R is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms and aryl of 6 to 12 carbon atoms comprising reacting an optically active isomer, or racemate of the formula

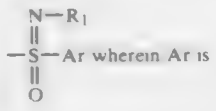


II

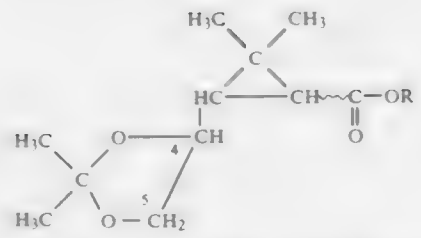
wherein R has the above definition and the wavy line indicates Z geometry with a gem-dimethyl cyclopropanation agent of the formula



wherein X is selected from the group consisting of $—P(Ar)_3$, $S(Ar)_2$, $Se(Ar)_2$, $—As(Ar)_2$ and

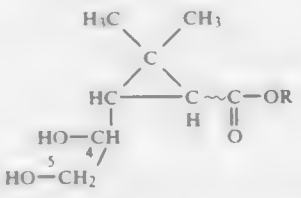


aryl and R_1 is hydrogen or alkyl of 1 to 5 carbon atoms to obtain a compound of the formula



III

wherein R has the above definition and the cyclopropane ring has the trans configuration and hydrolyzing the compound of formula III with a mineral or organic acid to obtain a compound of the formula



IV

and then cleaving the 4,5 bond under oxidizing conditions to obtain the corresponding compound of formula I.

5,004,841

ALKYLATION OF AROMATIC COMPOUNDS TO ALKYLATES ENRICHED IN THE LINEAR-SUBSTITUTED ISOMERS

Guo-shuh J. Lee; Juan M. Garces; Joseph J. Maj, all of Midland, and Stephen C. Rocke, Mt. Pleasant, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 123,741, Nov. 23, 1987, Pat. No. 4,891,448. This application Mar. 14, 1989, Ser. No. 323,530

The portion of the term of this patent subsequent to Jan. 2, 2007, has been disclaimed.

Int. Cl.[5] C07C *41/00*

U.S. Cl. 568—678 **28 Claims**

1. A process of alkylating an aromatic compound to a mixture of substituted aromatic compounds enriched in the linear alkylated isomers comprising contacting an aromatic compound with an alkylating agent having from one to eight carbon atoms in the presence of a catalyst under conditions such that a mixture of substituted aromatic compounds enriched in the linear alkylated isomers is formed, said catalyst consisting essentially of an acidic mordenite zeolite having a silica/alumina molar ratio of at least 15:1 and a crystalline structure which is determined by X-ray diffraction to possess a Symmetry Index sufficient to increase the yield of linear alkylated isomers to at least about 20 mole percent.

5,004,842

AROMATIC VINYL ETHER COMPOUNDS AND COMPOSITIONS, AND METHOD OF MAKING THE SAME

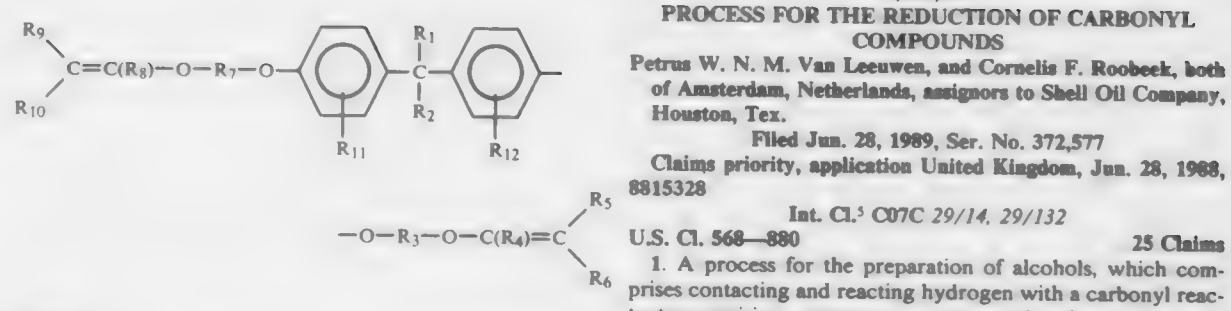
Philip T. Klemarczyk, Collinsville, and Yoshihisa Okamoto, Avon, both of Conn., assignors to Loctite Corporation, Newington, Conn.

Filed Jun. 25, 1990, Ser. No. 543,248

Int. Cl.[5] C07C *43/00*

U.S. Cl. 568—640 **12 Claims**

1. An aromatic vinyl ether of the formula:



wherein:

R_1, R_2, R_4, R_5, R_6, R_8, R_9 and R_{10} are independently selected from hydrogen, halogen, and C_1–C_8 alkyl radicals;

R_3 and R_7 are independently selected from C_1–C_8 alkylene radicals; and

R_{11} and R_{12} are independently selected from allyl and methallyl.

5,004,843

PROCESS FOR PRODUCING ALLYLIC ALCOHOLS

Mitsuhisa Tamura; Gohu Suzukamo, and Ken-ichi Hirose, all of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

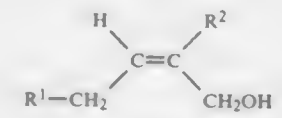
Continuation of Ser. No. 338,546, Apr. 17, 1989, abandoned, which is a continuation of Ser. No. 91,308, Aug. 28, 1987, abandoned, which is a continuation of Ser. No. 430,511, Sep. 30, 1982, abandoned, which is a continuation of Ser. No. 209,143, Nov. 21, 1980, abandoned. This application May 29, 1990, Ser. No. 529,730

Claims priority, application Japan, Nov. 22, 1979, 54-151877; Nov. 22, 1979, 54-151878; Apr. 8, 1980, 55-46347; Jun. 13, 1980, 55-80413; Jun. 25, 1980, 55-86873

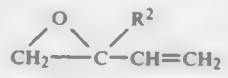
Int. Cl.[5] C07C *41/00, 33/34, 33/28, 35/06*

U.S. Cl. 568—670 **15 Claims**

1. A process for preparing 1,4 adducts exclusively and regioselectively which are predominantly Z-substituted allylic alcohols of the formula:



wherein R^1 is a straight or branched C_2–C_{25} alkyl or C_3–C_{25} cycloalkyl group optionally bearing at least one substituent selected from the group consisting of phenyl, naphthyl, lower alkoxy and alkylenedioxy and R^2 is a hydrogen atom or a methyl group, which comprises reacting 1 mole of vinyl epoxide of the formula:



wherein R^2 is as defined above with 0.1 to 10 moles of an organolithium compound of the formula:

$$R^1—L_1$$

wherein R^1 is as defined in an inert solvent at a temperature of −78° C. to the reflux temperature of the reaction mixture.

5,004,844

PROCESS FOR THE REDUCTION OF CARBONYL COMPOUNDS

Petrus W. N. M. Van Leeuwen, and Cornelis F. Roobeek, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 28, 1989, Ser. No. 372,577

Claims priority, application United Kingdom, Jun. 28, 1988, 8815328

Int. Cl.[5] C07C *29/14, 29/132*

U.S. Cl. 568—880 **25 Claims**

1. A process for the preparation of alcohols, which comprises contacting and reacting hydrogen with a carbonyl reactant comprising one or more compounds selected from the group consisting of aldehydes of the formula R^3CHO and ketones of the formula R^3COR^4, wherein R^3 and R^4 each is independently selected from the group consisting of substituted and unsubstituted alkyl, alkenyl, cycloalkyl and cycloalkenyl moieties having from 1 to about 10 carbon atoms or a phenyl group, in the presence of a catalyst system comprising a platinum compound, an acid having a pKa in the range of from about 2 to about 10.5 and a phosphorus compound of the formula R^1R^2POH, wherein R^1 and R^2 each independently represents a C_1 to C_{10} alkyl group or a phenyl group, at a temperature in the range from about 20 to about 150° C. and at a pressure in the range from about 1 to about 100 bar.

5,004,845

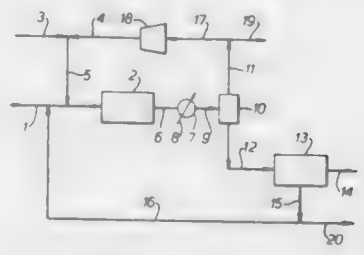
HYDROGENATION OF ALDEHYDES

Michael W. Bradley, Marton; Norman Harris, Norton, and Keith Turner, Fairfield, all of England, assignors to Davy McKee (London) Limited, London, England

Continuation of Ser. No. 874,805, Jun. 13, 1986, abandoned, which is a continuation of Ser. No. 659,904, Oct. 11, 1984, abandoned, which is a continuation-in-part of Ser. No. 409,933, Aug. 20, 1982, abandoned, which is a continuation-in-part of Ser. No. 294,519, Aug. 20, 1981, abandoned. This application Jun. 27, 1988, Ser. No. 212,113

Int. Cl.[5] C07C *29/136, 29/14, 31/12, 31/125*

U.S. Cl. 568—885 **17 Claims**



1. In a continuous process for the production of an aliphatic alcohol containing 2 to 10 carbon atoms by catalytic hydrogenation of an aliphatic aldehyde containing 2 to 10 carbon atoms by reaction of a hydrogenation mixture containing the aldehyde and hydrogen in a catalytic aldehyde hydrogenation zone containing a charge of a hydrogenation catalyst effective for the hydrogenation of aldehydes and maintained under aldehyde hydrogenation conditions, followed by recovery of a reaction mixture containing, in addition to product alcohol, a minor amount of a by-product ester containing twice as many carbon atoms as the product alcohol, said ester being derived from an alkyl carboxylic acid containing the same number of carbon atoms as the product alcohol and from the product alcohol, the improvement comprising separating by-product ester from the reaction mixture and passing an essentially aldehyde-free vaporous mixture comprising by-product ester and hydrogen, in which mixture the vapour pressure of said by-product ester is at least about 0.05 kg/cm^2 over a catalyst consisting essentially of a reduced mixture of copper oxide and zinc oxide, in a secondary catalytic hydrogenation zone, at a temperature in the range of from about 150° C. to about 240° C.

and at a pressure in the range of from about 5 kg/cm^2 absolute up to about 50 kg/cm^2 absolute, and recovering from said secondary catalytic hydrogenation zone a reaction mixture that is substantially free from by-product ester and contains a substantially quantitative yield of further product alcohol corresponding to 2 moles of further product alcohol per mole of by-product ester treated in the secondary catalytic hydrogenation zone.

5,004,846

PROCESS FOR PRODUCING NITROBENZENES

Hiroshi Sato; Kenichi Hirose; Koichi Nagai; Hiroshi Yoshioka, and Yoshihiko Nagaoka, all of Ehime, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed May 15, 1989, Ser. No. 352,022

Claims priority, application Japan, May 18, 1988, 63-122671

Int. Cl.^{5} C07C *79/10*

U.S. Cl. 568—940 **10 Claims**

1. A process for producing nitrobenzenes which comprises nitrating benzenes in a vapor phase using nitric acid as a nitrating agent in the presence of acidic sheet clay minerals which are sheet clay minerals ion-exchanged with a member of the group selected from Al^{3+}, Ti^{4+}, Zr^{4+}, Fe^{3+}, Cr^{3+}, $Bi^{3+}$and La^{3+}.

6. A process for producing nitrobenzenes which comprises nitrating benzenes in a vapor phase using nitric acid as a nitrating agent in the presence of acidic composite oxides comprising oxides of metals belonging to Group IVA of Medeleefs' periodic Table and tungsten oxide, molybdenum oxide, niobium oxide or zinc oxide.

5,004,847

RECOVERY OF HEXABROMOCYCLODODECANE PARTICLES

Phillip R. Beaver, Baton Rouge, La.; Peter M. DiGiacinto, Seabrook, Tex.; Donald O. Hutchinson, and Julio J. Vega, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Dec. 27, 1989, Ser. No. 457,960

Int. Cl.^{5} C07C *23/02*

U.S. Cl. 570—186 **24 Claims**

1. A method for obtaining an improved product from a composition, said composition comprising:

(i) solid particles comprising hexabromocyclododecane;

(ii) a solvent or mixture of solvents used in the production of hexabromocyclododecane; and

(iii) one or more members selected from the group consisting essentially of dodecyl bromides, hydrogen bromide, lower alkyl bromides and bromine;

said method comprising

(1) forming an admixture of said composition and water;

(2) heating said admixture for a time and at a temperature and a pressure, which time, temperature and pressure are sufficient to remove at least a portion of said solvent from said admixture and to form agglomerates with at least a portion of said particles; and

(3) recovering from said admixture a product comprising said particles and agglomerates;

wherein said forming and said heating are effective to enhance the removal of at least a portion of said solvent and/or said one or more members so as to obtain said improved product.

5,004,848

METHOD OF ELEVATING THE MELTING POINT OF A HEXABROMOCYCLODODECANE PRODUCT

Phillip R. Beaver, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Feb. 5, 1990, Ser. No. 475,384

Int. Cl.^{5} C07C *17/12*

U.S. Cl. 570—206 **17 Claims**

1. A method for elevating the melting point of hexabromocyclododecane product obtained from a reaction mass formed by admixing bromine and cyclododecatriene in a solvent system comprising the admixture of a lower alkyl alcohol and a lower alkyl halogenated hydrocarbon, said method comprising the steps of:

(1) maintaining said reaction mass

(a) at a temperature of at least about 40° C.,

(b) at a loading factor of at least about 40%, and

(c) at a weight ratio of said halogenated hydrocarbon to said alcohol of about 3/97 to about 90/10,

at least until there is formed a composition comprising first particles predominant in a first hexabromocyclododecane isomer and second particles of one or more other hexabromocyclododecane isomers, said first particles being larger in size and heavier in mass than said second particles and said first isomer having a higher melting point than each of said one or more other isomers; and

(2) processing said composition to produce said HBCD product, said processing comprises separating said first and second particles according to size or mass so as to preferentially retain said first particles in said hexabromocyclododecane product.

5,004,849

MANUFACTURE OF PERCHLOROETHYLENE AND TRICHLOROETHYLENE BY CATALYTIC OXYCHLORINATION, AND IMPROVED CATALYSTS THEREFOR

Robert P. Hirschmann; William Q. Beard, Jr., both of Wichita; Eric L. Mainz, Colwich; Earl B. Smith, Newton, all of Kans., and Barry M. Little, Castlewood, S. Dak., assignors to Vulcan Chemicals, Wichita, Kans.

Filed Dec. 15, 1989, Ser. No. 451,303

Int. Cl.^{5} C07C *17/15, 19/156*

U.S. Cl. 570—224 **5 Claims**

1. In a process for the production of trichloroethylene and perchloroethylene by catalytic oxychlorination of a C_2 hydrocarbon or a partially chlorinated derivative thereof in a reaction zone comprising a fluidized bed of microspheroidal particles of catalyst maintained at a temperature between 370° and 470° C. and a pressure between 1 and 20 atmospheres and providing a superficial reaction zone residence time of 2 to 60 seconds, the improvement which comprises using as the catalyst a catalyst composition comprising a mixture of copper chloride, potassium chloride and magnesium chloride deposited in a catalytically active amount on a microspheroidal support comprising from 90 to 99.8 percent alumina and from 0.2 to 10 percent silica and having an initial surface area X in excess of 20 and less than 100 m^2/g, (a) the ratio of copper chloride, to potassium chloride in said salt mixture being between 0.5:1 and 5.0:1, the copper chloride being calculated as copper (II) chloride and (b) the ratio of $MgCl_2$ to KCl in said salt mixture being between 0.5:1 and 2.0:1, said salt mixture being deposited on said microspheroidal support at a catalyst loading Y which is dependent on the initial surface area X of said microspheroidal support, wherein Y is calculated from the equation

$$Y \text{ (expressed in weight percent)} = (0.102X + 12.57) \pm 20\%,$$

X being a figure corresponding to the initial surface area of the support expressed in square meters per gram.

5,004,850

BLENDED GASOLINES

Ewert J. A. Wilson, Albany, Ky., assignor to Interstate Chemical, Inc., Jupiter, Fla.

Filed Dec. 8, 1989, Ser. No. 447,543

Int. Cl.^{5} C07C *7/20*; C10L *1/16*

U.S. Cl. 585—1 **24 Claims**

1. A process for producing gasoline, comprising the steps of:

(a) blending liquid components comprising a low-weight hydrocarbon component, a natural gasoline component, and a toluene component; and,

(b) withdrawing a vapor stream of light-weight hydrocarbons from said liquid components, whereby the vapor pressure of the resulting blended liquid product will be decreased.

5,004,851

PROCESS TO PRODUCE AROMATICS OF LOW ACID-WASH COLOR

George R. Durham, Baton Rouge, and Randy S. Hebert, Donaldsonville, both of La., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 98,837, Sep. 21, 1987, abandoned. This application Nov. 22, 1988, Ser. No. 275,665

Int. Cl.^{5} C07C *7/163*

U.S. Cl. 585—260 **20 Claims**

1. A process to produce benzene or toluene with an acid wash color of two or less from a stream containing primarily benzene or toluene with impurities which include olefins, said process comprising sequentially the steps of:

(1) fractionally distilling said stream such that the purity of the benzene or toluene is increased to at least about 99 percent by weight; and

(2) passing said stream after said distillation step in a liquid phase over a hydrogenation catalyst with a sufficient amount of hydrogen and under conditions such that substantially all olefins remaining in the stream are hydrogenated to paraffins but little benzene or toluene is hydrogenated.

5,004,852

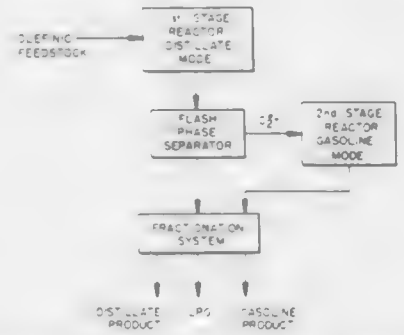
TWO-STAGE PROCESS FOR CONVERSION OF OLEFINS TO HIGH OCTANE GASOLINE

Mohsen N. Harandi, Lawrenceville, N.J., assignor to Mobil Oil Corp., Fairfax, Va.

Filed Aug. 24, 1989, Ser. No. 399,182

Int. Cl.^{5} C07C *2/12, 15/02*

U.S. Cl. 585—322 **10 Claims**



1. A continuous process for converting an olefinic feedstock containing ethylene and C_3+olefins by catalytic oligomerization and aromatization to produce high octane gasoline which comprises the steps of:

(a) contacting the olefinic feedstock in a first catalytic oligomerization zone with a crystalline zeolite oligomerization catalyst at pressure of about 240 to 2900 kPa (20 to 400 psig), temperature of about 170° to 510° C. and WHSV of about 0.1 to about 50 hr^{-1} to convert C_3+olefins to a first reaction zone effluent stream rich in oligomerized gasoline range hydrocarbons;

(b) flashing the first reaction zone effluent stream to separate said first reaction zone effluent stream into a liquid stream rich in C_5+ gasoline and a vapor stream rich in ethylene; and

(c) contacting the vapor stream from step (b) in a second catalytic reaction zone with a crystalline zeolite aromatization catalyst to pressure of about 150 to 1500 kPa (10 to 200 psig), temperature of about 510° to 820° C. (950° to 1500° F.) and WHSV of about 0.3 to 300 hr^{-1} to convert ethylene and other lower olefins to a second reactor effluent stream rich in aromatic gasoline.

5,004,853

CONTINUOUS PROCESS FOR THE PRODUCTION OF 2,6-DIMETHYLNAPHTHALENE

Paul T. Barger, Arlington Heights; Timothy J. Barder, Addison; David Y. Lin, Hinsdale, and Simon H. Hobbs, Chicago, all of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 174,561, Mar. 29, 1988, Pat. No. 4,835,334. This application Mar. 27, 1989, Ser. No. 328,654

The portion of the term of this patent subsequent to May 30, 2006, has been disclaimed.

Int. Cl.^{5} C07C *5/22*

U.S. Cl. 585—481 **18 Claims**

8. A continuous process for the production of 2,6-dimethylnaphthalenes including a two-stage adsorptive separation zone which comprises the steps of:

(a) passing a feed mixture of a feed stream comprising a mixture of dimethylnaphthalene isomers including 2,6, 2,7, and 1,7 isomers and the isomerization reaction zone product stream of step (e) below, into a fractionation means;

(b) separating the feed mixture in the fractionation means into hydrocarbon fraction having a boiling point higher than DMN isomers, a hydrocarbon fraction having a boiling point higher than DMN isomers, and into a first process stream fraction comprising dimethylnaphthalene isomers including 2,6, 1,7, and 2,7 isomers of dimethylnaphthalene;

(c) passing the first process stream into a two-stage adsorptive separation zone comprising a first stage employing a first stage adsorbent comprising a potassium-exchanged X-zeolite and a first stage desorbent material and operating at 2,6-dimethylnaphthalene rejective conditions to produce a first stage extract and raffinate product, with at least a portion of the raffinate product of the first stage being fed to a second stage, employing a second stage adsorbent comprising a carbon material and a second stage desorbent material and operating at 2,6-dimethylnaphthalene adsorptive conditions, thereby producing a second stage extract product containing purified 2,6-dimethylnaphthalene and a second stage raffinate stream;

(d) recovering the second stage extract stream containing purified 2,6-dimethylnaphthalene;

(e) feeding the first stage extract stream and the second stage raffinate stream into an isomerization reaction zone operating at isomerization reaction conditions including a temperature of from 300° to 450° C., a pressure of from 1 to 20 atmospheres, and a liquid hourly space velocity of from 0.5 to 5 hr^{-1} and into contact with an isomerization catalyst comprising from 10.0 to 60.0 wt. % of a crystalline aluminosilicate and from 0.1 to 5.0 wt. % of a platinum group metal component to produce an isomerization reaction zone product stream having a 2,6-dimethylnaphthalene concentration greater than that of the feed entering the isomerization reaction step; and

(f) passing the isomerization reaction zone product into the fractionation means of step (a).

5,004,854

PSEUDOCUMENE AND MESITYLENE PRODUCTION AND COPRODUCTION THEREOF WITH XYLENE

Tsoung Y. Yan, Philadelphia, Pa., assignor to Mobil Oil Corp., Fairfax, Va.

Filed Dec. 4, 1986, Ser. No. 937,845

Int. Cl.^{5} C07C *4/12*

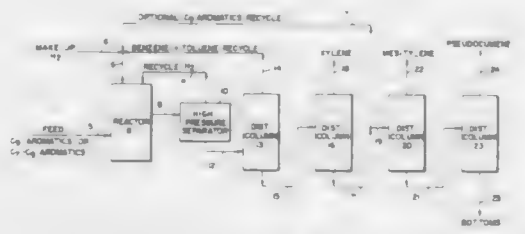
U.S. Cl. 585—489 **15 Claims**

1. A process for upgrading C_9 alkylaromatics, wherein mesitylene and pseudocumene are recovered from a mixture of C_9

aromatics including propylbenzene and methylethylbenzene, said process comprising the steps of:

(a) contacting a C_9 alkylaromatic feed stream with a shape-selective crystalline zeolite catalyst having a silica-to-alumina ratio of at least 12 and a constraint index from about 1 to 12 in the presence of hydrogen at a temperature of about 700° F. to 1100° F., a pressure of about 15 to 2000 p.s.i.g., a hydrogen to hydrocarbon mole ratio of 0.5 to 10.0 and a weight hourly space velocity of about 0.5 to 10.0, thereby selectively converting said propylbenzene and methylethylbenzene and forming a product mixture effluent comprising benzene, toluene, C_8 alkylbenzenes, C_9 alkylbenzenes and C_{10} alkylbenzenes;

(b) introducing the product mixture to a first distillation zone wherein benzene and toluene are distilled as an overhead



fraction and materials heavier than toluene are separated as a first bottoms fraction;

(c) introducing the first bottoms fraction to a second distillation column wherein xylene is distilled as an overhead fraction and materials heavier than xylene, comprising C_9 and C_{10} alkylbenzenes, are separated as a second bottoms fraction;

(d) introducing the second bottoms fraction to a third distillation column wherein mesitylene is distilled as an overhead fraction and C_9 and C_{10} alkylbenzenes are separated as a third bottoms fraction;

(e) introducing the third bottoms fraction to a fourth distillation column wherein pseudocumene is distilled as an overhead fraction and C_9 and C_{10} alkylbenzenes are separated as a fourth bottoms fraction.

5,004,855

PROCESS FOR CONVERSION OF ETHYLBENZENE IN C_8 AROMATIC HYDROCARBON MIXTURE

Kuniyuki Tada, Kamakura; Eiichi Minomiya, and Masatoshi Watanabe, both of Nagoya, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Aug. 19, 1988, Ser. No. 234,393

Claims priority, application Japan, Aug. 25, 1987, 62-212157; Aug. 25, 1987, 62-212158

Int. Cl.[5] C07C *4/12*

U.S. Cl. 585—489 **6 Claims**

1. A process for preparing p-xylene from a C_8 aromatic hydrocarbon mixture containing ethylbenzene and xylene, which comprises the steps of:

(a) converting ethylbenzene in said C_8 aromatic hydrocarbon mixture to benzene by contacting said C_8 aromatic hydrocarbon mixture in the presence of hydrogen with a catalyst comprising 0.6 to 20.0 parts by weight of rhenium, 100 parts by weight of a zeolite which consists essentially of an acid type zeolite having a main cavity inlet composed of a 10-membered oxygen ring and 100 to 900 parts by weight of alumina, said catalyst being substantially free of zeolites having main cavity inlets composed of 8-membered or 12-membered oxygen rings, and said catalyst having been subjected to a sulfiding treatment to effect hydrode-ethylation of ethylbenzene;

(b) separating C_8 aromatic hydrocarbon mixture from the resulting conversion reaction mixture; and

(c) feeding the separated C_8 aromatic hydrocarbon mixture to a circulation system comprising a p-xylene separating step and a xylene-isomerizing step to produce p-xylene.

5,004,856

PROCESS FOR UPGRADING METHANE TO HIGHER HYDROCARBONS

Lorenzo C. DeCaul, Chester, Pa.; Scott Han, Lawrenceville; Robert E. Palermuo, Bloomfield, both of N.J., and Dennis E. Walsh, Richboro, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 29, 1989, Ser. No. 459,218

Int. Cl.[5] C07C *2/00*

U.S. Cl. 585—500 **8 Claims**

1. A process for synthesizing one or more hydrocarbons having at least two carbon atoms by the direct partial oxidation of methane, said process comprising contacting a mixture of methane and oxygen with a cadmium-manganese oxide catalyst under conditions sufficient to convert methane to said one or more hydrocarbons having at least two carbon atoms.

5,004,857

METHOD FOR CONTINUOUSLY PRODUCING LOW MOLECULAR WEIGHT POLYMER OF CONJUGATED DIOLEFIN

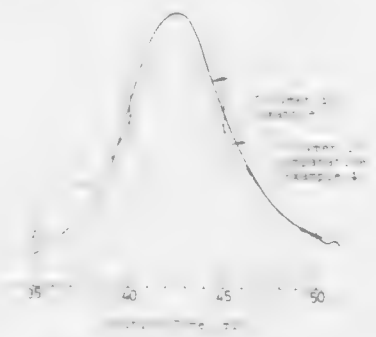
Shoji Iida; Kazuo Miyazaki, both of Yokohama, and Nobuyuki Takizawa, Yokosuka, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Japan

Filed Nov. 3, 1988, Ser. No. 267,508

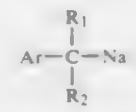
Claims priority, application Japan, Jun. 11, 1987, 62-281597

Int. Cl.[5] C07C *2/02*

U.S. Cl. 585—507 **5 Claims**

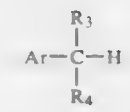


1. A method for continuously producing a liquid low molecular weight polymer of conjugated diolefin having a number average molecular weight of 300 to 10000 which method comprises the step of continuously polymerizing or copolymerizing conjugated diolefin in an inert hydrocarbon solvent at a temperature within a range of 40° to 70° C. with maintaining the quantity of dissolved oxygen in the polymerization system at 1 ppm or below and in the presence of a polymerization catalyst of an organic sodium compound represented by the following general formula (I):



(I)

wherein Ar is an aryl group, R_1 and R_2 are the same or different and each of them is a hydrogen atom or an alkyl group having 1 to 20 carbon atoms and a chain transfer agent of an alkylaryl compound represented by the following general formula (II):



(II)

wherein Ar is an aryl group, R_3 and R_4 are the same or different and each of them is a hydrogen atom or an alkyl group having 1 to 20 carbon atoms.

5,004,858

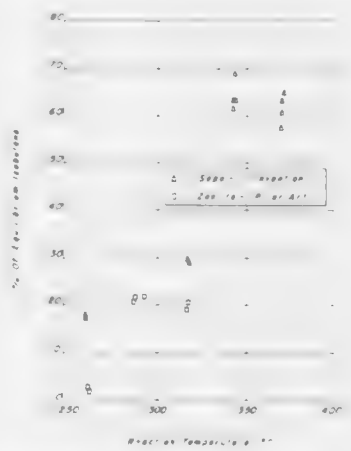
BUTENE ISOMERIZATION PROCESS

Gregory J. Gajda, East White Plains, N.Y., assignor to UOP, Des Plaines, Ill.

Filed Nov. 29, 1989, Ser. No. 442,879

Int. Cl.[5] C07C *5/23*

U.S. Cl. 585—667 **17 Claims**



1. A process for the isomerization of butenes which comprises contacting a butene-containing feedstock at isomerization conditions with a catalyst containing at least one NZMS to provide a product containing at least one butene isomer in greater concentration than in the feedstock.

5,004,859

CATALYST FOR THE ISOMERIZATION OF ALKANES

Robert J. Schmidt; Robert S. Haizmann, both of Rolling Meadows; Mark R. Ford, Buffalo Grove; C. David Low, Lisle, and Frank H. Adams, LaGrange Park, all of Ill., assignors to UOP, Des Plaines, Ill.

Filed Nov. 13, 1989, Ser. No. 435,304

Int. Cl.[5] C07C *5/22*

U.S. Cl. 585—741 **4 Claims**

1. A process for isomerizing isomerizable hydrocarbons to form an isomerization product which process comprises contacting the isomerizable hydrocarbons with a bed of catalyst particles comprising a refractory inorganic-oxide support, from about 1 to 15 mass % of a Friedel-Crafts metal halide and from about 0.01 to 2 mass % on an elemental basis of a surface-layer platinum-group metal component, wherein the average concentration of platinum-group metal component on a 100-micron surface layer of the catalyst particles is at least 1.5 times the average magnitude of the concentration of platinum-group metal component in the central core of the catalyst particles.

5,004,860

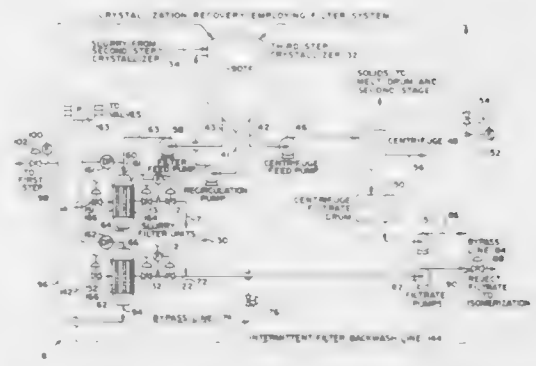
FILTER SYSTEM

John S. Hansen, League City, and William A. Waranius, Texas City, both of Tex., assignors to Amoco Corporation, Chicago, Ill.

Filed Jul. 28, 1986, Ser. No. 890,127

Int. Cl.[5] C07C *7/14*

U.S. Cl. 585—812 **32 Claims**



1. In a method for extracting high purity solid para-xylene crystals from a mother liquor feed slurry of mixed xylenes in liquid and crystal form in a separation unit of the type which includes a crystallization stage where the mother liquor slurry is cooled in at least one crystallizer to crystallize liquid para-xylene into solid crystals, an isomerization stage where xylenes, such as ortho-xylene and meta-xylene, are reacted over a catalyst bed to convert these xylenes into para-xylene, and a distillation stage where the mixed xylenes are separated form the impurities, the improvement comprising the steps of: withdrawing a portion of the liquid-crystal slurry from the crystallizer and passing the withdrawn portion of the liquid-crystal slurry to a filter system located outside of the aforesaid crystallizer, while at the same time withdrawing a portion of the liquid-crystal slurry from the crystallizer and supplying same to a centrifuge where solid crystal para-xylene is extracted from the liquid-crystal slurry; where, in such filter system, the aforesaid withdrawn portion of the liquid-crystal slurry is separated to form an essentially crystal-free liquid filtrate and a higher crystal concentrate liquid-crystal slurry where the essentially crystal-free liquid filtrate separated from the aforesaid withdrawn portion of the liquid-crystal slurry in the filter system is supplied to an isomerization stage thereby to increase the amount of solid para-xylene crystals extracted from the centrifuge over time and the higher crystal concentration liquid-crystal slurry separated from the aforesaid withdrawn portion of the liquid-crystal slurry in the filter system is either recycled to the crystallizer or passed to the centrifuge.

18. In an apparatus for extracting high purity solid para-xylene crystals from a mother liquor feed slurry of mixed xylenes in liquid and crystal form including a separation unit of the type which includes a crystallization stage where the mother liquor slurry is cooled in at least one crystallizer to crystallize liquid para-xylene into solid crystals, an isomerization stage where xylenes, such as ortho-xylene and meta-xylene, are reacted over a catalyst bed to convert these xylenes into para-xylene, and a distillation stage where the mixed xylenes are separated from the impurities, the improvement comprising a filter system located outside of the aforesaid crystallizer; means for withdrawing a portion of the liquid-crystal slurry from said crystallizer and passing the withdrawn portion of the liquid-crystal slurry to said filter system wherein the withdrawn portion of the liquid-crystal slurry is separated to form an essentially crystal-free liquid filtrate and a higher crystal concentration liquid-crystal slurry; a centrifuge; means for withdrawing a portion of the liquid-crystal slurry from said crystallizer and supplying same to said centrifuge where solid crystal para-xylene is extracted from the liquid-crystal slurry;

and means for supplying essentially crystal-free liquid filtrate separated from the aforesaid withdrawn portion of the liquid-crystal slurry in said filter system to said isomerization stage thereby to increase the amount of solid para-xylene crystals extracted from said centrifuge over time, and means for passing the higher crystal concentration liquid-crystal slurry separated from the aforesaid withdrawn portion of the liquid-crystal slurry in the filter system to either the crystallizer or the centrifuge.

5,004,861

PROCESS FOR PERVAPORIZATION USING MEMBRANE SEPARATING MEANS

Mordechai Pasternak, Spring Valley; Craig R. Bartels, and John Reale, Jr., both of Wappingers Falls, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 5, 1988, Ser. No. 214,987

The portion of the term of this patent subsequent to Jan. 17, 2006, has been disclaimed.

Int. Cl.[5] **C07C** *7/144;* **B01D** *13/00*

U.S. Cl. 585—818 **9 Claims**

1. The method of separating water from a charge aqueous mixture of hydrocarbon and organic oxygenate which comprises

maintaining a non-porous membrane separating layer of (i) a blend of polyvinyl alcohol and a polyacrylic acid or consisting of (ii) cast polyvinyl alcohol which has been cross-linked with an aliphatic polyaldehyde containing at least three carbon atoms including those in said aldehyde groups;

maintaining a pressure drop across said non-porous separating layer;

passing a charge water-containing solution of hydrocarbon and organic oxygenate into contact with the high pressure side of said non-porous separating layer whereby at least a portion of said water in said charge aqueous mixture and a lesser portion of hydrocarbon and organic oxygenate pass by pervaporation through said non-porous separating layer as a lean mixture containing more water and less hydrocarbon and organic oxygenate than are present in said charge aqueous mixture and said charge aqueous mixture is converted to a rich liquid containing less water and more hydrocarbon and organic oxygenate than are present in said charge aqueous mixture;

recovering from the low pressure side of said non-porous separating layer said lean mixture containing more water and less hydrocarbon and organic oxygenate than are present in said charge aqueous mixture, said lean mixture being recovered in vapor phase at a pressure below the vapor pressure thereof; and

recovering from the high pressure side of said non-porous separating layer said rich liquid containing a lower water content and a higher hydrocarbon and organic oxygenate content than are present in said charge aqueous mixture.

5,004,862

PROCESS FOR RECYCLING AND PURIFYING CONDENSATE FROM A HYDROCARBON OR ALCOHOL SYNTHESIS PROCESS

Henry W. Hildinger, R.D. 1 Box D21 Cora La., Chester, N.J. 07930, and Edwin D. Carlson, 63 Castlewood Trail, Sparta, N.J. 07871

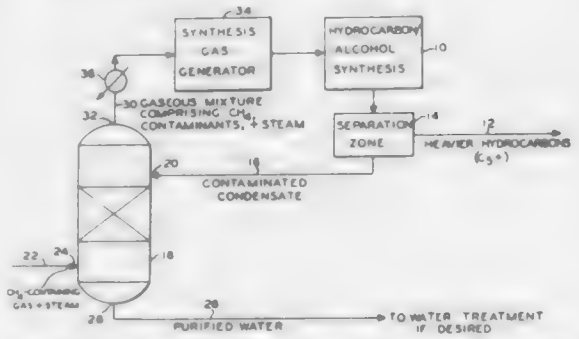
Filed Jun. 27, 1988, Ser. No. 211,745

Int. Cl.[5] **C07C** *7/00*

U.S. Cl. 585—867 **6 Claims**

1. A process for purifying a condensate stream from a hydrocarbon synthesis or alcohol synthesis process which comprises:

(a) contacting the condensate with a hot gaseous mixture comprising methane and steam to strip contaminants from the condensate, said contaminants comprising lower molecular weight hydrocarbons and oxygenates;



(b) recovering a gaseous stream comprising the contaminants and the gaseous mixture; and

(c) separately recovering purified water.

5,004,863

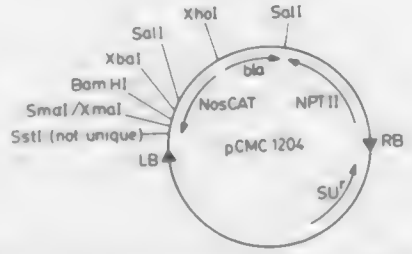
GENETIC ENGINEERING OF COTTON PLANTS AND LINES

Paul F. Umbeck, Madison, Wis., assignor to Agracetus, Middleton, Wis.

Filed Dec. 3, 1986, Ser. No. 937,384

Int. Cl.[5] **C12N** *15/00;* **A01H** *5/00, 5/10*

U.S. Cl. 800—205 **16 Claims**



1. A method of of introducing genes into cotton plants and plant lines comprising the steps of:

exposing hypocotyl tissue of immature cotton plants to a culture of transformation competent non-oncogenic *Agrobacterium tumefaciens* harboring a Ti plasmid having a T-DNA region including both a foreign chimeric gene and a selection agent resistance gene, both genes including appropriate regulatory sequences so as to be expressed in the cells of cotton plants;

culturing the exposed tissue in the presence of a selection agent for which the resistance gene encodes for resistance so as to select for plant cells transformed with the T-DNA region;

inducing somatic embryo formation in the exposed tissue in culture; and

regenerating the somatic embryos into whole cotton plants.

5,004,864

DOMINANT AMYLOSE-EXTENDER MUTANT OF MAIZE

Donald S. Robertson, and Philip S. Stinard, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Nov. 28, 1988, Ser. No. 276,882

Int. Cl.[5] **A01H** *5/00;* **C12N** *15/00*

U.S. Cl. 800—235 **11 Claims**

1. High amylose starch maize seeds containing at the *amylose-extender* (ae) locus at least one dominant mutant allele Ae-5180.

ELECTRICAL

5,004,865

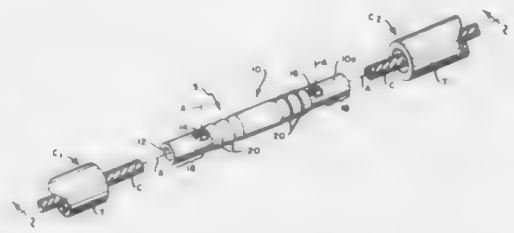
SPLICING DEVICE FOR FLUID-COOLED ELECTRIC CABLES

Theodore A. Krupnicki, 565 Adams Rd., Webster, N.Y. 14580

Filed Oct. 10, 1989, Ser. No. 418,499

Int. Cl.[5] **H01B** *7/34*

U.S. Cl. 174—15.7 **5 Claims**



5. Apparatus for splicing together two lengths of fluid-cooled electric cable, said apparatus comprising an electrically conductive tubular member defined by an endless wall encircling an axis, said wall having a pair of apertures formed therein, said apertures being spaced inwardly from the respective ends of said member, the distal ends of said tubular member being adapted to be crimped closed by a crimping tool, said holes being located to be tilted relative to said axis after said ends have been crimped closed.

5,004,866

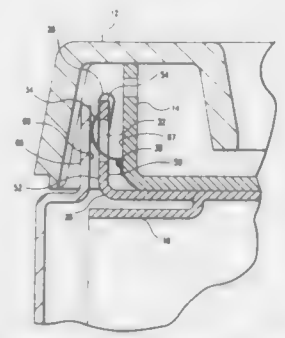
SELF-CONTAINED GROUNDING STRIP

Kevin K. Cooke, Delray Beach; John R. Dewitt, Boca Raton; Paul J. Galinis, Boynton Beach, and Walter B. Koteff, Boca Raton, all of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 27, 1989, Ser. No. 428,140

Int. Cl.[5] **H05K** *9/00*

U.S. Cl. 174—35 GC **10 Claims**



1 Apparatus for electromagnetically shielding electronic equipment comprising:

first and second spaced apart housing members and means defining a gap there between;

an interposer between said means defining said gap;

a spring member on said interposer and having portions thereof facing and extending towards said means defining said gap;

and a cover member for embracing said means defining said gap, and cam means associated with said cover member to effect closure of said gap to bias said first and second housing members against said spring member.

5,004,867

PERSONAL COMPUTER EXPANSION SLOT SEAL AND METHOD

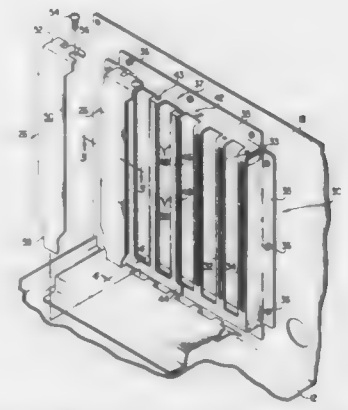
Thomas R. Mast, Austin, Tex., assignor to Compuadd Corporation, Dallas, Tex.

Continuation of Ser. No. 270,266, Nov. 14, 1988, Pat. No. 4,873,395. This application May 25, 1989, Ser. No. 356,689

The portion of the term of this patent subsequent to Oct. 24, 2006, has been disclaimed.

Int. Cl.[5] **H05K** *9/00*

U.S. Cl. 174—35 GC **7 Claims**



1. An apparatus for retarding the escape of radio frequency from an electronic circuit chassis having four walls, said apparatus comprising:

at least one expansion slot for receiving additional electronic circuits, said expansion slot having edges defining a slot opening and adaptable to be affixed to one wall of said chassis;

a slot cover attached to said expansion slot and substantially overlying said slot opening;

sealing means disposed along the edges of said slot opening and between said expansion slot and said slot cover for sealing said slot opening and retarding the escape of radio frequency from said chassis; and

a spring-loaded retainer attachable to a chassis wall and engaging the base of said slot cover for forcing said slot cover against said sealing means and said expansion slot.

5,004,868

SEALING ARRANGEMENT FOR AN ELECTRICAL CABLE

Aydin Singor, Balve, Fed. Rep. of Germany, assignor to Leopold Kostal GmbH & Co. KG, Ludenscheid, Fed. Rep. of Germany

Filed Apr. 6, 1990, Ser. No. 505,891

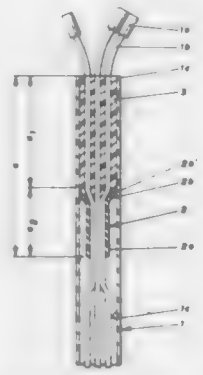
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1989, 3911285

Int. Cl.[5] **H02G** *15/013*

U.S. Cl. 174—76 **3 Claims**

1. In combination with an electrical cable, a sealing arrangement comprising: an insulating hose (1*c*) having one or more insulated electrical conductors (1*b*) within the electrical cable, the end portions of said conductors protruding from said insulating hose by a length determined by connections to be made; a pourable sealing compound (3) for sealing said insulating hose at at least one end thereof; and a presealing element (2) located in said insulating hose, said presealing element comprising an elastic sheath (2) which encloses all the individual conductors (1*b*) at a predetermined location (a2), said sheath having a tubular portion (2*a*) which presses said conductors

(1*b*) closely together and a funnel-shaped portion (2*b*) joined with said tubular portion (2*a*), the outer edge (2*b'*) of said



funnel-shaped portion (2*b*) fitting tightly against the inside wall of 1*c'*) of the insulating hose (1*c*).

5,004,869

ELECTRICAL CONNECTOR CONTAINING ADIPIC ACID POLYESTER SEALANT COMPOSITION

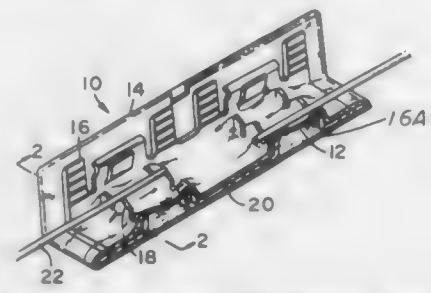
Francis F. Koblitz; Thomas M. O'Shea, both of York; Beverly A. Stoner, Glen Rock, and Joseph J. Yula, York, all of Pa., assignors to AMP, Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 767,566, Aug. 20, 1985, Pat. No. 4,714,801, which is a continuation of Ser. No. 620,411, Jun. 14, 1984, abandoned. This application Dec. 21, 1987, Ser. No. 136,143

The portion of the term of this patent subsequent to Dec. 22, 2004, has been disclaimed.

Int. Cl.[5] H01R *4/20*

U.S. Cl. 174—84 C **20 Claims**



1. A moisture-proof electrical connector for sealingly connecting transmission means therein comprising

(a) a connector body having a receiving means for accepting and receiving a transmission means; and

(b) a sealant composition disposed along or adjacent to the receiving means, said sealant composition comprising:

(i) polymeric adipic acid polyester in an amount at least about 50% by weight of the composition;

(ii) silica thickening agent dispersed in said polymer;

(iii) organofunctional coupling agent; and

(iv) polyfunctional bridging agent, said silica thickening agent and said coupling and said bridging agents being present in amounts sufficient to cause gelation of said composition.

5,004,870

POLAR CO-ORDINATE DIGITIZER

John J. Osborn, 2960 Paradise Dr., Tiburon, Calif. 94950

Filed Apr. 11, 1990, Ser. No. 508,248

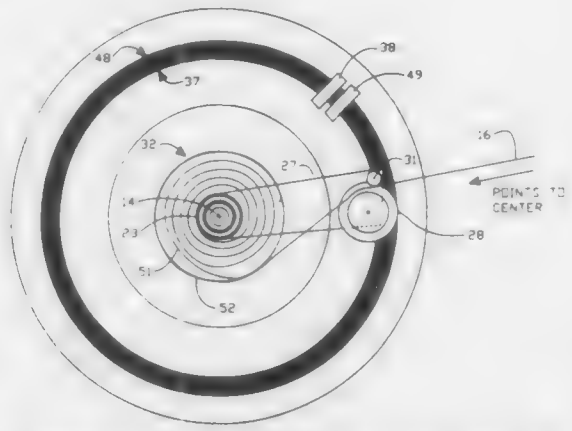
Int. Cl.[5] G08C *21/00*

U.S. Cl. 178—18 **7 Claims**

1. A polar co-ordinate digitizer for digitizing angle and length parameters of a planar form being traced by a stylus using a relatively fixed base support at the origin axis of the polar co-ordinate system of the digitizer, the system comprising a cord connected to the stylus extensible from the base support for providing said length parameter and a cord guide through which said cord extends and is pivoted substantially at said origin to provide said angle parameter, the improvement comprising:

angle detecting means including a first disk affixed for rotation with a shaft means which is mounted for rotation at said origin axis, the disk having an annular periphery with a first bar-type pattern, and pulley means rotatable with said disk which bears against said cord and serves as said cord guide, angular movement of said cord rotating said cord guide and associated first disk an angle proportional to said cord angle;

a fixed bar pattern superimposed on said first bar-type pattern, the relationship between the moving bars of said



annular periphery and said fixed bar pattern being indicative of rotation of said first disk whereby said angle parameter is determined;

means for sensing the extended length of said cord, including a drum on which said cord is wrapped, mounted for rotation on said shaft means and rotatable with respect to said shaft means and including spring biasing means connected between said drum and said shaft means for restraining extension of said cord from said drum and tending to move said shaft in a rotary direction to bias said pulley means against said cord, said cord sensing means including a second disk fixed for rotation with said drum and having an annular periphery with a second bartype pattern; and

a relatively fixed bar pattern superimposed on said second bar-type pattern, the relationship between the moving bars of said annular periphery and said fixed bar pattern being indicative of rotation of said second disk whereby said length parameter is determined.

5,004,871

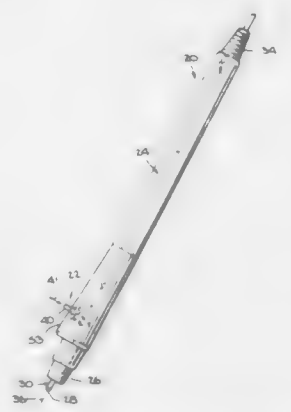
DIGITIZER STYLUS HAVING SIDE SWITCH

Alexander M. Purcell, Guilford, Conn., assignor to Summagraphics Corporation, Seymour, Conn.

Filed Nov. 13, 1989, Ser. No. 436,196

Int. Cl.[5] G08L *21/00*

U.S. Cl. 178—18 **27 Claims**



1. A stylus comprising an elongated housing and a device responsive to pressure or force applied thereto transversely of said housing to provide an output related to the magnitude of such applied pressure or force.

5,004,872

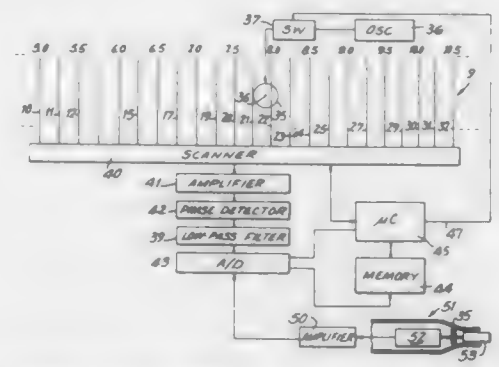
DIGITIZER TABLET WITH PRESSURE STYLUS

Daniel G. Lasley, Newtown, Conn., assignor to Summagraphics Corporation, Seymour, Conn.

Filed Nov. 14, 1989, Ser. No. 437,018

Int. Cl.[5] G08C *21/00*

U.S. Cl. 178—18 **22 Claims**



1. In a digitizer tablet comprising an electrode array, a pointing device whose position is to be located with respect to the array and whose applied pressure is to be determined with respect to the tablet, and means for energizing the array and tablet to generate position and pressure signals representative, respectively, of the pointing device position and pressure, said pointing device having a linear transducer for converting applied pointing device pressure into electrical signals linearly related to the applied pressure, the improvement comprising:

(a) means for processing the transducer electrical signals to convert their linear relation to pointing device pressure to a substantially logarithmic relation.

5,004,873

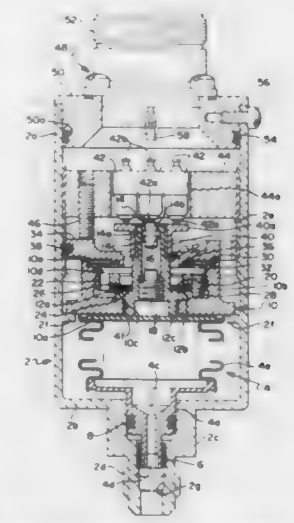
PLURAL SET POINT PRESSURE RESPONSIVE SWITCHING APPARATUS UTILIZING A SINGLE PRESSURE SENSING DRIVER ELEMENT

Robert H. Schnut, Carmel, N.Y., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 20, 1989, Ser. No. 410,174

Int. Cl.[5] H01H *35/32*

U.S. Cl. 200—83 P **24 Claims**



1. A plural set point pressure switch comprising:

a pressure responsive driving element;

an actuator driven by said driving element;

a plurality of electric switches operated by said actuator;

a plurality of force responsive means blocking movement of said actuator and respectively sequentially unblocking said actuator for driven movement at respective predetermined pressure values;

a plurality of stop means respectively associated with said plurality of force responsive means, said stop means respectively sequentially arresting said driven movement of said actuator at respective increments of travel wherein said actuator operates a respective switch in each said increment of travel;

a plurality of separate adjustment means each individually respectively associated with said plurality of force responsive means and said plurality of stop means for adjustibly applying an individual initial force to each respective said force responsive means.

5,004,874

DIRECT CURRENT SWITCHING APPARATUS

Peter J. Theisen, West Bend; Daniel A. Wycklendt, Milwaukee; Mark A. Juds, New Berlin, and Peter K. Moldovan, Cascade, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 13, 1989, Ser. No. 435,228

Int. Cl.[5] H01H *33/04, 33/18*

U.S. Cl. 200—144 R **27 Claims**

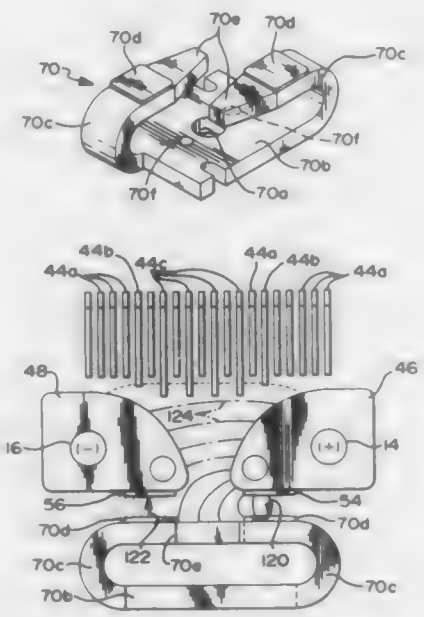
1. Direct current switching apparatus comprising:

a pair of arc extinguishing chambers each comprising a spaced pair of fixed conductors, respective conductors of one said chamber conductively connected to respective corresponding conductors of an other said chamber and to respective power terminals of said apparatus;

a first stationary contact conductively mounted on one of said conductors in said one chamber and a second stationary contact conductively mounted on an opposite one of said conductors in said other chamber; and

a movable contact extending within each said chamber movable into and out of bridging engagement with said first and second stationary contacts, said movable contact

establishing first and second arcs between said movable contact and said first and second stationary contacts, respectively, upon movement out of bridging engagement therewith, said first arc transferring from said movable



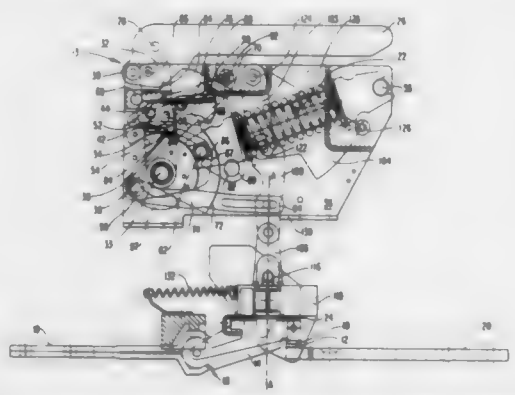
contact to an opposite said conductor in said one chamber establishing a current path comprising said first arc directly between said respective spaced pair of conductors, eliminating said second arc.

5,004,875

STORED ENERGY CONTACT OPERATING MECHANISM

G. Lawrence Moody; David A. Leone, both of Lawrenceville, and Mark E. Bell, Atlanta, all of Ga., assignors to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Filed Oct. 11, 1988, Ser. No. 255,[illegible]
Int. Cl.[5] H01H *5/00*
U.S. Cl. 200—400 12 Claims



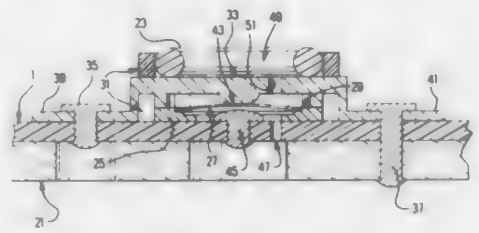
1. A circuit breaker that permits selective compression of a spring, comprising:
a support structure;
a first contact and a second contact for carrying current, the contacts being adapted to be opened and closed;
means for storing energy including:
a rotatable member being rotatable in a first direction about and supported by a first shaft supported by the support structure;
a second shaft supported by the rotatable member such that the second shaft is substantially parallel to the first shaft and offset from the first shaft;
a third shaft supported by the support structure such that the third shaft is substantially parallel to the first shaft and offset from the first shaft;
a fourth shaft supported by the rotatable member such that the fourth shaft is substantially parallel to the first shaft and offset from the first shaft;
a latch member rotatable about the third shaft, the latch member defining a first surface for resting upon the second shaft, the first surface defining a latch opening for engaging the second shaft;
the spring being coupled to the support structure and the second shaft, such that the spring is compressed to store energy when the rotatable member is rotated in the first direction, and the second shaft is engaged by the latch opening in response to the spring being compressed a predetermined distance;
a first stop latch which restricts the latch members from rotating such that the latch opening maintains engagement with the second shaft;
means for rotating the rotatable member in the first direction; and
means for opening and closing the contacts, wherein the means is coupled to the fourth shaft such that energy stored in the compressed spring can be utilized to close the contacts.

5,004,876

PRESSURE RESPONSIVE SWITCH PARTICULARLY ADAPTABLE FOR OPERATION AS A NORMALLY OPEN OR A NORMALLY CLOSED SWITCH

Dale R. Sogge, Randolph, Mass.; Edward F. O'Brien, Providence, and David A. Czarn, Cumberland, both of R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 20, 1988, Ser. No. 286,726
Int. Cl.[5] H01H *35/34*
U.S. Cl. 200—83 P 14 Claims



1. A pressure responsive switch, which comprises:
(a) an upper contact assembly comprising a first electrically insulating body having a first hollow central region and a first electrically conducting member having a depending contact ember extending into said first hollow central region;
(b) a lower contact assembly comprising a second electrically insulating body having a second hollow central region and a second electrically conducting member having an upwardly extending contact member extending into said second hollow region; and
(c) a pressure responsive snap acting member responsive to predetermined pressure thereagainst to switch from one of an upwardly extending and a downwardly extending condition to the other of said conditions and a third electrically conducting member, said snap acting member and said third member being sandwiched between said upper and lower contact assemblies, said third member including an aperture with at least one of said contact members received therein and electrically insulated from said other contact member, said snap acting member being positioned over said aperture in said third member and between said depending and upwardly extending contact members, at least one of said first and second electrically

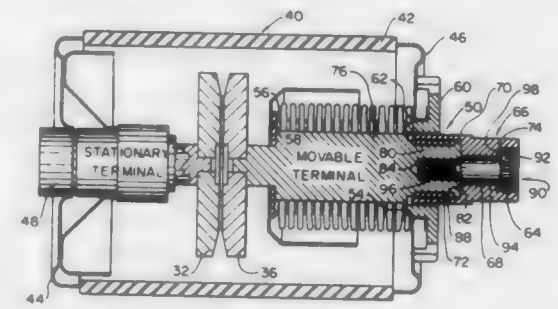
conducting members extending internally and externally of its respective insulating body.

5,004,877

VACUUM INTERRUPTER

Simon Yin, Fremont, Calif., assignor to Square D Company, Palatine, Ill.

Filed Oct. 3, 1988, Ser. No. 252,679
Int. Cl.[5] H01H *33/66*
U.S. Cl. 200—144 B 28 Claims



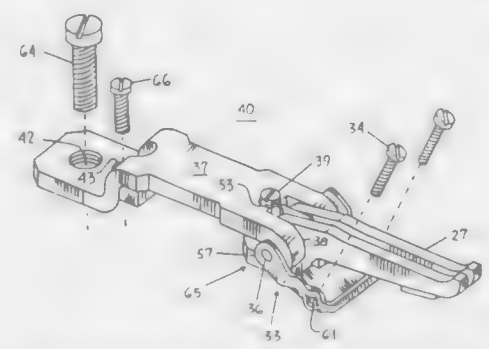
1. A vacuum interrupter, comprising:
a cylindrical envelope;
an endcap hermetically sealed at each circumferential edge of said cylindrical envelope;
a stationary terminal rigidly mounted in a central portion of one endcap; and
a movable terminal mounted for axial movement along its central longitudinal axis in a central position of an opposite endcap, said movable terminal comprising a rotatable external portion in electrical contact with a non-rotatable internal portion, said rotatable external portion being fixed relative to said non-rotatable internal portion along said central longitudinal axis when said external portion rotates relative to said internal portion.

5,004,878

MOLDED CASE CIRCUIT BREAKER MOVABLE CONTACT ARM ARRANGEMENT

Raymond K. Seymour, Plainville; Marshall B. Hart, Middletown; Gary D. Magnon, Bristol; Michael C. von Kannewurff, West Willington, and Dennis J. Doughty, Plainville, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Mar. 30, 1989, Ser. No. 330,521
Int. Cl.[5] H01H *33/02*
U.S. Cl. 200—144 R 10 Claims



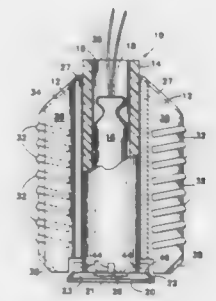
1. A current limiting circuit interrupter comprising:
a molded plastic case and cover;
a movable contact arm support within said case having load terminal screw receiving means formed at one end and movable contact arm attachment means formed at an opposite end thereof;
a movable contact arm supported within said movable contact arm attachment means and arranged for driving a movable contact out of electric connection with a fixed contact upon occurrence of an intense overcurrent condition through said contacts; and
a shunt clip attached to said movable contact arm support and abutting said movable contact arm to thereby maintain electric connection between said movable contact arm support and said movable contact arm when said movable contact is driven out of electric connection with said fixed contact.

5,004,879

SWITCH HOUSING WITH RESILIENT RETAINERS

Everett A. Bernhardt, Oregon City, and Robert C. Winters, Lake Oswego, both of Oreg., assignors to Sentrol, Inc., Portland, Oreg.

Filed Dec. 7, 1989, Ser. No. 447,536
Int. Cl.[5] H01H *9/02*
U.S. Cl. 200—295 21 Claims



1. A switch housing for insertion into a cavity comprising:
(a) hollow body means for holding a switch, said hollow body means having a cylindrical surface and being free from openings in said cylindrical surface;
(b) a wing of resilient material extending from said cylindrical surface of said hollow body means and formed integrally therewith, said wing being resiliently movable with respect thereto between a position in which said wing extends away from said hollow body means and a position in which said wing is located alongside said body means; and
(c) means for biasing said wing to exert pressure outwardly away from said body means against an interior surface of said cavity for retaining said housing in said cavity.

5,004,880

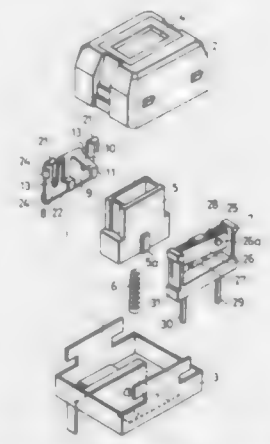
CLICK-TYPE PUSH BUTTON SWITCH WITH IMPROVED LEAF SPRING

Yoshirou Koutaka, Iwaki, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 348,616, May 5, 1989, abandoned. This application Jul. 20, 1990, Ser. No. 560,509
Claims priority, application Japan, Jul. 25, 1988, 63-97345[U]
Int. Cl.[5] H01H *13/02*
U.S. Cl. 200—521 1 Claim

1. In a push button switch including a casing unit composed of
a first casing and a second casing,
a switch device provided in said casing unit,
a stem slidably supported by said casing unit for switching on and off said switch device,
biasing means for normally elastically biasing said stem in such a direction as to restore an initial condition of said stem,
and a clicking leaf spring adapted to abut against said stem for giving a click feeling to an operator upon depression of said stem;
an improvement wherein said clicking leaf spring comprises:

a base portion having opposite ends abutting against opposed inner surfaces of said first casing and said second casing and thereby being held between said first casing and said second casing, said base portion further having at least two curved portions formed at opposite side edges adapted to elastically abut against the inner surface of said first casing such that said base portion may be fixedly positioned in said first casing with respect to a lateral direction.



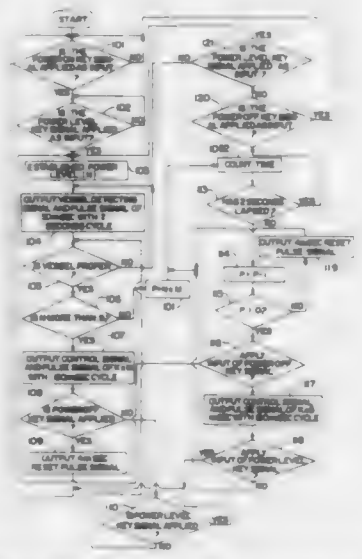
and a spring portion split from said base portion by a pair of slits having closed ends, the straight-line distance between said spring portion being bent such that said spring portion is removed from both said first casing and said second casing, thereby allowing said spring portion to bend at said spring fulcrum, thus increasing the effective length of said spring portion.

5,004,881

METHOD AND CIRCUIT FOR CONTROLLING POWER LEVEL IN THE ELECTROMAGNETIC INDUCTION COOKER

Min Ki Lee, Changwon, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 22, 1989, Ser. No. 440,264
Int. Cl.[5] H05B *6/06*
U.S. Cl. 219—10.77 **4 Claims**



1. A method of controlling a power level of an EI cooker by turning a power transistor off and on to alternate a direction of current flowing in a working coil, the power transistor being turned on and off according to pulse signals received from a central processing unit, comprising the steps of:

(a) establishing a power level for the EI cooker;

(b) determining if the established power level is greater than or equal to a predetermined power level;

(c) controlling a pulse width of the pulse signals from the central processing unit by multiplying a variable (K) with the established power level repeatedly when said step (b) determines that the established power level is greater than or equal to the predetermined power level; and

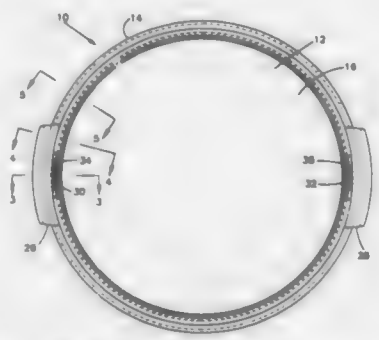
(d) controlling a duty cycle of the pulse signals from the central processing unit by multiplying variables (M) with the established power level thereby generating pulse signals with a certain duty cycle according to the multiplication of variables (M) with the established power level when said step (b) determines that the established power level is less than the predetermined power level.

5,004,882

MICROWAVABLE METAL BAKING PAN WITH INSULATING GIRDLE

John R. Nottingham; John W. Spirk, Jr., both of Moreland Hills, and Paul E. Brokaw, Euclid, all of Ohio, assignors to G & S Metal Products Company, Inc., Cleveland, Ohio

Filed Sep. 13, 1989, Ser. No. 406,687
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—10.55 E **8 Claims**



1. A cooking utensil for use inside microwave or conventional ovens having side walls, said utensil comprising:

a metal vessel having a lip encircling its mouth; and

a girdle of a both electrically and thermally insulating material, said girdle encircling and fastened to said lip, whereby spacing of said vessel from the sides of said oven is provided about the entire lip, wherein said girdle includes:

a shoulder receiving said lip; and

a rib retaining said lip against said shoulder, whereby said girdle is snap-fit attached to said vessel.

5,004,883

METHOD OF FABRICATING PLURAL SHAPED PARTS FROM A WORKPIECE

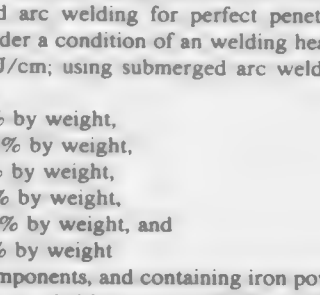
Andrew F. Brown, and Peter B. Webber, both of Whittier, Calif., assignors to Calcor Space Facility, Inc., Whittier, Calif.

Filed Oct. 4, 1989, Ser. No. 416,961
Int. Cl.[5] B23H *7/06, 9/00*
U.S. Cl. 219—69.12 **15 Claims**

1. In a method of forming separate parts from a single workpiece, the steps of:

(1) cutting said workpiece in the direction of a first axis of the workpiece and along interrupted lines in a plane normal to said first workpiece axis conforming substantially to certain part outlines in such a way that the workpiece sections between the cuts remain integrally joined to the remainder of the workpiece, and

(2) thereafter cutting said workpiece in the direction of a second axis normal to said first workpiece axis and along lines in a plane normal to said second workpiece axis conforming substantially to certain other part outlines in such a way that the cuts made in this cutting step (2) intersect all of the cuts made in cutting step (1) so as to



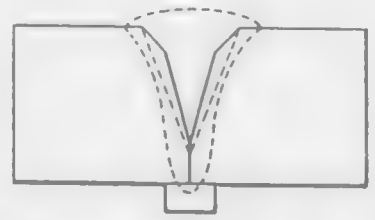
form separate shaped pieces separated from one another and from the remainder of the workpiece and having outlines when viewed in certain mutually perpendicular directions conforming substantially to said certain part outlines, respectively.

5,004,884

METHOD OF SUBMERGED ARC WELDING A THICK STEEL PLATE WITH LARGE HEAT INPUT AND SUBMERGED ARC WELDING FLUX

Shuichi Sakaguchi; Tadamasa Yamaguchi, and Itaru Yamashita, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Dec. 22, 1989, Ser. No. 454,920
Claims priority, application Japan, Dec. 28, 1988, 329458
Int. Cl.[5] B23K *9/18*
U.S. Cl. 219—73 **3 Claims**



1. A method of arc welding of thick steel plates with a large heat input and flux for submerged arc welding which comprises:

forming a groove having a multi-angle shape which has at least two different angular inclinations when a single side submerged arc welding for perfect penetration is conducted under a condition of an welding heat input of 100 to 1000 kJ/cm; using submerged arc welding flux composed by

SiO_2: 5 to 28% by weight,
MgO: 15 to 35% by weight,
CaO: 5 to 15% by weight,
CaF_2: 2 to 20% by weight,
Al_2O_3: 5 to 15% by weight, and
TiO_2: 2 to 10% by weight

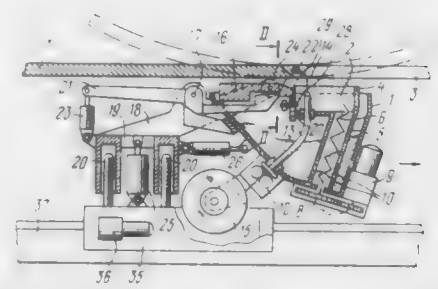
as the main components, and containing iron powder by 30 % by weight or less and either or both of Si and Mn in the metallic form by 10 % by weight, said submerged arc welding flux having a particles size distribution arranged such that the proportion of the particles which have a size finer than 36 mesh is 20 % by weight or less and the proportion of the particles which have a size 14 mesh or finer but 36 mesh or rougher is 60 % by weight or more; and conducting said welding.

5,004,885

APPARATUS FOR OVERHEAD SUBMERGED-ARC WELDING

Konstantin A. Juschenko, ulitsa Komandarma, Kameneva, 4a, kv. 115; Pavel A. Varenchuk, ulitsa Prazhskaya, 3, kv. 426; Valentin D. Kovalev, ulitsa Malo-Kitaevskaya, 58, kv. 2; Anatoly I. Chvertko, ulitsa Mechnikova, 18, kv. 86; Nikolai T. Privalov, ulitsa Prazhskaya, 3, kv. 118, and Vladimir G. Kuzmenko, ulitsa Lomonosova, 29, kv. 94, all of Kiev, U.S.S.R.

PCT No. PCT/SU88/00259, § 371 Date Feb. 6, 1990, § 102(e) Date Feb. 6, 1990, PCT Pub. No. WO89/11942, PCT Pub. Date Dec. 14, 1989
PCT Filed Dec. 14, 1988, Ser. No. 460,928
Claims priority, application U.S.S.R., Jun. 6, 1988, 4429060
Int. Cl.[5] B23K *9/18*
U.S. Cl. 219—73.2 **2 Claims**



1. An apparatus for overhead submerged-arc welding, comprising: a suspended pivotally mounted rotatable hopper containing flux and accommodating a bowl having means for supplying flux and pressing it against a work being welded, an open top part of the bowl facing towards the work being welded, a welding nozzle for supplying a consumable electrode extending through the bowl and mounted adjacent to a rear wall of the bowl relative to the welding direction, and a forming means mounted above a brim of the open top part of the bowl on a suspension supported by a first pivot pin, the forming means being mounted on said suspension for cooperation with the rear wall of the bowl relative to the welding direction, and for movement in longitudinal and transverse planes, the rear wall of the bowl relative to the welding direction being in the form of a movable plate mounted on a second pivot pin extending perpendicularly to a surface of the rear wall of the bowl relative to the welding direction, and mounted on a means for pressing an upper end face of the movable plate against a front end extremity of the underside of the forming means, the hopper containing flux being supported by the first pivot pin supporting the suspension of the forming means.

5,004,886

METHOD OF APPLYING WEAR-RESISTANT LAYER AND CONSUMABLE ELECTRODE FOR CARRYING OUT THE METHOD

Dieter Born, Ratingen; Peter Knauf, Mettmann, and Hans-Joachim Retelsdorf, Zirndorf, all of Fed. Rep. of Germany, assignors to Durum Verschleissschutz GmbH, Krefeld, Fed. Rep. of Germany

Filed May 18, 1990, Ser. No. 526,230
Claims priority, application Fed. Rep. of Germany, May 20, 1989, 3916559; Mar. 14, 1990, 4008091
Int. Cl.[5] B23K *9/04*
U.S. Cl. 219—76.14 **10 Claims**

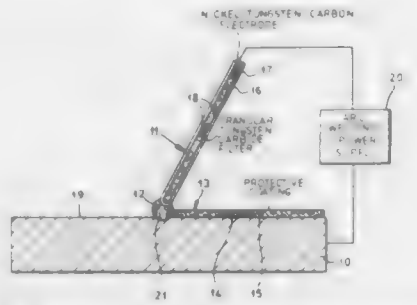
1. A process for applying a wear-resistant layer to an electrically conductive surface, comprising the steps of:

(a) juxtaposing with said surface a consumable rod-shaped electrode comprised of a nickel tube and, within said tube, a filling consisting of:

50 to 40 percent by weight nickel,
45 to 55 percent by weight tungsten,

0.1 to 1.5 percent by weight boron,
3 to 4 percent by weight carbon, and
0 to 2 percent by weight silicon,
the sum of carbon, boron and silicon being substantially 5 percent by weight, and including a fluxing agent and tungsten carbide particles in said filling of a grain size of 0.3 to 2.0 mm in said tube, the compositions of said nickel tube and said filling making up 100% of said layer;

(b) depositing said layer on said substrate by arc welding deposition from said rod-shaped electrode so that said



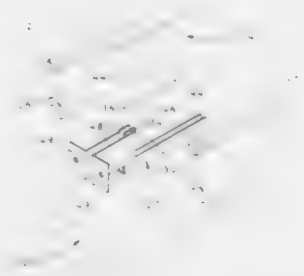
layer is formed as a nickel-alloy matrix containing tungsten carbide grains as inclusions; and

(c) controlling arc welding parameters of said arc welding deposition so that a voltage of 22 to 26 volts is applied across said rod-shaped electrode and said substrate and a current of 70 to 150 amperes passes between said rod-shaped electrode and said substrate, and such that there is practically no solubilization of said tungsten carbide grains in said nickel-allow matrix during the arc welding deposition.

5,004,887
HEATING APPARATUS HAVING CURIE EFFECT HEATER

Michael J. McKee, New Cumberland; William D. Miknis; Joseph M. Pawlikowski, both of Lancaster, and William E. Zelko, Dauphin, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 24, 1989, Ser. No. 384,331
Int. Cl.[5] B23K *1/00*
U.S. Cl. 219—85.16 **19 Claims**



15. A soldering apparatus for soldering an array of first coplanar conductors, such as the conductors in a flat cable, to an array of second conductors, such as spaced-apart terminal pads on a substrate, the apparatus comprising a work holder for holding the first and second conductors adjacent to each other and in registry, a heater bar assembly which is mounted on a fixture means and is normally spaced from the work holder, the fixture means having a heater bar assembly moving means for moving the heater bar assembly to the work holder thereby to bring the heater bar assembly into engagement with the conductors on the work holder, the apparatus being characterized in that:

the heater bar assembly comprises an insulating support member and a bi-metallic self-regulating Curie effect heater, the support member having a supporting edge and two major surfaces extending from the supporting edge,

the heater having a non-magnetic layer having a relatively high conductivity and a magnetic layer having a relatively low conductivity, the heater having opposite ends and having heater terminals at the ends, the heater being folded, end to end, on a fold line which is substantially mid-way between the ends so that the heater terminals are adjacent to each other, the folded heater comprising two substantially parallel aligned sections which extend from the heater terminals to the fold, the two sections having their non-magnetic surfaces opposed to, and proximate to, each other and having their magnetic surfaces remote from each other and facing in opposite directions, the heater having insulating material between the opposed non-magnetic surfaces,

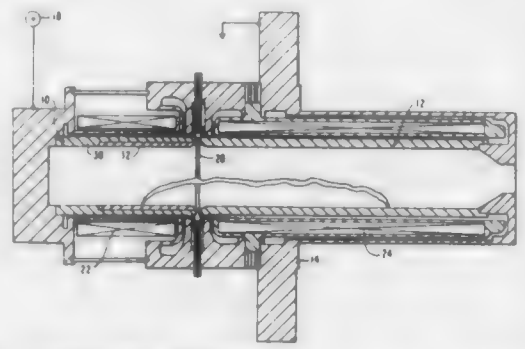
the heater being secured to the support member with the supporting edge against the magnetic material of one of the folded sections, with the supporting edge extending from the terminals to the fold, and with the magnetic material of the other folded section facing away from the support member whereby,

upon placement of the first and second conductors in the work holder, moving the heater bar assembly towards the work holder and positioning the supporting edge adjacent to the conductors so that the magnetic material of the other folded section is against the conductors, and passing a high frequency current through the heater, the first and second conductors will be soldered to each other.

5,004,888
PLASMA TORCH WITH EXTENDED LIFE ELECTRODES

Charles B. Wolf, Irwin; Shyam V. Dighe, North Huntingdon; Paul E. Martin, West Mifflin; Raymond F. Taylor, Jr., Penn Township, and William J. Melilli, Belle Vernon, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 21, 1989, Ser. No. 454,495
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—121.520 **20 Claims**



1. A plasma torch comprising:

first and second tubular electrodes arranged substantially colinearly along an axis with adjacent ends defining a gap therebetween;

means for initiating an arc across said gap;

means for supplying a gas to be heated through said gap into space within said tubular electrodes and causing the arc to extend to respective arcing portions of said electrodes' inner surfaces that are less than the entire extent of said inner surfaces;

means for rotating the arc so it moves circumferentially about said electrodes' surfaces and heats gas therebetween;

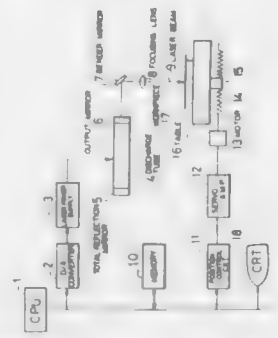
one of said electrodes being open to allow heated gas to exit the torch;

at least one of said first and second electrodes comprising a shell consisting principally of a first conductive metal and said arcing portion consisting principally of a conductive metal that is more durable than said first conductive metal under the arcing conditions of the heated gas located on an inner surface of said shell.

5,004,889
LASER POWER CONTROLLING METHOD

Etsuo Yamazaki, Hachioji; Nobuaki Iehisa, and Kazuhiro Suzuki, both of Minamitsuru, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP88/00891, § 371 Date Apr. 17, 1989, § 102(e) Date Apr. 17, 1989, PCT Pub. No. WO89/02335, PCT Pub. Date Mar. 23, 1989
PCT Filed Sep. 3, 1988, Ser. No. 343,260
Claims priority, application Japan, Sep. 10, 1987, 62-226791
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.61 **2 Claims**



1. A laser power controlling method in which a laser output is controlled by an NC instruction as a function of an instruction regarding the moving speed of a mechanical system, the method comprising the steps of:

providing an instruction regarding moving speed to a simulator approximated to said mechanical system with a first-order or second-order function; and

generating a laser output instruction based on the result obtained by said simulator,

whereby synchronism between the moving speed of the mechanical system and the laser output control is assured.

5,004,890
METHOD OF EVALUATING QUALITY OF A LASER BEAM IN A LASER PROCESSING MACHINE

Gnian C. Lim, Auburn Hills, Mich., assignor to Amada Company, Limited, Japan

Filed Feb. 20, 1990, Ser. No. 481,514
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.83 **7 Claims**

1. A method of evaluating quality of a laser beam in a laser processing machine which comprises a frame, and the laser processing head supported on the frame free to move in the X-, Y-, and Z-axis directions and free to rotate about a vertical axis and a horizontal axis, the method comprising the steps of:

(a) mounting a dynamical laser beam analyzer on the frame of the laser processing machine;

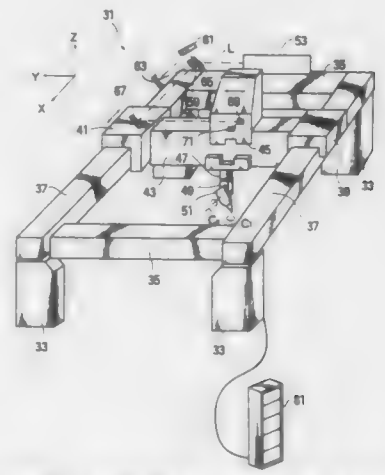
(b) moving the laser processing head in the X-, Y-, and/or Z-axis directions so that the head is positioned in front of the dynamical laser beam analyzer;

(c) rotating the laser processing head about the vertical axis and/or the horizontal axis so that a tip section is directed to a beam entrance section of the dynamical laser beam analyzer;

(d) detecting an instantaneous profile of a laser beam by means of the dynamical laser beam analyzer;

(e) repeating the detection of the step (d);

(f) calculating values of a beam stability parameter of the laser beam profiles, each value of the beam stability parameter corresponding to one of the laser beam profiles;

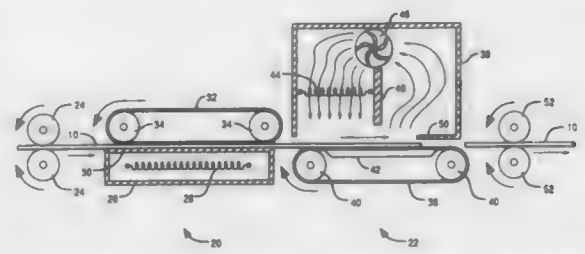


(g) calculating a standard deviation of the beam stability parameters from the values of the beam stability parameter calculated in the step (f).

5,004,891
TWO-STAGE METHOD AND APPARATUS FOR GLOSSING A DEVELOPER SHEET

Robert A. Landis, Kettering, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Apr. 14, 1989, Ser. No. 338,901
Int. Cl.[5] G03G *15/20*
U.S. Cl. 219—388 **6 Claims**



1. A method of glossing an image sheet having a resin layer on one side thereof which glosses at a predetermined temperature T, comprising the steps of:

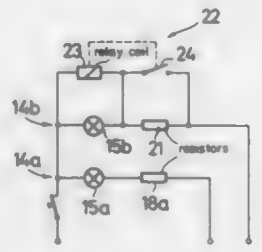
placing said sheet with the resin side thereof in contact with a conductive heating means;

applying heat to the resin side of the sheet to bring the sheet to a temperature just below said temperature T;

removing the resin side of said sheet from contact with said conductive heating means; and

applying heat to the resin side of said sheet from a non-contact heating source to raise the temperature of said sheet to a temperature at or above said temperature T.

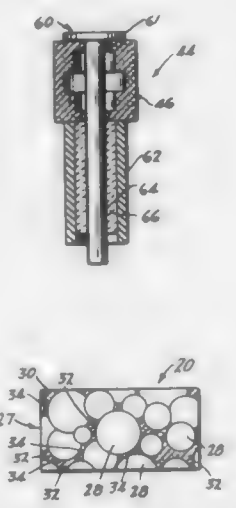
5,004,892
RADIANT ELEMENT
Gerhard Goessler, Oberderdingen; Eugen Wilde, Knittlingen, and Rolf Seeburger, Salzfeld, all of Fed. Rep. of Germany, assignors to E.G.O. Elektro-Geraete Blanc U. Fischer, Fed. Rep. of Germany
Filed Nov. 29, 1989, Ser. No. 443,559
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1988, 3840360
Int. Cl.[5] H05B 3/74
U.S. Cl. 219—464 7 Claims



1. A radiant element, particularly for glass ceramic hotplates, comprising:
means for coupling the radiant element to a source of electrical energy;
the radiant element defining a heating area;
at least two electric visible light radiator heating means connected in parallel and arranged in different heating zones of said heating area;
selection switching means for selectively switching one or both of said heating means in said different heating zones to said source;
temporarily operable damping means for damping energization of the heating means for a limited time following each switching in of the heating means, said damping means having a resistor located in said heating area; and,
means for connecting said resistor in series with both said heating means in said different zones for said limited time and disconnecting said resistor when said limited time has elapsed, whereupon both heating means are connected without an interconnected series resistor to said source of energy.

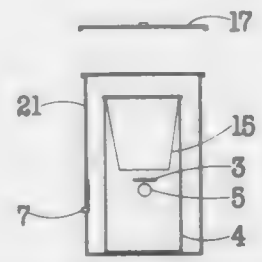
5,004,893
HIGH-SPEED, HIGH TEMPERATURE RESISTANCE HEATER AND METHOD OF MAKING SAME
Brooke N. Westover, 1044 Fleming Dr., Pensacola, Fla. 32514
Filed Nov. 7, 1988, Ser. No. 268,188
Int. Cl.[5] H05B 3/10
U.S. Cl. 219—505 8 Claims

1. A high-speed high temperature electrical resistance heater comprising, in combination:
(a) a composite, non-homogeneous body having an essentially electrically-conducting material and an essentially electrically insulating material,
(b) one of said materials being constituted as a porous matrix,
(c) the other of said materials permeating said matrix of said one material,
(d) said electrically-conducting material having nodes and connective threads interconnecting said nodes, and
(e) means for effecting electrical connections to different places on said electrically-conducting material,
(f) said matrix comprising a body having a generally cylindrical outer surface,
(g) said body having a through bore of stepped configuration, the dimension of the inner portion of the bore being



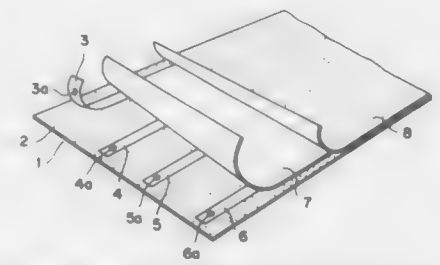
greater than those of the outer portions thereof, to thereby form an annular bridge in said body, intermediate its ends.

5,004,894
CLOTH WARMER
Jimmy Whitehead, 5500 Brookhaven, Mobile, Ala. 36693
Filed Oct. 3, 1988, Ser. No. 252,783
Int. Cl.[5] H05B 3/10
U.S. Cl. 219—521 15 Claims



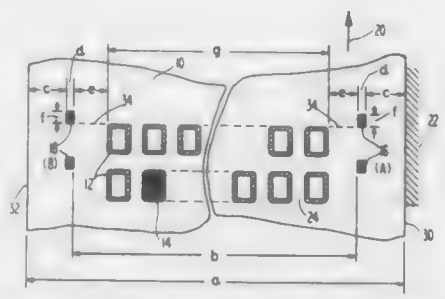
1. A cloth warmer warming moistened cloth towels in a container having a lip and lid comprising:
(a) at least 2 inner walls and a floor defining an inner chamber defining a ridge along an upper most edge of the inner walls for receiving the lip wherein at least one of said inner walls defines a notch;
(b) an outer chamber made of insulating material:
(c) a warming means within a lower portion of the inner chamber and fixedly attached to the inner chamber;
(d) a heat deflector means disposed above the warming means and below the ridges, said heat deflector means being attached to the inner chamber above a point of attachment of the warming means.

5,004,895
HEATER DEVICE USED FOR FLOOR MATERIAL ETC. AND FLOOR MATERIAL WITH HEATER CONTAINED THEREIN
Yoshinori Nishino, Yamatotakada, and Junjiro Kishigami, Osaka, both of Japan, assignors to Nippon Basic Technology Laboratory Co., Ltd., Japan
Filed Jul. 7, 1989, Ser. No. 376,818
Claims priority, application Japan, Jul. 8, 1988, 63-90665[U]; Jul. 8, 1988, 63-90669[U]; Nov. 14, 1988, 63-148172[U]
Int. Cl.[5] H05B 3/36
U.S. Cl. 219—528 7 Claims



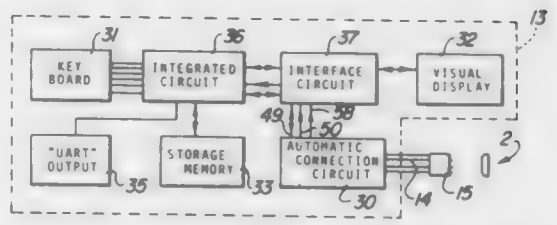
1. A heater device used for a floor material and the like comprising,
an insulating sheet,
a plurality of belt-shaped electrodes arranged side by side at intervals on said insulating sheet,
a plastic radiant body layer formed on the insulating sheet and said belt-shaped electrodes,
an insulating layer formed on said radiant body layer, and
means for supplying an electric current between a selected pair of said electrodes.

5,004,896
OPTICAL DOCUMENT SCANNING AND MARK SENSING
Robert Serrell, Princeton; J. Lamar Smith, Hopewell, both of N.J., and Frederick L. Kurst, Centreville, Md., assignors to Educational Testing Service, Princeton, N.J.
Filed Jul. 26, 1989, Ser. No. 385,382
Int. Cl.[5] G06K 5/00, 7/10
U.S. Cl. 235—437 10 Claims



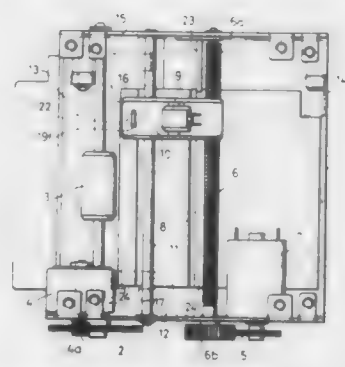
1. Method of optically scanning a document having rows of material to be scanned comprising, in combination, the steps of:
(a) transporting the document beneath a camera, the document having generally parallel sides, the camera scanning the document along a direction substantially parallel to one of the sides;
(b) automatically providing a measure of document size in at least a direction parallel to the direction of scanning at each row of material to be scanned but before scanning each row of material; and,
(c) automatically adjusting the scanning of each row of material to be scanned to compensate for random variations in shrinkage and expansion of document size.

5,004,897
AUTOMATIC CONNECTING DEVICE DESIGNED FOR THE QUICK AND MOMENTARY SUPPLY OF POWER TO ELECTRONIC CIRCUITS
Alain Biggio, Limonest, and Jacques Landrevie, La Chambre, both of France, assignors to Aliflex Europe S.A., France
Continuation-in-part of Ser. No. 765,261, Aug. 13, 1985, abandoned. This application Aug. 15, 1988, Ser. No. 232,629
Int. Cl.[5] G06K 7/15, 19/77
U.S. Cl. 235—441 8 Claims



1. A quick automatic connection device comprising:
an electronic chip having a contact surface, said contact surface having a plurality of conducting areas from one another and arranged about a central axis;
a sensor having a like plurality of electrically conductive tips, each engageable with one of said plurality of conducting areas when said sensor is pressed against said contact surface;
alignment means for rotating said sensor with respect to said contact surface to assure each of said electrically conductive tips engage with a respective one of said conducting areas when said sensor is pressed against said contact surface independent of the rotational orientation between said sensor and said electronic chip; and
electronic circuit means associated with said sensor for sensing the total rotational orientation of said sensor with respect to said electronic chip to identify the particular conducting area to which each of said plurality of electrically conductive tips is engaged.

5,004,898
OPTICAL READING DEVICE
Hiroshi Ihsikawa; Kazuo Hasegawa, both of Furukawa, and Masaki Gotoh, Sendai, all of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan
Filed Aug. 9, 1989, Ser. No. 392,232
Claims priority, application Japan, Nov. 25, 1988, 63-296286; Nov. 25, 1988, 63-296287; Nov. 25, 1988, 63-296288; Nov. 25, 1988, 63-296289; Dec. 15, 1988, 63-315027; Dec. 15, 1988, 63-315028; Feb. 2, 1989, 1-22666; Feb. 6, 1989, 1-25907; Feb. 6, 1989, 1-25908; Feb. 6, 1989, 1-25909
Int. Cl.[5] G06K 13/00
U.S. Cl. 235—475 25 Claims



1. An optical reading device, comprising:

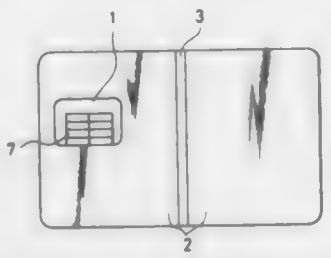
a holding member having a sensor of the reflecting type carried thereon;
a supporting means provided on said holding member in a spaced relationship by a predetermined distance from a location of said sensor;
an engaging member supported for pivotal motion by said supporting means;
at least one of said engaging member and said holding member having a toothed portion formed thereon;
a screw shaft having a spiral groove formed on an outer periphery thereof such that said spiral groove may be meshed by said toothed portion in a direction perpendicular to an axis of pivotal motion of said engaging member;
a first driving means for rotating said screw shaft to move said holding member in the opposite directions together with said engaging member along said screw shaft;
a medium guiding means for guiding a record medium, on which information to be read by said sensor when said holding member is moved in one or the other direction by said first driving means is optically recorded, in a predetermined plane;
a second driving means for feeding the record medium in said predetermined plane in a direction perpendicular to the direction in which said holding member is moved by said first driving means;
a guide shaft disposed in parallel to said screw shaft for guiding said sensor when said holding member is moved in one or the other direction;
a contact element provided on said holding member for assuring a minimum distance between said sensor and a surface of the record medium to be read by said sensor; and
a resilient member disposed between said holding member and said engaging member for urging said holding member and said engaging member with respect to a location at which a guide portion formed either on said holding member or on said engaging member is slidably contacted with said guide shaft such that said contact element of said holding member may be resiliently contacted with a sliding face provided by the record medium or said medium guiding means and said toothed portion on said holding member or said engaging member may be resiliently engaged with said spiral groove of said screw shaft.

5,004,899

SEMICONDUCTOR CARD WHICH CAN BE FOLDED

Tetsuya Ueda, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 26,967, Mar. 17, 1987, Pat. No. 4,849,617.
This application Apr. 14, 1989, Ser. No. 337,875
Claims priority, application Japan, Mar. 17, 1986, 61-60250
The portion of the term of this patent subsequent to Jul. 18, 2006, has been disclaimed.
Int. Cl.[5] G06K *19/06*
U.S. Cl. 235—492 **5 Claims**



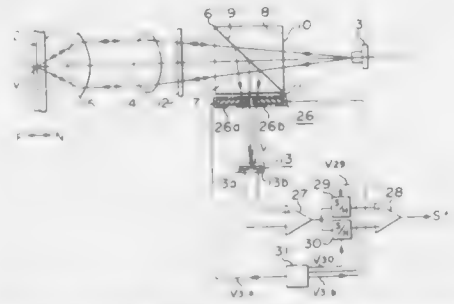
1. An integrated circuit card for electronically exchanging information with an external device, which integrated circuit card comprises:
a thin circuit card main body, said thin circuit card main body comprising a first portion and a second portion;
a semiconductor module mounted in said first portion of said circuit card main body, said semiconductor module containing data to be read by the external device; and
folding means permitting said first portion be folded substantially shut with respect to said second portion to thereby facilitate storage of said integrated circuit card for the user.

5,004,900

FOCUSING ERROR DETECTING APPARATUS WITH LIGHT SWITCHING AND DETECTOR SAMPLING

Masatomo Seya; Michihiro Tadokoro, and Kazuo Okada, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 10, 1989, Ser. No. 377,315
Claims priority, application Japan, Jul. 21, 1988, 63-182109
Int. Cl.[5] G01J *1/20*
U.S. Cl. 250—201.5 **5 Claims**



1. A focusing error detecting apparatus which comprises:
a ray source for emitting a ray flux,
a focusing means for focusing the ray flux to a focal point on a surface of an object substrate,
a light detecting means comprising two photo detectors,
an optical means for focusing a ray flux reflected from said surface of object substrate so that the ray flux comes to the middle of a space formed between said two photo detectors when the focal point is formed on said surface of object substrate,
a light switching means for switching the ray flux transmitted from said optical means said light switching means having two switching states which respectively pass the ray flux to said two photo detects of the light detecting means,
two sampling holding means each of which respectively receives an output of said two photo detectors during each of said two states of said light switching means, and
a process means for outputting a focusing error signal on the basis of the outputs of said sampling holding means.

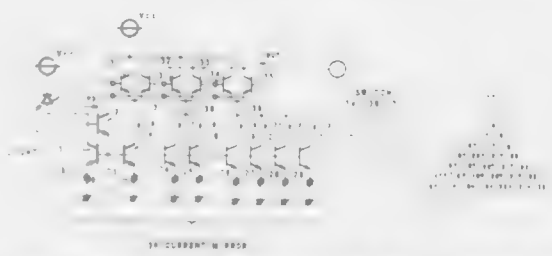
5,004,901

CURRENT MIRROR AMPLIFIER FOR USE IN AN OPTICAL DATA MEDIUM DRIVING APPARATUS AND SERVO-CIRCUIT

Kyosuke Yoshimoto, and Kyouji Shimoda, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 28, 1988, Ser. No. 212,566
Claims priority, application Japan, Jun. 30, 1987, 62-160841; Jun. 4, 1987, 62-139044
Int. Cl.[5] G01J *1/20;* **H03K** *3/01*
U.S. Cl. 250—201.5 **13 Claims**

1. An optical data medium driving apparatus and a servo circuit, comprising:
a photosensor which outputs a current signal corresponding to a quantity of transmitted light or reflected light from an optical data medium;
an amplification means intercoupled to and receiving said photosensor output current signal including a current mirror circuit having a plurality of switching elements, each switching element providing a current signal equal to said photosensor output current signal; and



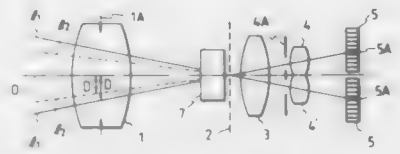
means for combining selected ones of said current signals thereby amplifying said output current signal from said photosensor by said current mirror circuit.

5,004,902

FOCUSED POINT DETECTING OPTICAL SYSTEM

Hiroshi Matsui, Hino, and Akitoshi Toda, Kunitachi, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 23, 1989, Ser. No. 300,598
Claims priority, application Japan, Jan. 22, 1988, 63-11982
Int. Cl.[5] G01J *1/20;* **H01J** *3/14;* **G02F** *1/13;* **G03B** *3/00*
U.S. Cl. 250—201.8 **14 Claims**



1. A focussed point detecting optical system for detecting a focussed condition of an image of an object formed by an imaging optical system having an exit pupil such that the exit pupil can take various positions on an optical axis, comprising:
at least a pair of reimaging lenses arranged apart from an imaging plane of said imaging optical system on the side opposite to said imaging optical system;
a stop having apertures individually corresponding to said pair of reimaging lenses, arranged adjacent to said pair of reimaging lenses; and
a variable refractive index optical element which is symmetrical with respect to a plane including the optical axis of said imaging optical system, said plane being perpendicular to a straight line connecting the centers of said pair of reimaging lenses, and which is arranged adjacent to said imaging plane and retains a lens function,
said variable refractive index optical element being varied in refractive index so that an image of said exit pupil is substantially formed at the position of said stop, irrespective of the various positions of said exit pupil.

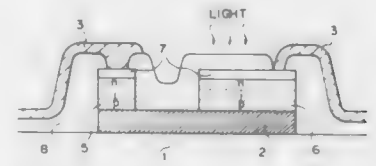
5,004,903

CONTACT TYPE IMAGE SENSOR DEVICE WITH SPECIFIC CAPACITANCE RATIO

Koichi Kitamura; Hidenori Mimura; Kazuo Yamamoto Yasumitsu Ohta and Kazuyoshi Sai all of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 2, 1990, Ser. No. 503,179
Claims priority, application Japan, Mar. 31, 1989, 1-81258
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.1 **11 Claims**

1. A contact type image sensor device comprising a plurality of photodiodes connected in a matrix for converting a light signal to an electrical signal depending on light intensity and comprising an equal numbers of blocking diodes to prevent a cross talk phenomenon, wherein



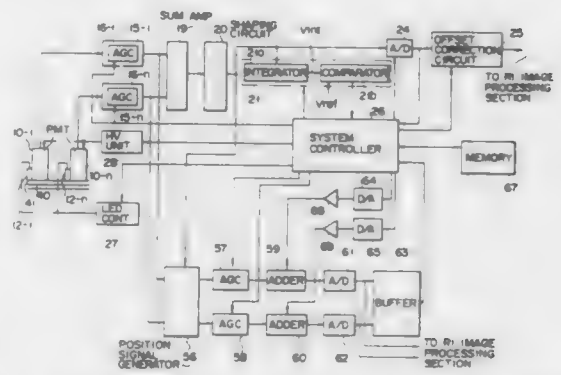
a capacity ratio of a photoelectric part constituting said photodiodes to a diode part constituting said blocking diodes is in a range of 2:1 to 30:1.

5,004,904

METHOD AND SYSTEM FOR CONTROLLING GAIN AND OFFSET IN RADIATION MEASUREMENT APPARATUS

Tsutomu Yamakawa, Tochigi, and Hiroaki Kobayashi, Ootawara, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 13, 1989, Ser. No. 365,385
Claims priority, application Japan, Jun. 17, 1988, 63-150913; Jun. 17, 1988, 63-150914; Aug. 19, 1988, 63-206081; Aug. 19, 1988, 63-206082; Aug. 31, 1988, 63-218920
Int. Cl.[5] H01J *40/14;* **G01T** *1/20*
U.S. Cl. 250—207 **8 Claims**



6. A method of controlling gain and offset in a radiation measurement apparatus during radiation measurement, the method comprising the steps of:
generating at least one first standard light signal during a first period and generating at least one second standard light signal during a second period, the amplitude of said first standard light signal being different from the amplitude of said second standard light signal;
converting light from said generating means and light indicative of said radiation measurement into measurement light signals;
detecting at least one first measurement light signal during said first period from light including said at least one first standard light signal, and detecting at least one second measurement light signal during said second period from light including said at least one second standard light signal;
determining whether or not said detected first and second measurement light signals each include a radiation light signal representing radiation measurement;
obtaining from said first and second measurement light signals first and second correction values when said first and second measurement light signals are determined to not include any radiation light signal representing radiation measurement, said first and second correction values

each corresponding respectively to said first and second standard light signals; and

controlling the gain in accordance with said first correction value and controlling the offset in accordance with said first and second correction values.

5,004,905

CONTACT TYPE IMAGE SENSOR WITH A FIBER ARRAY COATED IN PART WITH AN ABSORBER

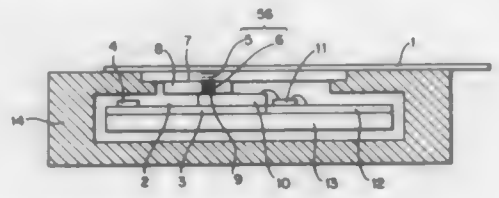
Atsushi Yoshinouchi, Kitakatsuragi; Masataka Itoh, Nara, and Shuhei Tsuchimoto, Kitakatsuragi, all of Japan, assignors to Sharp Kabushiki Kaisha, Japan

Filed Nov. 8, 1989, Ser. No. 432,995

Claims priority, application Japan, Nov. 10, 1988, 63-286533; Feb. 28, 1989, 1-49650; Apr. 6, 1989, 1-89173

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—208.1 **9 Claims**



1. A contact type image sensor comprising:

a light-detecting element array formed on a substrate,

a light source for irradiating an original to be read, and

an optical fiber array disposed between said light-detecting element array and said original to be read,

said optical fiber array including an optical fiber array member that is composed of optical fibers not coated with an absorber and an optical fiber array member that is composed of optical fibers coated with an absorber, said optical fiber array being disposed between said light-detecting element array and said original to be read, and

said light source being disposed to direct light onto said original from which it is then reflected via said optical fiber array to said light-detecting element array.

5,004,906

LOGARITHMIC AMPLIFIER, AND IMAGE READ-OUT APPARATUS USING THE SAME

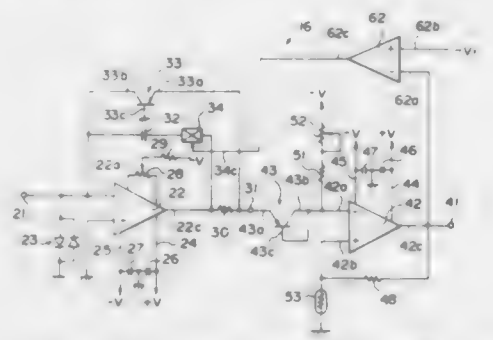
Yoshimi Takasaki, and Kazuo Horikawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 18, 1990, Ser. No. 466,837

Claims priority, application Japan, Jan. 20, 1989, 1-11386

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—214 A **19 Claims**



1. A logarithmic amplifier comprising an amplifier, which is provided with a feedback circuit and a logarithmic conversion device in said feedback circuit of said amplifier,

wherein the improvement comprises the provision of:

(i) an oscillation preventing circuit which is provided with a capacitor connected in parallel with said logarithmic conversion device, and

(ii) a control circuit which controls said oscillation preventing circuit in accordance with the current fed into said logarithmic amplifier, so that the amount of certain components in the output from said amplifier, which components are fed back to the input terminal of said amplifier through said oscillation preventing circuit, decreases as the current fed into said logarithmic amplifier becomes smaller.

5,004,907

CIRCUIT FOR DETERMINING POWER OF RECEIVED LIGHT HAVING SUPERIMPOSITION OF LOW FREQUENCY CURRENT

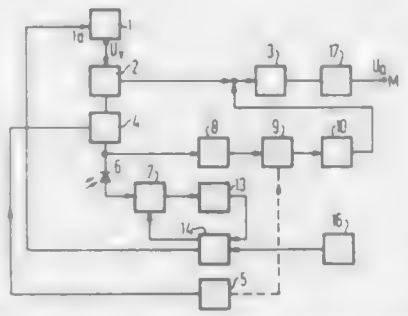
Karl-Heinz Prasse, Mittenwald, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 15, 1989, Ser. No. 407,741

Claims priority, application European Pat. Off., Sep. 15, 1989, 88115133.6

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—214 AG **20 Claims**



1. A circuit for determining light power received by a photodiode of an optical receiver, wherein bias voltage of said photodiode is controlled by a control means depending on the received light power, comprising:

(a) modulation means for superimposing a low-frequency current having a constant amplitude on a photoelectric current of said photodiode;

(b) rectifier means operatively connected to the photodiode for rectifying a low-frequency voltage resulting from the superimposition of said low-frequency current; and

(c) an output terminal connected to an output of the rectifier means.

5,004,908

REFLECTION TYPE PHOTOELECTRIC SWITCH FOR DETECTING THE PRESENCE OF AN OBJECT

Arata Nakamura, Kyoto, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Dec. 28, 1987, Ser. No. 138,052

Claims priority, application Japan, Dec. 26, 1986, 61-312456

Int. Cl.[5] G01V *9/04*

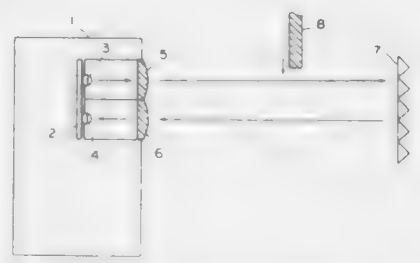
U.S. Cl. 250—221 **12 Claims**

1. A reflection type photoelectric switch which detects the presence of an object, comprising:

light emitting means for emitting a substantially single light beam having first and second different wavelengths into a space in which the object may be detected, wherein said light emitting means comprises a single light emitting diode which emits light at said first and second wavelengths.

a reflector for reflecting said substantially single light beam at different rates with respect to said first and second wavelengths,

light receiving means for sensing said first and second wavelengths of the reflected light beam and which generates outputs in response to said first and second wavelengths, and



means for analyzing said outputs generated by said light receiving means to generate an output representing the existance in the space of the object detected by the photoelectric switch.

5,004,909

METHOD AND APPARATUS FOR INSPECTING SIDEWALLS OF BOTTLES USING STRIPE PATTERN ILLUMINATION

Hiroyuki Fukuchi, Yokohama, Japan, assignor to Kirin Beer Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1989, Ser. No. 357,265

Claims priority, application Japan, May 30, 1988, 63-130154

Int. Cl.[5] G01N *9/04*

U.S. Cl. 250—223 B **40 Claims**



1. A method of inspecting the sidewalls of bottles comprising the steps of:

illuminating the sidewall of a bottle by light in a pattern of alternating shadowed and illuminated stripes to transmit an image of alternating dark and light stripes therethrough;

photoelectrically converting the image transmitted through the sidewall of the bottle;

scanning the photoelectrically converted transmitted light image along a scan line in a direction transverse to the dark and light stripes;

sensing the brightness at at least three points near one another along said scan line, said at least three points comprising a central point and outer points on both sides of said central point;

comparing the brightness of said at least three points with each other;

detecting a defect point at said central one of said at least three points when the brightness of the central point differs from the brightness of each of the outer points on both sides of the central point by more than a set value; and

judging the presence of a defect on the sidewall of the bottle based on the defect point.

5,004,910

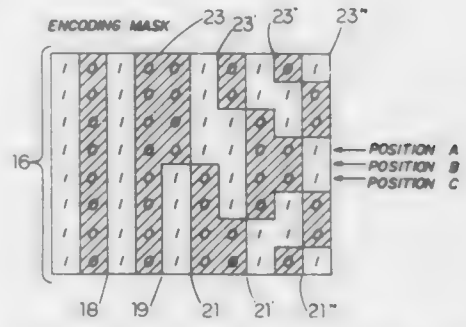
METHOD OF DECODING ENCODED RELATIVE SPECTRAL DATA

Eric M. Arnett, South Bend, Ind., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Aug. 4, 1989, Ser. No. 389,481

Int. Cl.[5] G01J *3/50*; G01D *5/34*

U.S. Cl. 250—226 **4 Claims**



1. A method of decoding a relative spectrum data for a plurality of positions that have been encoded by a wave length multiplexer sensor, said method comprising the steps of:

generating a spectrum of light having at least a predetermined band-width, said spectrum being made up of segments of a plurality of individual bits;

modulating the individual bits of said spectrum to produce a modulated spectrum having data bits derived from on/off and off/on transitions relating to a plurality of adjacent data bits, said modulated spectrum having a start data bit with a constant width which precedes each segment of the spectrum of light represented by said data bits, said start data bit being identified by an always on field followed by an always off field; and

locating the center of each data bit through a transition edge to determine the difference between adjacent data bits and thereby determining the location of the next transition edge in the plurality of data bits.

5,004,911

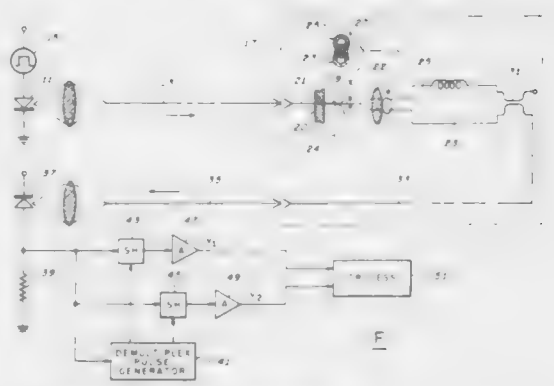
TIME MULTIPLEXED FIBER OPTIC SENSOR

Rudolph C. Dankwort, and Charles D. Klem, both of Phoenix, Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 20, 1989, Ser. No. 368,626

Int. Cl.[5] H01J *5/16*

U.S. Cl. 250—227.21 **4 Claims**



1. A fiber optic sensor comprising:

means for receiving optical signals from a first light propagation path;

means coupled to said receiving means for deflecting said receiving means for a reference position in accordance

with a measured parameter, thereby providing a deflected optical signal;

delay means responsive to said deflected optical signal for providing first and second optical signals with a time delay interval therebetween, said first and second optical signals having relative intensities that are functions of said measured parameter; and

means for coupling said first and second optical signals to propagate along a second light propagation path.

5,004,912

FIBER-OPTICAL PRESSURE SENSOR WITH CONTACTING LIGHTWAVE CONDUCTORS

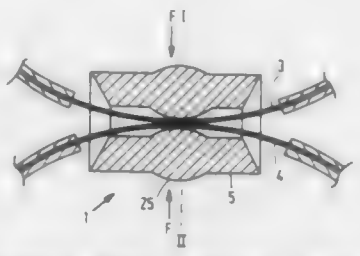
Gerhard Martens, Henstedt-Ulzburg; Jürgen Kordts, Norderstedt, and Georg Weidinger, Hamburg, all of Fed. Rep. of Germany, assignors to U.S. Philips Corp., New York, N.Y.

Filed Sep. 21, 1989, Ser. No. 410,695

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1988, 3832569

Int. Cl.[5] H01J *5/16*

U.S. Cl. 250—227.14 **10 Claims**



1. A fiber-optical sensor, comprising a light transmitter device (6) which couples transmitted light into at least one first lightwave conductor, and also comprising a light receiver device (7) which receives light from the first lightwave conductor and at least one second lightwaveconductor, the lightwave conductors (3, 4) comprising adjacently situated portions between which light can be coupled, and wherein the light transmitter device (6) couples a first transmitted light into the first lightwave conductor (3, 4) and a second transmitted light into the second lightwave conductor (4, 3), the adjacently situated portions (1) of the lightwave conductors (3, 4) being accommodated together in an envelope (5) via which a pressure or force acts on the lightwave conductors (3, 4), portions of the lightwave conductors (3, 4) contacting one another in a light-transferring manner under the influence of said pressure or force.

5,004,913

REMOTE MEASUREMENT OF PHYSICAL VARIABLES WITH FIBER OPTIC SYSTEMS - METHODS, MATERIALS AND DEVICES

Marcos Kleinerman, 24 Jerome St., Southbridge, Mass. 01550

Continuation-in-part of Ser. No. 608,932, May 14, 1984, Pat. No. 4,708,494, which is a continuation of Ser. No. 405,732, Aug. 6, 1982, abandoned. This application Mar. 12, 1985, Ser. No. 711,062

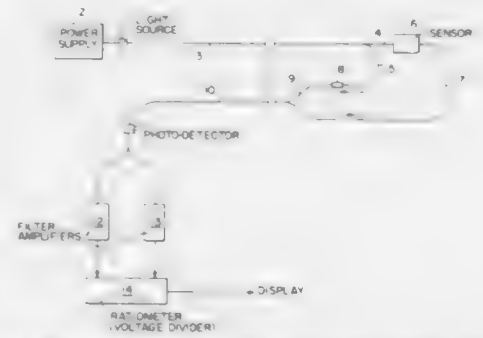
Int. Cl.[5] G01N *21/64;* **G01K** *11/12;* **G02B** *5/14;* **G01L** *7/02*

U.S. Cl. 250—227.21 **28 Claims**

1. A method for sensing variations in the magnitude of a physical parameter by use of a probe, and an interrogating light of suitable wavelength or wavelengths injected into said probe with an intensity P_o, comprising the steps of:

(a) exposing a light-transmitting probe to said physical parameter, said probe characterized by an ability to attenuate within said probe an interrogating light of suitable wavelength and an intensity P_o entering the probe to an intensity $P_o(1-\alpha)$, where α is a parameter-dependent fraction smaller than unity, and to substantially convert the fraction αP_o of the intensity of the interrogating light into a light separable from the interrogating light, at least part of the intensity of which is emitted from the probe at wavelengths λ_1 different from the wavelength of the interrogating light.

(b) injecting into the probe interrogating light of intensity P_o and of a wavelength or wavelengths within a suitable spectral region, thereby converting the fraction αP_o of the intensity of said injected interrogating light into emitted light at least part of the intensity of which is emitted from the probe at the wavelengths λ_1 different from the wavelength or wavelengths of the interrogating light, the value of α varying with the magnitude of said parameter, and



said emitted light having an intensity varying with the value of α;

(c) directing a fraction of the intensity of said emitted light to photodetector means;

(d) sensing the variations of the intensity of said emitted light received by said photodetector means, said variations being an indicator of the variations of the magnitude of the physical parameter; and

(e) thereby sensing the variations in the magnitude of the physical parameter from the variations of the intensity of said emitted light received by said photodetector means.

5,004,914

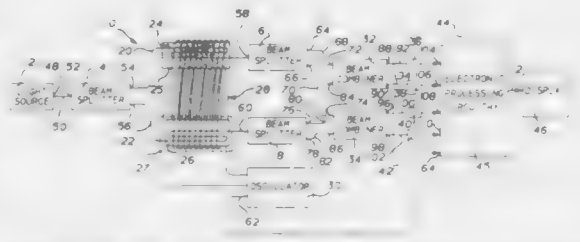
FIBER-OPTIC INTERFEROMETRIC CHEMICAL SENSOR

Victor Vali, Laguna Hills; David B. Chang, Tustin, and Patrick C. Brownrigg, Long Beach, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 20, 1990, Ser. No. 511,666

Int. Cl.[5] H01J *5/16*

U.S. Cl. 250—227.27 **15 Claims**



1. An apparatus for detecting presence of a given chemical vapor, said apparatus comprising:

a light source;

a first substrate exposed to the chemical vapor;

collector means on the first substrate for collecting the chemical vapor onto the substrate;

a first optical fiber on the first substrate and coupled to the light source;

a second substrate isolated from the chemical vapor;

a second optical fiber on the second substrate and coupled to the light source;

magnetic field generator means for subjecting both first and second substrates to an oscillating magnetic field;

said first and second substrates being constructed so that the dimensions thereof change in response to the oscillating magnetic field thereby altering characteristics of light from the light source passing through the first and second optical fibers, characteristics of the light in the first optical fiber being different from the characteristics of the light in the second optical fiber when the first substrate is exposed to said given chemical vapor whereby said first optical fiber provides an optical sensor signal and said second optical fiber generates an optical reference output signal; and

means for comparing said optical sensor signal with said optical reference output signal and for providing an output signal, based on said comparing, which is indicative of the presence of said given chemical vapor.

5,004,915

STEERING ANGLE SENSOR APPARATUS

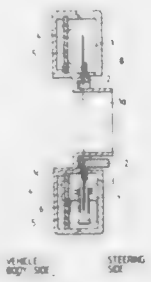
Keiichi Umehara; Hisashi Hirose, and Kazuo Kono, all of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Aug. 9, 1989, Ser. No. 391,022

Claims priority, application Japan, Aug. 12, 1988, 105976[U]

Int. Cl.[5] G01D *5/34*

U.S. Cl. 250—231.14 **10 Claims**



1. A steering angle sensor apparatus for mounting on a vehicle steering apparatus which includes a steering shaft that rotates during a steering operation and a stationary member, said steering angle sensor apparatus comprising:

disc means, for attachment to one of the steering shaft and the stationary member, including indications for indicating steering rotational angle;

a circuit substrate, for attachment to the other one of the steering shaft and the stationary member, including circuit elements forming a steering angle sensor circuit;

sensor means, operatively coupled to said sensor circuit, for reading said indications, at least one element of said sensor means being attached to said circuit substrate;

cover means for enclosing said disc means, said circuit substrate and said sensor means; and

said circuit substrate being positioned within said cover means to confront a surface of said disc means.

5,004,916

SCANNING SYSTEM HAVING AUTOMATIC LASER SHUTDOWN UPON DETECTION OF DEFECTIVE SCANNING ELEMENT MOTION

Donald A. Collins, Jr., Ithaca, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed Jul. 28, 1989, Ser. No. 387,551

Int. Cl.[5] H01J *3/14*

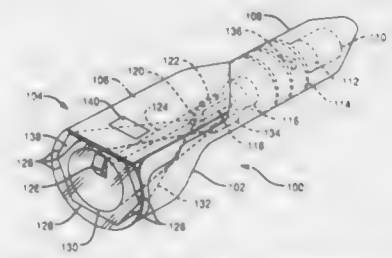
U.S. Cl. 250—235 **18 Claims**

1. A method of laser shutdown in a laser scanning system capable of reading the likes of a bar code comprising the steps of:

moving a scanning element by a motor coupled to said scanning element;

producing a laser beam for focus upon and deflection by said scanning element, said laser beam thus being able to scan the likes of a bar code;

driving said motor, and outputting signals from sensors coupled to said motor corresponding to scanning element movement; and



receiving signals from said sensors and automatically shutting down the operation of said laser when the amount of movement of said scanning element is below a threshold.

5,004,917

RADIATION IMAGE INFORMATION READING APPARATUS

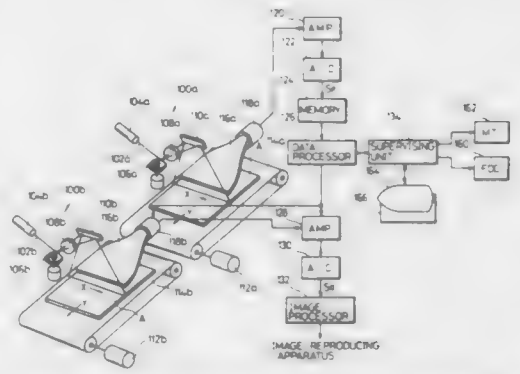
Kunimasa Shimizu; Masao Shigyo, and Hiroshi Tanaka, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 12, 1990, Ser. No. 508,678

Claims priority, application Japan, Apr. 17, 1989, 1-96762

Int. Cl.[5] H01J *3/14*

U.S. Cl. 250—236 **4 Claims**



1. A radiation image information reading apparatus for photoelectrically reading radiation image information from a recording medium which stores the radiation image information, comprising:

processing means for establishing reading conditions and/or image processing conditions based on the radiation image information which has been read from the recording medium;

determining means for determining whether said reading conditions and/or said image processing conditions fall outside of a predetermined range or not; and

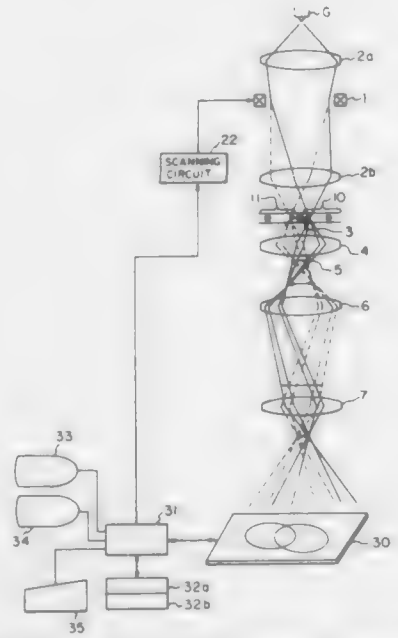
storage means for holding the radiation image information and data used to establish the reading conditions and/or the image processing conditions if the reading conditions and/or the image processing conditions fall outside of said predetermined range.

5,004,918

DIFFERENTIAL PHASE CONTRAST SCANNING TRANSMISSION ELECTRON MICROSCOPE

Katsushige Tsuno, and Masao Inoue, both of Tokyo, Japan, assignors to Jeol Ltd., Tokyo, Japan

Filed Jan. 24, 1990, Ser. No. 468,750
Claims priority, application Japan, Jan. 25, 1989, 1-15[illegible]
Int. Cl.[5] H01J *37/28*
U.S. Cl. 250—311 **4 Claims**



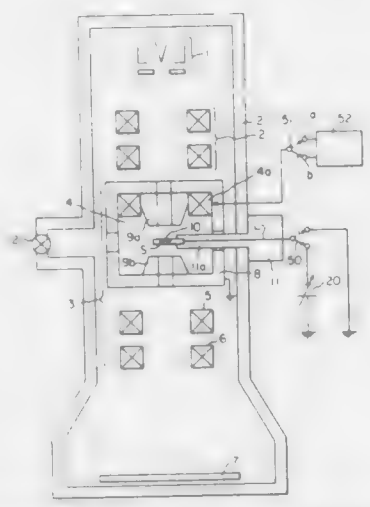
1. A differential phase contrast scanning transmission electron microscope, comprising:
an electron beam source for producing an electron beam;
a condenser lens for focusing the electron beam onto a specimen;
a scanning means for causing the electron beam to scan the surface of the specimen in two dimensions;
a two-dimensional image pickup means disposed in the path of the electron beam transmitted through the specimen;
a lens means for projecting a diffraction image onto the electron incident surface of the image pickup means, the diffraction image being created from electrons transmitted through the specimen;
a means for superimposing at least two diffraction images which are created by the image pickup means when the electron beam impinges on the specimen surface in at least two different positions, respectively;
a first display means which displays the superimposed diffraction image;
an arithmetic means which divides the region covered by the image pickup means into plural parts by at least one arbitrarily moveable boundary line and produces a signal indicating the difference between the relative number of electrons impinging on the plural parts, respectively;
an arbitrarily moveable pointing means for pointing positions on a viewing screen of said first display means which correspond to points of intersection between said diffraction images;
means for establishing the position of said arbitrarily moveable boundary line according to the signal which indicates the positions pointed by said pointing means; and
a second display means which displays an image of the specimen according to the differential signal from the arithmetic means and a signal related to the scanning means.

5,004,919

TRANSMISSION ELECTRON MICROSCOPE

Yukihito Kondo, Tokyo, Japan, assignor to Jeol, Ltd., Tokyo, Japan

Filed Jul. 2, 1990, Ser. No. 547,477
Claims priority, application Japan, Jul. 5, 1989, 1-173836; Aug. 11, 1989, 1-208185; Aug. 11, 1989, 1-208186; Oct. 4, 1989, 1-259495
Int. Cl.[5] H01J *37/26*
U.S. Cl. 250—311 **12 Claims**



1. A transmission electron microscope comprising:
an electron gun producing an electron beam;
a condenser lens system which focuses the electron beam onto a specimen;
an imaging lens system consisting of an objective lens, an intermediate lens, and a projector lens;
a display means upon which an image created by the electrons emitted from the specimen is displayed;
a voltage-applying means for applying a negative voltage to the specimen placed between the magnetic pole pieces of the objective lens; and
means for irradiating the specimen with exciting rays to induce photoelectrons from the lower surface of the specimen, whereby the photoelectrons emitted from the specimen are imaged by the imaging lens system.

5,004,920

METHOD OF PREPARING MEMBRANE FILTERS FOR TRANSMISSION ELECTRON MICROSCOPY

Richard J. Lee, Murrysville; Barbara A. Smith, Apollo; Robert G. Theys, Monroeville; Robert A. Theys, Pittsburgh, all of Pa., and Judy A. Murphy, St. Louis, Mo., assignors to RJ Lee Group, Inc., Monroeville, Pa.

Continuation of Ser. No. 359,150, May 31, 1989, abandoned. This application Jun. 12, 1990, Ser. No. 537,156
Int. Cl.[5] G01N *1/28*
U.S. Cl. 250—304 **14 Claims**

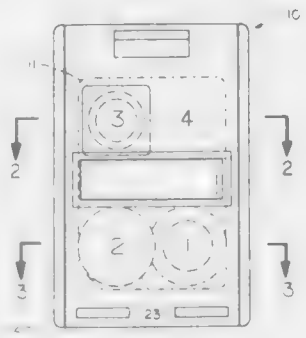
1. The method for preparing specimens for viewing particles and/or fibers captured upon membrane filters with a TEM comprising the following steps:
(a) mounting a section of the membrane filter on a glass slide with a quick drying liquid applied between the filter membrane and the slide which liquid will not release the filter membrane when the slide is immersed in a selected solvent and such that the liquid will not render the filter membrane resistant to the selected solvent, the face of the membrane filter that has collected the particles and/or fibers to be observed facing away from the glass slide,
(b) drying the assembly,
(c) vacuum coating the filter section surface with carbon to replicate the surface of the membrane filter and the particles and fibers thereupon,
(d) scoring the carbon coated membrane filter section into small sections,
(e) immersing the assembly in the selected solvent which will attack the filter material causing the carbon film squares to float off of the membrane filter, and
(f) capturing the film squares for use as transmission electron microscope specimens.

5,004,921

MIXED FIELD PERSONNEL DOSIMETRY METHOD AND APPARATUS FOR DETERMINATION OF RISK RELATED QUANTITY VIA A NEARLY TISSUE EQUIVALENT MULTI-ELEMENT THERMOLUMINESCENT DOSIMETER

Marko Moscovitch, Beachwood, Ohio, assignor to Solon Technologies, Inc., Solon, Ohio

Continuation-in-part of Ser. No. 216,343, Jul. 7, 1988. This application Nov. 6, 1989, Ser. No. 432,590
Int. Cl.[5] G01T *1/02, 1/11*
U.S. Cl. 250—337 **6 Claims**



1. A dosimetry method comprising
using a dosimeter to monitor exposure to a mixed radiation field composed of photons and neutrons, the dosimeter including first and second elements sensitive to photons and insensitive to neutrons and a third element sensitive to photons and neutrons, and first and second filters for said first and second elements having different photon attenuation characteristics and a third filter for said third element having a photon attenuation characteristic different from the photon attenuation characteristic of the first filter;
heating the radiated dosimeter to obtain thermoluminescence emission of the elements; and quantitatively relating the emission to the radiation incident on the dosimeter, said quantitatively relating including
determining a neutron component of incident radiation by taking the difference between the response of the first and third elements with one of the responses being weighted as a function of photon energy.

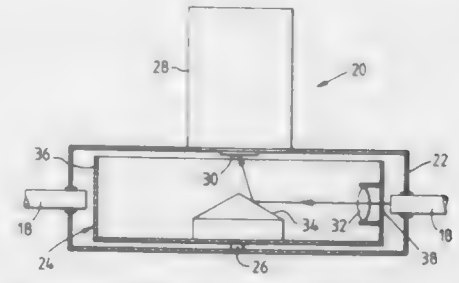
5,004,922

OPTICAL FIBER SCANNING SYSTEM FOR HEAT SENSING

Stanley A. Edwards, Wallasey, United Kingdom, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Oct. 16, 1989, Ser. No. 421,940
Int. Cl.[5] G08B *17/12*
U.S. Cl. 250—340 **8 Claims**

1. A scanning system for the detection of heat sources within an area to be maintained under surveillance, comprising two or more scanning units, optical scanning means for each scanning unit for cyclically scanning at least part of said area, a radiation sensor responsive to radiation indicative of a heat source and located remotely from the scanning units, optical fibre transmission elements each associated with a respective scanning unit for transmitting radiation received by the associated scanning unit to the radiation sensor which is thereby common to all of the scanning units, the transmission elements being arranged at their outlet ends in spaced relation, a masking member interposed between the outlet ends and the common radiation sensor for gating the radiation transmitted by each optical fibre transmission element so that radiation from only one transmission element at a time is incident on the radiation sensor, the masking member having an opening and being movable in a cyclic fashion to bring the opening into registry for a dwell period, one at a time, with each transmission element so that the radiation transmitted by the respective transmission element may impinge on the common sensor for that period, the masking member being arranged such that each transmission element is gated in turn to the common sensor for a period equivalent to a complete cycle of the associated scanning unit, and control circuitry so arranged that cycle completion pulses generated at the scanning units trigger indexing of the masking member from one scanning unit to the next scanning unit.

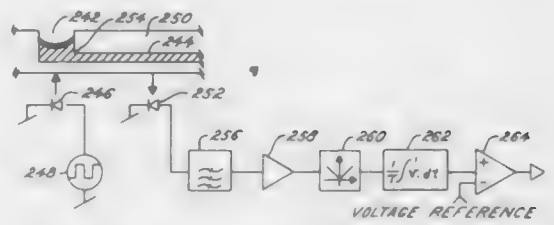


5,004,9[illegible]

CAPILLARY FLOW DEVICE

Robert S. Hillman, Cupertino; Michael E. Cobb, Sunnyvale; Jimmy D. Allen, Los Altos; Ian Gibbons, Menlo Park; Vladimir E. Ostoich, San Jose, and Laura J. Winfrey, Belmont, all of Calif., assignors to Biotrack, Inc., Mountain View, Calif.

Division of Ser. No. 177,625, Apr. 5, 1988, which is a division of Ser. No. 880,793, Jul. 1, 1986, which is a continuation-in-part of Ser. No. 762,748, Aug. 5, 1985. This application Jan. 30, 1990, Ser. No. 472,130
Int. Cl.[5] G01N *21/49, 21/05*
U.S. Cl. 250—341 **5 Claims**



1. A control device capable of detecting depletion of a particle-containing fluid from a sample reservoir in a device comprising a sample reservoir and a capillary exiting said reservoir, which comprises:
a light source located so as to impinge on said fluid in said reservoir;
a light detector located in close proximity to said capillary so as to collect light which is reflected by said particles into said capillary and thereafter further reflected by said particles so as to pass out through the walls of said capillary;
a signal generator operably attached to said light source, wherein a detectable signal is imposed on the output of said light source; and
a filter operably attached to the output of said light detector,

wherein said detectable signal is isolated from other light sources which may impinge upon said light detector.

5,004,924

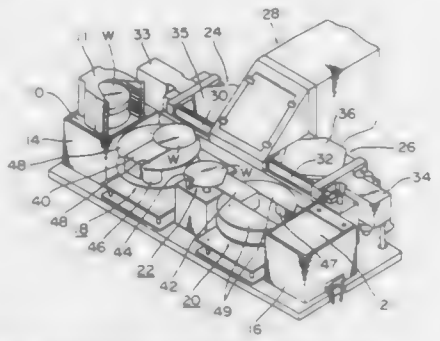
WAFER TRANSPORT APPARATUS FOR ION IMPLANTATION APPARATUS

Issei Imahashi, Tokyo, Japan, assignor to Tokyo Electron Limited, Tokyo, Japan

Continuation of Ser. No. 145,689, Jan. 15, 1988, Pat. No. 4,873,447, which is a continuation of Ser. No. 848,567, Apr. 7, 1986, abandoned. This application Mar. 9, 1989, Ser. No. 321,223

Int. Cl.[5] G21K *5/10*

U.S. Cl. 250—442.1 **6 Claims**



1. An ion implantation apparatus, comprising:

a vacuum processing chamber in which a wafer is subjected to ion implantation processing;

first and second auxiliary vacuum chambers each of which is hermetically sealable from or connectable to the outer atmosphere and vacuum processing chamber, and each of which is constructed to temporarily store the wafer;

first wafer transfer means for transferring a wafer into the vacuum processing chamber from the first auxiliary vacuum chamber;

second wafer transfer means for transferring the wafer to the second auxiliary vacuum chamber from the vacuum processing chamber;

driving means for driving the first and second wafer transfer means in a mutually synchronized manner said driving means being connected to the first and second wafer transfer means to move them at the same time so that two wafers are simultaneously transferred to the vacuum processing chamber and second auxiliary vacuum chamber from the first auxiliary vacuum chamber and vacuum processing chamber;

wafer cassette supporting means for supporting a cassette containing a plurality of wafers at a location outside of said first auxiliary vacuum chamber; and

wafer transport means for transporting the wafer into the first auxiliary vacuum chamber from the cassette one by one.

5,004,925

METHOD AND APPARATUS FOR DETECTING ALIGNMENT MARK OF SEMICONDUCTOR DEVICE

Yasushi Takahashi, Kawasaki, and Hiroshi Yasuda, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 6, 1990, Ser. No. 489,224

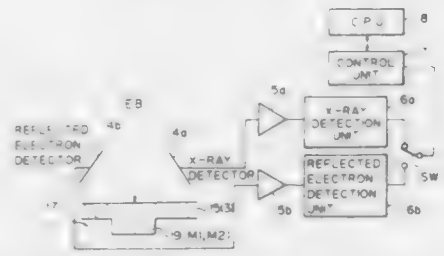
Claims priority, application Japan, Mar. 6, 1989, 1-52136

Int. Cl.[5] H01J *37/30*

U.S. Cl. 250—491.1 **19 Claims**

1. A method of detecting a flat surface alignment mark, of a semiconductor device having a main surface, the flat surface alignment mark comprising a level difference alignment mark in said main surface and a portion of a leveling metal layer on said main surface which forms a flat surface above said level-difference alignment mark common with said main surface, wherein said method comprises:

a step of irradiating and scanning charged particles onto a region of said main surface of said device encompassing said flat surface alignment mark; and



a step of detecting information generated from the region of said flat surface alignment mark in accordance with the thickness of the metal layer portion in said level difference alignment mark, so that the position of said flat surface alignment mark is detected.

5,004,926

DEVICE FOR THE IRRADIATION OF A PRODUCT ON BOTH FACES

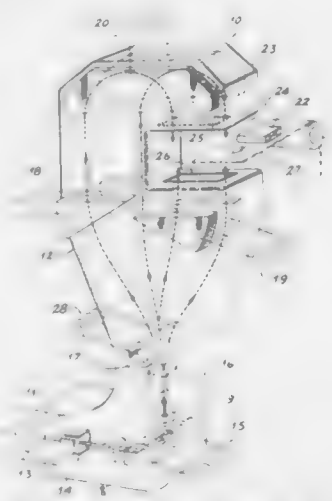
Michel Vassenaix, Sceaux, and Jacques Milcamps, Clamart, both of France, assignors to CGR MeV, Buc, France

Filed Sep. 8, 1989, Ser. No. 404,631

Claims priority, application France, Sep. 16, 1988, 88 12118

Int. Cl.[5] H01J *37/304*

U.S. Cl. 250—492.3 **3 Claims**



1. A device for the dual-faced irradiation of a product, including a charged particle accelerator associated with a modulator so as to emit a charged particle beam in pulse form, a horn-shaped, vacuum-sealed scanning chamber, said chamber having, at the widest end, an aperture occupying half of the cone, and provided with two windows transparent to the beam, said aperture being used for the passage of the product to be irradiated, said device comprising:

magnetic scanning means associated with the scanning chamber for causing an angular deflection, on either side of an axis, of the particle beam for the duration of the beam pulse;

first magnetic deflection means associated with the scanning chamber for converting the divergent angular scanning into parallel scanning;

second magnetic deflection means associated with the scanning chamber for obtaining a 180° deflection of the parallel scanning beam corresponding to that part of the scanning chamber that does not have the aperture; and

means for synchronizing both the deflection of the beam and the occurrence of the beam pulse;

wherein the magnetic scanning means comprises a magnet with circular pole pieces, the winding of which is supplied with a current that is variable in the course of the duration of a pulse.

5,004,927

PROCESS FOR FORMING A FINE PATTERN HAVING A HIGH ASPECT RATIO

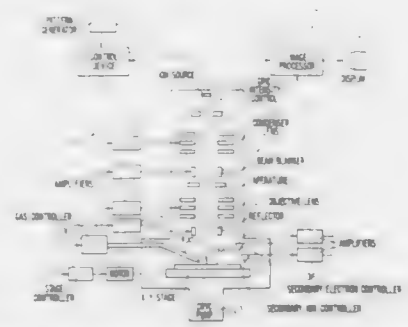
Kenji Nakagawa, Isehara, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 282,505, Dec. 12, 1988, abandoned. This application May 25, 1990, Ser. No. 529,744

Claims priority, application Japan, Dec. 10, 1987, 62-314761

Int. Cl.[5] H01J *37/302, 37/304*

U.S. Cl. 250—492.2 **20 Claims**



1. A process for forming a desired, fine pattern by a focused-ion beam (FIB) system, comprising the steps of:

(a) mounting a sample in the FIB system;

(b) scanning an ion beam on the sample while supplying a reaction gas over the sample at a first scanning condition to deposit a material from the reaction gas onto the sample, the deposited material forming a first pattern including material in excess of the desired pattern and forming a sloped foot about the periphery of the desired fine pattern; and

(c) repeatedly performing a cycle comprising the following steps until the desired, fine pattern without a sloped foot along the entire periphery thereof is obtained:

(i) scanning an ion beam at least along the periphery of the first pattern at a second scanning condition to acquire an image of the first pattern;

(ii) comparing the acquired image of the first pattern with the desired, fine pattern to detect excess material of the first pattern which should be removed; and

(iii) scanning an ion beam onto said excess material of the first pattern at a third scanning condition to remove at least a part thereof, wherein said scanning at each of the second scanning condition and at the third scanning condition is performed along the entire periphery of the desired pattern at least once;

wherein said steps (b) and (c) are carried out in said FIB system.

5,004,928

PRINTING METHOD IN WHICH BOTH SIDES OF THE RECORDING SHEET ARE INSPECTED AND APPARATUS THEREFOR

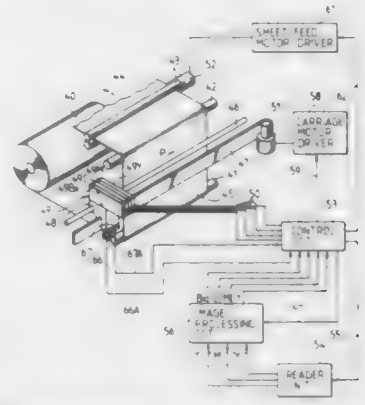
Akio Suzuki, Yokohama; Yoshihiro Takada, Kawasaki; Masami Izumizaki, Tokyo, and Toshimitsu Danzuka, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 13, 1989, Ser. No. 337,376

Claims priority, application Japan, Apr. 18, 1988, 63-095063; Apr. 18, 1988, 63-095064; Apr. 18, 1988, 63-095065; Apr. 18, 1988, 63-095066; Apr. 18, 1988, 63-095067

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—559 **6 Claims**



1. A printing apparatus comprising:

printing means for forming an image on a recording sheet;

means for detecting an upper or lower surface of the recording sheet; and

means for determining, according to a detection result of said detecting means, a recording enable state when the upper and lower surfaces of the recording sheet are properly set and a recording disable state when the upper and lower surfaces of the recording sheet are reversed.

5,004,929

OPTICAL SYSTEM FOR DETECTING THREE-DIMENSIONAL SHAPE

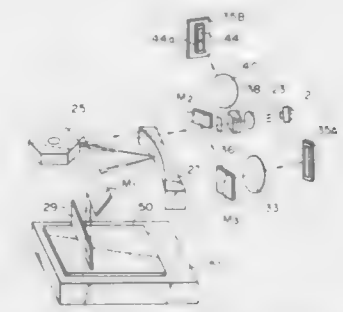
Yoshikazu Kakinoki, Machida; Masato Nakashima, Yokohama; Tetsuo Koezuka, Hachioji; Noriyuki Hiraoka, Kawasaki; Hiroyuki Tsukahara, Atsugi; Yoshinori Suto, Kawasaki; Yoshitaka Oshima, and Shinji Hashinami, both of Atsugi, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 2, 1989, Ser. No. 360,878

Claims priority, application Japan, Jun. 4, 1988, 63-136651; Jun. 14, 1988, 63-144846; Aug. 5, 1988, 63-196815; Aug. 31, 1988, 63-218165

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—561 **37 Claims**



1. An optical system for detecting the shape of a three-dimensional object, comprising:

a collimating lens for converting a laser beam to a parallel beam of light;

a scanning optical system comprising.

a deflection mirror on which the parallel light beam is incident and which reflects the incident parallel beam in a predetermined direction, as a deflection beam.

a parabolic mirror on which the deflection beam is incident and which reflects the deflection beam as a scanning beam, in a direction normal to the object and incident on the object, for scanning the object with a scanning light beam spot, the scanning light beam spot being reflected by the scanned object and producing a scanned object, diffused reflection beam,

a further mirror disposed adjacent the surface of the object and with the reflecting surface thereof disposed at a predetermined, small angle of inclination with respect to the normal to the surface of the object whereby the reflecting surface thereof is substantially normal to the surface of the object, the scanned object, diffused reflection beam being incident on said further mirror and the further mirror reflecting same in a predetermined direction as a scanned object, diffused and reflected reflection beam, and

an image forming, converging lens on which the diffused and reflected reflection beam is incident and which converges same to a point in a first predetermined focal plane and thereby forms an image of the object, as illuminated by the scanning light beam spot, in the first, predetermined focal plane, and

a first optical detector positioned at the point in the first, predetermined focal plane at which the diffused and reflected beam is converged, for detecting the beam spot

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5,004,930

METHOD AND DEVICE FOR SETTING THE ANGULAR POSITION OF A WORKPIECE ON A MACHINE-TOOL BY MEANS OF A LASER BEAM

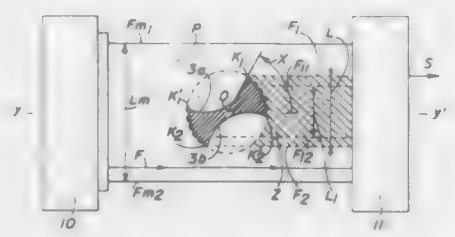
Henri Gremaud; Martial Gremaud, and Michel Rollier, all of Le Landeron, Switzerland, assignors to Francis Rollier SA, La Neuveville, Switzerland

Filed Dec. 21, 1989, Ser. No. 455,990

Claims priority, application Switzerland, Dec. 21, 1988, 04727/88

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—561 **10 Claims**



1. A method of angularly setting a workpiece (3) that is rotatably mounted about an axis (xx') of a machine-tool and wherein the position of the workpiece is defined by an angle (X), in a predetermined position corresponding to a given angle (Xl), said method comprising:

sweeping with a mobile laser beam (F) an area (P) passing through at least a part of the workpiece (3) in such a manner that said part, by intercepting said beam, produces in said area a shaded zone (Z) defined by a characteristic quantity (L) varying with said angle (X), said quantity taking a reference value (L1) at said given angle (Xl);

measuring said characteristic quantity (L);

turning said workpiece (3) about said axis (xx') until the characteristic quantity (L) reaches said reference value (L1), which corresponds to the workpiece being in said predetermined position; and

stopping the workpiece (3) in said predetermined position

5,004,931

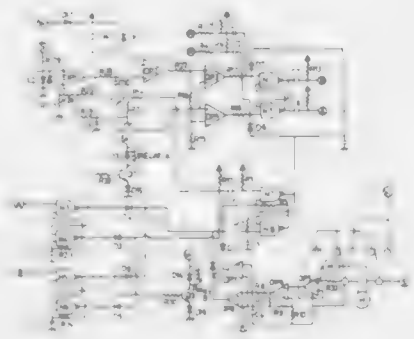
CENTRAL LOCK CONTROL SYSTEM ADAPTED FOR AUTOMOBILE

Michael Chen, Taipei, Taiwan, assignor to Advance Security Inc., Taipei, Taiwan

Filed Oct. 19, 1989, Ser. No. 424,040

Int. Cl.[5] E05B *47/00*

U.S. Cl. 307—10.2 **3 Claims**



1 A central lock control system comprising four actuators and an electronic module wherein the actuators are disposed in four doors of an automobile respectively and each actuator is operatively connected to, the lock knob of said individual door wherein the lock knob is locked or unlocked by way of a motor disposed in said actuator respectively actuating racks mechanically engaged with said lock knobs; said electronic module is equipped with a circuit therein adopted for determining clockwise or counter clockwise rotation of said motors so as to lock or unlock said doors; the system is characterized by that said electronic module takes the inductive voltage generated as a result of the actuation of the motor in said actuator by said respective lock knob as an input signal which is then amplified, rectified and used to control the locking or unlocking of other doors.

5,004,932

UNIT CIRCUIT FOR CONSTRUCTING A NEURAL NETWORK AND A SEMICONDUCTOR INTEGRATED CIRCUIT HAVING THE SAME

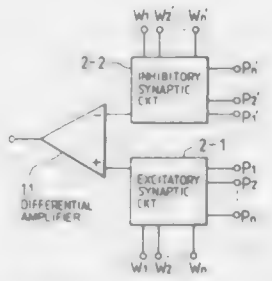
Yoshito Nejime, Hachioji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 27, 1989, Ser. No. 373,261

Claims priority, application Japan, Jul. 1, 1988, 63-162513

Int. Cl.[5] G06G *7/12*

U.S. Cl. 307—201 **19 Claims**



1. A unit circuit for constructing a neural network comprising:

a differential amplifier which includes an output terminal, an inverting input terminal and a noninverting input terminal;

an excitory synapse circuit which is connected to the noninverting input terminal of said differential amplifier; and

an inhibitory synapse circuit which is connected to the inverting input terminal of said differential amplifier,

wherein each of said excitory and inhibitory synapse circuits includes a plurality of current switches, a regulated current source array which is configured of regulated current source circuits being equal in number to the number of said current switches, said regulated current source circuits determining values of currents that flow through said current switches, and includes one load resistor which is connected to all of said current switches, and

wherein input terminals of each synapse circuit are responsive to inputs which turn "on" and "off" the respective current switches and to which input terminals external inputs or outputs of other unit circuits are applied, said regulated current source circuits having current values which can be respectively altered by voltages externally applied independently of one another.

5,004,933

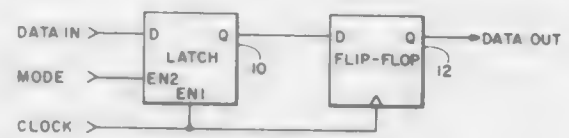
PHASE-SELECTABLE FLIP-FLOP

Glenn F. Widener, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 869,788, Jun. 2, 1986, abandoned. This application Sep. 18, 1987, Ser. No. 98,701

Int. Cl.[5] H03K *5/135*

U.S. Cl. 307—269 **2 Claims**



1. A phase-selectable flip-flop comprising:

an input transparent latch having a data input, a data output, and two enable inputs, a clock being applied to one enable input and a command being applied to the other enable input; and

a flip-flop connected to the data output of the input transparent latch, the flip-flop being clocked by the clock, such that when the command is in a first state the input transparent latch is held transparent and the output of the phase-selectable flip-flop is that data clocked into the flip-flop on the rising edge of the clock, and when the command is in a second state the output of the phase-selectable flip-flop is that data latched by the input transparent latch on the falling edge of the clock and clocked into the flip-flop on the next rising edge of the clock.

5,004,934

SEMICONDUCTOR INTEGRATED CIRCUIT AND TEST METHOD FOR CHARACTERISTICS

Kouichi Furuta, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 27, 1989, Ser. No. 302,469

Claims priority, application Japan, Jan. 27, 1988, 63-16502

Int. Cl.[5] H03K *3/33, 3/335*

U.S. Cl. 307—303 **14 Claims**

1. A semiconductor integrated circuit comprising:

a first connecting terminal operatively connected to,

a first signal processing circuit for receiving a signal from the first connecting terminal to perform a predetermined function,

a second connecting terminal connected to the first signal processing circuit for supplying means for setting to a predetermined first level a signal during the predetermined function of the first signal processing circuit,

a third connecting terminal,

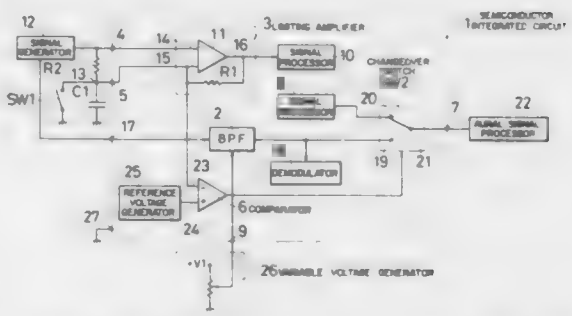
a second signal processing circuit for generating a signal by performing a predetermined function,

a fourth connecting terminal,

a changing circuit that has characteristics that can be changed so as to have a characteristic corresponding to a signal given to the fourth connecting terminal,

a switch for selectively connecting the outputs of the second signal processing circuit and changing circuit in response to a control signal to apply signals to the third connecting terminal, and

control signal generating means for responding to a signal applied to the second connecting terminal, for applying a



control signal to the switch for actuating the switch to set the switch in a first mode in order to apply the output of the second signal processing circuit to the third connecting terminal when the second connecting terminal is at the predetermined first level, and also in a second mode to change the switch in order to apply an output of the changing circuit to the third connecting terminal when the second connecting terminal is at a predetermined second level.

5,004,935

SAMPLE AND HOLD CIRCUIT

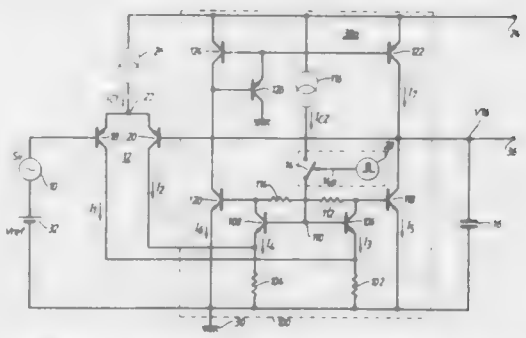
Akihiro Murayama, Yokohama, and Takeshi Koyama, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 402,455, Sep. 5, 1989, abandoned, which is a continuation of Ser. No. 186,305, Apr. 26, 1988, abandoned. This application Mar. 21, 1990, Ser. No. 500,091

Claims priority, application Japan, Apr. 28, 1987, 62-103245

Int. Cl.[5] G11C *27/02*

U.S. Cl. 307—353 **12 Claims**



1. A sample and hold circuit for sampling an input signal having a variable input voltage, comprising:

input means for supplying the input signal;

holding capacitor means for storing a charge voltage in response to a charge current supplied thereto when a charge voltage stored previously therein is lower than the input voltage and for producing a discharge current when the previous stored charge voltage is higher than the input voltage;

differential circuit means having a first differential transistor and a second differential transistor for comparing the voltage levels of the input voltage and the charge voltage, and generating a differential current in response thereto;

first constant current source connected to said differential circuit means for supplying a constant current thereto;

current amplifier means for generating the charge current in response to the differential current when the previous stored charge voltage is lower than the input voltage and for amplifying the discharge current when the previous stored charge voltage is higher than the input voltage;

a switch means for selectively activating and deactivating the current amplifier means; and

wherein the current amplifier means further includes a discharge and charge control circuit for coupling a first transistor which is denominated as a first discharge transistor, to said first differential transistor and also for coupling a second transistor which is denominated as first charge transistor to said second differential transistor, and which is provided as a means for providing a means for charging and discharging said holding capacitor means, and

a second constant current source coupled in series to the switch means for supplying said discharge and charge control circuit with a second constant current independently from said first constant current source.

5,004,936
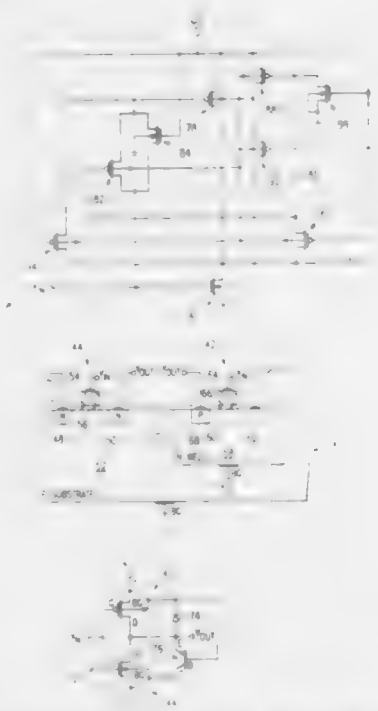
NON-LOADING OUTPUT DRIVER CIRCUIT

Bernhard H. Andresen, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 31, 1989, Ser. No. 332,261

Int. Cl.[5] H03K *19/003, 19/094, 17/16, 17/687*

U.S. Cl. 307—443 **30 Claims**



1. A non-loading output driver circuit for supplying an output signal to a data bus, wherein the data bus may be active when the output driver circuit is inactive, comprising:

output signal circuitry including:

a first semiconductor region of a first conductivity type electrically coupled to an output terminal for supplying the output signal to the data bus; and

a second semiconductor region of a second conductivity type adjacent said first semiconductor region and coupled to a reference voltage level, wherein forward biasing said first semiconductor region with respect to said second semiconductor region creates a conduction path between said first and second semiconductor regions; and

switching circuitry for alternatively connecting said reference voltage level between a supply voltage signal and the output signal.

5,004,937

CIRCUIT CONFIGURATION FOR ACCELERATED CHARGE REVERSAL OF THE VOLTAGE LEVEL OF A BUS LINE OF AN INTEGRATED CIRCUIT

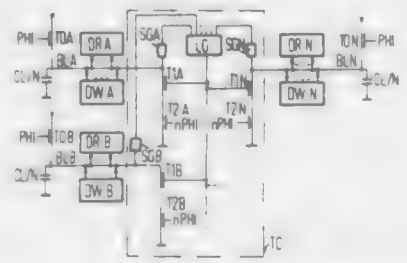
Antonio M. d. A. de Oliveira, Munich, and Jakob Staerk, Karlsfeld, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 26, 1988, Ser. No. 186,374

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1987, 3714134; Dec. 23, 1987, 3743932

Int. Cl.[5] H03K *17/16, 19/003*

U.S. Cl. 307—443 **2 Claims**



1. Circuit configuration, comprising a plurality of data transmitters, data receivers, a bus line of an integrated circuit being divided into N line segments each having a voltage level, each of said line segments being connected to a respective one of said data transmitters and to a respective one of said data receivers for data transmission between said data transmitters and said data receivers, said bus line being charged to a predetermined electrical voltage level during a pre-charging phase, and said bus line having a voltage level being left as is or reversed within a charge reversal period during a data transmission phase in accordance with digital data to be transmitted, a trigger circuit connected to said bus line for accelerated charge reversal of said bus line, said trigger circuit effecting an additional, accelerated discharging or charging of said bus line upon attainment of a predetermined trigger level, said trigger circuit including a logic gate having a plurality of inputs and an output, a plurality of switch elements each being connected between a respective one of said N line segments of said bus line and a respective one of said inputs of said logic gate for comparing the trigger level with said voltage level on said line segment, and discharge transistors being connected to and triggered by said output of said logic gate for rapid individual charge reversal of each of said line segments.

5,004,938

MOS ANALOG NOR AMPLIFIER AND CURRENT SOURCE THEREFOR

Sheau-Jiung Lee, Taipei, China, assignor to Acer Incorporated, Taipei, Taiwan

Filed Mar. 3, 1989, Ser. No. 318,[illegible]3

Int. Cl.[5] H03K *19/003*

U.S. Cl. 307—443 **10 Claims**

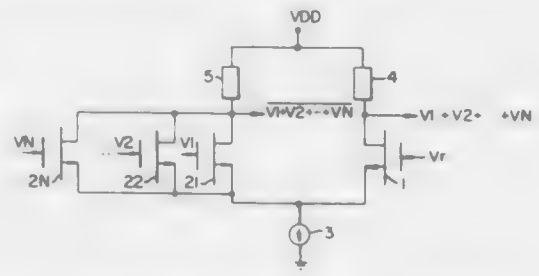
1. An MOS analog NOR amplifier comprising:

a constant current source,

a reference MOS transistor having a source, a gate and a drain terminal, wherein the source terminal of said reference MOS transistor is connected to a first terminal of said constant current source, said gate terminal is connected to a constant reference voltage and said drain terminal is connected to a first terminal of a first pull-up means, and

a plurality of input MOS transistors each of which has a source, a gate and a drain terminal, wherein the source terminal of each of said input MOS transistors is connected to said first terminal of said constant current source and the drain terminal of the same is connected to a first terminal of a second pull-up means;

wherein in response to a logic "1" or a logic "0" signal applied at the gate terminal of each of said input MOS transistors, an output signal is generated at the drain terminals of said plurality of input MOS transistors which is the same response as that of a standard NOR gate and an



output signal is generated at the drain terminal of said reference MOS transistor which is the same response as that of a standard OR gate; and

wherein said reference MOS transistor and said plurality of input MOS transistors are NMOS transistors, and said first and second pull-up means are PMOS transistors with respective second terminals thereof being coupled to a V_{DD} source; and

wherein a second terminal of said constant current source is connected to ground.

5,004,939

CMOS-ECL CONVERTER

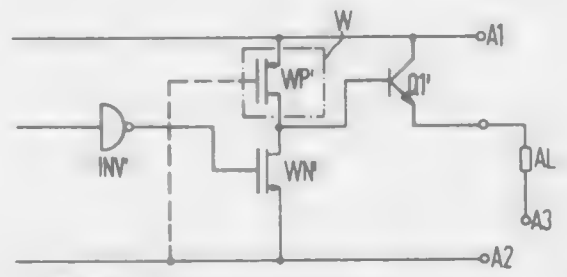
Michael Stegherr, Neubiberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 17, 1990, Ser. No. 524,443

Claims priority, application Fed. Rep. of Germany, May 30, 1989, 39175[illegible]

Int. Cl.[5] H03K *17/30, 19/17*

U.S. Cl. 307—475 **8 Claims**



8. A CMOS-ECL converter comprising:

an input, an output, and first, second and third terminals for voltage supply;

said first terminal connected to a reference potential, said third terminal connected to a potential that is negative with respect to the reference potential, and said second terminal connected to a potential that is negative with respect to the voltage potential at said third terminal;

first and second field-effect transistors, said first field-effect transistor being an n-channel field-effect transistor and said second field-effect transistor being a p-channel field effect transistor, each of said field-effect transistors including a controlled current path and a gate, said gate of said first field effect transistor connected to said input, said controlled current paths connected in series between said first and second terminals for voltage supply, and said gate of said second field-effect transistor connected to the second terminal for voltage supply;

an npn bipolar output transistor including a base connected to the junction of said controlled current paths of said first and second field-effect transistors, a collector connected to the first terminal for a voltage supply, and an emitter connected to said output; and

a load connected between said output and said third terminal for voltage supply.

5,004,940

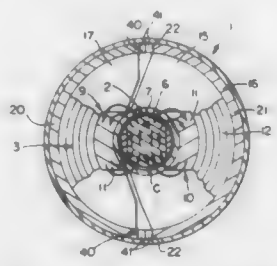
DIRECT DRIVE VALVE FORCE MOTOR WITH GAIN SHAPING PROVISION

Robert D. Vanderlaan, Kalamazoo, Mich., assignor to Pneumo Abex Corporation, Boston, Mass.

Filed Sep. 21, 1987, Ser. No. 98,075

Int. Cl.[5] H02K *33/12*

U.S. Cl. 310—36 **23 Claims**



1. A limited angle torque motor comprising a rotor assembly, a stator assembly surrounding said rotor assembly, said rotor assembly and stator assembly being mounted for relative rotation, said rotor assembly including permanent magnet means magnetized in the diametrical direction, and said stator assembly including circumferentially spaced stator magnetic poles, stator coil means wrapped about said magnetic poles which when excited by direct or pulse width modulated current produce a cross flux between said stator assembly and rotor magnet means causes said rotor assembly to rotate relative to said stator assembly through a limited rotational angle range, an outer magnetic housing surrounding said stator coil means defining a magnetic return path for the magnetic field with is produced when said stator coil means is excited, air gap means in said magnetic return path which causes the magnetic flux produced by said permanent magnet means to follow a primary magnetic flux path from said permanent magnet means through said stator magnetic poles that produces a magnetic reluctance torque urging said rotor assembly to a null position, and means defining a secondary magnetic flux path of relatively small cross-section area compared to said primary magnetic flux path from said permanent magnet means through said stator magnetic poles and magnetic housing that increases the rotational and torque gains in a localized area about such null position, said means defining a secondary magnetic flux path comprising magnetic means for bridging said air gap means at one or more points along the length of said air gap means, said magnetic means having a relatively small cross-sectional area which becomes saturated at a specified level of applied current, whereby increases in current above such specified level will be redirected into said primary magnetic flux path to provide reduced rotational and torque gains at higher current levels outside such null position.

5,004,941

STEPPER MOTOR WITH INPUT CONNECTOR ARRAY

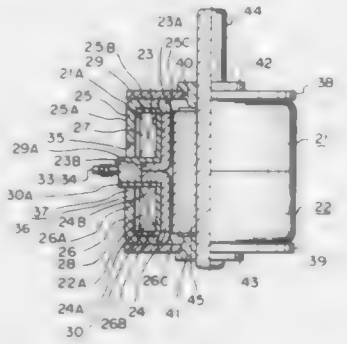
Yoshiyuki Ohzeki, and Kazuo Amikura, both of Tokyo, Japan, assignors to Copal Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1989, Ser. No. 447,225

Claims priority, application Japan, Dec. 9, 1988, 63-160208[U]

Int. Cl.[5] H02K *1/18, 19/02*

U.S. Cl. 310—49 R **6 Claims**



4. A stepper motor comprising:

a. a rotor made of magnetic material;

b. a rotatable output shaft having said rotor mounted thereon;

c. a pair of stator units, each comprising:

i. a first yoke having an axially elongated cylindrical portion including circumferentially spaced, axially elongated magnetic pole pieces annularly positioned about said output shaft and a radially outwardly extending annular ring-shaped portion;

ii. a second yoke including a generally cylindrical wall portion of greater diameter than said cylindrical portion of said first yoke defining a cylindrical exterior of said stator unit and a radially inwardly extending annular portion having magnetic pole pieces in spaced alternating arrangement with said magnetic pole pieces of said first yoke;

iii. a bobbin retained between said cylindrical portion of said first yoke and said radial portion of said second yoke, said bobbin including:

(1) a generally cylindrical axially elongated core;

(2) a pair of planar radially extending annular flanges on respective axial ends of said core;

(a) an outwardly facing surface of said flange which is farther from said remaining stator unit of said pair being in facing complemental contact with said radially extending portion of said second yoke;

(b) a radially outwardly facing edge of said flange which is farther from said remaining stator unit of said pair being in facing complemental contact with said cylindrical wall portion of said second yoke;

(c) an inner annular surface of said cylindrical core being in facing complemental contact with said cylindrical portion of said first yoke;

(d) said flange which is closer to said remaining stator unit of said pair

(i) facingly contacting said radially outwardly extending annular ring-shaped portion of said first yoke;

(ii) having a solid rectangular lug formed integrally therewith, said lug extending radially outwardly from said flange and extending axially from an axially outwardly facing surface of said flange axially away from said flange;

(3) conductor placed about said bobbin core;

d. said stator units adjoining by

i. respective axially facing surfaces of said annular ring-shaped portions of said first yokes facingly contacting one another;

ii. respective exterior cylindrical surfaces of said cylindrical wall portions of said second yokes contacting one with another to define a generally closed cylindrical exterior of said stepper motor;

e. said rectangular lugs of said respective bobbins of said respective stator units protruding through a common rectangular opening in said generally closed cylindrical exterior of said stepper motor;

f. said lugs of said respective bobbins being in facing complemental contact along lug planar surfaces perpendicular to the output shaft;

g. axially extending angularly outwardly facing end surfaces of said lugs facingly contacting axially extending surfaces of said rectangular opening;

h. respective annular ring-shaped portions of said first yokes of said respective stator units abuttingly contacting substantially the entirety of radially inwardly facing surfaces of said lugs;

i. means for electrically connecting said annularly disposed sinous electrically conductive material with an external source of electrical power, extending radially outwardly from a radially outwardly facing surface of one of said lugs;

j. said sinous electrically conductive material annularly would about said bobbin core connected to connecting means extending from said lug which are integral with said respective bobbins independently of connection of said stator units.

5,004,942

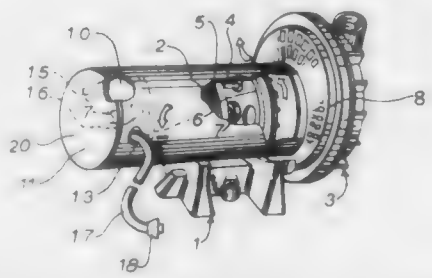
POWER AND CONTROL CHAMBER FOR DYNAMOELECTRIC MACHINES

James L. King, Troy, Ohio, assignor to A. O. Smith Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 306,887, Feb. 6, 1989, abandoned. This application Nov. 6, 1989, Ser. No. 432,173

Int. Cl.[5] H02K *9/00;* **F28F** *9/02*

U.S. Cl. 310—89 **18 Claims**



1. A dynamoelectric machine having a main cylindrical frame supporting a stator unit and a rotor unit within said stator unit, comprising an integrated power and control compartment secured to one end of said motor frame and forming an extension of said cylindrical motor frame, a plurality of power and control components mounted within said compartment and interconnected to each other and to the motor windings, said compartment defining a substantially sealed enclosure for protecting of the electrical connections and components therein from the surrounding environment, an opening within one wall of said compartment, a door unit releasably secured within said opening and effectively sealing said opening, at least one of said power and control components mounted to the interior surface of, said door unit and providing direct access to said component on said door unit upon removal of said door unit.

5,004,943

BRUSH HOLDER DEVICE FOR AN ELECTRIC MOTOR HAVING A ROTATABLE COMMUTATOR

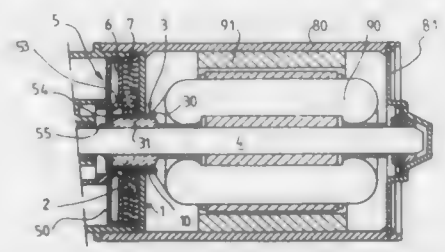
Georges Gagneux, Chatellerault, France, assignor to Valeo Systemes d'Essuyage, Montigny-le-Bretonneux, France

Filed Aug. 21, 1990, Ser. No. 570,612

Claims priority, application France, Sep. 5, 1989, 8911585

Int. Cl.[5] H01R *39/38;* **H02K** *5/14, 15/00*

U.S. Cl. 310—239 **8 Claims**



1. For an electric motor having a shaft and a commutator fixed on said shaft, a brush holder device comprising:

a support for brushes, having a central passage whereby to allow the said commutator to be introduced in line with the brushes,

resilient biassing means carried by the said brush support for biassing the brushes towards the passage, and

stop means carried by the said brush support for holding the said brushes in a position spaced away from the said central passage for the introduction of the commutator into the passage, and for releasing the said brushes after the commutator has been mounted in position so as to allow them to come into cooperating contact with the said commutator,

wherein the stop means comprise a cover member having a base, adapted to be secured with respect to the said brush support, and defining therein an opening which is coaxial with the said central passage, a generally frusto conical foldable wall extending the said base and adapted to be folded back on itself, and an annular end face, for surrounding the motor shaft and being joined to the said foldable wall, with the said foldable wall being adapted to hold the said brushes in the said spaced-away position, and to release them after it has been folded back due to the axial displacement of the said annular end face which is brought about by the introduction of the commutator into the said passage.

5,004,944

LIGHTWEIGHT HIGH POWER ELECTROMAGNETIC TRANSDUCER

Gene A. Fisher, Highlands Ranch, Colo., assignor to Unique Mobility, Inc., Englewood, Colo.

Continuation of Ser. No. 812,306, Dec. 23, 1985, abandoned. This application Nov. 27, 1987, Ser. No. 125,781

Int. Cl.[5] H02K *1/22*

U.S. Cl. 310—266 **4 Claims**

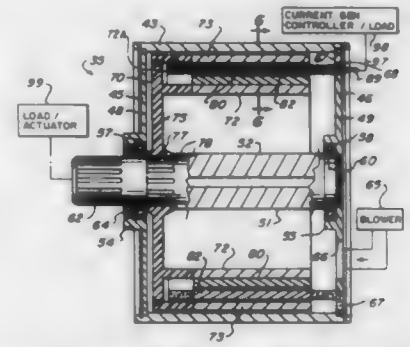
1. A brushless, high-speed, high torque electric motor, comprising:

a housing;

a shaft mounted on said housing to rotate relative thereto;

a magnetic field-generating rotor secured to said shaft to rotate therewith, said rotor having a mounting disk connected to said shaft and one of (i) a first annular wall means having a first magnetic means mounted thereon for generating a magnetic flux and (ii) a second annular wall means comprising an outer annular wall and an inner annular wall both supported by said mounting disk and spaced radially apart to define an annular gap therebetween, said inner annular wall being spaced radially apart from said shaft, and a second magnetic means for generating a magnetic flux mounted on at least one of said inner annular wall and said outer wall; and

an armature, for intercepting said magnetic flux, fixed to said housing, said armature comprising an annular member positioned to be disposed one of (i) radially adjacent said first annular wall means and (ii) at least partially within said gap between said inner annular wall and said outer wall of said rotor, said armature including (i) a plurality of spaced sections of electrical conductors, each section



including a plurality of separate conductive wires insulated from each other and (ii) a plurality of magnetic flux carrying elements interposed between said sections of electrical conductors, each flux carrying element comprising a member pressed from highly magnetically permeable particles and a binder material for binding said particles together.

5,004,945

PIEZOELECTRIC TYPE ACTUATOR

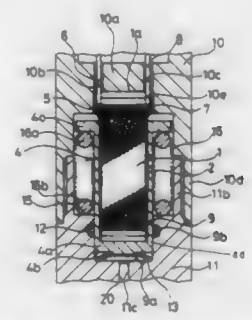
Masahiro Tomita, Anjo; Satoshi Hayashi, Kuwana; Shinro Oda, Kuwana; Akira Fujii, Kuwana, and Masayoshi Tanigawa, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 22, 1989, Ser. No. 410,525

Claims priority, application Japan, Sep. 26, 1988, 63-239949

Int. Cl.[5] H01L *41/08*

U.S. Cl. 310—328 **14 Claims**



1. A piezoelectric type actuator comprising:

a piezoelectric laminate comprising alternately superimposed piezoelectric plates as piezoelectric elements and metallic electrode plates;

a first spring means for exerting a compressive force on said piezoelectric laminate and having a relatively small spring constant and relatively long effective stroke;

a second spring means for exerting a compressive force on said piezoelectric laminate and having a relatively large spring constant and relatively short effective stroke;

said first spring means and second spring means being positioned in parallel with each other, and positioned so that an expanding stroke of said first spring means is equal to an expanding stroke of said second spring means when a length of said piezoelectric laminate after deforming is less than a maximum expanding length of said second spring means, so that the compressive force caused by said second spring means is dominant, and the compressive force caused by said first spring means becomes dominant when

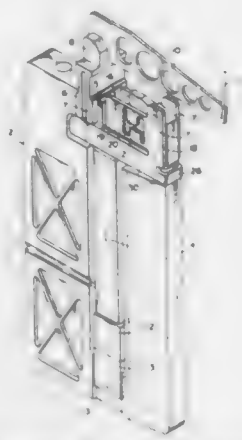
the length of said piezoelectric laminate after deforming exceeds the maximum expanding length of said second spring means.

5,004,946

PARALLEL FOUR-LINK MECHANISM

Atsuo Sakaida, Gifu; Yoshiyuki Ikezaki, Nagoya; Akira Iriguchi, Nagoya, and Toshio Inose, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 5, 1990, Ser. No. 548,097
Claims priority, application Japan, Jul. 6, 1989, 1-175162
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—328 8 Claims



1 A parallel four-link mechanism integrally formed by a predetermined elastic material, adapted to be positioned in a motion conversion mechanism for converting mechanical expansion and compression of a predetermined material in a predetermined direction to a motion in the desired direction, for regulating the mechanical expansion and compression so as not to be skewed from said predetermined direction by means of the elastic deformation therof in accordance with the mechanical expansion and compression, comprising a pair of plate portions oppositely located which respectively include one pair of links arranged in parallel with each other, another pair of links arranged in parallel with each other, and hinge sections provided between said links adjacently located for respectively connecting said links, said parallel four-link mechanism is arranged in such a manner that the stress generated on the opposed inner surfaces of one pair of hinge sections which are diagonally disposed becomes smaller than that generated on the outer surfaces of another pair of hinge sections which are diagonally disposed when said parallel four-link mechanism is deformed in accordance with the mechanical expansion and compression of said predetermined material.

5,004,947

FLUORESCENT LAMP BALLAST WITH HIGH POWER FACTOR

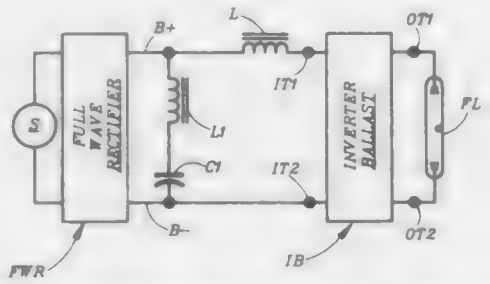
Ole K. Nilssen, Caesar Dr., Barrington, Ill. 60010

Continuation of Ser. No. 820,120, Jan. 21, 1986, abandoned. This application Oct. 31, 1989, Ser. No. 430,900
Int. Cl.[5] H04B *41/14*
U.S. Cl. 315—224 12 Claims

1. A ballast means adapted to be powered from the AC voltage on an ordinary electric utility power line and operative to power a gas discharge lamp, comprising:

rectifier means operative to connect with the power line and to provide a unidirectional current at a pair of DC terminals; a DC voltage being present across the DC terminals;

L-C circuit means connected with the DC terminals and operative to provide an effective short circuit across the DC terminals for any current having frequency about equal to twice the frequency of the AC voltage, thereby to cause the DC voltage to have an instantaneous absolute magnitude that is substantially equal to that of said AC voltage over at least half of the total duration of each half-cycle of this AC voltage; and



inverter ballast means connected with the DC terminals and operative to convert the DC voltage provided therefrom such as to provide at a pair of ballast output terminals a magnitude-limited alternating current for powering a gas discharge lamp.

5,004,948

LUMINESCENT MATERIAL, ESPECIALLY FOR APPLICATION IN MERCURY VAPOR GAS DISCHARGE LIGHT SOURCES, AND MERCURY VAPOR GAS DISCHARGE LIGHT SOURCE

Péter Kinczel; László Balázs, and Gábor Sajó, all of Budapest, Hungary, assignors to Tungsram Reszvenytarsasag (Tungsram RT), Budapest, Hungary

Filed Mar. 22, 1989, Ser. No. 327,326
Claims priority, application Hungary, Mar. 28, 1988, 1532/88
Int. Cl.[5] H01J *63/04*
U.S. Cl. 313—486 14 Claims



1. A luminescent material, especially for application in mercury vapor gas discharge light sources, comprising

a first component for luminescing red light under influence of incident optical radiation and

a second component for luminescing under influence of said incident optical radiation in the spectral range from 520 to 560 nm including colors from green to yellow, said second component including

a first phase of garnet crystallization system consisted of yttrium aluminate activated by trivalent cerium and determined by the general structural formula

$$Y_{3-a}Ce_aAl_5O_{12}$$

wherein the value of the index a lies in the range $0.0003 < a < 0.1$, and

a second phase of hexagonal crystallization system consisted of a mixed rare earth aluminate of general structural formula

$$La_bCe_{1-b}Al_{11}O_{18}$$

wherein the value of the index b lies in the range $0 < b < 1$, and

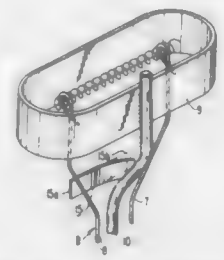
said second phase is present in an amount ranging from the amounts detectable by means of X-ray diffractometry to the double amount of said first phase.

5,004,949

FLUORESCENT LAMP WITH GROUNDED ELECTRODE GUARD

Frank M. Latassa, Morgantown, and Thomas O. Leyh, Bridgeport, both of W. Va., assignors to North American Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 200,382, May 31, 1988, Pat. No. 4,891,551. This application Dec. 22, 1989, Ser. No. 456,027
Int. Cl.[5] H01J *61/10*
U.S. Cl. 313—492 6 Claims



1. In a fluorescent lamp having an electrode, a conductive element for supplying voltage to said electrode, and a metallic guard partially surrounding said electrode for shielding material ejected from said electrode, a discharge arc being maintained in said lamp during lamp operation, the improvement comprising:

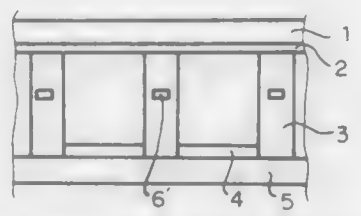
a bimetal strip for electrically connecting said conductive element and said metallic guard during lamp operation, said bimetal strip being arranged such that upon starting of said lamp heat from said discharge arc causes said strip to bend and electrically connect said conductive element and said metallic guard for maintaining said metallic guard and said electrode at the same potential during lamp operation irrespective of electrode polarity.

5,004,950

PLASMA DISPLAY PANEL ARRANGED WITH AUXILIARY ELECTRODE

Seung-Woo Lee, Seoul, Rep. of Korea, assignor to Samsung Electron Devices Co., Ltd., Kyonggi, Rep. of Korea

Filed Sep. 6, 1989, Ser. No. 403,345
Claims priority, application Rep. of Korea, Sep. 16, 1988, 88-15299
Int. Cl.[5] H01J *17/49*
U.S. Cl. 313—582 4 Claims



1. In a plasma display panel having front and rear substrates supported in spaced relationship from each other to define a gap therebetween, said substrates having opposed surfaces which face each other across said gap, an anode and a cathode formed respectively on said substrate surfaces, means for creating a seal between said substrates so that said gap is sealed, a quantity of gas confined in said sealed gap, means for effecting a voltage differential between said anode and said cathode which is sufficient to cause movement of ions in a first direction across said gap from said anode to said cathode, and auxiliary electrode means disposed in said gap for permitting introduction of priming ions into said gap before said voltage differential is effected between said anode and said cathode, the improvement comprising:

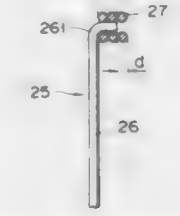
means operable while said voltage differential exists between said anode and said cathode for producing in said gap an electric field which forcibly urges ions in said gap in a second direction approximately perpendicular to said first direction, said electric field producing means including means for applying an AC voltage to said auxiliary electrode means while said voltage differential exists between said anode and said cathode.

5,004,951

SINGLE SIDE-SEALED METAL VAPOR DISCHARGE LAMP

Kazuo Honda, Hiratsuka; Atsushi Matsuura, Yokohama, and Hisanori Sano, Yokosuka, all of Japan, assignors to Toshiba Lighting & Technology Corporation, Tokyo, Japan

Filed Jan. 26, 1990, Ser. No. 470,681
Claims priority, application Japan, Jan. 31, 1989, 1-21054; Mar. 31, 1989, 1-83647; Mar. 31, 1989, 1-83652
Int. Cl.[5] H01J *61/00, 61/04*
U.S. Cl. 313—631 10 Claims



1. A single side-sealed metal vapor discharge lamp comprising:

an arc tube having a sealed section at one end and an envelope at the other end, the envelope defining a discharge region containing a rare gas for starting and a filled gas containing mercury and light emitting metal;

a pair of metal foils sealed in the sealed section; and

a pair of electrode means each comprised of a rod and a coil mounted on a forward end portion of the rod, the rod being inserted at one end into the sealed section and connected to the corresponding metal foil and the other end portions of the rods being bent and situated opposite to each other in the discharge region, and the coils of the electrode means being mounted on the bent forward end portions of the rods by at least one turn, situated, opposed to each other in the discharge region, and made of a higer melting point material than a surface material of the bent forward end portions of the rods, where the following inequalities are satisfied:

$$L1 \leqq 3d$$

$$d/2 \leqq L2 - L1 \leqq 3d$$

where

L1: the length from the bent portion to the forward end of the electrode rod;

L2: the length of the coil; and

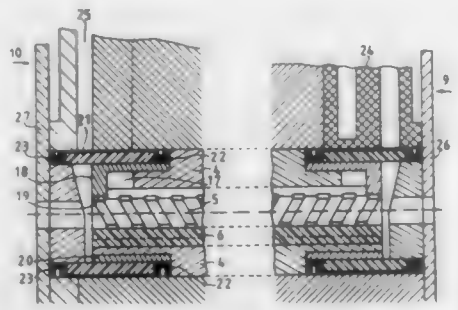
d: the wire diameter of the coil.

5,004,952

VACUUM-TIGHT WINDOW FOR MICROWAVE ELECTRON TUBE AND TRAVELLING WAVE TUBE INCLUDING THIS WINDOW

Jacques Tikes, Orsay; Joel Le Fur, Chilly-Mazarin, and Pierre Nugues, Auneaux, all of France, assignors to Thomson-CSF, Puteaux, France

Filed Nov. 3, 1989, Ser. No. 431,390
Claims priority, application France, Nov. 4, 1988, 8814417
Int. Cl.[5] H01J *23/42*
U.S. Cl. 315—3.5 6 Claims



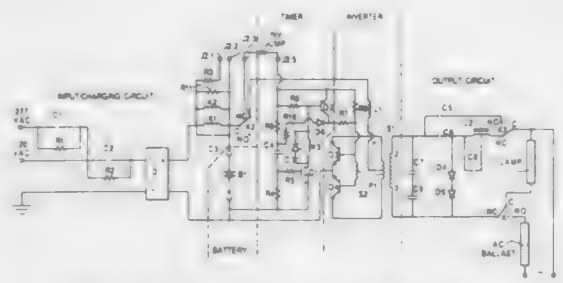
1. A vacuum-tight window for a microwave electron tube, said tube comprising, firstly, a zone under vacuum, form by a source of electrons, a focusing unit called a "delay line" and a collector of electrons and, secondly, at least one external transmission circuit through which a microwave signal interferes with the beam of electrons crossing said delay line, which is cylindrical, wherein said vacuum-tight window is cylindrical and is coaxial with a chamber which encases the delay line, and integrated with said chamber by brazing and wherein said window is made of ceramic material transparent to microwaves and further comprising a metallic flexible ring at each of the ends of said ceramic cylinder with a first ring being brazed to the chamber of the delay line and the second ring being brazed to at least one of said source and a collector sub-assembly coaxial with the delay line and wherein a microwave transmission antenna in the form of a metallic cylinder passes through the ceramic of the window with said antenna being formed by a metallic strip connected, at right angles, to said metallic cylinder which fits a clearance inserted in the chamber.

5,004,953

EMERGENCY LIGHTING BALLAST FOR COMPACT FLUORESCENT LAMPS WITH INTEGRAL STARTERS

Charles W. McDonald, Memphis, Tenn., assignor to The Bodine Company, Collierville, Tenn.

Filed Jun. 30, 1989, Ser. No. 374,451
Int. Cl.[5] H05B *37/00*
U.S. Cl. 315—86 11 Claims



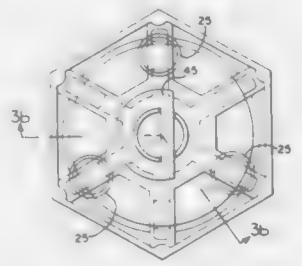
1. A method for operating a fluorescent lamp having a starter with power supplied by a battery comprising:
generating an alternating current from energy supplied by the battery;
supplying the alternating current as a starting current to the lamp for a selected period of time; and
at the end of the selected period of time, generating a direct current from the alternating current by effecting half-wave rectification of the alternating current, and supplying the direct current to the lamp in place of the alternating current.

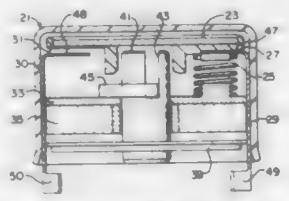
5,004,954

CURRENT SENSING RELAY

Lawrence P. Kleven, Attleboro; Edward A. Agranat, Weston; Jerry Crisafulli, Brookline; Hugh Robinson, Wenham; David J. Smith, Needham; Thomas Wiseley, Acton; Richard C. Fortier, Concord; Severne Johnson, Seattle, and Marvin Menzin, Lexington, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 21, 1989, Ser. No. 454,592
Int. Cl.[5] H05B *41/36;* H01H *63/10, 67/00*
U.S. Cl. 315—106 36 Claims





1. A relay for disconnecting fluorescent lamp filaments from the associated filament circuit, which comprises, in combination:
(a) a housing,
(b) a magnetic flux producing device disposed within said housing,
(c) slug means disposed within said housing and movable toward said magnetic flux producing device in response to magnetic flux from said magnetic flux producing device, and
(d) a plurality of switches within said housing, each said switch including a contact and a contact terminal, said slug means normally biasing each said contact against its associated contact terminal to maintain each of said switches in the normally closed state.

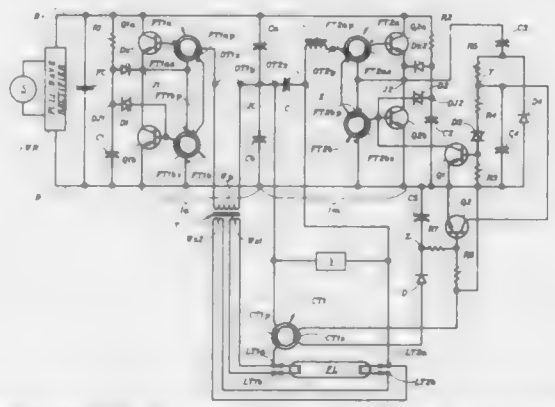
5,004,955

ELECTRONIC BALLAST WITH SHOCK PROTECTION FEATURE

Ole K. Nilssen, Caesar Dr., Barrington, Ill. 60010

Division of Ser. No. 830,270, Feb. 18, 1986. This application Dec. 12, 1989, Ser. No. 448,880
Int. Cl.[5] H05B *41/29*
U.S. Cl. 315—119 11 Claims

1. A combination comprising:
an AC current source powered from a DC voltage and operable, except after having been provided with a disable signal at a set of disable terminals, to provide an AC output current from a pair of output terminals;
gas discharge lamp connected with the output terminals and normally operative to constitute an adequate load for the AC current source, thereby to cause the magnitude of the voltage across the output terminals to stay below a first level for as long as the lamp is indeed so operative;
voltage-limiting means effectively connected across the output terminals and operative, in case the lamp were to fail to constitute said adequate load, to prevent the magnitude of the voltage between the output terminals from exceeding a second level, the second level being (i) higher than the first level, and (ii) substantially independent of the magnitude of the DC voltage; and



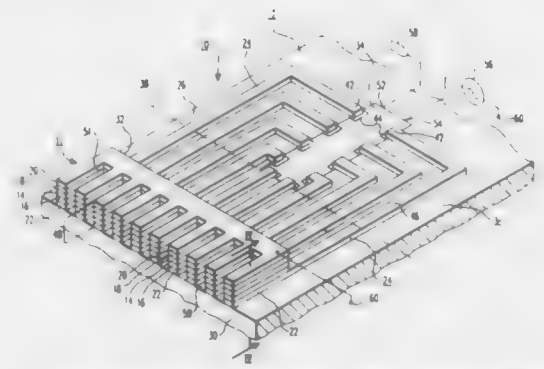
control means connected in circuit between the output terminals and the disable terminals, the control means being operative: (i) to sense the presence of the AC output current when it is flowing through the lamp, and (ii) to provide said disable signal in case the AC output current were to fail to flow through the lamp for longer than a brief period of time;
thereby to prevent the voltage-limiting means from having to absorb power for longer than this brief period.

5,004,956

THIN FILM ELECTROLUMINESCENT EDGE EMITTER STRUCTURE ON A SILCON SUBSTRATE

Zoltan K. Kun, Churchill Boro; Michael W. Cresswell, Plum Boro, and Richard H. Hopkins, Murrysville Boro, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 235,143, Aug. 23, 1988. This application Nov. 18, 1988, Ser. No. 273,296
Int. Cl.[5] G09G *3/10;* H01J *7/62, 63/04*
U.S. Cl. 315—169.3 2 Claims



1. A thin film electroluminescent edge emitter assembly comprising:
(a) a substrate having a configuration to define a top surface and at least one lateral edge surface;
(b) at least one integrated circuit being composed of semiconductor material and formed within an interior portion of said substrate, said integrated circuit having a logic signal input, an excitation voltage input, a plurality of output leads and internal means for providing an excitation voltage from said excitation voltage input to selected output leads in response to preselected logic signals provided to said internal means at said logic signal input; and
(c) a plurality of pixels formed on said top surface of said substrate and being defined by a composite laminar structure which includes a plurality of laterally-spaced, longitudinally-extending control electrodes disposed either upon said top surface or within the interior of said substrate, a dielectric layer disposed above said substrate and on said plurality of control electrodes, a common electrode layer disposed above said dielectric layer, and a phosphor layer interposed between said dielectric layer and said common electrode layer;
(d) each of said plurality of pixels having a light-emitting face located adjacent said substrate lateral edge surface of said substrate and including one control electrode having one end terminating adjacent said lateral edge and its other opposite end connected to one of said output leads of said integrated circuit;
(e) selected ones of said pixels being responsive to said excitation voltage provided to said selected control electrodes from said integrated circuit via said output leads thereof to radiate a light signal emitted at said selected pixels light-emitting faces.

5,004,957

DIMMING CONTROL CIRCUIT

David W. Cunningham, Los Angeles, Calif., assignor to Lee Colortran, Inc., Burbank, Calif.

Filed Jan. 6, 1989, Ser. No. 294,378
Int. Cl.[5] H05B *37/02*
U.S. Cl. 315—199 18 Claims

1. A dimming circuit for lighting devices comprising:
a pair of silicon controlled rectifiers (SCR) connected in parallel opposed circuit relation, each SCR having a control electrode,
a phase control signal generator connected to the control electrode of each SCR for switching the SCR on and off,
a source of electric power connected to the input to the dimming circuit,
inductive means connected in series circuit relationship with the source of power and the pair of SCR's, and
means for controlling the signal generator such that one or both of the SCR's are turned on and off by means of pulses from the generator having a frequency of approximately 50–60 Hz and a predetermined pulse duration to control the intensity of the light provided by the lighting devices and to suppress the acoustic noise generated by the lighting devices.

5,004,958

STROBE APPARATUS

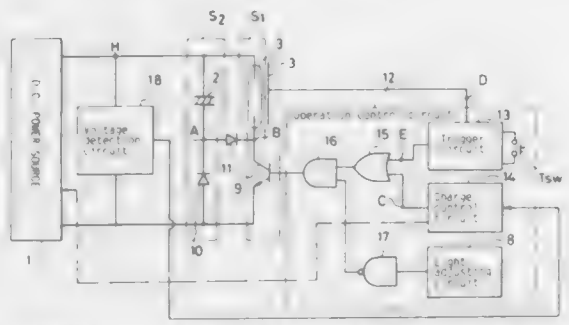
Shinji Hirata, Toyonaka, Japan, assignor to West Electric Company, Ltd., Osaka, Japan

Filed Aug. 2, 1989, Ser. No. 388,378
Claims priority, application Japan, Aug. 3, 1988, 63-193784
Int. Cl.[5] H05B *41/14*
U.S. Cl. 315—241 P 7 Claims

1. A strobe apparatus comprising:
a DC power source;

a first series connection of a strobe tube and a semiconductor switching device, said semiconductor switching device having a control electrode and being controlled by a controlling potential on the control electrode only, said first series connection being connected across said DC power source;

a second series connection of a main capacitor and a first diode of reverse direction with regards to charging of said main capacitor, said second series connection being connected across said DC power source;



a second diode of forward direction with regard to charging of said main capacitor, connected between a first junction point between said main capacitor and said first diode and a second junction point between said strobe tube and said switching device; and

an operation control circuit for controlling timings to turn on and off said switching device and a timing to excite said strobe tube, whereby said main capacitor is charged and discharged by turning on and off said switching device.

5,004,959

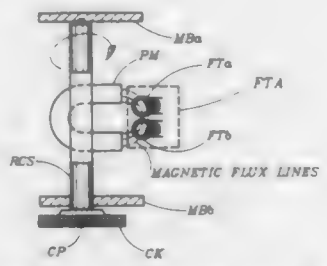
FLUORESCENT LAMP BALLAST WITH ADJUSTABLE LAMP CURRENT

Ole K. Nilssen, Caesar Dr., Barrington, Ill. 60010

Continuation of Ser. No. 853,872, Apr. 21, 1986, abandoned. This application Mar. 26, 1990, Ser. No. 498,498

Int. Cl.[5] H05B *41/29, 41/38*

U.S. Cl. 315—291 **20 Claims**



1. In a ballast for a gas discharge lamp, the ballast being adapted by way of a source of AC voltage to provide lamp operating current to the gas discharge lamp, the improvement comprising:

lamp current control means: (i) connected with the source of AC voltage, (ii) receptive of magnetic flux, and (iii) operative in response to this magnetic flux to control of the frequency of the AC voltage;

current-limiting means connected with the AC voltage and operative to provide the lamp operating current, the magnitude of the lamp operating current being dependent on the frequency of the AC voltage; and

magnetic flux means magnetically coupled with the charging control means and adapted to provide controllable magnetic flux to this control means, thereby to permit control of the frequency of the AC voltage and thereby the magnitude of the lamp operating current; the lamp operating current being defined as the current that is actually flowing through the gas discharge lamp.

5,004,960

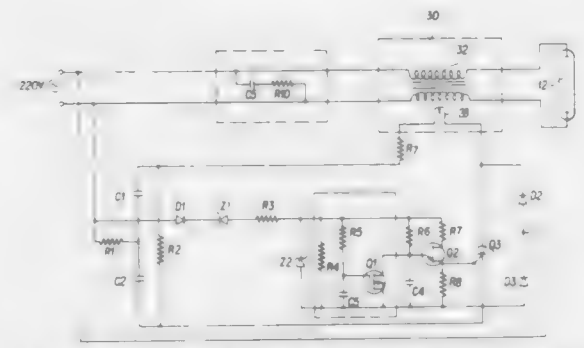
IGNITION DEVICE FOR A GAS DISCHARGE LAMP

David J. Cockram, and Edgar S. R. Cockram, both of Johannesburg, South Africa, assignors to Actronic Lighting CC, Edenvale, South Africa

Continuation-in-part of Ser. No. 181,496, Apr. 13, 1988, abandoned. This application Dec. 28, 1989, Ser. No. 458,086

Int. Cl.[5] H05B *41/36*

U.S. Cl. 315—307 **8 Claims**



1. An ignition device for a gas discharge which is driven by a source of electrical current having a periodic waveform, the device comprising a voltage multiplier which is adapted to be connected to the source and to provide an output having a higher voltage than that of the source; a pulse generator adapted to be driven by the output and to produce trigger pulses; sensing means for sensing the voltage of the source and for enabling the pulse generator when the voltage of the source exceeds a predetermined level, wherein the sensing means comprises a voltage dependent semiconductor device; timing means associated with the sensing means and the pulse generator and adapted to synchronize the enabling of the pulse generator with the occurrence of the peak in the waveform of the electrical source; and a resonant network having a primary winding to which the trigger pulses from the pulse generator are applied and a secondary winding which is in circuit with the lamp and which applies high-voltage ignition pulses to the lamp when the trigger pulses are applied to the primary winding, the ignition device thereby providing ignition pulses to the lamp automatically whenever the voltage of the source increases beyond the predetermined level, the ignition pulses being synchronized with peaks in the waveform of the electrical source.

5,004,961

WINDOW OPERATOR CONTROL

John M. Berner, Golden Valley, and Thomas A. Roman, St. Anthony, both of Minn., assignors to Truth Incorporated, Owatonna, Minn.

Division of Ser. No. 285,661, Dec. 16, 1988, Pat. No. 4,933,613. This application Apr. 19, 1990, Ser. No. 511,193

Int. Cl.[5] H02P *1/58*

U.S. Cl. 318—65 **6 Claims**

1. A control for operating a window operator having an electrically controlled drive for moving a window in preselected incremental movements between fully open and closed positions, comprising:

means for receiving a command to selectively move the window in a direction to the open position or the closed position;

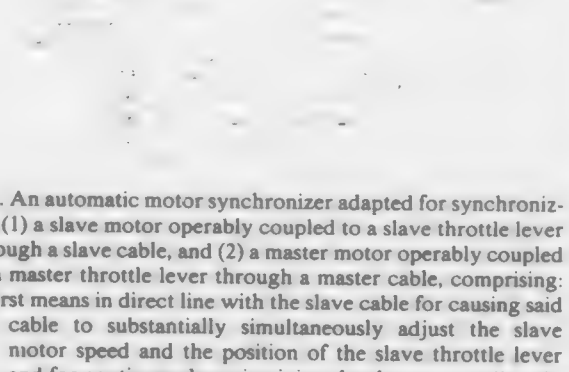
means for determining when the drive has moved the window a preselected incremental distance, less than a distance between fully open and closed positions;

control means coupled to said receiving means and said determining means for enabling energization of the electrically controlled drive when a command is received by said receiving means until the drive has moved the window said preselected incremental distance and thereafter inhibiting energization of the drive until another command is received to move the window a subsequent incremental distance in the selected direction.

6. A window operator power control circuit for operating a window operator having a motor drive for moving a window between open and closed positions, comprising:

means for receiving bipolar electrical power to power the motor drive to selectively move the window in a direction to the open or closed position;

first and second transistors coupled between said receiving means and the motor drive;



means coupled to said receiving means and said transistors for driving said transistors if power is received by said receiving means;

a limit switch for sensing a desired movement of the window; and

means coupling said limit switch and said driving means for disabling said driving means to drive said transistors to uncouple the receiving means for the motor drive when said desired movement is sensed by said switch means.

5,004,962

AUTOMATIC MOTOR SYNCHRONIZER

Jack G. Fonss, San Jose; Howard Z. Silverberg, Los Gatos, and Martin H. Gardiner, Sunnyvale, all of Calif., assignors to Arrow Marine, Inc., Santa Clara, Calif.

Filed Dec. 28, 1989, Ser. No. 458,085

Int. Cl.[5] B63H *25/02*

U.S. Cl. 318—85 **21 Claims**



1. An automatic motor synchronizer adapted for synchronizing (1) a slave motor operably coupled to a slave throttle lever through a slave cable, and (2) a master motor operably coupled to a master throttle lever through a master cable, comprising:

first means in direct line with the slave cable for causing said cable to substantially simultaneously adjust the slave motor speed and the position of the slave throttle lever and for continuously maintaining the slave motor directly coupled to the slave throttle lever;

second means for determining the difference in speed between the master motor and the slave motor;

third means for driving the first means responsive to the second means.

5,004,963

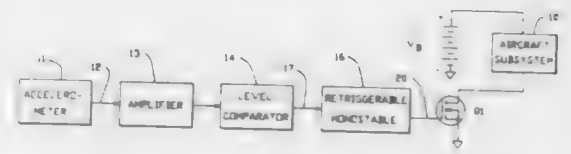
ACCELEROMETER BASED POWER CONTROL APPARATUS FOR AIRCRAFT SUBSYSTEM

Wayne R. Hay, Pleasant Hill, Calif., assignor to Systron Donner Corporation, Concord, Calif.

Filed Mar. 13, 1990, Ser. No. 493,136

Int. Cl.[5] H02J *7/00;* **H01H** *35/14*

U.S. Cl. 320—13 **4 Claims**



1. Power control apparatus for an aircraft subsystem comprising:

self-contained and independent electrical battery means carried by said aircraft, said aircraft subsystem being powered exclusively by said battery means;

switching means responsive to vibration or acceleration of said aircraft for electrically connecting said battery means to said aircraft subsystem to power said subsystem, whereby said battery means powers said subsystem only during flight of said aircraft to prolong battery life.

5,004,964

CONTROL APPARATUS FOR VIBRATION DRIVEN MOTOR

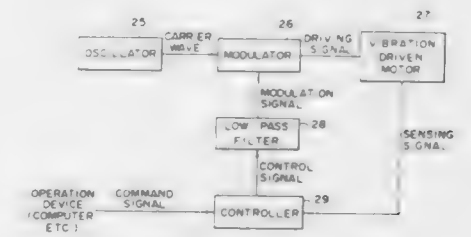
Kenichi Kataoka, Yokohama, and Takayuki Tsukimoto, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1990, Ser. No. 539,344

Claims priority, application Japan, Jun. 19, 1989, 1-156557

Int. Cl.[5] H02N *2/00*

U.S. Cl. 318—128 **15 Claims**



1. A vibration driven motor comprising:

(a) a vibration member;

(b) an electro-mechanical energy conversion element connected to said vibration member and responsive to an applied driving signal for reproducing a vibration in said vibration in said variation member, thereby to cause relative movement between said vibration member and a frictional member in contact with said vibration member;

(c) a modulating member functionally connected to said element for applying to said element said driving signal having a frequency for generating an nth-order (where n is an integer) vibration in said vibration member;

(d) a detecting member for generating a detecting signal corresponding to a vibrating state of said vibration member;

(e) a comparator for receiving said detecting signal and a reference signal and producing a signal corresponding to a difference between said detecting signal and said reference signal; and

(f) a filter connected to said modulating member for filtering frequencies of not more than a smaller value of $|n-(n-1)|$ and $|(n+1)-n|$ (where n is a frequency of said driving signal for generating the nth-order vibration in said vibration member, $(n+1)$ is a frequency of said driving signal for generating the $(n+1)$th-order vibration in said vibration member, and $(n-1)$ is a frequency of said driving signal for generating the $(n-1)$th-order vibration in said vibration member) represented by difference signals from said comparator, and for causing said modulating member to receive an electrical signal corresponding to the filtered frequencies,

wherein said driving signal is modulated by said modulating member in accordance with the electrical signal from said filter.

5,004,965

BRUSHLESS MOTOR WITH TORQUE COMPENSATION

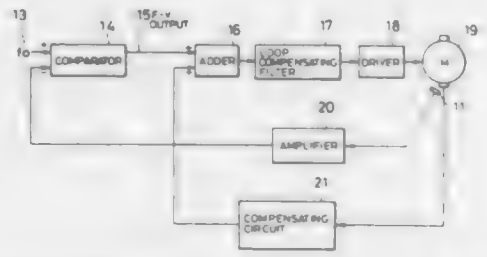
Mitsuhiro Otokawa, and Hiroyuki Takimoto, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 18, 1988, Ser. No. 195,647

Claims priority, application Japan, May 20, 1987, 62-121150; May 20, 1987, 62-121151; May 20, 1987, 62-121153

Int. Cl.[5] H02P *6/02*

U.S. Cl. 318—254 **3 Claims**



1. In a brushless motor which includes a rotor, comprising:

speed detecting means for detecting the rotating speed of said rotor;

synthesizing means or synthesizing the output wave forms of inverse electromotive forces of different phases of the brushless motor and outputting a synthesized wave form;

detector means for demodulating the synthesized wave form obtained from said synthesizing means and outputting a demodulated wave form;

inverter means for inverting the demodulated wave form from said detector means and outputting it;

comparator means for comparing a predetermined rotation speed with the speed detected by said speed detecting means and generating a voltage corresponding to the difference of speed obtained from said comparison and outputting it;

adding means for adding the output from said inverter means to the output from said comparator means and outputting it; and

drive control means for controlling the current supplied to said motor according to the output from said adding means.

3. In a brushless motor comprising:

speed detecting means for non-linearly detecting a speed of a rotor, said speed detecting means including a speed detecting magnet having magnetic poles for a frequency generator and provided on a periphery of said rotor, and a magnetic resistance device for detecting magnetic fields of said magnetic poles, said magnetic poles being spaced from each other in accordance with a pattern of torque ripple, denser at the position of higher torque and coarse at the position of lower torque;

comparator means for comparing a predetermined rotating speed with the speed detected by said speed detecting means and converting the difference between said speeds obtained by the comparison into a voltage value corresponding to the difference between said speeds, and outputting the voltage value; and

drive control means for controlling current supplied to the motor on the basis of the voltage value from said comparator means.

5,004,966

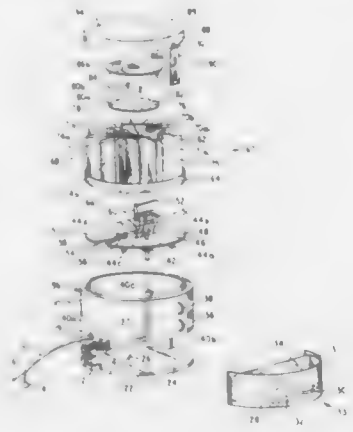
COMPUTER ACTIVATED REWARD DISPENSING MACHINE

Gary N. Eakin, Box 9039, Spirit Lake, Iowa 51360

Filed Nov. 29, 1989, Ser. No. 442,569

Int. Cl.[5] B65D *83/04*

U.S. Cl. 318—446 **4 Claims**



1. A computer activated reward dispensing machine comprising a carousel-type magazine having a hollow inner drum at its center, a plurality of slats radiating out from the outer wall of said inner drum thus forming a plurality of compartments spaced axially around said inner drum, said magazine resting on a middle floor, a case enclosing said floor and said magazine, said middle floor formed with an opening, an electric motor secured to said floor inside of said inner drum, gear reduction type coupling means driven by said motor adapted to move said compartments toward said opening, said motor including a drive shaft extending upward substantially perpendicularly to the center of said floor, a pivot bar extending across said drum remote from said floor, said shaft also extending through said pivot bar, a drive arm extending at a right angle from said shaft toward the inner wall of said drum, a drive tab extending radially inward from said inner wall in position to be engaged by said drive arm, whereby said drum will be driven by the rotation of said motor, thereby causing said compartments to be rotated over said opening in said floor, an electric valve in series with said motor and in series with a source of electric power, said valve thus being effective to allow or prohibit the flow of power to said motor, said valve being responsive to signals from a computer programmed to send such a signal to said valve, an electric switch in series between said motor and said source of power but in parallel with said electric valve, and alignment means connected to said switch adapted to sense alignment between said compartment and said opening in said floor and to control the power flow from said source through said switch to operate said motor until such alignment is reached and to stop operation of said motor at that time.

5,004,967

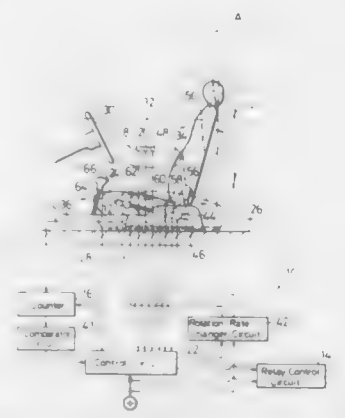
METHOD AND DEVICE FOR CONTROLLING SLIDE MOTION OF A VEHICLE SEAT

Hiromitsu Ogasawara, Akishima, Japan, assignor to Tachi-S Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1990, Ser. No. 495,3[illegible]

Int. Cl.[5] G05B *19/42*

U.S. Cl. 318—568.1 **9 Claims**



1. A method for controlling a slide motion of a vehicle seat, in which said seat is slidingly moved between a seating position and backward position by a drive of a motor through a operation of a switch means, said seating position being able to be preset according to a seating taste of an occupant who sits on the seat and said backward position being defined where said seat is to be moved backwardly and stopped at a point away from a front of the vehicle to permit said occupant to climb onto or descend from said seat without hindrance of projected parts or fittings mounted in said vehicle, said method comprising the steps of:

detecting and memorizing a rotation number of said motor which is produced to cause said seat to move from a preset point of said seating position to said backward position; and

causing said motor to rotate by a number equal to said memorized rotation number, so as to automatically return said seat to said preset point of said seating position;

said step of detecting and memorizing said motor rotation number involving counting said rotation number by means of a counter being actuated in response to a rotation sensor provided on said motor, said rotation sensor being adapted to detect said rotation umber of said motor, wherein said method further includes the steps of:

providing a switch means having a first switch area for energizing said motor to rotate in a direction to cause said seat to move to said backward position and a second direction opposite to said first direction so as to return said seat to said seating position;

r[illegible]tting said rotation number to zero in said counter when turning on said first switch area of said switch means, prior to said seat being caused by said motor to move to said backward position, in order that said counter starts to count up said rotation number from zero in response to said rotation sensor detecting rotation of said motor starting to rotate in said first direction;

causing said counter to memorize a total number of thus-counted-up rotations of said motor when said seat reaches said backward position; and

permitting return of said seat from said backward position to said seating position by turning on said second switch area of said switch means, in which case, said counter counts down said memorized total rotation number and said seat is returned to said seating position until said total rotation number is counted down to zero by said counter.

5,004,968

METHOD FOR ACCELERATION AND DECELERATION CONTROL OF SERVOMOTORS

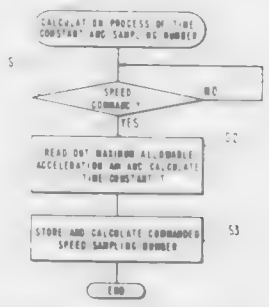
Toru Mizuno, Tama, and Ryuichi Hara, Oshino, both of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP88/01241, § 371 Date Jul. 5, 1989, § 102(e) Date Jul. 5, 1989, PCT Pub. No. WO89/06066, PCT Pub. Date Jun. 29, 1989

PCT Filed Dec. 9, 1988, Ser. No. 381,396

Int. Cl.[5] H02P *5/00*

U.S. Cl. 318—615 **11 Claims**



1. A method for controlling acceleration and deceleration of at least one servomotor mounted to a machine, said method comprising the steps of:

(a) sampling, at a predetermined sampling period, a commanded speed for the servomotor;

(b) varying a time constant for acceleration/deceleration control by dividing the commanded speed sampled in step (a) by a predetermined maximum allowable acceleration/deceleration of the machine after the commanded speed is sampled in step (a); and

(c) controlling acceleration/deceleration of the at least one servomotor in accordance with the time constant varied in step (b) and the commanded speed sampled in step (a).

5,004,969

PHASE CONTROL SWITCHING CIRCUIT WITHOUT ZERO CROSSING DETECTION

David J. Schanin, Carlos, Calif., assignor to Bayview Technology Group, Inc., San Carlos, Calif.

Filed Oct. 16, 1989, Ser. No. 422,396

Int. Cl.[5] G05F *1/445*

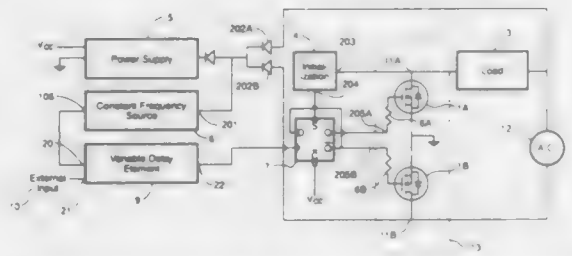
U.S. Cl. 323—235 **14 Claims**

1. A phase control power switching circuit for controlling the phase angle of current flow through a load from an alternating current source, said circuit comprising:

a pair of voltage controlled switches in inverse series connection between said load and said alternating current source for controlling the current flow through said load;

drive means for driving said voltage controlled switches in an inverse fashion to ensure that one switch is always in a conducting mode and that one switch is always in a non-conducting mode; and

toggle means for toggling said drive means so that each of said voltage controlled switches alternates between the



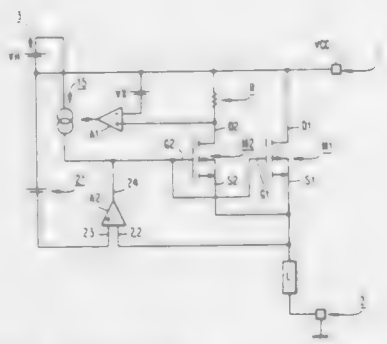
conducting mode and the non-conducting mode when the phase angle of current flow is determined to be proper.

5,004,970

DEVICE AND A PROCESS FOR DETECTING CURRENT FLOW IN A MOS TRANSISTOR

Michel Barou, Voreppe, France, assignor to SGS-Thomson Microelectronics S.A., Gentilly, France

Filed Jan. 19, 1990, Ser. No. 467,459
Claims priority, application France, Jan. 20, 1989, 89 01230
Int. Cl.[5] G05F *1/573*
U.S. Cl. 323—277 5 Claims



1. A device for detecting the flow of current lower than a given threshold current in a load, wherein the load is series connected through the source and drain terminals of a MOS transistor to a supply source, and the gate of the MOS transistor is connected to a control source, said device comprising:

means for detecting a voltage drop across the source and drain terminals of the MOS transistor; and

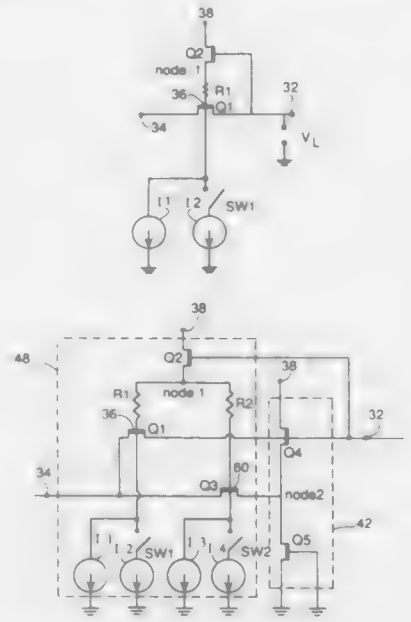
a control loop for imposing an appropriate gate voltage to the MOS transistor as soon as the voltage drop across said source and drain terminals tends to decrease below a predetermined level.

5,004,971

FLOATING TRANSISTOR SWITCH

Mark E. Fitzpatrick, San Jose, and Robert C. Burd, Sunnyvale, both of Calif., assignors to Gazelle Microcircuits, Inc., Santa Clara, Calif.

Filed Apr. 5, 1990, Ser. No. 505,858
Int. Cl.[5] G05F *1/46, 3/08*
U.S. Cl. 323—312 15 Claims



1. A switch comprising:

a first terminal;

a second terminal;

a first transistor having a first current handling terminal coupled to said first terminal and a second current handling terminal coupled to said second terminal, said first transistor having a current control terminal; and

a first biasing means having an output terminal coupled to said current control terminal of said first transistor, said first biasing means having a control terminal coupled to said first terminal,

said first biasing means being configured to generate a first voltage at said output terminal which creates a first predetermined voltage differential between said current control terminal of said first transistor and said first current handling terminal of said first transistor for turning on said first transistor despite variations in voltage at said first terminal,

said first biasing means also being configured to generate a second voltage at said output terminal required to turn off said first transistor.

5,004,972

INTEGRATED POWER LEVEL CONTROL AND ON/OFF FUNCTION CIRCUIT

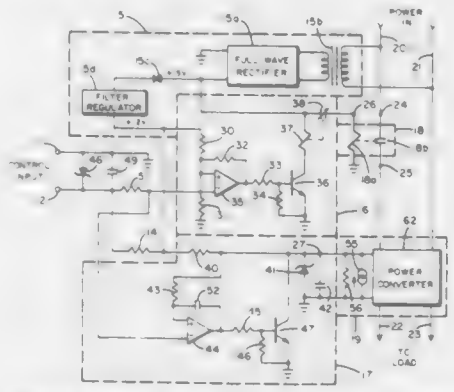
Roger R. Roth, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 26, 1989, Ser. No. 457,221
Int. Cl.[5] G05F *5/02;* G05B *24/02*
U.S. Cl. 323—320 3 Claims

1. In an electric power control system including a load power control circuit for varying the level of power supplied to a load by a power source according to the value of a variable impedance connected across control terminals of said load power control circuit, said load power control circuit of the type providing at its control terminals an output voltage varying in response to the value of the impedance across the control

terminals, an improvement for switching the power from the load responsive to a preselected voltage across the control terminals, and comprising

(a) a voltage sensor receiving the voltage across the load power control circuit control terminals and providing an output signal having a first preselected voltage responsive to the load power control circuit control terminals voltage falling within a preselected range, and a second preselected voltage otherwise; and



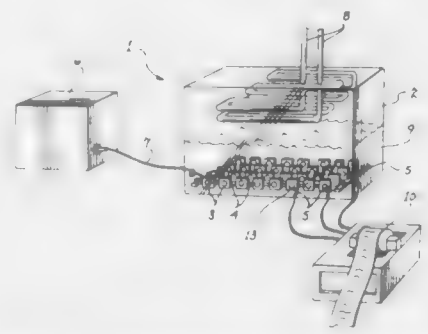
(b) a switch means having a pair of power terminals for series connection with the load power control circuit, the power source, and the load and having a control terminal receiving the voltage sensor's output signal and responsive to the first preselected voltage, for forming an electrical connection between the pair of power terminals, and responsive to the second preselected voltage, for opening the electrical connection between the pair of power terminals.

5,004,973

METHOD AND APPARATUS FOR MAINTAINING ELECTRICALLY OPERATING DEVICE TEMPERATURES

Richard Taraci; Brian Taraci, both of Phoenix, and Imre Gorgenyi, Scottsdale, all of Ariz., assignors to Thermal Management, Inc., Tempe, Ariz.

Filed Jul. 13, 1989, Ser. No. 379,083
Int. Cl.[5] G01R *31/02;* H01L *23/44*
U.S. Cl. 324—158 R 20 Claims



1. A method for maintaining an electrically operating device at a desired temperature during operation of the device, comprising the steps of:

a. installing the device in a bath of a first inert liquid having a boiling point less than the desired device temperature;

b. electrically operating the device, thereby generating heat which is transferred to the bath by nucleate boiling of the liquid;

c. monitoring the device temperature until it stabilizes at a temperature near the boiling point of the first inert liquid and below a desired device temperature; and

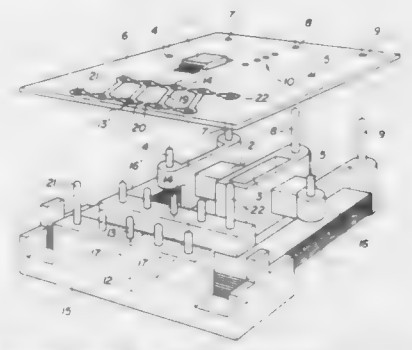
d. adding, incrementally, to the bath a second inert liquid having a boiling point greater than the desired device temperature to modify the rate of nucleate boiling of the first inert liquid while simultaneously monitoring the device temperature until it reaches the desired device temperature.

5,004,974

ELECTRIC CURRENT SENSING DEVICE

Pierr Cattaneo, Saint-Julien, and Claude Gudel, Entrembières, both of France, assignors to Liasons Electroniques-Mecaniques, Switzerland

Filed Sep. 11, 1989, Ser. No. 405,554
Claims priority, application Switzerland, May 30, 1989, 2031/89
Int. Cl.[5] G01R *1/20*
U.S. Cl. 324—117 R 7 Claims



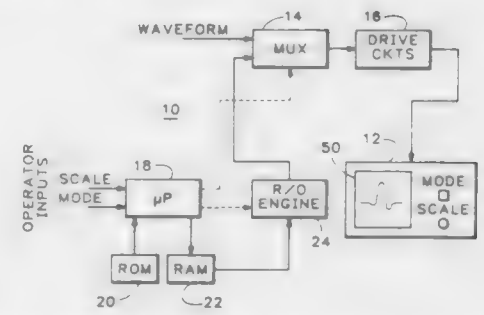
1. An electric sensing device for measuring a current flowing in at least one primary conductor and/or for producing a representation of this current, the device including at least one magnetic circuit, coupled with the said primary conductor, and a device for detecting or measuring the magnetic flux in the said circuit, said primary conductor comprising several substantially U-shaped conductor portions, said portions being arranged to each partially surround a section of the said magnetic circuit and being arranged for connection to a connecting device, said connecting device being selected among several connecting devices having each conductor element arranged for connecting certain of the said conductor portion together so as to form with the said conductor portions at least one primary winding having a respective chosen number of turns.

5,004,975

ADJUSTABLE ELECTRONIC GRATICULES FOR MEASURING WAVEFORM DISTORTIONS

Dale A. Jordan, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jun. 28, 1990, Ser. No. 546,270
Int. Cl.[5] G01R *31/22, 13/30*
U.S. Cl. 324—121 R 2 Claims



1. An apparatus for measuring distortions of a waveform using adjustable electronic graticules comprising:

means for generating a display list based upon operator

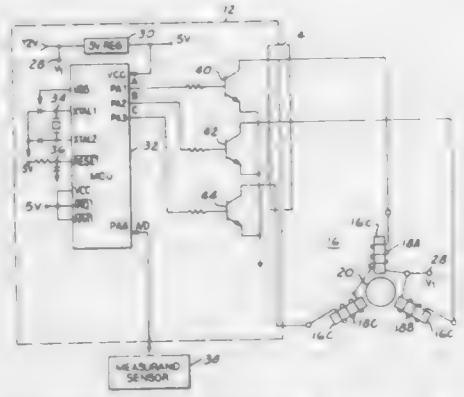
inputs of measurement mode and scale factor that represents a graticule and a measurement value;
means for generating from the display list electronic signals for the graticule and the measurement value; and
means for displaying the graticule and the measurement value together with the waveform.

5,004,976

WYE WINDING RADIAL AIR-CORE GAUGE SYSTEM

Paul A. Markow, Huntsville; William Nolle, Hazel Green, and Charles L. Bell, Huntsville, all of Ala., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Nov. 3, 1989, Ser. No. 431,129
Int. Cl.[5] G01R *1/00*
U.S. Cl. 324—154 R **7 Claims**



1. A wye winding type air-core gauge system for generating a movable electromagnetic field in a direction and of a field strength proportional to a magnitude and a direction of input electrical signals representing changes in magnitude of a measurand emanating from a measurand source, said system comprising:
(a) wye-coil, radial air-core gauge means for providing a visual angular displacement indicative of changes in magnitude of the measurand;
(b) sensor means having an input terminal connected to said measurand source for sensing the changes in magnitude of the measurand and to produce therefrom a series of electrical signals in a chosen format representing changes in magnitude of the measurand; and
(c) control means adapted to receive said series of electrical signals and to produce therefrom combinations of maximum amounts of a voltage signal to a chosen coil of said gauge means and a series of pulse width modulated (PWM) signals at a chosen frequency and of durations to a selected second or third coil of said gauge in response to changes of magnitude of said series of magnitude signals for generating control signals to the chosen and selected coils of said gauge means which cause the occurrences of the visual angular displacements indicative of changes in magnitude of the measurand.

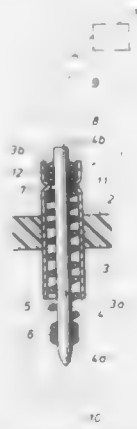
5,004,977

CONTACT PROBE

Toshio Kazama, Kanagawa, Japan, assignor to NHK Spring Co., Ltd., Yokohama, Japan

Filed Oct. 20, 1989, Ser. No. 424,511
Claims priority, application Japan, Oct. 24, 1988, 63-138376[U]; Mar. 3, 1989, 1-24651[U], May 1, 1989, 1-112691
Int. Cl.[4] G01R *1/06, 31/02*
U.S. Cl. 324—158 P **5 Claims**

1. A contact probe, comprising:
an elongated electroconductive needle member having a forward end, said needle member having a smooth, uninterrupted exterior surface;
a tubular holder having an open end, said tubular holder slidably receiving said needle member;
a compression coil spring coiled around said needle member whereby said needle member can slide within said coil spring, said coil spring having a first portion thereof engaged with said tubular holder and a second portion thereof secured to said needle member to thereby urge the



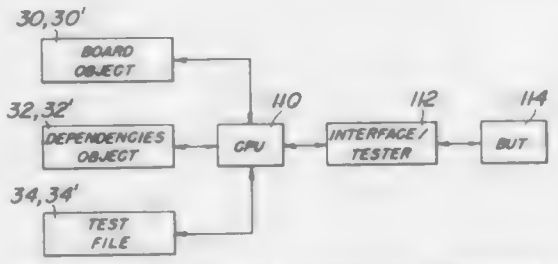
forward end of said needle member to project from said open end of said tubular member;
stopper means secured to said needle for restricting the extent to which said forward end of said needle member projects from said open end of said tubular holder; and
lead means for electrically connecting said needle member to an external circuit.

5,004,978

METHOD FOR REGENERATING IN-CIRCUIT TEST SEQUENCES FOR CIRCUIT BOARD COMPONENTS

Carroll E. Morris, Jr., Fort Collins; Robert E. Balliew, Loveland; Mark A. Mathieu, Loveland, and Darrell B. Johnsrud, Loveland, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 29, 1990, Ser. No. 501,991
Int. Cl.[5] G01R *31/28*
U.S. Cl. 324—158 R **15 Claims**



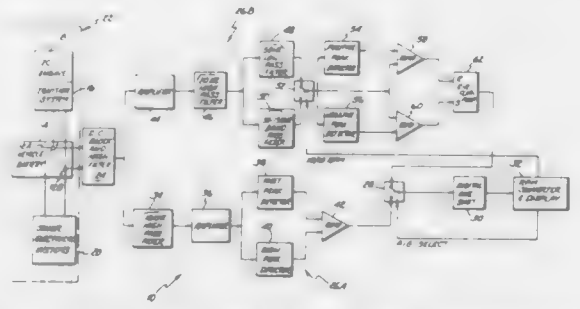
1. Method of operating an in-circuit-tester comprising the steps of:
(a) providing in the in-circuit tester information defining details of a circuit board, including data indicative of devices to be tested on the board;
(b) generating, according to at least the information provided in step (a), test sequences for the devices to be tested on the board;
(c) automatically determining, for each device for which a test sequence was generated in step (b), whether other devices on the board affect the test sequence for the device to be tested and identifying the other devices; and,
(d) storing data indicative of the results of step (c) in a memory associated with the in-circuit tester;
the in-circuit tester thereby having stored in the memory, data indicative of the other devices that should be considered in deciding whether to generate new test sequence(s) for each device.

5,004,979

BATTERY TACH

Joseph A. Marino, Waukesha; Surender K. Makhija, Brookfield; Majid Taghikhani, Milwaukee, and Peter A. Puetz, Waukesha, all of Wis., assignors to Bear Automotive Service Equipment Company, New Berlin, Wis.

Continuation of Ser. No. 116,634, Nov. 3, 1987, abandoned. This application Mar. 16, 1990, Ser. No. 496,103
Int. Cl.[5] G01P *3/42*
U.S. Cl. 324—160 **29 Claims**



1. A circuit for providing an output signal representative of speed of an internal combustion engine of the type having an electrical ignition system connected to a battery, the circuit comprising:
means for deriving directly from the battery an input signal representative of time-varying components in battery current, where battery current is the current flow appearing at a battery terminal;
means for filtering the input signal to produce a filtered signal comprising time-varying components of the input signal having frequencies within a range of frequencies associated with a time-varying signal impressed upon the battery current by operation of the ignition system; and
means for suppressing components in the filtered signal not associated with ignition system operation to produce the output signal as a function of engine speed.

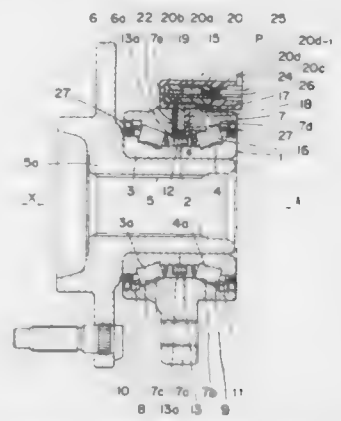
5,004,980

WHEEL BEARING APPARATUS PROVIDED WITH COMPACT WHEEL ROTATION SPEED DETECTOR LYING WITHIN THE OUTSIDE PERIPHERY OF THE BEARING APPARATUS

Tomoyasu Ida; Makoto Nohara, and Nobuyuki Seo, all of Osaka, Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Sep. 27, 1989, Ser. No. 413,387
Claims priority, application Japan, Jun. 2, 1989, 1-141778
Int. Cl.[5] G01P *3/48*
U.S. Cl. 324—166 **9 Claims**

1. A wheel bearing apparatus which comprises: an inside member having a main body lying along an axis, a flange projecting radially outwardly on one end of said main body for mounting the wheel bearing apparatus on a wheel, said flange having a radially outer edge, and a detected member which has multiple projections placed at regular intervals around the circumference of the main body; an outside member which is placed on the same axis as the inside member and adapted to be fixed to a chassis; multiple rolling elements which are placed between raceway surfaces of the inside member and raceway surfaces of the outside member so as to roll in the circumferential direction on the raceway surfaces; and a wheel rotation speed detector which is mounted on the outside member and which includes a detector end portion having a sensor in spaced opposed relation to the detected member of the inside member, and a circuit housing which is connected to the detector end portion and contains a circuit for processing a signal input from the sensor, so that the rotation of the inside member is detected by the wheel rotational speed detector;
said wheel rotation speed detector having a simplified L-shape, and the detector end portion being embedded in the outside member and extending substantially in the radial direction of the outside member so as to be in spaced opposed relation to the detected member, and the circuit housing is provided on the outside surface of the outside member in parallel with the axial direction of the outside member being inside, in the radial direction, the radially outer edge of the flange;



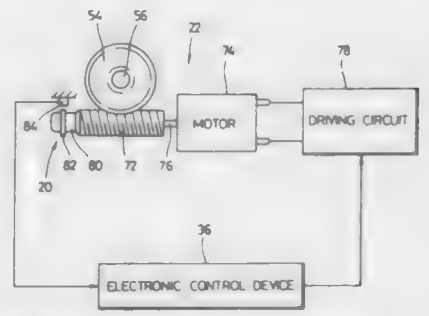
said outside member having at least one flange projecting in the radial direction of the outside member and having radially outer edges, and a surface portion on the outside surface of the outside member positioned radially inwardly of said radially outer edges of said flanges and extending in parallel with the axial direction of the outside member, said circuit housing of said rotational speed detector being mounted on said surface portion and lying inside, in the radial direction, of said radially outer edges of said flanges and having a connector portion at an end of the circuit housing, said connector portion having an opening which faces neither the flange of said outside member nor the flange of said inside member.

5,004,981

DETECTOR DIVICE FOR SIMULTANEOUSLY DETECTING BOTH THE DIRECTION AND NUMBER OF ROTATIONS OF ROTATING MEMBER

Toru Hashimoto; Masato Takabatake; Masashi Chino, and Akira Takahashi, all of Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 9, 1989, Ser. No. 434,082
Claims priority, application Japan, Nov. 18, 1988, 63-290242; Nov. 18, 1988, 63-290243; Oct. 27, 1989, 1-278348
Int. Cl.[5] G01B *7/30;* **G01P** *3/487;* **G05D** *13/00;* **F02D** *9/00*
U.S. Cl. 324—207.22 **22 Claims**



14. A sensor for detecting direction and number of revolu-

tions of a rotating member which is rotated in forward and reverse directions, comprising:

a magnetic assembly arranged around an outer peripheral surface of the rotating member, the magnet assembly including first and second ring magnets of identical shape, securely arranged and surrounding the outer peripheral surface of the rotating member and spaced apart from each other at a predetermined distance in an axial direction of the rotating member, the first and second ring magnets each having a north pole region magnetized to be a north magnetic pole and extending over one circumferential portion of an outer peripheral surface thereof and a south pole region magnetized to be a south magnetic pole and extending over another circumferential portion of the other peripheral surface thereof, the north and south pole regions of the first ring magnet being shifted in rotational phase by a predetermined number of degrees in a circumferential direction of the rotating member from the north and south pole regions of the second ring magnet, respectively; and

magnetism detecting means for detecting changes in polarity caused by movement of the north and south pole regions of the first and second ring magnets, at a predetermined circumferential position relative to the circumferential direction of the rotating member when the first and second ring magnets are rotated together with the rotating member, and for outputting a result of the detection, the magnetism detecting means including a first magnetic probe securely arranged in the vicinity of the outer peripheral surface of the first ring magnet and always opposed to same, and a second magnetic probe securely arranged in the vicinity of the outer peripheral surface of the second ring magnet and always opposed to same, the first magnetic probe outputting a binary signal of a different level depending on whether it is opposed to the north or south pole region of the first ring magnet, the second magnetic probe being located at the same circumferential position as the first magnetic probe with respect to the circumferential direction of the rotating member, and outputting a binary signal of a different level depending on whether it is opposed to the north or south region of the second ring magnet.

5,004,982

SCALES FOR POSITION DETERMINING APPARATUS HAVING MARKS OF DIFFERENT AMPLITUDES THEREON

Raymond J. Chaney, Berkeley; David R. McMurtry, Wotton-Under-Edge, and David Wilson, Stonehouse, all of United Kingdom, assignors to RIENSHAW plc, Gloucestershire, United Kingdom

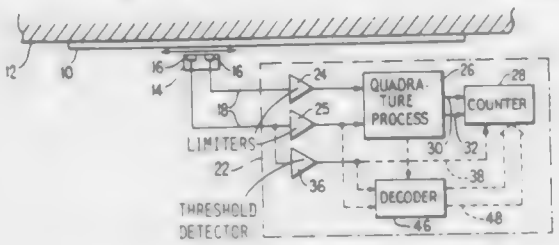
Continuation of Ser. No. 264,965, filed as PCT GB88/00119 on Feb. 24, 1988, published as WO88/06717 on Sept. 7, 1988, abandoned.

This application Jul. 23, 1990, Ser. No. 555,792

Claims priority, application United Kingdom, Feb. 24, 1987, 8704204; Mar. 6, 1987, 8705304; Mar. 21, 1987, 8706789

Int. Cl.[5] G01B *7/14*

U.S. Cl. 324—207.22 **8 Claims**



1. A scale for a position determination device comprising:

a track,

a series of marks spaced along the track and recorded on the track as a signal of varying amplitude,

said marks comprising first marks having a first amplitude with coding groups of marks interspersed therewith, each coding group including a plurality of second marks having a second amplitude which is distinguishable from the first amplitude,

the marks within a said group being arranged in a code to provide information relating to the positions of selected ones of the first marks.

5,004,983

CIRCUIT ARRANGEMENT FOR GENERATING RF SIGNALS FOR MR EXAMINATIONS

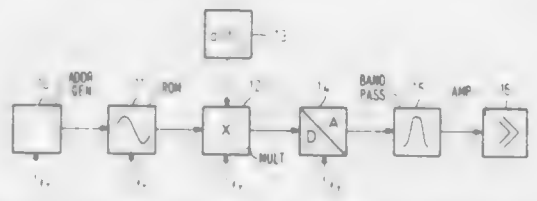
Roland Proksa; Peter Roschmann, both of Hamburg, Fed. Rep. of Germany, and Noel J. M. van den Berg, Zoetermeer, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 1, 1989, Ser. No. 359,620

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1988, 3821984

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—322 **20 Claims**



1. A circuit arrangement for generating rf signals at a Larmor frequency "f_L" for transmission into an examination zone during MR examinations, comprising a read-only memory in which samples of a sinusoidal waveform are stored in the form of a series of data words, an address generator means for reading data words from the read-only memory with a clock frequency "f_T" such that cycles of the sinusoidal waveform are read out from said read-only memory with a frequency "f_S", there being at least two data words read from the read-only memory for each cycle of the sinusoidal waveform, and a digital-to-analog converter which succeeds the read-only memory, wherein "f_T" and "f_S" are chosen such that a frequency spectrum at the output of the digital-to-analog converter comprises a spectral line at the Larmor frequency f_L, and wherein $f_L > f_S$.

5,004,984

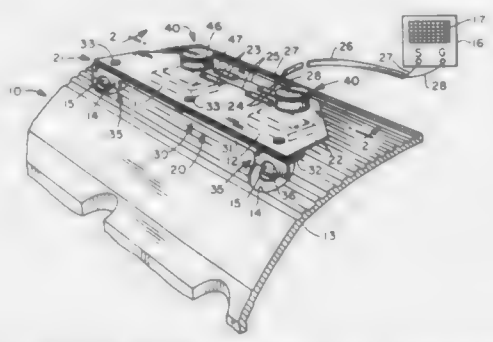
MAGNETIC FIELD PICKUP ASSEMBLY FOR DIAGNOSITICS ON SPECIFIC ENGINE

Thomas P. Becker, Kenosha, Wis.; Sohrab S. Rameshk, Libertyville, Ill., and Matthew M. Crass, Kenosha, Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Filed Sep. 8, 1989, Ser. No. 404,430

Int. Cl.[5] F02P *17/00*

U.S. Cl. 324—402 **10 Claims**



1. An inductive pickup assembly for sensing the electromagnetic fields of ignition coils of an automotive engine having a plurality of such ignition coils, direct access to which ignition coils is prevented by associated engine housing structure mounted by fastening means, said pickup assembly comprising:

a frame disposable on the housing structure in a predetermined configuration, said frame having a plurality of locating members adapted for cooperation with fastening means accurately to position said frame in said predetermined configuration, and a plurality of inductive coil sensing means equal in number to the ignition coils and carried by said frame in predetermined positions such that when said frame is disposed in its predetermined configuration on the housing structure said sensing means are respectively properly positioned for sensing the electromagnetic fields of the ignition coils, each of said sensing means including a helical sensing coil of electrically conductive wire having an axis extending between opposite ends of the sensing coil, and a magnetizable metal shield covering only one end of said sensing coil.

5,004,985

METHOD AND APPARATUS FOR TESTING THE RESPONSE OF A STRESS WAVE SENSOR

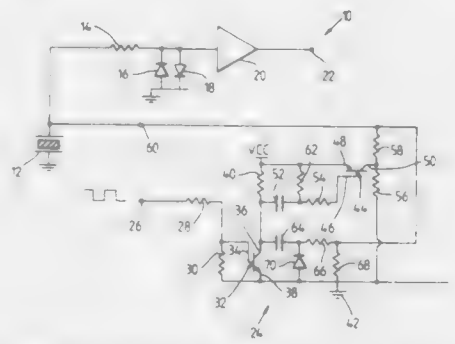
Trevor J. Holroyd, and Timothy E. Tracey, both of Derby, England, assignors to Stresswave Technology Limited, Derby, England

Filed Mar. 15, 1990, Ser. No. 493,708

Claims priority, application United Kingdom, Apr. 21, 1989, 8909155

Int. Cl.[5] G01R *29/22*

U.S. Cl. 324—727 **14 Claims**



1. A method of testing the response of a stress wave sensor, the stress wave sensor comprising a transducer and an amplifier arranged electrically in series,

the method comprising supplying to the sensor at a point electrically between the transducer and the amplifier at least one first electrical pulse having a relatively large amplitude such that it causes an operative transducer to oscillate, an operative transducer caused to oscillate by the at least one electrical pulse generating an additional electrical pulse,

supplying the first electrical pulse and any additional electrical pulse generated by the transducer to the amplifier, an operative amplifier amplifying the first electrical pulse and any additional electrical pulse to produce an output signal,

determining from the output signal of the amplifier if any one or more of the transducer and amplifier are not operating satisfactorily, an inoperative amplifier not amplifying the first electrical pulse and any additional electrical pulse and not producing an output signal, the lack of an output signal from the amplifier indicating that the amplifier is inoperative,

supplying to the sensor at the point electrically between the transducer and the amplifier a second electrical pulse having a relatively small predetermined amplitude such that it does not saturate the amplifier,

supplying the second electrical pulse to the amplifier,

and determining from the output signal of the amplifier corresponding to the second electrical pulse the gain of the amplifier.

5,004,986

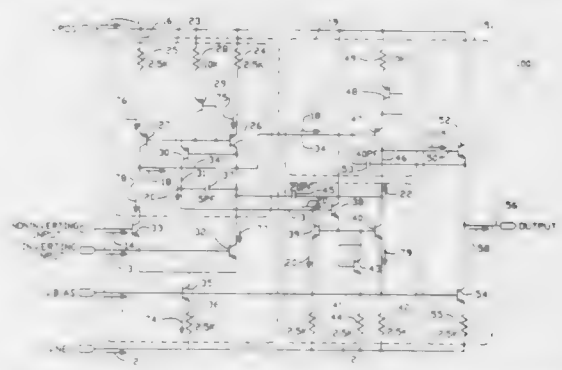
OP-AMP WITH INTERNALLY GENERATED BIAS AND PRECISION VOLTAGE REFERENCE USING SAME

Mark W. Bohrer, Saratoga, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 2, 1989, Ser. No. 415,896

Int. Cl.[5] H03F *3/45*

U.S. Cl. 330—257 **24 Claims**



13. A method of converting a first and a second input signal into an output signal, comprising the steps of:

accepting said first and second input signals;

generating an intermediate signal as a function of said first and second input signals;

establishing a stable reference whose stability is independent of fluctuations of said input signals;

generating a control signal according to said stable reference and independently of fluctuations of said input signals;

producing a current signal according to said control signal and independently of fluctuations of said input signals; and

converting said intermediate signal to said output signal according to said current signal.

5,004,987

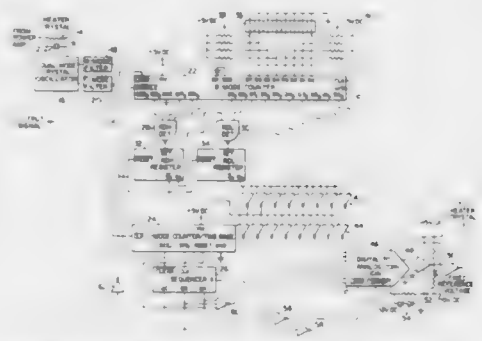
TEMPERATURE COMPENSATED CRYSTAL RESONATOR FOUND IN A DUAL-MODE OSCILLATOR

Leslie C. Hurley, Carlisle, Pa., assignor to Piezo Crystal Company, Carlisle, Pa.

Filed May 19, 1989, Ser. No. 363,595

Int. Cl.[5] H03B *5/32;* **H03L** *1/02;* **G05D** *23/20*

U.S. Cl. 331—70 **18 Claims**



1. A circuit for controlling an output of a dual-mode oscillator including a crystal resonator, wherein the output of the dual-mode oscillator comprises a first signal and a second signal, comprising:

first counting means for counting in accordance with the first signal to produce a first output defining a time period;

second counting means for counting in accordance with the

second signal for the time period defined by the first output to produce a second output defining a temperature of the crystal resonator; and

processing means for processing the second output to derive a temperature control signal for selectively adjusting the temperature of the crystal resonator

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5,004,988

QUARTZ CRYSTAL OSCILLATOR WITH TEMPERATURE-COMPENSATED FREQUENCY CHARACTERISTICS

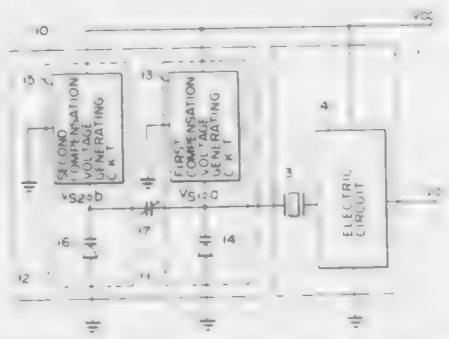
Yoshifusa Ueno; Takihei Tanzawa, and Takayuki Suzuki, all of Tokorozawa, Japan, assignors to Nihon Dempa Kogyo Co., Ltd., Tokyo, Japan

Filed Jul. 19, 1989, Ser. No. 382,107

Claims priority, application Japan, Jul. 25, 1988, 63-186276; Sep. 30, 1988, 63-248632; Dec. 31, 1988, 63-335049

Int. Cl.[5] H03B *5/04*

U.S. Cl. 331—116 R **12 Claims**



1. A temperature-compensated crystal oscillator, for providing a signal oscillating at a predetermined frequency, said crystal oscillator having frequency-temperature characteristics depending upon temperature, the frequency of the signal provided by said oscillator being determined by said frequency-temperature characteristics, said oscillator comprising:

oscillating circuit means for providing an oscillating signal, said oscillating circuit means having a quartz crystal vibrator as an oscillating element, said oscillating circuit means having a rated temperature range and given frequency-temperature characteristics; and

temperature compensating means coupled to said quartz crystal vibrator for compensating the frequency-temperature characteristics of said oscillating circuit means, said temperature compensating means including:

first temperature compensating means for compensating the frequency-temperature characteristics of the oscillating circuit means within a rated temperature range of said oscillating circuit means to obtain compensated frequency-temperature characteristics; and

second temperature compensating means for further compensating said compensated frequency-temperature characteristics in a specific temperature region of said compensated frequency-temperature characteristics, said specific temperature region being within said rated temperature range and extending over only a part of said rated temperature range, to obtain desired frequency-temperature characteristics for the crystal oscillator.

5,004,989

OSCILLATOR FOR CONTROLLING A MIXER STAGE IN A TUNER

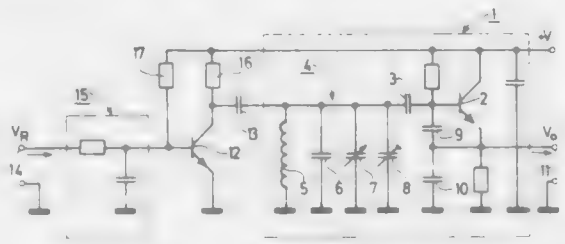
Rudolf Hasler, Vienna, Austria, assignor to U.S. Philips Corp., New York, N.Y.

Filed Dec. 13, 1989, Ser. No. 450,338

Claims priority, application Austria, Dec. 19, 1988, 3081/88

Int. Cl.[5] H03B *5/00*

U.S. Cl. 331—117 R **2 Claims**



1. An oscillator, for controlling a mixer stage in a tuner which oscillator comprises:

an active circuit element and a parallel resonant circuit including a variable capacitance which is variable in dependence upon a fine-tuning control signal, characterized in that;

the variable capacitance is comprised of a transistor separate from the active element whose collector is capacitively coupled to the parallel resonant circuit and whose base and emitter are connected to ground for alternating current, in that the operating point of the transistor is chosen to be such that both its base-emitter junction and its base-collector junction are forward biased, and in that the fine-tuning control signal is applied to the base-emitter path of the transistor, said fine-tuning control signal within its control range driving the base-collector junction further into conduction on the one hand and into its cut-off region on the other hand.

5,004,990

MICROWAVE LOAD IN SMALL-LENGTH OVERSIZED WAVEGUIDE FORM

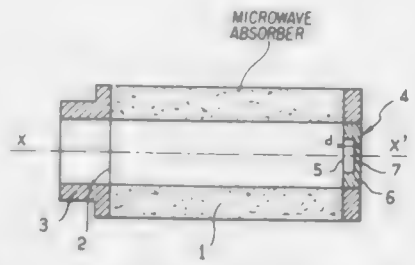
Jean-Pierre Bergero, Limeil Brevannes, and Claude Couasnard, Meudon La Foret, both of France, assignors to Thomson Tubes Electroniques, Boulogne Billancourt, France

Filed Nov. 13, 1989, Ser. No. 436,006

Claims priority, application France, Nov. 15, 1988, 88 14800

Int. Cl.[5] H01P *1/26*

U.S. Cl. 333—22 R **12 Claims**



1. A microwave load for attenuation of waves with low losses that are propagated in an oversized waveguide comprising:

a body of absorbent material having a longitudinal axis and an interior cross section substantially equal to or larger than an interior cross section of the oversized waveguide, the body forming a waveguide section and having a first open end connected to the oversized waveguide and a second open end; and

a mode reflecting and converting device closing the second end of the body and having a part thereof which is oriented substantially transversely to the longitudinal axis, the part facing an interior of the body;

wherein the part comprises at least one offset portion forming one of a recess and projection defining at least two distinct reflecting planes for converting a mode of waves located at the second end of the body into at least one mode of higher losses and for reflecting converted waves towards the first end for absorption.

5,004,991

LOW PASS FILTER SYSTEM FOR AN ELECTRICAL CIRCUIT

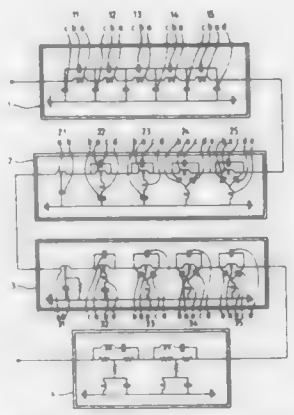
Béla Teleki, Newcastle under Lyme, United Kingdom; Alan G. Holden, Chesire, England, and Leang H. Chong, Penang, Malaysia, assignors to Johnson Matthey Public Limited Company, London, England

Filed Apr. 3, 1987, Ser. No. 33,969

Claims priority, application United Kingdom, Apr. 4, 1986, 8608298.

Int. Cl.[5] H03H *7/075*

U.S. Cl. 333—168 **7 Claims**



1. A low pass filter system for filtering from an electrical circuit unwanted signals having a frequency above a pre-selected frequency whilst allowing passage to a passband of signals whose frequency is below the pre-selected frequency, the system comprising:

a low pass filter having an input and a filtered output;

a first group delay means having an input connected to the filtered output of the filter and having an output, said first group delay means comprises a plurality of combinations of inductance and capacitance elements, each said combination being tuned to affect a particular frequency group of the passband of signals such that the cumulative effect of the combination is to impart a delay to at least 90% of said passband of signals passing through said first group delay means; and

at least one additional group delay means having an input connected to the output of the first group delay means and having an output, said additional group delay means comprising a plurality of combinations of inductance and capacitance elements, each said combination being tuned to affect a particular frequency group of the passband of signals such that the cumulative effect of the combinations is to impart delay to at least 90% of the passband of signals and the cumulative effect of the first and the additional group delay means together is to impart sufficient extra delay to said passband of signals at the output of the additional group delay means to bring the delay provided to at least 90% of the wanted signals to within 20 ns of the delay provided to the passband signal having a highest frequency.

5,004,992

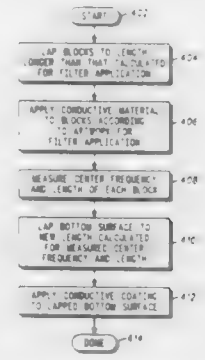
MULTI-RESONATOR CERAMIC FILTER AND METHOD FOR TUNING AND ADJUSTING THE RESONATORS THEREOF

Steven E. Grieco, and Douglas A. Morris, both of Albuquerque, N. Mex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 25, 1990, Ser. No. 529,098

Int. Cl.[5] H01P *1/202*

U.S. Cl. 333—202 **8 Claims**



1. A method manufacturing a filter with a predetermined center frequency, said method comprising the steps of:

producing dielectric means comprised of a dielectric material having top, side and bottom surfaces, said dielectric means further having at least two holes extending from the top surface toward the bottom surface thereof and spatially disposed at a predetermined distance from one another, the side and bottom surfaces of said dielectric means selectively covered with a conductive material to provide a transmission line resonator for each of said at least two holes, and said at least two holes having a length that is greater than a predetermined length producing the predetermined center frequency, and said dielectric means having at least two measurable frequency related characteristics;

producing an artwork mask for adjusting the frequency related characteristics of the dielectric means;

applying conductive material to the top surface of said dielectric means in accordance with the artwork mask;

measuring one of the frequency related characteristic of said dielectric means to obtain a measurement;

removing the conductive material and a layer of the dielectric material from the bottom surface, said layer having a thickness related to the measurement; and

applying conductive material to the bottom surface of said dielectric means.

5,004,993

CONSTRICTED SPLIT BLOCK WAVEGUIDE LOW PASS FILTER WITH PRINTED CIRCUIT FILTER SUBSTRATE

John Reindel, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 19, 1989, Ser. No. 410,385

Int. Cl.[5] H01P *1/207*

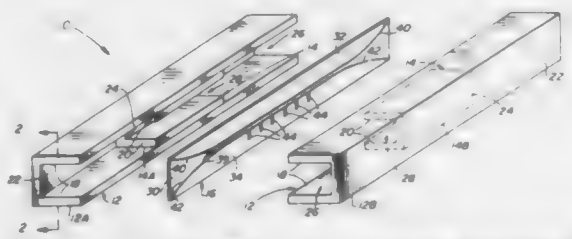
U.S. Cl. 333—208 **16 Claims**

1. A waveguide low pass filter, comprising:

(a) an outer waveguide;

(b) an inner waveguide shorter in length than, and disposed within, said outer waveguide so as to form a constriction

within said outer waveguide limiting the propagation of energy to the fundamental TE_{10} mode; and



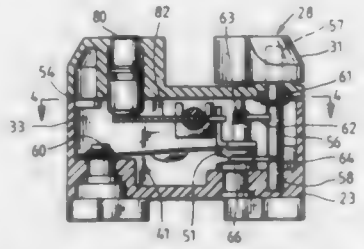
(c) a slotted ridge filter array mounted longitudinally through said outer and inner waveguides.

5,004,994

PUSH-TO-TRIP HIGH-AMP CIRCUIT BREAKER

Jacek M. Korczynski, Niles, and Thomas J. Stack, Chicago, both of Ill., assignors to Cooper Industries, Inc., Houston, Tex.

Filed May 24, 1990, Ser. No. 528,312
Int. Cl.[5] H01H *71/16*
U.S. Cl. 337—66 **11 Claims**



1. A high amperage circuit breaker comprising
a pair of spaced terminals being placed in series with the circuit to be protected;
a heat resistant electrical insulating plastic housing defining a body cavity, said body cavity having a base, a front wall, a rear wall and two side walls,
a cover to close said housing;
a rectangular thermally activated bistable mechanical element in said cavity, at least one dimple formed on said bistable element;
a first contact being connected to one of said terminals, said first contact also connected to one end of said bistable element by means wherein the one end of said bistable element always remains stationary with respect to the first contact and in electrical contact with the first contact;
a second electrical contact attached to the other end of said bistable element;
said other end of said bistable element being free to move in a relatively vertical direction;
a third contact electrically connected to said other terminal and being positioned relative to said second contact wherein said second and third contact are normally in electrical contact with each other when the bistable element is in a first position, and said first position being to close the circuit of the circuit breaker;
said bistable element having a predetermined current response to quickly deflect when there is a predetermined over current, said deflection causing said other end of said bistable element to move from said first position to a second position and to cause said second contact to separate from said third contact by a predetermined distance to open the circuit of the circuit breaker;
a reset mechanism to maintain the predetermined distance between said second contact and said third contact until the circuit breaker is manually reset; and
a manual trip means to open the circuit of the circuit breaker.

5,004,995

FUSE ASSEMBLY FOR CAR

Ying C. Lo, No. 46, Lane 130, Ming-Tzwu Rd., Miau-Li, Taiwan

Filed Mar. 22, 1990, Ser. No. 497,284
Int. Cl.[5] H01H *85/32*
U.S. Cl. 337—266 **3 Claims**



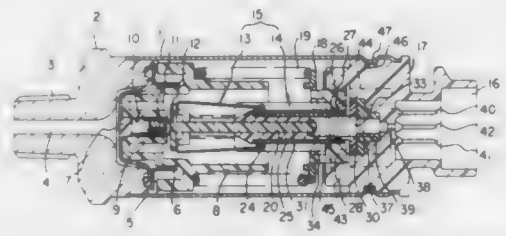
1. A fuse assembly for a car comprising:
a cross-sectionally generally rectangular hollow insulating housing including an open bottom, a central receiving room, two side receiving rooms both communicating with said central receiving room, said and a top **44**, said top having two diametrically opposite angulate surfaces **46**, and two through holes respectively communicating with said two side rooms;
two conducting plates respectively received in said two side rooms, respectively having two cornered surfaces **53** respectively complementary to said angulate surfaces, and each of which includes a first end inserted in one of said two top holes **44** and a second opposite end protruding beyond said open bottom to be adapted to be inserted to a fuse assembly socket for said car; and
a fuse positioned in said central room and having two ends thereof respectively connected to and integrally formed with said two conducting plates, in which:
said fuse assembly further includes an indicating bulb generally positioned in said central room and between said top and said fuse **60** and having two diametrically disposed electrodes **72** respectively generally positioned in said two side rooms and respectively having two U-shaped portions having two angled portions respectively firmly clamped between said cornered surfaces **53** and said angulate surface **46**, and
said top and said first ends of said two conducting plates clamp therebetween said two electrodes in order to generally position said indicating bulb in said central room.

5,004,996

HYDRAULIC ACTUATING APPARATUS

Toshiji Shibazaki; Masaru Okano; Naoto Kishida; Yoshihiro Ozaki, and Kunihiko Iyama, all of Saitama, Japan, assignors to Toyo Denso Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 28, 1989, Ser. No. 399,057
Claims priority, application Japan, Aug. 26, 1988, 63-111837[U]; Aug. 26, 1988, 63-111838[U]; Nov. 22, 1988, 63-152668[U]
Int. Cl.[5] H01C *10/10, 10/30*
U.S. Cl. 338—36 **9 Claims**



1. A hydraulic actuating apparatus for sensing hydraulic pressure, comprising:

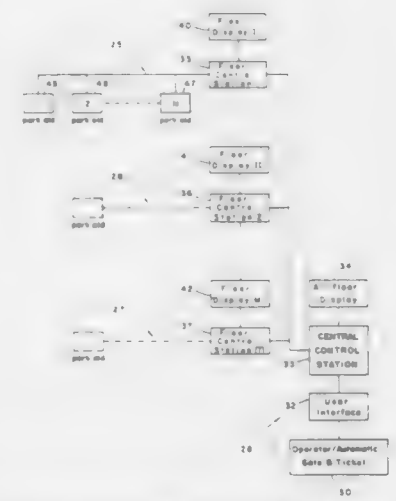
a slider which is movable in proportion to the hydraulic pressure;
a variable resistor unit having a resistance value which changes in response to movement of said slider;
resilient means which is resiliently deformable by movement of said slider and which exerts a restoring force opposing the movement of said slider caused by said hydraulic pressure; and
adjusting means for setting an initial resistance value of said variable resistor unit, said variable resistor unit having a portion which is in contact with said adjusting means.

5,004,997

PARKING AID DEVICE

Ben Z. Shisgal, Carmiel, and Tzvi Tzelnick, Tel Aviv, both of Israel, assignors to Insys Ltd., Carmiel, Israel

Filed Jan. 22, 1990, Ser. No. 468,292
Int. Cl.[5] B60Q *1/00;* **G08G** *1/14*
U.S. Cl. 340—436 **17 Claims**



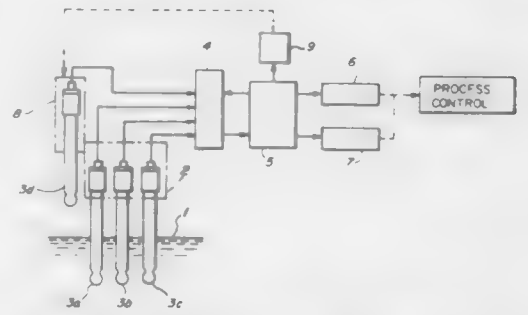
1. An electronic parking-aid device for guiding a motorist when parking a vehicle in a parking bay, the device comprising:
a housing adapted to be fixed to a wall at an end of the parking bay and containing therein means for connecting to a source of electric power,
transmitter means for transmitting a first signal towards an approaching vehicle so as to reflect a second signal from an approaching surface of the vehicle,
receiver means for receiving the second signal,
computing means coupled to the transmitting and receiving means and responsive to the first and second signals for computing the distance of the approaching surface of the vehicle from the wall,
logic means coupled to the computing means for comparing the computed distance with a first predetermined threshold and generating a first output signal if the computed distance is less than the first threshold, and
first indication means coupled to the logic means and responsive to the first output signal for indicating to the motorist to stop.

5,004,998

ION-MEASURING APPARATUS FOR USE IN PROCESS

Yoshio Horii, Miyanohigashi, Japan, assignor to Horiba, Ltd., Kyoto, Japan

Filed Dec. 7, 1989, Ser. No. 447,221
Claims priority, application Japan, Dec. 14, 1988, 63-316778
Int. Cl.[5] G08B *21/00;* **G01N** *27/26*
U.S. Cl. 340—507 **24 Claims**



1. An ion measuring apparatus for the monitoring of a sample from a production process, comprising:
a plurality of ion measuring electrodes for respectively measuring the ion content of the sample and providing an output measurement signal based on outputs from each of the electrodes;
means for determining a failure of one of the electrodes, and
means for excluding the failed electrode output form the output measurement signal

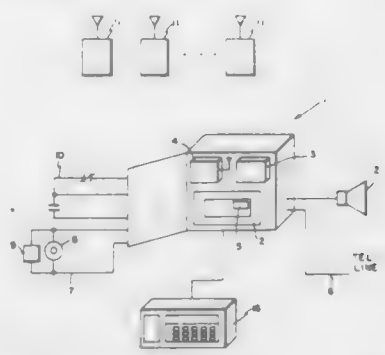
9. The ion measuring apparatus of claim 1 further including an alarm that is responsive to a detection of a failure of an electrode.

5,004,999

EXTENDED RF RANGE ALARM SYSTEM

Jon P. Hartmann, Santa Ana, and Ted W. Glasener, Orange, both of Calif., assignors to Honeywell, Inc., Minneapolis, Minn.

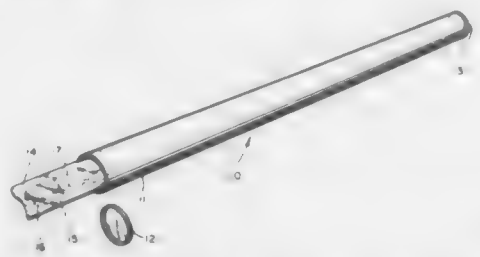
Filed Dec. 21, 1989, Ser. No. 454,329
Int. Cl.[5] G08B *1/08*
U.S. Cl. 340—539 **10 Claims**



1. An alarm system comprising:
a central control including an RF receiver for receiving message information from remote locations;
one or more RF transmitters for generating alarm message information to be transmitted to said receiver, each said transmitter comprising:
an RF energy generator for generating RF signals having an average signal strength which is a predetermined level;
a message source for providing said message information to modulate said RF signals; and
means for modulating said RF signals with said message information to produce modulated RF pulses of contiguous data bits, each of said pulses having an instantaneous level of RF field strength substantially greater than said

predetermined level and wherein said average signal is calculated over a cycle said cycle comprising the on-time of one of said pulses and the off-time between said pulses.

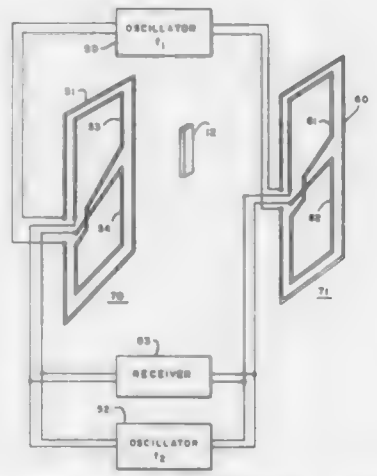
5,005,000
KIT CONTAINING COMPONENTS FOR AN ALARM SCREEN ASSEMBLY
Dennis E. Riordan, Los Angeles, Calif.
Filed Dec. 12, 1986, Ser. No. 941,166
Int. Cl.[5] G08B *13/00*
U.S. Cl. 340—550 **1 Claim**



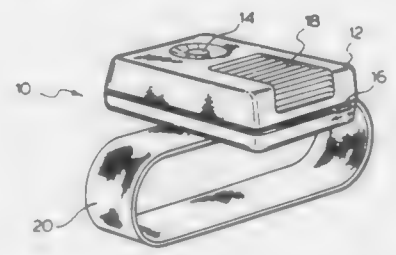
1. A process for making an alarm screen mesh comprising the steps of:
a. weaving a screen mesh with a plurality of parallel strands of conductive wire so that each of said plurality of strands of conductive wire is interwoven into said screen mesh with each of said plurality of strands of conductive wire having a first end and a second end;
b. cutting a rectangular sheet from said screen mesh and trimming opposite sides of said rectangular sheet in order to leave projecting lengths of each of said plurality of parallel strands of conductive wire into said rectangular sheet;
c. mechanically coupling alternating pairs of said first ends and second ends of said plurality of strands of conductive wire to adjacent strands of conductive wire in order to form a mechanically-coupled plurality of strands of conductive wire to form a sinuous path in said rectangular sheet;
d. mechanically coupling one end of a continuous strand of conductive wire to one end of said mechanically-coupled plurality of strands of conductive wire; and
e. using said mechanically-coupled plurality of strands of conductive wire to pull said continuous strand of conductive wire through said rectangular sheet whereby said continuous strand of conductive wire is interwoven into said screen mesh along said sinuous path of said rectangular sheet.

5,005,001
FIELD GENERATION AND RECEPTION SYSTEM FOR ELECTRONIC ARTICLE SURVEILLANCE
Robert A. Cordery, Danbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed Apr. 5, 1990, Ser. No. 505,079
Int. Cl.[5] G08B *13/24*
U.S. Cl. 340—551 **4 Claims**

1. In a system for detecting the presence of a ferromagnetic marker in an interrogation zone, including first and second generating means for generating first and second magnetic fields, respectively, at first and second frequencies, respectively, and wherein said second frequency is substantially lower than said first frequency, the improvement wherein said first generating means comprises means for generating an alternating field at said first frequency and said second generating means comprises means for generating a rotating field at said second frequency.



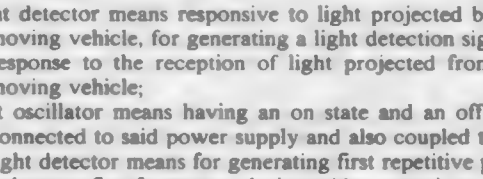
5,005,002
HAND HELD SAFETY SIREN
Rachel Halperin, 100 Antibes Drive, Suite 1105, North York, Ontario, M2R 3N1, Canada
Filed Jan. 5, 1990, Ser. No. 461,413
Int. Cl.[5] G08B *15/00*
U.S. Cl. 340—574 **2 Claims**



1. A hand held alarm device for personal use comprising a housing having a top surface, bottom surface and side surfaces, an alarm circuitry contained within said housing and a activating switch located on the op surface of said housing, said activating switch being provided in a recessed area surrounding said switch, said recessed area being enlarged relative to said switch, said housing having a attaching means for releasably attaching the alarm device to a hand such that the activating switch is maintained in a position to be within reach of the fingers of a user, even after a fright response.

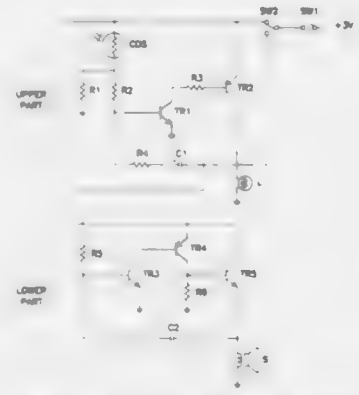
5,005,003
METHOD OF DETECTING FIRE IN AN EARLY STAGE
Peter Ryser, Stafa, and Sigfrid Strassler, Baden-Dattwil, both of Switzerland, assignors to Cerberus AG, Switzerland
Filed Mar. 29, 1989, Ser. No. 330,187
Claims priority, application Switzerland, Mar. 30, 1988, 1193/88; Dec. 23, 1988, 4760/88
Int. Cl.[5] G08B *17/00*
U.S. Cl. 340—587 **25 Claims**

1. A fire alarm for the early detection of fires comprising:
a first sensing means for sensing a first fire related phenomenon having a first electrical output, where said first sensing means is sensitive to temperature fluctuations having frequency components in the range of 0.1 to 20 Hz;
a second sensing means for sensing a second fire related phenomenon, different from the first fire related phenomenon, having a second electrical output;
a means for combining the first and second electrical output from the first and the second sensing means respectively for generating a third output;



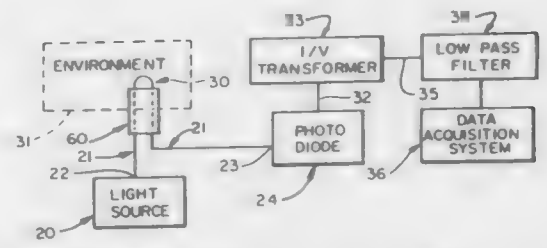
and a housing containing the first sensing means having means for optimizing the flow of air to the first sensing means.

5,005,004
LIGHT ACTIVATED VEHICLE SENSOR WITH FLASHING LIGHT AND PULSING SOUND ALARM
Michael P. Udofot, 1346 LaSalle Ave. S., Minneapolis, Minn. 55403
Filed Oct. 21, 1988, Ser. No. 260,597
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—600 **5 Claims**



1. A light activated signaling system for detecting the presence of a lighted moving vehicle and signaling the presence of the signaling system to the operator of the moving vehicle and for indicating the presence of the moving vehicle to the operator of the signaling system comprising:
a power supply for powering said system, said power supply having a positive supply terminal and a ground potential terminal;
light detector means responsive to light projected by said moving vehicle, for generating a light detection signal in response to the reception of light projected from said moving vehicle;
first oscillator means having an on state and an off state, connected to said power supply and also coupled to said light detector means for generating first repetitive power pulses at a first frequency, during said on state in response to said light detection signal, and not generating said repetitive power pulses, during said off state representative of the absence of said light detection signal,
light source means connected to said first oscillator means for converting said first repetitive power pulses to light pulses and for projecting said light pulses toward said moving vehicle;
second oscillator means coupled to said first oscillator means for generating second power pulses at a second fixed frequency higher than said first frequency, in response to said on state,
said second oscillator means operating during the one state of said first oscillator means and not operating during said off state;
audio transducer means coupled to said second oscillator means for converting said second power pulses to sound energy,
wherein said light detector means comprises,
a photo resistive detector (CDS) connected in series with a variable resistor (R_1) across said power supply terminal (+3, and) the junction between said photo-resistive detector and said variable resistor defining a control node, wherein said first oscillator means comprises
a first npn transistor (TR_1) having a base, a collector and an emitter;
a second npn transistor (TR_2) having a base, a collector and an emitter, said emitter being connected to said positive supply terminal (+3V);
a bias resistor (R_2) connected between said base of said first transistor and said control node for supplying a bias current to said first transistor when said photo-resistive detector is illuminated;
a base supply resistor (R_3) connected between said collector of said first transistor and said base of said second transistor for supplying current to the base of second transistor (TR_2);
a series connected timing resistor (R_4) connected to a timing capacitor (C_1) forming a feed base path connected between said base of said first transistor (TR_1) and said collector of said second transistor (TTR_2), whereby said first repetitive power pulses are produced at said first frequency, whereby said first frequency is proportional to the time constant of said feedback path, at said collector of said second transistor (TR_{10}) when said photo-resistive detector biases said first transistor TR_1 into conduction.

5,005,005
FIBER OPTIC PROBE SYSTEM
Charles E. Brossia, 1748 E. Ross La., Highlands Ranch, Colo. 80126, and Samuel C. Wu, 10205 W. Exposition Ave., Lakewood, Colo. 80226
Continuation-in-part of Ser. No. 838,283, Mar. 10, 1986, Pat. No. 4,851,817. This application Mar. 1, 1989, Ser. No. 317,426
Int. Cl.[5] G08B *21/00, 19/02*
U.S. Cl. 340—604 **18 Claims**



1. A system for detection of a selected medium in an environment comprising:
a light source means for generating a beam of light;
a light receiving and signal generating means for receiving light from said light source and for generating variable signals dependent upon the amount of light received;
optical path means made of a continuous uninterrupted length of transparent material for connecting said light source means to said light receiving and signal generating means and for providing a continuous light path therebetween for transmitting said beam of light from said light source means to said light receiving means along the optical path;
at least one sensor portion located on a peripheral outer surface of said optical path means and in contact with the environment and being constructed and arranged to cause change in intensity of light transmitted through said sensor portion dependent on the amount of selected medium in the environment adsorbed and absorbed by the sensor portion, whereby variable output signals generated by

said light receiving and signal generating means vary in accordance with the amount of selected medium in the environment adsorbed and absorbed by the sensor portion; and

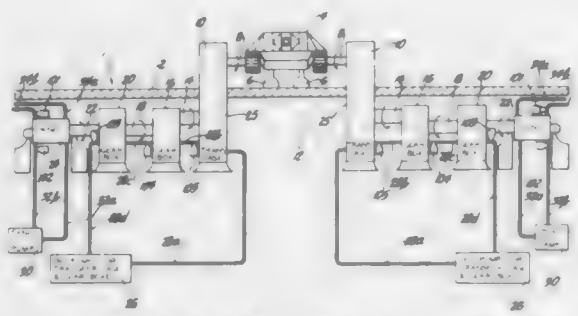
signal processing and indicating means connected to said light receiving and signal generating means for output signaling and for indicating the detection of the selected medium in the environment.

5,005,006

ELECTRONIC CONTROL FOR A FLUID SYSTEM

Kenneth W. Ratcliff, 21035 Lantz, Mt. Clemens, Mich. 48043

Filed Jan. 5, 1990, Ser. No. 461,565
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—611 **9 Claims**



1. An electronic device for monitoring pressure in a system of fluid circuitry in a machine, the fluid circuitry having at least one location where fluid pressure is monitored, the electronic device comprising:

a set of at least two switches at the location, one of the switches actuated when pressure at the location is within a first range, another of the switches actuated when pressure at the location is within a second range, the set being capable of giving four responses, wherein the one switch gives a first response when not actuated and gives a second response when actuated, and wherein the other switch gives a third response when not actuated and gives a fourth response when actuated;

a first NOR gate receiving the responses from the switches, the first NOR gate outputting a fifth response when receiving both the first response from the one switch and the third response from the other switch, the first NOR gate outputting a sixth response when receiving either a second response from the one switch or the fourth response from the other switch;

a first indicator means for indicating a first status of the fluid pressure at the location, the first indicating means being actuated in response to the fifth response from the first NOR gate;

a second NOR gate, the second NOR gate receiving the third and fourth responses from the other switch and receiving the fifth and sixth responses from the first NOR gate, the second NOR gate outputting a seventh response when receiving both the third response from the other switch and the sixth response from the first NOR gate, the second NOR gate outputting an eighth response when receiving either the fourth response from the other switch or the fifth response from the first NOR gate;

a second indicator means for indicating a second status of the pressure at the location, the second indicator means actuated in response to the seventh response from the second NOR gate;

a third indicator means for indicating a third status of the fluid pressure at the location, the third indicator means actuated in response to the fourth response of the other switch;

whereby pressure at the location outside both the first range and the second range results in actuation of neither the one nor the other switch, so that the one switch sends the first response while the other switch sends the third response, so that the first indicator means is actuated to show that the pressure at the location is outside both the first range and the second range;

whereby pressure at the location within the first range and outside the second range results in actuation of the one switch but not the other switch, so that the second response is given by the one switch and the third response is given by the other switch, so that the second indicator means is actuated to show that the pressure at the location is within the first range and outside the second range; and

whereby pressure at the location within the second range results in actuation of both the one switch and the other switch, so that the one switch gives the second response and the other switch gives the fourth response, so that the third indicator means is actuated to show that pressure at the location is within the second range.

5,005,007

ALARM DEVICE FOR MARINE TANK

Kuo-Lianq Weng, and Kuo-Liang Weng, both of Taichung Hsien, Taiwan, assignors to Yu Li Enterprise Co. Ltd., Taiwan

Filed May 10, 1990, Ser. No. 521,785
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—650 **1 Claim**



1. An alarm device adapted for use in a household marine tank with accessory equipment so as to indicate to an operator an electric leakage or a poor insulation condition, comprising a sensor means in serial connection to an alarm circuit controlled by a capacitor exchange type power circuit which has a receptacle for receiving plugs from the accessory equipment such as an illumination light, air pump, water temperature controller, and filter means, and said power circuit being connected to a power source; wherein the range of detection of electric leakage is from 0.1 to 1 mA, and an indication of a poor insulation condition is given at a measurement of substantially 3.3 mΩ; whenever either electric leakage occurs inc said range, or a poor insulation condition is detected, a buzzer means and an indicator light will be actuated to keep the operator alert; by disconnecting one by one the plugs of said accessory equipment to see if the light and buzzer means cease actuation, the operator can locate a trouble spot with certainty.

5,005,008

METHOD AND APPARATUS FOR PROVIDING THERMODYNAMIC PROTECTION OF A DRIVER CIRCUIT USED IN AN IN-CIRCUIT TESTER

Philip N. King, Fort Collins, Colo., assignor to Hewlett Packard Company, Palo Alto, Calif.

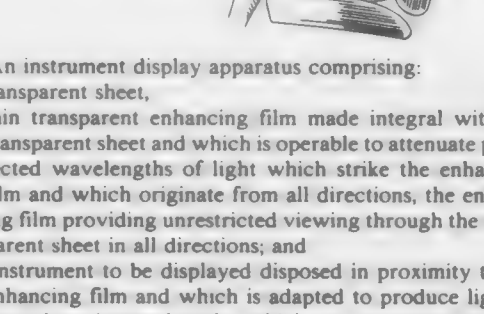
Continuation of Ser. No. 340,993, Apr. 20, 1989, abandoned. This application Jun. 26, 1990, Ser. No. 544,024
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—653 **7 Claims**

1. Apparatus for maximizing operating time while preventing damage to a transistor, or similar active device, contained in the output stage of a driver circuit in an overdrive/functional tester, comprising:

first sensing means for sensing the current in said output stage transistor, or similar active device;

second sensing means for sensing the voltage in said output stage transistor, or similar active device;

multiplication means for multiplying said sensed current with said sensed voltage and for generating a power signal representative of such multiplication;



thermodynamic model means, connected to receive said power signal, for compensating said power signal to account for the thermodynamic characteristics of said transistor, or similar active device, so that comparison of said power signal to a power reference value does not result in an indication of excessive dissipated power during heat build up in said transistor or an indication that said transistor is ready to dissipate power during heat decay; and

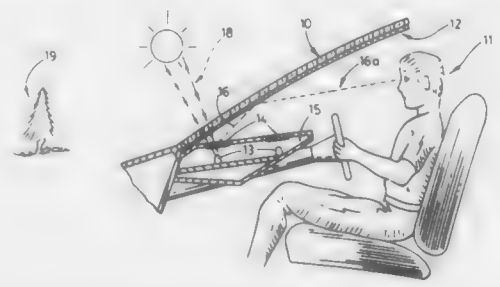
comparison means for comparing the compensated power signal with a power reference value and for generating an indication signal reflective of said comparison.

5,005,009

METHOD AND APPARATUS FOR MULTIPLE OBJECT VIEWING

John K. Roberts, Camp Pendleton, Calif., assignor to K. W. Muth Company, Inc., Sheboygan, Wis.

Continuation-in-part of Ser. No. 156,122, Feb. 16, 1988, abandoned. This application Feb. 15, 1989, Ser. No. 310,644
Int. Cl.[5] G02B *27/16*
U.S. Cl. 340—705 **23 Claims**



1. An instrument display apparatus comprising:

a transparent sheet,

a thin transparent enhancing film made integral with the transparent sheet and which is operable to attenuate preselected wavelengths of light which strike the enhancing film and which originate from all directions, the enhancing film providing unrestricted viewing through the transparent sheet in all directions; and

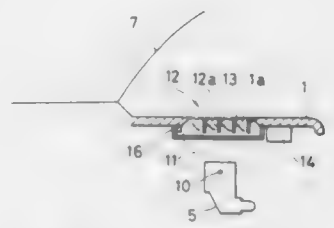
an instrument to be displayed disposed in proximity to the enhancing film and which is adapted to produce light in the selected wavelengths which are attenuated by the enhancing film whereby the image of the instrument appears in the enhancing film, and wherein the enhancing film further attenuates the selected wavelengths of light which originate from locations other than the instrument whereby the contrast of the image appearing in the enhancing film is improved relative to the background ambient lighting conditions.

5,005,010

HEAD-UP DISPLAY FOR MOTOR VEHICLES

Takashi Misaki, Susono, and Hitoshi Aoki, Numazu, both of Japan, assignors to Yazaki Corporation, Japan

Filed Mar. 18, 1988, Ser. No. 169,695
Claims priority, application Japan, Mar. 18, 1987, 62-038509
Int. Cl.[5] G09G *3/02*
U.S. Cl. 340—705 **11 Claims**



1. A head-up display for a motor vehicle having a dashboard with a top surface which is provided with an aperture, which comprises:

a transparent member provided within said aperture in said top surface of said dashboard;

means for projecting an image of visual information through said transparent member provided in said aperture, said projecting means being enclosed in said dashboard;

reflection means for producing the image of the visual information thereon; and

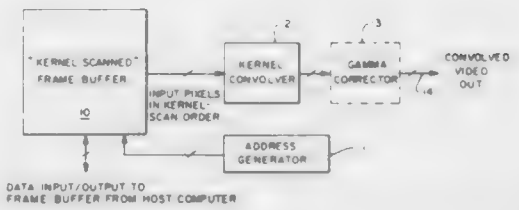
means for preventing reflection of light entering from the outside of said vehicle on said transparent member, said reflection preventing means being associated with said aperture and shiftable between a first position covering said transparent member by closing said aperture and a second position uncovering said transparent member by opening said aperture.

5,005,011

VERTICAL FILTERING APPARATUS FOR RASTER SCANNED DISPLAY

Stephen G. Perlman, Mountain View; Jerome M. Okun, Campbell; John H. Palevich, Sunnyvale, and James A. Lundblad, Santa Clara, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Dec. 23, 1988, Ser. No. 290,182
Int. Cl.[5] G09G *5/10, 1/14*
U.S. Cl. 340—728 **18 Claims**



1. In a raster-scanned video display for a computer where data for the display is stored in a frame buffer, and where the data is organized in the frame buffer by scan lines with data being stored for each pixel along each scan line, an improved method for generating filtered pixel data for a first display line, comprising:

(a) storing the pixel data in a frame buffer having a first and a second bank of video RAMs with pixel data for scan lines **2, 3, 6, 7, 10, 11** . . . being stored in said first bank and

pixel data for scan lines 0, 1, 4, 5, 8, 9 . . . being stored in said second bank;

(b) reading from said buffer the pixel data for a first pixel of the n, n+1, n+2 . . . n+N scan lines before reading from said buffer the pixel data for subsequent pixels of said n, n+1, n+2 . . . n+N scan lines,

(c) convolving the pixel data for said first pixel of said n, n+1, n+2 . . . n+N scan lines to provide said filtered pixel data for said first pixel of said first display line;

(d) repeating steps (b) and (c) for each subsequent pixel on said first display line.

5,005,012

METHOD OF ARRANGING DATA ON A RAM FOR DISPLAY

Kunio Kanda, Kokubunji, Japan, assignor to Fanuc Ltd, Minamitsuru, Japan

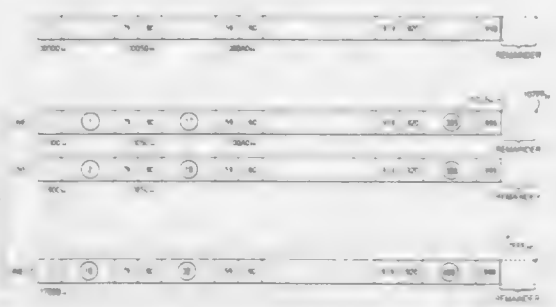
PCT No. PCT/JP87/00522, § 371 Date Apr. 15, 1988, § 102(e) Date Apr. 15, 1988, PCT Pub. No. WO88/01420, PCT Pub. Date Feb. 25, 1988

PCT Filed Jul. 16, 1987, Ser. No. 184,486

Claims priority, application Japan, Aug. 22, 1986, 61-196900

Int. Cl.[5] G09G *1/16*

U.S. Cl. 340—750 **7 Claims**



1. A method of data arrangement in a memory for a display in which character data and graphical data are overlappingly displayed in plural rows, each of the rows includes plural lines and the memory including addresses having high-order and low-order address bits, comprising the steps of:

(a) dividing the graphic data into blocks, each of said blocks corresponding to a respective one of the rows and dividing each of said blocks into sub-blocks, each of said sub-blocks corresponding to a respective one of the lines;

(b) arranging in the memory the character data in the order of the rows;

(c) arranging in the memory said blocks in the order of the rows and arranging said sub-blocks so that the addresses associated with a respective one of said sub-blocks within a respective block have the same low-order address bits as the low-order address bits of addresses associated with a corresponding row of character data; and

(d) performing an address transition from one sub-block to another sub-block of the same block by shifting the high-order address bits.

5,005,013

PAGER WITH A DISPLAY FUNCTION

Akihiro Tsukamoto, and Keiichi Kobayashi, both of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jul. 14, 1988, Ser. No. 219,348

Claims priority, application Japan, Jul. 16, 1987, 62-176047; May 12, 1988, 63-115319

Int. Cl.[5] G08B *5/22*

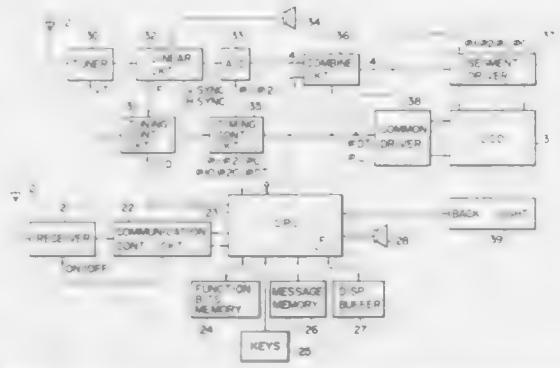
U.S. Cl. 340—825.44 **4 Claims**

1. A pager comprising:

radio receiving means for receiving and demodulating a modulation signal including an identification number and message data;

identification number memory means for storing a self identification number;

reception control means for discriminating whether the received identification number coincides with the identification number stored in said memory means, and for, if a coincidence is detected, reading the received message data;



message memory means for storing the message data read by said reception control means;

means for designating a display color; and

color display means for displaying the message data stored in said message means as a color designated by said display color designating means;

wherein said designating means comprises means for designating said display color in accordance with the amount of time which has elapsed since the reception of the message data.

5,005,014

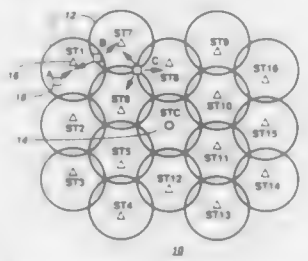
SYSTEM AND METHOD FOR OPTIMALLY TRANSMITTING ACKNOWLEDGE BACK RESPONSES

Leon Jasinski, Ft. Lauderdale, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 22, 1989, Ser. No. 354,568

Int. Cl.[4] G08B *5/22*

U.S. Cl. 340—825.44 **15 Claims**



1. A method for providing system acknowledge back responses from a plurality of remote stations to a central station, the system acknowledge back responses including a predetermined station identification number assigned to each remote station and any individual acknowledge back responses received by each remote station from a plurality of portable communication receivers operating in the system, the station identification numbers being assigned to each remote station beginning with a first remote station number and ending with a last remote station number in a predetermined sequential order, said method comprising the steps of:

generating a start signal and transmitting the same from the central station to initiate the transmission of system acknowledge back responses from the plurality of remote stations;

transmitting, from the first remote station, the system acknowledge back response in response to the first remote station receiving the start signal;

transmitting, from each subsequent remote station in the predetermined sequential order, the system acknowledge back response in response to the subsequent remote station receiving the predetermined station identification number of the previous remote station;

monitoring the progression of transmitted system acknowledge back responses at a selected station from the remote station in the predetermined sequential order; and

generating and transmitting from the selected station, a request to acknowledge which includes the predetermined station identification number of the previous remote station in response to subsequent remote station failing to respond in the predetermined sequential order within a predetermined time interval.

5,005,015

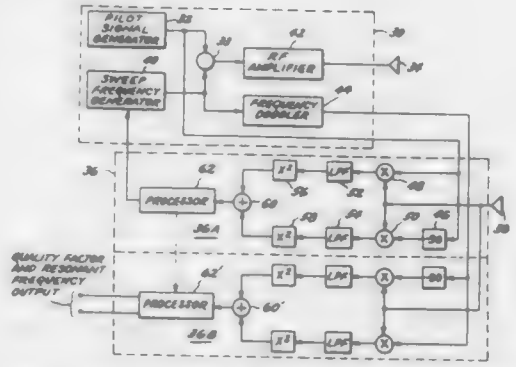
ICE DETECTION SYSTEM

Rudolph A. Dehn, Schenectady, and Andrew J. Macdonald, Ballston Spa, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 7, 1989, Ser. No. 390,125

Int. Cl.[5] G08B *21/00*; B64D *15/00*

U.S. Cl. 340—962 **13 Claims**



1. An ice detection system for detecting the state and thickness of water overlying a surface, comprising:

a plurality of resonant circuits spaced at predetermined locations about an electrically conductive surface, each of said circuits consisting entirely of a respective cutout in said surface and having a preselected resonant frequency which varies in response to thickness of overlying ice and liquid water;

variable frequency generating means for generating a transmission signal which can be varied about the resonant frequency of each of said circuits to cause each of said circuits to generate a resonant frequency signal in response to said transmission signal;

receiver means tunable to the resonant frequency of each of said circuits, said receiver means including means for identifying the resonant frequency of each of said circuits and for determining the quality factor of each of said circuits from the resonant frequency signals produced by the respective circuits; and

processing means responsive to the identified resonant frequency and determined quality factor for each of said circuits, for determining the state and thickness of water overlying each of said circuits.

5,005,016

HYBRID PHASE-LOCKED LOOP

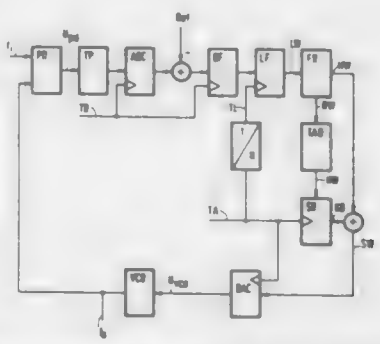
Konrad Schmidt, Ellingen, and Ralf Kramer, Nuremburg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 27, 1990, Ser. No. 500,447

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1989, 3910703

Int. Cl.[5] H03M *1/00*

U.S. Cl. 341—142 **20 Claims**



1. Phase-locked loop comprising a phase detector, an analog-to-digital converter, a digital loop filter, a digital-to-analog converter and a voltage-controlled oscillator, characterized in that a fractionizer is inserted after the digital loop filter that is operating at a first clock, which fractionizer produces a main value and a residual value and in that means are provided for deriving a correction value from the residual value and for applying the sum of the main value and a correction bit derived from the correction value is applied to the digital-to-analog converter that is operating at a second clock.

5,005,017

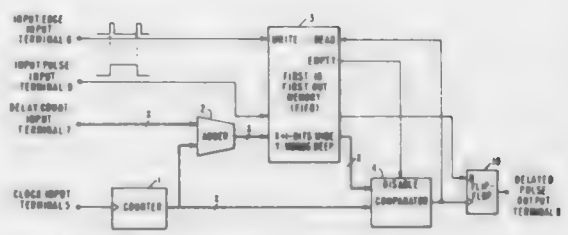
MULTIPLE PULSE DELAY PROCESSOR

Gary J. Sikora, Columbia, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 13, 1990, Ser. No. 508,455

Int. Cl.[5] G01S *7/40*

U.S. Cl. 342—172 **3 Claims**



1. An apparatus for delaying a series of input pulses received on an input pulse input terminal and for outputting delayed pulses onto a delayed pulse output terminal, the apparatus allowing multiple input pulses to be simultaneously delayed, comprising:

counting means for outputting a binary number indicative of current time, said counting means having an input, and an output, said input being connected to a clock input terminal;

adding means for adding binary numbers, said adding means having a first input, a second input, and an output, said first input being connected to said output of said counting means, said second input being connected to a delay count input terminal, said adding means providing at its output a binary number which represents the sum of its first and second inputs;

first-in-first-out storing means for storing binary numbers,

said first-in-first-out storing means having a write input, a data word input, a data bit input, a read input, a data word output, a data bit output, and an empty output, said write input being connected to an input edge input terminal for pushing values on said data word input onto said first-in-first-out storing means upon the occurrence of each input edge of each individual input pulse of said series of input pulses, said data word input being connected to said output of said adding means, said data bit input being connected to the input pulse input terminal so that the level to which the input pulse went following each input edge is stored in the first-in-first-out storing means, said read input causing said first-in-first-out storing means to be popped such that the next oldest stored binary numbers of said first-in-first-out storing means is outputted on said data word output and said data bit output;

comparing means for outputting a delayed clock edge when two binary numbers are equal to each other, said comparing means having a first input, a second input, a disable input, and an output, said first input being connected to said output of said first-in-first-out storing means, said second input connected to said output of said counting means, said disable input being connected to said empty output of said first-in-first-out storing means, said output being connected to said read input of said first-in-first-out storing means, said comparing means outputting said delayed clock edge when said output of said counting means equals said data word output of said first-in-first-out storing means, said comparing means outputting each delayed clock edge such that the delay time from the input edge to the corresponding delayed clock edge approximately equals the amount of time required for said counting means to count the number of clock periods on said delay count input terminal when said input edge occurred; and

clocked storage means for changing the level of the signal on the delayed pulse output terminal upon the occurrence of a delayed clock edge, said clocked storage means having a data input, a clock input, and a data output, said clock input being connected to said output of said comparing means, said data input being connected to said data bit output of said first-in-first-out storing means, said data output being connected to the delayed pulse output terminal.

5,005,018

(U) MODULATOR TO PROVIDE A CONTINUOUS STEPPED FREQUENCY SIGNAL FORMAT

Glenn A. Walters, Escondido, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, DC

Filed Oct. 6, 1982, Ser. No. 440,392
Int. Cl.[5] G01S *13/00*; H03C *3/12*
U.S. Cl. 342—203 **2 Claims**



1. An apparatus for eliminating ringing between an input terminal and an output terminal in a stepped frequency format comprising:

a harmonic generator coupled to the input terminal;

a first resonant circuit coupled to the input terminal to receive at least a first and a second frequency from the harmonic generator for selectively resonating at the first frequency and the second frequency, the first resonant circuit having an electric signal influenced variable reactance impedance coupled in parallel with a fixed reactance impedance;

a second resonant circuit coupled to the first resonant circuit for selectively resonating at the second frequency and the first frequency and having an output connected to the output terminal, the second resonant circuit having an electric signal influenced variable reactance impedance coupled in parallel with a fixed reactance impedance;

means for providing an electric signal source at at least two levels;

a switch coupled to the electric signal influenced variable reactance impedance of the first and second resonant circuits and the electric signal providing means for selectively switching between the two levels thereby assuring the alternate selective resonance at the first frequency simultaneously by the first and second resonant circuits and the second frequency simultaneously by the first and second resonant circuits; and

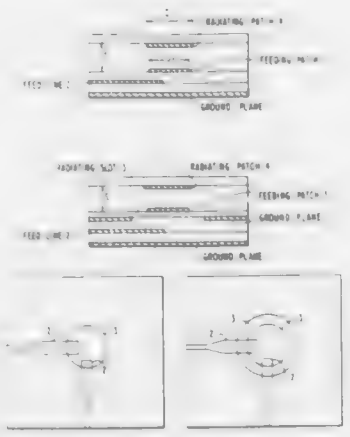
a pair of radio frequency chokes each coupling a separate resonant circuit to the electric signal providing means and switch, the electric signal providing means is a potential source and the electric signal influenced variable reactance impedance is a varactor.

5,005,019

ELECTROMAGNETICALLY COUPLED PRINTED-CIRCUIT ANTENNAS HAVING PATCHES OR SLOTS CAPACITIVELY COUPLED TO FEEDLINES

Amir I. Zaghloul, Bethesda, and Robert M. Sorbello, Potomac, both of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Nov. 13, 1986, Ser. No. 930,187
Int. Cl.[5] H01Q *1/00*
U.S. Cl. 343—700 MS **29 Claims**



10. A microstrip antenna, comprising:

a plurality of feedlines;

a plurality of feeding elements, each coupled in a contactless manner to at least a respective one of said plurality of feedlines, said feeding elements being impedance matched with said feedlines; and

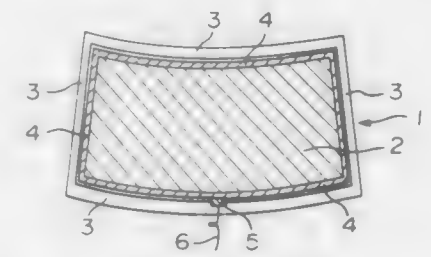
a plurality of radiating elements, each coupled in a contactless manner to a respective one of said plurality of feeding elements, wherein said feedlines are capacitively coupled to said feeding elements and said feeding elements are capacitively coupled to said radiating elements.

5,005,020

TRANSPARENT GLASS ANTENNA FOR AN AUTOMOBILE

Masanobu Ogawa, and Shinya Shibata, both of Aikawa, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 145,102, Jan. 19, 1988, abandoned. This application Jun. 25, 1990, Ser. No. 542,659
Claims priority, application Japan, Jan. 20, 1987, 62-5508[U]; May 18, 1987, 62-72860[U]
Int. Cl.[5] H01Q *1/32*
U.S. Cl. 343—713 **3 Claims**



1. A transparent antenna for an automobile, comprising:

a window glass panel;

an infrared reflecting transparent conductive film integrally formed with said window glass panel;

said transparent conductive film covering said window glass panel except for a blank region of glass having a predetermined width of at least 10 mm around the periphery of said window glass panel, the transparent conductive film having a surface resistance ranging from 4Ω/□ to 500Ω/□;

a busbar formed on said window glass panel around said transparent conductive film and connected to said transparent conductive film at substantially the entire periphery of said transparent conductive film; and

a current feeding terminal connected to said busbar;

wherein said window glass panel is a laminated glass panel formed by laminating at least two glass plates between which an interlayer film is placed, and said transparent conductive film is provided on the inner surface of one of said glass plates facing the outside of an automobile so as to be in contact with said interlayer film.

5,005,021

ANTENNA UNIT FOR VEHICLE

Koichiro Kato; Hiroshige Fukuhara; Hiroyuki Kamishima, and Hitoshi Tsukahara, all of Kanagawa, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Aug. 4, 1989, Ser. No. 389,448
Claims priority, application Japan, Aug. 8, 1988, 63-196146
Int. Cl.[5] H01Q *1/32*
U.S. Cl. 343—717 **17 Claims**

1. An antenna unit for a vehicle comprising:

an antenna element member;

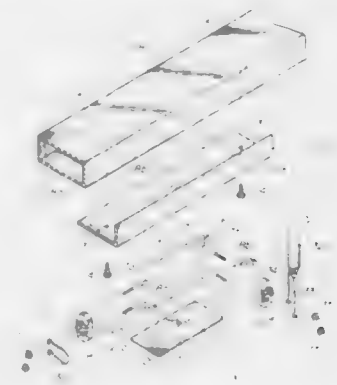
a grounding plate located on the underside of the vehicle;

a first supporting member fixed on said antenna element, said first supporting member having first and second end portions;

a second supporting member fixed on said grounding plate, said second supporting member having first and second end portions;

resilient connectors, made of insulating materials, non-conductively connecting the first and second end portions of said first supporting member to the first and second corresponding end portions of said second supporting member respectively so as to suspend said antenna element member from said grounding plate, respective first end portions of said first and second supporting members being provided as terminals for feed; and

a wire, having a predetermined length, electrically connecting respective second end portions of said first and second supporting members to adjust the impedance of the antenna unit so as to tune it to appropriate operation frequencies.

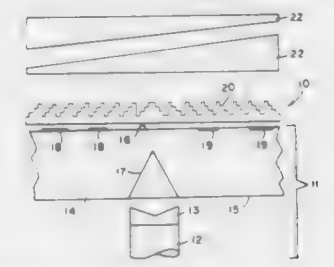


5,005,022

MICROWAVE ANTENNA

Leonard L. Blaisdell, Medway, Mass., assignor to GTE Government Systems Corporation, Waltham, Mass.

Filed Dec. 29, 1989, Ser. No. 459,004
Int. Cl.[5] H01Q *019/060, 013/000*
U.S. Cl. 343—753 **14 Claims**



1. An antenna comprising:

a sheet of dielectric material having a first surface and a parallel second surface;

a tapered recess in said dielectric material converging from said first surface towards said second surface and having an axis orthogonal to said second surface;

said dielectric material having a critical angle of reflection with respect to said axis;

a RF horn arranged nearer said first surface and having an axis in common with the axis of said tapered recess;

a RF lens interposed between said horn and said tapered recess; said RF horn RF lens, tapered recess, and dielectric material having RF optical properties such that all rays traced from said horn through said lens and dielectric material to said second surface have an angle with respect to said normal of said second surface greater than said critical angle and RF energy on said second surface from the center of said horn is in phase with RF energy on said second surface from the edge of said horn for launching a surface wave on said second surface; and

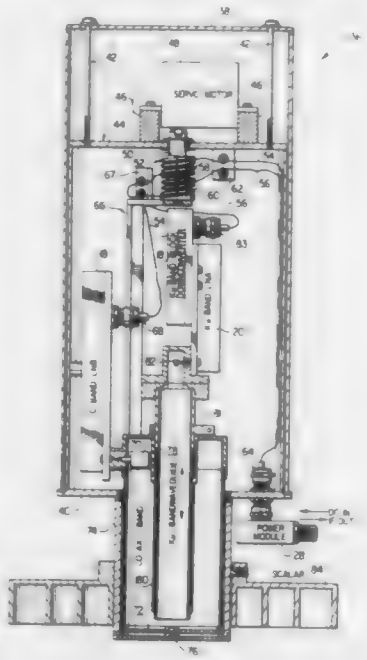
perturbing means for causing said surface wave on said second surface to leak in order to produce a radiating aperture with a desired illumination characteristic.

5,005,023

DUAL BAND INTEGRATED LNB FEEDHORN SYSTEM

James M. Harris, Terrell, Tex., assignor to Gardiner Communications Corporation, Garland, Tex.

Filed Dec. 1, 1988, Ser. No. 278,589
Int. Cl.[5] H01Q 19/00, 13/00; H01P 1/16, 5/12
U.S. Cl. 343—756 5 Claims



1. A multi-band integrated LNB feedhorn system comprising: a housing having a body portion and first and second ends, a first support means attached to the housing adjacent to the first end for forming a drive motor portion of the housing, a servomotor mounted on the first support means, a second support means contained in the body portion of the housing and connected to the servomotor for rotation, a plurality of power modules exteriorly attached to the housing, a plurality of low noise block means attached to the second support means for rotation therewith and electrically connected to the plurality of power modules, a cup-shaped member attached to the second end of the housing for forming with a portion of the housing a compartment for a plurality of waveguide means including a plurality of energy output coupling means electrically connected to the plurality of low noise block means, and first and second waveguide means attached to the second support means for rotation therewith, a focusing means, the first waveguide means connected to the focusing means for focusing modulated RF signals at a first band received from an antenna, a defocusing means, the second waveguide means connected to the defocusing means for defocusing modulated RF signals at a second band received from the antenna,

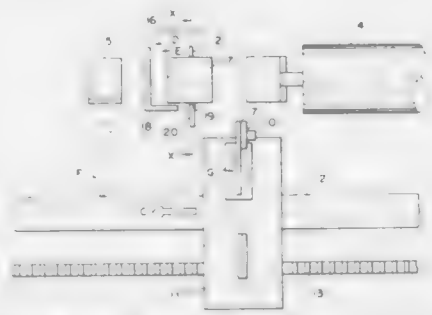
whereby with the band of the first waveguide means being focused and the band of the second waveguide means being defocused and the second support means rotated by the servomotor to align the first and second waveguide means and plurality of low noise block means with the polarization of incoming modulated RF energy, the first and second waveguide means and plurality of low noise block means combine to perform the polarizer function thereby alleviating the need for additional polarizing elements and their power loss to provide a power savings sufficient for a wider than typical half power beamwidth for increasing the aiming accuracy while compensating for the defocusing of the band of the second waveguide means without substantially affecting its gain.

5,005,024

INK JET RECORDING APPARATUS WHICH SUPPLIES REPELLENT AGENT TO LIQUID DISCHARGE PORT SURFACE AND METHOD THEREOF

Hiroto Takahashi, Atsugi; Seiichiro Karita, Yokohama, and Koichi Sato, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 174,815, Mar. 29, 1988, abandoned. This application Mar. 2, 1990, Ser. No. 489,831
Claims priority, application Japan, Mar. 31, 1987, 62-076352; Mar. 14, 1988, 63-0760102; Mar. 14, 1988, 63-0760105
Int. Cl.[5] B41J 2/165, 2/05
U.S. Cl. 346—1.1 53 Claims



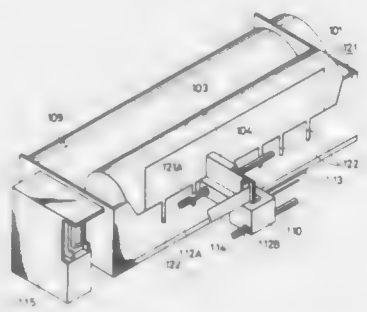
1. A liquid injection recording apparatus adapted to discharge recording liquid from discharge ports provided in a discharge port surface of a recording head to make flying liquid droplets to thereby accomplish recording, comprising a recording head having a discharge port surface with discharge ports provided therein and liquid-repellent process means capable of applying a liquid-repellent agent to said discharge port surface for repelling the recording liquid adhering to said discharge port surface provided at a position capable of being opposed to said discharge port surface, said liquid injection recording apparatus further comprising reciprocating means for reciprocally moving said recording head a plurality of times after said liquid-repellent agent is applied to said discharge port surface and before said recording apparatus accomplishes further recording.

5,005,025

PRINTER HAVING MEANS FOR HEATING A RECORDING SHEET AND FIXING INK THEREON

Akira Miyakawa, Tanashi, and Hiroyuki Inoue, Chiba, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 202,568, Jun. 6, 1988, abandoned. This application Aug. 13, 1990, Ser. No. 566,311
Claims priority, application Japan, Jun. 12, 1987, 62-146376; Jul. 7, 1987, 62-167827
Int. Cl.[5] B41V 2/01
U.S. Cl. 346—25 13 Claims



1. A printer comprising:

ink jet recording means for recording on a recording sheet;

means for providing a conveyance route for conveying the recording sheet through a recording area where said recording means is opposed to the recording sheet and records on the recording sheet, said means comprising a heating member for contacting the recording sheet to heat the recording sheet; and

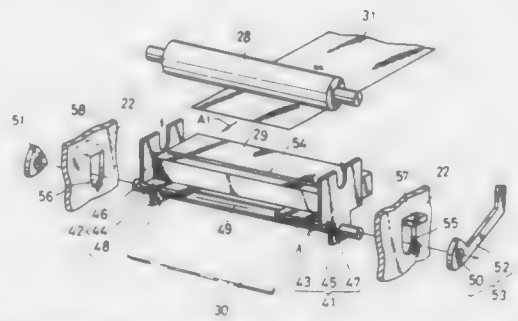
a press plate, disposed upstream of the recording area with respect to the conveying route, for pressing the recording sheet to said heating member, said press plate having a portion opposed to said heating member and a plurality of spaced apart slots spaced apart from each other in a direction perpendicular to a conveying direction of the recording sheet.

5,005,026

THERMAL HEAD SEPARATING MECHANISMS

Katsuyuki Sakai, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 13, 1990, Ser. No. 493,002
Claims priority, application Japan, Mar. 17, 1989, 1-66965
Int. Cl.[5] G01D 15/10
U.S. Cl. 346—76 PH 19 Claims



1. A thermal recording apparatus for recording information onto thermosensitive recording paper, comprising:

a body;

a roller, including a shaft, rotatably connected to said body, for transporting the thermosensitive recording paper in a first direction;

a thermal head within said body, capable of moving in a second direction perpendicular to said first direction and including a plurality of heating resistance elements;

said thermosensitive recording paper being transported between said plurality of heating resistance elements and said roller during said recording;

pushing means for biasing said thermal head to push said thermosensitive recording paper into contact with said roller during said recording;

a cam, operatively connected to said thermal head, capable of angularly displacing said thermal head, said cam including a cam face;

contact members connected to said body, contacting said face at a contact point during the angular displacing of said cam and displacing said thermal head a predetermined distance from said thermosensitive recording paper and said roller, opposing the biasing force of said pushing means,

said plurality of heating resistance elements of said thermal head being positioned so as to be linearly arranged along a line including the shaft of said roller and the contact point.

5,005,027

THERMAL RECORDER

Hisaichi Oshima, Minoo, and Masami Yamashita, Takarazuka, both of Japan, assignors to Furuno Electric Co., Ltd., Hyogo, Japan

Continuation of Ser. No. 128,888, Dec. 4, 1987, abandoned. This application Mar. 30, 1990, Ser. No. 503,096
Claims priority, application Japan, Dec. 5, 1986, 62-291316
Int. Cl.[5] G01D 15/10
U.S. Cl. 346—76 PH 9 Claims



1. A thermal recorder for recording information on heat-sensitive paper comprising:

means for advancing heat-sensitive paper lengthwise through said recorder;

a linear array of heat-producing elements advanced across the paper in a direction perpendicular to the paper advancing direction;

reception means for receiving information signals, each of an amplitude value, generated for a plurality of sets of time intervals, each set being a predetermined number of time intervals and each time interval being of a predetermined length;

a plurality of storing means, each for storing first signals corresponding to the amplitude values of the information signals received during said plurality of sets of time intervals;

first switching means, alternately connecting each of said plurality of storing means with said reception means, for switching said connection of said reception means to a different one of said plurality of storing means after each said set of a predetermined number of time intervals;

digital to pulse-width conversion means for converting said first signals supplied from one of said plurality of storing means, into second signals of a predetermined pulse width in accordance with a predetermined relationship between the amplitude values of the received information signals and the pulse width of the record signals;

second switching means, alternately connecting each of said plurality of storing means with said digital to pulse-width conversion means, for switching said connection of said digital to pulse-width conversion means to a different one of said plurality of storing means after each said set of a predetermined number of time intervals, such that said reception means and said digital to pulse-width conversion means are continuously connected to a different of said plurality of storing means;

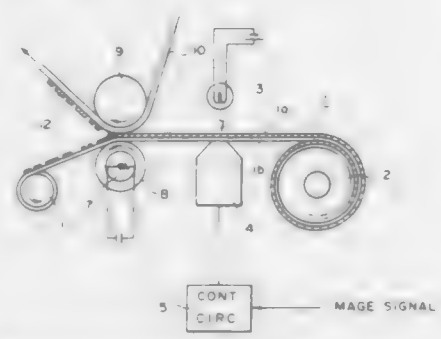
coupling means, connected to said digital to pulse-width conversion means, for coupling the resultant second signals of a predetermined pulse width to heat-producing elements of a terminal recording means;

said thermal recording means recording the received information signals, each of an amplitude value, with different degrees of darkness substantially in direct proportion to the amplitude values of the received information signals in response to said pulse-widths of said second signals; and

drive means for alternately moving the array of heat-producing elements during said recording by said thermal recording means and for then moving said heat sensitive

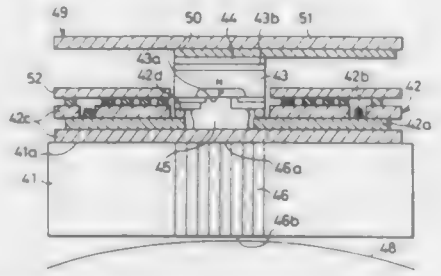
paper upon completion of said recording by said recording means.

5,005,028
IMAGE FORMING METHOD AND TRANSFER RECORDING MEDIUM THEREFOR
Yasuyuki Tamura, Yokohama, and Shuzo Kaneko, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 869,689, Jun. 2, 1986. This application Sep. 8, 1988, Ser. No. 242,022
Claims priority, application Japan, Jun. 3, 1985, 60-120080; Jun. 3, 1985, 60-120081; Jun. 17, 1985, 60-131411; Jun. 20, 1985, 60-134831; Jul. 9, 1985, 60-150597; Sep. 10, 1985, 60-199926; Nov. 11, 1985, 60-250884
Int. Cl.[5] G01D *15/10*
U.S. Cl. 346—76 R 19 Claims



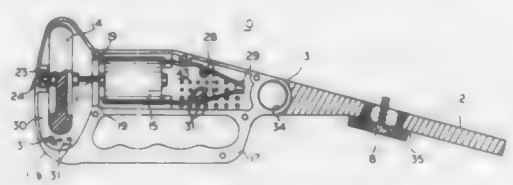
1. An image forming apparatus for a method wherein a transferable portion is formed in a transfer recording layer of a transfer recording medium, transported in a predetermined direction and is then transferred to a transfer-receiving medium to form an image thereon, said apparatus comprising:
transferable portion-forming means for imparting heat and light energies so that at least one of the heat and light energies corresponds to an image signal, thereby forming the transferable portion, and
transfer means for transferring the transferable portion formed in said transfer recording layer, said transfer means being disposed downstream of the transfer portion-forming means with respect to the transporting direction of the transfer recording medium.

5,005,029
TRANSMITTING RADIATION THROUGH A FLEXIBLE PRINTED CIRCUIT TO AN OPTICAL FIBER BUNDLE
Masashi Fuse, Morioka, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan
Division of Ser. No. 228,886, Aug. 4, 1988, Pat. No. 4,929,965. This application Apr. 13, 1990, Ser. No. 509,109
Claims priority, application Japan, Sep. 2, 1987, 62-220007; Sep. 2, 1987, 62-220008; Nov. 7, 1987, 62-281343; Nov. 7, 1987, 62-281344; Nov. 7, 1987, 62-281342; Nov. 7, 1987, 62-281345
Int. Cl.[5] G01D *9/42*; G02B *6/08*; H01L *33/00*
U.S. Cl. 346—107 R 2 Claims



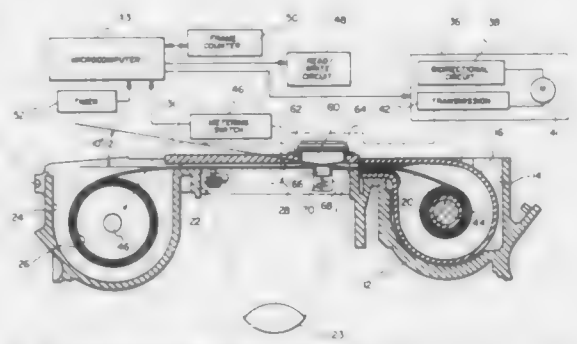
1. An optical writing head comprising:
a light emitting means emitting radiation in a first direction;
at least one flexible printed circuit having formed thereon at least one pattern of electrode, said pattern facing a second direction opposite to said first direction;
a fiber plate supporting said at least one flexible printed circuit;
a plurality of optical fibers buried in said fiber plate such that one end of each optical fiber is positioned to receive such radiation, said radiation arriving from said light emitting means to said end of said optical fiber through the material of said at least one flexible printed circuit.

5,005,030
HAND HELD CAMERA STEADYING DEVICE
David L. Wells, 3881 Constitution Way, Boise, Id. 83706
Filed May 29, 1990, Ser. No. 529,322
Int. Cl.[5] G03B *17/00*
U.S. Cl. 354—82 7 Claims



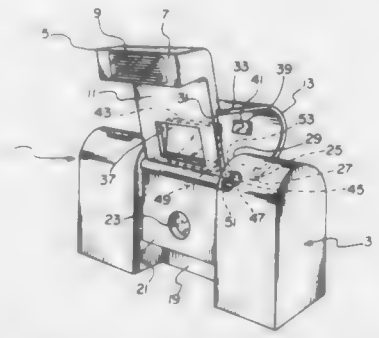
1. A camera steadying device which comprises:
a housing;
attachment means for attaching said housing to a camera; and
inertia means housed by said housing for creating a moment of inertia to resist sudden movements of an attached camera.

5,005,031
CAMERA APPARATUS FOR MAGNETICALLY RECORDING ON FILM
Richard R. Kelbe, Fishers, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation of Ser. No. 254,914, Oct. 7, 1988, abandoned. This application Jun. 25, 1990, Ser. No. 541,434
Int. Cl.[5] G03B *17/24*
U.S. Cl. 354—106 6 Claims



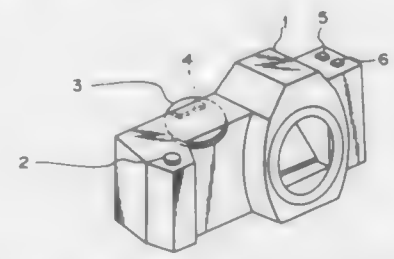
1. A photographic still camera for transporting a photographic film through an exposure position to expose frames of the film, the film having a magnetic surface for magnetically recording information on the film, said camera comprising:
a camera body having an exposure opening;
a film platen supported to engage the film and hold it in a exposure plane adjacent said opening; and
a magnetic head mounted on said platen to engage one side of the film, said magnetic head being inclined transversely of the film to approximate the film inclination resulting from film curl.

5,005,032
OPTICAL FINDER FOR CAMERA WITH FLIP-UP FLASH UNIT
William L. Burnham, Leroy, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 12, 1990, Ser. No. 479,006
Int. Cl.[5] G03B *13/06, 15/03*
U.S. Cl. 354—149.11 7 Claims



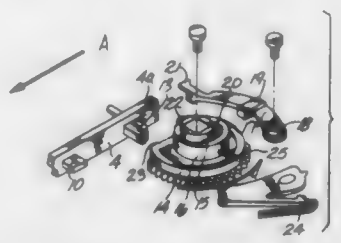
1. A photographic camera comprising (a) a camera housing and (b) a flip-up unit including a head part having a flash emission window and a supporting part for said head part connected to said camera housing to permit movement of said flash unit to a folded storage position in which the head part and said supporting part cover respective portions of the camera housing and to a non-folded operative position in which the head part and the supporting part are elevated from the camera housing with said flash emission window substantially facing a subject to be photographed, is characterized in that:
said supporting part of said flash unit has a viewfinder opening for viewing through said viewfinder opening a subject to be photographed when the flash unit is in its non-folded position;
a finder objective lens and a finder eyelens are supported for movement relative to said camera housing to individual viewing positions in which said finder lenses are optically aligned with and spaced behind said viewfiner opening of said supporting part when said flash unit is in its non-folded position, to permit a subject to be photographed to be viewed through the finder lenses in addition to through the viewfinder opening; and
motion-transmitting means connects said supporting part and said finder lenses for moving the finder lenses to their viewing positions responsive to movement of said flash unit to its non-folded position.

5,005,033
PHOTOGRAPHING DATA SETTING APPARATUS FOR CAMERA
Tetsuo Miyasaka, Machida, Japan, assignor to Olympus Optical Company, Ltd., Tokyo, Japan
Filed Jul. 27, 1989, Ser. No. 386,580
Claims priority, application Japan, Aug. 1, 1988, 63-192555
Int. Cl.[5] G03B *17/00*
U.S. Cl. 354—289.1 25 Claims



1. A photographing data setting apparatus for a camera capable of setting a plurality of types of photographing data upon rotation of a single rotary member, comprising:
a rotary operation member exposed from a plurality of portions of said camera so as to be operable at each of said plurality of exposed portions;
detection means for detecting that said rotary operation member is operated at a predetermined one of said exposed portions;
pulse signal generation means for generating a pulse signal upon rotation of said rotary operation member; and
a photographing data setting circuit for setting predetermined photographing data according to a detection output from said detection means on the basis of a pulse output from said pulse signal generation means, thereby setting and storing the plurality of types of photographing data.

5,005,034
CAMERA MECHANISM
Yet Chan, Kowloon, Hong Kong, assignor to Achiever Industries, Ltd., Mongkok, Hong Kong
Filed Apr. 11, 1990, Ser. No. 508,118
Claims priority, application United Kingdom, Apr. 14, 1989, 8908514
Int. Cl.[5] G03B *17/42*
U.S. Cl. 354—204 5 Claims

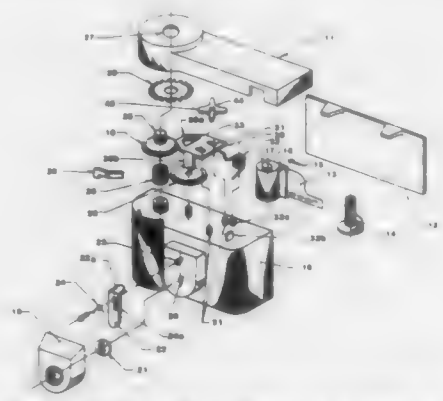


1. A camera mechanism in which a shutter plate operating member is slidably mounted for movement between a cocked position and a rest position and biassed by biassing means into said rest position, and in which actuator means is provided for effecting said sliding movement of said shutter plate operating member, said actuator means being adapted to be connected to a film wind-on device of a camera, wherein said actuator means comprises a cam mounted for rotation in said mechanism and an abutment surface on said shutter plate operating member for cooperating with said cam, so that, in use, rotation of the cam causes said shutter plate operating member to move from its rest position to its cocked position against the urging of said biassing means, said cam being provided with force-varying means whereby greater force is needed to rotate the cam over an initial part of the cocking stroke of the shutter plate operating member than is needed for a final part of said cocking stroke.

5,005,035
CAMERA OPERATING MECHANISM
Daniel M. Pagano, Henriette, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 20, 1989, Ser. No. 439,217
Int. Cl.[5] G03B *17/42, 1/62, 1/00, 17/36*
U.S. Cl. 354—206 13 Claims

1. Operating mechanism for a camera having a shutter, actuation of which makes an exposure, comprising:
first gear wheel means mounted for axial and rotary movement, and carrying a shutter release button normally projecting outside the camera so as to be accessible to the camera user;
means biasing said first gear wheel means to urge said button to said projecting position;
a slide member carrying shutter actuating means and biased

for sliding, shutter actuating movement from a cocked position, an edge of said slide member being in contact with the periphery of said first gear wheel means when in cocked position, said slide member thereby being blocked against shutter actuating movement; and



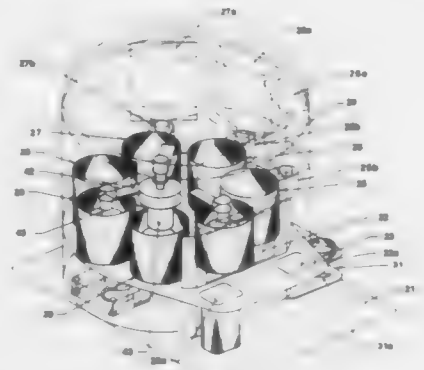
said first gear means being movable out of contact with said slide member by depression of said shutter release button, thereby releasing said slide member for shutter actuating movement.

5,005,036

PROCESSING APPARATUS

William B. Wilson, Hamlin; Matthew DiPietro, Webster; Richard K. Neace, Hilton; Vincent B. Dethier, Rochester; Raymond G. Hauss, Rochester, and James R. Louk, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 22, 1989, Ser. No. 397,147
Int. Cl.[5] G03B *3/08*
U.S. Cl. 354—322 17 Claims



1. Mechanism for effecting movement of film holder means in processing apparatus for photographic film said apparatus being of the type in which said film holder means is sequentially lowered into and raised out of a plurality of circularly arranged processing stations, comprising:

a rotatable upright column having a spiral groove and located centrally of said stations;

annular hub means slideably mounted on said column and having radially extending means for carrying said film holder means;

said hub means having pin means engaging said spiral groove to cause upward movement of said hub means along said column upon rotation of said column in a first direction and downward movement upon rotation of said column in a second direction, and

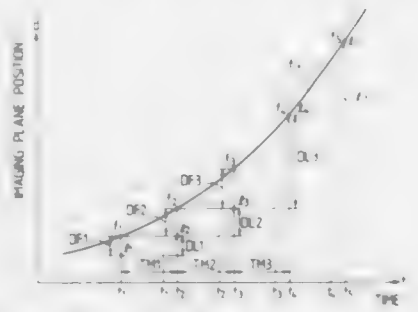
means securing said hub means against rotation with said column except when said hub means is at an upper portion of said column.

5,005,037

AUTO FOCUS ADJUSTING DEVICE

Akira Akashi; Terutake Kadohara, both of Yokohama; Ichiro Ohnuki, Kawasaki, and Masaki Higashihara, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 272,475, Nov. 17, 1988, abandoned.
This application May 29, 1990, Ser. No. 528,908
Claims priority, application Japan, Nov. 20, 1987, 62-293576
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—400 5 Claims



1. Apparatus for use with an auto focus adjusting device which is provided with a focus state detecting circuit for detecting a focusing state of an imaging optical system and a driving circuit for driving the imaging optical system in conformity with a result of the detection by said detecting circuit, comprising:

(a) a calculation circuit for performing a first calculation in which imaging plane positions at a plurality of points of time in the past and at the present time are determined on the basis of a signal representing a focusing state in the past detected by said focus state detecting circuit and a signal representing a focusing state at the latest time to determine coefficients of a predetermined higher order function, and for performing a second calculation in which an imaging plane position at a time after a predetermined time has passed is determined on the basis of the higher order function;

(b) a regulation circuit for regulating the signal representing the focusing state detected by said focus detecting circuit, and for causing the operation of said calculation circuit to be performed on the basis of said regulated signal; and

(c) a control circuit for transmitting the signal representing the imaging plane position obtained by said calculation circuit to said driving circuit for driving said imaging optical system

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5,005,038

FOCAL LENGTH CHANGEABLE CAMERA

Yukio Ogawa, Kanagawa; Michio Hirohata; Takanori Kodaira, both of Tokyo, and Makoto Miyawaki, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

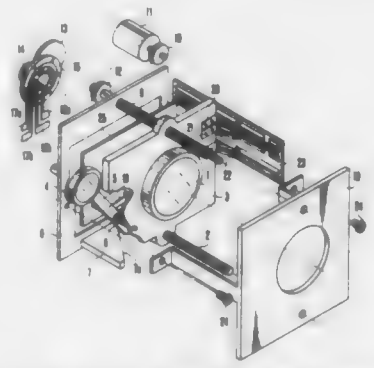
Continuation of Ser. No. 504,053, Apr. 2, 1990, abandoned, which is a continuation of Ser. No. 406,189, Sep. 12, 1989, abandoned, which is a continuation of Ser. No. 325,036, Mar. 14, 1989, abandoned, which is a continuation of Ser. No. 145,654, Jan. 13, 1988, abandoned, which is a continuation of Ser. No. 918,619, Oct. 10, 1986, abandoned, which is a continuation of Ser. No. 658,694, Oct. 9, 1984, abandoned. This application Jun. 27, 1990, Ser. No. 545,123
Claims priority, application Japan, Oct. 11, 1983, 58-188341
Int. Cl.[5] G03B *5/00, 13/32*
U.S. Cl. 354—400 79 Claims

1. A driving device for varying a focal length of photographic optical means of a camera, comprising:

(A) movable optical means for varying the focal length of the photographic optical means and for focusing the photographic optical means, said movable optical means being movable between a first position and a second position and arranged for performing the variation of the focal length

and the focusing while moving between the first position and the second position;

(B) single electric driving means for driving said movable optical means; and



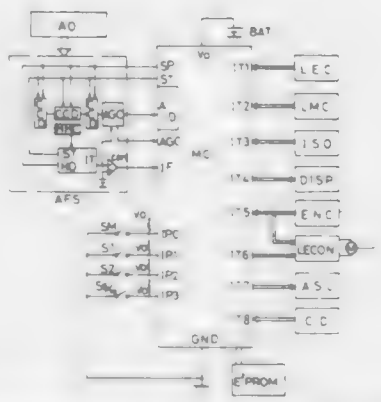
(C) control means for controlling said electric driving means, said control means including switch means for actuating said electric driving means so as to restore said movable optical means to a predetermined position after photography is performed.

5,005,039

AUTOFOCUSING CAMERA

Masataka Hamada; Tokuji Ishida, and Kenji Ishibashi, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 16, 1989, Ser. No. 352,190
Claims priority, application Japan, May 17, 1988, 63-119690
Int. Cl.[5] G03B *13/00*
U.S. Cl. 354—402 12 Claims



1. A camera having an autofocusing mechanism, comprising:

focus detecting means for repeatedly detecting a focusing state of an objective lens with respect to a photographic object and outputting a focus adjustment signal;

object detecting means for detecting movement of the object to be photographed in accordance with a plurality of said focus adjustment signals;

image magnification detecting means for detecting an image magnification rate;

a manually operable member;

release means for starting a shutter release operation in response to manual operation of said operable member and carrying out a subsequent photographic operation;

lens drive means capable of driving said objective lens during the shutter release operation when said object detecting means detects the movement of the photographic object; and

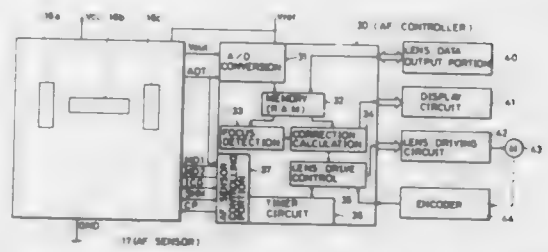
prohibiting means for prohibiting said lens drive means from driving said objective lens when said image magnification is greater than a predetermined rate.

5,005,040

AUTOMATIC FOCUS ADJUSTING APPARATUS OF A CAMERA

Toshio Norita; Tokuji Ishida; Masataka Hamada, and Kenji Ishibashi, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 352,824, May 16, 1989, abandoned.
This application Feb. 14, 1990, Ser. No. 479,206
Claims priority, application Japan, May 16, 1988, 63-118682; May 16, 1988, 63-118683; Oct. 6, 1988, 63-252431; Oct. 6, 1988, 63-252432
Int. Cl.[5] G03B *13/36*; G02B *7/28*
U.S. Cl. 354—402 14 Claims



1. An automatic focus adjusting apparatus of a camera, comprising:

(a) a plurality of photoelectric converting means receiving light from an object, each of said photoelectric converting means having a plurality of light receiving portions and a plurality of charge accumulating portions for accumulating charges generated in said light receiving portions;

(b) accumulation controlling means for controlling time of charge accumulation in each said photoelectric converting means;

(c) focus detecting means for detecting an in-focus state of a photographic lens based on outputs from said photoelectric converting means to output a focus signal;

(d) calculating means for calculating an amount of driving said photographic lens based on said focus signal;

(e) selecting means for selecting one photoelectric converting means out of said plurality of photoelectric converting means, a focusing error being generated when said photographic lens is moved during said time of charge accumulation of the photoelectric converting means selected by said selecting means;

(f) correcting means for correcting the amount of driving of the photographic lens calculated based on said focusing error; and

(g) driving means for driving said photographic lens based on said corrected amount of driving the photographic lens.

5,005,041

FOCUS DETECTING APPARATUS HAVING A PLURALITY OF FOCUS DETECTING AREAS

Yasuo Suda; Keiji Ohtaka; Kenji Suzuki; Akira Ishizaki, and Keisuke Aoyama, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 3, 1988, Ser. No. 266,804
Claims priority, application Japan, Nov. 5, 1987, 62-279835; Nov. 5, 1987, 62-279836; Nov. 5, 1987, 62-279837
Int. Cl.[5] G03B *13/36*; G02B *7/34*
U.S. Cl. 354—407 10 Claims

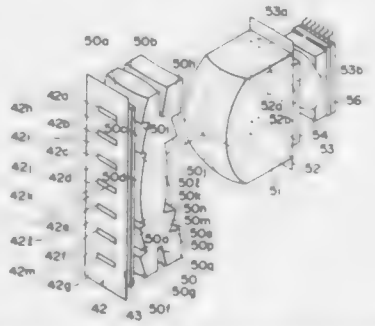
1. An apparatus for detecting the focus adjusted state of an objective lens, comprising:

a pair of light distribution forming lenses for forming a plurality of light distribution sets whose relative positions are displaced in conformity with the focus adjusted state of the objective lens, from a light beam passed through the objective lens;

sensing means provided with a plurality of arrangements of sensors for receiving said light distribution sets, and for

outputting a signal regarding the relative positions of said light distributions sets, said signal being indicative of the focus adjusted state of the objective lens; and

optical means for imparting the action of a field lens to a light beam incident on the arrangements of the sensors,



said optical means having a plurality of components of different shapes and being disposed on or near a predetermined imaging plane of said objective lens, light fluxes from said plurality of components being introduced to said pair of lenses.

5,005,042

ELECTRIC CONTROL CAMERA

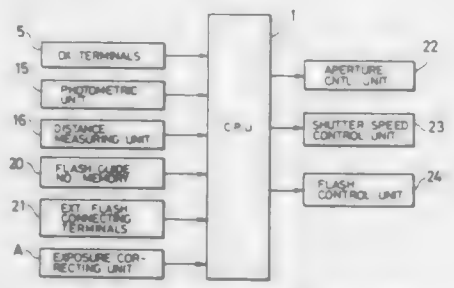
Osamu Sato, and Isamu Hirai, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 174,465, Mar. 28, 1988, abandoned. This application Jan. 25, 1990, Ser. No. 471,013

Claims priority, application Japan, Mar. 26, 1987, 62-72918

Int. Cl.[5] G03B *7/00*

U.S. Cl. 354—412 **8 Claims**



1. A camera having a built-in flash comprising:

(a) film sensitivity data input means (5) for inputting sensitivity data (SV) of a film inserted into said camera;

(b) shutter means settable in accordance with shutter speed values TV;

(c) diaphragm aperture means settable in accordance with aperture values AV;

(d) photometric means (15) for determining the brightness value BV of an object to be photographed by said camera;

(e) distance setting means for setting distance values DV of the object;

(f) data processing means (1) connected to said film sensitivity data input means (5) and to said photometric means (15) for calculating an exposure value EV in accordance with said film sensitivity data value SV and with said brightness value BV;

(g) said data processing means being operable for determining whether said exposure value EV is larger than a first predetermined value, and when said exposure value EV is larger than the first predetermined value, said data processing means varies the amount of light emitted by said flash according to said exposure value EV, flash photographing is carried out with a shutter speed at a first constant value, and an aperture value is calculated according to the following expression:

$$AV = AVs + (SV - SVs) - \alpha(DV - DVs)$$

wherein AVs, SVs and DVs are initially set values for the values AV, SV, and DV, respectively, when not yet available, and wherein α is a coefficient.

5,005,043

IMAGE FORMING APPARATUS

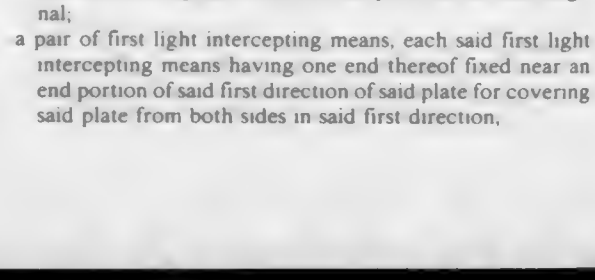
Atsushi Kobayashi; Takashi Suzuki, and Yasuhiko Kosugi, all of Suwa, Japan, assignors to Seiko Epson Corporation, Japan

Continuation-in-part of Ser. No. 149,815, Jan. 29, 1988, Pat. No. 4,860,058. This application Jun. 26, 1989, Ser. No. 371,226

Claims priority, application Japan, Feb. 2, 1987, 62-22006; Mar. 3, 1987, 62-48275; Apr. 30, 1987, 62-107702

Int. Cl.[5] G03B *27/32, 27/52*

U.S. Cl. 355—27 **21 Claims**



1. An image forming apparatus for forming an image on a transfer medium by pressing the transfer medium against a photosensitive medium having light sensitive microcapsules thereon, the apparatus comprising:

image projection means for subjecting a first predetermined region of the photosensitive medium to light representative of the image prior to pressing the transfer medium against the photosensitive medium;

exposure means for subjecting a second predetermined region of the photosensitive medium to light nonrepresentative of the image prior to pressing the transfer medium against the photosensitive medium; and

means for transporting the photosensitive medium within the image forming apparatus;

wherein the image projection means includes slide projection means having a slide with an image thereon and operable for moving the slide at a speed based on the speed at which the photosensitive medium is transported within the image forming apparatus.

5,005,044

AUTOMATIC MASKING DEVICE

Makoto Yahata, and Fumihiko Nishida, both of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Sep. 21, 1989, Ser. No. 410,201

Claims priority, application Japan, Oct. 14, 1988, 63-260295

Int. Cl.[5] G03B *27/52*

U.S. Cl. 355—40 **13 Claims**

1. A masking device for covering, when an image of an original is to be exposed on a photosensitive material, an area which is not to be exposed of said photosensitive material, comprising:

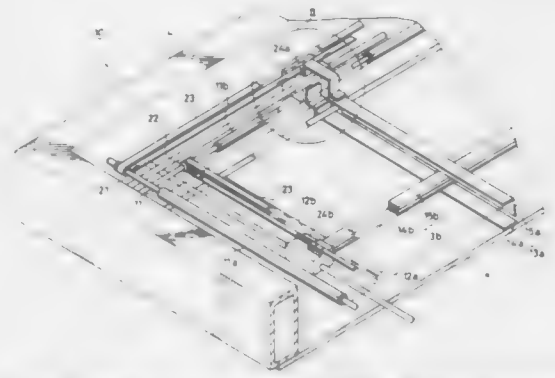
a light transmitting plate having a pair of end portions in a first direction and a pair of end portions in a second direction intersecting said first direction provided on said original;

a pair of first light intercepting means, each said first light intercepting means having one end thereof fixed near an end portion of said first direction of said plate for covering said plate from both sides in said first direction,

each one of said first light intercepting means including a first cover for covering said plate and means for determining an end portion of said first cover in the first direction,

each of said means for determining an end portion in the first direction including a first cover holding means for holding said end portion of the corresponding first cover, and means for defining an opening portion in the first direction arranged close to said plate,

a first space existing between said first cover holding means and the associated means for defining an opening portion in said first direction; and



a pair of second light intercepting means, each of said second light intercepting means having one end fixed near an end portion thereof in said direction of said plate, for covering said plate from both sides in said second direction,

each one of said second light intercepting means including a second cover for covering said plate and means for defining an end portion of said second cover in said second direction, said means for defining an end portion in the second direction including a second cover holding means for holding said end portion of said cover and means for defining an opening portion in the second direction,

at least part of said means for defining an end portion in the second direction being near said means for defining an opening portion in said first direction located in said first space.

5,005,045

REPROGRAPHIC CAMERA SYSTEM

Knud S. Stovring, Holte, Denmark, assignor to Helioprint Als, Kvistgaard, Denmark

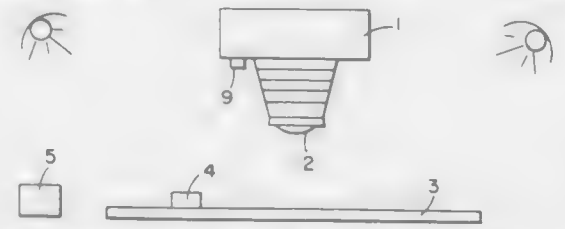
PCT No. PCT/DK88/00178, § 371 Date Mar. 20, 1990, § 102(e) Date Mar. 20, 1990, PCT Pub. No. WO89/04506, PCT Pub. Date May 18, 1989

PCT Filed Nov. 2, 1988, Ser. No. 469,547

Claims priority, application Denmark, Nov. 3, 1987, 5759/87

Int. Cl.[5] G03B *27/74, 27/80*

U.S. Cl. 355—68 **8 Claims**



1. A reprographic camera system comprising; a reprographic camera (1) with a vertical optical axis and a mainly horizontal, original table (3) positioned under the objective lens (2) of the camera, an arrangement separate from the camera for the transfer of signals of density and/or picture data to an exposure sure control device in the camera, wherein, the reprographic camera (1) and said device include transducer means (6, 7, 8) for wireless transfer of signals from said arrangement to the exposure control means.

5,005,046

PATTERN FORMING METHOD

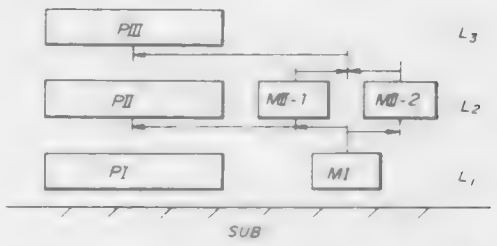
Koichi Hashimoto, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 20, 1990, Ser. No. 496,010

Claims priority, application Japan, Mar. 20, 1989, 1-68306

Int. Cl.[5] G03B *27/42*

U.S. Cl. 355—77 **15 Claims**



1. A pattern forming method comprising the steps of:

forming a first layer which includes a first alignment mark on a substrate;

forming a second layer which includes a first pattern and second and third alignment marks on said first layer, said second and third alignment marks being independently aligned with said first alignment mark;

measuring the positions of said second and third alignment marks and calculating the deviations of said positions from predetermined design positions;

moving the substrate to a correct location determined from the calculated deviations; and

forming a third layer which includes a second pattern on said second layer by aligning said second pattern with said second and third alignment marks.

5,005,047

CAMERA DATA SETTING DEVICE

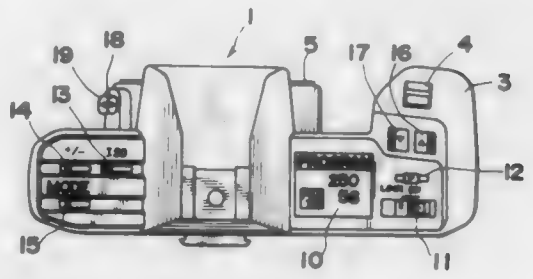
Akihiko Fujino, Osaka; Manabu Inoue, Kobe; Takanobu Omaki, Osaka; Masaaki Nakai, Osaka; Akira Fujii, Osaka, and Minoru Sekida, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 388,316, Aug. 1, 1989, abandoned, which is a continuation of Ser. No. 115,620, Oct. 30, 1987, abandoned, which is a continuation of Ser. No. 807,694, Dec. 11, 1985, abandoned. This application Mar. 7, 1990, Ser. No. 489,881

Claims priority, application Japan, Dec. 14, 1984, 59-190602[U]; Dec. 14, 1984, 59-190603[U]; Dec. 17, 1984, 59-191074[U]

Int. Cl.[5] G03B *17/18, 7/097*

U.S. Cl. 354—442 **11 Claims**



1. A camera data setting device for use in a camera which is operable selectively in a diaphragm aperture priority automatic exposure control mode, an exposure time priority automatic exposure control mode and a manual exposure control mode, said device comprising:

first and second manual means located at different positions on the camera and manually operable for generating first and second data changing signals, respectively;

selection means for selecting an exposure control mode from said diaphragm aperture priority, exposure time priority and manual exposure control modes, and

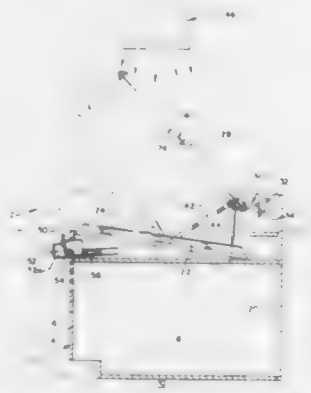
a data changing means for changing the diaphragm aperture value and the exposure time value in response to the data changing signals, said data changing means including means for changing the exposure time value in response to either of said first and second data changing signals with the exposure time priority mode being selected, and in response to said first data changing signal with the manual exposure control mode being selected, and means for changing the diaphragm aperture value in response to either of the first and second signals with the diaphragm aperture priority mode being selected, and in response to the second data changing signal with the manual exposure control mode being selected.

5,005,048

GRAPHIC ARTS EXPOSURE DEVICE

Charles J. Leonhart, Schaumburg, Ill., assignor to nuArc Company, Inc., Niles, Ill.

Filed Jul. 5, 1990, Ser. No. 548,086
Int. Cl.[5] G03B *27/20*
U.S. Cl. 355—93 **20 Claims**



1. A graphic arts exposure device, including:

means defining a work surface at a convenient working level and having a forward edge facing a standing operator using the device;

drawer means below said working level movable between an extended position outwardly of said forward edge and a retracted position;

control panel means for controlling the operation of said device mounted with said drawer means and facing upwardly in the same field of view as said working surface; and

drawer support means below said work surface for supporting said drawer means for movement between said extended and retracted position in a manner whereby said control panel means is normally biased to move toward said extended position and is movable by rearward pressure applied to said drawer means by said operator to move toward said retracted position.

5,005,049

COPYING MACHINE WITH CAPACITY TO MEASURE TRANSPARENCY OF ORIGINAL

Kouji Matsushita, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 17, 1989, Ser. No. 395,438
Claims priority, application Japan, Aug. 18, 1988, 63-205205
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—208 **19 Claims**

1. A copying machine irradiating light to a document from an exposure light source, guiding the reflected light from said document to a photosensitive body so as to form latent images corresponding to images of said document, supplying toner from a developing unit so as to develop said latent images, and transferring said developed images onto a copying paper, comprising:



measuring means for measuring light transmittance of said document, said measuring means using said exposure light source as its light source when the light transmittance of said document is measured; and

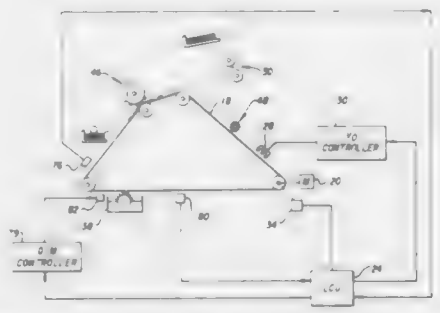
adjusting means for adjusting a copying condition corresponding to said light transmittance measured by said measuring means.

5,005,050

CONTROL OF TONER PARTICLE CHARGE

Lawrence J. Donivan, and Joseph F. Laukaitis, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 15, 1989, Ser. No. 366,728
Int. Cl.[4] G03G *15/08*
U.S. Cl. 355—208 **6 Claims**



1. In an electrostatographic reproduction machine having means for developing an electrostatic latent image with charged toner particles, the improvement comprising:

means for producing a control signal characteristic of the ratio of toner particle electrostatic charge to the toner particle mass; and

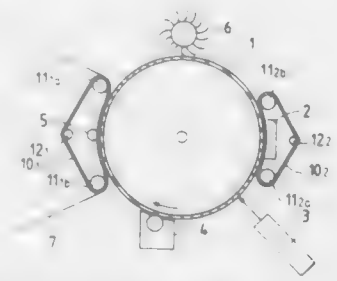
means responsive to said control signal for adjusting said ratio, said adjusting means including a source of ions and means for directing the ions to the toner particles.

5,005,051

ELECTROPHOTOGRAPHIC IMAGE RECORDING APPARATUS USING AMORPHOUS SILICON HYDRIDE PHOTOSENSITIVE DRUM

Shinichi Haruki; Yhuzi Furuya, and Akio Tsujita, all of Katsuta, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1990, Ser. No. 498,518
Claims priority, application Japan, Mar. 24, 1989, 1-73002
Int. Cl.[5] G03G *15/02, 5/16, 21/00*
U.S. Cl. 355—221 **13 Claims**



1 An electrophotographic recording apparatus for recording an image on a recording medium comprising:

a photosensitive member rotatable about its own axis and having a peripheral surface made of amorphous silicon hydride, said photosensitive member being movable in a predetermined direction and at a predetermined speed at the time of image recording;

charging means for uniformly charging said photosensitive member, said charging means comprising a corona discharger;

exposure means for exposing said uniformly charged photosensitive member to light to form a latent image thereon;

developing means for developing the latent image and providing a visible image on said photosensitive member;

transfer means for transferring the visible image onto the recording medium, said transfer means comprising a corona discharger, the recording medium being transported between said transfer means and said photosensitive member while contacting the surface of said photosensitive member; and

shielding means provided in association with at least one of said corona dischargers or shielding said corona discharger to interrupt atmospheric contact with the surface of said photosensitive member, said shielding means comprising a hermetically sealed unit for confining at least one of said charging and transfer units therein.

5,005,052

IMAGE FORMING APPARATUS HAVING VERTICALLY MOVABLE ORIGINAL COVER

Junji Watanabe, Yokohama, and Yuji Ishikawa, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

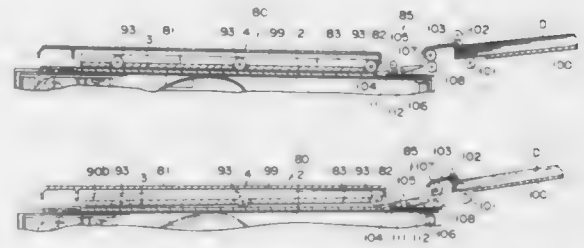
Filed Dec. 20, 1988, Ser. No. 286,885
Claims priority, application Japan, Dec. 24, 1987, 62-325356; Dec. 24, 1987, 62-325358; Dec. 28, 1987, 62-330067
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—231 **2 Claims**

1. An image forming apparatus comprising:

a main body having an original table surface on which an original is to be placed;

scanning means, arranged inside said main body, for scanning he original placed on said original table surface; and

an automatic original feeder including an original cover arranged above the original table surface to be movable between a lower position where said original cover is in contact with said original table surface, to press the original toward said original table surface, and an upper position where said original cover is away from said original table surface, said original cover having one end portion which is located at a downstream side of the feeding direction of the original and being rotatable between said upper and lower positions about said one end portion, feeding means for feeding the original to said original table surface, original cover drive means for moving said original cover to the upper position when the original is to



be fed onto said original table surface, a feed roller arranged to contact said original table surface, and roller drive means for driving said feed roller to feed the original, fed by said feeding means, to a predetermined position on said original table surface

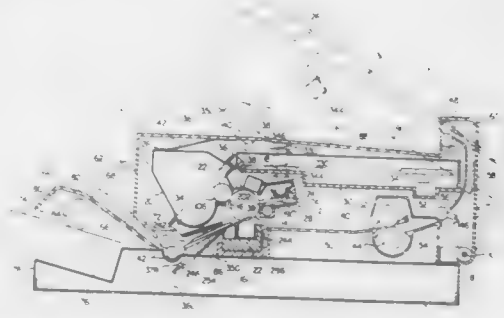
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5,005,053

IMAGE-FORMING MACHINE HAVING A PROCESS ASSEMBLY COMPRISING TWO INDEPENDENTLY MOVABLE UNITS

Nobuhiko Kozuka, Suita, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Filed Feb. 6, 1990, Ser. No. 475,826
Claims priority, application Japan, Feb. 15, 1989, 1-33660
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—245 **18 Claims**



2. An image-forming machine comprising a main body and a process unit to be mounted detachably on the main body, wherein

the process unit includes an image-bearing means having an electrostatographic material and a transfer corona discharger for transferring the toner image formed on the surface of the electrostatographic material to a sheet material, a transfer zone existing between the image-bearing means and the transfer corona discharger,

an introduction opening for introducing a sheet material into the transfer zone is formed in one surface of the process unit, and a withdrawing opening for withdrawing the sheet material conveyed through the transfer zone is formed in the other surface of the process unit, and

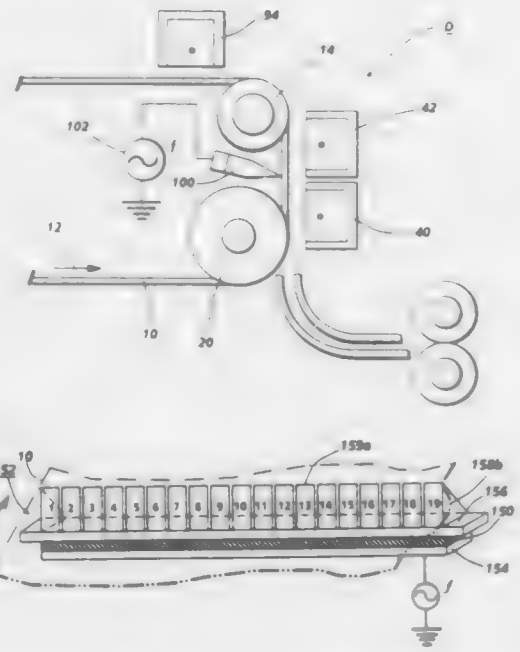
an opening-closing cover for opening or closing the opening is provided in at least one of the introduction opening and the withdrawing opening.

5,005,054

FREQUENCY SWEEPING EXCITATION OF HIGH FREQUENCY VIBRATORY ENERGY PRODUCING DEVICES FOR ELECTROPHOTOGRAPHIC IMAGING

Ronald E. Stokes, Fairport; William J. Nowak, Webster; Anthony A. Attardi, Rochester, and Daniel W. Costanza, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 2, 1990, Ser. No. 548,645
Int. Cl.[5] G03G *15/14, 21/00;* H02N *1/04*
U.S. Cl. 355—273 14 Claims



1. In an imaging device having a non-rigid member with a charge retentive surface moving along an endless path, means for creating a latent image on the charge retentive surface, means for imagewise developing the latent image with toner, means for electrostatically transferring the developed toner image to a copy sheet, and a resonator for enhancing toner release from the charge retentive surface, producing relatively high frequency vibratory energy and having a portion thereof adapted for contact across the flexible belt member, generally transverse to the direction of movement thereof, the resonator comprising:

a horn member for applying the high frequency vibratory energy to the non-rigid member, having a platform portion, a horn portion, and a contacting portion

said horn member divided into a linear array of horn segments across said belt member, each horn segment including horn portion and contacting portion;

vibratory energy producing means coupled to said horn platform for generating the high frequency vibratory energy required to drive said horn member; and

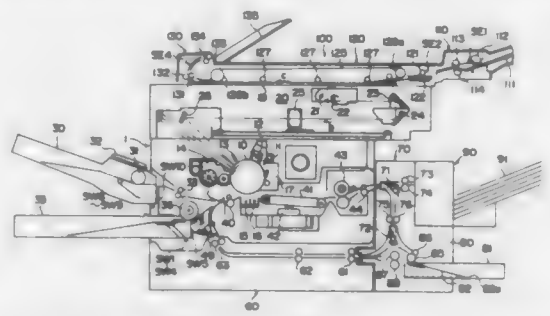
a voltage source for driving said vibratory energy producing means through a range of frequency responses, said range of frequency responses including resonant frequencies of each horn segment.

5,005,055

COPYING APPARATUS PROVIDED WITH AUTOMATIC DOCUMENT FEEDER

Hirokazu Matsuo, and Hiroyasu Nagato, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 188,555, Apr. 29, 1988, abandoned.
This application Oct. 27, 1989, Ser. No. 428,026
Claims priority, application Japan, May 1, 1987, 62-108624; May 18, 1987, 62-121647; May 18, 1987, 62-121648; May 18, 1987, 62-121649; May 18, 1987, 62-121650
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—311 25 Claims



1. A copying apparatus comprising:

transporting means for sequentially feeding a pair of original documents and serially placing them onto a platen in the document feeding direction, said transporting means including detect means for detecting the sizes of the documents fed by said transporting means;

illuminating means for illuminating the pair of original documents on the platen;

image forming means for copying the images of the documents which were serially placed on said platen and illuminated by said illuminating means to a copy sheet; and

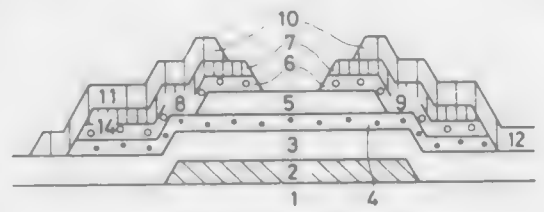
inhibition means for inhibiting the illuminating operation as well as the image forming operation when the sizes of the pair of documents are different.

5,005,056

AMORPHOUS-SILICON THIN FILM TRANSISTOR ARRAY SUBSTRATE

Noboru Motai, Tochigi; Sakae Tanaka, and Yoshiaki Watanabe, both of Tokyo, all of Japan, assignors to Nippon Precision Circuits Ltd. and Seikosha Co., Ltd., both of Tokyo, Japan

Filed Feb. 3, 1989, Ser. No. 306,373
Claims priority, application Japan, Feb. 26, 1988, 63-43577
Int. Cl.[5] H01L *45/00*
U.S. Cl. 357—2 7 Claims



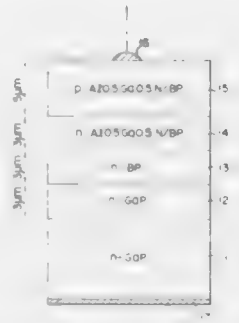
1. In a reverse staggered type amorphous-silicon thin film transistor array substrate including amorphous silicon thin film transistors provided in an array, gate electrodes, gate wirings interconnecting the gate electrodes of said amorphous silicon thin film transistors, source electrodes comprised at least of an impurity doped silicon layer, and first source wirings composed of a transparent conductive layer interconnecting the source electrodes of said transistors, the improvement wherein said amorphous silicon thin film transistor array substrate comprises an auxiliary source wiring extending under said first source wirings and interconnecting said source electrodes, said auxiliary wiring being formed with said source electrodes, whereby said auxiliary wirings are composed of the same material as the source electrode of at least one of said amorphous silicon thin film transistors.

5,005,057

SEMICONDUCTOR LIGHT-EMITTING DIODE AND METHOD OF MANUFACTURING THE SAME

Toshihide Izumiya, Tokyo; Yasuo Ohba, Yokohama, and Ako Hatano, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 13, 1990, Ser. No. 508,685
Claims priority, application Japan, Apr. 28, 1989, 1-110503
Int. Cl.[5] H01L *33/00, 27/12, 49/02, 45/00*
U.S. Cl. 357—17 13 Claims



1. A semiconductor light-emitting diode including a light-emitting layer with a p-n junction, said light-emitting layer comprising:

a first superlattice layer, of a first conductivity type, wherein a plurality of BP and $Ga_xAl_{1-x}N$ ($0 \leqq x \leqq 1$) layers are alternately stacked, said $Ga_xAl_{1-x}N$ ($0 \leqq x \leqq 1$) layers having a zinc blend type crystal structure; and

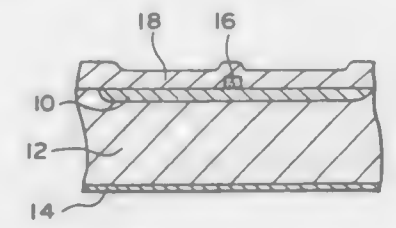
a second superlattice layer, of a second conductivity type, wherein a plurality of BP and $Ga_xAl_{1-x}N$ ($0 \leqq x \leqq 1$) layers are alternately stacked, said $Ga_xAl_{1-x}N$ ($0 \leqq x \leqq 1$) layers having a zinc blend type crystal structure.

5,005,058

LIGHT-EMITTING DIODE WITH LIGHT-TRANSMISSIVE FILM

Yukio Tanaka, Yokohama, Japan, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 4, 1990, Ser. No. 576,890
Claims priority, application Japan, Mar. 19, 1990, 2-69197
Int. Cl.[5] H01L *33/00*
U.S. Cl. 357—17 5 Claims



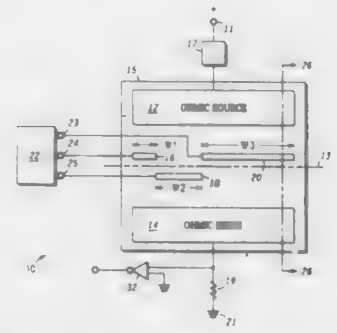
1. A light-emitting diode comprised of a light-emitting section constituted by a P-N junction and a thin film formed adjacent to the light-emitting section and through which light produced in the light-emitting section is transmitted to the outside, the thin film being formed of a material wherein the transmittivity of the thin film increases as the wavelength of the emitted light increases.

5,005,059

DIGITAL-TO-ANALOG CONVERTING FIELD EFFECT DEVICE AND CIRCUITRY

John M. Golio, and Joseph Staudinger, both of Chandler, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 1, 1989, Ser. No. 345,746
Int. Cl.[5] H01L *29/80, 29/78;* H03K *3/01*
U.S. Cl. 357—22 18 Claims



1. A field effect device suitable for providing an analog output signal having a magnitude which is representative of a digital input code having a sequence of bits, the field effect device including in combination:

an input electrode;

an output electrode;

a plurality of gate electrodes located between said input electrode and said output electrode, said gate electrodes providing different gate widths, each of said gate widths being representative of the magnitude of the analog signal to be provided at said output electrode in response to a digital input signal of a particular logic state to be applied to said gate electrode;

means for applying selected digital bits separately to each of said gate electrodes to independently control each of said gate electrodes; and

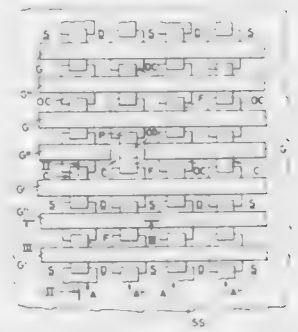
the magnitude of the current conducted between said input electrode and said output electrode thereby being adapted to be responsive to the total of the widths of the gates receiving said digital signal of said particular logic state.

5,005,060

TABLECLOTH MEMORY MATRIX WITH STAGGERED EPROM CELLS

Stefano Mazzali, Milan, Italy, assignor to SGS-Thomson Microelectronics s.r.l., Milan, Italy

Filed Mar. 21, 1989, Ser. No. 326,809
Claims priority, application Italy, Apr. 12, 1988, 20169 A/88
Int. Cl.[5] H01L *29/78*
U.S. Cl. 357—23.5 2 Claims



1. Memory matrix with EPROM cells comprising parallel and alternating source and drain lines, floating gate areas placed between said source and drain lines and control gate lines parallel with each other and perpendicular to said source

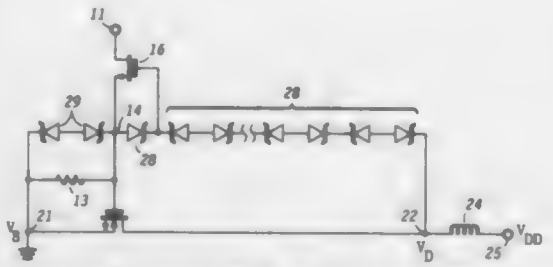
and drain lines superimposed on said floating gate areas, wherein said floating gate areas are arranged in rows parallel to said source and drain lines in positions longitudinally staggered in relation to those of an adjacent row in such a manner that the floating gate areas of a row underlie a first plurality of said control gate lines and the floating gate areas of the adjacent row underlie a second plurality of said control gate lines alternating with the first plurality of said control gate lines.

5,005,061

AVALANCHE STRESS PROTECTED SEMICONDUCTOR DEVICE HAVING VARIABLE INPUT IMPEDANCE

Stephen P. Robb, Tempe; John P. Phipps, Phoenix, and Michael D. Gadberry, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 5, 1990, Ser. No. 474,889
Int. Cl.[5] H01L *29/80, 29/06, 29/10, 27/02*
U.S. Cl. 357—23.13 **3 Claims**



1. A monolithic junction field effect transistor (JFET) comprising: a semiconductor substrate; an insulating layer disposed on the substrate; a polysilicon layer disposed on the insulating layer; and a JFET having a gate, drain, source, and channel formed in the polysilicon layer, wherein the JFET source, drain, and channel are of a first conductivity type and the JFET gate comprises a plurality of interconnected regions of a second conductivity type; at least one diode having an anode coupled to the gate of the JFET and a cathode coupled to a source of the JFET; and a power MOSFET transistor integrated with the JFET, wherein the power MOSFET transistor has a gate formed in the polysilicon layer, a drain formed in the substrate, and a source formed in the substrate, wherein the source of the JFET is coupled to the gate of the power MOSFET transistor, the drain of the JFET serves as a gate terminal for the power MOSFET transistor, and the gate of the JFET is coupled to the drain of the power MOSFET transistor, so that drain-to-source resistance of the JFET is controlled by the drain voltage of the power MOSFET transistor.

5,005,062

IMAGE SENSOR DEVICE OF THE FRAME TRANSFER TYPE

Jacobus G. C. Bakker, and Marnix G. Collet, both of Eindhaven Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

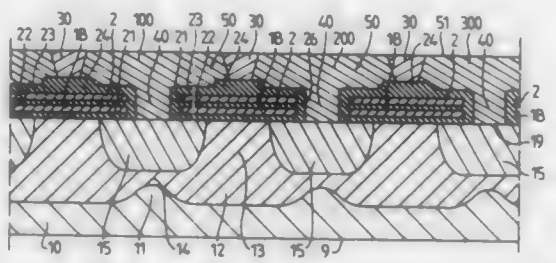
Filed Aug. 4, 1989, Ser. No. 389,726
Claims priority, application France, Aug. 10, 1988, 88 10786
Int. Cl.[5] H01L *29/78, 27/01, 29/00, 27/14*
U.S. Cl. 357—24 **20 Claims**

1. An image sensor device of the frame transfer type, comprising:

a semiconductor substrate which includes a first region of a first conductivity type, a second region of a second conductivity type overlying said first region, and a plurality of substantially parallel, longitudinally extending charge transfer channels of the first conductivity type arranged in said second region, said channels being aligned with a desired direction of charge transfer; and

an arrangement of charge transfer electrodes overlying a surface of said second region, which electrodes serve to transfer electrical charges of a first type along said substantially parallel channels when suitable voltages are applied thereto, Characterized In That

said device further comprises a network of electrically insulating separation strips (**24**) which overlie said arrangement of charge transfer electrodes (**1A, 1B, 1C, 1D**), a photosensitive structure (**50**) which overlies both said separation strips and said second region, said structure (**50**) including conductive strips (**30**) of the second conductivity type which overlies said separation strips (**24**), said separation strips (**24**) serving to outline a plurality of window regions (**100, 101, 200, 201**) in said structure (**50**)



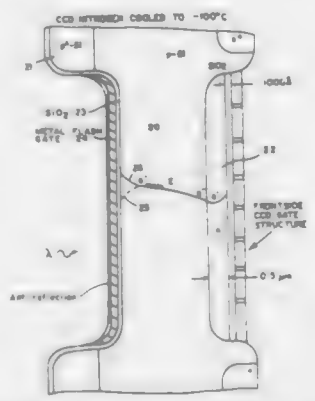
and said conductive strips (**30**) serving to at least partially separate said window regions, said device including a plurality of elementary cells each of which includes at least one such window region, said structure (**50**) also including charge transfer windows (**40, 240**) extending from said window regions (**100, 101, 200, 201**) to said substantially parallel channels, each elementary cell of said device including at least one charge transfer window to provide an electrical connection between the corresponding window region of the elementary cell and a charge transfer channel.

5,005,063

CCD IMAGING SENSOR WITH FLASHED BACKSIDE METAL FILM

James R. Janesick, La Canada, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Continuation of Ser. No. 197,564, May 23, 1988, abandoned, which is a division of Ser. No. 835,535, May 3, 1986, Pat. No. 4,760,031. This application Jan. 16, 1990, Ser. No. 466,070
Int. Cl.[5] H01L *29/78, 27/14, 29/06*
U.S. Cl. 357—24 **18 Claims**



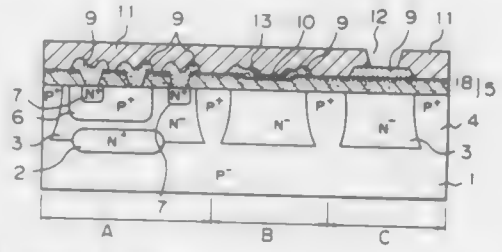
14. In a semiconductor CCD imaging sensor having a buried n channel in a p-doped semiconductor material epitaxially grown over a p^+ doped substrate material, and having a gate structure over said buried n channel for control of storage and transfer of electrons, and further having a portion of said substrate material and a portion of p-doped semiconductor material removed to provide a thinned backside opposite said n channel, and a thin oxide film over said thinned backside, an improvement comprised of a thin transparent film of metal over said thin oxide film, said metal having a work function higher than the work function of said p^+ doped substrate material for improvement and stabilization of the quantum efficiency of said CCD imaging sensor.

5,005,064

DEVICE FOR DETECTING MAGNETISM

Yoshimi Yoshino, Inuyama; Kenichi Ao, Obu; Ichiro Izawa, Anjo, and Toshikazu Arasuna, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 18, 1988, Ser. No. 233,431
Claims priority, application Japan, Aug. 21, 1987, 62-208832; Apr. 30, 1988, 63-108518
Int. Cl.[5] H01L *27/22, 29/82, 29/96, 43/00*
U.S. Cl. 357—27 **13 Claims**



1. A device for detecting magnetism which comprises,

a substrate,

an interposed insulating layer having an impurity layer formed on an upper portion of said interposed insulating layer and an opening formed in said impurity layer, by removing a part of said impurity layer, said impurity layer formed on said substrate and containing impurities at a higher concentration than impurities in a remaining part of said interposed layer therein, and

a ferromagnetic magnetoresistive element formed at said opening on said interposed layer, thereby formed on an area with a smaller impurity concentration,

wherein at least a portion of said interposed layer on which said ferromagnetic magnetoresistive element is formed has a concentration of impurities less than a concentration of impurities in said impurity layer

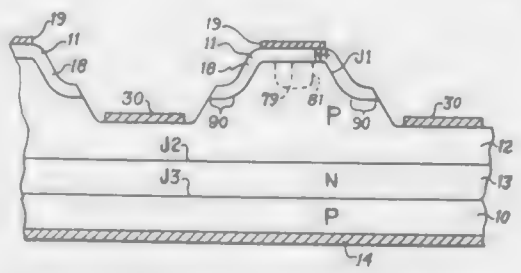
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5,005,065

HIGH CURRENT GATE TURN-OFF THYRISTOR

Dante E. Piccone, Glenmoore, Pa.; James E. McIntyre, deceased, late of Crum Lynn, Pa. (by Anna M. McIntyre, executrix), and Leroy B. Major, West Chester, Pa., assignors to General Electric Company, King of Prussia, Pa.

Filed Apr. 6, 1989, Ser. No. 334,131
Int. Cl.[5] H01L *29/74, 29/747*
U.S. Cl. 357—38 **27 Claims**



1. A gate turn-off thyristor comprising:

(a) a multi-layer semiconductor body having at least four layers, with contiguous layers being of different P and N conductivity types and with at least three back-to-back PN junctions between contiguous layers; one end layer constituting an anode layer, an opposite end layer constituting a cathode layer, and an intermediate layer contiguous with said cathode layer constituting a gate layer; said gate layer having a predetermined surface region adjacent said cathode layer but uncovered by said cathode layer and extending alongside the PN junction between said cathode layer and said gate layer;

(b) an anode electrode in ohmic contact with said anode layer,

(c) an elongated cathode electrode in ohmic contact with said cathode layer, and

(d) a gate electrode in ohmic contact with said gate layer in said predetermined surface region of said gate layer, said gate electrode extending alongside said elongated cathode electrode but spaced from said cathode electrode about the entire periphery of said cathode electrode, and in which:

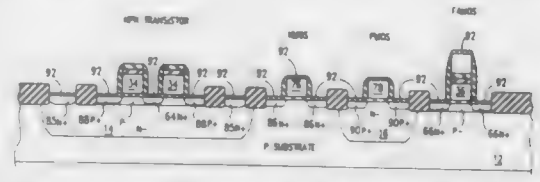
(e) the PN junction between said cathode layer and said gate layer has a region located centrally of said cathode electrode that is characterized by an avalanche voltage at least 4 volts lower than characterizes the region of said latter PN junction that is closest to said gate electrode.

5,005,066

SELF-ALIGNED NPN BIPOLAR TRANSISTOR BUILT IN A DOUBLE POLYSILICON CMOS TECHNOLOGY

Kueing-Long Chen, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 184,737, Apr. 22, 1988, abandoned, which is a division of Ser. No. 57,586, Jun. 2, 1987, Pat. No. 4,784,966. This application Dec. 28, 1989, Ser. No. 455,769
Int. Cl.[5] H01L *27/02*
U.S. Cl. 357—43 **10 Claims**



1. A semiconductor device having a floating gate avalanche metal oxide semiconductor (FAMOS) structure, an NPN bipolar transistor, an N-channel field effect transistor (NMOS) and a P-channel field effect transistor (PMOS) in a substrate, comprising:

N-type material reservoirs formed in areas of P type material in said substrate, said reservoirs of N type material corresponding to sites of the PMOS and NPN structures;

regions of P type material formed in said substrate, at least one of said regions of P type material formed to serve as a threshold voltage adjust implant of the FAMOS structure, and at least one portion of said regions of P type material formed in said N type material reservoir of said NPN transistor to serve as a base layer for the NPN transistor;

a layer of oxide for gates of the MOS transistors;

regions of a first polysilicon layer formed on regions of said substrate, at least one of said regions of the first polysilicon layer aligned over a portion of said base layer of P type material of the NPN transistor and at least one portion of said regions of the first polysilicon layer being formed to align with said threshold voltage adjust implant region at the site of the FAMOS structure;

an interlayer oxide layer formed on the regions of said first polysilicon layer;

a second layer of polysilicon material formed over portions of the substrate;

the first layer of polysilicon material having an emitter hole therethrough, thereby exposing the site of the emitter of the NPN transistor, and regions of the first and second layers of polysilicon material forming the stack gate structure of the FAMOS structure, the sites of a source and drain of the FAMOS structure being adjacent said regions forming the stack gate structure;

N type material implanted into said sites of the source and drain of the FAMOS structure, and N type material implanted into said site of said emitter of said NPN transistor, the emitter being self-aligned by the first polysilicon layer;

gates for the NMOS and PMOS structures formed from portions of said second layer of polysilicon material;

N type material implanted into regions on the body to form a collector region of the NPN transistor and a source region and drain region of the NMOS structure; and

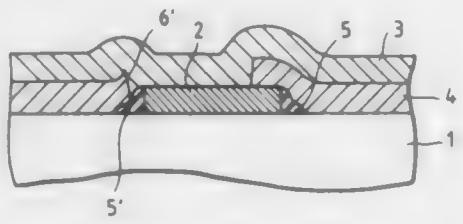
P type material implanted in a region of the base layer to form a P type doped base region(s) of the NPN transistor and a source region and drain region of the PMOS structure, the base region of the NPN transistor being self-aligned with said region of first polysilicon material aligned over said base layer, the doped base region being space apart from the emitter region, and having inner edges aligned with the region of the first polysilicon layer aligned over a portion of said base layer of P type material of the NPN transistor.

5,005,067

SEMICONDUCTOR INTEGRATED CIRCUIT

Yasushi Sakata, and Toshimichi Iwamori, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 7, 1988, Ser. No. 165,039
Claims priority, application Japan, Mar. 12, 1987, 62-57779
Int. Cl.[5] H01L *29/34, 23/02, 23/12*
U.S. Cl. 357—54 **5 Claims**



1. A semiconductor integrated circuit comprising:

a substrate;

a first electrically conductive wiring layer formed on a surface of the substrate, said first wiring layer being substantially rectangular in cross section with an upper surface having a laterally extending dimension defining the width dimension and opposite sidewalls defining the height dimension;

a first interlaid electrically insulating layer having a first etching speed overlaying at least a portion of the substrate on opposite sides of the first wiring layer, and being contiguous to both sidewalls of the first wiring layer, said first insulating layer longitudinally extending outwardly from the sidewalls of the first wiring layer in a direction substantially parallel with the width dimension of the first electrically conductive wiring layer defining a maximum width dimension contiguous to the substrate and having a maximum thickness dimension corresponding to the defined height dimension of said first wiring layer, said thickness dimension varying as a function of said width dimension;

a second interlaid electrically insulating layer having a second etching speed different than the first etching speed overlaying at least a portion of the first insulating layer on each side of the opposite sidewalls of the first wiring layer, said second insulating layer having opposing edges spaced from each other, said spaced opposing edges defining boundaries for an opening for exposing at least a portion of the upper surface of the first wiring layer through said opening; and

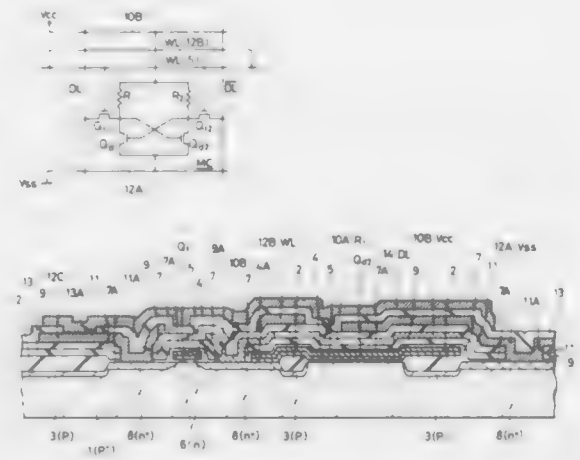
a second electrically conductive wiring layer overlaying said second insulating layer and filling said opening of the second insulating layer for making electrical contact with the first wiring layer, at least a portion of the first insulating layer protecting the substrate from electrical contact with the second wiring layer at times when at least one of the spaced opposing edges of the second insulating layer is spaced from the upper surface of the first wiring layer, wherein said first interlaid insulating layer includes a silicon nitride film.

5,005,068

SEMICONDUCTOR MEMORY DEVICE

Shuji Ikeda, Koganei; Katsuro Sasaki, Fuchuu; Kouichi Nagasawa, Kunitachi, and Satoshi Meguro, Nishitama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 5,950, Jan. 22, 1987, abandoned. This application Jul. 7, 1989, Ser. No. 376,953
Claims priority, application Japan, Jan. 22, 1986, 61-10077
Int. Cl.[5] H01L *29/040, 27/020*
U.S. Cl. 357—59 **45 Claims**



1. A semiconductor memory device comprising:

data lines which extend in a column direction over a semiconductor substrate and which are constituted as individual sets of complementary data lines, each set including a pair of complementary data lines and each data line of a corresponding pair of complementary data lines being coupled to an identical memory cell;

a plurality of memory cells each of which comprises cross-coupled first and second driver MISFETs and first and second switching MISFETs, each one of said first and second switching MISFETs being coupled between a respective one of said first and second driver MISFETs and a data line of a pair of complementary data lines associated therewith;

load elements which are respectively coupled to said first and second driver MISFETs of each memory cell, each of said data lines extending in substantially the same direction as that of said load elements and being formed above said semiconductor substrate and positioned so as to be substantially aligned over said load elements such that a projection of each data line in the direction of said semiconductor substrate would fall on a load element associated therewith; and

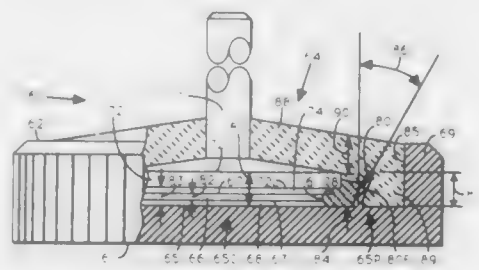
wirings for supplying a ground potential to said plurality of memory cells, said wirings being disposed as a wiring layer between said load elements of each one of said plurality of memory cells and each pair of data lines respectively associated therewith and being formed so as to cover said load elements.

5,005,069

RECTIFIER AND METHOD

William D. Wasmer, Fountain Hills; Peter J. Gillespie; James G. Lippmann, both of Mesa, and Hiep M. Le, Phoenix, all of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Apr. 30, 1990, Ser. No. 516,656
Int. Cl.[5] H01L *23/28, 23/02, 23/12, 23/42*
U.S. Cl. 357—72 **10 Claims**



1. A rectifier comprising:

a metallic base with opposed first and second major faces and a cavity extending into the base from the first face, wherein the cavity has a bottom and a side extending between the bottom and the first face, wherein the bottom of the cavity has a central region for receiving a rectifier die and a peripheral region located between the central region and the side of the cavity;

a rectifier die with one face mounted on the central region of the bottom of the cavity;

a metallic electrode attached to a second, opposed, face of the rectifier and extending away from the base;

an inclined wall located between the central region and the side of the cavity, and having at least the same elevation above the bottom of the cavity as the one face of the rectifier die, and extending upwardly and outwardly from the bottom of the cavity part way toward the first surface; and

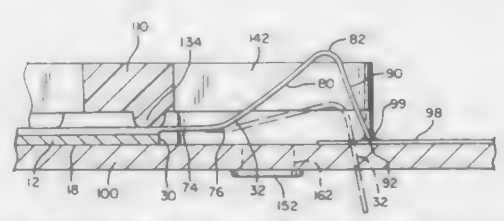
an encapsulation in the cavity covering edges f the rectifier die and the inclined wall.

5,005,070

SOLDERING INTERCONNECT METHOD AND APPARATUS FOR SEMICONDUCTOR PACKAGES

John M. Altendorf, and Marvin G. Wong, both of Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 19, 1988, Ser. No. 285,988
Int. Cl.[5] H01L *23/02, 23/12, 39/02, 29/44*
U.S. Cl. 357—74 **7 Claims**



1 A semiconductor package adapted for attachment by soldering to the conductive traces on a printed circuit board comprising:

an upper exterior surface;

a lower exterior surface substantially parallel to the upper exterior surface; and

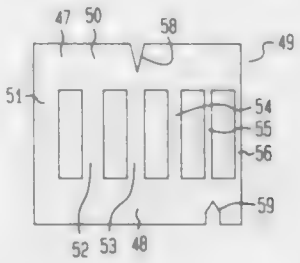
a plurality of leads formed on said upper exterior surface and extending outwardly therefrom, each of said leads comprising a first proximal section lying substantially parallel to said upper exterior surface, a second section connected to said first section and angled therefrom away from said lower exterior surface, and a third terminal section connected to said second section and angled to extend through a plane containing said lower exterior surface.

5,005,071

SEMICONDUCTOR DEVICE

Haruo Amano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 755,897, Jul. 17, 1985, Pat. No. 4,650,744. This application Dec. 16, 1986, Ser. No. 942,184
Claims priority, application Japan, Jul. 17, 1984, 59-148112
Int. Cl.[5] H01L *23/544*
U.S. Cl. 357—85 **3 Claims**



1. A semiconductor device comprising a semiconductor substrate having an element forming area and a checking area, a field insulating film formed on said checking area of said semiconductor substrate, and a checking pattern for inspecting an etching condition formed on said field insulating film, said checking pattern including first and second stripe-like frame portions extending in a first direction in parallel with each other, each of said first and second stripe-like frame portions having an inner side line and an outer side line with a constant width between said inner and outer side lines, and a plurality of straight lines bridging respective parts of said inner side lines of said first and second stripe-like frame portions, said straight lines having different widths and extending in parallel with each other in a second direction perpendicular to said first direction with predetermined intervals, a first indicium formed in said first stripe-like frame portion from a part of said outer side line thereof inwardly, said first indicium indicating a pair of parts of respective said inner side lines of said first and second stripe-like frame portions being free from any straight line bridging said pair of parts, and a second indicium being formed in said second stripe-like frame portion from a part of said outer side line thereof inwardly, said second indicium indicating one of said straight lines.

5,005,072

STACKED CELL DESIGN FOR 16-MEGABIT DRAM ARRAY HAVING A PAIR OF INTERCONNECTED POLY LAYERS WHICH ENFOLD A SINGLE FIELD PLATE LAYER AND CONNECT TO THE CELL'S STORAGE NODE JUNCTION

Fernando Gonzalez, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jan. 29, 1990, Ser. No. 471,998
Int. Cl.[5] H01L *29/68, 29/78, 29/92*
U.S. Cl. 357—23.6 **4 Claims**

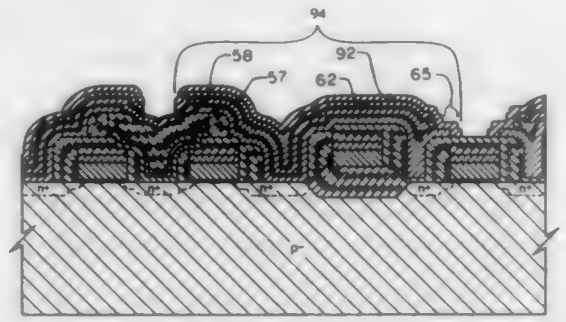
1. In a DRAM cell constructed on a silicon substrate, said cell having a capacitor for strong an electrical charge and a field effect access transistor through which said capacitor may be charged and discharged, said transistor having a first heavily-doped n-type region within said substrate for a storage-node junction and a second heavily-doped n-type region within said substrate for an access-node junction, said capacitor comprising:

a conductively--doped polysilicon lower storage-node plate layer having upper and lower surfaces and substantially vertical edges, the lower surface of said lower storage-node plate layer being in electrical communication with

said storage-node junction and a portion of the upper surface thereof serving as a tying region;

a first non-oxide dielectric layer superjacent said lower storage-node plate layer, said first dielectric layer being coextensive with said lower storage-node plate layer except in said tying region;

a conductively-doped polysilicon field plate layer superjacent said first dielectric layer and coextensive therewith, said field plate layer having upper and lower surfaces and a substantially vertical edge adjacent to said tying region, said vertical edge having been oxidized to form a dielectric border along its enter length, said first dielectric layer insulating the lower surface of said field plate layer from the upper surface and vertical edges of said lower storage-node plate layer;



a second non-oxide dielectric layer superjacent said field plate layer and said dielectric border, said second dielectric layer being coextensive with said field plate layer and a portion of said dielectric border extending along the entire length of said adjacent vertical edge; and

a conductively-doped polysilicon upper storage-node plate/tying layer having upper and lower surfaces, said upper storage-node plate/tying layer being coextensive with said dielectric layer and insulated from the upper surface of said field plate layer by said second dielectric layer, in addition to extending over said dielectric border, being in contact with an edge of said first dielectric layer, and making electrical contact with said tying region of said lower storage-node plate.

5,005,073

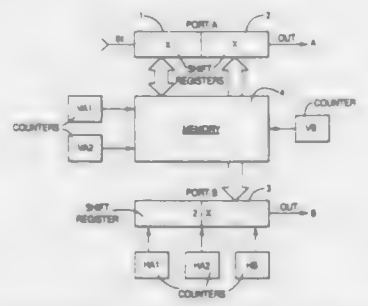
DEMULTIPLEXER FOR PROVIDING A COLOR TELEVISION SIGNAL HAVING AN INCREASED IMAGE FREQUENCY

Jean C. Rufray, Brigachtal, and Jean C. Guillon, Erstein, both of Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Hanover, Fed. Rep. of Germany

Filed Sep. 30, 1988, Ser. No. 252,051

Int. Cl.[5] H04N *9/64*

U.S. Cl. 358—21 R **7 Claims**



1. A demultiplexer for a combined color television signal composed of a plurality of first components containing luminance information and a plurality of second components containing chrominance information, the television signal initially being in a form such that the second components alternate in time with the first components, said demultiplexer comprising:

first shift register means having a plurality of register locations, a serial input connected to receive the television signal in its initial form, parallel inputs and outputs and a serial output;

second shift register means having a plurality of register locations parallel inputs and a serial output;

memory means connected to said parallel inputs and parallel outputs and having a plurality of individually addressable memory locations arranged in rows and columns; and

sequence control means including a plurality of address counters connected to said memory means so that each said counter independently addresses a selected group of memory locations, said counters including two write address counters operable for writing each component of the television signal into a respective group of memory locations from said parallel outputs of said first shift register means, and two read address counters operable for reading each first component of the television signal from said memory means to said parallel inputs of one of said shift register means and for reading each second component of the television signal from said memory means to said parallel inputs of the other one of said shift register means, whereby the first components of the television signal are supplied in succession to said serial output of said one register means and the second components of the television signal are supplied in succession to said serial output of the other one of said register means.

5,005,074

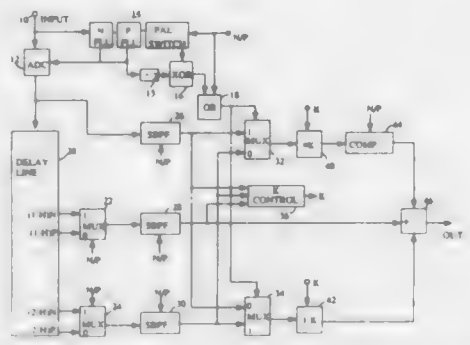
ADAPTIVE MULTISTANDARD VIDEO COMB FILTER

Stuart S. Perlman, Princeton, N.J., assignor to RCA Licensing Corporation, Princeton, N.J.

Filed Nov. 17, 1989, Ser. No. 437,952

Int. Cl.[5] H04N *9/78*

U.S. Cl. 358—31 **12 Claims**



1. A multimode comb filter, for comb filtering video signals of different video signal standards, comprising

a signal input terminal for receiving a video signal;

means including delay means, coupled to said signal input terminal, for selectably providing video signals representing three adjacent horizontal lines of video signal for video signals of first and second standards in first and second modes respectively;

means including combining means, responsive to said video signals representing three adjacent horizontal lines of video signal, for generating a comb filtered signal which at an instant in time comprises a combination of video signals representing two of said three horizontal lines.

5,005,075

X-RAY MASK AND METHOD OF MANUFACTURING AN X-RAY MASK

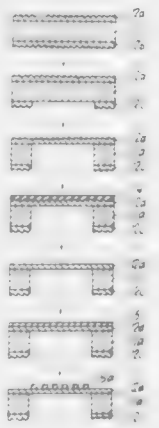
Masato Kobayashi, Miyagi; Yoh-Ichi Yamaguchi, Tokyo; Minoru Sugawara, Tokyo, and Kazuhide Yamashiro, Tokyo, all of Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Jan. 30, 1990, Ser. No. 487,771

Claims priority, application Japan, Jan. 31, 1989, 1-22198; Oct. 27, 1989, 1-281132

Int. Cl.[5] G21K *5/00;* **H01L** *21/306;* **B44C** *1/22;* **C23F** *1/00*

U.S. Cl. 378—35 **11 Claims**



10. An X-ray mask comprising a substrate having a principal surface, an X-ray transmission layer on said principal surface, and an X-ray absorption layer on said X-ray transmission layer, said X-ray transmission layer being subjected to a flattened process and having roughness smaller than 100 angstroms.

5,005,076

DCT VIDEO SIGNAL COMPRESSION DEVICE WITH INTRAFIELD/INTERFIELD SWITCHING AND ADJUSTABLE HIGH FREQUENCY FILTER

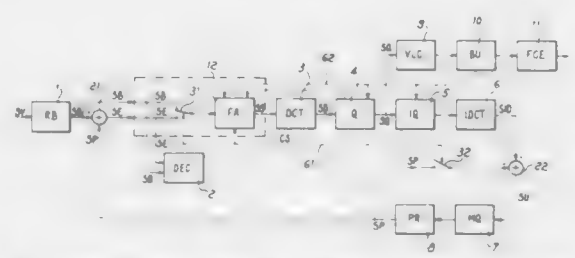
Mario Stroppina, Turin, and Luigi Ronchetti, Como, both of Italy, assignors to RAI Radiotelevisione Italiana S.p.A., Italy

Filed Mar. 6, 1993, Ser. No. 489,486

Claims priority, application European Pat. Off., May 12, 1989, 89830208.8

Int. Cl.[5] H04N *7/12*

U.S. Cl. 358—135 **11 Claims**



1. A digital video signal compression device comprising:

line-block converter means for converting an incoming digital video signal intrafield blocks each including a predetermined number of adjacent image elements;

a digital adder having a non-inverting input operatively connected to an output of said converter means, an inverting input and an output;

a processing chain including an input, a digital low-pass filter, a DCT transformer and a quantizer connected in cascade to each other;

a variable-length coder connected to an input to an output of said quantizer;

switching means, operatively connected to the output of said converter means, to the output of said adder and to the input of said processing chain, for selectively applying to the input of said processing chain an intrafield block from said converter means during an intrafield mode of operation and an interfield block during an interfield mode of operation;

a predictor chain operatively connected to the output of said quantizer, said predictor chain including an inverse quantizer, an inverse DCT transformer and predicting means for generating a predicted block signal and applying said signal to the inverting input of said adder to generate said interfield block;

selector means, operatively connected to said converter means, said switching means and to the output of said adder, for comparing each intrafield block with a corresponding interfield block and setting said switching means in said intrafield mode of operation if such intrafield block has less information content than said corresponding interfield block and alternatively setting said switching means in said interfield mode of operation if such intrafield block has greater information content than said corresponding interfield block; and

output buffer means operatively coupled to said variable-length coder for temporarily storing compressed video signals therefrom, said buffer means being operatively connected to said quantizer and inverse quantizer for changing quantization resolutions thereof inversely with a fill rate of said buffer means, said buffer means being operatively coupled to said filter for varying an upper cutoff frequency thereof inversely with the buffer fill rate.

5,005,077

MOTION DEPENDENT VIDEO SIGNAL PROCESSING

Raphael Samad, and Clive H. Gillard, both of Basingstoke, United Kingdom, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 20, 1990, Ser. No. 511,739

Claims priority, application United Kingdom, Apr. 27, 1989, 8909651

Int. Cl.[5] H04N *7/01*

U.S. Cl. 358—140 **10 Claims**

1. A motion compensated video standards converter for converting a video signal conforming to a first video standard to a converted video signal conforming with a second video standard, said video signal being provided as a sequence of intervals selected from fields and frames, each of said intervals being arranged in a plurality of blocks each representing a portion of an image represented by said video signal, comprising:

motion vector deriving means for comparing each of a plurality of blocks in a first interval of said video signal with a plurality of blocks in an adjacent interval of said video signal for deriving motion vectors representing motion of the image portion represented by respective ones of said blocks between said first interval and said adjacent interval;

motion vector assigning means to assign to respective ones in a group of blocks in said first interval adjacent to a border region thereof, motion vectors selected from motion vectors which have been derived for blocks of said first interval which are adjacent to said respective ones in said group of blocks and which are outside said border region; and

interpolator means for producing said converted video signal, said interpolator means being controlled at least in dependence on the assigned motion vectors.

5,005,078

MOTION DEPENDENT VIDEO SIGNAL PROCESSING

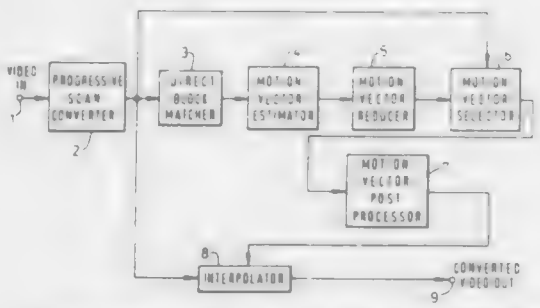
Clive H. Gillard, Chineham, United Kingdom, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 20, 1990, Ser. No. 513,426

Claims priority, application United Kingdom, Apr. 27, 1989, 8909645

Int. Cl.[5] H04N *7/01*

U.S. Cl. 358—140 **8 Claims**



1. A motion compensated video standards converter for converting an input video signal having a first standard format to a motion compensated video signal having a second standard format, said converter comprising:

progressive scan converter means for receiving said input video signal having said first standard format and for converting fields of said input video signal to video signal progressive scan frames;

comparator means coupled to said progressive scan converter means for comparing blocks in a first progressive scan frame of said video signal with a plurality of blocks in the following progressive scan frame of said video signal, said comparator means deriving motion vectors which represent the motion of the content of the respective blocks compared between said first frame and said following frame; and

interpolator means for interpolating said scan frames from said progressive scan converter means in dependence on said motion vectors to produce said motion compensated video signal having said second standard format.

5,005,079

AUTOMATIC FREQUENCY CONTROL CIRCUIT

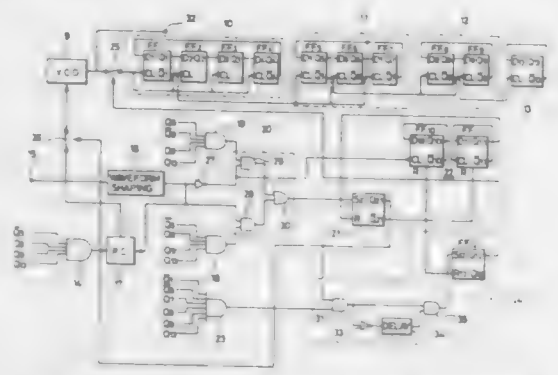
Hideo Satomi, Nitta, Japan, assignor to Sanyo Electric Co., Ltd., Japan

Filed Mar. 13, 1990, Ser. No. 492,759

Claims priority, application Japan, Mar. 16, 1989, 1-65528

Int. Cl.[5] H04N *5/04*

U.S. Cl. 358—158 **2 Claims**



1. An automatic frequency control circuit comprising:

voltage controlled oscillator means for providing an oscillating output signal having a frequency which changes in response to a control input;

frequency dividing means for frequency dividing the oscillating output signal of said voltage controlled oscillator means by a predetermined division ratio;

phase comparing means for comparing phases of an externally supplied input reference signal and an output signal of said frequency dividing means to generate an error output and supply the error output to said voltage controlled oscillator means as said control input such that said input reference signal and the output signal of said frequency dividing means enter a phase-locked state wherein both the input reference signal and the output signal of said frequency dividing means have a predetermined phase relation;

miss-lock detecting means for detecting the phase relation between said input reference signal and the output signal of said frequency dividing means entering a miss-lock state out of said predetermined phase relation;

frequency division interrupting means responsive to a detection signal in the miss-locked state from said miss-lock detecting means for once interrupting a frequency dividing operation of said frequency dividing means at a predetermined timing, and thereafter, restarting the frequency dividing operation in response to a subsequent input reference signal, thereby forcibly restoring the phase locked state of said input reference signal and the output signal of said frequency dividing means, said frequency division interrupting means comprising:

counter means responsive to the output of said miss-lock detecting means for counting pulses of said subsequent input reference signal by a predetermined number;

means for defining a first period starting from said predetermined timing after the detection of said miss-lock state until the end of the counting by said counter means; and

a first switch for cutting off the supply of the oscillating output signal of said voltage controlled oscillator means for said frequency dividing means during said first period, and

an output terminal for taking out an output of said voltage controlled oscillator means.

5,005,080

METHOD AND APPARATUS OF IMAGE PROCESSING

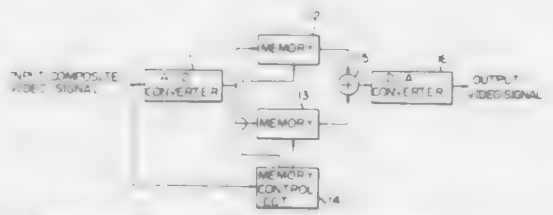
Masao Kanda, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 13, 1988, Ser. No. 193,744

Claims priority, application Japan, May 15, 1987, 62-118236; Jun. 4, 1987, 62-140694; Jun. 5, 1987, 62-141013

Int. Cl.[5] H04N *5/14*

U.S. Cl. 358—160 **6 Claims**



1 An image processing apparatus comprising:

an analog to digital converting means for digitizing an input composite video signal representing an image into a digital composite video signal, said digital composite signal comprised of a series of fields;

a first memory means for storing said digital composite video signal;

a second memory means for storing said digital composite video signal;

memory control means for controlling writing and reading timings of said first and second memory means such that one field of said digital composite video signal obtained for every four fields of said digital composite video signal is sequentially written in said first memory means and a stored content of said first memory means is sequentially read out in the order of storing said digital composite signal, and one field which is identical to any one field of a field group stored in said first memory means is sequentially written in said second memory means at intervals longer than intervals of the field stored in said first memory means, and a stored content of said second memory means is read out sequentially in the order of storing said digital composite signal;

adding means for adding together the contents of said first and second memory means; and

a digital to analog converting means for outputting an analog composite video signal corresponding to the combined contents of said first and second memory means.

5,005,081

METHOD AND APPARATUS FOR REDUCING NOISE IN A VIDEO SIGNAL

Mitsuyasu Asano, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

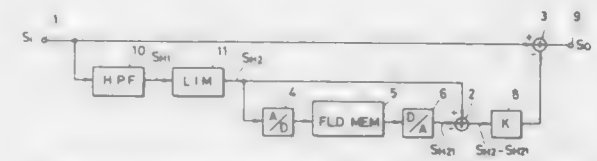
PCT No. PCT/JP88/00286, § 371 Date Jan. 10, 1989, § 102(e) Date Jan. 10, 1989, PCT Pub. No. WO88/07307, PCT Pub. Date Sep. 22, 1988

PCT Filed Mar. 18, 1988, Ser. No. 294,663

Claims priority, application Japan, Mar. 20, 1987, 62-67403

Int. Cl.[5] H04N *5/213*

U.S. Cl. 358—167 **11 Claims**



1. A method of reducing noise in a video signal, comprising:

passing said video signal through a high pass filter to create a high frequency signal;

passing said high frequency signal through a limiter to produce a first signal;

delaying said first signal to produce a second signal;

subtracting said second signal from said first signal to produce a difference signal;

subtracting said difference signal from said video signal such that any noise in said video signal is reduced.

5,005,082

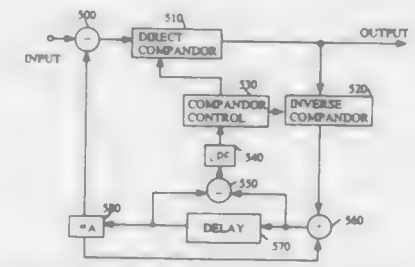
VIDEO SIGNAL COMPANDER ADAPTIVELY RESPONSIVE TO PREDICTIONS OF THE VIDEO SIGNAL PROCESSED

Joel W. Zdepski, Lebanon, and Joshua L. Koslov, East Windsor, both of N.J., assignors to General Electric Company, Princeton, N.J.

Filed Oct. 3, 1989, Ser. No. 416,695

Int. Cl.[5] H04N *5/52, 7/12*

U.S. Cl. 358—174 **20 Claims**



1. An adaptive compansion system for processing a video signal comprising:

means for applying an adaptively companded signal representing a video signal;

an adaptive compandor having an output terminal and a control terminal, and having a plurality of compansion transfer characteristics selectably responsive to a control signal applied to said control terminal, said adaptive compandor being responsive to said adaptively companded signal for performing a compansion function to produce a noncompanded signal representing said video signal;

means coupled to the output terminal of said adaptive compandor for providing an output video signal;

means responsive to said output video signal for generating a signal indicative of an attribute of said video signal;

means responsive to said signal indicative of an attribute of said video signal for generating said control signal.

5,005,083

FLIR SYSTEM WITH TWO OPTICAL CHANNELS FOR OBSERVING A WIDE AND A NARROW FIELD OF VIEW

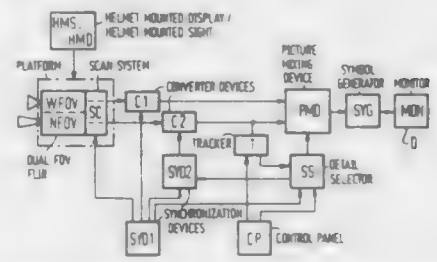
Ludger Grage, Eichenau, and Paul Dato, Emmering, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 19, 1989, Ser. No. 354,208

Claims priority, application Fed. Rep. of Germany, May 19, 1988, 3817159

Int. Cl.[5] H04N *5/268, 7/18*

U.S. Cl. 358—181 **19 Claims**



1. A method for observing a scene, comprising the steps of:

directing an image pick-up side of an infrared imaging system having two optical channels with different fields of view at a scene to be observed to obtain a picture signal of the scene to be observed having a wide field of view and having a narrow field of view;

converting said picture signals of said two optical channels into two television video signals through two converter devices;

synchronizing said two television video signals to one another with a first synchronization device;

supplying said two television video signals to a picture mixing device;

selecting only a detail of said television video signal of said narrow field of view by a detail selector;

mixing said detail with said television video signal of said wide field of view in said picture mixing device to form a mixed video signal; and

portraying said mixed video signal on a single image portrayal device in such fashion that an overview of the scene to be observed from the wide field of view channel appears simultaneously with a mixed-in picture detail of said narrow field of view channel in a portrayed picture.

5,005,084

REMOTE CONTROL TELEVISION SYSTEM USING SUPPLEMENTARY UNIT FOR SIMPLIFIED PERSONALIZED CONTROL

Kenneth R. Skinner, Jefferson City, Tenn., assignor to North American Philips Corporation, New York, N.Y.

Filed Dec. 19, 1989, Ser. No. 452,983
Int. Cl.[5] H04N 5/44; H03J 9/06
U.S. Cl. 358—194.1 20 Claims



1. A television system comprising:

(a) a first remote control transmitter device having a plurality of first keyboard keys and a first infrared transmitter which are coupled such that the pressing of respective of said plurality of first keyboard keys causes said first infrared transmitter to transmit respective of a plurality of desired first signals;

(b) an auxiliary remote control transmitter device having a plurality of second keyboard keys, said plurality of second keyboard keys being substantially smaller in number than said plurality of first keyboard keys, and a second infrared transmitter, said plurality of second keyboard keys and said second transmitter being coupled such that the pressing of respective of said plurality of second keyboard keys causes said second infrared transmitter to transmit respective of a plurality of desired second signals, at least one of said desired second signals being uniquely distinguishable from all of said desired first signals; and

(c) a television having an infrared receiver means for receiving said desired first and desired second signals; parameter control means for effecting control over an audio or video parameter of said television; a microprocessor coupled to the infrared receiver means for determining the meaning of said desired first and desired second signals, and coupled to the parameter control means for controlling the parameter control means in response to the received desired signals; and a programmable memory means for storing values for a plurality of personal preference parameter rings, including a value for at least said audio or video parameter, at least one of said plurality of personal preference parameter rings being associated with said uniquely distinguishable desired second signal of said auxiliary remote device, said programmable memory means being coupled to said microprocessor,

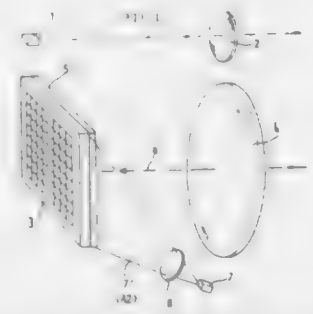
wherein said programmable memory means is programmable when said television is in a programmable mode, and said programmable memory means is programmed with said values for said plurality of personal preference parameter rings by the pressing of a desired sequence of said first remote control transmitter device first keyboard keys.

5,005,085

CONTROLLABLE SEMICONDUCTOR IMAGE SENSOR AND ARRANGEMENT WITH SUCH A SENSOR

Hans Spies, Pfaffenhofen; Alfons Woehrl, Schrobenhausen, and Martin Spies, Pfaffenhofen, all of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Nov. 22, 1989, Ser. No. 440,601
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1988, 3839512
Int. Cl.[5] H04N 5/335, 3/14, 5/30
U.S. Cl. 358—213.11 10 Claims



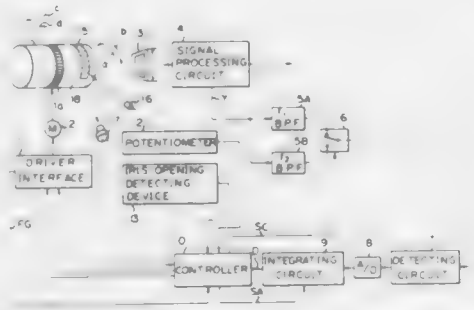
1 A controllable semiconductor image sensor, comprising a sensor semiconductor device, CCD-read-out means as part of said sensor semiconductor device for reading-out sensed image information, avalanche diode means arranged in said sensor semiconductor device for amplifying by an avalanche a photon current produced in response to exposure of said sensor semiconductor device to light from an image scene, means for generating a space charge in a space charge region of said sensor semiconductor device and for causing a charge carrier transport toward said CCD-read-out means to provide image information at said CCD-read-out means in response to said image scene light, and control light source means for directing control light impulses onto said space charge region for optically controlling said sensor semiconductor device.

5,005,086

FOCUS CONTROL APPARATUS HAVING TWO FOCUSING SPEEDS

Koji Iwamoto, Tokyo; Kenichi Hamada, and Katsuaki Hirota, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 2, 1989, Ser. No. 318,138
Claims priority, application Japan, Mar. 4, 1988, 63-051294; Mar. 4, 1988, 63-051293; Aug. 29, 1988, 63-214360
Int. Cl.[5] H04N 3/26
U.S. Cl. 358—227 5 Claims



1. Focus control apparatus for a video camera in which a component of a video signal is maximized to perform focus control, comprising:

means for extracting a signal having a predetermined frequency component from a video signal;

means for moving a position of a lens in quest of an in-focus position at which said lens is correctly focused;

means for sampling the signal of predetermined frequency component extracted from the video signal at at least continuous, successive first, second, and third lens positions,

means for determining a first gradient indicative of a change in value of the signal of predetermined frequency component for a change in lens position between said first and second lens positions from the signal of the predetermined frequency component sampled at the first lens position and the signal of predetermined frequency component sampled at the second lens position;

means for determining a second gradient indicative of a change in value of the signal predetermined frequency component for a change in lens position between said second and third lens positions from the signal of the predetermined frequency component sampled at the second lens position and the signal of predetermined frequency component sampled at the third lens position; and

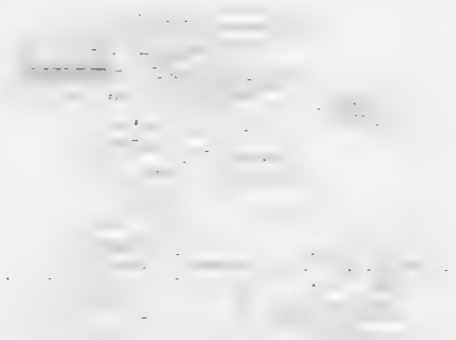
control means responsive to a relationship between said first and second gradients for effecting relatively rapid movement of said lens when said lens is relatively distant from said in-focus position and relatively slow movement of said lens when said lens is relatively close to said in-focus position.

5,005,087

SIGNAL PROCESSING DEVICE FOR AUTOMATIC-FOCUSING VIDEO SIGNAL IN ELECTRONICALLY CONTROLLED PHOTOGRAPHIC CAMERA

Noboru Suzuki; Shigeo Toji, and Yukio Uenaka, all of Tokyo, Japan, assignors to Asahi Kogaku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 173,449, Mar. 25, 1988. This application Aug. 22, 1989, Ser. No. 396,632
Claims priority, application Japan, Mar. 26, 1987, 62-45016[U]; Mar. 26, 1987, 62-72916
The portion of the term of this patent subsequent to Oct. 24, 2006, has been disclaimed.
Int. Cl.[5] H04N 5/232; G03B 3/00, 13/18
U.S. Cl. 358—227 15 Claims



1. A signal processor for an automatic-focusing video signal in an electronically controlled camera, comprising:

a photosensor having an electric charge accumulating part for accumulating an electric charge signal which corresponds to an object brightness, said photosensor being adapted to sequentially transmit said electric charge signal accumulated in said electric charge accumulating part; and

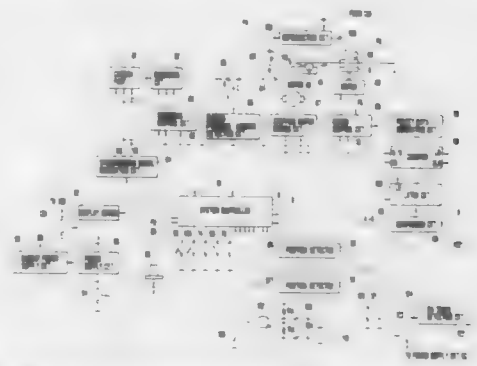
an automatic gain control circuit for automatically controlling the gain of said automatic-focusing video signal produced from said photosensor when said object contrast is low, in such a manner that a low-contrast corresponding level difference, which is the difference between a high-luminance corresponding level and a low-luminance corresponding level of an automatic-focusing video signal arising from a low-contrast object, approaches a high-contrast corresponding level difference, which is the difference between a high-luminance corresponding level and a low-luminance corresponding level of an automatic-focusing video signal arising from a high-contrast object

5,005,088

RECORDING AND/OR REPRODUCING APPARATUS ADAPTED TO MINIMIZE ELECTRICAL ENERGY CONSUMPTION

Nobuo Fukushima; Shinji Sakai; Osamu Takdea; Masahiro Takei; Yasutomo Suzuki; Tadashi Okino, and Shigeru Jinnai, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 356,608, May 24, 1989, abandoned, which is a continuation of Ser. No. 51,477, May 18, 1987, abandoned. This application Jan. 8, 1990, Ser. No. 462,102
Claims priority, application Japan, May 21, 1986, 61-116955; May 21, 1986, 61-116956; May 21, 1986, 61-116957; May 21, 1986, 61-116958; May 21, 1986, 61-116959; May 21, 1986, 61-116964; May 21, 1986, 61-116983; May 21, 1986, 61-116984; May 21, 1986, 61-116986
Int. Cl.[5] G11B 15/18, 17/00, 19/02
U.S. Cl. 360—69 44 Claims



1. A recording and/or reproducing apparatus comprising:

(a) means for loading a recording medium on said apparatus;

(b) means for detecting the presence or absence of information recorded at recording or reproducing position on said recording medium loaded on the apparatus;

(c) supply means for supplying electric energy at least to said detecting means; and

(d) control means for causing said supply means to supply said electric energy to said detecting means in response to a loading action of said loading means and for causing the supply means to stop in accordance with the completion of the detection action of said detecting means

5,005,089

HIGH PERFORMANCE, HIGH CAPACITY MICRO-WINCHESTER DISK DRIVE

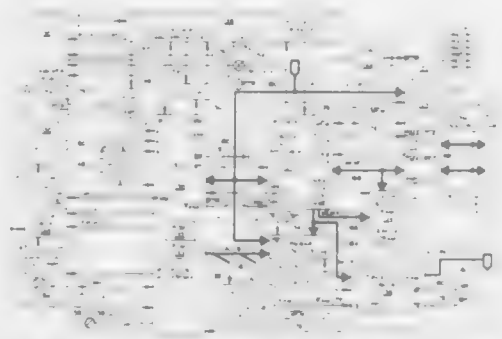
William N. Thanos; Bruce R. Peterson, both of San Jose; William G. Moon, Sunnyvale; Joshua Lindsay, Cupertino, and Thomas R. Stone, Pleasanton, all of Calif., assignors to Quantum Corp., Milpitas, Calif.

Filed May 10, 1988, Ser. No. 192,353
Int. Cl.[4] G11B 5/596
U.S. Cl. 360—77.08 22 Claims

1. A disk drive subsystem including integral data block sequencer means, cache memory means and interface means for direct memory access interface with a host computing machine and further including a disk forming data storage surfaces, the disk being mounted to a spindle journalled to a base, an electromechanical head transducer actuator structure mounted to the base for moving a plurality of data transducer heads among a multiplicity of concentric data tracks formed on

each data storage surface of the disk, the subsystem further comprising:

single, time divided multi-tasked digital supervisor means programmed for supervising track seeking, micro-stepping and following servo control operations of the actuator structure during a servo control phase of a two-phase operational cycle being a supervision phase devoted to supervision of data block handling functions of disk drive



data block sequencer means, cache memory means and interface means, the digital supervisor means being programmed so that during track seeking and micro-stepping settle operational modes of the subsystem each said two-phase operational cycle of the supervisor means is of shorter time duration than the duration of a said two-phase operational cycle of the supervisor means during track following operational modes.

5,005,090

AUTOMATIC CASSETTE TAPE CHANGER

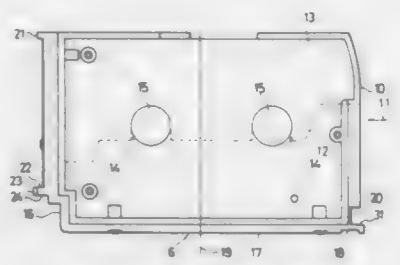
Takashi Kikuchi, and Shigeo Aoyagi, both of Iwaki, Japan, assignors to Alpine Electronics Inc., Tokyo, Japan

Division of Ser. No. 465,714, Jan. 16, 1990, which is a division of Ser. No. 207,671, Jun. 16, 1988, Pat. No. 4,918,542, which is a division of Ser. No. 807,368, Dec. 10, 1985, Pat. No. 4,777,547. This application Oct. 1, 1990, Ser. No. 591,348

Claims priority, application Japan, Dec. 10, 1984, 59-186121[U]; Dec. 10, 1984, 59-186122[U]; Dec. 10, 1984, 59-186123[U]; Dec. 10, 1984, 59-186124[U]; Dec. 10, 1984, 59-196125[U]

Int. Cl.[5] G11B *15/68*

U.S. Cl. 360—92 **4 Claims**



1. An automatic cassette tape changer having:

a tape container having side plates for containing a plurality of cassette tapes, said tape container having a first hole passing through each of its side plates, said first hole being located at a position corresponding to a rotatable hub of a cassette tape disposed in said tape container, said tape container having a plurality of partition walls forming tape cassette receiving portions within said tape container, said partition walls being provided with a plurality of cut portions therein corresponding to said position of said rotatable hub of said cassette tape; and

a hub locking member passing through said first hole in said side plates, said cut portions, and a plurality of cassette tape hubs in line with said first hole and said cut portions for restraining rotational movement of said hubs.

5,005,091

CASSETTE LOADING APPARATUS WITH SINGLE SWITCH CONTROL

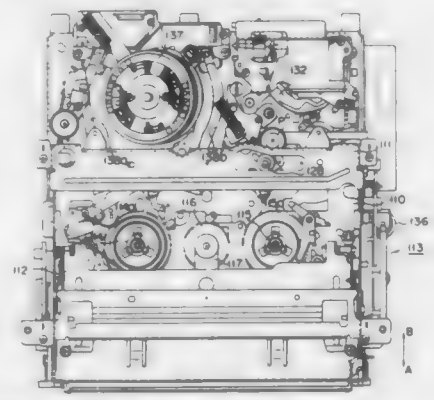
Hisanaga Tsujimoto, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 27, 1989, Ser. No. 457,562

Claims priority, application Japan, Dec. 28, 1988, 63-333616

Int. Cl.[5] G11B *5/008*

U.S. Cl. 360—96.5 **7 Claims**



1. A cassette loading apparatus comprising:

a cassette holder which houses a cassette to be loaded and is arranged to be movable in a substantially horizontal state;

loading means including a guide member for guiding said cassette holder so as to load the cassette in a first direction from a loading start position to a loading end position and to unload the cassette in a second direction opposite to the first direction from an unloading start position to an unloading end position, and a driving member for driving said guide member in the first and second directions;

transmitting means for transmitting a driving force from a driving source to said driving member;

switch means including a pair of contacts which are switched to ON and OFF states as to selectively supply power to said driving source, and first and second actuators for switching said pair of contacts to ON and OFF states, said second actuator being engaged with said guide member at the loading end position assumed by said guide member so as to switch said pair of contacts to an OFF state; and

a switching member including first and second engaging portions which can be freely engaged with said driving member and said first actuator of said switch means, engagement of said first engaging portion with said driving member being released at the loading start position assumed by said guiding member so as to cause said second engaging portion to be engaged with said first actuator of said switch means, thereby switching said pair of contacts to an ON state, and said first engaging portion being engaged with said driving member at the unloading end position assumed by said guide member so as to cause said second engaging portion to be disengaged from said first actuator, thereby switching said pair of contacts to an OFF state.

5,005,092

SHUTTER OPENING DEVICE

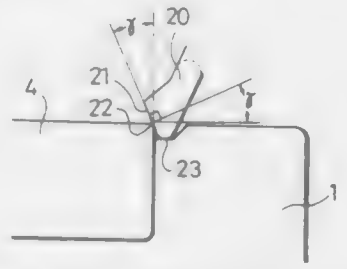
Osamu Shigenai, Furukawa, and Keiichi Sato, Shiogama, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Dec. 26, 1989, Ser. No. 456,921

Claims priority, application Japan, Apr. 7, 1989, 1-40478[U]

Int. Cl.[5] G11B *17/02*

U.S. Cl. 360—99.06 **2 Claims**



1. In a shutter opening device including a lever member rotatably supported at a deepest portion of a cartridge holder of a disc driving device with respect to an inserting direction of a disc cartridge and means for normally elastically biasing said lever member in an ejecting direction of said disc cartridge, said disc cartridge having a case formed with a head insertion opening and a shutter so mounted as to ride over one end of said case for normally closing said head insertion opening, said lever member being adapted to contact an end surface of said shutter upon insertion of said disc cartridge and open said shutter in a direction perpendicular to the inserting direction of said disc cartridge according to an inserting force of said disc cartridge; the improvement wherein said lever member has a contact end portion for contacting said shutter, said contact end portion being formed with an inclined surface having an angle of inclination from a plane perpendicular to a sliding direction of said shutter and further formed with a front end adapted to first contact said case of said disc cartridge, said inclined surface being adapted to contact a corner of said shutter, said angle of inclination of said inclined surface being set such that a force to be applied to said shutter by said lever member in a disengaging direction of said shutter upon contacting of said inclined surface with said corner is in a predetermined range not generating disengagement of said shutter.

5,005,093

RECORDING AND/OR REPRODUCING APPARATUS WITH CARTRIDGE LOCK MECHANISM

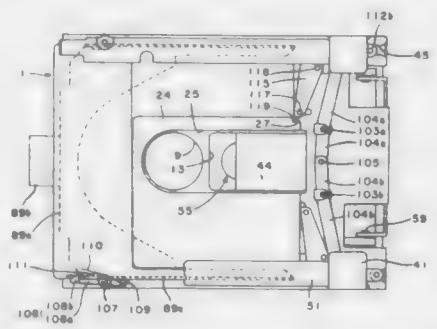
Yoshihisa Inoue, Saitama, and Yasunori Arai, Tokyo, both of Japan, assignors to Nakamichi Corporation, Tokyo, Japan

Continuation of Ser. No. 265,212, Oct. 31, 1988, Pat. No. 4,899,238. This application Dec. 13, 1989, Ser. No. 450,246

Claims priority, application Japan, Oct. 31, 1987, 62-276778

Int. Cl.[5] G11B *5/012*

U.S. Cl. 360—99.06 **9 Claims**



1. A recording and/or reproducing apparatus for performing recording and/or reproducing operation with respect to a disc contained in a disc cartridge, comprising:

a main chassis;

a holder secured to said main chassis for accommodating the disc cartridge;

shutter actuating means for opening a laterally slidable shutter of the disc cartridge along with insertion thereof into said holder in a direction substantially perpendicular to the sliding direction of said shutter;

a base for mounting thereon a head for transducing signals from a recording medium in opposition to one side of the disc and a spindle motor for rotating the disc, said base being displaceable between a first position retracted away from said holder and a second position close to said holder to make operative said head and said spindle with respect to the disc contained in the full-loaded disc cartridge in said holder;

cartridge lock means for locking the disc cartridge in a full-loaded position, including a lock lever engageable with a corresponding engaging portion of the disc cartridge and first spring means for biasing said lock lever and said corresponding engaging portion is released;

detect means for detecting that the disc cartridge has reached the full-loaded position in said holder; and

control means operated in response to detection by said detect means to actuate said cartridge lock means against said first spring means to lock the disc cartridge in the full-loaded position and then to shift said base to said second position.

5,005,094

MODE CHANGEOVER MECHANISM WITH FLAT CAM SURFACE FOR A TAPE PLAYER

Norimasa Komatsu, and Asashi Miyazaki, both of Kakuda, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Oct. 19, 1989, Ser. No. 424,359

Claims priority, application Japan, Dec. 12, 1988, 63-161741[U]; Feb. 10, 1989, 1-15065

Int. Cl.[5] G11B *5/008, 5/54*

U.S. Cl. 360—105 **5 Claims**



1. A mode changeover mechanism for a tape player for recording signals on a magnetic tape and reproducing signals recorded on the magnetic tape, comprising:

a base plate, a magnetic head mounted on said base plate, said base plate disposed to move toward the magnetic tape to bring the magnetic head into contact with the magnetic tape and away from the magnetic tape to separate the magnetic head from the magnetic tape, said base plate moving in a direction of movement which is substantially along a straight line;

a spring biasing said base plate away from the magnetic tape to separate the magnetic head from the magnetic tape;

a changeover cam for moving said base plate toward the magnetic tape against the resilience of the spring; and

a motor for driving the changeover cam for rotation;

characterized in that the changeover cam has a flat cam surface, and when said flat cam surface is in contact with said base plate, said base plate is in a position such that the magnetic head is in contact with the magnetic tape, and

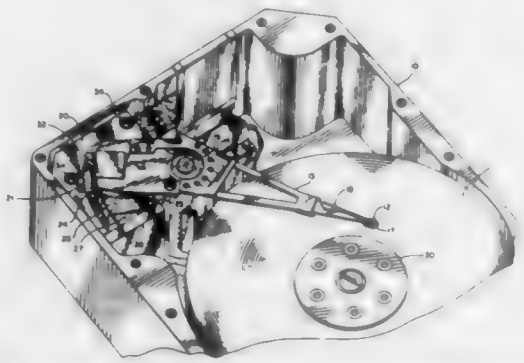
while said base plate is in said position, said flat cam surface is disposed perpendicular to and intersecting a center line passing through the center of rotation of the change-over cam, said center line extending in a direction parallel to said direction of movement of said base plate.

5,005,095

ACTUATOR FOR LINEARIZING TORQUE IN A DISK DRIVE SYSTEM

J. Arthur Wagner, San Jose, Calif., assignor to Maxtor Corporation, San Jose, Calif.

Filed May 2, 1990, Ser. No. 518,078
Int. Cl.[5] G11B *5/55*
U.S. Cl. 360—106 **12 Claims**



1. In a magnetic recording system which includes a magnetic disk for storing data in a pattern of remnant magnetization, a rotary moving coil actuator for selectively positioning a transducer across said disk to access data stored thereon, said actuator comprising:

a frame having a pair of radial slots;

a body pivotable about an axis;

a pair of magnets mounted to said frame along said slots;

a coil securely attached to said body, said coil passing through said radial slots and adjoining said magnets, said coil moving across said slots in an arcuate path from a first position to a second position, thereby pivoting said body, during a data stroke; and

at least one notch formed in said frame at a point midway along said arcuate path, said coil and notch each having first and second edges such that when said coil is in said first position, said first edge of said notch coincides with said first edge of said coil, and when said coil is in said second position, said second edge of said notch coincides with said second edge of said coil, said notch reducing the magnetic flux density at said point, thereby linearizing the torque of said actuator across said data stroke.

5,005,096

MAGNETORESISTIVE READ TRANSDUCER HAVING HARD MAGNETIC SHUNT BIAS

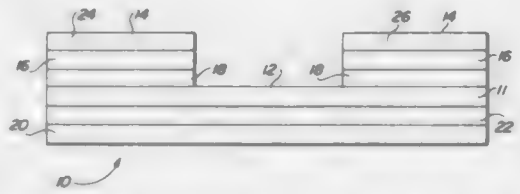
Mohamad T. Krounbi, San Jose; Otto Voegeli, Morgan Hill; and Po-Kang Wang, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1988, Ser. No. 287,970
Int. Cl.[5] G11B *5/127*
U.S. Cl. 360—113 **15 Claims**

1. A magnetoresistive read transducer comprising:

a thin film of magnetoresistive conductive layer formed of magnetic material, said magnetoresistive conductive layer having passive end regions separated by a central active region; and

means for producing a longitudinal magnetostatic bias in the passive end regions of said magnetoresistive layer, said means for producing a longitudinal bias comprising separate thin films of hard magnetic material parallel to, but spaced from, said magnetoresistive layer, said separate thin films of hard magnetic material existing substantially in each of the passive end region only, and said separate thin films of hard magnetic material being magnetized in a chosen direction along said transducer whereby said longitudinal bias maintains said active regions of said magnetoresistive layer in a single domain state in said chosen direction along said transducer.

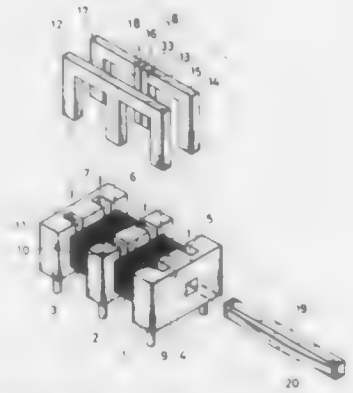


5,005,097

MAGNETIC HEAD WITH A COIL AND CORE SUPPORTING BOBBIN

Seigou Matsuoka, Arao, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 4, 1989, Ser. No. 293,776
Int. Cl.[5] G11B *5/265, 5/17*
U.S. Cl. 360—121 **2 Claims**



1. A magnetic head comprising:

at least one coil,

a front core having a media-touching portion and at least one protrusion;

a back core;

a dummy core disposed parallel to said front core; and

a bobbin for holding thereon said at least one coil for generating magnetic flux,

said bobbin having at least two apertures through which said dummy core and said protrusion of said front core are respectively disposed to effect an integral assembly of said front core, said dummy core and said bobbin,

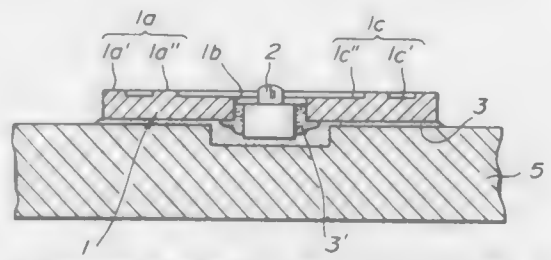
said back core extending in said bobbin and through said at least one coil and being in contact with said at least one protrusion of said front core to produce therewith at least one magnetic path for said magnetic flux.

5,005,098

DISK DRIVE WITH STABILIZER BLOCK FOR INSURING STABLE CONTACT BETWEEN A READ/WRITE HEAD AND A FLEXIBLE RECORDING MEDIUM

Tokio Kanada, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 12, 1989, Ser. No. 364,121
Claims priority, application Japan, Jun. 15, 1988, 63-147101
Int. Cl.[5] G11B *5/60, 21/21*
U.S. Cl. 360—130.34 **30 Claims**



1. A stabilizer block structure for a contact-type disk drive unit, in which information to be recorded and/or reproduced is transferred between a flexible storage medium disk and a reading and/or writing head being held in contact with each other, said stabilizer block structure comprising:

a stabilizer block body defining a head receptacle opening for securing said reading and/or writing head therein;

a contact surface incorporated with said stabilized block body and oriented on one side of said stabilizer block body, for defining a contact area for establishing contact with said flexible storage medium disk, the surface area of said contact area being less than a surface area of said one side of said stabilizer block body; and

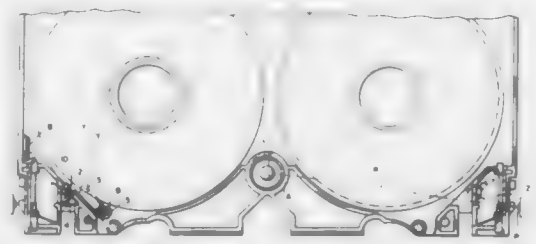
at least one void formed on said one side of said stabilizer block body, said void being substantially surrounded by said contact area and said void surrounding said reading and/or writing head for defining a vacuum chamber in cooperation with said flexible storage medium disk for generating a Bernoulli drawing force for drawing said flexible storage medium disk to establish steady head-to-disk contact while said flexible storage medium disk is rotatingly driven.

5,005,099

METHOD AND APPARATUS FOR THE PREVENTION OF FAST-FORWARDING OF A VIDEO CASSETTE TAPE

James D. Perryman, 1449 Richland Rd. #9, Auburn, Ala. 36830, and John M. Green, 125 Eufaula St., Gulf Breeze, Fla. 32561

Filed Dec. 18, 1989, Ser. No. 451,562
Int. Cl.[5] G11B *23/02, 15/48*
U.S. Cl. 360—132 **4 Claims**



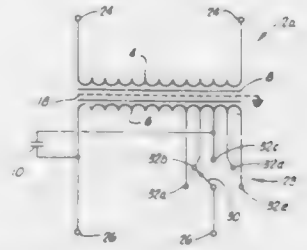
1. In a video cassette recorder having a motor for driving the supply reel and take-up reel for moving a video tape in a video tape cassette at a first play/record speed and a second fast forward/rewind speed, and standard photoelectric circuitry for sensing the clear leader and trailer in a video tape cassette to stop said recorder when the beginning or end of said tape is reached, a method for preventing the fast-forwarding of said video tape cassette in said video cassette recorder comprised of sensing said second speed of said tape in said cassette, and activating said standard photoelectric circuitry of said video cassette recorder for sensing the end of said tape to cause said video cassette recorder to stop.

5,005,100

TRANSIENT-FILTERED TRANSFORMER

Donald W. Owen, Yukon, Okla., assignor to Southwest Electric Company, Oklahoma City, Okla.

Filed Aug. 2, 1989, Ser. No. 389,312
Int. Cl.[5] H02H *7/04*
U.S. Cl. 361—35 **15 Claims**



1. A transient-filtered transformer, comprising:

an electrically conductive primary winding;

an electrically conductive secondary winding inductive by coupled to said primary winding for providing an output voltage, said secondary winding having leakage reactance; and

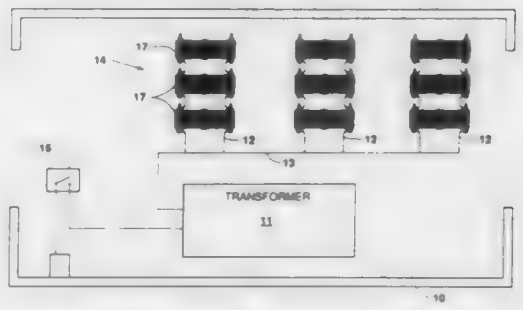
capacitance connected directly across less than the full length of said secondary winding wherein said capacitance is rated for less than the full output of said secondary winding, said capacitance combining only with said leakage reactance so that an inductive-capacitive filter is formed for reducing high frequency voltage transients magnetically induced in said secondary winding.

5,005,101

METHOD AND APPARATUS FOR NEGATIVE CHARGE EFFECT AND SEPARATION OF UNDESIRABLE GASES

James C. Gallagher, and Michael K. Gallagher, both of 105 Villa Ann, San Antonio, Tex. 78213

Filed Jan. 31, 1989, Ser. No. 304,275
Int. Cl.[5] H01J *3/04*
U.S. Cl. 361—231 **3 Claims**



1. An electrical discharge generator apparatus comprising:

at least two electrode units each having an electrically conductive plate such as stainless steel covered by a dielectric material bonded to the conductive plate, said electrode units being disc like in a spaced relationship, and said electrode units having an assembly notch, a tubular electrically conductive spacer and insulating washer, with the electrode units and spacer and insulating washer having an assembly rod capable of passing through the aligned spacers, washer, and electrode units, the rods being

threaded are fitted with nuts tightened to compress in a good physical and electrical contact, all being mounted and connected to a transformer which is then connected to a switch controlling the power to the transformer primary winding, wherein the improvement comprises the combination that includes:

a. the apparatus includes a plurality of electrode units each having an electrically conductive plate having a surface covered by a dielectric material wherein:

said dielectric material shall have a minimum dielectric strength of 10 kilovolts per millimeter;

said dielectric material shall have a minimum dielectric constant of 9.7 kilohertz;

said dielectric material shall have a minimum thermal conductivity not less than 0.05 at 20 degrees centigrade;

said dielectric material shall have a maximum use temperature under no load conditions of at least 1,300 degrees centigrade;

b. the apparatus include said electrically conductive plate covered by said dielectric material bonded together by a flexible water, heat, and corrosion resistant silicone adhesive;

c. said electrode units being spaced at least 0.330 centimeters apart;

d. said electrically conductive spacer being made of the same dielectric material used for the electrically conductive plate surface;

e. said washer being made from the same material used for said electrically conductive plate;

f. said transformer for supplying electrical power between said electrode units being sufficient to generate a glow type of discharge between said plates, said transformer having a minimum power rating of at least 7,000 volts at 30 milliamps when supplied with 110 volts at 60 hertz, and said transformer being midpoint grounded.

5,005,102

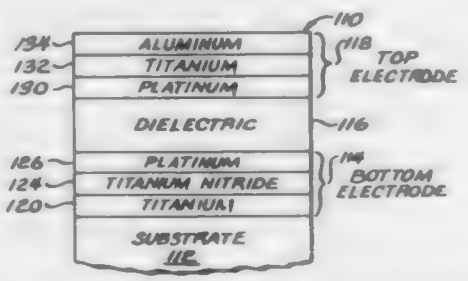
MULTILAYER ELECTRODES FOR INTEGRATED CIRCUIT CAPACITORS

William L. Larson, Colorado Springs, Colo., assignor to Ramtron Corporation, Colorado Springs, Colo.

Filed Jun. 20, 1989, Ser. No. 368,668

Int. Cl.[5] H01G *1/01;* **H01L** *3/00, 27/02*

U.S. Cl. 361—313 **8 Claims**



3. A capacitor for an integrated circuit comprising:

first and second electrodes;

a dielectric located between said electrodes;

one of said electrodes comprising a plate layer adjacent to said dielectric and a further layer, wherein said further layer comprises a layer of titanium and a layer of titanium nitride.

5,005,103

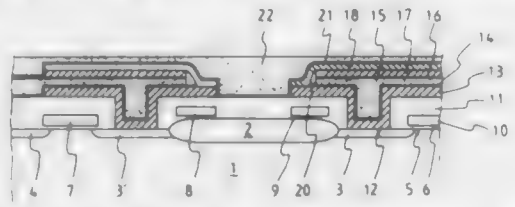
METHOD OF MANUFACTURING FOLDED CAPACITORS IN SEMICONDUCTOR AND FOLDED CAPACITORS FABRICATED THEREBY

Oh-Hyun Kwon; Taek-Yong Jang; Jung-Hyun Shin, and Won-Taek Choi, all of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suweon, Rep. of Korea

Filed Jun. 5, 1990, Ser. No. 533,494

Int. Cl.[5] H01G *4/06, 4/20*

U.S. Cl. 361—313 **14 Claims**



10. A folded capacitor for a DRAM cell having a MOS transistor and a capacitor, comprising:

a first capacitor including a first storage electrode, a first insulating layer and a first plate electrode, the first capacitor, the first storage electrode being extended from the upper part of a gate of a field oxide to the upper part of a gate of a channel region through a region for contact, the first insulating layer being interposed between the first storage electrode and the first plate electrode;

a second capacitor including the first plate electrode, a second insulating layer and a pad poly layer, the second capacitor being formed on the first capacitor, the second insulating layer being interposed between the first plate electrode and the pad poly layer; and

a third capacitor including a second storage electrode, a third insulating layer and second plate electrode, the third capacitor being formed on the second capacitor, the third insulating layer being interposed between the second storage electrode and the second plate electrode.

5,005,104

CLIP-CONNECTED TERMINAL CONDUCTOR ASSEMBLY

Kurt A. Grunert, Beaver, Pa.; Delfin Pabon, Carolina, Puerto Rico; and Ronald A. Cheski, Stowe Township, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 16, 1990, Ser. No. 568,375

Int. Cl.[5] H02B *1/20*

U.S. Cl. 361—355 **1 Claim**

1. A terminal assembly for connecting an electric cable to a bus conductor having a flat and square end portion with a central recess therein comprising:

a collar having an inner wall defining, between a head and a base portion thereof, a substantially central opening for accommodating therethrough the cable and the conductor end portion side-by-side in overlapping relation;

said central opening having a first section adjoining said head portion for receiving the cable and a second section adjoining said base portion for receiving the conductor end portion;

said second section forming an open channel communicating with said first section and of rectangular cross section matching the cross section of the conductor end portion; said open channel being defined by opposite lateral walls and by the inner surface of said, collar base portion joining said lateral walls, whereby the conductor end portion is lodged into said open channel for slip-fitting therein;

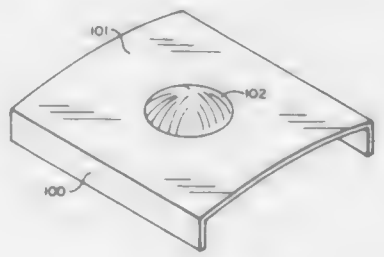
said collar head portion having a transversal threaded aperture with a locking screw extending therethrough for applying a perpendicular tightening force on the cable; and

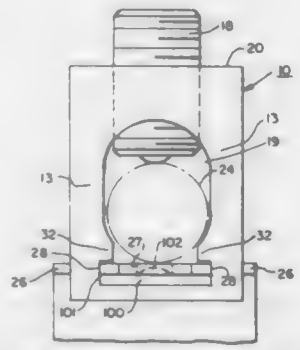
clip means being provided including a resiliently curved metallic member symmetrically defined by parallel generatrices extending between opposite side edges from a front

end to a back end of the member; said opposite edges being distant by substantially the distance between said lateral walls so that said member side edges are guided by said lateral walls of said collar open channel;

a boss being provided centrally on said member, projecting on the convex side thereof and matching the end portion recess;

said member extending from front end to back end sufficiently, when lodged inside said second section, to ride





upon said collar base inner surface, and said member having ledges along said front and back edges for gripping the respective front and back sides of said collar base portion;

said member being placed within said open channel (a) upon said collar base inner surface for clipping thereupon and (b) below the conductor end portion for boss and recess mating under resilient cooperative pressure by said locking screw and said member.

5,005,105

STRESS-RELIEVING FLEXIBLE CIRCUIT BOARD HOLDER PLATE

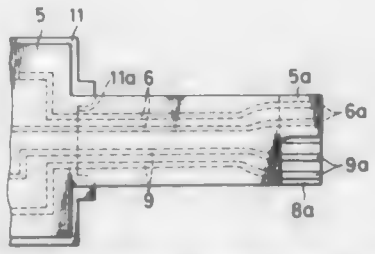
Norio Onodera, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1989, Ser. No. 311,928

Claims priority, application Japan, May 13, 1988, 63-63212[U]

Int. Cl.[5] H05K *1/00*

U.S. Cl. 361—398 **5 Claims**



1. A flexible print circuit board comprising a wired flexible insulation film held on a holder plate, a distributor section having a portion projecting from said insulation film, said distributor section including a cluster of conductive patterns arranged on said insulation film, wherein said holder plate is provided with a recessed portion under said distributor section, said recessed portion having a width greater than that of said cluster of conductive patterns.

5,005,106

MULTIFUNCTIONAL CARD HAVING AN ELECTROMAGNETIC WAVE PROTECTION

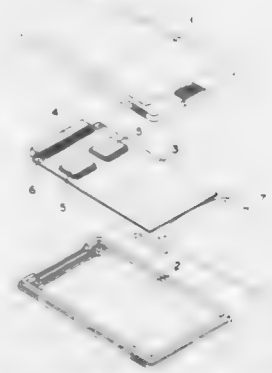
Yutaro Kiku, Yokohama, Japan, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 7, 1989, Ser. No. 447,394

Claims priority, application Japan, Dec. 8, 1988, 63-159956[U]

Int. Cl.[5] H05K *9/00*

U.S. Cl. 361—424 **1 Claim**



1. A multifunctional IC card comprising

a circuit substrate having mounted thereon at least one integrated circuit device and including a ground means,

a connector means disposed along at least one edge of said circuit substrate for electrically connecting the substrate to an external apparatus,

a housing of two separate sections formed of insulating material which are fit together to enclose the circuit substrate, and

a thin, film-like shielding member having two layers, an inner insulating layer and an outer conductive layer, said shielding member being disposed between the circuit substrate and the housing and surrounding said substrate, said inner insulating layer facing the substrate and said outer conductive layer facing the housing, said conductive layer being electrically connected to said ground means.

5,005,107

SOLID ELECTROLYTIC CAPACITOR

Yasuhiro Kobashi, Yahata, and Tsutomu Irikura, Joyo, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 6, 1989, Ser. No. 446,908

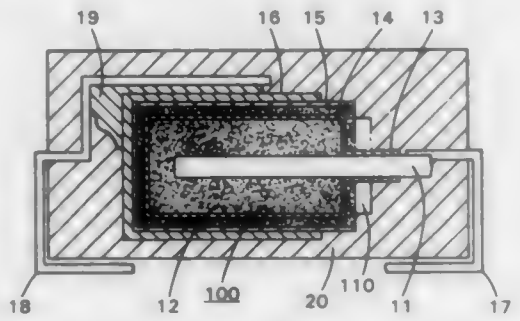
Claims priority, application Japan, Dec. 7, 1988, 63-309487; Apr. 5, 1989, 1-86240; Apr. 5, 1989, 1-86241; Apr. 5, 1989, 1-86242; Apr. 5, 1989, 1-86265; Apr. 5, 1989, 1-86266

Int. Cl.[5] H01G *9/00*

U.S. Cl. 361—540 **13 Claims**

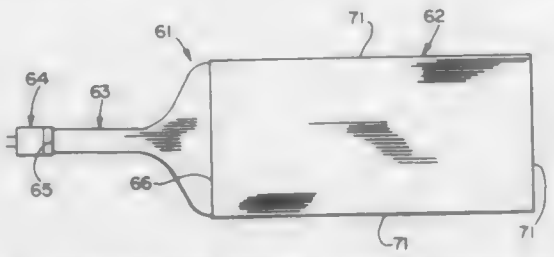
1. A solid electrolytic capacitor comprising an electrode provided with an anode lead; a dielectric oxide film, a solid electrolyte layer, a carbon layer, and a cathode layer, which are successively formed on the surface of said electrode; a positive terminal connected to said anode lead; and a negative terminal connected to said cathode layer by means of an elec-

trically conductive adhesive; wherein at least one of said cathode layer and said electrically conductive adhesive comprises



a polymer and an electrically conductive powder comprising a flaky palladium powder with grain diameters of 1-30 μm.

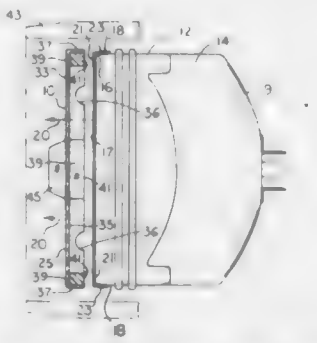
5,005,108
THIN PANEL ILLUMINATOR
David J. Pristash, Brecksville, and Jeffery R. Parker, Concord, both of Ohio, assignors to Lumitex, Inc., Cleveland, Ohio
Filed Feb. 10, 1989, Ser. No. 309,424
Int. Cl.[5] F21V *7/04*
U.S. Cl. 362—31 **76 Claims**



1. A panel illuminator comprising a solid transparent panel member having a greater cross sectional width than thickness and top and bottom surfaces and an input edge, transition means for receiving focused light from a light source and transmitting the focused light to said input edge for conduction by said panel member, and means for causing the conducted light to be emitted from one of said surfaces along the length of said panel member, said transition means including an input surface at one end shaped to permit a light source to be easily focused thereon, and an output surface at another end having a shape substantially corresponding in shape to said input edge of said panel member and connected thereto.

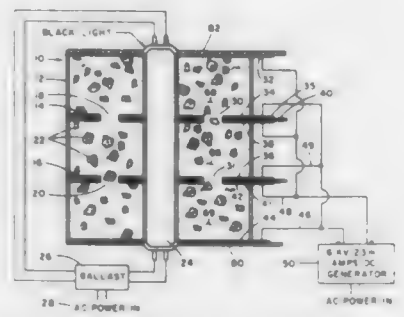
5,005,109
DETACHABLE AMBER LENS FOR A VEHICLE
Roland A. Carleton, 38241 Southfarm, Northville, Mich. 48167
Filed Jul. 30, 1990, Ser. No. 559,833
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 362—61 **3 Claims**

1. A removable fog lens attachment for a recessed automotive headlight, wherein the headlight includes a sealed beam unit having a rectangular front face and peripheral side surfaces extending generally normal to edge areas of said front face, and an annular rectangular mounting frame having an endless flat front flange overlying peripheral areas of the sealed beam unit front face, said mounting frame further including side flanges extending from outer edge areas of said front flange along the side surfaces of the sealed beam unit; said fog lens attachment comprising a flat rigid colored transparent light filtering panel having a rectangular plan configuration conforming to the plan configuration of the rectangular mounting frame; said transparent panel having an upper straight edge, a lower straight edge, and two straight side edges; said transparent panel having a flat front face, a rear face, and an endless peripheral flange extending right angularly from said rear face along the four edges of the panel; and four permanent magnets secured to the panel rear face at spaced points along the panel edges; each magnet being a straight bar magnet having a generally square cross section defining four flat faces; each bar magnet having a first flat face thereof engaged against the panel rear face, a second flat face thereof engaged against the panel peripheral flange, and a third flat face thereof in registry with the front flange of the mounting frame; said peripheral flange acting as a locator surface for the



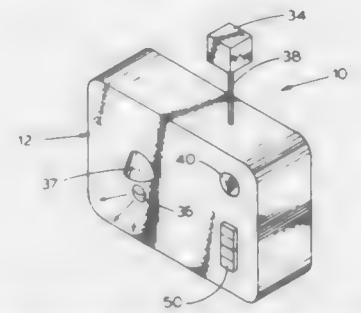
bar magnets; said four bar magnets being located midway along respective ones of the panel side edges for magnetically securing the fog lens attachment to the headlight; said magnets projecting from the panel rear face to space the rear face of said panel an appreciable distance away from the front face of the sealed beam unit; said panel and said endless peripheral flange being integrally formed as a single one piece unit whereby the flange serves as a reinforcement means for the panel.

5,005,110
ELECTROSTATIC DISPLAY DEVICE
Gregory R. Brotz, P.O. Box 1322, Sheboygan, Wis. 53081
Continuation-in-part of Ser. No. 475,910, Feb. 6, 1990, Pat. No. 4,842,504. This application Jul. 16, 1990, Ser. No. 553,866
The portion of the term of this patent subsequent to Jul. 17, 2007, has been disclaimed.
Int. Cl.[5] F21S *3/00*
U.S. Cl. 362—84 **5 Claims**



1. An electrostatic display device comprising:
a viewing chamber having at least one transparent side;
an upper electrostatic plate having an electric charge;
a lower electrostatic plate having an opposing charge from the charge of said upper electrostatic plate;
means for producing light to illuminate said viewing chamber;
a plurality of electrostatically charged particles; and
means for generating an electric current to said supper and lower electrostatic plates causing said particles to be attracted to the electrostatic plate of opposite charge of said particles, said particles acquiring the charge of such electrostatic plate to be then repelled and attracted to said electrostatic plate of opposing charge where said particles then change their charge to the same charge of that electrostatic plate where said particles are again repelled and attracted to the electrostatic plate of opposing charge, such process of changing charges continuing, causing the particles to move within said viewing chamber as said particles are illuminated by said light.

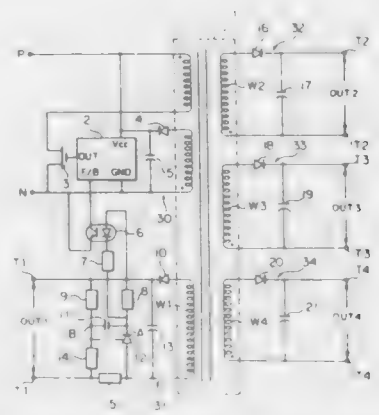
5,005,111
PURSE LIGHT ASSEMBLY
Chuck Teal, P.O. Box 1134, Walkertown, N.C. 27051
Filed Apr. 19, 1990, Ser. No. 511,234
Int. Cl.[5] A45C *15/06*
U.S. Cl. 362—156 **1 Claim**



1. A light assembly for use in a purse comprising:
(A) a case, said case having a front surface, a rear surface, a top surface, a bottom surface, and two side surfaces;
(B) a hook-and-loop fastener on said case rear surface mounting said case to an inner surface of a purse;
(C) a light element mounted on said case front surface;
(D) a hood element mounted on said case front surface above said light element, said hood element being shaped to direct light emitted from said light element downwardly toward said case bottom surface;
(E) a power source in said case;
(F) a manual on/off switch mounted on said case front surface adjacent to said light element;
(G) a horn element mounted on said case front surface adjacent to said manual on/off switch;
(H) a first circuit means connecting said light element to said power source, said first circuit means including a reverse switch that is biased into a circuit closing closed condition and is opened by overcoming said bias, said reverse switch being connected to said power source and to said light element, said reverse switch connecting said light element and said horn element to said power source when said reverse switch is closed and disconnecting said light element and said horn element from said power source when said reverse switch is held open;
(I) a second circuit means connecting said horn to said reverse switch and to said power source, said second circuit means including
(1) a timer mechanism connected to said horn,
(2) said manual on/off switch connecting said timer mechanism and to said reverse switch,
(3) said timer mechanism connecting said horn to said reverse switch after a preset delay period after said reverse switch is closed, said manual on/off switch being connected between said timer mechanism and said horn to disconnect said horn from said power source when manually operated into an off condition whereby said manual on/off switch serves as a manual override to prevent said horn from being activated even after said preset time has elapsed if said manual on/off switch is in an off condition;
(4) said timer mechanism, said manual on/off switch and said horn all being connected in series with each other and said series connected timer mechanism, said manual on/off switch and said horn being connected in parallel with said light element with respect to said reverse switch so that said light element will be activated even if said manual on/off switch is in an off condition to disconnect said timer mechanism from said power source;
(J) a pedestal mounted at one end thereof on said case top surface and extending upwardly therefrom and having a second end located spaced from said case top surface; and
(K) a housing mounted on said pedestal second end, said reverse switch being located in said housing to be contacted by a mouth element of a purse to hold said reverse switch open when the purse is closed and to permit said reverse switch to close when the purse is opened

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5,005,112
REGULATED D.C.-D.C. POWER CONVERTER HAVING MULTIPLE D.C. OUTPUTS
Shigemi Kuriyama, Nagoya City, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 16, 1990, Ser. No. 465,812
Claims priority, application Japan, Jan. 26, 1989, 1-16965
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—21 **6 Claims**



1. A regulated D.C.-D.C. power converter having multiple D.C. outputs, comprising:
switching means for converting a D.C. input to a high-frequency power;
power conversion means for converting said high-frequency power into a plurality of D.C. output powers at a plurality of output terminals;
feedback means for monitoring the D.C. voltage at one of said plurality of output terminals and providing a feedback signal to said switching means when the monitored D.C voltage deviates from a predetermined value to alter the operation of said switching means so as eliminate said deviation; and
hysteresis means for varying the value of said monitored D.C. voltage in accordance with the amount of load current drawn by a load connected to said one output terminal so as to cause a hysteresis change in the output D.C. voltage at said one output terminal in accordance with a change in said load current.

5,005,113

HYBRID CIRCUIT MODULE HAIVNG BRIDGE CIRCUIT AND RECTIFYING CIRCUIT DISPOSED ON A SAME SUBSTRATE

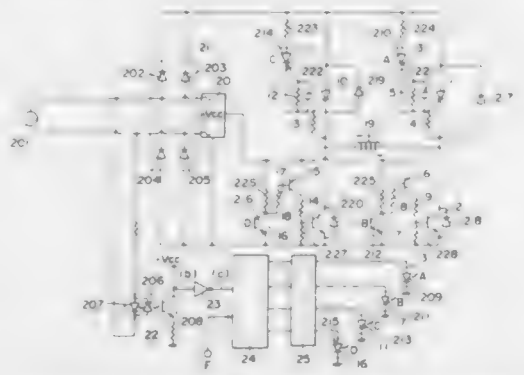
Nobuo Ohtuka, Oizumi, and Kouichi Matsumoto, Kumagaya, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Division of Ser. No. 271,302, Nov. 15, 1988, Pat. No. 4,918,590. This application Nov. 9, 1989, Ser. No. 433,773

Claims priority, application Japan, Nov. 16, 1987, 62-288779; Nov. 16, 1987, 62-288800

Int. Cl.[5] **H02M** *5/45, 5/458*

U.S. Cl. 363—37 **1 Claim**



1. A conversion apparatus having a bridge circuit using fast switching transistors for PWM and slow switching thyristors for a fundamental frequency and supplying to a load an output AC power having a frequency which is different from a frequency of an input AC power supplied thereto, said inverter comprising:

a rectifying circuit for rectifying a full wave of the input AC power and for providing a rectified output of pulsating power,

transistors for ON/OFF switching, said transistors each having a collector terminal, an emitter terminal and a base terminal for switching ON/OFF an electric current from said collector terminal to said emitter terminal,

thyristors having an ON/OFF switching speed slower than a switching speed of said transistors, said thyristors each having an anode terminal, a cathode terminal, and a gate terminal for switching ON/OFF an electric current from said anode terminal to said cathode terminal,

a plurality of bridge circuit arms each comprising one of said transistors and one of said thyristors, said collector terminal of said one of said transistors being connected to said cathode terminal of said one of said thyristors, said emitter terminal of said one of said transistors being connected to a negative side of said rectified output from said rectifying circuit, said anode terminal of said one of said thyristors being connected to a positive side of said rectified output from said rectifying circuit,

said plurality of bridge circuit arms being connected in parallel to each other to from the bridge circuit,

controlling means for supplying an electric signal to said gate terminal of said thyristors and for supplying an electric signal to said base terminal of said transistors so as to supply the AC output power to said load in accordance with a desired frequency, wherein said transistors repeatedly switch between ON and OFF states while said thyristors are in an ON state, and,

a zero cross signal generator for generating a zero cross signal at each half cycle of the input AC power supplied thereto,

said controlling means further comprising means for dividing a pulsating power during a period of time between said zero cross signal and a subsequent zero cross signal into plural power portions in accordance with the period of time, and means for changing a polarity of each of said plural power portions to said load in accordance with the desired frequency.

5,005,114

CIRCUITRY FOR GENERATING PHASE-SHIFTED SINUSOIDAL VOLTAGES

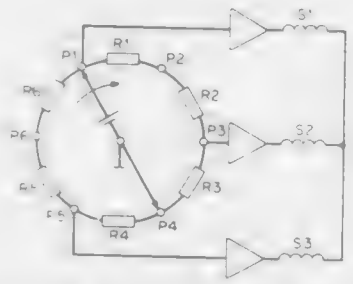
Güunter Gleim, Villingen-Schwenningen, Fed. Rep. of Germany, assignor to Deutsche Thomson-Brandt GmbH, VS-Villingen, Fed. Rep. of Germany

Filed Apr. 28, 1989, Ser. No. 345,020

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1988, 3814562

Int. Cl.[5] **H02M** *7/42;* **H03B** *27/00*

U.S. Cl. 363—43 **6 Claims**



1. An arrangement for generating phase-shifted sinusoidal voltages, comprising: a plurality of resistors connected in series in a closed circular network for providing said sinusoidal voltages; connecting junctions between resistors, each pair of connecting junctions having the same resistors therebetween; a source of direct-current voltage with poles; means for cyclically advancing a direct-current voltage from said source through said network so that two parallel branches of said network with the same number of resistors are connected between said poles of said voltage source, said resistors having all the same resistance values; motor windings connected between said connecting junctions; said voltage source being cyclically connected in sequence to said connecting junctions so that phase-shifted sinusoidal voltage functions appear at said connecting junctions for operating a motor.

5,005,115

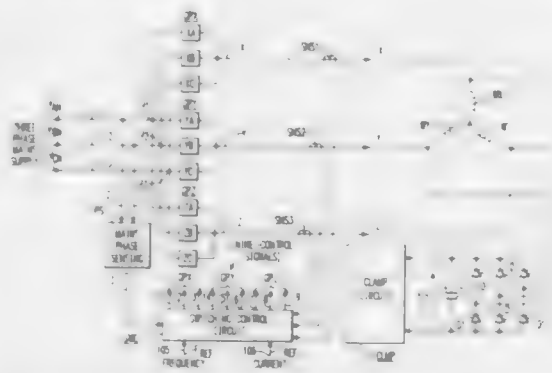
FORCED-COMMUTATED CURRENT-SOURCE CONVERTER AND AC MOTOR DRIVE USING THE SAME

Colin D. Schauder, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 28, 1989, Ser. No. 386,067

Int. Cl.[5] **H02M** *5/257*

U.S. Cl. 363—159 **11 Claims**



1. An AC/AC converter, connected between AC input lines and AC output lines, said input lines being connected to a power supply and said output lines being connected to a load,

and including a plurality of bilateral switches connected in groups, each group being associated in common with one of the respective AC output lines and the bilateral switches in each group being associated with the AC input lines, respectively, each bilateral switch when turned ON connecting one AC line associated therewith to one AC output line common with the group, comprising:

first means for successively selecting in sequence said groups by pairs, each pair of group for a predetermined duration to establish a single current path through the load, said current being for said duration in one direction through one selected group of said pair and in the opposite direction through the other selected group of said pair, said sequence and duration determining the frequency of alternation of said current in the load;

second means for successively gating for conduction in relation to the AC input line voltages said bilateral switches of a selected pair of groups for establishing a voltage between the output lines of said selected pair of groups;

means being associated with said gating means for adjusting the phase of gating relative to the voltage of said input lines for controlling said establishing voltage and for establishing therewith a desired magnitude of current on said output lines;

whereby a current source of controlled magnitude and frequency is applied to said output AC load lines.

5,005,116

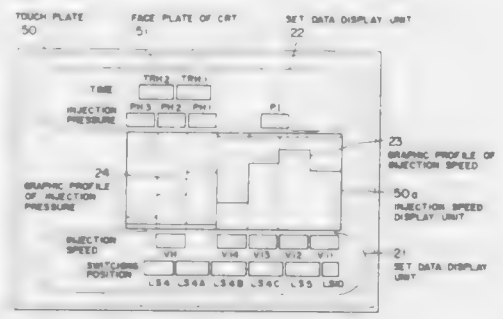
APPARATUS FOR DISPLAYING A PROFILE AND CORRESPONDING DATA OF OPERATING CONDITIONS

Shigeru Fujita; Hideo Tanaka, and Susumu Harada, all of Numazu, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1988, Ser. No. 267,254

Int. Cl.[5] **G06F** *15/46*

U.S. Cl. 364—188 **4 Claims**



1. An input display apparatus including:

a display member adapted to display a plurality of set items,

a transparent panel including key elements and being superposed on said display member,

a profile controlled graphic profile display picture displaying a profile and corresponding data representing an operating condition during one operation step of an injection molding machine in multi-stages in accordance with an operation position of a screw, and

means for changing a level of said profile display picture in accordance with a magnitude of a changed corresponding data value when an operating condition of said injection molding machine is changed, wherein an input key frame is displayed in a superposed relation on said displayed picture only when a set item is selected and operated for inputting a set value, said input key frame comprising a ten key and an input data display unit.

5,005,117

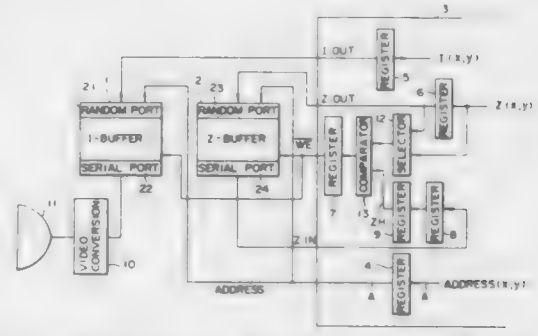
THREE-DIMENSIONAL COMPUTER GRAPHICS APPARATUS WITH TWO-PORT MEMORY FOR STORING DEPTH INFORMATION

Nobuyuki Ikumi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 29, 1988, Ser. No. 251,164

Int. Cl.[5] **G06F** *3/153, 15/70;* **G09G** *1/16*

U.S. Cl. 364—200 **1 Claim**



1. A three-dimensional computer graphics apparatus in which depth information, brightness information, and memory addresses of a plurality of coordinate points on a screen of the apparatus are calculated by an integrated circuit, wherein the depth information and the brightness information are stored in respective depth information display and brightness information display buffers in accordance with the memory addresses, said integrated circuit comprising:

depth information storing means for storing the calculated depth information of the coordinate points;

register means for storing depth information for a first of said plurality of coordinate points;

selecting means for selecting the depth information in said register for said first of said plurality of coordinate points and for selecting the calculated depth information in said storing means serially for all but the first of said plurality of coordinate points;

delay means for delaying transfer of the calculated depth information of said plurality of coordinate points for a predetermined period of time;

comparing means, connected to said selecting means and to said delay means, for comparing the calculated depth information selected by said selecting means with the depth information delayed by said delay means, and for activating a write-in control signal on the basis of the comparison; and

said depth information display buffer including a two-port memory means for storing the depth information in accordance with the write-in control signal, said two-port memory means including a random port through which the calculated depth information stored in the depth information storing means is entered, and including a serial port through which the calculated depth information is supplied to said delay means.

5,005,118

METHOD AND APPARATUS FOR MODIFYING MICRO-INSTRUCTIONS USING A MACRO-INSTRUCTION PIPELINE

Daniel E. Lenoski, Mountain View, Calif., assignor to Tandem Computers Incorporated, Cupertino, Calif.

Filed Apr. 10, 1987, Ser. No. 36,726

Int. Cl.[5] **G06F** *9/26, 9/302, 9/305, 9/38*

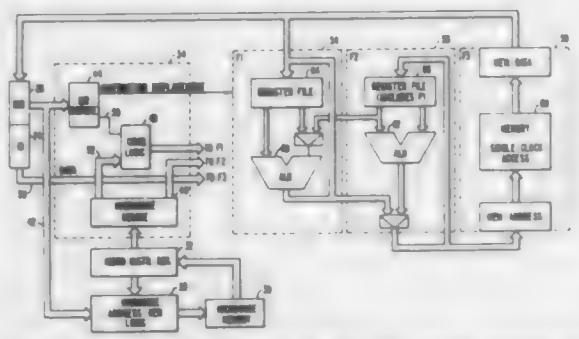
U.S. Cl. 364—200 **1 Claim**

1. An apparatus for executing instructions in a controller having at least first and second function units which each include an arithmetic logic unit, comprising:

a macro-instruction register;

a next macro-instruction register coupled to said macro-instruction register;

first logic means, coupled to one of said instruction registers, for generating control signals to concurrently execute, during a single clock cycle, first and second operations in said first and second function units, respectively, said first operation being used to carry out a first macro-instruction in said first macro-instruction register and said second operation being performed to carry out a next macro-instruction, and for using the result of said second operation during the execution of said next macro-instruction if said next macro-instruction has a number of operations less than a predetermined number and otherwise re-executing said second operation;



second logic means for decoding said next macro-instruction to determine whether less than said predetermined number of operations are required;

wherein one of said first and second operations is a memory access operation and said first logic means includes

a first logic stage for providing access to a memory,

a second logic stage having a first arithmetic logic unit for performing arithmetic operations on data provided from at least one of said first and next macro-instructions and said memory, and

a third logic stage having a second arithmetic logic unit for performing arithmetic operations on data provided from at least one of said first and next macro-instructions and said memory, at least two of said first, second and third logic stages being concurrently operated for a portion of said first and next macro-instructions.

5,005,119

USER INTERACTIVE CONTROL OF COMPUTER PROGRAMS AND CORRESPONDING VERSIONS OF INPUT/OUTPUT DATA FLOW

James E. Rumbaugh, Schenectady, N.Y., and Kenneth J. Daniel, North Ridgeville, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 20,846, Mar. 2, 1987, abandoned. This application Aug. 29, 1989, Ser. No. 401,461

Int. Cl.[5] **G06F** *15/00, 3/14*

U.S. Cl. 364—200 **22 Claims**

1. A method of for tracking program execution and versions on a digital computer during a computeraided engineering design operation, said computer including means for interacting with a human user and memory means for storing programs and data, said method comprising the steps of:

a) identifying on the digital computer each program to be controlled;

b) identifying for each said program input and output data set requirements;

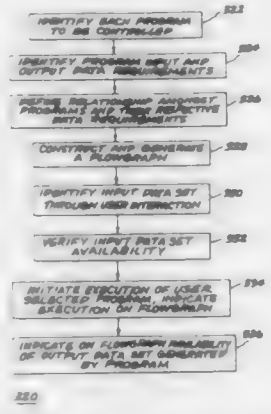
c) defining a relationship amongst said programs and their respective input and output data set requirements;

d) identifying an input data folder and an output data folder for respectively representing said input and output data set requirements for each said program;

e) identifying through user interaction each said user selected input data set;

f) verifying the presence of each said user selected input data set in each said input data folder of each said user selected program;

g) issuing computer commands effective to execute each said user selected program on each said user selected input data set, each said user selected program generating an output data set upon completing execution;



h) placing each said output data set generated by each said user selected program into said output data folder thereof; and

i) automatically identifying for each said output data set a respective input data set which was utilized to generate said output data set, thereby tracking design versions resulting from said computeraided engineering design operation.

5,005,120

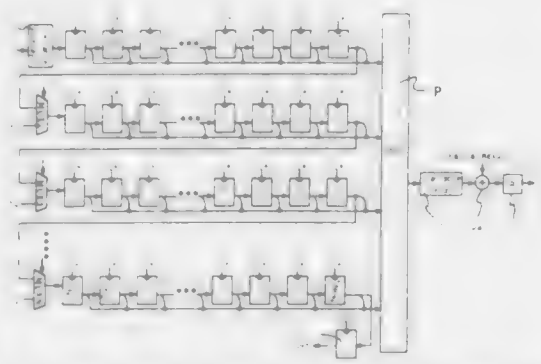
COMPENSATING TIME DELAY IN FILTERING SIGNALS OF MULTI-DIMENSIONAL RECONVIGURABLE ARRAY PROCESSORS

Peter A. Ruetz, Redwood City, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Jul. 29, 1988, Ser. No. 226,026

Int. Cl.[5] **G06F** *3/05, 13/29, 13/372, 15/16*

U.S. Cl. 364—200 **10 Claims**



1. A reconfigurable signal processing module comprising:

a first module input port (X.1) for receiving a first digital signal stream ($A.1 = a_{1,1}\ a_{1,2} \ldots a_{1,n1}$) having sequential data components ($a_{1,1}\ a_{1,2} \ldots a_{1,n1}$) representing a first number $n.1 > 1$ of sample values;

a second module input port (X.2) for receiving a second digital signal stream ($A.2 = a_{2,1}\ a_{2,2} \ldots a_{2,n2}$) having sequential data components ($a_{2,1}\ a_{2,2} \ldots a_{2,n2}$) representing a second number $n.2 > 1$ of sample values;

a first chain of register means ($P_{1,1}\ P_{1,2} \ldots P_{1,n1}$), having a first end coupled to the first module input port (X.1), for receiving and storing the data components ($a_{1,1}\ a_{1,2} \cdot a_{1,n1}$) of the first digital signal stream (A.1) and for outputting predesignated stored ones of said data components ($a_{1,1}\ a_{1,2} \ldots a_{1,n1}$) in parallel onto a corresponding number of first-chain tap lines;

first multiplexer means, having first and second selectable multiplexer input ports and a first multiplexer output port, for outputting signals appearing on a selected one of the first and second multiplexer input ports, the first multiplexer input port being coupled to a preselected one or more of the first-chain tap lines and the second multiplexer input port being coupled to the second module input port (X.2);

a second chain of register means ($P_{2,1}\ P_{2,2} \ldots P_{2,n2}$), having a first end coupled to the first multiplexer output port, for receiving and storing, during a first mode of the first multiplexer means, each of the data components ($a_{2,1}\ a_{2,2} \ldots a_{2,n2}$) of the second digital signal stream (A.2) and for outputting predesignated ones of said data components ($a_{2,1}\ a_{2,2} \ldots a_{2,n2}$) in parallel onto a corresponding number of second-chain tap lines, the second chain of register means being further for receiving and storing, during a second mode of the first multiplexer means, a plurality of first-chain-stored data components transmitted from the preselected one or more first-chain tap lines and for outputting predesignated ones of said first-chain-stored data components in parallel onto a corresponding number of second-chain tap lines, the first mode of the first multiplexer means being one in which the first multiplexer input port is coupled to the first multiplexer output port, the second mode of the first multiplexer means being one in which the second multiplexer input port is coupled to the first multiplexer output port; and

function generating means, having function input lines coupled to predetermined ones of the first-chain and second-chain tap lines, for receiving as input parameter signals of a predetermined signal processing function, preselected ones of the shifted data components ($a_{1,1}, a_{1,2}, \ldots, a_{1,n1}$ and $a_{2,1}, a_{2,2}, \ldots a_{2,n2}$) and for outputting on a function output bus of the function generating means, a digital function signal which is produced according to said signal processing function.

5,005,121

INTEGRATED CPU AND DMA WITH SHARED EXECUTING UNIT

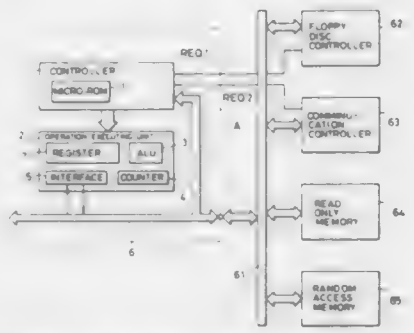
Kunihiko Nakada, Kodaira, and Yasushi Akao, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 836,421, Mar. 5, 1986, abandoned. This application Mar. 20, 1989, Ser. No. 326,472

Claims priority, application Japan, Mar. 25, 1985, 60-58350

Int. Cl.[5] **G06F** *9/22, 15/78, 12/00*

U.S. Cl. 364—200 **29 Claims**



1. A monolithic integrated single device data processor controller, comprising:

a CPU;

A DMA controller;

memory means for storing in a plurality of addressable memory locations, a plurality of CPU and DMA instructions for individually, respectively, controlling the operation of the CPU and the DMA controller;

holding means for simultaneously holding DMA and CPU instruction addresses of selected ones of said memory locations;

a single operation execution unit for executing at different times both said CPU and DMA instructions stored in said selected ones of said memory locations;

means for addressing said memory means in a variable sequence with said CPU and DMA instruction addresses held by said holding means for transferring said CPU and DMA instructions from said selected ones of said memory locations addressed by said CPU and DMA instruction addresses to said operation execution unit;

means for transferring said DMA instruction address from said holding means to said means for addressing while simultaneously maintaining said CPU instruction address held within said holding means independently of the order of arrival of said DMA instruction address and said CPU instruction address in said means for holding; and

means for transferring said CPU instruction address from said holding means to said means for addressing while simultaneously maintaining said DMA instruction address held within said holding means independently of the time of arrival of said DMA and CPU instruction addresses in said holding means.

5,005,122

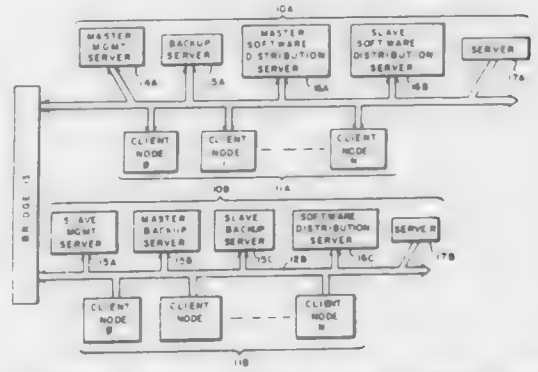
ARRANGEMENT WITH COOPERATING MANAGEMENT SERVER NODE AND NETWORK SERVICE NODE

David Griffin, Maynard; Jonathan Campbell, Acton; Michael Reilly, Sterling, and Richard Rosenbaum, Pepperell, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Sep. 8, 1987, Ser. No. 94,169

Int. Cl.[5] **G06F** *9/44, 13/38*

U.S. Cl. 364—200 **11 Claims**



1. A network including a client node and a plurality of server nodes interconnected by a communications link, at least one of said server nodes comprising a management server node and at least another one of said server nodes comprising a network service node for performing a network service with respect to said client node,

A. said management server node including:

i. a network service initiator arranged to transmit a network service initiation message for initiating a network service with respect to said client node;

ii. a network status maintainer arranged to receive a status message from said communications link and to maintain the status of said network service in response thereto; and

iii. a management server controller connected to said network service initiator and said network status maintainer and arranged to control the network service initiator to initiate said network service in response to the received status messages;

B. said network service node including:

i. a network service operator arranged to perform said network service with respect to said client node;

ii. a network service enabler connected to said communications link and said network service operator and arranged to receive the network service initiation message from said communications link and to enable said network service operator to operate in response to the receipt of said network service initiation message; and

iii. a status message generator connected to said communications link and to said network service operator and arranged to generate said status message identifying the status of an operation performed by said network service operator and to transmit said status message over said communications link.

5,005,123

CONTROL SYSTEM FOR MICROWAVE COOKING APPLIANCE

Eugene P. Mierzwinski, Ft. Wayne, Ind., assignor to Hamilton Standard Controls, Inc., Farmington, Conn.

Filed Nov. 19, 1985, Ser. No. 799,715

Int. Cl.[5] H05B *9/06*

U.S. Cl. 364—400 **12 Claims**



1. An improved apparatus for the control of a microwave cooking appliance having a microwave power circuit including a microwave generator, a source of electrical power for at least said microwave power circuit, and control means for controlling at least the microwave power circuit, the improvement wherein said control means comprises:

an electrically-energized electronic controller for operating in accordance with data programmed therein, said electronic controller being operatively connected to said microwave power circuit for controlling application of said electrical power to said microwave power circuit; and

input control circuit means connected to said electrical power source and to said electronic controller for controlling application of electrical energizing power to and entry of programming data into, said electronic controller, said input control circuit means including at least a data entry key for controlling the programming of data into said electronic controller, said input control circuit means being further operative in response to an initial actuation of said data entry key for applying start-up energizing power to said electronic controller.

5,005,124

METHOD AND APPARATUS FOR CATEGORIZING AND CERTIFYING MAIL

Richard A. Connell, South Salem; Raymond Keating, Purdys, both of N.Y.; Ronald P. Sansone, Weston, and Karl H. Schumacher, Westport, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 23, 1988, Ser. No. 234,977

Int. Cl.[5] G06F *15/21*

U.S. Cl. 364—401 **34 Claims**

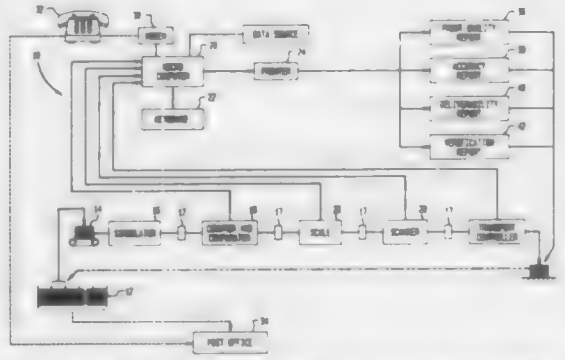
9. Apparatus for certifying and categorizing a batch of mail, comprising:

means for obtaining a random statistical sample of mail pieces from a batch of mail pieces,

means for storing post office regulations with regard to acceptable mail sizes, weight and address readability,

means for individually transporting the sample mail pieces,

means for identifying each sample mail piece,



means for scanning the sample mail pieces to determine the size and readability of the address line on each sample mail piece,

means for comparing the obtained weight, size and readability of the sample mail pieces with the stored regulations, and

means for determining the number of sample mail pieces that do not conform with the stored regulations.

5,005,125

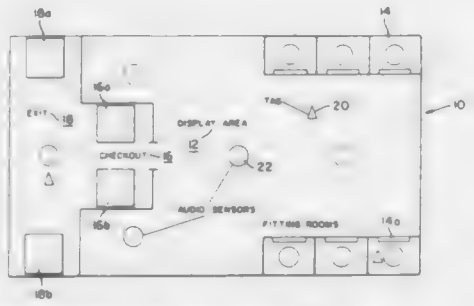
SURVEILLANCE, PRICING AND INVENTORY SYSTEM

James G. Farrar, Boca Raton, and Ezra D. Eskandry, Miami, both of Fla., assignors to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Filed Feb. 28, 1986, Ser. No. 834,766

Int. Cl.[5] G08B *13/18*

U.S. Cl. 364—403 **9 Claims**



1. In combination, in an article retail facility:

(a) an EAS (electronic article surveillance) tag of type including openable means for releasable attachment thereof to an article and responsive to incident energy comprising diverse EAS messages and other messages related to pricing and identification of articles, said tag including circuitry for response to such EAS message and for receipt and storage of such pricing and article identification data and for response to a selective one of said EAS messages and the opening of such releasable attachment means for issuance of said pricing and article identification data; and

(b) message generator means for transmitting such EAS and other messages in the form of said incident energy.

5,005,126

SYSTEM AND METHOD FOR REMOTE PRESENTATION OF DIAGNOSTIC IMAGE INFORMATION

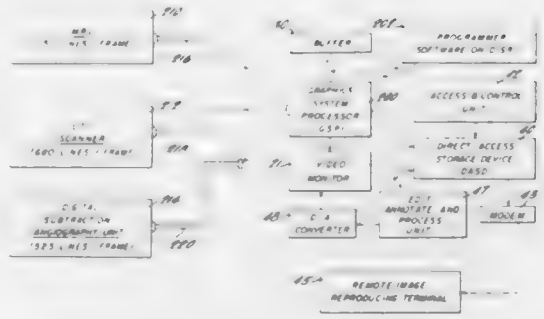
Marvin E. Haskin, Philadelphia, Pa., assignor to Prevail, Inc., West Chester, Pa.

Continuation of Ser. No. 84,333, Aug. 11, 1987, Pat. No. 4,764,870, and a continuation-in-part of Ser. No. 36,264, Apr. 9, 1987, abandoned. This application May 31, 1988, Ser. No. 200,543

The portion of the term of this patent subsequent to May 24, 2005, has been disclaimed.

Int. Cl.[5] G06F *15/42*

U.S. Cl. 364—413.13 **3 Claims**



1. In a system for providing viewing of diagnostic images of an object at a location remote from the object, comprising:

irradiating means for applying diagnostic radiation fields to said object at a diagnostic site;

radiation sensing means positioned adjacent said site and responsive to changes in said fields produced by said object for producing first object-related analog video signals embodying diagnostic information ■ to said object, in a first format;

signal-supplying means provided with said analog video signals of said first format;

diagnostic-image forming means ■jacent said site, supplied with said analog video signals of said first format by said signal-supplying means, said diagnostic image-forming means being responsive thereto to form a visually-perceptible visual image of said object suitable for diagnostic review; and

a remote display terminal adapted to receive analog video signals in a standard television format differing from said first format and to produce therefrom a corresponding image;

the improvement comprising:

signal pick-off means at said site for directly capturing said first analog video signals of said first format from said signal supply means prior to its application to said diagnostic image-forming means, and for converting them to said standard television format; and

transmitter means for transmitting said converted signals to said remote display terminal for display of said image thereon.

5,005,127

SYSTEM INCLUDING MEANS TO TRANSLATE ONLY SELECTED PORTIONS OF AN INPUT SENTENCE AND MEANS TO TRANSLATE SELECTED PORTIONS ACCORDING TO DISTINCT RULES

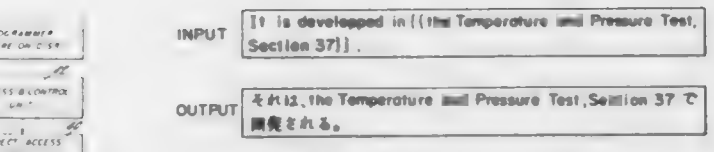
Shuzo Kugimiya; Yoji Fukumochi; Ichiko Nakamura, all of Nara; Tokuyuki Hirai, Yamatokoriyama, and Hitoshi Suzuki, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 25, 1988, Ser. No. 262,313

Claims priority, application Japan, Oct. 26, 1987, 62-271287; Oct. 28, 1987, 62-272638

Int. Cl.[5] G06F *15/38*

U.S. Cl. 364—419 **2 Claims**



1. A machine translation apparatus for inputting source language of words or sentences to be translated to a target language comprising:

a morpheme analyzer having a dictionary for analyzing a source sentence into morphemes and for obtaining part of speech and other information using said dictionary;

a syntax analyzer having grammatical rules for analyzing the structure of the morphemes identified by said morpheme analyzer using said dictionary and grammatical rules;

a converter for converting the structure obtained by said syntax analyzer to a structure of the target language;

a translated sentence generator for generating a translated sentence according to the structure of the target language obtained by said converter;

marker entry means for entering a no-conversion start marker and a no-conversion end marker in said input sentence;

marker identification means for identifying whether or not data read is either one of said no-conversion start marker and said no-conversion end marker;

morpheme skip means for skipping, when said marker identification means identifies the data read to be a no-conversion start marker, the dictionary referencing for all morphemes between the no-conversion start and end markers;

morpheme storing means for storing said morphemes between said no-conversion start and end markers, and adding data identifying said morphemes as a noun compound during dictionary look-up processing of said morpheme analyzer;

generation skip means for skipping translation generation for all morphemes between the no-conversion start and end markers, when said marker identification means identifies the read data to be a no-conversion start marker;

translation generation storing means for storing said morphemes in the same form as they appear in the source language during a translation generation processing in said translated sentence generator; and

means for setting a flag as the noun compound in a buffer.

5,005,128

AUTOMATED VEHICLE CONTROL

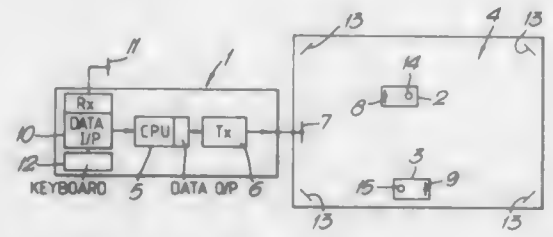
Michael P. Robins, Rugby, and Malcolm T. Roberts, Oadby, both of England, assignors to The General Electric Company, p.l.c., England

Filed May 2, 1989, Ser. No. 346,129

Claims priority, application United Kingdom, May 13, 1988, 8811442

Int. Cl.[5] **G06F** *15/50*

U.S. Cl. 364—424.02 **5 Claims**



1. A method of operating a vehicle guidance and control system including

(a) a vehicle having motive power and steering, a navigation system, and means for transmitting a directional laser beam which is scanned in a predetermined sense;

(b) a plurality of reflectors spaced apart from one another, each reflector incorporating an optical code which identifies that reflector, and each reflector being operative to reflect light from said laser beam when said beam impinges thereon; and

(c) means for utilizing said light reflected back to the vehicle by at least two said reflectors for controlling the movement and heading of the vehicle,

said method comprising the steps of:

(i) notionally dividing an area in which the vehicle is to freely operate into a plurality of equal subareas of predetermined dimension, each sub-area being provided with a plurality of said reflectors;

(ii) positioning the vehicle at an initial location from which its laser beam can scan a plurality of initialization reflectors, each incorporating a unique optical code, the initialization reflectors being located at positions selected for initialization of said navigation system;

(iii) feeding to said navigation system data defining the positions of said initialization reflectors; and

(iv) causing the navigation system to determine the position of the vehicle with respect to said initialization reflectors,

whereby, during subsequent movement of the vehicle around the area, the navigation system is operative, by measurement of distances and directions traveled by the vehicle from said initial location, to determine in which sub-area the vehicle is located at any instant.

5,005,129

DIAGNOSIS SYSTEM FOR A MOTOR VEHICLE

Kunihiro Abe, Higashi-Murayama; Masanori Sakamoto, Nishitama, and Tomoya Kobayashi, Fuchi, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 21, 1989, Ser. No. 314,647

Claims priority, application Japan, Feb. 29, 1988, 63-046331

Int. Cl.[5] **G01M** *15/00;* **F02D** *41/26;* **F02P** *17/00*

U.S. Cl. 364—424.03 **3 Claims**

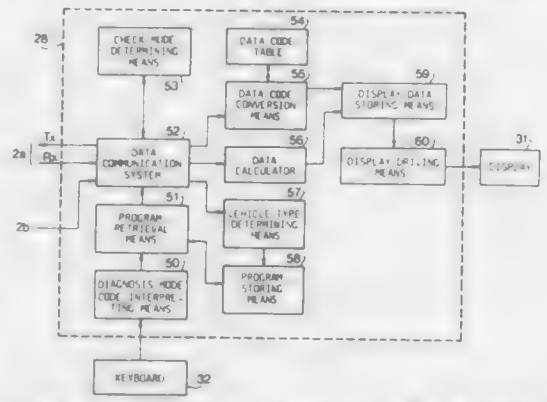
1. A diagnosis system for diagnosing an electronic control system for a vehicle, the electronic control system comprising sensing means for detecting operation conditions of the vehicle, and a first control unit responsive to the operation conditions for providing control signals for controlling the vehicle, the diagnosis system comprising a diagnosis device with a keyboard for inputting a code, a second control unit responsive to the code for diagnosing the electronic control system, display means for displaying diagnosis data diagnosed by the second control unit, and connecting means electrically connecting the diagnosis device to the electronic control system,

said first control unit comprising a programmed control system comprising self-diagnosis means for checking trouble in the electronic control system and for storing the trouble as trouble data and designation means for designating one of a plurality of test modes for the trouble data to said self-diagnosis means;

said second control unit comprising a programmed control system comprising:

interpreting means for interpreting the code inputted from the keyboard as a first specific code for checking the trouble data and for producing a first signal;

communication means for applying a first command signal



to the self-diagnosis means in response to the first signal for feeding the trouble data from the self-diagnosis means under a test mode designated by the designation means;

means for processing the trouble data fed from the self-diagnosis means by the communication means to display the trouble data on the display means;

said interpreting means for interpreting the code inputted from the keyboard as a second specific code for changing the test mode and for producing a second signal;

said communication means being responsive to the second signal for applying a second command signal to the designation means; and

said designation means being responsive to the second command signal for changing the test mode of the self-diagnosis means.

5,005,130

TRAILER SWING CONTROL

Michael T. Breen, Garden City, and Jeffrey H. Skorupski, Brighton, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 20, 1989, Ser. No. 454,095

Int. Cl.[5] **G06F** *7/70, 15/48;* **B06T** *13/00, 8/74*

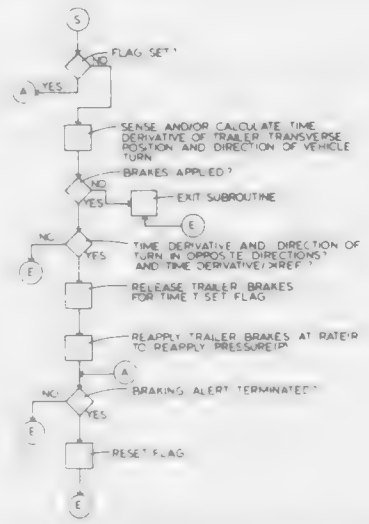
U.S. Cl. 364—426.01 **12 Claims**

1. A trailer anti-swing brake control method for articulated vehicles (**10**) of the type comprising a tractor (**12**) and a trailer (**14**) connected at an articulating connection (**34/176**) defining a pivot axis (**176**) about which the trailer is pivotable relative to the tractor, a tractor brake system, a trailer brake system, a driver operated brake effort demand device (**76/78**) for providing a demand input signal indicative of the magnitude of operators demand for vehicle braking, trailer brake control means (**174**) responsive in at least one operating mode for causing the trailer brake system to be applied with an operating force generally proportional to the magnitude of said demand input signal, said control method characterized by:

sensing (**260**) and/or calculating a value indicative of trailer transverse movement and of a time derivative thereof and providing at least one input signal indicative thereof;

receiving and processing said input signals (**70**) according to predetermined logic rules to detect the existence of conditions indicative of at least one of incipient and initial trailer brake induced trailer swing events and generating command output signals in response to detection of the existence of said conditions; and

responding (**174**) by said control means to said command output signals by causing the trailer brake system brakes to be applied with a substantially reduced force (**210–212**) regardless of the magnitude of said demand input signal



for a period of time (T) and then causing said trailer brake system brakes to be reapplied (**214–216**) at a selected rate (R) to a selected maximum reapplication force (P), said selected maximum reapplication force having a magnitude considerably smaller than the maximum trailer brake system brake application force (**208–210**), said selected maximum reapplication force (P) being a function of, and varying inversely with, the magnitude of the absolute value of said time derivative.

5,005,131

SLIP CONTROL DEVICE FOR DIFFERENTIAL

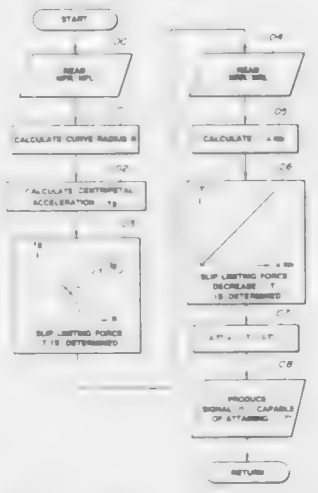
Takashi Imaseki, and Yuji Kobari, both of Zushi, Japan, assignors to Nissan Motor Co., Ltd., Yokahama, Japan

Filed Sep. 21, 1988, Ser. No. 247,466

Claims priority, application Japan, Sep. 29, 1987, 62-245685

Int. Cl.[5] **B60T** *8/32*

U.S. Cl. 364—426.02 **3 Claims**



1. A method of controlling a slip of a differential for a wheeled vehicle, the differential being of the type incorporating a clutch variable in engagement for producing a slip limiting force for limiting a differential action even during cornering of the vehicle, the method comprising:

detecting a driving wheel slip during cornering of the vehicle;

reducing a force urging the clutch for engagement and thereby reducing the slip limiting force in proportion to an increase of the driving wheel slip, wherein said detecting comprises the steps of:

detecting rotation speeds of a set of front dirigible wheels;

calculating a curve radius of the cornering vehicle by using the rotation speeds of the front dirigible wheels;

calculating a centripetal acceleration of the cornering vehicle by using the rotation speeds of the front dirigible wheels;

determining a basic slip limiting force based on the curve radius and the centripetal acceleration of the cornering vehicle and on a predetermined map;

detecting rotation speeds of a set of rear driving wheels; and

calculating the driving wheel slip by using an average front wheel speed and an average rear wheel speed.

5,005,132

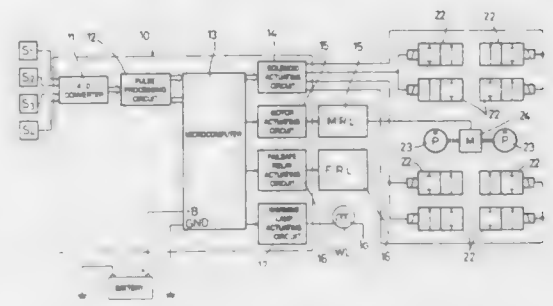
ANTILOCK BRAKE CONTROL DEVICE

Masato Yoshino, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 20, 1989, Ser. No. 438,006

Int. Cl.[5] **B60T** *8/58*

U.S. Cl. 364—426.02 **4 Claims**



1. An antilock brake control device for use in a full-time four-wheel drive motor vehicle, comprising: wheel rotation sensors for detecting the wheel rotations of the wheels of the vehicle; an electronic control circuit for calculating the wheel speeds, the estimated vehicle speed and the decelerations and the slip rates of the wheels from the wheel rotation signals detected and for producing fluid pressure control signals on the basis of the results of said calculation, and a fluid pressure control unit for controlling the braking forces on the wheels independently of one another in response to said fluid pressure control signals, said electronic control circuit having means for calculating the coefficient of friction μ between the wheels and the road surface based on the calculated vehicle deceleration and the sum of slip rates SR of both rear wheels based on a predetermined formula using the speeds of both rear wheels and a reference vehicle speed as the parameters to control all the wheels independently of one another if said coefficient of friction μ is higher than a first predetermined value μ_0 and said sum of slip rates SR is smaller than a second predetermined value THR and to control the front wheels independently of each other and control the rear wheels based on the wheel rotation signal supplied from the wheel rotation sensor for one of the rear wheels rotating at a lower speed than the other, if said sum of slip rates SR is larger than said second predetermined value THR.

5,005,133

SYSTEM AND METHOD FOR AUTOMATICALLY CONTROLLING A VEHICLE SPEED TO A DESIRED CRUISING SPEED

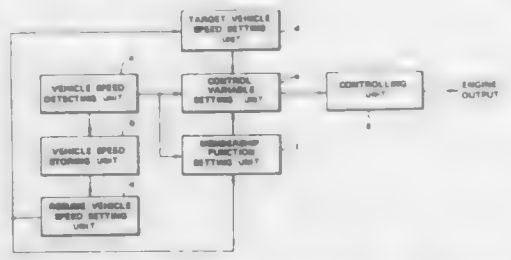
Hiroshi Takahashi, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 12, 1988, Ser. No. 143,092

Claims priority, application Japan, Jan. 12, 1987, 62-3299; Jan. 14, 1987, 62-5000

Int. Cl.[5] **B60K** *31/00*

U.S. Cl. 364—426.04 **34 Claims**



2. A system for automatically controlling a vehicle speed to a target cruising speed, having an automatic cruising speed control mode comprising:

(a) first means for detecting vehicle speed;

(b) second means for setting said target cruising speed on the basis of a vehicle driver'intention;

(c) third means for controlling an engine output using a controlled variable so that said vehicle speed detected by said first means coincides with said target cruising speed;

(d) fourth means for deriving a gear range operation state of a vehicular transmission connected to the engine;

(e) fifth means for selecting and setting a membership function from among a plurality of different membership functions in fuzzy estimation on the basis of said derived gear range operation state; and

(f) sixth means for carrying out said fuzzy estimation using membership function set by said fifth means to set said controlled variable of said third means, with said target cruising speed set by said second means and said vehicle speed detected by said first means as input information thereof.

5,005,134

NUMERICAL CONTROL APPARATUS WITH SIMULTANEOUS FUNCTION EXECUTION

Yoshihiro Nakashima, Machida, and Yasunori Kinoshita, Kunitachi, both of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP88/00409, § 371 Date Nov. 9, 1988, § 102(e) Date Nov. 9, 1988, PCT Pub. No. WO88/08559, PCT Pub. Date Nov. 3, 1988

PCT Filed Apr. 26, 1988, Ser. No. 274,149

Claims priority, application Japan, Apr. 30, 1987, 62-107257

Int. Cl.[5] **G05B** *19/403*

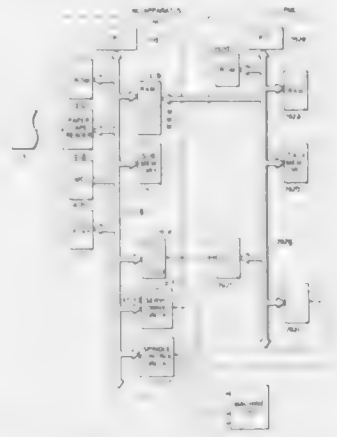
U.S. Cl. 364—474.01 **4 Claims**

1. A numerical control apparatus for sequentially controlling an NC machine tool in accordance with a stored-program method by using a sequence program and a program that has been read in, comprising:

memory means for simultaneously storing a plurality of auxiliary function codes which command the NC machine tool to perform specific auxiliary functions, from the program that has been read in;

execution means for simultaneously executing function instructions identifying auxiliary function numbers corresponding to each of the auxiliary function codes stored in said memory means to carry out the auxiliary functions; and

updating means for updating all of the auxiliary function codes of said memory means in response to completion of



the auxiliary functions, which correspond to each of the auxiliary function codes, in the NC machine tool.

5,005,135

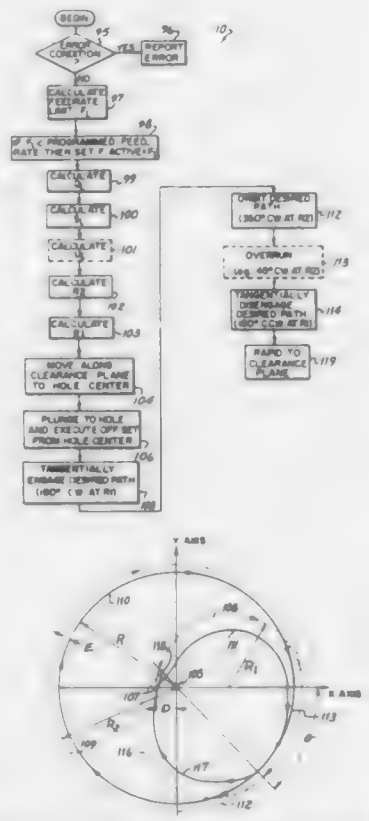
DYNAMIC CORRECTION OF SERVO FOLLOWING ERRORS IN A COMPUTER-NUMERICALLY CONTROLLED SYSTEM AND FIXED CYCLE UTILIZING SAME

Alfred H. Morser; Walter M. Gildemeister, both of Cincinnati, and David M. Farmer, Loveland, all of Ohio, assignors to Cincinnati Milacron, Inc., Cincinnati, Ohio

Filed Mar. 22, 1989, Ser. No. 327,324

Int. Cl.[5] **G05B** *19/24*

U.S. Cl. 364—474.35 **57 Claims**



1. A method of correcting path radius errors in a computer numerically controlled system of the type adapted to receive

program instructions defining a desired path of relative movement to be effected between a workpiece and a tool by motion of machine members along at least two orthogonal linear axes at a feedrate, (F) under control of a servo which receives position commands based on said instructions, said servo having at least one of, a position loop gain, (K_v) and a velocity loop integral time, (T_i), said path including a curved portion to be executed by effecting coordinated linear movement along said axes, said method comprising the steps of:

(a) receiving an instruction defining a desired radius, (R) of said curved portion;

(b) generating corrected radius data, (R2) to compensate for servo following errors appearing as path radius errors along said curved portion of said path such that the difference between the desired radius, (R) and said corrected radius data, (R2) compensates for at least a portion of the path radius error that would otherwise be induced in the movement by the servo, and

(c) generating the position commands in response to said corrected radius data whereby the actual relative movement between the workpiece and the tool more closely follows said curved portion of said desired path.

5,005,136

SILICON-COMPILER METHOD AND ARRANGEMENT

Cornelis H. Van Berkel, Heeze; Ronald W. J. J. Saeijs, Eindhoven, and Cornelis Niessen, Geldrop, all of Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Feb. 16, 1988, Ser. No. 156,392

Int. Cl.[5] **G06F** *15/60*

U.S. Cl. 364—490 **13 Claims**



1. A silicon-compiler method for executing a silicon-compiler program comprising the following sequence of steps:

a. a source-analyzer step having a sequence of substeps for:

a1. receiving a source text expressing an algorithm in a first imperative concurrent computer language having concepts including an explicit parallelism construct, an explicit sequentialism construct and an explicit communication construct, said communication construct stipulating a communication action that is represented as a time interval and is either active or passive for execution on the active or passive side of a program channel, respectively;

a2. converting said received source text under execution of lexical analysis, syntactic analysis and semantic analyis into a structure-tree (as an abstract) representation of the source text and defined according to said concepts;

b. an abstract-circuit synthesizer step for converting said structure-tree representation into an abstract-circuit representation that is a network of basic components interconnected by abstract channels, each such basic component representing an elementary program execution and each abstract channel representing an associated program channel featuring in exacty two elementary programs interconnected thereby;

c. converting said abstract-circuit representation into a concrete-circuit representation as constrained by timing-organization requirements, circuitry-type requirements and technologic-realization requirements, while one-to-one translating each abstract channel into a wire set of the concrete circuit, and each basic component of the abstract circuit into an elementary electronic circuit, linked by at least one wire set to another electronic circuit;

d. converting said concrete-circuit representation into a very large-scale integrated-circuit lay-out while implementing at least one low-level task of providing an elementary circuit element not specified by said concrete-circuit representation but mandated by an electrical property of an in-layout passive part.

5,005,137

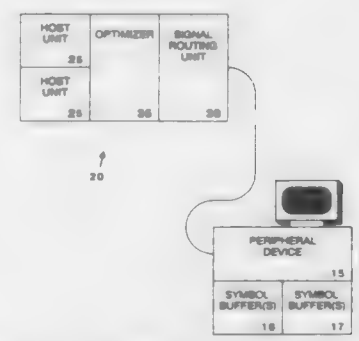
METHOD FOR OPTIMIZING DATA STREAMS CONTAINING TWO-BYTE CHARACTERS

Theodore R. Ernst, Sugar Land, Tex., assignor to BMC Software, Inc., Sugar Land, Tex.

Filed Jan. 9, 1989, Ser. No. 294,159

Int. Cl.[5] **G06F** *3/14, 13/00*

U.S. Cl. 364—514 **12 Claims**



5. A method of processing a data stream, containing an instruction sequence identifying a sequence of at least one character as a double byte character set (DBCS) character sequence, in a system for optimizing a formatted data stream generated at a host unit for processing at a peripheral unit to modify information contents of an addressable buffer of said peripheral unit, said method comprising the steps of:

(a) receiving the data stream from the host unit;

(b) generating an updated-state map of the peripheral unit buffer, said map reflecting the information contents of said buffer that are expected to exist after processing of the data stream at the peripheral unit;

(c) said updated-state map including at least one extension plane;

(d) setting a DBCS-character flag in a said extension plane for each character in said DBCS character sequence;

(e) altering the value of an odd-numbered flag in a said extension plane for each character in said DBCS character sequence; and

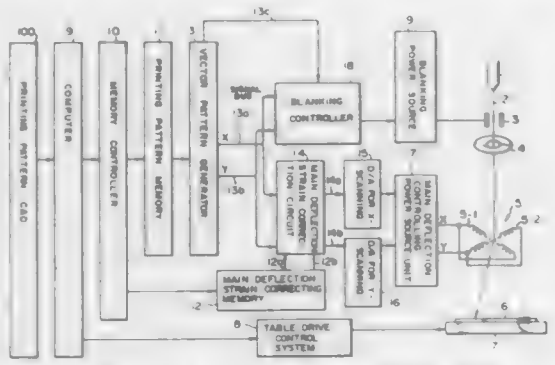
(f) performing a map comparison optimization method, utilizing the updated-state map as an operand, to generate a substitute data stream.

5,005,138

ELECTRON BEAM DIRECT PRINTING APPARATUS

Hiroaki Tobuse; Hidenobu Murakami, and Masashi Kamio, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1990, Ser. No. 511,788
Claims priority, application Japan, Apr. 20, 1989, 1-102212
Int. Cl.[5] G01N *21/00*
U.S. Cl. 364—519 **14 Claims**



1. An electron beam direct printing apparatus comprising:

direct printing pattern information generating means for setting an electron beam printing pattern on a circuit printing base and outputting said printing pattern as direct printing pattern information;

deflection scanning data generating means for generating data necessary for main deflection scanning by an electron beam on said circuit printing beam in a direction of the X-axis and in a direction of the Y-axis which is carried out on a basis of said printing pattern information;

electron beam deflection scanning means for executing deflection scanning by said electron beam on said circuit printing base on a basis of said data outputted from said deflection scanning data generating means;

blanking means provided in a route of radiation of said electron beam for cutting off said electron beam when a control signal is received;

a bit map memory for storing a dot graphic which represents the image of said printing pattern irradiated with said electron beam at the time of said deflection scanning by said electron beam on said circuit printing base by dots which correspond to the points which are to be irradiated with said electron beam; and

radiation control means including reading means for receiving said data for deflection scanning by said electron beam from said deflection scanning data generating means and reading the dot information at the position in the bit map memory which corresponds to the point which is to be irradiated with said electron beam in accordance with said data, writing means for judging whether or not the read information includes a dot and writing a dot at the position in said memory if there is no dot, and blanking control means for permitting radiation if there is no dot, while supplying a control signal to a blanking means so as to cut off said beam and prevent the irradiation of said base if there is a dot.

5,005,139

PIECE-WISE PRINT IMAGE ENHANCEMENT FOR DOT MATRIX PRINTERS

Charles C. Tung, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 112,814, Aug. 16, 1988, Pat. No. 4,847,641. This application Jun. 30, 1989, Ser. No. 374,494
Int. Cl.[5] G06K *15/00*
U.S. Cl. 364—519 **2 Claims**

1. A method for enhancing a displayed image derived from scanned input data which comprises the steps of;

a. storing bits of digital data representative respectively of a plurality of lines having known characteristic curvatures such as smooth edge curves, sharp tips and notches;

b. reading incoming digital data which may or may not be representative of said known characteristic curvatures;

c. comparing read digital data with said stored digital data;

d. generating an error correction signal only where there is a correlation between said read data and said stored data;

e. reading an image boundary to establish an initial pattern of cells to be printed;



f. responsive to said error signal generation, converting only digital information which is representative of said known characteristic curvatures to said image boundary,

g. controlling the orientation and ink proportionality of each cell by generating subcells; and

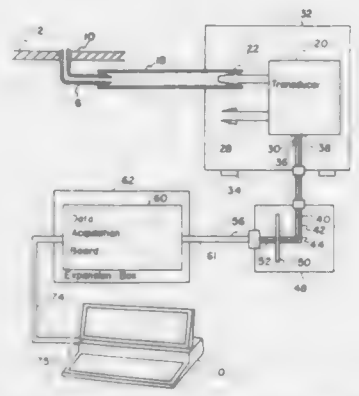
h. rearranging said subcells in a pattern to more closely follow the shape or contour of said image boundary.

5,005,140

METHOD AND APPARATUS FOR MONITORING HYDRODYNAMIC THERAPY AND EXERCISE

Rod Havriluk, Tallahassee, Fla., assignor to Swimming Technology Research, Inc., Tallahassee, Fla.

Filed Jan. 23, 1990, Ser. No. 468,618
Int. Cl.[5] A61H *1/02;* **G06F** *15/00*
U.S. Cl. 364—550 **4 Claims**



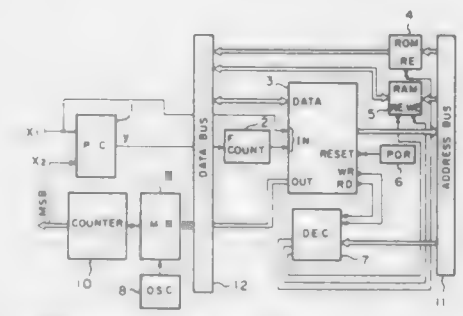
1. A system for monitoring and measuring underwater physical therapy, comprising: an aquatic exercise assembly having a first surface and a second surface; a first remote having a first surface and a second surface; a first remote pressure port defined by said first surface; a second remote pressure port defined by said second surface, said second surface being substantially opposite said first surface; a pressure/electrical signal transducer; a pressure conduit connecting each of said first and second remote pressure ports to said pressure transducer, said pressure transducer for sensing the pressure at each of said first and second pressure port via a corresponding said pressure conduit and forming a differential signal representative of the difference between pressure at said first remote pressure port and said second remote pressure port; calibration means for receiving electrical signals from said transducer means and for outputting a zero pressure signal representing a background pressure level; data acquisition means for receiving said differential signal and said zero pressure signal and for outputting a digital signal representative of said differential signal, compared to said zero calibration signal thereby allowing movement of the aquatic exercise assembly to be monitored for monitoring hydrodynamic therapy and exercise.

5,005,141

PHASE-LOCKED LOOP CIRCUIT

Kazunori Sanada, and Jyoji Kawai, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 7, 1989, Ser. No. 334,471
Claims priority, application Japan, Apr. 25, 1988, 63-102012
Int. Cl.[5] G06F *15/20;* **H03K** *5/13*
U.S. Cl. 364—550 **12 Claims**



1. A phase-locked loop circuit, comprising:

phase comparator means for detecting a phase difference between an input signal and a feedback signal and for outputting the resultant phase difference data twice per each cycle of said input signal;

calculator means for executing a phase control calculation based on the output of said phase comparator means; and

a variable-frequency oscillator circuit for producing an output signal of a frequency conforming to the result of calculation of said calculator means.

5,005,142

SMART SENSOR SYSTEM FOR DIAGNOSTIC MONITORING

John B. Lipchak, Forest Hills; Tod A. Oblak, Belle Vernon; Fred H. Bednar, Millvale; William Ciaramitaro, Murrysville; Francis R. Hughes, Verona; John R. Smith, Monroeville, and Gregory A. Gisoni, Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 10,504, Jan. 30, 1987, abandoned. This application Jul. 24, 1989, Ser. No. 386,008
Int. Cl.[5] G21C *17/00;* **G05B** *15/02*
U.S. Cl. 364—550 **18 Claims**

1. A smart sensor system, comprising:

one or more sensors for a monitored component;

a remote processor for processing and analyzing sensor signals from said one or more sensors;

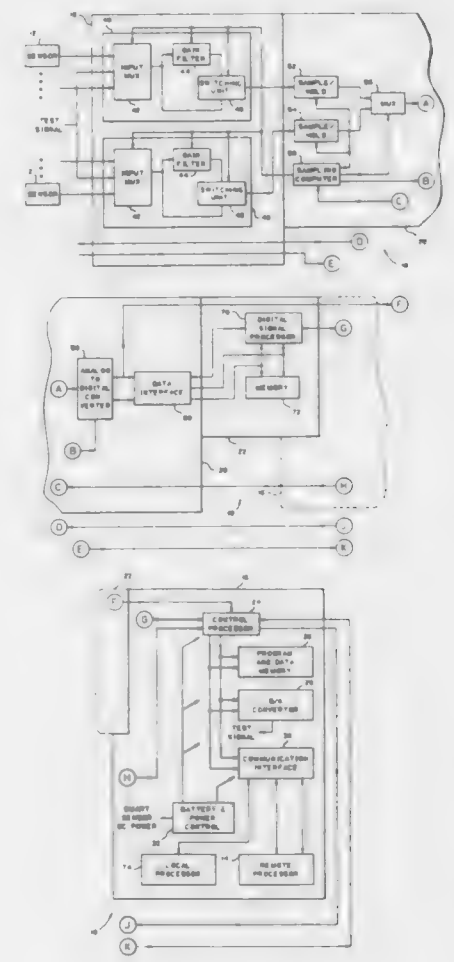
a communication link connected to said remote processor; and

a component monitor connected to said communication link, located physically in association with the monitored component and located physically remotely with respect to said remote processor, said monitor including at least

conditioning and multiplexing means for conditioning and selecting one of the sensor signals, wherein said conditioning and multiplexing means includes at least one sensor preprocessing module, each sensor preprocessing module including at least

a channel selection latch for storing a channel selection signal;

an input multiplexer, operatively connected to said channel selection latch, for receiving the sensor signals from said one or more sensors and for selecting one of the sensor signals as a selected sensor signal based on the channel selection signal;



a gain control latch for storing a gain control value;

a programmable gain control amplifier, operatively connected to said input multiplexer and said gain control latch, for amplifying the selected sensor signal based on the gain control value and for outputting an amplified signal;

a frequency selection latch for storing a frequency selection value;

a switching unit, operatively connected to said fre-

quency selection latch and said programmable gain control amplifier, for receiving the amplified signal and outputting a differential signal;

clock signal generating means for outputting a clock signal in dependence upon the frequency selection value; and

a programmable filter, operatively connected to said switching unit, for lowpass filtering the differential signal based on the clock signal and for outputting a preprocessed sensor signal;

conversion means for converting the sensor signals into digital samples;

signal analysis means for processing and analyzing the digital samples; and

control means for designating selection, conditioning and acquisition of sensor signals, designating a type of analysis performed on the digital samples, performing sensor signal analysis to determine and indicate pending sensor, component and component monitor failure and communicating the results of the analysis to said remote processor over said communications link.

5,005,143

INTERACTIVE STATISTICAL SYSTEM AND METHOD FOR PREDICTING EXPERT DECISIONS

Martin D. Altschuler, Wallingford, and Richard Whittington, Media, both of Pa., assignors to University of Pennsylvania, Philadelphia, Pa.

Continuation of Ser. No. 65,304, Jun. 19, 1987, Pat. No. 4,872,122. This application Sep. 25, 1989, Ser. No. 411,911

The portion of the term of this patent subsequent to Oct. 3, 2006, has been disclaimed.

Int. Cl.[5] G06F *15/42, 9/00*

U.S. Cl. 364—554 **2 Claims**

1. A method for comparing the analyses of a plurality of experts in a particular field, comprising the steps of:

(a) establishing a set of output actions for combinatory situations, said combinatory situations defined by a plurality of input parameters having input values which define a particular case situation;

(b) for each expert,

(1) establishing a decision making structure having a plurality of linked nodes extending from a first node and ending in a terminal node with each node defining a question;

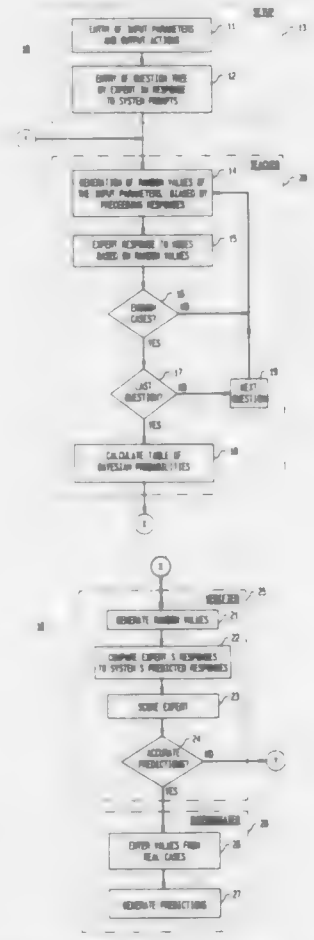
(2) entering the input values of the input parameters defining a case situation to be analyzed;

(3) determining which input values of the particular case situation are significant input values from node to node and predicting which response the expert would make for a question posed at the first node based on the significant input values and then predicting additional responses for questions posed at each subsequent node, said subsequent nodes forming a path based on the prior predicted responses through the decision making structure;

(4) repeating step (3) through the linked nodes until a predicted response is an output action at a terminal node of the decision-making structure; and

(5) determining the probability that the expert would have selected the output action predicted in step (4).

(c) comparing the determinations of which input values are significant input values from step (b) (3) and the output action arrived at in step (b) (4) of an expert's decision making structure with that of another expert's decision



making structure to determine which input values are most significant in arriving at an output action.

5,005,144

SIGNAL PROCESSING SYSTEM FOR FLOW VELOCITY IN LASER DOPPLER VELOCIMETER

Tsuyoshi Nakajima, 3-19 Mefuyamate, Takarazuka-shi, Hyogo-ken, and Yuji Ikeda, Maison de Cascade Rokko 205, 111-1 Miyasaka, Suishashindenaza, Nada-ku, Kobe-shi, Hyogo-ken, both of Japan

Filed Jul. 10, 1989, Ser. No. 378,098

Int. Cl.[5] G01P *3/36*

U.S. Cl. 364—565 **17 Claims**

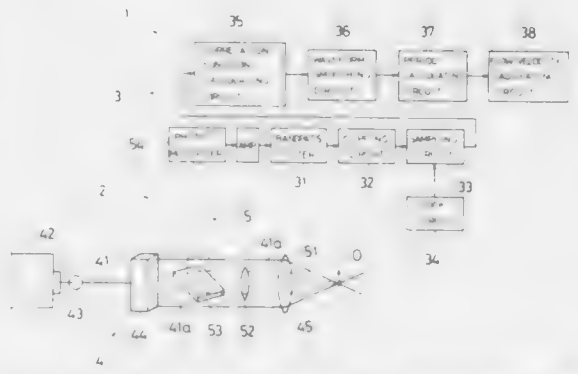
1. A flow velocity measurement processor for a laser Doppler velocimeter, comprising:

clipping means for receiving a Doppler burst signal obtained from a photomultiplier of a laser Doppler velocimeter and digitizing the Doppler burst signal by clipping it at a fixed level to output a pulse signal;

sampling means for receiving the pulse signal from the clipping means and sampling the pulse signal with a pre-set clock signal to output a digitized pulse signal;

digital correlation function calculating means for receiving the digitized pulse signal from the sampling means and calculating a correlation function of the digitized pulse signal to output a correlation signal;

period calculating means for receiving the correlation signal from the digital correlation function calculating means and detecting a crossing point at which the correlation signal crosses over a pre-set threshold level and calculating the period of the correlation signal based on the crossing point to provide a frequency of the correlation signal; and



flow velocity calculating means for calculating the flow velocity of a measuring object based on the frequency from the period calculating means.

5,005,145

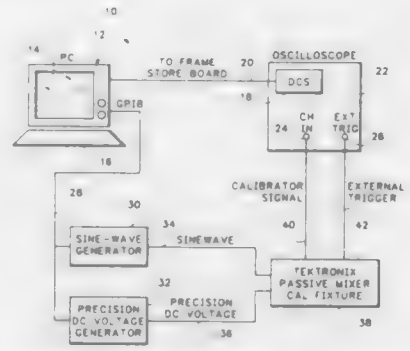
METHOD AND APPARATUS FOR CALIBRATING A SCAN CONVERTOR

Timothy L. Falk, and Geoffrey B. Rhoads, both of Vancouver, Wash., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Jun. 19, 1989, Ser. No. 367,997

Int. Cl.[5] G01R *35/00, 13/00*

U.S. Cl. 364—571.02 **16 Claims**



1. In a calibration system for a scan convertor having a scanning target with a horizontal axis related to time and a vertical axis related to voltage wherein a voltage map is generated for the vertical axis and a timing map is generated for the horizontal axis, an improved method of generating the timing map for the horizontal axis comprising the steps of:

scanning the target with a calibration periodic waveform having a known frequency;

estimating an ideal waveform for the calibration waveform;

calculating the phase differences between the ideal waveform and the calibration waveform; and

generating timing values for the timing map as a function of the calculated phase differences between the ideal waveform and the calibration waveform.

5,005,146

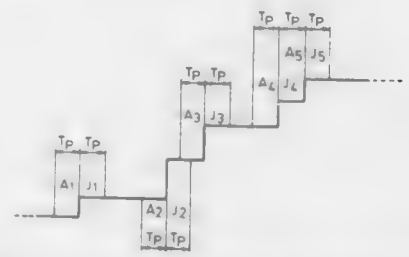
SIGNAL PROCESSING METHOD FOR NUCLEAR SPECTROMETERS

Tamás Lakatos; József Molnár, and Endre Madarász, all of Debrecen, Hungary, assignors to Magyar Tudományos Akadémia Atommag Kutató Intézete, Budapest, Hungary

Continuation-in-part of Ser. No. 39,250, Apr. 16, 1987, abandoned. This application Dec. 20, 1988, Ser. No. 289,398

Int. Cl.[5] G06G *7/12;* **G01J** *1/00*

U.S. Cl. 364—573 **8 Claims**



1. A signal processing method for nuclear spectrometers and the like adapted to analyze a series of randomly-occurring electrical data signals of random length and having randomly varying amplitudes, impressed upon electrical noise-bearing background, comprising: selecting a processing time interval for the signal, said processing time interval embracing the onset time of said signal; setting a base-line filtering time interval immediately preceding said signal onset and a signal filtering time interval immediately following said signal onset, the total duration of said intervals being equal to said processing time; continuously measuring the instantaneous voltage value in said base-line and signal filtering intervals and subtracting the base-line filtering interval voltage value from the corresponding signal filtering (internal) interval voltage to create a series of difference values, wherein said corresponding instantaneous base-line filtering interval voltage and signal filtering interval voltage values are symmetric in time offset from said onset of said signal; and summing said difference values according to a selected weighting function whereby a portion of said signal filtering interval may be used as portion of the base-line filtering interval for a following signal.

5,005,147

METHOD AND APPARATUS FOR SENSOR FUSION

Kumar Krishen, Seabrook, Tex.; Scott W. Shaw, Saratoga, Calif., and Rui J. P. deFigueiredo, Houston, Tex., assignors to The United States of America as represented by the Administrator, the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 30, 1988, Ser. No. 292,130

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—578 **20 Claims**

1. A method for determining the shape of a remote surface by sensor fusion using incomplete data from a plurality of sensors, comprising the steps of

(a) obtaining from a first sensor a first electronic signal representative of the surface,

(b) constructing a first electronic model of the surface using the first electronic signal,

(c) using first electronic model as a guide, constructing for a second sensor a predicted electronic signal also representative of the surface,

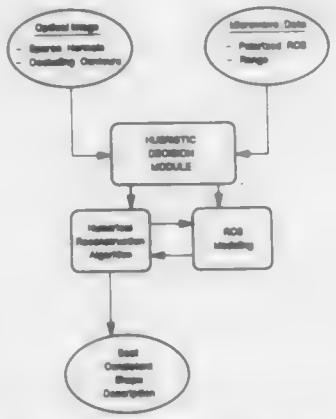
(d) obtaining from the second sensor an actual electronic signal representative of the surface,

(e) minimizing the difference between the predicted electronic signal and the actual electronic signal,

(f) constructing an additional electronic model of the surface using the result of step (e) as a guide,

(g) using the additional electronic model of the surface in constructing an additional predicted electronic signal for the second sensor,

(h) obtaining from the second sensor an additional actual electronic signal representative of the surface,
(i) minimizing the difference between the additional predicted electronic signal and the additional actual electronic signal,
(j) repeating steps (f) through (i) until the difference between



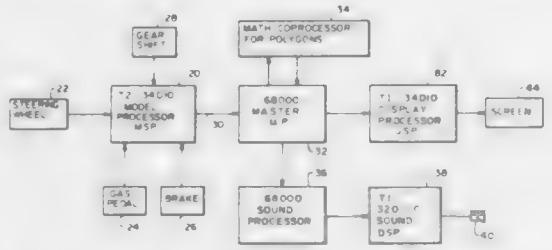
the final predicted electronic signal and the actual electronic signal is below a predetermined threshold level whereby, the shape of the remote surface, represented by the final predicted electronic signal, is determined more accurately than can be done with either the first or second sensor alone, and
(k) displaying the shape of the remote surface.

5,005,148

DRIVING SIMULATOR WITH MOVING PAINTED DASHBOARD

Max L. Behensky, Hayward; Rick L. Moncrief, Santa Clara; Jed Margolin, San Jose, and Stephanie J. Mott, Sunnyvale, all of Calif., assignors to Atari Games Corporation, Milpitas, Calif.

Filed Jan. 12, 1989, Ser. No. 296,553
Int. Cl.[5] G09B *9/04*
U.S. Cl. 364—578 **16 Claims**



13. A method of displaying a control panel of a vehicle on a video display and shifting the displayed position of said control panel to simulate perspective change to the operator of said vehicle comprising the steps of:
reading control inputs from said operator indicating desired movements of said simulated vehicle and calculating therefrom data indicating the position at which to display said control panel taking into account the forces acting on the operator's head and the compliance of the operator's body resisting movement of the operator's head; and
using said data to control the output of video data defining the appearance of said control panel such that said control panel appears in the proper place on said display to simulate the perspective which would be seen by said operator.

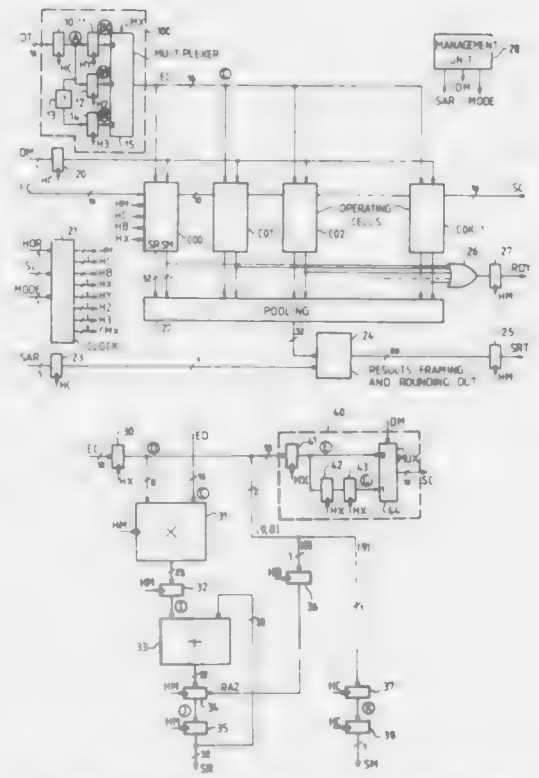
15. An apparatus for displaying a shifting control panel of a simulated vehicle on a video display comprising:
means for reading inputs from an operator indicating disired movements of said simulated vehicle and calculating therefrom data indicating the position at which to display said control panel taking into account the forces acting on the operator's head and the compliance of the operator's body resisting movement of the operator's head; and
means for using said data to control the output of video data defining the appearance of said control panel such that said control panel appears in the proper place on said display to simulate the perspective which would be seen by said operator.

5,005,149

DIGITAL COMPUTATION INTEGRATED CIRCUIT FOR CONVOLUTION TYPE COMPUTATIONS

Philippe Elleaume, Antony, and Michel Prevost, Le Plessis Robinson, both of France, assignors to Thomson CSF, Paris, France

Filed Dec. 7, 1988, Ser. No. 280,882
Claims priority, application France, Dec. 8, 1987, 87 17051
Int. Cl.[5] G06F *15/336*
U.S. Cl. 364—728.01 **6 Claims**



1. A digital computation integrated circuit for convolution type computations of the form

$$\sum_i C_i X_j$$

with $j=i+k$, j and k being integers and i being a natural integer, where C_i represents complex coefficients having a real and an imaginary part and X_j represents either complex or real input data, respectively corresponding to a complex data operating mode of said integrated circuit, wherein said input data have a real and an imaginary part, and to a real data operating mode of said integrated circuit, wherein said input data have only a real part, said circuit comprising:
a plurality of operating cells connected to each other in a sequence and which simultaneously receive the input data, a propagation bus for sending in succession the real and imaginary parts of each coefficient C_i to a first of said operating cells in said sequence, each of said cells including:
(a) a multiplier having an output connected to an adder accumulator comprising an adder and an accumulator register connected to form a loop, whereby each operating cell performs computations corresponding to a different value of k,
(b) a second register, inserted in the loop of said adder accumulator, after said accumulator register, to provide for alternative processing, at a clock rate, of real and imaginary portions of the computation, said second register providing output results of said each cell for computations corresponding to said value of k, and
(c) means for transferring, on said propagation bus, real and imaginary parts of coefficients received thereon by that cell, to a next cell in said sequence; whereby in each cell, the real and imaginary parts received on said propagation bus are, firstly, applied to an input of the multiplier of that cell and, secondly, retransmitted, by the transferring means of that cell, with a suitable delay, to the next cell, said coefficients thus being propagated from one cell to the next; and
logic means for receiving clock signals and said input data and for ensuring time distribution and repetition of said real and imaginary parts of said input data on a data bus towards said operating cells whereby said each cell is enabled to successively and alternatively provide real and imaginary partial products of the computation.

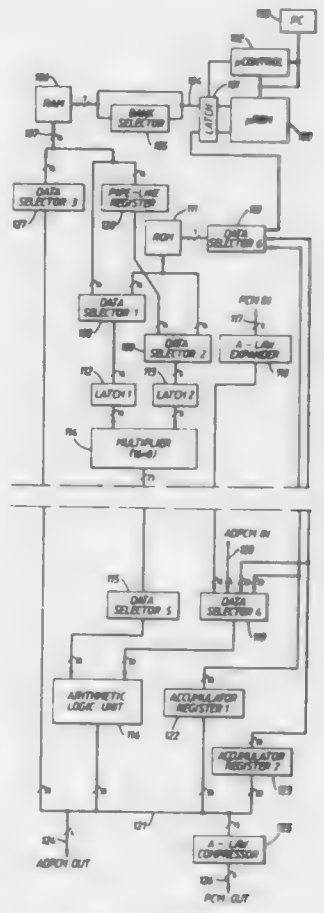
5,005,150

DIGITAL SIGNAL PROCESSORS

Peter R. Dent, Bedford, and Rajpal S. Bharya, Brickhill, both of United Kingdom, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 12, 1989, Ser. No. 336,956
Claims priority, application United Kingdom, Apr. 12, 1988, 8808569
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—736 **13 Claims**

1. A digital signal processor incorporated in an integrated circuit and including first and second sources of binary numbers, a parallel binary multiplier having a first input port with a first plurality of conductors for receiving in parallel a first plurality of bits defining a first number, a second input port with a second plurality of conductors for receiving in parallel a second plurality of bits defining a second number, and an output port with a third plurality of conductors for transmitting in parallel a third plurality of bits representing the product of the first and second numbers, the first plurality being substantially larger than the second plurality, a first data selector connected from the first and second sources to the first input port of the multiplier, a second data selector connected from the first and second sources to the second input port of the multiplier, and means for controlling the operation of the first



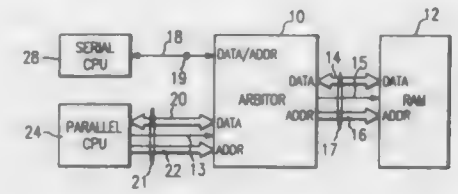
and second data selectom according to the number of bits in the binary numbers from the first and second sources.

5,005,151

INTERLEAVED ARBITRATION SCHEME FOR INTERFACING PARALLEL AND SERIAL PORTS TO A PARALLEL SYSTEM PORT

Hal Kurkowski, Dallas, Tex., assignor to Dallas Semiconductor Corporation, Dallas, Tex.

Filed May 13, 1988, Ser. No. 194,025
Int. Cl.[5] G06F *13/00*
U.S. Cl. 364—900 **41 Claims**



1. An arbiter for selectively interfacing a serial input port and a parallel input port with a parallel system port for transfer of information therebetween, comprising:
a serial communication link connected to the serial port for transmitting and receiving serial information;
a parallel communication link connected to the parallel input port for transmitting and receiving parallel information;
converting means for receiving parallel information from the parallel system port and converting it to serial infor-

mation for transmission to the serial communication link and for receiving serial information from the serial communication link and converting it to parallel information for transmission to the parallel system port;

serial port access means for transferring parallel data between the parallel system port and said converter means during a predetermined access window;

storage means for determining and storing the duration of time before the occurrence of said access window;

means for accessing the predetermined duration of time stored in said storage means for output to the parallel port in response to signals received from the parallel port;

parallel port access means for inhibiting access by the parallel port during said access window; and

means for transferring parallel information between the parallel input port and the parallel system port outside of said access window.

5,005,152

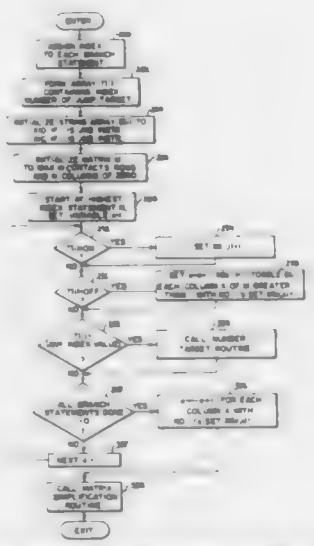
INDUSTRIAL CONTROLLER WITH DECOMPILABLE USER PROGRAM

Neil W. Knutsen, Milwaukee, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Apr. 5, 1989, Ser. No. 333,196

Int. Cl.[5] G06F *9/44, 3/153*

U.S. Cl. 364—900 **3 Claims**



1. A method of decompiling a series jump format machine code implementation of a ladder logic program comprised of a series of jump statements, each examining a contact status and jumping to a target, and including a COIL ON and a COIL OFF routine, into a ladder logic diagram comprised of interconnected numbered succeeding contacts arranged in rungs, each contact with a head and tail terminal, and an output coil, comprising the steps of:

a) assigning an index number to each jump statement according to its order in the machine code;

b) determining the target for each jump statement;

c) creating an interconnection matrix of elements having columns corresponding to the number of jump statements and hence to the number of contacts in the ladder logic diagram and rows corresponding to the number of points of interconnection between contacts;

d) placing head marker elements and tail marker elements in the matrix by analyzing each jump statement and its target so that each column will have only one head marker element and one tail marker element representing the head and tail terminal of a contact whose sequential number corresponds to the column number and so that the row of the head marker element and the row of the tail marker element define interconnections between the terminals of that contact and the terminals of contacts associated with other columns; and

e) displaying a ladder logic diagram by:

i) displaying a contact having a head and tail terminal for each column the contact having a head and tail terminal;

ii) connecting the head terminal of each contact to the head terminals of all other contacts having head marker elements in the row of the head marker element of that contact and to the tail terminals of all other contacts having a tail marker element in the row of the head marker element of that contact; and

iii) connecting the tail terminal of each contact to the head terminals of all other contacts having a head marker element in the row of the tail marker element of that contact and to the tail terminals of all other contacts having a tail marker element in the row of the tail marker element of that contact.

5,005,153

DATA PROCESSOR INTEGRATED ON A SEMICONDUCTOR SUBSTRATE

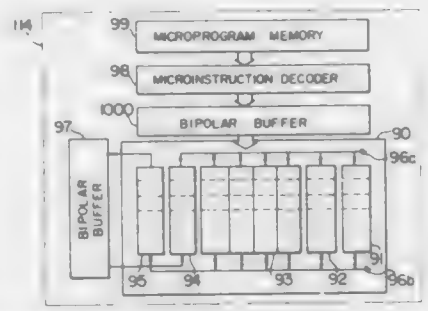
Hideo Maejima, and Ikuro Masuda, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 13,204, Feb. 6, 1987, abandoned, which is a continuation of Ser. No. 535,054, Sep. 23, 1983, abandoned. This application Feb. 12, 1988, Ser. No. 155,484

Claims priority, application Japan, Sep. 29, 1982, 57-168502; Oct. 27, 1982, 57-187569

Int. Cl.[5] G06F *13/00*

U.S. Cl. 364—900 **20 Claims**



6. A data processor integrated on a semiconductor substrate comprising:

an instruction decoder comprising a plurality of MOSFETs, for decoding instructions; and

a processing circuit being controlled by the decoded instructions, and comprising a plurality of elements including an arithmetic logic unit, a shifter, an operation register, an input register and an output register, each connected to an internal bus to provide a path for the transfer of data and each comprises of a plurality of MOSFETs,

wherein the connection of the at least one of said elements to said internal bus includes a bipolar buffer to reduce signal transmission delay along said data transfer path.

5,005,154

HIGH SPEED PROGRAMMABLE READ ON MEMORY DEVICE FORMED BY BIPOLAR TRANSISTORS

Hajime Masuda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 19, 1989, Ser. No. 321,902

Claims priority, application Japan, Jul. 19, 1988, 63-181025

Int. Cl.[5] G11C *11/34*

U.S. Cl. 365—96 **16 Claims**

1. A programmable read only memory device having a read out mode of operation and a write-in mode of operation, comprising:

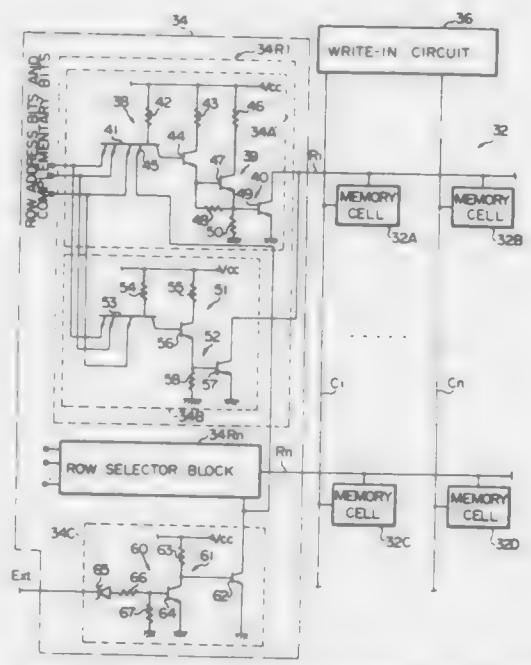
(a) a plurality of memory cells arranged in rows and columns and having respective elements each capable of being permanently changed in resistance with a large amount of a write-in current, each of said memory cells being operative to store a data bit of either logic "1" or "0" level depending upon the resistance of the element of the memory cell;

(b) a plurality of row lines respectively coupled to the rows of said memory cells;

(c) a plurality of column lines respectively coupled to the columns of said memory cells;

(d) column selector means coupled to said column lines and responsive to a column address signal for supplying one or a plurality of said column lines with said write-in current in said write-in mode of operation and with a small amount of a read out current with respect to said write-in current in said read out mode of operation;

(e) a row selector circuit having a plurality of row selector blocks respectively associated with said row lines, and responsive to a row address signal for selectively activating one of the row selector blocks, thereby providing a



current path from one of said row lines to a first constant voltage source; and

(f) an output circuit coupled to the aforesaid one or a plurality of said column lines in said read out mode of operation to change the voltage level or levels on the column line or lines for producing an output signal or signals representative of the data bit or bits stored in one or a plurality of the memory cells, in which each of said row selector blocks comprises a first discharging unit having a large current driving capability and activated in said write-in mode of operation for providing most of said current path, and a second discharging unit having a small current driving capability with respect to said first discharging unit and activated for providing the remaining part of said current path in said write-in mode of operation and for providing the current path in said read out mode of operation, and in which said programmable read only memory device further comprises a control unit responsive to an external signal and operative to establish most of said current path in said write-in mode of operation and to block most of said current path in said read out mode of operation.

5,005,155

OPTIMIZED ELECTRICALLY ERASABLE PLA CELL FOR MINIMUM READ DISTURB

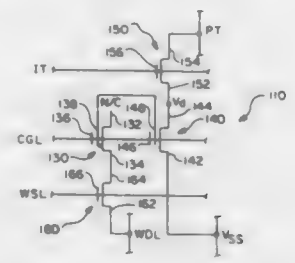
Nader A. Radjy, San Francisco, and Michael S. Briner, San Jose, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jun. 15, 1988, Ser. No. 207,323

The portion of the term of this patent subsequent to Jun. 19, 2007, has been disclaimed.

Int. Cl.[5] G11C *16/04*

U.S. Cl. 365—185 **9 Claims**



1. Apparatus comprising:

an array of floating gate tunnel devices including a first floating gate tunnel device (**130**), said first floating gate tunnel device having first (**134**) and second (**136**) terminals and having a floating gate (**138**) in tunnelling communication with said first terminal in response to a field generated between said floating gate and said first terminal;

a floating gate read transistor having first (**142**) and second (**146**) terminals and having a floating gate (**148**), said second terminal of said read transistor being common with said second terminal of said first tunnel device and said floating gate of said read transistor being common with said floating gate of said first tunnel device;

circuitry responsive during a sense mode to the charge level on a selected subset of said tunnel devices in said array; and

means, operative during said sense mode regardless of whether said first floating gate tunnel device is in said selected subset, for applying a first predetermined non-zero voltage to said second terminal of said read transistor relative to said first terminal of said read transistor and a second predetermined non-zero voltage to said first terminal of said tunnel device relative to said first terminal of said read transistor.

5,005,156

SEMICONDUCTOR DEVICE HAVING OUTPUT BUFFER CIRCUIT CONTROLLED BY OUTPUT CONTROL SIGNAL

Yasuhiro Takai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 27, 1989, Ser. No. 457,631

Claims priority, application Japan, Dec. 27, 1988, 63-331724

Int. Cl.[5] G11C *11/34*

U.S. Cl. 365—189.05 **11 Claims**

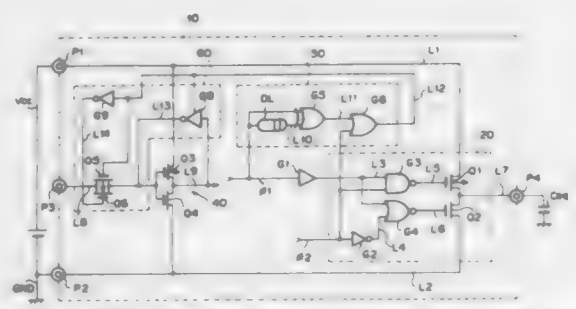
1. A semiconductor device having a data output buffer circuit controlled by an output control signal, comprising:

an output detecting circuit for detecting the level changes in the data signal inputted to said data output buffer circuit;

a signal input circuit, an output level of which is determined on the basis of the detection of the level changes in the data signal by said output detecting circuit; and

a holding circuit for holding said output level of said signal input circuit,

whereby possible output noises attendant on the data outputting operation of said data output buffer circuit are prevented from affecting the operation of said signal input circuit.

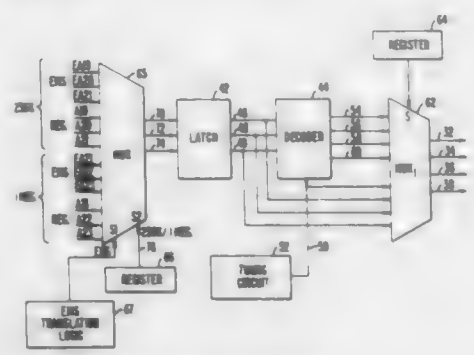


5,005,157

APPARATUS FOR SELECTIVELY PROVIDING RAS SIGNALS OR RAS TIMING AND CODED RAS ADDRESS SIGNALS

Robert W. Catlin, Santa Clara, Calif., assignor to Chips & Technologies, Inc., San Jose, Calif.

Filed Nov. 13, 1989, Ser. No. 436,143
Int. Cl.[5] G11C *7/00, 11/408*
U.S. Cl. 365—193 **7 Claims**



1. A memory control unit comprising:

N row address strobe (RAS) outputs;

means for selectively providing an address externally provided to said memory control unit or a translated expanded memory space (EMS) address, said means for selectively providing addresses including a multiplexer;

said multiplexer including two additional inputs of different address bits of said EMS address and external address for a different size of memory bank;

means for decoding said addresses to select, for predetermined addresses, one of N decode outputs;

means for providing a timing signal to control the duration of a signal on said selected decode output, and

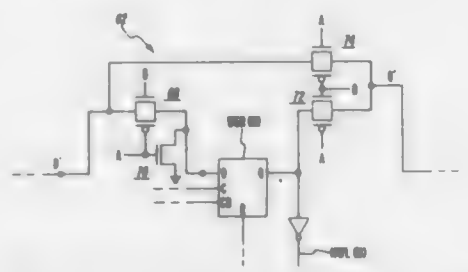
multiplexing means, coupled to said means for providing addresses, said means for decoding and said means for providing a timing signal, for selectively coupling to said RAS outputs said addresses and said timing signal or said decode outputs.

5,005,158

REDUNDANCY FOR SERIAL MEMORY

David C. McClure, and Mark A. Lysinger, both of Carrollton, Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jan. 12, 1990, Ser. No. 464,219
Int. Cl.[5] G11C *8/04;* **G06F** *11/20*
U.S. Cl. 365—200 **10 Claims**



1. A fault tolerant serial memory comprising, in combination:

a serial array of primary memory blocks including a first memory block, one or more intermediate memory blocks and a last memory block, each memory block having data storage cells;

a redundant memory block of data storage cells;

a block selection circuit having data input and data output nodes coupled to each primary and redundant memory block, respectively, for writing and reading data into and out of said primary and redundant memory blocks, said block selection circuits interconnecting said primary memory blocks for enabling write and read operations from the first memory block sequentially to the last memory block in the serial array, and interconnecting the redundant memory block to the last primary memory block for enabling write and read operations from the first primary memory block of the serial array sequentially to the redundant memory block;

a multiplexer circuit having a data input node and a data output node coupled to the data input and data output nodes of the block selection circuit for each intermediate memory block, for the last memory block and for said redundant memory block, respectively, each multiplexer circuit being operable in a first stable state in which block selection data is input to and output from each block selection circuit respectively, and each multiplexer circuit being operable in a second stable state in which the block selection circuit to which it is coupled is bypassed and block selection data is conducted from the multiplexer circuit data input node through a bypass path to the multiplexer circuit data output node, respectively.

5,005,159

CONTINUITY LOGGING USING DIFFERENCED SIGNAL DETECTION

Christine E. Krohn, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Nov. 1, 1989, Ser. No. 430,513
Int. Cl.[5] G01V *1/40*
U.S. Cl. 367—57 **19 Claims**

13. Method of continuity logging guided waves in the lithographic region located between two boreholes, comprising

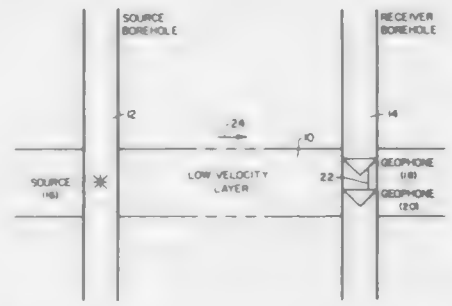
(a) first seismic sourcing at a first depth location in a first borehole,

(b) first receiving the direct impulses from said first depth location in a second borehole at a seismic receiver and developing a first signal value,

(c) second seismic sourcing at said first depth location in said first borehole in substantially the same manner as said first seismic sourcing,

(d) second receiving the direct impulses from said second sourcing at a depth location in said second borehole a predetermined short vertical distance from the location of said first receiving at said seismic receiver and developing a second signal value,

(e) developing a differenced signal by subtracting one of said first and second signals from the other, and



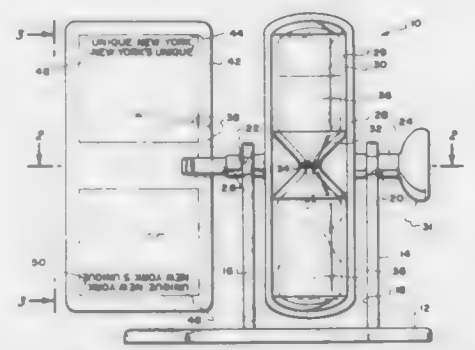
(f) at subsequent discrete depth locations in said respective first and second boreholes, repeating steps (a) through (e), wherein an appreciable differenced signal at a specific depth indicates the presence of guided waves in a continuous low-velocity lithographic layer at such specific depth.

5,005,160

GAME TIMING APPARATUS

Robert A. DeMars, 7210 Jordan Ave., Canoga Park, Calif. 91303

Filed Apr. 5, 1990, Ser. No. 505,165
Int. Cl.[5] G04F *1/04*
U.S. Cl. 368—95 **6 Claims**



1. A game timing apparatus comprising:

a base, said base adapted to be placed on a planar supportive surface;

a mounting frame mounted on said base, said mounting frame including a pair of stanchions extending from said base and located in a substantially parallel spaced apart relationship defining a gap therebetween;

an hourglass mounted on said stanchions of said mounting frame, said hourglass being pivotably on said stanchions, said hourglass having a transparent bulb defining a pair of chambers separated by a necked down waist, said bulb having a longitudinal center axis, during sufficient pivotable movement of said bulb said longitudinal center axis will be perpendicular to said base, a quantity of sand located within said chamber, said sand being movable between said chambers during pivoting of said hourglass;

a support frame, said bulb being fixedly mounted on said support frame, said support frame being located within said gap, said support frame including a pair of stub shafts mounted directly adjacent said waist, said stub shafts being in axial alignment, one said stub shaft connecting with one said stanchion and the other said stub shaft connecting with the remaining said stanchion; and

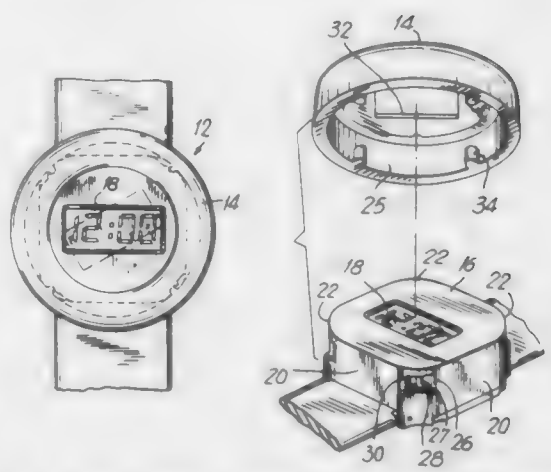
card mounting means mounted on one of said stub shafts, said card mounting means adapted to removably support a planar card upon which is located indicia, whereby as said hourglass is pivoted so is said card and said card mounting means.

5,005,161

CHANGEABLE WATCH BEZEL LOCKING MECHANISM

Irving Boilen, New York, N.Y., assignor to Trans-Action Marketing Corp., New York, N.Y.

Filed Apr. 17, 1990, Ser. No. 510,314
Int. Cl.[5] G04B *37/00*
U.S. Cl. 368—295 **8 Claims**



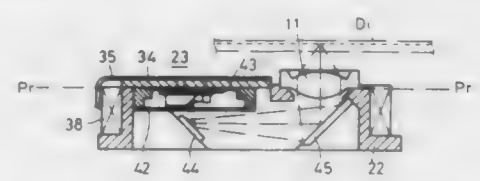
1. A watch assembly comprising in combination a wristwatch body including a time display, the cross-section of the wristwatch body being cylindrical and defining a circular cross-section with a plurality of chord sections, said wristwatch body including a first locking means, and a bezel adapted to be positioned on said wristwatch body, said bezel including a second locking means, said second locking means including at least one radially disposed projection being cooperatively associated with said first locking means on said wristwatch body so that said bezel can be releasably secured to said wristwatch body by placing said bezel over said wristwatch body and by rotating said bezel into a locked position, whereby each chord section is separated by a curved region, each said chord section providing clearance for said radially disposed projection so that said wristwatch body integrally fits into said bezel, said bezel being removable from said timepiece by rotating said bezel in the opposite direction.

5,005,162

OPTICAL HEAD DEVICES FOR USE IN DISC PLAYERS

Koji Mitsumori, and Hidehiro Kume, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 14, 1989, Ser. No. 338,184
Claims priority, application Japan, Apr. 25, 1988, 63-101964
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.12 **13 Claims**



1. An optical head device in a disc player comprising:

a movable optical assembly which has a finite magnification objective lens, a first mirror and a second mirror, and a light beam generating and detecting unit having a semiconductor substrate including photodetecting means and

light beam generating means formed thereon, said finite-magnification objective lens, said first and second mirrors, and said light beam generating and detecting unit being supported in said movable optical assembly by a common supporting member, and

a driving mechanism for moving said movable optical assembly in both a first direction along an optical axis of said finite-magnification objective lens and a second direction substantially perpendicular to said first direction;

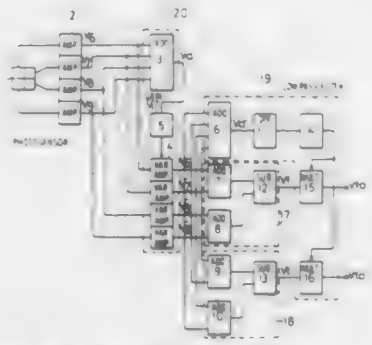
wherein, in said movable optical assembly, a light beam generated by said light beam generating means is reflected by said first mirror and changed in direction, reflected further by said second mirror and changed again in direction, and focused by said finite-magnification objective lens at a point on the optical axis of said finite-magnification objective lens, and wherein a light beam coming from outside of said movable optical assembly is received by said finite-magnification objective lens to pass therethrough to said second mirror, is reflected by said second mirror and changed in direction, and guided to said photodetecting means in said light beam generating and detecting unit.

5,005,163

LEVEL SHIFT CIRCUIT OF OPTICAL DISC APPARATUS

Makoto Yamamoto, and Akio Terada, both of Kodaira, Japan, assignors to Nakamichi Corp., Tokyo, Japan

Continuation of Ser. No. 302,125, Jan. 26, 1989, abandoned, which is a continuation of Ser. No. 39,260, Apr. 17, 1987, abandoned. This application May 16, 1990, Ser. No. 523,199
Claims priority, application Japan, Apr. 18, 1986, 61-57421
Int. Cl.[5] G11B *7/095*
U.S. Cl. 369—44.36 **3 Claims**



1. An optical disc apparatus, comprising:

a servo circuit including an automatic gain control device having a predetermined range of permissible input signal levels, and

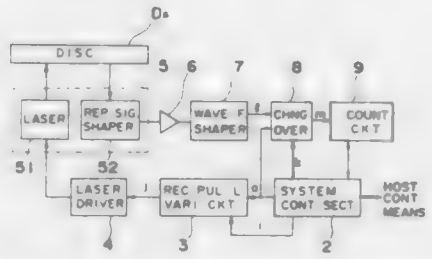
a shifting circuit for shifting the level of signals inputted to said servo circuit, said shifting circuit comprising: photodetecting and converting means for detecting optical signals reflected from the optical disc and for converting the detected optical signals into electrical signals, a plurality of variable gain amplifiers receiving said electrical signals from said photodetecting and converting means aid variable gain amplifiers outputting signals for detecting at least one of a focussing or tracking error and forming a corresponding error signal, respectively, means for determining a level of a quantity of light reflected from the optical disc according to said electrical signals, and gain set means for selecting one of a plurality of gains of said variable gain amplifiers depending on the level determined so that the outputs of said variable gain amplifiers are within the predetermined range of permissible input signal levels of said automatic gain control device.

5,005,164

RECORDING AND REPRODUCING APPARATUS

Noriaki Sakamoto, Kyoto; Shigemi Maeda, Yamatokortyama; Toshihiro Yamanaka, Ikoma; Toshihisa Deguchi, Nara; Nobuyuki Horie, Yamatokoriyama; Takeshi Yamaguchi, and Kunio Kojima, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 27, 1988, Ser. No. 186,580
Claims priority, application Japan, Apr. 28, 1987, 62-105616; Apr. 28, 1987, 62-107102; Apr. 28, 1987, 62-107104; May 13, 1987, 62-117574
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—48 **17 Claims**



1. A recording and reproducing apparatus comprising:

system control means for developing a binary-coded original recording signal;

recording condition control means for controlling recording conditions during the recording of said binary-coded original recording signal on a recording medium;

signal recording means for recording said original recording signal onto said recording medium in response to said recording conditions set by said recording condition control means;

reproducing signal output means for outputting a binary-coded reproducing signal by detecting said original recording signal as recorded on the recording medium by said signal recording means; and

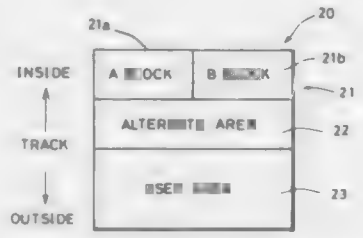
recording condition setting means for obtaining said recording conditions and developing a reproducing signal approximately equal to said original recording signal through a comparison between said binary-coded reproducing signal outputted from said reproducing signal output means and said original recording signal.

5,005,165

METHOD FOR MANAGING INFORMATION ON A STORAGE MEDIA WITHOUT LOSING INFORMATION DUE TO EFFECTS

Toshihiro Yamanaka; Shigemi Maeda, and Nobuyuki Horie, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 14, 1988, Ser. No. 284,328
Claims priority, application Japan, Dec. 15, 1987, 62-316862
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—58 **7 Claims**



1. A method for managing defect information comprising the steps of:

(a) providing a first and second defect information storage area in a storage medium;

(b) determining if a defect is present in the storage medium;

(c) storing location data of the determined defect in a work area;

(d) determining which defect information storage area has a greater number of registrations stored therein, a registration representing a location data of a single defect in the storage medium;

(e) transferring, for storing purposes, registrations from the defect information storage area having the greater number of registrations to the defect information storage area having a lesser number of registrations; and

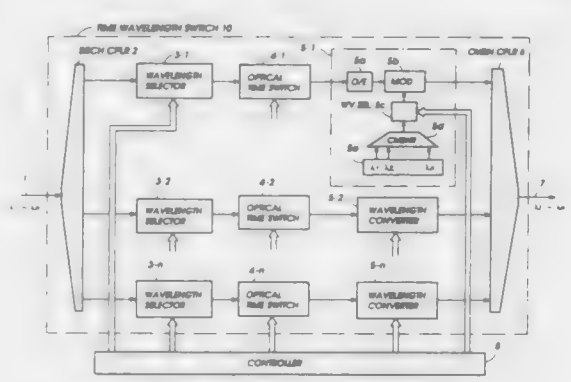
(f) transferring, for storing purposes, the location data of determined defect from the work area to the defect information storage area receiving the registrations in said step (e), the location data becoming a new registration.

5,005,166

TIME AND WAVELENGTH DIVISION SWITCHING SYSTEM

Syuji Suzuki, and Makoto Nishio, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Sep. 30, 1988, Ser. No. 251,486
Claims priority, application Japan, Sep. 30, 1987, 62-248347; Dec. 1, 1987, 62-305152; Jun. 2, 1988, 63-136955
Int. Cl.[5] H04J *14/00*
U.S. Cl. 370—1 **17 Claims**



1. A time and wavelength switch comprising:

a plurality of wavelength selector means each having a signal input terminal and a signal output terminal, the input terminal of each said selector means receiving a plurality of incoming time division multiplexed (TDM) channels of different optical wavelengths, each said wavelength selector means being capable of selecting, in response to a first, wavelength switching signal applied thereto, one of said incoming TDM channels which is carried on a first wavelength and allowing said selected TDM channel to appear at the output terminal thereof; and

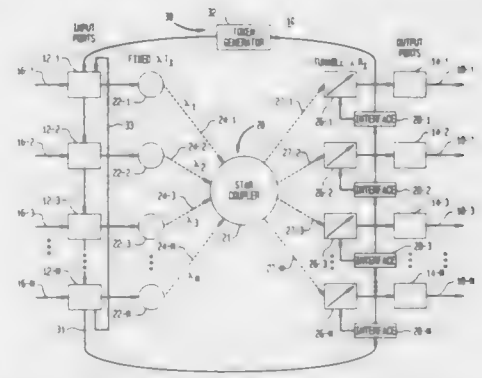
a plurality of time-slot switching and wavelength conversion stages associated respectively with said plural wavelength selector means, each of said stages having a single input terminal connected to the output terminal of the associated wavelength selector means and a single output terminal of said stage and being capable of deriving from a first time slot of the selected TDM channel an output signal of a second time slot carried on a second wavelength in response to a second, time-slot switching signal applied thereto and a third, wavelength switching signal applied thereto and allowing said output signal to appear at the output terminal thereof.

5,005,167

MULTICAST PACKET SWITCHING METHOD

Edward Arthurs, Summit; Matthew S. Goodman, Belle Meade; Chong K. Kim, Livingston, and Tony T. Lee, Bridgewater, all of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Division of Ser. No. 306,528, Feb. 3, 1989, Pat. No. 4,896,934. This application Oct. 11, 1989, Ser. No. 420,010
Int. Cl.[5] H04J *14/08*
U.S. Cl. 370—4 **9 Claims**



1. A method for routing packets in optical form from a plurality of input ports of a switch to a plurality of output ports of said switch, said method comprising:

during a first control phase of a packet transmission cycle, writing information into a control token at particular input ports so as to reserve particular output ports,

passing said control token among input ports to resolve contentions among said particular input ports wanting to reserve the same said particular output ports and between output ports to tune said particular output ports for receiving packets from said particular input ports,

transmitting said token from said particular input ports to said particular output ports on a distinct network independent of the optical packets being routed,

during a second control phase of a packet transmission cycle, reading said control token at said particular output ports and tuning said particular output ports in response to said token to enable them to selectively receive packets from said particular input ports, and

during a transmission phase which follows said first and said second control phases of a packet transmission cycle, optically transmitting said packets via an optical branching network from said particular input ports to all output ports including said particular output ports.

5,005,168

MULTIRATE WIRE LINE MODEM APPARATUS

Peter Cummiskey, Clark, N.J.; Marvin Epstein, Monsey, N.Y.; Paul A. Gilmour, Bloomfield, and Richard Kim, Nutley, both of N.J., assignors to ITT Corporation, New York, N.Y.

Filed May 2, 1988, Ser. No. 189,497
Int. Cl.[5] H04B *1/56;* **H04J** *15/00;* **H04L** *5/111*
U.S. Cl. 370—24 **40 Claims**

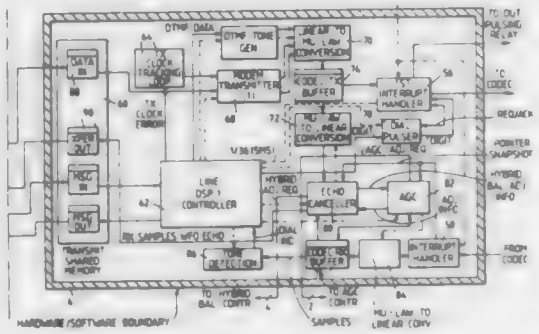
1. Modulator/demodulator apparatus comprising:

first digital signal processor means operable in a full duplex mode for providing digital samples to be transmitted to a coder decoder and receiving transmitted digital samples therefrom, said first digital signal processor means being responsive to received samples for initiating echo cancellation in said received samples;

second digital signal processor means operable to demodulate samples received from said first digital signal processor and outputting demodulated message information therefrom; and

input/output processor means for initiating operations of said first and second digital signal processor means, said input/output processor means receiving input information

to be transmitted and supplying said information to said first digital processor means and receiving demodulated message information from said second digital signal processor means and outputting said demodulated message information to at least one user device, said input/output



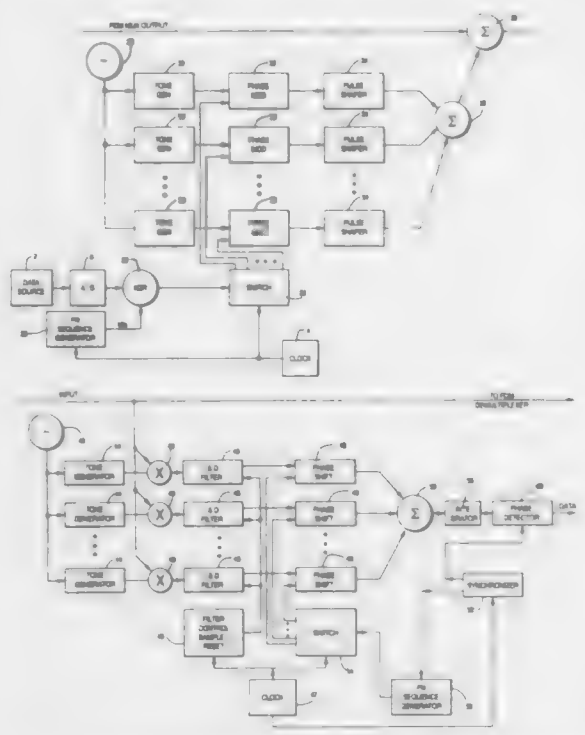
processor means also receiving transmitted digital samples to be demodulated from said first digital signal processor means and supplying said transmitted samples to be demodulated to said second digital signal means, said input-/output processor means being operable in a full duplex mode of operation.

5,005,169

FREQUENCY DIVISION MULTIPLEX GUARDBAND COMMUNICATION SYSTEM FOR SENDING INFORMATION OVER THE GUARDBANDS

Joseph B. Brooder, East Berlin, Pa., and William H. Gossard, Grasonville, Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 16, 1989, Ser. No. 437,153
Int. Cl.[5] H04J *1/14, 1/20*
U.S. Cl. 370—76 **4 Claims**



1. A frequency division multiplex (FDM) guardband communication system for using guardbands for sending additional signals between the information bands of the frequency division multiplex system, comprising:

generator means for generating pn chips;

data means for providing data to the system;

converting means, operatively connected to said data means, for converting the signal to digital form, if required;

combining means, operatively connected to said converting means and said generator means, for combining a predetermined number of pn chips with a number of data bits and obtaining signal chips;

switching means, operatively connected to said combining means, for assigning the signal chips to individual guardbands;

modulation means, operatively connected to said combining means, for combining digital data to be added to the frequency division multiplex system with the pn chips;

means, operatively connected to said modulation means, for summing the pn modulated digital signals to a FDM output for transmission through a communication medium;

shifting means for translating each guardband to DC;

filter means, operatively connected to said shifting means, for isolating individual chips and outputting a signal;

sampling means, operatively connected to said filter means, for sampling and phase alignment of the output signals from said filter means;

summing means, operatively connected to said sampling means, for summing outputs from said sampling means; and

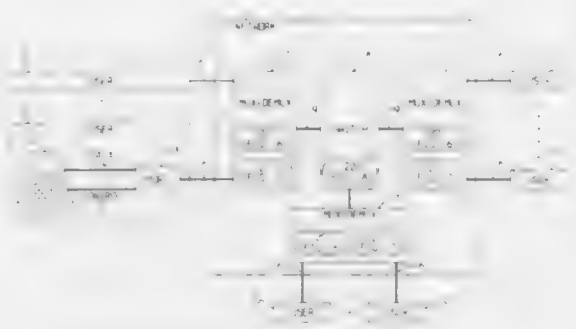
detector means, operatively connected to said summing means, for recovering the signal added to the frequency division multiplex system.

5,005,170

MULTI-RATE MULTIPLEXING ARRANGEMENT EFFICIENTLY UTILIZING MULTIPLEXED CHANNEL BANDWIDTH

Donald R. Nelson, Boulder, Colo., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 9, 1990, Ser. No. 462,361
Int. Cl.[5] H04J *3/22*
U.S. Cl. 370—84 **34 Claims**



1. A subrate multiplexer comprising:

means for receiving a plurality of first signal streams each at a subrate of a predetermined transmission rate;

means cooperative with the receiving means for subrate-multiplexing the plurality of received first signal streams into a second signal stream such that the second signal stream comprises a plurality of adjacent frames each having an identical sequence of time slots of equal duration with different ones of the time slots of a frame assigned to carry signals from different ones of the first signal streams and with sequentially identical time slots of a plurality of the adjacent frames assigned to a same one first signal stream;

means cooperative with the receiving means and the subrate-multiplexing means for assigning to at least one first signal stream a plurality of time slots in each frame, at least some of the time slots of the assigned plurality being separated from others of the time slots of the assigned plurality by at least one time slot assigned to a different first signal stream and at least some of the time slots of the assigned plurality being non-periodically distributed with respect to others of the time slots of the assigned plurality within the sequence of the time slots of a frame; and

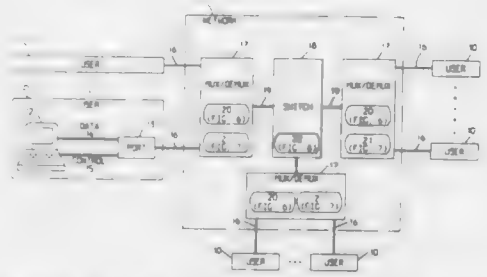
means cooperative with the subrate-multiplexing means for transmitting the second signal stream at the predetermined transmission rate.

5,005,171

TELECOMMUNICATION TRANSMISSION FORMAT SUITED FOR NETWORK-INDEPENDENT TIMING ENVIRONMENTS

David R. Modisette, Jr., Broomfield, and Donald R. Nelson, Boulder, both of Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 9, 1990, Ser. No. 462,374
Int. Cl.[5] H04J *3/12*
U.S. Cl. 370—110.1 **20 Claims**



1. An arrangement for transmitting control signals and data signals as a sequence of delineated units of signals, with at least the data signals having a present data transmission rate that fluctuates about a nominal rate, comprising:

means for assigning to the control and data signals a fixed transmission rate greater than the nominal rate; and

means for transmitting a stream of delineated units carrying the data signals at the present data transmission rate, and transmitting delineated units carrying the control signals interspersed among the delineated units carrying the data signals at a present control transmission rate that fluctuates and is equal to the fixed transmission rate less the present data transmission rate to maintain transmission of a continuous sequence of adjacent delineated units carrying the data and control signals at the fixed transmission rate;

whereby the present control transmission rate varies inversely with the present data transmission rate.

5,005,172

DIAGNOSTIC SYSTEM IN A DATA PROCESSING SYSTEM

Masakazu Kawamoto, Komae, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 15, 1989, Ser. No. 323,941
Claims priority, application Japan, Mar. 18, 1988, 63-064941
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—18 **7 Claims**

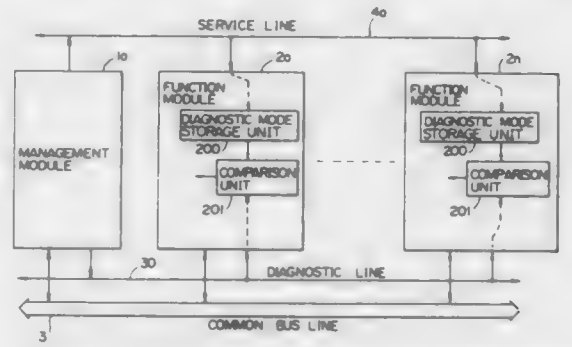
1. A diagnostic system in a data processing system constituted by a management module and a plurality of function modules, each having an address, a normal mode, and a diagnostic mode, and each being connected to said management module through a common bus line, said diagnostic system comprising:

service line means, operatively connected to the management module and said plurality of function modules, for issuing a diagnostic mode command;

diagnostic line means, operatively connected to said management module and said plurality of function modules, for providing a signal indicating a transfer of diagnostic data on the common bus line;

diagnostic mode storage means provided in each of the function modules, and operatively connected to said service line means for setting the diagnostic mode; and

comparison means, provided in each of the function modules, and operatively connected to said diagnostic mode storage means and to said diagnostic line means, for comparing a content of said diagnostic mode storage means with the signal indicating the transfer of diagnostic data, by comparing an address on the common bus line with an address of a corresponding function module, a resultant data of the comparison being used as a condition for a module selection for the diagnosis so that a transfer of diagnostic data in said diagnostic mode is separated from the transfer of the data in said normal mode.

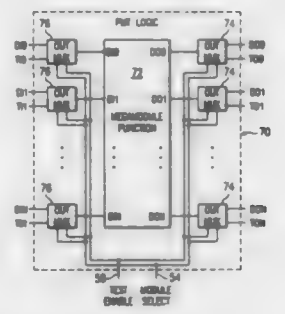


5,005,173

PARALLEL MODULE TESTING

Robert C. Martin, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 7, 1988, Ser. No. 281,308
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—22.6 **29 Claims**



25. An integrated circuit, comprising:

a first module of operation circuits, said first module having a plurality of first data terminals;

a plurality of first multiplexers, each of said first multiplexers having a first external data terminal and a first test terminal, each of said first multiplexers coupling a respective one of said first data terminals to said first external data terminal during normal operation and to said first test terminal during testing of said first module to permit test patterns of a testing program corresponding to said first module to be input into said first module;

a second module of operation circuits, said second module having a plurality of second data terminals;

a plurality of second multiplexers, each of said second multiplexers having a second external data terminal and a second test terminal, each of said second multiplexers coupling a respective one of said second data terminals to said second external data terminal during normal operation and to said second test terminal during testing of said

second module to permit test patterns of a testing program corresponding to said second module to be input into said second module; and

a bus for coupling to a source of test patterns, said bus having a plurality of conductors, each of said first test terminals and said second test terminals coupled to one of said plurality of conductors.

5,005,174

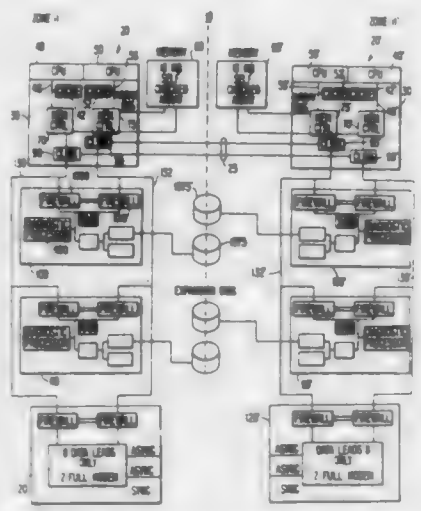
DUAL ZONE, FAULT TOLERANT COMPUTER SYSTEM WITH ERROR CHECKING IN I/O WRITES

William F. Bruckert, Northboro, Mass., and Thomas D. Bissett, Derry, N.H., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 93,572, Sep. 4, 1987, abandoned. This application Feb. 26, 1990, Ser. No. 489,751

Int. Cl.[5] G06F *11/16*

U.S. Cl. 371—68.3 **18 Claims**



1. A fault tolerant computer system designed to be coupled to at least one I/O device comprising:

a first processing system including

a first data processor for executing a series of data processing instructions involving the passage of data into and out of said first data processor, and

a first data output terminal for outputting a portion of the data passing out of said first data processor to said at least one I/O device;

a second processing system, substantially identical to said first processing system and operating independently of said first processing system, said second processing system including

a second data processor for executing said series of data processing instructions in the same sequence as said first data processor, said second data processor's execution of said instructions involving the passage of data into and out of said second data processor, and

a second data output terminal for outputting a portion of the data passing out of said second data processor to said at least one I/O device;

synchronizing means, coupled to said first and second data processors, for maintaining the execution of said series of data processing instructions by said first and second processing systems in synchronism; and

fault detection means, coupled to said first and second processing systems at said first and second output terminals, respectively, for receiving from said first and second processing systems only the portion of the data output from said first data output terminal of said first processing system to said at least one I/O device and the portion of the data output from said second data output terminal of said second processing system to said at least one I/O device, said fault detection means including means for identifying the presence of an error in said fault tolerant computer system when the portion of said data output from said first processing system at said first output terminal is different from the portion of the data output from said second processing system at said second output terminal.

5,005,175

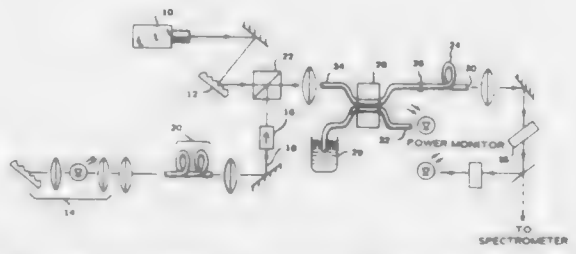
ERBIUM-DOPED FIBER AMPLIFIER

Emmanuel Desurvire; Clinton R. Giles, both of Middletown; Jay R. Simpson, Fanwood, and John L. Zyskind, Shrewsbury, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 27, 1989, Ser. No. 441,495

Int. Cl.[5] G02B *6/00*; H01S *3/00*

U.S. Cl. 372—6 **15 Claims**



1. An optical amplifier comprising a single mode optical fiber having a core surrounded by a cladding, said core being doped with rare earth ions having a distribution profile, and

means for generating a pump signal at a pump wavelength, said pump wavelength capable of coupling the ground state of the rare earth ions to an excited state which is an upper pump level of a three level lasing system having the ground state as the lower level of the lasing transition, said generating means being optically coupled to said optical fiber, the transmission mode of the optical fiber at the pump wavelength having a radius which is greater than the radius of the distribution profile of the rare earth ions in the core.

5,005,176

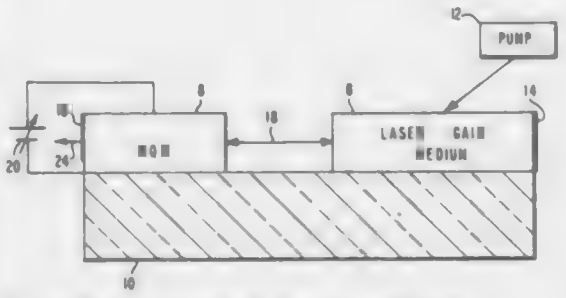
METHOD AND APPARATUS FOR Q-SWITCHING A LASER

Juan F. Lam, and Thomas C. Hasenberg, both of Agoura Hills, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 4, 1990, Ser. No. 504,758

Int. Cl.[5] H01S *3/11*

U.S. Cl. 372—10 **17 Claims**



1. An optical amplification method, comprising:

storing photon energy in a Type II staggered alignment multiple quantum well (MQW) structure by optically exciting the MQW structure with electromagnetic radiation,

applying an electric field across the MQW structure of sufficient magnitude to induce a release of optical energy from the structure, and

applying electromagnetic radiation at a wavelength substantially matched with that of the MQW energy release as an input to the MQW structure during at least a portion of said energy release, such that said energy release is amplified with respect to said input.

5,005,177

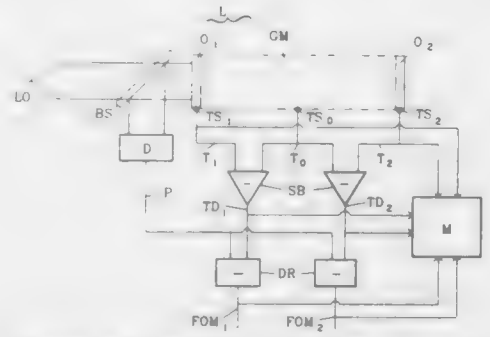
LASER OPTICS QUALITY MONITORING

Paul H. Beckwith, Ottawa, Canada, assignor to Lumonics Inc., Kanata, Canada

Filed Sep. 27, 1989, Ser. No. 413,096

Int. Cl.[5] H01S *3/04*

U.S. Cl. 372—34 **12 Claims**



1. A method of monitoring optical quality of optical means of a gas laser having a pair of optical means, the method comprising:

measuring a temperature of at least one of a pair of optical means of a gas laser;

measuring a surrounding temperature of an enclosure for the laser; and

subtracting said surrounding temperature from the measured temperature of said optical means to obtain a corresponding temperature differential thereby enabling monitoring of said optical means.

5,005,178

LASER DIODE MODULE

Johannes T. M. Kluitmans, and Hindrik Tjassens, both of Eindhoven, Netherlands, assignors to U.S. Philips Corp., New York, N.Y.

Continuation of Ser. No. 425,375, Oct. 17, 1989, abandoned, which is a continuation of Ser. No. 297,796, Jan. 17, 1989, abandoned. This application May 11, 1990, Ser. No. 523,308

Claims priority, application Netherlands, Jan. 22, 1988, 8800140

Int. Cl.[5] H01S *3/045*

U.S. Cl. 372—36 **19 Claims**

1. A laser diode module comprising:

a rectangular box-like metal casing with a bottom, two long and two short sidewalls, a tubular passage for a glass fibre being provided in one of the short sidewalls, and no less than eight guide pins being passed through the bottom in a standardized DIL order, no less than one of the guide pins being inserted in the bottom by means of electrically conducting material and the remaining guide pins being inserted in the bottom by means of feedthrough insulators;

a thermoelectric cooler having two thermal contact pads, one contact pad being thermoconductively coupled to the bottom of the metal casing;

a plate-formed metal base carrier which is thermoconductively connected to the other thermal contact pad of the thermoelectric cooler, this base carrier accommodating:

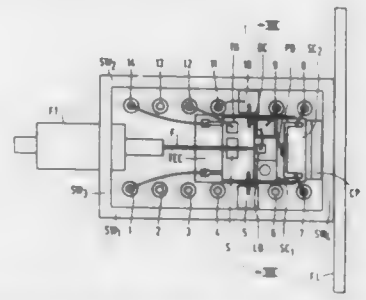
a first sub-carrier with a laser diode attached,

a second sub-carrier with a photodiode attached,

a support for arranging the glass fibre such that its end is facing the front facet of the laser diode, and

a thermistor thermally coupled with the base carrier; and

connecting lines for electrically connecting the laser diode,



the photodiode, the thermistor, the thermoelectric cooler and the metal base carrier to the respective guide pins;

wherein no less than one of the guide pins, electroconductively connected to the bottom, has a portion located inside the casing which portion has the form of a rod which over its entire length is electroconductively connected to the associated long sidewall of the casing, an electroconductive coupling being provided between the head face of the rod and the base carrier.

5,005,179

SEMICONDUCTOR DEVICE

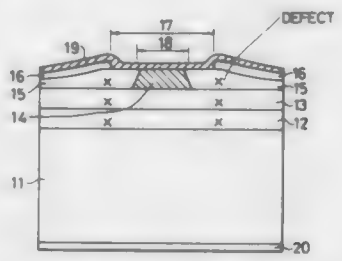
Toru Fukushima; Tsunehisa Takabayashi, and Mikio Ogai, all of Yokohama, Japan, assignors to The Furukawa Electric Company, Ltd., Tokyo, Japan

Filed Jun. 8, 1989, Ser. No. 364,366

Claims priority, application Japan, Jun. 8, 1988, 63-140632; Feb. 15, 1989, 1-35784

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—46 **13 Claims**



1. A semiconductor device comprising:

an active layer formed on a semiconductor substrate;

an electrode;

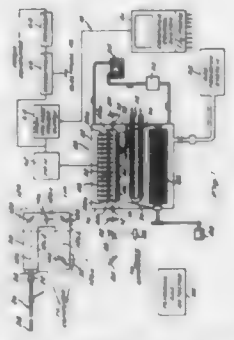
a first semiconductor layer in contact with the electrode;

a first current blocking layer formed on the first semiconductor layer and having a current confinement window;

wherein the contact resistance between the current blocking layer and the electrode is higher than the contact resistance between the electrode and the first semiconductor layer; and

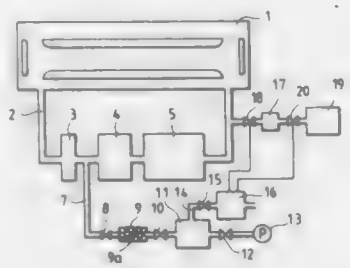
a second current blocking layer formed on said first blocking layer and provided with a dielectric insulation material having a window portion with an area larger than that of the current confinement window.

5,005,180
LASER CATHETER SYSTEM
William Edelman, Seal Beach; Dennis Constantinou, Corona Del Mar; Miles Stefanovski, Santa Ana; Yuh L. Jan, El Toro; Theodore S. Fahlen, San Jose; Ronald L. Hansen, San Jose, and Kenneth J. Kramasz, San Jose, all of Calif., assignors to Schneider (USA) Inc., Minneapolis, Minn.
Filed Sep. 1, 1989, Ser. No. 402,135
Int. Cl.[5] H01S *3/22*
U.S. Cl. 372—57 15 Claims



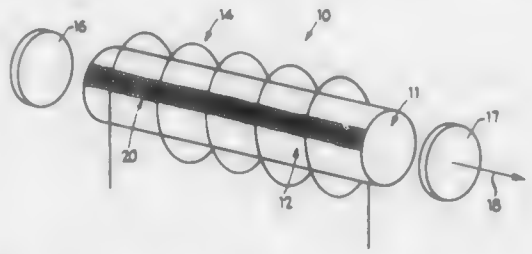
1. An apparatus for producing and transmitting energetic optical signals, comprising:
an excimer laser for producing ultraviolet light, said laser comprising:
(a) a first elongated laser electrode having a plurality of segments, there being associated with each of said segments an individual inductive element through which each said segment is connected to a common bus;
(b) a second elongated laser electrode spaced apart from said first laser electrode, said second electrode positioned substantially parallel to said first laser electrode and substantially coextensive therewith, the space between said first and second laser electrodes forming a laser discharge gap;
(c) a preionizer positioned adjacent to one of said first and second laser electrodes throughout the effective length of said one laser electrode, said preionizer comprising a conductive element within ar insulting tube, said insulating tube proximate said one laser electrode and said conductor element in electrical connection with the other of said laser electrodes;
(d) a housing for said first and second laser electrodes, said housing defining a cavity suitable for confining a gaseous laser medium, said housing cavity allowing exchange of said gaseous laser medium between said cavity and said laser discharge gap;
(e) a pulse forming network for producing electrical pulses for application to said laser electrodes to generate an electrical discharge in said gaseous laser medium in said laser discharge gap;
(f) a gas circulator for circulating said laser medium within said housing cavity; and
(g) a trap through which said gaseous laser medium may be passed, said trap removing impurities from said gaseous medium; an optical fiber having an input end and an output end, said input end receiving optical signals from said laser and guiding them through said fiber to said output end, said fiber further comprising a substantially rod shaped core material surrounded by a substantially tube shaped cladding material, said cladding material having an optical index of refraction which is less than or equal to the index of refraction of said core material at an interface between the core and the cladding, the index of refraction of the cladding material decreasing as the radial distance from said interface increases; and
a control system for monitoring and controlling the operation of said laser.

5,005,181
METHOD FOR CONTROLLING GAS IN HALOGEN GAS LASER AND DEVICE THEREFOR
Takeo Yoshioka, and Tadao Minagawa, both of Hyogo, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan
Filed Sep. 20, 1989, Ser. No. 409,916
Claims priority, application Japan, Oct. 20, 1988, 265470
Int. Cl.[5] H01S *3/22*
U.S. Cl. 372—59 22 Claims



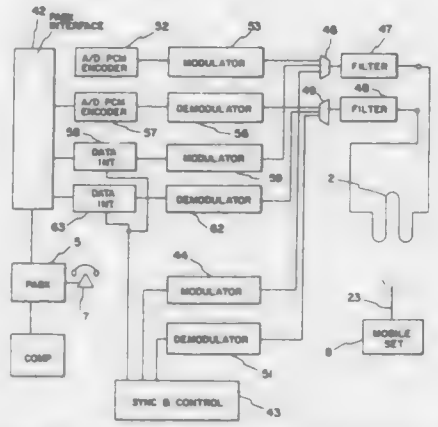
1. A gas control device for a halogen gas excimer laser using a laser gas comprising a halogen gas as the active medium, comprising:
means for pumping said laser and causing said laser to oscillate;
means for circulating said laser gas through said laser, said circulating means communicating with said laser pumping means;
means for controlling a flow of said laser gas circulating in said laser gas circulating means;
means for storing new halogen gas, said new halogen gas storing means being controllably connected to said circulating means;
means connected to said circulating means for converting said halogen gas into a low-boiling-point gas; and
means for detecting a density of said low-boiling-point gas, said detecting means being connected to said converting means, aid density detecting means outputting a control signal to said new halogen gas storing means when said density is lower than a predetermined value for controllably supplying the new halogen gas to said circulating means whereby the level of halogen gas in said laser device is mainmined above a predetermined level.

5,005,182
LASER PUMPING APPARATUS
Myron C. Muckerheide, Port Washington, Wis., assignor to Seton Health Care Foundation, Milwaukee, Wis.
Filed Oct. 11, 1989, Ser. No. 419,757
Int. Cl.[5] H01S *3/093*
U.S. Cl. 372—72 9 Claims



1. An improved laser pumping apparatus comprising:
laser element having an active outer surface;
pumping energy source; and
a plurality of generally spherical beads disposed in juxtaposition with at least part of said active outer surface and between said pumping energy source and said active outer surface whereby said plurality of generally spherical beads serve to increase the overall energy absorbing surface area of the active outer surface, refocus the energy from the pumping source in a random fashion adjacent the active outer surface, and lengthen the dwell time to increase the pumping efficiency of the apparatus.

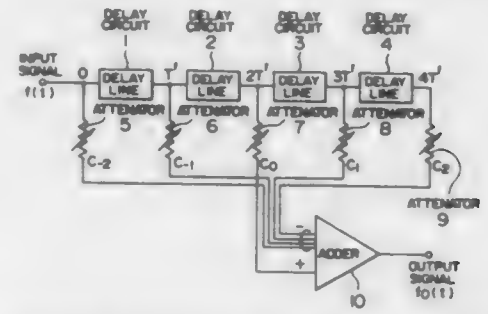
5,005,183
WIRELESS TELEPHONE SYSTEM
Michael J. Carey, Woolaston, England, and Adrian J. Anderson, Newport, United Kingdom, assignors to Mitel Telecom Limited, Gloucestershire, England
Continuation of Ser. No. 819,044, Jan. 15, 1986, Pat. No. 4,866,732. This application Sep. 7, 1989, Ser. No. 404,010
Claims priority, application United Kingdom, Feb. 4, 1985, 8502735
Int. Cl.[5] H04L *9/00*
U.S. Cl. 375—1 20 Claims



1. A wireless system for telephone communication within a building, comprising:
(a) means at a central location for receiving a plurality of signals for communication with selected wireless communication terminals,
(b) means at said central location for converting said signals to spread spectrum radio frequency signals using correlation codes corresponding to particular idle channels,
(c) a leaky transmission line located in a communication region within the building,
(d) means for applying the spread spectrum radio frequency signals to said transmission line for electromagnetic radiation within said region,
(e) at least one mobile wireless communication terminal adapted to receive a predetermined one of the spread spectrum radio frequency signals within the building and for demodulating it onto an intelligible signal.

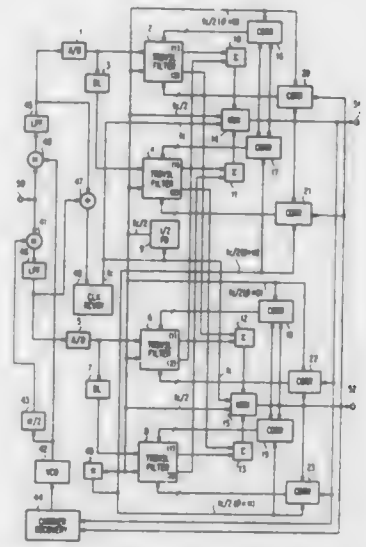
5,005,184
METHOD AND APPARATUS FOR WAVEFORM EQUALIZATION
Tetsuya Amano, Hachioji; Seiichi Mita, Kanagawa; Morishi Izumita, Inagi; Nobukazu Doi, Hachioji; Mamoru Kaneko, Hokkaido; Hiroto Yamauchi, Katsuta, and Susumu Kasai, Sagamihara, all of Japan, assignors to Hitachi, Ltd.; Hitachi Denshi Kabushiki Kaisha, both of Tokyo and Hitachi Video Engineering, Inc., Kanagawa, all of, Japan
Filed Sep. 6, 1988, Ser. No. 240,196
Claims priority, application Japan, Sep. 8, 1987, 62-223026
Int. Cl.[5] H03H *7/30, 7/40*
U.S. Cl. 375—14 4 Claims

1. A waveform equalization method for a digital modulated signal having an inverted polarity within a bit period lasting a time width of T or an inverted polarity on a boundary between bit periods, comprising the steps of:
inputting an isolated impulse response waveform of a digital modulated signal; and
compensating said isolated impulse response waveform by permitting intersymbol interference at ±T/2 with respect to the center axis of time of the waveform and eliminating



intersymbol interference at ±nT/2 which respect to the center axis of time of the waveform.

5,005,185
PARALLEL MODE ADAPTIVE TRANSVERSAL EQUALIZER FOR HIGH-SPEED DIGITAL COMMUNICATIONS SYSTEM
Shoichi Mizogachi, and Hideki Matsuura, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Jan. 19, 1990, Ser. No. 467,580
Claims priority, application Japan, Jan. 19, 1989, 1-10270
Int. Cl.[5] H04L *27/01*
U.S. Cl. 375—15 3 Claims



1. An adaptive transversal equalizer for a demodulator, wherein the demodulator derives a P-channel (in-phase channel) baseband signal and a Q-channel (quadrature-channel) baseband signal from a received digitally modulated signal and recovers a clock signal synchronized with symbols contained in the baseband signals, and includes P-channel and Q-channel analog-to-digital (A/D) converters for converting said P-channel and Q-channel baseband signals, respectively, into P-channel and Q-channel digital data streams, comprising:
a frequency divider for dividing the frequency of said clock signal by N to produce a sequence of lower-frequency clock pulses, where N is an integer equal to or greater than two;
(N−1) P-channel delay means for delaying said P-channel digital data stream by one symbol interval to produce (N−1) successively delayed P-channel data streams, and (N−1) Q-channel delay means for delaying said Q-channel digital data stream by one symbol interval to produce (N−1) successively delayed Q-channel data streams;

N P-channel transversal filters and N Q-channel transversal filters, each of said transversal filters comprising a tapped-delay line, latch means having inputs respectively connected to successive taps of the tapped-delay line and clocked by the output of said frequency divider for holding symbols for a duration of N-symbol intervals, first variable tap-weight multipliers coupled respectively to the outputs of said latch means, a first adder for summing the outputs of said first tap-weight multipliers to produce a first equalized output, second variable tap-weight multipliers coupled respectively to said latch means, and a second adder for summing the outputs of said second tap-weight multipliers to produce a second equalized output, the tapped-delay line of one of the transversal filters of each of said channels being connected to the output of the A/D converter of the same channel, and the tapped-delay lines of the other transversal filters of each of said channels being connected respectively to the output of said delay means of the same channel;

N P-channel adders associated respectively with the N transversal filters of each of said channels, and N Q-channel adders associated respectively with the N transversal filters of each of said channels, each of said adders summing the first equalized output of the associated transversal filter of one of said channels with the second equalized output of the associated transversal filter of the other channel;

a P-channel multiplexer for multiplexing the outputs of said P-channel adders, and a Q-channel multiplexer for multiplexing the output of said Q-channel adders; and

N pairs of P-channel correlators associated respectively with said P-channel transversal filters and further associated with said P-channel multiplexer, and N pairs of Q-channel second correlators associated respectively with said Q-channel transversal filters and further associated with said Q-channel multiplexer, one of the correlators of each of said N pairs detecting a correlation between data and error components of an output signal from the associated multiplexer for controlling the first variable tap-weight multipliers of the associated transversal filter, and the other of the correlators of each of said N pairs detecting a correlation between a data component of the output signal from the associated one of said multiplexers and an error component of an output signal from the other of said multiplexers for controlling the second variable tap-weight multipliers of the associated transversal filter.

5,005,186

DIGITAL DEMODULATOR APPARATUS

Yoshihito Aono, Tochigi; Takasori Iwamatsu, Otawara; Morihiko Misawa, Machida; Sadao Takenaka; Yoshimasa Daidoh, both of Yokohama; Hiroshi Nakamura, Sagamihara, and Nobutsugu Fujino, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP88/00280, § 371 Date Oct. 13, 1988, § 102(e) Date Oct. 13, 1988, PCT Pub. No. WO88/07302, PCT Pub. Date Sep. 22, 1988

PCT Filed Mar. 17, 1988, Ser. No. 265,459

Claims priority, application Japan, Mar. 20, 1987, 62-064145; Mar. 20, 1987, 62-064147; Jun. 17, 1987, 62-149267; Jul. 11, 1987, 62-172111

Int. Cl.[5] H04L *27/06, 5/12*

U.S. Cl. 375—82 **18 Claims**

1. A digital demodulation apparatus comprising:

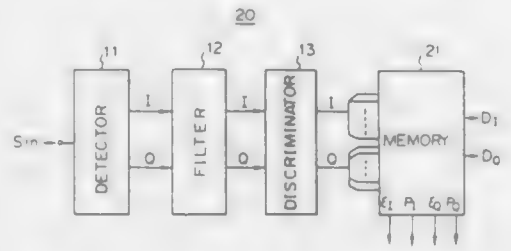
detector means for receiving and demodulating multivalue quadrature amplitude modulated signals, modulated in accordance with a honeycomb structure signal point arrangement and for providing a demodulation signal responsive to said demodulating;

filter means for wave reshaping and demodulation signal;

discriminator means for generating a digital demodulation signal; and

code decision means for successively receiving said digital demodulation signal and for reproducing an original code data, said code decision means comprises

memory means for storing code data in accordance with said honeycomb structure signal point arrangement, for



storing polarity bits P and error bits ε of said code data, and for accessing, based on said digital demodulation signal, said out code data that corresponds to said original code data.

5,005,187

REMOTE CONTROL

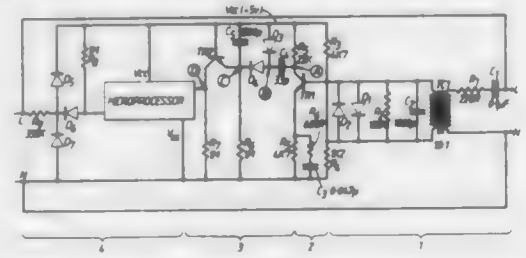
David R. Thompson, Fife, Great Britain, assignor to Pico Electronics Limited, Glenrothes, Scotland

Filed Mar. 23, 1989, Ser. No. 327,975

Claims priority, application United Kingdom, Mar. 25, 1988, 8807193

Int. Cl.[5] H04L *27/06*

U.S. Cl. 375—94 **11 Claims**



1. A slave receiver for detecting commands in the form of digital signals modulated on a cyclic carrier, the receiver comprising:

(a) an input for said carrier;

(b) capacitive means;

(c) first charging means coupling the input to said capacitive means for causing cycles of the carrier to charge the capacitive means beyond a predetermined level of charge when the carrier cycles exist above a given frequency and for at least a first given time;

(d) second charging means for applying charge to the capacitive means in the opposite direction so that, when the predetermined level of charge has been exceeded and there is a subsequent gap in the carrier cycles of a second given time, the charge falls below said predetermined level, and when carrier cycles are subsequently restored said predetermined level of charge is reached after a time directly related to the length of such gap;

(e) switching means coupled to the capacitive means to produce a binary signal corresponding to the existence of said predetermined level of charge;

(f) means for defining time windows; and

(g) means coupled to the switching means for processing said binary signal within said time windows to determine therefrom digital values dependent upon states of the binary signal within said windows.

5,005,188

CHANNEL ESTIMATION AND DETECTION FOR DIGITAL COMMUNICATION SYSTEMS

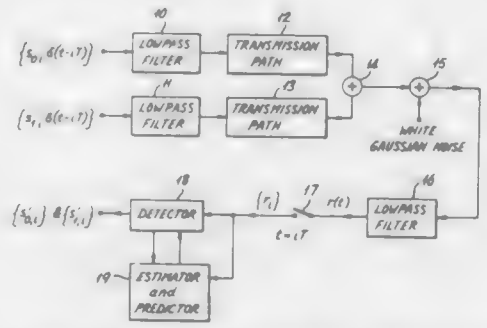
Adrian P. Clark, Loughborough, England, assignor to National Research Development Corporation, London, England

Division of Ser. No. 38,351, Apr. 14, 1987, Pat. No. 4,862,483. This application Jun. 29, 1989, Ser. No. 373,211

Claims priority, application United Kingdom, Apr. 21, 1986, 8609711

Int. Cl.[5] H04L *27/00*

U.S. Cl. 375—94 **1 Claim**



1. A method of detection of signals at a receiver following transmission of symbols from at least one transmitter comprising the steps carried out for each of a succession of sample instants, of:

receiving a digital sample representative of at least one of said symbols from a communication channel between the transmitter and the receiver,

forming a plurality of different predictions of the effect of the channel on said symbols, each prediction being derived from the digital sample at that instant, and

using the predictions to carry out near-maximum likelihood detection of said digital sample received in one of said sample instants.

5,005,189

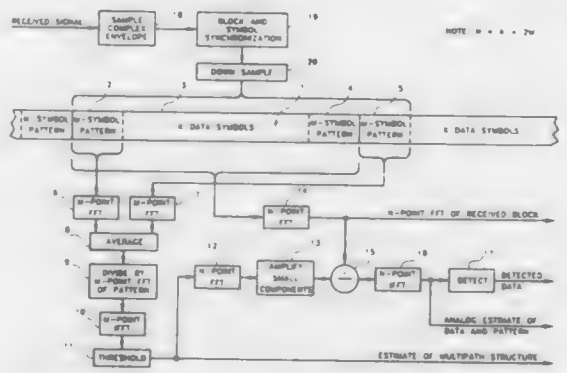
DETECTION OF DIGITAL SIGNALS RECEIVED FROM MULTIPATH CHANNELS

Charles M. Hackett, Jr., 38 Farragut, Irvine, Calif. 92720

Filed Jan. 23, 1989, Ser. No. 300,785

Int. Cl.[5] H04L *1/00*

U.S. Cl. 375—101 **9 Claims**



1. For any positive integers N, M, and K with N=K+2M, a method for detection or demodulation of a phase-and-amplitude-shift-keyed signal having a block format wherein each block has N symbols and is comprised of a known fixed pattern of M symbols preceding and following K symbols of data, where said signal is transmitted through a channel that may have multiple propagation paths and may add interfering noise, said method comprising the steps of:

a. obtaining from a received waveform complex samples of its complex-envelope at a rate which is an integer multiple of its symbol rate;

b. establishing block synchronization and symbol synchronization for said complex samples;

c. down-sampling to the symbol rate, and buffer-storing the N complex samples of the block to be detected and the first M complex samples of the next subsequent block;

d. computing the M-point fast Fourier transform (FFT) of the first M complex samples of said block to be detected, and computing the M-point FFT of the first M complex samples of said next subsequent block, where an M-point FFT is an efficient algorithm for evaluating an M-point discrete Fourier transform;

e. computing a weighted average of the two FFT's computed in step d;

f. computing the quotient of said average formed in step e divided component-by-component by the precomputed M-point FFT of said known fixed pattern;

g. obtaining a complex vector that is an estimate of the multipath-structure of the channel by computing the M-point inverse fast Fourier transform (IFFT) of said quotient formed in step f, and subjecting the components of said IFFT to a threshold;

h. computing the N-point FFT of said estimate of the multipath-structure of the channel obtained in step g padded with K+M zeros;

i. scaling up the small components of said N-point FFT computed in step h and replacing any zero by a non-zero number;

j. computing the N-point FFT of said block to be detected;

k. dividing component-by-component said N-point FFT formed in step j by the result of step i;

l. forming analog estimates of said data symbols and pattern symbols by computing the IFFT of the result of step k;

m. detection of said analog estimates of said data symbols formed in step l by an operation appropriate for detection of a signal of the same modulation transmitted over a noisy channel having but a single propagation path.

5,005,190

WINDOW SYSTEM SYNCHRONIZING PROTECTIVE CIRCUIT

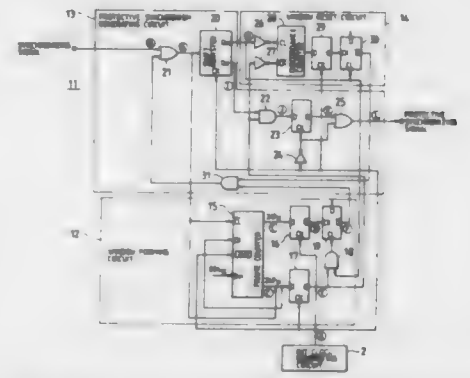
Satoshi Itoi, Osaka, Japan, assignor to NEC Home Electronics Ltd., Osaka, Japan

Filed Nov. 30, 1988, Ser. No. 278,029

Claims priority, application Japan, Nov. 30, 1987, 62-302843

Int. Cl.[5] H04L *7/08*

U.S. Cl. 375—108 **17 Claims**



1. A window system synchronizing protective circuit comprising:

a bit clock for producing bit clock pulses;

window dorming circuit means for forming a variable-duration window having a predetermined position and a maximum duration corresponding to a predetermined number of said bit clock pulses, said window forming circuit

means generating a window signal representing said window;

protective synchronizing circuit means for detecting a synchronizing signal within said window and generating a protective synchronizing signal in accordance with said window signal, said duration of said window being terminated upon the detection of the synchronizing signal; and

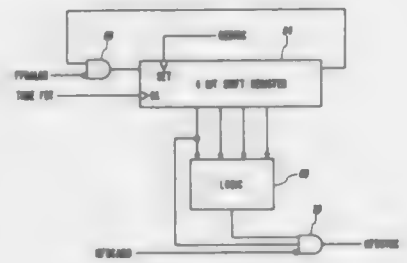
window reset circuit means, responsive to said window forming circuit means and said protective synchronizing circuit means, for changing the position of said window when the synchronizing signal has not been detected in said window over a predetermined period.

5,005,191

SYSTEM FOR SYNCHRONIZING DATA FRAME GROUPS IN A SERIAL BIT STREAM

James T. O'Connor, Dallas, and David A. Courtright, Carrollton, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jun. 30, 1989, Ser. No. 374,278
Int. Cl.[5] H04J 3/06
U.S. Cl. 375—116 **8 Claims**



1. A system for determining multiframe alignment in a serial bit stream by a receiver, each multiframe having a plurality of frames, each frame having a plurality of bits including a frame bit, comprising:

first logic means for identifying frame alignment, wherein a frame alignment signal is generated when frame bits for a plurality of consecutive frames are available at known positions;

second logic means for generating a candidate signal when the available frame bits match a valid alignment pattern, wherein a candidate signal can be generated only simultaneously with the frame alignment signal;

a shift register having bits initially set to a first logic state, wherein said shift register is clocked by the frame alignment signal;

third logic means for shifting the first logic state into said shift register when said second logic means generate the candidate signal, and for shifting a second logic state into said shift register otherwise; and

an alignment signal generator for generating a multiframe alignment signal when exactly one selected bit of said shift register is in said first logic state when the candidate signal and the frame alignment signals are generated.

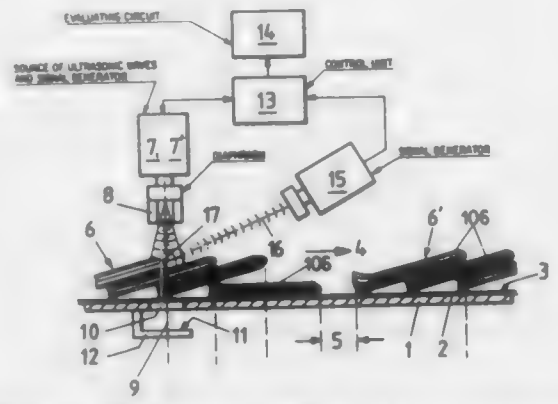
5,005,192

METHOD OF AND APPARATUS FOR COUNTING FLAT OBJECTS IN A STREAM OF PARTIALLY OVERLAPPING OBJECTS

Hanspeter Duss, Baden, Switzerland, assignor to GRAPHA-Holding AG, Hergiswil, Switzerland

Filed Sep. 14, 1989, Ser. No. 407,058
Claims priority, application Switzerland, Sep. 30, 1988, 3654/88
Int. Cl.[5] G06M 7/10
U.S. Cl. 377—8 **16 Claims**

1. A method of monitoring flat objects of a stream of successive partially overlapping objects, particularly printed sheets, brochures, signatures, newspapers and sections of newspapers, comprising the steps of conveying the stream along a predetermined path; generating a series of ultrasonic waves; directing the ultrasonic waves of said series against successive objects of said stream in a predetermined portion of said path to thus produce ultrasonic echoes having characteristics indicative of the respective objects, including transmitting ultrasonic waves



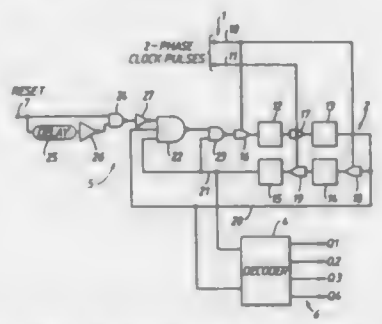
from a first location at a first distance from said portion of said path; detecting said echoes at a second location at a second distance from said portion of said path; ascertaining the length of intervals of transmission of waves at said first location to arrival of the respective echoes at said second location; comparing the intervals for each of said waves; and utilizing the results of said comparing step to count the number of those objects which are conveyed along said portion of said path.

5,005,193

CLOCK PULSE GENERATING CIRCUITS

Richard D. Simpson, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 29, 1989, Ser. No. 374,194
Int. Cl.[5] H03K 5/19, 21/12
U.S. Cl. 377—33 **12 Claims**



1. A clock pulse generating circuit comprising:

an input for a clock drive signal;

a multi-state circuit responsive to the clock drive signal to produce a cyclically repeated sequence of different output combinations of bits, each combination including a plurality of bits;

decoding means responsive to the output combinations of the multi-state circuit to produce a plurality of clock pulse outputs corresponding respectively to the different output combinations of the multi-state circuit;

reset control circuit means interconnected between said multi-state circuit and said decoding means and responsive to a reset signal and to a particular state of the multi-state circuit corresponding to a predetermined output combination of bits from said multi-state circuit to provide a control signal to said multi-state circuit blocking the response of the multi-state circuit to the clock drive signal for a period of time; and

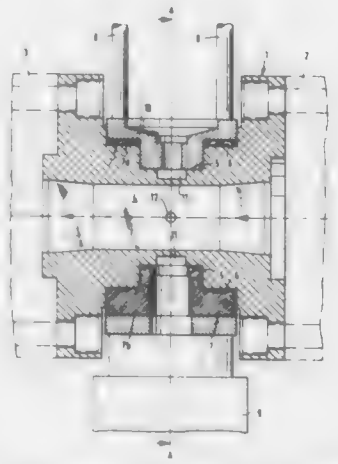
the multi-state circuit continuing to follow the cyclically repeated sequence of different output combinations of bits until the predetermined output combination of bits corresponding to the particular state of the multi-state circuit is reached, the multi-state circuit in response to the control signal from said reset control circuit means being held in the particular state to which the predetermined output combination of bits corresponds until the control signal from said reset control circuit means is terminated.

5,005,194

METHOD AND APPARATUS FOR DETECTING IN CONFORMITY WITH PROCESS TIME MIXING RATIOS IN PLASTICS AND RUBBER COMPOUNDING

Hans-Gerhard Fritz, Uhingen, and Rudi Löffel, Karlsruhe, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 27, 1990, Ser. No. 485,430
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1989, 3906203
Int. Cl.[5] G01N 23/06
U.S. Cl. 378—53 **2 Claims**



1. A method of detecting in conformity with process time mixing ratios in plastics and rubber compounding, wherein one uses an apparatus comprising a barrel section (1) with an axial channel (4) of rectangular cross section, with sliding surfaces (5) and (6) for a carriage, which can move on both sides of the barrel section (1) transversely to the axis of the barrel section (1) and bears on the one hand holders (8) for a radiation source selected from a group consisting of a gamma source, an X-ray source, and a bremsstrahlungs source, and on the other hand a scintillation detector system (9), the narrow sides of the channel (4) facing the sliding surfaces (5) and (6) and the wall thickness of the barrel section (1) being reduced in the region of the axis joining radiation source and detector system, to transirradiate the polymer melt flowing through the channel (4) with the measuring beam emanating from the radiation source and to determine from the reduction in the radiation intensity the proportion by volume k_F in accordance with the formula

$$k_F = \frac{1}{[\rho_F \cdot \mu_F - \rho_P \cdot \mu_P]} \cdot \left[\frac{1}{L} \cdot \ln\left(\frac{I_{St}}{I_{St,G}}\right) - \rho_P \cdot \mu_P\right]$$

in which

k_F = percentage proportion by volume of the filler, reinforcing material, pigment or blend component,

I_{St} = measured radiation intensity on the empty channel (4),

$I_{St,G}$ = measured radiation intensity on the channel (4) filled with melt,

μ_P = mass attenuation coefficient of the polymer,

μ_F = mass attenuation coefficient of the filler, reinforcing material, pigment or blend component

L = transirradiated material length,

ρ_F = density of the filler, reinforcing material, pigment or blend component and

ρ_P = density of the polymer at the melt temperature T and the pressure p and to calculate from this the percentage proportion by weight of b of the filler, reinforcing material, pigment or blend component in accordance with the equations

$$k_P = 1 - k_F, \; a = \frac{k_P \cdot P}{[k_P(\rho_F - \rho_P) - \rho_F]} \text{ and } b = 1 - a.$$

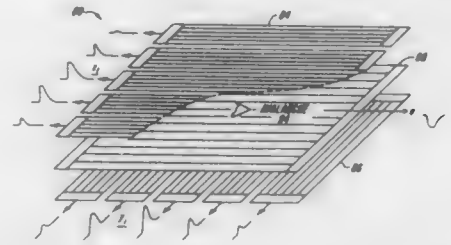
wherein k_P stands for the percentage proportion by volume of the polymer and a stands for the percentage proportion by weight of the polymer.

5,005,195

DIGITAL READOUT SYSTEM FOR RADIOGRAPHIC IMAGING

Richard C. Lanza, Brookline, and Joseph R. Votano, Tewksbury, both of Mass., assignors to Expert Image Systems, Inc., Somerville, Mass.

Filed Mar. 10, 1989, Ser. No. 321,766
Int. Cl.[5] G01N 23/04; G01T 1/185
U.S. Cl. 378—62 **16 Claims**



1. A readout system for transferring data from a radiation detector, the readout system comprising:

a plurality of event gating means each electrically connected to one of a plurality of detector lines for receiving signals simultaneously generated on said detector lines at a plurality of locations within a radiation detector in response to a radiation event, said event gating means operating to process the signals from a plurality of detector lines in parallel to produce a set of signals representative of the detector lines that have sensed said radiation event; and

means for estimating the locus of the radiation event from said signals by delineating said signals along at least one axis, determining the highest and lowest detector lines along said axis on which a signal has been generated, and selecting a median line as the locus of the radiation event.

5,005,196

LIMB POSITIONING AND CALIBRATION APPARATUS FOR RADIOGRAPHIC IMAGING

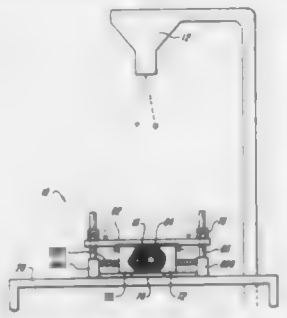
Richard C. Lanza, Brookline, and Joseph R. Votano, Tewksbury, both of Mass., assignors to Expert Image Systems, Inc., Somerville, Mass.

Filed Mar. 10, 1989, Ser. No. 321,990
Int. Cl.[5] G01D 18/00
U.S. Cl. 378—207 **10 Claims**

4. A method of calibrating a radiographic imaging system, the method comprising:

disposing at least two side blocks of materials having differ-

ent radiation absorption characteristics in stationary positions adjacent to a limb and between a photon radiation source and a detector of a radiographic imaging system said side blocks permitting concurrent measurement of differences in the intensity of photon radiation transmitted



through the two materials without affecting the acquisition of an image by the detector; and

comparing the intensity of photon radiation transmitted through said blocks to establish a comparative measurement value for said imaging system.

5,005,197

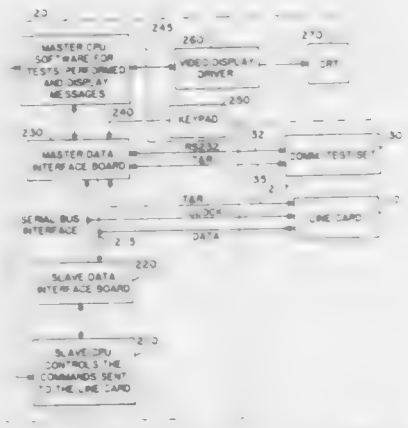
METHOD AND APPARATUS AS FOR TESTING A TELEPHONE LINE INTERFACE CARD

Gerald J. Parsons; Brian D. Greenwald, both of Chester Springs; John J. McGrath, Kennett Square, and Stephen W. Andrasko, Drexel Hill, all of Pa., assignors to Communications Test Design, Inc., West Chester, Pa.

Filed Nov. 30, 1989, Ser. No. 444,106

Int. Cl.[5] H04M *3/26*

U.S. Cl. 379—21 **14 Claims**



1. Apparatus suitable for testing a line interface card (LIC) for communication system applications, said LIC including a single data terminal for alternately transmitting data from said LIC and receiving data at said LIC, said apparatus comprising:

a bidirectional data bus including a single conductor for coupling to the single data terminal of said LIC;

first processing means, coupled to the single conductor of said bidirectional data bus, for receiving and analyzing data which is produced by the LIC; and

second processing means, physically distinct from said first processing means and coupled to the single conductor of said bidirectional data bus, for transmitting data to the LIC.

5,005,198

CORDLESS TELEPHONE APPARATUS

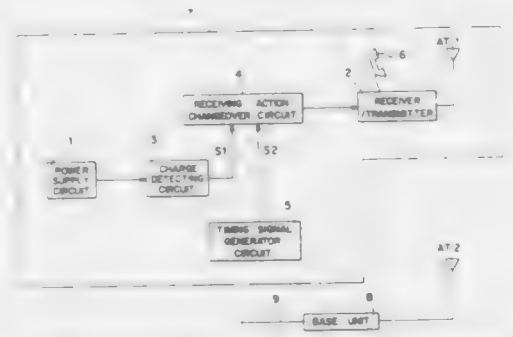
Manabu Toda, Hiroshima, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 11, 1989, Ser. No. 377,960

Claims priority, application Japan, Jul. 11, 1988, 63-173360

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—58 **11 Claims**



1. A cordless telephone apparatus including a base unit and a portable unit for transferring information between the base and portable unit by radio communications, the portable unit being powered by a rechargeable secondary battery and further including an internal receiver operating in an intermittent receiving action, the portable unit comprising:

detecting means for detecting when the secondary battery is being charged; and

switching means for switching the receiving action of the receiver to a continuous receiving action of continual power supply from an external power source, from the intermittent receiving action, when the secondary battery is being charged, as detected by the detecting means.

5,005,199

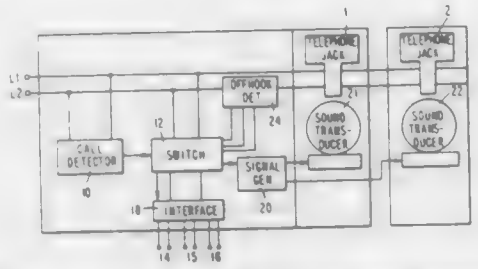
TELEPHONE INTERFACE CIRCUIT

Christian Dupillier, Brignoud, France, assignor to Dolphin Integration, Meylan, France

Filed Nov. 15, 1989, Ser. No. 436,588

Int. Cl.[5] H04M *1/00*

U.S. Cl. 379—375 **18 Claims**



1. A line powered telephone interface circuit, comprising:

input means for receiving an input from a telephone line (L1, L2) and providing an output to at least one telephone plug (1, 2) connectable with a telephone set jack, said interface circuit connected to various terminals;

ring detector means (10) for detecting a ring signal on said telephone line;

answering means (32) for establishing an off-hook connection on said telephone line in response to a ring signal being detected for a determined time duration by said ring detector means; and

control means including timing, selecting and steering means for selectively connecting said telephone line to a selected terminal in response to a command signal received on said telephone line (12) wherein each plug includes

connection means for directly connecting to the telephone line,

inhibiting means for inhibiting the ringing of the corresponding telephone set, and

connection means for connecting a sound transducer (21, 22) with said third means, said sound transducer operable by a low voltage signal.

5,005,200

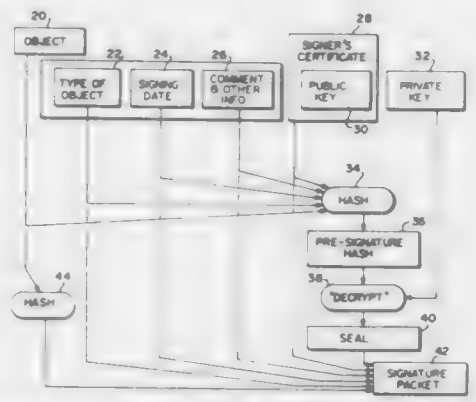
PUBLIC KEY/SIGNATURE CRYPTOSYSTEM WITH ENHANCED DIGITAL SIGNATURE CERTIFICATION

Addison M. Fischer, 60 14th Ave. S., Naples, Fla. 33942

Continuation-in-part of Ser. No. 155,467, Feb. 12, 1988, Pat. No. 4,868,877. This application Mar. 7, 1989, Ser. No. 319,780

Int. Cl.[5] H04K *1/00*

U.S. Cl. 380—30 **58 Claims**



1. In a communication system having a plurality of terminal devices coupled to a channel over which users may exchange messages, at least some of said user's having a public key and an associated private key, a method for controlling authority in a hierarchical manner among a group of users, comprising the steps of:

specifying at least first and second digital authority defining data structures, said data structures having digital values which can be associated with at least one user's private key,

said step of specifying including the step of

digitally specifying a set of authorities from a sufficient plurality of authorities so that a first user may digitally delegate authorities to second and third users so that the authorities delegated to the second user are different than those delegated to the third user, providing that the first user's digital authority defining data structure allows for such delegation; and

digitally signing by the first user the second digital data structure so that signatures performed by the second user's private key associated with the second data structure will be recognized upon an electronic analysis of the digital signature as having been granted said authority by the first user in accordance with the first user's authority-defining data structure.

5,005,201

APPARATUS AND METHOD THEREOF FOR IMPROVEMENT OF STEREOPHONIC SOUND

Mark F. Rumreich, and Robert P. Parker, both of Indianapolis, Ind., assignors to RCA Licensing Corporation, Princeton, N.J.

Filed Feb. 14, 1989, Ser. No. 310,102

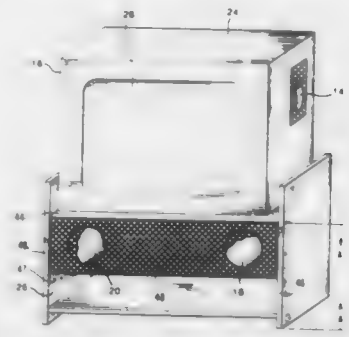
Int. Cl.[5] H04R *5/02*

U.S. Cl. 381—24 **4 Claims**

1. Apparatus for improving stereophonic sound from a source comprising:

a source of stereophonic sound having a cabinet and two internal loudspeakers disposed in a first spaced apart relationship within the cabinet and driven by stereophonic signal channels internal of the cabinet, said internal loudspeakers providing stereophonic sound external of the cabinet,

means for coupling the stereophonic signals to at least two other loudspeakers disposed eternal of the source, and



means for coupling a mixture of the stereophonic channels to said two internal loudspeakers at reduced power with respect to the external loudspeakers, said mixture of stereophonic channels comprising difference signals of said stereophonic channels.

5,005,202

HIGH FIDELITY STEREOPHONIC REPRODUCTION SYSTEM

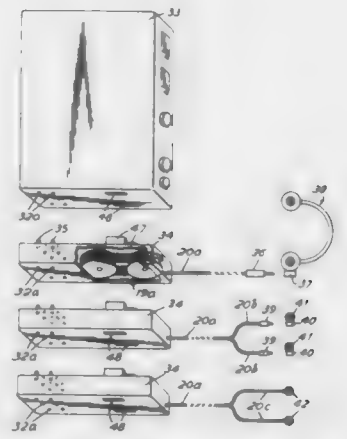
Andreas Pavel, 20, Via Gustavo Modena, Milan, Italy

Continuation of Ser. No. 105,168, Oct. 7, 1987, abandoned, which is a continuation-in-part of Ser. No. 539,232, Oct. 5, 1983, which is a division of Ser. No. 265,124, May 19, 1981, Pat. No. 4,412,106, which is a continuation of Ser. No. 47,967, Jun. 12, 1979, abandoned, which is a continuation-in-part of Ser. No. 889,664, Mar. 24, 1978, abandoned. This application Jul. 19, 1989, Ser. No. 382,048

Claims priority, application Italy, Mar. 24, 1977, 21625 A/77; Fed. Rep. of Germany, Jul. 22, 1987, 3724208

Int. Cl.[5] H04R *5/02*

U.S. Cl. 381—25 **23 Claims**



1. A personal stereo sound system device, to be carried and used on the person of at least one individual listener, comprising the combination of:

(i) a program source playback device, including control means for program selection, arranged to produce simultaneous mutually different stereo program output signals,

(ii) stereo signal amplifier means, including output volume adjusting means, impedance match to and arranged to receive said stereo output signals from said source device,

(iii) light weight paired stereo headphone or earphone means, which is the only sound reproduction means, phys-

ically remote from said source device, impedance and sensitivity matched to and arranged to receive separately, one for each phone, the output signals of said amplifier means,

(iv) multi-conductor lead means for electrically connecting said amplifiers means to said phone means,

(v) lead-reeling means capable of receiving and of dispensing a desired length of said lead means to permit the phone means to be used at a variable distance from said amplifier means,

(vi) power source means comprising a battery electrically connected to said amplifier means and to said source device, and

(vii) wherein said control means, said source device, said amplifier means, said volume adjusting means and said power source means are housed in a single portable unit, and wherein said lead reeling means are housed in a reel pack, adapted for mechanical and electrical connection to and disconnection from another like pack and mechanically and electrically connectable to and disconnectable from said portable unit.

5,005,203

METHOD OF RECOGNIZING CONTINUOUSLY SPOKEN WORDS

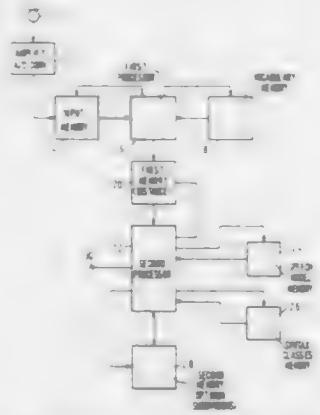
Hermann Ney, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 30, 1988, Ser. No. 175,085

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1987, 3711348

Int. Cl.[5] **G10L** *5/00*

U.S. Cl. 381—43 **4 Claims**



1. A method of recognizing a speech signal which is derived from coherently spoken words and includes a temporal sequence of speech values, each of which indicates a section of the speech signal, comprising: comparing the speech values with given stored comparison values, of which each time a group of comparison values represents a word of a given vocabulary; summing the comparison results over different sequences of combinations of comparison values and speech values to a distance sum per sequence, at each new speech value for each word calculating and storing in a first memory a distance sum of such sequences which for each word begin at different earlier speech values as a starting point, traverse the whole word as far as the instantaneous speech value and, related to the respective starting point, produce a minimum distance sum; then, for each of these starting points, according to an assignment contained in a first stored list of the words of the vocabulary to per word at least one syntactical class, for each class storing the smallest distance sum of all words assigned to this class together with an indication about the assignment of the word yielding this smallest distance sum in a second memory; subsequently, according to a second stored list, checking whether and into which two further syntactical classes each class can be subdivided and each time that a subdivisibility is ascertained again for each starting point as far as the earliest speech signal, adding each distance sum stored for the one of the two further classes for the respective starting point and a number of intermediate points lying successively at points adjacent to each other between the starting point and the instantaneous speech value, and each distance sum stored for the other of the two further classes for each intermediate point and the instantaneous speech value, and comparing each sum with the distance sum of the subdivided class and, in case it is larger than the smallest of the added distance sums, storing said sum instead thereof together with an indication about the subdivision at the particular intermediate point which has yielded the smallest sum; and after processing the last speech value from the class indicating a whole sentence through the subdivision into further classes indicated therein at the storage site for the first speech value as starting point and through the subdivision indicated at the respective further classes, determining a sequence of words and supplying same as recognized spoken words.

5,005,204

DIGITAL SOUND SYNTHESIZER AND METHOD

Michael A. Deaett, N. Kingstown, R.I., assignor to Raytheon Company, Lexington, Mass.

Continuation-in-part of Ser. No. 756,220, Jul. 18, 1985, abandoned. This application Mar. 30, 1989, Ser. No. 332,414

Int. Cl.[4] **G10L** *5/00*

U.S. Cl. 381—51 **10 Claims**



1. A method for providing a synthesized transient signal which is a replica of an original mechanically produced transient signal comprising the steps of:

sampling said original signal to provide sampled signals at a sample rate;

grouping consecutive sampled signals into blocks;

determining the autocorrelation coefficients for the sampled signals in each block;

determining the covariance matrix coefficients of each successive block of said sampled signal from the autocorrelation coefficients of each corresponding block;

applying a pseudo-random digital noise signal which changes at the sample rate to the input of a recursive filter;

applying the coefficients derived from the covariance matrix as multiplying factors to the respective multipliers of said recursive filter for a time equal to that of a block of said sampled signal;

changing the covariance matrix derived coefficients successively applied to said recursive filter to the values corresponding to the time of each said successive block of sampled signal; and

obtaining the output of said recursive filter to provide a synthesized transient signal which reproduces the sound of said original transient signal.

5,005,205

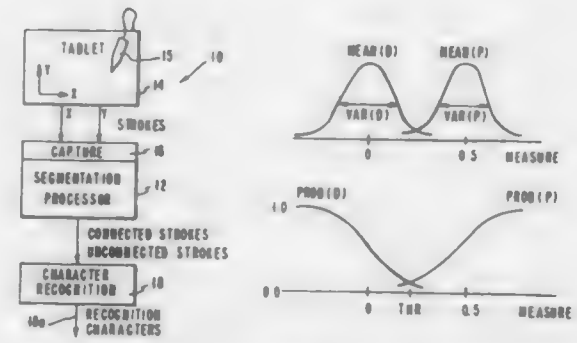
HANDWRITING RECOGNITION EMPLOYING PAIRWISE DISCRIMINANT MEASURES

Hamed A. Ellozy, Bedford Hills; Henry H. Jeanty, Patterson, and Charles C. Tappert, Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 12, 1990, Ser. No. 463,770

Int. Cl.[5] **G06K** *9/00*

U.S. Cl. 382—3 **18 Claims**



1. In a handwriting recognition system, a method for discriminating a first handwritten character from a second handwritten character, comprising the steps of:

selecting one or more discriminants that satisfy a predetermined threshold relating to a number of occurrences (N) of original characters in a training set and to a predetermined threshold relating to a percent accuracy (P) in correctly differentiating between training characters;

assigning a weight to each selected discriminant, the weight being equal to a product (P*G) of a goodness value (G) associated with the discriminant and (P); and

summing the weights to discriminate between the first and the second characters.

5,005,206

METHOD OF AND ARRANGEMENT FOR IMAGE DATA COMPRESSION BY MEANS OF A NEURAL NETWORK

Martine Naillon, Sceaux, and Jean-Bernard Theeten, Ozoir, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 20, 1989, Ser. No. 439,725

Claims priority, application France, Nov. 25, 1988, 88 15427

Int. Cl.[5] **G06K** *9/46*

U.S. Cl. 382—56 **10 Claims**

1. A method used in an arrangement for image data compression by vector quantization in accordance with a precoding in blocks constituted by a plurality of picture elements, thereafter comparing by means of a neural network precoded blocks with reference words stored in the form of a code book in the neural network so as to transmit to a receiver selected indices corresponding to the index of the reference words nearest to the precoded blocks, characterized in that it includes a stage of generating an adaptive code book by means of the neural network, the stage comprising the following steps:

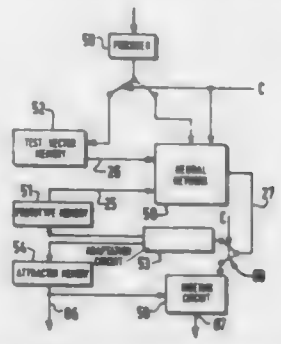
A—feeding the neural network with prototypes which prescribe the states of stable neurons in the neural network which determines its synaptic coefficients associated with each prototype during the learning phases,

B—resolving by means of the neural network with the aid of test vectors supplied by the pictures by effecting in accordance with consecutive dynamic relaxation phases performed by feeding back the input to the output of the neural network, after which the states of the neurons are stabilized in configuration denoted attractors around which the test vectors are grouped in clouds,

C—comparing each test vector with its corresponding attractor, with determination of the distance by which they are separated from each other and determination of the rate of frequentation of each attractor by the test vector,

D—determining the rough mean of all the distances:

and when this rough mean exceeds a predetermined value, selecting attractors whose rate of frequentation exceeds a predetermined rate, thereafter determining the centre



of gravity of the total cloud existing around each selected attractor to generate an optimum attractor when this attractor is the better and preserve the old attractor in the opposite case so as to form a group of new attractors which are then used again as new prototypes to restart the method of step A,

and when this rough mean is less than the predetermined value, to utilize all the final attractors, to form the reference words of the adaptive code book which are stored in a synaptic coefficients store of the neural network, said reference words being transmitted to the receiver to update its local code book,

the method also including a coding stage utilizing the said reference words to encode the rough image and thereafter to select the indices to be transmitted.

5,005,207

METHOD OF CONTROLLING THE SPEED OF A D.C. MOTOR AND DEVICE FOR CARRYING OUT THE METHOD

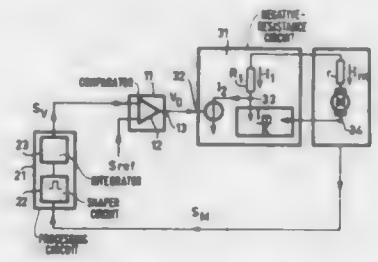
Georges A. Grave, Maintenon, and Jean-Pierre Gasloade, Caen, both of France, assignors to U. S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 392,047, Jun. 25, 1982, abandoned. This application Dec. 14, 1987, Ser. No. 132,679

Claims priority, application France, Jul. 9, 1981, 81 13545

Int. Cl.[5] **H02P** *5/165*

U.S. Cl. 388—816 **16 Claims**



1. A device for controlling the speed of a d.c. motor comprising: means for deriving a low frequency periodic signal

(S_M) induced by rotation of the motor, a circuit for processing said periodic signal, said processing circuit including a shaping circuit connected in cascade with an integrator circuit which supplies a motor-speed signal (S_V) comprising a direct voltage proportional to the motor-speed, a comparator circuit which compares said direct voltage (S_v) with a reference voltage (S_{ref}), said comparator circuit having an output terminal at which a control voltage (V_o) is produced, and a "negative-resistance" circuit coupled to the output terminal of the comparator circuit and to the motor such that the negative-resistance circuit at least partly compensates for the internal resistance of the motor, said control voltage being applied to an input terminal of said negative-resistance circuit so as to control the motor supply voltage to a value which is a substantially linear combination of the motor current and the control voltage.

5,005,208

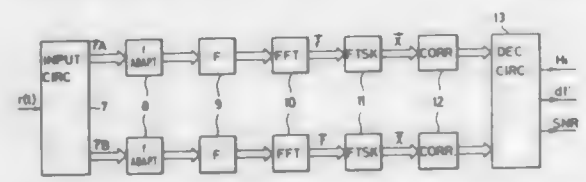
Patent Not Issued For This Number

5,005,209

PROCESS AND APPARATUS FOR THE TRANSMISSION OF SELECTIVE ADDRESSES AND/OR EMERGENCY MESSAGES IN SHORTWAVE RADIO NETWORKS

Roland Kung, Wolfhausen, and Hanspeter Widmer, Zurich, both of Switzerland, assignors to Zellweger Telecommunications AG, Hombrechtikon, Switzerland

Filed Jun. 30, 1988, Ser. No. 213,601
Int. Cl.[5] H04Q *7/00*
U.S. Cl. 455—32 **23 Claims**



1. Method for the transmission of selective addresses and/or emergency messages in short-wave radio networks having several stations which each include a transmitter and/or a receiver, comprising the steps of:

operating the stations in a channel-in-band scanning mode;

transmitting a calling signal consisting of a synchronization signal and an address signal, using as the address signal a modified FSK signal which forms a diversity pair by subdivision into two identical m-ary frequency-time-shift-keying (FTSK) signals; and,

numerically processing a received signal in a frequency-time plane by carrying out a frequency adaption and a transformation of each received FTSK pulse and FTSK slot in a frequency space by a fast Fourier transformation (FFT).

5,005,210

METHOD AND APPARATUS FOR CHARACTERIZING A RADIO TRANSMITTER

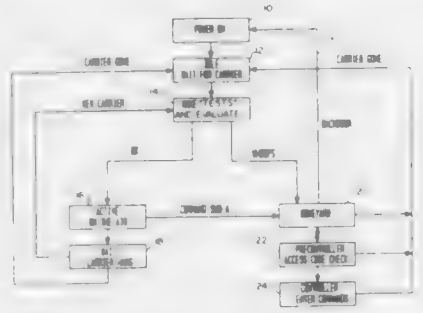
Philip J. Ferrell, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 30, 1987, Ser. No. 139,862
Int. Cl.[5] H04B *17/00*
U.S. Cl. 455—115 **20 Claims**

1. Apparatus for determining transient characteristics of a radio transmitter that transmits a transient signal, comprising:

means for receiving the transient signal transmitted by the transmitter;

means for measuring the signal phase of the transient signal with respect to a predetermined frequency; and



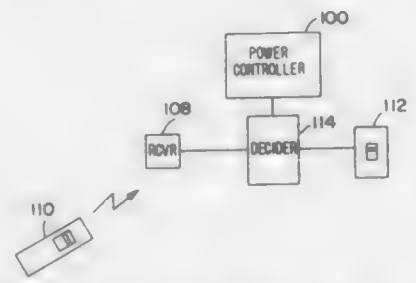
means for analyzing the signal phase of the transient signal to determine transient characteristics of the radio transmitter.

5,005,211

WIRELESS POWER CONTROL SYSTEM WITH AUXILIARY LOCAL CONTROL

Stephen J. Yuhasz, Zionsville, Pa., assignor to Lutron Electronics Co., Inc., Coopersburg, Pa.

Continuation of Ser. No. 79,845, Jul. 30, 1987, abandoned. This application Sep. 25, 1989, Ser. No. 412,572
Int. Cl.[5] H04B *10/10*
U.S. Cl. 455—603 **6 Claims**



1. A wireless power control system with auxiliary local control comprising, in combination,

(a) transmitter means to transmit a radiant first control signal,

(b) receiver means to receive and store said first control signal,

(c) auxiliary local control means to provide a second control signal,

(d) decider means to select one of said first or second control signals and to provide said selected signal to power control means to control the power supplied from a source to a load over a substantially continuous range of values, wherein said transmitter means has actuator means manually movable through a continuous range of positions to produce said first control signal.

5,005,212

INTERFERENCE SUPPRESSION IN OPTICAL COMMUNICATION SYSTEMS

Thomas H. Wood, Holmdel, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

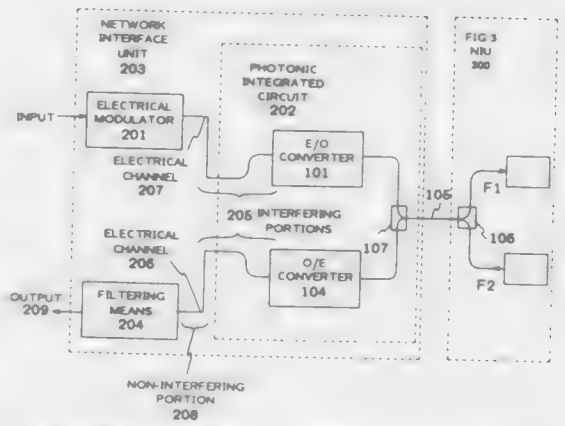
Filed Dec. 12, 1989, Ser. No. 449,039
Int. Cl.[5] G02F *1/00, 2/00;* **H01S** *3/00*
U.S. Cl. 455—606 **15 Claims**

1. A network interface unit (NIU) for interfacing an electrical device to an optical network, said NIU comprising:

first and second electrical transmission lines (**206**,**207**), arranged to effectuate substantial electromagnetic coupling therebetween;

electro-optical converting means (**101**) connected to said first electrical transmission line for receiving a first electrical signal and converting the first electrical signal into a first optical signal for transmission to the optical network;

optical-electro converting means (**104**) for (a) receiving a second optical signal from the optical network, (b) converting said second optical signal into a second electrical



signal, and (c) transmitting said second electrical signal via the second electrical transmission line; and

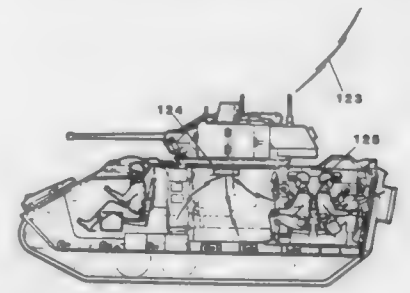
means connected to said second electrical transmission line for increasing a ratio of energy in the second electrical signal to energy electromagnetically coupled from said first electrical transmission line to said second electrical transmission line.

5,005,213

HEAD MOUNTED VIDEO DISPLAY AND REMOTE CAMERA SYSTEM

Charles M. Hanson, Richardson; Vaughn J. Koester, Dallas, and Robert D. Fallstrom, Richardson, all of Tex., assignors to Varo, Inc., Garland, Tex.

Division of Ser. No. 382,243, Jul. 19, 1989, which is a division of Ser. No. 168,137, Mar. 14, 1988, which is a division of Ser. No. 883,994, Jul. 10, 1986, Pat. No. 4,786,966. This application Apr. 11, 1990, Ser. No. 507,978
Int. Cl.[5] H04B *10/22;* **H04N** *5/33, 7/18, 7/22*
U.S. Cl. 455—617 **9 Claims**



1. A video system for use with a vehicle, comprising:

a transmitter mounted within said vehicle for omnidirectionally transmitting a video signal of an image through free space within the vehicle; and

a video receiver and display mountable to a person's head for receiving and displaying the image irrespective of the person's location within the vehicle.

DESIGN PATENTS

GRANTED APR. 2, 1991

ERRATA

For CLASS	See PATENT NO.
D02-314	315,828
D13-179	315,832

315,823

CROSS-COUNTRY MOTORCYCLIST'S BOOT

Dino Signori, Maser, Italy, assignor to SIDI SPORT S.a.s. di Dino Signori & C., Treviso, Italy

Filed May 10, 1988, Ser. No. 192,119

Claims priority, application Italy, Feb. 29, 1988, 20746/88[U]

Term of patent 14 years

U.S. Cl. D2—274



315,824

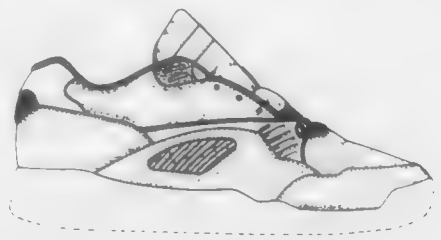
SHOE UPPER

Peter Backus, Portland, and Craig Feller, Tigard, both of Oreg., assignors to Avia Group International, Inc., Portland, Oreg.

Filed Mar. 28, 1990, Ser. No. 500,272

Term of patent 14 years

U.S. Cl. D2—314



315,825

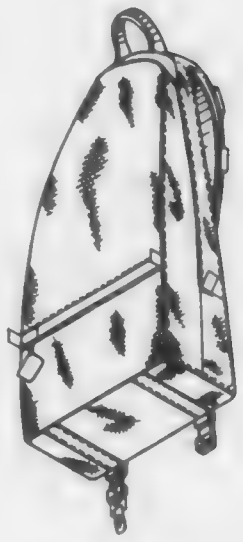
BACKPACK

Anthony Hutton, Bedford, England; Phillip A. Straughan, Mount Vernon, N.Y.; Tiffany A. Norwood, Ft. Washington, Md., and Oliver Pfeffer, Ithaca, N.N.Y., assignors to ToPAQ, Inc., Ithaca, N.Y.

Filed Dec. 4, 1989, Ser. No. 445,475

Term of patent 14 years

U.S. Cl. D3—32



315,826

ACCESSORY CONTAINER FOR A GOLF BAG

Enrico Fumia, Turin, Italy, assignor to Pininfarina Extra S.r.l., Turin, Italy

Filed Dec. 15, 1987, Ser. No. 133,454

Claims priority, application Italy, Jun. 15, 1987, 53424/87[U]

Term of patent 14 years

U.S. Cl. D3—37



315,827
SOFT LUGGAGE CASE
William L. King, Denver, Colo., assignor to Samsonite Corporation, Denver, Colo.
Filed Sep. 25, 1987, Ser. No. 101,331
Term of patent 14 years
U.S. Cl. D3—71



315,828
ELEMENT OF A SHOE UPPER
Larry M. Clark, Simi Valley, and Janell E. Magdaleno, Rosemead, both of Calif., assignors to L.A. Gear, Inc., Los Angeles, Calif.
Division of Ser. No. 295,561, Jan. 10, 1989, abandoned. This application Feb. 27, 1989, Ser. No. 315,778
Term of patent 14 years
U.S. Cl. D2—314



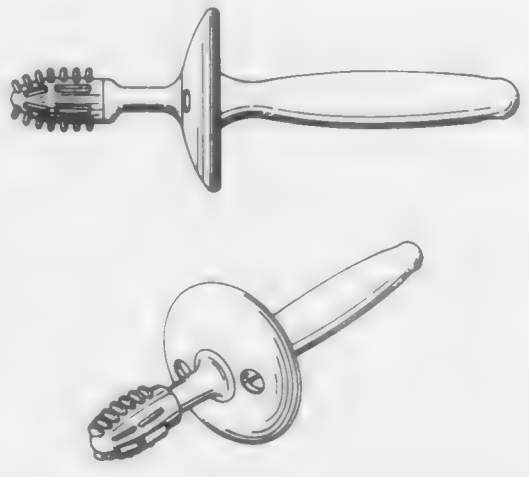
315,829
WATER PURIFYING CANTEEN
Melvin R. Covington, 3711 N. 75th St., Scottsdale, Ariz. 85251
Filed Mar. 12, 1987, Ser. No. 24,809
Term of patent 14 years
U.S. Cl. D3—30.1



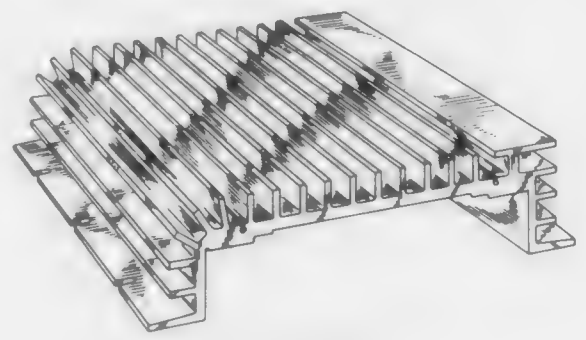
315,830
LIGHTED HANDBAG
Ellen Roberts, 541 Walnut St., Apt. B7, Elizabeth, N.J. 07201
Filed Feb. 19, 1988, Ser. No. 157,521
Term of patent 14 years
U.S. Cl. D3—52



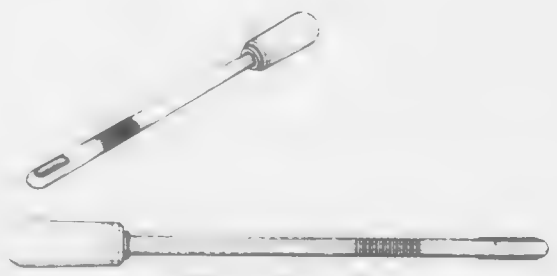
315,831
TOOTHBRUSH
Yusuke Kawano, Tokyo, Japan, assignor to Pigeon Co., Ltd., Tokyo, Japan
Filed Dec. 6, 1988, Ser. No. 280,728
Claims priority, application Japan, Jun. 6, 1988, 63-22113
Term of patent 14 years
U.S. Cl. D4—104



315,832
HEAT SINK
George A. Rocheleau; Michael C. Graves, both of Mesa, and John France, Phoenix, all of Ariz., assignors to Rockford Corporation, Tempe, Ariz.
Filed Oct. 24, 1988, Ser. No. 261,280
Term of patent 14 years
U.S. Cl. D13—179



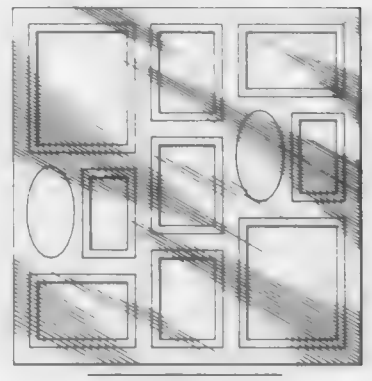
315,833
TOILET BOWL BRUSH HANDLE
William E. Brazis, Medina, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Jan. 13, 1989, Ser. No. 297,261
Term of patent 14 years
U.S. Cl. D4—138



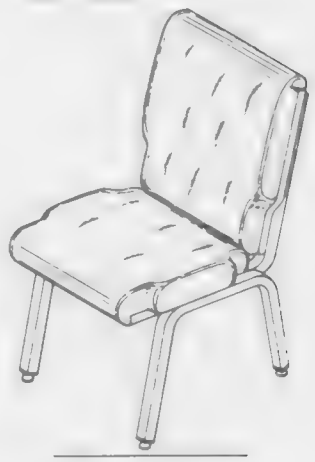
315,834
SCARF
Bruno Gentilli, Come, Italy, assignor to S. T. Dupont, Paris, France
Filed Aug. 17, 1987, Ser. No. 86,654
Claims priority, application France, Mar. 2, 1987, 871172
Term of patent 14 years
U.S. Cl. D5—16



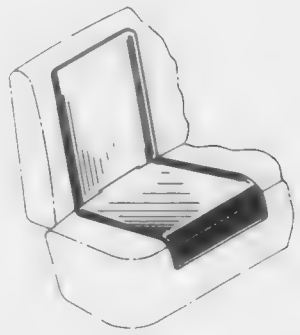
315,835
MAGNETIZED FRAME FOR HOLDING PLURAL PHOTOGRAPHS
Cindy K. Dahlquist, R.R. 3, Box 126, Oakland, Nebr. 68045
Filed Mar. 2, 1988, Ser. No. 162,861
Term of patent 14 years
U.S. Cl. D6—302



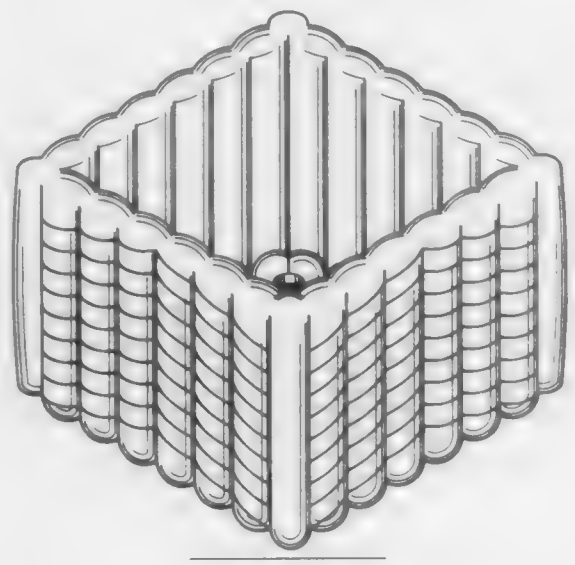
315,836
CHAIR
Kenneth L. Kaiser, 311 S. Denton St., Gainesville, Tex. 76240
Filed Feb. 29, 1988, Ser. No. 161,659
Term of patent 14 years
U.S. Cl. D6—334



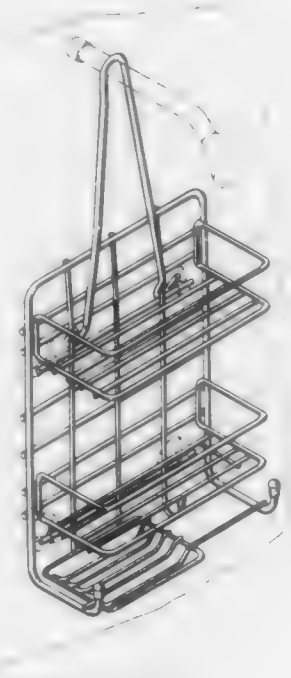
315,837
PROTECTIVE PAD FOR A CAR SEAT
Daniel J. Bernon, 2099 Miramar Blvd., S. Euclid, Ohio 44121
Filed Feb. 8, 1988, Ser. No. 153,023
Term of patent 14 years
U.S. Cl. D6—368



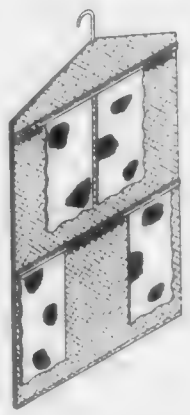
315,838
INFLATABLE CRIB
Robert R. Penrod, 47 McNeil Cir., Marlborough, Mass. 01752
Filed Feb. 8, 1988, Ser. No. 153,793
Term of patent 14 years
U.S. Cl. D6—391



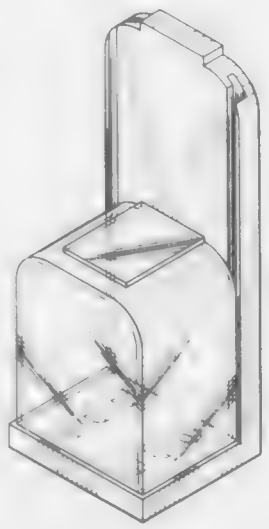
315,840
SHOWER CADDY
William W. Emery, Berkeley Heights, N.J., assignor to Better Sleep Manufacturing Co., Berkeley Heights, N.J.
Filed Sep. 14, 1989, Ser. No. 407,022
Term of patent 14 years
U.S. Cl. D6—525



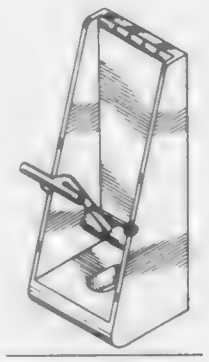
315,839
JEWELRY, TRINKET AND ACCESSORY ORGANIZER
Ellen Martorella, 11643 Sunshine Pond Rd., Tampa, Fla. 33635
Filed Aug. 6, 1990, Ser. No. 562,950
Term of patent 14 years
U.S. Cl. D6—513



315,841
COMBINED TOOTHBRUSH HOLDER AND PROTECTOR
Larry G. Roope, 413 Clyde St. N.E., and Earl W. Bobbitt, 1728 20th St. N.E., both of Roanoke, Va. 24012
Filed Nov. 18, 1988, Ser. No. 272,573
Term of patent 14 years
U.S. Cl. D6—528

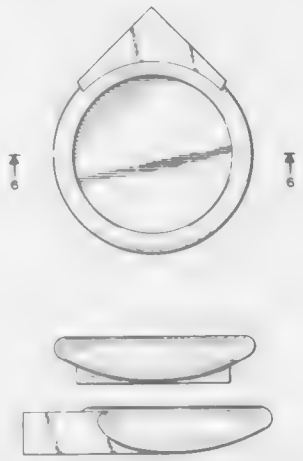


315,842
TOOTHPASTE DISPENSER
Larry E. Tallman, P.O. Box 42, North Hyde Park, Vt. 05665
Filed Mar. 27, 1989, Ser. No. 329,089
Term of patent 14 years
U.S. Cl. D6—541

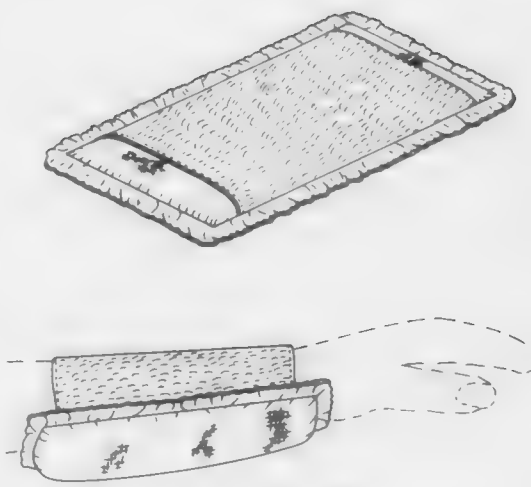


315,843
POUCH CONTAINING LIQUID SOAP OR THE LIKE FOR USE WITH A DISPENSER UNIT
Peter Thomsen, 100 N. Hill Dr. No. 28, Brisbane, Calif. 94005
Continuation-in-part of Ser. No. 807,293, Dec. 10, 1985. This application May 25, 1989, Ser. No. 356,405
Term of patent 14 years
U.S. Cl. D6—542

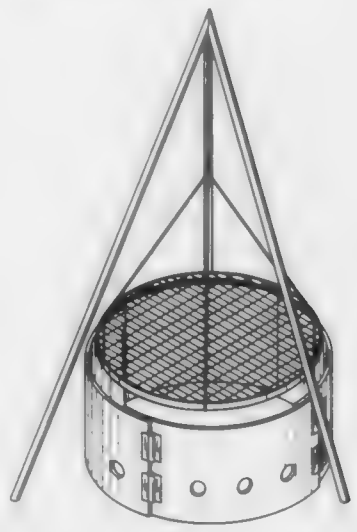
315,844
WALL-MOUNTED SHELF OR THE LIKE
Axel Enthoven, Wijnegem, Belgium, assignor to American Standard Inc., New York, N.Y.
Filed Oct. 19, 1987, Ser. No. 111,521
Term of patent 14 years
U.S. Cl. D6—574



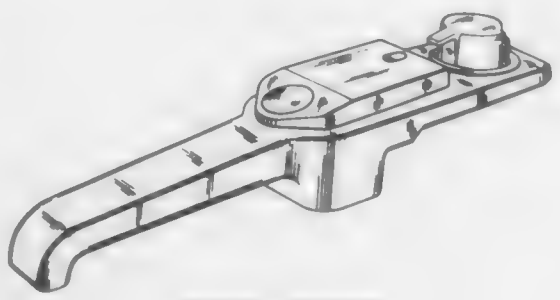
315,845
NURSING PILLOW
Linda S. Lafley, 12006 Blair Meadow, Stafford, Tex. 77477
Filed Jan. 5, 1989, Ser. No. 293,904
Term of patent 14 years
U.S. Cl. D6—601



315,846
COMBINED HOT PIT AND GRILL
Garold E. Hatzenbeller, 1520 Madison Ave., So. Milwaukee, Wis. 53172
Filed May 18, 1988, Ser. No. 195,176
Term of patent 14 years
U.S. Cl. D7—335



315,847
HANDLE FOR A PRESSURE COOKER
Christian Sebillotte, Selongey, France, assignor to SEB, Selongey, France
Continuation of Ser. No. 817,574, Jan. 10, 1986, abandoned. This application Oct. 7, 1988, Ser. No. 256,076
Claims priority, application France, Jul. 17, 1985, 853420
Term of patent 14 years
U.S. Cl. D7—393



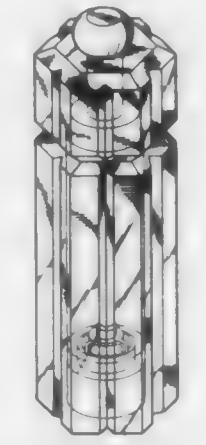
315,848
INSULATIVE COVER FOR PAPER BEVERAGE CUPS
Arthur G. Guzman, 14527 E. Los Angeles St., Baldwin Park, Calif. 91706
Filed Jan. 10, 1989, Ser. No. 295,469
Term of patent 14 years
U.S. Cl. D7—608



315,849
TRAY FOR HOLDING PEPPERONI SLICES
Donald A. Brunner, 2073 Kratz Station Rd., Harleysville, Pa. 19438
Filed Jun. 24, 1988, Ser. No. 190,231
Term of patent 14 years
U.S. Cl. D7—672

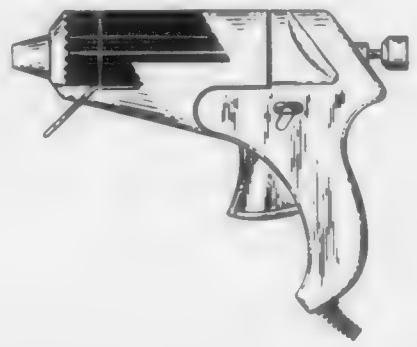


315,850
PEPPER MILL
J. T. Wu, No. 25, Hsin Ye Road, Tainan, Taiwan
Filed Oct. 24, 1988, Ser. No. 261,181
Term of patent 14 years
U.S. Cl. D7—679



315,851
MILL
J. T. Wu, No. 25, Hsin Ye Road, Tainan, Taiwan
Filed Oct. 24, 1988, Ser. No. 261,478
Term of patent 14 years
U.S. Cl. D7—679

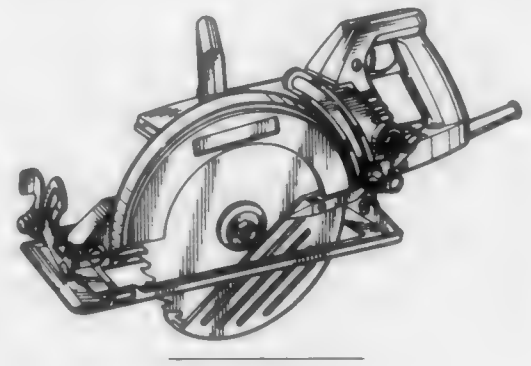
315,852
HOT MELT DISPENSER
Oktavio K. Nüsse, and Wolf-Dieter Krause, both of Münster, Fed. Rep. of Germany, assignors to Bostik, Inc., Middletown, Mass.
Filed Sep. 25, 1987, Ser. No. 101,334
Term of patent 14 years
U.S. Cl. D8—30



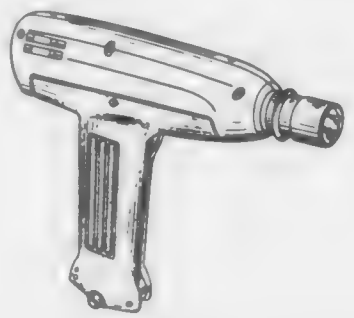
315,853
HANDLE FOR A SOLDERING IRON
Thaddeus Zaborowski, and Alan MacLeod, both of Cambridge, Mass., assignors to The Schawbel Corporation, Cambridge, Mass.
Division of Ser. No. 228,960, Jul. 25, 1988. This application Dec. 6, 1988, Ser. No. 280,532
Term of patent 14 years
U.S. Cl. D8—30



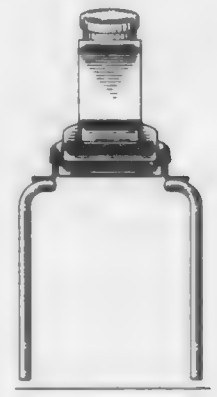
315,854
ELECTRIC SAW
Hideki Kawakami, Hiroshima, and Kiyoshi Hoshino, Tokyo, both of Japan, assignors to Ryobi Ltd., Hiroshima, Japan
Filed Oct. 1, 1987, Ser. No. 103,568
Claims priority, application Japan, Apr. 2, 1987, 62-12900
Term of patent 14 years
U.S. Cl. D8—66



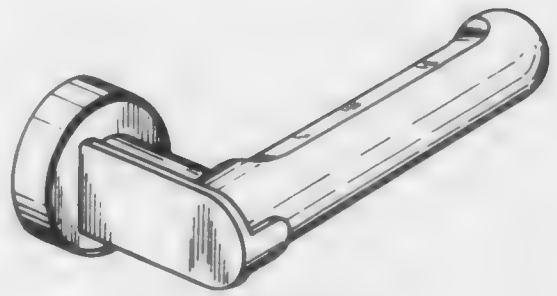
315,855
PORTABLE ELECTRIC WRENCH
Fusao Fushiya, and Shigeki Yamauchi, both of Anjo, Japan, assignors to Makita Electric Works, Ltd., Japan
Filed May 12, 1988, Ser. No. 192,899
Claims priority, application Japan, Nov. 12, 1987, 62-46350
Term of patent 14 years
U.S. Cl. D8—68



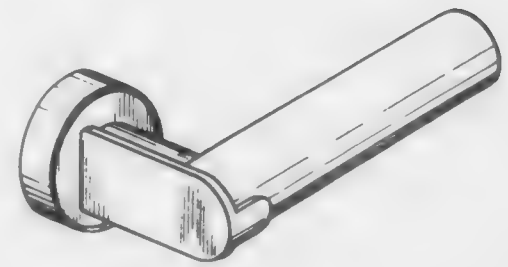
315,856
HOOP CUTTER
Seiji Tokukatsu, 25-8 Nishiarai 5 chome, Adachi-ku, Tokyo, Japan
Filed May 9, 1988, Ser. No. 192,597
Claims priority, application Japan, Nov. 16, 1987, 62-46869
Term of patent 14 years
U.S. Cl. D8—98



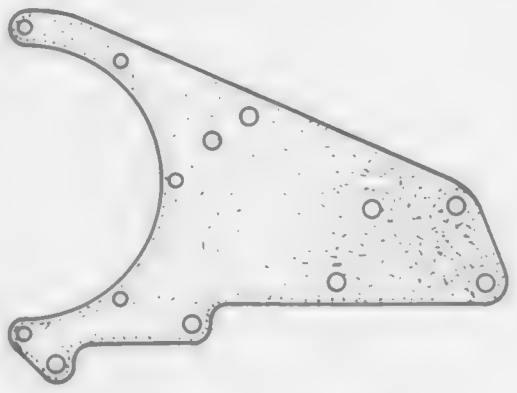
315,857
DOOR HANDLE
Gianfranco Frattini, Via S. Agnese, 14, 20123 Milan, Italy
Filed Aug. 17, 1988, Ser. No. 233,342
Claims priority, application Italy, Mar. 29, 1988, 20973/88[U]
Term of patent 14 years
U.S. Cl. D8—308

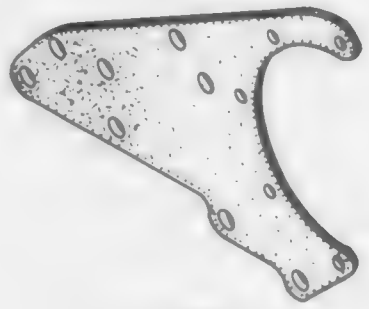


315,858
DOOR HANDLE
Gianfranco Frattini, Via S. Agnese, 14, 20123 Milan, Italy
Filed Aug. 17, 1988, Ser. No. 233,344
Claims priority, application Italy, Mar. 4, 1988, 2079/88[U]
The portion of the term of this patent subsequent to Apr. 2, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—308



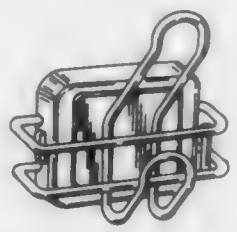
315,859
BRACKET
Francis G. Carroll, 40 Main St., Apt. 2C, Butler, N.J. 07405
Filed Sep. 28, 1988, Ser. No. 250,426
Term of patent 14 years
U.S. Cl. D8—357



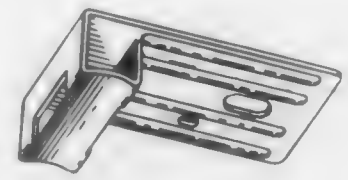


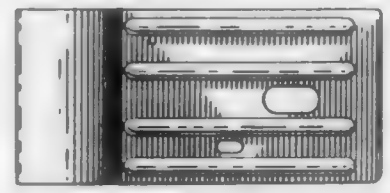
315,860
DOUBLE HOOK
Michael S. Joos, 911 W. Webster St., Chicago, Ill. 60614; Stanley P. Gresens, 2129 W. LeMoyne St., Chicago, Ill. 60622, and Richard Fraker, 1751 Mansards Blvd., Griffith, Ind. 46319
Filed Dec. 31, 1987, Ser. No. 139,941
Term of patent 14 years
U.S. Cl. D8—367



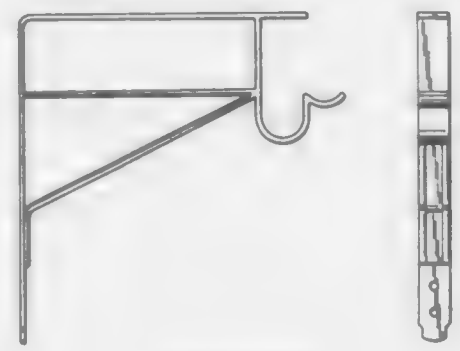


315,861
SUPPORT STRAP BRACKET
Isaac Sachs, 1240 Ridgewood Drive, Chomedey, Laval, Quebec, Canada H7W 1L3
Filed Dec. 23, 1987, Ser. No. 137,005
Term of patent 14 years
U.S. Cl. D8—371

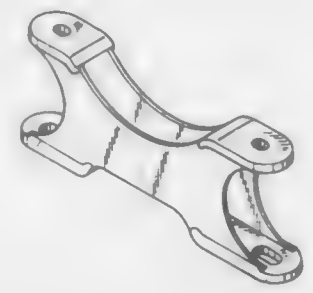




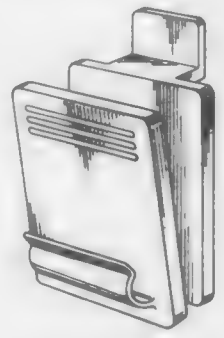
315,862
CLOSET POLE HANGER
Lewis Specker, Jr., 10 Via Cheparro, Greenbrae, Calif. 94904
Filed Dec. 14, 1988, Ser. No. 284,866
Term of patent 14 years
U.S. Cl. D8—380



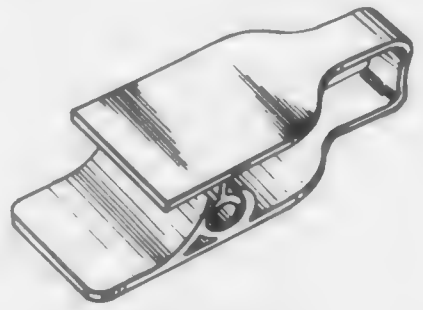
315,863
PIPE HOLDER
Lee Shui-Mu, No. 160, Sec. 1, Tai Yuan Rd., Taichung, Taiwan
Filed Jul. 6, 1990, Ser. No. 548,774
Term of patent 14 years
U.S. Cl. D8—380



315,864
CLIP HOOK FOR PERFORATE SUPPORTS
Donald Embree, Copley, and Stanley A. Mathey, Orrville, both of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Jul. 1, 1988, Ser. No. 214,634
Term of patent 14 years
U.S. Cl. D8—395



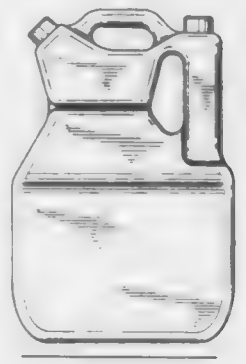
315,865
BOAT COVER CLIP
Brahm Fischer, Atlanta, Ga., assignor to Pawly Industries Corporation, Atlanta, Ga.
Filed Jul. 28, 1989, Ser. No. 387,100
Term of patent 14 years
U.S. Cl. D8—395



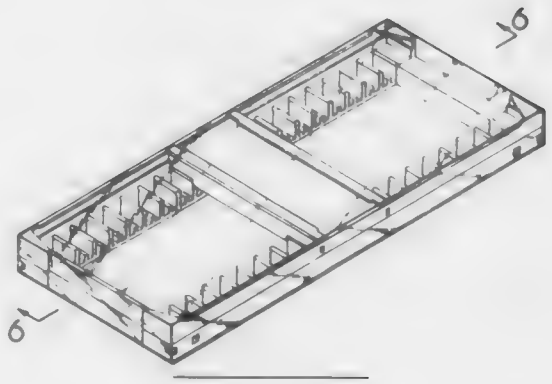
315,866
CONTAINER FOR CONFECTIONERY PRODUCTS
Pietro Ferrero, Genese, Belgium, assignor to Ferrero Ardennes S.A., Arlon, Belgium
Filed Sep. 23, 1988, Ser. No. 249,163
Claims priority, application Italy, Mar. 24, 1988, 53009/88[U]
Term of patent 14 years
U.S. Cl. D9—318



315,867
DUAL COMPARTMENT BOTTLE
Borge Hestehave, Alta Loma, and Kjeld Hestehave, Upland, both of Calif., assignors to Bomatic, Inc., Ontario, Calif.
Filed Jul. 7, 1987, Ser. No. 70,528
Term of patent 14 years
U.S. Cl. D9—341



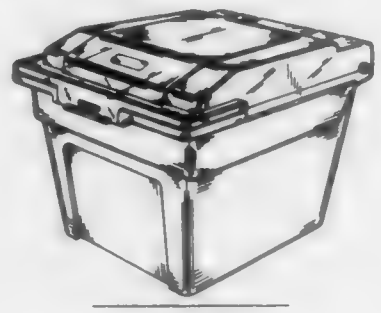
315,868
COMBINATION DISPLAY PACKAGE AND FLIP FILE HOLDER FOR COMPACT DISC BOXES
Paul J. Gelardi; Anthony L. Gelardi, both of Cape Porpoise, Me.; Alan B. Lowry, Canton, Mass.; Craig S. Lovecky, Old Orchard Beach, Me., and Richard H. Farr, Woburn, Mass., assignors to Shape Inc., Biddeford, Me.
Filed Apr. 8, 1988, Ser. No. 179,134
Term of patent 14 years
U.S. Cl. D9—341



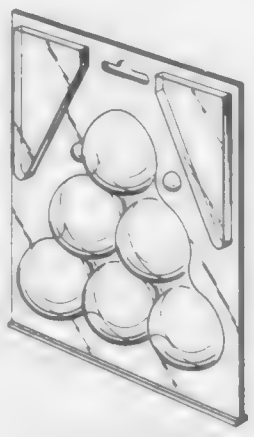
315,869
CONTAINER BODY FOR LIQUIDS OR THE LIKE
Wayne N. Collette, Merrimack, N.H., assignor to Continental PET Technologies, Inc., Norwalk, Conn.
Filed Jan. 11, 1989, Ser. No. 295,849
Term of patent 14 years
U.S. Cl. D9—392



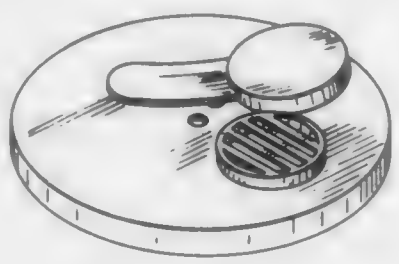
315,870
STORAGE BOX WITH HINGED LID
Thomas E. Perdue, Jr., 414 Spruce La., Crystal Lake, Ill. 60014, and Jeffrey D. Branasky, 233 S. Kensington, La Grange, Ill. 60525
Filed Jul. 18, 1988, Ser. No. 221,561
Term of patent 14 years
U.S. Cl. D9—420



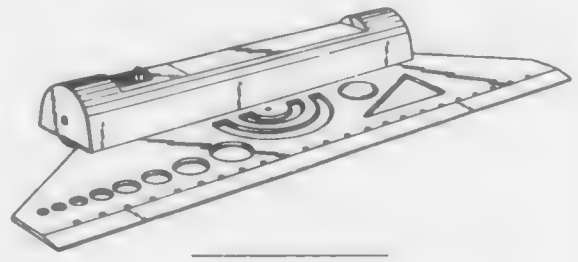
315,871
PACKAGE
David Whitebread, Harpenden, England, assignor to M.Y. Sports & Games Ltd., England
Filed Feb. 23, 1989, Ser. No. 314,600
Claims priority, application United Kingdom, Aug. 26, 1988, 1,083,264
Term of patent 14 years
U.S. Cl. D9—415



315,872
CLOSURE FOR A BEVERAGE CAN
Cynthia C. Bixler, Chillicothe, Ohio, assignor to CinTom, Inc., Carmel, Ind.
Filed Nov. 14, 1988, Ser. No. 270,118
Term of patent 14 years
U.S. Cl. D9—446



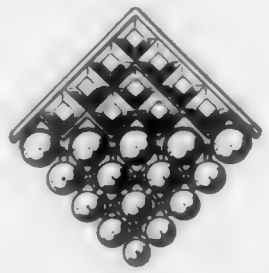
315,873
ROLLING RULER
Adam T. Laws, Balmain East, Australia, assignor to James Gregory McLaughlin, Queensland, Australia
Filed Nov. 18, 1988, Ser. No. 273,431
Claims priority, application Australia, May 20, 1988, 1629/88
Term of patent 14 years
U.S. Cl. D10—62



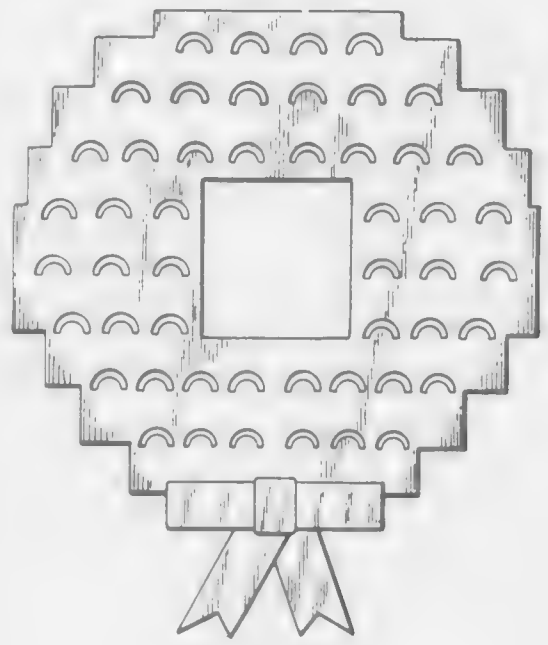
315,874
COMBINED FLASHING LIGHTS & TRAFFIC CONE
Jack A. DeCaro, 1109 N. Jackson, Tacoma, Wash. 98406
Filed May 13, 1988, Ser. No. 193,648
Term of patent 14 years
U.S. Cl. D10—114



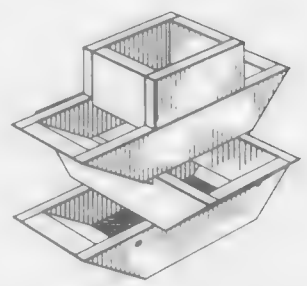
315,875
BROOCH
Paolo Bulgari, Rome, Italy, assignor to Partecipazione Bulgari S.p.A., Rome, Italy
Filed Jul. 13, 1988, Ser. No. 218,043
Claims priority, application Int'l Pat. Institute, Jan. 14, 1988, DM/010065
Term of patent 14 years
U.S. Cl. D11—43



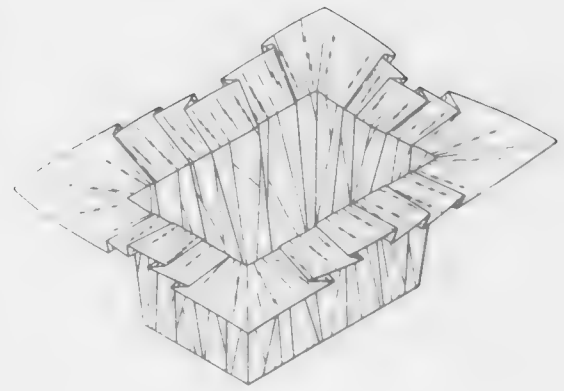
315,876
HOLDER FOR GREETING CARDS
Frank J. Vernon, 16 Powell Rd., Emerson, N.J. 07630
Filed Jan. 4, 1988, Ser. No. 140,417
Term of patent 14 years
U.S. Cl. D11—120



315,877
MULTI-TIER PLANTER UNIT
Kelley M. Hedges, 825 N. Buchanan, Escondido, Calif. 92027
Filed Jan. 19, 1988, Ser. No. 145,243
Term of patent 14 years
U.S. Cl. D11—143



315,878
FLOWER POT COVER
Donald E. Weder; Erwin H. Weder, both of Highland, Ill.; Wanda M. Weder, Highland, Calif : Franklin J. Craig, Valley Park, Mo.; Wilma M. Donnelly, Highland, Ill.; Phyllis J. Bolk, Highland, Ill.; John W. Bergstrand, Highland, Ill., and Robert C. Abrams, Edwardsville, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 613,053. May 22, 1984, Pat. No. D. 293,224. This application Oct. 13, 1987, Ser. No. 107,802
The portion of the term of this patent subsequent to Apr. 2, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—164

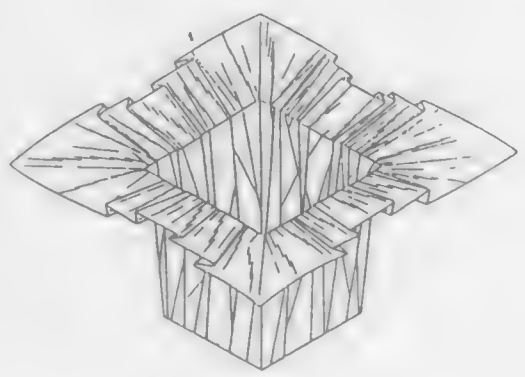




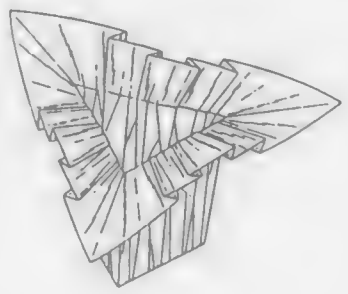


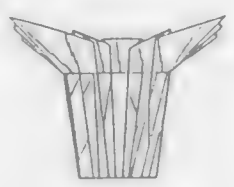


315,879
FLOWER POT COVER
Donald E. Weder; Erwin H. Weder, both of Highland, Ill.; Wanda M. Weder, Highland, Calif.; Franklin J. Craig, Valey Park, Mo.; Wilma M. Donnelly, Highland; Phyllis J. Bolk, Highland; John W. Bergstrand, Highland, and Robert C. Abrams, Edwardsville, all of Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 613,053, May 22, 1984, Pat. No. D. 293,224. This application Oct. 13, 1987, Ser. No. 108,320
The portion of the term of this patent subsequent to Apr. 2, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—164



315,880
FLOWER POT COVER
Donald E. Weder; Erwin H. Weder, both of Highland, Ill.; Wanda M. Weder, Highland, Calif.; Franklin J. Craig, Valley Park, Mo.; Wilma M. Donnelly, Highland, Ill.; Phyllis J. Bolk, Highland, Ill.; John W. Bergstrand, Highland, Ill., and Robert C. Abrams, Edwardsville, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 613,053, May 22, 1984, Pat. No. Des. 293,224. This application Oct. 13, 1987, Ser. No. 108,309
The portion of the term of this patent subsequent to Apr. 2, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—164







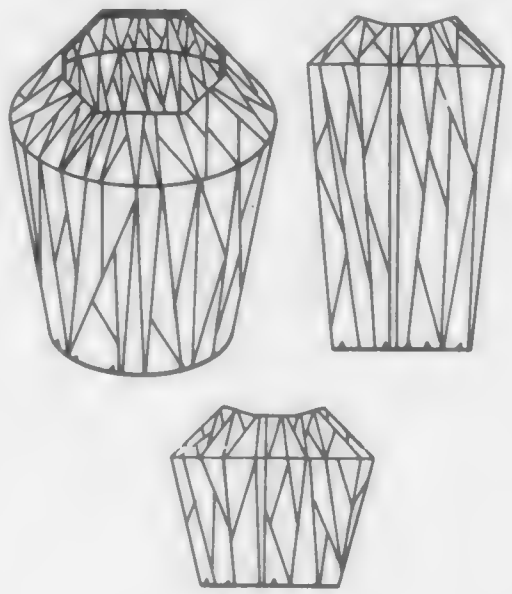




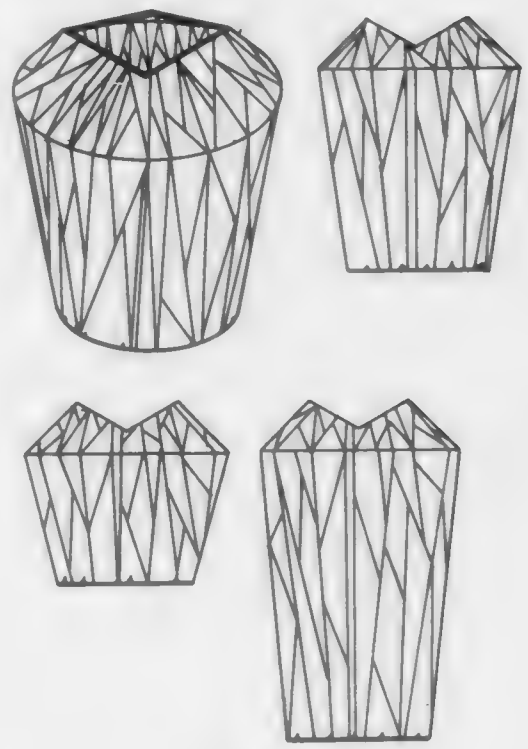




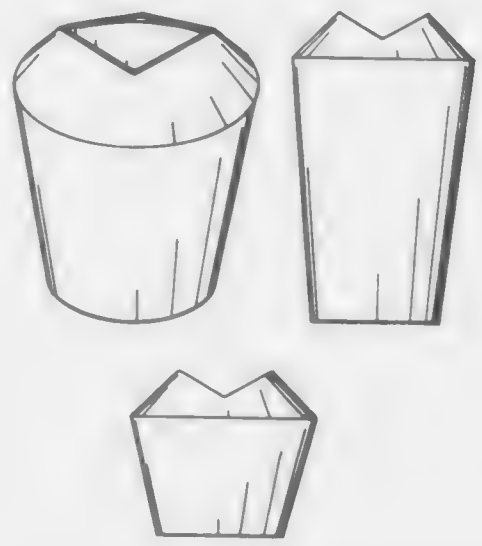
315,881
FLOWER POT COVER
Donald E. Weder, Highland, Ill., assignor to Highland Supply Corporation, Highland, Ill.
Filed Mar. 9, 1989, Ser. No. 321,459
The portion of the term of this patent subsequent to Apr. 2, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—164



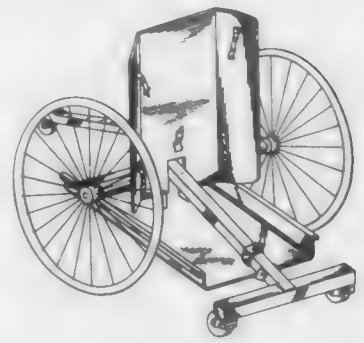
315,883
FLOWER POT COVER
Donald E. Weder, Highland, Ill., assignor to Highland Supply Corporation, Highland, Ill.
Filed Mar. 9, 1989, Ser. No. 321,467
The portion of the term of this patent subsequent to Apr. 2, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—164



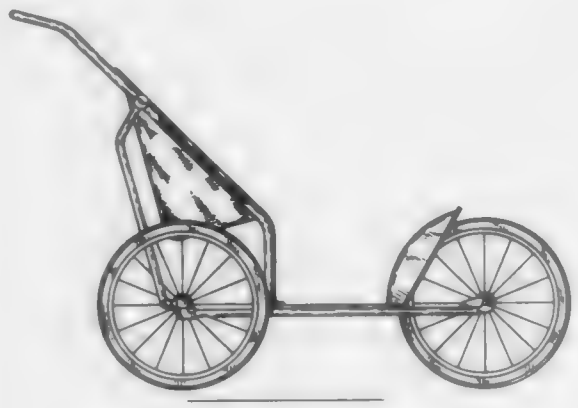
315,882
FLOWER POT COVER
Donald E. Weder, Highland, Ill., assignor to Highland Supply Corporation, Highland, Ill.
Filed Mar. 9, 1989, Ser. No. 321,466
The portion of the term of this patent subsequent to Apr. 2, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—164



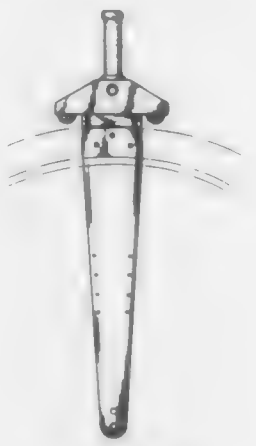
315,884
VERTICAL SUPPORTER FOR CHILD OR THE LIKE
Mac L'Dean Baker, Bakersfield, Calif., assignor to Mobility Options Research Foundation, Bakersfield, Calif.
Filed Sep. 14, 1987, Ser. No. 96,835
Term of patent 14 years
U.S. Cl. D12—128

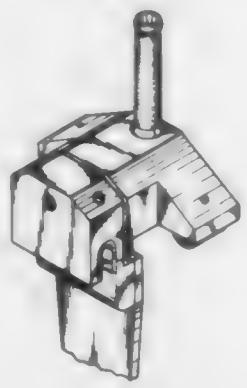


315,885
INFANT STROLLER
Richard H. Jacobs, Roseville, Minn., assignor to Tri Industries, Inc., Hopkins, Minn.
Filed Nov. 27, 1989, Ser. No. 441,933
Term of patent 14 years
U.S. Cl. D12—129



315,886
WHEELCHAIR PROPULSION UNIT
Herbert E. Wood, 1397 Tamarack St., Springfield, Oreg. 97477
Filed Sep. 30, 1988, Ser. No. 252,871
Term of patent 14 years
U.S. Cl. D12—133

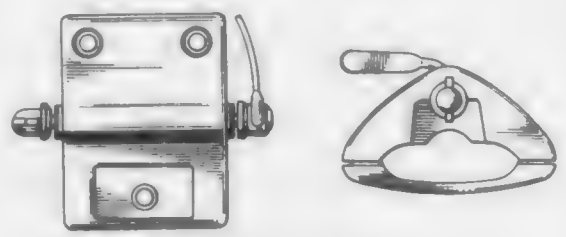




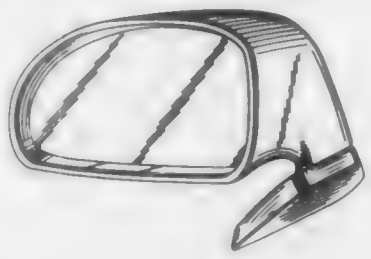
315,887
VEHICLE TIRE
Hisashi Shintomi, Osaka, Japan, assignor to The Ohtsu Tire & Rubber Co., Ltd., Osaka, Japan
Filed Mar. 15, 1988, Ser. No. 170,974
Claims priority, application Japan, Sep. 16, 1987, 62-37906
Term of patent 14 years
U.S. Cl. D12—136



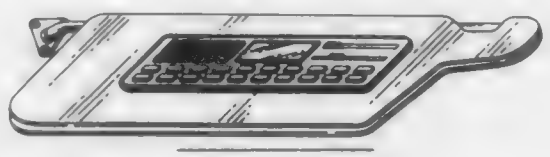
315,888
BICYCLE HOLDER FOR ATTACHMENT TO A VEHICLE ROOF RACK
Michael Dixon, Ardross, Australia, assignor to Samrein Pty Ltd., Double Bay, Australia
Filed Sep. 12, 1988, Ser. No. 243,491
Term of patent 14 years
U.S. Cl. D12—157



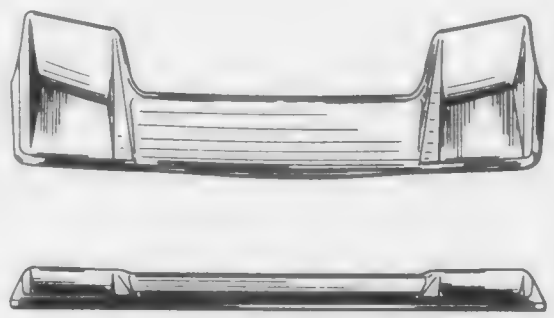
315,889
SIDE VIEW MIRROR
Hermann Burst, Rutesheim, and Heinz-Arno Kruschhausen, Leonberg, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsch AG, Fed. Rep. of Germany
Filed Feb. 10, 1988, Ser. No. 154,616
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1987, MR 6302
Term of patent 14 years
U.S. Cl. D12—187



315,890
COMBINED VEHICLE SUN VISOR AND CELLULAR TELEPHONE UNIT
Joe Lewo, P.O. Box N8913, Nassau, The Bahamas
Filed Apr. 29, 1988, Ser. No. 187,999
Term of patent 14 years
U.S. Cl. D12—191



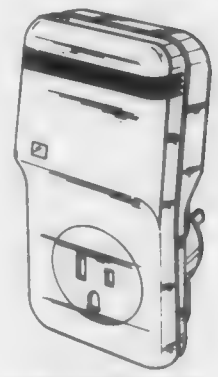
315,891
EXTERIOR VEHICLE VISOR OR SIMILAR ARTICLE
Paul Down, Elkhart, Ind., assignor to Kemberly, Inc., Elkhart, Ind.
Filed Jan. 30, 1989, Ser. No. 304,016
Term of patent 14 years
U.S. Cl. D12—191



315,892
YACHT
R. M. Tollefson, Edmonds; Dane A. Armstrong, Longview; David A. LeMonds; Douglas J. Wakefield, both of Kelso; Walter F. Altmann, Longview, and Marcel L. LaFond, Kelso, all of Wash., assignors to Tollycraft Yachts Corp., Seattle, Wash.
Filed Nov. 30, 1989, Ser. No. 444,604
Term of patent 14 years
U.S. Cl. D12—315



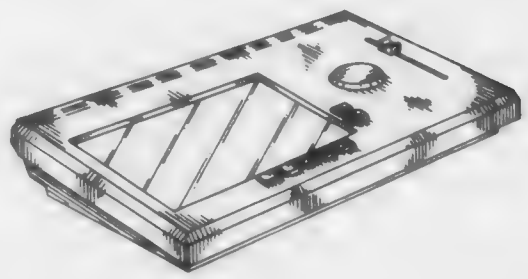
315,893
HEAVY DUTY, REMOTELY CONTROLLED TIMER SWITCH
Willis Cheng, Taipei, Taiwan, assignor to Woods Far East, Inc., Taiwan
Filed Jul. 11, 1988, Ser. No. 216,976
Term of patent 14 years
U.S. Cl. D13—165



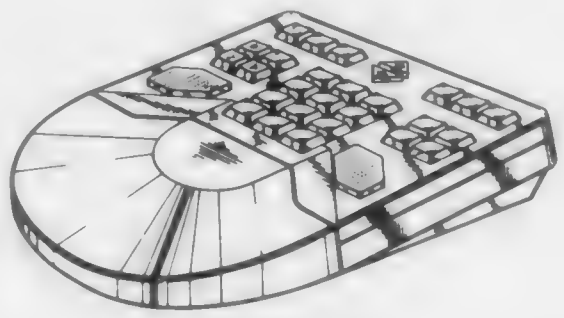
315,894
UNDERWATER SWITCH
Gabriel M. Giannini, 51555 Madison, Indio, Calif. 92201
Division of Ser. No. 132,056, Dec. 9, 1987, abandoned. This application May 8, 1990, Ser. No. 520,611
Term of patent 14 years
U.S. Cl. D13—171



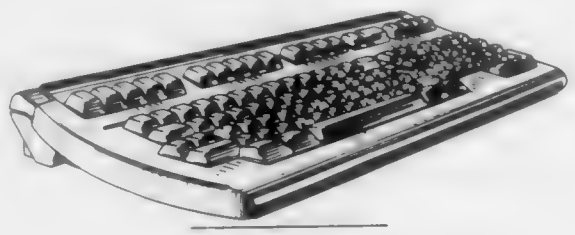
315,895
CONSOLE FOR DATA INPUT/OUTPUT TABLET
Stephen H. Paine, and Carl Schofield, both of London, Great Britain, assignors to Syco Systems Ltd., London, United Kingdom
Filed Jan. 25, 1988, Ser. No. 148,271
Claims priority, application Bulgaria, Jul. 23, 1987, 1043645; United Kingdom, Jul. 23, 1987, 1043646; Jul. 23, 1987, 1043647; Jul. 23, 1987, 1043648
Term of patent 14 years
U.S. Cl. D14—100



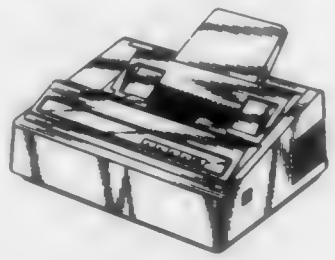
315,896
KEYPAD
Michael Brown, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Apr. 20, 1989, Ser. No. 341,104
Term of patent 14 years
U.S. Cl. D14—100



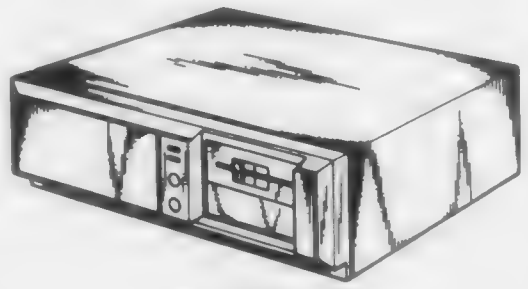
315,897
KEYBOARD
Robert T. Faranda, Acton, Mass., and Steven D. Kim, New York, N.Y., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed May 26, 1989, Ser. No. 358,602
Term of patent 14 years
U.S. Cl. D14—100



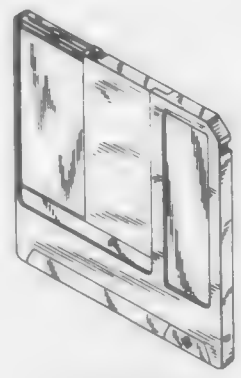
315,898
PAGE SCANNER
Yoshikazu Hokura, Kanagawa; Hironosuke Koda, and Munerori Fujimoto, both of Tokyo, all of Japan, assignors to Matsushita Graphic Communication Systems, Inc., Tokyo, Japan
Filed May 5, 1989, Ser. No. 347,955
Claims priority, application Japan, Nov. 9, 1988, 63-43880
Term of patent 14 years
U.S. Cl. D14—107



315,899
FLOPPY DISK DRIVE UNIT
Yong H. Kim, Kyungki, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea
Filed Sep. 5, 1989, Ser. No. 402,919
Claims priority, application Rep. of Korea, Mar. 22, 1989, 3489/1989[U]
Term of patent 14 years
U.S. Cl. D14—109



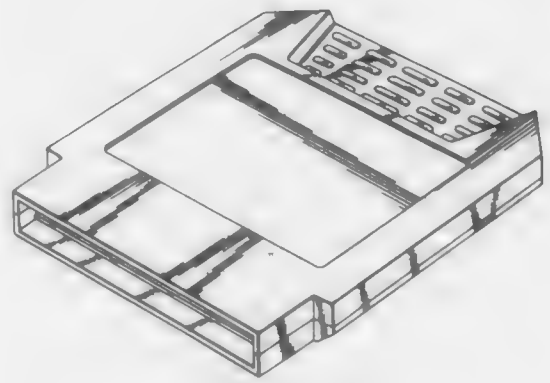
315,900
OPTICAL DISC CARTRIDGE
Hirokimi Iwata, Ina, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Apr. 14, 1989, Ser. No. 337,548
Claims priority, application Japan, Nov. 9, 1988, 63-43946
Term of patent 14 years
U.S. Cl. D14—114



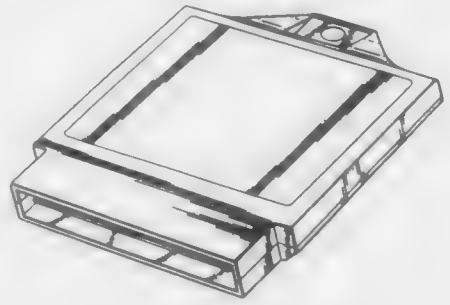
315,901
PORTABLE LASER SCANNER
Carl H. Knowles, Moorestown, N.J., assignor to Metrologic Instruments, Inc., Bellmawr, N.J.
Filed Jan. 30, 1989, Ser. No. 304,310
Term of patent 14 years
U.S. Cl. D14—116



315,902
GAME CARTRIDGE
Yoshiaki Nakauma, Chigasaki, Japan, assignor to Namco, Ltd., Tokyo, Japan
Filed Dec. 15, 1988, Ser. No. 284,481
Term of patent 14 years
U.S. Cl. D14—121

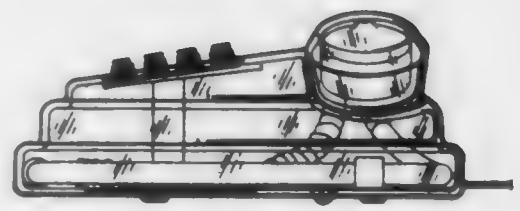


315,903
GAME CARTRIDGE
Yoshiaki Nakauma, Chigasaki, Japan, assignor to Namco, Ltd., Tokyo, Japan
Filed Dec. 15, 1988, Ser. No. 284,482
Term of patent 14 years
U.S. Cl. D14—121

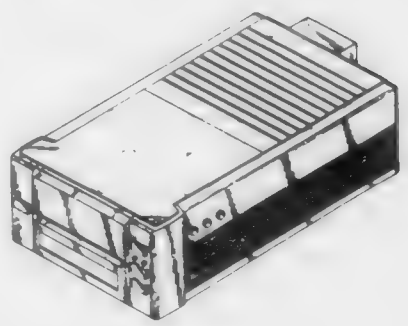


315,904
TELEPHONE SET WITH TRANSPARENT OUTER SURFACE AND NEON-LIGHT TUBE SURROUNDING THE BASE
Thomas Cheng, No. 6, Alley 49, Lane 149, Sec. 3, Nan Kang Rd., Taipei, Taiwan
Filed Sep. 5, 1989, Ser. No. 402,265
Term of patent 14 years
U.S. Cl. D14—150

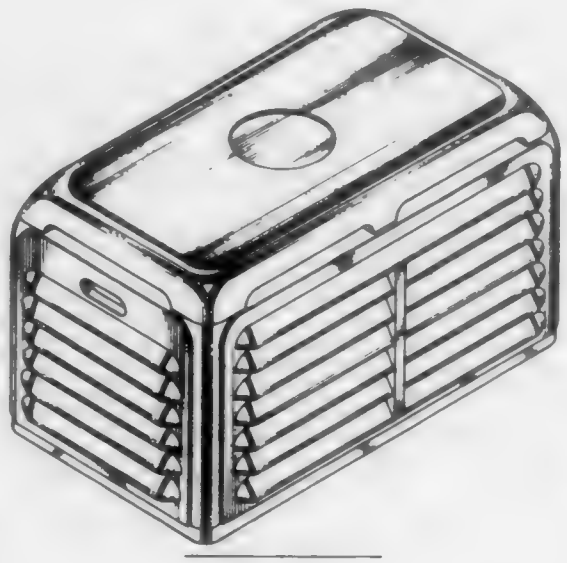




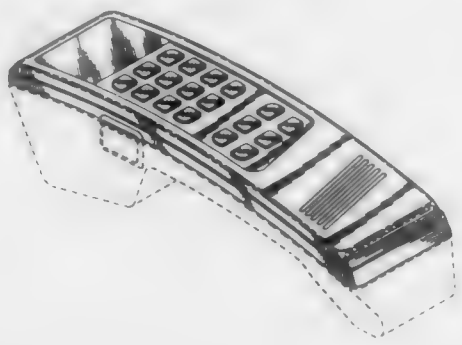
315,905
DIGITAL AUDIO DISC PLAYER
Masafumi Ito, Tokyo; Shigeru Hasegawa, Kodaira; Haruki Takita, and Minoru Sabe, both of Hachioji, all of Japan, assignors to Teac Corporation, Musashino, Japan
Filed Feb. 10, 1988, Ser. No. 154,625
Claims priority, application Japan, Aug. 24, 1987, 62-34371
The portion of the term of this patent subsequent to Mar. 26, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—156



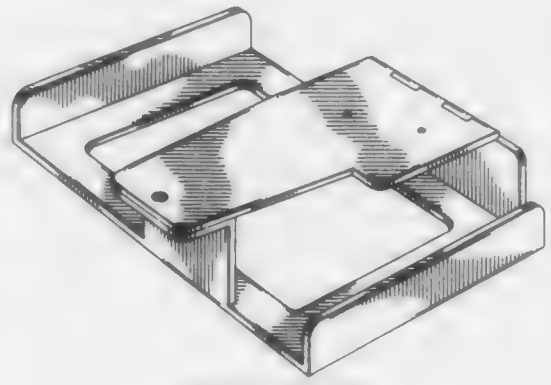
315,906
ALL-WEATHER COVERING FOR CABLE TELEVISION EQUIPMENT
William H. Channell, 122 Oak Tree Dr., Glendora, Calif. 91740
Filed Mar. 31, 1988, Ser. No. 175,725
The portion of the term of this patent subsequent to Oct. 11, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—239



315,907
DIAL TOP-HOUSING FOR TELEPHONE HANDSET OR SIMILAR ARTICLE
Allen Wong, Streamwood; Leonid Soren, Lincolnwood, and Phillip E. Lindeman, Roselle, all of Ill., assignors to Motorola Inc., Schaumburg, Ill.
Filed Nov. 17, 1989, Ser. No. 438,914
Term of patent 14 years
U.S. Cl. D14—247

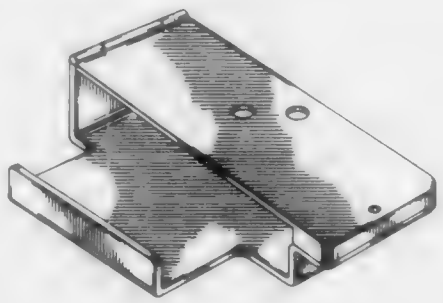


315,908
TELEPHONE DIALING-KEY COVER
Raymond F. Ward, 5225 E. Thomas Rd., Apt. 216, Phoenix, Ariz. 85018
Filed Jul. 31, 1989, Ser. No. 386,964
Term of patent 14 years
U.S. Cl. D14—250

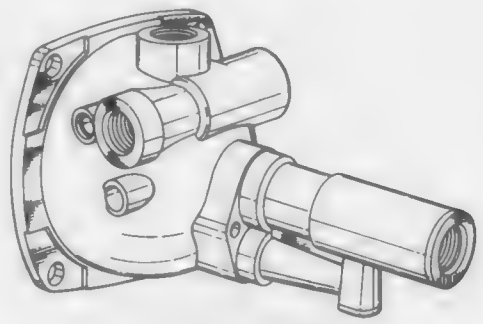


315,909
TELEPHONE DIALING-KEY COVER
Raymond F. Ward, 5225 E. Thomas Rd., Apt 216, Phoenix, Ariz. 85018
Filed Jul. 31, 1989, Ser. No. 386,965
Term of patent 14 years
U.S. Cl. D14—250

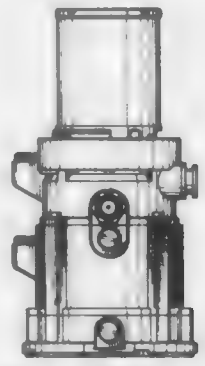
315,910
TELEPHONE DIALING-KEY COVER
Raymond F. Ward, 5225 E. Thomas Rd., Apt 216, Phoenix, Ariz. 85018
Filed Jul. 31, 1989, Ser. No. 386,966
Term of patent 14 years
U.S. Cl. D14—250



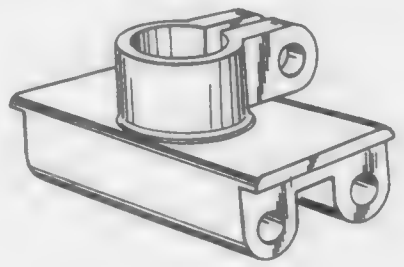
315,911
PUMP HOUSING
Jack F. Campbell, Guelph, Canada, assignor to GSW Inc., Fergus, Canada
Filed Mar. 4, 1988, Ser. No. 163,885
Term of patent 14 years
U.S. Cl. D15—7



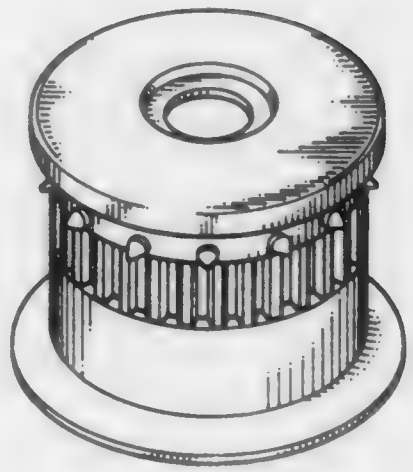
315,912
VACUUM PUMP
Mitsuhiro Nishida; Kozaburo Fujii, both of Fukuoka; Nobuyuki Kondoh, and Yoshinori Abe, both of Kamakura, all of Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan
Filed Mar. 14, 1989, Ser. No. 338,061
Claims priority, application Japan, Sep. 21, 1988, 63-37135
Term of patent 14 years
U.S. Cl. D15—7



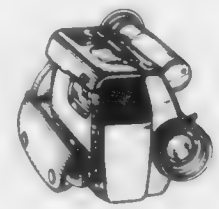
315,913
KNIFE HOLDER FOR TURF AERATION MACHINE
David J. Livingstone, Sylvania Waters, Australia, assignor to Greencare PTY. Limited, Taren Point, Australia
Filed Jun. 11, 1987, Ser. No. 60,435
Claims priority, application Australia, Dec. 17, 1986, 7962/86
Term of patent 14 years
U.S. Cl. D15—28

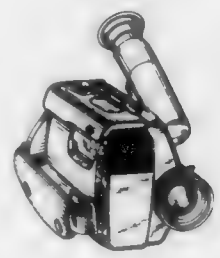


315,914
YARN FEEDER
Jen F. Chen, P.O. Box 1-79, Taipei, Taiwan 10602
Filed May 13, 1988, Ser. No. 193,640
Term of patent 14 years
U.S. Cl. D15—72

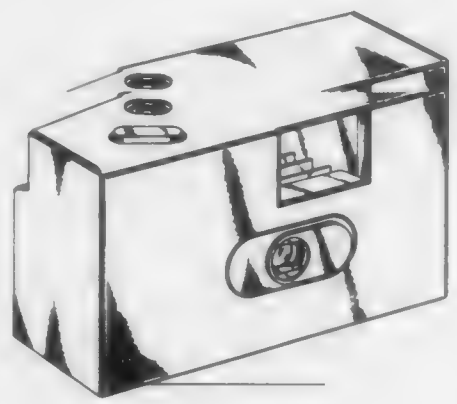


315,915
VIDEO CAMERA COMBINED WITH VIDEO TAPE RECORDER
Yuji Morimiya, Funabashi, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jul. 26, 1989, Ser. No. 385,298
Claims priority, application Japan, Apr. 26, 1989, 1-1555[illegible]
Term of patent 14 years
U.S. Cl. D16—202

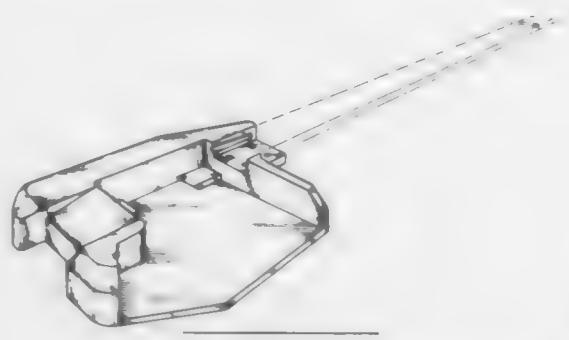




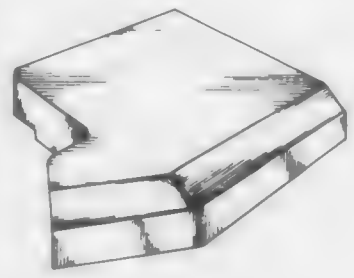
315,916
STILL CAMERA
Bruce A. Leonard, Honeoye Falls, and Deborah N. Pelcher, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 6, 1988, Ser. No. 141,345
Term of patent 14 years
U.S. Cl. D16—218



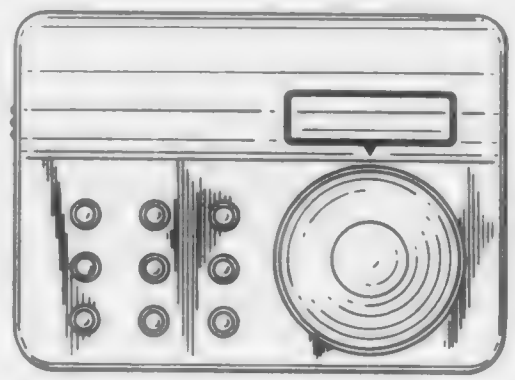
315,917
GUITAR BODY
E. Todd Ellison, 3203 Tareco Dr., Los Angeles, Calif. [illegible]
Filed Feb. 1, 1988, Ser. No. 150,718
Term of patent 14 years
U.S. Cl. D17—[illegible]



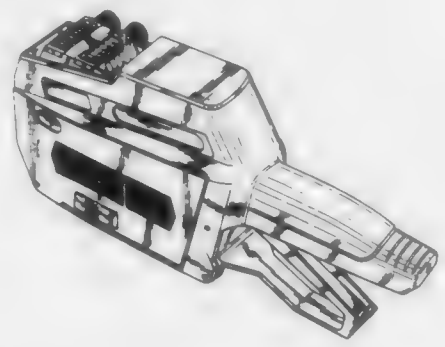
315,918
REMOVABLE CARTRIDGE FOR GUITAR BODY
E. Todd Ellison, 3203 Tareco Dr., Los Angeles, Calif. 90068
Filed Feb. 1, 1988, Ser. No. 150,723
Term of patent 14 years
U.S. Cl. D17—20



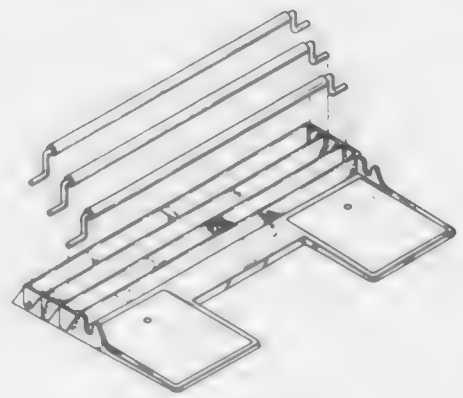
315,919
ELECTRONIC TAPE WRITER
Akira Miyamoto; Tokushige Ohmiya; Genichiro Otani; Setsuo Kawai; Kenji Watanabe; Goro Iijima; Takeshi Matsubara, and Takanobu Kameda, all of Tokyo, Japan, assignors to King Jim Co., Ltd., Japan
Filed Sep. 19, 1988, Ser. No. 246,304
Claims priority, application Japan, Apr. 20, 1988, 63-16032
Term of patent 14 years
U.S. Cl. D18—13



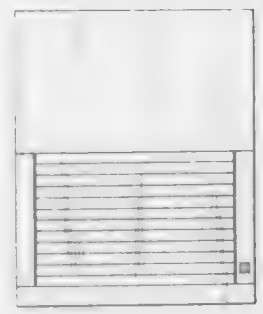
315,920
MANUALLY OPERATED LABELLING GUN
Klaus-Dieter Hermann, Ritterweg 17, D-6932 Hirschhorn, Fed. Rep. of Germany
Filed Sep. 9, 1987, Ser. No. 94,532
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1987, 430
Term of patent 14 years
U.S. Cl. D18—19



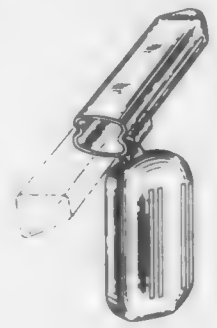
315,921
MULTI-FORM FEEDER FOR PRINTER
H. Charles Hassel, Los Angeles, and Donald Westland, Venice, both of Calif., assignors to MicroComputer Accessories, Inc., Los Angeles, Calif.
Filed Oct. 14, 1987, Ser. No. 108,041
Term of patent 14 years
U.S. Cl. D18—22



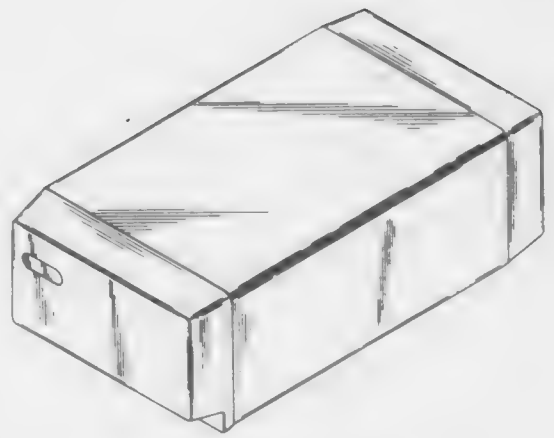
315,922
PAPER SHEET
John M. Giordano, Virginia Beach, Va., assignor to Hunt Holdings, Inc., Wilmington, Del.
Division of Ser. No. 110,956, Oct. 21, 1987. This application May 31, 1990, Ser. No. 532,503
Term of patent 14 years
U.S. Cl. D19—1

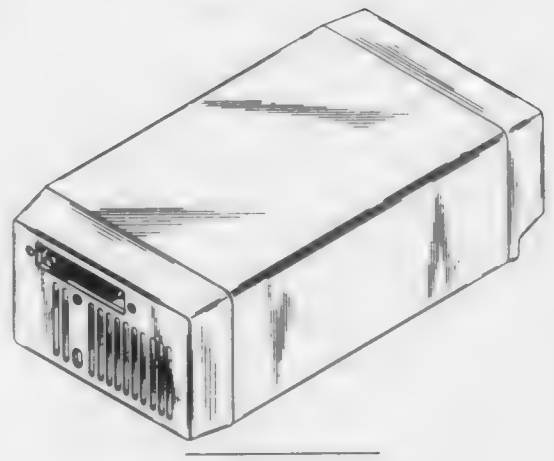


315,923
HAND TOOL HOLDER
Ivar Frischer, Kungsgatan 41, Goteborg, Sweden 411 15
Filed Aug. 20, 1987, Ser. No. 87,445
Claims priority, application Sweden, Feb. 23, 1987, 870388
Term of patent 14 years
U.S. Cl. D19—55

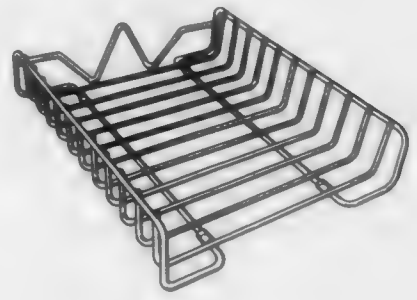


315,924
PORTABLE FILE
James J. Best, Austin, and Margaret C. Sweeney, Georgetown, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 27, 1988, Ser. No. 199,550
Term of patent 14 years
U.S. Cl. D19—75

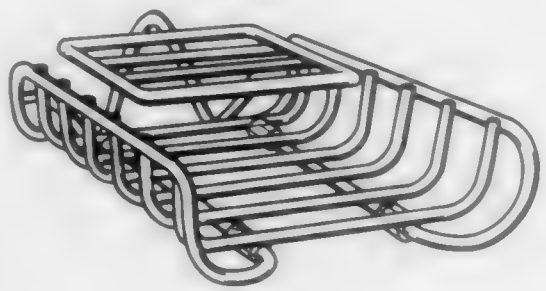




315,925
LETTER TRAY
Beverly C. Rich, Ruxton, Md., assignor to Fellowes Mfg Co, Itasca, Ill.
Filed Mar. 24, 1988, Ser. No. 171,293
Term of patent 14 years
U.S. Cl. D19—92



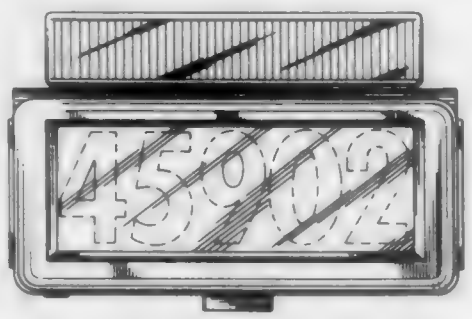
315,926
HOLDER FOR A NOTE PAD OR SIMILAR ARTICLE
Beverly C. Rich, Ruxton, Md., assignor to Fellowes Mfg. Co., Itasca, Ill.
Filed Mar. 24, 1988, Ser. No. 172,348
Term of patent 14 years
U.S. Cl. D19—92



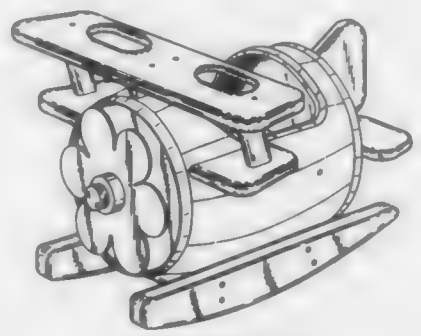
315,927
MULTIPLE UNIT VENDING MACHINE
Eldin H. Irwin, 225 Rue de Paresse, Tavares, Fla. 32778
Filed Feb. 2, 1987, Ser. No. 9,928
The portion of the term of this patent subsequent to Apr. 9, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D20—4



315,928
SOLAR POWERED ILLUMINATED YARD MARKER
Robert A. Flieder, 521 Long La., Huntingdon Valley, Pa. 19006
Filed Nov. 28, 1988, Ser. No. 276,563
Term of patent 14 years
U.S. Cl. D20—17



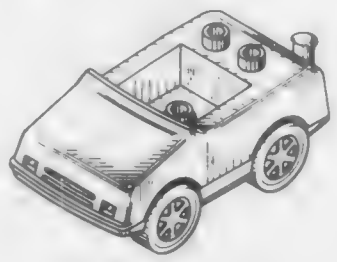
315,929
BI-PLANE ROCKING TOY
Thomas J. Bush, 123 Cherry Brook Rd., Canton Center, Conn. 06020
Filed Dec. 16, 1988, Ser. No. 285,232
Term of patent 14 years
U.S. Cl. D21—68



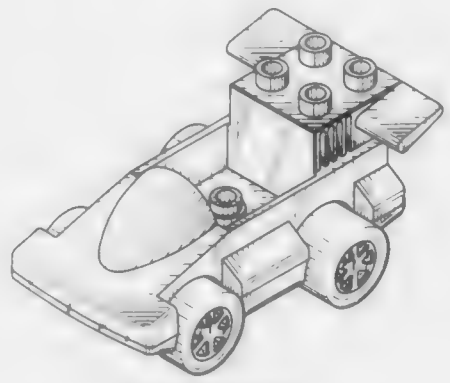
315,930
TOY SWING
Harry S. Thomson, Richmond; David M. Raffo, Gildern Sutton, and John A. Pape, Hitchin, all of England, assignors to Hestair Kiddicraft Limited, Bristol, England
Filed May 19, 1989, Ser. No. 354,678
Term of patent 14 years
U.S. Cl. D21—123



315,931
TOY CAR
Ib H. Berggren, Vedbaek, Denmark, assignor to Interlego AG, Baar, Switzerland
Filed Nov. 29, 1989, Ser. No. 443,231
Term of patent 14 years
U.S. Cl. D21—128



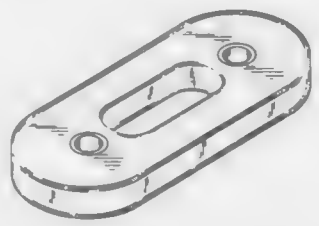
315,932
TOY CAR
Ib H. Berggren, Vedbaek, Denmark, assignor to Interlego AG, Baar, Switzerland
Filed Nov. 29, 1989, Ser. No. 443,233
Term of patent 14 years
U.S. Cl. D21—128



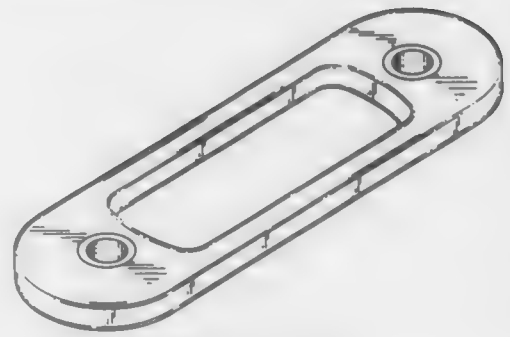
315,933
HULA DOLL
Rak M. Sung, 225 Kaiulani Ave., #505, Honolulu, Hi. 96815
Filed Apr. 14, 1989, Ser. No. 338,139
Term of patent 14 years
U.S. Cl. D21—180



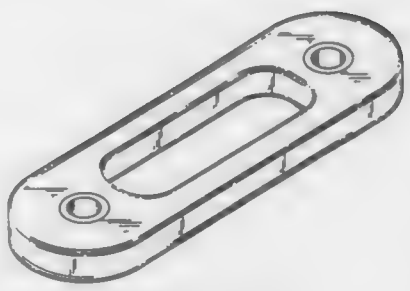
315,934
RESISTANCE STRAP FOR AN EXERCISE MACHINE
Jerry L. Wilson, 16170 SW. Jenne Lake Ct., Beaverton, Oreg. 97006; Jon Schneider, Washington County, and Frederick E. Collins, Lane County, both of Oreg., assignors to Jerry L. Wilson, Hillsboro, Oreg.
Filed Sep. 12, 1988, Ser. No. 243,649
Term of patent 14 years
U.S. Cl. D21—191



315,935
RESISTANCE STRAP FORAN EXERCISE MACHINE
Jerry L. Wilson, 16170 SW. Jenne Lake Ct., Beaverton, Oreg. 97006; Jon Schneider, Hillsboro, and Frederick E. Collins, Cresswell, both of Oreg., assignors to Jerry L. Wilson, Hillsboro, Oreg.
Filed Sep. 12, 1988, Ser. No. 243,650
Term of patent 14 years
U.S. Cl. D21—191



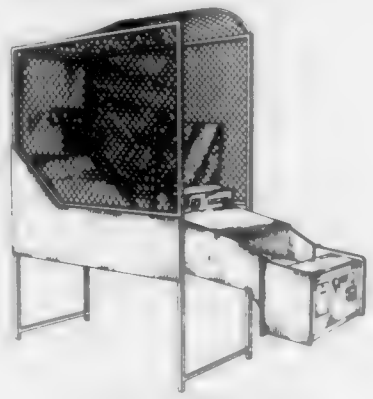
315,936
RESISTANCE STRAP FOR AN EXERCISE MACHINE
Jerry L. Wilson, 16170 SW. Jenne Lake Ct., Beaverton, Oreg. 97006; Jon Schneider, Hillsboro, and Frederick E. Collins, Cresswell, both of Oreg., assignors to Jerry L. Wilson, Hillsboro, Oreg.
Filed Sep. 12, 1988, Ser. No. 243,651
Term of patent 14 years
U.S. Cl. D21—191



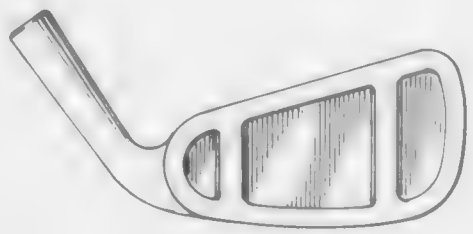
315,937
PHYSICAL EXERCISER
Jack D. Huggins, 212 Country Club Cir., and John Pannell, 11508 Surrey La., both of Midwest City, Okla. 73110
Filed Sep. 13, 1988, Ser. No. 243,670
Term of patent 14 years
U.S. Cl. D21—191



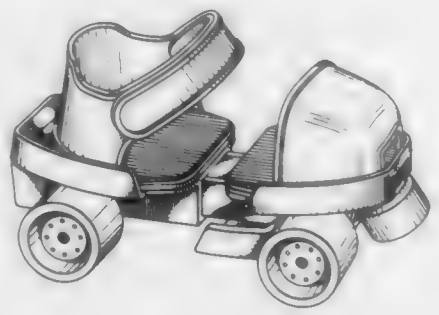
315,938
COMBINED BASKETBALL GAME GOAL AND BALL RETURN
[illegible]ra K. Doyle, P.O. Drawer 49467, Sarasota, Fla. 34230-6467
Filed Nov. 2, 1988, Ser. No. 2[illegible]924
Term of patent 14 years
U.S. Cl. D21—[illegible]01



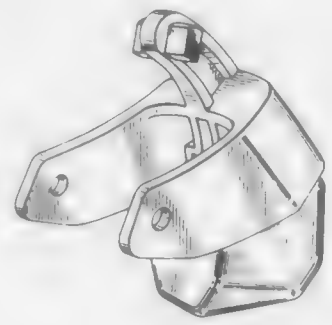
315,939
IRON GOLF CLUB HEAD
Anthony J. Antonious, 205 E. Joppa Rd., Towson, Md. 21204
Filed Mar. 4, 1988, Ser. No. 164,001
The portion of the term of this patent subsequent to Mar. 19, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—220



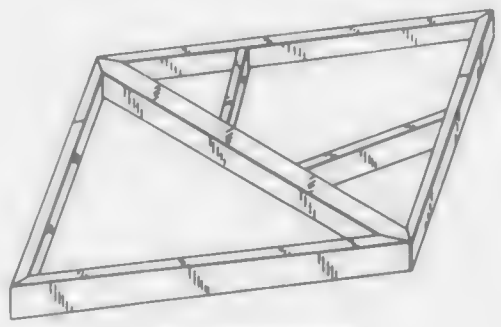
315,940
ROLLER SKATE
Stephen D. Wehmeyer, West Falls, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Aug. 15, 1988, Ser. No. 232,572
Term of patent 14 years
U.S. Cl. D21—226



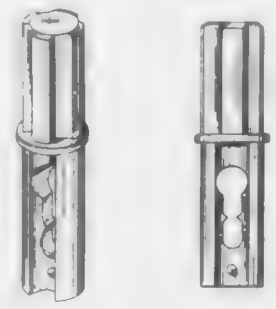
315,941
ROLLER SKATE BRAKE
Brennan J. Olson; Thomas J. Brace, both of Minneapolis, Minn., and Charles R. Frigard, Holland, Mich., assignors to Rollerblade, Inc., Minneapolis, Minn.
Filed Aug. 23, 1989, Ser. No. 397,304
Term of patent 14 y[illegible]s
U.S. Cl. D21—226



315,942
POOL RACK TRIANGLE
[illegible]avid Cahill, 7251 Weingartz, Centerline, Mich. 48015
Filed Mar. 7, 1988, Ser. No. 164,[illegible]43
Term of patent 14 years
U.S. Cl. D21—232



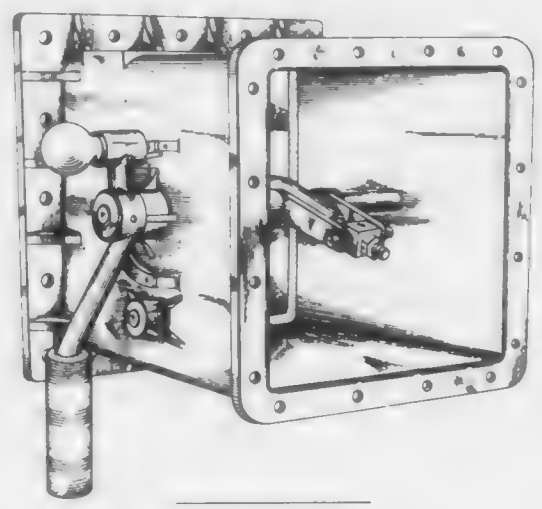
315,943
TENT POLE TIP
Steve C. Heller, Wauconda, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.
Filed Sep. 26, 1988, Ser. No. 250,121
Term of patent 14 years
U.S. Cl. D21—254



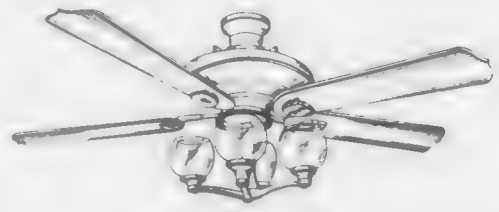
315,944
FISHING ROD OR THE LIKE
Gary J. Gibich, 611 E. 48th, Austin, Tex. 78751
Filed Mar. 18, 1988, Ser. No. 171,511
Term of patent 14 years
U.S. Cl. D22—142



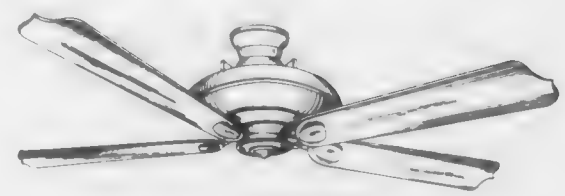
315,945
DUMP VALVE FOR ATTACHMENT TO FIRE ENGINE TANKERS
Theodore Ziaylek, Jr., 140 Riverview Dr., and Michael P. Ziaylek, 3 Brook La., both of Yardley, Pa. 19067
Filed Aug. 7, 1989, Ser. No. 390,912
Term of patent 14 years
U.S. Cl. D23—244



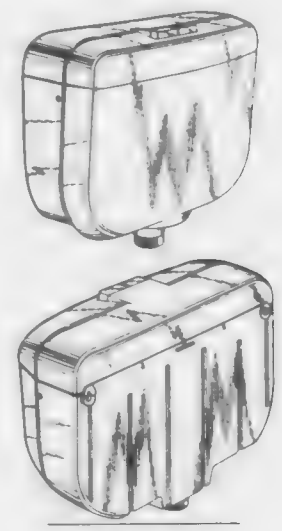
315,946
CEILING FAN AND LIGHT FIXTURE
Richard M. Hollbrook, Hermosa Beach, Calif., assignor to Casablanca Fan Company, Inc., City of Industry, Calif.
Filed Nov. 1, 1988, Ser. No. 265,663
Term of patent 14 years
U.S. Cl. D23—377



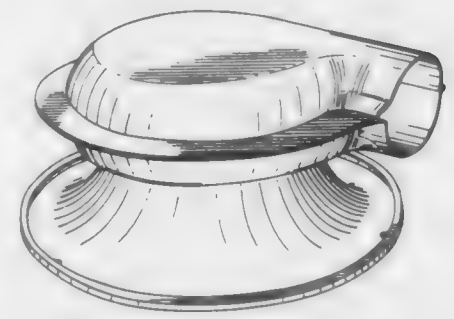
315,947
CEILING FAN
Richard M. Hollbrook, Hermosa Beach, Calif., assignor to Casablanca Fan Company, Inc., City of Industry, Calif.
Filed Nov. 1, 1988, Ser. No. 265,[illegible]64
Term of patent 14 years
U.S. Cl. D23—377



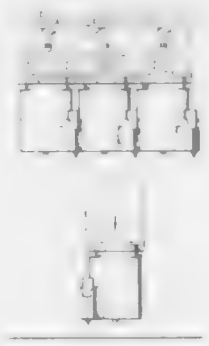
315,948
FLUSHING TANK
Bruce R. Thompson, Tranmere, Australia, assignor to Caroma Industries Limited, Australia
Filed Jun. 5, 1987, Ser. No. 58,378
Claims priority, application Australia, Dec. 10, 1986, [illegible]10/87
Term of patent 14 years
U.S. Cl. D23—313



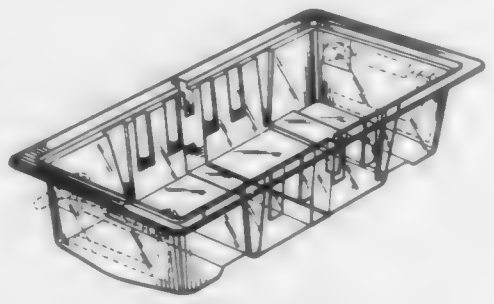
315,949
VENTILATOR
Bengt Sellö, Stockholm, Sweden, assignor to Soft Construction AB, Stockholm, Sweden
Filed Nov. 14, 1989, Ser. No. 436,534
Claims priority, application Sweden, May 23, 1989, 89-1243
Term of patent 14 years
U.S. Cl. D23—393



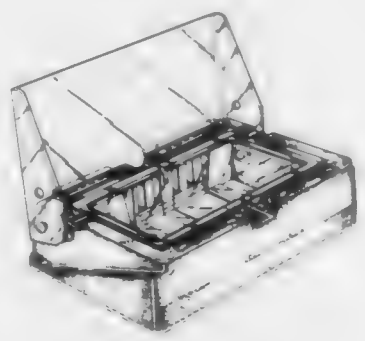
315,950
ANESTHESIA VAPORIZER UNIT
John C. Lundy, Tustin, Calif., assignor to Vaporflow Technology, Inc., Tustin, Calif.
Filed Oct. 9, 1987, Ser. No. 107,517
Term of patent 14 years
U.S. Cl. D24—8



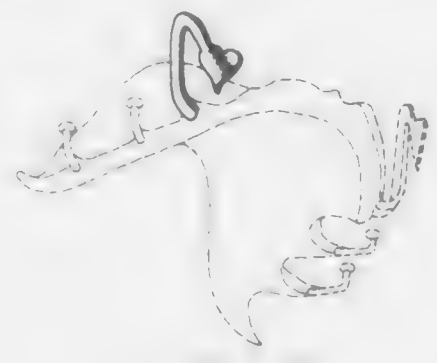
315,951
REACTION TANK FOR ELECTROPHORESIS APPARATUS
Mark Berninger, Gaithersburg, Md., and Michael Schuette, Vienna, Va., assignors to Life Technologies, Inc., Gaithersburg, Md.
Filed Jan. 29, 1988, Ser. No. 149,863
Term of patent 14 years
U.S. Cl. D24—8



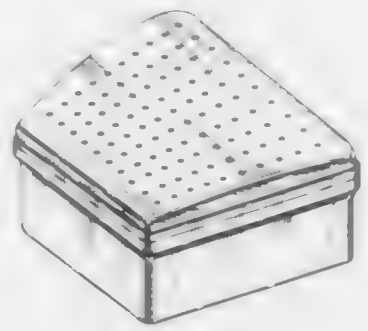
315,952
HORIZONTAL GEL ELECTROPHORESIS UNIT
Mark Berninger, Gaithersburg, Md., and Michael Schuette, Vienna, Va., assignors to Life Technologies, Inc., Gaithersburg, Md.
Filed Jan. 29, 1988, Ser. No. 149,[illegible]
Term of patent 14 years
U.S. Cl. D24—8



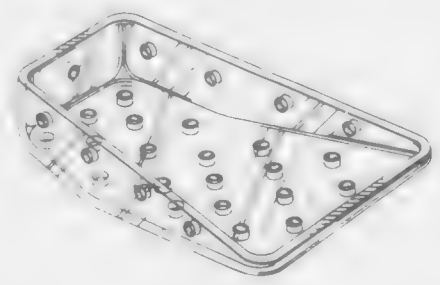
315,953
WIREFORM FOR AN ORTHODONTIC APPLIANCE OR SIMILAR ARTICLE
Ellen M. Moran, 4146 Hyde Park Ct. #H, Indianapolis, Ind., and James M. Moran, Indianapolis, Ind., assignors to Ellen M. Moran, Indianapolis, Ind.
Filed Oct. 27, 1988, Ser. No. 263,337
Term of patent 14 years
U.S. Cl. D24—16



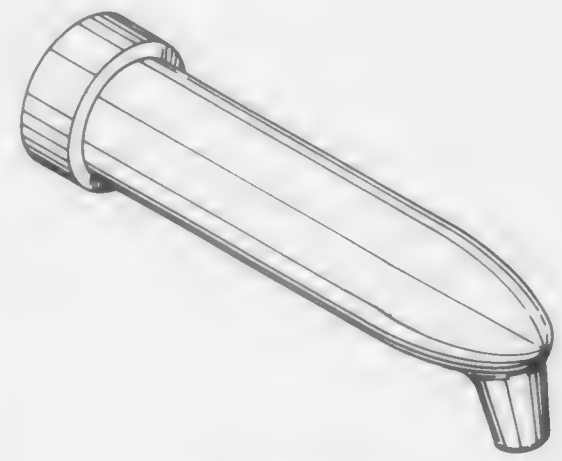
315,954
DENTURE CONTAINER
Maxine L. Berland, 659 Oak St., Lakewood, Colo. 80215
Filed Sep. 16, 1988, Ser. No. 245,544
Term of patent 14 years
U.S. Cl. D24—10



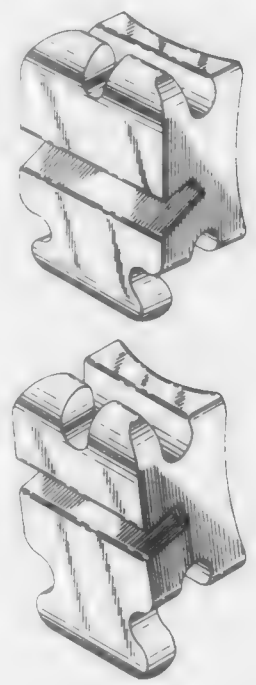
315,955
DENTAL IMPRESSION TRAY FOR SMALL ANIMALS
Lloyd J. Mann, Medford PO Sta. 3, P.O. Box 3503, Medford, Oreg. 97504
Filed Nov. 7, 1988, Ser. No. 267,914
Term of patent 14 years
U.S. Cl. D24—10



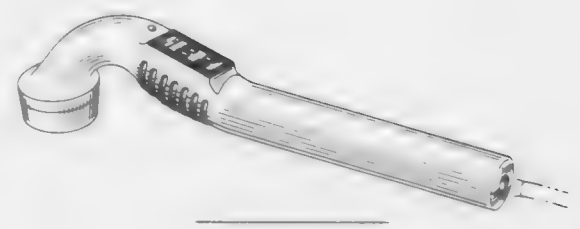
315,956
DENTAL SYRINGE TIP
William B. Dragan, 85 Burr St., Easton, Conn. 06612
Filed Feb. 6, 1989, Ser. No. 306,651
Term of patent 14 years
U.S. Cl. D24—14



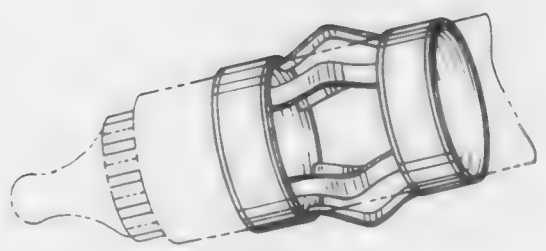
315,957
ORTHODONTIC BRACKET
John S. Kelly, Arcadia; Jerold S. Horn, Azusa, and Jirina V. Pospisil, Monrovia, all of Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 913,188, Sep. 29, 1986, abandoned. This application Nov. 13, 1989, Ser. No. 434,496
Term of patent 14 years
U.S. Cl. D24—16



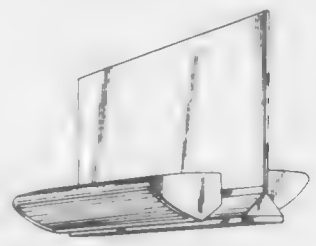
315,958
PHYSIOLOGICAL STIMULATOR
John C. Castel, Topeka, Kans., and Alexander Bally, Pittsburgh, Pa., assignors to Physio Technology, Inc., Topeka, Kans.
Filed Jun. 13, 1988, Ser. No. 207,055
Term of patent 14 years
U.S. Cl. D24—41



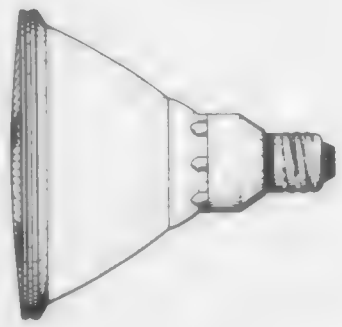
315,959
HANDLE GRIP FOR A BABY BOTTLE
Dona Bilangi, 3320 Ellenboro, Troy, Mich. 48083
Filed Jun. 9, 1989, Ser. No. 365,023
Term of patent 14 years
U.S. Cl. D24—48



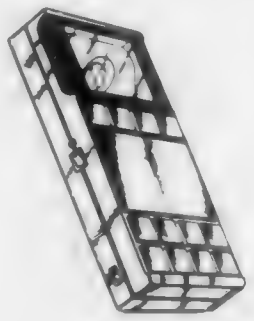
315,960
GLAZED EXTENSION PANEL
Charles Heidmann, Strasbourg, France, assignor to Steelcase Strafor, Strasbour, France
Filed Feb. 22, 1989, Ser. No. 314,419
Claims priority, application France, Aug. 30, 1988, 88 5496
Term of patent 14 years
U.S. Cl. D25—138



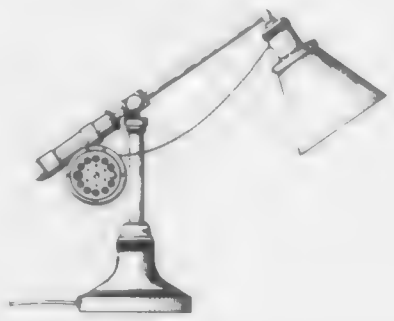
315,961
REFLECTOR LAMP
Carl F. Kackenmeister, and Michael R. Kling, both of Stratham, N.H., assignors to GTE Products Corporation, Danvers, Mass.
Filed Mar. 7, 1990, Ser. No. 490,166
Term of patent 14 years
U.S. Cl. D26—2



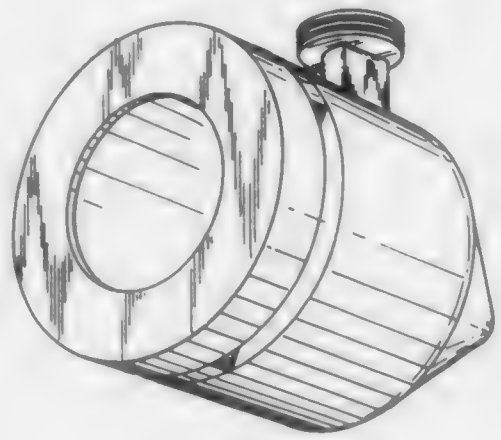
315,962
PORTABLE LIGHT PROJECTOR FOR PRODUCING MULTICOLORED LINE PATTERNS ON A WALL OR THE LIKE IN RESPONSE TO AN AUDIO INPUT SIGNAL
Joshua F. Lavinsky, 350 S. San Fernando Blvd., #301, Burbank, Calif. 91502, and Thomas M. Payne, Burbank, Calif., assignors to Joshua F. Lavinsky, Burbank, Calif.
Filed Mar. 16, 1988, Ser. No. 168,756
Term of patent 14 years
U.S. Cl. D26—24



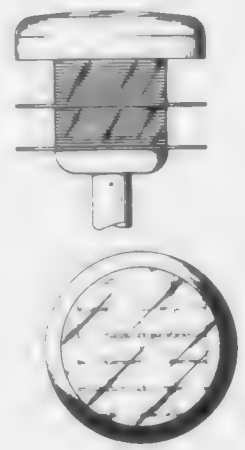
315,963
ADJUSTABLE DESK LAMP
Richard B. Greer, P.O. Box 4005, Carmichael, Calif. 95609
Filed Apr. 3, 1989, Ser. No. 331,899
Term of patent 14 years
U.S. Cl. D26—63



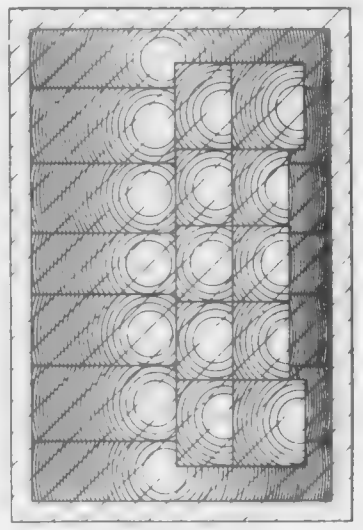
315,964
SPOTLIGHT HOUSING
Stefanus F. Joosten, Eindhoven, and Leonardus A. Krol, Gorichem, both of Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.
Filed May 1, 1989, Ser. No. 345,506
Claims priority, application Netherlands, Nov. 9, 1988, DMA/000.874
Term of patent 14 years
U.S. Cl. D26—63



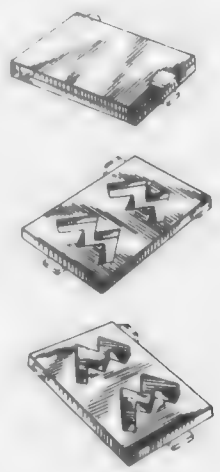
315,965
SOLAR POWERED WALKWAY LIGHT
John S. Frost, Thousand Oaks, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed Aug. 1, 1989, Ser. No. 388,227
Term of patent 14 years
U.S. Cl. D26—67



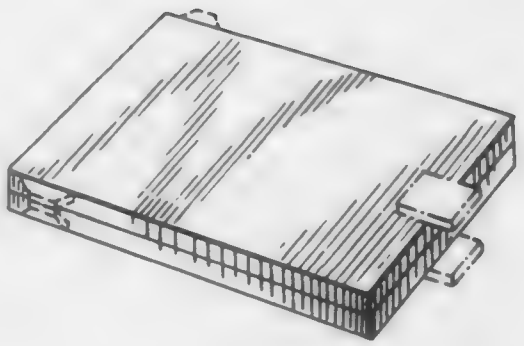
315,966
WIDE ANGLE FRESNEL LENS ARRAY FOR INFRARED MOTION DETECTOR SYSTEM
Richard N. Claytor, Arlington, and Russell G. Torti, Fort Worth, both of Tex., assignors to Fresnel Technologies, Inc., Fort Worth, Tex.
Filed Nov. 7, 1988, Ser. No. 267,788
The portion of the term of this patent subsequent to Mar. 12, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—122

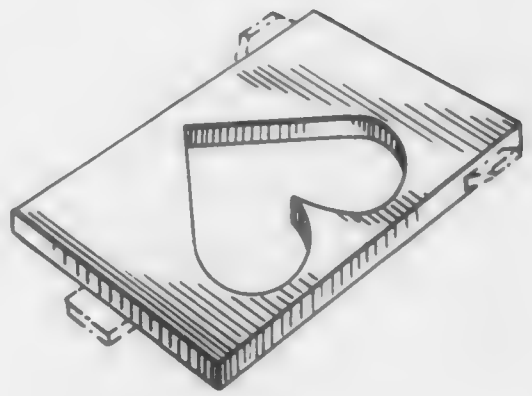


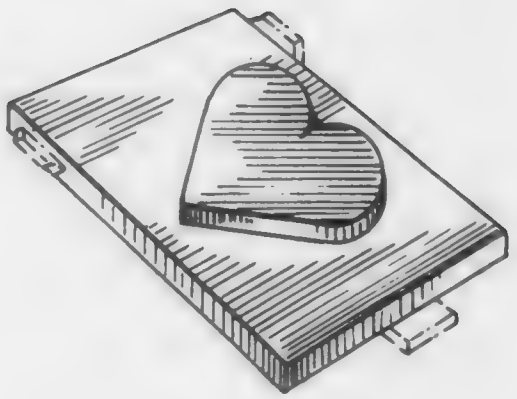
315,967
HAIR CRIMPING HEAD APPLIANCE
Leandro P. Rizzuto, Greenwich; Frank Lindsey, Stratford, both of Conn., and Anthony Leung, North Point, Hong Kong, assignors to Conair Corporation, Stamford, Conn.
Filed Jul. 27, 1989, Ser. No. 385,485
Term of patent 14 years
U.S. Cl. D28—35



315,968
HAIR CRIMPING HEAD APPLIANCE
Leandro P. Rizzuto, Greenwich; Frank Lindsey, Stratford, both of Conn., and Anthony Leung, North Point, Hong Kong, assignors to Conair Corporation, Stamford, Conn.
Filed Jul. 27, 1989, Ser. No. 385,790
Term of patent 14 years
U.S. Cl. D28—35

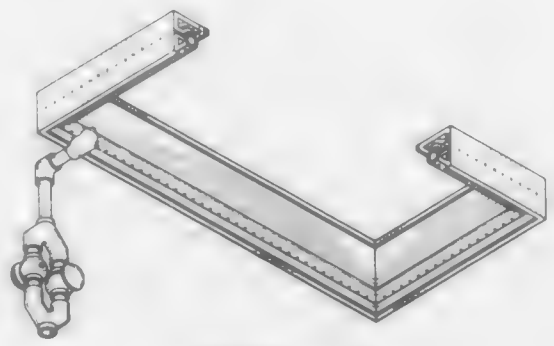




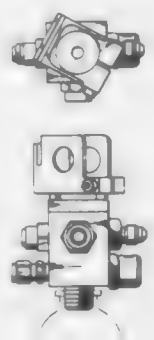


315,969
LIPSTICK CASE
Karen E. McCready, Suffern, N.Y., assignor to Elleance Ltd., New City, N.Y.
Filed Sep. 9, 1988, Ser. No. 242,290
Term of patent 14 years
U.S. Cl. D28—85

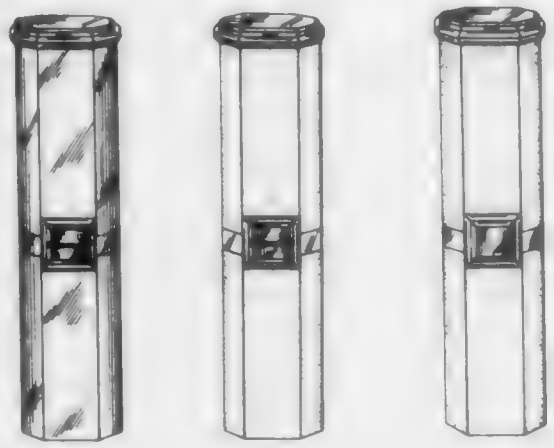
315,970
FIRE EXTINGUISHER
Aniano D. Ramos, 38 Passaic Rd., Goose Creek, S.C. 29445, and Wilhelm Gajeton, 5301 Marilyn Dr., Charleston, S.C. 29418
Filed Jun. 22, 1988, Ser. No. 211,397
Term of patent 14 years
U.S. Cl. D29—2

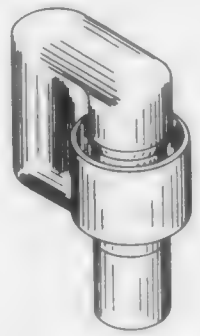


315,971
PRESSURE REDUCER UNIT FOR EMERGENCY BREATHING SYSTEMS
Albert R. Molzan, Alhambra, Calif., assignor to American Safety Flight Systems, Inc., Glendale, Calif.
Filed Jul. 21, 1986, Ser. No. 887,639
Term of patent 14 years
U.S. Cl. D29—6

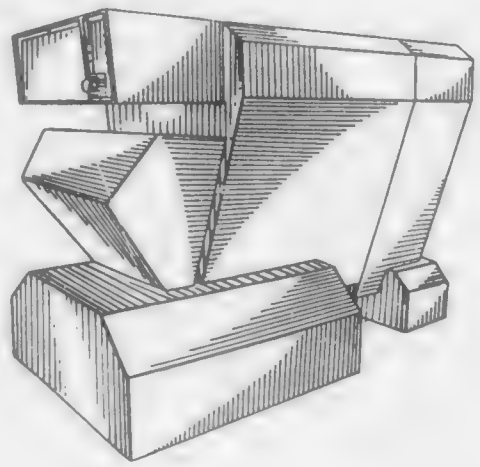


315,972
SNORKEL
Bruce J. Forman, 4455 Jasmine Ave., Culver City, Calif. 90230
Filed Sep. 19, 1988, Ser. No. 245,538
Term of patent 14 years
U.S. Cl. D29—7

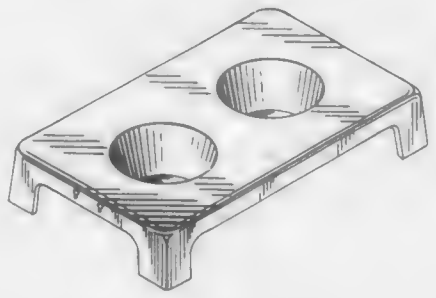




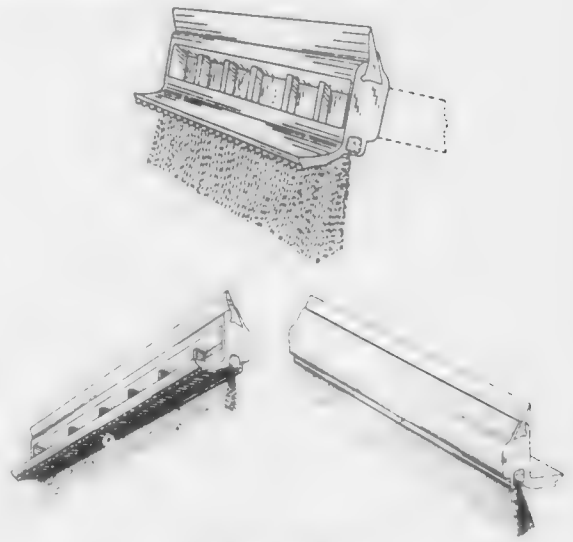
315,973
AUTOMATIC CATTLE FEEDER
Gaetan Beaudoin, Artabaska, and Jacques Cimon, Levis, both of Canada, assignors to Micro-Contact Inc., Quebec, Canada
Filed Mar. 31, 1989, Ser. No. 331,544
Term of patent 14 years
U.S. Cl. D30—122



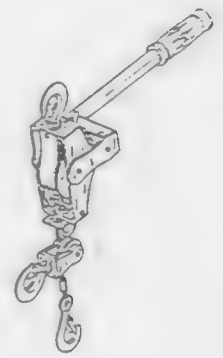
315,974
ANIMAL FEEDING TABLE
Gerald Steiner, 2033 Virginia Ave. South, St. Louis Park, Minn. 55426
Filed Jul. 15, 1988, Ser. No. 219,178
Term of patent 14 years
U.S. Cl. D30—131



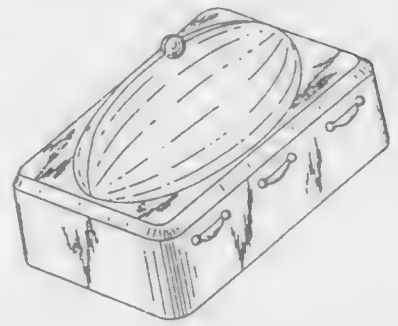
315,975
COMBINED BRUSH HEAD AND SCRAPER
Chii M. Huang, 7 Tuu Kuh North Road, Nan Tzu, POB6-53, Kaohsiung, Taiwan
Filed Jan. 7, 1988, Ser. No. 141,686
Term of patent 14 years
U.S. Cl. D32—41



315,976
MANUAL WINCH DEVICE
Y. S. Shieh, No. 15, Lane 493, Yuan-Chi Rd., Sec. 2, Yuan-Lin Jen, Chang Hua Hsien, Taiwan
Filed May 17, 1988, Ser. No. 194,718
Term of patent 14 years
U.S. Cl. D34—33



315,977
COFFIN
Jerina F. Best, 541 Guylyn Dr., Pittsburgh, Pa. 15235
Filed Feb. 16, 1988, Ser. No. 156,095
Term of patent 14 years
U.S. Cl. D99—1



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 2ND DAY OF APRIL, 1991

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. O. Smith Corporation: *See*—
King, James L., 5,004,942, Cl. 310-89.000.

ABB Environmental Services Inc. *See*—
Sublette, Kerry L., 5,004,551, Cl. 210-763.000.

Abbott Laboratories: *See*—
Becker, Wallace E., 5,004,651, Cl. 424-465.000.
Osip, Thomas W., Montgomery, Jerold W.; and Pezzoli, Paul A., 5,004,110, Cl. 215-232.000.

Abdel-Malik, Magdy M.. *See*—
Yalpani, Manssur; and Abdel-Malik, Magdy M., 5,004,808, Cl. 536-56.000.

Abe, Kunihiro, Sakamoto, Masanori; and Kobayashi, Tomoya, to Fuji Jukogyo Kabushiki Kaisha. Diagnosis system for a motor vehicle. 5,005,129, Cl. 364-424.030.

Abe, Masashi: *See*—
Takayama, Syuichi; Tsukaya, Takashi; Ueda, Yasuhiro; Hatta, Shinji, and Abe, Masashi, 5,003,991, Cl. 128-784.000.

Abe, Yuji. *See*—
Kano, Atsushi; Mizuno, Masayuki; Kajiwara, Manabu; Sakaue, Kenji, Abe, Yuji; and Nakamura, Kazuo, 5,004,217, Cl. 271-10.000.

Abkowitz, Martin A.: *See*—
Badesha, Santokh S., Stolka, Milan; Pai, Damodar M.; and Abkowitz, Martin A., 5,004,663, Cl. 430-59.000.

Acer Incorporated. *See*—
Lee, Sheau-Jiung, 5,004,938, Cl. 307-448.000.

ACF Industries, Inc.. *See*—
Schmidt, Kenneth D.; and Holt, Jan D., 5,004,386, Cl. 410-62.000.

Achiever Industries, Ltd.. *See*—
Chan, Yet, 5,005,034, Cl. 354-204.000.

Ackerman, John R.: *See*—
Stirling, Thomas E.; and Ackerman, John R., 5,004,484, Cl. 55-53.000.

Ackermann, Wilhelm, Langlitz, Karlheinz; and Schmitz, Gunter, to Mannesmann Aktiengesellschaft. Torque support for drives riding on trunnions, particularly for converter tilt drives. 5,003,835, Cl. 74-411.000.

Actronic Lighting CC: *See*—
Cockram, David J.; and Cockram, Edgar S. R., 5,004,960, Cl. 315-307.000.

Adachi, Kenichi, Katoh, Kazunobu; and Kawamura, Kouichi, to Fuji Photo Film Co., Ltd. Silver halide photosensitive material. 5,004,674, Cl. 430-333.000.

Adams, Ann H.. *See*—
Merickel, Michael B.; Adams, Ann H.; and Brookeman, James R., 5,003,979, Cl. 128-653.00A.

Adams, Frank H.: *See*—
Schmidt, Robert J.; Haizmann, Robert S.; Ford, Mark R.; Low, C David; and Adams, Frank H., 5,004,859, Cl. 585-741.000.

Adams, James, Gobel, Richard; and Lanham, Bryan, to Beloit Corporation. Shear hub. 5,004,028, Cl. 144-176.000.

Adany, Shalom; and Levi, Amram. Multi-annual calendar. 5,003,713, Cl. 40-113.000.

Adolph Coors Company: *See*—
Shriver, Frank L., 5,003,875, Cl. 101-350.000.

Advance Security Inc.. *See*—
Chen, Michael, 5,004,931, Cl. 307-10.200.

Advanced Cardiovascular Systems, Inc.. *See*—
Taylor, Charles S.; and Hampton, Hilary J., 5,003,989, Cl. 128-772.000.

Advanced Micro Devices, Inc.: *See*—
Bohrer, Mark W., 5,004,986, Cl. 330-257.000.
Radjy, Nader A.; and Briner, Michael S., 5,005,155, Cl. 365-185.000.

Aerotech, Inc.: *See*—
Hans, Paul C.; and Rosenfield, Gary C., 5,004,186, Cl. 244-3.250.

Agency of Industrial Science and Technology. *See*—
Suzuki, Susumu, Ishida, Kazuyuki, and Ozaki, Takeo, 5,003,977, Cl. 128-633.000.

Agfa-Gevaert Aktiengesellschaft. *See*—
Meckl, Heinz, Klotzer, Sieghart, Wolff, Erich; and Haseler, Helmut, 5,004,676, Cl. 430-398.000.

Agfa-Gevaert, N.V.: *See*—
Vermeulen, Leon L.; Pauwels, Robert S., De Smedt, Willy P.; and Vervloet, Ludovicus H., 5,004,659, Cl. 430-14.000.

Aghajanian, Michael K.: *See*—
Park, Eugene S.; and Aghajanian, Michael K., 5,004,034, Cl. 164-97.000.

Agracetus. *See*—
Umbeck, Paul F., 5,004,863, Cl. 800-205.000.

Agranat, Edward A.: *See*—
Kleven, Lawrence P.; Agranat, Edward A.; Crisafulli, Jerry; Robinson, Hugh; Smith, David J.; Wiseley, Thomas, Fortier, Richard C.; Johnson, Severne; and Menzin, Marvin, 5,004,954, Cl. 315-106.000.

Ahn, Chang S., to Goldstar Co., Ltd. Carriage device for an electronic typewriter using a two-row daisy wheel. 5,004,360, Cl. 400-144.200.

Aiello, Richard E.; Stillie, Donald G.; and Allgood, Christopher L., to AMP Incorporated. Printed circuit board edge connector. 5,004,434, Cl. 439-636.000.

Aisaka, Tatsuryoshi: *See*—
Shimamura, Keizo; Amano, Kagetaka; Aisaka, Tatsuryoshi; Hanai, Satoshi; and Nagata, Kohsoku, 5,004,498, Cl. 75-233.000.

Aisin AW Co., Ltd.: *See*—
Sakakibara, Shiro; and Furuya, Takashi, 5,004,082, Cl. 192-3.260.

Aisin AW Kabushiki Kaisha: *See*—
Suzuki, Akira, 5,004,440, Cl. 137-625.650.

Aisin Seiki Kabushiki Kaisha. *See*—
Takeda, Toshio, 5,003,957, Cl. 123-564.000.

Aisin Takaoka Co., Ltd.: *See*—
Oono, Toshio; and Uemura, Hiroki, 5,004,078, Cl. 188-218.00A.

Akagi, Toshimichi: *See*—
Shibata, Masanori; Okimoto, Haruo; Akagi, Toshimichi; and Tashima, Seiji, 5,003,781, Cl. 60-600.000.

Akao, Yasushi. *See*—
Nakada, Kunihiko; and Akao, Yasushi, 5,005,121, Cl. 364-200.000.

Akashi, Akira; Kadohara, Terutake. Ohnuki, Ichiro; and Higashihara, Masaki, to Canon Kabushiki Kaisha. Auto focus adjusting device. 5,005,037, Cl. 354-400.000.

Akishima Chemical Industries Co., Ltd.: *See*—
Tadenuma, Masahiko; Miyagi, Tetsuhiro; and Miyazawa, Tadashi, 5,004,776, Cl. 524-377.000.

Aktiebolaget SKF: *See*—
Berg, Sven-Olof; Broden, Ingemar; and Johansen, Odvar, 5,004,395, Cl. 414-412.000.

Al-Yazdi, Ahmed M. Apparatus and method for separating water from crude oil. 5,004,552, Cl. 210-789.000.

Albert-Frankenthal AG: *See*—
Prum, Sebastian, 5,004,451, Cl. 493-359.000.

Albrecht, Karoly: *See*—
Jekkel nee Bokany, Antonia; Albrecht, Karoly; Ambrus, Gabor; Lang, Tibor; Szabo, Istvan M.; Ilkoy, Eva; Konczol, Kalman, Moravcsik, Imre; Hantos, Gabor; Simonovits, Emilia; Lengyel nee Szemenyei, Zsuzsanna; Vida, Zsuzesanna, and Csajagi, Eva, 5,004,695, Cl. 435-253.100.

Alcan International Limited: *See*—
Hunter, John A.; Scamans, Geoffrey M.; O'Callaghan, Wilfred B.; and Wycliffe, Paul A., 5,004,654, Cl. 429-50.000.
Lyons, Nicholas; Baxter, William R. S.; Woodward, Adrian M.; and Clarke, Roger W., 5,004,542, Cl. 210-356.000.

Alfa Costruzioni Meccaniche S.p.A.: *See*—
Orlandi, Ireneo, 5,004,517, Cl. 156-567.000.

Alinovi, Mario B., to Omar S.n.c. di Mario Baiocchi Alinovi & C. Automatic skinner for non-scaly fish. 5,003,667, Cl. 452-125.000.

Alkermes. *See*—
Pardridge, William M., 5,004,697, Cl. 436-547.000.

Allen-Bradley Company: *See*—
Knutsen, Neil W., 5,005,152, Cl. 364-900.000.

Allen-Bradley International Limited: *See*—
Atkinson, Anthony; Gray, Richard; and Denes, Oscar L., 5,003,693, Cl. 29-849.000.

Allen, Floyd L.; Best, Glen H.; and Lindroth, Thomas A., to Merck & Co., Inc. Welan gum in cement compositions. 5,004,506, Cl. 106-729.000.

Allen, Jimmy D.: *See*—
Hillman, Robert S.; Cobb, Michael E.; Allen, Jimmy D.; Gibbons, Ian; Ostoich, Vladimir E.; and Winfrey, Laura J., 5,004,923, Cl. 250-341.000.

Allet, Bernard: *See*—
Fiers, Walter C.; and Allet, Bernard, 5,004,689, Cl. 435-69.510.

Alley, Russell I.; and Caine, George E., to CAC, Inc. Magnesium oxychloride cement compositions and methods for manufacture and use. 5,004,505, Cl. 106-685.000.

Allflex Europe S.A.: *See*—
Biggio, Alain; and Landrevie, Jacques, 5,004,897, Cl. 235-441.000.

Allgood, Christopher L.: *See*—
Aiello, Richard E.; Stillie, Donald G., and Allgood, Christopher L., 5,004,434, Cl. 439-636.000.

Allied-Signal Inc.: *See*—
Arnett, Eric M., 5,004,910, Cl. 250-226.000.
Das, Sajal; and Prevorsek, Dusan C., 5,004,788, Cl. 525-504.000.
Harnish, Daniel F.; Pickens, Donald; and Zweig, Andrew M., 5,004,790, Cl. 526-242.000.
Olson, Larry D.; and Kamla, Jeffrey R., 5,004,775, Cl. 524-371.000.

Stranford, Gerald T., Gonczy, Stephen T., and Mitsche, Roy T., 5,004,709, Cl. 501-97.000

Allport, Davies, to T-Systems Corp. Method for protecting drip irrigation hoses and other structures from root intrusion. 5,003,726, Cl. 47-48.500

Alm, Terry J. *See*—
Wagner, Oryn B., and Alm, Terry J., 5,004,398, Cl. 414-723.000

Alonso, Nelson. Bidet assembly with drainage. 5,003,645, Cl. 4-448.000

Alperk Limited. *See*—
Higgins, John, and McDonagh, Michael, 5,003,868, Cl. 99-357.000

Alpha Industries, Inc. *See*—
Borzym, John J., and Borzym, Alexander, 5,003,853, Cl. 83-318.000

Alpine Electronics Inc. *See*—
Kikuchi, Takashi, and Aoyagi, Shigeo, 5,005,090, Cl. 360-92.000

Alps Electric Co., Ltd. *See*—
Fuse, Masashi, 5,005,029, Cl. 346-107.00R
Ishikawa, Hiroshi; Hasegawa, Kazuo, and Gotoh, Masaki, 5,004,898, Cl. 235-475.000
Komatsu, Normasa, and Miyazaki, Asashi, 5,005,094, Cl. 360-105.000
Koutaka, Yoshirou, 5,004,880, Cl. 200-521.000
Onodera, Norio, 5,005,105, Cl. 361-398.000
Shigenai, Osamu, and Sato, Keiichi, 5,005,092, Cl. 360-99.060

Alread, Don. Exercise glove. 5,004,231, Cl. 272-143.000

Alt, Eckhard. Cardiac and pulmonary physiological analysis via intracardiac measurements with a single sensor. 5,003,976, Cl. 128-419.0PG

Altendorf, John M., and Wong, Marvin G., to Hewlett-Packard Company. Soldering interconnect method and apparatus for semiconductor packages. 5,005,070, Cl. 357-74.000

Altschuler, Martin D., and Whittington, Richard, to University of Pennsylvania. Interactive statistical system and method for predicting expert decisions. 5,005,143, Cl. 364-554.000

Aluminum Company of America. *See*—
Morton, Philip G., 5,003,747, Cl. 52-656.000

ALZA Corporation. *See*—
Osborne, James L., Nelson, Melinda, Enscore, David J., Yum, Su I., and Gale, Robert M., 5,004,610, Cl. 424-448.000

Amada Company, Limited. *See*—
Lim, Gnian C., 5,004,890, Cl. 219-121.830

Amana Refrigeration Inc. *See*—
Montuoro, Lou D., Vandarakis, Toni L., and Johnson, Richard L., 5,004,305, Cl. 312-214.000

Amano, Haruo, to NEC Corporation. Semiconductor device. 5,005,071, Cl. 357-85.000

Amano, Kagetaka. *See*—
Shimamura, Keizo, Amano, Kagetaka, Aisaka, Tatsuryoshi, Hanai, Satoshi, and Nagata, Kohsoku, 5,004,498, Cl. 75-233.000

Amano, Tetsuya, Mita, Seiichi, Izumita, Morishi, Doi, Nobukazu, Kaneko, Mamoru, Yamauchi, Hiroto, and Kasai, Susumu, to Hitachi, Ltd., Hitachi Denshi Kabushiki Kaisha, and Hitachi Video Engineering, Inc. Method and apparatus for waveform equalization. 5,005,184, Cl. 375-14.000

Ambrus, Gabor. *See*—
Jekkel nee Bokany, Antonia, Albrecht, Karoly, Ambrus, Gabor, Lang, Tibor, Szabo, Istvan M., Ilkoy, Eva, Konczol, Kalman, Moravesik, Imre, Hantos, Gabor, Simonovits, Emilia, Lengyel nee Szemenyei, Zsuzsanna, Vida, Zsuzesanna, and Csajagi, Eva, 5,004,695, Cl. 435-253.100

American Bank Note Holographics, Inc. *See*—
D'Amato, Salvatore F., Sorbo, Peter, and Dunning, Richard E., 5,003,915, Cl. 118-46.000

American Electric FL Industries, Inc., Division. *See*—
Suk, Eugene J., 5,004,199, Cl. 248-231.800

American Tourister, Inc. *See*—
Natho, Bradford J., Andrade, George L., Wheaton, John M., and Schmitt, Wayne I., 5,004,091, Cl. 190-18.00R

Ames, Matthew M., and Kovach, John S., to Mayo Foundation for Medical Education and Research. Hexamethylmelamine formulation exhibiting reduced neurotoxicity. 5,004,593, Cl. 424-10.000.

Amikura, Kazuo. *See*—
Ohzeki, Yoshiyuki; and Amikura, Kazuo, 5,004,941, Cl. 310-49.00R

Amoco Corporation. *See*—
Hansen, John S., and Waranius, William A., 5,004,860, Cl. 585-812.000
Park, Chang M., and Schammel, Wayne P., 5,004,830, Cl. 562-413.000

AMP Incorporated. *See*—
Aiello, Richard E., Stillie, Donald G.; and Allgood, Christopher L., 5,004,434, Cl. 439-636.000
Aoyama, Koji, 5,004,436, Cl. 439-752.000.
DelGuidice, Henry L., and Marsh, Edward K., 5,004,430, Cl. 439-350.000
Koblitz, Francis F., O'Shea, Thomas M., Stoner, Beverly A., and Yula, Joseph J., 5,004,869, Cl. 174-84.00C
McKee, Michael J., Miknis, William D., Pawlikowski, Joseph M.; and Zelko, William E., 5,004,887, Cl. 219-85.160.
Yagawa, Hiroshi, 5,003,846, Cl. 81-9.420.

Amrhein, Reinhard, Heid, Walter, and Muschong, Gunther, to Mannesmann Rexroth GmbH. Directional control device. 5,004,015, Cl. 137-625.680.

Anderson, Adrian J. *See*—
Carey, Michael J., and Anderson, Adrian J., 5,005,183, Cl. 375-1.000.

Anderson, Alexander A. Light for toilet bowl. 5,003,648, Cl. 4-661.000

Anderson, Michael P., to Exxon Research and Engineering Company. Method for the chemical preparation of zirconia alloy powders and article. 5,004,710, Cl. 501-103.000

Anderson, Olin S., Jr. *See*—
Peabody, Alan M., Anderson, Olin S., Jr., and Morton, Henry H., 5,004,459, Cl. 604-29.000

Anderson, Ray C. Framing and thread rolling machine. 5,003,690, Cl. 29-727.000

Anderson, Scott. Vehicle seat mounting structure. 5,004,266, Cl. 248-585.000

Andrade, George L. *See*—
Natho, Bradford J., Andrade, George L., Wheaton, John M., and Schmitt, Wayne I., 5,004,091, Cl. 190-18.00R

Andrasko, Stephen W. *See*—
Parsons, Gerald J., Greenwald, Brian D., McGrath, John J. and Andrasko, Stephen W., 5,005,197, Cl. 379-21.000

Andresen, Bernhard H., to Texas Instruments Incorporated. Non-loading output driver circuit. 5,004,936, Cl. 307-443.000

Andruet, Jean-Claude. Electrically powered motor vehicle. 5,004,061, Cl. 180-65.500

Angeles Nursery Toys, Inc. *See*—
Kelly, Ray G., 5,003,649, Cl. 5-8.000

Anno, Masahiro. *See*—
Ohtani, Junji, Anno, Masahiro, Sano, Eiichi, Machida, Junji, and Masuda, Fumio, 5,004,665, Cl. 430-106.600

Antel, William E., to Anteleo Pty. Ltd. Adjustable miniature watering device. 5,004,161, Cl. 239-542.000

Anteleo Pty. Ltd. *See*—
Antel, William E., 5,004,161, Cl. 239-542.000

Antezana, Luis F. Gyrating drive for particle screening machine. 5,003,833, Cl. 74-87.000.

Anthony, Brian J. *See*—
Grzybowski, Kenneth F., and Anthony, Brian J., 5,004,772, Cl. 524-62.000

Anthony, Shane L. Protective cover for automotive tape player. 5,004,634, Cl. 428-31.000

Antoine, Michel, Barreau, Michel, Desconclois, Jean-Francois, Girard, Philippe, and Picaut, Guy, to Laboratoire Roger Bellon. Benzo[1,8-]naphthyridine derivatives, their preparation and the compositions which contain them. 5,004,745, Cl. 514-254.000

Antonious, Anthony J. Putter with L-shaped hosel. 5,004,237, Cl. 273-80.200

Antonious, Anthony J. Metal wood type golf club head with integral upper internal weighted mass. 5,004,241, Cl. 273-167.00H

Ao, Kenichi. *See*—
Yoshino, Yoshimi, Ao, Kenichi, Izawa, Ichiro, and Arasuna, Toshikazu, 5,005,064, Cl. 357-27.000

Aoki, Hitoshi. *See*—
Misaki, Takashi, and Aoki, Hitoshi, 5,005,010, Cl. 340-705.000

Aono, Yoshihito, Iwamatsu, Takanori, Minowa, Morihiko, Takenaka, Sadao, Daidoh, Yoshimasa, Nakamura, Hiroshi, and Fujino, Nobutsugu, to Fujitsu Limited. Digital demodulator apparatus. 5,005,186, Cl. 375-82.000

Aoyagi, Shigeo. *See*—
Kikuchi, Takashi, and Aoyagi, Shigeo, 5,005,090, Cl. 360-92.000

Aoyama, Keisuke. *See*—
Suda, Yasuo, Ohtaka, Keiji, Suzuki, Kenji, Ishizaki, Akira, and Aoyama, Keisuke, 5,005,041, Cl. 354-407.000

Aoyama, Koji, to AMP Incorporated. Electrical connector. 5,004,436, Cl. 439-752.000

AP Parts Manufacturing Company. *See*—
Van Blaircum, Bennie A., Harwood, Jon W., and Kimmet, Mark S., 5,004,069, Cl. 181-282.000

Apfel, Helmut. Control arrangement for the chromatography of liquid. 5,004,538, Cl. 210-198.200

Apple Computer, Inc. *See*—
Perlman, Stephen G., Okun, Jerome M., Palevich, John H., and Lundblad, James A., 5,005,011, Cl. 340-728.000

Appleton, Arthur I. Horseshoe. 5,004,052, Cl. 168-4.000

Aqua Pura Group. *See*—
Tacchi, Ernest J., 5,004,587, Cl. 422-186.190

Aquatec Water Systems Incorporated. *See*—
Bosko, Robert S., and Barnes, Thomas C., 5,004,535, Cl. 210-90.000.

Arahara, Kozo; Fukui, Tetsuro; Fukumoto, Hiroshi; Katayama, Masato; and Takasu, Yoshio, to Canon Kabushiki Kaisha. Photosensitive material, and image formation process and image formation apparatus using same. 5,004,667, Cl. 430-255.000

Arai, Fuminori and Kondo, Asaji, to Fuji Photo Film Co., Ltd. Dry-type multilayer analytical element. 5,004,685, Cl. 435-25.000

Arai, Tatsuo, and Haga, Katsumi, to Mitsubishi Metal Corporation. Clamped cutting tool. 5,004,378, Cl. 407-106.000.

Arai, Yasunori. *See*—
Inoue, Yoshihisa, and Arai, Yasunori, 5,005,093, Cl. 360-99.060

Aramaki, Minoru, Suenaga, Takashi, Sakaguchi, Hiroaki, and Hamana, Takanori, to Central Glass Company, Limited. Method of preparing trifluoromethanesulfonic acid anhydride. 5,004,829, Cl. 562-113.000

Arasuna, Toshikazu. *See*—
Yoshino, Yoshimi, Ao, Kenichi, Izawa, Ichiro, and Arasuna, Toshikazu, 5,005,064, Cl. 357-27.000.

Archer Daniels Midland Company. *See*—
Binder, Thomas P., and Logan, Robert M., 5,004,507, Cl. 127-58.000

Arco Chemical Technology, Inc. *See*—
Schon, Steven G., and Hazbun, Edward A., 5,004,479, Cl. 44-302.000

Arelli, Pier L. *See*—
Sommi, Franco; and Arelli, Pier L., 5,004,621, Cl. 426-386.000.

Arnstech Chemical Corporation. *See*—
Pugach, Joseph, and Salek, Jeffrey S., 5,004,839, Cl. 568-390.000.

Aritomi, Mitsutoshi. *See*—
Terauchi, Makoto; Ikeda, Chikako, and Aritomi, Mitsutoshi, 5,004,800, Cl. 528-351.000.

Arnett, Eric M., to Allied-Signal Inc. Method of decoding encoded relative spectral data. 5,004,910, Cl. 250-226.000.

Arrow International Investment Corporation. *See*—
Botterbusch, Carl N., and Frankhouser, Paul L., 5,004,456, Cl. 604-53.000.

Arrow Marine, Inc.: *See*—
Fonss, Jack G.; Silverberg, Howard Z., and Gardiner, Martin H., 5,004,962, Cl. 318-85.000.

Arsenault, Normand P. *See*—
Hay, Robert A.; Willkens, Craig A., and Arsenault, Normand P., 5,004,544, Cl. 210-490.000

Arterbury, Bryant A., to Otis Engineering Corporation. Low profile dual screen prepack. 5,004,049, Cl. 166-228.000

Arthurs, Edward, Goodman, Matthew S., Kim, Chong K.; and Lee, Tony T., to Bell Communications Research, Inc. Multicast packet switching method. 5,005,167, Cl. 370-4.000

Arva AG. *See*—
Vaterlaus, Arthur, 5,004,130, Cl. 222-590.000.

Asahi Glass Company, Ltd. *See*—
Ogawa, Masanobu, and Shibata, Shinya, 5,005,020, Cl. 343-713.000.

Asahi Kasei Kogyo Kabushiki Kaisha. *See*—
Hane, Toshioki, and Katayama, Shigeki, 5,004,648, Cl. 428-364.000

Asahi Kogaku Kabushiki Kaisha. *See*—
Suzuki, Noboru; Toji, Shigeo, and Uenaka, Yukio, 5,005,087, Cl. 358-227.000

Asahi Kogaku Kogyo Kabushiki Kaisha. *See*—
Sato, Osamu, and Hirai, Isamu, 5,005,042, Cl. 354-412.000.

Asano, Mitsuyasu, to Sony Corporation. Method and apparatus for reducing noise in a video signal. 5,005,081, Cl. 358-167.000.

Ascenzo, Anthony. Lifting device for objects. 5,004,075, Cl. 187-8.410.

Ashizawa, Masaaki, Nishimoto, Kazuo, Oomura, Atsushi, and Ito, Shuji, to Nichias Corporation. Rubber-coated gasket material. 5,004,650, Cl. 428-463.000.

Ashland Oil, Inc. *See*—
Clinkenbeard, Jack L., 5,004,696, Cl. 436-51.000

Ashok, Sawant. *See*—
Lee, Sunggyu, Ashok, Sawant, and Kulik, Conrad J., 5,004,717, Cl. 502-50.000.

Ashton, Michael J.; Bridge, Andrew W., Chambers, Robert K.; Dron, Donald I., Fenton, Garry, Harris, Neil V., Lythgoe, David J.; McFarlane, Ian M.; Newton, Christopher G., Riddell, David, Smith, Christopher; Stuttle, Keith A. J., and Toft, Malcolm P., to May & Baker Limited. Isoquinolinones. 5,004,747, Cl. 514-309.000.

Ashworth Bros., Inc. *See*—
Roinestad, Gerald C., and Straight, Michael R., 5,004,097, Cl. 198-803.010

Astra Meditec Aktiebolag. *See*—
Soderberg, Per O., 5,004,420, Cl. 433-172.000.

AT&T Bell Laboratories. *See*—
Daoud, Bassel H., 5,004,433, Cl. 439-502.000
Desurvire, Emmanuel, Giles, Clinton R., Simpson, Jay R.; and Zyskind, John L., 5,005,175, Cl. 372-6.000.
Feldman, Martin, and Simpson, Princess E., 5,004,321, Cl. 350-320.000.
Glass, Alastair M.; Knox, Wayne H., and Nolte, David D., 5,004,325, Cl. 350-354.000
Modisette, David R., Jr., and Nelson, Donald R., 5,005,171, Cl. 370-110.100
Nelson, Donald R., 5,005,170, Cl. 370-84.000.
Wood, Thomas H., 5,005,212, Cl. 455-606.000.

Atari Games Corporation. *See*—
Behensky, Max L., Moncrief, Rick L., Margolin, Jed; and Mott, Stephanie J., 5,005,148, Cl. 364-578.000.

Atkins, Kenneth E.; Gentry, Robert R.; and Gandy, Raymond C., to Union Carbide Chemicals & Plastics Technology Corporation. Low profile molding system. 5,004,765, Cl. 523-434.000.

Atkinson, Anthony, Gray, Richard; and Denes, Oscar L., to Allen-Bradley International Limited. Manufacture of electrical circuits. 5,003,693, Cl. 29-849.000.

Atkinson, Robert W., to Zimmer. Skin graft preparation apparatus. 5,004,468, Cl. 606-132.000.

Atochem. *See*—
Millet, Jean-Christophe; and Jaccaud, Michel, 5,004,527, Cl. 204-82.000.

Attardi, Anthony A.: *See*—
Stokes, Ronald E.; Nowak, William J.; Attardi, Anthony A.; and Costanza, Daniel W., 5,005,054, Cl. 355-273.000.

Aubry, Jacques A., and Mondet, Jean J., to Societe Nationale Industrielle et Aerospatiale. Resilient return strut of the elastic-hydraulic type with incorporated linear damping by throttling a high-viscosity fluid. 5,004,215, Cl. 267-140.100.

Auerbach, Andrew B.: *See*—
Broussard, Jerry A., Auerbach, Andrew B.; Yang, Nan L.; Paul, James L.; Zheng, Yong C.; and Zhang, Chong L., 5,004,798, Cl. 528-230.000.

Augerscope, Inc.: *See*—
Irwin, Lawrence F., 5,004,119, Cl. 220-247.000

Aune, Jan A., and Pedersen, Thor, to Elkem a/s. Method and apparatus for treatment of dust recovered from off gases in metallurgical processes. 5,004,496, Cl. 75-10.280

Aurie-Chlor, Inc.: *See*—
Dunn, Wendell E., Jr., Carda, Dan D., and Storbeck, Timothy A., 5,004,500, Cl. 75-422.000.

Auriol, Jean-Louis. *See*—
Maurice, Jacques; Fouque, Romain, and Auriol, Jean-Louis, 5,004,591, Cl. 423-578.00R

Automotive Products plc. *See*—
Bolton, John S., 5,004,088, Cl. 192-106.200

Avco Corporation: *See*—
Horgan, John J., and Ociepka, Val S., 5,004,044, Cl. 165-145.000

Ayers, Robert C.; and Lee, Ted, to Rx Rocker Corporation. Rocking wheelchair. 5,004,259, Cl. 280-304.100

Azer, Samir N., Salman, Naser N., and Krause, William R., to Orthopedic Designs, Inc. Fracture alignment device. 5,003,969, Cl. 128-87.00R.

Azuma, Yuichi. *See*—
Shibata, Katsuhiro; Azuma, Yuichi, and Suzuki, Tsuguya, 5,004,497, Cl. 75-229.000

B. F. Goodrich Company, The. *See*—
Lochhead, Robert Y., Castaneda, Janet Y., and Hemker, Wilfred J., 5,004,598, Cl. 424-59.000.
Nagarajan, Madukkarai K., Wherley, Fred J.; and Frimel, Jody W., 5,004,557, Cl. 252-174.240.

Baader, Ekkehard; Bickel, Martin; Brocks, Dietrich, Gunzler, Volkmar; Henke, Stephan, and Hanauske-Abel, Hartmut, to Hoechst Aktiengesellschaft. Substituted pyridine-2,4-dicarboxylic acid derivatives and medicaments based on these compounds. 5,004,748, Cl. 514-350.000.

Baas, Kevin R., to Price Brothers Company. Snap ring joint assembly. 5,004,274, Cl. 285-288.000.

Baba, Hideo. *See*—
Hara, Yasuhiro; Inoue, Mitsuhiro, Baba, Hideo, Okazaki, Tadashi, and Kudo, Shigeru, 5,004,089, Cl. 192-107.00M

Baba, Yasuyuki: *See*—
Nakatani, Seiichi; Yuhaku, Satoru; Nishimura, Tsutomu, Terada, Yukio; and Baba, Yasuyuki, 5,004,640, Cl. 428-195.000.

Babcock-Hitachi Kabushiki Kaisha: *See*—
Ishida, Nobuyoshi; Michimoto, Takashi; Miyake, Katsutaro; and Ichige, Toshio, 5,004,718, Cl. 502-217.000.

Bachmann, Othmar. *See*—
Waeber, Rene; Demuth, Robert; Knabenhans, Fritz; and Bachmann, Othmar, 5,003,670, Cl. 19-66.0CC.

Badesha, Santokh S.; Stolka, Milan, Pai, Damodar M.; and Abkowitz, Martin A., to Xerox Corporation. Photoconductive imaging members with polyphosphazene binders. 5,004,663, Cl. 430-59.000.

Badiali, Roberto: *See*—
Colli, Luigi, Badiali, Roberto; and Marangone, Nereo, 5,004,171, Cl. 242-35.60R.

Bagley, William C.: *See*—
Langford, Stephen R.; Stone, James R.; and Bagley, William C., 5,004,058, Cl. 177-25.130.

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Law, Kock-Yee; and Bailey, F. Courtney, 5,004,661, Cl. 430-59.000.

Bainbridge, David W., to Manville Corporation. Insulated exhaust pipe and manufacture thereof. 5,004,018, Cl. 138-149.000.

Baker, Charles L., Cody, George D., Joseph, Craig A., and Sela, Uri, to Exxon Research & Engineering Company. Acoustic monitoring of two phase feed nozzles. 5,004,152, Cl. 239-8.000.

Bakker, Jacobus G. C.; and Collet, Marnix G., to U.S. Philips Corporation. Image sensor device of the frame transfer type. 5,005,062, Cl. 357-24.000.

Balazs, Laszlo: *See*—
Kinczel, Peter; Balazs, Laszlo, and Sajo, Gabor, 5,004,948, Cl. 313-486.000.

Ball, David D.. *See*—
Loch, Eugene W.; Ball, David D.; and Mack, George F., 5,004,129, Cl. 220-366.000.

Balliew, Robert E.: *See*—
Morris, Carroll E., Jr.; Balliew, Robert E., Mathieu, Mark A., and Johnsrud, Darrell B., 5,004,978, Cl. 324-158.00R

Barbagli, Rino O.; and De Castelli, Giorgio, to Fiatgeotech S.p.A. Tracked vehicle with an epicyclic steering differential. 5,004,060, Cl. 180-6.440.

Barbieri, Silvio: *See*—
Previato, Mario, Barbieri, Silvio, and Martucci, Roberto, 5,004,431, Cl. 439-358.000.

Barder, Timothy J.. *See*—
Barger, Paul T.; Barder, Timothy J., Lin, David Y.; and Hobbs, Simon H., 5,004,853, Cl. 585-481.000.

Bardhan, Pronob; and Yu, Chyang J., to Corning Incorporated. Frequency stable NPO ceramics. 5,004,713, Cl. 501-134.000.

Barger, Paul T.; Barder, Timothy J.; Lin, David Y., and Hobbs, Simon H., to UOP. Continuous process for the production of 2,6-dimethylnaphthalene. 5,004,853, Cl. 585-481.000

Barker, Ray E.: *See*—
Mehrotra, Vikram P.; and Barker, Ray E., 5,004,488, Cl. 65-18.200.

Barmag AG: *See*—
Krenzer, Eberhard, 5,003,677, Cl. 28-220.000.

Barnes, Thomas C.: *See—*
Bosko, Robert S., and Barnes, Thomas C., 5,004,535, Cl. 210-90.000.

Barnett, Roy, to Teradyne, Inc. Electrically connecting. 5,004,426, Cl. 439-82.000.

Barou, Michel, to SGS-Thomson Microelectronics S.A. Device and a process for detecting current flow in a MOS transistor. 5,004,970, Cl. 323-277.000.

Barreau, Michel: *See—*
Antoine, Michel; Barreau, Michel; Desconclois, Jean-Francois, Girard, Philippe, and Picaut, Guy, 5,004,745, Cl. 514-254.000.

Barrett, Haentjens & Co.: *See—*
Stirling, Thomas E., and Ackerman, John R., 5,004,484, Cl. 55-53.000.

Barrow, Bennie W. Portable container opener. 5,003,844, Cl. 81-3.200.

Barry, Thomas P. Backpack system for beach related activities. 5,004,134, Cl. 224-209.000.

Bartels, Craig R.: *See—*
Pasternak, Mordechai; Bartels, Craig R., and Reale, John, Jr., 5,004,861, Cl. 585-818.000.

Bartholomew, Richard M.: *See—*
Frincke, James M., Bartholomew, Richard M., and Dillman, Robert O., 5,004,606, Cl. 424-85.800.

Bartky, W. Scott; Paton, Anthony D., Temple, Stephen, and Michaelis, A. John, to XAAR Limited. Method of manufacturing a droplet deposition apparatus. 5,003,679, Cl. 29-25.350.

Bartley, Harold D., and Gaiser, William R., to Broadway Companies, Inc. Blown plastic container having an integral single thickness skirt of bi-axially oriented PET. 5,004,109, Cl. 215-1.00C.

BASF: *See—*
Schroeder, Rodney G.; and Sharangpani, Anand S. G., 5,004,504, Cl. 106-456.000.

BASF Aktiengesellschaft: *See—*
Dorow, Joachim, and Bleckmann, Gerhard, 5,003,878, Cl. 101-415.100.
Epple, Gerhard, 5,004,819, Cl. 552-244.000.
Pandl, Klaus, and Patseh, Manfred, 5,004,807, Cl. 534-618.000.
Vogel, Hans-Henning, Rath, Hans P., Jakob, Claus P., and Oppenlaender, Knut, 5,004,478, Cl. 44-398.000.

Bassick, John W., and Dubois, Edward A., to David Clark Company Incorporated. Pressure garment. 5,003,630, Cl. 2-2.10A.

Bastiaansen, Cornelis W. M.: *See—*
Waagen, Geert N., Bastiaansen, Cornelis W. M.; and Kirschbaum, Robert, 5,004,778, Cl. 524-474.000.

Bastioli, Catia; Garlisi, Salvatore; Fornara, Dario; and Bellotti, Vittorio, to Montefibre, S.p.A. Polyoxyalkylene-ether derivatives having organic acid end-groups, their alkyl ethers and their alkali metal and alkaline-earth metal salts. 5,004,817, Cl. 549-557.000.

Bates, James H. Marker screw cap. 5,003,735, Cl. 52-105.000.

Batiashvili, Boris I.: *See—*
Loladze, Teimuraz N.; Batiashvili, Boris I.; Mamulashvili, Gennady L.; Butskhnkidze, David S.; Grdzelishvili, Georgy J., and Markevich, Jury I., 5,003,728, Cl. 51-165.800.

Battelle Memorial Institute: *See—*
Carter, John G., 5,004,373, Cl. 405-131.000.
Giddey, Claude; and Dove, Georges, 5,004,623, Cl. 426-564.000.

Baucom, Robert M.: *See—*
Johnston, Norman J.; St. Clair, Terry L.; Baucom, Robert M., and Gleason, John R., 5,004,575, Cl. 264-136.000.

Bauer, Theodor, and Zweigart, Gerhard, to Daimler-Berg AG. Top framework of a folding top for vehicles. 5,004,291, Cl. 296-116.000.

Baugh, Benton F. Tieback thread with angular freedom. 5,004,273, Cl. 285-27.000.

Baur, Henricus A. C., and Kragten, Ubaldus F., to Stamicarbon B.V. Process for preparing a cycloalkanone and/or cycloalkanol. 5,004,837, Cl. 568-342.000.

Baxter International Inc.: *See—*
Fronk, David M., Brookstein, David S., and Skelton, John, 5,004,474, Cl. 623-13.000.

Baxter, William D.: *See—*
Dull, Raymond P.; Lavas, Bernard R.; and Baxter, William D., 5,003,740, Cl. 52-239.000.

Baxter, William R. S.: *See—*
Lyons, Nicholas; Baxter, William R. S.; Woodward, Adrian M.; and Clarke, Roger W., 5,004,542, Cl. 210-356.000.

Bayer Aktiengesellschaft: *See—*
Blum, Harald, Meixner, Jurgen; Schreckenberg, Manfred, Fleiter, Lothar, and Wellner, Wolfgang, 5,004,779, Cl. 524-591.000.
Kricheldorf, Hans-Rytger; Delius, Ulrich; and Wehrmann, Rolf, 5,004,836, Cl. 568-333.000.
Meier, Helmut-Martin; Kircher, Klaus; and Berg, Klaus, 5,004,569, Cl. 260-410.600.
Weissmuller, Joachim; Tietjen, Klaus-Gunther; Stendel, Wilhelm; and Wachendorff-Neumann, Ulrike, 5,004,744, Cl. 514-247.000.
Zecher, Wilfried; El-Sayed, Aziz, Haese, Wilfried, Kohler, Burkhard; and Meyer, Rolf-Volker, 5,004,795, Cl. 528-73.000.

Bayerische Motoren Werke AG: *See—*
Lemberger, Heinz, 5,003,947, Cl. 123-339.000.

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Kappler, Guenter; and Rist, Dieter, 5,003,768, Cl. 60-39.230.

Bayern-Chemie Gesellschaft fuer flugchemische Antriebe mbH: *See—*
Unterforsthuber, Karl; and Koenig, Rudolf, 5,003,887, Cl. 102-531.000.

Bayless, Lee. Collapsible hammock. 5,003,652, Cl. 5-129.000.

Bayview Technology Group, Inc.: *See—*
Schanin, David J., 5,004,969, Cl. 323-235.000.

Bear Automotive Service Equipment Company: *See—*
Marino, Joseph A.; Makhija, Surender K.; Taghikhani, Majid, and Puetz, Peter A., 5,004,979, Cl. 324-160.000.

Beard, William Q., Jr.: *See—*
Hirschmann, Robert P.; Beard, William Q., Jr.; Mainz, Eric L.; Smith, Earl B., and Little, Barry M., 5,004,849, Cl. 570-224.000.

Beaston, Brook J., to Great Plains Industries, Inc. Dripless coupling device. 5,004,013, Cl. 137-614.050.

Beatty, Scott M., and Bishop, John R., to Sargent & Greenleaf, Inc. Dial and dial ring assembly with detenting feature. 5,003,802, Cl. 70-333.00A.

Beaumont, Alan R.: *See—*
Booth, Richard C.; Beaumont, Alan R.; Daymond-John, Barbara E.; Cunningham, David G.; and Stallard, William A., 5,004,314, Cl. 350-96.140.

Beaver, Phillip R.; DiGiacinto, Peter M.; Hutchinson, Donald O.; and Vega, Julio J., to Ethyl Corporation. Recovery of hexabromocyclododecane particles. 5,004,847, Cl. 570-186.000.

Beaver, Phillip R., to Ethyl Corporation. Method of elevating the melting point of a hexabromocyclododecane product. 5,004,848, Cl. 570-206.000.

Becker, Kurt J., to Lanxide Technology Company, LP. Method for making metal matrix composites by the use of a negative alloy mold and products produced thereby. 5,004,036, Cl. 164-97.000.

Becker, Richard: *See—*
Braunling, Hermann; and Becker, Richard, 5,004,560, Cl. 526-258.000.

Becker, Thomas P.; Rameshk, Sohrab S.; and Crass, Matthew M., to Snap-on Tools Corporation. Magnetic field pickup assembly for diagnositics on specific engine. 5,004,984, Cl. 324-402.000.

Becker, Wallace E., to Abbott Laboratories. Stabilizing system for solid dosage forms. 5,004,651, Cl. 424-465.000.

Becker, Wilfried: *See—*
Pahnke, Klaus-Dieter; Holl, Rolf; and Becker, Wilfried, 5,003,886, Cl. 102-521.000.

Beckman, John A.; Huang, Shu-Jen, and Ebrat, Abdol R., to Nalco Chemical Company. Method of paint sludge conversion for disposal. 5,004,550, Cl. 210-710.000.

Beckwith, Barry M., to United Technologies Corporation. Bypass conduit for gas turbine engine. 5,003,773, Cl. 60-262.000.

Beckwith, Paul H., to Lumonics Inc. Laser optics quality monitoring. 5,005,177, Cl. 372-34.000.

Becoat, Billie J. Kit for converting a bicycle to a dual wheel driven cycle. 5,004,258, Cl. 280-259.000.

Bedekovic, Davor: *See—*
Phaff, Rox, and Bedekovic, Davor, 5,004,813, Cl. 548-463.000.

Bednar, Fred H.: *See—*
Lipchak, John B.; Oblak, Tod A., Bednar, Fred H., Ciaramitaro, William, Hughes, Francis R., Smith, John R.; and Gisoni, Gregory A., 5,005,142, Cl. 364-550.000.

Behensky, Max L.; Monerief, Rick L., Margolin, Jed; and Mott, Stephanie J., to Atari Games Corporation. Driving simulator with moving painted dashboard. 5,005,148, Cl. 364-578.000.

Belkin, Nathan L.: *See—*
Benstock, Gerald M., Belkin, Nathan L., and Green, Robert, 5,003,902, Cl. 112-418.000.

Bell, Charles L.: *See—*
Markow, Paul A.; Nolle, William; and Bell, Charles L., 5,004,976, Cl. 324-154.00R.

Bell Communications Research, Inc.: *See—*
Arthurs, Edward; Goodman, Matthew S.; Kim, Chong K., and Lee, Tony T., 5,005,167, Cl. 370-4.000.

Bell & Howell GmbH: *See—*
Dreschel, Jurgen, Hog, Peter; and Mobs, Stephan, 5,004,220, Cl. 271-184.000.

Bell, Mark E.: *See—*
Moody, G. Lawrence, Leone, David A.; and Bell, Mark E., 5,004,875, Cl. 200-400.000.

Bellin, Howard T.: *See—*
Dingwall, Robert P.; and Bellin, Howard T., 5,003,983, Cl. 128-704.000.

Bellotti, Vittorio: *See—*
Bastioli, Catia, Garlisi, Salvatore; Fornara, Dario; and Bellotti, Vittorio, 5,004,817, Cl. 549-557.000.

Beloit Corporation: *See—*
Adams, James; Gobel, Richard; and Lanham, Bryan, 5,004,028, Cl. 144-176.000.

Bemis, Steve; and Stocker, Erwin E., to Gates Rubber Company, The. Method for forming a fiber composite sealing element. 5,004,513, Cl. 156-191.000.

Bender, Richard C. Automatic fluid flow sensor and fluid shut-off system. 5,004,014, Cl. 137-624.120.

Benham, Harold L.; and Mitchell, James A., to British Petroleum Company p.l.c., The. Process for treating metal surfaces. 5,004,646, Cl. 428-344.000.

Bennett, Mark. Sun-shield. 5,004,285, Cl. 296-1.100.

Benstock, Gerald M.; Belkin, Nathan L.; and Green, Robert, to Superior Surgical Manufacturing Co., Inc. Seam having liquid proof threads stichably securing first and second liquid proof materials foldably enclosing a meltable adhesive polymer film and method of manufacture of same. 5,003,902, Cl. 112-418.000.

Berchowitz, David M., to Sunpower, Inc. Asymmetric gas spring. 5,003,777, Cl. 60-520.000.

Berfield, Robert C., to Shop-Vac Corporation. Attachment system for liquid spray lance. 5,004,160, Cl. 239-525.000.

Berg, Klaus: *See—*
Meier, Helmut-Martin; Kircher, Klaus; and Berg, Klaus, 5,004,569, Cl. 260-410.600.

Berg, Sven-Olof, Broden, Ingemar; and Johansen, Odvar, to Pronova AB; and Aktiebolaget SKF. Apparatus for the emptying of a package band and an arrangement for it. 5,004,395, Cl. 414-412.000.

Berger, Kurt: *See—*
Mutterer, Francis; and Berger, Kurt, 5,004,759, Cl. 524-89.000.

Bergero, Jean-Pierre, and Couasnard, Claude, to Thomson Tubes Electroniques. Microwave load in small-length oversized waveguide form. 5,004,990, Cl. 333-22.00R.

Bergquist, Roger: *See—*
Wislinski, Martin; Bergquist, Roger; Schroeder, Manfred; Weir, Theodore; Monetti, Matthew; and Fung, Paul, 5,004,579, Cl. 264-517.000.

Berkley, Robert D.; and Shaughnessy, Terry P., to Packaging Industries Group, Inc. Flying game bird decoys. 5,003,722, Cl. 43-3.000.

Berkley, Robert D.: *See—*
Lenert, Steven A.; and Berkley, Robert D., 5,003,718, Cl. 43-3.000.

Bernard, Marc, to Thomson-Brandt Armements. System of vehicle guidance by continuous gas jets. 5,004,184, Cl. 244-3.220.

Bernard, Walter, Heppner, Joachim G., and Schwarz, Karl H., to Bodenseewerk Geratetechnik GmbH. Measuring device having a laser and a ring resonator. 5,004,342, Cl. 356-350.000.

Bernards, Roger F.; Fisher, Gordon; and Sonnenberg, Wade, to Shipley Company Inc. Copper electroplating composition. 5,004,525, Cl. 204-52.100.

Berner, John M.; and Roman, Thomas A., to Truth Incorporated. Window operator control. 5,004,961, Cl. 318-65.000.

Bernhardt, Everett A.; and Winters, Robert C., to Sentrol, Inc. Switch housing with resilient retainers. 5,004,879, Cl. 200-295.000.

Bernstein, Arnold. Disposable debris bag for lawnmowers and sweepers. 5,003,758, Cl. 56-202.000.

Berruex, Serge A. Apparatus for rinsing surfaces with a non-aqueous liquid. 5,004,000, Cl. 134-108.000.

Bertrams, Kurt U. Training aid for such side arms as revolvers and pistols. 5,004,423, Cl. 434-22.000.

Besik, Ferdinand K. Apparatus for ultra high energy efficient heating, cooling and dehumidifying of air. 5,003,961, Cl. 126-110.00R.

Besore, John K.: *See—*
Stocking, George E.; Stich, Richard A.; Besore, John K.; and Denham, Clarence W., 5,004,302, Cl. 312-214.000.

Bessinger, Walter L., to Knape & Vogt Manufacturing Company. Interlock shelving bracket and standard cover. 5,004,201, Cl. 248-243.000.

Bessinger, Walter L.: *See—*
Stumpf, William E.; Carlson, Casey L.; Knape, Richard S.; and Bessinger, Walter L., 5,004,202, Cl. 248-243.000.

Best, Glen H.: *See—*
Allen, Floyd L.; Best, Glen H.; and Lindroth, Thomas A., 5,004,506, Cl. 106-729.000.

Bethlehem Steel Corporation: *See—*
Russo, Thomas J., 5,004,131, Cl. 222-600.000.

Beyar, Mordechay; and Foux, Amnon, to Technion Research and Development Foundation Ltd. Auxiliary intra-urethral magnetic valve for persons suffering from urinary incontinence. 5,004,454, Cl. 600-30.000.

Bhargava, Rameshwar N.: *See—*
Shaulov, Avner A.; Herko, Samuel P.; Dorman, Donald R.; and Bhargava, Rameshwar N., 5,004,726, Cl. 505-1.000.

Bharya, Rajpal S.: *See—*
Dent, Peter R.; and Bharya, Rajpal S., 5,005,150, Cl. 364-736.000.

Bickel, Martin: *See—*
Baader, Ekkehard; Bickel, Martin; Brocks, Dietrich; Gunzler, Volkmar; Henke, Stephan; and Hanauske-Abel, Hartmut, 5,004,748, Cl. 514-350.000.

Bienaime, Patrick, to Unilever Patent Holdings B.Y. Pack made from board. 5,004,147, Cl. 229-198.200.

Bifano, Gabriel F.; and Reyes, Erenio, to Vinyl Corporation. Panel support member and support arrangement. 5,003,743, Cl. 52-282.000.

Biggio, Alain; and Landrevie, Jacques, to Allflex Europe S.A. Automatic connecting device designed for the quick and momentary supply of power to electronic circuits. 5,004,897, Cl. 235-441.000.

Billmers, Robert L., to National Starch and Chemical Investment Holding Corporation. Organosiloxane-containing polysaccharides. 5,004,791, Cl. 527-300.000.

Binder, Thomas P.; and Logan, Robert M., to Archer Daniels Midland Company. Aqueous-alcohol fructose crystallization. 5,004,507, Cl. 127-58.000.

Binks Manufacturing Company: *See—*
Culbertson, Samuel W.; and Williams, Keith G., 5,004,403, Cl. 417-53.000.

Biocyte Corporation: *See—*
Boyse, Edward A.; Broxmeyer, Hal E.; and Douglas, Gordon W., 5,004,681, Cl. 435-2.000.

Biogen, Massachusetts: *See—*
Fiers, Walter C.; and Allet, Bernard, 5,004,689, Cl. 435-69.510.

Biomechanics Corporation of America: *See—*
Gross, Clifford, 5,004,196, Cl. 248-118.300.

Bionix Corporation: *See—*
Glick, J. Leslie, 5,004,615, Cl. 424-692.000.

Biotrack, Inc.: *See—*
Hillman, Robert S.; Cobb, Michael E., Allen, Jimmy D.; Gibbons, Ian; Ostoich, Vladimir E.; and Winfrey, Laura J., 5,004,923, Cl. 250-341.000.

Bishop, John R.: *See—*
Beatty, Scott M.; and Bishop, John R., 5,003,802, Cl. 70-333.00A.

Bissett, Thomas D.: *See—*
Bruckert, William F.; and Bissett, Thomas D., 5,005,174, Cl. 371-68.300.

Blackstone, Scott C., to Unitrode Corporation. Inverted epitaxial process. 5,004,705, Cl. 437-225.000.

Blaisdell, Leonard L., to GTE Government Systems Corporation. Microwave antenna. 5,005,022, Cl. 343-753.000.

Blaszkiewicz, Peter; and Speck, Ulrich, to Schering Aktiengesellschaft. Substituted dicarboxylic acid-bis(3,5-dicarbamoyl-2,4,6-triiodoanilides), process for their production as well as X-ray contrast media containing them. 5,004,835, Cl. 564-153.000.

Bleckmann, Gerhard: *See—*
Dorow, Joachim; and Bleckmann, Gerhard, 5,003,878, Cl. 101-415.100.

Blezard, Robert C., to Charles Packaging Corporation. Straight line sorting and/or fill-to-weigh machine. 5,004,093, Cl. 198-430.000.

Blontrock, Daniel, to N.V. Verbrugge. Harness frame with detachable corner connections. 5,004,019, Cl. 139-91.000.

Bluhm, Terry L.: *See—*
Fuller, Timothy J.; Marchessault, Robert H.; and Bluhm, Terry L., 5,004,664, Cl. 430-106.600.

Blum, Harald; Meixner, Jurgen; Schreckenberg, Manfred; Fleiter, Lothar; and Wellner, Wolfgang, to Bayer Aktiengesellschaft. Process for the preparation of aqueous, oxidatively drying alkyd resins and their use in or as aqueous lacquers and coating compounds. 5,004,779, Cl. 524-591.000.

Blume, William F.: *See—*
Schumacher, Dean P.; Blume, William F.; and Bonds, John C., 5,004,245, Cl. 273-241.000.

Blumstock, Judith E.; and Morgan, Leslie P., to Protection Protection, Inc. Multi-compartment container. 5,004,106, Cl. 206-581.000.

BMC Software, Inc.: *See—*
Ernst, Theodore R., 5,005,137, Cl. 364-514.000.

Board of Governors of Wayne State University, The: *See—*
Schaap, Arthur P., 5,004,565, Cl. 252-700.000.

Board of Regents, The University of Texas System: *See—*
DeLozanne, A. L., 5,004,721, Cl. 505-1.000.

Boaz, Premakaran T., to Ford Motor Company. Method and apparatus for supporting a sheet of glass. 5,004,284, Cl. 294-119.000.

Bobst, Albert M.; and Pauley, Gary T., to University of Cincinnati. Nitroxide labeled nucleotides and nitroxide labeled hybridization probes. 5,004,809, Cl. 536-29.000.

Bobst SA: *See—*
Stark, Charles, 5,004,221, Cl. 271-194.000.

Bock, Mark G.: *See—*
Evans, Ben E.; Bock, Mark G.; and Freidinger, Roger M., 5,004,741, Cl. 514-221.000.

Bode, Robert E. Apparatus for injecting displacement plugs. 5,004,048, Cl. 166-70.000.

Bodenseewerk Geratetechnik GmbH: *See—*
Bernard, Walter; Heppner, Joachim G.; and Schwarz, Karl H., 5,004,342, Cl. 356-350.000.

Bodine Company, The: *See—*
McDonald, Charles W., 5,004,953, Cl. 315-86.000.

Boehler Ges. m.b.H.: *See—*
Kroisenbrunner, Walter, 5,004,653, Cl. 428-615.000.

Boehm, Jeffrey C.; Hecht, Sidney M.; Holden, Kenneth G.; Johnson, Randall K.; and Kingsbury, William D., to SmithKline Beecham Corporation. Water soluble camptothecin analogs useful for inhibiting the growth of animal tumor cells. 5,004,758, Cl. 514-283.000.

Boeing Company, The: *See—*
Ferrell, Philip J., 5,005,210, Cl. 455-115.000.
Jensen, Tom M.; and Shorey, Thomas H., 5,004,387, Cl. 410-69.000.
Wong, Kin Y.; and Thompson, Douglas, 5,003,826, Cl. 73-828.000.

Bohrer, Mark W., to Advanced Micro Devices, Inc. Op-amp with internally generated bias and precision voltage reference using same. 5,004,986, Cl. 330-257.000.

Boilen, Irving, to Trans-Action Marketing Corp. Changeable watch bezel locking mechanism. 5,005,161, Cl. 368-295.000.

Boinot, Francois; Cousin, Michel; Francois, Pierre-Michel; and Michel-Dansac, Francois, to Societe Chimiques des Charbonnages S.A. Resin compositions based on phenolic resins. 5,004,789, Cl. 525-506.000.

Boiteau, Richard; Labayle, Denis; and Tenaillon, Alain, to Medipro. Device for unblocking intubation tubes and tracheotomy cannulas in vivo. 5,003,657, Cl. 15-104.330.

Bolen, David T.: *See—*
Sodec, Franc; Hudson, Donald L.; and Bolen, David T., 5,003,867, Cl. 98-31.600.

Bolton, John S., to Automotive Products plc. Torsional vibration damper. 5,004,088, Cl. 192-106.200.

Bom, Cornelis J. G.: *See—*
van der Lely, Ary; and Bom, Cornelis J. G., 5,004,163, Cl. 239-661.000.

Bommer, Jerry C.; and Burnham, Bruce F., to Nippon Petrochemicals Company, Ltd. Tetrapyrrole aminocarboxylic acids. 5,004,811, Cl. 540-145.000.

Bommer, Rainer, to Dragerwerk Aktiengesellschaft. Colorimetric detector tube. 5,004,585, Cl. 422-58.000.

Bonds, John C.: *See—*
Schumacher, Dean P.; Blume, William F.; and Bonds, John C., 5,004,245, Cl. 273-241.000.

Bonnet, Maurice: *See—*
Nerrinck, Bernard; and Bonnet, Maurice, 5,003,711, Cl. 36-120.000.

Booth, Richard C.; Beaumont, Alan R., Daymond-John, Barbara E., Cunningham, David G.; and Stallard, William A., to British Telecommunications public limited company. Optical signal modulation device. 5,004,314, Cl. 350-96.140.

Borer, John W., Skilliter, William J.; and Conner, Lowell J., to Libbey-Owens-Ford Co. Glass sheet conveying and bending apparatus. 5,004,492, Cl. 65-289.000.

Borglum, Brian P., to Raytheon Company. Method of producing optically transparent yttrium oxide. 5,004,712, Cl. 501-126.000.

Born, Dieter; Knauf, Peter; and Retelsdorf, Hans-Joachim, to Durum Verschleissschutz GmbH. Method of applying wear-resistant layer and consumable electrode for carrying out the method. 5,004,886, Cl. 219-76.140.

Borom, Marcus P.: *See*—
Svec, Paul S., Borom, Marcus P.; Szala, Lawrence E., Brun, Milivoj K., Miller, Steven A.; and Mourer, David P., 5,004,629, Cl. 427-204.000.

Bortnick, Newman M.: *See*—
Hallden-Abberton, Michael P., Bortnick, Newman M., Cohen, Leslie A., Freed, William T., and Fromuth, Harry C., 5,004,777, Cl. 524-433.000.

Borzym, Alexander: *See*—
Borzym, John J.; and Borzym, Alexander, 5,003,853, Cl. 83-318.000.

Borzym, John J.; and Borzym, Alexander, to Alpha Industries, Inc. Cut-off die set. 5,003,853, Cl. 83-318.000.

Bosko, Robert S., and Barnes, Thomas C., to Aquatec Water Systems Incorporated. Water purification system. 5,004,535, Cl. 210-90.000.

Botterbusch, Carl N., and Frankhouser, Paul L., to Arrow International Investment Corporation. In-dwelling catheter. 5,004,456, Cl. 604-53.000.

Bouchard, Victorin. Foldable dome. 5,004,001, Cl. 135-97.000.

Boucher, Raymond M. G., to Wave Energy Systems, Inc. Virucidal low toxicity compositions. 5,004,757, Cl. 514-694.000.

Boudreau, Robert J., to Hedstrom Corp. Spring connection assembly. 5,004,216, Cl. 267-179.000.

Boulanger, Alain; and Rousseau, Andre J., to Geostock S.A.R.L., and Esys S.A. Method of rapidly abandoning large cavities washed-out in rock salt. 5,004,298, Cl. 299-5.000.

Bowen, Robert F., Dudley, Kenneth W.; and Maiellano, Joseph C., Jr., to Raytheon Company. Method of heating food. 5,004,617, Cl. 426-233.000.

Bowlin, Terry L.: *See*—
Liu, Paul S., Sunkara, Sai P.; and Bowlin, Terry L., 5,004,746, Cl. 514-299.000.

Bowthorpe EMP Limited: *See*—
Doone, Rodney M.; and Colbert, Henry J., 5,003,689, Cl. 29-613.000.

Boyse, Edward A.; Broxmeyer, Hal E.; and Douglas, Gordon W., to Biocyte Corporation. Preservation of fetal and neonatal hematopoietic stem and progenitor cells of the blood. 5,004,681, Cl. 435-2.000.

Braas & Co. GmbH. *See*—
Schulz, Hans E.; Braas, Jurgen; and Echl, Friedrich, 5,004,415, Cl. 425-297.000.

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Bradley, Michael W., Harris, Norman, and Turner, Keith, to Davy McKee (London) Limited. Hydrogenation of aldehydes. 5,004,845, Cl. 568-885.000.

Brandt, Eckhard, to E.C.H. Will GmbH. Apparatus for transporting stacks of paper sheets to processing machines. 5,004,094, Cl. 198-460.000.

Bratrud, Lyle A. Cattle feeding trough. 5,003,926, Cl. 119-62.000.

Bratten, David R. Automatic water shut-off apparatus for building protection. 5,004,012, Cl. 137-560.000.

Braunling, Hermann, and Becker, Richard, to Wacker-Chemie GmbH. Basic polypyrrylenemethines and salts thereof, and a process for their preparation. 5,004,560, Cl. 526-258.000.

Brearley, Malcolm; and Moseley, Richard B., to Lucas Industries public limited company. Electronic braking system. 5,004,299, Cl. 303-15.000.

Brearley, Malcolm; and Moseley, Richard B., to Lucas Industries Public Limited Company. Electronic braking system. 5,004,300, Cl. 303-15.000.

Breen, Michael T.; and Skorupski, Jeffrey H., to Eaton Corporation. Trailer swing control. 5,005,130, Cl. 364-426.010.

Brennen, Kenneth R.: *See*—
Holleman, Timothy W.; Doan, Phong D., Brennen, Kenneth R.; and Swoyer, John M., 5,003,992, Cl. 128-785.000.

Breslin, Michael K. Pneumatically powered submersible fluids pump with integrated controls. 5,004,405, Cl. 417-131.000.

Bria, Frank: *See*—
Connors, Peter J., Scully, Sean, Bria, Frank; and ReFalo, John, III, 5,004,103, Cl. 206-372.000.

Bricken, Jonathan, to D.O.C.C., Inc. Process for sterile disposal of syringes. 5,003,892, Cl. 110-346.000.

Bridge, Andrew W.: *See*—
Ashton, Michael J.; Bridge, Andrew W., Chambers, Robert K., Dron, Donald I., Fenton, Garry; Harris, Neil V., Lythgoe, David J., McFarlane, Ian M., Newton, Christopher G., Riddell, David; Smith, Christopher, Stuttle, Keith A. J.; and Toft, Malcolm P., 5,004,747, Cl. 514-309.000.

Bridgestone Corp.: *See*—
Kadota, Kuninobu, Kohno, Yoshihide; and Koseki, Hiroyuki, 5,004,031, Cl. 152-538.000.

Bridgestone/Firestone, Inc.: *See*—
Gnebling, Stephen T., 5,004,635, Cl. 428-33.000.
Koopmann, Gary H., 5,003,819, Cl. 73-146.000.

Briggs, Beatrice E. Painters palette. 5,004,255, Cl. 280-79.500.

Briner, Michael S.: *See*—
Radjy, Nader A., and Briner, Michael S., 5,005,155, Cl. 365-185.000.

Brinkman, Robert J. Belt type garment with foldable seat cover. 5,003,634, Cl. 2-46.000.

Bristol, Samuel V., to Delco Electronics Corporation. Low residue soldering flux. 5,004,509, Cl. 148-23.000.

British Petroleum Company p.l.c., The. *See*—
Benham, Harold L.; and Mitchell, James A., 5,004,646, Cl. 428-344.000.

British Telecommunications public limited company. *See*—
Booth, Richard C., Beaumont, Alan R., Daymond-John, Barbara E.; Cunningham, David G.; and Stallard, William A., 5,004,314, Cl. 350-96.140.

Broadway Companies, Inc. *See*—
Bartley, Harold D., and Gaiser, William R., 5,004,109, Cl. 215-1.00C.

Brocks, Dietrich: *See*—
Baader, Ekkehard, Bickel, Martin; Brocks, Dietrich, Gunzler, Volkmar, Henke, Stephan; and Hanauske-Abel, Hartmut, 5,004,748, Cl. 514-350.000.

Brodart Co.: *See*—
Pugliese, Joseph S., and Garman, Charles L., 5,004,514, Cl. 156-251.000.

Broden, Ingemar. *See*—
Berg, Sven-Olof; Broden, Ingemar, and Johansen, Odvar, 5,004,395, Cl. 414-412.000.

Broderick, James, and Schaul, Malcolm. Buying guide. 5,004,270, Cl. 283-48.100.

Brokaw, Paul E.: *See*—
Nottingham, John R., Spirk, John W., Jr., and Brokaw, Paul E., 5,004,882, Cl. 219-10.55E.

Bronder, Joseph B., and Gossard, William H., to Westinghouse Electric Corp. Frequency division multiplex guardband communication system for sending information over the guardbands. 5,005,169, Cl. 370-76.000.

Brookeman, James R. *See*—
Merickel, Michael B., Adams, Ann H.; and Brookeman, James R., 5,003,979, Cl. 128-653.00A.

Brooks, David D., Brophy, Shirley A., and Goss, George R., to Oil-Dri Corporation of America. Oil bleaching method and composition for same. 5,004,570, Cl. 260-427.000.

Brookstein, David S.: *See*—
Fronk, David M., Brookstein, David S., and Skelton, John, 5,004,474, Cl. 623-13.000.

Brophy, Shirley A.: *See*—
Brooks, David D., Brophy, Shirley A., and Goss, George R., 5,004,570, Cl. 260-427.000.

Brossia, Charles E., and Wu, Samuel C. Fiber optic probe system. 5,005,005, Cl. 340-604.000.

Brother Kogyo Kabushiki Kaisha. *See*—
Ogawa, Masao, 5,003,899, Cl. 112-221.000.
Ogawa, Masao, 5,003,900, Cl. 112-242.000.
Sakaida, Atsuo; Ikezaki, Yoshiyuki, Iriguchi, Akira, and Inose, Toshio, 5,004,946, Cl. 310-328.000.
Yokoe, Masaaki; Kurono, Yoshikazu; and Hayashi, Koji, 5,003,897, Cl. 112-121.120.

Brotz, Gregory R. Electrostatic display device. 5,005,110, Cl. 362-84.000.

Broussard, Jerry A., Auerbach, Andrew B., Yang, Nan L., Paul, James L., Zheng, Yong C., and Zhang, Chong L., to Hoechst Celanese Corporation. Novel polyacetal copolymers of trioxane and trimethylolpropane formal derivatives. 5,004,798, Cl. 528-230.000.

Brown, Andrew F., and Webber, Peter B., to Calcor Space Facility, Inc. Method of fabricating plural shaped parts from a workpiece. 5,004,883, Cl. 219-69.120.

Brown, Donald G.; and Onufrak, Andrew F., to Rockwell International Corporation. High-range and resolution determinate mount and positioner. 5,004,205, Cl. 248-476.000.

Brown, Franklin L., to Ford Motor Company. Method of making glass substrate coated with tin oxide. 5,004,490, Cl. 60-60.520.

Brown, Gordon L., Jr., to Morrison Molded Fiber Glass Company. Apparatus for exercise of the human body. 5,004,226, Cl. 272-93.000.

Brown, James J. Ozone water purification system. 5,004,537, Cl. 210-192.000.

Brown, John C., to JCB Leasing Corp. Brush mower. 5,003,759, Cl. 56-249.000.

Brownrigg, Patrick C. *See*—
Vali, Victor, Chang, David B., and Brownrigg, Patrick C., 5,004,914, Cl. 250-227.270.

Broxmeyer, Hal E. *See*—
Boyse, Edward A.; Broxmeyer, Hal E., and Douglas, Gordon W., 5,004,681, Cl. 435-2.000.

Bruckert, William F., and Bissett, Thomas D., to Digital Equipment Corporation. Dual zone, fault tolerant computer system with error checking in I/O writes. 5,005,174, Cl. 371-68.300.

Bruhl, Daniel E., Jr., to Trident Medical Products, Inc. Integrally formed two-piece eyeshield. 5,004,333, Cl. 351-45.000.

Bruinink, Jacob. *See*—
Verhulst, Antonius G. H., Bruinink, Jacob, and Lenders, Emanuel J. W. M., 5,004,322, Cl. 350-320.000.

Brun, Milivoj K.: *See*—
Svec, Paul S., Borom, Marcus P.; Szala, Lawrence E.; Brun, Milivoj K., Miller, Steven A.; and Mourer, David P., 5,004,629, Cl. 427-204.000.

Brunswick Corporation: *See*—
McMorries, Lee W., IV; and Saatkamp, James B., 5,004,042, Cl. 165-41.000.

Bryant Grinder Corporation: *See*—
Halvorsen, James V., 5,003,730, Cl. 51-325.000.

Bublewicz, Leszek, to Phelps-Tointon, Inc. Door lock control system featuring a remote control for a pneumatically powered door lock mechanism. 5,003,800, Cl. 70-264.000.

Buchwald, Stephen L.; and Grossman, Robert B., to Massachusetts Institute of Technology. Preparation of chiral metallocene dihalides. 5,004,820, Cl. 556-53.000.

Buckholz, Lawrence L., Jr.; and Kasper-Lehmann, Robin, to International Flavors & Fragrances Inc. Process for preparing marinaded proteinaceous product and product produced thereby. 5,004,618, Cl. 426-281.000.

Buckley, John T. Expansion system for a medical and surgical dressing. 5,003,971, Cl. 128-156.000.

Buffalini, Jerry E.: *See*—
McGarvey, David C.; and Buffalini, Jerry E., 5,004,632, Cl. 427-410.000.

Bullard, James R., Muller, Richard P.; Grossi, Benedetto; and Cristine, John, to Bullard, James Roger. Laryngoscope. 5,003,963, Cl. 128-11.000.

Bullard, James Roger: *See*—
Bullard, James R.; Muller, Richard P.; Grossi, Benedetto; and Cristine, John, 5,003,963, Cl. 128-11.000.

Bunce, Kevin R., to Elopak A/S. Valve device for controlling liquid flow. 5,004,009, Cl. 137-512.300.

Bunch, Earnest B., Jr. Continuous form stationery folding machine with perforation alignment apparatus. 5,004,452, Cl. 493-414.000.

Burchette, Herbert L.; Hansen, Lee E.; West, James C.; and Nawrocki, Glen A., to United Technologies Corporation. Axial compressor stator construction. 5,004,402, Cl. 415-137.000.

Burd, Robert C.: *See*—
Fitzpatrick, Mark E.; and Burd, Robert C., 5,004,971, Cl. 323-312.000.

Burdea, Grigore C., to Rutgers University. Portable dextrous force feedback master for robot telemanipulation. 5,004,391, Cl. 414-6.000.

Burdukovsky, Alexandr I.: *See*—
Goikhman, Yakov A.; Krjukov, Georgy M.; Onotsky, Melis I.; Sorokin, Georgy M.; Filatov, Alexei V.; Tsarapkin, Viktor V.; Yakimov, Vadim P.; Smirnov, Gennady A.; Nikiforov, Ivan I.; Burdukovsky, Alexandr I.; Daibov, Sergei V.; and Kurdjukov, Alexandr S., 5,004,056, Cl. 175-293.000.

Burke, John T.; and Newkirk, Marc S., to Lanxide Technology Company, LP. Method of thermo-forming a novel metal matrix composite body and products produced therefrom. 5,004,035, Cl. 164-97.000.

Burnham, Bruce F.: *See*—
Bommer, Jerry C.; and Burnham, Bruce F., 5,004,811, Cl. 540-145.000.

Burnham, William L., to Eastman Kodak Company. Optical finder for camera with flip-up flash unit. 5,005,032, Cl. 354-149.110.

Burr Oak Tool & Gauge Company: *See*—
Milliman, James G.; and Franks, Lawrence A., 5,003,691, Cl. 29-727.000.

Burtin, Jacques: *See*—
Richalley, Gerard; and Burtin, Jacques, 5,004,548, Cl. 210-646.000.

Busby, Philip V. Power operated support or landing legs. 5,004,267, Cl. 280-766.100.

Busenhart, Peter: *See*—
Graf, Felix; and Busenhart, Peter, 5,004,170, Cl. 242-18.00R.

Buteev, Alexandr I.: *See*—
Ulyanitsky, Vladimir J.; Gavrilenko, Tamara P.; Nikolaev, Jury A.; and Buteev, Alexandr I., 5,004,021, Cl. 141-67.000.

Butler Manufacturing Company: *See*—
Penczak, John P., 5,003,737, Cl. 52-126.200.

Butskhrikidze, David S.: *See*—
Loladze, Teimuraz N.; Batiashvili, Boris I.; Mamulashvili, Gennady L.; Butskhrikidze, David S.; Grdzelishvili, Georgy J.; and Markevich, Jury I., 5,003,728, Cl. 51-165.800.

Buzzelli, Vincenzo. Catch basin. 5,004,534, Cl. 210-164.000.

Bylin Heating Systems, Inc.: *See*—
Montierth, Garry L.; Logan, Stephen A.; and Scott, Raymond J., 5,004,190, Cl. 246-428.000.

C. van der Lely N.V.: *See*—
van der Lely, Ary; and Bom, Cornelis J. G., 5,004,163, Cl. 239-661.000.

Cabourne, Michael K., to Precision Interconnect Corporation. Flexible pin type contact. 5,004,438, Cl. 439-825.000.

CAC, Inc.: *See*—
Alley, Russell I.; and Caine, George E., 5,004,505, Cl. 106-685.000.

Cadwallader, George W.; Highfill, Louis A.; Kurdys, Gregory D.; and Turiglatto, Richard S., to Monsanto Company. Process for preparing sodium tripolyphosphate. 5,004,589, Cl. 423-315.000.

Caine, George E.: *See*—
Alley, Russell I.; and Caine, George E., 5,004,505, Cl. 106-685.000.

Calcor Space Facility, Inc.: *See*—
Brown, Andrew F.; and Webber, Peter B., 5,004,883, Cl. 219-69.120.

Caldwell, J. Michael, to Sili-Tex, Inc. Silicone polymer-internally coated webs. 5,004,643, Cl. 428-246.000.

California Institute of Technology: *See*—
Janesick, James R., 5,005,063, Cl. 357-24.000.

Calvas, George T.: *See*—
Stinar, Robert P.; Calvas, George T.; and McNamara, David A., 5,003,801, Cl. 70-278.000.

Campbell, Andrew B.; and Simon, Ira J., to Triangle Brass Manufacturing Company. Flush bolt mechanism for double doors. 5,004,277, Cl. 292-166.000.

Campbell, Herbert W.: *See*—
Crawford, Paul M.; Campbell, Herbert W.; Myers, Michael J., and Siverns, Steven L., 5,003,814, Cl. 73-59.000.

Campbell, Jonathan: *See*—
Griffin, David; Campbell, Jonathan; Reilly, Michael; and Rosenbaum, Richard, 5,005,122, Cl. 364-200.000.

Canada, Her Majesty the Queen in Right of, as represented by the Minister of Communications: *See*—
Hill, Kenneth O.; Johnson, Derwyn C.; and Lamont, Robert G., 5,004,316, Cl. 350-96.150.

Candea, Cornell, to Chrysler Corporation. Forming bores in bendable layered materials. 5,003,683, Cl. 29-425.000.

Canon Kabushiki Kaisha: *See*—
Akashi, Akira; Kadohara, Terutake; Ohnuki, Ichiro; and Higashihara, Masaki, 5,005,037, Cl. 354-400.000.
Arahara, Kozo; Fukui, Tetsuro; Fukumoto, Hiroshi; Katayama, Masato; and Takasu, Yoshio, 5,004,667, Cl. 430-255.000.
Fukushima, Nobuo; Sakai, Shinji; Takdea, Osamu; Takei, Masahiro; Suzuki, Yasutomo; Okino, Tadashi; and Jinnai, Shigeru, 5,005,088, Cl. 360-69.000.
Kataoka, Kenichi; and Tsukimoto, Takayuki, 5,004,964, Cl. 318-128.000.
Miyakawa, Akira; and Inoue, Hiroyuki, 5,005,025, Cl. 346-25.000.
Nishimura, Yukuo; Eguchi, Ken; Kawada, Haruki; Tomida, Yoshinori; Nakagiri, Takashi; Saito, Kenji; Kimura, Toshiaki; Matsuda, Hiroshi; Sakai, Kunihiro; and Miyazaki, Toshihiko, 5,004,671, Cl. 430-286.000.
Ogawa, Yukio; Hirohata, Michio; Kodaira, Takanori; and Miyawaki, Makoto, 5,005,038, Cl. 354-400.000.
Otokawa, Mitsuhiro; and Takimoto, Hiroyuki, 5,004,965, Cl. 318-254.000.
Saijo, Yasutsugu; Chiku, Kazuyoshi; and Onoda, Shigeyoshi, 5,004,336, Cl. 353-122.000.
Sasaki, Kenichi, 5,004,326, Cl. 350-375.000.
Suda, Yasuo; Ohtaka, Keiji; Suzuki, Kenji; Ishizaki, Akira; and Aoyama, Keisuke, 5,005,041, Cl. 354-407.000.
Suzuki, Akio; Takada, Yoshihiro; Izumizaki, Masami; and Danzuka, Toshimitsu, 5,004,928, Cl. 250-559.000.
Suzuki, Masayuki; and Hattori, Jun, 5,004,328, Cl. 350-416.000.
Takahashi, Hiroto; Karita, Seiichiro; and Sato, Koichi, 5,005,024, Cl. 346-1.100.
Tamura, Yasuyuki; and Kaneko, Shuzo, 5,005,028, Cl. 346-76.00R.

Cantwell, Hugh F., to Rolls-Royce plc. Self-checking speed governor arrangement. 5,003,769, Cl. 60-39.281.

Capdebosco, Bernard, to Siemens Aktiengesellschaft. Device for fastening a die on a tool carrier cylinder of a rotary machine. 5,003,854, Cl. 83-331.000.

Carda, Dan D.: *See*—
Dunn, Wendell E., Jr.; Carda, Dan D.; and Storbeck, Timothy A., 5,004,500, Cl. 75-422.000.

Cardani, Silvestro; and Pareschi, Flavio, to SGS-Thomson Microelectronics S.r.l. Apparatus for treating silicon wafers in an acid bath. 5,003,999, Cl. 134-105.000.

Cardinal Scale Manufacturing Company: *See*—
Langford, Stephen R.; Stone, James R.; and Bagley, William C., 5,004,058, Cl. 177-25.130.

Carey, Michael J.; and Anderson, Adrian J., to Mitel Telecom Limited. Wireless telephone system. 5,005,183, Cl. 375-1.000.

Cargo Master Incorporated: *See*—
Thomas, John F., 5,004,293, Cl. 296-166.000.

Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co.: *See*—
Pflaum, Hermann; and Strehler, Richard, 5,003,817, Cl. 73-118.100.

Carl-Zeiss-Stiftung: *See*—
Kuchel, Michael, 5,004,346, Cl. 356-360.000.

Carleton, Roland A. Detachable amber lens for a vehicle. 5,005,109, Cl. 362-61.000.

Carlqvist, Stig G., to Stig G. Carlqvist Motor Consultant, (C.M.C.) Aktiebolag. Motion transmitting mechanism. 5,003,832, Cl. 74-51.000.

Carlson, Casey L.: *See*—
Stumpf, William E.; Carlson, Casey L.; Knape, Richard S.; and Bessinger, Walter L., 5,004,202, Cl. 248-243.000.

Carlson, Edwin D.: *See*—
Hildinger, Henry W.; and Carlson, Edwin D., 5,004,862, Cl. 585-867.000.

Carlson, Harold L.; DeWitt, Michael D.; Martel, Louis, Jr.; Kelley, Larry W.; and Tayon, Jeffrey E., to Orscheln Co. Electromechanical parking brake system. 5,004,077, Cl. 188-2.00D.

Carlsson, Borje. Method and an arrangement for filling large sacks. 5,004,022, Cl. 141-114.000.

Carney, Jayne F.: *See*—
Roberts, Katherine P.; Geiger, Jon R.; and Carney, Jayne F., 5,004,682, Cl. 435-6.000.

Carpenter, Billy L.: *See*—
White, Curtis D.; and Carpenter, Billy L., 5,003,985, Cl. 128-716.000.

Carpenter, Dewey; and Ehster, Kathryn. Paper item receptacle. 5,004,099, Cl. 206-83.500.

Carr, Noel R., to Supertruss Pty. Ltd. Metal frame structure. 5,003,748, Cl. 52-693.000.

Carrier Corporation: *See*—
Drucker, Alan S., 5,004,008, Cl. 137-504.000.
Meier, Paul R.; and Mueller, Brian D., 5,004,047, Cl. 165-158.000.

Carter, John G., to Battelle Memorial Institute. Method for initiating in-situ vitrification using an impregnated cord. 5,004,373, Cl. 405-131.000.

Casio Computer Co., Ltd.: *See*—
Minamitaka, Junichi, 5,003,860, Cl. 84-609.000.
Tsukamoto, Akihiro; and Kobayashi, Keiichi, 5,005,013, Cl. 340-825.440.

Castaldi, Graziano; and Giordano, Claudio, to Zambon S.p.A. Preparing alpha-arylalkanoic acids. 5,004,832, Cl. 562-490.000.

Castaldo, Ronald. Long span sprue tube for investment casting. 5,004,037, Cl. 164-244.000.

Castaneda, Janet Y.: *See*—
Lochhead, Robert Y.; Castaneda, Janet Y.; and Hemker, Wilfred J., 5,004,598, Cl. 424-59.000.

Caterpillar Inc.: *See*—
Custer, Bruce C., 5,004,081, Cl. 180-68.500.

Catlin, Robert W., to Chips & Technologies, Inc. Apparatus for selectively providing RAS signals or RAS timing and coded RAS address signals. 5,005,157, Cl. 365-193.000.

Cattaneo, Pierr; and Gudel, Claude, to Liasons Electroniques-Mecaniques. Electric current sensing device. 5,004,974, Cl. 324-117.00R.

Cattarozzi, Andrea. Modular sectional container which can be transported manually, for conserving substances, in particular for alimentary use. 5,004,116, Cl. 220-4.340.

Caulfield, H. John; Hester, Charles F.; Kinser, Jason M.; and Shamir, Joseph, to Teledyne Brown Engineering. Neural processor with holographic optical paths and nonlinear operating means. 5,004,309, Cl. 350-3.680.

Caya, Mario. Bunk bed with ladder. 5,003,650, Cl. 5-9.100.

Caza, Lawrence A.: *See*—
Unger, William; and Caza, Lawrence A., 5,003,904, Cl. 114-140.000.

Ceccucci, Rudolph R., Jr. Mechanical tool for manipulating fittings and caps. 5,003,848, Cl. 81-176.200.

Cedarapids, Inc.: *See*—
Goodwin, Jon D., and Musil, Joseph E., 5,004,394, Cl. 414-346.000.
Ostergaard, David A., 5,004,169, Cl. 241-192.000.

Central Glass Company, Limited. *See*—
Aramaki, Minoru; Suenaga, Takashi; Sakaguchi, Hiroaki; and Hamana, Takanori, 5,004,829, Cl. 562-113.000.

Cerberus AG: *See*—
Ryser, Peter; and Strassler, Sigfrid, 5,005,003, Cl. 340-587.000.

Cerestar Holding B.V.: *See*—
Krause, Frank; and Kniewske, Reinhard, 5,004,767, Cl. 524-30.000.

Cetus Corporation: *See*—
Hershenson, Susan; and Thomson, Jody, 5,004,605, Cl. 424-85.600.

CGR MeV: *See*—
Vassenaix, Michel; and Milcamps, Jacques, 5,004,926, Cl. 250-492.300.

Chalupa, William; Kronfeld, David S.; Schneider, Paul L.; and Sklan, David, to University of Pennsylvania, The Trustees of the. Methods of increasing milk yields in ruminants. 5,004,728, Cl. 514-12.000.

Chambers, Robert K.: *See*—
Ashton, Michael J.; Bridge, Andrew W.; Chambers, Robert K.; Dron, Donald I.; Fenton, Garry, Harris, Neil V.; Lythgoe, David J.; McFarlane, Ian M.; Newton, Christopher G.; Riddell, David; Smith, Christopher; Stuttle, Keith A. J., and Toft, Malcolm P., 5,004,747, Cl. 514-309.000.

Chan, Yet, to Achiever Industries, Ltd. Camera mechanism. 5,005,034, Cl. 354-204.000.

Chaney, Raymond J.; McMurtry, David R.; and Wilson, David, to Reinshaw plc. Scales for position determining apparatus having marks of different amplitudes thereon. 5,004,982, Cl. 324-207.220.

Chang, David B.: *See*—
Vali, Victor; Chang, David B.; and Brownrigg, Patrick C., 5,004,914, Cl. 250-227.270.

Charles Packaging Corporation: *See*—
Blezard, Robert C., 5,004,093, Cl. 198-430.000.

Chau, Tommy L.: *See*—
Cherukuri, Subraman R.; Chau, Tommy L.; Raman, Krishna P.; and Orama, Angel M., 5,004,595, Cl. 424-48.000.

Chen, Chun-Teh. Submerged-type gas cleaning system. 5,004,486, Cl. 55-222.000.

Chen, Evan N., to Warner-Lambert Company. Flexible razor head. 5,003,694, Cl. 30-49.000.

Chen, Hai C.; and Yeh, Felix W. H. Apparatus for controlling an electric elevator. 5,004,076, Cl. 187-130.000.

Chen, Kueing-Long, to Texas Instruments Incorporated. Self-aligned NPN bipolar transistor built in a double polysilicon CMOS technology. 5,005,066, Cl. 357-43.000.

Chen, Michael, to Advance Security Inc. Central lock control system adapted for automobile. 5,004,931, Cl. 307-10.200.

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Catlin, Robert W., 5,005,157, Cl. 365-193.000.

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Moote, Richard K.; Weber, Gregory T.; and Robinson, William O., 5,003,944, Cl. 123-299.000.
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Miyake, Teruyoshi; and Yamamoto, Tatsuo, 5,003,638, Cl. 2-167.000.

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Lipchak, John B.; Oblak, Tod A.; Bednar, Fred H.; Ciaramitaro, William, Hughes, Francis R.; Smith, John R.; and Gisoni, Gregory A., 5,005,142, Cl. 364-550.000.

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Cortolano, Frank P.; Seltzer, Raymond; and Patel, Ambelal R., 5,004,770, Cl. 524-99.000.
Dingwall, John G.; Ehrenfreund, Josef; Hall, Roger G.; and Jack, James, 5,004,826, Cl. 558-169.000.
Kvita, Vratislav, 5,004,814, Cl. 549-294.000.
Mutterer, Francis; and Berger, Kurt, 5,004,759, Cl. 524-89.000.
Phaff, Rox; and Bedekovic, Davor, 5,004,813, Cl. 548-463.000.
Rink, Hans, 5,004,781, Cl. 525-54.110.
Storni, Angelo, 5,004,755, Cl. 514-653.000.

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Morser, Alfred H.; Gildemeister, Walter M.; and Farmer, David M., 5,005,135, Cl. 364-474.350.

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Wagner, Oryn B.; and Alm, Terry J., 5,004,398, Cl. 414-723.000.

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Pryor, Timothy R.; Hageniers, Omer L.; Pastorius, Walter J.; Liptay-Wagner, Nicholas; and Clarke, Donald A., 5,004,339, Cl. 356-241.000.

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Lyons, Nicholas; Baxter, William R. S.; Woodward, Adrian M.; and Clarke, Roger W., 5,004,542, Cl. 210-356.000.

Claude, Jacques, to Intertechnique. Device for connecting a breathing mask to a helmet. 5,003,632, Cl. 2-6.000.

Cleanlite Aire Inc.: *See*—
Suzuki, Atsushi, 5,004,600, Cl. 424-76.300.

Clinkenbeard, Jack L., to Ashland Oil, Inc. Automatic total reducers monitoring and adjustment system. 5,004,696, Cl. 436-51.000.

Clough, John M.: *See*—
Sugavanam, Balasubramanyan; Worthington, Paul A.; and Clough, John M., 5,004,494, Cl. 71-92.000.

Cobb, Michael E.: *See*—
Hillman, Robert S., Cobb, Michael E.; Allen, Jimmy D.; Gibbons, Ian; Ostoich, Vladimir E.; and Winfrey, Laura J., 5,004,923, Cl. 250-341.000.

Cocherell, Francis E.; Harper, Homer C.; and Hsieh, George. Anhydrous toothpaste or dental cream composition. 5,004,596, Cl. 424-52.000.

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Cockram, David J.; and Cockram, Edgar S. R., 5,004,960, Cl. 315-307.000.

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Cohen, Samuel; and Manne, Liora G. Needle felted fabrics. 5,003,674, Cl. 28-109.000.

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Doone, Rodney M.; and Colbert, Henry J., 5,003,689, Cl. 29-613.000.

Cole, James M.: *See*—
Mixon, Larry C.; Snyder, George W.; Hill, Scott D.; Johnson, Gregory L.; Wlodarski, J. Frank; von Spakovsky, Alexis P.; Emerson, John D.; Cole, James M.; and Tipton, John P., 5,003,883, Cl. 102-476.000.

Coleman, Paula M.; and Luecke, Mark T., to Lewis Gallob Toys, Inc. Dollhouse within a dollhouse. 5,004,445, Cl. 446-478.000.

Colgate-Palmolive Company: *See*—
Julemont, Michel; Zocchi, Germaine; Mineo, Nunzio; and Fonsny, Pierre, 5,004,556, Cl. 252-99.000.

Collet, Marnix G.: *See*—
Bakker, Jacobus G. C.; and Collet, Marnix G., 5,005,062, Cl. 357-24.000.

Collett, Donald H. Method and apparatus for cleaning and sanitizing HVAC systems. 5,003,998, Cl. 134-22.120.

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Columbia in the City of New York, The Trustees of: *See*—
Stefaniak, Philip S.; and Fine, Daniel H., 5,004,124, Cl. 222-136.000.

Colwell, Joseph G., Jr., to J. M. Huber Corporation. Superconducting magnetic separator. 5,004,539, Cl. 210-222.000.

Combi Co., Ltd.: *See*—
Nakao, Shinroku; Suzuki, Yoshiyuki; and Kato, Hitoshi, 5,004,253, Cl. 280-47.380.

Communications Satellite Corporation: *See*—
Zaghloul, Amir I.; and Sorbello, Robert M., 5,005,019, Cl. 343-700.0MS.

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Parsons, Gerald J., Greenwald, Brian D.; McGrath, John J.; and Andrasko, Stephen W., 5,005,197, Cl. 379-21.000.

Compuadd Corporation: *See*—
Mast, Thomas R., 5,004,867, Cl. 174-35.0GC.

Concord Industries, Inc.: *See*—
Somers, James S., 5,004,177, Cl. 242-99.000.

Connell, Richard A.; Keating, Raymond; Sansone, Ronald P.; and Schumacher, Karl H., to Pitney Bowes Inc. Method and apparatus for categorizing and certifying mail. 5,005,124, Cl. 364-401.000.

Conner, Lowell J.: *See*—
Borer, John W.; Skilliter, William J.; and Conner, Lowell J., 5,004,492, Cl. 65-289.000.

Connors, Peter J.; Scully, Sean; Bria, Frank; and ReFalo, John, III, to Remcon Plastics, Inc. Tool storage box. 5,004,103, Cl. 206-372.000.

Conoco Inc.: *See*—
Rosendahl, Finn; Fjeld, Svein; Salama, Mamdouh M.; and Gillen, Michael P., 5,004,051, Cl. 166-357.000.

Conprinta Ltd.: *See*—
Lauber, Peter, 5,003,873, Cl. 101-219.000.

Constantinou, Dennis: *See*—
Edelman, William; Constantinou, Dennis; Stefanovski, Miles; Jan, Yuh L.; Fahlen, Theodore S.; Hansen, Ronald L.; and Kramasz, Kenneth J., 5,005,180, Cl. 372-57.000.

Conway, Joseph. Display case. 5,004,303, Cl. 312-140.000.

Cook, Charles T. Studio easel. 5,004,204, Cl. 248-449.000.

Cook, George W. Oral appliance for improving breathing and methods of using and making same. 5,003,994, Cl. 128-848.000.

Cook, Stephen D., to Tulane University. Porous coated total hip replacement system. 5,004,476, Cl. 623-23.000.

Cooke, Kevin K.; Dewitt, John R., Galinis, Paul J.; and Koteff, Walter B., to International Business Machines Corp. Self-contained grounding strip. 5,004,866, Cl. 174-35.0GC.

Cooper Industries, Inc.: *See*—
Korczynski, Jacek M.; and Stack, Thomas J., 5,004,994, Cl. 337-66.000.
Lipscomb, Dennis E.; Wilhelm, Gary L.; Perna, Barbara G.; and Guenthner, Waldemar G., 5,003,695, Cl. 30-193.000.

Copal Co., Ltd.: *See*—
Ohzeki, Yoshiyuki; and Amikura, Kazuo, 5,004,941, Cl. 310-49.00R.

Cordery, Robert A., to Pitney Bowes Inc. Field generation and reception system for electronic article surveillance. 5,005,001, Cl. 340-551.000.

Corning Incorporated: *See*—
Bardhan, Pronob; and Yu, Chyang J., 5,004,713, Cl. 501-134.000.

Corporation Salaison Melrose: *See*—
Choquette, Paul, 5,004,622, Cl. 426-513.000.

Corry, Durrell. Rain gutter support and mounting bracket. 5,004,191, Cl. 248-48.200.

Cortec, Inc.: *See*—
Dingwall, Robert P.; and Bellin, Howard T., 5,003,983, Cl. 128-704.000.

Cortolano, Frank P.; Seltzer, Raymond; and Patel, Ambelal R., to Ciba-Geigy Corporation. Polymeric substrates stabilized with N-substituted hindered amines. 5,004,770, Cl. 524-99.000.

Costanza, Daniel W.: *See*—
Stokes, Ronald E.; Nowak, William J.; Attardi, Anthony A.; and Costanza, Daniel W., 5,005,054, Cl. 355-273.000.

Costanza, John R.: *See*—
Vicari, Richard; Costanza, John R.; Lamonte, Ronald R.; and Miano, Ralph M., 5,004,796, Cl. 528-179.000.

Cotton Incorporated: *See*—
Wilkes, Lambert H.; Mehner, Martin; and Lalor, William F., 5,003,669, Cl. 19-49.000.

Couasnard, Claude: *See*—
Bergero, Jean-Pierre; and Couasnard, Claude, 5,004,990, Cl. 333-22.00R.

Coulon, Jean-Claude: *See*—
Kawahara, Hideo; Sakata, Nobuhiro; Coulon, Jean-Claude; and Lovera, Patrick, 5,004,503, Cl. 106-287.180.

Councilman, Richard R., to Zebco Corporation. Convertible bail opening system. 5,004,182, Cl. 242-232.000.

Courtright, David A.: *See*—
O'Connor, James T.; and Courtright, David A., 5,005,191, Cl. 375-116.000.

Cousin, Michel: *See*—
Boinot, Francois; Cousin, Michel; Francois, Pierre-Michel; and Michel-Dansac, Francois, 5,004,789, Cl. 525-506.000.

Cousminer, Joseph J.: *See*—
Shanbhag, Sudhakar P.; Cousminer, Joseph J.; and Milani, Gerald, 5,004,616, Cl. 426-102.000.

Cowan, Jack C.: *See*—
House, Roy F.; Wilkinson, Andree H.; and Cowan, Jack C., 5,004,553, Cl. 252-8.510.

Craig, William S.; and Siegel, Robert S., to Phillips Petroleum Company. Purification of hepatitis proteins. 5,004,688, Cl. 435-69.300.

Crass, Matthew M.: *See*—
Becker, Thomas P.; Rameshk, Sohrab S.; and Crass, Matthew M., 5,004,984, Cl. 324-402.000.

Crawford, Paul M.; Campbell, Herbert W.; Myers, Michael J.; and Siverns, Steven L., to Lenon Envionmental Inc. Sampling processes for use in the controlled addition of conditioning material to suspensions, sludges and the like and apparatus thereof. 5,003,814, Cl. 73-59.000.

Crea, Roberto: *See*—
Cohen, Charles M.; and Crea, Roberto, 5,004,686, Cl. 435-69.100.

Creative Biomolecules, Inc.: *See*—
Cohen, Charles M.; and Crea, Roberto, 5,004,686, Cl. 435-69.100.

Creative Techniques, Inc.: *See*—
Salloum, James S., 5,004,179, Cl. 242-118.600.

Creswell, Michael W.: *See*—
Kun, Zoltan K.; Creswell, Michael W.; and Hopkins, Richard H., 5,004,956, Cl. 315-169.300.

Crisafulli, Jerry: *See—*
Kleven, Lawrence P.; Agranat, Edward A.; Crisafulli, Jerry, Robinson, Hugh; Smith, David J., Wiseley, Thomas, Fortier, Richard C.; Johnson, Severne; and Menzin, Marvin, 5,004,954, Cl. 315-106.000.

Crisanti, Mark M.: *See—*
Majeti, Satyanarayana; Guay, Christopher B.; and Crisanti, Mark M., 5,004,597, Cl. 424-52.000.

Cristine, John: *See—*
Bullard, James R.; Muller, Richard P.; Grossi, Benedetto; and Cristine, John, 5,003,963, Cl. 128-11.000.

Cronje, Izak J.: *See—*
Dekker, Johannes; and Cronje, Izak J., 5,004,831, Cl. 562-475.000.

Cruden, John M. *See—*
Mahil, Mahinder S.; and Cruden, John M., 5,004,768, Cl. 524-30.000.

Csajagi, Eva: *See—*
Jekkel nee Bokany, Antonia; Albrecht, Karoly; Ambrus, Gabor; Lang, Tibor; Szabo, Istvan M.; Ilkoy, Eva, Konczol, Kalman; Moravcsik, Imre; Hantos, Gabor, Simonovits, Emilia, Lengyel nee Szemenyei, Zsuzsanna; Vida, Zsuzesanna; and Csajagi, Eva, 5,004,695, Cl. 435-253.100.

Cubic Defense Systems: *See—*
Shannon, Leland K.; Gentry, Ted L., and Le, Toby, 5,003,811, Cl. 73-12.000.

Culbertson, Samuel W.; and Williams, Keith G., to Binks Manufacturing Company. Pressure responsive drivers for reciprocating pump and method. 5,004,403, Cl. 417-53.000.

Cumbie, Carlyen F. Lock for retainer pin. 5,004,390, Cl. 411-340.000.

Cummings, Ernie W., to Drain-All, Inc. Automatic drain valve. 5,004,004, Cl. 137-195.000.

Cummiskey, Peter; Epstein, Marvin, Gilmour, Paul A., and Kim, Richard, to ITT Corporation. Multirate wire line modem apparatus. 5,005,168, Cl. 370-24.000.

Cunningham, David G. *See—*
Booth, Richard C., Beaumont, Alan R., Daymond-John, Barbara E., Cunningham, David G., and Stallard, William A., 5,004,314, Cl. 350-96.140.

Cunningham, David W., to Lee Colortran, Inc. Dimming control circuit. 5,004,957, Cl. 315-199.000.

Curnutt, Gerald L., to Dow Chemical Company, The. Catalytic vapor phase process for producing dihydrocarbyl carbonates. 5,004,827, Cl. 558-277.000.

Custer, Bruce C., to Caterpillar Inc. Battery restraint system. 5,004,081, Cl. 180-68.500.

Custom Chrome, Inc.: *See—*
Hoeptner, Herbert W., 5,003,945, Cl. 123-310.000

Czarn, David A.. *See—*
Sogge, Dale R.; O'Brien, Edward F.; and Czarn, David A., 5,004,876, Cl. 200-83.00P.

D.O.C.C., Inc.. *See—*
Bricken, Jonathan, 5,003,892, Cl. 110-346.000

Da Costa, Caio M. F. N., to Empresa Brasileira De Compressores S/A Embraco. Discharge system for rotary rolling piston compressor. 5,004,408, Cl. 418-15.000.

Da Costa, Caio M. F. N., to Empresa Brasileira de Compressores-S/A-Embraco. High frequency noise suppressor for hermetic rotary compressors. 5,004,410, Cl. 418-63.000

Dai-Ichi Kogyo Seiyaku Co., Ltd *See—*
Yada, Akira, and Matsumoto, Shusaku, 5,004,761, Cl. 522-3.000

Daibov, Sergei V. *See—*
Goikhman, Yakov A.; Krjukov, Georgy M.; Onotsky, Melis I.; Sorokin, Georgy M.; Filatov, Alexei V., Tsarapkin, Viktor V.; Yakimov, Vadim P., Smirnov, Gennady A., Nikiforov, Ivan I., Burdukovsky, Alexandr I., Daibov, Sergei V., and Kurdjukov, Alexandr S., 5,004,056, Cl. 175-293.000

Daidoh, Yoshimasa *See—*
Aono, Yoshihito; Iwamatsu, Takanori, Minowa, Morihiko; Takenaka, Sadao; Daidoh, Yoshimasa; Nakamura, Hiroshi; and Fujino, Nobutsugu, 5,005,186, Cl. 375-82.000.

Daikin Industries Ltd *See—*
Tohzuka, Takashi; Yamamoto, Ikuo; and Misugi, Yoshihiko, 5,004,554, Cl. 252-54.600
Yoshida, Tutomu; and Iida, Shigeharu, 5,004,825, Cl. 558-131.000.

Daikuhara, Yasushi: *See—*
Gohda, Eiichi; Tsubouchi, Hirohito; Nakayama, Hiroyuki; Hirono, Shuichi; Takahashi, Kozo; Hashimoto, Shuji; and Daikuhara, Yasushi, 5,004,805, Cl. 530-399.000.

Daimler-Berg AG *See—*
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Dainippon Screen Mfg. Co., Ltd.: *See—*
Yahata, Makoto; and Nishida, Fumihiko, 5,005,044, Cl. 355-40.000.

Daley, Peter A., to Dynamic Foam Products, Inc. Custom insole for athletic shoes. 5,003,708, Cl. 36-44.000.

Dalferth, G. Robert, to Morlock Mechanik GmbH Device for applying color to a block of a tampon printing machine. 5,003,872, Cl. 101-163.000.

Dallas Semiconductor Corporation. *See—*
Kurtowski, Hal, 5,005,151, Cl. 364-900.000.

D'Amato, Salvatore F.; Sorbo, Peter, and Dunning, Richard E., to American Bank Note Holographics, Inc. Apparatus for printing and for forming a hologram on sheet material. 5,003,915, Cl. 118-46.000

Dambre, Pierre, to Elevage Avicole de la Bohardiere. Egg incubation carriage for a ventilated incubation enclosure. 5,003,924, Cl. 119-44.000.

Danheiser, Rick L.; and Nowick, James S., to Massachusetts Institute of Technology. Method for synthesizing β-lactones and alkenes. 5,004,815, Cl. 549-328.000.

Daniel, Kenneth J.: *See—*
Rumbaugh, James E.; and Daniel, Kenneth J., 5,005,119, Cl. 364-200.000.

Dankwort, Rudolph C.; and Klem, Charles D., to Honeywell Inc. Time multiplexed fiber optic sensor. 5,004,911, Cl. 250-227.210.

Danzuka, Toshimitsu: *See—*
Suzuki, Akio, Takada, Yoshihiro; Izumizaki, Masami, and Danzuka, Toshimitsu, 5,004,928, Cl. 250-559.000

Daoud, Bassel H., to AT&T Bell Laboratories. Interconnection device. 5,004,433, Cl. 439-502.000.

Das, Sajal; and Prevorsek, Dusan C., to Allied-Signal Inc. Cyanato group containing phenolic resins, phenolic triazines derived therefrom 5,004,788, Cl. 525-504.000.

Dashevsky, Norm. Agricultural sprayer. 5,004,155, Cl. 239-127.000.

Dato, Paul: *See—*
Grage, Ludger, and Dato, Paul, 5,005,083, Cl. 358-181.000.

David Clark Company Incorporated *See—*
Bassick, John W.; and Dubois, Edward A., 5,003,630, Cl. 2-2.10A

Davy McKee (London) Limited: *See—*
Bradley, Michael W., Harris, Norman, and Turner, Keith, 5,004,845, Cl. 568-885.000.

Dayco Products-Eaglemotive, Inc.: *See—*
Settles, David J., 5,003,685, Cl. 29-525.000.

Daymond-John, Barbara E *See—*
Booth, Richard C., Beaumont, Alan R., Daymond-John, Barbara E.; Cunningham, David G.; and Stallard, William A., 5,004,314, Cl. 350-96.140.

De, Dilip K., to International Superconductor Corp. Superconductive quantum interference device for the non-destructive evaluation of metals. 5,004,724, Cl. 505-1.000.

Deaett, Michael A., to Raytheon Company. Digital sound synthesizer and method. 5,005,204, Cl. 381-51.000

Dean, Grant, to Ul-Tie-Mate Products, Inc. Tangle resistant pet tie apparatus and method. 5,003,929, Cl. 119-120.000.

De Bastiani, Basilio M. *See—*
Faccioli, Giovanni; De Bastiani, Basilio M.; Magnan, Bruno, and Soffiatti, Renzo, 5,004,501, Cl. 106-35.000.

De Castelli, Giorgio *See—*
Barbagli, Rino O.; and De Castelli, Giorgio, 5,004,060, Cl. 180-6.440.

DeCaul, Lorenzo C., Han, Scott; Palermo, Robert E., and Walsh, Dennis E., to Mobil Oil Corporation. Process for upgrading methane to higher hydrocarbons. 5,004,856, Cl. 585-500.000.

DeChristopher, Eugene L. Roller for forming a dough ball into a pizza shell. 5,004,350, Cl. 366-69.000

DeConti, John P., and Quenneville, Raymond N., to DeConti, John P. Energy absorbing device and torque measuring apparatus therefor. 5,003,829, Cl. 73-862.120.

deFigueiredo, Rui J. P. *See—*
Krishen, Kumar; Shaw, Scott W., and deFigueiredo, Rui J. P., 5,005,147, Cl. 364-578.000.

Deguchi, Toshihisa. *See—*
Sakamoto, Noriaki, Maeda, Shigemi; Yamanaka, Toshihiro; Deguchi, Toshihisa, Hone, Nobuyuki, Yamaguchi, Takeshi, and Kojima, Kunio, 5,005,164, Cl. 369-48.000

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Deller, Klaus, Ettlinger, Manfred; Klingel, Rainhard; and Krause, Helmfried, 5,004,719, Cl. 502-242.000.

Dehn, Rudolph A., and Macdonald, Andrew J., to General Electric Company. Ice detection system. 5,005,015, Cl. 340-962.000

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Curnutt, Gerald L., 5,004,827, Cl. 558-277.000.
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Lee, Guo-shuh J.; Garces, Juan M.; Maj, Joseph J., and Rocke, Stephen C., 5,004,841, Cl. 568-678.000
Patton, Robert T., Vaughn, Walter L.; and McKeand, Thomas J., Jr., 5,004,760, Cl. 521-149.000

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Draper, Kenneth G., to Schering Corporation. Antiviral oligomers. 5,004,810, Cl. 536-27.000.

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Hallam, Donald E.; Popper, Peter; Staunton, Harold F., Taylor, Robert E.; and Yngve, Paul W., 5,003,763, Cl. 57-297.000.
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Paquette, Louis J., 5,004,209, Cl. 251-144.000.
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Duruz, Jean-Jacques, to Moltech Invent S.A. Refractory oxycompound/refractory hard metal composite and used in molten salt aluminum production cells. 5,004,524, Cl. 204-243.00R.
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Dyar, Royce M. Flexible outdoor flip sign display. 5,003,716, Cl. 40-503.000.
Dyer, John, to Hoke Incorporated. Geared air actuator. 5,003,864, Cl. 92-132.000.
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Foot, John, to Paccar Inc. Vehicle nose pivotal hinge assembly 5,004,062, Cl. 180-69.210.
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Boaz, Premakaran T., 5,004,284, Cl. 294-118.000.
Brown, Franklin I., 5,004,490, Cl. 60-60.520
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Staniforth, John N., 5,004,614, Cl. 424-466.000
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Seto, Nobuo, and Morigaki, Masakazu, 5,004,678, Cl. 430-548.000
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Terai, Fumitaka; Yukawa, Kimio; Suyefuji, Mineo; Saito, Hiroki, and Yamaguchi, Shigeru, 5,004,628, Cl. 427-389.900.
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Aono, Yoshihito; Iwamatsu, Takanori; Minowa, Morihiko; Takenaka, Sadao; Daidoh, Yoshimasa; Nakamura, Hiroshi; and Fujino, Nobutsugu, 5,005,186, Cl. 375-82.000.
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Kakinoki, Yoshikazu; Nakashima, Masato; Koezuka, Tetsuo; Hiraoka, Noriyuki; Tsukahara, Hiroyuki; Suto, Yoshinori; Oshima, Yoshitaka; and Hashinami, Shinji, 5,004,929, Cl. 250-561.000.
Kawamoto, Masakazu, 5,005,172, Cl. 371-18.000.
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Fukuhara, Akihiko: *See*—
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Fukumoto, Hiroshi: *See*—
Arahara, Kozo; Fukui, Tetsuro; Fukumoto, Hiroshi; Katayama, Masato; and Takasu, Yoshio, 5,004,667, Cl. 430-255.000.
Fukushima, Nobuo; Saksi, Shinji; Takdea, Osamu; Takei, Masahiro; Suzuki, Yasutomo; Okino, Tadashi; and Jinnai, Shigeru, to Canon Kabushiki Kaisha. Recording and/or reproducing apparatus adapted to minimize electrical energy consumption. 5,005,088, Cl. 360-69.000.
Fukushima, Toru; Takabayashi, Tsunehisa; and Ogai, Mikio, to Furukawa Electric Company, Ltd., The. Semiconductor device. 5,005,179, Cl. 372-46.000.
Fuller, Timothy J.; Marchessault, Robert H.; and Bluhm, Terry L., to Xerox Corporation. Toner and developer compositions containing biodegradable semicrystalline polyesters. 5,004,664, Cl. 430-106.600.
Funaki, Keisuke: *See*—
Yamasaki, Komei; and Funaki, Keisuke, 5,004,649, Cl. 428-461.000.
Fung, Paul: *See*—
Wislinski, Martin; Bergquist, Roger; Schroeder, Manfred; Weir, Theodore; Monetti, Matthew; and Fung, Paul, 5,004,579, Cl. 264-517.000.
Furubayashi, Hisatoshi: *See*—
Webb, Brian C.; Pedley, Derek G.; Prosser, Stephen J.; Hijikigawa, Masaya; and Furubayashi, Hisatoshi, 5,004,700, Cl. 437-42.000.
Furukawa Electric Company, Ltd., The: *See*—
Fukushima, Toru; Takabayashi, Tsunehisa; and Ogai, Mikio, 5,005,179, Cl. 372-46.000.
Miyazaki, Hiroshi, 5,004,315, Cl. 350-96.150.
Furukawa, Kazunari, to Yamaha Corporation. Acoustic apparatus. 5,004,066, Cl. 181-160.000.
Furuno Electric Co., Ltd.: *See*—
Oshima, Hisaichi; and Yamashita, Masami, 5,005,027, Cl. 346-76.0PH.
Furuta, Kouichi, to Sharp Kabushiki Kaisha. Semiconductor integrated circuit and test method for characteristics. 5,004,934, Cl. 307-303.000.
Furuya, Takashi: *See*—
Sakakibara, Shiro; and Furuya, Takashi, 5,004,082, Cl. 192-3.260.
Furuya, Takeo: *See*—
Kobayashi, Kyoji; and Furuya, Takeo, 5,004,178, Cl. 242-107.000.
Furuya, Yhuzi: *See*—
Haruki, Shinichi; Furuya, Yhuzi; and Tsujita, Akio, 5,005,051, Cl. 355-221.000.
Furuyama, Masaaki, to Fuji Jukogyo Kabushiki Kaisha. Engine idling control apparatus. 5,003,816, Cl. 73-117.300.
Fuse, Masashi, to Alps Electric Co., Ltd. Transmitting radiation through a flexible printed circuit to an optical fiber bundle. 5,005,029, Cl. 346-107.00R.
Fushiya, Fusao; Yokoyama, Yoshio; and Hara, Akihito, to Makita Electric Works, Ltd. Electrically-operated tacker. 5,004,140, Cl. 227-8.000.
G. D Societa' per Azioni: *See*—
Draghetti, Fiorenzo, 5,003,755, Cl. 53-466.000.
G & S Metal Products Company, Inc.: *See*—
Nottingham, John R.; Spirk, John W., Jr.; and Brokaw, Paul E., 5,004,882, Cl. 219-10.55E.
Gabas, Carlos, to Industrias Techno-Matic S.A. Automobile sun visor with built-in air freshener box. 5,004,138, Cl. 224-312.000.
Gacs, Peter T.: *See*—
Donneky, Peter; and Gacs, Peter T., 5,004,188, Cl. 244-137.002.
Gadberry, Michael D.: *See*—
Robb, Stephen P.; Phippa, John P.; and Gadberry, Michael D., 5,005,061, Cl. 357-23.130.
Gagneux, Georges, to Valeo Systemes d'Essuyage. Brush holder device for an electric motor having a rotatable commutator. 5,004,943, Cl. 310-239.000.
Gaiser, William R.: *See*—
Bartley, Harold D.; and Gaiser, William R., 5,004,109, Cl. 215-1.00C.
Gajda, Gregory J., to UOP. Butene isomerization process. 5,004,858, Cl. 585-667.000.
Gale, Robert M.: *See*—
Osborne, James L.; Nelson, Melinda; Enscore, David J.; Yum, Su I.; and Gale, Robert M., 5,004,610, Cl. 424-448.000.
Galinis, Paul J.: *See*—
Cooke, Kevin K.; Dewitt, John R.; Galinis, Paul J.; and Koteff, Walter B., 5,004,866, Cl. 174-35.0GC.
Gallagher, James C.; and Gallagher, Michael K. Method and apparatus for negative charge effect and separation of undesirable gases. 5,005,101, Cl. 361-231.000.
Gallagher, Michael K.: *See*—
Gallagher, James C.; and Gallagher, Michael K., 5,005,101, Cl. 361-231.000.
Gandy, Raymond C.: *See*—
Atkins, Kenneth E.; Gentry, Robert R.; and Gandy, Raymond C., 5,004,765, Cl. 523-434.000.
Gaona, Manuel; and Gaona, Stephen M. Mist air conditioner for evaporative cooler. 5,003,789, Cl. 62-304.000.
Gaona, Stephen M.: *See*—
Gaona, Manuel; and Gaona, Stephen M., 5,003,789, Cl. 62-304.000.
Garces, Juan M.: *See*—
Lee, Guo-shuh J.; Garces, Juan M.; Maj, Joseph J.; and Rocke, Stephen C., 5,004,841, Cl. 568-678.000.
Gardiner Communications Corporation: *See*—
Harris, James M., 5,005,023, Cl. 343-756.000.
Gardiner, Martin H.: *See*—
Fonss, Jack G.; Silverberg, Howard Z.; and Gardiner, Martin H., 5,004,962, Cl. 318-85.000.
Gardner Asphalt Corporation: *See*—
Grzybowski, Kenneth F.; and Anthony, Brian J., 5,004,772, Cl. 524-62.000.
Garlati, Rodolfo: *See*—
Palmieri, Beniamino; and Garlati, Rodolfo, 5,004,469, Cl. 606-139.000.
Garlisi, Salvatore: *See*—
Bastioli, Catia; Garlisi, Salvatore; Fornara, Dario; and Bellotti, Vittorio, 5,004,817, Cl. 549-557.000.
Garlock Inc.: *See*—
Messenger, Edward J.; and Fedorovich, George, 5,004,248, Cl. 277-37.000.
Garman, Charles L.: *See*—
Pugliese, Joseph S.; and Garman, Charles L., 5,004,514, Cl. 156-251.000.
Garner, William C. Saw table apparatus. 5,004,029, Cl. 144-287.000.
Gas Research Institute: *See*—
Fischer, Robert D., 5,003,788, Cl. 62-238.700.
Gaslonde, Jean-Pierre: *See*—
Grave, Georges A.; and Gaslonde, Jean-Pierre, 5,005,207, Cl. 388-816.000.
Gates Rubber Company, The: *See*—
Bemis, Steve; and Stocker, Erwin E., 5,004,513, Cl. 156-191.000.
Gauthier, Jacques Y.: *See*—
Young, Robert N.; Zamboni, Robert; and Gauthier, Jacques Y., 5,004,743, Cl. 514-227.800.

Gavrilenko, Tamara P.: *See*—
Ulyanitsky, Vladimir J., Gavrilenko, Tamara P., Nikolaev, Jury A., and Buteev, Alexandr I., 5,004,021, Cl. 141-67.000.

Gazelle Microcircuits, Inc.: *See*—
Fitzpatrick, Mark E.; and Burd, Robert C., 5,004,971, Cl. 323-312.000.

Gebr. Happich GmbH: *See*—
Viertel, Lothar; Kaiser, Peter; and Welter, Patrick, 5,004,288, Cl. 296-97.110.

GEC Mechanical Handling Limited: *See*—
Donneky, Peter; and Gacs, Peter T., 5,004,188, Cl. 244-137.002.

Geiger, Jon R.: *See*—
Roberts, Katherine P.; Geiger, Jon R.; and Carney, Jayne F., 5,004,682, Cl. 435-6.000.

Geisler, Edward. Water reclamation apparatus. 5,004,536, Cl. 210-136.000.

General Electric Company: *See*—
Dehn, Rudolph A.; and Macdonald, Andrew J., 5,005,015, Cl. 340-962.000.
Piccone, Dante E.; McIntyre, James E., deceased; and Major, Leroy B., 5,005,065, Cl. 357-38.000.
Rumbaugh, James E.; and Daniel, Kenneth J., 5,005,119, Cl. 364-200.000.
Sawyer, Thomas F., 5,004,153, Cl. 239-81.000.
Seymour, Raymond K.; Hart, Marshall B.; Magnon, Gary D., von Kannewurff, Michael C.; and Doughty, Dennis J., 5,004,878, Cl. 200-144.00R.
Stocking, George E.; Stich, Richard A.; Besore, John K.; and Denham, Clarence W., 5,004,302, Cl. 312-214.000.
Svec, Paul S., Borom, Marcus P., Szala, Lawrence E., Brun, Milivoj K.; Miller, Steven A.; and Mourer, David P., 5,004,629, Cl. 427-204.000.
Thompson, Robert A., 5,003,805, Cl. 72-53.000.
Zdepski, Joel W.; and Koslov, Joshua L., 5,005,082, Cl. 358-174.000.

General Electric Company, p.l.c., The: *See*—
Robins, Michael P., and Roberts, Malcolm T., 5,005,128, Cl. 364-424.020

General Motors Corporation: *See*—
Miller, Gregory A., Pearson, Jeffery L.; and Horsch, John D., 5,004,266, Cl. 280-743.000.
Rush, William B., II; Elder, Jack E.; Shier, Richard K.; Foss, Jerry B.; Haltiner, Karl J., Jr.; and Wheeler, Grant M., 5,003,933, Cl. 123-52.0MC.
Stettner, Ernest R.; and Stoltman, Donald D., 5,004,162, Cl. 239-585.000.
Ward, Robert W., 5,004,577, Cl. 264-112.000.

Genetech, Inc. *See*—
Light, David R.; and Rastetter, William H., 5,004,690, Cl. 435-138.000.

Genetics Institute, Inc.: *See*—
Kaufman, Randal J.; and Pittman, Debra, 5,004,803, Cl. 530-383.000.

Gentry, Robert R.: *See*—
Atkins, Kenneth E.; Gentry, Robert R.; and Gandy, Raymond C., 5,004,765, Cl. 523-434.000.

Gentry, Ted L.: *See*—
Shannon, Leland K.; Gentry, Ted L.; and Le, Toby, 5,003,811, Cl. 73-12.000.

Geo-Centers, Inc.: *See*—
Schnur, Joel M.; Rudolph, Alan S.; and Testoff, Mary A., 5,004,566, Cl. 260-403.000.

Georg Fischer AG: *See*—
Gut, Karl; Matejka, Wolfgang A.; Gysel, Walter; and Gerber, Urs, 5,003,880, Cl. 102-314.000.

Geostock S.A.R.L.: *See*—
Boulanger, Alain; and Rousseau, Andre J., 5,004,298, Cl. 299-5.000.

Gerber, Urs. *See*—
Gut, Karl; Matejka, Wolfgang A.; Gysel, Walter; and Gerber, Urs. 5,003,880, Cl. 102-314.000.

Getman, Daniel P.: *See*—
Dyroff, David R.; Getman, Daniel P.; and Glascock, Joan K., 5,004,558, Cl. 252-95.000

Ghandehari, Mohammad H., to Union Oil Company of California. Rare earth-iron-boron compositions for polymer-bonded magnets. 5,004,499, Cl. 75-254.000.

Giaramita, Michael. Color dental kit and method of use. 5,004,417, Cl. 433-26.000.

Gibbons, Ian. *See*—
Hillman, Robert S.; Cobb, Michael E.; Allen, Jimmy D.; Gibbons, Ian; Ostoich, Vladimir E.; and Winfrey, Laura J., 5,004,923, Cl. 250-341.000.

Giddey, Claude; and Dove, Georges, to Battelle Memorial Institute. Aqueous foaming composition and method for homogenizingly incorporating water into lipophilic materials. 5,004,623, Cl. 426-564.000.

Gildemeister, Walter M.: *See*—
Morser, Alfred H.; Gildemeister, Walter M.; and Farmer, David M., 5,005,135, Cl. 364-474.350.

Giles, Clinton R.: *See*—
Desurvire, Emmanuel; Giles, Clinton R.; Simpson, Jay R.; and Zyskind, John L., 5,005,175, Cl. 372-6.000.

Gillard, Clive H., to Sony Corporation. Motion dependent video signal processing. 5,005,078, Cl. 358-140.000.

Gillard, Clive H.: *See*—
Samad, Raphael; and Gillard, Clive H., 5,005,077, Cl. 358-140.000.

Gillen, Michael P.: *See*—
Rosendahl, Finn, Fjeld, Svein; Salama, Mamdouh M.; and Gillen, Michael P., 5,004,051, Cl. 166-357.000.

Gillespie, Peter J. *See*—
Wasmer, William D., Gillespie, Peter J.; Lippmann, James G., and Le, Hiep M., 5,005,069, Cl. 357-72.000.

Gilmour, Paul A.: *See*—
Cummiskey, Peter; Epstein, Marvin; Gilmour, Paul A., and Kim, Richard, 5,005,168, Cl. 370-24.000.

Gimeno, Carlos V. Non-reusable syringe. 5,004,460, Cl. 604-228.000.

Giordano, Claudio. *See*—
Castaldi, Graziano; and Giordano, Claudio, 5,004,832, Cl. 562-490.000.

Girard, Philippe. *See*—
Antoine, Michel; Barreau, Michel; Desconclois, Jean-Francois, Girard, Philippe; and Picaut, Guy, 5,004,745, Cl. 514-254.000.

Gisoni, Gregory A. *See*—
Lipchak, John B.; Oblak, Tod A.; Bednar, Fred H.; Ciaramitaro, William, Hughes, Francis R.; Smith, John R.; and Gisoni, Gregory A., 5,005,142, Cl. 364-550.000.

Glascock, Joan K.: *See*—
Dyroff, David R.; Getman, Daniel P.; and Glascock, Joan K., 5,004,558, Cl. 252-95.000.

Glasener, Ted W.: *See*—
Hartmann, Jon P.; and Glasener, Ted W., 5,004,999, Cl. 340-539.000.

Glaser, Josef: *See*—
Pleschiutschnigg, Fritz-Peter; Parschat, Lothar; Franzen, Hans U., Pfluger, Manfred, and Glaser, Josef, 5,004,040, Cl. 164-453.000

Glass, Alastair M.; Knox, Wayne H., and Nolte, David D, to AT&T Bell Laboratories. Optical processing using a multilayer heterostructure. 5,004,325, Cl. 350-354.000.

Glasstech, Inc.: *See*—
McMaster, Ronald A.; and Shetterly, Donivan M., 5,004,491, Cl. 65-106.000.

Glatt, Jack E. *See*—
Strobl, Frederick P., Jr.; and Glatt, Jack E., 5,003,733, Cl. 52-86.000.

Gleason, John R.: *See*—
Johnston, Norman J.; St. Clair, Terry L.; Baucom, Robert M., and Gleason, John R., 5,004,575, Cl. 264-136.000.

Gleim, Guunter, to Deutsche Thomson-Brandt GmbH. Circuitry for generating phase-shifted sinusoidal voltages. 5,005,114, Cl. 363-43.000.

Glick, J. Leslie, to Bionix Corporation. Methods for diagnosing, monitoring and controlling the onset and progression of certain dementias and impeding memory loss or improving impairment of memory. 5,004,615, Cl. 424-692.000.

Glinecke, Robert: *See*—
Radebaugh, Galen W.; Murtha, John L.; and Glinecke, Robert, 5,004,613, Cl. 424-465.000.

Globe-Union Inc.: *See*—
Symanski, James S., 5,004,655, Cl. 429-82.000.

Glunz, Wolfgang; and Rau, Gunnar, to MAN Roland Druckmaschinen AG. Rotary printing machine system with a web path changing arrangement. 5,003,889, Cl. 101-228.000.

Gobel, Richard: *See*—
Adams, James; Gobel, Richard; and Lanham, Bryan, 5,004,028, Cl. 144-176.000.

Godlewski, Edward S. Up-feed conveyor system. 5,004,219, Cl. 271-116.000.

Goessler, Gerhard; Wilde, Eugen; and Seeburger, Rolf, to E.G.O. Elektro-Gerate Blanc U. Fischer. Radiant element. 5,004,892, Cl. 219-464.000.

Gohda, Eiichi; Tsubouchi, Hirohito; Nakayama, Hiroyuki; Hirono, Shuichi; Takahashi, Kozo; Hashimoto, Shuji; and Daikuhara, Yasushi, to Hashimoto, Shuji; Daikuhara, Yasushi; Gohda, Eiichi; Tsubouchi, Hirohito; and Mitsubishi Kasei Corporation. Hepatocyte growth factor. 5,004,805, Cl. 530-399.000.

Goikhman, Yakov A.; Krjukov, Georgy M.; Onotsky, Melis I.; Sorokin, Georgy M.; Filatov, Alexei V., Tsarapkin, Viktor V.; Yakimov, Vadim P.; Smirnov, Gennady A.; Nikiforov, Ivan I.; Burdukovsky, Alexandr I.; Daibov, Sergei V.; and Kurdjukov, Alexandr S. Percussion-rotary drilling tool. 5,004,056, Cl. 175-293.000.

Goldburt, Efim S., and Hemmer, Richard E., to North American Philips Corporation. Solid state light modulator incorporating metallized gel and method of metallization. 5,004,625, Cl. 427-38.000.

Goldowsky, Michael P. Balanced radial engine. 5,003,935, Cl. 123-55.00R.

Goldstar Co., Ltd.: *See*—
Ahn, Chang S., 5,004,360, Cl. 400-144.200.
Lee, Min Ki, 5,004,881, Cl. 219-10.770.

Goldstein, David, to United States of America, Navy. Geothermal energy conversion system. 5,003,779, Cl. 60-527.000.

Golio, John M., and Staudinger, Joseph, to Motorola, Inc. Digital-to-analog converting field effect device and circuitry. 5,005,059, Cl. 357-22.000.

Gonczy, Stephen T.: *See*—
Stranford, Gerald T.; Gonczy, Stephen T.; and Mitsche, Roy T., 5,004,709, Cl. 501-97.000.

Gonzalez, Fernando, to Micron Technology, Inc. Stacked cell design for 16-megabit DRAM array having a pair of interconnected poly layers which enfold a single field plate layer and connect to the cell's storage node junction. 5,005,072, Cl. 357-23.600.

Goodman, Matthew S.: *See*—
Arthurs, Edward; Goodman, Matthew S.; Kim, Chong K.; and Lee, Tony T., 5,005,167, Cl. 370-4.000.

Goodwin, Jon D.; and Musil, Joseph E., to Cedarapids, Inc. Vehicle positioning methods and apparatus with impact damper. 5,004,394, Cl. 414-346.000.

Gordon, John R.: *See*—
Johnson, Dale V.; and Gordon, John R., 5,004,007, Cl. 137-501.000.

Gorgenyi, Imre: *See*—
Taraci, Richard; Taraci, Brian; and Gorgenyi, Imre, 5,004,973, Cl. 324-158.00R.

Gorovenko, Georgy G.: *See*—
Sizonenko, Olga N.; Maxutov, Rafkhat A.; Maljushevsky, Pavel P.; Gorovenko, Georgy G.; Sokolov, Alexei V.; Lyapis, Diana N.; Schekin, Vladimir I.; and Kuskova, Natalya I., 5,004,050, Cl. 166-248.000.

Goss, George R.: *See*—
Brooks, David D.; Brophy, Shirley A.; and Goss, George R., 5,004,570, Cl. 260-427.000.

Goss, Raymond W., to Hercules Incorporated. Fabric lamination of unitary backed hot constructed carpet tile. 5,004,638, Cl. 428-95.000.

Gossard, William H.: *See*—
Bronder, Joseph B.; and Gossard, William H., 5,005,169, Cl. 370-76.000.

Goto, Hiroshi: *See*—
Toyoshi, Naoki; Oka, Tateki; and Goto, Hiroshi, 5,003,917, Cl. 118-653.000.

Goto, Nobutaka: *See*—
Koboshi, Shigeharu; Kobayashi, Kazuhiro; Goto, Nobutaka; Kurematsu, Masayuki; and Takabayashi, Naoki, 5,004,522, Cl. 159-47.003.

Gotoh, Masaki: *See*—
Ishikawa, Hiroshi; Hasegawa, Kazuo; and Gotoh, Masaki, 5,004,898, Cl. 235-475.000.

Gotou, Yukifumi: *See*—
Narikiyo, Hidetoshi; Gotou, Yukifumi; and Chuma, Yoshihiro, 5,004,149, Cl. 236-49.300.

Goud, Gilles R., to Salomon S.A. Ski brake. 5,004,065, Cl. 280-605.000.

Goulding, Frederick S.: *See*—
Loo, Billy W.; and Goulding, Frederick S., 5,003,980, Cl. 128-653.00R.

Goupil, Robert. Adaptor to convert a bottle fed water cooler into a device suppiied with pressurized water from the local piping system. 5,003,790, Cl. 62-389.000.

Graco Inc.: *See*—
Donley, Paul J., 5,003,916, Cl. 118-429.000.

Graf, Felix; and Busenhart, Peter, to Maschinenfabrik Rieter AG. Apparatus for compensating sag of the mandrel of a winding machine. 5,004,170, Cl. 242-18.00R.

Grage, Ludger; and Dato, Paul, to Siemens Aktiengesellschaft. FLIR system with two optical channels for observing a wide and a narrow field of view. 5,005,083, Cl. 358-181.000.

Graham, Anne C.: *See*—
Monte, Charles; White, Paul J.; and Graham, Anne C., 5,003,859, Cl. 84-423.00R.

Graillat, Gerard: *See*—
Provence, Marc; and Graillat, Gerard, 5,004,262, Cl. 280-615.000.

Grapha-Holding AG: *See*—
Duss, Hanspeter, 5,005,192, Cl. 377-8.000.

Grave, Georges A.; and Gaslonde, Jean-Pierre, to U.S. Philips Corporation. Method of controlling the speed of a D.C. motor and device for carrying out the method. 5,005,207, Cl. 388-816.000.

Graves, John G. Combination valve. 5,004,005, Cl. 137-269.500.

Gray, Charles H., Jr. Fire control valve with pivotal latch. 5,004,003, Cl. 137-75.000.

Gray, Richard: *See*—
Atkinson, Anthony; Gray, Richard; and Denes, Oscar L., 5,003,693, Cl. 29-849.000.

Grdzelishvili, Georgy J.: *See*—
Loladze, Teimuraz N.; Batiashvili, Boris I.; Mamulashvili, Gennady L.; Butskhrikidze, David S.; Grdzelishvili, Georgy J.; and Markevich, Jury I., 5,003,728, Cl. 51-165.800.

Great Plains Industries, Inc.: *See*—
Beaston, Brook J., 5,004,013, Cl. 137-614.050.

Green, John M.: *See*—
Perryman, James D.; and Green, John M., 5,005,099, Cl. 360-132.000.

Green, Robert: *See*—
Benstock, Gerald M.; Belkin, Nathan L.; and Green, Robert, 5,003,902, Cl. 112-418.000.

Greenlee, Mark L.: *See*—
DiNinno, Frank P.; Greenlee, Mark L.; and Salzmann, Thomas N., 5,004,739, Cl. 514-210.000.
Dininno, Frank P.; Salzmann, Thomas N.; and Greenlee, Mark L., 5,004,740, Cl. 514-210.000.

Greenwald, Brian D.: *See*—
Parsons, Gerald J.; Greenwald, Brian D.; McGrath, John J.; and Andrasko, Stephen W., 5,005,197, Cl. 379-21.000.

Greenwood, Eugene C.; and Hyatt, John. Infection-resistant catheter. 5,004,455, Cl. 604-43.000.

Gremaud, Henri; Gremaud, Martial; and Rollier, Michel, to Francis Rollier SA. Method and device for setting the angular position of a workpiece on a machine-tool by means of a laser beam. 5,004,930, Cl. 250-561.000.

Gremaud, Martial: *See*—
Gremaud, Henri; Gremaud, Martial; and Rollier, Michel, 5,004,930, Cl. 250-561.000.

Greve, Christopher G.: *See*—
Lapeyre, James M.; Weber, Peter G.; and Greve, Christopher G., 5,004,095, Cl. 198-660.000.
Lapeyre, James M.; Weber, Peter G.; and Greve, Christopher G., 5,004,096, Cl. 198-666.000.

Grey, Bettie. Method of laying out a pathway for piping. 5,004,374, Cl. 405-154.000.

Griebling, Stephen T., to Bridgestone/Firestone, Inc. Contoured liner for preassembled tire components. 5,004,635, Cl. 428-33.000.

Grieco, Steven E.; and Morris, Douglas A., to Motorola, Inc. Multiresonator ceramic filter and method for tuning and adjusting the resonators thereof. 5,004,992, Cl. 333-202.000.

Griffin, David; Campbell, Jonathan; Reilly, Michael; and Rosenbaum, Richard, to Digital Equipment Corporation. Arrangement with cooperating management server node and network service node. 5,005,122, Cl. 364-200.000.

Griffis, Steven C. Method and means for laundering contaminated clothing. 5,003,794, Cl. 68-3.00R.

Grimm, Duane H., to Sundstrand Corporation. Automatic lubrication device for mechanical actuation systems. 5,004,073, Cl. 184-6.120.

Grinwald, Paul M. Method and apparatus for enhanced drug permeation of skin. 5,003,987, Cl. 128-734.000.

Grodek, Raymond J., to Harshaw/Filtrol Partnership. Process of producing colloidal zirconia sols and powders using an ion exchange resin. 5,004,711, Cl. 501-103.000.

Grosch, Peter; Haas, Gerhard; and Kremer, Ingo, to Reinz-Dichtungs-Gesellschaft mbH. Flat gasket and process for its production. 5,004,249, Cl. 277-207.00R.

Gross, Clifford, to Biomechanics Corporation of America. Keyboard accessory. 5,004,196, Cl. 248-118.300.

Grossi, Benedetto: *See*—
Bullard, James R.; Muller, Richard P.; Grossi, Benedetto; and Cristine, John, 5,003,963, Cl. 128-11.000.

Grossler, Peter: *See*—
Nisal, Norbert; and Grossler, Peter, 5,003,884, Cl. 102-476.000.

Grossman, Robert B.: *See*—
Buchwald, Stephen L.; and Grossman, Robert B., 5,004,820, Cl. 556-53.000.

Grote & Hartmann GmbH & Co. KG: *See*—
Neumann, Andreas; and Wiese, Michael, 5,004,101, Cl. 206-343.000.

Gruedelbach, Hans-Dieter: *See*—
Hinzpeter, Juergen; and Gruedelbach, Hans-Dieter, 5,004,576, Cl. 264-40.500.

Grunert, Kurt A.; Pabon, Delfin; and Cheski, Ronald A., to Westinghouse Electric Corp. Clip-connected terminal conductor assembly. 5,005,104, Cl. 361-355.000.

Grunfeld, Hay; Lotan, Noah; and Sideman, Samuel, to Technion Research & Development Foundation Ltd. Method and apparatus for bioaffinity separation. 5,004,547, Cl. 210-635.000.

Grynberg, Gilbert; Pinard, Michel M. E.; and Faucheux, Marc A. F., to Quantel, S.A. Active optical gyrometer employing a phase conjugation. 5,004,341, Cl. 356-350.000.

Grzybowski, Kenneth F.; and Anthony, Brian J., to Gardner Asphalt Corporation. Asphalt roofing compositions especially adapted for cold applications. 5,004,772, Cl. 524-62.000.

GTE Government Systems Corporation: *See*—
Blaisdell, Leonard L., 5,005,022, Cl. 343-753.000.

Guay, Christopher B.: *See*—
Majeti, Satyanarayana; Guay, Christopher B.; and Crisanti, Mark M., 5,004,597, Cl. 424-52.000.

Gubernick, Franklin L.: *See*—
Monticup, Anthony, Jr.; and Gubernick, Franklin L., 5,004,023, Cl. 141-208.000.

Gubon, Peter; Sudmanns, Hans; and Teetz, Christoph, to MTU Friedrichshafen GmbH. Hood covering the space between cylinder banks of an internal-combustion engine which are arranged in a V-shape. 5,003,934, Cl. 123-52.0MV.

Gudel, Claude: *See*—
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Guenthner, Waldemar G.: *See*—
Lipscomb, Dennis E.; Wilhelm, Gary L.; Perna, Barbara G.; and Guenthner, Waldemar G., 5,003,695, Cl. 30-193.000.

Guillon, Jean C.: *See*—
Rufray, Jean C.; and Guillon, Jean C., 5,005,073, Cl. 358-21.00R.

Guirguis, Raouf A., to La Mina Ltd. Modular multiple fluid sample preparation assembly. 5,003,988, Cl. 128-771.000.

Gunlocke Co., The: *See*—
Sorensen, Thomas V., 5,004,371, Cl. 403-327.000.

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Baader, Ekkehard; Bickel, Martin; Brocks, Dietrich; Gunzler, Volkmar; Henke, Stephan; and Hanauske-Abel, Hartmut, 5,004,748, Cl. 514-350.000.

Guong-Hong, Li. Device and method for collecting bee venom by attracting and electrocuting injurious bees. 5,004,446, Cl. 449-1.000.

Gupta, Balaram, to Hoechst Celanese Corp. Radiation curable compositions based on 4-acetoxystyrene and 4-hydroxystyrene homopolymers. 5,004,762, Cl. 522-121.000.

Guruswamy, Vinodhini; and Elliott, Donald A., to MedTest Systems, Inc. Universal sensor cartridge for use with a universal analyzer for sensing components in a multicomponent fluid. 5,004,583, Cl. 422-58.000.

Gut, Karl; Matejka, Wolfgang A.; Gysel, Walter; and Gerber, Urs, to Georg Fischer AG. Process for the impact healing of inner discontinuities or defects in the sub-surface region of a cast component. 5,003,880, Cl. 102-314.000.

Gutierrez, Carlos D., to Du Pont de Nemours, E. I., and Company. Apparatus with improved flow-through characteristics for the recovery of silver from silver-containing waste fluids. 5,004,212, Cl. 266-170.000.

Gysel, Walter: *See*—
Gut, Karl; Matejka, Wolfgang A., Gysel, Walter; and Gerber, Urs, 5,003,880, Cl. 102-314.000.

H-C Industries, Inc.: *See*—
McBride, Stephen W., 5,004,112, Cl. 215-252.000.

Ha, Byung J.: *See*—
Kim, Young D.; and Ha, Byung J., 5,004,737, Cl. 514-182.000.

Haas, Gerhard: *See*—
Grosch, Peter; Haas, Gerhard; and Kremer, Ingo, 5,004,249, Cl. 277-207.00R.

Haas, Oscar W., Prasad, Ravi; and Smolarek, James, to Union Carbide Corporation. Production of dry, high purity nitrogen. 5,004,482, Cl. 55-16.000.

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Yamada, Taketoshi; Habu, Takeshi; and Takamuki, Yasuhiko, 5,004,669, Cl. 430-264.000.

Hacker, Hans-Eugen: *See*—
Esser, Klaus; and Hacker, Hans-Eugen, 5,003,675, Cl. 28-141.000.

Hackett, Charles M., Jr. Detection of digital signals received from multipath channels. 5,005,189, Cl. 375-101.000.

Haese, Wilfried: *See*—
Zecher, Wilfried; El-Sayed, Aziz; Haese, Wilfried; Kohler, Burkhard; and Meyer, Rolf-Volker, 5,004,795, Cl. 528-73.000.

Hafele KG: *See*—
Walz, Rudiger, 5,004,200, Cl. 248-250.000.

Hafelfinger, Werner; Sholder, Jason A., King, Murray P.; and Duncan, James L., to Siemens-Pacesetter, Inc. Automatic electrode configuration of an implantable pacemaker. 5,003,975, Cl. 128-419.0PG.

Hafner, Paul: *See*—
Schiel, Christian; and Hafner, Paul, 5,003,863, Cl. 92-61.000.

Haga, Katsumi: *See*—
Arai, Tatsuo, and Haga, Katsumi, 5,004,378, Cl. 407-106.000.

Hagan, John: *See*—
Walter, Gerard S.; and Hagan, John, 5,004,437, Cl. 439-811.000.

Hageniers, Omer L.: *See*—
Pryor, Timothy R.; Hageniers, Omer L., Pastorius, Walter J.; Liptay-Wagner, Nicholas; and Clarke, Donald A., 5,004,339, Cl. 356-241.000.

Hagiwara, Hiroyuki: *See*—
Tanahashi, Masaaki; Hagiwara, Hiroyuki; and Fuju, Hiroyuki, 5,004,172, Cl. 242-54.00R.

Hagmann, Otto: *See*—
Talher, Bernard, and Hagmann, Otto, 5,003,996, Cl. 131-84.200.

Hagus, U.S.A., Inc.: *See*—
Storm, Manfred; and Storm, Greg J., 5,004,139, Cl. 224-324.000.

Haid, David A.: *See*—
Litz, Lawrence M.; Weise, Mark K.; and Haid, David A., 5,004,571, Cl. 261-91.000.

Haines & Emerson, Inc.: *See*—
Dornblaser, Norman E.; and Hildermann, David F., 5,003,753, Cl. 53-415.000.

Haizmann, Robert S.: *See*—
Schmidt, Robert J., Haizmann, Robert S.; Ford, Mark R., Low, C. David; and Adams, Frank H., 5,004,859, Cl. 585-741.000

Hakotani, Yasuhiko, Nakatani, Seiichi, Yuuhaku, Satoru; Nishimura, Tsutomu; and Ishida, Toru, to Matsushita Electric Industrial Co., Ltd. Dielectric ceramic composition and a multilayer ceramic capacitor and a method of manufacturing a multilayer ceramic capacitor. 5,004,715, Cl. 501-136.000.

Hale, John M., to Orbisphere Corporation. Amperometric cell. 5,004,532, Cl. 204-415.000.

Halem, Stephen; and Lichtman, Philip R. Fluid dispensing and mixing device. 5,004,158, Cl. 239-310.000.

Hall, Randolph L.; and Johnson, Christopher D., to Rockwell International Corporation. Rugate reflector. 5,004,308, Cl. 350-1.700.

Hall, Roger G.: *See*—
Dingwall, John G.; Ehrenfreund, Josef; Hall, Roger G.; and Jack, James, 5,004,826, Cl. 558-169.000

Hallam, Donald E.; Popper, Peter; Staunton, Harold F.; Taylor, Robert E., and Yngve, Paul W., to Du Pont de Nemours, E. I., and Company. Apparatus and process for forming alternate twist plied yarn and product therefrom. 5,003,763, Cl. 57-297.000.

Hallden-Abberton, Michael P.; Bortnick, Newman M.; Cohen, Leslie A.; Freed, William T.; and Fromuth, Harry C., to Rohm and Haas Company. Imide polymers. 5,004,777, Cl. 524-433.000.

Halliburton Company: *See*—
Handke, Wayne A., 5,004,400, Cl. 414-786.000

Halperin, Henry R., to Johns Hopkins University. Dynamic indentation system. 5,003,982. Cl. 128-695.000.

Halperin, Rachel. Hand held safety siren. 5,005,002, Cl. 340-574.000.

Halstead, Nick V.: *See*—
Fanner, John C.; and Halstead, Nick V., 5,003,949, Cl. 123-382.000.

Haltiner, Karl J., Jr.: *See*—
Rush, William B., II; Elder, Jack E., Shier, Richard K.; Foss, Jerry B.; Haltiner, Karl J., Jr.; and Wheeler, Grant M., 5,003,933, Cl. 123-52.0MC.

Halvorsen, James V., to Bryant Grinder Corporation. Radius dressing apparatus. 5,003,730, Cl. 51-325.000.

Hamada, Kenichi: *See*—
Iwamoto, Koji; Hamada, Kenichi; and Hirota, Katsuaki, 5,005,086, Cl. 358-227.000
Yano, Tadashi; and Hamada, Kenichi, 5,003,877, Cl. 101-363.000.

Hamada, Masataka; Ishida, Tokuji; and Ishibashi, Kenji, to Minolta Camera Kabushiki Kaisha. Autofocusing camera. 5,005,039, Cl. 354-402.000

Hamada, Masataka: *See*—
Norita, Toshio, Ishida, Tokuji; Hamada, Masataka; and Ishibashi, Kenji, 5,005,040, Cl. 354-402.000.

Hamana, Takanori: *See*—
Aramaki, Minoru; Suenaga, Takashi; Sakaguchi, Hiroaki; and Hamana, Takanori, 5,004,829, Cl. 562-113.000.

Hamilton, Douglas D.: *See*—
MacLennan, Charles; Hamilton, Douglas D.; and Palfy, Robert M., 5,004,026, Cl. 144-3.00D.

Hamilton Standard Controls, Inc.: *See*—
Mierzwinski, Eugene P., 5,005,123, Cl. 364-400.000.

Hamlin, Humphrey A. S., and Harral, Michael W., to Normalair-Garrett (Holdings) Ltd. Molecular sieve-type gas separation systems. 5,004,485, Cl. 55-160.000.

Hammerly, Jeffrey L.; and Rosenthal, David S. Model rocket car. 5,004,441, Cl. 446-211.000.

Hammond, John R. M.: *See*—
Simpson, William J.; and Hammond, John R. M., 5,004,684, Cl. 435-8.000.

Hampton, Hilary J.: *See*—
Taylor, Charles S., and Hampton, Hilary J., 5,003,989, Cl. 128-772.000

Hampton, Jeanne M.: *See*—
Hampton, William B., 5,003,697, Cl. 33-244.000.

Hampton, William B., to Hampton, William B.; and Hampton, Jeanne M. Telescopic sight lens protector. 5,003,697, Cl. 33-244.000.

Han, Scott: *See*—
DeCaul, Lorenzo C.; Han, Scott; Palermo, Robert E.; and Walsh, Dennis E., 5,004,856, Cl. 585-500.000.

Han, Sil. Master gear turning assembly. 5,003,702, Cl. 33-501.190.

Hanagan, Joseph J., to Thermos Company, Inc., The. Electronic grill control. 5,003,960, Cl. 126-39.0BA.

Hanai, Satoshi: *See*—
Shimamura, Keizo; Amano, Kagetaka; Aisaka, Tatsuryoshi; Hanai, Satoshi; and Nagata, Kohsoku, 5,004,498, Cl. 75-233.000.

Hanatani, Yasuyuki: *See*—
Mutoh, Naruki, Hanatani, Yasuyuki; and Nishiguchi, Toshihiko, 5,004,662, Cl. 430-59.000.

Hanauske-Abel, Hartmut: *See*—
Baader, Ekkehard; Bickel, Martin; Brocks, Dietrich, Gunzler, Volkmar; Henke, Stephan; and Hanauske-Abel, Hartmut, 5,004,748, Cl. 514-350.000.

Handke, Wayne A., to Halliburton Company. Automatic rate matching system. 5,004,400, Cl. 414-786.000.

Handler, Isidore. Side supported cable tray. 5,004,192, Cl. 248-49.000.

Hane, Toshioki; and Katayama, Shigeki, to Asahi Kasei Kogyo Kabushiki Kaisha. Fiber of a fluorocarbon polymer and a process for producing the same. 5,004,648, Cl. 428-364.000

Hanes, Ronnie M.; and Kwiatek, Jack, to National Distillers and Chemical Corporation. Carbonylation of allylic ethers to esters. 5,004,568, Cl. 260-410.000.

Hanley, Roger T., to Stanley Works, The. Push to close latch for self-cleaning oven. 5,004,276, Cl. 292-126.000.

Hannecart, Etienne: *See*—
Simoens, Anthony; and Hannecart, Etienne, 5,004,773, Cl. 524-178.000.

Hans, Paul C.; and Rosenfield, Gary C., to Aerotech, Inc. Finlock alignment mechanism for rockets. 5,004,186, Cl. 244-3.250

Hansard, Gregory R. Rotary vaned valves. 5,003,942, Cl. 123-190.00A.

Hansen, John S.; and Waranius, William A., to Amoco Corporation. Filter system. 5,004,860, Cl. 585-812.000.

Hansen, Lee E.: *See*—
Burchette, Herbert L.; Hansen, Lee E.; West, James C.; and Nawrocki, Glen A., 5,004,402, Cl. 415-137.000.

Hansen, Ronald L.: *See*—
Edelman, William; Constantinou, Dennis; Stefanovski, Miles; Jan, Yuh L.; Fahlen, Theodore S.; Hansen, Ronald L.; and Kramasz, Kenneth J., 5,005,180, Cl. 372-57.000.

Hanson, Charles M., Koester, Vaughn J.; and Fallstrom, Robert D., to Varo, Inc. Head mounted video display and remote camera system. 5,005,213, Cl. 455-617.000.

Hantos, Gabor: *See*—
Jekkel nee Bokany, Antonia; Albrecht, Karoly; Ambrus, Gabor; Lang, Tibor; Szabo, Istvan M.; Ilkoy, Eva; Konczol, Kalman; Moravcsik, Imre; Hantos, Gabor; Simonovits, Emilia; Lengyel nee Szemenyei, Zsuzsanna; Vida, Zsuzsanna; and Csajagi, Eva, 5,004,695, Cl. 435-253.100.

Hara, Akihito: *See*—
Fushiya, Fusao; Yokoyama, Yoshio; and Hara, Akihito, 5,004,140, Cl. 227-8.000.

Hara, Kazumasa; Sano, Yasuro; Koike, Mikio; and Nishijima, Mitsuru, to Janome Sewing Machine Co. Ltd. Device for guiding a lower thread in a sewing machine. 5,003,896, Cl. 112-121.110.

Hara, Ryuichi: *See*—
Mizuno, Toru; and Hara, Ryuichi, 5,004,968, Cl. 318-615.000.

Hara, Yasuhiro; Inoue, Mitsuhiro; Baba, Hideo; Okazaki, Tadashi; and Kudo, Shigeru, to Hitachi Chemical Company, Ltd. Clutch driven plates and method of producing the same. 5,004,089, Cl. 192-107.00M.

Harada, Kazumasa: *See*—
Ishikawa, Akira, and Harada, Kazumasa, 5,003,751, Cl. 53-215.000.

Harada, Shoichi: *See*—
Imai, Hajime; Kito, Shozo; Harada, Shoichi; Yokoyama, Yoshinobu; Nakamura, Syuzi; Miyoshi, Shigetoshi; and Muramatsu, Tadao, 5,003,799, Cl. 70-247.000.

Harada, Susumu: *See*—
Fujita, Shigeru; Tanaka, Hideo; and Harada, Susumu, 5,005,116, Cl. 364-188.000

Haraguchi, Hiroshi; Tamura, Hiroshi; Kodama, Katuhiko; and Kondo, Toshio, to Nippondenso Co., Ltd. Method of controlling air-fuel ratio. 5,003,955, Cl. 123-489.000.

Harandi, Mohsen N., to Mobil Oil Corp. Two-stage process for conversion of olefins to high octane gasoline. 5,004,852, Cl. 585-322.000.

Harin, Farouk A., to Texas Instruments Incorporated. Radiation heat shield for silicon melt-in manufacturing of single crystal silicon. 5,004,519, Cl. 156-620.400.

Harke, Alfons, to International Intec Patent Holding Establishment. Grouting anchor to be inserted in a predrilled hole. 5,003,749, Cl. 52-703.000

Harkins, James J. Screwdriver with holding sleeve. 5,003,850, Cl. 81-436.000

Harlow Chemical Company Limited: *See*—
Mahil, Mahinder S., and Cruden, John M., 5,004,768, Cl. 524-30.000.

Harnish, Daniel F.; Pickens, Donald; and Zweig, Andrew M., to Allied-Signal Inc. Fluorinated surfactant monomers for polymer surface modification. 5,004,790, Cl. 526-242.000.

Harper, Homer C.: *See*—
Cocherell, Francis E.; Harper, Homer C.; and Hsieh, George, 5,004,596, Cl. 424-52.000.

Harral, Michael W.: *See*—
Hamlin, Humphrey A. S.; and Harral, Michael W., 5,004,485, Cl. 55-160.000.

Harris, Halford S. Retractable cleat device. 5,004,388, Cl. 410-107.000.

Harris, James M., to Gardiner Communications Corporation. Dual band integrated LNB feedhorn system. 5,005,023, Cl. 343-756.000.

Harris, James P.: *See*—
Roy, James P.; and Harris, James P., 5,003,845, Cl. 81-3.400.

Harris, Neil V.: *See*—
Ashton, Michael J.; Bridge, Andrew W.; Chambers, Robert K.; Dron, Donald I.; Fenton, Garry; Harris, Neil V.; Lythgoe, David J.; McFarlane, Ian M.; Newton, Christopher G.; Riddell, David; Smith, Christopher, Stuttle, Keith A. J.; and Toft, Malcolm P., 5,004,747, Cl. 514-309.000.

Harris, Norman: *See*—
Bradley, Michael W.; Harris, Norman; and Turner, Keith, 5,004,845, Cl. 568-885.000.

Harrison, Daniel R.: *See*—
Mallard, Bobby J.; Knapp, Richard H.; Roper, W. J.; and Harrison, Daniel R., 5,004,071, Cl. 182-3.000.

Harrison, John R.; and Millard, Michael W., to Ward Machinery Company, The. Printing apparatus with dual inking system. 5,003,876, Cl. 101-350.000

Harshaw/Filtrol Partnership: *See*—
Grodek, Raymond J., 5,004,711, Cl. 501-103.000.

Hart, Marshall B.: *See*—
Seymour, Raymond K.; Hart, Marshall B.; Magnon, Gary D.; von Kannewurff, Michael C.; and Doughty, Dennis J., 5,004,878, Cl. 200-144.00R.

Hartman, Standish C.: *See*—
Lockhart, John C., Jr.; Hartman, Standish C.; Meuron, Bruce R.; and Lyons, Joseph B., Jr., 5,004,185, Cl. 224-3.140.

Hartmann, Jon P.; and Glasener, Ted W., to Honeywell, Inc. Extended RF range alarm system. 5,004,999, Cl. 340-539.000.

Haruki, Shinichi; Furuya, Yhuzi; and Tsujita, Akio, to Hitachi Koki Co., Ltd. Electrophotographic image recording apparatus using amorphous silicon hydride photosensitive drum. 5,005,051, Cl. 355-221.000.

Harwood, Jon W.: *See*—
Van Blaircum, Bennie A.; Harwood, Jon W.; and Kimmet, Mark S., 5,004,069, Cl. 181-282.000.

Hasegawa, Kazuo: *See*—
Ishikawa, Hiroshi; Hasegawa, Kazuo; and Gotoh, Masaki, 5,004,898, Cl. 235-475.000.

Hasegawa, Kimio: *See*—
Yamamoto, Yohzoh; Ishiwata, Shuichi; Yokoyama, Kenji; and Hasegawa, Kimio, 5,004,764, Cl. 523-400.000.

Haseler, Helmut: *See*—
Meckl, Heinz; Klotzer, Sieghart; Wolff, Erich; and Haseler, Helmut, 5,004,676, Cl. 430-398.000.

Haseltine, Eric C.; and Jones, Helene H., to Hughes Aircraft Company. Catadioptric projector, catadioptric projection system and process. 5,004,331, Cl. 350-443.000.

Hasenberg, Thomas C.: *See*—
Lam, Juan F.; and Hasenberg, Thomas C., 5,005,176, Cl. 372-10.000.

Hashimoto, Koichi, to Fujitsu Limited. Pattern forming method. 5,005,046, Cl. 355-77.000.

Hashimoto, Shuji: *See*—
Gohda, Eiichi; Tsubouchi, Hirohito; Nakayama, Hiroyuki; Hirono, Shuichi; Takahashi, Kozo; Hashimoto, Shuji; and Daikuhara, Yasushi, 5,004,805, Cl. 530-399.000.

Hashimoto, Takayoshi: *See*—
Kawada, Sunao; Hashimoto, Takayoshi; Itoh, Toyotsugu; and Koyanagi, Makoto, 5,003,851, Cl. 82-1.110.

Hashimoto, Toru; Takabatake, Masato; Chino, Masashi; and Takahashi, Akira, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Detector device for simultaneously detecting both the direction and number of rotations of rotating member. 5,004,981, Cl. 324-207.220.

Hashinami, Shinji: *See*—
Kakinoki, Yoshikazu; Nakashima, Masato; Koezuka, Tetsuo; Hiraoka, Noriyuki; Tsukahara, Hiroyuki; Suto, Yoshinori; Oshima, Yoshitaka; and Hashinami, Shinji, 5,004,929, Cl. 250-561.000.

Haskin, Marvin E., to Prevail, Inc. System and method for remote presentation of diagnostic image in formation. 5,005,126, Cl. 364-413.130.

Hasler, Rudolf, to U.S. Philips Corp. Oscillator for controlling a mixer stage in a tuner. 5,004,989, Cl. 331-117.00R.

Hatano, Ako: *See*—
Izumiya, Toshihide; Ohba, Yasuo; and Hatano, Ako, 5,005,057, Cl. 357-17.000.

Hatta, Katuhiro; Hiramatsu, Takeo; and Takamiya, Bonnosuke, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Control device for automatic transmission gear system. 5,003,842, Cl. 74-867.000.

Hatta, Shinji: *See*—
Takayama, Syuichi; Tsukaya, Takashi; Ueda, Yasuhiro; Hatta, Shinji; and Abe, Masashi, 5,003,991, Cl. 128-784.000.

Hattori, Jun: *See*—
Suzuki, Masayuki; and Hattori, Jun, 5,004,328, Cl. 350-416.000.

Hauni Richmond, Inc.: *See*—
Hinzmann, Alfred; Shu, Timour T.; Drewnowski, Wojciech S.; and Preisner, Peter M., 5,004,467, Cl. 604-904.000.

Hauss, Raymond G.: *See*—
Wilson, William B.; DiPietro, Matthew; Neace, Richard K.; Dethier, Vincent B.; Hauss, Raymond G.; and Louk, James R., 5,005,036, Cl. 354-322.000.

Havriluk, Rod, to Swimming Technology Research, Inc. Method and apparatus for monitoring hydrodynamic therapy and exercise. 5,005,140, Cl. 364-550.000.

Hawkins, Robert E.: *See*—
D'Ottavio, Eugene D.; Hawkins, Robert E.; Rodriguez, Stephen S.; and Rychwalski, James, 5,004,672, Cl. 430-314.000.

Hay, Robert A.; Willkens, Craig A.; and Arsenault, Normand P., to Norton Company. Reaction bonded silicon nitride filtration membranes. 5,004,544, Cl. 210-490.000.

Hay, Wayne R., to Systron Donner Corporation. Accelerometer based power control apparatus for aircraft subsystem. 5,004,963, Cl. 320-13.000.

Hayasaka, Hiroshi; and Nagata, Akio, to Hitachi Koko Company, Limited. Centrifuge. 5,004,453, Cl. 494-39.000.

Hayashi, Chihiro: *See*—
Nakasuji, Kazuyuki; and Hayashi, Chihiro, 5,004,143, Cl. 228-126.000.

Hayashi, Koji: *See*—
Yokoe, Masaaki; Kurono, Yoshikazu; and Hayashi, Koji, 5,003,897, Cl. 112-121.120.

Hayashi, Minoru; Kobari, Koichi; Sato, Kimiharu; and Kishimoto, Junichi, to Nippon Koki Co., Ltd. Gas generating apparatus for inflating air bag. 5,004,586, Cl. 422-164.000.

Hayashi, Satoshi: *See*—
Tomita, Masahiro; Hayashi, Satoshi; Oda, Shinro; Fujii, Akira; and Tanigawa, Masayoshi, 5,004,945, Cl. 310-328.000.

Hayashi, Shigeru; and Yamada, Kaneo, to Shiseido Company Ltd. Fibrinophilic urokinase complex. 5,004,609, Cl. 424-94.300.

Hayden, Theodore R. Vacuum system attachment. 5,004,428, Cl. 439-191.000.

Hayes Separations, Inc.: *See*—
Hayes, William V., 5,003,813, Cl. 73-49.200.

Hayes, William V., to Hayes Separations, Inc. Method and apparatus for monitoring storage tank leakage. 5,003,813, Cl. 73-49.200.

Hazbun, Edward A.: *See*—
Schon, Steven G.; and Hazbun, Edward A., 5,004,479, Cl. 44-302.000.

Hebert, Randy S.: *See*—
Durham, George R.; and Hebert, Randy S., 5,004,851, Cl. 585-260.000.

Hecht, Sidney M.: *See*—
Boehm, Jeffrey C.; Hecht, Sidney M.; Holden, Kenneth G.; Johnson, Randall K.; and Kingsbury, William D., 5,004,758, Cl. 514-283.000.

Hedstrom Corp.: *See*—
Boudreau, Robert J., 5,004,216, Cl. 267-179.000.

Hee, Roland, to JES, L.P. Magnetic snap assembly for connecting grounding cord to electrically conductive body band. 5,004,425, Cl. 439-37.000.

Heid, Walter: *See*—
Amrhein, Reinhard; Heid, Walter; and Muschong, Gunther, 5,004,015, Cl. 137-625.680.

Heidelberger Druckmaschinen: *See*—
Junghans, Rudi, 5,003,874, Cl. 101-348.000.

Helioprint As: *See*—
Stovring, Knud S., 5,005,045, Cl. 355-68.000.

Helpenstein, Klaus: *See*—
Loth, Helmut; Helpenstein, Klaus; Podola, Tore; and Knop, Bernhard, 5,004,769, Cl. 524-43.000.

Hembert, Claude L. Device to protect the ends of fluid tanks made of composite materials. 5,004,120, Cl. 220-414.000.

Hemker, Wilfred J.: *See*—
Lochhead, Robert Y.; Castaneda, Janet Y.; and Hemker, Wilfred J., 5,004,598, Cl. 424-59.000.

Hemmer, Richard E.: *See*—
Goldburt, Efim S.; and Hemmer, Richard E., 5,004,625, Cl. 427-38.000.

Hendricks, James B., to Ketema Process Equipment Division. Invertible filter-type centrifuge with improved bearing and seal assembly. 5,004,540, Cl. 210-232.000.

Hendry Mechanical Works: *See*—
Sevier, Richard W.; and Keenan, James J., 5,004,107, Cl. 211-26.000.

Henke, Stephan: *See*—
Baader, Ekkehard; Bickel, Martin; Brocks, Dietrich; Gunzler, Volkmar; Henke, Stephan; and Hanauske-Abel, Hartmut, 5,004,748, Cl. 514-350.000.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Emmerling, Winfried; Wichelhaus, Juergen; and Podola, Tore, 5,004,794, Cl. 528-52.000.
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Heppner, Joachim G.: *See*—
Bernard, Walter; Heppner, Joachim G.; and Schwarz, Karl H., 5,004,342, Cl. 356-350.000.

Hercules Incorporated: *See*—
Goss, Raymond W., 5,004,638, Cl. 428-95.000.
Schimpf, Warren C., 5,004,590, Cl. 425-447.200.

Herko, Samuel P.: *See*—
Shaulov, Avner A.; Herko, Samuel P.; Dorman, Donald R.; and Bhargava, Rameshwar N., 5,004,726, Cl. 505-1.000.

Herman Wangner GmbH & Co. KG: *See*—
Esser, Klaus; and Hacker, Hans-Eugen, 5,003,675, Cl. 28-141.000.

Herold, Stanley J.; Howard, Charles D.; and LaGrange, Donald E., to United States of America, Navy. Aerial flare and igniter. 5,003,881, Cl. 102-337.000.

Herry, Robert E. Fish lure. 5,003,720, Cl. 43-42.390.

Hershenson, Susan; and Thomson, Jody, to Cetus Corporation. Low pH pharmaceutical compositions of recombinant β-interferon. 5,004,605, Cl. 424-85.600.

Hessman, Ingemar; Post, Karl G. Y.; and Norgren, Lars E., to Santrade Limited. Cutting insert. 5,004,380, Cl. 407-114.000.

Hester, Charles F.: *See*—
Caulfield, H. John; Hester, Charles F.; Kinser, Jason M.; and Shamir, Joseph, 5,004,309, Cl. 350-3.680.

Heuft-Qualiplus B.V.: *See*—
Swart, Nicholaas C., 5,004,347, Cl. 356-394.000.

Hewlett-Packard Company: *See*—
Altendorf, John M.; and Wong, Marvin G., 5,005,070, Cl. 357-74.000.
King, Philip N., 5,005,008, Cl. 340-653.000.
Morris, Carroll E., Jr.; Balliew, Robert E., Mathieu, Mark A.; and Johnsrud, Darrell B., 5,004,978, Cl. 324-158.00R.
Tullis, Barclay J.; and Kruger, James B., 5,004,340, Cl. 356-243.000.
Tung, Charles C., 5,005,139, Cl. 364-519.000.
Ty Tan, Michael R.; and Wang, Shih-Yuan, 5,004,313, Cl. 350-96.140.

Hibino, Katsuhiko: *See*—
Kozaki, Tetsuji; Ishikawa, Hiroshi; Yasui, Hideaki; Shimamoto, Mamoru; Hibino, Katsuhiko; and Suzuki, Motoshi, 5,004,264, Cl. 280-707.000.

Higashihara, Masaki: *See*—
Akashi, Akira; Kadohara, Terutake; Ohnuki, Ichiro; and Higashihara, Masaki, 5,005,037, Cl. 354-400.000.

Higgins, John; and McDonagh, Michael, to Alperk Limited. Food processing apparatus. 5,003,868, Cl. 99-357.000.

Highfill, Louis A.: *See*—
Cadwallader, George W.; Highfill, Louis A.; Kurdys, Gregory D.; and Turigliatto, Richard S., 5,004,589, Cl. 423-315.000.

Hijikigawa, Masaya: *See*—
Webb, Brian C.; Pedley, Derek G.; Prosser, Stephen J.; Hijikigawa, Masaya; and Furubayashi, Hisatoshi, 5,004,700, Cl. 437-42.000.

Hildermann, David F.: *See*—
Dornblaser, Norman E.; and Hildermann, David F., 5,003,753, Cl. 53-415.000.

Hildinger, Henry W.; and Carlson, Edwin D. Process for recycling and purifying condensate from a hydrocarbon or alcohol synthesis process. 5,004,862, Cl. 585-867.000.

Hile, Barry L.: *See*—
Legler, John G.; Folkerth, Harold E.; Flora, David D.; and Hile, Barry L., 5,004,027, Cl. 144-136.00R.

Hill, Amos G., to White Consolidated Industries, Inc. Close-trim mower deflector. 5,003,757, Cl. 56-17.400.

Hill, Kenneth O.; Johnson, Derwyn C.; and Lamont, Robert G., to Canada, Her Majesty the Queen in Right of, as represented by the Minister of Communications. Coupler fabrication techniques for dissimilar fibers. 5,004,316, Cl. 350-96.150.

Hill, Scott D.: *See*—
Mixon, Larry C.; Snyder, George W.; Hill, Scott D.; Johnson, Gregory L.; Wlodarski, J. Frank; von Spakovsky, Alexis P.; Emerson, John D.; Cole, James M.; and Tipton, John P., 5,003,883, Cl. 102-476.000.

Hillman, Robert S.; Cobb, Michael E.; Allen, Jimmy D.; Gibbons, Ian; Ostoich, Vladimir E.; and Winfrey, Laura J., to Biotrack, Inc. Capillary flow device. 5,004,923, Cl. 250-341.000.

Hiney, Leonard L.: *See*—
Terrell, John; Kadis, Paul M.; Hiney, Leonard L.; and Pfaff, Susan E., 5,003,807, Cl. 72-351.000.

Hinschlager, Robert A., to Huffy Corporation. Cover for the driving sprocket of a bicycle. 5,003,840, Cl. 74-594.200.

Hinzmann, Alfred; Shu, Timour T.; Drewnowski, Wojciech S.; and Preisner, Peter M., to Hauni Richmond, Inc. Tampon. 5,004,467, Cl. 604-904.000.

Hinzpeter, Juergen; and Gruedelbach, Hans-Dieter, to Wilhelm Fette GmbH. Process and apparatus for monitoring pressing forces in a tablet press. 5,004,576, Cl. 264-40.500.

Hirai, Isamu: *See*—
Sato, Osamu; and Hirai, Isamu, 5,005,042, Cl. 354-412.000.

Hirai, Tokuyuki: *See*—
Kugimiya, Shuzo; Fukumochi, Yoji; Nakamura, Ichiko; Hirai, Tokuyuki; and Suzuki, Hitoshi, 5,005,127, Cl. 364-419.000.

Hiramatsu, Takeo: *See*—
Hatta, Katuhiro; Hiramatsu, Takeo; and Takamiya, Bonnosuke, 5,003,842, Cl. 74-867.000.

Hirano, Mitsunori: *See*—
Okutsu, Eiichi; Hirano, Mitsunori; and Yagihara, Morio, 5,004,670, Cl. 430-265.000.

Hiraoka, Noriyuki: *See*—
Kakinoki, Yoshikazu; Nakashima, Masato; Koezuka, Tetsuo; Hiraoka, Noriyuki; Tsukahara, Hiroyuki; Suto, Yoshinori; Oshima, Yoshitaka; and Hashinami, Shinji, 5,004,929, Cl. 250-561.000.

Hirata, Eiji: *See*—
Tsubone, Akira; Tomiyoshi, Masanori; Yokomizo, Junichi; Tanaka, Nobuhiro, Moriguchi, Hideyuki; and Hirata, Eiji, 5,004,401, Cl. 414-786.000.

Hirata, Shinji, to West Electric Company, Ltd. Strobe apparatus. 5,004,958, Cl. 315-241.00P.

Hirohata, Michio: *See*—
Ogawa, Yukio; Hirohata, Michio; Kodaira, Takanori; and Miyawaki, Makoto, 5,005,038, Cl. 354-400.000.

Hirono, Shuichi: *See*—
Gohda, Eiichi; Tsubouchi, Hirohito; Nakayama, Hiroyuki; Hirono, Shuichi; Takahashi, Kozo; Hashimoto, Shuji; and Daikuhara, Yasushi, 5,004,805, Cl. 530-399.000.

Hirose, Hisashi: *See*—
Umehara, Keiichi; Hirose, Hisashi; and Kono, Kazuo, 5,004,915, Cl. 250-231.140.

Hirose, Ken-ichi: *See*—
Tamura, Mitsuhisa; Suzukamo, Gohu; and Hirose, Ken-ichi, 5,004,843, Cl. 568-670.000.

Hirose, Kenichi: *See*—
Sato, Hiroshi; Hirose, Kenichi; Nagai, Koichi; Yoshioka, Hiroshi; and Nagaoka, Yoshihiko, 5,004,846, Cl. 568-940.000.

Hirota, Katsuaki: *See*—
Iwamoto, Koji, Hamada, Kenichi; and Hirota, Katsuaki, 5,005,086, Cl. 358-227.000.

Hirschmann, Robert P.; Beard, William Q., Jr.; Mainz, Eric L.; Smith, Earl B., and Little, Barry M., to Vulcan Chemicals. Manufacture of perchloroethylene and trichloroethylene by catalytic oxychlorination, and improved catalysts therefor. 5,004,849, Cl. 570-224.000.

Hitachi Chemical Company, Ltd.: *See*—
Hara, Yasuhiro; Inoue, Mitsuhiro; Baba, Hideo; Okazaki, Tadashi; and Kudo, Shigeru, 5,004,089, Cl. 192-107.00M.

Hitachi Construction Machinery Co., Ltd.: *See*—
Kanai, Takashi; Ochiai, Masami; Oshima, Morio; and Sonoda, Mitsuo, 5,003,776, Cl. 60-434.000.

Hitachi Denshi Kabushiki Kaisha: *See*—
Amano, Tetsuya; Mita, Seiichi; Izumita, Morishi; Doi, Nobukazu; Kaneko, Mamoru; Yamauchi, Hiroto; and Kasai, Susumu, 5,005,184, Cl. 375-14.000.

Hitachi Koki Co., Ltd.: *See*—
Haruki, Shinichi; Furuya, Yhuzi; and Tsujita, Akio, 5,005,051, Cl 355-221.000.

Hitachi Koko Company, Limited: *See*—
Hayasaka, Hiroshi; and Nagata, Akio, 5,004,453, Cl. 494-39.000.

Hitachi, Ltd.: *See*—
Amano, Tetsuya; Mita, Seiichi; Izumita, Morishi; Doi, Nobukazu, Kaneko, Mamoru; Yamauchi, Hiroto; and Kasai, Susumu, 5,005,184, Cl. 375-14.000.
Ikeda, Shuji; Sasaki, Katsuro; Nagasawa, Kouichi; and Meguro, Satoshi, 5,005,068, Cl. 357-59.000.
Maejima, Hideo; and Masuda, Ikuro, 5,005,153, Cl. 364-900.000.
Nakada, Kunihiko; and Akao, Yasushi, 5,005,121, Cl. 364-200.000.
Nejime, Yoshito, 5,004,932, Cl. 307-201.000.
Sunagawa, Masao; Kubota, Kazuhiro; Ishii, Yoshitaro; and Satoh, Susumu, 5,003,663, Cl. 15-366.000.

Hitachi Maxell, Ltd.: *See*—
Sato, Kiyoshi; Yoshikawa, Hirokazu; Ikenari, Shigeru; and Yokoyama, Kenichi, 5,004,656, Cl. 429-162.000.

Hitachi Metals Ltd.: *See*—
Tanahashi, Masaaki; Hagiwara, Hiroyuki; and Fujii, Hiroyuki, 5,004,172, Cl. 242-54.00R.

Hitachi Video Engineering, Inc.: *See*—
Amano, Tetsuya; Mita, Seiichi; Izumita, Morishi; Doi, Nobukazu; Kaneko, Mamoru; Yamauchi, Hiroto; and Kasai, Susumu, 5,005,184, Cl. 375-14.000.

Hixson, William J. Quick adjust tappet assembly. 5,003,940, Cl 123-90.540.

Hjulstrom, Richard A., to Electro-Films, Inc. Adjustment of thin film capacitors. 5,004,658, Cl. 430-5.000.

HMT Technology Corporation: *See*—
Lal, Brij B.; and Eltoukhy, Atef H., 5,004,652, Cl. 428-611.000.

Hobach, Michael W.: *See*—
Trame, Charles E.; Karsten, Robert A.; and Hobach, Michael W., 5,003,717, Cl. 40-518.000.

Hobbs, Simon H.: *See*—
Barger, Paul T.; Barder, Timothy J.; Lin, David Y.; and Hobbs, Simon H., 5,004,853, Cl. 585-481.000.

Hochman, Haim: *See*—
Landa, Benzion; Hochman, Haim; and Yacoub, Naseem, 5,004,165, Cl. 241-21.000.

Hoechst Aktiengesellschaft: *See*—
Baader, Ekkehard; Bickel, Martin; Brocks, Dietrich; Gunzler, Volkmar; Henke, Stephan; and Hanauske-Abel, Hartmut, 5,004,748, Cl. 514-350.000.
Fritz, Hans-Gerhard; and Loffel, Rudi, 5,005,194, Cl. 378-53.000.
Rohrscheid, Freimund; Siegemund, Gunter; and Lau, Jurgen, 5,004,797, Cl. 528-206.000.

Hoechst Celanese Corporation: *See*—
Broussard, Jerry A.; Auerbach, Andrew B.; Yang, Nan L.; Paul, James L., Zheng, Yong C.; and Zhang, Chong L., 5,004,798, Cl. 528-230.000.
Gupta, Balaram, 5,004,762, Cl. 522-121.000.
Vicari, Richard; Costanza, John R., Lamonte, Ronald R.; and Miano, Ralph M., 5,004,796, Cl. 528-179.000.

Hoeptner, Herbert W., to Custom Chrome, Inc. Dual spark plug ignition system for motorcycle internal combustion engine. 5,003,945, Cl. 123-310.000.

Hoff, Heinz: *See*—
Erber, Anton; Hoff, Heinz; Reuchlein, Gunter; Schaaf, Hanno; and Schiessl, Gerhard, 5,003,778, Cl 60-517.000.

Hoffman, Ned, to Sports-Mitt International. Exercise apparatus. 5,004,227, Cl. 272-119.000.

Hoffmann-La Roche Inc.: *See*—
Leenhouts, Frans; and Schadt, Martin, 5,004,324, Cl. 350-347.00R.

Hofmann, Hartmut, to PPM Pure Metals GmbH. Production of phenylarsines. 5,004,821, Cl. 556-70.000.

Hog, Peter: *See*—
Dreschel, Jurgen; Hog, Peter; and Mobs, Stephan, 5,004,220, Cl. 271-184.000.

Hogeland, Robert. Article and method of improving exterior building appearance. 5,003,738, Cl. 52-202.000.

Hoke, A. Chyril. Lock protector. 5,003,795, Cl. 70-55.000.

Hoke Incorporated: *See*—
Dyer, John, 5,003,864, Cl. 92-132.000.

Holden, Alan G.: *See*—
Teleki, Bela; Holden, Alan G.; and Chong, Leang H., 5,004,991, Cl. 333-168.000.

Holden, Kenneth G.: *See*—
Boehm, Jeffrey C.; Hecht, Sidney M.; Holden, Kenneth G.; Johnson, Randall K.; and Kingsbury, William D., 5,004,758, Cl. 514-283.000.

Holl, Rolf: *See*—
Pahnke, Klaus-Dieter; Holl, Rolf; and Becker, Wilfried, 5,003,886, Cl. 102-521.000.

Holleman, Timothy W.; Doan, Phong D.; Brennen, Kenneth R.; and Swoyer, John M. Atraumatic screw-in lead. 5,003,992, Cl. 128-785.000.

Hollis, Ray A. Adjustable batting tee. 5,004,234, Cl. 273-26.00R.

Hollowell, George E., and Sample, Hugh D., to Neuville Industries, Inc. Method and apparatus for producing socks. 5,004,132, Cl. 223-1.000.

Holroyd, Trevor J.; and Tracey, Timothy E., to Stresswave Technology Limited. Method and apparatus for testing the response of a stress wave sensor. 5,004,985, Cl. 324-727.000.

Holt, Jan D.: *See*—
Schmidt, Kenneth D.; and Holt, Jan D., 5,004,386, Cl. 410-62.000.

Holzl, Klaus, to TMC Corporation. Anti-theft device. 5,004,261, Cl. 280-612.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Matsumoto, Yukihiro; Yoshihara, Kenji; Kajiura, Tetsuya; Niizato, Tomonori; and Yamada, Noriyuki, 5,003,937, Cl. 123-90.120.
Shibata, Katsuhiro; Azuma, Yuichi; and Suzuki, Tsuguya, 5,004,497, Cl. 75-229.000.
Yakuwa, Masahiko; Itoh, Tomofumi; and Igarashi, Hisashi, 5,003,954, Cl. 123-479.000.

Honda, Kazuo; Matsuura, Atsushi; and Sano, Hisanori, to Toshiba Lighting & Technology Corporation. Single side-sealed metal vapor discharge lamp. 5,004,951, Cl. 313-631.000.

Honeywell Inc.: *See*—
Dankwort, Rudolph C.; and Klem, Charles D., 5,004,911, Cl. 250-227.210.
Hartmann, Jon P.; and Glasener, Ted W., 5,004,999, Cl. 340-539.000.
McCracken, William L.; McDonald, Paul D.; and Kirschner, Roger S., 5,004,310, Cl. 350-6.800.
Roth, Roger R., 5,004,972, Cl. 323-320.000.

Hoodenpyle, James W.; Robinson, James P.; and Wright, John W., to Howell Instruments, Inc. Aircraft brake tester. 5,003,818, Cl. 73-121.000.

Hooykaas, Carel W. J., to Pelt & Hooykas B.V. Bearing part for a gas bearing. 5,004,357, Cl. 384-121.000.

Hopkins, Richard H.: *See*—
Kun, Zoltan K.; Cresswell, Michael W.; and Hopkins, Richard H., 5,004,956, Cl. 315-169.300.

Horgan, John J.; and Ociepka, Val S., to Avco Corporation. Compact rectilinear heat exhanger. 5,004,044, Cl. 165-145.000.

Horiba, Ltd.: *See*—
Horii, Yoshio, 5,004,998, Cl. 340-507.000.

Horie, Nobuyuki: *See*—
Sakamoto, Noriaki; Maeda, Shigemi; Yamanaka, Toshihiro; Deguchi, Toshihisa; Horie, Nobuyuki, Yamaguchi, Takeshi; and Kojima, Kunio, 5,005,164, Cl. 369-48.000.
Yamanaka, Toshihiro; Maeda, Shigemi; and Horie, Nobuyuki, 5,005,165, Cl. 369-58.000.

Horii, Satoshi; and Fukase, Hiroshi, to Takeda Chemical Industries, Ltd. Inosose derivatives, production and use thereof. 5,004,838, Cl. 568-347.000.

Horii, Yoshio, to Horiba, Ltd. Ion-measuring apparatus for use in process. 5,004,998, Cl. 340-507.000.

Horikawa, Kazuo: *See*—
Takasaki, Yoshimi; and Horikawa, Kazuo, 5,004,906, Cl 250-214.00A.

Horiuchi, Tetsuya: *See*—
Ida, Kozo; and Horiuchi, Tetsuya, 5,004,785, Cl. 525-305.000.

Horizons International Foods, Inc: *See*—
Shanbhag, Sudhakar P.; Cousminer, Joseph J., and Milani, Gerald, 5,004,616, Cl. 426-102.000.

Horne, G. Kent. Vehicle windowsill protective covering and arm rest apparatus. 5,004,292, Cl. 296-153.000.

Horsch, John D.: *See*—
Miller, Gregory A.; Pearson, Jeffery L., and Horsch, John D., 5,004,266, Cl. 280-743.000.

Hosmer, Jimmy D., to Hosmer Machinery & Engineering, Inc. Nozzle texturizer for yarn manufacturing. 5,003,764, Cl 57-333.000.

Hosmer Machinery & Engineering, Inc.: *See*—
Hosmer, Jimmy D., 5,003,764, Cl. 57-333.000.

Hosoi, Toshiaki. Drill. 5,004,384, Cl. 408-230.000

Hospal Industrie: *See*—
Richalley, Gerard; and Burtin, Jacques, 5,004,548, Cl. 210-646.000.

House, Roy F.; Wilkinson, Andree H.; and Cowan, Jack C., to Venture Innovations, Inc. Well working compositions, method of decreasing the seepage loss from such compositions, and additive therefor. 5,004,553, Cl. 252-8.510.

Howard, Charles D.: *See*—
Herold, Stanley J.; Howard, Charles D.; and LaGrange, Donald E., 5,003,881, Cl. 102-337.000.

Howe, David J., to Proctor & Gamble Company. Controlled heating baking pan. 5,004,121, Cl. 220-458.000

Howell Instruments, Inc.: *See*—
Hoodenpyle, James W., Robinson, James P.; and Wright, John W., 5,003,818, Cl. 73-121.000.

Hoya Corporation: *See*—
Ishibai, Isao; and Otsu, Hitonobu, 5,004,330, Cl 350-432.000
Kobayashi, Masato; Yamaguchi, Yoh-Ichi; Sugawara, Minoru; and Yamashiro, Kazuhide, 5,005,075, Cl. 378-35.000.

Hsieh, George: *See*—
Cocherell, Francis E.; Harper, Homer C.; and Hsieh, George, 5,004,596, Cl. 424-52.000.

Huang, Chin-Ming. Two-stage water discharge mechanism for flush toilet tank. 5,003,644, Cl 4-324.000

Huang, Dennis. Driving structure for mini-sewing machine. 5,003,898, Cl. 112-220.000.

Huang, Shu-Jen: *See*—
Beckman, John A.; Huang, Shu-Jen, and Ebrat, Abdol R., 5,004,550, Cl. 210-710.000.

Huang, Yao-Tsung: *See*—
Liu, Ru-Shi; Huang, Yao-Tsung; Chu, Jau-Jier; and Liang, Jiuh-Ming, 5,004,723, Cl. 505-1.000

Hubbard, Phillip W. Utility cart. 5,004,263, Cl. 280-645.000.

Huber, Jeffrey A., to Sundstrand Corporation. Turbo hydraulic unitized actuator. 5,003,772, Cl. 60-259.000.

Huber, Lothar, to Luk Lamellen und Kupplungsbau GmbH. Friction clutch. 5,004,087, Cl. 192-89.00B.

Hudson Associates, Inc.: *See*—
Sodec, Franc; Hudson, Donald L.; and Bolen, David T., 5,003,867, Cl. 98-31.600.

Hudson, Donald L.: *See*—
Sodec, Franc; Hudson, Donald L., and Bolen, David T., 5,003,867, Cl. 98-31.600.

Hudson, William S.: *See*—
Robb, Wendell E.; and Hudson, William S., 5,003,642, Cl. 4-287.000.

Huels Aktiengesellschaft: *See*—
Kelkenberg, Heike, 5,004,564, Cl. 252-546.000.

Huet, Wilfred. Hose rupture valve. 5,004,010, Cl. 137-513.300

Huff, Richard: *See*—
Elliott, Albert O., Jr., 5,004,383, Cl. 408-211.000.

Huffy Corporation: *See*—
Hinschlager, Robert A., 5,003,840, Cl. 74-594.200.

Hughes Aircraft Company: *See*—
Haseltine, Eric C.; and Jones, Helene H., 5,004,331, Cl. 350-443.000.
Isaak, Harlan, 5,003,870, Cl. 101-127.100.
Lam, Juan F.; and Hasenberg, Thomas C., 5,005,176, Cl. 372-10.000.
Vali, Victor; Chang, David B.; and Brownrigg, Patrick C., 5,004,914, Cl. 250-227.270.

Hughes, Francis R.: *See*—
Lipchak, John B.; Oblak, Tod A.; Bednar, Fred H.; Ciaramitaro, William; Hughes, Francis R.; Smith, John R.; and Gisoni, Gregory A., 5,005,142, Cl. 364-550.000.

Hughes, Robert J.; and Williams, Robert C. Masonry clip. 5,003,701, Cl. 33-409.000.

Humphries, Martyn; Nemcek, Jozef; Padget, John C.; and Mollett, Christopher C., to Imperial Chemical Industries PLC. Surface treatment with sulfonate ester polymer. 5,004,631, Cl. 427-385.500.

Hung, Yau Y. Dual-lens shearing interferometer. 5,004,345, Cl. 356-353.000.

Hunter, John A.; Scamans, Geoffrey M.; O'Callaghan, Wilfred B., and Wycliffe, Paul A., to Alcan International Limited. Aluminium batteries. 5,004,654, Cl. 429-50.000.

Hurley, Leslie C., to Piezo Crystal Company. Temperature compensated crystal resonator found in a dual-mode oscillator. 5,004,987, Cl. 331-70.000.

Huron Technologies, Inc.: *See*—
Dong, Dennis F.; and Loftfield, Richard E., 5,004,626, Cl. 427-58.000.

Huschauer, Helmuth, to Vereinigte Kesselwerke AG. Method of and device for maintaining a parameter constant in a fluidized-bed furnace. 5,003,931, Cl. 122-4.00D.

Hutchinson, Donald O.: *See*—
Beaver, Phillip R.; DiGiacinto, Peter M., Hutchinson, Donald O.; and Vega, Julio J., 5,004,847, Cl. 570-186.000

Hutchinson, Francis G., to Imperial Chemical Industries PLC. Continuous release pharmaceutical compositions formed by freeze drying acetic acid solutions of polylactide. 5,004,602, Cl. 424-78.000

Hutchison, Richard M., to Sundstrand Corporation. Method of scavenging air and oil and gear pump therefor. 5,004,407, Cl. 418-1.000.

Huttner, Gerhard; Kruckel, Peter, and Mock, Gerhard, to Schwan-Stabilo Schwanhausser GmbH & Co. Applicator device for cosmetic uses. 5,004,363, Cl. 401-75.000.

Huuf, Amanda *See*—
Elliott, Albert O., Jr., 5,004,383, Cl. 408-211.000

Huynh-Ba, Gia, to Du Pont de Nemours, E. I., and Company Polymer blends containing isocyanate reacting agents. 5,004,784, Cl. 525-123.000.

Hyatt, John: *See*—
Greenwood, Eugene C.; and Hyatt, John, 5,004,455, Cl. 604-43.000

Hybritech Incorporated: *See*—
Frincke, James M.; Bartholomew, Richard M.; and Dillman, Robert O., 5,004,606, Cl. 424-85.800

Hydro Air Industries, Inc.: *See*—
Stamp, Roger A.; and Williams, Farrell D., 5,003,646, Cl. 4-542.000.

Ichige, Toshio: *See*—
Ishida, Nobuyoshi; Michimoto, Takashi, Miyake, Katsutaro; and Ichige, Toshio, 5,004,718, Cl. 502-217.000

ICI Americas Inc.: *See*—
Jerusik, Russell J., and Mahon, Paul F., 5,004,749, Cl. 514-372.000

Ida, Kozo; and Horiuchi, Tetsuya, to Mitsubishi Rayon Co., Ltd. Light-diffusing methacrylic resin and process for production thereof. 5,004,785, Cl. 525-305.000

Ida, Tomoyasu; Nohara, Makoto; and Seo, Nobuyuki, to Koyo Seiko Co., Ltd. Wheel bearing apparatus provided with compact wheel rotation speed detector lying within the outside periphery of the bearing apparatus. 5,004,980, Cl. 324-166.000

Ide, Tohru, to Fuji Jukogyo Kabushiki Kaisha; and Van Doorne's Transmissie B.V. Belt for a continuously variable transmission. 5,004,450, Cl. 474-242.000

Idemitsu Kosan Co., Ltd.: *See*—
Yamasaki, Komei, and Funaki, Keisuke, 5,004,649, Cl. 428-461.000

Idemitsu Petrochemical Co., Ltd.: *See*—
Matsui, Kazufumi, 5,004,356, Cl. 383-63.000.

Iehisa, Nobuaki *See*—
Yamazaki, Etsuo; Iehisa, Nobuaki; and Suzuki, Kazuhiro, 5,004,889, Cl. 219-121.610.

Igarashi, Hisashi: *See*—
Yakuwa, Masahiko; Itoh, Tomofumi, and Igarashi, Hisashi, 5,003,954, Cl. 123-479.000.

Igram, Dale J. Reconfigurable airfoil. 5,004,189, Cl. 244-219.000.

Iida, Shigeharu: *See*—
Yoshida, Tutomu; and Iida, Shigeharu, 5,004,825, Cl. 558-131.000

Iida, Shoji; Miyazaki, Kazuo; and Takizawa, Nobuyuki, to Nippon Petrochemicals Company, Limited. Method for continuously producing low molecular weight polymer of conjugated diolefin. 5,004,857, Cl. 585-507.000.

Ikeda, Chikako: *See*—
Terauchi, Makoto; Ikeda, Chikako; and Aritomi, Mitsutoshi, 5,004,800, Cl. 528-351.000.

Ikeda, Shuji; Sasaki, Katsuro; Nagasawa, Kouichi; and Meguro, Satoshi, to Hitachi, Ltd. Semiconductor memory device. 5,005,068, Cl. 357-59.000.

Ikeda, Yuji: *See*—
Nakajima, Tsuyoshi; and Ikeda, Yuji, 5,005,144, Cl. 364-565.000.

Ikenari, Shigeru: *See*—
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Ikes, Jacques; Le Fur, Joel; and Nugues, Pierre, to Thomson-CSF. Vacuum-tight window for microwave electron tube and travelling wave tube including this window. 5,004,952, Cl. 315-3.500.

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Gabas, Carlos, 5,004,138, Cl. 224-312.000.

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Everts, Robert G., 5,003,662, Cl. 15-330.000.

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Taylor, John R., 5,003,744, Cl. 52-308.000

Inomata, Hiroshi: *See*—
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Kankkunen, Lauri P. A.; Piskunen, Raimo A. T., and Rantala, Borje T., 5,003,981, Cl. 128-677.000.

Insys Ltd.: *See*—
Shisgal, Ben Z., and Tzelnick, Tzvi, 5,004,997, Cl. 340-436.000

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Jager, Paul A., 5,004,198, Cl. 248-225.100.

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Ellozy, Hamed A., Jeanty, Henry H.; and Tappert, Charles C., 5,005,205, Cl. 382-3.000.
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Jackson, Kenneth P.; and Raver, Norman, 5,004,317, Cl. 350-96.200.
Krounbi, Mohamad T.; and Wang, Po-Kang, 5,005,096, Cl. 360-113.000.
Mace, Everitt W.; Sickler, Janet; and Srinivasan, Varadarajan, 5,004,508, Cl. 148-22.000
Martin, Yves; and Wickramasinghe, Hemantha K., 5,003,815, Cl. 73-105.000

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Miller, Jack E., 5,004,275, Cl. 285-373.000.

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Buckholz, Lawrence L., Jr.; and Kasper-Lehmann, Robin, 5,004,618, Cl. 426-281.000.

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Harke, Alfons, 5,003,749, Cl. 52-703.000.

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De, Dilip K., 5,004,724, Cl. 505-1.000
Tallman, Richard L., 5,004,722, Cl. 505-1.000.

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Moay, Neomi; and Draghi, Enrica, 5,004,694, Cl. 435-240.270

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Wilson, Ewert J. A., 5,004,850, Cl. 585-1.000.

Intertechnique: *See*—
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Olson, Thomas E., and Vigil, Dennis M., 5,003,918, Cl. 118-665.000

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Mann, Samuel J., 5,004,470, Cl. 606-188.000.
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Isotopenforschung Dr. Sauerwein GmbH: *See*—
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Itoh Seiki Co., Ltd.: *See*—
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Kawada, Sunao; Hashimoto, Takayoshi; Itoh, Toyotsugu, and Koyanagi, Makoto, 5,003,851, Cl. 82-1.110.

Itoi, Satoshi, to NEC Home Electronics Ltd. Window system synchronizing protective circuit. 5,005,190, Cl. 375-108.000.

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Cummiskey, Peter; Epstein, Marvin; Gilmour, Paul A., and Kim, Richard, 5,005,168, Cl. 370-24.000
Loch, Eugene W.; Ball, David D., and Mack, George F., 5,004,129, Cl. 220-366.000.
Schap, William W., 5,004,280, Cl. 292-341.160

Iura, Kazuo; Tsuji, Kazunori; and Saka, Kazuhito, to Sumitomo Wiring System, Ltd. Method and apparatus for manufacturing compact conductors. 5,003,761, Cl. 57-58.520.

Ivers, Douglas E.; and Nobles, Charles M., to Lord Corporation. Semi-active damper valve means and method. 5,004,079, Cl. 188-282.000.

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Iwamoto, Akio; and Yuzuriha, Yoshiki, to Japan Electronic Control Systems Co., Ltd. Electronic fuel injection control system for a multi-fuel internal combustion engine and method therefore. 5,003,956, Cl. 123-494.000.

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Iyama, Kunihiko: *See*—
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Japan Aircraft Mfg Co., Ltd.: *See—*
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Jarrett, Bobby R., to United States of America, Navy Switched comparator system for obtaining dynamic range. 5,004,183, Cl 244-3.110.
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Jeffrey, Roy R., Jr.; and Devoss, John. Engine heating unit. 5,003,941, Cl. 123-142.50R.
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Jensen, David G. Chain elongation indicator and method. 5,003,913, Cl. 116-208.000.
Jensen, Tom M.; and Shorey, Thomas H., to Boeing Company, The. Rollout stop. 5,004,387, Cl. 410-69.000.
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Jepson, Peter; and Tofield, Graham M., to Thorn Emi Flow Measurement Limited. Fluid meter. 5,003,810, Cl. 73-3.000.
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Johnson, Gary K. Memory game. 5,004,244, Cl. 273-240.000.
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Jones, Mark L.: *See—*
Tibbitts, Gordon A.; and Jones, Mark L., 5,004,057, Cl. 175-408.000.
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Joseph, Craig A.: *See—*
Baker, Charles L.; Cody, George D.; Joseph, Craig A.; and Sela, Uri, 5,004,152, Cl. 239-8.000.
Joset, Gerard, to Thomson-Brandt Armements. Safety device for releasable charges. 5,003,861, Cl. 89-1.550.
Joshi, Shrinivas G Acoustic wave microsensors for measuring fluid flow. 5,003,822, Cl. 73-204.230.
Joy Technologies Inc.: *See—*
Marshall, Gary C., 5,004,098, Cl. 198-847.000.
Juds, Mark A. *See—*
Theisen, Peter J.; Wycklendt, Daniel A.; Juds, Mark A.; and Moldovan, Peter K., 5,004,874, Cl. 200-144.00R.
Julemont, Michel, Zocchi, Germaine; Mineo, Nunzio; and Fonsny, Pierre, to Colgate-Palmolive Company. Built thickened stable non-aqueous cleaning composition and method of use. 5,004,556, Cl. 252-99.000.
Jung, Rudiger, to Flutec Fluidtechnische Gerate GmbH. Two-way flow valve. 5,004,006, Cl. 137-501.000
Junghans, Rudi, to Heidelberger Druckmaschinen. Distributor roller for an inking unit of a printing press. 5,003,874, Cl. 101-348.000.
Jurgensmeyer, Robert F.: *See—*
Ketterlin, William S.; and Jurgensmeyer, Robert F., 5,003,928, Cl. 119-73.000.
Juschenko, Konstantin A.; Varenchuk, Pavel A.; Kovalev, Valentin D.; Chvertko, Anatoly I.; Privalov, Nikolai T., and Kuzmenko, Vladimir G. Apparatus for overhead submerged-arc welding. 5,004,885, Cl. 219-73.200.
K. W Muth Company, Inc.: *See—*
Roberts, John K., 5,005,009, Cl. 340-705.000.
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Moritz, Werner, 5,003,765, Cl. 59-78.100.
Kabushiki Kaisha Machida Seisakusho: *See—*
Koshikawa, Nobuo; and Inoue, Masahiro, 5,003,964, Cl. 128-4.000.
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Tomura, Yoshihiro; Maruhashi, Keiji; and Ozawa, Nobuyuki, 5,004,364, Cl. 401-110.000.
Kabushiki Kaisha Sankyo Seiki Seisakusho: *See—*
Nebashi, Yukichi; and Wada, Takaaki, 5,004,515, Cl. 156-350.000.
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Imai, Hajime; Kito, Shozo; Harada, Shoichi; Yokoyama, Yoshinobu; Nakamura, Syuzi; Miyoshi, Shigetoshi; and Muramatsu, Tadao, 5,003,799, Cl. 70-247.000
Umehara, Keiichi; Hirose, Hisashi; and Kono, Kazuo, 5,004,915, Cl. 250-231.140.
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Ikumi, Nobuyuki, 5,005,117, Cl. 364-200.000.
Izumiya, Toshihide; Ohba, Yasuo; and Hatano, Ako, 5,005,057, Cl. 357-17.000.
Maeda, Satoshi; and Sawada, Shizuo, 5,004,704, Cl. 437-195.000.
Murayama, Akihiro; and Koyama, Takeshi, 5,004,935, Cl. 307-353.000.
Narikiyo, Hidetoshi; Gotou, Yukifumi; and Chuma, Yoshihiro, 5,004,149, Cl. 236-49.300.

Samata, Shuichi; and Matsushita, Yoshiaki, 5,004,702, Cl. 437-57.000
Shimamura, Keizo, Amano, Kagetaka, Aisaka, Tatsuryoshi; Hanai, Satoshi; and Nagata, Kohsoku, 5,004,498, Cl. 75-233.000.
Tsujimoto, Hisanaga, 5,005,091, Cl. 360-96.500
Watanabe, Junji, and Ishikawa, Yuji, 5,005,052, Cl. 355-231.000.
Yamakawa, Tsutomu; and Kobayashi, Hiroaki, 5,004,904, Cl 250-207.000.
Kaczmarczyk, Donald J.: *See—*
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Rezmer, Leonard D.; Kaczmarczyk, John R., Kaczmarczyk, Gerald R.; and Kaczmarczyk, Donald J., 5,004,024, Cl. 141-298.000
Kaczmarczyk, John R.: *See—*
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Kadis, Paul M.: *See—*
Terrell, John; Kadis, Paul M.; Hiney, Leonard L.; and Pfaff, Susan E., 5,003,807, Cl 72-351.000
Kadohara, Terutake: *See—*
Akashi, Akira; Kadohara, Terutake; Ohnuki, Ichiro; and Higashihara, Masaki, 5,005,037, Cl. 354-400.000.
Kadota, Kuninobu; Kohno, Yoshihide, and Koseki, Hiroyuki, to Bridgestone Corp. Pneumatic tire with a strip reinforcing laminate having filaments arranged together in an undulating form. 5,004,031, Cl 152-538.000.
Kaettlitz, Wolfgang: *See—*
Wahl, Hans-Peter, Schlueter, Rudolf, Kaettlitz, Wolfgang, and Loos, Rolf, 5,004,545, Cl 210-510.100
Kafai, Malakeh B. Bed sheet assembly. 5,003,655, Cl 5-496.000
Kainou, Kikuo *See—*
Fukada, Tetsuji; Wakamiya, Masayuki, and Kainou, Kikuo, 5,003,824, Cl 73-651.000
Kaiser, Peter. *See—*
Viertel, Lothar; Kaiser, Peter, and Welter, Patrick, 5,004,288, Cl 296-97.110
Kajiura, Tetsuya: *See—*
Matsumoto, Yukihiro; Yoshihara, Kenji, Kajiura, Tetsuya; Niizato, Tomonori, and Yamada, Noriyuki, 5,003,937, Cl. 123-90.120.
Kajiwara, Manabu *See—*
Kano, Atsushi, Mizuno, Masayuki, Kajiwara, Manabu, Sakaue, Kenji, Abe, Yuji, and Nakamura, Kazuo, 5,004,217, Cl 271-10.000.
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Kakinoki, Yoshikazu, Nakashima, Masato; Koezuka, Tetsuo; Hiraoka, Noriyuki, Tsukahara, Hiroyuki, Suto, Yoshinori, Oshima, Yoshitaka, and Hashinami, Shinji, to Fujitsu Limited Optical system for detecting three-dimensional shape. 5,004,929, Cl 250-561.000
Kalantar, S Javad, to Phyb U S A., Inc Simulated nipple for infants. 5,004,473, Cl 606-234.000.
Kalinoski, Richard W., Chitty, Gordon W., and Vignos, James H., to Foxboro Company, The Piezoelectric differential pressure vortex sensor. 5,003,827, Cl 73-861.240
Kalnes, Tom N., and James, Robert B., Jr., to UOP. Process for treating an organic stream containing a non-distillable component to produce an organic vapor and a solid. 5,004,533, Cl 208-50.000
Kameshima, Makoto Balance shaft. 5,004,236, Cl 273-80.00B.
Kamio, Masashi *See—*
Tobuse, Hiroaki, Murakami, Hidenobu; and Kamio, Masashi, 5,005,138, Cl 364-519.000
Kamishima, Hiroyuki: *See—*
Kato, Koichiro, Fukuhara, Hiroshige; Kamishima, Hiroyuki, and Tsukahara, Hitoshi, 5,005,021, Cl. 343-717.000.
Kamiya, Masakuni: *See—*
Matsuo, Yoshio, Nakano, Hirofumi, Kamiya, Masakuni; and Matsui, Kezuo, 5,004,580, Cl. 419-65.000
Kamla, Jeffrey R.: *See—*
Olson, Larry D., and Kamla, Jeffrey R., 5,004,775, Cl. 524-371.000.
Kanada, Tokio, to Sony Corporation Disk drive with stabilizer block for insuring stable contact between a read/write head and a flexible recording medium. 5,005,098, Cl 360-130.340
Kanai, Takashi, Ochiai, Masami; Oshina, Morio; and Sonoda, Mitsuo, to Hitachi Construction Machinery Co., Ltd. Hydraulic drive system. 5,003,776, Cl. 60-434.000.
Kanda, Kunio, to Fanuc Ltd. Method of arranging data on a RAM for display. 5,005,012, Cl 340-750.000
Kanda, Masao, to Pioneer Electronic Corporation. Method and apparatus of image processing. 5,005,080, Cl 358-160.000.
Kanebo, Ltd *See—*
Saka, Kenji; Terai, Masao; and Yamamoto, Kanji, 5,003,966, Cl. 128-39.000.
Kaneko, Mamoru: *See—*
Amano, Tetsuya, Mita, Seiichi; Izumita, Morishi, Doi, Nobukazu; Kaneko, Mamoru; Yamauchi, Hiroto; and Kasai, Susumu, 5,005,184, Cl. 375-14.000
Kaneko, Shozo; and Kinoshita, Masaaki, to Mitsubishi Jukogyo Kabushiki Kaisha. Pulverized coal combustion method. 5,003,891, Cl. 110-341.000.
Kaneko, Shuzo: *See—*
Tamura, Yasuyuki; and Kaneko, Shuzo, 5,005,028, Cl 346-76.00R.
Kang, Cheong J.; and Kang, Seok J. Door lock having security device. 5,004,278, Cl. 292-169.180.
Kang, Seok J.: *See—*
Kang, Cheong J.; and Kang, Seok J., 5,004,278, Cl. 292-169.180.
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Kanne, Diane D., to Union Oil Company of California. Air pollution reduction. 5,004,480, Cl. 44-387.000
Kano, Atsushi; Mizuno, Masayuki; Kajiwara, Manabu; Sakaue, Kenji; Abe, Yuji; and Nakamura, Kazuo, to Mita Industrial Co., Ltd. Paper feeding device. 5,004,217, Cl. 271-10.000.
Kao Corporation. *See—*
Tsubone, Akira; Tomiyoshi, Masanori, Yokomizo, Junichi; Tanaka, Nobuhiro; Moriguchi, Hideyuki, and Hirata, Eiji, 5,004,401, Cl 414-786.000.
Kappler, Guenter; and Rist, Dieter, to Bayerische Motoren Werke Aktiengesellschaft Gas turbine installation. 5,003,768, Cl 60-39.230.
Karita, Seiichiro: *See—*
Takahashi, Hiroto; Karita, Seiichiro, and Sato, Koichi, 5,005,024, Cl. 346-1.100
Karsten, Robert A.: *See—*
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Karten, Harvey J *See—*
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Kasai, Susumu: *See—*
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Kase, Hiroshi: *See—*
Yasuzawa, Toru, Nakanishi, Satoshi; Murakata, Chikara; Kase, Hiroshi, Sano, Hiroshi, and Yamada, Koji, 5,004,833, Cl 536-18.200.
Kasper-Lehmann, Robin: *See—*
Buckholz, Lawrence L., Jr., and Kasper-Lehmann, Robin, 5,004,618, Cl 426-281.000.
Kataoka, Kenichi; and Tsukimoto, Takayuki, to Canon Kabushiki Kaisha. Control apparatus for vibration driven motor. 5,004,964, Cl. 318-128.000.
Katayama, Masashi: *See—*
Namiki, Tomizo, Suzuki, Tamotsu, and Katayama, Masashi, 5,004,668, Cl 430-256.000.
Katayama, Masato. *See—*
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Katayama, Shigeki: *See—*
Hane, Toshioki; and Katayama, Shigeki, 5,004,648, Cl 428-364.000.
Kato, Hitoshi: *See—*
Nakao, Shinroku, Suzuki, Yoshiyuki, and Kato, Hitoshi, 5,004,253, Cl. 280-47.380.
Kato, Katsuaki. *See—*
Mochida, Ei, Murakami, Kimihiro, Kato, Kazuo; Kato, Katsuaki, Okuda, Jun; and Miwa, Ichitomo, 5,004,751, Cl. 514-390.000
Kato, Kazuo: *See—*
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Kato, Koichiro; Fukuhara, Hiroshige, Kamishima, Hiroyuki, and Tsukahara, Hitoshi, to Nissan Motor Company, Limited Antenna unit for vehicle. 5,005,021, Cl. 343-717.000
Kato, Senji; and Oba, Hidehiro, to Toyota Jidosha Kabushiki Kaisha Apparatus for control and intake air amount prediction in an internal combustion engine. 5,003,950, Cl 123-422.000
Kato, Shinji. *See—*
Takagi, Soya; Mori, Kazuhiko, Kawasaki, Minoru, and Kato, Shinji, 5,004,581, Cl. 420-487.000.
Katoh, Kazunobu *See—*
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Kaufman, Randal J.; and Pittman, Debra, to Genetics Institute, Inc Production of procoagulant proteins. 5,004,803, Cl 530-383.000
Kavitsky, Avraham *See—*
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Kawada, Haruki: *See—*
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Kawada, Sunao; Hashimoto, Takayoshi; Itoh, Toyotsugu; and Koyanagi, Makoto, to Konica Corporation. Method of manufacturing a photoreceptor. 5,003,851, Cl. 82-1.110
Kawahara, Hideo; Sakata, Nobuhiro; Coulon, Jean-Claude; and Lovera, Patrick, to Saint-Gobain Vitrage Distribution of powder for making coated glass. 5,004,503, Cl. 106-287.180.
Kawai, Hideshi, to Isowa Industry Company Ltd. Method of controlling web feeding device. 5,004,173, Cl. 242-57.000
Kawai, Jyoji: *See—*
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Kawamoto, Masakazu, to Fujitsu Limited Diagnostic system in a data processing system. 5,005,172, Cl. 371-18.000.
Kawamura, Kouichi: *See—*
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Kawasaki, Minoru: *See—*
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Kawasaki Steel Corporation. *See—*
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Sakaguchi, Shuichi, Yamaguchi, Tadamasa, and Yamashita, Itaru, 5,004,884, Cl. 219-73.000

Kawauchi, Susumu. *See—*
Tsuji, Masahiro; Kawauchi, Susumu, and Nakayama, Hiroshi, 5,004,520, Cl. 156-630.000

Kazama, Toshio, to NHK Spring Co., Ltd. Contact probe. 5,004,977, Cl. 324-158.00P.

Kazmierczak, Irvin J. *See—*
Sardano, Peter A., and Kazmierczak, Irvin J., 5,004,218, Cl. 271-35.000

Keating, Raymond. *See—*
Connell, Richard A., Keating, Raymond, Sansone, Ronald P., and Schumacher, Karl H., 5,005,124, Cl. 364-401.000

Keenan, James J. *See—*
Sevier, Richard W., and Keenan, James J., 5,004,107, Cl. 211-26.000

Keil, Charles F. Antenna position warning device. 5,003,911, Cl. 116-28.00R

Kelbe, Richard R., to Eastman Kodak Company. Camera apparatus for magnetically recording on film. 5,005,031, Cl. 354-106.000

Kelkenberg, Heike, to Huels Aktiengesellschaft. N-alkylglycamino compounds, a process for producing them, and their use. 5,004,564, Cl. 252-546.000

Keller, Teddy M. and Price, Thomas R., deceased (by Price, Carolyn R., legal representative), to United States of America, Navy. Polymer of dithioether-linked phthalonitrile. 5,004,801, Cl. 528-360.000

Kelley, Larry W. *See—*
Carlson, Harold L., DeWitt, Michael D., Martel, Louis, Jr., Kelley, Larry W., and Tayon, Jeffrey E., 5,004,077, Cl. 188-2.00D

Kelly, Michael J. Button die holder. 5,003,852, Cl. 82-158.000

Kelly, Ray G., to Angeles Nursery Toys, Inc. Nestable cot and end connector therefor. 5,003,649, Cl. 5-8.000

Kenmochi, Kazuhito, Yarita, Ikuo, Fukuhara, Akihiko, Komatu, Tomio, and Kishida, Akira, to Kawasaki Steel Corporation. Method for pre-processing stainless steel strip intended to be cold-rolled. 5,003,804, Cl. 72-39.000

Kent State University. *See—*
West, John L., 5,004,323, Cl. 350-346.000

Kerr-McGee Chemical Corporation. *See—*
Leonard, Robert E., 5,003,774, Cl. 60-275.000

Kersey, Robert L., to Tripar Incorporated. Compositions and articles for stimulating taste receptors. 5,003,995, Cl. 131-359.000

Kester, Jervis D., and Redington, Clarence P., to United Technologies Corporation. Fuel distribution valve for a combustion chamber. 5,003,771, Cl. 60-243.000

Kestler, Jeffrey L. Athletic supporter. 5,003,972, Cl. 128-158.000

Ketema Process Equipment Division. *See—*
Hendricks, James B., 5,004,540, Cl. 210-232.000

Ketterlin, William S., and Jurgensmeyer, Robert F. Freeze resistant animal watering installation. 5,003,928, Cl. 119-73.000

Kidachi, Atsushi. *See—*
Niki, Motohiro, Niki, Etsuko, Kidachi, Misako, Kidachi, Atsushi, Niki, Mieko, Lee, Kap J., and Lee, Yun, 5,003,922, Cl. 119-15.000

Kidachi, Misako. *See—*
Niki, Motohiro, Niki, Etsuko, Kidachi, Misako, Kidachi, Atsushi, Niki, Mieko, Lee, Kap J., and Lee, Yun, 5,003,922, Cl. 119-15.000

Kiku, Yutaro, to Du Pont de Nemours, E. I., and Company. Multifunctional card having an electromagnetic wave protection. 5,005,106, Cl. 361-424.000

Kikuchi, Takashi; and Aoyagi, Shigeo, to Alpine Electronics Inc. Automatic cassette tape changer. 5,005,090, Cl. 360-92.000

Kikuchi, Yoshiharu. *See—*
Tojo, Tetsuo, Okada, Keiji, Nakahara, Takashi, and Kikuchi, Yoshiharu, 5,004,787, Cl. 525-332.100

Kilrush Limited. *See—*
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Kim, Chong K. *See—*
Arthurs, Edward, Goodman, Matthew S., Kim, Chong K., and Lee, Tony T., 5,005,167, Cl. 370-4.000

Kim, Chung S. *See—*
Yeo, Jong K., Kim, Chung S., Lee, Dong J., and Jang, Sung H., 5,004,774, Cl. 524-262.000

Kim, Myung S. *See—*
Oh, Myung H., Lee, Kyung J., Chung, In J., Lee, Nam Y., and Kim, Myung S., 5,004,573, Cl. 264-61.000

Kim, Richard. *See—*
Cummiskey, Peter, Epstein, Marvin; Gilmour, Paul A., and Kim, Richard, 5,005,168, Cl. 370-24.000

Kim, Soonih, Takeda, Kazuhisa, and Sasatani, Seiei, to Ono Pharmaceutical Co., Ltd. Pharmaceutical compositions comprising esters or amides as active ingredients. 5,004,612, Cl. 424-450.000

Kim, Young D., and Ha, Byung J., to Pacific Chemical Co., Ltd. Quaternary ammonium-substituted sterol derivatives. 5,004,737, Cl. 514-182.000

Kim, Young Sul. 1,1-dioxopenicillanoyl oxymethyl D-6-(α-(methyleneamino) phenylacetamido)-penicillanate and a process for the preparation thereof. 5,004,738, Cl. 514-195.000.

Kim, Youngchol. Sun blind for use in automobile. 5,004,290, Cl. 296-99.100

Kimmet, Mark S. *See—*
Van Blaircum, Bennie A., Harwood, Jon W., and Kimmet, Mark S., 5,004,069, Cl. 181-282.000

Kimura, Toshiaki. *See—*
Nishimura, Yukuo, Eguchi, Ken, Kawada, Haruki, Tomida, Yoshinori, Nakagiri, Takashi, Saito, Kenji, Kimura, Toshiaki, Matsuda, Hiroshi, Sakai, Kunihiro, and Miyazaki, Toshihiko, 5,004,671, Cl. 430-286.000

Kinczel, Peter; Balazs, Laszlo, and Sajo, Gabor, to Tungsram Reszvenytarsasag (Tungsram RT). Luminescent material, especially for application in mercury vapor gas discharge light sources, and mercury vapor gas discharge light source. 5,004,948, Cl. 313-486.000

Kinetic Concepts, Inc. *See—*
Vrzalik, John H., 5,003,654, Cl. 5-453.000

King, Brian T. Valve duration and lift variator for internal combustion engines. 5,003,939, Cl. 123-90.160

King, James L., to A. O. Smith Corporation. Power and control chamber for dynamoelectric machines. 5,004,942, Cl. 310-89.000

King, Murray P. *See—*
Hafelfinger, Werner, Sholder, Jason A., King, Murray P., and Duncan, James L., 5,003,975, Cl. 128-419.0PG

King, Philip N., to Hewlett Packard Company. Method and apparatus for providing thermodynamic protection of a driver circuit used in an in-circuit tester. 5,005,008, Cl. 340-653.000

Kingsbury, William D. *See—*
Boehm, Jeffrey C., Hecht, Sidney M., Holden, Kenneth G., Johnson, Randall K., and Kingsbury, William D., 5,004,758, Cl. 514-283.000

Kino, Gordon S., and Mansfield, Scott M., to Leland Stanford Junior University, The Board of Trustees of the. Near field and solid immersion optical microscope. 5,004,307, Cl. 350-1.200

Kinoshita, Kiyoshi. *See—*
Tamura, Yukio, Kinoshita, Kiyoshi, Uwaji, Tetsuo, and Mizuno, Takashi, 5,004,352, Cl. 366-343.000

Kinoshita, Masaaki. *See—*
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Kinoshita, Yasunori. *See—*
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Kinser, Jason M. *See—*
Caulfield, H. John; Hester, Charles F., Kinser, Jason M., and Shamir, Joseph, 5,004,309, Cl. 350-3.680

Kipp, Robert M., to Shell Oil Company. Tendon bottom connector for a tension leg platform. 5,004,272, Cl. 285-24.000

Kircher, Klaus. *See—*
Meier, Helmut-Martin, Kircher, Klaus, and Berg, Klaus, 5,004,569, Cl. 260-410.600

Kirin Beer Kabushiki Kaisha. *See—*
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Kirschbaum, Robert. *See—*
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Kirschner, Kraig A. Adjustable load bolt adapter bracket assembly. 5,004,193, Cl. 248-59.000

Kirschner, Roger S. *See—*
McCracken, William L., McDonald, Paul D., and Kirschner, Roger S., 5,004,310, Cl. 350-6.800

Kishi, Ikuo. *See—*
Ogawa, Osamu, Kishi, Ikuo, Tahara, Yoshiyuki, and Sugita, Masanori, 5,004,756, Cl. 514-655.000

Kishi, Katsunobu, to Nitto Kohki Co., Ltd. Chamfering machine. 5,004,385, Cl. 409-180.000

Kishida, Akira. *See—*
Kenmochi, Kazuhito, Yarita, Ikuo, Fukuhara, Akihiko, Komatu, Tomio, and Kishida, Akira, 5,003,804, Cl. 72-39.000

Kishida, Hajime. *See—*
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Kishida, Naoto. *See—*
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Kishigami, Junjiro. *See—*
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Kishimoto, Junichi. *See—*
Hayashi, Minoru, Kobari, Koichi, Sato, Kimiharu, and Kishimoto, Junichi, 5,004,586, Cl. 422-164.000

Kissel, Charles L., to Union Oil Company of California. Latex/sol or gel systems. 5,004,562, Cl. 252-518.000

Kissel, Charles L., to Union Oil Company of California. Antistatic textile compositions and sol/gel/polymer compositions. 5,004,563, Cl. 252-518.000

Kistner, Kenneth J., to Specified Equipment Systems Company, Inc. Method and apparatus for applying single of multicomponent materials. 5,004,159, Cl. 239-337.000

Kitamura, Koichi, Mimura, Hidenori; Yamamoto, Kazuo; and Ohta, Yasumitsu, to Nippon Steel Corporation. Contact type image sensor device with specific capacitance ratio. 5,004,903, Cl. 250-208.100

Kitamura, Takayuki. *See—*
Okazaki, Kakuma, and Kitamura, Takayuki, 5,003,736, Cl. 52-108.000

Kito, Shozo. *See—*
Imai, Hajime, Kito, Shozo, Harada, Shoichi, Yokoyama, Yoshinobu, Nakamura, Syuzi, Miyoshi, Shigetoshi, and Muramatsu, Tadao, 5,003,799, Cl. 70-247.000

Kitsuda, Sakae. Safety cylinder cap. 5,004,117, Cl. 220-85.00P.

Kleinerman, Marcos. Remote measurement of physical variables with fiber optic systems - methods, materials and devices. 5,004,913, Cl. 250-227.210.

Klem, Charles D. *See—*
Dankwort, Rudolph C.; and Klem, Charles D., 5,004,911, Cl. 250-227.210.

Klemarczyk, Philip T.; and Okamoto, Yoshihisa, to Loctite Corporation. Aromatic vinyl ether compounds and compositions, and method of making the same. 5,004,842, Cl. 568-640.000

Klesius, Konrad. Plastic closure for a plastic container. 5,004,126, Cl. 222-153.000.

Kleven, Lawrence P., Agranat, Edward A.; Crisafulli, Jerry; Robinson, Hugh; Smith, David J., Wiseley, Thomas, Fortier, Richard C.; Johnson, Severne; and Menzin, Marvin, to Texas Instruments Incorporated. Current sensing relay. 5,004,954, Cl. 315-106.000

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Kline, Joseph M. Scalers for periodontal use. 5,004,419, Cl. 433-143.000.

Klingel, Rainhard. *See—*
Deller, Klaus; Ettlinger, Manfred; Klingel, Rainhard; and Krause, Helmfried, 5,004,719, Cl. 502-242.000.

Klotzer, Sieghart. *See—*
Meckl, Heinz; Klotzer, Sieghart; Wolff, Erich; and Haseler, Helmut, 5,004,676, Cl. 430-398.000.

Kluft, Cornelis, to Nederlandse Centrale Organisatie voor Teegepast-Natturwentenschappelijk Orderzoel 100KDa protein from blood which binds to and inhibits the activity of plasminogen activators. 5,004,802, Cl. 530-380.000.

Kluitmans, Johannes T. M.; and Tjassens, Hindrik, to U.S. Philips Corp. Laser diode module. 5,005,178, Cl. 372-36.000.

Knabenhans, Fritz. *See—*
Waeber, Rene; Demuth, Robert; Knabenhans, Fritz; and Bachmann, Othmar, 5,003,670, Cl. 19-66.0CC.

Knape, Richard S. *See—*
Stumpf, William E., Carlson, Casey L.; Knape, Richard S.; and Bessinger, Walter L., 5,004,202, Cl. 248-243.000.

Knape & Vogt Manufacturing Company. *See—*
Bessinger, Walter L., 5,004,201, Cl. 248-243.000.
Stumpf, William E.; Carlson, Casey L., Knape, Richard S.; and Bessinger, Walter L., 5,004,202, Cl. 248-243.000.

Knapp, Richard H. *See—*
Mallard, Bobby J., Knapp, Richard H., Roper, W. J., and Harrison, Daniel R., 5,004,071, Cl. 182-3.000.

Knauf, Peter. *See—*
Born, Dieter; Knauf, Peter; and Retelsdorf, Hans-Joachim, 5,004,886, Cl. 219-76.140

Kniewske, Reinhard. *See—*
Krause, Frank; and Kniewske, Reinhard, 5,004,767, Cl. 524-30.000.

Knop, Bernhard. *See—*
Loth, Helmut; Helpenstein, Klaus; Podola, Tore; and Knop, Bernhard, 5,004,769, Cl. 524-43.000.

Knox, Wayne H. *See—*
Glass, Alastair M.; Knox, Wayne H., and Nolte, David D., 5,004,325, Cl. 350-354.000.

Knutsen, Neil W., to Allen-Bradley Company. Industrial controller with decompilable user program. 5,005,152, Cl. 364-900.000.

Kobari, Koichi. *See—*
Hayashi, Minoru; Kobari, Koichi; Sato, Kimiharu; and Kishimoto, Junichi, 5,004,586, Cl. 422-164.000.

Kobari, Yuji. *See—*
Imaseki, Takashi; and Kobari, Yuji, 5,005,131, Cl. 364-426.020.

Kobashi, Yasuhiro, and Irikura, Tsutomu, to Matsushita Electric Industrial Co., Ltd. Solid electrolytic capacitor. 5,005,107, Cl. 361-540.000.

Kobayashi, Atsushi; Suzuki, Takashi, and Kosugi, Yasuhiko, to Seiko Epson Corporation. Image forming apparatus. 5,005,043, Cl. 355-27.000.

Kobayashi, Hiroaki. *See—*
Yamakawa, Tsutomu; and Kobayashi, Hiroaki, 5,004,904, Cl. 250-207.000.

Kobayashi, Jiro, to Nissan Motor Co., Ltd. Fuel check valve assembly for fuel tank. 5,004,002, Cl. 137-39.000.

Kobayashi, Kazuhiro. *See—*
Koboshi, Shigeharu; Kobayashi, Kazuhiro; Goto, Nobutaka; Kurematsu, Masayuki; and Takabayashi, Naoki, 5,004,522, Cl. 159-47.003.

Kobayashi, Keiichi. *See—*
Tsukamoto, Akihiro; and Kobayashi, Keiichi, 5,005,013, Cl. 340-825.440.

Kobayashi, Kyoji; and Furuya, Takeo, to Jidosha Denki Kogyo K.K. Seat belt apparatus. 5,004,178, Cl. 242-107.000.

Kobayashi, Masao. Production method of forming solid state food material completely wrapped and sealed in a clayish state food material. 5,004,619, Cl. 426-297.000.

Kobayashi, Masato; Yamaguchi, Yoh-Ichi; Sugawara, Minoru; and Yamashiro, Kazuhide, to Hoya Corporation. X-ray mask and method of manufacturing an X-ray mask. 5,005,075, Cl. 378-35.000.

Kobayashi, Tomoya. *See—*
Abe, Kunihiro; Sakamoto, Masanori; and Kobayashi, Tomoya, 5,005,129, Cl. 364-424.030.

Kobayashi, Toshio; Uchikawa, Fusaoki; Nomura, Kenji; Morita, Masao; and Yokoyama, Shouichi, to Mitsubishi Denki Kabushiki Kaisha. Process for producing a superconductor of an oxide system from acetylacetonates. 5,004,720, Cl. 505-1.000.

Kobayashi, Yoshiharu: *See—*
Sato, Shuichi; and Kobayashi, Yoshiharu, 5,003,901, Cl. 112-316.000.

Koblitz, Francis F.; O'Shea, Thomas M.; Stoner, Beverly A.; and Yula, Joseph J., to AMP Incorporated. Electrical connector containing adipic acid polyester sealant composition. 5,004,869, Cl. 174-84.00C.

Koboshi, Shigeharu; Kobayashi, Kazuhiro; Goto, Nobutaka; Kurematsu, Masayuki, and Takabayashi, Naoki, to Konica Corporation. Method of treating photographic process waste liquor through concentration by evaporation. 5,004,522, Cl. 159-47.003.

Kodaira, Takanori. *See—*
Ogawa, Yukio; Hirohata, Michio; Kodaira, Takanori; and Miyawaki, Makoto, 5,005,038, Cl. 354-400.000.

Kodama, Katuhiko. *See—*
Haraguchi, Hiroshi; Tamura, Hiroshi; Kodama, Katuhiko; and Kondo, Toshio, 5,003,955, Cl. 123-489.000

Koehler, Juergen, to Konvekta GmbH. Installation for heating, ventilation or air-conditioning of a long-distance bus. 5,004,150, Cl. 237-12.30A.

Koenig, Rudolf. *See—*
Unterforsthuber, Karl; and Koenig, Rudolf, 5,003,887, Cl. 102-531.000.

Koerner, Gotz; and Schaefer, Dietmar, to Th. Goldschmidt AG. Polyoxyalkylene-polysiloxane block copolymers as demulsifiers for water-containing oil. 5,004,559, Cl. 252-345.000.

Koester, Vaughn J. *See—*
Hanson, Charles M.; Koester, Vaughn J.; and Fallstrom, Robert D., 5,005,213, Cl. 455-617.000.

Koezuka, Tetsuo. *See—*
Kakunoki, Yoshikazu; Nakashima, Masato; Koezuka, Tetsuo; Hiraoka, Noriyuki; Tsukahara, Hiroyuki; Suto, Yoshinori; Oshima, Yoshitaka; and Hashinami, Shinji, 5,004,929, Cl. 250-561.000.

Kofman, Anatoly; and Kavitsky, Avraham. Vehicle locking device. 5,003,798, Cl. 70-238.000.

Koga, Yukihiro; and Koyama, Yukio, to Mitsubishi Jukogyo Kabushiki Kaisha. Apparatus for bonding adhesive rubber tape to both edges of a steel cord fabric. 5,004,516, Cl. 156-463.000.

Koh-I-Noor Rapidograph, Inc. *See—*
Felgentreu, Peter, 5,004,365, Cl. 401-258.000.

Kohler, Burkhard. *See—*
Zecher, Wilfried; El-Sayed, Aziz; Haese, Wilfried, Kohler, Burkhard; and Meyer, Rolf-Volker, 5,004,795, Cl. 528-73.000.

Kohler Co. *See—*
Churchill, Jonathan D.; and Volmary, William T., 5,003,948, Cl. 123-352.000.

Kohls, Dennis E.; and Moser, Francis M., to Reece Construction Company, Inc. Pelletized sulfur concrete and method of preparing same. 5,004,799, Cl. 528-389.000.

Kohno, Teruhisa. *See—*
Yamada, Shinji; Kohno, Teruhisa; and Takata, Koji, 5,004,301, Cl. 303-115.000

Kohno, Yoshihide. *See—*
Kadota, Kuninobu; Kohno, Yoshihide; and Koseki, Hiroyuki, 5,004,031, Cl. 152-538.000.

Koike, Hiroyuki. *See—*
Muraki, Yoshiya; and Koike, Hiroyuki, 5,003,984, Cl. 128-710.000.

Koike, Mikio. *See—*
Hara, Kazumasa; Sano, Yasuro; Koike, Mikio; and Nishijima, Mitsuru, 5,003,896, Cl. 112-121.110.

Koizumi, Takashi. *See—*
Miyata, Yukihide; Ishizaka, Hideo; Saito, Yoshio; and Koizumi, Takashi, 5,004,582, Cl. 422-56.000.

Kojima, Kunio. *See—*
Sakamoto, Noriaki; Maeda, Shigemi; Yamanaka, Toshihiro; Deguchi, Toshihisa; Horie, Nobuyuki, Yamaguchi, Takeshi; and Kojima, Kunio, 5,005,164, Cl. 369-48.000.

Komai, Takeshi. *See—*
Matsuyama, Kazuo; Sugiura, Takashi; and Komai, Takeshi, 5,004,780, Cl. 525-27.000.

Komatsu, Norimasa; and Miyazaki, Asashi, to Alps Electric Co., Ltd. Mode changeover mechanism with flat cam surface for a tape player. 5,005,094, Cl. 360-105.000.

Komatu, Tomio. *See—*
Kenmochi, Kazuhito; Yarita, Ikuo; Fukuhara, Akihiko; Komatu, Tomio; and Kishida, Akira, 5,003,804, Cl. 72-39.000.

Komurasaki, Satosi, to Mitsubishi Denki Kabushiki Kaisha. Control apparatus for internal combustion engine. 5,003,951, Cl. 123-425.000.

Konczol, Kalman. *See—*
Jekkel nee Bokany, Antonia; Albrecht, Karoly; Ambrus, Gabor; Lang, Tibor; Szabo, Istvan M.; Ilkoy, Eva; Konczol, Kalman; Moravcsik, Imre; Hantos, Gabor; Simonovits, Emilia; Lengyel nee Szemenyei, Zsuzsanna; Vida, Zsuzesanna; and Csajagi, Eva, 5,004,695, Cl. 435-253.100.

Kondo, Asaji. *See—*
Arai, Fuminori; and Kondo, Asaji, 5,004,685, Cl. 435-25.000.

Kondo, Syunichi; and Watarai, Syu, to Fuji Photo Film Co., Ltd. Electroconducting semiconductor and binder or binder precursor coated in a subbing layer. 5,004,641, Cl. 428-208.000.

Kondo, Toshio. *See—*
Haraguchi, Hiroshi; Tamura, Hiroshi; Kodama, Katuhiko; and Kondo, Toshio, 5,003,955, Cl. 123-489.000.

Kondo, Yukihito, to Jeol, Ltd. Transmission electron microscope. 5,004,919, Cl. 250-311.000.

Konica Corporation: *See—*
Kawada, Sunao; Hashimoto, Takayoshi; Itoh, Toyotsugu; and Koyanagi, Makoto, 5,003,851, Cl. 82-1.110
Koboshi, Shigeharu; Kobayashi, Kazuhiro; Goto, Nobutaka; Kurematsu, Masayuki; and Takabayashi, Naoki, 5,004,522, Cl. 159-47.003.
Okui, Susumu, 5,004,223, Cl. 271-275.000.
Tomono, Makoto; Tarumi, Noriyoshi; and Sato, Masayuki, 5,004,666, Cl. 430-110.000
Yagi, Toshihiko; Kumashiro, Kenji; and Takiguchi, Hideki, 5,004,680, Cl. 430-603.000.
Yamada, Taketoshi; Habu, Takeshi; and Takamuki, Yasuhiko, 5,004,669, Cl. 430-264.000.

Kono, Kazuo: *See—*
Umehara, Keiichi; Hirose, Hisashi; and Kono, Kazuo, 5,004,915, Cl. 250-231.140.

Konvekta GmbH: *See—*
Koehler, Juergen, 5,004,150, Cl. 237-12.30A.

Koopmann, Gary H., to Bridgestone/Firestone, Inc. Suspension simulator. 5,003,819, Cl. 73-146.000.

Kope, Harry H.: *See—*
Fortin, J. Andre ; Ogilvie, Kelvin K., Tsantrizos, Youla S., and Kope, Harry H., 5,004,754, Cl. 514-570.000.

Korczynski, Jacek M ; and Stack, Thomas J., to Cooper Industries, Inc. Push-to-trip high-amp circuit breaker. 5,004,994, Cl. 337-66.000.

Kordts, Jurgen: *See—*
Martens, Gerhard; Kordts, Jurgen; and Weidinger, Georg, 5,004,912, Cl. 250-227.140.

Korea Institute of Science and Technology: *See—*
Oh, Myung H., Lee, Kyung J., Chung, In J.; Lee, Nam Y ; and Kim, Myung S., 5,004,573, Cl. 264-61.000.

Koschak, Francis L.; and Sarno, Felicismo S., to Star-kist Foods, Inc. Semi-moist pet food having free gravy and process for preparation thereof. 5,004,624, Cl. 426-623.000.

Koseki, Hiroyuki: *See—*
Kadota, Kuninobu; Kohno, Yoshihide; and Koseki, Hiroyuki, 5,004,031, Cl. 152-538.000.

Koshikawa, Nobuo; and Inoue, Masahiro, to Kabushiki Kaisha Machida Seisakusho. Endoscope and jig for processing signal conductors of endoscope. 5,003,964, Cl. 128-4.000.

Koslov, Joshua L.: *See—*
Zdepski, Joel W.; and Koslov, Joshua L., 5,005,082, Cl. 358-174.000.

Kosugi, Yasuhiko: *See—*
Kobayashi, Atsushi; Suzuki, Takashi, and Kosugi, Yasuhiko, 5,005,043, Cl. 355-27.000.

Koteff, Walter B.: *See—*
Cooke, Kevin K., Dewitt, John R ; Galinis, Paul J ; and Koteff, Walter B., 5,004,866, Cl. 174-35 0GC.

Kotobuki Seiyaku Company Limited: *See—*
Tomiyama, Tsuyoshi; Tomiyama, Akira; and Kubota, Koichi, 5,004,750, Cl. 514-382.000.

Koutaka, Yoshirou, to Alps Electric Co., Ltd. Click-type push button switch with improved leaf spring. 5,004,880, Cl. 200-521.000.

Kovach, John S.: *See—*
Ames, Matthew M.; and Kovach, John S., 5,004,593, Cl. 424-10.000.

Kovalev, Valentin D.: *See—*
Juschenko, Konstantin A.; Varenchuk, Pavel A., Kovalev, Valentin D.; Chvertko, Anatoly I.; Privalov, Nikolai T., and Kuzmenko, Vladimir G., 5,004,885, Cl. 219-73.200.

Kowalczyk, Thaddeus. Filter assembly for protecting motor vehicle occupants from pollution. 5,004,487, Cl. 55-269.000.

Kowalski, David J.: *See—*
Fong, Dodd W.; and Kowalski, David J., 5,004,786, Cl. 525-344.000.

Koyama, Takeshi: *See—*
Murayama, Akihiro; and Koyama, Takeshi, 5,004,935, Cl. 307-353.000.

Koyama, Yukio: *See—*
Koga, Yukihiro; and Koyama, Yukio, 5,004,516, Cl. 156-463.000.

Koyanagi, Makoto: *See—*
Kawada, Sunao; Hashimoto, Takayoshi, Itoh, Toyotsugu; and Koyanagi, Makoto, 5,003,851, Cl. 82-1.110.

Koyo Seiko Co., Ltd.: *See—*
Ida, Tomoyasu; Nohara, Makoto; and Seo, Nobuyuki, 5,004,980, Cl. 324-166.000.

Kozaki, Tetsuji; Ishikawa, Hiroshi; Yasui, Hideaki, Shimamoto, Mamoru; Hibino, Katsuhiko; and Suzuki, Motoshi, to Nippondenso Co., Ltd. Position control device and automotive suspension system employing same. 5,004,264, Cl. 280-707.000.

Kozuka, Nobuhiko, to Mita Industrial Co., Ltd. Image-forming machine having a process assembly comprising two independently movable units. 5,005,053, Cl. 355-245.000.

Kragten, Ubaldus F.: *See—*
Baur, Henricus A. C.; and Kragten, Ubaldus F., 5,004,837, Cl. 568-342.000.

Kramasz, Kenneth J.: *See—*
Edelman, William; Constantinou, Dennis; Stefanovski, Miles; Jan, Yuh L.; Fahlen, Theodore S ; Hansen, Ronald L ; and Kramasz, Kenneth J., 5,005,180, Cl. 372-57.000.

Kramer, Ralf: *See—*
Schmidt, Konrad; and Kramer, Ralf, 5,005,016, Cl. 341-142.000.

Kraper, Wayne. Shopping basket accessory. 5,004,252, Cl. 280-33.992.

Krasicki, Walter, Jr.: *See—*
Krasicki, Walter, Sr.; and Krasicki, Walter, Jr., 5,003,857, Cl. 84-266.000.

Krasicki, Walter, Sr., and Krasicki, Walter, Jr ; to W & W Musical Instrument Company. Spindle for harp. 5,003,857, Cl. 84-266.000.

Krause, Duane K.: *See—*
Timmins, Lawrence J.; and Krause, Duane K., 5,004,102, Cl. 206-386.000.

Krause, Frank, and Kniewske, Reinhard, to Cerestar Holding B.V. Polymer compositions. 5,004,767, Cl. 524-30.000.

Krause, Helmfried: *See—*
Deller, Klaus; Ettlinger, Manfred; Klingel, Rainhard; and Krause, Helmfried, 5,004,719, Cl. 502-242.000.

Krause, William R.: *See—*
Azer, Samir N., Salman, Naser N.; and Krause, William R., 5,003,969, Cl. 128-87.00R.

Kreitmair, Xaver: *See—*
Vesely, Ivan; and Kreitmair, Xaver, 5,003,680, Cl. 29-227.000.

Kremer, Ingo. *See—*
Grosch, Peter, Haas, Gerhard; and Kremer, Ingo, 5,004,249, Cl 277-207.00R.

Krenzer, Eberhard, to Barmag AG. Method and apparatus for processing a textured yarn. 5,003,677, Cl 28-220.000.

Kreyenborg Verwaltungen und Beteiligungen KG: *See—*
Stude, Rolf-Rudiger; and Wilken-Trenkamp, Ludger, 5,004,414, Cl. 425-185.000.

Kricheldorf, Hans-Rytger; Delius, Ulrich; and Wehrmann, Rolf, to Bayer Aktiengesellschaft. Aromatic polyethers containing keto groups in side chains. 5,004,836, Cl. 568-333.000.

Krief, Alain, and Dumont, Willy, to Roussel Uclaf. Novel process for preparing semi-caronic aldehydes. 5,004,840, Cl. 568-486.000.

Krishen, Kumar; Shaw, Scott W.; and deFigueiredo, Rui J. P., to United States of America, Administrator, the National Aeronautics and Space Administration. Method and apparatus for sensor fusion. 5,005,147, Cl. 364-578.000.

Krjukov, Georgy M. *See—*
Goikhman, Yakov A.; Krjukov, Georgy M., Onotsky, Melis I.; Sorokin, Georgy M.; Filatov, Alexei V ; Tsarapkin, Viktor V., Yakimov, Vadim P., Smirnov, Gennady A ; Nikiforov, Ivan I.; Burdukovsky, Alexandr I.; Daibov, Sergei V.; and Kurdjukov, Alexandr S., 5,004,056, Cl. 175-293.000.

Krohn, Christine E., to Exxon Production Research Company. Continuity logging using differenced signal detection. 5,005,159, Cl. 367-57.000.

Krosenbrunner, Walter, to Boehler Ges. m.b.H. Preliminary material for the production of composite material parts and method of making. 5,004,653, Cl. 428-615.000.

Kronfeld, David S. *See—*
Chalupa, William; Kronfeld, David S.; Schneider, Paul L ; and Sklan, David, 5,004,728, Cl. 514-12.000.

Krounbi, Mohamad T., and Wang, Po-Kang, to International Business Machines Corporation. Magnetoresistive read transducer having hard magnetic shunt bias. 5,005,096, Cl. 360-113.000.

Kruckel, Peter. *See—*
Huttner, Gerhard; Kruckel, Peter; and Mock, Gerhard, 5,004,363, Cl. 401-75.000.

Kruger, James B. *See—*
Tullis, Barclay J ; and Kruger, James B , 5,004,340, Cl. 356-243.000.

Krukovsky, Yuri. Simulated observation flight apparatus. 5,004,225, Cl. 272-18.000.

Krupnicki, Theodore A. Splicing device for fluid-cooled electric cables. 5,004,865, Cl. 174-15.700.

Kubota, Kazuhiro: *See—*
Sunagawa, Masao; Kubota, Kazuhiro; Ishii, Yoshitaro; and Satoh, Susumu, 5,003,663, Cl. 15-366.000.

Kubota, Koichi: *See—*
Tomiyama, Tsuyoshi; Tomiyama, Akira; and Kubota, Koichi, 5,004,750, Cl. 514-382.000.

Kucerija, Zoran. Gas expander based power plant system. 5,003,782, Cl. 60-648.000.

Kuchel, Michael, to Carl-Zeiss-Stiftung. Method of examining an optical component. 5,004,346, Cl. 356-360.000.

Kudo, Shigeru. *See—*
Hara, Yasuhiro; Inoue, Mitsuhiro; Baba, Hideo; Okazaki, Tadashi; and Kudo, Shigeru, 5,004,089, Cl. 192-107.00M.

Kugimiya, Shuzo; Fukumochi, Yoji; Nakamura, Ichiko; Hirai, Tokuyuki; and Suzuki, Hitoshi, to Sharp Kabushiki Kaisha. System including means to translate only selected portions of an input sentence and means to translate selected portions according to distinct rules. 5,005,127. Cl. 364-419.000.

Kulik, Conrad J.: *See—*
Lee, Sunggyu; Ashok, Sawant; and Kulik, Conrad J , 5,004,717, Cl 502-50.000.

Kumashiro, Kenji: *See—*
Yagi, Toshihiko, Kumashiro, Kenji; and Takiguchi, Hideki, 5,004,680, Cl. 430-603.000.

Kume, Hidehiro: *See—*
Mitsumori, Koji; and Kume, Hidehiro, 5,005,162, Cl. 369-44.120.

Kun, Zoltan K.; Cresswell, Michael W ; and Hopkins, Richard H., to Westinghouse Electric Corp. Thin film electroluminescent edge emitter structure on a silicon substrate. 5,004,956, Cl. 315-169.300.

Kunde, Klaus: *See—*
Leins, Eberhard; and Kunde, Klaus, 5,003,793, Cl. 66-9.00B.

Kung, Roland; and Widmer, Hanspeter, to Zellweger Telecommunications AG. Process and apparatus for the transmission of selective addresses and/or emergency messages in shortwave radio networks. 5,005,209, Cl. 455-32.000.

Kung, Viola T., to Molecular Devices Corporation. Nitrocellulose filtration to remove proteins from polynucleotides. 5,004,806, Cl. 530-415.000.

Kuo, George; Masiarz, Frank, Truett, Martha; and Valenzuela, Pablo, to Nordisk Gentofte. Method and composition for preparation of factor VIIIC. 5,004,804, Cl. 530-387.000.

Kurdjukov, Alexandr S.: *See—*
Goikhman, Yakov A., Krjukov, Georgy M.; Onotsky, Melis I.; Sorokin, Georgy M.; Filatov, Alexei V.; Tsarapkin, Viktor V.; Yakimov, Vadim P., Smirnov, Gennady A., Nikiforov, Ivan I.; Burdukovsky, Alexandr I.; Daibov, Sergei V.; and Kurdjukov, Alexandr S., 5,004,056, Cl. 175-293.000.

Kurdys, Gregory D.: *See—*
Cadwallader, George W.; Highfill, Louis A.; Kurdys, Gregory D., and Turigliatto, Richard S., 5,004,589, Cl. 423-315.000.

Kurematsu, Masayuki: *See—*
Koboshi, Shigeharu; Kobayashi, Kazuhiro; Goto, Nobutaka, Kurematsu, Masayuki; and Takabayashi, Naoki, 5,004,522, Cl. 159-47.003

Kurihara, Motoaki; and Fujino, Ikuo, to Mitsuba Electric Mfg. Co., Ltd. Rotation device with a sealing plate. 5,004,090, Cl. 192-112.000.

Kurimoto, Kazunori, to Tokai Chemical Industries, Ltd. Method of producing skin tube for annular foam product, and assembly of the skin tube and core structure. 5,004,572, Cl. 264-46.600.

Kuriyama, Minoru, to Ube Industries, Ltd. Degassing apparatus for mold. 5,004,038, Cl. 164-305.000.

Kuriyama, Shigemi, to Mitsubishi Jukogyo Kabushiki Kaisha. Regulated D.C.-D.C. power converter having multiple D.C. outputs. 5,005,112, Cl. 363-21.000.

Kurkowski, Hal, to Dallas Semiconductor Corporation. Interleaved arbitration scheme for interfacing parallel and serial ports to a parallel system port. 5,005,151, Cl. 364-900.000.

Kurono, Yoshikazu: *See—*
Yokoe, Masaaki; Kurono, Yoshikazu; and Hayashi, Koji, 5,003,897, Cl. 112-121.120.

Kuroyanagi, Masatoshi; Suzuki, Masahiko; Matsui, Kazuma; Imaeda, Makoto; Nagai, Kouzi, and Ito, Yoshiaki, to Nippondenso Co., Ltd. Radial piston pump. 5,004,406, Cl. 417-273.000.

Kurst, Frederick L.: *See—*
Serrell, Robert; Smith, J. Lamar; and Kurst, Frederick L., 5,004,896, Cl. 235-437.000

Kusano, Hiromi: *See—*
Nagai, Takao; and Kusano, Hiromi, 5,004,320, Cl. 350-276.00R.

Kuskova, Natalya I.: *See—*
Sizonenko, Olga N ; Maxutov, Rafkhat A.; Maljushevsky, Pavel P.; Gorovenko, Georgy G.; Sokolov, Alexei V.; Lyapis, Diana N.; Schekin, Vladimir I.; and Kuskova, Natalya I., 5,004,050, Cl. 166-248.000.

Kuzmenko, Vladimir G.: *See—*
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Lindeman, Richard J ; 5,004,427, Cl. 439-101.000.

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Ackermann, Wilhelm; Langlitz, Karlheinz; and Schmitz, Gunter, 5,003,835, Cl. 74-411.000.

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Lauber, Peter, to Conprinta Ltd. Flexographic printing machine, especially for flexographic blank printing. 5,003,873, Cl. 101-219.000.

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Law, Kock-Yee; and Bailey, F. Courtney, to Xerox Corporation. Photoconductive member having symmetrical and unsymmetrical squaraine compositions. 5,004,661, Cl. 430-59.000.

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Velke, James D.; and Wright, William R., 5,004,251, Cl. 280-32.700.

Lawrie, Warwick W. Alignment sleeve for hand tool having a universal joint. 5,003,849, Cl. 81-184.000.

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Wasmer, William D.; Gillespie, Peter J.; Lippmann, James G., and Le, Hiep M., 5,005,069, Cl. 357-72.000.

Le, Toby: *See*—
Shannon, Leland K.; Gentry, Ted L.; and Le, Toby, 5,003,811, Cl. 73-12.000.

Leath, Robert P. Janitorial utility belt for carrying spray bottles, gloves, dusters, and cleaning towels. 5,004,136, Cl. 224-253.000.

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Eller, Joe C.; Leavens, James E.; and Wyatt, Charles H., 5,004,483, Cl. 55-20.000.

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Ogawa, Osamu; Kishi, Ikuo; Tahara, Yoshiyuki, and Sugita, Masanori, 5,004,756, Cl. 514-655.000.

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Cunningham, David W., 5,004,957, Cl. 315-199.000.

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Leigh, Steven, to Phares Pharmaceutical Research NV. Pro-liposome compositions. 5,004,611, Cl. 424-450.000.

Leins, Eberhard; and Kunde, Klaus, to Terrot Strickmaschinen GmbH. Card wheel for a knitting machine for making knit goods with combed-in fibers. 5,003,793, Cl. 66-9.00B.

Leise, Walter F., Jr., to E.R. Squibb & Sons. Convex adapter for ostomy device. 5,004,464, Cl. 604-338.000.

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Kino, Gordon S.; and Mansfield, Scott M., 5,004,307, Cl. 350-1.200.

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Verhulst, Antonius G. H.; Bruinink, Jacob, and Lenders, Emanuel J. W. M., 5,004,322, Cl. 350-320.000.

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Crawford, Paul M.; Campbell, Herbert W., Myers, Michael J., and Siverns, Steven L., 5,003,814, Cl. 73-59.000.

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Leonard, Robert E., to Kerr-McGee Chemical Corporation. Apparatus for soot removal from exhaust gas. 5,003,774, Cl. 60-275.000.

Leone, David A.: *See*—
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Leonhart, Charles J., to nuArc Company, Inc. Graphic arts exposure device. 5,005,048, Cl. 355-93.000.

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Singor, Aydin, 5,004,868, Cl. 174-76.000.

Levi, Amram: *See*—
Adany, Shalom; and Levi, Amram, 5,003,713, Cl. 40-113.000

Lew, Hyok S. Digital pressure sensor. 5,003,825, Cl. 73-704.000.

Lewis Gallob Toys, Inc.: *See*—
Coleman, Paula M.; and Luecke, Mark T., 5,004,445, Cl. 446-478.000

Leyh, Thomas O. *See*—
Latassa, Frank M., and Leyh, Thomas O., 5,004,949, Cl. 313-492.000

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Liang, Jeng An. Instrument for indicating an angular position of an object. 5,003,700, Cl. 33-401.000.

Liang, Jiuh-Ming *See*—
Liu, Ru-Shi, Huang, Yao-Tsung; Chu, Jau-Jier, and Liang, Jiuh-Ming, 5,004,723, Cl. 505-1.000

Liao, Chuen-Rong. Sanitary tearing towel. 5,004,637, Cl. 428-43.000.

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Cattaneo, Pierr, and Gudel, Claude, 5,004,974, Cl. 324-117.00R

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Borer, John W., Skilliter, William J.; and Conner, Lowell J., 5,004,492, Cl. 65-289.000

Lichtman, Philip R. *See*—
Halem, Stephen; and Lichtman, Philip R., 5,004,158, Cl. 239-310.000.

Liesen, Gregory P.: *See*—
Lam, William Y., and Liesen, Gregory P., 5,004,481, Cl. 44-435.000

Light, David R., and Rastetter, William H., to Genetech, Inc. Ascorbic acid intermediates and process enzymes. 5,004,690, Cl. 435-138.000

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Dickie, Gerald M.; Liles, Steve L.; and Woldvedt, Alan H., 5,004,372, Cl. 405-63.000.

Lim, Gnian C., to Amada Company, Limited. Method of evaluating quality of a laser beam in a laser processing machine. 5,004,890, Cl. 219-121.830

Lin, David Y. *See*—
Barger, Paul T., Barder, Timothy J.; Lin, David Y.; and Hobbs, Simon H., 5,004,853, Cl. 585-481.000.

Lin, Jian C. *See*—
Yu, Meng W.; Su, Shihuai; Chen, Yue Z., Zheng, Ticheng, Ji, Kebin; Ling, Shou R., Lin, Jian C.; Deng, Jianhui, and Zhang, Kunwu, 5,004,510, Cl. 148-146.000.

Lin, Peir-Kuen. Built-up type air-conditioning cushion assembly. 5,004,294, Cl. 297-180.000.

Lind, Charles F. Portable exercise device. 5,004,229, Cl. 272-127.000

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Durr, Dieter, 5,003,731, Cl. 51-418.000

Lindeman, Richard J., to Labinal Components and Systems, Inc. Electrical connectors. 5,004,427, Cl. 439-101.000.

Linder, James C., and McKenzie, Jeffrey J., to Fluoroware, Inc. Position indicating control valve. 5,004,011, Cl. 137-556.000.

Lindroth, Thomas A.: *See*—
Allen, Floyd L., Best, Glen H.; and Lindroth, Thomas A., 5,004,506, Cl. 106-729.000.

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Thanos, William N.; Peterson, Bruce R.; Moon, William G.; Lindsay, Joshua; and Stone, Thomas R., 5,005,089, Cl. 360-77.080

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Lipchak, John B.; Oblak, Tod A.; Bednar, Fred H.; Ciaramitaro, William; Hughes, Francis R.; Smith, John R., and Gisoni, Gregory A., to Westinghouse Electric Corp. Smart sensor system for diagnostic monitoring. 5,005,142, Cl. 364-550.000.

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Wasmer, William D.; Gillespie, Peter J., Lippmann, James G.; and Le, Hiep M., 5,005,069, Cl. 357-72.000

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Pryor, Timothy R.; Hageniers, Omer L., Pastorius, Walter J., Liptay-Wagner, Nicholas; and Clarke, Donald A., 5,004,339, Cl. 356-241.000.

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Hirschmann, Robert P.; Beard, William Q., Jr.; Mainz, Eric L.; Smith, Earl B.; and Little, Barry M., 5,004,849, Cl. 570-224.000.

Little, Roger W. Threading insert. 5,004,379, Cl. 407-113.000.

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Tazartes, Daniel A.; Mark, John G.; and Mathews, Anthony, 5,004,344, Cl. 356-350.000.

Litz, Lawrence M.; Weise, Mark K.; and Haid, David A., to Union Carbide Industrial Gases Technology Corporation. Liquid level control in gas-liquid mixing operations. 5,004,571, Cl. 261-91.000.

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Lochhead, Robert Y., Castaneda, Janet Y.; and Hemker, Wilfred J., to B. F. Goodrich Company, The. Stable and quick-breaking topical skin compositions. 5,004,598, Cl. 424-59.000.

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Klemarczyk, Philip T.; and Okamoto, Yoshihisa, 5,004,842, Cl. 568-640.000.

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Fritz, Hans-Gerhard; and Loffel, Rudi, 5,005,194, Cl. 378-53.000.

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Dong, Dennis F.; and Loftfield, Richard E., 5,004,626, Cl. 427-58.000.

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Ivers, Douglas E.; and Nobles, Charles M., 5,004,079, Cl. 188-282.000.

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Lovera, Patrick: *See*—
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Lovik, Craig J. Balloon decorative devices, methods and kits. 5,004,633, Cl. 428-9.000.

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McGarvey, David C.; and Buffalini, Jerry E., 5,004,632, Cl. 427-410.000.

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Brearley, Malcolm; and Moseley, Richard B., 5,004,299, Cl. 303-15.000.
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Yeo, Jong K.; Kim, Chung S.; Lee, Dong J.; and Jang, Sung H., 5,004,774, Cl. 524-262.000.

Luecke, Mark T.: *See*—
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Simpson, William J.; and Hammond, John R. M., 5,004,684, Cl. 435-8.000.

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Pristash, David J.; and Parker, Jeffery R., 5,005,108, Cl. 362-31.000.

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Yuhasz, Stephen J., 5,005,211, Cl. 455-603.000.

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Magic Plastics *See—*
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Magnon, Gary D. *See—*
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Magome, Nobutaka, to Nikon Corporation. Alignment device 5,004,348, Cl. 356-401 000

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Lakatos, Tamas, Molnar, Jozsef, and Madarasz, Endre, 5,005,146, Cl. 364-573 000

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Mahil, Mahinder S., and Cruden, John M., to Harlow Chemical Company Limited Adhesive compositions and self-adhesive sheet materials 5,004,768, Cl 524-30 000

Mahler, Leo M Adjustable water-level flushing apparatus. 5,004,462, Cl 4-325 000.

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MAN Nutzfahrzeuge GmbH *See—*
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MAN Roland Druckmaschinen AG *See—*
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Man Technologie Aktiengesellschaft *See—*
Erber, Anton, Hoff, Heinz, Reuchlein, Gunter, Schaaf, Hanno; and Schiessl, Gerhard, 5,003,778, Cl 60-517 000

Manaka, Junji *See—*
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Stopforth, Douglas R., 5,004,413, Cl 425-182 000

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Manville Corporation *See—*
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Sommi, Franco, and Arelli, Pier L., 5,004,621, Cl 426-386 000

Mar, Shih L Seat assembly 5,003,653, Cl 5-449 000

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Marino, Joseph A., Makhija, Surender K., Taghikhani, Majid, and Puetz, Peter A., to Bear Automotive Service Equipment Company Battery tach 5,004,979, Cl 324-160 000

Mark, John G *See—*
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Markow, Paul A., Nolle, William, and Bell, Charles L., to Chrysler Corporation Wye winding radial air-core gauge system 5,004,976, Cl 324-154 00R

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Marostica, Eugene J Necktie device 5,003,636, Cl 2-145 000

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DelGuidice, Henry L., and Marsh, Edward K., 5,004,430, Cl 439-350 000

Marshall, Gary C., to Joy Technologies Inc Conveyor belt 5,004,098, Cl 198-847 000

Martel, Louis, Jr *See—*
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Martell, Ely A Sprinkler system 5,004,157, Cl 239-205 000

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Martens, Gerhard, Kordts, Jurgen, and Weidinger, Georg, to U S Philips Corp Fiber-optical pressure sensor with contacting lightwave conductors 5,004,912, Cl 250-227 140

Martin, Felix *See—*
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Martin, Jeffrey J Fluid mixing accessory 5,004,353, Cl 366-349 000

Martin, Paul E *See—*
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Martin, Robert C., to Texas Instruments Incorporated Parallel module testing 5,005,173, Cl 371-22 600

Martin, Yves, and Wickramasinghe, Hemantha K., to International Business Machines Corporation Atomic photo-absorption force microscope 5,003,815, Cl. 73-105 000

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Mashita, Kentaro, Fujii, Takeshi, and Oomae, Tadayuki, to Sumitomo Chemical Company, Ltd. Thermoplastic resin composition 5,004,782, Cl 525-64 000.

Masiarz, Frank *See—*
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Masuda, Fumio *See—*
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Matejka, Wolfgang A *See—*
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Mathai, John, to Sherwin-Williams Company, The Hydroxy-functional polyester diluents as additives in coating compositions 5,004,828, Cl 560-224 000

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Matsui, Kazufumi, to Idemitsu Petrochemical Co., Ltd Fastener and wrapping bag having the same 5,004,356, Cl 383-63 000

Matsui, Kazuma *See—*
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Matsuo, Yoshio, Nakano, Hirofumi Kamiya, Masakuni, and Matsui, Kezuo, to Fuji Electrochemical Co. Ltd Method and apparatus for packing permanent magnet powder 5,004,580, Cl 419-65 000

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Izumi, Yasuo, Ishimoto, Kazumi, and Makino, Yutaka, 5,003,692, Cl 29-834 000
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Matsushita, Kouji, to Minolta Camera Kabushiki Kaisha Copying machine with capacity to measure transparency of original. 5,005,049, Cl 355-208 000

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Maxson, Myron T., to Dow Corning Corporation Method for extending the working life of organosiloxane compositions curable by a platinum catalyzed hydrosilation reaction 5,004,792, Cl 528-15 000

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Mayer, Klaus, to VDO Adolf Schindling AG Indicating instrument 5,003,914, Cl 116-332 000

Mayo Foundation for Medical Education and Research *See—*
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Mazzali, Stefano, to SGS-Thomson Microelectronics s r l Tablecloth memory matrix with staggered EPROM cells 5,005,060, Cl 357-23 500

Mazzotta, Joseph A., Sr Dog garment with flea repelling means 5,003,756, Cl 54-79 000.

McBride, Stephen W., to H-C Industries, Inc Tamper-indicating plastic closure 5,004,112, Cl 215-252 000

McCarthy, Theresa A., to Minnesota Mining & Manufacturing Company Internally delaminating tabbed inserseal for a container and method of applying 5,004,111, Cl 215-232 000

McClure, David C., and Lysinger, Mark A., to SGS-Thomson Microelectronics, Inc Redundancy for serial memory 5,005,158, Cl 365-200 000

McConnell, Bernard E Hand traction wrap. 5,003,967, Cl 128-77 000.

McConnell, Pat M *See—*
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McCracken, William L., McDonald, Paul D., and Kirschner, Roger S., to Honeywell Inc Wide angle line scanner 5,004,310, Cl 350-6 800

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McDonald, Paul D. *See—*
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McGarvey, David C., and Buffalini, Jerry E., to LRS, Inc Fire resistant tank construction. 5,004,632, Cl 427-410 000

McGee, Dwight H Pneumatic grinding mill 5,004,167, Cl. 241-91 000

McGrath, John J *See—*
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McIntyre, Anna M., executrix *See—*
Piccone, Dante E., McIntyre, James E., deceased, and Major, Leroy B., 5,005,065, Cl. 357-38 000.

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McKay Australia Limited *See—*
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McKee, Michael J.; Miknis, William D.; Pawlikowski, Joseph M.; and Zelko, William E., to AMP Incorporated Heating apparatus having Curie effect heater. 5,004,887, Cl. 219-85.160.

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McMaster, Ronald A., and Shetterly, Donivan M., to Glasstech, Inc Glass sheet forming method and apparatus utilizing lower full surface vacuum mold and upper ring mold 5,004,491, Cl 65-106.000
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McNeil-PPC, Inc *See—*
Radebaugh, Galen W., Murtha, John L., and Glinecke, Robert, 5,004,613, Cl 424-465.000
Wishinski, Martin, Bergquist, Roger, Schroeder, Manfred, Weir, Theodore, Monetti, Matthew, and Fung, Paul, 5,004,579, Cl 264-517.000
Mead Corporation, The *See—*
Landis, Robert A., 5,004,891, Cl 219-388.000
Saulas, Alain, 5,004,104, Cl 206-526.000
Meckl, Heinz, Klotzer, Sieghart, Wolff, Erich, and Haseler, Helmut, to Agfa-Gevaert Aktiengesellschaft Process for the production of color photographic images comprising replenishing the developing solution 5,004,676, Cl 430-398.000
Medipro *See—*
Boiteau, Richard, Labayle, Denis, and Tenaillon, Alain, 5,003,657, Cl 15-104.330
Meditron Corporation *See—*
Talish, Roger J., 5,003,965, Cl 128-24.0AA
MedTest Systems, Inc *See—*
Guruswamy, Vinodhini, and Elliott, Donald A., 5,004,583, Cl 422-58.000
Meguro, Satoshi *See—*
Ikeda, Shuji, Sasaki, Katsuro, Nagasawa, Kouichi, and Meguro, Satoshi, 5,005,068, Cl 357-59.000
Mehner, Martin *See—*
Wilkes, Lambert H., Mehner, Martin, and Lalor, William F., 5,003,669, Cl 19-49.000
Mehr-Ayin, Kourosh, and Schuh, Paul A., to Sundstrand Corporation Closed loop control of a hydraulically controlled clutch 5,004,084, Cl 192-0.033
Mehrotra, Vikram P., and Barker, Ray E., to Pitman-Moore, Inc Process for producing high purity fused quartz powder 5,004,488, Cl 65-18.200
Mei, Daniele *See—*
Zanardi, Angelo, Mei, Daniele, and Toselli, Vittorio, 5,004,412, Cl 418-132.000
Meier, Helmut-Martin, Kircher, Klaus, and Berg, Klaus, to Bayer Aktiengesellschaft Process for the production of carboxylic acid esters 5,004,569, Cl 260-410.600
Meier, Jacques, to Ferag AG Process and apparatus for the buffer storage and conversion of flat products preferably occurring in stream formation 5,004,092, Cl 198-347.300
Meier, Paul R., and Mueller, Brian D., to Carrier Corporation Header for a tube-in-tube heat exchanger 5,004,047, Cl 165-158.000
Meinershagen, Charles I., to NewTech Products, Inc. Wire twisting apparatus 5,004,020, Cl. 140-93.600
Meixner, Jurgen *See—*
Blum, Harald, Meixner, Jurgen, Schreckenberg, Manfred, Fleiter, Lothar, and Wellner, Wolfgang, 5,004,779, Cl 524-591.000
Melilli, William J *See—*
Wolf, Charles B., Dighe, Shyam V., Martin, Paul E., Taylor, Raymond F., Jr., and Melilli, William J., 5,004,888, Cl 219-121.520.
Menke, Wilhelm, to NSM Apparatebau GmbH & Co KG Electronic dart board 5,004,247, Cl 273-376.000
Menzin, Marvin *See—*
Kleven, Lawrence P.; Agranat, Edward A., Crisafulli, Jerry, Robinson, Hugh, Smith, David J., Wiseley, Thomas, Fortier, Richard C., Johnson, Severne; and Menzin, Marvin, 5,004,954, Cl 315-106.000
Merck & Co., Inc *See—*
Allen, Floyd L., Best, Glen H., and Lindroth, Thomas A., 5,004,506, Cl 106-729.000
DiNinno, Frank P.; Greenlee, Mark L., and Salzmann, Thomas N., 5,004,739, Cl 514-210.000
Dininno, Frank P.; Salzmann, Thomas N.; and Greenlee, Mark L., 5,004,740, Cl 514-210.000
Evans, Ben E., Bock, Mark G.; and Freidinger, Roger M., 5,004,741, Cl 514-221.000
Merck Frosst Canada, Inc *See—*
Young, Robert N., Zamboni, Robert, and Gauthier, Jacques Y., 5,004,743, Cl 514-227.800.
Merickel, Michael B., Adams, Ann H., and Brookeman, James R., to University of Virginia System and method for the noninvasive identification and display of breast lesions and the like 5,003,979, Cl 128-653.00A
Merrell Dow Pharmaceuticals Inc. *See—*
Liu, Paul S., Sunkara, Sai P., and Bowlin, Terry L., 5,004,746, Cl 514-299.000.
Merrill, Frances S., Miller, Richard L., and Miller, Patricia M. International white-water rafting game 5,004,246, Cl 273-246.000
Mesnel, Francois, and Mesnel, Gerard, Shaped section for the guidance and sealing of a movable window, in particular of a motor vehicle door, and its method of manufacture 5,003,792, Cl 49-479.000
Mesnel, Gerard *See—*
Mesnel, Francois, and Mesnel, Gerard, 5,003,792, Cl 49-479.000
Messenger, Edward J., and Fedorovich, George, to Garlock Inc Unitized seal with unitizing joint remote from seal lip 5,004,248, Cl 277-37.000
Messerschmitt-Boelkow-Blohm GmbH *See—*
Spies, Hans, Woehrl, Alfons, and Spies, Martin, 5,005,085, Cl 358-213.110
Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung *See—*
Nissl, Norbert, and Grossler, Peter, 5,003,884, Cl 102-476.000
Meta-Probe Inc *See—*
Perritt, John, and Scott, Hugh, 5,004,055, Cl 175-20.000
Meuron, Bruce R *See—*
Lockhart, John C., Jr., Hartman, Standish C., Meuron, Bruce R and Lyons, Joseph B., Jr., 5,004,185, Cl 224-3.140
Meyer, Rolf-Volker *See—*
Zecher, Wilfried, El-Sayed, Aziz, Haese, Wilfried, Kohler, Burkhard, and Meyer, Rolf-Volker, 5,004,795, Cl 528-73.000
Meyer, Urs, to Rieter Machine Works, Ltd Textile spinning machine 5,003,668, Cl 19-0.220
Miano, Ralph M *See—*
Vicari, Richard, Costanza, John R., Lamonte, Ronald R., and Miano, Ralph M., 5,004,796, Cl 528-179.000
Michaelis, A John *See—*
Bartky, W Scott Paton, Anthony D., Temple, Stephen, and Michaelis, A John, 5,003,679, Cl 29-25.350
Michel-Dansac, Francois *See—*
Boinot, Francois, Cousin, Michel, Francois, Pierre-Michel and Michel-Dansac, Francois, 5,004,789, Cl 525-506.000
Michimoto, Takashi *See—*
Ishida, Nobuyoshi, Michimoto, Takashi, Miyake, Katsutaro, and Ichige, Toshio, 5,004,718, Cl 502-217.000
Micron Technology, Inc *See—*
Gonzalez, Fernando, 5,005,072, Cl 357-23.600
Miefert, Elke *See—*
Dethlefs, Ralf Burkhard, Scholz, Bernd, Wysk, Wolfram, and Miefert, Elke, 5,004,644, Cl 428-323.000
Miele, Nadine Auxiliary nosepiece for eyeglasses 5,004,334, Cl 351-54.000
Mierzwinski, Eugene P., to Hamilton Standard Controls, Inc Control system for microwave cooking appliance 5,005,123, Cl 364-400.000
Mifune, Hiroyuki, and Urabe, Shigeharu, to Fuji Photo Film Co., Ltd Silver halide photographic material and process for the preparation thereof 5,004,679, Cl. 430-567.000
Mijnhardt B.V *See—*
van den Burg, Johannes M. E., 5,003,828, Cl 73-861.330
Miknis, William D *See—*
McKee, Michael J., Miknis, William D., Pawlikowski, Joseph M., and Zelko, William E., 5,004,887, Cl 219-85.160
Miksitz, Frank J., to UFI, Inc Animal litter cleaning apparatus 5,003,920, Cl 119-163.000
Milani, Gerald *See—*
Shanbhag, Sudhakar P., Cousminer, Joseph J., and Milani, Gerald, 5,004,616, Cl 426-102.000
Milcamps, Jacques *See—*
Vassenaix, Michel, and Milcamps, Jacques, 5,004,926, Cl 250-492.300
Millard, Michael W *See—*
Harrison, John R., and Millard, Michael W., 5,003,876, Cl 101-350.000
Miller, Donna F *See—*
Parker, A Bruce, and Miller, Donna F., 5,003,970, Cl 128-90.000
Miller, Gregory A., Pearson, Jeffery L., and Horsch, John D., to General Motors Corporation Occupant restraint system 5,004,266, Cl 280-743.000
Miller, Jack E., to International Clamp Company Clamp 5,004,275, Cl 285-373.000
Miller, Lois K., to University of Georgia Research Foundation, Inc Insect virus vector with broadened host range 5,004,687, Cl 435-69.100
Miller, Patricia M *See—*
Merrill, Frances S., Miller, Richard L., and Miller, Patricia M., 5,004,246, Cl 273-246.000
Miller, Richard L *See—*
Merrill, Frances S., Miller, Richard L., and Miller, Patricia M., 5,004,246, Cl 273-246.000
Miller, Steven A *See—*
Svec, Paul S., Borom, Marcus P., Szala, Lawrence E.; Brun, Milivoj K., Miller, Steven A.; and Mourer, David P., 5,004,629, Cl 427-204.000
Millet, Jean-Christophe, and Jaccaud, Michel, to Atochem Continuous electrolytic production of alkali metal perchlorates 5,004,527, Cl 204-82.000
Milliman, James G.; and Franks, Lawrence A., to Burr Oak Tool & Gauge Company Mechanical tube expander with hairpin bend support 5,003,691, Cl 29-727.000.
Millipore Corporation *See—*
Pluskal, Malcolm G., Wang, David; and Steuck, Michael J., 5,004,543, Cl 210-490.000.

Mimura, Hidenori *See—*
Kitamura, Koichi, Mimura, Hidenori; Yamamoto, Kazuo; and Ohta, Yasumitsu, 5,004,903, Cl 250-208.100
Minagawa, Tadao *See—*
Yoshioka, Takeo, and Minagawa, Tadao, 5,005,181, Cl 372-59.000
Minamitaka, Junichi, to Casio Computer Co., Ltd Automatic accompaniment apparatus 5,003,860, Cl 84-609.000.
Mineo, Nunzio *See—*
Julemont, Michel, Zocchi, Germaine; Mineo, Nunzio, and Fonsny, Pierre, 5,004,556, Cl 252-99.000
Ministry of International Trade and Industry *See—*
Suzuki, Susumu, Ishida, Kazuyuki, and Ozaki, Takeo, 5,003,977, Cl 128-633.000
Minks, Floyd M Engine spark control apparatus 5,003,946, Cl 123-335.000
Minnesota Mining & Manufacturing Company *See—*
McCarthy, Theresa A., 5,004,111, Cl 215-232.000
Polski, Stephen P., 5,004,630, Cl 427-208.800
Salaba, Timothy A., and Wilfong, Debra L., 5,004,351, Cl 366-152.000
Minolta Camera Kabushiki Kaisha *See—*
Fujino, Akihiko, Inoue, Manabu, Omaki, Takanobu, Nakai, Masaaki, Fujii, Akira, and Sekida, Minoru, 5,005,047, Cl 354-442.000
Hamada, Masataka, Ishida, Tokuji, and Ishibashi, Kenji, 5,005,039, Cl 354-402.000
Matsuo, Hirokazu, and Nagato, Hiroyasu, 5,005,055, Cl 355-311.000
Matsushita, Kouji, 5,005,049, Cl 355-208.000
Norita, Toshio, Ishida, Tokuji, Hamada, Masataka, and Ishibashi, Kenji, 5,005,040, Cl 354-402.000
Ohtani, Junji, Anno, Masahiro, Sano, Eiichi, Machida, Junji, and Masuda, Fumio, 5,004,665, Cl 430-106.600
Sato, Tsuyoshi, Inaba, Masahito, and Takata, Naoya, 5,004,349, Cl 356-402.000
Toyoshi, Naoki, Oka, Tateki, and Goto, Hiroshi, 5,003,917, Cl 118-653.000
Minomiya, Eiichi *See—*
Tada, Kuniyuki, Minomiya, Eiichi, and Watanabe, Masatoshi, 5,004,855, Cl 585-489.000
Minor, James I. *See—*
Springer, Edward L., and Minor, James L., 5,004,523, Cl 162-76.000
Minowa, Morihiko *See—*
Aono, Yoshihito, Iwamatsu, Takanori, Minowa, Morihiko, Takenaka, Sadao, Daidoh, Yoshimasa, Nakamura, Hiroshi; and Fujino, Nobutsugu, 5,005,186, Cl 375-82.000
Misaki, Takashi, and Aoki, Hitoshi, to Yazaki Corporation Head-up display for motor vehicles 5,005,010, Cl 340-705.000.
Mishima, Yoshio *See—*
Okamoto, Yasushi; Tahara, Yoshiyuki, and Mishima, Yoshio, 5,004,735, Cl 514-134.000
Misugi, Yoshihiko *See—*
Tohzuka, Takashi, Yamamoto, Ikuo, and Misugi, Yoshihiko, 5,004,554, Cl 252-54.600
Mita Industrial Co., Ltd *See—*
Kano, Atsushi, Mizuno, Masayuki, Kajiwara, Manabu; Sakaue, Kenji, Abe, Yuji, and Nakamura, Kazuo, 5,004,217, Cl 271-10.000
Kozuka, Nobuhiko, 5,005,053, Cl 355-245.000
Mutoh, Nariaki, Hanatani, Yasuyuki, and Nishiguchi, Toshihiko, 5,004,662, Cl 430-59.000
Mita, Seiichi *See—*
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Mitchell, James A *See—*
Benham, Harold L., and Mitchell, James A., 5,004,646, Cl 428-344.000
Mitchell, Rex P Apparatus for cleaning irrigation ditch 5,003,712, Cl 37-80.00R.
Mitel Telecom Limited *See—*
Carey, Michael J., and Anderson, Adrian J., 5,005,183, Cl 375-1.000
Mitsche, Roy T *See—*
Stranford, Gerald T., Gonczy, Stephen T., and Mitsche, Roy T., 5,004,709, Cl 501-97.000
Mitsuba Electric Mfg. Co., Ltd *See—*
Kurihara, Motoaki; and Fujino, Ikuo, 5,004,090, Cl 192-112.000
Oyama, Masayuki, 5,003,809, Cl 72-446.000
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Mitsubishi Denki Kabushiki Kaisha *See—*
Kobayashi, Toshio; Uchikawa, Fusaoki; Nomura, Kenji, Morita, Masao, and Yokoyama, Shouichi, 5,004,720, Cl. 505-1.000
Komurasaki, Satosi, 5,003,951, Cl 123-425.000.
Nagai, Takao, and Kusano, Hiromi, 5,004,320, Cl. 350-276.00R
Sanada, Kazunori, and Kawai, Jyoji, 5,005,141, Cl 364-550.000
Seya, Masatomo; Tadokoro, Michihiro; and Okada, Kazuo, 5,004,900, Cl 250-201.500.
Tanaka, Hidehiko, 5,004,530, Cl. 204-224.00M.
Tobuse, Hiroaki; Murakami, Hidenobu; and Kamio, Masashi, 5,005,138, Cl 364-519.000
Ueda, Tetsuya, 5,004,899, Cl 235-492.000
Umezaki, Tomokazu; and Takaishi, Tadao, 5,003,959, Cl 123-647.000
Wada, Shunichi, 5,004,080, Cl 188-299.000
Yoshimoto, Kyosuke; and Shimoda, Kyouji, 5,004,901, Cl 250-201.500.
Mitsubishi Gas Chemical Company, Inc *See—*
Nomura, Isao, and Narita, Kenichi, 5,004,561, Cl 252-511.000.
Mitsubishi Jidosha Kogyo Kabushiki Kaisha *See—*
Hashimoto, Toru; Takabatake, Masato, Chino, Masashi, and Takahashi, Akira, 5,004,981, Cl 324-207.220
Hatta, Katuhiro, Hiramatsu, Takeo, and Takamiya, Bonnosuke, 5,003,842, Cl 74-867.000
Mitsubishi Jukogyo Kabushiki Kaisha *See—*
Fudono, Kanji; Ogawa, Hiroshi, Takahashi, Toshimasa, and Yamashita, Toshio, 5,003,786, Cl 62-156.000
Kaneko, Shozo, and Kinoshita, Masaaki, 5,003,891, Cl 110-341.000
Koga, Yukihiro, and Koyama, Yukio, 5,004,516, Cl 156-463.000
Kuriyama, Shigemi, 5,005,112, Cl 363-21.000
Taguchi, Toshio; and Okita, Hajime, 5,003,706, Cl 34-92.000
Tamura, Yukio, Kinoshita, Kiyoshi, Uwaji, Tetsuo, and Mizuno, Takashi, 5,004,352, Cl 366-343.000
Yano, Tadashi; and Hamada, Kenichi, 5,003,877, Cl 101-363.000
Mitsubishi Kasei Corporation *See—*
Gohda, Eiichi, Tsubouchi, Hirohito; Nakayama, Hiroyuki, Hirono, Shuichi; Takahashi, Kozo; Hashimoto, Shuji, and Daikuhara, Yasushi, 5,004,805, Cl 530-399.000.
Mitsubishi Metal Corporation *See—*
Arai, Tatsuo, and Haga, Katsumi, 5,004,378, Cl 407-106.000
Mitsubishi Petrochemical Co., Ltd *See—*
Terauchi, Makoto, Ikeda, Chikako, and Aritomi, Mitsuteshi, 5,004,800, Cl 528-351.000
Mitsubishi Rayon Co., Ltd *See—*
Ida, Kozo; and Horiuchi, Tetsuya, 5,004,785, Cl 525-305.000
Mitsugu, Teruyuki, and Umezawa, Norio, to Matsushita Electric Industrial Co., Ltd. Worm gear motor with a built-in sensor 5,003,836, Cl 74-425.000
Mitsui Petrochemical Industries, Ltd *See—*
Tojo, Tetsuo, Okada, Keiji, Nakahara, Takashi, and Kikuchi, Yoshiharu, 5,004,787, Cl 525-332.100
Yamamoto, Yohzoh, Ishiwata, Shuichi, Yokoyama, Kenji, and Hasegawa, Kimio, 5,004,764, Cl 523-400.000
Mitsumori, Koji; and Kume, Hidehiro, to Sony Corporation Optical head devices for use in disc players 5,005,162, Cl 369-44.120
Miwa, Ichitomo *See—*
Mochida, Ei, Murakami, Kimihiro, Kato, Kazuo, Kato, Katsuaki, Okuda, Jun, and Miwa, Ichitomo, 5,004,751, Cl 514-390.000
Mixon, Larry C.; Snyder, George W., Hill, Scott D.; Johnson, Gregory L., Wlodarski, J. Frank, von Spakovsky, Alexis P., Emerson, John D., Cole, James M., and Tipton, John P., to United States of America, Army Lightweight blast shield 5,003,883, Cl 102-476.000
Miyagi, Tetsuhiro *See—*
Tadenuma, Masahiko, Miyagi, Tetsuhiro, and Miyazawa, Tadashi, 5,004,776, Cl 524-377.000
Miyakawa, Akira; and Inoue, Hiroyuki, to Canon Kabushiki Kaisha Printer having means for heating a recording sheet and fixing ink thereon 5,005,025, Cl 346-25.000
Miyake, Katsutaro *See—*
Ishida, Nobuyoshi, Michimoto, Takashi Miyake, Katsutaro, and Ichige, Toshio, 5,004,718, Cl 502-217.000
Miyake, Teruyoshi, and Yamamoto, Tatsuo, to Chyugoku Paalu Distributing Corporation, Shinanen New Ceramic Corporation, and Shinagawa Fuel Co., Ltd Sterilized glove 5,003,638, Cl 2-167.000
Miyano, Osamu *See—*
Takahashi, Mitsuru; Shuyama, Hideo, Miyano, Osamu, and Tsutsumi, Yukihiro, 5,004,567, Cl 260-408.000
Miyasaka, Tetsuo, to Olympus Optical Company, Ltd Photographing data setting apparatus for camera 5,005,033, Cl. 354-289.100
Miyata, Yukihide, Ishizaka, Hideo; Saito, Yoshio; and Koizumi, Takashi, to Fuji Photo Film Co., Ltd Biochemical analysis apparatus 5,004,582, Cl. 422-56.000.
Miyawaki, Makoto *See—*
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Miyazaki, Asashi *See—*
Komatsu, Nonmasa, and Miyazaki, Asashi, 5,005,094, Cl 360-105.000
Miyazaki, Hiroshi, to Furukawa Electric Co., Ltd Optical cable and optical cable line 5,004,315, Cl 350-96.150
Miyazaki, Kazuo *See—*
Iida, Shoji, Miyazaki, Kazuo, and Takizawa, Nobuyuki, 5,004,857, Cl 585-507.000
Miyazaki, Toshihiko *See—*
Nishimura, Yukuo, Eguchi, Ken, Kawada, Haruki, Tomida, Yoshinori, Nakagiri, Takashi, Saito, Kenji, Kimura, Toshiaki, Matsuda, Hiroshi, Sakai, Kunihiro, and Miyazaki, Toshihiko, 5,004,671, Cl 430-286.000.
Miyazawa, Tadashi *See—*
Tadenuma, Masahiko; Miyagi, Tetsuhiro, and Miyazawa, Tadashi, 5,004,776, Cl 524-377.000
Miyoshi, Shigetoshi *See—*
Imai, Hajime; Kito, Shozo, Harada, Shoichi, Yokoyama, Yoshinobu, Nakamura, Syuzi; Miyoshi, Shigetoshi, and Muramatsu, Tadao, 5,003,799, Cl. 70-247.000
Mizoguchi, Shoichi; and Matsuura, Hideki, to NEC Corporation Parallel mode adaptive transversal equalizer for high-speed digital communications system 5,005,185, Cl. 375-15.000

Mizuno, Masayuki *See—*
Kano, Atsushi; Mizuno, Masayuki; Kajiwara, Manabu; Sakaue, Kenji; Abe, Yuji; and Nakamura, Kazuo, 5,004,217, Cl 271-10.000

Mizuno, Takashi *See—*
Tamura, Yukio; Kinoshita, Kiyoshi, Uwaji, Tetsuo; and Mizuno, Takashi, 5,004,352, Cl 366-343.000

Mizuno, Toru; and Hara, Ryuichi, to Fanuc Ltd. Method for acceleration and deceleration control of servomotors 5,004,968, Cl 318-615.000

Mizusawa International Chemicals, Ltd *See—*
Ogawa, Masahide, Sato, Teiji; Tanaka, Masanori; and Takahashi, Noriyuki, 5,004,716, Cl 501-141.000

Mizutani, Yoichi, to Tokico Ltd. Suspension system 5,004,265, Cl 280-707.000

Moay, Neomi; and Draghi, Enrica, to Interpharm Laboratories Ltd. Complement-dependent cytolytic anti-*Trichomonas vaginalis* monoclonal antibodies 5,004,694, Cl 435-240.270

Mobil Oil Corporation *See—*
DeCaul, Lorenzo C.; Han, Scott; Palermo, Robert E.; and Walsh, Dennis E., 5,004,856, Cl 585-500.000
Harandi, Mohsen N., 5,004,852, Cl 585-322.000
Yan, Tsoung Y., 5,004,854, Cl 585-489.000

Mobs, Stephan *See—*
Dreschel, Jurgen; Hog, Peter; and Mobs, Stephan, 5,004,220, Cl 271-184.000

Mochida, Ei; Murakami, Kimihiro; Kato, Kazuo; Kato, Katsuaki; Okuda, Jun; and Miwa, Ichitomo, to Mochida Pharmaceutical Co., Ltd. Hydantoin derivatives 5,004,751, Cl 514-390.000

Mochida Pharmaceutical Co., Ltd *See—*
Mochida, Ei; Murakami, Kimihiro; Kato, Kazuo; Kato, Katsuaki; Okuda, Jun; and Miwa, Ichitomo, 5,004,751, Cl 514-390.000

Mock, Gerhard *See—*
Huttner, Gerhard; Kruckel, Peter; and Mock, Gerhard, 5,004,363, Cl 401-75.000

Modisette, David R., Jr.; and Nelson, Donald R.; to AT&T Bell Laboratories. Telecommunication transmission format suited for network-independent timing environments. 5,005,171, Cl 370-110.100

Moldovan, Peter K *See—*
Theisen, Peter J.; Wycklendt, Daniel A.; Juds, Mark A.; and Moldovan, Peter K., 5,004,874, Cl 200-144.00R

Molecular Devices Corporation *See—*
Kung, Viola T., 5,004,806, Cl 530-415.000

Molex Incorporated *See—*
Previato, Mario; Barbieri, Silvio; and Martucci, Roberto, 5,004,431, Cl 439-358.000
Yagi, Masanori; DiViesti, Anthony M.; Regnier, Kent E.; Yamada, Shoji E.; and Walse, Alan S., 5,004,429, Cl 439-326.000

Mollett, Christopher C *See—*
Humphries, Martyn; Nemcek, Jozef; Padget, John C.; and Mollett, Christopher C., 5,004,631, Cl 427-385.500

Molnar, Jozsef *See—*
Lakatos, Tamas; Molnar, Jozsef; and Madarasz, Endre, 5,005,146, Cl 364-573.000

Molnlycke AB *See—*
Ternstrom, Ingela; and Eriksson, Mats, 5,004,465, Cl 604-385.100

Moltech Invent S.A. *See—*
Duruz, Jean-Jacques, 5,004,524, Cl 204-243.00R

Monerief, Rick L. *See—*
Behensky, Max L.; Monerief, Rick L.; Margolin, Jed; and Mott, Stephanie J., 5,005,148, Cl 364-578.000

Mondet, Jean J *See—*
Aubry, Jacques A.; and Mondet, Jean J., 5,004,215, Cl 267-140.100

Monetti, Matthew *See—*
Wislinski, Martin; Bergquist, Roger; Schroeder, Manfred; Weir, Theodore; Monetti, Matthew; and Fung, Paul, 5,004,579, Cl 264-517.000.

Monig, Michael *See—*
Petri, Horst; and Monig, Michael, 5,003,785, Cl 62-131.000

Monsanto Company *See—*
Cadwallader, George W.; Highfill, Louis A.; Kurdys, Gregory D.; and Turigliatto, Richard S., 5,004,589, Cl 423-315.000
Dyroff, David R.; Getman, Daniel P.; and Glascock, Joan K., 5,004,558, Cl 252-95.000

Montanier, Gerard. Washing device mounted on a motor vehicle and comprising a rotary washing arm which delivers jets of pressurized hot water for cleaning various surfaces. 5,004,156, Cl. 239-130.000

Monte, Charles; White, Paul J.; and Graham, Anne C.; to Monte, Charles. Percussive action modular electronic keyboard. 5,003,859, Cl. 84-423.00R

Montefibre, S.p.A.: *See—*
Bastioli, Catia; Garlisi, Salvatore; Fornara, Dario; and Bellotti, Vittorio, 5,004,817, Cl 549-557.000

Montes, Juan D. System for reproducing three-dimensional, that is four-dimensional, images and, particularly moving images by projection, without the use of coherent light. 5,004,335, Cl. 352-58.000.

Montgomery, Jerold W. *See—*
Osip, Thomas W.; Montgomery, Jerold W.; and Pezzoli, Paul A., 5,004,110, Cl. 215-232.000.

Monticup, Anthony, Jr., and Gubernick, Franklin L. Gasoline nozzle with emergency shut-off. 5,004,023, Cl. 141-208.000.

Montierth, Garry L.; Logan, Stephen A.; and Scott, Raymond J., to Bylin Heating Systems, Inc. Rail heating apparatus. 5,004,190, Cl 246-428.000

Montuoro, Lou D.; Vandarakis, Tom L.; and Johnson, Richard L., to Amana Refrigeration Inc. Refrigerator door shelves. 5,004,305, Cl 312-214.000

Montvila, Stephen V. *See—*
Noll, John R.; and Montvila, Stephen V., 5,004,541, Cl 210-251.000

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Jekkel nee Bokany, Antonia; Albrecht, Karoly; Ambrus, Gabor; Lang, Tibor; Szabo, Istvan M.; Ilkoy, Eva Konczol; Kalman Moravesik, Imre; Hantos, Gabor; Simonovits, Emma Lengyel nee Szemenyei, Zsuzsanna; Vida, Zsuzsanna; and Csanagi, Eva, 5,004,695, Cl 435-253.100

Morel, Simone. Cap with a rotating casing for flasks, tubes and similar containers. 5,004,127, Cl. 222-521.000

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Blumstock, Judith E.; and Morgan, Leslie P., 5,004,106, Cl 206-581.000

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Takagi, Soya; Mori, Kazuhiko; Kawasaki, Minoru; and Kato, Shinji, 5,004,581, Cl. 420-487.000

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Kobayashi, Toshio; Uchikawa, Fusaoki; Nomura, Kenji; Morita, Masao; and Yokoyama, Shouichi, 5,004,720, Cl. 505-1.000

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Dalferth, G. Robert, 5,003,872, Cl. 101-163.000

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Peabody, Alan M.; Anderson, Olin S., Jr.; and Morton, Henry H., 5,004,459, Cl. 604-29.000.

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Kohls, Dennis E.; and Moser, Francis M., 5,004,799, Cl 528-389.000.

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Golio, John M.; and Staudinger, Joseph, 5,005,059, Cl. 357-22.000
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Robb, Stephen P.; Phipps, John P.; and Gadberry, Michael D., 5,005,061, Cl. 357-23.130
Wasmer, William D.; Gillespie, Peter J.; Lippmann, James G.; and Le, Hiep M., 5,005,069, Cl. 357-72.000

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Gubon, Peter; Sudmanns, Hans; and Teetz, Christoph, 5,003,934, Cl. 123-52.0MV.

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Muckerheide, Myron C., to Seton Health Care Foundation. Laser pumping apparatus. 5,005,182, Cl. 372-72.000

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Vidal, Henri; Muelas-Medrano, Santiago; and Segrestin, Pierre, 5,004,376, Cl. 405-284.000.

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Meier, Paul R.; and Mueller, Brian D., 5,004,047, Cl. 165-158.000

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Bullard, James R.; Muller, Richard P.; Grossi, Benedetto; and Cristine, John, 5,003,963, Cl. 128-11.000.

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Wood, Richard B.; Mullins, Richard M.; and Wojtowicz, John A., 5,004,549, Cl. 210-699.000.

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Tobuse, Hiroaki; Murakami, Hidenobu; and Kamio, Masashi, 5,005,138, Cl. 364-519.000.

Murakami, Kimihiro: *See—*
Mochida, Ei; Murakami, Kimihiro; Kato, Kazuo; Kato, Katsuaki; Okuda, Jun; and Miwa, Ichitomo, 5,004,751, Cl. 514-390.000

Murakata, Chikara: *See—*
Yasuzawa, Toru; Nakanishi, Satoshi; Murakata, Chikara; Kase, Hiroshi; Sano, Hiroshi; and Yamada, Koji, 5,004,833, Cl. 536-18.200.

Muraki, Yoshiya, and Koike, Hiroyuki, to Fukuda Densky Co. Ltd. Apparatus for alerting a doctor by radio to provide an alarm for a patient. 5,003,984, Cl. 128-710.000.

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Imai, Hajime; Kito, Shozo; Harada, Shoichi; Yokoyama, Yoshinobu; Nakamura, Syuzi, Miyoshi, Shigetoshi, and Muramatsu, Tadao, 5,003,799, Cl. 70-247.000

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Lee, Richard J.; Smith, Barbara A.; Theys, Robert G.; Theys, Robert A.; and Murphy, Judy A., 5,004,920, Cl. 250-304.000.

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Radebaugh, Galen W.; Murtha, John L.; and Glinecke, Robert, 5,004,613, Cl. 424-465.000.

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Amrhein, Reinhard; Heid, Walter; and Muschong, Gunther, 5,004,015, Cl. 137-625.680

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Crawford, Paul M.; Campbell, Herbert W.; Myers, Michael J.; and Siverns, Steven L., 5,003,814, Cl. 73-59.000

Naab, Jakob, to Zoller-Kipper GmbH. Device for emptying containers, especially refuse bins. 5,004,392, Cl. 414-21.000.

Nagai, Koichi: *See—*
Sato, Hiroshi; Hirose, Kenichi, Nagai, Koichi; Yoshioka, Hiroshi, and Nagaoka, Yoshihiko, 5,004,846, Cl. 568-940.000.

Nagai, Kouzi. *See—*
Kuroyanagi, Masatoshi, Suzuki, Masahiko, Matsui, Kazuma; Imaeda, Makoto, Nagai, Kouzi, and Ito, Yoshiaki, 5,004,406, Cl 417-273.000.

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Nagaoka, Yoshihiko *See—*
Sato, Hiroshi; Hirose, Kenichi, Nagai, Koichi, Yoshioka, Hiroshi, and Nagaoka, Yoshihiko, 5,004,846, Cl. 568-940.000

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Ikeda, Shuji; Sasaki, Katsuro; Nagasawa, Kouichi; and Meguro, Satoshi, 5,005,068, Cl. 357-59.000

Nagata, Akio *See—*
Hayasaka, Hiroshi; and Nagata, Akio, 5,004,453, Cl 494-39.000

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Shimamura, Keizo, Amano, Kagetaka, Aisaka, Tatsuryoshi, Hanai, Satoshi, and Nagata, Kohsoku, 5,004,498, Cl 75-233.000.

Nagato, Hiroyasu *See—*
Matsuo, Hirokazu; and Nagato, Hiroyasu, 5,005,055, Cl 355-311.000

Naillon, Martine; and Theeten, Jean-Bernard, to U.S. Philips Corporation. Method of and arrangement for image data compression by means of a neural network. 5,005,206, Cl. 382-56.000.

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Nakagawa, Etsuo *See—*
Yamamoto, Tetsushi, Niwano, Masaru; and Nakagawa, Etsuo, 5,003,919, Cl. 118-716.000

Nakagawa, Kenji, to Fujitsu Limited. Process for forming a fine pattern having a high aspect ratio. 5,004,927, Cl. 250-492.200

Nakagiri, Takashi *See—*
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Nakahara, Takashi *See—*
Tojo, Tetsuo; Okada, Keiji, Nakahara, Takashi, and Kikuchi, Yoshiharu, 5,004,787, Cl. 525-332.100

Nakai, Masaaki. *See—*
Fujino, Akihiko; Inoue, Manabu, Omaki, Takanobu, Nakai, Masaaki, Fujii, Akira; and Sekida, Minoru, 5,005,047, Cl. 354-442.000.

Nakajima, Tsuyoshi; and Ikeda, Yuji. Signal processing system for flow velocity in laser doppler velocimeter. 5,005,144, Cl. 364-565.000

Nakamichi Corporation. *See—*
Inoue, Yoshihisa, and Arai, Yasunori, 5,005,093, Cl. 360-99.060
Yamamoto, Makoto, and Terada, Akio, 5,005,163, Cl. 369-44.360

Nakamura, Arata, to Omron Tateisi Electronics Co. Reflection type photoelectric switch for detecting the presence of an object 5,004,908, Cl. 250-221.000.

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Aono, Yoshihito; Iwamatsu, Takanori; Minowa, Morihiko; Takenaka, Sadao; Daidoh, Yoshimasa, Nakamura, Hiroshi, and Fujino, Nobutsugu, 5,005,186, Cl. 375-82.000

Nakamura, Ichiko. *See—*
Kugimiya, Shuzo, Fukumochi, Yoji, Nakamura, Ichiko, Hirai, Tokuyuki; and Suzuki, Hitoshi, 5,005,127, Cl. 364-419.000.

Nakamura, Kazuo: *See—*
Kano, Atsushi; Mizuno, Masayuki, Kajiwara, Manabu, Sakaue, Kenji; Abe, Yuji, and Nakamura, Kazuo, 5,004,217, Cl 271-10.000.

Nakamura, Shigeo *See—*
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Nakamura, Syuzi: *See—*
Imai, Hajime; Kito, Shozo; Harada, Shoichi, Yokoyama, Yoshinobu; Nakamura, Syuzi, Miyoshi, Shigetoshi, and Muramatsu, Tadao, 5,003,799, Cl 70-247.000

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Yasuzawa, Toru; Nakanishi, Satoshi, Murakata, Chikara; Kase, Hiroshi, Sano, Hiroshi; and Yamada, Koji, 5,004,833, Cl 536-18.200.

Nakano, Hirofumi: *See—*
Matsuo, Yoshio; Nakano, Hirofumi; Kamiya, Masakuni; and Matsui, Kezuo, 5,004,580, Cl. 419-65.000.

Nakao, Shinroku; Suzuki, Yoshiyuki, and Kato, Hitoshi, to Combi Co., Ltd. Guard attachment/removal structure in baby carriage 5,004,253, Cl. 280-47.380.

Nakashima, Masato: *See—*
Kakinoki, Yoshikazu; Nakashima, Masato, Koezuka, Tetsuo; Hiraoka, Noriyuki; Tsukahara, Hiroyuki, Suto, Yoshinori; Oshima, Yoshitaka, and Hashinami, Shinji, 5,004,929, Cl. 250-561.000

Nakashima, Yoshihiro; and Kinoshita, Yasunori, to Fanuc Ltd. Numerical control apparatus with simultaneous function execution 5,005,134, Cl. 364-474.010

Nakasuji, Kazuyuki, and Hayashi, Chihiro, to Sumitomo Metal Industries, Ltd. Method of manufacturing clad bar. 5,004,143, Cl. 228-126.000.

Nakatani, Seiichi, Yuhaku, Satoru, Nishimura, Tsutomu, Terada, Yukio, and Baba, Yasuyuki, to Matsushita Electric Industrial Co., Ltd. Multilayered ceramic substrates and method for manufacturing the same. 5,004,640, Cl. 428-195.000.

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Nakayama, Hiroshi. *See*—
Tsuji, Masahiro; Kawauchi, Susumu; and Nakayama, Hiroshi, 5,004,520, Cl. 156-630.000.

Nakayama, Hiroyuki. *See*—
Gohda, Eiichi, Tsubouchi, Hirohito; Nakayama, Hiroyuki, Hirono, Shuichi, Takahashi, Kozo, Hashimoto, Shuji, and Daikuhara, Yasushi, 5,004,805, Cl. 530-399.000.

Nakhmanson, Raoul S. Displacement machine. 5,004,409, Cl. 418-58.000.

Nalco Chemical Company. *See*—
Beckman, John A., Huang, Shu-Jen, and Ebrat, Abdol R., 5,004,550, Cl. 210-710.000.
Fong, Dodd W.; and Kowalski, David J., 5,004,786, Cl. 525-344.000.

Namiki, Tomizo, Suzuki, Tamotsu, and Katayama, Masashi, to Fuji Photo Film Co., Ltd. Image-receiving sheet material and process for the formation of transferred image. 5,004,668, Cl. 430-256.000.

Namioka, Takashi. *See*—
Okamura, Masatoshi; Namioka, Takashi; and Shiba, Haruo, 5,004,180, Cl. 242-198.000.

Narikiyo, Hidetoshi; Gotou, Yukifumi; and Chuma, Yoshihiro, to Kabushiki Kaisha Toshiba. Central air conditioning system having compensating control function for total heat load in a plurality of rooms. 5,004,149, Cl. 236-49.300.

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Nomura, Isao; and Narita, Kenichi, 5,004,561, Cl. 252-511.000.

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Hanes, Ronnie M.; and Kwiatek, Jack, 5,004,568, Cl. 260-410.000.

National Energy Council. *See*—
Dekker, Johannes, and Cronje, Izak J., 5,004,831, Cl. 562-475.000.

National Research Development Corporation. *See*—
Clark, Adrian P., 5,005,188, Cl. 375-94.000.
Elliott, Michael; Janes, Norman F.; and Pulman, David A., 5,004,822, Cl. 556-115.000.

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Billmers, Robert L., 5,004,791, Cl. 527-300.000.

Naumburg, Per. Isolated insertion chute for suction-operated garbage disposal systems. 5,004,377, Cl. 406-120.000.

Nawrocki, Glen A.. *See*—
Burchette, Herbert L.; Hansen, Lee E., West, James C., and Nawrocki, Glen A., 5,004,402, Cl. 415-137.000.

NCR Corporation. *See*—
Collins, Donald A., Jr., 5,004,916, Cl. 250-235.000.

Neace, Richard K.. *See*—
Wilson, William B.; DiPietro, Matthew; Neace, Richard K.; Dethier, Vincent B.; Hauss, Raymond G., and Louk, James R., 5,005,036, Cl. 354-322.000.

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NEC Corporation. *See*—
Amano, Haruo, 5,005,071, Cl. 357-85.000.
Masuda, Hajime, 5,005,154, Cl. 365-96.000.
Mizoguchi, Shoichi; and Matsuura, Hideki, 5,005,185, Cl. 375-15.000.
Motokawa, Kazumasu, 5,004,701, Cl. 437-47.000.
Shimizu, Haruhito, 5,004,312, Cl. 350-96.130.
Suzuki, Syuji, and Nishio, Makoto, 5,005,166, Cl. 370-1.000.
Takai, Yasuhiro, 5,005,156, Cl. 365-189.050.

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Yamamoto, Yohzoh; Ishiwata, Shuichi; Yokoyama, Kenji, and Hasegawa, Kimio, 5,004,764, Cl. 523-400.000.

NEC Home Electronics Ltd.. *See*—
Itoi, Satoshi, 5,005,190, Cl. 375-108.000.

Nederlandse Centrale Organisatie voor Teegepast-Natturwentenschappelijk Orderzoel. *See*—
Kluft, Cornelis, 5,004,802, Cl. 530-380.000.

Nejime, Yoshito, to Hitachi, Ltd. Unit circuit for constructing a neural network and a semiconductor integrated circuit having the same. 5,004,932, Cl. 307-201.000.

Nelson, Donald R., to AT&T Bell Laboratories. Multi-rate multiplexing arrangement efficiently utilizing multiplexed channel bandwidth. 5,005,170, Cl. 370-84.000.

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Modisette, David R., Jr.; and Nelson, Donald R., 5,005,171, Cl. 370-110.100.

Nelson, Melinda. *See*—
Osborne, James L.; Nelson, Melinda; Enscore, David J., Yum, Su I.; and Gale, Robert M., 5,004,610, Cl. 424-448.000.

Nemcek, Jozef. *See*—
Humphries, Martyn; Nemcek, Jozef; Padget, John C.; and Mollett, Christopher C., 5,004,631, Cl. 427-385.500.

Nemoto, Isao. Apparatus for producing curvilinear tubes. 5,003,806, Cl. 72-260.000.

Nerrinck, Bernard, and Bonnet, Maurice, to Salomon S.A. Alpine ski boot. 5,003,711, Cl. 36-120.000.

Neumann, Andreas, and Wiese, Michael, to Grote & Hartmann GmbH & Co. KG. Beltable plastic casing for electric plug connectors. 5,004,101, Cl. 206-343.000.

Neuville Industries, Inc.. *See*—
Hollowell, George E., and Sample, Hugh D., 5,004,132, Cl. 223-1.000.

New England Biolabs, Inc. *See*—
Chen, Shu-zi, and Wilson, Geoffrey G., 5,004,691, Cl. 435-172.300.

Newkirk, Marc S.. *See*—
Burke, John T., and Newkirk, Marc S., 5,004,035, Cl. 164-97.000.

Newsome, R. Wayne. Chimney facade system. 5,003,739, Cl. 52-219.000.

NewTech Products, Inc. *See*—
Meinershagen, Charles I., 5,004,020, Cl. 140-93.600.

Newton, Christopher G. *See*—
Ashton, Michael J., Bridge, Andrew W.; Chambers, Robert K., Dron, Donald I.; Fenton, Garry, Harris, Neil V., Lythgoe, David J., McFarlane, Ian M., Newton, Christopher G., Riddell, David, Smith, Christopher, Stuttle, Keith A. J., and Toft, Malcolm P., 5,004,747, Cl. 514-309.000.

Newton, Geoffrey C. Stump burner. 5,003,890, Cl. 110-239.000.

Ney, Hermann, to U.S. Philips Corporation. Method of recognizing continuously spoken words. 5,005,203, Cl. 381-43.000.

NGK Insulators, Ltd. *See*—
Terada, Nobuhiro; Shimizu, Masataka; and Matsuzawa, Soichiro, 5,003,688, Cl. 29-603.000.

NHK Spring Co., Ltd. *See*—
Kazama, Toshio, 5,004,977, Cl. 324-158.00P.
Ojima, Juji, 5,004,448, Cl. 474-111.000.
Ojima, Juji, 5,004,449, Cl. 474-138.000.

Nichias Corporation. *See*—
Ashizawa, Masaaki, Nishimoto, Kazuo; Oomura, Atsushi, and Ito, Shuji, 5,004,650, Cl. 428-463.000.

Niedospial, John J., to Eastman Kodak Company. Film cassette. 5,004,176, Cl. 242-71.100.

Niessen, Cornelius. *See*—
Van Berkel, Cornelis H.; Saeijs, Ronald W. J. J., and Niessen, Cornelius, 5,005,136, Cl. 364-490.000.

Nifco, Inc.. *See*—
Oshida, Tsutomu, 5,004,306, Cl. 312-319.000.

Nigay, Pierre, to Kilrush Limited. Permanent receptacle for collecting urine from women. 5,004,463, Cl. 604-329.000.

Nihon Dempa Kogyo Co., Ltd.. *See*—
Ueno, Yoshifusa; Tanzawa, Takihei, and Suzuki, Takayuki, 5,004,988, Cl. 331-116.00R.

Nihon Kaiheiki Kogyo Kabushiki Kaisha. *See*—
Ohashi, Shigeo, 5,004,318, Cl. 350-96.200.

Niiro, Yasunori. *See*—
Satoh, Toshio; Niiro, Yasunori; Kakegawa, Hisao, and Matsumoto, Hitoshi, 5,004,742, Cl. 514-226.500.

Niizato, Tomonori. *See*—
Matsumoto, Yukihiro, Yoshihara, Kenji; Kajiura, Tetsuya, Niizato, Tomonori; and Yamada, Noriyuki, 5,003,937, Cl. 123-90.120.

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Ulyanitsky, Vladimir J.; Gavrilenko, Tamara P.; Nikolaev, Jury A., and Buteev, Alexandr I., 5,004,021, Cl. 141-67.000.

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Magome, Nobutaka, 5,004,348, Cl. 356-401.000.

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Nishino, Yoshinori, and Kishigami, Junjiro, 5,004,895, Cl. 219-528.000.

Nippon Colin Co., Ltd. *See*—
White, Curtis D.; and Carpenter, Billy L., 5,003,985, Cl. 128-716.000.

Nippon Hypox Laboratories Incorporated. *See*—
Satoh, Toshio; Niiro, Yasunori, Kakegawa, Hisao, and Matsumoto, Hitoshi, 5,004,742, Cl. 514-226.500.

Nippon Koki Co., Ltd. *See*—
Hayashi, Minoru; Kobari, Koichi; Sato, Kimiharu; and Kishimoto, Junichi, 5,004,586, Cl. 422-164.000.

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Tsuji, Masahiro, Kawauchi, Susumu; and Nakayama, Hiroshi, 5,004,520, Cl. 156-630.000.

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Matsuyama, Kazuo, Sugiura, Takashi; and Komai, Takeshi, 5,004,780, Cl. 525-27.000.

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Bommer, Jerry C.; and Burnham, Bruce F., 5,004,811, Cl. 540-145.000.
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Motai, Noboru; Tanaka, Sakae; and Watanabe, Yoshiaki, 5,005,056, Cl. 357-2.000.

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Yamamoto, Kazuo, 5,004,268, Cl. 280-804.000.

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Kitamura, Koichi; Mimura, Hidenori; Yamamoto, Kazuo; and Ohta, Yasumitsu, 5,004,903, Cl. 250-208.100.

Nippondenso Co., Ltd.. *See*—
Haraguchi, Hiroshi; Tamura, Hiroshi; Kodama, Katuhiko; and Kondo, Toshio, 5,003,955, Cl. 123-489.000.
Kozaki, Tetsuji, Ishikawa, Hiroshi, Yasui, Hideaki; Shimamoto, Mamoru; Hibino, Katsuhiko; and Suzuki, Motoshi, 5,004,264, Cl. 280-707.000.
Kuroyanagi, Masatoshi; Suzuki, Masahiko; Matsui, Kazuma; Imaeda, Makoto; Nagai, Kouzi; and Ito, Yoshiaki, 5,004,406, Cl. 417-273.000.
Tomita, Masahiro; Hayashi, Satoshi; Oda, Shinro; Fujii, Akira; and Tanigawa, Masayoshi, 5,004,945, Cl. 310-328.000.
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Yahata, Makoto; and Nishida, Fumihiko, 5,005,044, Cl. 355-40.000.

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Mori, Tatsuya; Ohsumi, Tadashi; Nakamura, Shigeo; Maeda, Kiyoto, Nishida, Sumio; and Takano, Hirotaka, 5,004,816, Cl. 549-462.000.

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Mutoh, Nariaki; Hanatani, Yasuyuki; and Nishiguchi, Toshihiko, 5,004,662, Cl. 430-59.000.

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Hara, Kazumasa, Sano, Yasuro, Koike, Mikio, and Nishijima, Mitsuru, 5,003,896, Cl. 112-121.110.

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Ashizawa, Masaaki; Nishimoto, Kazuo; Oomura, Atsushi; and Ito, Shuji, 5,004,650, Cl. 428-463.000.

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Hakotani, Yasuhiko; Nakatani, Seiichi; Yuuhaku, Satoru; Nishimura, Tsutomu; and Ishida, Toru, 5,004,715, Cl. 501-136.000.
Nakatani, Seiichi; Yuhaku, Satoru; Nishimura, Tsutomu; Terada, Yukio; and Baba, Yasuyuki, 5,004,640, Cl. 428-195.000.

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Suzuki, Syuji; and Nishio, Makoto, 5,005,166, Cl. 370-1.000.

Nissan Motor Co., Ltd.. *See*—
Imaseki, Takashi; and Kobari, Yuji, 5,005,131, Cl. 364-426.020.
Kato, Koichiro; Fukuhara, Hiroshige; Kamishima, Hiroyuki; and Tsukahara, Hitoshi, 5,005,021, Cl. 343-717.000.
Kobayashi, Jiro, 5,004,002, Cl. 137-39.000.
Takahashi, Hiroshi, 5,005,133, Cl. 364-426.040.
Yoneyama, Syuichi; Obana, Yoshinori; and Fujisawa, Eiichi, 5,003,958, Cl. 123-635.000.

Nisshin Flour Milling Co., Ltd.. *See*—
Ogawa, Osamu; Kishi, Ikuo; Tahara, Yoshiyuki; and Sugita, Masanori, 5,004,756, Cl. 514-655.000.
Okamoto, Yasushi; Tahara, Yoshiyuki; and Mishima, Yoshio, 5,004,735, Cl. 514-134.000.

Nissl, Norbert, and Grossler, Peter, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Hollow of projectile charge. 5,003,884, Cl. 102-476.000.

Nisula, Scott P., and O'Callaghan, Christopher P., to Chevron Research & Technology Company. Composition and method for removal of hydrogen sulfide. 5,004,588, Cl. 423-226.000.

Nitto Kohki Co., Ltd.. *See*—
Kishi, Katsunobu, 5,004,385, Cl. 409-180.000.

Niwano, Masaru. *See*—
Yamamoto, Tetsushi; Niwano, Masaru; and Nakagawa, Etsuo, 5,003,919, Cl. 118-716.000.

NNC Limited. *See*—
Utton, Donald B.; and Windebank, Stephen R., 5,004,354, Cl. 374-29.000.

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Ivers, Douglas E.; and Nobles, Charles M., 5,004,079, Cl. 188-282.000.

Nogawa, Atsuhiko, to Terumo Kabushiki Kaisha. Plug and blood circulation device with the plug. 5,004,113, Cl. 215-358.000.

Nohara, Makoto. *See*—
Ida, Tomoyasu; Nohara, Makoto; and Seo, Nobuyuki, 5,004,980, Cl. 324-166.000.

Noll, John R.; and Montvila, Stephen V., to Electrolux Water Systems, Inc. Fluid purification system. 5,004,541, Cl. 210-251.000.

Nolle, William. *See*—
Markow, Paul A.; Nolle, William, and Bell, Charles L., 5,004,976, Cl. 324-154.00R.

Nolte, David D.. *See*—
Glass, Alastair M.; Knox, Wayne H.; and Nolte, David D., 5,004,325, Cl. 350-354.000.

Nomura, Isao; and Narita, Kenichi, to Mitsubishi Gas Chemical Company, Inc. Electromagnetic wave-shielding thermoplastic resin composition. 5,004,561, Cl. 252-511.000.

Nomura, Kenji. *See*—
Kobayashi, Toshio; Uchikawa, Fusaoki, Nomura, Kenji; Morita, Masao; and Yokoyama, Shouichi, 5,004,720, Cl. 505-1.000.

Nordica S.p.A.. *See*—
Pozzobon, Alessandro, 5,003,710, Cl. 36-117.000.

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Kuo, George, Masiarz, Frank; Truett, Martha; and Valenzuela, Pablo, 5,004,804, Cl. 530-387.000.

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Hessman, Ingemar; Post, Karl G. Y., and Norgren, Lars E., 5,004,380, Cl. 407-114.000.

Norita, Toshio; Ishida, Tokuji; Hamada, Masataka, and Ishibashi, Kenji, to Minolta Camera Kabushiki Kaisha. Automatic focus adjusting apparatus of a camera. 5,005,040, Cl. 354-402.000.

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Hamlin, Humphrey A. S.; and Harral, Michael W., 5,004,485, Cl. 55-160.000.

Norris, Dale M. Method for inducing resistance in plants using environmentally safe antioxidants. 5,004,493, Cl. 71-88.000.

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Goldburt, Efim S.; and Hemmer, Richard E., 5,004,625, Cl. 427-38.000.
Latassa, Frank M.; and Leyh, Thomas O., 5,004,949, Cl. 313-492.000.
Shaulov, Avner A.; Herko, Samuel P.; Dorman, Donald R.; and Bhargava, Rameshwar N., 5,004,726, Cl. 505-1.000.
Skinner, Kenneth R., 5,005,084, Cl. 358-194.100.

Northrop Corporation. *See*—
Richardson, William T., 5,003,631, Cl. 2-6.000.

Norton Company. *See*—
Hay, Robert A.; Willkens, Craig A.; and Arsenault, Normand P., 5,004,544, Cl. 210-490.000.

Norton, Paul R.; Moroz, Michael; and Talley, Carol S., to Santa Barbara Research Center. Method of making photodetector with P layer covered by N layer. 5,004,698, Cl. 437-3.000.

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Rosendahl, Finn; Fjeld, Svein; Salama, Mamdouh M.; and Gillen, Michael P., 5,004,051, Cl. 166-357.000.

Nottingham, John R.; Spirk, John W., Jr., and Brokaw, Paul E., to G & S Metal Products Company, Inc. Microwavable metal baking pan with insulating girdle. 5,004,882, Cl. 219-10.55E.

Nowak, William J.. *See*—
Stokes, Ronald E.; Nowak, William J.; Attardi, Anthony A.; and Costanza, Daniel W., 5,005,054, Cl. 355-273.000.

Nowick, James S.. *See*—
Danheiser, Rick L.; and Nowick, James S., 5,004,815, Cl. 549-328.000.

NSM Apparatebau GmbH & Co. KG. *See*—
Menke, Wilhelm, 5,004,247, Cl. 273-376.000.

nuArc Company, Inc.. *See*—
Leonhart, Charles J., 5,005,048, Cl. 355-93.000.

Nuding, Wolfgang. *See*—
Link, Rainer, and Nuding, Wolfgang, 5,003,831, Cl. 73-865.900.

Nugues, Pierre. *See*—
Ikes, Jacques; Le Fur, Joel; and Nugues, Pierre, 5,004,952, Cl. 315-3.500.

N.V. Verbrugge. *See*—
Blontrock, Daniel, 5,004,019, Cl. 139-91.000.

Nysten, Bernhard, to William Prym-Werke GmbH. & Co. KG. Snap fastener. 5,003,673, Cl. 24-662.000.

O&K Orenstrein & Koppel Aktiengesellschaft. *See*—
Schwappach, Dieter, 5,004,397, Cl. 414-686.000.

Oba, Hidehiro. *See*—
Kato, Senji; and Oba, Hidehiro, 5,003,950, Cl. 123-422.000.

Obana, Yoshinori. *See*—
Yoneyama, Syuichi; Obana, Yoshinori; and Fujisawa, Eiichi, 5,003,958, Cl. 123-635.000.

Oblak, Tod A.. *See*—
Lipchak, John B.; Oblak, Tod A.; Bednar, Fred H., Ciaramitaro, William; Hughes, Francis R., Smith, John R.; and Gisoni, Gregory A., 5,005,142, Cl. 364-550.000.

O'Brien, Edward F.. *See*—
Sogge, Dale R.; O'Brien, Edward F.; and Czarn, David A., 5,004,876, Cl. 200-83.00P.

O'Callaghan, Christopher P.. *See*—
Nisula, Scott P.; and O'Callaghan, Christopher P., 5,004,588, Cl. 423-226.000.

O'Callaghan, Wilfred B.. *See*—
Hunter, John A.; Scamans, Geoffrey M., O'Callaghan, Wilfred B., and Wycliffe, Paul A., 5,004,654, Cl. 429-50.000.

Ochiai, Masami: *See—*
Kanai, Takashi; Ochiai, Masami; Oshina, Morio; and Sonoda, Mitsuo, 5,003,776, Cl. 60-434.000.

Ochs, Heinrich: *See—*
Franz, Karl-Heinz; Ochs, Heinrich; and Difflipp, Kurt, 5,003,871, Cl. 101-148.000.

Ociepka, Val S.: *See—*
Horgan, John J.; and Ociepka, Val S., 5,004,044, Cl. 165-145.000.

O'Connor, James T.; and Courtright, David A., to SGS-Thomson Microelectronics, Inc. System for synchronizing data frame groups in a serial bit stream. 5,005,191, Cl. 375-116.000.

Oda, Shinro. *See—*
Tomita, Masahiro; Hayashi, Satoshi; Oda, Shinro; Fujii, Akira, and Tanigawa, Masayoshi, 5,004,945, Cl. 310-328.000.

Office National d'Etudes et de Recherches Aerospatiales: *See—*
Falempin, Francois, 5,004,187, Cl. 244-53.00B.

Ogai, Mikio: *See—*
Fukushima, Toru; Takabayashi, Tsunehisa; and Ogai, Mikio, 5,005,179, Cl. 372-46.000.

Oganesyan, Suren. Method of making a channel set ring. 5,003,678, Cl. 29-10.000.

Ogasawara, Hiromitsu, to Tachi-S Co., Ltd. Method and device for controlling slide motion of a vehicle seat. 5,004,967, Cl. 318-568.100.

Ogawa, Hiroshi. *See—*
Fudono, Kanji; Ogawa, Hiroshi; Takahashi, Toshimasa; and Yamashita, Toshio, 5,003,786, Cl. 62-156.000.

Ogawa, Masahide, Sato, Teiji, Tanaka, Masanori; and Takahashi, Noriyuki, to Mizusawa International Chemicals, Ltd. Synthetic stevensite and process for preparation thereof. 5,004,716, Cl. 501-141.000.

Ogawa, Masanobu; and Shibata, Shinya, to Asahi Glass Company, Ltd. Transparent glass antenna for an automobile. 5,005,020, Cl. 343-713.000.

Ogawa, Masao, to Brother Kogyo Kabushiki Kaisha. Apparatus for disconnecting a needle bar and threading on a sewing machine. 5,003,899, Cl. 112-221.000.

Ogawa, Masao, to Brother Kogyo Kabushiki Kaisha. Thread securing device in a sewing machine. 5,003,900, Cl. 112-242.000.

Ogawa, Osamu; Kishi, Ikuo; Tahara, Yoshiyuki; and Sugita, Masanori, to Lederle (Japan) Ltd., and Nisshin Flour Milling Co., Ltd. Anticancer activity potentiator. 5,004,756, Cl. 514-655.000.

Ogawa, Yukio; Hirohata, Michio; Kodaira, Takanori; and Miyawaki, Makoto, to Canon Kabushiki Kaisha. Focal length changeable camera. 5,005,038, Cl. 354-400.000.

Ogilvie, Kelvin K.: *See—*
Fortin, J. Andre ; Ogilvie, Kelvin K ; Tsantrizos, Youla S., and Kope, Harry H., 5,004,754, Cl. 514-570.000.

Oh, Myung H.; Lee, Kyung J ; Chung, In J., Lee, Nam Y ; and Kim, Myung S., to Korea Institute of Science and Technology. Fabrication method for high voltage zinc oxide varistor. 5,004,573, Cl. 264-61.000.

Ohashi, Shigeo, to Nihon Kaiheiki Kogyo Kabushiki Kaisha. Small optical fiber switch. 5,004,318, Cl. 350-96.200.

Ohba, Yasuo: *See—*
Izumiya, Toshihide; Ohba, Yasuo; and Hatano, Ako, 5,005,057, Cl. 357-17.000.

Ohnishi, Akio: *See—*
Iwanaga, Takeshi; and Ohnishi, Akio, 5,004,242, Cl. 273-169.000.

Ohnuki, Ichiro: *See—*
Akashi, Akira; Kadohara, Terutake; Ohnuki, Ichiro; and Higashihara, Masaki, 5,005,037, Cl. 354-400.000.

Ohsumi, Tadashi: *See—*
Mori, Tatsuya, Ohsumi, Tadashi; Nakamura, Shigeo, Maeda, Kiyoto; Nishida, Sumio; and Takano, Hirotaka, 5,004,816, Cl. 549-462.000.

Ohta, Wasaburo: *See—*
Yagawara, Shinji; Manaka, Junji; and Ohta, Wasaburo, 5,003,812, Cl. 73-31.060.

Ohta, Yasumitsu: *See—*
Kitamura, Koichi; Mimura, Hidenori; Yamamoto, Kazuo, and Ohta, Yasumitsu, 5,004,903, Cl. 250-208.100.

Ohtaka, Keiji: *See—*
Suda, Yasuo; Ohtaka, Keiji; Suzuki, Kenji, Ishizaki, Akira, and Aoyama, Keisuke, 5,005,041, Cl. 354-407.000.

Ohtani, Junji; Anno, Masahiro; Sano, Eiichi, Machida, Junji, and Masuda, Fumio, to Minolta Camera Kabushiki Kaisha. Toner containing polymeric-magnetic coordination complex. 5,004,665, Cl. 430-106.600.

Ohtuka, Nobuo; and Matsumoto, Kouichi, to Sanyo Electric Co., Ltd. Hybrid circuit module having bridge circuit and rectifying circuit disposed on a same substrate. 5,005,113, Cl. 363-37.000.

Ohzeki, Yoshiyuki; and Amikura, Kazuo, to Copal Co., Ltd. Stepper motor with input connector array. 5,004,941, Cl. 310-49.00R.

Oil-Dri Corporation of America: *See—*
Brooks, David D.; Brophy, Shirley A.; and Goss, George R., 5,004,570, Cl. 260-427.000.

Ojima, Juji, to NHK Spring Co., Ltd. Tensioner. 5,004,448, Cl. 474-111.000.

Ojima, Juji, to NHK Spring Co., Ltd. Sealed tensioner. 5,004,449, Cl. 474-138.000.

Oka, Tateki: *See—*
Toyoshi, Naoki; Oka, Tateki; and Goto, Hiroshi, 5,003,917, Cl. 118-653.000.

Okada, Haruo: *See—*
Takahashi, Hiroaki; Okada, Haruo; Matsumoto, Katsuya; and Umino, Masuo, 5,004,546, Cl. 210-635.000.

Okada, Kazuo, to Universal Company, Ltd. Ball-shooting game machine. 5,004,238, Cl. 273-121.00B.

Okada, Kazuo: *See—*
Seya, Masatomo; Tadokoro, Michihiro; and Okada, Kazuo, 5,004,900, Cl. 250-201.500.

Okada, Keiji: *See—*
Tojo, Tetsuo; Okada, Keiji; Nakahara, Takashi; and Kikuchi, Yoshiharu, 5,004,787, Cl. 525-332.100.

Okamoto, Yasushi, Tahara, Yoshiyuki, and Mishima, Yoshio, to Nisshin Flour Milling Co., Ltd. Pharmaceutical compositions for the inhibition of tumor metastasis. 5,004,735, Cl. 514-134.000.

Okamoto, Yoshihisa: *See—*
Klemarczyk, Philip T.; and Okamoto, Yoshihisa, 5,004,842, Cl. 568-640.000.

Okamura, Masatoshi; Namioka, Takashi, and Shiba, Haruo, to TDK Corporation. Magnetic tape cassette. 5,004,180, Cl. 242-198.000.

Okano, Masaru: *See—*
Shibazaki, Toshiji; Okano, Masaru; Kishida, Naoto; Ozaki, Yoshihiro; and Iyama, Kunihiko, 5,004,996, Cl. 338-36.000.

Okayasu, Hideo: *See—*
Okayasu, Kenji, and Okayasu, Hideo, 5,003,709, Cl. 36-107.000.

Okayasu, Kenji; and Okayasu, Hideo, to Rikio Co., Ltd. Prick-preventing shoe. 5,003,709, Cl. 36-107.000.

Okazaki, Kakuma, and Kitamura, Takayuki, to Japan Aircraft Mfg. Co., Ltd. Deployable and collapsible structure. 5,003,736, Cl. 52-108.000.

Okazaki, Tadashi: *See—*
Hara, Yasuhiro, Inoue, Mitsuhiro; Baba, Hideo, Okazaki, Tadashi, and Kudo, Shigeru, 5,004,089, Cl. 192-107.00M.

Okimoto, Haruo: *See—*
Shibata, Masanori, Okimoto, Haruo, Akagi, Toshimichi; and Tashima, Seiji, 5,003,781, Cl. 60-600.000.

Okino, Tadashi. *See—*
Fukushima, Nobuo, Sakai, Shinji; Takdea, Osamu, Takei, Masahiro; Suzuki, Yasutomo; Okino, Tadashi; and Jinnai, Shigeru, 5,005,088, Cl. 360-69.000.

Okita, Hajime: *See—*
Taguchi, Toshio; and Okita, Hajime, 5,003,706, Cl. 34-92.000.

Okuda, Jun. *See—*
Mochida, Eiji; Murakami, Kimihiro, Kato, Kazuo; Kato, Katsuaki, Okuda, Jun; and Miwa, Ichitomo, 5,004,751, Cl. 514-390.000.

Okui, Susumu, to Konica Corporation. Document conveyance apparatus facilitating conveyance belt replacement. 5,004,223, Cl. 271-275.000.

Okun, Jerome M. *See—*
Perlman, Stephen G., Okun, Jerome M., Palevich, John H ; and Lundblad, James A , 5,005,011, Cl. 340-728.000.

Okutsu, Eiichi, Hirano, Mitsunori, and Yagihara, Morio, to Fuji Photo Film Co., Ltd. High-contrast development process for silver halide photographic material. 5,004,670, Cl. 430-265.000.

Olesen, Paul, to Swingline Inc. Guide anvil including movable clinching wings for stapler. 5,004,142, Cl. 227-155.000.

Olin Corporation. *See—*
Roberts, Katherine P., Geiger, Jon R.; and Carney, Jayne F., 5,004,682, Cl. 435-6.000.
Wood, Richard B., Mullins, Richard M., and Wojtowicz, John A., 5,004,549, Cl. 210-699.000.

Olivier, Michel. *See—*
Rotman, Frederic; Rancon, Yannick; Queille, Philippe, and Olivier, Michel, 5,004,489, Cl. 65-32.200.

Olsen, Eric. Fluid foil system. 5,003,903, Cl. 114-102.000.

Olson, Larry D , and Kamla, Jeffrey R., to Allied-Signal Inc. Polyimide resin laminates. 5,004,775, Cl. 524-371.000.

Olson, Thomas E , and Vigil, Dennis M., to InterVentional Technologies, Inc. Apparatus for manufacturing atherectomy torque tubes. 5,003,918, Cl. 118-665.000.

Olympus Optical Co., Ltd. *See—*
Matsui, Hiroshi, and Toda, Akitoshi, 5,004,902, Cl. 250-201.800.
Miyasaka, Tetsuo, 5,005,033, Cl. 354-289.100.
Takayama, Syuichi; Tsukaya, Takashi; Ueda, Yasuhiro; Hatta, Shinji; and Abe, Masashi, 5,003,991, Cl. 128-784.000.
Tsuchida, Hirofumi, 5,004,329, Cl. 350-427.000.

Omaki, Takanobu. *See—*
Fujino, Akihiko; Inoue, Manabu; Omaki, Takanobu; Nakai, Masaaki, Fujii, Akira, and Sekida, Minoru, 5,005,047, Cl. 354-442.000.

Omar S.n c. di Mario Baiocchi Alinovi & C. *See—*
Alinovi, Mario B., 5,003,667, Cl. 452-125.000.

Omron Tateisi Electronics Co. *See—*
Nakamura, Arata, 5,004,908, Cl. 250-221.000.

Onan Corporation: *See—*
Fanner, John C , and Halstead, Nick V., 5,003,949, Cl. 123-382.000.

Ono Pharmaceutical Co., Ltd. *See—*
Kim, Soonih; Takeda, Kazuhisa; and Sasatani, Seiei, 5,004,612, Cl. 424-450.000.

Onoda, Shigeyoshi: *See—*
Saijo, Yasutsugu; Chiku, Kazuyoshi; and Onoda, Shigeyoshi, 5,004,336, Cl. 353-122.000.

Onodera, Norio, to Alps Electric Co., Ltd. Stress-relieving flexible circuit board holder plate. 5,005,105, Cl. 361-398.000.

Onotsky, Melis I. *See—*
Goikhman, Yakov A.; Krjukov, Georgy M.; Onotsky, Melis I., Sorokin, Georgy M., Filatov, Alexei V , Tsarapkin, Viktor V , Yakimov, Vadim P , Smirnov, Gennady A , Nikiforov, Ivan I., Burdukovsky, Alexandr I., Daibov, Sergei V.; and Kurdjukov, Alexandr S., 5,004,056, Cl. 175-293.000.

Onoue, Akihiro, to Sanshin Kogyo Kabushiki Kaisha. Speed detecting device for marine propulsion unit. 5,004,439, Cl. 440-2.000.

Onufrak, Andrew F.: *See—*
Brown, Donald G.; and Onufrak, Andrew F., 5,004,205, Cl. 248-476.000.

Oohinata, Osamu; and Yanagida, Jun. Cosmetic applicator and method of producing the same. 5,003,660, Cl. 15-244.100.

Oohira, Jun: *See—*
Uda, Masashi; and Oohira, Jun, 5,004,466, Cl. 604-385.200.

Oomae, Tadayuki: *See—*
Mashita, Kentaro; Fujii, Takeshi; and Oomae, Tadayuki, 5,004,782, Cl. 525-64.000.

Oomura, Atsushi: *See—*
Ashizawa, Masaaki; Nishimoto, Kazuo; Oomura, Atsushi; and Ito, Shuji, 5,004,650, Cl. 428-463.000.

Oono, Toshio; and Uemura, Hiroki, to Aisin Takaoka Co., Ltd. Ventilated disk and process for making same. 5,004,078, Cl. 188-218.00A.

Opelz, Gerhard: *See—*
Terness, Peter; and Opelz, Gerhard, 5,004,604, Cl. 424-85.500.

Oppenlaender, Knut: *See—*
Vogel, Hans-Henning; Rath, Hans P.; Jakob, Claus P.; and Oppenlaender, Knut, 5,004,478, Cl. 44-398.000.

O'Quinn, Alethea H.: *See—*
Presswood, J. Kenneth; and O'Quinn, Alethea H., 5,004,627, Cl. 427-133.000.

Orama, Angel M.: *See—*
Cherukuri, Subraman R., Chau, Tommy L.; Raman, Krishna P.; and Orama, Angel M., 5,004,595, Cl. 424-48.000.

Orbisphere Corporation: *See—*
Hale, John M., 5,004,532, Cl. 204-415.000.

Orlandi, Ireneo, to Alfa Costruzioni Meccaniche S.p.A. Device for the alignment of bottles provided with a reference molding in rotary labeling machinery. 5,004,517, Cl. 156-567.000.

Orscheln Co.: *See—*
Carlson, Harold L.; DeWitt, Michael D.; Martel, Louis, Jr.; Kelley, Larry W., and Tayon, Jeffrey E., 5,004,077, Cl. 188-2.00D.

Orschlen Co.: *See—*
Italiano, Anthony J., 5,003,837, Cl. 74-501.50R.

Orthopedic Designs, Inc. *See—*
Azer, Samir N.; Salman, Naser N.; and Krause, William R., 5,003,969, Cl. 128-87.00R.

Osborn, John J. Polar co-ordinate digitizer. 5,004,870, Cl. 178-18.000.

Osborne, James L.; Nelson, Melinda; Enscore, David J.; Yum, Su I., and Gale, Robert M., to ALZA Corporation. Subsaturated nicotine transdermal therapeutic symstem. 5,004,610, Cl. 424-448.000.

O'Shea, Thomas M. *See—*
Koblitz, Francis F.; O'Shea, Thomas M.; Stoner, Beverly A.; and Yula, Joseph J., 5,004,869, Cl. 174-84.00C.

Oshida, Tsutomu, to Nifco, Inc. Drawer device. 5,004,306, Cl. 312-319.000.

Oshima, Hisaichi; and Yamashita, Masami, to Furuno Electric Co., Ltd. Thermal recorder. 5,005,027, Cl. 346-76.0PH.

Oshima, Yoshitaka: *See—*
Kakinoki, Yoshikazu; Nakashima, Masato; Koezuka, Tetsuo; Hiraoka, Noriyuki; Tsukahara, Hiroyuki; Suto, Yoshinori; Oshima, Yoshitaka; and Hashinami, Shinji, 5,004,929, Cl. 250-561.000.

Oshina, Morio: *See—*
Kanai, Takashi; Ochiai, Masami; Oshina, Morio; and Sonoda, Mitsuo, 5,003,776, Cl. 60-434.000.

Osip, Thomas W.; Montgomery, Jerold W.; and Pezzoli, Paul A., to Abbott Laboratories. Retortable closure for plastic container. 5,004,110, Cl. 215-232.000.

Oslapas, Algis; and Rumpel, Manfred, to Ford Motor Company. Steering system for the rear wheels of a vehicle. 5,004,063, Cl. 180-79.100.

Ostergaard, David A., to Cedarapids, Inc. Impeller bar assembly with adjustable locking mechanism. 5,004,169, Cl. 241-192.000.

Ostoich, Vladimir E.: *See—*
Hillman, Robert S.; Cobb, Michael E.; Allen, Jimmy D.; Gibbons, Ian; Ostoich, Vladimir E., and Winfrey, Laura J., 5,004,923, Cl. 250-341.000.

Osypka, Peter. Apparatus for implanting electrodes and the like in animal bodies. 5,003,990, Cl. 128-772.000.

Otaka, Ken; Matsuo, Noritada; Tsushima, Kazunori; and Yano, Toshihiko, to Sumitomo Chemical Company, Limited. Novel carboxylic acid esters, method for their production and insecticides containing them as active ingredient. 5,004,753, Cl. 514-531.000.

Otis Engineering Corporation: *See—*
Arterbury, Bryant A., 5,004,049, Cl. 166-228.000.

Otokawa, Mitsuhiro; and Takimoto, Hiroyuki, to Canon Kabushiki Kaisha. Brushless motor with torque compensation. 5,004,965, Cl. 318-254.000.

Otsu, Hitonobu: *See—*
Ishibai, Isao; and Otsu, Hitonobu, 5,004,330, Cl. 350-432.000.

Oudet, Claude; Drey, Gilbert; and Veignat, Norbert, to Portescap. Method of manufacturing a synchronous electric motor with magnetized rotar. 5,003,686, Cl. 29-596.000.

Ovonic Synthetic Materials Company Inc.: *See—*
Ovshinsky, Stanford R.; and Young, Rosa, 5,004,725, Cl. 505-1.000.

Ovshinsky, Stanford R.; and Young, Rosa, to Ovonic Synthetic Materials Company Inc. Parametrically modified superconductor material. 5,004,725, Cl. 505-1.000.

Owen, Donald W., to Southwest Electric Company. Transient-filtered transformer. 5,005,100, Cl. 361-35.000.

Oyama, Masayuki, to Mitsuba Electric Mfg. Co., Ltd. Method of mounting and demounting molds to and from press molding machine. 5,003,809, Cl. 72-446.000.

Ozaki, Takeo: *See—*
Suzuki, Susumu; Ishida, Kazuyuki; and Ozaki, Takeo, 5,003,977, Cl. 128-633.000.

Ozaki, Yoshihiro: *See—*
Shibazaki, Toshiji; Okano, Masaru; Kishida, Naoto; Ozaki, Yoshihiro; and Iyama, Kunihiko, 5,004,996, Cl. 338-36.000.

Ozawa, Nobuyuki: *See—*
Tomura, Yoshihiro; Maruhashi, Keiji; and Ozawa, Nobuyuki, 5,004,364, Cl. 401-110.000.

Pabon, Delfin: *See—*
Grunert, Kurt A.; Pabon, Delfin; and Cheski, Ronald A., 5,005,104, Cl. 361-355.000.

Paccar Inc.: *See—*
Foot, John, 5,004,062, Cl. 180-69.210.

Pacific Chemical Co., Ltd.: *See—*
Kim, Young D.; and Ha, Byung J., 5,004,737, Cl. 514-182.000.

Packaging Industries Group, Inc.: *See—*
Berkley, Robert D.; and Shaughnessy, Terry P., 5,003,722, Cl. 43-3.000.

Padget, John C.: *See—*
Humphries, Martyn; Nemcek, Jozef; Padget, John C.; and Mollett, Christopher C., 5,004,631, Cl. 427-385.500.

Paepke, Edwin E. Cleaning apparatus. 5,003,659, Cl. 15-209.00D.

Pagano, Daniel M., to Eastman Kodak Company. Camera operating mechanism. 5,005,035, Cl. 354-206.000.

Pahnke, Klaus-Dieter; Holl, Rolf; and Becker, Wilfried, to Rheinmetall GmbH. Projectile for combatting actively and passively recting armor. 5,003,886, Cl. 102-521.000.

Pai, Damodar M.: *See—*
Badesha, Santokh S.; Stolka, Milan; Pai, Damodar M.; and Abkowitz, Martin A., 5,004,663, Cl. 430-59.000.

Palermo, Robert E.: *See—*
DeCaul, Lorenzo C.; Han, Scott; Palermo, Robert E.; and Walsh, Dennis E., 5,004,856, Cl. 585-500.000.

Palevich, John H.: *See—*
Perlman, Stephen G.; Okun, Jerome M.; Palevich, John H.; and Lundblad, James A., 5,005,011, Cl. 340-728.000.

Palfray, Michel, to Establissements Proteor. Prosthesis for leg amputation and a process for its manufacture. 5,004,477, Cl. 623-53.000.

Palfy, Robert M.: *See—*
MacLennan, Charles; Hamilton, Douglas D.; and Palfy, Robert M., 5,004,026, Cl. 144-3.00D.

Palmer, Leon Robert. Mechanical pencil. 5,004,362, Cl. 401-53.000.

Palmieri, Beniamino; and Garlati, Rodolfo, to Ricerche Biomediche S.r.l. Improvements in automatic mechanical suturing guns. 5,004,469, Cl. 606-139.000.

Pandl, Klaus; and Patsch, Manfred, to BASF Aktiengesellschaft. Copper formazan reactive dyes containing a monofluorotriazine or monochlorotriazine group. 5,004,807, Cl. 534-618.000.

PanZhiHua Iron & Steel Co.: *See—*
Yu, Meng W.; Su, Shihuai; Chen, Yue Z.; Zheng, Ticheng; Ji, Kebin; Ling, Shou R.; Lin, Jian C.; Deng, Jianhui; and Zhang, Kunwu, 5,004,510, Cl. 148-146.000.

Paquette, Louis J., to Du Pont de Nemours, E. I., and Company. Dry disconnect coupling and safety cap for portable tanks. 5,004,209, Cl. 251-144.000.

Paraska, Theodore F.: *See—*
Lapp, Roger H.; and Paraska, Theodore F., 5,003,687, Cl. 29-600.000.

Pardridge, William M., to Univ. of CA; and Alkermes. Cationized antibodies for delivery through the blood-brain barrier. 5,004,697, Cl. 436-547.000.

Pareschi, Flavio: *See—*
Cardani, Silvestro; and Pareschi, Flavio, 5,003,999, Cl. 134-105.000.

Park, Chang M.; and Schammel, Wayne P., to Amoco Corporation. Process for oxidation of alkyl aromatic compounds. 5,004,830, Cl. 562-413.000.

Park, Eugene S.; and Aghajanian, Michael K., to Lanxide Technology Company, LP. Method of surface bonding materials together by use of a metal matrix composite, and products produced thereby. 5,004,034, Cl. 164-97.000.

Parker, A. Bruce; and Miller, Donna F., to Parker Medical Associates. Roll form medical bandaging product, method of constructing same and container for roll form bandaging product. 5,003,970, Cl. 128-90.000.

Parker, Jeffery R.: *See—*
Pristash, David J.; and Parker, Jeffery R., 5,005,108, Cl. 362-31.000.

Parker Medical Associates: *See—*
Parker, A. Bruce; and Miller, Donna F., 5,003,970, Cl. 128-90.000.

Parker, Robert P.: *See—*
Rumreich, Mark F.; and Parker, Robert P., 5,005,201, Cl. 381-24.000.

Parrette, Kim S.: *See—*
Roach, John E.; and Parrette, Kim S., 5,003,907, Cl. 114-221.00R.

Parris, Michael. Roll-type toilet tissue having hemorrhoid-treating medication therein. 5,004,636, Cl. 428-43.000.

Parschat, Lothar: *See—*
Pleschiutschnigg, Fritz-Peter; Parschat, Lothar; Franzen, Hans U.; Pfluger, Manfred; and Glaser, Josef, 5,004,040, Cl. 164-453.000.

Parsons, Gerald J.; Greenwald, Brian D.; McGrath, John J.; and Andrasko, Stephen W., to Communications Test Design, Inc. Method and apparatus as for testing a telephone line interface card. 5,005,197, Cl. 379-21.000.

Pasternak, Mordechai; Bartels, Craig R.; and Reale, John, Jr., to Texaco Inc. Process for pervaporization using membrane separating means. 5,004,861, Cl. 585-818.000.

Pastorius, Walter J.: *See—*
Pryor, Timothy R.; Hageniers, Omer L.; Pastorius, Walter J.; Liptay-Wagner, Nicholas; and Clarke, Donald A., 5,004,339, Cl. 356-241.000.

Patel, Ambelal R.: *See—*
Cortolano, Frank P.; Seltzer, Raymond; and Patel, Ambelal R., 5,004,770, Cl. 524-99.000.

Paton, Anthony D.: *See—*
Bartky, W. Scott; Paton, Anthony D.; Temple, Stephen; and Michaelis, A. John, 5,003,679, Cl. 29-25.350.

Patronis, Eugene T. Cinema sound system for unperforated screens. 5,004,067, Cl. 181-188.000.

Patsch, Manfred: *See—*
Pandl, Klaus; and Patsch, Manfred, 5,004,807, Cl. 534-618.000.

Patterson, E. Ennalls. Carton handling device. 5,004,145, Cl. 229-117.260.

Patton, Robert T.; Vaughn, Walter L.; and McKeand, Thomas J., Jr., to Dow Chemical Company, The. Biocidal foams. 5,004,760, Cl. 521-149.000.

Paul, James L.: *See—*
Broussard, Jerry A.; Auerbach, Andrew B.; Yang, Nan L.; Paul, James L.; Zheng, Yong C.; and Zhang, Chong L., 5,004,798, Cl 528-230.000.

Paul, Marius A. Gas turbine engine. 5,003,766, Cl. 60-39.150.

Pauley, Gary T.: *See—*
Bobst, Albert M.; and Pauley, Gary T., 5,004,809, Cl. 536-29.000.

Pauwels, Robert S.: *See—*
Vermeulen, Leon L.; Pauwels, Robert S.; De Smedt, Willy P.; and Vervloet, Ludovicus H., 5,004,659, Cl. 430-14.000.

Pavel, Andreas. High fidelity stereophonic reproduction system. 5,005,202, Cl. 381-25.000.

Pawlikowski, Joseph M.: *See—*
McKee, Michael J.; Miknis, William D.; Pawlikowski, Joseph M.; and Zelko, William E., 5,004,887, Cl. 219-85.160.

Peabody, Alan M.; Anderson, Olin S., Jr.; and Morton, Henry H. Continuous cyclic peritoneal dialysis system and method. 5,004,459, Cl. 604-29.000.

Pearson, Jeffery L.: *See—*
Miller, Gregory A.; Pearson, Jeffery L.; and Horsch, John D., 5,004,266, Cl. 280-743.000.

Pedersen, Helge L. Cover for a load-carrying space, preferably for vehicles. 5,004,032, Cl. 160-84.100.

Pedersen, Thor: *See—*
Aune, Jan A.; and Pedersen, Thor, 5,004,496, Cl. 75-10.280.

Pedley, Derek G.: *See—*
Webb, Brian C.; Pedley, Derek G.; Prosser, Stephen J.; Hijikigawa, Masaya; and Furubayashi, Hisatoshi, 5,004,700, Cl. 437-42.000.

Pelt & Hooykas B.V.: *See—*
Hooykaas, Carel W. J., 5,004,357, Cl. 384-121.000.

Pelt, J. Eugene, to Spade leasing, Inc. Stepped top fluid storage tank. 5,004,269, Cl. 280-837.000.

Penczak, John P., to Butler Manufacturing Company. Side rail for trenchduct. 5,003,737, Cl. 52-126.200.

Peppers, Norman A., to SRI International. Beam scanning method and apparatus. 5,004,311, Cl. 350-6.900.

Percec, Elena S.; and Takigawa, Doreen Y., to Standard Oil Company, The. Blends of high nitrile copolymers and thermoplastic polymers. 5,004,783, Cl. 525-77.000.

Perlman, Stephen G.; Okun, Jerome M.; Palevich, John H.; and Lundblad, James A., to Apple Computer, Inc. Vertical filtering apparatus for raster scanned display. 5,005,011, Cl. 340-728.000.

Perlman, Stuart S., to RCA Licensing Corporation Adaptive multi-standard video comb filter. 5,005,074, Cl. 358-31.000.

Perna, Barbara G.: *See—*
Lipscomb, Dennis E.; Wilhelm, Gary L.; Perna, Barbara G.; and Guenthner, Waldemar G., 5,003,695, Cl. 30-193.000.

Perry Equipment Corporation: *See—*
Perry, Scott G., 5,004,282, Cl. 294-16.000.

Perry, Scott G., to Perry Equipment Corporation. Useful improvements in utility street cover removal tools and methods. 5,004,282, Cl. 294-16.000.

Perryman, James D.; and Green, John M. Method and apparatus for the prevention of fast-forwarding of a video cassette tape. 5,005,099, Cl. 360-132.000.

Peterson, Bruce R.: *See—*
Thanos, William N.; Peterson, Bruce R.; Moon, William G.; Lindsay, Joshua; and Stone, Thomas R., 5,005,089, Cl. 360-77.080.

Peterson, James H. Clothing including insect repellent strips. 5,003,635, Cl. 2-69.000.

Petoca Ltd.: *See—*
Tamura, Tatsuya; and Takamatsu, Akio, 5,004,511, Cl. 156-89.000.

Petri, Horst; and Monig, Michael, to Dr. Ing h.c.F. Porsche Aktiengesellschaft. Air-conditioning system for a vehicle. 5,003,785, Cl. 62-131.000.

Petri, William A., Jr.: *See—*
Ravdin, Jonathan I.; and Petri, William A., Jr., 5,004,608, Cl. 424-88.000.

Petzold, Rainer; Fritz, Walter; and Wiencek, Norbert, to Zahnradfabrik Friedrichshafen AG. Clutch assembly for a motor vehicle. 5,004,086, Cl. 192-85.00C.

Pezzoli, Paul A.: *See—*
Osip, Thomas W.; Montgomery, Jerold W.; and Pezzoli, Paul A., 5,004,110, Cl. 215-232.000.

Pfaff, Susan E.: *See—*
Terrell, John; Kadis, Paul M.; Hiney, Leonard L.; and Pfaff, Susan E., 5,003,807, Cl. 72-351.000.

Pflaum, Hermann; and Strehler, Richard, to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co. Apparatus and a method for testing of synchronizing systems. 5,003,817, Cl. 73-118.100.

Pfluger, Manfred: *See—*
Pleschiutschnigg, Fritz-Peter; Parschat, Lothar; Franzen, Hans U.; Pfluger, Manfred; and Glaser, Josef, 5,004,040, Cl. 164-453.000.

Phaff, Rox; and Bedekovic, Davor, to Ciba-Geigy Corporation. Chromogenic phthalides and azaphthalides. 5,004,813, Cl. 548-463.000.

Phares Pharmaceutical Research NV *See—*
Leigh, Steven, 5,004,611, Cl. 424-450.000.

Phelps-Tointou, Inc.: *See—*
Bublewicz, Leszek, 5,003,800, Cl. 70-264.000.

Philippe, Michel; and Sebag, Henri, to Societe Anonyme Dite: L'Oreal Aromatic esters of macrolidic and lincosamidic antibiotics and pharmaceutical and cosmetic compositions containing them. 5,004,729, Cl 514-29.000.

Philippe, Michel; and Sebag, Henri, to L'Oreal. Polycyclic aromatic esters of macrolidic and lincosamidic antibiotics and pharmaceutical and cosmetic compositions containing them. 5,004,730, Cl 514-029.000.

Philippe, Michel; and Sebag, Henri, to Societe Anonyme Dite: L'Oreal. Unsaturated cycloaliphatic esters of macrolidic and lincosamidic antibiotics and pharmaceutical and cosmetic compositions containing them. 5,004,731, Cl. 514-29.000.

Philippe, Michel; and Sebag, Henri, to Societe Anonyme Dite: L'Oreal. Polyaromatic esters of macrolidic and lincosamidic antibiotics and pharmaceutical and cosmetic compositions containing them 5,004,732, Cl. 514-29.000.

Philippe, Michel; and Sebag, Henri, to Societe Anonyme Dite: L'Oreal Esters of the etretinic type or related to macrolidic and lincosamidic antibiotics and pharmaceutical and cosmetic compositions containing said esters. 5,004,733, Cl. 514-029.000.

Philippe, Michel; and Sebag, Henri, to Societe Anonyme Dite: L'Oreal Diaromatic esters of macrolidic and lincosamidic antibiotics and pharmaceutical and cosmetic compositions containing them. 5,004,734, Cl. 514-29.000.

Phillips, Donnie C. Device for holding chalk for application to tips of pool cues. 5,004,233, Cl. 273-21.000.

Phillips, Gerald W.: *See—*
Devon, Thomas J.; Phillips, Gerald W.; Puckette, Thomas A.; Stavinoha, Jerome L.; and Vanderbilt, Jeffrey J., 5,004,823, Cl. 556-136.000.

Phillips Petroleum Company: *See—*
Craig, William S.; and Siegel, Robert S., 5,004,688, Cl. 435-69.300

Phipps, John P. *See—*
Robb, Stephen P.; Phipps, John P.; and Gadberry, Michael D., 5,005,061, Cl. 357-23.130.

Phyb U.S.A., Inc.: *See—*
Kalantar, S. Javad, 5,004,473, Cl. 606-234.000.

Piatt, Richard. Greeting card system. 5,004,271, Cl. 283-65.000.

Picaut, Guy: *See—*
Antoine, Michel; Barreau, Michel; Desconclois, Jean-Francois; Girard, Philippe; and Picaut, Guy, 5,004,745, Cl. 514-254.000

Piccone, Dante E.; McIntyre, James E., deceased (by McIntyre, Anna M., executrix); and Major, Leroy B., to General Electric Company. High current gate turn-off thyristor. 5,005,065, Cl. 357-38.000.

Pich, Rene: *See—*
Thompson, Barry A., 5,004,603, Cl. 424-81.000.

Pickens, Donald: *See—*
Harnish, Daniel F.; Pickens, Donald; and Zweig, Andrew M., 5,004,790, Cl. 526-242.000.

Pico Electronics Limited: *See—*
Thompson, David R., 5,005,187, Cl. 375-94.000.

Pierrat, Michel. Variable positive fluid displacement apparatus with movable chambers. 5,004,404, Cl. 917-53.000.

Piezo Crystal Company: *See—*
Hurley, Leslie C., 5,004,987, Cl. 331-70.000.

Pilkington plc: *See—*
Dickinson, Clive F., 5,004,706, Cl. 501-27.000.

Pinard, Michel M. E.: *See—*
Grynberg, Gilbert; Pinard, Michel M. E.; and Faucheux, Marc A. F., 5,004,341, Cl. 356-350.000.

Pineau, Jean-Pierre: *See—*
Frehaut, Jean-Pierre; and Pineau, Jean-Pierre, 5,003,882, Cl 102-387.000.

Pinto, Alwyn, to Imperial Chemical Industries PLC. Steam reforming process. 5,004,592, Cl. 423-652.000.

Pioneer Electronic Corporation: *See—*
Kanda, Masao, 5,005,080, Cl. 358-160.000.

Piskunen, Raimo A. T.: *See—*
Kankkunen, Lauri P. A.; Piskunen, Raimo A. T.; and Rantala, Borje T., 5,003,981, Cl. 128-677.000.

Pitman-Moore, Inc.: *See—*
Mehrotra, Vikram P.; and Barker, Ray E., 5,004,488, Cl. 65-18.200.

Pitney Bowes Inc.: *See—*
Connell, Richard A.; Keating, Raymond; Sansone, Ronald P.; and Schumacher, Karl H., 5,005,124, Cl. 364-401.000.
Cordery, Robert A., 5,005,001, Cl. 340-551.000.

Pittman, Debra: *See—*
Kaufman, Randal J.; and Pittman, Debra, 5,004,803, Cl. 530-383.000.

Pizzacar, Anthony. Advertising cap nameplate. 5,003,640, Cl. 2-199.000.

Pleschiutschnigg, Fritz-Peter; Parschat, Lothar; Franzen, Hans U.; Pfluger, Manfred; and Glaser, Josef, to Mannesmann Aktiengesellschaft. Method of continuous casting. 5,004,040, Cl 164-453.000.

Pluskal, Malcolm G.; Wang, David; and Steuck, Michael J., to Millipore Corporation Charge-modified hydrophobic membrane materials and method for making the same 5,004,543, Cl. 210-490.000.

Pneumo Abex Corporation *See—*
Vanderlaan, Robert D., 5,004,940, Cl 310-36.000

Podola, Tore: *See—*
Emmerling, Winfried; Wichelhaus, Juergen; and Podola, Tore, 5,004,794, Cl. 528-52.000
Loth, Helmut; Helpenstein, Klaus; Podola, Tore; and Knop, Bernhard, 5,004,769, Cl. 524-43.000

Polski, Stephen P., to Minnesota Mining and Manufacturing Company Process of making zone adhesive/release coated tape. 5,004,630, Cl. 427-208.800

Pool, Kenneth D., Jr.: *See—*
Finitzo, Terese; and Pool, Kenneth D., Jr., 5,003,986, Cl. 128-731.000

Popper, Peter *See—*
Hallam, Donald E.; Popper, Peter; Staunton, Harold F.; Taylor, Robert E.; and Yngve, Paul W., 5,003,763, Cl 57-297.000.

Porritt, John, and Scott, Hugh, to Meta-Probe Inc Vibratory core drill apparatus for the recovery of soil or sediment core samples. 5,004,055, Cl 175-20.000

Porteous, Paul D. Dental instrument mat 5,004,418, Cl. 433-77.000.

Portescap: *See—*
Oudet, Claude; Drey, Gilbert; and Veignat, Norbert, 5,003,686, Cl 29-596.000.

Pospisil, Joseph, to Teleflex Incorporated Cable routing end fitting assembly. 5,003,838, Cl 74-502.400

Post, Karl G. Y. *See—*
Hessman, Ingemar, Post, Karl G. Y., and Norgren, Lars E., 5,004,380, Cl 407-114.000

Powers, Scott Leg stretching apparatus 5,004,228, Cl 272-125.000

Poynter, Timothy M. Article dispensing package. 5,004,122, Cl 221-155.000

Pozzobon, Alessandro, to Nordica S.p.A. Ski boot 5,003,710, Cl 36-117.000

PPG Industries, Inc.: *See—*
Sherby, James E., 5,003,729, Cl 51-283.00R

PPM Pure Metals GmbH *See—*
Hofmann, Hartmut, 5,004,821, Cl 556-70.000

Prasad, Ravi *See—*
Haas, Oscar W.; Prasad, Ravi, and Smolarek, James, 5,004,482, Cl 55-16.000

Prasse, Karl-Heinz, to Siemens Aktiengesellschaft. Circuit for determining power of received light having superimposition of low frequency current. 5,004,907, Cl. 250-214.0AG

Precision Interconnect Corporation *See—*
Cabourne, Michael K., 5,004,438, Cl. 439-825.000

Preisner, Peter M. *See—*
Hinzmann, Alfred, Shu, Timour T.; Drewnowski, Wojciech S.; and Preisner, Peter M., 5,004,467, Cl 604-904.000.

Presswood, J. Kenneth; and O'Quinn, Alethea H., to Ethyl Corporation. Polyimides for mold release 5,004,627, Cl 427-133.000

Prestel, James F.: *See—*
Weglarz, Michael W.; Vincent, Michael T.; Prestel, James F.; and Sisoler, Paul G., 5,003,952, Cl. 123-478.000
Weglarz, Michael W.; Vincent, Michael T.; Prestel, James F.; and Sisoler, Paul G., 5,003,953, Cl 123-478.000.

Prevail, Inc *See—*
Haskin, Marvin E., 5,005,126, Cl 364-413.130.

Previato, Mario, Barbieri, Silvio, and Martucci, Roberto, to Molex Incorporated. Reinforced connector latch 5,004,431, Cl. 439-358.000

Prevorsek, Dusan C. *See—*
Das, Sajal, and Prevorsek, Dusan C., 5,004,788, Cl 525-504.000.

Prevost, Michel *See—*
Elleaume, Philippe; and Prevost, Michel, 5,005,149, Cl. 364-728.010.

Price Brothers Company: *See—*
Baas, Kevin R., 5,004,274, Cl. 285-288.000

Price, Carolyn R., legal representative *See—*
Keller, Teddy M.; and Price, Thomas R., deceased, 5,004,801, Cl. 528-360.000.

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Keller, Teddy M.; and Price, Thomas R., deceased, 5,004,801, Cl. 528-360.000.

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Lanser, Mike L.; and Elenbaas, Tony J., 5,004,289, Cl. 296-97.120.

Pristash, David J.; and Parker, Jeffery R., to Lumitex, Inc. Thin panel illuminator. 5,005,108, Cl. 362-31.000.

Privalov, Nikolai T. *See—*
Juschenko, Konstantin A.; Varenchuk, Pavel A.; Kovalev, Valentin D.; Chvertko, Anatoly I.; Privalov, Nikolai T.; and Kuzmenko, Vladimir G., 5,004,885, Cl. 219-73.200.

Priwitzer, Gunther *See—*
Muller, Erich R.; Priwitzer, Gunther; and Martin, Felix, 5,003,834, Cl. 74-339.000.

Procter & Gamble Company, The *See—*
Majeti, Satyanarayana; Guay, Christopher B.; and Crisanti, Mark M., 5,004,597, Cl. 424-52.000.

Proctor & Gamble Company: *See—*
Howe, David J., 5,004,121, Cl. 220-458.000

Proksa, Roland; Roschmann, Peter; and van den Berg, Noel J. M., to U.S. Philips Corporation. Circuit arrangement for generating rf signals for MR examinations 5,004,983, Cl 324-322.000.

Pronova AB *See—*
Berg, Sven-Olof; Broden, Ingemar; and Johansen, Odvar, 5,004,395, Cl. 414-412.000.

Propellex: *See—*
Jones, Ronald G., 5,003,879, Cl 102-204.000

Propper, Robert H. Oral endosteal implants and a process for preparing and implanting them. 5,004,422, Cl 433-175.000

Prosser, Stephen J.: *See—*
Webb, Brian C., Pedley, Derek G., Prosser, Stephen J., Hijikigawa, Masaya, and Furubayashi, Hisatoshi, 5,004,700, Cl. 437-42.000.

Protection Protection, Inc.: *See—*
Blumstock, Judith E.; and Morgan, Leslie P., 5,004,106, Cl. 206-581.000.

Protein Design Labs, Inc.: *See—*
Tso, J. Yun; and Queen, Cary L., 5,004,692, Cl. 435-183.000

Provence, Marc; and Graillat, Gerard, to Salomon S.A. Front binding for cross-country ski boot. 5,004,262, Cl 280-615.000

Prum, Sebastian, to Albert-Frankenthal AG Folding apparatus with improved web transport. 5,004,451, Cl 493-359.000

Pryor, Timothy R.; Hageniers, Omer L.; Pastorius, Walter J.; Liptay-Wagner, Nicholas; and Clarke, Donald A., to Diffracto Ltd Method and apparatus for determining physical characteristics of objects and object surfaces 5,004,339, Cl 356-241.000

Puckette, Thomas A.: *See—*
Devon, Thomas J.; Phillips, Gerald W.; Puckette, Thomas A.; Stavinoha, Jerome L.; and Vanderbilt, Jeffrey J., 5,004,823, Cl 556-136.000.

Puetz, Peter A.: *See—*
Marino, Joseph A.; Makhija, Surender K.; Taghikhani, Majid, and Puetz, Peter A., 5,004,979, Cl 324-160.000

Pugach, Joseph; and Salek, Jeffrey S., to Aristech Chemical Corporation. Preparation of unsaturated ketones from acetone and paraformaldehyde (II). 5,004,839, Cl 568-390.000.

Pughese, Joseph S.; and Garman, Charles L., to Brodart Co Method of making protective book coverings. 5,004,514, Cl. 156-251.000

Pulman, David A. *See—*
Elliott, Michael; Janes, Norman F.; and Pulman, David A., 5,004,822, Cl 556-115.000

Purcell, Alexander M., to Summagraphics Corporation. Digitizer stylus having side switch 5,004,871, Cl 178-18.000

Purser, Brian. Crushing apparatus. 5,004,168, Cl. 241-101.700

Quantel, S.A.: *See—*
Grynberg, Gilbert; Pinard, Michel M. E.; and Faucheux, Marc A. F., 5,004,341, Cl. 356-350.000

Quantum Corp.: *See—*
Thanos, William N.; Peterson, Bruce R.; Moon, William G.; Lindsay, Joshua; and Stone, Thomas R., 5,005,089, Cl. 360-77.080

Queen, Cary L.: *See—*
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Queille, Philippe: *See—*
Rotman, Frederic; Rancon, Yannick; Queille, Philippe; and Olivier, Michel, 5,004,489, Cl 65-32.200

Quenneville, Raymond N.: *See—*
DeConti, John P.; and Quenneville, Raymond N., 5,003,829, Cl 73-862.120.

Quinnell, Geoffrey C., to Marley Tile A.G Roof verge system. 5,003,732, Cl. 52-94.000.

Radcliff, Ruth. Door latch holder. 5,004,279, Cl 292-288.000.

Radebaugh, Galen W.; Murtha, John L.; and Glinecke, Robert, to McNeil-PPC, Inc. Oral sustained release pharmaceutical formulation and process. 5,004,613, Cl. 424-465.000

Radjy, Nader A.; and Briner, Michael S., to Advanced Micro Devices, Inc Optimized electrically erasable PLA cell for minimum read disturb. 5,005,155, Cl. 365-185.000.

Raduechel, Bernd; Skuballa, Werner; Vorbrueggen, Helmut; Loge, Olaf; and Schilliner, Ekkehard, to Schering Aktiengesellschaft Novel 9-haloprostaglandins, processes for their preparation, and their use as medicinal agents. 5,004,752, Cl. 514-530.000.

Ragland, William L.; and Elfaki, Mohamed G., to University of Georgia Research Foundation, Inc. Method of immunizing poultry. 5,004,607, Cl. 424-88.000.

RAI Radiotelevisione Italiana S.p.A.: *See—*
Stroppina, Mario; and Ronchetti, Luigi, 5,005,076, Cl. 358-135.000

Raman, Krishna P.: *See—*
Cherukuri, Subraman R.; Chau, Tommy L.; Raman, Krishna P.; and Orama, Angel M., 5,004,595, Cl 424-48.000

Rameshk, Sohrab S.: *See—*
Becker, Thomas P.; Rameshk, Sohrab S.; and Crass, Matthew M., 5,004,984, Cl. 324-402.000

Ramshaw, Colin, to Imperial Chemical Industries PLC Process for effecting electrochemical reaction 5,004,526, Cl 204-73.00A.

Ramtron Corporation. *See—*
Larson, William L., 5,005,102, Cl. 361-313.000.

Ramzan, Chaudhary M. Non-irritating detackifying composition. 5,004,502, Cl. 106-287.130.

Rancon, Yannick: *See—*
Rotman, Frederic; Rancon, Yannick; Queille, Philippe; and Olivier, Michel, 5,004,489, Cl 65-32.200

Randall, Ovid. Shock cord and cover assembly 5,003,672, Cl 24-300.000.

Rantala, Borje T.: *See—*
Kankkunen, Lauri P. A.; Piskunen, Raimo A. T.; and Rantala, Borje T., 5,003,981, Cl. 128-677.000.

Rapp, Robert A. *See—*
Claar, Terry D., Johnson, William B., and Rapp, Robert A., 5,004,714, Cl. 501-134.000.

Rastetter, William H. *See—*
Light, David R., and Rastetter, William H., 5,004,690, Cl. 435-138.000.

Ratcliff, Kenneth W. Electronic control for a fluid system. 5,005,006, Cl. 340-611.000.

Rath, Hans P. *See—*
Vogel, Hans-Henning, Rath, Hans P., Jakob, Claus P., and Oppenlaender, Knut, 5,004,478, Cl. 44-398.000.

Rau, Gunnar *See—*
Glunz, Wolfgang; and Rau, Gunnar, 5,003,889, Cl. 101-228.000.

Raudys, Vytas A. *See—*
Stall, Alan D., and Raudys, Vytas A., 5,003,666, Cl. 452-21.000.

Ravdin, Jonathan I., and Petri, William A., Jr., to University of Virginia Alumni Patents Foundation, The. Amebiasis vaccine. 5,004,608, Cl. 424-88.000.

Raver, Norman *See—*
Jackson, Kenneth P., and Raver, Norman, 5,004,317, Cl. 350-96.200.

Raychem Corporation *See—*
Tucker, Donald L., 5,004,432, Cl. 439-417.000.

Rayman, Gerard A. Device for testing fluids. 5,004,584, Cl. 422-58.000.

Rayner, Ernest. Fence dropper. 5,004,211, Cl. 256-47.000.

Raynor, Peter H. Collapsible hatch screen. 5,003,905, Cl. 114-201.00R.

Raytheon Company. *See—*
Borglum, Brian P., 5,004,712, Cl. 501-126.000.
Bowen, Robert F., Dudley, Kenneth W., and Maiellano, Joseph C., Jr., 5,004,617, Cl. 426-233.000.
Deaett, Michael A., 5,005,204, Cl. 381-51.000.
Dorschner, Terry A., and Smith, Irl W., 5,004,343, Cl. 356-350.000.

RCA Licensing Corporation. *See—*
Perlman, Stuart S., 5,005,074, Cl. 358-31.000.
Rumreich, Mark F., and Parker, Robert P., 5,005,201, Cl. 381-24.000.

Reale, John, Jr. *See—*
Pasternak, Mordechai, Bartels, Craig R., and Reale, John, Jr., 5,004,861, Cl. 585-818.000.

Reale, Serge, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Joule-Thomson cooler. 5,003,783, Cl. 62-51.200.

Redington, Clarence P. *See—*
Kester, Jervis D., and Redington, Clarence P., 5,003,771, Cl. 60-243.000.

Reece Construction Company, Inc. *See—*
Kohls, Dennis E., and Moser, Francis M., 5,004,799, Cl. 528-389.000.

ReFalo, John, III. *See—*
Connors, Peter J., Scully, Sean, Bria, Frank, and ReFalo, John, III, 5,004,103, Cl. 206-372.000.

Regitar Power Tools Co., Ltd. *See—*
Sheen, Dony, 5,004,054, Cl. 173-12.000.

Regnier, Kent E. *See—*
Yagi, Masanori, DiVicsti, Anthony M., Regnier, Kent E., Yamada, Shoji E., and Walse, Alan S., 5,004,429, Cl. 439-326.000.

Reil, Wilhelm, to Tetra Pak Holdings & Finance S.A. Apparatus for the integral moulding of a synthetic plastics part. 5,004,411, Cl. 425-117.000.

Reilly, Michael *See—*
Griffin, David; Campbell, Jonathan, Reilly, Michael, and Rosenbaum, Richard, 5,005,122, Cl. 364-200.000.

Reindel, John, to United States of America, Navy. Constricted split block waveguide low pass filter with printed circuit filter substrate. 5,004,993, Cl. 333-208.000.

Reinshaw plc *See—*
Chaney, Raymond J., McMurtry, David R., and Wilson, David, 5,004,982, Cl. 324-207.220.

Reinz-Dichtunga-Gesellschaft mbH. *See—*
Grosch, Peter, Haas, Gerhard, and Kremer, Ingo, 5,004,249, Cl. 277-207.00R.

Remcon Plastics, Inc.. *See—*
Connors, Peter J., Scully, Sean, Bria, Frank, and ReFalo, John, III, 5,004,103, Cl. 206-372.000.

Remet Corporation *See—*
Feagin, Roy C., 5,004,039, Cl. 164-361.000.

Research Foundation of State University of New York, The *See—*
Erichsen, Jonathan T., Evinger, Craig, and Karten, Harvey J., 5,004,683, Cl. 435-7.210.

Retelsdorf, Hans-Joachim *See—*
Born, Dieter; Knauf, Peter, and Retelsdorf, Hans-Joachim, 5,004,886, Cl. 219-76.140.

Reuchlein, Gunter *See—*
Erber, Anton; Hoff, Heinz, Reuchlein, Gunter, Schaaf, Hanno, and Schiessl, Gerhard, 5,003,778, Cl. 60-517.000.

Reyes, Erenio *See—*
Bifano, Gabriel F., and Reyes, Erenio, 5,003,743, Cl. 52-282.000.

Rezmer, Leonard D., Kaczmarczyk, John R., Kaczmarczyk, Gerald R., and Kaczmarczyk, Donald J. Sealable funnel for measurement and spill prevention. 5,004,024, Cl. 141-298.000.

Rheinmetall GmbH *See—*
Pahnke, Klaus-Dieter; Holl, Rolf; and Becker, Wilfried, 5,003,886, Cl. 102-521.000.

Rhoads, Geoffrey B. *See—*
Falk, Timothy L., and Rhoads, Geoffrey B., 5,005,145, Cl. 364-571.020.

Rhone-Poulenc Chimie *See—*
Feder, Michel, and Frances, Jean-Marc, 5,004,771, Cl. 524-161.000.

Ricci, Russell L. Car ventilator. 5,003,866, Cl. 98-2.020.

Rice, Richard W., to Sundstrand Corporation. Noncontact rotating liquid film thickness sensor. 5,003,823, Cl. 73-293.000.

Ricerche Biomediche S.r.l. *See—*
Palmieri, Beniamino, and Garlati, Rodolfo, 5,004,469, Cl. 606-139.000.

Richalley, Gerard, and Burtin, Jacques, to Hospal Industrie. Method and apparatus for rinsing and priming an exchanger. 5,004,548, Cl. 210-646.000.

Richard, Herve, Leduc, Madeleine; Forestier, Serge, and Lang, Gerard, to L'Oreal. Benzylidenecamphor sulphonamides derived from amino acids and their application in cosmetics, particularly as sunscreens. 5,004,594, Cl. 424-47.000.

Richards, Robert M., to Richards, Robert M. Blocking device for latch mechanism. 5,003,803, Cl. 70-416.000.

Richardson, William T., to Northrop Corporation. Flight helmet with headset. 5,003,631, Cl. 2-6.000.

Richeson, William E., Jr. *See—*
Erickson, Frederick L., and Richeson, William E., Jr., 5,003,938, Cl. 123-90.140.

Richichi, Paul *See—*
Richichi, Thomas, and Richichi, Paul, 5,004,128, Cl. 222-527.000.

Richichi, Thomas, and Richichi, Paul. Flexi-nozzle. 5,004,128, Cl. 222-527.000.

Richter Gedeon Vegyeszeti Gyar R.T. *See—*
Jekkel nee Bokany, Antonia, Albrecht, Karoly, Ambrus, Gabor Lang, Tibor, Szabo, Istvan M., Ilkoy, Eva, Konczol, Kalman, Moravcsik, Imre, Hantos, Gabor; Simonovits, Emilia, Lengyel nee Szemenyei, Zsuzsanna, Vida, Zsuzsanna, and Csajagi, Eva, 5,004,695, Cl. 435-253.100.

Ricoh Company, Ltd. *See—*
Yagawara, Shinji, Manaka, Junji, and Ohta, Wasaburo, 5,003,812, Cl. 73-31.060.

Riddell, David *See—*
Ashton, Michael J., Bridge, Andrew W., Chambers, Robert K., Dron, Donald I., Fenton, Garry, Harris, Neil V., Lythgoe, David J., McFarlane, Ian M., Newton, Christopher G., Riddell, David, Smith, Christopher, Stuttle, Keith A. J., and Toft, Malcolm P., 5,004,747, Cl. 514-309.000.

Rieter Machine Works, Ltd. *See—*
Meyer, Urs, 5,003,668, Cl. 19-0.220.

Rikio Co., Ltd. *See—*
Okayasu, Kenji, and Okayasu, Hideo, 5,003,709, Cl. 36-107.000.

Ringel, Konrad *See—*
Rudolf, Karl, and Ringel, Konrad, 5,003,885, Cl. 102-494.000.

Rink, Hans, to Ciba-Geigy Corporation. Synthetic polystyrene resin and its use in solid phase peptide synthesis. 5,004,781, Cl. 525-54.110.

Riordan, Dennis E. Kit containing components for an alarm screen assembly. 5,005,000, Cl. 340-550.000.

Rist, Dieter *See—*
Kappler, Guenter, and Rist, Dieter, 5,003,768, Cl. 60-39.230.

RIV-SKF Officine di Villar Perosa S.p.A. *See—*
Varvello, Angelo, Vignotto, Angelo, and Moretti, Roberto, 5,004,358, Cl. 384-446.000.

Rivero-Olmedo, Jose M. Meter box or meter yoke expansion mechanism. 5,003,821, Cl. 73-201.000.

RJ Lee Group, Inc. *See—*
Lee, Richard J., Smith, Barbara A.; Theys, Robert G., Theys, Robert A., and Murphy, Judy A., 5,004,920, Cl. 250-304.000.

Roach, John E., and Parrette, Kim S. Boat hook. 5,003,907, Cl. 114-221.00R.

Robb, Stephen P., Phipps, John P., and Gadberry, Michael D., to Motorola, Inc. Avalanche stress protected semiconductor device having variable input impedance. 5,005,061, Cl. 357-23.130.

Robb, Wendell E., and Hudson, William S. Foreign matter trap for shower drain. 5,003,642, Cl. 4-287.000.

Robbins, Alan K. *See—*
Enquist, Lynn W., Robbins, Alan K., and Whealy, Mary E., 5,004,693, Cl. 435-235.100.

Robbins, David L. Method and apparatus for slowly dispensing a solution for unclogging drains. 5,004,025, Cl. 141-364.000.

Robert Bosch GmbH *See—*
Vishnitsky, Alexander, 5,004,529, Cl. 204-212.000.

Roberts, John D. Fish food dispenser. 5,003,925, Cl. 119-51.040.

Roberts, John K., to K. W. Muth Company, Inc. Method and apparatus for multiple object viewing. 5,005,009, Cl. 340-705.000.

Roberts, Katherine P., Geiger, Jon R., and Carney, Jayne F., to Olin Corporation. Method and kit for detecting live microorganisms in chlorine- or bromine-treated water. 5,004,682, Cl. 435-6.000.

Roberts, Malcolm T. *See—*
Robins, Michael P., and Roberts, Malcolm T., 5,005,128, Cl. 364-424.020.

Robertson, Donald S., and Stinard, Philip S., to Iowa State University Research Foundation, Inc. Dominant amylose-extender mutant of maize. 5,004,864, Cl. 800-235.000.

Robins, Michael P., and Roberts, Malcolm T., to General Electric Company, p.l.c., The. Automated vehicle control. 5,005,128, Cl. 364-424.020.

Robinson, Hugh *See—*
Kleven, Lawrence P.; Agranat, Edward A.; Crisafulli, Jerry; Robinson, Hugh; Smith, David J., Wiseley, Thomas, Fortier, Richard C., Johnson, Severne, and Menzin, Marvin, 5,004,954, Cl. 315-106.000.

Robinson, James P.: *See—*
Hoodenpyle, James W.; Robinson, James P.; and Wright, John W., 5,003,818, Cl. 73-121.000.

Robinson, William O.: *See—*
Moote, Richard K.; Weber, Gregory T.; and Robinson, William O., 5,003,944, Cl. 123-299.000.

Rocke, Stephen C.: *See—*
Lee, Guo-shuh J.; Garces, Juan M.; Maj, Joseph J.; and Rocke, Stephen C., 5,004,841, Cl. 568-678.000.

Rockwell International Corporation *See—*
Brown, Donald G.; and Onufrak, Andrew F., 5,004,205, Cl. 248-476.000.
Hall, Randolph L.; and Johnson, Christopher D., 5,004,308, Cl. 350-1.700.

Rodgers, Colin, to Sundstrand Corporation. Gas turbine starter system with power augmentation. 5,003,767, Cl. 60-39.142.

Rodriguez, Stephen S.. *See—*
D'Ottavio, Eugene D.; Hawkins, Robert E.; Rodriguez, Stephen S.; and Rychwalski, James, 5,004,672, Cl. 430-314.000.

Rohm and Haas Company. *See—*
Hallden-Abberton, Michael P.; Bortnick, Newman M.; Cohen, Leslie A., Freed, William T.; and Fromuth, Harry C., 5,004,777, Cl. 524-433.000.

Rohrscheid, Freimund; Siegemund, Gunter; and Lau, Jurgen, to Hoechst Aktiengesellschaft. Partly fluorinated carboxylic acids and derivatives thereof, processes for their preparation and their use. 5,004,797, Cl. 528-206.000.

Romestad, Gerald C., and Straight, Michael R., to Ashworth Bros., Inc. Replaceable snap-on modular overlay for rod and link turn-curve conveyor belts. 5,004,097, Cl. 198-803.010.

Rollers, Dennis A. Compact sanitary toothbrush. 5,003,658, Cl. 15-185.000.

Rollier, Michel: *See—*
Gremaud, Henri, Gremaud, Martial, and Rollier, Michel, 5,004,930, Cl. 250-561.000.

Rolls-Royce plc *See—*
Cantwell, Hugh F., 5,003,769, Cl. 60-39.281.
England, David R., 5,004,528, Cl. 204-129.200.
Webster, John R., 5,004,059, Cl. 177-210.00R.

Roman, Thomas A.: *See—*
Berner, John M.; and Roman, Thomas A., 5,004,961, Cl. 318-65.000.

Ronchetti, Luigi. *See—*
Stroppina, Mario; and Ronchetti, Luigi, 5,005,076, Cl. 358-135.000.

Roobeek, Cornelis F. *See—*
Van Leeuwen, Petrus W. N. M.; and Roobeek, Cornelis F., 5,004,844, Cl. 568-880.000.

Roper, W. J.: *See—*
Mallard, Bobby J.; Knapp, Richard H., Roper, W. J., and Harrison, Daniel R., 5,004,071, Cl. 182-3.000.

Roschmann, Peter: *See—*
Proksa, Roland, Roschmann, Peter; and van den Berg, Noel J. M., 5,004,983, Cl. 324-322.000.

Rosen, Ake, to Svecia Antiqua Limited. Light-polarizing material in the form of sheets or of a web and a method for the manufacture of the material. 5,004,327, Cl. 350-398.000.

Rosen, Karl G. Crib with vibration attenuating means. 5,003,651, Cl. 5-109.000.

Rosenbaum, Richard: *See—*
Griffin, David, Campbell, Jonathan, Reilly, Michael; and Rosenbaum, Richard, 5,005,122, Cl. 364-200.000.

Rosendahl, Finn, Fjeld, Svein; Salama, Mamdouh M.; and Gillen, Michael P., to Norwegian Contracts A/S, and Conoco Inc. Method and means for cleansing and storing drill cuttings from drilling operations in the sea bottom. 5,004,051, Cl. 166-357.000.

Rosenfield, Gary C.: *See—*
Hans, Paul C.; and Rosenfield, Gary C., 5,004,186, Cl. 244-3.250.

Rosenthal, David S. *See—*
Hammerly, Jeffrey L., and Rosenthal, David S., 5,004,441, Cl. 446-211.000.

Ross, Ludwig; and Schumann, Werener, to Schott Glaswerke. Lightwave guide produced from special substrate glasses by ion exchange against CS^+ ions. 5,004,707, Cl. 501-37.000.

Roth, Roger R., to Honeywell Inc. Integrated power level control and on/off function circuit. 5,004,972, Cl. 323-320.000.

Rotman, Frederic; Rancon, Yannick, Queille, Philippe; and Olivier, Michel, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Process for producing a glass-metal connection. 5,004,489, Cl. 65-32.200.

Rousseau, Andre J. *See—*
Boulanger, Alain; and Rousseau, Andre J., 5,004,298, Cl. 299-5.000.

Roussel Uclaf. *See—*
Krief, Alain; and Dumont, Willy, 5,004,840, Cl. 568-486.000.

Rowell, Frances E. Portable resonating platform and T-bar for securing the endpin and enhancing the tone of a cello. 5,003,858, Cl. 84-280.000.

Roy, James P.; and Harris, James P. Radiator cap remover. 5,003,845, Cl. 81-3.400.

Ruane, George W. Salt truck. 5,004,164, Cl. 239-666.000.

Rudolf, Karl, and Ringel, Konrad, to Diehl GmbH & Co. Warhead for an airborne body. 5,003,885, Cl. 102-494.000.

Rudolph, Alan S.: *See—*
Schnur, Joel M., Rudolph, Alan S.; and Testoff, Mary A., 5,004,566, Cl. 260-403.000.

Ruetz, Peter A., to LSI Logic Corporation. Compensating time delay in filtering signals of multi-dimensional reconvigurable array processors. 5,005,120, Cl. 364-200.000.

Rufray, Jean C., and Guillon, Jean C., to Deutsche Thomson-Brandt GmbH. Demultiplexer for providing a color television signal having an increased image frequency. 5,005,073, Cl. 358-21.00R.

Rule Industries, Inc.. *See—*
Wilkinson, Bruce S., 5,003,910, Cl. 114-304.000.

Rumbaugh, James E.; and Daniel, Kenneth J., to General Electric Company. User interactive control of computer programs and corresponding versions of input/output data flow. 5,005,119, Cl. 364-200.000.

Rumpel, Manfred: *See—*
Oslapas, Algis; and Rumpel, Manfred, 5,004,063, Cl. 180-79.100.

Rumreich, Mark F.; and Parker, Robert P., to RCA Licensing Corporation. Apparatus and method thereof for improvement of stereophonic sound. 5,005,201, Cl. 381-24.000.

Rush, William B., II; Elder, Jack E.; Shier, Richard K.; Foss, Jerry B.; Haltiner, Karl J., Jr., and Wheeler, Grant M., to General Motors Corporation. Integrated induction system. 5,003,933, Cl. 123-52.0MC.

Russo, Thomas J., to Bethlehem Steel Corporation. Molten metal slide gate valve. 5,004,131, Cl. 222-600.000.

Rutgers University: *See—*
Burdea, Grigore C., 5,004,391, Cl. 414-6.000.

Rx Rocker Corporation: *See—*
Ayers, Robert C.; and Lee, Ted, 5,004,259, Cl. 280-304.100.

Ryan, Wayne L., to Streck Laboratories, Inc. Temperature measuring apparatus. 5,004,355, Cl. 374-194.000.

Rychwalski, James: *See—*
D'Ottavio, Eugene D., Hawkins, Robert E., Rodriguez, Stephen S.; and Rychwalski, James, 5,004,672, Cl. 430-314.000.

Ryser, Peter; and Strassler, Sigfrid, to Cerberus AG. Method of detecting fire in an early stage. 5,005,003, Cl. 340-587.000.

Saatkamp, James B.: *See—*
McMorries, Lee W., IV; and Saatkamp, James B., 5,004,042, Cl. 165-41.000.

Sachan Media Corporation: *See—*
Lee, Jaeduck, 5,004,175, Cl. 242-68.500.

Saeijs, Ronald W. J. J.: *See—*
Van Berkel, Cornelis H.; Saeijs, Ronald W. J. J.; and Niessen, Cornelius, 5,005,136, Cl. 364-490.000.

Saijo, Yasutsugu, Chiku, Kazuyoshi, and Onoda, Shigeyoshi, to Canon Kabushiki Kaisha. Transmissive original projecting apparatus. 5,004,336, Cl. 353-122.000.

St. Clair, Terry L.: *See—*
Johnston, Norman J.; St. Clair, Terry L., Baucom, Robert M., and Gleason, John R., 5,004,575, Cl. 264-136.000.

Saint-Gobain Vitrage: *See—*
Kawahara, Hideo, Sakata, Nobuhiro, Coulon, Jean-Claude; and Lovera, Patrick, 5,004,503, Cl. 106-287.180.

Saito, Hiroki: *See—*
Terai, Fumitaka; Yukawa, Kimio, Suyefuji, Mineo; Saito, Hiroki; and Yamaguchi, Shigeru, 5,004,628, Cl. 427-389.900.

Saito, Kenji: *See—*
Nishimura, Yukuo; Eguchi, Ken; Kawada, Haruki; Tomida, Yoshinori; Nakagiri, Takashi; Saito, Kenji, Kimura, Toshiaki, Matsuda, Hiroshi; Sakai, Kunihiro; and Miyazaki, Toshihiko, 5,004,671, Cl. 430-286.000.

Saito, Yoshio: *See—*
Miyata, Yukihide; Ishizaka, Hideo, Saito, Yoshio, and Koizumi, Takashi, 5,004,582, Cl. 422-56.000.

Sajo, Gabor. *See—*
Kinczel, Peter; Balazs, Laszlo, and Sajo, Gabor, 5,004,948, Cl. 313-486.000.

Saka, Kazuhito: *See—*
Iura, Kazuo; Tsuji, Kazunori, and Saka, Kazuhito, 5,003,761, Cl. 57-58.520.

Saka, Kenji, Terai, Masao, and Yamamoto, Kanji, to Kanebo, Ltd. Suction device. 5,003,966, Cl. 128-39.000.

Sakaguchi, Hiroaki: *See—*
Aramaki, Minoru, Suenaga, Takashi, Sakaguchi, Hiroaki, and Hamana, Takanori, 5,004,829, Cl. 562-113.000.

Sakaguchi, Shuichi; Yamaguchi, Tadamasa, and Yamashita, Itaru, to Kawasaki Steel Corporation. Method of submerged arc welding a thick steel plate with large heat input and submerged arc welding flux. 5,004,884, Cl. 219-73.000.

Sakai, Katsuyuki, to Sharp Kabushiki Kaisha. Thermal head separating mechanisms. 5,005,026, Cl. 346-76.0PH.

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Nishimura, Yukuo, Eguchi, Ken, Kawada, Haruki; Tomida, Yoshinori; Nakagiri, Takashi, Saito, Kenji, Kimura, Toshiaki, Matsuda, Hiroshi, Sakai, Kunihiro; and Miyazaki, Toshihiko, 5,004,671, Cl. 430-286.000.

Sakai, Shinji: *See—*
Fukushima, Nobuo; Sakai, Shinji, Takdea, Osamu, Takei, Masahiro, Suzuki, Yasutomo, Okino, Tadashi; and Jinnai, Shigeru, 5,005,088, Cl. 360-69.000.

Sakaida, Atsuo; Ikezaki, Yoshiyuki, Iriguchi, Akira; and Inose, Toshio, to Brother Kogyo Kabushiki Kaisha. Parallel four-link mechanism. 5,004,946, Cl. 310-328.000.

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Abe, Kunihiro; Sakamoto, Masanori; and Kobayashi, Tomoya, 5,005,129, Cl. 364-424.030.

Sakamoto, Noriaki; Maeda, Shigemi; Yamanaka, Toshihiro; Deguchi, Toshihisa; Horie, Nobuyuki; Yamaguchi, Takeshi; and Kojima, Kunio, to Sharp Kabushiki Kaisha Recording and reproducing apparatus 5,005,164, Cl. 369-48.000.

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Kawahara, Hideo; Sakata, Nobuhiro; Coulon, Jean-Claude; and Lovera, Patrick, 5,004,503, Cl. 106-287.180.

Sakata, Yasushi; and Iwamori, Toshimichi, to Fuji Xerox Co., Ltd. Semiconductor integrated circuit. 5,005,067, Cl. 357-54.000.

Sakaue, Kenji *See*—
Kano, Atsushi; Mizuno, Masayuki; Kajiwara, Manabu; Sakaue, Kenji; Abe, Yuji; and Nakamura, Kazuo, 5,004,217, Cl. 271-10.000.

Sakura Color Products Corporation: *See*—
Imagawa, Kiyotaka, 5,004,763, Cl. 523-161.000.

Salaba, Timothy A.; and Wilfong, Debra L., to Minnesota Mining & Manufacturing Company. Reaction injection molding machine 5,004,351, Cl. 366-152.000.

Salama, Mamdouh M. *See*—
Rosendahl, Finn; Fjeld, Svein; Salama, Mamdouh M.; and Gillen, Michael P., 5,004,051, Cl. 166-357.000.

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Pugach, Joseph; and Salek, Jeffrey S., 5,004,839, Cl. 568-390.000.

Salloum, James S., to Creative Techniques, Inc. Molded sectional reel 5,004,179, Cl. 242-118.600.

Salman, Naser N. *See*—
Azer, Samir N.; Salman, Naser N.; and Krause, William R., 5,003,969, Cl. 128-87.00R.

Salomon S.A. *See*—
Goud, Gilles R., 5,004,065, Cl. 280-605.000.
Nerrinck, Bernard; and Bonnet, Maurice, 5,003,711, Cl. 36-120.000.
Provence, Marc; and Graillat, Gerard, 5,004,262, Cl. 280-615.000.

Salzmann, Thomas N. *See*—
DiNinno, Frank P.; Greenlee, Mark L.; and Salzmann, Thomas N., 5,004,739, Cl. 514-210.000.
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Samad, Raphael; and Gillard, Clive H., to Sony Corporation. Motion dependent video signal processing. 5,005,077, Cl. 358-140.000.

Samata, Shuichi; and Matsushita, Yoshiaki, to Kabushiki Kaisha Toshiba. Preparation method of selective growth silicon layer doped with impurities. 5,004,702, Cl. 437-57.000.

Sample, Hugh D. *See*—
Hollowell, George E.; and Sample, Hugh D., 5,004,132, Cl. 223-1.000.

Sampson, Edward J., to Shiley Infusaid, Inc. Implantable device 5,004,458, Cl. 604-175.000.

Samsung Electron Devices Co., Ltd.: *See*—
Lee, Seung-Woo, 5,004,950, Cl. 313-582.000.

Samsung Electronics Co., Ltd. *See*—
Kwon, Oh-Hyun; Jang, Taek-Yong; Shin, Jung-Hyun; and Choi, Won-Taek, 5,005,103, Cl. 361-313.000.

Sanada, Kazunori; and Kawai, Jyoji, to Mitsubishi Denki Kabushiki Kaisha. Phase-locked loop circuit 5,005,141, Cl. 364-550.000.

Sandt, Hartley. Method of making a composite structural element 5,004,574, Cl. 264-101.000.

Sano, Eiichi *See*—
Ohtani, Junji; Anno, Masahiro; Sano, Eiichi; Machida, Junji; and Masuda, Fumio, 5,004,665, Cl. 430-106.600.

Sano, Hiroshi: *See*—
Yasuzawa, Toru; Nakanishi, Satoshi; Murakata, Chikara; Kase, Hiroshi; Sano, Hiroshi; and Yamada, Koji, 5,004,833, Cl. 536-18.200.

Sano, Hisanori: *See*—
Honda, Kazuo; Matsuura, Atsushi; and Sano, Hisanori, 5,004,951, Cl. 313-631.000.

Sano, Yasuro: *See*—
Hara, Kazumasa; Sano, Yasuro; Koike, Mikio; and Nishijima, Mitsuru, 5,003,896, Cl. 112-121.110.

Sanshin Kogyo Kabushiki Kaisha. *See*—
Onoue, Akihiro, 5,004,439, Cl. 440-2.000.

Sansone, Ronald P. *See*—
Connell, Richard A.; Keating, Raymond; Sansone, Ronald P.; and Schumacher, Karl H., 5,005,124, Cl. 364-401.000.

Santa Barbara Research Center. *See*—
Norton, Paul R.; Moroz, Michael; and Talley, Carol S., 5,004,698, Cl. 437-3.000.

Santrade Limited. *See*—
Hessman, Ingemar; Post, Karl G. Y.; and Norgren, Lars E., 5,004,380, Cl. 407-114.000.

Sanyo Electric Co., Ltd.: *See*—
Ohtuka, Nobuo; and Matsumoto, Kouichi, 5,005,113, Cl. 363-37.000.
Satomi, Hideo, 5,005,079, Cl. 358-158.000.

Sardano, Peter A.; and Kazmierczak, Irvin J., to Xerox Corporation. Retard feeder with pivotal nudger ski for reduced smudge. 5,004,218, Cl. 271-35.000.

Sargent & Greenleaf, Inc.: *See*—
Beatty, Scott M.; and Bishop, John R., 5,003,802, Cl. 70-333.00A.

Sarno, Felicisimo S.: *See*—
Koschak, Francis L.; and Sarno, Felicisimo S., 5,004,624, Cl. 426-623.000.

Sarno, Russell J., to Magic Plastics. Gate valve 5,004,210, Cl. 251-279.000.

Sasaki, Katsuro *See*—
Ikeda, Shuji; Sasaki, Katsuro; Nagasawa, Kouichi; and Meguro, Satoshi, 5,005,068, Cl. 357-59.000.

Sasaki, Kenichi, to Canon Kabushiki Kaisha. Magneto-optical information reproducing apparatus having a polarizing beam splitter disposed with an inclination of 45 degrees 5,004,326, Cl. 350-375.000.

Sasatani, Seiei: *See*—
Kim, Soonih; Takeda, Kazuhisa; and Sasatani, Seiei, 5,004,612, Cl. 424-450.000.

Sase, Toshitsugu; Matsuda, Michiaki; Yanagisawa, Kiyoshi; and Maeda, Mitsuru, to Ebara Corporation. Muffler 5,004,068, Cl. 181-276.000.

Sato, Hiroshi; Hirose, Kenichi; Nagai, Koichi; Yoshioka, Hiroshi; and Nagaoka, Yoshihiko, to Sumitomo Chemical Company, Ltd. Process for producing nitrobenzenes. 5,004,846, Cl. 568-940.000.

Sato, Kenichi *See*—
Shigenai, Osamu; and Sato, Kenichi, 5,005,092, Cl. 360-99.060.

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Hayashi, Minoru; Koban, Koichi; Sato, Kimiharu; and Kishimoto, Junichi, 5,004,586, Cl. 422-164.000.

Sato, Kiyoshi; Yoshikawa, Hirokazu; Ikenari, Shigeru; and Yokoyama, Kenichi, to Hitachi Maxell, Ltd. Flat type sealed battery with hermetic sealing structure 5,004,656, Cl. 429-162.000.

Sato, Koichi *See*—
Takahashi, Hiroto; Karita, Seiichiro; and Sato, Koichi, 5,005,024, Cl. 346-1.100.

Sato, Masayuki *See*—
Tomono, Makoto; Tarumi, Noriyoshi; and Sato, Masayuki, 5,004,666, Cl. 430-110.000.

Sato, Osamu; and Hirai, Isamu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Electric control camera 5,005,042, Cl. 354-412.000.

Sato, Shin *See*—
Yoneda, Tetsuya; and Sato, Shin, 5,004,657, Cl. 429-193.000.

Sato, Shuichi; and Kobayashi, Yoshiharu, to SSMC Inc. Feeding rate adjusting unit of a sewing machine 5,003,901, Cl. 112-316.000.

Sato, Teiji *See*—
Ogawa, Masahide; Sato, Teiji; Tanaka, Masanori; and Takahashi, Noriyuki, 5,004,716, Cl. 501-141.000.

Sato, Tsuyoshi; Inaba, Masahito; and Takata, Naoya, to Minolta Camera Kabushiki Kaisha. Lighting apparatus and color measuring apparatus using the same 5,004,349, Cl. 356-402.000.

Satoh, Susumu *See*—
Sunagawa, Masao; Kubota, Kazuhiro; Ishii, Yoshitaro; and Satoh, Susumu, 5,003,663, Cl. 15-366.000.

Satoh, Toshio; Niiro, Yasunori; Kakegawa, Hisao; and Matsumoto, Hitoshi, to Nippon Hypox Laboratories Incorporated. Benzothiazine-1,1-dioxide derivatives 5,004,742, Cl. 514-226.500.

Satoh, Yasuta; and Moriyama, Yasuyuki, to Takara Co., Ltd. Figure moving article 5,003,714, Cl. 40-414.000.

Satomi, Hideo, to Sanyo Electric Co., Ltd. Automatic frequency control circuit 5,005,079, Cl. 358-158.000.

Sauer-Sundstrand S.p.A. *See*—
Zanardi, Angelo; Mei, Daniele; and Toselli, Vittorio, 5,004,412, Cl. 418-132.000.

Saulas, Alain, to Mead Corporation, The. Multi-unit package particularly for parallelepiped cartons 5,004,104, Cl. 206-526.000.

Savant Instruments *See*—
Zlobinsky, Yury, 5,003,787, Cl. 62-185.000.

Savio S.p.A. *See*—
Colli, Luigi; Badiali, Roberto; and Marangone, Nereo, 5,004,171, Cl. 242-35.60R.

Sawada, Shizuo *See*—
Maeda, Satoshi; and Sawada, Shizuo, 5,004,704, Cl. 437-195.000.

Sawyer, Thomas F., to General Electric Company. Melt system for spray-forming. 5,004,153, Cl. 239-81.000.

Scaglia, Enzo. Automatic feeder and feeding method for textile machines 5,003,762, Cl. 57-281.000.

Scamans, Geoffrey M. *See*—
Hunter, John A.; Scamans, Geoffrey M.; O'Callaghan, Wilfred B.; and Wycliffe, Paul A., 5,004,654, Cl. 429-50.000.

Schaaf, Hanno: *See*—
Erber, Anton; Hoff, Heinz; Reuchlein, Gunter; Schaaf, Hanno; and Schiessl, Gerhard, 5,003,778, Cl. 60-517.000.

Schaap, Arthur P., to Board of Governors of Wayne State University, The. Method and compositions providing enhanced chemiluminescence from 1,2-dioxetanes. 5,004,565, Cl. 252-700.000.

Schadt, Martin: *See*—
Leenhouts, Frans; and Schadt, Martin, 5,004,324, Cl. 350-347.00R.

Schaefer, Dietmar *See*—
Koerner, Gotz; and Schaefer, Dietmar, 5,004,559, Cl. 252-345.000.

Schammel, Wayne P. *See*—
Park, Chang M.; and Schammel, Wayne P., 5,004,830, Cl. 562-413.000.

Schanin, David J., to Bayview Technology Group, Inc. Phase control switching circuit without zero crossing detection. 5,004,969, Cl. 323-235.000.

Schap, William W., to ITT Corporation. Variable power drive for sliding door 5,004,280, Cl. 292-341.160.

Schauder, Colin D., to Westinghouse Electric Corp. Forced-commutated current-source converter and AC motor drive using the same 5,005,115, Cl. 363-159.000.

Schaul, Malcolm *See*—
Broderick, James; and Schaul, Malcolm, 5,004,270, Cl. 283-48.100.

Schegerin, Robert; Laboure, Bernard; and Standish, Robert, to Societe de Construction des Avions Hurel-Bubois. Thrust reverser for a jet engine of the type with doors equipped with auxiliary flaps 5,003,770, Cl. 60-226.200.

Schekin, Vladimir I.: *See*—
Sizonenko, Olga N.; Maxutov, Rafkhat A.; Maljushevsky, Pavel P.; Gorovenko, Georgy G.; Sokolov, Alexei V.; Lyapis, Diana N.; Schekin, Vladimir I.; and Kuskova, Natalya I., 5,004,050, Cl. 166-248.000.

Scher, Richard K. Method of treating nails. 5,004,599, Cl. 424-61.000.

Scherer, Peter. Cylinder of an internal combustion engine having variable volume. 5,003,936, Cl. 123-78.0AA.

Schering Aktiengesellschaft: *See*—
Blaszkiewicz, Peter; and Speck, Ulrich, 5,004,835, Cl. 564-153.000.
Raduechel, Bernd; Skuballa, Werner; Vorbrueggen, Helmut; Loge, Olaf; and Schilliner, Ekkehard, 5,004,752, Cl. 514-530.000.

Schering Corporation. *See*—
Draper, Kenneth G., 5,004,810, Cl. 536-27.000.

Scheurer, Robert S.. *See*—
Sullivan, John F., 5,004,283, Cl. 294-61.000.

Schiel, Christian; and Hafner, Paul, to J. M. Voith GmbH. Cylinder-piston unit for displacing a roll at right angles to its longitudinal axis. 5,003,863, Cl. 92-61.000.

Schiessl, Gerhard: *See*—
Erber, Anton; Hoff, Heinz; Reuchlein, Gunter; Schaaf, Hanno; and Schiessl, Gerhard, 5,003,778, Cl. 60-517.000.

Schilliner, Ekkehard *See*—
Raduechel, Bernd; Skuballa, Werner; Vorbrueggen, Helmut; Loge, Olaf; and Schilliner, Ekkehard, 5,004,752, Cl. 514-530.000.

Schimpf, Warren C., to Hercules Incorporated. Carbon fibers. 5,004,590, Cl. 425-447.200.

Schlett, Eugene. *See*—
Spinger, J. William; and Schlett, Eugene, 5,004,389, Cl. 411-304.000.

Schley, Paul E. Brake tool. 5,003,681, Cl. 29-239.000.

Schlueter, Rudolf *See*—
Wahl, Hans-Peter; Schlueter, Rudolf; Kaettlitz, Wolfgang; and Loos, Rolf, 5,004,545, Cl. 210-510.100.

Schmidt, Kenneth D.; and Holt, Jan D., to ACF Industries, Inc. Protective cover for railcar hitch. 5,004,386, Cl. 410-62.000.

Schmidt, Konrad; and Kramer, Ralf, to U.S. Philips Corporation. Hybrid phase-locked loop. 5,005,016, Cl. 341-142.000.

Schmidt, Robert J.; Haizmann, Robert S.; Ford, Mark R.; Low, C. David; and Adams, Frank H., to UOP. Catalyst for the isomerization of alkanes. 5,004,859, Cl. 585-741.000.

Schmitt, Marcella H. Portable, safety, play chair. 5,004,297, Cl. 297-270.000.

Schmitt, Wayne I. *See*—
Natho, Bradford J.; Andrade, George L.; Wheaton, John M.; and Schmitt, Wayne I., 5,004,091, Cl. 190-18.00R.

Schmitz, Gunter: *See*—
Ackermann, Wilhelm; Langlitz, Karlheinz; and Schmitz, Gunter, 5,003,835, Cl. 74-411.000.

Schneider, Paul L.. *See*—
Chalupa, William; Kronfeld, David S.; Schneider, Paul L.; and Sklan, David, 5,004,728, Cl. 514-12.000.

Schneider (USA) Inc.: *See*—
Edelman, William; Constantinou, Dennis; Stefanovski, Miles; Jan, Yuh L.; Fahlen, Theodore S.; Hansen, Ronald L.; and Kramasz, Kenneth J., 5,005,180, Cl. 372-57.000.

Schnur, Joel M.; Rudolph, Alan S.; and Testoff, Mary A., to Geo-Centers, Inc. Process for fabrication of lipid microstructures from dry organic solvent. 5,004,566, Cl. 260-403.000.

Schnut, Robert H., to Eaton Corporation. Plural set point pressure responsive switching apparatus utilizing a single pressure sensing driver element. 5,004,873, Cl. 200-83.00P.

Scholz, Bernd: *See*—
Dethlefs, Ralf-Burkhard; Scholz, Bernd; Wysk, Wolfram; and Miefert, Elke, 5,004,644, Cl. 428-323.000.

Schon, Steven G., and Hazbun, Edward A., to Arco Chemical Technology, Inc. Methanol as cosurfactant for microemulsions. 5,004,479, Cl. 44-302.000.

Schott Glaswerke: *See*—
Ross, Ludwig; and Schumann, Werener, 5,004,707, Cl. 501-37.000.

Schreckenberg, Manfred: *See*—
Blum, Harald; Meixner, Jurgen; Schreckenberg, Manfred; Fleiter, Lothar; and Wellner, Wolfgang, 5,004,779, Cl. 524-591.000.

Schroeder, Manfred. *See*—
Wislinski, Martin; Bergquist, Roger; Schroeder, Manfred; Weir, Theodore; Monetti, Matthew; and Fung, Paul, 5,004,579, Cl. 264-517.000.

Schroeder, Rodney G.; and Sharangpani, Anand S. G., to BASF. Transparent iron oxide pigments. 5,004,504, Cl. 106-456.000.

Schubert, Burton L., to Schubert Farms, Inc. Distance measuring device and method for use with vehicles. 5,003,704, Cl. 33-775.000.

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Schubert, Burton L., 5,003,704, Cl. 33-775.000.

Schuh, Paul A.: *See*—
Mehr-Ayin, Kourosh; and Schuh, Paul A., 5,004,084, Cl. 192-0.033.

Schulte, Helmut, to Luhn & Pulvermacher GmbH & Co. Leaf-spring hardener. 5,004,213, Cl. 266-116.000.

Schulz, Hans E.; Braas, Jurgen, and Echl, Friedrich, to Braas & Co. GmbH. Apparatus for producing concrete roof tiles. 5,004,415, Cl. 425-297.000.

Schumacher, Dean P.; Blume, William F.; and Bonds, John C. Method and apparatus for playing a game. 5,004,245, Cl. 273-241.000.

Schumacher, Karl H.: *See*—
Connell, Richard A.; Keating, Raymond; Sansone, Ronald P.; and Schumacher, Karl H., 5,005,124, Cl. 364-401.000.

Schumann, Werener: *See*—
Ross, Ludwig; and Schumann, Werener, 5,004,707, Cl. 501-37.000.

Schwan-Stabilo Schwanhausser GmbH & Co. *See*—
Huttner, Gerhard; Kruckel, Peter; and Mock, Gerhard, 5,004,363, Cl. 401-75.000.

Schwappach, Dieter, to O&K Orenstrein & Koppel Aktiengesellschaft. Attachment holder for interchangeable equipment on the superstructure of a mobile shovel excavator. 5,004,397, Cl. 414-686.000.

Schwarz, Karl H.: *See*—
Bernard, Walter; Heppner, Joachim G.; and Schwarz, Karl H., 5,004,342, Cl. 356-350.000.

Scott, Hugh: *See*—
Porritt, John; and Scott, Hugh, 5,004,055, Cl. 175-20.000.

Scott, Raymond J.: *See*—
Montierth, Garry L.; Logan, Stephen A.; and Scott, Raymond J., 5,004,190, Cl. 246-428.000.

Scully, Sean: *See*—
Connors, Peter J.; Scully, Sean; Bria, Frank; and ReFalo, John, III, 5,004,103, Cl. 206-372.000.

Sebag, Henri: *See*—
Philippe, Michel; and Sebag, Henri, 5,004,729, Cl. 514-29.000.
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Philippe, Michel; and Sebag, Henri, 5,004,731, Cl. 514-29.000.
Philippe, Michel; and Sebag, Henri, 5,004,732, Cl. 514-29.000.
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Secoolish, Ronald H.: *See*—
Dutcher, Davy L.; and Secoolish, Ronald H., 5,003,723, Cl. 43-42.130.

Seeburger, Rolf: *See*—
Goessler, Gerhard; Wilde, Eugen; and Seeburger, Rolf, 5,004,892, Cl. 219-464.000.

Segerpalm, Hans; and Eklund, Ante, to Swede Space Design AB. Arrangement for displaceable supporting articles of furniture. 5,004,304, Cl. 312-201.000.

Segrestin, Pierre: *See*—
Vidal, Henri; Muelas-Medrano, Santiago; and Segrestin, Pierre, 5,004,376, Cl. 405-284.000.

Seibu Electric and Machinery Co., Ltd.: *See*—
Tsubone, Akira; Tomiyoshi, Masanori, Yokomizo, Junichi; Tanaka, Nobuhiro; Moriguchi, Hideyuki; and Hirata, Eiji, 5,004,401, Cl. 414-786.000.

Seiko Epson Corporation: *See*—
Kobayashi, Atsushi; Suzuki, Takashi; and Kosugi, Yasuhiko, 5,005,043, Cl. 355-27.000.

Seikosha Co., Ltd.: *See*—
Motai, Noboru; Tanaka, Sakae; and Watanabe, Yoshiaki, 5,005,056, Cl. 357-2.000.

Sekida, Minoru: *See*—
Fujino, Akihiko; Inoue, Manabu; Omaki, Takanobu; Nakai, Masaaki; Fujii, Akira; and Sekida, Minoru, 5,005,047, Cl. 354-442.000.

Sela, Uri: *See*—
Baker, Charles L.; Cody, George D.; Joseph, Craig A.; and Sela, Uri, 5,004,152, Cl. 239-8.000.

Selga, Betty J. Reusable fabric gift wrap 5,004,144, Cl. 229-87.190.

Sellar, John G. Apparatus for employing destructive resonance. 5,004,166, Cl. 241-36.000.

Selman, Willis M., Jr. Toilet lid safety lock 5,003,641, Cl. 4-253.000.

Seltzer, Raymond: *See*—
Cortolano, Frank P.; Seltzer, Raymond; and Patel, Ambelal R., 5,004,770, Cl. 524-99.000.

Sensormatic Electronics Corporation: *See*—
Farrar, James G.; and Eskandry, Ezra D., 5,005,125, Cl. 364-403.000.

Sentrol, Inc.: *See*—
Bernhardt, Everett A.; and Winters, Robert C., 5,004,879, Cl. 200-295.000.

Seo, Nobuyuki. *See*—
Ida, Tomoyasu; Nohara, Makoto; and Seo, Nobuyuki, 5,004,980, Cl. 324-166.000.

Serrell, Robert, Smith, J. Lamar; and Kurst, Frederick L., to Educational Testing Service. Optical document scanning and mark sensing. 5,004,896, Cl. 235-437.000.

Seto, Nobuo; and Morigaki, Masakazu, to Fuji Photo Film Co., Ltd. Silver halide color photographic material 5,004,678, Cl. 430-548.000.

Seton Health Care Foundation. *See*—
Muckerheide, Myron C., 5,005,182, Cl. 372-72.000.

Settles, David J., to Dayco Products-Eaglemotive, Inc. Method of making a clutch for a cooling fan of a motor vehicle. 5,003,685, Cl. 29-525.000.

Sevier, Richard W.; and Keenan, James J., to Hendry Mechanical Works. Earthquake braced racks. 5,004,107, Cl. 211-26.000.

Seya, Masatomo; Tadokoro, Michihiro, and Okada, Kazuo, to Mitsubishi Denki Kabushiki Kaisha. Focusing error detecting apparatus with light switching and detector sampling. 5,004,900, Cl. 250-201.500.

Seymour, Raymond K.; Hart, Marshall B.; Magnon, Gary D.; von Kannewurff, Michael C.; and Doughty, Dennis J., to General Electric Company. Molded case circuit breaker movable contact arm arrangement. 5,004,878, Cl. 200-144.00R.

Seynhaeve, Andre, to Delsey S.A. Device for affixing the straps of articles of luggage. 5,003,671, Cl. 24-265.00A.

SGS-Thomson Microelectronics, Inc.: *See*—
McClure, David C.; and Lysinger, Mark A., 5,005,158, Cl. 365-200.000.

O'Connor, James T., and Courtright, David A., 5,005,191, Cl. 375-116.000.

SGS-Thomson Microelectronics S.r.l.: *See*—
Cardani, Silvestro; and Pareschi, Flavio, 5,003,999, Cl. 134-105.000
Mazzali, Stefano, 5,005,060, Cl. 357-23.500.

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Barou, Michel, 5,004,970, Cl. 323-277.000.

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Engdahl, Gerald E.; and Shah, Tushar K., 5,003,784, Cl. 62-124.000.

Shamir, Joseph: *See*—
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Sharangpani, Anand S. G.: *See*—
Schroeder, Rodney G., and Sharangpani, Anand S. G., 5,004,504, Cl. 106-456.000.

Sharp Kabushiki Kaisha: *See*—
Furuta, Kouichi, 5,004,934, Cl. 307-303.000.
Kugimiya, Shuzo; Fukumochi, Yoji; Nakamura, Ichiko, Hirai, Tokuyuki; and Suzuki, Hitoshi, 5,005,127, Cl. 364-419.000.
Sakai, Katsuyuki, 5,005,026, Cl. 346-76.0PH
Sakamoto, Noriaki; Maeda, Shigemi; Yamanaka, Toshihiro; Deguchi, Toshihisa; Horie, Nobuyuki, Yamaguchi, Takeshi, and Kojima, Kunio, 5,005,164, Cl. 369-48.000.
Toda, Manabu, 5,005,198, Cl. 379-58.000.
Webb, Brian C., Pedley, Derek G., Prosser, Stephen J.; Hijikigawa, Masaya; and Furubayashi, Hisatoshi, 5,004,700, Cl. 437-42.000.
Yamanaka, Toshihiro, Maeda, Shigemi; and Horie, Nobuyuki, 5,005,165, Cl. 369-58.000.
Yoneda, Tetsuya; and Sato, Shin, 5,004,657, Cl. 429-193.000.
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Berkley, Robert D.; and Shaughnessy, Terry P., 5,003,722, Cl. 43-3.000.

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Shaw-Walker Company, The: *See*—
Dull, Raymond P., Lavas, Bernard R., and Baxter, William D., 5,003,740, Cl. 52-239.000.

Sheen, Dony, to Regitar Power Tools Co., Ltd. Electric drill with speed and torque control. 5,004,054, Cl. 173-12.000.

Sheldahl, Inc.: *See*—
Desai, Jay, 5,004,639, Cl. 428-138.000.

Shell Oil Company: *See*—
Kipp, Robert M., 5,004,272, Cl. 285-24.000.
Van Leeuwen, Petrus W. N. M., and Roobeek, Cornelis F., 5,004,844, Cl. 568-880.000.

Shellhause, Ronald L. Fluidic valve mechanism. 5,003,780, Cl. 60-585.000.

Shepherd, James E. Saw chain holding mechanism for grinding machines. 5,003,843, Cl. 76-78.100.

Sherby, James E., to PPG Industries, Inc. Support system for abrasive jet cutting. 5,003,729, Cl. 51-283.00R.

Sherwin-Williams Company, The. *See*—
Mathai, John, 5,004,828, Cl. 560-224.000.

Shetterly, Donivan M.: *See*—
McMaster, Ronald A.; and Shetterly, Donivan M., 5,004,491, Cl. 65-106.000.

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Okamura, Masatoshi; Namioka, Takashi; and Shiba, Haruo, 5,004,180, Cl. 242-198.000.

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Shibata, Seiichi. Method for preparation of nephritogenoside. 5,004,818, Cl. 530-322.000.

Shibata, Shinya: *See*—
Ogawa, Masanobu; and Shibata, Shinya, 5,005,020, Cl. 343-713.000.

Shibazaki, Toshiji; Okano, Masaru; Kishida, Naoto; Ozaki, Yoshihiro; and Iyama, Kunihiko, to Toyo Denso Kabushiki Kaisha. Hydraulic actuating apparatus. 5,004,996, Cl. 338-36.000.

Shields, Michael R. Animal training collar. 5,003,930, Cl. 119-106.000.

Shier, Richard K.: *See*—
Rush, William B., II; Elder, Jack E.; Shier, Richard K.; Foss, Jerry B.; Haltiner, Karl J., Jr., and Wheeler, Grant M., 5,003,933, Cl. 123-52.0MC.

Shigenai, Osamu; and Sato, Keiichi, to Alps Electric Co., Ltd. Shutter opening device. 5,005,092, Cl. 360-99.060.

Shigyo, Masao: *See*—
Shimizu, Kunimasa; Shigyo, Masao; and Tanaka, Hiroshi, 5,004,917, Cl. 250-236.000.

Shiley Infusaid, Inc.: *See*—
Sampson, Edward J., 5,004,458, Cl. 604-175.000.

Shimamoto, Mamoru: *See*—
Kozaki, Tetsuji, Ishikawa, Hiroshi; Yasui, Hideaki, Shimamoto, Mamoru; Hibino, Katsuhiko; and Suzuki, Motoshi, 5,004,264, Cl. 280-707.000.

Shimamura, Keizo; Amano, Kagetaka; Aisaka, Tatsuryoshi, Hanai, Satoshi; and Nagata, Kohsoku, to Kabushiki Kaisha Toshiba. Dispersion strengthened copper alloy and a method of manufacturing the same. 5,004,498, Cl. 75-233.000.

Shimano Industrial Co., Ltd.: *See*—
Nagano, Masashi, 5,003,841, Cl. 74-594.400

Shimizu, Chiyuki: *See*—
Nagaoka, Hisayuki, Zenbayashi, Michio; and Shimizu, Chiyuki, 5,004,793, Cl. 528-15.000.

Shimizu, Haruhito, to NEC Corporation. Method for controlling a polarization of light. 5,004,312, Cl. 350-96.130.

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Shimizu, Masataka: *See*—
Terada, Nobuhiro, Shimizu, Masataka, and Matsuzawa, Soichiro, 5,003,688, Cl. 29-603.000.

Shimoda, Kyouji: *See*—
Yoshimoto, Kyosuke; and Shimoda, Kyouji, 5,004,901, Cl. 250-201.500.

Shin-Etsu Chemical Co., Ltd.: *See*—
Takaoka, Akio, and Inomata, Hiroshi, 5,004,824, Cl. 556-412.000.

Shin, Jung-Hyun: *See*—
Kwon, Oh-Hyun; Jang, Taek-Yong; Shin, Jung-Hyun, and Choi, Won-Taek, 5,005,103, Cl. 361-313.000.

Shinagawa Fuel Co., Ltd.: *See*—
Miyake, Teruyoshi; and Yamamoto, Tatsuo, 5,003,638, Cl. 2-167.000.

Shinanen New Ceramic Corporation: *See*—
Miyake, Teruyoshi, and Yamamoto, Tatsuo, 5,003,638, Cl. 2-167.000.

Shipley Company Inc.: *See*—
Bernards, Roger F., Fisher, Gordon, and Sonnenberg, Wade, 5,004,525, Cl. 204-52.100.
D'Ottavio, Eugene D., Hawkins, Robert E.; Rodriguez, Stephen S., and Rychwalski, James, 5,004,672, Cl. 430-314.000.

Shiseido Company Ltd.: *See*—
Hayashi, Shigeru; and Yamada, Kaneo, 5,004,609, Cl. 424-94.300.

Shisgal, Ben Z., and Tzelnick, Tzvi, to Insys Ltd. Parking aid device. 5,004,997, Cl. 340-436.000.

Sholder, Jason A.: *See*—
Hafelfinger, Werner; Sholder, Jason A., King, Murray P., and Duncan, James L., 5,003,975, Cl. 128-419.0PG

Shop-Vac Corporation: *See*—
Berfield, Robert C., 5,004,160, Cl. 239-525.000.

Shopsmith, Inc.: *See*—
Legler, John G.; Folkerth, Harold E.; Flora, David D.; and Hile, Barry L., 5,004,027, Cl. 144-136.00R.

Shorey, Thomas H.: *See*—
Jensen, Tom M., and Shorey, Thomas H., 5,004,387, Cl. 410-69.000

Shriver, Frank L., to Adolph Coors Company. Fountain roll and assembly for can decorating apparatus. 5,003,875, Cl. 101-350.000.

Shu, Timour T.: *See*—
Hinzmann, Alfred, Shu, Timour T.; Drewnowski, Wojciech S., and Preisner, Peter M., 5,004,467, Cl. 604-904.000.

Shuyama, Hideo: *See*—
Takahashi, Mitsuru; Shuyama, Hideo; Miyano, Osamu, and Tsutsumi, Yukihiro, 5,004,567, Cl. 260-408.000.

Sickler, Janet: *See*—
Mace, Everitt W.; Sickler, Janet; and Srinivasan, Varadarajan, 5,004,508, Cl. 148-22.000.

Sideman, Samuel: *See*—
Grunfeld, Hay, Lotan, Noah; and Sideman, Samuel, 5,004,547, Cl. 210-635.000.

Siegel, Robert S.: *See*—
Craig, William S.; and Siegel, Robert S., 5,004,688, Cl. 435-69.300.

Siegemund, Gunter: *See*—
Rohrscheid, Freimund; Siegemund, Gunter; and Lau, Jurgen, 5,004,797, Cl. 528-206.000.

Siemens Aktiengesellschaft: *See*—
Capdebosco, Bernard, 5,003,854, Cl. 83-331.000.
de Oliveira, Antonio M. d. A.; and Staerk, Jakob, 5,004,937, Cl. 307-443.000
Grage, Ludger; and Dato, Paul, 5,005,083, Cl. 358-181.000.
Prasse, Karl-Heinz, 5,004,907, Cl. 250-214.0AG.
Stegherr, Michael, 5,004,939, Cl. 307-475.000.

Siemens Energy & Automation, Inc.: *See*—
Moody, G. Lawrence, Leone, David A.; and Bell, Mark E., 5,004,875, Cl. 200-400.000.

Siemens-Pacesetter, Inc.: *See*—
Hafelfinger, Werner; Sholder, Jason A.; King, Murray P.; and Duncan, James L., 5,003,975, Cl. 128-419.0PG.

Sikora, Gary J., to Westinghouse Electric Corp. Multiple pulse delay processor. 5,005,017, Cl. 342-172.000.

Sili-Tex, Inc.: *See*—
Caldwell, J. Michael, 5,004,643, Cl. 428-246.000.

Silver, David R. Method and apparatus for preventing and treating anaerobic infections. 5,003,993, Cl. 128-842.000.

Silverberg, Howard Z.: *See*—
Fonss, Jack G.; Silverberg, Howard Z.; and Gardiner, Martin H., 5,004,962, Cl. 318-85.000.

Simmons, George H. Break-away coupling. 5,004,366, Cl. 403-2.000.

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Simon, Ira J.: *See*—
Campbell, Andrew B.; and Simon, Ira J., 5,004,277, Cl. 292-166.000.

Simonovits, Emilia: *See*—
Jekkel nee Bokany, Antonia; Albrecht, Karoly; Ambrus, Gabor; Lang, Tibor; Szabo, Istvan M.; Ilkoy, Eva; Konczol, Kalman; Moravcsik, Imre; Hantos, Gabor; Simonovits, Emilia; Lengyel nee Szemenyei, Zsuzsanna; Vida, Zsuzsanna; and Csajagi, Eva, 5,004,695, Cl. 435-253.100.

Simpson, Jay R.: *See*—
Desurvire, Emmanuel; Giles, Clinton R.; Simpson, Jay R.; and Zyskind, John L., 5,005,175, Cl. 372-6.000.

Simpson, Princess E.: *See*—
Feldman, Martin; and Simpson, Princess E., 5,004,321, Cl. 350-320.000.

Simpson, Richard D., to Texas Instruments Incorporated. Clock pulse generating circuits. 5,005,193, Cl. 377-33.000.

Simpson, William J.; and Hammond, John R. M., to Lumac BV. Method for ATP extraction. 5,004,684, Cl. 435-8.000.

Sinclair, Colin S.: *See*—
Tallentire, Alan; and Sinclair, Colin S., 5,004,645, Cl. 428-323.000.

Singor, Aydin, to Leopold Kostal GmbH & Co. KG. Sealing arrangement for an electrical cable. 5,004,868, Cl. 174-76.000.

Sisoler, Paul G.: *See*—
Weglarz, Michael W.; Vincent, Michael T.; Prestel, James F.; and Sisoler, Paul G., 5,003,952, Cl. 123-478.000.
Weglarz, Michael W.; Vincent, Michael T., Prestel, James F.; and Sisoler, Paul G., 5,003,953, Cl. 123-478.000.

Siverns, Steven L.: *See*—
Crawford, Paul M.; Campbell, Herbert W.; Myers, Michael J.; and Siverns, Steven L., 5,003,814, Cl. 73-59.000.

Sizonenko, Olga N.; Maxutov, Rafkhat A.; Maljushevsky, Pavel P.; Gorovenko, Georgy G.; Sokolov, Alexei V.; Lyapis, Diana N.; Schekin, Vladimir I.; and Kuskova, Natalya I. Method for well stimulation in the process of oil production and device for carrying same into effect. 5,004,050, Cl. 166-248.000.

Skanska Slakterimasiner: *See*—
Moritz, Kjell, 5,003,665, Cl. 452-185.000.

Skelton, John: *See*—
Fronk, David M.; Brookstein, David S.; and Skelton, John, 5,004,474, Cl. 623-13.000.

SKF Industrial Trading and Development Co. B.V.: *See*—
Jacobson, Bo O., 5,004,359, Cl. 384-526.000.

Skilliter, William J.: *See*—
Borer, John W.; Skilliter, William J.; and Conner, Lowell J., 5,004,492, Cl. 65-289.000.

Skinner, Kenneth R., to North American Philips Corporation. Remote control television system using supplementary unit for simplified personalized control. 5,005,084, Cl. 358-194.100.

Sklan, David: *See*—
Chalupa, William; Kronfeld, David S.; Schneider, Paul L.; and Sklan, David, 5,004,728, Cl. 514-12.000.

Skorupski, Jeffrey H.: *See*—
Breen, Michael T.; and Skorupski, Jeffrey H., 5,005,130, Cl. 364-426.010.

Skuballa, Werner: *See*—
Raduechel, Bernd; Skuballa, Werner; Vorbrueggen, Helmut; Loge, Olaf; and Schilliner, Ekkehard, 5,004,752, Cl. 514-530.000.

Smirnov, Gennady A.: *See*—
Goikhman, Yakov A.; Krjukov, Georgy M.; Onotsky, Melis I.; Sorokin, Georgy M.; Filatov, Alexei V.; Tsarapkin, Viktor V.; Yakimov, Vadim P.; Smirnov, Gennady A.; Nikiforov, Ivan I.; Burdukovsky, Alexandr I.; Daibov, Sergei V.; and Kurdjukov, Alexandr S., 5,004,056, Cl. 175-293.000.

Smith, Barbara A.: *See*—
Lee, Richard J.; Smith, Barbara A.; Theys, Robert G.; Theys, Robert A.; and Murphy, Judy A., 5,004,920, Cl. 250-304.000.

Smith, Christopher: *See*—
Ashton, Michael J.; Bridge, Andrew W.; Chambers, Robert K.; Dron, Donald I.; Fenton, Garry; Harris, Neil V.; Lythgoe, David J.; McFarlane, Ian M.; Newton, Christopher G.; Riddell, David; Smith, Christopher; Stuttle, Keith A. J.; and Toft, Malcolm P., 5,004,747, Cl. 514-309.000.

Smith, David J.: *See*—
Kleven, Lawrence P.; Agranat, Edward A.; Crisafulli, Jerry; Robinson, Hugh; Smith, David J.; Wiseley, Thomas; Fortier, Richard C.; Johnson, Severne; and Menzin, Marvin, 5,004,954, Cl. 315-106.000.

Smith, Donald E. Golf club and bag security device. 5,004,100, Cl. 206-315.200.

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Hirschmann, Robert P.; Beard, William Q., Jr.; Mainz, Eric L.; Smith, Earl B.; and Little, Barry M., 5,004,849, Cl. 570-224.000.

Smith, Irl W.: *See*—
Dorschner, Terry A.; and Smith, Irl W., 5,004,343, Cl. 356-350.000.

Smith, J. Lamar: *See*—
Serrell, Robert; Smith, J. Lamar; and Kurst, Frederick L., 5,004,896, Cl. 235-437.000.

Smith, John R.: *See*—
Lipchak, John B.; Oblak, Tod A.; Bednar, Fred H.; Ciaramitaro, William; Hughes, Francis R.; Smith, John R.; and Gisoni, Gregory A., 5,005,142, Cl. 364-550.000.

Smither, Robert K., to United States of America, Energy. Crystal diffraction lens with variable focal length. 5,004,319, Cl. 350-162.210.

SmithKline Beecham Corporation: *See*—
Boehm, Jeffrey C.; Hecht, Sidney M.; Holden, Kenneth G.; Johnson, Randall K.; and Kingsbury, William D., 5,004,758, Cl. 514-283.000.

Smolarek, James: *See*—
Haas, Oscar W.; Prasad, Ravi; and Smolarek, James, 5,004,482, Cl. 55-16.000.

Smyly, George M., Sr. Trailered boat cradle. 5,004,260, Cl. 280-414.100.

Snap-on Tools Corporation: *See*—
Becker, Thomas P.; Rameshk, Sohrab S.; and Crass, Matthew M., 5,004,984, Cl. 324-402.000.

Snipes, Wallace C., to Zetachron, Inc. Low-melting moldable pharmaceutical excipient and dosage forms prepared therewith. 5,004,601, Cl. 424-78.000.

Snyder, George W.: *See*—
Mixon, Larry C.; Snyder, George W.; Hill, Scott D.; Johnson, Gregory L.; Wlodarski, J. Frank; von Spakovsky, Alexis P.; Emerson, John D.; Cole, James M.; and Tipton, John P., 5,003,883, Cl. 102-476.000.

Societe Anonyme Dite: L'Oreal: *See*—
Philippe, Michel; and Sebag, Henri, 5,004,729, Cl. 514-29.000.
Philippe, Michel; and Sebag, Henri, 5,004,731, Cl. 514-29.000.
Philippe, Michel; and Sebag, Henri, 5,004,732, Cl. 514-29.000.
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Societe Anonyme Dite: Millet: *See*—
Dufournet, Francois; and Vernerey, Philippe, 5,004,135, Cl. 224-210.000.

Societe Chimiques des Charbonnages S.A.: *See*—
Boinot, Francois; Cousin, Michel; Francois, Pierre-Michel; and Michel-Dansac, Francois, 5,004,789, Cl. 525-506.000.

Societe de Construction des Avions Hurel-Bubois: *See*—
Schegerin, Robert; Laboure, Bernard; and Standish, Robert, 5,003,770, Cl. 60-226.200.

Societe Nationale Elf Aquitaine (Production): *See*—
Maurice, Jacques; Fouque, Romain; and Auriol, Jean-Louis, 5,004,591, Cl. 423-578.00R.

Societe Nationale Industrielle et Aerospatiale: *See*—
Aubry, Jacques A.; and Mondet, Jean J., 5,004,215, Cl. 267-140.100.

Sodec, Franc; Hudson, Donald L.; and Bolen, David T., to Hudson Associates, Inc. Air conditioning system for grocery store or the like and diffuser units thereof. 5,003,867, Cl. 98-31.600.

Soderberg, Per O., to Astra Meditec Aktiebolag. Dental bridge and manner for preparation. 5,004,420, Cl. 433-172.000.

Soffiatti, Renzo: *See*—
Faccioli, Giovanni; De Bastiani, Basilio M.; Magnan, Bruno; and Soffiatti, Renzo, 5,004,501, Cl. 106-35.000.

Sogge, Dale R.; O'Brien, Edward F.; and Czarn, David A., to Texas Instruments Incorporated. Pressure responsive switch particularly adaptable for operation as a normally open or a normally closed switch. 5,004,876, Cl. 200-83.00P.

Sokolov, Alexei V.: *See*—
Sizonenko, Olga N.; Maxutov, Rafkhat A.; Maljushevsky, Pavel P.; Gorovenko, Georgy G.; Sokolov, Alexei V.; Lyapis, Diana N.; Schekin, Vladimir I.; and Kuskova, Natalya I., 5,004,050, Cl. 166-248.000.

Solon Technologies, Inc.: *See*—
Moscovitch, Marko, 5,004,921, Cl. 250-337.000.

Solvay & Cie (Societe Anonyme): *See*—
Simoens, Anthony; and Hannecart, Etienne, 5,004,773, Cl. 524-178.000.

Somers, James S., to Concord Industries, Inc. Apparatus for blocking a winch. 5,004,177, Cl. 242-99.000.

Sommi, Franco; and Arelli, Pier L., to Manzini, S.p.A. Method of processing a food product having a liquid content. 5,004,621, Cl. 426-386.000.

Sonnenberg, Wade: *See*—
Bernards, Roger F.; Fisher, Gordon; and Sonnenberg, Wade, 5,004,525, Cl. 204-52.100.

Sonoda, Mitsuo: *See*—
Kanai, Takashi; Ochiai, Masami; Oshima, Morio; and Sonoda, Mitsuo, 5,003,776, Cl. 60-434.000.

Sony Corporation: *See*—
Asano, Mitsuyasu, 5,005,081, Cl. 358-167.000.
Gillard, Clive H., 5,005,078, Cl. 358-140.000.
Iwamoto, Koji; Hamada, Kenichi; and Hirota, Katsuaki, 5,005,086, Cl. 358-227.000.
Kanada, Tokio, 5,005,098, Cl. 360-130.340.
Mitsumori, Koji; and Kume, Hidehiro, 5,005,162, Cl. 369-44.120.
Samad, Raphael; and Gillard, Clive H., 5,005,077, Cl. 358-140.000.

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Zaghloul, Amir I.; and Sorbello, Robert M., 5,005,019, Cl. 343-700.0MS.

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D'Amato, Salvatore F.; Sorbo, Peter; and Dunning, Richard E., 5,003,915, Cl. 118-46.000.

Soref, Richard A., to United States of America, Air Force. Low loss semiconductor directional coupler switches including gain method of switching light using same. 5,004,447, Cl. 350-96.140.

Sorensen, Thomas V., to Gunlocke Co., The. Office partition, panel-to-panel quick-locking mechanism. 5,004,371, Cl. 403-327.000.

Sorokin, Georgy M.: *See*—
Goikhman, Yakov A.; Krjukov, Georgy M.; Onotsky, Melis I.; Sorokin, Georgy M.; Filatov, Alexei V.; Tsarapkin, Viktor V.; Yakimov, Vadim P.; Smirnov, Gennady A.; Nikiforov, Ivan I.; Burdukovsky, Alexandr I.; Daibov, Sergei V., and Kurdjukov, Alexandr S., 5,004,056, Cl. 175-293.000.

Southwest Electric Company: *See*—
Owen, Donald W., 5,005,100, Cl. 361-35.000.

Sova, Phillip R., to Technological Safety Design, Inc. Apparatus and method for automatic operation of a bilge blower. 5,003,906, Cl 114-211.000.

Spade leasing, Inc.: *See*—
Pelt, J. Eugene, 5,004,269, Cl. 280-837.000.

Specialized Shipping Products, Ltd.: *See*—
Mallard, Bobby J., Knapp, Richard H., Roper, W. J., and Harrison, Daniel R., 5,004,071, Cl. 182-3.000.

Specified Equipment Systems Company, Inc.: *See*—
Kistner, Kenneth J., 5,004,159, Cl. 239-337.000.

Speck, Ulrich: *See*—
Blaszkiewicz, Peter; and Speck, Ulrich, 5,004,835, Cl. 564-153.000.

Spector, George: *See*—
Terbrusch, Rosemarie; and Spector, George, 5,004,114, Cl. 220-296.000
Whitlock, Arthur D.; and Spector, George, 5,003,719, Cl. 43-17.500.

Spectrum Sciences B.V.: *See*—
Landa, Benzion; Hochman, Haim; and Yacoub, Naseem, 5,004,165, Cl. 241-21.000.

Spehar, Eli G. Utility knife with opposing blades. 5,003,696, Cl. 30-299.000.

Spencer, R. Wilson. Sample extraction system. 5,003,830, Cl. 73-863.830.

Spies, Hans; Woehrl, Alfons; and Spies, Martin, to Messerschmitt-Boelkow-Blohm GmbH. Controllable semiconductor image sensor and arrangement with such a sensor. 5,005,085, Cl. 358-213.110.

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Spies, Hans; Woehrl, Alfons; and Spies, Martin, 5,005,085, Cl. 358-213.110.

Spinger, J. William; and Schlett, Eugene, to Industrial Nut Corp. Externally threaded self-locking nut. 5,004,389, Cl. 411-304.000.

Spirk, John W., Jr.: *See*—
Nottingham, John R.; Spirk, John W., Jr.; and Brokaw, Paul E., 5,004,882, Cl. 219-10.55E.

Sports-Mitt International. *See*—
Hoffman, Ned, 5,004,227, Cl. 272-119.000.

Springer, Edward L.; and Minor, James L., to United States of America, Agriculture. Delignification of lignocellulosic materials with monoperoxysulfuric acid. 5,004,523, Cl. 162-76.000.

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Yin, Simon, 5,004,877, Cl. 200-144.00B.

SRI International. *See*—
Peppers, Norman A., 5,004,311, Cl. 350-6.900.
Winters, Mark A., 5,004,699, Cl. 435-7.310.

Srinivasan, Varadarajan *See*—
Mace, Everitt W.; Sickler, Janet; and Srinivasan, Varadarajan, 5,004,508, Cl. 148-22.000

SSMC Inc.: *See*—
Sato, Shuichi; and Kobayashi, Yoshiharu, 5,003,901, Cl 112-316.000.

Stack, Thomas J.: *See*—
Korczynski, Jacek M.; and Stack, Thomas J., 5,004,994, Cl. 337-66.000.

Staerk, Jakob: *See*—
de Oliveira, Antonio M. d. A.; and Staerk, Jakob, 5,004,937, Cl. 307-443.000.

Stall, Alan D.; and Raudys, Vytas A., to Viskase Corporation. Method and apparatus for making stuffed casing products having one flat end. 5,003,666, Cl. 452-21.000.

Stallard, William A.: *See*—
Booth, Richard C., Beaumont, Alan R., Daymond-John, Barbara E.; Cunningham, David G.; and Stallard, William A., 5,004,314, Cl. 350-96.140.

Stamicarbon B.V.: *See*—
Baur, Henricus A. C.; and Kragten, Ubaldus F., 5,004,837, Cl. 568-342.000.
Waagen, Geert N.; Bastiaansen, Cornelis W. M.; and Kirschbaum, Robert, 5,004,778, Cl. 524-474.000.

Stamp, Roger A.; and Williams, Farrell D., to Hydro Air Industries, Inc. Hydrotherapy apparatus. 5,003,646, Cl. 4-542.000.

Standard Oil Company, The: *See*—
Percec, Elena S.; and Takigawa, Doreen Y., 5,004,783, Cl. 525-77.000

Standish, Robert: *See*—
Schegerin, Robert; Laboure, Bernard; and Standish, Robert, 5,003,770, Cl. 60-226.200.

Standlick, Ronald E., to Jesco Products Company, Inc. Multiple component flow gun. 5,004,125, Cl. 222-145.000.

Staniforth, John N., to Forum Chemicals Ltd. Controlled release device with an impermeable coating having an orifice for release of drug. 5,004,614, Cl. 424-466.000.

Stanley Works, The. *See*—
Hanley, Roger T., 5,004,276, Cl. 292-126.000.

Star-kist Foods, Inc.: *See*—
Koschak, Francis L.; and Sarno, Felicisimo S., 5,004,624, Cl 426-623.000.

Stark, Charles, to Bobst SA. Device for conveying plate-like matter within a rotary printing machine. 5,004,221, Cl. 271-194.000.

Staub, Richard A.: *See*—
Wyatt, Richard J.; Freed, William J.; and Staub, Richard A., 5,004,457, Cl. 604-158.000.

Staudinger, Joseph: *See*—
Golio, John M., and Staudinger, Joseph, 5,005,059, Cl 357-22.000

Staunton, Harold F. *See*—
Hallam, Donald E.; Popper, Peter; Staunton, Harold F., Taylor, Robert E.; and Yngve, Paul W., 5,003,763, Cl. 57-297.000

Stavinoha, Jerome L.: *See*—
Devon, Thomas J.; Phillips, Gerald W.; Puckette, Thomas A., Stavinoha, Jerome L.; and Vanderbilt, Jeffrey J., 5,004,823, Cl 556-136.000.

Stefaniak, Philip S., and Fine, Daniel H., to Columbia in the City of New York, The Trustees of Method and apparatus for dispensing a fluid substance. 5,004,124, Cl. 222-136.000.

Stefanovski, Miles: *See*—
Edelman, William, Constantinou, Dennis; Stefanovski, Miles, Jan, Yuh L., Fahlen, Theodore S., Hansen, Ronald L.; and Kramasz, Kenneth J., 5,005,180, Cl. 372-57.000.

Stegherr, Michael, to Siemens Aktiengesellschaft. CMOS-ECL converter. 5,004,939, Cl 307-475.000.

Steiner, Norm. Painted display assembly. 5,003,715, Cl. 40-442.000.

Stendel, Wilhelm *See*—
Weissmuller, Joachim; Tietjen, Klaus-Gunther; Stendel, Wilhelm, and Wachendorff-Neumann, Ulrike, 5,004,744, Cl 514-247.000

Stettner, Ernest R.; and Stoltman, Donald D., to General Motors Corporation. Solenoid actuated valve assembly. 5,004,162, Cl 239-585.000.

Steuck, Michael J.: *See*—
Pluskal, Malcolm G.; Wang, David, and Steuck, Michael J., 5,004,543, Cl. 210-490.000.

Stewart, Christopher O., and Suprise-Mansfield, Karen. Manicuring aid for infants. 5,003,997, Cl. 132-73.000.

Stich, Richard A. *See*—
Stocking, George E., Stich, Richard A.; Besore, John K., and Denham, Clarence W., 5,004,302, Cl. 312-214.000

Stig G. Carlqvist Motor Consultant, (C.M.C.) Aktiebolag: *See*—
Carlqvist, Stig G. 5,003,832, Cl. 74-51.000

Stillie, Donald G *See*—
Aiello, Richard E., Stillie, Donald G.; and Allgood, Christopher L., 5,004,434, Cl 439-636.000

Stinar, Robert P., Calvas, George T.; and McNamara, David A., to Ford Motor Company. Programmable key and improved lock assembly. 5,003,801, Cl 70-278.000.

Stinard, Philip S.: *See*—
Robertson, Donald S.; and Stinard, Philip S., 5,004,864, Cl 800-235.000

Stipkovits, Frank M. Gap bridging assembly for use with vertical blind assemblies 5,004,033, Cl 160-178.100.

Stirling, Thomas E., and Ackerman, John R., to Barrett, Haentjens & Co. Air stripping of liquids using high intensity turbulent mixer 5,004,484, Cl. 55-53.000.

Stirling, William. Agricultural bale sheathing apparatus and method. 5,003,754, Cl 53-459.000.

Stocker, Erwin E *See*—
Bemis, Steve; and Stocker, Erwin E., 5,004,513, Cl. 156-191.000

Stocking, George E.; Stich, Richard A.; Besore, John K.; and Denham, Clarence W., to General Electric Company. Shelf support system for split cantilever shelves. 5,004,302, Cl. 312-214.000.

Stokes, Ronald E.; Nowak, William J.; Attardi, Anthony A.; and Costanza, Daniel W., to Xerox Corporation. Frequency sweeping excitation of high frequency vibratory energy producing devices for electrophotographic imaging. 5,005,054, Cl. 355-273.000.

Stolka, Milan: *See*—
Badesha, Santokh S.; Stolka, Milan; Pai, Damodar M.; and Abkowitz, Martin A., 5,004,663, Cl. 430-59.000.

Stoltman, Donald D. *See*—
Stettner, Ernest R., and Stoltman, Donald D., 5,004,162, Cl 239-585.000.

Stone, James R.: *See*—
Langford, Stephen R.; Stone, James R.; and Bagley, William C., 5,004,058, Cl. 177-25.130.

Stone, Thomas R.: *See*—
Thanos, William N., Peterson, Bruce R.; Moon, William G.; Lindsay, Joshua, and Stone, Thomas R., 5,005,089, Cl. 360-77.080

Stoner, Beverly A *See*—
Koblitz, Francis F., O'Shea, Thomas M.; Stoner, Beverly A., and Yula, Joseph J., 5,004,869, Cl 174-84.00C

Stoody, William R. Fluid dispenser with non-venting aspirator and bag 5,004,123, Cl. 222-94.000.

Stopforth, Douglas R., to Manesty Machines Limited. Tablet making machines. 5,004,413, Cl. 425-182.000.

Storage Technology Corporation *See*—
Lunka, Harold A.; and Marlowe, Christian P., 5,004,393, Cl 414-331.000.

Storbeck, Timothy A.: *See*—
Dunn, Wendell E., Jr., Carda, Dan D.; and Storbeck, Timothy A., 5,004,500, Cl. 75-422.000

Storm, Greg J.: *See*—
Storm, Manfred; and Storm, Greg J., 5,004,139, Cl. 224-324.000.

Storm, Manfred; and Storm, Greg J., to Hagus, U.S.A., Inc. Vehicle article holder. 5,004,139, Cl. 224-324.000.

Storni, Angelo, to Ciba-Geigy Corporation. Pharmaceutical use of laevorotatory basic derivative of 9,10-ethanoanthracene. 5,004,755, Cl 514-653.000.

Stovring, Knud S., to Helioprint Als. Reprographic camera system. 5,005,045, Cl. 355-68.000.

Straight, Jay G.; and Moore, Henry P., to Eskimo Pie Corporation Method and apparatus for enrobing confections. 5,004,620, Cl 426-304.000.

Straight, Michael R.: *See*—
Romestad, Gerald C.; and Straight, Michael R., 5,004,097, Cl 198-803.010.

Stranford, Gerald T.; Gonczy, Stephen T.; and Mitsche, Roy T., to Allied-Signal Inc. High surface area silicon nitride and use thereof. 5,004,709, Cl. 501-97.000.

Strassler, Sigfrid: *See*—
Ryser, Peter; and Strassler, Sigfrid, 5,005,003, Cl. 340-587.000.

Strausbaugh, Dennis I., and Strausbaugh, Irvin R. Plug or cap puller. 5,003,682, Cl. 29-259.000.

Strausbaugh, Irvin R.: *See*—
Strausbaugh, Dennis I.; and Strausbaugh, Irvin R., 5,003,682, Cl 29-259.000.

Streck Laboratories, Inc.: *See*—
Ryan, Wayne L., 5,004,355, Cl. 374-194.000.

Strehler, Richard: *See*—
Pflaum, Hermann; and Strehler, Richard, 5,003,817, Cl. 73-118.100

Stresswave Technology Limited. *See*—
Holroyd, Trevor J.; and Tracey, Timothy E., 5,004,985, Cl. 324-727.000.

Strobl, Frederick P., Jr.; and Glatt, Jack E. Structure and components for enclosing sun spaces and the like and method for erecting same. 5,003,733, Cl. 52-86.000.

Stromire, Mark L. Method and apparatus for armament control 5,003,862, Cl 89-133.000.

Stroppina, Mario; and Ronchetti, Luigi, to RAI Radiotelevisione Italiana S.p.A. DCT video signal compression device with intrafield-/interfield switching and adjustable high frequency filter 5,005,076, Cl 358-135.000.

Structural Block Systems, Inc.: *See*—
Wilston, Arthur, 5,003,746, Cl. 52-589.000.

Stude, Rolf-Rudiger; and Wilken-Trenkamp, Ludger, to Kreyenborg Verwaltungen und Beteiligungen KG. Apparatus for filtering plasticized materials in extruders and like machines. 5,004,414, Cl. 425-185.000.

Stumpf, William E.; Carlson, Casey L.; Knape, Richard S.; and Bessinger, Walter L., to Knape & Vogt Manufacturing Company. Book end bracket and shelving system. 5,004,202, Cl. 248-243.000.

Stuttle, Keith A. J.: *See*—
Ashton, Michael J.; Bridge, Andrew W.; Chambers, Robert K.; Dron, Donald I.; Fenton, Garry; Harris, Neil V.; Lythgoe, David J.; McFarlane, Ian M.; Newton, Christopher G.; Riddell, David; Smith, Christopher; Stuttle, Keith A. J.; and Toft, Malcolm P., 5,004,747, Cl 514-309.000.

Su, Michael. Electronic eyeball of doll. 5,004,443, Cl. 446-392.000.

Su, Shihuai: *See*—
Yu, Meng W.; Su, Shihuai; Chen, Yue Z.; Zheng, Ticheng; Ji, Kebin; Ling, Shou R.; Lin, Jian C.; Deng, Jianhui; and Zhang, Kunwu, 5,004,510, Cl. 148-146.000.

Sublette, Kerry L., to ABB Environmental Services Inc. Catalytic oxidation of hazardous wastes. 5,004,551, Cl 210-763.000.

Suda, Yasuo; Ohtaka, Keiji; Suzuki, Kenji; Ishizaki, Akira; and Aoyama, Keisuke, to Canon Kabushiki Kaisha. Focus detecting apparatus having a plurality of focus detecting areas. 5,005,041, Cl. 354-407.000.

Sudmanns, Hans: *See*—
Gubon, Peter; Sudmanns, Hans; and Teetz, Christoph, 5,003,934, Cl. 123-52.0MV.

Suenaga, Takashi. *See*—
Aramaki, Minoru; Suenaga, Takashi; Sakaguchi, Hiroaki; and Hamana, Takanori, 5,004,829, Cl 562-113.000.

Suga, Tamio. Surface unit on peripheral wall of tennis court field. 5,004,235, Cl. 273-29.00A.

Sugavanam, Balasubramanyan; Worthington, Paul A.; and Clough, John M., to Imperial Chemical Industries PLC. Heterocyclic compounds. 5,004,494, Cl. 71-92.000.

Sugawara, Minoru: *See*—
Kobayashi, Masato; Yamaguchi, Yoh-Ichi; Sugawara, Minoru; and Yamashiro, Kazuhide, 5,005,075, Cl. 378-35.000.

Sugita, Masanori: *See*—
Ogawa, Osamu; Kishi, Ikuo; Tahara, Yoshiyuki; and Sugita, Masanori, 5,004,756, Cl. 514-655.000.

Sugiura, Takashi: *See*—
Matsuyama, Kazuo; Sugiura, Takashi; and Komai, Takeshi, 5,004,780, Cl. 525-27.000.

Suk, Eugene J., to American Electric FL Industries, Inc., Division. Bracket. 5,004,199, Cl. 248-231.800.

Sullivan, Harold W.; and McConnell, Pat M., to Texas Instruments Incorporated. Robot slice aligning end effector. 5,004,399, Cl. 414-729.000.

Sullivan, John F., to Scheurer, Robert S. Rotary weed extractor. 5,004,283, Cl. 294-61.000.

Sumitomo Chemical Company, Ltd.: *See*—
Mashita, Kentaro; Fujii, Takeshi; and Oomae, Tadayuki, 5,004,782, Cl. 525-64.000.
Mori, Tatsuya; Ohsumi, Tadashi; Nakamura, Shigeo; Maeda, Kiyoto; Nishida, Sumio; and Takano, Hirotaka, 5,004,816, Cl. 549-462.000.
Otaka, Ken; Matsuo, Noritada; Tsushima, Kazunori; and Yano, Toshihiko, 5,004,753, Cl. 514-531.000.
Sato, Hiroshi; Hirose, Kenichi; Nagai, Koichi; Yoshioka, Hiroshi; and Nagaoka, Yoshihiko, 5,004,846, Cl 568-940.000.
Tamura, Mitsuhisa; Suzukamo, Gohu; and Hirose, Ken-ichi, 5,004,843, Cl. 568-670.000

Sumitomo Electric Industries, Ltd.: *See*—
Yamada, Shinji; Kohno, Teruhisa; and Takata, Koji, 5,004,301, Cl 303-115.000.
Yoshino, Masato, 5,005,132, Cl. 364-426.020.

Sumitomo Metal Industries, Ltd.: *See*—
Nakasuji, Kazuyuki; and Hayashi, Chihiro, 5,004,143, Cl 228-126.000.

Sumitomo Rubber Industries, Ltd.: *See*—
Iwanaga, Takeshi; and Ohnishi, Akio, 5,004,242, Cl. 273-169.000

Sumitomo Wiring System, Ltd.: *See*—
Iura, Kazuo; Tsuji, Kazunori; and Saka, Kazuhito, 5,003,761, Cl. 57-58.520.

Sumitsu & Company, Limited: *See*—
Fujimura, Yasuo; and Fujiwara, Toshio, 5,003,856, Cl. 83-576.000.

Summagraphics Corporation. *See*—
Lasley, Daniel G., 5,004,872, Cl. 178-18.000.
Purcell, Alexander M., 5,004,871, Cl. 178-18.000

Sunagawa, Masao, Kubota, Kazuhiro; Ishii, Yoshitaro, and Satoh, Susumu, to Hitachi, Ltd. Upright-type electric vacuum cleaner 5,003,663, Cl. 15-366.000.

Sundstrand Corporation: *See*—
Grimm, Duane H., 5,004,073, Cl. 184-6.120.
Huber, Jeffrey A., 5,003,772, Cl. 60-259.000.
Hutchison, Richard M., 5,004,407, Cl. 418-1.000.
Jewess, Gordon, 5,004,074, Cl. 184-105.100.
Mehr-Ayin, Kourosh; and Schuh, Paul A., 5,004,084, Cl 192-0.033.
Rice, Richard W., 5,003,823, Cl 73-293.000.
Rodgers, Colin, 5,003,767, Cl. 60-39.142.

Sunkara, Sai P.: *See*—
Liu, Paul S.; Sunkara, Sai P.; and Bowlin, Terry L., 5,004,746, Cl 514-299.000.

Sunpower, Inc.: *See*—
Berchowitz, David M., 5,003,777, Cl. 60-520.000.

Superior Surgical Manufacturing Co. Inc *See*—
Benstock, Gerald M.; Belkin, Nathan L., and Green, Robert, 5,003,902, Cl. 112-418.000.

Supertruss Pty. Ltd.: *See*—
Carr, Noel R., 5,003,748, Cl 52-693.000

Suprise-Mansfield, Karen: *See*—
Stewart, Christopher O.; and Suprise-Mansfield, Karen, 5,003,997, Cl. 132-73.000.

Suto, Yoshinori: *See*—
Kakinoki, Yoshikazu; Nakashima, Masato; Koezuka, Tetsuo; Hiraoka, Noriyuki; Tsukahara, Hiroyuki, Suto, Yoshinori, Oshima, Yoshitaka; and Hashinami, Shinji, 5,004,929, Cl. 250-561.000.

Suyefuji, Mineo: *See*—
Terai, Fumitaka; Yukawa, Kimio, Suyefuji, Mineo; Saito, Hiroki; and Yamaguchi, Shigeru, 5,004,628, Cl. 427-389.900.

Suzukamo, Gohu: *See*—
Tamura, Mitsuhisa; Suzukamo, Gohu; and Hirose, Ken-ichi, 5,004,843, Cl. 568-670.000.

Suzuki, Akio; Takada, Yoshihiro; Izumizaki, Masami; and Danzuka, Toshimitsu, to Canon Kabushiki Kaisha. Printing method in which both sides of the recording sheet are inspected and apparatus therefor. 5,004,928, Cl. 250-559.000.

Suzuki, Akira, to Aisin AW Kabushiki Kaisha. Pressure control valve. 5,004,440, Cl. 137-625.650.

Suzuki, Atsushi, to Cleanlite Aire Inc. Deodorizing agent. 5,004,600, Cl. 424-76.300.

Suzuki, Hitoshi: *See*—
Kugimiya, Shuzo; Fukumochi, Yoji; Nakamura, Ichiko; Hirai, Tokuyuki; and Suzuki, Hitoshi, 5,005,127, Cl. 364-419.000.

Suzuki, Kazuhiro: *See*—
Yamazaki, Etsuo; Iehisa, Nobuaki; and Suzuki, Kazuhiro, 5,004,889, Cl. 219-121.610.

Suzuki, Kenji: *See*—
Suda, Yasuo; Ohtaka, Keiji; Suzuki, Kenji; Ishizaki, Akira; and Aoyama, Keisuke, 5,005,041, Cl. 354-407.000.

Suzuki, Masahiko: *See*—
Kuroyanagi, Masatoshi; Suzuki, Masahiko; Matsui, Kazuma; Imaeda, Makoto; Nagai, Kouzi; and Ito, Yoshiaki, 5,004,406, Cl 417-273.000.

Suzuki, Masayuki; and Hattori, Jun, to Canon Kabushiki Kaisha. Spherical lens and imaging device using the same. 5,004,328, Cl. 350-416.000.

Suzuki, Motoshi: *See*—
Kozaki, Tetsuji; Ishikawa, Hiroshi; Yasui, Hideaki; Shimamoto, Mamoru; Hibino, Katsuhiko; and Suzuki, Motoshi, 5,004,264, Cl. 280-707.000.

Suzuki, Noboru; Toji, Shigeo; and Uenaka, Yukio, to Asahi Kogaku Kabushiki Kaisha. Signal processing device for automatic-focusing video signal in electronically controlled photographic camera. 5,005,087, Cl. 358-227.000.

Suzuki, Susumu; Ishida, Kazuyuki; and Ozaki, Takeo, to Agency of Industrial Science and Technology; and Ministry of International Trade and Industry. Device for analyzing fluorescent light signals. 5,003,977, Cl. 128-633.000.

Suzuki, Syuji; and Nishio, Makoto, to NEC Corporation. Time and wavelength division switching system. 5,005,166, Cl. 370-1.000.

Suzuki, Takashi: *See*—
Kobayashi, Atsushi; Suzuki, Takashi; and Kosugi, Yasuhiko, 5,005,043, Cl. 355-27.000.

Suzuki, Takayuki: *See*—
Ueno, Yoshifusa; Tanzawa, Takihei; and Suzuki, Takayuki, 5,004,988, Cl. 331-116.00R.

Suzuki, Tamotsu: *See*—
Namiki, Tomizo; Suzuki, Tamotsu; and Katayama, Masashi, 5,004,668, Cl. 430-256.000.

Suzuki, Tsuguya: *See*—
Shibata, Katsuhiro; Azuma, Yuichi; and Suzuki, Tsuguya, 5,004,497, Cl. 75-229.000.

Suzuki, Yasutomo: *See*—
Fukushima, Nobuo; Sakai, Shinji; Takdea, Osamu; Takei, Masahiro; Suzuki, Yasutomo; Okino, Tadashi; and Jinnai, Shigeru, 5,005,088, Cl. 360-69.000.

Suzuki, Yoshiyuki: *See*—
Nakao, Shinroku; Suzuki, Yoshiyuki; and Kato, Hitoshi, 5,004,253, Cl. 280-47.380.

Svec, Paul S.; Borom, Marcus P.; Szala, Lawrence E.; Brun, Milivoj K.; Miller, Steven A.; and Mourer, David P., to General Electric Company. Transfer tube. 5,004,629, Cl. 427-204.000.

Svecia Antiqua Limited: *See*—
Rosen, Ake, 5,004,327, Cl. 350-398.000.

Swanson, Carl E. Alignment indicator for machine tools. 5,003,703, Cl. 33-638.000.

Swars, Helmut, to Emitec Gesellschaft fur Emissionstechnologie mbH. Hollow shaft having drive elements with axially varied material properties being secured on the hollow shaft by expansion of the hollow shaft. 5,004,370, Cl. 403-277.000.

Swart, Nicholaas C., to Heuft-Qualiplus B.V. Method and an apparatus for inspecting the edge of a lid. 5,004,347, Cl. 356-394.000.

Swede Space Design AB: *See*—
Segerpalm, Hans; and Eklund, Ante, 5,004,304, Cl. 312-201.000.

Swimming Technology Research, Inc.: *See*—
Havriluk, Rod, 5,005,140, Cl. 364-550.000.

Swingline Inc.: *See*—
Olesen, Paul, 5,004,142, Cl. 227-155.000.

Swoyer, John M.: *See*—
Holleman, Timothy W.; Doan, Phong D.; Brennen, Kenneth R.; and Swoyer, John M., 5,003,992, Cl. 128-785.000.

Symanski, James S., to Globe-Union Inc. Thin bipolar lead-acid battery with individual cell vent. 5,004,655, Cl. 429-82.000.

Systron Donner Corporation: *See*—
Hay, Wayne R., 5,004,963, Cl. 320-13.000.

Szabo, Istvan M.: *See*—
Jekkel nee Bokany, Antonia; Albrecht, Karoly; Ambrus, Gabor; Lang, Tibor; Szabo, Istvan M., Ilkoy, Eva; Konczol, Kalman; Moravcsik, Imre; Hantos, Gabor; Simonovits, Emilia; Lengyel nee Szemenyei, Zsuzsanna; Vida, Zsuzesanna; and Csajagi, Eva, 5,004,695, Cl. 435-253.100.

Szala, Lawrence E.: *See*—
Svec, Paul S.; Borom, Marcus P.; Szala, Lawrence E.; Brun, Milivoj K., Miller, Steven A.; and Mourer, David P., 5,004,629, Cl. 427-204.000.

T-Systems Corp.: *See*—
Allport, Davies, 5,003,726, Cl. 47-48.500.

Tacchi, Ernest J., to Aqua Pura Group. Apparatus and method for ozone production. 5,004,587, Cl. 422-186.190.

Tachi-S Co., Ltd.: *See*—
Inoue, Nobuhiro, 5,004,295, Cl. 297-191.000.
Ogasawara, Hiromitsu, 5,004,967, Cl. 318-568.100.

Tada, Kuniyuki; Minomiya, Eiichi; and Watanabe, Masatoshi, to Toray Industries, Inc. Process for conversion of ethylbenzene in C_8 aromatic hydrocarbon mixture. 5,004,855, Cl. 585-489.000.

Tadenuma, Masahiko; Miyagi, Tetsuhiro; and Miyazawa, Tadashi, to Akishima Chemical Industries Co., Ltd. Stabilized chlorine-containing resin composition. 5,004,776, Cl. 524-377.000.

Tadokoro, Michihiro: *See*—
Seya, Masatomo; Tadokoro, Michihiro; and Okada, Kazuo, 5,004,900, Cl. 250-201.500.

Taghikhani, Majid: *See*—
Marino, Joseph A.; Makhija, Surender K.; Taghikhani, Majid; and Puetz, Peter A., 5,004,979, Cl. 324-160.000.

Taguchi, Toshio; and Okita, Hajime, to Mitsubishi Jukogyo Kabushiki Kaisha. Continuous vacuum treatment system. 5,003,706, Cl. 34-92.000.

Tahara, Yoshiyuki: *See*—
Ogawa, Osamu; Kishi, Ikuo; Tahara, Yoshiyuki; and Sugita, Masanori, 5,004,756, Cl. 514-655.000.
Okamoto, Yasushi; Tahara, Yoshiyuki; and Mishima, Yoshio, 5,004,735, Cl. 514-134.000.

Takabatake, Masato: *See*—
Hashimoto, Toru; Takabatake, Masato; Chino, Masashi; and Takahashi, Akira, 5,004,981, Cl. 324-207.220.

Takabayashi, Naoki: *See*—
Koboshi, Shigeharu; Kobayashi, Kazuhiro; Goto, Nobutaka; Kurematsu, Masayuki; and Takabayashi, Naoki, 5,004,522, Cl. 159-47.003.

Takabayashi, Tsunehisa: *See*—
Fukushima, Toru; Takabayashi, Tsunehisa; and Ogai, Mikio, 5,005,179, Cl. 372-46.000.

Takada, Kazuhiko: *See*—
Ishikawa, Jun; and Takada, Kazuhiko, 5,004,207, Cl. 248-632.000

Takada, Yoshihiro: *See*—
Suzuki, Akio, Takada, Yoshihiro; Izumizaki, Masami; and Danzuka, Toshimitsu, 5,004,928, Cl. 250-559.000.

Takagi, Soya; Mori, Kazuhiko; Kawasaki, Minoru; and Kato, Shinji, to Toyota Jidosha Kabushiki Kaisha. Dispersion strengthened copper-base alloy for overlay. 5,004,581, Cl. 420-487.000.

Takahashi, Akira: *See*—
Hashimoto, Toru; Takabatake, Masato; Chino, Masashi; and Takahashi, Akira, 5,004,981, Cl. 324-207.220.

Takahashi, Hiroaki; Okada, Haruo; Matsumoto, Katsuya; and Umino, Masuo, to Toyo Soda Manufacturing Co., Ltd. Process for measuring stable-type glycated hemoglobin in a sample. 5,004,546, Cl. 210-635.000.

Takahashi, Hiroshi, to Nissan Motor Company, Limited. System and method for automatically controlling a vehicle speed to a desired cruising speed. 5,005,133, Cl. 364-426.040.

Takahashi, Hiroto; Karita, Seiichiro; and Sato, Koichi, to Canon Kabushiki Kaisha. Ink jet recording apparatus which supplies repellent agent to liquid discharge port surface and method thereof. 5,005,024, Cl. 346-1.100.

Takahashi, Kozo: *See*—
Gohda, Eiichi; Tsubouchi, Hirohito; Nakayama, Hiroyuki; Hirono, Shuichi; Takahashi, Kozo; Hashimoto, Shuji; and Daikuhara, Yasushi, 5,004,805, Cl. 530-399.000.

Takahashi, Mitsuru; Shuyama, Hideo; Miyano, Osamu; and Tsutsumi, Yukihiro, to Tosoh Corporation. Process for producing fluorine-containing aliphatic carboxylic acids. 5,004,567, Cl. 260-408.000.

Takahashi, Noriyuki: *See*—
Ogawa, Masahide; Sato, Teiji; Tanaka, Masanori; and Takahashi, Noriyuki, 5,004,716, Cl. 501-141.000.

Takahashi, Osamu: *See*—
Yoneyama, Hiroyuki; Takahashi, Osamu; Yoshida, Kazuaki, and Ishikawa, Takatoshi, 5,004,675, Cl. 430-377.000.

Takahashi, Toshimasa: *See*—
Fudono, Kanji; Ogawa, Hiroshi; Takahashi, Toshimasa; and Yamashita, Toshio, 5,003,786, Cl. 62-156.000.

Takahashi, Yasushi, and Yasuda, Hiroshi, to Fujitsu Limited. Method and apparatus for detecting alignment mark of semiconductor device. 5,004,925, Cl. 250-491.100.

Takai, Yasuhiro, to NEC Corporation. Semiconductor device having output buffer circuit controlled by output control signal. 5,005,156, Cl. 365-189.050.

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Umezaki, Tomokazu; and Takaishi, Tadao, 5,003,959, Cl. 123-647.000.

Takamatsu, Akio: *See*—
Tamura, Tatsuya; and Takamatsu, Akio, 5,004,511, Cl. 156-89.000.

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Hatta, Katuhiro; Hiramatsu, Takeo; and Takamiya, Bonnosuke, 5,003,842, Cl. 74-867.000.

Takamuki, Yasuhiko: *See*—
Yamada, Taketoshi; Habu, Takeshi; and Takamuki, Yasuhiko, 5,004,669, Cl. 430-264.000.

Takano, Hirotaka: *See*—
Mori, Tatsuya, Ohsumi, Tadashi; Nakamura, Shigeo; Maeda, Kiyoto; Nishida, Sumio; and Takano, Hirotaka, 5,004,816, Cl. 549-462.000.

Takaoka, Akio; and Inomata, Hiroshi, to Shin-Etsu Chemical Co., Ltd. Fluorine-containing organosilicon compound. 5,004,824, Cl. 556-412.000.

Takara Co., Ltd.: *See*—
Satoh, Yasuta; and Moriyama, Yasuyuki, 5,003,714, Cl. 40-414.000.

Takasaki, Yoshimi; and Horikawa, Kazuo, to Fuji Photo Film Co., Ltd. Logarithmic amplifier, and image read-out apparatus using the same. 5,004,906, Cl. 250-214.00A.

Takasu, Yoshio: *See*—
Arahara, Kozo; Fukui, Tetsuro; Fukumoto, Hiroshi; Katayama, Masato; and Takasu, Yoshio, 5,004,667, Cl. 430-255.000.

Takata, Koji: *See*—
Yamada, Shinji; Kohno, Teruhisa; and Takata, Koji, 5,004,301, Cl. 303-115.000.

Takata, Naoya: *See*—
Sato, Tsuyoshi; Inaba, Masahito; and Takata, Naoya, 5,004,349, Cl. 356-402.000.

Takayama, Syuichi, Tsukaya, Takashi; Ueda, Yasuhiro; Hatta, Shinji; and Abe, Masashi, to Olympus Optical Co., Ltd. Hyperthermia apparatus. 5,003,991, Cl. 128-784.000.

Takdea, Osamu: *See*—
Fukushima, Nobuo; Sakai, Shinji; Takdea, Osamu; Takei, Masahiro; Suzuki, Yasutomo; Okino, Tadashi; and Jinnai, Shigeru, 5,005,088, Cl. 360-69.000.

Takeda Chemical Industries, Ltd.: *See*—
Horii, Satoshi, and Fukase, Hiroshi, 5,004,838, Cl. 568-347.000.

Takeda, Kazuhisa: *See*—
Kim, Soonih; Takeda, Kazuhisa; and Sasatani, Seiei, 5,004,612, Cl. 424-450.000.

Takeda, Toshio, to Aisin Seiki Kabushiki Kaisha. Internal combustion engine with a mechanical super-charger. 5,003,957, Cl. 123-564.000.

Takei, Masahiro: *See*—
Fukushima, Nobuo; Sakai, Shinji; Takdea, Osamu; Takei, Masahiro; Suzuki, Yasutomo; Okino, Tadashi; and Jinnai, Shigeru, 5,005,088, Cl. 360-69.000.

Takenaka, Sadao: *See*—
Aono, Yoshihito, Iwamatsu, Takanori; Minowa, Morihiko; Takenaka, Sadao; Daidoh, Yoshimasa; Nakamura, Hiroshi; and Fujino, Nobutsugu, 5,005,186, Cl. 375-82.000.

Takigawa, Doreen Y.: *See*—
Percec, Elena S.; and Takigawa, Doreen Y., 5,004,783, Cl. 525-77.000.

Takiguchi, Hideki: *See*—
Yagi, Toshihiko; Kumashiro, Kenji; and Takiguchi, Hideki, 5,004,680, Cl. 430-603.000.

Takimoto, Hiroyuki: *See*—
Otokawa, Mitsuhiro; and Takimoto, Hiroyuki, 5,004,965, Cl. 318-254.000.

Takizawa, Nobuyuki: *See*—
Iida, Shoji, Miyazaki, Kazuo; and Takizawa, Nobuyuki, 5,004,857, Cl. 585-507.000.

Talanker, Lev. Embroidery pantograph assembly. 5,003,895, Cl. 112-103.000.

Talish, Roger J., to Meditron Corporation. Medical device for ultrasonic treatment of living tissue and/or cells. 5,003,965, Cl. 128-24.0AA.

Tallentire, Alan; and Sinclair, Colin S., to DRG (UK) Limited. Barrier products. 5,004,645, Cl. 428-323.000.

Talley, Carol S.: *See*—
Norton, Paul R.; Moroz, Michael; and Talley, Carol S., 5,004,698, Cl. 437-3.000.

Tallier, Bernard; and Hagmann, Otto, to Fabriques de Tabac Reunies, S.A. Apparatus for trimming and compression of tobacco. 5,003,996, Cl. 131-84.200.

Tallman, Richard L., to International Superconductor Corp. Method of making superconductor wires by hot isostatic pressing after bending. 5,004,722, Cl. 505-1.000.

Tamura, Hiroshi: *See*—
Haraguchi, Hiroshi; Tamura, Hiroshi; Kodama, Katuhiko; and Kondo, Toshio, 5,003,955, Cl. 123-489.000.

Tamura, Mitsuhisa; Suzukamo, Gohu; and Hirose, Ken-ichi, to Sumitomo Chemical Company, Limited. Process for producing allylic alcohols. 5,004,843, Cl. 568-670.000.

Tamura, Tatsuya; and Takamatsu, Akio, to Petoca Ltd. Process for producing non-woven fabrics of carbon fibers. 5,004,511, Cl. 156-89.000.

Tamura, Yasuyuki; and Kaneko, Shuzo, to Canon Kabushiki Kaisha. Image forming method and transfer recording medium therefor. 5,005,028, Cl. 346-76.00R.

Tamura, Yukio; Kinoshita, Kiyoshi; Uwaji, Tetsuo; and Mizuno, Takashi, to Mitsubishi Jukogyo Kabushiki Kaisha. Plasticizing screw. 5,004,352, Cl. 366-343.000.

Tanahashi, Masaaki; Hagiwara, Hiroyuki; and Fujii, Hiroyuki, to Hitachi Metals Ltd. Take-up apparatus for amorphous metal ribbon. 5,004,172, Cl. 242-54.00R.

Tanaka, Hidehiko, to Mitsubishi Denki Kabushiki Kaisha. Discharge machining apparatus with liquid flow control. 5,004,530, Cl. 204-224.00M.

Tanaka, Hideo: *See*—
Fujita, Shigeru, Tanaka, Hideo; and Harada, Susumu, 5,005,116, Cl. 364-188.000.

Tanaka, Hiroshi: *See*—
Shimizu, Kunimasa; Shigyo, Masao; and Tanaka, Hiroshi, 5,004,917, Cl. 250-236.000.

Tanaka, Masanori: *See*—
Ogawa, Masahide; Sato, Teiji; Tanaka, Masanori; and Takahashi, Noriyuki, 5,004,716, Cl. 501-141.000.

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Tsubone, Akira; Tomiyoshi, Masanori; Yokomizo, Junichi; Tanaka, Nobuhiro; Moriguchi, Hideyuki; and Hirata, Eiji, 5,004,401, Cl. 414-786.000.

Tanaka, Sakae: *See*—
Motai, Noboru; Tanaka, Sakae; and Watanabe, Yoshiaki, 5,005,056, Cl. 357-2.000.

Tanaka, Yukio, to Eastman Kodak Company. Light-emitting diode with light-transmissive film. 5,005,058, Cl. 357-17.000.

Tandem Computers Incorporated: *See*—
Lenoski, Daniel E., 5,005,118, Cl. 364-200.000.

Tanigawa, Masayoshi: *See*—
Tomita, Masahiro; Hayashi, Satoshi; Oda, Shinro; Fujii, Akira; and Tanigawa, Masayoshi, 5,004,945, Cl. 310-328.000.

Tanzawa, Takihei: *See*—
Ueno, Yoshifusa; Tanzawa, Takihei; and Suzuki, Takayuki, 5,004,988, Cl. 331-116.00R.

Tappert, Charles C.: *See*—
Ellozy, Hamed A.; Jeanty, Henry H.; and Tappert, Charles C., 5,005,205, Cl. 382-3.000.

Taraci, Brian: *See*—
Taraci, Richard; Taraci, Brian; and Gorgenyi, Imre, 5,004,973, Cl. 324-158.00R.

Taraci, Richard; Taraci, Brian; and Gorgenyi, Imre, to Thermal Management, Inc. Method and apparatus for maintaining electrically operating device temperatures. 5,004,973, Cl. 324-158.00R.

Tarumi, Noriyoshi: *See*—
Tomono, Makoto; Tarumi, Noriyoshi; and Sato, Masayuki, 5,004,666, Cl. 430-110.000.

Tashima, Seiji: *See*—
Shibata, Masanori; Okimoto, Haruo; Akagi, Toshimichi; and Tashima, Seiji, 5,003,781, Cl. 60-600.000

Taureg, Herbert, to Viscodrive GmbH. Fluid friction coupling with closing slide. 5,004,085, Cl. 192-58.00B.

Taylor, Charles S.; and Hampton, Hilary J., to Advanced Cardiovascular Systems, Inc. Steerable dilation catheter. 5,003,989, Cl. 128-772.000.

Taylor, Joann: *See*—
Taylor, Sylvester R., III; and Taylor, Joann, 5,004,286, Cl. 296-24.100.

Taylor, John R., to Innovative Building Products, Inc. Glass-block panels with improved thermal conduction characteristics. 5,003,744, Cl. 52-308.000.

Taylor, Raymond F., Jr.: *See*—
Wolf, Charles B.; Dighe, Shyam V.; Martin, Paul E.; Taylor, Raymond F., Jr.; and Melilli, William J., 5,004,888, Cl. 219-121.520.

Taylor, Robert E.: *See*—
Hallam, Donald E.; Popper, Peter; Staunton, Harold F., Taylor, Robert E.; and Yngve, Paul W., 5,003,763, Cl. 57-297.000.

Taylor, Sylvester R., III; and Taylor, Joann. Transport vehicle protective shield. 5,004,286, Cl. 296-24.100.

Tayon, Jeffrey E.: *See*—
Carlson, Harold L.; DeWitt, Michael D.; Martel, Louis, Jr.; Kelley, Larry W.; and Tayon, Jeffrey E., 5,004,077, Cl. 188-2.00D.

Tazartes, Daniel A.; Mark, John G.; and Mathews, Anthony, to Litton Systems, Inc. Apparatus and method for correcting ring laser gyroscope phase errors at turnaround. 5,004,344, Cl. 356-350.000.

TCH Thermo-Consulting-Heidelberg GmbH: *See*—
Mucic, Vinko; Thieme, Kurt; and Engelmann, Jurgen, 5,004,043, Cl. 165-118.000.

TDK Corporation: *See*—
Okamura, Masatoshi; Namioka, Takashi; and Shiba, Haruo, 5,004,180, Cl. 242-198.000.

Teal, Chuck. Purse light assembly. 5,005,111, Cl. 362-156.000.

Technion Research and Development Foundation Ltd.: *See*—
Beyar, Mordechay; and Foux, Amnon, 5,004,454, Cl. 600-30.000.
Grunfeld, Hay; Lotan, Noah; and Sideman, Samuel, 5,004,547, Cl. 210-635.000.

Technological Safety Design, Inc.: *See*—
Sova, Phillip R., 5,003,906, Cl. 114-211.000.

Technology 21, Inc.: *See*—
Dunseath, W. J., Jr., 5,003,978, Cl. 128-640.000.

Tecres Spa: *See*—
Faccioli, Giovanni; De Bastiani, Basilio M.; Magnan, Bruno; and Soffiatti, Renzo, 5,004,501, Cl. 106-35.000.

Teetz, Christoph: *See*—
Gubon, Peter; Sudmanns, Hans; and Teetz, Christoph, 5,003,934, Cl. 123-52.0MV.

Tektronix, Inc.: *See*—
Falk, Timothy L.; and Rhoads, Geoffrey B., 5,005,145, Cl. 364-571.020.
Jordan, Dale A., 5,004,975, Cl. 324-121.00R
Widener, Glenn F., 5,004,933, Cl. 307-269.000.

Teledyne Brown Engineering: *See*—
Caulfield, H. John; Hester, Charles F.; Kinser, Jason M.; and Shamir, Joseph, 5,004,309, Cl. 350-3.680.

Teledyne Industries, Inc.: *See*—
Terrell, John; Kadis, Paul M.; Hiney, Leonard L.; and Pfaff, Susan E., 5,003,807, Cl. 72-351.000.

Teleflex Incorporated: *See*—
Pospisil, Joseph, 5,003,838, Cl. 74-502.400.

Teleki, Bela; Holden, Alan G.; and Chong, Leang H., to Johnson Matthey Public Limited Company. Low pass filter system for an electrical circuit. 5,004,991, Cl. 333-168.000.

Temple, Stephen: *See*—
Bartky, W. Scott; Paton, Anthony D.; Temple, Stephen; and Michaelis, A. John, 5,003,679, Cl. 29-25.350.

Tenaillon, Alain: *See*—
Botteau, Richard; Labayle, Denis; and Tenaillon, Alain, 5,003,657, Cl. 15-104.330.

Terada, Akio: *See*—
Yamamoto, Makoto; and Terada, Akio, 5,005,163, Cl. 369-44.360.

Terada, Nobuhiro; Shimizu, Masataka; and Matsuzawa, Soichiro, to NGK Insulators, Ltd. Method of producing a magnetic head core having track-width defining cut outs formed on opposite side of a magnetic gap. 5,003,688, Cl. 29-603.000.

Terada, Yukio: *See*—
Nakatani, Seiichi; Yuhaku, Satoru; Nishimura, Tsutomu; Terada, Yukio; and Baba, Yasuyuki, 5,004,640, Cl. 428-195.000.

Teradyne, Inc.: *See*—
Barnett, Roy, 5,004,426, Cl. 439-82.000.

Terai, Fumitaka; Yukawa, Kimio; Suyefuji, Mineo; Saito, Hiroki; and Yamaguchi, Shigeru, to Fuji Photo Film Co., Ltd. Coating method and apparatus. 5,004,628, Cl. 427-389.900.

Terai, Masao: *See*—
Saka, Kenji; Terai, Masao; and Yamamoto, Kanji, 5,003,966, Cl. 128-39.000.

Terauchi, Makoto; Ikeda, Chikako; and Aritomi, Mitsutoshi, to Mitsubishi Petrochemical Co., Ltd. Aromatic polythioetherimide. 5,004,800, Cl. 528-351.000.

Terbrusch, Rosemarie; and Spector, George. Trash can with tethered cover. 5,004,114, Cl. 220-296.000.

Terness, Peter; and Opelz, Gerhard, to Fresenius A. G. Immuno-suppressive material and process for preparing same. 5,004,604, Cl. 424-85.500.

Ternstrom, Ingela; and Eriksson, Mats, to Molnlycke AB. Disposable absorbent article. 5,004,465, Cl. 604-385.100.

Terrell, John; Kadis, Paul M., Hiney, Leonard L.; and Pfaff, Susan E., to Teledyne Industries, Inc. Press assembly and method of operation. 5,003,807, Cl. 72-351.000.

Terrot Strickmaschinen GmbH: *See*—
Leins, Eberhard; and Kunde, Klaus, 5,003,793, Cl. 66-9.00B

Terumo Kabushiki Kaisha: *See*—
Nogawa, Atsuhiko, 5,004,113, Cl. 215-358.000.

Testoff, Mary A.: *See*—
Schnur, Joel M.; Rudolph, Alan S.; and Testoff, Mary A., 5,004,566, Cl. 260-403.000.

Tetra Pak Holdings & Finance S.A.: *See*—
Reil, Wilhelm, 5,004,411, Cl. 425-117.000.

Texaco Inc: *See*—
Pasternak, Mordechai; Bartels, Craig R.; and Reale, John, Jr., 5,004,861, Cl. 585-818.000.

Texas Instruments Incorporated. *See*—
Andresen, Bernhard H., 5,004,936, Cl. 307-443.000.
Chen, Kueing-Long, 5,005,066, Cl. 357-43.000
Dent, Peter R.; and Bharya, Rajpal S., 5,005,150, Cl. 364-736.000.
Hariri, Farouk A., 5,004,519, Cl. 156-620.400.
Kleven, Lawrence P.; Agranat, Edward A.; Crisafulli, Jerry; Robinson, Hugh; Smith, David J., Wiseley, Thomas; Fortier, Richard C.; Johnson, Severne; and Menzin, Marvin, 5,004,954, Cl. 315-106.000.
Martin, Robert C., 5,005,173, Cl. 371-22.600.
Simpson, Richard D., 5,005,193, Cl. 377-33.000.
Sogge, Dale R.; O'Brien, Edward F.; and Czarn, David A., 5,004,876, Cl. 200-83.00P.
Sullivan, Harold W.; and McConnell, Pat M., 5,004,399, Cl. 414-729.000.

Textile Air Company, Inc.: *See*—
Wilson, Merlin C., 5,003,661, Cl. 15-301.000.

Tezuka, Kazunari; and Fujiki, Haruo, to Fuji Jukogyo Kabushiki Kaisha. Traction control system for a four-wheel drive motor vehicle. 5,004,064, Cl. 180-197.000.

Th. Goldschmidt AG: *See*—
Koerner, Gotz; and Schaefer, Dietmar, 5,004,559, Cl. 252-345.000.

Thanos, William N., Peterson, Bruce R., Moon, William G., Lindsay, Joshua; and Stone, Thomas R., to Quantum Corp. High performance, high capacity micro-winchester disk drive. 5,005,089, Cl. 360-77.080.

Theeten, Jean-Bernard: *See*—
Naillon, Martine; and Theeten, Jean-Bernard, 5,005,206, Cl. 382-56.000.

Theisen, Peter J.; Wycklendt, Daniel A., Juds, Mark A., and Moldovan, Peter K., to Eaton Corporation. Direct current switching apparatus. 5,004,874, Cl. 200-144.00R.

Thermal Management, Inc.: *See*—
Taraci, Richard; Taraci, Brian; and Gorgenyi, Imre, 5,004,973, Cl. 324-158.00R.

Thermodynetics, Inc.: *See*—
Jones, Brian C., 5,004,046, Cl. 165-156.000.

Thermos Company, Inc., The: *See*—
Hanagan, Joseph J., 5,003,960, Cl. 126-39.0BA

Theys, Robert A.: *See*—
Lee, Richard J.; Smith, Barbara A.; Theys, Robert G., Theys, Robert A.; and Murphy, Judy A., 5,004,920, Cl. 250-304.000

Theys, Robert G.: *See*—
Lee, Richard J., Smith, Barbara A.; Theys, Robert G., Theys, Robert A., and Murphy, Judy A., 5,004,920, Cl. 250-304.000.

Thieme, Kurt: *See*—
Mucic, Vinko; Thieme, Kurt; and Engelmann, Jurgen, 5,004,043, Cl. 165-118.000.

Thomas, John F., to Cargo Master Incorporated. Cargo truck body. 5,004,293, Cl. 296-166.000.

Thominet, Maurice; and Thominet, Rosemarie. Portable, collapsible cellular rack. 5,004,146, Cl. 229-120.310

Thominet, Rosemarie: *See*—
Thominet, Maurice; and Thominet, Rosemarie, 5,004,146, Cl. 229-120.310.

Thompson, Barry A., to Pich, Rene; Issaurat, Hubert, and Thompson, Barry A. Feeding livestock. 5,004,603, Cl. 424-81.000

Thompson, David R., to Pico Electronics Limited. Remote control. 5,005,187, Cl. 375-94.000.

Thompson, Douglas: *See*—
Wong, Kin Y., and Thompson, Douglas, 5,003,826, Cl. 73-828.000.

Thompson, Earl C. Demand type animal watering valve. 5,003,927, Cl. 119-72.500.

Thompson, Robert A., to General Electric Company. Method and system for monitoring shot peening. 5,003,805, Cl. 72-53.000

Thomson-Brandt Armements: *See*—
Bernard, Marc, 5,004,184, Cl. 244-3.220
Frehaut, Jean-Pierre; and Pineau, Jean-Pierre, 5,003,882, Cl. 102-387.000.
Joset, Gerard, 5,003,861, Cl. 89-1.550

Thomson CSF: *See*—
Elleaume, Philippe; and Prevost, Michel, 5,005,149, Cl. 364-728.010
Ikes, Jacques; Le Fur, Joel, and Nugues, Pierre, 5,004,952, Cl. 315-3.500

Thomson, Jody: *See*—
Hershenson, Susan, and Thomson, Jody, 5,004,605, Cl. 424-85.600

Thomson Tubes Electroniques. *See*—
Bergero, Jean-Pierre; and Couasnard, Claude, 5,004,990, Cl. 333-22.00R

Thorn Emi Flow Measurement Limited: *See*—
Jepson, Peter, and Tofield, Graham M., 5,003,810, Cl. 73-3.000

Thurston, Kurt W. Interlocking stacking plastic barricades. 5,003,912, Cl. 116-63.00P

Tibbitts, Gordon A., and Jones, Mark L., to Eastman Christensen Company. Drill bit with improved steerability. 5,004,057, Cl. 175-408.000.

Tiernan, Joan E. Treatment of concentrated industrial wastewaters originating from oil shale and the like by electrolysis polyurethane foam interaction. 5,004,531, Cl. 204-307.000.

Tietjen, Klaus-Gunther. *See*—
Weissmuller, Joachim; Tietjen, Klaus-Gunther; Stendel, Wilhelm; and Wachendorff-Neumann, Ulrike, 5,004,744, Cl. 514-247.000.

Timmins, Lawrence J.; and Krause, Duane K., to Chrysler Corporation. Rack for transporting vehicle center console assemblies. 5,004,102, Cl. 206-386.000.

Tipton, John P.: *See*—
Mixon, Larry C.; Snyder, George W.; Hill, Scott D.; Johnson, Gregory L.; Wlodarski, J. Frank; von Spakovsky, Alexis P., Emerson, John D., Cole, James M.; and Tipton, John P., 5,003,883, Cl. 102-476.000.

Tjassens, Hindrik: *See*—
Kluitmans, Johannes T. M.; and Tjassens, Hindrik, 5,005,178, Cl. 372-36.000.

TMC Corporation: *See*—
Holzl, Klaus, 5,004,261, Cl. 280-612.000.

Tobuse, Hiroaki; Murakami, Hidenobu; and Kamio, Masashi, to Mitsubishi Denki Kabushiki Kaisha. Electron beam direct printing apparatus. 5,005,138, Cl. 364-519.000.

Toda, Akitoshi: *See*—
Matsui, Hiroshi, and Toda, Akitoshi, 5,004,902, Cl. 250-201.800.

Toda, Manabu, to Sharp Kabushiki Kaisha. Cordless telephone apparatus. 5,005,198, Cl. 379-58.000.

Tofield, Graham M. *See*—
Jepson, Peter, and Tofield, Graham M., 5,003,810, Cl. 73-3.000

Toft, Malcolm P.: *See*—
Ashton, Michael J.; Bridge, Andrew W.; Chambers, Robert K., Dron, Donald I.; Fenton, Garry; Harris, Neil V., Lythgoe, David J.; McFarlane, Ian M.; Newton, Christopher G., Riddell, David; Smith, Christopher; Stuttle, Keith A. J.; and Toft, Malcolm P., 5,004,747, Cl. 514-309.000.

Tohzuka, Takashi; Yamamoto, Ikuo; and Misugi, Yoshihiko, to Daikin Industries Ltd. Fluorine-containing polyether and lubricant comprising the same. 5,004,554, Cl. 252-54.600.

Toji, Shigeo: *See*—
Suzuki, Noboru, Toji, Shigeo; and Uenaka, Yukio, 5,005,087, Cl. 358-227.000

Tojo, Tetsuo; Okada, Keiji; Nakahara, Takashi; and Kikuchi, Yoshiharu, to Mitsui Petrochemical Industries, Ltd. Vulcanizable rubber composition with triazine thiols. 5,004,787, Cl. 525-332.100.

Tokai Chemical Industries, Ltd.: *See*—
Kurimoto, Kazunori, 5,004,572, Cl. 264-46.600.

Tokico Ltd.: *See*—
Mizutani, Yoich, 5,004,265, Cl. 280-707.000.

Tokyo Electron Limited: *See*—
Imahashi, Issei, 5,004,924, Cl. 250-442.100.

Tom, Wilson. Multi-bolt door lock. 5,003,796, Cl. 70-107.000.

Tomida, Yoshinori: *See*—
Nishimura, Yukuo; Eguchi, Ken; Kawada, Haruki; Tomida, Yoshinori, Nakagiri, Takashi, Saito, Kenji, Kimura, Toshiaki, Matsuda, Hiroshi, Sakai, Kunihiro; and Miyazaki, Toshihiko, 5,004,671, Cl. 430-286.000.

Tomita, Masahiro, Hayashi, Satoshi; Oda, Shinro; Fujii, Akira; and Tanigawa, Masayoshi, to Nippondenso Co., Ltd. Piezoelectric type actuator. 5,004,945, Cl. 310-328.000.

Tomiyama, Akira: *See*—
Tomiyama, Tsuyoshi; Tomiyama, Akira; and Kubota, Koichi, 5,004,750, Cl. 514-382.000.

Tomiyama, Tsuyoshi; Tomiyama, Akira; and Kubota, Koichi, to Kotobuki Seiyaku Company Limited. Benzofuran and benzothiophene derivatives, of tetrazole and anti-hyperuricemia use thereof. 5,004,750, Cl. 514-382.000.

Tomiyoshi, Masanori: *See*—
Tsubone, Akira, Tomiyoshi, Masanori; Yokomizo, Junichi; Tanaka, Nobuhiro, Moriguchi, Hideyuki; and Hirata, Eiji, 5,004,401, Cl. 414-786.000.

Tomono, Makoto; Tarumi, Noriyoshi; and Sato, Masayuki, to Konica Corporation. Toner for use in developing electrostatic images. 5,004,666, Cl. 430-110.000.

Tomura, Yoshihiro, Maruhashi, Keiji; and Ozawa, Nobuyuki, to Kabushiki Kaisha Pilot. Device for advancing and retracting writing element in writing instrument. 5,004,364, Cl. 401-110.000.

Toray Industries, Inc.: *See*—
Tada, Kuniyuki, Minomiya, Eiichi; and Watanabe, Masatoshi, 5,004,855, Cl. 585-489.000

Toselli, Vittorio: *See*—
Zanardi, Angelo; Mei, Daniele; and Toselli, Vittorio, 5,004,412, Cl. 418-132.000

Toshiba Kikai Kabushiki Kaisha: *See*—
Fujita, Shigeru, Tanaka, Hideo; and Harada, Susumu, 5,005,116, Cl. 364-188.000

Toshiba Lighting & Technology Corporation: *See*—
Honda, Kazuo, Matsuura, Atsushi, and Sano, Hisanori, 5,004,951, Cl. 313-631.000.

Toshiba Silicone Co., Ltd.: *See*—
Nagaoka, Hisayuki, Zenbayashi, Michio, and Shimizu, Chiyuki, 5,004,793, Cl. 528-15.000.

Tosoh Corporation: *See*—
Takahashi, Mitsuru; Shuyama, Hideo; Miyano, Osamu, and Tsutsumi, Yukihiro, 5,004,567, Cl. 260-408.000.

Toyo Denso Kabushiki Kaisha: *See*—
Shibazaki, Toshiji; Okano, Masaru; Kishida, Naoto; Ozaki, Yoshihiro; and Iyama, Kunihiko, 5,004,996, Cl. 338-36.000.

Toyo Elizai Kabushiki Kaisha: *See*—
Uda, Masashi; and Oohira, Jun, 5,004,466, Cl. 604-385.200.

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Takahashi, Hiroaki, Okada, Haruo; Matsumoto, Katsuya; and Umino, Masuo, 5,004,546, Cl. 210-635.000.

Toyoda Gosei Co., Ltd.: *See*—
Inoue, Masaki, 5,003,684, Cl. 29-447.000.

Toyoshi, Naoki, Oka, Tateki; and Goto, Hiroshi, to Minolta Camera Kabushiki Kaisha. Developing apparatus with image quality control. 5,003,917, Cl. 118-653.000.

Toyota Jidosha Kabushiki Kaisha: *See*—
Imai, Hajime; Kito, Shozo, Harada, Shoichi; Yokoyama, Yoshinobu; Nakamura, Syuzi; Miyoshi, Shigetoshi; and Muramatsu, Tadao, 5,003,799, Cl. 70-247.000
Kato, Senji; and Oba, Hidehiro, 5,003,950, Cl. 123-422.000.
Takagi, Soya, Mori, Kazuhiko; Kawasaki, Minoru; and Kato, Shinji, 5,004,581, Cl. 420-487.000.

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Holroyd, Trevor J.; and Tracey, Timothy E., 5,004,985, Cl. 324-727.000.

Tracy, Darrel C. Live picture construction. 5,003,921, Cl. 119-5.000.

Trame, Charles E.; Karsten, Robert A., and Hobach, Michael W., to Everbrite, Inc. Changeable information scroll sign. 5,003,717, Cl. 40-518.000.

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Boilen, Irving, 5,005,161, Cl. 368-295.000.

Traudt, Jon E. Pressure controlled fresh air supply ventilation system soil gas pressure as a reference, and method of use. 5,003,865, Cl. 98-1.500.

Triangle Brass Manufacturing Company: *See*—
Campbell, Andrew B., and Simon, Ira J., 5,004,277, Cl. 292-166.000.

Trident Medical Products, Inc.: *See*—
Bruhl, Daniel E., Jr., 5,004,333, Cl. 351-45.000.

Tripar Incorporated: *See*—
Kersey, Robert L., 5,003,995, Cl. 131-359.000.

Truett, Martha: *See*—
Kuo, George, Masiarz, Frank; Truett, Martha, and Valenzuela, Pablo, 5,004,804, Cl. 530-387.000.

Truth Incorporated: *See*—
Berner, John M.; and Roman, Thomas A., 5,004,961, Cl. 318-65.000.

TRW Inc.: *See*—
Wood, Ruey E., Jr., 5,004,367, Cl. 403-46.000.

Tsantrizos, Youla S.: *See*—
Fortin, J. Andre; Ogilvie, Kelvin K.; Tsantrizos, Youla S.; and Kope, Harry H., 5,004,754, Cl. 514-570.000.

Tsarapkin, Viktor V.: *See*—
Goikhman, Yakov A.; Krjukov, Georgy M.; Onotsky, Melis I.; Sorokin, Georgy M., Filatov, Alexei V.; Tsarapkin, Viktor V.; Yakimov, Vadim P.; Smirnov, Gennady A.; Nikiforov, Ivan I.; Burdukovsky, Alexandr I., Daibov, Sergei V.; and Kurdjukov, Alexandr S., 5,004,056, Cl. 175-293.000.

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Tsubone, Akira; Tomiyoshi, Masanori; Yokomizo, Junichi; Tanaka, Nobuhiro; Moriguchi, Hideyuki; and Hirata, Eiji, to Kao Corporation, and Seibu Electric and Machinery Co., Ltd. Layer palletizing method. 5,004,401, Cl. 414-786.000.

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Tsuchida, Hirofumi, to Olympus Optical Co., Ltd. Vari-focal lens system. 5,004,329, Cl. 350-427.000.

Tsuchimoto, Shuhei: *See*—
Yoshinouchi, Atsushi; Itoh, Masataka; and Tsuchimoto, Shuhei, 5,004,905, Cl. 250-208.100.

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Iura, Kazuo; Tsuji, Kazunori; and Saka, Kazuhito, 5,003,761, Cl. 57-58.520.

Tsuji, Masahiro; Kawauchi, Susumu; and Nakayama, Hiroshi, to Nippon Mining Co., Ltd. Method of manufacturing film carrier. 5,004,520, Cl. 156-630.000.

Tsujimoto, Hisanaga, to Kabushiki Kaisha Toshiba. Cassette loading apparatus with single switch control. 5,005,091, Cl. 360-96.500.

Tsujita, Akio: *See*—
Haruki, Shinichi; Furuya, Yhuzi; and Tsujita, Akio, 5,005,051, Cl. 355-221.000.

Tsukahara, Hiroyuki: *See*—
Kakinoki, Yoshikazu; Nakashima, Masato; Koezuka, Tetsuo; Hiraoka, Noriyuki; Tsukahara, Hiroyuki; Suto, Yoshinori; Oshima, Yoshitaka; and Hashinami, Shinji, 5,004,929, Cl. 250-561.000.

Tsukahara, Hitoshi: *See*—
Kato, Koichiro; Fukuhara, Hiroshige; Kamishima, Hiroyuki; and Tsukahara, Hitoshi, 5,005,021, Cl. 343-717.000.

Tsukamoto, Akihiro; and Kobayashi, Kenichi, to Casio Computer Co., Ltd. Pager with a display function. 5,005,013, Cl. 340-825.440.

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Katsoka, Kenichi; and Tsukimoto, Takayuki, 5,004,964, Cl. 318-128.000.

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Otaka, Ken; Matsuo, Noritada; Tsushima, Kazunori, and Yano, Toshihiko, 5,004,753, Cl. 514-531.000

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Tucker, Donald L., to Raychem Corporation. Electrical connector. 5,004,432, Cl. 439-417.000.

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Cook, Stephen D., 5,004,476, Cl. 623-23.000.

Tullis, Barclay J.; and Kruger, James B., to Hewlett-Packard Company. Calibration target for surface analysis scanner systems. 5,004,340, Cl. 356-243.000.

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Cadwallader, George W.; Highfill, Louis A.; Kurdys, Gregory D.; and Turigliatto, Richard S., 5,004,589, Cl. 423-315.000.

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Bradley, Michael W.; Harris, Norman; and Turner, Keith, 5,004,845, Cl. 568-885.000.

Ty Tan, Michael R.; and Wang, Shih-Yuan, to Hewlett-Packard Company. Low loss, low dispersion velocity-matched travelling wave modulator. 5,004,313, Cl. 350-96.140.

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Shisgal, Ben Z.; and Tzelnick, Tzvi, 5,004,997, Cl. 340-436.000.

Ube Industries, Ltd.: *See*—
Kuriyama, Minoru, 5,004,038, Cl. 164-305.000.

Uchikawa, Fusaoki: *See*—
Kobayashi, Toshio; Uchikawa, Fusaoki; Nomura, Kenji; Morita, Masao; and Yokoyama, Shouichi, 5,004,720, Cl. 505-1.000

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Udagawa, Tsunekazu, to Ishikawa Gasket Co., Ltd. Metal plate with a bead. 5,004,250, Cl. 277-236.000.

Udofot, Michael P. Light activated vehicle sensor with flashing light and pulsing sound alarm. 5,005,004, Cl. 340-600.000.

Ueda, Shinji, to Fuji Photo Film Co., Ltd. Method for processing a silver halide color photographic material. 5,004,677, Cl. 430-382.000.

Ueda, Tetsuya, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor card which can be folded. 5,004,899, Cl. 235-492.000.

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Uemura, Hiroki: *See*—
Oono, Toshio; and Uemura, Hiroki, 5,004,078, Cl. 188-218.00A.

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Suzuki, Noboru; Toji, Shigeo; and Uenaka, Yukio, 5,005,087, Cl. 358-227.000.

Ueno, Yoshifusa; Tanzawa, Takihei; and Suzuki, Takayuki, to Nihon Dempa Kogyo Co., Ltd. Quartz crystal oscillator with temperature-compensated frequency characteristics. 5,004,988, Cl. 331-116.00R.

UFI, Inc.: *See*—
Miksitz, Frank J., 5,003,920, Cl. 119-163.000.

Ul-Tie-Mate Products, Inc.: *See*—
Dean, Grant, 5,003,929, Cl. 119-120.000.

Ulyanitsky, Vladimir J.; Gavrilenko, Tamara P.; Nikolaev, Jury A.; and Buteev, Alexandr I. Arrangement for conveying powder to the barrel of a gas detonation apparatus. 5,004,021, Cl. 141-67.000.

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Bienaime, Patrick, 5,004,147, Cl. 229-198.200.
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Atkins, Kenneth E.; Gentry, Robert R., and Gandy, Raymond C., 5,004,765, Cl. 523-434.000.
Union Carbide Corporation: *See*—
Haas, Oscar W., Prasad, Ravi; and Smolarek, James, 5,004,482, Cl. 55-16.000.
Moore, Arthur W., 5,004,708, Cl. 501-96.000.
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Litz, Lawrence M., Weise, Mark K., and Haid, David A., 5,004,571, Cl. 261-91.000.
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Ghandehari, Mohammad H., 5,004,499, Cl. 75-254.000.
Kanne, Diane D., 5,004,480, Cl. 44-387.000.
Kissel, Charles L., 5,004,562, Cl. 252-518.000.
Kissel, Charles L., 5,004,563, Cl. 252-518.000.
Unique Mobility, Inc. *See*—
Fisher, Gene A., 5,004,944, Cl. 310-266.000.
United Kingdom Atomic Energy Authority *See*—
Edwards, Stanley A., 5,004,922, Cl. 250-340.000.
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Administrator, the National Aeronautics and Space Administration *See*—
Krishen, Kumar; Shaw, Scott W., and deFigueiredo, Rui J. P., 5,005,147, Cl. 364-578.000.
Agriculture: *See*—
Springer, Edward L.; and Minor, James L., 5,004,523, Cl. 162-76.000.
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Soref, Richard A., 5,004,447, Cl. 350-96.140.
Army: *See*—
Mixon, Larry C.; Snyder, George W., Hill, Scott D., Johnson, Gregory L., Wlodarski, J. Frank; von Spakovsky, Alexis P.; Emerson, John D., Cole, James M., and Tipton, John P., 5,003,883, Cl. 102-476.000.
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Loo, Billy W.; and Goulding, Frederick S., 5,003,980, Cl. 128-653.00R.
Smither, Robert K., 5,004,319, Cl. 350-162.210.
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Wyatt, Richard J., Freed, William J., and Staub, Richard A., 5,004,457, Cl. 604-158.000.
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Johnston, Norman J.; St. Clair, Terry L., Baucom, Robert M., and Gleason, John R., 5,004,575, Cl. 264-136.000.
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Goldstein, David, 5,003,779, Cl. 60-527.000.
Herold, Stanley J.; Howard, Charles D., and LaGrange, Donald E., 5,003,881, Cl. 102-337.000.
Jarrett, Bobby R., 5,004,183, Cl. 244-3.110.
Keller, Teddy M.; and Price, Thomas R., deceased, 5,004,801, Cl. 528-360.000.
Lockhart, John C., Jr.; Hartman, Standish C.; Meuron, Bruce R., and Lyons, Joseph B., Jr., 5,004,185, Cl. 224-3.140.
Moody, Paul E., 5,003,909, Cl. 114-238.000.
Reindel, John, 5,004,993, Cl. 333-208.000.
Walters, Glenn A., 5,005,018, Cl. 342-203.000.
U S Philips Corporation *See*—
Bakker, Jacobus G. C., and Collet, Marnix G., 5,005,062, Cl. 357-24.000.
Grave, Georges A.; and Gaslonde, Jean-Pierre, 5,005,207, Cl. 388-816.000.
Hasler, Rudolf, 5,004,989, Cl. 331-117.00R.
Kluitmans, Johannes T. M.; and Tjassens, Hindrik, 5,005,178, Cl. 372-36.000.
Martens, Gerhard, Kordts, Jurgen; and Weidinger, Georg, 5,004,912, Cl. 250-227.140.
Naillon, Martine; and Theeten, Jean-Bernard, 5,005,206, Cl. 382-56.000.
Ney, Hermann, 5,005,203, Cl. 381-43.000.
Proksa, Roland; Roschmann, Peter; and van den Berg, Noel J. M., 5,004,983, Cl. 324-322.000.
Schmidt, Konrad; and Kramer, Ralf, 5,005,016, Cl. 341-142.000.
Van Andel, Maarten A.; Van Liempd, Johannes P. J. G., and Wijn, Josephus M., 5,004,660, Cl. 430-17.000.
Van Berkel, Cornelis H.; Saeijs, Ronald W. J. J., and Niessen, Cornelius, 5,005,136, Cl. 364-490.000.
Verhulst, Antonius G. H.; Bruinink, Jacob; and Lenders, Emanuel J. W. M., 5,004,322, Cl. 350-320.000.
United Steel Products Co.. *See*—
Young, Daniel E., 5,004,369, Cl. 403-232.100.
United Technologies Corporation: *See*—
Beckwith, Barry M., 5,003,773, Cl. 60-262.000.
Burchette, Herbert L., Hansen, Lee E., West, James C.; and Nawrocki, Glen A., 5,004,402, Cl. 415-137.000.
Kester, Jervis D.; and Redington, Clarence P., 5,003,771, Cl. 60-243.000.
Unitrode Corporation: *See*—
Blackstone, Scott C., 5,004,705, Cl. 437-225.000.
Univ. of CA. *See*—
Pardridge, William M., 5,004,697, Cl. 436-547.000.
Universal Company, Ltd.: *See*—
Okada, Kazuo, 5,004,238, Cl. 273-121.00B.
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Fortin, J. Andre, Ogilvie, Kelvin K., Tsantrizos, Youla S., and Kope, Harry H., 5,004,754, Cl. 514-570.000.
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Isayev, Avraam I., 5,004,766, Cl. 524-30.000.
University of Cincinnati *See*—
Bobst, Albert M. and Pauley, Gary T., 5,004,809, Cl. 536-29.000.
University of Florida, The *See*—
Jaeger, Marc J., 5,004,041, Cl. 165-8.000.
University of Georgia Research Foundation, Inc *See*—
Miller, Lois K., 5,004,687, Cl. 435-69.100.
Ragland, William L.; and Elfaki, Mohamed G., 5,004,607, Cl. 424-88.000.
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Altschuler, Martin D., and Whittington, Richard, 5,005,143, Cl. 364-554.000.
Chalupa, William; Kronfeld, David S., Schneider, Paul L., and Sklan, David, 5,004,728, Cl. 514-12.000.
University of Virginia *See*—
Merckel, Michael B., Adams, Ann H., and Brookeman, James R., 5,003,979, Cl. 128-653.00A.
University of Virginia Alumni Patents Foundation, The *See*—
Ravdin, Jonathan I., and Petri, William A., Jr., 5,004,608, Cl. 424-88.000.
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Barger, Paul T., Barder, Timothy J., Lin, David Y., and Hobbs, Simon H., 5,004,853, Cl. 585-481.000.
Gajda, Gregory J., 5,004,858, Cl. 585-667.000.
Kalnes, Tom N., and James, Robert B., Jr., 5,004,533, Cl. 208-50.000.
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Watanabe, Hideaki, 5,004,194, Cl. 248-74.500.
Utton, Donald B., and Windebank, Stephen R., to NNC Limited Heat transfer measurement. 5,004,354, Cl. 374-29.000.
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Gagneux, Georges, 5,004,943, Cl. 310-239.000.
Valeo Thermique Moteur: *See*—
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Vali, Victor, Chang, David B., and Brownrigg, Patrick C., to Hughes Aircraft Company Fiber-optic interferometric chemical sensor. 5,004,914, Cl. 250-227.270.
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Ide, Tohru, 5,004,450, Cl. 474-242.000.
Van Andel, Maarten A., Van Liempd, Johannes P. J. G., and Wijn, Josephus M., to U S. Philips Corporation Master disc and method of manufacturing a matrix. 5,004,660, Cl. 430-17.000.
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Van Blaircum, Bennie A., Harwood, Jon W.; and Kimmet, Mark S., to AP Parts Manufacturing Company. Stamp formed muffler with transverse baffle tube. 5,004,069, Cl. 181-282.000.
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van den Berg, Noel J. M.: *See*—
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Van Den Brink, Anthonie, to Eurotool B.V. Injection nozzle for use in an injection moulding device. 5,004,416, Cl. 425-564.000.
van den Burg, Johannes M. E., to Mijnhardt B.V. Flowmeter for gases. 5,003,828, Cl. 73-861.330.
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Devon, Thomas J.; Phillips, Gerald W.; Puckette, Thomas A., Stavinoha, Jerome L., and Vanderbilt, Jeffrey J., 5,004,823, Cl. 556-136.000.
Vanderlaan, Robert D., to Pneumo Abex Corporation. Direct drive valve force motor with gain shaping provision. 5,004,940, Cl. 310-36.000.
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Van Ketel, Hendrik, to 501 Heerema Engineering Service B.V. Cranes. 5,004,108, Cl. 212-255.000.
Van Leeuwen, Petrus W. N. M.; and Roobeek, Cornelis F., to Shell Oil Company Process for the reduction of carbonyl compounds. 5,004,844, Cl. 568-880.000.
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Hanson, Charles M.; Koester, Vaughn J.; and Fallstrom, Robert D., 5,005,213, Cl. 455-617.000.
Varvello, Angelo; Vignotto, Angelo; and Moretti, Roberto, to RIV-SKF Officine di Villar Perosa S.p.A. Device enabling the revolutionary speed to be measured between two parts in relative rotation such as the supports of a vehicle wheel. 5,004,358, Cl. 384-446.000.
Vasquez, Barbara: *See*—
Zdebel, Peter J., and Vasquez, Barbara, 5,004,703, Cl. 437-67.000.
Vassenaix, Michel; and Milcamps, Jacques, to CGR MeV. Device for the irradiation of a product on both faces. 5,004,926, Cl. 250-492.300.
Vaterlaus, Arthur, to Arva AG Outlet and flow control device for metallurgical vessels and process. 5,004,130, Cl. 222-590.000.
Vaughn, Walter L.: *See*—
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VDO Adolf Schindling AG: *See*—
Mayer, Klaus, 5,003,914, Cl. 116-332.000.
Vega, Julio J.: *See*—
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Velke, James D.; and Wright, William R., to Lawn-Wright, Inc Sulky apparatus attachable to a self-propelled power mower. 5,004,251, Cl. 280-32.700.
Venture Innovations, Inc.: *See*—
House, Roy F., Wilkinson, Andree H.; and Cowan, Jack C., 5,004,553, Cl. 252-8.510.
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Vermeire, Dirk V. Hip prosthesis. 5,004,475, Cl. 623-23.000.
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Vestuti, Emile. Tree grate system. 5,003,724, Cl. 47-25.000.
Vicari, Richard; Costanza, John R.; Lamonte, Ronald R.; and Miano, Ralph M., to Hoechst Celanese Corporation. Preparation of poly(arylate) using a non-solvent. 5,004,796, Cl. 528-179.000.
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Wyatt, Richard J.; Freed, William J.; and Staub, Richard A., to United States of America, Health and Human Services. Tissue transplantation system. 5,004,457, Cl. 604-158.000.
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Theisen, Peter J.; Wycklendt, Daniel A.; Juds, Mark A.; and Moldovan, Peter K., 5,004,874, Cl. 200-144.00R.
Wycliffe, Paul A.: *See*—
Hunter, John A.; Scamans, Geoffrey M.; O'Callaghan, Wilfred B.; and Wycliffe, Paul A., 5,004,654, Cl. 429-50.000.
Wyers, Philip W. Detachable article carrier assembly. 5,004,133, Cl. 224-42.45R.
Wysk, Wolfram: *See*—
Dethlefs, Ralf-Burkhard; Scholz, Bernd; Wysk, Wolfram; and Miefert, Elke, 5,004,644, Cl. 428-323.000.
XAAR Limited: *See*—
Bartky, W. Scott; Paton, Anthony D.; Temple, Stephen; and Michaelis, A. John, 5,003,679, Cl. 29-25.350.
Xerox Corporation: *See*—
Badesha, Santokh S.; Stolka, Milan; Pai, Damodar M.; and Abkowitz, Martin A., 5,004,663, Cl. 430-59.000.
Fuller, Timothy J.; Marchessault, Robert H.; and Bluhm, Terry L., 5,004,664, Cl. 430-106.600.
Law, Kock-Yee; and Bailey, F. Courtney, 5,004,661, Cl. 430-59.000.
Sardano, Peter A.; and Kazmierczak, Irvin J., 5,004,218, Cl. 271-35.000.
Stokes, Ronald E.; Nowak, William J.; Attardi, Anthony A.; and Costanza, Daniel W., 5,005,054, Cl. 355-273.000.
Yacoub, Naseem: *See*—
Landa, Benzion; Hochman, Haim; and Yacoub, Naseem, 5,004,165, Cl. 241-21.000.
Yada, Akira; and Matsumoto, Shusaku, to Dai-Ichi Kogyo Seiyaku Co., Ltd. Process for continuously preparing acrylic polymer gel. 5,004,761, Cl. 522-3.000.
Yagawa, Hiroshi, to AMP Incorporated. Optical fiber cable-stripping device. 5,003,846, Cl. 81-9.420.
Yagawara, Shinji; Manaka, Junji; and Ohta, Wasaburo, to Ricoh Company, Ltd. Gas detecting device. 5,003,812, Cl. 73-31.060.
Yagi, Masanori; DiViesti, Anthony M.; Regnier, Kent E.; Yamada, Shoji E.; and Walse, Alan S., to Molex Incorporated. Metal latch for SIMM socket. 5,004,429, Cl. 439-326.000.
Yagi, Toshihiko; Kumashiro, Kenji; and Takiguchi, Hideki, to Konica Corporation. High-speed and well-preservable silver halide photographic light-sensitive material. 5,004,680, Cl. 430-603.000.
Yagihara, Morio: *See*—
Okutsu, Eiichi; Hirano, Mitsunori; and Yagihara, Morio, 5,004,670, Cl. 430-265.000.
Yahata, Makoto; and Nishida, Fumihiko, to Dainippon Screen Mfg. Co., Ltd. Automatic masking device. 5,005,044, Cl. 355-40.000.
Yakimov, Vadim P.: *See*—
Goikhman, Yakov A.; Krjukov, Georgy M.; Onotsky, Melis I.; Sorokin, Georgy M.; Filatov, Alexei V.; Tsarapkin, Viktor V.; Yakimov, Vadim P.; Smirnov, Gennady A.; Nikiforov, Ivan I.; Burdukovsky, Alexandr I.; Daibov, Sergei V.; and Kurdjukov, Alexandr S., 5,004,056, Cl. 175-293.000.
Yakuwa, Masahiko; Itoh, Tomofumi; and Igarashi, Hisashi, to Honda Giken Kogyo Kabushiki Kaisha. Fail-safe device for temperature sensors. 5,003,954, Cl. 123-479.000.
Yalpani, Manssur; and Abdel-Malik, Magdy M., to Domtar Inc. Aminoalkyl-derivatives of hydroxyalkyl-celluloses. 5,004,808, Cl. 536-56.000.

Yamada, Kaneo: *See—*
Hayashi, Shigeru; and Yamada, Kaneo, 5,004,609, Cl. 424-94.300.

Yamada, Koji: *See—*
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Yamada, Noriyuki: *See—*
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Yamada, Shinji; Kohno, Teruhisa, and Takata, Koji, to Sumitomo Electric Industries, Ltd. Modulator for use in an anti-lock brake control system. 5,004,301, Cl. 303-115.000.

Yamada, Shoji E.: *See—*
Yagi, Masanori; DiViesti, Anthony M.; Regnier, Kent E., Yamada, Shoji E., and Walse, Alan S., 5,004,429, Cl. 439-326.000.

Yamada, Taketoshi; Habu, Takeshi; and Takamuki, Yasuhiko, to Konica Corporation. Light-sensitive silver halide photographic material. 5,004,669, Cl. 430-264.000.

Yamaguchi, Shigeru: *See—*
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Yamaguchi, Tadamasa. *See—*
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Yamaha Hatsudoki Kabushiki Kaisha. *See—*
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Yamakawa, Tsutomu; and Kobayashi, Hiroaki, to Kabushiki Kaisha Toshiba. Method and system for controlling gain and offset in radiation measurement apparatus. 5,004,904, Cl. 250-207.000.

Yamamoto, Ikuo: *See—*
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Yamamoto, Kazuo, to Nippon Seiko Kabushiki Kaisha. Mechanism for positional adjustment of anchor for webbing in passive seat belt system for vehicle. 5,004,268, Cl. 280-804.000.

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Yamamoto, Makoto; and Terada, Akio, to Nakamichi Corp. Level shift circuit of optical disc apparatus. 5,005,163, Cl. 369-44.360.

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Yamamoto, Tetsushi; Niwano, Masaru; and Nakagawa, Etsuo, to Chisso Corporation. Apparatus for stabilization treatment of ferromagnetic metal powder. 5,003,919, Cl. 118-716.000.

Yamamoto, Yohzoh; Ishiwata, Shuichi; Yokoyama, Kenji; and Hasegawa, Kimio, to Mitsui Petrochemical Industries, Ltd., and NEC Environment Engineering, Ltd. Composition for vibration damper, process for manufacture thereof, and vibration damper. 5,004,764, Cl. 523-400.000.

Yamanaka, Toshihiro; Maeda, Shigemi; and Horie, Nobuyuki, to Sharp Kabushiki Kaisha. Method for managing information on a storage media without losing information due to effects. 5,005,165, Cl. 369-58.000.

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Yamashita, Itaru: *See—*
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Yamazaki, Etsuo; Iehisa, Nobuaki; and Suzuki, Kazuhiro, to Fanuc Ltd. Laser power controlling method. 5,004,889, Cl. 219-121.610

Yamazaki, Toshio. Automobile side door extendable and retractable bump protector. 5,004,281, Cl. 293-118.000

Yan, Tsoung Y., to Mobil Oil Corp. Pseudocumene and mesitylene production and coproduction thereof with xylene. 5,004,854, Cl. 585-489.000

Yanagida, Jun: *See—*
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Yano, Tadashi, and Hamada, Kenichi, to Mitsubishi Jukogyo Kabushiki Kaisha. Printing apparatus inker with end dams. 5,003,877, Cl. 101-363.000.

Yano, Toshihiko: *See—*
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Yasuda, Hiroshi: *See—*
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Yasuzawa, Toru; Nakanishi, Satoshi; Murakata, Chikara; Kase, Hiroshi, Sano, Hiroshi; and Yamada, Koji, to Kyowa Hakko Kogyo Co., Ltd. KS-501 derivatives. 5,004,833, Cl. 536-18.200.

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Yeh, Felix W. H. *See—*
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Yeo, Jong K., Kim, Chung S.; Lee, Dong J.; and Jang, Sung H., to Lucky, Ltd. Thermosetting polyimide resin composition. 5,004,774, Cl. 524-262.000

Yin, Simon, to Square D Company. Vacuum interrupter. 5,004,877, Cl. 200-144.00B.

Yngve, Paul W.: *See—*
Hallam, Donald E.; Popper, Peter; Staunton, Harold F.; Taylor, Robert E., and Yngve, Paul W., 5,003,763, Cl. 57-297.000

Yokoe, Masaaki, Kurono, Yoshikazu; and Hayashi, Koji, to Brother Kogyo Kabushiki Kaisha. Sewing system. 5,003,897, Cl. 112-121.120.

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Yoneda, Tetsuya, and Sato, Shin, to Sharp Kabushiki Kaisha. Battery. 5,004,657, Cl. 429-193.000

Yoneyama, Hiroyuki, Takahashi, Osamu; Yoshida, Kazuaki; and Ishikawa, Takatoshi, to Fuji Photo Film Co., Ltd. Method for processing a silver halide photosensitive material for color photography. 5,004,675, Cl. 430-377.000

Yoneyama, Syuichi, Obana, Yoshinori; and Fujisawa, Eiichi, to Nissan Motor Co., Ltd. Ignition coil mounting structure for engine. 5,003,958, Cl. 123-635.000.

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Yoshida, Tutomu; and Iida, Shigeharu, to Daikin Industries Ltd. Process for preparing di(fluoroalkyl containing group-substituted alkyl) phosphate salt. 5,004,825, Cl. 558-131.000.

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Yoshino, Masato, to Sumitomo Electric Industries, Ltd. Antilock brake control device. 5,005,132, Cl. 364-426.020.

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Yoshino, Yoshimi; Ao, Kenichi, Izawa, Ichiro; and Arasuna, Toshikazu, to Nippondenso Co., Ltd. Device for detecting magnetism. 5,005,064, Cl. 357-27.000.

Yoshino, Yousuke, to Yoshino Seiki Inc. Mist-spouting type drilling device. 5,004,382, Cl. 408-60.000

Yoshinouchi, Atsushi; Itoh, Masataka; and Tsuchimoto, Shuhei, to Sharp Kabushiki Kaisha. Contact type image sensor with a fiber array coated in part with an absorber. 5,004,905, Cl. 250-208.100.

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Yoshioka, Takeo; and Minagawa, Tadao, to Mitsubishi Denki K.K. Method for controlling gas in halogen gas laser and device therefor. 5,005,181, Cl. 372-59.000.

Young, Alfred; and Church, Fred E., to Design Tool, Inc. Fastener feeding and driving apparatus. 5,004,141, Cl. 227-112.000.

Young, Daniel E., to United Steel Products Co. Slope and skew hanger. 5,004,369, Cl. 403-232.100.

Young, Robert N., Zamboni, Robert; and Gauthier, Jacques Y., to Merck Frosst Canada, Inc. Pyridyl styrene dialkanoic acids as anti-leukotriene agents. 5,004,743, Cl. 514-227.800.

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Youngs, Janene. Self-adherent foam wrapping material. 5,004,642, Cl. 428-222.000

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Zaghloul, Amir I.; and Sorbello, Robert M., to Communications Satellite Corporation. Electromagnetically coupled printed-circuit antennas having patches or slots capacitively coupled to feedlines. 5,005,019, Cl. 343-700.0MS.

Zahnradfabrik Friedrichshafen AG: *See—*
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Zambon S p A.: *See—*
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Zanardi, Angelo; Mei, Daniele; and Toselli, Vittorio, to Sauer-Sundstrand S.p.A. Gear machine for use as a pump or motor. 5,004,412, Cl. 418-132.000.

Zdebel, Peter J.; and Vasquez, Barbara, to Motorola. Multiple trench semiconductor structure method. 5,004,703, Cl. 437-67.000

Zdepski, Joel W.; and Koslov, Joshua L., to General Electric Company. Video signal compander adaptively responsive to predictions of the video signal processed. 5,005,082, Cl. 358-174.000.

Zebco Corporation: *See—*
Councilman, Richard R., 5,004,182, Cl. 242-232.000.

Zecher, Wilfried; El-Sayed, Aziz; Haese, Wilfried; Kohler, Burkhard, and Meyer, Rolf-Volker, to Bayer Aktuengesellschaft. Aliphatic-aromatic polyamide-imides. 5,004,795, Cl. 528-73.000.

Zelko, William E.: *See—*
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Zhang, Chong L.: *See—*
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Zimmer: *See—*
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Zlobinsky, Yury, to Savant Instruments. Cell preservation system. 5,003,787, Cl. 62-185.000.

Zocchi, Germaine: *See—*
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Zodrow, Rudolf, to ETI-TEC Maschinenbau GmbH. Labelling machine for objects such as bottles or the like. 5,004,518, Cl. 156-568.000.

Zoller-Kipper GmbH: *See—*
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Zweifel, Martin R. Method and plant for burning special waste. 5,003,893, Cl. 110-346.000.

Zweig, Andrew M.: *See—*
Harnish, Daniel F.; Pickens, Donald; and Zweig, Andrew M., 5,004,790, Cl. 526-242.000.

Zweigart, Gerhard: *See—*
Bauer, Theodor; and Zweigart, Gerhard, 5,004,291, Cl. 296-116.000.

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Van Ketel, Hendrik, 5,004,108, Cl. 212-255.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 2ND DAY OF APRIL, 1991

NOTE —Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice)

Alcofuels, Inc : *See—*
Badger, Stephen L., Re 33,562, Cl 44-438.000

AMCA International Corporation: *See—*
Heckelsberg, Robert E., Re 33,563, Cl 52-404.000

Badger, Stephen L., to Alcofuels, Inc. Fuel composition Re 33,562, Cl 44-438.000.

Ballard Medical Products *See—*
Ford, George W , Jr , Re 33,564, Cl. 222-209.000

Beck, Lee R *See—*
Stolle, Ralph J , and Beck, Lee R , Re 33,565, Cl 424-87.000

Ford, George W , Jr , to Ballard Medical Products Foam dispensing device Re 33,564, Cl 222-209.000

Heckelsberg, Robert E , to AMCA International Corporation Metal panel roofing structure Re 33,563, Cl 52-404.000

Stolle, Ralph J , and Beck, Lee R., to Stolle Research and Development Corporation Prevention and treatment of rheumatioid arthritis Re 33,565, Cl 424-87.000

Stolle Research and Development Corporation *See—*
Stolle, Ralph J , and Beck, Lee R , Re 33,565, Cl 424-87.000

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

a Porta, Reudi *See—*
Bjerknes, Anders, and a Porta, Reudi, B1 4,198,094, Cl 297-306.000

Anchor Hocking Corp *See—*
Ochs, Charles S., B1 4,392,580, Cl 215-332.000

Bart, Philip D Doll which rises from prone to standing position B1 4,349,987, 4-2-91, Cl 446-355.000

Bjerknes, Anders, and a Porta, Reudi Working chair B1 4,198,094, 4-2-91, Cl 297-306.000

Cleveland Machine Controls, Inc *See—*
Griebeler, Elmer L , B1 4,459,526, Cl 318-576.000

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Burst, Hermann; and Kruschhausen, Heinz-Arno, 315,889, Cl. D12-187.000.
L.A. Gear, Inc.: *See*—
Clark, Larry M.; and Magdaleno, Janell E., 315,828, Cl. D2-314.000.
Lafley, Linda S. Nursing pillow. 315,845, 4-2-91, Cl. D6-601.000.
LaFond, Marcel L.: *See*—
Tollefson, R. M.; Armstrong, Dane A.; LeMonds, David A.; Wakefield, Douglas J., Altmann, Walter F.; and LaFond, Marcel L., 315,892, Cl. D12-315.000.
Lavinsky, Joshua F.; and Payne, Thomas M., to Lavinsky, Joshua F. Portable light projector for producing multicolored line patterns on a wall or the like in response to an audio input signal. 315,962, 4-2-91, Cl. D26-24.000.
Laws, Adam T., to McLaughlin, James Gregory. Rolling ruler. 315,873, 4-2-91, Cl. D10-62.000.
LeMonds, David A.: *See*—
Tollefson, R. M.; Armstrong, Dane A.; LeMonds, David A.; Wakefield, Douglas J., Altmann, Walter F.; and LaFond, Marcel L., 315,892, Cl. D12-315.000.
Leonard, Bruce A.; and Pelcher, Deborah N., to Eastman Kodak Compay Still camera. 315,916, 4-2-91. Cl. D16-218.000.
Leung, Anthony: *See*—
Rizzuto, Leandro P.; Lindsey, Frank; and Leung, Anthony, 315,967, Cl. D28-35.000.
Rizzuto, Leandro P., Lindsey, Frank; and Leung, Anthony, 315,968, Cl. D28-35.000.
Lewo, Joe. Combined vehicle sun visor and cellular telephone unit 315,890, 4-2-91, Cl. D12-191.000.
Life Technologies, Inc.: *See*—
Berninger, Mark; and Schuette, Michael, 315,951, Cl. D24-8.000
Berninger, Mark; and Schuette, Michael, 315,952, Cl. D24-8.000.
Lindeman, Phillip E.: *See*—
Wong, Allen; Soren, Leonid; and Lindeman, Phillip E., 315,907, Cl. D14-247.000.

Lindsey, Frank: *See*—
Rizzuto, Leandro P.; Lindsey, Frank; and Leung, Anthony, 315,967, Cl. D28-35.000.
Rizzuto, Leandro P.; Lindsey, Frank; and Leung, Anthony, 315,968, Cl. D28-35.000.
Livingstone, David J., to Greencare PTY. Limited. Knife holder for turf aeration machine. 315,913, 4-2-91, Cl. D15-28.000.
Lovecky, Craig S.: *See*—
Gelardi, Paul J.; Gelardi, Anthony L.; Lowry, Alan B.; Lovecky, Craig S.; and Farr, Richard H., 315,868, Cl. D9-341.000.
Lowry, Alan B.: *See*—
Gelardi, Paul J.; Gelardi, Anthony L.; Lowry, Alan B.; Lovecky, Craig S.; and Farr, Richard H., 315,868, Cl. D9-341.000.
Lundy, John C., to Vaporflow Technology, Inc. Anesthesia vaporizer unit. 315,950, 4-2-91, Cl. D24-8.000.
M.Y. Sports & Games Ltd.: *See*—
Whitebread, David, 315,871, Cl. D9-415.000.
MacLeod, Alan: *See*—
Zaborowski, Thaddeus; and MacLeod, Alan, 315,853, Cl. D8-30.000.
Magdaleno, Janell E.: *See*—
Clark, Larry M.; and Magdaleno, Janell E., 315,828, Cl. D2-314.000.
Makita Electric Works, Ltd.: *See*—
Fushiya, Fusao; and Yamauchi, Shigeki, 315,855, Cl. D8-68.000.
Mann, Lloyd J. Dental impression tray for small animals. 315,955, 4-2-91, Cl. D24-10.000.
Martorella, Ellen. Jewelry, trinket and accessory organizer. 315,839, 4-2-91, Cl. D6-513.000.
Mathey, Stanley A.: *See*—
Embree, Donald; and Mathey, Stanley A., 315,864, Cl. D8-395.000.
Matsubara, Takeshi: *See*—
Miyamoto, Akira; Ohmiya, Tokushige; Otani, Genichiro; Kawai, Setsuo; Watanabe, Kenji; Iijima, Goro; Matsubara, Takeshi; and Kameda, Takanobu, 315,919, Cl. D18-13.000.
Matsushita Graphic Communication Systems, Inc.: *See*—
Hokura, Yoshikazu, Koda, Hironosuke; and Fujimoto, Munerori, 315,898, Cl. D14-107.000.
McCaffrey, Jack: *See*—
Cahill, Basil; and McCaffrey, Jack, 315,942, Cl. D21-232.000.
McCready, Karen E., to Elleance Ltd. Lipstick case. 315,969, 4-2-91, Cl. D28-85.000.
McLaughlin, James Gregory: *See*—
Laws, Adam T., 315,873, Cl. D10-62.000.
Metrologic Instruments, Inc.: *See*—
Knowles, Carl H., 315,901, Cl. D14-116.000.
Micro-Contact Inc.: *See*—
Beaudoin, Gaetan; and Cimon, Jacques, 315,973, Cl. D30-122.000.
MicroComputer Accessories, Inc.: *See*—
Hassel, H. Charles; and Westland, Donald, 315,921, Cl. D18-22.000.
Minnesota Mining and Manufacturing Company: *See*—
Kelly, John S.; Horn, Jerold S.; and Pospisil, Jirina V., 315,957, Cl. D24-16.000.
Mitsubishi Denki K.K.: *See*—
Nishida, Mitsuhiro; Fujii, Kozaburo; Kondoh, Nobuyuki; and Abe, Yoshinori, 315,912, Cl. D15-7.000.
Miyamoto, Akira; Ohmiya, Tokushige; Otani, Genichiro; Kawai, Setsuo; Watanabe, Kenji; Iijima, Goro; Matsubara, Takeshi, and Kameda, Takanobu, to King Jim Co., Ltd. Electronic tape writer. 315,919, 4-2-91, Cl. D18-13.000.
Mobility Options Research Foundation: *See*—
Baker, Mac L'Dean, 315,884, Cl. D12-128.000.
Molzan, Albert R., to American Safety Flight Systems, Inc. Pressure reducer unit for emergency breathing systems. 315,971, 4-2-91, Cl. D29-6.000.
Moran, Ellen M.; and Moran, James M., to Moran, Ellen M. Wireform for an orthodontic appliance or similar article. 315,953, 4-2-91, Cl. D24-16.000.
Moran, James M.: *See*—
Moran, Ellen M., and Moran, James M., 315,953, Cl. D24-16.000.
Morimiya, Yuji, to Sony Corporation. Video camera combined with video tape recorder. 315,915, 4-2-91, Cl. D16-202.000.
Motorola Inc.: *See*—
Wong, Allen; Soren, Leonid; and Lindeman, Phillip E., 315,907, Cl. D14-247.000.
Nakauma, Yoshiaki, to Namco, Ltd. Game cartridge. 315,902, 4-2-91, Cl. D14-121.000.
Nakauma, Yoshiaki, to Namco, Ltd. Game cartridge. 315,903, 4-2-91, Cl. D14-121.000.
Namco, Ltd.: *See*—
Nakauma, Yoshiaki, 315,902, Cl. D14-121.000.
Nakauma, Yoshiaki, 315,903, Cl. D14-121.000.
Nishida, Mitsuhiro; Fujii, Kozaburo; Kondoh, Nobuyuki, and Abe, Yoshinori, to Mitsubishi Denki K.K. Vacuum pump. 315,912, 4-2-91, Cl. D15-7.000.
Northern Telecom Limited: *See*—
Brown, Michael, 315,896, Cl. D14-100.000.
Norwood, Tiffany A.: *See*—
Hutton, Anthony; Straughan, Phillip A.; Norwood, Tiffany A.; and Pfeffer, Oliver, 315,825, Cl. D3-32.000.
Nusse, Oktavio K., and Krause, Wolf-Dieter, to Bostik, Inc. Hot melt dispenser. 315,852, 4-2-91, Cl. D8-30.000.
Ohmiya, Tokushige: *See*—
Miyamoto, Akira; Ohmiya, Tokushige, Otani, Genichiro; Kawai, Setsuo; Watanabe, Kenji; Iijima, Goro; Matsubara, Takeshi; and Kameda, Takanobu, 315,919, Cl. D18-13.000.
Ohtsu Tire & Rubber Co., Ltd., The: *See*—
Shintomi, Hisashi, 315,887, Cl. D12-136.000.
Olson, Brennan J.; Brace, Thomas J.; and Frigard, Charles R., to Rollerblade, Inc. Roller skate brake. 315,941, 4-2-91, Cl. D21-226.000.
Otani, Genichiro: *See*—
Miyamoto, Akira; Ohmiya, Tokushige; Otani, Genichiro; Kawai, Setsuo; Watanabe, Kenji; Iijima, Goro; Matsubara, Takeshi; and Kameda, Takanobu, 315,919, Cl. D18-13.000.
Paine, Stephen H.; and Schofield, Carl, to Syco Systems Ltd. Console for data input/output tablet. 315,895, 4-2-91, Cl. D14-100.000.
Pannell, John: *See*—
Huggins, Jack D.; and Pannell, John, 315,937, Cl. D21-191.000.
Pape, John A.: *See*—
Thomson, Harry S.; Raffo, David M., and Pape, John A., 315,930, Cl. D21-123.000.
Partecipazione Bulgari S.p.A.: *See*—
Bulgari, Paolo, 315,875, Cl. D11-43.000.
Pawly Industries Corporation: *See*—
Fisscher, Brahm, 315,865, Cl. D8-395.000.
Payne, Thomas M.: *See*—
Lavinsky, Joshua F.; and Payne, Thomas M., 315,962, Cl. D26-24.000.
Pelcher, Deborah N.: *See*—
Leonard, Bruce A.; and Pelcher, Deborah N., 315,916, Cl. D16-218.000.
Penrod, Robert R. Inflatable crib. 315,838, 4-2-91, Cl. D6-391.000.
Perdue, Thomas E., Jr., and Bransky, Jeffrey D. Storage box with hinged lid. 315,870, 4-2-91, Cl. D9-420.000.
Pfeffer, Oliver: *See*—
Hutton, Anthony; Straughan, Phillip A., Norwood, Tiffany A.; and Pfeffer, Oliver, 315,825, Cl. D3-32.000.
Physio Technology, Inc.: *See*—
Castel, John C.; and Bally, Alexander, 315,958, Cl. D24-41.000.
Pigeon Co., Ltd.: *See*—
Kawano, Yusuke, 315,831, Cl. D4-104.000.
Pininfarina Extra S.r.l.: *See*—
Fumia, Enrico, 315,826, Cl. D3-37.000.
Pospisil, Jirina V.: *See*—
Kelly, John S.; Horn, Jerold S.; and Pospisil, Jirina V., 315,957, Cl. D24-16.000.
Quaker Oats Company, The: *See*—
Wehmeyer, Stephen D., 315,940, Cl. D21-226.000.
Raffo, David M.: *See*—
Thomson, Harry S.; Raffo, David M.; and Pape, John A., 315,930, Cl. D21-123.000.
Ramos, Antano D., and Gajeton, Wilhelm. Fire extinguisher. 315,970, 4-2-91, Cl. D29-2.000.
Rich, Beverly C., to Fellowes Mfg. Co. Letter tray. 315,925, 4-2-91, Cl. D19-92.000.
Rich, Beverly C., to Fellowes Mfg. Co. Holder for a note pad or similar article. 315,926, 4-2-91, Cl. D19-92.000.
Rizzuto, Leandro P.; Lindsey, Frank; and Leung, Anthony, to Conair Corporation. Hair crimping head appliance. 315,967, 4-2-91, Cl. D28-35.000.
Rizzuto, Leandro P.; Lindsey, Frank; and Leung, Anthony, to Conair Corporation. Hair crimping head appliance 315,968, 4-2-91, Cl. D28-35.000.
Roberts, Ellen. Lighted handbag. 315,830, 4-2-91, Cl. D3-52.000.
Rocheleau, George A.; Graves, Michael C.; and France, John, to Rockford Corporation. Heat sink. 315,832, 4-2-91, Cl. D13-179.000.
Rockford Corporation: *See*—
Rocheleau, George A., Graves, Michael C.; and France, John, 315,832, Cl. D13-179.000.
Rollerblade, Inc.: *See*—
Olson, Brennan J.; Brace, Thomas J.; and Frigard, Charles R., 315,941, Cl. D21-226.000.
Roope, Larry G.; and Bobbitt, Earl W. Combined toothbrush holder and protector. 315,841, 4-2-91, Cl. D6-528.000.
Rubbermaid Incorporated: *See*—
Brazis, William E., 315,833, Cl. D4-138.000
Embree, Donald; and Mathey, Stanley A., 315,864, Cl. D8-395.000.
Ryobi Ltd.: *See*—
Kawakami, Hideki; and Hoshino, Kiyoshi, 315,854, Cl. D8-66.000
S. T. Dupont: *See*—
Gentilli, Bruno, 315,834, Cl. D5-16.000
Sachs, Isaac. Support strap bracket. 315,861, 4-2-91, Cl. D8-371.000.
Samrein Pty Ltd.: *See*—
Dixon, Michael, 315,888, Cl. D12-157.000.
Samsonite Corporation: *See*—
King, William L., 315,827, Cl. D3-71.000.
Schawbel Corporation, The: *See*—
Zaborowski, Thaddeus; and MacLeod, Alan, 315,853, Cl. D8-30.000.
Schneider, Jon: *See*—
Wilson, Jerry L.; Schneider, Jon, and Collins, Frederick E., 315,934, Cl. D21-191.000.
Wilson, Jerry L.; Schneider, Jon; and Collins, Frederick E., 315,935, Cl. D21-191.000.
Wilson, Jerry L.; Schneider, Jon; and Collins, Frederick E., 315,936, Cl. D21-191.000.
Schofield, Carl: *See*—
Paine, Stephen H.; and Schofield, Carl, 315,895, Cl. D14-100.000.
Schuette, Michael: *See*—
Berninger, Mark; and Schuette, Michael, 315,951, Cl. D24-8.000.
Berninger, Mark; and Schuette, Michael, 315,952, Cl. D24-8.000.

SEB: *See*—
Sebillotte, Christian, 315,847, Cl. D7-393.000
Sebillotte, Christian, to SEB. Handle for a pressure cooker 315,847, 4-2-91, Cl. D7-393.000
Sello, Bengt, to Soft Construction AB. Ventilator 315,949, 4-2-91, Cl. D23-393.000.
Shape Inc. *See*—
Gelardi, Paul J.; Gelardi, Anthony L., Lowry, Alan B., Lovecky, Craig S., and Farr, Richard H., 315,868, Cl. D9-341.000
Shieh, Y. S. Manual winch device 315,976, 4-2-91, Cl. D34-33.000
Shintomi, Hisashi, to Ohtsu Tire & Rubber Co., Ltd., The. Vehicle tire 315,887, 4-2-91, Cl. D12-136.000
Shui-Mu, Lee. Pipe holder 315,863, 4-2-91, Cl. D8-380.000
Sidi Sport S.a.s. di Dino Signori & C. *See*—
Signori, Dino, 315,823, Cl. D2-274.000
Signori, Dino, to Sidi Sport S.a.s. di Dino Signori & C. Cross-country motorcyclist's boot. 315,823, 4-2-91, Cl. D2-274.000
Soft Construction AB. *See*—
Sello, Bengt, 315,949, Cl. D23-393.000
Sony Corporation. *See*—
Iwata, Hirokimi, 315,900, Cl. D14-114.000
Morimiya, Yuji, 315,915, Cl. D16-202.000
Soren, Leonid. *See*—
Wong, Allen; Soren, Leonid, and Lindeman, Phillip E., 315,907, Cl. D14-247.000
Specker, Lewis, Jr. Closet pole hanger 315,862, 4-2-91, Cl. D8-380.000
Steelcase Strafor. *See*—
Heidmann, Charles, 315,960, Cl. D25-138.000
Steiner, Gerald. Animal feeding table 315,974, 4-2-91, Cl. D30-131.000
Straughan, Phillip A. *See*—
Hutton, Anthony; Straughan, Phillip A.; Norwood, Tiffany A.; and Pfeffer, Oliver, 315,825, Cl. D3-32.000
Sube, Minoru. *See*—
Ito, Masafumi, Hasegawa, Shigeru, Takita, Haruki, and Sube, Minoru, 315,905, Cl. D14-156.000
Sung, Rak M. Hula doll 315,933, 4-2-91, Cl. D21-180.000
Sweeney, Margaret C. *See*—
Best, James J., and Sweeney, Margaret C., 315,924, Cl. D19-75.000
Syco Systems Ltd. *See*—
Paine, Stephen H., and Schofield, Carl, 315,895, Cl. D14-100.000
Takita, Haruki. *See*—
Ito, Masafumi, Hasegawa, Shigeru, Takita, Haruki, and Sube, Minoru, 315,905, Cl. D14-156.000
Tallman, Larry E. Toothpaste dispenser 315,842, 4-2-91, Cl. D6-541.000.
Teac Corporation: *See*—
Ito, Masafumi, Hasegawa, Shigeru, Takita, Haruki, and Sube, Minoru, 315,905, Cl. D14-156.000
Thompson, Bruce R., to Caroma Industries Limited. Flushing tank 315,948, 4-2-91, Cl. D23-313.000
Thomsen, Peter. Pouch containing liquid soap or the like for use with a dispenser unit. 315,843, 4-2-91, Cl. D6-542.000.
Thomson, Harry S., Raffo, David M., and Pape, John A., to Hestair Kiddicraft Limited. Toy swing. 315,930, 4-2-91, Cl. D21-123.000.
Tokukatsu, Seiji. Hoop cutter 315,856, 4-2-91, Cl. D8-98.000
Tollefson, R. M., Armstrong, Dane A., LeMonds, David A., Wakefield, Douglas J., Altmann, Walter F., and LaFond, Marcel L., to Tollycraft Yachts Corp. Yacht. 315,892, 4-2-91, Cl. D12-315.000.
Tollycraft Yachts Corp. *See*—
Tollefson, R. M., Armstrong, Dane A.; LeMonds, David A., Wakefield, Douglas J., Altmann, Walter F., and LaFond, Marcel L., 315,892, Cl. D12-315.000.
ToPAQ, Inc. *See*—
Hutton, Anthony; Straughan, Phillip A.; Norwood, Tiffany A., and Pfeffer, Oliver, 315,825, Cl. D3-32.000
Torti, Russell G. *See*—
Claytor, Richard N., and Torti, Russell G., 315,966, Cl. D26-122.000.
Tri Industries, Inc. *See*—
Jacobs, Richard H., 315,885, Cl. D12-129.000
U.S. Philips Corporation. *See*—
Joosten, Stefanus F., and Krol, Leonardus A., 315,964, Cl. D26-63.000
Vaporflow Technology, Inc.. *See*—
Lundy, John C., 315,950, Cl. D24-8.000
Vernon, Frank J. Holder for greeting cards 315,876, 4-2-91, Cl. D11-120.000.
Wakefield, Douglas J. *See*—
Tollefson, R. M., Armstrong, Dane A., LeMonds, David A., Wakefield, Douglas J., Altmann, Walter F., and LaFond, Marcel L., 315,892, Cl. D12-315.000.
Ward, Raymond F. Telephone dialing-key cover 315,908, 4-2-91, Cl. D14-250.000.
Ward, Raymond F. Telephone dialing-key cover 315,909, 4-2-91, Cl. D14-250.000.
Ward, Raymond F. Telephone dialing-key cover 315,910, 4-2-91, Cl. D14-250.000.
Watanabe, Kenji. *See*—
Miyamoto, Akira, Ohmiya, Tokushige, Otani, Genichiro, Kawai, Setsuo; Watanabe, Kenji, Iijima, Goro, Matsubara, Takeshi, and Kameda, Takanobu, 315,919, Cl. D18-13.000
Weder, Donald E., Weder, Erwin H., Weder, Wanda M., Craig, Franklin J.; Donnelly, Wilma M., Bolk, Phyllis J., Bergstrand, John W., and Abrams, Robert C., to Highland Supply Corporation. Flower pot cover. 315,878, 4-2-91, Cl. D11-164.000
Weder, Donald E., Weder, Erwin H., Weder, Wanda M., Craig, Franklin J., Donnelly, Wilma M., Bolk, Phyllis J., Bergstrand, John W., and Abrams, Robert C., to Highland Supply Corporation. Flower pot cover. 315,879, 4-2-91, Cl. D11-164.000
Weder, Donald E., Weder, Erwin H., Weder, Wanda M., Craig, Franklin J., Donnelly, Wilma M., Bolk, Phyllis J., Bergstrand, John W., and Abrams, Robert C., to Highland Supply Corporation. Flower pot cover. 315,880, 4-2-91, Cl. D11-164.000
Weder, Donald E., to Highland Supply Corporation. Flower pot cover. 315,881, 4-2-91, Cl. D11-164.000
Weder, Donald E., to Highland Supply Corporation. Flower pot cover. 315,882, 4-2-91, Cl. D11-164.000
Weder, Donald E., to Highland Supply Corporation. Flower pot cover. 315,883, 4-2-91, Cl. D11-164.000
Weder, Erwin H. *See*—
Weder, Donald E., Weder, Erwin H., Weder, Wanda M., Craig, Franklin J., Donnelly, Wilma M., Bolk, Phyllis J., Bergstrand, John W., and Abrams, Robert C., 315,878, Cl. D11-164.000
Weder, Donald E., Weder, Erwin H., Weder, Wanda M., Craig, Franklin J., Donnelly, Wilma M., Bolk, Phyllis J., Bergstrand, John W., and Abrams, Robert C., 315,879, Cl. D11-164.000
Weder, Donald E., Weder, Erwin H., Weder, Wanda M., Craig, Franklin J., Donnelly, Wilma M., Bolk, Phyllis J., Bergstrand, John W., and Abrams, Robert C., 315,880, Cl. D11-164.000
Weder, Wanda M. *See*—
Weder, Donald E., Weder, Erwin H., Weder, Wanda M., Craig, Franklin J., Donnelly, Wilma M., Bolk, Phyllis J., Bergstrand, John W., and Abrams, Robert C., 315,878, Cl. D11-164.000
Weder, Donald E., Weder, Erwin H., Weder, Wanda M., Craig, Franklin J., Donnelly, Wilma M., Bolk, Phyllis J., Bergstrand, John W., and Abrams, Robert C., 315,879, Cl. D11-164.000
Weder, Donald E., Weder, Erwin H., Weder, Wanda M., Craig, Franklin J., Donnelly, Wilma M., Bolk, Phyllis J., Bergstrand, John W., and Abrams, Robert C., 315,880, Cl. D11-164.000
Wehmeyer, Stephen D., to Quaker Oats Company, The. Roller skate 315,940, 4-2-91, Cl. D21-226.000
Westland, Donald. *See*—
Hassel, H. Charles, and Westland, Donald, 315,921, Cl. D18-22.000
Whitebread, David, to M Y Sports & Games Ltd. Package 315,871, 4-2-91, Cl. D9-415.000
Wilson, Jerry L., Schneider, Jon; and Collins, Frederick E., to Wilson, Jerry L. Resistance strap for an exercise machine. 315,934, 4-2-91, Cl. D21-191.000
Wilson, Jerry L., Schneider, Jon; and Collins, Frederick E., to Wilson, Jerry L. Resistance strap for exercise machine. 315,935, 4-2-91, Cl. D21-191.000
Wilson, Jerry L., Schneider, Jon, and Collins, Frederick E., to Wilson, Jerry L. Resistance strap for an exercise machine. 315,936, 4-2-91, Cl. D21-191.000
Wong, Allen, Soren, Leonid; and Lindeman, Phillip E., to Motorola Inc. Dial top-housing for telephone handset or similar article. 315,907, 4-2-91, Cl. D14-247.000
Wood, Herbert E. Wheelchair propulsion unit 315,886, 4-2-91, Cl. D12-133.000
Woods Far East, Inc.. *See*—
Cheng, Willis, 315,893, Cl. D13-165.000
Wu, J. T. Pepper mill 315,850, 4-2-91, Cl. D7-679.000
Wu, J. T. Mill. 315,851, 4-2-91, Cl. D7-679.000.
Yamauchi, Shigeki. *See*—
Fushiya, Fusao, and Yamauchi, Shigeki, 315,855, Cl. D8-68.000
Zaborowski, Thaddeus, and MacLeod, Alan; to Schawbel Corporation, The. Handle for a soldering iron. 315,853, 4-2-91, Cl. D8-30.000
Ziaylek, Michael P. *See*—
Ziaylek, Theodore, Jr.; and Ziaylek, Michael P., 315,945, Cl. D23-244.000
Ziaylek, Theodore, Jr., and Ziaylek, Michael P. Dump valve for attachment to fire engine tankers. 315,945, 4-2-91, Cl. D23-244.000.

LIST OF PLANT PATENTEES

Bennett, Cecilia L. D., deceased (by O'Brien, Susan M., executor), to O'Brien, Susan. Miniature rose plant named 'Mother's Love' 7,484, 4-2-91, Cl. 9.000
O'Brien, Susan. *See*—
Bennett, Cecilia L. D., deceased, 7,484, Cl. 9.000
O'Brien, Susan M., executor. *See*—
Bennett, Cecilia L. D., deceased, 7,484, Cl. 9.000
VandenBerg, Cornelis P., to Yoder Brothers, Inc. Chrysanthemum plant named Topacio. 7,487, 4-2-91, Cl. 76.000
VandenBerg, Cornelis P., to Yoder Brothers, Inc. Chrysanthemum plant named Naples. 7,488, 4-2-91, Cl. 77.000
VandenBerg, Cornelis P., to Yoder Brothers, Inc. Chrysanthemum plant named Pasion. 7,489, 4-2-91, Cl. 80.000
van Riet, Joseph E. J. Lily plant named White Sheen. 7,486, 4-2-91, Cl. 68.000
Wimmers, Robert L. Bosc pear—Wimmers cultivar. 7,485, 4-2-91, Cl. 36.000.
Yoder Brothers, Inc.: *See*—
VandenBerg, Cornelis P., 7,487, Cl. 76.000
VandenBerg, Cornelis P., 7,488, Cl. 77.000
VandenBerg, Cornelis P., 7,489, Cl. 80.000

LIST OF STATUTORY INVENTION REGISTRATIONS

APPLICANTS TO WHOM

STATUTORY INVENTION REGISTRATIONS WERE ISSUED ON THE 2ND DAY OF APRIL, 1991

Baggett, Franklin E., and Cage, W. Franklin, to United States of America, Energy. Wedge assembly for electrical transformer component spacing. H906, 4-2-91, Cl. 403-409.100.
Cage, W. Franklin. *See*—
Baggett, Franklin E., and Cage, W. Franklin, H906, Cl. 403-409.100.
Danby, Gordon T.; and Jackson, John W., to United States of America, Energy. Method of correcting eddy current magnetic fields in particle accelerator vacuum chambers. H909, 4-2-91, Cl. 328-233.000
Dawson, John W., to United States of America, Energy. Method and system for improved resolution of a compensated calorimeter detector. H908, 4-2-91, Cl. 250-336.100.
General Electric Company. *See*—
Weinstein, Barry, H903, Cl. 60-757.000.
Hindenach, Laurence J., to United States of America, Air Force. Adaptive two dimensional shading for batch synthetic aperture radar using phased array antenna. H910, 4-2-91, Cl. 342-25.000.
Jackson, John W. *See*—
Danby, Gordon T.; and Jackson, John W., H909, Cl. 328-233.000
Mitsubishi Oil Co., Ltd.. *See*—
Tate, Kazuhito, Tsuchimoto, Koji, and Yanagida, Kazuhiro, H907, Cl. 423-448.000
Rottenberg, Mark M., to United States of America, Army. Fin assembly. H905, 4-2-91, Cl. 244-3.280
Rousseau, David G., to United States of America, Navy. Air cooled helmet. H902, 4-2-91, Cl. 2-414.000
Schmidlin, Albertus E., to United States of America, Army. Safe secure survivable door locking assembly for an overpack container. H904, 4-2-91, Cl. 206-3.000
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Tsuchimoto, Koji. *See*—
Tate, Kazuhito, Tsuchimoto, Koji, and Yanagida, Kazuhiro, H907, Cl. 423-448.000
United States of America
Air Force: *See*—
Hindenach, Laurence J., H910, Cl. 342-25.000.
Army. *See*—
Rottenberg, Mark M., H905, Cl. 244-3.280.
Schmidlin, Albertus E., H904, Cl. 206-3.000.
Energy: *See*—
Baggett, Franklin E.; and Cage, W. Franklin, H906, Cl. 403-409.100
Danby, Gordon T., and Jackson, John W., H909, Cl. 328-233.000.
Dawson, John W., H908, Cl. 250-336.100
Navy: *See*—
Rousseau, David G., H902, Cl. 2-414.000
Weinstein, Barry, to General Electric Company. Cool tip combustor. H903, 4-2-91, Cl. 60-757.000
Yanagida, Kazuhiro. *See*—
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CLASSIFICATION OF PATENTS

ISSUED APRIL 2, 1991

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

2 1 A 5,003,630
6 5,003,631
5,003,632
9 5,003,633
46 5,003,634
69 5,003,635
145 5,003,636
160 5,003,637
167 5,003,638
187 5,003,639
199 5,003,640

CLASS 4

253 5,003,641
287 5,003,642
313 5,003,643
324 5,003,644
325 5,004,462
448 5,003,645
542 5,003,646
559 5,003,647
661 5,003,648

CLASS 5

8 5,003,649
9 1 5,003,650
109 5,003,651
129 5,003,652
449 5,003,653
453 5,003,654
496 5,003,655

CLASS 7

169 5,003,656

CLASS 15

104 33 5,003,657
185 5,003,658
209 D 5,003,659
244 1 5,003,660
301 5,003,661
330 5,003,662
366 5,003,663

CLASS 16

6 5,003,664

CLASS 19

0 22 5,003,668
49 5,003,669
66 CC 5,003,670

CLASS 24

265 A 5,003,671
300 5,003,672
662 5,003,673

CLASS 28

109 5,003,674
141 5,003,675
209 5,003,676
220 5,003,677

CLASS 29

10 5,003,678
25 35 5,003,679
227 5,003,680
239 5,003,681
259 5,003,682
425 5,003,683
447 5,003,684
525 5,003,685
596 5,003,686
600 5,003,687
603 5,003,688
613 5,003,689
727 5,003,690
5,003,691
834 5,003,692
849 5,003,693

CLASS 30

49 5,003,694
193 5,003,695
299 5,003,696

CLASS 33

244 5,003,697
268 5,003,698
379 5,003,699
401 5,003,700
409 5,003,701
501.19 5,003,702
638 5,003,703
775 5,003,704

CLASS 34

54 5,003,705
92 5,003,706
104 5,003,707

CLASS 36

44 5,003,708
107 5,003,709
117 5,003,710
120 5,003,711

CLASS 37

80 R 5,003,712

CLASS [illegible]

113 5,003,713
414 5,003,714
442 5,003,715
503 5,003,716
518 5,003,717

CLASS 43

3 5,003,718
5,003,722
17.5 5,003,719
42.13 5,003,723
42 39 5,003,720
132.1 5,003,721

CLASS 44

302 5,004,479
387 5,004,480
398 5,004,478
435 5,004,481
438 Re 33,562

CLASS 47

25 5,003,724
39 5,003,725
48 5 5,003,726

CLASS 49

479 5,003,792
504 5,003,727

CLASS 51

165 8 5,003,728
283 R 5,003,729
325 5,003,730
418 5,003,731

CLASS 52

86 5,003,733
94 5,003,732
101 5,003,734
105 5,003,735
108 5,003,736
126 2 5,003,737
202 5,003,738
219 5,003,739
239 5,003,740
280 5,003,741
282 5,003,742
5,003,743
308 5,003,744
316 5,003,745
404 Re.33,563
589 5,003,746
656 5,003,747
693 5,003,748
703 5,003,749
742 5,003,750

CLASS 53

215 5,003,751
399 5,003,752
415 5,003,753
459 5,003,754
466 5,003,755

CLASS 54

79 5,003,756

CLASS 55

16 5,004,482
20 5,004,483
53 5,004,484
160 5,004,485
222 5,004,486
269 5,004,487

CLASS 56

17 4 5,003,757
202 5,003,758
249 5,003,759
400.06 5,003,760

CLASS 57

58 52 5,003,761
281 5,003,762
297 5,003,763
333 5,003,764

CLASS 59

78.1 5,003,765

CLASS 60

39.142 5,003,767
39.15 5,003,766
39.23 5,003,768
39.281 5,003,769
60.52 5,004,490
226.2 5,003,770
243 5,003,771
259 5,003,772
262 5,003,773
275 5,003,774
313 5,003,775
434 5,003,776
517 5,003,778
520 5,003,777
527 5,003,779
585 5,003,780
600 5,003,781
648 5,003,782

CLASS 62

51 2 5,003,783
124 5,003,784
131 5,003,785
156 5,003,786
185 5,003,787
238.7 5,003,788
304 5,003,789
389 5,003,790

CLASS 63

32 5,003,791

CLASS 65

18.2 5,004,488
32 2 5,004,489
106 5,004,491
289 5,004,492

CLASS 66

9 B 5,003,793

CLASS 68

3 R 5,003,794

CLASS 70

55 5,003,795
107 5,003,796
180 5,003,797
238 5,003,798
247 5,003,799
264 5,003,800
278 5,003,801
333 A 5,003,802
416 5,003,803

CLASS 71

88 5,004,493
92 5,004,494

CLASS 72

39 5,003,804
53 5,003,805
260 5,003,806
351 5,003,807
405 5,003,808
446 5,003,809

CLASS 73

3 5,003,810
12 5,003,811
31 06 5,003,812
49 2 5,003,813
59 5,003,814
105 5,003,815
117 3 5,003,816
118.1 5,003,817
121 5,003,818
146 5,003,819
181 5,003,820
201 5,003,821
204 23 5,003,822
293 5,003,823
651 5,003,824
704 5,003,825
828 5,003,826
861.24 5,003,827
861 33 5,003,828
862 12 5,003,829
863 83 5,003,830
865.9 5,003,831

CLASS 74

51 5,003,832
87 5,003,833
339 5,003,834
411 5,003,835
425 5,003,836
501 5 R 5,003,837
502.4 5,003,838
551 1 5,003,839
594 2 5,003,840
594 4 5,003,841
867 5,003,842

CLASS 75

10 22 5,004,495
10 28 5,004,496
229 5,004,497
233 5,004,498
254 5,004,499
422 5,004,500

CLASS 76

78 1 5,003,843

CLASS 81

3 2 5,003,844
3 4 5,003,845
9 42 5,003,846
57 39 5,003,847
176.2 5,003,848
184 5,003,849
436 5,003,850

CLASS 82

1.11 5,003,851
158 5,003,852

CLASS 83

318 5,003,853
331 5,003,854
346 5,003,855
576 5,003,856

CLASS 84

266 5,003,857
280 5,003,858
423 R 5,003,859
609 5,003,860

CLASS 89

1 55 5,003,861
133 5,003,862

CLASS 92

61 5,003,863
132 5,003,864

CLASS 98

1 5 5,003,865
2 02 5,003,866
31.6 5,003,867

CLASS 99

357 5,003,868
453 5,003,869

CLASS 101

127.1 5,003,870
148 5,003,871
163 5,003,872
219 5,003,873
228 5,003,889
348 5,003,874
350 5,003,875
5,003,876
363 5,003,877
415.1 5,003,878

CLASS 102

204 5,003,879
314 5,003,880
337 5,003,881
387 5,003,882
476 5,003,883
5,003,884
494 5,003,885
521 5,003,886
531 5,003,887

CLASS 104

17 002 5,003,888

CLASS 106

35 5,004,501
287 13 5,004,502
287 18 5,004,503
456 5,004,504
685 5,004,505
729 5,004,506

CLASS 110

239 5,003,890
341 5,003,891
346 5,003,892
5,003,893

CLASS 111

178 5,003,894

CLASS 112

103 5,003,895
121 11 5,003,896
121 12 5,003,897
220 5,003,898
221 5,003,899
242 5,003,900
316 5,003,901
418 5,003,902

CLASS 114

102 5,003,903
140 5,003,904
201 R 5,003,905
211 5,003,906
221 R 5,003,907
229 5,003,908
238 5,003,909
304 5,003,910

CLASS 116

28 R 5,003,911
63 P 5,003,912
208 5,003,913
332 5,003,914

CLASS 118

46 5,003,915
429 5,003,916
653 5,003,917
665 5,003,918
716 5,003,919

CLASS 119

5 5,003,921
15 5,003,922
19 5,003,923
44 5,003,924
51 04 5,003,925
62 5,003,926
72.5 5,003,927
73 5,003,928
106 5,003,930
120 5,003,929
163 5,003,920

CLASS 122

4 D 5,003,931

CLASS 123

52 MB 5,003,932
52 MC 5,003,933
52 MV 5,003,934
55 R 5,003,935
78 AA 5,003,936
90 12 5,003,937
90 14 5,003,938
90 16 5,003,939
90 54 5,003,940
142 5 R 5,003,941
190 A 5,003,942
198 D 5,003,943
299 5,003,944
310 5,003,945
335 5,003,946
339 5,003,947
352 5,003,948
382 5,003,949
422 5,003,950
425 5,003,951
478 5,003,952
5,003,953
479 5,003,954
489 5,003,955
494 5,003,956
564 5,003,957
635 5,003,958
647 5,003,959

CLASS 126

39 BA 5,003,960
110 R 5,003,961

CLASS 127

58 5,004,507

CLASS 128

4 5,003,964
11 5,003,962
5,003,963
24 AA 5,003,965
39 5,003,966
77 5,003,967
87 B 5,003,968
87 R 5,003,969
90 5,003,970
156 5,003,971
158 5,003,972
201 25 5,003,973
5,003,974
419 PG 5,003,975
5,003,976
633 5,003,977
640 5,003,978
653 A 5,003,979
653 R 5,003,980
677 5,003,981
695 5,003,982
704 5,003,983
710 5,003,984
716 5,003,985
731 5,003,986
734 5,003,987
771 5,003,988
772 5,003,989
5,003,990
784 5,003,991
785 5,003,992
842 5,003,993
848 5,003,994

CLASS 131

84 2 5,003,996
359 5,003,995

CLASS 132

73 5,003,997

CLASS 134

22 12 . 5,003,998
105 5,003,999
108 5,004,000

CLASS 135

97 5,004,001

CLASS 137

39 5,004,002
75 5,004,003
195 5,004,004
269 5 5,004,005
501 5,004,006
5,004,007
504 5,004,008
512.3 5,004,009
513 3 5,004,010
556 5,004,011
560 5,004,012
614 05 5,004,013
624 12 5,004,014
625 65 5,004,440
625 68 5,004,015

CLASS 138

96 T 5,004,016
106 5,004,017
149 5,004,018

CLASS 139

91 5,004,019

CLASS 140

93 6 5,004,020

CLASS 141

67 5,004,021
114 5,004,022
208 5,004,023
298 5,004,024
364 5,004,025

CLASS 144

3 D 5,004,026
136 R 5,004,027
176 5,004,028
287 5,004,029

CLASS 148

22 5,004,508
23 5,004,509
146 5,004,510

CLASS 152

225 R 5,004,030
538 5,004,031

CLASS 156

89 5,004,511
153 5,004,512
191 5,004,513
251 5,004,514
350 5,004,515
463 5,004,516
567 5,004,517
568 5,004,518
620 4 5,004,519
630 5,004,520
645 5,004,521

CLASS 159

47 003 5,004,522

CLASS 160

84 1 5,004,032
178 1 5,004,033

CLASS 162

76 5,004,523

CLASS 164

97 5,004,034
5,004,035
5,004,036
244 5,004,037
305 5,004,038
361 5,004,039
453 5,004,040

CLASS 165

8 5,004,041
41 5,004,042
118 5,004,043
145 5,004,044
149 5,004,045
156 5,004,046
158 5,004,047

CLASS 166

70 5,004,048
228 5,004,049
248 5,004,050
357 5,004,051

CLASS 168

4 5,004,052

CLASS 172

375 5,004,053

CLASS 173

12 5,004,054

CLASS 174

15 7 5,004,865
35 GC 5,004,866
5,004,867
76 5,004,868
84 C 5,004,869

CLASS 175

20 5,004,055
293 5,004,056
408 5,004,057

CLASS 177

25 13 5,004,058
210 R 5,004,059

CLASS 178

18 5,004,870
5,004,871
5,004,872

CLASS 180

6 44 5,004,060
65 5 5,004,061
68 5 5,004,081
69 21 5,004,062
79 1 5,004,063
197 5,004,064

CLASS 181

160 5,004,066
188 5,004,067
276 5,004,068
282 5,004,069
286 5,004,070

CLASS 182

3 5,004,071
45 5,004,072

CLASS 184

6 12 5,004,073
105 1 5,004,074

CLASS 187

8 41 5,004,075
130 5,004,076

CLASS 188

2 D 5,004,077
218 A 5,004,078
282 5,004,079
299 5,004,080

CLASS 190

18 R 5,004,091

CLASS 192

0 033 5,004,084
3.26 5,004,082
5 5,004,083
58 B 5,004,085
85 C 5,004,086
89 B 5,004,087
106.2 5,004,088
107 M 5,004,089
112 5,004,090

CLASS 198

347.3 5,004,092
430 5,004,093
460 5,004,094
660 5,004,095
666 5,004,096
803.01 5,004,097
847 5,004,098

CLASS 200

83 P 5,004,873
5,004,876
144 B 5,004,877
144 R 5,004,874
5,004,878
295 5,004,879
400 5,004,875
521 5,004,880

CLASS 204

52.1 5,004,525
73 A 5,004,526
82 5,004,527
129.2 5,004,528
212 5,004,529
224 M 5,004,530
243 R 5,004,524
307 5,004,531
415 5,004,532

CLASS 206

83.5 5,004,099
315.2 5,004,100
343 5,004,101
372 5,004,103
386 5,004,102
526 5,004,104
576 5,004,105
581 5,004,106

CLASS 208

50 5,004,533

CLASS 210

90 5,004,535
136 5,004,536
164 5,004,534
192 5,004,537
198.2 5,004,538
222 5,004,539
232 5,004,540
251 5,004,541
356 5,004,542
490 5,004,543
5,004,544
510.1 5,004,545
635 5,004,546
5,004,547
646 5,004,548
699 5,004,549
710 5,004,550
763 5,004,551
789 5,004,552

CLASS 211

26 5,004,107

CLASS 212

255 5,004,108

CLASS 215

1 C 5,004,109
232 5,004,110
5,004,111
252 5,004,112
332 B1 4,392,580
358 5,004,113

CLASS 219

10 55 E 5,004,882
10 77 5,004,881
69 12 5,004,883
73 5,004,884
73 2 5,004,885
76 14 5,004,886
85 16 5,004,887
121 520 5,004,888
121 61 5,004,889
121 83 5,004,890
388 5,004,891
464 5,004,892
505 5,004,893
521 5,004,894
528 5,004,895

CLASS 220

3 3 5,004,115
4 34 5,004,116
85 P 5,004,117
216 5,004,118
247 5,004,119
296 5,004,114
366 5,004,129
414 5,004,120
458 5,004,121

CLASS 221

155 5,004,122

CLASS 222

94 5,004,123
136 5,004,124
145 5,004,125
153 5,004,126
209 Re 33,564
521 5,004,127
527 5,004,128
590 5,004,130
600 5,004,131

CLASS 223

1 5,004,132

CLASS 224

3 14 5,004,185
42 45 R 5,004,133
5,004,134
210 5,004,135
253 5,004,136
274 5,004,137
312 5,004,138
324 5,004,139

CLASS 227

8 5,004,140
112 5,004,141
155 5,004,142

CLASS 228

126 5,004,143

CLASS 229

87.190 5,004,144
117.26 5,004,145
120.31 5,004,146
198 2 5,004,147

CLASS 232

35 5,004,148

CLASS 235

437 5,004,896
441 5,004,897
475 5,004,898
492 5,004,899

CLASS 236

49 3 5,004,149

CLASS 237

12 3 A 5,004,150

CLASS 239

2.2 5,004,151
8 5,004,152
81 5,004,153
96 5,004,154
127 5,004,155
130 5,004,156
205 5,004,157
310 5,004,158
337 5,004,159
525 5,004,160
542 5,004,161
585 5,004,162
661 5,004,163
666 5,004,164

CLASS 241

21 5,004,165
36 5,004,166
91 5,004,167
101.7 5,004,168
192 5,004,169

CLASS 242

18 R 5,004,170
35 6 R 5,004,171
54 R 5,004,172
57 5,004,173
58 6 5,004,174
68 5 5,004,175
71 1 5,004,176
99 5,004,177
107 5,004,178
118 6 5,004,179
198 5,004,180
225 5,004,181
232 5,004,182

CLASS 244

3 11 5,004,183
3.22 5,004,184
3.25 5,004,186
53 B 5,004,187
137.002 5,004,188
219 5,004,189

CLASS 246

428 5,004,190

CLASS 248

48.2 5,004,191
49 5,004,192
59 5,004,193
74.5 5,004,194
99 5,004,195
118.3 5,004,196
188.9 5,004,197
225.1 5,004,198
231.8 5,004,199
243 5,004,201
5,004,202
250 5,004,200
285 5,004,203
449 5,004,204
476 5,004,205
585 5,004,206
632 5,004,207

CLASS 249

91 5,004,208

CLASS 250

201.5 5,004,900
5,004,901
201.8 5,004,902
207 5,004,904
208.1 5,004,903
5,004,905
214 A 5,004,906
214 AG 5,004,907
221 5,004,908
223 B 5,004,909
226 5,004,910
227.14 5,004,912
227.21 5,004,911
5,004,913
227.27 5,004,914
231.14 5,004,915
235 5,004,916
236 5,004,917
304 5,004,920
311 5,004,918
5,004,919
337 5,004,921
340 5,004,922
341 5,004,923
442 1 5,004,924
491 1 5,004,925
492 2 5,004,927
492 3 5,004,926
559 5,004,928
561 5,004,929
5,004,930

CLASS 251

144 5,004,209
279 5,004,210

CLASS 252

8.51 5,004,553
54.6 5,004,554
62.9 5,004,555
95 5,004,558
99 5,004,556
174.24 5,004,557
345 5,004,559
511 5,004,561
518 5,004,562
5,004,563
546 5,004,564
700 5,004,565

CLASS 256

47 5,004,211

CLASS 260

403 5,004,566
408 5,004,567
410 5,004,568
410 6 5,004,569
427 5,004,570

CLASS 261

91 5,004,571

CLASS 264

40 5 5,004,576
46 6 5,004,572
61 5,004,573
101 5,004,574
112 5,004,577
136 5,004,575
514 5,004,578
517 5,004,579

CLASS 266

116 5,004,213
170 5,004,212

CLASS 267

64 12 5,004,214
140 1 5,004,215
179 5,004,216

CLASS 271

10 5,004,217
35 5,004,218
116 5,004,219
184 5,004,220
194 5,004,221
225 5,004,222
275 5,004,223

CLASS 272

18 5,004,225
70 5,004,224
93 5,004,226
119 5,004,227
125 5,004,228
127 5,004,229
134 5,004,230
143 5,004,231

CLASS 273

21 5,004,233
26 R 5,004,234
29 A 5,004,235
80 B 5,004,236
80.2 5,004,237
121 B 5,004,238
162 E 5,004,240
162 F 5,004,239
167 H 5,004,241
169 5,004,242
195 A 5,004,243
240 5,004,244
241 5,004,245
246 5,004,246
376 5,004,247
435 5,004,232

CLASS 277

37 5,004,248
207 R 5,004,249
236 5,004,250

CLASS 280

32 7 5,004,251
33 992 5,004,252
47 315 5,004,254
47 38 5,004,253
79 5 5,004,255
87.042 5,004,256
112.2 5,004,257
259 5,004,258
304.1 5,004,259
414.1 5,004,260
605 5,004,065
612 5,004,261
615 5,004,262
645 5,004,263
707 5,004,264
5,004,265
743 5,004,266
766 1 5,004,267
804 5,004,268
837 5,004,269

CLASS 283

48 1 5,004,270
65 5,004,271

CLASS 285

24 5,004,272
27 5,004,273
288 5,004,274
373 5,004,275

CLASS 292

126 5,004,276
166 5,004,277
169 18 5,004,278
288 5,004,279
341 16 5,004,280

CLASS 293

118 5,004,281

CLASS 294

16 5,004,282
61 5,004,283
118 5,004,284

CLASS 296

1 1 5,004,285
24 1 5,004,286
57 1 5,004,287
97 11 5,004,288
97 12 5,004,289
99 1 5,004,290
116 5,004,291
153 5,004,292
166 5,004,293

CLASS 297

180 5,004,294
191 5,004,295
194 5,004,296
270 5,004,297
306 B1 4,198,094

CLASS 299

5 5,004,298

CLASS 303

15 5,004,299
5,004,300
115 5,004,301

CLASS 307

10.2 5,004,931
201 5,004,932
269 5,004,933
303 5,004,934
353 5,004,935
443 5,004,936
5,004,937
448 5,004,938
475 5,004,939

CLASS 310

36 5,004,940
49 R 5,004,941
89 5,004,942
239 5,004,943
266 5,004,944
328 5,004,945
5,004,946

CLASS 312

140 5,004,303
201 5,004,304
214 5,004,302
5,004,305
319 5,004,306

CLASS 313

486 5,004,948
492 5,004,949
582 5,004,950
631 5,004,951

CLASS 315

3.5 5,004,952
86 5,004,953
106 5,004,954
119 5,004,955
169 3 5,004,956
199 5,004,957
224 5,004,947
241 P 5,004,958
291 5,004,959
307 5,004,960

CLASS 318

65 5,004,961
85 5,004,962
128 5,004,964
254 5,004,965
446 5,004,966
568.1 5,004,967
576 B1 4,459,526
615 5,004,968

CLASS 320

13 5,004,963

CLASS 323

235 5,004,969
277 5,004,970
312 5,004,971
320 5,004,972

CLASS 324

117 R 5,004,974
121 R 5,004,975
154 R 5,004,976
158 P 5,004,977
158 R 5,004,973
5,004,978

160 5,004,979
166 5,004,980
207 22 5,004,981
5,004,982
322 5,004,983
402 5,004,984
727 5,004,985

CLASS 330

257 5,004,986

CLASS 331

70 5,004,987
116 R 5,004,988
117 R 5,004,989

CLASS 333

22 R 5,004,990
168 5,004,991
202 5,004,992
208 5,004,993

CLASS 337

66 5,004,994
266 5,004,995

CLASS 338

36 5,004,996

CLASS 340

436 5,004,997
507 5,004,998
539 5,004,999
550 5,005,000
551 5,005,001
574 5,005,002
587 5,005,003
600 5,005,004
604 5,005,005
611 5,005,006
650 5,005,007
653 5,005,008
705 5,005,009
5,005,010
728 5,005,011
750 5,005,012
825 44 5,005,013
5,005,014
962 5,005,015

CLASS 341

142 5,005,016

CLASS 342

172 5,005,017
203 5,005,018

CLASS 343

700 MS 5,005,019
713 5,005,020
717 5,005,021
753 5,005,022
756 5,005,023

CLASS 346

1 1 5,005,024
25 5,005,025
76 PH 5,005,026
5,005,027
76 R 5,005,028
107 R 5,005,029

CLASS 350

1 2 5,004,307
1 7 5,004,308
3 68 5,004,309
6 8 5,004,310
6 9 5,004,311
96 13 5,004,312
96 14 5,004,313
5,004,314
5,004,447
96 15 5,004,315
5,004,316
96 20 5,004,317
5,004,318
162 21 5,004,319
276 R 5,004,320
320 5,004,321
5,004,322
346 5,004,323
347 R 5,004,324
354 5,004,325
375 5,004,326
398 5,004,327
416 5,004,328
427 5,004,329
432 5,004,330
443 5,004,331
453 5,004,332

CLASS 351

45 5,004,333
54 5,004,334

CLASS 352

58 5,004,335

CLASS 353

122 5,004,336

CLASS 354

82 5,005,030
106 5,005,031
149.11 5,005,032
204 5,005,034
206 5,005,035
289.1 5,005,033
322 5,005,036
400 5,005,037
5,005,038
402 5,005,039
5,005,040
407 5,005,041
412 5,005,042
442 5,005,047

CLASS 355

27 5,005,043
40 5,005,044
68 5,005,045
77 5,005,046
93 5,005,048
208 5,005,049
5,005,050
221 5,005,051
231 5,005,052
245 5,005,053
273 5,005,054
311 5,005,055

CLASS 356

124 5,004,337
218 5,004,338
241 5,004,339
243 5,004,340
350 5,004,341
5,004,342
5,004,343
5,004,344
353 5,004,345
360 5,004,346
394 5,004,347
401 5,004,348
402 5,004,349

CLASS 357

2 5,005,056
17 5,005,057
5,005,058
22 5,005,059
23.13 5,005,061
23.5 5,005,060
23 6 5,005,072
24 5,005,062
5,005,063
27 5,005,064
38 5,005,065
43 5,005,066
54 5,005,067
59 5,005,068
72 5,005,069
74 5,005,070
85 5,005,071

CLASS 358

21 R 5,005,073
31 5,005,074
135 5,005,076
140 5,005,077
5,005,078
158 5,005,079
160 5,005,080
167 5,005,081
174 5,005,082
181 5,005,083
194 1 5,005,084
213 11 5,005,085
227 5,005,086
5,005,087

CLASS 360

69 5,005,088
77 08 5,005,089
92 5,005,090
96 5 5,005,091
99 06 5,005,092
5,005,093
105 5,005,094
106 5,005,095
113 5,005,096
121 5,005,097
130 34 5,005,098
132 5,005,099

CLASS 361

35 5,005,100
231 5,005,101
313 5,005,102
5,005,103
355 5,005,104
398 5,005,105
424 5,005,106
540 5,005,107

CLASS 362

31 5,005,108
61 5,005,109
84 5,005,110
156 5,005,111

CLASS 363

21 5,005,112
37 5,005,113
43 5,005,114
159 5,005,115

CLASS 364

188 5,005,116
200 5,005,117
5,005,118
5,005,119
5,005,120
5,005,121
5,005,122
400 5,005,123
401 5,005,124
403 5,005,125
413.13 5,005,126
419 5,005,127
424.02 5,005,128
424.03 5,005,129
426.01 5,005,130
426.02 5,005,131
5,005,132
426.04 5,005,133
474.01 5,005,134
474.35 5,005,135
5,005,136
514 5,005,137
519 5,005,138
5,005,139
550 5,005,140
5,005,141
5,005,142
554 5,005,143
565 5,005,144
571.02 5,005,145
573 5,005,146
578 5,005,147
5,005,148
728.01 5,005,149
736 5,005,150
900 5,005,151
5,005,152
5,005,153

CLASS 365

96 5,005,154
185 5,005,155
189 05 5,005,156
193 5,005,157
200 5,005,158

CLASS 366

69 5,004,350
152 5,004,351
208 B1 4,235,553
343 5,004,352
349 5,004,353

CLASS 367

57 5,005,159

CLASS 368

95 5,005,160
295 5,005,161

CLASS 369

44 12 5,005,162
44 36 5,005,163
48 5,005,164
58 5,005,165

CLASS 370

1 5,005,166
4 5,005,167
24 5,005,168
76 5,005,169
84 5,005,170
110 1 5,005,171

CLASS 371

18 5,005,172
22 6 5,005,173
68 3 5,005,174

CLASS 372

6 5,005,175
10 5,005,176
34 5,005,177
36 5,005,178
46 5,005,179
57 5,005,180
59 5,005,181
72 5,005,182

CLASS 374

29 5,004,354
194 5,004,355

CLASS 375

1 5,005,183
14 5,005,184
15 5,005,185
82 5,005,186
94 5,005,187
5,005,188
101 5,005,189
108 5,005,190
116 5,005,191

CLASS 377

8 5,005,192
33 5,005,193

CLASS 378

35 5,005,075
53 5,005,194
62 5,005,195
207 5,005,196

CLASS 379

21 5,005,197
58 5,005,198
375 5,005,199

CLASS 380

30 5,005,200

CLASS 381

24 5,005,201
25 5,005,202
43 5,005,203
51 5,005,204

CLASS 382

3 5,005,205
56 5,005,206

CLASS 383

63 5,004,356

CLASS 384

121 5,004,357
446 5,004,358
526 5,004,359

CLASS 388

816 5,005,207

CLASS 400

144 2 5,004,360

CLASS 401

53 5,004,362
75 5,004,363
110 5,004,364
258 5,004,365

CLASS 403

2 5,004,366
46 5,004,367
166 5,004,368
232 1 5,004,369
277 5,004,370
327 5,004,371

CLASS 405

63 5,004,372
131 5,004,373
154 5,004,374
230 5,004,375
284 5,004,376

CLASS 406

120 5,004,377

CLASS 407

106 5,004,378
113 5,004,379
114 5,004,380

CLASS 408

31 5,004,381
60 5,004,382
211 5,004,383
230 5,004,384

CLASS 409

180 5,004,385

CLASS 410

62 5,004,386
69 5,004,387
107 5,004,388

CLASS 411

304 5,004,389
340 5,004,390
366 5,004,361

CLASS 414

6 5,004,391
21 5,004,392
331 5,004,393
346 5,004,394
412 5,004,395
417 5,004,396
686 5,004,397
723 5,004,398
729 5,004,399
786 5,004,400
5,004,401

CLASS 415

137 5,004,402

CLASS 417

53 5,004,403
131 5,004,405
273 5,004,406

CLASS 418

1 5,004,407
15 5,004,408
58 5,004,409
63 5,004,410
132 5,004,412

CLASS 419

65 5,004,580

CLASS 420

487 5,004,581

CLASS 422

56 5,004,582
58 5,004,583
5,004,584
5,004,585
164 5,004,586
171 B1 3,870,474
186 19 5,004,587

CLASS 423

226 5,004,588
315 5,004,589
578 R 5,004,591
652 5,004,592

CLASS 424

10 5,004,593
47 5,004,594
48 5,004,595
52 5,004,596
5,004,597
59 5,004,598
61 5,004,599
76 3 5,004,600
78 5,004,601
5,004,602
81 5,004,603
85 5 5,004,604
85 6 5,004,605
85 8 5,004,606
87 Re 33,565
5,004,607
88 5,004,608
5,004,609
94 3 5,004,610
448 5,004,611
450 5,004,612
5,004,613
465 5,004,651
5,004,614
466 5,004,615
692 5,004,615

CLASS 425

117 5,004,411
182 5,004,413
185 5,004,414
297 5,004,415
447 2 5,004,590
564 5,004,416

CLASS 426

102 5,004,616
233 5,004,617
281 5,004,618
297 5,004,619
304 5,004,620
386 5,004,621
513 5,004,622
564 5,004,623
623 5,004,624

CLASS 427

38 5,004,625
58 5,004,626
133 5,004,627
204 5,004,629
208 8 5,004,630
385 5 5,004,631
389 9 5,004,628
410 5,004,632

CLASS 428

9 5,004,633
31 5,004,634
33 5,004,635
43 5,004,636
5,004,637
95 5,004,638
138 5,004,639
195 5,004,640
208 5,004,641
222 5,004,642
246 5,004,643
323 5,004,644
344 5,004,645
344 5,004,646
349 5,004,647
364 5,004,648
461 5,004,649
463 5,004,650
611 5,004,652
615 5,004,653

CLASS 429

50 5,004,654
82 5,004,655
162 5,004,656
193 5,004,657

CLASS 430

5 5,004,658
14 5,004,659
17 5,004,660
59 5,004,661
5,004,662
106 6 5,004,663
5,004,664
5,004,665
110 5,004,666
255 5,004,667
256 5,004,668
264 5,004,669
265 5,004,670
286 5,004,671
314 5,004,672
325 5,004,673
333 5,004,674
377 5,004,675
382 5,004,677
398 5,004,676
548 5,004,678
567 5,004,679
603 5,004,680

CLASS 433

26 5,004,417
77 5,004,418
143 5,004,419
172 5,004,420
173 5,004,421
175 5,004,422

CLASS 434

22 5,004,423
301 5,004,424

CLASS 435

2 5,004,681
6 5,004,682
7 21 5,004,683
7 31 5,004,699
8 5,004,684
25 5,004,685
69 1 5,004,686
5,004,687
69 3 5,004,688
69 51 5,004,689
138 5,004,690
172 3 5,004,691
183 5,004,692
235 1 5,004,693
240 27 5,004,694
253 1 5,004,695

CLASS 436

51 5,004,696
547 5,004,697

CLASS 437

3 5,004,698
42 5,004,700
47 5,004,701
57 5,004,702
67 5,004,703
195 5,004,704
225 5,004,705

CLASS 439

37 5,004,425
82 5,004,426
101 5,004,427
191 5,004,428
326 5,004,429
350 5,004,430
358 5,004,431
417 5,004,432
502 5,004,433
636 5,004,434
652 5,004,435
752 5,004,436
811 5,004,437
825 5,004,438

CLASS 440

2 5,004,439

CLASS 446

211 5,004,441
302 5,004,442
355 B1 4,349,987
392 5,004,443

406	5,004,444	242	5,004,719		CLASS 522		5,004,793	70	5,004,821		5,004,855
478	5,004,445		CLASS 505	3	5,004,761	52	5,004,794	115	5,004,822	500	5,004,856
	CLASS 449	1	5,004,720	121	5,004,762	73	5,004,795	136	5,004,823	507	5,004,857
1	5,004,446		5,004,721		CLASS 523	179	5,004,796	412	5,004,824	667	5,004,858
	CLASS 452		5,004,722	161	5,004,763	206	5,004,797		CLASS 558	741	5,004,859
21	5,003,666		5,004,723	400	5,004,764	230	5,004,798	111	5,004,825	812	5,004,860
125	5,003,667		5,004,724	434	5,004,765	351	5,004,800	169	5,004,826	818	5,004,861
185	5,003,665		5,004,725		CLASS 524	360	5,004,801	277	5,004,827	867	5,004,862
	CLASS 455		5,004,726	30	5,004,766	389	5,004,799		CLASS 560		CLASS 600
32	5,005,209		CLASS 514		5,004,767		CLASS 530	224	5,004,828	30	5,004,454
115	5,005,210	12	5,004,728		5,004,768	322	5,004,818		CLASS 562		CLASS 604
603	5,005,211	29	5,004,729	43	5,004,769	380	5,004,802	113	5,004,829	29	5,004,459
606	5,005,212		5,004,731	62	5,004,772	383	5,004,803	413	5,004,830	43	5,004,455
617	5,005,213		5,004,732	89	5,004,759	387	5,004,804	475	5,004,831	53	5,004,456
	CLASS 474		5,004,734	99	5,004,770	399	5,004,805	490	5,004,832	158	5,004,457
111	5,004,448	029	5,004,730	161	5,004,771	415	5,004,806		CLASS 564	175	5,004,458
138	5,004,449		5,004,733	178	5,004,773		CLASS 534	142	5,004,834	228	5,004,460
242	5,004,450	134	5,004,735	262	5,004,774	618	5,004,807	153	5,004,835	265	5,004,461
	CLASS 493	161	5,004,736	371	5,004,775		CLASS 536		CLASS 568	329	5,004,463
359	5,004,451	182	5,004,737	377	5,004,776	18 2	5,004,833	333	5,004,836	338	5,004,464
414	5,004,452	195	5,004,738	433	5,004,777	27	5,004,810	342	5,004,837	385 1	5,004,465
	CLASS 494	210	5,004,739	474	5,004,778	29	5,004,809	347	5,004,838	385 2	5,004,466
39	5,004,453		5,004,740	591	5,004,779	56	5,004,808	390	5,004,839	904	5,004,467
	CLASS 501	221	5,004,741		CLASS 525		CLASS 540	486	5,004,840		CLASS 606
27	5,004,706	226 5	5,004,742	27	5,004,780	145	5,004,811	640	5,004,842	132	5,004,468
37	5,004,707	227 8	5,004,743	54 11	5,004,781		CLASS 546	670	5,004,843	139	5,004,469
96	5,004,708	247	5,004,744	64	5,004,782	201	5,004,812	678	5,004,841	188	5,004,470
97	5,004,709	254	5,004,745	77	5,004,783		CLASS 548	680	5,004,844	194	5,004,471
103	5,004,710	283	5,004,758	123	5,004,784	463	5,004,813	685	5,004,845	234	5,004,472
	5,004,711	299	5,004,746	305	5,004,785		CLASS 549	940	5,004,846		5,004,473
126	5,004,712	309	5,004,747	332 1	5,004,787	294	5,004,814		CLASS 570		CLASS 623
134	5,004,713	350	5,004,748	344	5,004,786	328	5,004,815	186	5,004,847	13	5,004,474
	5,004,714	372	5,004,749	504	5,004,788	462	5,004,816	206	5,004,848	23	5,004,475
136	5,004,715	382	5,004,750	506	5,004,789	557	5,004,817	224	5,004,849		5,004,476
141	5,004,716	390	5,004,751		CLASS 526		CLASS 552		CLASS 585	53	5,004,477
	CLASS 502	530	5,004,752	242	5,004,790	244	5,004,819	1	5,004,850		CLASS 800
50	5,004,717	531	5,004,753	258	5,004,560		CLASS 556	260	5,004,851	205	5,004,863
217	5,004,718	570	5,004,754		CLASS 527	53	5,004,820	322	5,004,852	235	5,004,864
		653	5,004,755	300	5,004,791			481	5,004,853		CLASS 917
		655	5,004,756		CLASS 528			489	5,004,854	53	5,004,404
		694	5,004,757	15	5,004,792						
			CLASS 521								
		149	5,004,760								

CLASSIFICATION OF DESIGNS

D2—	274	315,823		679	315,850		120	315,876		116	315,901	D20—	4	315,927		10	315,954
	314	315,824			315,851		143	315,877		121	315,902		17	315,928			315,955
		315,828	D8—	30	315,852		164	315,878			3.5,903	D21—	68	315,929		14	315,956
D3—	30.1	315,829			315,853			315,879		150	315,904		123	315,930		16	315,953
	32	315,825		66	315,854			315,880		156	315,905		128	315,931			315,957
	37	315,826		68	315,855			315,881		239	315,906			315,932		41	315,958
	52	315,830		98	315,856			315,882		247	315,907		180	315,933		48	315,959
	71	315,827		308	315,857			315,883		250	315,908		191	315,934	D25—	138	315,960
D4—	104	315,831			315,858	D12—	128	315,884			315,909			315,935	D26—	2	315,961
	138	315,833		357	315,859		129	315,885			315,910			315,936		24	315,962
D5—	16	315,834		367	315,860		133	315,886	D15—	7	315,911			315,937		63	315,963
D6—	302	315,835		371	315,861		136	315,887			315,912		201	315,938			315,964
	334	315,836		380	315,862		157	315,888		28	315,913		220	315,939		67	315,965
	368	315,837			315,863		187	315,889		72	315,914		226	315,940		122	315,966
	391	315,838		395	315,864		191	315,890	D16—	202	315,915			315,941	D28—	35	315,967
	513	315,839			315,865			315,891		218	315,916		232	315,942			315,968
	525	315,840	D9—	318	315,866		315	315,892	D17—	20	315,917		254	315,943		85	315,969
	528	315,841		341	315,867	D13—	165	315,893			315,918	D22—	142	315,944	D29	2	315,970
	541	315,842			315,868		171	315,894	D18—	13	315,919	D23—	244	315,945		6	315,971
	542	315,843		392	315,869		179	315,832		19	315,920		313	315,948		7	315,972
	574	315,844		415	315,871	D14—	100	315,895		22	315,921		377	315,946	D30—	122	315,973
	601	315,845		420	315,870			315,896	D19	1	315,922			315,947		131	315,974
D7—	335	315,846		446	315,872			315,897		55	315,923		393	315,949	D32—	41	315,975
	393	315,847	D10—	62	315,873		107	315,898		75	315,924	D24—	8	315,950	D34—	33	315,976
	608	315,848		114	315,874		109	315,899		92	315,925			315,951	D99—	1	315,977
	672	315,849	D11—	43	315,875		114	315,900			315,926			315,952			

CLASSIFICATION OF PLANTS

P—	II	7,484		36	7,485		68	7,486		76	7,487		77	7,488		80	7,489

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60—	757	H903	244—	3.28	H905	328—	233	H909	342—	25	H910	403—	409 1	H906	423—	448	H907

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PATENTS

01	5,003,716		5,004,020		5,004,596		5,003,875	12	5,003,645		5,003,879
	5,003,764		5,004,053		5,004,605		5,003,973		5,003,715		5,003,960
	5,003,844		5,004,062		5,004,606		5,004,018		5,003,743		5,004,073
	5,003,883		5,004,074		5,004,610		5,004,072		5,003,902		5,004,081
	5,004,309		5,004,084		5,004,624		5,004,133		5,003,911		5,004,124
	5,004,587		5,004,100		5,004,632		5,004,166		5,003,946		5,004,146
	5,004,894		5,004,107		5,004,639		5,004,239		5,004,039		5,004,219
	5,004,976		5,004,118		5,004,643		5,004,393		5,004,041		5,004,229
	5,005,099		5,004,119		5,004,652		5,004,403		5,004,052		5,004,258
02	5,003,921		5,004,123		5,004,688		5,004,404		5,004,099		5,004,297
04	5,003,662		5,004,134		5,004,690		5,004,634		5,004,181		5,004,319
	5,003,712		5,004,136		5,004,692		5,004,944		5,004,230		5,004,427
	5,003,789		5,004,144		5,004,696		5,004,978		5,004,231		5,004,445
	5,004,186		5,004,190		5,004,697		5,005,005		5,004,270		5,004,533
	5,004,292		5,004,191		5,004,698		5,005,008		5,004,296		5,004,536
	5,004,334		5,004,193		5,004,699		5,005,102		5,004,388		5,004,570
	5,004,452		5,004,195		5,004,804		5,005,170		5,004,402		5,004,642
	5,004,703		5,004,204		5,004,806		5,005,171		5,004,441		5,004,709
	5,004,911		5,004,205		5,004,870	09	5,003,694		5,004,537		5,004,786
	5,004,973		5,004,210		5,004,877		5,003,734		5,004,574		5,004,828
	5,005,059		5,004,227		5,004,883		5,003,771		5,004,772		5,004,830
	5,005,061		5,004,232		5,004,914		5,003,773		5,004,866		5,004,853
	5,005,069		5,004,252		5,004,923		5,003,829		5,004,893		5,004,859
05	5,004,228		5,004,259		5,004,957		5,003,866		5,005,014		5,004,947
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	5,003,767		5,004,421		5,005,095		5,004,872		5,004,607		5,004,293
	5,003,811		5,004,422		5,005,096		5,004,878		5,004,875		5,004,488
	5,003,820		5,004,432		5,005,101		5,005,001	15	5,004,240		5,004,509
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PATENT ROOM

Vol. 1125 Number 2

OFFICIAL GAZETTE

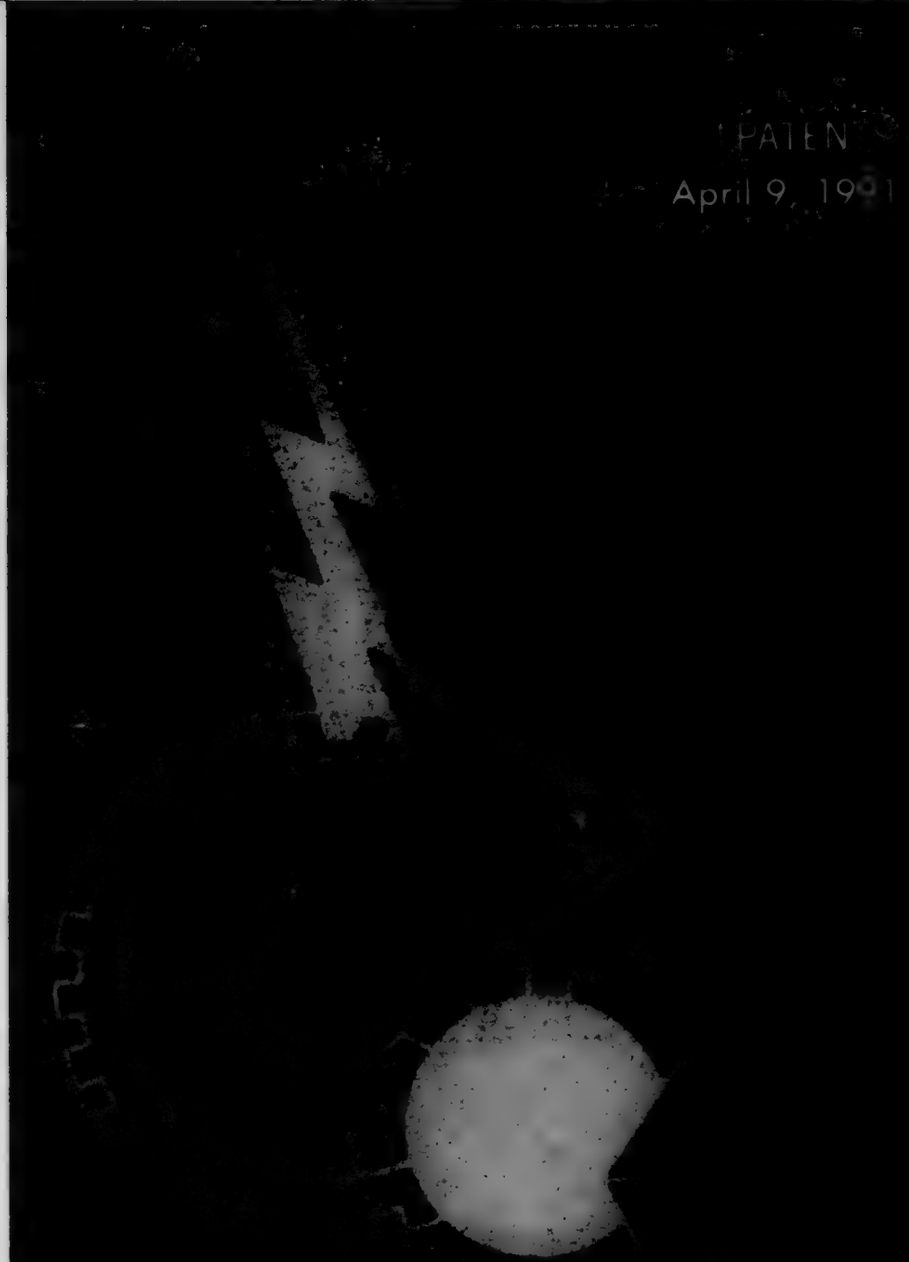
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1120 O.G. 54 on Nov. 27, 1990.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987 and at 1091 O.G. 2 on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office, see the notice appearing at 1116 O.G. 32, on July 17,1990.

The search fee of the European Patent Office was changed due to a difference in the amount of the fee in German Marks and the exchange rate of the U.S. dollar in relation to the German Mark as of Jan. 3, 1991, and was announced in the *Official Gazette* at 1122 O.G. 564 on Jan 1, 1991.

International fees were changed on March 1, 1991 due to a difference in the exchange rate of the U.S. dollar in relation to the Swiss Franc and were announced in the *Official Gazette* at 1122 O.G. 629 on Jan. 22, 1991.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Apr. 17, 1989 and were announced in the *Official Gazette* at 1100 O.G. 24 on Mar. 7, 1989.

The current schedule of PCT fees (in U.S. dollars) is as follows:

Transmittal fee	170.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	550.00
—Corresponding prior U.S. national application filed	380.00
Supplemental search fee, per additional invention	150.00
European Patent Office as ISA	1492.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as ISA	400.00
—Additional examination fee, per additional invention	130.00
ISA not the USPTO	600.00
Additional examination fee, per additional invention	200.00
International fees	
Basic fee	559.00
Basic Supplemental fee (for each page over 30)	11.00
Designation fee per country or region for the first 10 national or regional offices	135.00
Designation fee for 11th and subsequent designations	No Charge
Handling fee	171.00

U.S. National Stage fees	Small Entity	Regular
USPTO was IPEA	165.00	330.00
USPTO was ISA but not IPEA	185.00	370.00
USPTO was neither ISA nor IPEA	250.00	500.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2)-(4)	25.00	50.00
For each independent claim in excess of 3	18.00	36.00
For each claim in excess of 20	6.00	12.00
For each application containing a multiple dependent claim	60.00	120.00
Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	60.00	120.00
Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	30.00	30.00

Dec. 21, 1990

HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Apr. 17, 1989. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on April 5, 1988 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,734,938 through 4,736,465
Reissue Patents based on the above identified patents

Attention is drawn to the patents which were issued on April 3, 1984, for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,439,871 through 4,441,210
Reissue Patents based on the above identified patents

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months are set forth in 37 CFR 1.20(e), and (f), as amended Nov. 5, 1990, which are reproduced below.

37 CFR § 1.20 Post-issuance fees and surcharges.

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years, the fee is due by three years and six months after the original grant $245.00

"(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 8 years, the fee is due by seven years and six months after the original grant ..... $495.00"

"(h) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Aug. 27,1982, in force beyond 4 years, the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) $415.00
By other than a small entity $850.00

"(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 8 years, the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f)) $835.00
By other than a small entity ..... $1670.00"

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(k) and (l), which are reproduced below.

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27,1982 ..... $120.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f)) $60.00
By other than a small entity ..... $120.00"

(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been unavoidable ..... $550.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED JANUARY 27, 1991 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,369,528	06/236,667	1/25/83
4,369,530	06/265,100	1/25/83
4,369,531	06/260,085	1/25/83
4,369,540	06/248,298	1/25/83
4,369,541	06/251,596	1/25/83
4,369,553	06/254,552	1/25/83
4,369,582	06/316,346	1/25/83
4,369,591	06/270,082	1/25/83
4,369,597	06/247,169	1/25/83
4,369,613	06/247,740	1/25/83
4,369,619	06/285,012	1/25/83
4,369,620	06/233,398	1/25/83
4,369,626	06/288,619	1/25/83
4,369,629	06/223,235	1/25/83
4,369,634	06/223,790	1/25/83
4,369,635	06/248,427	1/25/83
4,369,640	06/227,939	1/25/83
4,369,642	06/247,381	1/25/83
4,369,657	06/285,592	1/25/83
4,369,667	06/282,233	1/25/83
4,369,683	06/247,815	1/25/83
4,369,686	06/227,717	1/25/83
4,369,690	06/303,336	1/25/83
4,369,698	06/238,989	1/25/83
4,369,701	06/240,574	1/25/83
4,369,703	06/251,301	1/25/83
4,369,710	06/243,894	1/25/83
4,369,712	06/233,555	1/25/83
4,369,720	06/291,256	1/25/83
4,369,735	06/256,013	1/25/83
4,369,738	06/264,866	1/25/83
4,369,753	06/215,848	1/25/83
4,369,756	06/223,086	1/25/83
4,369,758	06/303,024	1/25/83
4,369,774	06/243,784	1/25/83
4,369,798	06/289,856	1/25/83
4,369,801	06/264,863	1/25/83
4,369,803	06/229,037	1/25/83
4,369,805	06/225,033	1/25/83
4,369,812	06/235,668	1/25/83
4,369,820	06/240,262	1/25/83
4,369,832	06/249,761	1/25/83
4,369,839	06/293,257	1/25/83
4,369,881	06/321,812	1/25/83
4,369,896	06/248,559	1/25/83
4,369,901	06/240,893	1/25/83
4,369,903	06/283,853	1/25/83
4,369,915	06/234,382	1/25/83
4,369,932	06/242,397	1/25/83
4,369,939	06/241,822	1/25/83
4,369,952	06/233,205	1/25/83
4,369,957	06/289,765	1/25/83
4,369,962	06/234,691	1/25/83
4,369,964	06/219,757	1/25/83
4,369,971	06/223,185	1/25/83
4,369,979	06/384,993	1/25/83
4,370,025	06/219,655	1/25/83
4,370,028	06/220,075	1/25/83
4,370,036	06/267,991	1/25/83
4,370,046	06/287,570	1/25/83
4,370,070	06/234,372	1/25/83
4,370,072	06/252,761	1/25/83
4,370,081	06/300,173	1/25/83
4,370,102	06/227,638	1/25/83
4,370,113	06/281,774	1/25/83
4,370,127	06/237,973	1/25/83
4,370,136	06/259,583	1/25/83
4,370,140	06/224,153	1/25/83
4,370,146	06/331,056	1/25/83
4,370,148	06/281,845	1/25/83
4,370,153	06/320,466	1/25/83
4,370,158	06/225,564	1/25/83
4,370,169	06/221,741	1/25/83
4,370,176	06/227,763	1/25/83
4,370,183	06/223,866	1/25/83
4,370,195	06/362,042	1/25/83
4,370,203	06/230,595	1/25/83
4,370,218	06/245,801	1/25/83
4,370,222	06/239,776	1/25/83
4,370,226	06/238,100	1/25/83
4,370,229	06/258,393	1/25/83
4,370,232	06/289,804	1/25/86
4,370,234	06/231,833	1/25/83
4,370,243	06/232,474	1/25/83

Patent Number	Serial Number	Issue Date
4,370,258	06/261,488	1/25/83
4,370,264	06/300,074	1/25/83
4,370,271	06/262,969	1/25/83
4,370,274	06/220,170	1/25/83
4,370,275	06/250,363	1/25/83
4,370,280	06/308,734	1/25/83
4,370,322	06/308,581	1/25/83
4,370,333	06/278,760	1/25/83
4,370,342	06/241,147	1/25/83
4,370,363	06/292,890	1/25/83
4,370,364	06/333,222	1/25/83
4,370,379	06/284,069	1/25/83
4,370,381	06/239,259	1/25/83
4,370,399	06/246,605	1/25/83
4,370,404	06/318,495	1/25/83
4,370,407	06/282,616	1/25/83
4,370,409	06/277,038	1/25/83
4,370,418	06/286,372	1/25/83
4,370,460	06/274,195	1/25/83
4,370,478	06/323,112	1/25/83
4,370,482	06/315,788	1/25/83
4,370,484	06/242,728	1/25/83
4,370,507	06/338,088	1/25/83
4,370,513	06/363,755	1/25/83
4,370,516	06/262,035	1/25/83
4,370,542	06/264,847	1/25/83
4,370,578	06/274,850	1/25/83
4,370,586	06/248,062	1/25/83
4,370,597	06/224,603	1/25/83
4,370,609	06/271,222	1/25/83
4,370,613	06/317,597	1/25/83
4,370,639	06/236,755	1/25/83
4,370,648	06/249,399	1/25/83
4,370,649	06/265,063	1/25/83
4,370,651	06/278,270	1/25/83
4,370,657	06/241,955	1/25/83
4,370,664	06/250,464	1/25/83
4,370,696	06/266,886	1/25/83
4,370,703	06/285,355	1/25/83
4,370,715	06/229,366	1/25/83
4,370,747	06/216,234	1/25/83
4,638,513	06/801,292	1/27/87
4,638,517	06/741,797	1/27/87
4,638,518	06/805,422	1/27/87
4,638,520	06/573,255	1/27/87
4,638,521	06/765,459	1/27/87
4,638,522	06/710,387	1/27/87
4,638,524	06/573,321	1/27/87
4,638,532	06/724,054	1/27/87
4,638,533	06/723,571	1/27/87
4,638,535	06/803,280	1/27/87
4,638,544	06/806,636	1/27/87
4,638,546	06/795,190	1/27/87
4,638,550	06/533,252	1/27/87
4,638,560	06/840,078	1/27/87
4,638,561	06/756,111	1/27/87
4,638,563	06/859,715	1/27/87
4,638,564	06/842,904	1/27/87
4,638,575	06/818,377	1/27/87
4,638,578	06/723,865	1/27/87
4,638,586	06/872,169	1/27/87
4,638,590	06/774,476	1/27/87
4,638,591	06/827,458	1/27/87
4,638,593	06/730,555	1/27/87
4,638,603	06/823,803	1/27/87
4,638,605	06/701,392	1/27/87
4,638,620	06/726,093	1/27/87
4,638,623	06/617,189	1/27/87
4,638,635	06/735,243	1/27/87
4,638,637	06/669,893	1/27/87
4,638,640	06/791,365	1/27/87
4,638,645	06/783,404	1/27/87
4,638,655	06/676,664	1/27/87
4,638,660	06/816,453	1/27/87
4,638,663	06/807,809	1/27/87
4,638,670	06/766,871	1/27/87
4,638,680	06/768,260	1/27/87
4,638,685	06/681,128	1/27/87
4,638,704	06/528,533	1/27/87
4,638,708	06/842,923	1/27/87
4,638,722	06/443,468	1/27/87
4,638,723	06/636,739	1/27/87
4,638,737	06/749,847	1/27/87
4,638,738	06/666,181	1/27/87
4,638,739	06/829,339	1/27/87
4,638,745	06/797,399	1/27/87
4,638,757	06/756,154	1/27/87
4,638,761	06/722,791	1/27/87
4,638,767	06/752,943	1/27/87
4,638,772	06/693,847	1/27/87
4,638,786	06/696,292	1/27/87
4,638,787	06/744,955	1/27/87
4,638,800	06/699,933	1/27/87
4,638,801	06/790,637	1/27/87
4,638,806	06/753,193	1/27/87
4,638,815	06/809,414	1/27/87
4,638,821	06/689,463	1/27/87
4,638,823	06/749,262	1/27/87
4,638,824	06/773,869	1/27/87
4,638,826	06/749,106	1/27/87
4,638,831	06/828,758	1/27/87
4,638,834	06/778,362	1/27/87
4,638,841	06/799,149	1/27/87
4,638,848	06/456,083	1/27/87
4,638,853	06/634,298	1/27/87
4,638,860	06/825,086	1/27/87
4,638,866	06/824,729	1/27/87
4,638,867	06/691,847	1/27/87
4,638,870	06/680,390	1/27/87
4,638,874	06/517,465	1/27/87
4,638,875	06/685,482	1/27/87
4,638,884	06/754,496	1/27/87
4,638,912	06/721,802	1/27/87
4,638,915	06/791,931	1/27/87
4,638,917	06/808,265	1/27/87
4,638,923	06/721,222	1/27/87
4,638,925	06/718,969	1/27/87
4,638,934	06/656,863	1/27/87
4,638,941	06/770,825	1/27/87
4,638,948	06/827,941	1/27/87
4,638,951	06/732,381	1/27/87
4,638,956	06/781,974	1/27/87
4,638,963	06/735,449	1/27/87
4,638,966	06/748,191	1/27/87
4,638,968	06/643,047	1/27/87
4,638,970	06/764,569	1/27/87
4,638,978	06/761,585	1/27/87
4,638,984	06/785,648	1/27/87
4,638,997	06/782,937	1/27/87
4,639,003	06/827,966	1/27/87
4,639,005	06/740,562	1/27/87
4,639,007	06/777,919	1/27/87
4,639,008	06/568,391	1/27/87
4,639,010	06/823,962	1/27/87
4,639,015	06/767,092	1/27/87
4,639,019	06/223,072	1/27/87
4,639,027	06/781,046	1/27/87
4,639,028	06/670,627	1/27/87
4,639,035	06/551,163	1/27/87
4,639,043	06/675,358	1/27/87
4,639,044	06/265,189	1/27/87
4,639,053	06/797,342	1/27/87
4,639,054	06/721,238	1/27/87
4,639,058	06/643,237	1/27/87
4,639,064	06/834,690	1/27/87
4,639,076	06/550,848	1/27/87
4,639,080	06/645,138	1/27/87
4,639,091	06/583,645	1/27/87
4,639,097	06/578,632	1/27/87
4,639,100	06/584,945	1/27/87
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4,639,136	06/738,003	1/27/87
4,639,138	06/665,474	1/27/87
4,639,144	06/809,388	1/27/87
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4,639,209	06/724,195	1/27/87
4,639,215	06/399,272	1/27/87
4,639,219	06/351,278	1/27/87
4,639,227	06/338,628	1/27/87
4,639,231	06/778,940	1/27/87
4,639,239	06/797,526	1/27/87
4,639,242	06/698,013	1/27/87
4,639,256	06/810,114	1/27/87
4,639,258	06/541,923	1/27/87
4,639,261	06/584,819	1/27/87
4,639,262	06/818,993	1/27/87
4,639,269	06/805,805	1/27/87
4,639,270	06/517,774	1/27/87
4,639,282	06/829,953	1/27/87
4,639,296	06/824,811	1/27/87
4,639,299	06/677,341	1/27/87
4,639,300	06/736,604	1/27/87
4,639,310	06/761,681	1/27/87
4,639,327	06/746,783	1/27/87
4,639,330	06/842,207	1/27/87
4,639,345	06/478,554	1/27/87
4,639,348	06/670,806	1/27/87
4,639,351	06/590,691	1/27/87
4,639,354	06/641,527	1/27/87
4,639,360	06/791,658	1/27/87
4,639,361	06/702,643	1/27/87
4,639,368	06/741,871	1/27/87
4,639,372	06/625,882	1/27/87
4,639,389	06/680,889	1/27/87
4,639,395	06/711,615	1/27/87
4,639,413	06/765,626	1/27/87
4,639,442	06/798,697	1/27/87
4,639,449	06/854,789	1/27/87
4,639,453	06/679,178	1/27/87
4,639,473	06/801,075	1/27/87
4,639,475	06/601,183	1/27/87
4,639,476	06/749,251	1/27/87
4,639,496	06/770,701	1/27/87
4,639,509	06/717,216	1/27/87
4,639,510	06/784,919	1/27/87
4,639,511	06/797,066	1/27/87
4,639,532	06/621,574	1/27/87
4,639,537	06/738,105	1/27/87
4,639,538	06/608,097	1/27/87
4,639,543	06/709,572	1/27/87
4,639,546	06/790,559	1/27/87
4,639,552	06/710,003	1/27/87
4,639,591	06/688,117	1/27/87
4,639,595	06/581,661	1/27/87
4,639,596	06/456,065	1/27/87
4,639,610	06/807,147	1/27/87
4,639,614	06/775,606	1/27/87
4,639,634	06/597,595	1/27/87
4,639,642	06/684,391	1/27/87
4,639,654	06/751,504	1/27/87
4,639,662	06/639,000	1/27/87
4,639,667	06/496,843	1/27/87
4,639,672	06/659,214	1/27/87
4,639,689	06/769,868	1/27/87
4,639,696	06/795,174	1/27/87
4,639,704	06/835,684	1/27/87
4,639,705	06/706,296	1/27/87
4,639,710	06/822,219	1/27/87
4,639,718	06/705,179	1/27/87
4,639,722	06/530,596	1/27/87
4,639,759	06/550,910	1/27/87
4,639,766	06/656,864	1/27/87
4,639,801	06/628,701	1/27/87
4,639,809	06/671,634	1/27/87
4,639,811	06/684,055	1/27/87
4,639,820	06/719,342	1/27/87
4,639,832	06/862,822	1/27/87
4,639,845	06/609,470	1/27/87
4,639,861	06/572,579	1/27/87
4,639,867	06/652,656	1/27/87
4,639,913	06/683,672	1/27/87
4,639,915	06/648,674	1/27/87
4,639,928	06/588,788	1/27/87
4,639,935	06/739,533	1/27/87
4,639,942	06/840,390	1/27/87

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE
(35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378

Patent No	Serial No	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,370,868	06/222,455	2/01/83	1/05/81	2/27/91
4,577,778	06/730,057	3/25/86	5/03/85	2/27/91
4,586,060	06/513,698	4/29/86	7/14/83	11/30/90

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b) The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b))

4,282,111, Re. S. N. 07/655,222, Filed Feb. 12, 1991, Cl. 422. HYDROQUINONE AS AN OXYGEN SCAVENGER IN AN AQUEOUS MEDIUM, S.J. Ciuffi, Owner of Record. *Inventor*. Attorney or Agent: Steven D. Boyd, Ex. Gp. 189

4,630,538, Re. S. N. 07/661,008, Filed Feb. 26, 1991, Cl. 101/045, PORTABLE LABEL MAKER, Larry A. Cushman, Owner of Record. *Inventor*. Attorney or Agent: William D. Blackman, Ex. Gp. 337

4,678,476, Re. S. N. 07/658,720, Filed Feb. 19, 1991, Cl. 8/639, MIXTURES OF BLUE MONO-AZO DISPERSE DYESTUFFS AND THEIR USE FOR DYEING POLYESTER, Horst Tappe, et al., Owner of Record: *Cassella Aktiengesellschaft, Frankfurt (Main) Fechenheim, Germany*. Attorney or Agent: Maria P. Tungol, Ex. Gp. 115

4,784,575, Re. S. N. 07/660,459, Filed Feb. 26, 1991, Cl. 416/226, COUNTERROTATING AIRCRAFT PROPULSOR BLADES, Joey L. Nelson, et al. Owner of Record: *General Electric Company, New York, N.Y.* Attorney or Agent: Charles L. Moore, Ex. Gp.: 341

4,788,180, Re. S. N. 07/619,055, Filed Nov. 28, 1990, Cl. 514/26, PHARMACEUTICAL COMPOSITIONS, Maurice Bloch, Owner of Record: *Inventor*. Attorney or Agent: Alan E. Schiavelli, Ex. Gp. 183

4,805,390, Re. S. N. 07/658,063, Filed Feb. 20, 1991, Cl. 56/300, MODULAR SICKLE BAR SELECTIONS, David S. Majkrzak, Owner of Record: *Crary Company, Fargo, N. Dak.*, Attorney or Agent: Nicholas E. Westman, Ex. Gp. 356

4,865,460, Re. S. N. 07/658,262, Filed Feb. 20, 1991, Cl. 366/337, STATIC MIXING DEVICE, Juergen Friedrich, Owner of Record: *Kudo Corp., Hazelton, Pa.*, Attorney or Agent: Steven B. Pokotilow, Ex. Gp.: 242

4,875,254, Re. S. N. 07/660,728, Filed Feb. 25, 1991, Cl. 452/157, METHOD AND APPARATUS FOR AUTOMATICALLY

CUTTING FOOD PRODUCTS TO PREDETERMINED WEIGHT OR SHAPE, Norman A. Rudy, et al., Owner of Record *Frigoscania Food Processing Systems A.B. Helsingborg, Sweden*, Attorney or Agent: Oliver D. Olson, Ex. Gp. 323

4,913,116, Re. S.N. 07/660,853, Filed Feb. 26, 1991, Cl. 123-425, IGNITION TIMING CONTROL APPARATUS FOR AN INTERNAL COMBUSTION ENGINE, Kozo Katogi, et al., Owner of Record *Hitachi, Ltd. Tokyo Japan*, Attorney or Agent: Donald R. Antonelli, Ex. Gp. 342

4,962,568, Re. S.N. 07/661,336, Filed Feb. 25, 1991, Cl. 83-177, METHOD AND APPARATUS FOR AUTOMATICALLY CUTTING FOOD PRODUCTS TO PREDETERMINED WEIGHT OR SHAPE, Norman A. Rudy, et al., Owner of Record *Frigoscania Food Processing Systems A.B. Helsingborg, Sweden*, Attorney or Agent: Oliver D. Olson, Ex. Gp. 324

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c): The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,604,319, Reexam. No. 90/002,288, Requested Mar. 12, 1991, Cl. 428/290, THERMOPLASTIC INTERLEAFED RESIN MATRIX COMPOSITES WITH IMPROVED IMPACT STRENGTH AND TOUGHNESS, Robert E. Evans, et al., Owner of Record: *American Cyanamid Comp. Stamford, Conn.*, Attorney or Agent: Steven H. Flynn, Stamford, Conn., Ex. Gp. 154, Requester: Owner

Patent Examiner's Action Survey

As part of the quality reinforcement efforts of the Patent and Trademark Office, the Office will be sending out a survey sheet with each Examiner's Office Action mailed for about 4 weeks selected from the period March-May, 1991.

The survey is intended to determine whether Office actions are perceived to be clear and complete on certain specific items. The results of the survey will be used in the development of Office training programs. Follow-up surveys are intended to be conducted in the future to determine the effectiveness of the training and any trends in performance.

The survey sheet is brief and easy to complete and will not require identification of the respondent or of the particular application involved. The survey sheet may be completed at the time of response to the Office action. Cooperation in completing the survey sheet is requested.

Feb. 28, 1991 JAMES E. DENNY
Assistant Commissioner for Patents designate

Removal From Register

Pursuant to the provisions of 37 CFR §10.11(b), a letter was directed on November 30, 1990 to Freeman Crampton, Caller #10003, Toledo, Ohio 43699 the last post office address furnished by him to the Office of Enrollment and Discipline. No reply was recieved within the period of forty-five (45) days therein set.

Accordingly, his name is being removed from the Register of Attorneys and Agents.

March 11, 1991 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Errata

"All reference to Patent No. 4,993,020 to Emil D. Hopner of Los Gatos, Calif. for 'INTEGRATED COMMUNICATIONS SYSTEM' appearing in the Official Gazette of Feb. 12, 1991 should be deleted since no patent was granted."

"All reference to Patent No. 4,993,904 to Rolf Baur of Germany for 'AUTOMATED ARCHIVING AND RETRIEVAL FOR COMPUTER TAPE CASSETTES' appearing in the Official Gazette of Feb. 19, 1991 should be deleted since no patent was granted."

"All reference to Patent No. 4,993,633 to Robert R. Mellette of Jamestown, Colo. for 'HIGH VOLUME LOW PRESSURE AIR SPRAY GUN' appearing in the Official Gazette of Feb. 19, 1991 should be deleted since no patent was granted."

"All reference to Patent No. 4,998,481 to Erwin Grimm et al. of Mainz, Federal Republic Germany for 'RETURNING SYSTEM FOR RAILBOUND TRANSPORT CARTS WITHOUT INTERNAL DRIVE' appearing in the Official Gazette of Mar. 12, 1991 should be deleted since no patent was granted."

Patents Available for License or Sale

D. 301,615 THE INSULIN SHOT REMINDER TRAY, Joce lyne Ueva, P.O. Box 90631, Honolulu, Hi. 96835

4,507,019 METHOD AND APPARATUS FOR REPLACING BURIED PIPE, Alan E. Thompson, 1127 Tulip Trail, Mesquite, Tex. 75149

4,702,704 TETRAHEDRAL CONDON STEREO TABLE, Leonard R. Svensson, Birch, Stewart, Kolasch & Birch, P.O. Box 747 Falls Church, Va. 22046

4,635,563 ADJUSTABLE SHELVING SYSTEM, James I. Young, Esq., Kinney & Lange, P.A., Suite 1500 625 Fourth Ave. South Minneapolis, Minn. 55415-1659

4,816,567 RECOMBINANT IMMUNOGLOBIN PREPARATION, Nick Simon or Michael Johnson, Genentech Business Development, 460 Point San Bruno Ave., South San Francisco, Calif. 94080

4,903,963 ABDOMINAL MUSCLE EXERCISER, Bryan R. Garnett, 101 California St., Suite 980, South San Francisco, Calif.

4,930,985 WIND POWER PLANT, Ferdinand Klute, Fixberg 6 Paderborn 4790, Federal Republic of Germany

4,934,631 AMPHIBIOUS LIGHTER THAN-AIR TYPE VEHICLE, Lou Birbas, 2164 W. 2000 North St., George, Utah 84770

4,960,371 ROTARY COMPRESSOR FOR HEAVY DUTY GAS SERVICES, H. Eugene Bassett, 10507 Jody Crt., Houston, Tex. 77099

4,994,786 U TURN SIGNAL, Michael Schaffer, 411 W. Lake Dasha Dr., Plantation, Fla., 33324

NOTICE OF PETITION FOR REINSTATEMENT

Robert L. Slater, Jr. of 11 Broadway, New York, N.Y., whose registration number was 18,104, and who, in a Decision disbarring him in 1985 for a period of seven (7) year, is authorized to seek reinstatement after two years of disbarment, has filed a petition for reinstatement. Granting of reinstatement is subject to, *inter alia*, establishing to the satisfaction of the Director of Enrollment and Discipline that granting the petition is not contrary to the public interest, and that the suspended or excluded practitioner has complied with the provisions of 37 CFR § 10.158 during his period of suspension or exclusion. 37 CFR §10.160. Accordingly, information bearing upon the good moral character and repute of Robert L. Slater, Jr. is material to his eligibility for reinstatement. Any information tending to affect the eligibility of Robert L. Slater, Jr. on moral, ethical or other grounds should be furnished to the Director in a written communication addressed to the Commissioner of Patents and Trademarks, Box OED, Washington, D.C. 20231 on or before May 24, 1991.

Oct. 29, 1990 CAMERON WEIFFENBACH, *Director*
Office of Enrollment and Discipline

Reclassification Alert Report

This is a summary of classification changes which became effective by issuance of Classification Orders from January through March 1991. Information includes:

- subclasses established or abolished
- subclass title, indent, or position change
- classes where existing subclass definitions have changed

This Reclassification Alert Report may appear from time to time in the Official Gazette and is intended to provide an interim notice of classification and changes pending publication of the Manual of Classification and revisions thereto.

March 5, 1991 WILLIAM S. LAWSON
Administrator for Documentation

RECLASSIFICATION ALERT REPORT

January 1991-March 1991

CLASS	FIRST SUBCLASS	LAST SUBCLASS	ACTION	ORDER NUMBER
004			DEFN CHANGE	1368
016			DEFN CHANGE	1365
028	172		ABOLISH	1364
028	172.1		ESTABLISH	1364
028	172.2		ESTABLISH	1364
028	203		ABOLISH	1364
028	203.1		ESTABLISH	1364
028	207.1		ESTABLISH	1364
028	240		TITLE CHANGE	1364
029			DEFN CHANGE	1365
029	001.21		TITLE CHANGE	1367
029	001.22		TITLE CHANGE	1367
029	001.3		TITLE CHANGE	1367
029	002.1		TITLE CHANGE	1367
029	002.11		TITLE CHANGE	1367
029	002.17		TITLE CHANGE	1367
029	002.2		TITLE CHANGE	1367
029	002.23		TITLE CHANGE	1367
029	002.25		TITLE CHANGE	1367
029	006.2		TITLE CHANGE	1367
029	007		TITLE CHANGE	1367
029	007.2		TITLE CHANGE	1367
029	007.3		TITLE CHANGE	1367
029	008		TITLE CHANGE	1367
029	011		TITLE CHANGE	1367
029	014		TITLE CHANGE	1367
029	015		TITLE CHANGE	1367
029	017.2		TITLE CHANGE	1367
029	017.3		TITLE CHANGE	1367
029	017.4		TITLE CHANGE	1367
029	017.7		TITLE CHANGE	1367
029	018.1		TITLE CHANGE	1367
029	021.1		TITLE CHANGE	1367
029	022		TITLE CHANGE	1367
029	023.1		TITLE CHANGE	1367
029	024.5		TITLE CHANGE	1367
029	025.01		TITLE CHANGE	1367
029	029		TITLE CHANGE	1367
029	033		TITLE CHANGE	1367
029	034		TITLE CHANGE	1367
029	057		TITLE CHANGE	1367
029	064		TITLE CHANGE	1367
029	065		TITLE CHANGE	1367
029	077		TITLE CHANGE	1367

CLASS	FIRST SUBCLASS	LAST SUBCLASS	ACTION	ORDER NUMBER
029	078		TITLE CHANGE	1367
029	080		TITLE CHANGE	1367
029	089.5		TITLE CHANGE	1367
029	091		TITLE CHANGE	1367
029	091.1		TITLE CHANGE	1367
029	091.3		TITLE CHANGE	1367
029	091.4		TITLE CHANGE	1367
029	091.7		TITLE CHANGE	1367
029	110		TITLE CHANGE	1367
029	115		TITLE CHANGE	1367
029	121.1		TITLE CHANGE	1367
029	121.8		TITLE CHANGE	1367
029	123	125	TITLE CHANGE	1367
029	129.5		TITLE CHANGE	1367
029	132		TITLE CHANGE	1367
029	160		TITLE CHANGE	1367
029	161		TITLE CHANGE	1367
029	168		TITLE CHANGE	1367
029	169.5		TITLE CHANGE	1367
029	172		TITLE CHANGE	1367
029	173		TITLE CHANGE	1367
029	177	179	TITLE CHANGE	1367
029	213.1		TITLE CHANGE	1367
029	214		TITLE CHANGE	1367
029	215		TITLE CHANGE	1367
029	222		TITLE CHANGE	1367
029	225		TITLE CHANGE	1367
029	227	233	TITLE CHANGE	1367
029	235		TITLE CHANGE	1367
029	235.5		TITLE CHANGE	1367
029	236		TITLE CHANGE	1367
029	237		TITLE CHANGE	1367
029	240.5		TITLE CHANGE	1367
029	241		TITLE CHANGE	1367
029	242		TITLE CHANGE	1367
029	243		TITLE CHANGE	1367
029	243.5		TITLE CHANGE	1367
029	244	254	TITLE CHANGE	1367
029	256		TITLE CHANGE	1367
029	263		TITLE CHANGE	1367
029	266	271	TITLE CHANGE	1367
029	275		TITLE CHANGE	1367
029	277	280	TITLE CHANGE	1367
029	281.3		TITLE CHANGE	1367
029	283		TITLE CHANGE	1367
029	400.1		TITLE CHANGE	1367
029	402.03		TITLE CHANGE	1367
029	402.06		TITLE CHANGE	1367
029	402.07		TITLE CHANGE	1367
029	402.08		TITLE CHANGE	1367
029	402.09		TITLE CHANGE	1367
029	402.14		TITLE CHANGE	1367
029	402.16		TITLE CHANGE	1367
029	402.19		TITLE CHANGE	1367
029	403.1		TITLE CHANGE	1367
029	403.3		TITLE CHANGE	1367
029	403.4		TITLE CHANGE	1367
029	407		TITLE CHANGE	1367
029	408		TITLE CHANGE	1367
029	411		TITLE CHANGE	1367
029	412		TITLE CHANGE	1367
029	417		TITLE CHANGE	1367
029	418		TITLE CHANGE	1367
029	419.2		TITLE CHANGE	1367
029	421.1		TITLE CHANGE	1367
029	421.2		TITLE CHANGE	1367
029	423		TITLE CHANGE	1367
029	426.1		TITLE CHANGE	1367
029	426.2		TITLE CHANGE	1367
029	426.4		TITLE CHANGE	1367
029	426.5		TITLE CHANGE	1367
029	428		TITLE CHANGE	1367
029	429		TITLE CHANGE	1367
029	442		TITLE CHANGE	1367
029	444.1		TITLE CHANGE	1367
029	447		TITLE CHANGE	1367

CLASS	FIRST SUBCLASS	LAST SUBCLASS	ACTION	ORDER NUMBER
029	448		TITLE CHANGE	1367
029	458		TITLE CHANGE	1367
029	462	469	TITLE CHANGE	1367
029	506		TITLE CHANGE	1367
029	509		TITLE CHANGE	1367
029	511		TITLE CHANGE	1367
029	512		TITLE CHANGE	1367
029	515	518	TITLE CHANGE	1367
029	520		TITLE CHANGE	1367
029	522.1		TITLE CHANGE	1367
029	523		TITLE CHANGE	1367
029	525.1		TITLE CHANGE	1367
029	526.2		TITLE CHANGE	1367
029	526.4		TITLE CHANGE	1367
029	526.5		TITLE CHANGE	1367
029	527.1		TITLE CHANGE	1367
029	527.7		TITLE CHANGE	1367
029	530		TITLE CHANGE	1367
029	558		TITLE CHANGE	1367
029	560		TITLE CHANGE	1367
029	564.1		TITLE CHANGE	1367
029	564.3		TITLE CHANGE	1367
029	594	596	TITLE CHANGE	1367
029	599		TITLE CHANGE	1367
029	600		TITLE CHANGE	1367
029	615		TITLE CHANGE	1367
029	621.1		TITLE CHANGE	1367
029	623.1		TITLE CHANGE	1367
029	888.01		TITLE CHANGE	1367
029	888.023		TITLE CHANGE	1367
029	888.051		TITLE CHANGE	1367
029	888.061		TITLE CHANGE	1367
029	889.1		TITLE CHANGE	1367
029	890.053		TITLE CHANGE	1367
029	893.1		TITLE CHANGE	1367
029	894.351		TITLE CHANGE	1367
029	894.354		TITLE CHANGE	1367
029	894.361		TITLE CHANGE	1367
029	894.38		TITLE CHANGE	1367
029	897.1		TITLE CHANGE	1367
029	897.3		TITLE CHANGE	1367
029	898.01		TITLE CHANGE	1367
029	898.051		TITLE CHANGE	1367
029	898.061		TITLE CHANGE	1367
029	898.062		TITLE CHANGE	1367
029	898.064		TITLE CHANGE	1367
029	898.1		TITLE CHANGE	1367
029	D001	D014	TITLE CHANGE	1367
029	D016	D027	TITLE CHANGE	1367
029	D029	D039	TITLE CHANGE	1367
029	D043		TITLE CHANGE	1367
029	D047	D049	TITLE CHANGE	1367
029	D052		TITLE CHANGE	1367
029	D053		TITLE CHANGE	1367
029	D094		TITLE CHANGE	1367
029	D101		TITLE CHANGE	1367
029	D102		TITLE CHANGE	1367
029	D105		TITLE CHANGE	1367
049			DEFN CHANGE	1368
052	002		ABOLISH	1368
052	002.11	002.19	ESTABLISH	1368
052	002.21	002.26	ESTABLISH	1368
053	048		ABOLISH	1365
053	048.1	048.9	ESTABLISH	1365
053	128	139	ABOLISH	1365
053	128.1		ESTABLISH	1365
053	129.1		ESTABLISH	1365
053	130.1		ESTABLISH	1365
053	131.1	131.5	ESTABLISH	1365
053	132.1		ESTABLISH	1365
053	133.1	133.8	ESTABLISH	1365
053	134.1		ESTABLISH	1365
053	134.2		ESTABLISH	1365
053	135.1	135.3	ESTABLISH	1365
053	136.1	136.5	ESTABLISH	1365
053	137.1		ESTABLISH	1365

CLASS	FIRST SUBCLASS	LAST SUBCLASS	ACTION	ORDER NUMBER
053	137.2		ESTABLISH	1365
053	138.1	138.8	ESTABLISH	1365
053	139.1		ESTABLISH	1365
053	139.2		ESTABLISH	1365
053	139.3		ABOLISH	1365
053	139.4	139.7	ESTABLISH	1365
053	266		ABOLISH	1365
053	266.1		ESTABLISH	1365
053	284.2	284.7	ESTABLISH	1365
053	329.2	329.5	ESTABLISH	1365
053	370.2	370.9	ESTABLISH	1365
053	371	389	ABOLISH	1365
053	371.2	371.9	ESTABLISH	1365
053	372.2	372.9	ESTABLISH	1365
053	373.2	373.9	ESTABLISH	1365
053	374.2	374.9	ESTABLISH	1365
053	375.2	375.9	ESTABLISH	1365
053	376.2	376.8	ESTABLISH	1365
053	377.2	377.8	ESTABLISH	1365
053	378.3		ESTABLISH	1365
053	381.1	381.7	ESTABLISH	1365
053	382.1	382.3	ESTABLISH	1365
053	383.1		ESTABLISH	1365
053	384.1		ESTABLISH	1365
053	385.1		ESTABLISH	1365
053	386.1		ESTABLISH	1365
053	387.1		ESTABLISH	1365
053	387.4		ESTABLISH	1365
053	389.1	389.5	ESTABLISH	1365
065			DEFN CHANGE	1365
068	012		ABOLISH	1366
068	012.01	012.09	ESTABLISH	1366
068	012.11	012.19	ESTABLISH	1366
068	012.21	012.27	ESTABLISH	1366
081			DEFN CHANGE	1365
086			DEFN CHANGE	1365
099			DEFN CHANGE	1365
100			DEFN CHANGE	1365
101			DEFN CHANGE	1365
112			DEFN CHANGE	1365
118			DEFN CHANGE	1365
135			DEFN CHANGE	1368
137			DEFN CHANGE	1366
141			DEFN CHANGE	1365
156			DEFN CHANGE	1365
219			DEFN CHANGE	1365
221			DEFN CHANGE	1365
229			DEFN CHANGE	1365
271			DEFN CHANGE	1365
383			DEFN CHANGE	1368
413			DEFN CHANGE	1365
425			DEFN CHANGE	1365
432			DEFN CHANGE	1365
493			DEFN CHANGE	1365

PATENT NOTICES

Certificates of Correction For Week of April 9, 1991

PP 6,901	4,864,037	4,890,681	4,906,218
4,684,525	4,864,420	4,891,453	4,906,494
4,694,503	4,864,434	4,891,579	4,906,838
4,714,766	4,864,651	4,891,627	4,906,972
4,734,962	4,867,318	4,892,422	4,907,501
4,737,580	4,867,570	4,893,297	4,907,614
4,745,099	4,868,260	4,894,018	4,907,757
4,755,327	4,868,533	4,894,220	4,907,763
4,782,450	4,869,129	4,894,453	4,907,858
4,785,405	4,870,013	4,894,611	4,907,966
4,788,107	4,870,582	4,894,813	4,908,352
4,788,694	4,870,761	4,895,017	4,908,855
4,791,889	4,871,601	4,895,194	4,908,981
4,794,395	4,873,300	4,895,270	4,909,457
4,808,564	4,874,329	4,895,360	4,909,849
4,809,247	4,875,327	4,895,663	4,909,971
4,809,949	4,876,653	4,896,045	4,910,154
4,811,958	4,878,123	4,896,190	4,910,469
4,818,632	4,878,230	4,897,045	4,910,494
4,822,752	4,878,571	4,897,173	4,910,499
4,827,241	4,879,185	4,897,612	4,910,762
4,827,322	4,880,081	4,897,730	4,911,212
4,835,104	4,880,789	4,898,750	4,912,107
4,839,844	4,882,387	4,898,767	4,912,398
4,841,063	4,882,779	4,899,047	4,912,515
4,841,638	4,882,962	4,899,118	4,913,353
4,842,851	4,883,244	4,900,668	4,913,406
4,847,543	4,885,042	4,901,530	4,915,139
4,847,654	4,885,687	4,901,903	4,916,611
4,848,466	4,885,774	4,902,438	4,917,876
4,851,014	4,886,080	4,902,849	4,917,978
4,851,869	4,886,753	4,902,983	4,919,953
4,853,751	4,887,420	4,903,053	4,921,934
4,854,705	4,887,559	4,903,111	4,922,466
4,857,065	4,887,885	4,903,440	4,928,126
4,858,671	4,888,307	4,903,714	4,944,869
4,859,114	4,888,980	4,904,002	4,954,695
4,859,804	4,889,161	4,904,146	4,972,510
4,860,040	4,889,922	4,904,269	4,975,513
4,861,782	4,890,060	4,905,064	
4,863,749	4,890,615	4,905,903	

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JAMES E. DENNY, Acting Assistant Commissioner
STEPHEN G. KUNIN, Acting Deputy Assistant Commissioner

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ORGANIC CHEMISTRY GROUP 120— JOHN F. TERAPANE, JR., Director	308-1235
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130 BARRY S. RICHMAN, Director	308-0651
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GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350— A. L. SMITH, Director	308-0651

Expiration of patents. The patents within the range of numbers indicated below expire during March 1991 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents	Numbers 3,795,014 to 3,800,328 inclusive
Plant Patents	3,501 to 3,534 inclusive

REEXAMINATIONS

APRIL 9, 1991

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification, matter printed in italics indicates additions made by reexamination

B1 4,464,223 (1447th)

PLASMA REACTOR APPARATUS AND METHOD

Georges J. Gorin, Pinole, Calif., assignor to Tegal Corp., Novato, Calif.

Reexamination Request Nos. 90/001,809, Jul. 14, 1989 and 90/001,674, Dec. 20, 1988.

Reexamination Certificate for Patent No. 4,464,223, issued Aug. 7, 1984, Ser. No. 538,593, Oct. 3, 1983.

Int. Cl.[5] H01L *21/312*; B44C *1/22*; C03C *15/00*; C23F *1/02*

U.S. Cl. 156—643

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT

The patentability of claims 8–11 is confirmed

Claim 3 is cancelled

Claims 1, 2 and 4–7 are determined to be patentable as amended

New claims 12–15 are added and determined to be patentable

1 A reactor apparatus including a reaction volume into which reactants are injected and from which reaction products are exhausted, and in which said reactants are acted upon by electric fields to form a plasma thereof, said apparatus comprising

first, second, and third electrodes,

said first electrode coupled to electrical ground,

said second electrode selectively coupled to a high frequency source of AC power, [and]

said third electrode selectively coupled to a low frequency source of AC power, *and*

wherein one of said electrodes is adapted for holding a workpiece.

REISSUES

APRIL 9, 1991

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue

Re. 33,566

ROOFING STRUCTURE

Robert E. Heckelsberg, Germantown, Tenn., assignor to AMCA International Corporation, Hanover, N.H.

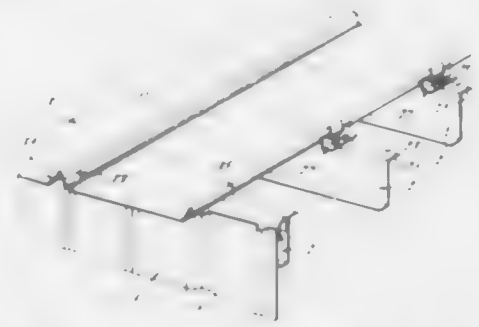
Original No. 4,296,581, dated Oct. 27, 1981, Ser. No. 62,300, Jul. 31, 1979. Application for reissue Jan. 25, 1982, Ser. No. 342,162

The portion of the term of this patent subsequent to Mar. 18, 1997, has been disclaimed.

Int. Cl.[5] E04D *1/34*

U.S. Cl. 52—520

3 Claims



2 [2 A paneling construction as defined in claim 1] *In a paneling construction adapted to be installed by attachment to spaced parallel structural supporting elements such as the roof purlins of buildings, said construction comprising a plurality of elongated panels laid over and transversely to such supporting elements with the side edges of the panels abutting, said panels having generally planar mid-portions lying close to the supporting elements and having upstanding seaming flanges on said side edges folded over and crimped together to provide a mechanical interlock, each of said panels having supporting portions for said seaming flanges, said supporting portions extending angularly upwardly away from each other and from the mid-portion of the panel whereby the supporting portions of adjacent panels define a tunnel-like area and clip means securing the panels to the structural supporting elements, each clip means including a base member, attaching means rigidly securing said base members and clip means to a structural supporting element in the tunnel-like area defined by the supporting portions of adjacent panels, said construction being characterized by*

A. A rim portion incorporated in an intermediate part of each of the supporting portions of each panel, said rim portions lying substantially in a common plane and extending inwardly toward one another from and substantially perpendicularly to the seaming flanges,

B. The base member of each of said clip means having an upstanding column with a top portion closely underlying and supporting said rim portions of the adjacent panels,

C. A holding portion secured to the base member of each clip means and preventing outward movement of the holding portion, said holding portions projecting upwardly from the base member between, and being folded over and crimped together with, the seaming flanges of the adjacent panels to prevent relative movement therebetween, whereby said holding portion and the top portion of the base member co-act with the seaming flanges and with said attaching means to prevent movement of the seaming flanges and of the supporting portions of the panels toward and away from the structural supporting elements and also to hold the holding portion against movement toward the base member, and wherein the column of the base member comprises a flat upstanding column web having a slot therein extending lengthwise thereof, the holding portion comprising a sheet metal member having a holding web lying beside and projecting upwardly above said column web, a part of said holding web at its lower end being slidably interengaged with the upper edge of said slot to prevent upward movement of said holding web, and a resiliently deflectable portion carried by said holding web yieldably slidably engaging the lower edge of said slot

* * * * *

The questions raised in reexamination request No. 90/000,345, filed 03/18/83, have been considered and the results thereof are reflected in this reissue patent which constitutes the reexamination certificate required by 35 U.S.C. 307 as provided in 37 CFR 1.570(e)

Re. 33,567

TEMPERATURE CONTROLLING APPARATUS FOR USE WITH PORE VOLUME AND SURFACE AREA ANALYZERS

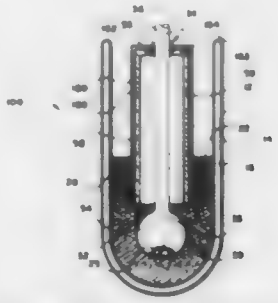
Graham R. Killip, Doraville; Ronnie W. Camp, Duluth, and Clyde Orr, Jr., Dunwoody, all of Ga., assignors to Micromeritics Instrument Corporation, Norcross, Ga.

Original No. 4,693,124, dated Sep. 15, 1987, Ser. No. 833,079, Feb. 25, 1986. Application for reissue Oct. 21, 1988, Ser. No. 260,590

Int. Cl.[5] G01N *1/28*, B01L *7/00*, F25D *3/10*

U.S. Cl. 73—863.11

47 Claims



1. A method of cooling a sample contained in a vessel, comprising the steps of

immersing said vessel in a container of volatile cooling liquid with a portion of said vessel extending above the surface of said liquid, and

conducting said liquid *through a wick* from a location at or below the surface of said liquid in said container along said vessel to a predetermined point along the length of said vessel, said point being above the surface of said liquid, regardless of changes in the level of the surface of said liquid, *said wick maintaining a lower than ambient temperature at the surface of said vessel along the entire length of said wick.*

Re. 33,568

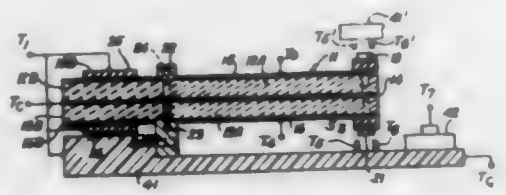
PIEZOELECTRIC CERAMIC SWITCHING DEVICES AND SYSTEMS AND METHODS OF MAKING THE SAME

John D. Harsden, Jr., Schenectady, and William P. Korsrumpf, Albany, both of N.Y., assignors to General Electric Company, Fort Wayne, Ind.

Original No. 4,678,957, dated Jul. 7, 1987, Ser. No. 879,495, Jun. 24, 1986. Division of Ser. No. 685,109, Dec. 21, 1984, Pat. No. 4,670,682. Application for reissue Jun. 1, 1989, Ser. No. 360,228

Int. Cl.' H01L 41/08

U.S. Cl. 310—332 24 Claims



11. Electrical switching apparatus comprising

(a) at least one piezoelectric ceramic bender-type switching device having a movable piezoceramic bender member, said bender member having at least two planar piezoceramic plate elements secured in opposed parallel relationship sandwich fashion on opposite sides of at least one central conductive surface and having respective outer conductive surfaces that are insulated from each other and the central conductive surface by the respective intervening piezoceramic plate element thicknesses,

(b) the piezoceramic plate elements further including polarized and unpolarized portions when conducting the switching operation with at least one set of coacting electrical switch contacts being opened and closed by the polarized portions thereof,

(c) clamping means securing the piezoceramic plate elements together and mechanically supporting the unpolarized portions thereof in a cantilever manner for opening and closing the set of coacting the electrical contacts, and

(d) selectively operable electric excitation circuit means connected to the piezoelectric ceramic bender-type switching device for selectively and respectively actuating the polarized portions of each piezoceramic plate element thereof with a direct current energizing potential which is applied in the same direction employed to produce initial polarization in the polarized portions of the respective plate elements,

(e) the electric excitation circuit means being connected in circuit relationship across the respective ones of the piezoceramic plate elements of the piezoelectric ceramic bender-type switching device for selectively closing or opening the set of coacting electrical switch contacts to control electric current being supplied through a load by the opening and closing of the switch.

Re. 33,569

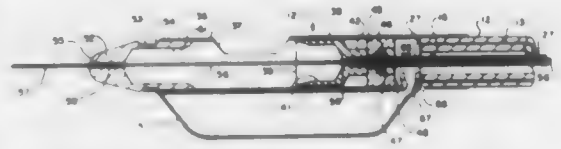
SINGLE LUMEN ATHERECTOMY CATHETER DEVICE

Hanson S. Gifford, III, Palo Alto, and John B. Simpson, Woodside, both of Calif., assignors to Devices for Vascular Intervention, Inc., Redwood City, Calif.

Original No. 4,669,469, dated Jun. 2, 1987, Ser. No. 834,950, Feb. 28, 1986. Application for reissue May 19, 1989, Ser. No. 354,166

Int. Cl.' A61B 17/32

U.S. Cl. 606—159 16 Claims



8. A device comprising:

flexible guiding means having a lumen extending from a proximal end to a distal end thereof;

a housing mounted on the distal end of the flexible guiding means, said housing having a cutout therein;

flexible drive means extending through the lumen of the flexible guiding means and into the housing;

a work performing device secured to the flexible drive means;

inflatable means carried by the housing;

means coupling the inflatable means to the lumen; and

means for establishing fluid-tight sealing between the lumen and the interior of the housing, said means allowing the passage of the drive means therethrough.

PLANT PATENTS

GRANTED APRIL 9, 1991

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

7,490

MACADAMIA NAMED "HIDDEN VALLEY A4"

Henry F. D. Bell; Margaret A. Bell, and David J. D. Bell, all of Box 6, Beerwah, Queensland 4519, Australia

Filed Apr. 26, 1989, Ser. No. 344,279

Claims priority, application Australia, Apr. 26, 1988, 88/001

Int. Cl.' A01H 5/00

U.S. Cl. Plt.—30 1 Claim

1 A new and distinct hybrid *Macadamia integrifolia* · *tetraphylla* named Hidden Valley A4 substantially as shown and described

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7,491

ARTHUR CHERIMOYA TREE

Arthur J. Daou, A. Daou Bldg., Edde Road, Byblos, Jbail, Lebanon, and Suzanna Daou, 5 Marine Ave., Westport, Conn. 06880

Filed Jul. 27, 1989, Ser. No. 385,561

Int. Cl.' A01H 5/00

U.S. Cl. Plt.—33 1 Claim

1 The new variety of *Annona cherimola* substantially as shown and described herein, being distinguished for its ability to produce fruit of exceptional flavor with an unusually small number of seeds. The tree of this variety also being notable for its relative hardiness and resistance to extremes of heat and cold, and not susceptible to the Mediterranean Fruit Fly

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7,492

FLOWERING CRAB APPLE TREE 'SINAI FIRE'

John L. Fiala, Medina, Ohio, assignor to J. Frank Schmidt & Son Co., Boring, Oreg.

Filed May 12, 1989, Ser. No. 351,870

Int. Cl.' A01H 5/00

U.S. Cl. Plt.—34 1 Claim

1 A new and distinct variety of flowering crab apple tree substantially as herein shown and described, characterized particularly as to novelty by its weeping branches, glossy green leaves, white flowers and red fruit and high resistance to apple scab

7,493

GAZANIA PLANT CALLED *GAZANIA RIGENS* 'MOORPARK ORANGE'

Janet N. Egger, Ventura, and Stephen H. Beimel, Agoura, both of Calif., assignors to Mitsuwa Nursery, Inc., Moorpark, Calif.

Filed Apr. 12, 1989, Ser. No. 337,072

Int. Cl.' A01H 5/00

U.S. Cl. Plt.—68 1 Claim

1 A new and distinct cultivar of Gazania as described and illustrated, particularly characterized by its floriferous shows deep orange flowers, green foliage, vigorous growth, and trailing habit

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7,494

GERANIUM PLANT NAMED BRENESO

Siegfried Klemm, Stuttgart, Fed. Rep. of Germany, assignor to Klemm & Sohn, Fed. Rep. of Germany

Filed May 24, 1989, Ser. No. 356,127

Int. Cl.' A01H 5/00

U.S. Cl. Plt.—68 1 Claim

1 The new and distinctive Geranium cultivar substantially as herein shown and described, particularly distinguished by its low growth habit and the very large size of its roseine purple florets mostly grouped to provide very large umbel formed clusters

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7,495

PYRETHRUM PLANE NAMED ARIZONA

Robert G. McDaniel, Tucson, Ariz., assignor to Arizona Technology Development Corporation, Tucson, Ariz.

Filed Mar. 31, 1989, Ser. No. 332,611

Int. Cl.' A01H 5/00

U.S. Cl. Plt.—74 1 Claim

1 A new and distinct cultiar of *Chrysanthemum cinerariaefolium* plant known by the cultivar name Arizona, and particularly characterized as to uniqueness as described and illustrated herein by the combined characteristics of high pyrethrin content, environmental stress tolerance, uniform flower stalk extension and substantially erect growth

PATENTS

GRANTED APR. 9, 1991

ERRATA

For CLASS	See PATENT NO.
452-185	5,005,257
452-018	5,005,258
241-073	5,005,614
350-171	5,005,974
434-161	5,006,000
427-383	5,006,278
427-192	5,006,321
424-085	5,006,470
514-422	5,006,570
521-027	5,006,576
210-727	5,006,639
392-450	5,006,689
310-071	5,006,765
340-572	5,006,856
335-271	5,006,901
372-096	5,007,107

PATENTS

GRANTED APRIL 9, 1991

GENERAL AND MECHANICAL

5,005,214

REMOVABLE EYEGLASS SHADE VISOR APPARATUS

Terence L. Koethe, 1021 Oakwood Dr., Keller, Tex. 76248

Filed Nov. 28, 1989, Ser. No. 442,250

Int. Cl.[5] A61F 9/04

U.S. Cl. 2—13 18 Claims



1 Shade visor apparatus removably securable to a pair of eyeglasses having a front frame section operatively supporting a pair of lenses, said front frame section having a front side, a rear side, and a top side edge portion with outer corner portions to which inner ends of a pair of temple bar members are pivotally secured, said shade visor apparatus comprising:

a visor member having a lower side surface, a front edge portion, a rear edge portion, a pair of opposite end portions, and a pair of support tab portions projecting downwardly from said lower side surface adjacent said opposite end portions, and

elastomeric loop means secured to said support tab portions and projecting outwardly therefrom, said elastomeric loop means being operative to be placed over the outer ends of the temple bar members, moved inwardly along the temple bar members, and then stretched around said outer corner portions of said front frame section to removably support said visor member on said front frame section in a position wherein said rear edge portion of said visor member extends generally across said top side edge portion of said front frame section, said front edge portion of said visor member is disposed forwardly of said front frame section, and said support tab portions are pressed against said top side edge portion of said front frame section.

5,005,215

PROTECTIVE ARTICLE OF CLOTHING

Carl J. McIlquham, W5836 Highway 64, Bryant, Wis. 54418

Filed Nov. 9, 1989, Ser. No. 435,094

Int. Cl.[5] A41D 17/02

U.S. Cl. 2—22 9 Claims

1 A protective article of clothing for a leg, comprising:

a sheet of fabric adapted to encircle the leg, said sheet of fabric having a top portion and an opposite bottom portion,

a circumferential flap located on the sheet of fabric between said top and bottom portions;

means adjacent said bottom portion of said sheet of fabric for drawing said sheet of fabric around the leg;

means adjacent said top portion of said sheet of fabric for maintaining said sheet of fabric on the leg; and

an absorbent strip attached circumferentially on said sheet of fabric between said top and bottom portions, said absorbant strip for receiving an insect repellent and being positioned below said flap so that said flap is positioned outward of said absorbant strip



5,005,216

SELF-VENTILATING PROTECTIVE GARMENT

William A. Blackburn, Cary, N.C., and Michael P. Sosnowich, Decatur, Ala., assignors to Abandaco, Inc., Decatur, Ala.

Filed Jul. 30, 1990, Ser. No. 559,681

Int. Cl.[5] A62B 17/00, A41D 13/00

U.S. Cl. 2—79 7 Claims



1 An air ventilated protective garment for an operator working in a hazardous environment, comprising

(a) an outer impermeable protective layer having portions covering the torso, the arms to the wrists and the legs to the ankles and having an interior surface, an exterior surface and a neck area,

(b) securing means including elastic band means formed around the respective neck area, wrist and ankle portions and additional drawstring means around the neck area,

(c) a hood piece having an inner hood skirt received within said layer interior surface and within said neck area and an outer hood skirt received over said layer exterior surface and over said neck area, said drawstring means being operative to secure said layer in the neck area between said inner and outer hood skirts,

(d) an external air source assembly including a source of pressurized air and a flexible hose connecting the interior of said hood piece to said air source enabling pressurized external air to be fed to an operator wearing said garment,

(e) an inner arm skirt secured within each said arm portion of said garment formed of impermeable fabric and having an upper end periphery secured to said layer interior surface at a position intermediate the length of the said arm portion and extending to the outer extremity thereof,

(f) a glove shaped hand cover secured to and forming an extension of each said inner arm skirt and formed of an air pervious fabric,

(g) an inner leg skirt formed of impermeable fabric secured within each said leg portion of said garment and having an upper end periphery secured to said layer interior surface at a position intermediate the length of said leg portion and extending to the outer extremity thereof, and

(h) a boot shaped street shoe cover secured to and forming an extension of each said inner leg skirt, each said street shoe cover having at least a selected portion thereof formed of an air permeable fabric such that when the operator dons work boots over said street shoe covers and fits said work gloves into said arm portions around said inner arm skirts and said work boots into said leg portions around said inner leg skirts, a predetermined volume of said pressurized air is expelled through those selected portions of street shoe covers formed of said air permeable fabric at a predetermined rate to ventilate said garment and prevent ballooning thereof

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5,005,217

NURSING BIB

Barbara J. Bern, Washington Ave., Lawrence, N.Y. 11559, and Janet Y. Anderson, 205 Root Ave., Central Islip, both of N.Y. 11722

Filed Mar. 15, 1990, Ser. No. 493,643
Int. Cl.[5] A41D *1/20, 1/22*
U.S. Cl. 2—104 **5 Claims**



1. A protective garment for use by a wearer while holding an infant comprising a shortened rear panel extending down to the waist of the wearer and wrapped around one side of said wearer and covering one shoulder, a front panel extending down substantially below the waist of said wearer, said front panel being joined to said rear panel along a common vertical edge on the other side of said wearer, said front panel extending sufficiently, laterally, to wrap around said other side and front of said wearer and terminating at the front of said wearer with a flap overlapping said rear panel covering said one shoulder, short fluffy sleeve means formed at the outer edges of the shoulders of said garment raised to provide comfortable support and resting places for the head of said infant when being held and to prevent the head of the infant from rolling off a shoulder of said wearer, said flap and the overlapped rear panel being provided with press type connections for holding the flap in place.

5,005,218

GARMENT

Daniel Ganz, Rockville Centre, N.Y., assignor to Ganz Manufacturing Co., Inc., Rockville Centre, N.Y.

Filed Oct. 5, 1989, Ser. No. 417,508
Int. Cl.[5] A41B *1/00, 1/02, 1/08,* **A41D** *27/08*
U.S. Cl. 2—69 **19 Claims**



1 A garment comprising

a body having a front part and a back part,

said body having an outer surface;

said surface having at least one aperture,

said body having a first part, said first part being capable of being drawn through said aperture said front part including a two-dimensional design, and said first part being capable of being drawn through said aperture forming a three-dimensional member which also forms a three-dimensional part of said two-dimensional design so a combined two-dimensional—three-dimensional composite design is formed when said first part is drawn through said aperture

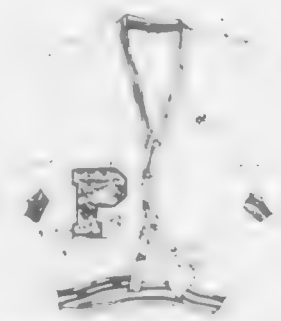
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5,005,219

GARMENT DECORATION WITH A PROCESS FOR ITS MANUFACTURE

David P. Diaz, New York, N.Y., assignor to Stephen S. Fleming, Irving, Tex.

Filed Mar. 30, 1990, Ser. No. 501,878
Int. Cl.[5] A41D *27/08*
U.S. Cl. 2—244 **14 Claims**



1 A decorative shape comprising

an interior area comprising an image manufactured upon an isolated area of a base fabric body which contains no chenille, and,

an outline area substantially comprising chenille affixed to the base fabric body

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5,005,220

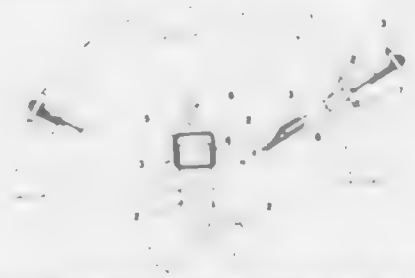
PROTECTION HELMET

Daniele Gaiatto, Vigevano; Gianni Mengazzato, and Michelle Villis, both of Vicenza, all of Italy, assignors to Brancale S.R.L., Vigevano, Italy

Filed Jul. 17, 1989, Ser. No. 382,472
Claims priority, application Italy, Jul. 21, 1988, 85618 A/88
Int. Cl.[5] A42B *3/02*
U.S. Cl. 2—421 **8 Claims**

1 A protection helmet for a user which comprises crown

(1), a plurality of belts (2), said belts being blocked from moving with respect to the crown at least at one location, said belts being fixed one to the other, means for fixing said belts with respect to the crown whereby said helmet is held firmly on the head of the user, said means comprising buckles (3), at least one slit for the entry and one slit for the exit of each belt in each



buckle, each of said buckles being inserted in a slit (6) formed along the entire thickness of the helmet at at least one location, said slit (6) having a width at least equal to the thickness of the buckle with the belt wound thereon, at least one recess (7) formed on the external surface of said crown, said recess having a shape corresponding to the shape of the buckle, whereby said buckle with the belt may pass through said slit

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5,005,221

MOTORCYCLE HELMET WIND VISOR ADJUSTMENT DEVICE

Lee S. Chen, No. 343, Chung Chen Rd., Yung Kang Hsiang, Tainan Hsien, Taiwan

Filed Aug. 28, 1989, Ser. No. 399,245
Int. Cl.[5] A61F *9/06*
U.S. Cl. 2—424 **1 Claim**



1 A motorcycle helmet wind visor adjustment device for a motorcycle helmet comprising:

(a) a wind visor (2) with respective visor rings (21) on each distal end thereof, each said visor ring (21) having a friction track (211) on an outer surface thereof, each said visor ring (21) also having an annular seat (212) on an inner circumference thereof;

(b) a slip ring (5) which has an annular protrusion (52) thereon for rotatably engaging said annular seat (212), said slip ring (5) also having a friction piece (53) thereon for frictionally engaging with said friction track (211), said slip ring (5) having inner walls (51) on a radially inner circumference thereof seperated by two diametrically opposite securement slots (511);

(c) a U-shaped bracket (4) having a center portion with a hole therethrough and two side portions, said side portions each having a respective catch (41) on an outer surface thereof for engagement with said annular protrusion (52), said two side portions being flexible so as to be engageable with said securement slots (511), said U-shaped bracket (4) being securable by a bolt (14) at said center portion thereof to said motorcycle helmet, a fixing post (42) protruding from said center portion away from said side portions for engaging with a fixing hole (15) on said motorcycle helmet so as to prevent rotation of said U-shaped bracket (4),

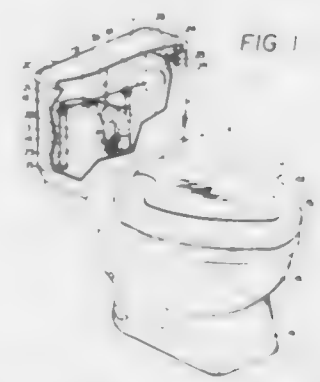
(d) a cover plate (3) for covering said visor ring (21), slip ring (5), and said U-shaped bracket (4), said cover plate (3) having an annular wall (32) on an inner surface thereof which is frictionally engageable with an inner surface of each side portion said U-shaped bracket (4), said cover plate (3) having a plurality of evenly spaced fixing stubs (31) protruding from said inner surface thereof, said motorcycle helmet having a plurality of engagement holes (11) corresponding to said fixing stubs (31), said fixing stubs (31) fitting through said engagement holes (11) and fixably engaging with a plurality of receptacles (13), and said visor ring (21) being fixable at a wide range of angles about said slip ring (5)

5,005,222

TOILET ASSEMBLY

Jae K. Sim, 619 S. Orange Dr., Los Angeles, Calif. 90036

Filed Jun. 21, 1990, Ser. No. 541,741
Int. Cl.[5] E03D *9/05*
U.S. Cl. 4—216 **8 Claims**



1 A ventilating toilet assembly comprising

a toilet stool having a toilet bowl, including a back wall, a flush ring disposed at the upper end of said toilet bowl, a plurality of openings communicating with said flush ring for allowing flush water to be flushed into the toilet bowl from the flush ring, a seat ring disposed on said flush ring, a toilet seat cover disposed on the peripheral inside edge of said seat ring, and a siphon conduit connected to and communicating with the toilet bowl for discharging waste product directly from the toilet bowl to a sewer discharge line,

a ventilation conduit disposed adjacent to the back wall portion of said toilet stool for ventilating objectionable odor from the toilet bowl, said ventilation conduit extending annularly around said siphon conduit at a point where they communicate with said sewer discharge line, said ventilation conduit containing a fan disposed in the lower portion thereof,

a toilet tank for containing flush water, said toilet tank having a water intake valve and an opening leading to said bowl,

a motion sensor disposed on the front exterior of said toilet holding tank facing said stool, said sensor being free of interference from the opening and closing of the toilet seat cover,

a multifunctional tube having an inverted U-shaped configuration with one leg of the U being disposed in said opening in said toilet tank, which leg serves as a first gas exhaust tube connected to said flush ring, a horizontal flapper tube

extending laterally of said one leg and having a flapper valve seated thereon,

a second leg of said U being connected to said ventilation conduit, and serving as a second gas exhaust tube,

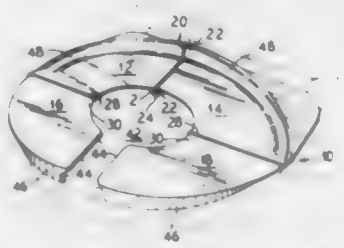
a movable ball valve disposed to move between a first position in said flapper tube adjacent said flapper valve to a second position in said first gas exhaust tube for allowing exhaust gas to flow from the flush ring to the ventilation conduit in said first position or flush water to flow from the toilet holding tank via flapper tube to the toilet bowl in said second position, whereby with the toilet seat cover open, while the user sits on the seat ring, the motion senser is actuated to operate the fan and the objectionable odor is ventilated, and in turn when the user stands and flushes the toilet assembly, the motion senser is deactivated and simultaneously, the flush water discharges the waste product and associated objectionable odor directly to the sewer discharge line.

5,005,223

FOLDABLE TOILET SEAT

Mark H. Greenwood, Arlington Heights, Ill., assignor to Children On The Go, Inc., Wheeling, Ill.

Filed Apr. 13, 1990, Ser. No. 509,028
Int. Cl.[5] A47K *13/14*
U.S. Cl. 4—235 20 Claims



15 A foldable toilet seat adapted to fit over a conventional toilet seat comprising:

a pair of rear sections having upper and lower surfaces and forward edges, said rear sections having contiguous edges defining a substantially longitudinal center of the seat,

a pair of front sections having upper and lower surfaces and rear edges contiguous with the forward edges of the rear sections to define a substantially transverse center of the seat and having confronting inner edges spaced apart to form a gap therebetween,

connecting means on the lower surfaces of the front and rear sections joining the contiguous edges of the rear sections and joining the forward edges of the rear sections with the corresponding rear edges of the front sections;

a flange extending downwardly from the lower surface of each front section to engage the conventional toilet seat; and

a raised portion extending upwardly from the upper surface of each rear section and having a hollow interior that receives the flange from the corresponding front section when the sections are folded;

whereby the front sections are foldable against the rear sections along the transverse center of the seat and the rear sections, with the front sections folded therein, are foldable along the longitudinal center of the seat so that the front and rear sections are substantially parallel when folded.

5,005,224

TOILET BOWL SILENCER DISH

William M. Carmichael, 555 Fillmore Ave. #603, Cape Canaveral, Fla. 32920

Filed Dec. 15, 1989, Ser. No. 451,439
Int. Cl.[5] E03D *9/00*
U.S. Cl. 4—300.3 14 Claims



1 A urine splash guard accessary for a male user of a conventional flush toilet having a bowl containing a normal water level therein and including an inner and outer surface and an upper rim, said accessary comprising:

a first arcuate disc of rigid material having a generally concave front surface and a generally convex rear surface and further including at least one fin integral with and extending rearwardly from said rear surface at a top portion thereof,

at least one hanger member integral with said rear surface of said disc at said top portion thereof and positioned above said at least one fin,

a length of twine secured at one end to said at least one hanger member,

a counterbalance secured to the other end of said twine; and

said disc adapted to be positioned within the toilet bowl above the normal water level therein with its front surface facing toward the center of the bowl and with said at least one fin engaging the inner surface of the bowl below the rim thereof, wherein said twine is draped over the rim of the bowl with said counterbalance freely hanging alongside the outer surface thereof thereby maintaining said disc in position, whereby a male user of the toilet can direct a stream of urine at said concave front surface of said disc to reduce any splash or noise normally generated thereby

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5,005,225

DUAL FLUSH VALVE FOR WATER CLOSETS

John P. Pasquin, P.O. Box 25664, West Valley City, Utah 84125

Continuation-in-part of Ser. No. 326,366, Mar. 21, 1989, abandoned. This application Oct. 10, 1989, Ser. No. 418,858
Int. Cl.[5] E03D *1/14*
U.S. Cl. 4—326 14 Claims

1. A flush valve assembly for use in the water storage reservoir of a toilet having water outlet, said flush valve comprising:

a first valve means positioned within said storage reservoir and above said water outlet, for closing said water outlet, said first valve means being associated with said water outlet for closing said water outlet;

said first valve means comprising;

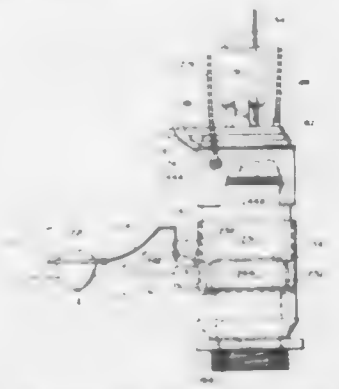
an open-sided first upright tubular conduit, defining a first interior channel, mounted within said storage reservoir to communicate with said water outlet, and

a first plug, pivotedly mounted to a first support member mounted within said storage reservoir, said first plug being dimensioned to be inserted into an open end of said first tubular conduit thereby closing said first conduit

a second valve means positioned within said storage reservoir and above said water outlet, said second valve means being associated with said water outlet for closing said water outlet, said second valve means comprising,

an open-ended, upright, solid-walled second tubular conduit, defining an second interior channel, mounted fixedly on said storage reservoir, said second conduit defining at least one aperture in a sidewall thereof communicating with said second channel, said second channel communicating with said water outlet, and

an open-ended, upright, solid-walled third conduit defining a third channel therein, mounted on said first con



duit, said third conduit being displaceably and slidably mounted coaxially within said second conduit,

wherein a first displacement of said third conduit communicates said aperture with said water outlet and a second displacement of said third conduit seals said aperture from communicating with said water outlet,

a respective actuation means mounted on said first valve means and said second valve means, for individually opening said first valve means and said second valve means,

wherein upon said first valve means being opened by said actuation means said first valve means is adapted to discharge a first quantity of water from said storage reservoir, and said second valve means, upon being opened by said actuation means, is adapted to discharge a second quantity of water from said storage reservoir, said first quantity of water being measurably smaller than said second quantity of water

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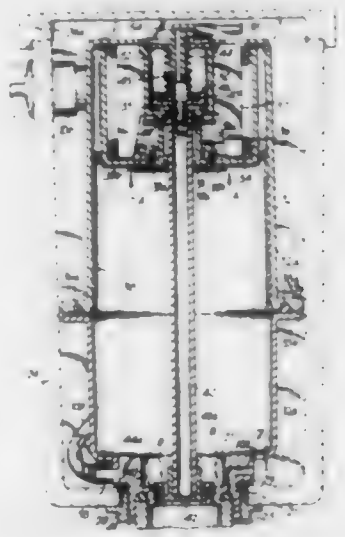
5,005,226

FLUSHING MECHANISM WITH LOW WATER CONSUMPTION

Peter A. Basile, Lawrenceville; Ashvani K. Madan, Ocean; Fred E. Snyder, Princeton Junction, all of N.J., and Harold M. Stillman, Scarsdale, N.Y., assignors to American Standard Inc., New York, N.Y.

Division of Ser. No. 440,363, Nov. 30, 1989. This application May 11, 1990, Ser. No. 522,010
Int. Cl.[5] E03D *3/10*
U.S. Cl. 4—354 14 Claims

1 A flushing mechanism for flushing a bowl with liquid comprising a containment vessel adapted to hold a predetermined amount of liquid, inlet means on said containment vessel for receiving said liquid under a predetermined pressure, outlet means on said containment vessel coupleable to said bowl for permitting said liquid when in said containment vessel to be released into said bowl, piston means displaceable in said containment vessel for forcing said liquid out of said containment vessel through said outlet means, biasing means for biasing said piston means against the force exerted by said liquid sealing means for releaseably sealing said outlet means, actuation means for releasing said sealing means to open said outlet means to permit said liquid in said containment vessel to be forced out of said containment vessel and into said bowl under the force of said piston means, said sealing means including a flush valve displaceable between a first position where said



outlet means is closed to liquid in said containment vessel and a second position where said outlet means is open to liquid in said containment vessel, and pressure sensing means for determining when said liquid in said containment vessel has been substantially expelled and for closing said flush valve in response thereto

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5,005,227

COMPOSTING TOILET WITH RESPRAY OF LIQUID WASTES

Allen E. White, Millerton, Pa., assignor to Clivus Multrum, Inc., Lawrence, Mass.

Filed Mar. 8, 1989, Ser. No. 320,521
Int. Cl.[5] A47K *11/02*
U.S. Cl. 4—449 16 Claims



1 A composting toilet for the treatment of liquid and solid wastes and conversion thereof into biologically acceptable, disposable products, comprising

a housing including means for the reception of liquid and solid wastes, said housing having top, bottom and side walls for retaining said wastes therewithin,

means dividing said housing into a major portion in which said liquid and solid wastes are received, and a relatively minor portion substantially free of solid wastes, said portions being arranged in substantial juxtaposition within said housing,

means for permitting ingress and egress of air into and from said housing, said ingress and egress means being located remote from each other, said means extending within said

housing from a location near said ingress means, to a location in said minor portion of said housing.

means for collecting liquid waste accumulating within said housing, and

means for projecting said liquid waste within said housing into said minor portion of said housing and into the flow of air moving through said minor portion toward egress from said housing, so that portions of said liquid waste projected into said minor portion are entrained with or evaporate into said air and pass from said housing with said air

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5,005,228

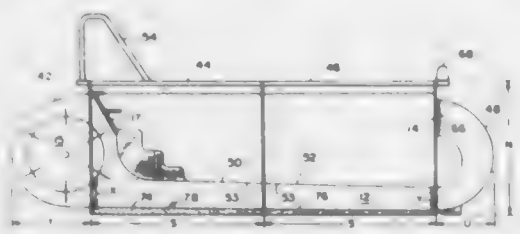
FLOW CONTROLLING

Seymour Mermelstein, Newton, Mass., assignor to Swimex Systems, Inc., Warren, R.I.

Continuation-in-part of Ser. No. 4,232, Jul. 1, 1987, which is a continuation of Ser. No. 774,541, Oct. 9, 1985, abandoned. This application Oct. 8, 1987, Ser. No. 106,550

Int. Cl.[4] E04H *4/12*

U.S. Cl. 4—488 **12 Claims**



1 A swim-in place pool comprising

a ducted tank for containing fluid, said tank having first and second ends,

channel defining means in said ducted tank for defining upper and lower channels in said tank for allowing fluid flow in upper and lower opposed directions,

and drive means at said first end extending across the entire width of said ducted tank in fluid communication with said upper and lower channels for propelling said fluid through said lower channel then through said second end into said upper channel for producing a current flow along a length direction of said ducted tank in said upper channel that is substantially uniform in velocity across substantially the entire width of said ducted tank,

said drive means comprising a vaned wheel having a plurality of vanes each vane extending across substantially the entire width of said tank and fully immersed in the fluid contained in said ducted tank,

said ducted tank including shrouding and ducting coacting with said vaned wheel for form a vane pump propelling a stream of fluid toward said lower channel, said stream including an escape plume which has an upward component and is captured by a tapered inlet portion of said ducting leading into said lower channel, said lower channel being connected for fluid flow to said upper channel by a transition channel at said second end having an opening that ejects a stream of water across the top of the tank of substantially uniform lengthwise velocity across the width of the tank with negligible turbulence at sufficient velocity to enable a swimmer to swim in place naturally.

5,005,229

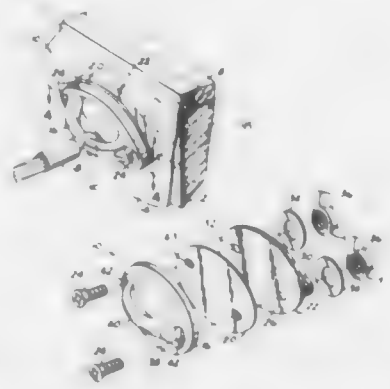
SWIMMING POOL ROPE ANCHOR METHOD AND DEVICE

Italo A. Bertoni, 305 Edinborough Street, Windsor, Ontario, Canada (N8X 3C3)

Filed Jan. 5, 1990, Ser. No. 461,256

Int. Cl.[4] E04H *4/00*

U.S. Cl. 4—505 **5 Claims**



2 A rope anchor device for swimming pools having a wall and a liner, comprising in combination

(a) a base plate having at least two stems integral with and projecting rearwardly from said base plate substantially perpendicular thereto,

(i) said stems being spaced apart by a predetermined dimension and having a length such that free ends of said stems project through two holes in said swimming pool wall,

(ii) at least two bores in said base plate opening interiorly of said pool when said stems are projected through said wall, one of said bores extending into one of said stems and another of said bores extending into another of said stems,

(b) engaging means for interengaging free ends of said stems with a back of said wall to secure said base plate on said wall,

(c) an anchor plate having eye means for receiving a swimming pool rope hook and at least two openings through said anchor plate, said anchor plate openings being spaced apart by said predetermined dimension and having a predetermined geometry relative to said eye means so that when said anchor plate is secured to said base plate, said eye means will have a predetermined final orientation, and

(d) means for securing said anchor plate to said plate with said liner clamped firmly therebetween and with said eyelet means at said predetermined orientation, said securing means comprising at least two threaded fasteners engageable with said anchor plate and threadably engageable with said bores so that when said fasteners are tightened, said anchor plate is firmly and fixedly mounted on said wall to resist turning moments of said anchor plate and with said liner clamped firmly between said anchor plate and said base plate, clamping forces are distributed over a surface area between said fasteners, said liner being easily replaced by removing said fasteners without having access to the backside of said pool wall.

5,005,230

PATIENT TRANSPORTER

Richard G. Congdon, Providence, R.I., assignor to Massachusetts Eye and Ear Infirmary, Boston, Mass.

Filed Mar. 30, 1990, Ser. No. 502,448

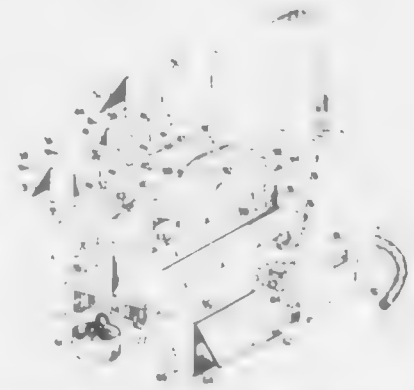
Int. Cl.[5] A61G *7/00, 7/05*

U.S. Cl. 5—60 **5 Claims**

1. A patient-transporting stretcher/operating room table system incorporating a plurality of components for the comfortable, secure, and efficient movement of an outpatient or ambulatory surgical patient and his belongings comprising

(a) a combined transport stretcher/operating room table mounted on wheels,

(b) one or more lockable containers,



(c) a patient-jumpsuit, and

(d) a means for supplying heated and cooled air to said patient jumpsuit,

wherein said lockable containers and said means for supplying air are mounted on said combined transport stretcher-/operating room table

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5,005,231

MEANS FOR POSITIONING BEDFAST PATIENTS

Robert Lonardo, Treasure Island, Fla., assignor to Robert Lonardo, Trustee of the Robert Lonardo Living Trust Agreement, Treasure Island, Fla.

Continuation of Ser. No. 202,532, Jun. 6, 1988, Pat. No. 4,872,226. This application Sep. 27, 1989, Ser. No. 413,230

The portion of the term of this patent subsequent to Oct. 10, 2006, has been disclaimed.

Int. Cl.[4] A61G *7/10*

U.S. Cl. 5—61 **3 Claims**



1 A bedfast patient positioning device, comprising

a substantially rectangular pad means adapted to extend over a patient's bed underneath a bedfast patient, said pad means having opposite parallel sides, and upper and lower surfaces,

a pair of separate continuous straps secured to the bottom surface of said pad means and extending transversely across the width of said pad means and extending outwardly from said opposite parallel sides thereof, and terminating in straight elongated end portions,

said pair of continuous straps being spaced apart and one each thereof being adapted to be substantially aligned with a patient's shoulder and hip areas, respectively,

a pair of gripping loops secured to said pair of straps substantially adjacent the opposite parallel sides of said pad means inwardly from the end portions of said straps, said straps extending outwardly beyond said gripping loops and fastening means positioned on each strap outwardly from said gripping loops, said fastening means adapted to selectively secure said straps to the bed so as to maintain the patient in a selected position

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5,005,232

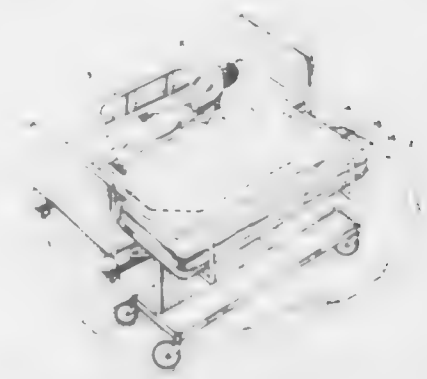
PATIENT SHIFTER PAD

H. Earl Wright, and Brad E. Wright, both of Decatur, Ill., assignors to Inventive Products, Inc., Decatur, Ill.

Filed Aug. 1, 1990, Ser. No. 561,188

Int. Cl.[5] A61G *7/08*

U.S. Cl. 5—81 C **5 Claims**



1 A pad for use in shifting patient from one bed, or other horizontal surface, to another, the pad comprising

(a) a sealed, elongated, and flattened enclosure of a flexible puncture-resistant material having sufficient size to support a patient, having substantially parallel longitudinal sides, and having end sides forming an angle of greater than 90° to the longitudinal sides to ease the rotation of the enclosure over upon itself when a patient is placed on top of the pad and shifted, and

(b) a lubricant sealed within the enclosure to reduce the friction between the inside surfaces of the enclosure to further ease the rotation of the enclosure over upon itself when a patient is placed on top of the pad and shifted laterally

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5,005,233

APPARATUS FOR TRANSFERRING PATIENTS

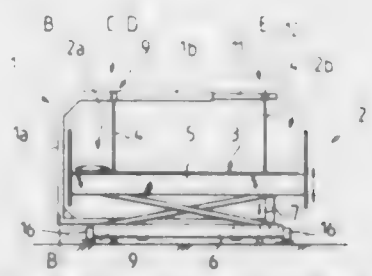
Ikka Toivio, and Tertti Toivio, both of Likolammenkatu 15, SF-15850 Lahti, Finland

Filed Sep. 12, 1989, Ser. No. 406,091

Claims priority, application Finland, Mar. 15, 1989, 891231; May 17, 1989, 892374

Int. Cl.[4] A61C *7/10*

U.S. Cl. 5—83 **36 Claims**



1 An apparatus for transferring a patient, said apparatus comprising:

(a) a bed having a bed bottom and a bed frame,

(b) an elongate support frame connected to and extending above said bed,

(c) an underlay for extending beneath the patient, and

(d) transfer means for moving the patient on the underlay,

said transfer means being supported by said support frame, said transfer means including lifting means located between said support frame and said bottom of said bed such that said lifting means is operable to vertically adjust said support frame and said bed bottom with respect to each other, said support frame being directly connected to said bed frame and said bed bottom being vertically adjustable with respect to the bed frame; and said lifting means being operable to lift said bed bottom

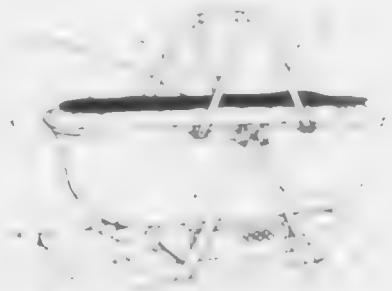
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5,005,234

INFANT CAR BED FOR A VEHICLE

Barbara J. Kelleher; Michael J. Walsh, both of Buffalo, N.Y., and Richard E. Cone, Dayton, Ohio, assignors to Hartley Associates Inc., Buffalo, N.Y.

Filed May 24, 1989, Ser. No. 356,750
Int. Cl.' A47D 7/04
U.S. Cl. 5—94 10 Claims



8 Apparatus for protecting an infant in a vehicle, comprising

a cushioned bassinet for holding said infant, and

means for supporting said bassinet in a horizontal position comprising a flexible base member secured to a seat of said vehicle, wherein said bassinet is pivotally mounted to said support means, and also including an elastic strap extending between said base member and a front edge of said bassinet, wherein said flexible base member and said elastic strap jointly function to protect said infant in event of a collision of said vehicle by minimizing impact effects of inertial forces and inhibiting rotation of said bassinet

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5,005,235

TWO-PERSON SLEEPING BAG FORMED BY TWO SINGLE SLEEPING BAGS

Wen-Chen Huang, No. 58, Lane 242, Hu Lin St., Taipei, Taiwan

Filed Jan. 1, 1989, Ser. No. 359,964
Int. Cl.' A47G 9/08
U.S. Cl. 5—413 1 Claim

1 A sleeping bag comprising a flexible casing (2) that includes an outer panel (27) and an inner panel (26), each panel having two longitudinal side edges a longitudinal centerline defined therebetween, and two transverse end edges, each panel being generally rectangular except that each panel has an integral pillow case extension at one end thereof offset to one side of the panel longitudinal centerline; said panel and associated extensions being secured together around their peripheral edges to form a hollow sealed casing and integral pillow case, said panels being stitched together along the panel longitudinal centerline; said outer panel (27) being formed of a moisture-impervious cloth material, said inner panel (26) having a first zipper opening (at 23) extending transversely across the associated pillow case extension, said inner panel having a second zippered opening (at 28) extending transversely thereacross at the end thereof remote from the first zippered opening;

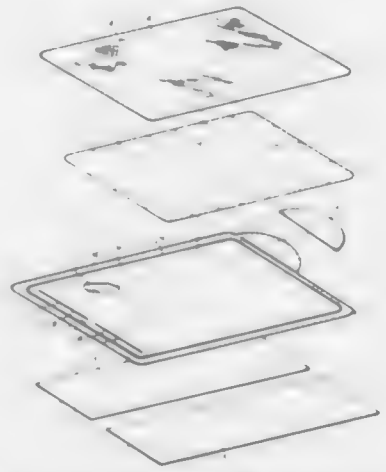
a pillow (6) insertable through the first zippered opening to occupy the hollow space defined by the pillow case extensions;

an elongated generally rectangular pad (5) formed of a soft cushion material insertable through the second zippered opening to form a cushion underneath the body of a person lying within the sleeping bag,

a generally rectangular liner panel (4) having longitudinal and transverse dimensions slightly less than the corresponding dimensions of said flexible casing (2),

a first inner zipper means (25) extending around substantially the entire periphery of said flexible casing along the surface thereof defined by said inner panel (26), said first zipper means being inset from the edges of the case so that the extreme outer edge area of the case is located outwardly beyond said inner zipper means including a first portion thereof inset inwardly from the first zippered opening (23), and a second portion thereof spaced outwardly beyond the second zippered opening (28),

a second zipper means (41) extending along the peripheral edges of said liner panel (4), said second zipper means



being adapted to mate with said first zipper means (25) whereby said liner panel can be releasably attached to the flexible case at the panel peripheral edges

a generally rectangular mattress (3) having a plan dimension slightly less than the space circumscribed by the first and second zipper means, whereby said mattress can be inserted into the space between the liner panel and the flexible casing,

and a third outer zipper means (24) extending only along the two longitudinal slide edges of said casing and the end edge of said casing remote from the pillow case extensions,

said flexible casing being foldable on its longitudinal centerline so that portions of said third zipper means mate together, whereby said third zipper means can be closed to form a bag seal along the entire folded bag edge except for the edge area thereof defined by the pillow case

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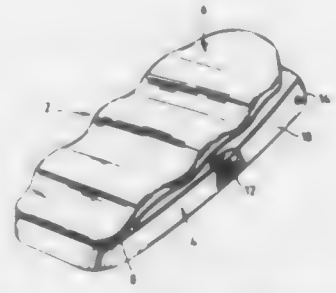
5,005,236

INFLATABLE PRODUCTS

Peter M. Hutchinson, Harrogate, Great Britain, assignor to Mountain Equipment Limited, Stalybridge, United Kingdom

PCT No. PCT/GB87/00151, § 371 Date Oct. 26, 1989, § 102(e) Date Oct. 26, 1989, PCT Pub. No. WO88/06421, PCT Pub. Date Sep. 7, 1988
PCT Filed Mar. 4, 1987, Ser. No. 424,287
Claims priority, application United Kingdom, Jan. 10, 1986, 8600534
Int. Cl.' A47G 9/08; A47C 27/08, 27/12
U.S. Cl. 5—413 9 Claims

1 An inflatable product comprising an inflatable enclosure; filling material provided within and substantially filling the enclosure and attached to opposite sides of the enclosure, the filling material being at least one fibrous bat substantially ex-



pandable by the movement apart of the opposite sides of the enclosure caused by inflation of the enclosure

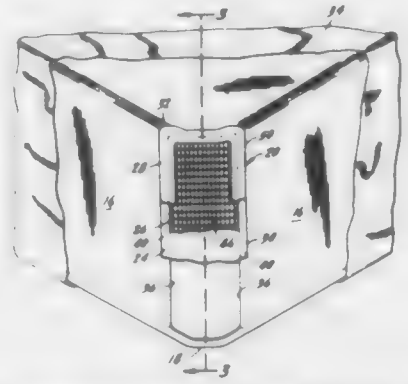
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5,005,237

MATTRESS CORNER ADHESION PATCHES

Jeffrey J. Lachonsok, Redondo Beach, Calif., assignor to Advanced Sleep Products, Redondo, Calif.

Filed Aug. 21, 1990, Ser. No. 570,536
Int. Cl.' A47C 27/08, 31/00
U.S. Cl. 5—451 7 Claims



1 In a water mattress, an outer water fillable shell having a top surface, a bottom surface, connecting side walls and a corner where any two surfaces meet, means on said shell for providing an area which is formed and adapted to frictionally grip bed clothing on the water mattress shell and prevent sliding movement thereof, including a webbing attached to the surface of said water mattress shell, a border having an outer circumference and an inner circumference, said inner circumference being fixedly attached to said webbing and said outer circumference being fixedly attached to said mattress shell to secure said webbing to a desired location on said water mattress shell

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5,005,238

WATER BED MATTRESS

E. Thomas Freet, Alta Loma, Calif., assignor to Nature Sleep Corporation, Rancho Cucamonga, Calif.

Filed Aug. 29, 1990, Ser. No. 575,190
Int. Cl.' A47C 27/10
U.S. Cl. 5—451 18 Claims

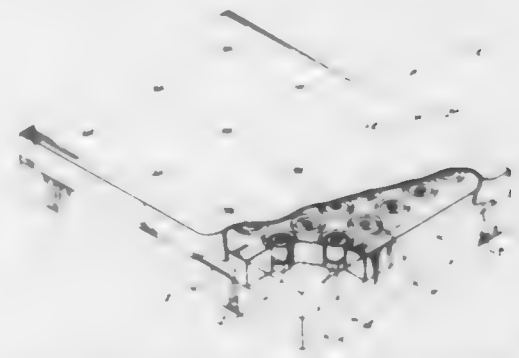
1 A water bed mattress construction comprising,

a compressible sheet for providing a level of cushion-like sleeping support;

an array comprised of a plurality of cutout areas extending vertically into the depth of the compressible sheet and spaced apart laterally and longitudinally across the surface area of the compressible sheet, and

a separate water cushion removably disposed within each cutout, each water cushion comprising a flexible water impervious enclosure with a hollow interior and a means for admitting water to the interior of the enclosure and sealing the water from the outside,

the mattress thereby providing an array of separate and independent areas of water support combined with a



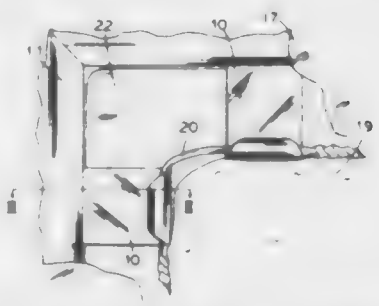
compressible means of cushion-like support surrounding each of the water support areas to absorb and accommodate volumetric expansion of the individual areas of water support when different degrees of downward pressure are applied randomly across the surface area of the mattress.

5,005,239

BED SHEET SECURING SYSTEM FOR WATERBEDS

Debra Clark, Oro Station, Box 2, Unit 1, Ontario, Canada (L0L 2E8)

Filed Aug. 22, 1990, Ser. No. 570,873
Int. Cl.' A47G 9/04
U.S. Cl. 5—451 10 Claims



1 A bed sheet securing system for a waterbed having a waterbed mattress disposed within a bed frame, comprising

a plurality of bracket members mounted on said bed frame, said bracket members having a flat, generally horizontal, surface portion located adjacent to a top surface of said mattress and a hook-shaped free end extending outwards from said bed frame,

a bed sheet member having a plurality of resilient loop shaped edge portions operative to engage with said bracket members on said bed frame for retaining said bed sheet member in a mounted position over said mattress whereby the peripheral edge portions of the bed sheet are located generally above the mattress

5,005,240

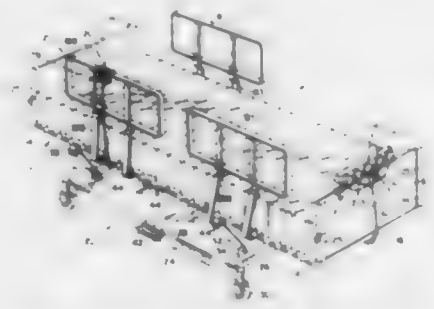
PATIENT SUPPORT APPARATUS

John H. Vrzalik, San Antonio, Tex., assignor to Kinetics Concepts, Inc., San Antonio, Tex.

Continuation of Ser. No. 124,382, Nov. 20, 1987, abandoned, which is a continuation of Ser. No. 784,875, Oct. 4, 1985, abandoned, which is a continuation-in-part of Ser. No. 683,153, Dec. 17, 1984, abandoned. This application Sep. 29, 1988, Ser. No. 251,948

Int. Cl.[5] A61G 7/00

U.S. Cl. 5—453 39 Claims



1. A patient support apparatus for supporting a patient thereon comprising

a source of gas,

a plurality of sets of air bags for supporting a patient thereon, each of said sets of air bags being mounted to a bed frame,

a plurality of sets of gas manifolds, each manifold of said sets of gas manifolds communicating separately with said gas source and with the interior of the air bags of one set of said sets of air bags;

an air control box between said gas source and said gas manifolds, and

a plate pivotally mounted to said air control box having a plurality of openings therethrough, each of the openings being connectible to a gas supply hose for directing a flow of gas from said air control box to one of said gas manifolds, said plate being selectively pivotable to open the openings to the atmosphere, allowing the gas to escape from said air bags, collapsing said air bags and causing the patient to be supported by a rigid portion of bed frame

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5,005,241

DRAINABLE CUSHION AND FURNITURE SEATING

Donna M. Difloe, 1225 Lake Charles Dr., Roswell, Ga. 30075

Continuation of Ser. No. 258,736, Oct. 17, 1988, Pat. No. 4,914,772. This application Jan. 18, 1990, Ser. No. 466,760

The portion of the term of this patent subsequent to Apr. 10, 2007, has been disclaimed.

Int. Cl.[5] A47C 27/12; A47G 9/00

U.S. Cl. 5—461 2 Claims



1. A cushion which drains liquid and dries through its bottom, comprising:

(a) an inner core of drainable filling material comprising non-resinated synthetic fibers; and

(b) an outer covering surrounding said inner core, said outer covering comprising

(i) a top portion comprising air and water permeable fabric material and

(ii) a bottom portion of a material having a plurality of openings larger in size than any opening of said top portion for promoting air circulation and draining of liquid from said cushion

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5,005,242

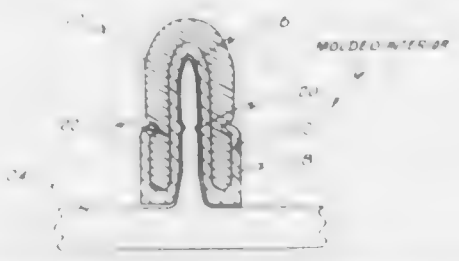
FOAMED SEAT CUSHION

William J. Kennedy, Manchester, N.H.; Peter E. Leach, Royal Oak, Mich., and Larry N. Grogan, Greer, S.C., assignors to Velcro Industries B.V., Amsterdam, Netherlands

Filed Feb. 6, 1990, Ser. No. 475,687

Int. Cl.[5] A47C 27/14

U.S. Cl. 5—481 8 Claims



1. An article of manufacture for use in forming a foamed seat cushion with a foamed-in loop fastener tape, said article comprising an elongated tape having a fastener surface containing either hook or loop fastening elements on one surface and a flexible plastic V-shaped support for said tape, said support having a pointed ridge over which the center portion of said tape is placed with the fastening surface facing said support, said support also having sealing means for holding the lateral edges of the tape and means for securing said support to the surface of a mold

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5,005,243

SEAT REMOVAL TOOL FOR AIRPLANE PASSENGER SEATS

Benjamin Yip, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 18, 1987, Ser. No. 98,575

Int. Cl.[5] B66F 15/00

U.S. Cl. 7—166 8 Claims



1. A tool used in removing airplane passenger seats and the like from a seat track, which comprises:

(a) a tool body having:

(1) an elongated handle portion adapted to be gripped by a user's hand; and

(2) an elongated blade portion extending longitudinally from said handle portion and having an upturned tip at its distal end, said blade portion having an L-shaped hole near its distal end; and

(b) a cylinder plug means for positioning said blade portion in said seat track, said cylindrical plug means being adapted to fit in said seat track, said cylindrical plug means pivotally supporting said blade portion near its distal end by a single pivot pin connected to said cylindrical plug means, said pivot pin being received by said L-shaped hole in said blade portion and having a slip fit in said L-shaped hole, whereby said pivot pin moves from the forward portion of said L-shaped hole to the rear portion of said L-shaped hole as a user pushes down on said handle portion

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5,005,244

DEVICE FOR CLEANING CYLINDRICAL OBJECTS, SUCH AS BOLTS

Yutaka Muraguchi, Fukuoka, Japan, assignor to Hoko Sangyo Co., Ltd., Fukuoka, Japan

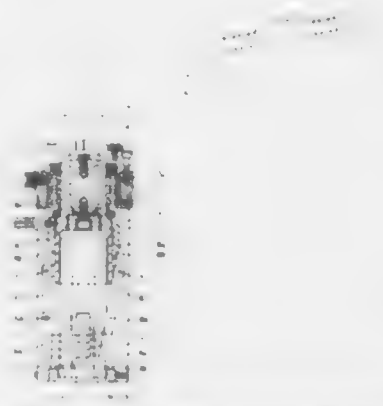
PCT No. PCT/JP89/00090, § 371 Date Sep. 25, 1989, § 102(e) Date Sep. 25, 1989, PCT Pub. No. WO89/07019, PCT Pub. Date Aug. 10, 1989

PCT Filed Jan. 30, 1989, Ser. No. 423,471

Claims priority, application Japan, Feb. 5, 1988, 63-26206; Sep. 6, 1988, 63-224155

Int. Cl.[5] A46B 13/02, B08B 9/02

U.S. Cl. 15—88 6 Claims



1. A device for cleaning a cylindrical object comprising

a sleeve having an open end,

a rotor means rotatably mounted in said sleeve for rotation about a rotary axis, said rotor means being coaxial with said sleeve, said object being placed in said sleeve,

drive means on said sleeve for rotatably driving said rotor means,

a plurality of arms each having end portions and an intermediate portion intermediate said end portions, a brush on one of said end portions and a first engageable surface on the other of said end portions,

pivot means on said intermediate portion pivotably mounting each of said arms on said rotor for pivotal movement about an axis generally perpendicular to said rotary axis, and

adjustable holding means on said rotor means having a second engageable surface engaging said first engageable surfaces of said arms to limit the pivotal movement of said arms in one pivotal direction to a limited pivotal position which determines the largest distance of each brush from said rotary axis, said adjustable holding means being adjustably mounted on said rotor means for adjustable axial movement such that different adjusted positions of said adjustable holding means varies said limited pivotal position of said arms, whereby said adjustable holding means is thereby operable to vary the largest distance of each brush from said rotary axis so that varying diameter objects are cleanable by said brushes

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5,005,245

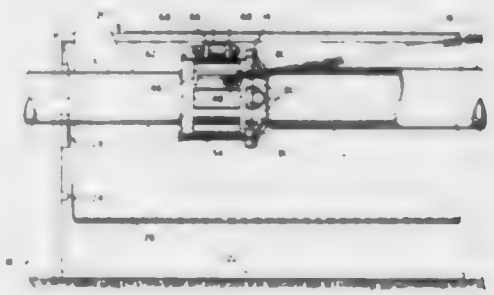
PIPE COATING REMOVAL SYSTEM

R. Dennis Dooley, Carrollton; Daryl W. Morris, Tina; Dana L. Scott, and Jimmy A. Watts, both of Carrollton, all of Mo., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 12, 1989, Ser. No. 420,446

Int. Cl.[5] B08B 9/02

U.S. Cl. 15—104.04 9 Claims



1. A tool for removing coatings from generally cylindrical pipe and the like comprising

a pair of opposed body members hinged to each other for movement between open and closed positions,

a plurality of scraper blades mounted on respective ones of said body members, each of said scraper blades having a cutting edge engageable with the outer circumference of a section of pipe for effecting removal of a coating on said pipe in response to movement of said tool longitudinally along said pipe;

support means for said scraper blades,

retaining means for retaining each of said scraper blades in a position wherein said cutting edges are at least directly adjacent an outer surface of said pipe for effecting removal of said coating during movement of said tool relative to said pipe, said retaining means comprising cooperable threaded member and retaining nut means, said threaded member being supported on said body member for projection through slot means formed in said scraper blade whereby the position of said scraper blade relative to said body member and said pipe section may be adjusted by adjusting the position of said nut on said threaded member; and

means for securing said body members in a closed and locked position so that said tool may be moved along said pipe to remove coating material therefrom

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5,005,246

REPLACEABLE TOOTH BRUSH WITH TONGUE SCALER

Lin Yen-Hui, No. 6, Lane 55, Tao Yuan Road, Changhua, Taiwan

Filed Sep. 18, 1989, Ser. No. 409,610

Int. Cl.[5] A47L 13/12

U.S. Cl. 15—111 1 Claim

1. A toothbrush comprising

(a) a brush handle and an integrally formed brush head at one end of the handle, the brush head and brush handle extending along a common longitudinal axis,

(b) the brush head including a longitudinal receiving trough formed therein, a pair of inwardly directed longitudinal guide tracks on opposite sides of the trough and a pair of longitudinally spaced notches formed in a front end and a rear end of the head,

(c) a bristle holder for supporting a plurality of bristles, the bristle holder being detachable engageable within the receiving trough and including a pair of longitudinally spaced projections formed in a front end and a rear end of the holder, the projections being engageable within the pair of notches of the brush head, a longitudinal slide

groove formed in the bristle holder and a plurality of positioning dowels extending outwardly from the bristle holder on opposite sides of the slide groove.

(d) a head cover including a stopper formed at a front end, a slide rib extending longitudinally along a bottom surface of the cover, a plurality of positioning recesses formed on opposite sides of the ribs for engagement by the positioning dowels, and a pair of longitudinal tracks formed on opposite sides of the cover for slidable engagement within the guide tracks of the brush head

(e) an elongate tongue scaler including a tenon formed at one end and a handle means formed at another end thereof, and



(f) a handle cover including a plurality of dowels for securing the handle cover to the handle so as to define a longitudinal space therebetween for slidably receiving the tongue scaler therein, the handle cover including a longitudinal groove having one end terminating in a stop wall, the tenon being slidably engageable within the longitudinal groove to permit the tongue scaler to be disposed between a retracted position within the handle and an extended position of use wherein the tenon engages the stop wall to prevent detachment of the scaler from the handle

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5,005,247

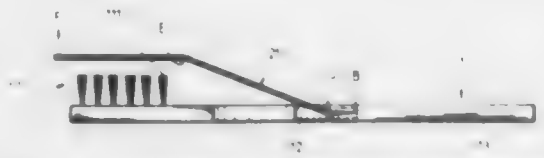
HYGIENIC TOOTHBRUSH

Kin-Shue Hsieh, 4F., No. 30, Chung Hsin North St., San Chung City, Taipei, Taiwan

Filed Mar. 29, 1990, Ser. No. 501,458

Int. Cl.' A46B *15/00*

U.S. Cl. 15—167.1 5 Claims



5. A disposable toothbrush as defined in claim 1 wherein the width and thickness of said strip gradually reduces from said first bent portion to the point at which said strip is joined to said intermediate portion so that said strip can be readily broken off at said point.

5,005,248

WINDSHIELD WASHER AND WIPER

George D. Bonar, G.P.O. Box 2064, New York, N.Y. 10116

Filed Jul. 18, 1988, Ser. No. 220,249

Int. Cl.' A47L *1/02*

U.S. Cl. 15—250.04 8 Claims

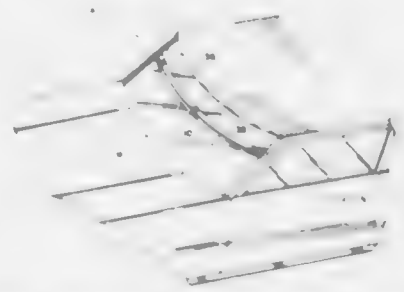
1. A windshield wiper for a motor vehicle windshield where the wiper moves up and down the surface of a windshield to remove rain, snow and other matter from the windshield, comprising:

a windshield wiper extending horizontally across a windshield,

said windshield wiper having a first blade side and a second blade side for contacting the surface of the windshield and removing rain, snow and other matter,

said first blade side being concaved to collect rain, snow and other matter in front of said wiper on a downward movement cleaning the windshield surface,

said second blade side being concaved and slanted from



midway of said wiper toward each end of said wiper to direct rain, snow and other matter to the side edges of the windshield without spilling said rain, snow and other matter on to the cleaned surface of the windshield on the upward movement of the wiper cleaning the windshield surface,

said wiper being stretched across the surface of the windshield for close contact with the windshield, and,

means to reciprocate said windshield wiper up and down the windshield to remove rain, snow and other matter

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5,005,249

VEHICLE WINDSHIELD WIPER

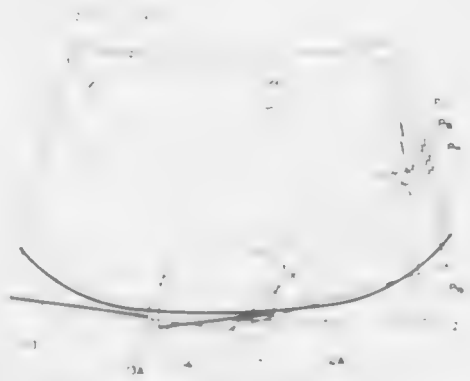
Kazunori Nishizawa, Kosai; Mitsutaka Abe, Aichi; Hiroshi Matsumoto, Hamamatsu, and Shinji Imamura, Kosai, all of Japan, assignors to Asmo Co., Ltd., Kosai, Japan

Filed Mar. 13, 1989, Ser. No. 322,509

Claims priority, application Japan, Apr. 1, 1988, 63-81918

Int. Cl.' A47L *1/02*

U.S. Cl. 15—250.27 4 Claims



1. A vehicle windshield wiper comprising

a driving rod which is reciprocated by crank-coupling with a wiper motor,

a double arm lever reciprocally swung with a pivot shaft by the driving rod,

a driving-side wiper blade which is swung by fixing in the pivot shaft,

a driving-side lever which is fixedly secured in the pivot shaft,

a coupling rod rotatably coupled with the driving-side lever, and

a driven-side lever which is swung by reciprocation of the coupling rod and swings the driven-side wiper blade,

whereby the driving-side lever of said double arm lever can be swung by an angle beyond a straight line connecting a center of the pivot shaft of said double arm lever and a connecting point between the driven-side lever and the coupling rod, where the driven-side lever comes to a maximum angle position on an open side thereof, wherein the driven-side wiper blade is reversely swung and minutely returns in the maximum angle position on the open side when the driving-side lever is located above and below the straight line, and the driven-side wiper blade returns after the driving-side wiper blade

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5,005,250

GLASS SHEET CLEANING APPARATUS

Hugh M. Trautmann, Renfrew, and H. Dale Shaner, Ellwood City, both of Pa., assignors to Billco Manufacturing, Inc., Zelienople, Pa.

Filed Jun. 5, 1989, Ser. No. 361,449

Int. Cl.' F26B *15/00*

U.S. Cl. 15—309.2 22 Claims



1. Apparatus for drying sheets of glass including conveyor means for moving a wet glass sheet, oriented with its broad surface facing generally vertically, in a linear pathway, and air knife means disposed adjacent the pathway and having means defining an elongated slot for directing a continuous air stream against at least one broad surface of the sheet in a pattern transverse to the direction of sheet movement, characterized by the slot being adjustable along its length to a straight disposition consistent with a flat glass sheet and to a predetermined curvature generally conforming it to a curved configuration in a glass sheet

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5,005,251

ADAPTER FOR MOUNTING VACUUM MOTOR

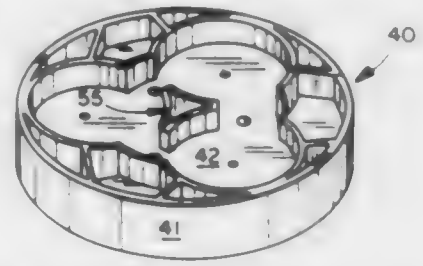
Rick McLeod, Lake in the Hills, and Gary E. Palmer, Roselle, both of Ill., assignors to Hako Minuteman, Inc., Addison, Ill.

Filed Oct. 20, 1989, Ser. No. 424,382

Int. Cl.' A47L *9/22*

U.S. Cl. 15—327.1 9 Claims

1. In combination with a canister, a power head coupled to said canister and adapted to generate a vacuum therein comprising, a housing adapted to receive a first vacuum motor of a first axial dimension or a second vacuum motor of a larger axial dimension than said first axial dimension, said housing including a vertical peripheral wall at least partially defining a vacuum chamber and a transverse bottom wall having first and second surfaces, one of said first and second vacuum motors, and a mounting adapter for securing said one motor within said housing, said mounting adapter comprising a vertical outer wall having first and second peripheral edges and adapted to be received within said vertical peripheral wall of said vacuum chamber, a transverse wall integrally formed with said outer wall and spaced at unequal distances from the respective edges thereof, first and second upright intermediate support wall means integrally formed respectively with said first and second surfaces of said transverse wall and extending generally per-



pendicular thereto, each intermediate support wall means cooperating with said transverse wall to define a receptacle for one of said motors, whereby when said adapter is in one position it defines a receptacle having an axial dimension for receiving said first vacuum motor and when said adapter is inverted, it defines a receptacle having an axial dimension for receiving said second vacuum motor

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5,005,252

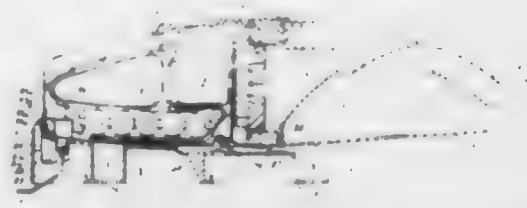
PORTABLE WET/DRY VACUUM CLEANER AND RECHARGING BASE

Robert E. Steiner, Chesterfield, Mo., and Daniel S. Soultanian, Boyle County, Ky., assignors to Emerson Electric Co., St. Louis, Mo.

Continuation of Ser. No. 274,724, Nov. 9, 1988, Pat. No. 4,899,418, which is a continuation of Ser. No. 77,234, Jul. 24, 1987, abandoned. This application Feb. 1, 1990, Ser. No. 473,332

Int. Cl.' A47L *9/28*

U.S. Cl. 15—339 16 Claims



1. A portable wet/dry hand held vacuum cleaner comprising a housing having a handle permitting a user to lift and operate said vacuum cleaner and a nozzle/debris container releasably secured to said housing, said housing having a motor and a blower driven by said motor which is in communication with said nozzle/debris container for forcibly drawing air and debris including water into the nozzle/debris container, and said nozzle/debris container being constructed to transmit visible light therethrough along a substantial portion of the nozzle/debris container in order that a user may visually observe the amount of debris collected by the vacuum cleaner within the nozzle/debris container

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5,005,253

SURFACE CLEANING APPARATUS

John A. Noelle, 408 45th St. W., and Thomas J. Noelle, 1724 81st St., NW., both of Bradenton, Fla. 34209

Filed Oct. 12, 1989, Ser. No. 420,581

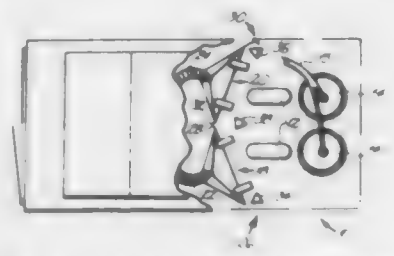
Int. Cl.' E01H *1/08*

U.S. Cl. 15—346 6 Claims

1. An improved debris directing and suction arrangement for use with vehicle mounted surface cleaning apparatus of the

type which dispenses a liquid on the surface to be cleaned comprising,

at least a first elongated air nozzle having means for mounting said air nozzle to said vehicle such that a first end portion be disposed at one side of the vehicle and extending to a second end to be disposed towards the center of the vehicle and rearwardly with respect to said first end portion;



said first air nozzle first end portion having a horizontally curved arc configuration,

said first air nozzle having outlet means for directing an air stream generally radially inward of said arc configuration,

a first suction head having means for mounting said head to said vehicle and spaced from said first end portion of said first air nozzle and disposed adjacent to said arc, whereby air emitted from said nozzle will blow debris towards said suction head

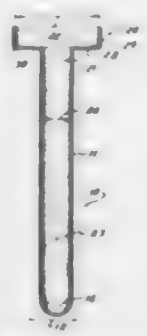
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5,005,254

HANDLE GRIP

Paul J. Uffindell, Morrow, Ohio, assignor to 'Totes', Incorporated, Loveland, Ohio

Filed Sep. 12, 1989, Ser. No. 405,900
Int. Cl.[5] A63B *71/00, 49/00*
U.S. Cl. 16—111 R 2 Claims



1. A grip for a handle of a hand held implement comprising

a thin walled stretchable tubular member having a longitudinal axis and an inside diameter, said member being stretchable radially of said longitudinal axis in response to exposure to a vacuum which allows for insertion of said handle into said member, and said member being sized and configured to contract into a tight friction fit with said handle,

a boot formed integral with said tubular member at one end thereof, said boot being adapted to receive therein, said handle's free end, said boot closing said one end, and

an outwardly flaring generally cup-shaped flange formed integral with said tubular member at an open end of said tubular member, said flange having a greatest diameter at least twice the inside diameter of said tubular member, said flange being sized and configured so that its outer periphery can be provided with a stable cuff, that stable cuff being stretchable over a collar on a vacuum chamber without significantly stretching said tubular member during installation of said grip on said handle, said cup-shaped flange comprising

an annular floor joined integral with said tubular member, said floor extending generally radially outward of said tubular member relative to said longitudinal axis and having a width, and

an annular rim joined integral with said floor at a shoulder, said rim initially extending beyond the open end of said tubular member substantially parallel to the longitudinal axis of the tubular member, said cup-shaped flange being structured so as to be invertable at its shoulder, said rim forming the stable cuff relative to said tubular member when said flange is inverted so as to space said cuff from said tubular member in order to form an annular gap having a width about equal to the width of said annular floor

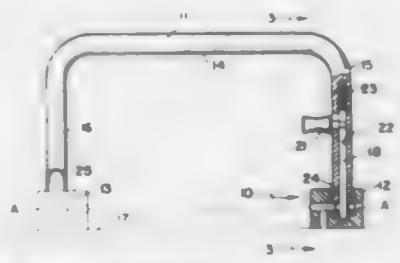
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5,005,255

HANDLE SYSTEM

Rodney H. Paré, West Warwick; Peter D. Tata, and Anthony R. Marrocco, both of Johnston, all of R.I., assignors to Square Head, Inc., Exeter, N.H.

Filed Jun. 11, 1990, Ser. No. 536,167
Int. Cl.[5] E05B *7/00*
U.S. Cl. 16—115 9 Claims



1 Handle system, comprising

(a) a handle of generally U-shaped configuration having an elongated main body and a leg extending at a right angle thereto at each end,

(b) two base elements adapted to be mounted in spaced relationship on a vertical surface and hingedly connected to free ends of the said legs, so that the handle can swing from an operative position to a storage position about a horizontal axis passing through both base elements and parallel to said surface,

(c) a plunger slidably mounted within at least one leg and adapted to slide from a forward position in a recess in a base element 15 to a rearward position removed from the recess, and

(d) an actuator for moving the plunger from the forward position to the rearward position.

5,005,256

STRUCTURE OF HINGE

Yeong-An Jang, 2F., No. 207, Sec. 2, Chang Chiang Rd., Pan Chia, Taipei Hsien, Taiwan

Filed Sep. 28, 1990, Ser. No. 589,570
Int. Cl.[5] E05D *5/00*
U.S. Cl. 16—384 1 Claim

1 A hinge for connecting two wooden members together permitting one to swing about the other, comprising a first part pivoted to a second part, said first part having two rectangular strips, each strip extending from its periphery in a first direction substantially perpendicular to a plane defining its back surface and located adjacent to an opposite end of its pivot axis about which said second part is pivoted, a plurality of pointed teeth also extending in said first direction from the periphery on three sides thereof, a plurality of pyramidal projections extending in a second direction transverse to said first direction around the periphery of the three sides thereof, a plurality of notches around the edges of the three sides thereof, a plurality of sleeves spaced axially from each other along said pivot axis; said second part having two rectangular strips, each strip extending from its periphery in a third direction substantially perpendicular to a plane defining its back surface and located adjacent to an opposite end of its pivot axis about which said first part is pivoted, a plurality of pointed teeth also extending in said third direction from the periphery on three sides thereof, a plurality of pyramidal projections extending in a



fourth direction transverse to said third direction around the periphery of the three sides thereof, a plurality of notches around the edges of the three sides thereof, a plurality of sleeves spaced axially from each other along said pivot axis, wherein the sleeves of said first part are alternately engaged in between the sleeves of said second part and connected thereto in series by a fastening rod coupled at one end with a rivet

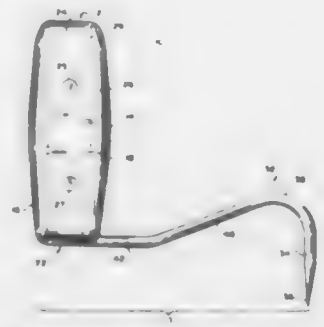
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5,005,257

MEAT HOOK

Ronald F. Bailey, Omaha, Nebr., assignor to Rare Research, Omaha, Nebr.

Filed Aug. 4, 1989, Ser. No. 389,789
Int. Cl.[5] B65G *7/12*
U.S. Cl. 452—185 23 Claims



1. A meat hook comprising

an elongated, rigid, curved cylinder having a first pointed, meat piercing end and a second handle engaging end,

a handle rigidly secured to the handle engaging end of the curved cylinder; the handle having a main axis, a first end, a second end, a relatively narrow front side portion and a relatively narrow rear side portion with relatively wide opposing side portions; the handle being sized to extend substantially the width of the user's palm for grasping between the palm and the fingers of the user's hand;

the curved cylinder being formed to extend from the front side portion of the handle in a common plane with the main axis and parallel to planes of the wide opposing side portions of the handle in close proximity to the first end of the handle at an angle approximately 90 degrees from the front side portion of the handle; the curved cylinder being formed to extend from the handle a sufficient distance to clear the user's fingers before curving to form the meat piercing end, said meat piercing end being in the common plane and extending approximately parallel to the plane of the front side portion of the handle, and being in spaced relation therefrom

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5,005,258

METHOD AND APPARATUS FOR EVISCERATING SCALLOPS

Edgar E. Griffis, 70 S. Banana River Dr., Merritt Island, Fla. 32952

Continuation-in-part of Ser. No. 222,137, Jul. 21, 1988, Pat. No. 4,947,519. This application May 15, 1990, Ser. No. 523,782
Int. Cl.[5] A22C *29/00*
U.S. Cl. 452—18 18 Claims



1 A method of mechanically eviscerating the viscera from the meat of a shucked scallop, comprising the steps of

introducing a plurality of scallops at a controlled rate into a series of longitudinally aligned inclined channels, each channel being formed between a first roller and a second plurality of rollers, wherein said first rollers in adjacent channels are longitudinally aligned,

moving the scallops from side to side down along the channels while rotating the rollers to rotate the scallop about their axis while progressively pinching and successively removing the viscera, and then cleaning the viscera therefrom, and

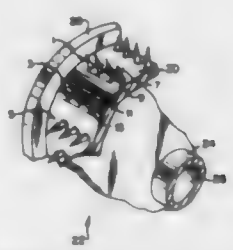
rotating the first rollers at a rotational speed different than that of the second rollers.

5,005,259

OPENING ROLLER FOR OPEN END SPINNING MACHINES

William R. Stewart, Craigmount, and David B. Stewart, Newey Park, both of Scotland, assignors to William R. Stewart & Sons Ltd., Scotland

Continuation of Ser. No. 89,162, Aug. 25, 1987, abandoned, which is a continuation of Ser. No. 559,006, Dec. 8, 1983, abandoned, which is a continuation of Ser. No. 396,344, Sep. 29, 1981, abandoned. This application Mar. 30, 1988, Ser. No. 175,600
Claims priority, application United Kingdom, Sep. 26, 1980, 803177
Int. Cl.[5] D01G *19/10*
U.S. Cl. 19—97 6 Claims



1 An opening roller for use in open end spinning machines, and for separating fibers from a sliver prior to the fibres being spun into a yarn, comprising a cylindrical member having spaced first and second side walls and a central hub, said first

side wall extending radially outwards from said hub, and at or adjacent a peripheral edge of said first side wall, a continuous cylindrical wall extending across the width of the roller to said second side wall of the roller and defining the width of said roller, there being a plurality of spaced pairs of rows of pins projecting from said continuous cylindrical wall, wherein the spacing between adjacent pairs of rows of pins is greater than the spacing between the rows in any pair of rows, and wherein the area of said roller between each of said pairs of rows is smooth and arcuate, and forms part of said cylindrical surface, and wherein, in any pair of rows, the pins of one row are staggered relative to the pins of the other row

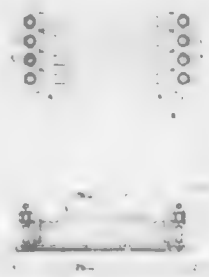
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5,005,260

STATIONARY FLAT, TOP BAR AND CARDING ENGINE

Takumi Oda, Kobe, Japan, assignor to Kanai Juyo Kogyo Company, Limited, Hyogo, Japan

Filed Nov. 28, 1989, Ser. No. 442,986
Claims priority, application Japan, Nov. 30, 1988, 63-303180
Int. Cl.[5] D01G 15/28
U.S. Cl. 19—104 6 Claims



1 A stationary flat unit for a carding engine, comprising a stationary flat having two base members spaced laterally from each other and each having a radius of curvature corresponding to a front concentric bend of the carding engine, a plurality of stud bolts on each of said base members and spaced at regular intervals therealong in the direction of curvature thereof, a plurality of top bars positioned in parallel and extending between said two base members, each top bar having an inverted L-shape bracket at each end with an arm extending outwardly from a top portion of the top bar, a card clothing on an under surface of said top bars, said arms of said brackets being positioned on corresponding stud bolts on said base members for free movement up and down along said stud bolts, and nuts threaded on said stud bolts and engagable with said bracket arms and tightenable thereagainst for fixing said top bars in an adjusted position on said flat, and an arm on each end of said flat for mounting said flat unit on the carding engine for pivoting movement toward and away from the cylinder of the carding engine

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5,005,261

DEVICE FOR PNEUMATICALLY FEEDING FIBER MATERIAL TO A CHUTE OR THE LIKE

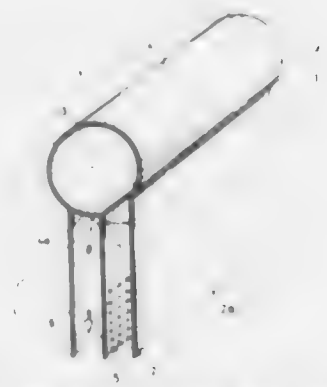
Akiva Plato, Duesseldorf Wittlaer, and Werner Lasenga, Duelmen, both of Fed. Rep. of Germany, assignors to Hergeth Hollingsworth GmbH, Duelmen, Fed. Rep. of Germany

Filed Feb. 13, 1990, Ser. No. 479,124
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1989, 3904317
Int. Cl.[5] D01G 15/44
U.S. Cl. 19—105 6 Claims

1. Apparatus for pneumatically feeding fiber through a conduit to a processing machine comprising:

an upper chute connected to and receiving fiber from said conduit, said upper chute comprising a tube of substantially circular cross section; and

a sequential lower chute, said lower chute at its entrance from said upper chute having a width less than the diameter of said upper chute,



wherein the flow of fiber through said conduit moves through said upper chute such that fiber flows in a substantially straight line through said upper chute and allows fibers to drop into said lower chute

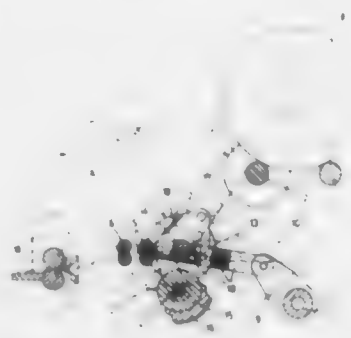
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5,005,262

COMBER WITH ELECTRIC MOTOR DRIVEN INTERMITTENT FEED ROLLER

Walter Ackeret, Seuzach, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Sep. 13, 1989, Ser. No. 406,781
Claims priority, application Switzerland, Sep. 21, 1988, 03505/88
Int. Cl.[5] D01G 19/08
U.S. Cl. 19—234 21 Claims



1 A comber comprising

at least one combing head including an oscillating nipper unit and a rotatable feed roller for advancing a lap to be combed;

an electric motor for intermittently rotating said feed roller, and

a control unit for energizing said motor with drive pulses in synchronism with the movements of said nipper unit.

5,005,263

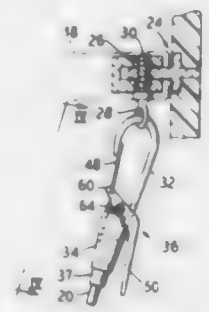
EYEGLASS SUPPORT

Robert D. Barrett, 10261 Canterbury St., Westchester, Ill. 60154

Filed Oct. 24, 1989, Ser. No. 426,305
Int. Cl.[5] A44B 21/00
U.S. Cl. 24—3 C 5 Claims

1. A selectively actuable clip of the type including a body portion, a stationary portion extending from said body portion, and a selectively movable, resilient closure member between said body portion and said engaging portion, said clip further including a lever means pivotally attached to said body portion and comprising the following:

contact arm means for selective engagement with said closure member,



control arm means, rigidly attached to, and disposed at a predetermined angle to, said contact arm means, for engagement by a user to move said closure means, and

pivot pin means, disposed between said contact arm means and said control arm means, for pivotably attaching said lever means to said body portion

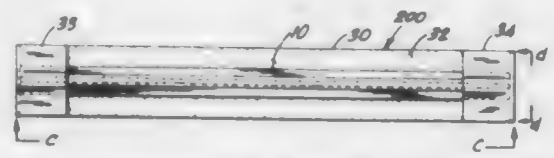
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5,005,264

FASTENER FOR CLOSING FLEXIBLE BAGS AND THE LIKE

Stanley Breen, 24 Downing St., Norwood, Mass. 02062

Continuation of Ser. No. 323,428, Mar. 14, 1989, abandoned. This application Aug. 22, 1990, Ser. No. 570,975
Int. Cl.[5] B65D 77/18
U.S. Cl. 24—30.5 R 10 Claims



1 An improved fastener for closing the open end of a flexible container comprising the combination of

a piece of tape having a pressure-sensitive adhering surface on a first side,

a strip of deformable material, wherein the length of the strip of deformable material is greater than the length of the piece of tape,

means for attaching the strip of deformable material to the pressure-sensitive adhering surface of the piece of tape wherein the width of the strip of deformable material is less than the width of the piece of tape thereby leaving an exposed portion of the pressure-sensitive adhering surface, wherein the strip of deformable material is deformed around the neck of the container and the pressure-sensitive adhering surface is pressed against itself at the exposed portion in order to close the container

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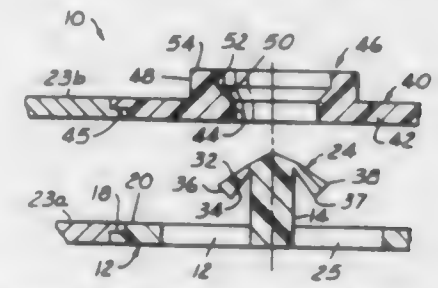
5,005,265

TWO-PIECE STUD ASSEMBLY

John Muller, Englewood, Tenn., assignor to Lavidson Textron Inc., Dover, N.H.

Continuation of Ser. No. 221,886, Jul. 20, 1988, abandoned. This application Dec. 28, 1989, Ser. No. 458,334
Int. Cl.[5] A44B 1/04
U.S. Cl. 24—453 5 Claims

1 A two-piece, self-locking stud assembly comprising a male segment including a base portion, a rigid stem extending therefrom and having an outer surface and a distal end, and a plurality of equally spaced deflectable fingers, each having an inboard end connected to the distal end of said rigid stem and an axis extending downwardly therefrom at a predetermined angle with respect to said rigid stem toward said base portion, and a female segment including a base portion having an opening formed therethrough, a flange formed on one side of said base portion around said opening, a frustoconical surface formed in said flange adjacent said opening, and a cylindrical



surface formed in said flange adjacent said frustoconical surface, said deflectable fingers movable so as to approach said outer surface of said rigid stem while passing through said opening and thereafter returning back to said predetermined angle to become abutted against and locked on said frustoconical surface

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5,005,266

SELF-CLOSING CARABINER

Christian Fister, Lyons, and Yves Grasset, Caluire, both of France, assignors to Alpcan SA, Lyons, France

Filed Sep. 28, 1989, Ser. No. 413,686
Claims priority, application France, Sep. 28, 1988, 88 12924
Int. Cl.[5] A44B 13/02; B66C 1/36
U.S. Cl. 24—601.5 6 Claims



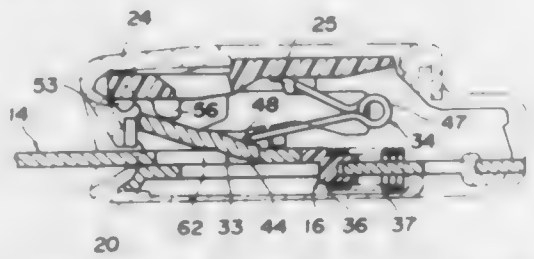
1 A carabiner comprising a body in the general shape of a C, a gate, means for pivotally mounting the gate on one end of the body, biasing means for holding the gate in a closed position, means for holding the gate in an open position against the action of the biasing means and for allowing the gate to pivot toward its closed position following the introduction into the body of an element to be hooked, wherein the means for holding the gate in the open position comprises a tongue, means for pivotally mounting one end of the tongue on the body for pivoting around an axis parallel to the axis of pivoting of the gate, and the tongue having a part cooperating with the free end of the gate to hold the gate in the open position

5,005,267

BUCKLE ASSEMBLY FOR SEAT BELT

Mutsumi Sugimoto, Hamamatsu, Japan, assignor to Katsuyama Kinzoku Kogyo Kabushiki Kaisha, Japan

Filed Sep. 27, 1989, Ser. No. 413,539
Claims priority, application Japan, Sep. 28, 1988, 63-243795; Aug. 25, 1989, 1-217504
Int. Cl.⁵ A44B 11/26
U.S. Cl. 24—637 22 Claims



1 A buckle assembly for a seat belt comprising

a base having a horizontal plate and side plates formed integrally with both longitudinal side portions of said horizontal plate and extending substantially normal thereto,

latch means engageable with said side plates and supported thereby so as to be swingable between a latch locking position and a latch releasing position,

a push button pivotally mounted on said side plates of the base,

spring means engageable with said latch means for always urging said latch means towards the locking position thereof, said spring means having a double torsional spring structure comprising double torsional portions, a central lock spring portion formed between said double torsional portions and engageable with said latch means to urge said latch means to the locking position thereof, and cantilever portions formed outside said double torsional portions and carried by said push button so as to urge said push button towards an original position thereof,

tongue means insertable into a tongue insertion space formed between said horizontal plate and said side plates of the base and releasably engageable with said latch means,

a lower cover for covering said base from a lower side thereof, and

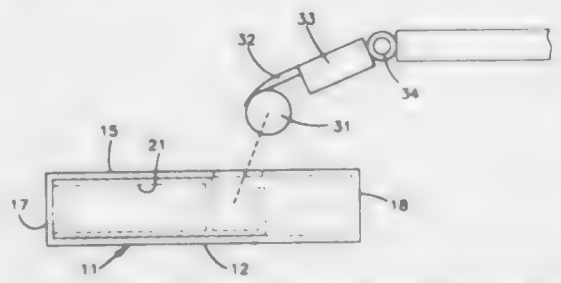
an upper cover for covering said base from an upper side thereof and engaged with said lower cover.

5,005,268

WATCH BAND OR BRACELET CLOSURE

György Hartmann, östra Förstads Gatan 7A, 21131 Malmö, Sweden

Filed Dec. 11, 1989, Ser. No. 448,524
Int. Cl.⁵ A44B 11/25
U.S. Cl. 24—652 6 Claims



1. A closure for connecting a first and a second free end of a band as might be used as a strap on a wrist watch, said closure comprising:

a box element adapted for attachment to said first band end, said box element comprising an outer box having a bottom wall, two side walls, an end wall distal said first band end, and a top wall having a first cutout creating an opening therein, the width of said first cutout varies along the length thereof to provide a wide portion thereof proximal said first band end and a narrow portion thereof distal said first band end, said top wall having a top surface, said box element further comprising a slide element slidably contained within said outer box, said slide element comprising a slide top wall and a receiving well, said slide top wall having a top surface, and

a bar element adapted for attachment to said second band end, said bar element comprising a bar appropriately sized to engage and fit into said receiving well within said outer box by passing through said wide portion of said first cutout therein and to be slidably retained by said outer box after said bar is moved in a direction away from said first band end to a retained position wherein said bar is retained by slidable contact with those portions of said top wall adjacent to and delimiting said cutout at said narrow portion thereof, said bar element further comprising a tab extension connecting said bar to a band-end body adapted for attachment to said second band end, said tab extension having a top surface

wherein said moving of said bar to said retained position causes, by means of the engagement of said bar with said receiving well, movement of said slide element in the same direction, thereby to expose a portion of said slide top wall through said first cutout to present a clean and finished appearance of the closure when so closed, and wherein a pivoting motion of said bar element about said bar moves said band-end body portion of said bar element into a position wherein said band-end body prevents translational motion of said bar element that would be sufficient to effect the release of said bar from said outer box, by securement of said box element end wall between said bar and said band-end body, the closure then securely holds said free ends together.

5,005,269

RESILIENT SPRING CLIP SHOULDER STRAP LOOP

Nathan A. Hirsch, Monsey, N.Y., assignor to Albest Metal Stamping Corporation, Brooklyn, N.Y.

Continuation of Ser. No. 734,156, May 15, 1985, Pat. No. 4,935,997. This application Apr. 24, 1990, Ser. No. 513,822
The portion of the term of this patent subsequent to Jun. 26, 2007, has been disclaimed.
Int. Cl.⁵ A44B 11/00
U.S. Cl. 24—668 7 Claims



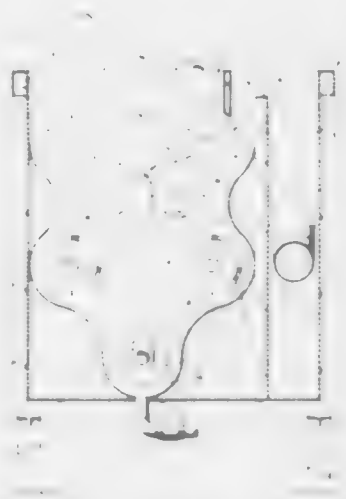
1 A spring clip closure member for resilient clamping onto a button type projection, said closure member comprising a generally inverted U-shaped resilient wire loop having a bight portion for depending suspension from a support band, and pair of opposing leg portions each terminating in inwardly directed feet portions formed with downwardly directed finger portions, said feet portions being resiliently separable and normally spring biased toward each other to engage the button type projection, encasement means including a closed pocket for receiving and enveloping said downwardly directed finger portions and being dimensioned to permit resilient lateral movement of said finger portions, side channels defining passageways through which said feet portions extend as they separate, and stop walls integral with said closed pocket for limiting the lateral movement of said finger portions, wherein said encasement means is developed from an elongated substantially planar sheet of rigid material having a transverse axis and being symmetrically folded about said transverse axis, said encasement means including contoured opposing wall shaving undercut shoulders at lateral corners thereof, U-shaped planar extensions, and flange portions along the undercut shoulders, said flange portions abutting against each other and in their abutting relationship defining said side channels.

5,005,270

CONTINUOUS CARPET WASHING AND PILE MODIFICATION METHOD AND APPARATUS

Billy M. Childers, Calhoun, Ga., assignor to Multitex Corporation of America, Calhoun, Ga.

Filed Feb. 9, 1990, Ser. No. 477,552
Int. Cl.⁵ D06G 1/00
U.S. Cl. 26—25 16 Claims



1 An apparatus for washing and mechanically treating a continuous travelling web having a backing surface and a pile surface, said apparatus comprising

a processing tank receivable of a processing liquid,

guide means directing said web through said tank in a first direction in a substantially U-shaped path with the pile surface directed outward,

means within said tank for manipulating said pile surface of said web,

processing liquid inlet means located adjacent the exit point of said web from said tank,

processing liquid outlet means located adjacent the entrance point of said web into said tank,

filtering and recirculating means for said processing liquid,

said processing tank having an interior wall that is contoured relative to said manipulating means,

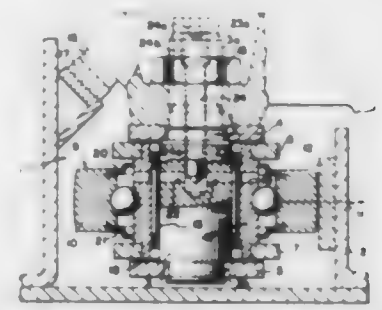
whereby circulation of said processing liquid is maintained in an agitated and substantially counter current flow to the direction of travel of said web.

5,005,271

CONVEYOR CHAIN FOR MACHINES FOR TENSIONING LENGTHS OF MATERIAL

Harry Gressens, Benningen/Neckar, Fed. Rep. of Germany, assignor to Bruckner Trockentechnik GmbH & Co. KG, Fed. Rep. of Germany

Continuation of Ser. No. 165,236, Mar. 7, 1988, abandoned. This application Oct. 12, 1989, Ser. No. 423,490
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1987, 3713063
Int. Cl.⁵ D06C 3/02
U.S. Cl. 26—89 6 Claims



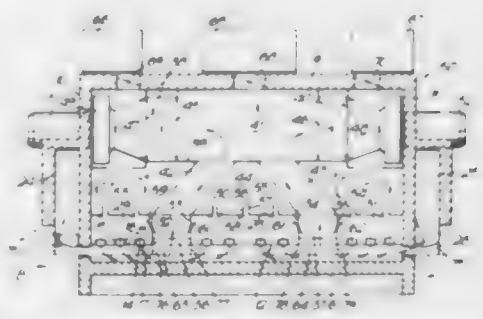
1 A conveyor chain joint construction for a web tensioning machine, said construction comprising a joint bolt having an axis, a joint sleeve, first bearing means journalling said joint sleeve on said joint bolt for rotation about said axis, a first pair of fishplates respectively mounted on said joint sleeve at opposite ends thereof, a roller, second bearing means journalling said roller on said joint sleeve between the fishplates of said first pair thereof and for rotation about said axis, a second pair of fishplates respectively mounted on said joint bolt adjacent opposite ends of said joint sleeve and straddling said first pair of fishplates, a support member for supporting web tensioning means, and means removably mounting said support member on said joint bolt in such position that one fishplate of said second pair thereof is sandwiched between said support member and said joint sleeve, said one fishplate having an aperture therein through which said joint bolt extends, said aperture being sufficiently larger in size than said joint bolt as to provide an unoccupied annular space encircling said joint bolt, thereby facilitating removal of said one fishplate to provide access to said first and second bearing means.

5,005,272

PROCESS IN SETTING A WEB, AND A HEAT SETTING PLANT FOR SETTING WEBS

Severin Severinsen, N-1087, Oslo 10, Norway

Filed Feb. 16, 1990, Ser. No. 481,141
Claims priority, application Norway, Feb. 24, 1989, 890790
Int. Cl.⁵ F26B 13/10
U.S. Cl. 26—106 17 Claims



1 In a method in setting a web, e.g. a wire sieve or a felt, in a heating and setting plant, in which said web is passed through

an air box in which air at a desired temperature is blown towards the web, the improvement comprising the steps of:

placing the web in said air box;

heating the air in said air box to a desired starting temperature;

redirecting the air at the same time to recirculate in the box without excessive flow towards the web;

redirecting the air, upon reaching said starting temperature, to be blown towards the web while said web is running;

redirecting the air for recirculation;

heating said air to a next temperature level;

redirecting the air to be blown, upon reaching said next level of temperature, towards the running web; and

repeating the above steps until the web is set

5,005,273

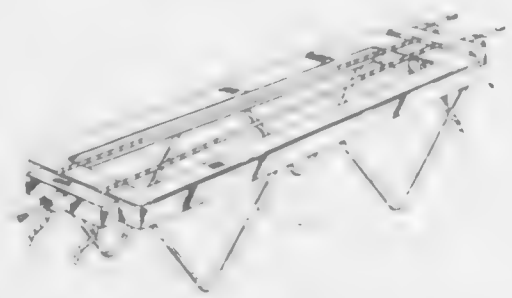
RAG RUG LOOM

Jackie F. Packham, 6905 Wisconsin Ave., La Mesa, Calif. 92041

Filed Aug. 10, 1989, Ser. No. 392,306

Int. Cl.' D03D 29/00

U.S. Cl. 28—149 8 Claims



1. A rag rug loom comprising

a frame having a pair of laterally spaced longitudinal side members, and a pair of laterally spaced transverse end members that are connected to the respective opposite ends of said longitudinal side members;

a first transverse platen positioned adjacent one of said pair of laterally spaced transverse end members and having means for tightening said first transverse platen into rigid surface contact with said one of said pair of said laterally spaced transverse end members,

a second transverse platen positioned adjacent an other one of said pair of laterally spaced transverse end members and having means for tightening said second transverse platen into rigid surface contact with said other one of said pair of said laterally spaced transverse end member; and

a first and second pair of foldable legs extending downwards from the ends of the transverse end members

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5,005,274

MOUNTING DEVICE WITH TRANSFER MEANS FOR ADVANCING TUBULAR SLEEVES BETWEEN DIFFERENT WORK STATIONS

Hans Tinell, Hasenbergstrasse 36, 6312 Steinhausen, Sweden

PCT No. PCT/SE88/00031, § 371 Date Sep. 5, 1989, § 102(e) Date Sep. 5, 1989, PCT Pub. No. WO88/07494, PCT Pub. Date Oct. 6, 1988

PCT Filed Feb. 1, 1988, Ser. No. 399,460

Claims priority, application Sweden, Apr. 3, 1987, 8701396

Int. Cl.' B23P 23/00

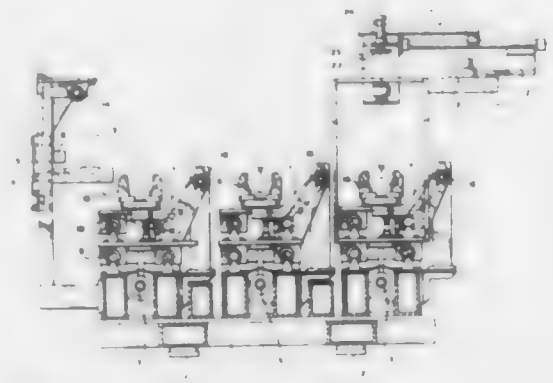
U.S. Cl. 29—33 P 8 Claims

1. An apparatus for the arrangement and preparation of cores intended for use as reel cores inpapermaking, essentially comprised of

one or more stations with tools for executing a number of working operations, wherein the stations are disposed in a side-by-side relationship; and

said stations have openable and closable grippers for the retention of that core which is to be prepared in each respective station, under the execution of one or more working operations therein, and

said stations have arms located at each end of the core, wherein said openable and closable grippers are disposed on the one free end of an arm, and with said arm being pivotal about a shaft at the opposite end from said grippers, and



said arms being interconnected for the simultaneous pivoting about the shaft for he transfer of a core, being held substantially non-rotatable by means of the grippers, from an initial station to a subsequent station, in which the open grippers of he subsequent station are arranged to close about the core and thereby grasp and fixedly hold the core in an orientationally controlled position, before the grippers at the preceding station are opened for release of said core

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5,005,275

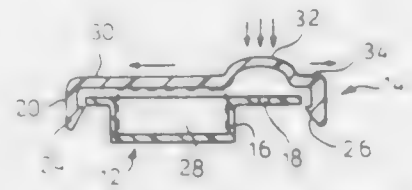
CARRIER TAPE AND COVER APPLYING AND REMOVAL DEVICS FOR SAME

Herbert A. Borst, West Nyack; Zdenek Machacek, Nanuet; Ernest Schnittger, Suffern, all of N.Y.; Richard D. Schulte, Niles, Ill.; Richmond Scott, Pleasantville, and Paul A. Tilman, New City, both of N.Y., assignors to Illinois Tool Works Inc., Chicago, Ill.

Continuation of Ser. No. 335,219, Apr. 7, 1989, abandoned, which is a division of Ser. No. 46,259, May 4, 1987, Pat. No. 4,842,135, which is a continuation-in-part of Ser. No. 8,293, Jan. 29, 1987, Pat. No. 4,708,245, which is a continuation-in-part of Ser. No. 913,131, Sep. 25, 1986, Pat. No. 4,733,778. This application Jul. 18, 1990, Ser. No. 555,665

Int. Cl.' B02C 19/04

U.S. Cl. 29—235 7 Claims



1. A device for applying a carrier tape cover strip to a base strip, said cover strip having a top surface with a longitudinally extending hump projecting upwardly therefrom and sidewalls extending parallel to said hump extending downwardly from said top surface, said device comprising

a guide for receiving said base strip, and

a feed channel member overlying said guide for receiving said cover strip and feeding said cover strip into a position over said base strip, said feed channel member including an inner face contoured to receive said cover strip including a channel to receive said hump and means for exerting a downward force on said hump as said cover strip passes through said feed channel member, said force exerting means including a rod extending through said channel, such that the downward force exerted on the hump can be varied by adjusting the extent of said rod extending through said channel

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5,005,276

APPARATUS FOR ACCURATELY ASSEMBLING LARGE SCALE MACHINE PARTS

Marshall J. Rouse, Charlotte, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 5, 1990, Ser. No. 461,575

Int. Cl.' B23P 19/04

U.S. Cl. 29—244 14 Claims



1. Apparatus for lifting an object with a hoist and applying torque to an object using a socket, comprising

hoist ring means for connecting the apparatus to the hoist means for lifting,

housing means affixed to said hoist ring means,

drive means for attaching a means for applying the socket torque,

socket retainer means for releasably connecting said housing means and said drive means,

counterbalance means for resiliently connecting said socket retainer means and said housing means,

support means for supporting the object, and

a body portion connecting said drive means and said support means, said body portion adapted to engage a portion of the object

whereby, said counterbalance means reduces the force due to the weight of the object when the object is lifted to the position from which it will be torqued, and whereby the torque applied to said drive means is transferred through said body portion to the object

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5,005,277

AUTOMATED ASSEMBLY ARRANGEMENT FOR VEHICLE BODY AND METHOD OF ASSEMBLY

Satoshi Uemura, Tokyo; Susumu Kawada, Kamakura; Yoshitada Sekine, Yokohama, and Tatsuo Miyauchi, Utsunomiya, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 9, 1988, Ser. No. 282,190

Claims priority, application Japan, Dec. 10, 1987, 62-313023

Int. Cl.' B23P 21/00

U.S. Cl. 29—407 4 Claims

1. An arrangement wherein a work piece is to be connected with a given degree of precision to a structure, comprising

a first assembly stage;

a second assembly stage which is separate and spaced from said first assembly stage;

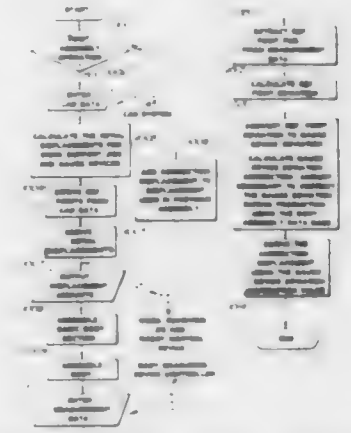
means for determining a position in which said work piece should be disposed relative to said structure using pre-recorded data which relates to the design of said structure, said first stage including

(a) work support means, controlled by an inference type processing means, for supporting and moving said work piece into the determined position relative to said structure, and

(b) means for fixing said work piece to said structure,

means for determining a correct position for each of a plurality of reference points defined on said work piece, using pre-recorded structure design data,

shuttle conveyor means for moving the structure out of said first assembly stage into said second assembly stage,



said second stage including measuring means for determining a measured position of said plurality of reference points,

means for determining the deviation between each said measured position and a corresponding one of said correct reference point positions using said pre-recorded data;

a memory bank containing said pre-recorded data and said inference means, wherein said inference means is used in combination with said pre-recorded data to determine correction values for correcting the operation of said work support means in said first stage so as to reduce the magnitude of said deviations detected in said second stage

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5,005,278

METHOD OF CONTROLLING THE OPERATION OF APPLYING A SUCCESSION OF DISCRETE COUPLING ELEMENTS

Chiharu Sado, Kurobe, and Yasuhiko Matsuda, Toyama, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Mar. 30, 1990, Ser. No. 502,403

Claims priority, application Japan, Mar. 31, 1989, 1-82207

Int. Cl.' B21D 53/50

U.S. Cl. 29—408 2 Claims

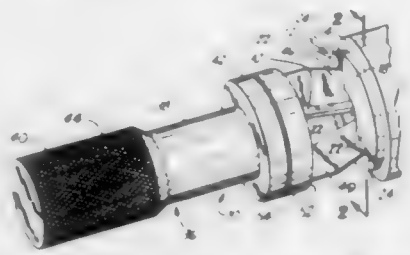


1 A method of controlling the operation of applying a succession of discrete coupling elements, supplied through a chute, onto a stringer tape at constant intervals along a longitudinal edge thereof, which method comprises the steps of

(a) detecting and counting the number N_1 of said coupling elements which have entered said chute at one end thereof;
(b) subtracting from said number N_1 the number N_2 of said coupling elements which have been applied onto said tape thereby monitoring the inventory or number Nc of said coupling elements within said chute, and
(c) adjusting the speed of applying said coupling elements to an extent corresponding to said number Nc of said coupling elements being monitored

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5,005,279
COLLET INSERTION AND REMOVAL DEVICE AND METHOD
Mark S. Koolker, Minnetonka, Minn., assignor to Turning, Inc., St. Paul, Minn.
Filed May 18, 1990, Ser. No. 525,868
Int. Cl.[5] B23P 19/00
U.S. Cl. 29—426.5 8 Claims



7. A method of inserting a collet into a lathe collet chuck, the collet including a plurality of fingers separated by slots, using a collet wrench device having a handle portion and a plurality of blades attached to the handle portion, the blades shaped and arranged to engage the slots within the collet, the method comprising
inserting the blades into the slots within the collet,
positioning the collet to be secured within the lathe collet chuck,
turning the collet wrench device until the collet is secured within the lathe collet chuck, and
removing the blades from the slots of the collet

5,005,280
METHOD OF MANFACTURING A FOLDABLE LADDER STRUCTURE
Claude R. Wallick, Jr., and Thomas J. Schmitt, both of Louisville, Ky., assignors to Emerson Electric Co., St. Louis, Mo.
Continuation of Ser. No. 294,398, Jan. 9, 1989, which is a division of Ser. No. 3,613, Jan. 15, 1987, Pat. No. 4,834,216.
This application Nov. 15, 1989, Ser. No. 436,965
Int. Cl.[5] B29C 67/22
U.S. Cl. 29—434 7 Claims

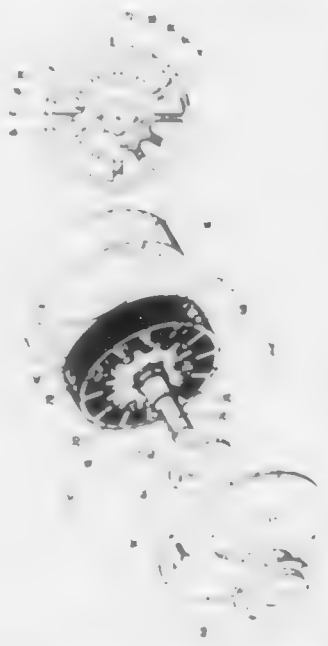


1. A method of forming opposed ladder sections for foldable ladder structure, said sections to be jointably hinged below the top platform of said ladder structure, comprising the steps of
forming each of said sections to include a portion of said top platform and a portion of a hinge therebelow with the hinge portion of each of said sections being formed to be in lateral offset relation to the hinge portion of the other section and with at least one section including formed spaced steps therein by supplying a controlled quantity of expansible plastic compound in unexpanded form solely along a partially confined first mold part of a mold pair, said first mold part of said pair having a preselected shape in accordance with the ladder section to be formed, said first mold part of said mold pair and only said expansible compound being confined with an opposing second and mating mold part of said pair of preselected shape to provide a completely confined mold cavity of fixed shape in accordance with the ladder section to be formed,
expanding said compound in the formation of each ladder section to the limits of complete confinement of said mold cavity of fixed shape formed by said mating pair of mold parts for each ladder section,
releasing each of said mating mold parts forming each of the finished ladder sections from mold confinement after said expanded plastic compound has set,
assembling said sections with the offset hinge portion of one ladder section dovetailing with the offset hinge portion of the other section and with the top platform portion of each section being aligned to form a top platform when in ladder open position,
connecting said dovetailing hinge portions of each section together for pivotal movement of said ladder sections about said connected hinge portions to ladder open and ladder closed positions, and
linking said opposed ladder sections with said connected dovetailing hinge portions with pivotal link arms below said hinges to allow said hinge portions connected ladder sections to be moved with respect to each other between a limited ladder open and a ladder closed position

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5,005,281
METHOD OF MAKING ROTOR AND STATOR POLE ASSEMBLIES BY STAMPING MAGNETIC PLATE
William Burns, Oakville, Canada, assignor to Dynamics Systems International Inc., Concord, Canada
Filed Aug. 20, 1990, Ser. No. 569,427
Int. Cl.[5] H02K 15/02, B21D 31/02
U.S. Cl. 29—596 8 Claims

1. A method of making a stator pole assembly and a cooperating rotor pole assembly for an electric motor or generator, comprising
producing a predetermined number of complementary rotor and stator pole assembly laminations by repeating the following steps
A providing a plate of magnetic material,
B stamping the plate thereby defining an outer peripheral edge corresponding in shape to an outer peripheral surface of an annular stator yoke,
C stamping the plate thereby defining a central aperture centered about a center point of the plate,
D stamping the plate thereby defining a multiplicity of apertures of predetermined identical shape equally-spaced circumferentially and at a common radial distance from the center point of the plate, the predetermined shape being selected such that the multiplicity of apertures define internal edge surfaces in the plate corresponding in shape to radially inner surfaces of the stator yoke and to radially outer surfaces of a central hub of the rotor pole assembly and define a multiplicity of identical radial webs equally-spaced circumferentially, and
E stamping the multiplicity of webs thereby producing a cut through each web with a common predetermined radius of curvature relative to the center point of the plate such that the plate is divided into a stator pole assembly lamination with radially-inward projections corresponding in shape to stator poles and a rotor pole assembly lamination with radially-outward projections corresponding in shape to rotor poles,
mounting the stator pole assembly laminations registered and in side-by-side relationship on a support structure thereby forming the stator pole assembly,



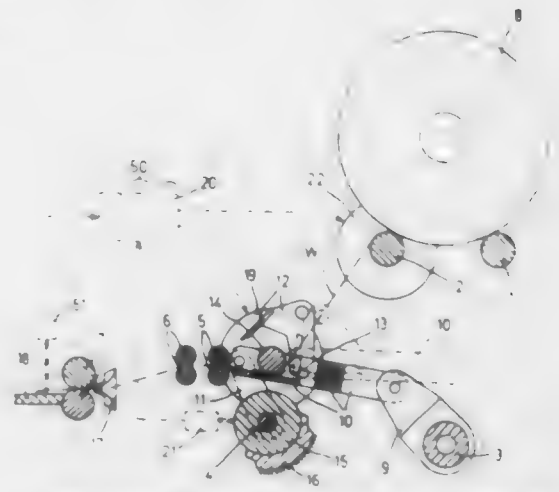
mounting the rotor pole assembly laminations registered and in side-by-side relationship on a support shaft extending through the central apertures of the rotor pole assembly laminations thereby forming the rotor pole assembly,
mounting the support shaft for rotation relative to the support structure with the rotor pole assembly positioned centrally within and substantially coplanar with the stator pole assembly

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5,005,282
METHOD OF MAKING AN ELECTRONIC MEMORY CARD
René Rose, Bretonneux, France, assignor to Schlumberger Industries, Montrouge, France
Filed May 24, 1989, Ser. No. 356,357
Claims priority, application France, May 25, 1988, 88 06921
Int. Cl.[5] H01R 43/00
U.S. Cl. 29—827 11 Claims

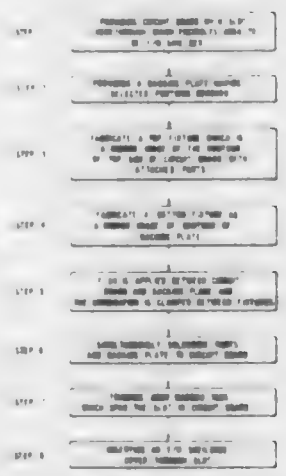
1. A method of making an electronic memory card comprising an electronic module mounted on a card body, the method comprising the steps of
(a) providing a lead-frame having an inside and outside face defining various conductor elements at least some of which form external electrical contact tabs for the card,
(b) affixing at least one strip of electrically insulating reinforcement material on at least one of said two faces of said lead-frame in such a manner that said strip covers neither external tabs disposed on said outside face of said lead-frame nor connection zones disposed on said inside face of said lead-frame;

(c) affixing a semiconductor chip on said inside face of the lead-frame and electrically connecting the terminals of



said chip to said connection zones, thereby obtaining said electronic module, and
(d) affixing the electronic module on the body of said card

5,005,283
METHOD OF MANUFACTURING AN E/M SHIELDED RF CIRCUIT BOARD
Charles C. Deyo, Rockledge; Thomas R. Wolters, Satellite Beach, and Robert H. Oas, Melbourne, all of Fla., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Sep. 19, 1990, Ser. No. 585,338
Int. Cl.[5] H05K 3/00
U.S. Cl. 29—829 3 Claims



1. A method for manufacturing a circuit board comprising the steps of
(a) providing a printed circuit board having a top side with a plurality of parts thereon, and a bottom side having a slot therein, said slot encircling a predetermined portion of said circuit board;
(b) fabricating a backing plate with variable thickness in accordance with a predetermined thermal characteristic of said circuit board,
(c) providing a top fixture which is a mirror image of the contour of the top side of the circuit board,
(d) providing a bottom fixture which is a mirror image of the contour of the backing plate;

(e) applying flux between the circuit board and the backing plate and clamping the combination between the top fixture and the bottom fixture.
(f) simultaneously soldering the parts and the backing plate to the circuit board,
(g) trimming away a plurality of tabs which span the slot in the circuit board.
(h) inserting a metallic shield cover through the slot in the circuit board

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5,005,284
METHOD OF ASSEMBLING TERMINALS WITH MODULAR PLUG

Eugene R. Cocco, Glendale, and Bobby W. Rothman, Phoenix, both of Ariz., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 273,301, Nov. 18, 1988, Pat. No. 4,950,176.
This application Jun. 6, 1990, Ser. No. 533,975
Int. Cl.[5] H01R 43/16
U.S. Cl. 29—884 4 Claims



1 A method of assembling electrically conductive flat blade-like terminals to a dielectric housing of a plug to terminate conductors of a cordage, each terminal having a body portion with an internal contact portion and an external contact portion extending from said body portion, the external contact portion being disposed asymmetrically between ends of said body portion, said method including the steps of

advancing a plurality of repetitively configured strips of material along a path to move a leading portion of each into a nest wherein the leading portion is supported along a leading edge and two adjoining faces thereof,

separating the leading portion from the next successive repetitively configured portion of each strip to form a plurality of terminals each having a trailing edge opposite the leading edge while covering the nest to complete the support of each terminal across its trailing edge,

supporting a dielectric housing to align a plurality of terminal-receiving slots of the housing with the terminals, the housing including a plurality of partitions which extend from an inner surface of a well to which the slots open to an outer surface of the plug and which extend from a free end of the plug to ends of the external contact portions of the terminals;

engaging a reference edge surface of the body portion of each terminal between the external contact portion and the trailing edge with one of a plurality of insertion rams,

causing the insertion rams to move the terminals partially into the housing between partitions and between partitions and sidewalls of the housing to cause side edge barbs of each terminal to become embedded in the plastic material of the housing; and

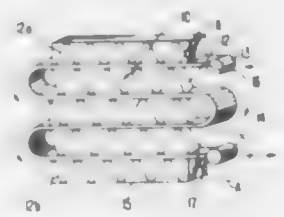
subsequently reengaging the reference edge surfaces of the terminals with a common ram and causing the ram to seat fully the terminals within the housing to cause the internal contact portions to engage electrically the cordage conductors and to cause strain relief facilities of the plug to engage the conductors and a jacket of the cordage

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5,005,285
METHOD OF PRODUCING AN ALUMINUM HEAT EXCHANGER

Yutaka Ishii, Isesaki, Japan, assignor to Sanden Corporation, Isesaki, Japan

Continuation of Ser. No. 830,200, Feb. 18, 1986, abandoned.
This application Sep. 28, 1987, Ser. No. 102,250
Claims priority, application Japan, Feb. 15, 1985, 60-26486
Int. Cl.[5] B23P 15/26
U.S. Cl. 29—890.043 7 Claims



1 A method of producing an aluminum heat exchanger having a heat exchanger core with inlet and outlet openings and inlet and outlet pipes connected thereto, wherein both the heat exchanger core and the inlet and outlet pipes are made of an aluminum material, comprising brazing the heat exchanger core to the inlet and outlet pipes with a coated unitary brazing filler metal element comprising a rod of brazing filler metal consisting essentially of an aluminum-silicon alloy containing about 4.5 to 13.0% (by weight) silicon, said rod having a zinc-containing coating thereon, to form a brazed connection, said brazing causing said zinc to diffuse into the surface of the brazed connection and into the heat exchanger core adjacent to the brazed connection to form a diffused zinc layer

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5,005,286
MOLD EXTRACTOR

Thomas L. Purcell, 8737 E. Hubbell St., Scottsdale, Ariz. 85257

Filed May 1, 1989, Ser. No. 345,288
Int. Cl.[5] B26B 3/08
U.S. Cl. 30—1 1 Claim



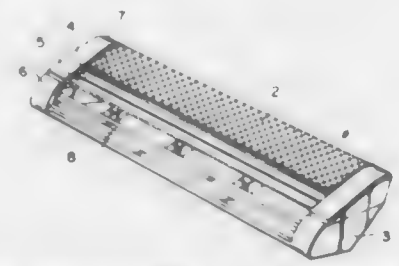
1. A mold extractor comprising:
a hammer member;
a chisel end portion;
A chisel shaft member for applying an impact force from said hammer member to said chisel end portion; said chisel end portion comprising a first straight knife edge means for separating a mold and a second straight knife edge means for cutting a mold, said first straight knife edge means and said second straight knife edge means forming a tee-shaped tip portion in a common plane, said tee-shaped tip portion being located at an end of said chisel shaft member and having a width substantially equal to a width of said chisel shaft member, said first straight knife edge means having a tapered portion with a narrow portion at an end of said tee-shaped tip portion for facilitating entry of said first straight knife edge means inside of said mold and for exposing said second knife edge means for cutting said mold, said tapered portion having a wider portion substantially equal to the width of said chisel shaft member,
claw means for removing a container lid, said claw means being mounted on said chisel shaft member in a direction to apply a force opposite in direction to a force exerted by said first and second knife edge means, said claw means having a first portion extending outwardly from a surface of said shaft member spaced from said second straight knife edge means said claw means being located on the same side of said chisel shaft member as said second straight knife edge means said claw means having an inwardly sloped portion extending from said first portion to said second straight knife edge means and being a continuation of said tapered portion of said first straight knife edge means to facilitate cutting of said mold, and wherein said hammer member comprises sliding hammer means coaxial with said chisel shaft member for applying a force to said chisel end portion in a first direction and for applying a force to said claw means in a second direction opposite side first direction

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5,005,287
PROCESS FOR MAKING A HYDROPHILIC COATING ON A FORMED PART AND SAFETY RAZOR MADE USING THIS PROCESS

Helmut Ritter, Wuppertal, Fed. Rep. of Germany, assignor to Wilkinson Sword GmbH, Solingen, Fed. Rep. of Germany

Filed May 5, 1988, Ser. No. 190,628
Claims priority, application Fed. Rep. of Germany, May 6, 1987, 3714971; Apr. 27, 1988, 3814135
Int. Cl.[5] B26B 21/44
U.S. Cl. 30—41 15 Claims



1 A razor blade unit comprising a blade platform for at least one razor blade, a surface for slidably engaging the skin of a user, and a coating on the surface for increasing the slidability of the surface, wherein said coating comprises a water-soluble polymer or copolymer of poly-N-vinylpyrrolidone, at least one radically polymerizable vinyl monomer and a photoinitiator

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5,005,288
RAZOR

Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023

Filed Mar. 8, 1990, Ser. No. 490,921
Int. Cl.[5] B26B 19/38
U.S. Cl. 30—36 20 Claims

1. A razor comprising:
a body member;
an elongate handle attached to said body member;
a blade mounted to said body member, said blade having an exposed edge and a width perpendicular to said edge
cleaning means slidably secured to said body member for slidingly engaging said blade along said exposed edge, and
actuator means operatively connected to said cleaning means for enabling an operator to shift said cleaning means parallel to said edge, said cleaning means including an elongate strip extending essentially permanently from in front of said edge across said width of said blade



5,005,289
DEVICE FOR THE CUTTING OF PLATES OF SOFT MATERIAL

Richard Vogele, Berauastrasse 367, CH-4353 Leibstadt, Switzerland

Filed Mar. 30, 1990, Ser. No. 502,508
Claims priority, application Switzerland, Apr. 5, 1989, 01263/89
Int. Cl.[5] B26D 7/10
U.S. Cl. 30—140 10 Claims

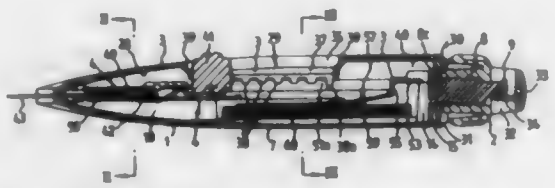


1 Transportation device for the cutting of plates of soft material with the aid of a cutting member and a base plate, the base plate having lateral guides in which a press-on cutting rule is movable up and down and guided parallel to an end of the base plate, characterized in that the lateral guides (2) are provided with electrically conducting outer lay-on strips (5), which are electrically insulated and connected to a current source, and the cutting member consisting of an electrically heatable wire (6) which is held in a frame-saw type bow (7,8), said cutting member being completely separable from said base plate and said lateral side (2), so that said heatable wire can only be heated when said cutting member is pressed by hand upon said outer lay-on strips, and said cutting member further being completely separable from said lay-on strips (5)

5,005,290
UTILITY KNIVES

Richard Gilbert, Dronfield, Great Britain, assignor to The Stanley Works Limited, Bracknell, England

PCT No. PCT/GB88/00342, § 371 Date Jan. 8, 1990, § 102(e) Date Jan. 8, 1990, PCT Pub. No. WO88/08775, PCT Pub. Date Nov. 17, 1988
PCT Filed Apr. 29, 1988, Ser. No. 435,377
Claims priority, application United Kingdom, May 8, 1987, 8710980
Int. Cl.[5] B25F *3/00*; B26B *1/00, 5/00, 1/04*
U.S. Cl. 30—162 9 Claims



1. A utility knife with
a handle comprising two elongate part shells which assemble about a longitudinal parting line;
forward wedge structure at said parting line and at a forward location of said handle;
means operable to cause one of said part shells to move longitudinally relative to the other part shell whereby component parts of said wedge structure move relatively and cause the said part shells to adopt relative transverse movement to grip or release a blade in a position protruding from a forward end of said handle;
said means operable to cause relative longitudinal movement comprising a threaded shank extending rearwardly from one part shell; a rear wall on the other part shell said rear wall being configured to provide an open slot aperture through which said shank passes and from which it may be removed transversely; and a turnable nut on said threaded shank whereby (a) relative longitudinal movement of the part shells may be achieved by turning the nut on the shank to bear upon the said rear wall, and (b) suitable positioning of the nut allows transverse threaded removal.

5,005,291
LIVESTOCK DEHORNER

Wayland F. Moore, Box 665, and Glynard Moore, Box 586, both of Matador, Tex. 79224

Filed Nov. 21, 1989, Ser. No. 439,773
Int. Cl.[5] B26B *13/00*
U.S. Cl. 30—244 17 Claims

1. An apparatus for removing horns comprising:
a first cutting blade, said first cutting blade having a first, convexly curved, non-planar leading edge; and
a second cutting blade having a second leading edge, said first and second cutting blades pivotally secured to each other;
wherein a horn to be removed is received between said first, convexly curved, non-planar leading edge of said first



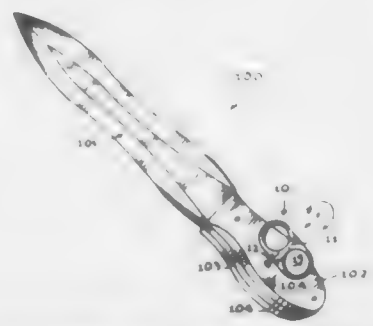
cutting blade and said second leading edge of said second cutting blade

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5,005,292
SWIVEL GRIP ARRANGEMENT FOR KNIVES

Gerald L. Jones, 2130 Deanville Rd., Richmond, Va. 23235

Continuation-in-part of Ser. No. 310,579, Mar. 23, 1989, Pat. No. 4,920,648. This application Apr. 25, 1990, Ser. No. 514,451
Int. Cl.[5] B26B *27/00, 29/00, 13/00*
U.S. Cl. 30—298 6 Claims



1. A swivel grip arrangement in combination with a knife including a knife blade having a blade stem and a knife handle having hand grip members disposed on opposite sides of the blade stem wherein the arrangement comprises:
a finger grip unit including a finger grip member having a plurality of finger holes;
an axle unit comprising an elongated axle member operatively engaged with said finger grip member; and,
an axle capturing ,unit comprising a detachable capture member which is easily detachable by hand and which radially projects from, and is secured to, the periphery of the elongated axle member; wherein, the finger grip unit is disposed on one side of the knife handle; the axle member projects through at least one of the hand grip members on said one side of the knife handle; and, the detachable capture member is disposed on the opposite side of said at least one handle grip member; whereby the finger grip member is capable of at least rotary movement relative to said knife; and, wherein the detachable capture member permits the swivel grip arrangement to be selectively engaged with the knife handle.

5,005,293
TWISTING PASTA FORK

Paul A. Di Amico, 500 E. Palm Canyon, Palm Springs, Calif. 92264

Filed Oct. 30, 1989, Ser. No. 428,908
Int. Cl.[5] A47J *43/28, 43/04*
U.S. Cl. 30—322 1 Claim



1. An eating utensil for gathering food such as pasta comprising
a stationary hollow sleeve having a closed end and an open end leading into a central bore,
a movable fork element having an elongated shaft insertably disposed within said sleeve bore in slideable and rotational relationship,
a plurality of elongated tines carried on said fork element in fixed spaced-apart relationship for collection of pasta thereon;
resilient means operably carried in said sleeve bore between said sleeve closed end and said shaft normally urging said shaft out of said sleeve,
latch member releasably coupled between said shaft and sleeve securing said shaft to said sleeve against said resilient means in one shaft position and unsecuring said shaft from securement with said sleeve in a second shaft position,
said latch means includes a spiral groove about said shaft slideably receiving a ball carried on said sleeve partially disposed within said spiral groove,
said latch means further includes means cooperating between said shaft and said sleeve for releasing said shaft for movement between said first and said second positions,
said latch means further includes an annular groove at the end of said spiral groove adjacent said fork element, and
a limit stop provided on said shaft end to said annular groove to stop said ball in order to secure said shaft in said first position

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5,005,294
SKIMMER/SEPARATOR LADLE

Leo B. Roberts, and Emma F. Roberts, both of 1507 Cerulean, Creve Coeur, Mo. 63146

Continuation-in-part of Ser. No. 538,336, Oct. 3, 1983, Pat. No. Des. 308,151. This application Nov. 30, 1989, Ser. No. 443,185
Int. Cl.[5] A47J *43/28*
U.S. Cl. 30—324 5 Claims

1. In a skimmer/separator ladle comprising
a handle;
a bowl having a spout section at one end thereof and a container section at the other end thereof, the improvement consisting of: a separator gate removably mounted in said bowl between said spout and said container section and means for removably mounting said gate on said bowl, said gate defining a passage with the bottom of said bowl for liquids from the container section to said spout section, said mounting means comprising at least one track in said bowl in which said gate is received, said at least one



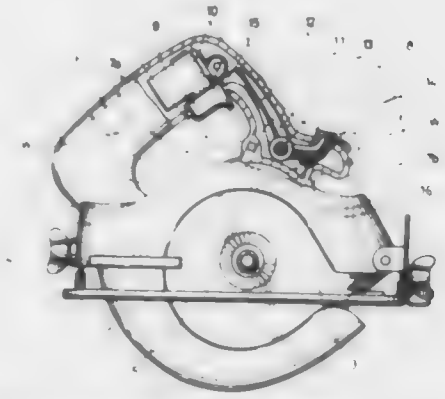
track being semicircular, the gate including semicircular sides that mate with said semi-circular track

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5,005,295
PORTABLE POWER DRIVEN TOOL

Fusao Fushiya, Anjo, Japan, assignor to Makita Electric Works, Ltd., Anjo, Japan

Filed May 14, 1990, Ser. No. 522,824
Claims priority, application Japan, May 17, 1989, 1-123073
Int. Cl.[5] B27G *19/02*
U.S. Cl. 30—390 6 Claims



1. A portable power driven tool comprising
a body having a motor therein,
a handle including a first grip portion adapted to be grasped by an operator in one hand and a second grip portion adapted to be grasped by the operator in another hand and disposed at a position different from said first grip portion,
a switch provided in a circuit connecting said motor with a power source, said switch being operably by the operator at said first grip portion so as to be turned on or off for starting or stopping said motor; and
prevention means operable by the operator at said second grip portion for preventing said motor from being started by said switch, said switch including a switch body and an operating member mounted on said first grip portion and movable between a first position to turn said switch body on and a second position to turn the same off and wherein said prevention means includes lock means which can selectively prevent said operating member from moving to said first position from said second position, said first grip portion and said second grip portion being integrally formed in said handle.

said handle including a cavity therein extending from said first grip portion to said second grip portion, and

said lock means including a lever pivotally mounted on said handle within said cavity, a lock member mounted on one end of said lever and movable between a lock position for engagement with said operating member positioned at said second position, and a non-lock position to permit movement of said operating member to said first position from said second position, and a pusher mounted on the other end of said lever and extending outwardly from said second grip portion of said handle, said pusher being operably by the operator, and a spring forcing said lever to maintain the position of said lock member at said lock position,

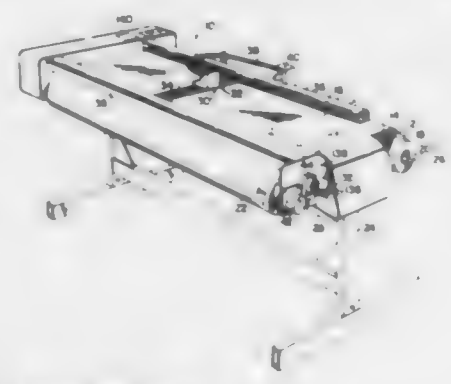
whereby said lock member can be moved to said non lock position from said lock position when said handle is grasped by the operator at said second grip portion and said pusher is pushed.

5,005,296

PLOTTER AND INK PRESSURIZING PUMP

Heinz J. Gerber, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., West Tolland, Conn.

Filed Sep. 15, 1989, Ser. No. 407,958
Int. Cl.[5] G01D 15/16; F04B 19/04
U.S. Cl. 33—18.1 10 Claims



10 A plotter comprising.

means providing a support surface for supporting a portion of a web of sheet material,

a pen mechanism moveable relative to said support surface, said pen mechanism having a pen for drawing on the portion of a web of sheet material supported by said support surface and also having an ink reservoir for containing ink used by said pen,

a web advancing means for moving a web of sheet material over said support surface to bring fresh portions of said web to said support surface for drawing thereon by said pen,

a pump for supplying pressurized air to said pen mechanism to pressurize the ink in said ink reservoir used by said pen,

drive means for driving said web advancing means and said pump in unison so that said pump is operated only when said web is moved over said support surface by said web advancing means,

said pump when operated supplying pressurized air at such a rate that, as a result of its being driven in unison with said web advancing means, so long as ink remains in said pen said pump keeps the air in said ink reservoir pressurized above a predetermined value of pressure, and said pen when empty of ink allowing air to flow therethrough at such a rate that said pump, as a result of its being driven in unison with said web advancing means, does not keep said ink reservoir pressurized at a pressure above said predetermined value, and

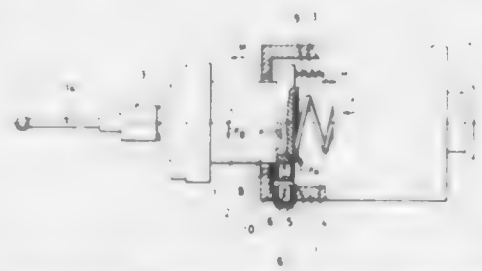
a pressure sensitive switch responsive to the pressure of the air in said ink reservoir for providing a signal when said pressure falls below said predetermined value

5,005,297

PROBE HEAD OF THE SWITCHING TYPE

Hans-Peter Achnelt, Oberkochen, and Michael Wirth, Aalen, both of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany

Filed Dec. 15, 1989, Ser. No. 451,229
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1988, 3843125
Int. Cl.[5] G01B 7/03
U.S. Cl. 33—559 12 Claims



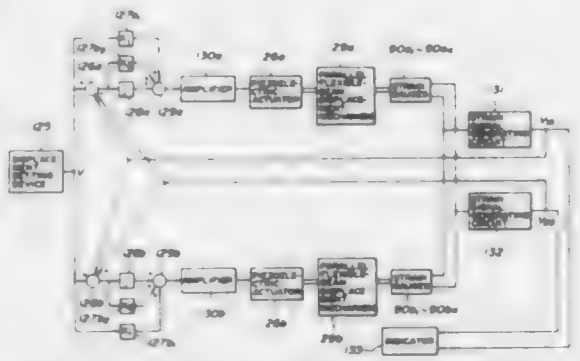
1 A probe head of the switching type, wherein a housing has a self-centering bearing for a movable part which is adapted to carry a work-contacting probe element, whereby the movable part and a probe element carried thereby present at said bearing a given gravitational weight (F_g), and wherein the movable part is held in a defined null position in said bearing by resilient loading means acting in the direction (F_f) toward said bearing, whereby for probe-head orientation in which the direction (F_f) of resilient loading is other than gravitationally vertical, said gravitational weight (F_g) establishes a force component (F_f) which acts perpendicular to the direction of resilient loading, and spaced non-contacting but magnetically reacting elements carried by the housing and by the movable part, said magnetically reacting elements being positioned to react perpendicular to the direction (F_f) of resilient loading and with a compensating magnetic-reaction force (F_a) in opposition to said force component (F_f)

5,005,298

DISPLACEMENT CONTROLLER FOR FINE POSITIONING DEVICE

Kiyoshi Nagasawa, Ibaragi; Kozo Ono, Toride; Kojiro Ogata, Ishioka; Ken Murayama, Ibaragi, and Yoshihiro Hoshino, Tsuchiura, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Filed Sep. 14, 1988, Ser. No. 244,102
Claims priority, application Japan, Sep. 9, 1986, 61-210616; Sep. 9, 1986, 61-210618; Sep. 9, 1986, 61-210619; Nov. 4, 1986, 61-262437; Nov. 29, 1986, 61-283061; Nov. 29, 1986, 61-283062; Nov. 29, 1986, 61-283063; Mar. 31, 1987, 62-76269; Mar. 31, 1987, 62-76270
Int. Cl.[5] G01B 7/00
U.S. Cl. 33—573 7 Claims



1 A controller for a fine positioning device constructed of two planar structural units connected symmetrically and equipped individually with planar flexible beams arranged in an opposing relation between two rigid members and actuators for applying forces between the two rigid members, each of the planar structural units being a parallel planar structural unit in which the planar flexible beams are arranged parallel to each other, said controller comprising

(a) displacement detection means comprising translational displacement detection means and angular displacement detection means, said translational displacement detection means comprising plural strain gauges arranged at predetermined positions on one of said planar flexible beams in one of said structural units and plural strain gauges arranged at predetermined positions on one of said planar flexible beams in the other planar structural unit, and said angular displacement means comprising plural strain gauges arranged at predetermined positions on the other planar flexible beam in said one planar structural unit and plural strain gauges arranged at predetermined positions on the other planar flexible beam in the other planar structural unit,

(b) displacement setting means for setting a target translational displacement for the fine positioning device and outputting a value corresponding to the target displacement,

(c) means for determining the degree of each translational displacement by both the plural strain gauges of said translational displacement detection means, and

(d) control means for controlling voltages to be applied to the respective actuators in such a way that the degree of a translational displacement is coincided with the value output from the displacement setting means and the degree of an angular displacement is controlled at "0".

5,005,299

SHOCK ABSORBING OUTSOLE FOR FOOTWEAR

Ian H. Whatley, 926 Cleveland St., Apt. F-101, Greeville, S.C. 29601

Filed Feb. 12, 1990, Ser. No. 478,476
Int. Cl.[5] A43B 13/00
U.S. Cl. 36—25 R 16 Claims



1 An outsole for an item of footwear, comprising

a lower surface of said outsole having a central portion and a peripheral portion,

a plurality of resilient shock absorbing strike plates extending from and disposed about said peripheral portion to define a central concavity disposed below said central portion, each said strike plate having an inwardly sloped wall adjacent said central concavity, said sloped wall being disposed at an obtuse angle to said central portion, and

an elastic membrane depending from said lower surface connecting a plurality of said strike plates and extending through said central concavity, said membrane having a stiffness less than that of one of the strike plates to which it is connected

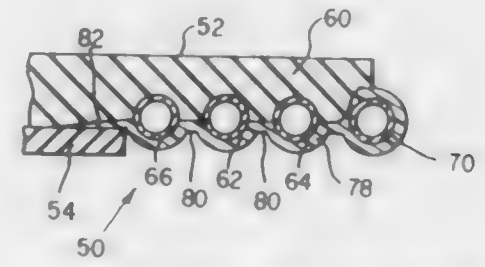
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5,005,300

TUBULAR CUSHIONING SYSTEM FOR SHOES

Juan A. Diaz, Weymouth; Mark R. Goldston, Newton; Spencer White, Marion; David E. Miller, Carver; Charles P. Legassie, Canton, all of Mass.; Wayne Russell, Wakefield, England, and Judith C. Ringel, Milton, Mass., assignors to Reebok International Ltd., Stoughton, Mass.

Continuation of Ser. No. 304,615, Feb. 1, 1989, abandoned, which is a continuation-in-part of Ser. No. 70,214, Jul. 6, 1987 abandoned. This application Mar. 7, 1990, Ser. No. 492,434
Int. Cl.[5] A43B 13/20; A43B 5/00
U.S. Cl. 36—114 4 Claims



1 An athletic shoe having a sole, said sole comprising

(a) an outsole, said outsole having a cutout region,

(b) a midsole, said midsole having a body portion, and an insert portion, wherein said insert portion of said midsole includes a plurality of substantially tubular chambers, and wherein said body portion includes seating grooves which correspond to the shape of said tubular chambers, wherein said tubular chambers are substantially positioned within said seating grooves, and

(c) a substantially transparent window disposed within said cutout region of said outsole, said transparent window being in contact with and substantially following the curvature of said tubular chambers

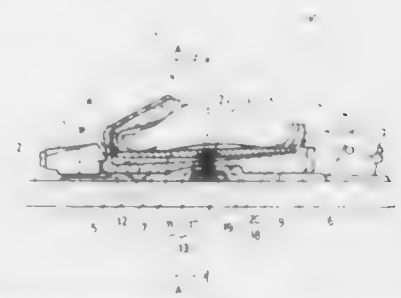
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5,005,301

SKI BOOT

Michel Mabboux, Seynod, France, assignor to Salomon S. A., Annecy Cedex, France

Filed Mar. 22, 1990, Ser. No. 497,320
Claims priority, application France, Mar. 23, 1989, 89 04200
Int. Cl.[5] A43B 5/04
U.S. Cl. 36—117 17 Claims



1. Alpine ski boot comprising

(a) a shell base (8) fitted with a walking sole (9) and surmounted by a shaft (10);

(b) a rigid inner sole (11, 11') movable vertically in relation to a bottom (12) of said shell base (8),

(c) a device (13, 13') for transmission of pressures exerted by

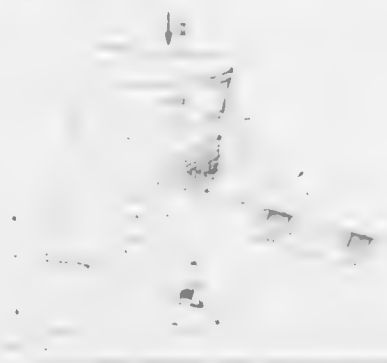
a foot from an interior to an exterior of said boot (1) onto a top (7) of a ski (2), said device comprising said inner sole (11, 11') hinged by only one of two ends (15, 16) of said inner sole to said bottom (12) of said shell base (8), and a support element (17) movable in substantially vertical translational motion and mounted at an approximate midpoint of a length of said walking sole (9), said support element cooperating with a bottom of said inner sole (11, 11') and extending from said inner sole to said exterior of said boot, through an opening (17') in said bottom of said shell base, in order to cooperate with a support area located on said top (7) of said ski (2)

5,005,302

SYSTEM FOR HOLDING A FOOT IN A SKI BOOT

Horst Bischof, Graz, and Wolfgang Skerbinjek, Baernbach, both of Austria, assignors to Koflach Sport Gesellschaft mbH & Co. KG, Voecklabruck, Austria

Filed Dec. 2, 1988, Ser. No. 279,067
Claims priority, application Austria, Dec. 3, 1987, 3194/87
Int. Cl.' A43B 5/04
U.S. Cl. 36—119 7 Claims



1 A system for securely and comfortably holding a foot in a boot when the boot is closed, particularly in the heel and instep regions, comprising

a shell covering at least the instep region of the foot

a cuff part tiltably attached to said shell having a generally curved shape,

a sole attached to said shell,

a projection part located between the heel region of the foot on one side and said shell and said cuff part on the other side,

tension means for drawing said projection part towards the heel region of the foot when the boot is closed while simultaneously exerting minimal pressure on the instep region of the foot wherein said tension means includes a first free end extending forward from the heel area of the boot across the front of said cuff part and a second free end extending forward from the heel area of the boot along the side of said shell,

closing flap means at the front of said cuff part to which the first free end of said tension means is movably attached for selecting and controlling the forces to be applied to said cuff part and for regulating the movement of the first free end during closing of said cuff part, and

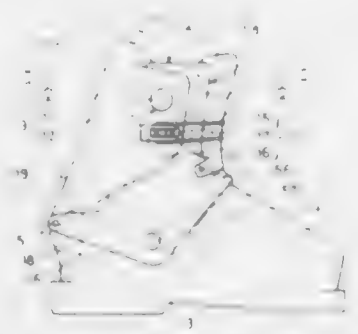
adjustment means fixed to said shell at a point spaced forward of the heel region along the length of the boot in the direction of the toe region wherein said second free end is attached to said adjustment means for selectably changing the force applied by said tension means to said projection part by altering the length of said tension means without significantly affecting the forces applied to said cuff part by said closing flap means

5,005,303

ALPINE SKI BOOT

Laurent Bonaventure, Annecy; Jean-Marie Begey, Bonne; Claude Perrissoud, Saint-Jorioz, and Serge Lagier, Rumilly, all of France, assignors to Salomon S.A., Annecy Cedex, France

Filed Dec. 8, 1989, Ser. No. 447,815
Claims priority, application France, Dec. 9, 1988, 88 16507
Int. Cl.' A43B 5/04
U.S. Cl. 36—120 46 Claims



1 A ski boot comprising a shell base, an upper journalled at least partially on said shell base, and a means for fastening and tightening said upper on said lower leg, said ski boot having an open position and a closed position, said upper comprising

(a) a central part defining a sleeve journalled with respect to said shell base about a first axis, said sleeve comprising extensions extending towards the rear from said first journal axis, said sleeve further comprising an upper part defining a front opening and a rear opening defined by two lateral walls of said sleeve

(b) a rear spoiler journalled about a second axis positioned rearwardly of said first axis, said second axis extending through said extensions of said sleeve, said rear spoiler being adapted to close said rear opening of said sleeve, and

(c) a front cuff moveable with respect to a forward area of said sleeve when in said open position, and being adapted to close said front opening of said sleeve

wherein said rear spoiler and said front cuff are moveable with respect to said central part in said open position, and said rear spoiler and said front cuff are moveable with said central part about said first axis in said closed position

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5,005,304

REPLACEABLE WEAR ELEMENT

Terry L. Briscoe, Portland, and Paul C. Sprunger, Dundee, both of Oreg., assignors to ESCO Corporation, Portland, Oreg.

Filed Feb. 12, 1990, Ser. No. 478,359
Int. Cl.' E02F 9/28
U.S. Cl. 37—141 R 10 Claims



8 An assembly of wear elements for installation on the wearable part of a structure engageable with abrasive material comprising

a relatively elongated base element adapted to be secured to said wearable part and a relatively elongated wear element releasably, reversibly mounted on said base element along the longitudinal centerlines thereof,

each of said base and wear elements having first and second pairs of longitudinally spaced-apart dovetail surfaces with the surfaces in each pair being spaced symmetrically about the centerline thereof,

one of said base and wear elements having third and fourth pairs of longitudinally spaced-apart dovetail surfaces with the surfaces in each pair being spaced symmetrically about the centerline thereof, the dovetail surfaces of said third and fourth pairs being interlaced with the dovetail surfaces of said first and second pairs,

the dovetail surfaces of the first and second pairs extending at a predetermined angle with said one element centerline and the dovetail surfaces of said third and fourth pairs extending at the reverse of said predetermined angle whereby the first and second pairs of surfaces of the other of said elements can mate with either the first and second pairs of surfaces of said one element or, when reversed end-for-end, with the third and fourth pairs of surfaces of said one element

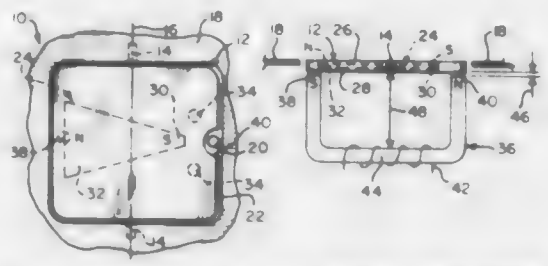
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5,005,305

MAGNETICALLY OPERATED DISPLAY DEVICE

David L. Turney, Plano, Tex., and Morris Nelson, Great Neck, N.Y., assignors to Guiton Industries, Inc., Plano, Tex.

Filed Oct. 20, 1989, Ser. No. 424,891
Int. Cl.' G09F 9/30
U.S. Cl. 40—449 20 Claims



1 An electromagnetically operated display device comprising

a frame,

a display unit, including a relatively thin substantially planar disc element having opposite faces with contrasting appearance, said disc element being mounted on said frame for rotation about a rotational axis generally in the plane of said disc element, and a permanent magnet mounted on said element to rotate therewith and defining a magnetic axis between the poles thereof, said magnetic axis being transverse with respect to said rotational axis and substantially co-planar with respect to said disc element,

a pair of magnetic pole pieces fixed in relation to said frame, said pole pieces being located adjacent opposite edges of said disc element when said disc element is displaying either of said opposite faces, said pole pieces being on opposite sides of said rotational axis and arranged relative to the locus of said permanent magnet such that when said pole pieces are oppositely magnetized in a first polarity, said disc element rotates from a first position to a second position, and when said pole pieces are oppositely magnetized in the opposite polarity, said disc element rotates from the second position to the first position, and

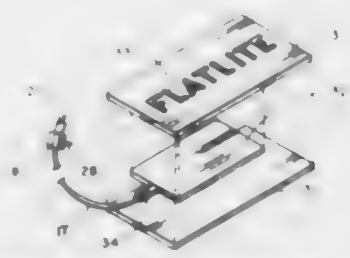
said permanent magnet having opposite poles which are asymmetrical and differ one from the other in magnetic flux distribution characteristics, the attractive and repulsive interaction of said respective permanent magnet poles with said pole pieces being unequal.

5,005,306

ILLUMINATED VEHICLE SIGN

William G. Kinstler, 2 Buckingham Ct., Rockledge, Fla. 32955

Filed Jun. 21, 1989, Ser. No. 369,692
Int. Cl.' G09F 21/04
U.S. Cl. 40—591 7 Claims



1 An illuminated vehicle sign comprising

a flexible electroluminescent panel having a front planar surface which directly generates illumination when excited by an alternating current and a rear opaque surface,

a thin, flat, flexible opaque shield having predetermined cutout areas to form designs therein attached over said flexible electroluminescent panel planar surface so that the flexible electroluminescent panel and attached flexible opaque shield form a flexible sign panel having portions of said electroluminescent panel visible through said opaque shield whereby indicia and graphic designs may be defined with visible electroluminescent light,

magnetic means attached to said rear opaque surface for removably attaching said electroluminescent panel to a vehicle body,

circuit means including a pair of conductors attached to said electroluminescent panel for applying an alternating current thereto and a DC to AC converter for converting said vehicle direct current to alternating current, and

coupling means for removably connecting said pair of conductors of said circuit means between a vehicle battery circuit and to said DC to AC converter, said coupling means including a cigarette lighter plug attached to said circuit means conductors whereby said cigarette lighter plug can be attached or removed to connect or disconnect the vehicle power to said electroluminescent panel, whereby an illuminated vehicle sign can be quickly attached and removed from the side of the vehicle

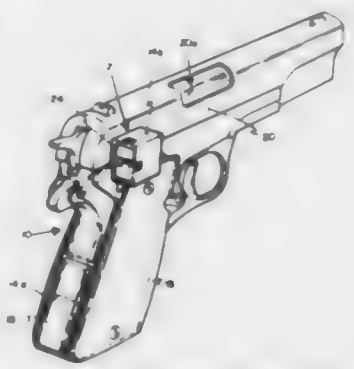
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5,005,307

CARTRIDGE MONITORING AND DISPLAY SYSTEM FOR A FIREARM

John N. Horne, 2274-B 47th St., and Michael A. Wolf, 3195 Arizona, both of Los Alamos, N. Mex. 87544

Filed Dec. 29, 1989, Ser. No. 458,582
Int. Cl.' F41A 9/62
U.S. Cl. 42—1.02 11 Claims



1 In a semiautomatic or automatic firearm having a slide

means which slides relative to a frame upon firing of the firearm, and wherein said firearm is loaded by magazine means inserted into said frame of said firearm and from which cartridges are fed into the firearm, a cartridge monitoring and display system comprising,

slide switch means affixed to said frame, said slide switch means including a cam means engaged by said slide means upon sliding of said slide means relative to said frame, said slide switch means being operable to produce a slide signal upon sliding of said slide means relative to said frame;

magazine switch means affixed to said frame, said magazine switch means being operable to generate a magazine signal upon insertion and withdrawal of a magazine from said firearm,

a programmed control circuit operable to receive said slide and magazine signals,

a visual display unit affixed to said frame and driven by said control circuit, and

wherein said programmed control circuit operates to receive said slide and magazine signals, and to produce on said visual display unit a visual display of the number of cartridges contained in the firearm

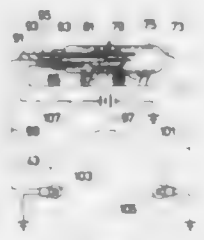
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5,005,308

TILT INDICATOR FOR FIREARM SCOPES

William K. Parks, P.O. Box 134, Lipan, Tex. 76462

Filed Dec. 22, 1989, Ser. No. 455,622
Int. Cl.' F41G 1/38
U.S. Cl. 42—101 13 Claims



1 An improved firearm scope for coupling to a firearm in axial alignment with the firearm barrel, which is subjected to shocks when said firearm is discharged, comprising

a tubular scope barrel;

an objective lens assembly coupled to one end of said tubular scope barrel for receiving a target image,

an erector lens assembly disposed within said tubular scope barrel for processing said target image;

an ocular lens assembly coupled to the opposite end of said tubular scope barrel for viewing said target image,

a reticle visible through said ocular lens for defining an aiming point in said target image;

wherein accuracy of said firearm is optimized when said firearm scope and firearm barrel are held substantially vertically, and

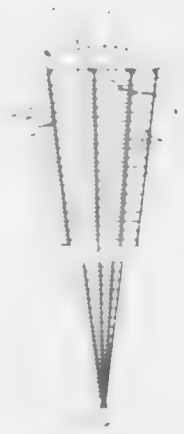
an electrically actuated indicator for providing an illuminated visual display indicating tilt of said firearm scope and barrel from vertical, which is visible through said ocular lens assembly when electrically illuminated, which is physically stationary relative to said reticle, and which does move relative to said reticle in response to shock when said firearm is discharged

5,005,309

INSTRUMENTED DRIFT FISH AGGREGATING DEVICE AND METHOD

John D. Hall, 2255 Ygnacio Valley Rd., Ste M-1, Walnut Creek, Calif. 94598

Filed Aug. 25, 1989, Ser. No. 398,778
Int. Cl.' A01K 91/00
U.S. Cl. 43—4 22 Claims



1 A drift fish aggregating device comprising

buoy means adapted for flotation on the surface of water, said buoy means being non-tethered and having a first or beam dimension normally parallel with the surface of the water,

a plurality of ballast suspension lines, each line connected at one end to said buoy means in the vicinity of the periphery of the buoy and extending downwardly therefrom, the length of said suspension lines defining a draft dimension, the beam to draft ratio being so configured as to create a very stable drifting device,

fish attraction means secured to said ballast lines,

a ballast weight secured to the other ends of said suspension lines and hanging below said buoy means, and

means mounted to said buoy means to facilitate location of said drift fish aggregating device

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5,005,310

FLOATING TIP-UP FISHING RIG

John R. Rinehart, Milton, Wis., assignor to American Institute of Taxidermy, Inc., Janesville, Wis.

Filed May 1, 1990, Ser. No. 517,024
Int. Cl.' A01K 97/12
U.S. Cl. 43—17 12 Claims

1 A floating tip-up fishing rig comprising

a float body,

a flagpole;

spring means mounted atop said body near one end thereof and connected to the bottom portion of said flagpole, urging it to an upright position,

a tube disposed vertically through said float body centrally thereof, and extending below the body;

a fishline having its inner end connected to said tube and having a portion coiled about the tube above the bottom thereof and immediately below said body;

a cotter pin having an eye end, on open flared end, and an elongated closed portion between said ends,

string means extending from a central portion of said flagpole down into said tube, connecting said flagpole to the eye end of said cotter pin;

said tube having a vertical slit therein extending upwardly from its lower end up to near the bottom of the coiled portion of the fishline,



whereby said fishline may be pulled through said slit from the coiled portion of the fishline to extend into said tube and be set in to the closed portion of said cotter pin

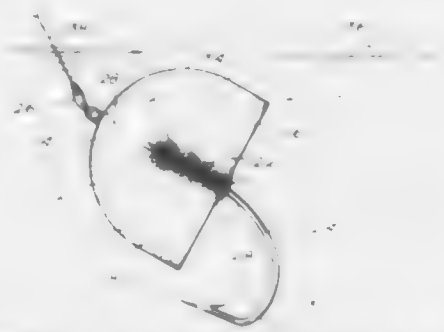
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5,005,311

SELF-COLORING FISHING LURES

Jack W. Dawson, 625 Wendy Way, Paradise, Calif. 95969, and Norbert M. Perrault, P.O. Box 176, Tehama, Calif. 96090

Filed Jan. 29, 1990, Ser. No. 471,974
Int. Cl.' A01K 85/00
U.S. Cl. 43—42.32 6 Claims



1 A fishing lure having a lure body made by moldable structural materials and composition for self-coloring when wet, comprising,

a fishhook having an eye at one end, and a shank extending from said eye to a pointed hook of said fishhook,

said lure body structured of a core material attached to said shank, said core material extending from adjacent said eye along said shank and terminating prior to reaching said pointed hook, said core material being a flexible fast colored material which retains its coloring when wet,

said lure body further structured of a covering material generally covering said core material, said covering material fabricated of soft pliable and resilient expanded open cell plastic, said covering material attached to said fishhook shank adjacent said eye, said covering material extending from adjacent said eye along said shank to generally cover said core material and then terminate prior to reaching said pointed hook, said covering material further being sufficiently thin-walled to become translucent upon submergence in water through expansion of said open cells absorbing the water, the translucence of the wet said covering material providing means allowing said core material to become visible through said covering material whereby the color of at least a portion of said lure body appears to change

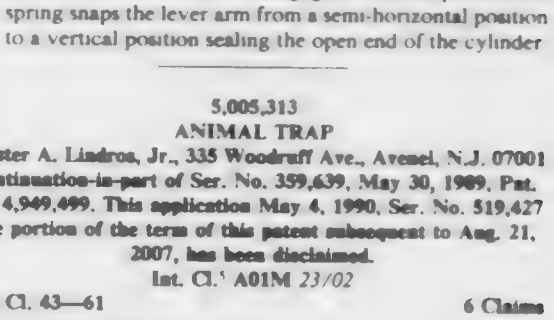
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5,005,312

DISPOSABLE MOUSE TRAP

Richard E. Lutes, P.O. Box 144, Tiskilwa, Ill. 61368

Filed Aug. 6, 1990, Ser. No. 563,297
Int. Cl.' H01M 23/18
U.S. Cl. 43—61 5 Claims



1 A disposable mouse trap comprising

a cylindrical compartment having two open ends,

an end cap coupled to one of the open ends of the cylindrical compartment closing said end,

a pin having a head positioned through the cylindrical compartment adjacent its closed end, the head of the pin being outside the cylindrical compartment,

bait attached to the end of the pin within the cylindrical compartment,

a lever arm having a semi-circular groove at one end suitable for engaging the pin, the other end having a semi-circular configuration suitable for closing the other open end of the cylindrical compartment when the lever arm is activated,

a pair of spring holding tabs coupled adjacent to the open end of the cylindrical compartment and, positioned parallel to each other, each tab having an aperture therein,

a spring having two ends, said spring being positioned between said spring holding tabs,

a pair of lever arm tabs coupled to the underside of the lever arm adjacent the semi-circular end thereof, the tabs being parallel to each other and, each tab having an aperture therethrough,

a spring holding pin coupling the spring to the spring holding tabs, and the lever arm tabs, the pin passing through the apertures of the spring holding tabs and the lever arm tabs, wherein one end of the spring abuts the underside of the lever arm and the other end of the spring abuts the cylindrical compartment so that when a mouse activates the pin, the lever arm is disengaged from the pin and the spring snaps the lever arm from a semi-horizontal position to a vertical position sealing the open end of the cylinder

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5,005,313

ANIMAL TRAP

Chester A. Lindros, Jr., 335 Woodruff Ave., Avenel, N.J. 07001

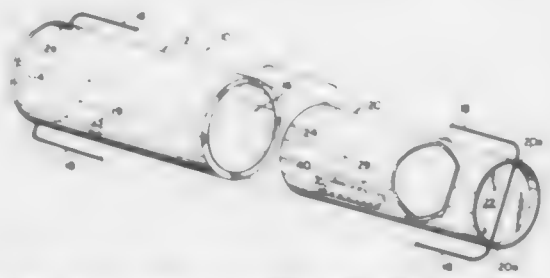
Continuation-in-part of Ser. No. 359,639, May 30, 1989, Pat. No. 4,949,499. This application May 4, 1990, Ser. No. 519,427
The portion of the term of this patent subsequent to Aug. 21, 2007, has been disclaimed.
Int. Cl.' A01M 23/02
U.S. Cl. 43—61 6 Claims

1 An animal trap, comprising

(a) an outer housing having a closed end and an open end;

(b) an inner housing having a closed end and an open end mounted within and movable relative to said outer housing to define a trapping area within said inner and outer housings,

(c) at least one trap opening in said inner housing for an animal to enter said trapping area,
(d) means for moving said inner housing into said outer housing to close off said trap opening to trap an animal in said trapping area;
(e) means for guiding said inner housing into said outer housing; and

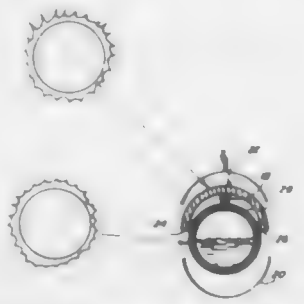


(f) bait means disposed in contact with said guiding means for holding said trap opening in an open position so that when an animal in said trapping area eats said bait means, said moving means moves said inner housing into said outer housing to close off said trap opening to trap an animal in said trapping area.

5,005,314
SAP COLLECTING DEVICE

Jean-Marie Chabot, St. Damien, Canada, assignor to IPL, Inc., St-Damien, Canada

Filed Nov. 13, 1989, Ser. No. 434,216
Int. Cl.[5] A01G 23/10; F24J 3/02
U.S. Cl. 47—50 6 Claims



1. A device for use in conducting sap collected from maple trees to a sap-processing unit, particularly during sunny days, comprising:
a tubular member in which sap is contained and conveyed to the sap-processing unit; and
means mounted exteriorly on said tubular member for preventing high angled sun rays to be absorbed in said tubular member but allowing low angled sun rays to be absorbed in part of said tubular member for defreezing sap contained in frozen state in said tubular member

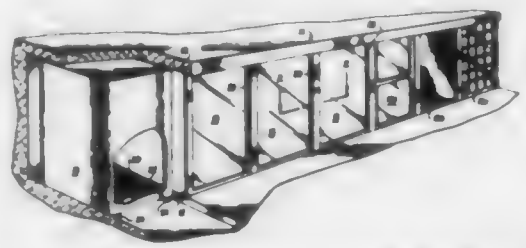
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5,005,315
MULTI-PANEL SLIDING CLOSURE UNIT

Arthur J. Jackson, Jr., 6310 Barrister Place, Alexandria, Va. 22307

Filed May 11, 1990, Ser. No. 522,031
Int. Cl.[5] E05D 15/26
U.S. Cl. 49—127 13 Claims

1. A multi-panel sliding closure unit comprising:
an upper track extending across the top of a rectangular opening in a wall;
a lower track vertically under said upper track and similarly extending across the bottom of said rectangular opening in a wall;
a storage module at one end of said opening and means mounting said storage unit for lateral movement in relation to said upper and lower tracks,
a plurality of closure panels mounted for sliding movement along said upper and lower tracks, each closure panel having vertical side edges that are positioned to be in edge-to-edge alignment when said closures panels are slid out between said upper and lower tracks,



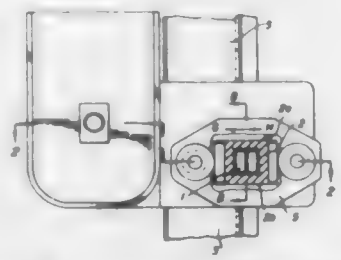
a plurality of storage positions in said storage module for serially receiving said closure panels as they are slid onto said storage module from said tracks,
a plurality of separate removable jamb posts positionable between facing vertical side edges of adjacent closure panels, said jamb posts being of a length to interfit between said upper and lower tracks and having a cross-sectional shape for interfitting with the vertical side edges of adjacent closure panels

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5,005,316
PANE HOLDER MOUNTING SYSTEM FOR A WINDOW LIFT

Lothar Horalvius, Ehringhausen, Fed. Rep. of Germany, assignor to Kuster & Co., Ehringshausen, Fed. Rep. of Germany

Filed Feb. 6, 1990, Ser. No. 474,397
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1989, 3903556
Int. Cl.[5] E05F 11/38
U.S. Cl. 49—348 6 Claims



1 A window lift mechanism comprising:
a slide block for lifting a window, said block slidingly engaging a guide rail;
a mounting pin for a window pane holder attached to said slide block;
a bushing interposed between said window pane holder and said mounting pin, said bushing including rounded outer edge portions which engage similarly rounded inner surface portions of a slot located in said window pane holder, the combination of said rounded inner and outer surface and edge portions allowing limited tilting to occur between said window pane holder and said bushing with respect to the axis of said mounting pin.

5,005,317
BOTTOM WIPER SEAL FOR A RETRACTABLE CAR WINDOW

Guy Saint-Louis Augustin, Montargis, and Henri Guillon, Vaux sur Seine, both of France, assignors to Hutchinson, Paris, France

Filed Jun. 28, 1989, Ser. No. 372,876
Claims priority, application France, Jun. 29, 1988, 88 08728
Int. Cl.[5] E06B 7/16
U.S. Cl. 49—495 9 Claims



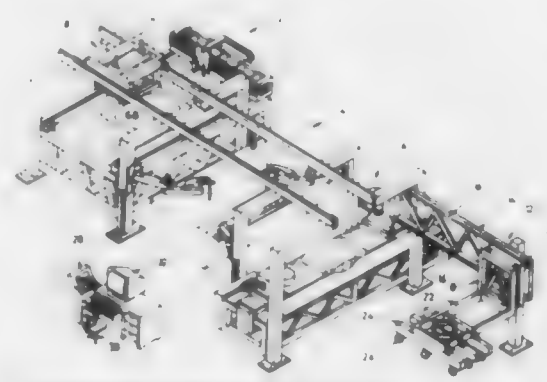
1 In a bottom wiper seal for a moving glass which comprises a stub or clamp for securing the bottom wiper seal on the frame of a door and a first sealing lip which cooperates with the moving glass carried by the stub or clamp, the first sealing lip being covered on portions liable to come into contact with the glass by means of a relatively flexible covering of flock, the improvement which comprises a second lip connected to the stub or clamp which is offset downwards relative to the first sealing lip and which is shaped and disposed so as to contact the moving glass only when the glass is fully extended, the second lip bearing sufficiently against the moving glass to provide a satisfactory seal and the second lip having a coating on its operative portion which facilitates sliding and the second lip is connected to the stub via a zone of greater elasticity than the second lip

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5,005,318
METHOD AND APPARATUS FOR CUTTING GLASS BLANKS

Aaron Shafir, Tel Aviv, Israel, assignor to O/Y Kyro A/B, Tamglass Corp., Tampere, Finland

Filed Jun. 30, 1988, Ser. No. 213,406
Int. Cl.[5] C03B 33/02
U.S. Cl. 51—5 C 13 Claims



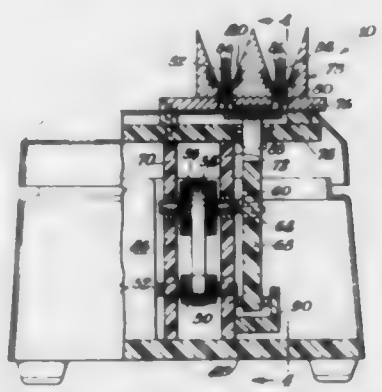
1 Apparatus for cutting glass blanks according to a particular contour, comprising
a scoring machine including a separate drive therefor for scoring the contour on the glass blank,
a breaking machine for severing the scored contour from the glass blank,
a grinding machine including a table for supporting the glass blank, two grinding heads on opposite sides of said table, and a motor for driving each of said grinding heads, for smoothing the edges of the severed blank;
a conveyor for conveying the glass blank to each of the above machines for performing their respective scoring, severing and grinding operations thereon,
and a control system for controlling said scoring machine including its separate drive according to a digital scoring file, for controlling said breaking machine according to a digital breaking file, and for controlling said grinding machine including said two grinding head motors according to a digital grinding file

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5,005,319
KNIFE SHARPENER

Daniel D. Friel, Greenville, Del., assignor to Edgecraft Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 304,323, Jan. 31, 1989, Pat. No. 4,897,965, which is a continuation-in-part of Ser. No. 917,601, Oct. 6, 1986, Pat. No. 4,807,399, which is a continuation-in-part of Ser. No. 588,794, Mar. 12, 1984, Pat. No. 4,627,194, and Ser. No. 855,147, Apr. 23, 1986, Pat. No. 4,716,689, which is a continuation-in-part of Ser. No. 588,795, Mar. 12, 1984, abandoned. This application Aug. 22, 1989, Ser. No. 396,974
Int. Cl.[5] B24B 3/54, 1/00
U.S. Cl. 51—58 14 Claims



1 A knife sharpening apparatus comprising a housing, a honing section in said housing, a sharpening member in said honing section, said sharpening member having a flat outer face with abrasive particles mounted thereon, guide means in said honing section at a non-parallel and non-perpendicular angle to said flat outer face for disposing the face of a knife against said guide means with the cutting edge facet of the knife against said sharpening member parallel to said flat outer face, drive means for orbitally driving said sharpening member, and said drive means imparting an orbital motion to each of said particles of no greater than ‖ inch effective diameter and an orbital velocity of no greater than 1500 feet/minute.

5,005,320
METHOD AND APPARATUS FOR TAPERING AN END OF AN ELONGATED OBJECT

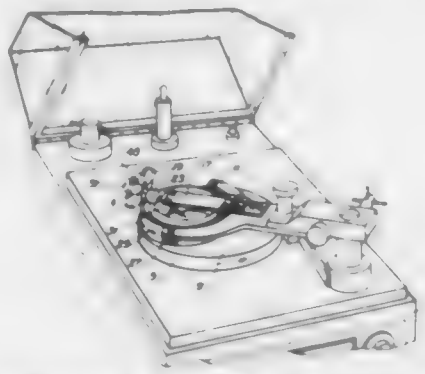
Robert J. Furmanak, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 30, 1990, Ser. No. 502,010
Int. Cl.[5] B24B 19/00, 5/00
U.S. Cl. 51—131.1 2 Claims

1. A conveniently demountable apparatus, for use in conjunction with a standard polishing machine, for tapering an end of an optical fiber comprising:
a. a holder assembly means for holding said optical fiber,
b. a translatable ball bearing friction mounted and centered

on the longitudinal axis of said holder assembly means, said bearing being translatable along the length of said holder assembly means,

c a ring having a substantially flat bottom surface, said flat bottom surface being disposed to ride on the rotating polishing surface of said polishing machine, and a top surface having a groove thereon upon which said ball bearing rotates, said groove comprising a pair of angled



surfaces which are disposed in a V-shape so that as said bearing rotates thereon, the paths of said surfaces' contact points on said ball bearing are substantially circular with the radius of one being substantially an integer multiple of the other, and

d means for guiding said holder assembly means and said ring during a tapering operation so that said ring and said holder means are allowed to rotate but not translate

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5,005,321

PROTECTIVE HOOD FOR GRINDING MACHINES, PARTICULARLY ANGLE GRINDERS, AND SUITABLE FASTENING RECEPTACLE FOR THE LATTER

Walter Barth; Erich Borst; Winfried Helm, and Manfred Stäbler, all of Leinfelden-Echterdingen, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE87/00407, § 371 Date Apr. 28, 1989, § 102(e) Date Apr. 28, 1989, PCT Pub. No. WO88/03077, PCT Pub. Date May 5, 1988

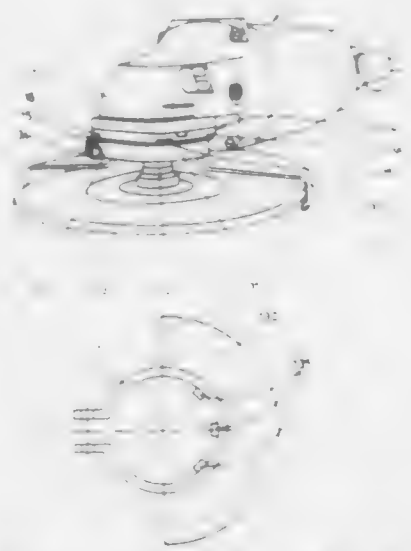
PCT Filed Sep. 5, 1987, Ser. No. 347,808

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1986, 3636601

Int. Cl.' B24B 23/02

U.S. Cl. 51—170 T 18 Claims

1 A protective hood assembly for a grinding machine having a predetermined nominal rotational speed and including a housing a shaft projecting from the housing for receiving at a free end thereof a grinding disc having a predetermined diameter corresponding to the nominal rotational speed of the grinding machine, said protective hood assembly comprising a protective hood having a predetermined size corresponding to the predetermined diameter of the grinding disc, and a fastening receptacle attachable to the grinding machine housing and having a shoulder for receiving said protective hood, said protective hood including a portion for securing said protective hood on said shoulder, and locking means comprising a predetermined number of locking members arranged on said securing portion in a predetermined manner with each locking member having a predetermined shape and size, at least one of the predetermined number of said locking members, the predetermined manner of arrangement of said locking members, the predetermined size of each locking member, and the predetermined shape of each locking member defining the predetermined size of said protective hood, said shoulder of said fastening receptacle including opening means for receiving said locking means, comprising a predetermined number of openings, and arranged in a predetermined manner with each opening having a predetermined size and a predetermined shape, at least one of the predetermined number of said openings, the predetermined arrangement of said opening means, the predetermined size of each opening, and the predetermined shape of each opening being selected to correspond to said at least one of the predetermined number of locking members, the predetermined manner of arrangement of the locking members, the predetermined size of each locking member, and the predeter-



mined shape of each locking member defining the predetermined size of said protective hood, respectively, in such a way as to prevent mounting on said fastening receptacle protective hoods having a size exceeding said predetermined size while permitting mounting on said fastening receptacle protective hoods having a size smaller than said predetermined size of said protective hood

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5,005,322

INFLATABLE TENT STRUCTURE

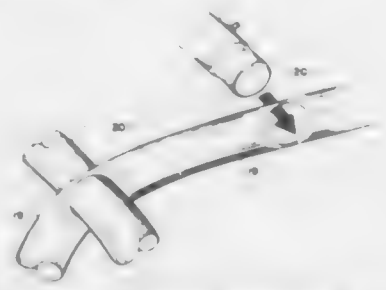
Michael J. Mattick, and John W. Huffman, both of Charlotte, N.C., assignors to Pneumo-Beam International, Ltd., Charlotte, N.C.

Continuation-in-part of Ser. No. 145,051, Jan. 19, 1988, Pat. No. 4,876,829. This application Oct. 30, 1989, Ser. No. 428,765

The portion of the term of this patent subsequent to Oct. 31, 2006, has been disclaimed.

Int. Cl.' E04B 1/34

U.S. Cl. 52—2 J 12 Claims



1 An inflatable tent structure, comprising

(a) a plurality of mechanically interconnected but pneumatically separate, elongate inflatable tubes defining the perimeter of the tent structure for being separately inflated,

(b) a plurality of valves pneumatically connected to respective separately-inflatable tube for inflating the tubes,

(c) a plurality of wall panels suspended from and between the tubes to define the enclosure of the tent whereby the tubes define a support structure exterior to the enclosure of the tent

5,005,323

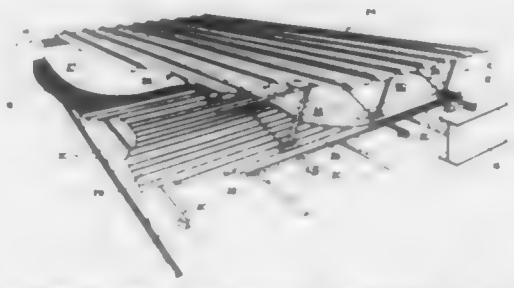
APPARATUS FOR SECURING A ROOFING SUPPORT SPACER TO UNDERLYING SUPPORT STRUCTURES

Harold G. Simpson, Mustang, and Charanjit S. Bindra, Edmond, both of Okla., assignors to Harold Simpson, Inc., Oklahoma City, Okla.

Continuation of Ser. No. 90,689, Aug. 28, 1987, abandoned, which is a continuation-in-part of Ser. No. 378,241, May 14, 1982, Pat. No. 4,528,789, Ser. No. 428,568, Sep. 30, 1982, Pat. No. 4,602,468, Ser. No. 481,844, Apr. 13, 1983, Pat. No. 4,700,522, Ser. No. 481,858, Apr. 4, 1983, Pat. No. 4,525,976, Ser. No. 503,299, Jun. 10, 1983, Pat. No. 4,534,148, Ser. No. 568,083, Jan. 4, 1984, Pat. No. 4,597,234, Ser. No. 698,082, Feb. 4, 1985, abandoned, Ser. No. 713,319, Mar. 18, 1985, Pat. No. 4,620,397, and Ser. No. 745,320, Jun. 14, 1985, abandoned. This application May 17, 1989, Ser. No. 353,694

Int. Cl.' E04B 7/02

U.S. Cl. 52—90 2 Claims



1 In a roof assembly for a building wherein the building is provided with a new roof top surface spatially disposed and supported by roof support spacers above an existing corrugated roof and deck attached to supporting joints, the improvement comprising

spacer means for supporting the roof support spacers thereon, the spacer means connectable to a joist supporting the existing deck, the existing roof is provided with a hole alignable with the joist, the spacer means comprising

a spacer member having a hole therethrough, the spacer member dimensioned for receipt in one of the corrugations of the corrugated roof, and

a support channel having a base and a pair of downwardly extending channel legs, the channel legs received through the hole in the existing roof and supported above the underlying joists, and

connector means for interconnecting the spacer means and the joist, the connector means comprising

a J-bolt having a threaded upper end an a lower J-end, the threaded upper end positionable through the hole in the spacer member such that the J-end engages one side of the joist, and

tinner-man nut means positionable about the upper end of the J-bolt for engaging the joist and stabilizing the J-end in the joist

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5,005,324

SHIPPING AND STORAGE CASING

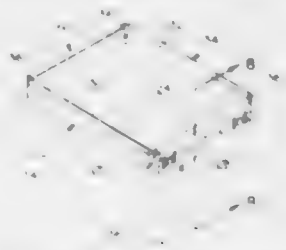
Seymour Baum, Englewood Cliffs, N.J., assignor to Gusseo Manufacturing, Inc., Brooklyn, N.Y.

Filed Aug. 7, 1990, Ser. No. 564,162

Int. Cl.' E04B 1/00

U.S. Cl. 52—98 5 Claims

1 A shipping and storage casing of sheet material having a unitary metal reinforcing member affixed to the edge of the sheet material along each of two opposite sides of an opening into the casing, each reinforcing member comprising a first elongated substantially planar leg portion affixed to one face of the sheet material adjacent the opening, a narrow substantially planar flange portion joined along one edge integrally to the first leg portion along one edge thereof along a continuous smooth juncture free of interruptions and disposed substantially orthogonally to the first leg portion such as to overlie the edge of the sheet material, and a second elongated substantially planar leg portion joined integrally to the other edge of the flange portion along a bending line defined by vestigial segments of the member located between spaced apart perforations and being adapted to be bent along the bending line into engagement with the other face of the sheet material adjacent the edge thereof



5,005,325

POSITION ADJUSTMENT LEG FOR PARTITION PANEL ASSEMBLY

Raymond P. Dull, Spring Lake; Bernard R. Lavas, and William D. Baxter, both of Muskegon, all of Mich., assignors to The Shaw-Walker Company, Muskegon, Mich.

Division of Ser. No. 275,718, Nov. 23, 1988, abandoned. This application Apr. 9, 1990, Ser. No. 505,991

Int. Cl.' E04B 2/82

U.S. Cl. 52—126.4 2 Claims



1 A leg for supporting an open office partition panel and a base assembly for such a panel, said leg including

end and side walls forming an upstanding structure of generally U-shaped horizontal cross-section,

laterally-extending feet formed at the bottom of said side walls,

laterally-extending brackets formed at the top of said side walls,

the bottom of said end wall bent to extend horizontally between said side walls to form a bottom wall,

said end wall projecting substantially above said side walls,

ledges formed on said end wall, and means to receive a threaded glide formed at the bottom of the walls

5,005,326

STRUCTURE VIBRATION PROOFING OR SUPPRESSING SYSTEM WITH DIFFERENTIAL DOUBLE LEVER MECHANISM

Shinji Ishimaru, 11-17, Hanaguri 4, Sohka-shi, Saitama-ken; Takahiro Niiya, 872, Hazama 2-chome, Funabashi-shi, Chiba-ken, and Kazuko Ishimaru, 11-17, Hanaguri 4, Sohka-shi, Saitama-ken, all of Japan

Filed Jan. 25, 1990, Ser. No. 470,206
Claims priority, application Japan, Feb. 15, 1989, 1-35781
Int. Cl.' E04B 1/98, E04H 9/02
U.S. Cl. 52—167 R 8 Claims



1 A vibration proofing/suppressing system comprising

a first rigid member extending and translatable in a first direction,

a second rigid member extending parallel to said first rigid member and translatable in the first direction relative to said first member,

a third member interposed between said first and second rigid member,

a fifth member interposed between said first and second rigid members,

guide means interposed between said first, third and fifth members and said second, third and fifth members for guiding translation of said third and fifth members along the direction of relative movement between said first and second members,

at lest one first lever means for connecting said first member to said fifth member, said one first lever means being pivotally connected to a first point on said third member such that said one first lever means is movable around the first point,

at least one second lever means having a slightly different lever ratio than said one first lever means for connecting said second rigid member to said fifth member, said one second lever means being pivotally connected to a second point on said third member such that said one second lever means is movable around the second point

5,005,327

CONTAINER, PARTICULARLY A SILO CONTAINER

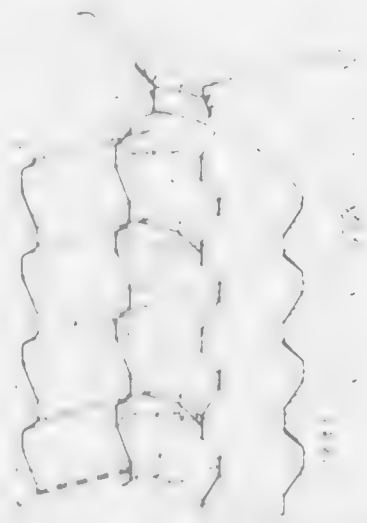
Markus Becker, Habichtsteiner Weg 20, D-3501 Habichtswald-/Ehlen, Fed. Rep. of Germany

Filed Oct. 30, 1989, Ser. No. 428,887
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1988, 3837475
Int. Cl.' E04H 7/00
U.S. Cl. 52—192 15 Claims

1 A container, particularly a silo container, comprising

a plurality of wall parts having a vertical height and having horizontal crimps extending therethrough substantially throughout the vertical height, wherein at least two of said wall parts form a region with a joint,

at least one vertically standing support element connecting said at least two wall parts with each other at the joint



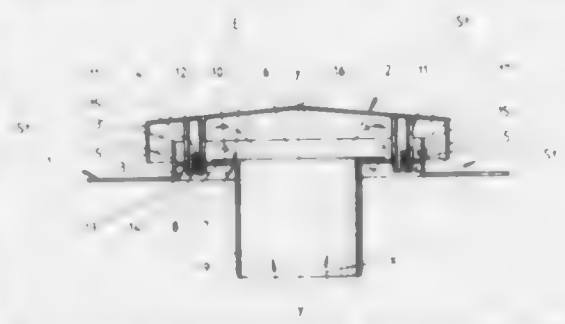
said at least one vertically standing support element formed as a metal support plate and having legs with crimps matching the crimps of said wall parts within the region of the joint for positively receiving the wall parts

5,005,328

ROOFING VENT COVER WITH PLUG DETENT CONNECTION

Johannes Holtgreve, Schwelm, Fed. Rep. of Germany, assignor to Johannes Klöber, Ennepetal, Fed. Rep. of Germany

Filed Sep. 15, 1989, Ser. No. 408,121
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1988, 8813239[U]
Int. Cl.' E04B 7/00
U.S. Cl. 52—199 8 Claims



1 A roofing vent cover having the shape of a dormer, the vent cover comprising

a tubular section provided on a lower side of the vent cover, said tubular section having a periphery at an upper end of the tubular section,

an arm assembly having a plurality of arms extending from said periphery radially outward of said tubular section,

a cap-shaped hood located on an upper side of the vent cover and spaced-apart from said arm assembly to leave free air passage channels between said hook and said arm assembly,

plug-detent connection means for securing said hood to said arm assembly, said plug-detent connection means being disposed between said hood and said arm assembly, there being an insertion opening provided in an inner space of the hood between elements of the plug detent connection means for receiving said tubular section, and

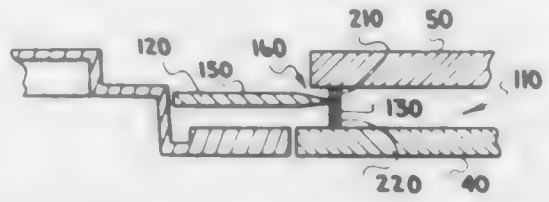
wherein said arms form a wall of a roof cover plate transverse to an axis of said tubular section, the transverse wall including a web which forms a part of said plug-detent connection means to enable engaging the plug-detent connection means extending from the hood into the transverse wall of the roof cover plate which forms the web

5,005,329

WINDOW SEAL FOR OPTICAL SCANNER

Theodore H. Schorr, Eugene, Oreg., assignor to Spectra-Physics, Inc., San Jose, Calif.

Filed Feb. 17, 1989, Ser. No. 312,696
Int. Cl.' G06K 7/10
U.S. Cl. 52—204 12 Claims



1 A window assembly for an optical scanner comprising

a first window,

a second window spaced apart from said first window and substantially parallel thereto forming a substantially transparent gap between said first window and said second window,

said first window having a first surface and a second surface,

said second window having a third surface and a fourth surface,

said second surface and said third surface adjacent said gap,

a seal rim,

said seal rim comprising a rim member and a seal member attached to said outer rim member,

said rim member comprising a tapered region,

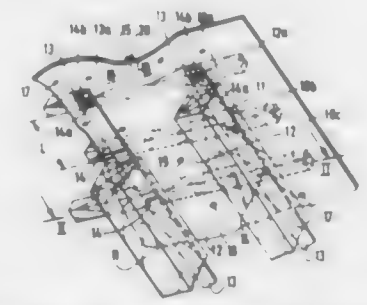
said seal member having at least one downwardly depending flange in unbonded contact with said second surface and at least one upwardly depending flange in unbonded contact with said third surface

5,005,330

ASSEMBLY OF BATTENS PARTICULARLY FOR THE COVERING OF SLOPING ROOFS

Serge Todisco, Le Bourget, France, assignor to Societe Moderne d Batiment Industriel, Le Bourget, France

Filed Aug. 21, 1989, Ser. No. 396,358
Claims priority, application France, May 26, 1989, 89 06904
Int. Cl.' E04D 12/00
U.S. Cl. 52—303 4 Claims



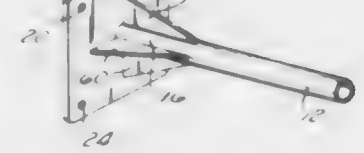
1 An assembly of battens which enables them to be stored and rapidly put in place, at the desired spacing, on elements constituting a receiving surface for the subsequent mounting of covering elements, and consisting of a series of parallel and regularly spaced battens attached to a continuous sheet formed from a flexible material, the battens being moreover mutually joined together by parallel, thin, flexible strips that are resistant and substantially inextensible, arranged transversely with respect to the axis of said battens and fixed at their intersection therewith, the continuous sheet having a good tear-off and tear resistance and being inserted between the battens and the resistant parallel strips the spacing of which substantially corresponds to the spacing of the above said elements constituting a receiving surface, and the continuous sheet being held in place by stapling said strips onto the battens at their intersection therewith, wherein the length of the flexible sheet between two adjacent resistant parallel strips is greater than the length of the battens separating these two adjacent strips whereby the flexible sheet when laid, forms a trough or gutter for collection and drawing off any water falling thereon, and wherein the continuous flexible sheet includes perforations allowing air ventilation through the flexible sheet and which are disposed in regions of the sheet that are separate from the areas of said trough or gutter

5,005,331

CONCRETE DOWEL PLACEMENT SLEEVES

Ronald D. Shaw, 1988 Pelican; Leory E. Shaw, 2861 Tobago, both of Costa Mesa, 92626; Lee A. Shaw, 1924 Irvine Ave., Newport Beach, Calif. 92660, and

Continuation of Ser. No. 263,556, Oct. 27, 1988, abandoned. This application Apr. 10, 1990, Ser. No. 508,080
Int. Cl.' E04B 1/62
U.S. Cl. 52—396 5 Claims



1 A concrete dowel placement apparatus comprising

a dowel receiving sheath comprising a generally tubular body having an outer surface, an open proximal end, a closed distal end and a hollow interior compartment extending axially therein,

a generally rectangular flange extending perpendicularly about said open proximal end of said sheath, said flange being formed to extend completely about said open proximal end and having an inner surface and a generally flat outer surface, wherein said outer surface of said flange is held in abutting contact with a flat surface of a concrete form to prevent seepage of concrete into said hollow interior compartment of said sheath, and

at least one stength imparting gusset extending between a proximal portion of said outer surface of said sheath and said inner surface of said flange

5,005,332

LOUVRE PANNELLING SYSTEM

Johannes A. H. Brugman, Rotterdam, Netherlands, assignor to Hunter Douglas International N.V., Curacao, Netherlands

Filed Aug. 28, 1989, Ser. No. 399,741
Claims priority, application United Kingdom, Sep. 1, 1988, 8820734
Int. Cl.' E06B 7/08, F24F 13/08
U.S. Cl. 52—473 10 Claims

1 A louvre panelling system comprising,

(a) a plurality of elongate louvres, each louvre comprising a louvre body having first and second substantially parallel sides joined by a central portion and disposed at an angle

to said central portion, and first and second U-shaped rearwardly directed beads extending along said first and second parallel sides, respectively, each said bead having a free edge; and

(b) at least two brackets, each bracket comprising a bracket body portion securable to a support structure, and first and second laterally extending bead holding portions,



wherein at least said first laterally extending bead holding portion comprises a front projection and a rear projection defining therebetween a recess, and wherein the first bead of a louvre is engageable behind the front projection of said first bead holding portion and engages the rear projection of the first bead holding portion with its free edge in said recess, and the second bead of a louvre is engageable with the second bead holding portion

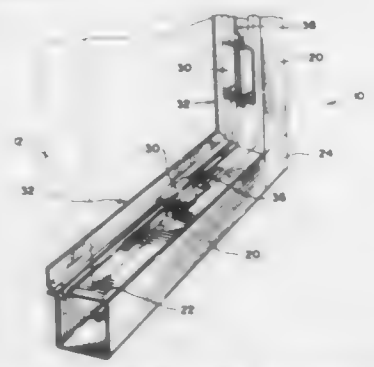
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5,005,333

PANEL-FRAMING ASSEMBLY AND ASSEMBLY METHOD THEREFOR

Donald E. Ott, 17754 W. Spring Lake Rd., Spring Lake, Mich. 49456

Filed Mar. 9, 1990, Ser. No. 491,082
Int. Cl.[5] E04B 9/00
U.S. Cl. 52—476 11 Claims



1 An assembly for framing a panel, the assembly comprising and being assembled from

(a) a frame member having a wall defining an opening,

(b) a clip having a securing portion inserted into the opening and coacting with the wall to secure the clip to the frame member after the securing portion has been inserted into the opening, the clip having a flanged portion confronting the wall, but in spaced relation to the wall after the clip has been secured to the frame member, and

(c) a retaining strip having an inner leg and an outer leg which is generally normal to the inner leg, the inner leg being inserted between the flanged portion and the wall and being insertable therebetween after the clip is secured to the frame member, the inner leg coacting with the flanged portion to secure the retaining strip to the frame member by means of the clip, the outer leg being adapted to retain a panel seated against the flanged portion by engaging a portion of one face of the panel, along one edge of the panel, to prevent lateral movement of the edge in one direction relative to the frame member.

5,005,334

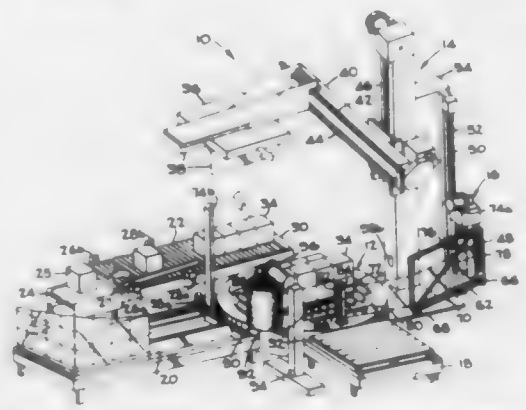
Patent Not Issued For This Number

5,005,335

STRETCH WRAPPING ROBOTIC PALLETIZER

Ray A. Yourgalite, Hoopeston, Ill.; Malcolm Moore, Green Bay, Wis.; Neal C. Chamberlain, Hoopeston, Ill.; Kenneth F. Becicka, Alvin, Ill.; Samuel J. Hilgeman, Hoopeston, Ill., and Kevin D. Moore, Potomac, Ill., assignors to FMC Corporation, Chicago, Ill.

Continuation of Ser. No. 167,950, Mar. 14, 1988, abandoned. This application Dec. 5, 1989, Ser. No. 445,934
The portion of the term of this patent subsequent to Feb. 26, 2008, has been disclaimed.
Int. Cl.[5] B65B 11/04
U.S. Cl. 53—399 10 Claims



10 A method of unitizing a stack of articles including the steps of

feeding ann empty pallet means to a turntable, said turntable stabilized at a fixed location,

picking up a number of articles to be stacked from a stationary conveyor,

transferring said articles to said pallet means,

repeating said pick up and transferring steps for a predetermined number of pick ups and transfers to form a layer of articles,

rotating said turntable after a layer of articles has been formed,

feeding film from a film storage roll to said rotating turntable as said turntable rotates to wrap said layer of articles before further articles are transferred to said pallet means,

repeating the step of repeating said pick up and transferring steps for a predetermined number of pick ups and transfers to form a layer of articles, the step of rotating said turntable after a layer of articles has been formed, and the step of feeding film from a film storage roll to said rotating turntable as said turntable rotates to wrap said layer of articles until a unitized stack of articles is formed on said turntable,

cutting said film after at least one rotation of said turntable

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5,005,336

METHOD OF MAKING A HAWAIIAN NUTTY GRAM MAILING RECEPTACLE

Melvin R. Bloom, Box 1231, Pahoa, Hi. 96778-1231

Filed Aug. 17, 1990, Ser. No. 568,972
Int. Cl.[5] B65B 7/28; B65D 73/00
U.S. Cl. 53—401 8 Claims

1. A method of making a mailing receptacle from a coconut, comprising the steps of:

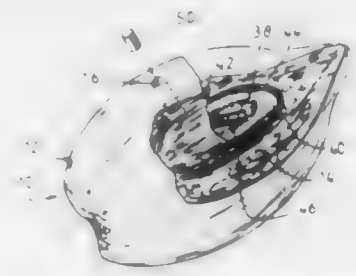
(a) making a hole in the coconut so that access to the inner compartment of the coconut can be obtained,

(b) draining out the milk of the coconut by way of the hole so that the inner compartment of the coconut becomes dry,

(c) filling the coconut with a preserving solution by way of the hole so that the coconut will be preserved,

(d) waiting a predetermined period of time so that the preserving solution has preserved the coconut,

(e) emptying the coconut of the preserving solution by way of the hole so that the preserving operation is completed,



(f) letting the coconut dry so that items can be put into it by way of the hole

(g) inserting items to be mailed into the hole until the items drop into the inner compartment of the coconut, and

(h) sealing the hole in the coconut so that the mailing receptacle is now ready for transit

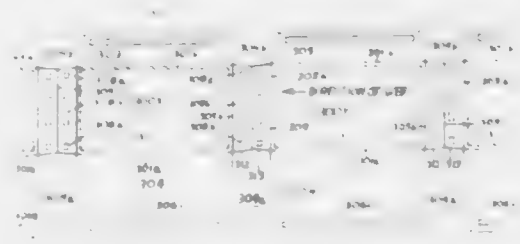
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5,005,337

ENVELOPE MAILER

Alvin J. Kluth, 2247 Oakhill Dr., Green Bay, Wis. 54313

Filed Jan. 16, 1990, Ser. No. 464,924
Int. Cl.[5] B65B 11/48
U.S. Cl. 53—460 17 Claims



1 A method of producing a continuous series of envelopes folded around discrete envelope contents, comprising the steps of:

(a) providing a continuous paper web running in a longitudinal direction and having a plurality of envelope shapes with first and second envelope flaps on the sides of the continuous paper web transverse to the direction of the web,

(b) placing the envelope contents at preselected positions on the envelope shapes on the continuous paper web,

(c) severing the continuous paper web between the envelope shapes to form a continuous series of individual envelopes further having leading and trailing envelope flaps,

blowing the trailing envelope flap in the direction of the continuous paper web using compressed air to assist in folding the trailing envelope flap

(e) folding the trailing envelope flap in the direction of the continuous paper web and folding the leading envelope flap in the opposite direction of the continuous paper web such that the continuous series of individual envelopes is moved only in the longitudinal direction without stopping the individual envelopes, and

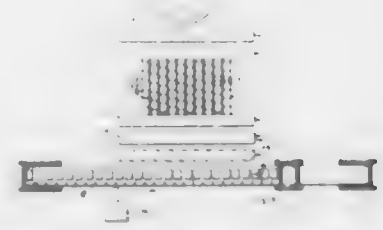
(f) folding and sealing the first and second envelope flaps to the leading and trailing envelope flaps to cover the envelope contents.

5,005,338

METHOD OF POSITIONING PRODUCTS ON A TAPE COMPRISING COMPARTMENTS AS WELL AS AN APPARATUS FOR IMPLEMENTING THE METHOD

Pieter Kemkers; Johannes H. M. Van Roosmalen, and Bernardus G. J. L. Venema, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 309,636, Feb. 9, 1989, abandoned. This application Jan. 19, 1990, Ser. No. 467,626
Claims priority, application Netherlands, Dec. 21, 1988, 8803122
Int. Cl.[5] B65B 15/04, 57/10
U.S. Cl. 53—494 15 Claims



1 A method of positioning products on a tape having a plurality of product locations, the products being aligned, tested in a row in a measuring station, the tape being transported in a given direction and an uninterrupted series of approved products being positioned onto empty tape locations following occupied locations of the tape, said method comprising:

advancing the tape a number of positions depending on the number of tape locations already occupied and the number of approved products to be placed

discharging only the faulty products, and

placing the approved products onto the tape, filling the vacant positions in the measuring station

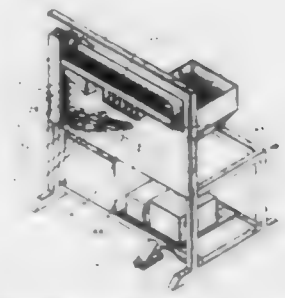
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5,005,339

COIN ROLL BOXING APPARATUS

Ross Capawana, Las Vegas, Nev.

Filed Feb. 13, 1990, Ser. No. 479,768
Int. Cl.[5] B65B 57/20
U.S. Cl. 53—500 9 Claims



1 In a coin roll boxing apparatus in which cylindrical coin rolls are fed from a supply hopper to an orienting feeder that discharges the coin roll through a discharge chute, wherein the improvement comprises

(a) a conveyer belt system receiving the coin rolls from the discharge chute,

(b) a manifold positioned to receive coin rolls from the conveyer belt system, and

(c) a manifold bypass means including slidable panels movable into position to cover the manifold upon the manifold being filled with coin rolls.

whereby excess coin rolls are permitted to pass over the manifold for return to the orienting feeder for re-entry into the conveyer belt system

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5,005,340

APPARATUS FOR INSPECTING AND PACKAGING CAN ENDS

Andrew E. Mojden, Hinsdale, Ill., assignor to Fleetwood Systems, Inc., Countryside, Ill.

Filed Dec. 21, 1989, Ser. No. 454,153
Int. Cl.[5] B65B *57/20*
U.S. Cl. 53—500 **11 Claims**



1 Article handling apparatus for handling articles such as can ends, said apparatus being capable of receiving a continuous flow of said articles and automatically counting and separating a group of said articles of a prescribed number, disposed in a nested condition for delivery to a packing station, said apparatus comprising elongate trough means for handling a plurality of said articles in a nested condition, transport means for advancing said articles longitudinally of the trough means, an inspection station including article rotating means for rotating said articles within said trough means to permit visual inspection of the same prior to advancement to said packing station and control means for controlling a sequence of operation of said articles rotating means and of said transport means for initially causing said article rotating means to rotate said articles for inspection, and thereafter for activating said transport means to transport the articles out of said inspection station and into said packing station, wherein said transport means comprises push-rod means dimensioned for entering into said trough means for directing contacting and pushing said articles therethrough, at least from said inspection station into said packing station, carriage means for bidirectionally moving said push-rod means relative to the longitudinal dimension of said trough means, and pivotal mounting means for mounting said carriage means in an orientation generally parallel to said trough means, and for bidirectionally pivoting the same to the extent necessary to cause said push-rod means to enter the trough means to engage and advance said articles and to otherwise swing free of the trough means to permit the free movement of a subsequent group of articles into the inspection station, and wherein said carriage means comprises an elongate cylinder member which extends generally in parallel to said trough means at said inspection station, and yoke means movable by said cylinder means bidirectionally along the length thereof for mounting said push-rod means

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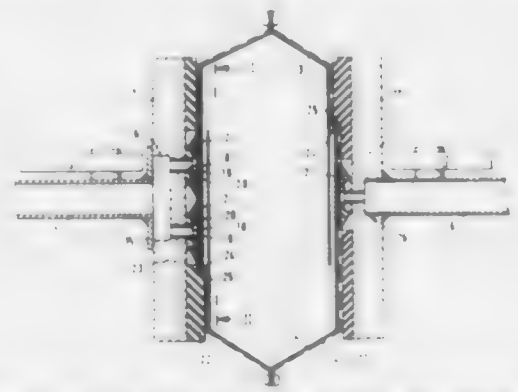
5,005,341

APPARATUS FOR FILLING SACKS

Konrad Tetenborg, Lengerich, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Sep. 25, 1989, Ser. No. 411,381
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1988, 3832634
Int. Cl.[5] B65B *39/02, 43/30*
U.S. Cl. 53—570 **2 Claims**

1 Apparatus for filling sacks which includes opposed clamping assemblies for engaging opposite side walls of a sack adjacent an opening-defining edge of the sack and for pulling said side walls apart to open the sack for filling, and a pipe for filling the sack when opened, wherein each clamping assembly includes a suction device for engaging the respective side wall of the sack and a carrier for the suction device which includes a strip of elastomeric material at least partially surrounding the respective suction device for urging the side edges of the sack into sealing contact with side walls of the pipe, and recesses



formed in the strips of elastomeric material, said suction devices accommodated in said recesses

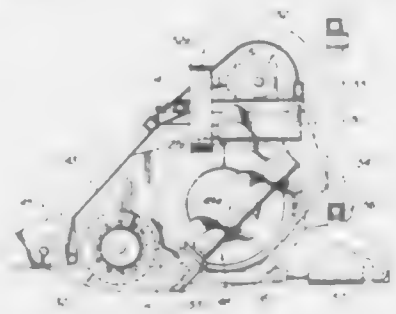
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5,005,342

CROP PROCESSOR

E. Cordell Lundahl, Providence, and Laurel H. Jensen, Hyrum, both of Utah, assignors to Ezra C. Lundahl, Inc., Logan, Utah

Filed Feb. 13, 1990, Ser. No. 479,321
Int. Cl.[5] A01D *34/53, 34/54, 43/10, 55/00*
U.S. Cl. 56—10.2 **29 Claims**



1 A crop processor comprising
a support frame coupled to a prime mover,
a drive system for said processor connected to and powered from said prime mover,
at least two conveyor augers on a common axis, each including a helical flange thereon, each conveyor auger supported in cantilever fashion on said support frame at opposite ends thereof, each of said conveyor augers being less than half the width of the processor, the helical flange of each conveyor auger wound to move the material toward the center of the processor,
conveyor auger housings cooperating with said conveyor augers to move the material,
at least two cutting augers on a common axis,
support means for each of said cutting augers at the ends and at the center of the processor,
each of said cutting augers having a helical flange thereabout with the flange from the outside turned in the same direction as the conveyor flange for at least a portion of the length of the conveyor auger and a continuation reversely turned flange for the remaining length of the cutting auger to the center of the processor,
each of said flanges including a plurality of first means for mounting cutting teeth thereon,
a plurality of cutting teeth;
second means for mounting each of said cutting teeth to a single one of said first mounting means on said flanges,
a front cover means pivotally attached to said support means,
a rear cover means
a baffle means attached to and extending from said conveyor auger housing enlarging the volume for conveying the cut crop
a center discharge area to discharge cut crop to the rear of said processor,
means for selecting and maintaining the height of the cutting augers above the ground, and
whereby the crop is cut by the cutting augers and fed by the conveying augers to the center area for discharge

28 A crop processor comprising
an auger having flighting therearound
support means for said auger,
drive means for rotating said auger,
teeth for attachment to said flighting on said auger, and
means for attaching said teeth to said flighting, each of said teeth including a metal base plate of essentially horse shoe shape, having a circular portion and converging side portion, a hole toward the circular end of said base plate for attaching to said auger flighting, said base plate having bevels on a major portion of a first flat surface, the base plate being bent in the direction of said first flat surface, and the second flat surface of the base plate being hard surfaced only on the converging side portion

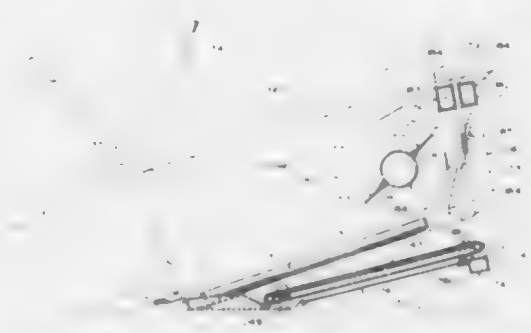
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5,005,343

HEADER FOR A COMBINE HARVESTING MACHINE

Roger L. Patterson, Selkirk, Canada, assignor to MacDon Industries Ltd., Winnipeg, Canada

Continuation-in-part of Ser. No. 209,901, Jun. 22, 1988, abandoned. This application Jul. 17, 1989, Ser. No. 380,536
Int. Cl.[5] A01D *34/40*
U.S. Cl. 56—14.4 **20 Claims**



1 A header for a crop harvesting machine comprising a frame, means for mounting the frame on the machine for transportation in a working direction across a field including a standing crop to be harvested, a knife arrangement extending transversely across a front edge of the frame for cutting the standing crop, means defining an opening rearwardly of the frame through which the cut crop is guided to pass, the frame extending outwardly therefrom to respective sides thereof, a first and a second draper assembly each including a pair of draper guide rollers arranged with the respective axes of rotation extending generally parallel to the working direction, one of said rollers being spaced from the opening to a respective side thereof and the other of said rollers being arranged adjacent said opening to define an end of the draper assembly, and a draper canvas arranged rearwardly of said knife arrangement so as to receive the cut crop therefrom and constrained by the rollers to move transversely of the frame towards said end to carry said cut crop toward said opening, a third draper assembly including a pair of draper guide rollers arranged with respective axes extending transversely to said working direction and a draper canvas arranged rearwardly of said knife arrangement and at said ends of the first and second draper assemblies so as to carry said cut crop rearwardly of the frame from said ends to said opening to pass therethrough, an elongate confining and feeding member comprising a shaft having a longitudinal axis transverse to said working direction and extending across a width of the header substantially equal only to the width of the opening, said shaft carrying auger flight means extending along at least a part of the length of the shaft so as to include at least a part thereof aligned with the opening, means mounting said confining and feeding member with said flight means above a rear end of said third draper assembly and with an edge of the flight means spaced from a surface of the third draper assembly and means driving said confining and feeding member to rotate about said axis in a direction to feed material thereunder so that the flight means cooperates with said third draper assembly to confine said cut crop and to direct said cut crop between an underside of said flight means and an upper surface of said rear end of said third draper canvas to pass through said opening

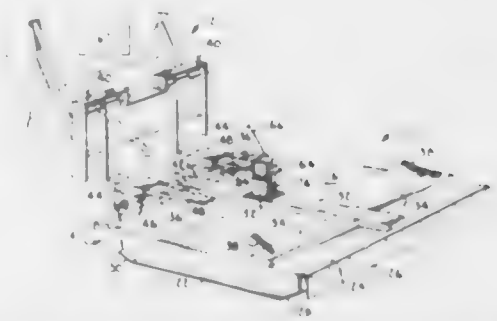
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5,005,344

LIGHT BRUSH AND GRASS HYDRAULIC MOWER

Doc J. McCracken, 218 W. 1st St.; P.O. Box 322, Tonganoxie, Kans. 66086

Filed Jan. 8, 1990, Ser. No. 461,650
Int. Cl.[5] A01D *55/12*
U.S. Cl. 56—14.7 **20 Claims**



1 Mowing apparatus for attachment to a self propelled machine having a hydraulic power source and a pair of tines projecting forwardly from the machine, said apparatus comprising
a mowing deck
means for detachably connecting said mowing deck to the tines of the machine for movement of the deck with the tines
a cutting blade mounted beneath said mowing deck for rotation to provide cutting action when the blade is rotated
a hydraulic motor mounted on said deck and coupled with said blade in a manner to rotate the blade when the motor is actuated, and
detachable means for connecting said hydraulic power source with said motor to supply fluid to the motor for actuating same

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5,005,345

METHOD FOR ACCELERATING THE BIODEGRADATION OF CROP RESIDUES FOLLOWING GRAIN HARVEST

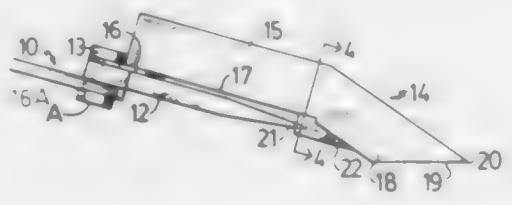
Joseph A. Pinckard, 10840 Jilinda Court, San Jose, Calif. 95127, and Paul E. Gill, 3131 Homestead Road, Santa Clara, Calif. 95051

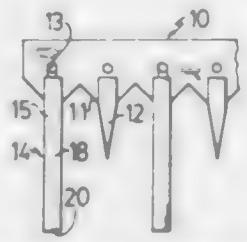
Filed Mar. 5, 1990, Ser. No. 489,959
Int. Cl.[5] A01D *41/00*, **A01F** *12/40*; **C05G** *3/00*
U.S. Cl. 56—71 **3 Claims**

1 A method for accelerating biodegradation of nutrient-deficient straw residues of cereal grain grown in a field comprising the steps separating straw from the grain, crushing the straw, applying a nutrient solution containing a humectant selected from the group consisting of molasses, dextrose, malt

extract, and invert sugar to the straw, and distributing the straw on the field

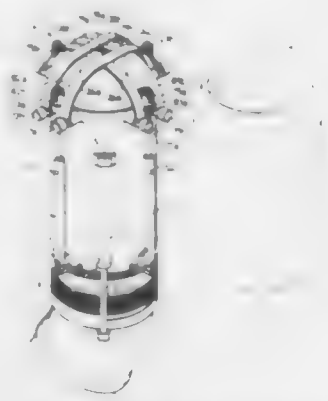
5,005,346
CROP LIFTER FOR SWATHERS OR COMBINES
Louis J. Mederaach, Saskatchewan, Canada, assignor to Eagle Air Ltd., Saskatchewan, Canada
Filed Jan. 5, 1990, Ser. No. 461,426
Claims priority, application Canada, Jan. 16, 1989, 590679
Int. Cl.' A01D 55/10
U.S. Cl. 56—312 12 Claims





1 A crop lifter for use with a combine or swather which includes a transverse knife blade assembly on a header and a plurality of spaced and parallel knife guards each with a front end extending forwardly from of the header, said crop lifter including a downwardly extending ground engaging front portion and a substantially horizontal header attachment portion close coupled behind the front portion and means on said lifter to engage the front end of an associated one of the guards for stabilizing said lifter both vertically and horizontally

5,005,347
FRUIT PICKING DEVICE
Dan Kedem, Weizman, and Mordechai Rubinstein, Kaplinsky, both of Israel, assignors to Du-Kedem Technologies, Ltd., Rehovot and Du-Kedem Projects Ltd., Gan Haim, both of, Israel
Filed Jan. 12, 1990, Ser. No. 463,726
Int. Cl.' A01D 46/24
U.S. Cl. 56—328.1 20 Claims



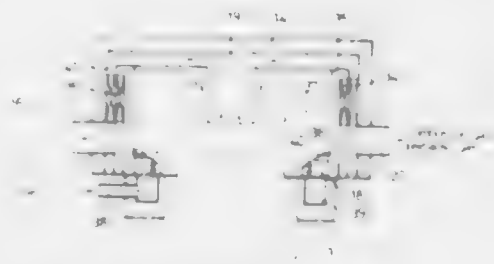
1 A fruit picking device for picking a fruit suspended by a stem from a plant on which the fruit grows, said fruit picking device comprising
a head having an opening at one end larger than the fruit to be picked for receiving the fruit
a first pair of bails pivotally mounted to the head in spaced relation to each other across said housing opening and pivotal from an open position allowing the fruit to enter the head, or to a closed position, and a second pair of bails pivotally mounted to the head in spaced relation to each other across said housing opening substantially perpendicularly to said first pair of bails and also pivotal from an open position allowing the fruit to enter the head, or to a closed position

5,005,348
PROCESS AND AN ARRANGEMENT FOR PRODUCING PACKAGES
Fritz Stahlecker, Bad Überkingen, Fed. Rep. of Germany, assignor to Hans Stahlecker, Fed. Rep. of Germany, a part interest
Continuation of Ser. No. 340,708, Apr. 20, 1989, abandoned.
This application Jun. 18, 1990, Ser. No. 539,305
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1988, 3813368
Int. Cl.' D01H 1/115, 1/20
U.S. Cl. 57—87 28 Claims



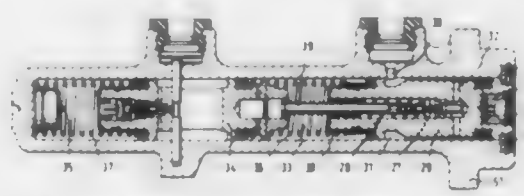
1 A process for piecing double yarn at a spinning unit which includes drafting means and false twisting means for forming two separate prestrengthened yarn components and package wind-up means for winding up the two yarn components in an untwisted side-by-side relationship as a double yarn on a double yarn package, said process including the sequential steps of
interrupting the operation of the package wind-up means upon the occurrence of a break in one of the yarn components while the other yarn component remains intact,
gripping the other intact yarn component and holding the same at a predetermined location,
withdrawing the intact yarn component from the package with the broken yarn component on the package being also removed with the intact yarn component due to disposition of the two yarn components side-by-side on the package,
and piecing the yarn components removed from the package with respective yarn components being spun at the spinning unit

5,005,349
STIRLING ENGINE
Yutaka Momose, Anjo; Tetsumi Watanabe, Okazaki, and Akira Yamaguro, Chiryu, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Sep. 28, 1989, Ser. No. 413,741
Claims priority, application Japan, Sep. 29, 1988, 63-242415
Int. Cl.' F02G 1/04
U.S. Cl. 60—517 8 Claims



1 A Stirling engine, comprising
an expansion chamber defined in an expansion cylinder by an expansion piston
a compression chamber defined in a compression cylinder by a compression piston and communicating with the expansion chamber via a heater, a regenerator, and a cooler,
a combustion chamber in proximity to said expansion and compression cylinders,
a burner located within said combustion chamber, said burner having a substantially annular shape defining an inner circumferential surface and at least one outer surface,
said heater being circularly disposed in the center of said combustion chamber and radially interiorly of said inner circumferential surface of said burner,
an air supply means delivering air to said burner
a fuel supply means delivering fuel to said burner,
said burner including a plurality of fuel delivery holes receiving fuel from said fuel supply means, and a plurality of air supply holes receiving air from said air supply means,
at least one of said pluralities of holes extending from said inner circumferential surface of said burner to an outer surface of said burner

5,005,350
TANDEM MASTER CYLINDER
Hans-Dieter Reinartz, Frankfurt am Main; Helmut Steffes, Hattersheim; Holger Von Hayn, Bad Vilbel, and Thomas Meier, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt, Fed. Rep. of Germany
Filed Oct. 12, 1989, Ser. No. 420,181
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1988, 3835394
Int. Cl.' B60T 11/20
U.S. Cl. 60—562 7 Claims



1 A tandem master cylinder comprising
a housing having an axial bore which is closed at one end and open at the opposite end, said open end of said axial bore adapted for connection to a vacuum brake booster,
a pressure element positioned in said axial bore in said housing at said open end of said axial bore and adapted to respond to forces exerted by a vacuum brake booster,
a floating piston movable along said axial bore in said housing and having a valve which closes upon movement of said floating piston toward said closed end of said axial bore and opens upon movement of said floating piston toward said open end of said axial bore,
a push-rod piston movable along said axial bore in said housing in response to responses of said pressure element to forces exerted by a vacuum brake booster and having a valve which closes upon movement of said push-rod piston toward said closed end of said axial bore and opens upon movement of said push-rod piston toward said open end of said axial bore, said valve in said push-rod piston including
(a) a valve bore extending along said axial bore in said housing and having an open end facing said floating piston,
(b) a closure member rigidly connected to said floating piston and movable along said valve bore toward said open end of said valve bore as said floating piston moves toward said closed end of said axial bore in said housing, and
(c) a valve seat positioned in said valve bore at a point which permits movement of said closure member over a distance within said valve bore which is at least as great as the maximum stroke of said floating piston
a first spring positioned between said floating piston and said closed end of said axial bore in said housing and urging said floating piston away from said closed end of said axial bore,
a second spring positioned between said floating piston and said push-rod piston urging separation of said floating piston and said push-rod piston,
and means for supplying a pressure medium to said floating piston and said push-rod piston to conduct pressure medium to a chamber in said axial bore in said housing between said floating piston and said closed end of said axial bore when said valve in said floating piston is open and to a chamber in said axial bore in said housing between said floating piston and said push-rod piston when said valve in said push-rod piston is open

5,005,351
POWER PLANT CONDENSER CONTROL SYSTEM
David H. Archer, Ross Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Feb. 26, 1990, Ser. No. 484,750
Int. Cl.' F01K 13/02
U.S. Cl. 60—686 18 Claims



1 A method for controlling the operation of a steam condenser in a power plant which includes a steam turbine having a steam outlet, the condenser having a steam flow path including a steam inlet connected to receive turbine exhaust steam from the turbine steam outlet, a condensate outlet and a heat exchange region located between the steam inlet and the condensate outlet, a cooling water flow path having a cooling water inlet, a cooling water outlet and heat exchange means for

conducting cooling water through the heat exchange region from the cooling water inlet to the cooling water outlet, and a non-condensible product removal path having a product inlet communicating with the heat exchange region and a product outlet located outside of the heat exchange region, said method comprising

measuring parameters representative of fluid flows at the steam inlet, the condensate outlet, the cooling water inlet and the cooling water outlet, and determining, on the basis of the measured parameters, the fluid flow rates at those inlets and outlets;

providing a computer model of the condenser in its normal operating condition, supplying the model with representations of the fluid flow rates at the steam inlet and the cooling water outlet, as determined by said determining step, and producing, in the model, indications of the flow rate at the condensate outlet and the cooling water outlet when the condenser is in its normal operating condition

comparing the indications from said producing step with the flow rate at one of the condensate outlet and the cooling water outlet, as determined by said determining step, and

generating, on the basis of the result of said comparing step, an indication of differences between the compared indications and flow rate.

5,005,352

CLEARANCE CONTROL METHOD FOR GAS TURBINE ENGINE

Fred M. Schwarz; Clifton J. Crawley, Jr., both of Glastonbury; Anthony F. Rausco, Middletown, and Ken R. Lagueux, Berlin, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 23, 1989, Ser. No. 372,398

The portion of the term of this patent subsequent to Apr. 9, 2007, has been disclaimed.

Int. Cl.[5] F02C [illegible]/18

U.S. Cl. 60—39.02 5 Claims

1 A method for modulating a cooling flow of air to a gas turbine engine operating within a power range, comprising the steps of

determining a desired minimum clearance between a plurality of rotating blade tips within the gas turbine engine and a surrounding annular shroud

establishing a cooling air flow rate schedule responsive to engine power within the power range, including the steps of

(a) establishing a first cooling air flow rate corresponding to a maximum, steady state, engine power level within the power range, the first cooling air flow being sufficient to result in the blade tip to shroud clearance being equal to the determined minimum clearance;

(b) determining, for each of a plurality of other engine power levels within the operating range, the magnitude of a corresponding transient clearance decrease resulting from a step change in engine power from the other engine power level to the maximum power level, and

(c) establishing, responsive to the determined transient clearance displacement, a plurality of corresponding air flow rates for the plurality of other engine steady state power levels

5,005,353

ACTIVE CONTROL OF UNSTEADY MOTION PHENOMENA IN TURBOMACHINERY

Elizabeth Acton, Cambridge; Alexander M. Cargill, Derby; Colin F. Ross, and Graham P. Eatwell, both of Cambridge, all of England, assignors to Rolls-Royce plc, London, England

Division of Ser. No. 187,169, Apr. 28, 1988, Pat. No. 4,967,550, which is a continuation-in-part of Ser. No. 36,770, Apr. 9, 1987, abandoned. This application Apr. 20, 1990, Ser. No. 511,726

Claims priority, application United Kingdom, Apr. 28, 1986, 8610297; Apr. 28, 1987, 8710071

Int. Cl.[5] F02C [illegible]/05; F04D [illegible]/02

U.S. Cl. 60—39.281 16 Claims



1 In a turbomachine a control system for actively controlling the dynamics of at least one mode of at least one unsteady motion phenomenon associated with the blading of said turbomachine, said control system having a control bandwidth which is at least partly coextensive with the bandwidth of said unsteady motion phenomenon and comprising

(a) an array of sensors located in said turbomachine in predetermined relationship to said unsteady motion phenomenon for continuously producing from each of said sensors sensor signals related to said unsteady motion phenomenon,

(b) signal processing means connected to receive said sensor signals from each of said sensors and having at least one channel for continuously processing said sensor signals and continuously outputting control signals, and

(c) actuator means located in said turbomachine in predetermined relationship to said unsteady motion phenomenon said actuator means being adapted to be continuously driven by said control signals,

wherein said signal processing means comprises

(i) means for summing sensor signals from each of said sensors in predetermined combinations thereof and weighing said sums to obtain signals representing at least one independent measure of said at least one mode in said at least one channel, and

(ii) means for modifying said signals representing said at least one independent measure in said at least one channel to obtain said control signals in controlled phase and amplitude relationship to said at least one mode, said actuator means thereby producing outputs effective to change said dynamics of said at least one mode so as to minimize the physical effects of said dynamics on said turbomachine,

said turbomachine being a turbocompressor, said at least one unsteady motion phenomenon being unsteady fluid flow in said turbocompressor with at least some of said array of sensors being disposed to detect the unsteady fluid flow and produce said sensor signals

5,005,354

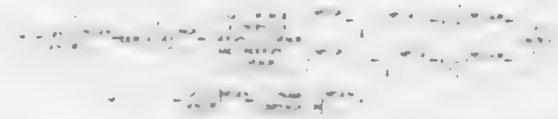
FUEL CONTROL HAVING RESET OF PROPELLER OVERSPEED AND UNDERSPEED GOVERNORS

Roy W. Schneider, Ellington, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Apr. 11, 1989, Ser. No. 336,274

Int. Cl.[5] F02C [illegible]/28

U.S. Cl. 60—39.281 11 Claims



1 Apparatus for controlling a gas generator engine having a propeller associated therewith, comprising

engine acceleration means, for providing an engine acceleration signal indicative of an increasing or decreasing rate of change of engine speed,

underspeed reset means, for comparing said engine acceleration signal to a reference underspeed signal to determine a presence of an underspeed reset condition, and for providing in response to the presence of said underspeed reset condition an underspeed reset signal indicative of a desired propeller speed and having a desired propeller speed value lower than a desired propeller speed value in the absence of said underspeed reset condition,

overspeed reset means, for comparing said engine acceleration signal to a reference overspeed signal to determine a presence of an overspeed reset condition, and for providing in response to the presence of said overspeed reset condition an overspeed reset signal indicative of a desired propeller speed and having a desired propeller speed value higher than a desired propeller speed value in the absence of said overspeed reset condition.

5,005,355

METHOD OF SUPPRESSING FORMATION OF CONTRAILS AND SOLUTION THEREFOR

Surjit Singh, Williamsville, N.Y., assignor to Sciper, Inc., Williamsville, N.Y.

Filed Aug. 24, 1988, Ser. No. 235,670

The portion of the term of this patent subsequent to Aug. 30, 2005, has been disclaimed.

Int. Cl.[5] F02K 3/04; C09K 3/18; B01D [illegible]/02

U.S. Cl. 60—204 31 Claims

1 A method of suppressing the formation of contrails from water vapor in the hot exhaust gases of an engine operating in cold temperatures comprising the steps of providing at least one alcohol which is a combined nucleating agent and freezing point depressant, and injecting said alcohol into said hot exhaust gases of said engine for reducing ice particles formed from said water vapor to a size below a humanly visible range.

5,005,356

TORQUE CONVERTER UTILIZING STREAMWISE VORTICITY

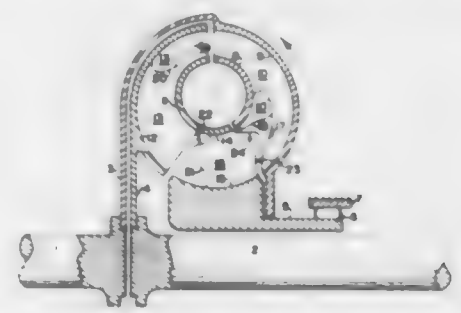
Walter S. Saunders, 307 Thornhill Rd., Baltimore, Md. 21212

Filed May 27, 1987, Ser. No. 54,582

Int. Cl.[5] F16D 33/00

U.S. Cl. 60—330 34 Claims

1 A torque converter comprising an impeller and a turbine said impeller comprising means adapted to generate streamwise vortices, and said turbine comprising means adapted to



reverse the direction of rotation of said vortices to efficiently transfer torque therebetween.

5,005,357

OSCILLATING FORCE TURBINE

Manuel F. Fox, 508 10th St., Edwards AFB, Calif. 93523

Filed Jul. 9, 1990, Ser. No. 550,011

Int. Cl.[5] F02B 9/08

U.S. Cl. 60—398 4 Claims



1 An apparatus for extracting energy from water waves along a shoreline, comprising

a cylindrical stack, vertically aligned, said stack having an upper end open and immersed in air, a lower end open and immersed in water

an air turbine disposed within said stack, the axis of said turbine being concentric with the axis of said stack, said turbine including

a hub rotatably mounted within said stack, the axis of said hub being concentric with the axis of said stack,

a plurality of essentially planar blades rotatably fixed to said hub, the axis of relative rotation between said hub and said blade being perpendicular to the axis of said turbine,

each of said essentially planar blades being divided into a greater area on a first side of the axis of relative rotation between said blade and said hub and a lesser area on a second side of the axis of relative rotation between said blade and said hub, and

means for limiting the rotation of said blades relative to said hub, and

means for transferring energy from the turbine whereby the energy of waves on the water surface causes air within the stack to flow over the turbine, the flow of air over said

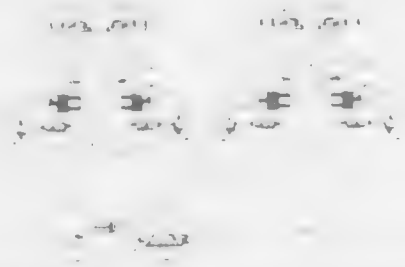
turbine causes it to revolve in a single sense regardless of the direction of the flow of air, and wave energy is transferred through said turbine.

5,005,358

HYDRAULIC DRIVE SYSTEM FOR CRAWLER-MOUNTED CONSTRUCTION VEHICLE

Toichi Hirata, Ushiku; Hideaki Tanaka, Tsuchiura; Genroku Sugiyama, Inashiki, and Yusuke Kajita, Tsuchiura, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Filed May 10, 1989, Ser. No. 349,851
Claims priority, application Japan, May 12, 1988, 63-113435
Int. Cl.[5] F16D 31/02
U.S. Cl. 60—426 5 Claims



1. A hydraulic drive system for a crawler-mounted construction vehicle comprising

a hydraulic pump (1),

a plurality of hydraulic actuators including first and second traveling hydraulic motors (2, 3) driven by a hydraulic fluid discharged by said hydraulic pump,

a plurality of flow control valve means including first and second flow control valve means (15, 16, 35, 36) for respectively controlling the flow rates of said hydraulic fluid supplied from said hydraulic pump to said first and second traveling hydraulic motors,

pump controlling means (11) for effecting control during the driving of said first and second traveling motors in such a manner that the discharge pressure of said hydraulic pump becomes higher by a fixed value than the higher one of load pressures of said traveling motors, and

first and second pressure balance valve means (17, 18, 37, 38) for respectively controlling the rates of flow through said flow control valve means during the driving of said first and second traveling motors in such a manner that the load pressures of said traveling motors do not affect the rates of flow through said first and second flow control valve means,

wherein said first and second pressure balance valve means (17, 18, 37, 38) are respectively provided with valve control means (62, 63, 66, 67) which do not cause the associated pressure balance valve means to be actuated until the differential pressure between the load pressure generated in said first traveling motor (2) and the load pressure generated in said second traveling motor (3) reaches a predetermined value (ΔP_0), and causes said pressure balance valve means to be actuated when said differential pressure exceeds said predetermined value.

5,005,359

AIR SUPPLY CONTROL SYSTEMS FOR TURBOCHARGED INTERNAL COMBUSTION ENGINES

Seiji Tashima; Haruo Okimoto; Toshimichi Akagi, and Yasushi Niwa, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 17, 1989, Ser. No. 324,670
Claims priority, application Japan, Mar. 19, 1988, 63-66790; Jan. 20, 1989, 1-12677
Int. Cl.[5] F02B 37/12
U.S. Cl. 60—600 15 Claims



1. An air supply control system for an internal combustion engine comprising

a plurality of superchargers including at least a first supercharger and a second supercharger which comprises a turbosupercharger having a turbine disposed in one of separated exhaust passages connected with the engine and a blower connected through a shaft with the turbine and disposed in one of separated intake passages connected with the engine,

a selectively operated exhaust cutoff valve for opening and closing the separated exhaust passage in which the turbine of said second supercharger is disposed,

a selectively operated intake air cutoff valve for opening and closing the separated intake passage in which the blower of said second supercharger is disposed,

a selectively operated intake air relief valve for opening and closing a relief passage which is provided in the separated intake passage in which the blower of said second supercharger is disposed for detouring the blower of said second supercharger,

engine operation detecting means for detecting operating conditions of the engine to produce a detection output,

cutoff valve control means operative, in response to the detecting output from said engine operation detecting means, to close both said exhaust cutoff valve and said intake air cutoff valve so that said first supercharger works for supercharging the engine and said second supercharger is restrained from supercharging the engine when intake air mass flow fed to the engine is relatively small, and to open both said exhaust cutoff valve and said intake air cutoff valve so that both of said first and second superchargers work simultaneously for supercharging the engine when the intake air mass flow fed to the engine is relatively large, and

relief valve control means operative, in response to the detection output from said engine operation detecting means, to close said intake air relief valve at a time point earlier than another time point at which said exhaust cutoff valve is fully opened.

5,005,360

SOLAR ENERGY SYSTEM FOR GENERATING ELECTRICITY

J. A. McMurtry, 1350 N. 26th St., Mesa, Ariz. 85213

Filed Feb. 22, 1990, Ser. No. 483,458
Int. Cl.[5] F03G 6/06
U.S. Cl. 60—659 12 Claims



1. A system for generating electricity, comprising

(a) heat storage means comprising

(i) an enclosed primary chamber lined with heat sink material and including an opening shaped and dimensioned to permit a concentrated beam of sunlight to pass therethrough into said chamber while maintaining a pressure in said primary chamber in excess of ambient air pressure,

(ii) at least one enclosed secondary chamber smaller than and connected to said primary chamber and shaped and dimensioned to permit heat to flow from said primary chamber outwardly into said secondary chamber,

(b) means for collecting and concentrating solar energy including

(i) a frame,

(ii) a series of vertically stacked arcuate light-converging mirrors each mounted on said frame for sequentially reflecting and progressively increasing the concentration of sunlight by cascading in a zig-zag fashion sunlight through said series of mirrors to produce a beam of sunlight,

(iii) means operatively associated with said frame and said mirrors for rotating said frame and adjusting the position of said series of mirrors and said frame such that

at least one of said series of mirrors tracks the sun across a selected arc in the sky and continues to receive and concentrate sunlight, while said sun is in said arc, and

said beam of sunlight produced by said series of mirrors is continually directed through said opening into said storage means,

(c) a turbine powered by fluid in the gaseous state and including a fluid input and a fluid output,

(d) an electrical generator connected to and powered by said turbine,

(e) a closed, heat powered circulating system for circulating a fluid between said turbine and said heat storage means said circulating system including

(i) fluid cooling means for liquefying fluid flowing in the gaseous state out of said exhaust of said turbine,

(ii) heat conductive container means in said secondary chamber of said storage means for conductively transmitting heat from within said storage means through said container means to a fluid in a liquid state in said container means to increase the temperature of the fluid and cause the fluid to assume a gaseous state and increase the pressure in said container means,

(iii) a first conduit interconnecting said container means and said turbine to deliver heated fluid under pressure and in a gaseous state from said container means to said turbine to power said turbine,

(iv) a second conduit interconnecting said exhaust of said turbine and said cooling means to carry fluid leaving said turbine in a gaseous state to said cooling means,

(v) a third conduit interconnecting said cooling means and said storage means to carry fluid in a liquid form from said cooling means to said container means to absorb heat to take on a gaseous state and travel through said first conduit to said turbine to power said turbine,

the power for causing fluid to circulate through said closed circulating system being supplied by the heating and expansion of said fluid occurring in said container means,

(f) valve means in at least one of said first, second and third conduit for controlling the flow of fluid through said circulating system, and,

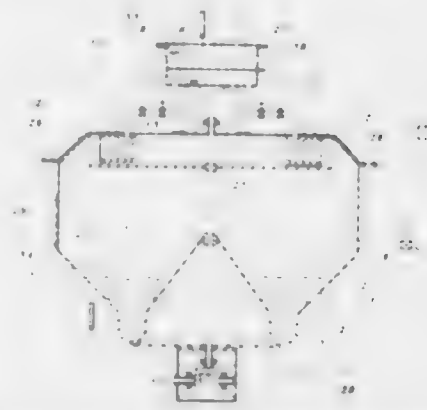
(g) control means in said storage means for controlling the flow of heat from said primary chamber to said secondary chamber.

5,005,361

ION REPULSION TURBINE

Richard C. Phillips, 313 E. Haven Dr., Birmingham, Ala. 35215

Filed Mar. 22, 1988, Ser. No. 171,808
Int. Cl.[5] F01K 25/00
U.S. Cl. 60—671 1 Claim



1. An ion turbine comprising means for generating an ionized gas, a plurality of uniquely designed ion repulsion discharge chambers which accelerate the ions of the ionized gas at an extremely high velocity through the use of strategically located electrostatic fields, said ion repulsion discharge chambers being situated along the inner perimeter of a set of turbine blades within a turbine, a condenser connected to the outlet of the turbine and a pump connected to the outlet of the condenser returning the condensed gas back to the means for generating the ionized gas.

5,005,362

CRYOGENIC STORAGE CONTAINER

William R. Weltmer, Jr., Murray Hill, and Walter H. Whitlock, Peapack, both of N.J., assignors to The BOC Group, Inc., Murray Hill, N.J.

Filed Mar. 20, 1990, Ser. No. 497,156
Int. Cl.[5] F17C 1/00
U.S. Cl. 62—45.1 6 Claims

1. In a cryogen storage container for storing a liquid cryogen formed of one of hydrogen, helium, and neon wherein the cryogenic storage container comprises a pressure vessel for containing the liquid cryogen, a vacuum vessel having an outer wall surrounding and spaced from the pressure vessel for subjecting the space between the outer wall and the pressure vessel to a vacuum, a pair of inlet and vent lines penetrating the vacuum vessel and in communication with the pressure vessel for filling the pressure vessel with the liquid cryogen and for venting boil-off vapor from the liquid cryogen, respectively

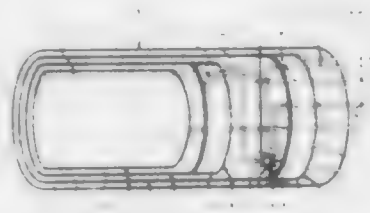
an intermediate heat shield spaced between the outer wall of the vacuum vessel and the pressure vessel for intercepting heat that would otherwise be transferred from the vacuum vessel to the pressure vessel, a set of first and second layers of insulating material located between the intermediate heat shield and the outer wall of the vacuum vessel and the pressure vessel, respectively, and a liquid nitrogen container, formed of a heat conductive material, located in thermal contact with the intermediate heat shield, and containing liquid nitrogen to absorb the heat intercepted by the intermediate heat shield through vaporization of the liquid nitrogen, wherein the improvement comprises

a sub-intermediate heat shield interposed between the second insulation layer and the pressure vessel for intercepting heat that would otherwise be transferred from the intermediate heat shield to the pressure vessel,

a third insulation layer located between the sub-intermediate heat shield and the pressure vessel

intermediate heat absorption means in thermal contact with the sub-intermediate heat shield and containing a coolant for absorbing the heat intercepted by the sub-intermediate heat shield by undergoing a phase change, the coolant having a phase transition temperature, at which the phase change occurs, below the boiling temperature of liquid nitrogen, and

recovery means connected to the intermediate heat absorption means for recovering the coolant after having undergone the phase change for regeneration of the coolant



5,005,363

CRYOGENIC SORPTION PUMP

Marxen P. Larin, prospekt Nauki, 29 kv. 78, Leningrad, U.S.S.R.

PCT No. PCT/SU88/00228, § 371 Date Aug. 16, 1989, § 102(e) Date Aug. 16, 1989, PCT Pub. No. WO89/05917, PCT Pub. Date Jun. 29, 1989

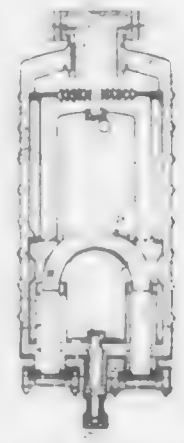
PCT Filed Nov. 14, 1988, Ser. No. 408,505

Claims priority, application U.S.S.R., Dec. 17, 1987, 4344470/29

Int. Cl.[5] B01D 8/00

U.S. Cl. 62—55.5 5 Claims

1 A cryogenic sorption pump comprising a housing complete with a cover, a bottom, and an inlet nozzle arranged on the cover, a vessel for cryogenic agent accommodated within the housing, an adsorbent, a first gas-permeable screen located on the inner side of the housing, a heat bridge connected to said inlet nozzle, a vacuum conductor arranged within the space of the cryogenic agent vessel and having one end taken out of the housing through the bottom, and pipes to fill in cryogenic agent and remove cryogenic agent vapours, wherein the improvement comprises the vessel for cryogenic agent comprising upper and lower shells installed in the central part of the pump one over the other and interconnected by a circular element, the upper shell comprising a cover, and the lower shell comprising a bottom, a heat conductor for said cryogenic agent vessel and attached to the circular element and encompassing the upper shell to form an interspace between the upper shell and the heat conductor, a second gas-permeable screen attached to the circular element and in the interspace between the upper shell and the heat conductor, the adsorbent being located between the heat conductor and the second gas-permeable screen, and a heat conductor for said vacuum conductor and attached thereto and installed within the cryogenic agent vessel shells along their entire length, with the



other end of the vacuum conductor being taken out of the housing through the bottom

5,005,364

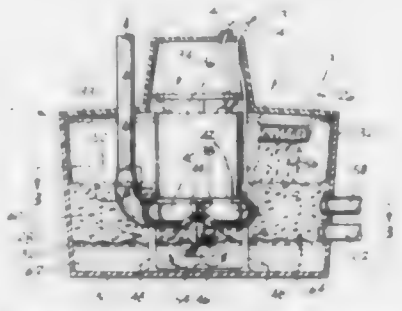
APPARATUS FOR AND METHOD OF MAKING AND DELIVERING SLUSH ICE

William R. Nelson, 1549 N.W. 49th Street, Seattle, Wash. 98107

Filed Feb. 7, 1990, Ser. No. 476,516

Int. Cl.[5] F25C 1/00

U.S. Cl. 62—76 28 Claims



1 An apparatus for producing and delivering slush ice comprising

a main housing having a floor and substantially cylindrical sidewalls, said housing including a water inlet and an ice inlet,

a pump having a delivery outlet and an inlet substantially centered axially within said housing and spaced a predetermined distance from said floor,

a delivery conduit having a first end operably connected to said delivery outlet and a second end remote therefrom

a rotating agitator member having an axis of rotation substantially centered co-axially within said housing such that said agitator swirls ice and water in said housing substantially around said pump inlet, said ice floating in an upper layer substantially above a lower layer of water which is substantially devoid of ice, and

said pump drawing ice and water from said upper layer through said inlet and delivering a mixture of ice and water in the form of slush ice through said delivery outlet

5,005,365

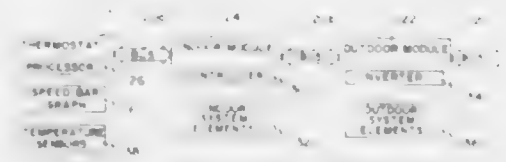
THERMOSTAT SPEED BAR GRAPH FOR VARIABLE SPEED TEMPERATURE CONTROL SYSTEM

Gregory A. Lynch, Murfreesboro, Tenn., assignor to Inter-City Products Corporation (USA), Lavergne, Tenn.

Filed Dec. 2, 1988, Ser. No. 278,789

Int. Cl.[5] F25B 49/00

U.S. Cl. 62—126 18 Claims



1 A variable speed temperature control system having a thermostat for selecting a desired ambient temperature to be maintained by said variable speed temperature control system, said system having a predetermined available capacity, said system comprising

a prime mover to maintaining the desired temperature, said prime mover adapted to continuously operate at an operating speed within a predetermined speed range whereby the utilized capacity of said temperature control system is a function of the operating speed of said prime mover and the available capacity of said system

means for determining the operating speed of said prime mover of said temperature control system to maintain a selected ambient temperature, said speed determining means calculating a utilization ratio as a function of the determined operating speed of said prime mover and the available capacity of said temperature control system,

display means, coupled to said speed determining means, for graphically displaying said determined operating speed

5,005,366

AIR CONDITIONING SYSTEM

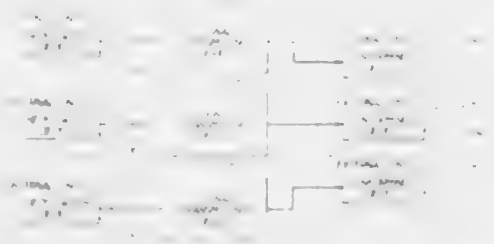
Yoshinori Murashige, Shizuoka, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Mar. 29, 1990, Ser. No. 502,168

Claims priority, application Japan, Mar. 29, 1989, 1-74966

Int. Cl.[5] G01M 1/10

U.S. Cl. 62—126 12 Claims



1 An air conditioning apparatus comprising external refrigerating circuit unit means for executing a refrigerating cycle operation,

fluid path control valve means, provided in the external refrigerating circuit unit means, for controlling the path of a fluid, the fluid path control valve means producing an audible sound when energized

internal air conditioning unit means associated with the external refrigerating circuit unit means for generating a flow of conditioned air, and

corresponding relationship check means for outputting an operation command signal to intermittently energize the fluid path control valve means thereby intermittently producing the audible sound from the fluid path control valve means

5,005,367

AUTOMATIC COOLANT SPRAYER FOR THE CAR INTERIOR

Feng-Lin Hwang, No. 21, Pa Te Rd., Chi Tu District, Keelung City, Taiwan

Filed May 23, 1990, Ser. No. 527,403

Int. Cl.[5] B60H 1/32

U.S. Cl. 62—133 5 Claims



1 An automatic coolant sprayer for use in a car interior, the car having a trunk compartment, comprising

(a) a container having, at a bottom edge thereof, ears for enabling installation, a containing chamber for accommodating a jet can, and in an upper part thereof, a cone-shaped, appropriately upslant degreed jet gate and a starting chamber

(b) a jet can having a top mounted valve connected to an arc driven plate, said jet can being loaded with a mixture of coolant liquid and jet-actuating air

(c) a starting gear arranged on a starting chamber bottom floor of said container and having a motor with an output shaft connected with a main gear allowing start-up of a reducing gear set to deliver a reducing speed turning a follower having a connected driving arm to force said valve's driven plate to be pressed down, thereby spraying said coolant out of an orifice

(d) a PC board having an IC time control circuit having a power source, a delay circuit and a shifter, and having connection via a power lead to a micro-switch fixed behind the knob of a car door, the shifter commanding conduction between the circuit and micro-switch, the micro-switch leading conduction to the power source of the circuit, which via a delay circuit will start motor operation, the IC time control circuit controlling stoppage of the motor operation

(e) a heat insulating layer provided on bottom, peripheral and top walls of said containing chamber

wherein said sprayer is installed on a top plate of said trunk compartment behind a rear seat and wherein said sprayer is able to spray out the coolant automatically

5,005,368

COOLNESS STORAGE AIR CONDITIONER APPLIANCE

Calvin D. MacCracken, Englewood, N.J., and Brian M. Silvetti, Tomkins Cove, N.Y., assignors to Calmac Manufacturing Corporation, Englewood, N.J.

Filed Feb. 7, 1990, Ser. No. 476,257

Int. Cl.[5] F25C 1/00

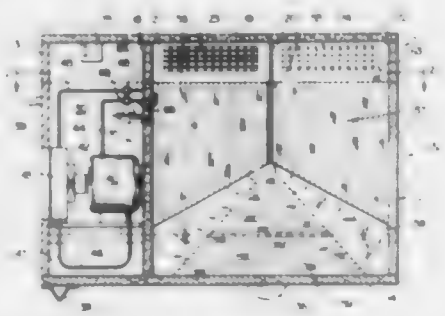
U.S. Cl. 62—139 13 Claims

1 A coolness storage air conditioner appliance for cooling an interior air space comprising

(a) a box-like thermally insulated housing of narrow lateral width relative to its height and longitudinal length and including a vertical bulkhead dividing the housing into upper inlet and outlet manifolds

(b) a plurality of thermally conductive closely spaced wall members defining water chambers and air passageways in the housing.

(c) the water chambers being adapted to contain water in heat transfer contact with the associated wall members,
(d) evaporator conduit means adapted to be in heat transfer contact with water in the associated water chambers,
(e) circulating means for moving air through said passage ways from and into said interior air space, and



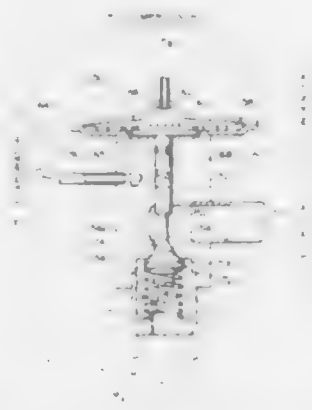
(f) compressor-condenser refrigeration means of a limited refrigerating capacity permitting heat discharge directly into said interior air space and adapted to circulate a refrigerant through said conduit means,
(g) whereby water in said chambers can be frozen during protracted charges cycles and melted during brief cooling cycles to cool said interior air space

5,005,369
REFRIGERANT PURIFICATION WITH AUTOMATIC AIR PURGE
Kenneth W. Manz, Paulding, Ohio, assignor to Kent-Moore Corporation, Warren, Mich.
Continuation-in-part of Ser. No. 405,236, Sep. 11, 1989, abandoned. This application Jan. 11, 1990, Ser. No. 463,449
Int. Cl.' F25B 43/04
U.S. Cl. 62—195 18 Claims



1 In a refrigerant handling system that includes a refrigerant storage container having separate liquid, vapor and purge ports and means releasably connected to said container for feeding liquid refrigerant to said vapor port so as to capture air in said container over said refrigerant, said refrigerant being characterized by a liquid/vapor saturation pressure that varies as a function of refrigerant temperature, means coupled to said purge port for purging air captured in said container comprising
means positioned externally of said container and coupled to said liquid feeding means for heat transfer contact with liquid refrigerant passing through feeding means to said container and responsive to temperature of liquid refrigerant in said feeding means as a measure of saturation pressure thereof
means coupled to said temperature responsive means and to said container for determining a pressure differential of air in said container over said saturation pressure, which varies as a function of quantity of air captured in said container, and
means coupled to said container purge port for venting air in said container when said pressure differential exceeds a preselected threshold

5,005,370
THERMAL EXPANSION VALVE
Hazime Tanaka, Yokohama; Teiichi Okamoto, Kawasaki; Kenji Yoshiga, Funabashi, and Kazuhiko Watanabe, Sagamihara, all of Japan, assignors to Fuji Koki Mfg. Co. Ltd., Tokyo, Japan
Filed Dec. 19, 1989, Ser. No. 452,426
Claims priority, application Japan, Dec. 19, 1988, 63-318549
Int. Cl.' F25B 41/00
U.S. Cl. 62—211 8 Claims



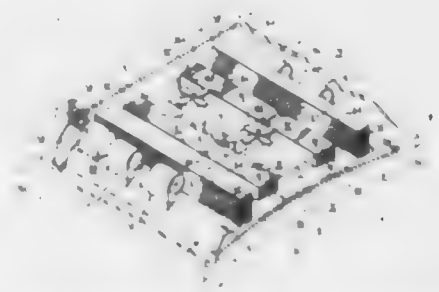
1 A thermostatic expansion valve to be used in a refrigerating system having a compressor, a condenser, an evaporator, and an expansion means, and using a refrigerant for heat exchange comprising
a valve housing having a refrigerant pathway in which a valve seat is formed and a diaphragm chamber in which a diaphragm is housed,
a valve body arranged in said valve housing so as to be movable between a closure position where it is in contact with said valve seat and an open position where it is separated from said valve seat, and connected with one side surface of said diaphragm so as to be movable between the closure position and the open position in accordance with a displacement of said diaphragm
biasing means, provided in said valve housing, for biasing said valve body toward the closure position,
auxiliary pressure applying means for applying a pressure of the refrigerant, sensed at a downstream side of said valve seat, on the side surface of said diaphragm
principal pressure applying means, having a thermal bulb which contains an actuator vapor and is located at an outlet of said evaporator, for applying a pressure of the actuator vapor in response to temperature at the outlet of said evaporator, on another side surface of said diaphragm, and
valve-body biasing pressure means, provided on said valve body, for biasing said valve body from the closure position toward the open position by the pressure of the refrigerant sensed at an upstream side of said valve seat in the refrigerant pathway of said valve housing,
wherein a degree of valve opening is defined by a different between a first force applied on one side surface of said diaphragm and a second force applied on the other side surface thereof
wherein the first force is a sum of the pressure of the refrigerant sensed at the downstream side of said valve seat and applied on one side surface by said auxiliary pressure applying means, and a biasing force, applied on one side surface by said biasing means by said valve body,
wherein the second force is a sum of the pressure of the actuator vapor, contained in the thermal bulb and applied on the other side surface of said diaphragm by said principal pressure applying means and the pressure of the refrigerant sensed at the upstream side of said valve seat in the refrigerant pathway of said valve housing and applied on the other side surface of said diaphragm by said valve body biasing pressure means, and
wherein a parameter for said first force and a parameter for said second force are so selected that the second force becomes higher than the first force so that the refrigerant can be supplied at a flow rate over a predetermined value to said evaporator even when a value of a degree of superheat is lower than a value of a degree of pre-set static superheat in a case where a difference in the pressure of the refrigerant on said valve body between the upstream side of said valve seat and the downstream side thereof is larger than a pressure difference which is used as a base for setting the degree of static superheat of said thermostatic expansion valve

5,005,371
ADSORPTION THERMAL STORAGE APPARATUS AND ADSORPTION THERMAL STORAGE SYSTEM INCLUDING THE SAME
Yasuo Yonezawa, Nara; Toshiya Ohnishi, Sakai; Shin'ichi Okumura, Ohtsu; Akiyoshi Sakai, Toyonaka; Hiroki Nakano; Masao Matsushita, both of Neyagawa; Atsushi Morikawa, and Motoshi Yoshihara, both of Yawata, all of Japan, assignors to Nishiyodo Air Conditioner Co., Ltd., Osaka, Japan
Filed May 18, 1990, Ser. No. 525,745
Claims priority, application Japan, Sep. 4, 1989, 1-228853
Int. Cl.' F25B 27/00
U.S. Cl. 62—238.6 16 Claims



1 An adsorption thermal storage apparatus formed of an evacuated vessel which comprises therein a refrigerant, and an adsorbent heating or cooling section and a refrigerant condensing or evaporating section located in communication with each other, said adsorbent heating or cooling section including an adsorbent material and first heat transfer means supporting thereon the adsorbent and having heat transfer surfaces for heating or cooling the adsorbent therethrough, said first heat transfer means being adapted to be connected to a heat source for heating the adsorbent, and an exothermic heat source and utilization means on a utilization side,
said refrigerant condensing or evaporating section including second heat transfer means holding refrigerant liquid and having heat transfer surfaces for condensing or evaporating the refrigerant therethrough,
said second heat transfer means being adapted to be connected to a cold source for condensing the refrigerant, and an endothermic heat source and the utilization means on the utilization side,
which apparatus is constructed so that thermal energy is stored by heating the adsorbent through the first heat transfer means to cause desorption of the refrigerant in gaseous state and condensing the gaseous refrigerant through the second heat transfer means whereas cold is generated by latent heat of evaporation of the refrigerant liquid through the second heat transfer means and heat is generated by heat of adsorption of the desorbed adsorbent through the first heat transfer means, and said cold and heat may be utilized singly or simultaneously

5,005,372
AIR CONDITIONER UNIT FOR MOUNTING ON OR IN THE ROOF OF A VEHICLE
Donald D. King, Chanhassen, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.
Filed Apr. 27, 1990, Ser. No. 515,970
Int. Cl.' B60H 1/32
U.S. Cl. 62—244 5 Claims



1 An air conditioner unit mounted on or within the roof of a vehicle, with the vehicle having a front and back, first and second sides, and a longitudinal axis which extends between the front and back, comprising
a plurality of refrigeration components, including first and second condenser sections and first and second evaporator sections,
and a frame for supporting said refrigeration components,
said frame having an outer periphery which includes first and second longitudinal ends, and a longitudinal axis between the first and second longitudinal ends which is parallel with the longitudinal axis of the vehicle,
said outer periphery of the frame further including first and second side edges which are adjacent the first and second sides, respectively, of the vehicle,
said frame including an intermediate section which defines a substantially flat upwardly facing intermediate support surface which extends between the first and second ends of the frame, in inwardly spaced relation from the first and second edges of the frame,
said intermediate support surface supporting said first and second condenser sections,
said intermediate section further including first and second upturned side portions which extend between the first and second longitudinal ends of the frame,
first and second upstanding walls on said intermediate section disposed adjacent to the first and second longitudinal ends of the frame, which cooperate with the upturned side portions of the intermediate section to define a condenser plenum,
said frame further defining first and second substantially flat upwardly facing lateral support surfaces respectively adjacent to the first and second side edges of the frame,
said first and second lateral support surfaces respectively supporting said first and second evaporator sections,
a major portion of the outer periphery of said frame being devoid of upstanding wall portions, including the entire first and second edges of the frame, and portions of the first and second longitudinal ends of the frame

5,005,373

ROOF UNIT FOR EVAPORATIVE COOLER

Mark East, 6615 Bergquist Ave., West Hills, Calif. 91304

Filed Nov. 16, 1989, Ser. No. 437,116
Int. Cl.[5] F25D 23/12
U.S. Cl. 62—259.1 8 Claims



1 An insulative roof unit comprising, in combination

(a) an evaporative cooler, said cooler including an underlying frame for engaging said roof,

(b) a tower-like enclosure element, said element being arranged to surround said cooler and including means capable of removably receiving vertical panels,

(c) said enclosure element including a base, a plurality of upright columns and a spire, said spire being supported by said columns and said means capable of removably receiving vertical panels including (i) an upwardly-directed flange adjacent the periphery of said base, (ii) a downwardly-directed flange adjacent the periphery of said spire, and (iii) said columns including vertical edge flanges whereby said flanges form channels for removably capturing the top and bottom edges of vertical side panels,

(d) said base surrounding said underlying frame and said column surrounding said body of said cooler, and

(e) said enclosure element is formed of material of lesser thermal conductivity than said cooler.

5,005,374

THERMAL WRAPS

Michael L. Spitler, Phoenix, Ariz., assignor to Chillynex Corporation, Tempe, Ariz.

Filed Apr. 27, 1990, Ser. No. 515,226
Int. Cl.[5] F25D 23/12
U.S. Cl. 62—259.3 20 Claims



1 A thermal wrap comprising

(a)

a flexible band having

an outer layer formed of thermal insulating material,

an inner layer formed of non-insulating material,

a pair of opposite ends,

a pair of opposite edges extending longitudinally between said opposite ends,

fastening means for securing said opposite ends to one another to form an annulus, and

a cavity formed between said inner layer and said outer layer, and

(b) a flexible cold pack carried within said cavity, said cold pack containing deionized water and a chemical freezing agent.

16 A thermal jacket for chilling a product stored within a container, said jacket comprising

(a)

a flexible band for encircling said container, said band including

an outer layer for facing away from said container, said outer layer being formed of thermal insulating material,

an inner layer for contacting said container, said inner layer being formed of non-insulating material,

a top edge,

a bottom edge,

a cavity formed between said inner layer and said outer layer, and

(b) a flexible cold pack carried within said cavity.

5,005,375

REFRIGERATION EQUIPMENT SERVICE APPARATUS WITH QUICK-DISCONNECT COUPLINGS

Kenneth W. Manz, Paulding, Ohio, and Richard Parks, Horton, Mich., assignors to Kent-Moore Corporation, Warren, Mich.

Filed Apr. 6, 1989, Ser. No. 334,178
Int. Cl.[5] F25B 45/00
U.S. Cl. 62—292 24 Claims



1 A system for servicing refrigeration equipment having at least one service fitting of first predetermined configuration, said system comprising

a plurality of separate devices for performing differing service operations on refrigerant within equipment under service, each of said devices including at least one service fitting of second predetermined configuration, and

a manifold separate from said devices and including first refrigerant conduit means having a first end coupling for releasable connection to said service fitting of first predetermined contour, second refrigerant conduit means having a second end coupling for selective alternate releasable connection to each of said service fittings of second predetermined contour, each of said first and second couplings including means for automatically sealing the associated said conduit means upon disconnection from the associated fitting, and means interconnecting said first and second conduit means to form a sealed refrigerant flow path between equipment under service through said service fitting, said first conduit means and said second conduit means to a refrigerant service device connected to said second end coupling,

such that sequential service operations may be performed on equipment under service by connecting said first conduit means and end coupling to the equipment service fitting, and connecting said second conduit means and end coupling to each of said devices in turn and operating said devices while said second end coupling is connected thereto to perform an associated service operation on the equipment.

5,005,376

REFRIGERANT INJECTION INTO OIL FOR SOUND REDUCTION

Howard H. Fraser, Jr., Lafayette, and Jacob A. Bayyouk, Clay, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 902,853, Sep. 2, 1986, Pat. No. 4,907,414.
This application Nov. 30, 1987, Ser. No. 126,530
Int. Cl.[5] F25D 19/00
U.S. Cl. 62—296 4 Claims



1 Refrigerant injection apparatus for foam generation in a low side hermetic compressor having an oil sump comprising

muffler means having header structure for delivering compressed refrigerant to said muffler means and a discharge line for conveying compressed refrigerant from said muffler means,

diverting means connected to said muffler means for diverting a small portion of said compressed refrigerant delivered to said muffler means including orifice means discharging said diverted refrigerant beneath the surface of said oil sump to generate foam.

5,005,377

SCRAP FREEZING TUNNEL

Miroslav Tucek, 142 Woodside Avenue, Apt. 203, Cambridge, Ontario, Canada (N1S 4A9), and

Filed Nov. 29, 1989, Ser. No. 442,636
Int. Cl.[5] F25D 17/02
U.S. Cl. 62—374 15 Claims



1 Apparatus for freezing scrap, comprising

means defining a tunnel having a central longitudinal axis,

means defining a scrap inlet communicating with the interior of the tunnel for delivery of scrap into a receiving end portion of the tunnel,

means defining a scrap outlet communicating with the interior of the tunnel for discharge of scrap from a discharge end portion of the tunnel,

means supporting the tunnel for rotation about its central longitudinal axis and inclined downwardly from the tunnel receiving end portion to the tunnel discharge end portion,

means for rotating the tunnel to cause movement of scrap from the tunnel receiving end portion to the tunnel discharge end portion,

means for delivering volatile cryogenic material into the interior of the tunnel,

means closing the tunnel sufficiently that spent cryogenic material in a gaseous state accumulates in the tunnel,

means defining an exhaust outlet communicating with the interior of the tunnel for discharge of the spent gaseous cryogenic material,

temperature sensing means for sensing and indicating the temperature of the spent gaseous cryogenic material,

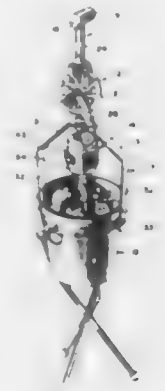
variable flow generating means for producing a discharge flow of the spent gaseous cryogenic material from the interior of the tunnel through the exhaust outlet and for permitting the rate of flow to be varied in response to the indicated temperature.

5,005,378

LIQUID CHILLING APPARATUS

Charles J. Ottenheimer, 1128 Ala Napunani, Suite 1105, Honolulu, Hi. 96818

Filed Apr. 10, 1990, Ser. No. 507,602
Int. Cl.[5] F25D 25/00
U.S. Cl. 62—378 11 Claims



1 A liquid chilling apparatus for supporting and rotating a bottle in a bucket containing a chilling medium that is at a temperature lower than that of the bottle contents, comprising

(a) a bridge adapted to be mounted on the bucket,

(b) a drive mechanism mounted on the bridge, the drive mechanism having a drive shaft projecting through the bridge, and

(c) a bottle gripping device coupled to the drive shaft beneath the bridge and adapted to be clamped on the neck of a bottle to support the bottle in the chilling medium for rotation by the drive mechanism,

the bottle gripping device comprising a cylindrical tube housing a bottle neck receiving chamber having at its lower end an elastomeric compressible lining therein,

the cylindrical tube being open at its bottom end and having a hinged wall portion extending upwardly from the open end,

the hinged wall portion being swingable into a position to provide a lateral access opening into the chamber, and

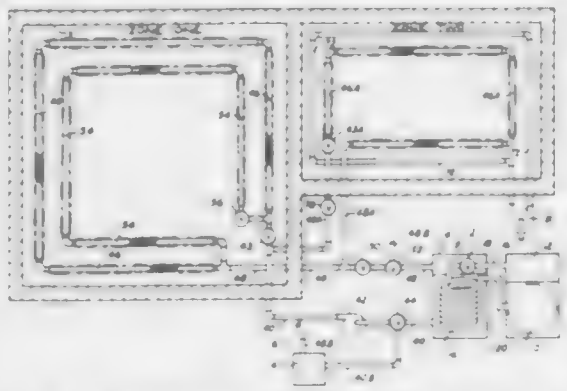
latch means for securing the hinged wall portion in chamber closed position with the lining compressed about the bottle neck.

5,005,379

AIR CONDITIONING SYSTEM

Michael E. Brown, 650 Horizons East - Apt. 101, Boynton Beach, Fla. 33435

Filed Jul. 5, 1989, Ser. No. 375,825
Int. Cl.[5] F25D 17/02
U.S. Cl. 62—434 11 Claims



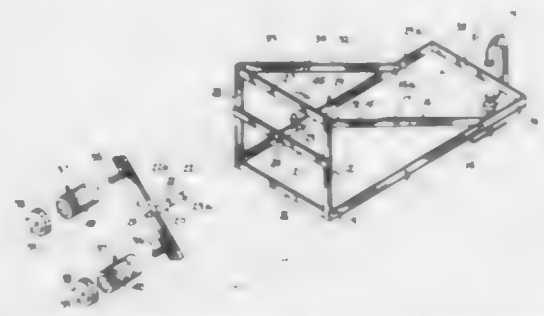
1 An air conditioning system for removing heat from a room, said system having a length of spiral wall pipe for being located in a room, means for mounting said length of spiral wall pipe around the upper periphery of a room permitting upward air flow therearound, said spiral wall having a plurality of internal and external spiral grooves extending along the length of the pipe, a chiller tank for containing a coolant, means for regulating the temperature of said coolant, said spiral wall pipe having an inlet end, said inlet end being connected to said chiller tank as an inlet, said spiral wall pipe having an outlet end, said outlet end being connected to said chiller tank to return a coolant to said chiller tank, pump means connected to said spiral wall pipe for pumping a coolant through said spiral wall pipe to remove heat from a room.

5,005,380

DUAL SPINDLE YARN SUPPORT AND DELIVERY APPARATUS

Patrick J. Downey, 283 4th Avenue West, North Bay Ontario, Canada

Filed Jan. 25, 1990, Ser. No. 470,376
Int. Cl.[5] D04B 3[illegible]/06
U.S. Cl. 66—1 A 9 Claims



1 A dual spindle yarn support and delivery apparatus comprising

a lower horizontal rectangular framework and a vertical rectangular framework pivotally mounted to and internally of the horizontal rectangular framework, and

a respective right and left linkage means mounted between the respective right and left side portions of the lower horizontal framework and the vertical framework for pivotally positioning the vertical rectangular framework relative to the horizontal rectangular framework, and

a shaft rotatably mounted to the vertical rectangular framework adjacent a rear terminal end of the shaft, and

a propeller brace orthogonally and fixedly mounted to a forward terminal end the propeller brace medially of the propeller brace, and

a respective first and second yarn container mounted adjacent respective opposed terminal ends of the propeller brace.

5,005,381

HOSIERY FINISHING APPARATUS

Stanley H. Moss, Strabane, Northern Ireland, assignor to Adria Limited, Northern Ireland

PCT No. PCT/GB88/00760, § 371 Date Mar. 12, 1990, § 102(e) Date Mar. 12, 1990, PCT Pub. No. WO89/02947, PCT Pub. Date Apr. 6, 1989
PCT Filed Sep. 19, 1988, Ser. No. 469,522
Claims priority, application United Kingdom, Sep. 26, 1987, 8722695
Int. Cl.[5] D04B 15/32
U.S. Cl. 66—149 S 3 Claims

1 Apparatus for finishing hosiery articles (37) including a chamber (10) for causing relaxation of articles (37) in it, means (31) for connecting the chamber (10) to a take down tube (4) of a knitting machine (2) for receiving articles (37) from the knitting machine (2), and means (25) for controlling the exit of articles (37) from the chamber (10) in synchronization with a knitting cycle of the knitting machine (2) characterized in that a fan (5) is connected through a valve (6) to the take-down tube (4) and to the chamber (10), the valve (6) having a first position in which the fan (5) draws air through a by-pass (9) from the take-down tube (4), and a second position in which the fan (5) draws air through a trap (8) from the chamber (10) and blows air through the by-pass (9) into the take-down tube (4).

5,005,382

ELECTROMECHANICAL MOTOR REVERSING

John P. Duve, Brookfield, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jan. 16, 1990, Ser. No. 465,832
Int. Cl.[5] D06F 37/40
U.S. Cl. 68—12.16 6 Claims

5 A motorized reversible drive comprising

(a) an alternating current drive motor having plural stator coil segments and adapted to have the rotor shaft of said drive motor connected to a device to be driven,

(b) electromechanical programmer means operable to effect timed intermittent operation of said motor, said programmer means having

(i) a timing motor,

(ii) a rotatable cam,

(iii) advance means driven by said timing motor, said advance means operable to effect timed advancement of said cam,

(iv) switch means having a movable contact blade means operably movable between a first state closing a first set of electrical contacts and a second state opening said first set and closing a second set of contacts, said switch means series connected with said drive motor such that said second set of contacts reverses motor rotation from said first set,



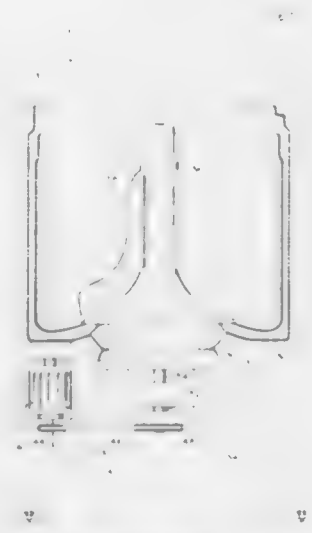
(v) follower means operative in response to said advancement of said cam to move said contact blade means between said first and second states with said cam configured to provide a predetermined time delay not less than 1.30 second between said first and second states.

5,005,383

WASHING MACHINE MOTOR WITH HIGH ROTOR RESISTANCE

Lawrence G. Clawson, Dover, and Joseph R. Adamski, Sudbury, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Feb. 12, 1990, Ser. No. 478,314
Int. Cl.[5] D06F 37/30, 37/38
U.S. Cl. 68—133 5 Claims



1 A washing machine comprising

a clothes basket having a clothes agitator,

a permanent split capacitor motor having first and second stator windings,

a speed reducer linked between said motor and said agitator,

control means for alternately switching line voltage to said first and second stator windings of said motor to drive said motor and said agitator in alternately reversing direction, and

said motor having a high resistance rotor for increasing starting torque and reducing starting current to minimize the heat generated in said first and second stator windings while starting said motor wherein the ratio of locked rotor amps to idle amps of said motor is less than 2.5.

5,005,384

MECHANISM FOR A COMBINATION PADLOCK

Tzung-I. Lo, and Teng-Yun Wang, both of P.O. Box 96-405, Taipei 10098, Taiwan

Filed Jun. 29, 1990, Ser. No. 546,[illegible]
Int. Cl.[5] E05B 37/02
U.S. Cl. 70—25 3 Claims



1 An improved mechanism for a combination padlock comprising

a body portion, which including one end having a bigger diameter with a shackle hole, and the other end thereof having a main shaft with a smaller diameter to be mounted with a combination wheel assembly, and a T-shaped slot being provided on said smaller diameter shaft for receiving a T-shaped block therein, and said main shaft having a round groove to be mounted with a retaining ring, and said main shaft having a center hole for mounting two lock tumblers and a spring therein, and said main shaft having a shackle hole of which the lower portion has a screw hole for receiving a screw therein, and one end of said main shaft being mounted with a cap,

a shackle having a longer end with a flat part and a round groove, and said flat part having a semi-circular recess, and a short end with a semi-circular recess,

said combination wheel assembly including several combination rings, driving rings and partition rings, and said driving rings each having a plurality of teeth on one side of the outer surface thereof, and having a driving-ring hole with a recess, and said partition rings each being a thin ring with a recess and a lug on an inner edge of said partition ring, and said partition rings being installed between two said driving rings, and the inner surface of said combination rings having a plurality of inner teeth to be engaged with the teeth on said driving rings,

said T-shaped block being movably installed in said T-shaped slot, in which at least two springs are installed, and the lower end of said T-shaped block being extended into said center hole of said main shaft and into a space between said two lock tumblers,

said two lock tumblers each having a stud, while other ends thereof being formed into semi-spherical portions, and said spring being mounted between said two lock tumblers upon the same being installed in said center hole of said main shaft,

said cap having a round hole for mounting on said main shaft after said combination wheel assembly is mounted in place, and at one side of said cap, a round hole being provided and being aligned with said shackle hole, and said cap also having a cylindrical hole on the bottom of said round hole for receiving the lower part of said screw, and

said center hole being in communication with said T-shaped slot, and said T-shaped block being mounted within the inner diameter of said combination wheel assembly, and said recesses in said driving rings being used for providing said T-shaped block with a space to move upwards upon said combination wheel assembly rotating to a given position so as to have said two lock tumblers and said spring moved freely, and said padlock able to be locked up by moving said T-shaped block downwards until being engaged in said space between said two lock tumblers so as

to have said semi-spherical portions of said two lock tumblers retained in said two semi-circular recesses respectively

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5,[illegible],385

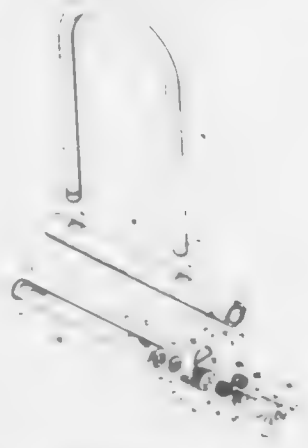
Patent Not Issued For This Number

5,005,386

PADLOCK WITH AN IMPROVED LOCKING STRUCTURE

Charlie Y. Chang, 293 Pei Tun Road, Taichung, Taiwan

Filed Jun. 26, 1990, Ser. No. 543,334
Int. Cl.[5] E05B 67/22
U.S. Cl. 70—39 **1 Claim**



1 An improved locking structure of a padlock, comprising

a lock body, being hollow and cylindrical in shape, having an opening at front end thereof and two shackle receiving holes located at appropriate positions thereof to receive shackle arms which have locking notches located at end portions thereof, a locking plate manufactured in proportion to inner diameter of said lock body and assembled inside said lock body and capable of sliding axially inside said lock body and having two shackle engaging slots thereon with locking semi-circular sectors at one end thereof to facilitate a locking engagement between said locking notches and said locking semi-circular sectors,

a receiving block, which is assembled firmly inside said lock body, being semi-circular on other end thereof with axial pin recess therein and a semi-circular retaining groove thereon to facilitate a locking spring,

a sectored disk, assembled between said locking plate and receiving block, having a cam sector thereon and an oval hole thereinto;

an axial spring resisting the circular cross-sectional end of said receiving block, and,

a locking core member, capable of sliding axially inside said lock body for an appropriate distance, having on one side thereof a rotating bolt whose one end is firmly assembled with said locking plate and sectored disk, and having on other side thereof a locking head with a key hole thereinto and a sliding groove therein of an appropriate length,

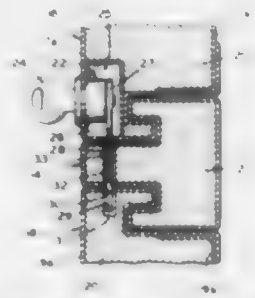
therefore, without using a key to drive said locking core member of a padlock, it is possible to achieve a speedy and ensuring locking mechanism by employing integral structures mentioned above and by simply pushing said U-shaped shackle arms into said shackle engaging slots of said locking plate and then pushing in said locking core member, causing said locking spring to be engaged with locking spring catch in order to refrain said locking core member from moving about and in the meantime driving said locking plate to slide axially in order to cause said locking semi-circular sectors to be in an engaging position with said locking notches of said shackle arms

5,005,387

CABINET LOCKING DEVICE

Robert J. Cuffr, Swanton, Ohio, assignor to Meilink Industries, Inc., Whitehouse, Ohio

Filed Nov. 20, 1990, Ser. No. 616,215
Int. Cl.[5] E05B 65/46
U.S. Cl. 70—86 **12 Claims**



1. A locking device for a cabinet having a housing with at least a first and a second drawer slidable into and out of the housing and a mullion attached to the housing and positioned between the first and second drawers, the locking device comprising a rotatable locking means mounted on a first drawer, a cam means having one end attached to said locking means and cam receiving means formed on the second drawer and a mullion, positioned between the drawers and attached to cabinet housing for the drawers, whereby when said locking means is in an unlocked position, said cam means is completely disposed in the first drawer and the drawers are free to move into and out of the cabinet housing and when said locking means is rotated to a locked position, said cam means engages said cam receiving means thereby locking and preventing movement of the drawers in the cabinet housing

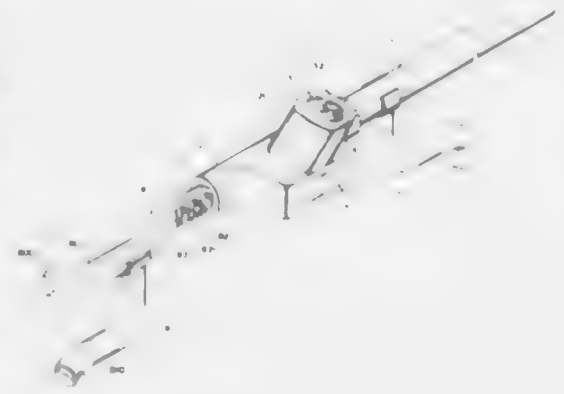
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5,005,388

AUTOMOBILE STEERING LOCK

Tsung I. Lo, 5th Fl., No. 76, Ai-Kuo E. Road, Taipei, Taiwan

Filed Apr. 6, 1990, Ser. No. 505,425
Int. Cl.[5] B60R 25/02
U.S. Cl. 70—209 **7 Claims**



1. An anti-theft device for attachment to the steering wheel of an automobile comprising

(a) an elongate tubular member having an open inner end, a closed outer end and an elongate passageway extending along its longitudinal axis from the open inner end towards the closed outer end;

(b) a first L-shaped member secured to the tubular member and defining a first hook spaced from the open inner end of the tubular member and open towards the closed outer end of the tubular member for engaging a first inner portion of a steering wheel,

(c) a housing means including an inner end, an outer end and a passageway extending therethrough from the inner end to the outer end, the outer end being secured to the open inner end of the tubular member to place the elongate passageway of the tubular member in axial alignment with the passageway of the housing means,

(d) a lock means including a downwardly extending locking member having first and second surfaces,

(e) an elongate compartment formed in the housing means the compartment extending from the outer end of the housing means towards the inner end thereof and disposed in parallel to the passageway of the housing means,

(f) an elongate actuating member slidably disposed in the elongate compartment, the actuating member including at least one notch formed therein and defined by a vertical side wall and a sloping side wall, the vertical side wall being positioned closer to the outer end of the housing means than the sloping side wall, and a recess formed in the actuating member and defined by a stop side wall for engagement by the locking member,

(g) a first spring means disposed in the elongate compartment for biasing the actuating member towards the inner end of the housing,

(h) first means for retaining the actuating member and the first spring means in the elongate compartment,

(i) means for securing the lock means to the housing means, whereby the locking member is rotatable between an unlocked position, in which the first surface thereof engages the stop side wall of the recess of the actuating member, and a locking position wherein the second surface thereof engages the stop side wall of the actuating member,

(j) an elongate rod member provided with a plurality of longitudinally spaced notches and telescopically receivable within the axially aligned passageways of the housing means and tubular member, and a second L-shaped member secured to the rod member and defining a second hook open in a direction opposite to the first hook for engaging an opposed second inside portion of the steering wheel,

(k) at least one transverse passageway formed in the housing means and extending across the elongate compartment and intersecting the passageway in the housing means,

(l) a locating member slidably received within the transverse passageway, the locating member including an opening sized to receive the actuating member therethrough and positioning the locating member within the notch of the actuating member, and a second spring means disposed in the transverse passageway for urging the locating member towards the passageway of the housing means, whereby when the actuating member is in the locking position, the locating member engages a notch of the rod member, and when the actuating member is in its unlocked position, the locating member is disengaged from the notch of the rod member, and

(m) second means for retaining the locating member and second spring means within the transverse passageway

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5,005,389

STEERING WHEEL LOCK

Mao-Hsiung Wang, No. 29-27, Hsu Tsuo Kang, Nan Kang Tsun, Ta Yuan Hsiang, Tayuan Hsien, Taiwan

Continuation-in-part of Ser. No. 284,384, Dec. 14, 1988, abandoned. This application Apr. 20, 1989, Ser. No. 340,766
Int. Cl.[5] B60R 25/02
U.S. Cl. 70—209 **1 Claim**

1 A steering wheel lock comprising

(a) an inner tubular member connected at one end with one leg of a first U-shaped member and having an outer stop shoulder at an other end, said first U-shaped member having two legs each defining a first hole in alignment with said inner tubular member,

b) a hidden tubular member having a first outer stop shoulder at one end and adapted to be inserted through said inner tubular member,

c) an outer tubular member connected at one end with one leg of a second U-shaped member and having a second outer stop shoulder at an other end, the second U-shaped member having two legs each defining a second hole in alignment with the outer tubular member, said outer tubular member adapted to receive said inner tubular member so as to prevent said inner tubular member from detaching from said outer tubular member by engagement between said inner stop shoulder and said second outer stop shoulder



(d) a lock core disposed in a leg of said second U-shaped member, and,

e) an elongated latch rod having a handgrip at one end and circular grooves disposed toward an other end, said latch rod adapted to be inserted through said second holes in said second U-shaped member, said outer tubular member and said inner tubular member so as to push said hidden tubular member toward and into the first holes of said first U-shaped member of said inner tubular member such that said lock core may engage at least one of said grooves

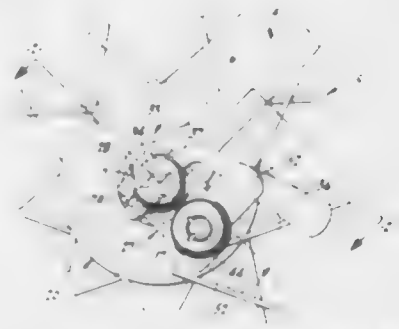
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5,005,390

LOCK FOR QUICK RELEASE MECHANISM ON BICYCLE WHEELS, SEATS AND CAR RACKS

George R. Giannini, 6419 Longridge Ct., Foresthill, Calif. 95631, and George G. Giannini, 500 Mansion Ct., Apt. No. 203, Santa Clara, Calif. 95054

Filed Apr. 30, 1990, Ser. No. 516,572
Int. Cl.[5] B60R 25/00
U.S. Cl. 70—225 **6 Claims**



1 For use with a bicycle having a frame, a front fork, a front wheel with a hub rotatably mounted on a hollow axle spanning the space between and engaging the front fork, a cam actuated

quick release mechanism including a drawbar shaft extending through the axle, a lever shaft and a cam actuating lever connected to the drawbar shaft for selectively securing and releasing the front wheel relative to the front fork, a lock device comprising

a a torque limiting nut mounted on one end of the drawbar shaft;

b a lock housing positioned on the other end oft he drawbar shaft;

c a lock mounted on said housing and including a blade movable between a first position in non-interfering relation with the cam actuating lever and a second position in interfering relation therewith; and,

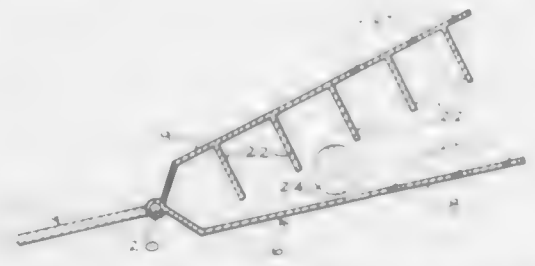
d lock engaging means for selectively moving said blade between said first position and said second position with the cam actuating lever in front wheel securing relation

5,005,391

VEHICLE ANTI-THEFT DEVICE

Gerald L. Gibson, FM 772 W., P.O. Box 1202, Kingsville, Tex. 78363

Filed Oct. 1, 1990, Ser. No. 590,738
Int. Cl.[5] E05B 65/12
U.S. Cl. 70—238 5 Claims



1. A vehicle anti-theft device for connection between the steering wheel and one of the floor controls such as a brake, clutch or gas pedal for immobilizing the use of the vehicle comprising,

an elongate body having first and second ends,

said first end including a connection for engaging one of the floor controls,

said second end including first and second jaws, one of the jaws pivotly connected to the body,

a plurality of spaced generally parallel dividers positioned between the jaws and connected to one of the jaws thereby providing an adjustable connection for attachment to a steering wheel, and

means on both said jaws for receiving lock means for locking said jaws together

5,005,392

SWITCH DEVICE IN CAR LOCK DEVICE

Tboru Shibata, Utsunomiya, Japan, assignor to Mitsui Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 14, 1990, Ser. No. 537,970
Claims priority, application Japan, Jun. 22, 1989, 1-160238
Int. Cl.[5] E05B 65/36
U.S. Cl. 70—264 1 Claim

1 In a car lock device consisting of a body, a cover plate fixed to a surface of said body and a back plate fixed to a back of said body and fixed to a door, the improvement comprising

a lock lever disposed between said body and said back plate, rotating with a center shaft in a longitudinal direction being the center and switching said lock device to a lock state and an unlock state,

a switch member fitted to an outer surface of said back plate, having a rotary shaft on the same axis as that of said center shaft, connected electrically to lock devices of other doors and sending a switch signal of at least either one of lock and unlock states to said other lock devices

a switch arm fixed to said rotary shaft, rotating between said lock state and said unlock state and equipped with an engagement hole at an end portion thereof,

an arcuate hole formed at an end portion of said lock lever and having its center at said center shaft, and



a rod having one of the end portions thereof meshed with said arcuate hole of said lock lever and with said engagement hole of said switch arm, and having the other end portion thereof interconnected to a key cylinder;

said arcuate hole having the length half the moving distance of said engagement hole of said switch arm by said key cylinder

5,005,393

ELECTRONIC KEY LOCKS

Johannes M. Ewalds, Delft; Johan C. Hordijk, Oosterhout, and Evert Nieuwkoop, Pijnacker, all of Netherlands, assignors to Chubb Lips Nederland bv, Dordrecht, Netherlands

Filed Apr. 10, 1990, Ser. No. 508,340
Claims priority, application United Kingdom, Apr. 13, 1989, 8908386
Int. Cl.[5] E05B 47/00
U.S. Cl. 70—277 10 Claims



1. A lock comprising a bolt, a rotatable thrower for retracting the bolt, an electromechanical-release mechanism which normally prevents retraction of the bolt when thrown but which can be actuated to permit such retraction, a rotatable barrel defining a keyway to receive and be turned by a proper coded key, reading means associated with the keyway for electronically transducing the code from a proper key, and processing means to receive the code transduced by said reading means and to issue a signal to actuate said release mechanism upon the recognition of a correct code,

said bolt, thrower, and release mechanism being housed within a main casing of the lock,

said barrel and reading means being housed within a cylinder unit distinct from said main casing,

said processing means being disposed within said main casing or being in communication therewith from a remote location

said thrower and barrel having respective cooperating mechanical coupling means and said main casing and cylinder unit having respective cooperating electrical connector means

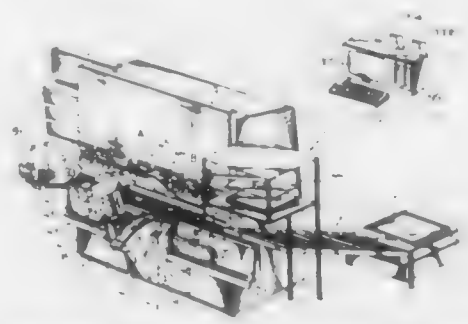
whereby the lock is assembled by attaching the cylinder unit exteriorly of the main casing thereby to establish a rotary driving connection from the barrel to the thrower through said mechanical coupling means and to establish an electrical connection from the reading means to the processor through said electrical connector means

5,005,394

PROGRAMMING SYSTEM FOR THE SINGLE ARM BENDING ROBOT

Franco Sartorio; Fabrizio Grassi; Gianpaolo Prunotto, and Francesco Sgandurra, all of Turin, Italy, assignors to Amada Company, Limited

Filed Dec. 14, 1988, Ser. No. 284,440
Claims priority, application Italy, Dec. 15, 1987, 68073 A/87; Dec. 15, 1987, 68074 A/87
Int. Cl.[5] B21J 13/10
U.S. Cl. 72—10 15 Claims



1 A device for controlling a manipulator for handling a workpiece processed by a press brake which is equipped with a side sensor for detecting a position of the workpiece in a horizontal X-axis direction parallel to a longitudinal direction of upper and lower dies of the press brake, the manipulator being arranged to be movable in the X-axis direction, and a head of the manipulator being arranged to be rotatable about a first shaft and a second shaft of the manipulator, comprising:

means for inputting a position of the workpiece for an initial bending stage,

means for inputting an angle of rotation of the workpiece about the first and, or the second shafts of the manipulator for each of a plurality of bending stages;

means for sequentially calculating a position of the workpiece for the second and subsequent bending stages, based on the initial position of the workpiece which is input from the workpiece initial position input means, and the angle of rotation of the workpiece about the first and/or the second shafts at each of the bending stages which is input from the workpiece rotation angle input means

means for producing a first instruction data for rotating the workpiece about the first and/or the second shafts of the manipulator for each of the bending stages, based on the position of the workpiece at each of the bending stages, and

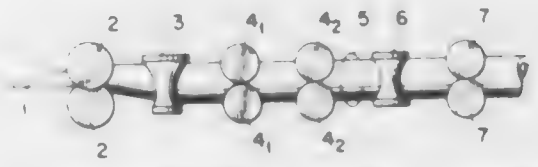
means for producing second instruction data for detecting a position of the workpiece in the X-axis direction by means of the signal from the side sensor at a bending stage for bending a long side of said workpiece

5,005,395

METHOD OF MANUFACTURING ELECTRIC WELDED PIPES UNDER HOT CONDITIONS

Ichiro Yasumura, and Kuniharu Fujimoto, both of Ibaraki, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Division of Ser. No. 225,191, Jul. 28, 1988, Pat. No. 4,945,743.
This application Mar. 27, 1990, Ser. No. 499,908
Int. Cl.[5] B21D 5/12; 51/00
U.S. Cl. 72—128 43 Claims



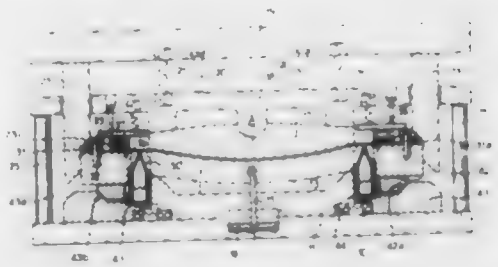
1 A method of producing an electric-welded pipe by continuously shaping a steel sheet as it passes from upstream to downstream along a constant pass-line into a tubular form in a hot condition, said shaping step being performed with a forming roll arrangement comprising a series of roll stands of a constant pass-line type in combination with a downward bending system said shaping step including positioning the sheet so as to substantially lie in a horizontal plane and bending the sheet with respect to a vertical plane extending perpendicular to said horizontal plane such that a central portion of the sheet is bent upwardly away from said horizontal plane and edges of the sheet which are joined together are bent downwardly away from said horizontal plane, said pipe formed after said shaping step having a central axis substantially coplanar with said horizontal plane

5,005,396

METHOD AND DEVICE FOR FORMING A SHEET-METAL BLANK IN PARTICULAR FOR MAKING A CATHODE TUBE MASK, AND CATHODE TUBE MASK OBTAINED ACCORDING TO THIS METHOD

Gabriel DeSmet, Nogent sur Oise, France, assignor to Sollac, Puteaux, France

Filed Oct. 4, 1989, Ser. No. 416,918
Claims priority, application France, Oct. 5, 1988, 88 13042; Jan. 18, 1989, 89 00545
Int. Cl.[5] B21D 22/26
U.S. Cl. 72—309 20 Claims



1 Method for forming a sheet-metal blank (1), in particular for making a cathode tube mask, on a press, comprising

arranging the sheet-metal blank (1) between a deformable punch (17) and a deformable die (13),

holding a peripheral part of the sheet-metal blank (1) over a small width in a peripheral clamping member (30),

clamping a central part of the sheet-metal blank (1) between the deformable punch (17) and the deformable die (13),

forming the central part of the sheet-metal blank (1), according to a given curvature, by deforming the punch (17) and the die (13) through the action of an upper bearing plate (19) so as to place a mean axis of the sheet-metal blank (1) in a given position, relative to a neutral axis of the punch

(17), the die (13) and a press assembly which holds the punch and die, such that it is possible to produce, at least in localized zones of the sheet-metal blank (1), an adjustable internal stress,

exerting a mechanical force on localized zones of the clamping member (30), moving closer together the opposite elements of the clamping member so as to produce on the peripheral part (1b) of the sheet-metal blank (1) situated between the punch (17) and die (13) assembly and the clamping member (30), a controlled buckling directed by a thrusting force on the peripheral part of the sheet-metal blank (1), while ensuring that the thickness and perimeter of the sheet-metal blank remain substantially constant,

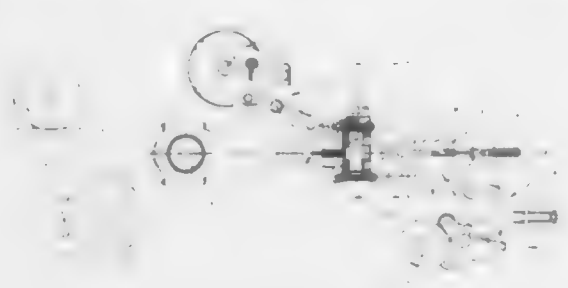
simultaneously applying and unfurling a peripheral zone (1b) of the sheet-metal blank (1) along the walls of the punch (17) or the die (13), by a relative movement of the clamping member (30) with respect to the punch (17) or to the die (13) so as to obtain a final flanged edge.

5,005,397

METHOD FOR PROVIDING PROGRESSIVE FORMERS WITH QUICK-CHANGE TOOLING

William H. Hite, and Gene E. Allebach, both of Tiffin, Ohio, assignors to The National Machinery Company, Tiffin, Ohio

Division of Ser. No. 230,327, Aug. 9, 1988, Pat. No. 4,898,017.
This application Nov. 13, 1989, Ser. No. 434,301
Int. Cl.[5] B21J 13/08, 13/12
U.S. Cl. 72—405 4 Claims



1. A method of providing progressive formers having a frame and reciprocating slide with quick-change tooling comprising providing a plurality of tooling sets each including

(a) a die breast with a plurality of dies therein for mounting on said frame,

(b) a transfer assembly including transfer fingers for progressively transferring workpieces to said dies and which includes transfer adjusting means for adjusting operation of said transfer fingers,

(c) a separate tool assembly for mounting on said slide providing tools operable in cooperation with each die to progressively form said workpieces, said tool assembly including second adjustable means for adjusting the position of said tools with respect to said dies in all directions,

(d) adjusting said transfer adjusting means and said second adjusting means while said die breast, transfer assembly, and tool assembly are in said machine to fine-tune said tool set, and

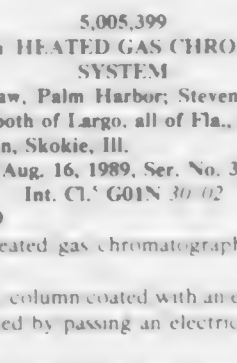
(e) removing and reinstalling said die breast, said transfer assembly and said tooling assembly without changing said adjustment of said transfer and said tool assembly whereby fine-tuning of said adjustments performed prior to removal of a tool set is retained when said tool set is reinstalled so that reinstalled tooling sets may be used without further substantial fine-tuning.

5,005,398

HEMMING MACHINE

Owen C. Evans, Birmingham, Mich., assignor to Craftmation, Inc., Troy, Mich.

Filed Jun. 1, 1990, Ser. No. 531,920
Int. Cl.[5] B21J 9/18
U.S. Cl. 72—450 6 Claims



1. A machine for hemming the edge of a relatively flat panel comprising

a base,

a fixed die supported by said base in vertically spaced relation thereto and having a contour complementary to an edge of said panel,

an arm pivoted on said base and extending generally vertically therefrom,

a die head having a hemming die thereon with an edge contour complementary to the edge contour of said panel,

a pair of parallel links spaced from one another and having one end pivotally mounted on said arm, respectively, and an opposite end pivotally mounted on said die head, respectively, so as to support said die head for movement relative to said arm,

a first cam surface on said base extending at an angle to the vertical,

a cam follower on said die head and engagable with said cam surface to effect lateral movement of said die head relative to the vertical, and

an extendable fluid actuator having one end secured to said base and an opposite end controlling movement of said die head, energization of said fluid actuator effecting both vertical and lateral movement of said die head and hemming die relative to said fixed die.

5,005,399

RESISTIVELY HEATED GAS CHROMATOGRAPH SYSTEM

James R. Holtzclaw, Palm Harbor; Steven J. Madry, and R. Craig Lashley, both of Largo, all of Fla., assignors to Brunswick Corporation, Skokie, Ill.

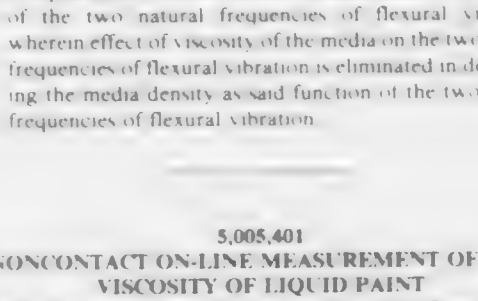
Filed Aug. 16, 1989, Ser. No. 394,758
Int. Cl.[5] G01N 30/02
U.S. Cl. 73—23.39 12 Claims

1. A directly heated gas chromatograph column assembly comprising

a fused capillary column coated with an electrically conductive film heated by passing an electrical current through said film,

a pair of electrical conductors each connected to said film,

an insulating low thermal mass support carrying said column for minimizing heat loss and permitting rapid heating and cooling of said column, and



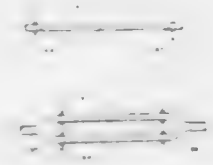
control means electrically connected to said conductors for selectively developing a current through said film to directly heat said column.

5,005,400

DUAL FREQUENCY DENSITY METER

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Filed Jul. 18, 1989, Ser. No. 380,820
Int. Cl.[5] G01N 9/00
U.S. Cl. 73—32 A 13 Claims



1. A method for measuring density of media comprising in combination

(a) creating two different natural frequencies of flexural vibration of conduit containing the media by laterally vibrating at least one conduit providing at least one flow passage,

(b) measuring the two natural frequencies of flexural vibration, and

(c) determining density of the media as a function of a ratio of a parameter to a differential combination of the squares of the two natural frequencies of flexural vibration, wherein effect of viscosity of the media on the two natural frequencies of flexural vibration is eliminated in determining the media density as said function of the two natural frequencies of flexural vibration.

5,005,401

NONCONTACT ON-LINE MEASUREMENT OF THE VISCOSITY OF LIQUID PAINT

Brian M. Pierce, Moreno Valley, and David B. Chang, Tustin, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

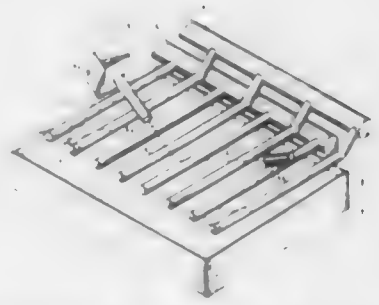
Filed Feb. 12, 1990, Ser. No. 478,893
Int. Cl.[5] G01N 11/00, 13/02
U.S. Cl. 73—54 19 Claims

1. Apparatus for measuring the measuring the viscosity of a liquid, comprising

means for initiating a surface wave of predetermined wavelength in a fluid sample of known depth,

frequency signal generating means for generating a frequency signal as a function of the surface wave frequency,

decay signal generating means for generating a decay signal as a function of the rate of decay of the surface wave magnitude, and



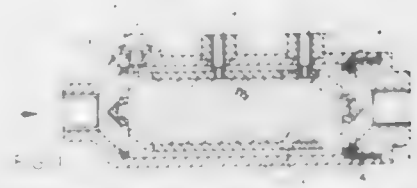
computing circuit means connected to received the frequency and decay signals for computing the viscosity of the fluid as a function thereof.

5,005,402

MEASURING CELL FOR DETERMINATING THE ALCOHOL CONTENT AND/OR CALORIFIC VALUE OF FUELS

Franz Pischinger; Ernst Scheid; Ulrich Hilger, and Gunter Schmitz, all of Aachen, Fed. Rep. of Germany, assignors to FEV Motorentechnik GmbH & Co. KB, Aachen, Fed. Rep. of Germany

Filed Dec. 6, 1989, Ser. No. 446,780
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1988, 3843243
Int. Cl.[5] G01N 27/22, F02D 41/04
U.S. Cl. 73—61.10 R 11 Claims



1. A measurement cell for determining the alcohol content and calorific value of a fuel, the cell including a housing having inner walls defining a cavity for a flow of a fuel in a particular direction, the measurement cell comprising

a symmetrical flow body located within the cavity, said flow body and the inner walls of the housing being parallel and thereby defining a passageway for the flow of fuel through the cavity in the particular direction and around the flow body, whereby the flow body is wetted by the fuel,

a first electrode located on the outside of said flow body, and

an electronic measuring circuit connected to said first electrode to measure the capacitive dielectric of the fuel.

5,005,403

PROCESS AND APPARATUS FOR THE DETERMINATION OF THE CONCENTRATION OF A SUBSTANCE DISSOLVED IN A SOLVENT BY MEANS OF AN OSMOMETER

Ernst Steudle, Dorotheenstrasse 3, D-8581 Eckersdorf, and Burkhard Stumpf, Trebgast, both of Fed. Rep. of Germany, assignors to Ernst Steudle, Eckersdorf, Fed. Rep. of Germany

Filed Jul. 25, 1989, Ser. No. 385,324
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1988, 3825208
Int. Cl.' G01N 13/04
U.S. Cl. 73—64.3 40 Claims



1 A process for testing a test solution, said test solution comprising a solvent and at least one solute dissolved in said solvent, said process employing a first chamber defining a first volume, a second chamber defining a second volume, said first volume being less than said second volume and a membrane interposed between said first and second chambers, said process comprising the steps of

(a) introducing an osmometer solution into said first chamber;

(b) introducing a reference solution into said second chamber;

(c) determining a reference pressure P_0 established in one of said first and second chambers.

(d) replacing said reference solution in said second chamber with said test solution.

(e) limiting the amount of fluid exchange between said first and second chambers to a value equalling approximately zero.

(f) limiting the amount of deflection of said membrane to a preselected value.

(g) maintaining a constant fluid pressure in one of said first and second chambers.

(h) determining at least one pressure change characteristic occurring in the other of said first and second chambers, and

(i) using said at least one determined pressure change characteristic to determine the concentration of said at least one solute dissolved in said solvent

5,005,404

SYSTEM FOR DETERMINING AXIAL DISPLACEMENT OF A ROD, PARTICULARLY THE PLUNGER OF AN ELECTROMAGNETIC FUEL INJECTOR

Mario Ricco; Vincenzo Damiani, both of Bari, and Michele Picciallo, Palese, all of Italy, assignors to Weber S.r.l., Turin, Italy

Filed Apr. 10, 1990, Ser. No. 507,653
Claims priority, application Italy, Apr. 12, 1989, 67263 A/89
Int. Cl.' G01M 19/00
U.S. Cl. 73—119 A 7 Claims

1 An apparatus comprising

a body including a seat portion and a housing in communication with said seat portion,

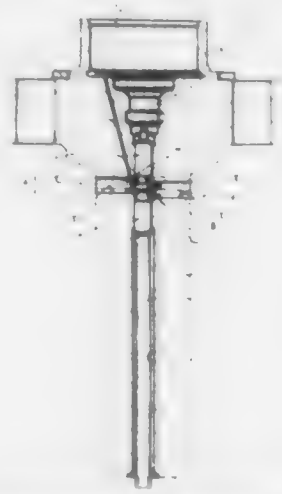
a rod disposed in said seat portion, said rod having surface portions;

said body and said surface portions defining two chambers for high pressure fluid, said rod including a separating portion disposed between said two chambers

said seat portion enabling fluid communication between said two chambers,

said separating portion slidably coupled with said seat portion, said separating portion including a pair of annular grooves defining an annular surface portion of said rod, and

a proximity transducer disposed within said housing of said body, said proximity transducer for determining displacement of said annular surface portion

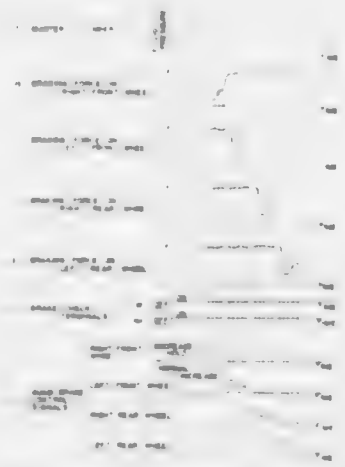


5,005,405

METHOD OF TESTING AN ANTI-LOCK BRAKE CONTROL SYSTEM OF A MOTOR VEHICLE

Seiichi Ishizeki, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 304,175, Jan. 31, 1989, abandoned. This application Jan. 16, 1990, Ser. No. 464,689
Claims priority, application Japan, Feb. 3, 1988, 63-23528
Int. Cl.' G01L 5/28
U.S. Cl. 73—123 1 Claim



1 A method of testing an anti-lock brake control system for a motor vehicle mounted on a test stand having rollers to support each of a plurality of wheels and a dynamometer to measure and indicate a braking force, the vehicle having brakes for applying said braking force to each of said plurality of wheels, a hydraulic pressure source in said anti-lock brake control system for providing a hydraulic fluid to said brakes, modulators connected between said hydraulic pressure source and each of said brakes for modulating said braking force, wheel speed sensors for detecting a revolutional speed of said plurality of wheels and for producing wheel speed signals, and a control circuit responsive to said wheel speed signals for controlling said braking force to said plurality of wheels, the method of testing said anti-lock brake control system which comprises the steps of

turning said plurality of wheels by said rollers at a predetermined speed on said test stand

depressing a brake pedal to keep said braking force indicated on said dynamometer to a predetermined constant value,

generating a set of quasi brake control signals representing a predetermined sequence of increasing, decreasing and holding said braking force in said control circuit,

delivering said set of the quasi brake control signals to each of said modulators in a predetermined order of one by one within a set time period so as to cause the increase, decrease and holding of said braking force in said predetermined sequence; and

checking whether variation of said braking force indicated on said dynamometer is within an allowable range of deviations from said predetermined constant value

5,005,406

MONITORING DRILLING MUD COMPOSITION USING FLOWING LIQUID JUNCTION ELECTRODES

Raymond Jasinski, Tulsa, Okla.; Philip Fletcher, Hardwick, and Claude Vercoemer, Cambridge, both of England, assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Nov. 28, 1989, Ser. No. 442,954
Claims priority, application United Kingdom, Dec. 21, 1988, 8829758
Int. Cl.' E21B 47/00
U.S. Cl. 73—153 7 Claims



1 A method for the determination of a chosen ionic component of a drilling mud, in which, using an electrode selective for the chosen ion together with a reference electrode of the type having a liquid junction formed by a liquid electrolyte connectable via an aperture within the reference electrode containment vessel, there is determined the potential difference generated across the two electrodes by the ion in the mud, and thus the concentration of that ion in the mud,

and in which, during the determination, the electrolyte constituting the reference electrode's liquid junction is caused to flow through the electrode containment vessel's aperture and out of the vessel into the mud

5,005,407

FLUID LEVEL SENSING SYSTEM

Terry D. Koon, Florence, Oreg., assignor to Level Electronics, Inc., San Jose, Calif.

Continuation of Ser. No. 256,605, Oct. 11, 1988, abandoned. This application Jul. 2, 1990, Ser. No. 547,419
Int. Cl.' G01F 23/26
U.S. Cl. 73—290 R 9 Claims



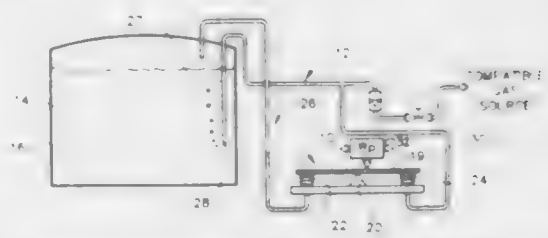
1 A level sensing system for use with a storage container constructed of low dielectric constant material holding a stored medium, the level of which is to be sensed to determine the quantity of the medium therein, said level sensing system comprising a single, unitary conductive sensing member adapted to be arranged on the exterior of the container along the height of such container for a distance corresponding to the level of the stored medium to be sensed, means for securing the sensing member to the container exterior surface, and circuit means having a source of electrical power connected to said sensing member for energizing said sensing member and effecting an electrostatic field therefrom, whereby said field emanating from said sensing member will vary in accordance with the level of the medium in the container, and wherein said circuit means further includes means for sensing variations of said electrostatic field, and means for indicating the level of the medium in the container responsive to such variations, wherein said circuit means includes an oscillator detector circuit with a variable amplitude output, and wherein said sensing member is associated with said oscillator detector circuit as a capacitor component thereof such that variations in said electrostatic field are adapted to correspondingly vary the amplitude of said output of said oscillator detector circuit, wherein a change in the amplitude of the output of said oscillator detector circuit indicates a change in the level of the stored medium

5,005,408

GAS WEIGHTS COMPENSATION METHOD FOR LIQUID DEPTH GAUGING SYSTEM

Eugene A. Glassey, San Diego, Calif., assignor to Fluid Data Systems, San Diego, Calif.

Filed Sep. 25, 1989, Ser. No. 411,873
Int. Cl.' G01F 23/14, G01N 9/26
U.S. Cl. 73—301 16 Claims



1 A method of measuring a liquid level in a body of liquid, comprising the steps of:

sensing the hydrostatic pressure at a submerged level close

to the bottom of a body of liquid to produce a pressure signal dependent on said hydrostatic pressure,

applying the pressure signal as an input to a pressure responsive instrument having an output proportional to the pressure input,

calculating an error compensation factor to compensate for predetermined errors in the pressure signal including gas-weights errors,

connecting the output signal of the pressure responsive instrument to compensation means for amplifying the output by said calculated compensation factor, and

connecting the amplified output to a data acquisition means for monitoring said hydrostatic pressure

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5,005,409

CAPACITIVE LIQUID SENSOR

Peter A. Hochstein, Troy, Mich., assignor to Teleflex Incorporated, Limerick, Pa.

Division of Ser. No. 297,113, Jan. 13, 1989. This application Feb. 7, 1990, Ser. No. 477,050

Int. Cl.[5] G01F 23/26, G08B 21/00

U.S. Cl. 73—304 C 6 Claims



1 A method of gauging the amount or level of substance in a container, the method comprising the steps of, sensing level of the substance by measuring a first capacitance, sensing dielectric constant of the substance by measuring a second capacitance, producing a level signal having a frequency proportional to one of the first and second capacitance and a pulse width proportional to the other of the first and second capacitance

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5,005,410

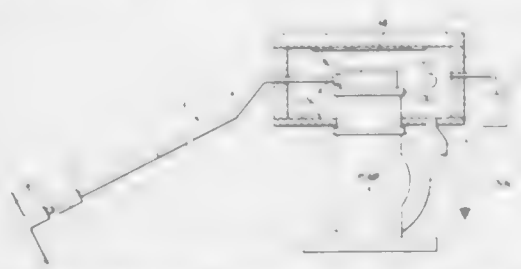
HIGH TEMPERATURE HUMIDITY DETERMINING DEVICE AND PROCESS

Jeffrey Webster, Augusta; Stephen Richey, and Robert Tuttup, both of Battle Creek, all of Mich., assignors to Kellogg Company, Battle Creek, Mich.

Filed Dec. 20, 1989, Ser. No. 453,915

Int. Cl.[5] G01N 25/56

U.S. Cl. 73—335 25 Claims



1 A high temperature humidity determining device comprising

an insulated sample chamber

means for inducing a heated air sample from a region whose humidity is to be measured to flow into said insulated sample chamber, said inducing means including a sample conduit connected to said region and having at least a cool down portion, whereby the heated air sample is cooled before reaching said insulated sample chamber,

heating means for controlling the temperature of said heated air sample such that said heated air sample always remains above the dew point thereof in said insulated sample chamber and said inducing means,

sensing means for sensing at least the temperature and relative humidity of the air sample in said insulated sample chamber, and

means for determining a humidity parameter of the air sample based upon at least the sensed temperature and relative humidity

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5,005,411

SHIFT CONTROL ARRANGEMENT FOR MANUAL TRANSMISSION

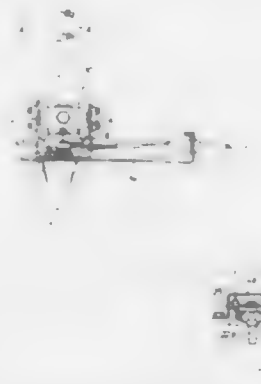
Junichi Miyagi, Aichi, and Isao Shimazu, Anjo, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Banno Kogyo Kabushiki Kaisha, Okazaki, both of, Japan

Filed Nov. 17, 1989, Ser. No. 437,614

Claims priority, application Japan, Nov. 17, 1988, 63-290736

Int. Cl.[5] G05G 9/00, B60K 41/00, F16C 1/10

U.S. Cl. 74—473 R 9 Claims



1 A manual transmission shift control arrangement adapted for use in combination with a remotely operated shift mechanism operatively connected thereto by means of a pair of push-pull cables comprising

a support shaft horizontally mounted on a vehicle body structure for rotation about a first axis,

a manual shift control lever having a lower end mounted on said support shaft for rotation about a second axis orthogonal to the first axis,

a drive bevel gear integrally mounted to the lower end of said control lever for rotation therewith

a pair of axially spaced driven bevel gears mounted on said support shaft for rotation therewith and being in meshing engagement with said drive bevel gear, and

means for operatively connecting said driven bevel gears to said push-pull cables

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5,005,412

ACCELERATION SENSOR

Takeo Kushida; Hideyasu Takefuta, and Hajime Muramatsu, all of Higashimatsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 375,886, Jul. 6, 1989, abandoned. This application Aug. 29, 1990, Ser. No. 574,522

Claims priority, application Japan, Jul. 28, 1988, 63-99151

Int. Cl.[5] G01P 15/08

U.S. Cl. 73—517 R 5 Claims

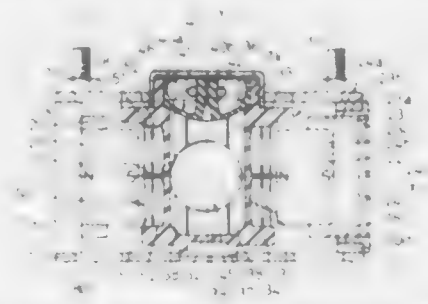
1 An acceleration sensor comprising

(a) a body,

(b) a tubular casing supported on said body,

(c) a magnetic member received within said casing so as to be movable along an axis of said casing,

(d) a pair of magnets supported on said body and disposed radially externally of said casing, said casing being interposed between said pair of magnets, magnetic forces of said magnets holding said magnetic member in a reference position within said casing, and said magnetic member in a reference position within said casing, and said magnetic member being displaceable from said reference position along the axis of said casing against the magnetic forces of



said magnets when said acceleration sensor is subjected to acceleration

(e) detection means mounted externally of said casing so as to detect displacement of said magnetic member from said reference position, and

(f) position adjusting means for adjusting the position of at least one of said magnets in a direction perpendicular to the axis of said casing, said position adjusting means comprising a threaded portion formed on said body and a support member engaging said threaded portion and supporting said at least one of said magnets

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5,005,413

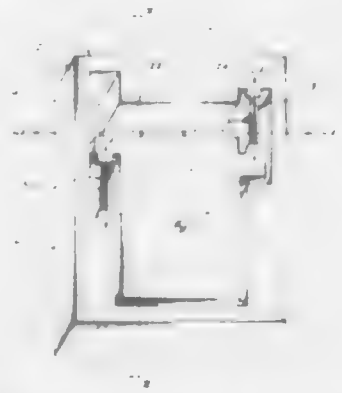
ACCELEROMETER WITH COPLANAR PUSH-PULL FORCE TRANSDUCERS

Mitchell J. Novack, Kirkland; Brian L. Norling, Mill Creek, and James R. Woodruff, Redmond, all of Wash., assignors to Sundstrand Data Control, Inc., Redmond, Wash.

Filed Feb. 27, 1989, Ser. No. 316,399

Int. Cl.[5] G01P 15/13

U.S. Cl. 73—517 AV 12 Claims



1 In an accelerometer of the type comprising a support, a proof mass, flexure means connected between the support and the proof mass such that the flexure means mounts the proof mass for rotational movement with respect to the support about a hinge axis (HA) in response to acceleration along a sensitive axis, and first and second force transducers physically separate from the flexure means, each force transducer having opposite first and second ends and a longitudinal axis extending therebetween, each force transducer having its first end connected to the proof mass and its second end connected to the support, the force transducers being connected in a push-pull arrangement wherein for a given acceleration along the sensitive axis, one force transducer is subjected to a compression force along its respective longitudinal axis and the other force transducer is subjected to a tension force along its respective longitudinal axis, the improvement wherein the transducers are positioned such that their longitudinal axes are located in a common plane that is approximately perpendicular to the sensitive axis, and wherein the hinge axis is normal to the sensitive axis and parallel to but spaced from the common plane

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5,005,414

ACCELERATION PICKUP

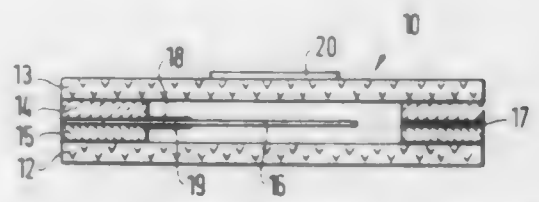
Martin Holland, Tubingen; Botho Ziegenbein, and Dieter Seipler, both of Reutlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 3, 1989, Ser. No. 347,330

Claims priority, application Fed. Rep. of Germany, May 3, 1988, 3814950

Int. Cl.[5] G01P 15/12

U.S. Cl. 73—517 R 5 Claims



1 An acceleration pickup for releasing occupant protecting devices in power vehicles, comprising a housing, a ceramic plate which forms a bending spring and is clamped at least at its one end in said housing, and expansion-sensitive resistances arranged on said ceramic plate, said housing being composed of several layers of ceramic parts and produced, together with said bending spring and said resistances, by a thick film technique

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5,005,415

METHOD AND APPARATUS FOR DETECTING VARIATIONS IN A PROCESS BY PROCESSING EMITTED ACOUSTIC SIGNALS

Trevor J. Holroyd, Derby, England, assignor to Stresswave Technology Limited, Derby, England

Filed Oct. 6, 1989, Ser. No. 417,920

Claims priority, application United Kingdom, Oct. 22, 1988, 8824793

Int. Cl.[5] G06F 15/46

U.S. Cl. 73—587 19 Claims



1 A method of processing electrical signals derived from an acoustic emission activity in order to recognize signal features indicative of variations in a process producing the electrical signals, comprising measuring the minimum value of the electrical signals, measuring the mean value of the electrical signals, determining the ratio of the mean value of the electrical signals to the minimum value of the electrical signals, monitoring said ratio for variations of the ratio which are indicative of variations in the process producing the electrical signals

5,005,416

INSECT DETECTION USING A PITFALL PROBE TRAP HAVING VIBRATION DETECTION

Kenneth W. Vick, Newberry; J. C. Webb, Gainesville, and Carl A. Litzkow, Newberry, all of Fla., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 332,901, Apr. 4, 1989, Pat. No. 4,937,555. This application May 18, 1990, Ser. No. 525,016
Int. Cl.[5] G01N 29/00
U.S. Cl. 73—587 29 Claims



1 A process for detecting insect infestation in an agricultural commodity comprising

providing an insect pitfall probe trap including

an insect-permeable trap portion including a first wall portion defining therein a first interior chamber, said first wall portion defining at least one aperture dimensioned to permit ingress of an insect through said at least one aperture into said first interior chamber, a reservoir portion including container means for containing at least one insect and defining a container means interior surface, said container means defining therein a second interior chamber dimensioned to contain therein at least one insect, said container means including on at least said interior surface thereof a non-stick material upon which insects cannot readily climb, said insect-permeable trap portion being connected to said reservoir portion whereby said first interior chamber is in insect-tight communication with said second interior chamber so that an insect may move from said first interior chamber to said second interior chamber, means positioned between said first interior chamber and said second interior chamber for permitting movement of insects from said first interior chamber to said second interior chamber and for inhibiting movement of insects from said second interior chamber to said first interior chamber, and detector means positioned proximate a lower terminus of said second interior chamber for detecting vibration,

orienting said insect pitfall probe trap substantially vertically within an agricultural commodity, and,

determining if said detector means detects vibration.

5,005,417

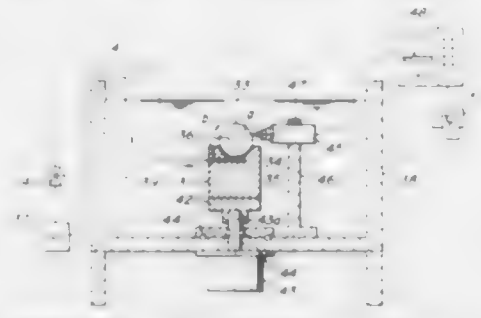
DETECTING FLAWS FORMED IN SURFACES OF ROTATING MEMBERS WITH ULTRASONIC WAVES

Keiji Kawasaki; Michio Sekiguchi, both of Nagoya, and Tadaaki Matsuhisa, Kasugai, all of Japan, assignors to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 172,244, Mar. 23, 1988, abandoned. This application Oct. 20, 1989, Ser. No. 423,723
Claims priority, application Japan, Mar. 31, 1987, 62-78277
Int. Cl.[5] G01N 29/04
U.S. Cl. 73—593 20 Claims

1 A method of detecting a defect formed in a surface of a rotating member having a circular cross-section with the aid of a focusing-type probe for emitting an ultrasonic wave toward the rotating member and receiving an ultrasonic wave reflected from the rotating member, comprising the steps of

setting the focusing-type probe with respect to the rotating member in an ultrasonic wave propagating medium such that a center axis (a) of the probe is displaced from a normal axis (b) which passes through a center axis of the rotating member and extends parallel to said center axis of the probe by such a displacement about (x) that the ultrasonic wave is made incident upon the rotating member substantially at a critical angle of reflection, such that a portion of the ultrasonic wave is refracted thereby to propagate substantially along a surface of the rotating member as a surface wave, said probe being set at a dis-



tance from the surface of the rotating member which is substantially equal to the focal length of the ultrasonic wave emitted from the focusing-type probe, such that the ultrasonic wave to be projected from the probe is focused on the surface of the rotating member,

projecting the ultrasonic wave from the probe toward the rotating member, and

receiving an ultrasonic wave reflected from a defect formed in the surface of the rotating member.

5,005,418

THREE DIMENSIONAL IMAGING DEVICE USING ELLIPSOIDAL BACKPROJECTION

Forrest L. Anderson, P.O. Box 1400, Bernalillo, N. Mex. 87004

Continuation-in-part of Ser. No. 221,534, Jul. 19, 1988, abandoned, which is a continuation-in-part of Ser. No. 106,577, Oct. 7, 1987, abandoned, which is a continuation-in-part of Ser. No. 858,6[illegible], May 2, 1986, Pat. No. 4,706,499. This application Feb. 12, 1990, Ser. No. 480,324
Int. Cl.[5] G01N 29/04
U.S. Cl. 73—625 26 Claims



1 A three dimensional active imaging device with multiple transmitter, using a reduced number of transmitted pulses to produce a three dimensional image, and capable of generating a three dimensional image of reflecting points on or within objects in a three dimensional volume within which the propagation velocities of the transmitted energy and the echo energy are known, said volume being external to a sparsely spaced two or three dimensional array of plural transmitters and plural receiver elements, comprising

(a) A Transmitter means for transmitting a pulse of energy which radiates through a wide solid angle within the three dimensional volume,

(b) A Receiver means for detecting echoes, from the reflecting points within the volume, caused by said pulse of energy, simultaneously at three or more of the sparsely spaced receiver elements,

(c) An Echo Time History Memory means for sampling said detected echoes from each of the receiver elements of said receiver means whereby an Echo Time History echo sample set is created which is associated with the transmitter which transmitted the pulse;

(d) A System Timing and Control means for repeating (a) through (c) with other of the plural transmitters whereby a set of echo samples from each of the receiver elements becomes associated with each of the transmitters within the array of plural transmitters,

(e) An Image Reconstruction Processor means for selecting and combining with each other, for each image of a reflecting point, one echo sample from each receiver element from each of the echo sample sets associated with each of the transmitters, whereby an image is created of the reflecting points on or within objects in the three dimensional volume, said Image Reconstruction Processor utilizing for selection, the sum of: distance from the transmitter to the image point divided by the known propagation velocity of the pulse of energy, and distance from the image point to each of the receiver element divided by the known propagation velocity of the echoes, said Image Reconstruction Processor means therefore operating in accordance with the equivalent of the formula

$$PR(xr,yr,zr) = \sum_{\text{echo}_i(sn)\,\text{for}\,CORTE+CORPE} \text{echo}_i(sn)$$

for each of the transmitters $t_1, t_2 \ldots t_i \ldots t_{tn}$ and for each of the receivers $c_1, c_2 \ldots c_j \ldots c_{cn}$

where

i is the transmitter index

j is the receiver element index

PR (xr,yr,zr) is the image of the point at the location (xr,yr,zr)

t_{tn} is the number of transmitter elements

c_{nc} is the number of receiver elements

$\text{echo}_i(sn)$ is the echo sample at location "sn" in the echo sample set, st_i, where the echoes resulted from the pulse transmitted the transmitter i, and the echoes were detected by receiver element j

ds is the time interval at which the echo samples are taken

Ct is the transmitted energy propagation velocity

Ce is the echo energy propagation velocity which may be equal to Ct, or different from CT

and where

$$RTP = \sqrt{[(xr - xt)^2 + (yr - yt)^2 + (zr - zt)^2]}$$

$$RPE = \sqrt{[(xr - xc)^2 + (yr - yc)^2 + (zr - zc)^2]}$$

where also

(xti,yti,zti) is the location of transmitter element i

(xrj,yrj,zrj) is the location of receiver element j

5,005,419

METHOD AND APPARATUS FOR COHERENT IMAGING SYSTEM

Matthew O'Donnell, Schenectady; Kenneth B. Welles, II, Scotia, both of N.Y.; Carl R. Crawford, Milwaukee; Norbert J. Pelc, Wauwatosa, both of Wis., and Steven G. Karr, Scotia, N.Y., assignors to General Electric Company, Schnectady, N.Y.

Filed Jun. 16, 1988, Ser. No. 207,532
Int. Cl.[5] G01N 29/04
U.S. Cl. 73—626 55 Claims



1 A medical imaging system for generating a stream of digital data signals with a vibrating energy beam having increased dynamic range which represents at least one object point detected in the object region including

(a) an array of transducer elements which produces bipolar analog echo signals from impingement with at least one object point in the object region,

(b) means to process the analog echo signals with at least one analog-to-digital converter device so that a stream of digital data signals is obtained from the analog-to-digital converter device bearing a mathematical relationship to the analog echo signals which approximates a non-linear amplitude compression function,

(c) means to non-linearly process the stream of compressed amplitude digital data signals from the analog-to-digital converter device in accordance with the inverse of the previously employed mathematical function and thereby gain expanded amplitude digital data signals which are linearly related to the analog echo signals,

(d) means for delaying the stream of digital data signals after amplitude compression by respective predetermined time intervals corresponding to the distance of the detected object point from the respective transducer elements which causes each data signal to occur at substantially the same time, and

(e) means to obtain a summation of the delayed expanded amplitude digital data signals.

5,005,420

ULTRASONIC METHOD FOR MEASUREMENT OF DEPTH OF SURFACE OPENING FLAW IN SOLID MASS

Takeshi Miyajima, Ibaraki, Japan, assignor to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

PCT No. PCT/JP87/00358, § 371 Date Mar. 30, 1989, § 102(e) Date Mar. 30, 1989, PCT Pub. No. WO88/[illegible]31, PCT Pub. Date Dec. 15, 1988
PCT Filed Jun. 8, 1987, Ser. No. 381,684
Int. Cl.[5] G01N 29/04
U.S. Cl. 73—629 4 Claims

1. A method for ultrasonic measurement of the depth of a surface opening flaw which may be present in a solid mass, comprising the steps of

scanning an ultrasonic probe which emits an ultrasonic wave at a wave angle back and forth on a surface of the solid mass toward and away from a position of a suspected

surface opening flaw in the solid mass for transmitting an ultrasonic wave into the solid mass

forming values of the echoes of the ultrasonic wave reflected from the surface opening flaw at the different positions of movement of said probe and which are above a predetermined level into a curve of the echo levels above said predetermined level and at said probe positions



integrating the area beneath said curve and above said predetermined level for the range of movement of said probe and

using the value of said integrated areas as an evaluation index for determining the depth of said surface opening flaw.

5,005,421

PRESSURE SENSOR AND METHOD FOR THE MANUFACTURE THEREOF

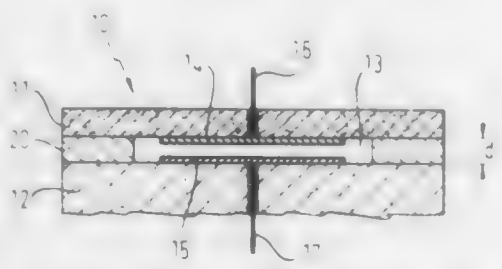
Frank Hegner, Maulburg; Gerhard Dittrich, Lorrach, and Thomas Klahn, Steinen, all of Fed. Rep. of Germany, assignors to Endress u. Hauser GmbH u. Co., Fed. Rep. of Germany

Filed Jul. 18, 1989, Ser. No. 381,502

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1988, 3825029; Jan. 19, 1989, 3901492

Int. Cl.' G01L 7/08, 9/12

U.S. Cl. 73—72 **17 Claims**



1 A pressure sensor comprising a base body and a diaphragm which both consist of oxide ceramic or sapphire and are assembled at a defined distance apart parallel to each other to form a chamber therebetween wherein the base body and the diaphragm are joined together by a shaped part of copper which serves as a spacer and is bonded to the two parts by a eutectic melt forming at the surface

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5,005,422

METHOD AND APPARATUS FOR MEASURING SUBSIDENCE

Mario Ruscev, Issy Les Moulineaux, and Patrick Vandenabeele, Clamart, both of France, assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Sep. 14, 1989, Ser. No. 407,138

Claims priority, application France, Sep. 14, 1988, 88 11955

Int. Cl.' G01B 7/16

U.S. Cl. 73—784 **5 Claims**

1 A method of measuring subsidence in subsurface formations traversed by a borehole, the formation having at least two radioactive markers previously implanted therein, the markers spaced apart along the longitudinal axis of the borehole, the method comprising the steps of

inserting a measuring apparatus into the borehole, the measuring apparatus comprising at least two nuclear detection assemblies spaced apart along the longitudinal axis of the apparatus, wherein the distance between the detection assemblies is substantially equal to the distance between the radioactive markers, each of the assemblies including



a position sensitive detector to perform position determination along the longitudinal axis of the apparatus

positioning the apparatus in the borehole such that each of the detection assemblies is substantially opposite a corresponding radioactive marker

during the apparatus in said position, and

performing measurements for localizing the radioactive markers while the apparatus is thereby secured.

5,005,423

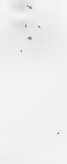
CRACK GROWTH RATE MEASURING INSTRUMENT

Mark L. Poormon, Palm City, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 13, 1990, Ser. No. 582,812

Int. Cl.' G01N 19/08

U.S. Cl. 73—799 **5 Claims**



1 Test apparatus for screening alloys dimensioned in a prescribed notched specimen to ascertain a specific ratio of the crack growth rate to a given stress intensity comprising a horizontal table, vertical support columns, a cross head horizontally supported to said support columns, a platen supported horizontally by said cross head, a die set supported on said table underlying said platen, a motor supported to said platen, an eccentric driven by said motor, a fulcrum lever supported to said cross head being pivoted at one end and driven by said eccentric on the other end, a load rod interconnected to said fulcrum lever and bearing against said notched specimen, an adapter holding said notched specimen in a predetermined spacial relationship, and said adapter being supported to said die set and being in cooperating relationship with a load cell, means for imparting movement from said motor for driving said eccentric and load rod to cyclically apply a constant displacement to said notched specimen and means for recording the cycles of said eccentric varying load imposed on said load cell whereby the differential of the crack length and cycles (da/dN) can be calculated and plotted against the stress intensity (ΔK) to obtain a single point to be compared with a base line curve indicative of a given da/dN v ΔK and where the load will seek its own value

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5,005,424

MACHINE AND METHOD FOR UNIAXIAL MECHANICAL MATERIAL TESTING

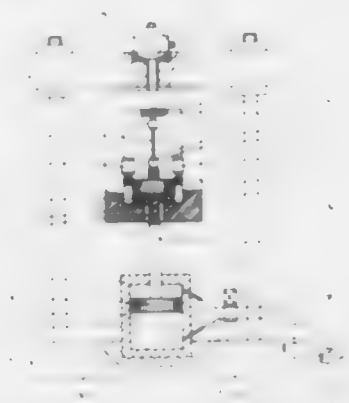
Winfried Markowski, Berlin, Fed. Rep. of Germany, assignor to Bundesanstalt für Materialforschung und -prufung (BAM), Berlin, Fed. Rep. of Germany

Filed Apr. 6, 1990, Ser. No. 505,275

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1989, 3912075

Int. Cl.' G01N 3/08

U.S. Cl. 73—834 **23 Claims**



1 Testing machine for the mechanical testing of material samples comprising

a first and a second force engagement device,

a first and a second sample engagement device,

a first force measuring device positioned between said first sample engagement device and said force by-pass device together with said first force engagement device,

an actuator for creating the force to be applied,

a force by-pass device connected to said first force engagement device for transferring an applied prestress force acting from one of said force engagement devices to the other whilst by-passing the sample positioned between said two sample engagement devices,

whereby

said force by-pass device is rigid,

said second sample engagement device being, by way of a length adjustment device, slideably mounted in the direction of the application of force relative to the end of said force by-pass device not being connected to one of said force engagement devices and whereby said length adjustment device is connected to said second force engagement device and

said second force engagement device is connected to said actuator for creating the force to be applied whereby a device for defining the prestress force to be applied during testing is connected to said actuator

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5,005,425

VORTEX FLOWMETER

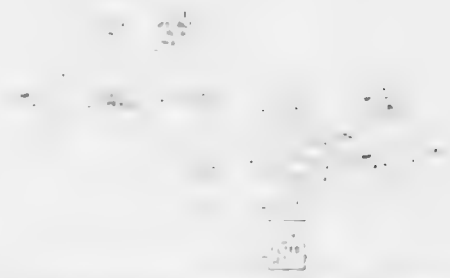
Katsuhiko Ohmae, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 19, 1989, Ser. No. 340,602

Claims priority, application Japan, Apr. 16, 1988, 63-97872; Apr. 19, 1988, 63-97868; Apr. 19, 1988, 63-97870; Apr. 19, 1988, 63-97871

Int. Cl.' G01F 1/32

U.S. Cl. 73—861.22 **3 Claims**



1 A vortex flowmeter comprising vortex signal detection means for detecting a vortex signal produced according to a flow rate of a fluid to be measured, a plurality of filter sets (12) disposed in parallel and responsive to an output of said vortex signal detection means for removing noise and beat components therefrom, each filter set having a different frequency response characteristic, a waveform shaping circuit (13) for providing an output of one of said filter sets as a vortex frequency output, a filter set switching decision circuit (14) for measuring a frequency of said vortex frequency output and selecting a most appropriate one of the filter sets in accordance with the measured frequency, and a switch circuit (15) responsive to a selection output from said filter switching decision circuit for connecting an output of the selected filter set to the waveform shaping circuit, wherein each filter set comprises an amplifier (12*a*) for amplifying the detected vortex signal, a low pass filter (12*b*) for removing noise components from an output of said amplifier, a limiter circuit (12*c*) for limiting an output voltage of said low pass filter, a switch (12*f*) for on-off controlling an output of said limiter circuit, a high pass filter (12*d*) for removing beat components from the detected vortex signal, and a combiner (12*e*) for combining output signals of said switch and said high pass filter

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5,005,426

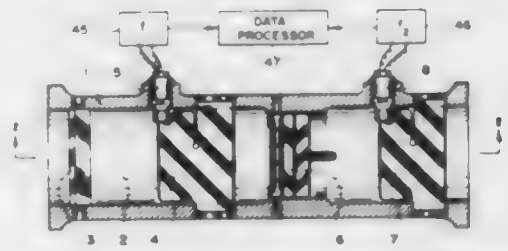
MASS-VOLUME VORTEX FLOWMETER

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 208,739, Jun. 20, 1988, Continuation-in-part of Ser. No. 368,406, Jun. 19, 1989. This application Mar. 13, 1990, Ser. No. 492,943

Int. Cl.' G01F 1/32

U.S. Cl. 73—861.22 **6 Claims**



1. An apparatus for measuring flow of fluid comprising in combination

(a) a body including a flow passage,

(b) a first vortex generator of elongated shape with fixed width disposed across a first cross section of the flow passage, and means for measuring frequency of vortex shedding from the first vortex generator,

(c) a second vortex generator of elongated shape with a variable width disposed across a second cross section of the flow passage wherein said variable width of the second vortex generator varies as a function of flow rate of fluid moving through the flow passage, and means for measuring frequency of vortex shedding from the second vortex generator,

(d) means for determining volume flow rate of the fluid from the frequency of vortex shedding from the first vortex generator, and

(e) means for determining mass flow rate of the fluid from a combination of the frequency of vortex shedding from the first vortex generator and a function of the frequency of vortex shedding from the first vortex generator and the frequency of vortex shedding from the second vortex generator.

5,005,427

KARMAN VORTEX FLOWMETER WITH SIGNAL WAVEFORM SHAPER CIRCUIT

Katsuhiko Ohmae, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 340,206, Apr. 19, 1989. This application Aug. 10, 1990, Ser. No. 565,084

Claims priority, application Japan, Apr. 19, 1988, 63-97869

Int. Cl.' G01F 1/32

U.S. Cl. 73—861.22 2 Claims



1 A vortex flowmeter for measuring an amount of a flow of a fluid, comprising

vortex generation frequency detector means for detecting a frequency of vortex generation in the flow of the fluid by an obstruction positioned in the flow, said vortex generation frequency detector means outputting an electrical signal including an essentially sinusoidal signal component having a frequency corresponding to the frequency of vortex generation,

peak level holding circuit means, coupled to an output of said vortex generation frequency detector means, for holding a highest level of said electrical signal which occurs after said peak level holding circuit means is set into a holding operation,

bottom level holding circuit means, coupled to the output of said vortex generation frequency detector means, for holding a lowest level of said electrical signal which occurs after said bottom level holding circuit means is set into a holding operation,

positive level shift circuit means, coupled to an output of said vortex generation frequency detector means, for shifting a level of said electrical signal by a positive predetermined amount, and outputting the positively shifted signal therefrom,

negative level shift circuit means, coupled to an output of said vortex generation frequency detector means, for shifting a level of said electrical signal by a negative predetermined amount, and outputting the negatively shifted signal therefrom,

first comparator means, coupled to outputs of said peak level holding circuit means and said positive level shift circuit means, for outputting a pulse when a level held by said peak level holding circuit means crosses with a level of the positively shifted signal outputted from said positive level shift circuit,

second comparator means coupled to outputs of said bottom level holding circuit means and said negative level shift circuit means, for outputting a pulse when a level held by said bottom level holding circuit means crosses with a level of the negatively shifted signal outputted from said negative level shift circuit,

bistable multivibrator circuit means having a pair of inputs coupled to outputs of said first and second comparator means, respectively, for outputting a pulse-shaped signal taking a first and a second level, wherein the pulse-shaped signal outputted from said bistable multivibrator circuit means goes to a first level in response to a pulse outputted from said first comparator means, and to a second level in response to a pulse outputted from said second comparator means,

peak level resetting means, coupled to an output of said bistable multivibrator means, for resetting a level held by said peak level holding circuit means each time after the level held by said peak level holding circuit means crosses with the level of the positively shifted signal outputted from the positive shift circuit, and

bottom level resetting means, coupled to an output of said bistable multivibrator means, for resetting a level held by said bottom level holding circuit means each time after the level held by said bottom level holding circuit means crosses with the level of the negatively shifted signal outputted from the negative shift circuit.

5,005,428

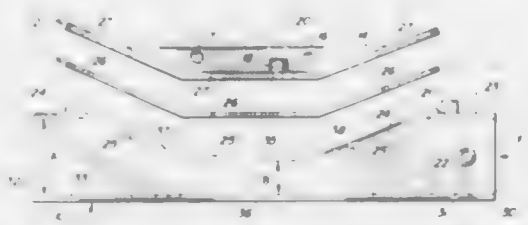
INVERTED WEIR FOR CONDUIT

Steven W. Tanis, 6507 S. Alder, Tempe, Ariz. 85283

Filed Feb. 14, 1990, Ser. No. 479,868

Int. Cl.' G01F 1/40

U.S. Cl. 73—861.52 1 Claim



1 In combination with an elongate conduit, the conduit including

a central space through which fluid normally moves by laminar flow along the conduit, said central space having at each point along the length of the conduit a generally constant cross sectional area perpendicular to the direction of fluid flow through the conduit,

a wall having an inner surface circumscribing the central space, and

one end through which fluid flows out of said conduit,

the improvement comprising an elongate weir, said weir including

(a) an inner space through which fluid normally flows through the weir, said inner space having at each point along the length of said weir a cross sectional area perpendicular to the direction of fluid flow through said weir,

(b) a wall having an inner surface circumscribing said inner space of said weir,

(c) a first end shaped and dimensioned to be connected to said one end of said conduit, and

(d) such that fluid moves by laminar flow from said one end of said conduit through said first end said weir,

said first end including a first section of said inner surface said first section circumscribing a first portion of said inner space, said first portion having a cross sectional area generally equivalent to said cross sectional area of said conduit to facilitate the laminar flow of fluid from said one end of said conduit through said first end of said weir,

said inner surface of said wall of said weir including

(a) a flat elongate surface portion,

(b) an arcuate portion opposing and parallel to said flat elongate surface portion, said flat elongate portion and said arcuate portion circumscribing a second portion of said inner space and being shaped and dimensioned such that the cross sectional area of said second portion of said central space is less than said cross sectional area of said first portion, and

(c) to produce laminar flow in fluid flowing through said weir intermediate said flat elongate surface portion and said arcuate portion and deflect fluid outwardly from the highest of the conduit, and

(e) means for measuring the pressure of said weir.

5,005,429

WEIGH MODULE

Rolf P. Haggstrom, East Walpole, Mass., assignor to BLH Electronics, Inc., Canton, Mass.

Filed Sep. 21, 1989, Ser. No. 410,301

Int. Cl.' G01L 1/22

U.S. Cl. 73—862.65 11 Claims



10 A strain gage transducer for measuring a force applied to a weighing

an elongated support bar,

a base support comprising

a base portion,

a base support bar receiving portion mounted on said base portion which includes an interior surface defining a passageway dimensioned to receive a first end of said support bar, said passageway receiving said first end of said support bar thereby supporting said support bar but permitting a second and opposite end of said support bar to flex downwardly toward said base portion where the load force is applied,

a load portion comprising

a support bar receiving portion including an interior surface defining a passageway dimensioned to receive said second end of said support bar,

an upper load support portion mounted on said support bar receiving portion for said load portion,

a recess provided in the interior surface of said support bar receiving portion which permits said support bar to flex downwardly toward said base portion when the load force is applied,

a load support including a load pad which has an upper surface for receiving the load force and a lower surface having a centrally-located attachment means, and further including a support means in contact with said attachment means for transmitting the load force received by said load pad to said upper load support portion which causes said second end of said support bar to flex into said recess, the degree of flexure being measured by a measurement means whereby the amount of the load force can be determined.

5,005,430

AUTOMATED MEMBRANE FILTER SAMPLER

Jack M. Kibler, Minerva; Jack K. Schmotzer, Alliance, and Charles C. Stauffer, Beloit, all of Ohio, assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation of Ser. No. 355,147, May 16, 1989, abandoned, which is a continuation of Ser. No. 113,780, Oct. 26, 1987, abandoned. This application Jan. 11, 1990, Ser. No. 463,047

Int. Cl.' G01N 1/24

U.S. Cl. 73—863.01 2 Claims



1 An apparatus for collecting samples of ionic and particulate impurities from a fluid stream, comprising

a sample line connected to said fluid stream,

a vertical manifold fluidically connected to said sample line for upwardly conveying a sample stream taken from said fluid stream, a plurality of filter holder pairs, each filter holder pair having a first filter holder for removably securing a first filter for removing particulate impurities from said sample stream and a second filter holder located downstream of said first filter holder for removably securing a second filter for removing ionic impurities from said sample stream,

a plurality of isolation valves located between said manifold and each of said filter holder pairs, for fluidically isolating each of said filter holder pairs from said manifold,

a single automatic valve device fluidically connected to and downstream of said manifold and each of said filter holder pairs, for permitting the flow of said sample stream through only one of said plurality of filter holder pairs at a time while preventing flow to the remaining filter holder pairs,

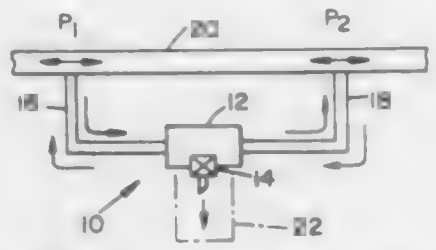
means for determining the flow rate of said sample stream through each of said filter holder pairs, and

a computer, connected to said single automatic valve device and to said means for determining the flow rate of said sample stream, for controlling the single automatic valve device to allow said sample stream to flow through each of said plurality of filter holder pairs, in a desired sequence, for a desired length of time through each filter holder pair, and with a desired time interval between flow occurring in one filter holder pair and flow occurring in another filter holder pair, and for determining the total volume of sample stream sampled by each filter holder pair.

5,005,431
FLOWABLE MATERIAL DISTRIBUTION SAMPLING METHOD AND DEVICE
Robert J. Cordera, East Amherst, N.Y., assignor to Nabisco Brands, Inc., East Hanover, N.J.
Division of Ser. No. 163,539, Mar. 3, 1988, Pat. No. 4,873,103. This application May 25, 1989, Ser. No. 356,770
Int. Cl.' G01N 1/00
U.S. Cl. 73—863.53 14 Claims

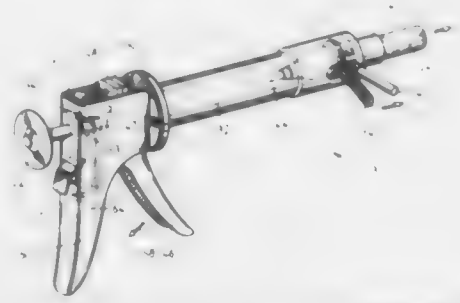
1. An apparatus for coating food articles and determining the distribution of a flowable coating material being dispensed onto a moving lower surface containing edible food articles which are to be baked comprising means to uniformly distribute a flowable coating material downwardly onto a continuously moving lower surface, and a multi-sectioned collection means received on said continuously moving surface disposed below said means to distribute said flowable coating material to collect a representative sample of said flowable coating material in each section of said multi-sectioned collection means to determine distribution, wherein said multi-sectioned collection means comprises a plurality of substantially uniform collections chambers and wherein said collection chambers are of a size corresponding substantially to the food articles whereby each sample collected in each section corresponds to an amount of said coating material dispensed onto said food articles.

5,005,432
SAMPLING VALVE
Douglas L. Faulkner, 281 Gerry Ct., Walnut Creek, Calif. 94596
Continuation-in-part of Ser. No. 312,471, Feb. 21, 1989, abandoned. This application Apr. 18, 1990, Ser. No. 510,600
Int. Cl.' G01N 1/00
U.S. Cl. 73—863.86 12 Claims



1. A Tee-body for use in a system for sampling process fluids flowing through a conduit of a process stream, wherein a continuously fresh sample of said process fluids within said Tee-body is desired and wherein said Tee-body is attachable to said conduit of said process stream between portions of said conduit wherein a pressure differential exists so as to cause continuous flow of a portion of said process fluids through said Tee-body, said Tee-body including a closely coupled sample exit conduit means and a valving system attached to and forming a part of said Tee-body, said Tee-body comprising
(a) a body element having areas definable as two end areas and a central gallery area between said end areas,
(b) a restrictive axial passageway of predeterminable size through said body element between said end areas establishing flow controlling restricting orifices at each of said two end areas with said axial passageway opening into and exiting from said central gallery area,
(c) means at each of said two end areas of said body element for attaching said body element to a portion of said conduit of said process stream between said portions of said conduit where said pressure differential exists whereby a portion of said process fluids within said conduit flows continuously through said restrictive axial passageway into said central gallery area and out of said central gallery area through said body element,
(d) a lateral opening from the exterior of said body element extending at least partially through said body element between said two end areas and extending into said central gallery area so as to closely couple said exterior and said central gallery area, said lateral opening having a size in cross-sectional dimensions at least as large as the size in cross-sectional dimension of said axial passageway to form an unobstructed open volume portion of said central gallery area within said Tee-body, the intersection of said lateral opening and said axial passageway defining said unobstructed open volume portion at said central gallery area within said body element, said unobstructed open volume portion and said lateral opening at said central gallery area adapted to be flushed by said process fluid flow through said predetermined controlled axial passageway of said Tee-body to establish continuously vena contracta turbulant process fluid flow within and a fresh sample of said process fluids within said unobstructed open volume portion of said central gallery area and said lateral opening, said predetermined size of said restrictive axial passageway and the size of said lateral opening being proportioned to cause said vena contracta turbulant flushing, fluid flow so as to produce said fresh process fluid sample within said unobstructed open volume portion of said central gallery area and said lateral opening at a manageable pressure and flow rate,
(e) a valve means including means for attaching said valve means to said exterior of said body element at said lateral opening,
(f) and an exit conduit means,
(g) said valve means being positioned between and closely coupled to said gallery area and said exit conduit means from said Tee-body at said lateral opening and at said exterior of said body element whereby said valve means may control passage of said fresh process fluid sample between said flushed central gallery area and said exit conduit means through said flushed lateral opening.

5,005,433
ASBESTOS SAMPLE REMOVAL TOOL
Eugene K. Patton, 3000 N. Knoxville, Peoria, Ill. 61603
Filed Jul. 20, 1989, Ser. No. 383,031
Int. Cl.' G01N 1/28, 1/04
U.S. Cl. 73—864.44 20 Claims



1. A method for removing an insulation sample from a hollow coring bit, comprising the steps of
inserting said coring bit containing said insulation sample in a bit receiving portion of a sample removal tool, said tool being adapted to securingly hold said coring bit in axial alignment with a rod;
actuating a rachet mechanism of said sample removal tool which forces said rod axially toward said coring bit, and forcing said insulation sample out of said coring bit by repeatedly actuating said rachet mechanism to force said rod through the hollow of said coring bit.

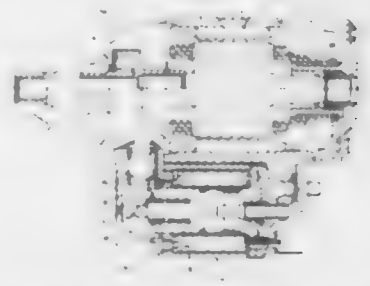
5,005,434
AUTOSAMPLER WITH A MEANS FOR DETECTING AIR BUBBLE IN SPECIMEN
Yoshio Watanabe, Hitachi; Mamoru Taki, Oomiya; Junkichi Miura; Masao Kamahori, both of Hitachi; Hiroyuki Miyagi, Kokubunji; Yasuhide Matsumura, Hachiouji, and Masafumi Kanetomo, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 8, 1989, Ser. No. 390,720
Claims priority, application Japan, Aug. 27, 1988, 63-213356
Int. Cl.' G01N 35/06
U.S. Cl. 73—864.21 8 Claims



1. An autosampler with apparatus for detecting an air bubble in a liquid specimen, comprising:
a container for containing the specimen,
a needle for drawing the specimen from the container into a passage in the needle,
a needle fixing member supporting the needle,
a block upon which the needle fixing member is detachably connected, the block having a passage therein having a cross section almost equal to the cross section of the needle passage;
a suction means for drawing in the specimen by suction through the passages in the needle and the block,
a discharge means for discarding a specimen containing an air bubble drawn in by the suction mechanism, and
a detecting means arranged in the block to face the passage in the block for detecting an air bubble in the specimen based on optical changes in the specimen flowing through the passage in the block,
whereby the discharge means is activated by the detecting means.

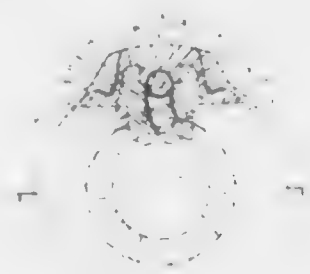
5,005,435
PINION SHIFT LEVER STARTER WITH WATERPROOF BOAT
Takeshi Sugiyama, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 18, 1990, Ser. No. 466,791
Claims priority, application Japan, Jan. 19, 1989, 1-12789
Int. Cl.' F02N 15/00; F16J 15/00
U.S. Cl. 74—7 A 7 Claims

1. A vehicle starter motor assembly, comprising
(a) a motor (2) having a rotary output shaft (3) extending outwardly from one end thereof,
(b) a shifting member (4) including a pinion (11) slidably fitted to the output shaft,
(c) an electromagnetic actuator (5) disposed below the motor,
(d) a shift lever (8) having an upper end portion engaged with the shifting member and a lower end portion engaged with the actuator,
(e) a front housing (9) including an upper portion (9a) surrounding the motor and defining an opening (12) for externally exposing the pinion, and a lower portion (9b) surrounding the actuator and defining a fulcrum support (13) for pivotally supporting the shift lever at an intermediate position thereof, the fulcrum support defining an aperture (14) through which the upper end portion of the shift lever extends, and



(f) an elastic waterproofing boot (21) having a central opening (21a) sealingly surrounding the upper end portion of the shift lever and a skirt surrounding the central opening and overlying the fulcrum support aperture to prevent water entering through the pinion exposure opening from reaching the actuator via the fulcrum support.

5,005,436
RECIRCULATING BALL SCREW-NUT SCREW COUPLING
Enzo Brusasco, Torino, Italy, assignor to R.G.B. S.p.A., Turin, Italy
Filed Feb. 10, 1989, Ser. No. 308,825
Claims priority, application Italy, Feb. 11, 1988, 67099 A 88
Int. Cl.' F16H 25/22
U.S. Cl. 74—459 15 Claims



1. A recirculating ball screw-nut screw coupling, comprising
(a) a screw including a first helical groove formed on the outer surface thereof,
(b) a screw-nut including a second helical groove formed on the inner surface thereof and coaxial with said screw,
(c) said first and second helical grooves defining a helical track,
(d) a plurality of balls mounted between said screw and said screw-nut in such a manner as to roll along said helical track,
(e) said screw-nut having at least a pair of substantially radial holes axially spaced from each other for defining therebetween a length of said helical track,
(f) each of said holes having a diameter equal to at least twice the width of said helical track so as to intersect within each of said holes adjacent outer and inner turns of said second helical groove,
(g) a longitudinal member extending outside said screw-nut and including a plug disposed at opposite ends thereof.

(h) each of said plugs being disposed within each of said radial holes, respectively,

(i) said member including a recirculating channel extending therethrough and connecting the ends of said length of said helical track,

(j) each of said plugs including a hole forming a respective end portion of said recirculating channel, and

(k) each of said plug holes communicating with one of said inner and outer adjacent turns such that said balls are diverted to said recirculating channel for return to said length of said helical track when said balls reach the end of said length of said helical track.

5,005,437

DEVICE FOR CLEANING LUBRICATING OIL IN A GEARBOX

Gerd Fürer, Friedrichshafen; Karl-Fritz Heinzelmann, Meckenbeuren, and Kurt Osterloff, Friedrichshafen, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

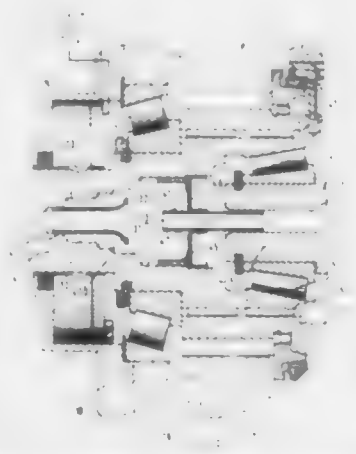
PCT No. PCT/EP88/00580, § 371 Date Dec. 19, 1989, § 102(e) Date Dec. 19, 1989, PCT Pub. No. WO89 00260, PCT Pub. Date Jan. 12, 1989

PCT Filed Jun. 30, 1988, Ser. No. 445,614

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1987, 3722392

Int. Cl.' B62D 5/06

U.S. Cl. 74—467 7 Claims



1 A device for cleaning lubricating oil within a gearbox comprising

an input shaft positioned within said gearbox,

a gearbox main shaft mounted within said input shaft,

a detent integrally molded onto said input shaft,

a lubricating oil pump driven by said input shaft,

a container receiving lubricating oil delivered from said pump,

a filter receiving said lubricating oil from said container,

a rotation chamber inside of said input shaft,

a lubricant channel arranged transversely to and entering radially into said rotation chamber, said channel communicating with said filter for receiving lubricating oil therefrom, and

a discharge tube extending into a center of said rotation chamber, said discharge tube delivering lubricating oil centrifugally cleaned within said chamber to shaft bearings, gear bearings and gears.

5,005,438

SHIFT MECHANISM

Ernest H. Marshall, 30 Saulters Rd., Manchester, Conn. 06040

Division of Ser. No. 273,474, Nov. 21, 1988. This application Jun. 25, 1990, Ser. No. 542,973

Int. Cl.' G05G 5/06

U.S. Cl. 74—538 2 Claims



1 A shift mechanism for manipulating an actuator of a transmission having a second gear between a first gear and a third gear to shift the transmission from any of the gears to an adjacent gear, said shift mechanism comprising a fixedly mountable shift segment plate, a shift arm pivotally mounted about a main axis which is fixed with respect to said shift segment plate and providing an additional axis parallel to said main axis, a shift rod pivotally connectible to the transmission actuator and pivotally connected to said shift arm at said additional axis, said shift segment plate having an arcuate surface confronting and coaxial with said main axis, a plurality of like barrels spaced from each other and having free ends projecting toward said main axis from said arcuate surface and crests projecting upwardly from said shift segment plate, said barrels including one said barrel which is adjacent and spaced from one end of said arcuate surface and another said barrel which is adjacent and spaced from the other end of said arcuate surface, whereby each said barrel has a portion of said arcuate surface on each side thereof, said shift mechanism further comprising a shift lever pivotally mounted with respect to said shift arm and having a forwardly facing surface overlying said shift arm and generally facing said shift segment plate, a pawl mounted for limited movement lengthwise of said shift arm and having a trailing end of width sufficiently narrow to fit between said free ends of adjacent ones of said barrels and between said free end of said barrel which is adjacent said one end of said arcuate surface and between said free end of said barrel which is adjacent said other end of said arcuate surface, spring means urging said pawl away from said main axis, a pusher block mounted for limited movement lengthwise of said shift arm and having a trailing end, pusher block resilient means urging said pusher block against said forwardly facing surface of said shift lever, a pusher carried by said pusher block and movable therewith lengthwise of said shift arm and having a forward end confronting said main axis and engageable with said pawl, said pusher being pivotally mounted to said pusher block about a pusher axis perpendicular to said main axis, and resilient means urging rotation of said pusher about said pusher axis in the direction urging said forward end of said pusher toward said shift segment plate, said forward end of said pusher being engageable in abutting fashion with said trailing end of said pawl and with said shift segment plate and liftable away from said shift segment plate by passing over said crest of any said barrel during shifting and into overlapping engagement with said trailing end of said pawl, permitting said trailing end of said pawl to engage said arcuate surface and preventing further shifting until said shift lever is released to allow said pusher block resilient means to push said pusher block and said pusher away from said main axis to move said forward end of said pusher past said trailing end of said pawl and said resilient means which urges rotation of said pusher to move said forward end of said pusher into engagement with said shift segment plate and abutting relationship with said trailing end of said pawl.

5,005,439

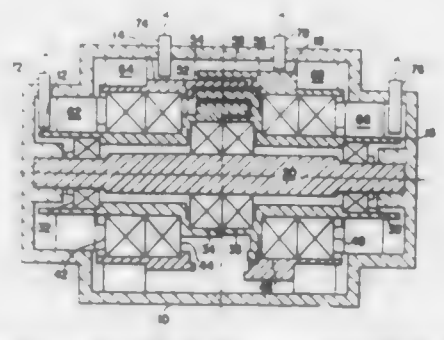
INERTIA FORCE GENERATING DEVICE

William S. Jensen, Canoga Park, and David Ng, Arcadia, both of Calif., assignors to Barry Wright Corporation, Watertown, Mass.

Filed Jul. 14, 1989, Ser. No. 379,881

Int. Cl.' F16F 15/10; G01H 11/00

U.S. Cl. 74—574 17 Claims



1 An inertial force generating device for producing periodic forces to cancel undesired vibrations, comprising

a stationary housing,

first and second pairs of eccentric rotors disposed within said housing for rotation around an axis common to all of said rotors, each rotor having an imbalanced portion with a respective eccentric center of mass, said imbalanced portions being nested radially, so as to develop force vectors in a common plane perpendicular to said axis,

means for rotating said rotor pairs in opposite directions,

means for controlling the angle between the mass centers of the rotors within each rotor pair, so as to vary an effective mass eccentricity of each, and

means for adjusting the phase angle between the rotor pairs so as to control the direction of the cancelling force generated by the device.

5,005,440

PORTABLE LIQUID SPRAYER, PARTICULARLY FOR THE TREATMENT OF PLANTS

Patrick J. Ballu, Reims, France, assignor to Tecnoma, Epernay, France

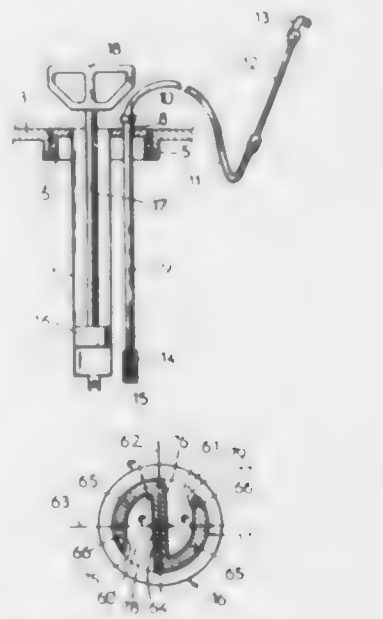
Division of Ser. No. 209,197, Jun. 20, 1988, Pat. No. 4,886,187. This application Oct. 11, 1989, Ser. No. 419,661

Claims priority, application France, Jun. 27, 1987, 87 09126

Int. Cl.' G05G 1/00

U.S. Cl. 74—579 R 5 Claims

1 A piston pump having a piston rod comprising a casting with a cross-section of external circular shape and having at least two longitudinal, parallel open grooves each of a predetermined depth such that each said groove extends beyond an axial plane lying perpendicular to a median plane of said rod.



5,005,441

LINE PRESSURE CONTROL FOR AUTOMATIC TRANSMISSION

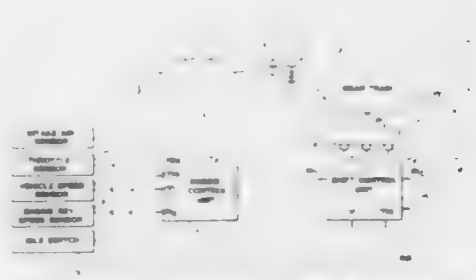
Yasushi Narita, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 17, 1989, Ser. No. 339,101

Claims priority, application Japan, Apr. 15, 1988, 63-91814; Apr. 26, 1988, 63-101318

Int. Cl.' B60K 41/06

U.S. Cl. 74—866 7 Claims



1 An automatic transmission for an automotive vehicle including an engine with a throttle which opens in degrees, the automatic transmission including a gear train with an input shaft and an output shaft, the gear train including a frictional device that is hydraulically activated by a hydraulic fluid pressure supplied thereto to effect a predetermined shift from one gear position to another gear position, the automatic transmission, comprising

hydraulic circuit means for start supplying a servo activating hydraulic fluid to the frictional device at the instant when the predetermined shift is required, causing a ratio of a revolution speed of the input shaft to a revolution speed of the output shaft to vary toward a new gear ratio for the another gear position,

an accumulator having an accumulator piston means for defining an accumulator chamber which forms a part of

said hydraulic circuit means and an accumulator back-up pressure chamber.

means for generating an accumulator back-up pressure supplied to said accumulator back-up pressure chamber;

a control unit, said control unit including means for generating a control signal supplied to said accumulator back-up pressure generating means, said control signal having a predetermined variable factor, said accumulator back-up pressure generating means varying the magnitude of said accumulator back-up pressure in response to a variation of said predetermined variable factor.

said control unit including means for varying said predetermined variable factor during the predetermined shift in a predetermined schedule.

said control unit also including means for changing said predetermined schedule of variation in response to a magnitude of a load on the engine

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5,005,442

CONTROL SYSTEM FOR STEPLESS BELT TRANSMISSIONS

Shiro Sakakibara; Norio Imai; Hidehiro Kondo, and Kazuo Kamiya, all of Anjo, Japan, assignors to Aisin AW Co., Ltd., Anjo, Japan

Filed Dec. 8, 1988, Ser. No. 281,352

Claims priority, application Japan, Dec. 11, 1987, 62-313257; Dec. 28, 1987, 62-333032; Dec. 28, 1987, 62-333033; Dec. 28, 1987, 62-333034; Dec. 28, 1987, 62-333035; Dec. 28, 1987, 62-333036

Int. Cl.' B60K 41/12

U.S. Cl. 74—866 6 Claims



1 A control system for a stepless transmission unit, comprising

stepless transmission means for variably controlling torque ratio in a stepless manner,

stepless transmission operating means for variably controlling said torque ratio of said stepless transmission means,

auxiliary transmission means combined with said stepless transmission means and having a low-speed mode in which a shift control-enable region becomes a comparatively high torque ratio region and a high-speed mode in which a shift control-enable region becomes a comparatively low torque ratio region,

mode changeover means for changing said auxiliary transmission means between said low-speed and high-speed modes,

torque ratio detecting means for detecting torque ratio of said stepless transmission means, and target torque ratio setting means for setting a target torque ratio based upon a traveling condition of a vehicle,

shift decision means, having a stepless shift decision means and a mode changeover decision means, for outputting signals to said stepless shift operating means and said mode changeover means based upon signals received from said torque ratio detecting means and said target torque ratio setting means,

stop control decision means for determining whether a stop control state is in effect by detecting said traveling condition

means for stopping operation of said stepless transmission operating means based upon signals from said stop control decision means when a shift region is changed while downcoating, and

means for setting output of said auxiliary transmission means to a neutral state

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5,005,443

SHIFT CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

Kazuhiko Sugano, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 25, 1989, Ser. No. 384,694

Claims priority, application Japan, Jul. 25, 1988, 63-183632

Int. Cl.' B60K 41/06

U.S. Cl. 74—868 7 Claims



1 A shift control system for an automatic transmission, the automatic transmission including a main gear train and an auxiliary gear train operatively coupled therewith, the auxiliary gear train including a first friction element for low gear position and a second friction element for high gear position, the shift control system comprising

a source of hydraulic fluid,

a first hydraulic passage connected with the first friction element through an orifice

a second hydraulic passage connected with the second friction element,

a third hydraulic passage,

a shift valve directly connected with said source, said first hydraulic passage and said second hydraulic passage and including a spool movable between a first position where said first hydraulic passage is directly connected with said source via said shift valve and hydraulic fluid is discharged from said second hydraulic passage, and a second position where said second hydraulic passage is directly connected with said source via said shift valve and hydraulic fluid is discharged from said first hydraulic passage,

an accumulator including a working pressure chamber and a back pressure chamber, said working chamber being connected with said first hydraulic passage between said shift valve and the first friction element, said back pressure chamber being connected with said third hydraulic passage; and

means for supplying a hydraulic pressure to said third hydraulic passage when an engine brake is required

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5,005,444

HYDRAULIC CONTROL APPARATUS FOR AUTOMATIC TRANSMISSION FOR MOTOR VEHICLE

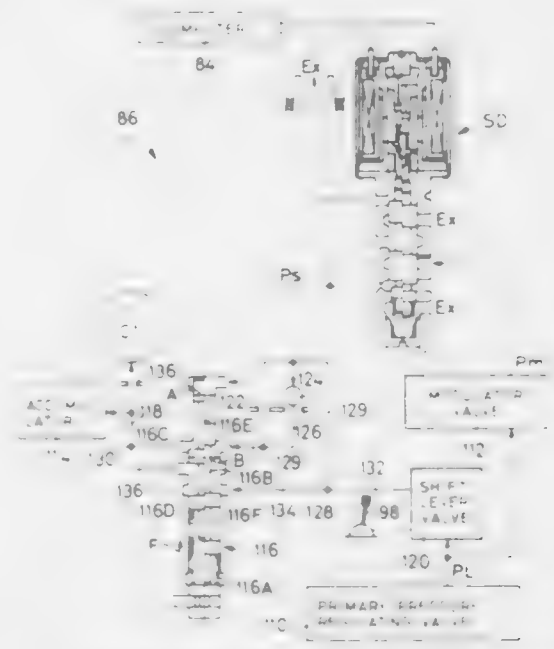
Hiromichi Kimura; Kunihiro Iwatsuki; Hiroji Taniguchi, all of Toyota; Takuji Taniguchi, Okazaki, and Kazunori Ishikawa, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Aisin AW Co., Ltd., both of Aichi, Japan

Filed Feb. 22, 1989, Ser. No. 313,638

Claims priority, application Japan, Mar. 7, 1988, 63-52896

Int. Cl.' B60K 41/06

U.S. Cl. 74—868 15 Claims



1 A hydraulic control apparatus for controlling a shifting action of a hydraulically operated frictional coupling clutch of an automatic transmission connected to an engine of a motor vehicle, to shift the automatic transmission between a neutral position thereof and a first-speed forward drive position, in response to an operation of a shift lever, with a minimum shifting shock, said clutch being engaged to establish said first-speed position, said hydraulic control apparatus comprising

a shift lever valve operable in response to the operation of said shift lever between a first position for supplying a fluid to said fractional coupling clutch for engagement thereof to establish said first-speed forward drive position and a second position for discharging the fluid from the frictional coupling clutch for disengagement thereof

flow control means lever valve and said frictional coupling clutch, for controlling a rate of flow of the fluid therethrough,

a fail-safe fluid passage disposed between said shift lever valve and said frictional coupling clutch for always maintaining fluid communication between the shift lever valve and the frictional coupling clutch irrespective of an operating position of said flow control means and even in the event of a trouble with said flow control means, and

electronic control means for controlling said flow control means so as to restrict the rate of fluid flow into or from said frictional coupling clutch after an engaging or disengaging action of said frictional coupling clutch is actually started and while a torque transmitted by the frictional coupling clutch is changed

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5,005,445

ELECTRIC-HYDRAULIC CONTROL FOR AUTOMATIC TRANSMISSION

Georg Gierer, Kressbronn, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

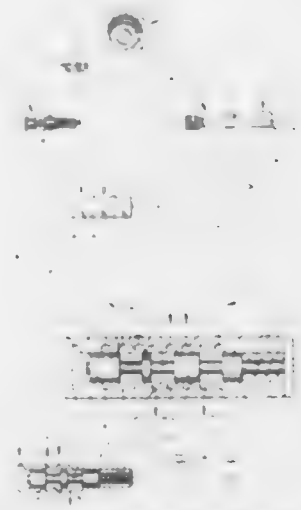
PCT No. PCT/EP87/00220, § 371 Date Oct. 26, 1988, § 102(e) Date Oct. 26, 1988, PCT Pub. No. WO87/06670, PCT Pub. Date Nov. 5, 1987

PCT Filed Apr. 23, 1987, Ser. No. 272,701

Claims priority, application Luxembourg, May 2, 1986, PCT/EP86/00261

Int. Cl.' F16H 61/12, 61/16

U.S. Cl. 74—878 9 Claims



1 An automatically shiftable transmission for a vehicle having a plurality of forward speeds and including a gear mechanism having a first clutch effective to switch the gear mechanism into a low forward speed and a second clutch effective to switch said gear mechanism into a reverse speed, and an electrohydraulic control system, said system comprising

a pressure medium source supplying a system pressure to said control system

a manual selecting valve connected to said source and receiving said system pressure for selecting between a first forward drive position actuating said first clutch, other forward drive positions, a reverse drive position and a neutral position,

an electronic control device connected with said manual valve and provided with a sensor detecting an output speed of said transmission,

electrohydraulic control means connected with said electronic control devices and including a first solenoid valve and a second solenoid valve for supplying a control pressure to control shifting between said speeds, said first solenoid valve switching said first solenoid valve on in said first forward drive position of said manual valve

a control valve receiving said control pressure from said first and second solenoid valves, and

a hydraulic switch valve connected with the first and second clutches for controlling actuation thereof and with said manual valve for receiving said system pressure therefrom, said hydraulic switch valve being agreeable to shift said speeds in response to said solenoid valves and being connected with said control valve for receiving said control pressure, said switch valve being provided with means for preventing an automatic shifting of said gear mechanism into said reverse drive position by blocking flow of the system pressure between said switch valve and the second clutch or forward speed of the transmission and for unblocking the system pressure connecting said

switch valve and said second clutch upon switching off of said first solenoid valve and effecting thereby the engagement of the second clutch controlling said reverse drive, said first solenoid valve being switched off by said sensor when a forward speed of the vehicle falls below a given speed regardless of the drive position selected by said manual valve.

5,005,446

PRESSURIZED CORK-REMOVAL APPARATUS FOR WINE BOTTLES AND OTHER CONTAINERS

Edward R. Mackey, 28 Nottingham Rd., Dracut, Mass. 01826

Continuation of Ser. No. 2,871, Jan. 13, 1987, abandoned. This application Jul. 21, 1988, Ser. No. 222,163
Int. Cl.[5] B67B 7/08
U.S. Cl. 81—3.48 2 Claims



1 In apparatus for removing a stopper from a container of the type including a housing, an exit port in the housing, a gas cylinder, and valve means for directing gas from the cylinder to the exit port, the improvement of a needle assembly comprising,

A hollow needle means connected at a first end to the exit port for penetrating a stopper and conducting gas under pressure into the container through a second end of said needle means thereby to force the stopper out of the container,

B open-ended cylindrical cover means rigidly attached to said first end of said needle means and extending coaxially with said needle means, said cover means including longitudinal slots formed therein,

C stripper plate means having a central section with a planar surface for abutting the stopper, a central aperture for receiving said needle means through said central section and transversely extending ears extending through said longitudinal slots thereby to enable an operator to push the stopper off said needle means after a stopper is removed from a container, said needle thereafter being completely encased by said cover means and said stripper plate means,

D capture means mounted to said cover means at the open end thereof to capture said stripper plate means, the longitudinal dimension of said cover means and said capture means exceeding the length of said needle means, and

E spring means mounted in said cover means solely for biasing said stripper plate means toward said capture means, said capture means being positioned so said stripper plate means and said cover means normally encase all of said needle means

5,005,447

TORQUE WRENCH

John K. Junkers, 7 Arrowhead La., Saddle River, N.J. 07458

Continuation-in-part of Ser. No. 417,257, Oct. 5, 1989, abandoned, which is a continuation-in-part of Ser. No. 179,387, Apr. 8, 1988, abandoned. This application Apr. 6, 1990, Ser. No. 505,978
Int. Cl.[5] B25B 13/46
U.S. Cl. 81—57.39 10 Claims



1 A torque wrench for tightening or loosening of threaded connectors, comprising turnable engaging means arranged to be turned and to engage threaded connector so as to tighten or loosen the latter in response to turning of said engaging means power drive means for turning said engaging means to perform a power stroke and means for connecting said power drive means with said engaging means, said power drive means including fluid operated cylinder-piston means provided with a cylinder and two pistons, said pistons being movable so that during said power stroke when one piston with a smaller piston area is moved it applies a smaller pressure to said engaging means to provide a smaller torque, while when both said pistons with a greater combined piston area are moved together they apply a greater pressure to said engaging means to provide a greater torque

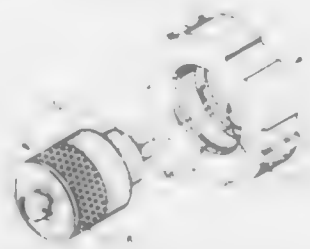
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5,005,448

SPEED WRENCH AND HAND GRIP COMBINATION

Harvey M. Main, P.O. Box 376, South Fork, Colo. 81154

Continuation-in-part of Ser. No. 919,838, Oct. 16, 1986, Pat. No. 4,791,837. This application Dec. 19, 1988, Ser. No. 287,476
The portion of the term of this patent subsequent to Dec. 20, 2005, has been disclaimed.
Int. Cl.[5] B25B 13/46
U.S. Cl. 81—63 22 Claims



1 In a tool adapted to rotatable drive a work piece wherein said tool includes a casing with a cylindrical outer surface which mounts a drive mechanism having a drive member that projects axially from one side of the casing and that is adapted to selectively engage the work piece whereby rotation of said casing rotates said work piece, the improvement comprising a drive head rigidly attached to said tool and projecting axially from said casing on a second side thereof opposite said drive member, said drive head having a raised surface generally in a plane transverse to the common axis of said drive member and said drive head and having a plurality of flat exterior sides oriented along exterior planes which are parallel to said common axis, at least some of said exterior sides being parallel to one another, said drive head having an axial cavity formed in said raised surface, said cavity having a plurality of flat interior sidewalls oriented along interior planes which are parallel to said common axis, and a strap-like bail member extending across said casing on the second side thereof with said bail member having radial end portions attached to diametrically opposite outermost edge portions of said casing and extending upwardly therefrom coextensive with the cylindrical outer surface of said casing to maintain said bail in fixed set apart relation to a surface of said second side

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5,005,449

HAND TOOL OR IMPROVED BAR CLAMP

Joseph A. Sorensen, and Dwight L. Gatzemeyer, both of Lincoln, Nebr., assignors to Peterson Manufacturing Co., Inc., DeWitt, Nebr.

Filed Feb. 14, 1990, Ser. No. 480,098
The portion of the term of this patent subsequent to May 22, 2007, has been disclaimed.
Int. Cl.[5] B25B 13/12 5/02
U.S. Cl. 81—152 20 Claims



1 A hand tool comprising

a fixed jaw

a movable jaw

a slide bar, said movable jaw being mounted to said slide bar

support means for supporting said slide bar, said fixed jaw extending outwardly from said support means and having at least a front portion facing said movable jaw, said support means having a handgrip extending longitudinally along said slide bar,

receiving means in the vicinity of the junction between said front portion of the fixed jaw and said support means, a braking lever pivotable at said receiving means and having an engaging portion extending outwardly from said support means,

one-way drive means for releasably engaging and, when engaged, for advancing said slide bar and movable jaw, said one-way drive means having at least a driving lever, and

a trigger handle pivotably mounted at said support means and contacting said driving lever, said trigger handle having a gripping portion extending longitudinally along said slide bar

5,005,450

SELF-LOCKING TOOL

Vernon Ford, 28 Hemenway Rd., Cheektowaga, N.Y. 14225

Filed Mar. 21, 1990, Ser. No. 496,955
Int. Cl.[5] B25B 7/14
U.S. Cl. 81—318 17 Claims



1 A locking tool comprising in combination at least three pieces comprising a first handle piece, a second handle piece and a third piece, each of these three pieces movably connected to each other and having axle apertures in substantial alignment with each other, at least two of said three pieces having at least one arc-like slot, each positioned adjacent said axle aperture and at least one remaining piece having at least one vertically-disposed slot positioned adjacent its axle aperture, said arc-like slots spiralling in an opposite direction from at least one other arc-like slot in a different adjacent piece, a locking means movably disposed in each of said arc-like slots and said vertically disposed slot, said locking means movably connecting said at least three pieces, and means to lock said first handle piece and said second handle piece in position

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5,005,451

ANGLE STOP INSTALLATION TOOL

Roger W. Lee, 20899 Maureen Way, Saratoga, Calif. 95070, and Richard J. Ramirez, 1380 Navarro Dr., Sunnyvale, Calif. 94087

Filed May 22, 1990, Ser. No. 526,890
Int. Cl.[5] B25B 27/24
U.S. Cl. 81—487 11 Claims



1 A tool for use in the installation of angle stop valves and the like, comprising

holder means including a generally fork shaped member forming a receptacle for receiving the body of a valve, the facing inner walls of said fork shape member being adapted to engage flats on the outer walls of a valve body, said fork shaped member including first and second openings on opposite ends of said receptacle and at least one side opening through which an outlet stem of the engaged valve may be extended,

means forming a cavity proximate one of said opposite ends for receiving an unengaged part of the engaged valve; and

means forming an elongated handle extending from the lower surface of said holder means.

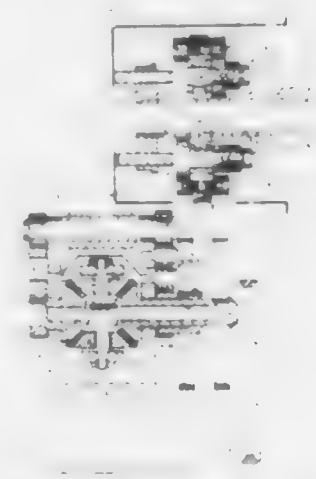
5,005,452
HIGH PRODUCTION MACHINING DEVICE
David B. Wood, III, Mason, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Aug. 10, 1989, Ser. No. 391,929
Int. Cl.[5] B23B [illegible]
U.S. Cl. 82—132 20 Claims



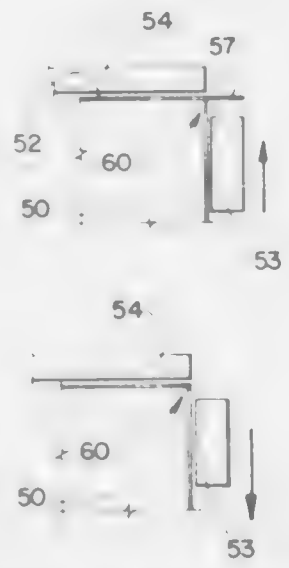
1 A high production machining device comprising
a headstock
first and second spindles rotatably mounted on said headstock
a carriage
first drive means for sliding said carriage along a transverse axis of said machining device,
first and second slides slidably mounted on said carriage for movement in a direction normal to said transverse axis said first and second slides each adapted to carry a machine tool and each being independently and directly connected to a common second drive means for moving said slides on said carriage
means for monitoring the positions of said first and second slides along said normal direction and
independent compensating means for adjusting the position of one of said slides relative the other slide in said normal direction, whereby the positions of said first and second slides in said normal direction can be effectively independently controlled

5,005,453
DRIVE FOR RELATIVELY AXIALLY SHIFTING CHUCK PARTS
Günter H. Röhm, Heinrich-Rohm-Strasse 50, D-7927 Sontheim, Fed. Rep. of Germany
Filed Feb. 1, 1990, Ser. No. 473,448
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1989, 3920612; European Pat. Off., Nov. 4, 1989, 89120452.1
Int. Cl.[5] B23B *31/28*
U.S. Cl. 82—142 11 Claims

1 In combination with a machine tool having a housing normally rotated about a housing axis and having a part that is axially movable relative to the housing to adjust the tool, an adjustment apparatus for relatively axially displacing the housing and the part of the tool, the apparatus comprising
drive means having two oppositely rotating drive outputs
two respective wheels coupled to the drive outputs and rotatable coaxially on the tool housing, and
two respective axially extending screws rotationally coupled to the respective wheels, axially fixed on the tool housing, and both threaded axially in the movable part of the machine tool, one of the screws having a screwthread of a predetermined hand and the other of the screws having a screwthread of opposite hand



5,005,454
LAMINA CLIPPING DEVICE AND METHOD
M. Ray Fletcher, Lexington, N.C., assignor to Fletcher Machine, Inc., Lexington, N.C.
Filed Aug. 21, 1989, Ser. No. 396,096
Int. Cl.[5] B26D *5/12*
U.S. Cl. 83—13 17 Claims



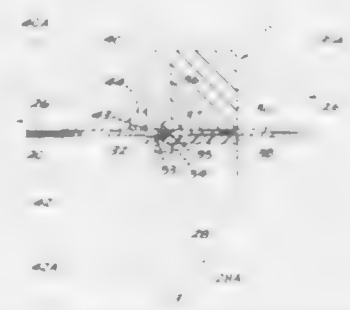
14 A method for clipping excess lamina which extends beyond the corner formed by two intersecting edges of a laminated substrate, the lamina having a complex profile with a back surface and a front surface, comprising the steps of
(a) positioning the corner of the substrate with excess edge lamina between a first movable blade having a cutting edge contoured to the front surface of said lamina and a second rigidly fixed blade having a cutting edge contoured to the front surface of said lamina,
(b) moving the first blade towards said second complementary blade,
(c) engaging the excess edge lamina between the blade edges along the entire length of each of said blade edges simultaneously, and
(d) cutting the excess lamina as the blade edges enclose the substrate corner

5,005,455
METHOD AND APPARATUS FOR MANUFACTURING PREFORM PANELS WITH PREFORMS FOR REPAIRING INTERCONNECTS
Guenter Dederer, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Mar. 23, 1989, Ser. No. 327,[illegible]
Claims priority, application Fed. Rep. of Germany, May 26, 1988, 3817901
Int. Cl.[5] B21D *28/10* H05K *3/24*
U.S. Cl. 83—50 9 Claims



1 A method for manufacturing preform panels having at least one preform for repairing interconnects with a preform plated with hard solder, comprising the steps of
providing at least two successive punch events on a metal band with a die, and
performing a predetermined feed (V) of the metal band relative to the die between the two punch events, whereby the length of the feed (V) is greater than a die width of the die, a length of the die being shorter than a width of the metal band, and the preform being formed by a residual web of the metal band after the two successive punch events

5,005,456
HOT SHEAR CUTTING OF AMORPHOUS ALLOY RIBBON
Donald E. Ballard, Conover, N.C.; Peter G. Frischmann, Scottsdale, Ariz., and Alan I. Taub, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Sep. 29, 1988, Ser. No. 250,805
Int. Cl.[5] B23D *15/08, 33/00* B26D *7/10*
U.S. Cl. 83—170 1 Claim



1 Apparatus for shearing a stack of amorphous alloy ribbons which comprises,
means for supplying a plurality of ribbons to be sheared as a stack,
means for compressing the stack of ribbons in a heating zone to reduce the electrical resistance between confronting surfaces of the ribbons of said stack,
resistance heating current supply means,
means for passing said resistance heating current through said heating zone for a time to induce heating by diffusion in a diffused heat zone adjacent said heating zone at a rate and to a temperature which conforms to the hatched areas of FIGS. 1 and 2 of the drawings of the subject application, and
means for shearing said stack of ribbons in said diffused heat zone the width dimension of the means for passing resistance heating current to the heating zone, oriented in the length dimension of the stack, is no greater than 0.025 inches.

5,005,457
METHOD AND APPARATUS FOR WASTE COLLECTION AND STORAGE
William E. Thornton, Jr., Friendswood, and Whitemore, Henry B., San Antonio, both of Tex., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.
Division of Ser. No. 35,401, Apr. 7, 1987, Pat. No. 4,870,709.
This application Aug. 10, 1989, Ser. No. 392,174
Int. Cl.[5] B26D *1/00, 7/02*
U.S. Cl. 83—206 4 Claims



1 A device for feeding a sheet onto a piston face, comprising
a grabber bar which is generally elongated and includes a first jaw and a second jaw, said first and second jaws being generally opposed to open and close on said sheet to secure and release said sheet thereby
a track having said grabber bar mounted thereon, said track alternately moving said grabber bar in a first direction across said piston face, to a first terminus above said piston face and, subsequently reversing said first direction and moving said grabber bar in a second direction to a second terminus below said piston face
a gripper bar having a first plate and a second plate, said first and second plates being generally identically shaped and having fingers extending therefrom, said first and second plates being demountably coupled, said gripper bar applying pressure great enough to hold said sheet sandwiched therebetween, yet weak enough to allow said sheet to slidably move therebetween, said gripper bar being located at said second terminus
trip means alternately urging said jaws of said grabber bar to an open position from a closed position, releasing said sheet thereby when said grabber reaches said first terminus, and back to a closed position securing said sheet therebetween, when said grabber bar reaches said second terminus,
cutting means for severing said sheet from a sheet source at

a point just above said gripper bar when said first and said second jaws are at said first terminus

a hollow mounting member integral with said grabber bar having a first and a second end and a channel therethrough, said mounting member fixedly attached at said first end to said track and at said second end to said first jaw, and

a guide member with a first and a second end, said guide member sized to slidably fit within said channel in said mounting member and attached at said first end to said second jaw and at said second end to said trip means, wherein said trip means urges said first and second jaws alternately from said open position to said closed position

5,005,458

LOW COST PUNCH MECHANISM

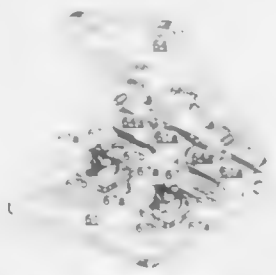
Robert G. Merrick, Cupertino, Calif., assignor to Merrick Industries, Incorporated, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 225,638, Jul. 27, 1988, Pat. No. 4,869,143, which is a continuation of Ser. No. 743,559, Jun. 11, 1985, abandoned, which is a continuation-in-part of Ser. No. 623,799, Jun. 22, 1984, abandoned. This application Sep. 22, 1989, Ser. No. 411,143

The portion of the term of this patent subsequent to Sep. 26, 2006, has been disclaimed.

Int. Cl.[5] B26D 1/12

U.S. Cl. 83—599 3 Claims



1 A punch mechanism for providing openings in a paper object,

said punch mechanism having a punch plate member movably hinged to a die plate member;

said punch plate member carrying a pair of spaced punching teeth adapted to engage openings in said die plate member when said punch plate member is moved closely adjacent said die plate member;

each of said punching teeth having a maximum of two sharp peak-like portions or crests diametrically opposite to each other for producing initial penetration of said paper object;

each of said punching teeth having rounded wider cutting portions or roots contiguous with said peak-like portions to produce further and sequential cutting of said paper object after said initial penetration by said peaklike portions, while providing additional wear surfaces for said teeth,

said punch plate member being hinged along an axis extending through at lest two cylinders in said punch plate member and a plurality of cylinders in said die plate member,

a cam slot in one of said cylinders of either said punch plate member or said die plate member,

said cam slot having a shoulder therein,

a lug on the other of said members, said lug being positioned to engage and disengage said cam slot only when said members are

a in a predetermined physical relationship to each other, and

b when manual force is applied along the direction of the hinge axis to snap said lug over said shoulder of said cam slot, thereby resulting in a structure having a semipress fit assembly, whereby said lug in cooperation with said cam slot guides said members into a coarse alignment and prevents disassembly of said members when said members are in other than said predetermined physical relationship

thereby resulting in a structure which can be assembled and disassembled using only manual force, yet which, because of said semipress fit assembly, is not subject to inadvertent disassembly even when said members are in said predetermined physical relationship

5,005,459

MUSICAL TONE VISUALIZING APPARATUS WHICH DISPLAYS AN IMAGE OF AN ANIMATED OBJECT IN ACCORDANCE WITH A MUSICAL PERFORMANCE

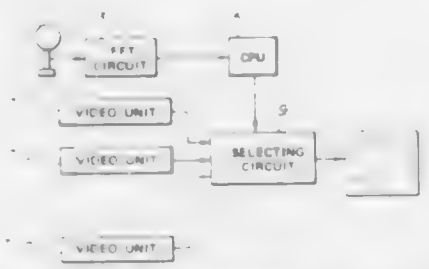
Takeshi Adachi; Kotaro Mizuno; Shigeru Yamada; Hideo Suzuki, and Mamoru Kimpara, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 231,076, Aug. 11, 1988, abandoned. This application Jun. 22, 1990, Ser. No. 542,639

Claims priority, application Japan, Aug. 14, 1987, 62-201803; Aug. 25, 1987, 62-209288; Aug. 28, 1987, 62-212679; Oct. 2, 1987, 62-248122

Int. Cl.[5] G10G 1/00

U.S. Cl. 84—453 38 Claims



19 A musical tone visualizing apparatus comprising

(a) detecting means for detecting information relating to a rhythm of music from one of a musical tone signal and musical tone performance information

(b) image displaying means for displaying an image of an object based on predetermined image information and

(c) display control means for varying said image displayed by said image display means based on said rhythm information such that said object is animated

5,005,460

MUSICAL TONE CONTROL APPARATUS

Hideo Suzuki; Shunichi Matsushima; Masahiko Obata; Masao Sakama; Akira Nakada, and Shinji Kumano, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Dec. 22, 1988, Ser. No. 289,181

Claims priority, application Japan, Dec. 24, 1987, 62-328061; Dec. 24, 1987, 62-328062; Dec. 24, 1987, 62-328064; Dec. 24, 1987, 62-328065; Dec. 24, 1987, 62-328066; Dec. 24, 1987, 62-328067; Dec. 25, 1987, 62-328797

Int. Cl.[5] G10H 1/06, 1/18, 1/34

U.S. Cl. 84—600 16 Claims



1 A belt type musical tone control apparatus, comprising

(a) detecting means, adapted to be mounted on at least one of a player's hand or foot, for detecting movement of the player; and

(b) control means, adapted to be mounted at the player's waist by use of a belt, for generating musical tone control data based on the detection result of said detecting means said musical tone control data being outputted to an externally provided musical tone generating apparatus from which a musical tone controlled by said musical tone control data is generated, said control means comprising a plurality of separable parts arranged respectively and independently along a longitudinal direction of said belt

5,005,461

PLUCKING-SOUND GENERATION INSTRUMENT AND PLUCKING-DATA MEMORY INSTRUMENT

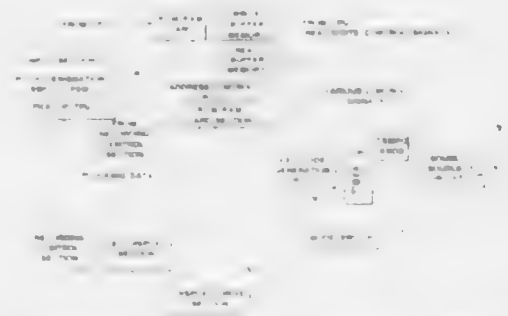
Yoshiyuki Murata, Tachikawa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Apr. 19, 1989, Ser. No. 340,235

Claims priority, application Japan, Apr. 25, 1988, 63-54538[U]

Int. Cl.[5] G10H 1/00, G10H 7/00

U.S. Cl. 84—646 46 Claims



1 A plucking sound generation instrument comprising

a fingerboard having a plurality of fingering operation tracks

pitch data output means for outputting pitch data responsive to a player's manual fingering operation performed on said fingerboard positions within a plurality of said fingering operation tracks

a plucking timing data output means for automatically and sequentially outputting plucking timing data which indicate generation timings for a series of plucking sounds defining a musical piece without a manual plucking operation of the player, and

instruction means for instructing sequential generation of a plurality of plucking sounds of said musical piece without a player's manual operation, said plucking sounds having a pitch corresponding to said pitch data and having timings corresponding to said plucking timing data

5,005,462

LASER CONTROLLED SEMICONDUCTOR ARMATURE FOR ELECTROMAGNETIC LAUNCHERS

Louis J. Jasper, Jr., Fulton, Md.; Maurice Weiner, Ocean, and Lawrence J. Bovino, Eatontown, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 16, 1990, Ser. No. 466,142

Int. Cl.[5] F41B 6/00

U.S. Cl. 89—8 10 Claims

1 A railgun including a pair of opposing elongated parallel stator members coupled to a source of electrical current, comprising

an armature comprising an optically activated semiconductor switch device including a body of semiconductor material located between said stator members and

a source of optical energy periodically energized to direct light energy to at least one surface of said semiconductor switch device,

whereby light energy from said optical source increases the conductivity of said semiconductor body to initiate and control current flow between said stator members, causing an electromagnetic Lorentz type driving force to be built up behind said switch device which is then set in motion and accelerated in a predetermined direction between said stator members

said stator members of said railgun comprising a pair of linear rails

said pair of rails additionally including a plurality of spaced



means coupled to said source of optical energy located between opposing inner side surfaces thereof and extending a predetermined distance along the length thereof and

said body of semiconductor material

5,005,463

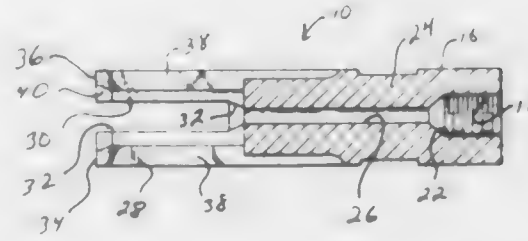
FLASH SUPPRESSOR FOR FIREARMS

Anthony A'Costa, P.O. Box 5806, 710 W. 4th St., Ste. F, Pueblo, Colo. 81003

Filed May 11, 1987, Ser. No. 48,318

Int. Cl.[5] F41A 21/34

U.S. Cl. 89—14.2 8 Claims



1 A flash suppresser for attachment to the muzzle end of the barrel of a firearm comprising

a generally cylindrical body member having a first portion for receiving a projectile from said barrel and a second portion for receiving a projectile from said first portion,

said first portion having a longitudinal smoothbore passage therethrough through which a projectile discharged from said barrel passes,

said second portion having a longitudinal passage with an inside diameter significantly greater than the inside diameter of said first portion passage,

a smooth tapered transition wall connecting the longitudinal passages of said first and second portions,

a pair of diametrically opposed longitudinal vent slots in said second portion and extending from the distal end of said second portion toward said first portion whereby said second portion comprises a pair of furnications, and

at least one radially directed closed ended vent opening formed in each of said furcations

5,005,464
BRAKE BOOSTER
Hitoshi Takaku, Saitama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan
Filed Mar. 22, 1989, Ser. No. 327,342
Claims priority, application Japan, Apr. 11, 1988, 63-88850
Int. Cl.' F01B 25/...2
U.S. Cl. 91—6 11 Claims

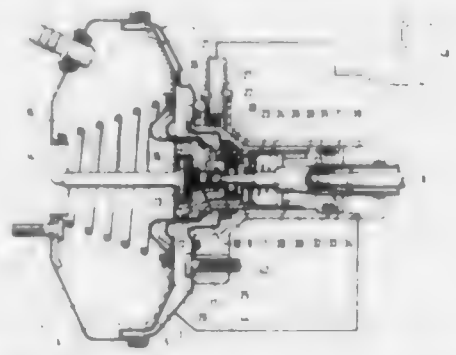


1. A brake booster including a power piston slidably disposed within a shell, a valve mechanism received in a valve body which is arranged in an axial portion of the power piston, a constant pressure chamber and a variable pressure chamber defined forwardly and rearwardly, respectively, of the power piston as viewed in the direction of operation thereof, a passage formed in the valve body for providing a communication between the valve mechanism and the constant pressure chamber, and an open close valve mounted on the valve body for opening and closing the passage,

characterized in that the open close valve comprises a valve seat formed in surrounding relationship with the passage, a valve element reciprocally movable within a casing which is mounted on the valve body, the casing comprising a cylindrical member secured to the valve body in surrounding relationship with the valve seat, the cylindrical member being formed with an opening which provides a communication between the interior and the exterior thereof, and a cup-shaped member integrally fastened to the cylindrical member, a diaphragm applied across the inner periphery of the casing and the valve element and having an outer peripheral portion which is held between the cylindrical member and the cup-shaped member to define a pressure chamber within the cup-shaped member for urging the valve element toward the valve seat, and pressure fluid supply means for supplying a pressure fluid into the pressure chamber from the outside of the shell to cause the valve element to be seated upon the valve seat.

5,005,465
BRAKE BOOSTER
Peter Boehm, Friedrichsdorf; Ralf Jakobi, Liederbach, and Jurgen Bauer, Wiesbaden, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt Am Main, Fed. Rep. of Germany
Filed Feb. 22, 1989, Ser. No. 313,922
Claims priority, application Fed. Rep. of Germany, Feb. 29, 1988, 3806401
Int. Cl.' F15B 9/...
U.S. Cl. 91—369.1 14 Claims

1. A brake booster comprising a booster housing subdivided by means of a movable wall arranged therein into a chamber of constant pressure and into a working chamber, the movable wall being formed by a diaphragm disk and by a rolling diaphragm partially abutting the diaphragm disk, a piston rod coupled with a brake pedal for actuating a control valve to alternatively connect the working chamber with a vacuum or with a higher differential pressure, the control valve having a control valve piston axially displaceable in a control valve housing and acting on an end of a push rod through an intermediary of a reaction element, pneumatic means for activating during the operation of the brake booster with pressure above



atmospheric a force constituent to counteract forces caused by an increased pressure difference and acting on the control valve piston as well as on the control valve housing.

5,005,466
CAVITATION-PREVENTING PILOT VALVE CONTROL SYSTEM FOR POWER SHOVEL HYDRAULIC CIRCUIT
Satoshi Miyaoka, Hiroshima, Japan, assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan
Filed Mar. 20, 1989, Ser. No. 326,017
Claims priority, application Japan, Apr. 7, 1988, 63-86500
Int. Cl.' F15B 11/...
U.S. Cl. 91—420 6 Claims



1. A hydraulic operating circuit of a power shovel including a hydraulic cylinder for driving a working component, comprising

a hydraulic change-over valve having a spool moving from a neutral position to forward and reverse directions for selectively supplying said cylinder with a discharge oil pressure of a hydraulic pump driven from an engine,

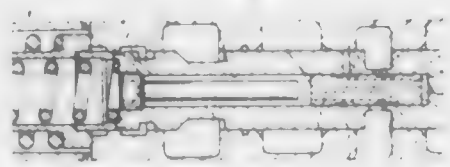
a pair of first signal receiving portions provided on said hydraulic change-over valve and comprising means for moving said spool in the forward and reverse directions away from a neutral position, respectively, and a second signal receiving portion provided on said hydraulic change-over valve and comprising means for pulling back said spool toward said neutral position,

a pressure detector means adapted to produce a signal commensurate with the pressure in an oil chamber of said cylinder where a vacuum pressure is developed by the weight of said working component,

a signal producing means for producing a signal for pulling back said spool toward said neutral position in response to a detection of a vacuum pressure in said cylinder by said pressure detector means, and

signal supplying means for supplying said signal from said signal producing means to said second signal receiving portion of said hydraulic change-over valve.

5,005,467
PILOT-OPERATED FLOW CONTROLLING DIRECTIONAL CONTROL VALVE WITH COPYING SPOOL
Orjan E. V. Wennerbo, and Bo Nilstam, both of Boras, Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden
Filed May 17, 1988, Ser. No. 195,119
Claims priority, application Sweden, May 18, 1987, 8702019
Int. Cl.' F15B 13/...42
U.S. Cl. 91—461 8 Claims



1. A hydraulic power system connected to and controlling a rod driving hydraulic motor (18, 32) apparatus, comprising

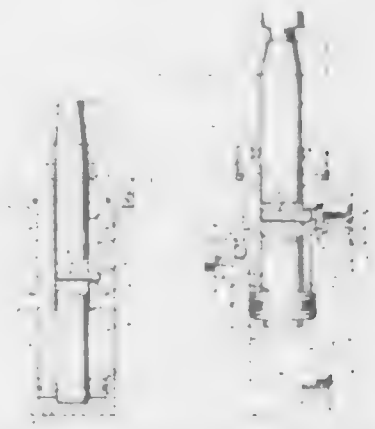
a pilot-operated flow controlling directional valve means (1, 29) comprising a fluid inlet port (21), two alternatively pressurized service ports (19, 20) for alternatively connecting communication ports of the load driving hydraulic motor (18, 32) to a pressure medium source and a tank, two oppositely located and pilot pressure activated activating means (3, 4), and a pilot pressure means (84) for pressurizing and activating one at a time of said activating means (3, 4) while draining the other one of said activating means (3, 4) to the tank through a flow restriction (5, 7),

at least one control flow circuit means (10, 12, 72, 83, 37, 44) for communicating with one of said activating means (3, 4), and

load pressure responsive compensating means including a control valve means (11, 12, 71, 31) for accomplishing a flow through said at least one control flow circuit means (10, 12, 72, 83, 37, 44) in relation to the load pressure of the motor, for causing a counter pressure from said flow restriction (5, 7) to be built up in the non-activated activating means for thereby generating a compensating force which is related to the load pressure on the motor, on the non-activated activating means, said built up counter pressure being proportional to the load pressure but not proportional to the pilot pressure,

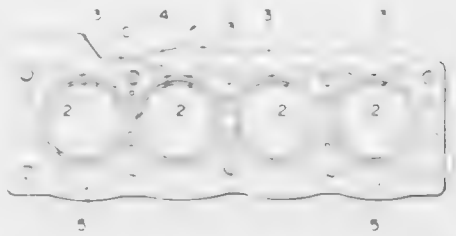
said control valve means comprising a continuously variable copying valve (71, 81) which has a first surface (85) for pressure loading the copying valve in one direction and a second surface (86) for pressure loading the copying valve in an opposite direction, and a first passage means (76, 77) for connecting said first surface (85) with one of said pressurized service ports (19, 20) of said directional valve means (1) and a second passage means (79, 80) for connecting said second surface (86) with said fluid inlet port (21) of said directional valve means (1), said second surface (86) also communicating with said non-activated activating means (3) via said at least one control flow circuit means, whereby said copying valve provides a continuously variable control flow which is proportional to the load pressure on the motor from said pressure fluid inlet port (21) to said non-activated activating means (3).

5,005,468
SWING CHUCKING DEVICE
Detlef Ulle, Reichelsheim, Fed. Rep. of Germany, assignor to Delaware Capital Formation, Inc., Wilmington, Del.
Filed Jan. 17, 1990, Ser. No. 465,741
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1989, 3901740
Int. Cl.' F01B 3/...
U.S. Cl. 92—33 12 Claims



1. Swing clamping device consisting of a cylinder provided with fluid medium connections with a piston and piston rod that can be advanced forward and retracted with a clamping arm attached to the free end, a piston rod swing guide in the form of a swing guide sleeve with a swing guide slot that runs along its length and is axially and rotationally secured in the cylinder interior on the piston rod end leaving a load surface of the piston free on the piston rod side, and a swing transmission element arranged between the swing guide slot and the piston rod, characterized in that the cylinder (2) is designed with one closed end with its opening oriented toward the clamping arm which is guided precisely in it by the cylinder interior wall (2...) with its upper end in the area of the open end of cylinder (2) and at least in the area of its lower end (3...) by the swing guide sleeve (3) that forms a unit together with the piston rod (1) and the respective piston (5) that can be built in as a unit, in which case the swing guide slot of sleeve (3) is designed in the form of a slot (7) that is closed at both ends and passes through wall (3...) of sleeve (3) and the free end (8) of a guide pin (9) that is secured in the piston rod (1) so it cannot move is arranged there.

5,005,469
CYLINDER LINER UNIT FOR USE IN AN INTERNAL COMBUSTION ENGINE
Masanori Obta, Kawasaki, Japan, assignor to Isuzu Jidosha Kabushiki Kaisha, Japan
Filed Oct. 13, 1989, Ser. No. 420,910
Claims priority, application Japan, Oct. 14, 1988, 63-259154
Int. Cl.' F01B 11/02 F16J 10/00
U.S. Cl. 92—169.4 18 Claims



1. A cylinder liner unit for use in an internal combustion

engine which unit is adapted to be cast in a cylinder block made of an aluminum alloy, said cylinder liner unit comprising

a plurality of cylinder liners made of a non-aluminum alloy and

a layer of an aluminum alloy covering said plurality of cylinder liners around the circumference thereof to a substantially uniform radial thickness so as to integrally combine said plurality of cylinder liners into a single unit which can be subsequently cast in a cylinder block

5,005,470

PORTABLE WORK STATION

James G. Denker, 9802 E. 33rd St., Tucson, Ariz. 85748

Filed Nov. 9, 1989, Ser. No. 434,779

Int. Cl.[5] F24F 7/013

U.S. Cl. 98—115.3 **25 Claims**

1. A portable work station comprising

a carrying case having upper and lower sections, said lower case section being adapted to rest in a generally horizontal position on a work surface, said upper case section being connected by hinges to said lower case section along their corresponding rear edges and being moveable between a closed position against said lower case section and an open position extending upright from said lower case section, said case sections having respective side and front edges which are in engagement when the upper case section is in a closed position with respect to said lower case section

a canopy having peripheral edge regions secured respectively to side edges of said upper and lower case sections and to the front edge of said upper case section, said canopy having a front edge providing an opening to the interior of the canopy and to the interiors of said case sections, and

means to remove and confine toner contaminants

5,005,471

COOKING MACHINE

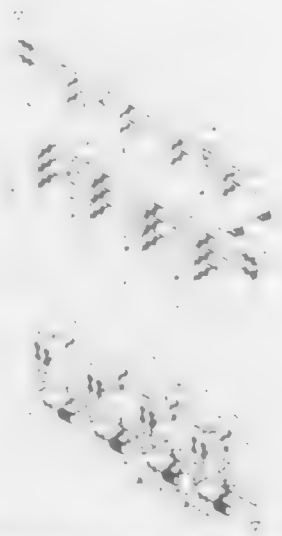
Claude Dréano, Guilliers, France, assignor to Armor-Inox SA, France

Filed Mar. 14, 1989, Ser. No. 323,482

Claims priority, application France, Mar. 23, 1988, 88 04133

Int. Cl.[5] A47J 27/20

U.S. Cl. 99—330 **5 Claims**



1. A machine for cooking food, said machine comprising a plurality of cooking tanks on a lower level, a central source of hot liquid on a higher level, a central source of cold liquids on a higher level, a format of pipes for delivering both said hot and said cold liquids between said sources and said cooking tanks, said format of pipes comprising a first distribution pipe extending from an entrance to said source of hot liquid to a first plurality of valves, a second distribution pipe extending from an entrance to said source of cold liquid to a second plurality of valves, a third distribution pipe extending from an exit of said source of hot liquids to a third plurality of valves, a fourth distribution pipe extending from an exit of said source of cold liquids to a fourth plurality of valves, a plurality of ascending pipes, each of said ascending pipes extending from an individually associated valve in said first and second plurality of valves to an individually associated one of said cooking tanks, a plurality of descending pipes, each of said descending pipes extending from an individually associated valve in said third and fourth plurality of valves to an individually associated one of said cooking tanks, flow control valve means in each of said descending pipes for controlling a flow of said liquids into said individually associated cooking tanks, a plurality of pumps, there being one pump associated with each of said cooking tanks, a fifth plurality of valves individually coupled in pipes which are individually associated with said cooking tanks and which extend from said cooking tanks to inlets of individually associated ones of said pumps, and a connection from an outlet of each of said pumps to an individually associated one of said ascending pipes, each of said valves being a controllable electric valve

5,005,472

ASEPTIC PROCESSING SYSTEM

Christopher Sillett, Horsham, United Kingdom, assignor to APV U K Limited, United Kingdom

Filed May 2, 1989, Ser. No. 346,072

Claims priority, application United Kingdom, May 4, 1988, 8810496

Int. Cl.[5] A01J 11/00

U.S. Cl. 99—468 **8 Claims**



1. A storage vessel for aseptic processing of a food product, said vessel comprising an aseptic tank, a draught tube enclosed within said tank and sealed at a first end to an upper end of said tank, said draught tube being open at a second end which is located close to a bottom of said tank, means for introducing and extracting said food product into and out of said tank, and means for adjusting the relative pressure in a head space above said food product in said draught tube and a head space above said food product in said tank outside of said draught tube, said relative pressure adjusting means comprising spray balls positioned respectively in said head space, said spray balls being connected to a supply of sterilized gas and control valves being provided for controlling supply and exhaust of said gas to and from said head spaces, and said spray balls being further connected to a supply of cleaning fluid to clean said tank and said draught tube

5,005,473

PRESS ROLL ELEVATOR IN A DOUBLE FACER

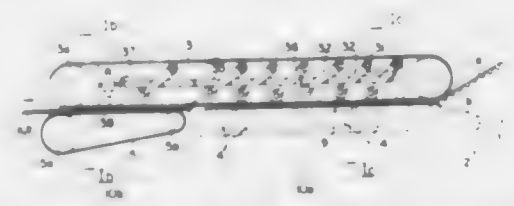
Yoshimitsu Ishibashi, Hiroshima, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1989, Ser. No. 410,271

Claims priority, application Japan, Sep. 26, 1988, 63-124667[U]

Int. Cl.[5] B30B 5/04

U.S. Cl. 100—154 **3 Claims**



1. A press roll elevator in a double facer including press roll groups each having a plurality of press rolls for a corrugated cardboard sheet traveling in a first direction through said double facer, said double facer comprising side frames for supporting respective pairs of arms rotatably mounted about fulcrum shafts which are mounted on said both side frames of said double facer, said fulcrum shafts are mounted on said side frames at fulcrum intervals between said fulcrum shafts in said first direction, said press rolls are rotatably supported between tip end portions of said respective pairs of arms which are constructed to swing about said fulcrum shafts in said first direction, said press rolls are disposed at intervals along the first direction, said press rolls are elevated and lowered by a means for swinging, wherein the swinging means of the press roll elevator comprises common rails and means for reciprocating said common rails along said first direction, said common rails comprising protrusion means disposed along said common rails at protrusion intervals along said first direction for abutting against said respective arms and for swinging said respective arms, and differences in the fulcrum intervals between the fulcrum shafts and the protrusion intervals between the protrusion means disposed along said common rails are successively varied in said first direction

5,005,474

ATTACHMENT FOR A DAMPING UNIT OF AN OFFSET PRINTING PRESS

Herbert Rebel, Rodgau, and Peter Hummel, Offenbach am Main, both of Fed. Rep. of Germany, assignors to MAN Roland Druckmaschinen AG, Fed. Rep. of Germany

Filed Mar. 9, 1990, Ser. No. 491,345

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1989, 3908045

Int. Cl.[5] B41F 7/26 7/40 B41L 25/02

U.S. Cl. 101—148 **4 Claims**

1. An attachment for damping unit of an offset printing press having a plate cylinder and a damping unit including an applicator roller, a distributing roller and a slotted bearing lever and wherein the applicator roller cooperates with the plate cylinder and the distributing roller and is mounted in the slotted bearing lever which is disposed on the distributing roller, said attachment comprising in combination, a mounting frame disposed on the slotted bearing lever adjacent the applicator roller and the distributing roller, said mounting frame including vertical bearing plates and a plurality of cross members interconnecting the plates, first and second intermediate spreader rollers mounted in the bearing plates adjacent to and for engagement with the applicator roller, and spring means for permitting radial movement of the spreader rollers relative to the applicator roller, the intermediate spreader rollers being mounted on rotatable spindles and driven frictionally in the peripheral direction by the applicator roller during engagement of the intermediate spreader rollers and the applicator roller and resilient contact pressure between the intermediate spreader rollers and the applicator roller is produced by the weight of the mounting frame, a drive mechanism including means for producing axial reciprocation for the frame and the intermediate spreader rollers mounted within the slotted bearing lever, and coupling means carried on either side of the frame for coupling up, uncoupling or completely disengaging the frame bearing plates from the slotted bearing lever



5,005,475

ROTARY PRINTING MACHINE CONSTRUCTION

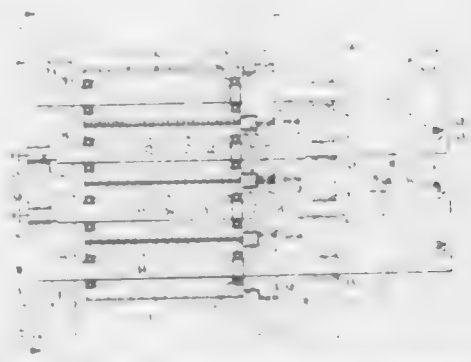
Peter Knauer, Rain Lech, Fed. Rep. of Germany, assignor to Man Roland Druckmaschinen AG, Offenbach am Main, Fed. Rep. of Germany

Filed Jul. 25, 1989, Ser. No. 385,205

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1988, 3825600

Int. Cl.[5] B41F 5/22 7/28

U.S. Cl. 101—218 **7 Claims**



1. A rotary printing machine having a plurality of cylinders (30, 41, 54, 66) and constructed to permit axial access to at least one of said cylinders for resurfacing thereof,

said machine further having

a first side wall

a second side wall

the plurality of cylinders being secured for rotation between said side walls,

wherein said first side wall comprises a composite wall formed of a plurality of severable wall parts (10, 11) which are separable along at least one separating line (12) and movable relatively towards and away from each other, and

holding means (35, 47, 60, 70) are provided for supporting the cylinders when the severable parts of the first side wall are separated.

wherein all the cylinders of the plurality of cylinders (30, 41, 54, 66) are constructed as hollow cylinders

a plurality of cylinder shafts (27, 38, 51, 63) are provided, retaining said hollow cylinders for rotation thereon

means for retaining said cylinder shafts in said side walls while being slightly movable in at least one of rotary position, axial position,

cylinder operating and control means are provided for, selectively, controlling operation of said cylinders with respect to at least one

cylinder register,

lateral register,

diagonal register,

drive or stop of cylinders,

said operating and control means for all said cylinders being located adjacent the second side wall (2), and

wherein the first side wall includes openings (13, 14, 15, 16) receiving, only, the cylinder shafts (27, 38, 51, 63).

5,005,476

INKING UNIT

Norbert Köbler, Beindersheim, and Helmut Puschnerat, Worms, both of Fed. Rep. of Germany, assignors to Albert-Frankenthal AG, Frankenthal, Fed. Rep. of Germany

Continuation of Ser. No. 289,557, Dec. 22, 1988, abandoned. This application Jul. 11, 1990, Ser. No. 551,031

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1988, 3800412

Int. Cl.' B41F 31/04, 31/06, 31/32, B41L 27/06

U.S. Cl. 101—363 13 Claims



1. A printing press inking unit, comprising

a pitted roll,

an ink chamber,

a fountain roll being provided within said ink chamber and extending over the length of said ink chamber, said fountain roll being circumferentially supported in said ink chamber,

a doctor mount,

two doctor blades, said doctor blades being mounted in a mutually offset manner on said doctor mount in a peripheral direction of said pitted roll so as to define said ink chamber,

half-shells mounted in said ink chamber, said half-shells each defining a circumferential bearing cup extending over 180°, said fountain roll being radially supported by said half-shells, and,

means for setting said half-shells for movement in a direction toward said pitted roll and for setting said fountain roll against said pitted roll, said means for setting including means for biassing said half-shells in a direction toward said pitted roll.

5,005,477

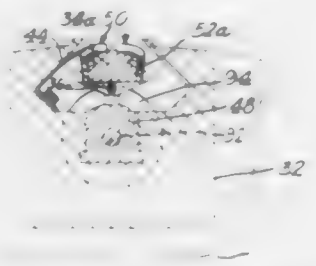
DOUBLE TRUCK PRINTING REGISTRATION SYSTEM FOR A ROTARY PRINTING PRESS

Richard B. Schroeder, Wilmington, Del., assignor to Hercules, Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 298,988, Jan. 19, 1989. This application Jan. 16, 1990, Ser. No. 466,014

Int. Cl.' B41F 27/06, 27/12

U.S. Cl. 101—415.1 3 Claims



1. In a rotary printing press having a plate cylinder with two aligned locking means in a peripheral channel in the plate cylinder for releaseably locking a respective one of a pair of side by side printing plates to the plate cylinder, one of said locking devices being provided for each printing plate, and each locking means having registration means engaged with complementary registration structure in its printing plate for orienting its printing plate laterally on the plate cylinder, the improvement being in that a housing as in said channel for each of said locking means, an elongated spindle pivotally mounted to a bar in each of said housings, said registration means being secured to said spindle, means for shifting said bar and said spindle with said registration means to two positions, one of said two positions being a single truck position and the other of said two positions being a double truck position, said double truck positions of said two registration means being disposed toward each other and said single truck positions of said two registration means being disposed away from each other, the adjacent sides of said side by side printing plates being spaced from each other when both of said registration means are in their single truck positions for standard printing, and said adjacent sides of said side by side printing plates abutting each other when both of said registration means are in their double truck positions for double truck printing to permit the forming of a continuous joint image from said side by side printing plates.

5,005,478

BLANKET WASH SYSTEM WITH SUB-AMBIENT PRESSURE CIRCULATION

Edward M. Goldberg, Waterford, Conn.; Daniel Bettencourt, Jr., West Warwick, R.I.; James C. Tosti, Jr., Pawcatuck, Conn., and Norman S. Jones, Peacedale, R.I., assignors to Precision Engineered Systems Inc., Westerly, R.I.

Continuation-in-part of Ser. No. 134,218, Dec. 16, 1987, abandoned, which is a continuation-in-part of Ser. No. 86,330, Aug. 17, 1987, abandoned, and a continuation-in-part of Ser. No. 926,379, Oct. 31, 1986, Pat. No. 4,686,902. This application Jul. 25, 1989, Ser. No. 384,966

Int. Cl.' B41F 35/00

U.S. Cl. 101—425 28 Claims

1. A system for automatically cleaning a component of a printing press, the system being located in an environment having an ambient pressure, the system comprising

source means for providing a reservoir of a fluid wash mixture;

supply and return lines in fluid communication with the source means,

spray means for spraying wash mixture onto the component, the spray means being in fluid communication with the source means and receiving wash mixture from the source means via the supply line,

circulation means for circulating wash mixture around a path including the source means and at least a portion of each of the supply and return lines in such a way that pressure in the supply line can never exceed the ambient pressure outside the system.



5,005,479

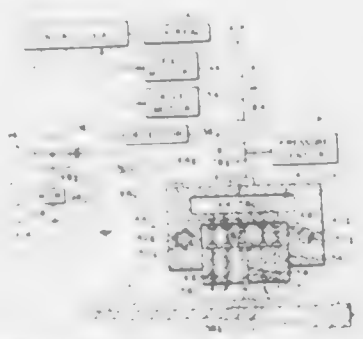
METHOD AND APPARATUS FOR IMAGING PRINTING PLATES BY SPARK DISCHARGE

Thomas E. Lewis, E. Hampstead; Bradley W. Davidson, Merrimack; Richard A. Williams, Hampstead, all of N.H.; Michael T. Nowak, Gardner, Mass., and John F. Kline, Hudson, N.H., assignors to Presstek, Inc., Hudson, N.H.

Division of Ser. No. 234,475, Aug. 19, 1988, Pat. No. 4,911,075. This application Sep. 27, 1989, Ser. No. 413,172

Int. Cl.' B41N 1/14

U.S. Cl. 101—467 30 Claims



1. A method of imaging a lithographic plate having a printing surface comprising the steps of mounting said plate to the plate cylinder of a lithographic press having at least one plate cylinder, a corresponding number of blanket cylinders and an impression cylinder, exposing said printing surface to spark discharges between said plate and an electrode spaced close to said printing surface produced in response to picture signals representing an image, said spark discharges producing sufficient heat to physically change the affinity of said printing surface for printing liquid selected from the group consisting of water and ink at the points thereof exposed to said spark discharges thereby producing directly on said plate image spots suitable for inking and reproduction, moving said electrode and said plate relatively to effect a scan of said printing surface, and controlling the spark discharges to the plate in accordance with picture signals so that they occur at selected times in the scan thereby forming an array of said image spots on said printing surface which make the plate press ready.

5,005,480

OPTICAL FUZE

Robert M. Szewczyk, Acton, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Dec. 1, 1989, Ser. No. 444,331

Int. Cl.' F42C 13/02

U.S. Cl. 102—213 7 Claims



1. A radar system comprising

(a) a plurality of directional antennas disposed at equally spaced positions about a body of a guided missile to produce overlapping beams that, taken together, form a substantially conical coverage pattern and individually provide a beam overlapping each adjacent beam by an amount equal to a portion of the beam that is not overlapping each adjacent beam,

(b) means for separately actuating each one of the directional antennas and for processing any received signals for producing a logic true signal whenever echo signals are received and otherwise a logic untrue signal, and

(c) logic circuitry means, responsive to the logic true and logic untrue signals, for producing control signals for a warhead, said control signals being representative of a particular sector of the substantially conical pattern.

5,005,481

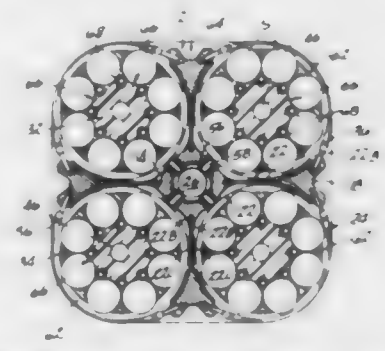
INFLATABLE BLADDER SUBMUNITION DISPENSING SYSTEM

Mark D. Schneider, Woodinville; Randy L. Hoskins, Bothell; Lyle D. Galbraith, Redmond, and Gary L. Dusenberry, Bellevue, all of Wash., assignors to Olin Corporation, Cheshire, Conn.

Filed Jun. 26, 1989, Ser. No. 370,978

Int. Cl.' F42B 12/58, B64D 1/02

U.S. Cl. 102—393 7 Claims



1. In combination with a carrier frame having a plurality of cavities disposed about and extending along a central axis of the frame, a submunition dispensing system comprising

(a) a plurality of dispersing subsystems each disposed in one of said cavities of said frame, each subsystem including an

inflatable central dispersal member expandable from a collapsed to an inflated condition in response to fluid pressure against said member disposed in said collapsed condition for supporting a plurality of elongated submunition stacks thereabout, first means for retaining the submunition stacks to said central dispersal member in said collapsed condition, and a first fluid pressure-generating means being actuatable for delivering pressurized fluid to said member to expand it from said collapsed condition to said inflated condition and cause dispersing of the submunition stacks therefrom and

(b) an ejecting subsystem including a plurality of inflatable metallic bladders, each being expandable from a collapsed to an inflated condition in response to fluid pressure against said bladder and each being mounted in said collapsed condition to said frame in one of the cavities so as to underlie one of said dispersing subsystems disposed therein, second means for releasably retaining the said dispersing subsystems in said cavities adjacent said bladders in said collapsed conditions, and second fluid pressure-generating means being actuatable for delivering pressurized fluid to said bladders to expand them from said collapsed to inflated conditions and cause ejection of said dispersing subsystems from said cavities

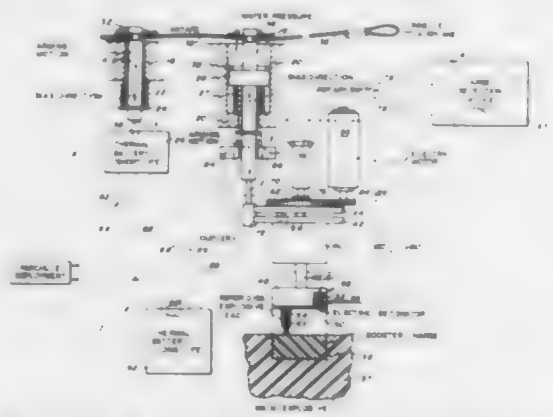
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5,005,482

COMBINED MINE SAFETY DEPLOYMENT AND ACTIVATION SYSTEM

William H. Reams, Keedysville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 21, 1984, Ser. No. 612,286
Int. Cl.[5] F42B 22/36
U.S. Cl. 102—420 **8 Claims**



1 A device for aiding deployment of a naval mine from an aircraft and initiating its activation at beyond predetermined water depth, comprising

a pair of biased plungers restrained in respective initial positions by a releasing lanyard adapted for connected to the aircraft,

a first plunger of the pair adapted upon lanyard release to be moved by its bias to a second position for initiating battery activation and closing a circuit adapted to actuated means to deploy a parachute for slowing air descent of the mine

a pair of facing members, one being rotatable and carrying a detonator and the other carrying an explosive lead which is in communication with an explosive charge;

a second plunger of the pair when in its initial position locking the rotatable member from rotation with the detonator out of communication with the explosive lead in the other member;

a second plunger upon lanyard release adapted to be moved by water pressure at beyond a predetermined depth against its bias to a second position for unlocking the rotatable member, thereby freeing the rotatable member for rotation and,

means responsive to the second plunger when in its second position for causing rotation of the rotatable member for aligning the detonator and explosive lead in communication and,

means for activating a target detecting device after the rotatable member is rotated to align the detonator and explosive lead

said target detecting device once activated adapted to fire the detonator upon detecting a target

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5,005,483

METHOD FOR THE EJECTION OF SUB-MUNITIONS AND PROJECTILE APPLYING SAID METHOD

Jean Deffayet, Chaville, France, assignor to Thomson-Brandt Armements, Boulogne Billancourt, France

Filed Jun. 7, 1989, Ser. No. 362,661
Claims priority, application France, Jun. 10, 1988, 88 07767
Int. Cl.[5] F42B 12/58
U.S. Cl. 102—489 **5 Claims**



1 A method for the ejection of sub-munitions from a projectile that carries them, which comprises

connecting a casing to a nose forming a front part of said projectile, and connecting said front part by locking means to a rear part forming a base portion of said projectile

positioning a tube in said casing connected to one of said nose and said base portion;

positioning a rod connected to the other of said nose and said base portion within said tube so as to act as a piston under the effect of a pyrotechnical charge in order to separate the rear part from the front part,

unlocking said locking means;

firing the pyrotechnical charge so as to rotate the front part of the projectile with respect to the base portion of said projectile through the combination of grooves formed on one of said tube and said rod in cooperation with a rotating band which is located on the other of said tube and said rod wherein, upon firing the pyrotechnical charge, an initial transversal speed for each of the sub-munitions is generated so as to generate a controlled transversal speed to each of the sub-munitions in one direction by rotation in one direction of the nose and rotation in an opposed direction of the base portion as to obtain an optimum dispersal of the sub-munitions, and

holding the sub-munitions to the rear part by a holding band which surrounds said sub-munitions.

2 A projectile for the ejection of sub-munitions from a projectile carrying said sub-munitions, wherein said projectile comprises

a nose portion forming a front part of said projectile

a casing connected to said nose portion

locking means for locking said front part to a rear part of said projectile forming a base portion of said projectile,

a tube positioned in said casing and connected to one of said nose portion and said base portion

a rod connected to the other of said nose portion and said base portion and movably mounted within said tube so as to act as a piston under the effect of a pyrotechnical charge so as to separate the rear part from the front part of said projectile

means for unlocking said locking means

means for firing said pyrotechnical charge so as to rotate the front part of the projectile with respect to the rear part of said projectile by means of grooves formed on one of said tube and said rod in cooperation with a rotating band on the other of said tube and said rod such that, upon firing of said pyrotechnical charge, an initial transversal speed is generated so as to generate a controlled transversal speed to each of the sub-munitions in one direction by rotation in one direction of the nose and rotation in an opposed direction of the base portion so as to obtain an optimum dispersal of the sub-munitions and

holding means for joining the sub-munitions to the rear part said holding means including a holding band surrounding said submunitions

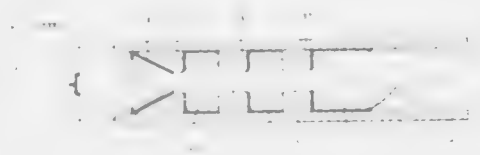
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5,005,484

PROJECTILE FOR FIRING FROM AN ELECTROMAGNETIC PROJECTILE ACCELERATION DEVICE

Wolfram Witt, Düsseldorf, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Dusseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 50,170, May 7, 1987, abandoned. This application Jun. 12, 1987, Ser. No. 68,480
Claims priority, application Fed. Rep. of Germany, May 9, 1986, 3615585
Int. Cl.[5] F42B [illegible]
U.S. Cl. 102—501 **13 Claims**



1 In a projectile of the type to be fired from an electromagnetic projectile acceleration device provided with parallel acceleration rails for forming a plasma arc cushion the improvement wherein said projectile, when seen in the direction of flight, includes at least two partial projectile sections which are arranged one behind the other and are separated from one another by intermediate projectile portions and respective plasma forming substances are disposed at rear ends of the respective said partial projectile sections

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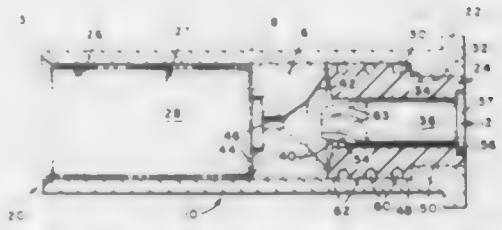
5,005,485

POWER BOOSTER BUSHING

Kenneth J. Woo, Manchester, and Robert K. Annan, Merrimack, both of N.H., assignors to Burndy Corporation, Norwalk, Conn.

Filed Feb. 22, 1990, Ser. No. 483,904
Int. Cl.[5] C06D 5/10
U.S. Cl. 102—531 **3 Claims**

1 A power booster for power activated tools comprising a cartridge case having a tubular wall with open muzzle and breech ends, a booster bushing and a power cell with a firing rim subassembly slidably fitted into the cartridge case, and a power piston in the cartridge case ahead of the subassembly, the cartridge case having a generally cylindrical inner surface divided by a radially extending shoulder into a forward cartridge chamber and a rear cartridge chamber, the booster bushing being generally cylindrical and having an outer surface of greater and lesser diameters defined by a radially extending shoulder, the bushing having an axial bore for receiving the power cell, the bushing being slidably fitted into the cartridge case with its lesser diameter portion received by the rear cartridge chamber positioning the power cell rim at the open breech end of the cartridge case, and with the greater



diameter portion of the bushing fitted in the forward cartridge chamber with radial shoulders of cartridge case and bushing in abutting relation and with the front end of the power cell in confronting relationship with the power pistor, the greater diameter portion of the bushing having a plurality of grooves on its outer surface defining a forward series of ribs thereon having annular flat surfaces and a rear rib wider than forward ribs for accommodating axial collapse of the greater diameter portion of of the bushing against the cartridge case shoulder for obturating power cell gases tending to flow past the outer surface of the bushing and out the open breech end when the cartridge case is fired

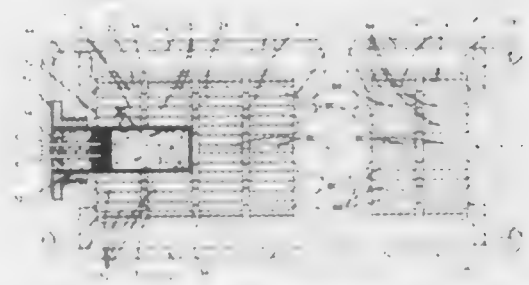
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5,005,486

IGNITER FOR AIRBAG PROPELLANT GRAINS

Reiner Lenzen, Almont, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Feb. 3, 1989, Ser. No. 306,877
Int. Cl.[5] C06D 5/10
U.S. Cl. 102—531 **28 Claims**



1 An apparatus for igniting a gas generating propellant grain which shatters when suddenly exposed to pressure above a shattering level greater than approximately 1500 psi, said apparatus comprising

a housing having a longitudinal axis, a closed axial end wall, and a closed peripheral side wall

an ignitable material contained in said housing, said ignitable material developing hot gases, flame and pressure within said housing upon combustion of said ignitable material and

means for containing said hot gases, said flame and said pressure within said housing until said pressure reaches a

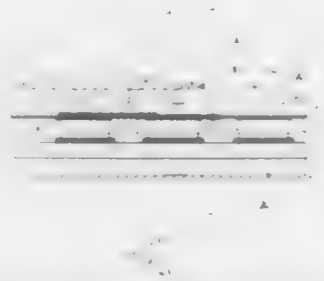
rupturing level equal to approximately 750–800 psi, and for permitting said side wall of said housing to rupture when said pressure reaches said rupturing level to direct said hot gases and said flame radially out of said housing through said side wall to ignite said propellant grain.

5,005,487

LINEAR MOTOR DRIVEN CONVEYING APPARATUS

Kazumi Ohmura, Tokyo; Jun Nishiyama, Amagasaki, and Yukio Chayama, Yawata, all of Japan, assignors to Tsubakimoto Chain Company, Osaka, Japan

Filed Mar. 9, 1990, Ser. No. 491,344
Claims priority, application Japan, Mar. 17, 1989, 29796
Int. Cl.[5] B60L 13/00
U.S. Cl. 104—292 4 Claims



1. A linear motor driven conveying apparatus for conveying trucks by means of linear motor comprising primary members provided on a traveling path of the trucks and secondary members mounted on the trucks, characterized in that a water tank is provided between the primary members and the secondary members such that said secondary members are submerged in said tank.

5,005,488

METHOD FOR THE TRANSFER OF AN OVERHEAD CONVEYOR CARRIAGE FROM ONE TRACK ONTO ANOTHER AND AN OVERHEAD CONVEYOR SYSTEM

Kai Lainio, Tureaki, Finland, assignor to Oy Partek Ab, Toijala, Finland

Filed Nov. 13, 1989, Ser. No. 435,278
Claims priority, application Finland, Nov. 11, 1988, 885227
Int. Cl.[5] B61B 3/02
U.S. Cl. 105—148 18 Claims



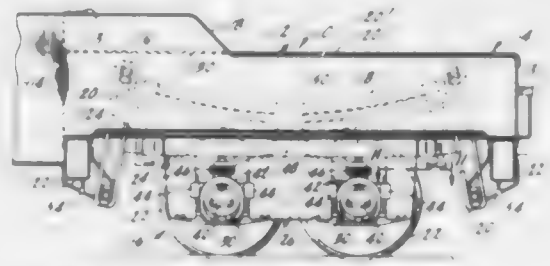
5. An overhead conveyor system, comprising
at least one conveyor carriage provided with sets of transfer wheels including carrying wheels,
a first track having guide rails with running faces thereon,
a second track, also having guide rails with running faces thereon, said second track placed parallel to said first track at a certain distance from said first track, and
means for alternating height positions of the sets of transfer wheels such that the sets can be alternated between a grasping position and a detached position.

5,005,489

STAND ALONE WELL CAR WITH DOUBLE AXLE SUSPENSION SYSTEM

Boris S. Terlecky, Woodridge, Ill., assignor to Trailer Train Company, Chicago, Ill.

Continuation of Ser. No. 290,693, Dec. 27, 1988, abandoned, which is a continuation of Ser. No. 946,054, Dec. 24, 1986, Pat. No. 4,817,535. This application Feb. 26, 1990, Ser. No. 485,275
Int. Cl.[5] B61F 5/24
U.S. Cl. 105—158.2 17 Claims



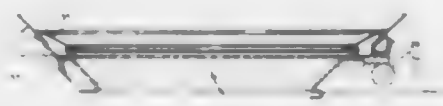
1. A railroad car comprising
a carbody having end sections which include carbody connectors attached thereto,
suspension means disposed at each end section of the carbody, each suspension means including
a plurality of axles disposed transversely to the carbody, and under the carbody, the axles being adjacent to each other and intermediate the carbody connectors, a plurality of rail-engaging wheels disposed on the axles,
a plurality of leaf springs, disposed above the axles, parallel to the longitudinal axis of the carbody,
a plurality of rigid swing hangers, each swing hanger being pivotally connected at one end to one of the carbody connectors and pivotally connected at its other end to an end of one of said leaft springs, the pivotal connections of the swing hanger ends being about horizontal axes transverse to the carbody such that said pivotal connections in combination with the rigid swing hangers permit said left springs to move only in a direction parallel to the longitudinal axis of the carbody,
a pair of bridging means which are separate and unconnected to each other, one on each side of the carbody and connecting adjacent axles, and
means for rotatably connecting each bridging means to a leaf spring.

5,005,490

RAILWAY HOPPER CAR SLIDING GATE SEALING MECHANISM

Robert P. Overheidt, Geneva, Ill., assignor to Miner Enterprises, Inc., Geneva, Ill.

Filed Jul. 26, 1989, Ser. No. 558,906
Int. Cl.[5] B61D 7/22
U.S. Cl. 105—282.2 3 Claims



2. In a railway hopper car having discharge opening walls, a slide gate and a seal for sealing said discharge opening walls against said slide gate irrespective of the relationship of the discharge opening walls to each other and to the slide gate, said sealing comprising
flange section means joined together to form a flexible rectangular frame having inside and outside portions, said inside and outside portions being joined by a downwardly sloping cantilevered section, a pliable sealing strip means occupying a plane parallel and contiguous with a plane swept out by said slide gate,
a series of channel means having strength substantially greater than that of said flange section means and having higher section modulus than said flange section means whereby said series of channel means have lower stresses and better resists deformation, and having first and second openings, said first opening being an elongated slot running the length of said channel means, said pliable sealing means being positioned in each of said channel means whereby portions thereof are directly adjacent said gate, said second opening being generally opposite said first opening whereby providing access to remove said pliable sealing means from said channel, and
means securing said outside portions of each of said flange section means to said discharge opening walls whereby said flange section means can flex so that said pliable sealing will contact said slide gate around the peripheral thereof.

5,005,491

AUTOMOTIVE TRAY APPARATUS

Kathryn R. Waterman, 951 Promontory Dr. West, Newport Beach, Calif. 92660

Filed Apr. 4, 1990, Ser. No. 504,408
Int. Cl.[5] A47B 23/00
U.S. Cl. 108—46 3 Claims



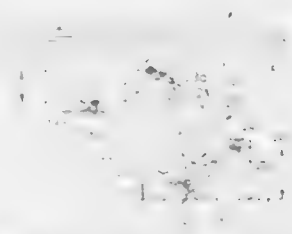
1. An automotive tray apparatus for securement within a window slot within an automotive door, wherein the apparatus comprises,
a planar tray, wherein the planar tray includes a surrounding wall, and
an aligned series of walls directed below the planar floor, and
wherein the tray and the surrounding wall include spaced sides and spaced ends, the sides orthogonally arranged relative to the ends, and a first hook pair mounted to one of said ends directed outwardly therefrom and a second hook pair mounted to one of said sides directed outwardly therefrom, wherein the second hook pair is arranged orthogonally relative to the first hook pair, and
wherein the first hook pair includes a first hook with a first horizontal leg integrally and orthogonally mounted to a first vertical leg, and further including a second hook with a second horizontal leg integrally and orthogonally mounted to a second vertical leg, wherein the first and second vertical legs are arranged for reception within the window slot, and
wherein the second hook pair includes a first and second hook member, the first hook member includes a first extensible and retractable linkage and the second hook member includes a second extensible and retractable linkage.

5,005,492

TABLE MECHANISM

Sumihito Ogino, and Ryo Takahashi, both of Tokyo, Japan, assignors to Yokogawa Medical Systems, Limited, Tokyo, Japan

Continuation of Ser. No. 432,766, Oct. 23, 1989, abandoned. This application Sep. 24, 1990, Ser. No. 587,628
Claims priority, application Japan, Apr. 28, 1987, 62-64373[U]
Int. Cl.[5] A47B 9/00
U.S. Cl. 108—145 1 Claim



1. A table top tilting mechanism comprising
a pair of links disposed parallel to each other and each having a first end and a second end,
first fitting means for rotatably fitting said pair of links by said first end of each of said pair of links to said table top with one of said pair of links being disposed at a higher vertical position than the other of said pair of links with a predetermined vertical distance therebetween,
second fitting means for rotatably fitting said pair of links by said second end of each of said pair of links to a base structure with one of said pair of links being disposed at a higher vertical position than the other of said pair of links with the same predetermined vertical distance therebetween, and
driving means having one end thereof rotatably secured to one of said pair of links, and another end thereof secured to said base structure,
wherein each of said pair of links comprises a U shaped member in section with the longitudinal dimension extending the length of said links,
wherein the open ended part of one U-shaped member is fitted longitudinally over the open ended part of the other U-shaped member along the length of said links so as to overlap along the length during the entire time there is movement of the links during lifting operation, and
wherein said driving means is concealed by said U shaped members.

5,005,493

HAZARDOUS WASTE MULTI-SECTIONAL ROTARY KILN INCINERATOR

Gregory M. Gitman, Duluth, Ga., assignor to American Combustion, Inc., Norcross, Ga.

Filed Nov. 8, 1989, Ser. No. 434,018
Int. Cl.[5] A47J 36/00, 36/24
U.S. Cl. 110—246 66 Claims

1. A device for incinerating solid waste, comprising
(a) a first rotating section for transporting solid waste within the device, the first rotating section having a forward opening at a first end thereof for introducing waste into the device and an exit opening at a second end thereof,
(b) first burning means for heating and at least partially volatizing components of the waste in the first rotating section to produce flue gases and hot residue,
(c) a second rotating section for further transporting waste residue within the device, and second rotating section

having a forward opening at a first end thereof and an exit opening at a second end thereof, wherein the exit opening of the first rotating section is in flow communication with the forward opening of the second rotating section

(d) means for providing first oxidizing gas to the first rotating section to at least partially burn the volatized components of the waste



(e) second burning means for increasing the temperature of waste residue in the second rotating section to further convert said waste residue into substantially decontaminated solid residue and flue gas

(f) means for collecting substantially decontaminated solid residue from the device; and

(g) means for removing flue gases from the device

5,005,494

APPARATUS AND METHOD FOR HIGH TEMPERATURE DISPOSAL OF HAZARDOUS WASTE MATERIALS

Max P. Schlienger, Ukiah, Calif., assignor to Retech, Inc., Ukiah, Calif.

Continuation-in-part of Ser. No. 173,968, Mar. 28, 1988, abandoned, which is a division of Ser. No. 46,483, May 4, 1987, Pat. No. 4,770,109. This application Aug. 16, 1989, Ser. No. 394,738

Int. Cl.[5] F23B 7/00

U.S. Cl. 110—341 21 Claims



15 A method of incinerating and melting waste materials comprising

directing waste materials into a region closed to the atmosphere and having a bottom hole;

rotating said region with the waste materials therewithin at a speed sufficient to cause centrifugal distribution of the waste materials;

directing a high temperature plasma into the region to incinerate and melt the waste materials; and

directing the products of combustion as an effluent through region through said hole

5,005,495

APPARATUS AND METHOD FOR REMOVING VOLATILE ORGANIC CONTAMINANTS FROM PARTICULATE MATERIAL

Frederick F. Heitel, P.O. Box 255, Saline, Mich. 48176

Filed Nov. 28, 1989, Ser. No. 442,133

Int. Cl.[5] F23J 7/00

U.S. Cl. 110—344 17 Claims



1 Apparatus for removing volatile organic contaminants from particulate material such as soil, sludge or the like comprising

a particulate material processor including a heating unit having a housing defining a heating chamber in which the contaminated particulate material is heated to remove the organic contaminants therefrom as contaminated gas emissions, and said housing having an inlet end at which the contaminated particulate material is fed into the heating chamber and having an outlet end through which the processed particulate material is delivered from the heating chamber separate from the contaminated gas emissions; and

an emissions processor including

(a) a recirculating emissions pretreatment circuit having an inlet that receives the emissions from the heating unit and a fan that draws the emissions into the pretreatment circuit through its inlet, the pretreatment circuit having a condenser for removing condensible gases from the emissions and also having an outlet through which the pretreated emissions are returned back to the heating unit, and the fan of the emissions pretreatment circuit being located between the condenser and the outlet of the pretreatment circuit, and

(b) a final treatment system having an inlet from the pretreatment circuit at a location between the condenser and the outlet thereof, the final treatment system including a fan for drawing off through its inlet a portion of the pretreated emissions flowing along the pretreatment circuit, and an emissions treater for treating the emissions to reduce the concentration of the organic contaminants

5,005,496

METHOD FOR DISPOSAL OF MEDICAL WASTE MATERIALS

Hirofumi Nagata, Osoda, Japan, assignor to Kyoei Steel Ltd., Osaka, Japan

Filed Jul. 6, 1989, Ser. No. 376,092

Claims priority, application Japan, Jul. 7, 1988, 63-169757; Sep. 2, 1988, 63-123282; Sep. 13, 1988, 63-229644; Oct. 12, 1988, 63-257963; Dec. 12, 1988, 63-314650; Dec. 28, 1988, 63-170795

Int. Cl.[5] F23G 7/00

U.S. Cl. 110—346 4 Claims



1 A method for disposing of medical waste materials comprising the steps of

placing medical waste materials into a container

sealing the container

placing the sealed container into a metal melting furnace together with metal; and

heating the furnace to a temperature sufficient to completely combust or melt the container and the medical waste materials

5,005,497

DEEP BANDING KNIFE WITH ROD ATTACHMENT

Albert Kolskog, Box 56, McCord, Saskatchewan, Canada (S0H 2T0)

Filed Jun. 18, 1990, Ser. No. 539,708

Int. Cl.[5] A01C 23/00, 5/06

U.S. Cl. 111—123 8 Claims



1 In a deep banding knife comprising a knife element including means for mounting the element on a shank and having a leading edge facing forwardly of a direction of travel which leading edge is substantially vertical for cutting a furrow in the ground so that a vertical height of the leading edge is greater than a width of the leading edge, and a material supply duct mounted on the knife element rearwardly thereof relative to the leading edge so as to deposit said material into the furrow as the knife element is moved forwardly in the ground, the improvement of a horizontal rod member, mounting means fixedly mounting the rod member through a hole transversely through the knife element so as to extend transversely of the direction of travel and such that rod member portions project outwardly to each side of the knife element, the rod member being spaced above a lowermost point of the leading edge and below a top edge of the knife element so as to run along the ground just below the surface on either side of the furrow, said mounting means being arranged such that the rod member is held fixed against rotation relative to the knife element, such that the rod member is wholly supported solely by the mounting means, and such that the rod member portions extend from the mounting means in cantilever manner

5,005,498

COMPUTER CONTROLLED TUFTING MACHINE AND A PROCESS OF CONTROLLING THE PARAMETERS OF OPERATION OF A TUFTING MACHINE

Brooks E. Taylor, Lookout Mountain, and Marshall A. Neely, Soddy-Daisy, both of Tenn., assignors to Card-Monroe Corporation, Chattanooga, Tenn.

Continuation of Ser. No. 388,604, Jul. 1, 1989, which is a continuation of Ser. No. 284,939, Dec. 15, 1988, Pat. No. 4,867,080. This application Sep. 28, 1990, Ser. No. 590,122

Int. Cl.[5] D05C 15/14

U.S. Cl. 112—80.32 8 Claims



1 A tufting machine assembly of the type having reciprocating needles for inserting yarns carried by the needles through a backing material as the backing material is progressively fed through the tufting machine and across the path of reciprocation of said needles and so that said needles produce tufts in said backing material, the improvement comprising:

(a) a first means for controlling the feed of said backing material through the tufting machine

(b) a computer means coupled to said first means

(c) second means for generating signals indicative of the speed of reciprocation of said needles

(d) means coupling said second means to said computing means; and

(e) input means connected to said computer means for prescribing to said computing means the number of stitches per prescribed length of backing material to be produced

by said needles, whereby said computing means controls through said first means, the speed of said backing material through said tufting machine.

5,005,499

DEVICE FOR DISABLING AND ENABLING STITCHING NEEDLES IN A QUILTING MACHINE OR A MULTI-NEEDLE EMBROIDERY MACHINE

Giannino Landoni, Strada Prov. Busto-Cassano, 1, Fagnano Olona (Varese), Italy

Filed Nov. 21, 1989, Ser. No. 439,764
Claims priority, application Italy, Apr. 27, 1989, 20277 A/89
Int. Cl.[5] D05B 11/00, 21/00
U.S. Cl. 112—117 15 Claims



1. A device for disabling and enabling one or more stitching needles in a machine provided with at least one needle carrier bar having a plurality of stitching needles arranged thereon characterized in that it comprises a linear actuator (24) for disabling a needle (22), adapted to control the raising thereof relative to fabric (10) to be sewn, and to keep it in said position, and return means (38) for stitching yarn (44) of the disabled needle (22), adapted to subject to a limited tension the portion of the stitching yarn lying between the disabled needle (22) and fabric (10) to be sewn, said stitching yarn return means being enabled simultaneously to the disabling of a yarn tensioning device (48) which was operating when the disabled stitching needle (22) was sewing.

5,005,500

AUTOMATIC EMBROIDERING MACHINE WITH PATTERN INPUT MEANS

Kenji Kato, Hachiohji; Mikio Koike, Oume; Akira Orii, Hachiohji, and Shinichi Fuchigami, Fussa, all of Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Jul. 27, 1990, Ser. No. 558,742
Claims priority, application Japan, Jul. 28, 1989, 1-193910; Jul. 28, 1989, 1-193911; Jul. 28, 1989, 1-193912
Int. Cl.[5] D05B 21/00
U.S. Cl. 112—121.12 11 Claims

1. An automatic embroidering system comprising:

a sewing machine having a vertically reciprocating needle, a loop-taker means cooperating with said needle to form a stitch on a fabric, an embroidery frame located between said needle and said loop-taker means for supporting the fabric and a drive control means for shifting, under control, said embroidery frame in two perpendicular directions to provide a specific point at which the needle penetrates the fabric to form the stitch;

input means for inputting a first series of data representing coordinates of substantially continuous points on an original pattern to be reproduced with said sewing machine, said input means being arranged separately from said sewing machine but connectable thereto;

first memory means for storing said first series of pattern data;

converting means for converting said first series of pattern data into a second series of data representing coordinates of stitch points of a pattern to be actually produced on the fabric with said sewing machine as a boldfaced representation of the original pattern; and



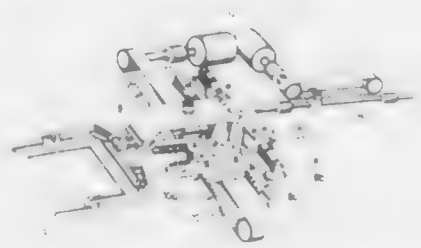
second memory means for storing said second series of pattern data, said second series of pattern data being sequentially read out from said second memory to control operation of said drive control means provided in said sewing machine which is thus operable to produce the boldfaced pattern on the fabric.

5,005,501

X-Y TABLE DEVICE IN AUTOMATIC SEWING MACHINE

Fujio Kita, Aichi, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan

Filed Sep. 19, 1989, Ser. No. 409,368
Claims priority, application Japan, Sep. 27, 1988, 63-241381
Int. Cl.[5] D05B 21/00
U.S. Cl. 112—121.12 5 Claims



1. An X-Y table device in an automatic sewing machine in which a cloth retainer is moved according to a pattern stored in a memory medium, to embroider the pattern, which comprises:

a moving body provided on an X-Y table, said moving body being moved by first and second drive means two-dimensionally in respective first and second directions;

a support secured to said moving body, to transmit the two-dimensional movement to said cloth retainer;

a guide rail having a plurality of rail surfaces which, together with said support, forms one unit high in rigidity, said guide rail being extended to guide movement of said moving body in said first direction; and

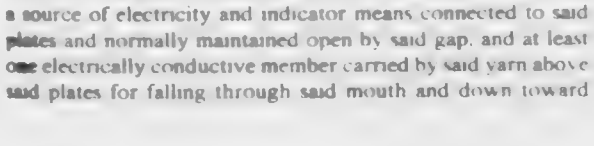
guide block means engaged movably with said plurality of rail surfaces of said guide rail, to guide said guide rail in said first direction, and coupled to said second drive means to move said guide rail in said second direction whereby said moving body also is moved in said second direction.

5,005,502

SEWING MACHINE FOR HEMMING ARTICLES

Patrick Gerardis, Guildford, and John Tester, Mt Pritchard, both of Australia, assignors to Adapt Engineering Pty. Limited, New South Wales, Australia

Filed Jun. 2, 1989, Ser. No. 360,322
Int. Cl.[5] D05B 35/02
U.S. Cl. 112—141 10 Claims



1. An automatic feeder unit, adapted for operation with a sewing head having a rotatable main shaft, comprising:

a feed conveyor;

a top feed conveyor located above said conveyor;

a stepping motor which drives said top feed conveyor;

microprocessor means for controlling the speed of the top feed conveyor at various ratios relative to the speed of the main shaft, and

a synchronizer which is coupled to the main shaft to control the speed of the motor in relation to the speed of the main shaft, said synchronizer feeding a signal to said microprocessor means to achieve said controlling of speed.

5,005,503

BROKEN YARN DETECTOR FOR MULTIPLE YARN MANIPULATING MACHINES

Alain Trahan, Wickham; Paul-André Grondin, Acton Vale, and Luc Bilodeau, Drummond Ville, all of Canada, assignors to Peerless Carpet Corporation, Quebec, Canada

Filed Dec. 12, 1989, Ser. No. 449,555
Int. Cl.[5] D05B 69/36, D05H 63/024
U.S. Cl. 112—277 18 Claims

1. A yarn break detector for detecting the occurrence of a yarn having a broken end at a location between a yarn supply and yarn manipulating instrumentalities of a machine to which said yarn end is fed, said detector comprising first and second electrically conducting plates, mounting means for mounting said plates below said yarn end at a location where the broken yarn is to be detected, each of said plates having an upper edge and a lower edge, said plates being disposed at a downward inclination relative to each other to form a substantially V shape configuration therebetween with a small gap intermediate said lower edges and with said upper edges spaced apart to form a mouth therebetween, electrical circuit means including a source of electricity and indicator means connected to said plates and normally maintained open by said gap, and at least one electrically conductive member carried by said yarn above said plates for falling through said mouth and down toward said gap upon breakage of said yarn, said member being sized to short said plates together across said gap and close said



circuit means to energize said indicator means irrespective of any disposition of said member after it has fallen.

5,005,504

THREAD CUTTING DEVICE HAVING A TRANSLATABLY SLIDABLE KNIFE AND CATCHER, BEING DRIVEN FOR FORMING UNIFORMLY SHORT STITCH THREAD ENDS IN A ZIG ZAG SEWING MACHINE

Ernst Albrecht, Hochspeyer, and Harald Dinges, Kaiserslautern, both of Fed. Rep. of Germany, assignors to G. M. Pfaff Aktiengesellschaft, Kaiserslautern, Fed. Rep. of Germany

PCT No. PCT/EP88/00329, § 371 Date Dec. 28, 1989, § 102(e) Date Dec. 28, 1989, PCT Pub. No. WO88/08894, PCT Pub. Date Nov. 17, 1988
PCT Filed Apr. 19, 1988, Ser. No. 438,438
Claims priority, application Fed. Rep. of Germany, May 9, 1987, 3715603
Int. Cl.[5] D05B 65/00, 65/02
U.S. Cl. 112—292 4 Claims

1. A thread cutting device on a zigzag fabric sewing machine, comprising:

a needle bar with a needle being movable to a maximum overstitch width;

a needle plate, having a stitch hole adapted to accommodate the maximum overstitch width of the needle;

a rotating shuttle below said needle plate;

a thread catcher, moveable as a function of an angular position of said shuttle and having a separating tip, a barb for a leg of the needle thread loop leading to a fabric to be sewn and a shuttle thread, a cutting edge;

a cutting knife for cutting the threads, in cooperation with said thread catcher's cutting edge, said cutting knife is moveable in a plane parallel to said thread catcher;

a gear mechanism having stopping segments and connecting said thread catcher and said cutting knife such that said thread catcher and said cutting knife are movable together from a resting position located to a side of said stitch hole into a cutting position located in an area under the middle of said overstitch width;

said gear mechanism moving said thread catcher farther than said cutting knife, wherein said thread catcher separates and engages the threads, while said cutting knife

remains in said cutting position, after separating and engaging the threads, said thread catcher is moveable back in the direction of said cutting knife to cut the threads, and



after cutting the threads said cutting knife can again be returned into said resting position together with said thread catcher.

5,005,505

METHOD OF SUPPLYING THREAD FROM A REEL TO SEWING MACHINE AND HANGER USED THEREIN

Ryoichi Muragaki, Osaka, Japan, assignor to Muragaki Co., Ltd., Osaka, Japan

Filed Sep. 27, 1989, Ser. No. 413,562

Claims priority, application Japan, Oct. 3, 1988, 63-130378[U]

Int. Cl.' D05B [illegible]

U.S. Cl. 112—302 **12 Claims**



6. A hanger for supporting a thread being supplied to a sewing machine from a reel having a reel axis whereabout said thread is wound, comprising

a case body,

a shaft projecting from said body and rotatably mounted to said body, one end of said shaft being formed as a hook to catch said thread,

a dial rotatably mounted to said case body for rotation about a body axis

coupling means connecting said dial to said shaft for rotating said hook when said dial is rotated

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5,005,506

RECREATIONAL WATER VEHICLE

Charles Handmer, Killarney Heights, Australia, assignor to Powerboard Australia Pty Limited, Australia

PCT No. PCT/AU87/00359, § 371 Date Jun. 19, 1989, § 102(e) Date Jun. 19, 1989, PCT Pub. No. WO88/03109, PCT Pub Date May 5, 1988

PCT Filed Oct. 23, 1987, Ser. No. 378,573

Claims priority, application Australia, Oct. 23, 1986, PH8651

Int. Cl.' B63B [illegible]

U.S. Cl. 114—270 **6 Claims**



1. A recreational water vehicle which comprises

a longitudinally extending hull

an engine housing attached to a rear of the hull and having means for non-steerably mounting a motor so that propulsion of the vehicle is always directly forward, the housing extending upwardly from the hull so as to provide a back rest for a seated driver, and

handle means mounted on the hull to enable the driver to keep a hold on the vehicle

the vehicle being steerable by weight transfer of the driver from side to side of the vehicle and wherein a laterally extending portion is provided at each side adjacent the rear of the vehicle to increase drag on one side upon leaning of the vehicle so as to assist slow speed turning of the vehicle, each laterally extending portion being substantially within the perimeter of a plan view of the hull and scooped inwardly of each respective side of the vehicle.

5,005,507

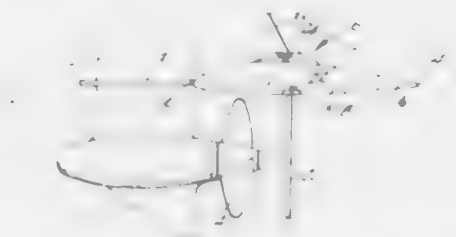
HYDROFOIL WITH RETRACTABLE PLATE

William B. Dyer, 3358 Taylor Rd., Central Point, Oreg. 97502

Filed Sep. 25, 1989, Ser. No. 412,151

Int. Cl.' B63B [illegible]

U.S. Cl. 114—280 **10 Claims**



1. An attachment for securement to the lower housing of an outboard motor or outdrive unit of a boat proximate the propeller of same, said attachment comprising,

a hydrofoil having a leading edge and a trailing edge and a curved upper surface providing a camber, said leading edge defining a rearwardly extending recess to receive a portion of said housing,

a plate pivotally mounted on the hydrofoil and having a retracted position and a deployed position rearwardly of the propeller for affecting propeller efficiency and boat speed, and

locking means acting on said plate to maintain same in an upright deployed position against displacement by water impingement

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5,005,508

ANCHOR ASSEMBLY

Peter W. Crosby, and Henry W. Schenk, both of Buffalo, N.Y., assignors to The Crosby Company, Buffalo, N.Y.

Filed Sep. 20, 1989, Ser. No. 409,807

Int. Cl.' B63B *21/44*

U.S. Cl. 114—309 **6 Claims**



1. An anchor assembly having a crown box, a stock extending through and to either side of the crown box, a pair of opposed flukes, and a shank assembly having one end pivotally secured to the stock within the crown box characterized in that each fluke of the pair of opposed flukes is substantially identical with the other, each fluke being formed from a single piece of sheet metal, the sheet metal after forming including a triangular flat plate portion and a flange portion to one side of the triangular plate portion, a section of the flange portion being at substantially right angles to the flat plate portion, the flange portion being bent in such a manner that it extends equally either side of the flat portion, the base of the triangular plate portion of each fluke being secured to the stock to one side of the crown box with the flange portion being disposed adjacent the shank assembly.

5,005,509

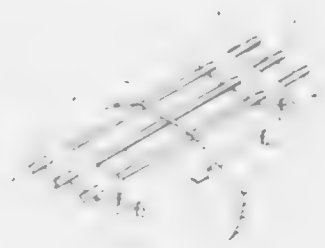
DINGHY SPAR AND EQUIPMENT CARRIER

D. Scot Williams, 123 E. Churchwell, Knoxville, Tenn. 37917

Filed Oct. 24, 1988, Ser. No. 261,127

Int. Cl.' B63B [illegible]

U.S. Cl. 114—343 **7 Claims**



1. A dinghy spar and equipment carrier for removable mounting on a dinghy boat, said dinghy boat defining a cockpit, said carrier comprising

an enclosure for receiving equipment related to the operation of a dinghy boat, said enclosure having a top portion and a bottom portion, said bottom portion defining a bottom surface, said enclosure also having first and second opposite end portions,

a pair of selectively spaced yoke members mounted on said enclosure for cooperatively engaging and carrying oars-spars and

support means for mounting said enclosure on said dinghy-boat, said support means including at least on support member mounted on said bottom surface of said enclosure for being received in said cockpit so as to restrict lateral movement of said enclosure as it is mounted on said dinghy boat, said support member being positioned upon said bottom surface such that at least a portion of said bottom surface supportively engages said dinghy boat proximate the perimeter of said cockpit

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5,005,510

HIGH STRENGTH BOAT HULL STRUCTURE

Robert D. Schad, 110 Bloor Street West, Suite 2104, Toronto, Ontario, Canada

Filed Dec. 18, 1989, Ser. No. 451,580

The portion of the term of this patent subsequent to Jan. 9, 2007, has been disclaimed.

Int. Cl.' B63B *5/24*

U.S. Cl. 114—357 **6 Claims**



1. A method of fashioning an impact resistant boat hull structure comprising the steps of

supporting at least one elongated batten-like, wear strip on a frame of the type used to lay up a fiberglass reinforced plastic skin,

said wear strip having an internally projecting rail or rib interrupted by cutouts, and,

applying layers of fiberglass reinforced plastic material upon said frame and upon said wear strip so that a composite body is developed wherein the rail and the cutouts mesh with said reinforced plastic material to define a first and a second key means.

5,005,511

AIR-DRIVEN LOW-FREQUENCY SOUND GENERATOR WITH POSITIVE FEEDBACK SYSTEM

Mats A. Olsson, Bromma, Sweden, assignor to Infrasonik AB, Stockholm, Sweden

PCT No. PCT/SE88/00172, § 371 Date Oct. 6, 1989, § 102(e) Date Oct. 6, 1989, PCT Pub. No. WO88/07894, PCT Pub. Date Oct. 20, 1988

PCT Filed Apr. 8, 1988, Ser. No. 424,206

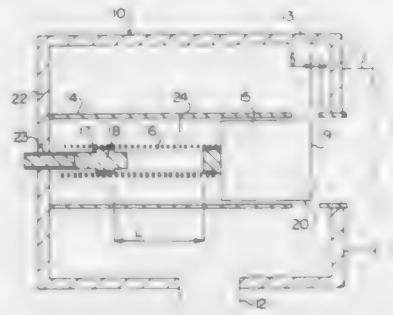
Claims priority, application Sweden, Apr. 8, 1987, 8701461

Int. Cl.' B06B [illegible]

U.S. Cl. 116—137 R **4 Claims**

1. In an air-driven, low-frequency sound generator with a positive feedback system, including, as a sound emitter, an open end tubulator resonator for generating standing, gas-borne sound waves which produce a varying gas pressure in the resonator and a feeder connected to one end of the resonator for regulating and supplying pressurized gas to the resonator from a source of pressurized gas and in which the feeder comprises a tube open at one end that communicates with the

interior of the resonator and a reciprocable, resilient slide valve located in the tube that regulates the flow of pressurized gas from the feeder to the resonator while creating a modulated flow of gas to the resonator, the improvement comprising a surge tank surrounding said tube that is connectable to the source of pressurized gas, a piston slidably mounted in said tube and having a first end surface communicating with the interior of the resonator and spring means acting on an opposite end of said piston, said piston having a side surface be-



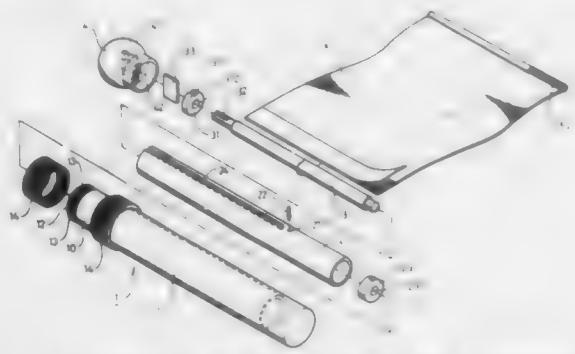
tween said ends and being moveable back and forth inside said tube under the competing influences of variations in the pressure inside the resonator and the force of the spring means and an opening in the tube controlled by the side surface of said piston that communicates the interior of the surge tank with the interior of the tube and the interior of the resonator, the side surface of said piston periodically opening and closing said opening as it moves back and forth in the tube to thereby modulate the flow of gas to the resonator.

5,005,512

PORTABLE EXTENSIBLE FLAG POLE WITH A FLAG

Shan C. Fu, No. 38, Alley 316, Ta Shun 3rd Rd., Kaohsiung, Taiwan

Filed Mar. 29, 1990, Ser. No. 500,941
Int. Cl.[5] G09F *17/00*
U.S. Cl. 116—173 **2 Claims**



1. A portable extensible flag pole with a flag comprising:
an extensible tubular pole assembly having at least two pole tubes of different diameter, including a smaller size pole tube telescopically mounted in a bigger size pole tube, each of said pole tubes having a distal male-threaded portion a female-threaded ring on each of said male-threaded portions, said distal male-threaded portion of each pole tube having several vertical split gaps useful for the female-threaded ring on the bigger tube to screw tight the bigger size pole tube around the smaller size pole tube, and the smallest size pole tube being able to contain an inner tube therein;
an inner tube having a lengthwise straight slot for the body of a flag to pass through, a pin hole near the inner end of said slot for a pin to connect a shaft ring with the inner tube and the shaft ring having a central hole for the lower end of a shaft to fit and be able to rotate in the inner tube;
a shaft having both ends of smaller size than the shaft body, a shaft ring rotatably mounted on each end of the shaft, one end of the shaft having a vertical slot located beyond the respective shaft ring and having a moving plate inserted therein;
a spherical cap having a groove in the interior for the moving plate and said one end of the shaft to insert therein and a round opening for the inner tube to fit in, said cap being able to be rotated manually to rotate the shaft at the same time for rolling a flag around the shaft for storing it away in the inner tube; and
a flag having an inner end glued on the shaft body and an outer end thicker than the width of the straight slot in the inner tube the flag being rolled around the shaft with the outer end being located outside said slot, to allow unrolling and rolling up of the flag by rotating the cap and so as to prevent the flag from being completely rolled onto the shaft

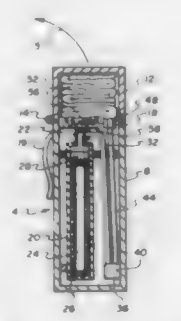
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5,005,513

HYDROGEN GAS-FILLED BALLOON SIGNALLING SYSTEM

Norman Van Patten, 584 S. 1st East, Springville, Utah 84663; Blaine Van Patten, 16 LaVesta Verde-Rancho, Palo Verde, Calif. 90274, and Vernon Dillenbeck, Orem, Utah, assignors to Norman Van Patten, Springville, Utah and Blaine Van Patten, Palo Verde, Calif.

Continuation-in-part of Ser. No. 345,363, May 1, 1989. This application Feb. 23, 1990, Ser. No. 483,630
Int. Cl.[5] B64B *1/50*
U.S. Cl. 116—210 **12 Claims**



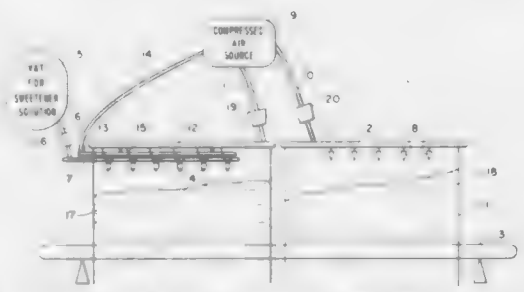
1. A balloon signalling system comprising
a hollow resilient casing having a container section with an upper open end and a bottom closed end, and a cap placeable on and removable from the upper end of the container section,
a hollow resilient flask having an opening and removably disposed in the container section of the casing,
a reactable material disposed in the flask,
a breakable cartridge disposed in the flask with the reactable material and containing a solution which, when it contacts the reactable material, produces hydrogen gas, wherein said casing is bent until the cartridge breaks to release the solution,
an inflatable balloon having an opening for receiving hydrogen gas to be inflated thereby, said balloon being collapsible to fit within the casing above the flask,
a nozzle means disposed in the balloon opening for allowing hydrogen gas to enter and inflate the balloon, and for preventing the escape of hydrogen gas from the balloon, said nozzle including receiving means for releaseably receiving the end of a tube,
a tube coupling the opening of the flask to the receiving means of the nozzle means for carrying to the balloon hydrogen gas produced in the flask, to thereby inflate the balloon and cause it to rise from the casing and pull the nozzle means off the tube, and
tether means attached to the balloon or nozzle means for holding the balloon from rising above a certain altitude.

5,005,514

METHOD AND APPARATUS FOR SPRAYING SNOW-LIKE FROSTING ONTO FOODSTUFF PARTICLES

Marsha K. Verrico, Fair Lawn, N.J., assignor to Nabisco Brands, Inc., East Hanover, N.J.

Continuation of Ser. No. 119,257, Nov. 6, 1987, Pat. No. 4,856,453, which is a continuation of Ser. No. 885,689, Jul. 15, 1986, abandoned, which is a division of Ser. No. 710,400, Mar. 11, 1985, Pat. No. 4,702,925. This application May 5, 1989, Ser. No. 348,883
The portion of the term of this patent subsequent to Aug. 15, 2006, has been disclaimed.
Int. Cl.[5] A23G *3/20;* **B05C** *5/00*
U.S. Cl. 118—16 **6 Claims**



1. An apparatus for applying a crystalline frosting on foodstuffs including a first section and a second section, consisting essentially of:
a means for conveying a plurality of foodstuff units through said apparatus;
a plurality of spray guns mounted in said first section and adapted to atomize and spray a sweetener solution to form crystalline particles on the surface of the foodstuff particles;
a plurality of air flow amplifiers mounted in said second section to direct a flow of compressed air and atmospheric air onto the foodstuff particles;
a liquid feed system adapted to supply a sweetener solution to said plurality of spray guns; and
a compressed air supply system for supplying food grade clean compressed air to said plurality of spray guns and said air flow amplifiers via manifolds and step down lines, such that compressed air is provided to said spray guns at pressures such that said spray guns atomize and spray said sweetener solution onto said foodstuff units to form crystalline sweetener particles having a snow-like appearance thereon, and compressed air is provided to said air flow amplifiers at pressures such that said air flow amplifiers direct a mixture of compressed air and atmospheric air onto the sprayed foodstuff units to dry the sprayed crystalline sweetener particles.

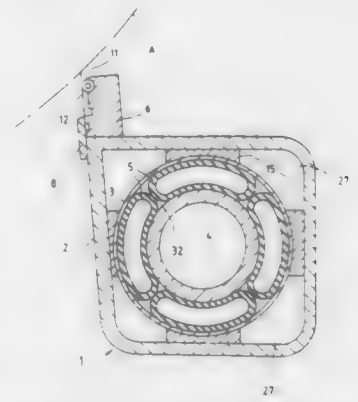
5,005,515

SMOOTHING DEVICE OF A COATING APPLICATOR UNIT

Hans-Peter Sollinger, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Jun. 13, 1989, Ser. No. 365,475
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1988, 3832325
Int. Cl.[5] B05C *11/04*
U.S. Cl. 118—100 **35 Claims**

1. A smoothing device for supporting a doctor element in engagement with a moving surface, the device comprising:
a hollow supporting beam extending across the width of the moving surface; a doctor element supported on the beam and projecting from the beam toward the moving surface;
a central supporting body extending through the hollow beam; an outer pipe also extending through the beam, disposed around the supporting body and radially spaced therefrom; a plurality of pressure elements disposed between the supporting body and the outer pipe and extending along the length of the beam, for transmitting force from the outer pipe to the supporting body within;
a plurality of connections from the exterior of the outer pipe to the supporting beam for transmitting forces applied by the beam and forces applied by the doctor element to the



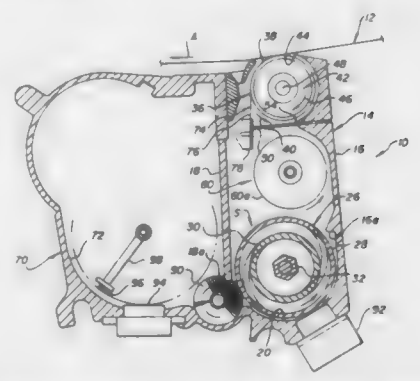
beam, through the connections to the outer pipe, and the connections between the outer pipe and the beam being placed for defining elongate channels extending through the hollow beam and outside the outer pipe for transmitting a fluid medium along the channels for heat transmission.

5,005,516

DEVICE FOR AIDING IN MEASURING PIGMENTED MARKING PARTICLE LEVEL IN A MAGNETIC BRUSH DEVELOPMENT APPARATUS

Larry W. Speer, Hilton, N.Y., assignor to Eastman Kodak Company

Filed Dec. 1, 1989, Ser. No. 444,257
Int. Cl.[5] G03G *15/09*
U.S. Cl. 118—657 **4 Claims**



1. An improved magnetic brush development apparatus for applying developer material to a latent image on a moving image carrying member, said apparatus comprising:
a housing defining a sump portion adapted to contain a supply of developer material for a magnetic brush a developer material replenishment device including a reservoir for replenishment material adjacent to said sump portion, a flow communication path between said reservoir and said sump portion, means for selectively controlling flow of replenishment material through said path, and means for measuring level of replenishment material in said reservoir, said measuring means including a material monitor located in the bottom of said reservoir immediately upstream of said flow communication path, and means an agitator for stirring material in said reservoir, and a brush attached to the end of said agitator for periodically sweep-

ing the surface of said monitor to facilitate accurate measurement of replenishment material level.

5,005,517
DEVELOPING DEVICE

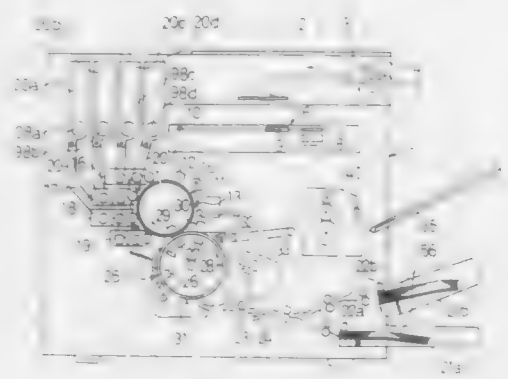
Kazuyuki Fukui; Yoshihiro Hattori, and Yoshinobu Hada, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

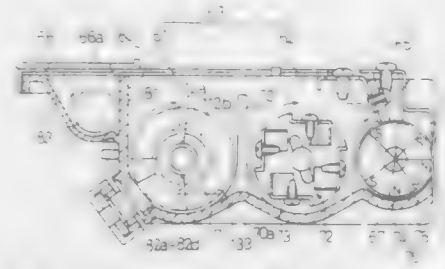
Filed Jul. 6, 1989, Ser. No. 376,411

Claims priority, application Japan, Jul. 6, 1988, 63-169902; Jul. 6, 1988, 63-169903; Jul. 6, 1988, 63-169905; Jul. 6, 1988, 63-169906

Int. Cl.[5] G03G *15/08, 15/01*

U.S. Cl. 118—689 **28 Claims**





1. A developing device for use in an electrophotographic image forming apparatus, comprising:

a developer holding member for supplying developer being rotatively driven and held for development of an electrostatic latent image;

a developer transporting means, by which the developer supplied to a developing unit is circulated and transported while being stirred and mixed by rotation, and said developer is supplied to the developer holding member in transit;

a driving means for driving the developer transporting means; and

a driving signal supply means for supplying driving signals to the driving means differentially in order to set the developer transporting means in different driving conditions when the developing unit is operated and when it is not operated for developing process.

5,005,518
ARTIFICIAL HAIR FOR HAIR-IMPLANTATION AND PREPARATION PROCESS AND PREPARATION APPARATUS THEREOF

Shiro Yamada, No. 2-7-1-606, Mita, Minato-ku, Tokyo, Japan

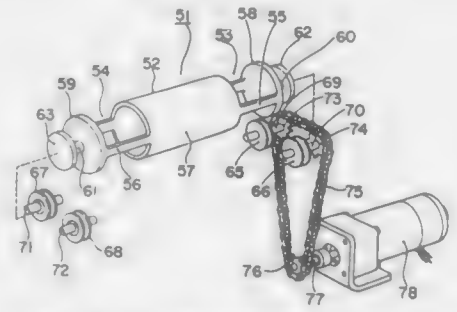
Division of Ser. No. 352,447, May 16, 1989. This application Dec. 20, 1989, Ser. No. 453,898

Claims priority, application Japan, Aug. 4, 1988, 63-193445

Int. Cl.[5] C23C *14/00, 14/04*

U.S. Cl. 118—716 **2 Claims**

1. An apparatus for the preparation of artificial hairs for hair-implantation, comprising: a vacuum vessel, a vacuum pump communicating with the vacuum vessel through an on-off valve, a crucible disposed in the vacuum vessel equipped with a heater for fusing silver, and a rotary container provided in the vacuum vessel adapted to receive monofilaments of a synthetic resin therein whereby amorphous silver is caused to adhere in spots to the monofilaments by subjecting said monofilaments to vacuum deposition of said silver at a vacuum degree of 10^{-3}–10^{-6} Torr at monofilament substrate



temperatures of 36° C. or lower upon rotation of said container;

wherein the rotary container is formed of a hollow cylinder having closed side ends and wherein said cylinder is provided with a plural number of openings which are made by cutting off a circumferential wall of said hollow cylinder in a vicinity close to said side ends or one side end of said hollow cylinder so as to expose free ends of monofilaments of artificial hairs held in said rotary container.

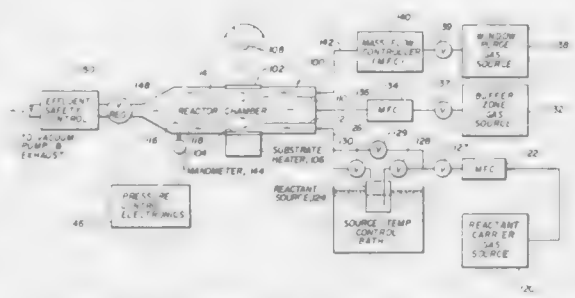
5,005,519
REACTION CHAMBER HAVING NON-CLOUDED WINDOW

John C. Egermeier; Janet Ellzey, both of Vienna, Va., and Delroy Walker, Mt. Rainier, Md., assignors to Fusion Systems Corporation, Rockville, Md.

Filed Mar. 14, 1990, Ser. No. 492,454

Int. Cl.[5] C23C *16/48*

U.S. Cl. 118—722 **17 Claims**



1. A reactor for performing a process in which a photoreactable gas is deposited on a substrate, comprising,

an enclosure having a window for allowing the passage of radiation to which said photoreactable gas is responsive,

the enclosure having two baffles therein which extend across the enclosure from wall to wall for dividing the space therein into three zones, the zone nearest the window being the window zone, the zone between the baffles being the buffer zone, and the other zone being the reactant zone,

each of said baffles having an opening in line with the window and the enclosure being adapted for receiving the substrate in the reactant zone at a position in line with the window and the baffle openings,

means for causing gas having a reactant to be deposited on said substrate to flow past said substrate in said reactant zone,

means for causing gas to flow in said buffer zone, and

means for causing gas to flow past said window in said window zone.

5,005,520
ANIMAL LITTER DEODORIZING ADDITIVE

Richard D. Michael, 7910 Milbury Rd., Baltimore, Md. 21207

Filed Apr. 24, 1989, Ser. No. 342,323

Int. Cl.[5] A01K *1/015*

U.S. Cl. 119—172 **6 Claims**

1. A method for deodorizing animal litter employing an oxidizing deodorizer substance which is a metallic double salt selected from a group consisting essentially of sodium percarbonate, sodium perborate, potassium percarbonate, and potassium perborate.

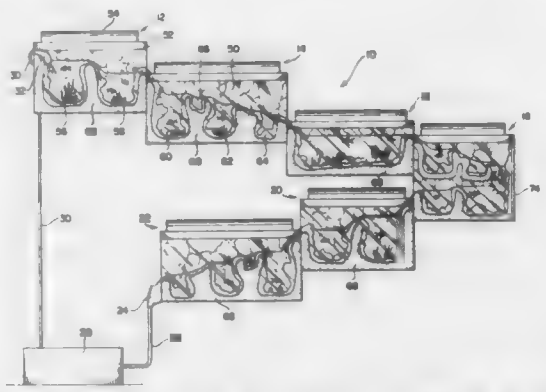
5,005,521
AQUARIUM ASSEMBLY

Finn A. Strong, 687 Fox Hill Rd., Chatham, Mass. 02633

Filed Jul. 13, 1990, Ser. No. 552,104

Int. Cl.[5] A01K *63/00*

U.S. Cl. 119—5 **17 Claims**



1. An aquarium system comprising a plurality of discreet tanks, means mounting said tanks in stepped, gradually descending relation to each other whereby water introduced to the uppermost tank flows therethrough and then down into and through each succeeding tank, each tank having a base member comprising an inlet section located adjacent the tank upstream end, and an outlet flume extending outwardly from the tank downstream end, and complementary connecting means located on each inlet section and on each flume, whereby the flume of one tank can be releasably connected to the inlet section of the next succeeding tank in order to maintain adjacent tanks releasably interconnected to each other and at the same time permitting water to flow from one tank to the next.

5,005,522
TAB FOR ANIMAL TANK COVER

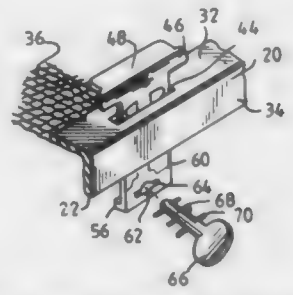
Richard A. Gordon, 95 W. 3rd St., Freeport, N.Y. 11520

Filed Jun. 7, 1990, Ser. No. 534,443

Int. Cl.[5] A01K *63/00*

U.S. Cl. 119—5 **6 Claims**

1. In combination with a cover for an animal tank, fish tank, or the like, the tank defining a peripheral enclosure having an open top provided with a border having an exterior lip, said cover comprising a continuous frame, the cross section of which comprises a horizontal wall adapted to be positioned over the top of said tank and a vertical skirt wall adapted to fit loosely about the exterior lip of the border, said frame having a plurality of retaining clips depending therefrom, certain ones of said retaining clips depending fixedly from the vertical skirt of said frame on one side of said frame to engage the tank enclosure beneath said exterior lip and certain others of said retaining clips being separately removable, said removable retaining clips being located in respective slot openings in the horizontal wall of said frame opposite to the side of said frame having the fixed retaining clips, said removable retaining clips depending freely and loosely through said openings below the lip, each of said retaining clips being formed of a planar body having front and rear surfaces provided with laterally extending projections at its upper end to prevent said retaining clips from passing through the openings, a boss located adjacent the upper edge of said body adapted to engage below the upper surface of the horizontal wall in engagement with the border of



said tank, an upper shoulder located on the rear surface of the body adapted to engage the vertical skirt wall of the frame and a lower shoulder on the rear surface of the body to engage below the lower edge of the vertical skirt wall of the frame, an enlarged tab along the lower portion of the front surface of the body, and key means passing through said body adjacent said enlarged tab being operable to removably engage the face of the tank, said key means causing said body to flex on engagement of said key with said glass to secure said bosses and shoulders in engagement with said respective portions of said border and frame,.

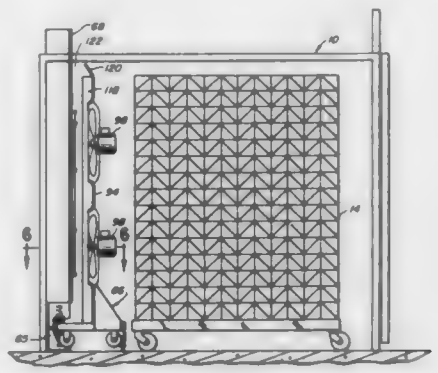
5,005,523
HATCHER WITH INTERNALLY MOUNTED EXHAUST DUCT AND EXHAUST DAMPER CONTROL MEANS

Matthew R. Foster, Cambridge, Canada, assignor to Marmon Corporation, Chicago, Ill.

Continuation of Ser. No. 145,608, Jan. 19, 1988, abandoned. This application Jan. 31, 1990, Ser. No. 473,118

Int. Cl.[5] A01K *41/00*

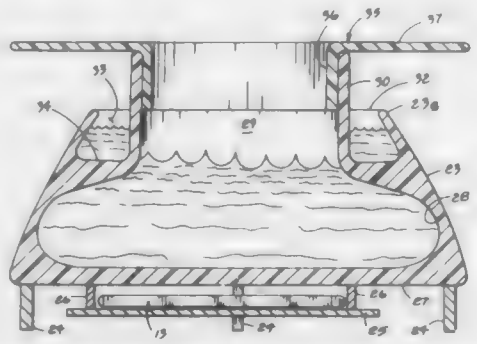
U.S. Cl. 119—37 **16 Claims**



1. An egg hatcher structure comprising a hatching chamber; airflow control means for creating a restricted area high pressure air zone within said chamber to control the flow of external air into the hatching chamber and to control the flow of internal air out of the hatching chamber; environmental adjustment means mounted on a moveable frame with wheels for heating, humidifying and circulating air within said chamber and alignment means for placement and removal of said environmental adjustment means; and environmental adjustment control means for monitoring the temperature, moisture and air circulation levels within the chamber and adjusting the environmental adjustment means and airflow control means to

maintain the temperature, moisture and air circulation at prescribed levels.

5,005,524
PET FEED BOWL CONSTRUCTION
Nancy K. Berry, 1980 W. Hibbard, Owosso, Mich. 48867
Filed Feb. 28, 1990, Ser. No. 486,286
Int. Cl.[5] A01K *7/00*
U.S. Cl. 119—51.11 **1 Claim**



1. A pet feed bowl apparatus including an upper bowl cavity defined by cylindrical interior wall and a conically tapered exterior body wall coaxially arranged about the cylindrical wall, and

a fluid cavity for containing fluid defined between the conical wall and the cylindrical wall, and

a heating plate including a first and second heating element underlying the upper bowl cavity, the heating plate including a timer mechanism mounted thereto for providing selective heating of the heating plate, and

the heating plate and timer mechanism arranged for electrical communication relative to one another, and

said first and said second heating elements mounted within the heating plate, and

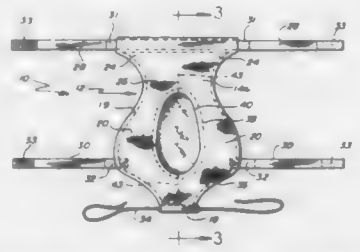
a switch means for selective actuation of the first and second heating elements to permit the elements to cooperate in concert or to effect actuation of the first and second heating elements individually, and

wherein the cylindrical wall is arranged to extend above the exterior conical wall, said upper bowl cavity defined by a lower elliptical cavity and a cylindrical upper cavity coaxially spaced above the elliptical cavity, the fluid cavity positioned above the elliptical cavity and in surrounding relationship to the cylindrical upper cavity to impart stability to the feed bowl, and

including a support grid underlying the elliptical cavity, and a floor defined coextensively between lower terminal ends of the conical exterior wall coaxially and orthogonally arranged relative to an axis defined by the conical wall and the cylindrical walls, and the support grid including a plurality of spacer legs orthogonally mounted to the floor and the spacer legs fixedly mounting the grid in a spaced relationship relative to the floor, and the heating plate selectively receivable on the grid and leg members extending below the grid spaced relative to one another at predetermined intervals and orthogonally mounted to the floor, and

including an insert slidably mounted within the cylindrical wall, the insert including an insert cylindrical wall defined by an external diameter substantially equal to an internal diameter defined by the cylindrical wall, and the insert further including an annular flange orthogonally and integrally mounted to an upper terminal end of the insert cylindrical wall, the insert annular flange including an outer peripheral end extending beyond the conical flange.

5,005,525
ANIMAL MARKING AND URINATION CONTROL DEVICE
Dorothy R. Stanton, 8721 32nd Circle North, New Hope, Minn. 55427
Filed Jul. 3, 1989, Ser. No. 374,734
Int. Cl.[5] A01K *23/00*
U.S. Cl. 119—95 **8 Claims**



1. A device for securing along the ventral side of a four legged animal in the region extending substantially from the area of the sternum distally to the area of the genitals of the animal, for preventing marking activity, and the like, comprising: a flexible body panel, the panel having a chest end and a waist end opposite therefrom, the chest end having a pair of chest end flanges extending therefrom and the waist end having a pair of waist end flanges extending therefrom defining a narrowed area there between, and the panel having pouch means for releasable retaining of absorbant pad means therein, a pair of chest straps, each strap having a first end secured to one of the chest end flanges and extending therefrom to a second end, the chest strap second ends having cooperating releasable securing means thereon and the panel proportioned with respect to the animal so that the chest straps extend around the torso of the animal between the front legs and the sternum thereof and the securing means for providing releasable securing together of the chest straps and the chest straps extending around the animal between the front legs and the sternum thereof for providing secure holding of the panel chest end to the animal, a pair of waist straps each strap having a first end secured to one of the waist end flanges and extending therefrom to a second end, the waist strap second ends having cooperating releasable securing means thereon and the waist straps extending around and releasably securing to the torso of the animal and the panel proportioned with respect to the animal so that the waist straps extend around the torso of the animal proximally of the hind legs thereof for providing releasable securing of the panel closely adjacent the animal genital area and the pouch positioned on the panel so that the pad means lies adjacent the genital area of the animal for absorbing any urine excreted by the animal, and the chest and waist flanges and the narrowed area creating a panel perimeter edge contour for providing close fitting of the panel to the torso of the animal.

5,005,526
COLLAPSIBLE VEHICLE SAFETY APPARATUS FOR ANIMALS
Charles Parker, 9953 Blossom Valley Rd., El Cajon, Calif. 92021
Filed Sep. 14, 1990, Ser. No. 582,408
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—96 **5 Claims**

1. A collapsible vehicle safety apparatus for animals comprising:

a. a rigid base;

b. a collapsible support frame removably secured to the base;

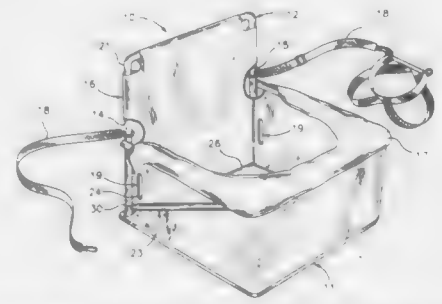
c. at least two blind insertion holes, in the base, to releasingly accept and retain a first leg and a second leg of the frame;

d. a pliable barrier cover attached to the frame;

e. a padded top restraint means, attached to the cover, to reduce trauma from impact due to abrupt forward movement;

f. an adjustable harness, attached to the frame, to restrict movement of the animal;

g. a first seat belt attachment means, in the cover, to attach a vehicular seat belt to secure the frame and cover to the vehicle;

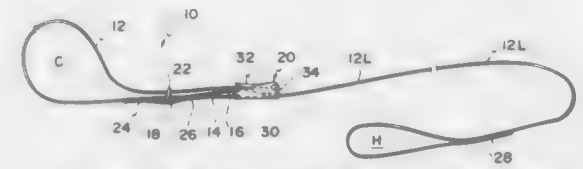


h. a second seat belt attachment means, attached to the cover, to secure the frame and the cover to the vehicle;

i. an insertion port in the cover; and

j. a removable soil tray slidingly inserted through the port, over and in intimate contact with the base.

5,005,527
UNITARY ANIMAL LEASH AND COLLAR
Charles S. Hatfield, 3203 S. Walton Blvd., Bentonville, Ark. 72712
Filed Feb. 13, 1990, Ser. No. 479,162
Int. Cl.[5] A01K *27/00*
U.S. Cl. 119—109 **10 Claims**



1. An animal leash comprising; an elongated strap with a quick release clamp secured at one end thereof, a rigid ring secured to the strap and spaced from the quick release, clamp, an infinitely adjustable collar formed from the other end of the strap slidably looped through the ring and then through the clamp, to form a loop for adjustably engaging the animal's neck, wherein the quick release clamp is infinitely slidable and lockable along the length of the strap.

5,005,528
BUBBLING FLUID BED BOILER WITH RECYCLE
Michael J. Virr, Fairfield, Conn., assignor to Tampella Keeler Inc., Williamsport, Pa.
Filed Apr. 12, 1990, Ser. No. 508,841
Int. Cl.[5] F23D *1/00;* **F23G** *5/00*
U.S. Cl. 122—4 D **13 Claims**

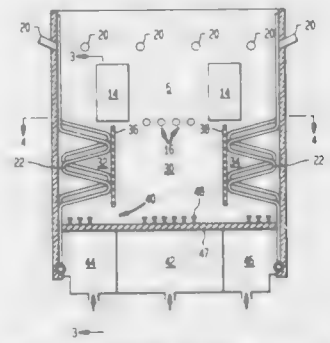
1. A process for burning carbonaceous material to generate steam which comprises the following steps:

introducing carbonaceous material to a lower combustion region of a reactor chamber of bubbling fluid bed boiler, said lower combustion region comprising: a combustion zone disposed between at least a first heat transfer zone and a second heat transfer zone, wherein the zones are formed by at least two substantially vertical internal wall members disposed within said lower combustion region such that one internal wall member is disposed between said first heat transfer zone and said combustion zone, and another internal wall member is disposed between said second heat transfer zone and said combustion zone; said first and second heat transfer zones having heat exchange means disposed internally therein; and a means for individually controlling the fluidizing gas supplied to each zone;

heating said combustion zone to a temperature in the range between about 800 to 1200° F. prior to introduction of said carbonaceous material;

fluidizing said carbonaceous material within said combustion zone with a primary fluidizing gas introduced at the bottom of said reactor chamber and a secondary fluidizing gas introduced into said reactor chamber at a level above said primary fluidizing gas, wherein the velocity of said combustion zone is in the range between about 8–17 ft/sec;

fluidizing said carbonaceous material within said heat transfer zones with a primary fluidizing gas introduced at the bottom of said reactor chamber and a secondary fluidizing gas introduced into said reactor chamber at a level above said primary fluidizing bas when the temperature of said



combustion zone is between about 1500 to 1700° F., wherein the velocity within said heat transfer zones is in the range between about 2–6 ft/sec such that the fines of said carbonaceous material are carried up the center of said reactor chamber and down the sidewalls into said heat transfer zones;

burning said carbonaceous material in said reactor chamber;

removing thermal energy from said reactor chamber by disposing heat exchange means substantially throughout the freeboard region and along the walls of said reactor chamber and also within said heat transfer zones, whereby water contained within said heat exchange means is heated to produce steam;

separating solid particles entrained in flue gas discharged by said reactor chamber; and

returning the separated solid particles to said reactor chamber via a recycle port disposed in a sidewall of said reactor chamber.

5,005,529
MODULAR HEAT RECOVERY STEAM GENERATOR HAVING PARALLEL OFFSET HEADERS
John Polcer, Morris, N.J., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.
Filed Apr. 23, 1990, Ser. No. 513,416
Int. Cl.[5] F22B *15/00, 25/00*
U.S. Cl. 122—235.15 **10 Claims**

1. A modular heat recovery generator utilizing at least two parallel upper and lower pressurizable headers each connected together by tubes, which generator comprises:

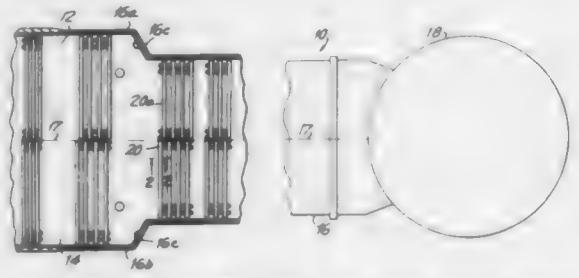
a horizontally extending casing;

a first elongated pressurizable upper header extending horizontally and transversely within said casing;

at least two rows of vertically-oriented tubes each connected pressure-tightly to said first upper header and also connected pressure-tightly to a corresponding elongated lower header; and

a second elongated pressurizable upper header located parallel to and offset from said first upper header, said second

upper header having at least two rows of vertically-oriented tubes connected pressure-tightly to the second header and also connected pressure-tightly to a corresponding lower header, wherein the tubes connected to said first upper header are located on a side opposite from



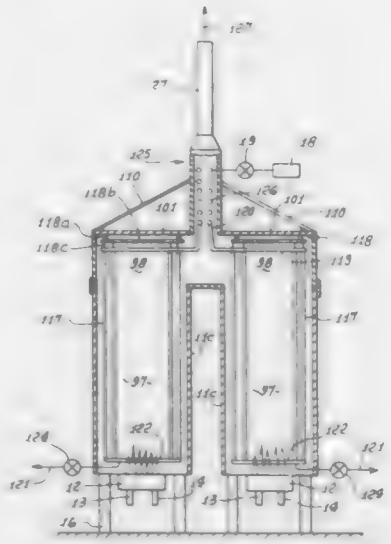
the tubes connected to said second upper header, and the adjacent ends of said first and second headers overlap each other, so as to provide dual adjacent tube banks within said casing of the modular heat recovery generator assembly.

5,005,530

FURNACE RADIANT SECTIONS WITH VERTICAL HEAT EXCHANGER TUBING, AND CONVECTION SECTION

Frank W. Tsai, 1842 Alpine Dr., San Marino, Calif. 91108

Filed Jun. 8, 1990, Ser. No. 535,408
Int. Cl.[5] F22B *31/00*
U.S. Cl. 122—240.3 **13 Claims**



1. The method of combining two furnaces into one, each furnace having a lower radiant section that includes upright walls and horizontal heat exchanger tubes, and an upper convection section, the lower section having associated fuel burners, that includes:

(a) removing said horizontal heat exchanger tubes from said lower section,

(b) extending said lower section upright walls vertically upwardly, and providing space between the vertically extended lower sections,

(c) providing top walls over said vertically extended lower sections, and providing vertically extending heat exchanger tubing and suspending said tubing vertically within said vertically extended lower radiant sections, to be heated by hot gases produced by combustion of fuel supplied via said burners,

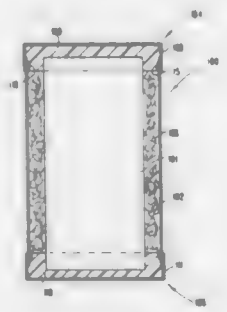
(d) and providing and locating an upright furnace convection section in flow receiving communication with said lower radiant sections, via lateral passages therefrom.

5,005,531

THERMAL INSULATION JACKET

Thomas E. Nelson, 6100 Old La Grange Rd., Crestwood, Ky. 40014

Continuation of Ser. No. 412,923, Sep. 26, 1989, Pat. No. 4,972,759, which is a continuation-in-part of Ser. No. 309,658, Feb. 13, 1989, Pat. No. 4,878,459. This application Jul. 23, 1990, Ser. No. 557,171
The portion of the term of this patent subsequent to Nov. 7, 2006, has been disclaimed.
Int. Cl.[5] F22B *37/36*
U.S. Cl. 122—494 **9 Claims**



1. A water heater comprising:

a generally cylindrical inner tank arranged so as to have a top end and an oppositely disposed lower end;

a generally cylindrical outer shell disposed about said inner water tank and defining therewith an annular clearance space therebetween, said outer shell being arranged so as to have an upper edge and an oppositely disposed lower edge;

insulation means disposed in said annular space;

a top cover having an outer casing and a panel of insulation material disposed in said outer casing, said panel of insulation material being shaped so as to define a generally central recess which is suitably sized, shaped and positioned to fit over the top end of said inner tank; and

a bottom cover having an outer casing and a panel of insulation material disposed in said outer casing, said panel of insulation material being shaped so as to define a generally central recess which is suitably sized, shaped and positioned to fit over the lower end of said inner tank.

5,005,532

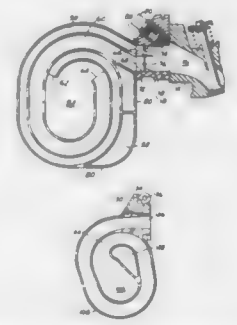
INTEGRATED TUNED INDUCTION SYSTEM

Ronald G. Shillington, Ontario, Canada, assignor to Siemens-Bendix Automotive Electronics Limited, Chatham, Canada

Continuation-in-part of Ser. No. 313,921, Feb. 22, 1989, Pat. No. 4,919,086. This application Jan. 18, 1990, Ser. No. 462,601
Int. Cl.[5] F02M *35/10*
U.S. Cl. 123—52 M **17 Claims**

1. In an induction air circuit for a multi-cylinder internal combustion engine the combination comprising a plenum zone that is supplied with air from an air intake, and spiral runners leading from said plenum zone and through which air is supplied from said plenum zone to individual engine cylinders, said runners laterally bounding said plenum zone at locations along the length of said plenum zone, and at least one of said runners, when viewed in transverse cross section through said plenum zone, having a beginning at a given circumferential location about a longitudinal axis of said plenum zone and spiraling from said beginning in excess of 360 degrees about said longitudinal axis of said plenum zone to terminate at an ending that is in excess of 360 degrees about said longitudinal axis of said plenum zone as measured along the length of said at least one runner, wherein each of said runners, when viewed

in transverse cross section through said plenum zone, has a beginning at a given circumferential location about said longitudinal axis of said plenum zone and spirals from its beginning in excess of 360 degrees about said longitudinal axis of said plenum zone to terminate at a corresponding ending that is in



excess of 360 degrees about said longitudinal axis of said plenum zone as measured along the length of each said runner, wherein said plenum zone and runners are a single plastic part, and further including a fuel rail that is embodied in said single plastic part and which merges with the endings of said runners.

5,005,533

TWO CYCLE ENGINE WITH FUEL INJECTOR

Kazuo Suzuki; Fusao Tachibana, and Mitsugi Chonan, all of Tokyo, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1989, Ser. No. 442,069
Claims priority, application Japan, Dec. 9, 1988, 63-160550[U]
Int. Cl.[5] F02M *35/10*
U.S. Cl. 123—52 MB **3 Claims**

1. A two-cycle engine with fuel injector, having an engine body with at least two cylinders, a crank case defining crank chambers operatively communicating with the corresponding cylinders, a plurality of throttle bodies, throttle passages connected to the corresponding crank chambers, each of said throttle bodies having mounted therein a throttle valve at a position upstream of the throttle passage, respectively, and said throttle passage communication with the outside of the engine through at least one air cleaner, and a fuel injector provided at a position downstream of the throttle valve, respectively, comprising:

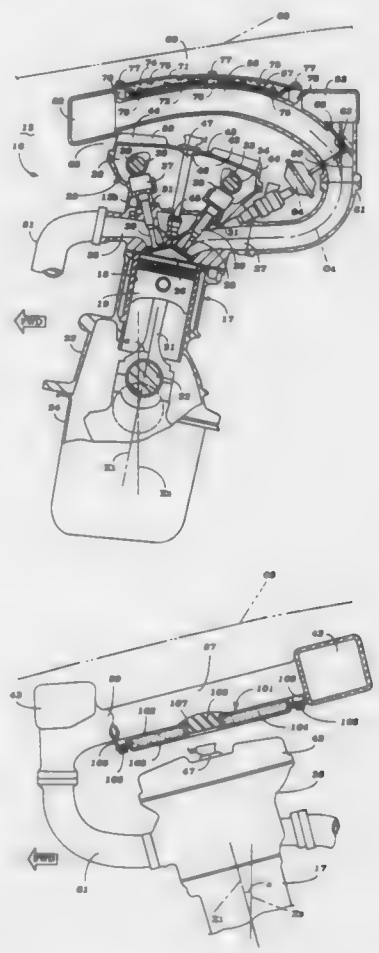
a balance passage located between and connecting the throttle passages with each other whereby a reverse flow mixture flowed back from one of the cylinders can be supplied to the other of the cylinders through the balance passage, an air chamber formed in said balance passage for attenuating pulsation of the reverse flow mixture.

5,005,534

INTAKE SYSTEM FOR AUTOMOTIVE ENGINE

Takehiro Washizu, and Tsutomu Nagamatsu, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Feb. 27, 1990, Ser. No. 485,460
Claims priority, application Japan, Mar. 3, 1989, 1-51613
Int. Cl.[5] F02M *35/10*
U.S. Cl. 123—52 M **20 Claims**



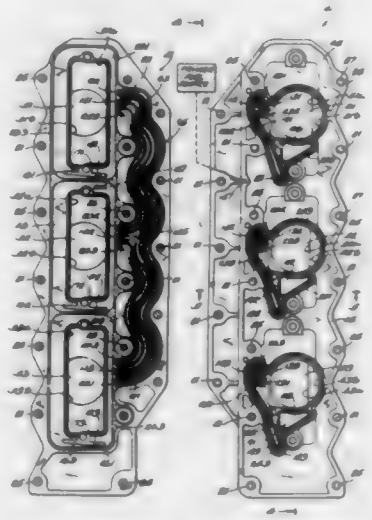
1. An internal combustion engine disposed transversely in an engine compartment closed by a hood, a plurality of cylinders lying in a cylinder bank, each having at least one intake port facing in the same direction in said engine compartment, and a plurality of manifold runners, each extending from a respective one of said intake ports and in the opposite direction in said engine compartment to be at least in part over said cylinder bank, and a sound deadening baffle plate separate from but affixed relative to said runners and disposed between the engine and the hood for silencing.

5,005,535

INTERNAL COMBUSTION ENGINE WITH RECESSED INTAKE MANIFOLD

Gregory J. Binversie, Grayslake; James E. Macier, Beach Park, and David W. Mate, McHenry, all of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Continuation-in-part of Ser. No. 316,319, Feb. 27, 1989, abandoned. This application Feb. 20, 1990, Ser. No. 482,932
Int. Cl.[5] F02M *35/10*
U.S. Cl. 123—52 M **66 Claims**



1. An internal combustion engine comprising an engine member including an intake manifold mounting face having therein a series of openings, an intake manifold including an engine mounting surface on said manifold mounting face, a carburetor mounting surface in spaced relation to said engine mounting surface, a like series of intake passages extending between said mounting surfaces, terminating at said engine mounting surface in respective openings respectively located in alignment with said openings in said manifold mounting face, and terminating at said carburetor mounting surface in respective openings, and drains re-circulation means for delivering drains accumulating in said intake passages to intake passages other than said intake passages in which the drains accumulated, and a like series of carburetors on said carburetor mounting surface, said carburetors respectively including air induction passages communicating respectively with said openings in said carburetor mounting surface.

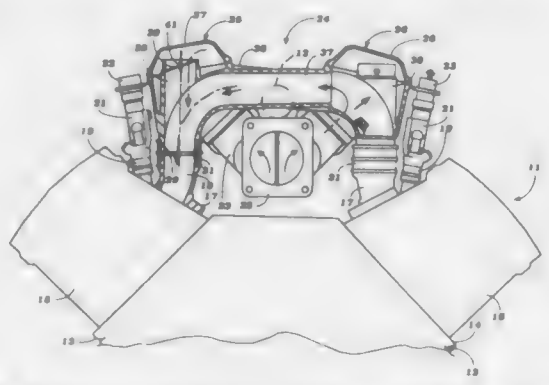
5,005,536

ENGINE INDUCTION SYSTEM

Takamitsu Suzuki; Takeshi Iwanami, and Minoru Yonezawa, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Shingai, Japan; Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan and Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka, Japan

Continuation of Ser. No. 440,646, Jan. 24, 1989, abandoned. This application Aug. 3, 1990, Ser. No. 563,818
Claims priority, application Japan, Nov. 25, 1988, 63-296039
Int. Cl.[5] F02M *35/00*
U.S. Cl. 123—52 MV **61 Claims**

1. An induction system for a V type engine comprised of a pair of angularly disposed cylinder banks, each formed with at least one cylinder, first and second plenum chambers each lying above a respective one of said cylinder banks, means for admitting an atmospheric air charge to said plenum chambers, a pair of first intake passages each having an inlet opening in one of said plenum chambers and an outlet communicating with the cylinder of the opposite cylinder bank and an intermediate portion passing at least in part through the other plenum chamber, a pair of second intake passages, each extending from one of said plenum chambers to the cylinder of the adjacent cylinder bank, each of said plenum chambers having an upper surface formed at least in part by a removable cover plate for



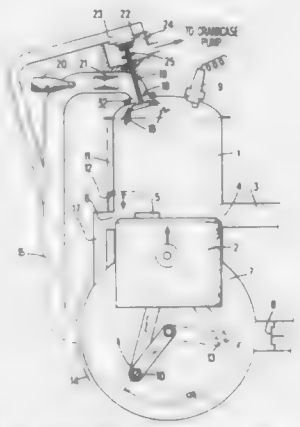
affording access to the interior of the respective plenum chamber when said cover plate is removed.

5,005,537

METHOD AND DEVICE FOR INTRODUCING A CARBURETTED MIXTURE UNDER PRESSURE IN A CHAMBER OF A TWO-STROKE ENGINE

Jean-Pierre Maissant, 12bis, rue du General Noel, 92500 Rueil Malmaison, France

Filed Dec. 29, 1989, Ser. No. 459,300
Claims priority, application France, Dec. 30, 1988, 88 17601
Int. Cl.[5] F02M *67/00, 69/10*
U.S. Cl. 123—65 VB **19 Claims**



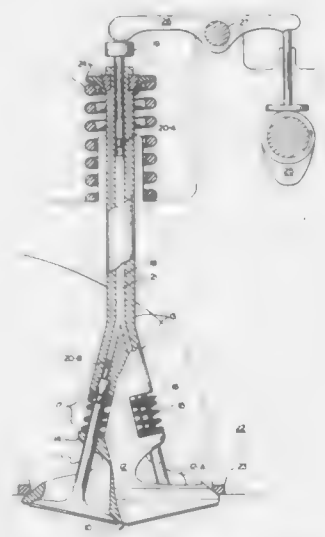
1. A device for introducing a carburetted mixture under pressure into a chamber of a first cylinder of a two-stroke internal combustion engine, the device comprising a valve having a first end cooperating with a seat for closing a feed duct feeding the carburetted mixture into the chamber of the first cylinder, means for returning the valve, an assistance member comprising a separation element cooperating with one end of a stem of the valve opposite said first end, said assistance member separating a first volume and a second volume within each of which a pressure prevails, the separation element being displaceable and causing displacement of the valve under an action of a pressure difference between the pressure of the first volume and the pressure of the second volume, and means for connecting said feed duct to said first volume so that the pressure in said first volume is substantially equal to the pressure in said feed duct.

5,005,538

EXTENDED CIRCUMFERENCE INTAKE POPPET VALVE SYSTEM FOR OPENING AND SEALING A SINGLE VALVE SEAT

Charles W. Bergeron, P.O. Box 17, Putnam Hall, Fla. 32185

Filed Jul. 3, 1990, Ser. No. 547,810
Int. Cl.[5] F01L *1/28, 3/00*
U.S. Cl. 123—79 R **2 Claims**



1. An improved intake valve for an internal combustion engine to increase the volumetric efficiency of the engine comprising:

a primary poppet valve having a stem and a circular valve body with a valve seat face disposed around the perimeter of the circular valve body, said primary valve body having at least three apertures disposed there through, said apertures including annular valve seats;

at least three secondary smaller poppet valves each sized to fit sealably within each of the primary valve apertures respectively;

means for supporting at least three secondary poppet valves connecting said three secondary poppet valves to said primary valve; and

means for opening and closing said secondary and primary poppet valves.

5,005,539

ENGINE CYCLE CONTROL SYSTEM

Hideo Kawamura, Samukawa, Japan, assignor to Isuzu Ceramics Research Institute Co., Ltd., Kanagawa, Japan

Filed May 11, 1990, Ser. No. 522,320
Claims priority, application Japan, May 11, 1989, 1-118474
Int. Cl.[5] F02B *69/06*
U.S. Cl. 123—21 **3 Claims**

1. An engine cycle control system for controlling an engine so as to be selectively operable in different cycle modes depending on the rotational speed thereof, comprising:

a cylinder;

a piston reciprocally disposed in said cylinder and having a piston head surface;

an intake port defined in a circumferential surface of said cylinder and positioned such that the intake port positionally corresponds to said piston head surface when said piston reaches a position near the bottom dead center thereof;

an exhaust port defined in an upper portion of said cylinder;

an exhaust valve for opening and closing said exhaust port;

rotation detecting means for detecting a rotational speed of the engine;

load detecting means for detecting a load on the engine;

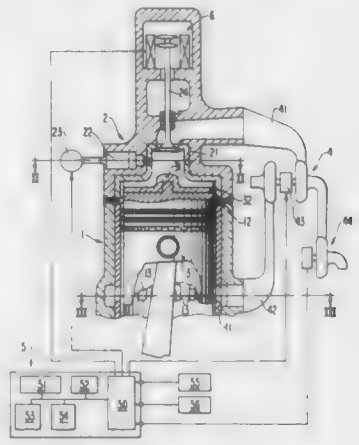
valve actuator means for actuating said exhaust valve to open and close said exhaust port;

supercharging means for supplying intake air under pressure through said intake port into said cylinder;

supercharging assisting means for assisting in supercharging operation of said supercharging means;

a fuel injection nozzle disposed in the upper portion of said cylinder and operable by a control signal for injecting fuel into said cylinder at a prescribed timing;

cycle mode selecting means for controlling said valve actuator means to operate said exhaust valve each time the engine makes one revolution and also controlling said fuel injection nozzle to eject fuel each time the engine makes one revolution, thereby operating the engine in a two-cycle mode, when the rotational speed of the engine detected by said rotation detecting means is lower than a predetermined speed, and for controlling said valve actuator means to operate said exhaust valve each time the engine makes two revolutions and also controlling said fuel injection nozzle to eject fuel each time the engine makes two revolutions, thereby operating the engine in a four-cycle mode, when the rotational speed of the engine detected by said rotation detecting means is higher than the predetermined speed; and



supercharging control means for operating said supercharging assisting means when the load on the engine detected by said load detecting means is greater than a predetermined load while the engine is being operated in the two-cycle mode by said cycle mode selecting means.

5,005,540

VALVE TIMING CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

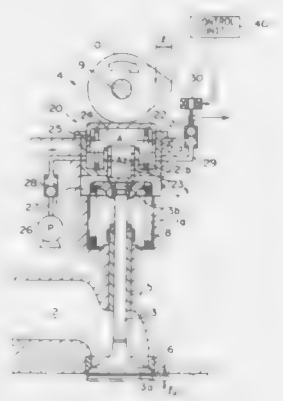
Kenzo Watanabe, Fuchu, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 21, 1990, Ser. No. 541,711
Int. Cl.[5] F01L *9/02*
U.S. Cl. 123—90.12 **4 Claims**

1. A valve timing control system for an internal combustion engine having a cylinder, a valve for inducing air or exhausting burned gases, a cam for operating the valve, and a hydraulic valve lifter disposed between said cam and said valve, the system comprising:

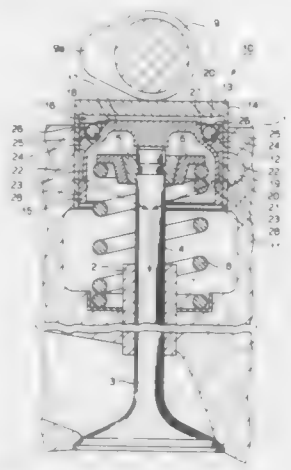
said hydraulic valve lifter comprises a cylindrical lifter body secured to said engine, a cam piston having a large area for receiving hydraulic pressure and slidably mounted in said lifter body, and a lifter piston having a small area for receiving hydraulic pressure and slidably mounted in said lifter body to define an oil chamber together with the cam piston, an outer surface of the cam piston being engaged with said cam and an outer surface of the lifter piston being engaged with said valve;

a hydraulic circuit having an oil supply passage for supplying oil to said oil chamber and a relief passage;
an electromagnetic relief valve provided in said relief passage for draining said oil chamber; and



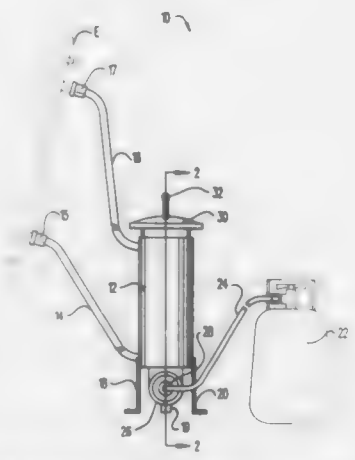
a control unit for operating said relief valve in accordance with engine operating conditions.

5,005,541
HYDRAULIC VALVE LIFTER
Takeomi Yamamoto, Nishio; Nariaki Endo, Osaka; Yasushi Kadota, Osaka, and Tadasu Yamakawa, Osaka, all of Japan, assignors to Otai Tekko Kabushiki Kaisha and Koyo Seiko Co., Ltd., Nishio and Osaka, Japan
Filed Jul. 24, 1990, Ser. No. 556,525
Claims priority, application Japan, Aug. 2, 1989, 1-91088
Int. Cl.[5] F01M *9/10*; F01L *1/24*
U.S. Cl. 123—90.35 **6 Claims**



1. A hydraulic valve lifter comprising:
an inverted cup-like body having a skirt and a tip;
an inverted cup-like plunger slidable axially within said body and having a side wall and an end wall;
a high pressure chamber defined between the tip of said body and the end wall of said plunger;
an oil passage through which an oil fed from the outside of the body is fed to the high pressure chamber, said oil passage being defined in said body and said plunger; and
at least one oil discharge hole formed in said plunger and extending from said oil passage to open to a valve stem.

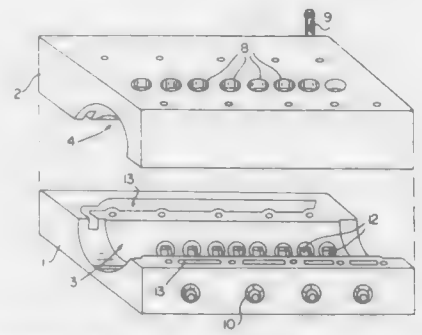
5,005,542
ENGINE PREHEATING DEVICE
David Rissanen, Box 175, Big Falls, Minn. 56627
Filed Jan. 2, 1990, Ser. No. 459,465
Int. Cl.[5] F02N *17/02*
U.S. Cl. 123—142.5 R **8 Claims**



1. An engine preheating device, comprising:
a hollow cylindrical housing;
a plurality of support legs spaced circumferentially around a bottom end of said housing for supporting said housing in an upright orientation;
a helical heat exchange coil in said housing;
an inlet conduit coupled to a bottom end of said coil, said inlet conduit having a quick connect coupling for fluid connection to an internal combustion engine water jacket;
an outlet conduit coupled to an upper end of said coil, said outlet conduit having a quick connect coupling for fluid connection to an internal combustion engine water jacket;
an arcuate tubular elbow having a first end secured in coaxial relation within said bottom end of said housing and a second open end;
a propane torch head inserted within a second open end of said elbow;
a conduit connecting said torch head to a propane supply tank;
a cover mounted in vertically spaced relation on an upper end of said housing bY a plurality of circumferentially spaced vertical tabs, a combustion gas outlet formed between said tabs and said cover;
a tube having a first end connected to said cover, said tube extending centrally and axially within said coil;
a flame diffuser secured to a second end of said tube, said flame diffuser having two semi-circular baffles connected at an acute angle; and
an insulated handle on an upper exterior surface of said cover.

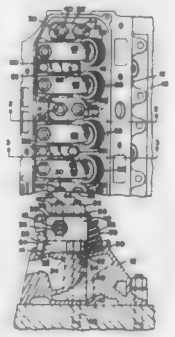
5,005,543
INTAKE AND EXHAUST SYSTEM WITH A ROTATING PORT SHAFT FOR FOUR-CYCLE INTERNAL COMBUSTION ENGINES
Felix O. Triguero, Virgen de la Fuencisla 33, 28027 Madrid, Spain
Filed Jun. 2, 1989, Ser. No. 360,435
Claims priority, application Spain, Jun. 6, 1988, 8801765
Int. Cl.[5] F01L *7/00*
U.S. Cl. 123—190 BD **14 Claims**

1. An intake and exhaust system with a rotating port shaft having both intake and exhaust means for internal combustion engines, said system comprising: a cylinder head having two halves, a first half and a second half, both said halves being provided with an axial, semi-cylindrical cut in their opposing faces which, when fitted together, form a longitudinal, cylindrical duct housing the rotating shaft, said cylinder head having a cooling duct for a cooling liquid circulation sleeve, aid first half having first orifices for coupling with intake and



exhaust manifolds, said second half having threaded second orifices for receiving spark plugs, said second half having third orifices which house static pistons for sealing each cylinder.

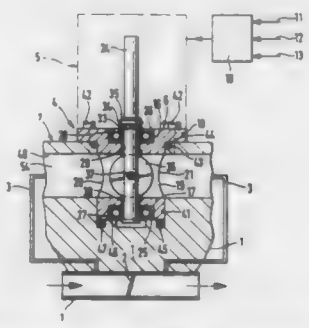
5,005,544
ROCKER SHAFT SUPPORT SYSTEM FOR INTERNAL COMBUSTION ENGINE
Earl M. Spangler, R.D. #5 - Box 5066, Spring Grove, Pa. 17362
Filed Feb. 6, 1990, Ser. No. 475,914
Int. Cl.[5] F01L *1/18*
U.S. Cl. 123—195 R **20 Claims**



1. In an internal combustion engine for racing cars adapted to be operated in relatively high RPM levels at which the rocker shaft of the engine supported upon the combustion head tends to flex or vibrate, the improvement comprising support means for said shaft upon the combustion head between each pair of rocker arms upon said shaft and including securing means which extend through the combustion head and into the cylinder block in which the pistons of the engine reciprocate and thereby secure said rocker shaft firmly to said cylinder block in a manner either to greatly reduce or eliminate said aforementioned vibration of said rocker shaft when said engine is operated at said relatively high RPM levels in racing cars when driven at high speeds.

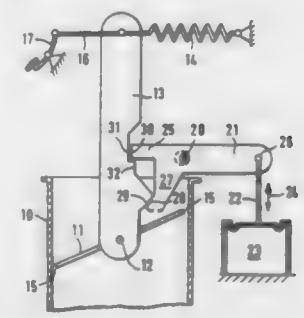
5,005,545
FLOW REGULATOR
Friedrich Wendel, Weissach, and Dieter Dick, Muehlacker, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Dec. 19, 1989, Ser. No. 452,669
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1989, 3905655
Int. Cl.[5] F02D *9/08*
U.S. Cl. 123—337 **21 Claims**

1. A regulator for controlling an operating medium for an internal combustion engine comprising a throttle housing (16), a throttle unit in said throttle housing, a shaft mounted in a turning space and extending from said throttle housing (16), a throttle member (36) connected to said shaft in said turning space; and regulator serving to control the flow of a medium from an inlet opening (20) via the turning space to an outlet opening (21) provided in the throttle housing, the throttle housing (16) comprises a cylindrical housing part (17) which is insertable in a tight manner in a receiving opening (41) of a holder (7, 50) having incorporated in said holder a flow chan-



nel (40) for conveying the flow medium; said flow channel (40) being divided by the throttle housing (16) into an inflow portion (54) and an outflow portion (55) such that at a wall of the throttle housing (16) the inflow portion (54) is connected to the inlet opening (20) in the throttle housing (16) and the outflow portion (55) is connected at the wall of the throttle housing (16) to the outlet opening (21) in the throttle housing (16).

5,005,546
SETTING DEVICE FOR A FEED DEVICE OF AN INTERNAL COMBUSTION ENGINE
Arnold Mann, Biebergemünd, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany
Filed Oct. 11, 1989, Ser. No. 419,642
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1988, 3843147
Int. Cl.[5] F02D *9/02*
U.S. Cl. 123—339 **7 Claims**



1. A speed control system for an internal combustion engine, the system providing for control of an idling speed of rotation of the engine, the system comprising:
a feed device for feeding air into the engine, the feed device including an actuating lever;
a setting device for positioning the feed device, the setting device including a pretensioned return spring and an adjusting rod which are connected to the feed device;
an idle setting device;
an idling stop lever which cooperates with the actuating lever and is adjustable by the idle setting device;
a first stop and a second stop disposed on said stop lever and being operable with said actuating lever, the second stop limiting a range of adjustment of the first stop for a minimum setting of the feed device; and
wherein there are at least two abutment surfaces located at different places on the actuating lever; and
corresponding ones of said abutment surfaces of said actuat-

ing lever, and said stops of said stop lever can be brought alternatively into operative connection with each other.

5,005,547

ABNORMAL COMBUSTION-DETECTING DEVICE AND COMBUSTION CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINES

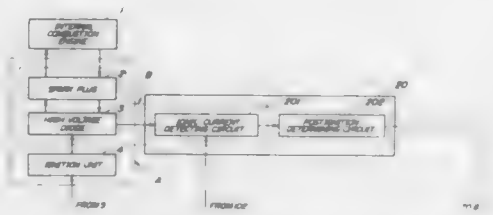
Toshiyuki Suga; Hideaki Arai, and Shinichi Kitajima, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1989, Ser. No. 373,946

Claims priority, application Japan, Jul. 1, 1988, 63-165585; Mar. 7, 1989, 1-54800

Int. Cl.[5] F02P *5/10*

U.S. Cl. 123—425 **20 Claims**



1. An abnormal combustion-detecting device for an internal combustion engine having cylinders, which detects abnormal combustion of an air-fuel mixture supplied to said cylinders to inhibit preignition of the mixture, comprising:

ignition timing-setting means for setting ignition timing for said cylinders in accordance with operating conditions in which said engine is operating;

ignition timing-retarding means for retarding the set ignition timing for at least one of said cylinders when said engine is in a predetermined operating condition; and

abnormal combustion-detecting means operable only when said ignition timing-retarding means has retarded the set ignition timing, for detecting abnormal combustion within said at least one cylinder.

5,005,548

FUEL INJECTION PUMP

Helmut Rembold, Stuttgart; Hannes Pflug, Weilderstadt; Wilhelm Christ, Ludwigsburg; Hans-Joachim Siebert, Schwieberdingen; Ewald Eblen, Stuttgart; Rodriguez-Amaya, Stuttgart; Helmut Laufer, Gerlingen; Alfred Schmitt, Ditzingen; Werner Pape, Magstadt, all of Fed. Rep. of Germany; Dominique Buisson, Venissieux, France; Pierre Lauvin, Francheville, France; Detlev Potz, Stuttgart-Nord, Fed. Rep. of Germany; Nikolaus Simon, Murnau A Staffelsee, Fed. Rep. of Germany; Jean Pigeroulet, Villeurbanne, France, and Anton Karle, Villingen, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

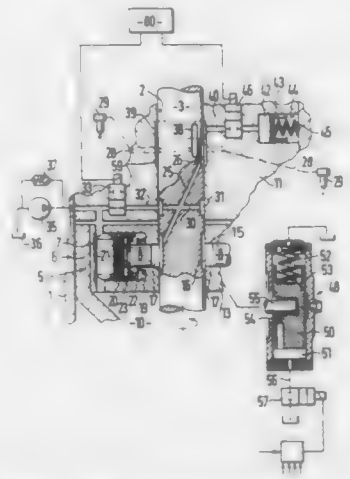
Filed Jun. 22, 1990, Ser. No. 542,125

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1989, 3922231

Int. Cl.[5] F02M *41/00*

U.S. Cl. 123—450 **19 Claims**

1. A fuel injection pump for internal combustion engines having at least one pump piston (8) defining a pump work chamber (17), said piston adapted to be driven by a cam drive (5) for executing an intake stroke and a supply stroke, said pump work chamber arranged to communicate, via a distributor line (25, 26) disposed in rotatingly driven distributor (3), in alternation with injection lines (28) which extend from a circumference of the distributor to injection locations, upon the supply stroke of the pump piston, a line (32) associating the pump work chamber (17) with a fuel supply chamber (10) which is at low pressure and the cross section of which supply chamber is controlled by a first electrically controlled valve (33), and a closing duration of said valve determining a duration of a high-pressure pumping of fuel by the pump piston, said distributor having a line (25, 26) adapted to communicate said pump work chamber through a pressure line (40) with a reservoir chamber (42) defined by a wall (43) which is adjustable counter to a restoring force, a second electrically controlled valve adapted to control a deflection motion of said adjustable wall (43), said first electrically controlled valve (33) adapted to be closed per pump piston supply stroke over a first portion (FB1–FE1) of the supply stroke of the pump piston to determine a main injection, and closed over a second remaining supply stroke portion (FB2–FE2) of the pump piston, during which at least the pressure line (40) to the reservoir chamber (42) is opened by the second electrically controlled valve (46), by means of which valve a second distributor line (39, 38) in the distributor (3) can be opened after the end of the remaining supply stroke and before the beginning of the ensuing first portion of the supply stroke, and the reservoir (42) communicates over the duration of a preinjection with the injection line (28) during the ensuing first supply stroke portion via the first distributor line (25).



5,005,549

METHOD AND APPARATUS FOR RECOGNIZING A FAULTY COMBUSTION IN AN INTERNAL COMBUSTION ENGINE

Alfons Pernpeintner, Langquaid, and Udo Frinzel, Oberkotzau, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 305,923, Feb. 3, 1989, abandoned. This application Jul. 23, 1990, Ser. No. 559,384

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1988, 3803337

Int. Cl.[5] F02P *5/14*

U.S. Cl. 123—479 **15 Claims**

1. A method for recognizing the difference between a faulty combustion condition and a normal combustion condition for any particular internal combustion engine wherein said faulty combustion condition comprises one of lack of combustion, incomplete combustion, combustion occurring outside a time frame intended for combustion for any preselected engine operating condition, and

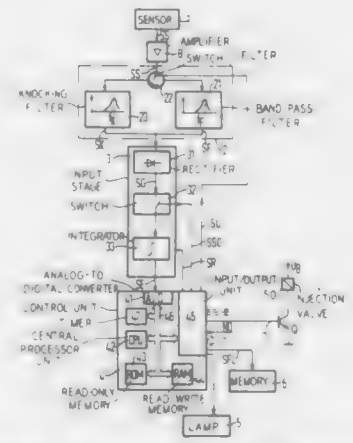
said normal combustion comprises lack of any of the aforementioned conditions, said method comprising:

sensing a frequency of vibration of the internal combustion engine using a sensor designed to output a sensor signal having spectrum components which are typical for a particular engine operating in said normal combustion condition;

passing said sensor signal through a bandpass filter which passes said typical spectrum components;

rectifying any signal portions passing through said bandpass filter to produce a rectified signal;

integrating said rectified signal during a period of time wherein the commencement of normal combustion occurs and ending said integration prior to a time during which knock may occur to produce an integrated signal;



comparing said integrated signal to a predetermined reference value for said particular engine; and

outputting a fault signal when said integrated signal remains below said predetermined reference value.

5,005,550

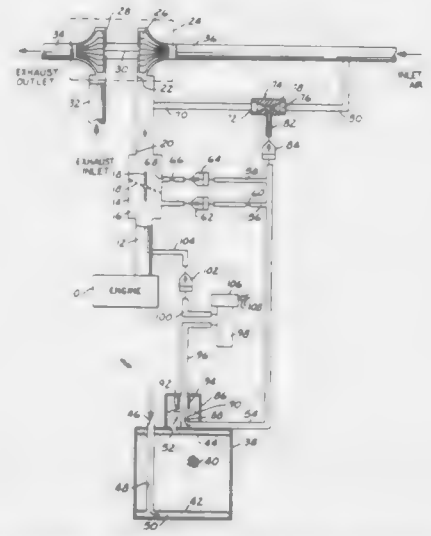
CANISTER PURGE FOR TURBO ENGINE

Marion Bugin, Jr., Troy; Gary D. Dawson, Rochester, both of Mich.; Kerry D. Franks, Lafayette, Colo.; Richard O. Geiss, Dexter, and Donald H. Kerska, Royal Oak, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 19, 1989, Ser. No. 452,433

Int. Cl.[5] F02M *25/08*

U.S. Cl. 123—520 **6 Claims**



1. With a vehicle engine which does not generate vacuum in a intake manifold under some operative conditions and utilizing an air compressor, an improved fuel vapor purge system for a vapor storage canister of the type utilizing a vacuum pressure differential to draw air through the canister, comprising: an air inlet to admit air to the canister; an air and vapor outlet to discharge air and vapor from the canister; an aspirator device including a housing having an inlet portion, an outlet portion, and a reduced dimension passage therebetween; means connecting the aspirator's inlet portion to the outlet region of the air compressor and the aspirator's outlet portion to the inlet region of the air compressor so that pressurized air is passed through the reduced dimension passage; the aspirator also having a purge passage connected to the air and vapor outlet of the canister and opening to the aspirator's reduced dimension passage whereby compressed air flowing through the aspirator's reduced dimension passage draws air through the canister so that fuel vapors are also drawn into the aspirator and then through the compressor and into the engine.

5,005,551

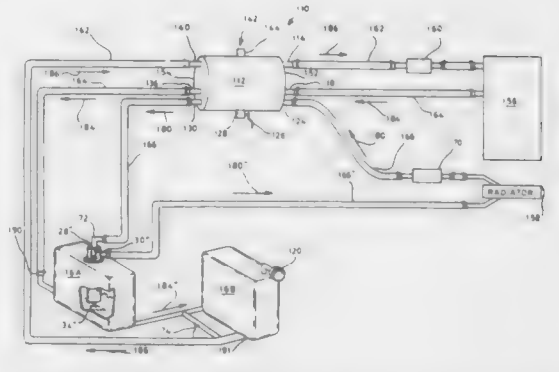
IN-LINE FUEL HEATER

Jerald R. McNelley, Rte. 2, Box 172, Benton, Tenn. 37307

Continuation-in-part of Ser. No. 306,641, Feb. 3, 1989, Pat. No. 4,926,830. This application May 7, 1990, Ser. No. 520,279

Int. Cl.[5] F02M *31/00*

U.S. Cl. 123—557 **8 Claims**



1. A system for preheating fuel for an internal combustion engine having a fuel line, comprising:

a fuel tank for storing fuel to be supplied to said fuel line, said tank having an access opening provided in an upper portion thereof;

an elongated first heat exchanger installed through and secured to said access opening, a substantial portion of said first heat exchanger being contained within said fuel tank;

said first heat exchanger defining an inlet port and an outlet port proximate a first end portion of said first heat exchanger positioned externally of said fuel tank;

a heated fluid chamber defined by said first heat exchanger communicating between said inlet and outlet ports, said heated fluid chamber including a divider plate which separates said heated fluid chamber into an inlet section communicating with said inlet port and an outlet section communicating with said outlet port, said divider plate being positioned such that a heated fluid entering said inlet port flows toward a second end portion of said first heat exchanger where said heated fluid flows through said outlet section of said heated fluid chamber and exits through said outlet port;

a source of said heated fluid;

means for providing fluid communication between said source of heated fluid and said inlet and outlet ports of said first heat exchanger;

said first heat exchanger further comprising a fuel tube passing substantially axially through said heated fluid chamber and forming a portion of said divider plate, said fuel tube having a fuel inlet end positioned externally of said heated fluid chamber proximate said second end portion of said first heat exchanger in fluid communication with said fuel in said fuel tank, and said fuel tube having a fuel outlet end with ninety degree elbow positioned externally of said heated fluid chamber proximate said first end portion of said first heat exchanger in fluid communication with said fuel line of said internal combustion engine;

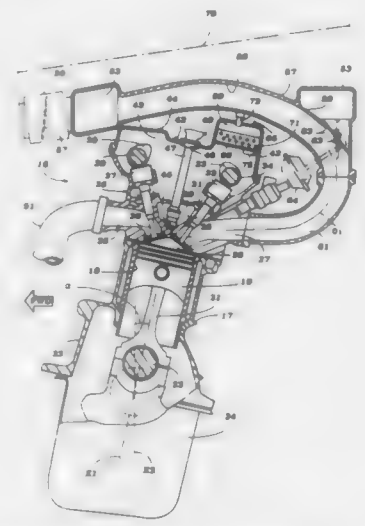
a second heat exchanger installed in series with said fuel line intermediate said fuel tank and said internal combustion engine;
a fuel storage means portion of said second heat exchanger for storing a quantity of said fuel;
a heat transfer means portion of said second heat exchanger for transferring heat from said heated fluid to said fuel stored in said storage means;
inlet and outlet means portions of said second heat exchanger for connecting to said second heat exchanger, to said fuel line, to said heated fluid source, and to a source for unused fuel returned from said engine;
attaching means for attaching said second heat exchanger to said vehicle;
whereby said fuel in said fuel tank is heated by heat transferred from said heated fluid contained within said heated fluid chamber through the walls of said first heat exchanger;
whereby fuel drawn from said fuel tank through said fuel tube into said fuel line is further heated by heat transferred from said heated fluid contained by said heated fluid chamber which surrounds said fuel tube in said first heat exchanger;
whereby fuel drawn from said fuel tank through said first heat exchanger is further heated in said second heat exchanger by heat transferred from said heated fluid through walls of a fluid-conveying pipe immersed in said fuel stored in said second heat exchanger storage means;
whereby said return fuel being returned from said engine is further heated while passing through said second heat exchanger; and
whereby said fuel in said fuel tank receives heat in the process of being mixed with said heated return fuel being returned from said engine.

5,005,552
EXHAUST GAS RECIRCULATION SYSTEM OF ENGINE
Hideo Kawamura, Samukawa, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan
Filed Apr. 25, 1990, Ser. No. 514,456
Claims priority, application Japan, May 9, 1989, 1-114140
Int. Cl.[5] F02M *25/07*
U.S. Cl. 123—571 **10 Claims**



1. An exhaust gas recirculation system of an engine, comprising:
a cylinder block;
cylinders formed in said cylinder block;
a cylinder head fixed to said cylinder block;
combustion chambers defined by said cylinder head and said cylinders;
intake ports and exhaust ports formed in said cylinder head;
intake valves opening and closing for introducing intake air into said combustion chambers, each being disposed at each of said intake ports;
exhaust valves opening and closing either for exhausting a combustion gas of said combustion chambers from said combustion chambers to said exhaust ports or for introducing the exhaust gas from said exhaust ports into said combustion chambers, each being disposed at each of said exhaust ports;
electromagnetic valve driving devices for actuating said intake valves and said exhaust valves for opening and closing by electromagnetic force, respectively;
detection means each for detecting an intake flow rate flowing into each of said combustion chambers through each of said intake ports; and
a controller for actuating each of said electromagnetic valve driving devices to open and close each of said intake valves and said exhaust valves, detecting the intake flow rate under the state where exhaust gas recirculation is made and the intake flow rate under the state where exhaust gas recirculation is stopped, by said detection means, and comparing the detection signals of said intake flow rates so as to detect an exhaust gas recirculation flow rate.

5,005,553
VENTILATION SYSTEM FOR AUTOMOTIVE ENGINE
Takehiro Washizu, and Tsutomu Nagamatsu, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Feb. 27, 1990, Ser. No. 485,458
Claims priority, application Japan, Feb. 28, 1989, 1-47312
Int. Cl.[5] F02M *25/00*
U.S. Cl. 123—572 **10 Claims**



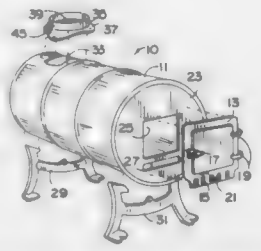
1. An internal combustion engine having a cylinder block with at least one cylinder bore formed therein, a cylinder head assembly affixed to said cylinder block and closing said cylinder bore, a crankcase ventilation oil separator affixed to said cylinder head assembly and protruding at least in part upwardly therefrom, an intake port formed in one side of said cylinder head assembly for supplying a charge to said cylinder bore, and an intake manifold extending from said intake port and across said cylinder head assembly toward the other side thereof and above said crankcase ventilation oil separator, said cylinder block being disposed with its axis inclined to the vertical for increasing the distance between said crankcase ventilation oil separator and said intake manifold without increasing the height of the engine.

5,005,554
BOW HANDLE RISER
Pete Shepley; Richard Johnston, and Allan F. Smith, all of Tucson, Ariz., assignors to Precision Shooting Equipment Company, Tucson, Ariz.
Continuation of Ser. No. 920,080, Oct. 17, 1986, abandoned. This application May 23, 1988, Ser. No. 197,294
Int. Cl.[5] F41B *5/10*
U.S. Cl. 124—24.1 **18 Claims**



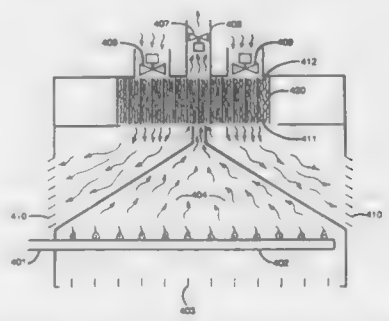
1. A bow handle for use with an overdraw arrow support having means for supporting an arrow with an arrowhead and vanes in an overdraw configuration, said handle having a hand grip, an upper limb mount, a lower limb mount and a pair of limbs, a bow string between the ends of said limbs, said bow string as drawn defining a bow string plane, said handle comprising,
a sight window face displaced from the plane of the bow string,
a sight window overdraw offset adjacent the hand grip and offset from the sight window face and the plane of the bow string to provide clearance for the arrowhead and the vanes of said arrow,
a sight window overdraw offset base adjacent said hand grip,
said sight window face being between said sight window overdraw offset and said upper limb mount,
said sight window overdraw offset having a sight window overdraw offset return remote from the base and terminating at the sight window face.

5,005,555
WOOD BURNING APPARATUS
Steven J. Vogelzang, 555 Bay View Ave., Holland, Mich. 49423
Filed Feb. 23, 1990, Ser. No. 483,741
Int. Cl.[5] F24C *1/00*
U.S. Cl. 126—60 **1 Claim**



1. A wood burning heater which operates at a high enough temperature to substantially reduce the amount of particulate matter contained in the exhaust products when consuming wood at the rate of at least 5 kg per hour comprising:
a fire box for containing wood to be burned having an exhaust port for the emission of the combustion products produced by the burning of wood in said fire box;
an access member for adding wood to said fire box;
an air controller for regulating the amount of air entering said fire box and which is normally in its closed position when burning wood at the rate of at least 5 kg per hour;
a cast iron collar having an outwardly extending peripheral flange having apertures therein, fastening means extending through said openings and attaching said flange to said fire box about said exhaust port;
a rotatable shaft extending through aligned apertures in said collar;
a handle on one end of said rotatable shaft and a spring positioned on said rotatable shaft between said handle and said collar, said spring holding said damper in position when moved;
a cast iron adjustable damper plate permanently installed in said collar, said damper plate being welded to said rotatable shaft so that it cannot be removed without destroying the usefulness of said damper plate or said collar, said damper plate having a peripheral edge of substantially the same inner configuration as said collar and having at least one aperture therein which, when said damper plate is in the closed position, normal to the flow of combustion products through said collar, will allow the passage of the combustion products produced during the burning of wood at the rate of at least 5 kg per hour.

5,005,556
EFFICIENT GAS HOT-AIR FURNACE AND HEATING PROCESS
William B. Astle, Jr., 146 Old Farm Rd., Leominster, Mass. 01453
Filed Jun. 8, 1989, Ser. No. 364,614
Int. Cl.[5] F24H *3/06*; F28D *19/04*
U.S. Cl. 126—110 R **31 Claims**



1. Space heating apparatus in which fuel gas is burned and heat is transferred from the resulting combustion gases to a cool air stream to produce heated air, said apparatus comprising:
a combustion chamber, said chamber comprising
an inlet for receiving combusion air and
a burner for burning fuel gas in said combustion air to produce combustion gases; and
a primary heat exchanger for receiving said combustion gases and for extracting the majority of the heat of combustion from said gases, said primary heat exchanger comprising
a porous heat sink member,
ducting for delivering said combustion gases to said heat sink member, said gases being delivered along a combustion-gas path,
a blower and ducting for directing cool air along a cool air path to said heat sink member, and
means for drawing said combustion gases and cool air through said porous heat sink member so that portions of

said member alternately pass through said combustion-gas path and said cool-air path, to transfer heat from said combustion gases to said cool air,

wherein said cool air is directed to said heat sink member along two separate cool-air paths, and wherein said means for moving said heat sink member includes means to pass most portions of said member alternately through said combustion-gas path and both said cool-air paths.

5,005,557

HEAT-INSULATING BUILDING AND/OR LIGHT ELEMENT

Emil Bächli, Marktgasse 7, CH-5304 Endigen, Switzerland

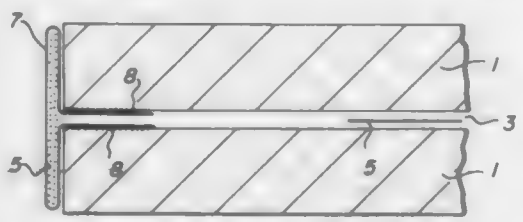
PCT No. PCT/CH86/00166, § 371 Date Jul. 22, 1987, § 102(e) Date Jul. 22, 1987, PCT Pub. No. WO87/03327, PCT Pub. Date Jun. 4, 1987

PCT Filed Dec. 1, 1986, Ser. No. 38,850

Claims priority, application Switzerland, Nov. 29, 1985, 5091/85; Apr. 16, 1986, 1558/86; Sep. 18, 1986, 3737/86

Int. Cl.[5] F24J *3/02*

U.S. Cl. 126—441 **22 Claims**



1. Heat insulating building and/or light element comprising at least two substantially parallel wall elements having flat support elements therebetween and a tight bond in the edge area of said wall elements to define an evacuable interspace between said wall elements, characterized in that said interspace (3) is evacuated to a vacuum between 1 and 10^{-2} mbar and the distance between wall elements (1) is smaller that the free path length of air molecules as determined for that vacuum whereby the heat conductivity of the air molecules between the wall elements is substantially cancelled, said tight bond comprising a metallic foil seal enclosing said interspace and absorbing differences in expansion of said wall elements resulting from differences in the temperatures of said wall elements.

5,005,558

ENDOSCOPE

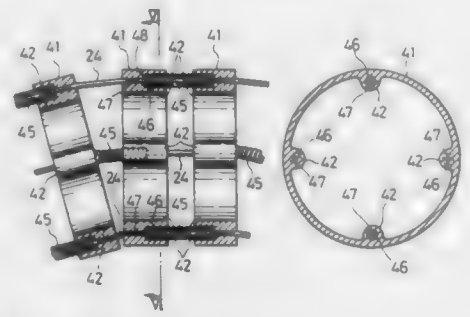
Kohkichi Aomori, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 16, 1989, Ser. No. 352,311

Claims priority, application Japan, May 16, 1988, 63-117024; Dec. 1, 1988, 63-302202

Int. Cl.[5] A61B *1/00*

U.S. Cl. 128—4 **19 Claims**



11. A bending tube part comprising:

ring link members having peripheral holes, the wires passing through the peripheral holes; and

flexible connection members for coupling two adjacent ring link members at alternate pairs of sides to connect the ring link members with one another in series, each flexible connection member being composed of a single flexible elongate member which is flexible in a direction approximately perpendicular to a longitudinal direction thereof, opposite ends of each flexible connection member being secured to the ring link members.

5,005,559

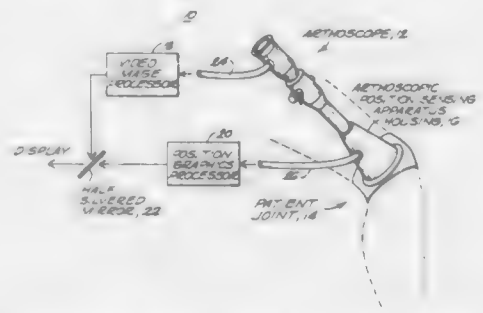
VIDEO-GRAPHIC ARTHROSCOPY SYSTEM

Ernesto E. Blanco, Belmont; Pascal R. Chesnais, Allston, both of Mass.; Phyllis K. Kristal, Glen Cove, N.Y., and Andrew B. Lippman, Salem, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 27, 1989, Ser. No. 386,343

Int. Cl.[5] A61B *1/06*

U.S. Cl. 128—4 **5 Claims**



1. An arthroscopic display system for displaying the location of an arthroscope during use, the display system comprising:

position-sensing means adapted for cooperation with an arthroscope for monitoring movement of the arthroscope and for generating electrical signals indicative of the movement including means for monitoring at least the tilt of the arthroscope during operation; and

graphic display means electrically connected to the position-sensing means for converting the electrical signals into a graphic display of the position of the arthroscope during use.

5,005,560

INTEGRAL FOOT MASSAGE AND SUPPORT APPARATUS

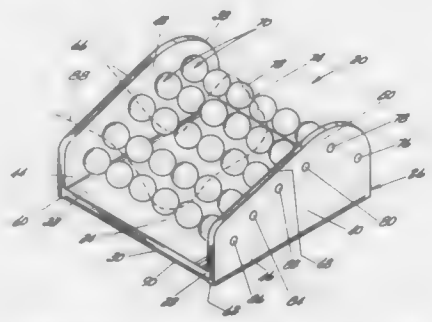
William M. Quam, and Dorothy M. Quam, both of 241 Conejo Rd., Santa Barbara, Calif. 93101

Filed Nov. 29, 1982, Ser. No. 445,196

The portion of the term of this patent subsequent to Jul. 14, 2004, has been disclaimed.

Int. Cl.[5] A61H *15/00*

U.S. Cl. 128—57 **10 Claims**



1. A combined foot message and support comprising

a base support including a base plate having a substantially planar surface and a second opposite surface;

a pair of substantially planar side support members each of which terminates in a first support end and a second support end, said first support end of each of said side support members including means defining a substantially planar support surface and said second support end of each of said side support members being located opposite said first support end and including means defining a ramp support surface having a slope which approximates about 10° to about 20° to reduce fatigue, stress and discomfort of the thigh, lower leg and foot of a human user in a sitting position, said substantially planar side support members being operatively coupled to and extending in the same substantially normal direction from said base support and base plate and in a spaced parallel relationship to each other with the substantially planar support surface of each of said planar side support members forming a support and with the ramp support surface of each of said planar side support members positioned to have the slope of the ramp support surface extending in the same direction;

a plurality of massage assemblies each of which includes an axially extending center support member and a plurality of annular shaped massage elements mounted axially on and rotatable about said center support members, said center support members being mounted in an arcuate, spaced parallel alignment between said spaced parallel planar side support members above said base support and above said opposite side of the base plate, said plurality of massage elements being mounted on said center support members and having a radius which extends therefrom to below said ramp support surfaces to form a convex shaped, angularly disposed treating surface which extends substantially between said substantially parallel side support members;

said foot massage and support being adapted to have a massage position wherein the base support, the substantially planar surface of the base plate and the substantially planar surface of the side support members are positioned on a supporting surface placing the convex shaped, angularly disposed treating surface in a massage position which is adapted to receive the feet of a user which may be massaged by movement of the feet relative to the rotatably mounted massage elements and a support position wherein the ramp support surfaces of the second support end of each side support members are positioned on a supporting surface placing the base support including the substantially planar surface of the base plate at an angle to receive and support the feet of a user.

5,005,561

INSTRUMENT FOR SKIN-STIMULATING THERAPY

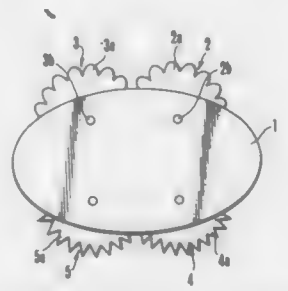
Kiyoshi Nishikawa, 2-6-19, Nakane, Meguro-ku, Tokyo, Japan

Filed Jan. 31, 1989, Ser. No. 304,761

Claims priority, application Japan, Feb. 3, 1988, 63-13444

Int. Cl.[5] A61H *15/00*

U.S. Cl. 128—60 **6 Claims**



1. An instrument for a skin-stimulating therapy having an effect similar to an acupuncture treatment, comprising:

a plurality of assemblies arranged in parallel relationship to each other, each of said assemblies including:

a plurality of skin-stimulating toothed wheels of the same diameter arranged in parallel relationship with each other, the teeth being rigid and having sharp edges at their ends; and

a casing for pivotably supporting each of said assemblies of toothed wheels to allow independent rotation of said toothed wheels;

each of said assemblies of toothed wheels partly projecting said teeth outwardly of said casing to constitute a skin-stimulating acupuncturing assembly;

at least one of said assemblies including stimulating toothed wheels having a tooth shape which is different from that of another assembly.

5,005,562

IMPLANT FOR SPINAL OSTEOSYNTHESIS DEVICE, IN PARTICULAR IN TRAUMATOLOGY

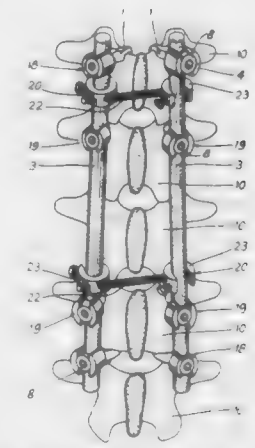
Yves Cotrel, Paris, France, assignor to Societe de Fabrication de Material Orthopedique, Berck Sur Mer, France

Filed Jun. 21, 1989, Ser. No. 369,701

Claims priority, application France, Jun. 24, 1988, 88 08538

Int. Cl.[5] A61F *5/00*

U.S. Cl. 128—69 **11 Claims**



1. Implant for an osteosynthesis device, in particular of the spine, comprising anchorage portion means for anchoring the implant to bone and body attaching means for attaching the implant to a rod, said body attaching means having two side branches defining a channel open at both sides of the body attaching means in order to be able to receive the rod and open to a rear portion of the body attaching means, and a threaded plug, a female thread formed in inner walls of said two side branches at the rear portion of the body attaching means, said threaded plug being screwed into said female thread to close the channel at said rear portion, the plug having a face directed towards the rod said face being equipped with means for gripping and attaching the plug to the rod in a manner in which the rod will be clamped to prevent translation and rotation.

5,005,563

MOBILE-CERVICAL EXTENSION AND SUPPORTING APPARATUS

Charles J. Veale, 1456 Opelika Rd., Auburn, Ala. 36830

Filed Jun. 18, 1990, Ser. No. 539,541

Int. Cl.[5] A61F *5/01*

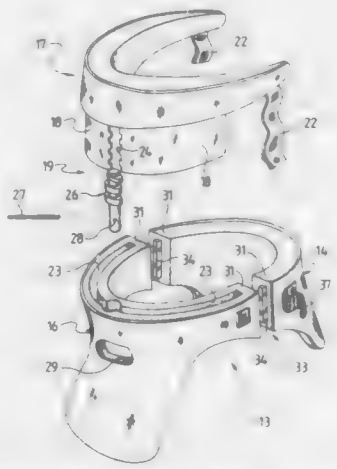
U.S. Cl. 128—75 **13 Claims**

1. An apparatus for supporting and stabilizing the cervical vertebrae in a human patient under various levels of extension thereof comprising:

a. an anterior base member resting on the sternum, clavicle and anterior shoulder area with an upwardly extending arcuate portion adjacent to the anterior neck area;

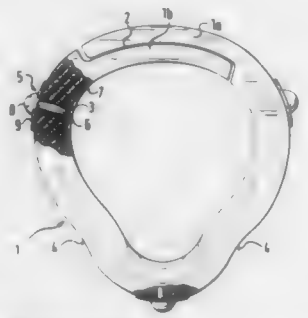
b. a posterior base member resting on the scapula and posterior shoulder area of the patient with an upwardly extending arcuate portion adjacent to the posterior neck region;

c. connecting means securing said anterior base member to said posterior base member on both the right and left side of neck;
d. cranial support means adapted to be positioned beneath the mandibular bone and the base of the cranial cavity for support thereof and extending about the skull from the right chin area to the left chin area;



e. an extension means connecting said posterior base member and said cranial support means for moving said cranial support means to various positions relative to said posterior base member to selectively extend the cervical spine; and
f. a chin support detachably affixed to the cranial support means.

5,005,564
CERVICAL SUPPORT
Jaana Grundei, Lübeck, and Andreas Timmermann, Ekelsdorf, both of Fed. Rep. of Germany, assignors to ADEV Gesellschaft fur Entwicklung und Vertrieb von medizintechnishen Artikein mbH, Lubeck, Fed. Rep. of Germany
Filed Feb. 12, 1990, Ser. No. 479,090
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1989, 3906232
Int. Cl.[5] A61H *1/02*; A61F *5/04*
U.S. Cl. 128—75 **6 Claims**



1. A cervical support comprising:
a substantially inherently stable support member of resilient foam material for encircling the neck of a patient and having a nape support rear region, two lateral jaw support regions extending from a larynx region, said jaw support regions terminating in free end parts which overlap each other in said nape support region; and jaw support regions having upper and lower edge contours adapted to the anatomical shape of the parts of the patient's body to which said contours are adjacent when the cervical support is in use;
means for adjustably and releasably connecting said free end parts together in said nape support region; and locally stabilizing support means releasably connectable to the support member, said stabilizing support means comprising at least one support element having a shank which has one end insertable into a radial opening in said support member to extend therethrough, said shank having a large area head for abutment against the inner circumference of the support member to locally stiffen the support member, the other end of said shank adapted to abut the outer circumference of said support member.

5,005,565
THIGH AND KNEE PROTECTIVE DEVICE
Gary R. Fratesi, 112-C Heritage Village, Southbury, Conn. 06418
Continuation-in-part of Ser. No. 203,092, Jun. 7, 1988, abandoned. This application Aug. 10, 1989, Ser. No. 392,426
Int. Cl.[5] A61F *5/00*
U.S. Cl. 128—80 C **10 Claims**



1. In combination with an article of athletic apparel of the type having at least one portion that encircles the wearer's thigh and that defines an inside pocket with an upwardly open entry to the pocket, a thigh and knee guard for use between the wearer's leg and the pocket defining article of apparel, said thigh and knee guard comprising:
(a) a molded plastic thigh guard having an upper portion of arcuate cross section conforming to the user's thigh and a lower portion of inverted U-shaped with inside and outside extensions adapted for placement alongside the inside and outside of the wearer's knee,
(b) a lower leg guard having an upper portion of U-shape with inside and outside projections adapted for placement alongside said inside and outside extensions respectively,
(c) means pivotably connecting said thigh guard extensions and said lower leg guard projections to provide limited pivotal movement of said lower leg guard relative to said thigh guard,
(d) pad means removably secured to said thigh and lower leg guards and including a medial portion for covering the wearer's kenn, said thigh and lower leg guards defining a knee opening for said medial portion,
(e) a plate secured to said upper portion of said thigh guard and extending downwardly in spaced relationship to said thigh guard upper portion, said plate shaped to fit into said apparel article pocket for supporting and locating said thigh guard and lower leg guard on the wearer's leg and inside said apparel article.

5,005,566
WATER-ACTIVATED ORTHOPEDIC CAST COMPOSITION HAVING COLORANT
William C. Klintworth, Jr., Tulsa, Okla., assignor to Carapace, Incorporated, Tulsa, Okla.
Division of Ser. No. 4,087, Jan. 15, 1987, Pat. No. 4,934,356. This application May 24, 1990, Ser. No. 528,156
Int. Cl.[5] A61F *13/04*; A61L *15/10, 15/14*
U.S. Cl. 128—90 **7 Claims**

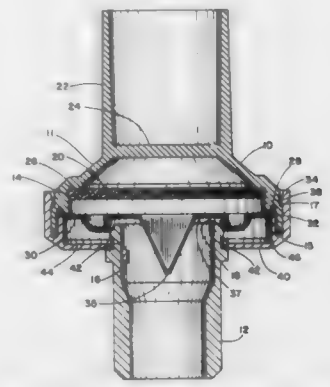
1. A method of forming an orthopedic cast about the epidermis of a body member comprising the steps of preparing, in a substantially moisture free environment, a first premix "A" of an isocyanate resin, a defoaming agent and a stabilizer/preservative, preparing a second premix "B" comprising a polyol and at least one reaction catalyst, separating a minor portion, dissolving said colorant in said minor portion and recycling and mixing said colorant added minor portion into said major portion of said premix "B", mixing said resultant premix "B" with said premix "A" to create said resultant pre-polymer, coating a flexible fabric with said resultant pre-polymer, wetting said coated fabric with water, wrapping said body member with said water-wetted coated fabric, and allowing same to harden.

5,005,567
METHOD FOR TREATING LEG WOUNDS
Thomas H. Gilman, Mansfield, and Betsy C. Westlake, Norton, both of Mass., assignors to The Kendall Company, Mansfield, Mass.
Filed Aug. 24, 1989, Ser. No. 397,606
Int. Cl.[5] A61F *13/00*
U.S. Cl. 128—165 **17 Claims**

1. A method for treating leg wounds requiring both bandaging and the application of compressive pressure, comprising the steps of:
(1) applying a dressing covering the wound;
(2) putting a first stocking on the leg and over the wound, said stocking being characterized as being a loosely knit stocking which easily slips on the leg and over the wound; and
(3) putting a second stocking on over said first stocking, said second stocking being an elastic stocking which applies said compressive pressure to the wound, the coefficient of friction between the outer surface of said first stocking and the inner surface of said second stocking frictionally engaging one another in putting on said second stocking being relatively low as compared to the coefficient of friction between the inner surface of said second stocking and said leg and dressing, whereby greatly to facilitate putting on said elastic second stocking to apply said compressive pressure.

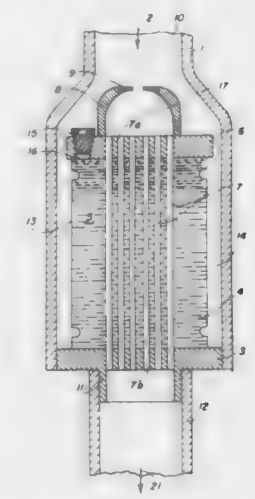
5,005,568
ISOLATION VALVE
Thomas C. Loescher, Encinitas; Thomas P. Shanks, Temecula, and Henry E. Garcia, Homeland, all of Calif., assignors to Hudson Respiratory Care Inc., Temecula, Calif.
Continuation of Ser. No. 105,726, Oct. 7, 1987, abandoned. This application Mar. 7, 1989, Ser. No. 320,868
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—202.28 **7 Claims**

1. An isolation valve assembly for use in administering mouth-to-mouth emergency artificial respiration comprising:
a housing assembly comprising an inlet member having a first cylindrical wall portion and an inlet pipe extending therefrom having an inside first diameter, and an outlet member having a second cylindrical wall portion with a plurality of exhaust ports therethrough and an outlet pipe extending therefrom having an inside second diameter, said first and second cylindrical wall portions being matingly engaged to define an interior chamber having a third diameter, which is greater than either said first or said second diameter,
a flexible diaphragm secured across said interior chamber, said diaphragm having a one-way valve therein for allowing gas to pass only from said inlet member to said outlet member and sealing means for forming a gas tight seal against said outlet member and closing said exhaust ports when gas is directed through said one-way valve, and



a cylindrical filter member spaced apart from said inlet pipe and secured in and extending across said interior chamber between said inlet pipe and said diaphragm, said filter member having a diameter greater than the inside diameter of either said inlet pipe or said outlet pipe, wherein said valve assembly has a back pressure of less than about 6 cm H_2O at a flow of 50 liters per minute.

5,005,569
VENTILATORY AIR HUMIDIFIER FOR A BREATHING EQUIPMENT
Adalbert Pasternack, Bad Schwartau, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany
Filed May 11, 1989, Ser. No. 350,846
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1988, 3819988
Int. Cl.[5] A61M *15/00*
U.S. Cl. 128—204.13 **8 Claims**



1. A humidifier for a respiratory device comprising an outer housing having a respiratory air outer housing inlet and a respiratory air outer housing outlet, at least one passage having a respiratory air passage inlet and a respiratory air passage outlet arranged in said outer housing with said passage outlet in a flow stream from said outer housing inlet, a pressure wall in

said outer housing, at least a portion of said wall being made of flexible material which is movable in response to pressure changes of said wall, water between said at least one passage and said pressure wall, said pressure wall being spaced inwardly from the interior of said outer housing and thereby defining an antechamber between said pressure wall and the interior of said outer housing, said antechamber being in communication with said passage inlet, and throttle means between said outer housing inlet, said passage inlet, and said antechamber.

5,005,570

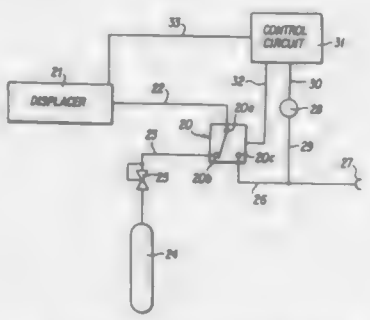
METHOD AND MEANS FOR DISPENSING RESPIRATING GASES BY EFFECTING A KNOWN DISPLACEMENT

Warren E. Perkins, 9960 S A-1-A, Apt. 1901, Jensen Beach, Fla. 34957

Division of Ser. No. 112,117, Oct. 25, 1987, Pat. No. 4,873,971, which is a continuation-in-part of Ser. No. 783,121, Oct. 2, 1985, Pat. No. 4,705,034. This application Oct. 3, 1989, Ser. No. 416,511

Int. Cl.[5] **A62B** *17/04, 18/00, 7/00;* **A61M** *16/00*

U.S. Cl. 128—204.23 **14 Claims**



1. A device for supplying premeasured doses of respirating gas to a patient in synchronization with the respiratory cycle of the patient comprising:

a source of respirating gas at relatively high pressure;

containment means having a volume sized to measure a prescribed single dose quantity of said respirating gas at source pressure and to temporarily store said measured dose;

means for sensing the onset of inhalations of the patient and for producing signals in response to said sensing;

valve means arranged to move between a first position and a second position in response to said produced signals, said valve means comprising a three-way valve having two option ports and a common port;

cannula means;

first gas flow routing means for connecting said gas source to one of said option ports;

second gas flow routing means for connecting said containment means to said common port;

third gas flow routing means for connecting one end of said cannula means to the other of said option ports; and

means connected to the other end of said cannula means and adapted for communication with the nasal cavity of the patient, said valve means in its first position connecting said first gas flow routing means to said second gas flow routing means and placing said gas source in communication with said containment means thereby filling said containment means with respirating gas at source pressure, said valve means in its second position connecting said second gas flow routing means to said third gas flow routing means and placing said containment means in communication with said means connected to the other end of the cannula means thereby releasing said measured dose quantity of respirating gas from said containment means and conveying said gas dose to the patient.

5,005,571

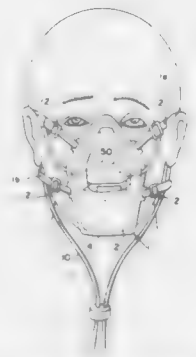
MOUTH NOSE MASK FOR USE WITH AN INHALATION THERAPY AND/OR BREATHING MONITORING APPARATUS

Henry G. Dietz, 80 Salisbury Ave., Garden City, N.Y. 11530

Filed Nov. 25, 1988, Ser. No. 276,293

Int. Cl.[5] **A62B** *18/02*

U.S. Cl. 128—205.25 **2 Claims**



1. A mouth nose mask which covers the mouth and nose in combination with a nasal cannula to function during breathing cycles of humans when breathing through the nose or mouth comprising:

a formed seal of flexible material adapting to the contours of a human face and being supported by the chin and the upper nasal bone,

means within said formed seal for allowing the passage of outside air into the mask,

means bonded to said formed seal including a flat plate having an opening for the passage of outside air into the mask, a formed projection for nose clearance and means for supporting said mask on a human face including four holes within said plate and four straps,

means connectable operatively through said mask to the respiratory system of a human for sensing inspiration.

5,005,572

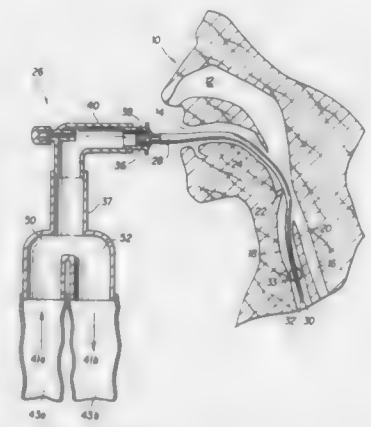
CO_2 INDICATOR AND THE USE THEREOF TO EVALUATE PLACEMENT OF TRACHEAL TUBES

Daniel B. Raemer, Brookline; David R. Walt, Lexington, and Christianne Munkholm, Salem, all of Mass., assignors to Brigham & Women's Hospital, Boston, Mass.

Continuation of Ser. No. 161,046, Feb. 26, 1988, abandoned. This application Jan. 31, 1989, Ser. No. 303,952

Int. Cl.[5] **A61M** *16/00*

U.S. Cl. 128—207.14 **8 Claims**

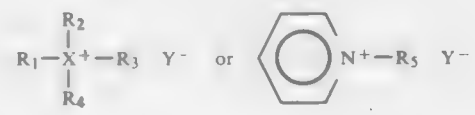


1. Apparatus, comprising:

means for enabling visual observation of proper placement of an endotracheal tube in the trachea of a patient, said means comprising:

a. an endotracheal apparatus which indicates a tracheal tube defining a gas path; and

b. a CO_2 detector disposed within said endotracheal apparatus at a location which is in said gas path of said tube and is visible when said endotracheal tube is inserted, said detector comprising a backing and an indicator material, said indicator material comprising a support material, a pH-sensitive dye, and a phase transport enhancer for enhancing a reaction between H_2CO_3 and said pH-sensitive dye, said phase transport enhancer having the formula:



wherein

X=N or P,

R_1, R_2, R_3 and R_4 are selected from the group consisting of C_1–C_{12} alkyl,

C_1–C_4 substituted alkyl wherein the substituent is a C_1–C_4 alkyl or phenyl group,

naphthyl,

benzyl, and

pyridine;

R_5 is selected from the group consisting of C_1–C_{12} alkyl and benzyl; and

Y^- is an anion selected from the group consisting of hydroxide, fluoride, chloride, bromide, iodide, carbonate and tetrafluoroborate.

5,005,573

ENDOTRACHEAL TUBE WITH OXIMETRY MEANS

Dale C. Buchanan, 4217 Horseshoe Bend, Matthews, N.C. 28105

Filed Jul. 20, 1990, Ser. No. 556,947

Int. Cl.[5] **A61M** *16/00*

U.S. Cl. 128—207.14 **7 Claims**

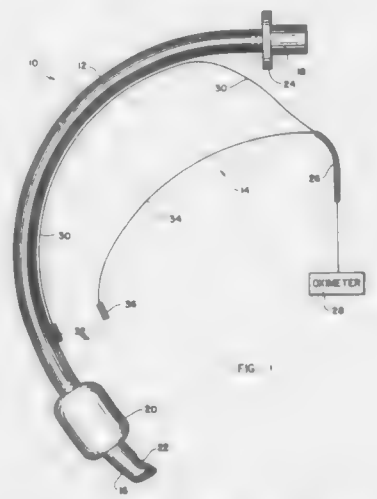


FIG. 1

1. In an endotracheal tube for insertion within a surgical patient's trachea for assisting breathing during surgical and like procedures, the improvement comprising means for transmitting light outwardly from a predetermined location on said tube which resides within the patient's trachea during use, means for detecting light transmitted by said transmitting means, said detecting means being manipulable outside the patient's body for selective positioning on the patient's neck in disposition for receiving light transmitted by said transmitting means, and means for operatively connecting said transmitting means and said detecting means with an oximeter for measuring oxygen saturation in the patient's arterial blood as a function of the transmitted light received by said detecting means.

5,005,574

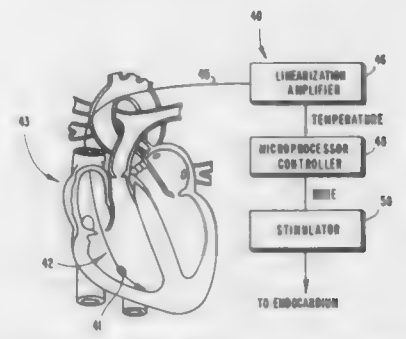
TEMPERATURE-BASED, RATE-MODULATED CARDIAC THERAPY APPARATUS AND METHOD

Neal E. Fearnot, and Merry L. Evans, both of West Lafayette, Ind., assignors to Medical Engineering and Development Institute, Inc., West Lafayette, Ind.

Filed Nov. 28, 1989, Ser. No. 442,224

Int. Cl.[5] **A61N** *1/362*

U.S. Cl. 128—419 PG **73 Claims**



1. A temperature-based, rate-modulated cardiac therapy device, comprising:

means for sensing central venous blood temperature; and

processing means coupled to said sensing means for calculating cardiac rate as a function of temperature conditions, one of said conditions including a dip in central venous blood temperature at the onset of exercise, said processing means including

means for calculating a first rate component proportional to the magnitude of said dip; and

means for increasing cardiac rate by said first rate component.

5,005,575

PLANTAR SUPPORT

Luciano Geri, Lungarna Simonelli No. 1, 56100 Pisa, Italy

Filed Oct. 31, 1988, Ser. No. 265,038

Claims priority, application Italy, Nov. 9, 1987, 9536 A/87

Int. Cl.[5] **A61F** *5/14, 5/32*

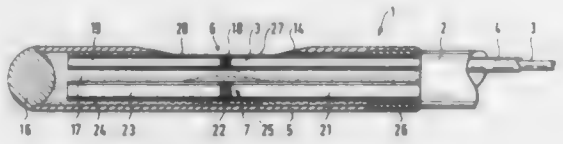
U.S. Cl. 128—581 **6 Claims**



1. A plantar support for use in a shoe comprising a unitary body including a plurality of cavities having elastically flexible walls and joined by a flat web, the cavities being sealed off from each other and containing dry, mobile fillings of granular material defining discrete, resiliently deformable, raised pads spaced apart by flat, unfilled, foot engaging portions of the web, the pads being for adjustment of selected spaced apart

bearing surfaces of the foot, a wall of each cavity being pierceable by a hollow needle and self-closing so that the filling material can be controllably introduced into or removed from the cavity through the needle to adjust the pad.

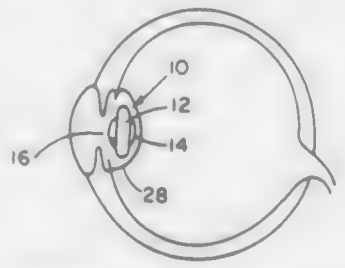
5,005,576
OPTICAL PROBE
Martin Günther, Wildberg, Fed. Rep. of Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Mar. 30, 1989, Ser. No. 332,080
Claims priority, application European Pat. Off., Apr. 9, 1988, 88105676.6
Int. Cl.[5] A61B *6/00*
U.S. Cl. 128—634 **3 Claims**



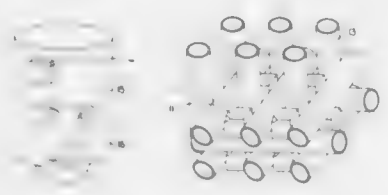
1. An optical probe comprising:
an outer sheath having a first end, a second end, and at least one opening therethrough between said first end and said second end;
a blood gas sensor unit positioned within said sheath comprising an optical fiber having a first end and a second end, said first end terminating within said sheath, said blood gas sensor unit further comprising a portion of gel positioned adjacent said first end of said optical fiber, said portion of gel having at least one dye therein, said dye having an absorption spectrum dependent on the concentration of a blood gas selected from the group consisting of oxygen and carbon dioxide, and a reflector unit positioned adjacent said portion of gel for reflecting light from said optical fiber which has passed through said portion of gel;
a pH sensor unit positioned within said sheath comprising an optical fiber having a first end and a second end, said first end terminating within said sheath, said pH sensor unit further comprising a portion of gel positioned adjacent said first end of said optical fiber, said portion of gel having at least one dye therein, said dye having an absorption spectrum dependent on hydrogen ion concentration, and a reflector unit positioned adjacent said portion of gel for reflecting light from said optical fiber which has passed through said portion of gel; and
a portion of gas-permeable adhesive within said sheath, said adhesive entirely covering said blood gas sensor unit, and covering only part of said pH sensor unit in order to divide said pH sensor unit into an uncovered section and a covered section, said uncovered section being positioned directly adjacent to and in alignment with said opening in said sheath in order to allow blood passing through said opening to come in contact with said uncovered section.

5,005,577
INTRAOCULAR LENS PRESSURE MONITORING DEVICE
Ronald E. P. Frenkel, 1501 Beacon St., No. 202, Brookline, Mass. 02146
Filed Aug. 23, 1988, Ser. No. 235,321
Int. Cl.[5] A61B *3/16*
U.S. Cl. 128—645 **10 Claims**

1. An apparatus for monitoring intraocular pressure comprising an intraocular lens implantable within the eyeball and at least one sensor apparatus affixed to said implantable intraocular lens and implantable therewith within the eyeball, said sensor apparatus being responsive to intraocular pressure.

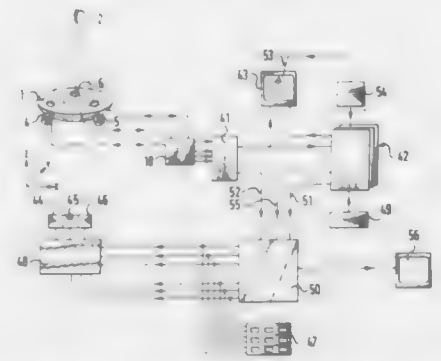


5,005,578
THREE-DIMENSIONAL MAGNETIC RESONANCE IMAGE DISTORTION CORRECTION METHOD AND SYSTEM
Douglas S. Greer, and Alan S. Gevins, both of San Francisco, Calif., assignors to SAM Technology, Inc., San Francisco, Calif.
Continuation-in-part of Ser. No. 287,138, Dec. 21, 1988, abandoned, which is a continuation-in-part of Ser. No. 177,681, Apr. 5, 1988, abandoned, which is a continuation-in-part of Ser. No. 942,204, Dec. 16, 1986, Pat. No. 4,736,751. This application Mar. 28, 1989, Ser. No. 329,792
Int. Cl.[5] A61B *5/055*
U.S. Cl. 128—653 A **4 Claims**



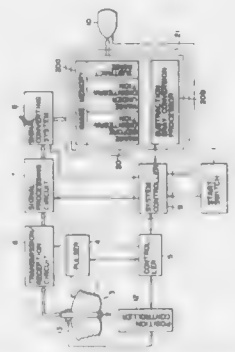
1. A method in nuclear magnetic resonance (NMR) for the correction of distortions in an NMR scanner, including the steps of:
(a) positioning a plurality of fiducial markers at selected locations on a helmet, said markers providing a readily determined distinctive image in an NMR scan;
(b) placing a phantom having a plurality of predetermined fiducial markers at selected locations therein in said NMR device and taking a scan of said phantom; and then removing said phantom from said device after taking the scan;
(c) placing the helmet on a subject within the NMR device and taking a scan of the helmeted subject;
(d) comparing the locations of the fiducial markers in the scans of the phantom and the helmeted subject by an automatic comparison using a computer system and pattern recognition algorithms;
(e) computing in the computer system a first set of distortion corrections providing three-dimensional corrections for the NMR scanner; and
(f) applying said three-dimensional corrections to the NMR scanner to produce corrected NMR scan images.

5,005,579
APPARATUS FOR SPATIAL LOCATION AND DESTRUCTION OF OBJECTS INSIDE THE BODY BY MEANS OF ULTRASOUND
Helmut Wurster, Oberderdingen, and Werner Krauss, Maulbronn, both of Fed. Rep. of Germany, assignors to Richard Wolf GmbH, Fed. Rep. of Germany
Filed Feb. 11, 1988, Ser. No. 155,149
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1987, 3704909
Int. Cl.[5] A61B *17/22*
U.S. Cl. 120—660.03 **15 Claims**



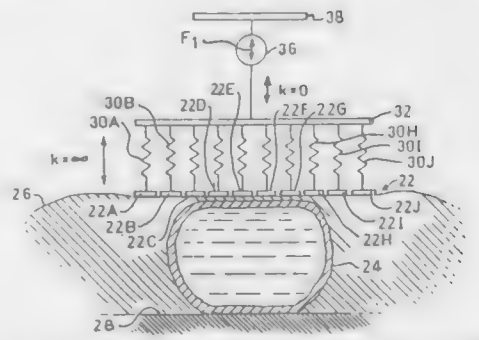
1. In an apparatus for destruction of an object inside a patient's body by means of ultrasound, of the type comprising a piezoelectric focusing transducer for generating ultrasound energy to destroy the object, and improvement for aligning the focusing transducer with the object comprising:
at least two ultrasonic locating transducers; and
means for mounting the at least two locating transducers remotely positioned from each other within said focusing transducer for generating ultrasound pressure waves along separate axes.

5,005,580
DESTROYING WAVE TREATMENT APPARATUS
Kiyoshi Okazaki, Takanezawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 340,352, Apr. 19, 1989, abandoned. This application Dec. 6, 1989, Ser. No. 445,154
Claims priority, application Japan, Apr. 22, 1988, 63-98312; Feb. 22, 1989, 1-44845
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—660.03 **5 Claims**



1. A destroying wave diagnosis apparatus of the type which comprises a generating means for transit destroying wave to a subject a destructive wave to destroy an object within the subject, said apparatus comprising:
tomogram data collecting means for collecting tomogram data of the object obtained before a destroying wave is transmitted, and tomogram data obtained during the progress of transmitting the destroying wave; and
a display means for displaying simultaneously a tomogram of the object obtained before the transmission of the destroying wave and a tomogram obtained during the transmission of the same, on the basis of the tomogram data collected by said collecting means.

5,005,581
MOTION ARTIFACT DETECTION FOR CONTINUOUS BLOOD PRESSURE MONITOR TRANSDUCER
Kevin S. Honeyager, San Antonio, Tex., assignor to Colin Electronics Co., Ltd., Aichi, Japan
Filed Feb. 25, 1988, Ser. No. 160,790
Int. Cl.[5] A61B *5/02*
U.S. Cl. 128—681 **3 Claims**



1. A method for detecting motion artifacts in data obtained from a blood pressure monitoring transducer, comprising the steps of:
monitoring a plurality of pressure sensing elements overlying an artery, said pressure sensing elements each producing a pulse amplitude signal waveform indicative of the pressure in said artery during successive pulses;
calculating a predetermined percentage of the pulse amplitude signals produced by said pressure sensing elements during a first pulse;
measuring the pulse amplitude signals produced by said pressure sensing elements on a next successive pulse and comparing the respective pulse amplitudes produced by said pressure sensing elements with the pulse amplitudes produced by the respective pressure sensing element during said first pulse; and
indicating a motion condition if any of said pulse amplitude signals measured during said next successive pulse differ from the corresponding pulse amplitude produced during said first pulse, by more than said predetermined percentage.

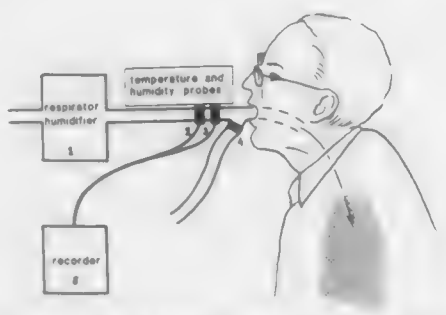
5,005,582
NON-INVASIVE METHOD FOR MEASURING LUNG TISSUE VOLUME AND PULMONARY BLOOD FLOW AND A PROBE TO CARRY OUT THE METHOD
Vladimir Serikov; Mark Rumm, both of University of California, San Francisco, Medical School, CVRI, M-1327, San Francisco, Calif. 94143-0130, and Norman C. Staub, P.O. Box 965, Stinson Beach, Calif. 94970
Filed Jun. 28, 1990, Ser. No. 545,031
Int. Cl.[5] A61B *5/02*
U.S. Cl. 128—691 **3 Claims**

1. A method for carrying out pulmonary blood flow and airway thermal volume measurements of a body, comprising the steps of:
providing measurements of temperature of inspired and maximal temperature of expired gas and gas volume flow (VG) at an entrance of the upper respiratory tract, humidity of said inspired gas and recording a curve of maximal expired gas temperature versus time
measuring a temperature value (T_B) of said body, and measuring an expired gas initial temperature value (T_O) and an

inspired gas temperature (T_{Go}) and inspired gas absolute humidity (C_o) value during an initial period of deep spontaneous or artificial breathing

changing the rate of breathing with a tidal volume of breathing about 22 ml per kg body weight during a second period until steady-state lung heat exchange with constant maximal expired gas temperature is present

determining from the temperature-vs-time curve a variable



of temperature fall (ΔT), and a half-time of temperature fall ($t_{0.5}$), and

estimating pulmonary blood flow (q) and airway thermal volume (V) as a function of said temperature value (T_B), and said expired gas initial temperature value (T_o), and said inspired gas temperature (T_{Go}) and said inspired gas absolute humidity (C_o) and said variable of temperature fall (ΔT) and said half-time of temperature fall ($t_{0.5}$) and said gas volume flow (V_G).

5,005,583

DIAGNOSTICS PROCEDURES IN UNEXPLAINED FEMALE INFERTILITY

Maria del Carmen Bustillo, Cabin John, Md., assignor to Research & Education Institute, Inc. Harbor-UCLA Medical Center, Torrance, Calif.

Filed Jul. 22, 1987, Ser. No. 76,353
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—738 **13 Claims**

1. A method for the diagnosis and treatment of an infertile woman having a normal ovulatory cycle, comprising the steps of:

(a) tracking said woman's ovulatory cycle to determine estimated approximate time of ovulation;

(b) inseminating said woman with normal human semen at or around said estimated approximate time of ovulation;

(c) performing a nonsurgical transcervical uterine fluid lavage on said woman within two to seven days after said insemination and recovering and retaining the lavage fluid;

(d) scanning said retained lavage fluid for the presence of an ovum; and

(e) examining any ovum present within said retained lavage fluid for the purpose of rendering a diagnosis and treatment.

5,005,584

FIBER OPTIC PRESSURE TRANSDUCER

Richard L. Little, New Hope, Minn., assignor to MNM Enterprises, Inc., Minneapolis, Minn.

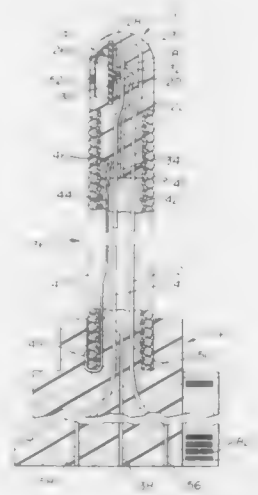
Continuation of Ser. No. 62,728, Jun. 15, 1987, abandoned. This application Jan. 5, 1990, Ser. No. 461,178
Int. Cl.[5] A61B *5/00, 5/02;* A61M *25/00;* C01L *7/08*
U.S. Cl. 128—748 **23 Claims**

1. A combination of a transvenously insertable guide wire, with a physiological pressure transducer assembly of the type having extended fiber optic paths for light transmission to and from the transducer, the combination comprising:

an elongated guide wire comprised of multiple coils of wire defining an elongated tubular passage, said guide wire being sufficiently flexible to bend sharply as required in traversing a patient's vascular system;

a pair of fiber optic paths contained within said tubular passage of said guide wire and extending longitudinally therein inside of said coils, each of said fiber optic paths having a proximal and a distal end; and

a pressure transducer mounted on said guide wire at the proximal ends of said fiber optic paths, said transducer comprising a housing within which the proximal ends of said fiber optic paths terminate adjacent to each other in



optical coupling relation, said housing being at least partially contained within said guide wire in restraining engagement between opposite sides thereof, and a flexible membrane means having an exterior portion exposed to sense pressure exterior of said housing and an interior portion positioned to interrupt light transmission between the proximal ends of said fiber optic paths due to movement of said membrane in response to changes in pressure exterior of said housing, said pressure transducer having a lateral dimension no greater than that of said guide wire on which it is mounted.

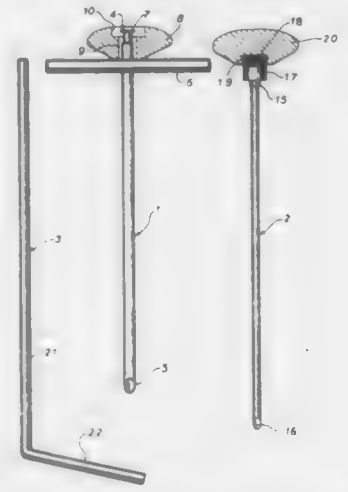
5,005,585

BIOPSY NEEDLE CONSTRUCTION

Joseph J. Mazza, Marshfield, Wis., assignor to Marshfield Clinic, Marshfield, Wis.

Filed Apr. 24, 1989, Ser. No. 342,540
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—754 **10 Claims**

1. A biopsy needle assembly, comprising an outer tubular cannula having a proximate end and a distal end, said distal end being disposed at an acute angle with respect to the longitudinal axis of said cannula, said cannula having an inner cylindrical surface disposed adjacent said distal end with said cylindrical surface having a uniform diameter throughout its length, an end of said cylindrical surface opposite said distal end being undercut to provide a sharp annular interior edge, the remaining portion of said cannula extending from said edge to said proximate end of said cannula having a larger internal diameter than the internal diameter of said cylindrical surface, and a solid stylus configured to be disposed within said cannula and having a proximate end and a distal end disposed at an acute angle to the longitudinal axis of said stylus, said stylus being in sliding contact with said cylindrical surface and spaced from said remaining portion of the cannula, the proximate end of said cannula being open, the distal end of said cannula after removal of said stylus acting to cut a specimen of tissue with



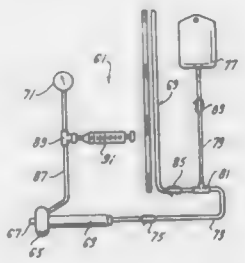
the specimen being collected interiorly of said cannula and being removed through the open proximate end.

5,005,586

METHOD FOR EXERCISING A PATIENT'S ANAL CANAL

Christopher J. Lahr, 103 Rutledge Ave., Charleston, S.C. 29401

Continuation-in-part of Ser. No. 174,203, Mar. 28, 1988, abandoned, which is a continuation-in-part of Ser. No. 51,636, May 20, 1987, Pat. No. 4,739,767, which is a division of Ser. No. 836,729, Mar. 6, 1988, Pat. No. 4,687,002. This application Apr. 14, 1989, Ser. No. 337,200
Int. Cl.[5] A61B *5/10*
U.S. Cl. 128—774 **4 Claims**



1. A method for exercising a patient's anal canal, comprising the following steps:

(a) inserting first and second balloons in the patient's relaxed anal canal;

(b) at least partially filling each balloon with fluid to preselected pressures;

(c) connecting the first balloon to a first pressure measuring device to measure the pressure in the first balloon and connecting the second balloon to a second pressure measuring device to measure the pressure in the second balloon; and

(d) repeatedly contracting the anal sphincter against the first balloon whereby the pressure measured by the first pressure measuring device is increased and relaxing the anal sphincter whereby the pressure measured by the first pressure measuring device is decreased, and repeatedly contracting the abdominal muscles whereby the pressure measured by the second pressure measuring device is increased and relaxing the abdominal muscles whereby the pressure measured by the second pressure measuring device is decreased.

5,005,587

BRAID ELECTRODE LEADS AND CATHETERS AND METHODS FOR USING THE SAME

Steven E. Scott, Miami, Fla., assignor to Telectronics Pacing Systems, Inc. Englewood, CA.

Filed Nov. 13, 1989, Ser. No. 434,246
Int. Cl.[5] A61N *1/05*
U.S. Cl. 128—786 **27 Claims**



1. A lead for implantation in a body for conducting an electrical current between an electrical device and a location in the body, said lead comprising:

an elongate tubular insulating member;

a first exposed portion of electrically conductive braid forming a closely fitting sheath around a portion of said insulating material;

a first electrical coupling means for coupling said device to said lead; and

a first electrically insulated connection means for electrically connecting said braid and said electrical coupling means,

said tubular insulating member having a part which extends distally with respect to said electrical coupling means from said braid, further comprising:

an electrode on said part, said electrode being spaced apart from said braid;

a second electrical coupling means for electrically coupling said device to said lead; and

a second electrical connection means for electrically connecting said electrode to said second electrical coupling means.

5,005,588

METHOD FOR INCREASING TUMOR SENSITIVITY TO CHEMOTHERAPY

David Rubin, 8949 Montrose Way, San Diego, Calif. 92122

Filed Oct. 13, 1989, Ser. No. 421,598
Int. Cl.[5] A61N *1/00*
U.S. Cl. 128—804 **14 Claims**

1. A method of rendering drug-resistant tumor cells drug-sensitive, comprising selectively administering only to said tumor cells a sufficient amount of a pump-affecting compound to suppress the pumping action of P-glycoprotein on said tumor cells, said amount being less than that amount necessary for such pump-affecting compound itself to kill said tumor cells.

5,005,589

CONDOM

Ying-Teh Hwang, No. 220, Ruey Feng Street, Kaohsiung, Taiwan

Filed Mar. 22, 1990, Ser. No. 497,610
Int. Cl.[5] A61F *6/04, 5/44*
U.S. Cl. 128—844 **5 Claims**

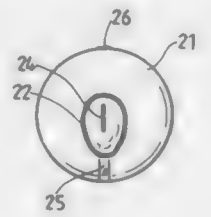
1. A condom comprising:

(a) an elongated body having a generally concavo-convex front portion and defining an interior space;

(b) a sperm cell having a generally oval shaped cross-sectional configuration with a width and a height, the cross-sectional configuration taken in a plane extending generally perpendicular to the elongated body; and,

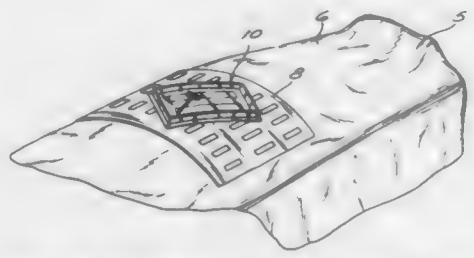
(c) a neck portion connecting the sperm cell to the front portion of the elongated body, a slit extending from said neck portion into said elongated body, said slit having a width and height, the slit allowing communication between the interior space of the elongated body and the

sperm cell wherein the width of the slit is substantially smaller than its height, and wherein the width and height



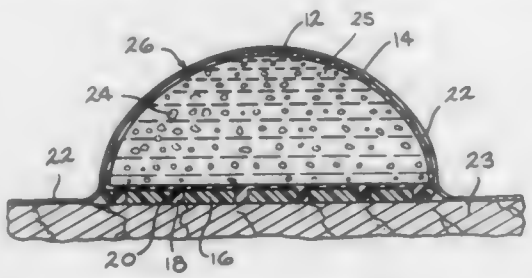
of the slit are substantially smaller than the width and height of the sperm cell.

5,005,590
SURGICAL INSTRUMENT TRAY
John D. Eldridge, Jr., and Mary A. Morgan, both of Newport Beach, Calif., assignors to Jodel Medical Products, Inc., Santa Ana, Calif.
Filed Feb. 17, 1989, Ser. No. 312,135
Int. Cl.[5] A61B *19/00*
U.S. Cl. 128—849 **5 Claims**



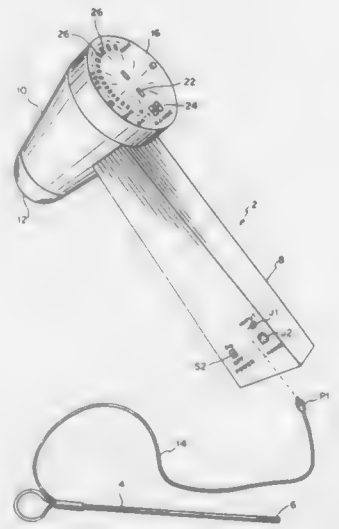
1. A system for retaining surgical instruments, comprising:
a surgical instrument retainer including a base portion defined by a periphery;
a wall projecting from said periphery wherein said wall terminates at a distance from said base portion;
a flexible surgical drape; and
a means for selectively securing said surgical instrument retainer to said surgical drape, said means comprising:
a magnetic element incorporated in said base portion; and
a plurality of magnets incorporated in said surgical drape such that a magnetic attraction exists between said magnetic element and said surgical drape.

5,005,591
SELF-INFLATING TISSUE EXPANDER
Eric D. Austad, 309 Riverview Dr., Ann Arbor, Mich. 48104
Filed May 3, 1990, Ser. No. 518,489
Int. Cl.[5] A61B *19/00;* **A61F** *2/12, 2/02*
U.S. Cl. 128—899 **20 Claims**



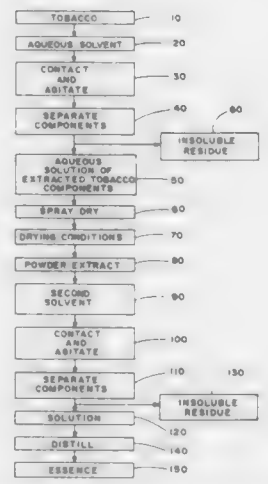
1. A surgically implantable self-inflating device for expanding soft tissue without substantial physician manipulation after implantation, said device comprising:
an expandable envelope portion being substantially impermeable to extracellular body fluids;
a window portion being readily permeable to extracellular body fluids; and
an osmotic material disposed within said device and providing an osmotic potential across said window for drawing extracellular fluid therethrough and into said envelope thereby forming a solution with said osmotic material and causing said device to inflate and the overlying tissue to expand.

5,005,592
METHOD AND APPARATUS FOR TRACKING CATHETERS
Robert L. Cartmell, Bellbrook, Ohio, assignor to Becton Dickinson and Company, Franklin Lankes, N.J.
Filed Oct. 27, 1989, Ser. No. 428,386
Int. Cl.[5] A61B *5/05*
U.S. Cl. 128—899 **13 Claims**



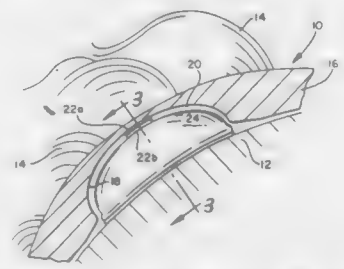
1. Apparatus for determining the location of an object adapted to be inserted into the body of a patient, which comprises:
a transmitter, the transmitter including an oscillator for generating a transmit signal, and a transmit coil coupled to the oscillator for transmitting a signal corresponding to the transmit signal;
a receiver, the receiver including a receive coil for receiving the signal transmitted by the transmitter by mutual inductance between the two coils, means for processing the signal received by the receive coil, one of the transmit coil and the receive coil being situated on the object adapted to be inserted into the patient's body, and the other of the receive coil and the transmit coil being located externally to the patient's body, the processing means providing an output signal which varies in accordance with the strength of the signal received by the receive coil and detecting the distance the transmit coil is form the receive coil based on the strength of the signal received by the receive coil, the receiver further including display means coupled to the processing means for indicating at least the relative distance which the transmit coil is from the receive coil, whereby the location of the object adapted to be inserted into the patient's body may be located; and
means for controlling the strength of the signal transmitted by the transmit coil in response to the output signal of the processing means of the receiver, the control means being operatively coupled to the processing means.

5,005,593
PROCESS FOR PROVIDING TOBACCO EXTRACTS
Barry S. Fagg, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Continuation-in-part of Ser. No. 149,044, Jan. 27, 1988, abandoned. This application Oct. 26, 1988, Ser. No. 262,770
Int. Cl.[5] A24B *15/24, 15/26*
U.S. Cl. 131—297 **123 Claims**



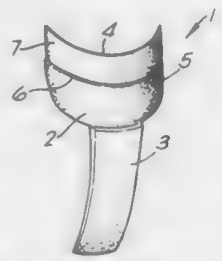
1. A process for providing a concentrated tobacco extract, the process consisting essentially of the steps of:
(a) extracting components from tobacco material with a first solvent having an aqueous character, and then
(b) providing the tobacco components extracted by the first solvent in a low solvent form,
(c) providing a second solvent different from the first solvent,
(d) extracting a portion of the components from the tobacco components resulting from step (b) with the second solvent, and then
(e) isolating tobacco components extracted by the second solvent from the second solvent.

5,005,594
WIG ANCHOR
Geneva R. Dunagan, 804 Edwards Blvd., Big Spring, Tex. 79720
Continuation of Ser. No. 108,697, Oct. 16, 1987, abandoned. This application Sep. 26, 1989, Ser. No. 393,830
Int. Cl.[5] A41G *5/00*
U.S. Cl. 132—53 **7 Claims**



1. In combination with a wig having a frame forming a concave underside surface, and a shallow pocket formed by the frame and opening at said surface, the pocket having cross dimensions substantially greater than its depth, an article adapted to assist in positioning and maintaining said wig on the head of a wearer having little or no natural hair, said article having the shape of a shallow pad fitting loosely in said pocket and comprising an envelope to be disposed in retaining engagement with the head of said wearer, said envelope having a first side substantially conforming to the surface of the pocket and a second side adapted to substantially conform to that portion of the head of the wearer facing the pocket, and a mass of fibrous compressible filler material within said envelope, said filler material confined by the envelope to have a pad shape, and means for locally attaching said envelope to said frame interiorly of said pocket, said mass of fibrous material causing the pad to protrude from said pocket.

5,005,595
FINGERNAIL REPAIR
David H. Aylott, Tomarton, United Kingdom, assignor to Eylure Limited, Wales
Filed Jan. 18, 1989, Ser. No. 298,389
Claims priority, application United Kingdom, Jan. 19, 1988, 8801107
Int. Cl.[5] A45D *29/00*
U.S. Cl. 132—73 **11 Claims**



1. A method of repairing a split or broken natural fingernail or cosmetically enhancing the appearance of a natural fingernail comprising the steps of:
providing a nail means having a support portion and a handle portion by which the support portion may be manipulated;
applying adhesive to at least a portion of an underneath surface of the natural fingernail or the support portion;
manipulating the nail means so as to position the support portion in contact with the underneath of the natural fingernail with the adhesive therebetween so as to secure the nail means to the underneath of the natural fingernail; and
separating the handle portion from the support portion.

5,005,596
ARTIFICIAL HAIR FOR HAIR-IMPLANTATION AND PREPARATION PROCESS
Shiro Yamada, No. 2-7-1-606, Mita, Minato-ku, Tokyo, Japan
Filed May 16, 1989, Ser. No. 352,447
Claims priority, application Japan, Aug. 4, 1988, 63-193445
Int. Cl.[5] A41G *5/00*
U.S. Cl. 132—201 **4 Claims**



1. In an artificial hair for hair-implantation, which is composed of a monofilament of a synthetic resin, the improvement wherein amorphous silver is adhered in spots covering about 20-80% of a distal end to surface of the monofilament by vacuum depositing said amorphous silver at between 10^{-3} to 10^{-6} Torr and at a monofilament temperature of 36° C. or lower.

5,005,597

STREET CLEANING DEVICE FOR COLLECTING LEAVES AND DEBRIS

Maurice A. Popelier, East Moline; Myron L. McCunn, Orion, both of Ill.; David C. Winter, Johnston, Iowa; Dennis L. Marchael, Des Moines, Iowa; James W. Hall, Bettendorf, Iowa, and Ronald E. Rohren, Moline, Ill., assignors to Deere & Company, Moline, Ill.

Continuation of Ser. No. 103,227, Sep. 30, 1987, abandoned. This application Jan. 19, 1989, Ser. No. 302,091

Int. Cl.[5] E01H *1/04*

U.S. Cl. 134—25.1 **24 Claims**

1. A device adapted for movement forwardly over a street by a propelling vehicle having an operator station, the device for collecting material including leaves and debris arranged in piles of varying sizes lying in the street, comprising:

a frame supported for forward movement over the ground;

a cutting device rotatably supported by the frame for rotation about a transversely extending and generally horizontal axis, the cutting device including pivoting flails adapted for movement closely adjacent the surface of the ground;

means for rotating the cutting device to bring the flails in contact with portions of the piles and lift the material over the cutting device;

hood means including a forwardly opening and transversely extending throat for receiving the piles of material as the frame is moved forwardly, said hood means extending over the cutting device for retaining the material as the material is lifted;

moveable structure supported by the frame adjacent the throat;

means varying the size of the throat from a location remote from the hood means as the frame is moved forwardly to conform generally to the size of the pile being received by the throat to thereby restrict material from being thrown forwardly through the throat while facilitating entry of the pile into the throat, wherein said means varying the size of the throat includes motor means operably connected to the moveable structure and controllable from the operator station to change the position of the moveable structure while the frame is moved forwardly; and

means for delivering the lifted material to a receptacle.

5,005,598

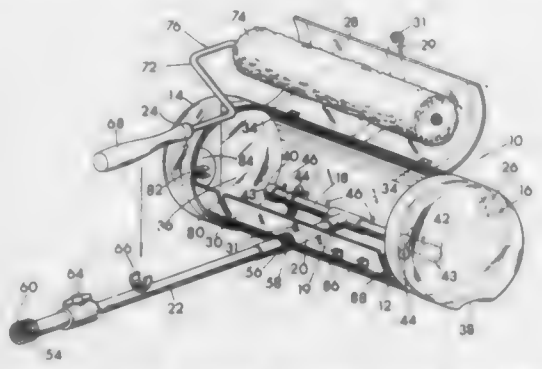
PAINT ROLLER RINSER

Ronald E. Hodgdon, 3521 Timber La., Anderson, Calif. 96007

Filed Aug. 16, 1990, Ser. No. 569,210

Int. Cl.[5] B08B *3/02*

U.S. Cl. 134—138 **4 Claims**



1. A paint roller cleaning apparatus having two separate roller holding and cleaning positions to allow cleaning of at least two types of paint rollers, one paint roller at a time, comprising:

an elongated tubular housing for use in a lengthwise horizontally disposed position on a surface, said tubular housing having a housing first end and an oppositely disposed housing second end, a first end wall generally closing said housing first end, a second end wall generally closing said housing second end, a roller installation opening in said tubular housing, said roller installation opening sized to allow installation and removal of a roller brush and at least a portion of a roller support rod supporting the roller brush into said tubular housing, an openable door hingidly attached over said roller installation opening, releasable fastening means to temporarily maintain said door closed over said roller installation opening, an elongated fluid distributor affixed within said tubular housing, said fluid distributor having means to connect to and receive a supply of pressured cleaning fluid, a plurality of nozzles on said fluid distributor, said nozzles spaced apart from one another extending generally from adjacent a first end of said fluid distributor to adjacent a second end of said fluid distributor, said nozzles further positioned to dispense and aim pressured cleaning fluid toward a roller brush when within said tubular housing to cause the roller brush to spin, an elongated rigid member removably affixed to said paint roller cleaning apparatus and extending generally perpendicular and exteriorly to said tubular housing, said rigid member having a roller handle holding means affixed thereto, said roller handle holding means sized and shaped to removably accept and tightly retain a paint roller handle, a first notch in said tubular housing adjacent said housing first end, said first notch located in communication with said roller installation opening, said first notch sized to accept a portion of a roller support rod, a first roller support rod holding means affixed to said tubular housing adjacent said housing first end, said roller handle holding means useful in conjunction with said first notch and said first roller support rod holding means to hold a paint roller in a first of said two cleaning positions, a second notch in said tubular housing adjacent said housing second end, said second notch located in communication with said roller installation opening, said second notch sized to accept a portion of a roller support rod, a second roller support rod holding means affixed to said tubular housing generally adjacent said second notch, said roller handle holding means useful in conjunction with said second notch and said second roller support rod holding means to hold a paint roller in a second of said two cleaning positions, at least one fluid discharge opening in said paint roller cleaning apparatus providing exit means for paint contaminated cleaning fluid.

5,005,599

RISING BRACE FOR INVALID WALKER, AND METHOD

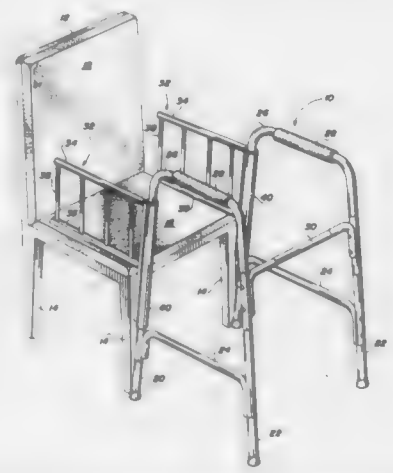
Thomas W. Cunningham, 3580 Emerywood La., Orlando, Fla. 32812

Filed May 14, 1990, Ser. No. 522,685

Int. Cl.[5] A61H *3/00*

U.S. Cl. 135—67 **19 Claims**

5. A portable aid for assisting an invalid or elderly person in rising from a sitting position in a seat to a standing position, comprising a portable vertical support and a brace member attachable with the vertical support, the brace member extensible away from the vertical support and having a dimension in the horizontal direction sufficient to extend across the surface of the seat and in contact with the seat and a sufficient dimension in the vertical direction to permit a sitting person to push



downwardly upon the brace member for assistance in rising to a standing position.

5,005,600

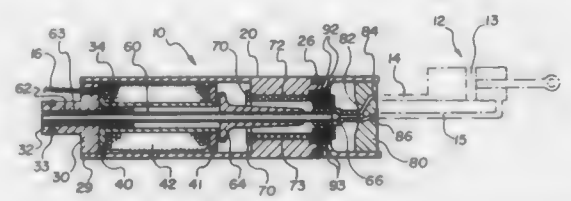
SERVOVALVE APPARATUS FOR USE IN FLUID SYSTEMS

Stephen C. Jacobsen; Edwin K. Iversen, and David F. Knutti, all of Salt Lake City, Utah, assignors to Sarcos Group, Salt Lake City, Utah

Filed Jan. 31, 1990, Ser. No. 472,701

Int. Cl.[5] G05D *16/20*

U.S. Cl. 137—83 **6 Claims**



1. A servovalve apparatus for use in fluid systems comprising

a flexible conduit having an upstream end and a downstream end;

means for connecting a source of fluid to the upstream end of the flexible conduit;

a receiving plate positioned adjacent the downstream end of the flexible conduit, the receiving plate having at least one fluid channel formed therein;

an armature affixed to the flexible conduit;

a conductive coil surrounding at least a portion of the flexible conduit adjacent its upstream end for magnetizing the armature when electrical current is supplied to the coil;

a magnet assembly positioned at the side of the armature for selectively attracting or repelling the armature to deflect the conduit, depending upon the direction of electrical current supplied to the coil; and

means for preventing magnetic particles from coming into contact with the magnetic assembly.

5,005,601

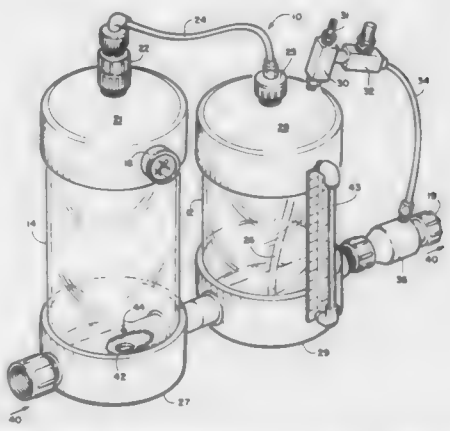
AUTOMATIC PROPORTIONING FERTILIZER INJECTOR

Thomas F. Strong, 8733 Magnolia, Ste. 100, Santee, Calif. 92071

Filed Nov. 3, 1989, Ser. No. 431,452

Int. Cl.[5] B01F *3/08*

U.S. Cl. 137—205.5 **9 Claims**



1. An apparatus for the automatic controlled dispensing of a liquid substance into a first conduit of flowing water under pressure comprising:

a first tank having a top and a bottom communicating with said flowing water through at least one opening in said first conduit;

a second tank having a top and bottom;

a first valve means located on the top of said first tank, said first valve means allows pressurized air to flow into said second tank and prevents any liquid from flowing from said first tank to said second tank;

a second conduit means interconnecting said first valve means with the interior of said top of said second tank;

a third conduit means extending from a location adjacent to the inside bottom of said second tank to a position exterior of the top thereof;

a second valve means communicating with the downstream end of said third conduit, said second valve means being normally open to the atmosphere and closed to said atmosphere when the inside of said second tank is pressurized;

a third valve means having and input and an output, said input connected downstream of said second valve means;

a normally closed pressure activated valve positioned in series with said first conduit, said pressure actuated valve having a calibrated leak therethrough when closed; and

a fourth conduit connected to said output of said third valve means and connected to said first conduit downstream of said pressure activated valve.

5,005,602

POPPET VALVE ASSEMBLY

Richard L. Fahl, Fairfield, Ohio, assignor to Dover Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 312,888, Feb. 17, 1989, abandoned, which is a continuation of Ser. No. 90,617, Aug. 28, 1987, Pat. No. 4,813,449, said Ser. No. 90,617, is a division of Ser. No. 813,250, Dec. 24, 1985, Pat. No. 4,693,268. This application Jul. 18, 1989, Ser. No. 381,578

The portion of the term of this patent subsequent to Mar. 21, 2006, has been disclaimed.

Int. Cl.[5] F16K *1/12, 31/52, 35/02*

U.S. Cl. 137—219 **3 Claims**

1. A poppet valve assembly having a flow passage therethrough and comprising

a housing comprising first and second parts compositely defining the outer bounds of the flow passage, which is formed concentrically of a central axis,

said housing parts being sealingly joined at a plane normal to said central axis,

one of said housing parts having, adjacent the outer end thereof, an annular valve seat defining a portion of said flow passage,

a single piece poppet structure having

a head, having an effective diameter, sealingly engageable with said valve seat and

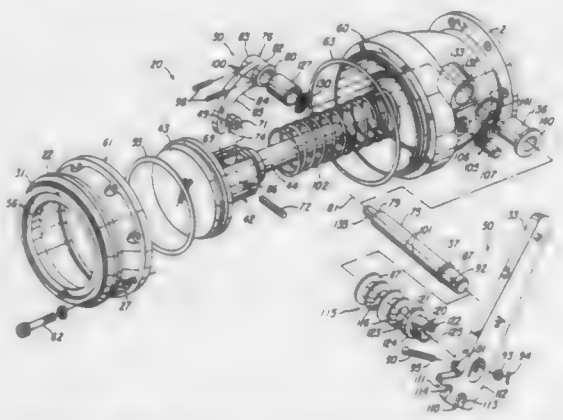
a stem, having an outer end portion of a given diameter, projecting from said head in a direction away from said valve seat,

said head and stem being formed concentrically of a central axis, with the effective diameter of the head being no greater than five times the given diameter of the stem,

journal means for mounting said poppet structure for movement of the head towards and away from the valve seat,

said journal means being disposed centrally of the flow passage and connected to the second housing part by radially extending members,

said journal means having a bore concentric of the central axis of the flow passage,



said bore slidably receiving an end portion of the stem and aligning the central axis of the poppet structure with the central axis of the flow passage, and

actuator means for displacing said head away from said valve seat, said actuator means comprising

a transverse opening formed in said stem, intermediate said head and the end portion which is slidably received by the bore of said journal means,

a roller rotatably mounted in said slot on an axis normal to and intersecting the central axis of the poppet structure,

an actuator shaft pivotally mounted on said second housing part about an axis parallel to the roller axis,

a handle secured to said actuator shaft exteriorly of said housing, and

a cam finger secured to said actuator shaft and extending into said slot,

said cam finger having a curved cam surface engageable with said roller, the curvature of said cam surface being such that contact thereof with the roller is aligned with the central axis of the poppet structure, as the actuator shaft is rotated by the handle to cause the finger to displace the poppet structure head away from the valve seat.

5,005,603

RETROFITTABLE SEWER TRAP

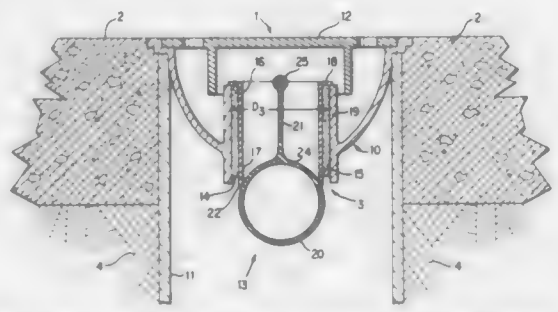
Eric K. Amundson, Rd. 2 Box 147, and Herbert C. Manners, Rd. 1 Box 5, both of Punxsutawney, Pa. 15767

Filed Jun. 22, 1989, Ser. No. 369,765

Int. Cl.[5] F16K *31/22, 25/00*

U.S. Cl. 137—192 **18 Claims**

1. A retrofittable drain insert capable of preventing gas and fluid from backflowing through a drain having a drain opening and permitting said drain to drain fluid therefrom, said insert comprising a cylindrical housing dimensioned and shaped to be retrofittable within said drain, said housing having an upper end, a lower end, a suspension means and a valve means, said housing upper end having a suspension receiving means disposed thereon, said valve means being on one end of said suspension mean sand having an outside diameter exceeding the inside diameter of said housing but smaller than the diameter of the drain opening, said valve means being held against



the lower end of said cylindrical housing by said suspension means, said suspension means being formed of a resilient material, said suspension means other end being pivotally and selectively positioned by said receiving means such that said valve means achieves selective gas tight and fluid tight seals with said cylindrical housing, said suspension means expanding to open said seal when fluid passes through the upper end of said housing.

5,005,604

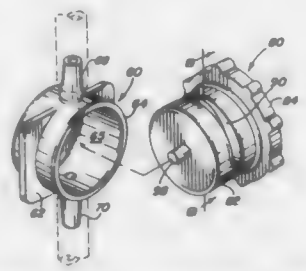
FLOW CONTROL DEVICE FOR ADMINISTRATION OF INTRAVENOUS FLUIDS

Jerry L. Aslanian, 4247 E. Hazelwood, Phoenix, Ariz. 85018

Continuation of Ser. No. 630,632, Jul. 13, 1984, abandoned. This application Feb. 2, 1989, Ser. No. 305,078

Int. Cl.[5] F16K *37/00, 5/10*

U.S. Cl. 137—556 **6 Claims**



1. In an IV system having a source of IV fluid connected to an administration needle via a tubing line, an IV control valve connectable in said tubing line comprising:

(a) a housing defining a valving chamber having generally cylindrical side walls and an end wall, said housing defining an inlet and outlet spaced apart communicating with said valving chamber and connectable in said tubing line, said housing being molded of a first plastic material having sufficient rigidity so as not to flow or deform under application of hoop stress;

(b) a flow control member including a metering member having a generally cylindrical surface and an end surface, said flow control member having dial means external of said housing for manually rotating the flow control member relative to the housing;

(c) at least the cylindrical surface of said metering member being molded from a second plastic material which is relatively softer than said first plastic material and in an assembled position being pressed into said valving chamber to place all of said valving chamber walls and metering member surfaces in engagement to provide sealing

substantially along all surfaces of said metering member and being rotatable with respect thereto; and

(d) said metering member defining a continuous circumferentially extending flow passage on said cylindrical surface, said flow passage having a first regime in which the cross sectional area of the flow passage varies and a second regime in which the cross sectional area is substantially constant and further including flow blocking area whereby upon rotation of said flow control member, said flow passage and said blocking area may be placed in selective registry with said inlet and outlet to block flow, meter flow, or establish a purge flow rate.

5,005,605

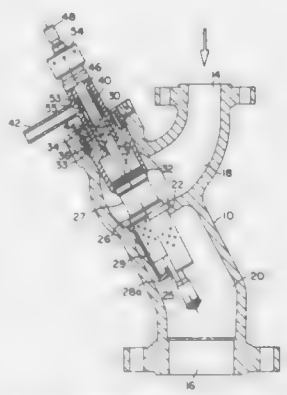
CONDITIONING VALVE

Max Kueffer, Blue Bell, and Roy L. Feiss, Southampton, both of Pa., assignors to Keystone International Holdings Corp., Wilmington, Del.

Filed Jul. 10, 1989, Ser. No. 377,426

Int. Cl.[5] F16K *11/07*

U.S. Cl. 137—625.39 **2 Claims**



1. A conditioning valve for simultaneously reducing the pressure and temperature of incoming steam comprising:

a valve body having an interior divided into first and second chambers, said first chamber having an inlet port for introducing superheated steam flow under high pressure into said conditioning valve, said second chamber having an outlet port for expelling conditioned steam out of said conditioning valve;

an annular seat affixed to the interior of said valve body between said first and second chambers;

a perforated cylindrical outer casing affixed to said annular seat and extending into said second chamber, said outer casing permitting the flow of steam into said second chamber;

retractable cylindrical valve means slidably matable within said annular seat and said perforated cylindrical outer casing, said cylindrical valve means extending between said first and second chambers, said cylindrical valve means having a plurality of openings over a portion of its body to permit the flow of steam between said first and second chambers when said valve means is in a first position, said openings being closed off from said flow of steam when said cylindrical valve means is in a second position;

a water steam extending axially through the center of said cylindrical valve means and said outer casing, said water steam having a terminal end in said second chamber, said water steam transporting desuperheating water to said second chamber, said stem further being coupled to said cylindrical valve means and slidably adjusting said cylindrical value means between said firs and second positions; and

means located at the terminal end of said water stem for injecting atomizing water into said second chamber to be mixed with steam entering said second chamber.

5,005,606

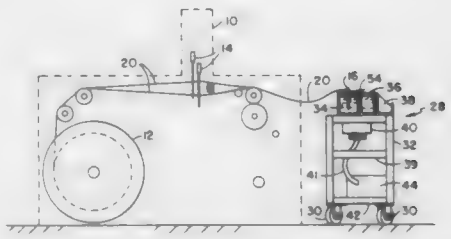
ULTRA-SONIC REED CLEANING METHOD

Patrick R. Carroll, Greenwood, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 791,792, Oct. 28, 1985, abandoned. This application Jun. 15, 1987, Ser. No. 62,411

Int. Cl.[5] D03J *1/02;* **B08B** *3/12;* **B01F** *11/02*

U.S. Cl. 139—1 C **5 Claims**



1. The method of servicing a loom reed comprising the steps of: subjecting the loom reed at the loom, with the warp yarns remaining in the reed, to the action of a cleaning liquid to which an ultrasonic force is applied for a time sufficient to apply a cleaning action to the reed; then subjecting the loom reed, with the warp yarns remaining in the reed, to the action of a rinsing liquid to which an ultrasonic force is applied for a time sufficient to apply a rinsing action to the reed, and then applying an air cleaning and drying action to the loom reed without damaging the warp yarns in the reed.

5,005,607

HEALD FRAME FOR LOOMS

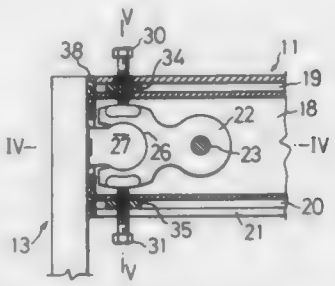
Yoichi Shimizu, Osaka, Japan, assignor to Nankai Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 21, 1990, Ser. No. 483,526

Claims priority, application Japan, May 22, 1989, 1-59412[U]

Int. Cl.[5] D03C *9/06*

U.S. Cl. 139—91 **7 Claims**



1. A heald frame for a loom comprising:

a hollow framestave having upper and lower walls;

a holder supported in the hollow of said framestave;

a side stay having a jointing convex part thereon;

said jointing convex part extending into the hollow of said framestave;

means for adjustably engaging said jointing convex part to said holder in different positions;

means for adjusting and fixing said jointing convex part to said holder in a selected position;

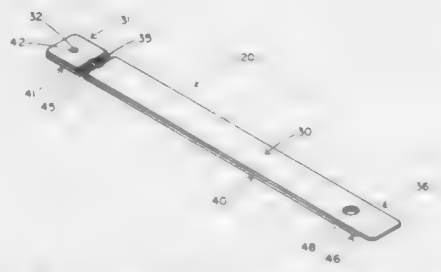
whereby said hollow framestave can be vertically adjusted in relation to said side stay.

5,005,608

SPLIT HEDDLE WITH SUPERIMPOSED BLADES WITH ALIGNED APERTURES

Larry D. Anderson, Appleton, Wis., assignor to Asten Group, Inc., Charleston, S.C.

Filed Jan. 31, 1990, Ser. No. 472,7[illegible]
Int. Cl.[5] D03C *9/02*
U.S. Cl. 139—93 16 Claims



1. A heddle for controlling the movement of a yarn, said heddle comprised of:

a first member having two apertures aligned one above the other at a first end thereof and a single aperture at the other end thereof, the lower aperture at the first end being intersected on one side thereof by a perpendicular slot and on the opposite side thereof by a perpendicular groove; and,

a second member which is the mirror image of said first member,

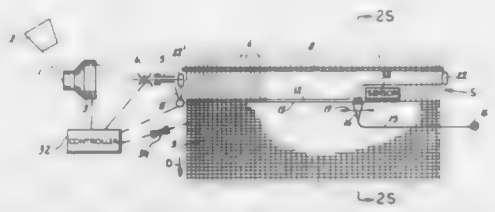
the first and second members being secured at their first ends with the respective grooves facing in opposite directions and defining a yarn capturing channel.

5,005,609

PNEUMATIC REMOVAL OF DEFECTIVE WEFT FILAMENT

Michel Volland; Gilles Grandvallet, both of Bourgoin Jallieu, and Roger Fourneaux, La Tour du Pin, all of France, assignors to S.A. Saurer Diederichs, Bourgoin Jallieu, France

Filed May 25, 1989, Ser. No. 357,560
Claims priority, application France, May 25, 1988, 88 07257
Int. Cl.[5] D03D *47/30, 51/00*
U.S. Cl. 139—116.2 18 Claims



1. In a loom wherein a weft filament is inserted as a pick in a weft direction into a shed formed between groups of warp filaments extending and generally traveling in a warp direction, and is beaten into the warp filaments by a comb to form a woven textile, a system for removing a defective pick from the warp filaments, the system comprising:

at least one stripping nozzle directed generally upstream in the warp direction;

supply means for feeding a compressed gas to the nozzle so the gas is expelled therefrom as a jet directed generally upstream in the warp direction over the defective pick to dislodge same from the warp filaments;

guide means for displacing the nozzle in the weft direction as it directs the jet of compressed gas at the defective pick; and

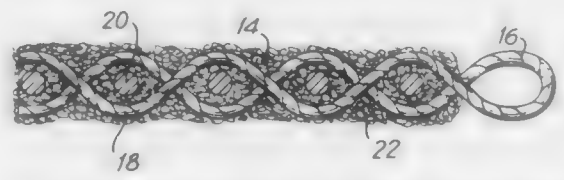
means for withdrawing the defective pick from the shed after being dislodged from the warp filaments by the nozzle.

5,005,610

PAPERMAKING FABRIC PIN SEAM WITH BRAIDED YARNS IN JOINING LOOPS

Francis L. Davenport, Ballston Lake, N.Y., assignor to Albany International Corporation, Albany, N.Y.

Filed Jan. 3, 1989, Ser. No. 293,207
Int. Cl.[5] D03D *13/00, 15/00*
U.S. Cl. 139—383 AA 2 Claims



1. An open-ended press fabric, for use on the press section of a papermaking machine, and designed for pin-seam closure, comprising:

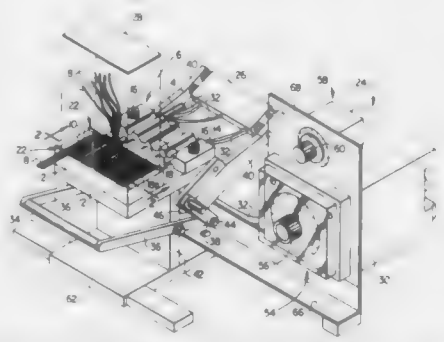
a system of machine direction (MD) yarns and a system of cross-machine direction (CD) yarns, said yarns of said system of machine-direction (MD) yarns being interwoven with said yarns of said system of cross-machine direction (CD) yarns to form said open-ended press fabric in a rectangular shape with a length, a width, two lengthwise edges, and two widthwise edges, said machine-direction (MD) yarns extending for said length of said open-ended press fabric between said two widthwise edges, said machine-direction (MD) yarns further forming loops along each of said two widthwise edges for joining said two widthwise edges to one another with a pin seam, said pin seam being integral to said open-ended press fabric, said machine direction (MD) yarns extending for the length of said open-ended press fabric being braided yarns formed by braiding a plurality of monofilament strands together, said braided yarns forming said loops so that said loops may maintain a preselected orientation along said two widthwise edges of said open-ended press fabric to facilitate the intermeshing of said lops when said two widthwise edges are brought together to form said pin seam.

5,005,611

APPARATUS FOR MODIFYING CABLES AND PRODUCTS THEREOF

Jack D. Hecker, 223 Johnson Dr., Duncanville, Tex. 75116

Filed Nov. 6, 1989, Ser. No. 432,558
Int. Cl.[5] H21F *1/02*
U.S. Cl. 140—147 6 Claims



1. A hand operated apparatus for modifying a round cable having a plurality of conductors so that said round cable is provided with a flat end portion to which a flat cable type conductor may be attached, said apparatus comprising:

a grooved template, said grooves designed to receive individual conductors; and

means for fixedly uniting said conductors when disposed in said groove, said means for fixedly uniting said conductors when in said grooves comprising:

a press plate; and

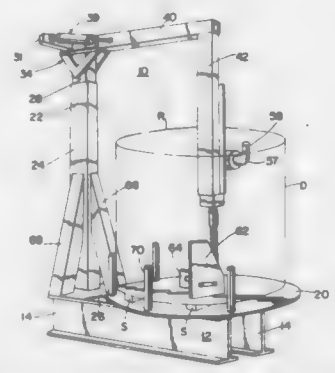
a hand operated toggle arm mechanism on which said press plate is mounted.

5,005,612

METHOD AND APPARATUS FOR TRANSFERRING HIGH VISCOSITY LIQUID WORK PRODUCT FROM A DRUM TO A WORK STATION

John M. Kurtz, 3175 Fulton Rd., Cleveland, Ohio 44109

Filed Dec. 14, 1989, Ser. No. 450,542
Int. Cl.[5] B01F *15/02*; B65G *53/14*
U.S. Cl. 141—7 7 Claims



1. The method of transferring high viscosity liquid work product to a work station from a cylindrical storage drum having an open top, a closed bottom, and a longitudinal axis, comprising the steps of:

(a) vertically aligning the longitudinal axis of said work product-filled cylindrical work product transfer drum and adapting said drum to rotate about said vertical axis;

(b) rotating said work product transfer drum about said vertical axis;

(c) lowering a work product transfer tube into said transfer drum at a predetermined rate while said drum is rotating;

(d) scraping work product from the interior wall surface of said drum while said drum is rotating;

(e) pumping work product from said drum at a predetermined rate synchronized with the rate of lowering said work product transfer tube into said drum;

(f) setting said work product pumping predetermined rate to cause said drum to be emptied of work product coincident with the lowering of said work product transfer tube to the bottom of said drum; and

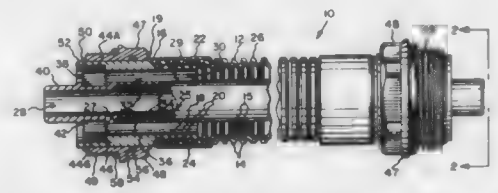
(g) lowering said work product transfer tube to the bottom of said drum.

5,005,613

LIGHT WEIGHT FLEXIBLE COAXIAL VAPOR RECOVERY HOSE

John H. Stanley, Uniontown, Ohio, assignor to The GoodYear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 498,153, Mar. 23, 1990, abandoned, which is a continuation of Ser. No. 272,611, Nov. 17, 1988, which is a continuation of Ser. No. 911,852, Sep. 26, 1986, abandoned.
This application Jun. 8, 1990, Ser. No. 536,052
Int. Cl.[5] B65B *3/18*; F16L *47/00, 9/18*
U.S. Cl. 141—45 5 Claims



1. A coaxial vapor recovery hose assembly for dispensing volatile fuels wherein one hose carries fuel from a supply tank to a receiving tank and another hose carries fuel vapors from the receiving tank back to the supply tank comprising:

(a) an inner hose,

(b) an outer hose, and

(c) means for holding said hoses in concentric relationship;

wherein said inner hose is substantially reinforced with metallic wire to be relatively incompressible as well as to be capable of bearing tensile stress applied to the assembly, having an outside diameter and an inside diameter to define an inner hose wall thickness;

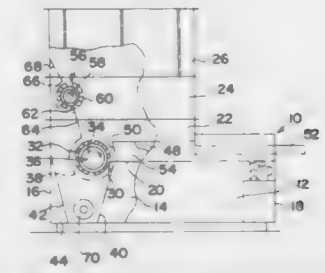
wherein said outer hose is lightweight, crust and kink resistant and is circumferentially corrugated, is selected from the group consisting of thermoplastics, thermoplastic elastomers, polyamides, thermoplastic polyurethanes and thermoplastic copolyesters and has an inside diameter larger than the outside diameter of the inner hose to define a vapor passageway therebetween and an outside diameter to define an outer hose wall thickness, and wherein the ratio of the inner hose wall thickness to the outer hose wall thickness is 1.67:1 to 5.0:1.

5,005,614

MACHINE FOR CRUSHING MATERIAL

Peter Rössler, Bustadtstr. 20, D-7129 Ilsfeld, Fed. Rep. of Germany

Filed Feb. 14, 1990, Ser. No. 479,951
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1989, 8910075
Int. Cl.[5] B02C *18/08*
U.S. Cl. 241—73 11 Claims



1. A machine for crushing material remains, which includes in combination

(a) a storage container (20–26) for the material to be crushed,

(b) a lower crushing roller (36) located close to a base of the storage container,

which roller (36) comprises a plurality of crushing tools (32) projecting radially from a crushing roller core (34), and

which cooperates with a first stationary crushing rack (30),

(c) a first screen (38) disposed adjacent the lower crushing roller (36) through which crushed remains pass,

(d) a collecting chamber (46) located below the first screen (38) for material chips produced at the time of crushing,

(e) a slide (48) located above a base plate (44) of the storage container which is adapted to be moved across said base plate (44) intermittently towards said lower crushing roller (56) to initially feed material to the lower crushing roller (36),

(f) an upper crushing roller (56) above said lower crushing roller (36) which

is mounted on a crushing roller core (58) and supports a plurality of radially projecting crushing tools (60), and cooperates with a second stationary crushing rack (62),

(g) an active peripheral region of the upper crushing roller (56) having a speed component directed towards said lower crushing roller (36), and

(h) a second screen (66) positioned adjacent said upper

crushing roller (56) through which crushed remains pass, and

(i) a space behind the second screen (66) that is also connected to the collecting chamber (46),

said upper crushing roller (56) thus crushing material not crushed by the lower crushing roller (36).

5,005,615

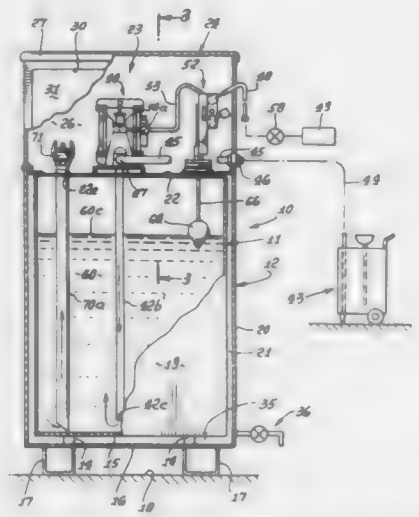
SAFETY TANK APPARATUS FOR LIQUID STORAGE

David C. McGarvey, San Gabriel, and David C. Whitman, Victorville, both of Calif., assignors to LRS, Inc., South El Monte, Calif.

Division of Ser. No. 462,634, Jan. 8, 1990. This application Aug. 6, 1990, Ser. No. 562,820

Int. Cl.[5] B67C *3/00*

U.S. Cl. 141—198 5 Claims



1. In a safety tank apparatus for installation to receive and store a liquid hydrocarbon or hydrocarbons, or the like, and from which the liquid may be withdrawn, the combination comprising:

(a) tank structure including an inner metallic tank, and an outer metallic tank protectively receiving the inner tank, the outer tank having a side wall, there being an upper interior space above the inner tank and within the tank structure,

(b) the tank structure including a cover extending over said inner and outer tanks,

(c) an opening in an upper continuation of said side wall, and a locking closure closing said opening, the closure movable to expose said upper interior space to direct sideward access from the exterior,

(d) control means below said cover, and directly horizontally accessible through said opening, for automatically effecting flow of said liquid into the inner tank from the exterior of said safety apparatus via said upper interior space if the level of liquid in the inner tank is below one predetermined level and for preventing flow of said liquid into the inner tank via said upper interior space if the level of liquid in the inner tank is at or above another predetermined level,

(e) said opening at all times being above the level of liquid in the inner tank.

5,005,616

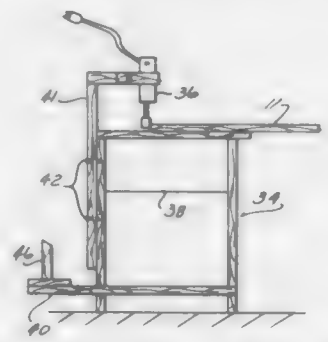
OVERARM ROUTER SHAPER

Bill L. Moshe, 868 Kettering, Pontiac, Mich. 48058

Filed Jun. 11, 1990, Ser. No. 535,776

Int. Cl.[5] B27C *5/00*

U.S. Cl. 144—134 A 2 Claims



1. A device to assist a machine operator in holding and feeding a piece of stock into a machine, the device comprising:

a base;

a support connected to said base;

a machine connected to said support;

a pair of parallel extensions connected to said base providing a vertical plane for said piece of stock; and

means for allowing rotation of said support.

5,005,617

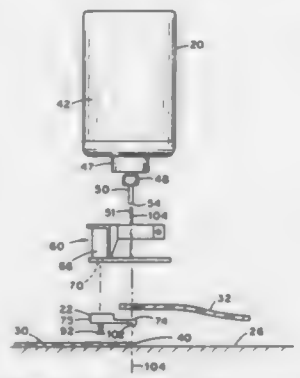
ROUTER GUIDE

John Michaels, 7454 Shawnee Rd., North Tonawanda, N.Y. 14120-1368

Filed Apr. 17, 1990, Ser. No. 510,046

Int. Cl.[5] B27C *5/10*; B43L *13/02*

U.S. Cl. 144—134 D 15 Claims



1. A guide facilitating the guide of a hand-held router across a relatively thin workpiece so that the rotatable cutting tool of the router severs the workpiece along a prescribed cutting path and so that the prescribed cutting path corresponds with an edge of an object underlying the workpiece, said guide comprising:

a platen body fixedly securable to the router adjacent the cutting tool thereof so that as the router is manually moved across the top of the workpiece so that the cutting tool moves in cutting engagement with the workpiece, the platen body moves below the workpiece and above the object underlying the workpiece;

said platen body including abutment means providing an abutment surface positionable in abutting engagement with the edge of the underlying object so that by moving the router across the workpiece while maintaining the abutment surface in abutting relationship with the edge of the underlying object, the cutting tool moves in cutting engagement with the workpiece along a cutting path which corresponds with the edge of the underlying object;

said platen body having a forward portion for extending an appreciable distance along the cutting path in advance of the cutting tool and for a distance which is of least 1.0 inch forwardly of the router and a rearward portion for extending an appreciable distance along the cutting path so as to trail the cutting tool and for a distance which is at least 1.0 inch rearwardly of the router so that a user can easily view the platen body when positioning the abutment surface in abutting relationship with the edge of the underlying object at the outset of a cutting operation; and

said abutment surface extending along the length of the forward and rearward portions of the platen body for engaging the edge of the underlying object at two points therealong which are at least 4.0 inches apart so that as the abutment surface is maintained in abutting relationship with the edge of the underlying object, the likelihood that the platen body will pivot relative to the underlying object edge and thereby shift the cutting tool to one side of the desired cutting path is relatively small.

5,005,618

MEANS FOR POSITIONING ARCHED HALVING-JOINTS OF FRAME PORTIONS AND FOR MILLING BEVELS INTO THESE FRAME PORTIONS

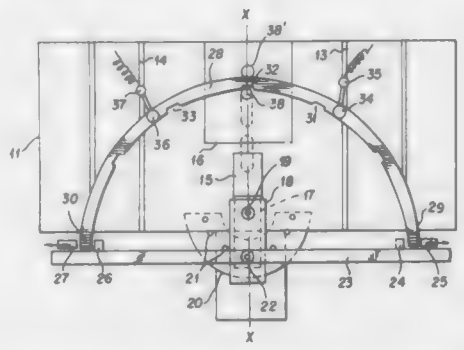
Ludolf Stegherr, Fabrikstrasse 2, 8413 Regenstauf, Fed. Rep. of Germany

Filed Feb. 27, 1989, Ser. No. 315,711

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1988, 3806116

Int. Cl.[5] B27C *5/00*

U.S. Cl. 144—136 R 3 Claims



1. An apparatus for positioning and milling arched halving-joint frame portions, which allow the milling of bevels into the inner and the outer surfaces of arches of window frames, door frames, which bevels are formed for receiving straight formed for receiving straight transverse struts, and the milling or recesses into said struts for connecting the arched frame portions with each other, said means comprising

a) a clamping rail which is fastened to the worktable so that it is rotatable and movable within the plane of the worktable, and which is provided with clamping elements being adjustable in the longitudinal axis of the clamping rail for taking up the two opposite arch ends,

b) a gauge, which gauge is movably connected with the working table transverse to the clamping rail and is connected to the clamping rail so that latching means, such as a spring-loaded bolt, provided at the clamping rail is engageable with latching points, such as bores within said gauge one at a time, and so that the clamping rail together with the workpiece can be rotated over the required graduation step,

c) clamping means for determining the position of the workpiece in order to mill the bevels,

d) a milling tool unit comprising at least two milling tools for tool unit comprising at least two milling tools for milling the bevels, which unit is arranged at the worktable and is adjustable to different shapes of arches relative to the workpiece, and

e) pressure roller means connected with a tool support for engaging one surface of the arch to be milled, which roller means is adjustable relative to the arch in order to determine the depth of the bevel.

5,005,619

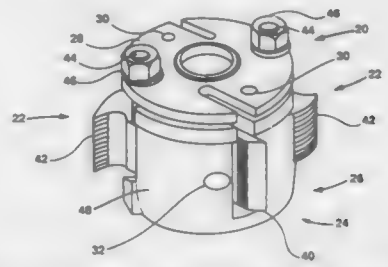
FINGER JOINT CUTTER HEAD

Raliegh J. Jensen, Boise, Id., assignor to Ace Company, Inc., Boise, Id.

Filed Feb. 9, 1990, Ser. No. 477,481

Int. Cl.[5] B27G *13/00*

U.S. Cl. 144—230 3 Claims



2. A finger joint cutter head assembly comprising:

a. a body portion;

b. a pair of cutter assemblies diametrically opposed and affixed to the body portion further comprising:

i. a plurality of removable cutter blades placed in a stacked configuration and having an aperture at an end opposite a cutting edge;

ii. a plurality of spacers interposed between the blades, having an aperture therethrough; and

iii. fastener means inserted through the blade apertures and interposed spacer apertures to adjustably affix the blades to the body portion;

c. a pair of adjustable trim knife assemblies diametrically opposed and affixed to the body portion further comprising:

i. a trim knife adjustment apparatus; and

ii. a knife clamp apparatus, and wherein the trim knife adjustment apparatus consists of:

(a) a pair of trim knife holders having a threaded tab;

(b) a pair of links pivotally connecting the trim knife holders to a rotary cylinder; and

(c) a knife fastener threadably engaged with one of the trim holder threaded tabs, and retained within an aperture in the body portion, such that rotation of the knife fastener extends or retracts the knife holders; and

d. means to securely affix the body portion to a rotatable machine spindle.

5,005,620

DRUM-TYPE WOOD CHIPPER

Norval Morey, Winn, Mich., assignor to Morbark Industries, Inc., Winn, Mich.

Filed Apr. 17, 1990, Ser. No. 510,086

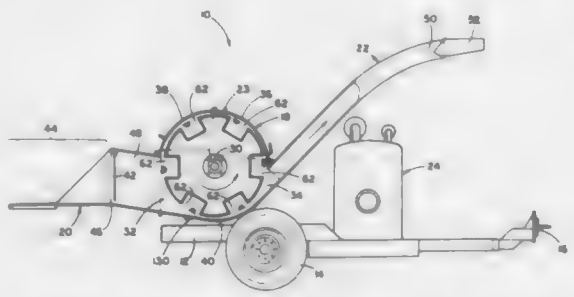
Int. Cl.[5] B27L *11/00*

U.S. Cl. 144—373 22 Claims

22. In a method of using a wood chipper for reducing wood products to wood chips, the chipper having:

a chipper housing with an inlet for receiving material to be chipped and an outlet for chips, a chipper drum mounted within the housing between the inlet and outlet and having a perimetral portion, at least one knife mounted on the perimetral portion of the drum, mechanism mounting the drum and knife for rotation in the housing and driving it in a chipping direction of rotation, the knife having a generally tangential portion with a cutting edge disposed for-

wardly with respect to said direction of drum and knife rotation, an anvil mounted by the housing radially adjacent the rotary path of travel of the knife cutting edge to cooperate with the knife in cutting chips, the perimetral portion of the drum having a chip inlet opening forwardly of and adjacent the knife cutting edge for passing chips cut by the knife and a chip retention basket radially inward of the knife in communication with the drum chip inlet opening for receiving and circumferentially transporting the chips cut, the drum also having a chip outlet opening rearwardly of the knife cutting edge and communicating with the basket, and the housing having a curvilinear belly band between the anvil and chipper housing outlet conforming in shape generally to the path of rotation of the



cutting edge and spaced radially outwardly thereof and the basket a distance to retain chips in the basket, the steps of:

a. feeding wood material to said chipper housing inlet and into the path of rotation of said knife to chip the inner end portions of said wood materials;

b. collecting the chips cut by said knife in said basket and retaining them therein against the operation of centrifugal force by substantially blocking their free outward egress through sasid drum outlet opening by passing said basket along said retaining belly band in its path to said chipper housing outlet to cause the chips to accelerate to the speed of rotation of said drum; and

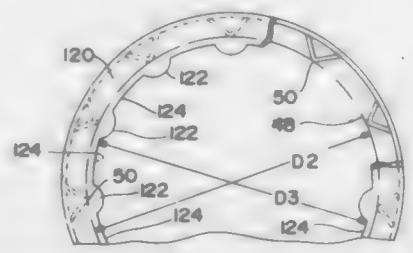
c. hurling them through said chipper housing outlet.

5,005,621

METHOD, SYSTEM, AND APPARATUS FOR DEBARKING ROUNDWOOD

Donald V. Woodham, Monticello, Ark., assignor to Price Industries, Monticello, Ark.

Filed Sep. 1, 1989, Ser. No. 401,407
Int. Cl.[5] B27L *1/02*
U.S. Cl. 144—208 B **18 Claims**



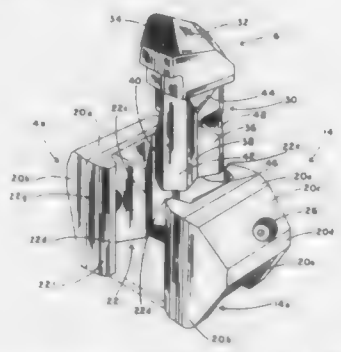
1. Apparatus for debarking roundwood, said apparatus comprising, a generally horizontal rotary drum debarker having a drum with an inside surface, an inlet end and an outlet end, means in front of the drum for feeding roundwood into the drum, a plurality of circumferentially spaced apart elongated lifter elements connected to the inside of the drum for rotation with the drum and having log engaging portions inwardly of the inside surface of the drum so that the roundwood fed into the drum is rotated and lifted by said lifter elements, and a reinforcing ring connected to the drum adjacent one of said ends, said reinforcing ring having an inside diameter greater than the diameter of a circle passing through the log engaging portions of said lifter elements, means adjacent the other end of the drum for reinforcing said other end of the drum, wherein said lifter elements have sloping ends adjacent an end of the drum which slope toward the inside surface of the drum, and cover plates secured to said sloping ends of said lifters.

5,005,622

BLOCK AND LOCKING MECHANISM FOR A STUMP GRINDING CUTTER BIT AND METHOD OF SECURING AND RETAINING

Wayner H. Beach, Roaring Spring, Pa.; Leroy E. Den Besten, Valatie, N.Y., and Don C. Rowlett, Bedford, Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Feb. 16, 1990, Ser. No. 481,490
Int. Cl.[5] B27G *13/04*
U.S. Cl. 144—241 **14 Claims**



5. A block and locking mechanism for a stump grinding cutter bit comprising:

(a) a block having a shank receiving cavity and surrounding wall structure;

(b) a cutter bit having a shank adapted to be received within the shank cavity of the block;

(c) retaining notches formed on opposite sides of the shank;

(d) a pair of threaded throughbores extending through opposite sides of the surrounding wall structure of the block, each threaded throughbore extending at an angle with respect to the shank cavity formed within the block; and

(e) a pair of angled set screws threaded through the threaded throughbores for engaging the retaining notches formed on opposite sides of the cutter bit shank and retaining the cutter bit shank within the block such that the cutter bit shank is held within the block by the cooperative action of the set screws which extend from opposite sides of the surrounding wall structure of the block into engagement with the cutter bit shank. are likewise offset such that the notches formed in the shank align with the threaded throughbores.

5,005,623

GOLF BAG RAIN COVER

James M. Webster, Jr., Baltimore, Md., assignor to Eru, Inc., Towson, Md.

Filed Feb. 6, 1990, Ser. No. 475,692
Int. Cl.[5] A63B *55/00*
U.S. Cl. 150—159 **37 Claims**

13. A rain cover for the top of a golf bag and for the golf clubs therein, the rain cover being compact, lightweight, flexible and waterproof, comprising:

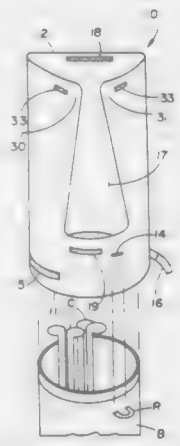
a sleeve having a first open end, a second open end and a sidewall therebetween;

the first open end having at least one slit therein, the slit receiving therein a ring which is attached near the top of the golf bag such that the ring may be inserted through the slit and a carrying strap on the golf bag may be connected to the ring thereby retaining the cover on the golf bag and

preventing rotation of the cover about the top of the golf bag;

the first open end having a releasable fastening means attached thereto, the first open end further having a strap attached thereto, the strap having thereon a fastening means which cooperates with the releasable fastening means such that when the respective fastening means are engaged, the first end of the cover may be securely snugged to conform to the top of the golf bag, and when so secured the second end of the cover is disposed outwardly from the top of the golf bag and is draped over the top of the golf bag and the golf clubs therein; the cover hanging freely therefrom;

a panel opening in the side wall of the cover, the opening extending from the second end toward the first end of the cover such that when the second end is draped over the top of the golf bag, the second end may be lifted to provide ease of access to the golf clubs while providing cover



to the top of the golf bag; and a releasable first fastening means attached to the second end of the cover, a cooperating second fastening means attached to the first end of the cover near the panel opening such that when the second end of the cover is folded toward the first end of the cover over the top of the golf bag and the respective first and second fastening means are engaged, the top of the golf bag and the golf clubs thereon are protected from rain and wind-driven rain and further, when the first and second fastening means are disengaged, the second end may be lifted providing access to the golf clubs from an angle and preventing rain from entering the golf bag;

wherein the cover is fabricated from a multilayer material;

wherein the multilayer material comprises an outer layer, a center layer which is waterproof and an inner layer; and

wherein the inner layer has a reflectorized surface to improve visibility when the second end of the cover is lifted for access to the golf clubs.

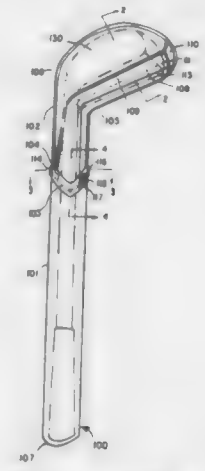
5,005,624

DEVICE FOR PROTECTING GOLF CLUBS

Henry H. Sung, 19826 E. Vista Hermosa Dr., Walnut, Calif. 91789

Filed Mar. 14, 1989, Ser. No. 323,284
Int. Cl.[5] A63B *57/00;* **B65D** *85/20*
U.S. Cl. 150—160 **3 Claims**

1. A golf club protector comprising an elongated rigid tube adapted to assume a vertical position in a golf bag for housing the shaft of an inverted golf club; and a flexible cover secured to the upper end of said rigid tube to entirely surround the hitting head of the inverted golf club; said flexible cover comprising first and second generally parallel elongated flexible panels (**105** and **104**) configured to be slightly larger than the profile of the inverted golf club head; a third elongated flexible panel (**110**) extending between longitudinal edge areas of the first and second panels; said third panel having an upper end area adapted to extend along the toe area of the golf club head, a central area adapted to extend along the sole area of the club head, and a downwardly extending area connected to the upper end of the rigid tube; a fourth flexible panel (**108**) extending from the other longitudinal edge of the first panel partway across the space between the first and second panels; and a fifth flexible panel (**109**) extending from the other longitudinal edge



of the second panel partway across the space between the second and first panels; said fourth and fifth panels having confronting overlapped unconnected longitudinal edges that define a longitudinal slot extending along the undersurface of the club head cover; said longitudinal slot having a sufficient length as to expose the golf club head when the cover is pulled in a direction away from the fourth and fifth panels.

5,005,625

PNEUMATIC TIRE HAVING AIR RETENTION INNERLINER

Daniel F. Klemmensen, Tallmadge, and Roger N. Beers, Uniontown, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 24, 1989, Ser. No. 343,776
Int. Cl.[5] B60C *5/14;* **B32B** *27/28*
U.S. Cl. 152—510 **5 Claims**

1. A pneumatic rubber tire having an integral innerliner of a sulfur cured rubber composition comprised of, based on 100 parts by weight rubber, a blend of (A) about 20 to about 90 parts by weight acrylonitrile/butadiene copolymer rubber with an acrylonitrile/butadiene ratio in the range of about 55/45 to about 20/80 and having a Tg in the range of about 20 ° C. to about −25° C.; and (B) about 80 to about 10 parts by weight of at least one additional rubber having a Tg in the range of about −40° C. to about −105° C. comprised of (i) at least one rubber selected from the group consisting of cis 1,4-polyisoprene rubber, styrene/butadiene copolymer rubber, cis 1,4-polybutadiene rubber, and styrene/isoprene/butadiene rubber or of (ii) at least one rubber selected from the group consisting of butyl rubber, chlorobutyl rubber and bromobutyl rubber wherein the resulting acrylonitrilecontent in the rubber blend of (A) and (B) (i) is in the range of about 20 to about 40 weight percent and in the rubber blend of (A) and B (ii) is in the range of about 5 to about 25 weight percent and wherein said innerliner is first constructed as an innersurface of an uncured rubber tire as an uncured compounded rubber gum strip having a thickness in the range of about 0.08 to about 0.2 centimeters and is then co-cured with the tire during a tire curing operation.

5,005,626

PNEUMATIC RADIAL TIRE HAVING A FOLDED BELT INCLUDING A POLYVINYL ALCOHOL CORDS

Kazuo Oshima, Higashiyamato, and Shizuo Iwasaki, Kodaira, both of Japan, assignors to Bridgestone Corp., Tokyo, Japan

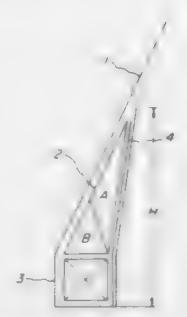
Filed Dec. 15, 1987, Ser. No. 133,405

Claims priority, application Japan, Dec. 19, 1986, 61-305470

The portion of the term of this patent subsequent to Dec. 26, 2006, has been disclaimed.

Int. Cl.[5] B60C *9/26, 15/00*

U.S. Cl. 152—527 **4 Claims**



1. A pneumatic radial tire having a belt structure of at least two belt layers composed of at least one layer containing cords each obtained by twisting organic fibers and at least one layer containing steel cords, at least one of the organic fiber cord layers being interposed between the steel cord layer and a tread at a state that both transversely outermost end portions are folded inward, said organic fiber cord having a dynamic modulus at 100° C. and $30H_2$ of 0.8×10^{11} to 2.0×10^{11} dyn/cm^2 and obtained by twisting high strength, high modulus polyvinyl alcohol fibers and having, after removal from the tire, a twisting coefficent N_T represented by the following equation:

$$N_T = N \times \sqrt{0.139 \times D/\rho} \times 10^{-3},$$

wherein N is a twisting number per 10 cm of cord length, D is ½ of total denier number of cord and p is a specific gravity of cord and a strength S (g/d), which satisfy the following relations:

$$0.19<N_T<0.55 \quad (1)$$

$$S>15.5-12N_T \quad (2,)$$

and said tire satisfying the following relation:

$$H>2.5M+125 \quad (3),$$

wherein H is a height of a turnup portion of a carcass ply around a bead portion (mm) and M is tensile stress at 50% elongation of a bead filler rubber reinforcing the bead portion at room temperature (kg/cm^2).

5,005,627

DEVICE FOR SEALING BETWEEN 4 TUBELESS TIRE AND A RIM DURING TIRE INFLATION PROCESS

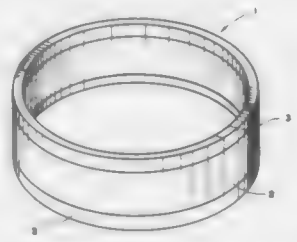
J. C. Tannehill, Baton Rouge, La., assignor to Quick & Easy Tire Products, Inc., Mandeville, La.

Continuation-in-part of Ser. No. 659,949, Oct. 11, 1984, abandoned. This application Jul. 28, 1986, Ser. No. 889,306

Int. Cl.[5] B60C *25/00, 25/05;* **B27H** *7/00*

U.S. Cl. 157—001.1 **4 Claims**

1. An improved tubeless tire inflation device for sealing between a tubeless tire and a rim during the tire inflation process, comprising a cylindrical, flexible sleeve having an inside diameter not greater than the largest outside diameter of said rim, said sleeve having an axial length such that said sleeve may sealingly span between said rim and said tire, at least one axial end of said sleeve having a groove along the entire circumference of said sleeve, said groove housing a sealing insert therein, the sealing insert being formed of a softer, more compressible composition than the sleeve, said sealing insert being



securely attached within the groove along the bottom of the groove and extending circumferentially around the groove, said insert having a portion which protrudes outside the groove and beyond the axial end of the sleeve, such that the protruding portion sealingly contacts the tire.

5,005,628

METHOD FOR CORRECTING TIRE DEFLECTION IN TIRE GROOVING AND APPARATUS THEREFOR

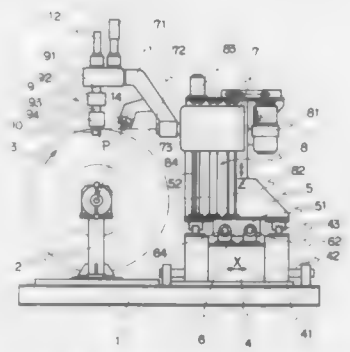
Satoru Kinuhata; Masao Takami, both of Kobe; Eiji Shibata, Nakama, and Tadahiko Tamura, Kitakyushu, all of Japan, assignors to Sumitomo Rubber Industries Inc., Kobe, Japan

Continuation of Ser. No. 285,557, Dec. 16, 1988, abandoned. This application Nov. 6, 1989, Ser. No. 432,405

Claims priority, application Japan, Dec. 19, 1987, 62-322202; May 30, 1988, 63-134026; May 30, 1988, 63-134027

Int. Cl.[5] B29H *21/08*

U.S. Cl. 157—13 **9 Claims**



1. An apparatus for compensating a radial deflection and a lateral deflection of a tire to be applied to a grooving apparatus wherein a cutter movement is controlled by a plurality of operating shafts and desired pattern grooves are formed in a tire surface, characterized in that the apparatus comprises a radial deflection detector for detecting a radial deflection of a tire in a direction of a tire diameter,

a lateral deflection detector for detecting a lateral deflection of a tire in a direction of a tire width, a radially driving shaft which rotates under a control of a reference program to move a cutter in the direction of the tire diameter,

a laterally driving shaft which rotates under a control of the reference program to move the cutter in the direction of the tire width,

a radially correction shaft which is disposed in parallel with the radially driving shaft and rotates to radially move the cutter under a control of a correction program based on a detected value from the radial deflection detector,

a laterally correction shaft which is disposed in parallel with the laterally driving shaft and rotates to laterally move the cutter under a control of a correction program based on a detected value from the lateral deflection detector;

a radially driving device for superposing a movement of the radially correction shaft on a movement of the radially driving shaft, and

a laterally driving device for superposing a movement of the laterally correction shaft on a movement of the laterally driving shaft.

5,005,629

COMPACT CURTAIN FOR THE CLOSURE OF PASSAGES

René Caillet, B.P. 19, F-78101, Saint Germain En Laye, France

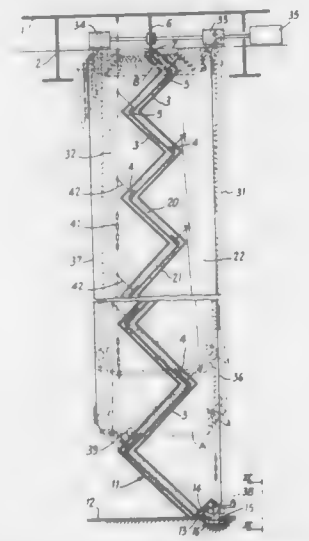
PCT No. PCT/FR88/00220, § 371 Date Mar. 6, 1989, § 102(e) Date Mar. 6, 1989, PCT Pub. No. WO88/08915, PCT Pub. Date Nov. 17, 1988

PCT Filed May 5, 1988, Ser. No. 309,768

Claims priority, application France, May 7, 1987, 87 6459

Int. Cl.[5] E06B *9/06*

U.S. Cl. 160—84.1 **14 Claims**



1. A curtain of small bulk for closing a passage, which comprises a succession of substantially planar elements comprising at one end a first element suspended to an upper part of the passage and at the other end a last element adapted in a closed position of the curtain to engage a lower part of the passage, said curtain moving for closure in a vertical plane from the upper part to the lower part of the passage, the elements are configured so that, while in an open position of the curtain, the elements fit into each other while being horizontally disposed, said elements each being formed by a shaped metal sheet section of high inertia and reduced size and each comprising:

(a) a wide central web and at least at one end a reinforcement forming an angle with said web, and

(b) hinge means connecting together one end of said element to a preceding element and the other end of said element to a following element, said elements having increasing dimensions from said first element to said last element, so that the most exposed lower elements can withstand hydrostatic pressure and shocks.

5,005,630

PROCESS FOR PRODUCING FOUNDRY MOLDS AND CORES FROM SAND AND A BINDER

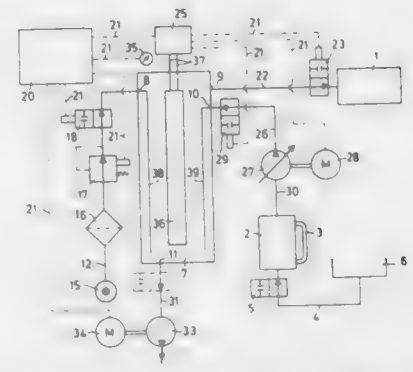
Franz Gähler, Hub, 9534, Gähwil, Switzerland

Filed Sep. 28, 1988, Ser. No. 250,343

Claims priority, application Switzerland, Oct. 2, 1987, 3865/87

Int. Cl.[5] B22C *9/12*

U.S. Cl. 164—16 **11 Claims**



1. A process for the production of foundry molds and cores from foundry sand mixed with a binder, comprising the steps of placing sand and a binder in a mold casing; providing a first container filled with a liquid reagent; providing a second container connected to said first container and to said casing; providing a compressed carrier gas source connected to said second container; providing means for producing vacuum connected to said second container; producing vacuum in said second container by switching on said vacuum producing means after closing connections of said compressed carrier gas source and said first container to said second container and, after reaching vacuum in said second container, opening a connection between said first container and said second container to introduce said liquid reagent into said second container whereby said liquid reagent is rapidly evaporated; opening a connection between said carrier gas source and said second container whereby said vacuum in said second container is quickly changed into an overpressure; and feeding the evaporated reagent through a compressed carrier gas into said casing which results in hardening of the sand in said casing to a dimensionally stable mold or core.

5,005,631

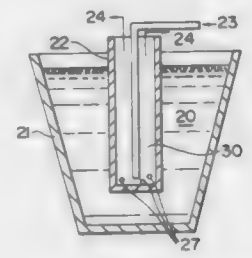
METHOD FOR FORMING A METAL MATRIX COMPOSITE BODY BY AN OUTSIDE-IN SPONTANEOUS INFILTRATION PROCESS, AND PRODUCTS PRODUCED THEREBY

Ratnesh K. Dwivedi, Wilmington, Del., assignor to Lanxide Technology Company, LP, Newark, Del.

Filed Nov. 10, 1988, Ser. No. 269,370

Int. Cl.[5] B22D *19/14*

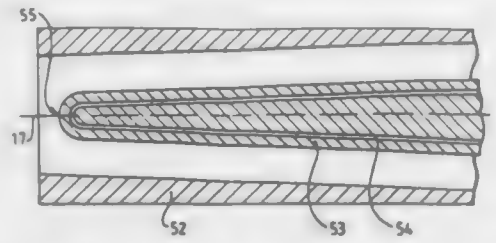
U.S. Cl. 164—97 **42 Claims**



1. A method for making a metal matrix composite, comprising:

providing a substantially non-reactive filler, said filler including a cavity portion therein;
communicating a localized infiltrating atmosphere with at least a portion of said cavity in said filler; and
spontaneously infiltrating at least a portion of the filler with molten matrix metal.

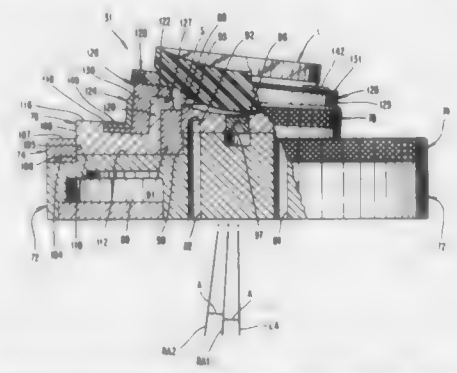
5,005,632
METHOD AND APPARATUS FOR COOLING A FLOW OF MOLTEN MATERIAL
Steven Henderson, Middlesbrough, and Robert M. Perry, Egremont, both of England, assignors to British Steel Corporation, London, England
Continuation of Ser. No. 296,352, Jan. 10, 1989, abandoned, which is a continuation of Ser. No. 90,681, Aug. 20, 1987, abandoned. This application Oct. 10, 1989, Ser. No. 418,980
Claims priority, application United Kingdom, Dec. 30, 1985, 8531837
Int. Cl.[5] B22D *1/00*
U.S. Cl. 164—122 **17 Claims**



17. A heat transfer conduit for conveying molten material from a first station to a second station and for controllably extracting heat from the material as it passes through the conduit, the conduit including means for promoting turbulent flow conditions within molten material passing therethrough to generate within the molten material shear rates sufficient to maintain fluidity of the molten material emerging from the conduit, and the heat transfer conduit being constructed from at least two elongate separate segments separable along separation lines which lie generally in the direction of a longitudinal center line of the conduit and generally in a direction normal to the longitudinal center line which are releasably assembled together to define a unitary conduit which can selectively be disassembled prior to reuse for the removal of solidified material and other matter from an interior of the conduit; wherein an elongate mandrel is positioned within the conduit interior with a longitudinal axis of the mandrel generally co-incident with a longitudinal axis of the conduit, means being provided to convey a coolant medium along lengthwise extending passageways formed in the mandrel.

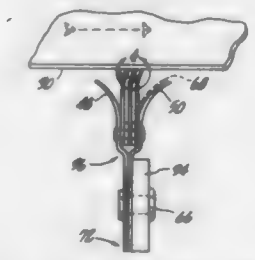
5,005,633
LENS BLOCKING APPARATUS
Herbert H. Mathews, Muskogee, and Joseph L. Welch, Jenks, both of Okla., assignors to Coburn Optical Industries, a Division of Pilkington Visionacare, Inc., Muskogee, Okla.
Filed Dec. 8, 1989, Ser. No. 447,844
Int. Cl.[5] B22D *19/00*
U.S. Cl. 164—334 **14 Claims**

1. A lens blocking apparatus comprising:
a base including means for removably receiving a block insert,
an axis ring mounted on said base for rotation about a first axis, said axis ring having a graduated axis scale,
a lower prism ring mounted on said base for rotation about said first axis and including a support surface defining a second axis inclined by a first acute angle relative to said first axis, said lower prism ring having a first prism scale graduated exponentially from zero to six diopters over a ninety degree region of said lower prism ring,
an upper prism ring mounted on said support surface of said lower prism ring for rotation about said second axis, said upper prism ring carrying a lens seat defining a third axis inclined by a second angle relative to said first axis, said second angle being equal to two times said first angle, said upper prism ring including a second prism scale graduated



exponentially from zero to nine diopters over a one hundred eighty degree region of said upper prism ring,
said lens seat arranged to define the upper edge of a space disposed between said seat and the block insert, and
means for conducting a molten alloy to said space for adherence to the lens and block insert.

5,005,634
BI-DIRECTIONAL FLEXIBLE SEAL
Richard L. Reeves, 24265 Gradera Rd., Homeland, Calif. 92348, and Dennis Woodland, 19760 Temescal Canyon Rd., Corona, Calif. 91719
Continuation of Ser. No. 382,848, Jul. 20, 1989, Pat. No. 4,940,080. This application Dec. 12, 1989, Ser. No. 448,936
The portion of the term of this patent subsequent to Jul. 10, 2007, has been disclaimed.
Int. Cl.[5] F28D *19/00*
U.S. Cl. 165—9 **6 Claims**

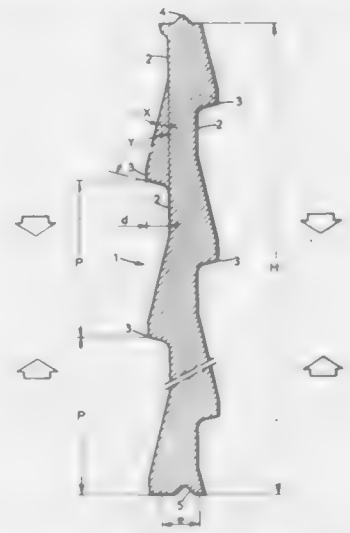


1. An air preheater having a flexible radial seal comprising:
a first base plate;
a second base plate attachable to said first base plate, said first and second base plates each have a planer section and a curved flange; and
at least one flexible leaf attachable at least partially in between and extending outwardly from said first and second base plates.

5,005,635
REFRACTORY ELEMENTS FOR THE CONSTRUCTION OF HEAT REGENERATORS
Alain P. B. Zanoli, Morieres, and Joseph Recasens, Sorgues, both of France, assignors to Societe Europeenne des Produits Refractaires, Courbevoie, France
Filed Jul. 26, 1989, Ser. No. 385,142
Claims priority, application France, Aug. 10, 1988, 88 10791
Int. Cl.[5] F28D *17/00*
U.S. Cl. 165—9.1 **10 Claims**

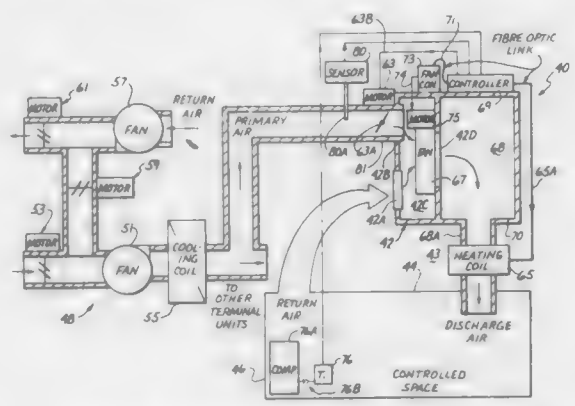
1. A ceramic element for equipping regenerators of glass

melting furnaces, having at least one vertical wall, the mean thickness of which is at the most 40 mm, characterized by the presence, on opposite faces of this vertical wall, of a plurality of obstacles forming an integral part of the element, the protrusion of the obstacles relative to the base surface of each face of the wall being at least 5 mm, the ratio of the distance separating two consecutive obstacles in the vertical direction to the said protrusion of each face being comprised between 3 and 15,and



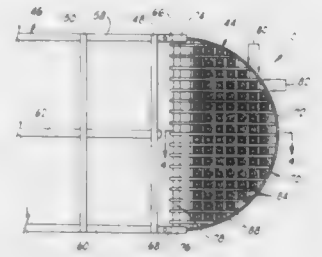
the angle x formed by the obstacle with the base surface of each face of the wall in the given direction of movement of the fumes and the angle y formed by the obstacle with the base surface of each face of the wall in the given direction of movement of the air to be heated being such that x is less than y, the obstacles on one vertical wall face being staggered in a vertical direction relative to the obstacles on the opposite vertical wall face.

5,005,636
VARIABLE AIR VOLUME VENTILATING SYSTEM AND METHOD OF OPERATING SAME
David L. Haessig, Poway, Calif., assignor to Staefa Control System, Inc., San Diego, Calif.
Continuation-in-part of Ser. No. 150,247, Jan. 29, 1988, Pat. No. 4,942,921. This application Feb. 5, 1990, Ser. No. 475,034
Int. Cl.[5] F25B *29/00*
U.S. Cl. 165—16 **28 Claims**



1. A variable air volume ventilating system comprising:
motive means for supplying a given volume of air mixture to a space to condition the air therein to an approximate predetermined temperature;
terminal housing means for permitting a desired quantity of primary air to be mingled with a certain quantity of return air from said space to form an air mixture for conditioning the air in said space;
said terminal housing means including a hollow interior having inlet means and outlet means, said inlet means and said outlet means being in atmospheric communication with said space;
damper means in atmospheric communication with said inlet means for supplying a desired quantity of primary air to the interior of said terminal means;
said motive means including a fan, said fan being disposed between said inlet means and said outlet means for drawing said desired quantity of primary air into the interior of said terminal means via said inlet means and for discharging a given volume of air mixture from said interior via said outlet means into said space;
said fan further drawing said certain quantity of return air into the interior of said terminal means via said inlet means for facilitating the mingling of said return air with said desired quantity of primary air;
modulator means coupled to said motive means for starting said motive means and for varying its speed, to control the volume of air mixture supplied to said space;
controller means for causing said modulator means and said damper means to cooperate in a functionally related manner relative to the velocity of the primary air available for cooling the air in the space and a user selected predetermined air temperature for the air in the space; and
means coupled to said controller for sensing the velocity of said primary air available for cooling the air in the space and the temperature of the air in the space.

5,005,637
HEAT EXCHANGER U-BEND TUBE SUPPORT
Cecil C. Gentry, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Nov. 5, 1986, Ser. No. 927,345
Int. Cl.[5] F28F *9/00*
U.S. Cl. 165—69 **23 Claims**



20. A heat exchanger comprising:
a housing defining a tube chamber therein;
a tube plate at an end of said tube chamber;
a plurality of substantially parallel tubes extending from said tube plate in a longitudinal direction in said tube chamber, said tubes being divided into a first pass and a second pass of tubes;
a plurality of U-bend tubes, each U-bend tube interconnecting a tube in said first pass with a corresponding tube in said second pass, said U-bend tubes defining a plurality of first lanes therebetween and a plurality of second lanes therebetween substantially perpendicular to said first lanes;
a tube support adapted for supporting said first and second passes of said tubes within said housing and having an end adjacent said U-bend tubes;
first and second mounting brackets positioned on said end of said tube support and aligned in a plane passing between said first and second passes of tubes;
a frame disposed around said U-bend tubes and in said plane between said first and second passes, said frame comprising:

a first end engaged with said first mounting bracket and longitudinally slidable therewith; and

a second end engaged with said second mounting bracket and longitudinally slidable therewith;

a plurality of first tube dividers attached to said frame and disposed in said first lanes; and

a plurality of second tube dividers attached to said frame and disposed in said second lanes.

5,005,638

THERMAL CONDUCTION MODULE WITH BARREL SHAPED PISTON FOR IMPROVED HEAT TRANSFER

Gary F. Goth, Pleasant Valley; Kevin P. Moran, Wappingers Falls, and Michael L. Zambrunnen, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, New York, N.Y.

Filed Oct. 31, 1988, Ser. No. 265,065

Int. Cl.[5] F28F *7/00;* **H05K** *7/20*

U.S. Cl. 165—80.4 **10 Claims**



1. A circuit module of the type having:

a substrate, heat producing components such as semiconductor chips mounted in an array of component sites on a surface of the substrate, the substrate being oriented for terminology in a horizontal plane with the surface facing up, the components having an upper substantially flat surface,

a hat of thermally conductive material cooperating with the substrate to form an enclosure for the heat producing components, and means such as a cold plate for removing heat from the hat, the hat having blind cylindrical holes of a predetermined diameter each facing an associated component site. the axis of each hole being perpendicular to the upper flat surface of an associated component within a predetermined maximum angle of component tilt,

wherein the improvement comprises,

pistons each having a cylindrical section and a section tapered at a predetermined angle from the cylindrical section and having a lower flat face perpendicular to the axis of the piston, each piston including the cylindrical section and at least a portion of said tapered section being in one of the cylindrical holes, means for each piston against the associated component with the flat face of the piston in contact with the surface of the component for heat transfer,

the cylindrical section of each piston having a predetermined diameter related to the diameter of the cylindrical hole to provide sufficient clearance for motion within the cylindrical hole and having a predetermined length to permit the piston to tip to said angle of piston taper,

whereby if a component is tilted at an angle equal to or less than the angle of taper, the lower face of the associated piston is in parallel contact with the surface of the component.

5,005,639

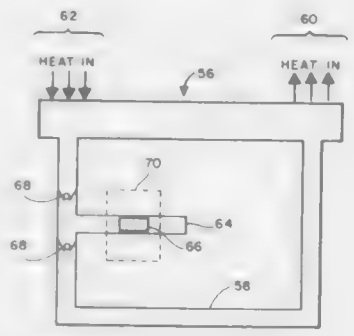
FERROFLUID PISTON PUMP FOR USE WITH HEAT PIPES OR THE LIKE

John E. Leland, Loudonville, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 172,676, Mar. 24, 1988, Pat. No. 4,967,831. This application Apr. 2, 1990, Ser. No. 502,966

Int. Cl.[5] F28D *15/02*

U.S. Cl. 165—104.25 **11 Claims**



1. A pump, comprising:

(a) a conduit;

(b) a piston inside the conduit, wherein the piston includes a permanent magnet section; and,

(c) next to the permanent magnet section, a ring of ferrofluid surrounding the piston and held in place by the magnetic field of the permanent magnet, whereby the ferrofluid ring suspends the piston inside the conduit.

11. A heat pipe pump for pumping liquid condensate from a condenser section of a heat pipe to an evaporator section, the heat pipe having a transport section for flow of gaseous working fluid, comprising:

(a) a conduit, separate from the transport section, from the condenser section to the evaporator section for transporting liquid condensate;

(b) a piston pump, including a piston, operatively interconnected with the conduit to pump the liquid condensate through the conduit, wherein the piston includes permanent magnet sections;

(c) next to each permanent magnet section, a ring of ferrofluid surrounding the piston and held in place by the magnetic field of the permanent magnet, and;

(d) means for creating an oscillating magnetic field for moving the piston.

5,005,640

ISOTHERMAL MULTI-PASSAGE COOLER

John R. Lapinski, St. Charles, and Michael G. Grote, St. Louis, both of Mo., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Continuation of Ser. No. 361,394, Jun. 5, 1989, abandoned. This application Sep. 17, 1990, Ser. No. 584,805

Int. Cl.[5] F28F *3/12*

U.S. Cl. 165—170 **8 Claims**

1. An isothermal cooler for cooling a heat source, comprising:

(a) a first plate constructed of a highly thermally conductive material and having a heating surface along a length of a first side of said plate which is adapted to attach to the heat source, a plurality of thermally conductive first passage walls attached to a second side of said first plate, said first passage walls defining a plurality of first passages having a length parallel to said heating surface length, said first plate having a first opening;

(b) a highly thermally conductive edge plate attached to said first plate and said first passage walls, said edge plate having a first manifold in fluid communication with said first opening and said first passages at one end thereof, a second manifold in fluid communication with said first passages at an opposite end thereof, and a third manifold at said one end thereof;

(c) a second plate having a plurality of thermally conductive second passage walls attached to said second plate and said edge plate, said second passage walls defining a plurality of second passages in fluid communication with said second and third manifolds, said second plate having a



second opening in fluid communication with said third manifold; and

(d) a fluid that flows into said second opening, through said third manifold, across said second passages through said second manifold, across said first passages, through said first manifold and out of said first opening, whereby said first plate heating surface is substantially isothermal along its length.

5,005,641

GAS GENERATOR WITH IMPROVED IGNITION ASSEMBLY

Henry H. Mohaupt, 1151 Estrella Dr., Santa Barbara, Calif. 93110

Filed Jul. 2, 1990, Ser. No. 546,898

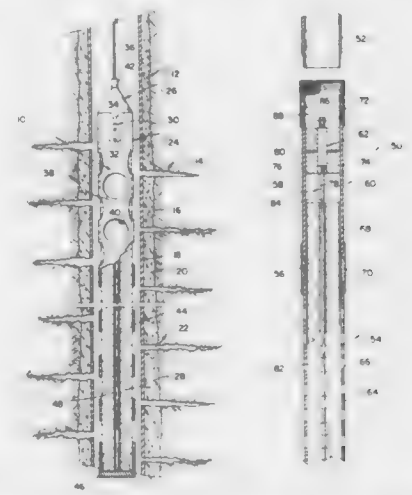
Int. Cl.[5] E21B *43/263;* **F42B** *3/08, 3/10*

U.S. Cl. 166—63 **10 Claims**

1. Apparatus for treating a well penetrating a subterranean formation, comprising

an elongate propellant charge for generating a quantity of high pressure gaseous combustion products and having an axial passage therein;

an ignition assembly for initiating flame propagated combustion of the propellant charge including an ignition tube having a combustible material therein, the ignition tube extending axially into the propellant passage and being capable of movement relative to the propellant charge;



the cross-sectional area of the passage being 112–156% of the cross-sectional area of the ignition tube.

5,005,642

LOGGING TOOL CENTRALIZER

Boyd B. Moore, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 30, 1989, Ser. No. 428,528

Int. Cl.[5] E21B *17/10*

U.S. Cl. 166—241 **2 Claims**



1. An apparatus for centralizing an elongated tool in a tubular member comprising:

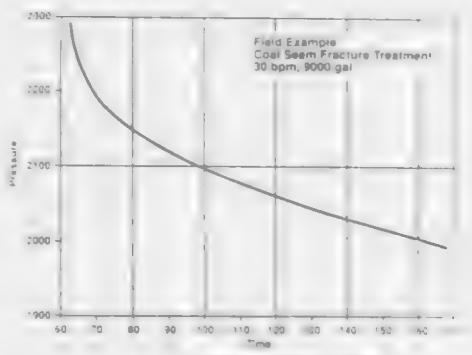
(a) two pairs of centralizing arms radially displaced about the elongated tool, each pair of arms being pivotally connected at adjacent ends to each other and pivotally connected at opposite ends to the elongated tool;

(b) means for causing said opposite ends of each pair of centralizing arms to move closer together, thereby forcing said pivotally connected adjacent ends of each pair of centralizing arms to move radially outward from a retracted position adjacent the elongated tool and into contact with the tubular member; and

(c) pivot points set off-center for connecting said opposite ends of the centralizing arms to the elongated tool body, each pair of centralizing arms crossing to reach respective opposite off-center pivot points, said pivot points being

functional to prevent the centralizing arms from locking in said retracted position.

5,005,643
METHOD OF DETERMINING FRACTURE PARAMETERS FOR HETEROGENOUS FORMATIONS
Mohamed Y. Soliman, Lawton; Robert D. Kuhlman, and Don K. Poulsen, both of Duncan, all of Okla., assignors to Halliburton Company, Duncan, Okla.
Filed May 11, 1990, Ser. No. 522,427
Int. Cl.[5] E21B *43/26, 47/06*
U.S. Cl. 166—250 **7 Claims**

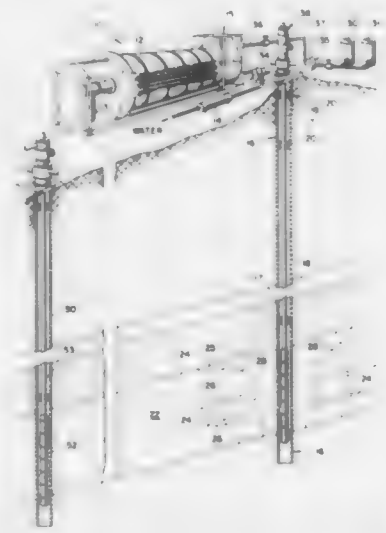


Pressure Decline vs Time

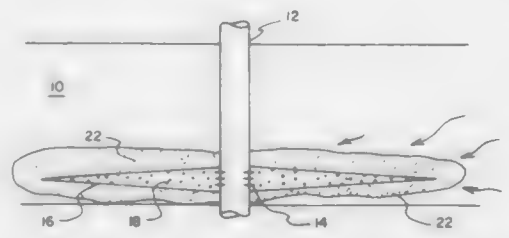
1. A method of determining the parameters of a full scale fracturing treatment of a subterranean formation comprising the steps of:
(a) injecting fluid into a wellbore penetrating said subterranean formation to generate a fracture in said formation;
(b) measuring the pressure of the fluid in said fracture over time;
(c) determining a leak-off exponent that characterizes the rate at which said fluid leaks off into said formation as a function of time from step (b);
(d) determining parameters of a fracturing treatment including fracture length and width using said leak-off exponent.

5,005,644
STEAM ENHANCED OIL RECOVERY METHOD USING BRANCHED ALKYL AROMATIC SULFONATES
Robert G. Wall, Pinole; Francois Friedmann, Laguna Beach, and Steven P. Current, Novato, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.
Continuation of Ser. No. 338,397, Apr. 6, 1989, abandoned, which is a continuation of Ser. No. 55,148, May 28, 1987, abandoned. This application Oct. 6, 1989, Ser. No. 418,016
Int. Cl.[5] E21B *43/22, 43/24*
U.S. Cl. 166—272 **34 Claims**

1. A method of enhanced recovery of oil from a petroleum reservoir during gas injection into said reservoir which comprises:
periodically injecting gas comprising steam and a solution of an anionic surfactant into said reservoir from a known depth interval in a well to form a foam in the presence of residual oil in high gas permeable channels of said reservoir, said anionic surfactant solution including an effective amount of an alkyl aromatic sulfonate component which has an average molecular weight of from 400 to 600 and at least one of the alkyl groups has a carbon content of from 15 to 30 carbon atoms and said alkyl group is branched with at least three tertiary or quaternary carbon atoms;
contacting the reservoir fluids in said formation with the resulting foam and said [illegible] away from said injection interval to assist movement of said reservoir fluids toward a producing interval in said reservoir; and
recovering oil from said producing interval.



5,005,645
METHOD FOR ENHANCING HEAVY OIL PRODUCTION USING HYDRAULIC FRACTURING
Alfred R. Jennings, Jr., Plano, and Roger C. Smith, Dallas, both of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.
Filed Dec. 6, 1989, Ser. No. 446,835
Int. Cl.[5] E21B *43/267, 33/134*
U.S. Cl. 166—280 **6 Claims**



1. A method for producing viscous substantially fines-free hydrocarbonaceous fluids from an unconsolidated or loosely consolidated formation comprising:
(a) drilling into said formation at least one well into a first productive interval of said formation;
(b) fracturing hydraulically said well with a viscous fracturing fluid containing a proppant therein which is of a size sufficient to prop a created fracture and restrict fines movement into the fracture which proppant comprises silicon carbide, silicon nitride, or garnet;
(c) injecting a pre-determined volume of steam into said well in an amount sufficient to soften said viscous fluid and lower the viscosity of said fluid adjacent a fracture face;
(d) producing the well at a rate sufficient to allow formation fines to build up on a fracture face communicating with said well thereby resulting in a filter screen sufficient to substantially remove formation fines from the hydrocarbonaceous fluids;
(e) injecting a second volume of steam into said well and producing substantially fines free hydrocarbonaceous fluids to the surface;
(f) repeating steps (c) through (e) until a desired amount of hydrocarbonaceous fluids have been produced from said first interval; and
(g) isolating mechanically said first interval and repeating steps (a) through (f) in a second productive interval of said formation.

5,005,646
ACCELERATING SET OF RETARDED CEMENT
J. Benjamin Bloys, Plano; Robert B. Carpenter, Hurst, and William N. Wilson, Plano, all of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.
Continuation-in-part of Ser. No. 393,546, Aug. 14, 1989, Pat. No. 4,953,620. This application Jul. 12, 1990, Ser. No. 552,238
Int. Cl.[5] E21B *33/138, 33/14, 33/16*
U.S. Cl. 166—293 **11 Claims**

1. In a method of setting a volume of cement in a well completed in a subterranean formation in which a cement is or may become retarded and is pumped into said well and allowed to set to form a hard cementitious material therewithin, the improvement comprising:
contacting said cement with a solution of a compatible organic accelerator comprising a material that will produce formate ions in the cement slurry and selected from the group consisting of the first four carbon esters of formic acid, said esters including methyl formate, ethyl formate, normal-propyl formate, iso-propyl formate, normal-butyl formate, iso-butyl formate, and t-butyl formate.

9. In a method of setting a volume of cement in a well completed in subterranean formation, in which a cement is or may become retarded and is pumped into said well and allowed to set to form hard cementitious material therewithin at liner tops and in wellbore plugs, the improvement comprising:
contacting downhole said cement with a solution of a compatible organic accelerator comprising a material that will produce formate ions in the cement slurry and selected from the group consisting of formamide, and esters of formic acid, said esters including methyl formate, ethyl formate, normal propyl formate, isopropyl formate, normal butyl formate, iso butyl formate and t-butyl formate.

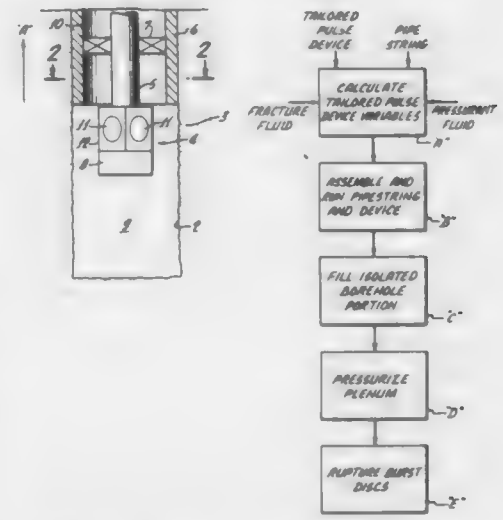
5,005,647
TREATING UNDERGROUND FORMATIONS
Robert H. Friedman, and Billy W. Surles, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.
Filed Jan. 2, 1990, Ser. No. 459,608
Int. Cl.[5] E21B *33/134, 33/138*
U.S. Cl. 166—295 **26 Claims**

1. A method for treating a subterranean permeable formation penetrated by a well in fluid communication with at least a portion of the formation to form an impermeable zone in the formation comprising introducing into the formation an effective amount of a treating fluid comprising a monomer or oligomer which can be acid catalyzed at the formation temperature to polymerize in the flow channels of the formation, said treating fluid also containing an ester and an effective amount of an acid catalyst, and an effective amount of a water swelling polymer to reduce shrinkage of the monomer or oligomer during polymerization.

5,005,648
TREATING UNDERGROUND FORMATIONS
Robert H. Friedman, and Billy W. Surles, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.
Filed Jan. 2, 1990, Ser. No. 459,606
Int. Cl.[5] E21B *33/138, 33/134*
U.S. Cl. 166—295 **20 Claims**

1. A method for treating a subterranean permeable formation penetrated by a well in fluid communication with at least a portion of the formation to form an impermeable zone in the formation comprising introducing into the formation an effective amount of a treating fluid comprising a monomer or oligomer which can be acid catalyzed at the formation temperature to polymerize in the flow channels of the formation, said treating fluid also containing an ester and an effective amount of an acid catalyst consisting essentially of orthonitrobenzoic acid or toluene sulfonic acid.

5,005,649
MULTIPLE FRACTURE PRODUCTION DEVICE AND METHOD
John C. Smith, Pasadena, and William O. Jacobson, San Diego, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.
Filed Feb. 28, 1990, Ser. No. 486,144
Int. Cl.[5] E21B *43/26, 43/267*
U.S. Cl. 166—308 **18 Claims**



1. A method for producing a tailored fluid pressure pulse in a borehole penetrating a subterranean formation from a pipe string, the tailored fluid pressure pulse sufficient to produce multiple fractures in the formation, the method comprising:
a. running the pipe string into the borehole, wherein the pipe string comprises a fluid conduit, a packer for isolating a portion of the borehole and a rupturable plenum capable of being filled with a pressurant fluid;
b. isolating a portion of the borehole containing at least a portion of the plenum with said packer;
c. filling the isolated portion with a fracture fluid and proppant mixture;
d. pressurizing a pressurant fluid within the rupturable plenum from a pressurant fluid pressurizing source located at the surface; and
e. rupturing the pressurized plenum so as to create a tailored fluid pressure pulse within the isolated portion.

11. A multiple fracture producing apparatus for generating a fracture fluid pressure pulse and fracture fluid flow within a borehole penetrating a subsurface formation comprising:
tubing capable of being located within said borehole and forming an annular-like space between said tubing and said borehole;
a plenum for containing a pressurized fluid, said plenum attached to said tubing;
means for isolating a portion of said borehole containing at least a part of said plenum from fluid communication with remaining portions; and
means for rupturing said plenum at relatively high pressure, so as to allow at least a portion of said pressurized fluid within to escape into said borehole containing a fracture fluid and generate said fluid pressure pulse and fracture fluid flow.

5,005,650

MULTI-PURPOSE WELL HEAD EQUIPMENT

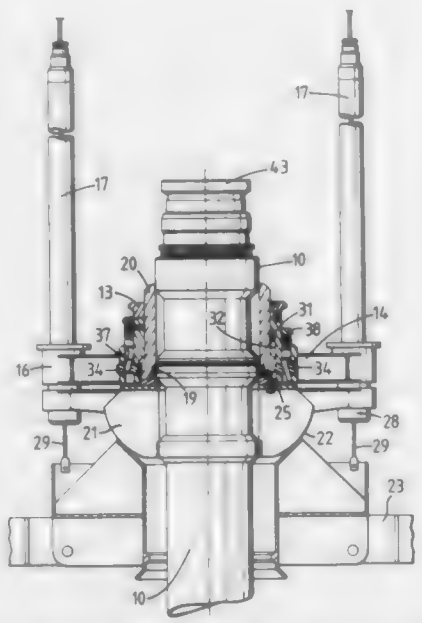
Hans P. Hopper, Aberdeen, Scotland, assignor to The British Petroleum Company p.l.c., London, England

Filed Feb. 22, 1990, Ser. No. 483,484

Claims priority, application United Kingdom, Feb. 23, 1989, 8904123

Int. Cl.[5] E02D *5/74;* E21B *23/04, 33/038, 43/01*

U.S. Cl. 166—339 8 Claims



1. A guide base assembly for a sub sea well comprising:

an annular portion adapted to fit around a conductor housing and be fixed to said conductor housing and having curved plates for sealing said annular portion on a sea-bed base selected from a temporary guide base and mud mat,

a retrievable guide base portion having a central annulus adapted to fit around and be releasably locked to the annular portion,

releasable locking means for said releasable locking of the guide base portion to the annular portion comprising:

horizontally moveable locking pins in the guide base portion co-operating with a horizontal groove in the annular portion,

a lock/unlock ring capable of vertical movement having dependent keys to connect the vertical movement of the ring to the horizontal movement of the locking pins, and

a fixed shear pin to hold the lock/unlock ring in a position in which the locking pins are in their unlocked position and a spring loaded shear pin to hold the lock/unlock ring in a position in which the locking pins are in their locked position.

4. A tool suitable for placing and recovering a guide base of a sub-sea installation comprising:

a framework adapted to be attached to means for lowering the tool to the sea bed from a surface vessel,

a further framework attached to the first framework having releasable locking means for locking onto a guide base, said releasable locking means comprising:

releasable spring loaded latches for latching onto the guide base, and

a ring capable of vertical movement within the second framework having spring loaded locking pins,

means for moving the spring loaded latches out of engagement with the guide base, and

means for moving the ring vertically, said two means being capable of independent operation.

5,005,651

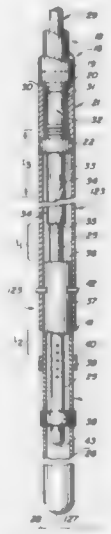
DOWNHOLE PUMP UNSEATING APPARATUS AND METHOD

Marvin L. Burrows, 125 W. St. Ann, Hobbs, N. Mex. 88240

Filed Oct. 20, 1989, Ser. No. 425,251

Int. Cl.[5] E21B *43/00;* F04B *47/00*

U.S. Cl. 166—381 20 Claims



1. In a fluid producing borehole having a downhole pump assembly located at a lower end of a tubing string for producing fluid from a pay zone, wherein some parts of the pump assembly are affixed to a hold-down and the hold-down is telescopingly received in sealed relationship within a seating nipple, the combination with said pump assembly of an apparatus for unsticking a downhole pump assembly by pushing the hold-down in an uphole direction and thereby forcing the hold-down to become unseated from the seating nipple;

said apparatus includes a pump upthrust member affixed at the lower end of said hold-down and extending downhole away from said seating nipple;

means connected to engage the borehole and apply an uphole force on said pump upthrust member in response to the tubing string being lowered downhole; and thereby unseat the hold-down from the seating nipple, and move the pump uphole respective to the tubing string, whereupon the downhole pump can then be retrieved from the borehole.

5,005,652

METHOD OF PRODUCING A CONTOURED WORK SURFACE

David M. Johnson, Matlock, England, assignor to John Kelly (Lasers) Limited, Barlow, England

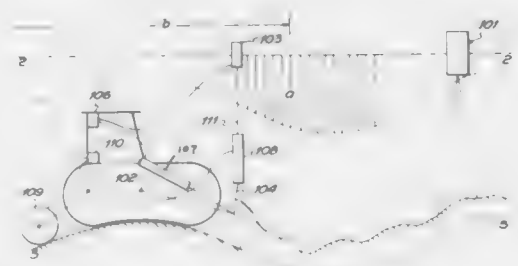
Filed Feb. 14, 1990, Ser. No. 479,934

Claims priority, application United Kingdom, Feb. 24, 1989, 8904211

Int. Cl.[5] E02F *1/00/3/85*

U.S. Cl. 172—1 3 Claims

1. A method of producing a desired contouring of other than flat planar form of a work surface, that includes the steps of producing a reference plane by means of a radiation beam, and traversing the terrain by a machine supporting a working tool and carrying radiation receiving means on raisable and lowerable masts so that said receiving means are maintained in said reference plane, the extension of said masts being directly proportional to the elevation of the ground relative to the gradient of the radiation beam, further including the steps of using storage and retrieval means comprising a programmed computer for data defining the desired non-planar contouring of the terrain and varying the distance of said working tool from the reference plane in accordance with instructions from the computer in response to a measure of distance travelled by



the working tool in the direction generally parallel to the reference plane.

5,005,653

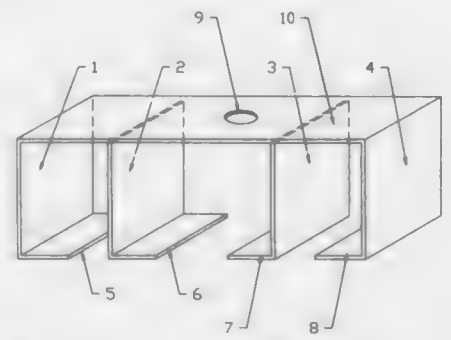
HOE ATTACHMENT FOR A LINE TRIMMER

Lance R. Macomber, #110184 Royal, Palm Beach, Fla. 33411

Filed Aug. 1, 1988, Ser. No. 226,451

Int. Cl.[5] A01B *1/10*

U.S. Cl. 172—41 2 Claims



1. A tillage tool for use as an attachment to a hand held rotary line trimmer, comprising a generally flat horizontally disposed elongate hub plate having an attachment means at the center thereof for attachment to a vertically disposed driven shaft, at least two radially spaced arms on each side of the center, fixed to said hub plate and disposed vertically downwardly therefrom, and a generally flat blade means mounted at the lower end of each arm, said blade means projecting radially inwardly in a generally horizontal plane.

5,005,654

HIGH TORQUE HYDRAULIC SHOE BOLT WRENCH

Yasumitsu Moriki, Tokyo, and Hirotomo Numakura, Kawasaki, both of Japan, assignors to Maruma Jyusharyo Kabushiki Kaisha, Tokyo, Japan

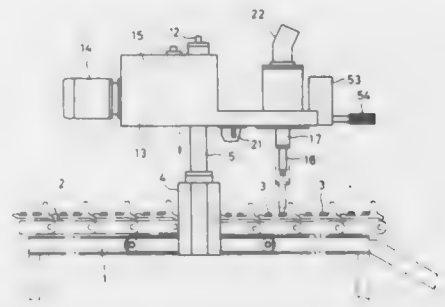
Continuation of Ser. No. 306,880, Feb. 3, 1989, abandoned. This application Dec. 18, 1989, Ser. No. 455,934

Claims priority, application Japan, Sep. 28, 1988, 63-243690

Int. Cl.[5] B25B *21/00*

U.S. Cl. 173—12 11 Claims

1. A high torque hydraulic shoe bolt wrench comprising a vertical cylinder stood upright on a frame moving on work table of a shoe track, a main frame secured and supported on a piston rod of said vertical cylinder through an outer tube which rotates about an axis, a wrench socket driving shaft vertically projected below said main frame, a low speed high torque motor and a reduction gear provided on the axis of said driving shaft through a jaw clutch mechanism, said driving shaft having one lower clutch constituting said clutch mechanism and being always connected to a high speed low torque motor, said reduction gear having an upper clutch with a shift mechanism slidably provided on an output shaft thereof, said main frame being provided with an operating handle for adjusting the rotational direction and rotational speed of each of said hydraulic motors, characterized in that pressure oil having a relatively low set pressure of a hydraulic circuit is supplied to said high speed low torque motor, high pressure oil is supplied



to said low speed high torque motor and driven, and switching from said high speed low torque motor to said low speed high torque motor is carried out by a pressure switch disposed in a low pressure hydraulic circuit.

5,005,655

PARTIALLY HALOGENATED ETHANE SOLVENT REMOVAL OF OLEOPHYLIC MATERIALS FROM MINERAL PARTICLES

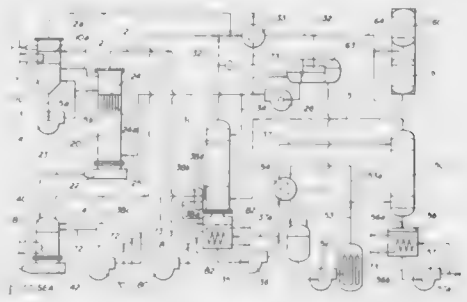
Olaf M. Stokke, Ponca City; David A. Flanigan, Cleveland, both of Okla.; Robert B. Ramsey, Wilmington, Del.; Robert E. Williams, Houston, Tex., and John Huycke, Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Continuation-in-part of Ser. No. 104,858, Oct. 9, 1987, Pat. No. 4,836,302, which is a continuation-in-part of Ser. No. 937,557, Dec. 3, 1986, abandoned. This application Mar. 28, 1989, Ser. No. 330,392

The portion of the term of this patent subsequent to Jun. 6, 2006, has been disclaimed.

Int. Cl.[5] B01D *11/00;* B08D *3/08;* C09K *7/00;* E21B *21/06*

U.S. Cl. 175—66 3 Claims



1. A process for cleaning drilling mud containing an oleophylic substance from drill cuttings in order to prepare the cuttings for environmentally acceptable disposal, which comprises the steps of:

(a) collecting drill cuttings which are contaminated with said drilling mud containing an oleophylic substance;

(b) contacting the contaminated drill cuttings with a single solvent selected from 1,1-dichloro-2,2,2-trifluoroethane or 1,1-dichloro-1-fluoroethane to remove said drilling mud containing an oleophylic substance from the drill cuttings;

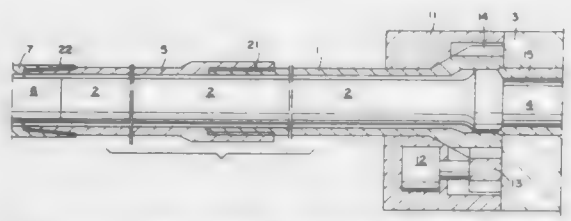
(c) separating the drill cuttings from said solvent laden with said drilling mud containing an oleophylic substance to provide drill cuttings which are sufficiently free of solvent laden with said drilling mud containing an oleophylic substance for environmentally acceptable disposal;

(d) moving the environmentally acceptable drill cuttings to the environment;

(e) heating the solvent laden with drilling mud conaining an

oleophylic substance to vaporize the solvent from the drilling mud containing an oleophylic substance;
(f) recovering the drilling mud containing an oleophylic substance for further handling; and
(g) condensing the vaporized solvent for recycle in the process by heat transfer with environmentally availble fluid at ambient temperatures.

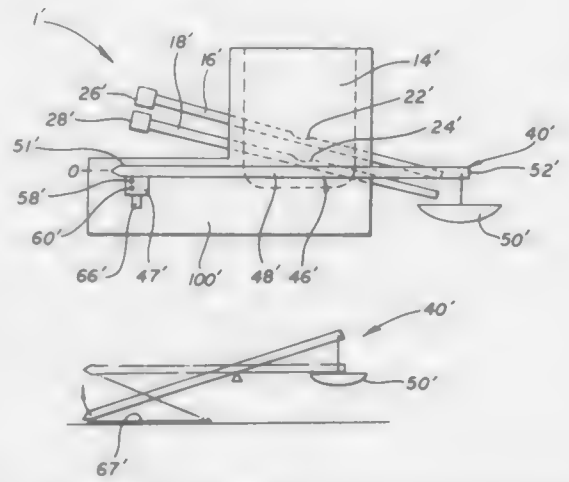
5,005,656
DEVICE IN IMPACT MACHINES
Jörgen A. R. Rodert, Saltsjö-Boo, Sweden, assignor to Atlas Copco MCT AB, Nacka, Sweden
Filed Feb. 8, 1990, Ser. No. 476,989
Claims priority, application Sweden, Mar. 7, 1989, 8900783
Int. Cl.[5] E21B *4/00*
U.S. Cl. 175—306 **1 Claim**



1. Device in impact machines comprising a maching housing (3, 11), a hammer piston (4) movable to-and-fro in the machine housing and arranged to deliver impacts against a tool, and a rotary device (12, 13) for rotation of the tool, said tool comprising a central set of rods comprising a plurality of rods (6) and a set of tubes comprising a plurality of interconnected tubes (7) surrounding the set of rods, said rods (6) being provided with projections (51), characterized in that said plurality of rods rest loosely against each other, each of said plurality of rods being provided with at least one of said projections (51), each of said plurality of said rods (6) being guided by elastic bushings (52, 53) arranged in said tubes (7), and said elastic bushings comprising a plurality of grooves (57) through which said projections (51) can be passed.

5,005,657
POWDER DISPENSING AND MEASURING DEVICE
Dolores D. Ellion, and M. Edmund Ellion, both of 2152 Highland Oaks Dr., Arcadia, Calif. 91006
Division of Ser. No. 318,963, Mar. 6, 1989, Pat. No. 4,953,645. This application Oct. 12, 1989, Ser. No. 420,376
Int. Cl.[5] G01G *1/18, 13/02*
U.S. Cl. 177—246 **6 Claims**

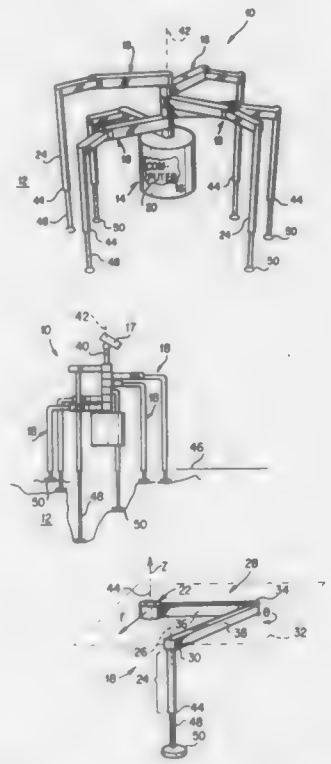
1. An improved powder dispensing apparatus comprising:
barrel means for transferring powder from a first retainer to a second retainer;
vibrating means for inducing vibration in said barrel effective to cause said powder to translate on a surface thereof;
scale means for measuring the amount of powder transferred to a second retainer, wherein said scale means is a mechanical scale having a balance arm and spring means in contact with a first end thereof for assisting the movement of said balance arm from an initial position to a point just below a second position at which it is in equilibrium with said second powder retainer suspended at an opposite end thereof; and



control means for controlling the activation of said vibrating means.

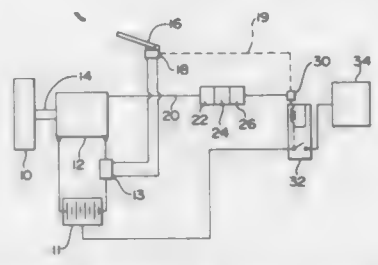
5,005,658
ORTHOGONAL LEGGED WALKING ROBOT
John E. Bares, and William Whittaker, both of Pittsburgh, Pa., assignors to Carnegie-Mellon University, Pittsburgh, Pa.
Filed Dec. 22, 1988, Ser. No. 288,677
Int. Cl.[5] B62D *57/02*
U.S. Cl. 180—8.1 **13 Claims**

1. A robot for moving along terrain comprising:
a body;
means for moving the body, said moving means including legs; each leg exhibiting an overlapping gait with respect to every other leg and comprised of a pedestal which has an axis that is disposed essentially in a z direction; and
means for positioning the axis of the pedestal at a desired ground engaged location with respect to an r, θ plane, where r and θ are directions mutually orthogonal to each other and the z direction; said moving means also able to move the body in any of r, θ heading and z dimensions,



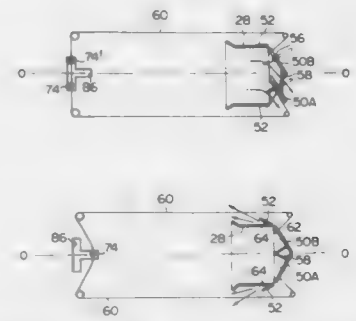
said heading defined by a direction in which the movable body is pointing.

5,005,659
POWER ASSISTED STEERING FOR VEHICLES
John Jones, Essignton, and Rinaldo G. Uccellini, Wolverhampton, both of England, assignors to Yale Materials Handling Limited, Wolverhampton, England
Filed Feb. 12, 1988, Ser. No. 156,170
Int. Cl.[5] B60K *1/00;* B62D *5/00*
U.S. Cl. 180—65.1 **3 Claims**



1. Apparatus for actuating the power supply of a power steering assembly for an electrically propelled vehicle including an electric traction motor comprising:
detecting means for detecting any voltage generated by the traction motor; and
switch means operable by said voltage to actuate a power supply to the power steering assembly of the vehicle.

5,005,660
PROPULSION AIR STREAM DEFLECTING APPARATUS FOR AIR CUSHION VEHICLE
Ryuichi Yoshida, Takarazuka; Takashi Sawada, Suita; Yamamural Tetsushi, Takasago, and Koji Kadota, Kobe, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan
Filed Oct. 16, 1989, Ser. No. 421,237
Claims priority, application Japan, Oct. 14, 1988, 63-133338
Int. Cl.[5] B60V *1/14*
U.S. Cl. 180—117 **8 Claims**



1. A propulsion air stream deflecting apparatus for an air cushion vehicle having a hull, said apparatus comprising:
(a) an air duct mounted on the hull, and a propeller fan disposed within said air duct for producing a propulsion air stream in the air duct that provides a thrust to the hull, the air duct having a longitudinal axis, an inner surface extending about the longitudinal axis, a rear open end, and opening means extending therethrough downstream of said propeller fan with respect to the direction in which the air stream produced by said fan flows through the air duct;
(b) a plurality of rudders each having side edges, said rudders supported in the apparatus adjacent the rear open end of said air duct and pivotable about respective vertical axes which lie in a plane extending transversely to the longitudinal axis of said air duct;
(c) link means linking adjacent rudders, of each respective pair thereof, together and articulatable between an extended state and a folded state,
said rudders assuming a mutually parallel arrangement when said link means assumes said extended state, and said rudders assuming a closed arrangement in which the side edges of the rudders are in abutting contact with each other and with said air duct at the rear open end thereof thereby closing said rear open end when said link means assumes said folded state;
(d) a control lever pivotally supported on the hull so as to be movable between a neutral position, side positions spaced transversely of the neutral position towards port and starboard sides of the vehicle, respectively, and a rear position spaced from the neutral position toward the rear of the vehicle;
(e) a pair of cables operatively connecting the control lever to said rudders, at respective locations close to the air duct with respect to the transverse dimension of the air duct, in such a manner that when the control lever is in said neutral position, said cables cause the rudders to assume said mutually parallel arrangement in which the rudders extend parallel to the longitudinal axis of the air duct with said link means in the extended state whereby a rearward propulsion thrust is produced by said fan, that when the control lever is in either of said side positions, said cables cause the rudders to assume the mutually parallel arrangement in which the rudders extend at an angle, corresponding to the degree to which control lever is shifted transversely of said neutral position, to the longitudinal axis of the air duct with said link means in the extended state

whereby a rearward steering thrust is produced by said fan, and that when the control lever is in said rear position, said cables cause the rudders to assume said closed arrangement with said link means in the folded state whereby the rear open end of the air duct is closed to cause an increase in air pressure in the air duct;

(f) flap means having an inner face and a rear end, the flap means being pivotably mounted at the rear end thereof to said air duct, said flap means assuming a normal position in which the inner face thereof is substantially flush with the inner surface of said air duct to close the opening means thereof, and said flap means being swingable outwardly of said air duct into an open position in which the inner face of the flap means extends obliquely and forwardly in the vehicle, from said rear end thereof, thereby opening said opening means whereby the inner face of the flap means guides the air stream produced by said fan to flow forward in the vehicle and provide a reverse thrust to the hull; and

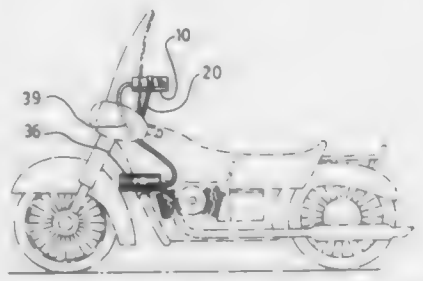
(g) flap urging means for urging the flap means to said normal position, and for allowing said flap means to move to the open position thereof when the air pressure increase in the air duct is effected upon the rudders assuming said closed arrangement.

5,005,661

MOTORCYCLE MOUNTING FOR RADAR

Keith Taylor, 118 Bechtel Drive, Kitchener, Ontario, Canada (N2P 1S4), and Roger Neal, 113 William Street, Guelph, Ontario, Canada (N1E 5G3)

Filed Feb. 21, 1989, Ser. No. 313,270
Int. Cl.[5] G01S *9/44*
U.S. Cl. 180—219 **11 Claims**



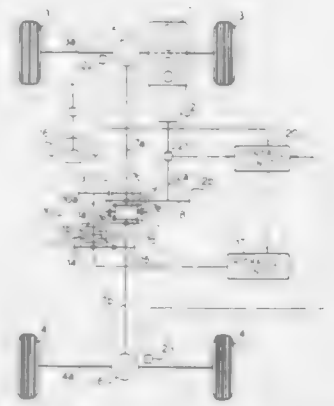
1. A motorcycle including a first mounting for a radar monitor for providing a display, said first mounting comprising a support member positioned above and spaced from the handlebar of the motorcycle, said support member having spaced apart sides; releasable means on said support member for holding a radar monitor in position on said support member; a support strut extending down from each side of said support member, each support strut attached at its upper end to said support member and including clamping means at its lower ends, said clamping means attached to the handle bar of the motorcycle; a further strut connected at a rear end to said support member and attached at its front end to a structural member forward of and moving with the handlebar upon steering; a second lower mounting for mounting a radar transmitter/receiver on the motorcycle, said second mounting including a support member mounted on a main body part of the motorcycle which does not move upon steering of the handlebar at a predetermined height, and connected to said radar monitor; and a lock switch on said handlebar, spaced from said monitor for locking the display on the monitor.

5,005,662

POWER TRANSMISSION SYSTEM FOR A FOUR-WHEEL DRIVE VEHICLE

Yukio Kodama, Gunma, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 338,714, Apr. 14, 1989, which is a division of Ser. No. 63,173, Jun. 15, 1987, Pat. No. 4,896,738. This application Mar. 15, 1990, Ser. No. 494,719
Claims priority, application Japan, Jun. 20, 1986, 61-144475; Jun. 20, 1986, 61-144476; Jun. 20, 1986, 61-144477; Jun. 20, 1986, 61-144478; Jun. 20, 1986, 61-144479
The portion of the term of this patent subsequent to Feb. 21, 2006, has been disclaimed.
Int. Cl.[5] B60K *17/34, 23/08*
U.S. Cl. 180—233 **6 Claims**



1. A power transmitting system for a four-wheel drive vehicle in which power of an engine is transmitted to front and rear wheels of the vehicle through a central differential, the system comprising

a torque distribution device including clutch means for changing torque transmitted to the front and rear wheels,

detecting means for detecting driving conditions of the vehicle including axle loads on the front and rear wheels of the vehicle for producing corresponding output signals, and

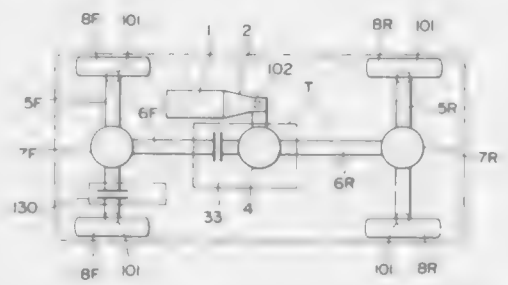
control means responsive to the output signals for rendering the clutch means operative so as to change torque distribution ratio for the rear wheels.

5,005,663

FOUR-WHEEL DRIVE VEHICLE

Kazuo Niide; Hideki Yamada, both of Hiroshima; Haruki Higashi, Hatsukaichi, and Noboru Nakamura, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Oct. 27, 1988, Ser. No. 263,212
Claims priority, application Japan, Oct. 28, 1987, 62-272411
Int. Cl.[5] B60K *17/35, 17/352*
U.S. Cl. 180—247 **11 Claims**



1. In a vehicle steered by a steering wheel and equipped with four-wheel drive having a transfer case including a center-differential which delivers driving power to both front and rear axle assemblies when needed, and is shiftable between a two-wheel and a four-wheel drive mode of operation and, in said four-wheel drive mode of operation, between a differential-locked and a differential-unlocked drive mode of operation, an axle differential disposed between left and right axles of at least one of said front and rear axle assemblies in association with wheels on said axles which are non-driven when said center-differential is in said two-wheel drive mode of operation, said one axle assembly being divided and delivering driving power differentially to said left and right axles thereof, and free-wheeling drive means with clutch means incorporated in said one axle assembly, said clutch means being disposed between said axle differential and one of said axles to operationally couple and uncouple said one axle from said axle differential, said free-wheeling drive means being actuated to force said clutch means to operationally disconnect said one axle from said axle differential so as to interrupt the transmission of driving power between said axle differential and said wheel secured to said one axle when said center-differential is in said two-wheel drive mode of operation, or to operationally connect said axle differential and said one axle so as to provide said transmission of driving power between said axle differential and said wheel on said one axle when said center-differential is in said four-wheel drive mode of operation, the improvement comprising:

detecting means for detecting whether said free-wheeling drive means is actuated to interrupt or provide said transmission of driving power; and

control means coupled to said detecting means for forcing said center-differential to shift from said four-wheel differential-unlocked drive mode of operation to said two-wheel drive mode or said four-wheel differential-locked mode when said detecting means detects that said free-wheeling drive means is actuated to interrupt said transmission of driving power while said center-differential is in said four-wheel differential-unlocked drive mode of operation.

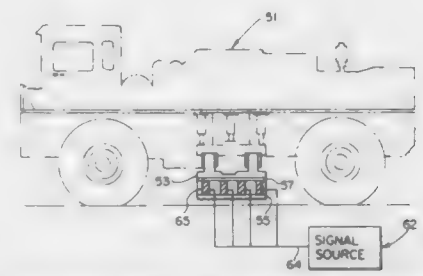
another of which positions the vehicle is no longer immobilized by said immobilizing means but said door is necessarily locked, said control facility including a key-switch located adjacent said door remote from the driver's cab, said key switch including an operating member providing a keyhole exposed adjacent said door for receiving a key whereby the key switch may be operated, said control facility being arranged to open said door only if said control member is in a position to immobilize the vehicle and select said door and said key switch is operated.

5,005,665

PIEZOELECTRIC SEISMIC VIBRATION DEVICE AND METHOD

Lim H. Cheung, Carrollton, Tex., assignor to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 874,937, Jun. 16, 1986, Pat. No. 4,850,449. This application Jul. 24, 1989, Ser. No. 384,391
Int. Cl.[5] G01V *1/00*
U.S. Cl. 181—101 **14 Claims**



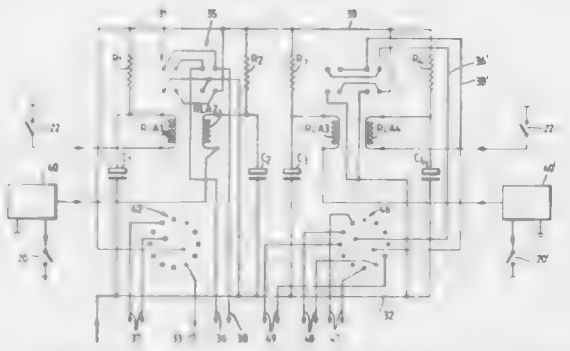
1. A vibrator for transmitting seismic signals into the earth, comprising at least one piezoelectric transducer capable of vibrating from 20 to 500 Hz, means for supplying an electrical signal to the transducer to cause the transducer to vibrate between 20 to 500 Hz, a contact plate attached to the transducer, and means for holding the transducer and contact plate firmly against the earth, said means for holding including a heavy mass.

5,005,664

VEHICLE LOCKING SYSTEM

David Hoffmann, Luton, United Kingdom, assignor to Ralph Leslie Harris, United Kingdom

Filed Dec. 18, 1989, Ser. No. 452,035
Claims priority, application United Kingdom, Jun. 5, 1989, 8912871
Int. Cl.[5] B60R *25/00*
U.S. Cl. 180—287 **6 Claims**



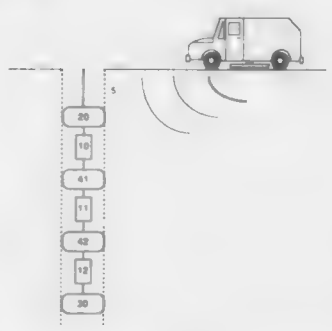
1. A vehicle locking system for a vehicle having a driver's cab and at least one door remote from the driver's cab, a lock for said door, a control facility for operating said lock automatically, said system including immobilizing means for immobilizing the vehicle, and wherein said control facility controls said immobilizing means, said control facility including a control member located in the driver's cab and movable to any of a plurality of positions, in one of which positions the control facility selects said door and immobilizes the vehicle, and in another of which positions the vehicle is no longer immobilized by said immobilizing means but said door is necessarily locked, said control facility including a key-switch located adjacent said door remote from the driver's cab, said key switch including an operating member providing a keyhole exposed adjacent said door for receiving a key whereby the key switch may be operated, said control facility being arranged to open said door only if said control member is in a position to immobilize the vehicle and select said door and said key switch is operated.

5,005,666

ATTENUATION OF BOREHOLE TUBE-WAVES

John W. Fairborn, Newport Beach, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Filed Apr. 19, 1990, Ser. No. 511,112
Int. Cl.[5] G01V *1/40*
U.S. Cl. 181—102 **11 Claims**



1. An apparatus for use within a borehole for seismic surveying comprising:

(a) at least one seismic receiver connected to a cable,

(b) a top inflatable bladder connected to the cable above the top seismic receiver, wherein said top bladder acoustically isolates all seismic receivers from the borehole environment above said top bladder, and

(c) a bottom inflatable bladder connected to the cable below the bottom seismic receiver, wherein said bottom bladder

acoustically isolates all seismic receivers from the borehole environment below said bottom bladder.

5,005,667

EXTENSIBLE AND RETRACTABLE STEP ASSEMBLY

Eddy Anderson, 1681 NE. 172nd St., North Miami Beach, Fla. 33162

Filed Mar. 21, 1990, Ser. No. 496,936
Int. Cl.' A47B 77/10, 96/00
U.S. Cl. 182—15 6 Claims



1 An extensible and retractable step assembly for a cabinet standing on a floor and having a hollow interior space directly above the floor, said step assembly comprising:

a base shaped and dimensioned to be received in said hollow interior space of the cabinet, floor-engaging rollers on said base;

first guide means positionable in said hollow interior space of the cabinet,

second guide means on said base having antifriction engagement with said first guide means to guide said base between a retracted position within said hollow interior space of the cabinet and an extend position in front of the cabinet;

a step carried by said base,

and linkage means acting between said base and said step and permitting said step to be selectively adjusted between a retracted lowered position on said base and an extended positioned raised up from said base when said base is in its extended position in front of the cabinet,

said base being a rectangular structure having a front wall, a back wall spaced behind said front wall, and opposite side walls extending between and interconnecting said front and back walls, said base being open between said front, back and opposite side walls,

said step fitting between said front, back and opposite side walls of the base,

and said linkage means being mechanical pivoted linkages on each of said opposite side walls of the base having a first position holding said step in its retracted lowered position and a stable second position holding said step in its extended position raised up from the base,

said pivoted linkages on each of said opposite side walls of the base in said first and second positions thereof being spaced above and out of contact with the floor,

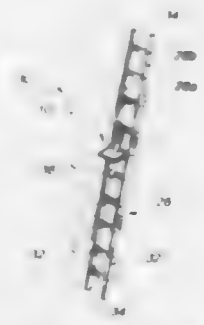
and said pivoted linkages on each of said opposite side walls of the base comprising a first linkage located toward the front of said base and having respective pivotal connections to said side wall of the base and said step, and a second pivoted linkage spaced behind said first lingage and having respective pivotal connections to said side wall of the base and said step.

5,005,668

LADDER STEP SUPPORT

Bud C. Nowlan, 3958 Aldrich Ave. N., Minneapolis, Minn. 55412

Filed Jul. 20, 1990, Ser. No. 555,898
Int. Cl.' E04C 7/16
U.S. Cl. 182—121 8 Claims



1 A portable, integral ladder rung attachment comprising

a substantially rectangular platform, having a top and a bottom and a lip in a long edge thereof, the platform having securely attached on its bottom and its lip,

an elongate, oblique-angled, L-shaped, centrally disposed vertical support member, the support member having a tubular longer leg projecting from said platform and leading to a substantially flat shorter leg, the shorter leg being attached to the bottom of the platform, the opening of the tubular portion of the support being attached to the top of the platform adjacent its lip, the attachment further comprising,

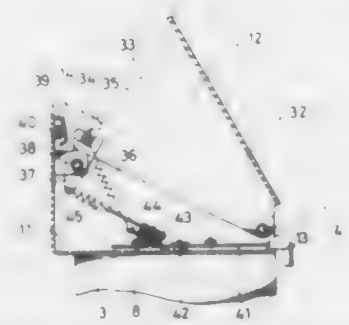
horizontally mounted, elongate, arcuate, upper and lower brackets for cooperation with ladder rungs to support the platform, the upper bracket being secured transversely adjacent the end of the tubular long leg of said vertical support and the lower bracket being secured to the lip edge of said platform.

5,005,669

COMMODITY DATA INPUTTING DEVICE

Takao Umebara, and Takeshi Yagome, both of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed May 22, 1990, Ser. No. 526,881
Claims priority, application Japan, May 24, 1989, 1-130951
Int. Cl.' G06K 7/10
U.S. Cl. 186—61 2 Claims



1 A commodity data inputting device comprising a bar code scanner and a keyboard for inputting commodity data, a supporting member for supporting said bar code scanner, a base for retaining said keyboard, a mounting member provided on said bar code scanner for pivotably mounting said base at the front end thereof in such a manner that said base is rotatable about a horizontal pivotal axis, a plurality of engaging portions arranged along an arc defined about said pivotal axis and formed on at least one of a plurality of opposed side portions

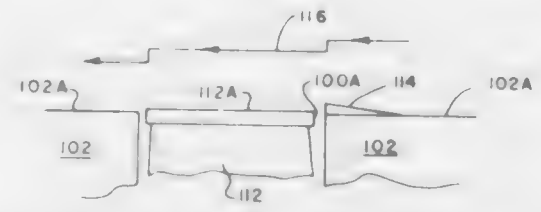
located between said mounting member and said base, an engaging bar normally urged into engagement with one of said engaging portions by a biasing force applied toward said pivotal axis, a retaining portion formed adjacent an other of said opposed side portions for retaining at least one end of said engaging bar in such a manner as to permit displacement of said engaging bar toward and away from said pivotal axis, a release lever normally abutting said engaging bar and adapted to be displaced by a biasing force larger than said biasing force applied to said engaging bar, an operating portion displaceably mounted on said mounting member for operating said release lever, a wire connected at one end thereof to said operating portion, and a spring connected at the one end thereof to the other end of said wire, and at the other end thereof to said release lever.

5,005,670

METHOD AND APPARATUS FOR MOUNTING DATA GATHERING SYSTEM

Howard H. Nojiri, Eugene, Oreg., assignor to Spectra-Physics, Inc., San Jose, Calif.

Filed Mar. 24, 1989, Ser. No. 328,229
Int. Cl.' A47F 9/04
U.S. Cl. 186—61 6 Claims



1 A method of mounting a data gathering system within a checkout counter to facilitate smooth handling of products which are presented at said counter for purchase, said method comprising the steps of

supporting said data gathering system within said counter such that an upper surface of said data gathering system is substantially parallel with an upper surface of said counter and extends thereabove by a first defined distance, said data gathering system defining an entry side across which products are passed to access said data gathering system and an exit side across which products are passed after having been processed by said data gathering system, and

elevating a portion of said counter adjacent the entry side of said data gathering system by a second defined distance greater than said first defined distance whereby products to be processed by said data gathering system are raised from said upper surface of said counter over the elevated portion of said counter and then encounter a downwardly stepped path as they are moved from the elevated portion of said counter preceding said data gathering system downwardly to the upper surface of said data gathering system and downwardly therefrom to said counter succeeding said data gathering system such that said products can be slid across the system substantially without being snagged or caught thereon.

5,005,671

APPARATUS FOR DAMPING OSCILLATIONS IN ELEVATOR CARS

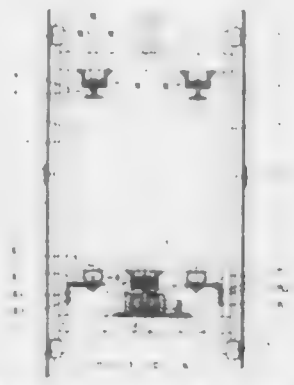
Michel Aime, Maurepas, France, and Edmund Sager, Meggen, Switzerland, assignors to Inventio AG, Switzerland

Filed Jul. 12, 1989, Ser. No. 378,658
Claims priority, application Switzerland, Jul. 12, 1988, 02652/88
Int. Cl.' B66B 9/00
U.S. Cl. 187—1 R 13 Claims

1. An apparatus for damping vibrations generated in an elevator car body supported in an elevator car sling, comprising

at least two spherical shock absorbers adapted to be attached to an elevator car sling for abutting a bottom side of an elevator car body supported by the car sling,

a spherical tensioning means adapted to be attached to the car sling and including a bumper support for limiting the deflection movement of the car body in the car sling and at least one other bumper support attached to said bumper



support for further limiting the deflection movement of the car body in the car sling,

a lower centering element adapted to be attached to the bottom side of the car body for generating springy and damped return movement of the car body into a center position in the car sling and coupled to said spherical tensioning means, and

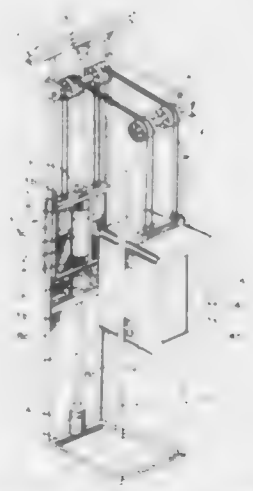
centering and damping elements adapted to be attached between a top side of the car body and the car sling.

5,005,672

AIR GAP APPARATUS FOR A LINEAR MOTOR

Keiichiro Nakai, Tokyo, and Yoshinori Nakanishi, Chiba, both of Japan, assignors to Otis Elevator Company, Farmington, Conn.

Filed Feb. 26, 1990, Ser. No. 493,591
Claims priority, application Japan, Feb. 28, 1989, 1-49714
Int. Cl.' B66B 11/04
U.S. Cl. 187—17 32 Claims



25 In an elevator system including a car traveling along a predetermined traveling axis, a counterweight connected to said car via a rope and traveling along a predetermined traveling axis essentially parallel to the traveling axis of said car, a

toroidal linear motor for driving at least one of said car and counterweight, and an apparatus for maintaining an air gap in the toroidal linear motor, the linear motor having a stationary element disposed along an axis, and a moving element having a central opening for receiving the stationary element, the moving element and stationary element being separated by said air gap, the moving element of the linear motor being driven along the axis, the linear motor converting electrical power into a magnetic driving force, wherein said apparatus comprises;

at least one elastic body attached to said moving element about a circumference of said stationary element, said elastic body being in sliding contact with said stationary element, said elastic body being attached to said moving element and disposed in contact with said stationary element such that a predetermined air gap is maintained

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5,005,673

COORDINATED ELEVATOR CAR DOOR-HALL DOOR MOVEMENT

James A. Rivera, Bristol, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed Sep. 27, 1989, Ser. No. 413,028
Int. Cl.' B66B *13/00*
U.S. Cl. 187—52 LC **7 Claims**



1 An assembly for coordinating movement of an elevator car door and an elevator hoistway hallway door during opening and closing cycles of said doors, said assembly comprising

(a) a pair of vanes mounted on said elevator car door, said vanes being movable between a closely spaced collapsed position and a farther spaced spread position,

(b) means for biasing said vanes toward said spread position

(c) a pair of rollers mounted on said hallway door, said rollers being movable from a first position proximate each other to a second position further offset from each other

(d) spring means operable to urge said rollers toward said first position,

(e) said vanes being positioned on said car door so as to pass freely between said rollers when the latter are in their first position and said vanes are in their collapsed position when the elevator car moves up and down in the hoistway,

(f) stationary cam means on the elevator car for holding said vanes in said collapsed position when said elevator car door is fully closed; and

(g) said vanes being interposed between said rollers when the elevator car stops at the hallway door and said vanes being operable by reason of said means for biasing to move to said spread position to engage said rollers when the elevator car door begins to open to move said vanes away from said cam means thereby preventing the latter from holding said vanes, whereby concurrent opening and closing movement of said elevator car door and said hallway door will ensue

5,005,674

BI-DIRECTIONAL ROTATING GRIP BRAKE FOR USE WITH A CONVENTIONAL HAND BRAKE SYSTEM OF A BICYCLE

John A. Piatt, 226 Getchell St., Santa Cruz, Calif. 95060

Filed Feb. 5, 1990, Ser. No. 475,149
Int. Cl.' B62L *1/00 3/00*
U.S. Cl. 188—24.11 **15 Claims**



1 A hand grip subassembly for a bicyclist's use with a conventional cable operated, pull-up braking system to provide bi-directional braking action without change in the rider's grip comprising

a multi-sprocketed derailleur-controlled bicycle having handle bars, a frame upon which front and rear wheels are rotatably mounted, a conventional cable operated, pull-up braking system including a pair of levered subassemblies attached to said handle bars and braking subassemblies attached at said front and rear wheel, each levered subassembly of said conventional cable operated, pull-up braking system including stationary and movable members and a cable, each movable member including a handle, said cable being attached to said movable member and terminating at one of said braking subassemblies,

a cord of predetermined length,

a hand grip of elongated construction having a longitudinal bore into which one of said handle bars of said bicycle is slidably positioned about the rotatable with respect to said handle bar, and a side wall fitted with attaching means positioned closely adjacent to said handle of said movable member of said conventional pull-up braking system, said attaching means fastening said cord to said hand grip, said cord being attached to said handle of said movable member of said conventional pull-up braking system, whereby a non-braking nadir position is established for said attaching means but where in new precise, easily controllable braking positions can thereafter be easily established as said hand grip subassembly is rotated in both counter- and clockwise directions about an axis of symmetry of said bore relative to said handle bar

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5,005,675

SELF-ASSISTING RIM BRAKE FOR BICYCLES

Oskar Pletscher, Marthalen, Switzerland, assignor to Gebruder Pletscher AG, Marthalen, Switzerland

Filed Jun. 21, 1989, Ser. No. 369,327
Claims priority, application Switzerland, Jun. 22, 1988, 02400 88-0
Int. Cl.' B62L *1/12*
U.S. Cl. 188—24.14 **6 Claims**

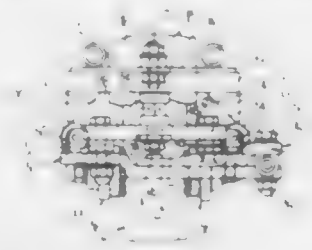
1 A self-assisting brake for selectively engaging the wheel rim of a bicycle, and comprising

a pair of caliper type brake arms, with each of said arms including a lower end portion, and with each of said arms mounting a brake shoe mounted at the lower end portion thereof,

means mounting said brake arms to the frame of the bicycle, with the lower end portions and brake shoes being located on respective opposite sides of the wheel rim, and for pivotal movement about respective, laterally spaced apart pivotal axes which extend generally parallel to the plane of rotation of the wheel rim so as to permit movement of said arms in a first pivotal plane lying perpendicular to the plane of rotation of the wheel rim and between a braking position wherein the brake shoes engage the wheel rim and an open position spaced from the wheel rim, and while permitting limited pivotal movement of said brake arms in a second pivotal plane which lies parallel to the plane of rotation of the wheel rim and such that said brake shoes are able to move in the direction of movement of the wheel rim,

manually operable means for moving said brake arms from said open position to said braking position, and spring biasing means for biasing said brake arms toward said open position,

a pair of cam surfaces fixed mounted to the frame of the bicycle at laterally space apart locations on opposite sides of the wheel rim and forwardly of said brake arms when



viewed in the forward rotational direction of said wheel rim, with the cam surfaces being generally aligned with respective ones of the lower end portions of said brake arms and positioned so as to lie between the associated brake shoe and the pivotal axis of the associated brake arm, and with said cam surfaces converging toward each other in the forward rotational direction of the wheel rim, and

a pair of rollers mounted to respective ones of said lower end portions of said brake arms and being aligned with respective ones of said cam surfaces,

whereby movement of the brake arms to said braking position during operation of the bicycle causes the brake shoes to engage the rotating wheel rim, which in turn causes said brake shoes to move in the forward rotational direction and said rollers to engage said cam surfaces, thereby camming the brake shoes against the wheel rim with an increased force

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5,005,676

DISK FOR DISK-BRAKE

Alain L. Gassiat, Montussan, France, assignor to Societe Anonyme: Carbone Industrie, Bagnolet Cedex, France

Filed May 12, 1988, Ser. No. 193,081
Claims priority, application France, May 13, 1987, 87 07011
Int. Cl.' F16D *65/12, 65/847*
U.S. Cl. 188—218 XL **7 Claims**



1 An improved rotor for a disk brake comprising

(a) a hub portion rotatable about a central axis,

(b) a driving portion having a radially outward surface defining at least one driving tooth;

(c) a central web having a plurality of spacing members and defining at least one driving notch adapted to slidably receive the at least one driving tooth such that the central web may move in a direction generally parallel to the central axis with respect to the driving portion, but may not rotate relative thereto, and,

(d) a generally annular friction element formed separately from and located on each lateral side of the central web, each friction element defining a recess adapted to slidably receive the at least one driving tooth such that the friction elements may move in a direction generally parallel to the longitudinal axis separately from the central web, but may not rotate relative to the driving portion

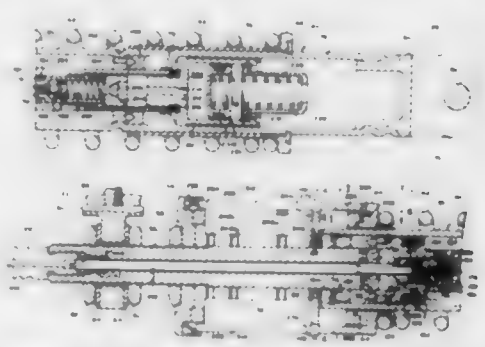
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5,005,677

ADJUSTABLE STOP FOR LOCKING DEVICE

Brian C. Bucholtz, Lakeview, and Thomas J. Miller, Clarence, both of N.Y., assignors to Enidine Incorporated, Orchard Park, N.Y.

Filed Mar. 14, 1989, Ser. No. 323,406
Int. Cl.' B60T *7/00*, **F16F** *9/34*
U.S. Cl. 188—299 **28 Claims**



1 In a fluid device including a piston and a cylinder wherein relative movement between said piston and cylinder is influenced by fluid in said device, an arrangement for limiting the extent of relative movement between said piston and cylinder in said device comprising

(a) a housing having a longitudinal axis and carried by said device,

(b) said housing having an inner surface of cross-sectional dimension enabling one end of said cylinder to move along within said housing,

(c) at least one formation on said housing inner surface,

(d) a stop member within said housing having a portion adapted to engage said formation in a manner establishing a fixed position of said stop member along said housing longitudinal axis, and

(e) means for supporting said stop member within said housing for movement between a first position wherein said stop member portion engages said formation and a second position wherein said stop member portion is out of engagement with said formation,

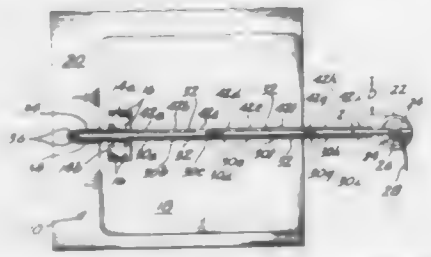
(f) so that said stop member in said first position acts as an abutment to contact said cylinder upon movement of said cylinder into said housing thereby limiting the extent of relative movement between said cylinder said piston

5,005,678

METHOD AND APPARATUS FOR SENSING AND DAMPING VIBRATION

Gerald J. Julien, Puyallup, and Steven P. Robinson, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 3, 1989, Ser. No. 318,393
Int. Cl.[5] F16F 7/10
U.S. Cl. 188—378 41 Claims



1. A mechanism for damping vibration of a structure, comprising

a member comprising a metal alloy having temperature responsive shape memory characteristics and characterized by a very high specific damping capacity compared to the specific damping capacity of the structure and

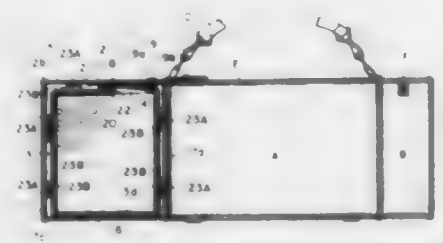
means for attaching the member to the structure at least at two spaced apart points that are offset from a neutral axis of the structure, said points being selected so that the spacing between the points cyclically varies as the structure vibrates, the variation in spacing between the points applying stress to the member, said member absorbing energy from the structure as it is stressed, and thereby damping the vibration of the structure

5,005,679

TOTE BAGS EQUIPPED WITH A COOLING CHAMBER

Kurt R. Hjelle, 315 S. East Ave., Viroqua, Wis. 54665

Filed Feb. 6, 1990, Ser. No. 475,679
Int. Cl.[5] A45C 3/00, 11/20, 13/02
U.S. Cl. 190—110 19 Claims



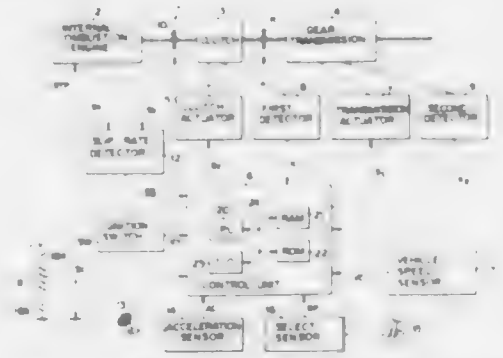
1. A durable tote bag comprised of an uninsulated luggage compartment and a cooling compartment, with said cooling compartment comprising a flexible housing member secured onto and extending outwardly from said uninsulated compartment, a cooling chamber contained within said housing member, a flexible insulative liner enveloping said chamber and disposed between said member and said cooling chamber, an accessing port within said member and said liner so as to provide access to the cooling chamber means for detachably removing said liner from said cooling compartment, and means for securely attaching the cooling compartment onto the uninsulated compartment and removing the cooling compartment therefrom

5,005,680

APPARATUS FOR CONTROLLING GEAR TRANSMISSION AND CLUTCH OF VEHICLES

Yuji Satoh, and Hiromi Kono, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1989, Ser. No. 418,056
Claims priority, application Japan, Oct. 14, 1988, 63-257005
Int. Cl.[5] B60K 41/22
U.S. Cl. 192—3.55 7 Claims



1. An apparatus for controlling a vehicle having an automatic gear shift control system for a gear transmission, said apparatus comprising

an input means for inputting information concerning a load condition of the vehicle,

a first determining means responsive to said input means for determining characteristic curves for engaging the clutch for vehicle drive-off,

a gear discriminating means responsive to said input means for discriminating whether or not a gear position set in the gear transmission corresponds to a predetermined allowable gear position at the time of vehicle drive-off, and

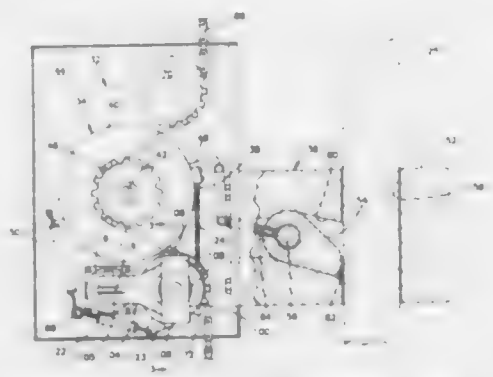
an engaging means responsive to said first determining means and said gear discriminating means for carrying out the operation for engaging the clutch during vehicle drive-off in accordance with the characteristic curve determined by said first determining means only when the gear of the transmission is shifted to an allowable gear position

5,005,681

BRAKE MECHANISM FOR A STORAGE AND RETRIEVAL MACHINE

George R. Pipes, Salt Lake City, Utah, assignor to Eaton-Kenway, Inc., Salt Lake City, Utah

Filed Dec. 20, 1989, Ser. No. 454,788
Int. Cl.[5] B66B 5/16, 9/20
U.S. Cl. 192—7 11 Claims



1. In a load elevating system comprising a mast, a load carriage mounted for vertical movement along said mast, drive means operable to move said load carriage along said mast and

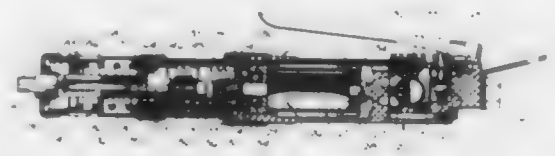
a brake system operable to prevent downward movement of said load carriage relative to said mast, the improvement wherein said brake system comprises engagement means on said load carriage engageable with said mast to prevent relative movement between said load carriage and said mast, said engagement between being movable between a first position out of engagement with said mast and a second position in engagement with said mast, actuating means operable to move said engagement means from said first position to said second position, a first rotary member on said load carriage, means operative to rotate said first rotary member in response to relative movement between said load carriage and said mast, a clutch assembly operatively engageable with said first rotary member, said clutch assembly including an output member having a first condition disengaged from said first rotary member and a second condition engaged with said first rotary member, means for selectively shifting said output member from its disengaged condition to its engaged condition, and means acting between said output member and said actuating means to move said engagement means from its first position to its second position when said output member is in its engaged condition, including means for providing lost motion connection means effective to permit a predetermined amount of relative movement between said load carriage and said mast after said output member is put in its engaged condition

5,005,682

AIR POWERED TORQUE CONTROL TOOL DRIVER WITH AUTOMATIC TORQUE DISCONNECT

Raymond L. Young, and James A. Sjovall, both of Sioux City, Iowa, assignors to Sioux Tools, Inc., Sioux City, Iowa

Filed Jun. 25, 1990, Ser. No. 543,159
Int. Cl.[5] B23Q 5/06
U.S. Cl. 192—0.034 8 Claims



1. A torque control tool driver comprising

a housing,

a motor mounted in said housing,

a tool driving spindle rotatably mounted at one end of said housing,

reduction gear means comprising a ring gear and planetary gears rotatably mounted in said housing and driven by said motor,

torque responsive clutch means for transmitting torque from said gear means to said spindle and operable at predetermined torque output of said spindle to prevent transmission of torque thereto,

said clutch means being operable to hold said ring gear stationary until said predetermined torque output is reached whereupon said ring gear is released for rotation to prevent torque transmission to said spindle, and

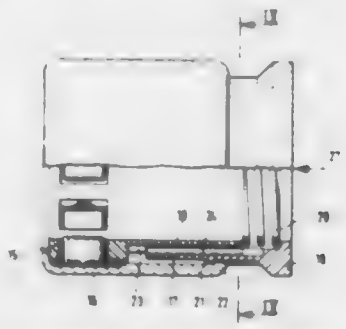
means operable subsequent to preventing transmission of torque to said spindle for shutting off said motor

5,005,683

SWITCHABLE CLAMPING ROLLER OVERRUNNING CLUTCH

Joachim Ritter, Herzogenaurach, and Johann Stark, Weisendorf, both of Fed. Rep. of Germany, assignors to INA Walzlager Schaeffler KG, Fed. Rep. of Germany

Filed Dec. 27, 1989, Ser. No. 457,252
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1989, 3902804
Int. Cl.[5] F16D 15/00, 23/00, 41/06
U.S. Cl. 192—45 4 Claims



1. An overrunning clutch comprising a clamping ring provided with clamping ramps and spring-loaded clamping rollers housed in pockets of a cage and associated with the clamping ramps, the clutch being switchable from a first indexing position into a second by rotation of the cage with respect to the clamping ring characterized in that the cage either directly or with the help of an intermediate member, and the clamping ring with projections and recesses, engage in each other similar to a screw thread that when the cage or the intermediate member, is axially displaced, the cage executes a movement of rotation with respect to the clamping ring and is mounted axially indisplaceably at both ends in the clamping ring between radially directed rims and between the cage and clamping ring, a preferably cylindrical intermediate member is axially displaceably mounted and pressed axially outwards under the action of a pressure spring, which intermediate member projects axially beyond the clamping ring, the cage and the intermediate member and the intermediate member and the clamping ring, engaging in each other similar to a screw thread and in the manner of a longitudinal guide, so that when the intermediate member is axially displaced, the cage executes a movement of rotation with respect to the clamping ring

5,005,684

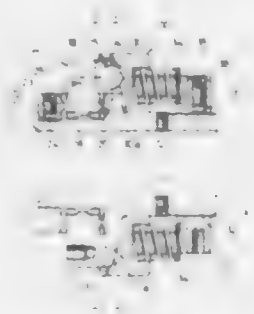
OVERLOAD CLUTCH

Shunji Fujii, Osaka, Japan, assignor to Tsubakimoto Emerson Co., Daito, Japan

Filed Sep. 13, 1989, Ser. No. 406,715
Claims priority, application Japan, Dec. 3, 1988, 63-305154; Feb. 27, 1989, 1-43136; Feb. 27, 1989, 1-43137
Int. Cl.[5] F16D 7/08, 43/206
U.S. Cl. 192—56 R 15 Claims

1. In an overload clutch in which torque transmitting elements are held within hollow portions formed in one of a driving member or a driven member and are urged by a pressure member against recesses formed in the other of the driving member or driven member so that torque may be transmitted and the torque transmitting elements are adapted to escape from said recesses in opposition to an urging force, comprising the improvement wherein said pressure member is formed with an inclined section means for pressing the torque transmitting elements along a direction which substantially intersects a rotational axis of the overload clutch, said hollow portions for holding the torque transmitting elements are generally V-

shaped when viewed axially, and said recesses for holding the torque transmitting elements are grooves which open axially



toward the hollow portions and are of V-shaped cross-section when viewed radially.

5,005,685

TORQUE TRANSMITTING DEVICE

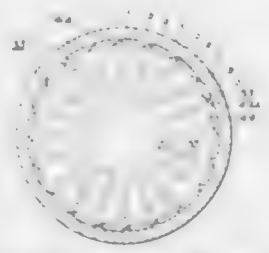
Masami Takano; Tetsurou Hamada, and Katsuhiko Masuda, all of Tochigi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 28, 1988, Ser. No. 212,711

Claims priority, application Japan, Jun. 30, 1987, 62-162622

Int. Cl.⁴ F16D 31/00, 13/64

U.S. Cl. 192—58 B **13 Claims**



1 A torque transmitting device of viscous coupling type comprising a rotatable case member having defined therein a fluid chamber extending axially and filled with a viscous fluid, a rotatable shaft member disposed coaxially in said fluid chamber and rotatable with respect to said case member, two plate-groups comprised of outer plates and inner plates disposed coaxially in said fluid chamber, said outer plates being rotatable with said rotatable case member and said inner plates being rotatable with said rotatable shaft member for relative torque transmission between said rotatable case member and said rotatable shaft member through said fluid, and engaging means engaging the plates of at least one group of said two plate-groups with a peripheral surface of the corresponding rotatable member to provide rotational engagement therewith while allowing relative displacement therebetween through a predetermined angle, said engaging means comprising at least one pair of engaged teeth disposed on an inner peripheral surface of said rotatable case member spaced circumferentially from each other, and at least one engaging tooth disposed on an outer periphery of at least one of said outer plates projecting between said engaged teeth, said engaging tooth being engageable with said engaged teeth after having traversed a circumferential gap corresponding to said predetermined angle, said gap in a plane of said at least one outer plate having an area which is about 2 through 10% of the surface area of each said outer plate.

5,005,686

TORQUE TRANSMITTING AND TORSION DAMPING APPARATUS FOR USE IN MOTOR VEHICLES

Wolfgang Reik, Bühl, and Hans-Dieter Elison, Offenburg, both of Fed. Rep. of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Baden, Fed. Rep. of Germany

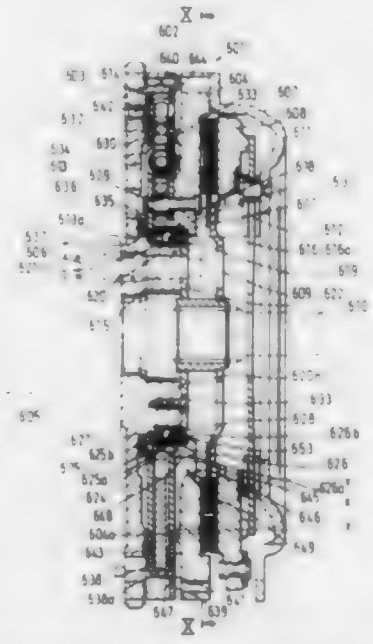
Division of Ser. No. 132,909, Dec. 14, 1987, abandoned, which is a division of Ser. No. 470, Jan. 5, 1987, Pat. No. 4,727,970, which is a continuation-in-part of Ser. No. 716,838, Mar. 28, 1985, abandoned, Ser. No. 799,006, Nov. 18, 1985, abandoned, and Ser. No. 848,732, Apr. 4, 1986, abandoned. This application Dec. 13, 1988, Ser. No. 283,859

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1984, 3421709; Nov. 23, 1984, 3442679; Apr. 15, 1985, 3513449; Apr. 16, 1985, 3513479

The portion of the term of this patent subsequent to Mar. 1, 2005, has been disclaimed.

Int. Cl.⁴ F16F 15/12 F16D 3/12 13/72

U.S. Cl. 192—70.17 **21 Claims**



1 Torque transmitting apparatus with means for taking up and for compensating for variations of torque, particularly for fluctuations of torque between a combustion engine and input means of a transmission, comprising at least two coaxial flywheels including first and second flywheels which are rotatable relative to each other, said first flywheel being connectable with the engine and said second flywheel being connectable with the input means of the transmission by way of a clutch plate of a friction clutch and having a friction surface engageable with the clutch plate with attendant generation of heat, damping means for opposing rotation of said first and second flywheels relative to each other; and antifriction bearing means interposed between said first and second flywheels and including at least one annulus of rolling elements, said second flywheel further having a plurality of elongated circumferentially extending substantially axial passages adjacent said bearing means and disposed radially between said friction surface and said bearing means, the combined length of said passages in the circumferential direction of said second flywheel being at least 20 percent of the corresponding portion of said second flywheel, said first and second flywheels defining a space which communicates with said passages and has an open outer portion to establish a path for the flow of cooling air through said passages and said space.

5,005,687

CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION APPARATUS FOR VEHICLES

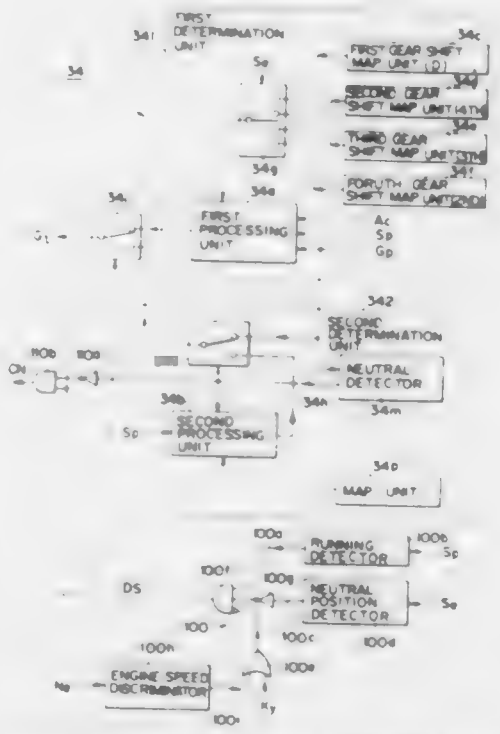
Kazumasa Kurihara, and Tsutomu Takahashi, both of Higashimatsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Dec. 13, 1989, Ser. No. 449,190

Claims priority, application Japan, Dec. 15, 1988, 63-314976

Int. Cl.⁵ B60K 41/28

U.S. Cl. 192—0.073 **11 Claims**



1 A system for controlling a vehicle transmission apparatus for a vehicle powered by an internal combustion engine including a gear transmission electronically controlled by a transmission control unit and a clutch electronically controlled by a clutch control unit, said system comprising

means for producing a key-switch signal indicating that an ignition switch is in its OFF position,

a discriminating means responsive to the key-switch signal for discriminating whether or not the vehicle is running with the gear transmission shifted to its neutral position and fuel combustion in the engine discontinued,

a first determining means for determining a first target gear position to which the gear transmission is to be shifted when the vehicle is running with the engine powered by the fuel combustion,

a second determining means for determining a second target gear position to which the gear transmission is to be shifted when the vehicle is running without fuel-combustion in the engine;

a providing means for providing an output from either said first or second determining means to the transmission control unit in accordance with a discrimination result obtained by said discriminating means, whereby the transmission control unit is caused to control the gear transmission to shift to the gear position indicated by the output provided by said providing means, and

means responsive to said discriminating means for producing a control signal for controlling the clutch control unit to engage the clutch at a prescribed timing

5,005,688

DEVICE FOR VALIDATING AND ACCUMULATING BILLS AND COINS

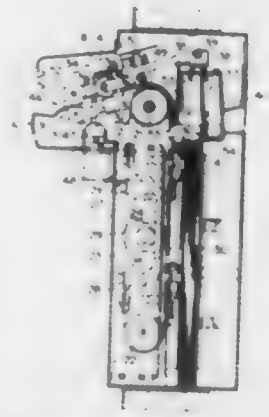
Koji Yukimoto, and Hiroshi Hayashi, both of Sakado, Japan, assignors to Nippon Conlux Co., Ltd., Tokyo, Japan

Filed Jun. 21, 1989, Ser. No. 369,313

Claims priority, application Japan, Jun. 23, 1988, 63-83359[U]. Jun. 28, 1988, 63-100275[U]

Int. Cl.⁵ G07F 7/04

U.S. Cl. 194—206 **2 Claims**



1 A device for validating and accumulating bills having a fixed chute mechanism and a movable chute mechanism forming therebetween a bill passage, magnetic heads provided above said bill passage for validating bills passing thereby, and head pressing rollers for pressing bills against the magnetic heads from the opposite side of the bill passage, said device being characterized in that each of said head pressing rollers is rotatably supported on one end of a roller support lever pivotally supported at a middle part thereof, and the other end of said roller support lever is coupled to a working end of a plunger of an actuating solenoid, an actuating member is secured vertically to the working end of said plunger, the lower end of the actuating member engageable with a lever which is pivotable about a horizontal pivot pin and is operated to open and close the vertical bill passage, when a bill is not validated and is returned in a reverse direction for rejection, said roller support lever and the lever are released synchronously to thereby prevent jamming of said bill due to obstruction by the head pressing roller

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5,005,689

STORAGE SYSTEM

Dieter Maier, Stuttgart, and Dieter Boley, Leonberg/Eltingen, both of Fed. Rep. of Germany, assignors to Fraunhofer Gesellschaft zur Förderung der angewandten Forschung e.V., Munich, Fed. Rep. of Germany

Continuation of Ser. No. 474,634, Jan. 30, 1990, abandoned, which is a continuation of Ser. No. 160,210, Feb. 25, 1988, abandoned. This application Jul. 6, 1990, Ser. No. 549,637

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1987, 3706493

Int. Cl.⁵ B65G 1/00

U.S. Cl. 198—347.3 **20 Claims**



1 A storage system for sequent and positioned input, storage and removal of items on a conveyor belt (1), the ends of which

are attached to shafts (31, 32) respectively, and which can be wound off together with the items thereon from one shaft and onto the other shaft by means of a forward transport unit in such a manner that one item at a time can be stored, and respectively be removed, at a loading and unloading station, a pair of containers (21, 22), said shafts (31, 32) being arranged with one of the shafts in a corresponding one of said containers, each of said containers being closed on all sides except for openings for said conveyor belt, said containers being connected to each other by means of a detachable connecting plate, whereby each of said containers can be removed from the storage system, said forward transport unit (43, 44, 46) being a synchronized forward transport unit, independent of said containers (21, 22)

5,005,690

CONVEYOR CARRIAGE

Jochen Gonser, Kornwestheim, Fed. Rep. of Germany, assignor to Veit Transpo GmbH

Filed Jun. 1, 1989, Ser. No. 359,891

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1988, 8807283[U]

Int. Cl.[5] B65G 47/46

U.S. Cl. 198—350 **4 Claims**



1 A conveyor carriage, for an overhead conveying system, including a U-shaped frame, two casters for engaging a rail for travelling along a conveying direction, and a proximity-readable code carrier, said casters being supported and connected to one another by said frame, said frame being formed with an interior cavity so that said frame forms a housing for the accommodation into said U-shaped frame of said proximity-readable code carrier to protect said proximity-readable code carrier from damage, said proximity-readable code carrier including an electronic circuit of the non-contacting control type

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5,005,691

APPARATUS FOR SUSPENDING GARMENTS ON HANGERS

Manfred A. Jennewein, Meisenweg 10, D-6082 Mörfelden-Walldorf, and Achim Ballweg, Homburg/Saar, both of Fed. Rep. of Germany, assignors to Manfred A. Jennewein, Mörfelden-Walldorf, Fed. Rep. of Germany

Filed Mar. 29, 1989, Ser. No. 330,312

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1988, 3810794; Jun. 4, 1988, 3819103

Int. Cl.[5] B65G 17/32

U.S. Cl. 198—465.4 **25 Claims**

1 Apparatus for suspending garments on hangers of the type having a hook, comprising a plurality of garment holders each resembling the upper part of a human torso and each having an open-top hanger-receiving pocket, a main section and a receptacle which is movably installed in the respective main section and has an open upper side for admission of a hanger, the depth of each of said receptacles being such that at least the hook of a hanger in the receptacle projects upwardly beyond the respective receptacle, said receptacles being movable up and down in the respective main sections between raised and lowered positions, said main sections having topmost portions and the hooks of hangers in said receptacles being disposed at a level below the respective topmost portions in the lowered positions of said receptacles, a conveyor supporting and defining an endless path for said holders, and a plurality of stations including a first station adjacent said path and having means for inserting hangers into the pockets of adjacent holders so



that the hook of an inserted hanger extends upwardly, and a second station adjacent said path to facilitate the application of a garment over a holder and over the hanger in the pocket of such holder, one of said holders being located at said first station when another of said holders is located at said second station

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5,005,692

TUBE FEED APPARATUS

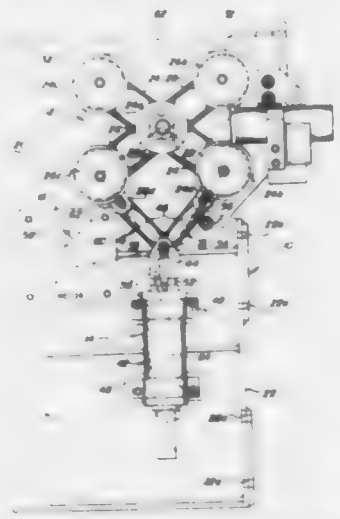
John J. Borzym, 4820 Schoolbell, Birmingham, Mich. 48010

Continuation of Ser. No. 149,430, Jan. 29, 1988, Pat. No. 4,903,822. This application Nov. 16, 1989, Ser. No. 437,864

The portion of the term of this patent subsequent to Feb. 27, 2007, has been disclaimed.

Int. Cl.[5] B65G 29/00

U.S. Cl. 198—624 **12 Claims**



1 A power feed apparatus for tubing or the like comprising

feed rollers adapted to drive the tubing along a tube feed path;

actuator means, including means interconnecting said rollers for joint displacement, operative in response to actuation of said actuator means to simultaneously and jointly displace said rollers between a drive position in which the rollers are disposed at opposite sides of and proximate said feed path to drivingly engage opposite sides of the tubing with each of said rollers having its axis of rotation spaced the same distance from the center line of said tube regardless of the diameter of said tube and a rest position in which each of the rollers is withdrawn form its drive position and withdrawn from said feed path,

means for rotationally driving said rollers throughout the movement of said rollers between engaged and withdrawn positions such that various tube diameters can be driven

said means for relatively moving said rollers includes a pair of arms mounted for movement about a fixed pivot axis with said pair of arms each defining a free end,

said feed rollers are respectively mounted on the free ends of said arms,

a pulley is mounted on the free end of each of said arms in driving relation to the respective feed rollers; and

an endless member is trained around said pulleys.

5,005,693

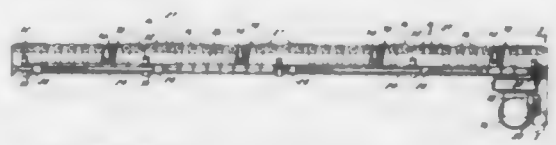
LINE SHAFT ACCUMULATION CONVEYOR

William A. Fultz, and David M. McLochlin, both of Louisville, Ky., assignors to The Interlake Companies, Inc., Shepherdsville, Ky.

Filed Apr. 23, 1990, Ser. No. 512,818

Int. Cl.[5] B65G 13/06

U.S. Cl. 198—781 **3 Claims**



1 An accumulation conveyor comprising

a conveyor frame including first and second side rails and a plurality of rollers each having a first end mounted on the first side rail and a second end mounted on the second side rail;

a drive shaft extending along the conveyor and defining an axis which is substantially parallel to the side rails;

a plurality of intermediate shafts extending parallel to the drive shaft, said intermediate shafts being aligned with each other along an axis which is distinct from the axis of the drive shaft, each of said intermediate shafts lying adjacent to a distinct group of rollers so as to define a zone of rollers associated with each intermediate shaft,

a plurality of drive belts wrapped around each of the intermediate shafts, each of said drive belts also being wrapped around its respective roller such that, when an intermediate shaft rotates, it drives the drive belts that are wrapped around it, which, in turn, drive the rollers in the zone of rollers associated with that intermediate shaft,

a plurality of friction wheels mounted on the drive shaft, each of said friction wheels lying adjacent to its respective intermediate shaft; and

means for moving each intermediate shaft toward and away from its respective friction wheel, such that, when each intermediate shaft contacts one of the friction wheels of the drive shaft, it is driven by the drive shaft, which, in turn, causes the zone associated with that intermediate shaft to be driven, and, when that intermediate shaft is moved away from the friction wheel, it stops driving its zone of rollers

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5,005,694

SYSTEM FOR PACKAGING DETONATING CORD FOR TRANSPORT

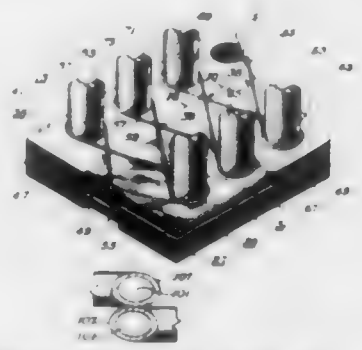
Billy F. Davis; Michael P. Hancock, both of Cleburne, and Scott L. Hayes, Burleson, all of Tex., assignors to Goex, Inc., Cleburne, Tex.

Continuation-in-part of Ser. No. 110,227, Oct. 19, 1987, Pat. No. 4,895,249. This application Jul. 6, 1989, Ser. No. 376,887

The portion of the term of this patent subsequent to Jan. 23, 2007, has been disclaimed.

Int. Cl.[5] B65D 85/62

U.S. Cl. 206—3 **20 Claims**



1 A detonating cord transport package comprising a plurality of sections, with each section comprising

a detonating cord separator-support member having front and back face surfaces and edge surfaces, and

a continuous length of detonating cord comprising a metal jacket surrounding an explosive core along said entire continuous length, disposed for support on said separator-support member and traversing portions of said surfaces such that said detonating cord is formed in a plurality of loops on said separator-support member, each of said loops having two end portions engaging each other at a severing location to allow said detonating cord to sever itself should detonation of said cord occur

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5,005,695

CONDOM CADDY PACKAGE

David A. Tennefos, and Victoria I. Tennefos, both of 2711 S. Rivershore Dr., Moorehead, Minn. 56560

Filed Mar. 15, 1990, Ser. No. 493,785

Int. Cl.[5] B65D 85/00

U.S. Cl. 206—69 **6 Claims**



1 A condom package comprising,

a front web overlying and coextensive with a rear web, the front web and the rear web including a heat sealed upper edge spaced from a heat sealed lower edge, and

heat sealed side edges defining an enclosing perimeter of the package, and

a first opening means formed within the front and rear webs

adjacent the upper edge for gaining access interiorly of the package, and

a second opening means mounted adjacent the first opening means underlying the first opening means for permitting resealing of the package, and

a first compartment defined within the package underlying the second opening means, and

a second compartment defined within the package overlying the second opening means containing the first opening means, and

wherein the first opening means includes a first row of perforated slits formed within the front web extending coextensively along the front web, and further including a second row of perforated slits adjacent to said first row of perforated slits extending coextensively along the rear web wherein the first and second rows of perforated slits are arranged parallel to the top edge spaced above the second opening means, and

wherein the second opening means includes a continuous groove extending along the rear web cooperative with a continuous tongue formed to the front web wherein the continuous tongue is defined by a continuous linear recess formed within the front web wherein the linear recess defines a convex upper surface and a convex lower surface extending over the first and second compartments respectively to provide enhanced grasping of the package during opening of the package by rupturing the slits

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5,005,696

ROUND BALER

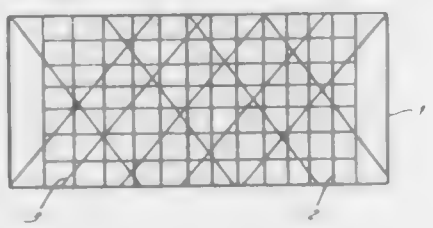
Wilhelm von Allwörden, Gallingen, Fed. Rep. of Germany, assignor to Grunland Gmph & Co.

Filed May 10, 1989, Ser. No. 349,709

Claims priority, application Fed. Rep. of Germany, May 11, 1988, 3816189

Int. Cl.' B65D 71/00

U.S. Cl. 206—83.5 2 Claims



1 A round bale comprised of stalk crops cut into short pieces in the longitudinal direction of the stalks, a cover which consists of a netting web, and baler twine wound spirally around the surface of said round bale so that the baler twine crosses itself, said web being located between the stalk crops and baler twine.

2 A round bale comprising an interior of stalk crops cut into small pieces in the longitudinal direction of the stalks, an exterior of at least one surface layer of uncut stalk crops, a cover which consists of a netting web, and baler twine wound spirally around the surface of said round bale so that the baler twine crosses itself, said netting web being located between the exterior of uncut stalk crops and the baler twine.

5,005,697

MAKE-UP CASE

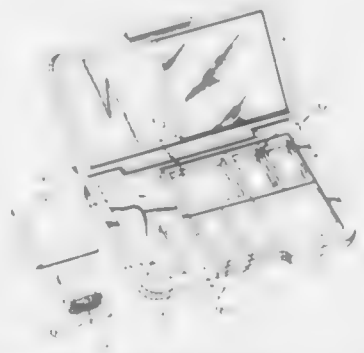
Keiji Jimbo, Naka; Yuuji Yasui, Hachioji, and Sigeru Taninaga, Minamiashigara, all of Japan, assignors to Kanebo Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 793,463, Oct. 29, 1985, abandoned, which is a continuation of Ser. No. 636,788, Aug. 1, 1984, abandoned, which is a continuation of Ser. No. 436,424, Oct. 25, 1982, abandoned. This application Aug. 15, 1990, Ser. No. 568,196

Claims priority, application Japan, Oct. 27, 1981, 56-160913

Int. Cl.' B65D 21/00

U.S. Cl. 206—235 1 Claim



1 A make-up tray containing at least two rows of cosmetics pans of rectangular shape, said pans having uniform dimensions in one direction, said pans in the other direction having at least two different dimensions the larger of which is in an integer multiple of the smaller, and means providing magnetic attraction between the bottoms of said pans and the inner bottom of the said make-up case, wherein said pans do not become dislodged by gravitational forces but are removal by a manually applied force grater than the force of magnetic attraction and where each of the cosmetics pans has at least one width-wise projected top edge adapted to effect said manually applied force

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5,005,698

INDIVIDUALLY WRAPPED CIGARETTES IN CIGARETTE PACK OR BOX

Ameer G. Mikhail, 945 Riverside Dr., Unit #15-A, Methuen, Mass. 01844

Filed Jan. 5, 1984, Ser. No. 568,294

Int. Cl.' B65D 85/10

U.S. Cl. 206—257 2 Claims



1 A thin foil-type wrapper for use in packaging common cigarettes in cigarette packs or boxes for preserving tobacco freshness, said wrapper comprising an enclosure which totally wraps each cigarette individually, said enclosure defined by seam lines forming an individual compartment for each cigarette, a perforation line included in said seam line to permit separation of each individual cigarette while permitting the remaining cigarettes to remain sealed, said seam lines arranged along the long side of each cigarette and defining connecting surfaces between each cigarette which are foldable and flexible, said connecting surfaces defined by a plurality of fold areas so that said connecting surfaces can be compacted linearly and stretched linearly or curvilinearly without separation of adjacent cigarettes

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5,005,699

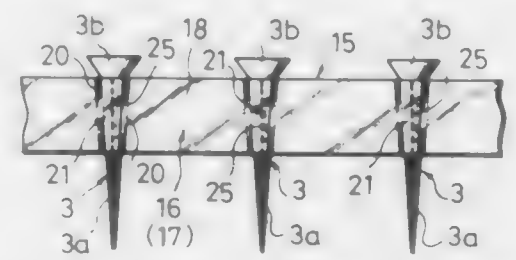
STRAPPED FASTENER ASSEMBLAGE

Masaki Kawashima, No. 10-36, Nakano 2-chome, Niizai-shi, Saitama-ken, and Kouichi Miyagaki, Toda, both of Japan, assignors to Masaki Kawashima, Saitama, Japan

Filed Dec. 6, 1988, Ser. No. 280,364

Int. Cl.' B65D 85/24

U.S. Cl. 206—344 16 Claims



1 A strapped fastener assemblage, comprising

a pair of connecting straps made of paper, a plastic film is laminated onto one surface of each of the connecting straps, the plastic-film-side surfaces of the connecting straps being in contact with each other;

a plurality of pin-like fasteners arranged generally parallel to one another with a predetermined spacing therebetween, each of said fasteners extending transversely of and between the connecting straps,

a plurality of fastener retainers each of which is defined by a pair of heat-sealed portions of the connecting straps extending transversely of the connecting straps, said fastener retainer retaining a corresponding one of said fasteners, and

separation means provided on only one connecting strap of each fastener retainer for facilitating removal of the pin-like fastener from the fastener retainer

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5,005,700

GAS TIGHT PACKAGING WITH A SAFETY DEVICE

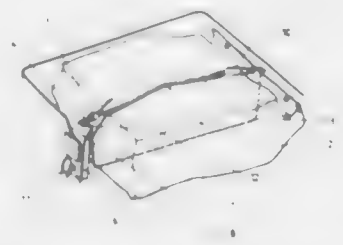
Holmer Röhling, Reinfeld; Christoph Bauer, Bad Schwartau; Harald M. Friedrichs, Lübeck, and Roderich Thometschek, Stockelsdorf, all of Fed. Rep. of Germany, assignors to Dräger werk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany

Filed Jan. 23, 1990, Ser. No. 468,616

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1989, 3902118; Mar. 27, 1989, 3907706

Int. Cl.' B65D 73/00

U.S. Cl. 206—459 10 Claims



1 A gas-tight packaging arrangement for checking the vacuum seal of the packaging device comprising

an evacuated envelope surrounding the device, said evacuated envelope having an outer surface with an outer circumference a tensioned and substantially non-elastic band surrounding at least a part of the circumference of said envelope, said substantially non-elastic band being in contact with the outer surface of said envelope at said circumference, a visible mark band part connected to said band, said visible mark band part having a visible appearance which differs from said substantially non-elastic band, and a housing surrounding said envelope

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5,005,701

STRENGTHENING STRUT FOR RECTANGULAR CONTAINER

Daniel P. Dutcher, Bethel, Minn., assignor to Waldorf Corporation, St. Paul, Minn.

Filed Sep. 12, 1990, Ser. No. 582,112

Int. Cl.' B65D 5/10

U.S. Cl. 206—491 14 Claims



1 A package of thin, flexible material for positioning an article contained within the package comprising

an exterior container having generally the shape of a rectangular box

comprising first and second opposed main panel pairs joined at ninety degrees to form a tube of generally rectangular cross-section and a pair of end closures at opposite ends of said tube, and

an internal positioning frame within said exterior container, said internal positioning frame comprising

a pair of generally parallel positioning panels, each such positioning panel being generally parallel to the first pair of main panels,

a first positioning strut connected between the first pair of main panels and lying generally perpendicular to each of the parallel positioning panels and in spaced, generally parallel relation to the second pair of main panels, and

a second positioning strut connected between said first positioning strut and at least one of said second pair of main panels, said second positioning strut lying generally parallel to said parallel positioning panels and in a plane intermediate the planes of said parallel positioning panels

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5,005,702

PORTABLE FOOD/WRITING TRAY

Mark S. Davis, and Patricia S. Davis, both of 1632 S. Primrose, Alhambra, Calif. 91803

Filed Feb. 9, 1990, Ser. No. 478,208

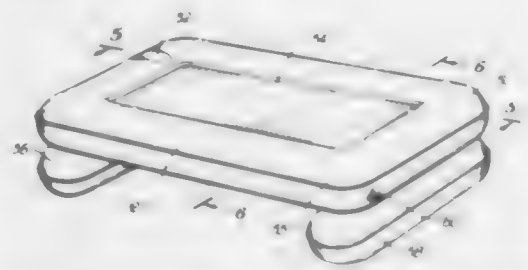
Int. Cl.' B65D 6/04

U.S. Cl. 206—562 7 Claims

1. A portable tray apparatus for providing a flat surface upon the lap of an operator, said apparatus comprising

a tray body having damping and shock absorbing means,

wherein said damping and shock absorbing means includes a first air chamber.



support means extending outward in a first direction from said tray body

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5,005,703

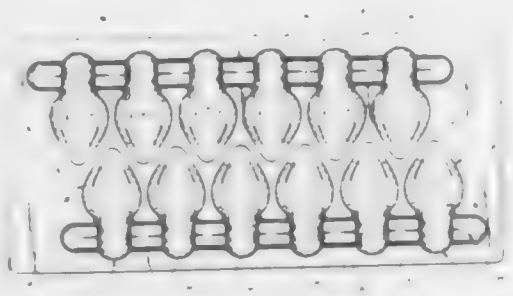
APPARATUS FOR INDIVIDUALIZED ANGULAR CONTAINMENT OF CRAWFISH

Edward Bodker, 364 Peachtree Blvd., Baton Rouge, La. 70806

Continuation-in-part of Ser. No. 282,106, Dec. 8, 1988, abandoned. This application Jul. 10, 1990, Ser. No. 550,388

Int. Cl.[5] B65D 1/36, A01K 61/00

U.S. Cl. 206—563 10 Claims



1. A container for holding live or fresh crawfish, stored with their tails in a folded position, comprising

(a) an expansive support member carrying a plurality of sockets,

(b) each socket having a continuous sidewall conforming generally to the shape of a crawfish, the sockets being spaced apart so that multiple crawfish can be stored within the dimensions of the horizontal member, separate from one another and in a generally co-planar orientation,

(c) each socket including a longitudinally extending socket that aligns with the longitudinal axis of the crawfish being stored and including a front end portion of gradually increasing width and a rear end portion shaped to be receptive of a crawfish folded tail, and

(d) a transverse trough, angularly oriented with respect to the crawfish being stored and connecting adjacent sockets at the tail portion so that the thumb and forefinger of a user can grip the crawfish tail by entering the transverse slot

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5,005,704

DISPOSABLE TACO HOLDER

Russell E. Martin, 5420 Beckner Str., Norfolk, Va. 23509

Filed Jun. 4, 1986, Ser. No. 870,418

Int. Cl.[5] B65D 5/42

U.S. Cl. 206—564 9 Claims

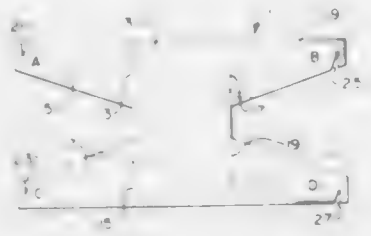
1. An assemblable holder for comestible products, which comprises

(a) a sheet having substantially negligible thickness dimension, formed of a semi-rigid material and having

(b) a central region, said central region having at least one pair of spaced parallel sides;

(c) first and second spaced apart legs secured to and spaced along one of said spaced parallel sides, each of said first and second legs having a first side most closely adjacent a first side of the other of said first and second legs and extending outwardly from said central region, said first sides forming a substantially V-shaped trough, each of said first and second legs having a notch at one end portion thereof remote from said central region extending in a direction parallel to said spaced parallel sides, and a crease in the material at the juncture of said first and second legs and said central region,

(d) third and fourth spaced apart legs secured to and spaced along the other of said spaced parallel sides, each of said



third and fourth legs having a first side most closely adjacent a first side of the other of said third and fourth legs and extending outwardly from said central region, said first sides forming a substantially V-shaped trough, each of said third and fourth legs having a notch at one end portion thereof remote from said central region extending in a direction parallel to said spaced parallel sides, the notch in said first leg extending in a direction opposite to said notch in said third leg and said notch in said second leg extending in a direction opposite to said notch in said fourth leg, and a crease in the material at the juncture of said third and fourth legs and said central region, said legs being folded toward each other along said crease with the notch of said first leg engaging the notch of said third leg and the notch of said second leg engaging the notch of said fourth leg to form said taco holder

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5,005,705

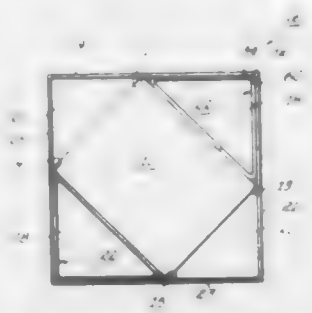
PACKAGE FOR SHIPPING FLUORESCENT LAMPS AND OTHER FRAGILE TUBULAR PRODUCTS

Kenneth Combs, Warrensville Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 28, 1990, Ser. No. 500,424

Int. Cl.[5] B65D 81/02, 85/42

U.S. Cl. 206—586 16 Claims



1. A package for shipping fragile tubular or rod-shaped articles, which comprises a first carton being rectangularly shaped and having four longitudinal outside edges and containing a plurality of said articles within, with the longitudinal axis of said articles being parallel to the longitudinal axis of said first carton, with said first carton being disposed within a second rectangularly shaped carton such that the longitudinal

axes of both cartons are substantially coincident and each of the said four longitudinal edges of said first carton are located adjacent a respective one of the four sides of said second carton inside said second carton to form four triangular-shaped cavities inside said second carton and wherein at least one of said triangular-shaped cavities contains a triangular-shaped spacer of about the same dimensions as said cavity to prevent rotation of said first carton within said second carton and also to provide additional stiffness and rigidity to said package

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5,005,706

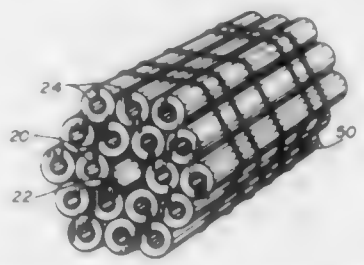
STABLE ROLL TRANSPORT BUNDLE

Nancy T. LaTondress, Mt. Juliet, and H. E. Thomas, Hendersonville, both of Tenn., assignors to Reemay, Inc., Old Hickory, Tenn.

Continuation-in-part of Ser. No. 281,104, Dec. 7, 1988, Pat. No. 4,898,761. This application Nov. 29, 1989, Ser. No. 442,664

Int. Cl.[5] B65D 85/20, 85/62, 85/67

U.S. Cl. 206—595 6 Claims



1. A transportation package for shipping wound rolls of sheet material, said package comprising a plurality of said rolls and a hollow tube, at least one layer of at least three rolls being disposed around said tube in the form of a bundle, said tube being located centrally within said bundle, adjacent rolls being in tangential contact with each other and with said tube, said tube accommodating insertion of a lifting means to facilitate transportation

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5,005,707

RECLOSABLE PACKAGE

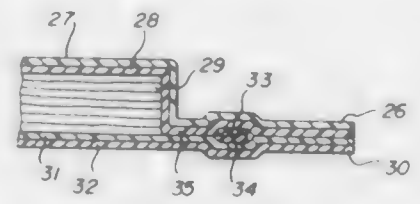
Gerald O. Hustad, McFarland, and Ray H. Griesbach, Monona, both of Wis., assignors to Oscar Mayer Foods Corporation, Madison, Wis.

Continuation of Ser. No. 218,388, Jul. 12, 1988, Pat. No. 4,823,961, which is a continuation of Ser. No. 841,916, Mar. 20, 1986, Pat. No. 4,782,951. This application Feb. 22, 1989, Ser. No. 313,430

The portion of the term of this patent subsequent to Apr. 25, 2006, has been disclaimed.

Int. Cl.[5] B65D 75/26, 81/20

U.S. Cl. 206—632 12 Claims



1. A reclosable package comprising

a bottom film,

a top film positioned over said bottom film;

a continuous hermetic seal formed by intimate contact between said top and bottom films hermetically sealing said top and bottom films and peripherally surrounding a product cavity between said top and bottom films,

a portion of said hermetic seal being an easy-open hermetic peel seal for graining access to the contents of said product cavity, and

one or more interlocking ribs and grooves extending adjacent to said portion of said easy-open hermetic peel seal peripherally to said easy open hermetic peel seal, said interlocking ribs and grooves being adapted to reclose said package after said easy open hermetic peel seal has been opened

said easy open hermetic peel seal being of sufficient opening force to withstand processing, handling and shipping, yet low enough to allow easy access to the product cavity and to ensure that the structural and functional integrity of the films, interlocking ribs and grooves and remaining seals is maintained

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5,005,708

SUPPORT FOR COMPACT DISK BOXES

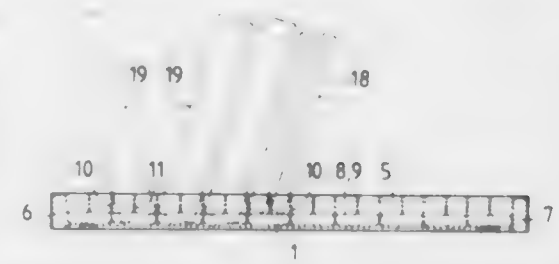
Patrick P. P. Posso, Renens, Switzerland, assignor to Gefitec S.A., Lausanne, Switzerland

Filed Aug. 25, 1989, Ser. No. 398,656

Claims priority, application France, Sep. 9, 1988, 88 11799

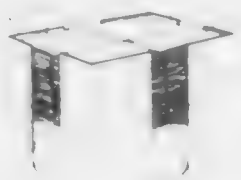
Int. Cl.[5] A47G 29/00

U.S. Cl. 211—41 2 Claims



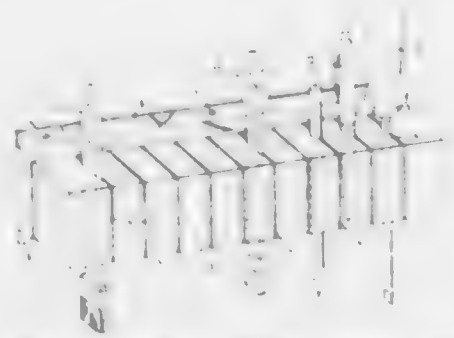
1. A rectangular support tray for compact disk boxes having long sides and short sides forming a rectangular plane, and having a width dimension extending perpendicular to the rectangular plane, the rectangular tray being formed of long sides and short sides forming a rectangular plane and also formed of a vertical dimension extending perpendicular to the rectangular plane of the tray, and a bottom of the tray, the length of the short side of the tray substantially corresponding to the length of the long side of the compact disk box, continuous raised portions adjoin the interiors of each of the long sides of the tray, the distance between the continuous raised portions as measured parallel to the short side of the rectangular tray being greater than the length of the short side of the compact disk box and shorter than the length of the long side of a compact disk box, the tray also being provided with a plurality of vertical transverse walls extending along the interior long sides of the tray and perpendicular thereto, said vertical transverse walls having a height of approximately 1 to 2 cm, said vertical transverse walls being of a first length and a second length, said first length transverse walls extending in the direction perpendicular to the long side of the tray upon only the continuous raised portion of the long side of the tray and the second length transverse walls extending for a length beyond the continuous raised portion of the long side of the tray, said vertical transverse walls being spaced along the long side of the tray so that a compact disk box placed upon its width dimension between two said vertical transverse walls will stand vertically and tilt slightly, with said compact disk box resting against the vertical transverse walls.

5,005,709
PAPER RACK
Rick W. Stokes, 601 Glenway St., Madison, Wis. 53711
Filed Jun. 27, 1989, Ser. No. 371,940
Int. Cl.' A47F [illegible]
U.S. Cl. 211—50 13 Claims



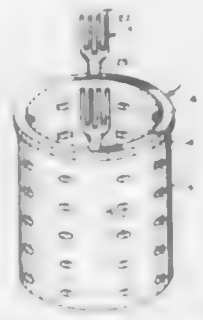
1. A paper support bundling apparatus comprising in essentially continuous sidewall having four sidewalls and further formed of a flat board-like material having four corners and interconnected in at least three corners by interconnections, a separate interconnecting unit connected at said fourth corner to form an integrated tubular rectangular structure, at least two of said sidewalls located on opposite sides of said rectangular structure including a substantially vertically extended opening extending downwardly from the top of said rectangular structure, four corner shelf members each including an interconnecting supporting vertical leg portion and a laterally and horizontally extended shelf portion interconnected to each other by a folded connection, said shelf portions being located above the bottom of said sidewall openings and said shelf portions located adjacent said sidewalls including said openings terminating adjacent the edges of said sidewall openings and forming a free unobstructed opening beneath the plane of said shelf portions including said supporting vertical leg portions interconnected to each other by mechanical fastener means extending beneath said unobstructed opening said shelf portion being located within said sidewall with said supporting leg portion of said shelf member folded into supporting and abutting engagement with said sidewall.

5,005,710
RETAINING DEVICE
Karl Hofer, Emmentalstrasse 77, 3510 Konolfingen, Switzerland
Filed Feb. 26, 1990, Ser. No. 484,556
Claims priority, application Switzerland, Mar. 31, 1989, 1171/89
Int. Cl.' A47F [illegible]
U.S. Cl. 211—70.6 4 Claims



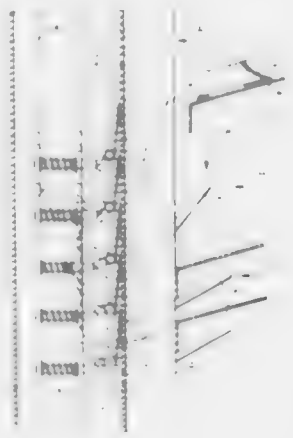
1. A retaining device for generally vertically hanging a plurality of generally parallel disposed elongate objects, comprising
(1) a generally longitudinally elongated, rectangular, parallelepiped, block of a resilient foamed plastic or rubber having front, back, top, bottom and side surfaces,
(2) a plurality of spaced-apart incisions disposed through said front surface and extending toward said back surface to at least beyond the longitudinal center of said block and terminating within said block such that the back surface thereof is continuous
(3) a securing frame substantially surrounding at least a back portion of the said top, bottom and side surfaces and having a generally opened, rectangular, parallelepiped configuration, and
(4) attachment means for mechanically attaching the said block to said frame, said attachment means having vertically disposed spaced-apart, connecting bars attached between longer sides of the frame which bars are spaced apart such that the bars are received into correspondingly spaced-apart incisions near the termination thereof

5,005,711
UTENSIL HOLDER APPARATUS
Christopher M. Pentross, 1028 Marine Ave., Apt. #138, Gardena, Calif. 90247, and Ferdinand E. Flowers, 3750 Easy Ave., Long Beach, Calif. 90810
Filed Apr. 13, 1990, Ser. No. 509,067
Int. Cl.' A47F [illegible]
U.S. Cl. 211—70.7 1 Claim



1. A utensil holder apparatus comprising,
a plurality of containers comprising a first, second, and third container, each container including an elongate longitudinally aligned body, with a rim mounted orthogonally to the body at an upper terminal end of the body, and wherein each container defines a cavity therewithin, and
designation means mounted to the body, and the designation means is configured to provide a configurational replication of a plurality of utensils contained within the cavity of each container, and
wherein the body is defined as a cylindrical body, the body including a matrix of apertures directed therethrough, and
wherein each rim includes a planar top surface, and the designation means including a plurality of fork members orthogonally and integrally mounted to the first container on the rim of the first container extending coaxially parallel to a first axis of the first container, and the second container including a plurality of spoon members integrally and orthogonally mounted to the rim of the second container coaxially parallel relative to one another and to a second axis defined by the second container, and the third container including a plurality of knife end members integrally and orthogonally mounted to the rim of the third container arranged parallel to one another and to a third axis defined by the third container, the plurality of fork members serving as first manual identification means for permitting manual identification of first utensils within the first container, the plurality of spoon members serving as second manual identification means for permitting manual identification of second utensils within the second container, and the plurality of knife end members serving as third manual identification for permitting manual identification of third utensils within the third container

5,005,712
STORING AND TRANSPORTING RACK FOR BODY PANELS AND OTHER FLAT COMPONENTS
Klaus Niederprum, Bergheim, Fed. Rep. of Germany, assignor to Ford Motor Company, Dearborn, Mich.
Filed Apr. 27, 1989, Ser. No. 344,940
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1988, 3714452
Int. Cl.' A47F [illegible]
U.S. Cl. 211—150 17 Claims

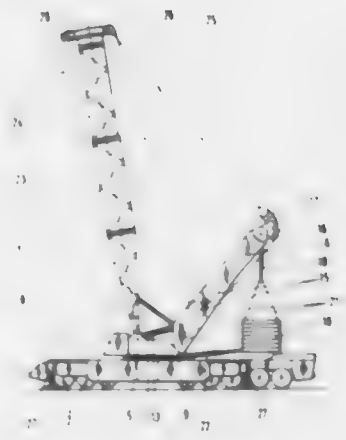


12. A storage and transportation rack for stacking and transporting generally flat components, comprising
a framework means,
a plurality of support columns attached to said framework means, said support columns including bearing slots,
a plurality of support arm assemblies pivotally disposed in selected ones of said bearing slots of said support columns, said support arm assemblies being positionable between a rest position and an extended position so that when said support arm assembly is in said extended position, said support arm assembly supports at least a portion of the flat component, and wherein said support arm assemblies have a length and shape such that they can be adjustably positioned within a range of bearing slots allowing storage of flat components of varying size without disturbing the sequencing ability of said support arm assemblies and wherein such sequencing is such that when a component is placed on one of said support arm assemblies, said support arm assembly is rotated from an intermediate position, which is between said rest and said extended positions, to said extended position, and such that during such movement a portion of said support arm assembly cooperates with a portion of the adjacent support arm assembly to move the adjacent support arm assembly from said rest position to an intermediate position capable of receiving the next component

5,005,713

Patent Not [illegible] For This Number

5,005,714
CRANE, IN PARTICULAR A LARGE MOBILE CRANE
Joachim Kröll, Steinstrasse 1, 4053 Juchen 1, and Walter Köllner, Mendelssohnweg 25, 4052 Korschenbroich 2, both of Fed. Rep. of Germany
Filed Jul. 21, 1989, Ser. No. 384,138
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1988, 3824732
Int. Cl.' B66C [illegible]
U.S. Cl. 212—196 1 Claim



1. A crane comprising
an undercarriage (1), a revolving joint (3) on said undercarriage (1), a superstructure on said revolving joint (3), said superstructure comprising a central part (5) rotatably mounted on said revolving joint (3), a boom pivotally connected to said central part (5), a swing part (6), and a horizontal swing bearing (9) pivotally mounting said swing part on said central part (5) for movement in a vertical plane on said central part (5), a plurality of winches mounted on said swing part (6), a retraction mechanism (17) mounted at one end of said swing part (6) opposite said swing bearing (9), said retraction mechanism comprising a pulley head (16) and a bracing (25) for said boom, a counterweight(18); means (19) for attaching said counterweight on said end of said swing part (6) for vertical movement relative thereto, at least one hydraulic ram (22) pivotally mounted on said central part (5) and having a free end, said free end acting on said counterweight (18) in a substantially horizontal direction, means (13) operatively connected between said central part (5) and said swing part (6) for swinging said swing part (6) in a vertical plane about said horizontal swing bearing (9), said swing bearing (9) having a horizontal axis extending perpendicular to the longitudinal axis of said superstructure, an operator's cab (8) attached to said central part (5), said swing

bearing (9) being located at approximately the height of said revolving joint on said central part (5) at a location farther from said operator's cab (8) than the pivot point of said boom; at least one of said plurality of winches being operatively connected to said bracing for positioning said boom at selected locations about said pivot point and at least another one of said plurality of winches being adapted to be connected to a load cable mounted on said boom for raising and lowering a load

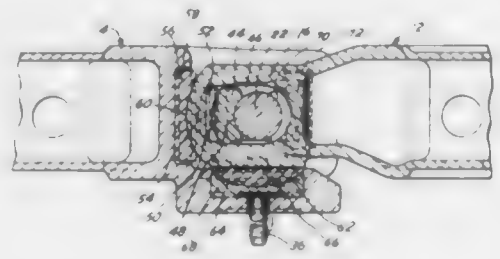
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5,005,715

ARTICULATED RAILROAD CAR CONNECTOR

James E. Solomon, Lithopolis, Ohio, assignor to Buckeye Steel Castings Company, Columbus, Ohio

Continuation-in-part of Ser. No. 126,183, Nov. 27, 1987, Pat. No. 4,949,856. This application Jul. 24, 1989, Ser. No. 383,660
Int. Cl.[5] B61G 01/02
U.S. Cl. 213—62 A 14 Claims



1 An articulated connector for railroad cars, which comprises:

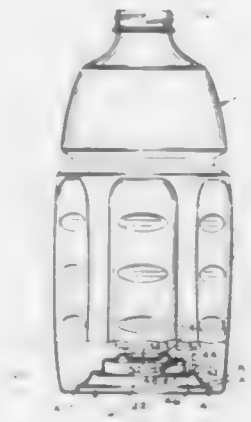
first and second connector members pivotably connected to each other at inner ends with a pin to permit vertical, rotational and horizontal pivoting of said connector members, said connector members having opposed ends proportioned to each be welded to a railroad car sill, and means for attaching said articulated connector to a railroad truck; pin bearing block means carried in said articulated connector and abutting said pin; slack adjusting wedge means urging said pin against the pin bearing block means, said slack adjusting wedge means being laterally positioned in said connector; and side aperture means in said connector positioned to provide access from the exterior to the slack adjusting wedge means; in which the inner end of the first connector member defines a downwardly facing, spherical face which rests on a spherical recess area defined in a recess of the inner end of the second connector member, said pin extending horizontally through first and second connector member inner ends, whereby said spherical face presses with relatively large surface area against the spherical recess area to provide a load-bearing sliding surface of relatively reduced pressure per unit area.

5,005,716

POLYESTER CONTAINER FOR HOT FILL LIQUIDS

Tod F. Eberle, Saline, Mich., assignor to Hoover Universal, Inc., Plymouth, Mich.

Continuation of Ser. No. 211,464, Jun. 24, 1988, abandoned. This application Feb. 7, 1990, Ser. No. 477,115
Int. Cl.[5] B65D 1/02, 1/42, 23/00
U.S. Cl. 215—1 C 6 Claims



1 A PET container formed by blow molding and adapted to be filled with liquid at an elevated temperature above room temperature, said container comprising an upper portion defining a sealable closure, a sidewall portion, and

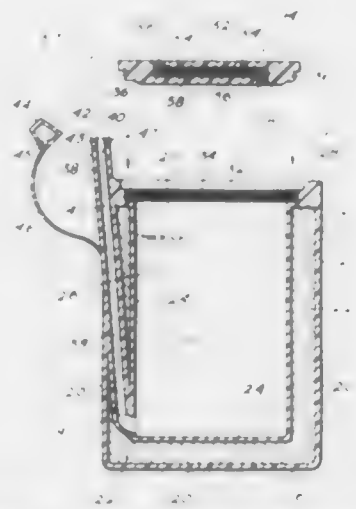
a base portion closing the bottom of the container and formed integral with said sidewall portion, said base portion having a generally flat outer support ring at the lower end of said sidewall portion that is substantially concentric with said sidewall portion, a dome formed integral with said outer ring and extending upwardly into said container and terminating in a central disc portion that is also substantially concentric with said sidewall portion, said dome also including an annular wall extending between said disc portion and said outer ring, a portion of said annular wall being subject to deformation by virtue of the presence therein of unrelaxed retractive stresses resulting from blow molding and the heating effect of the filling liquid at said elevated temperature, said annular wall being shaped to resist deformation by said stresses by reducing the area of said dome in which said stresses may be formed by providing a series of alternately arranged radially upwardly sloping and radially downwardly sloping portions in said annular wall which provide said annular wall with a serpentine appearance extending radially from said disc portion along said dome down to said outer ring when viewed in radial cross section, said upwardly and downwardly sloping portions thereafter forming at least one inwardly concave reinforcing ring and at least one inwardly convex reinforcing ring being substantially concentrically positioned around said central disc portion to thereby reinforce the ability of said annular wall to resist deformation during filling of the container with liquid at said elevated temperature.

5,005,717

INSULATED BEVERAGE CUP

Clayton D. Oilar, P.O. Box 64, Cedarville, Calif. 96104, assignor to Clayton Dale Oilar, Cedarville, Calif.

Filed Jun. 26, 1990, Ser. No. 544,178
Int. Cl.[5] A47G 19/22
U.S. Cl. 215—13.1 2 Claims



1 A thermally insulated spill-resistant beverage cup with straw receiving structure, comprising

a tubular housing structured of an annular sidewall, an affixed bottom panel and an open top end oppositely disposed from said bottom panel, said annular sidewall with said bottom panel defining an open interior chamber adapted to retain a beverage therein, said housing generally manufactured of thermal insulating materials, said annular sidewall of said housing having threads adjacent said top end with said thread in communication with said interior chamber,

a handled lid affixed with threads positioned for removable engagement with said threads of said annular sidewall of said housing, said lid including means for providing a removable generally fluid tight seal over said interior chamber,

a vent opening through said handled lid;

a first tubular passage extending within and through said annular sidewall of said housing from adjacent said top end to adjacent said bottom panel, said first tubular passage opening into communication with said interior chamber adjacent said bottom panel;

a drinking spout structured of an annular sidewall defining a second tubular passage, said drinking spout affixed to said annular sidewall of said housing adjacent said top end with said second tubular passage aligned with and in communication with said first tubular passage in said annular sidewall of said housing,

said first tubular passage and said aligned second tubular passage each sized and sufficiently straight to removably receive a disposable drinking straw inserted through an upper open end of said second tubular passage downward through said first tubular passage to adjacent said bottom panel;

a cap affixed by a flexible tether to said cup, said cap including means for removable placement over said drinking spout to provide a generally fluid tight seal over said second tubular passage,

at least two oppositely disposed handles affixed to said annular sidewall of said housing adjacent said top end,

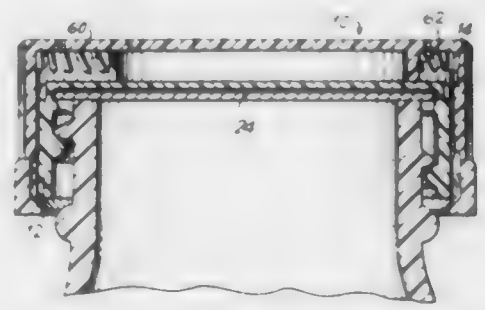
a flexible carrying strap and means for securing said strap to said oppositely disposed handles

5,005,718

TAMPER-EVIDENT CHILD RESISTANT CLOSURE DEVICE

Caetano Buono, Staten Island, N.Y., assignor to Van Blarcom Closures, Inc., Brooklyn, N.Y.

Continuation of Ser. No. 228,294, Aug. 4, 1988, abandoned. This application Sep. 19, 1989, Ser. No. 409,276
Int. Cl.[5] B65D 55/02
U.S. Cl. 215—220 2 Claims



1 A tamper-evident child resistant screw-on closure for use on a container having a threaded portion threadedly engageable with said screw-on closure, comprising

an inner cap comprising a top and a cylindrical skirt depending from said top, the inner surface of said skirt being threaded for said threaded engagement with said container when said inner cap is rotated in one direction and is disengageable therefrom when said inner cap is rotated in the opposite direction;

an outer cap comprising a top and a cylindrical skirt coaxial with and surrounding the skirt of said inner cap, said inner and outer caps being in close confronting relation and being coaxially movable relative to one another,

the inner surface of said skirt of said outer cap having a first set of knurling extending away from the top thereof in an angular direction extending axially and in said one direction and the outer surface of said skirt of said inner cap having a second set of knurling complementary to said first set of knurling so that when said outer cap is turned in said one direction said first and second sets of knurling will meet to cam said outer cap relative to said inner cap axially toward said inner cap to rotate said inner cap in said one direction to threadedly engage said inner cap on said container and when said outer cap is rotated in said opposite direction said first and second sets of knurling will cam said outer cap axially away from said inner cap to prevent the rotation of said inner cap in said opposite direction to open said container, the camming of said outer cap axially away from said inner cap being preventable by the manual exertion of an axial force on said outer cap toward said inner cap to enable said outer cap to impart rotation to said inner cap in said opposite direction when such axial force is applied,

cooperating engageable means on said inner and outer caps for holding said inner and outer caps in a position axially away from one another whereby to prevent the meshing of said first and second sets of knurling to impart rotation to said inner cap by rotation of said outer cap through said meshed knurling, at least one of said cooperating engageable means being movable out of engagement with the other of said cooperating engageable means to permit the axial movement of said outer cap toward said inner cap, whereby to mesh said first and second sets of knurling, the movement of said one cooperating engageable means out of engagement with the other being readily visually detectable whereby to make tampering with said container visually evident, and

one-way drive means for imparting rotation to the inner cap when the outer cap is rotated in the closing direction but not for imparting rotation to the inner cap in the opening

direction when said outer cap is turned in said opening direction

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5,005,719

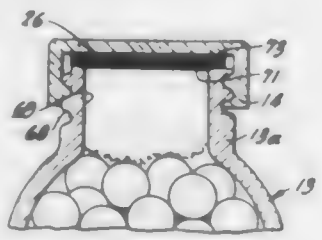
TAMPER EVIDENT OPTICAL DEVICE AND ARTICLE UTILIZING THE SAME

Roger W. Phillips; Vernon C. Spellman; Wayne L. Gossett; Marc A. Kamerling; Paul G. Coombs; David W. Todd, and Steven A. Silver, all of Santa Rosa, Calif., assignors to Flex Products, Inc., Santa Rosa, Calif.

Continuation-in-part of Ser. No. 147,891, Jan. 25, 1988, Pat. No. 4,840,281, which is a continuation-in-part of Ser. No. 894,320, Aug. 7, 1986, Pat. No. 4,721,217. This application Jun. 19, 1989, Ser. No. 368,200

Int. Cl.⁵ B65D *55/02*

U.S. Cl. 215—230 25 Claims



16. In a tamper evident article, first and second parts which are movable with respect to each other, a tamper evident optical device disposed between said first and second parts and being adherent to at least one of said first and second parts, the tamper evident optical device displaying a desired optical property, the tamper evident optical device having a substrate, a splittable tamper evident coating adherent to the substrate, a liner having a metal layer incorporated therein, adhesive means securing the liner to the tamper evident coating and an induction adhesive secured to the liner, said induction adhesive being bonded to said one part.

5,005,720

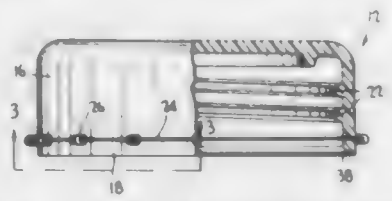
PLASTIC CAP WITH BREAKAWAY TAMPER BAND AND METHOD OF FORMING SAME

Robert J. Heilman, Orland Park, Ill., assignor to Continental White Cap, Inc., Norwalk, Conn.

Filed Feb. 24, 1989, Ser. No. 314,960

Int. Cl.⁵ B65D *41/32*

U.S. Cl. 215—252 5 Claims



1. A plastic cap having an integral tamper indicating band, said plastic cap having a skirt with said tamper indicating band being a continuation of said skirt and separated from said skirt by a single continuous slit extending entirely around and through said skirt, and a purality of radially outwardly projecting and circumferentially spaced protrusions joining said tamper indicating band to said skirt, said slit extending radially outwardly into said protrusions to form said protrusions as openable strap means for permitting axial separation of said tamper indicating band from said skirt to have received between said skirt and said tamper indicating band a transfer bead of a container to be closed by said plastic cap.

5,005,721

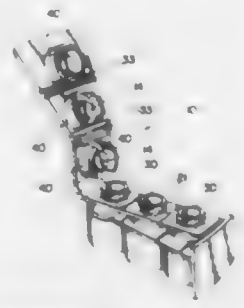
VIAL SEAL

Willie W. Jordan, Garland, Tex., assignor to Abbott Laboratories, Abbott Park, Ill.

Continuation-in-part of Ser. No. 47,831, May 8, 1987, abandoned. This application Apr. 7, 1988, Ser. No. 177,816

Int. Cl.⁵ A47G *19/00*

U.S. Cl. 220—23.4 1 Claim



1. A vial seal comprising

a unitary foldable member, having a mounting portion and a cover portion adapted to overlie said mounting portion,

a plurality of vial insert means formed on said cover portion of said foldable member for sealing a plurality of vials, and a corresponding plurality of openings formed in said mounting portion of said foldable member for supporting the plurality of vials whereby said foldable member permits sealing and unsealing of the vials by said inserts, said openings including a plurality of score means extending into said mounting portion for facilitating the attachment and retention of the vials

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5,005,722

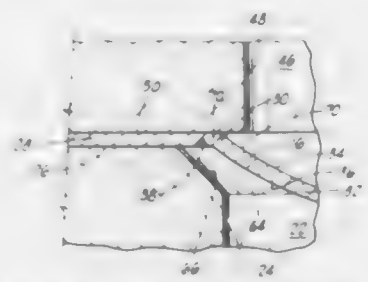
FAIL SAFE RUPTURE DISK ASSEMBLY

Edward H. Short, III, and Jim E. Ellis, both of Tulsa, Okla., assignors to BS&B Safety Systems, Inc., Tulsa, Okla.

Filed Nov. 7, 1990, Ser. No. 610,972

Int. Cl.⁵ F16K *17/16*

U.S. Cl. 220—89.1 11 Claims



1. A fail safe burst disk assembly comprising

inlet and outlet head members each defining a central flow way and having juxtaposed peripheral seating surfaces extending therefrom,

a rupture disk formed as an outer portion for seating between said peripheral seating surfaces and a central domed portion having a concave surface and a convex surface that extends the convex surface into the flow way of the inlet head member,

means for securing said inlet and outlet head members together, and

a notch removing a portion of the inlet head seating surface adjacent the flow way for approximately one-sixth of the flow way periphery whereby the removal of support to the disk outer portion will cause disk failure at reduced pressures when the assembly is placed in operation upside down

5,005,723

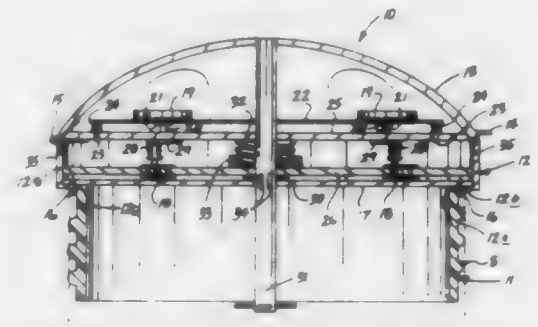
LOCKING SPOUT CLOSURE CAP

Lambert L. Smallfoot, 4132 Briarcliff, Des Moines, Iowa 50317

Filed Mar. 10, 1989, Ser. No. 321,587

Int. Cl.⁵ B65D *55/14*

U.S. Cl. 220—210 9 Claims



1. A locking closure cap comprising, in combination,

a cylindrical bottom portion and a coaxially aligned top portion rotatably secured to said bottom portion, and

an annular combination plate fixedly mounted to the bottom portion, and

latch means for selective securement of said top portion to said bottom portion to enable selective torque transmission between said top portion and said bottom portion wherein said latch means is interengageable between said top portion and said bottom portion, and

wherein said latch means includes a plurality of combination legs reciprocatably mounted within said top portion to engage openings formed in the combination plate wherein the combination plate is integrally secured to said bottom portion to secure said top portion to said bottom portion, and

wherein said top portion includes a cylindrical skirt formed with a hinged top mounted to said skirt, and a first deck secured integrally between and orthogonally to said skirt, and a plurality of combination dials each including a dial post extending downwardly therefrom and slidingly directed through said first deck and the top portion further including an alignment plate positioned about the first deck securing said dial posts together wherein said alignment plate includes a plurality of legs integrally mounted to the alignment plate and slidably received within said first deck

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5,005,724

FLOATING COVER FOR THE INTERIOR OF A STORAGE TANK

Heinrich L. Imhof, Offenbach, Fed. Rep. of Germany, assignor to Ingenieurbeero Imhof GmbH, Offenbach am Main, Fed. Rep. of Germany

Continuation of Ser. No. 204,098, Jun. 8, 1988, abandoned. This application Oct. 31, 1989, Ser. No. 430,103

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1987, 3720302

Int. Cl.⁵ B65D *88/42*

U.S. Cl. 220—222 33 Claims

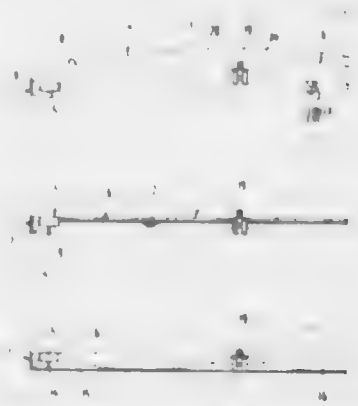
1. A floating cover for covering and sealing a liquid surface in a tank having an external roof, a tank floor, and at least one side wall, said floating cover comprising

(a) a gas tight membrane of flexible material, normally floating on said liquid surface in substantially direct contact with said liquid surface, peripheral float means connected to said membrane for keeping said membrane afloat within a circle defined by said peripheral float means,

(c) said membrane being dimensioned for bulging vertically upwardly in response to a pressure build-up in a space between said membrane and said liquid surface, said membrane bulging downwardly when said tank is empty and said float means come to rest above said tank floor,

(d) peripheral sealing means arranged in a gas-tight manner along a perimeter rim of said membrane for sealing said space between said membrane and said liquid surface,

(e) and at least one normally fully closed excessive pressure relief valve for normally closing off said space between said membrane and said liquid surface and for venting



excessive gas pressure from said space between said membrane and said liquid surface before said excessive pressure leads to damage of said membrane, whereby said flexible membrane in combination with said normally fully closed valve provides an extra expandable volume, the maximum expansion of which is limited by said valve, to minimize evaporation losses and to avoid an excessive expansion.

5,005,725

COVER RELEASE MECHANISMS

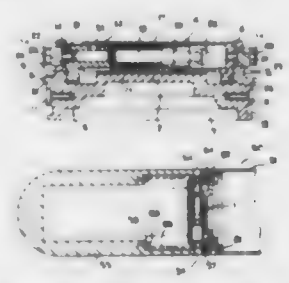
John C. Goodwin, Sunbury-on-Thames; Roy Kirby, Perivale, and Ernest A. Langley, Hayes, all of United Kingdom, assignors to Dowty Maritime Systems Limited, Feltham, England

Filed Jun. 30, 1989, Ser. No. 374,244

Claims priority, application United Kingdom, Jun. 30, 1988, 8815583

Int. Cl.⁵ B65D *41/00*

U.S. Cl. 220—261 18 Claims



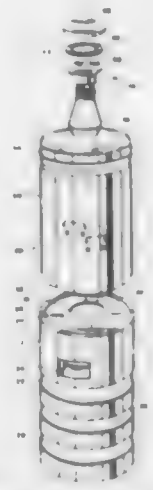
1. A cover release mechanism which enables a cover to be released whilst being subjected to a high inwardly acting pressure differential, comprises:

an operating mechanism having at least two plungers mounted within the cover and a sealing member associated with each plunger; and

a high energy release mechanism mounted within the cover to activate the operating mechanism,

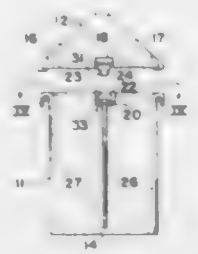
wherein under normal operating conditions, with the cover secured in position, each sealing member engages in a detent in the cover, and when the cover is to be removed the high energy release mechanism is activated causing said plungers to move and the associated sealing members to disengage from the respective detents.

5,005,726
COMPOSITE CONTAINER ASSEMBLIES
Edward S. Robbins, 459 N. Ct., Florence, Ala. 35630
Continuation-in-part of Ser. No. 288,237, Dec. 22, 1988, Pat. No. 4,930,644, and a continuation-in-part of Ser. No. 332,994, Apr. 4, 1989, abandoned, and a continuation-in-part of Ser. No. 379,783, Jul. 14, 1989, abandoned. This application Nov. 6, 1989, Ser. No. 431,760
Int. Cl.[5] B65B *3/00*
U.S. Cl. 220—403 38 Claims



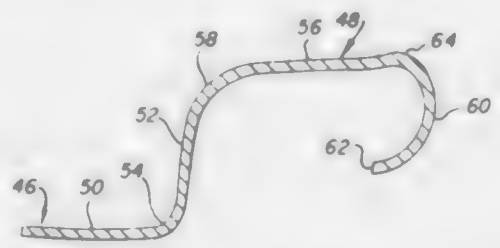
1. A composite container assembly comprising
a relatively rigid, unitary outer container body having at least a first peripheral side wall, a first bottom wall and a first top wall having an aperture formed therein,
a flexible and collapsible inner liner having a second peripheral sidewall, a second bottom wall and a second top wall, said top wall having an integral relatively rigid pour spout formed therein, wherein said inner container is nested within said outer container so that at least substantially all of said second peripheral side and bottom walls are in engagement with and supported by said outer container, said pour spout and at least a portion of the second top wall having a wall thickness greater than a wall thickness of said second peripheral side wall, and said outer container and said pour spout of said inner liner having cooperable surfaces for releasably securing said liner within said outer container body, and wherein
said second peripheral side, bottom and top walls are sufficiently flexible to permit insertion and removal of said liner into and out of said outer container body through said aperture in said first top wall.

5,005,727
DUAL PURPOSE WASTE RECEPTACLE
Karen L. Roth, 100 Parkview Pl., Hampton, Va. 23664
Filed Apr. 23, 1990, Ser. No. 512,464
Int. Cl.[5] B65D *1/24*
U.S. Cl. 220—404 6 Claims



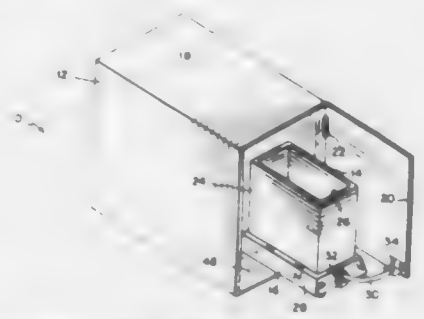
1. Apparatus for receiving and maintaining separate recyclable and non recyclable refuse, as accumulated, comprising in combination
a trash container having an open top end and a closed bottom end,
divider means carried by said open top end of said trash container,
two trash can liners supported by said divider means in side-by-side relationship and serving to divide the interior of said trash container into two separate compartments,
said divider means having spaced vertically extending edges defining an elongated open channel extending the length of said divider means and facing the open top end of said trash container,
a pair of linear protrusions formed on opposite sides of said vertically extending edges,
said open channel of said divider means receiving a portion of the top of each of said two trash can liners in overlapping relationship thereon,
a removable cover for said trash container serving to selectively cover said open top end thereof,
said removable cover being provided with first and second doors,
said first door being aligned with and providing access to one of said two trash can liners and said second door being aligned with and providing access to the other of said two trash can liners,
a transverse elongated bar extending over a central portion of the open top end and supported by said removable cover,
said transverse elongated bar including a depending elongated portion,
said depending elongated portion having a pair of grooves on opposite sides of said elongated bar and disposed along the length thereof and disposed in frictional mating engagement with said linear protrusions of said divider means when said removable cover is positioned on said trash can to thereby assist in maintaining said two trash can liners releasably attached to said divider means and to releasably secure said removable cover in position on said open top end of said trash container.

5,005,728
END SHAPE MODIFICATION TO REDUCE END HOOK WRINKLING
Stanley L. Mazurek, Rolling Meadows, and Robert A. Winkless, Oak Lawn, both of Ill., assignors to Continental Can Co., Inc., Norwalk, Conn.
Filed Aug. 14, 1989, Ser. No. 392,891
Int. Cl.[5] B65D *8/00*
U.S. Cl. 220—619 13 Claims



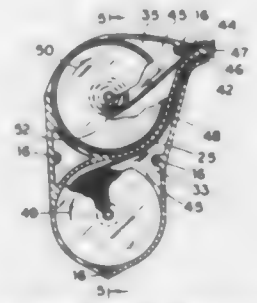
1. An end hook configuration for a container end of the type including a chuck wall, a seaming panel radius joining a seaming panel to said chuck wall, said seaming panel terminating in an end curl, and said end hook terminating in a cut edge, said end hook configuration being improved by said end curl terminating at said cut edge, and said end hook having reinforcement means formed of the same material as the end hook for said end curl at an intersection between said seaming panel and said end curl, and said end curl being of a positive continuous curvature which extends to said cut edge.

5,005,729
DISPLACEABLE WASTE BASKET
Kevin A. Hollman, 1243 Houlu St., Apt. 302, Hi[illegible] Hi. 96822
Filed Jan. 22, 1990, Ser. No. 468,132
Int. Cl.[5] [illegible]F *1/08*
U.S. Cl. 220—908 9 Claims



1 A displaceable waste basket, comprising
(a) a cabinet portion having a door that opens to the side to save space when being used and void of a handle and a frame,
(b) a reuseable waste portion disposed inside said cabinet portion and having an open top void of any closure members, said reuseable waste portion coming out of said cabinet portion automatically when said door of said cabinet portion is opened, container can service said cabinet either inside or outside but not simultaneously and depending upon where it is installed, and
(c) means for displacing said waste portion from an extended position to a retracted position and vice versa so that said waste portion being hidden within said cabinet portion when said waste portion is in the retracted position and said waste portion being visible outside said cabinet portion when said waste portion is in the extended position, said displacing means include a base tray, a door arm having a first end and a second end, and a recessed slide mechanism, said recessed slide mechanism and said door arm are so attached to said base tray that when said door is opened said base tray comes out automatically and vice versa.

5,005,730
ORTHODONTIC DISPENSER
Floyd W. Pickrell, Jr., Anaheim; James F. Reher, Pomona, and Terry L. Sterrett, Long Beach, all of Calif., assignors to Ormco Corporation, Glendora, Calif.
Filed Nov. 15, 1988, Ser. No. 271,298
Int. Cl.[5] A61C *7/00*
U.S. Cl. 221—71 11 Claims



6. A dispensing device for dispensing orthodontic elastomeric appliances formed in a strip of elastomeric material comprising
a housing having a discharge opening and a guide bar adjacent said discharge opening,
a strip of elastomeric material having a plurality of orthodontic appliances formed therein, each of said orthodontic appliances being connected to said strip of elastomeric material by a breakable connecting portion,
said strip being mounted in said housing such that it passes out said discharge opening around said guide bar,
means for moving said elastomeric strip out said discharge opening around said guide bar for dispensing of said elastomeric appliances.

5,005,731
HAND-HELD EXTRUDER
Harold W. Koehler, West Paterson; Alfred J. Anderson, Livingston, and Alfred A. Finelli, Nutley, all of N.J., assignors to Hardman Incorporated, Belleville, N.J.
Filed Jun. 8, 1989, Ser. No. 363,629
Int. Cl.[5] B67D *5/08*
U.S. Cl. 222—54 14 Claims



1 A hand-held extruder comprising,
a main housing means including, a pistol grip section, and a double planetary gear assembly housing having, a first connecting means for connecting the double planetary gear assembly housing in alignment with the main housing means, and a reverse internally threaded section at the end remote from said first connecting means,
b counterclockwise rotating driving means mounted in said main housing means,
c double planetary gear reduction means in said double planetary gear assembly housing operatively connecting at one end to said driving means and having a driven shaft and connector at the opposite end,
d front assembly means having a second connecting means for connecting said front assembly means to the reverse internally threaded connecting means on said double planetary gear assembly housing for alignment therewith and to prevent separation of the front assembly means from the double planetary gear assembly housing during operation of the extruder,
e said front assembly means including, outer housing means, and barrel means mounted in said front assembly means,
f said barrel means including,
i a material feeding passage extending end to end along the longitudinal line of said front assembly means,
ii means in said barrel means for heating material in said material feeding passage,
iii an inlet means in communication with said material feeding passage for charging material to be extruded into said material feeding passage, and an outlet means in communication with said material feeding passage a spaced distance from said inlet means for discharging heated material from said hand-held extruder, and
iv means for controlling the heating means on said barrel means,
g screw conveyor means rotatably mounted in the material feeding passage in said barrel means and extending out of said front assembly means at the end with the second connecting means thereon,
h said screw conveyor means connected at one end to and in alignment with said driven shaft on said double planetary gear reduction means, and
i said driving means, double planetary gear reduction

means, driven shaft, and screw conveyor means so connected that during operation of said hand-held extruder the screw conveyor means is rotated counterclockwise at a predetermined number of revolutions per minute without reduction in torque of said driving means to increase the throughput and discharge of material from said material feeding passage at a predetermined rate

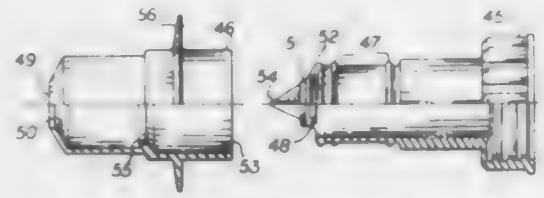
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5,005,732

OIL CAN SPOUT WITH FLOW CONTROL

Henry E. Penn, 12300 Highway 67, Lakeside, Calif. 92040

Continuation-in-part of Ser. No. 427,760, Oct. 27, 1989, abandoned. This application Apr. 3, 1990, Ser. No. 503,762
Int. Cl.' B67D 5/00
U.S. Cl. 222—91 4 Claims



1 In combination with a liquid container having a pouring orifice, a controllable spout which comprises

a generally tubular conduit having an inlet at a proximal end and an outlet at a distal end,

said inlet being shaped and dimensioned to mate with said pouring orifice,

said tubular conduit having a gating section comprising

a tubular sleeve axially movable between two locking positions, and dimensioned to affect the flow of liquid through the distal end of said conduit when moved between said positions, wherein said tubular sleeve has a bore on the distal end, said bore being surrounded by a beveled inner annular surface, and

a projection extending on the distal end of said tubular conduit through and beyond said bore to form a sharply pointed tip, the periphery of said projection defining a beveled outer annular surface shaped and dimensioned to intimately contact said inner annular surface

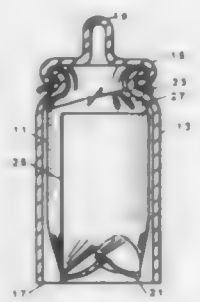
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5,005,733

FLACCID BAG BOTTLE FOR DISPENSERS

William R. Stoody, 8659 Summerdale Rd., San Diego, Calif. 92126

Filed Apr. 12, 1989, Ser. No. 337,151
Int. Cl.' B65D 35/56
U.S. Cl. 222—105 7 Claims



1 A collapsible, passive, flaccid bag bottle for closed containment of fluid to be aspirated therefrom, which comprises

a passive flaccid bag being collapsible and having, integral therewith, at least one passive means that manages collapsing of said bottle,

said passive means being a means which promotes complete collapsing of said bottle without regard to the attitude of said bottle,

whereas, said passive means insures against proliferation and sustainment of fluid retention pockets in said bottle without regard to the attitude of said bottle

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5,005,734

FLEXIBLE POUCH WITH REINFORCEMENT TO FACILLITATE POURING

Todd D. Van Gordon, Basking Ridge; John H. Swanson, Bloomfield; Knud N. Kristensen, Fair Haven, all of N.J., and Adam Sherman, Brooklyn, N.Y., assignors to Colgate-Palmolive Company, Piscataway, N.J.

Filed Mar. 23, 1989, Ser. No. 327,659
Int. Cl.' B65D 35/08
U.S. Cl. 222—107 10 Claims



1 A flexible pouch for storing liquid therein, comprising first and second flexible walls made of sheet material, said first and second flexible walls being bonded along their periphery by means of a sealed juncture, said first and second flexible wall and said sealed juncture defining a closed chamber, said pouch having a shape with a recess for defining a spout when said walls are cut along a predetermined line, said pouch having a stiffening strip of material secured to one of an inner and outer surface of one of said first and second walls in the region of the spout for supporting said first and second wall of the spout in an open condition upon liquid being dispensed from the spout

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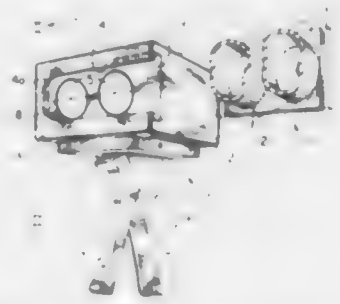
5,005,735

DISPENSING APPARATUS FOR OPERATING DOUBLE CARTRIDGES

Wilhelm A. Keller, Riedstrasse 1, CH-6330 Cham, Switzerland

Filed May 17, 1988, Ser. No. 194,803
Claims priority, application Switzerland, May 20, 1987, 01946/87
Int. Cl.' B67D 5/52
U.S. Cl. 222—137 4 Claims

1 In a dispensing apparatus adapted for operation double cartridges of the type having an elongated holding flange with two sides longer than the two ends thereof, said apparatus having a front and a retaining guide thereon with a slide-in opening on one side of said guide for receiving the holding flange, said apparatus further having two delivery plungers, which are subject to movement out of said apparatus front along parallel axes, said plungers having respective centers spaced apart in correspondence with the centers of said double cartridges, the improvement comprising that said retaining guide is generally U-shaped and positioned on both sides of a straight line connecting the centers of both plungers and that the opening of said U-shape extends transversely to said straight line, said opening being dimensioned to slidingly receive said holding flange inserted end-first into said guide, said



guide being contoured to engage said two sides and one said end of said flange and constrain said sides and one end against forces at least in the direction of said parallel axes

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5,005,736

APPARATUS FOR SIMULTANEOUSLY DISPENSING TWO COMPONENTS

Abelardo A. Portas, Arcos 2757 - 1 piso "E", 1428 Buenos Aires, Argentina

Continuation of Ser. No. 261,370, Oct. 24, 1988, abandoned. This application Apr. 30, 1990, Ser. No. 517,505
Claims priority, application Argentina, Oct. 23, 1987, 309102
Int. Cl.' B67D 5/56
U.S. Cl. 222—135 11 Claims



1 An apparatus comprising

a support frame for receiving a pair of pressurized containers in side-by-side relation;

a handle secured to one side of said frame;

a pressure plate having a pair of apertures, each aperture being sized to fit over an actuating push button of an atomizing valve on a respective container with an outlet orifice of each push button above said pressure plate and

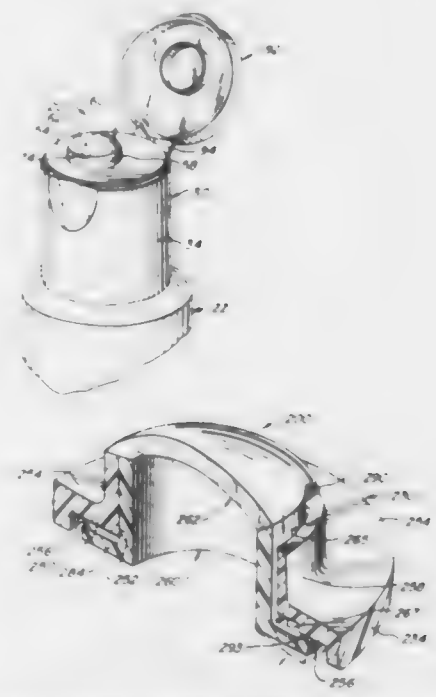
a key hingedly mounted on said frame opposite said handle for disposition over said pressure plate between said apertures and said handle to permit pressing of said pressure plate towards the containers for simultaneous actuation of the valves of the containers.

5,005,737

FLEXIBLE DISPENSING CLOSURE HAVING A SLITTED RESILIENT OUTLET VALVE AND A FLANGED VENT VALVE

Robert D. Rohr, Elgin, Ill., assignor to Seaquist Closures, Crystal Lake, Ill.

Filed Jun. 29, 1989, Ser. No. 374,155
Int. Cl.' B65D 5/72
U.S. Cl. 222—212 2 Claims



1 A fluid dispensing closure in combination with a squeeze-type container,

said container comprising a discharge opening communicating with the container interior in which a fluid product is contained and that is sufficiently resilient to return to a substantially undeformed condition after applied squeezing forces have been removed

said closure comprising

a housing for being sealingly mounted to said container across said discharge opening, said housing including a peripheral wall having securing means for engaging cooperating means on said container for releasably securing said closure to said container, said housing including a top wall connected to said peripheral wall over said container discharge opening, said top wall having an upper surface exterior of said container and a lower surface facing the interior of said container, said top wall defining a cylindrical dispensing aperture providing communication between said container discharge opening and the exterior of the container above said housing, said housing further including a cylindrical collar projecting upwardly from said housing top wall upper surface around said cylindrical dispensing aperture, said collar and top wall having a generally vertically oriented venting channel that is open to said dispensing aperture, a portion of said top wall at said lower surface defining a partially circumferential venting recess opening to said venting channel, and said channel and recess together defining a vent passage; and

a resilient insert member mounted within said housing cylindrical dispensing aperture, said insert member defining at its upper end a dome member projecting convexly outwardly over said container discharge opening at the top of said cylindrical collar, said dome member defining at least one slit extending through said dome member, said dome member being sufficiently resilient to have a normally

closed configuration in which said slit is sealed closed at least when the pressure inside said dome member equals the pressure outside said dome member, and said dome member being sufficiently flexible to be deformed further outwardly from and relative to said normally closed configuration for opening said slit when said container is squeezed to exert a predetermined fluid pressure against the inside of said dome member whereby said fluid product can discharge from said container through said open slit, said insert member including a hollow cylindrical portion extending downwardly from said dome member through said collar and top wall dispensing aperture in circumferential sealing engagement with said collar and top wall except at said channel, said insert member including a vent valve member in the form of a flange of flexible material located below said top wall and radially extending from said hollow cylindrical portion beyond said top wall recess, said flange sealingly engaging the lower surface of said top wall around said top wall cylindrical dispensing aperture radially beyond said recess to close said vent passage to the interior of said container when the pressure inside the container is at least equal to the outside pressure, said vent valve member flange being sufficiently flexible adjacent said recess to be forced away from said housing top wall lower surface so as to open said vent passage at said recess when the pressure outside of said container exceeds the pressure inside of said container to permit exterior air to be vented down said vent passage channel, through said recess, and past said flange into said container to equalize the pressures inside and outside of the container

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5,005,738

AEROSOL VALVE DEVICE

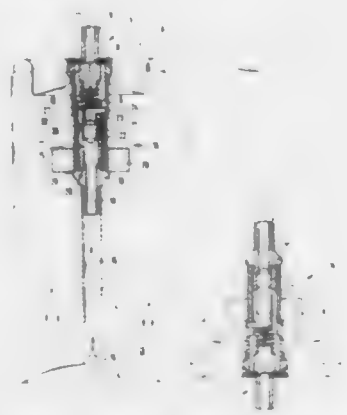
Antonie P. Tempelman, Meeden, Netherlands, assignor to Mobacc B. V., Veendam, Netherlands

Filed Mar. 27, 1989, Ser. No. 328,568

Claims priority, application Netherlands, Mar. 28, 1988, 8800774

Int. Cl.[5] B65D 83/14

U.S. Cl. 222—402.19 13 Claims



1. An aerosol valve device, suitable in particular for use with spray canisters or other containers from which liquid can be forced out in the form of a fine mist, using compressed gas as a propellent, said valve device comprising:

an aerosol valve;

a connector;

a riser tube connected to the connector;

a two-way valve provided between the aerosol valve and the connector, said two-way valve comprising a body with a central bore, in which two opposed valve seats are formed to seat an elongated valve member moveable between said valve seats;

automatic actuating means for actuating said valve member, which control the valve member depending on the position of the container;

said valve member cooperating with one valve seat to clear a connection between the riser tube and the aerosol valve and simultaneously to block a connection between the direct surroundings of the two-way valve and the aerosol valve, and said valve member cooperating with the other valve seat to block the connection between the riser tube and aerosol valve and at the same time to clear a connection between the direct surroundings of the two-way valve and the aerosol valve;

said valve member being made of magnetizable material and said automatic actuating means comprise a member disposed about the body of the two-way valve, which actuating means is at least partly permanently magnetic and can move freely along the body through a path corresponding to the patch between the two valve seats

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5,005,739

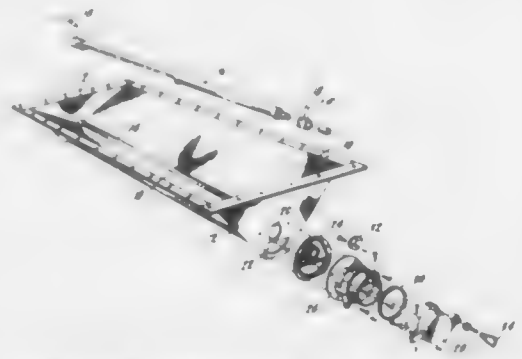
RAILROAD HOPPER CAR OUTLET GATE END TUBE SEAL

William E. Fritz, Naperville, and James C. Pankow, Geneva, both of Ill., assignors to Gen-Tech, Inc., North Aurora, Ill.

Filed Dec. 7, 1989, Ser. No. 447,056

Int. Cl.[5] B67D 3/00

U.S. Cl. 222—542 10 Claims



1. A seal for use between an end tube and an end plate of an outlet gate of a railroad hopper car, said seal having a generally flat body with a periphery generally coextensive with the end tube, said body being formed of an elastic material, a shaft opening in said body in alignment with a valve shaft of the outlet gate, a discharge opening in said body in alignment with a discharge opening of the outlet gate end plate, and a continuous elastic seal element extending outwardly from each face of said flat body, said seal elements each extending about said shaft opening and discharge opening and being adapted to be in compressive contact with the end tube and the end plate

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5,005,740

MECHANICALLY ACTUATED ADDITIVE DISPENSER FOR DISHWASHER

Larry D. Marks; Richard C. Stiles, both of St. Joseph Township, Berrien County, and William F. Bartloff, Eau Claire, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Continuation-in-part of Ser. No. 900,999, Aug. 27, 1986, abandoned. This application Sep. 28, 1988, Ser. No. 250,232

Int. Cl.[5] A47L 15/46

U.S. Cl. 222—651 33 Claims

26 In a dishwashing apparatus having a hinged door, a wash chamber selectively sealed by the door, a timer mechanism and moving means driven by said timer mechanism in a reciprocating path during an operating cycle, an additive dispensing module comprising:

a reservoir for storing a supply of additive and having an outlet,

a cover,

means for mounting the cover to the reservoir for movement relative to the reservoir between (a) a closed position wherein the cover prevents escape of additive from the reservoir outlet and (b) an open position permitting the additive to discharge from the reservoir through said outlet,

means for removably operably mounting the reservoir with



the cover operatively mounted on the reservoir as a unit to the dishwasher door so that the reservoir outlet is in communication with the wash chamber, and

means for interconnecting the cover to the moving means driven by the timer mechanism on the dishwasher with the module operably mounted to the dishwasher door so that in response to the moving means on the dishwasher moving in said reciprocating path the cover moves between its open and closed position

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5,005,741

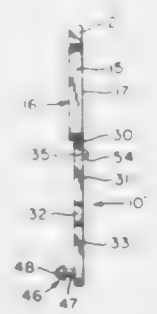
FOLDED TAIL BELT HANGER WITH ENHANCED BELT RETENTION

Chester Kolton, Westfield, and Stuart S. Spater, Livingston, both of N.J., assignors to B & G Plastics, Inc., New York, N.Y.

Filed Jan. 8, 1990, Ser. No. 462,060

Int. Cl.[5] A47G 25/14

U.S. Cl. 223—85 10 Claims



1. A hanger comprised of an integral body defining a hook portion for use with a display rod and a further portion adapted to be folded on itself to form a loop, said integral body having a front planar surface and a rear planar surface, said further portion having a projection extending forwardly of said front planar surface, said integral body having an additional portion extending rearwardly of said rear planar surface and defining a cavity for retentive receipt of [illegible] projection, said cavity extending from said front planar surface beyond said rear planar surface and through said additional portion

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5,005,742

FLAT GARMENT HANGER WITH RETAINER SLOTS

James C. Smith, 11852 - 11th Ave. S., Seattle, Wash. 98168-2124

Filed Jan. 16, 1990, Ser. No. 464,548

Int. Cl.[5] A47G 25/14, 25/26, 25/28, 25/34

U.S. Cl. 223—87 10 Claims



1 A hanger for displaying articles of clothing, comprising

(a) a flat, elongated, one-piece plastic body of predetermined length and thickness and having a top edge and a bottom edge and which is rigid and yet flexible and which includes a hook portion generally centrally of said body and extending upwardly, said body also having a depending end portion at each end of said body such that an end edge is defined at each end, and

(b) a slot in each end portion angling generally upwardly and inwardly from each said end edge a predetermined distance, said slot being generally saw-tooth in form such that a series of triangular coacting teeth are defined and said slot also defining a lower end portion which is sufficiently flexible under finger pressure to be flexed for insertion of garment fabric therein

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5,005,743

TELESCOPIC CARRYING CASE

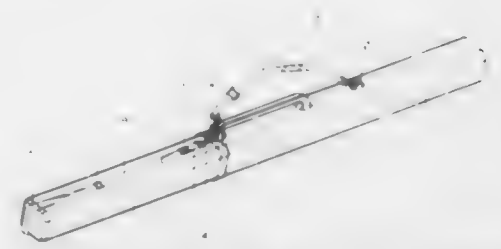
Richard P. Ramsay, 19A Abbeville Road, London, Great Britain (SW4 9LA)

Filed Sep. 12, 1989, Ser. No. 406,070

Claims priority, application United Kingdom, Sep. 15, 1988, 8821609

Int. Cl.[5] A45C 7/00, B65D 6/12

U.S. Cl. 224—202 7 Claims



1. A carrying case comprising first and second container portions each having an open end and a closed end and arranged in telescopic relation with the first container portion slidable over the open end of the second container portion to form a case of variable length, the first container portion being of a length such that the first container portion is capable of

sliding over the entire second container portion; means for securing said container portions one to the other at a position selected according to the contents of the case, and a rigid handle provided on the first portion and extending between a first position adjacent said open end of the first portion to a second position spaced therefrom by a distance such that the length of the handle is sufficient to extend over all centres of gravity which arise when using the case for carrying goods of differing lengths, wherein the securing means comprises a strap of adjustable length having a first end attached to a bar extending across the entire closed end of the second container portion, and a second opposite end constructed and arranged to selectively engage said first container portion such that said strap releasably secures said second container portion to said first container portion

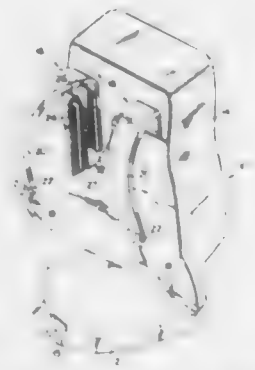
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5,005,744

ADJUSTABLE BACKPACK

Dana W. Gleason, 409 East Olive, Bozeman, Mont. 59715

Filed Aug. 3, 1990, Ser. No. 562,322
Int. Cl.[5] A45F 3/08
U.S. Cl. 224—211 4 Claims



1 A backpack carried on the back of a user comprising

a planar frame member constructed of a stiffened but bendable material,

a backpack bag,

a first pocket secured to a side of the backpack bag adjacent the user having an open upper portion for receiving the planar frame member and being formed between a first pocket member and a second pocket member,

a securing means for securing the planar frame member in the first pocket,

the second pocket member of the first pocket forming one side of a second pocket between the second pocket member and the backpack bag and wherein this second pocket member includes a VELCRO surface located on the side of the second pocket member closest the backpack bag,

a shoulder strap having one end connected to the backpack bag at a lower end thereof and having a VELCRO strip positioned at the other end of the shoulder strap,

the second pocket being sized to receive the VELCRO end of the shoulder strap, whereby the VELCRO end of the shoulder strap is positioned to engage the VELCRO surface of the second pocket member to securely hold the shoulder strap end within the second pocket

5,005,745

APPARATUS FOR PREVENTING TAPE FROM BEING ROLLED

Shozo Nishimura, Tokyo, Japan, assignor to Tanashin Denki Co. Ltd., Shinmachi, Japan

Filed Jan. 16, 1990, Ser. No. 465,977
Claims priority, application Japan, Feb. 23, 1989, 1-20756[U]
Int. Cl.[5] B65H 26/04, 59/38; G11B 15/43
U.S. Cl. 226—24 6 Claims



1 An apparatus for preventing tape from being rolled on a capstan or pinch roller in contact with one another, which comprises

(a) said pinch roller having a ratchet wheel attached thereto, the pinch roller and ratchet wheel together being simultaneously rotatable about a shaft,

(b) a tape-contacting plate having a pawl capable of engaging the ratchet wheel, the tape contacting plate being movable from a first tape-contacting position in which the pawl does not engage the ratchet wheel to a second non-tape contacting position in which the pawl engages the ratchet wheel and stops rotation of the pinch roller, and

(c) means for moving the tape-contacting plate between the first position and the second position, the means being capable of exerting a biasing force against a tape, the force being sufficient to move the tape-contacting plate from the first position to the second position in the absence of force exerted by a taut tape

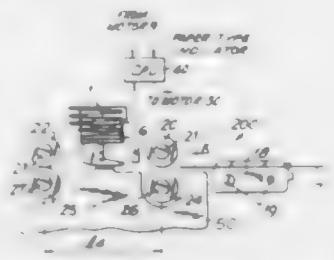
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5,005,746

APPARATUS FOR FEEDING BOTH CUT SHEET AND FAN FOLD PAPER IN A PRINTER

Kenjiro Murakami; Hirokazu Iinuma, and Toshikazu Kodaka, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Apr. 4, 1989, Ser. No. 333,166
Claims priority, application Japan, Apr. 8, 1988, 63-87009
Int. Cl.[5] B41J 13/00; B65M 17/10
U.S. Cl. 226—101 15 Claims



1 An apparatus for feeding paper in a printer adapted to utilize both fan fold paper and cut sheet paper comprising push tractor means for feeding fan fold paper, a print head positioned downstream along the paper path of said push tractor means, first paper feed means intermediate said push tractor means and said print head for selectively feeding paper along said paper path, and second paper feed means downstream of said print head along the paper path for feeding paper along said paper path, the first paper feeding means including at least one first feed roller rotatably mounted on the printer, a first pressure roller rotatably mounted on the printer selectively

contacting the first feed roller, the paper being fed by the first paper feed means moving between the first feed roller and the first pressure roller, and pressure adjusting means for adjusting the pressure at which the first pressure roller contacts the first feed roller, the pressure adjusting means including a drive wheel, motor means for driving said drive wheel, a square shaft eccentrically positioned on said drive wheel, biasing means positioned for selectively coming in contact with said square shaft at selected positions of the drive wheel for biasing said first pressure roller towards said drive roller, whereby driving of the drive wheel causes the square shaft to cause the biasing means to bias said first pressure roller towards said first feed roller

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5,005,747

MOUNTING FOR THE SPIRAL FLIGHTS AT THE OPPOSITE ENDS OF A BALE WRAPPING MATERIAL SPREADER ROLL

Henry D. Anstey, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jun. 23, 1989, Ser. No. 370,538
Int. Cl.[5] B23P 11/02, 19/04
U.S. Cl. 226—190 7 Claims



1 In a roll including a smooth, cylindrical tube having a spirally wound elongate member received thereon and secured thereto to form flighting thereabout, the improvement comprising said elongate member being wound so as to have an inside diameter slightly less than an outside diameter of said tube when the elongate member is free of said tube, whereby a frictional fit is established between the tube and elongate member when the latter is received on the former, one end of said elongate member being defined by a radially inwardly directed projection, and said tube having a hole extending radially therethrough and receiving said one end of said elongate member to establish a connection which works in combination with the frictional fit as means for connecting the elongate member to the tube

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5,005,748

IMPEDANCE ROLLER STRUCTURE FOR VCR

Soo K. Kim, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 30, 1989, Ser. No. 443,210
Claims priority, application Rep. of Korea, Nov. 30, 1988, 19647
Int. Cl.[5] B65H 20/00
U.S. Cl. 226—190 2 Claims

1 An impedance roller mounted to main chassis for use in a video cassette tape recorder, which comprises

a roller for guiding a tape of said video cassette tape recorder, said roller including a roller hub and a roller boss disposed at a top portion thereof,

a roller shaft attached to said roller at an upper portion thereof, said roller shaft supported on said main chassis,

a flange disposed at an outer bottom edge of said roller for preventing the tape from separating from the roller,

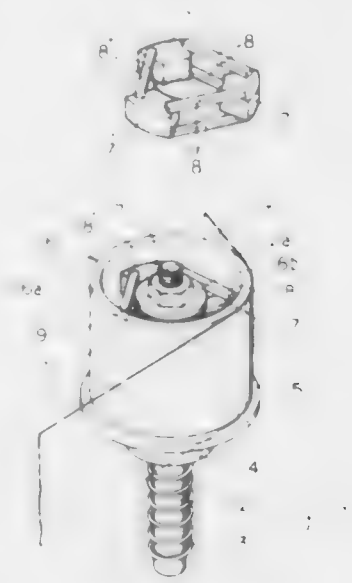
a main boss attached to a bottom of said roller,

a compression spring wound around a lower portion of said roller shaft from said main boss, and

an inertia spring damping member disposed between said roller hub and said roller boss, said inertia spring damping member including

a plurality of elastic members and

a plurality of inertia masses alternatively connected to



each other, said inertia masses attached to a top surface and a bottom surface of said plurality of elastic members, whereby the impedance roller enables to absorb and reduce the vibrations to the tape so that the disadvantages such as trembling and flowing of the screen according to the vibrations of the tape can be eliminated

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5,005,749

ANASTOMOSIS SURGICAL STAPLING INSTRUMENT

Ernest Aranyi, Easton, Conn., assignor to United States Surgical Corp., Norwalk, Conn.

Filed Jul. 1, 1988, Ser. No. 214,289
Int. Cl.[5] B31B 1/06
U.S. Cl. 227—19 19 Claims



1 An anastomosis surgical stapling instrument comprising

a yoke,

a pusher tube slidably mounted within said yoke and having a pair of diametrically disposed openings near a proximal end thereof,

a pair of handles pivotally mounted on said yoke, each said handle having an arm extending through a respective opening in said pusher tube to abut and move said pusher tube in a distal direction in response to pivoting of said handles toward each other into a closed position, and

a center rod reciprocally mounted coaxially within said

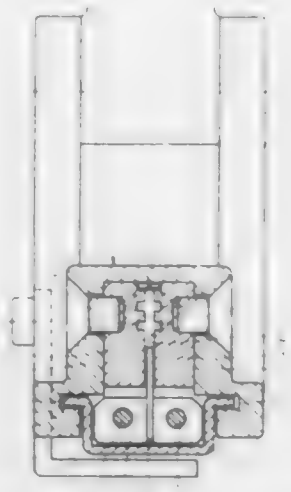
pusher tube for relative movement thereto, said rod having a distal portion, a recessed portion extending proximally of said distal portion to receive said arms therein in spaced relation and an annular groove between said portions, said recessed portion extending proximally of said annular groove for a distance sufficient to allow said center rod to move axially within said pusher tube with said handles in said closed position with said arms spaced from said recessed portion

5,005,750

MAGAZINE FOR COMPRESSED-AIR RIVETING GUNS

Giancarlo Scala, Bologna, Italy, assignor to Fasco S.p.A., Cadriano di Granarolo Emilia, Italy

Filed Nov. 27, 1989, Ser. No. 441,727
Claims priority, application Italy, Dec. 2, 1988, 3688 A/88
Int. Cl.[5] B25C 7/00
U.S. Cl. 227—109 4 Claims



1 A magazine for compressed-air riveting guns, comprising a staple guiding channel delimited by two opposed side faces, a lid which can be extractable to allow loading of a set of staple elements, a plurality of seats formed by pairs of mutually facing longitudinal grooves extending in said faces at a side of said channel opposite to said lid, and a strip which can be inserted in one of said plurality of seats, said staple guiding channel being defined between two opposite bars fixed in a cavity enclosed by a U-shaped profiled element, said bars defining said pairs of mutually facing grooves for inserting said strip upon extraction of said lid

5,005,751

SHEET STACKING AND STAPLING APPARATUS

Manfred Radtke, Korb, and Friedrich Ueffinger, Schorndorf-Weiler, both of Fed. Rep. of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 15, 1989, Ser. No. 437,005
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1988, 3839306
Int. Cl.[5] B27F 7/21
U.S. Cl. 227—111 9 Claims

1 Apparatus for stacking and stapling sheets, said apparatus comprising

a stacking area through which sheets can be fed along a path in one feeding direction,

an abutment which is selectively movable from a releasing position remote from said sheet path into an abutment position intercepting said sheet path, in which it limits the stacking area, and back again, and against which an edge of sheets fed to the stacking area can be stacked when it is in its abutment position, and



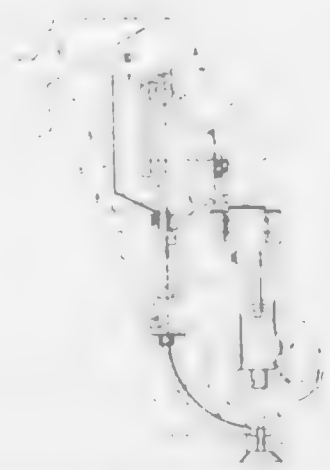
means for stapling sheets stacked against said abutment, said stapling means laterally substantially surrounding the stacking area from above and below, but not intercepting said sheet path

5,005,752

APPLICATION APPARATUS

Frank Obst, Haan, Fed. Rep. of Germany, assignor to Stocko Metallwarenfabriken Henkels und Sohn GmbH & Co., Wuppertal, Fed. Rep. of Germany

Filed May 18, 1990, Ser. No. 525,473
Claims priority, application Fed. Rep. of Germany, May 20, 1989, 3916451
Int. Cl.[5] A41H 37/04
U.S. Cl. 227—114 6 Claims



1 In an apparatus for applying small parts, such as rivets, eyelets, snaps, hooks, buttons, etc., to a carrier material, and including a separating or sorting magazine for storing loose small parts, with said magazine comprising a laterally open, tub-shaped container that has a feed opening for said small parts and also comprising, for sorting said small parts, a drum-like working mechanism that is secured to a side of said container, an applying tool, and a guide rail that is disposed between said magazine and said applying tool for supplying oriented small parts that leave said magazine, the improvement wherein

at least one of said container and said working mechanism is

pivotably mounted about a shaft to permit opening and emptying of said magazine

5,005,753

CARTRIDGE FOR A RIVETING GUN

Edoardo Gravina, Cadriano di Granarolo Emilia, Italy, assignor to Fasco S.p.A., Cadriano di Granarolo Emilia, Italy

Filed Dec. 29, 1989, Ser. No. 459,225
Claims priority, application Italy, Jan. 18, 1989, 4713/89[U]
Int. Cl.[5] B27F 7/08
U.S. Cl. 227—120 3 Claims



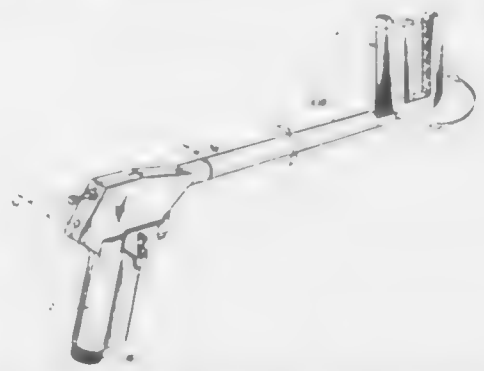
1 A cartridge for a riveting gun comprising an elongated body in the shape of an inverted U which forms an accommodating and guiding channel for the fastener elements and a slidable lid closing said accommodating and guiding channel, said lid having a beak defining an expulsion channel for the fastening elements, wherein proximate to an end of the elongated body which is opposite to the expulsion channel a lateral seat is formed for retaining an elastic body defining an abutment, said lid having a protrusion arranged proximate to said beak, both said elastic body and said protrusion protruding with respect to said lid such that said protrusion engages with said elastic body upon a backward rearward sliding motion of said lid with respect to said accommodating and guiding channel

5,005,754

BLADDER AND MANDREL FOR USE WITH SURGICAL STAPLER

Ronald R. Van Overloop, West Chester, Ohio, assignor to Ethicon, Inc., Somerville, N.J.

Filed Apr. 4, 1990, Ser. No. 504,774
Int. Cl.[5] A61B 17/00
U.S. Cl. 227—178 6 Claims



1 In a surgical stapler having an acuation mechanism connected to a stapling head containing a driving mechanism by means of a pneumatic stapling line, said driving mechanism including a staple driver and a stapling surface, and a driving piston to propel said driver, said piston attached to said pneumatic stapling line, said driving piston propelled by the inflation of a driving bladder seated behind said driving piston upon actuation of said actuation mechanism, the improvement comprising a driving bladder, and a tube embedded within said stapling head and containing a mandrel retaining the form of said driving bladder, said driving bladder filling upon introduction of pneumatic pressure into said tube

5,005,755

FLEXIBLE TUBE OF ENDOSCOPE AND METHOD OF AND APPARATUS FOR PRODUCING THE SAME

Nagashige Takahashi, and Teruo Ouchi, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 501,838, Mar. 30, 1990, abandoned, which is a division of Ser. No. 328,542, Mar. 24, 1989, Pat. No. 4,944,287. This application Aug. 8, 1990, Ser. No. 563,690
Claims priority, application Japan, Mar. 29, 1988, 63-77817; Mar. 29, 1988, 63-77818; Apr. 8, 1988, 63-87739
Int. Cl.[5] B23K 31/00, 101/04, A61B 1/00
U.S. Cl. 228—126 18 Claims



1 A method of producing a flexible tube of an endoscope, comprising the steps of

covering the outer periphery of a spiral tube made of a precipitation hardening metal with a braided-wire tube,

forming a groove in the outer surface of the tube stock comprising said spiral tube and said braided-wire tube, said groove being recessed inwardly from the outer side of the tube stock and extending in a straight line along the axis of the tube stock, and

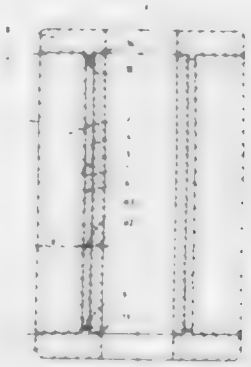
subjecting said tube stock to a solid solution treatment and then age hardening process

5,005,756

METHOD OF PRODUCING BIMETALLIC TUBES AND THE TUBES OBTAINED BY THIS METHOD

Alain Muggeo, and Denis Vuillaume, both of Montbard, France, assignors to Valinox, Boulogne-Billancourt, France

Filed Jan. 3, 1990, Ser. No. 460,539
Claims priority, application France, Jan. 3, 1989, 89 00025
Int. Cl.[5] B23K 20/00, 20/16, 101/06
U.S. Cl. 228—127 15 Claims



1 A method of producing a bimetallic tube by coextrusion under heat of a blank comprising two tubular components of revolution consisting of metals or alloys of different compositions fitted coaxially one into the other, characterised in that the cross-sections of each of these tubular components (2, 3, 22, 23) in a plane at right-angles to the common axis are established in such a way as to provide between their facing walls (5, 6, 25,

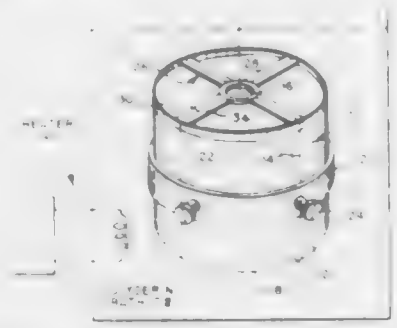
26) an annular space (4, 24) of radical width (e3, e13) which is not less than 3 mm, at least equal to 2% of the outside diameter of the inner component and no greater than that of the tubular component (3, 23) of lesser thickness, and then in that a divided alloy or metal, the composition of which is compatible with the compositions of the two tubular components, is used to fill this annular space (4, 24) which is then closed in sealing-tight fashion by closure means (7, 8, 27, 28) disposed at the two ends and in that the blank (1, 11) is heated to the extrusion temperature determined according to the characteristic features of the metals or alloys which constitute it, and in that coextrusion of the blank is carried out by means of a press through a die in such a way as to produce a bimetallic tube, the ratio of reduction between the solid cross-section of the blank and that of the bimetallic tube obtained being at least 4.

5,005,757

BONDED SEGMENTED CYLINDRICAL MAGNET ASSEMBLY

Michael G. Kornely, Jr., Centerport; Robert G. Micich, Bethpage, and John M. Miller, Huntington Station, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed May 14, 1990, Ser. No. 522,825
Int. Cl.[5] B23K 1/19
U.S. Cl. 228—178 11 Claims



1. A method for bonding rare earth-cobalt magnet segments together to form a permanent magnet, the steps comprising
temporarily restraining the segments in abutting relation,
gradually raising the temperature of the segments;
applying melted solder to the joints existing at segment interfaces until the solder flows over interface surfaces by capillary action,
cooling the magnet until the solder forms metallurgical bonds between mating interface surfaces; and
removing the temporary restraint of the segments.

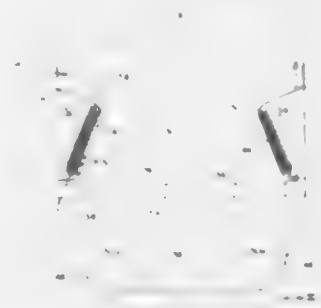
5,005,758

ENVELOPE CONSTRUCTED FOR INK JET PRINTING

Judith M. Richards, and James H. Beckman, both of Dayton, Ohio, assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 890,884, Jul. 28, 1986, abandoned, which is a continuation-in-part of Ser. No. 809,609, Dec. 16, 1985, abandoned. This application Nov. 3, 1987, Ser. No. 117,452
Int. Cl.[5] B65D 27/00
U.S. Cl. 229—68 R 4 Claims

1. In an envelope comprising a central panel,
two side panels and a bottom panel foldably connected to said central panel so that the side panels and bottom panel are joined to each other along respective overlapping edges to form, with said central panel, the pocket of the envelope,
joining means applied to said overlapping edges,
and a sealing flap, foldably connected to said central panel,
the improvement wherein said side, central and bottom panels are constructed to permit flexure of the envelope out of a single plane, said constructed panels including,
(a) in at least a portion of said joined edges of the innermost one of said side panels or said bottom panel that are underneath the respective overlapping edges of the other of said joined panels, means defining slits of a shape and spacing effective to allow said joined respective edges to stretch while still joined, when wrapped around an axis extending parallel to said plane, said slits being located at the site of said joining means,



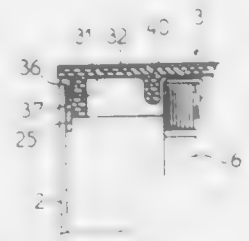
and scoring in said bottom panel and said central panel, said lines (a) extending at least the majority of the width of said envelope and parallel to said axis, and (b) being positioned and formed in one side only of said envelope so as to flex said panels in one direction only to approximate a curve favoring wrapping of the envelope around said axis,
whereby said envelope can be printed on a printer using a drum support during printing.

5,005,759

SNAP-LOCK BOX

Alain Bouche, 20 Impasse du Pigeonnier, Orvault, France (44700)

PCT No. PCT/FR88/00611, § 371 Date Apr. 25, 1990, § 102(e) Date Apr. 25, 1990, PCT Pub. No. WO90/06886, PCT Pub. Date Jun. 28, 1990
PCT Filed Dec. 14, 1988, Ser. No. 477,823
Int. Cl.[5] B65D 5/02, 5/64
U.S. Cl. 229—125.260 11 Claims



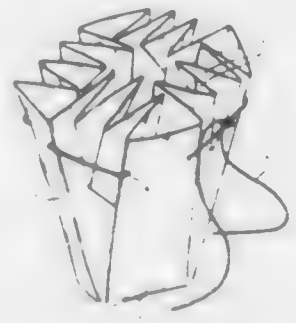
1. Snap-lock box comprising
a sleeve for containing a product having an inner wall, an outer wall, and at least two ends,
at least one of said two ends including
an edge surrounding an opening, and
at least one locking tab which is folded back against said inner wall of said sleeve, said at least one locking tab including means forming an anchoring orifice; and
at least one stopper comprising
a cap capable of bearing against said edge when inserted into the opening, with the size of the cap being sufficient to cover said edge,
a central body being dimensioned to be inserted into the opening and to substantially correspond to the dimensions of the inner wall, said central body having at least one side wall on which is arranged at least one lug which can cooperate with said means forming an anchoring orifice for maintaining said at least one stopper in position on said sleeve.

5,005,760

FLEXIBLE PLIABLE RETAINING PACKAGE FOR FLOWERS AND PLANTS

Lambertus A. M. van den Hoogen, 3, Antoniusstraat, NL-5408 AM Volkel, Netherlands

PCT No. PCT/EP87/00491, § 371 Date Apr. 28, 1988, § 102(e) Date Apr. 28, 1988, PCT Pub. No. WO88/01593, PCT Pub. Date Mar. 10, 1988
PCT Filed Aug. 31, 1987, Ser. No. 221,785
Claims priority, application Netherlands, Sep. 2, 1986, 8602213
Int. Cl.[5] B65D 5/24
U.S. Cl. 229—125.38 15 Claims



1. A packaging container for transport and display of flowers and plants, constructed for retaining water for keeping the flowers and plants fresh and for adding if desired a support characterized in that said container is made of a quadrangular sheet of waterresistant cardboard folded along creased folding lines, which are in crossform and diagonal over a surface of the sheet, such that four side planes (2), standing up to a variable degree around a square bottom surface (1) are formed, said side planes (2) being connected to each other by inwardly fold flaps (3), creating in a middle of said planes an almost quadrangular empty space having a height adapted to a height of the side planes (2), while said side planes (2) are provided with perforated small holes (4) near to an edge in an upper part of said planes, a string (5) being pulled through said small holes, to the effect that said container is kept either entirely collapsed or folded outwardly in a desired position by said string, which is put through said holes in said planes (2) and kept at a defined place through said holes, and said container being formed by folding the container into a vase and further comprising a flower or plant placed into the vase.

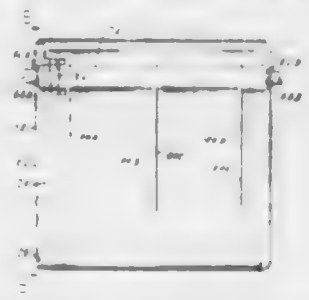
5,005,761

MULTIPLE ACCESS NEWSPAPER RECEPTACLE

James E. Barber, 319 E. Elm St., Wauseon, Ohio 43567

Filed May 28, 1987, Ser. No. 55,006
Int. Cl.[5] B65D 91/00
U.S. Cl. 232—1 C 1 Claim

1. A newspaper receptacle having opposing ends with an individual pivotable doorway on each end, such receptacle having a doorway hinge structure for each said individual doorway comprising
(a) a base planar member having a frontal face and rear face and having an upper part and a lower part said base planar member comprising the basic pivotable doorway structure;
(b) a longitudinally extending pivot bar member with end portions integrally formed as part of said planar member on the upper part thereof and extending transversely over said door width on the upper part thereof; said bar member being rounded on each respective end portion,
(c) a plurality of web members extending over the frontal



face of said doorway, said web members extending over the frontal face of said doorway, said web members being perpendicular to said bar member and extending from said bar member in a vertically downward direction as an integral extension of said bar member.

5,005,762

DECORATION OR UTILITARIAN WATER-USING EQUIPMENT FOR ATMOSPHERE OR LEISURE

Alain Cacoub, 94, rue de Sèvres, 75007 Paris, France

Filed Jul. 8, 1988, Ser. No. 216,380
Claims priority, application France, Jul. 8, 1987, 87 09680
Int. Cl.[5] F21P 7/00
U.S. Cl. 239—20 23 Claims



1. A water fountain device for creating controlled flows of water comprising
at least one pair of a liquid dispenser and collector operatively positioned with respect to one another at vertically spaced apart locations, each dispenser including a supply manifold and a supply line, each supply line including pressure and flow controllers, each supply manifold including a plurality of ports and an equal plurality of nozzles respectively associated with said ports, each of said nozzles including means defining a capillary outlet from said associated port of said supply manifold, said plurality of nozzles being positioned on said supply manifold D3 so that the volume, duration, frequency and D4 of flow of liquid from said supply manifold are adjustable, each collector being connected to at least one collection line and each collection line including control means for controlling the circulation and flow of liquid within said device to each of said supply lines.

5,005,763

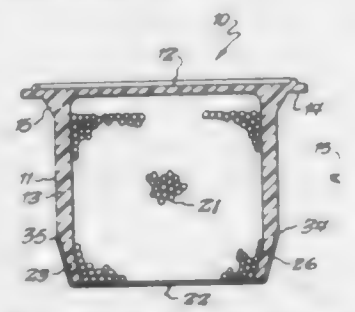
CONTAINER FOR BULK MATERIAL AND METHOD OF FABRICATION THEREOF

John S. Cullen, Buffalo; Samuel A. Incorvia, Tonawanda; Christopher S. Nigon, Orchard Park, and Frederick A. Boczkowski, Tonawanda, all of N.Y., assignors to Multiform Desiccants, Inc., Buffalo, N.Y.

Continuation-in-part of Ser. No. 253,553, Oct. 5, 1988, abandoned. This application Jun. 14, 1989, Ser. No. 366,128
Int. Cl.[5] A61L 9/04
U.S. Cl. 239—57 12 Claims

1. A container for material such as a desiccant, adsorbent, absorbent, or the like, comprising a molded plastic shell having

a wall with an inner surface and an outer surface, an opening extending transversely to said wall, an end portion on said wall proximate said opening, a first edge portion of frustoconical configuration on said outer surface of said wall proximate said end portion, a permeable membrane extending across said opening transversely to said wall, an inner edge portion on said permeable membrane fused to said end portion of said wall, an outer edge portion of frustoconical configuration on said permeable membrane extending onto said first edge portion of frustoconical configuration and fused in frustoconical mating



relationship therewith, and said material within said inner surface of said shell on one side of said membrane for treating the environment on the other side of said membrane by desiccation, adsorption, absorption, or the like, said outer edge portion on said permeable membrane being formed to said mating frustoconical configuration with said first edge portion on said outer surface of said wall incidental to effecting said fusion therebetween

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5,005,764

APPARATUS FOR FLAME SPRAYING OF POWDER MATERIALS

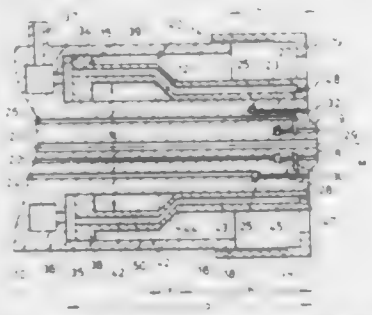
Wolfgang Simm, Ecublens; Hans-Theo Steine, Cugy, both of Switzerland, and Karl P. Streb, Markt-Mombris, Fed. Rep. of Germany, assignors to Castolin S.A., Sulpice, Switzerland

Filed Feb. 9, 1990, Ser. No. 477,629

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1989, 3903888

Int. Cl.[5] B05B 7/20, 15/08, C23C 4/00

U.S. Cl. 239—79 23 Claims



1 An apparatus for flame spraying powder materials comprising a nozzle carrier having a central arm portion disposed along a longitudinal axis and a peripheral wall portion spaced from said central arm portion and disposed along said longitudinal axis thereby defining with said central arm portion an elongated annular chamber; a burner nozzle formed on one end of said central arm portion, a hollow, elongated accelerating means disposed within said annular chamber between said peripheral wall portion and said central arm portion, and means for axially moving said accelerating means between a first non-working position and a second working position wherein said accelerating means defines a combustion chamber into which said burner nozzle projects.

5,005,765

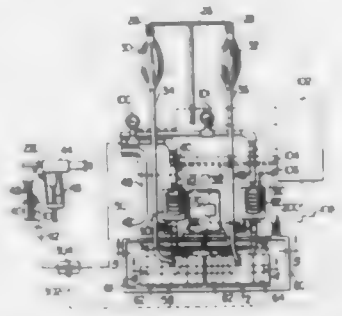
METHOD AND APPARATUS FOR APPLYING MULTICOMPONENT MATERIALS

Kenneth J. Kistner, Midlothian, Tex., assignor to Specified Equipment Systems Company, Inc., Dallas, Tex.

Filed Jan. 25, 1988, Ser. No. 147,880

Int. Cl.[5] B05B 7/04

U.S. Cl. 239—135 34 Claims



1 A system for metering dual component materials comprising

a first gear pump and a second gear pump, one for receiving and pumping each of the components,

a drive source for simultaneously driving said gear pumps, said gear pumps having mesh gears rotating in a gear housing and said first gear pump having a first clearance between a radially outer tip of said gears and said gear housing and said second gear pump having a second clearance between a radially outer tip of said gears and said gear housing, said first and second clearances selected such that said gear pumps pump a predetermined amount of each component to produce a desired ratio of the components being pumped when said pumps are driven, and

an applicator for receiving said components from said gear pumps and for applying said components onto a surface or into a void

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5,005,766

DEVICE FOR PROVIDING A FLUX LAYER ON A PRINTED BOARD

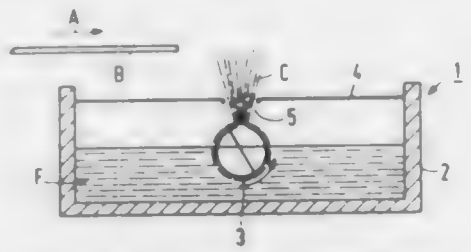
Nicolaas Heiner, Wenum-Wiesel, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 31, 1989, Ser. No. 401,893

Claims priority, application Netherlands, Sep. 15, 1988, 8802266

Int. Cl.[5] B05B 3/12

U.S. Cl. 239—214 8 Claims



1 A device for providing a flux layer on a printed board, which device comprises a reservoir and a wire-gauze cylinder which is present in and rotatable in the reservoir, a spray tube extending parallel to the center line of said cylinder provided in said cylinder, and outflow aperture of an air supply duct opening into said spray tube and in which spray apertures are provided which are arranged in a row extending in the longitudinal direction of the spray tube, characterized in that the spray

apertures are provided at a regular pitch in the wall of the spray tube and are conical at least over a part of their length

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5,005,767

SLITTED DIRT SEAL FOR INGROUND SPRINKLER HEADS

Lawrence P. Heren, Peoria, Ill., assignor to L.R. Nelson Corporation, Peoria, Ill.

Filed Aug. 24, 1989, Ser. No. 398,277

Int. Cl.[5] B05B 15/00

U.S. Cl. 239—288 15 Claims



1 A pop-up sprinkler head and shield assembly for use during installation of an underground sprinkler system comprising

a housing having,

an inlet positioned in one portion of said housing operable to be communicated with water under pressure from an underground conduit of said underground sprinkler system, and an open end positioned in another portion of said housing having an annular seal means therein and, said open end extending upward from said inlet to a posture substantially coplanar with the ground surface when said housing is installed,

a pop-up body mounted within said housing for movement in cooperating relation with said annular seal means from a first retracted position within said housing to a second extended position extending upwardly from said housing in response to the communication of the water under pressure with said inlet of said housing,

said pop-up body having means for releasably securing a sprinkler nozzle in a position to cooperate with said annular seal means when said pop-up body is in said first retracted position to prevent debris from entering the pop-up body and the housing so that during installation when the sprinkler nozzle is unattached and the pop-up body is in said first retracted position there remains an aperture within said annular seal means through which debris may enter said pop-up body and said housing,

spring means for biasing said pop-up body into said first retracted position in absence of the water under pressure, said spring means being stressed in response to movement of said pop-up body from said first retracted position to said second extended position concurrent with the introduction of the water under pressure through said inlet of said housing, and

shielding means removably secured to said housing in an aperture-shielding position and movable (1) out of said aperture-shielding position in response to the movement of said pop-up body from said first retracted position to said second extended position during a flushing operation of the installation and (2) back into said aperture-shielding position in response to movement of said pop-up body from said second extended position back into said first retracted position, said shielding means operably serving to close said aperture and isolate the interior of said housing and said pop-up body from the unintended and unwanted deposit of debris, dirt and the like after the flushing operation of the underground sprinkler system

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5,005,768

SPRAY NOZZLE

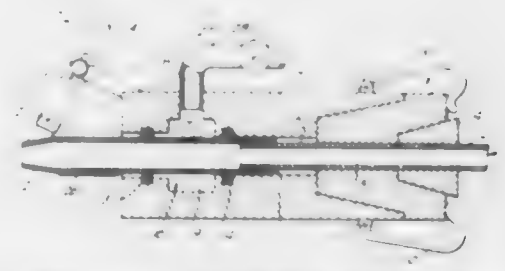
Fike Herfurth, Allensbach, Fed. Rep. of Germany, assignor to Elkem a/s, Norway

Filed Jan. 5, 1990, Ser. No. 533,462

Claims priority, application Norway, Jun. 29, 1989, 892,706

Int. Cl.[5] B28C 7/16, 7/12, E04F 21/12

U.S. Cl. 239—417 8 Claims



1 A spray nozzle for dry shotcreting having an inlet opening (1) for dry concrete mix and an inlet opening (8) for water which inlet opening can be regulated without effecting the velocity of the water, characterized in that the spray nozzle comprises a first member (3) having an axial bore, means (4) for firmly affixing a hose (2) for transport of dry concrete mix to the first number (3), a removable pipe (6) inserted into the first member (3), a second member (7) having an axial bore, an inlet opening for water (8) and a water chamber (9), a spray nozzle head (1) inserted into the axial opening in the second member (7), sealing means (13,14) arranged between the spray nozzle head (12) and each side of the water chamber (9), said spray nozzle head (12) being axially movably connected to the second member (7) by connecting means (20, 21, 22, 23), said spray nozzle head (12) being equipped with a plurality of openings (16) axially spaced apart and arranged about the circumference of the spray nozzle head (12), whereby the number of openings (16) in the spray nozzle head (12) located inside the area of the water chamber (9) can be adjusted by axial movement of the spray nozzle head (12)

5,005,769

DISTRIBUTION OF A PULVERULENT SOLID

Vincent Sauvinet, Paris; Jean Fosset, Saint-Léger Aux Bois; Michel Valere, Thourotte; Daniel Defort, Lacroix Saint-Ouen, and Maurice Boutrouille, Melicocq, all of France, assignors to Saint Gobain-Vitrage International, Courbevoie, France

Filed Dec. 14, 1989, Ser. No. 450,793

Claims priority, application France, Dec. 14, 1988, 88 16436

Int. Cl.[5] B05C 19/00, B05B 7/14

U.S. Cl. 239—429 46 Claims

1 A device for distribution of a pulverulent solid suspended in a gas on an advancing substrate comprising

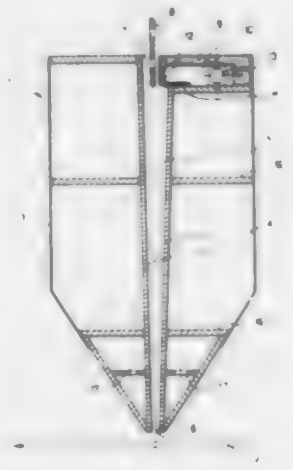
a nozzle having a cavity extending the length of the nozzle and defined by two substantially planar converging side walls being substantially planar along their length, said walls forming an outlet slot on the lower part of said nozzle and an orifice at the opposite end of the cavity from the outlet slot,

means for injecting a mixture of pulverulent solid suspended

in a gas into the cavity, said injecting means positioned in the orifice in the median plane of the cavity.

means for drawing gas into the cavity located adjacent to the pulverulent solid-gas mixture injecting means, and

means for injecting a secondary gas under pressure into said cavity, said secondary gas injecting means comprising a chamber which is fed with said gas, whereby said gas enters the cavity through an opening substantially parallel



to the inner wall of the cavity which is adjacent said opening, said opening comprising a multiplicity of jets with axes substantially parallel to the wall of the cavity that is adjacent to said jets, said jets being pierced in a plate closing said chamber and extending crosswise to the substrate

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5,005,770

SIFTER FOR SIFTING GRANULAR MATERIAL AND GRINDING SYSTEM HAVING INTRODUCTION THEREINTO OF SUCH A SIFTER

Albert Suessegger, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Kloeckner-Humbolt-Deutz Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 22, 1990, Ser. No. 482,236

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1989, 3905123

Int. Cl.' B02C 21/00

U.S. Cl. 241—19 7 Claims



1 A circulating grinding system for grinding particulate material comprising in combination

a high pressure roller press having an entry nip for interparticle crushing delivering partially agglomerated scabs which include finely ground material,

a tube mill having an input connected to receive the output from said roller press and grinding the material breaking the agglomerate,

a separator connected to receive an output from the tube mill, said separator having a coarse grit fraction output and a fine grit fraction output

first conduit means connected said coarse grit fraction output directly to the nip of said roller press whereby the coarse grits are passed through the roller press with other stock and

second conduit means connected said fine grit fraction to the input of the tube mill whereby the separated fine grit fraction is mixed with input to the tube mill from the roller press

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5,005,771

PROCESS FOR THE CONTINUOUS DRYING OF HYDROPHILIC POLYMER GELS

Stefan Pieh, Leoding, and Gerhard Willert, Katsdorf, both of Austria, assignors to Chemie Linz Gesellschaft m.b.H., Linz, Austria

Filed Jan. 25, 1990, Ser. No. 470,076

Claims priority, application Austria, Jan. 30, 1989, 175/89

Int. Cl.' B02C 19/12

U.S. Cl. 241—23 5 Claims

1 A process for the continuous drying of a hydrophilic polymer gel, comprising the steps of

(a) feeding the wet polymer gel into a cylindrical dryer fitted with a high speed rotor,

(b) drying the polymer gel in said dryer at temperatures of 20° to 250° C. and at a circumferential velocity of the rotor of 6 to 100 m/sec, whereby the polymer gel is prevented from agglomerating, is partially comminuted and is conveyed axially through the dryer, after which the dried polymer gel is discharged from the dryer

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5,005,772

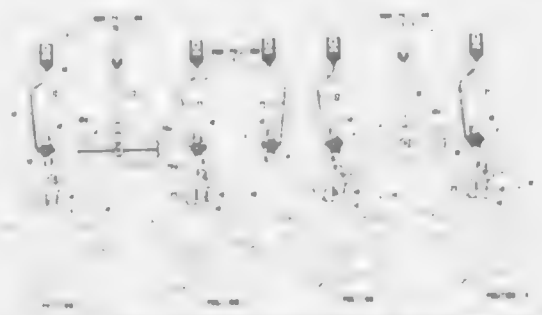
IMPELLER BAR INSTALLATION AND REPOSITIONING MEANS FOR IMPACT CRUSHERS HAVING OPEN TYPE ROTORS

David A. Ostergaard, Cedar Rapids, Iowa, assignor to Cedarapids, Inc., Cedar Rapids, Iowa

Division of Ser. No. 182,120, Apr. 15, 1988. This application Jun. 16, 1989, Ser. No. 366,777

Int. Cl.' B02K 13/26

U.S. Cl. 241—30 7 Claims



1 A method of manipulating an impeller bar of a rotor of an impact crusher for installing the bar into the rotor and for repositioning the bar with respect to the rotor after periods of operation of the rotor, the method of manipulating including lowering the bar into and raising the bar out of the impact crusher, the rotor having an axis of rotation and at least one pair of axially spaced rotor discs on which the impeller bar is mounted substantially parallel to the axis of rotation of the rotor, the impeller bar having opposite side walls extending axially and generally radially of the rotor and forming leading and trailing sides of the impeller bar with respect to rotor rotation, said side walls having radially inner and outer edges and having a circular aperture extending through the bar through said opposite side walls and at the center of gravity of the bar, the method comprising the steps of positioning said bar in a mounting position at an upper portion of the rotor, engaging said bar aperture with a circular, generally horizontal portion at a lower end of an elongated hook suspended at its upper end for rotation about a generally vertical axis, the center of gravity of the impeller bar lying substantially along said generally vertical axis, supporting said bar with said hook for lowering the bar into and raising the bar out of the rotor, disengaging the hook from the bar after lowering the bar into the rotor, after an initial period of operation of the rotor and wear on the bar, engaging said aperture with said circular, generally horizontal portion, and then raising the bar from the rotor, then lowering the bar into the rotor, and then disengaging the hook from the bar after lowering the bar into the rotor, and, while the bar is raised from the rotor, rotating the bar about the horizontal portion at the lower end of the hook thereby exchanging, upon insertion into the rotor, radially inner and outer edges of the bar while maintaining a respective one of the side walls as the leading side, and after another period of operation of the rotor and wear on the bar, engaging said aperture with said circular, generally horizontal portion, and then raising the bar from the rotor, then lowering the bar into the rotor, and then disengaging the hook from the bar after lowering the bar into the rotor, and while the bar is raised from the rotor, rotating the bar and the hook about the generally vertical axis, thereby changing, upon insertion into the rotor, the side wall forming the trailing side to the side wall forming the leading side while maintaining the radially outer edges of the side walls as the radially outer edges thereof

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5,005,773

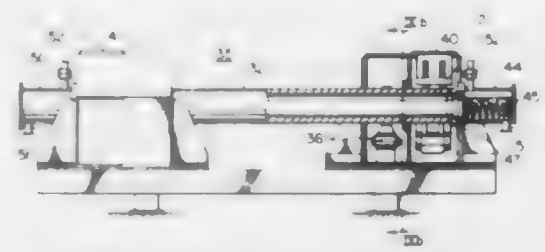
SONIC GENERATOR

Christopher A. Nyberg, North Vancouver; James G. Jackson, Burnaby, and Jan Brdicko, West Vancouver, all of Canada, assignors to ARC Sonics Inc., Burnaby, Canada

Continuation-in-part of Ser. No. 176,716, Apr. 1, 1988, Pat. No. 4,941,134. This application Mar. 31, 1989, Ser. No. 332,560

Int. Cl.' B01F 11/02

U.S. Cl. 241—30 9 Claims



1 A method of grinding material comprising supporting a member having at least one resonant frequency at nodal points such that said member is substantially unrestrained, rigidly and removably mounting at least one grinding chamber externally of and on a free end of said member, introducing grinding media into said grinding chamber, electromagnetically exciting said unrestrained member and said grinding chamber at a resonant frequency of said member thereby to commence the electromagnetic vibration of said grinding chamber and said grinding media within said chamber at said resonant frequency of said member, introducing material to be ground into said grinding chamber and removing said material following passage through said grinding media

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5,005,774

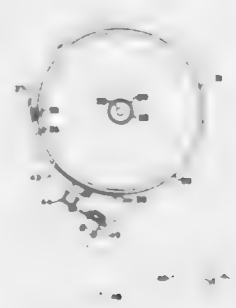
RAPID, SINGLE KERNEL GRAIN CHARACTERIZATION SYSTEM

Charles R. Martin; Robert Rousser, and Daniel L. Brabec, all of Manhattan, Kans., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 3, 1990, Ser. No. 519,196

Int. Cl.' B02C 9/00

U.S. Cl. 241—101.2 8 Claims



1 An apparatus for characterizing cereal grains comprising

a rotor having a coarse outer surface

a means for driving said rotor

an arm having a pivot point and a crescent-shaped inner surface which has a curvature greater than that of the outer surface of said rotor, said arm being positioned relative to said rotor so that a tapered gap having a wide, feed end and a narrow, discharge end is formed between the outer surface of the rotor and the crescent-shaped inner surface, wherein the spacing between said surfaces at the narrow end is substantially less than the thickness of the grains,

a means for feeding singulated kernels of grain into said gap,

a means for measuring the movement of said arm with time about the pivot point as a function of the physical resistance exerted by the grain on the crescent-shaped inner surface and

a means for correlating said movement to a value indicative of grain hardness

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5,005,775

TWO ROLLER MACHINE, PARTICULARLY A ROLL TYPE CRUSHER

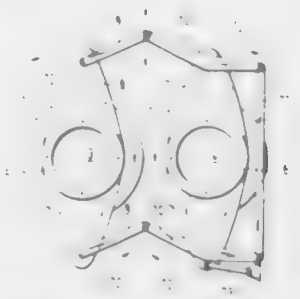
Willy Jakobs, Cologne, Fed. Rep. of Germany, assignor to Kloeckner-Humboldte-Deutz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 3, 1990, Ser. No. 460,538

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1989, 3901060

Int. Cl.' B02C 4/32

U.S. Cl. 241—232 13 Claims



1 A two roll crusher, comprising in combination

first and second parallel rollers supported for rotation

toward each other to crush stock passing into a crushing nip formed between the rollers

gearings for the rollers flexibly connected to each other for absorption of reaction movements,

first and second end plates connected coaxially with the rolls at the roll ends and having ends projecting radially of the roll axes in opposite directions

first levers pivotally connected at each end of the first plate

second levers pivotally connected at each end of the second plate,

said first and second levers pivotally connected to each other between the plates at a junction point

and a rigid link means pivotally connected to each junction point so as to extend between points and limit movement of said plates to parallel movement for absorbing reaction movement caused by the rolls

5,005,776

PROCESS AND DEVICE TO GUIDE AND SEVER A THREAD UPON BOBBIN REPLACEMENT

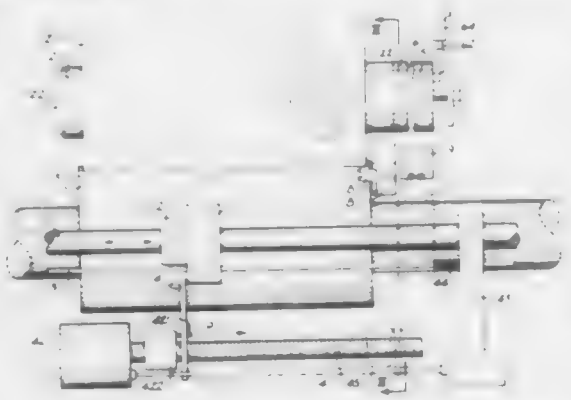
Ralph Schwarz, Ingolstadt, Fed. Rep. of Germany, assignor to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 174,596, Mar. 29, 1988, abandoned. This application Feb. 28, 1990, Ser. No. 486,383

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1987, 3710692

Int. Cl.[5] **B65H** *54/02, 54/34*

U.S. Cl. 242—18 PW **18 Claims**



1 A process for replacing stopped wound yarn bobbins on a winding machine with an empty bobbin support and for transferring a continuously supplied yarn from said stopped yarn bobbins to said empty bobbin support, wherein said yarn is wound onto said bobbins in a bobbin winding zone by a traversing yarn guide, comprising the steps of

(a) moving said yarn and said yarn traversing guide out of said winding zone into a yarn clamping and cutting zone,

(b) collecting said continuously supplied yarn in said cutting and clamping zone,

(c) severing said yarn between said cutting and clamping zone and said stopped bobbin,

(d) removing said stopped bobbin from said winding machine and replacing it with an empty bobbin support,

(e) cutting and clamping said yarn in said cutting and clamping zone,

(f) moving said yarn and said yarn traversing guide out of said cutting and clamping zone into said bobbing winding zone, and

(g) traversing and winding said yarn onto said empty bobbin support

5,005,777

SEAT BELT RETRACTOR WITH AN ELECTRIC MOTOR

Angel Fernandez, 36794 Harper, Apt. 301, Mt. Clemens, Mich. 48043

Filed Dec. 9, 1988, Ser. No. 282,744

Int. Cl.[5] **A62B** *45/00*; **B65H** *75/48*

U.S. Cl. 242—54 R **21 Claims**



1 A seat belt retractor for use by an occupant of a vehicle, said seat belt retractor comprising

a rotatable spool with belt webbing wound around said spool, said spool being rotatable in a belt withdrawal direction and in a belt retraction direction, said spool rotating in the belt withdrawal direction to enable the belt webbing to be extended around the occupant, said spool rotating in the belt retraction direction to enable the belt webbing to be tightened against the occupant

a motor for rotating said spool,

detector means for detecting a tension force applied to the belt webbing and for providing a first signal when the tension force initially applied to the belt webbing increases above a first predetermined amount of force, and

actuator means for actuating said motor to rotate said spool in the belt withdrawal direction in response to said first signal

5,005,778

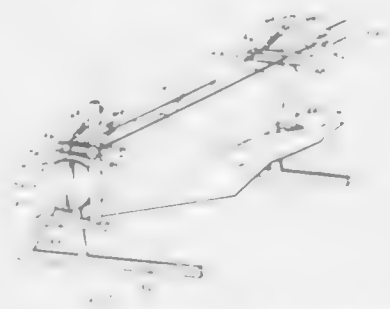
WEB WINDING APPARATUS

Herbert E. Gladish, Ottawa, Canada, assignor to E. B. Eddy Forest Products Ltd., Ottawa, Canada

Filed Nov. 28, 1989, Ser. No. 442,520

Int. Cl.[5] **B65H** *75/06, 18/08*

U.S. Cl. 242—61 **17 Claims**



1 Apparatus for wrapping web material about an object, comprising

(a) frame means,

(b) cylindrical support means mounted horizontally in said frame means,

(c) annular resilient sleeve means longitudinally and loosely surrounding said support means, having an inner diameter greater than the outer diameter of said support means, and being rotatable on and with respect to said support means,

(d) means for removably mounting an object in said frame means, with an outer surface of said object contacting said sleeve means, creating a nip therebetween,

(e) means for feeding said web material into said nip under substantially uniform tension, and

(f) means for rotating said object on a rotation axis thereof to draw said web material through said nip and to wrap such material about said object as it rotates, such rotating and wrapping movement causing said sleeve means to rotate on and with respect to said support means, and said sleeve means deforming radially inwardly at said nip under loading to enhance uniform wrapping of such web material on said object

5,005,779

SYSTEM FOR DISPENSING A CONTINUOUS WEB FROM A ROLL ON WHICH THE WEB IS WOUND

Gregory A. Ferguson, New Bedford, Mass., assignor to Precision Handling Devices, Rochester, N.Y.

Filed Dec. 4, 1989, Ser. No. 446,946

Int. Cl.[5] **B65H** *23/16, 18/20*

U.S. Cl. 242—68.7 **10 Claims**



1 The method of unreeling a web wound onto a roll having a central axis while continuously maintaining tension on said web, even when unreeling stops, which method comprises the steps of supporting said roll on a rotatable body which contacts the outer periphery of said web wound on the roll at a point on the periphery of said body so that said body rotates with said roll as said web is pulled from said roll, guiding said roll for limited pivotal movement having a displacement component upwardly along the periphery of said body when pulling force is applied to said web and a downward component of motion when pulling force is released thereby applying tension on said web in the direction opposite to the direction of said pulling force when said pulling force is released, wherein said supporting step is carried out with a cylindrical body and said roll makes a line contact with said body, and wherein said guiding step is carried out with a shaft extending through a central opening in said roll, having a diameter which is larger than said shaft in diameter and with spaced walls having slots open at their top, and placing said roll between said walls with said shaft in said slots

5,005,780

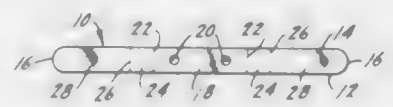
REEL SPRING FOR MAGNETIC TAPE CASSETTES

William M. Carroll, Milwaukee, Wis., assignor to Koller Manufacturing Corporation, Milwaukee, Wis.

Filed Jan. 2, 1990, Ser. No. 460,015

Int. Cl.[5] **G11B** *15/32*

U.S. Cl. 242—199 **1 Claim**



1 In a magnetic tape cassette, a reel spring comprising an elongated strip of stainless steel having first and second edges extending substantially throughout its length parallel to a longitudinal centerline, the width between the first and second edges being about 0.315 inches, the strip including

a flat, central base portion,

a first pair of transverse crimps at the ends of the base portion defining transition sections of the strip extending at a first angle to the plane of the base portion,

a second pair of transverse crimps at the outer ends of the transition sections defining end portions of the strip extending at a second angle to the plane of the base portion and terminating at tips,

the first and second angles and the lengths of the transition sections and end portions being chosen such that when the spring is at rest the tips are located about 0.390 inches above the base portion and when the tips are deflected to a distance of about 0.079 inches from the base, the spring exerts a force of about 280-380 grams, and

means for mounting said reel spring to the cassette, said means being formed in said base portion

5,005,781

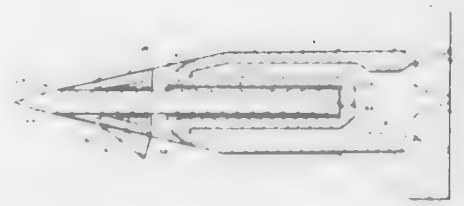
IN-FLIGHT RECONFIGURABLE MISSILE CONSTRUCTION

Scott D. Baysinger, Chatsworth, and Ralph H. Klestadt, Encino, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 27, 1989, Ser. No. 328,828

Int. Cl.[5] **F42B** *39/12*

U.S. Cl. 244—3.26 **4 Claims**



1 A staged missile assembly for attacking a target, comprising

a rocket motor assembly having a forward end, an aft end and a cavity extending part way through said rocket motor assembly from said forward end,

an aerodynamic control section releasably mounted on the forward end of said rocket motor assembly, said control section including a tubular opening of uniform cross-section aligned with said cavity,

a penetrator rod payload, said penetrator rod including a first part slidably disposed within said control section and a second part slidably disposed within said cavity, said second part having an outwardly flared end portion formed with an external cross-section less than said cross-section of said cavity and greater than the cross-section of said tubular opening through said control section wherein jettisoning of said rocket motor assembly causes relative movement between said penetrator rod and said control section until said outwardly flared end is wedged into extended surface gripping contact and an increasingly tighter interference fit with said tubular opening, insuring said penetrator rod and said control section proceed as a unit toward a specified target

5,005,782

TWO DIMENSIONAL AND ASYMMETRIC SUPERSONIC AIR INTAKE FOR THE COMBUSTION AIR OF AN AIRCRAFT ENGINE

Francois Falempin, Saint Michel Sur Orge; Claude Sans, Massy; Champigny Patrick, Villebon Sur Yvette; Gérard Laruelle, Le Plessis Robinson, and Jean-Marie Garrel, Tremblay-Les-Gonesses, all of France, assignors to Office National d'Etudes et de Recherches Aerospatiales (ONERA), France

Filed Jul. 28, 1989, Ser. No. 386,130
Claims priority, application France, Aug. 7, 1988, 88 10557
Int. Cl.' B64D 33/02
U.S. Cl. 244—53 B 6 Claims



1 A two-dimensional supersonic air intake for the harness of the combustion air at the exterior of a supersonic aircraft provided with at least a jet engine, said air intake being arranged for supplying said aircraft jet engine with said combustion air, said air intake having two opposite sides, said air intake comprising

on one side a fairing,

on the other side, a front flap forming a visor and articulated about a pivot axis situated opposite said fairing,

a mobile fairing nose situated in front of said fairing and fast with said front flap, said mobile fairing nose being adapted for moving in front of said fairing when said front flap moves in the direction which increases the air intake section, said mobile fairing nose being arranged so that when moving in front of said fairing it defines therewith a variable section passage forming a boundary layer trap through facing surfaces which move away from each other when said front flap moves in the direction which increases the air intake section.

5,005,783

VARIABLE GEOMETRY AIRSHIP

James D. Taylor, Cambridge, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

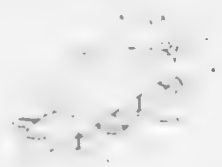
Filed Jan. 18, 1990, Ser. No. 466,888
Int. Cl.' B64B 1/58
U.S. Cl. 244—97 20 Claims

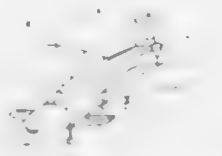
1. A variable geometry aircraft comprising

an airship frame;

a flexible gas envelope which is fixed to said airship frame and which may be inflated with a buoyant gas to provide buoyant lift to said variable geometry aircraft,

a means for providing a variable aerodynamic lift to said variable geometry aircraft, said providing means being fixed to said airship frame, and said variable geometry aircraft being capable of changing its geometric shape





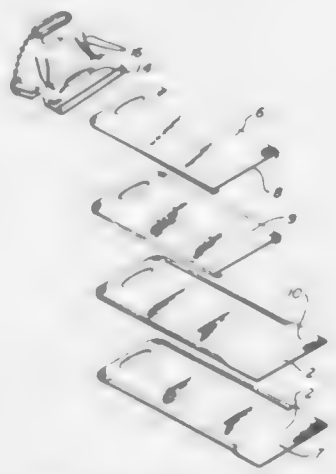
from an ovoid shaped lighter than air airship to a winged shaped heavier than air airplane.

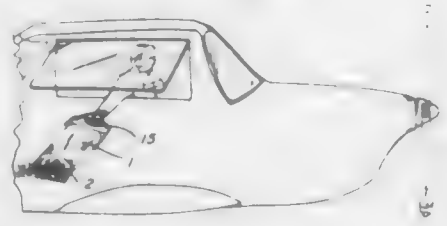
5,005,7[illegible]

METHOD AND APPARATUS FOR DISPERSING CREMATED REMAINS

Boanie J. Harden, 3279 Silverthorne Dr., Fort Collins, Colo. 80526

Division of Ser. No. 98,500, Sep. 18, 1987, Pat. No. 4,877,203.
This application Oct. 30, 1989, Ser. No. 4[illegible],766
Int. Cl.' B64D 1/16
U.S. Cl. 244—136 7 Claims





1 An apparatus for dispersing cremated remains comprising:

a. a sealable container, made of a fabric material, having a substantially constant circumference therethrough and a sealable opening on only one end;

b a means for opening said container at only one end, said means comprising a flap of fabric material extending beyond said opening,

c a means for preventing retention of any cremated remains within said container, said means comprising

i a permanent inner liner made of non-textured material, and

ii a rounded end seam,

d an affirmative means for continuously evacuating said container.

5,005,785

HIGH DRAG SLIDER REEFING SYSTEM FOR PARACHUTES

Elek Puskas, Mt. Holly, N.J., assignor to Para-Flite, Inc., Pennsauken, N.J.

Filed Dec. 31, 1985, Ser. No. 815,056
Int. Cl.' B64D 17/62
U.S. Cl. 244—152 10 Claims



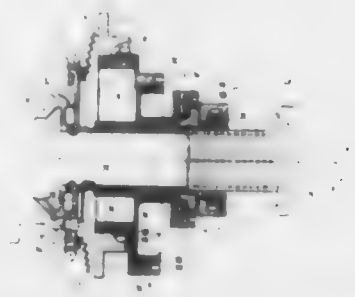
1 In combination with a parachute canopy having upper and lower airfoil surfaces separated by chordwise-extending cells inflated by inflow of air at an open leading edge, suspension lines connecting the lower surface of the canopy to a load, a reefing slider through which the extension lines extend and aerodynamic drag means for retarding descent of the slider relative to the canopy from an upper reefing position in which inflation of the canopy is restricted, the improvement comprising means extending beyond the suspension liens for deflecting flow induced by gravitational descent of the canopy and means connecting said flow deflecting means to the drag means in operative alignment with the leading edge of the canopy for diverting said inflow into the cells in the upper reefing position of the slider to delay inflation of the canopy, said drag means including a relatively high porosity baffle connected to the reefing slider, a relatively low porosity baffle and means peripherally securing the low porosity baffle to the high porosity baffle to form a drag chute thereabove inflated by said flow induced during said descent of the canopy.

5,005,786

DOCKING AND ACTIVE DAMPING DEVICE FOR SPACE STRUCTURES

Osamu Okamoto, Higashiyamato; Terusmi Nakaya, Machida; Seizo Suzaki, Mitaka; Naoaki Kuwano, Chofu; Yoshinori Sakai, Kakamigahara; Hiroshi Oda, Takatsuki; Masao Uegusa, Yachiyo, and Goji Iba, Toyama, all of Japan, assignors to National Aerospace Laboratory of Science & Technology Agency, Tokyo and Kawasaki Industries, Ltd., Kobe, both of, Japan

Filed Sep. 5, 1989, Ser. No. 402,586
Claims priority, application Japan, Mar. 1, 1989, 1-46479
Int. Cl.' B64G 1/64
U.S. Cl. 244—161 6 Claims



1 A docking and active damping device for space structures for docking a plurality of space structures or space structure elements including

a positioning device having a fixed cylinder provided on a frame of a docking portion of one space structure to be docked, one or more eccentric rotors successively eccentrically provided between said fixed cylinder and an output rotor, and a hollow output rotor provided at an eccentric position of the final eccentric rotor, said eccentric rotors and said output rotor being independently driven and controlled by an electric direct drive motor, and

a docking member supported on the output rotor of said positioning device, having a docking ring joined with a docking surface of the other space structure to be docked and having a plurality of latch mechanisms in an outer peripheral portion of said docking surface, said docking member capable of being moved and axially rotated within a two-dimensional plane vertical to at least the docking direction by said positioning device.

5,005,787

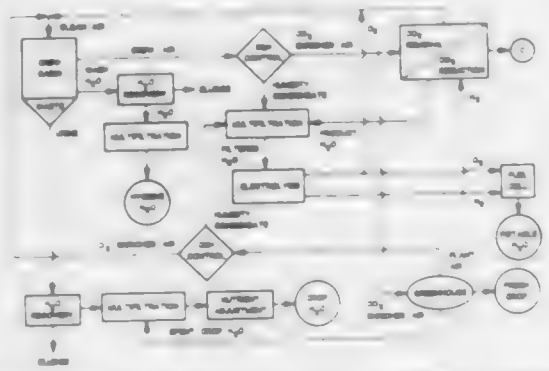
METHOD AND APPARATUS FOR BIO-REGENERATIVE LIFE SUPPORT SYSTEM

Hatice S. Cullingford, Houston, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 11, 1989, Ser. No. 378,548
Int. Cl.' B64G 1/46
U.S. Cl. 244—163 12 Claims

1 A spacecraft life support system comprising, as integral parts thereof, a crew cabin capable of maintaining an environment conducive to human crew life and a greenhouse capable of maintaining plant life and, whereby, said crew cabin and said greenhouse are interrelated with each other and with other spacecraft systems such that portions of the consumables, food, carbon dioxide, water, hydrogen and oxygen, are regenerated and exchanged between said crew cabin, said greenhouse and said other spacecraft systems including returning portions of said regenerated consumables from the crew cabin and greenhouse to the other spacecraft systems so as to mini-

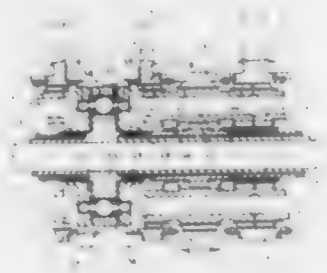
mize over a period of time the amount of said consumables required wherein the cabin air contamination control com-



prises a microbiological control treatment, a HEPA particulate control, and a trace contaminant oxidizer

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5,005,788
GEARED ROTARY ACTUATOR
Terence J. Capewell, Wheaton Aston, England, assignor to Lucas Industries Public Limited Co., Birmingham, England
Division of Ser. No. 301,150, Jan. 25, 1989, Pat. No. 4,932,929.
This application Jan. 3, 1990, Ser. No. 460,518
Claims priority, application United Kingdom, Feb. 6, 1988, 8802714; Jan. 15, 1988, 8814200
Int. Cl.[5] B64C 13/34
U.S. Cl. 244—231 6 Claims



6 A rotary actuator for an aircraft lift surface comprising an input shaft at least two axially aligned gear trains each gear train having an input sun gear drivingly connected to said input shaft a plurality of compound planet gears each having a first pinion and two second pinions said first and second pinions being secured together for rotation in unison, said first pinion meshing with said sun gear and with a first output ring gear and second output ring gears drivingly coupled for rotation by respective ones of said second pinions, said sun gears in adjacent gear trains being drivingly coupled to said shaft through a differential device for permitting limited rotational displacement between said sun gears in adjacent gear trains, a coupling joining adjacent ones of said first ring gears for movement in unison, and a spindle carried by said coupling and extending normally of a plane which contains the axes of the ring gears, said control surface being mounted, in use, on said spindle

5,005,789
PIPE HANGER
Harold D. Jones, 6392 Van Vleet Rd., Swartz Creek, Mich. 48473
Filed Aug. 10, 1989, Ser. No. 392,014
Int. Cl.[5] F16B 15/00
U.S. Cl. 248—58 2 Claims



1. A pipe hanger for supporting a pipe on a structural element comprising

an elongated wire having two free ends and a U-shaped midportion,

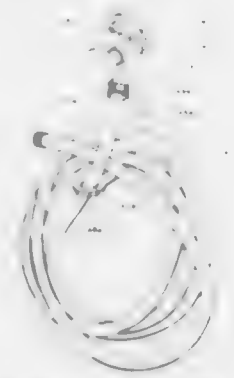
means for attaching said free ends of the wire to the structural element,

an elongated flexible strap of uniform thickness through its length, said strap being constructed of a plastic material,

means for attaching said strap to said U-shaped midportion of said wire, said attaching means comprising at least two pairs of spaced apart locking tabs, said locking tabs protruding outwardly from one side of said strap and being dimensioned to resiliently lockingly receive the wire therebetween, said locking tabs further integrated with said flexible strap as a one-piece construction

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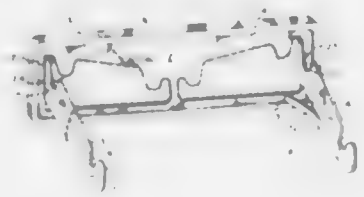
5,005,790
HOSE HOLDING FIXTURE
John H. Harris, III, 4518 Seboy Cir., Pensacola, Fla. 32504
Division of Ser. No. 264,372, Oct. 31, 1988, Pat. No. 4,903,922.
This application Nov. 20, 1989, Ser. No. 438,301
Int. Cl.[5] A62C 23/04
U.S. Cl. 248—75 4 Claims



1. A combination comprising a faucet, a hose having two ends with one end connected to said faucet and having a plurality of generally concentric coils intermediate said ends of said hose, a hose holding fixture having a flat flexible elongated body providing a ring shaped hose receiving opening at one end and a hook at the other end, and an elongated neck therebetween, said hose receiving opening encircling said hose substantially adjacent to said one end of said hose, said elongated neck extending through said plurality of coils, said hook at the other end of said elongated body releasably connecting to said faucet, said fixture depending from said faucet and supporting said coils from said faucet

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5,005,791
HANGER FOR OPEN BAG
Richard G. Lanzen, 1843 38th St., Moline, Ill. 61265
Filed Apr. 30, 1990, Ser. No. 516,192
Int. Cl.[5] B65B 67/12
U.S. Cl. 248—99 1 Claim



1. A holder for supporting bags in an open position, said bags having opposite loops for handles, said holder having a base and two supporting arms, means for attaching said supporting arms perpendicularly to said base, means for mounting said base for extending said arms at the same level, said upper edges of said arms being contoured for suspending said loops about respective intermediate portions of said arms, the distance along each of said intermediate portions and the distance between said arms being sufficient to hold open the top of said bags having said loops about said intermediate portions,

the improvement comprising a hinge as said means for attaching each of said supporting arms to said base, said hinges permitting only horizontal turning of said arms, an intermediate portion of said base contiguous each of said hinges having a nestable space of sufficient area intermediate said hinges to receive the contiguous one of said arms in a nestable position within said base, said hinges being biased to urge said arms into said respective nestable spaces,

a stiffly resilient finger as an integral portion of each of said arms, each of said fingers being formed by a gap a short distance from the lower edge of said respective arm, said gap extending for a substantial distance from the hinged end of said respective arm outwardly along said lower edge thereof, an end of each of said fingers adjacent said respective hinge being movable to a position on said base to retain said respective arm in a useful position substantially perpendicular to said base, and the other end of each of said fingers being integrally connected to said respective arm

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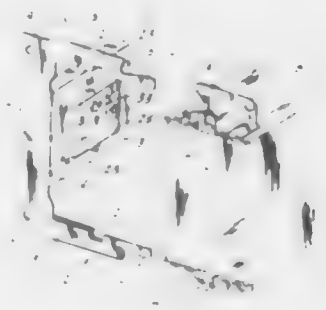
5,005,792
BRACKET FOR MOUNTING AN ELECTRICAL SWITCHBOX ON A WALL STUD
Eric R. Rinderer, Highland, Ill., assignor to B-Line Systems, Inc., Highland, Ill.
Filed Apr. 7, 1989, Ser. No. 334,897
Int. Cl.[5] A47B 96/00
U.S. Cl. 248—205.1 20 Claims

1. A bracket for mounting an electrical switchbox or the like on a metal stud of generally channel shape having a web at one side of the stud, constituting the closed side of the stud, generally parallel opposing flanges extending laterally outwardly from the web, one flange constituting a front flange at the front of the stud and the other flange constituting a rear flange at the rear of the stud, said flanges defining therebetween an open side of the stud, said bracket comprising

support means having a front end and a rear end,

means generally adjacent the front end of said support means for attaching the bracket to the front flange of the wall stud in a position in which said support means extends rearwardly adjacent one side of the wall stud,

means generally adjacent the front end of said support means for holding an electrical switchbox or the like in fixed position relative to said support means with one side of the



box generally adjacent said support means and with an open front of the switchbox facing forwardly, and

an arm on said support means adapted for movement from a first position in which the arm extends in front-to-rear direction with respect to said support means to a second position in which the arm extends laterally inwardly from said support means whereby, when the bracket is to be used at the open side of a wall stud and the depth of the wall stud in front-to-rear direction is greater than the length of said support means in front-to-rear direction, said arm is adapted to be moved to said second position for engagement with the web of the wall stud to support said support means against lateral movement toward the web of the stud

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5,005,793
POLE CLIP NEEDLE CAP HOLDER
Richard A. Shillington, Leucadia, Calif., assignor to Med-Safe Systems, Inc., Carlsbad, Calif.
Filed Apr. 18, 1990, Ser. No. 510,579
Int. Cl.[5] F16M 13/00
U.S. Cl. 248—229 15 Claims



1. A needle cap holder for holding a cap in a stationary position for a needle to be reinserted therein, comprising

a base member for attachment to a support surface,

an arm having an inner end and an outer end and attached to said base at said inner end, and

needle holding means on the outer end of said arm for holding a plurality of needle caps in an inverted stationary position for enabling the insertion of a needle therein, comprising a generally rectangular frame on the outer end of said arm and extending generally transverse thereto, first vertical throughbore defined by a continuous peripheral wall in said frame for axially receiving and holding a cap of a first size, and a second vertical throughbore defined by a continuous peripheral wall in said frame for axially receiving and holding a cap of a second size

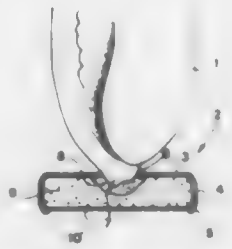
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5,005,794

DISPLAY STAND FOR A SHELL

Daniel G. J. Donck, Verbeekstraat 225, Overijse, Belgium

Filed Feb. 23, 1990, Ser. No. 484,927
Claims priority, application Belgium, Mar. 8, 1989, 08900250
Int. Cl.[5] A47B 97/00
U.S. Cl. 248—346 14 Claims



1 A display stand for a shell, which, in combination, comprises a pedestal having a plate (3, 13) pierced with at least one through hole (6) and at least one structural element (4, 15) which raises said plate in relation to a support on which the display stand is placed, the shell (1, 11) being secured in position by adhesive (8) placed on a lower surface of the plate which makes the lower surface of said plate (3, 13) solid with a small protuberant part (7) of the shell (1, 11) inserted in said through hole (6) and bearing on an edge of the through hole (6)

5,005,795

MULTIPURPOSE EASEL

Steven A. Holmgren, 703 N. Ella Ave., Sandpoint, Id. 83864

Filed Jun. 1, 1990, Ser. No. 531,632
Int. Cl.[5] A47B 97/04
U.S. Cl. 248—449 4 Claims



1 A tripodal easel convertible into a tripodal drafting table and comprising,

an upright pair of front leg members and an upright rear leg member each including a downwardly extensible segment, said rear leg member slotted for that portion if its length adjacent it upper end,

fastener means attaching the upper ends of said front leg members to said rear leg member in an adjustable manner permitting the attached upper ends of the front leg members to be positioned at different distances from the upper end of said rear leg member, a brace assembly adjustably coupling said front leg members to said rear leg member and

adjustable coupling means including fastener assemblies each joining each said downwardly extensible segment of each front leg member to the front leg member in a manner permitting downward extension and locking in place of each extensible leg segment, said coupling means additionally permitting each extensible leg segment to be angularly displaceable about one of said fastener assemblies to an upright position to serve as a drafting table leg while the remaining portion of each front leg member serves as a workpiece supporting table top

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5,005,796

CHART CLIP

Yasmin J. Downie, P.O. Box 97088, Tacoma, Wash. [illegible]97

Filed Feb. 6, 1990, Ser. No. 475,759
Int. Cl.[5] A41H 43/00
U.S. Cl. 248—451 2 Claims



1. A clip capable of detachable attachment to a supporting structure, comprising:

(a) a first plate member having an elongated aperture, two vertical arms allowing sufficient opening so inserted materials are visible, a curved hook and a straight hook for tool attachment, and a rectangular pad of open-cell urethane foam for affixing needles,

(b) a second plate member where-by said first plate member lays suitably juxtaposed,

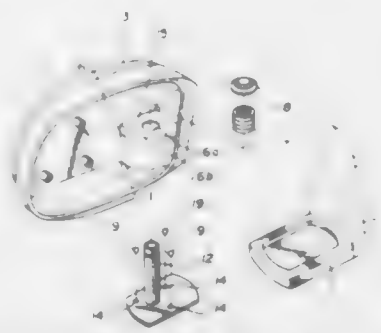
(c) a scroll arm having at one end a generally U shaped opening provided with an aperture by which a bolt can be attached, and at the bottom of said scroll arm apertures for connection to a supporting structure

5,005,797

DOOR MIRROR FOR VEHICLES

Masashi Maekawa, Atsugi; Kunio Kotani, Isehara; Ryoji Ukaji, Sagamihara; Hiroshi Shimizu, Takasaki, and Kenichi Sato, Isehara, all of Japan, assignors to Ichikoh Industries, Ltd., Tokyo, Japan

PCT No. PCT/JP88/00709, § 371 Date Mar. 15, 1989, § 102(e) Date Mar. 15, 1989, PCT Pub. No. WO89/00518, PCT Pub. Date Jan. 26, 1989
PCT Filed Jul. 16, 1988, Ser. No. 330,085
Claims priority, application Japan, Jul. 16, 1987, 62-108313[U]; Mar. 14, 1988, 63-32596[U]; Mar. 25, 1988, 63-38486[U]; Mar. 25, 1988, 63-38487[U]; Mar. 28, 1988, 63-39591[U]; Apr. 5, 1988, 63-45301[U]
Int. Cl.[5] A47G 1/24
U.S. Cl. 248—479 5 Claims



1 A door mirror for vehicles having a mirror base to be fixed to the door of a vehicle and which has a substantially vertical shaft, a synthetic resin-made mirror housing tiltably supporting a mirror and pivotably supported on said shaft, and spring means for biasing the mirror housing toward the mirror base to maintain the mirror housing in a normal position, said mirror housing being pivotable from the normal position to a front or rear position with respect to the normal position when applied with an external force larger than a predetermined force corresponding to the elasticity of said spring means, said mirror housing having formed by an integral molding therein a bearing member which bears the shaft of said mirror base, wherein said bearing member is composed of a hollow inner cylindrical portion having formed thereon a bearing surface to bear the circumferential surface of said shaft, an outer cylindrical portion formed integrally with said inner cylindrical portion and opened at the lower end thereof, and a plurality of reinforcing ribs coupling said inner and outer cylindrical portions to each other and disposed radially, an end of said shaft being so constructed as to be inserted from a lower opening of said inner cylindrical portion and exposed outside of an upper opening thereof, an upper wall of said outer cylindrical portion being formed to have a flat surface substantially perpendicular to said shaft, said spring means being constructed in the form of a compression coil spring interposed between a spring receiving member fixed at the end of said shaft end and said flat surface

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5,005,798

TROLLING MOTOR MOUNT

Thomas C. McCoy, 2796 W. Country Club Rd., Searcy, Ark. 72143

Filed Oct. 2, 1990, Ser. No. 591,934
Int. Cl.[5] B63H 5/00
U.S. Cl. 248—642 16 Claims

16 A mount for dynamically coupling a trolling motor to a fishing boat, said mount comprising

a rigid, generally L-shaped bracket, said bracket comprising rigid spaced-apart sides, a bottom, a rigid top connecting said sides, and a length defined centrally between said sides,

a rigid, adjustable base slidably coupled to said bracket bottom, said base projecting inwardly from one of said sides to facilitate adjustment of said bracket to properly fit about the gunwale of said boat,

a rigid shelf projecting integrally inwardly from one of said bracket sides to securely engage said the side or gunwale of said boat,

a rigid, adjustable screw clamp for at least temporarily securing said bracket to said boat,

a rigid, elongated motor mounting block,

a first hinge defining a first axis of rotation parallel to said length, whereby said block may be rotated over said bracket along a first arc of roughly one hundred eighty degrees to move said trolling motor between a generally vertical, deployed position and a generally horizontal, storage position,



a second hinge defining a second axis of rotation generally perpendicular to said length, whereby said block and said motor may be rotated along a second arc generally parallel to said first axis of rotation of roughly two hundred twenty-five degrees whereby to permit said motor to resiliently deflect upwardly in response to impact with underwater obstacles,

a rigid, generally L-shaped stop integral with said bracket for limiting rotation of said block about said second axis of rotation; and,

a rigid lock projecting integrally outwardly from said block to fit within said stop whereby said lock prevents rotation of said block about said first axis of rotation

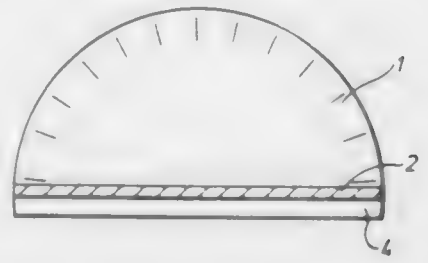
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5,005,799

PATTERNS FOR DETERMINING THE PROFILE OF AN ARCH

Anthony Gallagher, 65 Hazewick Road, Three Bridges, Crawley, West Sussex, England

Filed Mar. 20, 1989, Ser. No. 325,638
Claims priority, application United Kingdom, Mar. 19, 1988, 8806587
Int. Cl.[5] E04G 13/00
U.S. Cl. 249—19 5 Claims



1 A pattern for defining a profile of an arch, the pattern having sufficient strength for supporting a brick arch during construction thereof and comprising a unitary block of material having a deformable upper surface whose contour complements the profile of the arch, a generally flat under surface, and

a first side face which includes markings to indicate to the user respective locations of bricks to be laid about the upper surface of the pattern

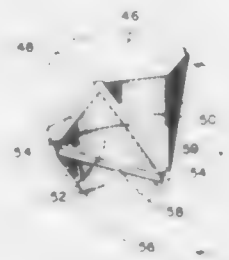
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5,005,800

DIE FOR MAKING A TETRAHEXAGONAL TRUSS STRUCTURE

Dick O. Weisse, Camarillo, Calif., assignor to Tetrahex, Inc., Camarillo, Calif.

Division of Ser. No. 266,386, Nov. 2, 1988. This application Sep. 18, 1989, Ser. No. 408,619
Int. Cl.[5] B29C 33/42, 45/26
U.S. Cl. 249—175 2 Claims



1 A die having a plurality of walls for making a structure, comprising

a die apex,

a tetrahedron having tetrahedron edges and a tetrahedron apex that coincides with the die apex,

a hexagonal base located on the opposite end of the die from the die apex, the base being integrated with the tetrahedron such that three walls of the die are parallelograms having parallelogram edges, a first parallelogram vertex of each parallelogram wall intersecting the tetrahedron apex, and the opposing second parallelogram vertex of each parallelogram intersecting a base vertex, and

a groove in the parallelogram walls such that the groove joins a third parallelogram vertex with an opposing fourth parallelogram vertex in the parallelogram wall

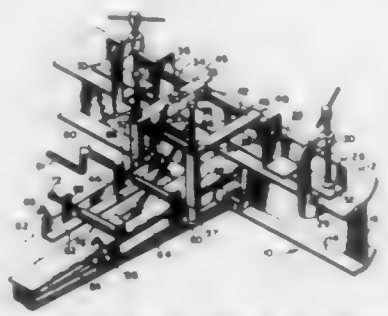
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5,005,801

JACK HANGING APPARATUS

Martin A. Giarrocco, III, 7155 Stockley Rd., Upper Darby, Pa. 19082, and Kevin J. McCarthy, 2061 Granite St., Philadelphia, Pa. 19124

Filed Aug. 18, 1989, Ser. No. 395,895
Int. Cl.[5] E04G 17/18
U.S. Cl. 249—211 26 Claims



1 An apparatus for holding, rotating and positioning a jack for the purpose of attaching said jack to one side of a structural support, said apparatus comprising

(a) a base having means to mount the base on the structural support and including a pivot axle extending parallel to said one side of said structural support, and

(b) a holder pivotally connected at one end to the pivot axle of the base, such holder having at least two side arms connected to said axle for adjustment of said arms relative to each other along the axle between closed and open positions, and for displacement of the holder between a first location above said structural support and a second location at said one side, each of said arms having a receiver, said receivers operable in said closed position to engage and retain the jack as the holder is pivoted between said locations in order to position the jack for attachment to said one side of the structural support, said receivers in the open position affording disengagement of the holder from the jack after said attachment, in said open position, said holder being displacable from said second location back to said first location after disengagement of the holder from the jack

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5,005,802

VARIABLE BORE PACKER FOR A RAM TYPE BLOWOUT PREVENTER

David J. McWhorter; Bolie C. Williams, III, both of Houston; Eric G. Childs, Katy, and Gary R. Schaeper, Houston, all of Tex., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Feb. 1, 1990, Ser. No. 473,579
Int. Cl.[5] E21B 33/06
U.S. Cl. 251—1.3 4 Claims



1 A variable bore packer for use in a front ram slot of a ram-type blowout preventer comprising

a resilient body having a size to fit within the front slot of the ram in which it is to be positioned, an upper portion, a lower portion and an upper surface, and having a central recess on its front face,

an upper plate positioned in the upper portion of the resilient body and having a recess on its front face and an under surface,

a lower plate positioned in the lower portion of the resilient body and having a recess on its front face,

a plurality of spaced apart, radially extending metal insert segments positioned between the upper surface of the resilient body and the under surface of the upper plate and around the central recess of the resilient body,

said insert segments being embedded in said resilient body and having sufficient length to engage the exterior surface of a tubular member which is to be sealed against by the packer,

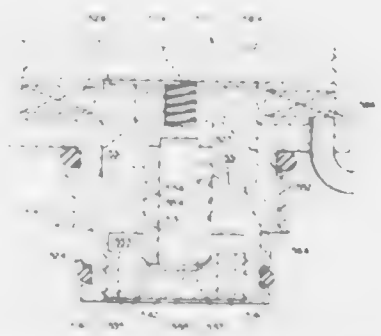
said insert segments being selected to seat against a preselected small tubular member to provide anti-extrusion support for the resilient body against the small tubular member whose diameter is less than the diameter which could be sealed by the packer without the insert segments with the upper plate providing the sole anti-extrusion support for the resilient body

5,005,803

HIGH RESPONSE, COMPACT SOLENOID TWO-WAY VALVE

Frank M. Fritz, Milwaukee; Dale A. Knutson, Nashotah, and James P. Janecke, Waukesha, all of Wis., assignors to Applied Power Inc., Butler, Wis.

Filed Dec. 29, 1988, Ser. No. 290,374
Int. Cl.[5] F16K 31/06
U.S. Cl. 251—129.15 16 Claims



1 A high response, compact, flow regulating valve comprising

a housing having a generally cylindrical bore extending therethrough, said housing having an inlet port and an outlet port connected by said bore of said housing, said housing further having a first land in said bore, said first land defining a first chamber above said land and a second chamber below said land,

means for regulating fluid communication between said inlet port and said outlet port, said regulating means movable between a first closed position and a second open position, including

a generally cylindrical plunger, longitudinally slidable within said bore of said housing, having a coaxial bore therethrough, at least one cross bore connecting said bore of said plunger to said first chamber, and a plurality of notches about the periphery of said plunger,

sealing means at the base of said plunger including an outer bevelled lower edge on said plunger and a frusto-conical indentation in said housing below and concentric to said bevelled edge, said indentation designed to accept said bevelled edge to prevent fluid communication between said first and second chambers when said plunger is in contact with said indentation,

means for biasing said plunger into contact with said indentation,

a lightweight armature mounted to the upper end of said plunger and movable within said first chamber,

solenoid means comprising a coil which, when energized, magnetically moves said plunger away from said indentation, and

means for selectively energizing and de-energizing said coil

5,005,804

BALANCED-TORQUE BUTTERFLY VALVE

Blaine W. Andersen, Tempe, and John N. Tervo, Scottsdale, both of Ariz., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Jun. 6, 1990, Ser. No. 534,091
Int. Cl.[5] F16K 1/22
U.S. Cl. 251—215 25 Claims

1 A butterfly valve, comprising

a mounting body defining a flow path for a fluid to be conveyed therethrough;

a valve plate disposed in the flow path and pivotally supported therein,

pivot means for pivotally supporting the valve plate in the path; the valve plate being supported by the pivot means such that the valve plate is translationally movable relative thereto in directions suitable for altering net torque to be exerted on the valve plate by the fluid, and rotationally movable over a range of rotational positions in order to variably permit flow along the path, the pivot means comprising a carrier which is rotatable with the valve

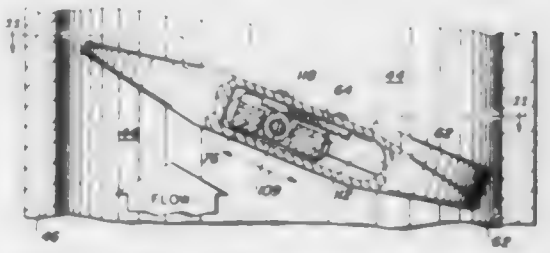


plate over the range of rotational positions, and a shaft which is rotatable relative to the carrier and secured thereto, and

power transmission means secured to the valve plate and shaft for converting rotational movement of the shaft to translational movement of the valve plate

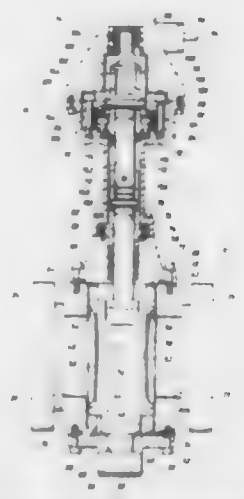
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5,005,805

LIFT-TURN VALVE AND ACTUATOR ASSEMBLY

Gene A. Morris, New Caney; Deepak C. Patel, and James E. Sternenberg, both of Houston, all of Tex., assignors to Daniel Industries, Inc., Houston, Tex.

Filed Jun. 4, 1990, Ser. No. 532,625
Int. Cl.[5] F16K 5/18, 25/00, 31/528
U.S. Cl. 251—229 13 Claims



1 A lift-turn valve actuator for valves incorporating a valve body and a valve seat, said valve body having therein a valve element with a valve stem extending therefrom and being moved first linearly to space the valve element away from the valve seat, then rotated between opening and closed positions and then moved again linearly to seat the valve element against the valve seat, said valve actuator comprising

(a) a valve actuator housing having an internal actuator chamber disposed therein,

(b) an inner sleeve being disposed in fixed relation with said valve body, said inner sleeve defining opposed cam surfaces forming opposed guide slots each having upper and lower substantially vertically oriented guide slot sections and an intermediate inclined guide slot section, said inner sleeve forming an actuator stem passage centrally thereof,

(c) an outer sleeve being rotatably disposed about said inner sleeve and positioned within said actuator chamber, said outer sleeve defining cam surfaces forming opposed cam

slots each having upper and lower inclined sections and a substantially vertically oriented intermediate section together with smoothly curved transition sections therebetween, said outer sleeve receiving a driving means about a portion thereof and being disposed within a portion of said actuator chamber for operable coupling to an extended driving means.

(d) an actuator stem for connection in nonrotatable relation with said valve stem and being disposed for rotary and linear movement within said actuator stem passage.

(e) cam follower means extending transversely from opposed sides of said actuator stem and being movably received within respective guide slots and cam slots.

(f) means for restraining relative linear movement of said outer sleeve.

(g) means restraining rotary and linear movement of said inner sleeve; and

(h) said internal and external driving means imparting rotary movement to said outer sleeve thus inducing interaction of said cam slots and guide slots with said cam follower means for imparting movement to said cam follower means and said actuator stem, said lower vertically oriented sections of said guide slots of said inner sleeve and said lower inclined sections of said cam slots of said outer sleeve cooperatively inducing linear movement to said cam follower means and actuator stem during a first rotary component of movement of said outer sleeve in one direction said intermediate inclined sections of said guide slots and said vertically oriented intermediate sections of said cam slots cooperatively inducing simultaneous rotary and linear movement to said cam follower means and said actuator stem during a second component of rotary movement of said outer sleeve inn said one direction, whereby said cam follower means and actuator stem are initially moved linearly and then moved linearly and rotationally during rotation of said outer sleeve to the open position, and then moved linearly and rotationally during rotation of said outer sleeve to said closed position and then again moved linearly

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5,005,806

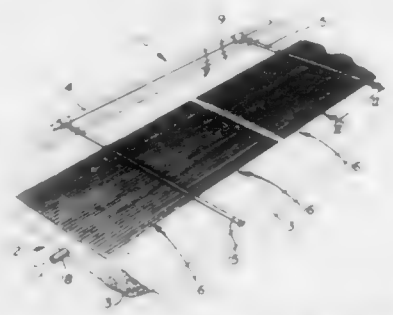
CONTROLLED PERCOLATION SYSTEM AND METHOD FOR HEAP LEACH MINING

Richard G. Krauth, 7466 N. 4th St., Fresno, Calif. 93710

Continuation of Ser. No. 116,465, Nov. 3, 1987. This application Jul. 30, 1990, Ser. No. 560,369

Int. Cl.' C22B 3/00

U.S. Cl. 266—101 12 Claims



1 A controlled percolation system for heap leach mining over an ore bed composed of crushed metal-laden ore deposited on an impervious pad comprising

supply means for conducting a leaching solution adjacent to said ore bed,

a plurality of laterally spaced tube means connected to said supply means for receiving said leaching solution therefrom; and

a plurality of pre-calibrated emitter means attached to and positioned in spaced and communicating relationship along each of said tube means for directly and collectively emitting said leaching solution at predetermined flow rates and in overlapping patterns into said ore be at controlled and substantially uniform seepage rates without projecting said leaching solution to any substantial extend above said ore bed and without causing said leaching solution to pond thereon

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5,005,807

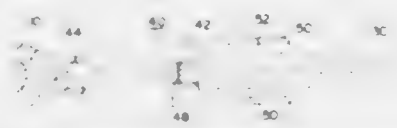
EXTENSION BAR FOR BLAST FURNACE TAP HOLE DRILL

Ronald J. Mathews, Valencia, and Robert T. Woodings, Pittsburgh, both of Pa., assignors to Woodings Industrial Corporation, Mars, Pa.

Filed Apr. 4, 1990, Ser. No. 504,603

Int. Cl.' C21C 5/48

U.S. Cl. 266—271 17 Claims



1 An extension bar for a blast furnace tap hole drill comprising an elongated body portion having a forward end and a rearward end, means at said forward end for securing a drill bit, and a socket at said rearward end having a base and forming a protective sleeve with said body portion extending rearward from said base, said socket having a diameter sufficient to receive a forward end of a drill rod and provide an annular gap between said drill rod and said sleeve and having means at said base for securing said drill rod such that said protective sleeve will shield the forward end of said drill rod and any metal-to-metal interface between said drill rod and said extension bar

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5,005,808

AIRSPRING END MEMBER AND AIRSPRING ASSEMBLY

Ivan J. Warmuth, II, Wapakoneta, and Steven J. Moeglin, North Canton, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 1, 1987, Ser. No. 127,123

Int. Cl.' B60G 11/26, F16F 9/04

U.S. Cl. 267—64.27 13 Claims



7 An airspring assembly comprising:

(a) a flexible tubular sleeve having two ends,

(b) a pair of clamping rings; and

(c) a pair of end members; wherein each end member is generally cylindrical in shape having a longitudinal axis and a trough area on its outer periphery, wherein each end of the sleeve is attached to one end member by means of one of the rings and wherein said trough area comprises an inner diameter surface of a pre-determined height, parallel to said axis, having extending from two ends thereof a first pair of radially, outwardly, diverging wall surfaces, and extending from said first pair, a second pair of radially, outwardly, more diverging wall surfaces

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5,005,809

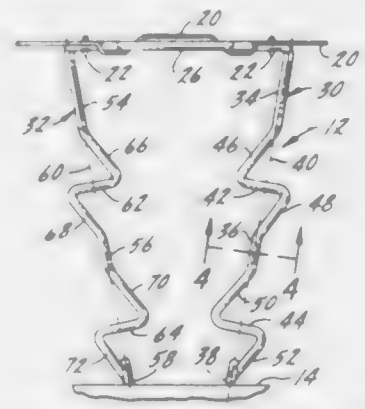
SPRING ELEMENT FOR A FOUNDATION UNIT AND FOUNDATION UNIT EMPLOYING A SPRING ELEMENT

Lonnie R. Harmon, Carthage, Mo., assignor to Steadley Company, Carthage, Mo.

Filed Oct. 30, 1989, Ser. No. 428,589

Int. Cl.' F16F 3/02, A47K 13/18, 11/04

U.S. Cl. 267—103 17 Claims



1 A spring element for a foundation unit of the type having a wire top bearing structure and a rigid bottom substructure, a plurality of the spring elements being disposed in spaced relationship between the top bearing structure and the bottom substructure, the spring element comprising

a a top portion and a pair of spaced support legs extending from said top portion and converging toward one another,

b said top portion including means for attachment to the wire top,

c each support leg comprising a series of spaced support segments, said support segments of each support leg lying generally in a single plane, adjacent support segments being oppositely directed from one another and at least one of said support segments being downwardly inclined,

d a torsion segment located between adjacent ones of said support segments at the ends thereof, each said torsion segment extending generally perpendicular to said single plane, each torsion segment comprising a generally straight wire member with the center of each torsion segment of each said support leg being located generally in said single plane, and

e means interconnecting each torsion segment and said adjacent support segments.

5,005,810

FLUID-FILLED CUSHIONING DEVICE HAVING SEALING ARRANGEMENT FOR EASY ASSEMBLING

Kouji Sawada, Toyota; Yasuhiro Miya, Kakogawa; Masato Tanabe, Toyota; Takanobu Nanno, Kasugai, and Shinji Miyakawa, Komaki, all of Japan, assignors to Tokai Rubber Ind., Ltd. and Toyota Jidosha Kabushiki Kaisha, both of, Japan

Filed Jul. 5, 1988, Ser. No. 215,305

Claims priority, application Japan, Jul. 9, 1987, 62-171665; Jul. 28, 1987, 62-115625

Int. Cl.' F16F 9/34

U.S. Cl. 267—140.1 11 Claims



1 A fluid-filled cushioning device connected to two support members for damping vibrations applied therebetween, comprising

an inner sleeve through which one of said two support members is inserted for attachment to the inner sleeve,

a cylindrical elastic body mounted on an axially intermediate portion of said inner sleeve, said elastic body being provided at its outer circumferential portion with orifice defining means which has an orifice formed therethrough

a pair of annular elastic members each having an integrally formed inner retainer member and an integrally formed outer sleeve which are spaced apart from each other in an axial direction of the elastic members, said pair of annular elastic members being mounted on said inner sleeve such that said inner retainer member is press-fitted in a corresponding one of axial end portions of said inner sleeve while said orifice defining means of said cylindrical elastic body is sandwiched by and between corresponding axial end faces of said outer sleeves of said pair of annular elastic members, in said axial direction of the elastic members

a cylindrical bracket which is mounted on outer circumferential surfaces of said outer sleeves of said pair of annular elastic members and to which the other of said two support members is fixed, said bracket forcing said outer sleeves of said pair of elastic members against each other via said orifice-defining means in said axial direction of the elastic members, said inner sleeve, said cylindrical elastic body and said annular elastic members cooperating with each other to define two fluid chambers which are separated from each other by said elastic body and which communicate with each other through said orifice, said fluid chambers being filled with a non-compressible fluid and

an axial dimension of said each annular elastic member before mounted on said inner sleeve being determined to permit said each annular elastic member to be axially compressed upon mounting of said pair of annular elastic members on said inner sleeve, so that said outer sleeves are urged against said orifice-defining means with a force sufficient to maintain fluid tightness between said pair of annular elastic members and said orifice-defining means, whereby the mounting of said cylindrical bracket on said outer sleeves of the elastic members may be effected in a condition that said two fluid chambers are filled with said non-compressible fluid; and

wherein said inner sleeve and said cylindrical elastic body having said orifice-defining means constitute a first inter-

mediate component prepared in the process of manufacture of said device, while said pair of annular elastic members are prepared as second intermediate components which are mounted on said inner sleeve of said first intermediate component, within a mass of said non-compressible fluid, said cylindrical bracket being mounted on said outer sleeves of said second intermediate components after an assembly of said first and second intermediate components is removed from said mass of the non-compressible fluid

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5,005,811

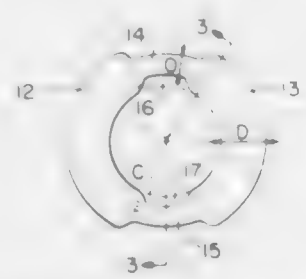
RESILIENT ROLLING TORUS FOR A LOAD-CUSHIONING DEVICE

Pamela J. Harrison, Pleasant Lake, and Richard D. Hein, Wabash, both of Ind., assignors to GenCorp Inc., Fairlawn, Ohio

Filed Oct. 2, 1989, Ser. No. 416,184

Int. Cl.[5] F16F 7/00

U.S. Cl. 267—220 5 Claims



1 A cushioning device comprising

(a) at least one pair of concentrically disposed, rigid conical surfaces in spaced relation, and

(b) a resilient, toroidally-shaped elastomeric ring disposed freely between the conical surfaces for rolling, compressive engagement with the surfaces as they come closer together, the ring having a pair of similar opposing longer toroidal segments of uniform circular cross-sections, connected by a pair of similar opposing shorter toroidal segments of uniform circular cross-sections, the shorter toroidal segments being concentric with the two longer toroidal segments about the circular axis of the ring and having a substantially shorter arcuate length than that of the longer toroidal segments, the shorter toroidal segments having cross-sections which are substantially smaller than those of the longer toroidal segments, such that recesses are formed between the ring and adjacent conical surfaces in the areas of the shorter toroidal segments

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5,005,812

PNEUMATIC BEARING JACK AND ADAPTORS

M. D. Robertson, Rte. 1, Box 456, Big Spring, Tex. 79720

Filed Sep. 25, 1989, Ser. No. 412,015

Int. Cl.[5] B66F 3/00

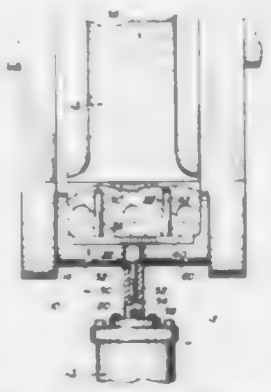
U.S. Cl. 269—47 3 Claims

1 In a large internal combustion engine and a jack, wherein the large engine has a piston rod with a journaled end, the journaled end of the rod has a face with bolt holes formed therein, the combination with said rod and jack of an improved adaptor that is interposed between the jack and the journaled end of the piston rod,

said jack has a main body and a piston shaft reciprocatingly received therein and extending therefrom, said adaptor has a main body in the form of a plate member, said plate member has opposed sides, one side of said plate member has an extension member affixed thereto and extending therefrom and the other side of said plate member has a plurality of upstanding rod engaging pins affixed thereto and extending therefrom in opposition to said extension member,

the marginal free end of the piston shaft and the extension member of said adaptor telescopingly engage one another in a removable and slidable manner, said extension member has a boss adjacent said plate member that is seated on the terminal end of the piston shaft, and the free marginal end thereof is received within a counterbore formed within the marginal terminal end of the shaft, said upstanding pins have opposed ends with one end being affixed to the plate member and the other end freely extending therefrom, said upstanding pins have a free marginal end received within the bolt holes of the rod journaled end, said other side of said plate member engages the face of the rod end, said upstanding pins are equally spaced from said extension member,

whereby, the plate member and the upstanding pins are free of the crankshaft journal as the rod end is engaged and lifted from the engine crankshaft by said adaptor and said jack.



5,005,813

RAPID ACTION CAM-LOCK CLAMP

Joseph W. Lawrence, R.D. 4, Box 184, Saegertown, Pa. 16433

Filed May 15, 1990, Ser. No. 523,420

Int. Cl.[5] B25B 1/24

U.S. Cl. 269—236 19 Claims



1 A rapid acting adjustable clamp for controllably exerting clamping forces by a single cam actuated locking action, comprising

(a) a base member having a leg at each of two ends of a central bridge member to enclose a clamping plane with orthogonal X and Y axes, said bridge member having a first type of dovetail track formed along one edge thereof,

(b) a slideable locking member having cam actuated locking means with locked and released positions, and having a second type of dovetail track formed along one edge thereof engaged with said first type of dovetail track for slidable X-axis adjustability along said bridge member,

(c) a workpiece engaging member carried by and threadedly depending from said cam actuated locking means for rotatable Y-axis adjustability,

(d) whereby said workpiece engaging member may be rapidly adjusted along said X-axis by moving said slideable locking member relative to said base member and said workpiece engaging member may be finely adjusted along said Y-axis by said rotatable adjustment, both with said cam actuated locking means in a released position,

and said workpiece engaging member may be coarsely adjusted in part along said Y-axis by said cam actuated locking means,

and said cam actuated locking means locking said dovetail engaged members in its locked position

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5,005,814

PRODUCT CARRIER FOR CIRCUIT BOARDS

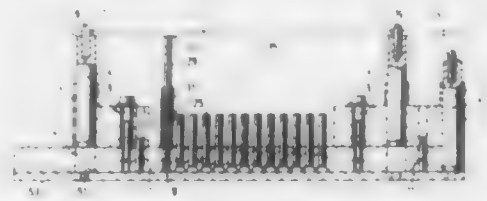
Hans Gumbert, Sinn, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 713,226, Apr. 18, 1985, abandoned. This application Jul. 23, 1986, Ser. No. 890,789

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1984, 3410130

Int. Cl.[5] B23A 3/00

U.S. Cl. 269—309 11 Claims



1 A product carrier for circuit boards which are subjected to an operation while on this carrier and which have locating holes for aligning the board with respect to the carrier, comprising

a base plate, and

a plurality of locating pins provided on the base plate for insertion in the locating holes to fix a circuit board on the carrier in a given position and at a given height with respect to said plate, and

further comprising means for lowering the locating pins out of their locating holes individually with respect to the base plate,

a plurality of mounting areas on said base plate between said locating pins, and

a plurality of supporting pins between said locating pins and arranged in positions with respect to respective mounting areas, from which area these pins extend vertically up to the lower side of a circuit board carried on the carrier to support said board, said supporting pins defining a supporting plane and being arranged to extend to the lower side of the circuit board between any components which already have been mounted to said board

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5,005,815

APPARATUS AND METHOD FOR INDIVIDUALLY PRINTING SIGNATURES DURING DELIVERY TO A BINDING LINE CONVEYOR

Gunnar Auksi, Palatine, Ill., assignor to R. R. Donnelley & Sons Company, Chicago, Ill.

Continuation of Ser. No. 224,332, Jul. 26, 1988, abandoned. This application Feb. 20, 1990, Ser. No. 483,333

The portion of the term of this patent subsequent to Sep. 28, 1990, has been disclaimed.

Int. Cl.[5] B41F 13/54

U.S. Cl. 270—1.001 49 Claims

1 An apparatus for individually printing signatures during delivery to a binding line conveyor, comprising

a feeding station for receiving a plurality of signatures to be delivered to said binding line conveyor,

signature transfer means extending from said feeding station to said binding line conveyor and adapted to receive one signature at a time from said plurality of signatures at said feeding station and to transfer said signatures to said binding line conveyor, and



means for individually printing on both sides of said signatures in a direction perpendicular to backbones of said signatures upstream of said binding line conveyor

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5,005,816

INTERFOLDER DEVICE WITH DYNAMIC PRESSURE SECTION CONNECTED AT THE OUTLET SIDE OF THE FOLDING ROLLERS

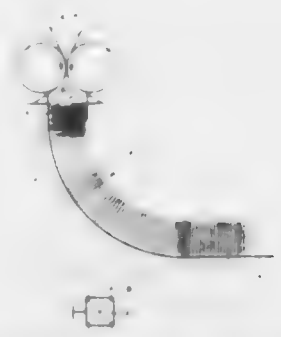
Kurt Stemmler, Neuwied; Ludwig Wecker, Dusseldorf, and Egon Marth, Neuwied, all of Fed. Rep. of Germany, assignors to Winkler & Dunnebier Maschinenfabrik und Eisengiesserei KG, Neuwied, Fed. Rep. of Germany

Filed May 16, 1989, Ser. No. 352,272

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1988, 3820032

Int. Cl.[5] B41L 1/32

U.S. Cl. 270—39 8 Claims



1 An interfolder device for folding sheet material in a zig-zag manner comprising,

a pair of counter rotating rollers for receiving the sheet material,

an elongated guide track disposed adjacent to said rollers for receiving, supporting and conveying the sheet material as it is folded, and,

dynamic pressure means coupled to said guide track for providing a vacuum brake to the sheet material as it is conveyed along said guide track

5,005,817
SHEET FEEDING MECHANISM AND METHOD FOR AN ELECTROPHOTOGRAPHIC PRINTER

Mark H. Ruch; Roger Q. Paubel, and Patricia J. Naron, all of Houston, Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Jun. 2, 1989, Ser. No. 360,395
Int. Cl.[5] B65H *3/44*
U.S. Cl. 271—9 25 Claims



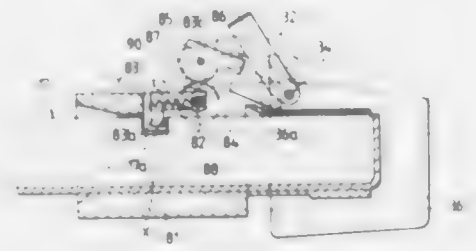
1 A paper handling apparatus for an electrophotographic printer, comprising

paper feeding means for contacting a selected one of a plurality of stacks of sheets of paper and removing a selected one of said sheets of paper from said selected stack of sheets of paper, said paper feeding means being controllably moveable along a preselected substantially vertical path, and

a plurality of paper receiving trays, each of said trays being adapted for receiving a stack of sheets of paper, said plurality of trays being generally vertically arranged relative to one another and adapted for general horizontal movement between a first selected position and a second unselected position, wherein said first selected position intersects the substantially vertical path of said paper feeding means,

said paper feeding means including a single motor for both removing a selected one of said sheets of paper from said selected stack of sheets of paper and for moving said paper feeding means along the preselected substantially vertical path, second shaft being connected together through a one-way clutch

locking means for locking said sheet cassette against removal from the housing in response to movement of said sheet



attracting means toward said sheet cassette for feeding sheets from said sheet cassette

5,005,819
Patent Not Issued For This Number

5,005,818
SHEET FEED DEVICE HAVING A SHEET CASSETTE LOCKING MECHANISM

Takayuki Hayashi, Nagoya, and Hideo Yoshihara, Kasugai, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Japan

Filed Dec. 19, 1989, Ser. No. 452,413
Claims priority, application Japan, Dec. 21, 1988, 63-165921[U]; Jan. 25, 1989, 1-7490[U]
Int. Cl.[5] B65H *3/08*
U.S. Cl. 271—107 18 Claims

1 A sheet feed device for feeding a sheet in housing, comprising:

a sheet cassette storing a stack of sheets therein and removably positioned in the housing,

sheet attracting means for attracting one of the sheets from said sheet cassette, said sheet attracting means being movable toward and away from said sheet cassette; and

5,005,820
PAPER TRAY WITH LEAF SPRING

Michael C. Leembuis, Nicholasville, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 23, 1989, Ser. No. 370,923
Int. Cl.[5] B65H *1/08*
U.S. Cl. 271—127 4 Claims

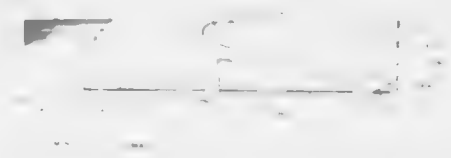
1 A sheet holding mechanism for use in a processing machine, such as a copier or printer, comprising

bin assembly means for holding a stack of print-receiving material,

a movable tray located within said bin assembly means for receiving said stack;

sheet feeding means for moving the top sheet from said stack into said machine;

leaf spring means located within said bin assembly means for applying a force to said movable tray to lift said tray to a position at which the top sheet on said tray is in a correct position for being fed into said machine by said sheet feeding means, and

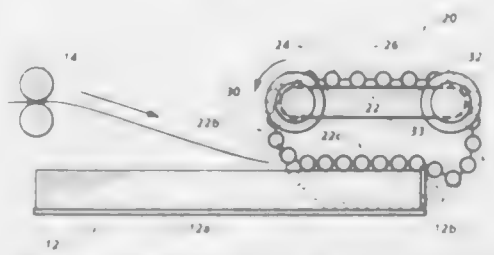


movable support means for said leaf spring means for moving in a first dimension to adjust the spring constant of said leaf spring means to provide a constant normal force between said top sheet and said sheet feeding means regardless of the size and density of sheets on said movable tray

5,005,821
LOOSE ELEMENT SHEET STACKING ASSISTANCE SYSTEM

William R. Burger, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 2, 1990, Ser. No. 517,797
Int. Cl.[5] B65H *31/28*
U.S. Cl. 271—198 12 Claims



1 In a sheet stacking apparatus for a printer or copier in which sheets are sequentially fed by sheet output means into a stacking tray and against a stacking registration wall for stacking with a sheet stacking assistance and control system; the improvement in said sheet stacking assistance and control system comprising

an endless chain-like lose element member,

supporting means providing for endless rotation of said chain-like lose element member,

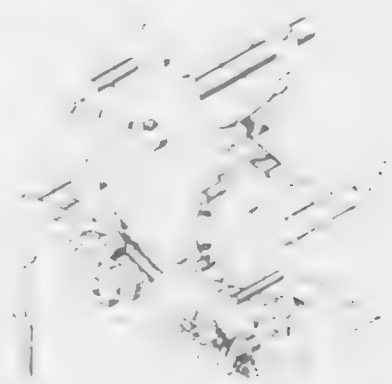
said supporting means for partially supporting said endless chain-like lose element member above said stacking tray so that a first integral portion of said endless chain-like lose element member hangs downwardly from said supporting means towards said stacking tray in the path of said sheets being sequentially fed by said sheet output means, and so that a second integral portion of said endless chain-like lose element member lies on top of any sheets stacking in said stacking tray, and

driving means for endless rotation of said chain-like lose element member so that continuously said first portion of said chain-like lose element member is moving downwardly towards said stacking tray, and said second portion of said chain-like lose element member is being dragged over the top of any sheets stacking in said tray to drag the top sheet towards said stacking registration wall.

5,005,822
SHEET DELIVERY

Reinhold Max, Bad Rappenau-Grombach, and Karl-Heinz Filsinger, Wiesloch, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heildelberg, Fed. Rep. of Germany

Filed Oct. 27, 1989, Ser. No. 427,796
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1988, 3836571
Int. Cl.[5] B65H *31/04*
U.S. Cl. 271—213 7 Claims



1 Delivery for sheets being delivered by transport means in a conveying direction from a sheet-processing machine and being deposited alternatively in a pile and on catching arms of a catching device, the catching arms being temporarily moveable out of a basic position into a catching position above the pile, including stops for respective leading edges of the sheets, the stops being disposed at the pile and being flappable away from the pile in the conveying direction, and a transmission system for moving the catching arms from the basic position into the catching position and from the catching position into the basic position, and for flapping-out the stops against the action of a stop spring in the conveying direction and into a release position thereof and in an opposite direction into a stop position on the pile by means of a common actuating element, the transmission system being constructed so as to flap out the stops into the release position immediately after the catching arms have been moved into the catching position, comprising a dead-center spring swivellable with respect to a swivel shaft and articulatingly connected to the transmission system, said dead-center spring, in a first end position of the transmission system, holding the catching arms in the basic position against the action of at least one tension spring and, in a second end position of the transmission system, holding the stops in the release position thereof against the action of the stop spring.

5,005,823
CORNER ALIGNMENT SYSTEM

Donald C. Fyler, Cambridge; Edward A. Van Duyne, Framingham, and Michael G. Kelly, Arlington, all of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Jul. 6, 1989, Ser. No. 376,391
Int. Cl.[5] B65H *7/02*
U.S. Cl. 271—228 10 Claims

1 Apparatus for locating a corner of a workpiece on a substantially planar worksurface, said worksurface being characterized by a first reflectivity and said workpiece being characterized by a second reflectivity, comprising

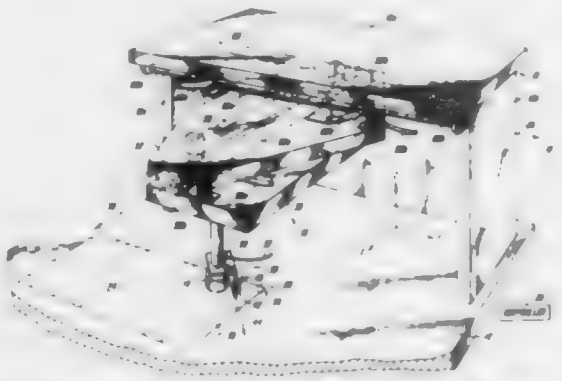
A gripper overlying said worksurface and including means for selectively gripping said workpiece, and an associated two axis transport assembly affixed thereto, said transport assembly including means for maintaining the angular orientation of said gripper with respect to said worksurface substantially constant, said means being responsive to

applied position control signals for selectively positioning said gripper with respect to said worksurface in the direction of a first reference axis and for selectively positioning said gripper with respect to said worksurface in the direction of a second reference axis, said first and second axes being parallel to said worksurface.

B. means for directing radiation toward said workpiece and said worksurface from above said worksurface,

C. first sensor affixed to said gripper and including means for detecting said radiation reflected from portions of said workpiece and said worksurface and underlying a first region associated with said gripper, and for generating a first sensor signal representative thereof,

D. second sensor affixed to said gripper and spaced apart in



both said first and second direction from said first sensor and including means for detecting said radiation reflected from portions of said workpiece and said worksurface underlying a second region associated with said gripper, and for generating a second sensor signal representative thereof, and

E. control means responsive to said first and second sensor signals for translating said gripper on said worksurface in the direction of said first reference axis until a transition in the intensity of detected radiation is identified by said first sensor, and in the direction of said second reference axis until a transition in the intensity of detected radiation is identified by said second sensor, whereby said gripper overlies a predetermined corner of said oriented workpiece.

5,005,824

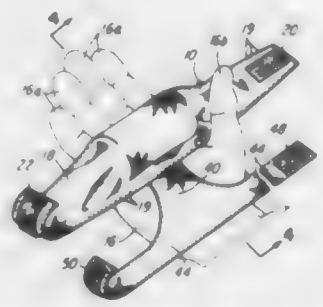
METHOD OF AVOIDING A CONTINUOUS CLENCH POSITION OF THE HAND AND FINGERS

Herman J. Eichel, 2571 Clarion Ct., Columbus, Ohio 43220

Filed Jun. 21, 1990, Ser. No. 541,337

Int. Cl.[5] A61H 1/02, A61F 13/44, A63B 5/00

U.S. Cl. 272—67 6 Claims



1. A method of avoiding a continuous clench position of the hand and fingers of a person afflicted with a disease such as arthritis while the person is sleeping to reduce pain and discomfort in the hand and fingers after the person awakes, comprising the steps of forming a generally cylindrical resilient body of spongy material having an axial length approximately equal to the width of the person's hand and a cross-sectional diameter between one and two inches, positioning the resilient body within the palm of the person's hand with the body axis extending laterally across the hand and in a pressure position to be engaged by the tips of the fingers during unconscious flexing of the fingers toward a clenching condition, attaching the resilient body to the person's hand with a flexible material connected to the body and extending laterally around the person's hand, retaining the resilient body in the pressure position within the palm with a flexible material connected to the body and extending around the person's wrist to prevent the body from slipping off the person's fingers, and maintaining the resilient body in the pressure position while the person is sleeping.

5,005,825

INTEGRAL LEG BRACE AND PEDAL FOR THE HANDICAPPED

Lou Fogel, 33 Hutchinson Ct., Great Neck, N.Y. 11027

Continuation-in-part of Ser. No. 926,209, Nov. 3, 1986, abandoned. This application Jan. 24, 1987, Ser. No. 65,780

Int. Cl.[5] A63B 23/02

U.S. Cl. 272—73 1 Claim



1. An integral leg brace and pedal apparatus adapted to convert a standard pedal driven exercise machine into a machine that can be used by the handicapped comprising an elongate pedal plate formed of a forward pedal shelf and a rearward heel platform, said plate having a step-like bend adapted to place the shelf and heel platform on spaced parallel planes with the pedal shelf disposed relatively below the heel platform, a pedal including a threaded pedal axle, said pedal fixedly attached to the pedal shelf with the pedal axle thereof extending laterally from one side of the pedal shelf and adapted to engage a respective pedal crankarm of the machine, a calf support of essentially semi-cylindrical configuration, said calf support extending relatively upwardly from the rearward edge of the heel platform, and strap means carried on the calf support for holding the lower leg within said calf support semi-cylindrical configuration such that as the lower torso is exercised, the lower leg remains within said configuration, a hub fixedly attached to and extending laterally from the pedal shelf, said hub being placed on the pedal shelf so as to be at a location that is substantially opposed to said axle, a spherical bearing attached to said hub for rotation therewith, a pair of rigid poles, each on one end being attached to said bearing for cojoint rotation therewith, and the other end of said pole being accessible to the exerciser, whereby simultaneous use of said pedals and said poles contributes to linked complex articulation of the upper and lower torso.

5,005,826

NECK EXERCISER DEVICE AND METHODS

John H. Merrick, 1465 Hooksett Rd., Hooksett, N.H. 03102

Continuation-in-part of Ser. No. 940,963, Dec. 12, 1986, abandoned. This application Jan. 3, 1989, Ser. No. 293,745

Int. Cl.[5] A63B 23/025

U.S. Cl. 272—94 7 Claims



1. A method of exercising muscles of the cervical spine comprising

providing an inflated hollow airtight resilient sphere free of liquid and having a flexible skin with hand grip means attached thereto and pressure observing means for observing the pressure in said sphere, said sphere being inflated to at least 2 pounds per square inch pressure,

placing said sphere against a substantially vertical surface with one hand holding said hand grip means,

placing one's head against said sphere and pressing said sphere against said surface, and

while continuing to so press the head against said sphere exercising selected muscles of the cervical spine by rotating the head in all directions of motion.

5,005,827

LEAPER'S OBSTACLE

Gary A. Steinbrecher, Box 101, Scottsbluff, Nebr. 69363-0101

Filed Feb. 26, 1990, Ser. No. 484,814

Int. Cl.[5] A63B 5/04

U.S. Cl. 272—102 1 Claim



1. A leaper's segmented obstacle bar comprising two elastic distal end segments each having a buckle for adjustably looping said end segments to each of a pair of vertical uprights, and a third central segment comprised of soft material having an elastic portion at one end and having a buckle at its other end for providing a length adjustable loop; each said end segment having a magnetic catch and said third central segment having a piece of nonsharp ferrous material at each of its ends for engagement with each respective magnetic catch of said distal end segments, thereby providing a magnetically united segmented barrier between a pair of conventional vertical uprights, whereby the bar separates into unconnected segments during an unsuccessful leap.

5,005,828

HIGH JUMP RIBBON ASSEMBLY

Roland Sauerbrey, 94 Bruehlstrasse, in 9320 Arbon, Kanton Thurgau, Switzerland

Filed Jul. 2, 1990, Ser. No. 546,718

Int. Cl.[5] A63B 5/02

U.S. Cl. 272—103 20 Claims



1. A high jump ribbon assembly which is comprised of a fabric ribbon, and at least two brackets, wherein

(a) said fabric ribbon comprises a textile base material and attached to at least two separate portions of said textile base material, two separate portions of fibrous fastener fabric, wherein

1. said textile base material has a width of from about 1 to about 3 centimeters and a thickness of from about 0.5 to about 2 millimeters,

2. each of said portions of fibrous fastener fabric has a length of from about 2 to about 7 inches,

3. each of said portions of fibrous fastener fabric has a width of from about 1 to about 3 centimeters,

4. said fabric ribbon is comprised of at least two different textile materials,

(b) each of said brackets has attached thereto at least two separate pieces of complementary fibrous fastener fabric, wherein one of said pieces is loop fibrous fastener fabric, and the other of said pieces is complementary hook fibrous fastener fabric, and

(c) each of said brackets comprises means for adjustably securing said bracket to a standard.

5,005,829

EXERCISE MACHINE FOR PATIENTS CONFINED TO BED

Anthony A. Caruso, 1130 Commodore Dr., Clearwater, Fla. 34643

Filed Nov. 14, 1989, Ser. No. 436,168

Int. Cl.[5] A63B 21/00

U.S. Cl. 272—130 17 Claims



1. An exercise device for persons confined to a bed, comprising

a base member configured to fit under a bed,
an upstanding column member secured to said base member,
a substantially horizontal arm member disposed in cantilevered relation to said column member,
a pair of handle members,
said handle members being pivotally mounted to opposite sides of said arm member for reciprocation in a substantially vertical plane,
resistance means disposed in interconnecting relation between each of said handle members and said arm member, said resistance means being disposed on opposite sides of said arm member,
locking means for locking said device to a bed when in use and a handle member stabilizing means including a bell crank member pivotally secured to an underside of said arm member, and a pair of stabilizing link members, each link member in said pair of stabilizing link members being disposed in interconnecting relation between each handle member and said bell crank member on opposite sides of said arm member for maintaining said handles in a substantially vertical plane.

5,005,830

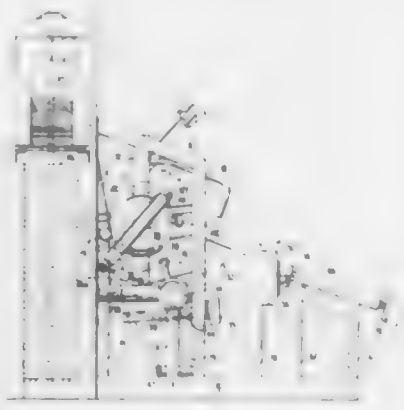
MACHINE FOR EXERCISING AND/OR TESTING MUSCLES OF THE LOWER TRUNK

Arthur A. Jones, 1155 NE. 77th St., Ocala, Fla. 32670

Division of Ser. No. 236,367, Aug. 25, 1988, Pat. No. 4,902,009, which is a continuation-in-part of Ser. No. 60,679, Jun. 11, 1987, Pat. No. 4,836,536, which is a continuation-in-part of Ser. No. 181,372, Apr. 14, 1988, Pat. No. 4,834,365. This application Oct. 18, 1989, Ser. No. 422,905

Int. Cl.[5] A63B 21/00

U.S. Cl. 272—134 14 Claims



1. Apparatus for exercising the muscles of the lower trunk of a human body, the apparatus comprising in combination, a seat for receiving a person in sitting position, means for restraining against movement the pelvis of a person seated on said seat, a movement arm extending above the seat and being mounted for pivotal movement relative to the seat about a generally horizontal axis, said movement arm having a portion engageable by a trunk portion of the body for applying with the muscles of said lower trunk a force to the movement arm to pivot the movement arm about said axis, and resistance means connected to the movement arm to create resistance to movement of the movement arm, and means on the movement arm for fixing the positions of the arms and head of the body relative to the movement arm during movement of the movement arm, said means on the movement arm including a headrest mounted to the movement arm for fixing the position of the head relative to the movement arm.

5,005,831

ATHLETIC EQUIPMENT FOR REHABILITATION

Tsutomu Hara, 20-15, Kamisoshigaya 3-chome, Setagaya-ku, Tokyo, Japan

Filed Aug. 1, 1988, Ser. No. 226,543

Int. Cl.[5] A63B 21/04

U.S. Cl. 272—136 19 Claims



1. Athletic equipment for rehabilitation, comprising
a support means adapted to be mounted to a supporting surface,
a first arm pivotally mounted to the support means for pivotable movement in a first direction and means for mounting said first arm and said support means to said support surface for co-rotation of the first arm and support means in a second direction different from the first direction of pivotal movement,
a second arm coupled to said first arm so as to be capable of rotation in a plane oblique to the plane containing the first arm, and
at least one holder, graspable by a user to pivot and/or rotate at least one of the first and second arms in exercising movement, mounted on said second arm, and
means for imparting spring bias to the holder during pivotal movement of the first arm.

5,005,832

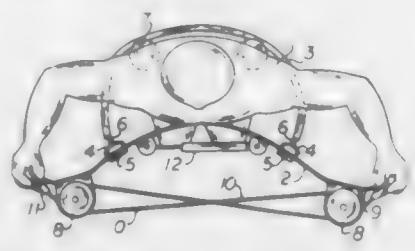
PORTABLE ABDOMINAL EXERCISER

Martin A. Van Der Hoeven, 2726 Loker Avenue W., Carlsbad, Calif. 92008

Filed Aug. 18, 1989, Ser. No. 395,537

Int. Cl.[5] A63B 21/02

U.S. Cl. 272—137 10 Claims



1. An portable exercise device comprising
an elongate and generally arcuate shaped bar,
the width of said bar at its center being shaped and dimensioned to fit and press against a user's abdomen,
the length of said bar being approximately the shoulder width of the user,
handgrip means attached near both ends of the bar in such position as to enable the user to press the convex side of the arcuate bar against his abdomen,
a tensioning means spanning the concave side of the arcuate bar and horizontally disposed across the center point of the bar, and
said tensioning means being attached to the bar on both sides of the center point to restrain flexion of the bar.

5,005,833

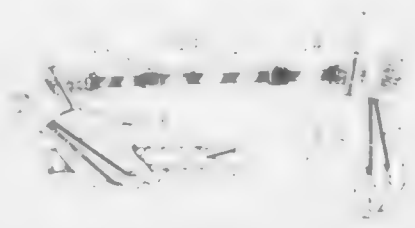
TENNIS TRAINING AID

Joseph F. Groveman, and Grant D. Groveman, both of 500 E. Amado, Palm Springs, Calif. 92262

Filed Oct. 30, 1989, Ser. No. 428,911

Int. Cl.[5] A63B 69/38

U.S. Cl. 273—29 A 6 Claims



1. A tennis training aid for attachment to the wrists of a user to train for the driving of a tennis ball comprising
first and second similar band means,
means for securing each of said band means in place when wrapped around a separate one of said wrists,
a looped thong means extending from each of said band means for securing one of the fingers of the hand associated with each of said wrists to said band means, thereby restraining said hands against palmar flexion, and
strap means for joining said first and second band means together, whereby the arms of a user are caused to move together in preparing for and executing a tennis stroke.

5,005,834

MULTI-FRAME RACKET

Matthew F. Ferrari; Harry M. Ferrari, and John M. Shallenberger, all of Pittsburgh, Pa., assignors to Ferrari Importing Company, Pittsburgh, Pa.

Filed Mar. 16, 1990, Ser. No. 495,231

Int. Cl.[5] A63B 49/02

U.S. Cl. 273—73 C 23 Claims



1. In a sports racket having a handle, a multi-frame comprising
(a) a primary frame having a pair of opposite sides and defining a throat connected to said handle and a hoop-shaped head connected to said throat and encompassing an open region, said head having a plurality of stringing holes defined therethrough for attaching stringing to said head and across the open region, said stringing holes being aligned in a common plane lying between said opposite sides of said primary frame,
(b) at least one supplementary frame disposed solely in spaced relation outwardly from one of said opposite sides of said primary frame and being coextensive with at least a portion of said primary frame, and
(c) means disposed between said supplementary frame and said one of said opposite sides of said primary frame for rigidly interconnecting said supplementary frame to said coextensive portion of said primary frame at said one opposite side thereof for increasing the stiffness of said primary frame to thereby reduce axial and torsional deflections thereof upon striking a ball by the stringing across the open region of said primary frame head.

5,005,835

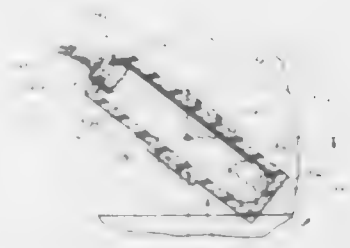
GOLF SWING HEAD MOVEMENT MONITORING APPARATUS

Russell B. Huffman, Los Osos, Calif., assignor to Value Engineering Co., Los Osos, Calif.

Filed Jul. 14, 1989, Ser. No. 379,811

Int. Cl.[5] A63B 69/36

U.S. Cl. 273—183 B 14 Claims



11. A motion profile detector adapted to be mounted on a golfer in a static position, including an article of golfer's headwear, a guide tube having opposite abutment ends, means for mounting the tube on the article of headwear at an angle to the horizontal, a movable contact element displaceable within said guide tube between said opposite abutment ends thereof, means for adjustably positioning the guide tube in a predetermined angular orientation with respect to horizontal ground gravitationally holding the contact element in engagement with one of the opposite abutment ends in the static position of the golfer, and sensing means for detecting engagement of the contact element with the other of the opposite abutment ends of the guide tube in response to displacement of the contact element under accelerating forces generated by rotation of the golfer's head during swing of a golf club.

5,005,836

GOLF DRIVING AND PUTTING EXERCISER AND TRAINING AID

Steven Nelson, 52-900 Diaz, LaQuinta, Calif. 92253

Filed Jul. 19, 1989, Ser. No. 381,838

Int. Cl.[5] A63B 69/36

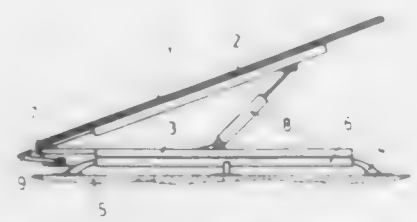
U.S. Cl. 273—191 R 20 Claims

1. A golf swing training apparatus comprising multiple sections telescopically mounted for extensible and retractable sliding motion with respect to each other in the direction of their length, means at one end of said sections to secure said sections to a supporting surface with limited movement rela-

tive thereto, means at the other end of said sections to mount a golf swing force transmitting fixture, and friction means responsive to the force transmitted by said fixture to control said sliding motion between said sections



5,005,837
GOLF TRAINER
Pedro M. Urra Martinez, Padre Moret, 10-2°, Pamplona, Spain (31002)
Filed Apr. 13, 1990, Ser. No. 508,659
Claims priority, application Spain, Apr. 13, 1989, 8901258
Int. Cl.[5] A63B 69/36
U.S. Cl. 273—195 B 5 Claims



1 A golf trainer characterised by a ground support (4) having a lower ring (6) on which is positioned an upper ring (3), parallel to the lower ring, with the inclusion between the two rings of bearing means to permit selective turning of the upper ring (3) with respect to the lower ring (6) about a substantially vertical axis, the upper ring (3) being attached by means of pivot (7), to a platform (1) which may thus tilt, from a position parallel to the rings to an inclined position, so that the platform (1) may turn and may be inclined with respect to the ground and tilt means being provided between the upper ring and the platform for selectively tilting the platform with respect to the upper ring

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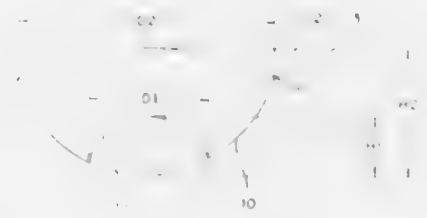
5,005,838
GOLF BALL
Kengo Oka, Kobe, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed May 2, 1990, Ser. No. 517,732
Claims priority, application Japan, May 9, 1989, 1-115856
Int. Cl.[5] A63B 37/14
U.S. Cl. 273—232 1 Claim

1 A golf ball, which flies a short distance having a projection circularly formed on the bottom of a dimple circularly formed,

wherein supposing that the largest diameter of said projection is D1, the diameter of said dimple is D2, and L = D1/D2,

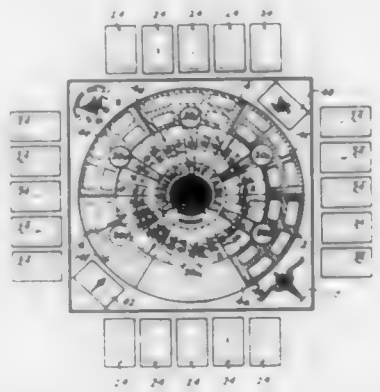
an equation of $0.1 \leq L \leq 0.9$ is determined,

supposing that the height of said projection 11 is H1, the virtual greatest depth of said dimple is H2, and K = H1/H2,



an equation of $0.6 \leq K \leq 1.0$ is determined, and the number of dimples ranges from 250 to 600

5,005,839
BOARD GAME
Kyle A. Ryan; Michael Ackerman; Bruce Hale, and Ward Payne, all of Seattle, Wash., assignors to Turning the Tables, Inc., Seattle, Wash.
Filed Dec. 15, 1989, Ser. No. 451,448
Int. Cl.[5] A63F 3/00
U.S. Cl. 273—240 5 Claims



1 A method of playing a game in which the players simulate being waitpersons in a restaurant, the game including the taking and remembering of lists of food dishes for later recitation and confirmation as to accuracy, comprising the steps of

providing a board having a playing surface divided into sections, each section having table spaces marked thereon corresponding to tables in a restaurant,

providing a set of table cards corresponding to each of the table spaces,

providing a plurality of order sheets, said order sheets sized such that they are capable of being covered by said table cards, and

providing a plurality of markers, one marker associated with each player, providing a menu containing food items, assigning each section and its corresponding table spaces to a different player, placing said markers on each of said assigned section, moving said markers on said playing surface a first players marker and when is moved to a predetermined space within a section associated with that player permitting an opposing player to order a plurality of food items from said menu, said first player taking the food order by marking ordered food items on an order sheet, and covering said order sheet with a table card, and said first player reciting said food order back

5,005,840
BINGO GAME WITH INDICIA DISTRIBUTED ON VIDEOCASSETTE
David S. Schwartz, 26 Quai Zorn, Strasbourg, France
Filed Sep. 6, 1989, Ser. No. 403,613
Int. Cl.[5] A63F 3/00
U.S. Cl. 273—269 5 Claims



1 A game apparatus for use by an individual player comprising

(a) a planar game card having a matrix of gaming areas, said card distributed on a periodic basis to said player, each of said gaming areas having a single, specific visual gaming indicia located thereon,

(b) a periodic publication presented by videocassette means distributed with said game card on a periodic basis, said videocassette means adapted to present stored images, comprising

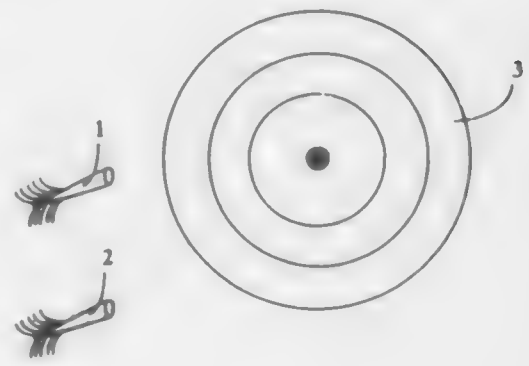
(i) visual gaming indicia stored on said videocassette means, adapted to be flashed to said player, and

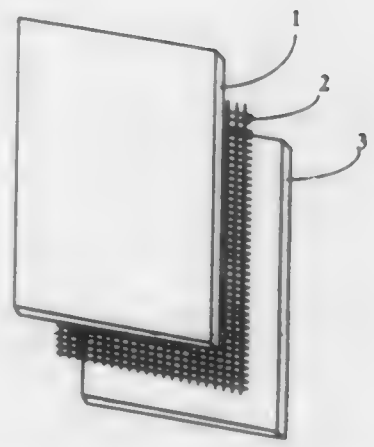
(ii) audiovisual articles and documents, whereby said player individually and visually matches corresponding and substantially identical ones of said gaming indicia on said gaming card with said corresponding and substantially identical gaming indicia presented by said videocassette means, and whereby the player can repeatedly review the videocassette means to ascertain the correspondence between said indicia displayed by said videocassette means and said indicia on said game card

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5,005,841
MEANS AND METHOD OF A GAME BOARD FOR RECEIVING MAGNETIC PIECES
Alan B. Klick, 2185 Hanshaw Rd., Lot #36, Ithaca, N.Y. 14850
Filed Sep. 8, 1989, Ser. No. 405,568
Int. Cl.[5] A63B 65/02, A63F 3/02
U.S. Cl. 273—345 10 Claims

1 A new and improved game board for use as a magnetizable receiver for permanently magnetized game pieces or projectiles, said game board comprising a metallic wire screen fixedly embedded between two layers of flexible material, wherein said game board has a substantially flat surface and

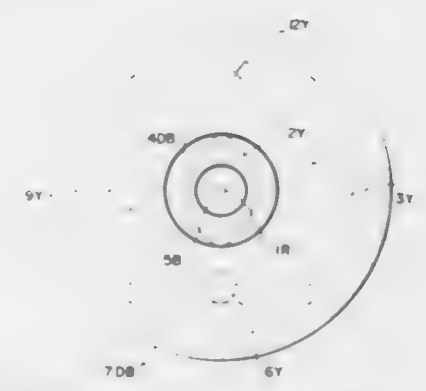




said embedded metallic wire screen is capable of magnetic interaction with said permanency magnetized game pieces

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5,005,842
DART QUARTERBACK
Brian A Bauer, 321 W. Main St., Hartford City, Ind. 47348
Filed Mar. 30, 1990, Ser. No. 502,244
Int. Cl.[5] F41J 3/00
U.S. Cl. 273—408 1 Claim



1 A dart football comprising

(a) singular, circular dart board target means for receiving a multitude of at least 8 darts therein,

(b) said dart board consists of centralized, donut shaped area

as a means for scoring a plurality of darts therein, to attain a point,

(c) center, circular, donut hole, of said centralized donut shaped area, being centermost of said board and encompassing the bullseye, wherein pierced by each, and every dart therein results in a point or touchdown, whereas,

d) four other circular areas exist, in relation to said center, circular donut hole, in relation to point or touchdown value results, and approximate circular diameters, whereby located toward the outermost parameters of said board at twelve, three, six, and nine o'clock, as each, and every dart within said other, circular areas, also results in a point or touchdown,

(e) each player throws at least 8 darts, and less than 15 darts, successively, for 4 rounds or quarters, to complete an entire game, as each players score is totalled after each round or quarter, unless a tie results after the fourth round or quarter, whereby overtime rounds or quarters continue, one by one, until a winner is declared,

(f) competition by a solo player is possible on said board by competing against a prescribed, equal number of points or touchdowns per round or quarter, and thus the sum per game, whereby said prescribed equal number of points or touchdowns represents between 33-40 % of the total mount of darts thrown in single round or quarter

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5,005,843

CHUCK MECHANISM FOR DETACHABLY CONNECTING IMPELLER SHAFT AND DRIVE UNIT OF MIXING APPARATUS

Stephen Markle, Rochester; William Hutchings, Fairport; Marlin Schutte, and Richard Howk, both of Rochester, all of N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Filed Dec. 28, 1989, Ser. No. 458,475

Int. Cl.' B23B *31/107*

U.S. Cl. 279—29 22 Claims



1 A mechanism which detachably couples a rotatable drive member to a shaft, which mechanism comprises a collar rotatably connected to said drive member, a shaft receivable in said collar in coaxial relationship therewith, said shaft and said collar being rotatable independently of each other about their axis into and out of locking position, a keyway in at least one of said shaft and said collar, and a key captured in and rotatable with said one of said shaft and collar, said locking position being defined when said shaft and collar are rotated to bring said key and keyway into alignment, and manually actuable means engagable with said key for releasably retaining it in said locking position

5,005,844

TRAVOIS WITH ROLLER ASSEMBLY

George V. Douglas, and Vivian T. Douglas, both of Wheat Ridge, Colo., assignors to Douglas & Douglas, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 130,078, Dec. 8, 1987, Pat. No. 4,838,565. This application May 15, 1989, Ser. No. 351,724

Int. Cl.' B62D *51/004*

U.S. Cl. 280—1.5 3 Claims



1 A rolling travois for carrying camping supplies and the like, the rolling travois adapted for connection to an individual and comprising

an elongated support frame having a forward end and a rearward end

an enlarged roller assembly rotatably connected to the elongated support frame so as to be disposed below the support frame and near the rearward end thereof, the roller assembly comprising

a plurality of cylindrically shaped wheel disks, each wheel disk having a centrally disposed hole therethrough

axle means extending through the holes of the wheel disks for rollingly connecting to the wheel disks, the wheel disks having varying diameters so that the wheel disks provide the wheel assembly with a substantially spherically shaped profile, and

undercarriage frame means attached to the support frame for disposing the axle means and the wheel disks below the support frame for rolling support thereof and

adjustable harness means attached to the support frame and attachable to an individual for pulling the rolling travois

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5,005,845

LOAD CARRYING POLE FOR OUTDOORSMEN

Donald F. Haueter, Jr., 1165 Lakewood La., Coos Bay, Oreg. 97420

Filed Feb. 26, 1990, Ser. No. 484,268

Int. Cl.' B62D *51/04*

U.S. Cl. 280—1.5 6 Claims



1 A personal load transporting device adapted to be propelled by contact with the front of a user's upper torso, said device comprising

a pole member having a main portion and a segmented portion attached to the upper end of said main portion in an axially adjustable manner,

load carrying means on said pole member including a container with compartments disposed circumferentially about said main portion adjacent its lower end thereof, said container having a central opening through which said main portion is insertably received and a cover of bag construction for confining an article in place about said segmented portion, said cover being disposed circumferentially about said segmented portion and enclosing the upper end of said segmented portion, and

a ground engaging wheel carried at the lower end of said main portion, wherein said pole member is adapted to be grasped intermediate its ends by the user's hand and held in an inclined position so as to locate the upper end of said pole member, with the cover disposed thereon, against the front of the user's torso

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5,005,846

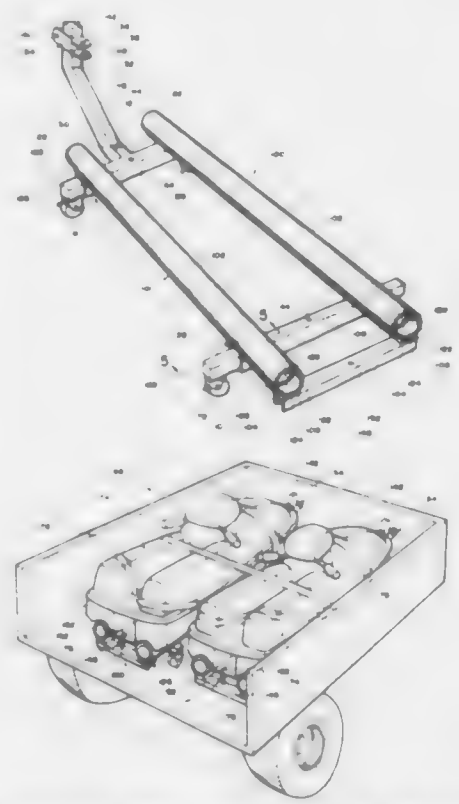
JET SKI TRANSPORTER CARRIAGE AND RELATED METHODS

Keven Taylor, 3672 Ridgecrest Dr., Salt Lake City, Utah 84118

Filed Oct. 16, 1989, Ser. No. 421,865

Int. Cl.' B60F *5/00* **B62B** *3/02*

U.S. Cl. 280—30 48 Claims



1 A manually manipulable jet ski ground and vehicle supported transport carriage for a loading and unloading into a bed of a pick-up truck the combination of the carriage and a jet ski superimposed thereon by one person, safe and stable hauling of the combination from a shoreline site, unloading and subsequent displacement of the combination from the shoreline site to water's edge, detachment of the jet ski from the carriage into water and reattachment thereat, the jet ski transport carriage comprising framework means comprising longitudinally-directed members having a length less than that of said pick-up truck bed and a width no greater than one half that of said pick-up truck bed, the longitudinally-directed members comprising means sized, shaped, and laterally spaced to matingly receive and essentially contiguously support in a superimposed, stable relationship, the jet ski thereon, lateral support members interconnecting with the longitudinally-directed members in load transferring relationship and support means interposed between the framework means and a support surface including the bed of the pick-up whereby said load is transferred through the support means, said support means comprising means removably interconnecting the support means to the lateral support members

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5,005,847

FISHING CADDY APPARATUS

Ernest L. King, 2108 Squire Rd., Rock Hill, S.C. 29730, and Lee R. Durham, Rte. 1, Box 26 T.F., Iron Station, N.C. 28080

Filed Feb. 26, 1990, Ser. No. 485,000

Int. Cl.' B62B *1/12, 1/26*

U.S. Cl. 280—47.19 6 Claims



1 A fishing caddy apparatus comprising, in combination,

a central support post orthogonally mounting a lower rectangular framework at a lowermost end thereof directed forwardly of the support post, and

an upper rectangular framework directed rearwardly of the support post mounted to an upper terminal end of the support post, and

an axle mounted to a rear side of the lower rectangular framework including a plurality of wheel members mounted to the axle to permit transport of the apparatus, and

a handle means pivotally mounted to a rear side of the upper rectangular framework, and

a spring locking clip mounted to a rear side wall of the support post, and

the handle means rotatably mounted to the upper rectangular framework for selective engagement with the clip, and

wherein the handle means comprises a handle collar rotatably mounted to the rear side of the upper rectangular framework, and a rotatably lock member to selectively lock the collar in a predetermined relationship relative to the rear side of the upper rectangular framework, and

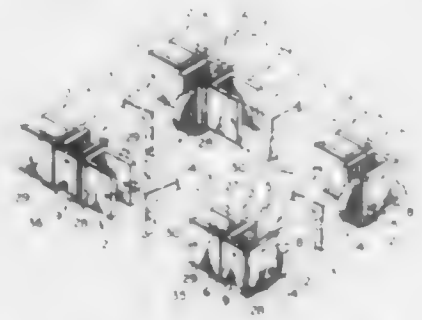
wherein the handle means further includes a handle leg mounted to an elbow, the elbow rotatably mounted to a further handle leg, the further handle leg mounted to the elbow at a rear end of the further handle leg and to the handle collar at a forward end of the further handle leg, and a handle elbow lock member to selectively and rotatably lock the elbow relative to the further handle leg, and the handle leg including an illumination member mounted thereto, with a switch member mounted to the handle leg

5,005,848

MODULAR CABINET SUPPORT

Paul Cornell, 4426-97 St., South Edmonton, Alberta, Canada (T5E 5R9)

Filed Sep. 25, 1989, Ser. No. 411,647
Claims priority, application Canada, Apr. 7, 1989, 596111
Int. Cl.' B62B 3/02
U.S. Cl. 280—79.11 8 Claims



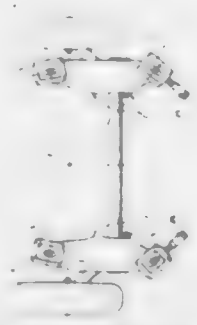
1 A modular dolly having a dolly frame with an upper surface for supporting objects, the frame having at least one corner formed by a pair of interconnected bracket means, each bracket means being substantially U-shaped as viewed generally normal to the upper surface of the frame such that each bracket means includes a base end, two side arms and an open end opposite said base end, the base end of one said bracket means being interconnected with a side arm of the other bracket means such that the open ends open away from and perpendicular to each other, wheel means rotatably mounted in one said bracket means for supporting the dolly, and elongated channel means extending from and connected to each bracket means to define a side and an end of the dolly adjacent said corner

5,005,849

STEERING DEVICE FOR THE REAR AXLE OF A MOTOR VEHICLE

Romolo Gandiglio, Villanova d'Asti, and Ernestino Bellone, Turin, both of Italy, assignors to Fiat Auto S.p.A., Tokyo, Japan

Filed Apr. 21, 1989, Ser. No. 341,603
Claims priority, application Italy, Apr. 27, 1988, 67392 A/88
Int. Cl.' B62D 5/00, 15/00
U.S. Cl. 280—97 8 Claims



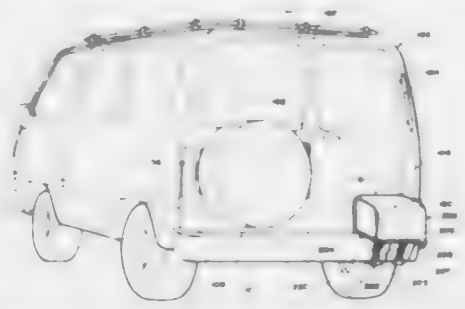
1. A rear suspension for motor vehicles having four steerable wheels including a suspension support frame adapted to be fixed to the body of the motor vehicle and carrying members for supporting and guiding the rear wheels of the motor vehicle, wherein the suspension support frame is adapted to be connected to the body of the vehicle for rotation about a vertical axis contained substantially in the longitudinal median plane of the motor vehicle, by means of a plurality of attachment members, each attachment member comprising a first element adapted to be fixed to the body and a second element mounted for sliding in a straight line on the first element in a direction which is tangential to a circumference whose centre lies on said vertical axis, the second element being fixed to the suspension support frame

5,005,850

RETRACTABLE STAIRS FOR VEHICLES

Milo Baughman, 24 S. 600 East, #5, Salt Lake City, Utah 84102

Filed Dec. 29, 1989, Ser. No. 459,013
Int. Cl.' B60R 3/00
U.S. Cl. 280—166 15 Claims



1 A retractable/extensible staircase apparatus for access to at least one elevated site at the exterior and materially above a floor of a vehicle, the staircase apparatus comprising

means by which the staircase apparatus is mounted to the exterior of a vehicle,

staircase means comprising a series of steps disposed above the mount means and collapsible/extensible frame means interconnecting the steps,

the staircase means further comprising means by which the staircase means are securely supported at the exterior of the vehicle when extended and elevated to provide access to at least one location exteriorly disposed substantially above the floor

container means into which the staircase means are collapsed during periods of nonuse including travel and storage

5,005,851

TRUCK MOUNTED JEEP HAVING ADJUSTABLE AXLE AND LOADING CAPACITY

James R. McGhie, 4632 Metcalf Dr., Eagan, Minn. 55122, and Robert Dieleman, 6109 S. Industrial Rd., Las Vegas, Nev. 90118

Filed Mar. 12, 1990, Ser. No. 491,939
Int. Cl.' B60D 1/44, B62D 53/00, 53/06
U.S. Cl. 280—407.1 7 Claims



1 A jeep for use with a vehicle for hauling heavy loads, said vehicle including at least one power supplying unit, at least one jeep, a least one rear carriage and a load unit supported by said jeep and carriage units, said jeep comprising

(a) an elongated, rigid frame having a top surface and an underside and a front leading end and a rear trailing end, said frame extending therebetween,

(b) a plurality of hydraulically suspended wheel axle assemblies attached to said underside of said frame near the opposite longitudinal sides thereof, and means for selectively and transversely positioning said wheel axle assemblies along a line extending transversely and perpendicularly across the longitudinal axis of said elongated frame,

(c) a fifth wheel connection member attached to the underside of and near the leading end of said frame, and

(d) a fifth-wheel plate attached to the top surface of said frame, said plate located rearwardly from said fifth wheel connection member and means for selectively positioning said plate in the vertical orientation and in the horizontal, longitudinal orientation relative to said frame, said means for selectively positioning in the vertical direction comprising a hydraulically-powered elevator assembly having two pairs of piston and cylinder arrangements, one of said arrangements located on each side of said fifth-wheel plate, said cylinders being fixedly attached to said frame and said pistons being operably attached to said fifth wheel plate

5,005,852

SEPARATIVE TRAILER TONGUE HITCHING METHOD

George M. Smyly, Sr., 1903-B Carlton St., N. Charleston, S.C. 29405

Filed Aug. 23, 1989, Ser. No. 397,246
Int. Cl.' B60D 1/00
U.S. Cl. 280—477 19 Claims



1 A separative trailer tongue comprising

(a) a first assembly housing integral with a handle and a coupler and means for coupling a first end of said coupler to a vehicle,

(b) a bracket having a brace slidingly captured within a lower channel thereof, said bracket fixedly attached, using fasteners, upon a forward inner lower surface of said housing, said brace having a tab attached upon a rear upper surface thereof, a frame having a tab attached at a lower forward surface thereof, and a brace retracting spring attached between said tabs, a stud fixedly attached at a forward lower surface of said brace, said stud providing means for gripping and pulling said brace, locking a catch lip of said brace with a forward surface of said bracket lower channel, a forward most end of said brace having a concave shape and protrudes from within said housing when said catch lip is locked, said spring maintaining said catch lip in a locked position, said spring retracts said brace when said catch lip is unlocked,

(c) a horizontal pulley, two rearward directed vertical pulleys and a stop supported by said frame, said frame fixedly attached, using fasteners, within and at rear most end of said housing, said stop secured, using fasteners, upon a rear surface of said frame,

(d) an elongated cylindrical lug, said lug providing nut like means for fastening a hitching ball upon a ball mount, said lug also providing a support for said locked protruding brace forward most end, said forward most concave shaped end surroundingly abutting said lug, said first assembly housing, being coupled to said vehicle and supported in a near horizontal position, said first assembly housing being pivotal in a near horizontal plane,

(e) a V-shaped pivotal lever secured between two supports, said supports attached at a forward top surface of said bracket, an upper leg forward end of said lever having a contact rod fixedly attached thereto, a lower leg of said lever having a forward under surface resting upon an upper surface of said brace,

(f) second assembly bifurcated bars, said bars having beveled forward most ends, said bars registrable with inner surfaces of said first assembly housing when said bars are received in said housing, said bars sandwich and are integral with longitudinally spaced-apart blocks, said bars extending rearward beyond said blocks providing space between said bars to secure a cable guide pulley and a winch, said blocks having longitudinally aligned apertures, and

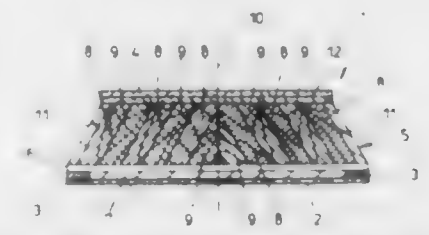
(g) a pull lift align slide rod disposed through said apertures, a rear most end of said slide rod having a protruding stop, said protruding stop abuts a rear surface of rear most block, said slide rod having a tapered forward most end said tapered forward most end slightly protrudes beyond said forward most beveled ends of said bars, said slide rod having an end of a cable attached at said tapered forward most end, said cable extending and trained about said horizontal pulley and upon said vertical pulleys, semicircular cable guide notches at bottom edge of said frame supported stop maintaining said cable within upper grooved rims of said vertical pulleys, grooved rims of said vertical pulleys slightly protrude from within rear end of said housing, said cable returning through aperture in said tapered forward most end of said slide rod, said channel extending from said channel to winching means, said frame secured stop having said slide rod forward most end abutting a forward surface thereof during winching resulting in said slide rod being forced rearward as said bars are being received in said housing, said bars forking internal components of said housing, except said contact rod, forward edges of said bars pushing said contact rod pivoting said lever causing said under surface resting upon said brace to push said brace causing said catch lip to unlock from said bracket lower channel forward surface causing said brace to retract under spring tension resulting in said brace forward most concave shaped end clearing said lug, said first and second assemblies being united

5,005,853

SKI

Heinz Lampl, Hohenems, Austria, assignor to Head Sportgerate Gesellschaft m.b.H. & C.OHG., Kennelbach, Austria

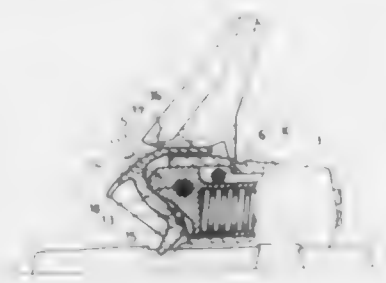
Filed Feb. 25, 1986, Ser. No. 832,781
Claims priority, application Austria, Feb. 25, 1985, 560/85
Int. Cl.' A63C 5/12
U.S. Cl. 280—610 22 Claims



1 A ski (1) assembly, said assembly comprising at least one running surface layer (2) and a top surface layer (4) disposed normal to a longitudinal plane and at least one multiple-part intermediate layer (5) bisected by the center plane and disposed between the surface layers characterized in that said intermediate layer (5) comprises elements (8, 9) of substantially parallelogram-shaped cross-section retained between lateral cheeks (11), which elements are inclined relative to the longitudinal center plane (10), converge toward one another in the direction of the top layer (4), and extend longitudinally within the ski, a plurality of said elements (8, 9) being of different

bending elasticity arranged in traverse direction relative to the longitudinal axis of the ski (1) and being in abutment with one another.

5,005,854
ALPINE SAFETY SKI BINDING
Pierre Szafranski, Annecy Le Vieux, France, assignor to Salomon S.A., Annecy Cedex, France
Filed Nov. 16, 1988, Ser. No. 271,916
Claims priority, application France, Nov. 18, 1987, 87 16302
Int. Cl.' A63C 9/08
U.S. Cl. 280—626 23 Claims



1 A safety ski binding for retaining the end of a boot to a ski until a threshold bias force is exerted, said binding comprising

(a) a body for connection to the ski,

(b) a jaw mounted on the front of the body for movement between a stable closed position at which the jaw is adapted to engage and retain the end of the boot when the latter is resting on the ski, and a stable open position at which the jaw is adapted to either free the end of the boot from the binding or to receive said end into the binding

(c) elastic return apparatus for biasing the jaw towards one or the other of its stable positions, said apparatus including energization means and a pressure element,

(d) said jaw having a ramp that includes and elastic extend segment and an opening segment selectively engageable with said pressure element, engagement of the pressure element with the elastic extend segment of the ramp effecting movement of said jaw toward its closed position, and engagement of the pressure element with the opening segment of the ramp effecting movement of the jaw toward its opened position;

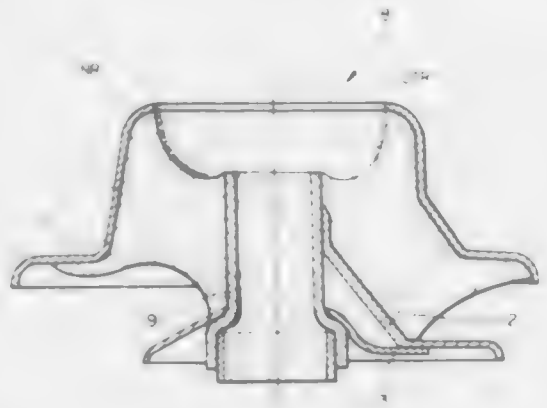
(e) a lever having a handle pivotally mounted on said binding and having a raised position rising above the body towards the rear thereof when the jaw is in its closed position, the handle being extended in a lowered position when the jaw is in its opened position, said handle having a front end defined by a front edge and two parallel cheeks which overly the rear portion of the jaw,

(f) first means on the lever cooperable with first means on the jaw for opening the latter, and second closure means on the lever cooperable with second means on the jaw for closing the latter,

(g) said second means of the lever being constituted by at least one portion of the front edge of the handle, and the second means of the jaw being constituted by at least a portion of the upper surface of the jaw

(h) the second means of the lever and the second means of the jaw being constructed and arranged so that, when the jaw is in its opened position and the lever is in its lowered position, the front edge of the lever engages a portion of the upper surface of the jaw, and movement of the lever towards its raised position causes the front edge of the lever to move on a portion of said upper surface while moving the jaw toward its closed position, at least until the pressure element has reached the elastic extent segment

5,005,855
INSULATOR DEVICE FOR STRUT TYPE SUSPENSION SYSTEM OF AUTOMOBILE
Un K. Lee, Ulsan, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea
Filed Jan. 10, 1990, Ser. No. 463,336
Claims priority, application Rep. of Korea, Jan. 24, 1989, 89-695
Int. Cl.' B62D 17/00
U.S. Cl. 280—662 3 Claims



1 An insulator device for a strut type suspension system of an automobile, which comprises

a car body and a plurality of car wheels,

a steering knuckle connected to each of said car wheels at one end thereof,

a shock absorber integrally formed with said steering knuckle, said shock absorber containing a piston rod disposed in the center thereof,

a lower control arm connected to said steering knuckle at one end thereof and connected to said car body at the other end thereof,

a coil spring disposed on the upper portion of said shock absorber, and

an elastomeric insulator member disposed between said car body and the upper end of said piston rod, said elastomeric insulator member having an asymmetrical configuration and including

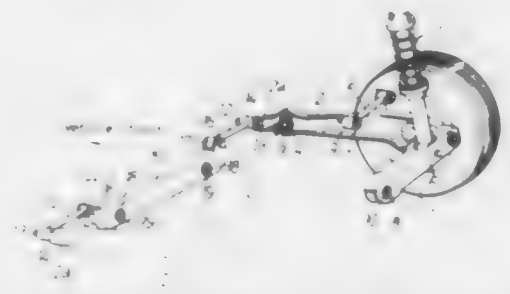
a bearing case,

a rubber member disposed around said bearing case, said rubber member provided with a supporting plate, said supporting plate secured to both said rubber member and said bearing case and supported by a reinforcing plate at bottom end thereof, said reinforcing plate secured to the lower portion of said bearing case, and

an insulator housing having an asymmetrical configuration and defining an outside portion located toward the outside of

the automobile and an inside portion located toward the inside of the automobile, wherein the outside portion thereof is larger than the inside portion thereof so as to become a smaller spring constant of an inside portion of said rubber member than a spring constant of an outside portion of said rubber member, distance between said supporting plate and an inside surface of said insulator housing is smaller than a distance between said bearing case and an inside surface of said insulating housing, and whereby moving centrode of the car wheels to the car body can be controlled by displacements of the bearing case

5,005,856
REAR SUSPENSION SYSTEM OF AUTOMOBILE
Yasuji Shibahata, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Wako, Japan
Filed Jul. 11, 1989, Ser. No. 377,975
Claims priority, application Japan, Jul. 14, 1988, 63-175348
Int. Cl.' B60G 3/18
U.S. Cl. 280—688 4 Claims



1 A rear suspension system of an automobile, comprising

a pair of left and right trailing arms pivoted vertically swingably to a body of the automobile for carrying thereon left and right rear wheels, respectively,

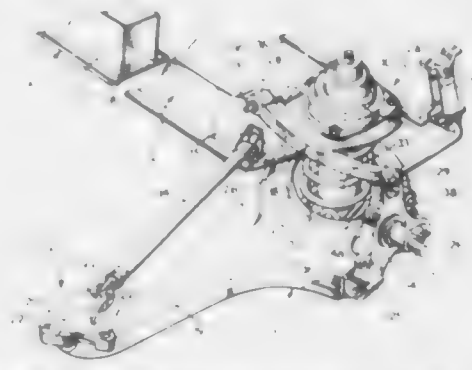
forward extension arms extending forwardly from portions of the respective trailing arms pivoted to said automobile body for permitting longitudinal displacements as well as lateral swinging motions of the trailing arms in a resilient fashion,

left and right compensator arms inclined so as to have front ends thereof directed inwardly of the automobile body and rear ends thereof connected to said forward extension arms for swinging motions relative to each other, and

a relay rod carried on the automobile body in a manner displaceable in a lateral direction with respect to the body, said relay rod providing a connection between the front ends of the compensator arms such that the front ends of the compensator arms are swingable relative to each other via the relay rod

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5,005,857
INDEPENDENT REAR SUSPENSION
Sergio Camuffo, Torino, Italy, assignor to Fait Auto S.p.A., Torino, Italy
Filed Dec. 7, 1988, Ser. No. 447,465
Claims priority, application Italy, Dec. 7, 1988, 68092 A/88
Int. Cl.' B60G 3/04
U.S. Cl. 280—690 8 Claims



1 A rear suspension for a motor vehicle comprising:

a cross member (2) for supporting the suspension, which is fixed at its ends (2a), with the interposition of rubber blocks (3), to two side members (4) fixed under the floor of the motor vehicle,

the suspension also including, in association with each rear wheel

a lower arm (15) which is pivotably mounted at one end on the respective end (2b) of the supporting cross member (2) and at the other end on the respective wheel support (14), the lower arm (15) having a part (19) which extends forwardly from the cross member (2) with reference to the direction of travel,

an auxiliary support (21) provided with means (22) for fixing it in an adjustable position under the motor vehicle body, the front end of the lower arm (19) being articulated to the auxiliary support (21) so that the entire lower arm (15) is pivotable relative to the body of the motor vehicle about a pivoting axis (23) lying in a substantially horizontal plane and inclined to the longitudinal axis of the motor vehicle, the axis (24) of pivoting between the lower arm (15) and the wheel support (14) being substantially parallel to the pivoting axis of the lower arm relative to the body of the motor vehicle,

an upper transverse strut (27) mounted pivotably at its ends on the cross member (2) and on the wheel support (14) respectively, so as to form an articulated quadrilateral with the lower arm (15),

resilient shock-absorbing means (32, 33) interposed between the lower arm (15) and the end (2a) of the cross member (2),

an inclined tie-rod (34) connected at its ends to the cross member (2) and to the auxiliary support (21), and an anti-roll stabiliser bar connected at its ends to the two wheel supports (14) and supported beneath the body of the motor vehicle by means of dependant members (37)

5,005,858
HYDROPNEUMATIC VEHICLE SUSPENSION SYSTEM OF VARIABLE ATTITUDE
Vittorino Torrielli, Turin, and Virginio Maggioni, Rosta, both of Italy, assignors to Fiat Auto S.p.A., Turin, Italy
Filed Dec. 21, 1989, Ser. No. 452,750
Claims priority, application Italy, Dec. 23, 1988, 68150 A 88
Int. Cl.' B60G 11/26
U.S. Cl. 280—707 6 Claims



1 A vehicle hydropneumatic suspension system of variable attitude, of the type comprising, for each wheel, sustaining and load adaptation means of variable rigidity, characterised by comprising a plurality of vehicle dynamic attitude sensors and a central electronic control unit connected to said sensors, said sustaining and load adaptation means comprising, for each wheel, at least one respective hydraulic damper of variable internal pressure directly connected hydraulically to a respec-

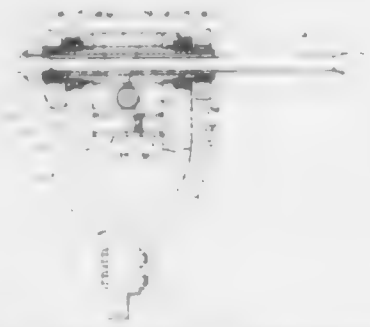
tive hydraulic service accumulator which is connected to a pressure source via a first solenoid valve controlled by said central control unit

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5,005,859
MOTOR VEHICLE SUSPENSION WITH ROTARY DAMPER

Yutaka Satoh, and Yoshinori Takeuchi, both of Shizuoka, Japan, assignors to Kabushiki Kaisha Showa Seisakusho, Tokyo, Japan

Filed Nov. 17, 1989, Ser. No. 438,681
Claims priority, application Japan, Nov. 18, 1988, 63-291985; Nov. 18, 1988, 63-291986; Apr. 25, 1989, 1-105680
Int. Cl.' B60G 15/06
U.S. Cl. 280—721 7 Claims



1 A suspension for supporting a wheel on a vehicle body, comprising

a hollow shaft adapted to be fixed to the vehicle body

an arm having one end adapted to be coupled to the wheel and an opposite end pivotally supported on an outer peripheral surface of said hollow shaft,

a rotary damper interposed between said hollow shaft and said arm, for dampening swinging movement of said arm with respect to said hollow shaft, said rotary damper comprising a damper case with an oil chamber defined therein and filled with working oil and a vane movably disposed in said oil chamber, said damper case being fixed to said opposite end of the said arm for angular movement in unison with said arm, said vane being joined to the outer peripheral surface of the hollow shaft, and

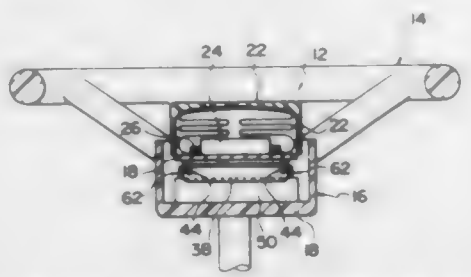
a torsion bar extending through said hollow shaft and having one end adapted to be fixed to said vehicle body and an opposite end coupled to said opposite end of said arm for angular movement in unison with said arm

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5,005,860
AIR BAG ASSEMBLY MOUNTING MECHANISM

Shinji Mori; Kozi Buma, both of Niwa, and Hiroaki Shinto, Toyota, all of Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan

Filed May 29, 1990, Ser. No. 529,443
Claims priority, application Japan, May 31, 1989, 1-63291[U]
Int. Cl.' B60R 21/16
U.S. Cl. 280—731 20 Claims



1. An air bag assembly mounting mechanism for mounting an air bag assembly onto a steering wheel of a vehicle, comprising

fixing means for fixing said air bag assembly to a chassis, and

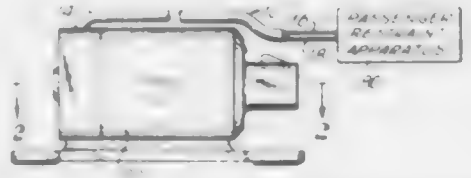
temporary fixing means for temporarily fixing said air bag assembly to said chassis, having engaging portions provided on said chassis and said air bag assembly, respectively, said temporary fixing means temporarily fixing said air bag assembly as said engaging portions are engaged with each other, thereby supporting the air bag assembly to counteract a reaction force of said fixing means during fixing

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5,005,861
VELOCITY CHANGE SENSOR WITH DOUBLE POLE SENSOR

Allen K. Breed, Boonton Township, Morris County; Ted Thuen, Morris Plains, and Carl T. Grossi, Wharton, all of N.J., assignors to Breed Automotive Technology, Inc., Boonton Township, Morris County, N.J.

Filed Oct. 19, 1989, Ser. No. 423,871
Int. Cl.' H01H 35/14
U.S. Cl. 280—734 13 Claims



1 An accelerometer for sensing velocity changes comprising

a housing with a first end and a second end opposite said first end,

first and second contact means disposed at said first end, at least one of said contact means being flexible for displacement toward the other of said contact means,

a sensing element movably disposed in said housing, and

biasing means for generating a biasing force on said sensing means for urging said sensing element toward a first position, said sensing element being arranged and constructed to move toward a second position away from said first position in response to a deceleration force exceeding said biasing force, said sensing element displacing said first contact means to contact said contact means by moving toward said second position with said second contact being initially stationary as said first contact is being displaced by said sensor element

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5,005,862
TILTABLE STEERING DEVICE

Mikio Yamaguchi, Takasaki, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1990, Ser. No. 546,944
Claims priority, application Japan, Jul. 7, 1989, 1-174063
Int. Cl.' B62D 1/18
U.S. Cl. 280—775 4 Claims

1 A tiltable steering device comprising a support bracket fixed to a vehicle body, a steering column having one end pivotably secured to said support bracket by means of first horizontal shafts, a first engaging member fixed to the underside of said steering column and having a lower surface projecting downward in an arcuate form centered at the axis of the first horizontal shafts and having first engaging teeth formed on the downwardly projecting lower surface thereof, a second engaging member pivotably supported at its one end on a second horizontal shaft provided on said support bracket and provided with second engaging teeth provided on the upper edge of the other end thereof and engageable with said first engaging teeth, a hanger plate pivotable to cause said first and second engaging teeth to be brought into and out of engagement with each other and having a slot formed in one end thereof, a third horizontal shaft pivotably supporting the other end of said second engaging member and an intermediate



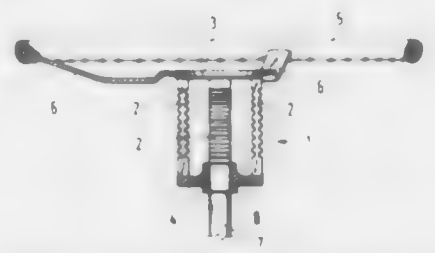
portion of said hanger plate, and a guide member projecting from one side of said support bracket and loosely received in said slot formed in said hanger plate, said slot having a form which does not conform with an arc centered at the third horizontal shaft

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5,005,863
INSTALLABLE COMPONENT FOR ABSORBING ENERGY

Klaus Drefahl, Hanau am Main, Fed. Rep. of Germany, assignor to Kolbenschmidt Aktiengesellschaft, Neckarsulm, Fed. Rep. of Germany

Filed Nov. 13, 1989, Ser. No. 436,275
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1988, 3838594
Int. Cl.' B62D 1/18
U.S. Cl. 280—777 15 Claims



1 An installable component for use with steering wheels of motor vehicles, comprising a plurality of inelastically deformable, straight prismatic metal rods (2, 9, 12, 17, 19), which have parallel axes, are arranged on a circle, and are firmly interconnected at each end by a metal flange, the transverse dimensions of each prismatic metal rod being small relative to its longitudinal direction, the prismatic metal rods being adapted to buckle in the direction of the larger principle moment of inertia under an axially acting pressure force, and the prismatic metal rods having broadsides, which extend at right angles to the axis of the larger principle moment of inertia and include a right angle with the radius of the circle formed by the prismatic metal rods, at least one of the broadsides being provided with spur teeth (11, 14, 18, 10), which extend transversely to the longitudinal direction

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5,005,864
VEHICLE FRAME MODIFICATIONS

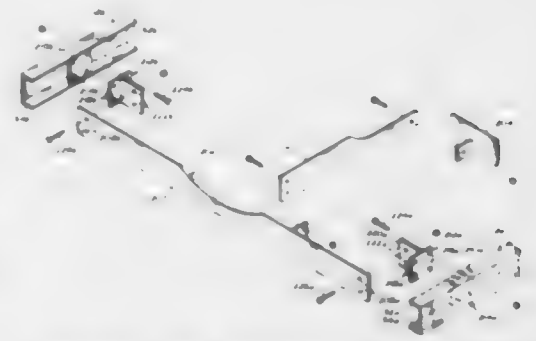
Richard L. Chachere, 2625 Dauphine Pla., Beaumont, Tex. 77705

Filed Aug. 26, 1986, Ser. No. 900,374
Int. Cl.' B62D 21/12
U.S. Cl. 280—800 1 Claim

1 A mounting assembly for mounting an accessory hanger to a motor vehicle frame which is constructed with channeled side beams comprising

a first beam mounting member engaging the sides of the channel of a first side beam of the frame, the first beam mounting member having a substantially flat first beam mounting member surface,

a first hanger mounting member having a first plate portion and a second plate portion being rigidly attached to the first plate portion and being substantially perpendicular to



the first plate portion, the first plate portion being compatible with and attachable to the flat first beam mounting member surface and the second plate portion being compatible with and rigidly attachable to one end of the accessory hanger by bolt means, and

first attaching means for engaging the first plate portion of the first hanger mounting member with the flat first beam mounting member surface and for attaching the first hanger mounting member to the first beam mounting member

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5,005,865
SEATBELT POSITIONING ASSEMBLY FOR A PREGNANT PERSON

Steinar Kruse, Ste. 109, 1055 S. American Way, Miami, Fla. 33132

Filed Jul. 31, 1990, Ser. No. 560,882
Int. Cl.' B60R 22/02
U.S. Cl. 280—801 7 Claims



1 For use in combination with a seatbelt of an automobile, a seatbelt positioning assembly adapted to position the seatbelt along a lower abdominal region of a pregnant person, said assembly comprising

a seat pad for placement on a seat of the automobile having a substantially flat configuration and including an upper side and a lower congruent side connected thereto along an outer peripheral edge including a front edge, a rear edge and two opposite side edges,

a sleeve structured and configured to be slidably received along a portion of the length of the seatbelt,

an elongate securing strap fitted along said rear edge of said seat pad and adapted to extend around the seat, attaching at opposite free ends so as to secure said seat pad to said seat,

positioning straps connected to said elongate securing strap and extending from said upper side of said seat pad, and

said positioning straps including attachment means formed on a free distal end thereof for removable attachment with a bottom edge of said sleeve, said positioning straps being positioned and disposed so as to exert a downward pulling force on said sleeve when attached thereto, thereby pulling the seatbelt down to a position extending along the lower abdominal region of the pregnant person substantially below the womb

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5,005,866

SEAT BELT CUSHION IN THE FORM OF PEOPLE PLACES AND THINGS

Eddie R. Reedom, P.O. Box 754, Pixley, Calif. 93256

Filed May 5, 1986, Ser. No. 859,400

The portion of the term of this patent subsequent to Feb. 9, 2005, has been disclaimed.

Int. Cl.[5] B60R *22/00*

U.S. Cl. 280—801 **14 Claims**



1 A novel seat belt cushion comprising

(a) any of a plurality of sections, limbs, cushioned sections, objects, things and electronic devices adapted for cooperative assembly to form representations of people, places, things, animals, birds, caricatures or insects, and where two or more of said seat belt cushions can be joined together,

(b) means forming at least one opening in said seat belt cushion to receive a portion of a seat belt of a vehicle, said means forming an opening comprising a pair of cushion portions which are hingedly connected together and which can open to thereby form said opening to receive a seat belt and which can close about said seat belt to fully encircle a portion of the seat belt,

(c) padding means in said seat belt cushion and constructed for for absorbing the force of an impact in at least two stages,

(d) first joining means for securing cushioned sections, objects, devices, things or limbs to said seat belt cushion, and

(e) second joining means for securing said seat belt cushion to a seat belt while allowing access to a buckle and a release button of a seat belt system.

5,005,867

PIVOTALLY MOUNTED LOCKING STATION FOR PASSIVE SAFETY BELT CARRIAGE

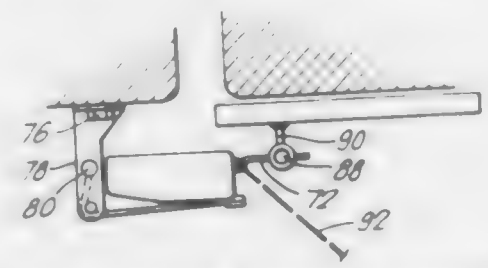
Lars V. Sandvik, and Gert A. Anderzen, both of Vargarda, Sweden, assignors to General Engineering (Netherlands) B. V., Utrecht, Netherlands

Filed Jul. 17, 1989, Ser. No. 380,444

Claims priority, application Sweden, Jul. 18, 1988, 8802664; United Kingdom, Sep. 29, 1988, 8822887

Int. Cl.[5] B60R *22/06*

U.S. Cl. 280—804 **21 Claims**



1 A passive safety belt arrangement in a motor vehicle having a door and a door frame, comprising

a rail in a plane on the door of the motor vehicle

a carriage movable along the rail,

a tongue, the carriage carrying the tongue,

a safety belt connected to the tongue,

a locking station pivotally mounted on one of the door and the door frame, the locking station having means for receiving the tongue when the carriage reaches one end of the rail, and

retaining means for retaining the locking station in a predetermined initial position in a plane parallel to the plane of the rail, the retaining means being responsive to a severe force applied from the belt to the locking station via the tongue, in a direction of force, to release the locking station from the retaining means and pivot the locking station into alignment with the direction of force

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5,005,868

RETRACTABLE SLING FOR TRANSPORTING COASTER-TYPE VEHICLES

Bradley M. Stern, 3 Chester La., Nanuet, N.Y. 10977, and James Doane, 213 E. 6th St., Clifton, N.J. 07011

Filed Apr. 6, 1990, Ser. No. 505,403

Int. Cl.[5] A63C *11/00*

U.S. Cl. 280—814 **14 Claims**



1 A sling assembly for carrying, transporting, or storing of a coaster-type vehicle, said sling assembly including

(a) a flexible sling having a determined length, a free end, and a second end,

(b) an enclosure adapted for mounting to said vehicle as a spacer between a truck member and said vehicle, said enclosure further arrayed for the passage of the flexible sling therethrough;

(c) a storage means carried interior of said enclosure, said storage means adapted for holding and storing a selected portion of said flexible sling within said enclosure, said storage means being attached to said second end of said flexible sling,

(d) a connecting means adapted for attaching to said vehicle at a second selected position, said second selected position at or near a second end of said vehicle,

(e) an attaching means arrayed for securing to said free end of said flexible sling exterior of said enclosure, said attaching means further arrayed for engaging said connecting means and holding said flexible sling in an extended condition, said extended condition allowing for said carrying, transporting, or storing, and

(f) a means for retracting said selected portion of said flexible sling into said enclosure and onto said storage means as and when desired

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5,005,869

DEVICE TO DISPLAY COVER AND PAGES OF A DOCUMENT

Samuel C. Smith, 210 Hartman Rd., Newton Center, Mass. 02159

Continuation of Ser. No. 173,599, Mar. 25, 1988, abandoned. This application May 25, 1990, Ser. No. 529,779

Int. Cl.[5] B42D *1/00, 3/00*, **A47B** *91/00*, **A47G** *1/06*

U.S. Cl. 281—15.1 **10 Claims**



1 A device for substantially vertical (i.e., non-horizontal) display of a book form memorable document with three or more leaves in a series, a first such leaf being a front cover member with primary display significance, the device comprising in combination

(a) means forming a common pivot/binder for the leaves at a common first side edge of each leaf which allows variable spread openings of the leaves to be established and maintained,

(b) each of several of the leaves comprising a display page with a coupled rigid member,

(c) means forming a lost motion pull linkage between successive leaves and comprising a thread passing through openings at a second (outer) side edge of such leaf with stops spaced along the thread with sufficient slack to allow up to a maximum spread between successive leaves, the stops being effective in engaging openings - while the thread is pulled - to impart turning motion to the leaf carrying the engaged opening

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5,005,870

PROCESS AND APPARATUS FOR INDUSTRIAL BOOKBINDING AND BINDING THEREBY OBTAINED

Georges Desmouliere, Sainte Savine, France, assignor to 501 Sirc Societe Industrielle de Reliure et de Cartonnage, Paris, France

Filed Jun. 22, 1988, Ser. No. 210,098

Claims priority, application France, Jan. 6, 1988, 88 00054

Int. Cl.[5] B42D *1/06, 3/00*

U.S. Cl. 281—21.1 **4 Claims**

1 A book comprising

a book block having pages of a predetermined size; and

a case comprising a front panel, a rear panel and a spine with said book block being permanently secured to said case such that said book block is interposed between said front and rear panels, said front and rear panels being approximately the same size as said predetermined size, and said front and rear panels having upper, lower and side free edges,



said case further comprising at least one leaf integral with and extending beyond one of said free edges of said front or rear panel and being foldable toward said pages of said book block so as to function as a bookmark

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5,005,871

FORM USED FOR ORDERING CUSTOM PRINTED PRODUCTS

Doan R. Anderson, River Falls, Wis., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Jan. 25, 1990, Ser. No. 470,104

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—61 **6 Claims**

1 A form used for ordering custom printed sheets, said form comprising

a master portion corresponding in size and shape to a sheet to be printed, said master portion having a front surface free of indicia that will be reproduced by the printing process,

an identifying portion having a front surface on the same side of the form as the front surface of the master portion for accepting identifying information concerning a person ordering the sheets, and

an informational portion bearing written instructions concerning the use of the form,

the master portion and the identifying portion of the form having adjacent edges joined to each other,

the form is perforated along the boundary between the informational portion and the master and identifying portions of the form to afford separation of the master and identifying portions of the form as a unit from the informational portion of the form,

the adjacent edges of the master and identifying portions of the form are adapted to afford folding the form along the adjacent edges, and

the identifying portions of the form is smaller in area than the master portion of the form and is completely overlaid by the master portion of the form when the form is folded

along the adjacent edges so that after the person ordering the sheets applies identifying information to the identifying portion of the form and indicia of a desired type to the master portion of the form the identifying and master portions of the form can be separated from the informational portion of the form, folded along the adjacent edges to position the identifying portion along the side of the master portion opposite the indicia applied to the master portion, and the folded identifying and master portions of the form can be releasably adhered at a predetermined location on a substrate with the master portion of the form opposite the substrate to provide a graphic master for preparation of a printing plate for use to print the printed sheets, and the identifying portion of the form can thereafter be separated from the substrate and used as a label to send the printed sheets to the person ordering the sheets

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5,005,872

MULTILAYER IDENTITY CARD USABLE AS A PRINTING BLOCK AND A METHOD OF PRODUCING IT

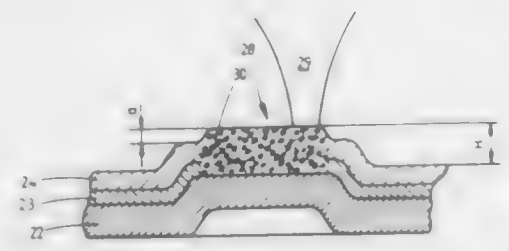
Joseph Laas; Hansjurgen Merkle, both of Munich; Alexander Hierweger, Rottach-Egern, and Erwin Loh, Munich, all of Fed. Rep. of Germany, assignors to GAO Gesellschaft fur Automation und Organisation mbH, Fed. Rep. of Germany

Filed Sep. 20, 1988, Ser. No. 246,638

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1987, 3731853

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—85 9 Claims



1 In an identity card including a main card body having a plastic surface area having at least one character or symbol thereon raised to a given height above the surrounding card surface for enabling the card body to be used as a printing block, the improvement comprising

said card including a raised plateau area at least underlying said character or symbol, said plateau area being raised in relief above an adjacent surface portion of the card body to provide a portion only of said given height of said character or symbol,

said plastic surface area including at least a portion corresponding with said character or symbol expandable by laser irradiation,

said at least one raised character or symbol comprising an area of said plastic surface area that is locally expanded by laser irradiation above the underlying plateau area to provide the remainder of said given height

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5,005,873

MARKING OF ARTICLES

Michael A. West, 59 Dale Wood Rd., Orpington Kent, United Kingdom (BR6 OBY)

PCT No. PCT/GB87/00239, § 371 Date Jan. 22, 1988, § 102(e) Date Jan. 22, 1988, PCT Pub. No. WO87/06197, PCT Pub. Date Oct. 22, 1987

PCT Filed Apr. 7, 1987, Ser. No. 133,834

Claims priority, application United Kingdom, Apr. 7, 1986, 8608427

Int. Cl.[5] G06K *19/06*; B42D *15/00*; B42F *21/00*

U.S. Cl. 283—92 30 Claims

1. An article for identification which can be authenticated by sequential irradiation by at least two different wavelengths of ultraviolet radiation comprising a substrate having authentication markings which are provided by at least two fluorescent materials which are excited to fluoresce by said different wavelengths of ultraviolet radiation, and when excited fluoresce



with different colors in the visible region of the spectrum, each of said fluorescent materials being incorporated homogeneously in a body of plastics material, the substrate also carrying visual identification data

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5,005,874

POSTCARD AND ITS MANUFACTURING METHOD

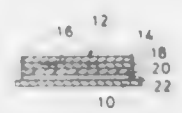
Noboru Matsuguchi, and Tadashi Matsuguchi, both of Suita, Japan, assignors to Daimatsu Kagaku Kogyo Co., Ltd., Osaka, Japan

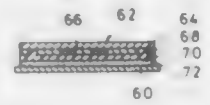
Filed Sep. 16, 1988, Ser. No. 245,884

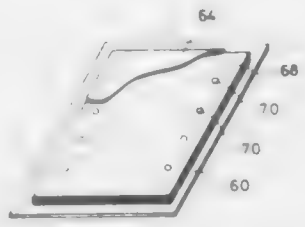
Claims priority, application Japan, Sep. 18, 1987, 62-235332; Sep. 18, 1987, 62-235333; Sep. 18, 1987, 62-235334

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—101 3 Claims







1. A postcard comprising a top material which is at least partially opaque, an inter-layer peel ply adhered to said top material, a synthetic resin layer which is at least partially transparent adhered to said inter-layer peel ply, a postcard material, indicia means on one side of said postcard material, an adhesive layer which is at least partially transparent adhered between said postcard material and said resin layer with said adhesive layer being in contact with said one side of said postcard material having said indicia means, said inter-layer peel ply comprising wax and being adhered to said resin layer with an adhering strength which is less than the adhering strength between said inter-layer peel ply and said top material, less than the adhering strength between said resin layer and said adhesive layer, and less than the adhering strength between said adhesive layer and said postcard material, said top material and inter-layer peel ply being peelable off of said resin layer as separation occurs between said inter-layer peel ply and said resin layer, said indicia means on said postcard material being viewable through said transparent resin layer and said transparent adhesive layer after said opaque top material and said inter-layer peel ply have been peeled off of said resin layer

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5,005,875

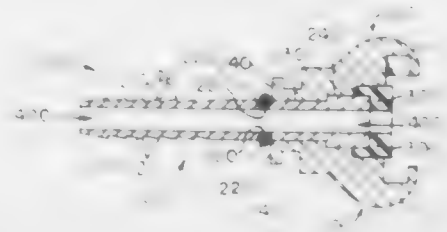
ANTI-TORQUE COUPLING

William Harle, 7324 Cedar Valley Road, West Salem, Ohio 44287

Filed Jul. 15, 1988, Ser. No. 219,278

Int. Cl.[5] F16L *27/00*

U.S. Cl. 285—73 12 Claims



1 An article of manufacture comprising a coupling member of the universal kind, adapted and useful for conveying a compressed gas, having a head portion substantially of a one-piece general construction and having an orifice therethrough, a front coupling face end, a recessed portion, an internal abutment within said orifice and a rear end extending from said abutment, a stem portion having a passageway therethrough surrounded by an imperforate wall section and a front shoulder having a front and rear face, said stem portion insertable from the front coupling face end of said head portion and inset in said head portion, said rear face of said shoulder resting on said internal abutment of said head portion and being rotatable relative to said head portion and said rear end engaging said stem portion, and a one-piece cylindrical gasket having a passageway therethrough and a rear annular bead portion extending from said cylindrical portion and a front sealing face, said gasket inset in said head portion and in sealable contact with said front shoulder on said stem portion, said annular bead portion fitting within said recessed portion and said passageway in said gasket being coaxial with said passageway in said stem portion for conveying the compressed gas, said coupling member having means thereon for sealingly connecting to another similar coupling member of the universal kind wherein the front face of the gasket abuts a similar gasket in said another similar coupling member thereby providing a sealed passageway for the compressed gas, said connection allowing said stem portion to rotate relative to said head portion when sealingly connected to said another similar coupling member and also when a surge of the compressed gas is passed through the passageway so that uncoupling effects of twist or torque in a coupled combination with said another similar coupling member are relieved

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5,005,876

QUICK CONNECT-DISCONNECT COUPLINGS

Richard L. Fahl, Fairfield, Ohio, assignor to Dover Corporation, New York, N.Y.

Filed Dec. 19, 1989, Ser. No. 452,762

Int. Cl.[5] F16L *37/20*

U.S. Cl. 285—311 12 Claims

1 A quick connect-disconnect coupling comprising

an adapter adapted to be mounted on a first fluid conduit and having a sealing surface at its outer end and an undercut outer surface spaced from and adjacent thereto, and

a coupler adapted to be attached to a second fluid conduit and comprising a body member having a bore for telescopingly receiving the outer end portion of the adapter, and locking mechanism for joining said coupler and adapter,

said locking mechanism comprising

a four bar linkage including

a manually operable lever,

a link pivotally connected to the lever and to the body member, and

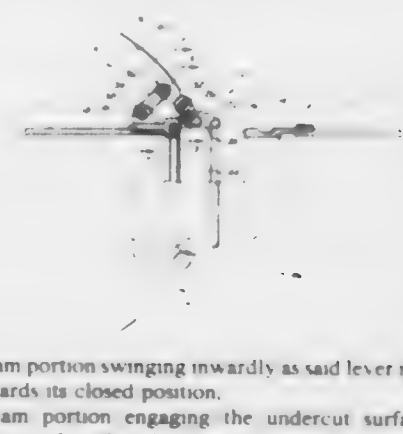
a cam member having pivotal connections with the lever and the body member,

said cam member having a projecting portion extending beyond and inwardly from its pivotal connection with the body member,

said protruding cam being engageable with the undercut surface of the adapter when it is telescoped within the bore of the body member,

said lever being displaceable between an open position and a closed position,

said cam portion being disposed outside the outline of said bore in the open position of said lever,



said cam portion swinging inwardly as said lever is displaced towards its closed position,

said cam portion engaging the undercut surface of the adapter when the adapter is telescoped into said bore,

the point of contact between said cam portion and said undercut portion closely approaching a plane normal to the axis of said bore and passing through the axis of the pivotal connection of the cam member with the body member, as the lever nears its closed position, said point of contact passing to the opposite side of said plane when the lever is fully displaced to its closed position,

whereby, the movement vector of the cam portion, at its point of engagement with said undercut portion is essentially axial and there is minimal relative movement between the cam portion and the undercut portion

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5,005,877

QUICK CONNECT/DISCONNECT FLUID COUPLING

Lawrence F. Hayman, Auckland, New Zealand, assignor to Parker Hannifin Corporation, Cleveland, Ohio

Filed Dec. 6, 1989, Ser. No. 446,948

Claims priority, application New Zealand, Dec. 16, 1988, 277363

Int. Cl.[5] F16L *37/22*

U.S. Cl. 285—315 9 Claims



1 A quick connect/disconnect coupling having two engageable and disengageable haves, said halves being locked together when in engaged relation, comprising

a male coupling half having a first fluid bore therethrough,

said male coupling half having a generally cylindrical outside surface and including a first locking surface extending outward relative to a centerline of the coupling, said first locking surface extending circumferentially about said male coupling half,

a female coupling half having an opening and a second generally cylindrical fluid bore therethrough for accepting said male coupling half, said outside surface of said male coupling half extending into said opening when said halves are in engaged relation, said female coupling half including a body portion having a second locking surface extending circumferentially in said second fluid bore, said second locking surface extending inward and at an acute angle relative to the centerline of the coupling and a plane of said opening, said first and second bores in fluid communication when said coupling halves are in engagement, said body portion further including a cylindrical outer surface extending parallel of the centerline of the coupling,

a plurality of cocking bodies mounted for movement outward from the centerline of the coupling on one of said coupling halves, each of said locking bodies comprising an arcuate segment of a ring, and in the engaged position of said coupling halves each of said locking bodies engaging said first and second locking surfaces and both adjacent locking bodies in said ring, and biasing means for biasing said ring segments toward said centerline of said coupling, and movement means for moving said locking bodies to disengage at least one of said locking surfaces, whereby said coupling halves are enabled to be disconnected, and wherein said movement means includes

a sleeve member mounted for movement parallel of the centerline of the coupling on said female coupling half, said sleeve member including a cylindrical portion having an inner face, said inner face of said cylindrical portion overlying and contacting said outer surface of said body portion of said female coupling half and extending circumferentially about said outer surface, said sleeve member further including a turned-in continuous leg portion, said cylindrical portion and said leg portion of unitary, one piece construction, said leg portion extending from said cylindrical portion of said sleeve member to adjacent said outside surface of said male coupling half

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5,005,878

COUPLER ELEMENT

Loren Smith, Livonia, Mich., assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 18, 1989, Ser. No. 452,085

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1989, 3904479

Int. Cl.' F16L 39/00, 37/00

U.S. Cl. 285—319 23 Claims



1 A coupler element for coupling an injection nozzle to a connector neck of a fuel supply line coaxial with said injection nozzle, said injection nozzle includes a circumferential groove which groove is engaged by said coupler element and said connector neck includes a locking collar protruding radially beyond the circumference of the connector neck, to which said coupling element is snapped, said coupling element including a one-piece plastic clip (10) comprising a C shaped portion having an opening (20) in annular disk (16), said annular disk has an inside diameter corresponding to an outside diameter of said circumferential groove (15) of said injection nozzle and a thickness corresponding to a width of said circumferential groove, said coupler element further comprises spring legs (17) that protrude outward from said annular disk (16) that extend in an axial direction of the clip, each of said spring legs have a detent protrusion (18) on their inner facing sides for extending above said locking collar (14) of said connector neck

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5,005,879

CORNER BRACKET AND INTERCONNECTION SYSTEM FOR DUCTING

Roy J. Jackson, New South Wales, Australia, assignor to Bullock Mfg. Pty. Limited, New South Wales, Australia

Filed Aug. 4, 1989, Ser. No. 389,533

Claims priority, application Australia, Aug. 4, 1988, P19657

Int. Cl.' F16L 23/00

U.S. Cl. 285—405 19 Claims



9 An L shaped corner bracket comprising first and second legs which are substantially co-planar and perpendicular, a corner region being defined at the intersection of said legs and having an elongated bendable tab joined at one end to said bracket and aligned with one of said legs, the tab being bendable out of the plane of the bracket and over an outer edge of said corner region thereby providing a means for clamping said bracket to a second similar corner bracket and thereby forming an aperture through the corner region of the bracket

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5,005,880

SELF-SEALING SNAP-IN RECEPTACLE, ESPECIALLY FOR CIRCUIT BREAKER COVER RETENTION

Peter D. Raine, Palo, and Darrell P. Ophaug, Marion, both of Iowa, assignors to Square D Company, Palatine, Ill.

Filed Aug. 31, 1989, Ser. No. 404,489

Int. Cl.' E05C 19/06

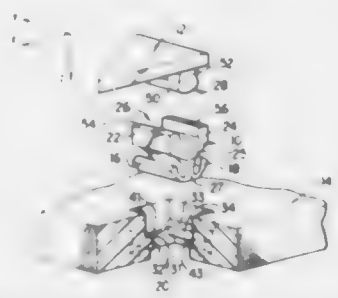
U.S. Cl. 292—17 29 Claims

1 A one-piece fastener for fastening a cover to a plate, said fastener comprising

a base from which two resilient legs extend to form a U-shaped notch therebetween, said notch being formed to engage a male member attached to said cover,

means defining a peripheral sealing surface around said base, and

means including a pair of protruding tabs for engaging respective opposing ledges in an opening defined by a perimeter in said plate to hold said peripheral sealing surface against a mating surface in said plate so that said receptacle is locked in said opening and seals said opening around substantially the entire perimeter



5,005,881

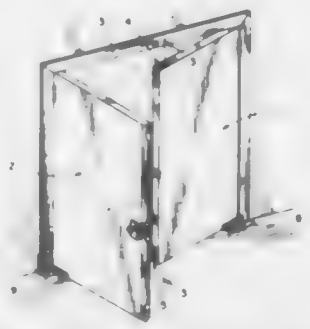
DOOR LOCKING MECHANISM

Kevin L. Bailey, Rolling Meadows, and Richard E. D'Hooge, Wood Dale, both of Ill., assignors to Rixson-Firemark Inc., Franklin Park, Ill.

Filed Aug. 7, 1989, Ser. No. 389,964

Int. Cl.' E05C 7/06

U.S. Cl. 297—45 14 Claims



1 A locking mechanism to be applied to an inactive door of a set of active and inactive double doors co-ordinated so that the inactive door closes first relative to a frame followed by the closing of the active door, comprising adjustable drive means capable of lengthwise contraction along a first axis upon the application of a force between first and second separated locations on the adjustable drive means exceeding a threshold value, a door-lock actuating element coupled to the adjustable drive means at the first location with the door-lock actuating element turning about a second axis different from the first axis, a door-locking element coupled to the adjustable drive means at the second location with the door-locking element turning about a third axis different from the first and second axes, and means adapted to support the adjustable drive means, the door-lock actuating element and the door-locking element at an upper or lower corner of the inactive door with the door-lock actuating element projecting into the closing path of the active door to operate the door-locking actuating element by turning that element and moving the adjustable drive means to drive forcibly the door-locking element into a locking engagement condition by turning that element in response to a force applied to the adjustable drive means less than the threshold value

5,005,882

AUTOMOTIVE DOOR LOCK DEVICE

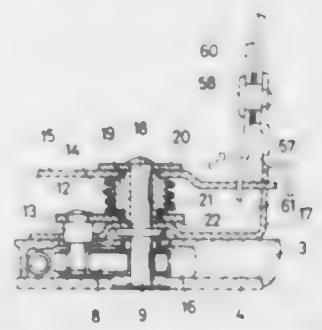
Ryoichi Fukumoto, Nagoya; Shigeru Hayakawa, Chiryu, and Nozomu Torii, Hekinan, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 28, 1989, Ser. No. 413,533

Claims priority, application Japan, Sep. 30, 1988, 63-244530

Int. Cl.' E05C 3/26

U.S. Cl. 292—216 5 Claims



1 An automobile door lock device comprising

a base having a surface area,

a sub-base spaced from the base and having an inner surface portion opposing the base surface area, the sub-base having an opening in alignment with the base surface area,

a pawl pin having a head end, a shank of substantially uniform diameter terminating at a lower end, the head end being of larger diameter than the shank, the pawl pin being inserted through the opening of the sub-base with the lower end of the shank being mounted to the surface area of the base,

a flange integrally attached to the pawl pin in engagement with the inner surface area portion of the sub-base surrounding the opening in the sub-base,

a washer disposed on the pawl pin in engagement with the head end,

a collar having an axial bore disposed on the pawl pin having first and second opposite radially extending end faces, the first end face engaging the washer and the second end face engaging the sub-base surrounding the opening of the sub-base on an outer surface portion opposite the inner surface portion, and

a pawl member rotatably mounted on the pawl pin between the flange and the surface area of the base

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5,005,883

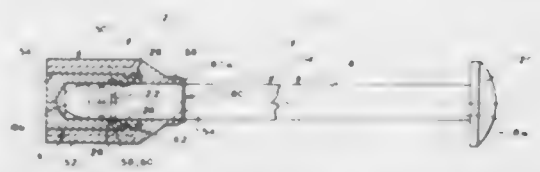
TAMPER INDICATOR FOR A LOCKING SEAL

Richard S. Guiler, Newton, N.J., assignor to E. J. Brooks Company, Newark, N.J.

Filed May 24, 1990, Ser. No. 528,711

Int. Cl.' B65D 33/34

U.S. Cl. 292—327 23 Claims



21 A device for visually indicating an attempt to tamper with or defeat a locking seal, the seal being of the type having a body containing a passageway, a member having a portion insertable and receivable in the passageway, and means within the body for preventing removal of the inserted portion therefrom, wherein the device comprises

a frangible, brittle shroud adapted to overlie those portions of the body to which seal-tampering or -defeating forces

are expected to be applied, the material, dimensions and configurations of the shroud being selected so that the shroud will crack, chip or fracture upon the application thereto of low force during an attempt to tamper with or defeat the seal, and

a frangible, brittle flange secured to the shroud and adapted to overlie portions of the member at or near its point of entry into the passageway to which seal-tampering or -defeating forces are expected to be applied, the material, dimensions and configuration of the flange being selected so that the flange will crack, chip or fracture upon the application of low force either exteriorly thereto or between the flange and the member during an attempt to tamper with or defeat the seal by either removing the membe, from the body or inserting a removal-preventing means-defating object into the passageway

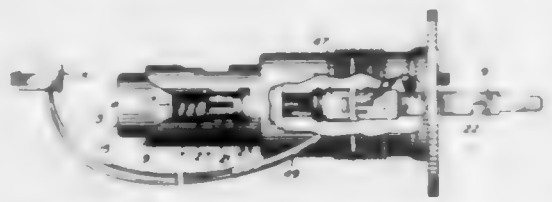
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5,005,884

CYLINDER LOCK MODIFIED FOR USE WITH A CARD READER UNLOCKING MECHANISM

Aaron M. Fish, St. Lac; Alexander Branover, St. Laurent; Jean-Paul Dansereing, Laval, and Masoud Miresmaili, LaSalle, all of Canada, assignors to Ilco Unican Inc., Montreal, Canada

Filed Feb. 6, 1990, Ser. No. 474,395
Claims priority, application Canada, Feb. 7, 1989, 590355
Int. Cl.' F05B *41/00*
U.S. Cl. 292—336.3 5 Claims



1 A cylinder lock comprising

a circular door knob having a free end and a connected end and extending longitudinally from said free end to said connected end,

a locking rod cylinder partially enclosed within said door knob and extending longitudinally of said door knob and coaxially with said door knob, and having a first end adjacent said free end of said door knob,

a push-button, having a free end and an attached end, and mounted coaxial with said door knob and extending, from the free end thereof, from the outside of said door knob through said free end of said door knob and into said cylinder through the first end thereof,

a locking rod, extending longitudinally from said attached end of said push-button and through said cylinder;

whereby, when said push-button is pushed inwardly, in the direction from the free end to the connected end of said knob, said locking rod moves in the same direction,

means for detecting the movement of said locking rod; and

whereby, means for providing an electronic signal are activated by said means for detecting on detecting the movement of the locking rod, to provide said electronic signal;

and further including a cylindrical detector assembly housing having a front end and an open rear end;

a wall at said front end having an opening therein,

a retractor assembly retainer cap assembly comprising a cylindrical member having a front end and a rear end;

a plate member mounted transversely to said cylindrical member at the rear end thereof;

the front surface of said plate member abutting the rear surface of said wall;

said means for detecting comprising a twostate switch;

said switch being mounted on the front surface of said plate member;

said opening of said wall receiving said cylindrical member and said switch such that said cylindrical member and said switch extend in front of said front wall outside of said housing

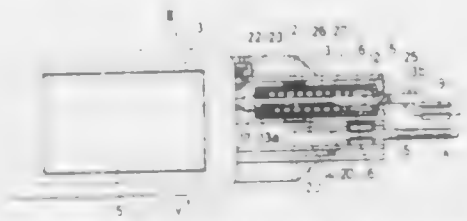
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5,005,885

APPARATUS FOR OPERATING LINKAGE OR CAR DOOR BY PIVOTAL LEVER

Yasutomo Kobayashi, Chigasaki, and Tsuyoshi Kato, Yokohama, both of Japan, assignors to Nifco, Inc., Yokohama, Japan

Filed Sep. 18, 1989, Ser. No. 408,585
Claims priority, application Japan, Sep. 19, 1988, 63-121574
Int. Cl.' E05B *3/00*
U.S. Cl. 292—336.3 10 Claims



1 An apparatus for operating a linkage with a pivotal lever having a crank arm provided on a lever handle pivoted on a pivot and coupled to one end of the linkage, comprising

a piston-cylinder assembly including a cylinder having a rod end and a head end, a piston having a piston rod coupled to the crank arm and being accommodated in said cylinder, and a coil spring interposed between said piston and said rod end of said cylinder,

a support for supporting the lever handle and said piston-cylinder assembly,

stopper means extending into said cylinder to engage an inner side of said head end of said cylinder, prevent movement of said cylinder toward said rod end but permit movement of said cylinder toward said head end,

a contact portion provided on said piston rod for abutting an outer side of said rod end of said cylinder when said piston rod is fully projected into said cylinder, and

spring bearing means for receiving an end of said coil spring directed toward said head of said cylinder at the same position as that of said piston rod when said piston rod is fully projected into said cylinder

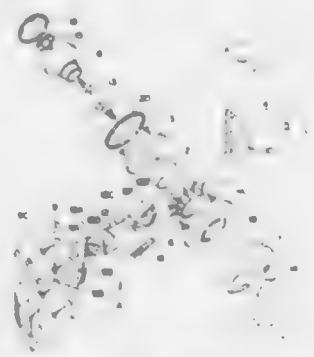
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5,005,886

LATCH MECHANISMS

Terence J. Carroll, 3 Lackenheath Court, Dingley, Victoria, Australia (3172)

Filed Dec. 8, 1989, Ser. No. 447,136
Int. Cl.' E05C *1/16*
U.S. Cl. 292—336.3 9 Claims



1 A locking device for a latch mechanism, the latch mechanism including a bolt device movable between a latched position and retracted position, an actuator shaft operatively connected to the bolt device such that rotation thereof about an axis of rotation causes movement of the belt device between the latched and retracted positions and at least one handle operatively connected to the actuator shaft by which the actuator shaft can be rotated, the locking device comprising

a locking element mounted for movement in the direction of the axis of the actuator shaft between a lock position in which rotation of the actuator shaft by the handle is inhibited and a release position in which the actuator can be rotated by the handle,

a control member operatively connected to or engageable with said locking element said control member being mounted for movement in the direction of the actuator shaft between first and second positions whereby in said first position the locking element is caused to adopt the lock position and in said second position the locking element can adopt the release position, whereby in said first position the control member is capable of rotatable movement and in said second position is inhibited from that rotational movement, and

an actuating member operable to cause the axial movement of the control member and drive means associated with said actuating member and said control member for causing rotation of the control member when in the first position

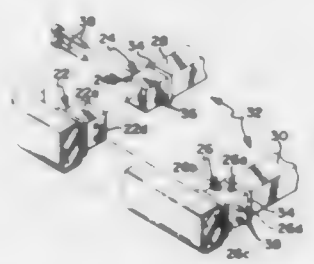
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5,005,887

ENERGY ABSORBING BUMPER FASTENER SYSTEM

Josh Kelman, Dover, N.H., assignor to Davidson Textron Inc., Dover, N.H.

Filed Apr. 9, 1990, Ser. No. 506,160
Int. Cl.' B60R *19/24*
U.S. Cl. 293—120 10 Claims



1 An energy absorbing bumper assembly for attachment to spaced frame rails of a motor vehicle, the spaced frame rails each having a rail end with an end surface and polygonal side surfaces formed generally perpendicular to said end surface, the assembly including a bumper extending as a bridge across the spaced frame rails, the bumper including a core of energy absorbing material and a high strength outer sheath with a flat inboard surface carrying a frame mount characterized by

said frame mount being a pair of spaced fastening cups each having interconnected side walls to form an axial opening with an axial open end for receiving said ends of said spaced frame rails, said fastening cups each further having a multiplicity of flat surface portions each located against the polygonal side surfaces of said rail end, said polygonal side surfaces and said interconnected side walls being juxtaposed to form a double wall thickness therebetween at each of said polygonal side surfaces for resisting frame rail bending and for distributing loads from said outer sheath to the spaced frame rails.

5,005,888

GARDEN TOOL FOR REMOVING PLANTS HAVING ROOTS

David W. Parks, Dallas; Thomas A. Parks, Lindsay, and Raymond Green, Richardson, all of Tex., assignors to Speedy Weedy, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 208,151, Jun. 17, 1988, abandoned. This application Jan. 29, 1990, Ser. No. 471,303
Int. Cl.' A01B *1/16*
U.S. Cl. 294—50 19 Claims



1 A garden tool for extracting a plant having roots in the earth comprising

a housing having an upper end and a lower end,

a prong assembly connected to the lower end of the housing and being adapted for insertion in the earth generally about the plant to be extracted, the housing and the prong assembly being rotatable after insertion in the earth for compacting the earth about the plant to be extracted and forming a plug comprising the plant, a substantial portion of the plant root and a portion of the earth disposed generally within the prong assembly and surrounding the plant to be extracted, the housing and the prong assembly being removed from the earth along with the plug, comprising

a prong holder having an outer peripheral surface, an upper end and a lower end, the upper end of the prong holder being connectable to the lower end of the housing and at least three prong openings being formed in the lower end of the prong holder generally near the outer peripheral surface of the prong holder with each prong opening extending a length into the prong holder generally from the lower end toward the upper end of the prong holder; and

at least three prongs, each prong having an upper end, a lower end and a prong length, the upper end of each prong being disposed in one of the prong openings and each prong being inserted in one of the prong openings with at least about one-fourth of the prong length of each prong being disposed in one of the prong openings whereby the prong holder cooperates with the portions of the prongs disposed in the prong holder to provide sufficient strength for substantially reducing the tendency of the prongs to bend when disposed in the earth and rotated during the operation of the garden tool, and

wherein the housing includes a slit formed through the lower end thereof and extending a distance generally toward the upper end thereof and a snap hole formed through a portion thereof and spaced a distance generally above the lower end thereof, and wherein the prong holder further comprises a holder opening extending through a portion thereof intersecting the upper and the lower ends of the prong holder, and a retaining

ridge connected to the prong holder and disposed generally within the holder opening and extending a distance into the holder opening, the retaining ridge being disposable in the slit formed in the housing generally near the lower end thereof in the assembled position of the prong holder connected to the lower end of the housing for cooperating to substantially prevent rotation of the prong holder relative to the housing, and wherein the prong holder further comprises a snap knob connected to the prong holder and disposed generally within the holder opening, the snap knob being snappingly disposable in the snap hole formed in the housing generally near the lower end thereof for snappingly connecting the prong assembly to the housing in an assembled position

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5,005,889

GRIPPER ASSEMBLY FOR AN INDUSTRIAL ROBOT

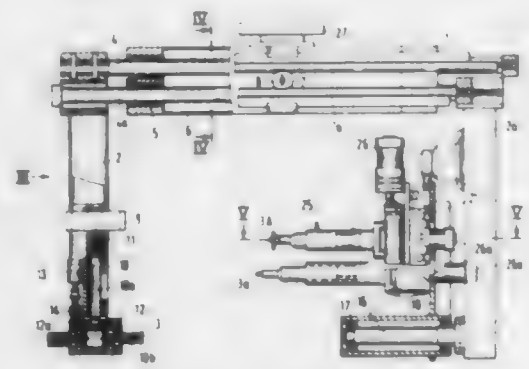
Klaus K. Nerger, Witten; Hans J. Klein, Iserlohn, and Günther Burkart, Herdecke, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengelsellschaft, Dusseldorf, Fed. Rep. of Germany

Filed May 31, 1989, Ser. No. 359,120

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1988, 3819302; Jan. 24, 1989, 3902341

Int. Cl.[5] B66C *1/62*

U.S. Cl. 294—86.4 12 Claims



1. A gripper assembly of an industrial robot, comprising:
- a pair of gripper arms disposed for relative movement toward and away from each other, each gripper arm comprising a shaft, said shaft having an axis and said axes extending perpendicularly with respect to each other;
- a plurality of workpiece receiving devices carried on each said shaft for gripping arrangement with a workpiece;
- operable means including said shaft mounting said receiving devices to said gripper arms for selectively moving said receiving devices about said axis so as to bring said receiving devices into receiving positions for engagement with the workpiece; and
- one of said plurality of said receiving devices being arranged in a substantially star-shaped configuration with respect to each other, and one of said gripper arms including a guide for guiding said shaft along a vertical axis and about which axis said receiving devices in said star-shaped configuration are movable so as to bring at least a selected one of said receiving devices into a receiving position for engagement with said workpiece.

5,005,890

LIFTING CLAMP

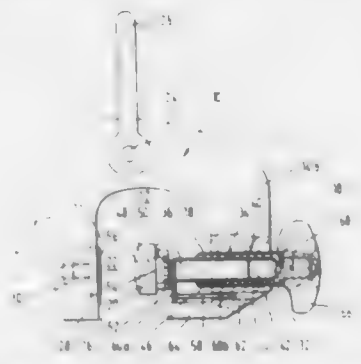
Willy Schwenger, Sussen, Fed. Rep. of Germany, assignor to Carl Stahl GmBH, Fed. Rep. of Germany

Filed Oct. 5, 1989, Ser. No. 417,467

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1988, 8812717[U]

Int. Cl.[5] B66C *1/44*

U.S. Cl. 294—103.1 23 Claims



1 A lifting clamp for the lifting and conveyance of loads, comprising

a clamp body defining a chamber for receiving articles,

lifting means, coupled to said clamp body, for attaching said body to a lifting tool;

first and second jaws coupled to said clamp body, said jaws opposing and facing one another, and

drive means, coupling said second jaw to said clamp body, for moving said second jaw along a path relative to said first jaw within said chamber to engage the articles between said jaws, said drive means including a spindle having first and second spindle parts, said first spindle part being rotatably mounted in said clamp body, said second spindle part supporting said second jaw and being guided for longitudinal movement in said first spindle part, said first spindle part driving said second spindle part, said second spindle part having a ball end on a free end thereof projecting into said chamber, said second jaw being pivotally mounted on said ball end.

5,005,891

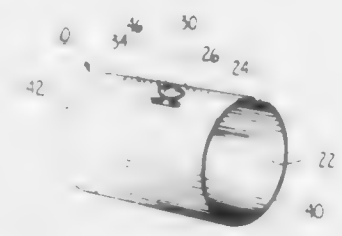
BAG HANDLE APPARATUS

T. J. Lunsford, 11668 Hi Ridge Rd., Lakeside, Calif. 92040

Filed Feb. 26, 1990, Ser. No. 485,089

Int. Cl.[5] A45F *5/10*; B65D *33/06*

U.S. Cl. 294—171 7 Claims



1 An apparatus for protecting the hands of a user carrying at least one heavily loaded plastic carrier bag of the type having handles formed in the plastic carrier bag, comprising

a thin sheet of semirigid flexible material having a first end portion and a second end portion opposite said first end portion;

a locking tab formed on said first end portion; and

a locking slot formed in said second end portion for lockingly engaging said locking tab, wherein said locking tab has a substantially mushroom-shaped head portion having a predetermined width, and said slot has a first orifice portion and a second orifice portion positioned beneath said first orifice portion so that said first orifice portion is disposed intermediate said second orifice portion and said locking tab, and separated by a flexible catch portion, said first orifice portion having a width greater than said head portion to allow free movement into and out of said first orifice portion, said second orifice portion having a width less than said head portion to latch said head portion in said second orifice portion,

said sheet having a width sufficient to cover the user's hand, and having a length sufficient to permit said sheet to be disposed around said carrier bag handles with said locking tab engaged in said slot

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5,005,892

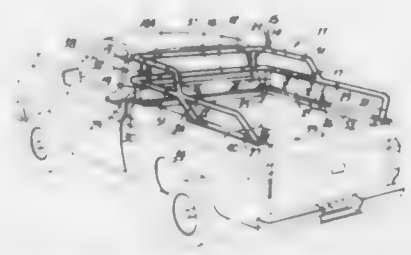
RACK FOR BODY OF PICKUP TRUCK

Ronald E. Haugen, and David T. Murphy, both of Forest City, Iowa, assignors to VIX Design Products, Inc., Forest City, Iowa

Continuation-in-part of Ser. No. 453,698, Dec. 20, 1989. This application May 14, 1990, Ser. No. 522,654

Int. Cl.[5] B62D *33/00*

U.S. Cl. 296—3 27 Claims



1 A rack assembly adapted to be mounted on the box of a pickup truck, said box having inside generally upright side walls, comprising a first corner unit having first means adapted to be supported on a section of the box, a second corner unit having second means adapted to be supported on another section of the box, transverse tubular means extended between and connected to said first and second corner units, a pair of first tubular side members secured to the first corner unit located generally above and outwardly of one inside wall of the box, a pair of second tubular side members secured to the second corner unit located generally above and outwardly of the other inside wall of the box, a first tubular end member secured to one of the first side members opposite the first corner unit, a second tubular end member secured to one of the second side members opposite the second corner unit, first arm means secured to the other of the first side members opposite the first corner unit and the first tubular end member, second arm means secured to the other of the second side members opposite the second corner unit and the second tubular end member, first leg means supporting the first tubular end member on a first top section of the box second leg means supporting the second tubular end member on a second top section of the members to secure the members in end-to-end relationship and secure the transverse tubular means and first and second side members to the first and second corner units

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5,005,893

MOBILE PROMOTIONAL VEHICLE

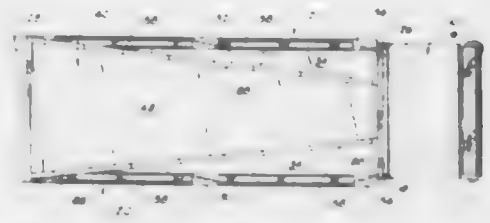
Marcus R. McCrary, 18711 Fortson Ave., Dallas, Tex. 75252

Filed Oct. 30, 1989, Ser. No. 429,830

Int. Cl.[5] B60R *13/00*; B62D *33/04*

U.S. Cl. 296—21 15 Claims

1. A mobile promotional vehicle comprising
- a wheel-supported tractor cab having a forward end and a rear end;
- a wheel-supported bed connected to the rear end of said tractor cab and projecting rearwardly therefrom, said bed having a forward end and a rear end and an upwardly facing floor surface, and
- an informational display superstructure extending upwardly from said bed, said superstructure including
- a pair of opposed, upwardly extending side walls each having a lower edge level with the floor surface, and an upper edge, said walls inclining outwardly and said upper edges being spaced further from each other in a horizontal direction than said lower edges, and said side walls extending from the rear end of the bed toward the forward end thereof, and converging toward each other as the side walls progress from the rear end of the bed toward the forward end thereof so that said side walls are closer to each other at the forward end of said bed than at the rear end thereof, and



- a trapezoidally-shaped ceiling extending parallel to the floor surface and interconnecting the upper edges of said side walls, and
- a vertically extending trapezoidally-shaped forward wall extending between and joining said side walls whereby said side walls, floor surface, ceiling, and forward wall define an enclosure which is trapezoidal in horizontal cross-section in a plane extending parallel to the floor surface, and is also trapezoidal in vertical cross-section in a vertical plane extending transversely across the bed and parallel to said front wall, said side walls each having an outwardly facing indicia display surface illuminable from below and visible from ahead of the cab of the vehicle over substantially an entire length of the respective side walls

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5,005,894

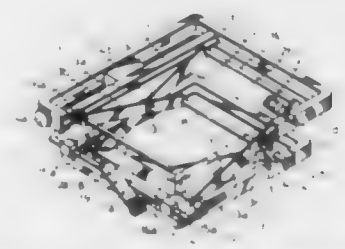
AUTOMOTIVE SEAT WITH SUSPENSION DEVICE

Kojiro Nagata, Akishima, Japan, assignor to Tachi S Co., Ltd., Tokyo, Japan

Filed Oct. 31, 1989, Ser. No. 429,512

Int. Cl.[5] B60N *2/42*

U.S. Cl. 296—68.1 3 Claims



1 An automotive seat with a suspension device having upper and lower frames, the seat including a seat cushion on the upper frame and the lower frame engaging a floor of an automobile body, said seat comprising

an X-shaped link means entirely interposed inwardly of the upper and lower frames,

a first pivot connecting a first link member of said X-shaped link means to the upper frame,

a second pivot connecting a second link member of said X-shaped link means to the lower frame,

a seat belt anchor,

a pin fixed on said first link midway between a cross point of said X-shaped link means and said first pivot, and

a sublink positioned inwardly of the frames having one end connected to the lower frame by said second pivot and another end thereof formed with an elongated hole in which said pin is slideably retained

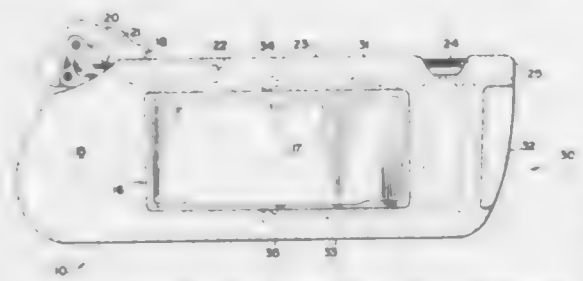
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5,005,895

ADJUSTABLE VISOR

David A. Muyres, Saugatuck; Wesley D. Mersman, Holland; Steven P. Dykstra, and Russell L. Clark, both of Zeeland, all of Mich., assignors to Prince Corporation, Holland, Mich.

Filed Apr. 16, 1990, Ser. No. 509,505
Int. Cl.' B60J 3/02
U.S. Cl. 296—97.8 22 Claims



1 A vehicle visor having an adjustable width comprising

a pivot rod for attachment to a vehicle for supporting said visor;

a visor body supported by said pivot rod having guide means formed within said body for receiving a slide member,

said slide member movably supported by said guide means, and

a collapsible shield mounted to said slide member for extension and retraction from said visor body with said shield collapsing into said visor body in a stored position and extending from said body with said slide member when in an extended position

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5,005,896

RETRACTABLE TRUCK CANOPY FRAME

Cheng-Chin Li, No. 391, Tung Men Road, Tainan, Taiwan

Filed Jan. 22, 1990, Ser. No. 468,146
Int. Cl.' B62D 25/06
U.S. Cl. 296—100 1 Claim



1 A retractable truck canopy frame for a truck body, comprising.

(a) a pair of rails adapted to be installed on opposite sides of a truck body, each rail having an inwardly opening, generally "C" shaped cross-sectional configuration,

(b) a plurality of sliding elements, each sliding element having a mounting post extending generally upwardly therefrom and a pair of vertically spaced rollers slidably receivable in one of the respective rails,

(c) a plurality of main frames, each main frame having an inverted generally "U" shaped configuration with each lower end of each main frame fixedly connected to the mounting post of a sliding element,

(d) a plurality of rods, each rod having one end pivotally connected to a main frame and an opposite end slidably attached to an adjacent main frame,

(e) means to fixedly attach the sliding elements associated with a frontmost main frame to the associated rail, and,

(f) means to releasably fix the sliding elements associated with a rearmost main frame to the associated rail

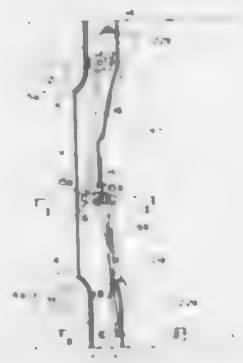
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5,005,897

WIPER DEVICE OF A MOTOR VEHICLE

Mineo Endo, Chiyoda, and Shigemi Kambayashi, Nitta, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1990, Ser. No. 494,015
Claims priority, application Japan, Apr. 19, 1989, 1-46139[U]
Int. Cl.' B62D 25/08
U.S. Cl. 296—192 2 Claims



1 A wiper device of a motor vehicle having a cowl provided adjacent a front edge of a windshield and a bulkhead in a form of a box laterally extending under the cowl, comprising.

a front panel vertically provided in the bulkhead to form a chamber in the bulkhead into a housing for a wiper at a front side and an air duct at a rear side,

a center pivot mounted on the cowl on a lateral center line of the vehicle;

a side pivot mounted on the cowl at a side position of the vehicle,

a wiper motor provided in the bulkhead at an opposite side of the side pivot,

a center wiper link pivotally mounted on the center pivot at a center thereof,

a side wiper link pivotally mounted on the side pivot at a front end thereof;

a first wiper rod connected between the wiper motor and a front end of the center wiper link,

a second wiper rod connected between a rear end of the center wiper link and a rear end of the side wiper link; and

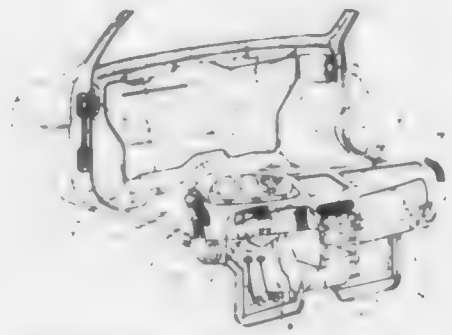
the front panel having an opening through which the second wiper rod extends and fresh air passes for ventilation.

5,005,898

VEHICLE STRUCTURE AND THE METHOD FOR ITS ASSEMBLY

Piero Benedetto, Murello; Salvatore Bezzi, Moncalieri, and Paolo Odone, Turin, all of Italy, assignors to Fiat Auto S.p.A., Turin, Italy

Filed Dec. 21, 1989, Ser. No. 452,744
Claims priority, application Italy, Dec. 23, 1988, 68147 A/88
Int. Cl.' B60K 37/00
U.S. Cl. 296—194 11 Claims



1 A vehicle structure, comprising

(a) a body defining an engine compartment and a passenger compartment communicating with each other through an opening between them,

(b) a dividing element between the passenger compartment and engine compartment,

(c) said dividing element comprising a panel independent of said body and arranged to close said opening between the engine compartment and passenger compartment,

(d) said panel comprising a rigid element having a mechanical support function and a soundproofing element formed of expanded material of cellular structure,

(e) said soundproofing element forming a single body with said rigid element,

(f) said panel including an upper portion of cross-member form and a lower portion of bulkhead form,

(g) said rigid element defining a load-bearing framework of said panel and being embedded in said soundproofing element, and

(h) said soundproofing element covering said upper portion of said panel on a side facing the engine compartment and said lower portion on a side facing the passenger compartment

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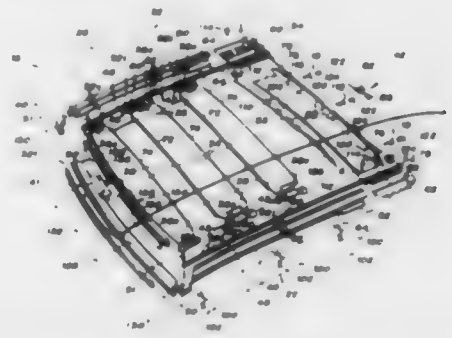
5,005,899

VEHICLE TRANSPARENT ROOF HAVING MANUALLY OPERABLE SUNSHADE

Alain J.-M. Clenet, Santa Barbara, Calif., assignor to Asha Corporation, Santa Barbara, Calif.

Continuation-in-part of Ser. No. 313,795, Feb. 22, 1989, Pat. No. 4,923,244, and a continuation-in-part of Ser. No. 220,785, Jul. 19, 1988, abandoned. This application May 2, 1990, Ser. No. 518,576
The portion of the term of this patent subsequent to May 8, 2007, has been disclaimed.
Int. Cl.' B60J 7/00
U.S. Cl. 296—214 16 Claims

1 For use with a vehicle including a roof covering an occupant compartment, a sunshade roof construction comprising a transparent roof panel through which the environment can be viewed from the occupant compartment; a sunshade mounted below the transparent roof panel and including a plurality of laterally elongated blades each of which has opposite ends; said sunshade also including a flexible sheet-like shade that connects the blades, a pair of guides supported below the transparent panel with each guide receiving one end of each blade to support the sunshade for movement between: a closed position where the blades are spaced from each other below the transparent roof panel with the flexible shade extending between the blades to cooperate therewith in shading the occupant compartment from the transparent roof panel, and an open position where the blades are stored in a stacked relationship with all of the blades located in a single vertical stack at a location that exposes the occupant compartment to the transparent roof panel and with portions of the flexible shade folded between the stacked blades, the sunshade having a front end



including a handle that is manually grasped to move the sunshade between the closed and open positions, and a coupling mechanism including releasable connections for connecting to the blade ends to maintain the blades spaced from each other during movement to and from and while in the closed position, and the releasable connections of the coupling mechanism disconnecting from certain blade ends upon movement to the open position to permit the storage of the blades in the stacked relationship with the portions of the flexible shade folded between the blades

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5,005,900

AUTOMOTIVE SEAT CUSHION SUPPORT

Jerry D. Clampa, Dearborn Heights, and Lawrence J. Kummer, Plymouth, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 12, 1989, Ser. No. 364,765
Int. Cl.' A47C 7/02
U.S. Cl. 297—216 14 Claims



1 In an automotive vehicle body having a floor and a seat mounted on the floor having at least one seating position for supporting vehicle occupants, the seat including a seat back extending substantially perpendicularly upwardly from the floor and the seat cushion having rear surfaces abutting lower front surfaces of the seat back and extending substantially parallel to the floor, an improved support for the seat cushion comprising

a support frame fixedly secured to the floor below the rear of the seat cushion and including a restraining portion projection obliquely upwardly and forwardly from the floor to a position rearwardly proximate the front of the seat cushion, comprising a generally U-shaped member having a substantially horizontal mounting portion including one

end adapted to be fixedly secured to the floor proximate the rear of the seat cushion and wherein the restraining portion projects from the other end of the mounting portion

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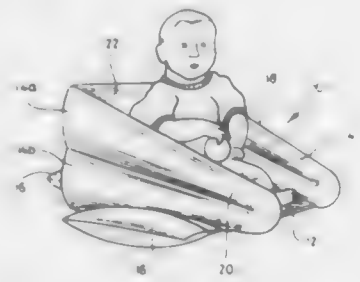
5,005,901
REMOVABLE SEAT COVER
Brian Hinde, Honolulu, Hi., assignor to Seatector Hawaii, Inc., Honolulu, Hi.
Filed Nov. 16, 1989, Ser. No. 438,295
Int. Cl.' A47C 31/11
U.S. Cl. 297—229 1 Claim



1 A removable cover for a seat, the seat having a seat portion and a back portion, the cover being comprised of a pliable material and having a back covering portion, a seat covering portion, a pocket formed on an exterior surface of the cover the back covering portion, seat covering portion and pocket being integral, the pocket overlying an upper portion of the seat back covering portion for covering the front of the seat back and having a mouth oriented toward the seat covering portion, the pocket mouth having a lip, and mutually cooperating closure means provided on the lip and on the seat back covering portion adjacent the lip, the seat covering portion and the back covering portion except for said upper portion being receivable in the pocket when the cover is not in use and the pocket then being closable by means of said closure means

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5,005,902
SEAT FOR A BABY
Wendy E. Farnworth, and David J. Farnworth, both of 12 Mill Lane, Felixstowe, Suffolk IP11 7RN, Great Britain
Continuation of Ser. No. 375,611, Jul. 5, 1989, abandoned. This application Oct. 10, 1990, Ser. No. 596,758
Claims priority, application United Kingdom, Jul. 6, 1988, 8816108
Int. Cl.' A47D 1/10
U.S. Cl. 297—250 16 Claims



1 A support for a seated baby for supporting a baby in a sitting position on a floor, the seat comprising a non-inflatable base which, in use, will lie flat on the floor, the non-inflatable base having a front edge, a rear edge, and opposing side edges, an inflatable wall upstanding from part of the periphery of the base and surrounding the rear edge and opposing sides edges to support a baby seated on the base and to prevent the baby falling backwards or sideways, the front edge of the base remaining open to define a front opening, whereby legs of a baby supported on the base extend in the direction of the front opening at approximately floor level, whereby the baby's center of gravity is at the same position relative to the floor as if the baby were sitting directly on the floor, and at least one inflatable support cushion arranged outside the wall and at the bottom edge of the wall to add stability to the wall

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5,005,903
PROTECTIVE CUSHION FOR CHILD'S AUTO SEAT
Raye F. Minardi, 19601 Gunn Hwy., Odessa, Fla. 33556
Filed May 5, 1989, Ser. No. 347,570
Int. Cl.' A47C 27/00
U.S. Cl. 297—250 12 Claims



1 In combination with a child's auto seat having laterally outwardly facing sides and laterally outwardly facing supporting framework, the sides and framework each having sharp and rough edges, the improvement comprising a removably attachable cushion for attachment to a portion of the sides and the supporting framework, said cushion comprising

(a) cover means

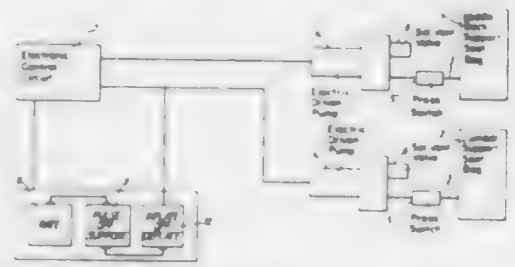
(b) padding means substantially encased by said cover, and

(c) attaching means connected to said cushion, said attaching means adapted so that said cushion is removably attached to a portion of the laterally outwardly facing sides of the seat structure and a portion of the laterally outwardly facing supporting framework of the child's auto seat, such that the padding encases at least a portion of the sharp and rough edges of the child's auto seat, whereby said cushion is interposed between said child's auto seat and persons or things not placed within said child's auto seat

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5,005,904
SYSTEM FOR INFLATING SUPPORT BAG IN SEAT
Clive Clemens, Etwall, and Gary Martin, Burton-on-Trent, both of England, assignors to Pirelli Limited, London, England
Filed Feb. 27, 1989, Ser. No. 315,656
Claims priority, application United Kingdom, Mar. 1, 1988, 8804864
Int. Cl.' A47C 7/46
U.S. Cl. 297—284 12 Claims

1 A seat bag inflation system comprising a seat structure and inflatable bag means forming part of said seat structure, electrically driven pump means for supplying inflation fluid to said bag means, said pump means when driven continuously producing complete inflation of said bag means in a first time interval, and a control circuit for automatically energizing said pump means for periods at spaced apart intervals to produce complete inflation of said bag means in a second time interval substantially longer than that which would be produced by continuous energization of said pump means, the duration of each period of energization being such that the output of said pump means during each period of energization produces only a small increase in the inflation of said bag means whereby a



multiplicity of periods of energization at said spaced apart intervals is required to produce complete inflation of said bag means

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5,005,905
CHAIR FOR AN OFFICE OR THE LIKE
Horst Sondergeld, Wenzinger Strasse 32-34, D-7800 Freiburg, Fed. Rep. of Germany
Filed Jan. 13, 1989, Ser. No. 297,678
Int. Cl.' A47C 1/032
U.S. Cl. 297—320 14 Claims

1 Seat unit for an office chair or the like and being adjustable by especially body displacement, comprising a support; at least one first positive guiding means coupled to said support and establishing a first path, at least one second positive guiding means coupled to said support and establishing a second path, a front seat section, at least one first supporting element for mounting said front seat section to said first positive guiding means such that said front seat section is displaceable along said first path and rotatable about a first axis, a back rest, at least one second supporting element for mounting said back rest to said second positive guiding means such that said back rest is displaceable along said second path and rotatable about a second axis, a rear set section, at least one first hinge for pivotally coupling said rear seat section and said front seat section such that both sections are pivotable relative to each other about a third axis, and at least one second hinge for pivotally coupling said rear seat section and said back rest such that both the rear seat section and the back rest are pivotable relative to each other around a fourth axis.

5,005,906
RECLINING DEVICE
Yoshio Suzuki, Shioya; Kaoru Umeda, and Norimasa Kitoh, both of Inuyama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Kabushiki Kaisha Imasen Denki Seisakusho, Inuyama, both of, Japan
Filed Jun. 8, 1989, Ser. No. 363,265
Claims priority, application Japan, Jun. 14, 1988, 62-78467[U]; Jun. 14, 1988, 63-78468[U]; Jun. 14, 1988, 63-78470[U]; Jun. 14, 1988, 62-146464; Jun. 14, 1988, 63-0146465
Int. Cl.' B60N 2/02
U.S. Cl. 297—362 14 Claims

1 An adjustable device for a vehicle seat having a seat portion and a back portion comprising:

a back bracket adapted to be attached to the back portion;

an external gear on said back bracket;

a seat bracket adapted to be attached to the seat portion;

an internal gear on said seat bracket having a slightly greater number of gear teeth than the gear teeth on said external gear;

an eccentric shaft having an eccentric portion thereon;

said internal and external gears being rotatably mounted on said eccentric shaft with one of said internal and external gears being mounted on said eccentric portion, so that said internal and external gears are relatively rotatable with respect to each other by rotation of said shaft and said internal and external gear teeth engage with each other continuously over a part of each gear,

at least one of said gears being attached to the associated bracket by rivet means;

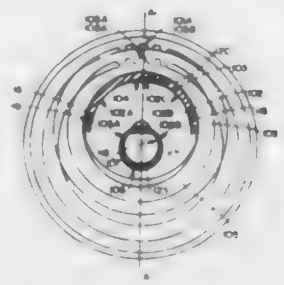
at least the other of said gears being disposed between said at least one gear and the associated bracket on which said one gear is mounted, and



a plurality of slots in at least the other of said gears circumferentially spaced on the same radius, said slots extending in directions relative to said eccentric shaft and being positioned so that parts of said rivet means slidably engage in said slots to provide for said relative rotation of said gears and reclining adjustment of said seat and back portions

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5,005,907
CONTINUOUS JOINT FOR A SEAT WITH AUTOMATIC CLEARANCE COMPENSATION
André Caillol, Paris, France, assignor to Tubauto, Levallois-Perret, France
Continuation-in-part of Ser. No. 128,425, Dec. 3, 1987, Pat. No. 4,887,863. This application Dec. 5, 1989, Ser. No. 446,480
Claims priority, application France, Dec. 3, 1986, 86 16917
Int. Cl.' B60N 1/06
U.S. Cl. 297—362 9 Claims



1 A continuous joint for a seat with an adjustable back comprising a fixed plate, integral with the seat-part of the seat and a movable plate, integral with the back, said plates being laterally secured to each other in confronting relationship, one of said plates being provided with a shaft disposed about a central axis, an eccentric constituting a cam provided with a bearing aperture in which is seated the shaft and rotatable about said central axis, enabling the angular position of one of the two plates to be varied in relation to the other by partial engagement of at least two sets of teeth, a first set of teeth, integral with one of the two plates being centered on said central axis, about which the eccentric constituting a cam turns and a second corresponding set of teeth being integral with a part driven by the eccentric constituting a cam, in such a way

as to displace around said central axis the partial engagement zone, wherein, the eccentric constituting a cam has on its periphery, in the most eccentric zone in relation to the axis, an elastic bearing made of a metal or metal alloy, integral with this eccentric constituting a cam, which is elastically held, directly or indirectly against the driven face of the tooth part displaced by this eccentric constituting a cam, in such a way as to hold the second set of teeth, integral with this part, against the first set of teeth in the partial engagement zone, the bearing aperture of the eccentric constituting a cam being provided with two main support zones in relief, on which the shaft bears to provide a reactive force to the force applied by said elastic bearing against the driven face of said tooth part, said support zones being angularly spaced 90°-150° apart on opposed sides of a plane containing the central axis and a diametral line symmetrically bisecting the partial engagement zone of said at least two sets of teeth

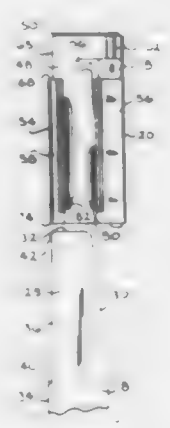
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5,005,908

FLOATING WEDGE COUPLING

Charles D. Young, Princeton, Ky., assignor to Hoover Universal, Inc., Plymouth, Mich.

Filed Oct. 16, 1989, Ser. No. 422,005
Int. Cl.' A47C 7/00
U.S. Cl. 297—443 4 Claims



1 A seat assembly comprising:

a lower seat cushion,

a seat back extending generally upwardly from said seat cushion, and,

a coupling for joining said seat back to said seat cushion, said coupling including;

an elongated mounting plate attached to said seat cushion and extending longitudinally therefrom,

a hollow housing attached to said seat back, said housing being open at one end for reception of said plate into said housing by longitudinally moving said housing over said plate;

a recess in one edge of said plate for reception of a longitudinally elongated portion of a sidewall of said housing therein upon lateral movement of said housing relative to said plate to couple said housing to said plate to prevent longitudinal movement of said housing relative to said plate; and

wedge means comprising a separately attached wedge disposed within said housing for resisting lateral movement of said plate relative to said housing to hold said sidewall in said recess to resist rotational movement of said housing relative to said plate.

5,005,909

FORCE-LIMITING ENERGY ABSORBER FOR SAFETY BELT SYSTEMS

Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to TRW Repa GmbH, Fed. Rep. of Germany

Division of Ser. No. 202,803, Jan. 3, 1988, Pat. No. 4,904,023.
This application Jul. 27, 1989, Ser. No. 386,512
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1987, 3723772
The portion of the term of this patent subsequent to Feb. 27, 2007, has been disclaimed.
Int. Cl.' A62B 35/04
U.S. Cl. 297—472 1 Claim



1 A force-limiting energy absorber for a safety belt system, said force-limiting energy absorber comprising

two end fittings,

a deformable element connected with said end fittings, said deformable element including first and second side portions which are spaced apart for at least a portion of their length to at least partially define an opening, said first and second side portions being deformable under the influence of a tensile load transmitted between said two end fittings through said first and second side portions,

a limiting element in each opening located longitudinally centrally of the side portions as measured in the direction of tensile load and having a surface portion spaced from said side portions for abutting another surface portion located longitudinally centrally of said side portions as measured in the direction of tensile load to limit the combined distance through which said first and second side portions of said deformable element move during deformation to a distance which is substantially less than a transverse dimension of the opening as measured along a line extending perpendicular to a longitudinal axis extending between said two end fittings through said deformable element prior to deformation of said deformable element under the influence of a tensile load transmitted between said two end fittings.

5,005,910

APPARATUS FOR RESTRICTING RELATIVE MOVEMENT OF BELT PORTIONS

Isaak A. Itkis, Southfield, and Louis A. LaFrate, Sterling Heights, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed Jul. 6, 1989, Ser. No. 376,313
Int. Cl.' A47C 31/00
U.S. Cl. 297—483 11 Claims

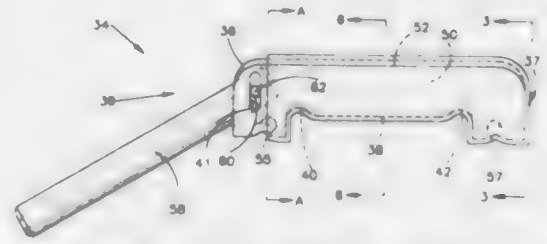
1 An apparatus for use with a first belt portion and a second belt portion arranged in a lengthwise overlapping side-by-side relationship with the first belt portion, said apparatus comprising:

a first member having a pair of leg portions and a bight portion interconnecting said leg portions, said first member having an opening in said bight portion for receiving a loop formed from the overlapping first and second belt portions;

each of said leg portions including a surface against which a part of one of the overlapping belt portions is engagable,

the surfaces of said leg portions extending away from said bight portion and diverging relative to each other as they extend away from said bight portion, and

a second member having a portion thereof pivotally connected to a portion of said first member and between said pair of leg portions of said first member, said second member being receivable in the loop for, when said second member is received in the loop and tension is applied to a belt portion, engaging the other one of the overlapping belt portions into engagement with respective diverging surfaces of said leg portions to clamp the overlapping belt portions between said second member and the diverging surfaces of said leg portions and thereby restrict relative sliding movement of the first and second belt portions, said first and second members clamping the overlapping belt portions along spaced apart parallel lines at locations of the overlapping belt portions spaced apart along the length of the overlapping belt portions

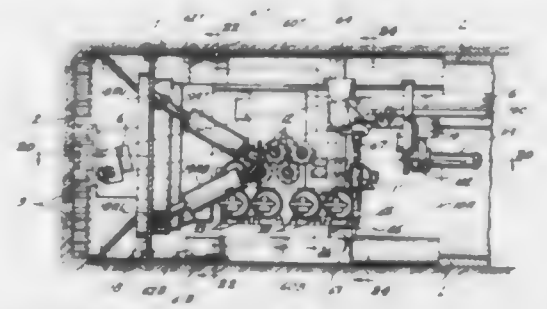


5,005,911

QUADRISHOE TUNNEL BORING MACHINE

Tyman H. Fikse, P.O. Box 1008, LaConner, Wash. 98257

Continuation-in-part of Ser. No. 183,020, Apr. 18, 1988, Pat. No. 4,915,453. This application Mar. 13, 1990, Ser. No. 493,078
Int. Cl.' E21C 29/00, E21D 9/12
U.S. Cl. 299—31 5 Claims



1 A quadrishoe tunnel boring machine comprising a body having a front end, a rotary cutterhead rotatively mounted on the front end of said body, two pairs of anchor shoes disposed in circumferentially orthogonal relationship behind said body with the anchor shoes of each pair being disposed diametrically oppositely, each anchor shoe of each pair being substantially a quadrant in circumferential extent and the anchor shoes of said two pairs being in generally circumferential registration, the opposite anchor shoes of one of said pairs floating relative to said body, pivot means pivotally connecting the leading end portions of the anchor shoes of the other of said pairs to said body for movement along the tunnel conjointly therewith, shoe-setting jack means engaged directly between the opposite anchor shoes of each anchor shoe pair for spreading the anchor shoes of such pair to set them against the tunnel wall in machine-anchoring position independently of the anchor shoes of the other pair, said body including thrust-receiving means, and body-advancing jack means engaged directly between said thrust-receiving means and said floating anchor shoes of said one pair for advancing said body and the other pair of anchor shoes relative to said one pair of anchor shoes.

5,005,912

WHEEL MOUNTING ASSEMBLY FOR A STORAGE AND RETRIEVAL MACHINE

George R. Pipes, Salt Lake City, Utah, assignor to Eaton-Kenway, Inc., Salt Lake City, Utah

Filed Oct. 2, 1989, Ser. No. 415,738
Int. Cl.' B60B 35/10
U.S. Cl. 301—111 10 Claims



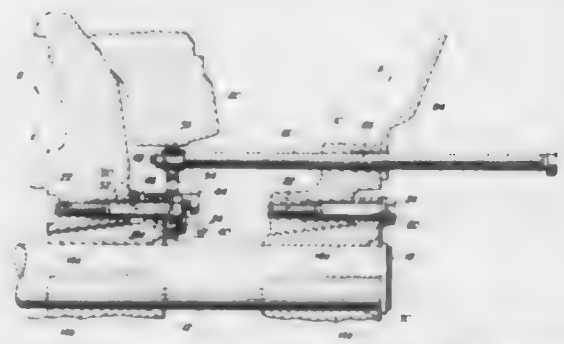
1 In a storage/retrieval machine comprising a base, a mast assembly attached to said base, at least one wheel mounted for rotation on said base and supporting said machine on a floor-mounted rail, and means for mounting said wheel to said base comprising a first mounting member mounted in fixed relation to said base, a second mounting member movably mounted on said first mounting member, means rotatably mounting said wheel on said second mounting member, and means for moving said second mounting member relative to said first mounting member about a plurality of axes, the improvement comprising means defining a spherical joint between said first mounting member and said second mounting member.

5,005,913

WHEEL TREAD ADJUSTING DEVICE

Carl E. Kittle; Dennis L. Paxton, both of Cedar Falls, and Abraham Camacho, Gilbertville, all of Iowa, assignors to Deere & Company, Moline, Ill.

Continuation-in-part of Ser. No. 236,690, Aug. 25, 1988, Pat. No. 4,936,634. This application Oct. 3, 1989, Ser. No. 416,741
Int. Cl.' B60B 35/00, 27/06
U.S. Cl. 301—128 13 Claims



1 A wheel adjusting mechanism for moving a wheel axially along an axle, the wheel having a hub positioned about the axle and a tapered sleeve positioned between the hub and the axle which is axially movable relative to the hub, the sleeve frictionally holding the hub to the axle when the sleeve is wedged

between the hub and the axle, and allowing the hub to move axially along the axle when the sleeve is not wedged 10 between the hub and the axle, the wheel adjusting mechanism comprising:

a. a plate having at least one adjustment bore therein,

b. mounting means for mounting said plate to the tapered sleeve of the wheel;

c a threaded adjustment bolt substantially parallel to the axle,

d holding means for holding one end of said adjustment bolt in said adjustment bore in said plate while allowing rotary motion of said adjustment bolt within said adjustment bore and limiting axial movement of said adjustment bolt along said adjustment bore;

e bracket means fixed to said axle and having at least one threaded bore therein, said adjustment bolt threadedly engaging said threaded bore

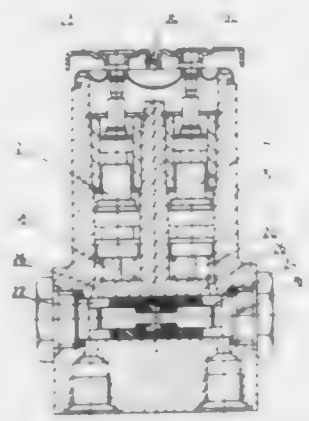
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5,005,914

DUAL BRAKE COMPENSATOR

Roland Levrai, Stains, and Pascal Le Normand, Aulnay Sous Bois, both of France, assignors to Bendix France, Drancy, France

Filed Sep. 14, 1989, Ser. No. 407,481
Claims priority, application France, Sep. 30, 1988, 88 12861
Int. Cl.[5] B60T 8/22
U.S. Cl. 303—9.63 5 Claims



1 A dual brake compensator for a motor vehicle, comprising two correcting valve of which respective inlets are connected separately to two independent brake-pressure sources and reapective outlets are connected separately to two independent brake motors, each correcting valve being capable of controlling the values of pressures at the respective inlet and outlet of the valve according to a predetermined relation, and each correcting valve comprising a piston subjected to respective elastic return means by a respective lever, the dual brake compensator further including a device for detecting and providing a warning signal of an angular deviation between the levers

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5,005,915

EMPTY/LOAD CHANGEOVER VALVE FOR RAILWAY CAR

James E. Hart, Trafford, Pa., and Albert A. McKay, Stoney Creek, Canada, assignors to American Standard Inc., Wilmerding, Pa.

Filed Feb. 20, 1990, Ser. No. 481,414
Int. Cl.[5] B60T 8/18
U.S. Cl. 303—22.2 31 Claims

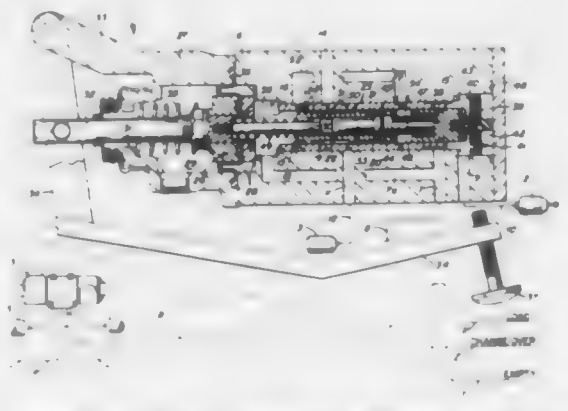
1 For use in a railway vehicle brake control system including a brake pipe charged to a certain chosen pressure, an auxiliary reservoir charged to the pressure carried in said brake pipe, a brake cylinder device, and a brake control valve device via which fluid under pressure is supplied from said auxiliary reservoir to said brake cylinder device and released therefrom in accordance with variation of the fluid pressure in said brake pipe, an empty/load changeover valve device mounted on one of the sprung and unsprung members of said vehicle comprising

(a) load sensing means engageable with the other of said sprung and unsprung members for measuring the distance therebetween to provide an empty setting and a load setting of said changeover valve device depending upon said distance being greater or less than a predetermined distance corresponding to the changeover point between said empty and load settings.

(b) an inlet passage connected to said control valve device and an outlet passage connected to said brake cylinder device.

(c) a valve seat between said inlet and outlet passages.

(d) a check valve between said valve seat and said outlet



passage, said check valve being engageable with said valve seat in a closed position to interrupt the supply of fluid under pressure to said brake cylinder device and disengageable therefrom in an open position to conduct the supply of fluid under pressure to said brake cylinder device;

(e) a balance piston to which said check valve is connected having equal opposing pressure areas, one of said pressure areas being subject to the fluid pressure effective at said inlet passage; and

(f) empty/load valve means for pressurizing the other of said pressure areas in said load setting of said changeover valve device to establish a fluid pressure force balance across said balance piston, and for depressurizing said other pressure area in said empty setting to establish a differential fluid pressure force across said balance piston in the direction of engagement of said check valve with said valve seat

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5,005,916

ANTILOCK BRAKE CONTROL SYSTEM FOR A MOTORCYCLE

Hideaki Fujioka, and Yoshio Katayama, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 17, 1990, Ser. No. 524,474
Claims priority, application Japan, May 18, 1989, 1-125299
Int. Cl.[5] B60T 8/60
U.S. Cl. 303—103 4 Claims

1 An antilock brake control system for a motorcycle having front and rear wheels, comprising:

means for detecting a velocity of said front wheel;

means for detecting a velocity of said rear wheel;

means for calculating an estimated velocity of said motorcycle based on the detected front and rear wheel velocities;

means for calculating a slippage of said front and rear wheels relatively to the estimated motorcycle velocity;

means for detecting a brake applied to said front wheel;

means for detecting a brake applied to said rear wheel

means for providing antilock control to said front wheel;

means for providing antilock control to said rear wheel,

means for detecting whether or not one of said front and rear wheel is provided with antilock control,



means for detecting whether or not one of said front and rear wheel is applied with brake, and

means for producing compensation amounts for compensating said slippage when each of said front and rear wheels is provided with antilock control

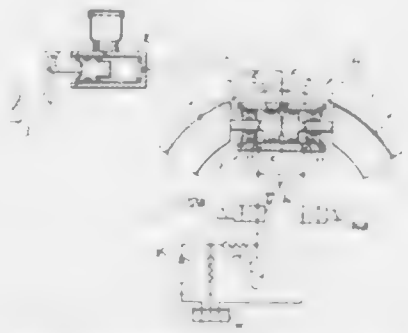
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5,005,917

ANTI-LOCK BRAKE CONTROL METHOD

Toshio Yahagi; Yoshihiro Iwagawa; Yoichi Sugimoto, and Tsuyoshi Satoh, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 17, 1989, Ser. No. 380,415
Claims priority, application Japan, Jun. 6, 1989, 1-143277
Int. Cl.[5] B60T 8/58
U.S. Cl. 303—113 6 Claims



1 A method of controlling an anti-lock brake having a control valve means for controlling a braking pressure of a braking device coupled to a rotating wheel and also to a master cylinder, the method comprising the steps of

reducing said braking pressure of said braking device for a first time period, when said rotating wheel enters a locking condition, in order to reduce the braking force of said braking device, thereby preventing the wheel from becoming locked,

intermittently increasing said braking pressure for a second predetermined time period depending upon a pressure fed from the master cylinder, when said braking pressure is to be recovered, in order to intermittently increase said braking force;

detecting a condition of a braking operation, the condition comprising one of a recovery of said braking pressure or a completion of said braking operation, said condition occurring during said second time period while said braking force is intermittently increasing;

interrupting said intermittently increasing braking force for a third time period in response to the detection of the completion of said braking operation, said third time period being less than and occurring during said second predetermined time period

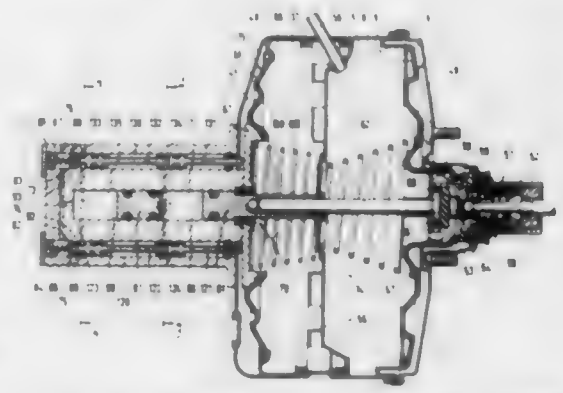
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5,005,918

AUTOMOTIVE VEHICLE BRAKE SYSTEM

Lothar Schiel, Hofheim, and Manfred Rueffer, Salzbach, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt, Fed. Rep. of Germany

Filed Oct. 18, 1989, Ser. No. 423,315
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1988, 3836710
Int. Cl.[5] B60T 8/44
U.S. Cl. 303—114 6 Claims



1 An automotive vehicle brake system having a vacuum brake power booster which is interposed between brake pedal and master brake cylinder and which comprises at least two working chambers isolated from one another by by a diaphragm plate, one of said chambers communicating with a vacuum source, while the other one of said chambers is ventilated by means including a control valve actuated by the brake pedal for generating a boosting force that is proportional to the brake pedal force, wherein wheel brake cylinders are connected by way of brake lines to the master brake cylinder, wherein sensors are allocated to the wheels to be braked which sense the rotational behavior of the wheels to determine wheel-lock, and the output signals of which sensors are coupled to a central control electronics, and with a second diaphragm plate provided in the vacuum brake power booster to which a controllable pressure difference is applied and which isolates two additional pneumatic working chambers from each other and which, for slip control, is movable in a direction opposite to the actuating direction of the master brake cylinder under the effect of two compensating cylinders (120, 130) connected to and cooperating with the master-brake-cylinder pressure chambers, wherein said compensating cylinders (120, 130) include relief chambers (123, 133, 124, 134) respectively connected to pressure chambers (80, 90) of said master cylinder, and wherein the wheel brake cylinders are further connected to said relief chambers (123, 133, 124, 134) of the compensating cylinders (120, 130) and the connection between the master-brake cylinder pressure chambers (80, 90) and the relief chambers (123, 133, 124, 134) being closable during said slip control

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5,005,919

ABS SOLENOID/ISOLATION VALVE INTEGRATION INTO SINGLE-ENDED SOLENOID BODY, USING MASTER CYLINDER ACTUATION

Lyle W. Shuey, Pendleton, Ind.; Edward J. DeHoff, Huber Heights, and Donald E. Schenk, Vandalia, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 13, 1989, Ser. No. 322,040
Int. Cl.[5] B60T 8/36
U.S. Cl. 303—119 6 Claims

1 A solenoid/isolation valve integration into a single ended body using master cylinder actuation for use in an anti-lock

braking system including a master cylinder, wheel cylinder, reservoir, and a pressurized fluid source, said valve integration in combination comprising

a housing for mounting said solenoid valve and said isolation valve, said housing including fluid connections for said master cylinder, wheel cylinder, reservoir and said pressurized fluid source, said housing also having a first fluid path connecting said master cylinder to said wheel cylinder, a second fluid path intersecting said first fluid path and connecting with said pressurized fluid source and a third fluid path intersecting with said first fluid path and connecting with said reservoir,

a first solenoid having a first solenoid actuated valve member for controlling fluid communication in said first fluid path between said intersection of said first and second fluid paths and said wheel cylinder connection, said first solenoid having a normally open position,



a second solenoid having a second solenoid actuated valve member positionally located on the same side of said first and second solenoids as said first solenoid valve member, and said second solenoid valve member controlling fluid communication in said third fluid path and said second solenoid having a normally closed position, and

an isolation valve mounted within said first fluid path with a portion sealably separating said master cylinder from said wheel cylinder and when said anti-lock braking system is actuated said normally open solenoid valve member is closed and said normally closed solenoid valve member is opened allowing fluid to flow from said wheel cylinder to said reservoir and said isolation valve moves within said first fluid path by a pressure force provided by said master cylinder to isolate said master cylinder from said wheel cylinder.

5,005,920

TRACK ADJUSTING MECHANISM

Malcolm H. Kinsinger, Washington, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Mar. 26, 1990, Ser. No. 499,234
Int. Cl.' B62D 55/30
U.S. Cl. 305—10 9 Claims

1 A track adjusting mechanism for adjusting the tension in the track of a track-type vehicle comprising

a track roller frame having first and second portions slidably movable relative one to the other,

first and second wheels connected respectively to said first and second portions of said roller frame, said track being entrained around said first and second wheels and said roller frame,

means for biasing said first wheel away from said second wheel, said means including a compressed spring positioned within said first portion of said track roller frame,

means for varying the degree of compression of said spring, including a first piston reciprocally movably positioned within said first portion of said track roller frame,

a fluid cylinder having a fluid leakage port for receiving low pressure leakage fluid, said cylinder being contained within said second portion of said track roller frame,

a source of pressurized fluid and means for controlling the flow of said pressurized fluid between said source and said fluid cylinder, said means including a variable position control valve,

a second piston positioned within said cylinder and being movable by said pressurized fluid



means for collecting and storing said low pressure leakage fluid from said cylinder, said means being in fluid communication with said fluid leakage port, and

a fluid line connected between said control valve and said cylinder, said fluid line adapted to receive high pressure fluid from said control valve in a first operational position of said control valve, and to receive relatively low pressure fluid from said cylinder and low pressure leakage fluid from said collecting means in a second operational position of said control valve

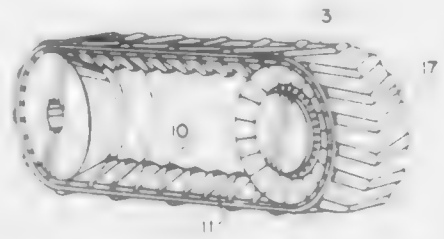
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5,005,921

ENDLESS TRACK DRIVE SYSTEM

John W. Edwards, Brandon; Daniel R. Harper, and Quinton B. McNew, both of Fort Meyers, all of Fla., assignors to Edwards, Harper, McNew & Company, Fort Myers, Fla.

Continuation of Ser. No. 51,830, May 20, 1987, Pat. No. 4,906,054, which is a continuation-in-part of Ser. No. 49,819, May 14, 1987, Pat. No. 4,861,120. This application Dec. 18, 1989, Ser. No. 452,117
The portion of the term of this patent subsequent to Mar. 6, 2007, has been disclaimed.
Int. Cl.' B62D 55/24
U.S. Cl. 305—35 EB 19 Claims



1 An endless vehicle track comprising

a plurality of polymeric endless track drive members integrally formed in a closed loop to form said endless vehicle track, each said drive member including at least two lateral frictional drive faces sloping inwardly with respect to a transverse direction of said endless vehicle track and an upper surface between said lateral frictional drive faces, said upper surface being narrower at an uppermost location than at a lowermost location as viewed in a transverse direction of said drive member; and

at least one substantially continuous reinforcement member substantially entirely encased within said endless vehicle track

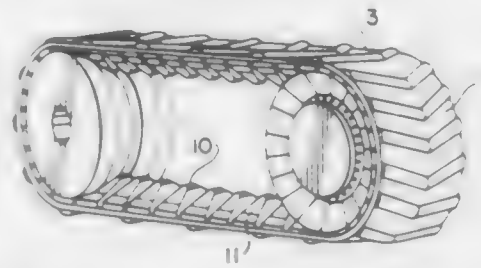
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5,005,922

DOUBLE V-SHAPED ENDLESS TRACK DRIVE SYSTEM

John W. Edwards, Brandon; Daniel R. Harper, and Quinton B. McNew, both of Ft. Myers, all of Fla., assignors to Edwards, Harper, McNew & Company, Ft. Myers, Fla.

Continuation of Ser. No. 261,933, Oct. 25, 1988, Pat. No. 4,884,852, which is a continuation-in-part of Ser. No. 113,670, Oct. 28, 1987, which is a continuation-in-part of Ser. No. 51,830, May 20, 1987, Pat. No. 4,906,054, which is a continuation-in-part of Ser. No. 49,819, May 14, 1987, Pat. No. 4,861,120. This application Sep. 22, 1989, Ser. No. 411,885
Int. Cl.' B62D 55/24
U.S. Cl. 305—35 EB 31 Claims



1 An endless drive track comprising

a plurality of endless track drive members each having at least one lateral side, said lateral side including first and second lateral frictional drive faces which intersect one another at an obtuse angle, and

means for connecting said drive members to one another to form said endless drive track

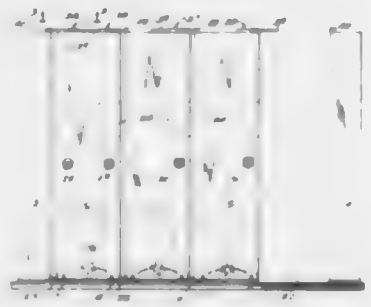
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5,005,923

LIMIT SWITCH ASSEMBLY FOR MOBILE STORAGE APPARATUS

Dean L. Dahnert, Fort Atkinson, Wis., assignor to Spacesaver Corporation, Fort Atkinson, Wis.

Filed Mar. 9, 1990, Ser. No. 491,256
Int. Cl.' A47B 53/00
U.S. Cl. 312—201 8 Claims



1 A limit switch assembly comprising

a base member,

rod means having opposite ends and mounted on said base member for moving axially between a first limit position wherein one end is fully projected a predetermined distance from said base member and a second limit position wherein said rod means is retracted relative to said base member,

switch operating cam means fixed on said rod means for moving therewith between corresponding limit position, said cam means including axially spaced apart first and second cam surfaces,

first and second axially spaced apart switches mounted adjacent said rod means for said first cam surface on said rod means to operate the first switch when said first cam surface is in the first limit position and to operate the second switch when the second cam surface is in said second limit position, and

means for applying a biasing force to said rod means to move said first cam surface thereon to said first limit position wherein said one end of said rod means projects by said predetermined distance and said first cam surface operates said first switch, and such that a force acting on said rod means to overcome said biasing force retracts said rod means for said second cam surface to operate said second switch

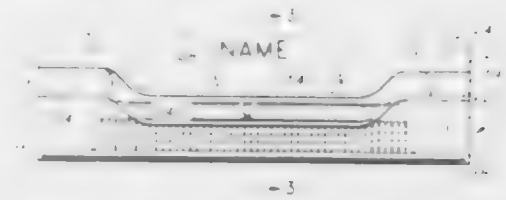
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5,005,924

DRAWER COMB HOLDER

Henry H. Hawn, 531 S. Mesa Dr., Mesa, Ariz. 85210

Filed Dec. 28, 1988, Ser. No. 291,153
Int. Cl.' A47B 83/00
U.S. Cl. 312—237 7 Claims



– 3

1 A combination drawer and comb holder comprising a generally vertical front wall, and a comb holder mounted thereupon for holding a hand comb which has a lower edge defined by protruding comb teeth and an upper edge defined by a back for grasping and holding the comb, the comb holder comprising

(a) a first bottom comprising a narrow elongate bottom strip from about four to about ten inches long and from about 0.1 to about 0.4 inches wide, the strip having first and second ends and front and rear edges;

(b) a first front wall substantially the length of the first bottom and from about one-half to about one and one-half inches in width having a bottom edge secured along the front of the first bottom, a top edge and first and second ends,

(c) first and second trapezoidal end pieces each having a base edge, a top edge longer than the base edge, an altitude and front and rear edges, the base edges being secured at the repective ends of the first bottom and the front edges secured to the respective ends of the first front wall,

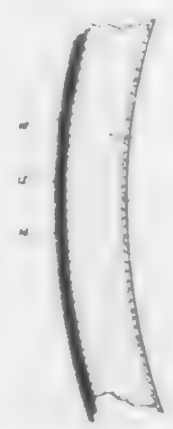
(d) means for mounting the rear edges of the first bottom and of the end pieces adjacent a generally vertical wall for use, the first bottom, end pieces and first front wall being so constructed and disposed relative to each other that when the holder is mounted for use the first front wall extends upwardly from the first bottom and outwardly from the vertical wall at an angle of from about 15 to about 50 degrees and defines an elongate receptacle for holding a comb therein lower edge down lying at an angle of from about 15 to about 50 degrees from vertical for exposing the upper edge for easy grasping by the user

5,005,925
COMBINATION TOY CHEST AND TABLE
Henry Diehl, 26 Old East Neck Rd., Melville, N.Y. 11747
Filed Apr. 17, 1990, Ser. No. 510,592
Int. Cl.[5] A47B [illegible]
U.S. Cl. 312—282 10 Claims



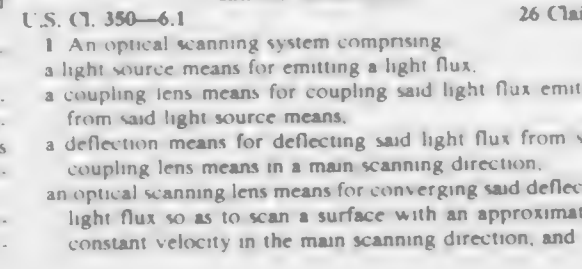
1 A combination toy chest and table comprising
a housing having a closed bottom wall
a sidewall extending completely around said bottom wall and extending vertically upwardly therefrom and having an upper perimeter edge to create a hollow interior space within said housing and an open top portion
a table top having two opposite ends and an underside
a leg attached to the underside of said table top at one end for supporting said table top and
a pivot hinge attached to the underside of said table top adjacent to the other end thereof for movably and rotatably connecting said table top to said sidewall so as to allow pivotable movement of said housing between a closed position for covering the open top portion of said housing and an open position for uncovering said open top portion of said housing, said pivot hinge raising up said leg during the rotatable movement thereof

5,005,926
BALLISTIC PROTECTIVE LASER SHIELD
Seymour Spielberger, Stamford, Conn., assignor to Barnes Engineering Company, Shelton, Conn.
Filed Oct. 18, 1988, Ser. No. 259,168
Int. Cl.[5] G02B [illegible]
U.S. Cl. 350—1.1 7 Claims



1 A ballistic protective laser shield for transmitting visible radiation while absorbing and/or reflecting predetermined laser radiation comprising
a transparent ballistic protective plastic substrate for transmitting visible radiation,
an interference filter deposited on a high temperature transparent plastic film which passes normal incidence radiation below 694 nanometers and reflects other wavelengths out to 1064 nanometers regardless of the angle of incidence of the laser radiation applied thereto,
transparent optical bonding means for bonding said interference filter directly onto said transparent ballistic protective plastic substrate thereby providing a protective laser shield having ballistic protection properties as well as laser radiation rejection properties

5,005,927
NONLINEAR OPTICAL MICROSCOPE
Roger S. Cudney, Los Angeles; Robert M. Pierce, San Pedro, and Jack I. Feinberg, Manhattan Beach, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Mar. 28, 1989, Ser. No. 329,731
Int. Cl.[5] G03H [illegible] G02B [illegible]
U.S. Cl. 350—3.64 2 Claims



1 A stationary object enhancing microscope which displays stationary microscopic objects in a sample while eliminating a moving background from said sample, said stationary object enhancing microscope comprising
a means for illuminating said sample which emits an illuminating beam,
a means for extracting a reference beam from said illuminating beam, said extracting means receiving and propagating said illuminating beam from said illuminating means while extracting said reference beam therefrom,
a microscope slide which holds said sample in front of said illuminating beam which it receives from said extracting means to yield thereby an object beam, said object beam containing an image of said moving background and an image of said stationary objects, and
a barium titanate photorefractive crystal which receives and interferes said reference beam from said extracting means with said object beam from said microscope slide to create a phase hologram inside itself, said phase hologram thereby creating constructive interference between said image of said moving background in said object beam with respect to said reference beam from said extracting beam, said barium titanate photorefractive crystal thereby yielding an output that displays predominantly only said stationary microscopic objects

5,005,928
OPTICAL SCANNING SYSTEM
Seizo Suzuki, Tokyo; Nobuo Sakuma, Isagi; Katsumi Yamaguchi, Fuchu, and Osamu Endo, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Jul. 7, 1989, Ser. No. 376,631
Claims priority, application Japan, Jul. 15, 1988, 63-176320; Dec. 29, 1988, 63-332472; Mar. 13, 1989, 1-61876; Jun. 5, 1989, 1-142740
Int. Cl.[5] G02B 26/10
U.S. Cl. 350—6.1 26 Claims

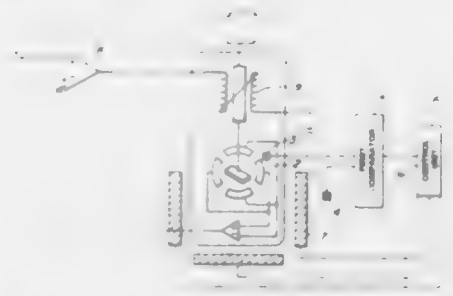
1 An optical scanning system comprising
a light source means for emitting a light flux,
a coupling lens means for coupling said light flux emitted from said light source means,
a deflection means for deflecting said light flux from said coupling lens means in a main scanning direction,
an optical scanning lens means for converging said deflected light flux so as to scan a surface with an approximately constant velocity in the main scanning direction, and

a correcting lens means, cooperating with said optical scanning lens means, for further converging, on said scanned surface, said light flux from said optical scanning lens means in the main scanning direction and approximately coupling said deflection means and said scanned surface with a conjugate relationship in view of geometrical optics, said correcting lens means having an optical axis,



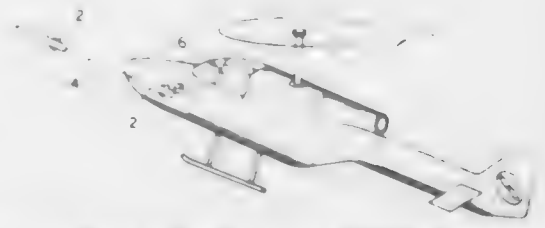
said correcting lens means including a barrel toroidal surface in which the radius of curvature thereof measured in a sub-scanning direction perpendicular to the main scanning direction decreases with an increased distance from said optical axis of said correcting lens means in a direction parallel to the main scanning direction

5,005,929
APPARATUS INCLUDING A LASER SCANNER
Kazuo Ota, Kanagawa, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
PCT No. PCT/JP87/00568, § 371 Date Feb. 15, 1989, § 102(e) Date Feb. 15, 1989, PCT Pub. No. WO88/01396, PCT Pub. Date Feb. 25, 1988
PCT Filed Jul. 30, 1987, Ser. No. 364,448
Claims priority, application Japan, Aug. 18, 1986, 61-192541
Int. Cl.[5] G02B 26/10
U.S. Cl. 350—6.5 2 Claims



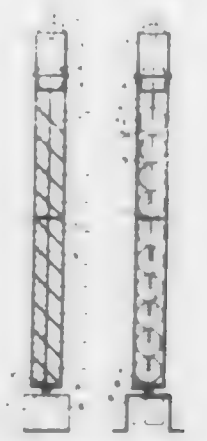
1 An apparatus including a laser scanner usable for the purpose of controlling the position of a mirror where a laser beam is reflected (representative of the direction of scanning) by turning said mirror by driving means adapted to be actuated in response to a signal indicative of a positional command and a signal detected by a position sensor, wherein said apparatus further includes,
scanner temperature detecting means for detecting the temperature of said position sensor,
environment temperature detecting means for detecting the environment temperature and
temperature controlling means adapted to perform controlling operation so as to allow the temperature of the position sensor to be kept constant at all times on the basis of an output from said environment temperature detecting means and an output from said scanner temperature detecting means
whereby operation of said driving means is controlled by said temperature controlling means

5,005,930
MULTI-DIRECTIONAL PAYOUT FIBER OPTIC CANISTER
Daniel K. Schotter, Tucson, Ariz., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Feb. 23, 1990, Ser. No. 484,015
Int. Cl.[5] G02B 1/00 F41G 7/00
U.S. Cl. 350—96.10 9 Claims



1 An optical fiber data link for interconnecting a missile launched from a moving platform, comprising
a first dispensing canister mounted to the missile on which a first optical fiber end portion is formed into a stack,
a second dispensing canister mounted to the moving platform including,
a further stack formed from the opposite end portion of the fiber, and
an enclosure having a single opening in the enclosure bottom with enclosure walls defining the opening being flared outwardly forming smooth curved surfaces facing the fiber dispensed through the opening

5,005,931
LIGHT RADIATOR
Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan
Filed Feb 2, 1990, Ser. No. 474,178
Claims priority, application Japan, Mar. 13, 1989, 1-61904
Int. Cl.[5] G02B 6/00
U.S. Cl. 350—96.10 10 Claims



10 A light radiator comprising a tubular container which is at least partially transparent and which has an elongate axis, rotary means rotatably mounted in said container for rotation about said axis, said rotary means comprising a rotary shaft having a shaft axis coaxial with said container axis and a plurality of spaced transparent plates mounted on said shaft with each plate being at an acute angle relative to said axis of said shaft, said tubular container having a longitudinal end portion, a light-guide cable means mounted on said end portion, a lens

in said tubular container disposed between said light-guide cable means and one of said plates, and motor means for rotatably driving said shaft about said container axis, each of said transparent plates having a least a partial reflective surface with the size of said partial reflective surface of each plate increasing with increasing distance from said end portion of said container such that each plate thereby reflects substantially the same amount of light rays.

5,005,932

ELECTRO-OPTIC MODULATOR

James H. Schaffner, Chatsworth; William B. Bridges, Pasadena, and Adrian E. Popa, Newbury Park, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 6, 1989, Ser. No. 432,933
Int. Cl.' G02B 6/10, 5/14
U.S. Cl. 350—96.14 18 Claims



1 An electro-optic modulator comprising

(a) a substrate having a major surface,

(b) an optical waveguide having at least two generally parallel optical waveguide channels formed in said substrate adjacent said major surface;

(c) an RF coplanar waveguide formed on the major surface of the substrate, said RF coplanar waveguide having first and second metallic ground conductors thereon which are separated by a region, the region overlying the two optical waveguide channels, said RF coplanar waveguide also having an axis of RF signal propagation within the region,

(d) optical input means for coupling an optical signal of a given phase to the optical waveguide,

(e) electromagnetic drive source means for coupling electromagnetic energy to the RF coplanar waveguide and

(f) phase regulating conductor means in said region between the first and second metallic ground conductors for adjusting the phase of the electromagnetic energy to maintain it in phase with the optical signal in the optical waveguide, said regulating conductor means being symmetric about the axis of RF signal propagation

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5,005,933

NON-LINEAR OPTICAL DEVICE

Akira Shimuzu, Isagi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

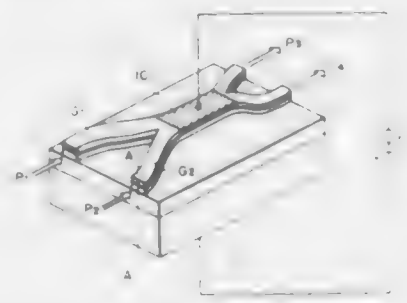
Filed Sep. 28, 1989, Ser. No. 413,733
Claims priority, application Japan, Sep. 30, 1988, 63-246324
Int. Cl.' G02B 6/10; H01L 27/14; H03F 7/00
U.S. Cl. 350—96.14 7 Claims

1. A non-linear optical device for transmitting light or carrying out optical signal processing by using a non-linear optical material having a biasing electric field applied perpendicularly to a semiconductor laminated to form a quantum well structure, characterized by:

(a) a well layer of the quantum well structure having substantially the same thickness as a Bohr radius of an exciton;

(b) the magnitude of the biasing electric field being selected such that a distance between centers of gravity of an electron and a hole which constitute the exciton is from a fraction of to substantially equal to the effective Bohr radius,

(c) the thickness and the potential of a barrier layer of the quantum well structure being selected such that the increase in the width of the absorption peak of the exciton which is caused by the ionization due to the tunneling effect of the exciton under the biasing electric field is



smaller than the width of the absorption peak under no electric field,

(d) the wavelength of light used to activate the device being selected such that the energy $h\omega$ of the photon us substantially equal to or slightly smaller than Eex/2, where Eex is the generation energy of the exciton of the quantum well structure, and

(e) the light which activates the device is polarized light whose electric field vector has a component normal to the layer of the quantum well structure

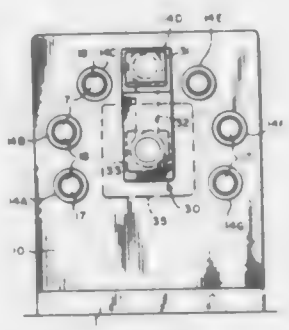
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5,005,934

FIBER OPTICS CHANNEL SELECTION DEVICE

Lawrence E. Curtiss, Concord, Mass., assignor to Galileo Electro-Optics Corporation, Sturbridge, Mass.

Filed Jul. 11, 1989, Ser. No. 378,145
Int. Cl.' G02B 6/26, 6/32
U.S. Cl. 350—96.15 13 Claims



1. An optical signal channel selection device comprising

a plurality of first fixedly positioned optical signal channels for transmitting collimated optical beam signals along a plurality of first parallel channel axes;

a second fixedly positioned optical signal channel for transmitting collimated optical beam signals along a second channel axis which is parallel to said first channel axis

a rotor structure having an open walled optical channel formed therein and a pair of ports communicating with said open walled optical channel,

a pair of mirrors fixedly mounted on said rotor structure at the ends of said open walled optical channel and arranged so as to be parallel with each other and in optical communication with respective ones of said pair of ports, an input collimated optical beam signal incident upon one of said pair of mirrors being directed through said channel toward and reflected from the other of said pair of mirrors through its associated port in parallel with said input signal, said mirrors being larger than the collimated beam signals from said first optical signal channels or said second optical signal channel, and

means for rotating said rotor structure to move said pair of mirrors so that said one of said mirrors and its associated port can be selectively positioned opposite selected ones of said plurality of first optical signal channels and the other of said mirrors and its associated port is positioned opposite said second optical signal channel

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5,005,935

WAVELENGTH-DIVISION MULTIPLEXING OPTICAL TRANSMISSION SYSTEM

Tatsuro Kunikane, Yokohama, and Takashi Yokota, Yamato, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 17, 1990, Ser. No. 510,138
Claims priority, application Japan, Apr. 19, 1989, 1-097498
Int. Cl.' G02B 6/28
U.S. Cl. 350—96.16 6 Claims



1 A wavelength division multiplexing optical transmission system for transmitting light of wavelengths λ_1, λ_2 and λ_3 having a relationship $\lambda_1 < \lambda_2 < \lambda_3$ by way of a single optical fiber, comprising

a first prism having a first side face and a second side face opposite to said first side face, said first side face having a first filter formed thereon while said second side face has second and third filters formed thereon,

a second prism having a third side face and a fourth side face opposite to said third side face, said third face having a fourth filter formed thereon while said fourth side face has fifth and sixth filters formed thereon,

said first, third and fifth filters having a characteristic that they transmit light of the wavelengths λ_1 and λ_2 but reflect light of the wavelength λ_3 while said second, fourth and sixth filters have another characteristic that they transmit light of the wavelengths λ_2 and λ_3 but reflect light of the wavelength λ_1,

an optical fiber disposed such that an end thereof is opposed to said second filter of said first prism and the other end thereof is opposed to said fifth filter of said second prism

first optical device means provided adjacent said first side face of said first prism in an opposing relationship to said first filter and adapted to emit or receive light of the wavelength λ_2,

second optical device means provided adjacent said first side face of said first prism such that a light path thereof may be directed to said third filter of said first prism and adapted to emit or receive light of the wavelength λ_3;

third optical device means provided adjacent said second side face of said first prism such that a light path thereof may be directed to said second filter of said first prism and adapted to emit or receive light of the wavelength λ_1,

fourth optical device means provided adjacent said third side face of said second prism in an opposing relationship to said fifth filter and adapted to emit or receive light of the wavelength λ_2,

fifth optical device means provided adjacent said third side face of said second prism such that a light path thereof may be directed to said sixth filter of said second prism and adapted to emit or receive light of the wavelength λ_1, and

sixth optical device means provided adjacent said fourth side face of said second prism such that a light path thereof may be directed to said fifth filter of said second prism and adapted to emit or receive light of the wavelength λ_3

5,005,936

LONG RANGE BIDIRECTIONAL OPTICAL FIBER COMMUNICATION LINK

Hui-Pin Hsu, Northridge, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 22, 1990, Ser. No. 527,228
Int. Cl.' G02B 6/28
U.S. Cl. 350—96.16 17 Claims



1 A long range bidirectional communication link comprising

an optical fiber having a first and a second end wherein the attenuation of optical energy passing therethrough at wavelengths included within a transmission window is substantially minimized;

first means for launching a first optical carrier of a first wavelength onto said fiber at said first end thereof, said first launching means including means for impressing a first modulating signal spanning a first frequency spectrum upon said first carrier,

second means for launching a second optical carrier of a second wavelength included within said transmission window onto said fiber at said second end thereof, said second launching means including means for impressing upon said second carrier a second modulating signal spanning a second frequency spectrum larger than said first spectrum,

a first receiver of a first bandwidth encompassing said first frequency spectrum, coupled to said second end of said fiber, for extracting said first modulating signal from said first optical carrier, and

a second receiver having a second bandwidth encompassing said second frequency spectrum, coupled to said first end of said fiber, for extracting said second modulating signal from said second optical carrier.

5,005,937

OPTICAL BRANCHING EQUIPMENT AND OPTICAL NETWORK USING THE SAME

Kazuo Aida, Yokohama; Shigeado Nishi, Yokosuka, and Kiyoshi Nakagawa, Miura, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Apr. 10, 1990, Ser. No. 506,832
Claims priority, application Japan, Apr. 14, 1989, 1-94580; May 9, 1989, 1-115527
Int. Cl.' G02B 6/28
U.S. Cl. 350—96.16 36 Claims



1 Optical branching equipment comprising

a trunk line optical signal input terminal into which an optical signal of a first wavelength band is input from a trunk line,

a trunk line optical signal output terminal from which an optical signal of said first wavelength band is output to said trunk line,

a branch line optical signal output terminal from which an optical signal of said first wavelength band is output to a branch line,

a branch line optical signal input terminal into which an optical signal of said first wavelength is input from said branch line,

optical divider means which has an input port and first and second output ports and whereby light input into said input port optically connected to said trunk line optical signal input terminal is divided for output to said first and second output ports,

optical coupling means which has first and second input ports and an output port and whereby light input into either of said first and second input ports is output to said output port optically connected to said trunk line optical signal output terminal,

a short circuit for optically interconnecting said first output port of said optical dividing means and said first input port of said optical coupling means,

a first branching circuit for optically interconnecting said second output port of said optical divider means and said branch line optical signal output terminal,

a second branching circuit for optically interconnecting said second input port of said optical coupling means and said branch line optical signal input terminal,

optical limiter amplifier means inserted in said short circuit, for limiting and amplifying light of said first and second wavelength bands;

control light input means optically connected to said optical limiter amplifier means, whereby control light supplied from said branch line and of a second wavelength band different from said first wavelength band is input into said optical limiter amplifier means; and

pump light supply means supplied with power from said trunk line, for supplying pump light to said optical limiter amplifier means to excite it;

wherein when being supplied with said control light, said optical limiter amplifier means excited by said pump light suppresses an optical signal of said first wavelength band to thereby substantially cut off said short circuit for said optical signal and, when not supplied with said control light, amplifies and outputs said optical signal

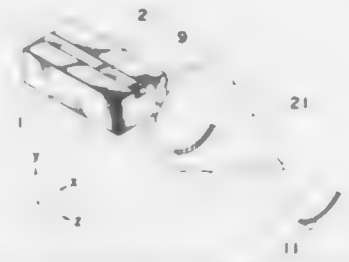
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5,005,938

OPTICAL WAVELENGTH CONVERTICAL APPARATUS

Tatsuo Itoh, Osaka; Shinichi Mizuguchi, Katano; Keishi Kubo, Moriguchi, and Takeo Sato, Kawasaki, all of Japan, assignors to Matsushita Electric Industry Co., Ltd., Osaka, Japan

Filed May 4, 1989, Ser. No. 347,817
Claims priority, application Japan, May 6, 1988, 63-111090; Jul. 15, 1988, 63-177813; Jul. 15, 1988, 63-177814
Int. Cl.' G02B 6/32
U.S. Cl. 350—96.18 10 Claims



1 An optical wavelength converting apparatus comprising

a light source,

an optical wavelength converting element comprising an optical waveguide capable of changing the wavelength of light of the type radiated by said light source that is incident at one side thereof, said optical waveguide having a central axis and transmitting light incident at one said side thereof at an angle other than 0° with respect to said central axis,

directing means operatively disposed in the apparatus between said light source and said optical waveguide for directing light radiated by said light source onto said one side of the optical waveguide,

a rotation lens defining at least a portion of a conical surface symmetrical with respect to an optical object axis of the lens,

said rotation lens disposed adjacent another side of said optical waveguide opposite that to which light radiated by said light source is directed by said directing means, and said optical wavelength converting element comprising said optical waveguide transmitting light, radiated by said light source and incident at said one side of said optical waveguide, to said at least a portion of a conical surface as divergent rays,

divergent rays impinging said at least a portion of a conical surface thereof being transmitted by said rotation lens as parallel rays

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5,005,939

OPTOELECTRONIC ASSEMBLY

Nicolaos C. Arvanitakis, Vestal, N.Y.; Vincent J. BLack, Austin, Tex.; Richard E. Corley, Jr., Lexington, Ky.; Richard G. Nolan, Binghamton, N.Y., and Leonard T. Olson, Jr., Centerville, Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 26, 1990, Ser. No. 499,238
Int. Cl.' G02B 6/42
U.S. Cl. 350—96.20 25 Claims

1 An optoelectronic assembly for providing bidirectional data transmission between fiber optic means and an electrical circuit member, said assembly comprising

a housing adapted for being positioned on said circuit member and including a base portion having first and second receptacle sections therein, and a cover portion for being attached to said base portion;

a first optoelectronic device positioned within said first receptacle portion of said housing for receiving electrical data signals and for converting said electrical data signals to optical data signals,

a second optoelectronic device positioned within said second receptacle portion of said housing for receiving optical data signals and for converting said optical data signals to electrical data signals, and

a substrate member located within said housing adjacent said first and second optoelectronic devices and adapted for



being electrically coupled to said electrical circuit member when said housing is positioned on said circuit member, said substrate member including first and second circuitized sections, said first circuitized section being electrically connected within said housing to said first optoelectronic device for providing said electrical data signals thereto and said second circuitized section being electrical connected within said housing to said second optoelectronic device for receiving said electrical data signals therefrom

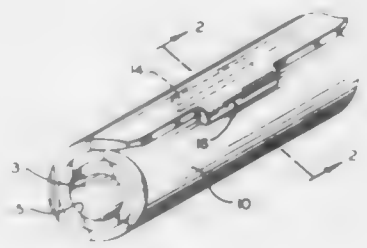
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5,005,940

CONNECTOR FOR OPTICAL FIBERS AND THE LIKE

Henry J. Modrey, 3546 S. Ocean Blvd., #7[illegible], Palm Beach, Fla. 33480

Division of Ser. No. 317,208, Feb. 21, 1989, Pat. No. 4,948,224. This application Jun. 5, 1990, Ser. No. 535,372
Int. Cl.' G02B 6/38
U.S. Cl. 350—96.21 7 Claims





3 A connector for connecting two fiber conductors in stable end-to-end engagement, comprised of

a spirally wound cylindrical member having an outer surface and an elongate axis, said cylindrical member being characterized as having at least more than one overlapping spiral winds,

said cylindrical member defining a hollow cylindrical inner volume along said elongate axis and further defining a slot therein on its outer surface adapted to receive a corresponding inwardly bent tongue member means connected to said outer surface,

said tongue member means being adapted for movement between a first position entirely removed from said slot and a second position entirely within said slot,

when said tongue member means is disposed within said slot, said tongue member means does not extend beyond the thickness of one wind of said member and thus does not extend into said inner volume of said member,

whereupon when said tongue member means is disposed within said slot, said cylindrical inner passageway assumes a first, enlarged, diameter adapted to receive the end segments of said elongated fiber members and, when said tongue member means is removed from said slot means said cylindrical inner passageway assumes a second, reduced diameter generally corresponding to the diameter of the fiber members to thereby clamp the end segments thereof in end-to-end engagement

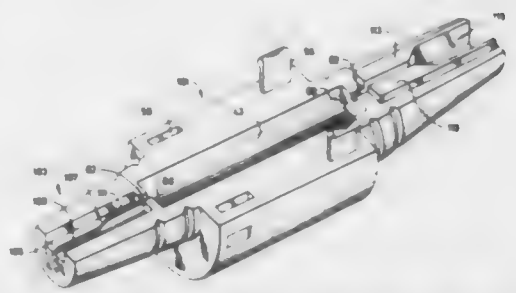
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5,005,941

FIBER OPTIC SPLICE ASSEMBLY

Robert W. Barlow, Canton; Steven E. Swanson, and Thomas M. Lynch, both of Williamsport, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 5, 1989, Ser. No. 403,438
Int. Cl.' G02B 6/38
U.S. Cl. 350—96.21 14 Claims



1 A fiber optic splice assembly for splicing optical fibers, said fibers having a transparent core with a buffer coating thereon, said assembly comprising a longitudinal body having an axial bore therethough and having opposed ends separated by and connected to a center portion; elastic means in said center portion for receiving the transparent cores of two fibers which have had a portion of their buffer coating removed, one fiber entering said body from each of said ends, means associated internally of said ends for receiving a portion of the fibers having a buffer coating thereon, and holding means cooperating with said ends for applying radial compression to said ends whereby said fibers are retained within said assembly, said ends being frusto-conical and said holding means comprising end caps which are longitudinally slidable over said ends, said end caps having an internal bore which is frusto-conical

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5,005,942

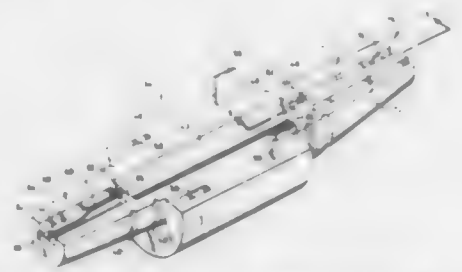
FIBER OPTIC SPLICE ASSEMBLY

Robert W. Barlow, Canton; Thomas M. Lynch, and Steven E. Swanson, both of Williamsport, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 403,438, Sep. 5, 1989. This application Oct. 2, 1989, Ser. No. 415,684
Int. Cl.' G02B 6/38
U.S. Cl. 350—96.21 15 Claims

6. a fiber optic splice assembly for splicing optical fibers, said

fibers having a transparent core with a buffer coating thereon, said assembly comprising a longitudinal body having an axial bore therethrough and having opposed ends separated by and connected to a center portion, a hollow sleeve positioned within said center portion, elastic means mounted in said hollow sleeve for receiving the transparent cores of two fibers which have had a portion of their buffer coating removed, one fiber entering said body from each of said ends, said body



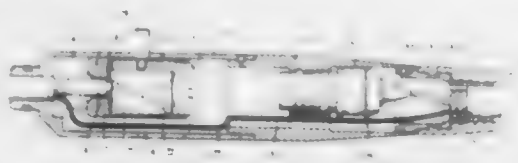
comprising longitudinal halves, means associated internally of said ends of said longitudinal halves for receiving a portion of the fibers having a buffer coating thereon and including said longitudinal bores, said longitudinal bores being defined by a slot formed on one of said halves and a projection formed on the other of said halves and holding means cooperating with said ends for applying radial compression to said ends whereby said fibers are retained within said bore.

5,005,943

RIGID VIDEO-ENDOSCOPE HAVING A ROTATABLE DEVICE FOR ADJUSTING THE ORIENTATION OF AN IMAGE RELATIVE TO AN IMAGE RECEIVING DEVICE

Francois Fort, Paris, France, assignor to Fibres Optiques Recherche et Technologie, Dourdan, France

Filed Dec. 12, 1989, Ser. No. 448,112
Claims priority, application France, Dec. 12, 1988, 88 16301
Int. Cl.' G02B 23/26, A61B 1/00
U.S. Cl. 350—96.26 6 Claims



1. A rigid video-endoscope comprising

an optical system disposed at a distal end of an elongated tubular rigid inserting portion and providing an image of an object,

a solid state image receiving device, whose axis is in alignment with the optical axis of the optical system, for picking up the image provided by the optical system, said image receiving device being connected through an electrical cable to an image processing device disposed outside the video-endoscope,

a bundle of optical fibers transmitting light from a light source and illuminating the object, said bundle passing along said elongated tubular inserting portion and defining an optical cable,

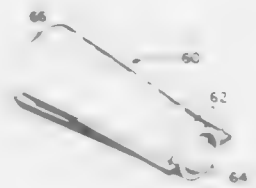
wherein said video-endoscope further includes an handle supporting said elongated inserting portion, through a proximal end thereof, and said image receiving means disposed inside said handle, this latter comprising a rotatable device for rotating the image provided by the optical system, in order to optimally adjust the orientatation of the image relative to said receiving means, said rotatable device of the handle being disposed between the optical system and the image receiving device.

5,005,944

HOLLOW LIGHTPIPE AND LIGHTPIPE TIP USING A LOW REFRACTIVE INDEX INNER LAYER

Katherine D. Laakmann, Seattle, and Michael B. Levy, Woodinville, both of Wash., assignors to Luxar Corporation, Bothell, Wash.

Continuation-in-part of Ser. No. 139,285, Dec. 29, 1987, Pat. No. 4,805,987. This application Feb. 17, 1989, Ser. No. 310,774
Int. Cl.' G02B 6/20
U.S. Cl. 350—96.32 36 Claims



1. A hollow tip for transmission of light energy from the end of a light conduit to an area exterior of the light conduit comprising

an elongated tip housing having an interior surface defining an elongated interior space through which the light energy is transmitted from an input end through an output end to the area exterior of the light conduit, said elongated tip housing being adapted to be selectively attached to the end of the light conduit, a first portion of said interior surface reflecting the light energy incident thereon from the light conduit at an incidence angle that is less than 90 degrees and being composed of a material having a complex index of refractivity with a real part (n) less than about 0.4.

5,005,945

REAR PROJECTION SCREEN AND REAR PROJECTION SYSTEM COMPRISING SUCH A SCREEN

Johannes C. van de Ven, Eindhoven, Netherlands, assignor to U. S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 467,717, Jan. 19, 1990. This application Jul. 19, 1990, Ser. No. 556,939
Claims priority, application Netherlands, Aug. 22, 1989, 8902112
Int. Cl.' G03B 21/60
U.S. Cl. 350—128 27 Claims



1. A rear projection screen having a front and a rear side for displaying at the front side of the screen a picture supplied by a plurality of primary picture sources arranged at the rear side of the screen, said screen comprising a translucent plate whose front side is provided with a multitude of parallel-arranged first light-spreading elements extending in one direction across the plate for spreading light in a first plane perpendicular to the said direction, said elements having steep edges for obtaining total internal reflection and having a top with a portion for transmission and refraction, characterized in that the rear side of the plate is provided with parallel-arranged second light-spreading elements which extend mainly in the said direction, for spreading light already upon its entrance into the plate in a plane perpendicular to said direction.

5,005,946

MULTI-CHANNEL FILTER SYSTEM

Robert W. Brandstetter, Levittown, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Apr. 6, 1989, Ser. No. 334,593
Int. Cl.' G02B 27/42, G02F 1/11, G06E 3/00, G03H 1/10
U.S. Cl. 350—162.12 34 Claims



1. A multi-channel filter system comprising

means for modulating a substantially coherent light beam with an input RF signal spectrum,

means for optically Fourier transforming and channelizing the modulated light beam to produce an input array of modulated light beams, each light beam in said input array being modulated by a spectral component of said input RF signal spectrum,

means for optically notching out noise in said input array of modulated light beams,

a holographic multi-channel spectrum filter, said spectrum filter selectively passing light beams from said input array having a correlation to preselected RF spectral components to produce a correlated output array,

means for illuminating said spectrum filter with said input array of modulated light beams to produce said correlated output array,

means for downconverting said correlated output array into an output array of noise excised and spectrum filtered RF signals, and

means for detecting and for respectively converting the signals passed by said holographic multi-channel spectrum filter into electrical output signal arrays.

5,005,947

DEVICE FOR FIXING AN OPTICAL MEMBER SUCH AS A FILTER TO A SUPPORT

Gérard Sibilo, Le Plan De Grasse, and Michel Louis, Nice, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris Cedex, France

Filed Sep. 27, 1989, Ser. No. 413,398
Claims priority, application France, Sep. 30, 1988, 88 12812
Int. Cl.' G02B 7/02, 7/00
U.S. Cl. 350—252 7 Claims

1. Device for fixing at least one optical member (12) to a support (10), characterized in that it comprises at least one clamp (20), whereof a first end of said clamp bears on the support (10) and whereof a second end of said clamp bears on the optical member (12) via a shim (26), the clamp being traversed between said ends by at least one fixing screw (22) screwed into the support, at least one elastic washer (28) being fitted between the clamp and a head of said screw, so as to tighten said optical member against the support with a calibrated force, said shim along with said optical member and said support providing flat substantially adjacent surfaces, separating strips (24) of a thermally conductive malleable material



being interposed along said flat surfaces between said optical member, the support, and the shim, said second end of said clamp (20) and the shim (26) being in contact by surfaces defining a swivel bearing.

5,005,948

LENS MOUNTING APPARATUS FOR A TELEVISION CAMERA

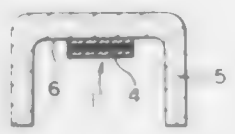
Masami Takahashi, Zushi, and Ichiro Kajiya, Yokohama, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 20, 1989, Ser. No. 424,789
Claims priority, application Japan, Oct. 20, 1988, 63-264534
Int. Cl.' G02B 7/02, H04N 5/30
U.S. Cl. 350—252 11 Claims



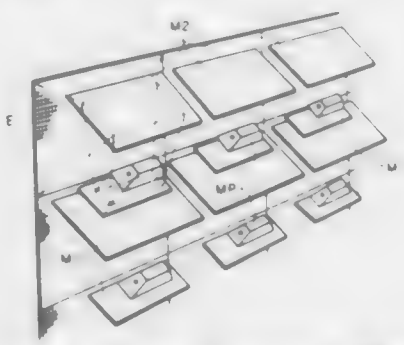
1. A lens mounting apparatus for television cameras, comprising a lens mounting mechanism on which a lens is mounted, a ring mechanism supported on said lens mounting mechanism, an elastic member for biasing said ring mechanism in the direction of the optical axis of said lens mounting mechanism, and a regulating member which abuts against a plurality of slanted cam faces formed in said ring mechanism so as to regulate a movement of said ring mechanism by said elastic member in the direction of the optical axis of said lens mounting mechanism, wherein an image pickup element-supporting member is moved toward or away from said lens mounting mechanism corresponding to said movement of said ring mechanism in the direction of said optical axis.

5,005,949
ANTI-GLARE COVERING FOR ILLUMINATE INDICATOR
Toshihiko Egawa, and Satoshi Odashima, both of Saitama, Japan, assignors to Shin Etsu Polymer Co., Ltd., Tokyo, Japan
Filed Oct. 25, 1989, Ser. No. 427,040
Claims priority, application Japan, Oct. 27, 1988, 63-140307[U]
Int. Cl.' G02B 27/00
U.S. Cl. 350—276 R 5 Claims



1. An anti-glare covering for an illuminate switch or indicator which comprises
(a) a covering member having a flat portion and two spaced-apart leg portions extending vertically from a surface of said flat portion; and
(b) an anti-glare microlouver sheet integrally melt-bonded to said covering member between said leg portions

5,005,950
GIANT LIQUID CRYSTAL DISPLAY MEANS
Francois Morin, Lannion, France, assignor to Etat Francais Represente Par Le Ministere des Postes, Issy Les Moulineaux, France
Filed Jun. 15, 1989, Ser. No. 366,587
Claims priority, application France, Jun. 28, 1988, 88 08663
Int. Cl.' G02F 1/13; H04N 9/31
U.S. Cl. 350—333 10 Claims



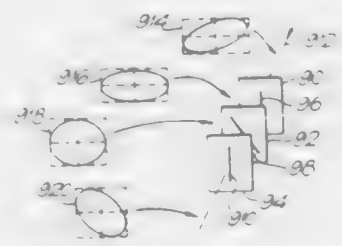
1 A giant display device comprising a large translucent screen having a front face directed toward an observer and a rear face covered by a mosaic of colored filters organized in triads of primary colors, a liquid crystal display device having a mosaic of pixels, a plurality of optical projection modules comprising a white light source and optical means for projecting an image of said mosaic of pixels of said liquid crystal display device onto said mosaic of colored filters on said rear face of said screen, each pixel of said mosaic of pixels of said liquid crystal display device being optically projected by said optical projection modules on one filter of said mosaic of colored filters.

5,005,951
LIQUID CRYSTAL DISPLAY DEVICE
Ties S. Te Velde, Waalre, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Jun. 8, 1988, Ser. No. 204,144
Claims priority, application Netherlands, Jun. 10, 1987, 8701347
Int. Cl.' G02F 1/133
U.S. Cl. 350—334 20 Claims



1 A liquid crystal display device comprising a liquid crystalline medium between a supporting plate and a cover plate, at least one of which plates is transparent and each of which is at least provided with a layer comprising a conducting material, characterized in that the layer of conducting material of the cover plate has a two-dimensional array of openings and in that spacing material is present between the plates at substantially equal distances from the openings

5,005,952
POLARIZATION CONTROLLER
Michael G. Clark, Buckinghamshire, and Ifor D. W. Samuel, Surrey, both of England, assignors to The General Electric Company, p.l.c., England
PCT No. PCT/GB88/00105, § 371 Date Dec. 14, 1988, § 102(e) Date Dec. 14, 1988, PCT Pub. No. WO88/06303, PCT Pub. Date Aug. 25, 1988
PCT Filed Feb. 18, 1988, Ser. No. 264,952
Claims priority, application United Kingdom, Feb. 18, 1987, 8703795
Int. Cl.' G02F 1/13
U.S. Cl. 350—335 7 Claims



1 A polarisation controller comprising at least one stack of nematic liquid crystal cells arranged such that radiation incident on the stack will pass through each cell in the stack in sequence, and means for applying synchronized fields across the cells so as to change the phase retardation of the radiation transmitted through each cell by a chosen amount, the optical axes of the cells being oriented with respect to each other, such that the polarisation of radiation transmitted through the controller is changed from a first polarisation state in which the radiation impinges upon the controller to a second polarisation state in which the radiation leaves the controller, one of said states being a first arbitrary polarisation and the other of said states being a pre-selected fixed polarisation or a second arbitrary polarisation; said means for applying synchronized fields including feedback means effective to change the values of said fields dependent on said second state

5,005,953
HIGH CONTRAST LIQUID CRYSTAL ELEMENT
Hideyuki Kawagishi, Fujisawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation-in-part of Ser. No. 253,077, Oct. 4, 1988, abandoned. This application Nov. 20, 1989, Ser. No. 438,046
Claims priority, application Japan, Oct. 6, 1987, 62-250676; Mar. 2, 1989, 1-48556
Int. Cl.' G02F 1/133
U.S. Cl. 350—341 16 Claims



13 A liquid crystal apparatus comprising
a a liquid crystal element comprising
a pair of substrates, each of said substrates including electrodes and uniaxial orientation-processing axes,
a ferroelectric smectic liquid crystal disposed between said substrates and having a temperature range for producing a smectic A phase, said liquid crystal being in an orientation state having at least two different average molecular axes by being disposed between said pair of substrates which are separated by a distance which is small enough to suppress a spiral alignment structure of the ferroelectric smectic liquid crystal in the absence of an electric field, and
a polarizer and an analyzer at 90° crossed nicols, wherein said ferroelectric smectic liquid crystal has a $T_A - T_B$ value no larger than 4% in the maximum value thereof within a wavelength of 440–600 nm, when oriented to produce in the absence of voltage, an angle between two different average molecular axes less than an angle between two different average molecular axes when voltage is applied, where T_A (%) is transmittance in an orientation state having one average molecular axis when the arrangement of the polarizer and the analyzer is in the darkest state of the smectic A phase and subsequently rotating only the analyzer clockwise by 15° from said darkest state with regard to the proceeding direction of incident light and TB is transmittance in an orientation state having another average molecular axis when only the analyzer is rotated counterclockwise by 15° with regard to the proceeding direction of the incident light from said darkest state, and
b first means for applying to the ferroelectric liquid crystal an AC electric field insufficient to convert one of the average molecular axis into the other average molecular axis

5,005,954
METHOD AND APPARATUS FOR SECOND-RANK TENSOR GENERATION
Hua-Kuang Liu, South Pasadena, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Feb. 16, 1989, Ser. No. 310,992
Int. Cl.' G02B 5/23; G06G 7/19; 7/192; 9/00
U.S. Cl. 350—354 6 Claims

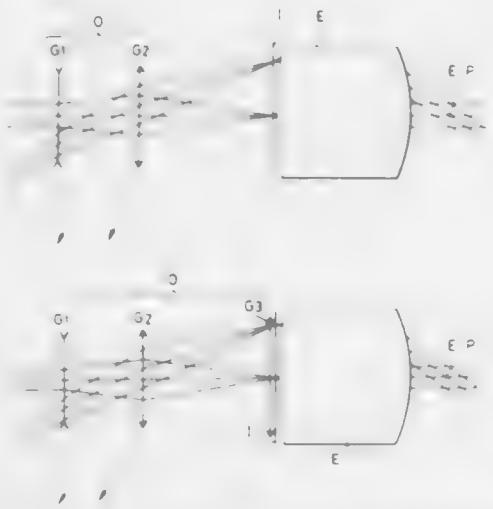


1 A real-time optical second-rank tensor generator comprising
a nonlinear refractive crystal having two parallel sides,
means for generating a first coherent vector beam representing a linear array of vector components,
means for expanding said first vector beam in a direction perpendicular to said linear array of said first vector components,
means for collimating said first expanded vector beam onto one of said two parallel sides of said crystal,
means for generating a second coherent vector beam representing a linear array of vector components oriented perpendicular to said linear array of said first vector components,
means for expanding said second vector beam in a direction perpendicular to said linear array of said second vector beam components,
means for collimating said second expanded vector beam onto the second of said two parallel sides of said crystal in exact opposition to said first expanded vector,
means for producing a coherent plane wave pumping beam for all of said first and second vector beams expanded, and
a beamsplitter positioned in the path of said plane wave pumping beam to reflect said plane wave pumping beam onto said one side of said crystal thereby to produce four wave mixing in order to generate a conjugated beam from said nonlinear photorefractive crystal that represents said second-rank tensor

5,005,955
KEPLERIAN ZOOM FINDER OPTICAL SYSTEM
Koichi Ohshita, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan
Filed Oct. 16, 1989, Ser. No. 421,765
Claims priority, application Japan, Oct. 18, 1988, 63-262209
Int. Cl.' G02B 15/14; 13/18; G03B 13/02
U.S. Cl. 350—423 15 Claims

1 A Keplerian zoom finder optical system having a zoom power variable objective lens, said Keplerian zoom finder optical system comprising
a zoom objective lens including a first lens group having a negative refracting power and capable of being moved for the purpose of conducting the zoom power variation and a second lens group including at least a positive meniscus lens whose convex surface faces an image and having a

positive refracting power, said second lens group being relatively movinl with respect to said first lens group for the purpose of conducting the zoom power variation, and an ocular used for enlarging and observing the image formed



by said zoom objective lens, wherein provided that the focal length of said first lens group is f_1, the focal length of said second lens group is f_2, and the curvature radius of said convex surface is r_a, the structure thereof is so formed as to meet the following conditions:

$$0.8 < \frac{f_1}{f_2} < 1.4 \quad (f_1 < 0)$$

$$0.1 < \frac{r_a}{f_2} < 1.4 \quad (r_a < 0)$$

5,005,956

LENS POSITION CONTROL DEVICE

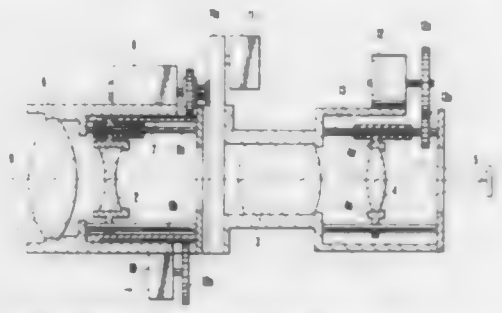
Naoya Kaneda; Hiroyuki Wada; Masahide Hirasawa, and Hirofumi Suda, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 31, 1989, Ser. No. 359,730

Claims priority, application Japan, Jun. 1, 1988, 63-135902; Jun. 7, 1988, 63-139619; Dec. 26, 1988, 63-328465

Int. Cl.[5] G02B *15/00*

U.S. Cl. 350—429 **14 Claims**



1 A lens position control device comprising

(a) a first lens group movable along an ootical axis for performing a function of varying an image magnification,

(b) a second lens group movable along the optical axis for performing a function of compensating at the time of variation of the image magnification and a function of focusing,

(c) position detecting means for detecting positions of said first lens group and said second lens group,

(d) in-focus detecting means for detecting an in-focus state, and

(e) control means for controlling movement of said second lens group on the basis of at least position information of said first lens group and said second lens group obtained by said position detecting means and information obtained by said in-focus detecting means, said control means forcibly driving said second lens group in a deviating direction from an in-focus position.

5,005,957

OBJECTIVE LENS SYSTEM FOR ENDOSCOPES

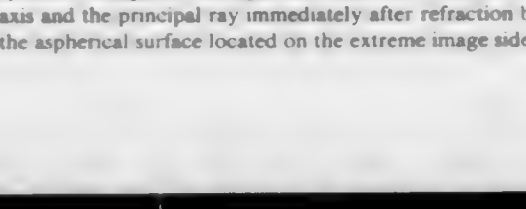
Iwao Kanamori, tokyo, and Minoru Okabe, Kanagawa, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 6, 1989, Ser. No. 403,480

Claims priority, application Japan, Sep. 7, 1988, 63-222215; Oct. 18, 1988, 63-262117; Apr. 10, 1989, 1-88115

Int. Cl.[5] G02B *13/18, 21/02*

U.S. Cl. 350—432 **18 Claims**



1 An objective lens system for endoscopes comprising, in the recited order from the object side,

a first lens unit having negative refractive power and a second lens unit having positive refractive power,

said lens units being arranged in such a manner that a principal ray passes substantially through a front focal point of said second lens unit for making the principal ray emerging from said objective lens system substantially parallel to an optical axis of the objective lens system;

said first lens unit including a negative lens component having a concave surface on the image side thereof, bearing a substantial portion of the negative refractive power of said first lens unit and satisfying the following condition (1), and said objective lens system comprising an aspherical surface satisfying the following condition (2) at 50% or more of the effective area determined depending on the maximum image height:

$$R_1 < 3f \quad (1)$$

$$\left| \frac{K_I - K_{0.5}}{K_{0.5}} \right| < |\cos\omega_I - \cos\omega_{0.5}| \quad (2)$$

wherein the reference symbol R_1 represents radius of curvature on said concave surface, the reference symbol f designating focal length of the objective lens system as a whole, the reference symbols ω_I and $\omega_{0.5}$ denote field angles at an image height of I and at ½ of the maximum image height respectively, and the reference symbols K_I and $K_{0.5}$ represent values of K at the image height of I and at ½ of the maximum image height respectively when K is defined as $K = \sin\theta_2/\tan\theta_1$ (the reference symbol θ represents an angle formed between the optical axis and the principal ray incident from the object side on said aspherical surface located on the extreme object side, and the reference symbol θ designates an angle formed between the optical axis and the principal ray immediately after refraction by the aspherical surface located on the extreme image side).

5,005,958

HIGH FLUX SOLAR ENERGY TRANSFORMATION

Roland Winston; Philip L. Gleckman, both of Chicago, and Joseph J. O'Gallagher, Flossmoor, all of Ill., assignors to Arch Development Corporation, Chicago, Ill.

Continuation of Ser. No. 164,069, Mar. 4, 1988, abandoned. This application Oct. 16, 1989, Ser. No. 423,616

Int. Cl.[5] G02B *5/08*

U.S. Cl. 350—442 **19 Claims**



1 A multi-stage solar radiant energy transformation system, said system comprising:

(a) as a primary stage, a means for focusing solar energy

(b) as a secondary stage, a non-imaging means for concentrative transmission of solar energy to an energy exit aperture,

said secondary stage disposed in energy receiving relation to said primary stage solar energy focusing means, and the concentrative capacities of said primary and secondary stages selected to provide a net solar flux intensification of at least 2000 uniformly distributed at the secondary stage energy exit aperture.

5,005,959

ILLUMINATION SYSTEM

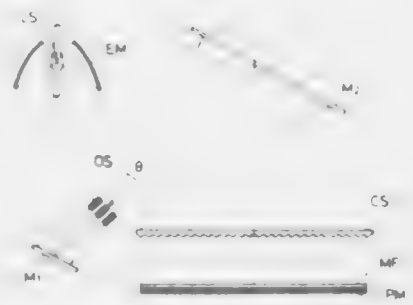
Shinichi Nagata, Kyoto; Atsushi Kikkawa, Osaka, and Kenji Endo, Nagaokakyo, all of Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan

Continuation of Ser. No. 062,440, Jun. 12, 1987, abandoned. This application May 24, 1989, Ser. No. 357,642

Claims priority, application Japan, Jun. 13, 1986, 61-138479

Int. Cl.[5] G02B *3/08*, F21V *13/00*

U.S. Cl. 350—452 **4 Claims**



1 An illumination system, comprising

a light source for producing light,

a reflector positioned with respect to said light to produce therefrom directed light,

an optical means having an entrance pupil for receiving said directed light at a characteristic entrance height, an exit pupil for passing the directed light received by said entrance pupil, and an optical axis leading from said exit pupil to an object to be illuminated, said optical means being effective for causing said light passing through said exit pupil to pass therefrom at an exit angle having a tangent which is substantially proportional to the entrance height of said directed light at said entrance pupil, including when said exit angle is larger than 10 degrees, and

collimation means, having a focal point which is in compliance with a focal point associated with said optical means, disposed between said exit pupil and said object to be illuminated for collimating light arriving at said object, said object to be illuminated being positioned on said optical axis whereby a uniform illumination is obtained on said object with a relatively short optical path of said illumination system.

5,005,960

RELAY LENS SYSTEM WITH FOUR OPTICAL ELEMENTS IN SYMMETRICAL ARRANGEMENT

Hans J. Heimbeck, Gallen, Switzerland, assignor to Med Inventio AG, Zurich, Switzerland

PCT No. PCT/EP88/00218, § 371 Date Nov. 21, 1989, § 102(e) Date Nov. 21, 1989, PCT Pub. No. WO88/07218, PCT Pub. Date Sep. 22, 1988

PCT Filed Mar. 17, 1988, Ser. No. 278,923

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1987, 3709021

Int. Cl.[5] G02B 9/34, 23/00, 23/24

U.S. Cl. 350—573 **13 Claims**



1 Relay lens system for endoscopes, comprising two rod-type lens elements and two further optical elements therebetween in symmetrical arrangement relative to a center plane of symmetry between the two rod-type lens elements and two further optical elements, wherein the rod-type lens elements are individual convex/concave lens elements with concave surfaces which face the center plane, while the two further optical elements are individual bi-convex lens elements, one of said two rod-type lens elements and one of said two further optical elements being bonded to each other.

5,005,961

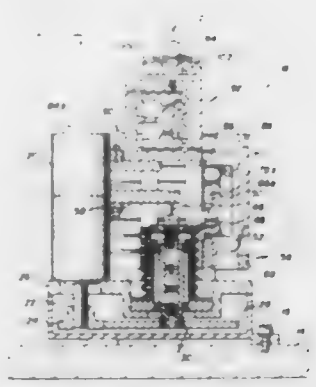
DEVICE FOR CONVERTING A DISPLACEMENT IN A DIRECTION INTO A FORCE IN THE SAME DIRECTION

Michael J. O'Brien, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 19, 1989, Ser. No. 452,892

Int. Cl.[5] G02B *5/08, 5/10, 7/18*

U.S. Cl. 350—611 **6 Claims**



1 A device for converting a displacement in a direction into a force in the same direction, said device including,

support means extensive in a plane parallel to said direction,

a first set of flexures, the flexures of the first set being of equal length and parallel to one another and each being

attached at one end to said support means and extending, in the unflexed condition, generally perpendicular to said plane;

first floating spine means attached to the ends of said flexures remote from said support means,

a second set of flexures, the flexures of said second set being of equal length and parallel to one another and each being attached at one end to said spine means and extending generally parallel to the flexures of the first set towards said support means,

first transfer means attached to the ends of the flexures of the second set remote from said first spine means,

a third set of flexures, the flexures of the third set being of equal length and parallel to one another in the unflexed state and being attached at one end to said first transfer means and extending generally parallel to the flexures of the first and second sets towards said first floating spine means,

second floating spine means attached to the ends of the flexures of the third set remote from said first transfer means;

a fourth set of flexures, the flexures of the fourth set being of equal length and parallel to one another in the unflexed state and being attached at one end to said second floating spine means and extending generally parallel to the flexures of the first, second and third sets towards said first transfer means,

second transfer means attached to the ends of the flexures of the fourth set remote from said second floating spine means,

first means for applying a displacement to one of the first and second transfer means, and

second means for applying a reaction to the other of the first and second transfer means,

the attachment of the flexures to the support means, the spine means and the transfer means being such, and the orientations of the flexures relative to the transfer means being such, that when a displacement is applied by the first means and a reaction is applied by the second means, the flexures of the third and fourth sets are caused to flex and movement of the second transfer means is guided by the first and second sets of flexures.

5,005,962

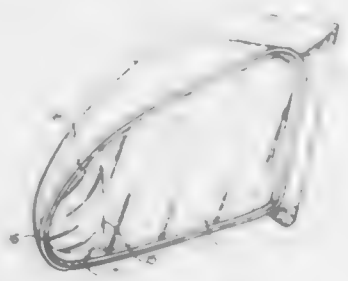
REARVIEW MIRROR

Karl W. Edelman, 45 Winter St., Hopkinton, Mass. 01748

Continuation-in-part of Ser. No. 391,433, Aug. 10, 1989, abandoned. This application Apr. 6, 1990, Ser. No. 505,603

Int. Cl.' G02B 5/10

U.S. Cl. 350—625 13 Claims



1 A rearview mirror comprising

a one piece sheet having a flat front face and a back face,

said back face having a flat section and a convex section when viewed from the front face,

and a reflective coating covering the back face, wherein the convex section is a spherical surface and the highest point on the spherical surface is adjacent to the plane of the flat section.

5,005,963

VEHICULAR MIRROR

William P. Schmidt, 21000 Woodruff, Rockwood, Mich. 48173, and Franklin D. Hutchinson, 28000 Beel Road, New Boston, Mich. 48164

Continuation-in-part of Ser. No. 254,027, Oct. 6, 1988, Pat. No. 4,938,578. This application Jun. 5, 1989, Ser. No. 361,334

The portion of the term of this patent subsequent to Jul. 3, 2007, has been disclaimed.

Int. Cl.' G02B 5/10

U.S. Cl. 350—629 16 Claims



1 A mirror for mounting onto a vehicle which provides a field-of-view about a vertical axis, the mirror comprising

a quadratic reflective surface having a generally convex shape throughout, the quadratic reflective surface having a height and a diameter, the height being normal to the diameter, the quadratic reflective surface having a first radius of curvature and a second radius of curvature, the first radius of curvature being different from the second radius of curvature, the quadratic reflective surface being bordered by a first flange and a second flange and a third flange, the quadratic reflective surface providing the driver of the vehicle with a field-of-view that is greater that the angle subtended by the quadratic reflective surface about the vertical axis.

5,005,964

SPECTACLES WITH COMBINED SLIDING AND PIVOTING REAR VISION ELEMENTS

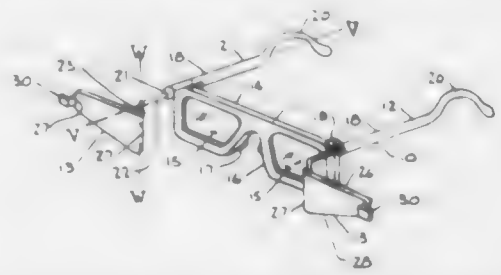
Joseph J. Berke, 2063 Long Lake Shore, West Bloomfield, Mich. 48033; George H. Muller, 1955 Gulf of Mexico Dr., Long Boat Key, Fla. 34228, and A. Gil Spear, Jr., Vero Beach, both of Fla.

Continuation of Ser. No. 243,855, Sep. 13, 1988, abandoned. This application Jan. 8, 1990, Ser. No. 463,937

Int. Cl.' G02C 7/14

U.S. Cl. 351—50 8 Claims

1 A pair of spectacles having a means for viewing objects behind a forward facing user which is integrated into a temple of the spectacles, comprising, in combination: an eyepiece, said eyepiece having a frame and a pair of lenses mounted in said frame, a pair of symmetrically opposite temples rotatably attached to the opposite outer ends of said frame, at least one of said temples having a longitudinal aperture for receiving a closely fitting slender cylindrical shaft, a slender cylindrical shaft having one portion engaging said aperture which is adjustably slidable along the axis of said aperture from a fully extended position out of said temple to a fully retracted position into said temple and adjustably rotatable about said axis throughout the full range of adjustment of said shaft along the axis of said aperture and an adjoining portion which is external to said temple and orthogonal to said first portion, and a reflective element which is visible through one of said lenses for



viewing objects behind a user of said spectacles, said reflective element being mounted on said forward orthogonal portion of said shaft and being selectively rotatable about the axis of said orthogonal portion of said shaft.

5,005,965

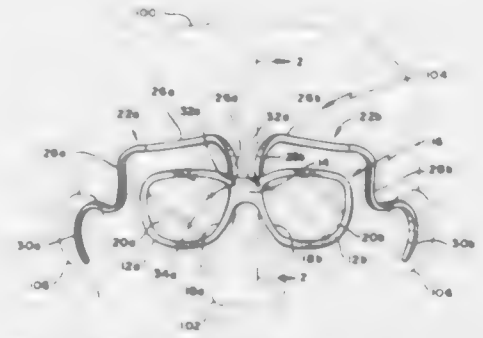
SPECTACLE FRAMES

Donald Walters, High Springs, Fla., assignor to University of Florida, Gainesville, Fla.

Filed Sep. 12, 1989, Ser. No. 405,968

Int. Cl.' G02C 3/00

U.S. Cl. 351—119 17 Claims



1 Spectacle frames comprising

substructure means for holding a pair of lenses, said substructure means comprising a first and a second rim means for retaining a lens therein, and a bridge piece attached to said first and second rim means adapted to maintain a predetermined spacing between said rims, and

first and second head-engaging members, a first end of each of said head-engaging members having means for pivotally attaching said head-engaging members to said substructure means at a top central portion of said substructure, each of said first ends of said head-engaging members extending upwardly to a predetermined distance in a substantially vertical orientation from said top central portion of said substructure, said means for pivotably attaching said head-engaging members to said substructure comprising a first and a second cylindrical bore extending inwardly into said substructure means from said top central portion of said substructure means and each of said first and second head-engaging members having a cylindrical pin extending from a first end thereof, each of said cylindrical bores being adapted to receive and retain one of said cylindrical pins, a second end of said first head-engaging member being adapted to engage one ear on a head of a wearer, and a second end of said second head-engaging member being adapted to engage the other ear on the head of the wearer.

5,005,966

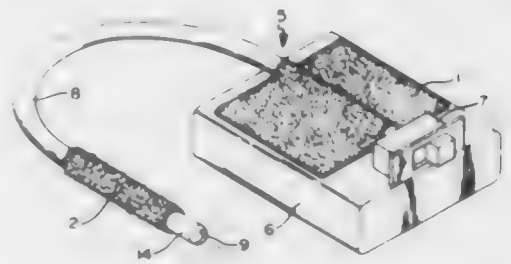
EXOPHTHALMOMETER LIGHT, AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Albert W. Handler, deceased, late of West Bloomfield, Mich.; by Bernice Handler, legal representative, West Bloomfield, Mich. 48033, and Lawrence F. Handler, North Miami Beach, Fla. 33180

Filed Jun. 2, 1988, Ser. No. 201,537

Int. Cl.' A61B 3/10

U.S. Cl. 351—221 14 Claims



1 An exophthalmometer light device, comprising

an electrical power source,

an electrical power control means operably interconnected with and controlling said electrical power source,

said power source having attachment means for affixing said power source to a Hertel-type exophthalmometer,

a light-emitting means having a flexible arm to locate the light-emitting means distally from said power source, and

said light-emitting means being electrically connected to said power source,

whereby said power source and said light emitting means may be affixed to said Hertel-type exophthalmometer, with the intensity of light emitted being controlled by said electrical power control means, thereby providing the operator of said exophthalmometer with sufficient illumination of the eye area and reflected light therefrom, to make an accurate reading, and leaving both hands free to operate said exophthalmometer.

5,005,967

MICROFILM IMAGE PROCESSING APPARATUS HAVING AUTOMATIC FOCUS CONTROL CAPABILITIES

Masaaki Kuriyama, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 29, 1989, Ser. No. 374,295

Claims priority, application Japan, Jul. 1, 1988, 63-165583; Jul. 1, 1988, 63-165584

Int. Cl.' G03B 21/53, 27/34

U.S. Cl. 353—101 15 Claims

1 A microfilm image reader for projecting an image of a microfilm onto a target plane, comprising

means for illuminating the microfilm for producing an image-bearing beam of light bearing the image of the microfilm,

a projection lens for projecting said image-bearing beam of light onto said target plane,

first detecting means for detecting a condition in which said image-bearing beam of light is focused with respect to said target plane,

first focus control means responsive to the condition detected by said detecting means and operative to establish an automatic mode of focus control operation for automatically moving said projection lens to adjust the focal plane of the lens with respect to said target plane depending on the condition detected by said detecting means,

second detecting means for detecting a condition in which the automatic mode of focus control is inoperable;

second focus control means responsive to the condition detected by said second detecting means and operative to

automatically move said projection lens to a position having its focal plane located on a predetermined plane with respect to said target plane when it is detected by said second detecting means that the automatic mode of focus control is inoperable,

manual focus control means for permitting manual adjustment of the focal plane of said projection lens after the projection lens is moved to said position by said second automatic focus control means and

indicating means for indicating the direction in which said projection lens should be moved with respect to said target plane by said manual focus control means when said projection lens is moved to said position by said second focus control means

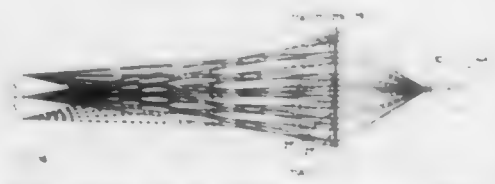
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5,005,968

CONTRAST DECREASING APPARATUS IN IMAGE FORMING OPTICAL SYSTEM

Yasuyuki Tejima; Ryota Ogawa, and Makoto Sato, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1989, Ser. No. 400,015
Claims priority, application Japan, Aug. 31, 1988, 63-217334
Int. Cl.' G03B 21/00; G02B 13/18, H04N 5/72
U.S. Cl. 353—122 24 Claims



1 An image forming optical system in which an image is formed by arrays of fine pictures elements, and which has non-emmision portions between the picture elements which do not contribute to the formation of an image, a contrast decreasing apparatus comprising means for dividing images of the respective picture elements, or a whole image formed by the picture elements, into a plurality of images and for shifting the divided images by a distance less than the size of one picture element, to be projected onto a projection plane of an image or onto an image plane of the aerial image

5,005,969

OPTICAL PROJECTION APPARATUS WITH THE FUNCTION OF CONTROLLING LASER COHERENCY

Keiji Katsuoka, Kawagoe, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 29, 1989, Ser. No. 330,291
Claims priority, application Japan, Mar. 30, 1988, 63-74293
Int. Cl.' G03B 21/14, G02B 27/10
U.S. Cl. 353—122 9 Claims



1 An optical projection apparatus comprising

a laser source

a splitting device for splitting light emitted from said laser source into a plural incoherent split light beams having light intensity equal to each other

an illuminating optical system for focusing each of said split light beams, and

a projection optical system for projecting an image of a pattern of a mask illuminated with said split light beams from said illumination optical system into a sample,

wherein said splitting device is constituted by a first reflection plate constituted by divisional portions respectively having predetermined reflection coefficients different from each other, and a second reflection plate arranged so as to return light reflected from one of said divisional portions of said first reflection plate to said first reflection plate so that said returned light enters into different one of said divisional portions of said first reflection plate having a reflection coefficient different from that of said one divisional portion, and in which a distance along which light reciprocates once between said first and second reflection plates is held so as to be longer than a coherent length and respective split light beams emitted from said divisional portions of said first reflection plate enter into corresponding lens portions of said illumination optical system

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5,005,970

DISTANCE DETECTING APPARATUS

Keiji Kunishige, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Mar. 3, 1989, Ser. No. 318,723
Claims priority, application Japan, Mar. 4, 1988, 63-52416
Int. Cl.' G01C 3/10, 3/08
U.S. Cl. 356—1 43 Claims

17 A distance detecting apparatus for a camera comprising

projection means for projecting light toward an object;

a semiconductor position sensitive element for receiving reflected light from an object being photographed as a light beam is projected thereto from said projection means and for producing a pair of signal currents depending on the position thereon of incidence of the reflected light, the semiconductor position sensitive element being positioned so that reflected light from an object being photographed which is located at infinity impinges thereon at a position which is displaced toward the projection means from the center of the element.

superimposition circuit means for superimposing bias currents upon the pair of signal currents,

a bias current preset circuit for presetting predetermined bias currents which are superimposed upon the pair of signal currents,

and a calculation circuit for calculating a distance to an object on the basis of an output from the superimposition circuit means

the predetermined values of said bias currents being selected so that the calculated output is substantially proportional to the reciprocal of a distance to an object to be photographed over an entire range across which the determination of distance is enabled

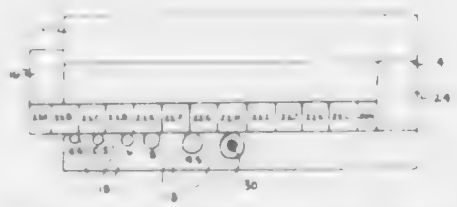
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5,005,971

METHOD AND APPARATUS FOR SIMPLIFYING AND IMPROVING CONSISTENCY OF COLOR GRADING OF GEMSTONES

Charles E. Davis, 1412 Watrous Dr., Titusville, Fla. 32780

Filed Jul. 3, 1990, Ser. No. 548,292
Int. Cl.' G01N 21/87
U.S. Cl. 356—30 7 Claims



1 Apparatus for grading gemstones within a color range comprising

a slide having a plurality of chips arranged in end-to-end relationship, each of the chips having a hue falling between the hue of each adjacent chip, and

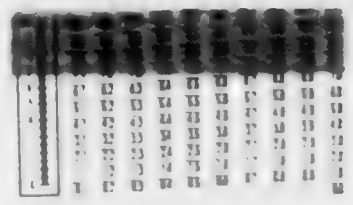
a frame for holding said slide in sliding engagement within a groove formed in a surface of said frame, said frame having at least one pocket formed in said surface adjacent said groove, said at least one pocket including an aperture communicating between said pocket and said groove, said aperture having a width less than the width of each one of said chips when said slide is positioned in said groove, said pocket being adapted for receiving a gemstone for comparing with the hue of each of said chips as said slide is moved within said frame

5,005,972

REFRACTOMETER READOUT SYSTEM

Herbert F. Goldberg, 195 Heath's Bridge Rd., Concord, Mass. 01742

Filed Jan. 24, 1990, Ser. No. 469,343
Int. Cl.' G01N 21/41
U.S. Cl. 356—135 7 Claims



1 In a refractometer of the critical angle of total reflection type

a scale for reading the concentration of a substance to be measured, an optical system including an objective to form an image on a reticle carrying said scale, said image including a shadow line moving across said scale in a direction of measurement in response to changes of said concentration to be measured, and

said scale being composed of scale segments, and

said scale segments being composed of successive scale divisions oriented parallel to said shadow line and positioned stepwise end-by-end, and

said scale segments sloping laterally to said direction of measurement, and forming angles of orientation with respect to said show line

said sloping scale segments being positioned with respect to each other to form a continuously reading scale, and

identifying numerals being positioned adjacent to at least one half of the said successive scale divisions to form discrete reading units providing a direct numerical readout of said concentration of said substance to be measured

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5,005,973

LASER BORESIGHTING METHOD AND APPARATUS FOR WEAPONRY

William E. Mimmack, El Paso, Tex., and William J. Thompson, El Cajon, Calif., assignors to Cubic Corporation, San Diego, Calif.

Filed Apr. 26, 1990, Ser. No. 497,543
Int. Cl.' G01B 11/26, G02B 26/08
U.S. Cl. 356—152 14 Claims



1 A boresighting system for establishing the boresight of a vehicle-borne weapon relative to a fixed reference line on said

vehicle which establishes a first axis of reference, such system comprising a light source and a projector comprising a collimator lens receiving light from said light source to establish a second axis and positioned on the vehicle to project a collimated light beam parallel to said first axis of reference, a weapon positioned on said vehicle remotely from and in non-axial alignment with said projector, a position-sensitive sensor, a receiver positioned on said vehicle at said weapon and coaxial with said weapon for focusing the collimated light beam onto said position-sensitive sensor the output of which indicates departure from an alignment condition, and one or more optical deviators for directing the collimated light beam to the receiver

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5,005,974

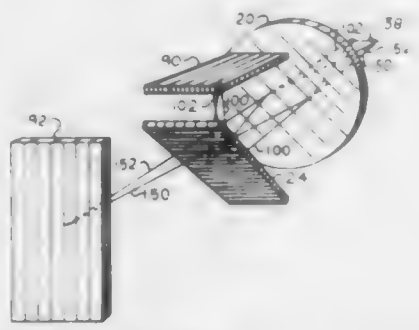
PROJECTING TESSELLATOR

Peter S. Baum, 9 Eustis St., #2R, Cambridge, Mass. 02140

Division of Ser. No. 303,956, Jan. 25, 1989, Pat. No. 4,940,309. This application Dec. 19, 1989, Ser. No. 454,051

Int. Cl.[5] G02B 5/08, 7/18, 27/14

U.S. Cl. 350—171 10 Claims



1. A tessellator comprising

(a) a focusing means used to form a set of electromagnetic waves into a clear image,

(b) a plurality of source elements, each of which generates a segment of said clear image,

(c) at least one reflective means positioned along the path taken by the electromagnetic waves as they travel from said source elements to said focusing means, said reflective means positioned farther from said focusing means than a minimum tessellating distance to direct at least one section of said electromagnetic waves from at least one of said individual source elements to said focusing means.

5,005,975

SURFACE PROFILE ANALYZER

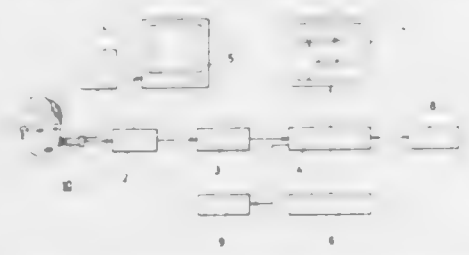
Michio Kawai, Funabashi; Sadahiro Tanaka, Yokohama, and Osamu Osanai, Chiba, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Aug. 31, 1988, Ser. No. 239,118

Claims priority, application Japan, Aug. 31, 1987, 62-216773

Int. Cl.[5] G01N 21/00; G01B 11/30

U.S. Cl. 356—237 11 Claims



1. A profile analyzer for human skin surfaces comprising:

a ring-shaped illuminating device for irradiating a predetermined area of a human skin surface from all peripheral directions thereof at an irradiating angle of 0° to 10° with respect to the skin surface;

image pick-up means for photographing the skin surface illuminated by said ring-shaped illuminating device, thereby generating an image signal,

negative-positive converter means, operatively connected to said image pick-up means, for converting said image signal representing the skin surface to from a negative image to a positive image;

digital signal generating means, operatively connected to said negative-positive converter means, for converting said image signal representing a positive image of skin surface into a digital signal representing an image of the skin surface, and

a computer including member means for storing said digital signal

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5,005,976

ELECTROTHERMAL ATOMIZATION OF A SAMPLE FOR SPECTROSCOPIC PURPOSES

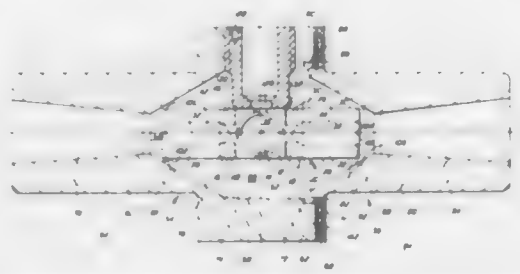
Rolf Tamm, Am Fohrenbuhl 8, 7777 Salem 2; Bernhard Huber, Hildegardring 42, 7770 Uberlingen; Gunther Rodel, Hinter den Garten 13, 7776 Owingen, and Erich Stengele, Dorfstr. 23, 7776 Taisersdorf, all of Fed. Rep. of Germany

Filed Jul. 11, 1989, Ser. No. 377,992

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1988, 3823733

Int. Cl.[5] G01J 3/30; G01N 21/74

U.S. Cl. 356—312 29 Claims



1 An electrothermal atomization furnace assembly comprising

an electrothermal furnace body having a furnace bore adapted for passing a radiation beam therethrough, a sample port for introducing sample into the furnace bore and contact surfaces configured for mounting engagement between coacting electrical contacts for supplying electrical current through said furnace body,

current-supplying contact means for operationally mounting the furnace body and supplying current therethrough to heat the furnace body for sample atomization,

said contact means comprising first and second contact elements coacting to form a cavity containing said furnace body and having a though-bore in alignment with said sample port for introducing sample into the furnace body and exhausting inert gas and sample components, said first and second contact elements being in non-contacting disposition to form a predetermined gap therebetween,

electrically insulating seal means for sealing said gap against inert gas loss from said cavity, and

said contact means having means for providing inert gas in a defined flow about and within said furnace body to prevent exposure to oxygen and exhausting out said throughbore

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5,005,977

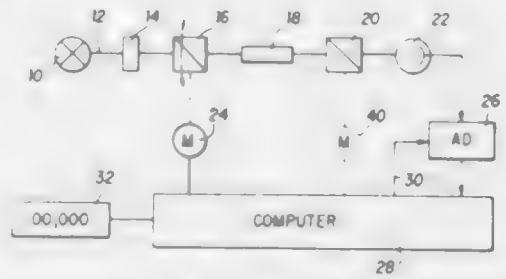
POLARIMETER

Toma Tomoff, Lavendelweg 9, 7770 Uberlingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 400,304, Aug. 29, 1989. This application Oct. 30, 1989, Ser. No. 429,218

Int. Cl.[5] G01N 21/21

U.S. Cl. 356—367 9 Claims



1 A polarimeter for measuring the rotation of optically active samplers comprising

light source means for generating a measuring light beam along a light path for polarimetric analysis of a sample,

polarizer means for polarizing said measuring light beam to define a polarization plane for passing through a sample, said light beam having a beam axis and said polarizer means being mounted for rotational movement about said axis,

sample vessel means for holding sample to be analyzed,

analyzer means mounted in the light path to receive the measuring light beam from the sample vessel means, said analyzer means having a zero position and defining a polarization plane,

photodetector means for sensing the measuring light beam from said analyzer means,

servomotor means for rotating said polarizer means with a first adjusting movement to attain a coarse balancing of the polarization plane of the measuring light beam relative to said zero position of said analyzer means and with a superimposed second reciprocating rotational movement,

control means for controlling said servomotor means for said adjusting movement and said superimposed reciprocating rotational movement of said polarizer means, said control means being connected to said detector means, and

means for fine measurement of angle between the polarization plane of said analyzer in said zero position and said polarization plane of the measuring light beam in a coarsely balanced position

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5,005,978

APPARATUS AND METHOD FOR THE NONCONTACT MEASUREMENT OF DRILL DIAMETER, RUNOUT, AND TIP POSITION

Timothy A. Skunes, Columbia Heights; Steven K. Case, St. Louis Park, and Jeffrey A. Jalkio, St. Paul, all of Minn., assignors to CyberOptics Corporation, Minneapolis, Minn.

Filed Nov. 6, 1989, Ser. No. 433,620

Int. Cl.[5] G01B 11/00, 11/04

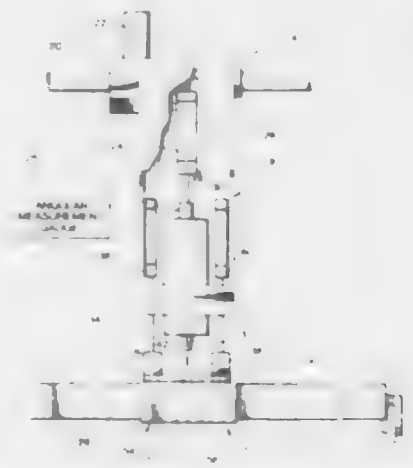
U.S. Cl. 356—372 32 Claims

1 An apparatus for measuring the lateral variation of a rotating element defining an operating envelope, comprising

angular measurement means for determining the angular position of said rotating element,

sensor means for locating the edge of said envelope at first and second angular positions of said rotating element to provide first and second envelope edge positions, and

measurement means for determining the linear difference between said first and second envelope edge positions



whereby said linear difference provides a measure of said lateral variation

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5,005,979

OPTICAL POSITION DETECTION

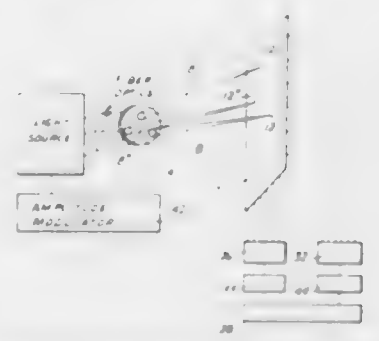
Heinz Sontag, Friedrichshafen; Hartmut Elias, Meersburg, both of Fed. Rep. of Germany; Wolfgang Ludwig, Taegerwilen, Switzerland; Walter Fritzsch, Markdorf, Fed. Rep. of Germany; Wolfgang Lachner, Daisendorf, Fed. Rep. of Germany; Rainer Hundhausen, Immenstaad, Fed. Rep. of Germany, and Harald Kratz, Tettnang, Fed. Rep. of Germany, assignors to Dornier GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Jul. 31, 1989, Ser. No. 387,623

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1988, 3826067

Int. Cl.[5] G01B 11/14; F21V 9/16

U.S. Cl. 356—375 4 Claims



1. Apparatus for determining the position of objects comprising

light source means positioned in relation to one of said objects such that form a particular position on the one object three collimated beams issue respectively bearing different but fixed and definite positional relationship to the position of said one object, and being differently modulated,

a planar flourescent foil or plate positioned in relation to said one object such that three spots on said foil are stimulated bearing in a two dimensional fashion a very definite position relationship to the position of the one object owing to the utilization of said three collimated beams that provide the stimulations,

a plurality of fiber optics, each having a first and a second end, respective first ends of the respective fiber optics of the plurality of fiber optics being arranged in a spatial relation to said flourescent foil or plate, that establishes and is a particular geometric pattern of positioning, to

receive in each instance radiation from such stimulated spots, respective other ends of the fiber optics being arranged in a similar but smaller scale geometric pattern as the first ends are; and

detector means in relation to said other ends providing electrical signals that represent the position of said object there being a demodulator included in the detection means in order to differentiate among the different spots, by demodulating in accordance with the different modulations

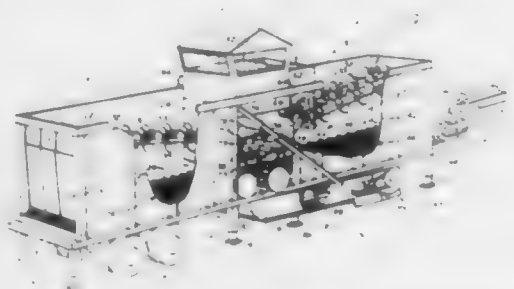
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5,005,980

SLUDGE/SOIL MIXING MACHINE

Harold M. Zimmerman, R.D. #1, Wabash Rd., Ephrata, Pa. 17522

Filed Jan. 5, 1990, Ser. No. 461,371
Int. Cl.' B01F *15/04, 15/02*
U.S. Cl. 366—162 20 Claims



1 A mixing machine for homogeneously mixing two solid materials, comprising

a support frame;

a mixing chamber centrally mounted on said support frame,

a first hopper mounted on said support frame for holding a supply of a first material on one side of said mixing chamber, said first hopper having a first conveyor means for moving said first material from said first hopper through a first discharge opening into said mixing chamber,

a second hopper mounted on said support frame for holding a supply of a second material on the opposing side of said mixing chamber from said first hopper, said second hopper having a second conveyor means for moving said second material from said second hopper through a second discharge opening into said mixing chamber,

rotor means rotatably supported within said mixing chamber to engage both said first and second materials entering said mixing chamber and to effect both a comminuting and a mixing of said first and second materials while in said mixing chamber to form a mixed material, said rotor means further being operable to discharge said mixed material through a discharge opening in said mixing chamber,

discharge means supported from said support frame in flow communication with said discharge opening in said mixing chamber to receive said mixed material from said rotor means, to effect a further mixing of said mixed material, and to effect a discharge of the mixed material remotely from said machine; and

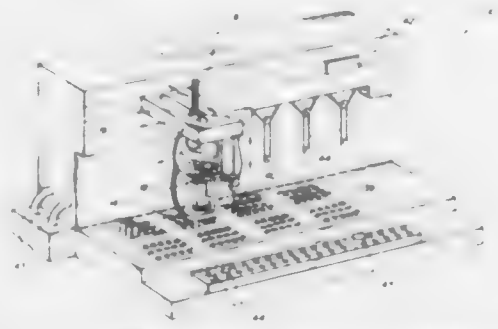
power means operably connected to said first conveyor means, said second conveyor means, said rotor means, and said discharge means to drive the operation thereof

5,005,981

APPARATUS FOR METHOD FOR CAUSING VORTICES IN A TEST TUBE

Harvey Schulte, Los Altos, and Sal Noto, Sunnyvale, both of Calif., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Sep. 8, 1989, Ser. No. 405,803
Int. Cl.' B01F *13/08*
U.S. Cl. 366—219 10 Claims



1 A test tube handling assembly for causing a vortex in a test tube sample comprising

an elongated member with an end for engaging a test tube and an end opposite thereto driven about an axis of the member for orbital movement with the axis thereof, the member having a center part thereon between the ends thereof and along the axis,

a support for the member with an arm extending therefrom to carry the center part of the member and permit limited motion of the member relative to the support, the arm carries the center part in spaced apart relation with respect to the support so that movement of the member relative to the center part is permitted without contact between the support and the test tube or the member,

a test tube gripping means on the end for engaging the test tube, the gripping means having test tube contacting means able to hold the test tube and the contents thereof for engaging an open end of the test tube during movement of the member relative to the axis, the contacting means including an inflatable bladder which upon inflation holds the open end of the test tube with a seal for closing the open end of the test tube,

a drive located on the support near the end opposite and in contact with the gripping means, the drive having a motor carried on the support, the motor axis and the member axis are in spaced parallel relation relative to each other with a linkage means between the end opposite the motor axis to cause the axis of the member to orbit imparting an orbital motion to the end opposite of the member thereby orbiting the end for engaging the test tube to cause the test tube to move with the axis thereby swinging the test tube relative to the center part of the member

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5,005,982

MATERIAL PROCESSOR

Kenneth J. Kistner, 419 Tahoe La., Midlothian, Tex. 76065

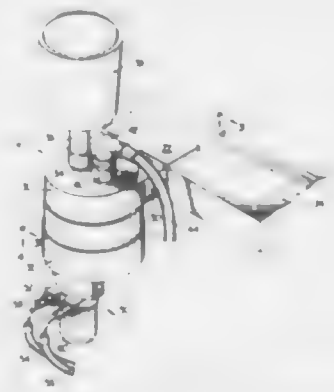
Filed Jun. 21, 1989, Ser. No. 369,108
Int. Cl.' B01F *5/14*
U.S. Cl. 366—272 29 Claims

1 A material processor comprising

a housing defining a process chamber having an inlet for introducing material therein and an outlet for discharging material therefrom,

a drive process gear and a driven process gear in intermeshing relation and rotatable in said process chamber, said area of intermesh being in a flow path between the inlet and outlet in the process chamber,

said drive and driven process gears designed with a clearance therebetween such that the mesh between said gears during selected rotational speeds permits said driven gear to be forced ahead of and out of contact with said drive gear by material therebetween, thereby allowing material



to flow from the discharge side to the inlet side of said gears through the intermesh, and

a power source for rotating said drive gear at one of said rotational speeds

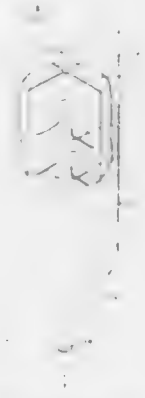
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5,005,983

PLATE BLENDER

Dale Draffen, Paducah; William E. Dunning, Eddyville; Larry D. McGregor, Benton; Donald L. Walker, Paducah, all of Ky., and Harold R. Sisk, Deatsville, Ala., assignors to Apex Engineering Inc., Calvert City, Ky.

Filed Jan. 23, 1989, Ser. No. 299,445
Int. Cl.' B01F *5/06*
U.S. Cl. 366—340 11 Claims



1 A stationary mixing and blending apparatus for particulate material which employs a static action for solids mixing on a batch flow basis comprising a chamber having walls and an inlet and outlet at substantially opposite ends thereof, a plurality of planar baffle members positioned within said chamber and extending radially outwardly to and contacting the chamber walls, said baffle members defining a plurality of vertically extending blending zones with one blending zone located between each two adjacent baffle members, said baffle members each having at lest one opening or window for passage of said particulate material from one blending zone to another; and with said inlet for the chamber being positioned above a blending zone defined between adjacent baffles, wherein the opening for each successive baffle in one of either a clockwise or counter clockwise direction from an upper opening is at a progressively lower level around the circumference of the chamber

5,005,984

OPTICAL HEAT FLUX GAUGE

Bruce W. Noel, Espanola, N. Mex.; Henry M. Borella, Santa Barbara, Calif.; Michael R. Cates, Oak Ridge, Tenn.; W. Dale Turley, Santa Barbara, Calif.; Charles D. MacArthur, Clayton, and Gregory C. Cala, Dayton, both of Ohio, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 362,541, Jun. 7, 1989. This application Aug. 24, 1990, Ser. No. 572,073
Int. Cl.' G01K *17/00*
U.S. Cl. 374—29 8 Claims



1 An optically interrogated gauge for measuring heat flux incident on a plurality of points on a surface comprising

a plurality of first thermographic phosphors in direct contact with said surface,

a plurality of second thermographic phosphors spaced above, but juxtaposed in relation to said plurality of first thermographic phosphors,

thermal insulating means having a predetermined thickness and thermal conductivity between said plurality of first thermographic phosphors and said plurality of second thermographic phosphors for thermally isolating said plurality of first thermographic phosphors from said plurality of second thermographic phosphors,

light means incident on said plurality of first thermographic phosphors and on said plurality of second thermographic phosphors, for producing first luminescence from each of said plurality of first thermographic phosphors and second luminescence from each of said plurality of second thermographic phosphors collecting means for collecting said first and second luminescences wherein said first luminescence and said second luminescence are indicative of the temperatures of said first and second thermographic phosphors at a plurality of points on said surface, and computing means connected to said collecting means for determining the heat flux on said plurality of points on said surface using numerical differences between said temperatures of said pluralities of first and second thermographic phosphors, and said thickness and thermal conductivity of said thermal insulating means

8 A method of determining heat flux incident on a surface comprising the steps of

depositing a plurality of first thermographic phosphors on said surface,

depositing a thermal insulator having a predetermined thickness and thermal conductivity over said plurality of first thermographic phosphors;

depositing a plurality of second thermographic phosphors over said thermal insulator;

illuminating said plurality of second thermographic phosphors and said plurality of first thermographic phosphors with light to produce first luminescence from said plurality of first thermographic phosphors and second luminescence from said plurality of second thermographic phosphors,

collecting said first and second luminescences, and

computing said heat flux incident on said surface from information contained within said first and second lumines-

cences and said thickness and thermal conductivity of said thermal insulator

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5,005,985

METHOD OF DETERMINING THERMAL COEFFICIENT OF MATERIALS

Ewa Piórkowska-Galeska, and Andrzej Galeski, both of Lód , Poland, assignors to Polska Akademia Nauk Centrum Badan Molekularnych i Makromolekularnych, Lód , Poland

Filed May 5, 1989, Ser. No. 348,070
Claims priority, application Poland, May 20, 1988, 272596
Int. Cl.[5] G01N 25/18
U.S. Cl. 374—44 5 Claims



1 A method for determining thermal conduction coefficient of a material sample having two opposite surfaces, comprising the steps of:

placing said material sample in a system composed of a heater, a first and second heat sinks, a first and a second identical reference samples having known thermal conduction coefficients, said first reference sample being in thermal contact with the first heat sink, said second reference sample being in thermal contact with the second heat sink, said material sample and said heater being positioned between the first and the second reference samples and maintaining thermal contacts therewith;

supplying an amount of heat in a time unit by the heater so as to give rise to a heat flux across the samples,

measuring said amount of supplied heat during a preferably continuously linear change of the temperature of said heat sinks;

measuring a momentary temperature difference between the two opposite surfaces of the material sample, and

determing the thermal conduction coefficient of the material sample for the momentary temperature of the system on the basis of the following equation

$$\lambda = \frac{P}{2s} \cdot \frac{l}{\Delta T} \cdot \frac{\lambda_1}{2 l_1}$$

wherein

λ is the thermal conduction coefficient of the material sample;

P is the amount of heat supplied by the heater in a time unit,

l is the thickness of the material sample,

s is the surface of the heater;

Δ is the momentary temperature difference between surfaces of the material sample;

λ_1 is the thermal conduction coefficient of the reference samples, and

l_1 is the thickness of the reference samples

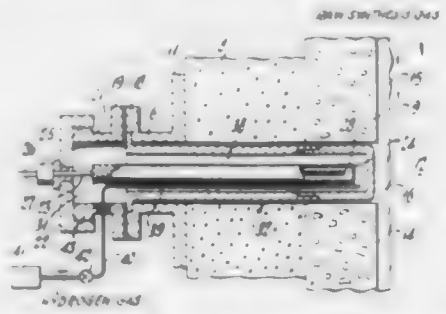
5,005,986

SLAG RESISTANT THERMOCOUPLE SHEATH

Mitri S. Najjar, Wappingers Falls, N.Y., and Arnulf Muan, Lacey Spring, Va., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 19, 1989, Ser. No. 367,930
Int. Cl.[5] G01K 1/10, 1/08
U.S. Cl. 374—179 12 Claims

1. In an apparatus comprising a thermocouple for measuring the temperature in a system for the partial oxidation of liquid hydrocarbonaceous and/or solid carbonaceous fuel with a free-oxygen containing gas in the presence of a temperature moderator in the reaction zone of a gasifier to produce an effluent gas stream comprising H_2, CO, CO_2, and at least one member from the group consisting of H_2O, N_2, H_2S, COS, Ar, and CH_4, along with slag containing Fe and other free metals, the improvement comprising a metal sheath for enclosing said



thermocouple thereby protecting said thermocouple from exposure to iron and other damaging elements in said slag, and wherein said protective sheath is made from a continuous binary alloy consisting of about 30 to 70 wt. % of palladium and the remainder silver

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5,005,987

RECTILINEAR MOTION ROLLING GUIDE UNIT

Kunihiko Morita, Koganei, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 379,259, Jul. 13, 1989. This application Sep. 11, 1990, Ser. No. 570,596
Claims priority, application Japan, Dec. 1, 1988, 63-302239
Int. Cl.[5] F16C 29/06, 19/49
U.S. Cl. 384—43 4 Claims



1 A rectilinear motion rolling guide unit comprising

a rail having a top part with projecting side portions, the upper and lower corners of said side portions being chamfered to form inclined upper and lower rail track surfaces;

an inverted U-shaped casing having a concave portion for riding on said rail, said concave portion having upper and lower casing track surfaces corresponding to said upper and lower rail track surfaces,

plural rollers carried between said upper rail and casing track surfaces for resisting a first force tending to decrease the distance between said top part and said concave portion and for holding said rail approximately centered in said concave portion; and

plural balls carried between said lower rail and casing track surfaces for resisting a second force having a component opposite to said first force and for holding said rail approximately centered in said concave portion,

said casing having two first cavities for carrying said plural rollers and two second cavities for carrying said plural balls,

each of said first cavities having an axis that is aligned approximately forty-five degrees to said top part's upper surface when viewed in vertical cross section and each of said second cavities having an axis that is aligned approximately parallel to said top part's upper surface when viewed in vertical cross section

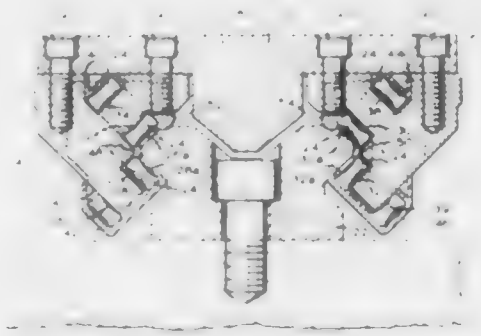
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5,005,988

LINEAR MOTION BEARING

Gregory S. Lyon, Manorhaven, N.Y., assignor to Thomson Industries, Inc., Port Washington, N.Y.

Filed Mar. 28, 1990, Ser. No. 500,404
Int. Cl.[5] F16C 31/06
U.S. Cl. 384—44 14 Claims



1 Linear motion bearing which comprises

rail having load bearing surfaces, and

bearing carriage having rolling element surfaces which define with said load bearing surfaces of said rail, load bearing raceways for reception of a plurality of cylindrical rolling elements, said carriage further defining return raceways communicating with said load bearing raceways for conducting said plurality of cylindrical rolling elements between said load bearing raceways and respective return raceways, said rolling elements supporting said carriage with respect to said rail when in a load bearing raceway, each said load bearing surface having a portion which contacts said rolling elements generally centrally thereof and being configured to define a space between said surface and each rolling element end portion.

5,005,989

ROLLER BIT

Harry L. Karlsson, Sandviken, Sweden, assignor to Sandvik AB, Sandviken, Sweden

Continuation of Ser. No. 331,388, Mar. 31, 1989, abandoned. This application Jul. 6, 1990, Ser. No. 549,250
Claims priority, application Sweden, Apr. 5, 1988, 8801233
Int. Cl.[5] E21B 10/22; F16C 33/72
U.S. Cl. 384—94 8 Claims



1. A roller bit comprising a plurality of legs each leg having a longitudinally extending pin, a cutting cone rotatably mounted on each of said pins by bearing means, a prefabricated sealing insert fixedly connected at a longitudinally inner end of each of said pins and including a sealing surface at least a portion of which is situated radially between said pin and said cone, a sealing element positioned between each of said cones and a respective sealing surface, said insert formed of a material having a hardness greater than a core hardness of said pin

8 A leg of a roller bit, said leg including a longitudinally extending pin adapted to rotatably support a cutting cone, bearing races for the cutting cone being arranged on said pin, a prefabricated sealing insert fixedly connected at a longitudinally inner end of said pin and including a sealing surface for receiving a sealing element, said insert formed of a material having a hardness greater than a core hardness of said pin

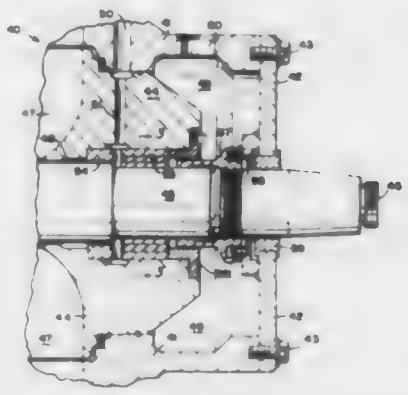
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5,005,990

PUMP BEARING SYSTEM

Timothy L. Wotring, Emmaus, Pa., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Apr. 27, 1990, Ser. No. 516,039
Int. Cl.[5] F16C 33/74, F04D 29/08
U.S. Cl. 384—130 4 Claims



1 A bearing system for a centrifugal pump comprising a pump casing have a pumping chamber and a separate bearing chamber, a pump shaft extending through the bearing chamber into the pumping chamber and having an end located outside of the pump casing adapted to be driven and the other end connected to a pump impeller for rotation inside of the pumping chamber for pumping fluid, bearing means inside of said bearing chamber for supporting said shaft for rotation, first seal means separating said bearing chamber from said pumping chamber and second seal means separating said bearing chamber from the outside of the pump casing, said first seal means being adapted to restrict the leakage of the pumped fluid from said pumping chamber into said bearing chamber while allowing some leakage, and means for admitting a portion of the pumped fluid to said bearing chamber to cool the sealing means and to lubricate the bearing, whereby any fluid leaking from the bearing chamber into the pumping chamber mixes with the pumped fluid without contaminating the pumped fluid

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5,005,991

SPHERICAL BEARING LINK

David E. Heumann, Jupiter, and William G. Hoop, Palm Beach Gardens, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 4, 1987, Ser. No. 129,023
Int. Cl.[5] F16C 23/04
U.S. Cl. 384—208 3 Claims

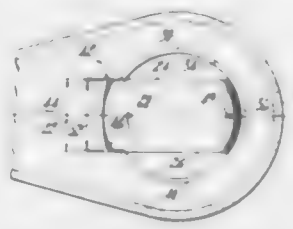
1 A spherical bearing link comprising

an elongated link having a longitudinal axis, at least one link opening adjacent at least one end, and an arm extending away from said end;

a truncated ball member having a width defined by substantially flat opposing sides and having a spherical perimeter,

an opening through said ball member substantially perpendicular to said opposing sides;

said link opening having a spherical inner surface commensurate with the spherical perimeter of said ball member on the edge of said link opening closest to the end, and also on both sides of said link opening along said axis.



said link opening having an axially extending entry slot only on the arm side of said link opening for receiving said ball member when turned to have the opposing sides of the ball member parallel to the axis of said link opening.

5,005,992

SEAL FOR SELF-ALIGNING BEARINGS

Peter Dreschmann, Dittelbrunn, and Wilhelm Walter, Oberthulba/Reith, both of Fed. Rep. of Germany, assignors to FAG Kugelfischer George Schafer (KGaA), Fed. Rep. of Germany

Filed Apr. 5, 1990, Ser. No. 505,055

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1989, 8904504[U]

Int. Cl.' F16C 33/72, 23/08

U.S. Cl. 384—484 7 Claims



1. A seal for self-aligning bearing wherein said bearing has an inner and an outer concentric bearing ring, said bearing rings each having opposite first and second axial ends, and said bearing rings are rotatable relative to one another and are supported relative to one another by interposed bearing roller means between said rings;

a first seal ring fastened to said first axial end of said inner bearing ring said first seal ring also having a radially extending portion,

a second seal ring fastened to said first axial end of said outer bearing ring that is adjacent said first axial end of said inner bearing ring, said first and second seal rings partially overlapping radially and having an annular gap between them,

a first resilient sealing lip fixed to said first seal ring and extending across said annular gap and resiliently pressing against said second seal ring, a second resilient sealing lip fastened to said second seal ring and shaped and oriented to rest with oblique inclination against said radially extending portion of said first seal ring,

said second seal ring having a mostly axially outwardly extending portion which is approximately spherically radially and axially outwardly convexly curved around the center of said bearing and said first sealing lip pressing against said convexly spherically curved portion, whereby said first lip continuously sealingly presses against said outwardly extending spherically and convexly curved portion when said bearing rings misalign.

5,005,993

ELECTROTHERMAL PRINTER WITH A RESISTIVE INK RIBBON AND DIFFERING RESISTANCE CURRENT RETURN PATHS

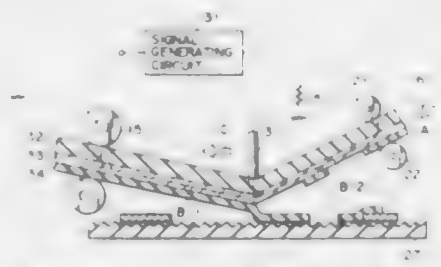
Tadayoshi Ohno; Hitoshi Nagato, both of Kawasaki, and Tsutomu Kanai, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 225,787, Jul. 29, 1988, abandoned. This application May 4, 1990, Ser. No. 517,452

Claims priority, application Japan, Jul. 31, 1987, 62-190365, Nov. 10, 1987, 62-282012

Int. Cl.' B41J 2/39

U.S. Cl. 400—120 21 Claims



1. An electrothermal printing apparatus for transferring ink onto a recording medium, thereby to record data on the recording medium, said apparatus comprising

an ink ribbon including a base film being electrically resistive and having first and second surfaces, an electrically conductive layer formed on the first surface of the base film; and an ink layer formed on the conductive layer, and having a surface to face and contact with the recording medium

ribbon feeding means for feeding said ink ribbon in a first direction;

current-supplying means contacting with the second surface of the base film for supplying a signal current to the electrically conductive layer through the base film, thereby to generate heat in the base film and transfer ink to the recording medium from the ink layer,

current-collecting means, contacting with the second surface of the base film, for collecting the signal current supplied from said current-supplying means to the electrically conductive layer, which includes first and second electrodes located upstream and downstream of said first direction with respect to said current-supplying means, respectively, the first electrode being connected to the ground, and a resistor connected between the second electrode and the ground, a first current path including the base film, the conductive layer and the first electrode, and a second current path including the base film, the conductive layer and the second electrode, the signal current flowing through the first and second current path into the ground, respectively.

5,005,994

PRINTING HEAD OF WIRE-DOT IMPACT PRINTER

Akio Yano, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 15, 1989, Ser. No. 323,833

Claims priority, application Japan, Mar. 18, 1988, 63-63216; Jul. 15, 1988, 63-175068; Nov. 11, 1988, 63-283898

Int. Cl.' B41J 2/295

U.S. Cl. 400—124 15 Claims

1 A printing head comprising a frame, a plurality of impact printing wires constituting a wire-dot matrix and a plurality of actuators respectively corresponding to, and for selectively driving, said respective impact printing wires, each of said actuators comprising

a movable member to which the respective one of said impact printing wires is connected,

an electro-distortion device having a first end connected to said frame and responsive to selective application of an electrical voltage thereto to undergo longitudinal expansion and contraction and a second end,

a first resilient member having a first end fixedly connected to the second end of said electro-distortion device and thereby to said frame and a second end fixedly connected to said movable member,



a second resilient member disposed in substantially parallel relationship to said first resilient member and having a first end fixedly connected to said frame and a second end fixedly connected to said movable member so that the extent of longitudinal expansion and contraction of said electro-distortion device in response to the selective application of an electrical voltage thereto is enlarged by said movable member and transmitted thereby to said impact printing wire, and

a third resilient member disposed substantially perpendicularly to said first and second resilient members and having a first end fixedly connected to said frame and a second end fixedly connected to said movable member.

5,005,995

METHOD OF AUTOMATICALLY IDENTIFYING A PRINT WHEEL

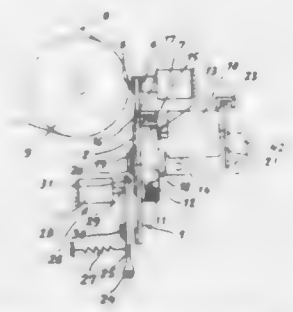
Ewald Bruns, and Rolf Bruns, both of Westerstede, Fed. Rep. of Germany, assignors to AEG Olympia Office GmbH, Wilhelmshaven, Fed. Rep. of Germany

Filed Apr. 27, 1990, Ser. No. 516,132

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1989, 3914256

Int. Cl.' B41J 1/30, 7/76

U.S. Cl. 400—144.2 12 Claims



1 A method of automatically identifying a print wheel in a printing mechanism of a typewriter-like machine wherein, the print wheel includes a hub having a centrally disposed bearing bore, a plurality of spokes extending from the hub, type faces disposed on the outer ends of the spokes which can be charged with axial pressure for printing, and a stopping element and one coupling member of a pin/slot connector disposed on the hub of the print wheel, wherein the print wheel is disposed in a print wheel receptacle of the machine, with the print wheel receptacle being driven by a drive motor and coupled to the print wheel during operation by the other member of the pin/slot connection to fix a defined angle between the drive motor and the print wheel, wherein the machine is provided with a blocking member which cooperate with the stopping element disposed on the hub to stop rotation of the print wheel during a rotary search movement to cause engagement of the pin/slot connection and blockage of the drive motor, and wherein scanning means are provided to produce control signals indicating a zero position of the print wheel, the method comprising the step of

providing a print wheel having the stopping element and the coupling member on the hub readially spaced from one another and forming angle therebetween with the size of the formed angle uniquely indentifying the set of type faces provided on the spokes,

inserting the print wheel in the receptacle and rotating the print wheel in a first direction with the blocking member in a position to engage the stopping element on the hub of the print wheel to cause engagement of the pin/slot connection,

detecting blockage of the drive motor,

rotating the print wheel in the direction opposite the first direction after detection of drive motor blockage,

determining the size of said angle by counting the number of steps of movement of the print wheel until the zero position of the print wheel is reached, and

using the determined size of the angle to produce identification data for the print wheel which are stored as digital signals in a digital memory, to enable the sequence of printer functions of the printing mechanism to be controlled automatically for the particular set of print type faces of the identified print wheel.

5,005,996

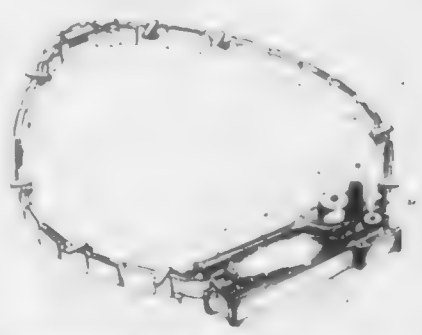
RIBBON CARTRIDGE WITH ENDLESS RIBBON REINKING MECHANISM

Jeffrey H. Paterra, Charlotte, N.C., and Donald K. Rex, Highland Beach, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 15, 1989, Ser. No. 408,017

Int. Cl.' B41J 32/00

U.S. Cl. 400—196.1 15 Claims



1 A ribbon cartridge comprising,

a one piece housing having a cavity within defined by sides and a bottom having formed thereon a post,

a ribbon protector partially surrounding said post, a socket formed on a side of said housing, a bracket formed on yet another side of said housing, said bracket formed to provide a bearing surface for a rotating shaft,

a porous ink reservoir having an external circumference defined by points of rotation about an axis and having a central bore for rotatably mounting on said post,

a combination ink transfer and drive gear having a central

shaft, said central shaft rotatably mounted on said bracket, said ink transfer and drive gear mounted in frictional contact with the external circumference of said ink reservoir, said ink transfer and drive gear further having a splined shaft extending beyond said gear in axial alignment with the axis of rotation of said central shaft, said central shaft having a bored out center in the end opposite said splined shaft,

a circular opening in said housing bottom centered on said central shaft bored end for exposing said bored end through said housing bottom,

a toothed idler gear pivotally mounted in said socket on said housing and biased into engagement with said drive gear for engaging a ribbon therebetween, and

a cover for enclosing said housing, having a hole therein for exposing said splined shaft of said drive transfer gear beyond said cover

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5,005,997

RE-INKING DEVICE AND METHOD

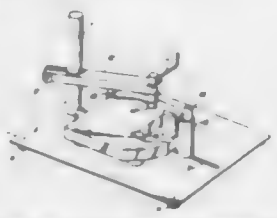
Seng Y. Chang, 205 Balestier Road #03-01, Singapore, Singapore

Filed Apr. 5, 1989, Ser. No. 333,221

Claims priority, application United Kingdom, Apr. 6, 1988, 8808028; Jun. 20, 1988, 8814575; Jul. 23, 1988, 8817628

Int. Cl.[5] B41J *31/14*

U.S. Cl. 400—197 17 Claims



1 A re-inking device for a cassette-housed fabric ribbon, the cassette being of the type having a ribbon discharge opening and a ribbon feed opening with an exposed free run section of the ribbon therebetween, the cassette having a rotatable drive mechanism to feed ribbon between said discharge opening and said feed opening to expose a replacement free run section of the ribbon, the device comprising a base upon which is mounted cassette support means, cassette location means, rotational drive means for association with the cassette drive mechanism, and reservoir means having an ink dispensing outlet engageable by the free run section of the ribbon, each of the said support means, the said location means, the said rotational drive means and the said reservoir means being to one side of the base, and each of the said support means, the said location means, the said rotational drive means and the said reservoir means each being movable to a different area of the base

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5,005,998

CARTRIDGE FOR A PRINTER SYSTEM

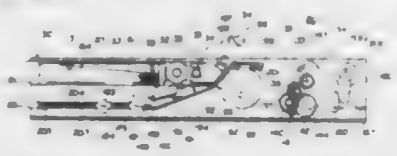
Itsuo Takanashi, Kamakura; Hedeshi Tanaka; Shigeru Kato, both of Yokohama; Naomi Onda, Yokohama, and Toshikatsu Ichito, Kawasaki, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Nov. 4, 1988, Ser. No. 267,533

Claims priority, application Japan, Nov. 6, 1987, 62-280794; Mar. 9, 1988, 63-31345[U]

Int. Cl.[5] B41J *35/28*

U.S. Cl. 400—208 10 Claims



1. A cartridge for a printer system comprising a printer in which the cartridge is loaded, said cartridge being designed for storing a sheet to be fed to the printer for printing, said cartridge being designed further to hold an ink film also to be fed to the printer such that an image is printed on the sheet as a result of an action of a printer head of the printer performed under a state wherein the ink film and the sheet contact each other on a platen roller of the printer, said cartridge being adapted to be loaded on the printer in such a direction that a front end of the cartridge is first inserted into the printer when the cartridge is loaded, said cartridge comprising

an ink film storing part provided at the front end of the cartridge for storing an ink film, said ink film storing part removably holding a first roll and a second roll of the ink film in a state wherein the first and second rolls are mutually parallel and wherein the ink film is wound on the first and second rolls and stretched therebetween, said ink film storing part having a first opening generally facing a first direction which is perpendicular to the direction of loading of the cartridge on the printer, said first opening being configured to allow taking out of the first roll from the cartridge therethrough, said ink film storing part having a stationary part for covering the first and second rolls in a manner that prevents the first and second rolls being exposed in a second direction opposite to the first direction,

a sheet storing part provided behind the ink film storing part such that the sheet storing part and the ink film storing part form a unitary body, for storing one or more sheets in a stack, said sheet storing part having a second opening which exposes the sheet stored in the sheet storing part in the second direction so as to allow feeding of the sheet from the cartridge through said second opeing; and

a rotatable lid member hinged on the ink film storing part so as to be rotatable between a first position whereat said lid member closes the first opening and a second position whereat said lid member exposes the first opening, said rotatable lid member being hinged at a part of the cartridge where the sheet storing part is contiguous with the ink film storing part, said rotatable lid member having a part which engages a corresponding part of the printer when the cartridge is loaded on the printer such that the lid member is rotated to the second position upon loading of the cartridge on the printer

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5,005,999

INK CASSETTE WITH CONTROL MEANS FOR ALTERNATELY DRIVING ONE OF TWO SPOOL BEARING THEREIN

Hans Raar, Cuyk, and Jan Kelders, Elshout, both of Netherlands, assignors to Merlin C.T.C. Production Division Nederland B.V., Zevenaar, Netherlands

Filed Mar. 15, 1989, Ser. No. 323,828

Claims priority, application Netherlands, Mar. 16, 1988, 8800650

Int. Cl.[5] B41J *35/28*

U.S. Cl. 400—208 4 Claims



1. An ink ribbon cassette for use in a printing device having a rotatable driver means and for use with first and second spools having an ink ribbon connected therebetween, said ink ribbon including trip means located near opposite ends thereof said cassette comprising

a housing,

spaced first and second bearing means rotatably mounted in said housing to respectively mount said first and second spools,

drive means mounted in said housing for alternatively rotating said first bearing means in a first rotational direction and said second bearing means in a second, opposite rotational direction and cause said first and second spools, when mounted on said first and second bearing means, to rotate and move said ink ribbon extending therebetween in alternatively first and second traveling directions within said housing, said drive means comprising a first shaft which is fixedly mounted on said housing and is rotatable by said rotatable driver means of said printing device, a toothed wheel having longitudinal grooves mounted on said first shaft, a second shaft which is fixedly mounted on said housing and which extends in parallel with the first shaft and mounts a tooth wheel having longitudinal grooves that are engaged with the longitudinal grooves of the toothed wheel on the first shaft, a first gear means for driving the first bearing means, and a second gear means for driving the second bearing means, the tooth wheel being slidable along the second shaft between a first position wherein the tooth wheel is in engagement with said first gear means and a second position wherein the tooth wheel is in engagement with said second gear means, and

control means mounted in said housing and through which said ink ribbon that extends between said first and second spools mounted on said first and second bearing means can pass, said control means controlling whether said tooth wheel is in said first position or said second position, based on actuation by said trip means

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5,006,000

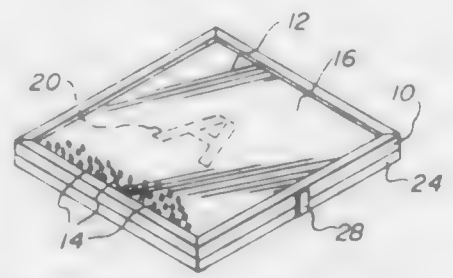
EDUCATIONAL AID WITH SUBSTITUTABLE MAGNETIC ITEMS

Charles E. House, 5055 Beatrice Way, Columbia, Md. 21044

Filed Jan. 23, 1990, Ser. No. 469,041

Int. Cl.[5] G09B *7/00*

U.S. Cl. 434—161 7 Claims



1 An educational aid, comprising

a a frame having a first part and a second part,

b a clear front means, mounted in the first part of the frame, for viewing an image formed therebehind,

c a protective plastic sheet spaced behind the clear front means in the first part of the frame;

d a plurality of magnetizable means, restricted within a first space defined between the clear front means and the protective plastic sheet, for forming the image in the first space;

e. backing means, arranged in the second part of the frame and spaced behind the protective plastic sheet in the first part of the frame, for defining a second space with the protective plastic sheet, and

f. a colored paper sheet means, arranged in the first space between the clear front means and the protective plastic sheet, for serving as a selectable background on which the plurality of magnetizable means form the image in the first part of the frame,

g substitutable magnetic means, having a preformed shape and being confinable within the second space between the protective plastic sheet and the backing means, for emanating a magnetic field that forms the plurality of magnetizable means into the image which is defined by the preformed shape

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5,006,001

KEYBOARD WITH ONE HAND CHARACTER KEY ARRAY AND ONE HAND MAPPING KEY ARRAY

Terrance E. Vulcano, R.R. #4, Calgary, Alberta, Canada (T2M 4L4)

Filed Sep. 27, 1989, Ser. No. 414,124

Int. Cl.[5] B41J *5/08*

U.S. Cl. 400—486 20 Claims



1 An input keyboard for the transfer of information to a machine by a human operator, comprising

a plurality of character keys arranged in a first array positioned at a first location to facilitate operation of all of the character keys by one hand of the operator, each character key being operative for generating a manifestation of a character or function assigned thereto,

a plurality of mapping keys arranged in a second array positioned at a second location spaced from the first location to facilitate operation of all of the mapping keys by the other hand of the operator, each mapping key being operative to generate a respective predetermined assignment of characters or functions to the character keys

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5,006,002

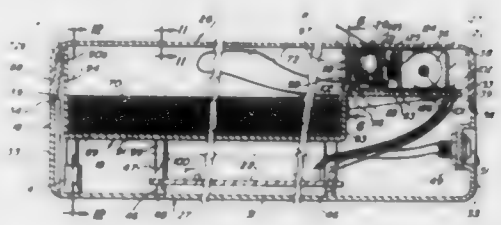
PORTABLE PRINTING APPARATUS WITH MOVABLE PAPER FEED GATE

Robert M. Brodbeck, Denver, Colo., assignor to Clancy Systems International, Inc., Denver, Colo.

Filed Apr. 11, 1989, Ser. No. 336,128

Int. Cl.[5] B41J *11/58*

U.S. Cl. 400—613.2 32 Claims



1. In a portable printing apparatus including a printer, the combination comprising

a housing for containing and supporting a printer, said housing having first and second separable sections with opposed first and second walls and mating peripheral edges that releasably interfit with one another to close the housing along said peripheral edges, said housing having an

access opening to admit into said housing printing sheets in a fan-fold stack having joined perforated edge portions defining perforations for tearing separation of the sheets and a cover for covering said access opening during use, said housing having a discharge slot through which each sheet is discharged after having printing performed thereon, and

sheet and printer support means mounted in said housing including a tray with an opening for receiving and supporting said stack, said tray opening being covered by said cover during use, a shelf-like support wall extending beyond a wall of said tray for supporting a printer and a movable feed gate adjacent an edge surface of said tray wall supported for bidirectional movement relative to said edge surface defining a sheet feed slot of a variable size to allow said perforations to pass through said feed slot as a succession of said sheets are passed from said stack through said feed slot, through said printer and out said discharge slot,

said tray including spaced side walls and spaced end walls, one of said end walls having a top edge terminating below the top edge of the side walls, said movable feed gate having ends and being slidably supported at said ends by said side walls with said top edge of said one end wall and a bottom edge of said gate defining said sheet feed slot,

said ends of said gate being slidably confined in a pair of opposed facing channel means along the inside of said side walls and including a slide coupling means slidably interconnecting the ends of said gate with said side walls,

said slide coupling means having cooperating means to hold said gate in a raised position when the cover is retracted to facilitate feeding of the top sheet of said stack into the printer

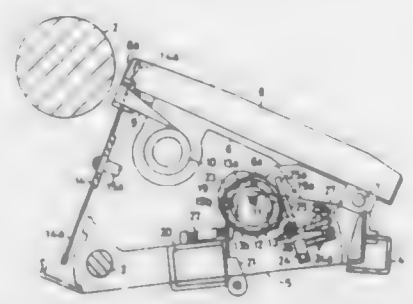
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5,006,003

TYPEWRITER

Yuichi Harada, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Continuation of Ser. No. 137,767, Dec. 24, 1987, Pat. No. 4,871,274. This application Aug. 15, 1989, Ser. No. 393,810
Claims priority, application Japan, Dec. 26, 1986, 61-313595
The portion of the term of this patent subsequent to Oct. 3, 2006, has been disclaimed.
Int. Cl.[5] B41J 29/00, 11/62
U.S. Cl. 400—697.1 6 Claims



1. A typewriter having a carriage member movable along a platten, a holder member having a correction ribbon movable in a vertical direction provided on said carriage member, said typewriter further comprising:

a cam member rotatably movable for controlling said holder member so as to be moved between an erase position at which said correction ribbon faces said platen and a rest position at which said correction ribbon is located below said erase position in accordance with a rotation of said cam member;

a single switch member mounted on said carriage;

a first actuate member for actuating said single switch member to be operated based upon a movement of said cam member in case that said cam member is located at a predetermined position,

a second actuate member for actuating said single switch member to be operated in case that said carriage member is located at a predetermined original position;

first judge means for judging the condition of said single switch member at the time when said typewriter is initially operated, and

first shift means for shifting said carriage member with a predetermined length so that said single switch member having been actuated by said second actuate member is released in case that it is judged by said first judge means that said single switch member has been actuated

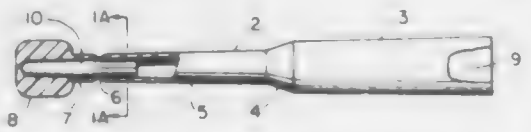
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5,006,004

TOPICAL APPLICATOR FOR LIQUID

Robert S. Dirksing, and Theodore F. Merz, both of Cincinnati, Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Nov. 25, 1987, Ser. No. 125,291
Int. Cl.[5] A47L 13/30; B43K 5/00; B43M 11/06
U.S. Cl. 401—261 4 Claims



1. A dispenser for the substantially uniform topical application of a liquid product either to discrete isolated portions of the surface of an object or to the entire surface of said object, said dispenser comprising:

(a) a compressible reservoir for housing said liquid product

(b) an applicator tip comprised of substantially non-porous material and having a longitudinal axis and an external surface comprising an exposed portion and a non-exposed portion, said exposed and non-exposed portions being located adjacent one another along said longitudinal axis, said non-exposed portion of said applicator tip being secured in fluid communication with said compressible reservoir, said non-exposed portion of said applicator tip also being in fluid communication with the exposed portion of said applicator tip by means of at least one liquid passageway at least partially comprising said applicator tip, said liquid passageway extending from said compressible reservoir to the initial point of exposure of said exposed portion of said applicator tip, said liquid passageway having a cross-section which is sufficiently small that it will resist the flow of liquid from said compressible reservoir when said liquid is acted upon solely by gravitational forces, whereby liquid product can be transferred from said compressible reservoir to said exposed surface of said applicator tip along said liquid passageway when said reservoir is compressed, said exposed portion of said applicator tip extending beyond said at least one liquid passageway comprising a cylinder having a rounded end, said cylinder and said rounded end exhibiting a substantially non-porous surface which is sufficiently smooth that said liquid product will sheet substantially uniformly onto said smooth surfaced cylinder and rounded end of said applicator tip as soon as said liquid product exits said at least one liquid passageway, whereby said uniformly sheeted liquid product on said exposed portion of said applicator tip can thereafter be transferred either to discrete isolated portions of the surface of an object by contacting said discrete isolated portions with said liquid product coated rounded end portion of said applicator tip or to the entire surface of said object by tangentially stroking said entire surface with the periphery of said liquid product coated cylinder portion of said applicator

tip in a direction substantially perpendicular to the axis of said cylinder, and

(c) an applicator tip cover for totally enclosing the exposed portion of said applicator tip prior to placing said dispenser in service, said applicator tip cover being integrally formed with said compressible reservoir

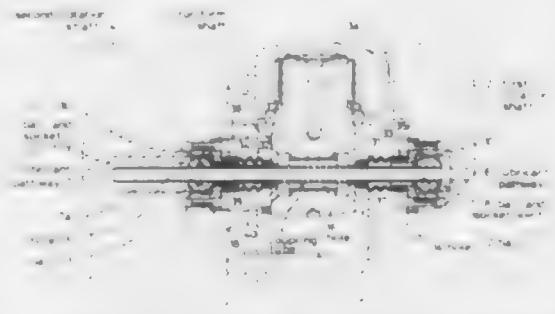
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5,006,005

LUBRICANT SUPPLY FOR UNIVERSAL JOINT

Nobuo Komeyama, Osaka, Japan, assignor to Koyo Seiko Co., Ltd., Osaka, Japan

Continuation of Ser. No. 248,125, Sep. 22, 1988, abandoned. This application Mar. 8, 1990, Ser. No. 492,353
Claims priority, application Japan, Sep. 25, 1987, 62-146785[U]
Int. Cl.[5] F16D 3/26
U.S. Cl. 403—131 5 Claims



1. A lubricant supply assembly for a universal joint comprising

a universal joint,

two rotation shafts connected via said universal joint, each of said rotation shafts having a lubricant pathway defined therein and said two rotation shafts being bendable relative to one another,

ball-and-socket joints secured at said two rotation shafts, each ball of the ball-and-socket joints having a hole defined therein,

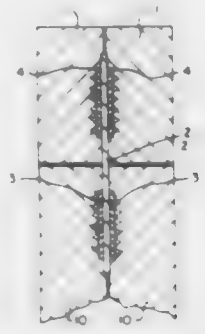
a coupling tube provided at said universal joint for introducing a lubricant from one of said pathways of one of the two rotation shafts to the other of said pathways of the other of the two rotation shafts, said coupling tube being a single tube having two ends, a first end of said coupling tube being fixed in the hole of one ball in one of said ball-and-socket joints while a second end of said coupling tube is engaged with and guided by an internal surface of the hole of the ball in the other of said ball-and-socket joints, the second end of said coupling tube slidably penetrates and protrudes through said ball in the other of said ball-and-socket joints, the second end of the coupling tube further extends into an opening defined in one of the rotation shafts, the opening in the one rotative shaft being a part of the lubricant pathway and having a diameter greater than a diameter of the coupling tube, said coupling tube being movable relative to the ball in the other of said ball-and-socket joints to thereby remain unflexed even during bending between said two rotation shafts.

5,006,006

CONNECTOR FOR CONNECTING WOODEN BEAMS TO ONE ANOTHER

Markku S. Lehtonen, Rautio, Finland, assignor to Metsa-Serla Oy, Kirkkalemi, Finland

Continuation of Ser. No. 14,191, Feb. 12, 1987, abandoned. This application Sep. 11, 1989, Ser. No. 404,041
Claims priority, application Finland, Feb. 13, 1986, 860665
Int. Cl.[5] F16B 15/00
U.S. Cl. 403—283 3 Claims



1. A connector for interconnecting beams made at least partly of wood, comprising

a frame plate having two opposite, toothless sides,

at least one toothed plate having two opposite sides, each toothed plate having a plurality of teeth protruding outwards from a first said side thereof for penetration into at least one beam at least partially made of wood, a second said side of each said toothed plate being toothless,

the toothless, second side of each said toothed plate being abuttingly disposed facewise against a said side of said frame plate, and

a permanently fixed surface joint securing each toothed plate against the respective said side of said frame plate against which such toothed plate is abuttingly disposed facewise,

said frame plate being thicker, between said opposite sides thereof, than each said toothed plate, exclusive of said teeth of each said toothed plate,

at least one said toothed plate being secured on each side of said frame plate, whereby in use, two beams made at least partly of wood can be interconnected by the connector by sandwiching the connector between wooden portions of the two beams and pressing the resulting sandwich construction together so that teeth of one of said toothed plates on one side of said frame plate penetrate into a wooded portion of one of the beams and teeth of another of said toothed plates on the opposite side of said frame plate penetrate into a wooded portion of the other of the beams

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5,006,007

VIBRATION-PROOF COUPLING

Michael J. Fischer, Elizabethtown, and W. Eugene Wilson, Columbus, both of Ind., assignors to Reliance Electric Industrial Company, Greenville, S.C.

Filed Jun. 16, 1989, Ser. No. 367,260
Int. Cl.[5] B25G 3/24, F16B 2/02
U.S. Cl. 403—290 11 Claims

1. An improved coupling arrangement, comprising

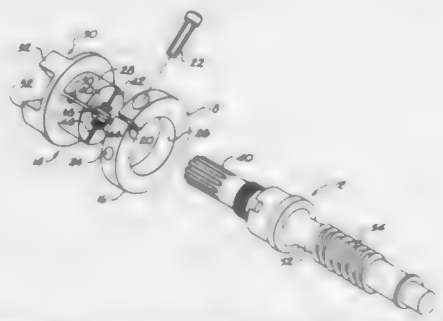
a substantially cylindrical non-deformable male splined member, adapted to be rotatively driven, such as a shaft,

a coupling hub, having at least a substantially cylindrical axial portion thereof provided with a substantially cylindrical bore formed with a female splined inside diameter for receipt of said male splined member,

at least one slot defined through the circumference of said hub in said substantially cylindrical axial portion thereof, and extending between said hub bore and the hub outside

diameter, said at least one slot permitting radial shrinkage of said coupling hub upon compression of said slot; and

collar means, adapted for removable receipt about the outside diameter of said coupling hub axial portion with said male splined member received in said coupling hub bore, for selectively clamping said hub to said male splined



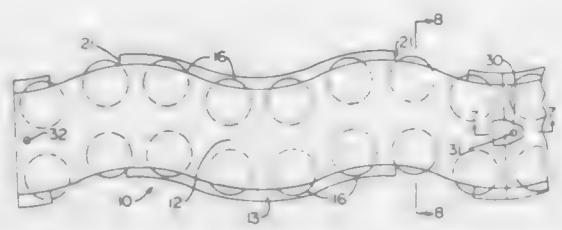
member by compressing said slot for radially shrinking said hub, whereby play between said hub and said male splined member is eliminated so as to likewise eliminate fretting corrosion between such hub and member while permitting said hub and said male splined member to be subsequently decoupled when desired.

5,006,008

SECTIONAL HIGHWAY BARRIER WITH RESILIENT CYLINDRICAL INSERTS

Robert J. Bishop, 1083 Bloomfield Ave., West Caldwell, N.J. 07006

Filed Apr. 16, 1990, Ser. No. 509,209
Int. Cl.[5] E01F *13/00, 15/00*
U.S. Cl. 404—6 20 Claims



1. A shock-absorbing and motorist warning highway barrier comprising a plurality of elongated upstanding units adapted to be joined in end-to-end relation, each unit comprising an outwardly flared base and an upstanding central portion having interfitting protrusions at opposed ends thereof facilitating end-to-end coupling of adjacent units, opposed side surfaces of the upstanding portion having a plurality of transversely aligned and longitudinally spaced recesses to receive resilient cylindrical members in a manner to protrude substantially from such surfaces, the cylindrical members being insertable and removable through the top of the unit and being secured in place by a cover member having downward protrusions interfitting with the aligned recesses in said unit.

5,006,009

OUTDOOR POST ASSEMBLY

Richard D. Griffin, 107 Maplebrook, Laurens, S.C. 29360

Filed Apr. 27, 1990, Ser. No. 516,033
Int. Cl.[5] E01F *9/01*
U.S. Cl. 404—11 9 Claims

1. A spring biased outdoor post assembly for carrying a highway reflector, sign or the like comprising:

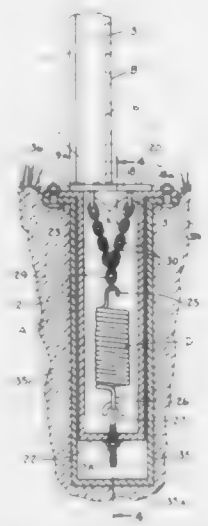
a support member positioned within the ground;

a post member carried in upright position upon said support member extending substantially above the ground;

a base carried at a lower end of said post member mounting said post member upon said support member forming a juncture therebetween;

a single coiled tension spring connected on one end to one of said members at laterally spaced locations adjacent said juncture; and

said coiled tension spring being connected on the other end to the other of said members remote from said spaced



locations to exert a resilient force between said support member and said post member at said juncture;

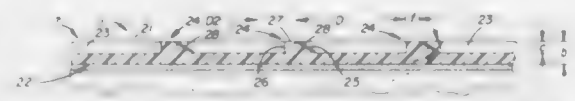
whereby said single coiled tension spring exerts at said spaced locations a torsional force for maintaining said post in proper horizontal alignment and for returning said post to upright position after being displaced laterally as by a highway maintenance device.

5,006,010

ROADWAY WITH UNI-DIRECTIONAL LIGHT REFLECTIVE LANE MARKER

John W. Duckett, 4905 Ranch Rd., Tiburon, Calif. 94920

Filed Nov. 3, 1989, Ser. No. 431,573
Int. Cl.[5] E01F *9/06, 9/08*
U.S. Cl. 404—12 19 Claims



1. A roadway defining at least one pair of side-by-side first and second traffic lanes for conveying traffic in first and second opposite directions, respectively, and a unidirectional light reflective lane marker secured on said roadway comprising at least one delineating strip separating said traffic lanes from each other, said delineating strip comprising light reflective means for visually displaying said delineating strip when it is subjected to light and viewed by a driver travelling in said first direction on said first traffic lane and for at least substantially rendering said delineating strip invisible when it is viewed by a driver travelling in said second direction on said second traffic lane, means defining an elongated groove in an upper surface of said roadway and wherein said lane marker, including said light reflective means, is secured and entirely confined within said groove, said delineating strip comprising an elongated, opaque and one-piece member defining a flat upper surface disposed in a horizontal plane flush with an upper surface of said roadway, and an elongated slot formed in the upper surface of said member and solely interrupted by a series

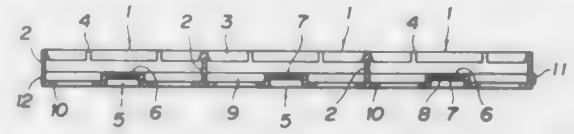
of longitudinally spaced segments formed integrally within said member and bridged laterally across said slot, each said segment comprising a leading surface on a proximal side of said segment, a trailing surface on a distal side of said segment and a flat intermediate surface flush with the flat upper surface of said member and with the upper surface of said roadway, said light reflective means being disposed and confined solely on the leading surface of said segment and in fully protected relationship within said groove.

5,006,011

FRAMES FOR INSTALLING WOODEN BRICKS

Isao Hiyashi, 10-15, Kanesawacho 1-Chome, Hitachi-Shi, Ibaragi 316, Japan

PCT No. PCT/JP87/00534, § 371 Date Sep. 30, 1988, § 102(e) Date Sep. 30, 1988, PCT Pub. No. WO89/00625, PCT Pub. Date Jan. 26, 1989
Continuation of Ser. No. 273,339, Sep. 30, 1988, abandoned. This PCT application Jul. 22, 1987, Ser. No. 541,198
Int. Cl.[5] E01C *5/00*
U.S. Cl. 404—37 8 Claims



1. A frame for installing wooden paving blocks, comprising:

a plurality of juxtaposed sections and each having a peripheral shape for holding a wooden paving block, said sections being arranged in a predetermined pattern, each of said plurality of sections being defined by a peripheral wall;

fixing means provided in each section for fixing a wooden paving block in the section, the peripheral wall for the section extending upwardly above said fixing means to a height such that when a wooden paving block is in position in a section, it will project at least slightly above the peripheral wall of the section; and

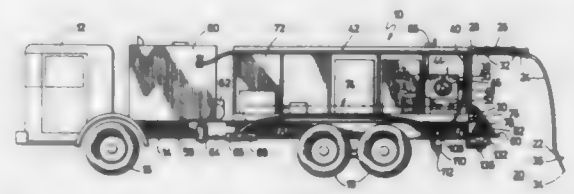
an elastic protruding piece provided around at least a portion of the peripheral wall of each section, said protruding piece projecting downwardly and inwardly into the interior of the section and having a free end spaced from the inner surface of the peripheral wall which is resiliently movable toward and away from the inner surface of the peripheral wall for being engaged by the edge of a wooden paving block positioned in the section and moving resiliently for accommodating changes in the shape of a wooden paving block in the section.

5,006,012

COMBINATION ROAD REPAIR MACHINE WITH IMPROVED CRACK-FILLING CAPABILITIES

Carl L. Sterner, 3860 North Rd., Bakersfield, Calif. 93312-9216

Filed Mar. 9, 1989, Ser. No. 321,591
Int. Cl.[5] E01C *23/02*
U.S. Cl. 404—107 5 Claims



1. a vehicle for transporting and dispensing materials required for filling and repairing cracks in roadways and highways or similar, said vehicle comprising:

a. a storage tank for asphalt mix or emulsion or the like liquid crack-filling material;

b. hose means leading from said tank to a dispensing area adjacent said vehicle;

c. manually directable applicator wands connected to said hose for manually directing crack-filling material from said tank into cracks in the roadway;

d. a hopper for carrying sand, rock chips, or other substantially dry structural material for covering the liquid crack-filler material and binding therewith to form in the aggregate substantially firm roadway surface;

e. a said dispensing platform attached to said vehicle adjacent said dispensing area;

f. a conveyor interconnected with said hopper for moving sand or other structural filler material therefrom to said dispensing area adjacent said vehicle; and

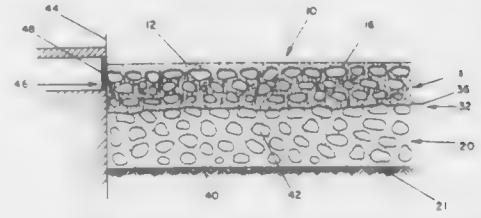
g. controls for driving said vehicle positioned on said vehicle immediately adjacent said dispensing area such that said dispensing area is clearly viewable by an operator at said driving control position.

5,006,013

GRANULAR TYPE STRUCTURE WITH MOISTURE RETAINING TOP SURFACE

Herman F. Burkstaller, and Emmet F. Brieger, both of Nogal, N. Mex., assignors to Burco, Inc., El Paso, Tex.

Continuation-in-part of Ser. No. 174,118, Mar. 28, 1988, Pat. No. 4,881,846. This application Aug. 28, 1989, Ser. No. 399,614
The portion of the term of this patent subsequent to Nov. 21, 2006, has been disclaimed.
Int. Cl.[5] A01G *25/00;* E02B *11/00*
U.S. Cl. 405—38 38 Claims



1. A built-up, moisture content controlling granular structure comprising:

an upper surface layer comprising fine aggregate material;

a barrier surface substantially impervious to moisture spaced beneath said upper surface layer;

a containment means positioned essentially peripherally around said structure;

a subsurface reservoir bed disposed atop said barrier surface and beneath said upper surface layer, said subsurface reservoir bed being peripherally surrounded by said containment means; and

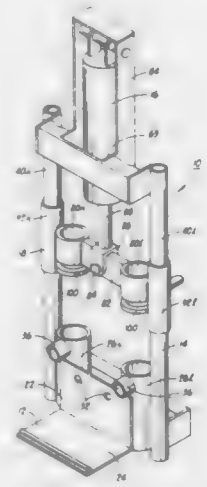
means for stabilizing said subsurface reservoir bed and for providing adequate fluid conductivity between said subsurface reservoir bed and said upper surface layer to substantially maintain the selected moisture content in said upper surface layer, said stabilizing and fluid conductivity providing means comprising a stabilizing layer of adhesive material disposed atop said subsurface reservoir bed, said layer of adhesive material comprising voids therein to provide adequate fluid conductivity between said subsurface reservoir bed and said upper surface layer thereabove to substantially maintain the selected moisture content in said upper surface layer, and said upper surface layer of fine aggregate material disposed atop and in said voids of said adhesive coated stabilizing layer.

5,006,014
BOOM STICKS
Ronald L. Greenough, Surrey, Canada, assignor to MacMillan Bloedel Limited
Filed Feb. 2, 1990, Ser. No. 473,756
Int. Cl.[5] E02B *15/04*
U.S. Cl. 405—72 10 Claims



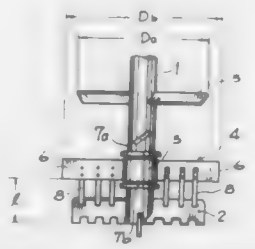
1. A boom stick comprising a plurality of substantially axially aligned vehicle tires of essentially the same diameter arranged in side by side relationship having tread surfaces forming an outer peripheral surface of said boom stick, axially extending reinforcing means passing through rim receiving holes in said tires and holding said tires together in said side by side relationship and a first rigidity imparting filling material having a specific gravity less than one contained within said tires and substantially filling said rim receiving holes in said tires, said rigidity imparting filling material cooperating with said reinforcing means.

5,006,015
HYDRAULIC JACKING APPARATUS
Jerry B. Stephens, 4725 Lamar Ave., Paris, Tex. 75460; Richard E. Jackson, Rte. 1, Box 443, and David H. Conder, Rte. 1, Box 211, both of Powderly, Tex. 75473
Filed Mar. 12, 1990, Ser. No. 491,721
Int. Cl.[5] E02D *7/20*
U.S. Cl. 405—230 7 Claims



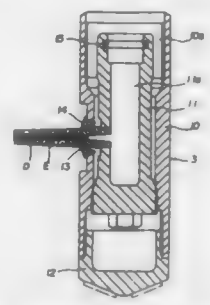
1. Apparatus for driving foundation leveling pile members to raise the foundation comprising:
- a foundation support member including a support foot plate, a backing plate and two vertical guide sleeves receiving a respective two pile members downward therethrough;
- a frame assembly including two parallel side bars, an upper cross beam and a lower cross beam attachable to the foundation support member;
- a gripper assembly including means actuatable to grip said two pile members in parallel configuration;
- first and second side guide sleeves rigidly attached to the gripper assembly and slidably disposed around the respective side bars of the frame assembly; and
- a hydraulic linear actuator interconnected between the upper cross beam of the frame assembly and the gripper assembly, said hydraulic actuator being energizable to actuate the gripping assembly and drive the piles downward.

5,006,016
COROTATING PREVENTOR OF EXCAVATED SOILS IN A GROUND IMPROVEMENT APPARATUS
Kosei Fukuda, Yokohama, Japan, assignor to Tenox Corporation, Tokyo, Japan
Filed Dec. 5, 1989, Ser. No. 446,147
Claims priority, application Japan, Dec. 17, 1988, 63-163824[U]
Int. Cl.[5] E02D *5/56*
U.S. Cl. 405—240 4 Claims



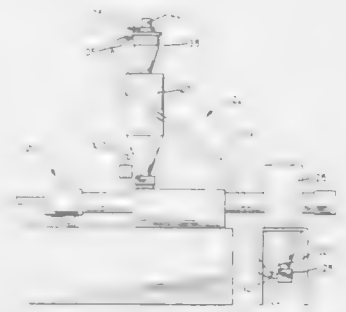
1. A ground improvement device comprising an excavation shaft having an excavation blade fixed to a tip end of the shaft, at least one agitation blade fixed on the shaft, and at least one radially extending corotation preventing blade rotatably mounted on the shaft, the corotation blade having a diameter greater than that of the excavation blade, and a plurality of radially spaced fingers extending from the corotation blade substantially in an axial direction towards the excavation blade.

5,006,017
METHOD FOR IMPROVING GROUND OF LARGE SECTION AREA
Hiroshi Yoshida, Tokorozawa; Mitsuhiro Shibazaki, Tokyo; Hiroaki Kubo, Nakamuraminami, and Shunji Jinbo, Koyama, all of Japan, assignors to Kajima Corporation and Chemical Grouting Company, Ltd., both of Tokyo, Japan
Filed Jan. 29, 1990, Ser. No. 471,488
Claims priority, application Japan, Jan. 27, 1989, 1-16320
Int. Cl.[5] E02D *3/12*
U.S. Cl. 405—263 3 Claims



2. A method for improving a large-section ground area comprising the steps of:
- inserting a double pipe into a hole previously dug in the ground, said double pipe having a first nozzle at a top portion directed in a lateral direction and a second nozzle located near said first nozzle;
- injecting a ground improving agent at a high pressure from said first nozzle through one pipe of said double pipe;
- injecting a reproduced slurry, obtained by reproducing grouted slimes, from said second nozzle through another pipe of said double pipe at a pressure lower than said pressure of said ground improving agent;
- lifting said double pipe up from under the ground while rotating said double pipe; and
- injecting said reproduced slurry along with said ground improving agent to thereby reduce frictional resistance between said ground improving agent and sediments, increase arrival distance of said ground improving agent, and obtain an abrasive effect.

5,006,018
FEED AND SEPARATION DEVICE
Llewellyn E. Depew, Ontario, Canada, assignor to Filter Queen Ltd., Rexdale, Canada
Continuation of Ser. No. 63,624, Jun. 19, 1987, Pat. No. 4,834,586. This application Mar. 23, 1989, Ser. No. 327,832
Claims priority, application Canada, Jun. 19, 1986, 511905
Int. Cl.[5] B65G *53/66*
U.S. Cl. 406—18 9 Claims



1. Apparatus for elevating particulate material from the level to a higher second level and comprising:
- pick-up means for insertion into the material at the lower level and having an outlet and an inlet;
- a separator for removing the particulate material from an air stream;
- duplex duct means coupling the separator and the pick-up means to form a loop;
- actuator means operable to drive air around the loop so that air leaving the pick-up means outlet entrains the particulate material and then carries the material through the inlet and via the duct means to the separator where the material is substantially stripped from the air before the are returns via the duct means to the pick-up means;
- the separator comprising, concentric inner and outer funnels arranged about a vertical axis and defining an axially extending annular space, inlet means attached to the outer funnel and positioned to cause inflowing air to move between the funnels in an annular flow path, the annular space having an increasing cross-sectional area adjacent the inlet means and in that downward axial direction of the annular space so that particulate material carried by air in the flow path will tend to fly outwardly onto the outer funnel and fall axially, outlet means collecting air from the flow path and exhausting the air from the separator, and collection means coupled to the outer funnel for receiving falling particulate material and operable to withdraw such material periodically from the separator, the separator being located above the second level and the collection means including bottom exit means and resilient closure means coupled to the bottom exit means, the closure means being responsive to negative pressure in the separator to retain the closure means in a closed position; and
- control means including a timer operable in discrete time periods to energize the actuator means to drive the air around the loop and, upon completing one of said time periods, to provide time for the material in the collection means to fall under the force of gravity through the bottom exit means.

5,006,019
PNEUMATIC PICKUP PROBE
Joseph H. Dziedzic, Jr., Chicago; Daniel A. Rubino, Carol Stream, and Raymond J. Schaeffer, Lyons, all of Ill., assignors to AEC, Inc., Wood Dale, Ill.
Filed Jun. 29, 1989, Ser. No. 375,458
Int. Cl.[5] B65G *53/42*
U.S. Cl. 406—152 7 Claims

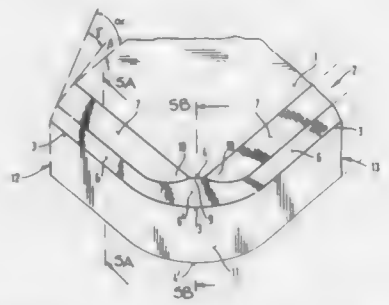


1. A pneumatic pickup probe for introducing a dry flowable material into a vacuum conveying system, comprising:
- an elongated single-walled pickup tube having a vacuum conveyor conduit connection end and a dry flowable material entry end,
- at least one air opening extending through the single wall of the pickup tube, adjacent to but spaced from the conveyor conduit connection end of the pickup tube,
- an anti-closing spacer mounted on the material entry end of the pickup tube and having a configuration adapted to preclude closing off of the material entry end of the pickup tube by proximity to a wall of a container,
- the material entry end of the tube being cut off at an acute angle A to the longitudinal axis of the tube to provide an inclined, oval-shaped opening in the material entry end of the tube, and
- a narrow, elongated flow modulation slot extending from the upper end of the oval-shaped opening in the material entry end of the tube towards the conveyor conduit connection end of the tube, the flow modulation slot having an axial length of about one to eight inches (2.5 to 20 cm).

5,006,020
CUTTER INSERT FOR MACHINING
Erwin Roos, Plochingen, Fed. Rep. of Germany, assignor to Feldmuehle Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany
Filed Jul. 6, 1989, Ser. No. 376,354
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1988, 3823199
Int. Cl.[5] B23P *15/28*
U.S. Cl. 407—113 4 Claims

1. Cutter insert for machining, especially a polygonal rotatable cutter insert with rounded cutter corners and a protective bevel configured as a double bevel running along the cutting edge, comprising:
- a body having a top surface and a corner radius and having a double bevel comprising a flat primary bevel, except in the corner radius, with a width between 0.05 and 0.5 mm and an inclination α from the top surface between 20 and 35 degrees, and a flat secondary bevel, except in the cor-

ner radius, with a width between 0.5 and 3.0 mm and in inclination β from the top surface of 5 degrees to 15 degrees, the primary and secondary bevels being at an angle



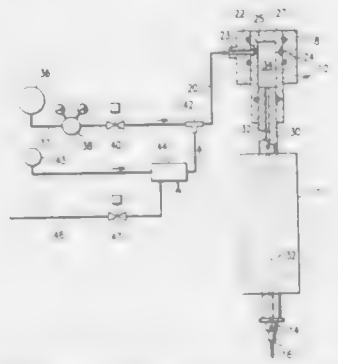
γ to one another, the secondary bevel terminating in the area of the corner radius in a strengthening area formed exclusively by the primary bevel.

5,006,021

HIGH PRESSURE GAS DRILLING

Michael J. Wheetley, Bedford, Tex., assignor to LTV, Dallas, Tex.

Filed Nov. 16, 1988, Ser. No. 272,109
Int. Cl.[5] B23B *35/00, 51/06*
U.S. Cl. 408—1 R **26 Claims**



1. In a method of forming a hole in a workpiece with a cutting tool having a cutting edge and a shank portion having a fluid passageway therein and at least one discharge port extending from said fluid passageway to the exterior of said cutting tool in the vicinity of said cutting edge, the method comprising the steps of:

rotating said cutting tool and advancing said cutting tool into said workpiece to cut a hole therein; and

supplying a circulation fluid comprised of gas having a liquid lubricant entrained therein into said passageway under an applied pressure of at least 500 psia to cause said circulation fluid to be discharged from said cutting port into said hole with an expansive cooling effect and outwardly from said hole to the entrance thereof to remove drill cuttings from said hole.

5,006,022

AXIALLY MOVABLE TOOL AND GUIDE

Bernard Miller, 5600 Munhall Rd., Pittsburgh, Pa. 15217

Filed May 2, 1989, Ser. No. 346,903
Int. Cl.[5] B23B *49/00*
U.S. Cl. 408—16 **19 Claims**

14. A hand-held tool and guide combination comprising:

said tool having a holder for a cutting means and having an axis along which said cutting means advances;

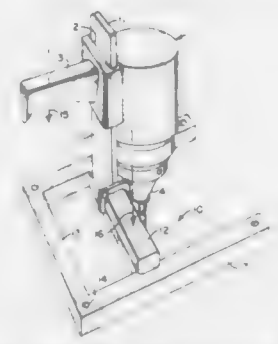
a gripping means on said tool for manually advancing said tool;

an elongated internal through opening forming a guideway adapted to receive said guide, said guideway being located adjacent said gripping means and in a plane between said gripping means and said axis along which said cutting means advances and being parallel to said axis along which said tool advances;

said guide having a base including spaced supports, the area between said supports defining a footprint;

a post attached to and projecting from said base;

a handle attaching means attached to said base and a handle attached to said handle attaching means, said handle and



said post being above and substantially within the area defined by said footprint;

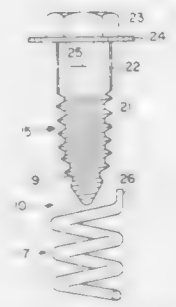
said post passing through said internal guideway of said tool, said post positioned with respect to said base and internal guideway of said tool such that said tool gripping means is above said base so that the line of force applied to said handle is parallel to and in the direction of tool advance, and so that the line of force applied to said tool gripping means is parallel to and in the direction of tool advance, such that both said lines of force pass within the area defined by said footprint.

5,006,023

STRIP-OUT PREVENTING ANCHORING ASSEMBLY AND METHOD OF ANCHORING

Stanley Kaplan, 160 Sequams La. West, West Islip, N.Y. 11788

Filed Apr. 24, 1990, Ser. No. 513,549
Int. Cl.[5] F16B *13/04*
U.S. Cl. 411—17 **20 Claims**



1. An anchoring assembly for securing a threaded elongate member such as a bolt or screw in a material engaging position in a relatively frangible material such as concrete, cement or the like, said assembly comprising:

an elongate member having:

an entry tip,

a body portion;

threads on at least a part of said body portion; and

a head end;

a coil formed of wire having a diameter such that the coil is engageable in the threads on said elongate member, said coil having an external diameter greater than the maximum diameter of said elongate member, and an internal diameter such that the wire forming the coil seats in the threads on said elongate member; and

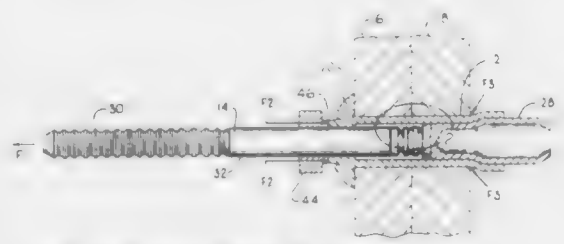
a tang on said coil extending at an angle to the axis of the wire forming an end wind of said coil from an end thereof, said tang having a thickness as measured in a direction transverse to said coil which is less than the diameter of the wire forming said coil, whereby the coil can be held against rotation as the elongate member is rotated in said coil to seat and retain the assembly in a hole in the frangible material in which the elongate member is to be secured.

5,006,024

DUAL-LOCK BLIND FASTENER

George Siebol, 1402 22nd St. NE., Space 552, Auburn, Wash. 98002

Filed Mar. 5, 1990, Ser. No. 488,646
Int. Cl.[5] F16B *13/06*
U.S. Cl. 411—43 **27 Claims**



1. A two piece blind fastener comprising:

a hollow sleeve having a shank and an enlarged head at one end and an axial through-bore extending from end to end, the through-bore having a section of reduced diameter,

a locking crown;

a pin having a pulling section and an enlarged head at one end, adapted to be inserted into the through bore of the sleeve for pulling therethrough and further having a first locking groove, one side of which is higher than the other side, the higher side forming a stop shoulder for engaging the reduced diameter section of the sleeve and adapted to cause material of the reduced diameter section to form into the first locking groove to form a first pin lock and having a second locking groove for receiving the locking crown to form a second pin lock; and

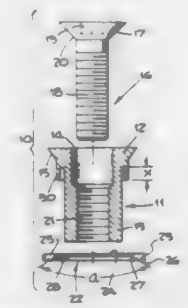
the enlarged pin head adapted to engage the sleeve shank and cause the sleeve shank to expand outwardly to form a blind head as the pin is pulled through the sleeve.

5,006,025

SELF-LOCKING NUT

John A. Duran, Glendora, Calif., assignor to Avibank Mfg., Inc., Burbank, Calif.

Filed Dec. 13, 1989, Ser. No. 450,284
Int. Cl.[5] F16B *37/04*
U.S. Cl. 411—183 **51 Claims**



1. A fastener assembly for securing a nut in an opening in a panel, said panel having an access side and a blind side, said assembly comprising:

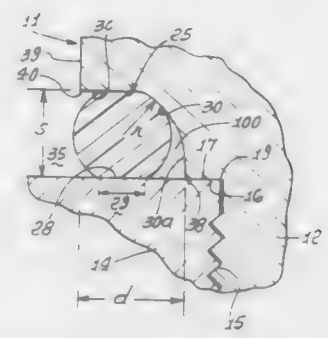
a nut having an enlarged head at one end disposed in said opening on the access side of said panel, said nut having a shank portion extending through said opening to the blind side of said panel, such nut having a threaded portion on said shank portion for threadably securing said nut to a mating threaded member, said nut having locking means associated therewith including a washer encircling said nut between said head and said shank portion on the blind side of said panel and a thin-walled skirt extending about the exterior of said nut between said head and said shank portion on the blind side of said panel swaged against said washer holding said nut to the blind side of said panel in a locking relationship with respect to said panel.

5,006,026

PARTICLE RETENTION MEANS ASSOCIATED WITH FASTENER

Carlos I. Estrada, 3143 Commonwealth Ave., Alhambra, Calif. 91803

Filed Jun. 4, 1990, Ser. No. 532,898
Int. Cl.[5] F16B *33/00, 43/02*
U.S. Cl. 411—369 **10 Claims**



1. In apparatus to collect metal particles as generated by a fastener connection to a workpiece, the fastener having a head and an axially forwardly extending shank, the combination comprising

(a) an O-ring about the head,

(b) the head forming an outwardly open annular recess spaced from the shank to receive the bulk of the O-ring,

(c) the O-ring projecting from the recess to engage the workpiece and form with the head a recess portion to receive and retain the particles,

(d) said recess opening radially outwardly of the head, and also toward the workpiece, to allow radially outward deformation of the O-ring away from said particle collecting recess portion.

5,006,027

FASTENER RECEIVING CAP

Jon D. Smith, Fenton, Mich., assignor to Dry Dock Industries, Inc., Fenton, Mich.

Continuation of Ser. No. 327,781, Feb. 23, 1989, Pat. No. 4,943,253. This application Feb. 20, 1990, Ser. No. 482,107
Int. Cl.[5] F16B *21/18*
U.S. Cl. 411—522 **2 Claims**

1. A cap member for use with a fastener receiving member comprising:

a center tooth adapted to be received between first and second longitudinally extending sides of a fastener receiving member, two side teeth adapted to be received on the outer periphery of the first and second longitudinally extending sides of a fastener-receiving member;

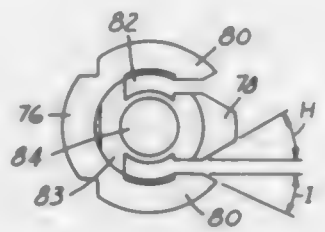
curved channels being defined between said center tooth and each side tooth and each extending in a first arc, said first arc being greater than an arc over which the longitu-

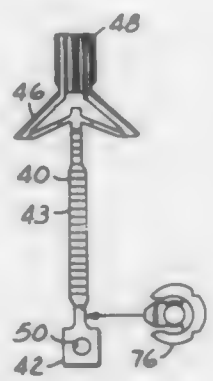
dinal sides of the fastener receiving member the cap is to be utilized with extends;

said curved channels extending between said center tooth and said side teeth to channels opening at a radially outer portion of said cap;

a central aperture formed in said center tooth for passage of a screw or other fastener, a line segment being drawn from a center of said central aperture to a center of one of said channel openings, in a plane drawn perpendicular to said center axis, is non-parallel to, and defines an angle of less than 180 degrees with, a line segment drawn in the same plane from said center of said central aperture to the center of the other of said channel openings, and both of said channel openings being received within a 180 degree arc drawn about said center of said central aperture:

said side teeth being resiliently biased towards said center tooth such that the first and second longitudinally extending sides of a fastener-receiving member may be snapped into said curved channels, springing said side teeth radially outwardly, and said side teeth will be resiliently re-





turned to a first position securing said first and second longitudinal sides within said curved channel;

said channels being defined by a first channel portion of a first thickness at a radially inner portion of said cap, and a second channel portion of a second thickness spaced towards said radially outer portion from said first channel portion said first thickness being greater than said second thickness and said second thickness being less than the lateral thickness of the longitudinal sides of the fastener receiving member that the cap is to be utilized with, said second channel portion being located at the arc portion which is greater than the arc of the longitudinal sides of the fastener receiving member such that said second portion can snap over the longitudinal sides of the fastener receiving member; and

said cap having a nominal first plane and a neck extending outwardly from said first plane, said neck being generally cylindrical and centered about said central aperture, said neck being sized such that its cylindrical shape will fit within a hole that the fastener receiving member is to be utilized with.

5,006,028

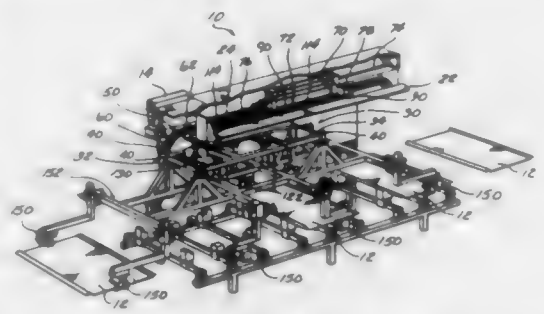
CAM LIFT AND CARRY PARTS TRANSFER APPARATUS

Donald T. Jackson, 1159 Ashley, Troy, Mich. 48098

Filed May 18, 1990, Ser. No. 525,459

Int. Cl.[5] B65G *25/04*

U.S. Cl. 414—222 **5 Claims**



1. A parts transfer apparatus for progressively advancing workpieces through successive work stations comprising:

a rigid support structure surrounding the work stations and having first and station ends;

a movable frame;

workpiece engaging means, mounted on the frame, for engaging a workpiece;

cam means fixedly mounted on the support structure and disposed on opposite sides of the frame, the cam means defining a reciprocal path of movement for the frame;

cam follower means mounted on the frame and engaging the cam means; and

drive means, coupled to the support structure and the frame, for reciprocatingly driving the frame between the first and second ends of the support structure, wherein the drive means comprises:

first cart means movably mounted for horizontal bi-directional movement on the support structure;

a second cart movably mounted for horizontal bi-directional movement on the support structure, the movable frame being connected to the second cart for movement therewith; and

first and second fluid operated cylinders, each having a reciprocal cylinder rod;

the first and second cylinders being fixedly mounted on the first cart means with the ends of the cylinder rod of the first cylinder fixedly connected to the support structure and extending outward from one end of the first cart means, the cylinder rod of the second cylinder extending outward in an opposite direction from the first cart means and fixedly connected to the second cart.

5,006,029

RECEIVING ASSEMBLY FOR SOLID WASTE DISPOSAL SYSTEM

Russell J. Galgana, Clarksville, N.Y., assignor to Smith & Mahoney, P.C., Albany, N.Y.

Filed Jul. 24, 1989, Ser. No. 384,500

Int. Cl.[5] F23K *3/00*; **B65G** *65/06*

U.S. Cl. 414—327 **20 Claims**

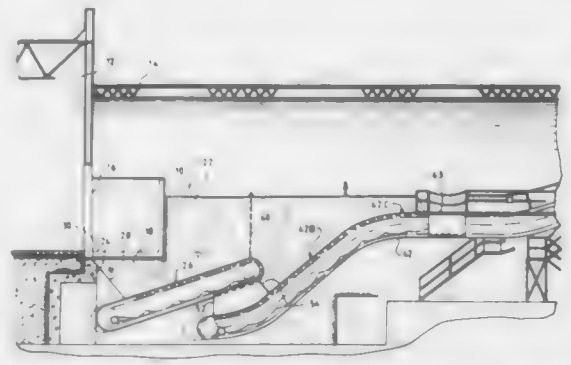
1. A receiving assembly for a solid waste disposal system, comprising:

a pit for receiving solid waste material;

a substantially horizontal tipping floor defined about said pit;

a first conveyor positioned within said pit, said first conveyor including a discharge end for discharging solid waste material which may be present on said first conveyor;

a second conveyor, at least part of said second conveyor being positioned beneath said discharge end of said first conveyor so that waste material discharged from said first conveyor drops upon said second conveyor, each of said first and second conveyors being adapted to transport waste material in substantially the same directions; and



a curtain positioned between said first conveyor and said second conveyor, said curtain having an upper end adjacent to a lower surface of said first conveyor and a lower end adjacent to an upper surface of said second conveyor.

5,006,030

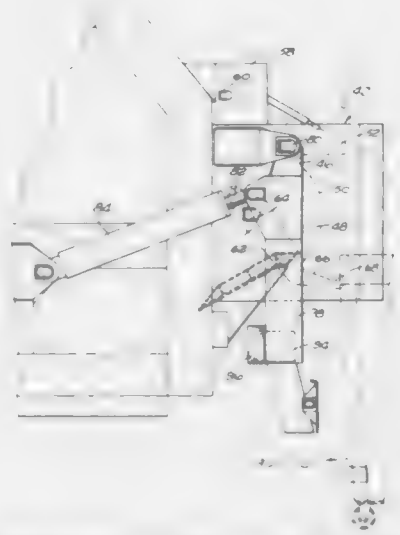
APPARATUS FOR TRANSFERRING REFUSE FROM CONTAINERS INTO REFUSE EQUIPMENT

Fred T. Smith, and Fred P. Smith, both of Alpine, Utah, assignors to Waste Management of North America, Inc., Oak Brook, Ill.

Filed Mar. 15, 1989, Ser. No. 323,776

Int. Cl.[5] B65F *3/02*

U.S. Cl. 414—406 **11 Claims**



1. In combination for use with a container for holding refuse and for depositing the refuse into a hopper through an opening at the rear end of the hopper, the container having a pin and having a lid at the top of the container and also having a peripheral wall extending downwardly from the lid,

first means constructed for coupling to the rear end of the hopper for engaging the peripheral wall of the container near the top of the container and for pivoting the bottom of the container upwardly about the pin on the container,

second means disposed relative to the first means for cooperating with the first means to retain the pin on the container in a fixed relationship when the first means pivots the container upwardly, and

third means independent in its movement of the movement of the first means and responsive only to the cooperative retention by the first and second means of the pin on the container in the fixed relationship for pivoting the container to a position where the bottom of the container is above the top of the container and is facing in a direction relative to the top of the container and the hopper to provide for the transfer of the refuse from the container into the hopper.

5,006,031

ELEVATING AND TRANSPORTING DEVICE

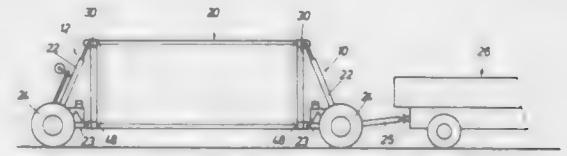
Michael Fossing, Vestbjerg, and Bent T. Jensen, Aalborg, both of Denmark, assignors to Danish Container Supply ApS, Denmark

Filed Jul. 12, 1989, Ser. No. 379,321

Claims priority, application Denmark, Oct. 7, 1988, 5610/88; Feb. 6, 1989, 538/89

Int. Cl.[5] B60P *3/40*

U.S. Cl. 414—458 **6 Claims**



1. Elevating and transporting device for a container provided with fittings for lifting at the corners of said container, the device comprising an undercarriage having main wheels and a carrying frame pivotally connected to the undercarriage, said carrying frame having means for connecting to a lower portion of the ends of the container and the bear against an upper portion of the ends of the container, said carrying frame having a base and having a pivotally mounted first displacing means connecting the undercarriage and an upper part of the carrying frame to elevate the container from the base, the improvement comprising said upper part of the carrying frame being separate from a lower part of the carrying frame, said upper and lower parts of the carrying frame being mutually displaceable by a second displacing means connected to each of to said lower an upper parts of the carrying frame, said upper part of the carrying frame having ends including means for attaching to the lower corners of the container along a side of the container to lift said container, whereby the container is supported and lifted by an elevating and transporting device on each of the opposed sides of the container.

5,006,032

MOBILE AND STEERABLE LIFTING AND SETTING-DOWN APPARATUS FOR LARGE TRANSPORTABLE RECEPTACLES

Reinhold Riedl, Von-Berlichingen-Str. 3, D-8760 Miltenberg, and Konrad Lazarus, Am Steiggraben 9, D-6982 Freudenberg-/Main, both of Fed. Rep. of Germany

Filed Sep. 8, 1989, Ser. No. 404,428

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1988, 3830530

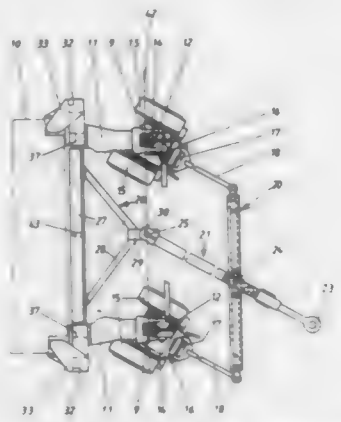
Int. Cl.[5] B60P *3/40*

U.S. Cl. 414—458 **8 Claims**

1. Mobile and steerable lifting and setting-down apparatus for large transportable receptacles, with rack and pinion jacks which can be secured to corners of the receptacles by means of outriggers, whose racks of the rack and pinion jacks are provided on supports for the large receptacle so that the large receptacle can be raised and lowered relative to each support, the supports having running wheels mounted on wheel cradles, pivotable with respect to the supports for steering maneuvers and the wheel cradles being provided with upwardly and downwardly swingable steering arms connected at one end to said wheel cradles, characterized in that

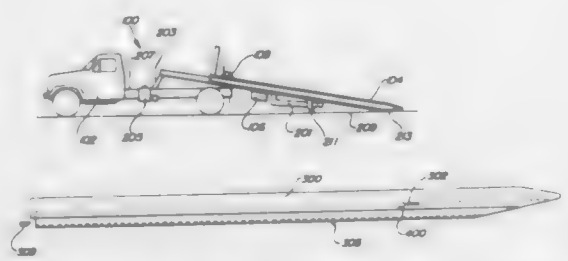
(a) the steering arms (18) are articulated by another end to a steering rod (20) which is mounted to be movable rotationally about its axis,

(b) a central shaft (21) which is coupled to the steering rod (20) at a coupling point which is movable along the axis of the central shaft,
(c) the central shaft (21) is pivoted at one of its ends to a connecting piece (26) which is mounted directly or indirectly on the large receptacle (10) to be swingable about an axis (A) parallel to the ground,



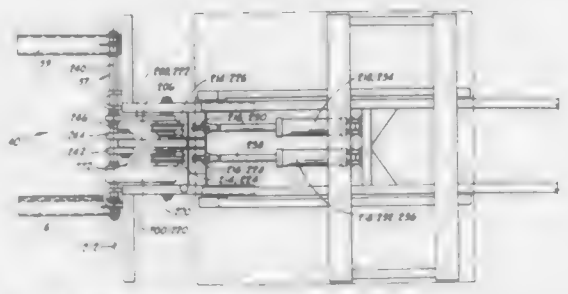
(d) the point (25) where the central shaft (21) is pivoted to the connecting piece (26) is located laterally in alignment with the pivots (9) of two adjacent wheel cradles (14).

5,006,033
CARRIER VEHICLE WITH TILT LOCK-OUT ARRANGEMENT
Ralph E. McConnell, Chattanooga, Tenn., assignor to Century Wrecker Corporation, Ooltewah, Tenn.
Filed Jul. 7, 1989, Ser. No. 376,880
Int. Cl.[5] B60P *1/16*
U.S. Cl. 414—477 **17 Claims**



1. In a carrier vehicle having frame means, a carrier bed arranged for translational movement with respect to the frame means, and tilt means coupled to the carrier bed for pivoting the carrier bed between a first position substantially parallel to a supporting surface of the carrier vehicle and a second position in which a rearward-most end of the carrier bed abuts the supporting surface, the improvement comprising:
means secured to one of the carrier bed and the frame means, for emitting a control signal,
proximity type contactless sensor means secured to the other of the carrier bed and the frame means and operative upon sensing the control signal to generate a lock-out signal at a sensor means output, and
control means coupled to the sensor means output and to the tilt means, operative upon receipt of the lock-out signal to disable the tilt means.

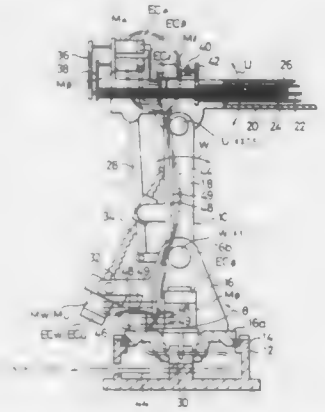
5,006,034
LIFTING APPARATUS
Dale E. Bragg, and Calvin L. Stegemoeller, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.
Division of Ser. No. 199,730, May 27, 1988, Pat. No. 4,913,554.
This application Apr. 27, 1989, Ser. No. 343,964
Int. Cl.[5] B60P *1/44*
U.S. Cl. 414—555 **9 Claims**



1. A lifting apparatus, comprising:
a base;
a load support means for engaging and supporting a load as said load support means and said load are moved between a lowered position and a raised position relative to said base;
lifting arm means, connected at a first pivotal connection to said base and at a second pivotal connection to said load support means, for moving said load support means between said lowered and raised positions;
stabilizer arm means, connected at a third pivotal connection to said load support means and at a fourth pivotal connection to said base, for controlling a rotational orientation of said load support means about an axis of said second pivotal connection relative to said base;
sprocket means rigidly attached to said lifting arm means substantially coaxial with said first pivotal connection;
chain means operably engaging said sprocket means;
power drive means, mounted on said base and operably connected to said chain means, for moving said chain means to rotate said sprocket means and said lifting arm means and to thereby move said load support means between said lowered and raised positions; and
wherein one of said lifting arm means and said stabilizer arm means includes a pair of spaced arms, and the other of said lifting arm means and said stabilizer arm means includes one and only one arm located between said pair of spaced arms.

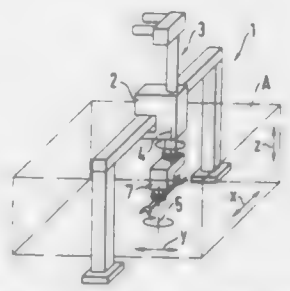
5,006,035
INDUSTRIAL ROBOT
Seiichiro Nakashima; Kenichi Toyoda, both of Hino, and Nobutoshi Torii, Hachioji, all of Japan, assignors to Fanuc, Ltd., Yamanashi, Japan
Continuation of Ser. No. 10,092, Dec. 24, 1986, abandoned. This application Mar. 31, 1989, Ser. No. 346,280
Claims priority, application Japan, Apr. 27, 1985, 60-89907
Int. Cl.[5] B25J *9/06*
U.S. Cl. 414—680 **3 Claims**

1. In an industrial robot having a robot unit comprising a fixed base and movable robot components, said movable robot components including a swivel body having an outerface and mounted on the fixed base so as to swivel about a longitudinal axis, a first robot arm pivotally joined to one end of the swivel body, and a second robot arm pivotally joined to one end of the first robot arm and provided with a robot wrist unit, characterized in that a first driving motor is mounted on said swivel body for swiveling said swivel body on said fixed base, second driving motors are mounted on said swivel body for pivoting said first robot arm on said swivel body and for pivoting said second robot arm on said first robot arm, respectively, and third drive motors are mounted on said second robot arm for driving said wrist unit, each of said motors of said first, second and third motors each having mounted on each, respective, motor an absolute position detecting encoder, and a battery mounted on said outerface of said swivel body and connected



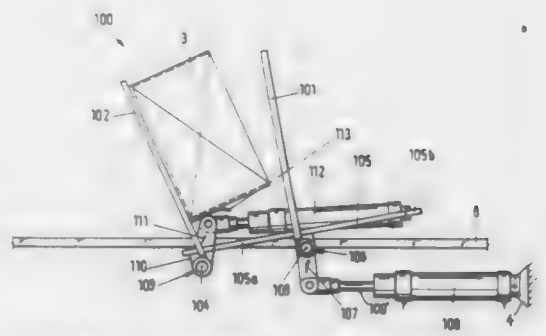
to each said encoder of each said second and third driving motors for supplying backup voltage to said encoders of said second and third drive motors for driving said movable robot components, other than said swivel body, mounted on said swivel body.

5,006,036
PORTAL SYSTEM
Hans-Joachim Massmann, Gottfried-Keller-Strasse 10, 6953, Gundelsheim, Fed. Rep. of Germany
Continuation of Ser. No. 70,474, Jul. 7, 1988, Pat. No. 4,832,563.
This application Dec. 27, 1988, Ser. No. 291,085
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1986, 3626610
The portion of the term of this patent subsequent to May 23, 2006, has been disclaimed.
Int. Cl.[5] B25J *5/04*
U.S. Cl. 414—744.5 **12 Claims**



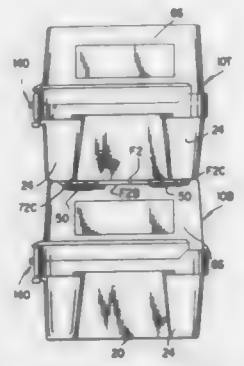
1. Portal system for the multidimensional movement of a holder member in at least x-, y- and z directions to selectable positions within a working space, the portal system comprising:
(a) a portal having a crossbeam extending in said x-direction with mounting means for mounting said crossbeam at a fixed location;
(b) a first unit movable along said crossbeam in said x-direction;
(c) means for moving said first unit in said x-direction;
(d) a second unit supported by said first unit for movement relative to said first unit in said z-direction; and
(e) means for moving said second unit in said z-direction;
said second unit comprising:
(i) a first hollow housing part movable in said z-direction relative to said first unit;
(ii) a first shaft having a first axis extending in said z-direction and having a first end and a second end, and being rotatably disposed within said first hollow housing part;
(iii) a second hollow housing part at said first end of said first shaft and rotatable with said first shaft about said first axis;
(iv) an axle rotatably disposed in said second housing part and offset to the side of said axis, with said holding member being provided at an end of said axle;
(v) a first motor mounted at said first housing part and drivingly connectable to said second end of said shaft;
(vi) a second motor mounted at said first housing part for driving said axle; and
(vii) a first transmission means extending from said second motor through said first and second housing parts to said axle for rotation of said axle, whereby movement of said holder in said y-direction is achieved by rotation of said second housing part about said axis under the influence of said first motor and by rotation of said axle by said second motor.

5,006,037
APPARATUS FOR TURNING OVER CARTONS
Martin Bluemle, Horhausen, Fed. Rep. of Germany, assignor to Winkler & Duennebier Maschinenfabrik und Eisengiesserei KG, Neuwied, Fed. Rep. of Germany
Continuation-in-part of Ser. No. 189,629, May 3, 1988, Pat. No. 4,870,803. This application Apr. 14, 1989, Ser. No. 338,303
Claims priority, application Fed. Rep. of Germany, May 7, 1987, 3715191
Int. Cl.[5] B65G *47/252*
U.S. Cl. 414—771 **8 Claims**



1. An apparatus for turning a body (3), such as a carton, so that an initially downwardly facing side of said body faces in another direction when the turning is completed, comprising a machine frame (4), tiltable first carrier means (101) for contacting said body (3) on said downwardly facing side, first mounting means (103, 106) forming a first horizontal axis (103) for tiltably mounting said first carrier means (101) to said machine frame, tiltable second carrier means (102) for contacting another side of said body (3), intermediate connecting means (105) rigidly and nonpivotably attached to said first carrier means (101), whereby said first carrier means (101) and said intermediate connecting means (105) form a rigid unit (101, 105) which is tiltable about said first horizontal axis (103) formed by said first mounting means (103, 106), second mounting means (109, 110) forming a second horizontal axis (104) for tiltably mounting said second carrier means (102) to said intermediate connecting means (105), first tilting drive means (108) connected to said rigid unit (101, 105) for tilting both carrier means (101, 102) and said intermediate connecting means in unison about said first horizontal axis (103), and second tilting drive means (112) for tilting said second carrier means (102) about said second horizontal axis (104) independently of any tilting in unison by said first tilting drive means (108), whereby both drives participate in said turning.

5,006,038
METHOD FOR CARRYING AND TRANSPORTING COMPUTER TAPE CARTRIDGES
David G. Leben, 105 S. Broadway, Ste. 640, Wichita, Kans. 67202
Division of Ser. No. 287,739, Dec. 21, 1988, Pat. No. 4,874,088.
This application Aug. 10, 1989, Ser. No. 392,210
Int. Cl.[5] B65D *25/18*
U.S. Cl. 414—786 5 Claims



1. A method for stacking containers in a superimposed posture to facilitate the carrying and transporting of the containers comprising the steps of:

(a) forming a first container for carrying and transporting computer tape cartridges and comprising

a first container base having a base bottom, a pair of base hollow upright side walls integrally secured to said base bottom, and a pair of base end walls integrally secured to said base bottom and to said base side walls, each of said base hollow upright side walls having a base outside wall and a base inside wall with said base outside wall having a structure defining a plurality of hollow dome-shaped protrusions spaced by an abridging outside wall member and with said base inside wall having a structure defining a plurality of hollow dome-shaped ribs spaced by an abridging inside wall member, and said base bottom having a base outside wall with a plurality of first protruding legs bound thereto and a base inside wall having a structure defining a plurality of hollow dome-shaped ridges spaced by an abridging base inside wall member, said dome-shaped ribs integrally connected to said dome-shaped ridges; and a first container lid pivotally secured to said first container base, said first container lid having a structure defining a first handle recess with a first handle recess depth and a first top recess with a first top recess depth;

(b) forming a second container comprising

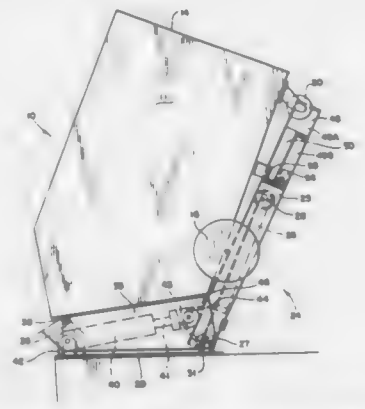
a second container base pivotally secured to a second container lid with the second container lid having a structure defining a second handle recess with a second handle recess depth and a second top recess with a second top recess depth, and said second container base includes a plurality of second protruding legs bound to a bottom thereof;

(c) securing pivotally a second handle to said second container lid within said second handle recess of said second container lid, said second handle has a thickness less than the depth of said second handle recess depth;

(d) pivoting said second handle downwardly to be flushed against the bottom of said second handle recess such as to completely contain said second handle therein with no structural part of said second handle extending above said second handle recess;

(e) positioning the first protruding legs of the first container into said second top recess such that the first protruding legs prevent the first container from readiiy sliding away from the second container.

5,006,039
METHOD OF EMPTYING A CONTAINER
Kurt W. Niederer, Charlotte, N.C., assignor to Toter, Inc., Statesville, N.C.
Division of Ser. No. 366,789, Jun. 14, 1989, Pat. No. 4,948,324.
This application Apr. 10, 1990, Ser. No. 507,676
Int. Cl.[5] B60P *1/16;* B65G *67/22*
U.S. Cl. 414—786 2 Claims



1. A method of emptying a container comprising the steps of:

(a) supporting the container by a bottom thereof by means of a supporting surface of a plate including first and second telescoping elements;

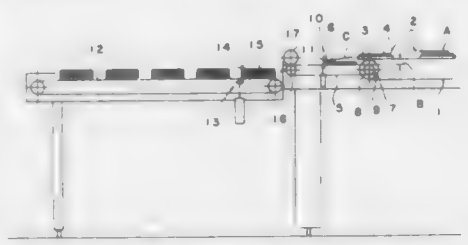
(b) providing a piston and cylinder cooperating with said plate for lifting the container and returning the container to starting position;

(c) lifting and tipping said container through a first range of motion by retracting said piston into said cylinder progressively through said first range of motion to a point where said bottom and a side wall of said container are both supported;

(d) lifting and tipping said container through a second range of motion while both the bottom and side wall of said container are supported by retracting said piston into said cylinder progressively through said second range of motion to a point where the container is inverted to a degree sufficient to empty it; and

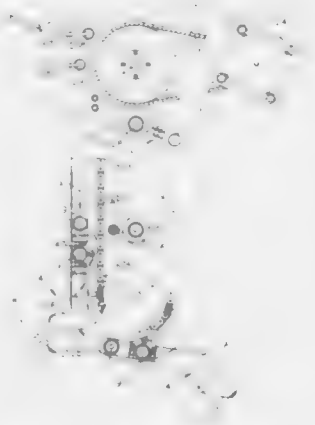
(e) returning the emptied container to its starting position by repeating steps (c) and (d) in reverse order as said piston extends outwardly from said cylinder.

5,006,040
APPARATUS FOR FORMING SETS OF ACCUMULATOR PLATES
Helmut Frey, Ferlach, Austria, assignor to Akkumulatorenfabrik Dr. Leopold Jungfer, Feistritz im Rosental, Austria
Filed May 30, 1990, Ser. No. 530,228
Claims priority, application Austria, Jun. 7, 1989, 1400/89
Int. Cl.[5] B65G *57/14*
U.S. Cl. 414—789.9 3 Claims



1. In an apparatus for forming sets of accumulator plates, said apparatus having a first conveyor device for a sequence of pairs of plates, consisting of a plate jacketed in a separator and an antiplate lying thereupon; and a vertically adjustable endless removal belt, located downstream of said conveyor device in the direction of conveyance, for forming a set of plates and removing the same, the improvement wherein said first conveyor device is formed by an endless conveyor chain and an endless conveyor belt located downstream of said conveyor chain in the direction of conveyance, and having, a plane of conveyance lower than a plane of conveyance of said conveyor chain, whereby said conveyor belt is adapted to receive an end plate of a said set from a magazine and said pairs of plates of a said set from said conveyor chain; and wherein a plane of conveyance of said removal belt is lower than said plane of conveyance of said conveyor belt; and wherein both said conveyor belt and said removal belt are provided with stop devices for engaging said plates or sets of plates.

5,006,041
CONNECTION ASSEMBLY FOR TRANSMITTING THE LOAD OF AN INTERCEPT ARM DIRECTLY TO THE PITCH CENTERLINE OF THE DRIVE CHAIN
Christer A. Sjogren, Miami, Fla., assignor to Quipp, Incorporated, Miami, Fla.
Filed Aug. 23, 1989, Ser. No. 397,584
Int. Cl.[5] B65G *57/03*
U.S. Cl. 414—790.4 16 Claims



1. A coupling assembly for coupling a stacker bucket for stacking signatures to a drive chain comprising:

said drive chain including a plurality of pairs of link plates, said pairs being pivotally connected to one another in end-to-end fashion to form a closed loop;

a connecting link having first and second ends;

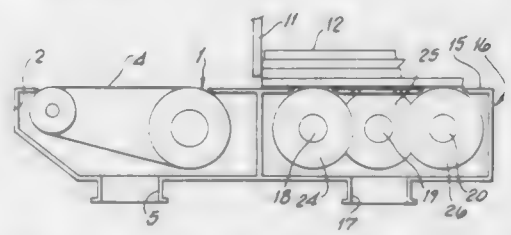
first means for pivotally coupling said first end to said drive chain, said first end being arranged between and pivotally coupled to one of said pairs of link plates so that said drive chain and the connecting link lie in a common plane, the link plates being substantially parallel to the connecting link first end;

second means for pivotally coupling said second end to said bucket;

the pivot axis of said first means being coincident with the pitch centerline of said drive chain; and

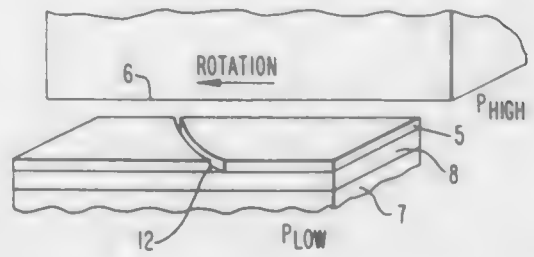
said connecting link first and second ends being respectively rotatable relative to the drive chain and the bucket.

5,006,042
APPARATUS FOR FEEDING BOARDS OR SHEETS FROM A STACK
Marcus G. Park, Stockport, England, assignor to Simon Container Machinery Limited, Cheshire, England
Filed Jan. 10, 1990, Ser. No. 463,246
Claims priority, application United Kingdom, Jan. 18, 1989, 8901055
Int. Cl.[5] B65G *59/00*
U.S. Cl. 414—795.4 11 Claims



1. Apparatus for feeding boards in a single direction sequentially from the top or bottom of a stack through a feed gate at the top or base respectively of a front stack retaining wall, comprising at least two rotary conveying members displaced longitudinally in the direction of feed and each having a conveying surface effective transversely across at least a part of the width of the boards to be fed and continuously in conveying contact with the most adjacent board in the stack, a separate variable speed motor to drive each conveying member selectively in said direction, suction means for holding each consecutive board in contact with the conveying members, and control means to start and accelerate the motors and their conveying members to a pre-determined speed to advance said most adjacent board and to decelerate each motor and its conveying members after the board has advanced and before the next succeeding board in the stack has descended onto a conveying surface.

5,006,043
FLOATING ANNULAR SEAL WITH THERMAL COMPENSATION
Shin Katsumata, and Mark W. Corcoran, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.
Filed Nov. 20, 1989, Ser. No. 438,111
Int. Cl.[5] F04D *29/00;* B65D *53/00*
U.S. Cl. 415—113 19 Claims



1. A floating annular seal for forming a seal with a radially opposed first surface, comprising, in combination, a sealing material adapted to be positioned with clearance radially opposite a first surface to be sealed, a backing ring radially spaced from said sealing material, and elastomeric means interconnecting said sealing material and said backing ring, wherein the surface of said sealing material adapted to be positioned with clearance radially opposite the first surface to be sealed comprises at least one open expansion groove for eliminating excessive hoop stress in the sealing material, and wherein said at least one open expansion groove is in the form of a spiral whereby a pumping action can be induced by relative rotation between the sealing material and the first surface to be sealed.

5,006,044

METHOD AND SYSTEM FOR CONTROLLING A MECHANICAL PUMP TO MONITOR AND OPTIMIZE BOTH RESERVOIR AND EQUIPMENT PERFORMANCE

Frank J. Walker, Sr., 8340 Northeast 2nd Ave., Miami, Fla. 33138, and Frank J. Walker, Jr., 5711 South Utica Ave., Tulsa, Okla. 74105

Continuation of Ser. No. 87,505, Aug. 19, 1987, abandoned, which is a continuation-in-part of Ser. No. 901,692, Aug. 29, 1986, abandoned. This application Nov. 2, 1989, Ser. No. 430,418

Int. Cl.[5] F04B *47/02*

U.S. Cl. 417—12 **35 Claims**



1. A method of preventing damage resultant from pump-off of well pump from pumping fluid from a well casing into which fluid from a surrounding earth formation fills to replenish the casing to a static fluid flow level, comprising the steps of:

measuring rate of flow of fluid pumped from the well casing and, in response, developing a fluid flow rate signal representing in real-time the instantaneous fluid flow rate of said flow of fluid;

processing said fluid flow rate signal during an initial interval of time to develop a constantly updated reference signal that varies over time in response to changes of said fluid flow rate signal;

processing said fluid flow rate signal over a latter interval of time to develop an average of said fluid flow rate signal;

comparing said average of said fluid flow rate signal with the reference signal to detect pump-off and, in response, developing a pump-off signal;

controlling said pump with said pump-off signal; and

monitoring pump duty cycle, and displaying monitored duty cycle.

5,006,045

SCROLL COMPRESSOR WITH REVERSE ROTATION SPEED LIMITER

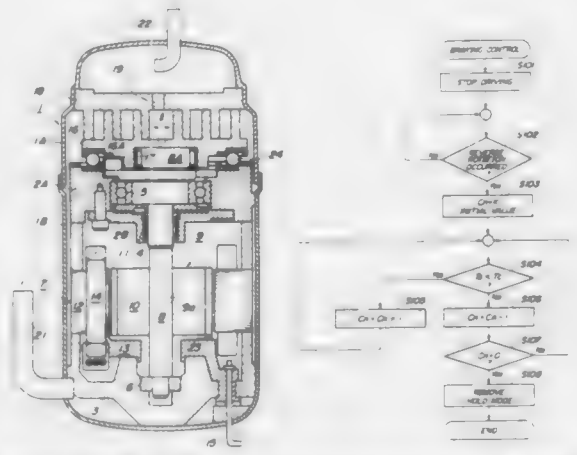
Tatsuya Shimoda; Takeshi Seto; Kenichi Endo, all of Nagano; Yamaha Yoshikazu, Tokyo, and Nobukazu Takagi, Saitama, all of Japan, assignors to Seiko Epson Corporation and Diesel Kiki Co., Ltd., both of Tokyo, Japan

Filed Dec. 16, 1988, Ser. No. 286,365

Int. Cl.[5] F04B *49/00*

U.S. Cl. 417—42 **5 Claims**

1. An air conditioner having a compressor and a brushless DC motor directly coupled to a driving shaft of said compressor, wherein said compressor comprises a scroll type compressor; and a rotor of said brushless DC motor comprises a permanent magnet essentially composed of rare earth elements inclusive of yttrium, transition metal and boron; and further comprising a detecting means for sensing reverse rotation of said rotor, a means for presetting a reverse rotation amount and a means for applying a braking force to said motor by exciting coils of said motor such that a high braking force is applied if the sensed rotation is greater than said preset reverse rotation amount and said braking force is decreased as said sensed reverse rotation is less than said preset reverse rotation amount until said sensed reverse rotation becomes zero.



5,006,046

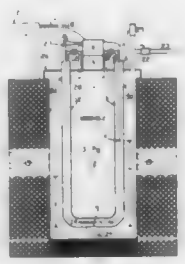
METHOD AND APPARATUS FOR PUMPING LIQUID FROM A WELL USING WELLBORE PRESSURIZED GAS

William G. Buckman, 504 Memphis Junction Rd.; Henry B. Steen, III, 109 Creekwood Ave., and William G. Buckman, Jr., 208 Whispering Hills, all of Bowling Green, Ky. 42101

Filed Sep. 22, 1989, Ser. No. 410,841

Int. Cl.[5] F04F *1/06*

U.S. Cl. 417—54 **25 Claims**



1. A method for removing liquid from a well bore and utilizing a tubing means having a gas inlet portion and a liquid discharge portion and a first valve connected to the liquid discharge portion, the tubing means having an opening therein comprising the steps of:

flowing liquid from said well bore into said tubing means through said opening;

flowing pressurized gas from the well bore into the gas inlet portion;

opening said first valve;

moving the liquid from said tubing means through the liquid discharge portion and out of the well.

5,006,047

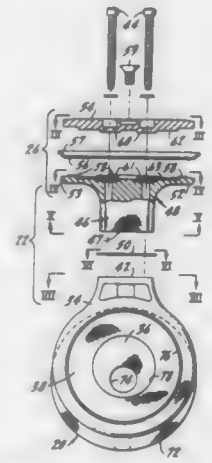
COMPRESSOR WITH A SEGMENTED PISTON ROD ASSEMBLY

Mark O'Connell, Cedar Grove, Wis., assignor to Thomas Industries, Inc., Sheboygan, Wis.

Filed Feb. 27, 1989, Ser. No. 317,886

Int. Cl.[5] F04B *19/00*

U.S. Cl. 417—238 **2 Claims**



1. A compressor comprising a motor, a housing, a cylinder in said housing, a shaft driven by said motor, a reciprocating rod and piston assembly having a resilient annual seal for engaging said cylinder, means accessible from an upper surface of said rod and piston assembly for replacing said seal and for adjusting the length of said assembly,

said means comprising a lower rod section having fastener engaging means, a main piston section having means for allowing passage of a fastener therethrough, a seal clamp for fixing said seal into engagement with said main piston section, and connecting means for fixing said main piston section, said seal clamp, and said seal to said lower rod section,

said means for replacing and adjusting said assembly including shim means insertable between a lower end of said main piston section and an upper end of said lower rod section,

said main piston section having at least one rib disposed on an upper surface thereof to positively engage said seal,

said main piston section and said seal clamp have alignment means for facilitating their relative alignment.

5,006,048

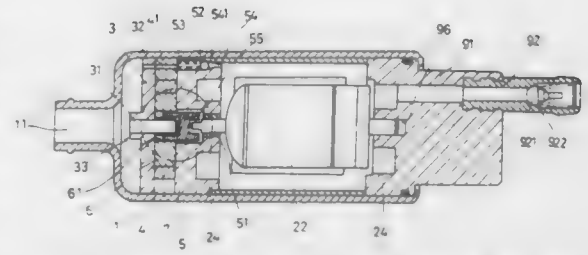
ELECTRICALLY-OPERATED GEAR ROTOR PUMP

Wen-Yuh Jow, Taichung, Taiwan, assignor to Mingyen Electronics Industry Co., Ltd., Taichung Hsien, Taiwan

Filed Sep. 19, 1989, Ser. No. 409,306

Int. Cl.[5] F04B *17/00*

U.S. Cl. 417—410 **1 Claim**



1. An improved dc motor operated pump of gear rotor type adapted for automobile fuel injection system comprising

a cylindrical casing having an extended fuel inlet tube;

an inlet end portion having an arcuate fuel inlet port disposed thereon being located right next to said fuel inlet tube in said casing with a shaft fixing hole being disposed at the center thereof in which a central fixed shaft is secured in place by way of interference fit;

a gear rotor unit having an inner rotor rotatably on said fixed shaft in engagement with said central shaft fixing hole; and an inner cam ring; and an outer rotor disposed within said inner cam ring and means to allow rotating of said outer rotor together with said inner rotor; said gear rotor unit being disposed adjacent said inlet end portion and in abutment therewith at one side thereof and in abutment with an outlet end portion at the other side thereof;

said outlet end portion having an arcuate fuel inlet port in communication with the gear rotor unit, and a central tubular opening having two sections of different diameters; said outlet end portion being located next to said gear rotor unit; a bearing means being secured in place in the section having smaller diameter of said tubular opening at the end away from said gear rotor unit;

a dc motor having an extended driving shaft, the terminal end thereof being defined in rectangular form; said driving shaft being rotatable with said bearing;

a pair of semi-circular through grooves symmetrically disposed on the wall of said inner rotor with said central shaft fixing hole located therebetween; and

a floating coupling means having an H-shaped cross section; one end of said coupling means being defined in solid form with a rectangular groove disposed thereon and being rotatably located in the central tubular opening in the section having a larger diameter of said outlet end portion so that a rectangular terminal end of said driving shaft of the dc motor can be in engagement therewith; the other end of said coupling device being provided with a pair of semi-circular arms which are in registry with said semi-circular through grooves on said inner rotor so that the floating coupling device can operatively join the inner rotor rotatably with respect to said fixed shaft and the driving shaft of said dc motor together;

a fuel outlet assembly having a pair of holes for the disposition of carbon brushes of said dc motor, and at the front end of each said hole is disposed an electrode rod; a hexagon-shaped hole being disposed at the center thereof for the location of a support end of said dc motor at the opposite end of said driving shaft;

a fuel outlet passage having a valve means disposed at the frontmost end thereof,

wherein the improvement consists in the adoption of said floating coupling device which is used to couple the driving shaft of said dc motor and said inner rotor which is rotatably mounted on said fixed shaft so as to permit the power of said dc motor to transmit to said gear rotor pump without the consideration of axial alignment.

5,006,049

PERISTALTIC PUMP

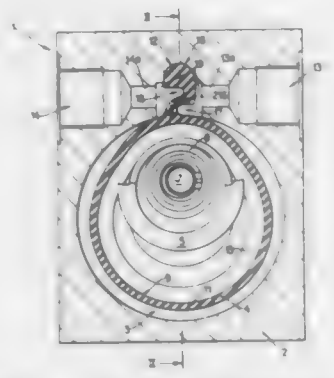
Richard von der Heyde, Breisach, and Erich Becker, Bad Krozingen, both of Fed. Rep. of Germany, assignors to KNF Newberger GmbH, Frieburg-Munzingen, Fed. Rep. of Germany

Filed May 5, 1989, Ser. No. 348,298

Claims priority, application Fed. Rep. of Germany, May 5, 1988, 3815252

Int. Cl.[5] **F04B** *43/17, 45/08*

U.S. Cl. 417—476 **19 Claims**



1. A peristaltic pump comprising a hollow housing having an annular internal surface, a fluid-admitting inlet and a fluid-discharging outlet; an elastically deformable diaphragm including an annular section disposed in said housing and defining with said internal surface an annular pumping chamber which communicates with said inlet and said outlet, said diaphragm further including an extension anchored in said housing and extending from said section substantially radially outwardly between said inlet and said outlet, said extension having at least one elastically-enhancing weakened portion, a first side confronting said inlet and a second side confronting said outlet, said at least one weakened portion having at least one first recess in said first side and at least one second recess in said second side, said at least one first recess being offset with reference to said at least one second recess in the radial direction of said section; a rotary piston disposed in said section with radial play; and means for rolling said piston circumferentially of and along said section to thereby move successive increments of said second toward said internal surface so that the section draws fluid into said chamber by way of said inlet and expels fluid from said chamber by way of said outlet.

5,006,050

HIGH ACCURACY DISPOSABLE CASSETTE INFUSION PUMP

James E. Cooke, 1506 Madrono Ave., Palo Alto, Calif. 94306; Philip Barkan, Stanford, and Gregory Kovacs, Palo Alto, both of Calif., assignors to James E. Cooke, Tampa, Fla.

Filed Dec. 9, 1988, Ser. No. 283,107

Int. Cl.[5] **F04B** *43/04*

U.S. Cl. 417—478 **15 Claims**

1. A pump for supplying a controlled quantity of liquid comprising:

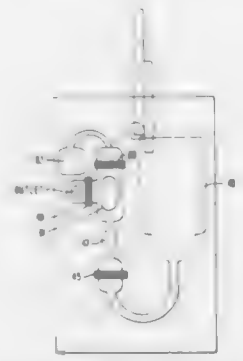
cassette means for defining a liquid path, the cassette means including an inlet region for receiving the liquid, an outlet region for discharging the liquid, and a pressurization region for forcing the liquid from the outlet region;

flexible membrane means disposed over the cassette means to enclose the liquid path;

controllable piston means disposed to move the flexible membrane means to pressurize the liquid in the pressurization region, thus forcing liquid from the outlet region;

inlet valve means disposed in proximity to the flexible membrane means and the inlet region for controlling liquid flow through the inlet region, the inlet valve means capable of operating independently of the controllable piston means;

outlet valve means disposed in proximity to the flexible membrane means and the outlet region for maintaining the outlet region closed except when liquid is being forced from the outlet region;



a second outlet region for discharging any gas in the cassette means, the second outlet region being disposed in the liquid path before the outlet region; and

additional outlet valve means disposed in proximity to the second outlet region for controlling gas flow through the second outlet region.

5,006,051

ROTARY TWO-CYLINDER COMPRESSOR WITH DELAYED COMPRESSION PHASES AND OIL-GUIDING BEARING GROOVES

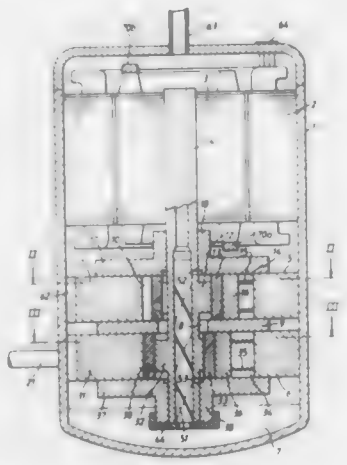
Hitoshi Hattori, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Dec. 1, 1988, Ser. No. 278,514

Claims priority, application Japan, Dec. 3, 1987, 62-304640; Jul. 18, 1988, 63-177210

Int. Cl.[5] **F04C** *23/00, 29/02*

U.S. Cl. 418—60 **11 Claims**



1. A rotary compressor comprising:

a pair of cylinders, each defining a hollow space therein;

a shaft mounted for rotary movement in the cylinders;

a motor for rotating the shaft;

a piston corresponding to each cylinder, each piston surrounding the shaft for eccentrically rotating with the shaft in one of the spaces and compressing gas in the one space;

blade means for continuous slidable contact with each piston, including an individual planar blade for dividing each space into a suction chamber and a compression chamber;

first and second journal bearings for rotatably supporting the shaft, including an inner bearing surface on each bearing;

oil-guiding groove means for distributing oil from a source thereof over the entire bearing surfaces between the bearing surfaces and the shaft upon rotation of the shaft; including oil-guiding grooves respectively provided within said first and second bearings, said respective oil-guiding grooves being provided in the regions having constant negative pressure with respect to the outsides of the first and second bearings during operational rotation of said shaft.

9. A rotary compressor having a rotating shaft driven by an electric motor and two compression mechanisms driven by said rotating shaft in common, each comprising:

a cylinder;

a piston supported and rotated by said rotating shaft eccentrically within said cylinder;

a blade attached to said cylinder so as to always make a slidable contact with the outer circumferential surface of said piston for dividing said cylinder into a suction chamber and a compression chamber;

a gas suction inlet communicating with said suction chamber;

a gas discharge outlet communicating with said compression chamber;

said two compression mechanisms being disposed coaxially so as to cause the phases of said blades to coincide with each other;

a pair of journal bearings for supporting said rotating shaft at portions projecting from both the upper and lower sides of two compression mechanisms;

said two rotary compression mechanisms having the compression phases being determined such that the starting point of compression phase of one of said rotary compression mechanism separated from said motor being delayed by an angle θ from the starting point of compression phase of the other one of said rotary compression mechanism disposed near said motor, said angle of θ being defined as $\pi - \alpha < \theta < \pi$, where

$$\alpha = \cos^{-1}\left(\frac{c}{a+c}\right)$$

a: the axial distance along said rotating shaft between the centers of said two pistons,

c: the axial distance along said rotating shaft between the other end of said motor and the center of one of the pistons closest to said motor.

5,006,052

ORBITAL ROTOR COMPRESSOR HAVING AN INLET PASSAGE IN THE ROTOR

Kenichi Kazaoka, Nagoya, and Hiroshi Okazaki, Kariya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 28, 1989, Ser. No. 458,510

Claims priority, application Japan, Dec. 29, 1988, 63-331388

Int. Cl.[5] **F04C** *18/02, 29/08*

U.S. Cl. 418—61.1 **1 Claim**

1. A compressor comprising:

a cylinder,

a crank shaft having an eccentric shaft,

a hub member rotatably supported by said crank shaft,

a rotor disposed in said cylinder and supported by said eccentric shaft,

end plates fixed to each end of said cylinder and provided with inlet passages extending to the inside of said cylinder,

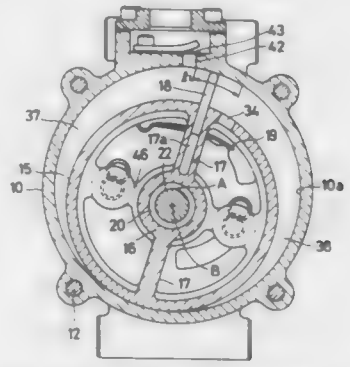
a support element extending between and connecting said hub member and said rotor and having a groove provided therein,

a vane member disposed in said groove,

spring means disposed between said end plates and said vane member for continuously urging said vane member to contact an inner surface of said cylinder,

a chamber defined by said cylinder, said rotor and said end plates,

an inlet port provided in said rotor to connect said inlet passage with said chamber, and



an outlet port provided in said cylinder to communicate with said chamber, wherein volume of said chamber is varied by movement of said rotor driven by said crank shaft.

5,006,053

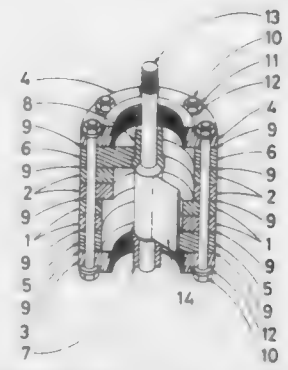
VERTICAL SINGLE BLADE ROTARY PUMP

Cornelio L. Seno, c/o Ibrahim Abunayyan Organization, P.O. Box 71, Riyadh, 11411, Saudi Arabia

Filed Mar. 12, 1987, Ser. No. 25,187

Int. Cl.[5] **F04C** *2/344*

U.S. Cl. 418—150 **1 Claim**



1. A vertical single blade rotary pump comprising:

A. single round shaft having continuous radial slot that holds and allows rectilinear oscillation of the blade, said shaft tapers off after the slot towards both ends to reduce diameter, the longer end protruding out of the casing assembly to receive the brakepower needed to run the pump;

B. single rectangular flat plate blade with round horizontal edges and wedge shaped vertical edges;

C. a shell assembly comprising multiple number of shell modules that can be varied in quantity to achieve the required flow, having interior surface following the curve of the function $r = B(1 + 0.5 \sin \theta)$, where B is slotted shaft's diameter and r is the distance of the curve from the center at an angle θ from the horizontal, each shell module having a port in one quadrant bounded by the circular arc about the center whose radius is equal to one and a half times the slotted shaft's diameter, the horizontal line passing through the center from which θ is reckoned, the vertical line located half the thickness of the blade from the center, and the sweeping cavity; said shell modules being divided into two contiguous uniformly arranged sets, the bottom set being attached to the suction end plate

and having the same relative position of the ports forming an integral suction port, the top set being attached to the discharge end plate having the same relative position of the ports forming an integral discharge port, the radial sides of the two integral ports being colinear orthographically in the assembled pump;

D. suction and discharge end plates serving as sidings of the pumping chamber which are similar to the shell module in all respects except that the sweeping cavity is replaced by a continuous bore and countersunk recess in the center where the sleeve bearing is force fitted; and

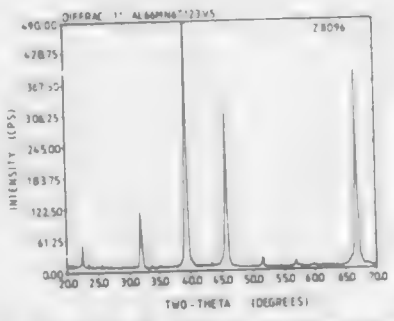
E. two sleeve bearings pressed into the center holes of the end plates, both having continuous round holes with countersunk tapered recesses that journal, support and prevent or minimize the radial and axial movement of the slotted shaft.

5,006,054

LOW DENSITY HEAT RESISTANT INTERMETALLIC ALLOYS OF THE AL_3TI TYPE

Donald E. Nikkola, Houghton, Mich., assignor to Technology Development Corporation, Houghton, Mich.

Continuation-in-part of Ser. No. 289,543, Dec. 23, 1988, Pat. No. 4,891,184. This application Mar. 30, 1989, Ser. No. 331,626
The portion of the term of this patent subsequent to Jan. 2, 2007, has been disclaimed.
Int. Cl.[5] **C22C** *21/00, 21/06*
U.S. Cl. 420—552 **11 Claims**



1. A low density heat resistant aluminum-titanium alloy composition comprising from about 15 to about 35 atomic percent titanium, from about 3 to about 15 atomic percent manganese, or chromium, or combinations of manganese and chromium, and the balance substantially aluminum.

5,006,055

APPARATUS FOR MANUFACTURING AN OTOPLASTIC

Helmut Lebisch; Rainer Basel, both of Erlangen; Georg Fuchs, Hembofen; Hermann Dietmar, Scheinfeld; Ernst Wipfelder, Munich, and Wilhelm Hekele, Kolbermoor, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Division of Ser. No. 185,794, Apr. 22, 1988, Pat. No. 4,871,502. This application Aug. 4, 1989, Ser. No. 389,860
Claims priority, application Fed. Rep. of Germany, May 6, 1987, 3715082
Int. Cl.[5] **B29C** *33/10, 39/24, 41/02*
U.S. Cl. 425—2 **6 Claims**

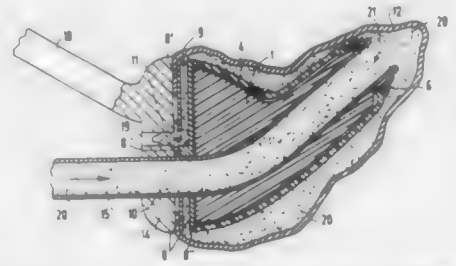
1. An apparatus for manufacturing an otoplastic, comprising:

(a) a die for simulating the outside contour of an in-the-ear hearing aid module;

(b) an over-shell positioned substantially over the die, the over-shell being provided with holes;

(c) a first deformable envelope located substantially over the die and the over-shell; and

(d) an admission channel formed by at least an open end of the first deformable envelope provided for the introduction of a flowing otopolastic material between the shell



and the envelope; wherein there is a space between the first deformable envelope and the over-shell

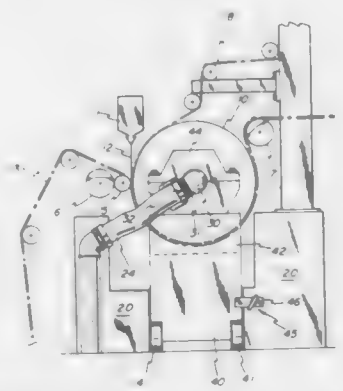
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5,006,056

FILM EXTRUSION APPARATUS INCLUDING A QUICKLY REPLACEABLE CHILL ROLL

Kenneth A. Mainstone, Cincinnati, Ohio, and Robert F. Moeller, Baldwinsville, N.Y., assignors to The Black Clawson Company, Middletown, Ohio

Continuation of Ser. No. 403,231, Sep. 1, 1989, abandoned. This application Jul. 5, 1990, Ser. No. 548,441
Int. Cl.[5] **B29C** *47/88*
U.S. Cl. 425—186 **9 Claims**



1. In extrusion apparatus for producing a continuous film of thermoplastic material which includes a main frame, a chill roll having hollow journals at each end thereof, drive means for said chill roll including a drive member on said frame and a complementary drive member on one of said journals, means for coupling said journals to a system for circulating liquid coolant through said chill roll, and means for extruding a film of thermoplastic material onto and into wrapping engagement with said chill roll, the combination of:

(a) a movable base for said chill roll which is separate from said frame and includes bearing means for directly supporting said chill roll journals,

(b) means defining an operating position of said chill roll with respect to said extruding means,

(c) means supporting said base for rolling movement lengthwise of said chill roll into and out of said operating position to expedite removal and replacement of said chill roll without requiring lifting thereof,

(d) means effective with said chill roll in said operating position thereof for connecting said drive members, and

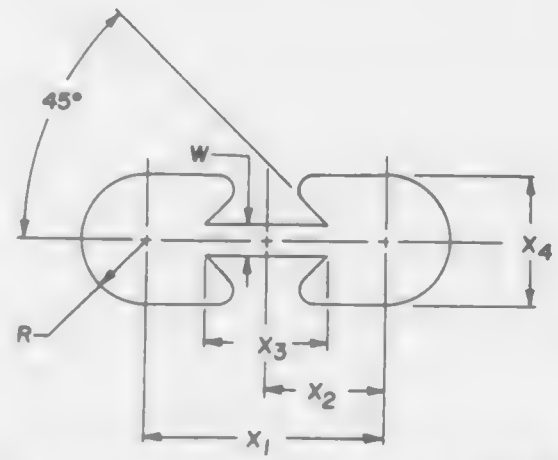
(e) releasable means for securing said movable base in fixed relation with said frame.

5,006,057

MODIFIED GROOVED POLYESTER FIBERS AND SPINNERET FOR PRODUCTION THEREOF

Shriram Bagrodia, Kingsport, and Bobby M. Phillips, Jonesborough, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 299,904, Jan. 23, 1989, Pat. No. 4,954,398, which is a division of Ser. No. 157,551, Feb. 16, 1988, Pat. No. 4,842,792. This application Apr. 24, 1990, Ser. No. 513,714
Int. Cl.[5] **D01D** *5/253;* **B29C** *47/30*
U.S. Cl. 425—464 **2 Claims**



1. A spinnerette having at least one orifice wherein the orifice has an overall mirror-image, rounded, spade-shape wherein the mirror images join at the small ends wherein the shape of the orifice is defined as follows: the central portion of the orifice is in the shape of a slot wherein W is the width of the slot and Y_3 is the length of the slot, said orifice being further defined as having two substantially equal, symmetrical, mirror-image, end portions continuous with each end of the slot, the slot being narrower than the end portions, each end portion having three distinct regions continuous with each other to form a single shape wherein the region most distal from the center of the orifice is a semicircle having a center directly aligned with the center of the slot, the diameter of the semicircle, X_4, being aligned perpendicular to the length of the slot and being closer to the center of the orifice than the rounded part of the semicircle, wherein the radius of the semicircle is R, the distance between the center of one semicircle to the center of the slot is X_2, and the distance between the center of one semicircle to the center of the other semicircle is X_1, the second most distal region is rectangular wherein the ends of the rectangle defining the rectangle's width are tangents to the ends of the semicircle are parallel to the slot length and extend a distance from the semicircle to the end of the slot, and the end portion region most proximal to the center of the orifice is in the form of two right triangular mirror images above and below the terminal portion of the slot, wherein one non-hypotenuse side of each triangle is continuous with the portion of the rectangle from the end of the slot to the end of the semicircle tangent, the other non-hypotenuse side is continuous with the semicircle tangent, and the hypotenuse of each triangle is at a 45° angle from the slot length, and wherein the angles of each of the triangles closest to the opposite end portions are rounded off, wherein:

$0.06\ \text{mm} \leqq W < 0.10\ \text{mm}$, $6\,W \leqq X_1 \leqq 12\,W$,

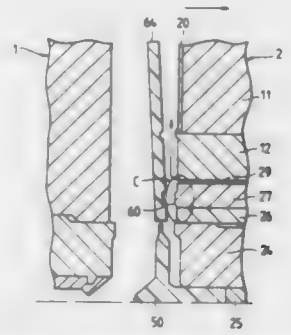
$2\,W \leqq X_3 \leqq 6\,W$ $3\,W \leqq X_2 \leqq 6\,W$, and $W \leqq R \leqq 3W$.

5,006,058

APPARATUS FOR INJECTION MOLDING INFORMATION RECORDING DISKS

Haruhisa Maruyama; Ken-ichi Ishiguro; Hiroaki Watanabe, and Osamu Yagisawa, all of Yamanashi, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 7, 1988, Ser. No. 280,920
Claims priority, application Japan, Dec. 19, 1987, 62-322508; Jun. 9, 1988, 63-142626
Int. Cl.[5] **B29C** *45/43*
U.S. Cl. 425—556 **9 Claims**



1. An apparatus for injection molding a substrate of an information recording disk, comprising:

a pair of mold bodies having molding surfaces opposed to each other so as to form a mold space therebetween, said mold bodies being movable relative to each other in a direction substantially perpendicular to said molding surfaces;

a mold clamping means for clamping said mold bodies;

an injecting means for injecting method molding material into said mold space after mold clamping;

a cutting means provided on one of said mold bodies for cutting said molding material after said molding material has cured, said molding material forming said substrate after said molding material has cured;

a pressurized gas supply means provided on a molding surface of said one of said mold bodies, said gas supply means having an opening for supplying pressurized gas to release said cured molding material from said mold; and

an annular uneven region in said molding surface of said one of said mold bodies between said cutting means and said opening, said annular uneven region of said molding surface forming a corresponding annular uneven region within a side of said substrate, wherein a connection between said annular uneven regions form an airtight seal.

5,006,059

MOLD FOR INJECTION MOLDING OF TOOTHED POWER TRANSMISSION BELT

Keizo Hakoda, and Hisashi Samejima, both of Kobe, Japan, assignors to Bando Kagaku Kabushiki Kaisha, Kobe, Japan

Filed Feb. 22, 1990, Ser. No. 483,251
Int. Cl.[5] **B29C** *45/27*
U.S. Cl. 425—573 **2 Claims**

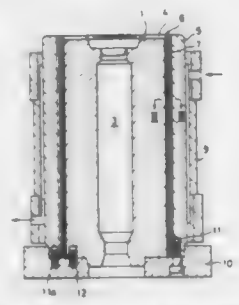
1. Apparatus for injection molding of toothed power transmission belts, comprising:

an outer mold having a cylindrical interior space, a columnar inner mold having a plurality of axial tooth-shaped grooves on the external circumferential surface thereof, said inner mold being mounted in said interior space and defining, when inserted in said space, an annular cavity between said external circumferential surface of the inner mold and the internal circumferential surface of the outer mold,

a plurality of axially extending runners being formed in the outer mold adjacent the internal circumferential surface thereof at substantially equal angular intervals about the

internal circumferential surface, means for injecting a molten molding material into said runners, and

each of said runners being provided with a slit-shaped gate opening to the internal circumferential surface of the outer



mold over the full length of the runner such that the inflow of the molten molding material from each runner into said cavity is gradually decreased downstream from said injecting means.

5,006,060

GAS RESONANCE DEVICE

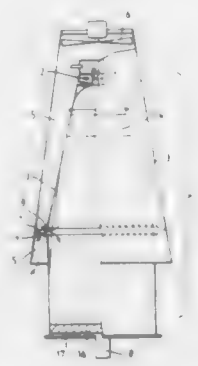
Alan A. Wells, Ely, England, assignor to Haser Company Limited, Inverness, England

Continuation of Ser. No. 398,306, Aug. 25, 1989, Pat. No. 4,948,360, which is a continuation of Ser. No. 117,783, Nov. 6, 1987, abandoned. This application Jun. 1, 1990, Ser. No. 531,732

Claims priority, application United Kingdom, Nov. 6, 1986, 8626562

Int. Cl.[5] F23C *11/04*

U.S. Cl. 431—1 **3 Claims**



1. A thermally driven gas resonance device comprising:

an elongate resonance tube (3), said resonance tube having an upper portion and a lower portion, said upper portion expanding in cross-section along its entire length from a first end thereof to a second end thereof;

a heat source (2), said heat source being located at said first end of said resonance tube; and,

means for triggering oscillations in a gas in said resonance tube, wherein said resonance tube has a frusto-ogival shape and constantly expanding in cross-sectioned area along its entire length such that, when viewed along a longitudinal section thereof, side walls of said resonance tube are bowed outwardly over their entire length.

5,006,061

METHOD FOR BRINGING A PLURALITY OF STEEL SLABS TO ROLLING TEMPERATURE IN A FURNACE

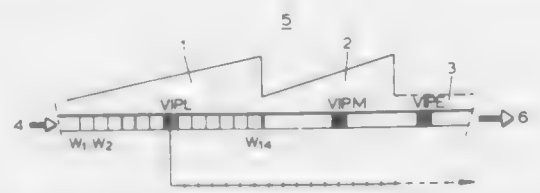
Rudy Westdorp, Beverwijk, and Frans P. Muysken, Haarlem, both of Netherlands, assignors to Hoogovens Groep B.V., Ijmuiden, Netherlands

Continuation of Ser. No. 268,374, Nov. 7, 1988, abandoned. This application Feb. 5, 1990, Ser. No. 481,644

Claims priority, application Netherlands, Nov. 11, 1987, 8702689

Int. Cl.[5] F27D *3/00*

U.S. Cl. 432—11 **6 Claims**



1. Method for bringing a plurality of steel slabs at temperatures of from 20°-600° C. to a mean rolling temperature of 1200°-1260° C. in a furnace having a controllable energy supply to raise the temperatures of said slabs comprising the steps of

(i) determining the mean temperatures of all slabs introduced into the furnace,

(ii) determining the mean temperature of at least one virtual slab from the mean tempertures of the corresponding group of steel slabs,

(iii) calculating the mean exit temperature of the virtual slab from the furnace,

(iv) measuring the mean temperature of the slabs exiting from the furnace, and

(v) adjusting the energy supply in dependence on the difference in mean temperatures at the exit from the furnace of said virtual slab and the plurality of steel slabs.

5,006,062

TREATMENT OF SOLIDS IN FLUIDIZED BED BURNER

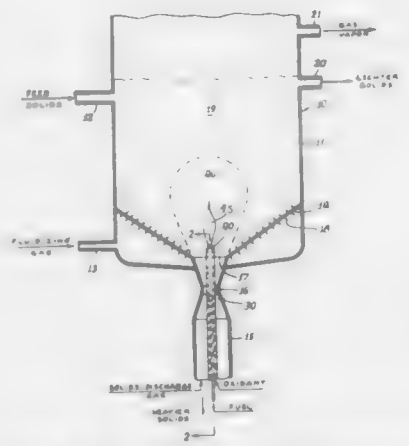
Bernard S. Lee, Lincolnwood; Paul B. Tarman, Elmhurst, and Dharam V. Punwani, Bolingbrook, all of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Continuation of Ser. No. 862,325, May 12, 1986, Pat. No. 4,693,682. This application Sep. 14, 1987, Ser. No. 96,935

The portion of the term of this patent subsequent to Sep. 15, 2004, has been disclaimed.

Int. Cl.[5] F27B *15/00*

U.S. Cl. 432—14 **15 Claims**



1. In a process for thermal treatment of solid particles in a fluidized bed of the type providing density/size particle classification discharge of heavier weight particles through a necked density/size particle classification heavier particle discharge conduit at the bottom of opposing downwardly sloping bed supports and recirculation of lighter weight particles to said fluidized bed, the improvement comprising: supplying fuel and oxidant through a burner extending upwardly through the central portion of said necked selective heavier particle discharge conduit to maintain a discrete fluid fueled flame in said fluidized bed in the region above an opening of said necked heavier particle discharge conduit forming a higher temperature zone in said fluidized bed in and surrounding said flame, said higher temperature zone at least about 100° F. higher than the remainder bed temperature, and passing solids discharge gas upwardly through an annular necked passage between said burner and said discharge conduit whereby multiple passage of said solids through said higher temperature zone prior to discharge is enhanced.

5,006,063

CONTINUOUS FURNACE FOR THE HEAT TREATMENT OF ARTICLES, MORE PARTICULARLY CERAMIC PIPES

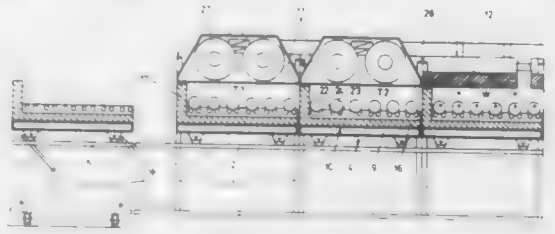
Luigi A. Poggi, Via Oberdan, I- 37121 Verona, Italy; Verheyden Jr., Bemmel, P.O. Box 2, NL-6680 Bemmel; Netherland

Filed Sep. 27, 1989, Ser. No. 413,471

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1988, 3832734

Int. Cl.[5] F27D *3/12*

U.S. Cl. 432—121 **9 Claims**



1. A furnace for heat treatment of articles, which comprises a plurality of connected zones for heating and cooling of said articles, each zone comprising an upper hood section which comprises a top wall and opposing side walls extending downwardly from said top wall; a train of lower base sections movable through said furnace relative to said upper hood sections, said lower base sections each comprising carriage means for transporting said articles through each of said furnace zones, said carriage means comprising a bottom wall, opposing side walls extending upwardly from said bottom wall, partition means disposed at an end of said lower base section and roller means adapted for supporting cylindrically shaped articles, said lower base sections adapted to coincide with said upper hood sections to provide individual furnace chambers for said zones wherein said downwardly extending, opposing side walls of said upper hood section and said upwardly extending side walls of said lower base section together form the side walls of said chambers.

5,006,064

FURNACE SEAL

William P. Freund, Lakewood, Ohio, assignor to Alloy Engineering Company, Berea, Ohio

Filed Dec. 28, 1989, Ser. No. 458,320

Int. Cl.[5] F27B *5/04*

U.S. Cl. 432—205 **7 Claims**

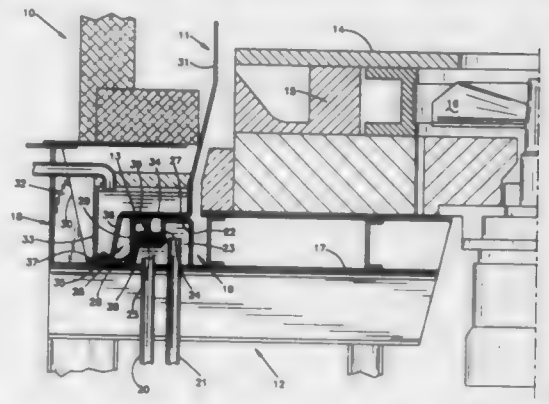
1. In a bell type furnace having a cover structure removably supported on a base structure an improved gas seal assembly comprising:

(a) one of the structures defining as endless seal receiving trough;

(b) heat resistant sealing pad material positioned in the trough, the material being capable of resisting permanent deformation, the material including an endless sealing surface;

(c) the other of the structures including an endless ring mechanism positioned when in use in compressing engagement with the pad material surface to effect a fluid seal between the mechanism and the pad;

(d) at least a first of the structures defining a cooling jacket



positioned in heat transfer relationship with the trough whereby to cool the material when the furnace is in use;

(e) inlet and outlet conduits communicating with the jacket for circulating a cooling medium through the jacket when the furnace is in use; and,

(f) the structure including coacting elements supporting the cover structure on the base structure when in use while permitting and at the same time limiting compression of the pad material by the surface engaging ring mechanism.

5,006,065

DENTAL ARTICULATOR

Bernard Wayenson, 55, Allees Jean-Jaures, 31000 Toulouse, France

Filed Aug. 17, 1989, Ser. No. 395,263

Claims priority, application France, Feb. 17, 1988, 88 02262

Int. Cl.[5] A61C *11/00*

U.S. Cl. 433—63 **4 Claims**



1. A dental articulator for reproducing the motion of a patient's mandible, comprising

a member corresponding to a model of the patient'upper jaw,

a mandible member corresponding to a model of the patient's mandible, and movement means connected to said mandible member allowing six degrees of freedom of motion of the said mandible member relative to said upper jaw member,

said movement means comprising six servo motors, each of said servo motors being connected to said mandible member for executing a single translation or rotation relative thereto, said servo motors comprising a first servo motor for movement along a first axis of translation, a second servo motor for movement along a second axis of translation, a third servo motor for movement along a third axis of translation, a fourth servo motor for movement about a first axis of rotation, a fifth servo motor for movement about a second axis of rotation, and a sixth servo motor for movement about a third axis of rotation,

wherein said three axes of translation are orthogonal, and said three axes of rotation are orthogonal.

5,006,066

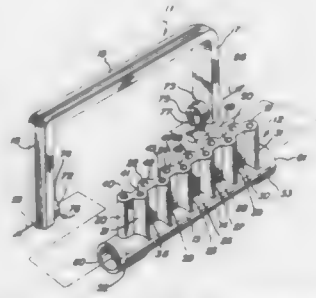
AUTOCLAVABLE DENTAL BURR HOLDER

Melvin R. Rouse, 1056 Serpentine La., Pleasanton, Calif. 94566

Filed Feb. 17, 1989, Ser. No. 312,137

Int. Cl.[5] A61G *15/00*

U.S. Cl. 433—77 **16 Claims**



1. For use in holding a plurality of dental burrs each having elongated shaft portions and cutting ends, a dental burr holder comprising:

an elongated burr block defining a plurality of bores extending into said burr block in a first common direction for receiving the shaft portions of dental burrs such that the cutting ends thereof extend beyond said bores, and a plurality of drain passages extending from said bores in a second common direction;

a burr block cover having a cross member extending transverse to said first direction and a pair of side members; and

detent support means coupling said side members to said burr block in a detented rotatable attachment.

5,006,067

DRIP PREVENTING DEVICE FOR DENTAL INSTRUMENTS

Giorgio Pignattini, Bologna, Italy, assignor to Castellini, S.p.A., Bologna, Italy
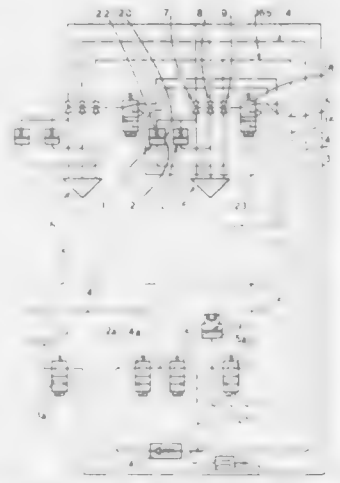
Filed Jan. 27, 1989, Ser. No. 303,466

Claims priority, application Italy, Feb. 9, 1988, 3330 A/88

Int. Cl.[5] A61C *1/02*

U.S. Cl. 433—98 **6 Claims**

1. A device serving to prevent dental surgery instruments and accessories from dripping water at the moment of switch-off, comprising at least one plenum for each instrument, connected to relative water and air circuits at a point immediately upstream of the instrument and charged with air, received under pressure from the relative circuit at the moment when the instrument is switched on, in such a way as to generate



negative pressure through the water circuit when the instrument is subsequently switched off.

5,006,068

DENTAL IMPLANT

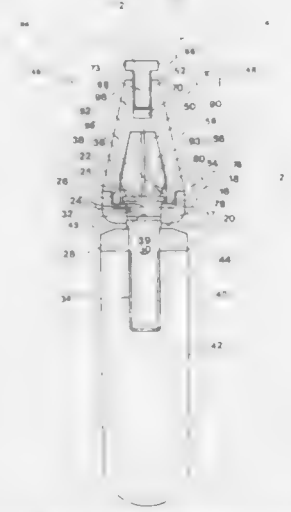
Chong Jin Lee, 291-1, Namgajwa-Dong, Seodaemun-gu, and Dong Seok Kim, 5-5, 852-744, Mia 7-Dong, Dobong-gu, both of Seoul, Rep. of Korea

Filed Aug. 28, 1990, Ser. No. 574,486

Claims priority, application Rep. of Korea, Jul. 14, 1990, 90-10696

Int. Cl.[5] A61C *8/00*

U.S. Cl. 433—169 **14 Claims**



1. A dental implant for placement into a jaw bone, the dental implant comprising:

a carrier body having a first end and a second end with a first aperture extending from said first end and partially into said carrier body and a second aperture coaxially formed with said first aperture and extending through said carrier body;

a foundation shaft having a first end and a second end with said first end of said foundation shaft terminating in a head having a diameter less than the diameter of said first aperture of said carrier body and greater than the diameter of said second aperture of said carrier body and said second end of said foundation shaft terminating in a jaw bone securing means for fixing the dental implant to the jaw bone;

a supporting ring secured proximate said first end of said foundation shaft and spaced apart relative to said second end of said carrier body such that in use said head prevents axial movement of said carrier body along said foundation shaft in a first direction beyond said head and said supporting ring prevents axial movement of said carrier body along said foundation shaft in a second direction beyond said supporting ring thereby enabling axial movement of said carrier body along said foundation shaft between said second end of said carrier body and said supporting ring;

an elongated body having a first end and a second end, with said second end having an aperture formed therein;

a means for attaching in use an artificial tooth at said first end of said elongated body;

connecting means to secure said elongated body to said carrier body such that in use the attachment of said artificial tooth to said elongated body attached to said carrier body defines a tooth assembly; and

a resilient force dampening means positioned in use into said aperture of said elongated body for maintaining contact of said carrier body and said head in the absence of masticatory movement of the jaw thereby maintaining said tooth assembly in a natural no-load appearance and for resisting axial movement of said tooth assembly in said second direction along said foundation shaft generated masticatory movement of the jaw thereby cushioning the masticatory forces received by said foundation shaft during use.

5,006,069

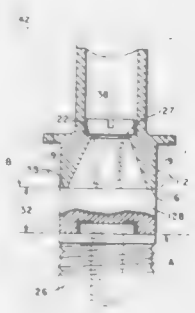
PERIODONTAL RESTORATION COMPONENTS

Richard J. Lazzara, Lake Worth, and Keith D. Beaty, West Palm Beach, both of Fla., assignors to Implant Innovations, Inc., West Palm Beach, Fla.

Filed Nov. 2, 1988, Ser. No. 266,073

Int. Cl.[5] A61C *8/00*

U.S. Cl. 433—173 **11 Claims**



1. A dental coping for mounting a temporary dental restoration and fixing the same removably on a support such as a dental implant fixture or the like, comprising an elongated tubular body made of a material that resists corrosion in the human mouth around which to mount said restoration, said body having a substantially rigid base portion adapted for mating at a first end of said body with said support, means within said base portion providing a shoulder for cooperation with means to fasten said body to said support, extending supragingivally from said base portion when so fastened a relatively thin-walled tubular portion terminating at the other end of said body, the interior diameter of said base portion being reduced progressively from said first end to said shoulder on the locus of a female cone, providing a conical socket in said base portion having its wider opening at said first end and its narrower opening at said shoulder, and flange means located intermediate said ends of said body and extending radially outward beyond the exterior of said body, said flange means presenting a first substantially flat annular side facing toward but spaced from said first end and a second substantially flat annular side facing toward but spaced from said other end of said boby, said annular sides being substantially co-parallel, said flange means serving to project into and thereby to retain said restoration when the material of the latter is mounted around said body so as to embrace both sides of said flange means.

5,006,070

DENTAL IMPLANT WITH Y-SHAPED BODY

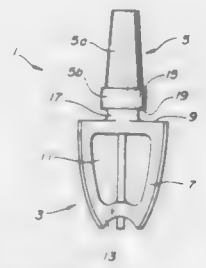
Shigeru Komatsu, 7-14-7, Roppongi, Minato-ku, Tokyo, Japan

Filed Sep. 7, 1989, Ser. No. 404,113

Claims priority, application Japan, Feb. 27, 1989, 1-21915[U]

Int. Cl.[5] A61C *8/00*

U.S. Cl. 433—176 **12 Claims**



1. A dental implant comprising:

a body including three planar legs extending radially as viewed from above, each of said legs having an opening defined centrally therein with said centrally defined openings being in communication with each other such that the legs define a peripheral frame about a central cavity; and wherein each of said legs has a tapered foot that extends downwardly and terminates in a downwardly pointed tip at a lower end remote from a head; and

the head supported on said body and adapted to be capped by an artificial tooth.

5,006,071

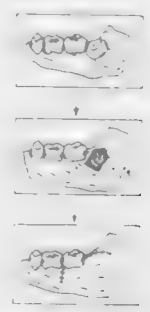
TECHNIQUE FOR THE PREVENTION OF ALVEOLAR OSTEITIS

Dewey G. Car..., 3002 Tanbark Ct., Burlington, N.C. 27215

Filed May 9, 1988, Ser. No. 191,413

Int. Cl.[5] A61C *5/00*

U.S. Cl. 433—215 **16 Claims**



1. A method for the prevention of alveolar osteitis following the extraction of a tooth or removal of a cyst which comprises:

preparing a dressing of semi-liquid paste containing primarily plaster of Paris;

packing said dressing into the cavity formed by the extraction whereby said dressing substantially fills and assumes the shape of the cavity;

suturing the tissues above said dressing to enclose said dressing; and

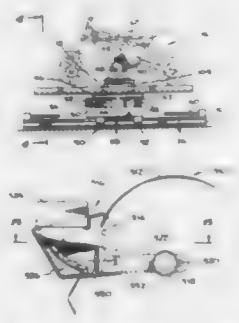
allowing said dressing to stand to form a putty-like consistency prior to packing said dressing in the cavity.

5,006,072

HIGH PERFORMANCE MOTORCYCLE SIMULATOR AND HELMUT DISFLAY

Howard Letovsky, Los Angeles, and Bernard Fried, Beverly Hills, both of Calif., assignors to Bernie Fried Racing Enterprises, Inc., Beverly Hills, Calif.

Continuation-in-part of Ser. No. 324,172, Mar. 16, 1989, Pat. No. 4,887,967. This application Jun. 27, 1989, Ser. No. 372,690
Int. Cl.[5] G09B 9/04
U.S. Cl. 434—61 5 Claims



4. A motorcycle stimulator which is capable of movement with six degrees of freedom to provide an operator with a realistic simulation of riding a motorcycle, said simulator comprising:

a support structure having a left side, a right side, a front end and a rear end;

a motorcycle mount assembly attached to said support structure;

a motorcycle frame having a front end and a rear end and including a front fork assembly, main frame and rear fork assembly wherein said motorcycle frame is attached to said mount assembly at said main frame;

sway means for controllably moving said motorcycle mount assembly between the left and right sides of said support structure;

surge means for controllably moving said motorcycle mount assembly between the front and rear ends of said support structure;

roll means for controllably moving the motorcycle frame from a vertical position to inclined positions on the left or right side of said vertical position;

yaw means for controllably pivoting the motorcycle mount assembly to provide horizontal rotation of said motorcycle frame relative to said support structure;

front fork elevator means for controllably lowering and raising the front end of said motorcycle frame;

rear fork elevator means for controllably lowering and raising the rear end of said motorcycle frame independently of said front fork elevator means wherein said sway means, surge means, roll means, yaw means, front fork elevator means and rear fork elevator means can be controlled to provide movement of said motorcycle frame with six degrees of freedom to thereby provide a realistic simulation of riding a motorcycle; and

visual display means for providing a visual representation which simulates the riding of a motorcycle, said visual display means comprising a helmet mounted visual display system comprising:

a. a helmet shaped to be worn by an individual, said helmet having a surface defining a front visual opening in front of the individual's eyes;

b. a visor assembly located in front of said front visual opening, said visor assembly comprising:

(1) a horizontal video display;

(2) a parabolic mirror having a curvature sufficient to expand said horizontal video display and being positioned to reflect said horizontal video display to provide a vertical video display;

(3) collimating lens means for focusing said vertical video display at infinity to thereby provide a wide field of view video display; and

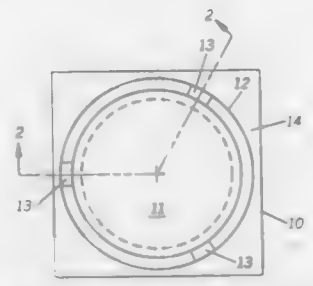
c. means for mounting said visor assembly to said helmet.

5,006,073

SNAP FIT CONTACT ASSEMBLY

Vincent J. Mennona, Jr., Boca Raton, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 357,913, May 30, 1989, abandoned. This application May 15, 1990, Ser. No. 524,674
Int. Cl.[5] H01R 9/09
U.S. Cl. 439—77 20 Claims



1. A snap fit contact for insertion into a housing opening having a shoulder therein comprising:

a substantially planar top contact surface,

a wall depending from the periphery of the top contact surface, the wall including a snap feature protruding from the wall, and

electrical circuit connection means carried by said wall.

5,006,074

ADJUSTABLE GROUND CLAMP

George J. Franks, Jr., 664 Thompson Cir., Inverness, Ill. 60067

Continuation-in-part of Ser. No. 204,397, Jun. 9, 1988, which is a continuation-in-part of Ser. No. 116,899, Nov. 3, 1987, Pat. No. 4,828,504. This application Mar. 8, 1989, Ser. No. 320,360
Int. Cl.[5] H01R 4/66
U.S. Cl. 439—92 21 Claims



1. An adjustable clamping device for mechanical and electrical connection to the sides of a conductor which may have a variety of different widths, comprising:

a base spanning the conductor, said base having two separate elongated members, each member having an arm extending from one end of the base member positionable adjacent one side of the conductor;

one of the arms including a threaded opening and a threaded bolt moveable therein for engagement with its adjacent side of the conductor, the threaded bolt having an abrading surface for abrading the side of the conductor to penetrate the outer surface thereof; and

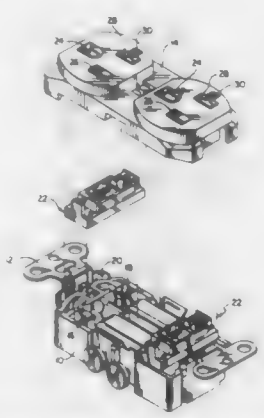
adjustment means for varying the length of the base within a predetermined range of lengths by securing the members to each other at a plurality of different positions whereby the clamping device is adjustable for different width conductors.

5,006,075

ELECTRICAL RECEPTACLE WITH SHUTTERED PRONG-RECEIVING OPENINGS

Wade R. Bowden, Jr., Northport, N.Y., assignor to Pass & Seymour, Inc., Syracuse, N.Y.

Filed Feb. 9, 1989, Ser. No. 307,910
Int. Cl.[5] H01R 13/44
U.S. Cl. 439—137 17 Claims



1. In an electrical receptacle of the type having a cover and a base held in a predetermined assembled relationship, said cover having at least one pair of spaced openings, one of which is generally elongated along a first axis and the other of which is T-shaped, having a first portion which is elongated in a direction parallel to said first axis and a second portion extending contiguously from the longitudinal mid-point of the first portion along a second axis, perpendicular to said first axis, and wherein blade-receiving terminals are positioned in said base in alignment with both of said openings to receive the blades of either a parallel blade or tandem blade type of plug which is connected to said receptacle, a safety shutter assembly for preventing an object inserted through only one of said openings from contacting the terminals aligned therewith, said assembly comprising:

(a) a first shutter element including a first, elongated side member, a first camming member having a first camming surface, and a first blocking member, said camming and blocking members extending in the same direction, perpendicularly from said first side member and spaced by a distance substantially equal to the distance between said one opening and said first portion of said other opening;

(b) a second shutter element including a second, elongated side member, a second camming member having a second camming surface, and a second blocking member, said second camming and blocking members extending in the same direction, perpendicularly from said second side member and spaced by a distance substantially equal to the spacing of said first camming and first blocking members;

(c) a third shutter element having a third camming surface;

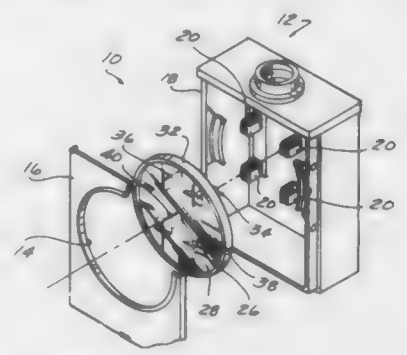
(d) support means upon which each of said first, second and third shutter elements are supported for independent movement between first and second positions, said shutter elements being so supported and arranged relative to one another and to said cover and base that, when all of said shutter elements are in said first position, said first camming surface is aligned with said one opening and said second blocking member is positioned between said first camming member and the terminals aligned with said first opening, said second camming surface is aligned with said first portion of said T-shaped opening and said first blocking member is positioned between said second camming member and the terminals aligned with said first portion of said T-shaped slot, and said third camming surface is aligned with said second portion of said T-shaped opening and a portion of one of said side members is positioned to block movement of said third shutter element to said second position thereof.

5,006,076

BLADED METER SOCKET COVER

Darrell Robinson, Highland, Mich., and John T. Shincovich, North Canton, Ohio, assignors to Ekstrom Industries, Inc., Farmington Hills, Mich.

Filed Aug. 23, 1990, Ser. No. 572,473
Int. Cl.[5] H01R 13/44, 31/08
U.S. Cl. 439—146 20 Claims



1. A cover for a meter socket having a plurality of jaw terminals and a cover plate having an aperture formed therein for normally receiving a watt hour meter therethrough, the cover comprising:

a planar base having first and second opposed major surfaces;

a plurality of blades mounted on and extending outward from the second major surface of the base for releasably engaging the jaw terminals of the meter socket to mount the cover in the meter socket; and

rib means, mounted on and extending between the base and at least one of the blades, for supporting the one blade and preventing movement of the one blade relative to the base, the rib means having a predetermined height such that an exterior edge of the rib means contacts one of the jaw terminals of the meter socket when the cover is mounted in the meter socket.

5,006,077

INSULATION DISPLACING BARREL TERMINAL

Winfield W. Loose, Lingelstown; James W. Robertson, Oberlin, and Francis J. Shay, Palmyra, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 211,483, Jun. 24, 1988, abandoned. This application Jul. 28, 1989, Ser. No. 386,475
Int. Cl.[5] H01R 4/24
U.S. Cl. 439—409 38 Claims

1. An insulation displacement type connector for terminating a conductor of an insulated wire thereto, comprising:

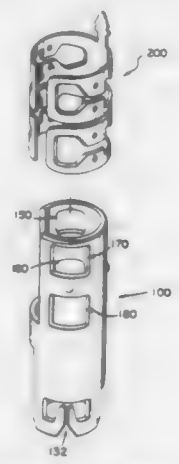
an insulating housing having at least one terminal receiving cavity defined by a cylindrical wall, and a wire receiving opening through the wall into the interior of the cavity;

a cylinder formed of a conductive material defining a tubular wall, said cylinder having at least one wire receiving entry through the wall of the cylinder which is in communication with a slot that partially extends circumferentially around a terminal, and

a cap which is positioned adjacent to the cylinder and rotatable with respect to the housing, having means for engaging the cylinder for simultaneous rotation of the cylinder with the rotation of the cap;

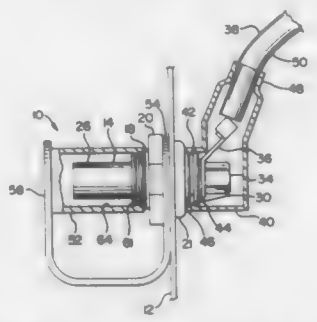
whereby, when a wire is placed within the wire receiving

entry and the cap is rotated relative to the housing, the cap engages the cylinder thereby rotating the terminal into the



wire thereby terminating the conductor of said wire within the slot in the terminal.

5,006,078
JUMP START STUD ASSEMBLY
Jerry A. Crandall, Bluffton; James A. Witta, and Stuart S. Bower, both of Fort Wayne, all of Ind., assignors to Navistar International Transportation Corp., Chicago, Ill.
Filed Feb. 22, 1990, Ser. No. 484,136
Int. Cl.[5] H01R *13/52*
U.S. Cl. 439—521 **23 Claims**



1. A jump start stud assembly which is mountable on a vehicle surface away from the starting circuit of the vehicle, but electrically engaged thereto, said stud assembly comprising:

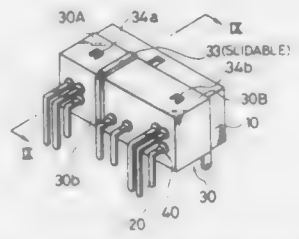
a conductive stud;

a cylindrical nonconductive insulating body molded around a medial portion of said stud between exposed ends thereof, said insulating body having a distal end and a proximal end, said insulating body including a threaded main hub portion and distal and proximal collar portions of smaller diameter than said hub portion disposed respectively at each end thereof;

a nonconductive boot sealingly fixed over a proximal end of said stud assembly, said boot being secured at one end to insulation of a battery cable electrically engaged to said stud at said proximal end thereof, the other end of said boot being sealingly secured to said proximal collar of said insulating body; and

an insulating cap releasably covering the distal end of said conductive stud for isolating said stud from the ambient environment.

5,006,079
CONNECTOR WITH BUILT-IN THROUGH CAPACITORS
Hiroyuki Okamoto, and Kunio Hoshino, both of Shizuoka, Japan, assignors to Yazaki Corporation, Japan
Filed Nov. 30, 1989, Ser. No. 443,330
Claims priority, application Japan, Dec. 8, 1988, 63-310749
Int. Cl.[5] H01R *13/648, 13/66*
U.S. Cl. 439—607 **2 Claims**



1. A connector provided with built-in through capacitors, comprising:

(a) an insulated connector housing;

(b) at least two connector pins passing through and supported by said insulated connector housing;

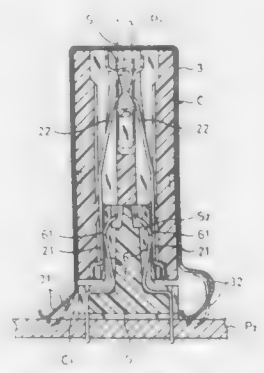
(c) a conductive shield casing for covering said insulated connector housing;

(d) at least two through capacitors formed between said connector pins and said conductive shield casing, respectively; and

(e) means for reducing thermal stress due to difference in thermal expansion coefficient between said insulated connector housing and said conductive shield casing, said thermal stress reducing means being formed in any one of said insulated connector housing and said conductive shield casing, and being made of a material with a smaller thermal expansion coefficient,

wherein said insulated connector housing is made of a synthetic resin; said conductive shield casing is made of a metal; and said thermal stress reducing means is said metallic shield being divided into at least two parts slidably overlapped at a joint end portion thereof, respectively.

5,006,080
ELECTRICAL CONNECTOR
Norio Ichitsubo, and Keishi Sugiyama, both of Yao, Japan, assignors to Hosiden Electronics Co., Ltd., Yao, Japan
Filed Jun. 11, 1990, Ser. No. 535,526
Claims priority, application Japan, Jun. 21, 1989, 1-72694[U]
Int. Cl.[5] H01R *23/70*
U.S. Cl. 439—634 **15 Claims**



1. In an electrical connector having:

a housing made of an insulating material;

a board connection space which is formed at one end of said housing, and into or from which a circuit board is adapted to be inserted or removed;

a connector connection portion which is formed at the other end of said housing, and into or from which other connector is adapted to be inserted or removed; and

thin plate-like contact members extending over said connector connection portion and said board connection space, said electrical connector comprising:

resilient contact portions formed at the tips of said contact members disposed in said board connection space and adapted to be resiliently deformed, as pushed, by a circuit board inserted into said board connection space;

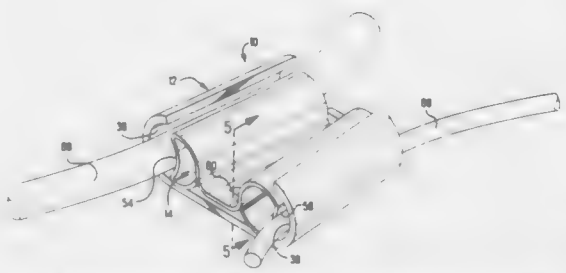
contacts formed on said contact portions and adapted to resiliently come in contact with external terminals of said circuit board when said contact portions are resiliently deformed;

flat plate-like terminal portions formed at the longitudinal center portions of said contact members disposed in said connector connection portion and adapted to be pressingly contacted with the contacts of resilient contact pieces of other connector connected to said connector connection portion when said contact pieces are resiliently deformed as pushed by the terminal portion;

projecting pieces formed by bending the base ends next to said terminal portions of said contact members, transversely of said terminal portions; and

engagement pawls formed on said contact members for holding, together with said projecting pieces, a portion of said housing.

5,006,081
ELECTRICAL WIRE CONNECTOR
Eugene F. Counsel, Clearwater, Fla., and Walter M. Werner, Downingtown, Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Aug. 14, 1990, Ser. No. 567,228
Int. Cl.[5] H01R *4/50*
U.S. Cl. 439—783 **3 Claims**

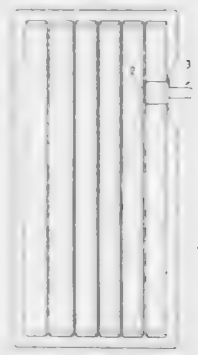


1. An electrical wire connector for electrically commoning and mechanically securing a pair of electrical wires, comprising:

a C-member having converging sides towards one end and rolled over edges defining a pair of inwardly facing channels along respective sides and a web attached to and extending between said channels, and further having a hole through said web intermediate said channels; and

a wedge having converging sides towards one end to be conformably received in said C-member, said wedge having concave, outwardly facing surfaces on each side and an outwardly extending dimple intermediate said sides, said dimple adapted to enter said hole when said wedge is pressed into said C-member to secure said wedge from inadvertently backing out of said C-member.

5,006,082
ACTUATING-DEVICE FOR SMALL-TYPE AIR-FEEDED WATER FLOATERS
Feng-Lin Hwang, No. 21, Pa Te Rd., Chi Tu District, Keelung City, Taiwan
Filed Dec. 14, 1989, Ser. No. 450,490
Int. Cl.[5] B63H *21/17*
U.S. Cl. 440—6 **1 Claim**



1. An actuating device for utilization with small inflatable floats for use in swimming pools and other bodies of water comprising:

a spring actuated jaw clip for attachment to an inflatable float comprising an upper jaw piece and a bottom jaw piece;

a top plate with solar cells mounted thereon;

said top plate pivotally connected to said upper jaw piece to permit adjustment for maximum exposure of said solar cells to sunlight;

a waterproof housing mounted on said bottom jaw piece comprising;

an air pump including an air outlet pipe protruding through said housing for inflating an inflatable float;

a motor having a drive shaft protruding through said housing, said shaft having a propeller mounted on an end thereof;

a rechargeable battery for actuating said air pump and said motor; and

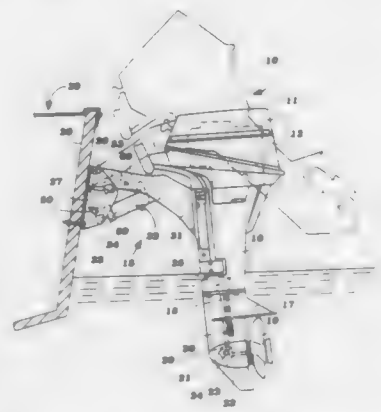
a PC board including first electrical connections protruding through said housing to said solar cells and other electrical connections from said PC board to said rechargeable battery, said air pump and said motor;

wherein said solar cells are adapted to charge said rechargeable battery and said battery is adapted to selectively drive said air pump and said motor for the purpose of inflating a float and propelling the float through water.

5,006,083
TILTING DEVICE FOR MARINE PROPULSION UNIT
Yukio Sumigawa, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Filed Jun. 19, 1989, Ser. No. 367,564
Claims priority, application Japan, Jun. 17, 1988, 63-148299
Int. Cl.[5] B63H *5/12*
U.S. Cl. 440—61 **14 Claims**

1. An outboard drive unit carrying propelling means for propelling a marine vessel having a hull through water, comprising a clamp bracket having a slot and a slot stop surface therein, a tilt shaft, and a swivel bracket having a slot, said clamp bracket being attached to the hull of said vessel, and said swivel bracket being rotatably secured to said clamp bracket by said tilt shaft for movement about a generally horizontally extending tilt axis between a tilted-down position wherein said propelling means is positioned beneath the water and a tilted-up position wherein said propelling means is out of the water, a lower position stop pin, engageable with said swivel bracket, for setting the downward position of said swivel bracket, said outboard drive unit further comprising a tilting device in

which said swivel bracket, when in the tilted-down position, is prevented from freely moving toward the tilted-up position during normal operation of said drive unit, said tilting device



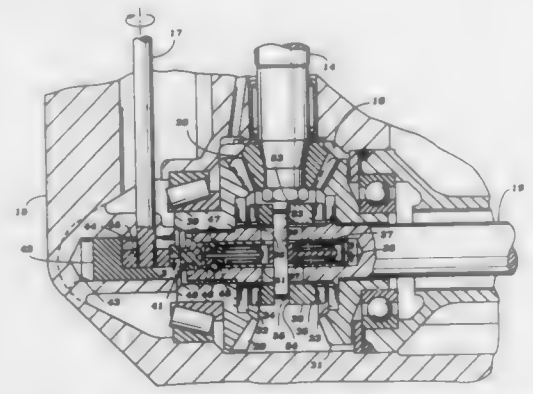
comprising a tilt-lock arm rotatably supported about said tilt shaft and a first spring for rotating said lock arm in a locked position when said swivel bracket is in the tilted-up position.

5,006,084

SHIFT DEVICE FOR MARINE PROPULSION

Kenichi Handa, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 14, 1988, Ser. No. 257,710
Claims priority, application Japan, Oct. 16, 1987, 62-261444
Int. Cl.[5] B63H *23/02*
U.S. Cl. 440—75 5 Claims



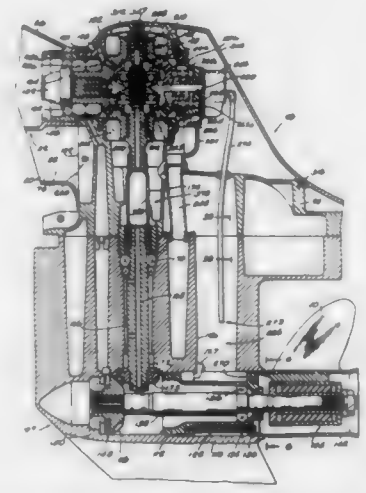
1. In a shifting arrangement for a transmission comprising a pair of counter-rotating gears journaled relative to a shaft, a dog clutching element having dog clutching teeth for cooperation with cooperating teeth on said gears for selectively coupling said dog clutching element for rotation with selected of said gears, said dog clutching element being moveable in a first direction to couple with a first of said gears and in an opposite direction for coupling with the other of said gears, and shifting means for moving said dog clutching element in either of said directions, the improvement comprising a single biasing coil spring for yieldably connecting said shifting means to said dog clutching element in both directions of movement for cushioning engagement of the dog clutching teeth, said coil spring having one of its ends fixed and the other of its ends moveable when shifting into engagement with one of the gears and the other of its ends moveable and the one of its ends fixed when shifting into engagement with the other of the gears.

5,006,085

MARINE PROPULSION DEVICE WITH REMOVABLE CLUTCH ASSEMBLY

Gerald F. Bland, Glenview; Martin J. Mondek, Wonder Lake, and Lawrence E. Zdanowicz, Waukegan, all of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed May 12, 1989, Ser. No. 351,830
Int. Cl.[5] B63H *23/08*
U.S. Cl. 440—75 29 Claims



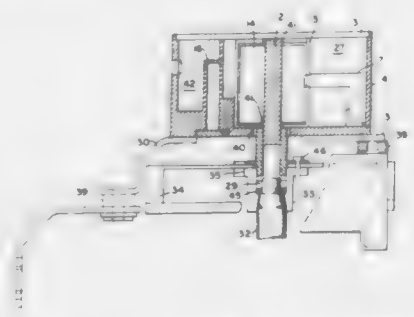
29. A marine propulsion device comprising a gear housing adapted to be mounted on the transom of a boat, a clutch assembly including a clutch assembly substantially enclosed by said gear housing, a shaft rotatably supported within said clutch housing and adapted to be drivingly connected to a propeller, opposed bevel gears coaxially supported within and substantially enclosed by said clutch housing for rotation relative to said shaft, and clutch means located between said bevel gears for causing selective and alternative driving engagement of said bevel gears and said shaft, and means for affording insertion of said clutch assembly as a unit into said gear housing and for affording removal of said clutch assembly as a unit from said gear housing.

5,006,086

HYDRAULIC POWER SYSTEM FOR OUTBOARD MOTOR

Robert P. Latham, 280 SW. 32nd Ct., Fort Lauderdale, Fla. 33315

Filed Mar. 19, 1990, Ser. No. 495,624
Int. Cl.[5] B63H *21/10*
U.S. Cl. 440—88 6 Claims



1. A compact, integral hydraulic power assembly for mounting on top of the engine block of a marine propulsion unit having a flywheel at the upper end of a vertical crankshaft, said assembly comprising:

(a) a vertical pump shaft arranged for operatively coupling with coupling means to said crankshaft in coaxial alignment;

(b) hydraulic pump impeller means for pumping hydraulic fluid fixedly connected to said pump shaft;

(c) pump housing means for enclosing said impeller means, said housing means defining a fluid space with low pressure inlet and high pressure outlet, said pump shaft being journaled in said housing means;

(d) a fluid reservoir means for storing a substantial amount of hydraulic fluid to be pumped, said reservoir means arranged in an annulus around said pump housing means, and said reservoir means in fluid communication with said low pressure inlet of said pump housing means; and

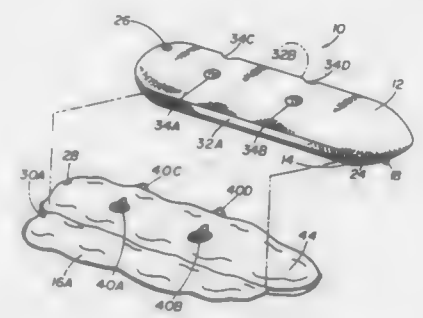
(e) resilient connecting means attached to said reservoir means for connecting said hydraulic power assembly to said engine block while maintaining said coaxial alignment.

5,006,087

TOWABLE INFLATABLE COVER

Leroy L. Peterson, 13614 Pierce St., Omaha, Nebr. 68144

Filed Feb. 20, 1990, Ser. No. 481,520
Int. Cl.[5] B63B *7/08*
U.S. Cl. 441—66 15 Claims



1. A protective cover for an inflatable apparatus having a central elongated chamber and two elongated stabilizer chambers connected to and arranged on opposite sides of said central chamber, said protective cover comprising

a flexible enclosure having opposite sides and shaped to conform to and be substantially filled by the inflated central chamber of said inflatable apparatus,

said enclosure having a pair of elongated side openings on respective opposite sides thereof, each side opening being of such size and position to accommodate extension of a stabilizer chamber therethrough upon insertion of an at least partially deflated inflatable apparatus through one of said side openings and upon inflation of said apparatus within the enclosure, and

tow means for attaching a tow rope to said flexible enclosure whereby towing force is distributed by said enclosure across a substantial surface area of the inflatable apparatus to minimize stress on said inflatable apparatus.

5,006,088

METHOD OF MAKING A PINCH-SEALED, GAS-FILLED INCANDESCENT LAMP

Chikara Tokuhara, Shimizu, and Tetsuro Hara, Nagano, both of Japan, assignors to Koito Manufacturing Co., Ltd., Shizuoka, Japan and Nissei Industries, Nagano, Japan

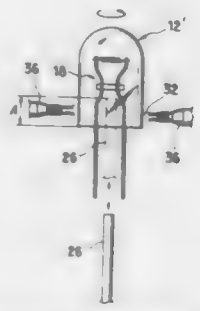
Filed Nov. 29, 1989, Ser. No. 442,768
Claims priority, application Japan, Dec. 1, 1988, 63-304950
Int. Cl.[5] H01J *9/32*
U.S. Cl. 445—27 7 Claims

1. A method for producing a pinch-sealed incandescent lamp, comprising the steps of:

(a) providing an envelope blank of vitreous material having an open end portion;

(b) inserting a mount assembly comprising a pair of lead wires supporting a filament into said blank;

(c) heating said end portion to a temperature at which said end portion becomes moldable;



(d) inserting a gas exhaust/supply tube of vitreous material into said end portion after said end portion has reached said moldable temperature; and

(e) pinch-sealing said end portion with said mount assembly and said gas exhaust/supply tube inserted therein.

5,006,089

LIFE-LIKE TOY ANIMAL

James S. W. Lee, Long Island, N.Y., assignor to C. J. Associates, Ltd., Monrovia, Liberia

Filed Sep. 22, 1989, Ser. No. 411,406
Int. Cl.[5] A63H *3/02*
U.S. Cl. 446—267 12 Claims



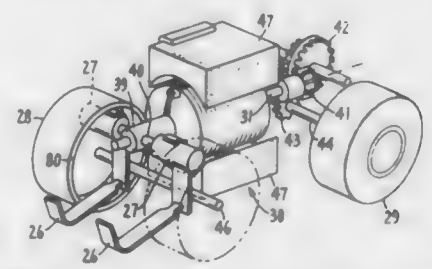
1. A stuffed animal having a closed envelope of non-porous material in the shape and form of an animal, a simulated skeleton inside said closed envelope, a plush covering of simulated fur surrounding said envelope of non-porous material, and a viscous material filling said closed envelope, said viscous material and said simulated skeleton having the feel of an animal body.

5,006,090

ULTRA-MINIATURE VEHICLE

Melvin R. Kennedy, New York, N.Y., and Joseph J. Labinski, Canton, Hong Kong, assignors to Lewis Galoob Toys, Inc., South San Francisco, Calif.

Filed Feb. 9, 1990, Ser. No. 479,093
Int. Cl.[5] A63H *29/22*
U.S. Cl. 446—462 4 Claims



1. A miniature electrically powered vehicle having a front

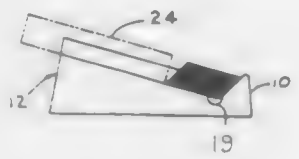
axle and rear axle supported by a vehicle chassis, said front axle supporting front wheels each being characterized as having a circumferential surface for contact with a track and a web portion for enclosing said circumferential surface and for supporting said front wheels on said front axis such that said front wheels are substantially hollow and open to said vehicle chassis, said vehicle having an electric motor operatively connected to at least one drive wheel of the vehicle, the electric motor being energized through a pair of pick-up shoes which engage the track, the track including electric power means contained therein, said electric motor being mounted in the vehicle chassis such that said brush assembly casings extend into the hollow portions of said front wheels for rotating a drive shaft extending axially along the length of said vehicle, said pick-up shoes being attached to brush assemblies which are, in turn, connected to a commutator of said electric motor for energizing said electric motor, said brush assemblies including brush assembly casings for housing springs and shafts, said springs urging said shafts against said commutator, said brush assembly casings being located substantially perpendicular to the vehicle chasis and substantially parallel and proximate to said front axle and extending outwardly of said vehicle chasis

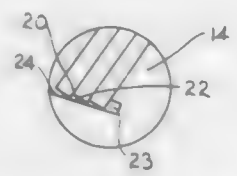
5,006,091

COIN COUNT VERIFIER

Francis Reavley, 206-20 Bradmon Drive, St. Catharines, Ontario, Canada L2M 3S2

Filed Dec. 27, 1988, Ser. No. 289,820
Int. Cl.[5] G07D 9/00
U.S. Cl. 453—59 3 Claims





1. The combination of a coin counter verifier, cylinder means and a pad of paper containing sheets which are capable of being removed from said pad, said sheets adapted to be rolled about said cylinder means so as to produce coin cartridges for use in association with said coin count verifier, said coin count verifier including:

(a) an elongated body having a lower surface and an upper surface and one end opposite to another end;

(b) coin receiving means having a curved cross section for receiving said coins, said coin receiving means extending longitudinally along said upper surface of said elongated body between the said ends, said coin receiving means declining from said one end of said body to said other end;

(c) abutment means disposed at said other end of said body, said abutment means spanning across and integral with said coin receiving means, said coin receiving means disposed at an angle greater than 90° relative said coin receiving means, and extending beyond said upper surface;

(d) said coin receiving means disposed at an acute angle relative said lower surface;

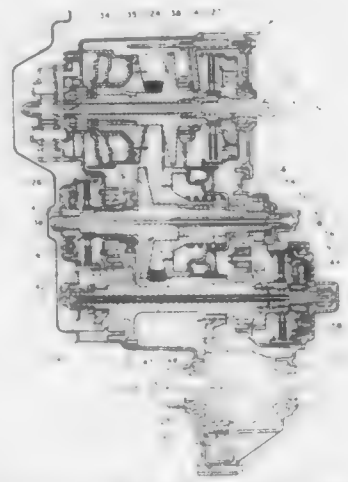
(e) recess means presented by said abutment means in the vicinity of said recess means for receiving a portion of said coin cartridge so as to facilitate the introduction of coins into said coin cartridge from said coin receiving means.

5,006,[illegible]12

CONTINUOUSLY VARIABLE TRANSMISSION POWER TRAIN CONFIGURATION

Guenter Neuman, and William J. Haley, both of Ithaca, N.Y., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed May 24, 1990, Ser. No. 529,010
Int. Cl.[5] F16H 63/00
U.S. Cl. 474—8 10 Claims



1. A continuously variable transmission system to provide transmission of torque from a torque input means to a torque output means, comprising:

an input shaft disposed for operative connection to a torque input means, said torque input means being operable to transmit torque up to a first limiting value;

a continuously variable drive system having a variable input pulley, a variable output pulley and a belt means interconnecting said input pulley and said output pulley, said belt means being operable to transmit torque up to a second limiting value, said second limiting value being greater than said first limiting value;

a slippable start clutch means for selectively connecting said input shaft and said input pulley; and,

a non-dynamic clutch system means for selectively connecting said output pulley with an output shaft, said output shaft being operatively connected to said torque output means, said non-dynamic clutch system means having a predetermined torque capacity, said predetermined torque capacity being between said first limiting value and said second limiting value.

5,006,093

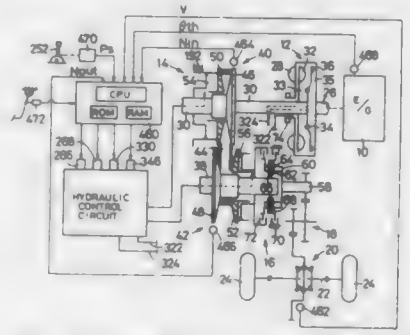
HYDRAULIC CONTROL APPARATUS FOR VEHICLE POWER TRANSMITTING SYSTEM HAVING CONTINUOUSLY VARIABLE TRANSMISSION

Hiroshi Itoh, Toyota; Masami Sugaya; Yoshinobu Soga, both of Susono; Kunio Morisawa, Toyota; Ryoji Habuchi, Aichi; Katsumi Kouno, Toyota, and Yuji Hattori, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 7, 1990, Ser. No. 476,601
Claims priority, application Japan, Feb. 13, 1989, 1-33147; Feb. 13, 1989, 1-33150; Feb. 13, 1989, 1-33151; Apr. 11, 1989, 1-91072
Int. Cl.[5] F16H 11/02
U.S. Cl. 474—28 7 Claims

1. A hydraulic control apparatus for a power transmitting system for an automotive vehicle having a continuously variable transmission which has a first and a second shaft, a pair of variable-diameter pulleys provided on the first and second shafts, respectively, a belt connecting the pulleys, and a pair of hydraulic actuators for changing effective diameters of the pulleys, the apparatus including a directional control valve for supplying a working fluid from a pressure line to one of said pair of hydraulic actuators while discharging the working fluid from the other hydraulic actuator, for controlling a speed ratio of the transmission, wherein the improvement comprises:

a first fluid passage connected to said directional control



valve, for primarily supplying said working fluid from said pressure line to a driving side actuator of said pair of hydraulic actuators which is provided on a driving one of said first and second shafts;

a second fluid passage connected to said directional control valve, for primarily supplying the working fluid from said pressure line to a driven side actuator of said pair of hydraulic actuators; and

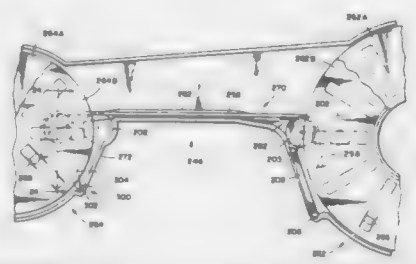
flow restrictor means for restricting a flow of the fluid through said first fluid passage so that a fluid flow resistance of said first fluid passage is higher than a fluid flow resistance of said second fluid passage.

5,006,094

SELF-POSITIONING BELT TENSIONER

George H. Leonard, Darien, Conn., assignor to Hamlin Transmission Corporation, Wilton, Conn.

Continuation-in-part of Ser. No. 403,571, Sep. 6, 1989, Pat. No. 4,946,426. This application Jul. 13, 1990, Ser. No. 552,295
Int. Cl.[5] F16H 7/08, 55/54
U.S. Cl. 474—101 15 Claims



1. A self adjusting drive means tensioning system for a variably transmission comprising:

frame means;

a pair of spaced apart variable diameter sheaves mounted on said frame means;

endless drive means wrapped at least partially around each said sheave for transmitting rotational force from one said sheave to the other;

tensioning means for said drive means including a carrier and at least two spaced apart guides adjacent said drive means for placing force through said guides against said drive means whereby said guides maintain said drive means around said sheaves in optimum driving relationship for all diameters of said sheaves, said guides being supported by said frame means for movement in a non-rotational path as determined by the geometry of said drive means depending upon the diameters of said sheaves for any given ratio of the transmission whereby as the ratio of the transmission changes and said drive means achieves a new geometry in response to the changing diameters of said sheaves, said drive means automatically adjusts the position of said tensioning means;

means mounting said guides on said carrier, said carrier having a longitudinal axis substantially parallel with a line connecting said mounting means; and

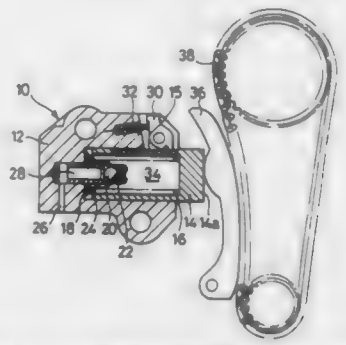
stabilizer means extending between said frame means and said carrier for counteracting rotational movement of said carrier about said longitudinal axis.

5,006,095

RATCHET TYPE TENSIONER

Tadasu Suzaki, Kawagoe, Japan, assignor to Tsubakimoto Chain Co., Osaka, Japan

Filed May 29, 1990, Ser. No. 530,548
Claims priority, application Japan, May 31, 1989, 1-62463
Int. Cl.[5] F16H 7/08
U.S. Cl. 474—111 3 Claims



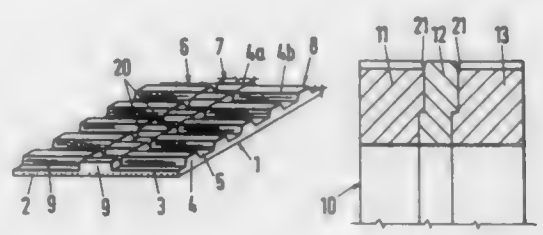
1. A ratchet type tensioner comprising a ratchet having a plurality of teeth and a rack, characterized in that the teeth of said teeth of the ratchet is n times that of the teeth of the rack, where n is an integer which is 2 or greater.

5,006,096

BELT DRIVE COMPRISING A TOOTHED BELT AND A TOOTHED PULLEY

Rudolf Breher, Porta Westfalica, Fed. Rep. of Germany, assignor to Breco Kunststoffverarbeitungs-GmbH & Co. KG, Porta Westfalica, Fed. Rep. of Germany

Filed Mar. 14, 1990, Ser. No. 494,179
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1989, 3909950
Int. Cl.[5] F16H 7/02
U.S. Cl. 474—153 3 Claims



1. In a belt drive comprising a toothed belt and a toothed pulley, with said belt having a toothed side on which are formed guide surfaces that are disposed along at least one line that extends in the longitudinal direction of said belt, with said guide surfaces extending transverse to teeth and grooves of said belt, whereby when said belt rotates about said pulley, in

order to provide lateral guidance for said belt said guide surfaces rest against corresponding abutment surfaces of said pulley that extend transverse to teeth of said pulley, the improvement wherein:

said teeth of said belt are divided into at least two strip-like rows of teeth that are disposed next to one another, with adjacent rows of teeth being offset relative to one another in the longitudinal direction of said belt in such a way that the teeth of one of said rows are disposed at least partially laterally adjacent to the grooves between the teeth of the adjacent row; and

said pulley, in conformity with the number of rows of teeth of said belt, is provided with at least two rows of teeth that are disposed next to one another and are staggered relative to one another in conformity with the offset of said rows of teeth of said belt.

5,006,097

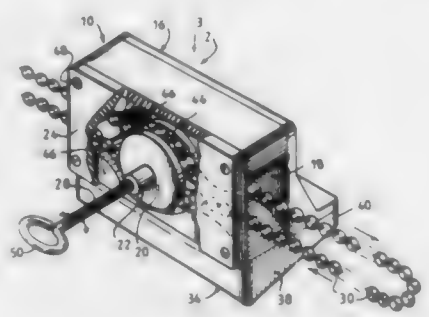
CONTROL UNIT FOR SINGLE AND DOUBLE TRACK BLINDS

Henry Cook, 32 Smith St., Freeport, N.Y. 11520

Filed Jan. 25, 1990, Ser. No. 543,095

Int. Cl.[5] F16G *15/00*

U.S. Cl. 474—154 **7 Claims**



1. A control unit for single and double track blinds comprising:

(a) a housing having a passageway therethrough;

(b) a sprocket wheel having a hub rotatably carried in the center of the passageway within said housing;

(c) a front cover plate having a central aperture therethrough and is attached to said housing over said sprocket wheel so that the hub extends through the central aperture; and

(d) an operating handle extending into the hub of said sprocket wheel so that said operating handle can be turned to rotate said sprocket wheel, thus driving a bead chain through the passageway of said housing to operate louvers in the single and double track blinds.

5,006,098

POWER TRANSFER MECHANISM FOR MOTOR VEHICLE

Toshio Yoshinaka, Nagoya; Hideo Hamano; Hiroshi Minami, both of Toyota, and Shinji Ogawa, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 14, 1990, Ser. No. 480,144

Claims priority, application Japan, Feb. 14, 1989, 1-34685

Int. Cl.[5] B60K *17/348*

U.S. Cl. 475—86 **6 Claims**

1. A power transfer mechanism adapted for use in a motor vehicle, comprising:

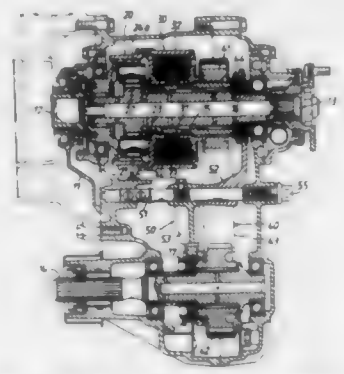
a casing structure;

an input shaft rotatably mounted within said casing structure to be applied with drive torque from a prime mover of the vehicle;

a first output shaft arranged coaxially with said input shaft and rotatably mounted within said casing structure for drive connection to a first set of drive axles;

a second output shaft arranged in parallel with said first output shaft and rotatably mounted within said casing structure for drive connection to a second set of drive axles;

a double pinion planetary gearset mounted on said first output shaft to transfer the drive torque from said input shaft to said first and second output shafts, said planetary gearset including a ring gear in drive connection to said



input shaft, a sun gear in drive connection to said first output shaft and a planet carrier for drive connection to said second output shaft;

a limited-slip differential selectively connecting the ring gear and planet carrier of said planetary gearset; and

a drive train for providing drive connection between said planet carrier and said second output shaft.

5,006,099

FOUR WHEEL DRIVE FOR A MOTOR VEHICLE

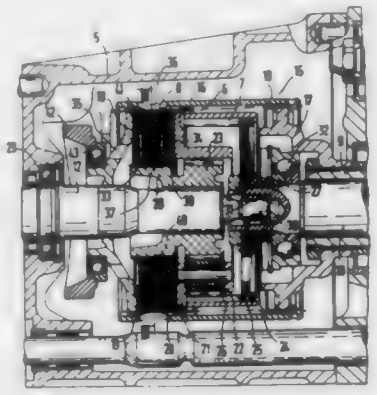
Robert Müller, Moensheim, and Gerhard Weller, Maulbronn, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Oct. 13, 1989, Ser. No. 421,326

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1988, 3835224

Int. Cl.[5] F16H *47/04*

U.S. Cl. 475—86 **17 Claims**



1. A four wheel drive for a motor vehicle having a locking system arranged in a rear axle/front axle drive line comprising:

a planet gear transfer transmission having a sun gear, planet gears disposed at a planet carrier and a ring gear, the planet carrier being non-rotatable with respect to an input shaft of the locking system, the ring gear being non-rotatably connected with a first output shaft which is concentric with respect to the input shaft, and the sun gear being non-rotatably connected with a second output shaft, wherein the input shaft is constructed as a hollow shaft, the first output shaft being rotatably disposed inside the hollow shaft, and the second shaft being supportably disposed in an opening n the first output shaft; and

a bundle of disks which can be pressed against the planet carrier in a frictionally engaged manner by means of a pressure applying means to lock the gear transfer transmission in response to a predetermined slip difference between the first and second output shafts, said bundle of disks including internal disks and external disks, wherein the disk bundle and the planet gear transfer transmission are surrounded, with a slight radial and axial gap, by a cylindrical lock housing.

5,006,100

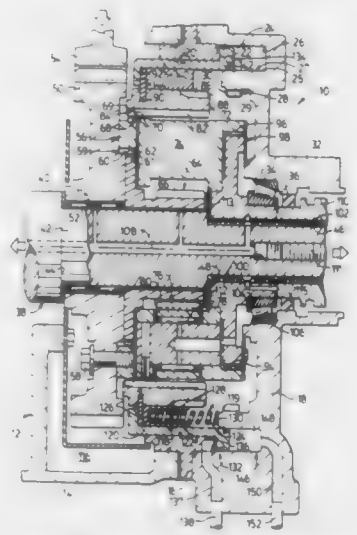
TWO-SPEED PLANETARY GEAR MECHANISM

Christopher D. Brandt; David C. Kettler, both of Peoria; Willis E. Windish, Pekin, and William W. Blake, Kewanee, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Continuation-in-part of Ser. No. 350,809, May 12, 1989, abandoned. This application Mar. 7, 1990, Ser. No. 496,718

Int. Cl.[5] F16H *57/10*

U.S. Cl. 475—138 **24 Claims**



1. In a two-speed planetary gear mechanism of the type having a sun gear, a ring gear, a planet carrier, and a plurality of planet gears rotatably supported by the planet carrier and operatively connected to the sun gear and the ring gear, the improvement comprising:

a stationary coupling;

a rotating coupling connected to rotate with the sun gear;

first means for urging the ring gear in a first direction longitudinally away from the stationary coupling and into engagement with the rotating coupling;

second means for urging the ring gear in a second direction longitudinally away from the rotating coupling and into engagement with the stationary coupling; and

wherein one of the first and second means includes a compressible spring apparatus, and the other includes an annular piston closely disposed to the ring gear and hydraulic means for hydraulically moving and extending the annular piston axially in opposition to the compressible spring apparatus.

5,006,101

LOCKING-FOUR-WHEEL DRIVE LOCKING-TWO-WHEEL DRIVE

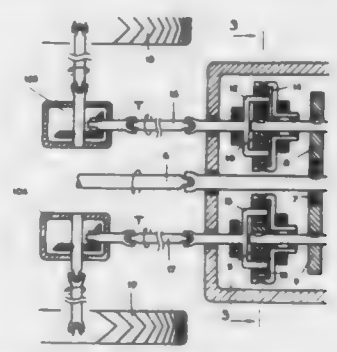
Tran-dinh Truong, 803 E. Spreading Oak, Houston, Tex. 77076

Filed Apr. 18, 1989, Ser. No. 339,669

Int. Cl.[5] F16H *1/44*

U.S. Cl. 475—221 **15 Claims**

1. A gear box for locking-four-wheel drive mechanism consists of four planetary gearing systems each having a sun gear and a carrier, a plurality of pinions connected to each said carrier each said sun gear and said pinions are connected inside of a ring gear and said systems are connected to an input shaft



and give outputs to four wheels and said systems are connected to four worm gears which are driven by three differential gearing units.

5,006,102

FLOATING STRUCTURE FOR INTERCONNECTING THREE CLUTCHES WITH A SINGLE ACTUATOR IN AN AUTOMATIC TRANSMISSION

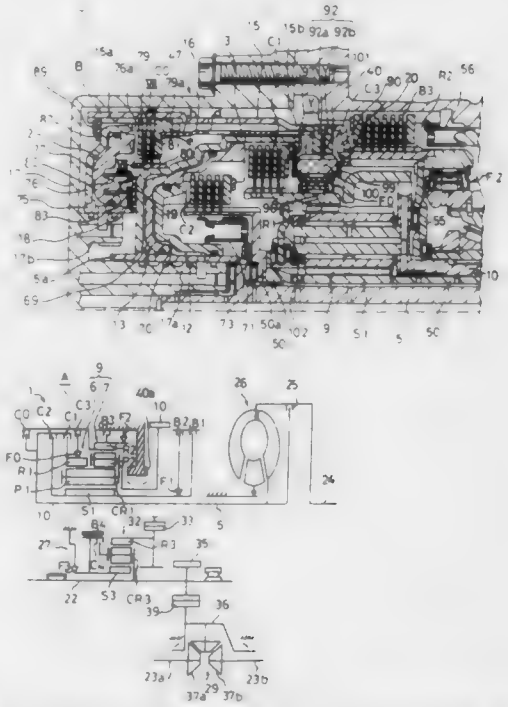
Isao Takase, Aichi; Haruki Takemoto, Chiryu; Mitsugu Tatsuta, Anjo; Shinobu Maseki, Kariya; Takenori Kano; Fumitomo Yokoyama, both of Anjo, and Mamoru Niimi, Handa, all of Japan, assignors to Aisin Aw Co., Ltd., Japan

Filed Jan. 23, 1989, Ser. No. 300,404

Claims priority, application Japan, Sep. 27, 1988, 63-242877; Oct. 19, 1988, 63-263680

Int. Cl.[5] F16H *57/10*

U.S. Cl. 475—282 **12 Claims**



1. An automatic transmission with a forward four speed automatic transmission mechanism, comprising,

a planetary gear unit formed of a single planetary gear and a dual planetary gear having ring gears, sun gears and carriers, respectively, said sun gears and carriers of both plane-

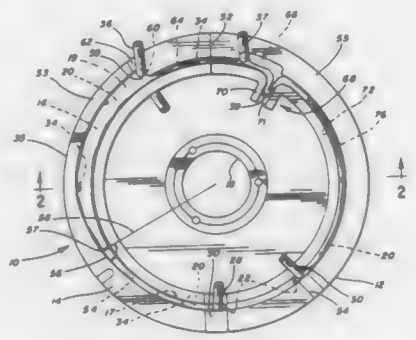
tary gears being respectively connected together to form a common sun gear and a common carrier,
first, second and third clutches having hydraulic actuators, respectively,
an output member connected to the carrier,
an input shaft connected to the ring gear of the single planetary gear unit through the first clutch, to the sun gear through the second clutch and to the ring gear of the dual planetary gear through the third clutch,
restraining means for restraining the sun gear and the ring gear of the dual planetary gear at a predetermined time,
a clutch drum fixed to the input shaft, said clutch drum covering the first and second clutches with the actuators for the first and second clutches, said third clutch and its actuator being situated adjacent to the clutch drum,
a drum member for connecting the third clutch and the ring gear of the dual planetary gear,
a fourth clutch and a one-way clutch situated between the ring gear of the single planetary gear and the drum member, and
a strut member situated between the third and fourth clutches,
whereby axial force generated by the hydraulic actuator for the third clutch when hydraulic pressure is supplied thereto is absorbed by the drum member and the strut member, and an axial movement in one direction of the hydraulic actuator for the third clutch is supported by contacting with the clutch drum, and an axial movement in the opposite direction of the hydraulic actuator for the third clutch is supported by fastening an end of the drum member to the ring gear of the dual planetary gear.

5,006,103

DISPOSABLE CONTAINER FOR A CENTRIFUGE

David V. Bacehowski, Wildwood, Ill.; Herbert M. Cullis, Silver Spring, Md., and Armand R. Van Baelen, Rolling Meadows, Ill., assignors to Baxter International Inc., Deerfield, Ill.

Division of Ser. No. 824,182, Aug. 12, 1977, Pat. No. 4,934,995.
This application Jan. 11, 1990, Ser. No. 463,694
Int. Cl.[5] B04B 7/08
U.S. Cl. 494—45 13 Claims



1. A disposable container for use in a centrifuge for separating cellular material, which comprises:

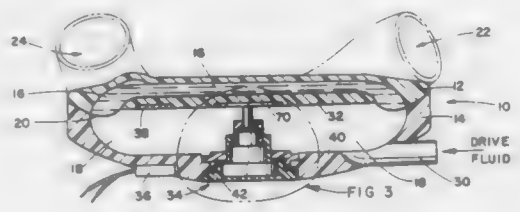
an elongated, flat container formed of a flexible plastic material, said flat container being sufficiently flexible to allow it to be easily bent and inserted into an elongated curvilinear channel defined in a centrifuge for separating cellular material; said container including a fluid receptacle portion, a first port communicating with a first location of said fluid receptacle portion for introducing cellular material, and a second port communicating with a second location of said fluid receptacle portion for extracting a first cellular material component.

5,006,104

HEART PUMP HAVING CONTRACTIBLE GUIDE MECHANISM FOR PUSHER PLATE

William A. Smith, Lyndhurst, and Ji-Feng Chen, Cleveland, both of Ohio, assignors to The Cleveland Clinic Foundation, Cleveland, Ohio

Filed Nov. 7, 1988, Ser. No. 268,020
Int. Cl.[5] A61M 1/12; F04B 43/02
U.S. Cl. 600—016 30 Claims



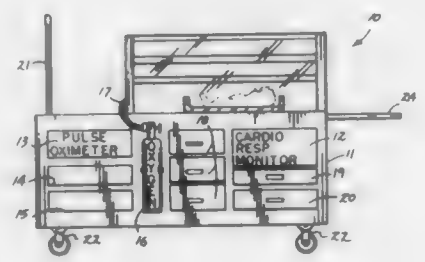
9. A guide mechanism for a blood pump having an elastomeric diaphragm and a pusher plate to support the diaphragm comprising a plurality of nestable sleeves disposed for selective telescopic reciprocatory movement between extended and nested positions, and including means for restricting the pusher plate stroke to a linear motion, and a maximum length.

5,006,105

NEWBORN INFANT THERAPY APPARATUS

Timothy L. Sherard, 307 S. Hite Ave., Louisville, Ky. 40218

Filed Aug. 17, 1990, Ser. No. 568,906
Int. Cl.[5] A61G 11/00
U.S. Cl. 600—22 7 Claims



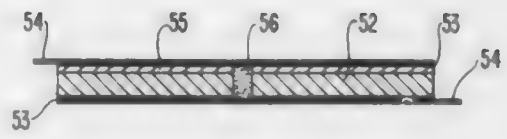
1. A newborn infant therapy apparatus comprising,
a support cabinet housing, including a front vertical wall, the front vertical wall including a cardio-respirator monitor device, and a pulse-oximeter mounted through the front wall, and a first and second shelf mounted within the housing, and an oxygen tank mounted the front wall adjacent the pulse oximeter, and a plurality of aligned supply draws mounted to the front wall, and the housing including a planar left support shelf, the planar left support shelf including an intravenous support post and hook fixedly and orthogonally mounted to the left support shelf, and a right support shelf coplanar with the left support shelf extending longitudinally of and beyond the housing and fixed thereto, and a support chamber floor mounted between the left and right support shelves coplanar therewith, including a chamber housing overlying the chamber floor, wherein the chamber housing includes a left and right support arch fixedly mounted orthogonally overlying the support chamber floor, with the left and right support arch arranged parallel relative to one another, and each arch including a support track coextensive with the arch and formed to a bottom surface thereof, and an aligned parallel series of elongate therapy bulb members, each bulb member longitudinally aligned relative to the chamber housing and each bulb including a bulb socket mounted at each end of each respective bulb to define a bulb socket pair, each bulb socket pair rotatably mounting a support wheel, with each support wheel rotatably mounted within a respective track of each respective left and right support arch.

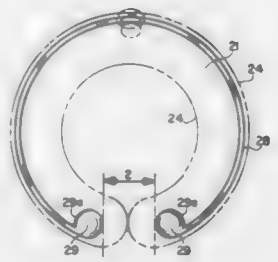
5,006,106

APPARATUS AND METHOD FOR LAPAROSCOPIC IMPLANTATION OF ANTI-REFLUX PROSTHESIS

Jean P. Angelchik, 522 W. Northview, Phoenix, Ariz. 85021

Filed Oct. 9, 1990, Ser. No. 594,011
Int. Cl.[5] A61F 2/00, 13/00; A61B 19/00
U.S. Cl. 600—37 2 Claims





1. A laparoscopically implantable prosthesis for treating esophageal reflux comprising:
(a) a normally generally C-shaped cushion member, the inside diameter of which is generally larger than the normal outside diameter of the distal esophagus, said normally C-shaped member being temporarily deformable to a shape adapted for inserting said member into a torso cavity through a laparoscopic portal; and
(b) shaping spring means formed with said cushion member to normally maintain said cushion member in said C-shape, said shaping spring means being temporarily deformable, with said C-shaped member to said insertable shape.

5,006,107

Patent Not Issued For This Number

5,006,108

APPARATUS FOR IONTOPHORETIC DRUG DELIVERY

Ronald E. LaPrade, Miami, Fla., assignor to Noven Pharmaceuticals, Inc., Miami, Fla.

Filed Nov. 16, 1988, Ser. No. 271,600
Int. Cl.[5] A61N 1/30
U.S. Cl. 604—20 9 Claims

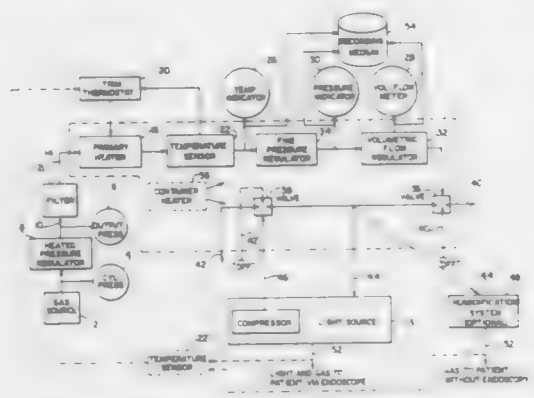
1. An iontophoretic device for delivery of a drug comprising:
a flexible, non-conductive backing layer;
first and second conductive electrodes in a plane composed of a substantially non-ionizing material, attached to one side of which plane is said backing layer and the other side of which plane is adapted to be affixed to one side of a flexible and electrically conductive layer containing drug to be delivered;
a source of electrical current;
means for reversing the polarity of the two electrodes;
a pulse generator means for delivering current to the electrodes in timed intervals;
a switch means for reversing the polarity between electrodes during an intermission period of the therapeutic pulse; and
ion exchange means for separating the electrodes and the conductive layer to inhibit the flow of ions to the electrically conductive layer from the electrode having a charge similar to that of the drug.

5,006,109

METHOD AND DEVICE FOR CONTROLLING PRESSURE, VOLUMETRIC FLOW RATE AND TEMPERATURE DURING GAS INSUFFICATION PROCEDURES

Donald D. Douglas, 703 White Swan Dr., Arnold, Md. 21012, and James A. Hamel, Virginia Beach, Va., assignors to Donald D. Douglas

Filed Sep. 12, 1989, Ser. No. 406,351
Int. Cl.[5] A61M *13/00*
U.S. Cl. 604—26 41 Claims



1. A gas delivery system for use in an endoscopic or medical procedure involving a patient, comprising:

a gas source supplying gas for use in the endoscopic or medical procedure;

a heated pressure regulator, connected to and receiving gas from the gas source, for pre-heating the gas to ensure that it is in its gaseous state and for initially regulating the pressure of the gas;

a gas source output pressure gauge, connected to the heated pressure regulator, for measuring the pressure of the gas output through the heated pressure regulator;

a filter, connected to the heated pressure regulator, for receiving the heated gas from the heated pressure regulator and filtering out foreign matter from the gas;

a gas delivery system main body, connected to an output of the filter for receiving filtered gas, comprising:

(a) a primary heater for heating the gas from the filter to a temperature having a relationship to a physiologically desired temperature for administration to the patient;

(b) a temperature sensor, connected to an output of the primary heater, for measuring the temperature of the gas exiting the primary heater;

(c) a thermostat, connected to an output of the temperature sensor and to an input of the primary heater, for receiving temperature measurements from the temperature sensor, for governing the primary heater in regulating the temperature of the gas;

(d) a fine pressure regulator, for controlling the pressure of the gas administered to the patient in the endoscopic or medical procedure; and

(e) a volumetric flow regulator, for controlling the volumetric flow rate of the gas administered to the patient in the endoscopic or medical procedure;

wherein the primary heater, fine pressure regulator, and volumetric flow regulator are connected substantially in series, not necessarily in the recited order;

a temperature indicator, a pressure indicator, and a flow meter, connected, respectively, to the temperature sensor, the fine pressure regulator, and the volumetric flow regulator, for respectively indicating the temperature, pressure and volumetric flow rate of the gas;

a recording medium, connected to the temperature sensor, fine pressure regulator and volumetric flow regulator, for recording the temperature, pressure, and volumetric flow rate of the gas as a function of time during the endoscopic or medical procedure;

an endoscopic light source comprising a compressed air source for producing compressed air as an alternative gas; and

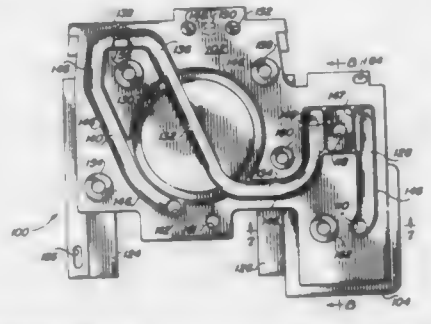
a valve assembly, connected to the main body and to the endoscopic light source, for controllably directing either (1) the gas from the main body, or (2) the compressed air from the endoscopic light source compressed air source, into an endoscope for administration to the patient.

5,006,110

AIR-IN-LINE DETECTOR INFUSION SYSTEM

Michi E. Garrison, Granada Hills; John P. Pelmulder, Chatsworth, and Herman L. Renger, Calabasas, all of Calif., assignors to Pacesetter Infusion, Ltd., Sylmar, Calif.

Filed Dec. 1, 1987, Ser. No. 128,121
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—65 16 Claims



1. An apparatus for detecting the presence of air bubbles in liquid passing through a disposable cassette installed on a main unit in a medication infusion system or the like, comprising:

an optical receiving module adapted for mounting on said main unit;

optical signal source means for providing a light beam, said optical signal source means being located in said optical receiving module;

optical signal sensor means for receiving said light beam, said optical signal sensor means also being located in said optical receiving module;

a liquid channel located in a disposable cassette, said liquid channel having a first wall, said liquid channel also having a second wall located opposite said first wall, liquid passing through said disposable cassette passing through said liquid channel in an area between said first wall and said second wall, said first wall being transparent to said light beam from said optical signal source means, said second wall being absorptive of light of the type provided by said optical signal source means, said first wall of said liquid channel being located adjacent said optical receiving module when said disposable cassette is installed on said main unit; and

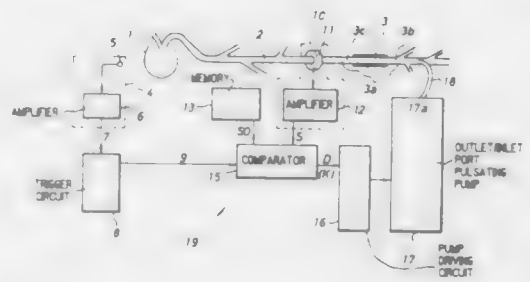
an optical viewing area located in said first wall, a first portion of said optical viewing area in said first wall being located adjacent said optical signal source means, a second portion of said optical viewing area in said first wall being located adjacent said optical signal sensor means, said optical viewing area comprising means for reflecting said light beam from said optical signal source means onto said optical signal sensor means when said area of said liquid channel has air therein, said light beam from said optical signal source means thereby passing through said optical viewing area when said area of said liquid channel has liquid therein.

5,006,111

MEDICAL PUMP DEVICE AND A METHOD FOR COMPENSATING A DEVIATION OF A MEASURED BLOOD FLOW RATE

Kiyoshi Inokuchi; Kenichiro Okadome; Yoichi Muto, all of Fukuoka; Yoshio Kawai, Musashino; Tadashi Ouuma, Inashiki, and Toshiharu Shirakami, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 2,709, Nov. 24, 1986, abandoned. This application Jul. 18, 1988, Ser. No. 220,990
Claims priority, application Japan, Apr. 5, 1985, 60-71997
Int. Cl.[5] A61M *5/14*
U.S. Cl. 604—67 16 Claims



1. A medical pump apparatus for compensating a deviation of a measured blood flow rate in an artery from a reference blood flow rate to thereby bring said measured blood flow rate near to said reference blood flow rate, comprising:

means for detecting a heart beat and outputting a triggering signal in response to said detected heart beat;

means for measuring a blood flow rate in said artery and for outputting a measured blood flow rate signal;

memory means for storing a reference blood flow rate signal;

means for determining a first difference and a second difference in response to said reference blood flow rate signal from said memory means and said measured blood flow rate signal from said blood flow rate measuring means to thereby issue a characterizing signal representing said first and second differences in response to said triggering signal from said heart beat detecting means,

said first difference comprising a difference between said reference blood flow rate and said measured blood flow rate during a first period in which said measured blood flow rate is less than said reference blood flow rate,

said second difference comprising a difference between said reference blood flow rate and said measured blood flow rate during a second period in which said measured blood flow rate is more than said reference blood flow rate;

means for discharging a liquid from a source of said liquid to said artery and for sucking said discharged liquid from said artery in response to said characterizing signal; and

means for connecting said discharging and sucking means to said artery.

5,006,112

SYRINGE PUMP

Dieter Metzner, Schweinfurt, Fed. Rep. of Germany, assignor to MTS Schweinfurt GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Nov. 13, 1989, Ser. No. 435,013
Claims priority, application Italy, Nov. 12, 1988, 3838465
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—155 10 Claims

1. A motor-driven syringe pump device for controlled dosage dispensing of a liquid from an injection syringe having a syringe piston disposed therein and a pushing member acting on one end of said syringe piston, said device comprising:

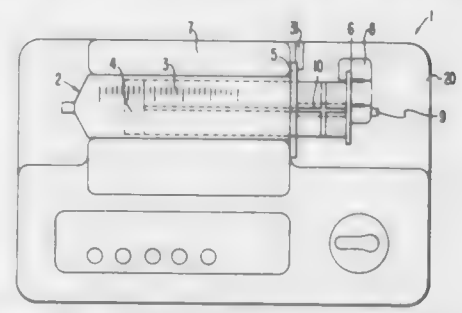
a casing having a mounting for a syringe;

a screw spindle transmission means for transmitting a driving force from the motor to the syringe piston, said transmission having a threaded screw spindle and a drive element coupled to the pushing member;

a clutch member permanently and rotatably engaged with the threads of the screw spindle;

a releasable brake means for alternatively braking or releasing said clutch member for movement along said screw spindle;

an actuation means for releasing said brake means from said clutch member and applying said brake means to said



clutch member, said actuation means being coupled to said brake means, said brake means being urged into contact with the clutch member by a spring which has one end engaging said pushing member;

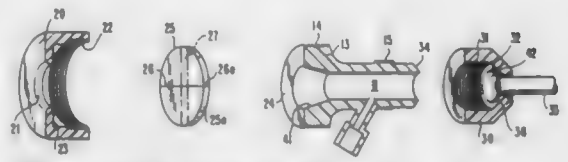
wherein the brake means comprises a brake tube and said spring is disposed within the brake tube, said brake tube being disposed within a pull-shaft, the other end of the spring engaging the brake tube, the actuation means being disposed on the pushing component.

5,006,113

HEMOSTASIS CANNULA

Frank Fischer, Bloomington, Ind., assignor to Cook Incorporated, Bloomington, Ind.

Continuation-in-part of Ser. No. 477,345, Feb. 8, 1990, which is a continuation-in-part of Ser. No. 357,041, May 25, 1989, abandoned. This application Apr. 17, 1990, Ser. No. 510,591
Int. Cl.[5] A61B *5/178*
U.S. Cl. 604—167 22 Claims



1. A hemostasis cannula comprising:

a body having an elongated passage therethrough adapted to receive a catheter; and

a flexible, elastic gasket having an axial thickness and mounted in said passage, including:

opposite first and second surfaces separated from each other by said axial thickness;

an elongated first slit extending across said first surface and into said gasket toward said second surface a first slit depth without passing entirely through said gasket;

an elongated second slit extending across said second surface and into said gasket toward said first surface a second slit depth without passing entirely through said gasket;

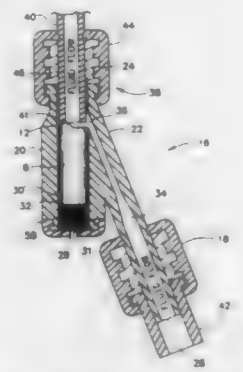
a generally axial opening running inbetween said first slit and said second slit in said gasket an axial opening depth;

wherein the sum of said first slit depth and said second slit depth is less than said axial thickness so that said gasket includes elastic material axially inbetween said first and second slits; and

wherein the sum of said first slit depth, said second slit

depth and said axial opening depth is equivalent to said axial thickness of said gasket to provide a resealable path for insertion of the catheter through said thickness of said gasket.

5,006,114
MEDICAL VALVE ASSEMBLY
Bobby E. Rogers, 1885 Sienna Canyon Dr., Encinitas, Calif. 92024, and Robert L. Zimmer, 11705 Gillette, Overland Park, Kans. 66210
Filed Apr. 20, 1990, Ser. No. 512,658
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—167 18 Claims



1. A valve assembly adapted to facilitate the administration and withdrawal of fluid from a patient comprising

valve assembly housing having an input side and an output side, a fluid channel having an input opening, a piston and biasing means housing wherein said fluid channel extends between the output side of said valve assembly housing and said piston and biasing means housing, said input opening of said fluid channel is connected to said piston and biasing means housing,

piston means located in said piston and biasing means housing, said piston means being movable between an open and closed position, said piston means sealing the input opening of said fluid channel from said input side of said valve assembly housing when said piston means is in said closed position, said piston means having a top surface forming a part of said valve assembly housing input side, said top surface being flat except for at least one raised portion, said raised portion being adapted to contact the output end of a syringe, said piston means is adapted to be displaced into said open position when a syringe is connected to the input side of said valve assembly housing, thereby permitting fluid connection between said output end of said syringe and the input opening of said fluid channel, the input side of said valve assembly housing having a sealing means for forming a seal between said input side of said valve assembly housing and said output end of said syringe, and

biasing means located in said piston and biasing means housing for biasing said piston means in said closed position.

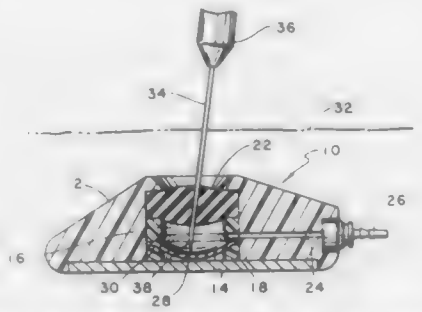
5,006,115
NEEDLE PLACEMENT SENSOR
Ray S. McDonald, St. Paul, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed Jul. 25, 1989, Ser. No. 385,131
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—175 4 Claims

1. An implantable medical device comprising:

a device body;

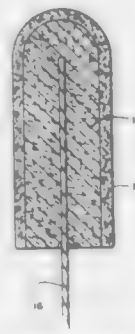
port means in said device body for receiving a medical instrument percutaneously; and

means, mounted in the device for communication with the medical instrument for flexing from a first rest position to a second position after contact with the medical instrument, and for providing an extracorporeal response signal



resulting from the flexion from the first position to the second position.

5,006,116
TAMPON WITH SINGLE LAYER POWDER BONDED WRAP
Mir I. Alikhan, Marietta, Ga.; Sandra M. Colrud, Appleton, Wis., and James C. Sneyd, Marietta, Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Dec. 21, 1988, Ser. No. 287,790
Int. Cl.[5] A61F *13/15, 13/20*
U.S. Cl. 604—365 23 Claims

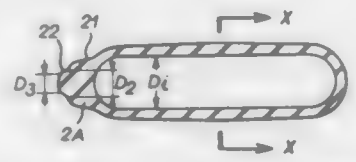


1. A personal care absorbent article, comprising:

an absorbent pledget; and

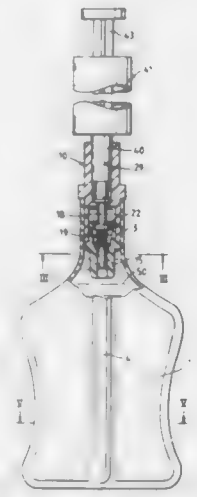
a single layer powder bonded wrap embossed onto the absorbent pledget, the wrap comprising a homogeneous blend of hydrophobic fibers and hydrophilic fibers laminated together with bonding powder.

5,006,117
CONTAINER FOR BIOLOGICAL LIQUIDS
Robert Cassou, L'Aigle, France, assignor to Instruments Medecine Veterinaire, L'Aigle, France
Filed Jan. 17, 1989, Ser. No. 297,433
Int. Cl.[5] A61B *19/00*
U.S. Cl. 604—403 12 Claims



1. An in-vivo fertilization container for a biological liquid such as a culture medium, comprising a hollow body of plastic material including means perforable by a cannula for introducing a biological liquid and hermetically resealing itself upon withdrawal of the cannula, the hollow body having a generally cylindrical tubular portion between rounded end portions, the interior and exterior surfaces of the container being smooth, continuous and curved throughout and the means perforable by a cannula comprising a thick wall portion, said thick wall portion comprising one of said end portions and being substantially thicker in a direction axially of the container than said cylindrical tubular portion and being integral with said cylindrical tubular portion.

5,006,118
LIQUID TRANSFER ASSEMBLIES
Bruce Yule, 56, Grange Road, Saltwood, Hythe, Kent, England
Filed Jan. 9, 1989, Ser. No. 294,703
Claims priority, application United Kingdom, Jan. 9, 1988, 8800448
Int. Cl.[5] A61B *19/00*
U.S. Cl. 604—408 7 Claims



1. A liquid transfer assembly for enabling the transfer of liquid from a container to a syringe comprising:

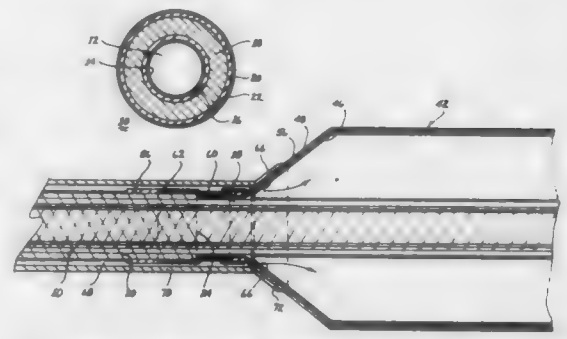
the syringe having a nose portion;

the liquid container comprising a reservoir and defining an opening therein;

a valve in said opening for selectively permitting the flow of liquid from said container to the syringe, said valve including means urging said valve to a normally closed position in which it blocks the flow of the liquid from the container to the syringe, said valve means further including means responsive to the forcible insertion of said nose portion of the syringe into said container opening to open said valve means to permit the flow of liquid from the container to the syringe, said valve having a tapered bore that forms a fit with the syringe inserted within said bore that is sufficient to retain said container on said syringe during normal use of the assembly;

a flexible wall for said container adapted to collapse about the contents of said container as the liquid is withdrawn therefrom thereby causing the internal volume of said container to be maintained substantially equal to the volume of the liquid remaining in the container, and at least one continuous, non-collapsible elongate channel extending longitudinally along substantially the full length of the interior side of at least one said flexible wall surface in the direction of flow of the liquid as it is emptied from said container in normal use thereof, said at least one channel being in communication over at least most of its length with the interior of said container to thereby maintain continuous liquid flow into said syringe as the opposite wall surfaces of the container collapse in response to the emptying of said container.

5,006,119
HOLLOW CORE COAXIAL CATHETER
Loren C. Acker, and Daniel C. Harmony, both of Tucson, Ariz., assignors to Engineering & Research Associates, Inc., Tucson, Ariz.
Filed May 25, 1989, Ser. No. 357,058
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—27 62 Claims



1. A flexible hollow core coaxial catheter usable in angioplasty procedures for transmitting electrical energy, said catheter comprising in combination:

(a) a flexible hollow member defining a passageway extending therewithin and having an inner surface and an outer surface;

(b) a first electrical conductor juxtaposed with the inner surface, said first conductor maintaining a substantial part of the cross sectional area of the passageway unoccupied;

(c) a second electrical conductor juxtaposed with the outer surface;

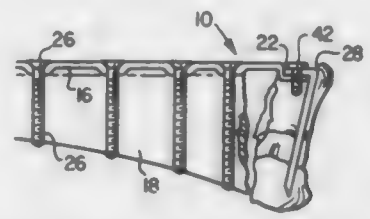
(d) first means for electrically insulating said first electrical conductor within the passageway;

(e) second means for electrically insulating said second electrical conductor about said hollow member;

(f) a load supported by said hollow member and responsive to application of electrical energy for heating arterial plaque during the angioplasty procedure; and

(g) means for electrically interconnecting said first and second electrical conductors with said load.

5,006,120
DISTAL RADIAL FRACTURE SET AND METHOD FOR REPAIRING DISTAL RADIAL FRACTURES
Peter R. Carter, 3707 Gaston Ave., Suite 520, Dallas, Tex. 75246
Filed Oct. 10, 1989, Ser. No. 418,582
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—69 17 Claims



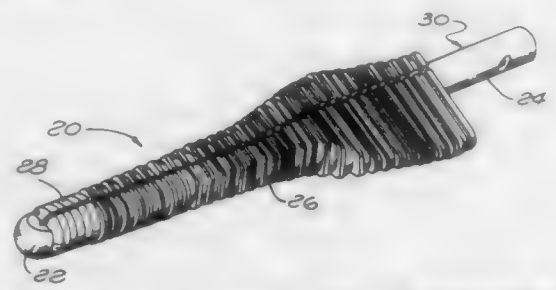
1. A bone fixation set for the treatment of distal radial fractures comprising:

a fixation plate, said plate having a plurality of bone screw holes formed therethrough, said plate having a proximal end and a distal end, said plate having an upper surface and a lower surface, said lower surface of said plate constructed to substantially conform to the dorsal surface of the radius bone, said upper surface and said lower surface of said plate being depressed proximate said bone screw holes formed through said plate; and

an attachable blade, said blade comprising a blade insertion

portion and an attachment portion, said attachment portion of said blade being attachable to said distal end of said plate.

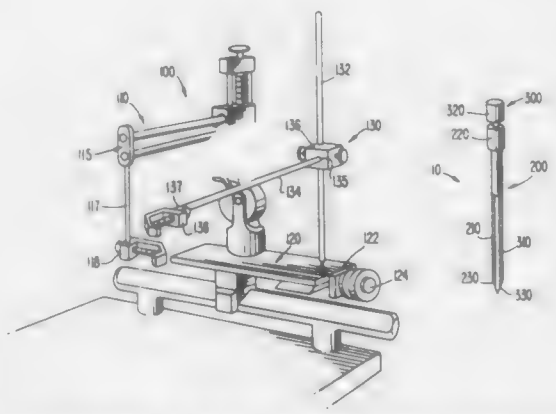
5,006,121
BONE BROACHES AND METHODS OF MANUFACTURING THEREOF
Paul B. Hafeli, El Toro, Calif., assignor to Artifex Ltd., Newport Beach, Calif.
Filed Apr. 23, 1990, Ser. No. 513,070
Int. Cl.[5] A61F 5/04
U.S. Cl. 606—85 22 Claims



1. A bone broach for removing tissue and shaping the surface of a bone for receiving an implant comprising:
a support mandrel defining a mandrel axis and having first and second mandrel ends;
a plurality of broach plates stacked on said mandrel between said first and second ends thereof, each broach plate having an opening therethrough through which said mandrel passes, and first and second substantially flat and parallel surfaces substantially perpendicular to said mandrel axis circumscribed by a peripheral surface shaped at least in part to form a cutting edge defining at least part of the desired bone opening for the respective axial position of the respective said broach plate on said mandrel;
alignment means for maintaining each of said broach plates at a fixed angular alignment on and with respect to said mandrel; and,
clamping means for maintaining said broach plates tightly stacked on said mandrel.

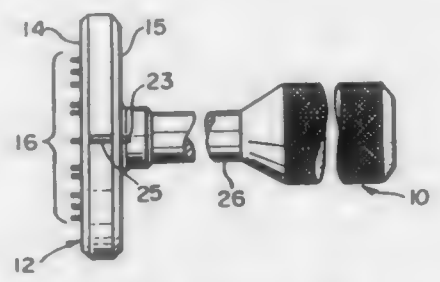
5,006,122
TISSUE TRANSPLANTATION SYSTEM
Richard J. Wyatt, Washington, D.C.; William J. Freed, Ft. Washington, and Richard A. Staub, Waldorf, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.
Continuation of Ser. No. 278,821, Dec. 2, 1988. This application Sep. 20, 1990, Ser. No. 588,242
Int. Cl.[5] A61M 5/178
U.S. Cl. 606—130 6 Claims

1. Apparatus for transplanting tissue into a brain, comprising:
first tubular cannula means for penetrating a brain to a predetermined depth to form a transplant site;
second tubular cannula means for releasably holding said tissue to be transplanted, said second cannula means including a portion at one end thereof of reducible volume, said portion being adapted to obtain and hold a predetermined quantity of donor tissue;
first mechanical support means for releasably receiving and maintaining said first cannula means at said predetermined depth within the brain while said second cannula means is inserted into said first cannula means to such an extent that the tissue-filled portion of the second cannula means is located in the vicinity of said transplant site;
second mechanical support means for releasably receiving and maintaining said second cannula means fixed in position relative to said transplant site following insertion of said second cannula means into said first cannula means;
mechanical means for moving said first cannula means relative to said second cannula means and in a direction away from said transplant site;
whereby movement of said first cannula means relative to



said transplant site in said direction causes a reduction in volume of said reducible volume portion such that the tissue held in said second cannula means is released and deposited at said transplant site.

5,006,123
SCLERA AND/OR LIMBUS MARKING DEVICE FOR USE IN INTRAOCULAR SURGERY
David B. Soll, 5001 Frankford Ave., Philadelphia, Pa. 19124, and Stephen J. Failla, 39 Dogwood Dr., Chester, N.J. 07930
Division of Ser. No. 177,716, Apr. 5, 1988, Pat. No. 4,880,017.
This application Sep. 7, 1989, Ser. No. 404,146
Int. Cl.[5] A61F 9/00
U.S. Cl. 606—166 28 Claims



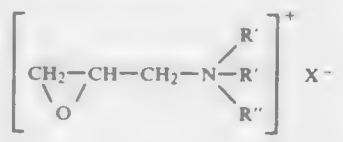
1. A marking device for marking a sclera and/or limbal portion of an eye during intraocular surgery comprising a generally arcuate body member having opposed first and second major surfaces, the first major surface being substantially planar, a first set and a second set of plurality of projections extending from the first major surface, the first set of projections being generally equiangularly spaced from each other and radially arranged in a pattern along an arc of a circle, the second set of projections being radially aligned with and equidistically spaced from the first set of projections, the projections being adapted to be inked and to transfer to an eye the ink in markings corresponding to the projections so that incisions and sutures can be placed in the sclera and/or limbal portion of the eye relative to the markings to standardize and define incisions and suture placement with respect to the sclera and/or limbus.

5,006,124
WET PROCESSING OF DENIM
Robert H. Tieckelmann, Trenton; Randy A. Bull, Hopewell, and Lisa M. Kurschner, Lawrenceville, all of N.J., assignors to FMC Corporation, Philadelphia, Pa.
Filed Dec. 15, 1989, Ser. No. 451,067
Int. Cl.[5] D06L 3/02
U.S. Cl. 8—111 19 Claims

1. In a process for wet processing denim fabric containing dyestuff colorbodies by desizing the denim fabric, washing the desized fabric, contacting the washed fabric with potassium permanganate to oxidize part of the colorbodies in the denim fabric to a form which is easily removed from the fabric surface, thereby decolorizing the denim fabric, and neutralizing the decolorized denim fabric by removing residues of the potassium permanganate and of the oxidized colorbodies, the improvement comprising the steps of (a) neutralizing the-oxidized denim fabric by (i) immersing the denim fabric in about 5 to 20 parts by weight of water per part by weight denim fabric, (ii) maintaining said water solution between pH 3.0 and 6.0, (iii) subsequently incorporating into the water about 2 parts by weight of either a monodentate or multidentate carboxylic acid chelating agent or salt or combination thereof owg to provide a first aqueous solution, and 1 part by weight hydrogen peroxide owg to provide a first aqueous solution, and (iv) maintaining said first aqueous solution at about 65° C. to 90° C. for 5 to 15 minutes, and (b) bleaching the decolorized denim fabric by contacting said denim fabric for 4 to 8 minutes at 65° C. to 90° C. with 5 to 20 parts by weight of an alkaline bleaching solution owg comprising from about 0.6 to about 4 parts by weight hydrogen peroxide owg and sufficient alkali to provide a pH of about 8 to 9.

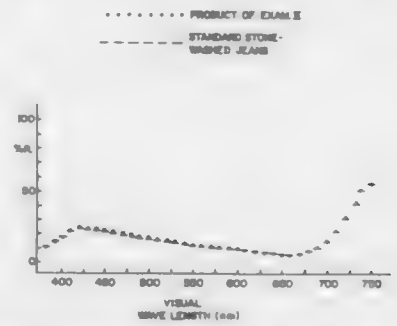
5,006,125
PROCESS FOR IMPROVING THE DYEABILITY AND WHITENESS OF CELLULOSIC FABRICS
Robert T. Patton; John D. Kitchens, both of Lake Jackson, Tex., and David M. Hall, Auburn, Ala., assignors to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of Ser. No. 243,575, Sep. 13, 1988, abandoned. This application Nov. 7, 1989, Ser. No. 432,954
Int. Cl.[5] D06M 13/322
U.S. Cl. 8—188 9 Claims

1. A process for improving the whiteness of a cellulosic fabric which comprises the steps of:
A. scouring said fabric in an aqueous sodium hydroxide solution so as to remove natural fats and oils;
B. treating said fabric from step A with steam;
C. removing excess sodium hydroxide solution from said fabric; and then,
D. treating said fabric with an aqueous solution with an epoxy compound of the formula:



where R, R' and R'' are each lower alkyl radicals and X is an anion whereby the whiteness of said fabric is improved.

5,006,126
CELLULASE COMPOSITIONS AND METHODS THAT INTRODUCE VARIATIONS IN COLOR DENSITY INTO CELLULOSIC FABRICS, PARTICULARLY INDIGO DYED DENIM
Lynne A. Olson, Mendota Heights, and Patricia M. Stanley, Minneapolis, both of Minn., assignors to Ecolab Inc., St. Paul, Minn.
Filed Sep. 15, 1988, Ser. No. 245,123
Int. Cl.[5] C11D 3/38, 11/00; D06B 11/00
U.S. Cl. 8—401 9 Claims



1. A gelled concentrate composition that can be used in aqueous solution to introduce, into the surface of dyed cellulosic fabrics, local areas of variations in color density, which consists essentially of:
(a) about 25–90 wt-% of a cellulase enzyme;
(b) about 0.01–10 wt-% of a thickener selected from the group consisting of a hydratable alkali metal or alkaline earth metal inorganic salt, a polyethylene oxide polymer, a polypropylene oxide polymer, a polyvinyl alcohol polymer, a polyvinyl pyrrolidone polymer, a polyalkyloxazoline polymer, a xanthum gum and mixtures thereof;
(c) about 0.1–50 wt-% of a buffer than can maintain the pH of the aqueous solution to about the optimum pH for enzyme activity;
wherein the variation in color density is substantially the same as that produced by conventional pumice stone processing.

5,006,127
AGENT FOR THE OXIDATIVE DYEING OF HAIR, METHOD FOR THE PREPARATION OF THE AGENT AND USE OF THE AGENT
Jürgen Tennigkeit, Seeheim, and Herbert Lorenz, Gross-Bieberau, both of Fed. Rep. of Germany, assignors to Goldwell GmbH, Darmstadt-Eberstadt, Fed. Rep. of Germany
PCT No. PCT/EP87/00465, § 371 Date Apr. 14, 1988, § 102(e) Date Apr. 14, 1988, PCT Pub. No. WO88/01161, PCT Pub. Date Feb. 25, 1988
PCT Filed Aug. 19, 1987, Ser. No. 187,029
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1986, 3628397
The portion of the term of this patent subsequent to Oct. 11, 2005, has been disclaimed.
Int. Cl.[5] A61K 7/13
U.S. Cl. 8—406 10 Claims

1. An agent for dyeing human or animal hair, comprising: a mixture of approximately one-third by weight of an oxidation dye in creme or gel form containing an effective amount of an oxidation dye and approximately two-thirds by weight of a developer solution containing approximately two percent of hydrogen peroxide, and as a catalyst 0.0001 to 1.00 per cent by weight of at least one salt selected from the group consisting of potassium iodide, potassium bichromate, lithium chloride, magnesium acetate, calcium chloride and barium nitrate, said agent having a pH between 5.9 and 6.9.

5,006,128

SUBSTITUTED 2,4-DI[4'-(DISULFONAPHTH-2''-YLAZO)-PHENYLAMINO]-6-AMINO-1,3,5-TRIAZINES

Reinhard Pedrazzi, Allschwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

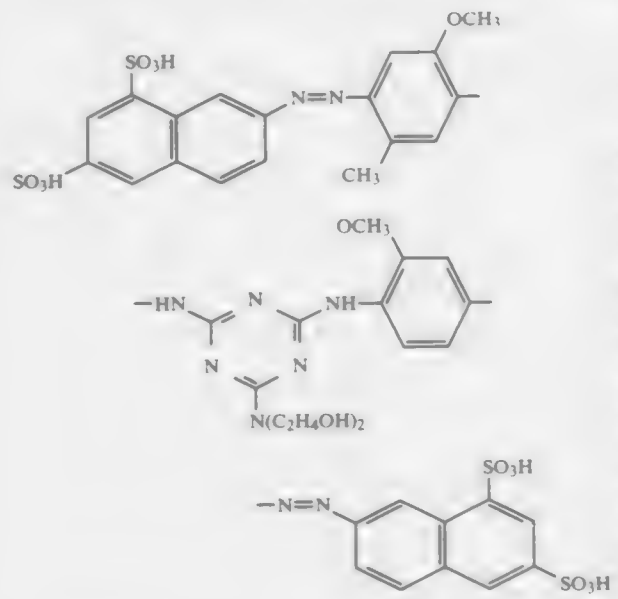
Filed Aug. 25, 1989, Ser. No. 399,665

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1988, 3828909

Int. Cl.[5] **C09B** *33/02, 43/40;* **D06P** *1/39;* **C07D** *251/34*

U.S. Cl. 8—437 **5 Claims**

1. The compound having the formula SO_3H



or a salt thereof.

5,006,129

DYEING TEXTILE MATERIAL WITH PIGMENT DYES: PRE-TREATMENT WITH QUATERNARY ALLY AMMONIUM SALT POLYMER

Thomas Martini, Kelkheim; Karl-Heinz Keil, Hanau; Ulrich Karsunky, Hünfelden, and Klaus Sternberger, Bad Vilbel, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 29, 1989, Ser. No. 459,270

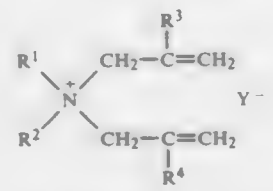
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1988, 3844194

Int. Cl.[5] **D06P** *1/44;* **D06M** *5/04, 15/35*

U.S. Cl. 8—554 **14 Claims**

1. A process for coloring textile material with pigment colorants, which comprises

a. pretreating the textile material with a polymer which consists wholly or partly of nonomeric units of the formula I



(I)

where R^1 and R^2 are each hydrogen, (C_1-C_{22})alkyl which may be interrrupted by —CO—NH— or C_1-C_4-hydroxyalkyl,

R^3 and R^4 are each hydrogen or methyl, and

Y^- is a monovalent anion or one equivalent of a polyvalent anion,

b. then coloring with a pigment colorant in the presence of a leveling or dispersing agent by the exhaust method and optionally,

c. treating in a liquor with a pigment binder and subsequently fixing it.

5,006,130

GASOLINE COMPOSITION FOR REDUCING INTAKE VALVE DEPOSITS IN PORT FUEL INJECTED ENGINES

Robert P. Aiello, Cypress; Michael J. Riley, and Herbert D. Millay, both of Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 28, 1989, Ser. No. 372,578

Int. Cl.[5] **C10L** *1/14*

U.S. Cl. 44—432 **38 Claims**

1. An unleaded fuel composition comprising a major amount of a hydrocarbon base fuel of the gasoline boiling range containing an effective amount to reduce intake valve deposits in electronic port fuel injected engines of a mixture of (a) about 2.5 ppmw or higher of basic nitrogen based on the fuel composition in the form of an oil soluble aliphatic alkylene polyamine containing at least one olefinic polymer chain attached to at least one nitrogen or carbon atom of the alkylene radical connecting the amino nitrogen atoms and said polyamine having a molecular weight in the range of from about 600 to about 10,000 and (b) from about 75 ppmw to about 125 ppmw based on the fuel composition of at least one component selected from (i) a polymer of a C_2 to C_6 monoolefin, (ii) a copolymer of a C_2 to C_6 monoolefin, (iii) the corresponding hydrogenated polymer or copolymer, (iv) an oil soluble poly(oxyalkylene) alcohol, glycol or polyol or a mono or di ether thereof, which has the formula R_1—O—$(R_2O)_n$—R_3 wherein R_1 and R_3 each independently is a hydrogen atom or an aliphatic, cycloaliphatic or mononuclear aromatic hydrocarbon group of up to 40 carbon atoms, R_2 represents an alkylene group and n is an integer of at least 7, (v) a naphthenic or paraffinic oil having a visocity of 100° C. of from about 2 to about 15 cenetistokes, the weight ratio of (a) as basic nitrogen to (b) in the mixture being in the range of about 0.020 or higher.

5,006,131

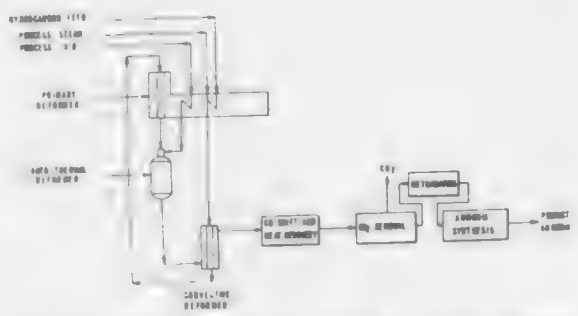
APPARATUS FOR PRODUCTION OF SYNTHESIS GAS USING CONVECTIVE REFORMING

Maxim Karafian, Cold Spring Harbour, and Irving C. Tsang, Flushing, both of N.Y., assignors to Stone & Webster Engineering Corporation, Boston, Mass.

Division of Ser. No. 944,327, Dec. 19, 1986, Pat. No. 4,824,658, which is a division of Ser. No. 749,869, Jun. 27, 1985, abandoned. This application Oct. 3, 1988, Ser. No. 253,542

Int. Cl.[5] **B01J** *7/00*

U.S. Cl. 422—201 **1 Claim**



1. A system for the steam reforming of hydrocarbons into a hydrogen-rich gas, which comprises in series:

(a) a convective reformer device having indirect heat-exchange means for partially reforming a feed mixture of hydrocarbons and steam;

(b) a steam reforming furnace having a radiant section, reforming tubes in the radiant section, and means for producing radiant heat for the further reforming of the partially reformed effluent from (a);

(c) an auto-thermal reformer for fully reforming the effluent from (b);

(d) conduit means for passing the partially reformed effluent from (a) to (b);

(e) conduit means for passing the effluent from (b) to (c); and

(f) conduit means for passing the fully reformed effluent from (c) to (a), to supply the heat of reaction for the partial reformation of the hydrocarbon-steam feed mixture.

5,006,132

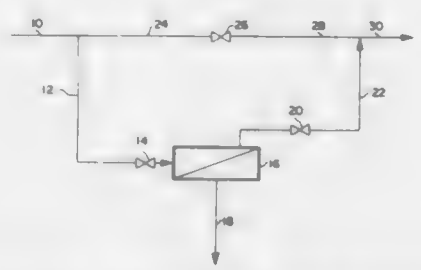
MEMBRANE PROCESSED PURIFIED PIPELINE GAS

Stephen P. DiMartino, Sr., Topton, and James C. Sorensen, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 12, 1990, Ser. No. 537,182

Int. Cl.[5] **B01D** *53/22*

U.S. Cl. 55—16 **27 Claims**



1. A process for removing a higher purity component sidestream product gas from a lower purity main product pipeline gas containing that component, with insignificant main pipeline gas pressure drop and purity loss so as to maintain the approximate pressure and purity of the main product pipeline gas downstream of the sidestream product gas removal, comprising: (a) contacting at least a portion of the main product pipeline gas with the feed side of a membrane, that selectively permeates the component product gas over any other components of the main product pipeline gas, (b) permeating the component product gas through the membrane preferentially over the other components of the main product pipeline gas by reduced pressure on the permeate side of the membrane, (c) recovering a higher purity component sidestream product gas from the permeate side of the membrane, and (d) commingling the reject gas from the feed side of the membrane with the main product pipeline gas downstream of the sidestream product gas removal.

5,006,133

METHOD AND APPARATUS FOR DEOXIDATION OF SEA-WATER

Charles Mandrin, Winterthur, and Rene Keller, Zell, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Mar. 19, 1990, Ser. No. 495,838

Claims priority, application Switzerland, Apr. 5, 1989, 01252/89

Int. Cl.[5] **B01D** *19/00*

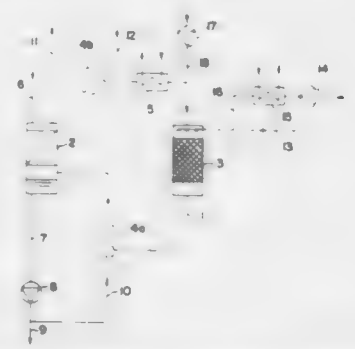
U.S. Cl. 55—53 **18 Claims**

1. In a method of deoxidizing sea water, the steps of

delivering a flow of oxygen-charged stripping gas to a catalytic combustion chamber during a start up phase;

delivering a flow of a first fuel having a low ignition temperature to the catalytic combustion chamber during said start-up phase for combustion therein with the oxygen of the stripping gas until a predetermined temperature is reached; and

thereafter delivering a flow of a second fuel having a higher ignition temperaturere than said first fuel to the combus-



tion chamber to maintain combustion of the oxygen of the delivered flow of stripping gas.

5,006,134

COAGULATOR FOR SYSTEMS FOR THE PURIFYING OF EXHAUST GASES OF FOSSIL FUELS

Guenter Knoll, Stuttgart; Rolf Leonhard, Schwieberdingen; Wolfgang Kraft, Leonberg-Rutel, and Bernhard Lucas, Weissach, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

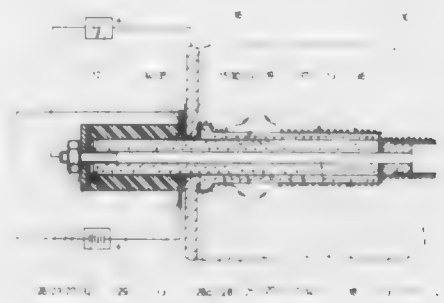
PCT No. PCT/DE89/00320, § 371 Date Dec. 15, 1989, § 102(e) Date Dec. 15, 1989, PCT Pub. No. WO89/12731, PCT Pub. Date Dec. 28, 1989

PCT Filed May 20, 1989, Ser. No. 455,410

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1988, 3820740

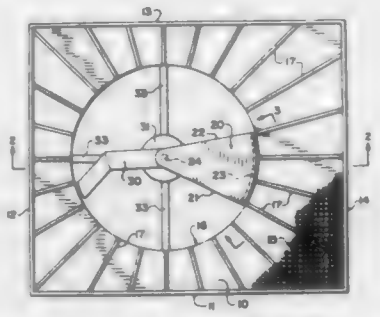
Int. Cl.[5] **B03C** *3/00*

U.S. Cl. 55—146 **17 Claims**



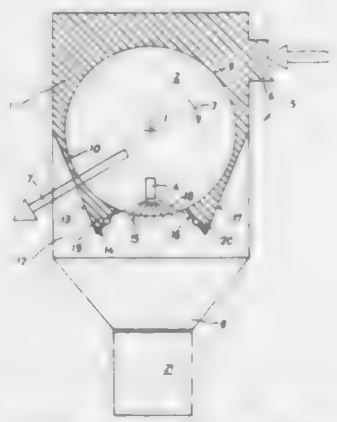
1. Coagulator for systems for purifying the exhaust gases of fossil fuels from diesel internal-combustion engines, with a housing, poled as counter-electrode and cylindrical electrode, arranged concentrically in the housing and at high voltage, and with at least one insulator surround the electrode over a section of its length for the insulated leading of the electrode through the housing, which insulator bears an electric heating conductor track for the prevention or elimination of an agglomerate deposit on its surface, wherein the insulator (13; 13') is in two parts and consists of a ceramic inner tube (17; 17') and a ceramic projective tube (18; 18'), surrounding the latter, the heating conductor track (19) is applied to the circumference of the inner tube (17; 17') and the protective tube (18; 18') is sintered on to the inner tube (17; 17') in such a way that the parting line (14) between inner and protective tubes (17, 18; 17', 18') is gas-tight.

5,006,135
SELF CLEANING SCREEN
David Friesen, 305-1825-4th St. N., Cranbrook, British Columbia, Canada (V1C 3L9)
Filed Dec. 12, 1989, Ser. No. 448,124
Int. Cl.[5] B01D *46/04*
U.S. Cl. 55—286 8 Claims



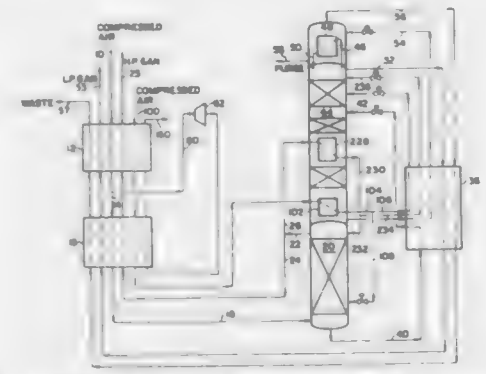
1. A self cleaning screen for separating particles from an air stream comprising a housing defining a front surface which is covered by a filter screen having perforations sized to halt the particles while allowing the air stream to pass through, a rear surface spaced from the front surface and a surrounding side wall means extending between the front surface and the rear surface to cause all airflow exiting the rear surface to be drawn through the front surface and the screen, a plurality of divider plates each extending from a front edge of the plate at the screen in a rearward direction to a rear edge of the plate at said rear surface of the housing, said divider plates being spaced each from the next so as to divide the screen into plurality of separate screen elements, the air flow through the screen element being confined on respective sides by said divider plates, the rear surface of the housing having at least a portion thereof which is open to allow passage of the air through the screen and between the plates, and baffle means for halting flow of air through each one of said separate screen elements in turn to allow material collecting on said each element in turn to be discharged from the screen.

5,006,136
ROTARY DRUM FILTER
Peter Wetter, Im Rigiblick 23, 8623 Wetzikon, Switzerland
Filed Dec. 20, 1989, Ser. No. 453,578
Claims priority, application Switzerland, Jan. 10, 1989, 67/89-1
Int. Cl.[5] B01D *33/044, 46/20*
U.S. Cl. 55—290 9 Claims



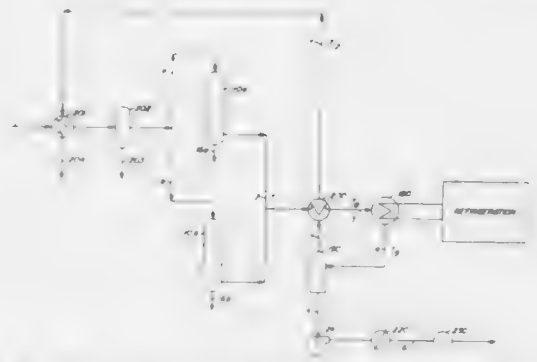
1. A rotary drum filter having a drum which is rotatable around a substantially horizontal axis and having a filter cake cleaning-off unit, which drum and which cleaning-off unit are located inside a filter housing that includes a raw air inlet, a clean air outlet and a filter cake discharge section, which raw air inlet faces an outer jacket surface of said drum and which clean air outlet faces an inner jacket surface of said drum, said filter housing comprising a vertically upper filter zone and a filter cake settling zone located below said filter zone such that the filter housing is partitioned into two zones, whereby a part of a partitioning plane is formed as cleaning-off zone and the rest of the partitioning plane is formed substantially air-tight.

5,006,137
NITROGEN GENERATOR WITH DUAL REBOILER/CONDENSERS IN THE LOW PRESSURE DISTILLATION COLUMN
Rakesh Agrawal, Allentown, and Donald W. Woodward, New Tripoli, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Mar. 9, 1990, Ser. No. 491,756
Int. Cl.[5] F25J *3/00*
U.S. Cl. 62—11 11 Claims



1. A cryogenic process for the production of nitrogen by distilling air in a double column distillation system comprising a high pressure column and a low pressure column comprising:
(a) cooling a first compressed feed air stream to near its dew point an rectifying the cooled, compressed feed air stream in the high pressure distillation column thereby producing a high pressure nitrogen overhead and a crude oxygen bottoms liquid,
(b) removing the crude oxygen bottoms liquid from the high pressure distillation column subcooling the removed, crude oxygen bottoms liquid an :ding the subcooled, crude oxygen bottoms liquid to an intermediate location of the low pressure column for distillation;
(c) removing the high pressure nitrogen overhead from the high pressure column and dividing the removed, high pressure nitrogen overhead to a first and second portion;
(d) condensing the first portion of the high pressure nitrogen overhead in an intermediate reboiler/condenser located in the upper portion Of the stripping section of the low pressure column thereby providing at least a portion of the heat duty rreboil the low pressure column;
(e) warming the second portion of the high pressure nitrogen overhead to recover refrigeration thereby producing a high pressure nitrogen product;
(f) refluxing the high pressure column with at least a portion of the condensed nitrogen generated in step (d);
(g) cooling a second compressed feed air stream., totally condensing the cooled, second compressed feed air stream and dividing it into a first and second substream;
(h) feeding the first substream to a lower intermediate location of the high pressure column for distillation;
(i) reducing in pressure the second substream and feeding the reduced pressure, second substream to an upper intermediate location of the low pressure column for distillation; and
(j) removing a low pressure nitrogen stream from the top of the low pressure column, warming the removed, low pressure nitrogen stream to recover refrigeration and recovering the warmed, low pressure nitrogen stream from the process as a low pressure nitrogen product.

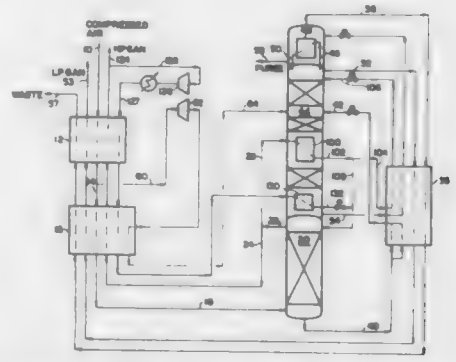
5,006,138
VAPOR RECOVERY SYSTEM
J. Paul Hewitt, P.O. Box 1091, Angleton, Tex. 77515
Filed May 9, 1990, Ser. No. 521,028
Int. Cl.[5] F25J *3/00*
U.S. Cl. 62—18 13 Claims



1. A system for removing substantially all of the organic compound vapors from an air-organic compound vapor mixture, comprising:
(a) a collection header for collecting said mixture;
(b) a first heat exchanger in fluid communication with said header to effect indirect heat exchange between the mixture entering and a refrigerant and thereby cool said entering mixture to condense a portion of the water contained therein;
(c) a knock out pot in fluid communication with said first heat exchanger to collect and remove said portion of water condensed;
(d) at least one desiccant vessel in fluid communication with said knock out pot to receive the vapor therefrom and for removing any water remaining within said mixture;
(e) a second heat exchanger in fluid communication with said dehydration means;
(f) a vapor chiller in fluid connection with said second dehydration to condense substantially all of said organic compounds in said mixture by indirect heat exchange with a refrigerant gas at a cryogenic temperature;
(g) a separator in fluid communication with said chiller to separate said condensed organic compounds from said mixture;
(h) a flow line connecting said separator to carry the uncondensed vapors from said separator to said second heat exchanger to effect indirect heat exchange between said uncondensed vapors and the dehydrate mixture prior to entering said chiller;
(i) a means to remove substantially all of said condensed organic compounds from said vapor chiller; and
(j) a vent to remove said vapor less substantially all of said hydrocarbons from said second heat exchanger.

5,006,139
CRYOGENIC AIR SEPARATION PROCESS FOR THE PRODUCTION OF NITROGEN
Rakesh Agrawal, Allentown, and Donald W. Woodward, New Tripoli, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Mar. 9, 1990, Ser. No. 491,420
Int. Cl.[5] F25J *3/02*
U.S. Cl. 62—24 13 Claims

1. A cryogenic process for the production of nitrogen by distilling air in a double column distillation system comprising a high pressure column and a low pressure column comprising:
(a) cooling a compressed feed air stream to near its dew point and rectifying the cooled, compressed feed air stream in the high pressure distillation column thereby producing a high pressure nitrogen overhead and a crude oxygen bottoms liquid;
(b) removing the crude oxygen bottoms liquid from the high pressure distillation column, subcooling the removed, crude oxygen bottoms liquid and feeding the subcooled, crude oxygen bottoms liquid to an intermediate location of the low pressure column for distillation;
(c) removing the high pressure nitrogen overhead from the high pressure column and dividing the removed, high pressure nitrogen overhead into a first and second portion;
(d) condensing the first portion of the high pressure nitrogen overhead in an intermediate reboiler/condenser located in the upper portion of the stripping section of the low pressure column thereby providing at least a portion of the heat duty to reboil the low pressure column;



(e) warming and dividing the second portion of the high pressure nitrogen overhead into a high pressure nitrogen product and a recycle nitrogen stream;
(f) compressing the recycle nitrogen stream and condensing it in a reboiler/condenser located in the bottom of the low pressure column thereby providing another portion of the heat duty to reboil the low pressure column;
(g) refluxing the high pressure column with at least a portion of the condensed nitrogen generated in steps (d) or (f); and
(h) removing a low pressure nitrogen stream from the top of the low pressure column, warming the removed, low pressure nitrogen stream to recover refrigeration and recovering the warmed, low pressure nitrogen stream from the process as a low pressure nitrogen product.

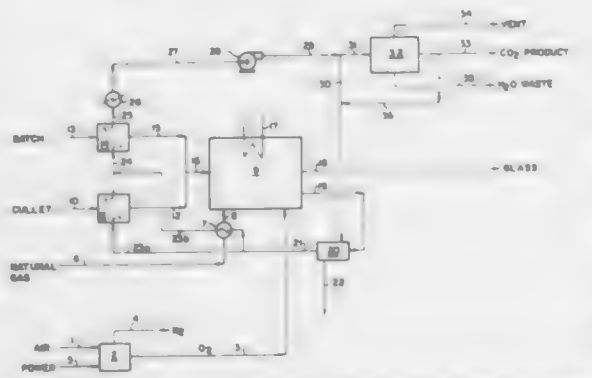
5,006,140
PROCESS FOR THE MANUFACTURE OF MINERAL FIBRE COMPOSITIONS
Juergen Loercks, Rees-Androp, and Horst Neisius, Kleve, both of Fed. Rep. of Germany, assignors to Cerestar Holding B. V., Sas Van Gent, Netherlands
Filed Dec. 14, 1989, Ser. No. 451,959
Claims priority, application United Kingdom, Dec. 16, 1988, 8829405
Int. Cl.[5] C03C *25/02*
U.S. Cl. 65—3.1 12 Claims

1. A process for the production of a mat of glass or other mineral fibre composition having heat and sound insulating properties and enhanced water resistance comprising, melting glass or other mineral, forcing the molten glass or mineral through a plurality of openings to produce fibres, spraying the hot fibres with a water dispersion of a binder comprising a gelatinized starch sulphamate product and a hydrophobic agent, depositing the fibres on a conveyer as glass wool, passing the glass wool through a drier where the fibres are dried at an elevated temperature and the wool is formed into a mat.

5,006,141
THERMALLY EFFICIENT MELTING FOR GLASS MAKING

Michael S. K. Chen, Zionsville; Corning F. Painter; Steven P. Pastore, both of Allentown; Gary Roth, Trexlertown, and David C. Winchester, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 30, 1990, Ser. No. 474,200
Int. Cl.[5] C03B *5/04*
U.S. Cl. 65—27 **12 Claims**



1. An integrated process for the production of glass utilizing combustion heat to melt glass making materials in a glassmaking furnace, comprising:

(a) heating glass making materials of batch and cullet feedstocks in a glassmaking furnace by the combustion of fuel with an oxygen-enriched oxidant stream.,

(b) removing an hot offgas from said glassmaking furnace comprising a substantially carbon dioxide-containing combustion product and feedstock volatiles and quenching the offgas using a relatively cooler process stream to condense out said volatiles;

(c) further cooling at least a portion of the offgas against the fuel fed to the glassmaking furnace and at least a portion of the glassmaking materials to the furnace;

(d) separating carbon dioxide in substantially pure form from the offgas as a product of the process by a separation selected from the group consisting of cryogenic distillation, adsorptive separation, membrane separation or combinations thereof; and

(e) recovering a refined glass as a product of the process.

5,006,142
OXYNITRIDE GLASS PRODUCTION PROCEDURE

Jerry R. Weidner; Stanley T. Schuetz, and Michael H. O'Brien, all of Idaho Falls, Id., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 28, 1990, Ser. No. 500,352
Int. Cl.[5] C03C *3/11;* **C03B** *8/04*
U.S. Cl. 65—32.5 **12 Claims**

1. A method of preparing an oxynitrite glass comprising.

mixing low-melting temperature glass with discrete particles of a nitrogen-containing compound to form a first batch,

heating the first batch, under an atmosphere of flowing nitrogen to a temperature sufficient to melt the glass but below the decomposition temperature of the nitrogen-containing compound,

maintaining the temperature for a period of time sufficient for the glass to melt, forming a first melt of molten glass containing particles of nitrogen-containing compound,

cooling the melt to form a glass containing particles of nitrogen-containing compound,

grinding the glass to form particles of nitrogen-containing compound encapsulated in low-melting temperature glass,

mixing the particles with glass-forming oxides in an amount sufficient to bring the composition of the mixture into a glass-forming region, forming a second batch,

heating the second batch, under an atmosphere of flowing nitrogen and in the presence of a buffer gas, to a temperature sufficient to melt the low-melting temperature glass and to dissolve the nitrogen-containing compound and glass-forming oxides in the molten glass to form a second melt,

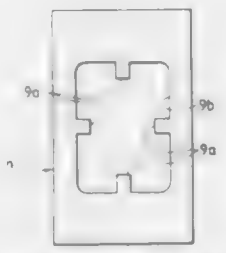
maintaining the temperature of the second melt for a period of time sufficient for the nitrogen-containing compound and the glass-forming oxides to dissolve in the molten glass to form a molten mixture and for the molten mixture to homogenize to form a homogeneous melt, and

cooling the homogeneous melt, thereby forming an oxynitrite glass.

5,006,143
METHOD OF PRODUCING A JOINED ARTICLE THROUGH BONDING WITH LOW MELTING POINT GLASS

Hideyuki Kawase; Noboru Sahashi, and Tamotsu Hashizume, assignors to NGB Spark Plug Co., Ltd., Aichi, Japan

Continuation of Ser. No. 335,325, Apr. 10, 1989, abandoned. This application Oct. 12, 1990, Ser. No. 596,414
Claims priority, application Japan, Apr. 11, 1988, 63-88547
Int. Cl.[5] C03B *29/00;* **C03C** *29/00*
U.S. Cl. 65—43 **6 Claims**



1. A method of joining two articles by means of a low-melting point glass, said method comprising the steps of:

(a) providing a first article to be joined, said first article having a first bonding surface;

(b) applying a layer of low-melting point glass to said first bonding surface, said layer having a plurality of open recesses in flow communication with the outer peripheral edge of said layer;

(c) applying a second article to said layer to a low melting point glass;

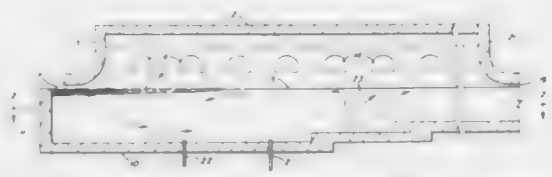
(d) heating said first and second articles and said layer of low-melting point glass to a temperature above the melting point of said glass; and

(e) solidifying said glass to join said first and second articles.

5,006,144
MELTING GLASS WITH OXIDATION CONTROL AND LOWERED EMISSIONS

Leonard A. Knavish, Plum Boro, and William C. Harrell, Sarver, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 25, 1990, Ser. No. 543,006
Int. Cl.[5] C03C *3/087;* **C03B** *5/04*
U.S. Cl. 65—134 **26 Claims**



1. A method of making glass so as to control the final valence state of multivalent ions contained in the glass, comprising:

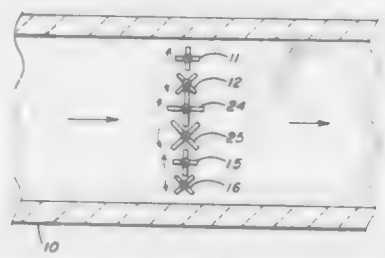
melting glass batch materials containing a source of the multivalent ion and a fining agent at an upstream zone in which redox conditions in the melting glass are maintained relatively oxidizing as measured by the ratio of ferrous iron to total iron, whereby the batch material is substantially liquefied while avoiding undue premature dissociation of the fining agent and assuring the presence of sufficient fining agent in the molten glass entering a downstream fining zone to provide adequate fining;

at a downstream zone introducing a reducing agent uniformly throughout the melt to alter the redox conditions to be more reducing as measured by an increase in the ratio of ferrous iron to total iron of at least twenty percent compared to the ratio in the upstream zone, thereby reducing solubility of the fining agent in the melt to induce dissociation of the fining agent to thereby aid in fining, and thereby controlling the final valence state of the multivalent ions in the glass product by inducing a greater proportion of the multivalent ions to be present in their lower valence state.

5,006,145
CENTER BIASED STIRRING FOR IMPROVED GLASS HOMOGENIZATION

Sheldon R. Brinker, Natrona Heights, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 26, 1990, Ser. No. 484,311
Int. Cl.[5] C03B *5/187*
U.S. Cl. 65—134 **11 Claims**



1. A method for mixing molten glass or the like in which a stream of molten glass is passed along a channel, and the molten stream is stirred by means of a row of at least five stirrers extending substantially across the channel, characterized by carrying out the stirring in the center portion of the row with stirrers having diameters at least ten percent greater than stirrers in outboard portions of the row to provide substantially greater stirring force than the stirring force used in outboard portions of the row comprised of at least two stirrers on each side of the center portion, whereby a more thorough homogenization is achieved.

5,006,146
APPARATUS FOR BENDING GLASS PLATES INTO CONVEX SHAPE

Denis Mathivat, Thourotte; Daniel Colmon, Franconville, and Daniel Philibert, Thourotte, all of France, assignors to Saint-Gobain Vitrage, Courbevoie, France

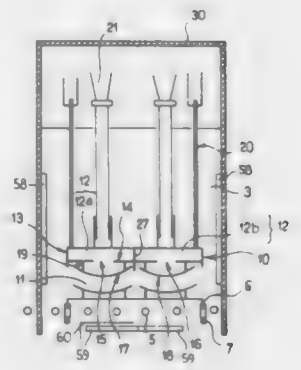
Filed Nov. 6, 1987, Ser. No. 117,513
Claims priority, application France, Nov. 6, 1986, 86 15489
Int. Cl.[5] C03B *23/023*
U.S. Cl. 65—273 **10 Claims**

1. An apparatus for bending or shaping glass plates, comprising:

a reheating furnace,

a means for conveying said glass plates, said means comprising longitudinally sequential separable sections, said conveying means passing through said furnace and through

a cell for bending or shaping said glass plates downstream of said furnace, said cell comprising a series of stations for bending or transferring one of said glass sheets at any given time, said stations comprising a common upper unit above said conveyor for lifting said glass plates off said conveyor, each said station further comprising a means for temporarily retaining one of said glass plates mounted on said common upper unit, each said station further comprising a lower unit that comprises a means for receiving said one glass plate from said temporary retaining means, each said temporary retaining means being provided with separate vacuum means for retaining one of said glass plates, each said vacuum means being capable of operation independent of the remaining vacuum means connected to said common upper unit.

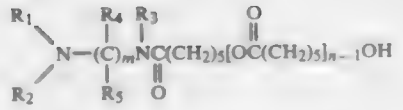


5,006,147
BIODEGRADABLE BARRIER FILMS OF IONOMER POLYMER

Warren A. Thaler, Flemington; Pacifico V. Manalastas, Edison; Evelyn N. Drake, Lebanon, and Robert D. Lundberg, Bridgewater, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 131,583, Dec. 11, 1987, which is a continuation-in-part of Ser. No. 883,533, Jul. 9, 1986, Pat. No. 4,741,956. This application Jul. 17, 1989, Ser. No. 380,940
The portion of the term of this patent subsequent to May 3, 2005, has been disclaimed.
Int. Cl.[5] C05G *3/00*
U.S. Cl. 71—27 **4 Claims**

1. An encapsulated water soluble fertilizer which comprises a polymeric film of about 2 to about 100 micrometers coated on a surface of said fertilizer, said polymeric film comprising a sulfonated polymer having about 10 to about 200 meq of sulfonate groups per 100 grams of said sulfonated polymer, said sulfonate groups being neutralized with a polycaprolactone polymer being characterized by the formula



wherein R_1 or R_2 is an alkyl, cycloalkyl or aryl group; R_3, R_4 and R_5 are a hydrogen or alkyl, cycloalkyl, or aryl groups; m equals 1 to 20 and n equals 1 to 500.

5,006,148

N-ARYL-SUBSTITUTED NITROGEN-CONTAINING HETEROCYCLES, AND THEIR USE AS HERBICIDES AND PLANT GROWTH REGULATORS

Reiner Fischer, Monheim; Uta Jensen-Korte, Duesseldorf; Franz Kunisch, Odenthal-Gloebusch; Albrecht Marhold, Leverkusen; Pieter Ooms, Krefeld; Otto Schallner, Monheim; Hans-Joachim Santel, Leverkusen; Robert R. Schmidt, Bergisch-Gladbach; Birgit Krauskopf, Bergisch-Gladbach, and Harry Strang, Duesseldorf, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

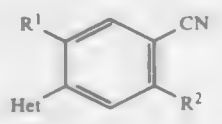
Filed Nov. 13, 1989, Ser. No. 435,898

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1988, 3839480

Int. Cl.[5] A01N *43/56;* **C07D** *231/22*

U.S. Cl. 71—72 **7 Claims**

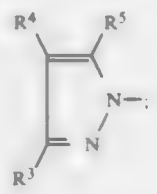
1. An N-Aryl-substituted nitrogen-containing heterocycle of the general formula (I)



(I)

in which

Het represents a heterocycle of the formula



R^1 represents hydrogen or alkyl, and

R^2 represents a radical —X—R^9,

where

R^3 represents hydrogen or alkyl, and

R^4 represents halogen,

R^5 represents hydrogen or alkyl

R^9 represents an alkoxy-carbonylalkyl and

X represents oxygen or sulphur.

6. A method for regulating the growth of plants which comprises applying to such plants or to a locus in which such plants are grown or to be grown a plant growth regulating effective amount of a compound according to claim 1.

5,006,149

METHOD AND COMPOSITION FOR THE TREATMENT OF FIELD PLANT SEEDS

László Kiss, Petőháza; Gyula Justus, Székesfehérvár; József Zsuppán, Abë , and Tibor Knollmár, Budapest, all of Hungary, assignors to Szekszárdi Állami Gazdaság KSZE Növénytermelési Rendszer, Szekszárd, Hungary

Continuation of Ser. No. 333,881, Mar. 31, 1989, abandoned, which is a continuation of Ser. No. 226,567, Aug. 1, 1988, abandoned, which is a continuation of Ser. No. 930,969, Nov. 13, 1986, abandoned, which is a continuation of Ser. No. 701,437, Feb. 12, 1985, abandoned, which is a continuation of Ser. No. 462,633, Jan. 31, 1983, abandoned, which is a continuation of Ser. No. 271,525, Jun. 8, 1981, abandoned. This application Feb. 27, 1990, Ser. No. 528,399

Int. Cl.[5] A01N *43/08, 54/00*

U.S. Cl. 71—81 **7 Claims**

1. A process for the treatment of sowing seeds of field plants selected from the group consisting of wheat, corn, sunflower, sugar beet and alfalfa, to improve the biological properties of the plants, comprising the step of treating the seeds prior to sowing and germination with 2–25% by volume calculated for the volume of the seed of a neutral or nearly neutral aqueous solution of the composition containing gibberelline derivatives GA_3, GA_7 or a mixture thereof, potassium in the form of potassium hydrocarbonate or potassium hydroxide and boron in the form of boric acid, in a concentration of 5–100 $\mu g/cm^3$.

5,006,150

SUBSTITUTED HETEROCYCLOHEXANE-3,5-DIONES

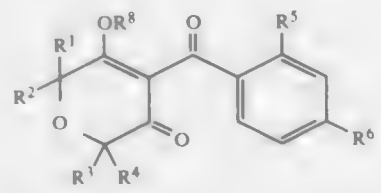
Shy-Fuh Lee, Sunnyvale; Richard J. Anderson, Palo Alto; Gary W. Luehr, Sacramento, and Carole R. Scott, Newark, all of Calif., assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 360,551, Jun. 1, 1989, abandoned, which is a continuation-in-part of Ser. No. 185,566, Apr. 25, 1988, abandoned, which is a continuation-in-part of Ser. No. 156,269, Feb. 12, 1988, abandoned, which is a continuation-in-part of Ser. No. 58,443, Jun. 5, 1987, abandoned. This application May 29, 1990, Ser. No. 530,487

Int. Cl.[5] A01N *43/00;* **C07D** *309/10, 309/22*

U.S. Cl. 71—88 **7 Claims**

1. A compound of formula I



(I)

wherein

R^1 and R^3 are both methyl or both hydrogen;

R^2 and R^4 are both methyl;

R^5 is nitro and R^6 is fluoro, chloro, bromo or SR^{12};

R^{12} is C_{1-4}alkyl; and

R^8 is hydrogen, methyl, C_{1-4}alkylcarbonyl or benzoyl.

6. An herbicidal composition comprising an herbicidally effective amount of a compound of formula I according to claim 1 in association with suitable diluents and additives.

5,006,151

SUBSTITUTED OXIRANE COMPOUNDS

R. Garth Pews, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 716,861, Mar. 27, 1985, Pat. No. 4,929,268. This application Jan. 12, 1990, Ser. No. 464,253

The portion of the term of this patent subsequent to May 29, 2007, has been disclaimed.

Int. Cl.[5] A01N *43/00;* **C07D** *303/08*

U.S. Cl. 71—88 **9 Claims**

1. A compound selected from the group consisting of (2,2-dichloro-3-(2-(3,5-dichlorophenyl)oxiranyl)-1-oxopropyl)carbamic acid, ethyl ester and α,α-dichloro-2-(3,5-dichlorophenyl)-N-methyl-N-((methylamino)carbonyl)oxirane-propanamide.

5,006,152

AZOLYLMETHYLCYCLOPROPANES AND THEIR USE AS CROP PROTECTION AGENTS

Rainer Seele; Reiner Kober, both of Fussgoenheim; Stefan Karbach, Neustadt; Hubert Sauter, Mannheim; Eberhard Ammermann, Ludwigshafen; Gisela Lorenz, Neustadt; Wilhelm Rademacher, and Johann Jung, both of Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

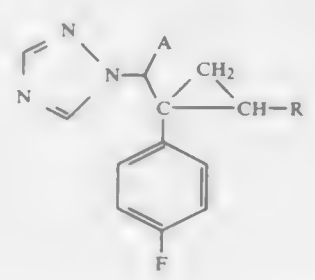
Filed Sep. 19, 1989, Ser. No. 409,310

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1988, 3834437

Int. Cl.[5] A01N *43/653;* **C07D** *249/08*

U.S. Cl. 71—92 **16 Claims**

1. An azolylmethylcyclopropane of the formula:



wherein R is a C_3–C_8-cycloalkyl, C_5–C_8-cycloalkenyl, tetrahydropyranyl or norbornyl group or said R group monosubstituted, disubstituted or trisubstituted by halogen, nitro, phenoxy, amino, C_{1-4} alkyl, C_{1-4} alkoxy or C_{1-4} haloalkyl, A is H, F, Cl or Br and their plant-tolerated acid addition salts and metal complexes.

5,006,153

AZOLE DERIVATIVES OF NAPHTHALENONE OXIME ETHERS

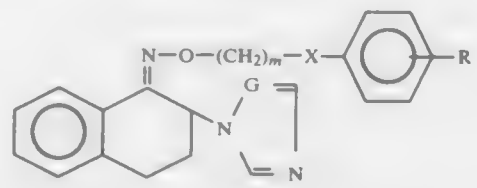
Hoi K. Lai, Guelph, Canada; Robert A. Davis, and Allen R. Blem, both of Cheshire, Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn. and Uniroyal Chemical Ltd./Ltee., Don Mills, Canada

Filed Nov. 29, 1989, Ser. No. 443,294

Int. Cl.[5] A01N *43/50;* **C07D** *233/60*

U.S. Cl. 71—92 **8 Claims**

1. A compound having the structural formula (I)



(I)

in which:

R is a substituent or group of substituents selected from the group consisting of halogen, lower alkyl of 1 to 6 carbon atoms, phenyl, phenoxy, naphthyl, nitro, cyano, lower alkoxy, lower alkoxycarbonyl, or trifluoromethyl;

X is a single bond, oxygen, sulfur or sulfonyl;

G is CH; and

m is an integer from 1 to 4.

5,006,154

METHOD OF SYNCHRONIZING FLOWERING IN PLANTS

Stuart L. Kaplan, and John R. Goss, both of Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 24, 1986, Ser. No. 889,532

Int. Cl.[5] A01N *43/60, 43/08*

U.S. Cl. 71—92 **27 Claims**

1. A method for synchronizing the flowering of two genotypes of a species of a plant that is to be used in cross-breeding, which genotypes do not naturally flower at the same time after emergence from the soil, that method comprising providing in the soil in which the genotype that naturally flowers earlier is to be grown, or is growing, up to the stage of its development just prior to when anthesis begins, a chemical that is absorbed into the vascular system of a plant from its soil rhizosphere via the underground parts of the plant, and that inhibits biosynthesis of gibberellic acid(s) in the plant by inhibiting oxidation of kaurene to kaurenoic acid, the amount of said chemical being sufficient to delay the time of flowering of that genotype sufficiently to synchronize its flowering with the flowering of the later-flowering genotype.

5,006,155

PYRIDINE DERIVATIVES AND THEIR USE AS HERBICIDES

Joachim Rheinheimer, 24 Merziger Strasse, 6700 Ludwigshafen; Karl Eicken, 12 Am Huettenwingert, 6706 Wachenheim; Peter Plath, 13 Hans-Blacke-Strasse, 6710 Frankenthal; Karl-Otto Westphalen, 58 Mausbergweg, 6720 Speyer, and Bruno Wuerzer, 13 Ruedigerstrasse, 6701 Otterstadt, all of Fed. Rep. of Germany

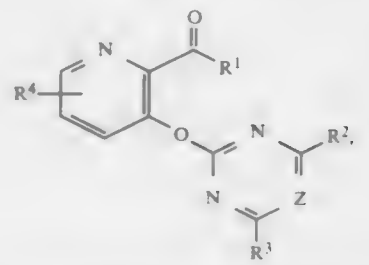
Filed Nov. 14, 1989, Ser. No. 435,671

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1988, 3841432

Int. Cl.[5] C07D *239/34, 251/26, 401/12;* **A01N** *43/66*

U.S. Cl. 71—92 **7 Claims**

1. A pyridine derivative of the formula I



(I)

where R^1 is C_3–C_{20}-alkylideneaminoxy which is unsubstituted or monsubstituted or disubstituted by C_1–C_3-alkoxy, C_1–C_3-alkylthio or phenyl, C_3–C_{15}-cycloalkylideneaminoxy which is unsubstituted or monosubstituted or disubstituted by methyl, R^2 and R^3 are each C_1–C_5-alkyl, C_1–C_5-haloalkyl, C_1–C_5-alkoxy or C_1–C_4-alkylthio, R^4 is hydrogen, halogen, C_1–C_6-alkyl, C_1–C_6-haloalkyl, or C_1–C_5-alkoxy, and Z is nitrogen or the methine group.

5,006,156

HERBICIDAL SULFONYLAMINOAZINES

Ernst R. Gesing, Erkrath-Hochdahl; Hans-Joachim Santel, Leverkusen; Robert R. Schmidt, Bergisch Gladbach, and Harry Strang, Duesseldorf, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

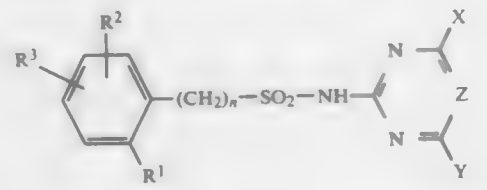
Filed Nov. 20, 1989, Ser. No. 439,714

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1988, 3841086

Int. Cl.[5] **C07D** *403/04, 251/46;* **A01N** *43/66, 43/68*

U.S. Cl. 71—93 **11 Claims**

1. A sulphonylaminoazine of the formula



(I)

in which

R^1 represents halogen, cyano, nitro, C_1–C_2-alkyl, C_1–C_2-halogenoalkyl, C_1–C_2-alkoxy, C_1–C_2-halogenoalkoxy, C_1–C_2-alkylthio, C_1–C_2-halogenoalkylthio, C_1–C_2-alkylsulphinyl, C_1–C_2-halogenoalkylsulphinyl, C_1–C_2-alkylsulphonyl, C_1–C_2-halogenoalkylsulphonyl, C_1–C_2-alkoxy-C–C_2-alkoxy, di-(C_1–C_2-alkylamino)-sulphonyl, N-(C_1–C_2-alkoxy)-N-(C_1–C_2-alkyl)-aminosulphonyl or C_1–C_2-alkoxy-carbonyl,

R^2 and R^3 independently of one another represent hydrogen, halogen, alkyl or halogenoalkyl,

n represents the numbers 0 or 1,

X represents hydrogen, C_1–C_2-alkyl, C_1–C_2-halogenoalkyl, C_1–C_2-alkoxy-C_1–C_2-alkyl, cyclopropyl, C_1–C_2-alkoxy, C_1–C_2-halogenoalkoxy, C_1–C_2-alkoxy-C_1–C_2-alkoxy, C_1–C_2-alkylthio, C_1–C_2-alkylamino or di-(C_1–C_2-alkyl)-amino, and

Y represents halogen, C_1–C_2-alkyl, C_1–C_2-halogenoalkyl, cyclopropyl, C_2–C_2-alkoxy, C_1–C_2-halogenoalkoxy or C_1–C_2-alkylthio,

or a salt thereof.

9. A method of combating unwanted vegetation which comprises applying thereto or to a locus from which it is desired to exclude such vegetation a herbicidally effective amount of a compound according to claim 1.

5,006,157

PYRROLIN-2-ONE COMPOUNDS WHICH ARE USEFUL AS HERBICIDES

Nobuyuki Obba, Iwata; Atsuhiko Ikeda, Shizuoka; Kenji Matsunari, Fujieda; Yuji Yamada; Michiya Hirata, both of Shizuoka; Yasuo Nakamura, Tokyo; Akira Takeuchi, Kakegawa, and Hiroyuki Karino, Shizuoka, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd. and Ihara Chemical Industry Co., Ltd., both of Tokyo, Japan

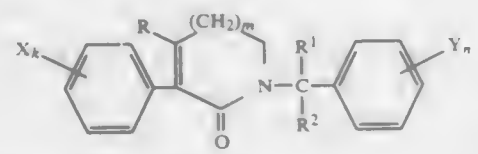
Filed Nov. 28, 1989, Ser. No. 442,735

Claims priority, application Japan, Dec. 9, 1988, 63-311635; Oct. 12, 1989, 64-265900

Int. Cl.[5] **C07D** *207/20;* **A01N** *43/36*

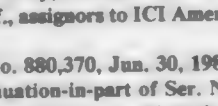
U.S. Cl. 71—95 **17 Claims**

1. A cyclic amide compound of the formula

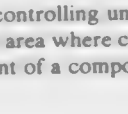


wherein X is a hydrogen atom, a halogen atom, a C_1–C_4 alkyl group, a C_1–C_4 haloalkyl group, a C_1–C_4 alkoxy group, a C_1–C_4 haloalkoxy group, a C_1–C_4 alkylthio group or a nitro group;

Y is a hydrogen atom, a halogen atom, C_1–C_8 alkyl group, a C_3–C_6 cycloalkyl group, a C_2–C_8 alkenyl group, a C_2–C_8 alkynyl group, a C_1–C_8 haloalkyl group, a phenyl group, a C_1–C_8 alkoxy group, a C_3–C_6 cycloalkoxy group, a C_3–C_6 cycloalkyl–C_1–C_8 alkoxy group, a C_3–C_8 alkenyloxy group, a C_3–C_8 alkynyloxy group, a benzyloxy group, a phenoxy group, a C_1–C_8 haloalkoxy group, a C_1–C_4 alkoxy–C_1–C_4 alkoxy group, a C_1–C_4 cyanoalkoxy group, a C_1–C_8 alkylthio group, a C_1–C_8 haloalkylthio group, a C_3–C_8 alkenylthio group, a C_3–C_8 alkynylthio group, a benzylthio group, a phenylthio group,



(wherein W is an oxygen atom or a sulfur atom, R^3 is a hydrogen atom or a C_1–C_4 alkyl group and R^4 is a C_1–C_4 alkyl group),



(wherein each of R^5 and R^6 is a hydrogen atom or a C_1–C_4 alkyl group), a methanesulfonyl group,



(wherein R^5 and R^6 are as defined above), a C_1–C_4 alkyl carbonyl group, a C_1–C_4 alkoxy carbonyl group, a hydroxy carbonyl group, a nitro group, a cyano group or a hydroxyl group;

R is a hydrogen atom or a C_1–C_4 alkyl group;

each of R^1 and R^2 is independently a C_1–C_4 alkyl group, or R^1 and R^2 together with the adjacent carbon atom form a C_3 ring;

m is zero;

n is an integer of from 1 to 5; and

k is an integer of 1 or 2.

17. A method for killing weeds which comprises applying a herbicidally effective amount of a cyclic amide compound of the formula I as defined in claim 1, to crops to be protected.

5,006,158

CERTAIN 2-(2-SUBSTITUTED BENZOYL)-1,3-CYCLOHEXANEDIONES

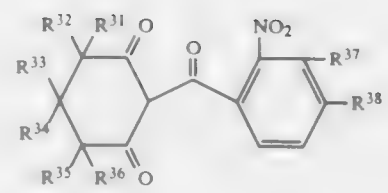
Charles G. Carter, San Francisco; David L. Lee, Martinez; William J. Michaely, Richmond, and Gary W. Kraatz, San Jose, all of Calif., assignors to ICI Americas Inc., Wilmington, Del.

Division of Ser. No. 880,370, Jun. 30, 1986, Pat. No. 4,780,127, which is a continuation-in-part of Ser. No. 802,135, Nov. 29, 1985, abandoned, which is a continuation-in-part of Ser. No. 683,900, Dec. 20, 1984, abandoned. This application Feb. 23, 1988, Ser. No. 128,128

Int. Cl.[5] **A01N** *37/34, 33/32;* **C07C** *255/50, 205/06*

U.S. Cl. 71—98 **69 Claims**

26. The method of controlling undesirable vegetation comprising applying to the area where control is desired, an herbicidally effective amount of a compound having the structural formula



wherein

R^{31} is hydrogen or C_1–C_4 alkyl;

R^{32} is hydrogen or C_1–C_4 alkyl; or

R^{31} and R^{32} together are alkylene having 3 to 6 carbon atoms;

R^{33} is hydrogen or C_1–C_4 alkyl;

R^{34} is hydrogen or C_1–C_4 alkyl;

R^{35} is hydrogen or C_1–C_4 alkyl;

R^{36} is hydrogen or C_1–C_4 alkyl; and

R^{37} is hydrogen or 3-C_1–C_4 alkoxy; and

R^{38} is (1) hydrogen; (2) halogen; (3) C_1–C_4 alkyl; (4) C_1–C_4 alkoxy; (5) trifluoromethoxy; (6) cyano; (7) nitro; (8) C_1–C_4 haloalkyl; (9) R^bSO_n— wherein n is the integer 0, 1 or 2; and R^b is (a) C_1–C_4 alkyl; (b) C_1–C_4 alkyl substituted with halogen or cyano; (c) phenyl; or (d) benzyl; (10) —NR^cR^d wherein R^c and R^d independently are hydrogen or C_1–C_4 alkyl; (11) $R^eC(O)$— wherein R^e is C_1–C_4 alkyl or C_1–C_4 alkoxy; or (12) $SO_2NR^cR^d$ wherein R^c and R^d are as defined, or its herbicidally effective salts.

5,006,159

SUBSTITUTED CYCLOHEXANEDIONES AND THEIR HERBICIDAL USES

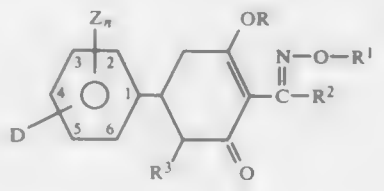
Lowell D. Markley; Christopher T. Hamilton, both of Midland, Mich.; Beth A. Swisher, Fairfield, Calif., and Jacob Secor, Midland, Mich., assignors to DowElanco, Indianapolis, Ind.

Filed Mar. 30, 1990, Ser. No. 503,199

Int. Cl.[5] **A01N** *31/06*

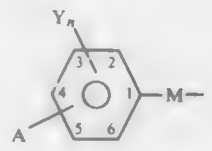
U.S. Cl. 71—98 **18 Claims**

1. Substituted cyclohexanedione compounds corresponding to the formula



Wherein

D is a group corresponding to the formula, with



the proviso that D is only attached in the 3 or 4 ring position;

A represents C_1–C_4 alkylthio, C_1–C_4 alkylsulfinyl or C_1–C_4 alkylsulfonyl, with the proviso that A is only attached in the 3 or 4 ring position:

R represents hydrogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_2–C_4 alkenyl, C_3–C_4 alkynyl, C_1–C_4 alkylsulfonyl, phenylsulfonyl or acyl:

R^1 represents C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_2–C_4 alkenyl, C_2–C_4 haloalkenyl, C_3–C_4 alkynyl, or C_3–C_4 haloalkynyl:

R^2 represents C_1–C_4 alkyl, C_1–C_4 fluoroalkyl, C_2–C_4 alkenyl, C_3–C_4 alkynyl or phenyl:

R^3 represents hydrogen, halo, C_1–C_4 alkyl, cyano, or C_1–C_4 alkoxycarbonyl:

Y represents hydrogen, halo, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, C_1–C_4 alkylsulfinyl or C_1–C_4 alkylsulfonyl or —CF_3, with the proviso that when M is =S(O), Y cannot be C_1–C_4 alkylthio and when M is $=S(O)_2$, Y cannot be C_1–C_4 alkylthio or C_1–C_4 alkylsulfinyl:

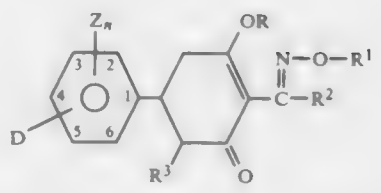
M represents =O, =S, =S(O) or $=S(O)_2$;

Z represents hydrogen, halo, C_1–C_4 alkyl, C_1–C_4 alkoxy or —CF_3; and

n represents the integer 1, 2 or 3;

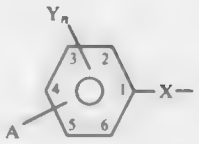
and the herbicidally acceptable organic and inorganic salts thereof.

13. A method for the kill or control of grassy weeds which comprises contacting said weeds or their habitat with a herbicidally effective amount of a composition which comprises an inert carrier in intimate admixture with a herbicidally active ingredient which is a substituted cyclohexanedione compound corresponding to the formula



Wherein

D is a group corresponding to the formula, with



the proviso that D is attached only in the 3 or 4 ring position:

A represents C_1–C_4 alkylthio, C_1–C_4 alkylsulfinyl or C_1–C_4 alkylsulfonyl, with the proviso that A is attached only in the 3 or 4 ring position:

R represents hydrogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_2–C_4 alkenyl, C_3–C_4 alkynyl, C_1–C_4 alkylsulfonyl, phenylsulfonyl or acyl:

R^1 represents C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_2–C_4 alkenyl, C_2–C_4 haloalkenyl, C_3–C_4 alkynyl, or C_3–C_4 haloalkynyl:

R^2 represents C_1–C_4 alkyl, C_1–C_4 fluoroalkyl, C_2–C_4 alkenyl, C_3–C_4 alkynyl or phenyl:

R^3 represents hydrogen, halo, C_1–C_4 alkyl, cyano, or C_1–C_4 alkoxycarbonyl:

Y represents hydrogen, halo, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, C_1–C_4 alkylsulfinyl or C_1–C_4 alkylsulfonyl or —CF_3, with the proviso that when M is =S(O), Y cannot be C_1–C_4 alkylthio and when M is $=S(O)_2$, Y cannot be C_1–C_4 alkylthio or C_1–C_4 alkylsulfinyl;

X represents =O, =S, =S(O) or $=S(O)_2$;

Z represents hydrogen, halo, C_1–C_4 alkyl, C_1–C_4 alkoxy or —CF_3; and

n represents the integer 1, 2 or 3:

and the herbicidally acceptable organic and inorganic salts thereof.

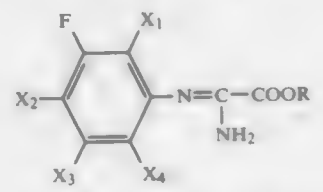
5,006,160

IMINO[(3-HALOGENOPHENYL)AMINO]ACETIC ACID DERIVATIVES AND HERBICIDES CONTAINING SAME

Yuichi Sugiyama; Takashi Isono; Yukihiro Nakamura; Akihiro Takaiwa, and Kenichi Komatsubara, all of Tokyo, Japan, assignors to SDS Biotech Kabushiki Kaisha, Japan

Filed Jul. 5, 1989, Ser. No. 375,587
Claims priority, application Japan, Jul. 6, 1988, 63-166798; Jul. 7, 1988, 63-167717
Int. Cl.[5] A01N *37/10*
U.S. Cl. 71—111 6 Claims

3. A herbicide containing as its active ingredient a compound represented by the following general formula



[I]

wherein X_1, X_2, X_3 and X_4 are each hydrogen, halogen or methyl, and R is hydrogen or a lower alkyl.

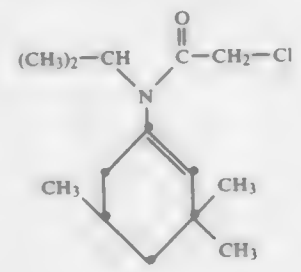
5,006,161

HERBICIDAL COMPOSITION

Hans W. Hässlin, Grenzach-Wyhlen, and Wolfgang P. Iwanzik, Sissein, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 1, 1988, Ser. No. 162,534
Claims priority, application Switzerland, Mar. 6, 1987, 849/87
Int. Cl.[5] A01N *37/18, 25/28*
U.S. Cl. 71—118 12 Claims

1. A herbicidal composition which comprises an aqueous suspension of microcapsules having a capsule wall of polyurea and encapsulating a herbicidally active N-chloroacetylcyclohexeneamine of the formula I



(I)

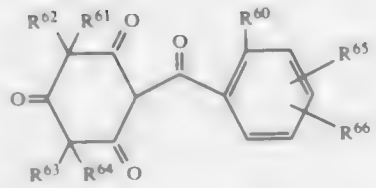
5,006,162

CERTAIN 2-(2-SUBSTITUTED BENZOYL)-1,3,5-CYCLOHEXANETRIONES

Charles G. Carter, Silver Spring, Md., assignor to ICI Americas Inc., Wilmington, Del.

Division of Ser. No. 126,449, Nov. 30, 1987, Pat. No. 4,797,150, which is a continuation-in-part of Ser. No. 110,988, Oct. 21, 1987, abandoned, which is a division of Ser. No. 880,370, Jun. 30, 1987, Pat. No. 4,780,127, which is a continuation-in-part of Ser. No. 872,067, Jun. 9, 1986, abandoned. This application Oct. 11, 1988, Ser. No. 255,293
Int. Cl.[5] A01N *35/06*
U.S. Cl. 71—123 17 Claims

1. The method of controlling undesirable vegetation comprising applying to the area where control is desired, an herbicidally effective amount of a compound having the formula



wherein

R^{60} is hydrogen; halogen; C_1–C_2 alkyl; C_1–C_2 alkoxy; nitro; cyano; C_1–C_2 haloalkyl; or R^aSO_n— wherein n is 0 or 2 and R^a is C_1–C_2 alkyl, trifluoromethyl or difluoromethyl; or trifluoromethoxy or difluoromethoxy;

R^{61} is hydrogen or C_1–C_4 alkyl;

R^{62} is hydrogen or C_1–C_4 alkyl; or

R^{61} and R^{62} together are C_2–C_5 alkylene;

R^{63} is C_1–C_4 alkyl;

R^{64} is C_1–C_4 alkyl; or

R^{63} and R^{64} together are C_2–C_5 alkylene;

R^{65} and R^{66} independently are (1) hydrogen; (2) halogen; (3) C_1–C_4 alkyl; (4) C_1–C_4 alkoxy; (5) trifluoromethoxy; (6) cyano; (7) nitro; (8) C_1–C_4 haloalkyl; (9) R^bSO_n— wherein n is the integer 0, 1 or 2; and R^b is (a) C_1–C_4 alkyl; (b) C_1–C_4 alkyl substituted with halogen or cyano; (c) phenyl; or (d) benzyl; (10) —NR^cR^d wherein R^c and R^d independently are hydrogen or C_1–C_4 alkyl; (11) $R^eC(O)$— wherein R^e is C_1–C_4 alkyl or C_1–C_4 alkoxy; or (12) —$SO_2NR^cR^d$ wherein R^c and R^d are as defined; and (13) —$N(R^c)C(O)R^d$ wherein R^c and R^d are as defined and their salts.

5,006,163

TURBINE BLADE SUPERALLOY II

Raymond C. Benn, Huntington, W. Va.; Jeffrey M. Davidson, Summit, N.J., and Kenneth R. Andryszak, Goshen, N.Y., assignors to Inco Alloys International, Inc., Huntington, W. Va.

Continuation of Ser. No. 711,199, Mar. 13, 1985. This application May 8, 1989, Ser. No. 348,383
Int. Cl.[5] B22F *1/00*
U.S. Cl. 75—229 2 Claims



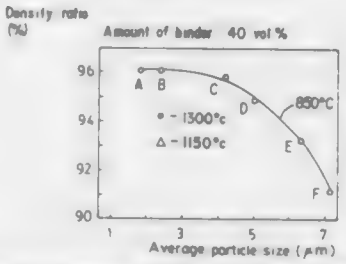
1. A zone-annealed recrystallized alloy body especially useful in hot stages of industrial gas turbines having improved resistance to long term stress at temperatures in the range 800° to 1100° C. combined with enhanced oxidation and corrosion resistance comprising, in at least part, an aggregation of elongated, essentially parallel metallic crystals having grain boundaries therebetween wherein the average grain aspect ratio of said metallic crystals is at least about 7, said metallic crystals (1) having a γ′ phase dispersed therein at a temperature lower than about 1180° C. and (2) having dispersed therethrough particles in the range of about 5 to 500 nanometers in major dimension of a stable yttrium-containing oxidic phase, said metallic crystals and grain boundary material consisting essentially in weight percent of about 19 to about 21% chromium, about 6 to about 7% aluminum, up to about 1% titanium, up to about 4% tantalum, up to about 2% niobium about 1.5 to 2.5% molybdenum, about 3 to about 4.5% tungsten, up to about 10% cobalt, up to about 2% hafnium, about 0.4 to about 1% oxygen, about 0.4 to about 1% yttrium, up to about 0.2% carbon, up to about 0.05% boron, up to about 0.5% zirconium, up to about 2% iron, up to about 0.5% nitrogen, up to about 4% rhenium in replacement of an equal percentage of molybdenum or tungsten, the balance, except for impurities being essentially nickel.

5,006,164

STARTING MATERIAL FOR INJECTION MOLDING OF METAL POWDER

Yoshisato Kiyota, Chiba, Japan, assignor to Kawasaki Steel Corporation, Japan

Continuation-in-part of Ser. No. 342,795, Apr. 25, 1989, abandoned, which is a division of Ser. No. 282,489, Dec. 12, 1988, Pat. No. 4,867,943. This application Feb. 26, 1990, Ser. No. 484,531
Claims priority, application Japan, Dec. 14, 1987, 62-314271
Int. Cl.[5] B22F *1/00*
U.S. Cl. 75—255 6 Claims



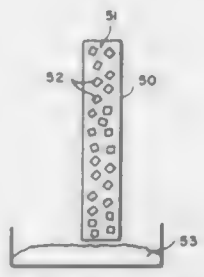
1. A starting material for injection molding of a metal powder, which provides a sintered part having a density ratio of higher than 94% by sintering at a temperature lower than an A_3 transformation point, comprising from 38 to 46% by volume of an organic binder and the balance of a spherical iron powder with an average particle size from 2 to 6 μm wherein the value of said average particle size (μm) does not exceed the value of $\{25 - \frac{1}{2}\}$.

5,006,165

METHOD FOR MERCURY REFINEMENT

Mark W. Grossman, Belmont; Richard Speer, Reading, and William A. George, Rockport, all of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Dec. 23, 1988, Ser. No. 289,640
Int. Cl.[5] C22B *43/00*
U.S. Cl. 75—407 5 Claims



1. A process for the purification of the effluent formed in a photochemical enrichment reactor during the operation thereof for the photochemical isotope enrichment of mercury for the production of the ^{196}Hg isotope, which comprises separating the effluent, which contains both ^{196}Hg and one or more of the particulate mercury compounds selected from the group consisting of Hg_2Cl_2 and HgO, by mechanical means.

5,006,166

RECOVERY OF NOBLE METALS

David J. Gulliver, Hull, England, assignor to BP Chemicals Limited, London, England

Filed Oct. 20, 1988, Ser. No. 260,193
Claims priority, application United Kingdom, Oct. 24, 1987, 8724972
Int. Cl.[5] B01J *80/11;* C01G *55/00*
U.S. Cl. 75—413 11 Claims

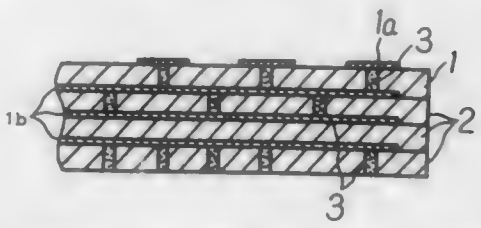
1. A process for recovering a Group VIII noble metal from a mixture consisting essentially of the Group VIII noble metal, tar and methyl iodide which comprises the steps of (a) preparing a mixture consisting essentially of the Group VIII noble metal, tar and methyl iodide, (b) feeding the mixture into a vessel, (c) isolating the inside of the vessel from the outside, (d) heating the vessel and its contents to a temperature in excess of 50° C., (e) removing a mixture consisting essentially of tar and methyl iodide from the vessel and (f) removing the Group VIII metal in solid form from the vessel.

5,006,167

METALLIZING COMPOSITION

Asao Morikawa, and Kazuo Kondo, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Jan. 25, 1989, Ser. No. 301,291
Claims priority, application Japan, Jan. 25, 1988, 63-12670
Int. Cl.[5] C23C *30/00*
U.S. Cl. 106—1.18 9 Claims



1. A metallizing composition that comprises 100 parts by weight of Au powder, from 2 to 7 parts by weight of CuO powder, from 0.3 to 2 parts by weight of a glass-based inorganic powder free from PbO, and from 3 to 8 parts by weight of a resin.

5,006,168

WATER SOLUBLE POLYMERS AS ALCOHOL REPLACEMENT IN LITHOGRAPHIC FOUNTAIN SOLUTIONS

Jashawant J. Modi, and Bruce E. Banyai, both of Hockessin, Del., assignors to Aqualon Company, Wilmington, Del.

Filed Apr. 3, 1989, Ser. No. 331,741
Int. Cl.[5] C09K *3/18*
U.S. Cl. 106—2 9 Claims

1. An improved lithographic printing fountain solution comprising:

(a) an aqueous solution of a oxidatively degraded hydroxypropylcellulose or oxidatively degraded hydrophobically modified hydroxyethyl cellulose with a molecular weight between 5,000 and 100,000 wherein a 30% by weight solution has a viscosity below 4000 cps at 25° C.;

(b) a desensitizing agent;

(c) an acid and a buffer; and

(d) a wetting agent or surfactant;

where the aqueous solution is used in an amount of about 1% by weight of the weight of the fountain solution.

5,006,169

LIPOPHOBICATING SOLUTION FOR ELECTROPHOTOGRAPHIC PLATES FOR OFFSET PRINTING

Hajime Yoshida, Nagoya, Japan, assignor to Nikken Chemical Laboratory Co., Ltd., Nagoya, Japan

Division of Ser. No. 268,948, Nov. 8, 1988, Pat. No. 4,954,173. This application Jun. 11, 1990, Ser. No. 536,495
Claims priority, application Japan, Nov. 19, 1987, 62-292630
Int. Cl.[5] C09K *3/00;* B41M *5/25*
U.S. Cl. 106—2 11 Claims

1. In a method for offset printing with an electrophotographic plate, the improvement comprising using a lithophobicating solution comprising:

(a) an effective amount of phytic acid to prevent oily print-

ing ink from sticking to nonimage areas of the surface of said electrophotographic plate,

(b) an amount of a diamine, having the general formula NH_2—R—NH_2 wherein R is an alkyl or aryl group having from 2 to 8 carbon atoms, effective to adjust the pH of said lipophobicating solution to a value in the range of from about 3.0 to about 6.0,

(c) at least about 60 mol% by weight, based on said phytic acid, of a mixture of at least two dicarboxylic acids selected from the group consisting of dicarboxyic acids represented by the formula HOOC—$(CH_2)_n$—COOH (wherein n is an integer in the range from 1 to 6) and phthalic acid, and

(d) water.

5,006,170

HOT MELT INK COMPOSITIONS

William M. Schwarz, Webster, N.Y.; Robert H. Marchessault, Montreal; Lupu Alexandru, Toronto, both of Canada, and Bernard Heurisset, Grenoble, France, assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 22, 1989, Ser. No. 369,797

Int. Cl.[5] C09D *11/00*

U.S. Cl. 106—20 **39 Claims**

1. A hot melt ink composition which comprises a colorant, a binder, and a propellant selected from the group consisting of hydrazine; cyclic amines; ureas; aldehydes; ketones; biphenyl; hexane; benzene; phenols; amides; imides; halocarbons; urethanes; ethers; sulfones; sulfamides; methyl sulfonamide; phosphites; phosphonates; alkyl sulfides; alkyl acetates; and sulfur dioxide, said ink being a solid at room temperature.

5,006,171

INK ERADICATOR FOR INKS CONTAINING TRIARYL METHANE DYESTUFFS

Norbert Mecke, Hanover, and Albert Schmedes, Pattensen, both of Fed. Rep. of Germany, assignors to Pelikan Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Dec. 19, 1989, Ser. No. 454,778

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1988, 3842774

Int. Cl.[5] C09D *11/00, 13/00;* **C08C** *3/00;* **B05D** *3/10*

U.S. Cl. 106—21 **20 Claims**

1. An aqueous ink eradicator solution for decoloring a triarylmethane dyestuff ink on a substrate, comprising:

(a) substantially 2 to 50 wt % of a sugar component selected from the group consisting of at least one sugar, at least one solid sugar alcohol and mixtures thereof; and

(b) substantially 0.1 to 5 wt % of a reducing sulfur component consisting of at least one reducing sulfur compound.

5,006,172

INK-JET INKS FOR THE MARKING OF PLASTICS

Ching K. Chieng, Bukit Merah Central, Singapore, and Charles L. Thierheimer, Jr., Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 17, 1989, Ser. No. 395,224

Int. Cl.[5] C09D *11/02*

U.S. Cl. 106—22 **28 Claims**

1. In a method of printing plastics with a thermal ink-jet printer, said plastic having a given solubility parameter, the improvement consisting of printing an ink onto the surface of said plastic, said ink consisting essentially by weight:

(a) from about 1% to about 10% dyestuff;

(b) from about 1% to about 25% jetting agent, comprising at least one component selected from the group consisting of water and an organic liquid;

(c) the balance being substantially at least one organic solvent which is capable of dissolving, swelling, or penetrating the plastic material and which is a solvent for said dyestuff, said at least one organic solvent also having a given solubility parameter, said solubility parameter of said at least one solvent being comparable to that of said plastic.

said printing being performed at a contact angle relative to said plastic surface of about 40° to 70°.

5,006,173

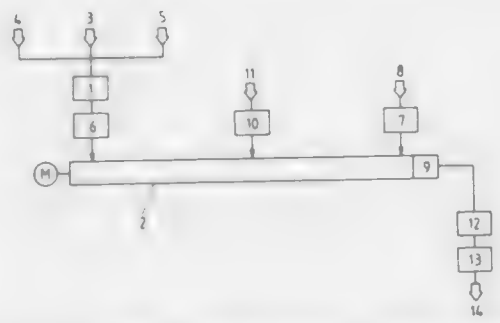
TRANSFORMING CRUDE COPPER PHTHALOCYANINES INTO A PIGMENTARY STATE

Wolfgang Fath, Hirschberg, Rainer Nachtrab, Ludwigshafen, and Rudolf Polster, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 23, 1989, Ser. No. 370,727

Int. Cl.[5] C09B *67/50*

U.S. Cl. 106—410 **7 Claims**



1. A process which comprises subjecting a suspension of the (organic solvent) and the milled crude (copper phthalocyanine) (hereinafter referred to as the solvent/pigment suspension), which has a pigment concentration of from 15 to 55% by weight and a solvent concentration of from 15 to 85% by weight and which may contain water in a concentration of from 0 to 30% by weight, to a shear gradient of from 1000 to 20000 s^{-1} for a period of from 2 to 1000 s with an energy uptake during shearing of from 0.01 to 0.2 kWh/kg of pigment throughput, then metering water into the solvent/pigment suspension in an amount of from 0.1 to 10 times the amount of the solvent, to effect a defined discontinuation of the conditioning process, and finally mixing the suspension until homogeneous.

5,006,174

SMOKE SUPPRESSANT ADDITIVE FOR HALOGENATED POLYMER COMPOSITION

Ernest W. J. Michell, North Harrow, and Shona M. Page, Greenford, both of United Kingdom, assignors to Cookson Group PLC, United Kingdom

Continuation of Ser. No. 57,275, Jun. 1, 1987, abandoned. This application Jul. 10, 1989, Ser. No. 378,427

Claims priority, application United Kingdom, Jun. 2, 1986, 8613294

Int. Cl.[5] C08K *3/22;* **C04B** *14/30*

U.S. Cl. 106—426 **12 Claims**

1. A smoke suppressant additive for halogenated polymer compositions which comprises a starting mixture consisting of from 30% to 70% by weight of zinc oxide and from 70% to 30% by weight of caustic calcined magnesium oxide, the starting mixture having been doped with a positive amount of up to 20% by weight of finely divided silica based upon the total weight of the zinc oxide and magnesium oxide, and the silica-doped mixture having been subjected to calcination at a temperature in the range of from 700° to 1100° C. for a period of time of from 1 to 6 hours.

5,006,175

HIGH INFRA RED REFLECTING BROWN RUTILE PIGMENT COMPOSITIONS

Zoltan M. Modly, Shaker Hts., Ohio, assignor to Engelhard Corporation, Edison, N.J.

Filed Feb. 27, 1990, Ser. No. 485,464

Int. Cl.[5] C09C *1/36*

U.S. Cl. 106—439 **11 Claims**

1. A brown rutile pigment composition comprising about 40 to about 50% by weight of titanium present as titanium dioxide, from about 2.3 to about 4.5% by weight of manganese, from about 7.3 to about 11% by weight of tungsten, from 0.05 to about 5% of lithium and from about 0.1 to about 20% of cerium.

5,006,176

COAGULANT FOR SOIL AND/OR SAND METHOD FOR PREVENTING WASHOUT USING THE SAME

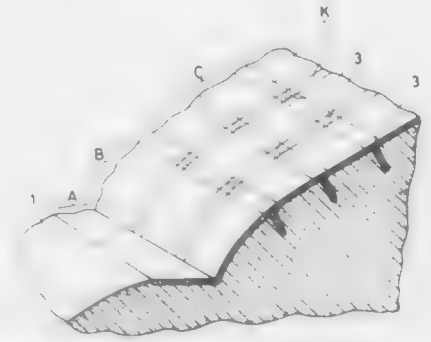
Yoshiyuki Oka, Fuchu, Japan, assignor to Shiro Sejima; Yoshiyuki Oka and Ken Murata, all of Tokyo, Japan

Filed Mar. 27, 1990, Ser. No. 500,251

Claims priority, application Japan, Apr. 5, 1989, 1-84770

Int. Cl.[5] C04B *12/04*

U.S. Cl. 106—633 **4 Claims**



3. A method for preventing washout of soil and/or sand using a coagulant, the method comprising the steps of:

preparing a coagulant by premixing approximately 10 parts by weight of each of carboxymethylcellulose, calcium chloride and sodium metasilicate powder, 0.3 to 100 parts by weight of silicon dioxide and 1 to 300 parts by weight of calcium carbonate;

scattering said coagulant over the surface of the soil and/or sand in a manner such that 500 to 2000 g of said coagulant is applied to a volume of surface area of 1 m^2 and a depth of 10 cm;

scattering portland cement over the local area of the construction site in a manner such that 1 to 20 kg of said portland cement is applied to a volume of surface area of 1 m^2 and a depth of 10 cm; and

excavating said soil and/or sand and mixing said coagulant, said portland cement and said soil and/or sand, while adjusting water content of said soil and/or sand in the range of 35 to 45% by sprinkling water, so as to form, as time elapses, high strength local area and low strength local area in said construction site.

5,006,177

PROCESS AND COMPOSITION FOR CEMENTING WELLS PASSING THROUGH SALT FORMATIONS

Rüdiger Oberste-Padtberg, Merrheim, France, assignor to Dowell Schlumberger Incorporated, Tulsa, Okla.

Filed Dec. 4, 1984, Ser. No. 677,965

Claims priority, application France, Dec. 19, 1983, 83 20303

Int. Cl.[5] C04B *24/34*

U.S. Cl. 106—805 **3 Claims**

1. A process for cementing a borehole passing through a salt formation comprising the step of injecting into the annular space, the composition consisting of a cement, mix water and additives selected so as to be capable of reacting or participating in a reaction on the salts of the formations traversed in order to form fibrous minerals capable of solidly bonding the cement and the salt strata traversed, said mix water containing at the start less than 18 percent sodium chloride by weight of mix water, and containing a set retarding amount of a combination of a lignosulfonate and borax or citric acid.

5,006,178

THERMO-ELECTRIC DEVICE WITH EACH ELEMENT CONTAINING TWO HALVES AND AN INTERMEDIATE CONNECTOR PIECE OF DIFFERING CONDUCTIVITY

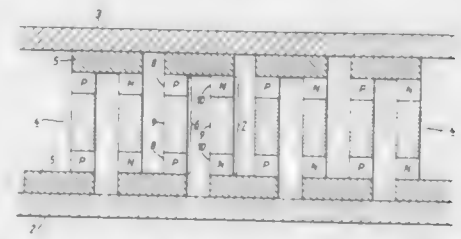
Theodorus Bijvoets, Joh. Strausslaan 36, 5583 XX Waalre, Netherlands

Filed Apr. 27, 1989, Ser. No. 344,335

Claims priority, application Netherlands, Apr. 27, 1988, 8801093

Int. Cl.[5] H01L *35/28*

U.S. Cl. 136—211 **10 Claims**



1. A thermoelectric device comprising a number of thermoelectric elements electrically connected in series and thermally connected in parallel, said thermoelectric elements each being provided with two element halves, electrically connected in series and thermally connected in parallel, of opposite conductivity types, characterized in that each element half has two semiconducting end pieces and an electrical conductivity intermediate piece of differing electrical conductivity which are electrically connected in series.

5,006,179

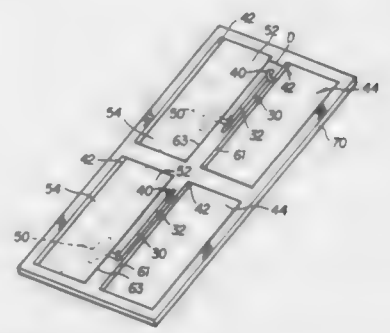
INTERCONNECT FOR ELECTRICALLY CONNECTING SOLAR CELLS

Edward M. Gaddy, Potomac, Md., assignor to Solarex Corporation, Frederick, Md.

Filed May 24, 1989, Ser. No. 356,208

Int. Cl.[5] H01L *31/05*

U.S. Cl. 136—244 **11 Claims**



7. A solar cell array, comprising:

a plurality of solar cells arranged in an array, each said solar cell having an upper electrical contact and a lower electrical contact;

a plurality of interconnects for electrically connecting said solar cells, each said interconnect comprising:

a stress relief part comprised of a single longitudinally ex-

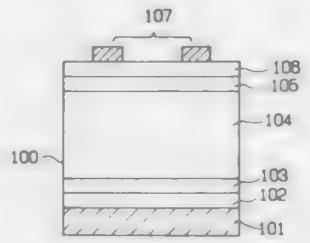
tended member having a central portion and first and second end portions defining a planar surface;
a first connecting part attached to the upper contact of a respective one of said solar cells;
a second connecting part attached to the lower contact of a solar cell adjacent to said respective one of said solar cells;
means for joining said first and second connecting parts to respective first and second end portions of said stress relief part such that said central portion of said stress relief part is disposed substantially parallel to adjacent edges of the solar cells which are electrically connected by the interconnect and such that said planar surface defined by said stress relief part extends substantially perpendicularly relative to the top surface of the solar cell array.

5,006,180

PIN HETEROJUNCTION PHOTOVOLTAIC ELEMENTS WITH POLYCRYSTAL GAP (H,F) SEMICONDUCTOR FILM

Masahiro Kanai, Tokyo; Tatsuyuki Aoike; Koichi Matsuda, both of Nagahama, and Soichiro Kawakami, Hikone, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 19, 1990, Ser. No. 467,538
Claims priority, application Japan, Jan. 21, 1989, 1-12507
Int. Cl.[5] H01L *31/075, 31/0368, 31/0376*
U.S. Cl. 136—258 **4 Claims**



1. A pin heterojunction photovoltaic element which generates photoelectromotive force by the junction of a p-type semiconductor layer, an i-type semiconductor layer and an n-type semiconductor layer, characterized in that at least one of said p-type and n-type semiconductor layers comprises a polycrystal semiconductor film comprised of gallium atoms (Ga), phosphorus atoms (P), hydrogen atoms (H), and atoms (M) of a p-type or n-type dopant element, said polycrystal semiconductor film contains crystal grains of an average size in the range of 50 to 1000 Å, and said polycrystal semiconductor film contains the hydrogen atoms (H) in an amount of 0.5 to 5 atomic %; and said i-type semiconductor layer comprises a non-single crystal semiconductor film containing silicon atoms (Si) as a matrix and at least one kind of atoms selected from the group consisting of hydrogen atoms (H) and fluorine atoms (F).

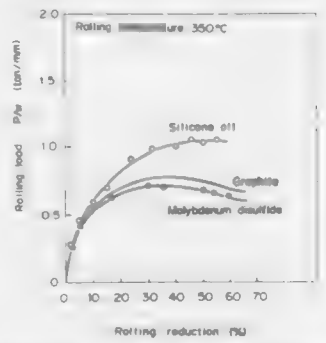
5,006,181

LUBRICATING METHOD FOR WARM ROLLING OF HIGH SILICON STEELS

Sadakazu Masuda; Fumio Fujita; Tadayoshi Murakami; Masahiko Yoshino; Ryuichi Yagi, and Masamoto Kamata, all of Tokyo, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP88/00491, § 371 Date Dec. 15, 1988, § 102(e) Date Dec. 15, 1988
PCT Filed May 23, 1988, Ser. No. 294,666
Int. Cl.[5] H01F *1/04*
U.S. Cl. 148—111 **3 Claims**

1. A lubricating method for warm rolling of high Si steels, wherein warm rolling is carried out on a high Si steel at temperatures between 200° and 600° C., while a lubricant is sprayed on to the working rolls or assistant rolls, the lubricant



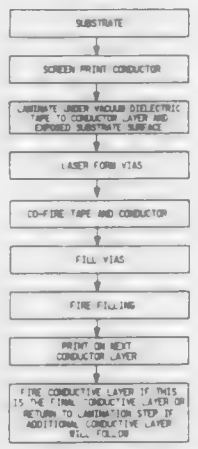
having been produced by mixing graphite or MoS_2 into a heat resistant grease.

5,006,182

METHOD FOR FABRICATING MULTILAYER CIRCUITS

John E. Gantzhorn, Jr., Hockessin, and Steven R. Nann, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 17, 1989, Ser. No. 438,653
Int. Cl.[5] B32B *31/26*
U.S. Cl. 156—089 **17 Claims**



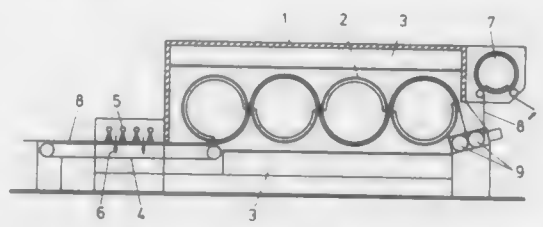
1. A method for the fabrication of multilayer circuits comprising the sequential steps of:
(a) applying to an electrically non-conducting layer a patterned conductive layer in registry with the vias, if any, formed in the non-conducting layer;
(b) laminating to the conductive layer and exposed areas of the non-conducting layer a dielectric layer while under vacuum, at least one of the electrically non-conducting layer(s) and dielectric layer(s) being an unfired dielectric tape optionally having a via pattern formed therein which is in registry with the patterned conductive layer;
(c) if the unfired dielectric tape of step (b) lacks a via pattern, forming vias in selected positions through the layer of unfired dielectric tape in registration with the patterned conductive layer;
(d) firing the assemblage of step (c);
(e) filling the vias in the dielectric tape with a conductive metallization;
(f) firing the assemblage of step (e);
(g) applying a patterned conductive layer to the dielectric tape in registry with the vias therein; and
(h) firing the assemblage of step (g).

5,006,183

PROCESS FOR PRODUCING NONWOVEN FABRICS WITH STEAM PRETREATMENT OF BINDER POWDER

Gerold Fleissner, Chur, Switzerland, assignor to Fleissner Maschinenfabrik AG, Rebstein, Switzerland

Filed Sep. 18, 1989, Ser. No. 408,730
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1988, 3831496
Int. Cl.[5] B27N *1/00*
U.S. Cl. 156—62.2 **9 Claims**



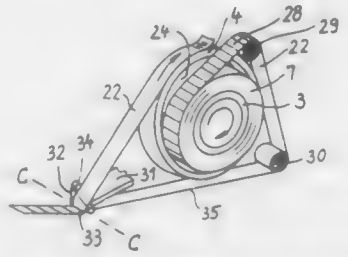
1. A process for thermal bonding of a web of fibers with binder powder wherein the fibers comprised of reclaimed wool, cotton, spun rayon, synthetic polymer, or glass fibers are uniformly mixed with binder powder comprising a phenolic resin or novolak resin to form a binder-containing nonwoven web; the nonwoven web containing the binder powders is passed through a steam treatment zone wherein steam is drawn through the nonwoven to wet the binder powders with steam condensate so that the binder powders will adhere more tenaciously to the fibers; and heated air is passed through the binder-containing nonwoven web for bonding of the fibers with said binder powder in a heat treatment zone by passing the binder-containing nonwoven web successively over a plurality of sieve drums, said binder powder remaining within the nonwoven web without adhering to surfaces of the sieve drums.

5,006,184

HAND OPERATED DEVICE FOR TRANSFERRING A FILM FROM A CARRIER TAPE TO A SUBSTRATE

Cristoph Manusch, Hemmingen, and Hans-Jürgen Harp, Hanover, both of Fed. Rep. of Germany, assignors to Pelikan Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Nov. 3, 1989, Ser. No. 431,610
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1988, 3837621
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—577 **16 Claims**



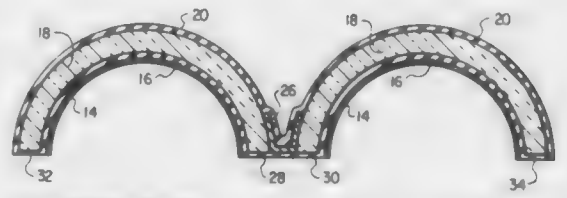
1. Hand operated device for transferring film from a carrier tape to a substrate, in which in a casing the carrier tape is guided from a smaller supply reel to a pressure edge of an application foot projecting at the bottom of the casing in the outwards direction and from there back into the casing onto a larger take-up reel, the supply and take-up reel being coupled together by means of a slip clutch acting in the rotation direction, and with guide means for guiding the carrier tape fitted to the casing, characterized in that the supply reel (3) and take-up reel (4) are axially juxtaposed and are reciprocally inclined by an acute angle (α), the supply reel (3) projecting at the bottom into the inner area (24) of the core (6) of the larger take-up reel (4) open on the side facing reel (3), whilst its top surface is located completely outside the same, that the slip clutch (25–27) is located centrally between the two reels (3,4), that the guide means in the tape guide of the carrier tape (22) are fitted between the supply reel (3) and the application foot (31) and that the pressure edge (33) is followed by a guiding edge (34) inclined at an angle (δ) the lateral deflection of the carrier tape (22) towards the take-up reel (4).

5,006,185

PIPE INSULATION AND CORROSION PROTECTION SYSTEM

Donald R. Anthony, Plano, and George C. Williamson, III, Wylie, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 29, 1987, Ser. No. 139,232
Int. Cl.[5] B31C *13/00*
U.S. Cl. 156—193 **4 Claims**



1. A method of making a segment of pipe insulation comprising the steps of:
(a) covering a mandrel with an inner sleeve material forming an elongated cylindrical inner support;
(b) applying an inner jacket layer of elastomeric material to the exterior of the inner sleeve;
(c) applying a layer of insulating material to cover the inner jacket and form a thermal insulating barrier;
(d) cutting a hinge seam longitudinally through said layer of insulating material and said inner jacket and said inner sleeve;
(e) overlapping the hinge seam with a hinge element;
(f) applying an outer jacket layer of elastomeric material to the exterior and ends of the layer of insulating material and covering the hinge element;
(g) cutting an opening seam through the outer jacket, the insulating material, the inner jacket layer, and the inner sleeve at a location on the opposite side of the mandrel from the hinge seam;
(h) removing the insulation segment in two hingedly connected semi-cylindrical portions from the mandrel; and
(i) applying an outer jacket layer of elastomeric material to opposed sides of the hinge seam and the opening seam and joining and sealing with the inner jacket and the outer jacket to completely encapsulate the insulating material.

5,006,186

MANUFACTURING METHOD OF SQUARE BOTTOM BAGS

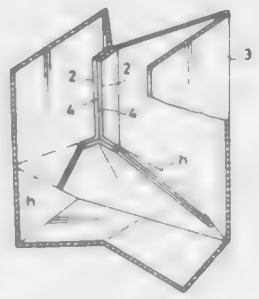
Naoomi Yokoyama, Ichikawa, Japan, assignor to Altech Co., Ltd., Tokyo, Japan

Filed May 17, 1989, Ser. No. 353,096
Claims priority, application Japan, May 17, 1988, 63-118273, 63-118274
Int. Cl.[5] B31B *1/22, 1/26, 1/62*
U.S. Cl. 156—211 **4 Claims**

1. A manufacturing method of a square bottom bag comprising the steps of: folding each of the two brims of a sheet bag raw material blank to an identical face side and butting them together to form a flat cylindrical body;
providing one of a coating of a bonding agent and a heat seal layer to the outside of both the butted brims;
arranging the flat cylindrical body in an inverted V-shaped form by providing a fold at a mid-section of the cylindrical body and providing folds at each side of the mid-sec-

tion fold to arrange the cylindrical body in a W-shape with the one of coated and layered brim sections in substantially face to face relationship.;

press-fitting the section of cylindrical body formed into W-shape from the outside for adhering the one of coated and layered brim sections with said bonding agent to the opposing the one of the coated and layered brim sections;



forming the blank with cuts lying at about 90 degrees with respect to each other forming two notches positioned on both of the brims, each of the notches of each brim being spaced a substantially equal distance from said mid section, said inverted V-shaped fold of said flat cylindrical body is provided between said notches, said W-shaped folded section being provided at the center of said notches.

5,006,187

PLUGGED MICROPOROUS FILM

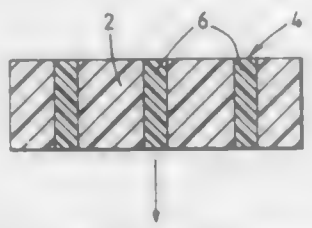
John A. Cook, Faringdon, and Raymond W. Singleton, Cirencester, both of Great Britain, assignors to Scimat Limited, Great Britain

Continuation of Ser. No. 88,623, Aug. 21, 1987, abandoned. This application Jun. 15, 1989, Ser. No. 366,360

Claims priority, application United Kingdom, Aug. 22, 1986, 8620484

Int. Cl.[5] B29C *47/00*; B05D *3/06, 5/00*; B32B *31/20*

U.S. Cl. 156—244.11 17 Claims



1. A method of making a plugged microporous film from a film which comprises a structural component having pores extending therethrough, and a plugging material within the pores, the method comprising:

(a) selectively modifying the plugging material so that its susceptibility to a crosslinking treatment differs from a first region of the film to a second region thereof, the modification step comprising treatment of the film with a reagent;

(b) crosslinking the plugging material at the second region of the film; and

(c) removing the uncrosslinked plugging material from the first region of the film leaving plugs of crosslinked plugging material in the pores at the second region of the film.

5,006,188

METHOD FOR PRODUCING PLASTIC MOLDINGS

Mitsuji Usui; Takeo Hanamura, and Junichi Kurihara, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1989, Ser. No. 304,455

Claims priority, application Japan, Feb. 3, 1988, 63-024406

Int. Cl.[5] B29C *51/14*

U.S. Cl. 156—245 6 Claims

1. A method for producing plastic molding made of a laminate of a skin material and a base material, having the steps of:

placing the skin material in a mold;

melting a predetermined quantity of the base resin and charging it onto the kin material in the mold; and

closing the mold and cooling to form the laminated plastic molding; wherein the improvement comprises;

all of said quantity of said molten resin being charged onto the skin material after having been stored outside the mold in a molten state and in a shape that corresponds to or resembles the shape of the plastic molding being produced.

5,006,189

COATING METHOD AND CLEANING METHOD FOR HEAT-SOLUBLE MATERIAL

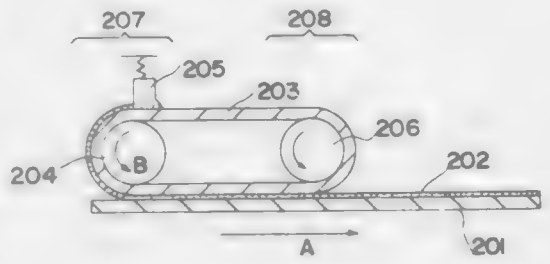
Masahide Tsukamoto, Nara; Yutaka Nishimura, and Yasuo Fukui, both of Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 26, 1989, Ser. No. 357,597

Claims priority, application Japan, May 26, 1988, 63-128946; May 31, 1988, 63-133262

Int. Cl.[5] B32B *31/16*

U.S. Cl. 156—247 9 Claims



1. A cleaning method for removing an image-forming material formed on a surface of an image-carrying substrate from said surface of said image-carrying substrate, comprising the steps of:

supplying a heat-soluble material in a heated and melted condition onto said surface of said image-carrying substrate on which said image-forming material has been formed;

laying a cleaning sheet member on said heat-soluble material supplied onto said surface of said image-carrying substrate;

cooling said heat-soluble material to solidify said heat-soluble material; and

separating said image-carrying substrate and said cleaning sheet member from each other such that said image-forming material is moved from said surface of said image-carrying substrate to said cleaning sheet member together with the solidified heat-soluble material.

5,006,190

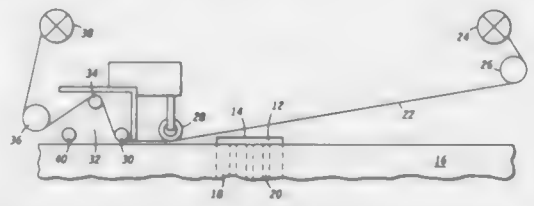
FILM REMOVAL METHOD

Richard W. Earle, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 5, 1990, Ser. No. 474,894

Int. Cl.[5] B32B *31/16*

U.S. Cl. 156—247 1 Claim



1. A method of removing an adhered film from a wafer, said method comprising the steps of:

placing a wafer having a film to be removed adhered thereto on a vacuum stage to hold said wafer in a stationary position;

applying an adhesive tape along a length of the non-adhered surface of said film, said tape being applied by applying means which apply pressure to said tape along said length which is in the range of 5 to 50 percent of the entire length of said film;

lifting said applying means away from said film following the application of said adhesive tape; and

pulling said tape with pulling means so that said film initially separates from a portion of said wafer and is then completely removed therefrom, said pulling means comprising a top roller, a front bottom roller and a back bottom roller, said top roller serving to guide tape into a tape take-up reel, said front bottom roller serving to hold said tape approximately planar to rolling means so that it will apply said tape along the length and said back bottom roller serving to pull said tape following its adherence to said film.

5,006,191

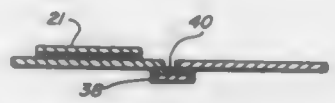
METHOD OF PRODUCING A LABEL-PROVIDING CONTINUOUS BUSINESS FORM

Eric R. Schmidt, Elgin, Ill., assignor to Wallace Computer Services, Inc., Hillside, Ill.

Continuation-in-part of Ser. No. 178,497, Apr. 7, 1988, Pat. No. 4,865,669. This application Jun. 19, 1989, Ser. No. 367,891

Int. Cl.[5] B32B *31/10*

U.S. Cl. 156—268 5 Claims



1. A method of producing a label-providing continuous business form comprising the steps of: advancing a composite first web along a predetermined path, said composite web including a bottom release ply, a top label stock ply, and an adhesive layer therebetween; advancing a second web in said path in spaced relation to said composite web and in co-planar relationship to said composite web; adhering a continuous splicing strip to said composite and second webs in the edge portions adjacent each other to provide a label supplying business form; removing a continuous portion of said top label stock ply of said first web.

5,006,192

APPARATUS FOR PRODUCING SEMICONDUCTOR DEVICES

Mikio Deguchi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Nov. 21, 1988, Ser. No. 273,556

Claims priority, application Japan, Jun. 28, 1988, 63-158062

Int. Cl.[5] H01L *21/304*; C23C *14/00*

U.S. Cl. 156—345 7 Claims



1. An apparatus for treating wafers utilizing a plasma produced by a gas discharge comprising:

an electrically conductive, grounded vacuum vessel;

a main electrode, an opposing electrode, means for supporting a wafer, said means for supporting a wafer being disposed on one of said main and opposing electrodes, and a limiter electrode disposed between said main and opposing electrodes, said main, opposing, and limiter electrodes being disposed within said vacuum vessel and generally enclosing a first discharge space and defining a second discharge space outside the first discharge space within said vacuum vessel;

means for introducing a gas into said vacuum vessel;

a high voltage source having a high voltage terminal and a ground terminal for forming a high voltage electrical field in the first discharge space and generating a plasma in the first discharge space in a gas introduced into said vacuum vessel, one of said main and opposing electrodes being electrically connected to said high voltage terminal and the other of said main and opposing electrodes being electrically connected to said ground terminal; and

means for selectively alternatively electrically connecting said limiter electrode to said ground terminal for generating the plasma in the first discharge space and to said high voltage terminal for generating a plasma in the first and second discharge spaces.

5,006,193

AUTOMATIC CLAMP TIGHTENER

Bradley S. Quick, Staatsburg, N.Y., assignor to James L. Taylor Manufacturing Co., Poughkeepsie, N.Y.

Continuation-in-part of Ser. No. 244,915, Sep. 14, 1988, Pat. No. 4,952,269, which is a continuation of Ser. No. 846,363, Mar. 31, 1986, Pat. No. 4,778,555. This application Jul. 19, 1989, Ser. No. 353,699

The portion of the term of this patent subsequent to Oct. 10, 2005, has been disclaimed.

Int. Cl.[5] B23Q *3/08*

U.S. Cl. 156—350 4 Claims

1. In a device for allowing glued pieces of wood to dry, said device incorporating clamps to hold the pieces of wood in close and high pressure engagement, the improvement comprising:

means for automatically tightening and loosening said clamps including fluid driven rotating means mounted for engagement with said clamp;

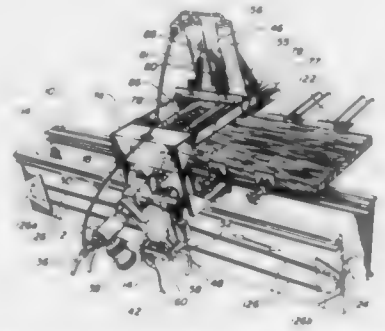
means connected to said tightening means for automatically flattening and securely holding the wood when said clamp are being tightened including a hold-down means actuated momentarily before said tightener means to:

(i) flatten the work piece before said clamp is tightened and

(ii) to hold down and align the work piece at the location to be tightened; and

a sensor of a proximity type for generating electrical signals

on the sensing of the location of a clamp to be tightened and means in said clamp for generating an electrical signal



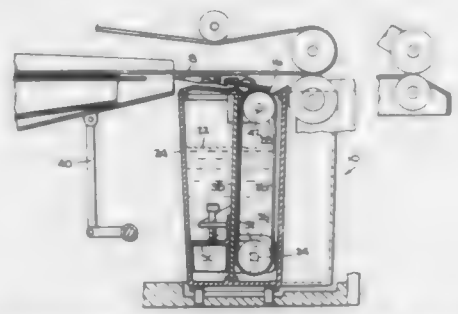
indicative of the force exerted on said clamp by said tightener.

5,006,194

APPARATUS FOR MOISTENING ENVELOPE FLAP

Roderick N. Schmaling, Brookfield Center, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 9, 1988, Ser. No. 281,607
Int. Cl.[5] B05G *1/02*
U.S. Cl. 156—442.1 5 Claims



1. An apparatus for moistening the flap of an envelope, comprising:

a tank for holding a volume of water;

a moistening brush pivotably mounted on said tank, said tank having a vertical wall located beneath said brush;

an envelope feeding means, said feeding means adapted to transport an envelope whereby the flap of the envelope makes contact with said moistening brush;

a first roller rotatably journalled in said tank;

a second roller rotatably journalled in said tank and situated below said first roller;

an endless belt trained over said first and second rollers, said belt having one reach situated adjacent but spaced from said vertical wall by an amount which permits a meniscus to be formed between said reach and said wall, whereby water is conveyed from said tank to said brush; and

an envelope flap sealing means.

5,006,195

APPARATUS FOR FOLDING AND SEALING A FORM ALONG A TRANSVERSE EDGE

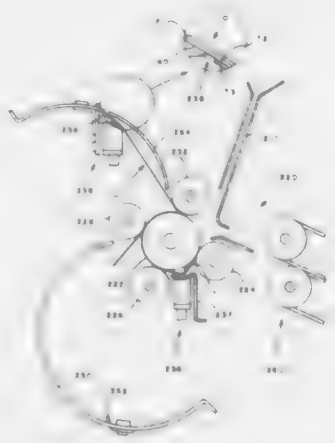
Samuel W. Martin, Martin Rd., Weston, Conn. 06883, and Steven A. Supron, 11 Comstock Hill Ave., Norwalk, Conn. 06850

Filed Sep. 14, 1989, Ser. No. 407,488
Int. Cl.[5] B43M *5/04*
U.S. Cl. 16—442.1 14 Claims

1. Apparatus for folding and sealing a form sheet along a transverse edge comprising:

(a) folding means for folding said form sheet so that leading and trailing edges of said form sheet are superimposed and in contact, said folding means including a curved, one-sided buckle chute, open towards its concave side; and,

(b) sealing means for applying adhesive fluid to a portion of said form sheet adjacent said leading transverse edge; wherein,



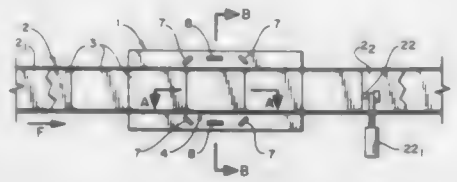
(c) said sealing means is positioned in relation to said concave side and the stop of said buckle chute so that said form sheet bypasses said sealing means as it enters said buckle chute and touches said sealing means as it is withdrawn, whereby said adhesive fluid is applied to said portion without activation or displacement of said sealing means.

5,006,196

INSTALLATION FOR APPLYING LABELLING SLEEVES TO ARTICLES SUCH AS CANS

Jean-Claude Vandevoorde, Montdidier, France, assignor to Protection Decoration Conditionnement Europe S.A., Montidier, France

Filed Dec. 12, 1988, Ser. No. 283,184
Claims priority, application France, Dec. 10, 1987, 87 17242
Int. Cl.[5] B32B *31/12*
U.S. Cl. 156—494 9 Claims



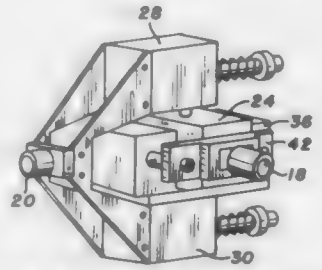
1. An installation for applying labelling sleeves to articles, which installation comprises a frame (1) provided with a table (4) to support the articles and bring the articles into a position for the application of the sleeves, a shaping device (25, 23, 27, 30, 31) to shape the sleeves about a vertical axis of the shaping device, pincers (7) to stretch the shaped sleeves and to apply them on the articles, the installation being characterized in that the shaping device is mounted on a framework (44) which is itself supported by the frame (1) via means (46, 47, 48) to allow the rotation of the framework (44) about a vertical axis (X—X') which passes through the middle of the table (4) and through the vertical axis of the shaping device.

5,006,197

MULTIPLE FIXTURE APPARATUS FOR FUSION BONDING

Raymond K. Newkirk, Plymouth, and William G. West, Edina, both of Minn., assignors to Forward Technology Industries, Inc., Minneapolis, Minn.

Filed Jul. 3, 1989, Ser. No. 375,045
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—514 16 Claims



1. An apparatus for forming a fusion bond between a fixed thermoplastic article and a movably supported thermoplastic attachment, comprising:

a mounting means for supporting a thermoplastic article in a fixed disposition;

a heating tool including axially aligned inner and outer end segments, and a heating element means for selectively heating said inner and outer end segments to respective first and second selected temperatures; and

a fixture including a base means, a first carrier reciprocably mounted with respect to the base means for supporting a thermoplastic attachment in a predetermined orientation with an end surface of the thermoplastic attachment facing said thermoplastic article, a first moving means mounted to the base means for reciprocating said first carrier to move said thermoplastic attachment longitudinally toward and away from a generally transverse mating surface of said thermoplastic article, a second carrier reciprocably mounted with respect to the base means for supporting said heating tool in a select orientation, a second moving means mounted to the base means for reciprocating said second carrier to move said heating tool longitudinally toward and away from said mating surface of said thermoplastic article, and a third moving means operatively coupled to the second carrier for reciprocating said second carrier generally transversely with respect to said base means to move said tool between an aligned position between said thermoplastic article and thermoplastic attachment, and a remote position removed from between said article and attachment, to permit longitudinal movement of said thermoplastic attachment toward said first thermoplastic article to form an engagement of said end surface and mating surface for fusion bonding of said first and second articles.

5,006,198

JIG FOR RETAINING WELDING MITERED JOINTS BETWEEN THE MEMBERS OF MOLDED PLASTIC WINDOW AND DOOR FRAMES

Luciano Pasquini, Via Adige, 13, 47037 Rimini (Forli), Italy

Filed Sep. 14, 1988, Ser. No. 244,100
Claims priority, application Italy, Oct. 15, 1987, 3653 A/87
Int. Cl.[5] B29C *65/20*
U.S. Cl. 156—559 4 Claims

1. A jig for retaining mitered joints defined between abutting members of a molded rectangular plastic closure frame in position to be welded, said jig comprising:

(a) a bed,

(b) a first carriage (TVF) anchored to said bed, and a second carriage movable relative to said bed,

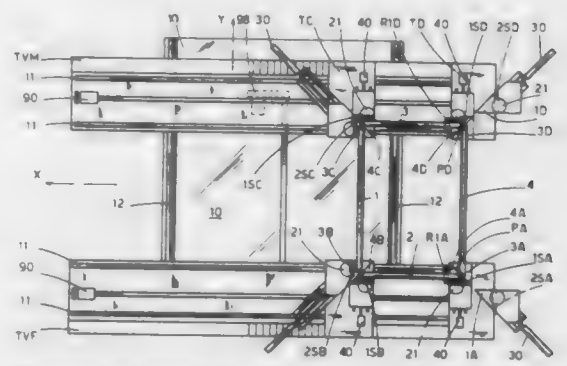
(c) four clamp assemblies (TA, TB, TC & TD), each assembly occupying a position corresponding to one of the corners of the frame,

(d) said clamp assemblies being arranged in two pairs, of which a first pair (TB, TC) is located downstream of a second pair (TD, TA),

(e) means for traversing one of said pairs of clamp assemblies toward and away from said other pair of clamp assemblies to facilitate handling of the frame,

(f) four pairs of horizontal triangular rests (4A, 4B, 4C, and 4D) for supporting the corners of the frame, one side of each rest extending along a miter line,

(g) four pairs of vertically movable plates (1A–2A; 1B–2B, 1C–2C; and 1D–2D), one pair for each of said clamp assemblies, each plate being located above a corresponding one of said rests,



(h) means for moving said plates toward said rests to clamp ends of the frame members therebetween,

(i) a plurality of upwardly projecting fences (ISA, ISB, ISC, and ISD), one fence associated with each of said rests, a portion of said fences being integral with their respective rests, and the remainder of said fences being disposed transverse thereto, to check and align the frame members,

(j) said remainder of said fences being mounted for movement relative to their respective rests between a first limit position in which the frame members are checked, and a second limit position in which the fences are disengaged from the frame members to allow the frame to be conveyed along a flow path,

(k) first actuator means (40) for spreading apart, and drawing together, said fences integral with their respective rests.

5,006,199

PROCESS FOR PREPARING SINGLE CRYSTAL OF POTASSIUM TITANIUM ARSENATE

Toshiki Kishimoto, Mitaka, and Kuniyasu Imamura, Ome, both of Japan, assignors to Sumitomo Metal Mining Company Limited, Tokyo, Japan

Filed Jun. 21, 1990, Ser. No. 541,538
Claims priority, application Japan, Jul. 28, 1989, 1-193947
Int. Cl.[5] C30B *9/04*
U.S. Cl. 156—621 3 Claims

1. A process for preparing a single crystal of potassium titanium arsenate by flux growth method, wherein a compound of K_2ZO_4, in which Z represents at least one selected from the group consisting of W, S, Mo and Cr, is used as a flux and the said flux is blended with potassium titanium arsenate in such a way that the proportion of potassium titanium arsenate is from 15 to 50 mol % of the whole.

5,006,200

METHOD OF BONDING COPPER AND RESIN

C. J. Chen, Taipei, Taiwan, assignor to Compeq Manufacturing Co., Ltd., Tao Yuan Hsien, Taiwan

Filed May 7, 1990, Ser. No. 519,741
Int. Cl.[5] B44C 1/22; C23F 1/00; C03C 15/00, 25/06
U.S. Cl. 156—629 12 Claims

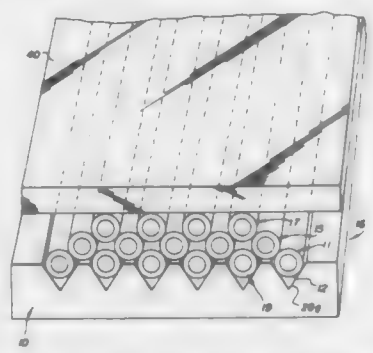
1. A method of bonding copper and resin comprising the steps of:
(a) forming a layer of copper oxide on a surface of copper by oxidation of copper;
(b) reducing said layer of copper oxide thus formed to cuprous oxide with a reducing solution of a controlled concentration and controlled pH at a controlled temperature under a well circulated condition within a controlled period of reaction time to modify the morphology thereof; and
(c) bonding the surface of said cuprous oxide formed by the reduction and a resin together by heat-pressing.

5,006,201

METHOD OF MAKING A FIBER OPTIC ARRAY

Joseph Y. Kaukeinen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 22, 1989, Ser. No. 440,159
Int. Cl.[5] H01L 21/306; B44C 1/22; C03C 15/00, 25/06
U.S. Cl. 156—633 12 Claims



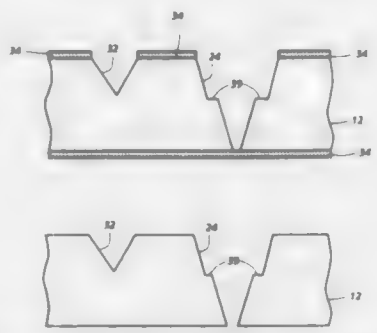
1. A method of making a fiber optic array, said array having stacked rows of optical fibers, said method comprising the steps of:
forming a plurality of grooves in a first substrate, said grooves extending to a first end of the substrate;
placing an optical fiber of a predetermined diameter in each of said grooves to form a first row of fibers in which the spacing of the fibers is determined by the pitch of said grooves;
cementing the fibers in the grooves;
forming a plurality of grooves in a second substrate;
cementing an optical fiber of a predetermined diameter in each of the grooves in said second substrate to form a second row of fibers in which a portion of each of said fibers extends beyond one end of said second substrate;
placing said second substrate and the fibers therein over said first substrate such that the fibers in the two substrates are in contact with each other and the spacing of said portions of the fibers in said second row is determined by the spacing of the fibers in said first substrate and the diameters of said fibers; and
cementing the fibers in said second substrate to the fibers in said first substrate.

5,006,202

FABRICATING METHOD FOR SILICON DEVICES USING A TWO STEP SILICON ETCHING PROCESS

William G. Hawkins, Webster; Donald J. Drake, Rochester, and James F. O'Neill, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 4, 1990, Ser. No. 533,204
Int. Cl.[5] H01L 21/306; B44C 1/22; C03C 15/00, 25/06
U.S. Cl. 156—644 14 Claims



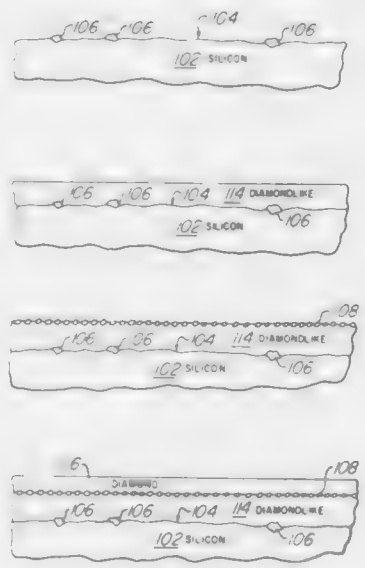
1. A method of fabricating a precision-etched, three dimensional device from a silicon wafer having a frontside and a backside surface, the device being produced by etching only the wafer frontside surface, comprising the steps of:
(a) depositing a first etch resistant masking layer on both frontside and backside surfaces of a clean wafer;
(b) depositing a first mechanical damage protective layer over the first masking layer on both the frontside and backside surfaces of the wafer;
(c) applying and patterning a first photoimagable layer on the first protective layer on the wafer frontside surface to produce first and second sets of vias in the first photoresist layer exposing the first protective layer through said sets of vias, the first masking layer on the wafer backside surface being concurrently protected from damage by the first protective layer thereover;
(d) etching the exposed first protective layer and underlying first masking layer on the wafer frontside surface through the first and second sets of vias in the first photoresist layer to form sets of vias therein which expose the wafer frontside surface;
(e) stripping the patterned first photoimagable layer from the frontside surface of the wafer;
(f) removing the first protective layer from the frontside and backside surfaces of the wafer;
(g) depositing a second etch resistant masking layer over the first etch resistant masking layer on both frontside and backside surfaces of the wafer, so that the vias in the first masking layer exposing the wafer frontside surface are covered by said second masking layer;
(h) depositing a second mechanical damage protective layer over the second masking layer on both frontside and backside surfaces of the wafer;
(i) applying and patterning a second photoimagable layer on the second protective layer on the wafer frontside surface to produce a set of vias similar to and aligned with the first set of vias in said first masking layer, the set of vias in the second photoresist layer being slightly smaller than the first set of vias in said first masking layer, the second masking layer on the wafer backside surface being concurrently protected from damage by the second protective layer thereover;
(j) etching the exposed second protective layer and underlying second masking layer through the set of vias in the second photoimagable layer to form a set of vias therein which expose the wafer frontside surface;
(k) stripping the patterned second photoresist layer from the frontside surface of the wafer;
(l) anisotropically etching the wafer in an etch bath, so that the frontside surface of the wafer exposed through the set of vias in the second protective layer and the second masking layer produce relatively large, loosely toleranced recesses therein;
(m) removing the second protective layer and then the second masking layer exposed by the removal of the second protective layer, thereby leaving a defect-free first masking layer on the wafer with the large, loosely toleranced recesses substantially completed; and
(n) anisotropically etching the wafer in an etch bath, so that the frontside surface of the wafer exposed through the first and second sets of vias in the first masking layer produce relatively small, closely toleranced recesses in the frontside wafer surface through second set of vias, while concurrently completing the etching of the relatively large recesses in the frontside wafer surface through the first set of vias.

5,006,203

DIAMOND GROWTH METHOD

Andrew J. Purdes, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 12, 1988, Ser. No. 231,750
Int. Cl.[5] B44C 1/22; C03C 15/00, 25/06
U.S. Cl. 156—646 9 Claims



7. A diamond film growth method, comprising the steps of:
(a) growing a film of diamondlike material;
(b) selectively removing graphitic-bonded material from a surface of said film of diamondlike material; and
(c) growing a film of diamond on said surface.

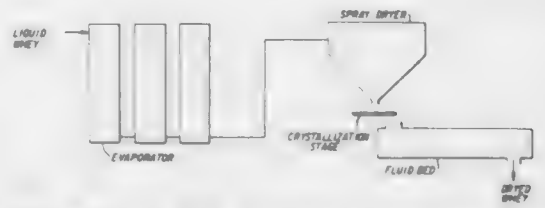
5,006,204

APPARATUS FOR CRYSTALLIZING WHEY

Jens P. Jensen, Hudson, Wis., assignor to A/S Niro Atomizer, Soeborg, Denmark

Continuation-in-part of Ser. No. 230,545, Aug. 10, 1988, abandoned. This application Oct. 31, 1988, Ser. No. 264,569
Int. Cl.[5] B01D 1/18
U.S. Cl. 159—3 8 Claims

1. Apparatus for drying whey comprising:
an evaporator, a pre-crystallizer, a spray dryer, a fluid bed, means for moving said whey from said evaporator to said pre-crystallizer, means for moving said whey from the pre-crystallizer to said spray dryer, a disc located between said spray dryer and said fluid bed and having a cone-shaped upper surface, a shaft supporting said disc for rotation in a horizontal plane, and means for rotating said disc whereby said surface of said disc will receive partially dried whey from said spray dryer and deliver said whey to



said fluid bed while permitting crystallization of said whey as it rests on said surface of said disc.

5,006,205

DEHYDRATION OF FORMIC ACID BY EXTRACTIVE DISTILLATION

Lloyd Berg, 1314 S. 3rd Ave., Bozeman, Mont. 59715; Kraig M. Wendt, and Rudolph J. Szabados, both of Bozeman, Mont., assignors to Lloyd Berg, Bozeman, Mont.

Continuation-in-part of Ser. No. 126,003, Nov. 27, 1987, abandoned. This application Jan. 17, 1989, Ser. No. 297,181
The portion of the term of this patent subsequent to Nov. 22, 2005, has been disclaimed.
Int. Cl.[5] B01D 3/40; C07C 51/44, 53/02
U.S. Cl. 203—15 2 Claims

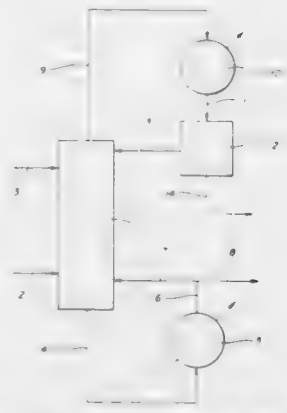
1. A method for recovering formic acid from a mixture of formic acid and water which comprises distilling a mixture of formic acid and water in a rectification column in the presence of about one part of an extractive agent per part of formic acid - water mixture, recovering water as overhead product and obtaining the formic acid and the extractive agent from the stillpot, wherein said extractive agent consists of decanoic acid ad one material selected from the group consisting of butyl benzoate and methyl benzoate.

5,006,206

PROPYLENE OXIDE PURIFICATION

T. Thomas Shih, Bryn Mawr, and William J. Sim, Newtown Square, both of Pa., assignors to Arco Chemical Technology, Inc., Wilmington, Del.

Filed Mar. 12, 1990, Ser. No. 491,872
Int. Cl.[5] B01D 3/40; C07D 301/32
U.S. Cl. 203—55 3 Claims



1. An extractive distillation process for the separation of hydrocarbon impurities from propylene oxide which consists essentially introducing a feed comprises of propylene oxide containing hydrocarbon impurities into an intermediate section of an extractive distillation zone, introducing extractive distillation solvent consisting essentially of a mixture of about 2–50 wt.% water with t-butyl alcohol into the upper section of said extractive distillation zone, distilling said hydrocarbon impuri-

ties overhead from said extractive distillation zone and removing a mixture consisting essentially of said extractive distillation solvent and said propylene oxide substantially free of said hydrocarbon impurities from the lower section of the said extractive distillation zone.

5,006,207

METHOD OF DECORATING AN EXPANSIVE SURFACE OF A METALLIC FAUCET SPOUT OR OTHER PLUMBING FIXTURE

Eric C. Peterman, Elm Grove, and John S. Lindstedt, Hartland, both of Wis., assignors to Gerber Plumbing Fixtures Corp., Chicago, Ill.

Filed Jul. 27, 1989, Ser. No. 386,292
Int. Cl.[5] C25D *5/02*
U.S. Cl. 204—18.1 10 Claims



1. A method of providing a sharply defined, ornamental design on an expansive surface of a zinc, brass, or stainless steel faucet spout or other plumbing fixture, the method comprising steps of

(a) providing an initial finish on the expansive surface, the initial finish contrasting in color with what is beneath the initial finish,

(b) causing a mask to adhere to selected portions of the expansive surface, by means of an adhesive, leaving the expansive surface with unmasked portions where the mask does not adhere to the expansive surface,

(c) treating the unmasked portions so as to remove all of the initial finish from the unmasked portions, thereby to cause the unmasked portions to contrast in color with the initial finish when the mask is removed, and

(d) removing the mask,

wherein the expansive surface is plated with at least two plating layers, which include a penultimate plating layer and an ultimate plating layer contrasting in color with the penultimate plating layer, and wherein step (c) is performed so as to remove all of the ultimate plating layer from the unmasked portions of the expansive surface, and so as to expose the penultimate plating layer on the unmasked portions of the expansive surface, and whereby the ornamental design is defined sharply by color-contrasted portions of the expansive surface.

5,006,208

GALVANIC GOLD ALLOYING BATH

Werner Kuhn, Rodenbach, and Wolfgang Zilske, Hanau, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Aug. 29, 1990, Ser. No. 574,359
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1989, 3929569
Int. Cl.[5] C25D *3/62*
U.S. Cl. 204—44 5 Claims

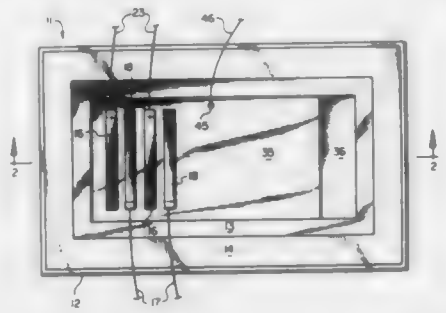
1. A galvanic gold alloying bath comprising 1 to 15 g/liter gold as potassium gold (I) cyanide, 5 to 50 g/liter copper as potassium copper (I) cyanide, 0.05 to 5 g/liter silver as potassium silver (I) cyanide, free alkali cyanide, dipotassium hydrogenphosphate and potassium selenocyanate.

5,006,209

ELECTROLYTIC REDUCTION OF ALUMINA

Theodore R. Beck, and Richard J. Brooks, both of Seattle, Wash., assignors to Electrochemical Technology Corp. and Brooks Rand, Ltd., both of Seattle, Wash.

Filed Feb. 13, 1990, Ser. No. 479,164
Int. Cl.[5] C25C *3/06, 3/18, 3/08*
U.S. Cl. 204—67 65 Claims



1. A method for the electrolytic reduction of alumina to aluminum in a vessel having a bottom and sidewalls, said method comprising the steps of:

containing within said vessel a molten electrolyte bath consisting essentially of (1) $NaF+AlF_3$ eutectic, (2) $KF+AlF_3$ eutectic and (3) LiF;

said molten electrolyte bath having a density less than the density of molten alumina and less than the density of alumina;

maintaining said bath at a temperature substantially below 950° C.;

providing within said bath a plurality of vertically disposed, spaced apart, non-consumable anodes and a plurality of vertically disposed, spaced apart, dimensionally stable cathodes in close, alternating relation to said anodes, with a space defined between each pair of adjacent electrodes;

introducing finely divided alumina particles into said bath;

passing an electric current through said bath from said anodes to said cathodes;

forming bubbles of gaseous oxygen at each of said anodes;

allowing said bubbles to pass upwardly from said anodes;

forming a slurry composed of said finely divided alumina particles suspended in said molten electrolyte bath;

forming metallic aluminum at each cathode;

allowing said metallic aluminum to flow downwardly as molten aluminum along each cathode at which aluminum is formed, toward the bottom of said vessel;

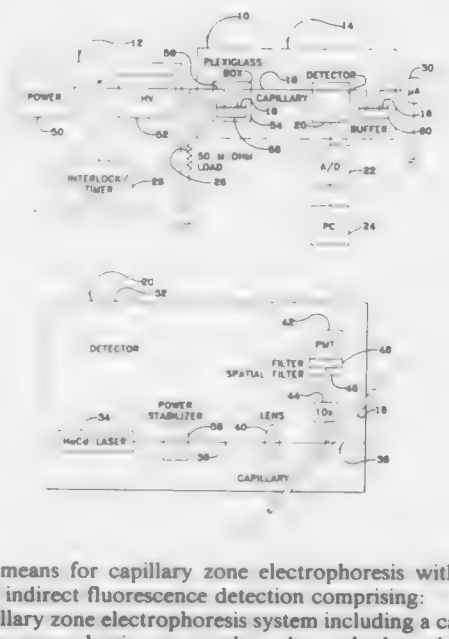
and accumulating said molten aluminum at the bottom of said vessel.

5,006,210

MEANS AND METHOD FOR CAPILLARY ZONE ELECTROPHORESIS WITH LASER-INDUCED INDIRECT FLUORESCENCE DETECTION

Edwards Yeung, Ames, Iowa, and Werner G. Kuhr, Riverside, Calif., assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Feb. 6, 1989, Ser. No. 306,071
Int. Cl.[5] G01N *27/26;* B01D *57/02*
U.S. Cl. 204—180.1 10 Claims



1. A means for capillary zone electrophoresis with laser-induced indirect fluorescence detection comprising:

a capillary zone electrophoresis system including a capillary tube means having an anode and a cathode end, power means for imposing an electrical field upon the capillary tube means, specimen means for supplying specimen to the capillary tube means, buffer means for supplying buffer to the capillary tube means;

an indirect fluorescence detection system including a laser means for directing a laser beam upon a selected portion of the capillary tube means, a detector means for detecting fluorescence indirectly from the selected portion of the capillary tube means, the buffer containing as a principal component a fluorescing portion which fluoresces upon imposition of the laser beam and which allows indirect fluorescence detection by causing one of the set of displacement and ion-pairing of the sample and the electrophoresis portion of the buffer without labeling the sample with an electrophoretic portion, the detector measuring a signal independent of the spectral properties of the sample but related to fluorescing changes caused by the displacement or ion-pairing which indirectly allows sensitive detection of constituent components of the specimen during the electrophoresis process; and

an interlock and timing means associated with the power means for controlling the periods of time the electrical field is created.

5,006,211

ELECTRODIALYLIC WATER SPLITTING PROCESS FOR THE TREATMENT OF AQUEOUS ELECTROLYTES

Michael Paleologou, Pierrefonds, and Richard M. Berry, Ile Perrot, both of Canada, assignors to Pulp and Paper Research Institute of Canada, Pointe Claire, Canada

Filed Apr. 19, 1989, Ser. No. 340,200
Int. Cl.[5] C25B *7/00, 1/16*
U.S. Cl. 204—182.4 34 Claims

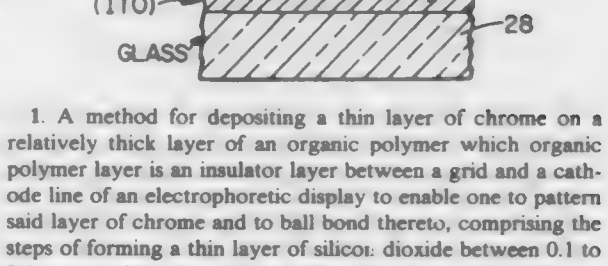
1. a process which comprises the steps of

(a) providing a cell comprising an anode, a cathode and at least two compartments therebetween defined at least in part by a cation permselective membrane and at least a pair of bipolar membranes, said bipolar membranes having an anion side facing said anode and a cation side facing said cathode,

(b) feeding an aqueous alkaline solution comprising monosodium peroxide and sodium hydroxide into a first of said compartments to contact a first side of said cation permselective membrane,

(c) feeding a liquid comprising water into a second of said compartments to contact an anion side of a said bipolar membrane,

(d) passing a direct current through said cell between said anode and cathode to effect:



(i) migration of sodium cations from said first compartment through said cation permselective membrane into said second compartment, and

(ii) splitting of water by said bipolar membrane of said second compartment with accumulation of hydroxide ions of the water in said second compartment and removal of hydrogen ions of the water from aid second compartment,

(e) removing accumulated NaOH from said second compartment, and

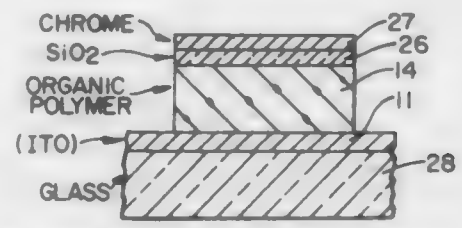
(f) removing accumulated dealkalized monosodium peroxide solution from said first compartment.

5,006,212

METHODS ENABLING STRESS CRACK FREE PATTERNING OF CHROME ON LAYERS OF ORGANIC POLYMERS

Frank J. DiSanto, North Hills; Denis A. Krusos, Lloyd Harbor, and Frederic E. Schubert, Shoreham, all of N.Y., assignors to Copytele, Inc., Huntington Station, N.Y.

Filed Mar. 10, 1988, Ser. No. 166,430
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—192.14 8 Claims

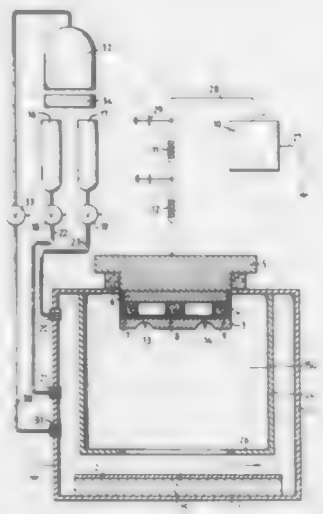


1. A method for depositing a thin layer of chrome on a relatively thick layer of an organic polymer which organic polymer layer is an insulator layer between a grid and a cathode line of an electrophoretic display to enable one to pattern said layer of chrome and to ball bond thereto, comprising the steps of forming a thin layer of silicon dioxide between 0.1 to 0.4 um on said polymer layer with said polymer layer between 4 - 15 um and then forming a layer of chrome between 0.5 to 0.75 um on said silicon dioxide layer with said layer of chrome being thicker than said layer of silicon dioxide to enable one to pattern and wire bond to said chrome layer.

5,006,213
PROCESS FOR COATING A SUBSTRATE WITH ELECTRICALLY CONDUCTIVE MATERIALS

Eggo Sichmann, Gelnhausen; Thomas Krug, Hanau, and Stephan Kempf, Alzenau, all of Fed. Rep. of Germany, assignors to Leybold Aktiengesellschaft, Hanau I, Fed. Rep. of Germany

Filed Aug. 31, 1989, Ser. No. 401,050
Claims priority, application Fed. Rep. of Germany, Jun. 12, 1989, 3919145
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—192.14 4 Claims



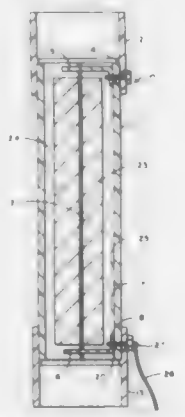
1. Process for coating a plastic substrate with electrically conductive material, comprising the steps of
providing an electrode in a coating chamber which can be evacuated, said electrode being connected to D.C. power source;
providing a target of the material to be coated in said chamber, said target being connected to said electrode;
disposing a plastic substrate in said chamber opposite said target;
introducing a process gas in said coating chamber;
introducing into said chamber at least one additional gas selected from the group consisting of hydrogen and water vapor so that the sputtering pressure is 7×10^{-3} mbar and the partial pressure of the additional gas is 1.40×10^{-3} mbar; and
sputtering said target to deposit said material on said substrate.

5,006,214
CATHODIC PROTECTION APPARATUS

Donald H. Burchnell, 7813 Napoleon St.; Donald J. Burchnell, 10607 Allisheim Ave., both of Orlando, Fla. 32825, and Joseph R. Burchnell, 2007 Dorris Dr., Orlando, Fla. 32807

Filed Feb. 5, 1990, Ser. No. 475,327
Int. Cl.[5] C23F *13/00*
U.S. Cl. 204—197 7 Claims

1. A cathodic protection system for building water supply pipes comprising:
a polymer pipe section;
a polymer pipe coupling on each end of said pipe section for coupling said polymer pipe section in a water supply pipe;
a sacrificial anode formed onto a conductor passing therethrough;
a pair of anode support brackets attached to said pipe section with connection means, said brackets supporting said sacrificial anode conductor at each end thereof to support said sacrificial anode in said pipe section while leaving a passageway between said pipe section and sacrificial anode mounted therein; and
a ground wire electrically coupled through said polymer pipe section to one of said anode support brackets and the sacrificial anode grounding said sacrificial anode whereby

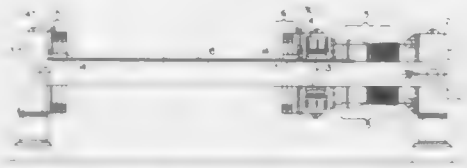


a building's water pipes are protected from corrosion due to electrolytic action.

5,006,215
SQUEEZER APPARATUS

Pierluigi A. Borrione, Milan; Vittorio Caizzi, Crema; Maurizio Marzupio, Capriate San Gervasio, and Jean E. Morris, Segrate-Milan, all of Italy, assignors to The Dow Company, Midland, Mich. and DeNora Permelec S.p.A., Milan, Italy

Filed Jul. 27, 1989, Ser. No. 386,875
Int. Cl.[5] C25B *9/00, 13/00;* B01D *25/00*
U.S. Cl. 204—253 23 Claims



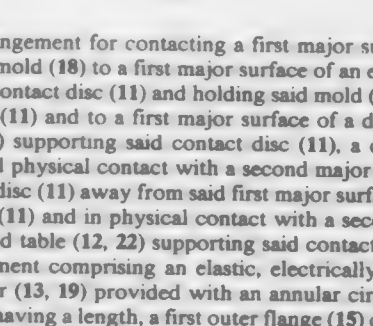
1. An apparatus for uniformly pressing a plurality of flat plate-type structures together comprising a first and second vertical support means, a pair of side rails spaced apart and supported on the support means, the side rails being perpendicular to the support means and adapted to support flat plate-like structures, a plurality of flat plate-like structures with hanger members to slidably and pivotably mount the structures on the side rails, a vertical mobile platen provided with top and bottom hanger guide members connected to a press means adapted for pressing the mobile platen against and toward the flat plate-type structures to compress them together and retracting the mobile platen from the plate-like structures, the press means comprising at least one coiled spring, a first contactor plate attached to the mobile platen and a second contactor plate attached to a positioning device secured to one of the support means and a first and second guide chamber for directing the positioning device and coiled spring perpendicularly to the face of the mobile platen and the support means.

5,006,216
METAL REMOVAL APPARATUS

Joseph J. Dietrich, Painesville; Andrew J. Niksa, Concord, and James J. Stewart, Chardon, all of Ohio, assignors to ELTECH Systems Corporation, Boca Raton, Fla.

Filed Dec. 7, 1989, Ser. No. 447,294
Int. Cl.[5] C25C *7/04;* C25B *11/03, 11/10*
U.S. Cl. 204—257 16 Claims

1. An electrolytic cell for reduction of metal ions comprising:
an electrically non-conductive cell box;
spaced-apart inlet and outlet means to pass an electrolyte containing metal ions into, through and out of said cell box;
at least one electrocatalytically coated, valve metal anode extending across said cell box;
at least one openly porous and metallic reticulated cathode extending across said cell box;
means positioning said anode and said cathode in said box in a spaced-apart relationship sequentially arranged between said box inlet and box outlet means; and

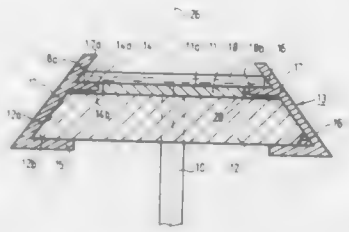


diffusion barrier means in the form of a diffusion barrier envelope enveloping said anode and separating said anode from said cathode and from said inlet and outlet means, said diffusion barrier means defining an anolyte zone containing said anode and a catholyte zone in flow communication with said inlet and outlet means containing said cathode, said diffusion barrier means impeding the access of metal ions to the anode and including means for flow of electrolyte through said cell bypassing said anolyte zone.

5,006,217
ARRANGEMENT FOR CONTACTING AND HOLDING A MOLD

Hermann Koop, Ronnenberg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 21, 1989, Ser. No. 384,223
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1988, 3825592
Int. Cl.[5] C25D *17/00*
U.S. Cl. 204—297 R 15 Claims

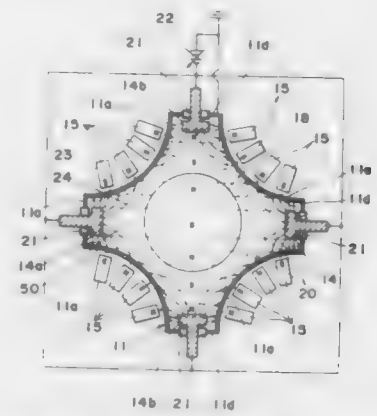


1. An arrangement for contacting a first major surface of a disc-shaped mold (18) to a first major surface of an electrically conductive contact disc (11) and holding said mold (18) to said contact disc (11) and to a first major surface of a disc-shaped table (12, 20) supporting said contact disc (11), a cathode in electrical and physical contact with a second major surface of said contact disc (11) away from said first major surface of said contact disc (11) and in physical contact with a second major surface of said table (12, 22) supporting said contact disc (11); said arrangement comprising an elastic, electrically non-conductive collar (13, 19) provided with an annular circumferential part and having a length, a first outer flange (15) contacting said second major surface (18*a*) of said table (12, 22), and together with said annular circumferential part (18*a*) collar (13, 19) surrounding said table (12, 22), a second radial annular flange (14) extending inwardly from said collar and into an annular space (28) formed between said table (12, 22) said mold (18) and said contact plate (11), said outer flange (15) being stretched around the table in such a manner so as, together with further holding members (17*a*, 19*a*) extending through the annular circumferential part of the collar (13, 19), to press mold (18) into the contact disc (11).

5,006,218
SPUTTERING APPARATUS

Yoshikazu Yoshida, Izumi, and Kunio Tanaka, Toyonaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 16, 1990, Ser. No. 556,002
Claims priority, application Japan, Jul. 20, 1989, 1-187849
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—298.06 6 Claims



1. A sputtering apparatus comprising:
a discharge chamber having four adjacent curved side surfaces protruding toward a center of said chamber to form a discharge space surrounded by the side surfaces therein;
a gas inlet and a gas outlet each formed in said chamber;
cylindrical cathodes, each of which is arranged between the adjacent curved side surfaces of said chamber, to which a negative electric potential is applied;
plural adjacent permanent magnets arranged outside each of the side surfaces of said chamber, said adjacent permanent magnets having different magnetic poles from each other;
a sputtering electrode having a target arranged on a lower surface of the sputtering electrode arranged in the space surrounded by the adjacent curved side surfaces; and
a bed for holding a substrate, having a surface said bed being arranged in said chamber and opposed to said sputtering electrode, a surface of the substrate held by said bed being parallel to an opposed surface of said sputtering electrode, the surfaces of the substrate and said electrode being perpendicular to the adjacent curved side surfaces.

5,006,219
MICROWAVE CATHODE SPUTTERING ARRANGEMENT

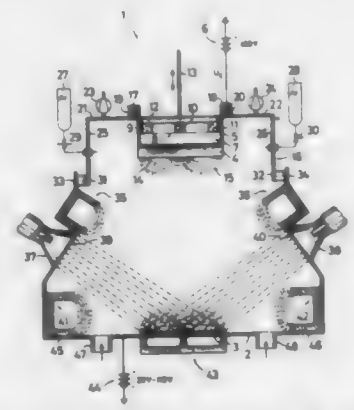
Rudolf Latz, Frankfurt am Main; Michael Scherer, Rodenbach; Michael Geisler, Wächtersbach, and Michael Jung, Kahl, all of Fed. Rep. of Germany, assignors to Leybold Aktiengesellschaft, Hanau, Fed. Rep. of Germany

Filed Sep. 28, 1989, Ser. No. 413,863
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1989, 3920834
Int. Cl.[5] C23C *14/35*
U.S. Cl. 204—298.16 11 Claims

1. Microwave cathode sputtering apparatus, comprising:
a target having an active surface of material to be sputtered onto a substrate;
a cathode connected to the target;
means for mounting a substrate spaced from the target;

magnet means for producing at least one magnetic field penetrating the target with curved field lines leaving and entering said target active surface;

microwave source means generating microwaves directed toward the substrate and passing between the target and



substrate so as to generate a plasma in the vicinity of the substrate; and

magnetic field means in the vicinity of the substrate having a strength sufficient to produce electron cyclotron resonance in the plasma.

5,006,220

ELECTRODE FOR USE IN THE TREATMENT OF AN OBJECT IN A PLASMA

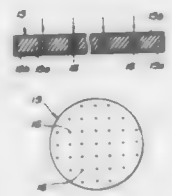
Izumu Hijikata; Akira Uehara, and Mitsuo Samezawa, all of Kanagawa, Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Kanagawa, Japan

Division of Ser. No. 262,531, Oct. 25, 1988. This application Feb. 14, 1990, Ser. No. 479,988

Claims priority, application Japan, Oct. 26, 1987, 62-164365

Int. Cl.[5] H01H *1/46;* **C23F** *4/04;* **B01J** *19/12*

U.S. Cl. 204—298.33 **2 Claims**



1. An electrode for use in the treatment of an object through plasma reaction, said electrode being composed of silicon carbide in its entirety:

said electrode being of a disk shape and having a plurality of through holes defined therein for ejecting a reaction gas therethrough toward said object;

each of said holes having a diameter ranging from 0.3 to 1.0 mm; and

said holes are uniformly spaced at a spacing of 20 mm or less between two adjacent ones of said holes.

5,006,221

OXYGEN CONCENTRATION-DETECTING APPARATUS

Akira Uchikawa; Satoshi Anbe; Masami Kawashima; Tatsumasa Yamda; Tadao Suwa, all of Isesaki, Japan, assignor to Japan Electronic Control Systems Co., Isesaki, Japan

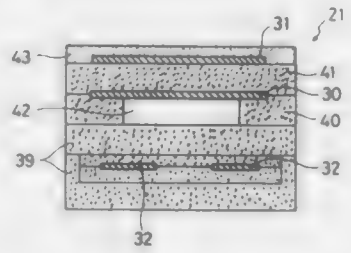
Filed Feb. 23, 1989, Ser. No. 313,690

Claims priority, application Japan, Mar. 1, 1988, 63-45739

The portion of the term of this patent subsequent to Sep. 27, 2005, has been disclaimed.

Int. Cl.[5] G01N *27/417*

U.S. Cl. 204—426 **18 Claims**



1. An oxygen concentration-detecting apparatus for an internal combustion engine which comprises:

a plate substrate;

an oxygen ion-conducting solid plate electrolyte for generating an electromotive force between a first surface contacted with air and a second surface contacted with an exhaust gas of said engine according to the difference between the concentrations of oxygen gases of said air and said exhaust gas, said oxygen ion-conducting solid electrolyte being laminated on a surface of said substrate and said substrate restricting a cavity portion therebetween where air is introduced into;

a pair of electrode members formed at said first and second surfaces, respectively, of said oxygen ion-conducting solid electrolyte, to take out said electromotive force as a detection signal; and

a nitrogen oxide-reducing catalyst layer for promoting the reduction of nitrogen oxide disposed on said second surface of said oxygen ion-conducting solid electrolyte and said electrode located on said second surface.

5,006,222

SOLVENT DEWAXING OF LUBRICATING OILS

Avilino Sequeira, Jr., Port Arthur, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed May 23, 1990, Ser. No. 526,745

Int. Cl.[5] C10G *71/00, 73/06*

U.S. Cl. 208—33 **11 Claims**

1. In a process for producing a dewaxed lubricating oil from a wax-bearing mineral oil by the steps comprising:

mixing the oil with a dewaxing solvent thereby forming an oil-solvent mixture,

chilling the oil-solvent mixture to a dewaxing temperature thereby crystallizing the wax and forming an oil-solvent-crystalline wax mixture,

separating the oil-solvent-crystalline wax mixture to form a dewaxed oil-solvent mixture and crystalline wax,

steam stripping the dewaxed oil-solvent mixture at a temperature of 300° F. to 600° F and pressure of 1 atm to 3 atm, to yield a solvent free dewaxed oil, the improvement which comprises:

contacting the solvent free dewaxed oil with an inert gas having a dew point about −100° F. or lower, at a contacting rate of about 0.5 to 10 SCF/bbl and dehydration pressure of about 0.2 to 16 psia, thereby yielding a dewaxed lubricating oil free of water haze.

5,006,223

ADDITION OF RADICAL INITIATORS TO RESID CONVERSION PROCESSES

Irwin A. Wiehe, Baton Rouge, La.; Martin L. Gorbaty, Westfield, and William N. Olmstead, Murray Hill, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Sep. 29, 1989, Ser. No. 414,352

Int. Cl.[5] C10G *9/32*

U.S. Cl. 208—125 **11 Claims**

1. In a thermal conversion process wherein a petroleum feedstock is heated at elevated temperatures to form low boiling liquid products and wherein gaseous products are formed, the improvement consisting essentially of: carrying out the thermal conversion in the presence of a free radical initiator and in the absence of added hydrogen-donor diluent, the free radical initiator being present in an amount sufficient to increase the rate of thermal conversion without substantially increasing the formation of gaseous products.

5,006,224

START-UP OF A HYDROREFINING PROCESS

John A. Smegal; Haluk A. Bilgic; Robert C. Ryan, and Vance J. Grieshop, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 5, 1989, Ser. No. 361,197

The portion of the term of this patent subsequent to Apr. 16, 2008, has been disclaimed.

Int. Cl.[5] C10G *23/00*

U.S. Cl. 208—254 H **13 Claims**

1. In a hydrorefining process which comprises contacting hydrocarbonaceous oil feed and hydrogen with a catalyst comprising a hydrogenation component selected from the group consisting of Group VIB metal component, Group VIII non-noble metal component and mixtures thereof, and an alumina-containing support, at hydrorefining conditions, the improvement which comprises heating the catalyst at initial start-up from a temperature below about 450° F. to hydrorefining temperature at an average rate of less than 10° F. per hour in the presence of hydrogen and said oil feed.

5,006,225

METHOD AND APPARATUS FOR DETECTING HUMIDITY IN CUT LUMBER

Gratien Beauchemin, Sillery; André Gadoury, Ste-Foy, and Claude Gravel, Beaupré , all of Canada, assignors to Centre de Recherche Industrielle du Quebec, Quebec, Canada

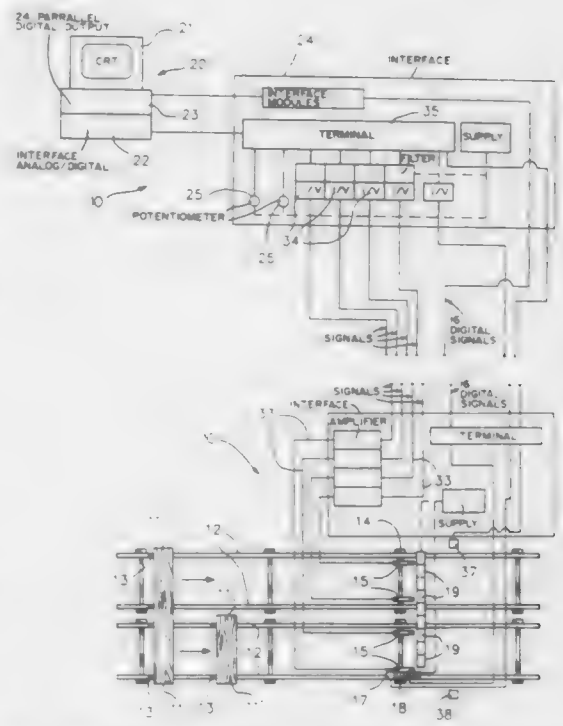
Filed Jun. 27, 1989, Ser. No. 371,810

Claims priority, application Canada, Jun. 29, 1988, 570709

Int. Cl.[5] B07C *5/34;* **G01N** *9/02, 9/36*

U.S. Cl. 209—3.3 **15 Claims**

1. An apparatus for automatically detecting the approximate percentage humidity in predetermined types of cut lumber, said apparatus comprising conveyor mans for conveying individual pieces of cut lumber to weighing means, sensing means associated with said conveyor means for detecting the length and cross-sectional dimension of said individual pieces of cut lumber, said weighing means having platform means for supporting individual ones of said pieces of cut lumber in movement thereover, and one or more weighing cells are secured to said platform means for detecting the weight of said one piece of lumber, control circuit means connected to said sensing means and said one or more weighing cells to receive information signals therefrom, and adjustable control means for conditioning said circuit means to identify and classify said individual lumber pieces in accordance with one or more reference



signals related to selected humidity content weight(s) of said lumber pieces.

5,006,226

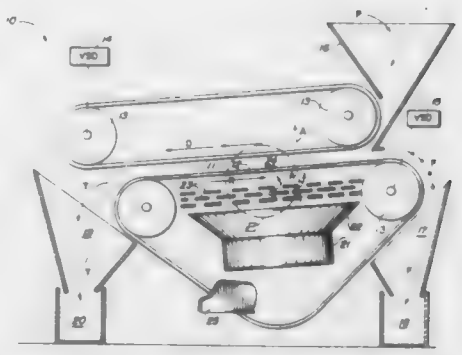
FLUIDIZED, DRY BED, ORE CONCENTRATOR

Leo O. Burt, Jr., P.O. Box 567, Wickenburg, Ariz. 85358

Filed Nov. 2, 1987, Ser. No. 115,972

Int. Cl.[5] B07B *9/00*

U.S. Cl. 209—19 **26 Claims**



1. A fluidized, dry bed, concentrator comprising:

means for fluidizing a mass of dry particulate material so as to physically segregate within the fluidized mass relatively heavy particulates from relatively light particulates; and

means coupled to the fluidizing means for withdrawing from said fluidized mass selected particulate matter so physically segregated wherein said means for withdrawing selected particulate matter comprises:

first extraction means coupled to a region of said fluidized mass in which relatively light particulate matter is segre-

gated for extracting from said fluidized mass said relatively light particulate matter; and

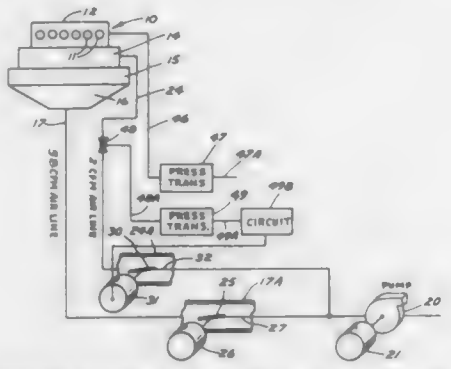
second extraction means coupled to a region of said fluidized mass in which relatively heavy particulate matter is segregated for extracting from said fluidized mass said relatively heavy particulate matter.

5,006,227

VOLUMETRIC FLOW CONTROLLER FOR AEROSOL CLASSIFIER

Steven M. Behm, Minneapolis; Virgil A. Marple, Maple Plain, both of Minn., and Robert M. Burton, Raleigh, N.C., assignors to MSP Corporation, Minneapolis, Minn.

Filed Jun. 26, 1989, Ser. No. 371,986
Int. Cl.[5] B07B 7/00
U.S. Cl. 209—143 12 Claims



1. Apparatus for use in combination with an aerosol classifier, having a flow inlet passageway means for carrying inlet flow, and an air pump for providing a flow carrying aerosols through said inlet passageway means, a conduit connecting said air pump and said passageway means to provide the flow, the classifier having means for classifying aerosols and dividing flow into at least two portions, wherein the improvement comprises valve means in said conduit, said valve means being movable and adjustable for adjusting the flow size of the conduit and thus the volume of air passing through the conduit at a substantially constant setting of the air pump, static pressure sensing means in said flow inlet passageway means, a pressure transducer responsive to said static pressure for providing an output signal proportional to the pressure in said flow inlet passageway means, means for comparing said output signal with a reference signal and for providing a drive signal, and a motor for controlling the position of said valve means in said conduit, said motor being operable in response to said drive signal to position the valve means at a position which is related to the drive signal.

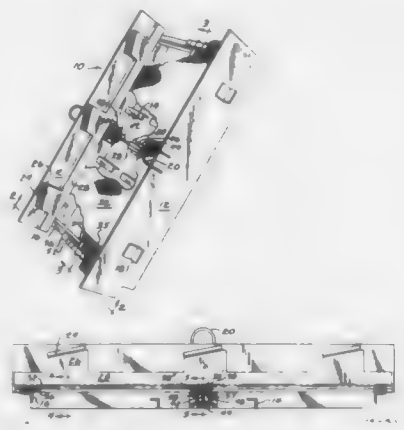
5,006,228

MOUNTING SYSTEM FOR INCREASING THE WEAR LIFE OF A VIBRATING SCREEN PANEL

Thomas A. Anderson, Placerville, Calif.; Richard G. Kalar, Coon Rapids, Minn.; Reinhold S. Markfelt, Moundsview, Minn., and Walter R. Wagner, Minneapolis, Minn., assignors to Johnson Filtration Systems Inc., New Brighton, Minn.

Filed Jan. 16, 1990, Ser. No. 464,929
Int. Cl.[5] B07B 1/46
U.S. Cl. 209—365.3 17 Claims

1. In a screen panel mounting system having a screen panel which includes a plurality of spaced wires which are welded to a series of spaced apart underlying support rod members positioned generally normal thereto so as to define a plurality of flow slots, and a screen box assembly having side walls and end wall portions for receiving and supporting said screen panel in its use position, the improvement comprising a vibrator bar assembly mounted to the opposed side walls of said screen box assembly; a vibrator support plate mounted to said vibrator bar assembly intermediate its end wall portion, said vibrator support plate being adapted to receive fastening means for attaching a vibrator thereto; said vibrator bar assembly including an elongated rigid bar portion having an upper contact surface; means for mounting said vibrator bar assembly to the opposed sides of said screen box assembly; an elongated elastomeric wear strip attached to the underside of said screen panel at a location wherein it will overlie and contact the said upper



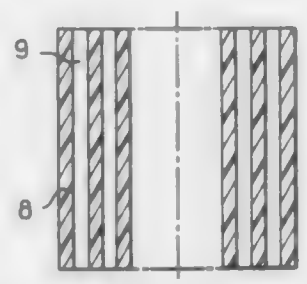
contact surface of said vibrator bar assembly, said wear strip having side portions which extend downwardly past at least a portion of the upper contact surface of said rigid bar portion so as shield said contact surface from possible contact with materials passing through the flow slots of said screen panel; and hold-down means for retaining said screen panel relative to the sides of said screen box assembly.

5,006,229

METHOD OF MANUFACTURING A UNIT ASSEMBLY OF FILTER MEMBRANES, A MOLD USED IN THE METHOD, AND A PRODUCT OBTAINED FROM THE METHOD

Jean-Michel Espenan, Toulouse, France, assignor to Lyonnaise des Eaux, Paris, France

Filed Dec. 11, 1989, Ser. No. 448,527
Claims priority, application France, Dec. 23, 1988, 88 17075
Int. Cl.[5] B01D 67/00
U.S. Cl. 210—321.89 10 Claims



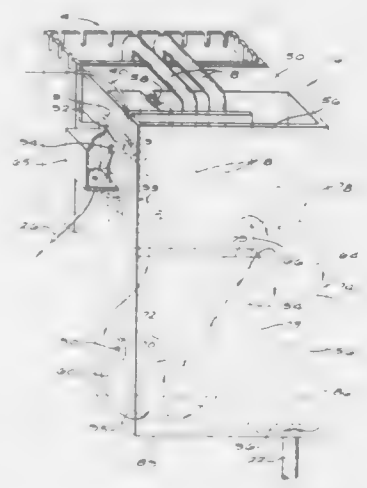
6. A unit filter assembly, constituted by a molded porous polymer block pierced by channels whose longitudinal axes are parallel to one another and whose inner surfaces created during the precipitation of the polymer constitute filter membranes.

5,006,230

DUAL-ACTION AQUARIUM FILTER

Paul Votava, III, 4723 Hamilton St., San Diego, Calif. 92116, and Daniel K. Mojonnier, P.O. Box 1005, Encinitas, Calif. 92024

Filed Apr. 3, 1989, Ser. No. 333,417
Int. Cl.[5] E04H 4/00; C02F 1/24
U.S. Cl. 210—94 11 Claims



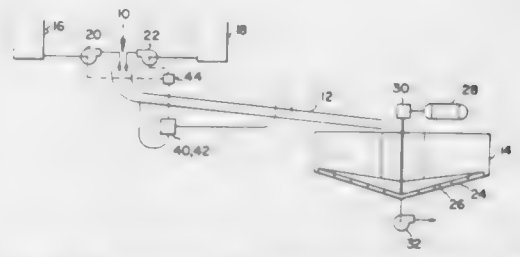
2. Aquarium water filtration means including:
intake means for aquarium water,
prefilter means,
water transfer means for transferring aquarium water from the intake means to the prefilter means,
said prefilter means provided for both froth filtration and mechanical filtration of the aquarium water and comprising side walls, a plurality of chambers separated by partitioning walls, and means for permitting fluid flow between said chambers;
said prefilter means including means for the feeding of said aquarium water into and through the prefilter means;
said prefilter means comprising:
(a) a collection chamber for receiving aquarium water from the intake means;
(b) mechanical filter means for mechanical filtration of the aquarium water;
(c) froth filtration means for froth filtration of the aquarium water; and
(d) drainage means for drainage of aquarium water filtered by the mechanical filter means and the froth filtration means from the prefilter means; and
said prefilter means also including:
(a) an outlet filter chamber containing said mechanical filter means and said drainage means;
(b) a collection channel;
(c) a frothing chamber;
(d) a skimmed water exit channel;
(e) a first, a second, a third, a fourth, and a fifth opening comprising said means for permitting fluid flow;
(f) a first partitioning wall, mainly separating the collection chamber from the outlet filter chamber and extending from a bottom wall of the prefilter means to at least a first level, whereby the collection chamber and the outlet filter chamber communicated via said first opening, located in or above the first partitioning wall, for allowing water to flow from the collection chamber to the outlet filter chamber at or above the first level;
(g) a third partitioning wall, mainly separating the collection chamber from the collection channel and extending above the first level, whereby the collection chamber and collection channel communicate via said third opening, located in or below the bottom of said third partitioning wall;
(h) a fourth partitioning wall, mainly separating the collection channel from the frothing chamber and extending above the first level, whereby the collection channel and frothing chamber communicate via said fourth opening, located in said fourth partitioning wall and extending below the first level, for creating a counter-current of water in the frothing chamber;
(i) a second partitioning wall, separating the collection chamber from the skimmed water exit channel and mainly separating the frothing chamber from the skimmed water exit channel, whereby the frothing chamber and the skimmed water exit channel communicate via said second opening, provided at or below the bottom of the second partitioning wall;
(j) a fifth partitioning wall, mainly separating the skimmed water exit channel from the outlet filter chamber and extending from the bottom wall of the prefilter means to at least a second level, lower than the first level, whereby the skimmed water exit channel and the outlet filter chamber communicate via said fifth opening located in or above said fifth partitioning wall for allowing water to flow from the skimmed water exit channel to the outlet filter chamber at or above the second level; and
(k) frothing means for crating a vertical stream of gas bubbles in the frothing chamber for froth filtration of water entering the frothing chamber from the collection channel, whereby said counter-current of water flows counter to said vertical stream of gas bubbles;
(l) froth separation means disposed in the frothing chamber for removing froth created by the frothing means; and
(m) froth collection means for collecting and removing froth created by the frothing means from the prefilter means.

5,006,231

FLOCCULANT CONTROL SYSTEM

Hayward B. Oblad, and Gary F. Meenan, both of Bethel Park, Pa., assignors to Consolidation Coal Company, Pittsburgh, Pa.

Continuation of Ser. No. 325,837, Mar. 20, 1989, abandoned.
This application Aug. 24, 1990, Ser. No. 572,318
Int. Cl.[5] B01D 17/12, 21/30; C02F 1/52
U.S. Cl. 210—96.1 2 Claims



1. A system apparatus for automatically controlling the supply of additives to a feed slurry passing into a thickener in which the additives coagulate different solids in the feed slurry to separate the solids from the slurry water, comprising;
(a) a thickener including means to feed said slurry to the thickener, and to coagulate separate solids of the feed slurry and separate the solids from the slurry water;
(b) a first means coacting with the feed slurry passing into the thickener responsive to the light reflective characteristics of the solids of the feed slurry and the solids concentrations of the feed slurry, said first means comprising a first optoelectric detector having a transparent tube containing light emitting diodes passing light into the feed slurry and a photoconductor means for generating a first signal in response to the light reflected by the solids, and means to send said first signal to a controller means;
(c) a second means coacting witht the feed slurry passing into the thickener responsive to the light reflective characteristics of the solids of the feed slurry and less respon-

sive than said first means to the solids concentration of the feed slurry, said second means comprising an optoelectric detector having a transparent tube containing light emitting diodes passing light into the feed slurry and a photoconductor means for generating a second signal in response to the light reflected by the solids, and means to send second signal to said controller means;

d) first and second additive feed means each including variable means to supply the additives to the feed slurry; and,

e) said controller means comprising means to receive said first and second signals and means to generate signals controlling functioning of said variable means.

5,006,232

SEWAGE TREATMENT PLANT

Peter J. Lidgitt; Derek J. Freeman, both of Trowbridge, and Paul F. Cooper, Stevenage, all of Great Britain, assignors to The Secretary of State for Defence, in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

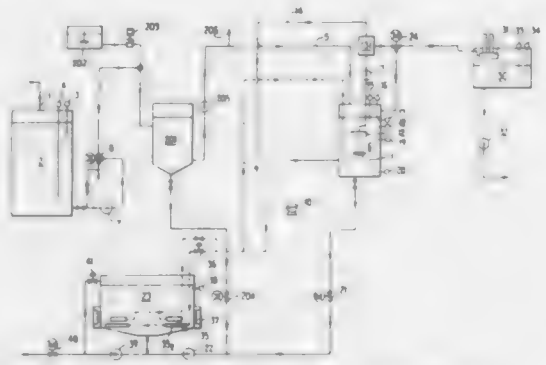
PCT No. PCT/GB88/00434, § 371 Date Jan. 22, 1990, § 102(e) Date Jan. 22, 1990, PCT Pub. No. WO88/09740, PCT Pub. Date Dec. 15, 1988

PCT Filed Jun. 2, 1988, Ser. No. 458,618

Claims priority, application United Kingdom, Jun. 5, 1987, 8713211

Int. Cl.[5] C02F *3/20*

U.S. Cl. 210—96.1 **11 Claims**



1. An aerobic sewage treatment plant comprising:

a vacuum flush system;

a sewage collection tank, connected to the vacuum flush system, for receiving sewage therefrom;

a settlement tank, connected so as to receive liquid sewage output from said collection tank, said settlement tank having a liquid sewage outlet and a settled solids outlet;

a water dilution means, connected to said liquid sewage outlet of the settlement tank, for diluting liquid sewage and for optimizing subsequent biological processing;

an aeration tank, connected to receive diluted liquid sewage from the settlement tank, said aeration tank having a sewage outlet and a sludge deposit outlet;

a sludge monitor, connected to the aeration tank, for providing a signal for controlling release of sludge;

transfer pump means for controllably pumping liquid sewage output from said sewage collection tank to said settlement tank, for controllably pumping liquid sewage from said settlement tank to said water dilution means, for controllably pumping diluted liquid sewage from said water dilution means to said aeration tank, for pumping said sewage from said aeration tank sewage outlet and sludge deposits from said aeration tank sludge deposit outlet, in response to and under the control of a transfer controller; and

a transfer controller, responsive to at least to said sludge monitor signal, for enabling said transfer pump means to pump between said sewage collection tank, said settlement tank, said water dilution means, said aeration tank and remove material from said aeration tank in controlled batches.

5,006,233

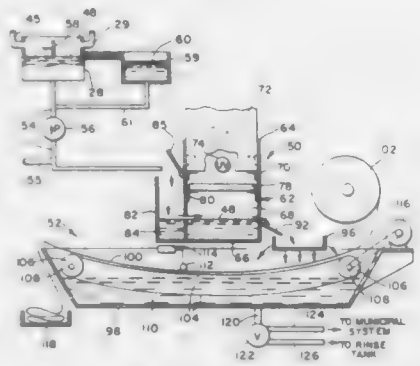
WATER PURIFICATION SYSTEM

Charles M. Muisener, Newington, Conn., assignor to Loctite Corporation, Newington, Conn.

Filed Jan. 11, 1988, Ser. No. 142,738

Int. Cl.[5] C02F *1/32, 1/52*

U.S. Cl. 210—96.1 **26 Claims**



1. Apparatus for purifying, in a continuous operation, rinse water containing a monomer emulsion of the anaerobic or heat cure variety plus a photoinitiator to cause the generation of radicals to initiate polymerization upon exposure to UV energy comprising:

curing means proximate to but spaced from the rinse water for exposing the rinse water containing the monomer emulsion to UV energy to cause the emulsion to polymerize;

delivery means for directing uninterrupted flow of the rinse water containing the emulsion past and proximate to said curing means at a rate sufficient to substantially complete polymerization of the emulsion in the rinse water; and

filter means positioned downstream of said curing means to receive from said curing means the irradiated rinse water containing the polymer, said filter means operable for removing the polymer from the rinse water.

5,006,234

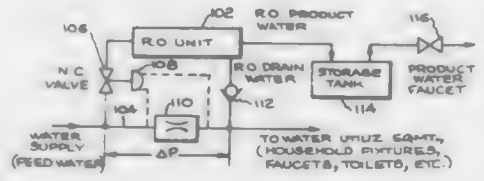
REVERSE OSMOSIS WATER PURIFICATION SYSTEMS

Krishna S. Menon, and Michael J. Witham, both of Liverpool, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 20, 1990, Ser. No. 496,570

Int. Cl.[5] B01D *61/08*

U.S. Cl. 210—98 **17 Claims**



1. A water purification system comprising a section of a water line which supplies water through said section to utilization equipment, such as faucets, toilets, washing machines and the like, a reverse osmosis system having a feed water inlet, a reject water outlet and a product water outlet, means in said line section for establishing a differential pressure thereacross when water flows through said line when demanded by said utilization equipment, and means for connecting said reverse osmosis system to said line so that water supplied by said line flows from the feed water inlet to the reject water outlet in response to said differential pressure and product water is produced at said product water outlet.

5,006,235

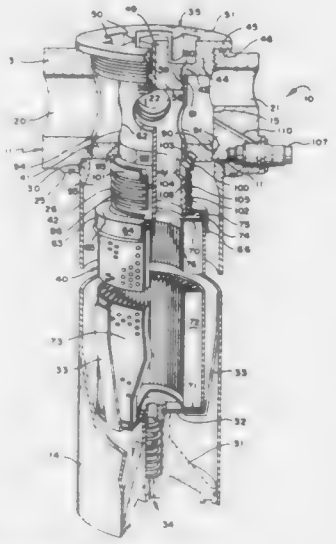
BARRIER FLANGE FILTER ASSEMBLY INCLUDING COVER

Roydon B. Cooper, Locust Valley, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Mar. 20, 1986, Ser. No. 841,614

Int. Cl.[5] B01D *27/06, 27/08*

U.S. Cl. 210—136 **28 Claims**



1. A filter assembly comprising:

a housing which has an opening;

a cover which is detachably and sealingly mounted to the housing at one end of the opening;

a barrier flange which is detachably and sealingly mounted to the housing within the opening and which has upstream and downstream sides and an aperture extending therebetween, said housing including at least one port which communicates with the opening between the cover and the barrier flange;

a flow tube which has first and second end means, which is joined at the first end means to the cover and extends through the aperture in the barrier flange, and which includes at least one orifice between the barrier flange and the cover, said barrier flange being joined to the flow tube; and

a filter unit which is mounted to the second end means of the flow tube and which includes a hollow, cylindrical filter element and first and second impervious end means for capping the filter element, said flow tube communicating with the interior of the filter element via an aperture in the first end means of the filter unit;

wherein the cover, barrier flange and filter unit are coaxially joined to the flow tube and wherein the barrier flange is no larger than the cover and the filter unit is no larger than the barrier flange, whereby the filter unit may be withdrawn through the opening by removing the cover from the housing.

5,006,236

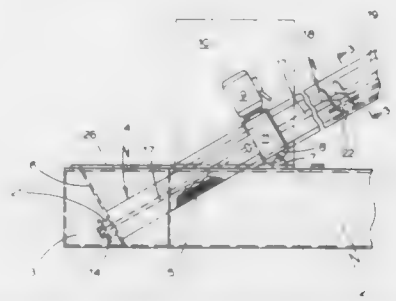
CONTAMINANT ENTRAINED FLOW SEPARATING APPARATUS

Frank M. Croket, Louisville, Ky., assignor to Hallco Fabricators, Inc., Louisville, Ky.

Filed Sep. 25, 1989, Ser. No. 411,814

Int. Cl.[5] B01D *29/56, 29/94*

U.S. Cl. 210—162 **11 Claims**



1. Apparatus for separating solid contaminants from contaminant entrained fluid stream flows comprising:

a sump for containing filtered flows from which solid contaminants have been removed; a longitudinally extending inclined filtering trough having lower and upper ends with said lower end pivotally disposable in said sump about a pivot axis intermediate said lower and upper ends to pass filtered flows thereto, said trough having an inlet above said lower end for introduction of contaminant entrained flows thereto for filtration thereof and an outlet adjacent said upper end for free passage therefrom of separated solids;

longitudinally extending conveyor means disposed within said filtering trough for removing the separated solids to said trough outlet;

power means spaced intermediate said trough inlet and said trough outlet above said sump substantially adjacent said pivot axis in cooperative drive connection with the lower extremity of said conveyor means to drive said conveyor means; and

means to remove said filtered flows from said pump.

5,006,237

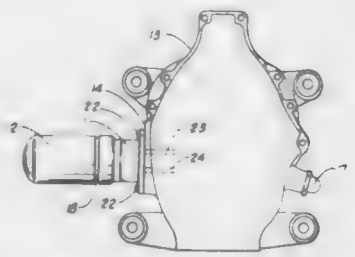
SPIN-ON OIL FILTER ADAPTOR FOR FOUR CYLINDER CONTINENTAL AIRCRAFT ENGINES

Floyd B. Jones, P.O. Box 3052, Borger, Tex. 79008

Filed Aug. 14, 1989, Ser. No. 344,357

Int. Cl.[5] F01M *11/03*

U.S. Cl. 210—168 **1 Claim**



1. An apparatus, comprising:

a four cylinder Continental Aircraft engine with an oil cooler pad having two openings for oil passage on a crank case of the engine;

a filter adaptor body connected to said oil cooler pan and having an oil inlet passage and an oil outlet passage with the oil inlet passage in the filter adaptor body being aligned with one of the openings in the oil cooler pad and the oil outlet passage in the filter adaptor body being aligned with the other opening in the oil cooler pad; and

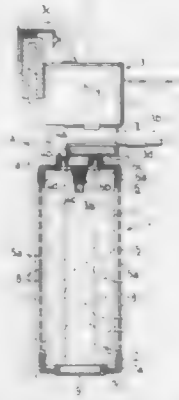
a spin on filter connected to the filter adaptor body with the oil inlet passage and the oil outlet passage being in flow communication with the spin on filter whereby oil is circulated from the oil inlet passage through the spin on filter from one of said holes and discharged back into said other hole through the oil outlet passage.

5,006,238

FILTER FOR USE IN A FISH CULTURING TANK

Kazutoshi Tominaga, Higashiosakashi, Japan, assignor to Kabushiki Kaisha Tominaga Jyushi Kogyosho, Osaka, Japan

Filed Jun. 20, 1989, Ser. No. 368,578
Int. Cl.[5] E04H *3/16*
U.S. Cl. 210—169 3 Claims



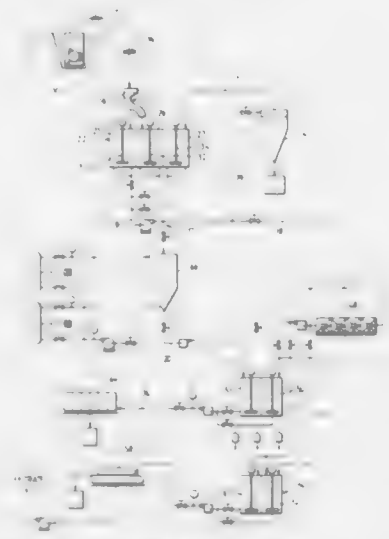
1. A filter for use in a fish culturing tank comprising:
a generally vertically-disposed, slotted outer cylindrical casing containing a cylindrical filter medium and having a top open end and a bottom open end, said casing also having a pair of removable caps, an upper cap associated with said top open end, and a lower cap associated with said bottom open end, each of which has an aperture formed therethrough, said upper cap additionally having a raised rim surrounding said aperture thereof and said lower cap having a plug removably mounted in said aperture thereof, so that said aperture is normally closed;
a watertightly-constructed electric pump having a downwardly depending inlet nozzle for drawing filtered water from said casing and an outlet nozzle for returning water to the tank;
an interchangeable attachment means for removably mounting said pump directly atop said top end of said casing with said inlet nozzle extending into said casing, said attachment means comprising a generally annular collar having a generally horizontally-disposed flange portion having a downwardly depending outer shank portion which is configured and dimensioned to sealingly mate with said raised rim of said upper cap and a downwardly depending inner shank portion, radially-inwardly spaced from said outer shank portion, which defines a central bore which is configured and dimensioned to allow said inlet nozzle to pass therethrough; and
means for removably mounting said filter inside said tank.

5,006,239

APPARATUS FOR TREATMENT OF OILY SLUDGE

Surendra K. Mishra, The Woodlands, Tex., assignor to Tetra Technologies, Inc., The Woodlands, Tex.

Continuation of Ser. No. 201,522, Jun. 2, 1988, abandoned, which is a continuation-in-part of Ser. No. 933,119, Nov. 20, 1986, Pat. No. 4,851,123. This application Apr. 23, 1990, Ser. No. 512,608
Int. Cl.[5] C02F *1/40*; B01D *17/032*
U.S. Cl. 210—181 9 Claims



1. A separation apparatus, comprising:
a size separator for separating a mixture of hydro-phobic oil, solid particulates, and water into a fines fraction and a coarse fraction; wherein the fines fraction includes under-sized particles, hydrophobic oil, and water; and wherein the coarse fraction includes over-sized particles;
a hydrocyclone connected to the size separator for separating the fines fraction into a low density fraction a high density fraction; and
a froth flotator connected to the hydrocyclone for separating the low density fraction into a substantially hydrophobic component and a substantially hydrophilic component.

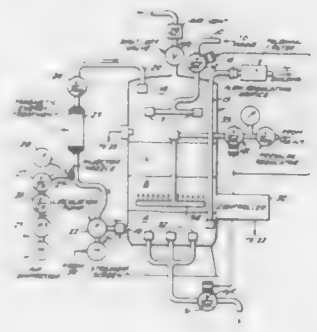
5,006,240

WATER-TREATMENT SYSTEM

Robert F. Steffero, Sr., Myrtle Beach, S.C., assignor to Aqua Systems Division of Chem-Free, Inc., Kennesaw, Ga.

Filed Feb. 6, 1990, Ser. No. 475,765
Int. Cl.[5] B01D *35/06*; C02F *1/48*
U.S. Cl. 210—223 11 Claims

1. A water-treatment system, comprising a tank having a lower filter-bed region and an upper region above said filter-bed region, a water-inlet connection to said upper region for admission of untreated water under delivery pressure, a circulation loop for conveying water from said lower region for discharge into the upper region of said tank, and a water-outlet connection from the lower region of said tank for external delivery of treated water; said circulation loop including in series a continuously running circulation pump, an air-admission connection and a magnetic-energy treatment device, and air-compressor means for delivering air through said air-admission connection to the flow of water in said loop prior to passage through said magnetic-energy treatment devices; and air-venting means above said water-outlet connection for venting air from said tank, whereby airborne oxygen is continuously exposed to recirculating water for oxidation of impurities to a state capable of magnetic-energy treatment to enhance impurity coagulation with density greater than unity, further whereby coagulated impurities will enable enhanced filter-bed accumulation of impurities; and a backwashing system comprising means to intermittently circulate upwardly directed flows of inlet water within a lower region of said filter-bed, whereby to dislodge and suspend filter-bed accumulations, and



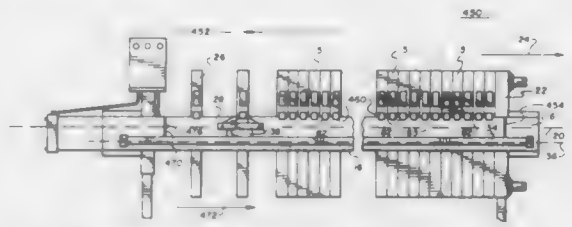
means including a selectively operable drain valve connected to the lower region of said tank for discharge of water with suspended accumulations from within said lower region of the filter-bed at least as long as inlet water is being admitted to the lower region of the filter bed.

5,006,241

APPARATUS FOR SHIFTING FILTER PLATES IN A FILTER PRESS

Steven S. Davis, Farmington, Utah, assignor to Envirotech Corporation, Menlo Park, Calif.

Continuation of Ser. No. 936,091, Nov. 28, 1986, Pat. No. 4,806,239. This application Feb. 21, 1989, Ser. No. 312,910
The portion of the term of this patent subsequent to Feb. 21, 2006, has been disclaimed.
Int. Cl.[5] B01D *25/34*
U.S. Cl. 210—225 6 Claims



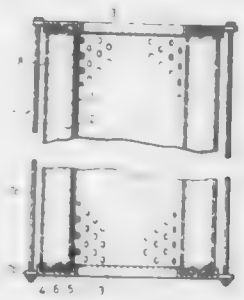
1. A filter press comprising:
an elongate frame;
a filter press head plate mounted on one end of said frame;
an upstanding follower slidably mounted on an opposing end of said frame;
a plurality of filter plates supported on said frame between said press head plate and said follower, said filter plates being made longitudinally slidable along said frame;
a rodless fluid pressure cylinder mounted on said frame;
a carriage mounted on said rodless fluid pressure cylinder for longitudinally displacement along said frame;
connection means, mounted on said carriage for effecting a releasable union with at least one of said filter plates wherein said filter plate is carried along said frame by said moving carriage.

5,006,242

MECHANICALLY SECURED WOOL FILTER CARTRIDGE

Mikio Sato, Sagamihara, and Tsuneo Yamaguchi, Kawasaki, both of Japan, assignors to Wako Sangyo Kabushiki Kaisha, Tokyo, Japan

Filed May 26, 1989, Ser. No. 357,935
Claims priority, application Japan, Sep. 30, 1988, 63-247231
Int. Cl.[5] B01D *27/04*
U.S. Cl. 210—232 2 Claims



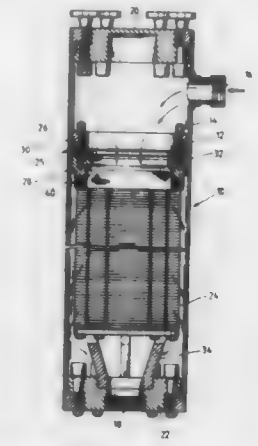
1. A cartridge-type fluid filtration element for filtrating a fluid, comprising:
a porous core cylinder;
a filtration cylinder formed of glass wool of large thickness fitted around said porous core cylinder; and
end plates secured to both end surfaces of said filtration cylinder without bonding or molding; wherein highly densified portions for hindering permeation of the fluid are formed at the ends of said filtration cylinder by compression of said glass wool filtration material by fastening bands wound flexibly on end outer peripheries thereof, and wherein said end plates are press-fitted to highly densified end portions of said filtration cylinder by interposed mechanical means connecting said end plates.

5,006,243

FILTER BAG SECURING RING

Johnny Arnaud, Houston, Tex., assignor to Hydrotreat, Inc., Pasadena, Tex.

Continuation of Ser. No. 110,976, Oct. 20, 1987, abandoned. This application Aug. 24, 1989, Ser. No. 399,356
Int. Cl.[5] B01D *29/27*
U.S. Cl. 210—232 9 Claims



1. A filter apparatus, comprising:
a housing having a fluid inlet and a fluid outlet;
a filter basket situated inside said housing;
a filter bag adjacent said filter basket; and
a securing apparatus for securing a portion of said filter bag to said filter basket, comprising:

a receiving member having an inner surface for seating against said filter bag and having a ledge projecting radially inwardly from said inner surface, and

a securing ring having a generally V-shaped outer circumference, said securing ring having a lower surface adapted to rest against the interior of said filter bag and proximate said ledge, and sized to force its V-shaped outer circumference against said inner surface through said filter bag.

5,006,244

FLUID PURIFICATION DEVICE

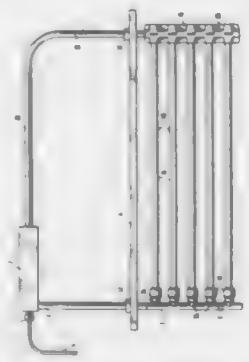
Jan Maarschalkerweerd, Lambeth, Canada, assignor to Trojan Technologies, Inc., London, Canada

Division of Ser. No. 243,845, Sep. 13, 1988, Pat. No. 4,872,980. This application May 31, 1989, Ser. No. 359,647

The portion of the term of this patent subsequent to Oct. 10, 2006, has been disclaimed.

Int. Cl.[5] C02F *1/32*

U.S. Cl. 210—243 **16 Claims**



1. A fluid purification module adapted to be inserted in a body of water to be purified, the module comprising in combination a frame including a pair of opposed legs laterally spaced from each other and adapted for insertion into the water to be purified, a plurality of water purification lamps extending between and supported by said legs, each lamp having one end thereof located towards said one leg and an opposite end which is closed and located towards said other leg, said lamps including means permitting immersion of the lamps into water, a plurality of electrical lead wires respectively connected to said lamps, said frame having a first portion directly connected to at least one of said legs, and a ballast incorporated in said first portion of said frame and including means connected to said lead wires for controlling all of said lamps.

5,006,245

WATER PURIFYING DEVICE

Takeshi Yukishita, Toyohashi, Japan, assignor to Sanki System Product Co., Ltd., Tokyo, Japan

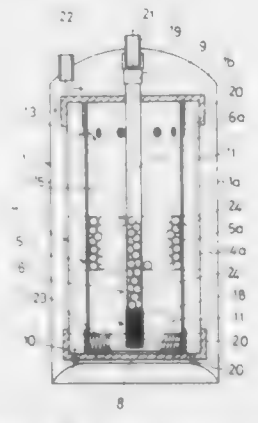
Filed Feb. 8, 1990, Ser. No. 477,324

Claims priority, application Japan, Feb. 13, 1989, 1-15696[U]

Int. Cl.[5] C02F *9/00*

U.S. Cl. 210—256 **3 Claims**

1. A water purifying device comprising a cylindrical housing equipped with a water inlet joint and a water outlet joint at a top cover of said housing, an outer cylinder coaxially mounted within said housing and having connection holes at a bottom of said outer cylinder to connect an inside space of said housing and an inside space of said outer cylinder, an intermediate cylinder coaxially mounted within said outer cylinder and having connection holes at a top portion of said intermediate cylinder across a wall of said intermediate cylinder, an upper cover plate air-tightly and commonly closing a top opening of both said outer cylinder and said intermediate cylinder with an air-tight fit, a lower cover plate commonly closing a bottom opening of both said outer cylinder and said intermediate cylinder, an inner cylinder coaxially mounted within said intermediate cylinder and having a top end projected from said upper cover plate to connect with said water outlet joint and having a connection hole at a lower end to open to an inner area of said intermediate cylinder, and water purifying materials packed in a gap between said outer cylinder and said intermediate cylinder and in a gap between said intermediate cylinder and said inner cylinder and in a space within said inner cylinder, and functioning so that water being introduced from said water inlet joint flows inside of said housing,



of said outer cylinder, of said intermediate cylinder, and of said inner cylinder to be purified by said water purifying materials and flows out from said water outlet joint and wherein said water purifying material packed in the gap between said outer cylinder and said intermediate cylinder and in the gap between said intermediate cylinder and said inner cylinder contains active carbon made from coconut shell and wherein said water purifying material packed within said inner cylinder is ceramic balls.

5,006,246

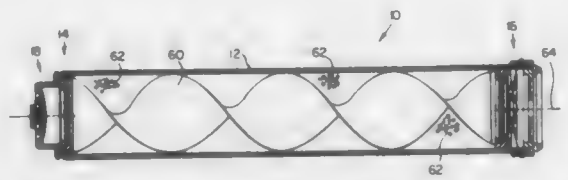
BAFFLED PARTICULATE MATERIAL HOUSING

Evan A. Edwards, Pittsford; Peter J. Harissis, Rush, and Krishna S. Menon, Liverpool, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 19, 1989, Ser. No. 452,924

Int. Cl.[5] B01D *27/02*

U.S. Cl. 210—264 **9 Claims**



1. A fluid treatment device including:

a cylindrical housing having first and second ends;

particulate material for treating said fluid, said particulate material being disposed within said housing;

inlet means for flow of fluid into the particulate material at or adjacent one end of said housing;

outlet means for flow of fluid out of the particulate material at or adjacent the other end of the housing; and

a helical baffle within said housing, said baffle extending at least part way between said inlet means and said outlet means and including a spine extending generally along the axis of said cylindrical housing and fins extending along the spine and away from the spine into continuous contact with the internal surface of the housing along helices.

5,006,247

ASYMMETRIC POROUS POLYAMIDE MEMBRANES

Kathleen A. Dennison, St. Paul; Bruce E. Kolcinski, Birchwood Village; Subramanian Krishnan, St. Paul, and Patrise M. Russell, Birchwood Village, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 15, 1989, Ser. No. 394,229

Int. Cl.[5] B01D *67/00, 69/02, 71/56*

U.S. Cl. 210—500.38 **31 Claims**



1. An asymmetric, porous polyamide membrane permeable to fluid flow comprising:

(A) a porous skin layer, and

(B) adjacent to the skin layer, an integral, porous support layer having at least one region comprising a network of substantially parallel, hollow tube-like structures, each of the tube-like structures being oriented such that the longitudinal dimension of each tube-like structure is essentially perpendicular to the skin layer;

wherein:

the skin layer is relatively thin and dense compared to the support layer,

the pore diameters in the skin layer are relatively small compared to the diameters of the tube-like structures in the support layer,

in membranes having support layers with more than one region, the cross-sectional area of the tube-like structures is larger in regions located farther from the skin layer, and

the polyamide is an aliphatic polyamide having a glass transition temperature of less than 200° C.

26. A process for making a porous asymmetric membrane comprising the steps of:

(A) preparing a casting solution comprising an aliphatic polyamide, having a glass transition temperature less than 200° C., dissolved in an alcohol/salt solution;

(B) coating a film of preselected thickness of the casting solution onto the surface of a casting substrate;

(C) exposing the resulting film to a non-solvent liquid bath thereby precipitating the polyamide and forming the porous, asymmetric polyamide membrane; and

(D) recovering the membrane from the bath and drying it.

5,006,248

METAL OXIDE POROUS CERAMIC MEMBRANES WITH SMALL PORE SIZES

Marc A. Anderson, and Qunyin Xu, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 425,668, Oct. 23, 1989. This application Aug. 6, 1990, Ser. No. 563,013

Int. Cl.[5] B01D *63/00*

U.S. Cl. 210—500.25 **4 Claims**

1. A composition of matter comprising a porous, transparent titanium dioxide ceramic membrane having a mean pore diameter of less than 40 Angstroms and a surface area available for contact of a filtrate in excess of 200 sq. m/g.

3. A composition of matter comprising a porous, transparent metal oxide ceramic membrane having a mean pore diameter of less than 40 Angstroms, a metal selected from the group consisting of transition metals and mixtures thereof and a surface area available for contact of a filtrate in excess of 200 sq. m/g.

5,006,249

ANAEROBIC WASTE WATER TREATING PROCESS

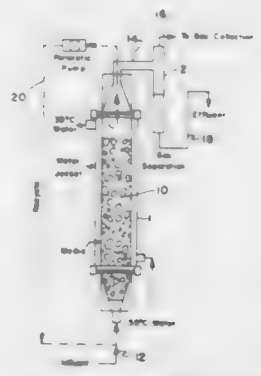
George A. Green, Elizabeth, and Stanislaus A. Kaczmarek, Morris Plains, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Dec. 29, 1988, Ser. No. 290,402

The portion of the term of this patent subsequent to Jan. 8, 2008, has been disclaimed.

Int. Cl.[5] C02F *3/28*

U.S. Cl. 210—603 **11 Claims**



1. A process for treating waste water separated from crude oil at a production well, said waste water comprising a Group IIA metal component of the Periodic Table of Elements, and an alkali metal component in an amount of at least about 7000 mg/l, calculated as elemental metal, which process comprises: contacting said water, in a contacting zone, in the absence of added molecular oxygen, with an acclimated biomass of anaerobic microorganisms at conditions to convert at least a portion of said organic pollutants to carbon dioxide and methane, wherein said biomass is acclimated by the steps which comprise:

(a) contacting a biomass of anaerobic microorganisms, in the absence of added molecular oxygen, with a water stream comprising organic pollutants, a Group IIA metal component of the Periodic Table of the Elements, and a low concentration of an alkali metal component; and

(b) incrementally adding an additional amount of said alkali metal component to said water of step (a) to acclimate said biomass of step (a).

5,006,250

PULSING OF ELECTRON DONOR AND ELECTRON ACCEPTOR FOR ENHANCED BIOTRANSFORMATION OF CHEMICALS

Paul V. Roberts, Cupertino; Gary D. Hopkins, Sunnyvale; Lewis Semprini, Palo Alto; Perry L. McCarty, Stanford, and Douglas M. MacKay, Venice, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Dec. 4, 1987, Ser. No. 128,664

Int. Cl.[5] C02F *3/34*

U.S. Cl. 210—610 **29 Claims**

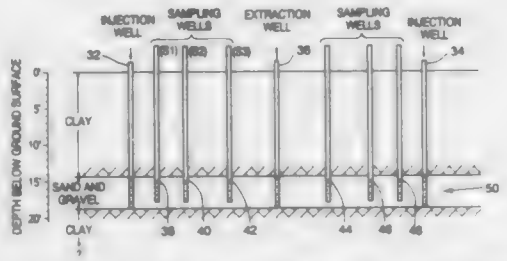
1. A method for purifying an underground water supply containing halogenated aliphatic compounds by in-situ biodegradation of said compounds, comprising:

injecting at least two water aliquots into an aquifer zone, at least one of said aliquots containing an electron donor capable of being utilized by an indigenous population of microorganisms contained in said groundwater supply as a primary growth substrate, and at least one of said aliquots containing an electron acceptor for oxidation of said primary growth substrate, wherein each of said aliquots are injected in said aquifer zone at separate points of addition

into said aquifer zone, to stimulate growth of said microorganisms and to distribute them throughout said aquifer zone to cause in-situ degradation of said halogenated aliphatic compounds by metabolic activity of said microorganisms.

16. A method for purifying an underground water supply containing halogenated aliphatic compounds by in-situ biodegradation of said compounds, comprising:

(a) addition of an electron donor into at least one aliquot of water, said electron donor being capable of being utilized



by an indigenous population of microorganisms contained in said groundwater supply as a primary growth substrate, and addition of an electron acceptor into at least a second aliquot of water for oxidation of said primary substrate; and

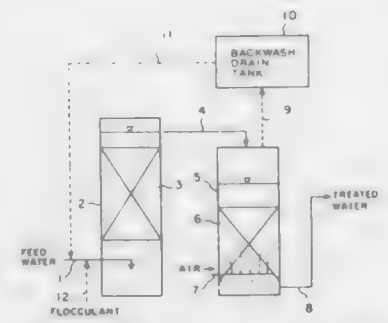
(b) injecting into an aquifer zone, in alternating pulsed cycles each of said aliquots containing said donor and said acceptor to stimulate growth of said microorganisms and to distribute them throughout said zone to cause in-situ degradation of said halogenated aliphatic compounds by the metabolic activity of said microorganisms.

5,006,251

PROCESS FOR TREATING ORGANIC WASTE WATER

Kazuo Takeishi, Ibaraki; Yasuhiro Okubo, and Takashi Itoh, both of Tokyo, all of Japan, assignors to Director General, Public Works Research Institute, Ministry of Construction, Ibaraki and Nishihara Environmental Sanitation Research Corporation Limited, Tokyo, both of, Japan

Filed Sep. 27, 1989, Ser. No. 413,188
Int. Cl.[5] C02F *3/06*
U.S. Cl. 210—618 5 Claims



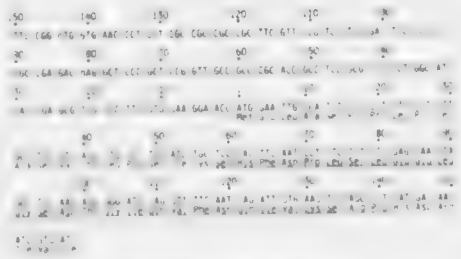
1. A process for treating organic waste water which comprises a first step of introducing the organic waste water containing suspended solids into a solid-liquid separator packed with a filter medium having a void ratio of at least 70%, via a lower portion of the separator, and discharging the waste water from the separator via an upper portion of the separator to thereby remove the suspended solids from the waste water, and a second step of introducing the effluent from the first step into an aerobic filter bed packed with a granular filter medium and supplied with oxygen-containing gas from a lower portion of the filter medium-packed bed, via an upper portion of the filter bed, and discharging the effluent from the filter bed via a lower portion of the filter bed to thereby treat the effluent aerobically.

5,006,252

PURIFIED PROTEASE NEXIN

Randy W. Scott, Sunnyvale, and Joffre B. Baker, El Granada, both of Calif., assignors to Invitron, St. Louis, Mo. and University of Kansas, Lawrence, Kans.

Continuation of Ser. No. 871,501, Jun. 6, 1986, abandoned, which is a continuation-in-part of Ser. No. 870,232, Jun. 3, 1986, abandoned. This application Jul. 10, 1989, Ser. No. 378,434
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—635 5 Claims



1. A method to purify native protease nexin 1 (PN-I), which method comprises:

applying a medium containing PN-I to a column containing heparin bound to solid support, said column being preequilibrated,

eluting said column with a gradient of 0.3–1M NaCl to obtain fractions,

recovering the fractions containing classes of PN-I, followed by

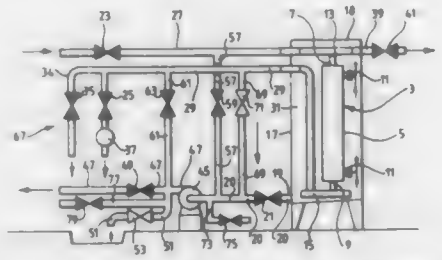
subjecting said fractions to gel exclusion chromatography using a gel with an exclusion of 100 kd.

5,006,253

METHOD OF OPERATING MEMBRANE SEPARATION SYSTEMS

John Siegers, Breda, Netherlands, assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 31, 1989, Ser. No. 331,476
Claims priority, application United Kingdom, Mar. 31, 1988, 8807825
Int. Cl.[5] B01D *65/02*
U.S. Cl. 210—636 11 Claims



1. A method of cleaning a membrane separation system comprising one or more membranes, which method comprises inducing flow of liquid through the or each membrane by creating a pressure less than atmospheric on the fouled side of the or each membrane while maintaining substantially atmospheric pressure on said fluid on the other side of the or each of said membrane.

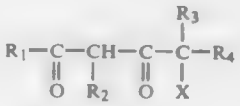
5,006,254

REDUCING THE RADIUM RADIOACTIVITY OF AQUEOUS EFFLUENTS

Francinet Cailly, Paris; Alain Leveque, La Rochelle, and Jean-Louis Sabot, Maisons Laffitte, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Apr. 26, 1988, Ser. No. 186,289
Claims priority, application France, Apr. 28, 1987, 87 6004
Int. Cl.[5] B01D *11/00*
U.S. Cl. 210—639 15 Claims

1. A process for reducing the radioactivity of an aqueous solution containing both nitrate and radium values, comprising adjusting the pH of the initial aqueous phase to at least 7.0, liquid/liquid extracting such solution with an organic phase which comprises at least one extractant having the formula (1):



(1)

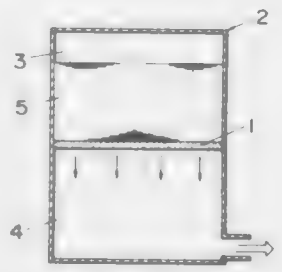
wherein R_1 is an alkyl, aryl, arylalkyl, or alkylaryl radical, a halo-substituted such radical, or a heterocycle, R_2 is hydrogen or an alkyl radical, X is a halogen atom, and R_3 and R_4, which may be identical or different, are each hydrogen, halogen, an alkyl radical or a halogenated alkyl radical, whereby providing a final organic phase charged with said radium values and a final aqueous phase purified thereof, and recovering said purified final aqueous phase.

5,006,255

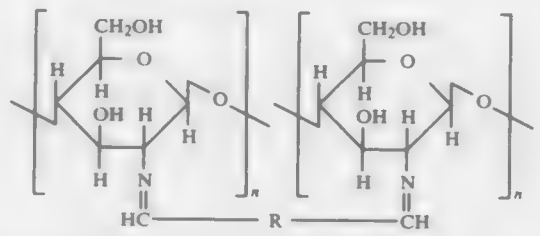
SELECTIVE PARMEABLE MEMBRANE FOR SEPARATION OF LIQUID SOLUTION

Tadashi Uragami, Osaka, Japan, assignor to Ligmyte Co., Ltd., Osaka, Japan

Filed Oct. 11, 1988, Ser. No. 255,304
Claims priority, application Japan, Oct. 15, 1987, 62-260067
Int. Cl.[5] B01D *61/36*
U.S. Cl. 210—640 6 Claims



1. A process of selectively separating water from a liquid solution containing water and an organic solvent, which comprises contacting the solution with a permeable membrane made of chitosan cross-linked with a dialdehyde and having the following general formula:



wherein n represents an integer of 200 to 20,000, and R represents a group of formula:

$-(CH_2)_m-$ wherein m represents an integer of 1 or more, or



whereby water selectively vaporizes and permeates the membrane.

5,006,256

AFFINITY MEMBRANES HAVING PENDANT HYDROXY GROUPS AND PROCESSES FOR THE PREPARATION AND USE THEREOF

James C. Davis, Hudson, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 478,392, Feb. 12, 1990, which is a division of Ser. No. 144,312, Jan. 14, 1988, Pat. No. 4,919,811. This application Aug. 10, 1990, Ser. No. 565,085
Int. Cl.[5] B01D *61/24*
U.S. Cl. 210—645 8 Claims

1. A process for selectively removing biological materials from fluids comprising the step of:

passing said fluids over a structure for binding a preselected biological consisting essentially of a hydrophilic precursor filtration membrane comprising a water-insoluble polymer matrix and a matrix-compatible copolymer; and a plurality of reaction sites provided on the surface of said membrane selective to bind a specific biological material, said reaction sites being selected from the group consisting of organic adducts synthesized from hydroxyl groups supplied by said matrix-compatible copolymer.

5,006,257

EXTRACTS OF THERMAL WATERS AND THEIR APPLICATIONS

Andre Lamothe, Plateu de Beauregard - Les Pinchinats, 13100 Aix-en-Provence, France

PCT No. PCT/FR88/00031, § 371 Date Sep. 20, 1988, § 102(e) Date Sep. 20, 1988, PCT Pub. No. WO88/05424, PCT Pub. Date Jul. 28, 1988
PCT Filed Jan. 21, 1988, Ser. No. 264,947
Claims priority, application France, Jan. 21, 1987, 87 00646
Int. Cl.[5] C02F *9/00*
U.S. Cl. 210—650 5 Claims

1. A process for regenerating polluted thermal waters containing thermal liquid with living thermal plankton therein, comprising the steps:

(a) providing a first portion of pure, unused thermal waters containing thermal liquid and living thermal plankton therein;

(b) obtaining a thermal plankton concentrate of said first portion of thermal waters by separating a quantity of thermal liquid from said first portion of thermal waters;

(c) filtering and sterilizing a second portion of thermal waters, said second portion being polluted; and

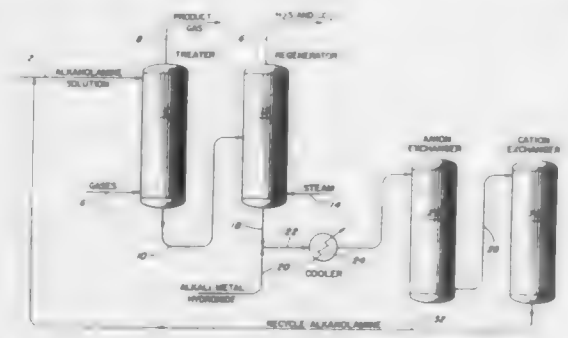
(d) regenerating said sterilized thermal waters by adding to it said thermal plankton concentrate in an amount sufficient to provide a predetermined population of living thermal plankton in said sterilized thermal waters.

5,006,258

REGENERATION OF ACIDIC CATIONIC EXCHANGE RESIN USED IN THE REACTIVATION OF SPENT ALKANOLAMINE

Fred C. Veatch, Newkirk, and Alfred E. Keller, Ponca City, both of Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Oct. 26, 1989, Ser. No. 427,417
Int. Cl.[5] B01D *15/04*
U.S. Cl. 210—677 24 Claims



1. A process for regenerating an acidic cation exchange resin containing alkali metal cations and alkanolamine cations at the ionic sites on the resin, which comprises:

(a) eluting the resin with aqueous ammonia solution to displace the alkanolamines from the resin with minimal displacement of alkali metal cations,

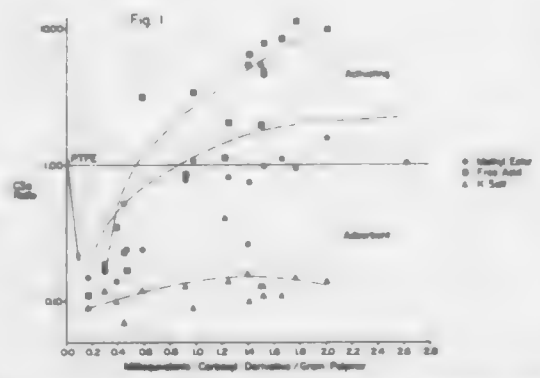
(b) thereafter eluting the resin with a weak solution of mineral acid to displace the ammonia, metal cations and any remaining alkanolamine from the resin.

5,006,259

PROCESS AND MEANS FOR USE OF ANAPHYLATOXIN ADSORBENTS

Deborah L. Liczwek, West Chester, Pa., and Erwin A. Vogler, New Hill, N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 171,027, Mar. 21, 1988, abandoned. This application Mar. 2, 1989, Ser. No. 315,966
Int. Cl.[5] B01D *15/00*; A61K *31/74, 31/745*
U.S. Cl. 210—692 5 Claims



1. Process for adsorbing anaphylatoxins from anaphylatoxin-contaminated blood, which process comprises contacting the contaminated blood with at least one tetrafluoroethylene copolymer consisting essentially of recurring units of

(a) tetrafluoroethylene, and

(b) recurring units of one or more comonomers of the structure $CF_2{=}CF{-}O{-}B{-}OCF_2CF_{2-x}COOR$,

wherein B is perfluoro alkylene of 2–4 carbon atoms, x is a cardinal number of 0–4, and R is hydrogen, alkyl of 1 to 12 carbon atoms, or a metal cation,

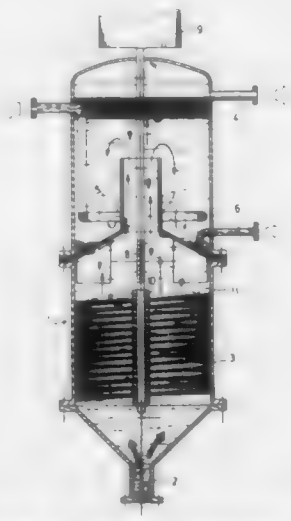
wherein the units of component (b) are present in an amount sufficient to cause the copolymer to adsorb anaphylatoxins from blood.

5,006,260

COALESCER DEVICE AND METHOD USING MOVABLE FILLING

Henri Roques, Portet S/Garonne; Yves Aurelle, Aucamville, and Louis Lopez, Portet sur Garonne, all of France, assignors to Institut National des Sciences Appliquees de Toulouse, Toulouse, France

PCT No. PCT/FR87/00454, § 371 Date May 26, 1989, § 102(e) Date May 26, 1989, PCT Pub. No. WO88/03831, PCT Pub. Date Jun. 2, 1988
PCT Filed Nov. 18, 1987, Ser. No. 368,343
Claims priority, application France, Nov. 28, 1986, 86 16784
Int. Cl.[5] B01D *17/04*
U.S. Cl. 210—708 13 Claims



6. An apparatus for separation of a dispersed phase in emulsion or suspension in a continuous phase of different density comprising a coalescing chamber (1) extending along an axis, an emulsion inlet (2) situated at one end of said chamber, a coalesced phase outlet (4) and a continuous phase outlet (5) situated at the opposite end of said chamber at different levels, a rotatable support (8, 10) associated with the coalescing chamber, means for causing rotation of said support (9) and a filling (11, 12, 14, 17) formed by fibers connected to said support, said filling having a high coefficient of void and an inherent volume of fiber less than about 20% of the useable volume of said coalescing chamber (1), said filling (11, 12) comprising a plurality of radial fibers connected to a central shaft extending along the axis of the chamber, each fiber having a length adapted to sweep the transverse section of the chamber during rotation and to be in contact with said chamber at the extremity of the fiber.

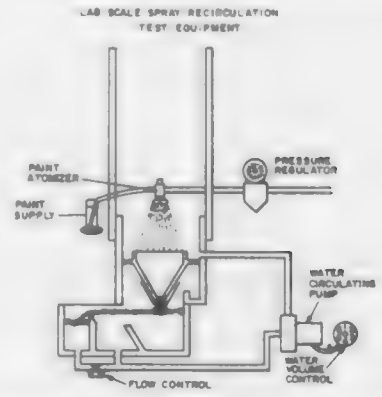
5,006,261

PAINT DETACKIFICATION USING WATER-DISPERSIBLE POLYMERIC LATEXES

Shu-Jen W. Huang, and Claudia V. Stenger, both of Naperville, Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation-in-part of Ser. No. 287,210, Dec. 21, 1988, abandoned. This application Apr. 11, 1990, Ser. No. 507,549
The portion of the term of this patent subsequent to Jun. 28, 2007, has been disclaimed.
Int. Cl.[5] C02F *1/56*
U.S. Cl. 210—712 3 Claims

1. A method of treating circulating wash water from a paint spray booth, said wash water containing an over-sprayed portion of an enamel paint which, prior to spraying, has a solids content of 35% by weight or less in order to prevent said over-sprayed paint contained in said wash water from adhering to the interior surfaces of the circulating water system, which method comprises adding to said water a water-dispersible, polymeric latex detackifier selected from the group consisting



of polyvinyl acetate, copolymers of vinyl acetate, polyvinyl chlorides, polystyrene and copolymers of styrene, said latex detackifier having an average particle size of less than 10 microns and being present in an amount to detackify said over-sprayed paint contained in said wash water.

5,006,262

PROCESS FOR RECOVERING COPPER FROM COPPER ION CONTAINING AQUEOUS SOLUTIONS

John Weyls, Cleveland, Ohio, and Ray C. Lindemann, Montgomery, Ala., assignors to Met. Rev. Inc., Cleveland, Ohio

Filed Nov. 21, 1989, Ser. No. 440,126
Int. Cl.[5] C02F *1/70*
U.S. Cl. 210—719 3 Claims

1. A process for recovering copper from cupric ion containing aqueous solutions which comprises

adding to the aqueous solution containing cupric ions an amount of reducing agent which corresponds from 0.1 to 10 moles of reducing agent per mole of cupric ion to produce a reaction mixture;

heating the reaction mixture in the absence of oxygen in a closed vessel to a temperature of from 170° to 240° C. at a pressure of from 10 to 50 bars, for a time from 2 to 80 hours to precipitate metallic copper; and

separating the precipitated metallic copper from the aqueous solution to recover the copper; and

wherein the reducing agent is selected from the group consisting of isobutyric acid, α-hydroxy isovaleric acid, α-hydroxy isocaproic acid, valine, threonine, glutamic acid, and proline.

5,006,263

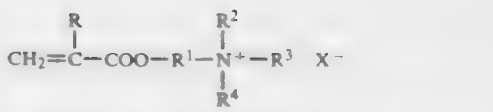
CATIONIC POLYMERS

Peter M. Robinson, Columbus, and Nguyen Van Det, Midland, both of Ga., assignors to Exxon Chemical Patents, Inc., Linden, N.J.

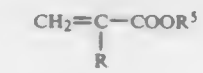
Division of Ser. No. 277,715, Nov. 30, 1988, Pat. No. 4,983,698, which is a continuation-in-part of Ser. No. 137,073, Dec. 23, 1987, abandoned. This application Sep. 7, 1990, Ser. No. 578,462
Int. Cl.[5] B01D *21/01*
U.S. Cl. 210—728 2 Claims

1. A method of dewatering sludge comprising contacting the sludge with the improved water-soluble cationic copolymer comprising

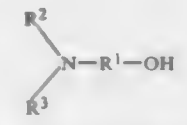
(i) a nonionic monomer selected from acrylamide and methacrylamide and (ii) a cationic monomer of the formula



wherein R is hydrogen or methyl, R^1 is alkylene C_2–C_4, R^2–R^4 are each individually alkyl C1–C4, and X is a counterion, the improvement which comprises replacing a portion of the nonionic monomer with an azeotropic waste stream which is produced and removed during a transesterification reaction between a starting acrylate of the formula



wherein R^5 is alkyl C_1–C_3, and a starting dialklamino alcohol of the formula



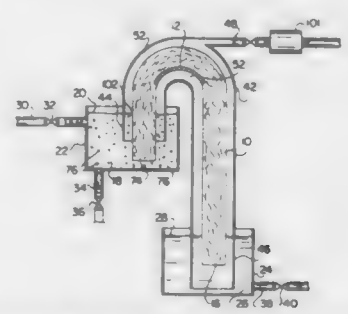
which was used to prepare the cationic monomer.

5,006,264

APPARATUSES AND METHODS FOR LIQUID-UNDISSOLVED-SOLIDS SEPARATION

Eduardo M. Acuna, Paseo de los Descubridores 216 4° Sector, Monterrey, N.L.C.P., Mexico (64610)

Continuation-in-part of Ser. No. 892,995, Aug. 4, 1986, Pat. No. 4,759,857. This application Jul. 14, 1988, Ser. No. 219,294
Int. Cl.[5] B01D *1/00*
U.S. Cl. 210—741 3 Claims



1. A method for separation of particles suspended undissolved solids present in a liquid having a top surface, the method comprising the steps of:

intersecting at least one portion of an open siphon member comprising a porous medium through an interface between the liquid containing the suspended undissolved solids and a gas contacting both the liquid and the porous medium, said porous medium containing a plurality of interconnected internal passageways some of which are dimensioned to plug with particles of the suspended undissolved solids of a given size and some of which are dimensioned to exclude particles of a given size, so that the suspended undissolved solids are either prevented from flowing through the porous medium or are captured by it,

controlling the gaseous composition of the gas contacting both the liquid and the porous medium,

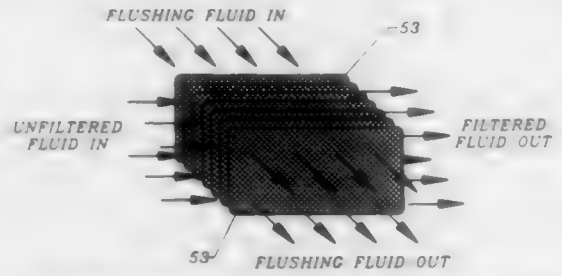
positioning at least one other portion of said porous medium lower than the top surface of the liquid and outside of the liquid,

isolating the gas contacting the liquid, and
siphoning the liquid and ejecting from the porous medium the liquid substantially free of the suspended undissolved solids.

5,006,265
FILTER APPARATUS AND METHOD FOR REMOVING SOLIDS FROM FLUIDS

Kishore K. Kar, Midland, and David J. Nowak, Auburn, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 25, 1989, Ser. No. 357,457
Int. Cl.[5] B01D *25/00*
U.S. Cl. 210—741 9 Claims

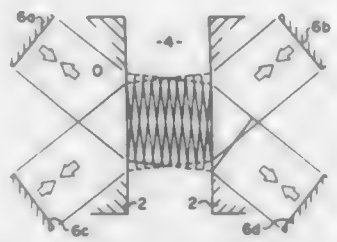


1. A filter apparatus (F) for separating suspended solids (54*a*) from fluids, which comprises:
a filter housing that has a filter chamber (33) defined within the housing;
a filter bundle (36) positioned inside the filter chamber (33), the bundle including at least two filter screens, each screen being defined by an overlayer strand (50) of material joined to an underlayer strand (51) of material, the overlayer (50) and underlayer strands (51) being spaced apart and placed crosswise to each other;
the spaces between each strand defining channels (52) which allow fluid to flow through the bundle (30) in a path parallel to each filter screen, and the spaces also defining openings (53) which allow flushing fluid to flow through the bundle in a path crosswise to each screen;
a filter disk (34) positioned inside the filter chamber (33) and having a front face (34*a*) and a rear face (34*b*), the front face (34*a*) including a holder means (35) for the filter bundle (36), and the disk (34) including several flush ports (38) that extend from the holder means (35) to the rear face (34*b*) of the disk (34);
a port closure plate (39) having a front face (39*a*) and a rear face (39*b*), and an actuator stem (41) fastened into the rear face (39*b*) of the plate (39) and into an actuator means (42);
the actuator means (42) being designed to move the port closure plate (39) to a first position in which the plate (39) closes the flush ports (38), and to a second position in which the plate (39) uncovers the flush ports (38);
a filter inlet fitting (45), and filter outlet fitting (46), said fittings being positioned in the filter housing, and in communication with the filter chamber (33);
the filter inlet fitting (45) being designed for directing a fluid containing solid particles (54) into the filter bundle (36) when the port closure plate (39) is in its first position, the filter bundle (36) being designed to trap said particles (54) within the openings (53) in the filter screens as the fluid moves through said filter bundle (36), and the filter outlet fitting (46) being designed to carry said fluid out of the filter chamber (33) after it passes through the filter bundle (36);
a flushing fluid inlet fitting (47, 48) positioned in the filter housing, and designed for directing a flushing fluid into the filter bundle (36) when the port closure plate (39) is in its second position; and
wherein the movement of the flushing fluid through the the filter bundle (36) dislodges the solid particles (54) from the filter screens, and the fluid containing said particles (54) is carried out of the filter chamber (33) through a flushing fluid outlet fitting (49) positioned in the filter housing.

5,006,266
MANIPULATING MEANS UTILIZING ULTRASONIC WAVE ENERGY FOR USE WITH PARTICULATE MATERIAL

Cornelius J. Schram, Paveaham, England, assignor to National Research Development Corporation, London, England

PCT No. PCT/GB88/00849, § 371 Date Aug. 2, 1989, § 102(e) Date Aug. 2, 1989, PCT Pub. No. WO89/03243, PCT Pub. Date Apr. 20, 1989
PCT Filed Oct. 13, 1988, Ser. No. 375,010
Claims priority, application United Kingdom, Oct. 14, 1987, 8724067
Int. Cl.[5] B01D *43/00*
U.S. Cl. 210—748 19 Claims



9. A method of controlling movement of particulate material in a liquid column utilizing a standing wave system produced by ultrasonic energy generating means, said method comprising the steps of:
establishing at least two ultrasonic standing waves, each standing wave having a series of nodes with at least some of the nodes of the respective standing waves intersecting in the column, the column having a longitudinal axis and said standing waves having axes of propagation extending transversely across the column at different orientations relative to the column longitudinal axis, at least one of the standing waves having its axis of propagation extending obliquely to the column longitudinal axis, whereby said nodes of the standing waves have intersections that are angled relative to said longitudinal axis; and
performing a relative movement in the direction of said longitudinal axis between said intersections at the nodes and the particle-containing liquid in the column, and retaining at least some of the particles in the regions of said intersections while said relative motion is performed.

5,006,267
BIOCIDAL FLUID FILTERS

Walter L. Vaughn, Lake Jackson; Thomas J. McKeand, Jr., Clute, and Robert T. Patton, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

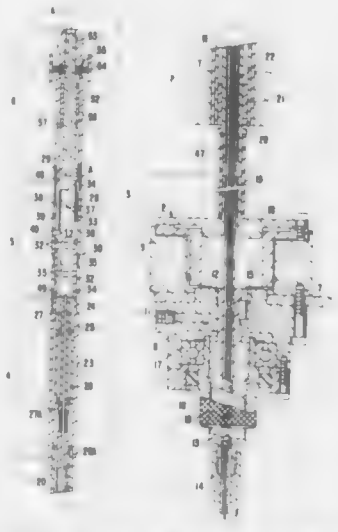
Filed Nov. 8, 1989, Ser. No. 433,488
Int. Cl.[5] C02F *1/50*
U.S. Cl. 210—755 23 Claims

1. A water insoluble biocidal filter for use in fluid systems comprising a water insoluble thermoplastic hydrogel copolymer consisting of an alpha olefin and an alpha, beta-ethylenically unsaturated carboxylic acid, said copolymer having at least one cationic biocidal agent ionically bonded to said copolymer.

5,006,268
DEVICE FOR LASER WELDING INSIDE A TUBULAR ELEMENT

Jacques Griffaton, Chalon S/Saone, France, assignor to Framatome, Bevoie, France

Filed Jun. 28, 1990, Ser. No. 544,898
Claims priority, application France, Jun. 28, 1989, 89 08634
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.63 7 Claims



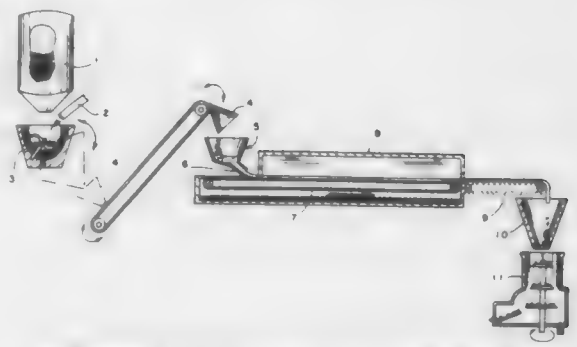
1. Device for laser welding inside a tubular element, of the type comprising a welding laser (104), a welding head (3 to 6) equipped with means (21, 54) for centring in the tubular element and comprising an optical cell (5) which itself comprises means (L1, L2, 37) for focusing and optical reflection for receiving a light beam along the axis of the head and for reflecting this beam focused on a point of impact of the wall of the tubular element (M), and means (F) for conveying the laser beam of the laser to the optical cell, characterized in that it comprises means (40) for detecting the form of the tubular element (M) near to the said point of impact, said detecting means being independent from said centring means, and in that the focusing and reflecting means comprise an inclined mirror (37) which is movably mounted in the welding head (3 to 6) and whose position is controlled by the said detection means.

5,006,269
CONTINUOUS PROCESS FOR PREPARING POWDER LUBRICANTS TO USE IN DRY WIREDRAWING AND/OR IN COLD METAL ROLLING

Angela N. Corso; Angelo Corso, both of Lecco; Carlo Corso, and Antonio Corso, both of Malgrate, all of Italy, assignors to Lubrimetal S.p.A., Como, Italy

Filed Nov. 7, 1988, Ser. No. 268,176
Claims priority, application Italy, May 12, 1988, 20554 A/88
Int. Cl.[5] C10M *105/80*
U.S. Cl. 252—39 7 Claims

1. A process for continuously preparing powder lubricants for use in dry wiredrawings and in cold metal rolling comprising the steps of:
a. mixing lubricant fat and calcium hydroxide until a homogenous product is obtained;
b. continuously distributing said homogenous product as a thin layer on a conveyor belt;
c. continuously baking the homogenous product on the conveyor belt while the belt conveyor is moving;
d. after the baking, continuously cooling the homogenous product; and



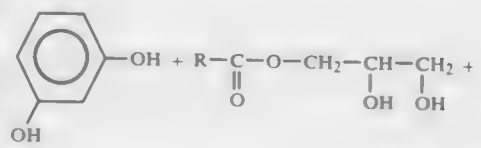
e. continuously pulverizing said cooled homogenous product.

5,006,270
MIXED RESORCINOL-HYDROXYESTER BORATES AS ANTIOXIDANTS

Liehpao O. Farng, Lawrenceville, and Andrew G. Horodysky, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

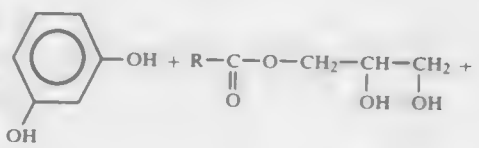
Filed May 1, 1989, Ser. No. 346,033
Int. Cl.[5] C10M *105/16*
U.S. Cl. 252—42.7 17 Claims

1. A composition comprising a major proportion of an oil of lubricating viscosity or grease or other solid lubricant prepared therefrom and a minor amount of a multifunctional friction reducing, antirust and antioxidant additive selected from mixed hydroxyaryl-hydroxyester borates and wherein said additive is prepared in reactions as generally described below:



at temperatures varying from 80° to 280° C. in molar ratios of hydroxyester to hydroxyaryl to boronating agent of from about 1–20:1.0–10:0.1–5 and where R is C_8 to about C_{20} hydrocarbyl and Y is said boronating agent and is selected from the group consisting of boric acid, metaborates and trialkyl borates.

12. An additive product prepared by reacting mixed resorcinol hydroxyester with a boronating agent in less than, more than or molar amounts of hydroxyester and boronating agent under temperatures varying from 80° to about 280° C. in the reaction generally described below:



where R is C_8–C_{20} hydrocarbyl and Y is said boronating agent selected from the group consisting of boric acid, metaborates, and trialkyl borates.

5,006,271

ORGANOSULFUR ADDUCTS AS MULTIFUNCTIONAL ADDITIVES FOR LUBRICATING OILS AND FUELS AND AS MULTIFUNCTIONAL LUBRICANTS

Noyes L. Avery, Bryn Mawr; Linda A. Benjamin, Horsham, both of Pa.; Andrew G. Horodysky, Cherry Hill, N.J., and Derek A. Law, Yardley, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 30, 1988, Ser. No. 292,039
Int. Cl.[5] C10M *105/72, 135/04*
U.S. Cl. 252—45 47 Claims

1. An improved lubricant composition comprising a major amount of an oil of lubricating viscosity or grease or other solid lubricant prepared therefrom and a minor EP/antiwear and antioxidant additive amount of from about 0.001 to about 10% by weight of a reaction product of a propylene based oligomerized olefin lube oil prepared in the following manner: propylene is first oligomerized over 2,4,6-collidine modified HZSM-23 zeolite catalyst; the oligomerized product is distilled and the ≧to C_{12}+ fraction oligomerized over HZSM-5 zeolite catalyst to provide a propylene lube olefin having a MW of from about 300 to about 6,000 and thereafter reacting said lube olefin and elemental sulfur and optionally with an organosulfur compound wherein said reaction product is obtained under the following reaction conditions: temperatures which vary from about 80° to about 225° C., pressures which vary from about ambient to slightly higher and times which vary from 0.5 to about 12 hours or more, and wherein said organosulfur compound is selected from mercaptothiadiazoles, dimercaptothiadiazoles, mercaptobenzimidazoles, mercaptobenzoates and mercaptobenzothiadiazoles.

5,006,272

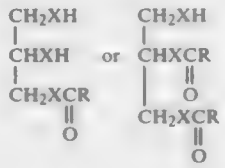
FRICTION REDUCING ADDITIVES AND COMPOSITIONS THEREOF

Harry J. Andress, Wenonah; Andrew G. Horodysky, Cherry Hill, and Joan M. Kaminski, Clementon, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 249,245, Sep. 22, 1988, abandoned, which is a continuation of Ser. No. 763,778, Aug. 9, 1985, abandoned, which is a continuation of Ser. No. 133,034, Mar. 24, 1980, abandoned. This application Sep. 29, 1989, Ser. No. 415,418
Int. Cl.[5] C10M *105/78*
U.S. Cl. 252—49.6 19 Claims

1. A method for reducing friction in an internal combustion engine, using a friction reducing borated additive in a lubricant composition, comprising:

lubricating moving surfaces of the engine with a lubricating composition which includes a lubricant oil and a friction reducing borated additive in a concentration of at least 1% by weight of the lubricating composition, said friction reducing borated additive includes a borated glycerol mono- and/or dihydroxyester or borated thioglycerol mono and/or dihydroxyester produced by borating a glycerol mono and/or dihydroxyester or thioglycerol mono-and/or dihyroxyester of the formula:



5,006,273

CONCENTRATED AQUEOUS LIQUID DETERGENTS CONTAINING VISCOSITY REDUCING POLYMERS

David Machin, Merseyside, England, and Johannes C. van de Pas, Vlaardingen, Netherlands, assignors to Lever Brothers Company, Division of CONOPCO, Inc., New York, N.Y.

Filed Jul. 26, 1988, Ser. No. 224,518
Claims priority, application United Kingdom, Jul. 31, 1987, 8718217
Int. Cl.[5] C11D *337, 1/83, 3/395*
U.S. Cl. 252—174.23 14 Claims

1. An aqueous surfactant structured liquid detergent concentrate comprising from 0–10% by volume suspended solid material and further comprising:

(a) at least 15% by weight of detergent active material, said material comprising:

(A) a nonionic surfactant or a polyalkoxylated anionic surfactant or mixture thereof; and

(B) a non-polyalkoxylated anionic surfactant;

wherein the weight ratio of component (A) to component (B) is from 2.8:1 to 1:4;

(b) from 1 to 30% of a salting out electrolyte;

(c) from 0.1 to 20% by weight of a viscosity reducing water soluble polymer, selected from the group consisting of Dextran, Dexran sulphonate, polyacrylate and polyacrylate/maleic acid copolymers, said polymer being present in an amount sufficient to reduce the viscosity by more than 5% when measured at a shear rate of 21 S^{-1} and in comparison with a composition identical except that all such polymer is omitted, said polymer having an electrolyte resistance (as hereinbefore defined) of more than 5 grams sodium nitrilotriacetate in 100 of a 5% by weight aqueous solution thereof, with the system adjusted to neutral pH, and said polymer having a vapour pressure in 20% aqueous solution equal to or less than the vapour pressure of a reference 2% by weight or greater aqueous solution of a polyethylene glycol having an average molecular weight of 6000;

said viscosity reducing polymer having a molecular weight of at least 1,000;

and the composition comprising no, or less than 5% by weight of a swelling clay and yielding no more than 2% phase separation upon storage at 25° C. for 21 days and having a viscosity of no greater than 1000 mPaS at a shear rate of 21 s^{-1}.

5,006,274

ADDITIVE FOR CLARIFYING AQUEOUS SYSTEMS WITHOUT PRODUCTION OF UNCONTROLLABLE FLOC

Daniel K. Durham, Spring; Urban C. Conkle, Houston, and Hartley H. Downs, Kingwood, all of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Division of Ser. No. 194,435, May 13, 1988, Pat. No. 4,855,060. This application May 18, 1989, Ser. No. 321,727
Int. Cl.[5] C02F *1/54*
U.S. Cl. 252—180 8 Claims

1. An additive for clarifying an aqueous system containing an oil-in-water emulsion or a dispersion of a non-aqueous discontinuous phase with production of only a controllable floc in the system, comprising a composition having present therein a dithiocarbamate of bishexamethylenetriamine, said dithiocarbamate being formed from an approximately stoichiometric ratio of carbon disulfide to primary amine in said bishexamethylenetriamine.

5,006,275

Patent Not Issued For This Number

5,006,276

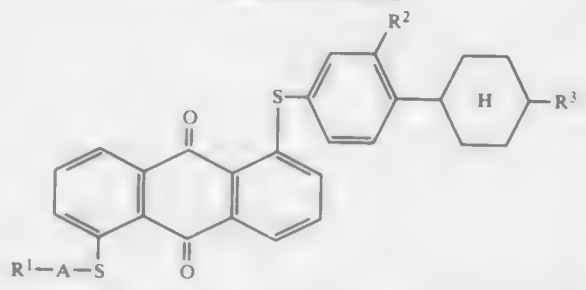
LIQUID CRYSTAL COMPOSITION AND DISPLAY ELEMENT USING THE SAME

Masaharu Kaneko, Kanagawa, and Takanori Nakajima, Tokyo, both of Japan, assignors to Mitsubishi Kasei Corporation, Japan

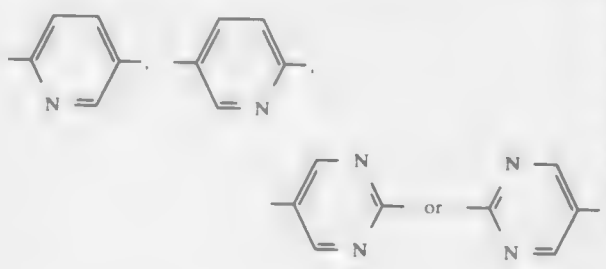
PCT No. PCT/JP88/01230, § 371 Date Aug. 3, 1989, § 102(e) Date Aug. 3, 1989, PCT Pub. No. WO89/05338, PCT Pub. Date Jun. 15, 1989
PCT Filed Dec. 7, 1988, Ser. No. 397,445
Claims priority, application Japan, Dec. 8, 1987, 62-310625
Int. Cl.[5] C09K *19/32, 19/16, 19/11*
U.S. Cl. 252—299.1 19 Claims

1. A liquid crystal composition comprising at least one compound represented by each of the following general formulae I, II and III:

general formula I:

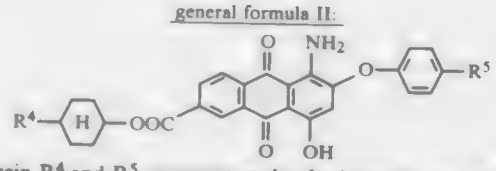


wherein R^1 to R^3 represent each a hydrogen atom, an alkyl, an optionally substituted cycloalkyl, an alkoxyalkyl or an alkoxy group or a halogen atom; and A represents a



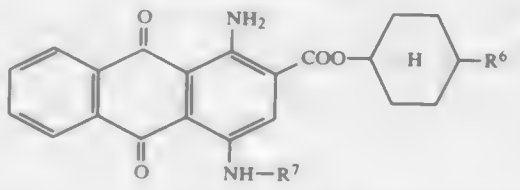
group;

general formula II:

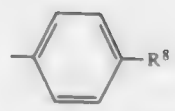


wherein R^4 and R^5 represent each a hydrogen atom, an alkyl, an optionally substituted cycloalkyl, an alkoxyalkyl or an alkoxy group or a halogen atom; and

general formula III:



wherein R^6 represents a hydrogen atom, an alkyl, an optionally substituted cycloalkyl, an alkoxyalkyl or an alkoxy group or a halogen atom; and R^7 represents a hydrogen atom or a



group wherein R^8 represents a hydrogen atom, an alkyl, an optionally substituted cycloalkyl, an alkoxyalkyl or an alkoxy group or a halogen atom.

5,006,277

FLUORESCENT COMPOSITION

Kunihiko Yoneshima, Hiratsuka, and Fumio Takahashi, Odawara, both of Japan, assignors to Kasei Optonix, Ltd., Tokyo, Japan

Filed Jul. 28, 1989, Ser. No. 386,238
Claims priority, application Japan, Aug. 1, 1988, 63-192375
Int. Cl.[5] C09K *11/62*
U.S. Cl. 252—301.6 S 3 Claims

1. A fluorescent composition composed of a phosphor consisting essentially of a sulfide which is represented by the formula of $:(Zn_{1-x}, Cd_x)S$, wherein x is a number satisfying a condition of $0 \leqq x \leqq 1$, as the host material; and indium oxide (In_2O_3), said phosphor and indium oxide being mixed or adhered to each other, characterized in that zinc oxide (ZnO) and/or a compound of zinc which can be converted to zinc oxide (ZnO) by heat-treatment at a temperature of 100° C. to 700° C. is adhered onto the surface of said phosphor or the respective surfaces of said phosphor and said indium oxide, the adhered quantity of said zinc oxide (ZnO) and/or said compound of zinc which can be converted to zinc oxide (ZnO) by said heat-treatment being less than 1,400 μg per 1 g of said phosphor in terms of zinc oxide (ZnO), and the quantity of said indium oxide (In_2O_3) mixed with or adhered to said phosphor being in a range of from 0.5 to 15% by weight with respect to the total quantity of said fluorescent composition, said adhered quantity of zinc oxide and/or said compound of zinc being such as to effect a composition exhibiting a higher luminance than (1) the composition as defined above absent said zinc oxide and zinc compound, and (2) the composition as defined above absent indium oxide.

5,006,278

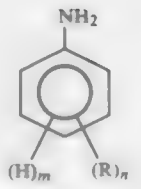
SOLUTION PROCESSIBLE FORMS OF ELECTRICALLY CONDUCTIVE POLYANILINE AND THE METHOD OF MANUFACTURE OF ELECTROCONDUCTIVE ARTICLES THEREFROM

Ronald L. Elsenbaumer, Morristown, N.J., assignor to Allied-Signal, Morris Township, Morris County, N.J.

Division of Ser. No. 2,528, Jan. 12, 1987, Pat. No. 4,983,322. This application Jan. 29, 1990, Ser. No. 471,463
Int. Cl.[5] H01B *1/00*
U.S. Cl. 427—385.5 40 Claims

1. A method of forming a conductive article which comprises the steps of:

(a) forming a conductive material selected from the group consisting of solutions and plasticized compositions comprising one or more solvents selected from the group consisting of solvents having a dielectric constant equal to or greater than about 25 and a dipole moment equal to or greater than about 3.25; one or more dopant solutes selected from the group consisting of oxidizing dopants which form a charge transfer complex with the polyaniline having a conductivity equal to or greater than about $10^{-3}ohm^{-1}$ cm^{-1}; and a substituted or unsubstituted polyaniline having a molecular weight of greater than about 15,000 prepared by polymerizing an aniline of the Formula I:



wherein:

n is an integer from 0 to 4;

m is an integer from 0 to 5 with proviso that the sum of n and m is 5;

R is the same or different at each occurrence and is alkyl, alkenyl, alkoxy, cycloalkyl, cycloalkenyl, alkanoyl, alkylthio, aryloxy, alkylthioalkyl, alkylaryl, arylalkyl, alkylsulfinyl, alkoxyalkyl, alksulfonyl, aryl, arylthio, arylsulfinyl, alkoxycarbonyl, arylsulfonyl, carboxylic acid, halogen, cyano, or alkyl substituted with one or more sulfonic acid, carboxylic acid, halogen, nitro, cyano or epoxy moieties; or and two R substituents taken together are an alkylene or alkenylene group completing a 3, 4, 5, 6 or 7 membered aromatic or alicyclic carbon ring, which ring may include one or more divalent heteroatoms of nitrogen, sulfur, sulfinyl, sulfonyl or oxygen; and

(b) removing the solvent from said material to form said article.

5,006,279

WATER-BASED COATING REMOVERS

William J. Grobbel, 70717 Romeo Plank, Romeo, Mich. 48065, and Bruce R. Berry, 670 Hawksmoore, Clarkston, Mich. 48016

Filed Aug. 24, 1988, Ser. No. 235,591
Int. Cl.[5] C11D *1/18, 3/44*
U.S. Cl. 252—542 18 Claims

1. A substantially stable homogenous water-based coating remover composition comprising:

(a) from about 7.2 to about 19.6 percent by weight of N-methyl-2-pyrrolidone; and

(b) from about 12.15 to about 47.6 percent by weight of at least one mononuclear aromatic hydrocarbon; and

(c) from about 7 to about 15 percent by weight of a glycol ether selected from tripropylene glycol mono (C_1–C_4) alkyl ether and diethylene glycol monobutyl ether; and

(d) from about 0.225 to about 2.8 percent by weight of an alkanolamine; and

(e) from about 0.297 to about 0.616 percent by weight of a hydroxypropyl cellulose thickener; and

(f) from about 30 to about 55 percent by weight water.

5,006,280

Patent Not Issued For This Number

5,006,281

PROCESS FOR THE PRODUCTION OF A MARINE ANIMAL OIL

David Rubin, Jerusalem, Israel, and Elyiahu J. Rubin, San Diego, Calif., assignors to Century Laboratories, Inc., Port Washington, N.Y.

Continuation of Ser. No. 716,502, Mar. 26, 1985, abandoned. This application Jan. 28, 1987, Ser. No. 9,028
Int. Cl.[5] C11B *31/04*
U.S. Cl. 260—424 27 Claims

1. A process for the production of storage-stable marine animal oil free of undesirable odor or taste wherein the marine animal is one in which substantially no peroxidation of the oil thereof occurs naturally in the living animal comprising:

treating that portion of a freshly killed marine animal from which the oil is to be obtained with a first antioxidant having peroxidase inhibiting capacity;

dissagregating said antioxidant treated portion to obtain an oil phase, an aqueous phase and a solid phase;

removing the oil phase from the aqueous phase and the solid phase;

mixing said oil phase with an aqueous acidic solution which is sufficiently dilute to avoid hydrolysis of triglycerides in the oil, in a manner effective to cause methylamines to dissolve in the aqueous phase which forms upon such mixing;

removing the oil phase from the aqueous phase which forms during said mixing step; and

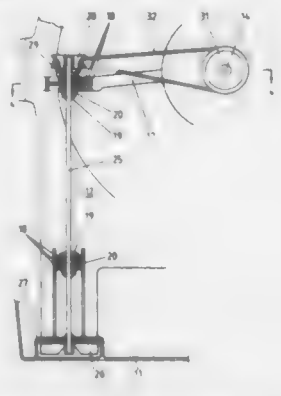
adding a further antioxidant to the obtained oil phase.

5,006,282

AIR COOLER PUMP MEANS

Richard H. Butcher, Hendon, Australia, assignor to F. F. Seeley Nominees Pty., Ltd., South Australia, Australia

Filed Oct. 23, 1989, Ser. No. 425,420
Claims priority, application Australia, Oct. 24, 1988, PJ1111
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—29 6 Claims



1. A pump arrangement for an evaporative air cooler of the type having a fan on a shaft rotatable about a horizontal axis and contained in a fan housing surmounting a water tank, and arranged to impel a flow of air through a wet pad to thereby cause evaporation and consequential cooling of the air, comprising,

a pump within the water tank,

a driving pulley on the fan shaft,

a pair of vertically spaced bearings supported by bearing support means provided on the fan housing,

a spindle journalled for rotation in the bearings,

a pump impeller on the lower end of the spindle within the pump housing, a driven pulley on the upper end of the spindle, and

a band type drive coupling the driven and driving pulleys.

5,006,283

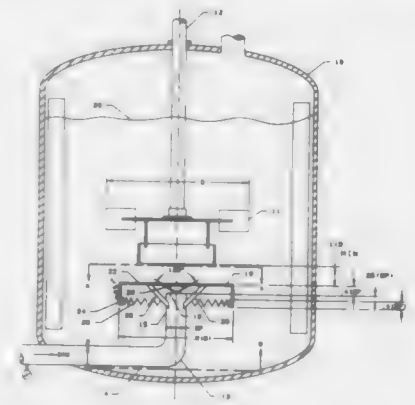
MIXING SYSTEM FOR DISPERSING A COMPRESSIBLE FLUID SUCH AS GAS INTO LIQUID IN A VESSEL

Marlin D. Schutte, Rochester; Craig B. Bahr, Brockport; Ronald J. Weetman, and Richard A. Howk, both of Rochester, all of N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Filed Oct. 6, 1988, Ser. No. 254,507
Int. Cl.[5] B91F *3/04*
U.S. Cl. 261—93 8 Claims

1. In a mixing system for dispersing a compressible fluid into liquid or slurry in a vessel and having an impeller for circulating said liquid, the improvement comprising a conduit for supplying said fluid into said vessel, said conduit having an outlet for said fluid, a cover below said impeller and around said outlet and having a side wall with upper and lower ends, said outlet and said side wall being spaced from each other such that the area defined by said side wall is significantly greater than the area defined by said outlet, the upper end of said cover being closed by a top wall, said top wall being

disposed between said outlet and the surface of the liquid in said vessel, the lower end having a rim, said outlet being disposed at a distance above said rim so as to confine a sufficient body of said fluid in said cover around said outlet to damp pulsating flow of said fluid when the hydrostatic pressure of



the liquid at said outlet is not substantially less than the pressure of said fluid at said outlet, said side wall being provided by an annular wall and, said top wall having an inverted conical surface with its apex end extending downward and facing said outlet.

5,006,284

GRANULES OF ALKYL ESTERS CONTAINING HYDROXYPHENYL GROUPS

Michael Gahan, Mobile, Ala., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 14, 1989, Ser. No. 366,819
Int. Cl.[5] B29B *9/10*
U.S. Cl. 264—9 13 Claims

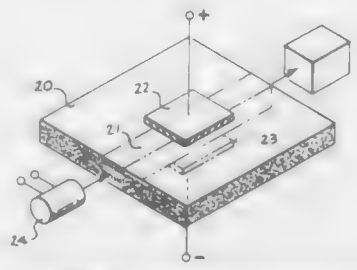
1. A process for the manufacture of granules of low-melting alkyl ester containing hindered hydroxyphenyl groups, which comprises introducing a melt of said ester into aqueous methanol containing between 8 and 12% water maintained under a turbulent state at a temperature below 15° C. and then isolating the resulting granules.

5,006,285

ELECTRO-OPTIC CHANNEL WAVEGUIDE

John I. Thackara, Sunnyvale; George F. Lipscomb, Palo Alto, both of Calif.; Hyun-Nam Yoon, New Providence, and Ronald N. De Martino, Wayne, both of N.J., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Jul. 28, 1988, Ser. No. 225,450
Int. Cl.[5] G02F *1/00;* B29C *71/04*
U.S. Cl. 264—1.3 9 Claims



1. A method of forming an electro-optic channel waveguide in a polymer structure that is initially substantially homogeneous, said polymer structure substantially consisting of a nonlinear optical polymer, said method comprising the steps of:

(a) maintaining an electric field as a poling field in a selected portion of said initially homogeneous polymer structure, said poling field being patterned to define a configuration for said channel waveguide in said selected portion of said polymer structure;

(b) maintaining said polymer structure in a temperature range above glass-transition temperature for said polymer while said electric field is being maintained as said poling field in said selected portion of said polymer structure, said polymer structure being maintained above said glass-transition temperature for a time that is sufficient to cause dipolar moieties of said polymer in said selected portion of said polymer structure to become sufficiently aligned by said poling field so as to produce a higher index of refraction in said selected portion than in a portion of said polymer structure adjacent said selected portion, said higher index of refraction being sufficient to support a guided mode of optical radiation of at least one polarization in said selected portion of said polymer structure so that said selected portion of said polymer structure acquires a transitory capability of functioning as a channel waveguide; and

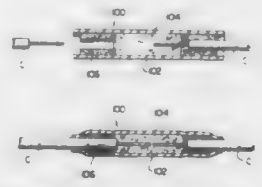
(c) cooling said polymer structure below said glass-transition temperature while said poling field continues to be maintained in said selected portion of said polymer structure, said poling field being maintained in said selected portion of said polymer structure for a sufficient time as said polymer structure is being cooled below said glass-transition temperature so that said capability of said selected portion of said polymer structure of functioning as a channel waveguide ceases to be merely transitory and becomes relatively permanent because, when said polymer structure has been cooled below said glass-transition temperature, the aligned dipolar moieties of said polymer in said selected portion of said polymer structure achieve thermal relaxation only after a time that is long relative to a useful lifetime of said polymer structure in an application utilizing said selected portion of said polymer structure as said channel waveguide.

5,006,286

POLYMERIC ELECTRICAL INTERCONNECTION APPARATUS AND METHOD OF USE

Ronald A. Dery, Winston-Salem; Frederick R. Deak, and Richard H. Zimmerman, both of Kernersville, all of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 31, 1986, Ser. No. 845,914
Int. Cl.[5] H01R *3/00;* B29C *63/18, 65/48*
U.S. Cl. 264—40.2 24 Claims



1. Apparatus for forming an electrically bonded interconnection between electrical conductors, comprising: an envelope containing a polymeric electrically conductive material disposed therein, the conductive material within the envelope being at least initially in a deformable, electrically conductive state such that an electrical conductor can be inserted therein and removed therefrom, and means for structurally affixing an electrical conductor to the envelope after insertion of the conductors into the polymeric electrically conductive material, the conductive material establishing electrical continuity with the electrical conductors prior to structural affixation of the conductor to the envelope, whereby electrical continuity can be verified prior to permanent attachment of the conductor to the apparatus.

20. A method of assembling an electrical harness having a plurality of separate conductors extending between and among a plurality of electrical components in the harness, the harness

including a plurality of electrical interconnections, the method comprising the steps of:

interconnecting the conductors by positioning the conductors in a polymeric electrically conductive material disposed within an envelope, the polymeric electrically conductive material being at least initially in a viscous, electrically conductive state such that the electrical conductor can be inserted therein and removed therefrom.,

verifying that the prescribed interconnections within the electrical harness have been made after insertion of conductors into the polymeric electrically conductive material, and rewiring the harness while the electrically conductive material is in the viscous electrically conductive state to correct any harness wiring errors; and

subsequently structurally affixing the conductors to the envelope after the electrical interconnections in the harness are verified.

5,006,287

AFFINITY MEMBRANES HAVING PENDANT HYDROXY GROUPS AND PROCESSES FOR THE PREPARATION AND USE THEREOF

James C. Davis, Hudson, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 144,312, Jan. 14, 1988, Pat. No. 4,919,811. This application Feb. 12, 1990, Ser. No. 478,392

Int. Cl.[5] **B01D** *67/00*

U.S. Cl. 264—41 **20 Claims**

1. A process for the preparation of affinity membranes comprising the steps of:

providing a material for binding a preselected biological material consisting essentially of a hydrophilic precursor filtration membrane comprising a water-insoluble polymer matrix and a matrix-compatible copolymer; and a plurality of reaction sites provided on the surface of said membrane selective to bind a specific biological material, said reaction sites being selected from the group consisting of organic adducts synthesized from hydroxyl groups supplied by said matrix-compatible copolymer by:

providing a copolymer compatible with a water insoluble polymer matrix and having a plurality of hydroxyl groups;

activating said hydroxyl groups with a compound selected from the group consisting of organic compounds reactive with a hydroxyl group in the presence of a water miscible solvent to provide a derivatized copolymer containing active adducts;

forming a solution of said derivatized copolymer and said polymer matrix to form a polymer blend solution;

casting said polymer blend solution; and

quenching said cast polymer blend solution in water.

5,006,288

MOLDING METHOD FOR STABILIZING THE LOCATION OF A SKIN INSERT

Richard D. Rhodes, Jr., Somersworth, and W. David Fredericks, Brookfield, both of N.H., assignors to Davidson Textron Inc., Dover, N.H.

Filed Oct. 12, 1989, Ser. No. 420,382

Int. Cl.[5] **B29C** *67/22*

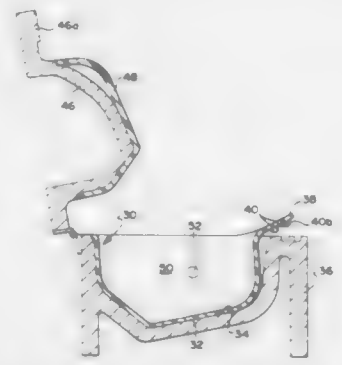
U.S. Cl. 264—46.6 **6 Claims**

1. A process for molding a composite part by -lacing a shell insert on a mold cavity part and thereafter directing form precursors against the shell insert and reacting the precursors to form a layer of form bonded to the back of the shell insert, the process comprising the steps of:

precasting a shell from thermoformable plastic material to form a first surface portion thereon adapted to be smoothly supported across the surface of the mold cavity part and to form a plurality of connection features in a second surface portion of the shell external to the mold cavity at the periphery thereof;

providing a mold cavity part with a surface thereon for smoothly supporting the first surface portion of the shell,

preshaping the mold cavity part to have recesses external to the mold cavity at the periphery of the mold cavity part adapted to engage the connection features on the second surface portion;



engaging the connection features with the recesses to provide a stabilized peripheral connection between the mold cavity part and the shell; and smoothly supporting the first surface portion of the shell on the mold at points inboard of the stabilized peripheral connection for positioning he shell within the mold cavity part so as to prevent it from being wrinkled with respect to the mold cavity part during the molding process.

5,006,289

METHOD FOR PRODUCING AN ELONGATED SINTERED ARTICLE

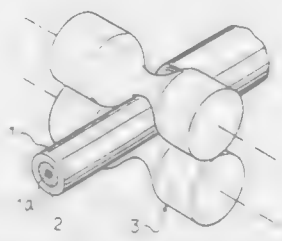
Susumu Yamamoto; Teruyuki Murai; Nozomu Kawabe, and Masaaki Tobioka, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 17, 1987, Ser. No. 63,228

Claims priority, application Japan, Jun. 17, 1986, 61-141566; Aug. 13, 1986, 61-190891; Sep. 10, 1986, 61-214487; Oct. 17, 1986, 61-246937; Dec. 5, 1986, 61-291216; Dec. 26, 1986, 61-312958; Jan. 9, 1987, 62-3060

Int. Cl.[5] **C04B** *33/34*

U.S. Cl. 264—61 **30 Claims**



1. Method for producing an elongated sintered ceramic article, characterized by the steps of filling powder material in a pipe, said powder material being ceramic, elongating said pipe filled with said powder material by wire-drawing or rolling, heating said elongated pipe filled with the powder material to burn and/or sinter the powder material, and removing said elongated pipe after said elongating step or said heating step, so as to form an uncovered elongated sintered ceramic article composed of said powder material.

28. Method for producing an elongated sintered ceramic article, characterized by including the steps of filling powdered material in a pipe, said powdered material being ceramic, deforming said pipe filled with said powdered material by wire-drawing or rolling to form a thin elongated wire filled with said powdered material and having at least a longitudinal length as long as 100 times its cross sectional diameter, and

heating said elongated wire filled with the powdered material to burn and/or sinter the powdered material.

5,006,290

PROCESS FOR MAKING A SILICON CARBIDE WHISKER REINFORCED ALUMINA CERAMIC COMPOSITE PRECURSOR

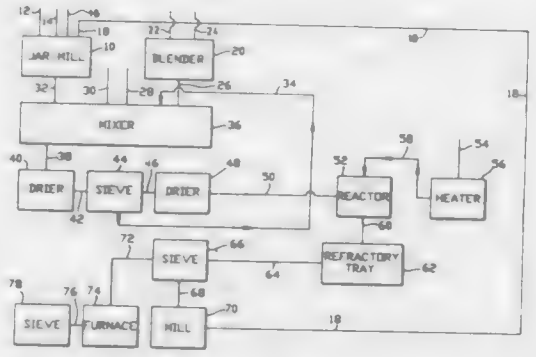
George T. Hida, North Tonawanda, N.Y., assignor to Benchmark Structural Ceramics Corporation, Amherst, N.Y.

Filed Oct. 6, 1988, Ser. No. 254,175

The portion of the term of this patent subsequent to Feb. 5, 2008, has been disclaimed.

Int. Cl.[5] **C04B** *35/10, 35/56*

U.S. Cl. 264—65 **10 Claims**



1. A process for preparing a ceramic composite which is comprised of alpha silicon carbide whiskers and alpha aluminum oxide powder, comprising the steps of sequentially:

(a) providing a slurry comprised of from about 80 to about 92 volume percent of solid material and from about 20 to about 8 volume percent of non-aqueous liquid, wherein:

1. said solid material comprises from about 17 to about 22 weight percent of aluminum material, from about 19 to about 24 weight percent of amorphous carbon, and from about 56 to about 65 weight percent of silica;

2. said aluminum material has a specific surface area of from about 0.2 to about 1.1 square meters per gram, has a particle size distribution which ranges from about 4 to about 28 microns, and has at least 80 weight percent of its particles being in the range of from about 6 to about 12 microns;

3. said amorphous carbon has a specific surface area of at least 4 square meters per gram:

4. said silica has a specific surface area of from about 1.2 to about 400 square meters per gram;

5. said non-aqueous liquid is volatile at a temperature of 80 degrees centigrade;

6. said slurry is comprised of from about 1 to about 5 weight percent of a source of carbon monoxide which, when it is subjected to a temperature of from about 700 to about 1,600 degrees centigrade, generates carbon monoxide;

7. said slurry is comprised of from about 1 to about 5 weight percent of a source of hydrogen fluoride which, when subjected to a temperature of from about 200 to about 400 degrees centigrade, generates hydrogen fluoride;

(b) pelletizing said slurry to provide a multiplicity of pellets comprised of from about 80 to about 92 volume percent of solids;

(c) drying said pellets to a moisture content of from about 0.1 to about 2.0 weight percent;

(d) preheating said dried pellets to a temperature of from about 200 to about 300 degrees centigrade, and

(f) igniting said pellets.

5,006,291

METHOD FOR MAKING FIBER REINFORCED PLASTIC TUBING

Elson B. Fish, Lakeville, Ind., assignor to Plas/Steel Products, Inc., Walkerton, Ind.

Continuation of Ser. No. 726,506, Apr. 24, 1985, abandoned. This application Oct. 22, 1986, Ser. No. 945,212

Int. Cl.[5] **B29C** *67/00, 71/02*

U.S. Cl. 264—103 **5 Claims**



1. A method of fabricating multi-layer fiber reinforced plastic tubing on a continuous basis comprising the steps of:

braiding a first layer of strands about a stationary mandrel by weaving together first, second, and third sets of strands, said second and third sets being wound oppositely about said mandrel while said first set is pulled longitudinally and interwoven therewith, whereby said first set inhibits said braided first layer from gripping said mandrel to an extend as will prevent movement of the resulting tubular layer with respect to said mandrel;

simultaneously radially gripping and axially pulling said first layer relative to said stationary mandrel;

prewetting said first layer by applying a liquid plastic matrix material to said second and third strands prior to engagement about said mandrel;

drawing said braided layer through a die orifice that defines with said mandrel a decreasing annular clearance through which said layer moves to gradually fully compact said strands onto said mandrel;

applying a liquid plastic matrix material under pressure to said first braided layer of stands while said layer is being gradually compacted and confined between said die orifice and said mandrel and before said braided layer is fully compacted;

applying a liquid plastic matrix material to said first braided layer of strands at the exit end of said orifice by surrounding said mandrel and said braided layer with said liquid plastic to inhibit air from being drawn into said layer as it expands following compaction; and

curing the liquid plastic matrix material while said tubular braid is moved along and is supported by said mandrel and while the liquid plastic matrix material is radially confined between the mandrel and a surrounding outer die to form self-supporting tubing.

5,006,292

MANUFACTURING UNIAXIALLY DRAWN ORIENTED POLYOLEFIN FILM FOR ELECTRIC INSULATION

Hikaru Shii, and Fumio Sugimoto, both of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 286,029, Jul. 22, 1981, abandoned. This application Aug. 16, 1984, Ser. No. 641,411

Claims priority, application Japan, Jul. 25, 1980, 55-101983

Int. Cl.[5] **B29C** *47/40*

U.S. Cl. 264—127 **11 Claims**

1. A method of manufacturing a uniaxially drawn oriented polyolefin film for cable insulation which has the tensile Young's modulus in the direction of the orientation axis of at least 2×10^4 kg/cm^2, and the change in the thickness in dodecylbenzene at 100° C. of not more than 10%, said method comprising

forming an extruding mixture by dispersing in a finely-divided powdered crystalline polyolefin having a melt index of at least 10, 0.5 to 20 parts per hundred parts of said crystalline polyolefin of finely-divided unsintered

polytetrafluoroethylene so that the particles do not substantially stick together to form a coherent mass;

extruding the mixture with an extruder capable of exerting high shearing stress at a temperature not higher than the heat distortion temperature of said unsintered polytetrafluoroethylene and not lower than the melting point of said crystalline polyolefin to thereby form an extrudate and forming the extrudate into a sheet by a sheet forming device having a forming die on a twin-screw type extruder with an L/D of at least 15;

solidifying the extruded sheet by cooling; and

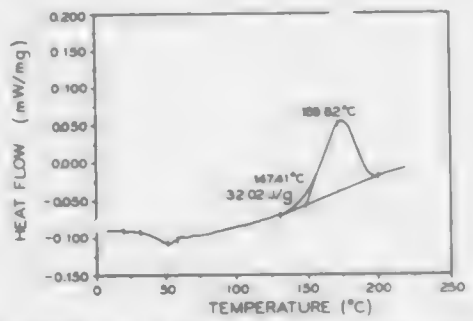
reducing the thickness of the solidified cooled sheet to ½ to 1/10 of the thickness of the solidified cooled sheet by drawing or rolling at a temperature of from 50° to 20° C. lower than the melting point of the crystalline polyolefin thereby to provide said uniaxially drawn oriented film having a thickness of 80 to 250 microns.

5,006,293

PROCESS FOR FORMING FLAT PLATE BALLISTIC RESISTANT MATERIALS

David R. Hartman, Newark; Ralph B. Jutte, Hebron; Terry R. Beaver, Nashport, and Homer G. Hill, Newark, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Feb. 2, 1989, Ser. No. 305,143
Int. Cl.[5] B29C *43/18, 43/20, 43/58*
U.S. Cl. 264—137 **15 Claims**



1. A process for a forming ballistic resistant composite which comprises:

(a) impregnating a low-alkali magnesia-aluminum-silicate glass fiber woven roving with an impregnating composition in an amount sufficient to produce a composite containing about 75 to 85%, by weight, of glass which impregnating composition is comprised of (i) a resin solution comprising a polyester resin in a polymerizable monomeric solvent and (ii) a free radical catalyst and,

(b) curing the impregnated woven roving in a sheet compression molding unit at a temperature of about 225°-255° F. for about 15-30 minutes to allow the impregnated woven roving to substantially conform to the mold unit, at a pressure of about 100-600 psi sufficient to maintain the exothermic temperature at about 300° F. or below and to catalytically crosslink the polyester resin and monomeric solvent.

5,006,294

PROCESS FOR MAKING COMPOSITES OF STRETCH BROKEN ALIGNED FIBERS

Archie R. Bice, Landenberg, Pa.; David H. Edison, Hockessin; Floyd H. Fish, Jr., Centreville, both of Del.; Mark W. Hopkins, Newark, and Richard K. Okine, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 26, 1989, Ser. No. 344,973
Int. Cl.[5] B29C *55/00, 67/14*
U.S. Cl. 264—138 **5 Claims**

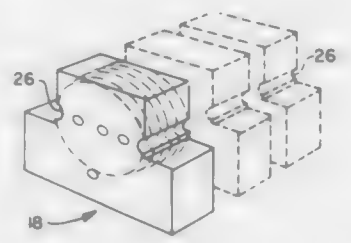
1. A process for making a resin matrix tow reinforced with stretch-broken fibers comprising: feeding a thermoplastic resin matrix tow reinforced with continuous filament fibers into a tensioning zone; heating said tow in said tensioning zone to melt said thermoplastic resin while tensioning said tow sufficiently to break all of said continuous filament fibers in a random manner, and immediately cooling said tow to solidify said resin.

5,006,295

METHOD FOR MAKING A PLURALITY OF LIKE PRINTED CIRCUIT BOARD TEST PIECES AND ARRANGING THEM RELATIVE TO ONE ANOTHER CUTTING ALONG A HOLE ROW CENTER PLANE

Tore Hesselgren, Ringvägen 63, S-130 35 Ingarö, Sweden

PCT No. PCT/SE88/00402, § 371 Date Apr. 10, 1989, § 102(e) Date Apr. 10, 1989, PCT Pub. No. WO89/01389, PCT Pub. Date Feb. 23, 1989
PCT Filed Aug. 9, 1988, Ser. No. 346,178
Claims priority, application Sweden, Aug. 10, 1987, 8703100
Int. Cl.[5] B29C *39/12*
U.S. Cl. 264—139 **6 Claims**



1. A method for preparing a plurality of printed circuit board test pieces for quality control examination of metal plating in holes provided through said test pieces, comprising:

providing a fixture having a mold cavity having an internal wall including at least two longitudinally extending, generally opposed bars;

cutting from at least one circuit board a plurality of test pieces, each including wholly surrounded by the perimeter thereof, at least one metal plated hole and each including in the perimeter thereof at least two generally radially outwardly opening grooves, so that the grooves on each test piece have a peselected uniform spatial relationship to each hole on the respective test piece;

inserting a plurality of test pieces into the mold cavity of the fixture so that the test pieces extend generally transversally of the fixture, in a longitudinally extending series, with each test piece groove receiving a respective bar of the fixture, so that all of said holes through the test pieces are disposed so as to be centered at substantially a common level;

introducing casting plastic material into the mold cavity into interstitial spaces among the test pieces, and allowing the plastic material to harden, thereby forming a composite in which the spatial dispositions of the test pieces are fixed relative to one another; and

cutting longitudinally through said composite at said common level, thereby substantially bisecting all of said holes,

and thereby exposing remaining-half portions thereof for examination.

5,006,296

PROCESS FOR THE PREPARATION OF FIBERS OF STEREOREGULAR POLYSTYRENE

David R. Pedersen, Clayton, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 1, 1988, Ser. No. 239,490
Int. Cl.[5] D01F *6/22*
U.S. Cl. 264—210.7 **10 Claims**

1. A process for the preparation of fibers of syndiotactic polystyrene, or a mixture of syndiotactic polystyrene and isotactic polystyrene which comprises:

A. heating syndiotactic polystyrene, or a mixture of syndiotactic polystyrene and isotactic polystyrene, to a temperature between its crystal melting point and the temperature at which the polystyrene undergoes degradation, wherein the polystyrene has sufficient viscosity to be extruded;

B. extruding the polystyrene through an orifice to form a fiber at elevated temperatures:

C. quenching the fiber by passing the fiber through one or more zones under conditions such that the fiber solidifies; and

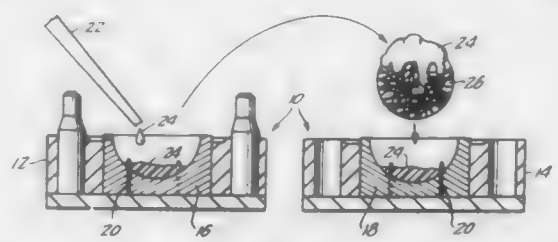
D. cooling the fiber to ambient temperature.

5,006,297

METHOD OF MOLDING POLYURETHANE COVERED GOLF BALLS

Robert A. Brown, Mattapoisett, and Shenshen Wu, No. Dartmouth, both of Mass., assignors to Acushnet Company, New Bedford, Mass.

Filed Feb. 22, 1989, Ser. No. 314,466
Int. Cl.[5] B29C *35/02, 39/10, 43/18*
U.S. Cl. 264—234 **21 Claims**



1. A method for making a polyurethane covered golf ball comprising the steps of:

(a) initially curing polyurethane cover stock in both a top mold half and a bottom mold half of an open, smooth-walled mold for a sufficient period of time so that a core positioned in the top mold half does not fall out of said mold during closing of the mold;

(b) initially molding, in the smooth-walled mold, the polyurethane cover stock about the core for a sufficient period of time to form a smooth-surfaced golf ball product that can be removed from the smooth-walled mold without being deformed;

(c) intermediately curing the smooth-surfaced golf ball product for a sufficient period of time so that the polyurethane cover stock molded about the core is able to retain a dimple pattern of a compression mold; and

(d) compression molding said intermediately cured, smooth-surfaced golf ball product for a sufficient period of time to form a dimpled golf ball.

5,006,298

METHOD OF PRODUCING A BADMINTON RACKET FRAME

Ko-Jan C. Tsai, No. 30, Sec. 2, Ya Tan Rd., Tan Tzu Hsiang, Taichung Hsien, Taiwan

Filed Jun. 28, 1990, Ser. No. 545,207
Int. Cl.[5] B29C *49/20, 49/22, 49/46;* **A63B** *49/10*
U.S. Cl. 264—512 **3 Claims**



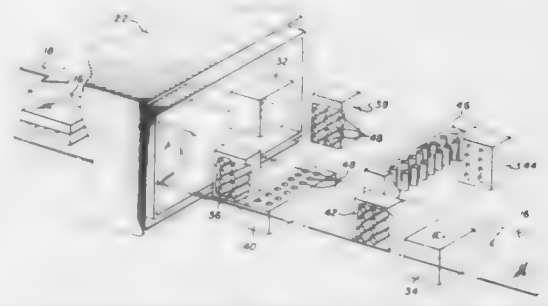
1. A method of producing a badminton racket frame comprising preparing a mold cavity shaped in the form of said badminton racket frame having generally a head section and a handle shaft, wrapping a plurality of layers of unidirectional oriented resin-impregnated graphite fibers so as to form a first tubular shell shaped in the form of said handle shaft and a second tubular shell shaped in the form of said head section, inserting solvent material into said first shell and second shell, closing both ends of said first shell and said second shell, wrapping said ends of said second shell and an upper end of said first shell together by a plurality of layers of unidirectionally oriented resin-impregnated graphite fibers, arranging said wrapped first shell and said second shell within said mold cavity, heating said solvent material to cause expansion from the liquid state to the gaseous state and to generate pressure within said mold cavity so as to press against said layers of graphite fibers and thereby provide intimate bonding of said layers, and thereafter removing from said mold cavity said first shell and said second shell as an integral composite badminton racket frame.

5,006,299

EXPLOSIVE DETECTION SYSTEM

Tsahi Gozani, Palo Alto, and Patrick M. Shea, Sunnyvale, both of Calif., assignors to Science Applications International Corporation, San Diego, Calif.

Continuation of Ser. No. 53,950, May 26, 1987, abandoned. This application Mar. 9, 1989, Ser. No. 321,511
Int. Cl.[5] G21G *1/06*
U.S. Cl. 376—159 **46 Claims**



1. A system for detecting the presence of explosive in an object under observation by detection of a particular element,

and the concentration of such particular, element, at the different positions in the object, including,

a cavity structure for receiving the object under observation,

means stationary in the cavity structure for providing thermal neutrons to the object under observation for interaction with the object under observation to obtain the production from the object of gamma rays representative of the presence and concentration of the particular element in the object,

means for moving the object through the cavity structure,

a plurality of inorganic detectors disposed in the cavity structure and operative independently of one another and positioned relative to the thermal neutron means and the object for detecting the gamma rays to produce output signals indicative at each instant of such gamma rays,

the thermal neutron means and the inorganic detectors being disposed in a common planar relationship enclosing the object to obtain the detection by the inorganic detectors at each instant of the gamma rays in such common plane, the common planar relationship being transverse to the direction of movement of the object through the cavity structure, the inorganic detectors in the plurality being operative independently of one another, and

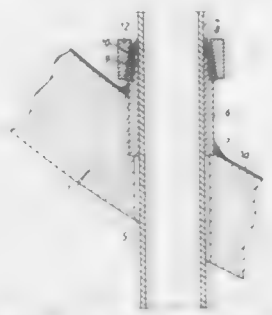
means responsive to the output signals from the inorganic detectors at progressive instants of time in the common planar relationship during the movement of the object through the cavity structure for processing such signals to indicate the presence, and the concentration of the particular element, at the different positions in the object on a three-dimensional basis.

5,006,300

SEALING DEVICE FOR NUCLEAR POWER REACTOR

Erik Jönsson, and Lars Törnblom, both of Västerås, Sweden, assignors to AB Asea-Atom, Västerås, Sweden

Filed Mar. 28, 1988, Ser. No. 174,171
Claims priority, application Sweden, Mar. 30, 1987, 8701310
Int. Cl.[5] G21C *13/028*
U.S. Cl. 376—203 **8 Claims**



1. A sealing device for sealing a possible leak inside a nuclear reactor pressure vessel, in which an operating rod for controlling a control rod of the reactor is arranged in an elongated tube, extending through an associated opening in the wall of the vessel, a CRD stub tube surrounding the tube on the inside of the wall of the pressure vessel and communicating with said opening, one end of said CRD stub tube being joined to the tube by means of a first weld, and the stub tube being joined to the wall around said opening by means of a second weld,

characterized in that

the sealing device comprises at least one inner sealing sleeve of a softer metallic material, which may be fitted over the tube and the CRD stub tube and has an outer frusto-conical surface, and an outer sealing sleeve of a harder metallic material, which is arranged over said inner sealing sleeve and has an inner frusto-conical surface,

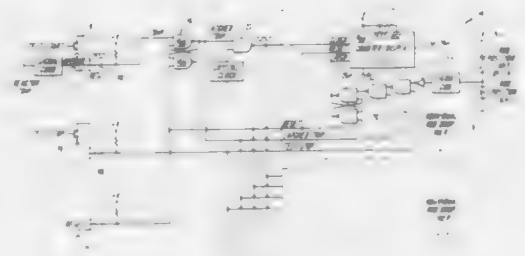
on each side of said possible leak there being formed contact surfaces between the inner sealing sleeve and at least one of the tube and the CRD stub tube, the outer sealing sleeve being adapted to be fitted over the inner sealing sleeve, thus achieving a sealing deformation of said contact surfaces of the inner sealing sleeve.

5,006,301

METHOD AND APPARATUS FOR CONTROL ROD DROP MONITORING

Anthony F. Lexa, Forest, Va., assignor to Joyner Engineers and Trainers, Inc., Forest, Va.

Filed Mar. 22, 1989, Ser. No. 327,251
Int. Cl.[5] G21C *17/00*
U.S. Cl. 376—259 **32 Claims**



1. A system for continuously monitoring a plurality of control rod drop times in a reactor, comprising:

means for receiving a reactor trip signal and for generating an initiation signal;

a plurality of timer circuits, each timer circuit being associated with one of a plurality of control rods, including

means for receiving a control rod position signal indicative of each associated control rod at a predetermined insert position and for generating a deactivation signal,

first latching means for retaining said initiation signal generated by said receiving means,

second latching means for retaining said deactivation signal received by said receiving means,

a timer actuated by said initiation signal and said timer being deactivated by said deactivation signal, and

means for displaying the output of said timer to represent the individual rod drop time.

5,006,302

NOZZLE DAM REMOTE INSTALLATION SYSTEM AND TECHNIQUE

Mark H. Trundle, Signal Mountain, Tenn., and William C. Jones, Tunnel Hill, Ga., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Division of Ser. No. 365,641, Jun. 13, 1989. This application Apr. 19, 1990, Ser. No. 511,118
Int. Cl.[5] G21C *19/00*
U.S. Cl. 376—260 **18 Claims**

1. An improved method for remotely translocating nozzle dam means from outside a nuclear reactor steam generator channel head to coupled association with nozzle holddown ring means within said channel head to thereby eliminate, or at least substantially minimize personnel exposure to radiation and/or radioactive contamination environment within said channel head, which improved method comprises the steps of:

(a) predetermining a first situs on the tubesheet associated with a nuclear reactor steam generator channel head;

(b) introducing into said nuclear reactor steam generator channel head, through a manway provided in the wall thereof, tubesheet tackle means, said tubesheet tackle means predisposed for operative association with first lifting means and said first lifting means in turn operatively associated with second lifting means, said second lifting means located juxtaposed a second situs, said second situs located outside of said channel head;

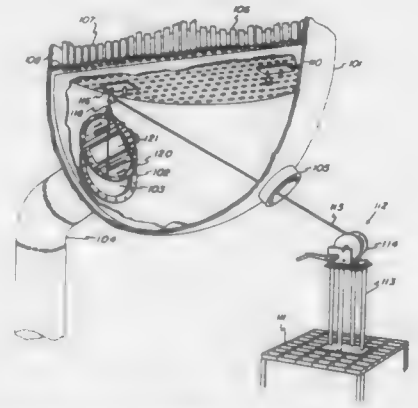
(c) remotely attaching said tubesheet tackle means to said first predetermined situs on said tubesheet;

(d) operatively associating nozzle dam strapping means with nozzle dam means and introducing the resulting assembly, with said nozzle dam means in folded mode, through said manway and into said channel head;

(e) operatively associating said nozzle dam strapping means with said first lifting means;

(f) actuating said second lifting means in a manner so as to apply at least an upwardly directed vertical force vector on that portion of said first lifting means juxtaposed said nozzle dam strapping means to elevate said folded nozzle dam means and effect the unfolding thereof to the full open position and continuing the actuating of said second lifting means in a manner so as to effect movement of said fully opened nozzle dam until the center point thereof is substantially vertically above the center point of said nozzle holddown ring and in juxtaposition therewith;

(g) remotely disengaging said nozzle dam strapping means from operative association with said nozzle dam;



(h) remotely effecting a determination of the proper orientation of said nozzle dam in relation to said nozzle holddown ring;

(i) remotely securing, at least temporarily, said nozzle dam means to said nozzle holddown ring;

(j) introducing into said nuclear reactor steam generator channel head, through said open manway, nozzle dam center section means and remotely operatively associating same with both said first lifting means and at least a portion of said nozzle dam strapping means for effecting subsequent positioning and engagement of said center section means with said at least temporarily secured nozzle dam means;

(k) remotely securing, at least temporarily, said nozzle dam center section means to said nozzle holddown ring; and

(l) introducing into said channel head suitable torquing means for securing said nozzle dam means to said nozzle holddown ring.

5,006,303

NUCLEAR POWER PLANT

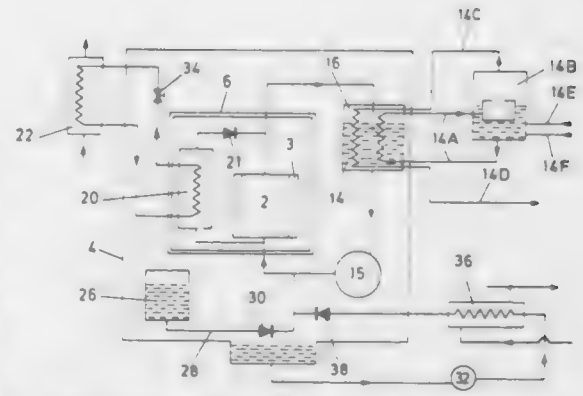
Ivor T. Rowlands, Eversley House, Kingsley Road, Frodsham, Cheshire, England (WA6 6EY)

Continuation-in-part of Ser. No. 695,262, Jan. 28, 1985, abandoned. This application Nov. 27, 1989, Ser. No. 441,171
Claims priority, application United Kingdom, Jun. 9, 1981, 8117616
Int. Cl.[5] G21C *15/18*
U.S. Cl. 376—282 **11 Claims**

1. In a power plant including a containment building which houses a nuclear reactor core containing an enriched uranium fuel in a primary cooling vessel means that partially contains a closed primary cooling circuit for cooling said core, and means for generating in said primary cooling circuit a single pass flow, upwardly through said core, of an organic liquid as primary coolant and moderator with said organic liquid being supplied to the primary cooling circuit initially as feed coolant having a first chemical composition and physical characteristics, and means for maintaining in the primary cooling circuit an operating primary coolant and moderator having a second chemical composition and physical characteristics, an improved passively operating emergency cooling system that is operable to respond automatically to a postulated fault condition comprising a breach of said primary cooling circuit, said emergency cooling system comprising:

means for flooding said core with emergency coolant on a breach of said primary cooling circuit and heat rejection means for cooling said emergency coolant,

said flooding means including an accumulator means having a liquid capacity several times greater than the inventory of said primary cooling circuit, organic emergency coolant maintained in said accumulator means at a pressure head above the saturated vapour pressure, at normal operating temperature, of the primary organic coolant and moderator, said organic emergency coolant in said accumulator means being mutually compatible with the said operating primary organic coolant and moderator but having a different chemical composition and physical



characteristics including a higher boiling point at atmospheric pressure from either the feed coolant or the operating primary organic coolant and moderator, and pressure responsive means for delivery of said organic emergency coolant from said accumulator means to said core under said pressure head in said accumulator means in response to such a postulated fault condition which include loss of pressure in said primary cooling circuit;

and said heat rejection means being operable to cool said organic emergency coolant in said core on such a breach of the primary cooling circuit in a manner to maintain cooling of said core without boiling of said organic emergency coolant, and comprising means for establishing, on occurrence of such a postulated fault condition, a first natural convection circuit within said primary cooling vessel means, to maintain a natural convention flow of the said organic emergency coolant through said core sustained by heat rejection to a first heat exchanger and a second natural convection circuit, for establishing a natural convention flow of an intermediate organic coolant through said first heat exchanger sustained by heat rejection to a second heat exchanger, said second heat exchanger being a high-level heat exchanger cooled by atmospheric air externally of the containment building.

5,006,304

PRESSURE PULSE CLEANING METHOD

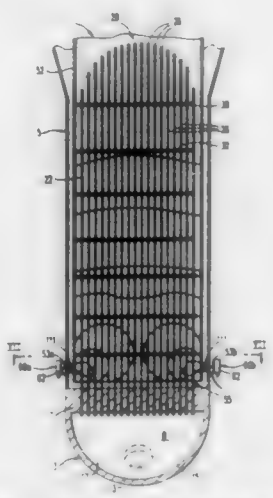
Richard D. Franklin, Jeannette; Gregg D. Auld, Trafford; David E. Murray, Greensburg; John J. Lescisin, Pittsburgh; Albert R. Vais, Export, and Thomas E. Dunn, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 183,874, Apr. 19, 1988, Pat. No. 4,921,662. This application Oct. 20, 1989, Ser. No. 424,879

The portion of the term of this patent subsequent to May 1, 2007, has been disclaimed.

Int. Cl.[5] F22B *37/48*

U.S. Cl. 376—316 45 Claims



21. A method for loosening and removing sludge, debris and dissolved matter from the secondary side of a steam generator of the type containing a plurality of heat exchanger tubes mounted in a tubesheet at one end and supported along their length by a plurality of vertically spaced support plates, comprising the steps of:

a. introducing a flow of water into the secondary side of the steam generator;

b. commencing the generation of a plurality of pressure pulses in the water in the secondary side of the steam generator when said water submerges said tubesheet, wherein each of said pulses is generated by introducing between 60 and 100 cubic inches of an inert gas into said water that is pressurized to between about 350 and 450 pounds per square inch, wherein said pressure pulses are generated at uniform time intervals of between about 5 and 12 seconds,

c. continuing the flow of water into the secondary side of the steam generator until the level of the water within the secondary side thereof is sufficiently high to immerse all of the support plates therein;

d. continuing the generation of pressure pulses at uniform intervals at a time between 5 and 12 seconds while the level of the water in the secondary side is raised to immerse all of the support plates, wherein the pressure of the pressurized gas used to generate the pressure pulses is increased from between about 350 to 450 psi to between about 750 to 850 psi;

e. draining water out of the secondary side of the steam generator while continuing to generate pulses at uniform intervals anywhere between about 5 and 12 seconds by lowering the level of the water in the secondary side from the upper support plates down to a level which immerses only the tubesheet, wherein the pressure of the gas used to generate the pressure pulses is lowered as the level of the water is lowered from between about 750 to 850 psi to between about 350 to 450 psi,

wherein the succession of pressure pulses lasts from between 24 and 52 hours.

5,006,305

DEVICE FOR GUIDING THE CONTROL CLUSTERS OF NUCLEAR REACTORS

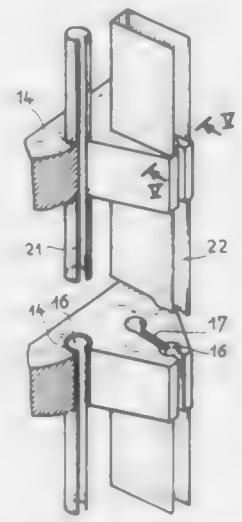
Jean-Pierre Denizou, Craponne, France, assignor to Framatome & CIE., Courbevoie, France

Filed Jun. 4, 1984, Ser. No. 617,230

Claims priority, application France, Jun. 3, 1983, 83 09275

Int. Cl.[5] G21C *7/08, 15/00*

U.S. Cl. 376—353 1 Claim



1. A nuclear reactor having:

a reactor vessel,

a reactor core comprising fuel assemblies located side by side in upright position,

an upper core plate located above said core and formed with coolant openings for upward circulation of coolant out of said core,

an upper support plate spaced above said upper core plate and carried by said vessel,

a plurality of control clusters each having a plurality of vertical neutron absorbing rods joined together at their upper ends by a spider and each movable from a position where said rods are in said core and a position where said rods are above said core, the rods in any one of said clusters including pairs of two said rods with the rods in a pair being aligned along a direction radial to an axis of the cluster,

and a plurality of guiding devices each associated with one of said control clusters,

wherein each said guiding device includes

(a) a vertical housing mounted between said upper support plate and said upper core plate in vertical alignment with one of said fuel assemblies and having a cross-section greater than that of the associated one of said control clusters,

(b) a plurality of horizontal guide plates securely connected to said housing and distributed at intervals along and within said casing, each of said plates being formed with guiding holes and radially directed openings of a shape corresponding to the cross-section of said rods and spider for slidably guiding said rods at discontinuous intervals only, and

(c) a plurality of U-shaped, folded sheet metal, coolant guiding casings each located between two adjacent ones of said guide plates in a lower portion of said housing and each surrounding one of said pairs and opening radially inwardly, each said casing having a section defining a gap with the associated pair of rods substantially devoid of radial coolant flow.

5,006,306

PROCESS FOR ALLOYING URANIUM AND NIOBIUM

Cressie E. Holcombe, Farragut; Walter G. Northcutt, Jr., Oak Ridge; David R. Masters, and Lloyd R. Chapman, both of Knoxville, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 6, 1990, Ser. No. 578,154

Int. Cl.[5] C22C *45/00*

U.S. Cl. 420—3 9 Claims

1. A process for preparing uranium-base alloys containing a small amount of niobium which comprises:

forming a stacked array of uranium plates or sheets having niobium powder disposed in layers between said sheets, the relative amounts of uranium and niobium being selected to provide a stoichiometric amount for a desired alloy composition;

heating said array in a crucible under a vacuum or inert atmosphere to a temperature such as to melt the uranium;

holding the resulting molten uranium-niobium powder mixture at a temperature such as to maintain the uranium in molten state until the niobium powder dissolves therein; and

casting the resulting uranium-niobium solution.

5,006,307

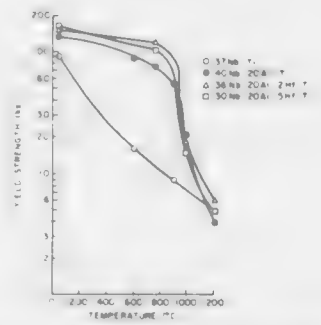
HAFNIUM CONTAINING NIOBIUM, TITANIUM, ALUMINUM HIGH TEMPERATURE ALLOY

Melvin R. Jackson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 5, 1988, Ser. No. 279,639

Int. Cl.[5] C22C *14/00*; C21D *1/00*

U.S. Cl. 420—426 4 Claims



1. As a composition of matter an alloy consisting essentially of the following composition in atom percent:

Ingredient	Concentration Range	
	From About	To About
niobium	balance essentially	
titanium	40	48
aluminum	12	22
hafnium	0.4	6

5,006,308

NICKEL ALUMINIDE ALLOY FOR HIGH TEMPERATURE STRUCTURAL USE

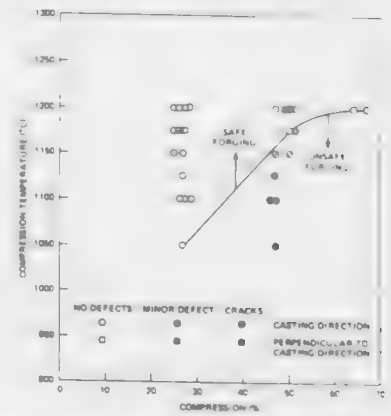
Chain T. Liu, Oak Ridge, and Vinod K. Sikka, Clinton, both of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Jun. 9, 1989, Ser. No. 364,774

Int. Cl.[5] C22C *19/05*

U.S. Cl. 420—445 17 Claims

1. A nickel aluminide alloy composition suitable for fabrication at high temperature in the range of about 1050° to about 1200° C. consisting essentially of: a Ni_3Al base; a sufficient concentration of chromium to increase ductility at elevated temperatures in oxidizing environments; a sufficient concentration of boron to increase ductility; about 0.2 to about 0.5% titanium to improve the creep resistance; and a sufficient concentration of zirconium to provide high strength and good alloy fabricability at a temperature in the range of about 1050° C. to about 1200° C.



5,006,309

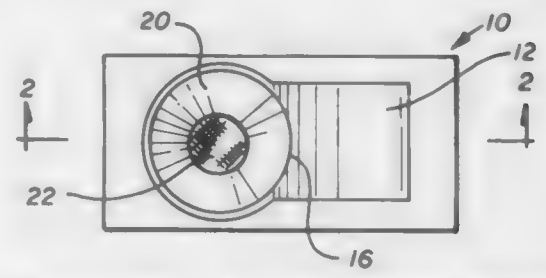
IMMUNOASSAY DEVICE WITH LIQUID TRANSFER BETWEEN WELLS BY WASHING

Omar S. Khalil; Charles F. Hanna, both of Libertyville; Thomas F. Zurek, River Forest, and Denise A. Grigalauski, Wildwood, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Apr. 22, 1988, Ser. No. 184,726

Int. Cl.[5] G01N *1/28, 33/543*

U.S. Cl. 422—56 6 Claims



1. A device suitable for performing a solid-phase diagnostic assay comprising:

a shallow sample well for receiving a sample and reagents for forming a reaction mixture which produces a detectable component corresponding to an analyte in the sample:

a read well positioned adjacent to said sample well comprising:

(a) an entrance port and wash receiving means for receiving a quantity of said sample and assay reagents from said sample well;

(b) a fibrous matrix for retaining and immobilizing said detectable components, said fibrous matrix positioned below and in fluid communication with said wash receiving means: and

(c) means positioned below said fibrous matrix for assisting the flow of sample and assay reagents through said fibrous matrix: and

said sample well and said wash receiving means are separated by a wall which is constructed and arranged such that when wash fluids is injected into said sample well, sample and reaction mixtures are washed from said shallow sample well over said wall and into said read well.

5,006,310

SCHIRMER TEAR TEST

Jerry Gin, Sunnyvale, Calif., and Vernon G. Wong, Rockville, Md., assignors to Visionex, Sunnyvale, Calif.

Filed Nov. 3, 1989, Ser. No. 431,522
Int. Cl.[5] G01N *31/22*
U.S. Cl. 422—56 5 Claims

1. In a Schirmer Tear Test strip, the improvement comprising a graduated scale index printed on said strip for measuring the migration distance of the tear migration front, wherein said scale index is printed in essentially water insoluble ink, and

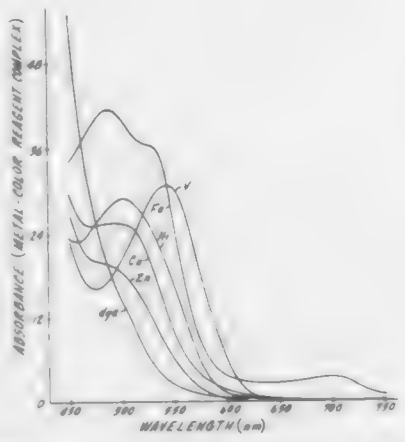
a water soluble dye that essentially co-migrates with the tear migration front positioned proximal to the end of said strip for insertion into the conjunctival sac of the eye.

5,006,311

MONITORING PERFORMANCE OF A TREATING AGENT ADDED TO A BODY OF WATER

John E. Hoots, St. Charles, and Rodney H. Banks, Naperville, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Mar. 23, 1990, Ser. No. 497,681
Int. Cl.[5] G01N *21/00, 31/00, 33/00*
U.S. Cl. 422—62 8 Claims



1. Method of analyzing the concentration of a treating agent injected by a pump into a body of system water in an amount estimated as optimum for improving the quality of the water, the inject agent being deemed sufficient for optimum performance of the treating agent, consumed as it improves the quality of the water, and also analyzing for the concentration of uncompensated metals constituting chemical stress, which body of water is also injected with an inconsumable vanadate transition metal tracer proportioned to the treating agent concentration as the equivalent of the treating agent concentration, comprising the steps of:

(1) withdrawing a specimen of the body of water and treating it successively with predetermined proportioned amounts of H_2O_2 and a dye reactive with both vanadate and stress metal ions, and then measuring the absorbance of the specimen, the H_2O_2 preventing the vanadate from reacting with the dye so that the absorbance value (I) of the specimen represents the concentration of stress metals as a blank for comparison; storing the absorbance value of the blank;

(2) withdrawing a second specimen of the body of water as a sample, adding only the predetermined proportioned amount of dye to the sample, without H_2O_2; measuring the absorbance (II) of the sample, resolving the difference between absorbance (I) and absorbance (II) to obtain the absorbance value of the vanadate as a measure of the prevailing concentration of the treating agent, and adjusting either the amount of treating agent or volume of water if the resolved absorbance value establishes non-optimum performance of the treating agent;

(3) comparing the absorbance value (III) of the proportioned amount of dye in distilled water to absorbance value (I) and resolving their difference to obtain the absorbance value of any stress metals present.

5,006,312

GRAVIMETRIC TITRATION APPARATUS FOR THE DETERMINATION OF THE IODINE NUMBER OF CARBON BLACK

Lawrence J. Murphy, Jr., 15 Lutheran Dr., Nashua, N.H. 03063

Division of Ser. No. 401,347, Aug. 31, 1989. This application Jun. 18, 1990, Ser. No. 539,646
Int. Cl.[5] G01N *31/16*
U.S. Cl. 422—62 9 Claims

1. An apparatus for gravimetrically determining the iodine adsorption number of carbon black, comprising

preparation means for preparing iodine solution, carbon black, an appropriate primary standard, and a solution comprising said primary standard for titration against an appropriate titrant, said preparation means including a first balance for weighing said iodine solution, said carbon black, said primary standard, and said solution comprising said primary standard, and equilibration means for equilibrating a mixture of accurately weighed carbon black and accurately weighed iodine solution,

titration means for titrating said primary standard solution, said iodine solution, and supernatant obtained from an equilibrated mixture of said carbon black and said iodine solution against said titrant, said titration means comprising a second balance, a titrant reservoir resting on said second balance, an indicating and reference electrode, a magnetic stirrer, and a titration cup for containing the solution to be titrated, said second balance accurately weighing the amount of titrant added to said primary standard solution, said iodine solution, and said supernatant, and

control means connected to said first and second balances, said control means receiving weight determinations from said first and second balances and using said weight determinations to gravimetrically determine the concentrations of said primary standard solution, said titrant, said iodine solution, and said supernatant, said control means calculating the iodine adsorption number of said carbon black based on said concentration determinations.

5,006,313

HALOGENATED SURFACE WITH REDUCED PROTEIN INTERACTION

Sally A. Swedberg, Santa Cruz, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

PCT No. PCT/US88/01877, § 371 Date Apr. 2, 1990, § 102(e) Date Apr. 2, 1990, PCT Pub. No. WO89/12225, PCT Pub. Date Dec. 14, 1989
PCT Filed Jun. 2, 1988, Ser. No. 474,716
Int. Cl.[5] G01N *30/00*
U.S. Cl. 422—70 4 Claims

1. A device for electrophoretic separations of protein solutes, comprising:

a small bore capillary tube having a reduced interaction phase coated along the bore and effective to reduce interaction between protein solute and the bore, the reduced interaction phase including a terminal moiety covalently bound in the reduced interaction phase through at least one heteroatom, the at least one heteroatom forming a linkage intermediate the bore and the terminal moiety, the terminal moiety including a plurality of halogen atoms.

5,006,314

SENSOR AND METHOD FOR SENSING THE CONCENTRATION OF A COMPONENT IN A MEDIUM

Ted H. Gourley; Thomas P. Maxwell, both of Santa Ana; Thomas G. Hacker, Anaheim; William W. Miller, Santa Ana, and Masao Yafuso, El Toro, all of Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 91,433, Aug. 31, 1987, abandoned, which is a continuation-in-part of Ser. No. 853,460, Apr. 18, 1986, abandoned, and a continuation-in-part of Ser. No. 917,913, Oct. 10, 1986, Pat. No. 4,798,738, and a continuation-in-part of Ser. No. 917,912, Oct. 10, 1986, Pat. No. 4,824,789, and a continuation-in-part of Ser. No. 49,844, May 15, 1987, Pat. No. 4,919,891. This application Jun. 13, 1988, Ser. No. 206,189
Int. Cl.[5] G01N *21/64*
U.S. Cl. 422—82.07 41 Claims

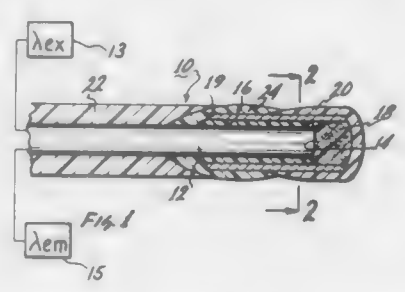


Fig. 1

29. An apparatus for sensing the concentration of a component in a medium comprising:

an optical fiber having a distal end;

a sleeve member more rigid than said optical fiber, said sleeve member being secured to said optical fiber and extending distally of said distal end whereby said distal end and said sleeve member at least partially define a pocket;

an optical indicator in said pocket for providing a signal which varies in response to the concentration of the component in the medium, said sleeve member extending around the entire circumference of at least a portion of said optical indicator, and said sleeve member acting to reduce the possibility of relative movement between said distal end of said optical fiber and said optical indicator; and

overcoating means acting to at least partially cover said optical indicator.

37. An apparatus for sensing the concentration of a component in a medium comprising:

elongated signal means having a distal end;

sleeve means secured to said elongated signal means and extending distally of said distal end whereby said distal end and said sleeve means at least partially define a pocket which is substantially filled with component permeable material;

sensor means in said pocket for providing a signal which varies in response to the concentration of the component in the medium, said sleeve means extending around the entire circumference of at least a portion of said sensor means, and said sleeve means acting to reduce the possibility of relative movement between said distal end of said elongated signal means and said sensor means; and

overcoating means acting to at least partially cover said sensor means.

41. A method for producing an apparatus for sensing the concentration of a component in a medium, comprising the steps of:

securing a sleeve member to an optical fiber having a distal end so that said sleeve member extends distally of said distal end and so that said sleeve member and said distal end at least partially define a pocket;

placing an optical indicator in said pocket, said sleeve member extending around the entire circumference of at least a portion of said optical indicator; and

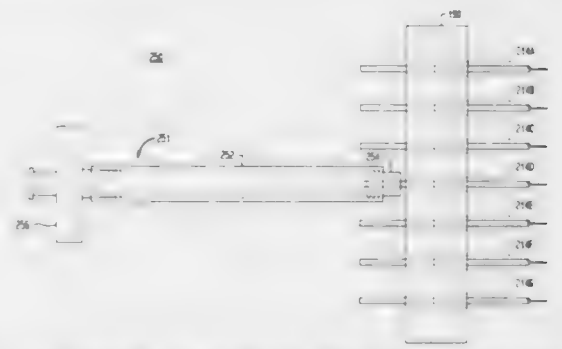
placing an overcoating adjacent at least a portion of said optical indicator in said pocket.

5,006,315

AUTOMATED PREPARATIVE GAS CHROMATOGRAPH

Peter J. Maroulis, Allentown; Patrick J. Clark, Palmerton; Victoria J. Morris, Macungie; Robert A. Byerley, Lehighton, all of Pa., and John Booker, Austin, Tex., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 160,541, Feb. 25, 1988. This application Apr. 27, 1990, Ser. No. 515,295
Int. Cl.[5] G01N *30/02*
U.S. Cl. 422—89 3 Claims



1. A collection and separation system of a gas chromatograph having flow of system effluent, including at least one effluent trap having an inlet for receiving the system effluent comprising:

condensing means coupled to the at least one inlet for condensing system effluent;

backpressure means coupled to the condensing means for providing backpressure within the condensing means, the backpressure means is a filter plug formed of a solid material having a smooth surface for facilitating removal of effluent condensate from the backpressure means.

5,006,316

REACTORS FOR HETEROGENEOUS SYNTHESIS

Umberto Zardi, Breganzona, and Giorgio Pagani, Lugano, both of Switzerland, assignors to Ammonia Casale S.A., Switzerland

Filed May 16, 1988, Ser. No. 194,402
Claims priority, application Switzerland, May 14, 1987, 01846/87
Int. Cl.[5] B01J *8/04*
U.S. Cl. 422—148 5 Claims

1. A system to increase reactor yield of a reactor for heterogeneous synthesis which includes an internal boiler and an internal heat exchanger inserted at least partially into a catalytic layer comprising:

a first catalytic layer, the first catalytic layer being partly connected to a boiler;

a second catalytic layer, the second catalytic layer being party connected to a heat exchanger;

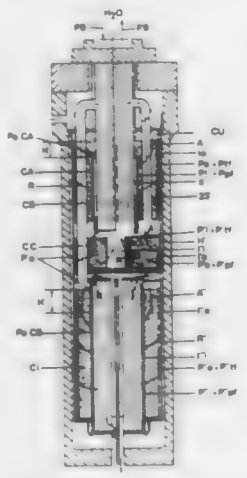
at least one intermediate catalytic layer disposed between the first catalytic layer and the second catalytic layer;

each catalytic layer having an internal annular wall and an external annular wall for defining a first airspace and a second airspace for each catalytic layer, the internal annular wall and external annular wall of each catalyst layer being at least partially perforated;

the external annular wall of the first catalytic layer being perforated along an entire length thereof, the first airspace of the first catalytic layer being defined by the perforated external annular wall of the first catalytic layer and a cartridge wall of the reactor;

the internal annular wall of the first catalytic layer being perforated along a length less than the length of the external annular wall of the first catalytic layer, the second airspace of the first catalytic layer being defined by the perforated internal annular wall of the first catalytic layer and a wall of the boiler;

the external annular wall of the second catalytic layer being perforated along an entire length thereof, the first airspace



of the second catalytic layer being defined by the perforated external annular wall of the second catalytic layer and the cartridge wall of the reactor;

the internal annular wall of the second catalytic layer being perforated along a length less than the length of the external annular wall of the second catalytic layer, the second airspace of the second catalytic layer being defined by the perforated internal annular wall of the second catalyst layer and a wall of the heat exchanger.

5,006,317

PROCESS FOR PRODUCING CRYSTALLINE SILICON INGOT IN A FLUIDIZED BED REACTOR

Angel Sanjurjo, San Jose, Calif., assignor to CommTech Development Partners II, Menlo Park, Calif.

Filed May 18, 1990, Ser. No. 525,900
Int. Cl.[5] B01J *8/42*
U.S. Cl. 422—245 **20 Claims**



1. A device for preparing highly-pure, crystalline silicon, comprising:

a reactor vessel suitable for containing a plurality of Si particles;

agitating means for agitating said plurality of Si particles;

positioning means, for positioning a seed crystal within said reactor; and

first heating means, capable of melting a portion of a seed crystal positioned by said positioning means.

5,006,318

PARTICULATE COMPOSITIONS OF RARE EARTH OXIDE AND METHOD OF MAKING SAME

Gérard Demazeau, Gradignan; Olivier Martel, Grande-Synthe; Michel Devalette, Gradignan, and Eric Verdon, St. Jean d'Angely, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

PCT No. PCT/FR87/00024, § 371 Date Nov. 13, 1987, § 102(e) Date Nov. 13, 1987, PCT Pub. No. WO87/04420, PCT Pub. Date Jul. 30, 1987
PCT Filed Jan. 22, 1987, Ser. No. 108,903
Claims priority, application France, Jan. 22, 1986, 86 00855
Int. Cl.[5] C01F *17/00*
U.S. Cl. 423—21.1 **40 Claims**

1. Particulate compositions of rare earth oxides comprising particles present in the form of single crystals of homogeneous size and morphology, the dimensions of the single crystals being less than or equal to 10 μm and greater than approximately 0.05 μm and at least 80% of the particles having dimensions varying within a range of x±0.2 x, x being the mean dimension of the particles of the composition under consideration, with the understanding that the variation of the range of ±0.2 x is not less than ±0.1 μm.

5,006,319

PROCESS FOR REMOVING IRON, CHROMIUM AND VANADIUM FROM PHOSPHORIC ACID

Richard E. Hall, and Denise D. Goyden, both of Trenton, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Mar. 4, 1988, Ser. No. 164,289
Int. Cl.[5] B01D *11/00;* **C01B** *25/16*
U.S. Cl. 423—54 **12 Claims**

1. In a process for purifying phosphoric acid by the process comprising extracting an impure aqueous solution of phosphoric acid with an organic solvent, thereby forming an aqueous raffinate, and a nonaqueous solution of phosphoric acid in said solvent, and stripping phosphoric acid from said solvent with an aqueous solution, the improvement comprising contacting said nonaqueous solution of phosphoric acid with a strongly basic anion exchange polymer thereby removing therefrom a metal selected from the group consisting of iron, chromium and vanadium.

5,006,320

MICROBIOLOGICAL OXIDATION PROCESS FOR RECOVERING MINERAL VALUES

William W. Reid, 11 Sunrise Dr., Englewood, Colo. 80110, and Joseph L. Young, 1450 Joshua Dr., Reno, Nev. 89509, assignors to William W. Reid; Joseph L. Young and U.S. Gold Corporation

Filed Mar. 5, 1990, Ser. No. 488,866
Int. Cl.[5] C22B *3/02*
U.S. Cl. 423—150 **52 Claims**

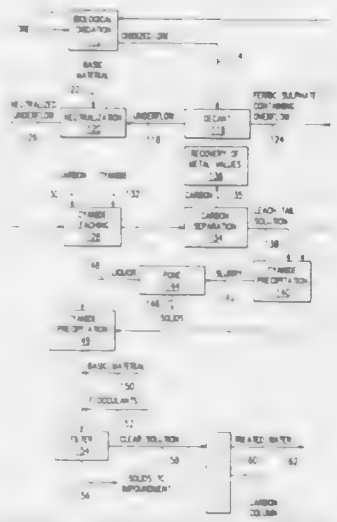
1. A process for recovering metal values from iron- and sulfide-containing ore comprising:

(a) inoculating a slurry of said ore with microorganisms capable of oxidizing the sulfide contained in the ore;

(b) allowing said microorganisms to oxidize at least a portion of the sulfide, thereby transforming the ore into a form which is more susceptible to cyanide leaching;

(c) leaching metal values from the ore using cyanide as a lixiviant;

(d) recovering the metal values; and



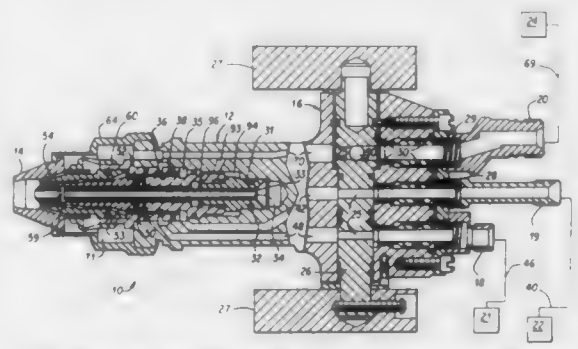
(e) precipitating cyanide from a leach tail solution by contacting said leach tail solution with ferric sulfate generated during the oxidation of the sulfide in the ore.

5,006,321

THERMAL SPRAY METHOD FOR PRODUCING GLASS MOLD PLUNGERS

Mitchell R. Dorfman, Smithtown; Roger W. Kaufold, Huntington; Burton Kushner, Old Bethpage; Anthony J. Rotolico, Hauppauge, and Roopnarine Tilkaran, S. Ozone Park, all of N.Y., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jan. 4, 1989, Ser. No. 293,268
Int. Cl.[5] B05D *3/02, 3/12*
U.S. Cl. 427—192 **13 Claims**



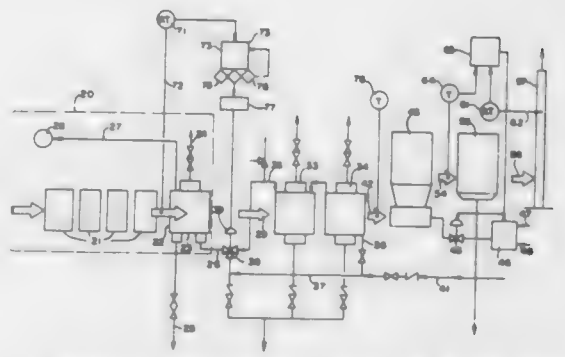
1. A method for manufacturing a glass mold plunger utilizing a thermal spray gun having combustion chamber means therein with a combustion chamber and an open channel for propelling combustion products into the ambient atmosphere at supersonic velocity, the method comprising the steps of preparing a glass mold plunger substrate for receiving a thermal sprayed coating, feeding through the open channel a powder comprising self-fluxing alloy particles, injecting into the chamber and combusting therein a combustible mixture of combustion gas and oxygen at a pressure in the chamber sufficient to produce a supersonic spray stream containing the powder issuing through the open channel, directing the spray stream toward the glass mold plunger substrate such as to produce a coating thereon, fusing the coating and grind finishing the fused coating to a polished finish.

5,006,322

CONTROLLING POLLUTANTS FROM BOILERS

Wolfram G. Schuetzenduebel, Pike Road, and James T. Honan, Montgomery, both of Ala., assignors to Blount Energy Resource Corp., Montgomery, Ala.

Filed Dec. 12, 1988, Ser. No. 283,258
Int. Cl.[5] B01D *53/30, 53/34*
U.S. Cl. 423—210 **15 Claims**



1. A method of controlling the emissions in the flue gas of the boiler in a municipal solid waste burning system having first and second economizers for both heating feed water for the boiler and cooling the flue gas from said boiler, a reactor through which said cooled flue gas flows, said reactor having means to introduce a basic reactant at a selected quantity flow rate in slurry form to reduce the acid content of the cooled flue gas, and a separator to separate particulates form said flue gas prior to discharging the flue gas, comprising the steps of:

determining the acid content of the flue gas in advance of said reactor,

changing the quantity flow rate of reactant in response to a change in the determined acid content to provide a quantity of reactant sufficient to reduce the acid content of the discharged flue gas below a given concentration; and

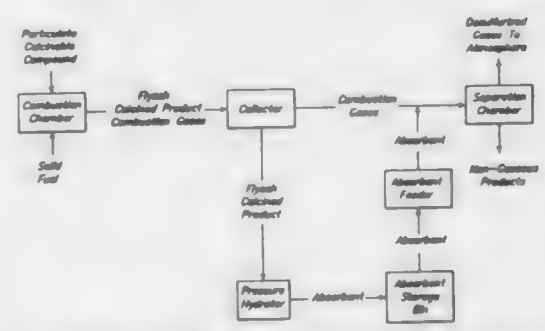
concurrently with changing the quantity flow rate of said reactant, changing the operations of said first and second economizers to effect an inverse change in the cooling of the flue as whereby the temperature of the flue gas entering the reactor is changed directly with the change in quantity flow rate of reactant introduced into said reactor.

5,006,323

METHOD OF DESULFURIZING COMBUSTION GASES

Neil H. Johnson, Grosse Ile, Mich., assignor to Detroit Stoker Company, Monroe, Mich.

Continuation-in-part of Ser. No. 212,000, Jun. 27, 1988, Pat. No. 4,867,955. This application Jun. 30, 1989, Ser. No. 374,181
The portion of the term of this patent subsequent to Sep. 19, 2006, has been disclaimed.
Int. Cl.[5] B01J *8/00;* **C01B** *17/00*
U.S. Cl. 423—244 **15 Claims**



1. A method of desulfurizing gaseous products of combustion comprising the steps of:

(a) burning a sulfur-containing solid fuel within a combustion chamber to produce flyash and combustion gases comprising sulfur dioxide;
(b) heating a particulate calcinable compound comprising a compound selected from the group consisting of the carbonates of magnesium, calcium, sodium, and mixtures thereof, in a selected temperature zone within the combustion chamber for a residence time sufficient for calcination of the calcinable compound to its respective oxide, wherein the particle size of the calcinable compound, the selected temperature zone and the residence time are selected to effect calcination of a substantial amount of the calcinable compound to its respective oxide;
(c) removing the oxide of the calcinable compound from the combustion chamber;
(d) removing the combustion gases from the combustion chamber;
(e) forming a slurry comprised of the oxide of the calcinable compound; and
(f) treating the removed combustion gases with the slurry to remove a substantial amount of the sulfur dioxide from the combustion gases.

5,006,324

POLYMERIZATION OF PHOSPHONITRILIC CHLORIDE

Charles H. Kolich, Baton Rouge, La.; Bernard R. Meltsner, Royal Oak, Mich., and Henry G. Braxton, Jr., Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 126,336, Mar. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 695,791, Jun. 14, 1976, abandoned, which is a continuation-in-part of Ser. No. 512,613, Oct. 7, 1974, abandoned. This application Jan. 10, 1984, Ser. No. 569,611

Int. Cl.[5] C01B *25/10*

U.S. Cl. 423—300 **23 Claims**

1. A process for making a non-oil, substantially linear, high molecular weight phosphonitrilic chloride polymer, said polymer being soluble in benzene, toluene and tetrahydrofuran, said process comprising heating a purified phosphonitrilic chloride of the formula:

$(PNCl_2)_x$

wherein x is an integer from 3–7 inclusive and mixtures thereof, at a temperature of about 200°–300° C. in the presence of a catalytic amount of an aprotic Lewis Acid catalyst selected from the group consisting of cobalt, nickel, boron, copper, gallium, silicon, arsenic and mercury halides and mixtures thereof, said catalytic amount being less than the amount which yields endcapped oily polymers as the major product and being within the range of 5–1000 parts per million parts of said phosphonitrilic chloride and separating a substantially linear high molecular weight non-oil phosphonitrilic chloride polymer, said polymer being further characterized by being soluble in benzene, toluene and tetrahydrofuran.

5,006,325

PROCESS FOR THE RECOVERY OF NITRIC ACID

David L. Parks, Jr., and Carl J. Martin, both of Houston, Tex., assignors to Air Products and Chemical, Inc., Allentown, Pa.

Filed Aug. 28, 1989, Ser. No. 399,654

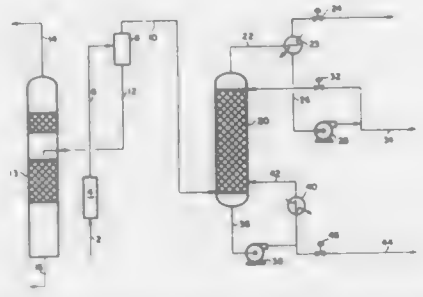
Int. Cl.[5] C01B *21/46;* **C07C** *79/10*

U.S. Cl. 423—390 **7 Claims**

1. In a process for the recovery and regeneration of nitric acid from a spent acid obtained from the mixed acid nitration of aromatic compounds, wherein a mixed acid of sulfuric acid and nitric acid is contacted with an aromatic composition at a temperature and pressure sufficient for producing a nitroaromatic composition and a spent acid containing unreacted nitric acid, sulfuric acid and solublized nitroaromatic compounds in said spent acid, the improvement which comprises:

heating the spent acid to a temperature of from about 120° to 200° C. for a time sufficient to convert nitroaromatics in said spent acid to a nitroaromatic composition having a boiling point greater than 300° C. at atmospheric pressure;

flash distilling the resultant hot spent acid containing nitroaromatics compositions having a boiling point greater than 300° C., and



removing nitric acid as an overhead vapor fraction in preselected concentration and a bottom liquid stream containing sulfuric acid and nitroaromatics.

5,006,326

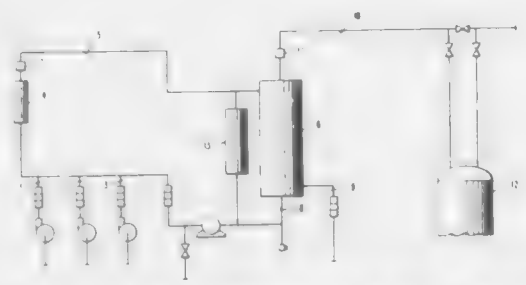
GASEOUS GENERATOR SYSTEM FOR PREPARING CHLORINE DIOXIDE

George Mayurnik, Franklin Lakes, N.J., and Donald C. Kucher, Quakertown, Pa., assignors to International Dioxcide, Inc., Clark, N.J.

Filed May 2, 1989, Ser. No. 346,451

Int. Cl.[5] C01B *11/02*

U.S. Cl. 423—477 **9 Claims**



1. A process for producing a gaseous stream of chlorine dioxide useful in the treatment of water comprising
(a) providing an aqueous stream of chlorine dioxide, wherein the aqueous stream of chlorine dioxide is obtained by reacting an alkali metal chloride with chlorine, and
(b) contacting the aqueous stream of chlorine dioxide in countercurrent fashion with a stream consisting essentially of an inert gas or air to strip chlorine dioxide from the aqueous stream and thereby produce a gaseous stream of chlorine dioxide.

5,006,327

ALKALI METAL HYDROSULFITE SOLUTIONS

Roger E. Bolick, II, Chattanooga, and Jimmy M. French, Charleston, both of Tenn., assignors to Olin Corporation, Cheshire, Conn.

Filed Jul. 18, 1989, Ser. No. 380,923

Int. Cl.[5] C01B *17/66;* **B01D** *19/00;* **C09K** *3/00*

U.S. Cl. 423—515 **8 Claims**

1. An aqueous solution comprising sodium hydrosulfite or potassium hydrosulfite, hydroxide ions in an amount to provide a residual alkalinity of at least 0.25 moles per liter and containing from about 0.02 to about 0.5 moles per liter of lithium ions.

5,006,328

METHOD FOR PREPARING MATERIALS FOR HYDROGEN STORAGE AND FOR HYDRIDE ELECTRODE APPLICATIONS

Kuochih Hong, 4853 Gambier, Troy, Mich. 48098

Continuation-in-part of Ser. No. 253,112, Oct. 4, 1988, abandoned, which is a division of Ser. No. 122,042, Nov. 17, 1987, Pat. No. 4,849,205. This application Sep. 25, 1989, Ser. No. 412,098

Int. Cl.[5] C01B *6/00;* **H01N** *4/00*

U.S. Cl. 423—644 **8 Claims**

5. A multicomponent alloy for hydrogen storage and a hydride electrode for electrochemical application, prepared by a method comprising the steps of:

providing a quality of elements A, B, C, . . . , where said elements are selected from the group consisting of Mg, Ti, V, Cr, Mn, Fe, Co, Ni, Al, Y, Zr, nb, Pd, Mo, Ca, Si, C, Cu, Ta, and rare earth elements, said quantity of said elements including nickel and at least two other elements from said group;

apportioning said quantity of said elements in order to form a composition $A_aB_bC_c$ . . . such that said composition $A_aB_bC_c$ . . . contains 24 to 65 mole percent of nickel and further such that said composition AaBbCc . . . has; melting said composition to form said multicomponent alloy, said multicomponent alloy having a heat of hydride formation that is in a range of between −3.5 and −9.0 Kcal/-mole H, wherein said heat of hydride formation is defined by:

$H_h=(aH_h(A)+bH_h(B)+cH_h(C)=\ldots)/(a+b+c\ldots)+K$

where $H_h(A)$, $H_h(B)$, $H_h(C)$, . . . are the heat of hydride formation of said elements A, B, C, . . . , in units of Kcal/-mole H, respectively, where said heat of hydride formation in said units for each of said elements is given as: $H_h(Mg)=-9.0$, $H_h(Ti)=-15.0$, $H_h(V)=-7.0$, $H_h(Cr)=-1.81$, $H_h(Mn)=-2.0$, $H_h(Fe)=4.0$, $H_h(Co)=4.0$, $H_h(Ni)=2.0$, $H_h(Al)=-1.38$, $H_h(Y)=-27.0$, $H_h(Zr)=-19.5$, $H_h(Nb)=-9.0$, $H_h(pb)=-4.0$, $H_h(Mo)=-1.0$, $H_h(Ca)=-21.0$, $H_h(Si)=-1.0$, $H_h(C)=-1.0$, $H_h(Cu)=2.0$, $H_h(Ta)=-10.0$, and H_h(rare earth elements)$=-25.0$, where K is a constant having the value of 0.5, −0.2, and −1.5 Kcal/mole H for a+b+c+. . . equal to 2, 3, 6, respectively, and having the value zero Kcal/mole H for a+b+c+ . . . not equal to 2, 3, 6.

wherein said method is performed so as to provide a multicomponent alloy having the formula:

$Ti_aCr_bV_cNi_dM_{3-a-b-c-d}$

where M is at least one of the elements selected from the group consisting of Mg, Ti, V, Cr, Mn, Fe, Co, Ni, Al, Y, Zr, Nb, Pd, Mo, Ca, Si, C, Cu, Ta and rare earth elements having a discharge capacity between a range of 250 to 315 mAh/g—has been inserted.

5,006,329

RADIOACTIVE TAGGED COMPOUNDS AND METHOD FOR THE TREATMENT OF METASTATIC BONE CANCER

Ephraim Lieberman, Suffern; Maurice Bordoni, Westtown, and Alfred Thornton, New Hampton, all of N.Y., assignors to Cadema Medical Products, Inc., Middleton, N.Y.

Continuation-in-part of Ser. No. 147,608, Jan. 22, 1988, abandoned. This application Jan. 26, 1989, Ser. No. 301,546

Int. Cl.[5] A61K *43/00;* **C07F** *9/00*

U.S. Cl. 424—1.1 **30 Claims**

1. A radioactive compound comprising a bone-seeking moiety and a chromium-51 moiety.

5,006,330

EVALUATIVE MEANS FOR DETECTING INFLAMMATORY REACTIVITY

Esther M. Sternberg, Chevy Chase; Ronald L. Wilder, Rockville; George P. Chrousos, Bethesda, all of Md., and Philip W. Gold, Washington, D.C., assignors to The United States of America as represented by the of the Department of Health and Human Services, Washington, D.C.

Filed Nov. 30, 1988, Ser. No. 277,708

Int. Cl.[5] A61K *49/00;* **G01N** *31/00, 33/48*

U.S. Cl. 424—9 **11 Claims**

1. A method for testing the susceptibility of a mammal to inflammatory diseases which comprises the steps of:

administering to a mammal an amount of interleukin-1 which is effective in stimulating the hypothalamicpituitary-adrenal axis; and

measuring the level of a hormone or hormones secreted by the pituitary or adrenal glands in the blood plasma of said mammal.

5,006,331

COMPOSITIONS AND METHOD OF STRENGTHENING HAIR

Frances C. Gaskin, 298 State St., Albany, N.Y. 12210

Continuation-in-part of Ser. No. 635, Jan. 5, 1987, Pat. No. 4,806,344. This application Oct. 26, 1988, Ser. No. 263,039

Int. Cl.[5] A61K *7/06, 7/08, 7/11*

U.S. Cl. 424—70 **5 Claims**

1. A composition for strengthening hair comprising:

an effective amount of melanin;

a substance selected from the group consisting of trypsin and triethanolamine for solubilizing the melanin, the substance present in an amount sufficient to solubilize the melanin, thereby producing melanin solubilized by the substance; and

a vehicle for topical application to hair in which the melanin solubilized by the substance is distributed.

5,006,332

COMPOSITION FOR INDUCING AND STIMULATING THE GROWTH OF HAIR AND/OR RETARDING ITS LOSS, BASED ON AN AMPHOTERIC SURFACE-ACTIVE AGENT AND ON A PYRIMIDINE DERIVATIVE

Jean F. Grollier, Paris, France, assignor to L'Oreal, Paris, France

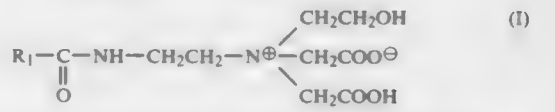
Filed Jun. 14, 1989, Ser. No. 365,803

Claims priority, application Luxembourg, Jun. 17, 1988, 87249

Int. Cl.[5] A61K *7/075, 7/06*

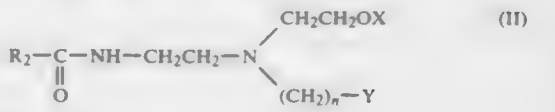
U.S. Cl. 424—70 **19 Claims**

1. Washing and foaming composition for inducing and stimulating the growth of hair and/or retarding its loss, characterized in that it contains, in a physiologically acceptable medium, at least one amphoteric surface-active agent chosen from the amphocarboxyglycinates of formula:



(I)

in which R_1 may denote an alkyl radical derived from copra, or a heptyl, nonyl or undecyl radical; and the amphocarboxypropionates corresponding to the formula:



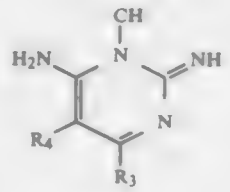
(II)

in which

n=1 or 2,
X denotes —CH_2CH_2COOH, or hydrogen;
Y denotes —COOH or the radical

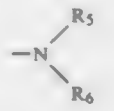
$$CH(OH)-CH_2SO_3H,$$

R_2 denotes an alkyl radical derived from copra, a saturated C_7, C_9, C_{11}, or C_{13} alkyl radical, a C_{17} alkyl radical and its iso form, a C_{17} unsaturated radical, or an alkyl radical derived from linseed oil; as well as the physiologically acceptable salts of these compounds; and a pyrimidine derivative corresponding to the formula:



(III)

in which R_3 denotes a group



in which:

R_5 and R_6 are chosen from hydrogen, an alkyl group having 1 to 4 carbon atoms or an alkenyl, alkylaryl or lower cycloalkyl group;

R_5 and R_6 may also be from a heterocyclic ring with the nitrogen atom to which they are bonded, this heterocyclic ring being chosen from aziridinyl, azetidinyl, pyrrolidinyl, piperidyl, hexahydroazepinyl, heptamethyleneimine, octamethyleneimine, morpholine and 4-(lower alkyl)-piperazidinyl groups, it being possible for the heterocyclic groups to be substituted on the carbon atoms by one to three lower alkyl, hydroxyl or alkoxy groups;

the group R_4 is chosen from hydrogen, an alkyl, alkenyl, alkylalkoxy, cycloalkyl, aryl, alkylaryl, arylalkyl, alkylarylalkyl, alkoxyarylalkyl and lower haloarylalkyl group, as well as the salts of addition to physiologically acceptable acids, wherein the pyrimidine derivative of formula (III) is present in proportions of between 0.05 and 6% by weight relative to the total weight of the composition, and wherein the amphoteric surface-active agent of formula (I) or (II) is present in proportions of between 1 and 30% by weight relative to the total weight of the composition.

5,006,333

CONJUGATES OF SUPEROXIDE DISMUTASE COUPLED TO HIGH MOLECULAR WEIGHT POLYALKYLENE GLYCOLS

Mark Saifer, Berkeley; Ralph Somack, Oakland, and L. David Williams, Fremont, all of Calif., assignors to DDI Pharmaceuticals, Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 81,009, Aug. 3, 1987, abandoned. This application Jul. 13, 1989, Ser. No. 380,205

Int. Cl.[5] A61K *31/74, 37/48*

U.S. Cl. 424—78 **13 Claims**

1. A an anti-imflammatory water-soluble substantially non-immunogenic conjugate of a superoxide dismutase coupled with a coupling agent to 1 to 5 strands of a polyalkylene glycol which is a polyethylene glycol or polyethylene-polypropylene glycol copolymer residue, wherein all of polyalkylene glycol so coupled has an average molecular weight as determined by HPLC using PEG as standard of about 35,000–200,000 and is unsubstituted or substituted at one terminal by a C_{1-4}-alkyl group.

5,006,334

ANTIGENIC MODIFICATION OF POLYPEPTIDES

Vernon C. Stevens, Dublin, Ohio, assignor to The Ohio State University, Columbus, Ohio

Continuation-in-part of Ser. No. 667,863, Nov. 2, 1984, Pat. No. 4,691,006, which is a continuation-in-part of Ser. No. 472,190, Mar. 4, 1983, Pat. No. 4,526,716, which is a continuation-in-part of Ser. No. 323,690, Nov. 20, 1981, Pat. No. 4,384,995, which is a continuation-in-part of Ser. No. 112,628, Jan. 16, 1981, Pat. No. 4,302,386, which is a division of Ser. No. 936,876, Aug. 25, 1978, Pat. No. 4,201,770, which is a continuation-in-part of Ser. No. 622,031, Oct. 14, 1975, abandoned, which is a continuation-in-part of Ser. No. 462,955, Apr. 22, 1974, abandoned, which is a continuation-in-part of Ser. No. 406,821, Oct. 16, 1973, abandoned, which is a continuation-in-part of Ser. No. 357,892, May 7, 1973, abandoned. This application Jul. 15, 1987, Ser. No. 73,748

The portion of the term of this patent subsequent to Nov. 24, 1998, has been disclaimed.

Int. Cl.[5] A61K *37/24*

U.S. Cl. 424—88 **3 Claims**

1. An immunogen vaccine which induces in a mammal production of antibodies against a natural protein reproductive hormone, which vaccine comprises a conjugate between a protein and a biologically effective amount of a female reproductive hormone, or fragment thereof, or a peptide immunologically equivalent to such a hormone or fragment.

5,006,335

LIVE VACCINE AGAINST MUMPS AND PROCESS FOR OBTAINING THEREOF

Reinhard Glück, Köniz, and René Germanier, Bern, both of, Switzerland, assignors to Swiss Serum & Vaccine Institute and Institute for the Research of Infectious Diseases, both of Berne, Switzerland

Filed Sep. 10, 1986, Ser. No. 905,925

Claims priority, application Switzerland, Nov. 26, 1985, 05062/85; Jan. 15, 1986, 00133/86

Int. Cl.[5] A61K *39/12;* **C12N** *7/00*

U.S. Cl. 424—89 **6 Claims**

1. A method of preparing a live-attenuated mumps virus comprising the steps of:

(i) isolating wild-type virus from a mumps-infected individual;

(ii) adapting the isolated virus to grow on human diploid cells;

(iii) concentrating and purifying said adapted virus;

(iv) passaging said adapted virus on embryonated poultry eggs under conditions sufficient for enrichment of the virus;

(v) attenuating the virus resulting from step (iv) on embryonated poultry eggs;

(vi) further attenuating the virus resulting from step (v) on human diploid cells at 30° C.; and

(vii) further attenuating the virus resulting from step (vi) on human diploid cells at a temperature higher than that used in step (vi) but under conditions to maintain the viability of said human diploid cells.

5,006,336

NOVEL COLEOPTERAN-ACTIVE BACILLUS THURINGIENSIS ISOLATE

Jewel Payne, San Diego, Calif., assignor to Mycogen Corporation, San Diego, Calif.

Filed Jun. 10, 1988, Ser. No. 205,122

Int. Cl.[5] C12N *1/20;* **A01N** *63/00*

U.S. Cl. 424—93 **11 Claims**

1. A process for controlling coleopteran insect pests with a δ-endotoxin which comprises contacting said insect pests with an insect-controlling effective amount of *B. thuringiensis* PS122D3 having the identifying characteristics of NRRL B18376, or mutants thereof.

5,006,337

MEDICINAL COMPOSITIONS BASED ON SPENT BREWERS' GRAINS EXTRACT, A PROCESS FOR THE PREPARATION THEREOF, AND THE USE OF SPENT BREWERS' GRAINS EXTRACT FOR THE PREPARATION OF COSMETIC COMPOSITIONS, AND A SPECIAL BREWERS' GRAINS EXTRACT

Lothar Motitschke, Hilden, and Hagen Trommer, Dortmund, both of Fed. Rep. of Germany, assignors to Marbert GmbH, Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Apr. 14, 1988, Ser. No. 181,408

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1987, 3712986

Int. Cl.[5] A61K *35/78, 7/06*

U.S. Cl. 424—195.1 **11 Claims**

1. Spent brewer's grains extract obtained by extraction of spent brewers' grains with liquid or above-critical CO_2 or N_2O.

5,006,338

WART TREATMENT

Brigitte Luenemann, Alter Fischmarkt 1, D-4400 Munster, Fed. Rep. of Germany

Filed Feb. 17, 1988, Ser. No. 156,628

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1987, 3705151

Int. Cl.[5] A61K *35/78, 33/04*

U.S. Cl. 424—195.100 **16 Claims**

1. A perorally administrable pharmaceutic preparation for the treatment of warts by peroral administration, consisting of

(a) 8.3 parts by weight of *Euphorbia cyparissias* extract, degree of dilution D3 to D6;

(b) 8.3 parts by weight of Clematis extract, degree of dilution D2 to D4;

(c) 8.3 parts by weight of Mezereum extract, degree of dilution D2 to D4;

(d) 8.3 parts by weight of Ranunculus extract, degree of dilution D2 to D4;

(e) 8.1 parts by weight of *Veratrum album* extract, degree of dilution D3 to D6;

(f) 7.2 parts by weight of Aconitum extract, degree of dilution D3 to D6;

(g) 7.2 parts by weight of Arnica extract, degree of dilution D2 to D4;

(h) 7.2 parts by weight of *Atropa belladonna* extract, degree of dilution D3 to D6;

(i) 7.2 parts by weight of *Cinchona succiruba* (China) extract, degree of dilution D2 to D4;

(k) 7.2 parts by weight of *Eucalyptus globulus* extract, degree of dilution D2 to D4;

(l) 7.2 parts by weight of Lycopodium extract, degree of dilution D3 to D6;

(m) 7.2 parts by weight of *Nux vomica* extract, degree of dilution D3 to D6; and

(n) 8.3 parts by weight of sulfur, degree of dilution D4 to D6.

5,006,339

ANTI-VIRAL WIPE

Robert A. Bargery, Wirral, and Gordon C. Peterson, Cheshire, both of Great Britain, assignors to Unilever Patent Holdings B.V., Rotterdam, Netherlands

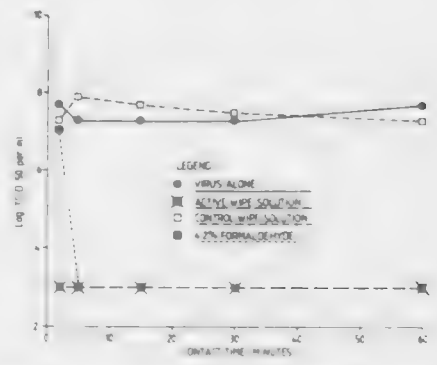
Filed Jul. 19, 1989, Ser. No. 382,129

Claims priority, application United Kingdom, Jul. 19, 1988, 8817199

Int. Cl.[5] A61F *13/40;* **A61L** *15/18, 15/20*

U.S. Cl. 424—404 **9 Claims**

1. Package containing a sheet-like article for wiping surfaces, said article comprising an absorbent material capable of absorbing and retaining a hydrophilic liquid, and of reversibly releasing at least some of the liquid on application of hand pressure, said absorbent material being the polymerization product of an internal phase emulsion having an aqueous internal phase and a continuous phase comprising one or more



polymerizable hydrophobic monomers, said article further containing an anti-viral agent, whereby the absorbent material is contained between two sheets of material, at least one of them being permeable to the liquid.

5,006,340

CURABLE COMPOSITIONS FOR DENTAL DRUGS HAVING SUSTAINED RELEASE PROPERTY

Mitsuru Atsuta, Nagasaki; Takeshi Sakashita, Yamaguchi; Ryoichi Miyamoto, Kyoto; Yukinori Tanimura, Yamaguchi, and Saburo Fuji, Hiroshima, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 189,528, Apr. 7, 1988, Pat. No. 4,925,660, which is a continuation-in-part of Ser. No. 933,241, Nov. 21, 1986, abandoned. This application Feb. 12, 1990, Ser. No. 478,362

Claims priority, application Japan, Nov. 21, 1985, 60-259900; Jul. 18, 1986, 61-168096; Nov. 4, 1986, 61-260766

Int. Cl.[5] A01N *25/00*

U.S. Cl. 424—405 **22 Claims**

1. A curable composition for dental drugs having sustained release property, which comprises

(a) a (meth)acrylate monomer,

(b) a polymerization initiator, and

(c) a crude drug ingredient having bactericidal activity, wherein said composition is polymerized by heat.

5,006,341

PROTECTION

Paul J. Davis, Bedfordshire; Simon C. Quarmby, Irchester, both of England, and Albert W. Schoenmakers, Dendermonde, Belgium, assignors to Unilever Patent Holdings B.V., Rotterdam, Netherlands

Filed May 13, 1988, Ser. No. 193,624

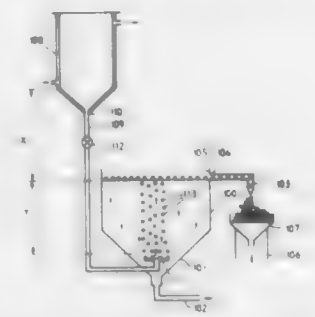
Claims priority, application United Kingdom, May 13, 1987, 8711256

Int. Cl.[5] A23K *1/165*

U.S. Cl. 424—442 **19 Claims**

1. A composition comprising dry free-flowing particles each consisting of a solid beadlet of lipid-continuous emulsion containing from about 25% to about 50% by weight water in a hardened palm kernel oil having a slip point in the range 35° to 45° C., each beadlet having an average diameter of about 2 to 3 millimeters and containing at least 1 viable sporulated oocyst

of a species of coccidium infective to poultry, each beadlet having a protective coating of cement and/or gypsum, the



protective coating having an average thickness of about 0.2 to 0.5 mm.

5,006,342

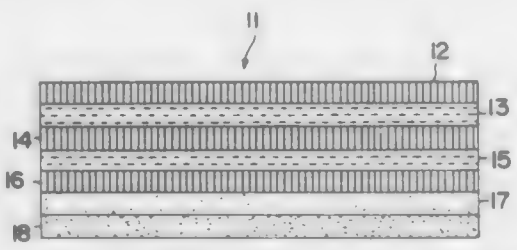
RESILIENT TRANSDERMAL DRUG DELIVERY DEVICE

Gary W. Cleary, San Mateo, and Samir Roy, Redwood City, both of Calif., assignors to Cygnus Corporation, Redwood City, Calif.

Division of Ser. No. 179,423, Apr. 8, 1988, Pat. No. 4,906,463, which is a continuation-in-part of Ser. No. 79,801, Jul. 30, 1987, abandoned, which is a continuation-in-part of Ser. No. 41,793, Apr. 23, 1987, abandoned, and Ser. No. 945,356, Dec. 22, 1986, abandoned. This application Feb. 10, 1989, Ser. No. 309,287

Int. Cl.[5] A61F *13/00*

U.S. Cl. 424—445 **21 Claims**



1. A transdermal drug-delivery device in the form of a solid state laminated composite adapted to be adhered to an area of unbroken skin and having mechanical properties that enable it to expand and contract in concert with the normal expansion and contraction of said area of skin comprising:

(a) at least two spaced structural laminas of a resilient elastomeric polymer, one of which forms the upper face surface of the composite, said laminas providing the composite with said mechanical properties;

(b) at least one lamina of a viscoelastic hydrophobic polymer in which (i) a drug and/or (ii) an agent that enhances the solubility of the drug in the viscoelastic hydrophobic polymer and/or is a percutaneous absorption enhancer that increases the permeability of the skin to the drug is dispersed and at least partly dissolved, the viscoelastic hydrophobic polymer lamina being positioned between the structural laminas with the structural lamina(s) underlying the viscoelastic hydrophobic polymer lamina(s) providing no rate-controlling barrier to diffusion of drug and/or agent from the viscoelastic hydrophobic polymer lamina(s) to the skin; and

(c) a lamina of a pharmaceutically acceptable pressure-sensitive adhesive in which (i) said drug and/or (ii) said agent is dispersed and at least partly dissolved, one face of the pressure-sensitive adhesive lamina defining the basal surface of the composite and contacting and adhering to the area of unbroken skin when the device is in use, said pressure-sensitive adhesive lamina providing no rate-controlling barrier to diffusion of the drug and/or agent from the device to the skin, with the proviso that at least one of said viscoelastic hydrophobic polymer lamina(s) and said pressure-sensitive adhesive lamina contains the drug.

5,006,343

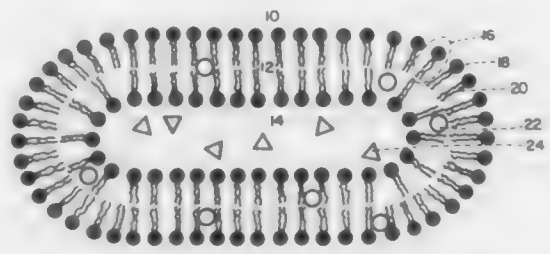
PULMONARY ADMINISTRATION OF PHARMACEUTICALLY ACTIVE SUBSTANCES

Bradley J. Benson, and JoRae Wright, both of 170 Cresta Vista Dr., San Francisco, Calif. 94127

Filed Dec. 29, 1988, Ser. No. 295,926

Int. Cl.[4] A61K *37/22*

U.S. Cl. 424—450 **9 Claims**



1. A composition for pulmonary administration of a pharmaceutically active substance, said composition comprising 60–90% by weight liposome forming compound, 5–20% by weight pharmacentically active substance, and 5–20% by weight surfactant protein, based on the total weight of liposome-forming substance, pharmacentically active substance and alveolar surfactant protein, wherein said composition comprises liposomes.

5,006,344

FOSINOPRIL TABLET FORMULATIONS

Robert L. Jerzewski, East Millstone; Thomas M. Wong; Lewis J. Gryziewicz, both of North Brunswick; Nemichand B. Jain, Monmouth Junction, and Ajit B. Thakur, East Brunswick, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 377,683, Jul. 10, 1989, abandoned. This application Jun. 26, 1990, Ser. No. 543,639

Int. Cl.[5] A61K *9/20*

U.S. Cl. 424—465 **24 Claims**

1. A stable tablet comprising on a weight percentage basis from about 1% to about 25% fosinopril sodium, up to about 25% of a diuretic, from about 30% to about 90% of a filler, from about 2% to about 10% of a disintegrant, from about 1% to about 5% of a binder, or from about 5% to about 15% of a single agent which is both binder and disintegrant, and from about 0.3% to about 4% of a lubricant selected from the group consisting of sodium stearyl fumarate and hydrogenated vegetable oil.

5,006,345

DIRECT TABLETING AUXILIARY

Siegfried Lang, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 826,094, Feb. 6, 1986, abandoned. This application Dec. 12, 1988, Ser. No. 284,765

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1985, 3505433

Int. Cl.[5] A61K *9/26*

U.S. Cl. 424—467 **16 Claims**

1. A direct tableting auxiliary consisting essentially of an intimate mixture of

(A) from 88 to 96% by weight of a pulverulent carrier pharmaceutically acceptable for use in the preparation of tablets, said carrier consisting of lactose, or an amount of lactose together with not more than the same amount of mannitol or calcium phosphate as another carrier,

(B) from 2 to 6% by weight of a binder selected from the group consisting of polyvinylpyrrolidone having a K value of from 20 to 40, hydroxypropylmethylcellulose, hydroxypropylcellulose and gelatine and

(C) from 2 to 10% by weight of tablet disintegrating agent selected from the group consisting of crosslinked, insoluble polyvinylpyrrolidone, crosslinked carboxymethylcellulose, crosslinked carboxylmethyl starch and formaldehyde casein, all percentages being based on the direct tableting auxiliary,

said auxiliary having a particle size distribution of from about 50 to 500 μm.

5,006,346

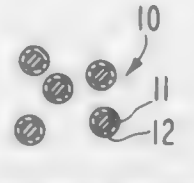
DELIVERY SYSTEM

David E. Edgren, El Granada, and Felix Theeuwes, Los Altos, both of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Division of Ser. No. 187,621, Apr. 28, 1988, Pat. No. 4,931,285. This application May 11, 1989, Ser. No. 350,482

Int. Cl.[5] A61K *9/24*

U.S. Cl. 424—473 **1 Claim**



1. A therapeutic composition comprising:

(a) a drug;

(b) an oil-in-water subcoat comprising from 15% to 75% of a member selected from the group consisting of a cellulose ether, a cellulose ester and a cellulose ester-ether, an optical plasticizer and comprising from 0.1% to 20% of an emulsifying agent comprising a member selected from the group consisting of nonionic, anionic and cationic agents; and

(c) an overcoat comprising a member selected from the group consisting of a hydroxypropylcellulose, hydroxypropylmethylcellulose, methylcellulose and carboxymethylcellulose, and an optional plasticizer, and wherein the subcoat and the overcoat are annealed at a temperature up to 65° C. for up to 72 hours to provide the therapeutic annealed composition comprising the drug.

5,006,347

PROCESS FOR RETARDING BACTERIAL GROWTH IN CHEESE

Carol A. Day, and Brian W. Holton, both of Worcestershire, Great Britain, assignors to Microbial Developments Ltd., England

Division of Ser. No. 189,967, May 4, 1988, Pat. No. 4,851,240. This application May 11, 1989, Ser. No. 350,215

Claims priority, application United Kingdom, May 7, 1987, 8710795

Int. Cl.[5] A23C *19/00, 19/097*

U.S. Cl. 426—36 **11 Claims**

1. A method of retarding undesirable bacterial growth in cheese comprising the administration thereto of a non-toxic amount of at least one type of bacteriophage effective to retard bacterial growth.

5,006,348

METHOD FOR MANUFACTURE OF SWISS CHEESE

Brent K. Pope, Wildwood; Susan P. Monckton, Glen Ellyn, and Kaser R. Nath, Glenview, all of Ill., assignors to Kraft General Foods, Inc., Glenview, Ill.

Filed May 4, 1990, Ser. No. 518,812

Int. Cl.[5] A23C *19/068, 19/02*

U.S. Cl. 426—40 **14 Claims**

1. A method for manufacture of Swiss cheese from milk comprising the steps of:

(a) removing moisture, ash and lactose from milk to provide a retentate,

(b) adding a mixture of a propionic acid producing culture, a coccus culture and a rod culture, to said retentate, the level of said rod culture being from about 0.1 to about 6 times the level of said coccus culture,

(c) fermenting said retentate to a pH of from between about 4.8 and about 5.6, said fermentation being effected at a temperature of from about 92° F. to about 118° F.,

(d) evaporating moisture from said retentate to provide a cheese product having from about 35% to about 41% moisture, and

(e) curing said cheese product for a time sufficient to provide a Swiss cheese.

5,006,349

PROCESS FOR PRODUCING A PROTEIN PRODUCT

Donald Dahlstrom, Fairbault; Stephen Dybing, Fridley, and Barney J. Gaffney, Stillwater, all of Minn., assignors to Land O'Lakes, Inc., Arden Hills, Minn.

Continuation of Ser. No. 823,304, Jan. 28, 1986, abandoned. This application Jun. 17, 1988, Ser. No. 210,214

The portion of the term of this patent subsequent to Jun. 23, 2004, has been disclaimed.

Int. Cl.[5] A23C *9/13, 19/02;* **A23J** *1/00*

U.S. Cl. 426—39 **36 Claims**

1. A process for producing a protein-containing food product, the process comprising:

introducing a protein-containing stream having a coaguable protein and a reactant stream containing a component for coagulating the protein, the two streams having concentrations and proportions effective for coagulation of the protein under uniform dispersion conditions, through a resonating chamber, resonating at an ultrasonic frequency causing instantaneous mixing of both streams such that a coagulum suitable as a food product is subsequently formed.

5,006,350

SOYBEAN PROTEIN FOOD PRODUCT

Tatuo Emura, Sapporo, and Kiyoshi Ohba, Chitose, both of Japan, assignors to Kabushiki Kaisha Hokkaido Nissin, Hokkaido, Japan

Division of Ser. No. 167,508, Mar. 14, 1988, Pat. No. 4,885,178. This application Jun. 8, 1989, Ser. No. 363,033

Int. Cl.[5] A23J *3/00, 1/14;* **A23L** *1/20*

U.S. Cl. 426—46 **8 Claims**

1. A cheese-like soybean protein food product consisting essentially of clotted soybean protein which has been clotted with an enzyme released from a microorganism designated FERM BP-1778.

5,006,351

CYCLOHEXYL DIOL DIESTERS AS LOW CALORIE FAT MIMETICS

Lawrence P. Klemann, Somerville; John W. Finley, Whippany, and Anthony Scimone, Cedar Grove, all of N.J., assignors to Nabisco Brands, Inc., East Hanover, N.J.

Filed Jun. 27, 1989, Ser. No. 372,288
Int. Cl.[5] A23D *7/00*
U.S. Cl. 426—611 54 Claims

1. An edible composition comprising at least one food ingredient and an edible fat mimetic compound of the formula

X—Q—X,

where

Q is a cyclohexane, cyclohexene or cyclohexdiene ring,

X is a —O—(CO)—R, —CH_2—O—(CO)—R, or —(CH_2.)$_2$—O—(CO)—R, and each R is, independently, an aliphatic group having 1 to 29 carbons.

5,006,352

PROCESS FOR THE PRODUCTION OF AN OXYGENATED RESTORATIVE DRINK

Mária Zelenák née Zoltai, and Lá/ zló Berzsenyi, both of Budapest, Hungary, assignors to Mester-Coop Élelmiszeripari és Ker. Leányvállalat, Budapest, Hungary

PCT No. PCT/HU88/00008, § 371 Date Dec. 23, 1988, § 102(e) Date Dec. 23, 1988, PCT Pub. No. WO88/06411, PCT Pub. Date Sep. 7, 1988
PCT Filed Feb. 26, 1988, Ser. No. 279,052
Claims priority, application Hungary, Feb. 27, 1987, 803/87
Int. Cl.[5] A23L *2/26*
U.S. Cl. 426—67 6 Claims

1. A process for producing a restorative drink having a good shelf life and which does not need to be stored under refrigeration, which consists essentially of saturating under pressure plain water, or mineral water having a temperature of from about 0° C. to about 5° C., with molecular oxygen, filling said water into a bottle, and then sealing said bottle under pressure to obtain an oxygenated restorative drink.

5,006,353

PROCESS FOR THE PRODUCTION OF SURIMI

Norihisa Nishi; Makoto Nakamura, and Satoshi Noguchi, all of Tokyo, Japan, assignors to Taiyo Fishery Co., Ltd., Tokyo, Japan

Filed Oct. 25, 1989, Ser. No. 426,969
Claims priority, application Japan, Jan. 12, 1989, 64-5264
Int. Cl.[5] G01N *33/00*
U.S. Cl. 426—231 6 Claims

1. In a process for the production of a surimi, which comprises distinguishing fish highly contaminated with sporozoans from less contaminated ones; removing said highly contaminated fish; collecting fish meat from the residual fish; and processing the residual fish into surimi, the improvement comprising

determining the presence of cysts in the fish meat as a basis for identifying highly contaminated fish for removal before collecting the fish meat from the residual fish, and thereafter leaching and dehydrating said fish meat.

5,006,354

DEAERATION PROCESS FOR THE MANUFACTURE OF FRUIT JUICES

Ghobad Rahrooh, The Procter & Gamble Company - I.T.C., 5229 Spring Grove Ave., Cincinnati, Ohio 45217, and Rüdiger A. Engel, Procter & Tamble GmbH, Sulzbacherstrasse 40, 6231 Schwalbach-am-Taunus, Fed. Rep. of Germany

Filed Apr. 23, 1990, Ser. No. 512,708
Claims priority, application United Kingdom, Apr. 28, 1989, 8909780
Int. Cl.[5] A23L *2/00;* G01N *33/00*
U.S. Cl. 426—231 15 Claims

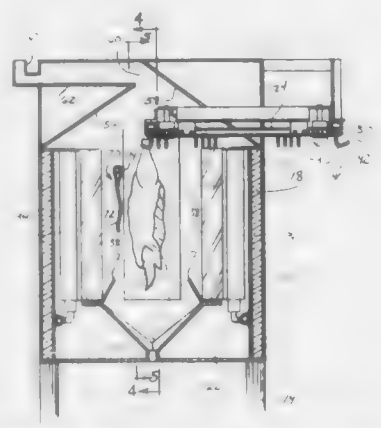
1. A process for deaerating fruit juices during their manufacture, the process comprising: (a) conducting vacuum deaeration on a concentrated source of the fruit juice, at a temperature such as to avoid damaging the volatile components and vitamins of the concentrated fruit juice, wherein the dissolved oxygen level in the deaerated concentrated fruit juice is reduced to not more than 3 ppm, and then (b) subsequently adding separately deaerated water to the deaerated concentrated source, wherein the added deaerated water has a dissolved oxygen level of from 0 to 0.4 ppm.

5,006,355

APPARATUS AND METHOD FOR COOKING FOOD PRODUCTS, SPECIALLY FOR BROILING WHOLE CHICKENS AND OTHER MEATS

Robert M. Stuck, 1 Thornwood Rd., Clover, S.C. 29710, and Samuel H. Maw, Jr., 1824 Santiago Dr., Newport Beach, Calif. 92660

Filed Aug. 1, 1990, Ser. No. 561,096
Int. Cl.[5] A23L *1/00;* A47J *37/00*
U.S. Cl. 426—243 20 Claims



14. A method for cooking food products comprising the steps of conveying food products along a cooking path through a cooking area defined between a pair of cooking energy-emitting faces spaced from one another in generally upright laterally opposed facing relation and selectively modifying the cooking energy emitted from a predetermined region of at least one of said energy-emitting faces corresponding to a predetermined portion of said cooking path wherein the food products are to be subjected to a modified amount of cooking.

5,006,356

TREATMENT OF FRUIT-BASED OR VEGETABLE-BASED BEVERAGES WITH PRECIPITATED MAGNESIUM SILICATE

James R. Munson, Somerville, N.J., assignor to The Dallas Group of America, Inc., Liberty Corner, N.J.

Filed Apr. 19, 1990, Ser. No. 523,707
Int. Cl.[5] C12H *1/02*
U.S. Cl. 426—330.4 9 Claims

1. A method of treating a fruit-based or vegetable-based beverage to remove chill haze components therefrom, comprising:

contacting said beverage with an effective amount of an amorphous hydrous precipitated synthetic magnesium silicate, said magnesium silicate having been treated to reduce the pH thereof to less than about 9.0;

maintaining contact of said magnesium silicate with said beverage for a time sufficient to remove said chill haze components from said beverage; and

separating said magnesium silicate from said beverage.

5,006,357

PACKAGING OF ROUGHAGE MATERIAL

Carlton R. Bert, P.O. Box 130, Larned, Kans. 67550

Continuation of Ser. No. 155,557, Feb. 12, 1988, abandoned. This application Jun. 2, 1989, Ser. No. 360,359
Int. Cl.[5] A23K *1/00*
U.S. Cl. 426—413 11 Claims

1. A process for packaging alfalfa hay consisting essentially of the steps of:

(a) cutting said hay at a moisture content in the range of about 25–50% to produce a particle size of a length less than six inches;

(b) drying said hay particles to a moisture content less than 12%;

(c) cooling said hay particles to approximately room temperature;

(d) placing said hay particles into a container impervious to air in a manner such that said particles in said container have a bulk density of at least about 15 pounds per cubic foot; and

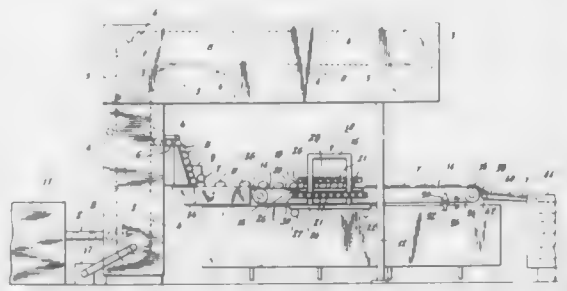
(e) closing said container; wherein said hay particles retain their natural roughage characteristics, nutritional value, and palatability.

5,006,358

METHOD OF MAKING TORTILLAS

Manuel J. Ribio, 1621 Collins Ave., Miami, Fla. 33139; Alberto de la Vega, Amazonas 101, Garza Garcia, Nueva Leon, Mexico, and Eberhard Mueller-Lobeck, 71 Aiken Ave., Norwalk, Conn. 06851

Division of Ser. No. 191,977, May 9, 1988, Pat. No. 4,938,126. This application Jan. 3, 1990, Ser. No. 460,389
Int. Cl.[5] A21D *6/00*
U.S. Cl. 426—496 2 Claims



1. A method of producing tortillas comprising the steps of

positioning groups of dough units on the upper surface of a conveyer belt that is traveling at a steady, pre-determined speed between the platens of a press which can be moved to and fro along the path of travel of said belt and the platens of which are moveable into and out of pressing relationship on dough units being carried by said conveyer belt,

moving said press in the direction of travel of said conveyer belt at the speed of said belt,

pressing said dough units into the form of tortillas between said platens while the speed of said press is maintained at the speed of the belt, and

terminating the pressing action of said platens on said dough units.

5,006,359

PREMIX PREPARATION FOR ICE FOODS

Akira Senda, Kanazawa, Japan, assignor to Daiei Food Industrial Co. Ltd., Ishikawa, Japan

Filed Dec. 17, 1987, Ser. No. 134,049
Claims priority, application Japan, Dec. 27, 1986, 61-313505
Int. Cl.[5] A23L *2/00;* A23G *9/00*
U.S. Cl. 426—565 22 Claims

1. A storage stable aqueous emulsion comprising:

(a) 2–10% by total weight of said emulsion of an edible oil consisting essentially of saturated fatty acids comprising medium chain triglycerides;

(b) an emulsifying agent comprising fatty acids selected from the group consisting of fatty acid esters of glycerin, fatty acid esters of sorbitan, fatty acid esters of sucrose, lecithin and hexaglycerin monostearate;

(c) a stabilizer comprising a stabilizer mixture of pectin and pregelatinizede starch

(d) a sweetener; and

(e) water.

5,006,360

LOW CALORIE FAT SUBSTITUTE COMPOSITIONS RESISTANT TO LAXATIVE SIDE EFFECT

Norman B. Howard, Hilton Head Island, S.C., and David C. Kleinschmidt, Fairfield, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 27, 1988, Ser. No. 211,802
Int. Cl.[5] A23L *1/307*
U.S. Cl. 426—601 23 Claims

1. A low calorie fat substitute composition resistant to laxative side effect comprising: (i) a liquid polyol fatty acid polyester, (ii) at least about 10% solid low calorie fat substitute by weight of the liquid polyol fatty acid polyester, and (iii) at least about 1% of a cohesive network of polysaccharide fibrils and microfibrils by weight of the liquid polyol fatty acid polyester.

5,006,361

LIPID PELLETIZATION METHODS, APPARATUS AND PRODUCTS

James P. Cox, 246 E. Bartlett Rd., Lynden, Wash. 98264

Continuation of Ser. No. 609,541, Nov. 29, 1983, abandoned, which is a continuation-in-part of Ser. No. 447,622, Dec. 7, 1982, abandoned, and Ser. No. 447,130, Dec. 6, 1982, abandoned, which is a division of Ser. No. 193,434, Oct. 3, 1980, Pat. No. 4,362,748, said Ser. No. 447,622, is a continuation-in-part of Ser. No. 193,434,. This application Dec. 8, 1987, Ser. No. 131,298
Claims priority, application PCT Int'l Appl., Jan. 29, 1983, PCT/US83/01869
Int. Cl.[5] A23K *1/00*
U.S. Cl. 426—601 8 Claims

1. A dry, firm, solid lipid pellet consisting essentially of at least about 95 percent by weight lipid, a water-insoluble alginate salt in an amount effective to form said pellet, and no more than about 5 percent water.

5,006,362

BRANDING PHARMACEUTICAL DOSAGE FORMS, FOOD AND CONFECTIONERY PRODUCTS WITH AQUEOUS INGESTIBLE INKS

G. Roland Hilborn, Royersford, Pa., assignor to Berwind Pharmaceutical Services, Inc., West Point, Pa.

Continuation of Ser. No. 191,704, May 9, 1988, abandoned. This application Feb. 2, 1990, Ser. No. 473,897
Int. Cl.[5] A61K *9/00*
U.S. Cl. 427—3 20 Claims

1. A method of marking forms such as pharmaceutical tab-

lets, capsules, confectionery or food with a water-based ingestible ink, comprising

mixing pigments, and a polymer into water to form a water-based ink dispersion having a closed cup flash point equal to or above 100° F., and

printing the ink dispersion onto said forms to form a trademark, logo, or the like using an offset gravure printing machine.

5,006,363

PLASMA ASSITED MO-CVD OF PEROOSKITE DALECTRIC FILMS

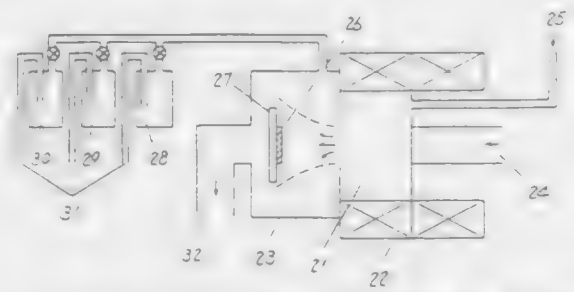
Eiji Fujii, Osaka; Hideo Torii, Higashiosaka, and Masaki Aoki, Minoo, all of Japan, assignors to Matsushita Electric Industries Co., Ltd., Osaka, Japan

Filed Dec. 6, 1989, Ser. No. 446,767

Claims priority, application Japan, Dec. 8, 1988, 63-311071; Mar. 30, 1989, 1-80339

Int. Cl.[5] B05D *3/06, 3/14*

U.S. Cl. 427—39 **18 Claims**



1. A method of manufacturing a dielectric film, in which vapor of an organometallic compound composed of a β-diketone metal complex containing barium, vapor of an organometallic compound composed of either a β-diketone metal complex containing titanium or a metal alkoxide containing titanium, and oxygen are decomposed and reacted in plasma which is generated by means of high-frequency discharge of electron cyclotron resonance under a reduced pressure of 10 through 10^{-4} Torr, thereby forming a perovskite-type film of barium titanate of the formula $BaTiO_3$ on a substrate heated to 400° C. or lower.

5,006,364

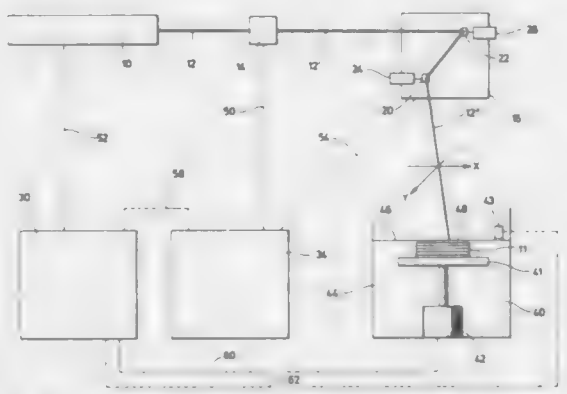
SOLID IMAGING METHOD UTILIZING COMPOSITIONS COMPRISING THERMALLY COALESCIBLE MATERIALS

Roxy N. Fan, East Brunswick, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 24, 1989, Ser. No. 398,194

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—44 **18 Claims**



1. A method for accurately fabricating an integral three dimensional object from a multiplicity of contiguous layers of a thermally coalescible photoformable liquid composition comprising the steps of:

(a) forming a layer of a thermally coalescible photoformable liquid on a substrate;

(b) imagewise exposing areas of at least a portion of the layer to actinic radiation;

(c) introducing a new layer of liquid onto the layer previously exposed imagewise to actinic radiation according to step (b);

(d) imagewise exposing areas of at least a portion of the new liquid layer to actinic radiation, with the requirement that the photoformable composition comprises a thermally coalescible polymeric cohesive material, a photohardenable monomer, and a photoinitiator, wherein after the exposure to the acthnic radiation, the photoformed areas of the composition remain thermally coalescible;

(e) successively repeating steps (c) and (d) until all layers of the three dimensional object have been photoformed and connected through joining surfaces; and

(f) in sequence

(i) removing the unexposed portion of the photoformable composition from the exposed portion of the three dimensional object, and

(ii) thermally coalescing the three dimensional object in order to promote cohesion both within the contiguous layers and at the joining surfaces between the contiguous layers, thus producing a single coalesced three dimensional object.

5,006,365

METHOD OF MANUFACTURING A THIN FILM EL DEVICE BY MULTISOURCE DEPOSITION METHOD

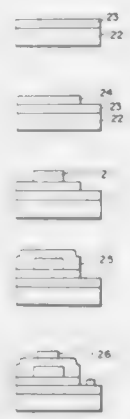
Takashi Nire, Hiratsuka, and Takehito Watanabe, Isehara, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Division of Ser. No. 947,782, Dec. 30, 1986, Pat. No. 4,794,302. This application Oct. 28, 1988, Ser. No. 269,930

Claims priority, application Japan, Jan. 8, 1986, 61-1883; Jan. 24, 1986, 61-13472

Int., Cl.[5] B05D *5/12;* **H01J** *1/62, 63/04*

U.S. Cl. 427—66 **4 Claims**



1. A method of manufacturing a thin film EL device on a substrate comprising the steps of:

forming a transparent electrode on said substrate;

forming a first insulating layer on said transparent electrode;

forming a luminescent layer having column polycrystals by a multi-source deposition method comprising steps of providing first elements constituting a host material of said luminescent layer evaporated from respectively separated evaporating sources, and a second element constituting an activator of said luminescent layer, and deposition said first and second elements in such a manner that said first elements are combined with each other and said second element is doped into said combined first elements on said first insulating layer;

forming a second insulating layer on said luminescent layer; and

forming a back electrode on said second insulating layer.

5,006,366

PHOTOLUMINESCENT MATERIAL FOR OUTPUTTING ORANGE LIGHT WITH REDUCED PHOSPHORESCENCE AFTER CHARGING AND A PROCESS FOR MAKING SAME

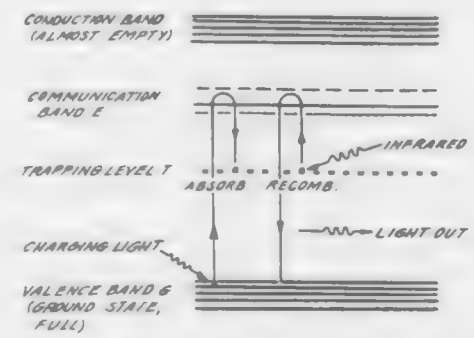
Joseph Lindmayer, Potomac, Md., assignor to Quantex Corporation, Rockville, Md.

Continuation-in-part of Ser. No. 34,332, Apr. 3, 1987, Pat. No. 4,839,092, which is a continuation of Ser. No. 870,809, Jun. 6, 1986, Pat. No. 4,830,875, which is a continuation-in-part of Ser. No. 786,095, Oct. 10, 1985, Pat. No. 4,705,952, which is a continuation-in-part of Ser. No. 313,171, Feb. 21, 1989. This application Jun. 8, 1989, Ser. No. 363,060

The portion of the term of this patent subsequent to Jun. 13, 2002, has been disclaimed.

Int. Cl.[5] B05D *5/06;* **C09K** *11/08*

U.S. Cl. 427—71 **16 Claims**



9. A process for preparing a photoluminescent material which emits orange light when subjected to infrared radiation, comprising the steps of:

(a) mixing,

a base material of substantially strontium sulfide,

a fusible salt, there being up to 10 parts fusible salt for every 100 parts of base material,

a first dopant of samarium or a samarium compound,

a second dopant selected from the group of europium oxide, europium fluoride, europium chloride, and europium sulfide, and

strontium carbonate provided in a quantity of from 1 to 10 parts per 100 parts of base material by weight, said strontium carbonate being provided to reduce phosphorescence;

(b) thoroughly drying the mixture at a temperature of about 150° C. for about one hour by placing it in a graphite crucible within a furnace flushed with a dry inert atmosphere;

(c) heating the resultant mixture in the graphite crucible within the furnace flushed with a dry inert atmosphere;

(d) grinding the resultant crystalline form into a powder; and

(e) reheating the resultant powder to a temperature below said heating of step (c) but sufficiently high to repair crystal edges of the powder to yield of electron trapping optical material without fusing the powder into a mass.

5,006,367

ELECTROLESS COATING METHOD

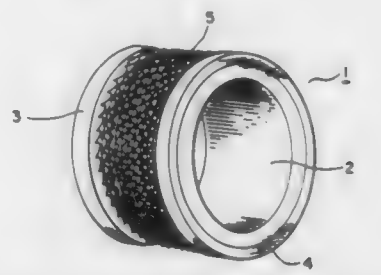
Thomas S. Lancsek, Morrisville, Pa., assignor to Surface Technology, Inc., Trenton, N.J.

Division of Ser. No. 249,227, Sep. 26, 1988, which is a continuation of Ser. No. 41,998, Apr. 24, 1987, abandoned. This application Feb. 13, 1990, Ser. No. 479,515

The portion of the term of this patent subsequent to Aug. 22, 2006, has been disclaimed.

Int. Cl.[5] H01F *10/02*

U.S. Cl. 427—129 **5 Claims**



1. A process for the metallization of a ferromagnetic member, said metallization comprising contacting said member with an electroless plating composition with finely divided particulate matter dispersed therein, and further comprising the step of demagnetization of said member prior to the metallization of said member, thereby resulting in a metallized member substantially free of microspheres.

5,006,368

PLASTIC PARTICLE COATED WITH PROCESSING AID AND METHOD OF COATING

Paul T. Louks, Saginaw, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 259,937, Oct. 19, 1988. This application Apr. 18, 1990, Ser. No. 511,479

Int. Cl.[5] B05D *3/02, 7/00*

U.S. Cl. 427—189 **17 Claims**

1. A process for preparing a particle having improved extrudability, which process comprises the steps of:

(A) providing a plastic in particle form, and a processing aid having a softening point between ambient temperatures and below the processing temperature of the plastic in particle form:

(B) charging the particle into a high intensity blender, said blender having an impeller:

(C) rotating the blender impeller at a speed and for a period of time effective to raise the temperature of the particle surface to between about 5° C. and 10° C. below the softening point of the processing aid;

(D) charging the processing aid into the blender such that the processing aid contacts the heated particle surface: and (E) rotating the blender impeller at a speed and for a period of time effective to raise the temperature of the particle surface to a temperature above the softening point of the processing aid, and to coat a portion of the particle surface by fusing the processing aid thereto.

5,006,369

REMOVING CONTAMINANTS FROM A GAS STREAM

Robert P. Shirtum, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 5, 1988, Ser. No. 229,080

Int. Cl.[5] B05D *7/00*

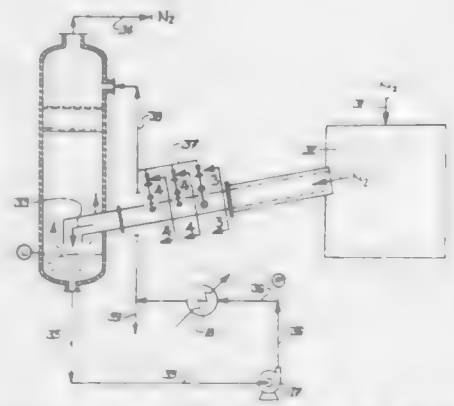
U.S. Cl. 427—212 **13 Claims**

1. A process for producing granulated material comprising:

(a) feeding a seed material to a rotary granulation drum;

(b) spraying molten material onto the seed material falling in a curtain-like pattern inside the drum to form granules;

(c) substantially simultaneously with steps (a) and (b) feeding an inert gaseous stream into the drum to cool the granules; and



(d) contacting the gaseous stream with an aqueous alkali metal hydroxide solution to reduce the amount of organic dust and mist contaminants present in the gaseous stream.

5,006,370

COMPOSITIONS FOR PRODUCTION OF ELECTRONIC COATINGS

Allan A. Eisenbraun, and Wesley C. Blocker, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 255,610, Oct. 11, 1988, Pat. No. 4,950,734.
This application Jun. 22, 1990, Ser. No. 542,015
Int. Cl.[5] B05D *5/12*; H01L *21/469*
U.S. Cl. 427—240 7 Claims

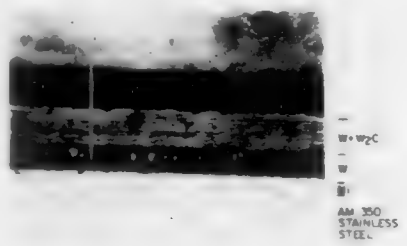
1. A method of forming a coating upon a planar substrate which comprises (a) applying to the central region of the planar surface a partially fluorinated polyamic acid composition, (b) rotating the substrate at a speed sufficient through centrifugal effect to cause the composition to flow outwardly toward the perimeter of the surface and form a substantially uniform liquid coating thereon, and (c) drying and curing the coating by heating the same to suitable elevated temperatures; said composition comprising a solution of (i) a 2,2-bis(3,4-dicarboxyphenyl)-hexafluoropropane dianhydride/2,2-bis[4-(aminophenoxy)phenyl]hexafluoropropane polyamic acid polymer having an inherent viscosity in the range of about 0.2 to about 1.5 dL/g (as measured in N-methylpyrrolidone at 25° C. at a concentration of 0.5 g/dL) in (ii) a solvent containing at least 40% by weight of one or more liquid aromatic hydrocarbons having a boiling point of at least about 110° C. and at least 5% by weight of one or more dipolar aprotic solvents having a boiling point of at least about 150° C., such that the solution (a) contains on a weight basis from about 5% to about 40% of such polyamic acid and (b) does not undergo precipitate formation during spin coating in an atmosphere of up to at least about 55% relative humidity; said method being further characterized in that it is conducted in an atmosphere having a relative humidity that does not result in such precipitate formation during the rotation in (b).

5,006,371

LOW TEMPERATURE CHEMICAL VAPOR DEPOSITION METHOD FOR FORMING TUNGSTEN AND TUNGSTEN CARBIDE

Diwakar Garg, Macungie; Ernest L. Wrecsics, Bethlehem; Leslie E. Schaffer, Macungie; Carl F. Mueller, Easton; Paul N. Dyer, Allentown, and Keith R. Fabregas, Easton, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 389,206, Aug. 2, 1989, Pat. No. 4,927,713, which is a continuation-in-part of Ser. No. 153,738, Feb. 8, 1988, Pat. No. 4,855,188. This application Mar. 8, 1990, Ser. No. 490,184
Int. Cl.[5] C23C *16/08*, *16/32*
U.S. Cl. 427—249 13 Claims



1. A low temperature chemical vapor deposition method for increasing the erosion and abrasion wear life, providing protection against impact of large particles and improving high cycle fatigue strength of substrates, said method comprising chemical vapor depositing a first layer of substantially pure columnar tungsten onto a substrate selected from the group consisting of ferrous metals and alloys, non-ferrous metals and alloys, graphite, carbides and ceramics at a temperature in the range of about 300° to about 550° C.; chemical vapor depositing onto said first layer a second layer of a mixture of tungsten and tungsten carbide wherein said tungsten carbide is selected from the group consisting of W_2C, W_3C, and mixtures of W_2C and W_3C at a temperature in the range of about 300+ to about 550° C., said second layer being fine grained, non-columnar, having a substantially layered microstructure and a thickness sufficient to confer a desired degree of erosive and abrasive wear resistance and protection against impact of large particles on said substrate; repeating the chemical vapor deposition steps to result in a composite coating system comprising at least two sets of alternating first and second layers such that the overall thickness of said composite coating system is at least about 20 μm.

5,006,372

ADHESIVE ORGANOPOLYSILOXANE COMPOSITION WHICH CAN BE CURED TO FORM AN ELASTOMER

Dietrich Wolfer, Oberndorf, Austria, and Wilhelm Marsch, Haiming, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 3, 1989, Ser. No. 375,073
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1988, 3825676
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—387 13 Claims

1. An adhesive composition for organopolysiloxane elastomers, which comprises:

(a) An organopolysiloxane containing Si-bonded vinyl groups;

(b) an organopolysiloxane containing Si-bonded hydrogen;

(c) a platinum catalyst which promotes the addition of Si-bonded hydrogen to vinyl groups;

(d) an inhibitor which delays the addition reaction of Si-bonded hydrogen with vinyl groups at room temperature, with the proviso that an inhibitor containing a hydroperoxy radical is excluded, and

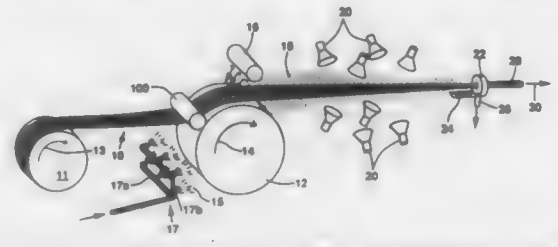
(e) an organic peroxide, with the proviso that an acyl peroxide is excluded.

5,006,373

METHOD AND APPARATUS FOR COATING FIBERS WITH THERMOPLASTICS

Donald E. Woodmansee, and Bang M. Kim, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 19, 1989, Ser. No. 367,913
Int. Cl.[5] B05D *1/02*
U.S. Cl. 427—422 12 Claims



1. A process for coating glass fibers with a thermoplastic, said process comprising:

heating a thermoplastic powder until molten;

spraying said heated thermoplastic powder to the fibers to coat the fibers; and

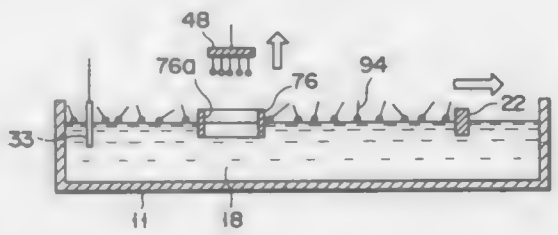
cooling the coated fibers to below the glass transition temperature of the thermoplastic.

5,006,374

METHOD OF FORMING THIN ORGANIC FILMS

Shigeru Wakayama, Yokohama, and Akira Miura, Toride, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 126,929, Nov. 30, 1987, Pat. No. 4,848,270. This application May 19, 1989, Ser. No. 354,354
Claims priority, application Japan, Dec. 2, 1986, 61-287124; Dec. 26, 1986, 61-308274
Int. Cl.[5] B05D *1/20*
U.S. Cl. 427—430.1 17 Claims



1. A method of forming thin organic films, comprising the steps of:

preparing at least one organic molecule developing region holding a liquid;

developing a monomolecular film of organic molecules on the surface of the liquid in the developing region; and

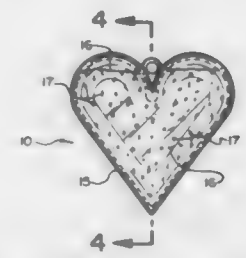
dipping into or drawing up a work from the liquid through the developed monomolecular film, in a predetermined direction with respect to the molecular film, so that the monomolecular film is adhered to a surface of the work in only one of steps of dipping and drawing up the work, said step including a process of dividing that region of the developed monomolecular film through which the work is passed from the remaining region before dipping or drawing up the work, so that the adhesion of the monomolecular film to the work surface is regulated by moving the work through the divided region.

5,006,375

ORNAMENTAL ARTICLE

Louis H. Mangan, 734 N. Spring Valley Pkwy., Elko, Nev. 89801

Filed Jan. 26, 1990, Ser. No. 470,711
Int. Cl.[5] A47G *33/08*
U.S. Cl. 428—13 4 Claims



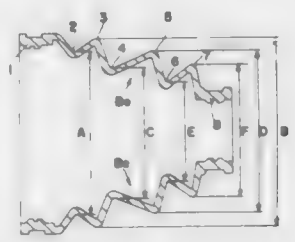
1. An ornamental object comprising a housing of transparent material and totally sealed to provide a space therewithin; a liquid in the housing; particle material in the liquid individual particles of which having a greater specific gravity than that of said liquid; and a sub-atmospheric pressure formed in the space between the liquid and the housing whereby ambient temperatures will cause the liquid to boil within the housing, bubbles created in that boiling to attach to said individual particles elevating them within said liquid.

5,006,376

JOINT BOOT MOLDED OF A THERMOPLASTIC POLYESTER ELASTOMER

Yoshihiro Arima, Ibaraki; Soiti Otuka, Sakai, and Nishida Kazushige, Suita, all of Japan, assignors to Toyo Tire and Rubber Co., Ltd., Osaka, Japan

Continuation of Ser. No. 710,907, Mar. 12, 1985, abandoned.
This application Feb. 1, 1990, Ser. No. 474,214
Claims priority, application Japan, Mar. 15, 1984, 59-50328
Int. Cl.[5] B29D *22/00*
U.S. Cl. 428—34.1 1 Claim



1. An injection molded joint boot, molded of a thermoplastic polyester elastomer shaped into a conical bellows having a major-diameter portion connected to a minor-diameter portion by a tapered wave-like portion in turn having a plurality of crests and troughs, this boot characterized in that:

along the direction from the major-diameter side to the minor-diameter side, the ratio of the outside diameter of the crest portion on the minor-diameter side of a given wave to the outside diameter of the immediately preceding trough portion of the same wave is confined within the range of 1.08 to about 1.40 when mold-forming said boot as a molding product;

a tensile yield strength of the thermoplatsic polyester elastomer is about 70 kg/cm^2;

a tensile yield strength of the thermoplastic polyester elastomer is above about 30%;

a tensile elastacity modulus of the thermoplastic polyester elastomer is in the range of about 430 kg/cm^2 to about 1700 kg/cm^2; and

a wall thickness of said boot is from 0.7 to 1.8 mm.

5,006,377

IMPERMEABLE MEMBRANE RESISTANT TO CHEMICAL AGENTS AND IMPERMEABLE ENCLOSURE PRODUCED USING SUCH MEMBRANES

Michel Delcorps, Brussels, and Hans Tanghe, Oudenaarde, both of Belgium, assignors to Plavina & Cie (Société en Nom Collectif), Belgium

Filed Apr. 11, 1989, Ser. No. 336,323
Claims priority, application France, Apr. 14, 1988, 88 05064
Int. Cl.[5] B65D *1/00*; B32B *27/08*
U.S. Cl. 428—34.7 10 Claims

1. An impermeable membrane which is resistant to chemical agents, the impermeable membrane comprising, in succession:
at least one flexible support layer comprised of a polymer containing chlorine;
at least one adhesive layer consisting essentially of a copolyamide having a degree of crystallinity which is less than 20% and which is produced by reacting (a) one of piperazine or caprolactam, (b) laurolactam, (c) hexamethylenediamine adipate, and (d) at least one other polyamide-forming substance selected from the group consisting of 1,1-aminoundecanoic acid and salts of hexamethylenediamine with at least one acid selected from the group consisting of adipic, azelaic, sebacic, dodecanedicarboxylic or undecanedicarboxylic acids; and
at least one film comprised of a polymer containing fluorine.

7. The impermeable membrane according to claim 1, comprising, in succession:
one said at least one flexible support layer comprised of a polymer containing chlorine and having a free face, edges, and a zone proximate the edges thereof;
one said at least one adhesive layer; and
one said at least one film comprised of a polymer containing fluorine,
wherein the free face of said one said at least one flexible support layer is coated with said layer of adhesive at least on the zone proximate the edges thereof.

8. An impermeable enclosure produced by a process comprising:
overlapping at least partially opposing faces of the impermeable membrane according to claim 7 to provide an overlapped zone, the opposing faces being overlapped including the free face of the one flexible support layer comprised of a polymer containing chlorine which is coated with a layer of adhesive at least on the zone proximate the edges thereof; and
heat sealing the opposing faces of the overlapped zone to one another.

5,006,378

POLYETHYLENE COMPOSITE FILM

Yasushi Itaba, Tokyo; Yutaka Yoshifuji, Saitama; Takayoshi Kondo, Tokyo; Minoru Izawa, Saitama; Ichiro Sakamoto, Kanagawa, and Tadao Yoshino, Saitama, all of Japan, assignors to Toa Neryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 8, 1988, Ser. No. 268,498
Claims priority, application Japan, Nov. 13, 1987, 62-285433; Nov. 20, 1987, 62-291952
Int. Cl.[5] B32B *7/02, 7/08*; B65B *53/00*
U.S. Cl. 428—34.9 18 Claims

1. A polyethylene composite film comprising an oriented polyethylene film such that the degree of crosslinking inwardly decreases across the thickness of the film and at least one lamination layer, provided on one side of the oriented polyethylene film, consisting of a lamination material having a heat shrinkage of less than 5% at 120° C., said oriented polyethylene film being crosslinked to form a structure of a crosslinked layer/uncrosslinked layer/crosslinked layer across the thickness of the film, wherein the crosslinked layer has a gel fraction of 20 to 70% and the uncrosslinked layer has a gel fraction of 0%; the ratio of the uncrosslinked layer: crosslinked layer being 1:0.1 to 10, said oriented polyethylene film further having a water vapor transmission rate (Y) of lower than a numerical value obtained from the following formula:

$$Y = 17X^{-1}$$

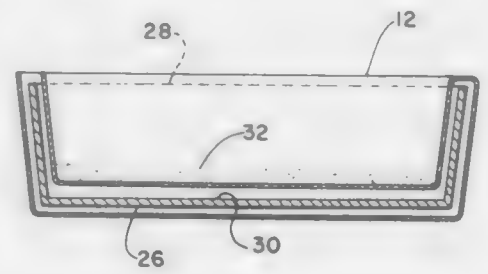
in which Y represents the water vapor transmission rate ($g/m^2/24$ hours) and X represents the thickness (μm) of the oriented film, and a haze of at most 5%, wherein said lamination material is selected from the group consisting of papers, aluminum foils, cellophanes and heat resisting resins selected from the group consisting of polyesters, polyamides, polyimides, polyparabanic acids and ethylene-vinyl alcohol copolymers.

5,006,379

LITTER BOX LINER

Francis P. Paciullo, Middlesex, N.J., assignor to Colgate-Palmolive Company, Piscataway, N.J.

Filed Aug. 14, 1989, Ser. No. 393,188
Int. Cl.[5] B65D *25/16, 30/04*
U.S. Cl. 428—35.2 6 Claims



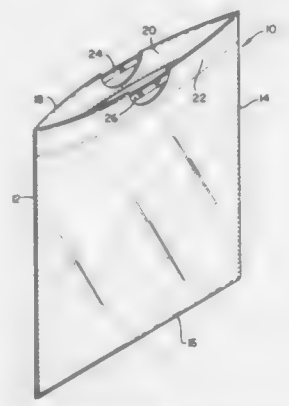
1. In combination with a litter box, a litter box liner comprising a bag having a lower portion and an upper portion, a sheet of claw resistant spun bonded non-woven nylon bonded to said upper portion, said bag having an open mouth for receiving in said bag said litter box.

5,006,380

DRAW TAPE BAG WITH MULTILAYER DRAW TAPE

Robert W. Fraser, Evergreen Park, Ill., assignor to First Brands Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 212,453, Jun. 28, 1988, abandoned. This application Aug. 16, 1989, Ser. No. 395,139
Int. Cl.[5] B65D *33/28*
U.S. Cl. 428—35.2 39 Claims



1. A draw tape bag comprising:
(a) two panels formed from a thermoplastic material, the sides of said panels being joined on three sides and open on the fourth side to form a top in said bag;
(b) a hem portion of each panel being folded over adjacent said top to form a tubular hem;
(c) draw tapes in each tubular hem secured at said sides of said panels by heat sealing, said draw tapes being characterized as having a multilayer structure having at least two layers wherein a first layer is characterized as having heat sealability to said thermoplastic panel and itself greater than to the second layer of the draw tape, said first layer also being characterized as having strength less than said second layer of the draw tape;
(d) a seal between each hem portion and the adjacent panel across the width of said bag below said draw tape; and
(e) an opening in said hem portion for accessing said draw tape.

5,006,381

UNGELLED POLYAMINE-POLYEPOXIDE RESINS

Richard M. Nugent, Jr.; Ken W. Niederst, both of Allison Park, and Jerome A. Seiner, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 152,177, Feb. 4, 1988, abandoned. This application Jun. 30, 1989, Ser. No. 375,659
Int. Cl.[5] B65D *25/00*; B32B *27/08*
U.S. Cl. 428—35.4 14 Claims

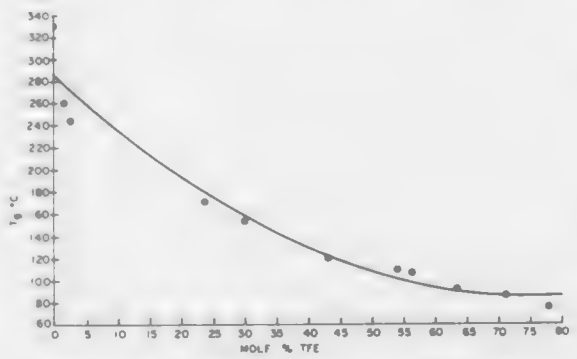
1. A container comprising at least one layer of a gas permeable polymer selected from the group consisting of polyesters, polycarbonates or polyolefins, and at least one layer of an ungelled thermoplastic resin comprising a reaction product of a polyamine essentially devoid of oxyalkylene moieties and containing up to about two primary amino nitrogen groups per molecule and a polyepoxide, the polyamine and the polyepoxide present in the reaction mixture at a ratio of from about 1.4:1 to about 0.83:1 based upon moles of polyamine to moles of polyepoxide; the ungelled resin is further characterized as containing at least about seven percent by weight amine nitrogen.

5,006,382

AMORPHOUS COPOLYMERS OF PERFLUORO-2,2-DIMETHYL-1,3-DIOXOLE

Edward N. Squire, Spring Hill, Fla., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 458,012, Dec. 28, 1989, which is a division of Ser. No. 148,579, Jan. 26, 1988, which is a division of Ser. No. 904,095, Sep. 4, 1986, Pat. No. 4,754,009, which is a continuation-in-part of Ser. No. 723,649, Apr. 16, 1985, abandoned, which is a division of Ser. No. 591,486, Mar. 20, 1984, Pat. No. 4,530,569, which is a continuation-in-part of Ser. No. 294,789, Aug. 20, 1981, abandoned. This application Apr. 9, 1990, Ser. No. 509,411
Int. Cl.[5] B29D *22/00, 23/00*
U.S. Cl. 428—35.7 2 Claims



1. An article for handling or processing of fluids selected from the group consisting of pipes, tubings, fittings, pump housings, pump impellers, valve bodies, valve stems, valve seals, diaphragms, tanks, trays, pipettes, and laboratory vessels, wherein at least one of the surfaces coming in contact with fluids is made of an amorphous dipolymer of 65–99 mole % of perfluoro-2,2-dimethyl-1,3-dioxide with a complementary amount of tetrafluoroethylene, the glass transition temperature of the dipolymer beings at least 140° C.

5,006,383

POLYMERIC BLEND AND LAMINATED STRUCTURES PREPARED THEREFROM

Felix Achille, Reynoldsburg; Brad Stevens, Frazeyburg, and George Clingerman, Newark, all of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 28, 1989, Ser. No. 372,583
Int. Cl.[5] B65D *25/38, 43/06, 25/00*; B32B *15/08*
U.S. Cl. 428—35.9 26 Claims

1. A polymeric film structure comprising a first layer comprising a blend of from 40 to 60 weight percent polypropylene resin and 60 to 40 weight percent very low density polyethylene having a density from 0.88 to 0.92, and a rubber and polar comonomer modified α-olefin polymer layer comprising an adhesive resin, said first layer and adhesive layer being adhered to one another by means of surface contact between major surfaces of the respective layers with an adhesive strength of from 1 to 24 lbs/lineal in.

5,006,384

FILMS USING BLENDS OF POLYPROPYLENE AND POLYISOBUTYLENE

Roger P. Genske, Neenah, Wis., assignor to American National Can, Chicago, Ill.

Division of Ser. No. 144,652, Jan. 11, 1988, Pat. No. 4,892,911, which is a continuation of Ser. No. 803,029, Nov. 29, 1985, abandoned. This application Jun. 13, 1988, Ser. No. 207,369
Int. Cl.[5] B29D *22/00*
U.S. Cl. 428—36.7 19 Claims

1. A multiple layer sheet material, comprising:
(a) a first polypropylene-based layer having two opposing surfaces, said first layer consisting essentially of greater than 60%, to 75% by weight polypropylene copolymer and conversely 25% to less than 40% by weight polyisobutylene, said polypropylene copolymer comprising 70 to 98 mole percent propylene moieties and conversely 30 to 2 mole percent ethylene moieties;
(b) a second layer of polyamide having two opposing surfaces, said second layer being adhered, on one of its said surfaces to one of said surfaces of said first layer;
(c) a third barrier layer having two opposing surfaces adhered on one of its said surfaces to the other said surface of said second layer of polyamide, the composition of said third layer comprising an ethylene vinyl alcohol copolymer; and
(d) a fourth layer of a polyamide, having two opposing surfaces, adhered on one of its said surfaces to the other said surface of said third layer.

5,006,385

STRAPPING JOINT AND METHOD FOR FORMING SAME

Nelson Cheung, Hoffman Estates; Robert J. Nix, Algonquin, and Janusz Figiel, Mt. Prospect, all of Ill., assignors to Signode Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 223,482, Jul. 22, 1988, abandoned. This application May 5, 1989, Ser. No. 347,569
Int. Cl.[5] B29C *65/06, 65/54*; B65B *13/32*
U.S. Cl. 428—57 26 Claims

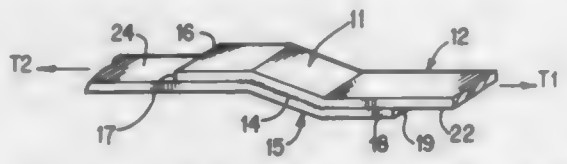
11. A method of forming a joint between overlapping portions of a thermoplastic strap surrounding an article, the steps comprising:
surrounding the article with the thermoplastic strap with an

inner surface of the strap facing the article and an outer surface of the strap facing away from the article;

tensioning at least a non-overlapping portion of the strap around the article with a length of the inner surface and a length of the outer surface overlapping thereby defining said overlapping portions;

joining said overlapping portions by providing a weldment between said overlapping portions along at least a portion of the lengths of the overlapping inner and outer surfaces; and

providing means for increasing resistance of said overlapping portions to peel separate above a peel separation resistance provided solely by said weldment when said overlapping portions at said weldment are in tension including deforming the strap such that said weldment lies



in a plane angularly oriented relative to planes of said inner and outer surfaces of said strap extending beyond opposite ends of said weldment.

25. A joint between overlapping portions of a thermoplastic strap surrounding an article comprising:

a weldment between at least a portion of an outer surface of an inner one of said overlapping portions disposed against said article and an inner surface of an outer one of said overlapping portions disposed outermost from said article, said overlapping portions at least along said weldment lying in a plane angularly disposed relative to a first plane of an interface between said inner and outer surfaces on one end of said weldment and a second plane of an interface between said inner and outer surfaces on an opposite end of said weldment.

5,006,386

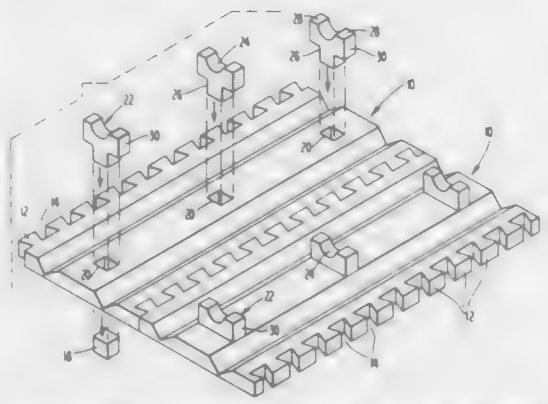
RESILIENT POLE-GUARD

Frank A. Menichini, Bryn Mawr, Pa., assignor to Custom Pack, Inc., Malvern, Pa.

Filed Jun. 12, 1989, Ser. No. 365,174

Int. Cl.[5] B32B *3/00; E04C 3/34;* **F16L** *9/00*

U.S. Cl. 428—58 **3 Claims**



1. A pole guard which is adaptable for poles having either a rectangular or a circular cross-section, said pole guard comprising at least two interlocking sections, wherein each of said sections comprises:

(a) a substantially rectangular sheet of resilient sheathing material, having along each of its two longer sides a means for interlocking the section with another identical section, and having on one rectangular face a pair of hinge channels which are inset from and parallel to said longer sides, said hinge channels being spaced apart from each other a distance which is twice as great as the distance which each channel is inset from its closest longer side;

(b) said hinge channels being adapted to allow the section to be folded at each channel such that the portion between the channel and its closest longer side extends at substantially a right angle to the portion between the two channels, whereby the section can be folded at the channels and locked to one or more identical sections to form a resilient pole guard having a rectangular hollow interior; and

(c) a plurality of plugs evenly spaced along the longitudinal centerline of the section, adapted to be removed and replaced by inserts which form semi-circular channels in the hollow interior to receive poles having a circular cross section.

5,006,387

INFORMATION RECORDING MEDIUM

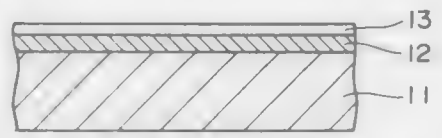
Toshiyuki Takao, and Toshiaki Igata, both of Fujinomiya, Japan, assignors to Fujii Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 4, 1989, Ser. No. 417,056

Claims priority, application Japan, Oct. 5, 1988, 63-251355

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—64 **7 Claims**



1. An information recording medium comprising a substrate and a recording layer provided thereon which is capable of writing and/or reading information with a laser beam, in which the recording layer comprises a layer composed of metals containing Se and Te and a layer provided thereon which is composed of TeO_x, wherein x is a value in the range of $1 \leqq x \leqq 2$, and which has a thickness in the range of 50 to 500 Å.

5,006,388

MAGNETIC DISC

Ryuichi Kuzuo; Atsushi Kawamoto; Junya Tada; Kenji Ohmori, and Hiroko Sekiya, all of Ichikawa, Japan, assignors to Sumitomo Metal Mining Company Limited, Tokyo, Japan

Filed Aug. 3, 1988, Ser. No. 227,800

Claims priority, application Japan, Aug. 6, 1987, 62-195338; Aug. 6, 1987, 62-195339; Aug. 19, 1987, 62-204177; Jul. 20, 1988, 63-179141

Int. Cl.[5] G11B *23/00*

U.S. Cl. 428—64 **4 Claims**

1. A magnetic disc having (a) a lower layer and (b) a magnetic recording medium film as an upper layer, as formed on a non-magnetic substrate, wherein;

(a) the lower layer consists essentially of Cr and 0.6 to 10% by weight of at least one element selected from the group consisting of Cu, Nb, Ti, V, Zr, Mo, Zn, W and Ta; and

(b) the upper layer comprises Co.

5,006,389

ERASABLE XEROGRAPHIC VELLUM

Joseph C. D'Annunzio, Barrington, Ill., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Jul. 30, 1990, Ser. No. 559,363

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—76 **10 Claims**

1. An oil and organic solvent free erasable vellum comprising, a fibrous cellulosic substrate transparentized in the absence of oil and organic solvent by incorporation of a polybutene

emulsion, a dried barrier coating of an aqueous emulsion of styrene-butadiene, and a dried top coat of vinyl acetate copolymer emulsion.

5,006,390

RIGID POLYETHYLENE REINFORCED COMPOSITES HAVING IMPROVED SHORT BEAM SHEAR STRENGTH

Sheldon Kavesh, Whippany, N.J.; Kwang Kim, Seoul, Rep. of Korea; Young D. Kwon, and Dusan C. Prevorsek, both of Morristown, N.J., assignors to Allied-Signal, Morris Township, Morris County, N.J.

Filed Jun. 19, 1989, Ser. No. 367,642

Int. Cl.[5] B32B *5/08,12, 27/02*

U.S. Cl. 428—105 **34 Claims**

1. A composition comprised of one or more layers, at least one of which comprises a network of filaments formed from polyethylene having a molecular weight of at least about 150,000 dispersed in a matrix said filaments having a tensile modulus of a least about 500 grams/denier, an energy-to-break of at least about 20 j/d, a tenacity equal to or greater than about 20 grams/denier, a weight average filament diameter equal to or less than about 37 micrometers, and an average filament aspect ratio equal to or less than about 2.9:1.

5,006,391

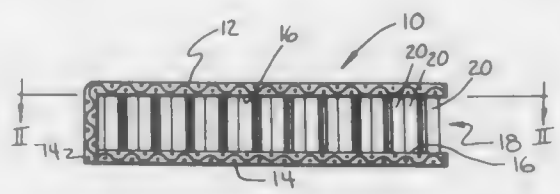
HONEYCOMB STRUCTURE AND METHOD OF MAKING SAME

James R. Biersach, 511 Kimberlee Drive N., Baxter, Minn. 56401

Filed Oct. 23, 1989, Ser. No. 424,947

Int. Cl.[5] B32B *3/12*

U.S. Cl. 428—116 **12 Claims**



1. An improved honeycomb core comprising

(a) a plurality of corrugated ribbons of preformed rigid corrugated resin panels, said ribbons having mechanically abraided exterior apexes; and

(b) adhesive permanently bonding facing pairs of said abraided apexes together.

5,006,392

CERAMIC MOLDED BODY

Yukio Sakamoto, and Hanato Yoshio, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

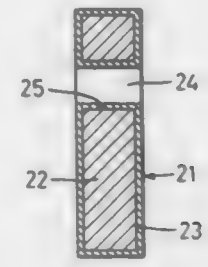
Continuation-in-part of Ser. No. 303,744, Jan. 25, 1989, abandoned. This application Sep. 14, 1989, Ser. No. 407,706

Int. Cl.[5] B32B *3/02*

U.S. Cl. 428—137 **3 Claims**

1. A ceramic molded body, comprising:

a ceramic sintered body, said ceramic sintered body having a plurality of outer surfaces and a plurality of through-holes extending through said ceramic sintered body; and



a resin coating covering the inner circumferential surface of said through-holes of said ceramic sintered body.

5,006,393

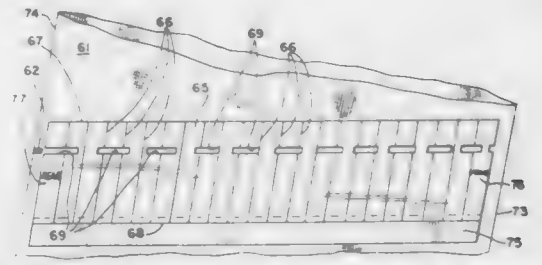
MATERIAL AND METHOD FOR HEMMING A GARMENT

Mark R. Isoe, Northbrook, Ill., assignor to QST Industries, Inc., Chicago, Ill.

Filed May 2, 1988, Ser. No. 189,296

Int. Cl.[5] B32B *3/02*

U.S. Cl. 428—137 **54 Claims**



1. A material for aiding the construction and alteration of clothing comprising a web of fabric having (1) adhered on at least a portion of one side thereof and exposed to contact a temporary adhesive and (2) adhered to said one side of said web and exposed to contact a substantially permanent adhesive.

5,006,394

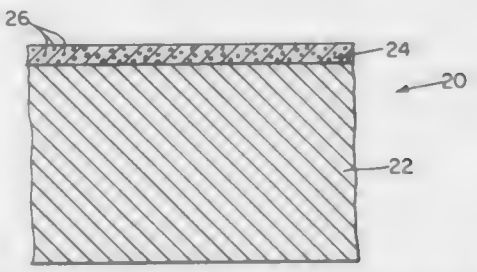
MULTILAYER POLYMERIC FILM

James C. Baird, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 23, 1988, Ser. No. 211,518

Int. Cl.[5] B32B *3/10*

U.S. Cl. 428—138 **19 Claims**



1. A substantially void-free polymeric multilayer film which exhibits an opaque appearance without being stretched, said polymeric multilayer film comprising:

(a) at least one relatively thick base layer comprised substantially of a polymer, said base layer having a thickness comprising at least about 80 percent of the total thickness of said multilayer film; and

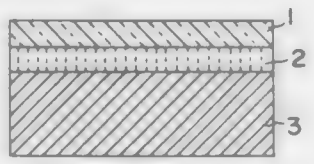
(b) at least one relatively thin filler containing polymeric layer substantially continuously joined to said base layer, said filler containing polymeric layer having about 15 to about 60 weight percent fillers substantially uniformly dispersed therein, said filler containing layer having a thickness not exceeding about 20 percent of the total thickness of said multilayer film, whereby said fillers in said relatively thin filler containing polymeric layer scatter the light rays incident upon said multilayer film to produce said opaque appearance in said multilayer polymeric film without significantly detracting from the material properties of said base layer.

5,006,395

IRON CARBIDE THIN FILM MAGNETIC RECORDING MEDIUM

Tohru Hori, Ikoma; Tomi Sato, Neyagawa; Hideaki Komoda, and Kenichi Fujii, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 11, 1988, Ser. No. 193,278
Int. Cl.[5] G11B *23/00*
U.S. Cl. 428—141 **5 Claims**



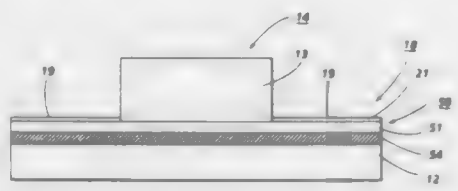
3. A magnetic recording medium comprising:
a substrate;
a base layer formed on said substrate, said base layer being composed mainly of at least one of an element in the IVA group through the VIIA group of the Periodic Table, an element of the platinum group, nickel (Ni) and copper (Cu); and
a ferromagnetic thin film deposited on said base layer, said ferromagnetic thin film being composed mainly of an iron carbide and having a preferentially oriented easy magnetization axis and wherein said ferromagnetic thin film comprises at least one member selected from the group consisting of Fe_3C_2, Fe_5C_2 and Fe_2C and wherein said ferromagnetic thin film has a columnar structure with a minimum of 2000 Å of columnar diameter or a lumpy structure.

5,006,396

MOISTURE PROOF THERMALLY ACTUATED BINDING TAPE FOR BOOKS

David P. VanBortel, Walworth; John A. McNamee, Webster, and Luke C. Lin, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 25, 1988, Ser. No. 223,852
Int. Cl.[5] B42D *1/00;* **B32B** *3/00*
U.S. Cl. 428—189 **15 Claims**



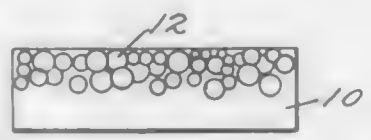
1. A binding tape for application to the spine of a book to bind the pages of said book together, comprising the combination of:
a backing strip composed of a hygroscopic material;
at least one stripe of hot melt adhesive on said backing strip, said at least one stripe of hot melt adhesive being narrower than said backing strip; and
moisture transfer preventing means to prevent transfer of moisture in the form of steam from said backing strip to said stripe of hot melt adhesive on application of heat to said tape,
said moisture preventing means comprising a layer of non-permeable temperature resistant barrier material between said backing strip and said stripe of hot melt adhesive.

5,006,397

PRINTED CIRCUIT BOARD

David Durand, Providence, R.I., assignor to Key-Tech, Inc., Cranston, R.I.

Division of Ser. No. 365,712, Jun. 14, 1989, Pat. No. 4,960,614, which is a continuation-in-part of Ser. No. 11,975, Feb. 6, 1987, Pat. No. 4,863,757. This application Jan. 30, 1990, Ser. No. 472,310
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—209 **6 Claims**



1. A printed circuit board comprising a substrate and at least one conductive line printed on said substrate, said line comprising a U.V. cured ink comprising from about 33 to 38 weight percent of a thermosetting resin binder and 67 to 62 weight percent of spherical or spheroidal conductive particles having a particle size distribution ranging from 1 to 30 microns, said line having been cured by exposure to U.V. radiation emanating from an electrodeless source having an output in the region between 360 nm and 420 nm in a pulsed manner comprising 5 to 8 one-half second exposure periods, each exposure period followed by a non-exposure period of about 2 to 3 seconds.

5,006,398

FOOD WRAP FILM

Roth Banerji, Aartselaar, Belgium, assignor to Exxon Chemical Patents Inc., Linden, N.J.

Filed Mar. 17, 1989, Ser. No. 324,833
Claims priority, application United Kingdom, Mar. 18, 1988, 8806504; Aug. 5, 1988, 8818692
Int. Cl.[5] C08L *33/04;* **B32B** *27/32*
U.S. Cl. 428—220 **14 Claims**

1. A transparent food wrap cling film comprising a layer of a composition containing:
from 20 to 50 wt % of LLDPE;
from 1 to 10 wt % of an elastomeric polymer;
from 40 to 79 wt % of a copolymer of ethylene and a vinyl acetate comprising 5 to 15 percent of VA;
the weight percentages being calculated in the total polymer weight;
and said film containing a minor amount of additives to provide, in combination with polymer components, an antifogging and antiblocking effect such that the film is transparent and has a controlled amount of residual cling.

5,006,399

PLANAR TEXTILE STRUCTURE

Ari Salminen, Suorama, and Aimo Rautanen, Tampere, both of Finland, assignors to Tamfelt OY AB, Tampere, Finland

Continuation of Ser. No. 134,571, Dec. 14, 1987, abandoned. This application Apr. 28, 1989, Ser. No. 346,354
Claims priority, application Finland, Dec. 15, 1986, 865094
Int. Cl.[5] D03D *3/00*
U.S. Cl. 428—224 **16 Claims**



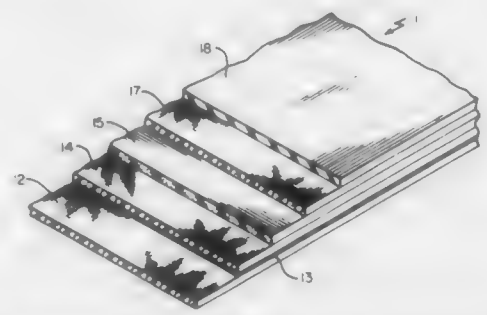
1. A planar textile material comprising a load-bearing basic structure and staple fibres adhered to and dispersed within a binder dispersion foam applied to the surface of and/or within the basic structure without flocking, said staple fibers including at least one of
a. very short fibres of approximately 0.5 mm length,
b. flock fibres applied to the surface of or within said basic structure without mechanical fastening, and
c. fibres fastenable to surface portions of said basic structure without needling or silver formation,
said staple fibres being arbitrarily bound to each other and to said basic structure so that said staple fibres form at least one continuous-three dimensional porous structure.

5,006,400

PRINTING BLANKET CONSTRUCTION HAVING NONTEXTURED SURFACE

Melvin D. Pinkston, Waynesville; Andrew J. Gaworowski, Asheville, and Stephen B. Edwards, Hazelwood, all of N.C., assignors to Day International, Dayton, Ohio

Filed Dec. 9, 1988, Ser. No. 282,387
Int. Cl.[5] B32B *7/00;* **D03D** *15/00*
U.S. Cl. 428—229 **1 Claim**



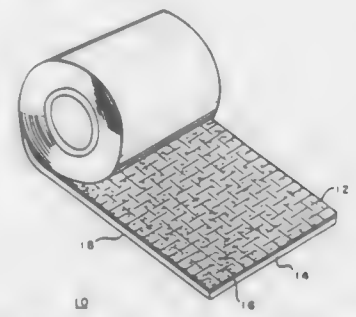
1. A laminated printing blanket construction comprising at least one base ply and a surface layer of polymeric material laminated to one surface thereof, and wherein said base ply is a woven fabric and the opposite surface of said base ply has been ground to remove weft threads where they cross over warp threads so that said opposite surface of said base ply is substantially nontextured such that, when mounted on a blanket cylinder, the pressures to which said blanket is subjected are spread substantially over the entire surface of said blanket in contact with said cylinder.

5,006,401

COMPOSITE COMPRESSION AND SUPPORT DRESSING

Margaret A. Frank, Lawrenceville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 23, 1988, Ser. No. 275,298
Int. Cl.[5] D03D *3/00*
U.S. Cl. 428—231 **12 Claims**



1. An extensible compression and support dressing comprising:
an extensible bandage of suitable size and shape to facilitate wrapping said bandage spirally around an affected body part; and,
a thin, fluid interactive extensible hydrocolloid adhesive composition laminated to one side of said bandage.

5,006,402

WHOLLY AROMATIC POLYESTER FIBER-REINFORCED HIGH PERFORMANCE THERMOPLASTIC AND PROCESS FOR PREPARING SAME

Avraam Isayev, Akron, Ohio, assignor to The University of Akron, Akron, Ohio

Filed Apr. 28, 1989, Ser. No. 344,703
Int. Cl.[5] B32B *27/02, 27/04, 27/12, 27/18*
U.S. Cl. 428—294 **12 Claims**

1. A self-reinforced polymer composite comprising:
(a) from about 60 to about 5 percent by weight, based on a total polymer weight, of an at least partially crystalline high performance thermoplastic polymer, and
(b) from about 40 to about 95 percent by weight, based on total polymer weight, of a melt processable wholly aromatic polyester;
said high performance thermoplastic polymer having a melting point of at least about 200° C.;
said polyester being essentially in the form of continuous, predominantly unidirectionally oriented fibers which are formed in situ in a matrix of said thermoplastic polymer.

5,006,403

WHOLLY AROMATIC POLYESTER FIBER-REINFORCED POLY(PHENYLENE OXIDE) AND PROCESS FOR PREPARING SAME

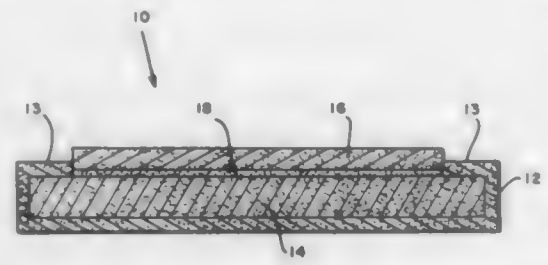
Avraam Isayev, Akron, Ohio, assignor to The University of Akron, Akron, Ohio

Continuation-in-part of Ser. No. 344,703, Apr. 28, 1989. This application Jun. 5, 1990, Ser. No. 533,381
Int. Cl.[5] B32B *27/02, 27/04, 27/12, 27/18*
U.S. Cl. 428—294 **8 Claims**

1. A self-reinforced polymer composite comprising:
(a) from about 97.5% to about 5% by weight, based on a total polymer weight, of thermoplastic poly(phenylene oxide), and
(b) from about 2.5% to about 95% by weight, based on total polymer weight, of a melt processable wholly aromatic polyester;
said polyester being essentially in the form of continuous,

predominantly unidirectionally oriented fibers which are formed in situ in a matrix of said thermoplastic poly(phenylene oxide) polymer.

5,006,404
REPLACEABLE INK PAD
Betty A. Terry, Weston, Conn., assignor to Pitney Bowes, Inc., Stamford, Conn.
Filed Oct. 1, 1990, Ser. No. 591,531
Int. Cl.[5] B32B 3/26
U.S. Cl. 428—316.6 7 Claims



1. A replaceable ink pad comprising:
a first layer of foam having a pore size of 10–20μ,
a second layer of foam, said second layer having one major surface addressing a major surface of said first layer and being made of a foam having a pore size 140–180 microns,
and a fusible web adhesive intermediate and in contact with said first layer major surface and said second layer major surface.

5,006,405
COATED MICROWAVE HEATING SHEET FOR PACKAGING
James D. Watkins, Prior Lake; David W. Andreas, and David H. Cox, both of Minneapolis, all of Minn., assignors to Golden Valley Microwave Foods, Inc., Eden Prairie, Minn.
Filed Jan. 27, 1988, Ser. No. 212,235
Int. Cl.[5] B32B 5/16; B65D 30/02, 85/00
U.S. Cl. 428—323 22 Claims



1. A coated microwave heating sheet for wrapping, packaging or shipping food products that are to be hated thereby in a microwave oven comprising,
a base sheet formed from a microwave transparent fibrous cellulose sheet that is thermally, dielectrically and dimensionally stable when exposed to microwave energy in a microwave oven,
preconditioning means for the base sheet selected from (a) a supercalendared surface to render the base sheet glossy or (b) a filler coating to fill voids between said fibers in the cellulosic base sheet form rendering one surface of the base sheet sufficiently smooth and free of discontinuities to allow microwave heating of the coated sheet material without arcing or sparking,
a microwave interactive heating layer composed of a microwave coupling material applied from a fluid or vapor state as a coating upon said one surface of the base sheet over the preconditioning means,
said microwave interactive heating layer comprising a microwave interactive composition that becomes hot when exposed to microwave energy to thereby transmit the heat by conduction from the interactive layer to the food product.

5,006,406
MAGNETIC RECORDING MEDIA
Jenoe Kovacs, Heasheim; Milena Melzer, Ludwigshafen; Werner Balz, Limburgerhof; Werner Lenz, Bad Duerkheim; Werner Loch, Erpolzheim, and Helmut Jakusch, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany
Filed Sep. 12, 1988, Ser. No. 243,094
Int. Cl.[5] G11B 23/00
U.S. Cl. 428—323 1 Claim

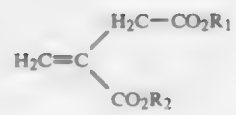
1. A magnetic recording medium comprising a non-magnetic base and, applied thereon, at least one magnetizable layer containing a magnetic material finely dispersed in an organic binder, a dispersant and a lubricant, wherein the magnetizable layer comprises
(1) at least one finely divided magnetic material having a BET specific surface area of not less than 25 m^2/g,
(2) at least one finely divided nonmagnetic metal oxide having a Mohs hardness greater than 5 and a BET specific surface area of not less than 2 m^2/g, in an amount of from 1 to 20% by weight, based on the amount of magnetic material,
(3) at least one lubricant from the group consisting of silicone resins, polyethylene waxes, paraffins and metal salts of stearic, oleic and myristic acid, in an amount of from 1 to 10% by weight, based on the amount of magnetic material, and
(4) a comb block copolymer based on a polyethyleneimine chain having a molecular weight of not less than 2,000 and having side chains selected from the groups consisting of polyamide side chains, polyester side chains and mixtures of polyamide and polyester side chains, said side chains having a molecular weight of not less than 500, as a dispersant, in an amount of from 1 to 20% by weight, based on the amount of magnetic material.

5,006,407
INK JET TRANSPARENCIES AND PAPERS
Shadi L. Malhotra, Mississauga, Canada, assignor to Xerox Corporation, Stamford, Conn.
Filed Feb. 8, 1989, Ser. No. 307,451
The portion of the term of this patent subsequent to Sep. 12, 2006, has been disclaimed.
Int. Cl.[5] B41M 5/00
U.S. Cl. 428—336 16 Claims

1. A transparency comprised of a supporting substrate and a hydrophilic coating comprising a plasticizer and a member selected from the group consisting of cellulose ester, alkyl cellulose, cyanoalkyl cellulose, carboxyalkyl cellulose, carboxyalkyl hydroxyalkyl cellulose, hydroxyalkyl cellulose, hydroxyalkyl methyl cellulose, acrylamide, a poly(alkylene oxide), and mixtures thereof.

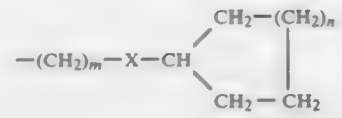
5,006,408
STAIN-RESISTANT POLYMERS DERIVED FROM ITACONIC ACID USEFUL AS COATINGS FOR FIBERS
George D. Green, Park Ridge, Ill.; Stephen A. Munk, West Lafayette, Ind., and Darryl K. Barnes, Bellwood, Ill., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.
Division of Ser. No. 292,862, Jan. 3, 1989, Pat. No. 4,925,906.
This application Apr. 19, 1990, Ser. No. 512,227
Int. Cl.[5] B32B 27/34
U.S. Cl. 428—395 2 Claims

1. A stain resistant fiber whose coating comprises copolymers of (1) at least one monomer having the formula (A)

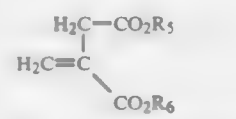


(A)

where R_1 is H, C_5–C_{22} alkyl,



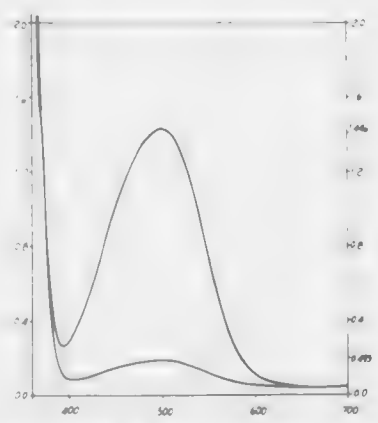
cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl;
m=o–12
n=o, 1, 2, 3;
X=CH_2, o when m>1,
R_2 is chosen from the list above and may or may not be the same as R_1, R_1 and R_2 cannot both be H (2) at least one monomer having the formula $(D)CF_3CF_2(CF_2)XCH_2YOC(O)C(R_3)=CH_2$
wherein
X is an integer from 2–18
Y is an inter from 1–15, R_3 is H or CH_3, (3) and may contain a monomer having the formula



(E)

where R_5 and R_6 may be H, $CF_3CF_2(CF_2)X(CH_2)Y$, but R_5 and R_6 cannot be H wherein
X is an inter from 2–18
Y is an integer from 1–15.

5,006,409
OPTICAL ELEMENT USED TO REDUCE THE IMAGE PERCEPTION TIME
Paolo Baiocchi, and Giuseppe Iori, both of Via Natta, 10/A, 43100 Parma, Italy
Filed Feb. 1, 1990, Ser. No. 473,339
Claims priority, application Italy, Feb. 9, 1989, 19365 A/89
Int. Cl.[5] B32B 9/04
U.S. Cl. 428—411.1 6 Claims



1. An optical element for use in eyeglasses, visors, masks and screens to reduce an image perception time and improve a contour definition thereof, wherein said optical element comprises a transparent plastic supporting member including 4-nitro-2-methyl-4-diethanolamino-azobenzene from 50 ppm to 350 ppm.

5,006,410
FILM COMPRISING AT LEAST ONE UNIMOLECULAR LAYER
Vogel Viola, Göttingen, and Dietmar Möbius, Waake, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Jul. 20, 1988, Ser. No. 221,898
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1987, 3724364
Int. Cl.[5] B32B 9/04, 27/00
U.S. Cl. 428—411.1 7 Claims

1. A film comprising at least one unimolecular layer which has been transferred onto a base material and comprises at least one amphiphilic compound having a hydrophilic and a hydrophobic region, wherein the amphiphilic compound has the formula (II)

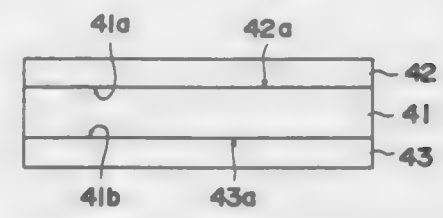
$$X—(CH_2)_n—(CF_2)_m—CF_3 \quad (II)$$

in which X is a hydrophilic group, n is an integer from 6 to 24, m is an integer from 0 to 18 and the sum of n+M is an integer from 6 to 24 and the amphiphilic compound formula (II) is present in a mixture with an amphiphilic compound of the formula (III)

$$X^1—(CH_2)_p—CH_3 \quad (III)$$

in which X^1 is a hydrophilic group and p is an integer from 12 to 14.

5,006,411
POLYIMIDE FILM HAVING FLUOROCARBON RESIN LAYER
Kazunori Motonari; Kazuo Kumamoto, both of Ube; Shigeto Turuda, Matsuura; Yutaka Ito, Matsuura, and Taiichiro Mitsutake, Matsuura, all of Japan, assignors to Ube Industries, Ltd., Ube and Chukoh Chemical Industries, Ltd., Tokyo, both of, Japan
Division of Ser. No. 2,874, Jan. 13, 1987, Pat. No. 4,801,506.
This application Jul. 11, 1988, Ser. No. 217,460
Claims priority, application Japan, Jan. 13, 1986, 61-5513; Jan. 13, 1986, 61-5514
The portion of the term of this patent subsequent to Jan. 31, 2006, has been disclaimed.
Int. Cl.[5] B32B 27/08; B05D 3/06
U.S. Cl. 428—421 10 Claims



1. A polyimide film having a fluorocarbon resin layer coated on a surface of an aromatic polyimide, wherein both surfaces of said film have been treated with corona discharge or plasma discharge for increasing adhesiveness and activity to the fluorocarbon resin layer and the fluorocarbon resin layer is coated on at least one of said treated surfaces.

5,006,412

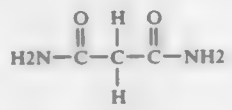
SUBSTRATE OF METAL-COMPLEXED BETA-DIKETONE/THERMOSETTING POLYMER REACTION PRODUCT

Susan A. Hodgson, Ossining; Jae M. Park, Binghamton, and Richard R. Thomas, Fishkill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 183,101, Apr. 19, 1988, Pat. No. 4,868,253.
This application Jul. 27, 1989, Ser. No. 385,505
Int. Cl.[5] B32B *15/04, 15/08*
U.S. Cl. 428—458 8 Claims

1. A substrate suitable for plating of an active metal thereon from an electroless plating bath that comprises:

a reaction product of a malonamide having the structural formula



and a thermosetting polymer having groups reactive with said β-diketone and a metal complexed with said reaction product.

5,006,413

WATERBASED METHYLOL (METH)ACRYLAMIDE ACRYLIC POLYMER AND POLYURETHANE CONTAINING COATING COMPOSITION

Herman C. Den Hartog, Rochester, Mich.; Eileen E. Konsza, Swedesboro, N.J.; James F. Matthews, and Ervin R. Werner, Jr., both of Levittown, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 402,293, Sep. 5, 1989, Pat. No. 4,954,559.
This application Apr. 17, 1990, Ser. No. 511,179
Int. Cl.[5] B32B *15/08;* C08F *20/58;* C08L *75/06, 75/08*
U.S. Cl. 428—463 8 Claims

1. A substrate coated with a dried and cured layer of a waterbased coating composition comprising about 10–30% by weight of film forming binder dispersed in an aqueous carrier; wherein the binder consist essentially of abut

a. 60–90% by weight, based on the weight of the binder, of an methylol (meth)acrylamide acrylic polymer consisting essentially of polymerized monomers of alkyl methacrylate, alkyl acylkate or mixtures thereof, 1–10% by weight, based on the weight of the acrylic polymer, of methylol methacrylamide, methylol acrylamide or mixtures thereof, 0.5–10% by weight, based on the weight of the acrylic polymer of an ethylenically unsaturated carboxylic acid, 0.5–10% by weight, based on the weight of the acrylic polymer, of an ethylenically unsaturated hydroxyl containing monomer, said the acrylic polymer having a glass transition temperature of −40 to +40 C. and a weight average molecular weight of 500,000 to 3,000,000; and the carboxyl groups of the carboxylic acid are reacted with ammonia to provide a pH of about 7.0–10;

b. 10–40% by weight, based on the weight of the binder, of a polyurethane selected from the group consisting of polyester urethane, polyether urethane or polyacryloure-thane.

2. The substrate of claim 1 in which the substrate is a metal.

5,006,414

PROCESS FOR MODIFYING THE SURFACE OF METAL OR METAL ALLOY SUBSTRATES AND SURFACE MODIFIED PRODUCTS PRODUCED THEREBY

Robert B. Pond, Sr., Westminster, Md., assignor to Marvaland, Incorporated, Westminster, Md.

Division of Ser. No. 243,608, Sep. 13, 1988, Pat. No. 4,881,681.
This application Dec. 15, 1988, Ser. No. 284,940
Int. Cl.[5] B05D *5/02*
U.S. Cl. 428—469 3 Claims

1. A process for producing a substrate having a tightly bonded grinding surface layer, said process comprising:

disposing a powdered mixture of fly ash and reactive metal or reactive metal alloy powder on at least one outer surface of said substrate; and

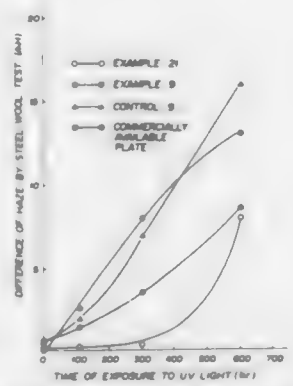
heating and maintaining the substrate and the powdered mixture at a temperature lower than a melting point or solidus temperature of the reactive metal or reactive metal alloy, until a tightly bonded grinding surface layer is formed on said substrate.

5,006,415

MOLDED ARTICLE OF METHACRYLIC RESIN

Shigeo Matsumaru, Kawaguchi; Akihiro Mochizuki, Oomiya, and Syuzi Isoi, Saitama, all of Japan, assignors to Kyowa Gas Chemical Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 4,667, Jan. 20, 1987, Pat. No. 4,830,803.
This application Nov. 17, 1988, Ser. No. 272,522
Int. Cl.[5] B32B *27/30*
U.S. Cl. 428—522 7 Claims



1. A molded article of methacrylic resin formed of a cross-linked polymer having at least part of the surface thereof coated with an abrasion resistant layer, produced by placing (A) an abrasion resistant layer-forming material selected from the group consisting of (a) cross-linked polymerizing compounds having a molecular weight of not less than 150 and containing at least two (meth) acryloyloxy groups per molecule, (b) mixtures of at least 30% by weight of said cross-linked polymerizing compounds with other copolymerizable monomers, and (c) partial polymerization products thereof, and possessed of a composition such that the number, x, of said (meth)acryloyloxy groups of said cross-linked polymerizing compound and the ratio of polymerization, y (%), of said scratchproofing layer-forming material satisfy the following formula I or II:

$$y \leqq 70 \ (2 \leqq x \leqq 3.5) \quad (I)$$

$$y \leqq -7.5x^2 + 52x - 18 \ (3.5 < x \leqq 6) \quad (II)$$

in contact with (B) a basic molding material made of an. acrylic partially cross-linked gel obtained by partially polymerizing a mixture of (i) a resin material selected from the group consisting of alkyl methacrylate monomers, mixtures of alkyl methacrylates as main components with α, β -ethylenically unsaturated monomers, and syrups containing polymers thereof with

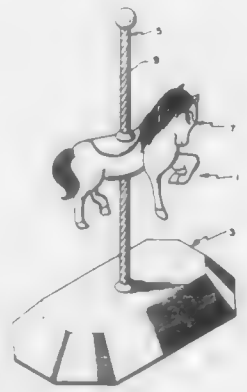
(ii) 10 to 25 parts by weight, based on 100 parts by weight of said resin material, of a cross-linking agent and stopping said partial polymerization when the gel content of the basic molding material reaches a level in the range of 15 to 95% thereby allowing said gelled polymer consequently produced to possess the property of retaining the polymerization in a stopped state, and simultaneously polymerizing said two materials held in mutual contact under a condition capable of imparting a desired shape to the combined materials.

5,006,416

STATIONARY DISPLAY UNIT

Jack Hou, 3 Fl, No. 8, Lane 7, Wu Hsing Street, Taipei, Taiwan

Filed Jan. 17, 1990, Ser. No. 466,642
Int. Cl.[5] B44C *3/06*
U.S. Cl. 428—542.2 7 Claims



1. A display unit comprising:

(a) a base assembly including a top portion and a bottom portion, the top portion being provided with a first aperture through a wall thereof;

(b) a spacer member disposable between opposed surfaces of the top and bottom portions for maintaining the surfaces at a predetermined distance from each other, the spacer member including a longitudinal passageway therethrough;

(c) the first aperture and longitudinal passageway being disposable in coaxial alignment;

(d) a support rod including a first end insertable through the first aperture and longitudinal passageway;

(e) cooperating means for attaching the first end of the rod to the bottom portion and positioning the rod to extend outwardly of the base assembly; and

(f) means for mounting an ornament on the rod.

5,006,417

TERNARY METAL MATRIX COMPOSITE

Michael B. Jackson, Greer, and Peter A. Roth, Greenville, both of S.C., assignors to Advanced Composite Materials Corporation, Greer, S.C.

Filed Jun. 9, 1988, Ser. No. 204,233
Int. Cl.[5] C22C *21/02, 32/00*
U.S. Cl. 428—614 14 Claims

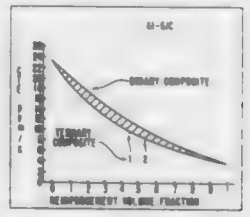
1. A ternary metal matrix composite comprising:

a consolidated powder blend of a metallic binding matrix material comprising 40–60 vol. % of the composite; and

a reinforcement material consisting essentially of 10–50 vol. % of an insoluble ceramic and 10–40 vol. % of a semi-metal.

11. A ternary metal matrix composite comprising:

a metallic binding matrix material comprising 40–60 vol. % of the composite, and



a reinforcement material consisting essentially of 10–50 vol. % of an insoluble ceramic and 10–40 vol. % of a semi-metal of the same element as said insoluble ceramic.

5,006,418

DECORATIVE MIRROR

Albert Servais, Gerpinnes, and Bernard Somerhausen, Nivelles, both of Belgium, assignors to Glaverbel, Brussels, Belgium

Division of Ser. No. 210,011, Jun. 22, 1988, Pat. No. 4,894,278.
This application Aug. 28, 1989, Ser. No. 398,891
Claims priority, application United Kingdom, Jun. 23, 1987, 8714667
Int. Cl.[5] B32B *15/04*
U.S. Cl. 428—621 9 Claims

1. A decorative mirror, comprising:

a transparent sheet; and

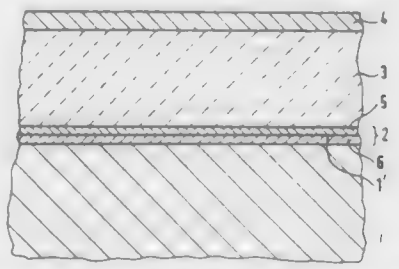
at least one reflective silver coating including a first silver layer and a second silver layer, the first silver layer being comprised of silver, being deposited on one face of the transparent sheet, and having a plurality of randomly distributed areas therein containing reaction products including at least one silver-containing substance formed by reacting at least a part of the silver of said first silver layer with a substance which reacts with silver to provide reaction products including the at least one silver-containing substance so that visible light reflectance of the decorative mirror is modified or interrupted; and the first silver layer being overcoated by the second silver layer.

5,006,419

STRUCTURAL COMPONENT MADE OF A TITANIUM ALLOY AND COVERED BY A PROTECTIVE COATING AND METHOD FOR PRODUCING THE COATING

Richard Grunke, Munich; Lothar Peichl, Dachau; Franz Puchinger, Niederscheyern, and Gerhard Wydra, Oberschleisheim, all of Fed. Rep. of Germany, assignors to MTU Motoren-und Turbinen-Union Muenchen GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 26, 1990, Ser. No. 485,044
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1989, 3906187; Aug. 8, 1989, 3926151
Int. Cl.[5] B32B *15/04*
U.S. Cl. 428—623 8 Claims



1. A structural component of a titanium or titanium alloy comprising a protective surface coating, said coating compris-

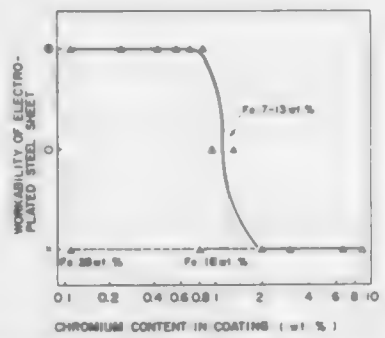
ing a first diffusion inhibiting and oxidation resisting base layer (2) made of a material selected from the group consisting of metals and salts, an intermediate layer (3) for inhibiting a titanium fire, said intermediate layer comprising a high temperature lacquer including aluminum and a binder, and a cover layer (4) forming a passivating seal on said intermediate layer.

5,006,420

ELECTROPLATED STEEL SHEET HAVING A PLURALITY OF COATINGS, EXCELLENT IN WORKABILITY, CORROSION RESISTANCE AND WATER-RESISTANT PAINT ADHESIVITY

Tsutomu Watanabe; Masaru Sagiyama; Masaki Kawabe, and Masaya Morita, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

Filed May 31, 1990, Ser. No. 531,503
Claims priority, application Japan, Jun. 21, 1989, 1-159002
Int. Cl.[5] C25D *15/02, 5/10*
U.S. Cl. 428—629 **2 Claims**



1. An electroplated steel sheet having a plurality of coatings, excellent in workability, corrosion resistance and water-resistant paint adhesivity, which comprises:

an iron-chromium-zinc alloy coating as a lower layer, formed on at least one surface of a steel sheet, consisting essentially of:

iron: from 3 to under 15 wt. %,

chromium: from 0.1 to 1 wt. %, and

the balance being zinc and incidental impurities, said iron-chromium-zinc alloy coating as the lower layer having a coating weight of at least 0.1 g/m^2 per one surface of said steel sheet;

another iron-chromium-zinc alloy coating as an intermediate layer, formed on said iron-chromium-zinc alloy coating as the lower layer, consisting essentially of:

iron: from 10 to 40 wt. %,

chromium: from over 1 to under 30 wt. %, and

the balance being zinc and incidental impurities, said another iron-chromium-zinc alloy coating as the intermediate layer having a coating weight of at least 20 g/m^2 per one surface of said steel sheet, and the sum of said coating weight of said iron-chromium-zinc alloy coating as the lower layer and said coating weight of said another iron-chromium-zinc alloy coating as the intermediate layer being up to 60 g/m^2 per one surface of said steel sheet; and

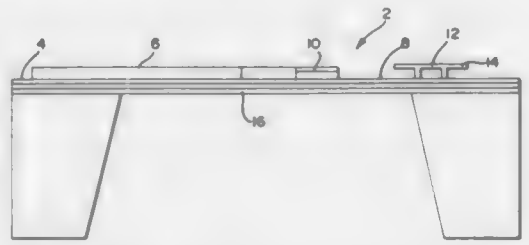
a chromating coating as an upper layer, formed on said another iron-chromium-zinc alloy coating as the intermediate layer, said chromating coating as the upper layer comprising a metallic chromium film formed on said another iron-chromium-zinc alloy coating as the intermediate layer, and a hydrated chromium oxide film formed on said metallic chromium film, and each of said metallic chromium film and said hydrated chromium oxide film having a coating weight of at least 5 mg/m^2 per one surface of said steel sheet.

5,006,421

METALIZATION SYSTEMS FOR HEATER/SENSOR ELEMENTS

Kuang L. Yang; David Gutierrez, both of Newport News, and George E. Gimpelson, Williamsburg, all of Va., assignors to Siemens-Bendix Automotive Electronics, L.P., Troy, Mich.

Filed Sep. 30, 1988, Ser. No. 257,074
Int. Cl.[5] H01C *7/02*
U.S. Cl. 428—641 **9 Claims**



1. A metallized heater/sensor element for flow sensors comprising a platinum silicide layer having a substantially linear temperature coefficient of resistance of at least 2000 parts per million, a substrate supporting said platinum silicide layer and conductor leads attached thereto.

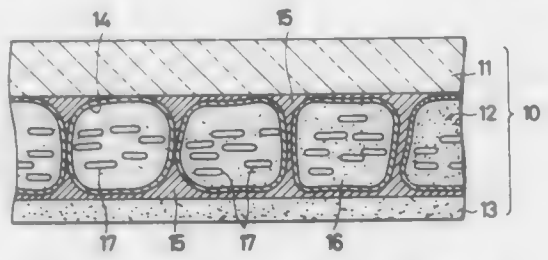
2. A metallized heater/sensor element for flow sensors having a substantially linear temperature coefficient of resistance of at least 2000 parts per million, the element comprising a first metal layer of a refractory metal, a second metal layer of a noble metal, a substrate supporting said first metal layer and conductor leads attached thereto.

5,006,422

VISUAL MAGNETIC RECORDING MEDIUM AND METHOD OF MAKING THE SAME

Masaaki Sakurai, Utsunomiya, and Mitsuru Yoda, Tokyo, both of Japan, assignors to The Nippon Signal Co., Ltd., Japan

Filed Aug. 5, 1988, Ser. No. 229,333
Claims priority, application Japan, Aug. 6, 1987, 62-196659; Aug. 26, 1987, 62-211629
Int. Cl.[5] G11B *23/00*
U.S. Cl. 428—694 **16 Claims**



1. A visual magnetic recording medium comprising:

(a) a transparent substrate;

(b) a magnetic field sensitive display web layer united with one surface of said transparent substrate and having a multiplicity of microcapsules held on said substrate by a transparent binder, each of said microcapsules containing a multitude of fine particles in suspension in a fluid, said fine particles being responsive to a magnetic field established across a magnetic recording layer overlying said display web layer to produce an image on said display web layer being which is visible though said transparent substrate; and

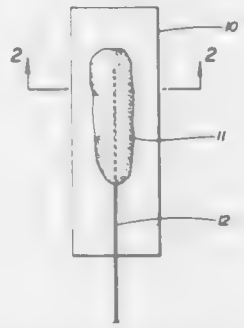
(c) said magnetic recording layer being united with said display web layer remote from said transparent substrate.

5,006,423

ATTACHMENT OF INSTRUMENTATION TO CERAMIC COMPONENTS

Barry S. Draskovich, Mesa, Ariz., assignor to Allied-Signal Inc., Phoenix, Ariz.

Filed Apr. 26, 1988, Ser. No. 186,275
Int. Cl.[5] B05D *3/02;* **C03B** *29/00;* **C04B** *35/56, 37/02*
U.S. Cl. 428—698 **8 Claims**



1. A method of bonding metallic instrumentation to a silicon-containing ceramic, structural component composed of either silicon carbide, silicon dioxide, silicon nitride, silicon carbide composites, or silicon carbide coated carbon composites used in a gas turbine engine for high temperature testing comprising the steps of:

cleaning the instrumentation and the component in the area to be bonded,

mixing a fine ceramic powder having a composition similar to that of said component with about an equal height of sodium silicate solution,

applying a base coating of the mixture to the instrumentation and the component, and curing the base coating,

positioning the instrumentation onto the component,

covering the instrumentation with at least one layer of the mixture, and

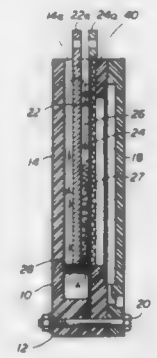
curing the mixture with heat to transform the sodium silicate solution into glass to bond the instrumentation to the ceramic component.

5,006,424

BATTERY USING A METAL PARTICLE BED ELECTRODE

James V. Evans, Piedmont, and Gultekin Savaskan, Albany, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Nov. 8, 1989, Ser. No. 433,475
Int. Cl.[5] H01M *8/04*
U.S. Cl. 429—15 **9 Claims**



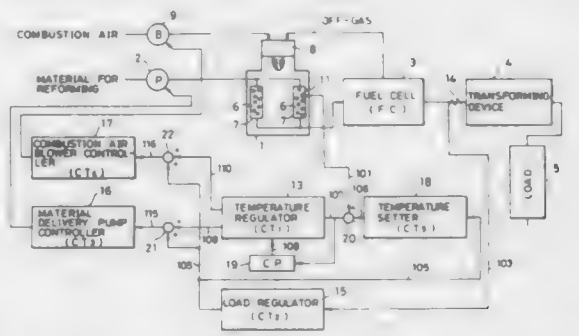
1. A battery comprising a battery case, a diaphragm disposed in and supported by said battery case, and metal electrode means disposed in and supported by said battery case and including a current feeder, a stationery bed of metal particles adjacent said diaphragm in contact with said current feeder and having an upper and lower end, said metal particles comprising metal on at least the outer surface of said particles, said metal being capable of dissolution in an electrolyte to generate a current in said current feeder, electrolyte outlet means proximal the lower end of said metal particle bed and including openings large enough to pass electrolyte solution but small enough to block passage of said metal particles, electrolyte inlet means for said metal particle bed proximal the upper end thereof, and electrolyte recycle conduit and storage means between said electrolyte outlet and inlet means arranged and positioned for convective flow.

5,006,425

METHOD AND APPARATUS FOR CONTROLLING THE TEMPERATURE OF A REFORMING REACTION CATALYST

Yasuhiro Takabayashi, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Sep. 29, 1989, Ser. No. 414,518
Claims priority, application Japan, Oct. 7, 1988, 63-251983; Sep. 7, 1989, 1-230359
Int. Cl.[5] H01M *8/04*
U.S. Cl. 429—23 **22 Claims**



1. A reforming reaction catalyst temperature control method in which a reforming gas to be supplied to a fuel cell is produced by allowing said reforming gas to react against a reforming reaction catalyst, so that the fuel cell can provide output power to be supplied to a load, said method comprising the steps of:

detecting the temperature of said reforming reaction catalyst during said catalytic reaction process;

detecting any current flow from said fuel cell to said load;

setting a value for said catalyst temperature that may vary depending upon the load condition, as well as setting a range of temperatures determined from the set value for said catalyst temperature on the basis of a relationship between variations in the load condition and the corresponding variations in said catalyst temperature;

determining any deviation that occurs between the set value for said catalyst temperature and the detected catalyst temperature by calculating said deviation; and

controlling the temperature for said catalyst when said deviation has fallen within said range of temperatures.

5,006,426

ALKALINE STORAGE BATTERY

Norio Suzuki; Seanosuke Oda; Hiromi Maruyama, and Kenichi Hoshino, all of Chigasaki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Oct. 26, 1989, Ser. No. 426,640
Claims priority, application Japan, Aug. 23, 1989, 1-216349
Int. Cl.[5] H01M *6/10*
U.S. Cl. 429—94 **8 Claims**

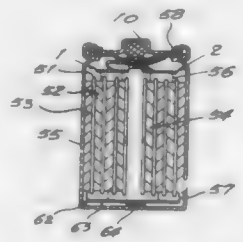
1. An alkaline storage battery, comprising

a case serving as one of positive and negative terminals, the case having an opening;

an electrode assembly housed in the case, the electrode assembly comprising a positive electrode and a negative electrode which are wound as spiral coils with a separator interposed therebetween, the positive and negative electrodes having opposite terminal edges;

a sealing cover mounted in the opening with an insulating seal ring therebetween, the sealing cover serving as the other terminal; and

a pair of current collector tab means for collecting an electric current, one of the current collector tab means electrically connecting the terminal edge of one of the positive



and negative electrodes to the case, the other current collector tab means electrically connecting the terminal edge of the other of the positive and negative electrodes to the sealing cover;

the one current collector tab means comprising a first collector tab comprising a first current collecting tab welded to the terminal edge of one of the electrodes and a first lead tab integral with the first current collecting tab and welded to the sealing cover, and a second current collector tab consisting of a second lead tab welded and electrically connected to the first lead tab of the first current collector tab.

5,006,427

STORAGE BATTERY

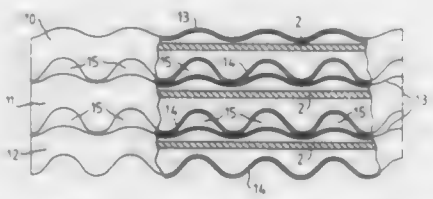
Harald Böhm, Glashütten; Wolfgang Jütting, Ulm, and Jork Bretting, Thalfingen, all of Fed. Rep. of Germany, assignors to AEG Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jan. 9, 1990, Ser. No. 462,406

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1989, 3900381

Int. Cl.[5] H01M *10/50*

U.S. Cl. 429—101 **21 Claims**



1. In a storage battery having first and second individual plate-shaped cells, each cell having (1) a positive pole and a negative pole, (2) positive and negative electrodes disposed between the poles and respectively contacting the positive pole and the negative pole, and (3) an electrolyte between the electrodes, the improvement wherein:

said first cell overlies said second cell;

one of the positive pole and the negative pole of each of said first and second cells is a first electrically conductive wall having a first polarity and the other of the positive pole and the negative pole of each of said first and second cells is a second electrically conductive wall having a second polarity; and

said first wall of said first cell has first electrically conductive projections which contact said second wall of said second cell, so that said first projections electrically connect said first wall of said first cell to said second wall of said second cell and define means, in the form of cooling channels between said first wall of said first cell and said second wall of said second cell, for carrying a cooling medium between said first and second cells.

5,006,428

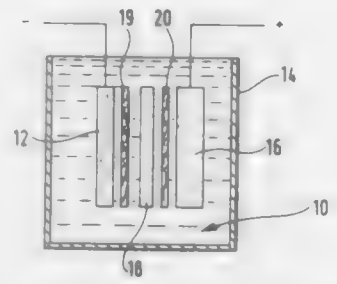
GETTER ELECTRODE AND IMPROVED ELECTROCHEMICAL CELL CONTAINING THE SAME

Franz Goebel, Sudbury, and Sohrab Hossain, Marlboro, both of Mass., assignors to Yardney Technical Products, Inc., Pawcatuck, Conn.

Filed Nov. 28, 1989, Ser. No. 442,033

Int. Cl.[5] H01M *2/16*

U.S. Cl. 429—101 **9 Claims**



5. An improved dendrite formation-resistant electrochemical cell employing an alkali metal anode, said cell also including a cathode spaced from said anode and electrolyte communicating with said anode and cathode, said cell including a getter electrode disposed between said anode and cathode and shielded by separators between said getter electrode and said anode and cathode, said getter electrode comprising active material selected from the group consisting of carbon, graphite and mixtures thereof disposed as a thin low rate capability layer on an inert substrate.

5,006,429

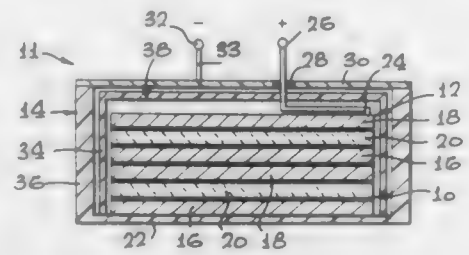
EXTERNALLY HEATED THERMAL BATTERY

Louis Pracchia; Ronald F. Vetter, and Darwin Rosenlof, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 24, 1989, Ser. No. 401,200

Int. Cl.[5] H01M *6/36, 4/36*

U.S. Cl. 429—112 **1 Claim**



1. A thermal battery adapted to be activated only by external heating, which comprises at least one cell having

an anode selected from the group consisting of a lithium-aluminum alloy, a lithium-boron alloy, a lithium-silicon alloy, calcium and magnesium,

a cathode selected from the group consisting of iron disulfide, calcium chromate and silver chromate, and

an electrolyte comprising a mixture of 31.8% lithium nitrate and 58.4% sodium nitrite containing some 9.8% lithium chloride.

said electrolyte positioned between said anode and said cathode, said electrolyte being inactive at ambient temperature but, being activated by melting at a predetermined temperature by external heating.

5,006,430

ELECTROCHEMICAL GENERATORS COMPRISING A POSITIVE ELECTRODE AND AN ELECTROLYTE BASED ON VITREOUS MATERIALS

Michel J. Duclot, Theys, and Thierry Pagnier, Grenoble, both of France, assignors to Centre National De La Recherche Scientifique, Paris, France

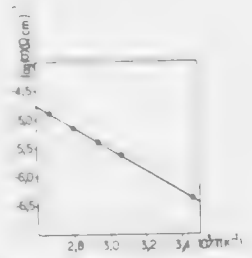
PCT No. PCT/FR84/00105, § 371 Date Dec. 10, 1984, § 102(e) Date Dec. 10, 1984, PCT Pub. No. WO84/04206, PCT Pub. Date Oct. 25, 1984

PCT Filed Apr. 13, 1984, Ser. No. 691,188

Claims priority, application France, Apr. 15, 1983, 83 06237

Int. Cl.[5] H01M *6/18*

U.S. Cl. 429—191 **16 Claims**



1. Electrochemical generators, characterized in that they comprise

a positive electrode based on a vitreous material of general formula I

$$A_x(1-y)\ F_aX_b\ y\ M_cX_c \qquad (I)$$

in which:

F_aX_b represents a network forming system and

M_cX_d a so-called active system, that is to say capable of capturing or providing electrons, in which:

F is an element selected from among Si, Ge, B, P, Al, Nb, As or Sb;

M represents a transition metal which can exist in several degrees of oxidation from 0 to +7 and existing in the vitreous material of the positive electrode in at least two of the degrees of oxidation that it may present;

X represents oxygen, sulfur or selenium;

a, b, c and d are indices corresponding to the stoichiometry of the elements in the forming system or in the active system concerned;

y is a number comprised between 0 and 1 (these two values being excluded);

A represents a monovalent element;

x is nil or represents a number not nil of which the value depends on the number of electrons and/or electron sites available in the materials;

a negative electrode based on a material selected from the group comprising the element A or a material capable of separating it,

an electrolyte formed from a vitreous material, which can transport the A^+ ions and possessing a former common with the vitreous material of the positive electrode.

5,006,431

SOLID STATE POLYMER ELECTROLYTE FOR BATTERIES

Henry F. Hope, and Stephen F. Hope, both of c/o Hope Industries 5701 Morland Rd., Willow Grove, Pa. 19090

Filed Feb. 23, 1989, Ser. No. 313,993

Int. Cl.[5] H01M *6/18*

U.S. Cl. 429—192 **8 Claims**

1. A solid state polymeric electrolyte composition for batteries wherein the electrolyte contains an epoxide based polymer component, and

said epoxide component is cycloaliphatic epoxide.

5,006,432

METHOD FOR MANUFACTURING A SHADOW MASK

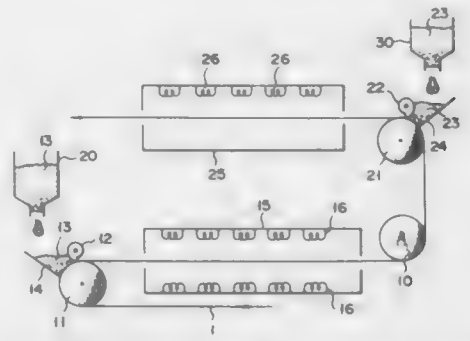
Seiji Sagou, and Yasuhisa Ohtake, both of Fukaya, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 24, 1988, Ser. No. 261,617

Claims priority, application Japan, Oct. 28, 1987, 62-272118

Int. Cl.[5] G03F *7/16*

U.S. Cl. 430—23 **7 Claims**



1. A method for manufacturing a shadow mask composed of a thin metal mask sheet having a plurality of apertures to allow three electron beams to be landed on corresponding phosphor layers on a phosphor screen, comprising the steps of:

(a) providing a band-like continuous thin metal sheet having first and second major surfaces;

(b) forming a first photosensitive resin layer on said first major surface by coating a first photosensitive resin solution on said fist major surface with said first major surface directed upward, and drying the coated first resin solution, said coating and drying being carried out while maintaining the metal sheet substantially horizontal;

(c) turning the coated, dried metal sheet so as to direct said second major surface upward;

(d) forming a second photosensitive resin layer on said second major surface by coating a second photosensitive resin solution on said second major surface with said second major surface directed upward, and drying the coated second resin solution, said coating and drying being carried out while maintaining the metal sheet substantially horizontal;

(e) forming opening patterns, corresponding to said apertures, in said first and second resin layers by subjecting the layers to an exposure and development process; and

(f) forming said apertures in said metal sheet by subjecting the metal sheet with said resin layer having the openings to an etching treatment.

5,006,433

PRINTING PLATE PRECURSORS FOR ELECTROPHOTOGRAPHIC PLATE-MAKING PURPOSES

Hiroaki Yokoya, and Hiromichi Tachikawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 26, 1989, Ser. No. 370,973

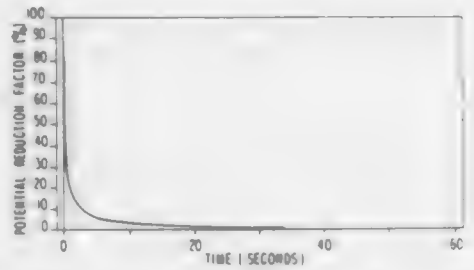
Claims priority, application Japan, Jun. 27, 1988, 63-158365

Int. Cl.[5] G03G *13/28, 5/00;* **G03C** *1/725, 1/73*

U.S. Cl. 430—49 **16 Claims**

1. A printing plate precursor for electrophotographic printing plate making purposes in which the printing plate is made by imagewise exposure, forming a toner image, and then removing a photoconductive layer in the non-image-forming parts other than the toner image parts, said printing plate precursor comprising at least a photoconductive layer which

comprises an organic photoconductive compound and a binder resin on a support wherein the binder resin for the photoconductive layer is a copolymer comprising at least one vinyl ester



compound or allyl ester compound, each of which has an aromatic ring, as a monomer component, and at least one vinyl polymerizable monomer which has at least one acidic functional group as a component monomer.

5,006,434

PHOTOHARDENABLE ELECTROSTATIC ELEMENT WITH IMPROVED ENVIRONMENTAL LATITUDE

Graciela B. Blanchet-Fincher; Catherine T. Chang, and Curtis R. Fincher, Jr., all of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 12, 1989, Ser. No. 351,361

Int. Cl.[5] G03G *13/28; G03C 1/725, 1/73, 1/735*

U.S. Cl. 430—49 **30 Claims**

1. An improved photohardenable electrostatic master having reduced temperature and humidity sensitivity comprising

(1) an electrically conductive substrate, and

(2) a layer of photohardenable composition consisting essentially of

(a) at least two organic polymeric binders,

(b) at least one monomeric compound having at least one ethylenically unsaturated group, and

(c) a photoinitiator or photoinitiator system that activates polymerization of the ethylenically unsaturated monomer upon exposure to actinic radiation, the improvement wherein the photohardenable composition contains at least one binder having a Tg greater than 80° C. and at least one binder having a Tg less than 70° C. such that the shift in transit time (a_T) of the photohardenable layer in the range 30% ≦ relative humidity ≦ 60% and 60° F. (15.6° C.) ≦ temperature ≦ 80° F. (26.7° C.) is 15 or less.

5,006,435

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER WITH ADDITIVE IN CHARGE GENERATING LAYER

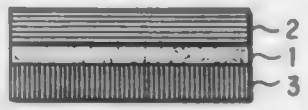
Yutaka Akasaki; Hidekazu Aonuma; Kazuya Hongo; Katsuhiro Sato; Katsumi Nukada, and Terunmi Marumo, all of Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 4, 1989, Ser. No. 416,778

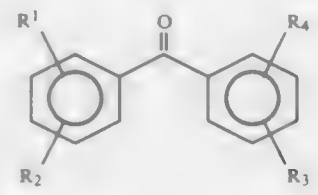
Claims priority, application Japan, Oct. 5, 1988, 63-249736; Oct. 5, 1988, 63-249737; Oct. 5, 1988, 63-249740; Oct. 5, 1988, 63-249741

Int. Cl.[5] G03G *5/047, 5/09*

U.S. Cl. 430—58 **4 Claims**

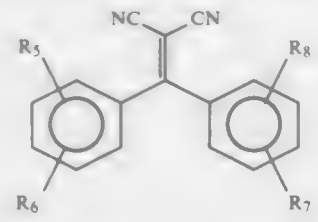


1. An electrophotographic photosensitive member having a charge generating layer and a charge transporting layer successively formed on a support, wherein the charge generating layer contains a charge generating pigment having a hole transporting property and at least one of the compounds represented by following formulae (Ia), (Ib), (Ic) and (Id) in a binder resin;



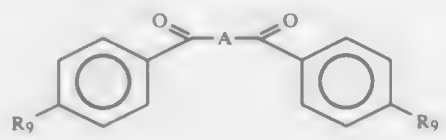
(Ia)

wherein R_1, R_2, R_3, and R_4 each represents a hydrogen atom, an alkyl group, a halogen atom, a nitro group, a cyano group, a benzyl group, a substituted or unsubstituted aryl group, an alkoxycarbonyl group, an acyl group, an aryl-substituted boronyl group, an aralkyl group, a substituted amino group, an aryloxy group, an aralkyloxy group, an aryloxycarbonyl group or an aralkyloxycarbonyl group, or wherein R_1 and R_2 or R_3 and R_4, when combined together, may form a ring:



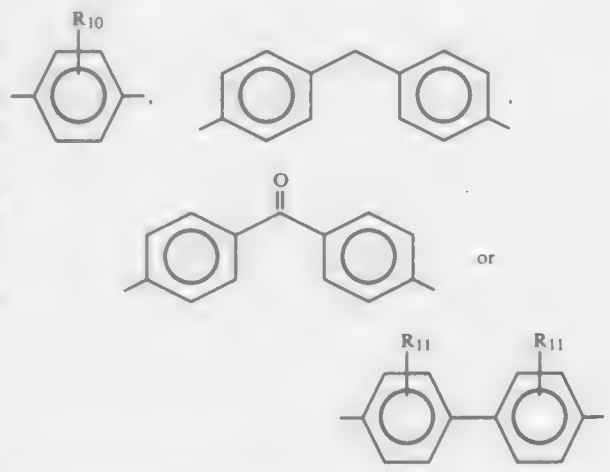
(Ib)

wherein R_5, R_6, R_7, and R_8 each represents a hydrogen atom, an alkyl group, a halogen atom, a nitro group, a cyano group, a substituted or unsubstituted aryl group, an alkoxycarbonyl group, an acyl group, an aryl-substituted boronyl group, an aralkyl group, a substituted amino group, an aryloxy group, an aralkyloxy group, an aryloxcarbonyl group or an aralkyloxycarbonyl group, or wherein R_5 and R_6 or R_7 and R_8, when combined together, may form a ring;

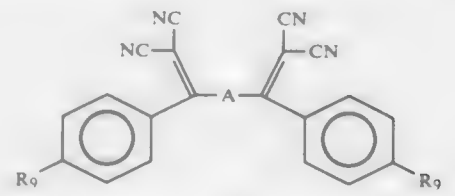


(Ic)

wherein A represents



wherein R_{10} represents a hydrogen atom or an alkyl group, and R_{11} represents a hydrogen atom, a nitro group or an alkyl group, and R_9 represents a hydrogen atom, a nitro group, an alkyl group, an alkoxycarbonyl group, a halogen atom, an aryl group, an aryloxy group or a cyano group; and



(Id)

wherein A and R_9 are as defined above for the compounds of formula (Ic), wherein at least one of the compounds shown by formulae (Ia), (Ib), (Ic), and (Id) is incorporated in an amount of from 0.01 to 2 equivalents to the charge generating pigment having the positive hole transporting property.

5,006,436

UV CURABLE COMPOSITIONS FOR MAKING TENTABLE SOLDER MASK COATING

Paul L. K. Hung, and Kenneth K. S. Tseng, both of Edison, N.J., assignors to Atochem North America, Inc., Philadelphia, Pa.

Filed Sep. 20, 1988, Ser. No. 247,052

Int. Cl.[5] G03F *7/029;* **G03C** *1/68, 1/71*

U.S. Cl. 430—284 **13 Claims**

1. A UV curable, aqueous alkaline developable, solder-mask composition comprising:

(a)

(i) 10–50% by wt. of a urethane acrylate compound which is obtained by reacting substantially equal molar quantities of an aliphatic or cycloaliphatic diisocyanate, and a hydroxyalkyl acrylate, with an alkylene polyol having 3–6 hydroxyl groups, and 3–6 carbon atoms, with at least one mole of a dicarboxylic acid anhydride per mole of said alkylene polyol,

(ii) 5–40% by wt. of an aromatic urethane diacrylate,

(iii) 2–30% by wt. of an aliphatic or cycloaliphatic urethane diacrylate,

(b) 5–30% by wt of a thermally cross-linkable polyunsaturated compound;

(c) 4–60% by wt. of at least one reactive monomer diluent;

(d) 0.5–10% by wt. of a photoinitiator; and

(e) 0.2–5% by wt. of a free radical thermal initiator wherein the urethane acrylate compound has terminal ethylenic unsaturation.

5,006,437

METHOD OF IMAGE FORMATION USING A SILVER AHLIDE COLOR PHOTOGRAPHIC MATERIAL

Tomomi Yoshizawa, and Nariko Kimura, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Aug. 30, 1989, Ser. No. 400,494

Claims priority, application Japan, Sep. 2, 1988, 63-220757

Int. Cl.[5] G03C *7/00*

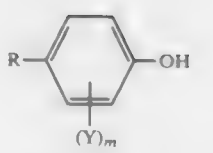
U.S. Cl. 430—359 **9 Claims**

1. A process for forming a color image comprising;

imagewise exposure of a photographic material which comprises a light-sensitive silver halide emulsion layer containing a 2,5-diacylaminophenol-based cyan coupler at a ratio of over 50 mol % of the total cyan coupler in the photographic material and compound selected from a group consisting of Formula V and Formula VI:

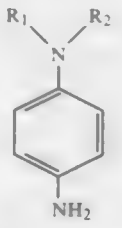
$$R_{16}—NHSO_2—R_{17} \qquad V$$

wherein R_{16} and R_{17} independently represent an alkyl or aryl group which may be substituted;



VI

wherein R represents an alkyl, alkoxycarbonyl, arylsulfonylamino or alkylsulfonylamino group, Y represents a substituent; and color developing the exposed photographic material with a color developer containing a color developing agent represented by Formula I at a ratio of over 55 mol % of total developing agent in the color developer.



I

wherein R_1 and R_2 independently represent a substituted or unsubstituted alkyl group, and R_1 and R_2 may link together to form a ring.

5,006,438

PROCESS FOR PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS

Takatoshi Ishikawa; Makoto Umemoto; Nobuo Sakai, and Genichi Furusawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

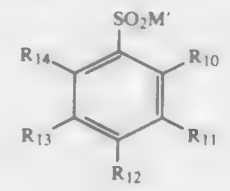
Continuation of Ser. No. 308,595, Feb. 10, 1989, abandoned. This application May 3, 1990, Ser. No. 518,266

Claims priority, application Japan, Feb. 10, 1988, 63-29621

Int. Cl.[5] G03C *7/00*

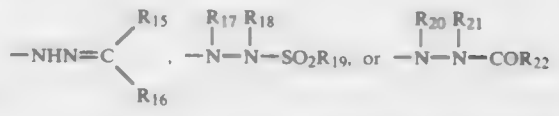
U.S. Cl. 430—372 **12 Claims**

1. A process for processing a silver halide color photographic material, which comprises processing an image-wise exposed silver halide color photographic material containing at least one compound represented by formula (IV):



(IV)

wherein M' represents an atom or an atomic group which forms an inorganic salt or an organic salt,



wherein R_{15} and R_{16}, which may be the same or different, each represents a hydrogen atom or an aliphatic group, aromatic group or heterocyclic group, and R_{15} and R_{16} may combine with each other to form a 5-membered to 7-membered ring; R_{17}, R_{18}, R_{20}, and R_{21}, which may be the same or different, each represent a hydrogen atom, aliphatic group, aromatic group or heterocyclic group; R_{17}, R_{18}, R_{20}, and R_{21} further represent an acyl group, an alkoxycarbonyl group, a sulfonyl

group, a ureido group, or a urethane group; at least one of R_{17} and R_{18} and at least one of R_{20} and R_{21} is a hydrogen atom;

R_{19} and R_{22} each represents a hydrogen atom or an aliphatic group, aromatic group or heterocyclic group; R_{22} further represents an alkylamino group, an arylamino group, an alkoxy group, an aryloxy group, an acyl group, an alkoxycarbonyl group, or an aryloxycarbonyl group;

at least two of R_{17}, R_{18}, and R_{19} may combine with each other to form a 5-membered to 7-membered ring, and at least two of R_{20}, R_{21}, and R_{22} may combine with each other to form a 5-membered to 7-membered ring;

R_{10}, R_{11}, R_{12}, R_{13}, and R_{14}, which may be the same or different, each represents a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group, a halogen atom, $-SR_8$, $-OR_8$,

$$-\underset{\displaystyle R_9}{\overset{}{\underset{|}{N}}}-R_3,$$

an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a sulfonyl group, a sulfonamide group, a sulfamoyl group, a ureido group, a urethane group, a carbamoyl group, a sulfo group, a carboxy group, a nitro group, a cyano group, an alkoxalyl group, an allyoxalyl group, a sulfonyloxy group, $-P(R_8)_3$,

$$-\overset{O}{\overset{\|}{P}}(R_8)_2, \quad -\overset{S}{\overset{\|}{P}}(R_8)_2,$$

$-P(OR_8)_3$, or a formyl group; wherein R_8 and R_9 each represents a hydrogen atom, an aliphatic group, an alkoxy group, or an aromatic group, with a color developer prepared by diluting a concentrated color developer composition containing from 90 ml/liter to 600 ml/liter of benzyl alcohol and from 0.07 mol/liter to 0.5 mol/liter of an aromatic primary amine color developing agent, said concentrated color developer composition after storage contains a compound formed by the reaction of benzyl alcohol and the color developing agent which adversely affects the storage stability of the processed photographic material, and the compound of formula (IV) prevents staining of the processed photographic material due the presence of the compound formed by the reaction of benzyl alcohol and the color developing agent.

5,006,439

PHOTOGRAPHIC REVERSAL PROCESS USING A COLOR DEVELOPING AGENT IN THE BLACK-AND-WHITE DEVELOPER

Ubbo Wernicke, Cologne, and Herbert Mitzinger, Lindlar-Remshagen, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 13, 1989, Ser. No. 434,414

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1988, 3839573

Int. Cl.[5] G03C *5/50, 7/30*

U.S. Cl. 430—379 **8 Claims**

1. A photographic reversal process for the production of positive photographic images by imagewise exposure of a photosensitive material containing at least one silver halide emulsion layer and color couplers comprising the steps of

black-and-white first development of said imagewise exposed photosensitive material in a first development bath comprised of

(a) a developer consisting of one or more N,N-dialkyl-p-phenylene derivatives,

(b) at least one tin (II) complex compound, and

(c) at least one compound which prevents the color couplers from reacting with a developer oxidation product in the first development step,

said first development bath having a pH value of less than 8,

transferring said black-and-white developed material from said first development bath to a color development bath without any intermediate steps,

color development of the black-and-white developed material in the absence of any intermediate steps in said color development bath containing a developer consisting of one or more N,N dialkyl-p-phenylenediamine derivatives at a pH value of greater than 10, and

chemically fogging the material in said color development step in the presence of said tin (II) complex compound,

and bleaching, fixing, washing or stabilizing and drying the developed photosensitive material.

5,006,440

PROCESS FOR STABILIZING PHOTOGRAPHIC SILVER IMAGES

Werner Berthold, Leverkusen, and Hans Öhlschläger, Bergisch Gladbach, both of Fed. Rep. of Germany, assignors to Agfa Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 21, 1990, Ser. No. 586,515

Int. Cl.[5] G03C *5/24*

U.S. Cl. 430—429 **2 Claims**

1. A process for stabilizing a silver image produced by imagewise exposure, development and fixing of a photographic material containing at least one silver halide emulsion layer, characterized in that, after fixing, the photographic material is subjected to the treatment by a stabilizing bath which contains a compound corresponding to general formula I

$$R_1-(NHCO-R_2-R_3)_m \qquad (I)$$

in which

R_1 represents a nitrogen-containing 5- or 6-membered heterocycle,

R_2 represents a straight or branched C_{1-8} alkylene radical,

R_3 represents Cl or Br and

m=1 or 2.

5,006,441

LIQUID DEVELOPER FOR ELECTROSTATIC PHOTOGRAPHY

Eiichi Kato, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 27, 1989, Ser. No. 457,914

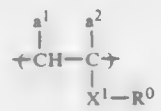
Claims priority, application Japan, Dec. 27, 1988, 63-328013; Jan. 13, 1989, 1-4618; Jan. 13, 1989, 1-4619

Int. Cl.[5] G03G *9/12*

U.S. Cl. 430—114 **12 Claims**

1. A liquid developer for electrostatic photography comprising a resin dispersed in a non-aqueous solvent having an electric resistance of at least 10^9 Ω cm and a dielectric constant of not higher than 3.5, wherein the dispersed resin is a copolymer resin obtained by polymerizing a solution containing at least one monofunctional monomer (A) which is soluble in the aforesaid non-aqueous solvent but becomes insoluble therein after being polymerized and at least one resin which is a polymer having at least a recurring unit represented by following formula (I), a part of the polymer being crosslinked, a polymerizable carbon to carbon double bond group copolymerizable with said monomer (A) being bonded to only one terminal of at least one polymer main chain thereof, and said resin being soluble in the aforesaid non-aqueous solvent;

$$\text{(I)}$$



wherein X^1 represents —COO—, —OCO—, $—CH_2OCO—$, $—CH_2COO—$, —O— or $—SO_2—$; R^0 represents a hydrocarbon group having from 6 to 32 carbon atoms; and a^1 and a^2, which may be the same or different, each represents a hydrogen atom, a halogen atom, a cyano group, a hydrocarbon group having from 1 to 8 carbon atoms, —COO—Z^1 or —COO—Z^1 bonded via a hydrocarbon group having from 1 to 18 carbon atoms (wherein Z^1 represents a hydrogen atom or a hydrocarbon group having from 1 to 18 carbon atoms).

5,006,442

METHOD OF FORMING A DISCONTINUOUS COVERING LAYER ON RADIATION SENSITIVE DEVICES

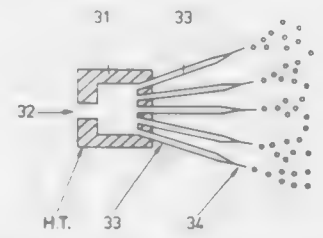
Graham P. Cooper, Bramley, and Reginald T. Jones, Chandlers Ford, both of United Kingdom, assignors to Vickers PLC, London, United Kingdom

Filed May 31, 1989, Ser. No. 359,373

Claims priority, application United Kingdom, Jun. 3, 1988, 8813154

Int. Cl.[5] G03C *1/495, 1/76, 1/52*

U.S. Cl. 430—168 **8 Claims**



1. A method of producing a radiation sensitive device which comprises

(i) providing a substrate carrying a radiation sensitive layer and

(ii) applying to the surface of the radiation sensitive layer a discontinuous covering layer of material by dissolving the material in a solvent to produce a liquid having a conductivity of from 10^3 to 10^9 pSm^1 and directing said liquid towards the radiation sensitive layer whilst applying or inducing in said liquid a potential of at least 5 kV relative to the substrate so that the liquid forms one or more ligaments which disrupt into drops which are deposited on the radiation sensitive layer, said potential being the sole disruptive force acting on said liquid.

5,006,443

RADIATION SENSITIVE REPRODUCTION COMPOSITION AND ELEMENT WITH PERFLUOROALKYL GROUP CONTAINING POLYMER

Werner H. Müller, E. Greenwich, R.I., assignor to Hoechst Aktiengesellschaft, Frankfurt/Main, Fed. Rep. of Germany

Continuation of Ser. No. 742,393, Jun. 7, 1985, abandoned. This application Jan. 7, 1988, Ser. No. 141,531

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1984, 3421448

Int. Cl.[5] G03C *7/023, 7/032, 7/033*

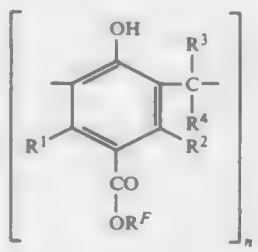
U.S. Cl. 430—192 **9 Claims**

1. A radiation-sensitive reproduction composition, which, after image-wise irradiation, is capable of being developed by washing out with an aqueous developing solution comprising an admixture of:

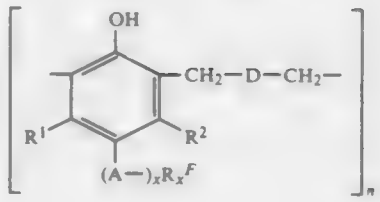
from 5 to 80% of at least one radiation-sensitive compound present in an amount sufficient to alter the solubility of the composition in an aqueous developer solution after irradiation; and

from 20 to 95% of at least one binder comprising a perfluoroalkyl group-containing polymer comprising repeating units selected from the group consisting of Formulae Ia, IIa, IIIa, IVa and VIa:

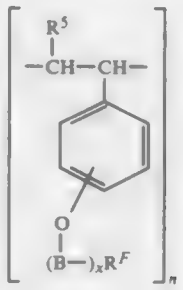
(Ia)



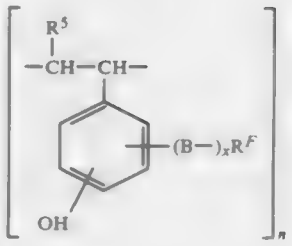
(IIa)



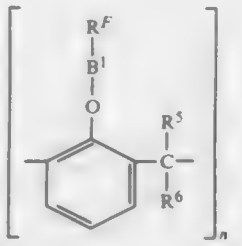
(IIIa)



(IVa)



(VIa)



wherein

R^1 and R^3 are H, C_1 to C_6 alkyl, R^F, OH or C_1 to C_6 alkoxy,

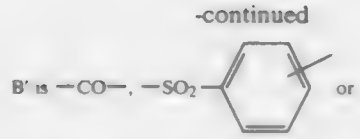
R^3 and R^4 are C_1 to C_6 alkyl, H, phenyl or R^F,

R^5 and R^6 are H, C_1 to C_6 alkyl, phenyl or naphthyl,

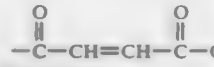
A is $-\overset{O}{\overset{\|}{C}}-O-$ or $-\overset{O}{\overset{\|}{C}}-R^F$

B is $-\overset{O}{\overset{\|}{C}}-$ or $-\overset{O}{\overset{\|}{C}}-CH=CH-\overset{O}{\overset{\|}{C}}-O-$.

-continued



B' is —CO—, —SO_2— or



-$CH(CH_3)COO$-,

D is phenylene, biphenylene or biphenylene bridged by an ether, thioether or carbonyl group,

R^F is $F(C_wF_{2w})(-CH_2)_z$ or $F(C_{w-1}F_{2w-2})$-CF=CH selected from the group consisting of (1) there being no linking bridging groups and (2) there being linking ether bridging groups between difluoromethylene groups,

n is 5 to 10,000,

w is 5 to 15,

x is 0 to 1 and

z is 0 to 5

each unit comprising at least one R^F group,

said polymer present in an amount sufficient to obtain a film forming coating and to permit aqueous development of the image-wise exposed composition.

3. A reproduction composition as claimed in claim 1 wherein said one radiation-sensitive compound is a polymerizable, perfluoroalkyl group-containing compound having at least two ethylenically unsaturated end groups, and said layer further comprises at least one photoinitiator.

4. A reproduction composition as claimed in claim 1 wherein said one radiation-sensitive compound is a 1,2-naphthoquinone diazide compound containing at least one perfluoroalkyl group as a substituent.

5,006,444

SILVER HALIDE PHOTOGRAPHIC MATERIAL

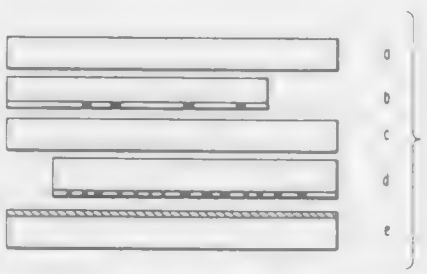
Hisashi Okada, and Morio Yagihara, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 9, 1990, Ser. No. 564,822

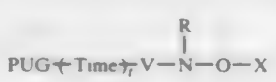
Claims priority, application Japan, Aug. 9, 1989, 1-205885

Int. Cl.[5] G03C *1/06*

U.S. Cl. 430—264 **18 Claims**



1. A silver halide photographic material comprising at least one compound represented by formula (I):



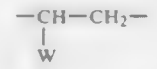
(I)

wherein X represents a hydrogen atom or a group which can become a hydrogen atom by hydrolytic action, Time represents a divalent connecting group, t represents 0 or 1, PUG represents a development inhibitor, V represents a carbonyl group,

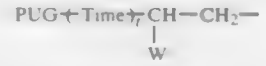
a sulfonyl group, a sulfoxy group,



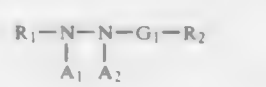
(R_0 represents an alkoxy group or an aryloxy group), an iminomethylene group, a thiocarbonyl group or



represents an electron attractive group), R represents a hydrogen atom, a substituted or unsubstituted aliphatic group, a substituted or unsubstituted aromatic group, or

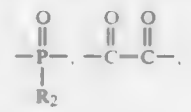


PUG, Time, t and W are as defined above); and at least one compound represented by formula (II):



(II)

wherein R_1 represents a substituted or unsubstituted aliphatic group or a substituted or unsubstituted (aromatic group, R_2 represents a hydrogen atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, an amino group, a hydrazino group, a carbamoyl group or an oxycarbonyl group, each of which may be substituted, G_1 represents a carbonyl group, a sulfonyl group, a sulfoxy group,



a thiocarbonyl group, or an iminomethylene group, A_1 and A_2 each represents a hydrogen atom, or one of A_1 and A_2 represents a hydrogen atom while the other represents a substituted or unsubstituted alkylsulfonyl group, a substituted or unsubstituted arylsulfonyl group, or a substituted or unsubstituted acyl group, said at least one compound of formula (I) and said at least one compound of formula (II) being present in the same layer or in different layers selected from a photographic emulsion layer and a hydrophilic colloid layer.

5,006,445

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Morio Yagihara; Hisashi Okada, and Kazunobu Katoh, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 26, 1989, Ser. No. 343,441

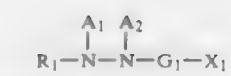
Claims priority, application Japan, Apr. 28, 1988, 63-105682

The portion of the term of this patent subsequent to Nov. 20, 2007, has been disclaimed.

Int. Cl.[5] G03C *1/08, 1/34*

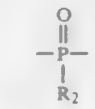
U.S. Cl. 430—264 **12 Claims**

1. A silver halide photographic material comprising a support having thereon at least one hydrophilic colloid layer, at least one of which is a silver halide photographic emulsion layer, wherein at least one of said silver halide emulsion layers or other hydrophilic colloid layers contains a compound represented by formula (I):

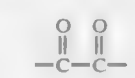


(I)

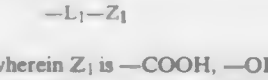
wherein, A_1 and A_2 both represent hydrogen atoms or one represents a hydrogen atom and the other a sulfonyl group or an acyl group, R_1 represents an aliphatic group, an aromatic group or a heterocyclic group, G_1 represents a carbonyl group, a sulfonyl group, a sulfoxy group, a



group wherein R_2 represents an alkoxyl group or an aryloxy group, a



group or an iminomethylene group, X_1 is represented by formula (a):



(a)

wherein Z_1 is —COOH, —OH, —SH or —NHR_3 (wherein R_3 is a hydrogen atom, an alkyl group, an aryl group, a heterocyclic group, a —COR_4 group or a —SO_2R_4 group wherein R_4 is a hydrogen atom, an alkyl group, an aryl group or a heterocyclic group) and L_1 is a divalent organic group whereby G_1, L_1 and Z_1 are able to form a ring structure when Z_1 attacks G_1 nucleophilically; and at least one of R_1 and X_1 has a silver halide adsorption accelerating group represented by Y_1—$(L_2)_l$—(wherein Y_1 is a ring-like thioamido group or a nitrogen-containing heterocyclic group, L_2 is a divalent linking group, and l is 0 or 1).

5,006,446

MEDIUM AND PROCESS FOR IMAGE FORMATION

Masahiro Haruta, Funabashi; Hiroshi Matsuda; Hirohide Munakata, both of Yokohama, and Yukuo Nishimura, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 27,050, Mar. 23, 1987, Pat. No. 4,818,665, which is a continuation of Ser. No. 710,686, Mar. 12, 1985, abandoned. This application Jul. 20, 1988, Ser. No. 221,638

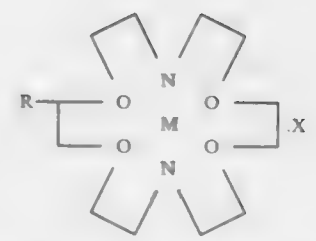
Claims priority, application Japan, Mar. 14, 1984, 59-47183; Mar. 14, 1984, 59-47184; Mar. 14, 1984, 59-47185; Mar. 14, 1984, 59-47186; Mar. 14, 1984, 59-47187; Mar. 14, 1984, 59-47188

Int. Cl.[5] G03C *1/725, 1/735*

U.S. Cl. 430—270 **7 Claims**

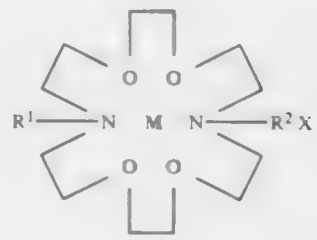
1. A medium for image formation which comprises a monomolecular film or a monomolecular built-up film of a metal chelate compound having a metal ion reducibly by the action of active energy to the metal on a substrate, said film being capable of image formation by reduction of said reducible metal ion by signals of said active energy, wherein the metal ion by signals of said active energy, wherein the metal chelate is selected from the group consisting of:

(2-a)



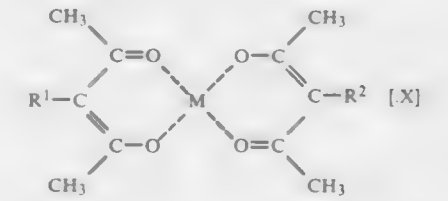
wherein M is Ag^+, Cu^{++}, or Pd^{++}; R is alkyl of 10 to 30 carbon atoms; and X is NO_3, Cl^- or $SO_4^=$;

(2-b)



wherein M is Ag^+, Cu^{++} or Pd^{++}; R^1 is hydrogen, methyl, or ethyl; R^2 is alkyl or acyl each having 10 to 30 carbon atoms; and X is NO_3, Cl or $SO_4^=$; and

(2-c)



wherein M is divalent Cu, Co, Fe, Mn, Ni, Zn, Pb, or Pd; R^1 is hydrogen, methyl or ethyl; R^2 is alkyl or an alkylcarboxylic acid group, each alkyl having 10 to 30 atoms.

5,006,447

PHOTOSENSITIVE RESIN PLATE FOR FLEXOGRAPHY

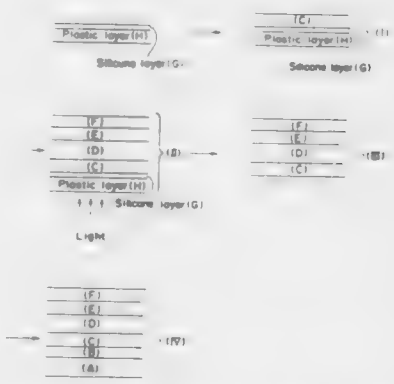
Yasushi Umeda, Kusatsu, and Hisao Satoh, Ibaragi, both of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Apr. 13, 1989, Ser. No. 337,403

Claims priority, application Japan, Apr. 13, 1988, 63-90739

Int. Cl.[5] G03F *7/028, 7/11*

U.S. Cl. 430—272 **12 Claims**



1. A photosensitive resin plate for flexographic printing, comprising;

(A) a substrate comprising a polyester film and a polyure-

thane or polyolefin foam layer on one side of said polyester film;
(B) an adhesive layer on the foam layer of said substrate;
(C) a polyurethane dried film on said adhesive layer;
(D) a photosensitive sheet which is provided on the polyurethane layer and is chemically bonded to the polyurethane layer, comprising a polymer having rubber elasticity, an addition polymerizable unsaturated monomer and a polymerization initiator;
(E) a slip layer on the photosensitive layer which is dissolvable in a developing solution used to develop the photosensitive layer; and
(F) a protective layer on the slip layer.

7. A process for preparing the photosensitive resin plate for flexographic printing of claim 1 comprising;
forming a polyurethane layer on a plastic layer on which a silicone releasing agent is coated,
placing thereon a three layers structure comprising of a photosensitive layer, then a slip layer and finally a protective layer,
exposing to light from the direction of the plastic layer,
releasing the plastic layer, and
adhering a substrate comprising a polyester film and a polyurethane or polyolefin foam layer on one side of the polyester through an adhesive layer.

5,006,448

PHOTOGRAPHIC MATERIAL AND PROCESS

Richard P. Szajewski; Paul A. Burns; Jerrold N. Poslusny, all of Rochester; Norma B. Platt, Ontario, and Timothy D. Norden, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 15, 1989, Ser. No. 366,730
Int. Cl.[5] G03C *1/08, 1/46*
U.S. Cl. 430—505 **15 Claims**

1. A photographic recording material comprising a support having thereon at least two light sensitive silver halide emulsion layers and a compound capable of releasing a development inhibitor upon exposure and process, wherein the compound has the structural formula:

CAR—(TIME)$_n$—INH—Q

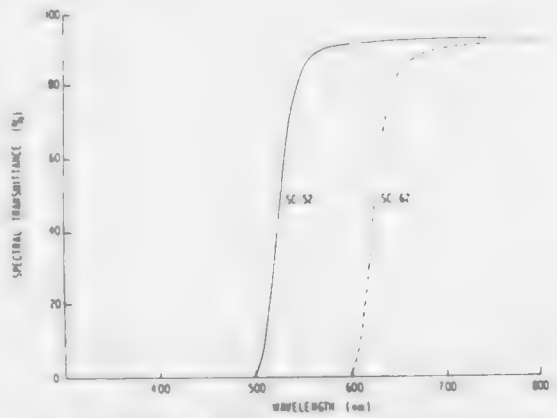
wherein:
CAR is a carrier moiety from which (TIME)$_n$—INH—Q is released during development;
TIME is a timing group;
INH—Q together constitute a development inhibitor moiety which is an oxazole, thiazole, diazole, oxadiazole, oxathiazole, thiatriazole, benzotriazole, tetrazole, benzimidazole, indazole, isoindazole, mercaptotetrazole, selenotetrazole, mercaptothiazole, selenobenzothiazole, mercaptobenzoxazole, selenobenzoxazole, mercaptobenzimidazole, selenobenzimidazole, benzodiazole, mercaptooxadiazole, or benzisodiazole with the proviso that INH does not comprise a monocyclic triazole moiety;
Q comprises from 1 to 4 thioether moieties, in each of which the sulfur atom is directly bonded to a saturated carbon atom but is not directly bonded to an INH heterocyclic ring; and
n is 0, 1, or 2.

5,006,449

SILVER HALIDE BLACK AND WHITE PHOTOGRAPHIC MATERIAL

Ichizo Toya, Kanagawa; Kunioki Ohmura, Tokyo, and Masaki Okazaki, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 128,304, Dec. 3, 1987, abandoned. This application Jun. 13, 1989, Ser. No. 368,944
Claims priority, application Japan, Dec. 3, 1986, 61-288099
Int. Cl.[5] G03C *1/12, 5/02, 5/08*
U.S. Cl. 430—506 **18 Claims**



1. A silver halide black and white photographic material for printing a developed transparent color photographic material, comprising a support having thereon at least one light-sensitive silver halide emulsion layer, wherein each of said at least one emulsion layer is composed of a silver halide emulsion which maintains a spectral sensitivity substantially only between 520 nm and 620 nm and contains substantially no iodine, and wherein the spectral sensitivities of the emulsion layers of the silver halide black and white photographic material are substantially only between 520 nm and 620 nm.

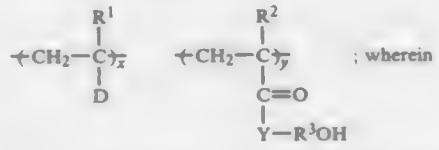
5,006,450

MORDANT POLYMER PHOTOGRAPHIC ELEMENT CONTAINING

Ronda E. Factor, Rochester, and Ignazio S. Ponticello, Pittsford, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

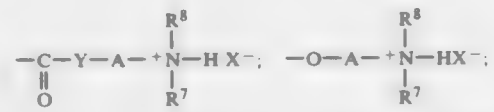
Filed Nov. 15, 1989, Ser. No. 437,003
Int. Cl.[5] G03C *1/06*
U.S. Cl. 430—518 **6 Claims**

1. A photographic element comprising a support, a silver halide emulsion layer, and a layer comprising a water-soluble dye and a polymer comprising polymerized recurring units according to the structures:



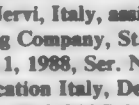
; wherein

D represents a substituted or unsubstituted heterocyclic group containing an amine acid addition salt component or



;

R^7 and R^8, each independently, represents H, alkyl of 1 to 20 carbons, cycloalkyl of 3 to 8 carbons, aryl, of 6 to 20 carbons or aralkyl of 6 to 20 carbon atoms; or R^8 or R^7 taken together with A represent the elements needed to complete a five or six membered ring;
Y represents NH;
A represents a divalent radical of 1 to 20 carbon atoms; R^1 and R^2, each independently represents —H or —CH_3;
R^3 represents alkylene of 2 to 6 carbon atoms;
x represents 10 to 100 weight percent; and
y represents 0 to 90 weight percent;
X represents Cl^-, Br^-,



NO_3^-, HSO_4^-, or ClO_4^-

5,006,451

PHOTOGRAPHIC SUPPORT MATERIAL COMPRISING AN ANTISTATIC LAYER AND A BARRIER LAYER

Charles C. Anderson, Rochester; Diane E. Kestner, Hilton; Mark A. Lewis, Fairport, and Gary R. Opitz, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 391,906, Aug. 10, 1989, abandoned. This application May 14, 1990, Ser. No. 523,081
Int. Cl.[5] G03C *1/85*
U.S. Cl. 430—527 **20 Claims**

1. A multilayer material useful as a base for a photographic element, said material comprising a support having thereon an antistatic layer comprising vanadium pentoxide in an amount sufficient to function as an antistatic agent and an overlying barrier layer comprised of a latex polymer in an amount sufficient to retard diffusion of said vanadium pentoxide, said latex polymer having hydrophilic functionality sufficient to render said barrier layer receptive to an aqueous coating composition applied thereto so that a layer formed from said aqueous coating composition is strongly adherent to said barrier layer.

5,006,452

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Marco Bucci, Genova/Nervi, Italy, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 1, 1988, Ser. No. 278,471
Claims priority, application Italy, Dec. 17, 1987, 23055 A/87
Int. Cl.[5] G03C *1/08*
U.S. Cl. 430—544 **8 Claims**

1. A silver halide color photographic lightsensitive material which comprises a support having coated thereon at least one silver halide emulsion layer containing a diketomethylene yellow dye forming coupler having, bonded directly or through a connecting group to the coupling active position, a group which provides a compound having a development inhibiting property when the group is released from the coupler active position upon the color development reaction, wherein said group is a 4,7-dihalogen-2-benzotriazolyl group.

5,006,453

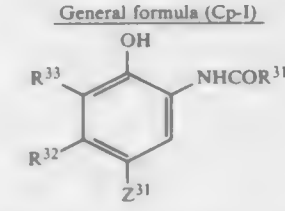
SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL HAVING IMPROVED DYE IMAGE STABILITY

Osamu Takahashi; Minoru Sakai; Genichi Furusawa, and Tsumoru Hirano, all of Kanagawa, Japan, assignors to Fuji Photo Film Co. Ltd., Tokyo, Japan

PCT No. PCT/JP87/00492, § 371 Date May 10, 1988, § 102(e) Date May 10, 1988, PCT Pub. No. WO88/00723, PCT Pub. Date Jan. 28, 1988
PCT Filed Jul. 9, 1987, Ser. No. 181,289
Claims priority, application Japan, Jul. 10, 1986, 61-162813
The portion of the term of this patent subsequent to Aug. 15, 2006, has been disclaimed.
Int. Cl.[5] G03C *1/08, 7/32*
U.S. Cl. 430—546 **5 Claims**

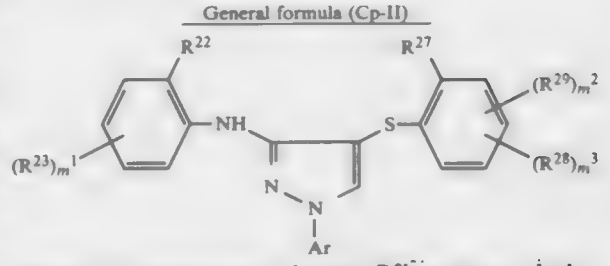
1. A silver halide color photographic material comprising a support having thereon at least one silver halide photographic emulsion layer containing a dispersion of oleophilic fine particles containing at least one diffusion resistant oil-soluble coupler which forms a substantially nondiffusible dye upon coupling with an oxidation product of an aromatic primary amine developing agent and at least one water-immiscible coupler solvent having a melting point of not more than 100° C. and a boiling point of not less than 140° C., wherein said oil-soluble coupler is represented by formula (Cp-I), (Cp-II), or (Cp-III), defined below, and the dispersion of oleophilic fine particles is a dispersion obtained by emulsifying or dispersing a solution containing at least one of said couplers, at least one of said coupler solvents, and at least one water-insoluble and an organic solvent-soluble polymer, which is a homopolymer or copolymer composed of at least one repeating unit in an amount of not less than 35 mol% which does not have an acid group in the main chain or side chain thereof, wherein the repeating unit is a repeating unit which, when the polymer is a homopolymer having a molecular weight of at least 20,000 formed exclusively by the repeating unit, provides a polymer having a glass transition temperature (Tg) of 50° C. or higher;

General formula (Cp-I)



wherein R^{31} represents an alkyl group, a cycloalkyl group, an aryl group or a heterocyclic group; R^{32} represents an acylamino group, or an alkyl group having 2 or more carbon atoms; R^{33} represents a hydrogen atom, a halogen atom, an alkyl group or an alkoxy group; with proviso R^{31} represents an aryl group when R^{32} is an acylamino group; Z^{31} represents a hydrogen atom, or a releasable group when Z^{31} reacts with an oxidation products of an aromatic primary amine color developing agent

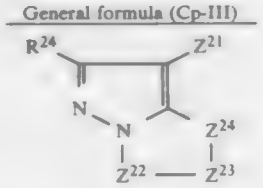
General formula (Cp-II)



wherein Ar represents an aryl group; R^{21} represents a hydrogen atom; an acyl group, or an aliphatic or aromatic sulfonyl group; R^{22} represents a halogen atom, or an alkoxy group; R^{23} represents an alkyl group, an aryl group, a halogen atom, an alkoxy group, an aryloxy group, an acylamino group, an imido

group, a sulfonamido group, an alkoxycarbonyl group, a carbamoyl group, a sulfamoyl group, an alkylthio group, or a sulfonyl group; R^{27} represents an alkyl group, an alkoxy group, or an aryloxy group; R^{28} represents a hydrogen atom, a halogen atom, a hydroxyl group, an alkyl group, an alkoxy group, or an aryl group; R^{29} represents an amino group, acylamino group, an ureido group, an alkoxy carbonylamino group, an imido group, a sulfonamido group, a sulfamoylamino group, an alkoxycarbonyl group, a carbamoyl group, an acyl group, a cyano group, or an alkylthio group; provided that at least one of R^{27} and R^{29} represents an alkoxy group; m^1 and m^2 each represents an integer of 1 to 4; and m^3 represent 0 or an integer of 1 to 3

General formula (Cp-III)



wherein R^{24} represents a hydrogen atom or a substituent group; Z^{21} represents a hydrogen atom or a releasable group when Z^{21} reacts with an oxidation product of an aromatic primary amine color developing agent; Z^{22}, Z^{23} and Z^{24} each represents



—N′ or —NH—, including that at least one of bondings Z^{24}–Z^{23} and Z^{23}–Z^{22} is double-bond and the rest thereof is a single-bond, and a bonding Z^{23}–Z^{22} is a part of an aromatic ring when Z^{23}–Z^{22} is a carbon to carbon double-bond.

5,006,454

LIGHT SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Masao Sasaki, Hadano; Toyoki Nishijima; Shun Takada, both of Odawara, and Kaoru Onodera, Sagamihara, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

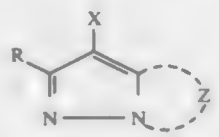
Continuation of Ser. No. 5,654, Jan. 21, 1987, abandoned. This application Nov. 23, 1988, Ser. No. 275,647

Claims priority, application Japan, Jan. 25, 1986, 61-14595

Int. Cl.[5] G03C *7/38*

U.S. Cl. 430—546 **13 Claims**

1. A light-sensitive silver halide photographic material comprising a support and provided thereon at least one silver halide emulsion layer, wherein at least one layer of said silver halide emulsion layer contains (i) a magenta color forming coupler represented by general formula (I),



(I)

wherein Z represents a group of non-metallic atoms necessary to complete a nitrogen-containing heterocyclic ring which may have a substituent; X represents a hydrogen atom or a substituent capable of being split off upon reaction with an oxidation product of a color developing agent; and R represents a hydrogen atom or a substituent; (ii) at least one anti-color-fading agent having an oxidation potential (Eox) of 0.95 (V)≦Eox≦1.50 (V); and (iii) a hydroquinone derivative in an amount ranging from 1×10^{-3} to 1×10^{-1} mole per 1 mole of said magenta color forming coupler represented by formula (I).

5,006,455

GRADATION-VARIABLE BLACK-AND-WHITE PAPER

Walter Pätzold, Leverkusen, and Helmut Kampfer, Cologne, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

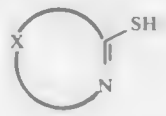
Filed Nov. 10, 1988, Ser. No. 269,993

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1987, 3739766

Int. Cl.[5] G03C *1/035, 1/34*

U.S. Cl. 430—571 **5 Claims**

1. A gradation-variable black-and-white paper comprising a silver halide emulsion layer of a mixture of at least two photosensitive silver halide emulsions, of which one has its absorption maximum in the range from 480 to 580 nm while the other has its absorption maximum below 480 nm, characterized in that only the emulsion which has its absorption maximum below 480 nm contains a compound corresponding to the following formula



in which

X represents the remaining members of an optionally benzo- or naphtho-condensed heterocycle optionally containing further substituents.

5,006,456

METHOD FOR PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS USING SULPHINC ACIDS AND SALTS OR THEIR PRECURSORS

Masakazu Morigaki; Takatoshi Ishikawa; Kazuto Andoh; Nobuo Seto, all of Minami-Ashigara; Toshio Koshimizu, Tokyo, and Shinji Ueda, Minami-Ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara, Japan

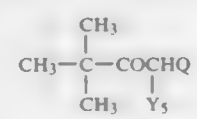
Filed Jun. 6, 1988, Ser. No. 202,558

Claims priority, application Japan, Jun. 8, 1987, 62-142941; Nov. 6, 1987, 62-280810

Int. Cl.[5] G03C *7/40, 7/32, 7/30*

U.S. Cl. 430—372 **18 Claims**

1. A method for processing a silver halide color photographic light-sensitive material containing at least one yellow coupler which comprises the steps of developing the light-sensitive material with a color developer containing an aromatic primary amine color developing agent, desilvering, washing with water and/or stabilizing the material, in which a washing water and/or a stabilizing solution contains at least one compound selected from the group consisting of sulfinic acids and salts and pecursors thereof, wherein the at least one yellow coupler is selected from compounds represented by the following eneral formula (V):



(V)

wherein Q is a substituted or unsubstituted N-phenylcarbamoyl group and Y_5 is a halogen atom or a group capable of being eliminated through a coupling reaction with an oxidized form of the developing agent.

5,006,457

PHOTOGRAPHIC RECORDING MATERIAL

Hans Vetter, Cologne; Hans Öhlschläger, Bergisch Gladbach; Heinrich Odenwälder, Leverkusen; Bernhard Morcher, Leverkusen; Friedhelm Sommer, Leverkusen, and Lothar Rosenhahn, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

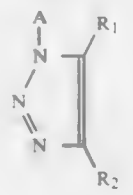
Filed Nov. 9, 1989, Ser. No. 434,927

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1988, 3838493

Int. Cl.[5] G03C *1/34*

U.S. Cl. 430—613 **2 Claims**

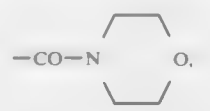
1. A photographic recording material comprising a layer support and at least one photosensitive silver halide emulsion layer arranged thereon, characterized in that the at least one silver halide emulsion layer contains an antifogging agent corresponding to formula (I)



(I)

in which

A represents H, the cation of a metal atom or non-metal group, a group attached by a covalent bond to the nitrogen atom of the triazole which is only eliminated during processing of the material with release of the triazole, selected from the group consisting of



—CO—N(CH₃)₂, —COCH₃, —SO₂N(CH₃)₂ and —SO₂CH₃

R_1 represents C_1–C_9 alkyl, C_2–C_8 alkenyl, C_6–C_{10} aryl, SR_3,

R_2 represents H, C_1–C_9 alkyl, C_2–C_8 alkenyl, C_6–C_{10} aryl, C_5–C_{10} heteroaryl, Cl, Br, —$COOR_3$, —COR_3, —O-COR_3,

R_3 represents C_1–C_9 alkyl, C_2–C_8 alkenyl, C_6–C_{10} aryl, C_5–C_{10} heteroaryl, the sum of the carbon atoms in the substituents R_1, R_2 and R_3 being equal to or greater than 5 where R_2 is a carboxylic ester group in a quantity of from 10^{-5} to 10^{-2} mol per mol silver halide.

5,006,458

ANALYTICAL ELEMENT HAVING A POLYACRYLAMIDE OR DERIVATIVE TO MINIMIZE BACKGROUND FOR ASSAYING ENZYME ACTIVITY

Keiko Kato; Shigeki Kageyama; Yoshikazu Amano; Fuminori Arai, and Harumi Katsuyama, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 21, 1987, Ser. No. 135,670

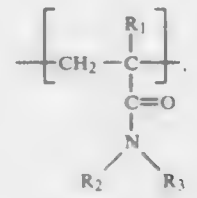
Claims priority, application Japan, Dec. 22, 1986, 61-305886

The portion of the term of this patent subsequent to Dec. 26, 2006, has been disclaimed.

Int. Cl.[5] C12Q *1/00, 1/26*

U.S. Cl. 435—4 **16 Claims**

1. In an analytical element for measuring enzyme activity of a liquid sample which has one or more water-permeable layers, and wherein at least one of the water-permeable layers is a porous spreading layer, the improvement which comprises said porous layer containing NAD^+ and at least one of the water-permeable layers containing a water-soluble hydrophilic polymer having a molecular weight from about 5,000 to 500,000 selected from the group consisting of homopolymers formed from a monomer component having the formula I and copolymers of this monomer component and another monomer component(s):



[I]

wherein R_1 represents a hydrogen atom or lower alkyl group, R_2 and R_3 represent a hydrogen atom, aliphatic hydrocarbon group, or aromatic hydrocarbon group, and R_2 may be identical with or different from R_3 and R_2 may be joined to R_3 to form a ring.

5,006,459

THERAPEUTIC AND DIAGNOSTIC METHODS USING SOLUBLE T CELL SURFACE MOLECULES

Patrick C. Kung, Cambridge; Stephen Ip, Framingham; Michael Brown, Wayland, all of Mass., and Linda A. McKeen, Point Pleasant, Pa., assignors to T Cell Sciences, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 846,230, Mar. 31, 1986, abandoned. This application Mar. 2, 1987, Ser. No. 20,819

Int. Cl.[5] G01N *33/566, 33/569, 33/574, 33/577*

U.S. Cl. 435—5 **31 Claims**

1. A method for detecting an advanced stage of a lymphatic malignancy, comprising measuring the concentration of soluble interleukin-2 receptor in a body fluid obtained from a patient with the lymphatic malignancy, in which the concentrated of soluble interleukin-2 receptor is indicative of the stage of malignancy.

5,006,460

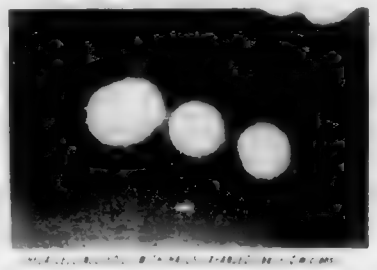
METHOD FOR MEASURING DNA DAMAGE IN SINGLE CELLS

Charles A. Thomas, Jr., La Jolla, and Eric A. Thomas, Solana Beach, both of Calif., assignors to Pantox Corporation, San Diego, Calif.

Filed May 26, 1988, Ser. No. 198,995

Int. Cl.[5] C12Q *1/68;* **G01N** *33/533*

U.S. Cl. 435—6 **37 Claims**



1. A method of measuring chain breakage in the DNA of a eucaryotic cell comprising the steps of:

(a) contacting said cell with a stripping solution that lyses and solubilizes said cell without denaturing the DNA of said cell, thereby forming a nucleoid having a halo,

said halo including undenatured DNA, and having a width related to the number of DNA chain breaks in said loop, and

(b) measuring said width of said halo, said width being indicative of said number of chain breaks.

5,006,461

TMB FORMULATION FOR SOLUBLE AND PRECIPITABLE HRP-ELISA

James E. Woiszwillo, Milford, Mass., assignor to Transgenic Sciences, Inc., Worcester, Mass.

Filed Nov. 3, 1989, Ser. No. 431,485
Int. Cl.[5] C12G *1/00;* G01N *33/53;* C12Q *1/68, 1/28*
U.S. Cl. 435—7.92 15 Claims

1. A reagent for forming a colored precipitate in an array using a chromogen producing a colored product in the presence of oxidizing agents comprising

an aqueous buffer containing a chromogen producing a colored product in the presence of oxidizing agents, substrate for perioxidase, and a peroxidase-conjugated molecule, including a polymeric compound selected from the group consisting of alginic acid, methyl vinyl ether-maleic anhydride copolymer, dextran sulfate, carrageenan and combinations thereof, wherein the colored product forms a stable precipitate with the polymeric compound.

5,006,462

METHOD FOR THE DETECTION OF SCHIZOPHRENIA

Wagner F. Gattaz, Heidelberg, Fed. Rep. of Germany, assignor to Abbott Laboratories, Abbott Park, Ill.

Filed Mar. 16, 1988, Ser. No. 168,709
Int. Cl.[5] G01N *33/53;* C12Q *1/44*
U.S. Cl. 435—7.4 28 Claims

1. A method for the diagnosis of schizophrenia, comprising:

(a) combining a test sample with a substrate capable of detecting phospholipase-A2 in the test sample;

(b) obtaining a measurement of the amount of said phospholipase-A2 in the test sample;

(c) comparing the measured amount to phospholipase-A2 values found in nonschizophrenic controls; and

(d) diagnosing schizophrenia if said test sample measurement is increased relative to phospholipase-A2 values found in nonschizophrenic controls.

5,006,463

IMMUNOASSAYS FOR DISCRIMINATING BETWEEN BRUCELLOSIS INFECTIONS AND VACCINATIONS

John W. Cherwonogrodzky, Kanata; J. Robert Duncan, Nepean; Klaus Nielsen; Peter F. Wright, both of Richmond; David R. Bundle, and Malcolm B. Perry, both of Ottawa, all of Canada, assignors to National Research Council of Canada, Ottawa, Canada

Filed Sep. 25, 1987, Ser. No. 100,873
Claims priority, application Canada, Sep. 26, 1986, 519243
Int. Cl.[5] G01N *33/53, 33/543, 33/531;* C12Q *1/04*
U.S. Cl. 435—7.32 13 Claims

1. A method for discriminating between (i) normal animals or animals vaccinated or immunized against smooth Brucella sp. or *Y. enterocolitica* 0:9, and (ii) animals infected with smooth *Brucella sp.* or *Y. enterocolitica* 0:9, comprising the steps of:

(a) subjecting serum samples from the animals to immunoassay to detect serological activity against an O-chain polysaccharide containing 4,6-dideoxy-4-acylamido-D-mannopyranose repeating units; and

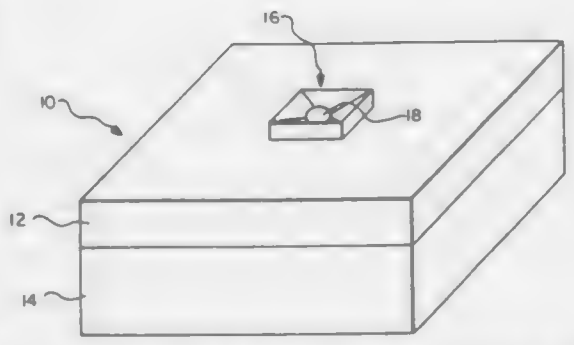
(b) differentiating the sera of the normal animals or vaccinated or immunized animals from those of infected animals based on a negative or positive result, respectively, of said assay, wherein the sera from infected animals is differentiated from the sera of normal animals or vaccinated or immunized animals based on the differences in specificity or affinity between antibodies of infected animals and antibodies of normal animals or vaccinated or immunized animals to said O-chain polysaccharide.

5,006,464

DIRECTED FLOW DIAGNOSTIC DEVICE AND METHOD

Albert E. Chu, Hillsborough; Peter K. Chun, South San Francisco, and Siu C. C. Yeung, San Mateo, all of Calif., assignors to E-Y Laboratories, Inc., San Mateo, Calif.

Filed Oct. 1, 1987, Ser. No. 103,845
Int. Cl.[5] G01N *33/53, 31/22, 33/553*
U.S. Cl. 435—7.1 23 Claims



17. An assay method for the detection of a bindable target substance in a liquid sample suspected of containing such substance, employing as an assay device an analytical apparatus comprising:

(a) a reaction membrane which is liquid-permeable and porous and having an upper and lower surface, an exposed area of said upper surface having immobilized thereon a receptor capable of directly or indirectly binding to the bindable target substance said immobilized receptor being concentrated in a limited region of said upper surface of said reaction membrane;

(b) a body of absorbent material capable of absorbing a liquid, said body having a surface located adjacent to the lower surface of the reaction membrane;

(c) separating means for substantially preventing liquid flow from the lower surface of the porous reaction membrane to the upper surface of the absorbent material body; and

(d) port means through said separating means for substantially directing the flow of liquid from the lower surface of said porous reaction membrane through said separating means into said absorbent material body, said port means comprising at least one port containing liquid permeable material contacting said reaction membrane said port means being of a substantially smaller cross-sectional area than said reaction membrane upper surface exposed area;

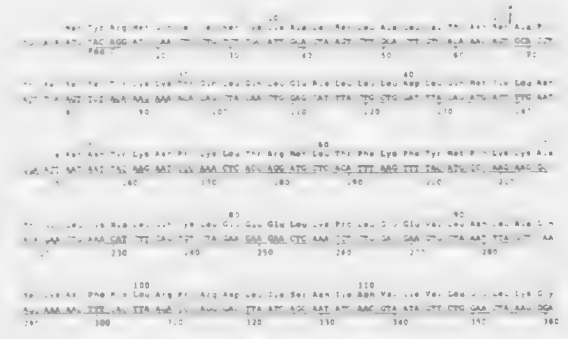
the method comprising applying the liquid sample, visibly labelled substance capable of specific binding to said receptor or target substance, and any additional reagents to the upper surface of said permeable reaction membrane whereby the applied liquid sample will permeate through said port means to the membrane lower surface and be substantially directed to at least one selected portion of the adjacent surface of said absorbent material body, said liquid flowing downwardly through said reaction membrane with a radial flow component in a substantially horizontal plane directed either (1) radially away from the center of said immobilized receptor outwardly towards the periphery of said reaction membrane or (2) radially inwardly toward the center of said immobilized receptor and thereafter detecting said visible labelled substance bound to said upper surface in order to detect the presence or absence of target substance in the liquid sample.

5,006,465

PROCESS FOR PREPARING BOVINE INTERLEUKIN-2

Dirk M. Anderson, 1757 N.W. 58th St., Seattle, Wash. 98107; Paul E. Baker, 16710 Agate Pass Rd., Bainbridge Island, Wash. 98110; Michael A. Cantrell, 4035 Midvale Ave. N., Seattle, Wash. 98103; Douglas P. Cerretti, 2415 W. Bertona, Seattle, Wash. 98199; David J. Cosman, 310 - 12th Ave. E., Seattle, Wash. 98102; Steven D. Gimpel, 3602 N.E. 73rd, #5, Seattle, Wash. 98115; Kenneth H. Grabstein, 5829 N.E. 75th St., No. 443, Seattle, Wash. 98115; Alf D. Larsen, 320 Summit Ave. E., No. 15, Seattle, Wash. 98102, and Kate N. McKereghan, 1140 N. 76th, Seattle, Wash. 98103

Division of Ser. No. 888,994, Jul. 31, 1986, Pat. No. 4,882,282, which is a continuation-in-part of Ser. No. 766,643, Aug. 16, 1985, abandoned. This application Aug. 11, 1989, Ser. No. 392,811
The portion of the term of this patent subsequent to Nov. 21, 2006, has been disclaimed.
Int. Cl.[5] C12P *21/06, 19/34;* C12N *15/00, 1/20, 1/14, 1/18, 15/00;* C07H *15/12;* C07K *3/00*
U.S. Cl. 435—69.52 27 Claims



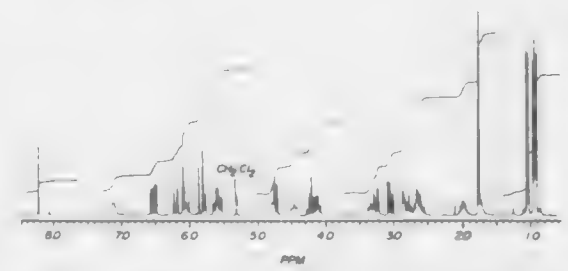
1. A process for preparing bovine interleukin-2(bIL-2) comprising the steps of culturing a microbial host transformed by a vector containing a DNA sequence encoding bIL-2 under conditions suitable for the expression of bIL-2 and recovering bIL-2.

5,006,466

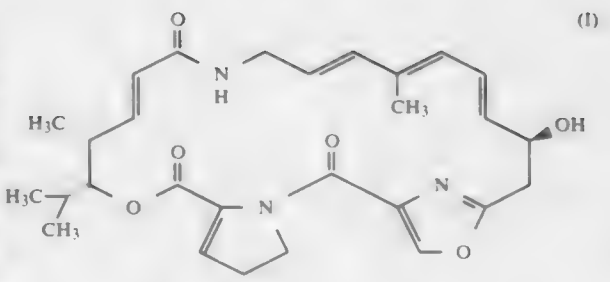
FERMENTATION ANALOGS OF VIRGINIAMYCIN M_1

Yiu-kuen T. Lam, Plainsboro; Otto D. Hensens, Red Bank, both of N.J.; Raymond S. Chang, Lansdale, Pa.; Cheryl D. Schwartz, Westfield, and Deborah L. Zink, Manalapan, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

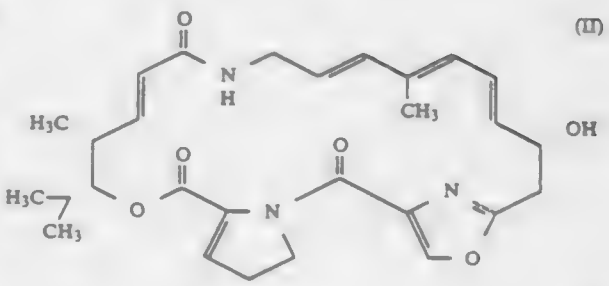
Division of Ser. No. 173,342, Mar. 25, 1988, Pat. No. 4,894,370, which is a division of Ser. No. 934,231, Nov. 21, 1986, Pat. No. 4,762,923. This application Oct. 26, 1989, Ser. No. 426,836
Int. Cl.[5] C12P *17/18, 17/14;* C12N *1/00, 1/20*
U.S. Cl. 435—120 2 Claims



1 A process for preparing the compounds of Formula I,

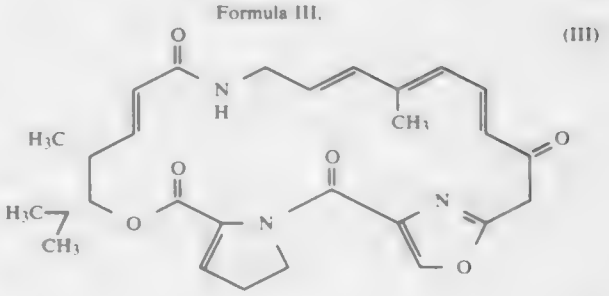


(I)



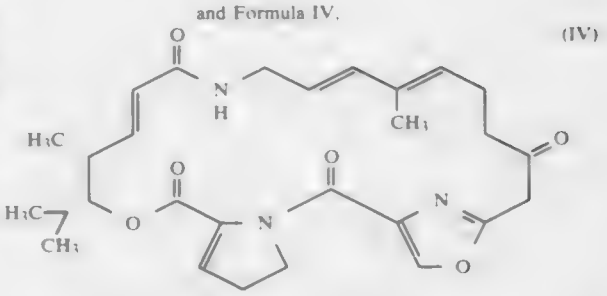
(II)

Formula III,



(III)

and Formula IV.



(IV)

which comprises the controlled aerobic fermentation of a strain of *Streptomyces olivaceous*, ATCC 53527, in an assimilable aqueous nutrient medium.

5,006,467

CELL CULTURE MICROCARRIERS

Hiroshi Kusano, Yokohama; Tsuyoshi Ito, Machida, and Hirohisa Kubota, Yokohama, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Jun. 29, 1988, Ser. No. 213,251
Claims priority, application Japan, Jul. 3, 1987, 62-166712
Int. Cl.[5] C12N *11/08;* C08F *16/26, 24/00*
U.S. Cl. 435—180 3 Claims

1. Mammalian anchorage-dependent cell culture microcarriers consisting of water-insoluble polymer particles, charcterized in that the particles are constituted by polyethyleneglycol (meth)acrylate, glycidyl (meth)acrylate and a cross linking agent, and have an average diameter of 100–1,000 μm and a density of 1.00–1.20 g/ml in a culture medium as well as positively chargeable chemical moieties distributed at least on their surfaces, the moieties being introduced into the particles by a reaction between glycidyl (meth)acrylate and ammonia or an amine having 5 or less carbon atoms and being bonded thereto directly through a nitrogen atom.

5,006,468

NOVEL UREASE AND METHOD OF PRODUCING THE SAME

Toru Nakayama; Hajime Yoshizumi, both of Osaka; Hiroshi Yamamoto, Kyoto, and Kiyoshi Yoshizawa, Saitama, all of Japan, assignors to Suntory Limited, Osaka and National Tax Administration, Tokyo, both of, Japan

Filed Nov. 16, 1988, Ser. No. 271,966
Claims priority, application Japan, Nov. 17, 1987, 62-289994
Int. Cl.[5] C12N *9/80*
U.S. Cl. 435—228 2 Claims

1. A substantially pure urease capable of being produced by a microorganism of the strain Arthrobacter mobilis SAM0752 having the following pyhsical and chemical properties:

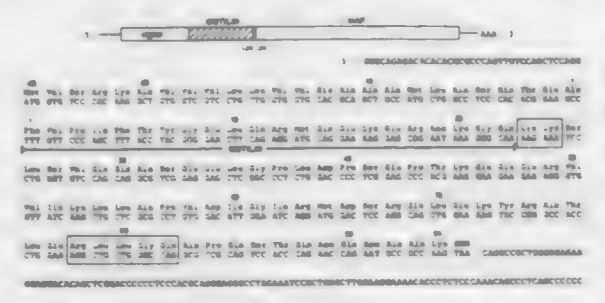
(1) function:
catalyzing hydrolysis of 1 mole of urea to produce 2 moles of ammonia and 1 mole of carbon dioxide at an optimum pH in the range of 4.2 to 5.0 and an optimum temperature in the range of 50°-60° C.;
(2) pH stability:
stable between pH 4.5 and 8.5 in treatment at 4° C. for 16 hours;
(3) temperature stability:
stable up to 50° C. in treatment at pH 4.5 for 15 minutes;
(4) substrate specificity:
having an extremely high degree of specificity to urea;
(5) inhibitor:
Hg^{++}, Ag^{+} or Cu^{++} ions;
(6) Km value:
in the range of 3.6 to 3.7 mM (pH 4.5, 0.1M acetic acid buffer);
(7) molecular weight:
about 240,000 (measured by a gel filtration method; and
(8) isoelectric point:
at a pI value of between 6.5 and 7.0

5,006,469

VECTORS AND HOST CELLS EXPRESSING PREPROMOTILIN AND MOTILIN-ASSOCIATED PEPTIDE (MAP)

John P. Adelman; Chris T. Bond; Gajanan Nilaver, and Earl A. Zimmerman, all of Portland, Oreg., assignors to Oregon Health Sciences University, Portland, Oreg.

Filed Feb. 9, 1988, Ser. No. 154,156
Int. Cl.[5] C12N *15/70, 15/74, 15/79, 15/85*
U.S. Cl. 435—240.1 4 Claims



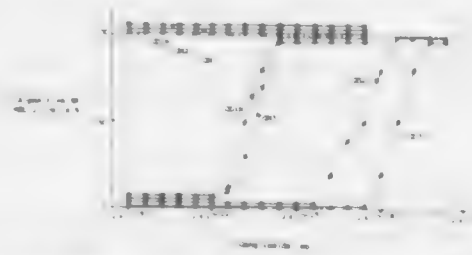
1. A recombinant expression vector comprising control sequences operably linked to a DNA encoding a protein functionally equivalent to motilin precursor or preprotein forms thereof, said DNA including a nucleotide sequence substantially equivalent to the sequence depicted in FIG. 1 encoding for amino acid residues 1-94.

5,006,470

HUMAN MONOCLONAL ANTIBODIES TO CELL SURFACE ANTIGENS OF MELANOMA

Hiroshi Yamaguchi, Bronx; Koichi Furukawa; Philip O. Livingston, both of New York; Kenneth O. Lloyd, Bronx, all of N.Y.; Herbert F. Oettgen, New Canon, Conn.; Lloyd J. Old, New York, N.Y., and Sheila R. Fortunato, Hollis, N.Y., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Filed Apr. 16, 1987, Ser. No. 39,479
Int. Cl.[5] C12N *5/12;* C07K *15/28;* A61K *39/00;* G01N *33/53*
U.S. Cl. 424—85.8 14 Claims



1. The human monoclonal antibody produced by the hybridoma cell line designated GXM1.

5,006,471

FUNGAL RESISTANCE MARKERS

Florentina S. Sanchez; Victor R. Susan; Laura Carramolino-Fitera, and Agustin P. A. Ortega, all of Madrid, Spain, assignors to Antibioticos S.A. of Bravo Murillo 38, Madrid, Spain

Continuation of Ser. No. 9,713, Feb. 2, 1987. This application Mar. 26, 1987, Ser. No. 32,065
Claims priority, application United Kingdom, Mar. 26, 1986, 8607502
Int. Cl.[5] C12N *1/15, 15/11, 15/80;* C12Q *1/04*
U.S. Cl. 435—254 12 Claims

1. A drug resistant strain of *Penicillium chrysogenum* where drug resistance is conferred by a vector for *P. chrysogenum* carrying a sulfonamide, trimethoprim or methotrexate resistance gene operably linked to the promoter region of the trpC gene isolated from *P. chrysogenum*.

5,006,472

ENZYMATIC PURIFICATION PROCESS

George B. Dove, Hercules, and Gautam Mitra, Kensington, both of Calif., assignors to Miles Inc., Elkhart, Ind.

Filed Jun. 3, 1988, Ser. No. 202,726
Int. Cl.[5] C12N *1/08*
U.S. Cl. 435—270 11 Claims

1. A method of enhancing the removal of nucleic acids from cell culture fluid containing a desirable, biologically active therapeutic substance to be purified and undesirable nucleic acids having an average molecular size similar to the molecular size of the therapeutic substance, the method comprising the steps of contacting the fluid with nuclease enzymes in the presence of a detergent under conditions sufficient to assure the degradation of the nucleic acids to a molecular size range significantly different from the molecular size of the desirable substance, and then subjecting the fluid to at least one separation step sufficient to remove nucleic acids from the fluid.

4. A method of removing DNA from a cell culture fluid containing a biologically active, therapeutic substance expressed by the cells, the method comprising the steps of

(a) incubating the fluid in the presence of a DNA-ase and a detergent in quantities sufficient to enhance the DNA-ase activity under conditions sufficient to degrade at least some of the DNA in the fluid; and
(b) subjecting the fluid to a separation step capable of removing at least some of the degradation products formed in step (a).

5,006,473

ELECTROPHORESIS METHOD USING VESICLES

Stanley R. Bouma, Mundelein; Lawrence J. Blecka, Palatine, both of Ill., and Philip Miller, Tucson, Ariz., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Aug. 9, 1988, Ser. No. 230,217
Int. Cl.[5] G01N *33/561*
U.S. Cl. 436—516 33 Claims

1. A method for detecting an analyte of interest in a sample comprising:

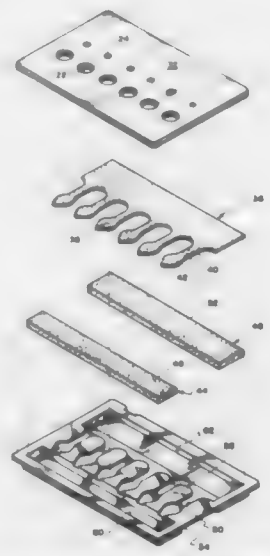
(a) providing an electrophoresis support medium through which said sample can migrate, said support medium including
(i) vesicles in which an indicator reagent is encapsulated, wherein said vesicles are embedded in said support medium and are of sufficient size so as to be immobile in said support medium, and
(ii) first binding members immobilized in said support medium, wherein said first binding members are capable of binding said analyte, and wherein said first binding members are immobilized directly within said support medium or indirectly by immobilization upon said vesicles;
(b) passing said sample through said support medium by electrophoresis so analyte is bound by said first binding members;
(c) passing a reactive species through said support medium, wherein said reactive species is a label, and wherein said label is capable of reacting with said indicator reagent in the presence of analyte to produce a detectable signal;
(d) lysing said vesicles; and
(e) detecting said signal.

5,006,474

BI-DIRECTIONAL LATERAL CHROMATOGRAPHIC TEST DEVICE

Frederick C. Horstman, Laguna Niguel, and Julie Whiteside, Orange, both of Calif., assignors to Disease Detection International Inc., Irvine, Calif.

Filed Dec. 16, 1987, Ser. No. 133,804
Int. Cl.[5] G01N *33/543;* C12Q *1/24*
U.S. Cl. 436—524 27 Claims



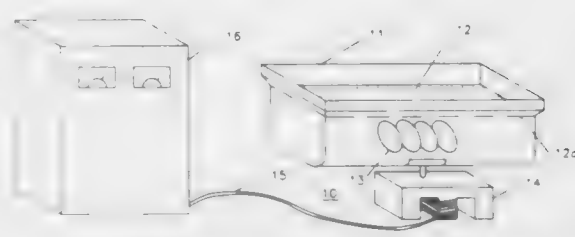
1. In a test device for performing solid phase immunoassays of a test sample having a liquid component, the combination of:
a planar fiber filter matrix which absorbs and conducts fluid, said matrix including a test sample application zone, a separation zone and a reaction zone, said separation zone separating said application zone from said reaction zone and being sufficiently long to inhibit migration of particulates in said sample into said reaction zone; first absorbent material in communication with said sample application zone; and second absorbent material in communication with said reaction zone so as to cause bilateral flow of the liquid component of said test sample; said filter matrix at the location of communication between said sample application zone and said first absorbent material being constricted for causing said bilateral flow to be primarily from said application zone to said reaction zone, and secondarily from said application zone to said first absorbent material.

5,006,475

METHOD FOR BACKSIDE DAMAGE OF SILICON WAFERS

John Robbins, Sherman, and Ricky L. Boston, Denison, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 12, 1989, Ser. No. 378,632
Int. Cl.[5] H01L *21/306*
U.S. Cl. 437—10 11 Claims



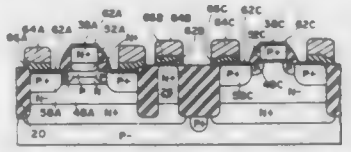
1. A method for backside damaging of semiconductor wafers comprising the steps of:
at least partially submerging the semiconductor wafers in an abrasive powder; and
vibrating the abrasive powder to create backside damage to the semiconductor wafers.

5,006,476

TRANSISTOR MANUFACTURING PROCESS USING THREE-STEP BASE DOPING

Jan L. De Jong, San Jose, Calif., and Jacob G. DeGroot, TA Malden, Netherlands, assignors to North American Philips Corp., Signetics Division, Sunnyvale, Calif.

Continuation of Ser. No. 241,526, Sep. 7, 1988, abandoned. This application Nov. 20, 1989, Ser. No. 440,456
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—31 20 Claims



1. A method of fabricating a bipolar transistor from a monocrystalline semiconductor body that comprises a major region of a first conductivity type located along an upper surface of the body, the method comprising the steps of:
introducing an initial dopant of a second conductivity type opposite to the first conductivity type into the major region to convert a surface-adjoining portion into a primary zone of the second conductivity type;
creating a patterned electrically conductive layer above the primary zone so as to contact part of its upper surface;
introducing a main impurity of the first conductivity type into the primary zone through part of its upper surface to convert a surface-adjoining portion into an emitter of the first conductivity type;
introducing an intermediate dopant of the second conductivity type into the major region through part of its upper

surface to establish a surface-adjoining portion as an intermediate zone of the second conductivity type using the patterned layer and any electrically insulating material along its sides as a shield for blocking the intermediate dopant from passing through the directly underlying section of the upper surface of the major region;

forming electrically insulating spacers along the sides of the patterned layer to a mean lateral width greater than that of any electrically insulating material located along the sides of the patterned layer during the previous step; and

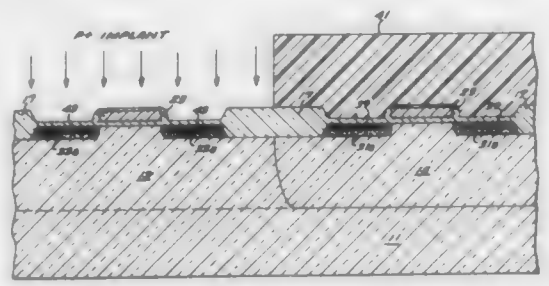
introducing a further dopant of the second conductivity type into the major region through part of its upper surface to establish a surface-adjoining portion as a base contact zone of the second conductivity type laterally separated from the emitter using the patterned layer and spacers as a shield for blocking the further dopant from passing through the directly underlying section of the upper surface of the major region, the intermediate zone being continuous with the primary zone and the base contact zone to form a base of the second conductivity type.

5,006,477

METHOD OF MAKING A LATCH UP FREE, HIGH VOLTAGE, CMOS BULK PROCESS FOR SUB-HALF MICRON DEVICES

Joseph E. Farb, Riverside, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 25, 1988, Ser. No. 275,833
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—34 **14 Claims**



1. In an integrated circuit wafer having a substrate with gate regions and field oxide regions formed thereon, a method for doping source and drain regions for sub-half-micron devices in the substrate adjacent the top surface thereof on opposing sides of each gate region, comprising the steps of:

forming oxide spacers surrounding said gate regions;

forming lightly doped graded regions in the source and drain regions having a doping concentration that decreases linearly with distance from the top surface of the source and drain regions; and

forming respective heavily doped regions in each of the lightly doped graded regions adjacent the surface of the source and drain regions.

5,006,478

METHOD FOR MANUFACTURE OF SEMICONDUCTOR DEVICE

Junichiro Kobayashi; Shigeru Hiramatsu, and Hidemi Takakuwa, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

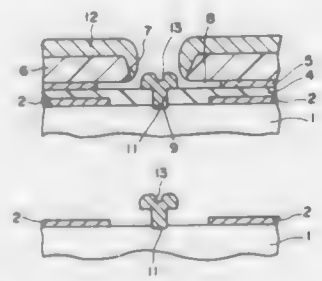
Filed Jul. 24, 1990, Ser. No. 556,480
Claims priority, application Japan, Jul. 25, 1989, 64-192854
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—41 **10 Claims**

1. A method for manufacturing a semiconductor device, comprising the steps of:

sequentially forming a first resist layer, an intermediate layer and a second resist layer on a substrate;

forming an aperture by removing a portion of said second resist layer where a T-shaped gate is to be later formed;

over-etching a portion of said intermediate layer which is opposed to said aperture thereby forming in said interme-



diate layer an aperture larger than the first-mentioned aperture; and

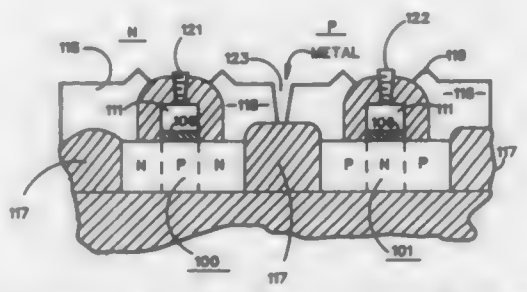
forming in said first resist layer an aperture which is smaller than the aperture in said second resist layer and which is positioned inside thereof.

5,006,479

METHODS FOR IMPROVING RADIATION TOLERANCE OF SILICON GATE CMOS/SILICON ON SAPPHIRE DEVICES

Jerry V. Brandewie, Mission Viejo, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 27, 1990, Ser. No. 485,687
Int. Cl.[5] H01L *21/266, 21/223, 21/336*
U.S. Cl. 437—45 **6 Claims**



1. A method for forming an edge hardened N type field effect transistor, comprising the steps of:

delineating an active region in an epitaxial layer of silicon on sapphire including a relatively thin thermal oxide layer on the silicon layer, a low temperature oxide layer over the thermal oxide, a silicon nitride layer over the thermal oxide, and a photoresist layer over the silicon nitride layer; said delineating including using reactive ion etching to verticalize the edges of the photoresist, thermal oxide, silicon nitride, and low temperature oxide layers;

multiple implanting boron ions into exposed portions of the silicon layer directly adjacent the active region at different energy levels between approximately 20 kilo electron volts and 50 kilo electron volts using doses of 10^{14}–10^{17} ions/cm^2 to provide a substantially uniform penetration of the silicon layer;

removing the photoresist layer;

driving in the boron ions to a depth of about 0.1 to 0.2 microns by heating in a nitrogen environment to approximately 850° C. for up to 2 hours;

using reactive ion etching to delineate the active region in the epitaxial layer and expose the edges being hardened;

conventionally finishing the forming of said transistor; and,

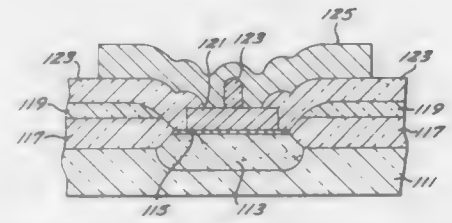
using boro phospho silicate glass directly in contact with said edges for isolation purposes.

5,006,480

METAL GATE CAPACITOR FABRICATED WITH A SILICON GATE MOS PROCESS

C. P. Chang, Newport Beach, and Joseph Farb, Riverside, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 229,540, Aug. 8, 1988, abandoned, which is a division of Ser. No. 918,185, Oct. 14, 1986, abandoned. This application Feb. 13, 1990, Ser. No. 479,557
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—47 **1 Claim**



1. A process for making MOS metal gate capacitors with a silicon gate process, comprising the steps of:

providing a semiconductor substrate and defining active areas and capacitor areas on the surface thereof;

forming field oxide regions that generally surround the active areas and the capacitor areas;

forming a gate oxide layer over the active areas and the capacitor areas;

forming polysilicon polysilicon gates over the active areas;

forming highly doped source and drain regions in the active areas and highly doped bottom capacitor plate regions in the capacitor areas;

depositing an oxide layer over the semiconductor structure;

opening the capacitor areas to expose the highly doped bottom capacitor plate regions; and

heating the semiconductor structure to reflow the deposited oxide layer and to grow a capacitor oxide layer over the exposed capacitor areas.

5,006,481

METHOD OF MAKING A STACKED CAPACITOR DRAM CELL

Tsiu C. Chan, Carrollton, and Frank R. Bryant, Denton, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation-in-part of Ser. No. 443,897, Nov. 30, 1989. This application Apr. 30, 1990, Ser. No. 516,271
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **5 Claims**

1. A method for forming a capacitor for an integrated circuit device, comprising the steps of:

forming a first ground plate of polycrystalline silicon;

forming a first insulating layer over the first ground plate;

forming an opening to a substrate;

forming a first charge storage plate of polycrystalline silicon over the first insulating layer, wherein the first charge storage plate contacts the substrate through the opening;

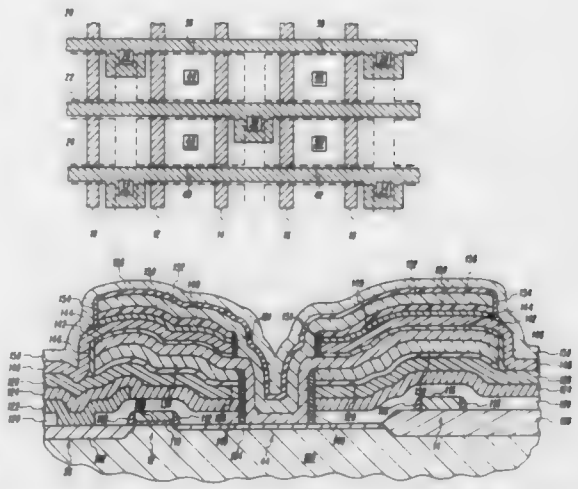
forming a second insulating layer over the first charge storage plate;

forming a second ground plate of polycrystalline silicon over the second insulating layer, wherein the second ground plate makes electrical contact with the first ground plate;

forming a third insulating layer over the second ground plate;

forming a second charge storage plate of polycrystalline silicon over the third insulating layer, wherein the second charge storage plate makes electrical contact with the first charge storage plate;

forming a fourth insulating layer over the second charge storage plate;and



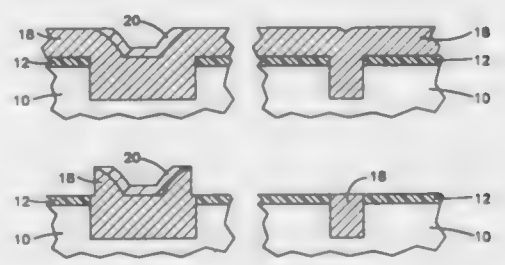
forming a third ground plate of polycrystalline silicon over the fourth insulating layer, wherein the third ground plate makes electrical contact with the second ground plate.

5,006,482

FORMING WIDE DIELECTRIC-FILLED PLANARIZED ISOLATION TRENCHES IN SEMICONDUCTORS

Michael L. Kerbaugh, Burlington; Charles W. Koburger, III, Essex, and Brian J. Machesney, Burlington, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 25, 1989, Ser. No. 427,153
Int. Cl.[5] H01L *21/82*
U.S. Cl. 437—67 **14 Claims**



12. A process for forming a filled wide trench in the surface of a substrate comprising the steps of:

forming a wide trench in the surface of the substrate;

conformally forming a layer of filling material on the surface of the substrate including in said trench the top surface of which filling material extends above the plane of the surface of the substrate;

conformally forming a layer of etch-resistant material on said layer of filling material which etch resistant material will mask said filling material from reactive ion etching;

selectively removing only those portions of said etch resistant material that extend above the surface of the filling material by physical polishing and not removing any etch resistant material disposed below the surface of said filling material, such that the only remaining portion of the etch resistant material resides within the width of said trench;

forming a plug above said trench by anisotropically etching

said layer of filling material which is not masked by said etch resisting material down to the top of said trench; and removing said plug to obtain a filled trench having an upper surface in substantial planarity with the upper surface of said substrate.

5,006,483

FABRICATION OF P-N JUNCTION SEMICONDUCTOR DEVICE

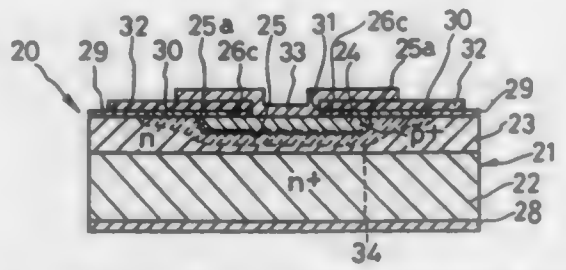
Koji Ohtsuka, Shiki, and Hirokazu Goto, Hanno, both of Japan, assignors to Sanken Electric Co., Ltd., Saitama, Japan

Division of Ser. No. 319,951, Mar. 7, 1989. This application Jun. 26, 1990, Ser. No. 544,202

Claims priority, application Japan, Mar. 31, 1988, 63-80173

Int. Cl.[5] M01L *21/443*

U.S. Cl. 437—179 4 Claims



1. A method of making a p-n junction semiconductor device which comprises:

(a) providing a semiconductor substrate comprising first and second regions of opposite conductivity types providing a p-n junction therebetween, the first semiconductor region being of higher resistivity than the second semiconductor region, the first and second semiconductor regions being both exposed through a predetermined surface of the substrate;

(b) forming a layer of a first metal on the predetermined surface of the substrate;

(c) forming a layer of second metal on the first metal layer;

(d) removing a peripheral part of the second metal layer so as to leave the remainder of the second metal layer on the second semiconductor region of the substrate via the first metal layer, with the consequent exposure of a peripheral part of the first metal layer; and

(e) oxidizing the exposed peripheral part of the first metal layer through a mask of the remaining part of the second metal layer in order to form a resistive layer of the oxide of the first metal capable of forming a Schottky barrier at its interface with the first semiconductor region of the substrate.

5,006,484

MAKING A SEMICONDUCTOR DEVICE WITH CONTACT HOLES HAVING DIFFERENT DEPTHS

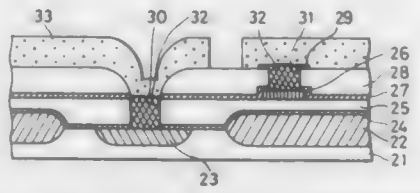
Yusuke Harada, Tokyo, Japan, assignor to Oki Electric Industry Inc, Co., Japan

Filed Jan. 31, 1990, Ser. No. 472,765

Claims priority, application Japan, Feb. 1, 1989, 1-20741

Int. Cl.[5] H01L *21/441*

U.S. Cl. 437—192 13 Claims



1. A process for fabrication a semiconductor device having a relatively deep contact hole and a relatively shallow contact hole, comprising the steps of:

(a) forming a lower interlayer insulating film having a flowing property on a semiconductor substrate:

(b) performing a heat treatment to cause said lower interlayer insulating film to flow:

(c) forming an upper interlayer insulating film having a flowing property on said lower interlayer insulating film;

(d) performing a heat treatment to cause said upper interlayer insulating film to flow; (e) forming a non-flowing film which does not have a flowing property in the area within which said shallow contact hole will be formed;

(f) forming said deep contact hole through said upper interlayer insulating film and said lower interlayer insulating film and forming said shallow contact hole through said upper interlayer insulating film and said non-flowing film;

(g) performing a heat treatment to cause said upper interlayer insulating film to flow, whereby said upper interlayer insulating layer flows except at the area covered by said non-flowing film;

(h) filling said deep contact hole and said shallow contact hole with metal by selective CVD; and

(i) forming an interconnect in contact with said metal filling said contact holes.

5,006,485

METHOD OF MANUFACTURING AN INTERGRATED CIRCUIT INCLUDING STEPS FOR FORMING INTERCONNECTIONS BETWEEN PATTERNS FORMED AT DIFFERENT LEVELS

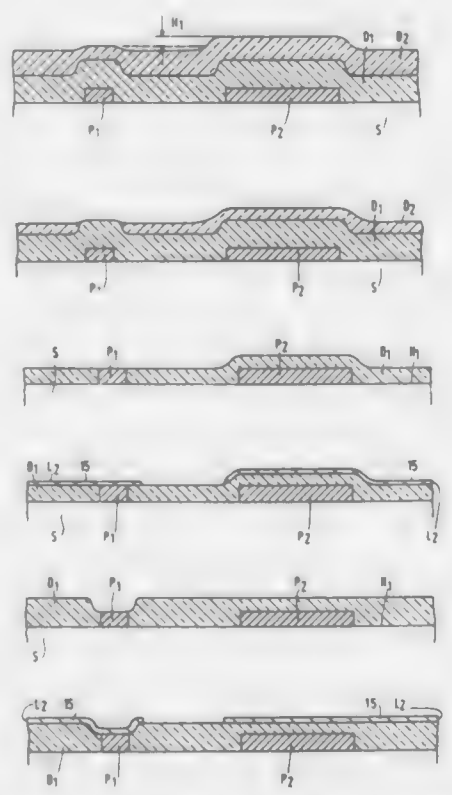
Claudine Villalon, Chennevieres, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 4, 1989, Ser. No. 446,506

Claims priority, application France, Dec. 9, 1988, 88 16230; Sep. 19, 1989, 89 12263

Int. Cl.[5] H01L *21/312, 21/47*

U.S. Cl. 437—195 14 Claims



1. A method of manufacturing integrated circuits having

improved electrical and mechanical properties comprising the steps of

(a) forming first conducting patterns on a substrate, said first conducting patterns including at least one first conducting portion having a dimension W_1 and at least one second conducting portion having a dimension W_2 substantially larger than W_1, said first conducting portion and second conducting portion having substantially coplanar upper surfaces;

(b) at least some of said second conducting portions being formed with appendices of reduced width, said appendices having a dimension substantially equal to W_1, and said appendices having an upper surface substantially coplanar with the upper surfaces of said first conducting portions;

(c) depositing a first dielectric layer over said conducting patterns and said substrate, said first dielectric layer being a passivating material, and said first dielectric layer having a uniform thickness, said uniform thickness being at least equal to a thickness of said at least one first conducting portion;

(d) thereafter depositing a second dielectric layer over said first dielectric layer, said second dielectric layer also being passivating and having a smaller thickness over said at least one first conducting portion than over said at least one second conducting portion;

(e) etching said second dielectric layer until said first dielectric layer over said at least one first conducting portion appears;

(f) thereafter etching said first dielectric layer at an etch rate greater than the etch rate of said second dielectric layer to form openings to said first conducting portions while said second conducting portions remain covered by a thickness of said first dielectric layer; and

(g) thereafter depositing metallic conduction layers in contact with said first conduction portions through said openings, said metallic conduction layers being separated from said second conducting portions.

5,006,486

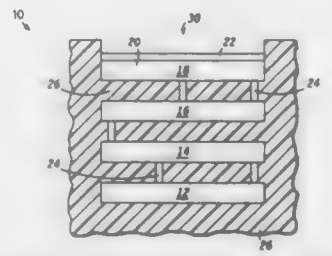
DIRECT CONTACT TAB METHOD

Douglas W. Schucker, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 29, 1990, Ser. No. 471,763

Int. Cl.[5] H01L *21/603*

U.S. Cl. 437—220 10 Claims



1. A method of connecting a TAB leadframe to the internal metallization of a semiconductor die comprising the steps of:

providing a semiconductor die having at least one metallization layer;

exposing at least a portion of said at least one metallization layer; and

directly contacting said exposed portion of said at least one metallization layer with a TAB leadframe.

5,006,487

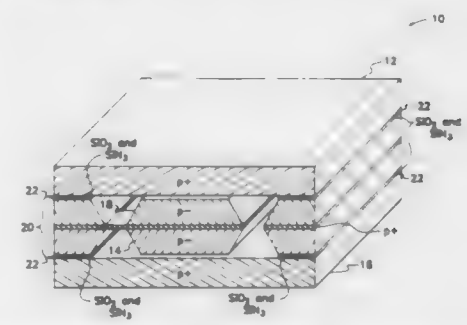
METHOD OF MAKING AN ELECTROSTATIC SILICON ACCELEROMETER

John F. Stokes, Wyoming, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 386,338, Jul. 27, 1989. This application Mar. 27, 1990, Ser. No. 499,756

Int. Cl.[5] H01L *21/302*

U.S. Cl. 437—228 5 Claims



1. A method for making a solid state accelerometer, comprising:

depositing a p+ doped layer of epitaxial silicon on a double-sided polished first p− doped silicon wafer;

dry etching a first pattern on the epitaxial silicon to define flexures and a proof mass;

fusion bonding a second p− doped silicon wafer to the p+ doped layer of epitaxial silicon;

thermally oxidizing the exposed surfaces of said first and second p− doped silicon wafers to grow dielectric interlayers to set widths of gaps for the proof mass;

applying an etch resistant material of a second pattern the dielectric interlayers;

anisotropically etching the first and second p− doped wafers to make individual flexures and the proof mass;

removing inner portions of the dielectric interlayers to make the gaps; and

fusion bonding first and second p+ doped silicon stop wafers to the dielectric interlayers of the first and second p− doped silicon wafers, thereby constituting the gaps between the proof mass and the first and second p+doped silicon stop wafers, and sealing the proof mass from volume external to the proof mass.

5,006,488

HIGH TEMPERATURE LIFT-OFF PROCESS

Rosemary A. Previti-Kelly, Richmond, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 6, 1989, Ser. No. 417,935

Int. Cl.[5] H01L *21/312, 21/47*

U.S. Cl. 437—229 10 Claims

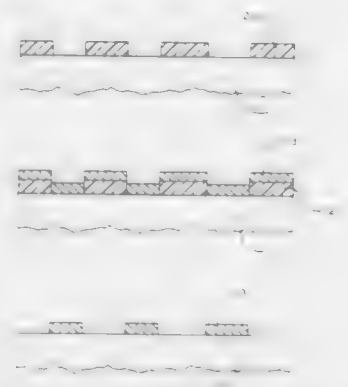
1. A process for forming a pattern of conductive material on a processed semiconductor substrate, comprising the steps of:

applying a layer of photosensitive polyimide precursor to said substrate, wherein said precursor is a material which fully imidizes at a temperature in excess of the temperature at which said conductive material is to be applied, said layer having a thickness greater than about 15μ and at least about 25% greater than that of said film to be formed;

imagewise exposing and then developing said layer so as to uncover portions of said substrate;

applying a conductive material to form a film on the portions of said layer remaining on said substrate and the uncov-

ered portions of said substrate at a temperature in the range from about 150° C. to about 250° C.; and



lifting-off said remaining portions of said layer and the portions of said film which overlie said remaining portions of said layer.

5,006,489

SOLDERING ENAMEL FOR PREPARING AN END SEAL OF A CERAMIC DISCHARGE ENVELOPE OF A DISCHARGE LAMP

Ferenc Nágel, and Mária J. Farkasné, both of Budapest, Hungary, assignors to Tungsram Reszvenytarsasag, Budapest, Hungary

Filed Jul. 6, 1989, Ser. No. 375,889

Claims priority, application Hungary, Sep. 7, 1988, 4614/88

Int. Cl.[5] C03C *8/24*

U.S. Cl. 501—15 **2 Claims**

1. A soldering enamel composition for preparing an end seal of a ceramic discharge envelope of a high-pressure discharge lamp, comprising a basic enamel including aluminum oxide and at least one oxide selected from the group consisting of rare earth metal oxides, alkaline earth metal oxides, and mixtures thereof and containing a ceramic filling material, being a zirconium-rare earth oxide of perovskite crystal structure, wherein the amount of said ceramic filling material referred to the overall mass of said basic enamel is from 0.1 to 0.9 mass % of yttrium-zirconium oxide for facilitating the nucleation process and forming a mixture of low thixotropy during soldering.

5,006,490

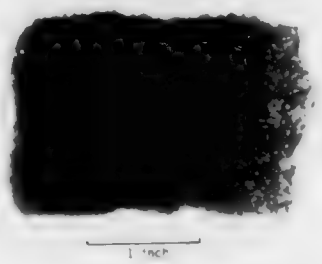
METHOD FOR THE FORMATION OF REFRACTORY PRODUCTS FROM AND DISPOSAL OF ASBESTOS

Kathryn V. Logan, Roswell, and Jesse D. Walton, Jr., Atlanta, both of Ga., assignors to Georgia Tech Research Corporation, Atlanta, Ga.

Continuation-in-part of Ser. No. 901,766, Aug. 28, 1986, Pat. No. 4,891,337. This application Dec. 19, 1989, Ser. No. 452,818

Int. Cl.[5] C04B *35/04, 35/10, 35/20*

U.S. Cl. 501—155 **20 Claims**



1 inch

1. A method of altering asbestos allowing for its disposal comprising:

mixing asbestos and a metal selected from the group consisting of aluminum and magnesium in a ratio to form an exothermic reaction mixture; and

reacting the exothermic reaction mixture heating to a temperature sufficient to ignite the mixture to form an end product in which the asbestos has been altered.

5,006,491

PROCESS FOR PRODUCTION OF NITRIDE CERAMIC SHAPES

Syuusaku Ueda, Harunamachi, and Masayuki Fujimoto, Takasaki, both of Japan, assignors to Taiyo Yuden CO., Ltd., Tokyo, Japan

Filed Mar. 21, 1989, Ser. No. 326,365

Claims priority, application Japan, Mar. 31, 1988, 63-80174

Int. Cl.[5] C04B *35/58*

U.S. Cl. 501—96 **9 Claims**

1. A process for the fabrication of nitride ceramic products which comprises:

(a) preparing a mixture of a nitride material and a sintering aid, both in finely divided form;

(b) forming the mixture into moldings of desired shape;

(c) sintering the moldings to maturity in a nitrogenous atmosphere, the sintered moldings having undesirable intergranular substances; and

(d) aftertreating the sintered moldings by exposing the sintered moldings to an atmosphere containing at least either of fluorine and a fluoride at an elevated temperature so as to remove the undesirable intergranular substances.

5,006,492

PRECERAMIC COMPOSITIONS AND CERAMIC PRODUCTS

John Semen, and John J. Rogers, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 193,105, May 12, 1988. This application Sep. 18, 1989, Ser. No. 409,036

The portion of the term of this patent subsequent to Jan. 2, 2007, has been disclaimed.

Int. Cl.[5] C04B *35/56, 35/58*

U.S. Cl. 501—97 **6 Claims**

1. A process for preparing a ceramic which comprises (A) molding a sintering aid-free preceramic composition having a particle size not larger than about 105 micrometers and comprising an intimate mixture of (1) about 50–85% by weight of silicon nitride powder and (2) about 15–50% by weight of a preceramic polysilazane binder at a temperature of about 60°–225° C., said binder consisting essentially of at least one polysilazane prepared by reacting an organodihalosilane with ammonia, treating the ammonolysis product with a basic catalyst which is capable of deprotonating an NH group that is adjacent to an SiH group, and quenching the resultant product with an electrophilic quenching reagent, and (B) pyrolyzing the molded composition in an inert atmosphere to a temperature of about 1200°–1450° C.

5,006,493

NOVEL CERAMIC BINDER COMPRISING POLY(ETHYLOXAZOLINE)

James E. Schuetz, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 31, 1986, Ser. No. 846,407

The portion of the term of this patent subsequent to May 16, 2006, has been disclaimed.

Int. Cl.[5] C04B *35/00*

U.S. Cl. 501—127 **14 Claims**

1. A method comprising forming a slurry containing a ceramic material and poly(ethyloxazoline), converting said slurry into a substantially dry powder, converting the powder into a body of a desired shape, and heating the body to substantially burn out the poly(ethyloxazoline).

5,006,494

STABILIZED BISMUTH OXIDE

Anil V. Virkar, Salt Lake City, Utah, assignor to Gas Research Institute, Chicago, Ill.

Filed Apr. 24, 1989, Ser. No. 342,291

Int. Cl.[5] C04B *35/48, 35/50*

U.S. Cl. 501—152 **10 Claims**

1. A stable Bi_2O_3 ceramic composition having excellent oxygen ion conductivity consisting essentially of: Bi_2O_3 in amounts from about 50 to about 90 mole %; Y_2O_3 in amounts from about 10 to about 40 mole %; and a dopant selected from the group consisting of ZrO_2, thoria or HfO_2 in amounts from about 0.1 to about 10 mole %.

5,006,495

FLUID CATALYTIC CRACKING REGENERATION

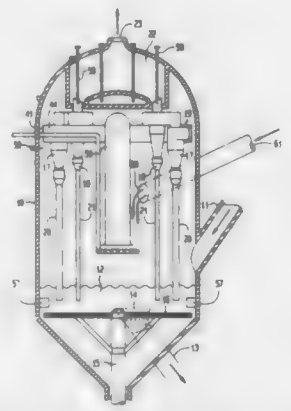
David A. Pappal, and Michael S. Sarli, both of Haddonfield, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 177,250, Apr. 4, 1988, abandoned, which is a continuation-in-part of Ser. No. 71,247, Jul. 8, 1987, Pat. No. 4,843,051. This application Feb. 26, 1990, Ser. No. 488,471

The portion of the term of this patent subsequent to Jun. 27, 2006, has been disclaimed.

Int. Cl.[5] B01J *29/38, 21/20;* C10G *11/18;* F27B *1/20*

U.S. Cl. 502—42 **2 Claims**



1. A method of reducing the emissions of nitrogen oxides from the regeneration of a fluid catalytic cracking catalyst, which comprises:

(i) contacting spend fluid catalytic cracking catalyst from an FCC reactor, the catalyst having coke deposited on it from cracking with an oxygen-containing regeneration gas, in a dense, fluidized bed in a regeneration vessel to effect oxidative removal of the coke deposited on the catalyst, the spent fluid catalytic cracking catalyst being admitted to the regenerator vessel from the FCC reactor through at least two inlets into the regenerator vessel located at different levels in the regenerator vessel, one inlet for the spent catalyst admitting the catalyst into the dense bed and the other into the region above the dense bed.

(ii) maintaining an oxygen/coke ratio in the dense bed to produce regeneration effluent gases containing carbon monoxide by combustion of the coke.

(iii) contacting the spent fluid catalytic cracking catalyst introduced into the regenerator into the region above the dense bed with the regeneration effluent gases in the region above the dense, fluidized bed in the regeneration vessel,

(iv) adding additional oxygen-containing regeneration gas in the region above the dense bed,

(v) oxidizing carbon monoxide to carbon dioxide in the presence of entrained catalyst particles in the regeneration effluent gases passing upwards through a substantially vertical, elongated duct within the regeneration vessel, the duct having an inlet above the dense bed to receive the carbon monoxide-containing regeneration effluent gases and entrained catalyst particles from the region above the dense bed to form effluent gases containing carbon dioxide and

(vi) separating the catalyst particles from the regeneration effluent gas in a plurality of cyclone separators within the regeneration vessel which receive the effluent gases and entrained catalyst particles from said elongated duct and returning the separated particles to the dense bed.

5,006,496

PROCESS FOR THE PREPARATION OF ZEOLITIC CATALYSTS

Tom Huizinga; Arend Hoek; Hennie Schaper, and Aan H. Klazinga, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 16, 1989, Ser. No. 376,277

Claims priority, application United Kingdom, Jun. 20, 1988, 8814601

Int. Cl.[5] B01J *29/10*

U.S. Cl. 502—61 **6 Claims**

1. A process for the preparation of a zeolitic catalyst which comprises treating at a temperature between 10° and 95° C. a zeolite of the Y-type having an alkali metal/aluminum oxide molar ratio of at most 0.13 with a solution of a gallium or nickel nitrate or chloride having a molarity between 0.005 and 2, subjecting the ion-exchanged zeolite to a drying treatment at a temperature up to 200° C. and combining the dried ion-exchanged zeolite without a calcination step with a hydrogenation component selected from the group consisting of nickel, cobalt, tungsten, molybdenum, platinum, palladium and mixtures thereof.

4. A catalyst comprising a zeolite of the Y type having an alkali oxide/aluminum oxide molar ratio of a most 0.13 and a mutivalent cation(s) with a cationic radius between 0.6 and 1.0 Å at ion-exchangeable positions, and at least one hydrogenation component of a Group VIII and/or Group VI(b) metal, obtainable by the process according to claim 1.

5,006,497

MULTI COMPONENT CATALYST AND A PROCESS FOR CATALYTIC CRACKING OF HEAVY HYDROCARBON FEED TO LIGHTER PRODUCTS

Joseph A. Herbst, Turnersville; Hartley Owen, Belle Mead, both of N.J., and Paul H. Schipper, Wilmington, Del., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 30, 1988, Ser. No. 292,287

Int. Cl.[5] B01J *29/04*

U.S. Cl. 502—67 **17 Claims**

1. A catalytic cracking catalyst comprising catalytically effective amounts of:

(i) at least one large pore molecular sieve;

(ii) a shape selective zeolite having a constraint index of 1–12, being substantially free of hydrogenation/dehydrogenation components, and having paraffin cracking-/isomerization activity;

(iii) a shape selective zeolite having a constraint index of 1–12 and paraffin aromatization activity; and

(iv) a matrix.

4. The catalyst of claim 1 wherein the large pore molecular sieve comprises at least one member selected from the group of VPI-5, pillared clays, SAPO-37 and zeolite Beta.

14. The catalyst of claim 1 wherein the matrix, exclusive of zeolites, contains about 0.5 to 10 wt % of at least one of calcium, magnesium, barium, lanthanum, cerium and compounds thereof.

5,006,498

ARTIFICIAL STONE WICK FOR A BURNER AND PROCESSES FOR THE PREPARATION THEREOF

Kwang-Shick Kim, #551, Dockpoong-7 Ri, Dongbu-Up, Kwangju-Gun, Kyungki-Do, Rep. of Korea

Filed Apr. 21, 1989, Ser. No. 341,643

Claims priority, application Rep. of Korea, Apr. 23, 1988, 4673/1988

Int. Cl.[5] B01J *20/12, 20/18*

U.S. Cl. 502—68 3 Claims

1. An artificial stone wick for a burner comprising the heat treated composition which comprises a mixture of portland cement powder, dried clay, zeolite and water, and whose final composition is in the range of SiO_2 7–21 weight percent, Al_2O_3 2–5 weight percent, Fe_2O_3 1–3 weight percent, CaO 50–27 weight percent, MgO 0.5–3 weight percent, K_2O 0.5–3 weight percent, Na_2O 0–2 weight percent, and TiO_2 0–2 weight percent.

5,006,499

ZIEGLER-NATTA CATALYST AND A PROCESS FOR ITS PREPARATION

Eric Daire, Lavera, France, assignor to BP Chemicals Limited, London, England

Filed Nov. 21, 1988, Ser. No. 274,386

Claims priority, application France, Nov. 30, 1987, 87 16754

Int. Cl.[5] C08F *4/654, 4/68*

U.S. Cl. 502—104 15 Claims

1. A process for the preparation of a solid catalyst of the Ziegler-Natta type comprising reacting a soluble magnesium dialkoxide solubilised in a liquid hydrocarbon with a transition metal halide characterised in that the solid catalyst is precipitated in a liquid hydrocarbon medium by reacting the solution of magnesium dialkoxide and transition metal halide in the presence of at least one alkoxide of a transition metal belonging to sub-groups IVb, Vb or VIb of the Periodic Classification of Elements, which transition metal alkoxide is free from halogen and soluble in liquid hydrocarbon and in that the transition metal halide is selected from the group consisting of halides of titanium (IV), halides of vanadium (IV) and halides of VO (III).

5,006,500

OLEFIN POLYMERIZATION CATALYST FROM TRIALKYLALUMINUM MIXTURE, SILICA GEL AND A METALLOCENE

Main Chang, Houston, Tex., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Continuation-in-part of Ser. No. 263,572, Oct. 27, 1988, Pat. No. 4,937,217, which is a continuation-in-part of Ser. No. 134,413, Dec. 17, 1987, Pat. No. 4,912,075. This application Oct. 16, 1989, Ser. No. 422,357

Int. Cl.[5] C08F *4/656*

U.S. Cl. 502—107 9 Claims

5. A method of preparing a catalyst active for the polymerization of 1-olefins, comprising:

(i) reacting a mixture of triisobutyl aluminum and trimethyl aluminum wherein the mole ratio of TMA to TIBA is from about 2:1 to 1000:1 with an undehydrated silica gel to form a reaction product;

(ii) contacting the reaction product with a metallocene component selected from the group consisting of Group IVB metallocenes, Group VB metallocenes and mixtures thereof to produce a catalytic composition.

5,006,501

AMINE CATALYST FOR FORMING FINE-CELL RIGID POLYURETHANE FOAM

Yutaka Tamano, Tokuyama, and Shoji Arai, Shinnanyo, both of Japan, assignors to Tosoh Corporation, Japan

Division of Ser. No. 288,238, Dec. 22, 1988, Pat. No. 4,910,230.

This application Dec. 28, 1989, Ser. No. 458,504

Claims priority, application Japan, Dec. 25, 1987, 62-327382; Jan. 26, 1988, 63-13520

Int. Cl.[5] B01J *31/04*

U.S. Cl. 502—167 2 Claims

1. An amine catalyst for the formation of a fine-cell rigid polyurethane foam, which has a retarding effect, said amine catalyst comprising (a) 30 to 50 parts by weight of triethylene diamine, (b) 30 to 50 parts by weight of at least one compound selected from the group consisting of bis(dimethylaminoethyl)ether and N,N',N'',N''-pentamethyldiethylene triamine, (c) 0 to 40 parts by weight of at least one compound selected from the group consisting of tetramethylhexamethylene diamine and trimethylaminoethylpiperazine, and (d) formic acid in an amount of 0.2 to 1.5 moles per mole of triethylene diamine.

5,006,502

HEAT TRANSFER SHEET

Hideo Fujimura, Kashiwa, and Hironobu Hanaki, Shinjuku, both of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

PCT No. PCT/JP88/00931, § 371 Date May 11, 1989, § 102(e) Date May 11, 1989, PCT Pub. No. WO89/02372, PCT Pub. Date Mar. 23, 1989

PCT Filed Sep. 14, 1988, Ser. No. 358,360

Claims priority, application Japan, Sep. 14, 1987, 62-228626; Sep. 30, 1987, 62-246811; Nov. 5, 1987, 62-280058; Dec. 18, 1987, 62-321098; Mar. 4, 1988, 62-51259

Int. Cl.[5] B41M *5/35, 5/26*

U.S. Cl. 503—227 16 Claims



1. A heat transfer sheet comprising:

a substrate sheet;

an image-receiving layer formed peelably on the surface of said substrate sheet, said image-receiving layer comprising a dye dyeable resin; and

a heat migratable dye layer formed on a plane on which said image-receiving layer is formed.

5,006,503

THERMALLY-TRANSFERABLE FLUORESCENT EUROPIUM COMPLEXES

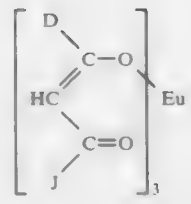
Gary W. Byers, and Derek D. Chapman, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 13, 1990, Ser. No. 493,076

Int. Cl.[5] B41M *5/035, 5/26*

U.S. Cl. 503—227 17 Claims

8. In a process of forming a transfer image comprising imagewise-heating a donor element comprising a support having on one side thereof a layer comprising a material dispersed in a polymeric binder, and transferring an image to a receiving element to form said transfer image, the improvement wherein said material is a fluorescent europium complex, said complex having the formula:



wherein:

D is a substituted or unsubstituted, aromatic, 5- or 6-membered carbocyclic or heterocyclic moiety; and

J is $-CF_3$, $-CH_3$, $-CH_2F$ or $-CHF_2$.

5,006,504

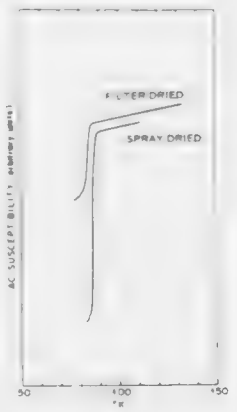
PREPARING SUPERCONDUCTING CERAMIC MATERIALS

Henry M. O'Bryan, Jr., Plainfield; Warren W. Rhodes, Raritan, and John Thomson, Jr., Spring Lake, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 28, 1989, Ser. No. 399,649

Int. Cl.[5] H01L *39/12;* C04B *35/64*

U.S. Cl. 505—1 5 Claims



1. The process of fabricating superconducting ceramic bodies comprising >99 percent $YBa_2Cu_3O_7$, which comprises the steps of

(a) wet milling an aqueous slurry comprising selected proportions of starting ingredients comprising yttrium oxide, barium carbonate and cupric oxide in an approximately 1:2:3 molar ratio to form a milled slurry, said aqueous slurry including a binder, a defoaming agent and a dispersant,

(b) continuously agitating the milled slurry after the wet milling step so as to avoid non-uniform sedimentation of starting ingredients in the slurry,

(c) spray drying the milled slurry into particulate material,

(d) calcining the spray dried particulate material to produce a calcined powder, said calcining step comprising ramping the temperature within a calcining furnace containing the spray dried particulate material to 900° C. in 4 hours, soaking the particulate matter at 900° C. for a period of 24 hours and, thereafter, ramping the temperature to about 450° C. in about 4 hours, the calcined powder comprising ≧95 percent $YBa_2Cu_3O_7$,

(e) forming the calcined powder into a body having a desired form, and

(f) sintering said body, said sintering including the steps comprising ramping the temperature of a sintering furnace to 900° C. in 2 hours, ramping the temperature from 900° to 975° C. in 6 hours, soaking the body at 975° C. for 6 hours, ramping the temperature from 975° C. to 450° C. in 1 hour, soaking the body at 450° C. for 4 hours, and ramping the temperature from 450° C. to room temperature in 1 hour.

5,006,505

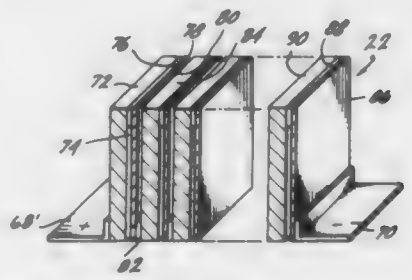
PELTIER COOLING STAGE UTILIZING A SUPERCONDUCTOR-SEMICONDUCTOR JUNCTION

Matthew M. Skertic, Chatsworth, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 8, 1988, Ser. No. 229,883

Int. Cl.[5] H01L *25/04, 35/28;* F25B *21/00*

U.S. Cl. 505—1 20 Claims



1. A Peltier cooling stack comprising:

a first electrode;

a superconducting layer electrically coupled to said first electrode;

a semiconducting layer electrically coupled to said superconducting layer; and

a second superconducting layer electrically coupled to said semiconductor layer; and

a second electrode electrically coupled to said second superconducting layer, electrons flowing under an applied voltage from said first electrode through said first superconducting layer, semiconductor layer, second superconducting layer and second electrode, the electrical junction between said first superconducting layer and semiconductor providing Peltier cooling while the electrical junction between said semiconductor layer and said second superconducting layer providing Peltier heating,

whereby a cryogenic Peltier cooling stack is provided.

5,006,506

MODIFIED CHROMIUM-CONTAINING CATALYST COMPOSITION FOR POLYMERIZING OLEFINS AND METHOD OF PREPARING THE CATALYST COMPOSITION

John T. T. Hsieh, Warren, and Ann L. Pruden, Bellemead, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 21, 1989, Ser. No. 454,538

Int. Cl.[5] B01J *21/02, 21/06, 21/08, 23/26*

U.S. Cl. 502—204 40 Claims

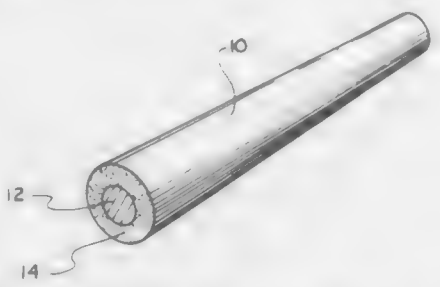
1. A modified olefin polymerization catalyst composition comprising a mixture of a supported catalyst comprising a chromium compound and a catalyst modifier which is an oxide of an element of Group IIIA of the Periodic Table of the Elements, the modifier containing such an amount of water that the modified catalyst composition contains about 0.010 to about 0.3% wt. of water.

5,006,507

NICKEL-BASED SUBSTRATE FOR CERAMIC SUPERCONDUCTOR

Lawrence D. Woolf, Carlsbad; Frederick H. Elsner, Cardiff, and William A. Raggio, Del Mar, all of Calif., assignors to General Atomics, San Diego, Calif.

Filed Apr. 14, 1989, Ser. No. 339,013
Int. Cl.[5] B32B *9/00*
U.S. Cl. 505—1 **25 Claims**



1. A ceramic superconductor which comprises:
an aluminum containing nickel based alloy substrate wherein said substrate is identified as Nil-Alx and wherein x is greater than zero and less than or equal to twenty-five one hundredths ($0 \leqq X \leqq 0.25$); and
an oxygen-containing ceramic superconductor layer supported on said substrate.

5,006,508

PREPARATION OF COPPER ALKOXIDES AND SOL/GEL PRECURSORS OF SUPERCONDUCTING CERAMICS

Debra J. Treacy, Walpole, Mass., and Khodabakhsh S. Mazdiyasni, Alpine, Calif., assignors to General Atomics, San Diego, Calif.

Filed Feb. 3, 1989, Ser. No. 306,539
Int. Cl.[5] B01J *13/00;* **C01G** *3/02;* **H01L** *39/12*
U.S. Cl. 505—1 **13 Claims**

1. A method for the preparation of high purity copper (II) alkoxides comprising:
(a) reacting an alkali metal with an anhydrous, deoxygenated alcohol and recovering from the resulting reaction product an anhydrous, deoxygenated alcoholic alkali metal alkoxide solution;
(b) admixing anhydrous copper (II) fluoride with the alkali metal alkoxide solution;
(c) heating said mixture to a temperature of between from about ambient temperature and about 10° C. below the boiling point of the alcohol for between about 0.25 hour and about 8 hours to form a solution of alkali metal fluoride and copper (II) alkoxide;
(d) ammoniating said alkali metal fluoride and copper (II) solution with anhydrous ammonia to form a saturated ammoniacal alcoholic solution of ammoniacal copper (II) alkoxide in solution and an alkali metal fluoride precipitate; and
(e) recovering an alkali metal free ammoniacal copper (II) alkoxide solution.

6. A method for the preparation of a homogeneous sol/gel useful in the preparation of superconducting ceramics comprising:
(a) reacting an alkali metal with an anhydrous deoxygenated alcohol and recovering from the resulting reaction product an anhydrous, deoxygenated alcoholic alkali metal alkoxide solution;
(b) admixing anhydrous copper (II) fluoride with the alkali metal alkoxide solution;
(c) heating said mixture to a temperature of between about ambient temperature and about 10° below the boiling point of the alcohol for between about 0.25 hour and about 8 hours to form a solution of alkali metal fluoride and a copper (II) alkoxide;
(d) ammoniating said alkali metal fluoride and copper (II) alkoxide solution with anhydrous ammonia to form a saturated ammoniacal alcoholic solution of ammoniacal copper (II) alkoxide in solution and an alkali metal fluoride precipitate;
(e) recovering an alkali metal free ammoniacal copper (II) alkoxide solution;
(f) hydrating said ammoniacal copper (II) alkoxide solution by the addition of 2 moles of triply distilled deionized water for each such mole of ammoniacal copper (II) alkoxide present in said solution and stirring said water containing solution for a time in the range of about 0.5 hour to about 2 hours;
(g) adding a solution of barium alkoxide in excess alcohol, at a temperature of at least 55° C., to the ammoniacal copper (II) alkoxide solution obtained in (f), said amount of barium added being about ½ the amount, on a molar basis, of copper present and stirring the resulting barium-copper containing solution at a temperature from about 60° C. to about 70° C. for a time in the range of about 0.5 hour to about 2.0 hours;
(h) adding a lanthanide series metal alkoxide solution to the solution resulting from (g), the amount of lanthanide metal added being about ⅓, on a molar basis, the amount of copper present in (g) and heating the resulting lanthanide metal-barium-copper solution at a temperature in the range of about 50° C. to about 60° C. for a time in the range of about 8 hours to about 16 hours; and
(i) concentrating and ageing the lanthanide metal-barium-copper solution to produce a sol/gel.

5,006,509

USE OF HUMAN GROWTH HORMONE IN TREATING TOPICAL ULCERS

Harald Waago, Breisynvegen 23, N-7021, Trondheim, Norway

Filed Jun. 24, 1988, Ser. No. 211,359
Int. Cl.[5] A61K *37/36*
U.S. Cl. 514—12 **3 Claims**

1. A method for treating topical ulcers, in a patient in need of such treatment comprising:
topically applying to said patient a therapeutically effective amount of human growth hormone in a pharmaceutically acceptable carrier.

5,006,510

METHOD FOR RELIEVING CHRONIC PAIN WITH A SOMATOSTATIN ANALOG COMPOSITION

Wladislaw V. Ellis, 2445 Carleton St., Berkeley, Calif. 94704

Filed Jun. 20, 1989, Ser. No. 368,660
Int. Cl.[5] A61K *37/02*
U.S. Cl. 514—16 **6 Claims**

1. A therapeutic method for relieving burning pain or hyperesthesia at the site of topical administration comprising:
topically administering an antinociceptive composition to relieve pain in a patient experiencing burning pain or hyperesthesia, the antinociceptive composition including a peptide having the amino acid sequence

(D)Phe-Cys-Phe-(D)Trp-Lys-Thr-Cys-Thr-ol

or a pharmaceutically acceptable acid addition salt or complex thereof, wherein the antinociceptive composition is a solution having from about 0.2 μg to about 2 μg peptide per unit dose and wherein the composition includes dimethyl sulfoxide that serves as a carrier to promote the passage of the peptide through the patient's skin.

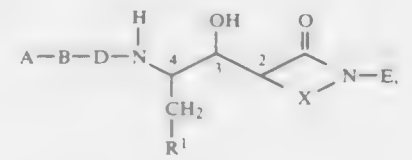
5,006,511

DI- OR TRIPEPTIDE RENIN INHIBITORS CONTAINING LACTAM CONFORMATIONAL RESTRICTION IN ACHPA

William J. Greenlee, Teaneck, N.J.; Daniel F. Veber, Ambler, and Peter D. Williams, Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

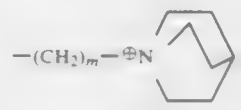
Continuation of Ser. No. 108,343, Oct. 14, 1981, abandoned. This application Aug. 26, 1988, Ser. No. 237,648
Int. Cl.[5] A61K *37/02;* **C07K** *5/02;* **C07F** *209/54;* **C07D** *207/12*
U.S. Cl. 514—19 **9 Claims**

1. A peptide of the formula:

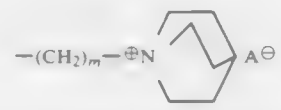


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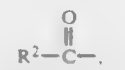
wherein:
A is hydrogen;
C_1–C_6-alkyl;
aryl, where aryl is unsubstituted or mono-, di- or trisubstituted phenyl, wherein the substituent(s) is/are independently selected from the group consisting of C_1–C_7-alkyl, phenyl-C_1–C_4-alkyl, amino, mono- or di-C_1–C_4-alkylamino, amino-C_1–C_4-alkyl, hydroxy-C_1–C_4-alkyl, mono- or di-C_1–C_4-alkylamino- C_1–C_4-alkyl, guanidyl, guanidyl-C_1–C_4-alkyl, hydroxyl, C_1–C_4-alkoxy, trifluoromethyl, halo, CHO, $—CO_2H$, $—CONH_2$, —CONH—C_1–C_4-alkyl, $—CON(C_1–C_4\text{-alkyl})_2$, —CO—$C_1$–$C_4$-alkyl $—(CH_2)_m—\oplus N(R^3)_2R^4\ A\ominus$, where R^3 is C_1–C_4-alkyl, $—(CH_2)_4—$, $—(CH_2)_5—$ or $—(CH_2)_2—O—(CH_2)_2—$; R^4 is C_1–C_4-alkyl, C_1–C_4-hydroxyalkyl, C_1–C_4-carboxyalkyl, or $—CH_2$-phenyl; $A\ominus$ is a counterion selected from the group consisting of single negatively-charged ions, and m is 0-to-3; $—CO_2—C_1–C_4$-alkyl, $—CO_2—C_1–C_4$-alkoxy-C_2–C_4-alkyl,



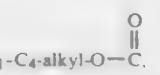
where $A\ominus$ and m are as defined above, and $—NR^5R^6$, where R^5 and R^6 are independently hydrogen, unsubstituted or monosubstituted C_1–C_4-alkyl, wherein the substituent is amino, mono- or di-C_1–C_4-alkylamino or $—\oplus N(R^3)_2R^4\ A\ominus$, where R^3, R^4 and $A\ominus$ are as defined above;
Het, where Het is an unsubstituted or mono- or disubstituted 5-to-7-membered mono- or bicyclic or 7- to 10- membered bicyclic heterocyclic ring, where the one or two heteroatoms are independently selected from the group consisting of N, O, S, NO, SO, SO_2 or quaternized N, and the substituent(s) is/are independently selected from the group consisting of hydroxyl, thiol, C_1–C_6-alkyl, CF_3, C_1–C_4-alkoxy, halo, aryl, as defined above, aryl-C_1–C_4-alkyl, amino, mono- or di-C_1–C_4-alkylamino, amino-C_1–C_4-alkyl, hydroxy-C_1–C_4-alkyl, mono- or di-C_1–C_4-alkylamino-C_1–C_4-alkyl, guanidyl, guanidyl-C_1–C_4-alkyl, CHO, CO_2H, $CO_2—C_1–C_4$-alkyl, $CONH_2$, CONH—C_1–C_4-alkyl, $CON(C_1–C_4\text{-alkyl})_2$, NR^5R^6,

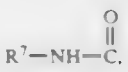


and $—(CH_2)_m—\oplus N(R^3)_2R^4\ A\ominus$, wherein R^5, R^6, $A\ominus$, m, R^3 and R^4 are as defined above, or when the heteroatom N is present, the substituents are alternatively $—(CH_2)_q—$ or $—(CH_2)_2—O—(CH_2)_2—$ and form a ring with the N-atom, wherein q is 3-to-6;

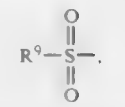


where R^2 is C_1–C_7-alkyl; hydrogen; Het, as defined above; aryl, as defined above; mono-substituted C_1–C_5-alkyl, wherein the substituent is selected from the group consisting of aryl, as defined above; Het, as defined above; hydroxyl; $—CO_2H$; CO_2R^7, where R^7 is C_1–C_5-alkyl, aryl, as defined above, and aryl-C_1–C_4-alkyl; $CONH_2$; —CONH—R^7 or $—S(O)_n—R^7$, wherein n is 0-to-2 and R^7 is as defined above; C_1–C_4-alkoxy; C_3–C_7-cycloalkyl; amino; mono- or di-C_1–C_4-alkylamino; —NH-aryl, —NH—CH_2-aryl or —CO-aryl, where aryl is as defined above; and —NH-Het, —NH—CH_2-Het or —CO-Het, where Het is as defined above;

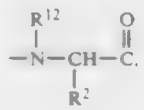




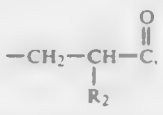
where R^7 is as defined above; or



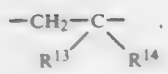
where R^9 is C_1–C_5-alkyl, aryl, as defined above, or Het, as defined above;
B and D are independently



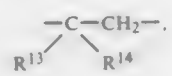
where R^{12} is hydrogen, C_1–C_5-alkyl or CH_2-aryl, wherein aryl is as defined above; and R^2 is as defined above;



where R^2 is as defined above; or either B or D, but not both simultaneously, is absent;
R^1 is hydrogen;
C_3–C_6-alkyl;
aryl, as defined above;
unsubstituted, mono-, di- or trisubstituted C_3–C_7-cycloalkyl, where the substituent(s) is/are selected from the group consisting of C_1–C_4-alkyl, trifluoromethyl, hydroxyl, C_1–C_4-alkoxy and halo; or
unsubstituted or 4-monosubstituted 1,3-dithiolan-2-yl or unsubstituted or 4-monosubstituted 1,3-dithian-2-yl, where the substituent is $—(CH_2)_m$-aryl, where m and aryl are as defined above;
X is



where and R^{13} and R^{14} are independently hydrogen; C_1–C_7-alkyl; C_2–C_7-alkenyl; —CO_2H; —$CONH_2$; —CO_2R^7, —CO—NH—R^7or —CO—$N(R^7)_2$, wherein R^7 is as defined above; monosubstituted C_1–C_5-alkyl, wherein the substituent is selected from the group consisting of azido; halo; hydroxy; C_1–C_5-alkoxy; aryl, aryl—CH_2O—, aryloxy, aryl-COO—, aryl-CH_2—NH— or arylamino, where aryl is as defined above; C_1–C_5-alkyl-CO_2—; R^7NH—COO—, R^7—CO—NH—, R^7—NH—CO—NH— or R^7—$S(O)_n$, where n and R^7 are as defined above; amino; mono- or di-C_1–C_4-alkylamino; or Het, as defined above; or R^{13} and R^{14} are connected to form a polymethylene chain of the formula, —$(CH_2)_p$, where p is 2-to-6; or



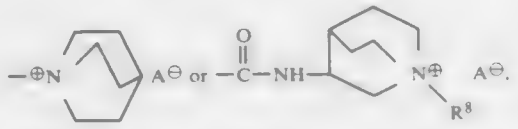
where R^{13} and R^{14} are as defined above; and

E is hydrogen;

aryl, as defined above;

Het, as defined above;

C_2–C_7-alkenyl; or unsubstituted or mono- substituted C_1–C_7-alkyl or unsubstituted or mono-substituted C_3–C_7-cycloalkyl, where the substituent is selected from the group consisting of aryl, —CO-aryl, —NH-aryl or —O-aryl, wherein aryl is as defined above; Het, —NH-Het, —O-Het, —CO-Het, —NH—CO-Het, CO—NH-Het, —CO—NH—CH_2-Het or O—CO—Het, wherein Het is as defined above; azido; C_3–C_7-cycloalkyl; halo; hydroxyl; C_1–C_4-alkoxy; —COOH; —O—CO—R^7, —O—CO—NH—R , —NH—CO—R^7, —NH—CO—NH—R^7, —$S(O)_n$—R^7, —CO_2R^7 or —CO—NH—R^7, wherein R^7 and n are as defined above; amino; mono- or di-C_1–C_4-alkylamino; —CHO; and —$\oplus N(R^3)_2R^8$ $A^\ominus$,



where R^8 is C_1–C_4-alkyl, C_1–C_4-hydroxyalkyl, alkyl, C_1–C_4-carboxyalkyl, —CH_2-aryl, wherein aryl is as defined above, or —CH_2—Het, wherein Het is as defined above, and R^3 and $A^\ominus$ are as defined above;

or a pharmaceutically-acceptable salt thereof.

5,006,512

THERAPEUTIC USAGES OF INHIBITORS FOR A POTASSIUM EFFLUX CHANNEL

Tsuyoshi Ohnishi, 502 King of Prussia Rd., Radnor, Pa. 19087

Continuation-in-part of Ser. No. 104,199, Oct. 2, 1987, abandoned. This application Dec. 22, 1988, Ser. No. 289,072

Int. Cl.[5] A61K *37/02, 35/58*

U.S. Cl. 514—21 **3 Claims**

1. A method of preventing cell death of the brain, the spinal cord and the liver against ischemia, hypoxia or injury in a human or animal by administering an effective dosage of charybdotoxin either pre-injury or post-injury, in the amount of at least 0.2 mg/kg body weight/day, subcutaneously at least 0.15 mg/kg/day or i.v. at least 0.1 mg/kg/day.

5,006,513

ANTIMYCOTIC COMPOSITIONS OF NIKKOMYCIN COMPOUNDS AND AZOLE ANTIMYCOTICA

Richard F. Hector, Dublin, Calif.; Klaus Schaller, Wuppertal, Fed. Rep. of Germany; Heinrich F. Moeschler, and Manfred Plempel, both of Leverkusen, Fed. Rep. of Germany, assignors to Miles Inc., Elkhart, Ind.

Continuation of Ser. No. 118,078, Nov. 9, 1987, abandoned. This application Nov. 29, 1989, Ser. No. 442,970

Int. Cl.[5] A61K *31/50, 31/70*

U.S. Cl. 514—43 **2 Claims**

1. A synergistically, fungicidally effective antimycotic composition comprising fungicidally effective amount of nikkomycin Z and intraconazole, the weight of the nikkomycin Z to itraconazole ranging from about 1:1 to about 30:1.

5,006,514

α,α-TREHALOSE TRIMYCOLATES AND PHARMACEUTICAL COMPOSITIONS

Yoshiko Kato, Kobe; Junji Yoshinaga, Neyagawa; Takeshi Shogaki, Suita; Satoko Kurano, Okaka, and Ikuya Yano, Minoh, all of Japan, assignors to Sawai Pharmaceutical Co., Ltd., Osaki, Japan

PCT No. PCT/JP87/00171, § 371 Date Oct. 2, 1987, § 102(e) Date Oct. 2, 1987, PCT Pub. No. WO87/05606, PCT Pub. Date Sep. 24, 1987

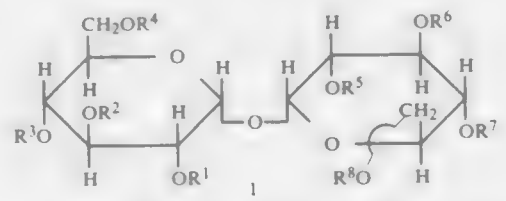
PCT Filed Mar. 19, 1987, Ser. No. 123,933

Claims priority, application Japan, Mar. 20, 1986, 61-63004; Aug. 28, 1986, 61-203486

Int. Cl.[5] A61K *31/71, 31/70;* **C07H** *13/06*

U.S. Cl. 514—53 **17 Claims**

1. An α,α-trehalose trimycolate represented by the formula:



(I)

wherein each of R^1, R^2 and R^8 is the same or a different mycolic

acid residue, and each of R^3, R^4, R^5, R^6 and R^7 is a hydrogen atom.

5,006,515

PHARMACEUTICALS, PHOSPHORUS-CONTAINING 2-ISOXAZOLINES AND ISOXAZOLES CONTAINED THEREIN

Wilfried Schwab, Wiesbaden; Robert R. Bartlett, Darmstadt; Ulrich Gebert, Kelkheim; Hans U. Schorlemmer, Marburg; Gerhard Dickneite, Marburg, and Hans H. Sedlacek, Marburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

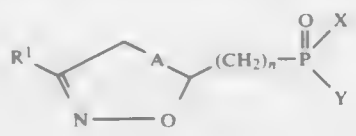
Filed Oct. 26, 1988, Ser. No. 262,635

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1987, 3736113

Int. Cl.[5] A61K *31/675;* **C07F** *9/653*

U.S. Cl. 514—89 **11 Claims**

1. A compound of the formula I, and/or one of its physiologically tolerated salts where appropriate,



(I)

where

R^1 represents

(a) a straight-chain or branched alkyl or alkenyl group which has 1 to 6 carbon atoms and whose carbon chain can be substituted by halogen, hydroxyl, (C_1–C_4)alkoxy, (C_1–C_4)acyloxy or aryl which is optionally substituted by (C_1–C_4)alkoxy or halogen, or

(b) a mono- or binuclear aromatic or heteroaromatic group having 1 or 2 nitrogen atoms and/or one sulfur or oxygen atom in the ring system, it being possible for this group to be substituted one or more times and identically or differently by straight-chain or branched (C_1–C_4)alkyl, (C_3–C_6)cycloalkyl, hydroxyl, (C_1–C_3)alkoxy, unsubstituted phenoxy, (C_1–C_4)acyloxy or benzoyloxy, halogen, trifluoromethyl, nitro, optionally mono- or disubstituted amino, (C_1–C_4)alkoxycarbonyl, carboxyl, carbamoyl, (C_1–C_4)alkylcarbonyl, whose carbonyl group can in each case also be in ketalized form, or benzyl or phenyl which is optionally ring-substituted by (C_1–C_4)alkyl, halogen or (C_1–C_3)alkoxy, or

(c) carboxyl or alkoxycarbonyl having 1 to 4 carbon atoms in the alkyl moiety or

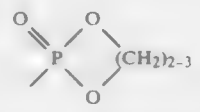
(d) arylcarbonyl which is optionally substituted in the aryl moiety by (C_1–C_4)alkyl, halogen or (C_1–C_3)alkoxy, or

(e) halogen,

A denotes a C,C single bond or a C,C double bond,

n denotes an integer from 0 to 2, and

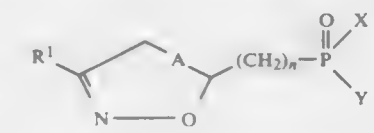
X and Y, which can be identical or different, each denote, independently of one another, a straight-chain or branched (C_1–C_4)alkyl group, the radical —OR^2 or the group —NR^2R^3, where R^2 and R^3 represent hydrogen or optionally substituted (C_1–C_6)alkyl radicals which, in the group —NR^2R^3, can also form together with the nitrogen atom a five- to seven-membered ring or, in the structural element —$P(O)(OR^2)_2$, can form together with the phosphorus atom a heterocycle of the formula



which is optionally also substituted by (C_1–C_3) alkyl (C_1–C_4)alkoxycarbonyl or carboxyl,

and where the compounds of the formula I can, where appropriate, be in the form of pure stereoisomers or mixtures thereof, excepting the compounds 3-phenyl-2-isoxazolin-5-ylphosphonic acid, 3-methyl(and phenyl)-2-isoxazolin-5-ylphosphonate, dipropyl 3-(3-nitrophenyl)-2-isoxazolin-5-ylphosphonate, 3-methyl(and phenyl)-2-isoxazollin-5-ylphosphonic tetramethyldiamide, 3-phenyl-2-isoxazolin-5-ylmethylphosphonic acid and the diethyl ester thereof, diethyl 3-methyl(ethyl, isopropyl, tert.butyl, methoxymethyl, phenyl and ethoxycarbonyl)-5-isoxazolylmethylphosphonate, 3-(4-fluoro- and 4-chlorophenyl)-5-isoxazolyl(P-methyl)phosphinic acid and methyl 3-phenyl-5-isoxazolyl(P-methyl)phosphinate, where the racemic forms are being dealt with where appropriate.

8. A method of treating a person for protecting said person from diseases of the immune system, which comprises administering to said person an effective amount of at least one compound of the formula I, its stereoisomeric forms where appropriate or its physiologically tolerated salts where appropriate,



(I)

where

R^1 represents

(a) a straight-chain or branched alkyl or alkenyl group which has 1 to 6 carbon atoms and whose carbon chain can be substituted by halogen, hydroxyl, (C_1–C_4)alkoxy, (C_1–C_4)acyloxy or aryl which is optionally substituted by (C_1–C_4)alkoxy or halogen, or

(b) a mono- or binuclear aromatic or heteroaromatic group having 1 or 2 nitrogen atoms and/or one sulfur or oxygen atom in the ring system, it is being possible for this group to be substituted one or more times and identically or differently by straight-chain or branched (C_1–C_4)alkyl, (C_3–C_6)cycloalkyl, hydroxyl, (C_1–C_3)alkoxy, unsubstituted phenoxy, (C_1–C_4)acyloxy or benzoyloxy, halogen, trifluoromethyl, nitro, optionally mono- or disubstituted amino, (C_1–C_4)alkylcarbonyl, carboxyl, carbamoyl, (C_1–C_4)alkylcarbonyl, whose carbonyl group can in each case also be in ketalized form, or benzyl or phenyl which is optionally ring-substituted by (C_1–C_4)-alkyl, halogen or (C_1–C_3)alkoxy, or

(c) carboxyl or alkoxycarbonyl having 1 to 4 carbon atoms in the alkyl moiety or

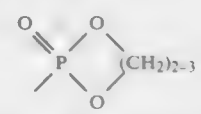
(d) arylcarbonyl which is optionally substituted in the aryl moiety by (C_1–C_4)alkyl, halogen or (C_1–C_3)alkoxy, or

(e) halogen,

A denotes a C,C single bond or a C,C double bond,

n denotes an integer from 0 to 2, and

X and Y, which can be identical or different, each denote, independently of one another, a straight-chain or branched (C_1–C_4)alkyl group, the radical —OR^2 or the group —NR^2R^3, where R^2 and R^3 represent hydrogen or optionally substituted (C_1–C_6) alkyl radicals which, in the group —NR^2R^3, can also form together with the nitrogen atom a five- to seven-membered ring or, in the structural element, —$P(O)(OR^2)_2$, can form together with the phosphorus atom a heterocycle of the formula



which is optionally also substituted by (C_1–C_3) alkyl, (C_1–C_4) alkyoxycarbonyl or carboxyl,

and where the compounds of the formula I can, where appropriate, be in the form of pure stereoisomers or mixtures thereof, excepting the compounds 3-phenyl-2-isoxazolin-5-ylphosphonic acid, 3-methyl(and phenyl)-2-isoxazolin-5-ylphosphonate, dipropyl 3-(3-nitrophenyl)-2-isoxazolin-5-ylphosphonate, 3-methyl(and phenyl)-2-isoxazollin-5-ylphosphonic tetramethyldiamide, 3-phenyl-2-isoxazolin-5-ylmethylphosphonic acid and the diethyl ester thereof, diethyl 3-methyl(ethyl,isopropyl, tert.butyl, methoxymethyl, phenyl and ethoxycarbonyl)-5-isoxazolylmethylphosphonate, 3-(4-fluoro- and 4-chlorophenyl)-5-isoxazolyl(P-methyl)phosphinic acid and methyl 3-phenyl-5-isoxazolyl(P-methyl)phosphinate.

5,006,516

METHOD FOR THE PROPHYLAXIS OF CARDIAC INFARCTIONS AND THE PREVENTION OF REINFARCTIONS

Joachim Helbig, Tutzing, and Hans G. Classen, Stuttgart, both of Fed. Rep. of Germany, assignors to Verla-Pharm Arzneimittelfabrik Apotheker H.J.V. Ehrlich GmbH & Co. KG., Tutzing, Fed. Rep. of Germany

Filed May 1, 1989, Ser. No. 345,276

Claims priority, application Fed. Rep. of Germany, May 2, 1988, 3814856

Int. Cl.[5] A61K *31/60*

U.S. Cl. 514—163 **4 Claims**

1. A method for the prophylaxis of cardiac infarctions and for the prevention of reinfarctions in a mammal, comprising administering to said mammal a pharmaceutical agent comprising a pharmaceutically effective amount of a mixture of a magnesium compound and acetylsalicylic acid as the active ingredient and a pharmaceutically acceptable carrier, said

magnesium compound selected from the group consisting of magnesium amino dicarboxylic acid halides, basic magnesium amino dicarboxylic acid salts, magnesium halides, and combinations thereof.

5,006,517

TREATMENT OF PRADER-WILLI SYNDROME

Leon Bradlow, Hollis Woods, and Fred I. Chasalow, Glen Cove, both of N.Y., assignors to Progenics, Inc., New York and Long Island Jewish Medical Center, New Hyde Park, both of, N.Y.

Continuation of Ser. No. 127,079, Dec. 1, 1987, abandoned. This application Jul. 24, 1989, Ser. No. 387,426

Int. Cl.[5] A61K *31/56*

U.S. Cl. 514—178 **12 Claims**

1. A method of ameliorating the consequences of a steroid biosynthetic defect in an individual having Prader-Willi Syndrome which comprises administering to said individual an amount of at least one 3-oxo or hydroxy substituted 5-beta-androstan-17-one effective to cause normal etiocholanolone plasma levels.

5,006,518

NOVEL 17β-HYDROXY-19-NOR-STEROIDS

Martine Moguilewsky, Paris; Lucien Nedelec, Le Raincy; Francois Nique, Pavillons-Sous-Bois, and Daniel Philibert, La Varenne Saint-Hilaire, all of France, assignors to Roussel Uclaf, Paris, France

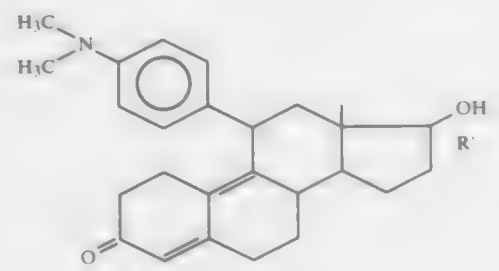
Filed Dec. 30, 1988, Ser. No. 292,475

Claims priority, application France, Dec. 30, 1987, 87 18376

Int. Cl.[5] A61K *31/56*

U.S. Cl. 514—179 **23 Claims**

1. A compound selected from the group consisting of 19-nor steroids of the formula



I

wherein R′ is selected from the group consisting of propyl, prop-1-enyl, iodoethenyl, iodoethynyl or —C≡C—CH$_2$—Hal$_1$, Hal$_1$ is selected from the group consisting of fluorine, chlorine and bromine and their non-toxic, pharmaceutically acceptable acid addition salts.

5,006,519

2-NAPHTHYL-CARBAPENEM ANTIBACTERIAL AGENTS

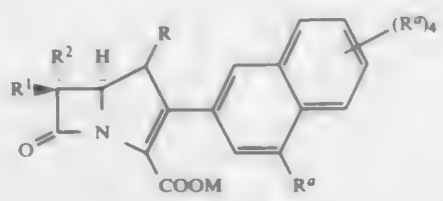
Frank P. DiNinno, Old Bridge, and Mark L. Greenlee, Rahway, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 11, 1990, Ser. No. 551,707

Int. Cl.[5] C07D *487/04*; A61K *31/40*

U.S. Cl. 514—210 **10 Claims**

1. A compound of the formula:



wherein:

R is H or CH_3,

R^1 and R^2 are independently H, CH_3—, CH_3CH_2—, $(CH_3)_2CH$—, $HOCH_2$—, $CH_3CH(OH)$—, $(CH_3)_2C(OH)$—, $FCH_2CH(OH)$—, $F_2CHCH(OH)$—, $F_3CCH(OH)$—, $CH_3CH(F)$—, CH_3CF_2—, or $(CH_3)_2C(F)$—;

R^q are independently selected from the group consisting of hydrogen and the radicals set out below, provided that one to four R^a radicals are other than hydrogen:

(a) a trifluoromethyl group: $—CF_3$,

(b) a halogen atom: —Br, —Cl, —F, or —I;

(c) C_1–C_4 alkoxy radical: $—OC_{1-4}$ alkyl, wherein the alkyl is optionally mono-substituted by R^q, where

R^q is a member selected from the group consisting of —OH, $—OCH_3$, —CN, $—C(O)NH_2$, $—OC(O)NH_2$, CHO, $—OC(O)N(CH_3)_2$, $—SO_2NH_2$, $—SO_2N(CH_3)_2$, $—SOCH_3$, $—SO_2CH_3$, —F, $—CF_3$, $—COOM^a$ (where M^a is hydrogen, alkali metal, methyl or phenyl), tetrazolyl (where the point of attachment is the carbon atom of the tetrazole ring and one of the nitrogen atoms is mono-substituted by M^a as defined above) and $—SO_3M^b$ (where M^b is hydrogen or an alkali metal);

(d) a hydroxy group: —OH;

(e) a carbonyloxy radical: $—O(C═O)R^s$, where

R^s is C_1–C_4 alkyl or phenyl, each of which is optionally mono-substituted by R^q as defined above;

(f) a carbamoyloxy radical: $—O(C═O)N(R^y)R^z$ where

R^y and R^z are independently H, C_1–C_4 alkyl (optionally mono-substituted by R^q as defined above), together a 3- to 5-membered alkylidene radical to form a ring (optionally substituted with R^q as defined above) or together a 2- to 4-membered alkylidene radical, interrupted by —O—, —S— or —S(O)—, $—S(O)_2—$, to form a ring (where the ring is optionally mono-substituted with R^q as defined above);

(g) a sulfur radical: $—S(O)_n—R^s$ where n = 0–2, and R^s is as defined above;

(h) a sulfamoyl group: $—SO_2N(R^y)R^z$ where R^y and R^z are as defined above;

(i) azido: N_3

(j) a formamido group: $—N(R^t)(C═O)H$, where

R^t is is H or C_1–C_4 alkyl, and the alkyl thereof is optionally mono-substituted by R^q as defined above;

(k) a (C_1–C_4 alkyl)carbonylamino radical: $—N(R^t)(C═O)C_{1-4}$ alkyl, where R^t is as defined above, and the alkyl group is also optionally mono-substituted by R^q as defined above;

(l) a (C_1–C_4 alkoxy) carbonylamino radical: $—N(R^t)(C═O)OC_{1-4}$ alkyl, where R^t is as defined above, and the alkyl group is also optionally mono-substituted by R^q as defined above;

(m) a ureido group: $—N(R^t)(C═O)N(R^y)R^z$ where R^t, R^y and R^z are asdefined above;

(n) a sulfonamido group: $—N(R^t)SO_2R^s$, where R^s and R^t are as defined above;

(o) a cyano group: —CN;

(p) a formyl or acetalized formyl radical: —(C═O)H or $—CH(OCH_3)_2$;

(q) (C_1–C_4 alkyl)carbonyl radical wherein the carbonyl is acetalized: $—C(OCH_3)_2C_{1-4}$ alkyl, where the alkyl is optionally mono-substituted by R^q as define above;

(r) carbonyl radical: $—(C═O)R^s$, where R^s is as defined above;

(s) a hydroximinomethyl radical in which the oxygen or carbon atom is optionally substituted by a C_1–C_4 alkyl group: $—(C═NOR^z)R^y$ where R^y and R^z are as defined above, except they may not be joined together to form a ring;

(t) a (C_1–C_4 alkoxy)carbonyl radical: $—(C═O)OC_{1-4}$ alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;

(u) a carbomoyl radical: $—(C═O)N(R^y)R^z$ where R^y and R^z are as defined above;

(v) an N-hydroxycarbamoyl or N(C_1–C_4 alkoxy)carbamoyl radical in which the nitrogen atom may be additionally substituted by a C_1–C_4 alkyl group: $—(C═O)—N(OR^y)R^z$ where R^y and R^z are as defined above, except they may not be joined together to form a ring;

(w) a thiocarbamoyl group: $—(C═S)N(R^y)(R)^z$ where R^y and R^z are as defined above;

(x) carboxyl: $—COOM^b$, where M^b is as defined above;

(y) thiocyanate: —SCN;

(z) trifluoromethylthio: $—SCF_3$;

(aa) tetrazolyl, where the point of attachment is the carbon atom of the tetrazole ring and one of the nitrogen atoms is mono-substituted by hydrogen, an alkali metal or a C_1–C_4 alkyl optionally substituted by R^q as defined above;

(ab) an anionic function selected from the group consisting of: phosphono $[P═O(OM^b)_2]$; alkylphosphono $\{P═O(OM^b)$-$[O(C_1$–C_4 alkyl)$]\}$; alkylphosphinyl $[P═O(OM^b)$-$(C_1$–C_4 alkyl)]; phosphoramido $[P═O$-$(OM^b)N(R^y)R^z$ and $P═O(OM^b)NHR^x]$; sulfino (SO_2M^b); sulfo (SO_3M^b); acylsulfonamides selected from the structures $CONM^bSO_2R^x$, $CONM^bSO_2N$-$(R^y)R^z$, $SO_2NM^bCON(R^y)R^z$; and SO_2NM^bCN, where

R^x is phenyl or heteroaryl, where heteroaryl is a monocyclic aromatic hydrocarbon group having 5 or 6 ring atoms, in which a carbon atom is the point of attachment, in which one of the carbon atoms has been replaced by a nitrogen atom, in which one additional carbon atom is optionally replaced by a heteroatom selected from O or S, and in which from 1 to 2 additional carbon atoms are optionally replaced by a nitrogen heteroatom, and where the phenyl and heteroaryl are optionally mono-substituted by R^q, as defined above; M^b is as defined above; and R^y and R^z are as defined above;

(ac) C_5–C_7 cycloalkyl group in which one of the carbon atoms in the ring is replaced by a heteroatom selected from O, S, NH or N(C_1–C_4 alkyl) and in which one additional carbon atom may be replaced by NH or N(C_1–C_4 alkyl), and in which at least one carbon atom adjacent to each nitrogen heteroatom has both of its attached hydrogen atoms replaced by one oxygen thus forming a carbonyl moiety and there are one or two carbonyl moieties present in the ring;

(ad) C_2–C_4 alkenyl radical, optionally mono-substituted by one of the substituents (a) to (ac) above and phenyl which is optionally substituted by R^q as defined above;

(ae) C_2–C_4 alkynyl radical, optionally mono-substituted by one of the substituents (a) to (ac) above;

(af) C_1–C_4 alkyl radical;

(ag) C_1–C_4 alkyl mono-substituted by one of the substituents (a)–(ac) above;

(ah) a 2-oxazolidinonyl moiety in which the point of attachment is the nitrogen atom of the oxazolidinone ring, the ring oxygen atom is optionally replaced by a heteroatom selected from S and NR^t (where R^t is as defined above) and one of the saturated carbon atoms of the oxazolidinone ring is optionally mono-substituted by one of the substituents (a) to (ag) above;

M is selected from:

(i) hydrogen;

(ii) a pharmaceutically acceptable esterifying group or removable carboxyl protecting group;

(iii) an alkali metal or other pharmaceutically acceptable cation.

5,006,520

FUSED PYRAZOLE COMPOUNDS AND PHARMACEUTICAL USE THEREOF

Takanori Oe, Nakatsu; Hiroyuki Sueoka, Buzen; Masao Hisadome, Nakatsu, and Keiji Yamagami, Iruma, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP88/01034, § 371 Date Jun. 13, 1989, § 102(e) Date Jun. 13, 1989, PCT Pub. No. WO89/03385, PCT Pub. Date Apr. 20, 1989

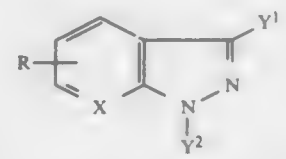
PCT Filed Oct. 11, 1988, Ser. No. 373,296

Claims priority, application Japan, Oct. 13, 1987, 62-257649; Jun. 7, 1988, 63-140147

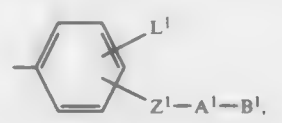
Int. Cl.[5] A61K *31/435*; C07D *471/04*

U.S. Cl. 514—212 **4 Claims**

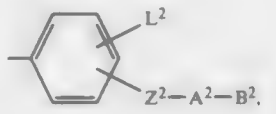
1. A fused pyrazole compound of the formula



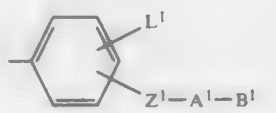
on a pharmaceutically acceptable salt thereof wherein in the above formula, X is =N—; R represents hydrogen, an alkyl group, an alkoxy group or a halogen; Y^1 represents a group of the formula:



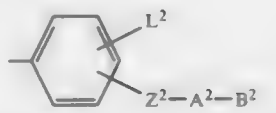
phenyl group or a phenyl group substituted by one to three halogen(s), alkyl group(s) and/or alkoxy group(s), and Y^2 represents a group of the formula:



a group of the formula: $—A^2—B^2$, hydrogen, an alkyl group, a phenylalkyl group, a phenylalkyl group in which the phenyl nucleus is substituted by one to three halogen(s), alkyl group(s) and/or alkoxy group(s), phenyl group or a phenyl group substituted by one to three halogen(s), alkyl group(s) and/or alkoxy group(s), an alkoxyalkyl group, wherein either Y^1 or Y^2 represents or both of Y^1 and Y^2 represent a group of the formula:

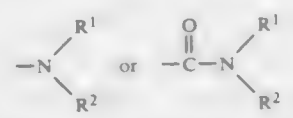


or of the formula:



wherein, Z^1 and Z^2 are the same or different, and respectively represent —O—, —S— or $—NR^3$ (wherein R^3 represents hydrogen or an alkyl group); A^1 and A^2 are the same or different, and respectively represent an alkylene group; B^1 and B^2

are the same or different, and respectively represent carboxyl group, an alkoxycarbonyl group, a phenylalkoxycarbonyl group (in which the phenyl nucleous may be substituted by one to three halogen(s), alkyl group(s), and/or alkoxy group(s)), an acyl group, hydroxy group, an acyloxy group or a group of the formula:



(wherein R^1 and R^2 are the same or different and respectively represent hydrogen, an alkyl group, a dialkylaminoalkyl group or a hydroxyalkyl group or represent a group which combinedly forms, together with the adjacent nitrogen atom, a heterocycle) and L^1 and L^2 are the same or different and respectively represent hydrogen, a halogen, an alkyl group or an alkoxy group.

5,006,521

α-ADRENERGIC RECEPTOR ANTAGONISTS AND METHODS OF USE THEREAS

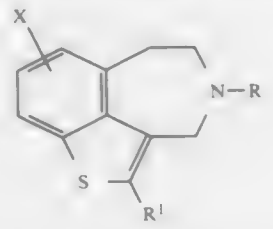
John J. Lafferty, Levittown; Robert M. DeMarinis, Ardmore, and Dinubhai H. Shah, Norristown, all of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Continuation of Ser. No. 361,875, Jun. 6, 1989, abandoned, which is a continuation-in-part of Ser. No. 201,005, Jun. 1, 1988, abandoned. This application Mar. 13, 1990, Ser. No. 492,696

Int. Cl.[5] **C07D** *459/06;* **A61K** *31/38*

U.S. Cl. 514—215 **19 Claims**

1. A compound represented by the formula:



in which:

X is H, Cl, Br, F, I, CF_3, $C_{1\text{-}6}$alkyl, COR^{10}, CO_2R^{10}, $CONR^{16}R^{11}$, CN, NO_2, $Nr^{12}R^{13}$, OR^{12}, $SC_{1\text{-}4}$alkyl, $S(CH_2)_{0\text{-}6}$aryl, SCF_3, or any accessible combination thereof of up to three substituents;

R is H, $C_{1\text{-}6}$alkyl, or $C_{3\text{-}5}$alkenyl;

R^1 is W, $(CH_2)_{0\text{-}2}CWYZ$, or $C_{3\text{-}5}$alkenyl, except where the double bond is in the 1 position;

R^{10} is $C_{1\text{-}6}$alkyl or $(CH_2)_{0\text{-}6}$aryl;

R^{11} and R^{16} independently are H, $C_{1\text{-}6}$alkyl, or $(CH_2)_{0\text{-}6}$aryl;

R^{12} is H, $C_{1\text{-}6}$alkyl, COR^{14}, or SO_2R^{15};

each R^{13} independently is H or $C_{1\text{-}6}$alkyl;

R^{14} and R^{15} independently are $C_{1\text{-}6}$alkyl or $(CH_2)_{0\text{-}6}$aryl;

W is H, NO_2, $C_{1\text{-}6}$alkyl, CH_2CH_2OH, CN, $C(R^{13})_2(OR^2)$, CH_2OR^2, CH_2SR^2, COR^2, CO_2R^2, $CONR^3R^4$, $SO_2NR^3R^4$, SO_3R^2, SO_2R^5, SOR^5, SR^5, $P(O)(OR^3)(OR^4)$, $P(O)R^5(OR^3)$, $P(O)R^5R^6$, $P(O)(OR^2)NR^3R^4$, $P(O)(NR^3R^4)_2$, $P(O)R^5(NR^3R^4)$, Cl, Br, F, I, CF_3, or $(CH_2)_{0\text{-}6}$aryl;

Y and Z independently are H or $C_{1\text{-}6}$alkyl;

R^2, R^3, and R^4 independently are H, $C_{1\text{-}6}$alkyl, $C_{3\text{-}5}$alkenyl, or $(CH_2)_{0\text{-}6}$aryl; and

R^5 and R^6 independently are $C_{1\text{-}6}$alkyl, $C_{3\text{-}5}$alkenyl, or $(CH_2)_{0\text{-}6}$aryl; or a pharmaceutically acceptable salt thereof.

5,006,522

CONDENSED DIAZEPINONES, PROCESSES FOR PREPARING THEM AND PHARMACEUTICAL COMPOSITIONS CONTAINING THESE COMPOUNDS

Wolfhard Engel; Wolfgang Eberlein; Gerhard Mihm; Gunther Trummlitz; Norbert Mayer, all of Biberach, Fed. Rep. of Germany, and Adriaan De Jonge, Driebergen, Netherlands, assignors to Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany

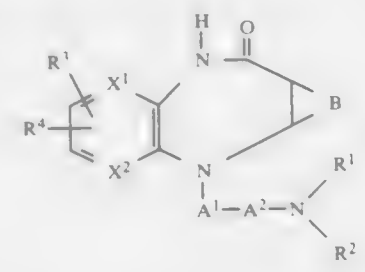
Filed May 30, 1989, Ser. No. 358,740

Claims priority, application Fed. Rep. of Germany, May 30, 1988, 3818299

Int. Cl.[5] **A61K** *31/55;* **C07D** *521/00*

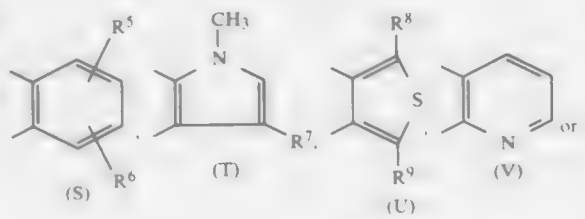
U.S. Cl. 514—221 **17 Claims**

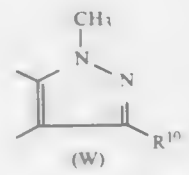
1. A condensed diazepinone of the formula:



wherein

B is one of the divalent groups





X^1 and X^2 each are a =CH— group; or, if B is the divalent group (S), (U) or (W), X^1 and X^2 each are a nitrogen or a =CH— group, with the proviso that only one of X^1 and X^2 can be a =CH— group;

A^1 is a methylene group, unsubstituted or substituted by one or two methyl groups;

A^2 is a straight-chained alkylene of 3 to 7 carbon atoms, unsubstituted or methyl-substituted; or A^2 is a straight-chained alkylene group of 3 to 7 carbon atoms comprising a double or triple bond, unsubstituted or methyl-substituted;

R^1 is a branched or unbranched alkl group of 1 to 4 carbon atoms;

R^2 is a branched or unbranched alkyl group of 1 to 7 carbon atoms, unsubstituted or substituted by a hydroxy group at its 2nd to 7th carbon atoms; or R^2 is a cycloalkyl or cycloalkylmethyl group with 3 to 7 carbon atoms in the cycloalkyl ring, which cycloalkyl ring is unsubstituted or substituted by a hydroxy group; or

R^1 and R^2 together with the intervening nitrogen atom, are a pyrrolidino or morpholino group, a piperido group, a piperidino group substituted with a dialkylaminomethyl or a cycloalkylmethylaminomethyl group, a hexahydro-1H-azepino group or a piperazino group substituted by an alkyl or phenylalkyl group, wherein the alkyl moieties comprise 1 to 4 carbon atoms and wherein the cycloalkyl moieties comprise 4 to 7 carbon atoms;

R^3 is hydrogen, chlorine, or an alkyl group of 1 to 4 carbon atoms;

R^4 is hydrogen or a methyl group;

R^5 and R^6 each are hydrogen, fluorine, chlorine, bromine, or an alkyl group of 1 to 4 carbon atoms;

R^7 is hydrogen, chlorine, or a methyl group;

R^8 is hydrogen or an alkyl group of 1 to 4 carbon atoms;

R^9 is hydrogen, halogen or an alkyl group of 1 to 4 carbon atoms; and

R^{10} is a hydrogen or a methyl group,

wherein, if B is the divalent group (T) and R^7 is a hydrogen atom, R^3 cannot be chlorine and A^2 cannot contain any double or triple bonds.

and the diastereomeric and enantiomeric forms thereof and the physiologically acceptable salts thereof and inorganic or organic acids.

7. A pharmaceutical composition useful as vagal pacemaker for treatment of bradycardia an bradyarrhythmia which comprises a therapeutically effective amount of the condensed diazepinone of claim 1.

5,006,523

ANTIARRHYTHMIC AGENTS: ARYL CYANOGUANIDINE POTASSIUM CHANNEL BLOCKERS

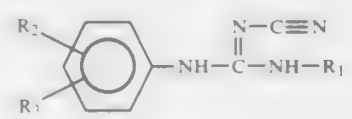
Karnail Atwal, Newtown, Pa., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 26, 1989, Ser. No. 427,655

Int. Cl.[5] **A61K** *31/54, 31/495, 31/445, 31/44, 31/415;* **C07D** *401/04, 401/06, 403/10, 233/02, 295/12*

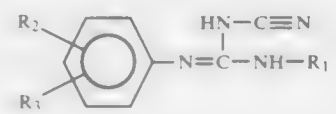
U.S. Cl. 514—227.5 **27 Claims**

1. Compounds having the formula



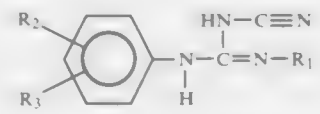
Ia

its possible tautomers



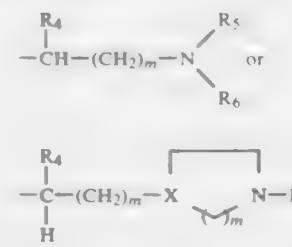
Ib

and

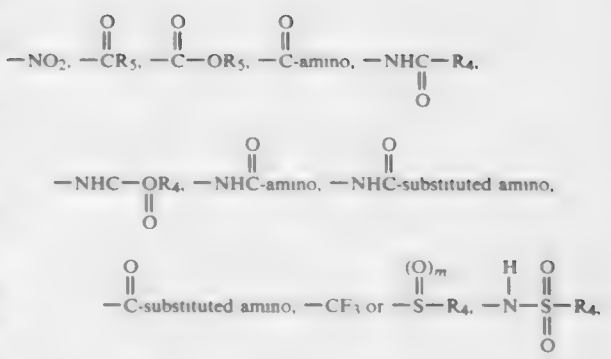


Ic

or a pharmaceutically acceptable salt thereof wherein R_1 is



R_2 is hydrogen, alkyl, halo, —C|N,



R_3 is hydrogen, chlorine, or an alkyl group of 1 to 4 carbon atoms;

R_4 is hydrogen or a methyl group;

R_5 and R_6 each are hydrogen, fluorine, chlorine, bromine, or an alkyl group of 1 to 4 carbon atoms;

R_7 is hydrogen, chlorine, or a methyl group;

R_8 is hydrogen or an alkyl group of 1 to 4 carbon atoms;

R_9 is hydrogen, halogen or an alkyl group of 1 to 4 carbon atoms; and

R_{10} is a hydrogen or a methyl group,

wherein, if B is the divalent group (T) and R_7 is a hydrogen atom, R_3 cannot be chlorine and A_2 cannot contain any double or triple bonds.

and the diastereomeric and enantiomeric forms thereof and the physiologically acceptable salts thereof and inorganic or organic acids.

7. A pharmaceutical composition useful as vagal pacemaker for treatment of bradycardia an bradyarrhythmia which comprises a therapeutically effective amount of the condensed diazepinone of claim 1.

5,006,523

ANTIARRHYTHMIC AGENTS: ARYL CYANOGUANIDINE POTASSIUM CHANNEL BLOCKERS

Karnail Atwal, Newtown, Pa., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 26, 1989, Ser. No. 427,655

Int. Cl.[5] **A61K** *31/54, 31/495, 31/445, 31/44, 31/415;* **C07D** *401/04, 401/06, 403/10, 233/02, 295/12*

U.S. Cl. 514—227.5 **27 Claims**

1. Compounds having the formula

Ia

its possible tautomers

Ib

and

Ic

or a pharmaceutically acceptable salt thereof wherein R_1 is

R_2 is hydrogen, alkyl, halo, —C|N,

R_3 is hydrogen, alkyl, alkenyl, alkynyl, haloalkyl, halo, alkoxy, —NHalkyl, —N—(alkyl)$_2$, —S—alkyl, —O—arylalkyl or —S—arylalkyl;

R_4 is hydrogen, alkyl, alkenyl, cycloalkyl, haloalkyl, aryl, arylalkyl, cycloalkylalkyl;

R_5 and R_6 are each independently R_4 or together make a 5-7 membered ring consisting essentially of pyrrolidine, piperidene, morpholine, thiomorpholine, imidazoline, 2-alkylimidazoline, 1-azepinyl, with the proviso that if R_5 and R_6 are each hydrogen, one of R_2 and R_3 must be other than chloro;

R_7 is R_4, diphenylalkyl, pyridyl, pyridylalkyl wherein the pyridyl ring could be substituted with alkyl, arylalkyl, halo, haloalkyl;

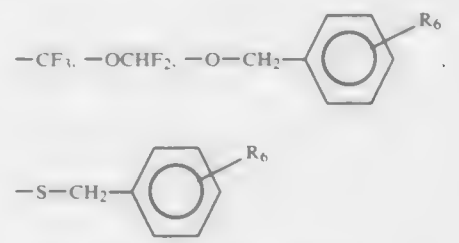
m = 1 or 2; and

X is nitrogen or —CH—

wherein the term alkyl refers to straight or branched chain saturated hydrocarbon radicals of one to eight carbons; the terms lower alkoxy and lower alkylthio refer to said alkyl groups attached to an oxygen or sulfur; the term lower alkenyl refers to straight or branched chain hydrocarbon radicals having from two to eight carbons and one double bond; the term lower alkynyl refers to straight or branched chain hydrocarbon radicals having from two to eight carbons and one triple bond; the term cycloalkyl refers to saturated carbocyclic rings of 4 to 7 carbon atoms; the term halo refers to chloro, bromo and fluoro;

the term halo substituted alkyl refers to such alkyl groups described above in which one or more hydrogens have been replaced by chloro, bromo or fluoro groups;

the term aryl refers to phenyl or mono substituted phenyl, wherein said substituent is lower alkyl of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, halo, nitro, cyano, hydroxy, amino, -NH-lower alkyl wherein alkyl is of 1 to 4 carbons, -N(lower alkyl)$_2$ wherein alkyl is of 1 to 4 carbons,



wherein R_6 is hydrogen, lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, halo, hydroxy or CF_3), —O—CH_2-cycloalkyl, or —S—CH_2-cycloalkyl, and di-substituted phenyl, wherein said substituents are selected from methyl, methoxy, methylthio, halo, CF_3, nitro, amino, and $OCHF_2$; and

the term "substituted amino" refers to a group of the formula $—NZ_1Z_2$ wherein Z_1 is hydrogen, alkyl, cycloalkyl, aryl, arylalkyl, cycloalkylalkyl and Z_2 is alkyl, cycloalkyl, aryl,

arylalkyl, cycloalkylalkyl or Z_1 and Z_2 taken together with the nitrogen atom to which they are attached are 1-pyrrolidinyl, 1-piperidinyl, 1-azepinyl, 4-morpholinyl, 4-thiamorpholinyl, 1-piperazinyl, 4-alkyl-1-piperazinyl, 4-arylalkyl-1-piperazinyl, 4-diarylalkyl-1-piperazinyl, 1-pyrrolidinyl, 1-piperidinyl, or 1-azepinyl substituted with alkyl, alkoxy, alkylthio, halo, trifluoromethyl or hydroxy.

25. A method for the treatment of arrhythmia in mammalian species which comprises administering a therapeutically effective amount of a compound of formula I in claim 1 to a specie in need thereof.

26. A method for the treatment of atrial or ventricular fibrillation in a mammalian species which which comprises administering a therapeutically effective amount of a compound of formula I in claim 1 to a specie in need thereof.

27. A method for the treatment of supraventricular tachycardia and/or ventricular tachyarrhythmia in a mammalina species which comprises administering a therapeutically effective amount of a compound of formula I in claim 1 to a specie in need thereof.

5,006,524

TRIPHENYL PYRAZOLINE COMPOUNDS WHICH ARE USEFUL AS INSECTICIDES

George P. Lahm, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

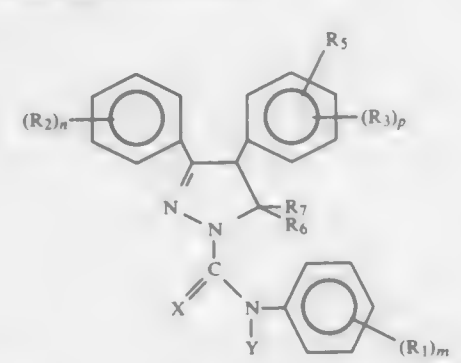
PCT No. PCT/US88/02335, § 371 Date Jan. 2, 1990, § 102(e) Date Jan. 2, 1990, PCT Pub. No. WO89/00562, PCT Pub. Date Jan. 26, 1989

Continuation-in-part of Ser. No. 74,795, Jul. 17, 1987, abandoned. This PCT application Jul. 15, 1988, Ser. No. 438,467

Int. Cl.[5] **A01N** *43/56;* **C07D** *231/06*

U.S. Cl. 514—232.2 **15 Claims**

1. A compound of the formula



wherein

R_1, R_2 and R_3 are independently selected from R_8, halogen, CN, N_3, SCN, NO_2, OR_8, SR_8, $S(O)R_8$, $S(O)_2R_8$, $OC(O)R_8$, $OS(O)_2R_8$, $C(O)OR_8$, $C(O)R_8$, $C(O)NR_8R_9$, $S(O)_2NR_8R_9$, NR_8R_9, $NR_9C(O)R_8$, $OC(O)NHR_8$, $NR_9C(O)NHR_8$ and $NR_9S(O)_2R_8$, or when m, n or p is 2, R_1, R_2 or R_3 can be taken together as OCH_2O, OCH_2CH_2O or CH_2CH_2O, to form a 5 or 6 membered ring, each of which can be substituted with 1 to 4 halogen atoms or 1 to 2 methyl groups;

R_5 is selected from $C(O)OR_{10}$, $C(O)R_{10}$, $C(O)NR_{10}R_{11}$, $C(S)SR_{10}$, $C(S)NR_{10}R_{11}$ and $S(O)_2NR_{10}R_{11}$;

R_6 is H or C_1 to C_4 alkyl;

R_7 is H or CH_3;

R_8 and R_{10} are independently selected from H, C_1 to C_4 alkyl, C_3 to C_4 alkenyl, C_3 to C_4 alkynyl, C_1 to C_4 haloalkyl, C_3 to C_4 haloalkenyl, C_1 to C_4 alkyl substituted with CN, $C(O)OCH_3$, $C(O)OCH_2CH_3$, OCH_3, OCH_2CH_3, SCH_3, SCH_2CH_3 and NO_2, and phenyl or benzyl, either optionally substituted with W, or R_8 and R_9 can be taken together as $(CH_2)_4$, $(CH_2)_5$ or $CH_2CH_2OCH_2CH_2$;

R_9 and R_{11} are independently selected from H, C_1 to C_4 alkyl, C_3 to C_4 alkenyl, C_3 to C_4 alkynyl,and C_1 to C_4 haloalkyl, or R_{10} and R_{11} can be taken together as $(CH_2)_4$, $(CH_2)_5$ or $CH_2CH_2OCH_2CH_2$;

m and n are independently 0 to 5;

P is 0 to 4;

W is selected from halogen, CN, NO_2, C_1 to C_2 alkyl, C_1 to C_2 haloalkyl, C_1 to C_2 alkoxy, C_1-C_2 haloalkoxy, C_1 to C_2 alkylthio, C_1 to C_2 haloalkylthio, C_1 to C_2 alkylsulfonyl and C_1 to C_2 haloalkylsulfonyl;

X is 0 or S; and

Y is selected from H, C_1 to C_6 alkyl, C_2 to C_6 alkoxyalkyl, CHO, C_2 to C_6 alkylcarbonyl, C_2 to C_6 alkoxycarbonyl, C_2 to C_6 haloalkylcarbonyl, C_1 to C_6 alkylthio, C_1 to C_6 haloalkylthio, phenylthio, and phenylthio substituted with 1 to 3 substituents independently selected from W.

5,006,525

DOPAMINE AGONISTS METHOD

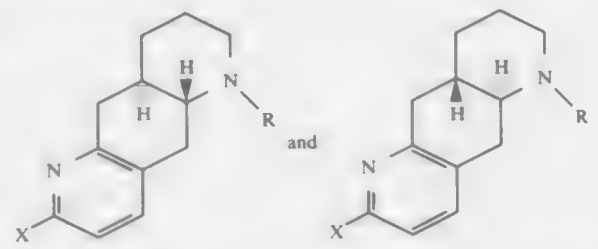
John M. Schaus, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 514,631, Apr. 25, 1990, Pat. No. 4,977,149, which is a division of Ser. No. 383,673, Jul. 24, 1989, Pat. No. 4,939,259. This application Sep. 21, 1990, Ser. No. 585,752

Int. Cl.[5] **A61K** *31/435, 31/445, 31/535*

U.S. Cl. 514—232.8 **24 Claims**

1. A method for treating sexual dysfunction, anxiety, depression, galactorrhea, glaucoma, hypertension, post-partum lactation, amenorrhea or prolactinoma in mammals which comprises administering a therapeutically effective amount of a compound of the formulae



wherein:

X is halo, hydroxy, hydrogen, C_1-C_4 alkyl or a group of the formula $-NR^1R^2$, wherein R^1 and R^2 are individually hydrogen, C_1-C_6 alkyl, C_2-C_6 acyl, or C_1-C_6 alkylphenyl, or where R^1 and R^2, taken together with the nitrogen atom to which they are attached, form a three- to eight-membered heterocyclic ring containing either one or two nitrogen atoms, or one nitrogen atom and one oxygen atom;

R is C_1-C_4 alkyl, allyl, or cyclopropylmethyl; or a pharmaceutically-acceptable salt thereof to a mammalian host.

5,006,526

METHOD OF TREATING A VERTEBRATE ANIMAL TO REDUCE PLASMA TRIGLYCERIDES AND CHOLESTEROL LEVELS AND TO ALLEVIATE AND PREVENT ATHEROSCLEROSIS

Albert H. Meier; Anthony H. Cincotta, both of Baton Rouge, La., and Donn D. Martin, Arlington, Tex., assignors to Louisiana State University, Baton Rouge, La.

Filed Oct. 17, 1988, Ser. No. 258,889

Int. Cl.[5] **A61K** *31/495, 31/50, 31/44*

U.S. Cl. 514—250 **18 Claims**

4. A method of suppressing and reducing the level of lipid plaques formed in the walls of the blood vessels of a vertebrate animal diagnosed as having an atherosclerotic condition which comprises administering to said animal an effective dosage of a prolactin-inhibiting compound sufficient to inhibit prolactin secretion and decrease the total plasma cholesterol and total triglyceride levels in the blood of the animal over a period of time sufficient to suppress and reduce the formation of lipid plaques in the walls of the blood vessels of the animal.

5,006,527

PHARMACOLOGICALLY ACTIVE N-(4-PIPERIDINYL) BICYCLIC CONDENSED 2-IMIDAZOLAMINE DERIVATIVES

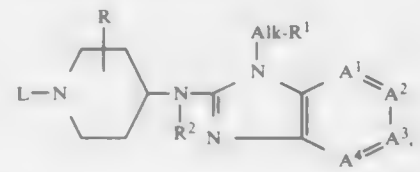
Frans E. Janssens, Bonheiden; Joseph L. G. Torremans, Beerse, and Gasto S. M. Diels, Ravels, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 182,814, Apr. 18, 1988, Pat. No. 4,897,401, which is a continuation-in-part of Ser. No. 63,899, Jun. 19, 1987, abandoned. This application Dec. 4, 1989, Ser. No. 445,812

Int. Cl.[5] **A61K** *31/495, 31/445;* **C07D** *401/14, 419/04*

U.S. Cl. 514—253 **12 Claims**

1. A compound of the formula:



(I)

a pharmaceutically acceptable acid-addition salt or a stereochemically isomeric form thereof, wherein:

A^1—A^2—A^3=A^4 represents a bivalent group of the formula.

—CH=CH—CH=CH— (a-1).

—N=CH—CH=CH— (a-2).

—CH=N—CH=CH— (a-3).

—CH=CH—N=CH— (a-4), or

—CH=CH—CH=N— (a-5);

wherein one or two hydrogen atoms in said groups (a-1) through (a-5) may, independently from each other, be replaced by halo, C_{1-6}alkyl, C_{1-6}alkoxy, trifluoromethyl, or hydroxy;

Alk represents C_{1-6}alkanediyl;

R represents hydrogen;

R^1 represent pyrazinyl, thiazolyl, or imidazolyl optionally substituted with C_{1-6}alkyl;

R^2 represents hydrogen or C_{1-4}alkyl; and

L is a group of the formula:

—Alk—R^3 (b-1).

—Alk—O—R^4 (b-2); or

—Alk—Z—C(=O)—R^7 (b-4)

wherein:

Alk represents C_{1-6}alkanediyl;

R^3 represents hydrogen, phenylthio, phenylsulfonyl, 4,5dihydro-5-oxo-1H-tetrazol-1-yl being optionally substituted in its 4-position with C_{1-4}alkyl; 2,3-dihydro-1,4-benzodioxin-2-yl, 4-morpholinyl, 1-piperidinyl, or 1-pyrrolidinyl;

R^4 represents C_{1-6}alkyl, phenyl, or substituted phenyl;

R^7 represents amino, mono- or di(C_{1-6}alkyl)amino C_{1-6}alkyloxy, phenyl, substituted phenyl, or C_{1-6}alkyl optionally substituted with phenyl or substituted phenyl; and

Z represents a direct bond or NR^8 wherein R^8 represents hydrogen or C_{1-6}alkyl,

provided that A^1=A^2—A^3=A^4 is a group of formula (a-1) or (a-2) when L is a group of formula (b-4),

wherein said substituted phenyl is phenyl substituted with 1, 2, or 3 substituents, each independently selected from the group consisting of halo, hydroxy, nitro, cyano, trifluoromethyl, C_{1-6}alkyl, C_{1-6}alkyloxy, C_{1-6}alkylthio, mercapto, C_{1-6}alkylsulfonyl, C_{1-6}alkylsulfonylC_{1-6}alkyl, phenylC_{1-6}alkylsulfonyl, phenylsulfonylC_{1-6}alkyl, amino, mono- and di(C_{1-6}alkyl)amino, carboxyl, C_{1-6}alkyloxycarbonyl, and C_{1-6}alkylcarbonyl.

5,006,528

CARBOSTYRIL DERIVATIVES

Yasuo Oshiro, Tokushima; Seiji Sato, Itano, and Nobuyuki Kurahashi, Tokushima, all of Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

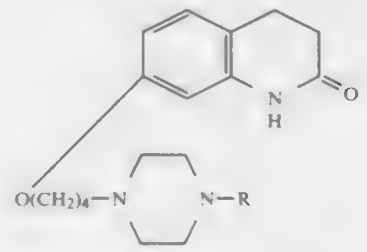
Filed Oct. 20, 1989, Ser. No. 424,719

Claims priority, application Japan, Oct. 31, 1988, 63-276953

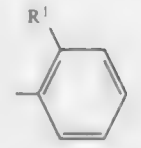
Int. Cl.[5] **A61K** *31/00;* **C07D** *401/12*

U.S. Cl. 514—253 **21 Claims**

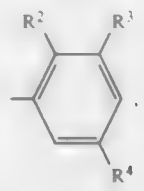
1. A carboxtyril compound or salt thereof of the formula,



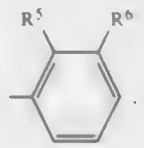
wherein R is a group of the formula



wherein R^1 is a C_1-C_3 alkoxy group; a group of the formula



wherein R^2 and R^3 are at the same time, both chlorine atoms, or both bromine atoms and R^4 is a hydrogen atom or a chlorine atom; a 2-methyl-3-nitrophenyl group; a 3,5-dichlorophenyl group; or a group of the formula



wherein R^5 is a chlorine atom or a bromine atom and R^6 is a methyl group; the carbon-carbon bond between the 3- and 4-positions in the carboxtyril skeleton being a single or a double bond.

16. A pharmaceutical composition for treating schizophrenia containing, as the active ingredient, a carbostyril compound or pharmaceutically acceptable salt thereof of claim 1 and a pharmaceutically acceptable carrier.

5,006,529

SOAP COMPOSITIONS OF ENHANCED ANTIMICROBIAL EFFECTIVENESS

Carol M. Resch, Rutherford, N.J., assignor to Lever Brothers Company, New York, N.Y.

Division of Ser. No. 322,858, Mar. 14, 1989, Pat. No. 4,954,281, which is a division of Ser. No. 199,568, May 27, 1988, Pat. No. 4,832,861. This application Jun. 20, 1990, Ser. No. 541,231

Int. Cl.[5] A01N *31/14;* C11D *3/48, 9/32;* A61K *31/075*

U.S. Cl. 514—721 5 Claims

1. A method for controlling the growth of bacteria on the skin comprising applying to the skin water and a toilet bar whose composition comprises:

(i) from 30 to 70% of a C_{12}–C_{22} fatty acid salt;

(ii) a non-soap anionic surface active agent which is a C_{10}–C_{22} acyl isethionate salt;

(iii) from 1 to 40% of C_{12}–C_{18} free fatty acid;

(iv) from 0.5 to 15% of sodium isethionate; and

(v) from 0.1 to 2% of 2,4,4'-trichloro-2'-hydroxy diphenyl ether in an amount effective to reduce body odor, the ratio of fatty acid salt to surface active agent being from 2.5:1 to 1.5:1.

5,006,530

CERTAIN 7-[2,6-DIISOPROPYL-4-PHENYL-5-LOWER ALKOXYMETHYL-PYRID-3-YL]-3,5-DIHYDROXY-6-ENOATES AND DERIVATIVES USEFUL FOR TREATING CIRCULATORY DISEASES

Rolf Angerbauer; Peter Fey; Walter Hübsch, all of Wuppertal; Thomas Philipps, Cologne; Hilmar Bischoff, Wuppertal; Dieter Petzinna, Duesseldorf; Delf Schmidt, Wuppertal, all of Fed. Rep. of Germany, and Günter Thomas, Arese, Italy, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

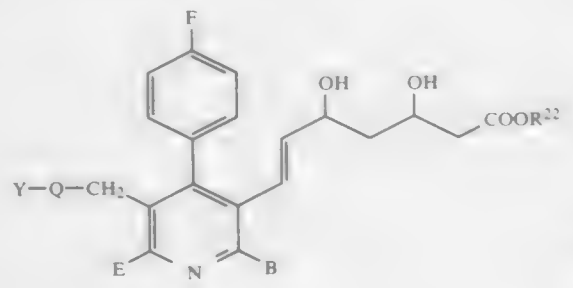
Filed Jan. 17, 1989, Ser. No. 298,549

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1988, 3801406; Italy, Jul. 11, 1988, 21317 A/88

Int. Cl.[5] C07F *7/02;* C07D *213/55;* A61K *31/44*

U.S. Cl. 514—277 19 Claims

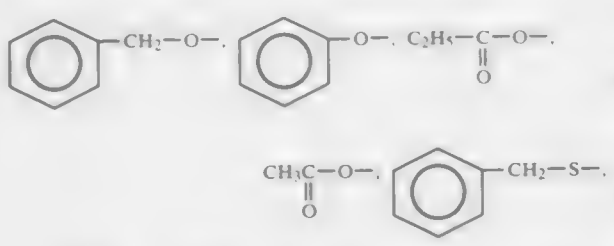
1. A substituted pyridine of the formula



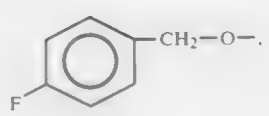
in which

B and E are C_{1-3}-alkyl of which one may be cyclopropyl,

Y—Q— is CH_3O—, $(H_3C)_3C(CH_3)_2$—Si—O—,



C_2H_5O—, C_3H_7O—, i-C_3H_7O—, C_4H_9O—, C_5H_{11}—, $C_6H_{13}O$— or



and

R^{22} is hydrogen, lower alkyl, phenyl, benzyl or a physiologically tolerable metal or ammonium cation.

18. A method of treating a patient afflicted with hyperlipoproteinaemia, lipoproteinaemia or arterioschlerosis which comprises administering to such patient and amount effective therefor of a compound according to claim 1.

5,006,531

5,6-DIHYDRO(1H-INDOLO(3,2-C)QUINOLINE-6,4'-PIPERIDINES) AND RELATED COMPOUNDS WHICH ARE USEFUL FOR TREATING PAIN, PSYCHOSIS OR CONVULSIONS

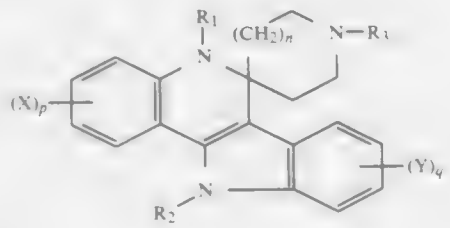
Grover C. Helsley, Pluckemin; John J. Tegeler, Bridgewater, both of N.J., and Kirk D. Shoger, Minneapolis, Minn., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, New Jersey, N.J.

Filed Jul. 10, 1989, Ser. No. 377,341

Int. Cl.[5] C07D *471/22, 487/22;* A61K *31/44*

U.S. Cl. 514—278 23 Claims

1. A compound of the formula



(I)

where

n is 1;

p and q are each independently 1, 2 or 3;

each X and each Y are independently hydrogen, loweralkyl, loweralkoxy, halogen, hydroxy, nitro, amino, loweralkylamino, diloweralkylamino, trifluoromethyl or loweralkylthio;

R_1 and R_2 are each independently hydrogen or loweralkyl; and

R_3 is hydrogen, loweralkyl, loweralkylcarbonyl, arylloweralkyl or aminocarbonyl;

or a pharmaceutically acceptable acid addition salt thereof.

23. A method of treating a patient in need of relief from convulsion which comprises administering to the patient an effective convulsion alleviating amount of a compound as defined in claim 1.

5,006,532

DERIVATIVES OF 3-HYDROXYAZABENZO(BETA)THIOPHENE USEFUL AS 5-LIPOXYGENASE INHIBITORS

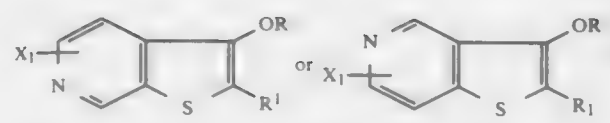
Robert K. Baker, Cranford; Arsenio A. Pessolano, Colonia; Kathleen M. Rupprecht, Cranford, and Philippe L. Durette, New Providence, all of N.J., assignors to Merck & Co. Inc., Inc., Rahway, N.J.

Division of Ser. No. 187,170, Apr. 28, 1988, Pat. No. 4,904,672, which is a division of Ser. No. 8,881, Jan. 30, 1987, Pat. No. 4,767,766. This application Dec. 8, 1989, Ser. No. 447,989

Int. Cl.[5] A61K *31/435;* C07D *495/04*

U.S. Cl. 514—301 8 Claims

1. A compound of formula:



or a pharmaceutically acceptable salt thereof wherein

X_1 is elected from the group consisting of

(a) H,

(b) C_{1-6}alkyl,

(c) halo,

(d) halo-C_{1-6}alkyl,

(e) CN,

(f) —(CO)OR^3, wherein R^3 is C_{1-6}alkyl, and

(g) —OC_{1-6}alkyl;

R is selected from the group consisting of

(a) H,

(b) —(CO)R^3,

(c) —(CO)OR^3,

(d) —(CO)NR^3R^4 wherein R^4 is C_{1-6}alkyl,

(e) —(CO)SR^3, and

(f) —$(CH_2)_mOR^3$, wherein m is an integer from 1 to 6;

R^1 is selected from the group consisting of

(a) pyridyl, and

(b) optionally substituted phenyl, wherien the substituent is

(1) -methylenedioxy,

(2) haloC_{1-6}alkyl,

(3) halo,

(4) CN,

(5) —OC_{1-6}alkyl,

(6) —(CO)OR^3,

(7) C_{1-6}alkyl, or

(8) NO_2.

5,006,533

CERTAIN 3-BROMO-2,6-DIMETHOXYBENZAMIDES AND PHARMACEUTICAL USE THEREOF

Rainer Sobotta, Ingelheim am Rhein; Adolf Langbein, Gau-Algesheim; Herbert Merz, Ingelheim am Rhein; Rudolf Bauer, Wiesbaden, and Joachim Mierau, Mainz, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

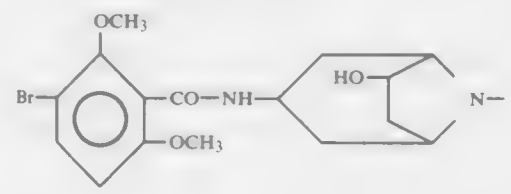
Continuation of Ser. No. 294,852, Jan. 9, 1989, abandoned, which is a continuation of Ser. No. 90,866, Aug. 28, 1987, abandoned. This application Nov. 22, 1989, Ser. No. 440,917

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1986, 3629598

Int. Cl.[5] A61K *31/46;* C07D *451/04*

U.S. Cl. 514—304 5 Claims

1. A compound of formula





wherein X is fluoro or chloro or a physiologically acceptable acid addition salt thereof.

5,006,534

SUBSTITUTED ETHERS, THIOETHERS AND AMINES FOR USE AS LIPOXYGENASE INHIBITORS

Klaus-Helmut Mohrs, Wuppertal; Romanis Fruchtmann, Cologne, and Christian Kohlsdorfer, Erftstadt, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

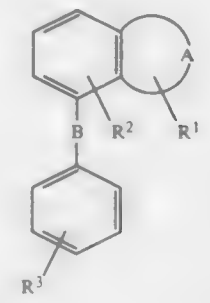
Continuation of Ser. No. 923,775, Oct. 27, 1986, abandoned. This application Jan. 30, 1989, Ser. No. 304,895

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1985, 3540743; May 22, 1986, 3617183

Int. Cl.[5] A61K *31/47, 31/425;* C07D *215/24, 21/702, 277/64, 277/76*

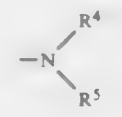
U.S. Cl. 514—311 6 Claims

1. A substituted benzyl ether, benzyl thioether or benzylamine of the formula



in which

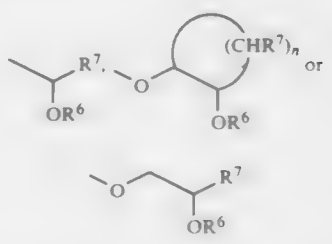
R^1 and R^2 each independently represent hydrogen, C_1–C_{12}-alkyl, C_2–C_{12}-alkenyl, C_5–C_8-cycloalkyl, C_1–C_{12}-alkoxy, C_1–C_{12}-alkylthio, C_1–C_6-halogenoalkyl, C_1–C_6-halogenoalkoxy, C_1–C_6-halogenoalkylthio, C_1–C_{12}-sulphonylalkyl, C_7–C_{14}-aralkoxy, C_7–C_{14}-aralkylthio, halogen, nitro, cyano or hydroxyl, or represent a group of the formula



wherein

R^4 and R^5 each independently represent hydrogen, C_1–C_{12}-alkyl, C_2–C_{12}-alkenyl, C_5–C_8-cycloalkyl, phenyl, naphthyl, bisphenyl, benzyl, naphthylmethyl, phenethyl, phenylpropyl or C_1–C_6-acyl,

R^3 represents a group of the formula



in which

R^6 represents hydrogen, C_1–C_{12}-alkyl or C_1–C_6-acyl,

R^7 represents hydrogen or C_1–C_{12}-alkyl and

n represents a number from 3 to 10,

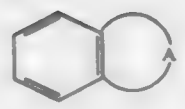
B represents —CH_2—X— or —X—CH_2,

wherein

X represents O, S or NR^7,

and wherein

R^7 has the abovementioned meaning and the group



represents quinoline, 2-quinolone or quinoline-N-oxide.

5,006,535

SUBSTITUTED HETEROCYLIC 4-AMINOQUINOLINE DERIVATIVES AS GASTRIC ACID SECRETION INHIBITORS

Robert J. Ife, Stevenage; Thomas H. Brown, Tewin, and Colin A. Leach, Stevenage, all of England, assignors to Smith Kline & French Laboratories Ltd., Welwyn Garden City, United Kingdom

Filed Feb. 23, 1989, Ser. No. 315,368

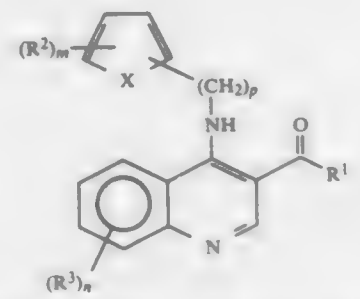
Claims priority, application United Kingdom, Feb. 25, 1988, 8804447

Int. Cl.[5] **C07D** *215/44;* **A61K** *31/44*

U.S. Cl. 514—313 **13 Claims**

1. A compound of structure (I):

(I)



in which R^1 is hydrogen, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6}alkoxyC_{1-6}alkyl, C_{3-6} cycloalkyl, C_{3-6}cycloalkylC_{1-6}alkyl, phenyl, phenylC_{1-6}alkyl, the phenyl group being optionally substituted from 1 to 3 times by members independently selected from the group consisting of hydrogen, C_{1-6} alkyl, C_{1-6} alkoxy, amino, C_{1-6} alkylthio, halogen, cyano, hydroxy, C_{1-6} alkanoyl and trifluromethyl;

R^2 is hydrogen, C_{1-6} alkyl, C_{1-6} alkoxy, CO_2H or CO_2C_{1-6} alkyl;

m is 1 to 3;

p is 0 to 4;

R^3 is hydrogen, C_{1-6} alkyl, phenyl, C_{1-6} alkoxy, C_{1-6}alkylthio, C_{1-6} alkanoyl, amino, C_{1-6}alkylamino, di-C_{1-6} alkylamino, halogen, trifluromethyl or cyano;

n is 1 or 2; and

X is S, or O,

provided that when X is oxygen, n and p are both 1, and R^1 is H or ethoxy, then R^3 is other than 6-chloro;

or a pharmaceutically acceptable salt thereof.

5,006,536

THIENOBENZOXEPINS AND ANALGESIC COMPOSITIONS THEREOF

Richard C. Effland, Bridgewater, and David G. Wettlaufer, Phillipsburg, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Dec. 26, 1989, Ser. No. 457,132

Int. Cl.[5] **A61K** *31/445, 31/40;* **C07D** *207/08, 211/32*

U.S. Cl. 514—321 **6 Claims**

1. A compound of the formula

wherein R is loweralkyl or aryllowerlkyl; X and Y are independently hydrogen, loweralkyl, halogen, loweralkoxy, or trifluoromethyl; W is CH_2, CHOH, or C═O; and n is 1 or 2; an optical isomer or pharmaceutically acceptable salt thereof.

5. A method of alleviating pain in a mammal by administering to a mammal in need of pain alleviation a pain alleviating effective amount of a compound of claim 1.

5,006,537

1,3-DIHYDRO-1-(PYRIDINYLAMINO)-2H-INDOL-2-ONES

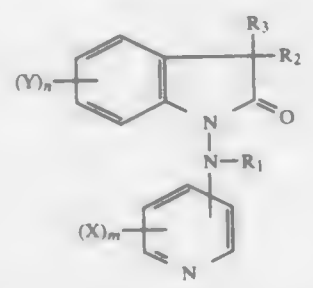
Richard C. Effland, Bridgewater, and David G. Wettlaufer, Phillipsburg, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Filed Aug. 2, 1989, Ser. No. 388,437

Int. Cl.[5] **A61K** *31/44;* **C07D** *213/74*

U.S. Cl. 514—339 **35 Claims**

1. A 1,3-dihydro-1-(pyridinylamino)-2H-indol-2-one of the formula



where R_1 is hydrogen, loweralkyl, aryl, aryllowerlkyl or heteroaryllowerlkyl selected from the group consisting of pyridinylmethyl, pyridinylethyl, thienylmethyl, thienylethyl; R_2 and R_3 are independently hydrogen, loweralkyl, aryllowerlkyl or heteroaryllowerlkyl selected from the group consisting of pyridinylmethyl, pyridinylethyl, thienylmethyl, thienylethyl; or R_2 and R_3 together form a cycloalkane ring of 4 to 6 carbons or a spiro fused arylcycloalkane, spiro fused pyridinylcycloalkane or spiro fused thiophenylcycloalkane, X and Y are independently hydrogen, halogen, hydroxy, loweralkyl, loweralkoxy, nitro, amino or trifluoromethyl; m and n are independently integers of 1 to 3, or the pharmaceutically acceptable acid addition salts thereof or, where applicable, the optical, geometrical or stereoisomers or racemic mixtures thereof.

33. A method of alleviating pain in a mammal which comprises administering to a mammal a pain alleviating effective amount of a compound as defined in claim 1.

5,006,538

CERTAIN INSECTICIDAL 6-(PHENOXY-2-PYRIDYL)-METHYL-NEOPHENTAL ETHERS

Kazunori Tsushima, Nishinomiya; Noritada Matsuo, Itami; Hiroshi Kisida, Takarazuka, and Toshihiko Yano, Ashiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

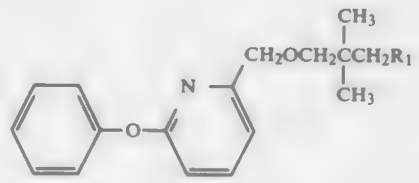
Filed Oct. 31, 1988, Ser. No. 264,865

Claims priority, application Japan, Nov. 7, 1987, 62-281834; Jun. 7, 1988, 63-141170

Int. Cl.[5] **C07D** *213/64;* **A01N** *43/40*

U.S. Cl. 514—345 **6 Claims**

1. An ether compound of the formula



wherein R_1 represents halogen or methyl.

6. A method for controlling insects which comprises administering an insecticidally effective amount of the ether compound according to claim 1 to the insects.

5,006,539

PROSTAGLANDINS

Robert L. Jones, and Norman H. Wilson, both of Edinburgh, Scotland, assignors to National Research Development Corporation, London, England

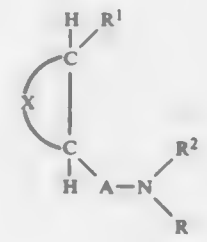
Division of Ser. No. 869,735, Jul. 22, 1986, Pat. No. 4,837,234, which is a division of Ser. No. 531,899, Aug. 23, 1983, Pat. No. 4,628,061. This application Mar. 6, 1989, Ser. No. 319,052

Claims priority, application United Kingdom, Dec. 23, 1981, 8138715

Int. Cl.[5] **C07C** *177/00;* **A61K** *31/557*

U.S. Cl. 514—357 **37 Claims**

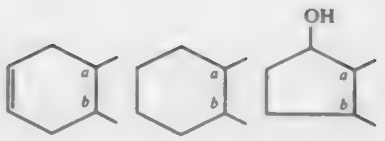
1. A compound of formula (I)



wherein



represents one of the cyclic groups shown below:



the letters a and b indicating in each case the points of attachment of the substituents R^1 and A-NR^2R, respectively;

R^1 is a 6-carboxyhex-2-enyl group, or a modification thereof in which the group is altered by one, or an appropriate combination of two or more, of the following: (a) alteration of the position of the double bond from the 2,3-position to the 3,4-position, (b) reduction of the double bond, (c) replacement of a methylene group at position 2 or 3 by an oxygen or sulphur atom in conjunction with reduction of the double bond, (d) alteration of the chain length through a decrease or an increase of one or two methylene groups, and (e) formation of a derivative of the carboxy group in the form of a pharmaceutically acceptable salt, C_{1-10} alkyl ester or an amide containing a group $—CONH_2$ or such a group in which the nitrogen atom is substituted by one or two groups selected from C_{1-10}alkyl groups, phenyl and phenyl substituted by one or more substituents selected from C_{1-10} alkoxy, halogen, C_{1-10} halogen-substituted alkyl, sulfamyl, amino, hydroxyl, nitro and C_{1-10} alkyl groups, or by one group $—SO_2R^6$ in which R^6 is a C_{1-10} alkyl group;

A is an aliphatic C_{1-10} hydrocarbon group with a chain length between the points of attachment to the divalent cyclic group and to the group NR^2R of 1 to 5 carbon atoms or such a group substituted by a group Ar, where Ar represents a phenyl, naphthyl, fluorenyl, dibenzocyclohexyl, dibenzocycloheptyl, pyridyl, benzthiazolyl, dihydrobenzthiazolyl, N-methyldihydrobenzthiazolyl, benzoxazolyl, dihydrobenzoxazolyl or N-methyldihydrobenzoxazylyl group or such a group substituted by one or more substituents selected from C_{1-10} alkoxy, halogen, C_{1-10} halogen-substituted alkyl, sulfamyl, amino, hydroxyl, nitro and C_{1-10} alkyl groups;

R^2 is hydrogen, a C_{1-10} aliphatic hydrocarbon group, a group Ar or a C_{1-10} aliphatic hydrocarbon group substituted by one or more groups Ar; and R is a group $—CO.NR^3R^4$, $—CS.NR^3R^4$, $—CNH.NR^3R^4$, $—CO.R^4$ or $—CS.R^4$ in which R^3 is hydrogen, a C_{1-10} aliphatic hydrocarbon group, a group Ar or a C_{1-10} aliphatic hydrocarbon group substituted by one or more groups Ar, but with the proviso that both R^2 and R^3 may not be other than hydrogen, and R^4 is a C_{1-10} aliphatic hydrocarbon group, a group Ar or a C_{1-10} aliphatic hydrocarbon group substituted by one or more groups Ar and/or by a group OAr, SAr, OR^5 or SR^5 wherein R^5 is a C_{1-10} aliphatic hydrocarbon group substituted by one or more groups Ar.

5,006,540

SUBSTITUTED 3-AMINOSYDNONIMINES, PROCESSES FOR THEIR PREPARATION AND THEIR USE

Karl Schönafinger, Alzenau; Rudi Beyerle, Frankfurt; Melitta Just, Nidderau; Helmut Bohn, Schöneck, and Jörg Ostrowski, Rodenbach, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

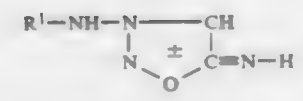
Filed Oct. 17, 1989, Ser. No. 422,502

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1988, 3837327

Int. Cl.[5] **C07D** *271/04;* **A01K** *31/41*

U.S. Cl. 514—361 **11 Claims**

1. Pharmacologically active substituted 3-aminosydnonimines of the general formula



and their pharmacologically acceptable acid addition salts, wherein R^1 denotes ethyl, hydroxyethyl, hydroxycyclohexyl or adamantyl.

5,006,541

ANTIALLERGY AND ANTIINFLAMMATORY AGENTS

Yoshihiko Kitaura; Fumitaka Ito; Rodney W. Stevens, and Nobuko Asai, all of Groton, Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 301,422, Feb. 27, 1989, Pat. No. 4,904,685, which is a division of Ser. No. 129,020, Dec. 7, 1987, Pat. No. 4,835,166, which is a continuation-in-part of Ser. No. 51,873, May 18, 1987, abandoned. This application Oct. 25, 1989, Ser. No. 427,161

Claims priority, application Japan, Jun. 9, 1986, 61-133470; Jun. 8, 1987, 62-142779

Int. Cl.[5] C07D *277/68;* A61K *31/425*

U.S. Cl. 514—367 5 Claims

1. A compound of the formula

or a pharmaceutically acceptable acid addition salt thereof, wherein R is hydrogen, alkyl having one to three carbon atoms, benzyl or carboxymethyl; R_1 is acetoxy, thiophenoxy, hydrogen, fluoro, chloro, methoxy, methyl or trifluoromethyl; R_2 is hydrogen, alkyl having one to three carbon atoms, alkanoyl having one to three carbon atoms or benzyl; X is S; n is an integer of 1 to 7; and Y is styryl, N-methylphenylamino, N-benzylphenylamino, phenylamino, phenoxy, thiophenoxy, thienyl, furyl, pyridyl, phenyl, substituted phenyl wherein said substituent is methyl, dimethylamino, methoxy, fluoro or chloro, or disubstituted phenyl wherein said substituents are each chloro, hydroxy or methoxy with the proviso that when Y is phenoxy, thiophenoxy, phenylamino, N-methylphenylamino or N-benzylphenylamino n is 2–7.

5,006,542

ARYLTHIOALKYLPHENYL CARBOXYLIC ACIDS, DERIVATIVES THEREOF, COMPOSITIONS CONTAINING SAME AND METHOD OF USE

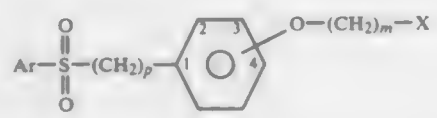
Steven E. Hall, Trenton, and Philip D. Stein, Princeton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 31, 1988, Ser. No. 264,939

Int. Cl.[5] C07C *321/00;* A61K *31/41*

U.S. Cl. 514—381 7 Claims

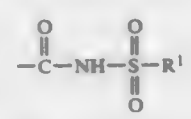
1. A compound having the structure



wherein

Ar is an aryl group which is unsubstituted or substituted with one, two or three of halogen, lower alkyl, lower alkoxy, phenyl, hydroxy, alkanoyl, aroyl, alkylamino, alkoxycarbonyl or carboxy;

X is COOR wherein R is hydrogen, alkali metal, lower alkyl or X is 5-tetrazolyl or



wherein R^1 is lower alkyl or aryl

p is 1 to 5;

m is 1 to 4;

and the $(CH_2)_m$ and $(CH_2)_p$ groups may be unsubstituted or optionally substituted with one or two lower alkyl groups and/or are one or two lower alkoxy groups.

5,006,543

DIPHENYLETHANE DERIVATIVES

Francis T. Boyle, Congleton, England, assignor to Imperial Chemical Industries PLC, London, England

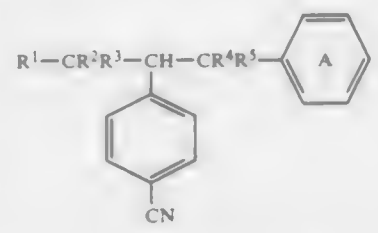
Filed Jul. 25, 1989, Ser. No. 384,487

Claims priority, application United Kingdom, Aug. 4, 1988, 8818561.6

Int. Cl.[5] A61K *31/41;* C07D *249/08*

U.S. Cl. 514—383 2 Claims

1. A pharmaceutical or veterinary composition comprising an aromatase inhibitory amount of a diphenylethane derivative of the formula

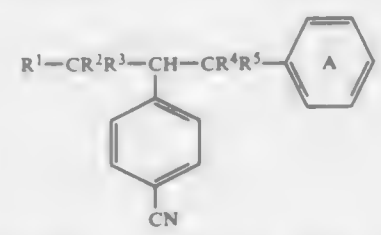


(I)

wherein R^1 is a 1,2,4-triazolyl; R^2 and R^3, which may be the same or different, are each a hydrogen atom or a 1–6C alkyl radical; R^4 and R^5, which may be the same or different, are each a hydrogen or fluorine atom or a 1–6C alkyl radical; and A is a phenyl radical, optionally bearing one or more substituents selected from halogen atoms, cyano radicals or 1–4C halogenoalkyl or halogenoalkoxy radicals; and, for those compounds which contain a basic nitrogen atom, the pharmaceutically or veterinarily acceptable salts thereof,

together with a pharmaceutically or veterinarily acceptable diluent or carrier.

2. A method of treating steroid hormone dependent tumors which comprises administering to a host in need of such treatment an effective aromatase inhibitory amount of a diphenylethane derivative of the formula



(I)

wherein R^1 is a 1,2,4-triazolyl; R^2 and R^3, which may be the same or different, are each a hydrogen atom or a 1–6C alkyl radical; R^4 and R^5, which may be the same or different, are each a hydrogen or fluorine atom or a 1–6C alkyl radical; and A is a phenyl radical, optionally bearing one or more substituents selected from halogen atoms, cyano radicals or 1–4C halogenoalkyl or halogenoalkoxy radicals; and, for those compounds which contain a basic nitrogen atom, the pharmaceutically or veterinarily acceptable salts thereof.

5,006,544

IMIDAZOLE DERIVATIVES AND PHARMACEUTICAL USE THEREOF

Peter C. North, Hertfordshire; David J. Cavalla, Cambridge, and Derek J. M. Black, Hertfordshire, all of England, assignors to Glaxo Group Limited, England

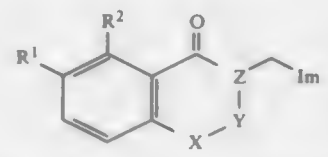
Filed Oct. 12, 1989, Ser. No. 420,324

Claims priority, application United Kingdom, Oct. 13, 1988, 8823980

Int. Cl.[5] C07D *405/06, 409/06;* A61K *31/415*

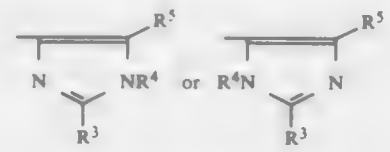
U.S. Cl. 514—385 9 Claims

1. A compounds of formula (I)



(I)

wherein Im represents an imidazolyl group of the formula:



and one of the groups represented by R^3, R^4 and R^5 is a hydrogen atom, or a C_{1-6}alkyl, C_{3-7}cycloalkyl, C_{3-6}alkenyl, phenyl or phenylC_{1-3}alkyl group, and each of the other two groups, which may be the same or different, represents a hydrogen atom or a C_{1-6}alkyl group;

R^1 and R^2 each represent a hydrogen atom, or together with the carbon atoms to which they are attached form a phenyl ring;

X represents an oxygen or a sulphur atom;

Z—Y represents the group CH—CH_2 or C═CH; or a physiologically acceptable salt or hydrate thereof.

9. A method of treating a condition mediated through 5-HT_3 receptors which comprises administering to a patient an effective amount to relieve said condition of a compound of formula (I) as defined in claim 1 or a physiolgically acceptable salt or hydrate thereof.

5,006,545

VETERINARY COMPOSITIONS AGAINST ENDOPARASITES CONTAINING CYPERMETHRIN AND ALBENDAZOLE

Peter Sarkoy; László Pap; András Szegó, all of Budapest; Lajos Nagy, Szentendre; István Székely, Dunakeszi; Katalin Mármarosi, Biatorbagy, and János Grosch, Budapest, all of Hungary, assignors to Chinoin Gyogyszer Es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Filed Aug. 9, 1989, Ser. No. 391,780

Claims priority, application Hungary, Aug. 9, 1988, 4128/88

Int. Cl.[5] A61K *31/34, 31/415, 31/425*

U.S. Cl. 514—395 2 Claims

1. A veterinary composition suitable against endoparasites containing as active ingredients:

(a) alpha-(cyano)-3-(2,2-dichlorovinyl)-2,2-dimethyl-cyclopropane-carboxylic acid-3-phenoxybenzyl ester or any isomeric mixture thereof; and

(b) 5(6)-propylthio-2-benzimidazolyl-methylcarbamate, wherein the weight ratio of the two respective compounds is 1:1 to 1.5:1, in combination with a carrier that is inert for veterinary purposes.

5,006,546

IMIDAZOLE DERIVATIVES

Edward C. J. Coffee, Upminster, England, assignor to Rhone-Poulenc Sante, Antony, France

Filed Mar. 26, 1990, Ser. No. 498,628

Claims priority, application United Kingdom, Apr. 5, 1989, 8907656

Int. Cl.[5] C07D *405/12;* A61K *31/415*

U.S. Cl. 514—397 3 Claims

1. An imidazole derivative which is: (2S,4R,6S)-6-[(4,5-diphenylimidazol-2-yl)thiomethyl]-4-hydroxy-2-methoxy-3,4,5,6-tetrahydro-2H-pyran or (2R,4R,6S)-6-[(4,5-diphenylimidazol-2-yl)thiomethyl]-4- hydroxy-2-methoxy-3,4,5,6-tetrahydro-2H-pyran or a mixture thereof.

2. A pharmaceutical composition useful for the treatment of atherosclerosis, hyperlipidaemia, cholesterol ester storage, and atheroma in vein grafts, said composition comprising an amount effective for the purposes indicated of (2S, 4R, 6S)-6-[(4,5-diphenylimidazol-2-yl) thiomethyl]-4-hydroxy-2-methoxy-3,4,5,6-tetrahydro-2H-pyran or (2R,4R,6S)-6-[(4,5-diphenylimidazol-2-yl) thiomethyl]-4-hydroxy-2-methoxy-3,4,5,6-tetrahydro-2H-pyran or a mixture thereof, in association with a pharmaceutically acceptable carrier or coating.

5,006,547

TENIDAP AS AN INHIBITOR OF THE RELEASE OF ELASTASE BY NEUTROPHILS

Leland D. Loose, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Mar. 19, 1990, Ser. No. 495,888

Int. Cl.[5] A01H *43/38*

U.S. Cl. 514—414 16 Claims

1. A method of inhibiting the release of elastase by neutrophils in a mammal in need thereof which comprises administering to said mammal an elastase release inhibiting amount of tenidap or a pharmaceutically-acceptable base salt thereof.

5,006,548

ACRYLAMIDOBENZOIC ACID DERIVATIVES AND THEIR USE

Toshio Satoh; Hitoshi Matsumoto; Hisao Kakegawa, all of Tokushima; Yoshiko Kato, Kobe; Juichi Riku, Uji; Junji Yoshinaga, Neyagawa, and Yoshifumi Kanamoto, Kashihara, all of Japan, assignors to Sawai Pharmaceutical Co., Ltd., Osaka, Japan

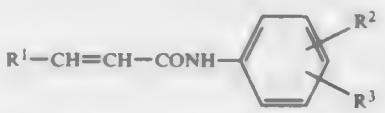
Continuation of Ser. No. 154,963, Feb. 11, 1988, abandoned, which is a continuation of Ser. No. 702,664, Feb. 19, 1985, abandoned. This application Aug. 7, 1989, Ser. No. 393,068

Claims priority, application Japan, Feb. 29, 1984, 59-38971

Int. Cl.[5] A61K *31/40, 31/425, 31/415;* C07D *339/02, 333/22, 207/18, 231/10, 233/54*

U.S. Cl. 514—427 14 Claims

1. A compound of the formula:



wherein R^1 is a five-membered heterocyclic group containing one or two heteroatoms selected from nitrogen and sulfur and which is unsubstituted or substituted with lower alkyl or lower alkoxycarbonyl, R^2 is hydrogen, and R^3 is a carboxy group or an ester thereof, with the proviso that when R^1 is an unsubstituted or substituted thienyl, then R^3 is attached to the ortho position with respect to —CONH—, and, where applicable pharmaceutically acceptable salts thereof.

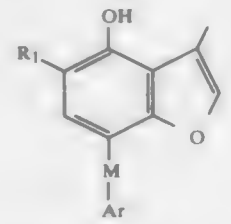
5,006,549

7-AROYL-4-HYDROXY-3-METHYL-BENZOFURANS AS DUAL INHIBITORS OF CYCLOOXYGENASE AND 5-LIPOXYGENASE

Robert A. Zambias, Springfield, and Milton L. Hammond, Somerville, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

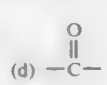
Filed May 24, 1989, Ser. No. 356,151
Int. Cl.[5] A61K *31/38, 31/44;* **C07D** *409/00, 305/12*
U.S. Cl. 514—444 **8 Claims**

1. A compound of formula (I)



(I)

or a pharmaceutically acceptable salt thereof wherein:
R_1 is selected from the group consisting of:
(a) hydrogen,
(b) C_{1-6}alkyl, and
(c) C_{3-6}alkenyl; and
M is
(a) a carbon-carbon bond,
(b) —C(H)═C(H)—,
(c) —CH_2C(H)═C(H)—, or



when
Ar is
(a) thienyl,
(b) halotheinyl,
(c) phenyl,
(d) halophenyl,
(e) benzyl,
(f) halobenzyl,
(g) n-methoxypyrrolidinoyl,
(h) γ-lactonyl, or
(i) pyridyl; and
M is —C(H)═, when
Ar is
(j) butyryl lactone, or
(k) cyclopentanone.

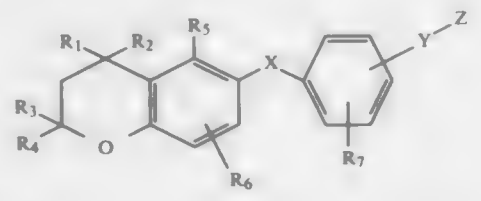
5,006,550

CHROMAN ESTERS OF PHENOLS AND BENZOIC ACIDS HAVING RETINOID-LIKE ACTIVITY

Roshantha A. S. Chandraratna, El Toro, Calif., assignor to Allergan, Inc., Irvine, Calif.

Filed Dec. 29, 1989, Ser. No. 458,883
Int. Cl.[5] A61K *31/35;* **C07D** *311/04*
U.S. Cl. 514—456 **28 Claims**

1. A compound of the formula



wherein
the R_1–R_7 groups are independently H or straight chain lower alkyl group of 1 to 6 carbons or branched chain lower alkyl or cycloalkyl groups of 3 to 6 carbons;
X is —COO—;
Y is cycloalkyl or branched chain alkyl group of 3 to 6 carbons, or is $(CH_2)_n$ where n is an integer between 0 to 6, and
Z is H, OH, OR', OCOR', —COOH or a pharmaceutically acceptable salt, ester or amide thereof, —CH_2OH —CH_2OR', CH_2OCOR', or —CHO CH$(OR_8)_2$, CHOR_9O, or —COR' or CR'$(OR_8)_2$, or CR'OR_9O where R' is an alkyl group containing 1 to 6 carbons, cycloalkyl group containing 3 to 6 carbons, or alkenyl group containing 2 to 6 carbons, or a phenylalkyl, or phenyl group and where R_8 is lower alkyl, and R_9 is a divalent alkyl radical of 2 to 5 carbons.

5,006,551

COMPOSITION FOR DESTROYING MALIGNANT TUMORS

Karl Groke, Eggersdorf; Hans Miggitsch, Graz; Horst Musil, Graz, and Josef Polzer, Graz, all of Austria, assignors to Leopold & Co., Chem. Pharm. Fabrik Aktiengesellschaft, Graz, Austria

Filed Jan. 24, 1989, Ser. No. 301,035
Claims priority, application Austria, Feb. 3, 1988, 218/88
Int. Cl.[5] A61K *31/34, 31/19*
U.S. Cl. 514—461 **12 Claims**

1. A method for treating patients with malignant diseases sensitive to treatment with the composition below, which comprises administration to said patients over a period of several weeks, of a cytostatically effective amount of a composition by the parenteral, oral, rectal or topical route, which composition contains alpha-ketoglutaric acid and 5-hydroxymethylfurfural, in a daily dose of 2.25–30 g of alpha-ketoglutaric acid and 0.375–5 g of 5-hydroxymethylfurfural.

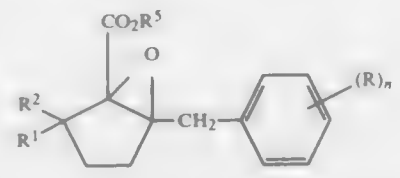
5,006,552

CYCLOPENTANE DERIVATIVES

Paul H. Briner, Canterbury, England, assignor to Shell Internationale Research Maatschappij B.V., Netherlands

Filed Aug. 23, 1989, Ser. No. 397,288
Claims priority, application United Kingdom, Aug. 31, 1988, 8820603
Int. Cl.[5] A61K *31/335;* **C07D** *303/40*
U.S. Cl. 514—475 **9 Claims**

1. A compound of the formula:



in which n represents an integer from 0 to 5;
each R represents a halogen atom, nitro, cyano, hydroxyl, C_{1-12} alkyl, C_{1-12} haloalkyl, C_{1-12} alkoxy, C_{1-12} haloalkoxy, amino, C_{1-12} alkylamino, di-C_{1-12} alkylamino, C_{1-12} alkoxycarbonyl, carboxyl, C_{1-12} alkanoyl, C_{1-12} alkylthio, C_{1-12} alkylsulphinyl, C_{1-12} alkylsulphonyl, carbamoyl, C_{1-12} alkylamindo, C_{3-8} cycloalkyl or phenyl group; R^1 and R^2 independently represent a hydrogen atom or a C_{1-12} alkyl group; and R^5 represents a hydrogen atom or a C_{1-12} alkyl or C_{3-8} cycloalkyl group.

8. A method of combating fungus at a locus which comprises treating the locus with a compound of formula I as defined in claim 1.

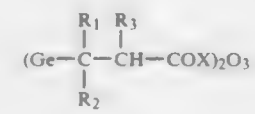
5,006,553

AGENT FOR IMPROVING REDUCED FUNCTIONS OF ORGANS CAUSED BY INHIBITED BLOOD CIRCULATION

Norihiro Kakimoto, Machida; Kazuo Kumano, Yamato, and Kunie Nakamura, Sagamihara, all of Japan, assignors to Asai Germanium Research Institute Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 261,405, Oct. 24, 1988, abandoned.
This application Jul. 23, 1990, Ser. No. 555,829
Claims priority, application Japan, Oct. 29, 1987, 62-273747
Int. Cl.[5] A61K *31/28*
U.S. Cl. 514—492 **6 Claims**

1. A method for improving reversible ischemic renal insufficiency, said method comprising administering to a mammalian organism in need of such treatment, a therapeutically effective amount to improve reversible ischemic renal insufficiency of an organogermanium compound represented by the formula (I)



(I)

wherein R_1 to R_3 are each a hydrogen atom or a lower alkyl group which may be the same or different, or a phenyl group, and X is a hydroxyl group, a lower alkoxy group, a $—NH_2$ group or O^-Y^+ where Y is a metal or a basic group-containing compound or pharmaceutically acceptable salt thereof.

5,006,554

ORGANOTIN COMPOUNDS

Carol A. Dooley, and Elek Lindner, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 26, 1989, Ser. No. 358,739
Int. Cl.[5] A01N *55.04;* **C07F** *7/22;* **C09D** *5/14*
U.S. Cl. 514—493 **1 Claim**

1. A method of reducing marine organisms on a ship's hull which comprises administering an effective amount of tributenyltin bromides having double bonds at carbon atoms C-1 or C-3 to remove said organisms from a ship's hull.

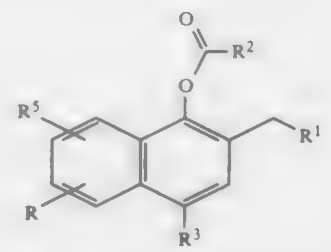
5,006,555

ESTERS OF 2-ARYLMETHYL-1-NAPHTHOL DERIVATIVES AS 5-LIPOXYGENASE INHIBITORS

Douglas G. Batt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 17, 1990, Ser. No. 466,601
Int. Cl.[5] A61K *31/22;* **C07C** *69/03;* **C07D** *213/55, 333/24*
U.S. Cl. 514—510 **36 Claims**

1. A compound having the formula:



(I)

or a pharmaceutically acceptable salt thereof wherein:
R^1 is pyridyl thienyl N-methylpyrryl, thiazolyl, methylenedioxyphenyl, phenyl, or phenyl substituted with 1 to 3 substituents independently selected from the group consisting of F, Cl, Br, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 acyloxy, C_1–C_4 alkylthio, C_1–C_4 alkylsulfonyl NR^6R^7;
R^2 is C_1–C_4 alkyl, C_1–C_4 alkoxy, or $(CH_2)_nR^8$ where n is 2–4;
R^3 hydrogen, C_1–C_4 alkyl, Br or Cl;
R^4 and R^5 independently are H, C_1–C_4 alkyl or C_1–C_4 alkoxy;
R^6 and R^7 independently are H or C_1–C_4 alkyl, or taken together are -$(CH_2)_4$-;
R^8 is H, $COOR^9$ or $N(R^{10})_2$; and
R9 and R^{10} independently are H or C_1–C_4 alkyl.
13. An anti-inflammatory pharmaceutical composition comprising a pharmaceutically acceptable carrier and an anti-inflammatory effective amount of a compound of claim 1.

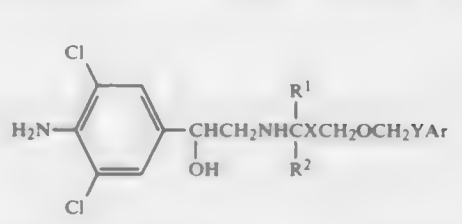
5,006,556

DICHLOROANILINE DERIVATIVES FOR THE THERAPY OR PROPHYLAXYSIS OF A DISEASE ASSOCIATED WITH REVERSIBLE AIRWAY OBSTRUCTION

Ian F. Skidmore, Welwyn; Lawrence H. C. Lunts, Broxbourne; Harry Finch, Hitchin; Alan Naylor, Royston, and Ian B. Campbell, Ware, all of England, assignors to Glaxo Group Limited, London, England

Division of Ser. No. 918,317, Oct. 14, 1986, Pat. No. 4,943,591.
This application May 15, 1990, Ser. No. 524,141
Claims priority, application United Kingdom, Oct. 17, 1984, 8426191; Oct. 15, 1985, 8525321
Int. Cl.[5] A01N *37/12, 37/10, 37/18, 33/02*
U.S. Cl. 514—539 **2 Claims**

1. A method of therapy or prophylaxis of a disease associated with reversible airways obstruction in a patient which comprises administering to said patient an effective amount to alleviate said disease of a compound of formula (I):



(I)

wherein
R^1 and R^2 each represent a hydrogen atom or a C_{1-3} alkyl group, with the proviso that the sum total of carbon atoms in R^1 and R^2 is not more than 4;
X represents a C_{1-6} alkylene, C_{2-6} alkenylene or C_{2-6} alkynylene chain;
Y represents a bond, or a C_{1-4} alkylene, C_{2-4} alkenylene or C_{2-4} alknylene chain with the proviso that the sum total of carbon atoms in X and Y is not more than 8;
Ar represents a phenyl group substituted by a group —NR^5COR^6, where R^5 represents a hydrogen atom or a C_{1-4}alkyl group and R^6 represents a hydrogen atom or a C_{1-4}alkyl, C_{1-4}alkoxy or —NR^3R^4 group where R^3 and R^4 each represent a hydrogen atom, or a C_{1-4} alkyl group or Ar is a phenyl group substituted by a group —$(CH_2)_rR^7$ where r is 0 or 1 and R^7 is —COR^9 where R^9 represents hydroxy, C_{1-4}alkoxy or a group —NR^3R^4; or a physiologically acceptable salt or solvate thereof.

5,006,557

ACNE SOLUTION

Yee Siu-Ming, N. 52, Lane 172, Kuang Tong Rd., Ping Tong City, Taiwan

Filed Apr. 19, 1990, Ser. No. 511,366
Int. Cl.[5] A61K *7/48, 9/08, 31/19*
U.S. Cl. 514—557 **1 Claim**

1. An acne treating solution consisting essentially of
Acetic Acid Glacial 6.25%
Almond Essence 18.75%
Glycerine 18.75%

and Water 56.25%.

5,006,558

METHOD FOR REDUCING STRESS IN PIGLETS PIGS AND POULTRY

Dieter M. Poralla, Wachenheim, and Walter Kohler, Frankenthal, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 269,443, Nov. 10, 1988, abandoned. This application May 15, 1990, Ser. No. 523,837

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1987, 3738570

Int. Cl.[5] A61K *31/19; A23L 1/00*

U.S. Cl. 514—557 9 Claims

1. A method for reducing stress in piglets, fattening pigs and poultry which comprises administering a dose of magnesium dipropionate effective to achieve said reduction in stress.

5,006,559

METHOD OF USE OF BRANCHED-CHAIN AMINO ACIDS INFUSIONS TO INFLUENCE APPETITE

Jeffrey Askanazi, and Karen Gil, both of Haworth, N.J., assignors to Clintec Nutrition Co., Deerfield, Ill.

Continuation-in-part of Ser. No. 238,709, Aug. 31, 1988. This application Mar. 27, 1989, Ser. No. 328,842

Int. Cl.[5] A61K *31/195*

U.S. Cl. 514—561 7 Claims

1. A method to decrease the risk of aspiration of gastric contents as a result of the administration of anesthesia to a patient comprising:

parenterally administering preoperatively a therapeutically effective amount of an amino acid solution including branched chain amino acid.

5,006,560

USE OF GABA-B SELECTIVE AGONISTS AS ANTI-TUSSIVE AGENTS

William Krentzer, West Caldwell; Donald Bolser, Bedminster; Richard Chapman, Somerville, and Sultan Aziz, Woodcliff Lake, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Dec. 20, 1989, Ser. No. 454,786

Int. Cl.[5] A61K *31/66, 31/195*

U.S. Cl. 514—114 5 Claims

1. A method for treating cough in a mammal comprising administering to said mammal an anti-tussive effective amount of a GABA-B selective agonist.

5,006,561

INDANE SULFONAMIDE ANTI-ARRHYTHMIC AGENTS AND USE

John E. Arrowsmith, Upper Walmer, and Peter E. Cross, Canterbury, both of England, assignors to Pfizer Inc., New York, N.Y.

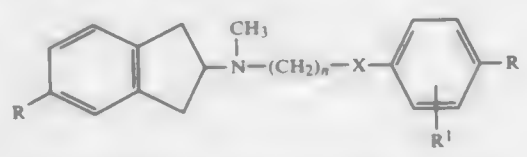
Continuation of Ser. No. 164,310, Mar. 4, 1988, abandoned. This application Apr. 17, 1990, Ser. No. 510,370

Claims priority, application United Kingdom, Mar. 25, 1987, 870123

Int. Cl.[5] A61K *31/18; C07C 311/08*

U.S. Cl. 514—605 9 Claims

1. An organic amine compound of the formula:



or a pharmaceutically acceptable salt thereof, wherein R, which is the same in each ring, is $—NHSO_2(C_1–C_4$ alkyl); R^1 is hydrogen, halogen, $C_1–C_4$ alkyl or $C_1–C_4$ alkoxy; X is oxygen or a direct link; and n is one or two; with the proviso that when X is oxygen, n is always two.

9. A method for preventing or reducing cardiac arrhythmias in the treatment of a subject afflicted with an impaired cardiac pump function, which comprises administering to said subject an effective anti-arrhythmic amount of a compound as claimed in claim 1.

5,006,562

PROCESSES FOR REPELLING INSECTS BY MEANS OF N-ALKYL NEOALKANAMIDE INSECT REPELLENTS

Robert J. Steltenkamp, Somerset, N.J., assignor to Colgate-Palmolive Co., Piscataway, N.J.

Continuation-in-part of Ser. No. 894,985, Aug. 8, 1986, abandoned, and a continuation-in-part of Ser. No. 71,305, Jul. 16, 1987, Pat. No. 4,804,683. This application Nov. 4, 1988, Ser. No. 267,141

The portion of the term of this patent subsequent to Feb. 14, 2006, has been disclaimed.

Int. Cl.[5] A01N *37/18*

U.S. Cl. 514—625 9 Claims

1. A process for repelling insects from an area, location or item which comprises applying to or near such area, location or item an insect repelling quantity of N-alkyl neoalkanamide(s), wherein the alkyl is of 1 to 2 carbon atoms and the neoalkanoyl moiety is of 7 to 14 carbon atoms.

5,006,563

ALKYLAMINO- AND ALKYLAMINO ALKYL DIARYLKETONES

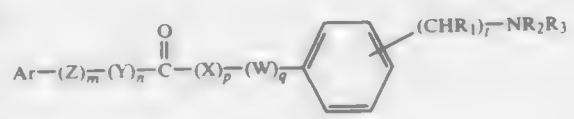
R. Richard L. Hamer, Lebanon; Brian Freed, Somerset, and Richard C. Allen, Flemington, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Continuation of Ser. No. 450,502, Dec. 14, 1989, abandoned. This application Jul. 31, 1990, Ser. No. 561,202

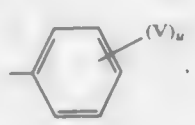
Int. Cl.[5] A61K *31/135;* C07C *211/27, 211/46, 215/74*

U.S. Cl. 514—646 23 Claims

1. An alkylamino-, alkylaminoalkyl diarylketone of the formula



where Ar is aryl of the formula



where V is hydrogen, halogen, loweralkyl, loweralkoxy, CF_3, NO_2 and u is an integer of 1 to 3; X and Y are independently $—CH_2—$, $—CF_2—$ or —CHF—; Z and W are independently $—CH_2—$, —O—, —CHOH—, or —CHF—; m, n, p, q and t are integers which are independently 0 or 1; R_1 is H or loweralkyl, R_2 and R_3 are loweralkyl; and the pharmaceutically acceptable acid addition salts thereof and where applicable the geometric and optical isomers and racemic mixtures thereof provided that when Z=oxygen n=1, or when W=oxygen p=1, or when both Z and W are simultaneously oxygen, n=p=1 or when W=—CHOH— and m=n=p=t=0 and u=1 then V is neither halogen nor loweralkoxy.

5,006,564

PROCESS FOR THE PRODUCTION OF FLAME-RETARDANT POLYURETHANE FOAMS

Heinz-Gerd Noonenbruch, Leverkusen; Ulrich Heltmann, Memmingen, and Heinrich Bormann, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen and Metzeler Schaum GmbH, Memmingen, all of, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 244,874, Sep. 15, 1988, abandoned. This application Aug. 3, 1989, Ser. No. 389,081

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1987, 3732199; Sep. 24, 1987, 3732239

Int. Cl.[5] C08G *18/82*

U.S. Cl. 521—54 17 Claims

1. A process for the preparation of a flame-retardant polyurethane foam comprising impregnating an open-cell polyurethane foam with a mixture of

(a) a cross-linkable elastomer latex, wherein the cross-linkable elastomer component is a polychloroprene containing carboxyl groups.

(b) a zinc salt of a metaboric or polyboric acid, and

(c) a cross-linking agent.

5,006,565

ANTI-CLUMPING AGENTS FOR EXPANDABLE VINYLAROMATIC-ACRYLONITRILE POLYMERIC MATERIALS

Martin H. Tusim, and James T. Grimes, both of Newark, Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 27, 1990, Ser. No. 516,020

Int. Cl.[5] C08V *9/224*

U.S. Cl. 521—57 10 Claims

1. The method for reducing clumping together of expandable vinylaromatic-acrylonitrile copolymer particles comprising coating the exposed surfaces of said particles with particulate magnesium oxide in an amount in the range from 0.2 to 1.5 weight percent, based on the weight of expandable copolymer particles.

5,006,566

PREPARATION OF FOAMS HAVING A HIGH COMPRESSIVE STRENGTH

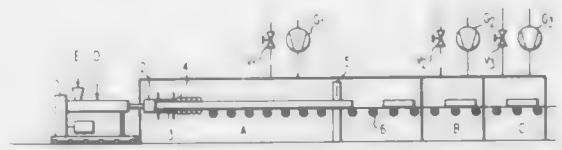
Reinhold Weber, Mutterstadt; Manfred Weilbacher, Frankenthal; Hermann Tatzel, Hirschberg; Ludwig Zuern, Bad Durkheim; Hans D. Zettler, Gruenstadt, and Klaus Hinselmann, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 2, 1988, Ser. No. 279,092

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1987, 3741095

Int. Cl.[5] C08J *9/08*

U.S. Cl. 521—79 4 Claims



1. A process for the preparation of a foam having high compressive strength by extrusion of a mixture of a styrene polymer and from 3 to 9% by weight, based on the styrene polymer, of a blowing agent consisting of

(a) from 80 to 100% by weight of carbon dioxide and

(b) from 0 to 20% by weight of one or more halohydrocarbons or hydrocarbons which are gaseous at room temperature,

with or without conventional additives, wherein the mixture is extruded into a zone under from 0.1 to 2 bar gauge pressure and the foam is allowed to stabilize under this pressure.

5,006,567

PROCESS FOR FOAMING POLYMER COMPOSITIONS WITH HYDRAZONE COMPOUNDS AND COMPOSITIONS ASSOCIATED THEREWITH

Michael J. Fazio; Richard A. Wolf; Edwin J. Wilson, all of Midland, Mich., and Susan Wollowitz, Walnut Creek, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 11, 1988, Ser. No. 255,572

Int. Cl.[5] C08J *9/10*

U.S. Cl. 521—95 15 Claims

1. A process for foaming a thermoplastic polymer comprising the steps of:

(a) dispersing throughout the molten thermoplastic polymer a foaming amount of foaming agent which contains a hydrazone compound having:

(1) a hydrazone group having a first hydrazone nitrogen atom and a second hydrazone nitrogen atom joined by a single bond,

(2) a first organic moiety having a single bond from a carbon atom in the first organic moiety to the first hydrazone nitrogen atom,

(3) a hydrogen atom bonded to the first hydrazone nitrogen atom, and

(4) a second organic moiety having a double bond from a carbon atom in the second organic moiety to the second hydrazone nitrogen atom,

said first and second organic moieties being chosen such that said hydrazone compound is substantially stable with respect to thermal decomposition at temperatures up to at least 200° C. and such that said hydrazone compound substantially decomposes to liberate gas at a temperature at which the polymer does not undergo substantial thermal degradation; and

(b) subjecting the foaming agent to temperature conditions in excess of 200° C. under which said hydrazone compound substantially decomposes and foams the polymer.

5,006,568

VOLATILE FOAMING AGENT COMPOSITION

Hiromitsu Fukazawa, and Motosuke Ogawa, both of Shimizu, Japan, assignors to Dupont-Mitsui Fulurochemicals Co., Ltd.

Continuation of Ser. No. 291,584, Dec. 29, 1988, abandoned. This application Aug. 2, 1990, Ser. No. 562,410

Int. Cl.[5] C08J *9/14*

U.S. Cl. 521—98 4 Claims

1. A method of blowing a thermoplastic polymer comprising mixing a volatile blowing agent into the molten polymer and blowing the polymer; wherein said blowing agent comprises a mixture of 1,1,1,2 tetrafluoroethane with other volatile blowing agents having a permeability higher than air in the thermoplastic polymer and where the ratio of the 1,1,1,2 tetrafluoroethane to the other volatile blowing agents is regulated so that the overall gas permeability of the volatile mixture in the thermoplastic polymer is comparable to that of air; and wherein the thermoplastic polymer is selected from polyethylene, polypropylene, polybutadiene, or polystyrene.

5,006,569

DENSITY REDUCTION IN FLEXIBLE POLYURETHANE FOAMS

Herman Stone, Hazleton, Pa., assignor to PMC, Inc., Sun Valley, Calif.

Filed Aug. 16, 1989, Ser. No. 394,548

Int. Cl.[5] C08G *18/14*

U.S. Cl. 521—118 42 Claims

1. An improved flexible, open-celled polyurethane foam produced in situ from the reaction, in the presence of a catalyst, of an isocyanate, a blowing agent, a foam stabilizer, a polyether polyol having a molecular weight from about 2000 to about 6500, and a liquid salt produced from the reaction of CO_2 with a water-soluble amine or amino alcohol, wherein the liquid salt is present in an amount greater than or equal to about

2 parts by weight per 100 parts by weight of polyol, the foam being characterized by reduced density as compared with a second foam of the same composition that was produced from a reaction mixture wherein the liquid salt was present in an amount less than about 2 parts by weight per 100 parts by weight of polyol.

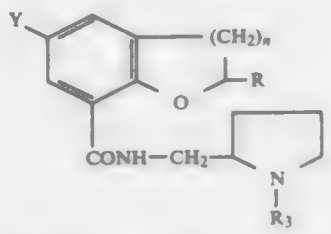
5,006,570

DIHYDROBENZOFURAN- AND CHROMAN-CARBOXAMIDE DERIVATIVES, PROCESSES FOR THE PREPARATION THEREOF AND USE THEREOF AS NEUROLEPTICS

Jacqueline Franceschini, L'Hay-Les-Roses, and Josette Margarit, Paris, both of France, assignors to Laboratoires Delagrange, Paris, France

Filed Jan. 30, 1987, Ser. No. 8,916
Claims priority, application France, Jan. 30, 1986, 86 01279
Int. Cl.[5] A61K *31/40*; C07D *405/00*
U.S. Cl. 514—422 **12 Claims**

1. Dihydrobenzofuran- and chroman-carboxamide derivatives of formula (I):



in which R is hydrogen or methyl;
n is equal to 1 or 2;
R_3 is cyclopropylmethyl or cyclohexanylmethyl;
Y is chlorine, cyclopropylmethylsulphonyl, methylsulfamoyl or ethylsulphonyl, and their pharmacologically acceptable acid addition salts and their optical isomers.

5,006,571

DENTURE ADHESIVE COMPOSITION

Lori D. Kumar, Princeton, and Alexander M. Schobel, Whitehouse Station, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 21, 1989, Ser. No. 455,703
Int. Cl.[5] C09J *101/26, 135/08*; A61C *13/23*
U.S. Cl. 523—120 **34 Claims**

1. A denture adhesive base composition comprising an adhesive copolymer matrix comprising a substantially anhydrous mixture of a mixed Na/Ca salt of methyl vinyl ether-maleic acid copolymer, sodium carboxymethylcellulose and a water soluble material which provides an amount of trivalent cations in water sufficient to crosslink said sodium carboxymethylcellulose and render said sodium carboxymethylcellulose insoluble in said adhesive copolymer matrix.

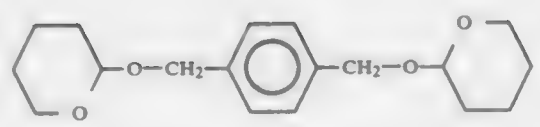
5,006,572

GAMMA RADIATION RESISTANT POLYCARBONATE COMPOSITION

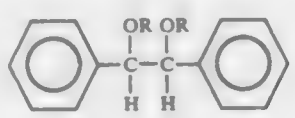
Charles E. Lundy; Roger J. White, and Sivaram Krishnan, all of Pittsburgh, Pa., assignors to Mobay Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 301,204, Jan. 24, 1989, abandoned. This application Sep. 5, 1989, Ser. No. 403,202
Int. Cl.[5] C08K *5/15, 5/06*
U.S. Cl. 523—136 **13 Claims**

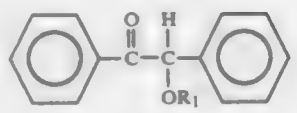
1. A polycarbonate molding composition comprising a homogeneous blend of (i) an aromatic polycarbonate resin and (ii) about 0.01 to about 5.0% relative to the weight of the composition of a member selected from the group consisting of



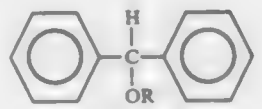
(a)



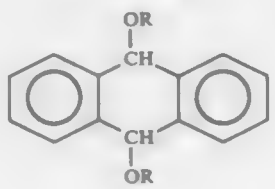
(b)



(c)

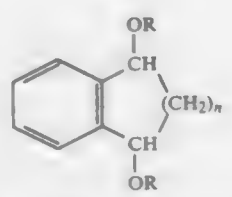


(d)



(e)

and



(f)

wherein R and R_1 denote a $C_{1\text{-}30}$ alkyl or aryl radical or a dihydropyran and n is 1 to 3.

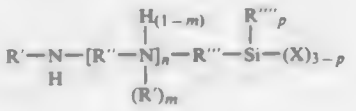
5,006,573

SILANE COUPLING AGENTS

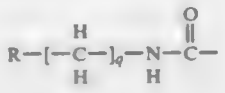
Edwin P. Plueddemann, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 803,043, Nov. 29, 1985, Pat. No. 4,650,889. This application Oct. 14, 1986, Ser. No. 917,950
Int. Cl.[5] C08K *9/08*
U.S. Cl. 523—214 **19 Claims**

1. A process for bonding a polymerizable material to a mineral filler comprising: (a) mixing an organosilane with a polymerizable material having aliphatic unsaturation and a filler having hydroxyl functionality thereon, to obtain a uniform dispersion of the components; and (b) polymerizing said material to form a solid composite, wherein said organosilane is represented by the formula



wherein R' is the group



and wherein R is selected from the group consisting of acryloxy and methacryloxy radical; R'' is a divalent hydrocarbon radical having 2 to 4 carbon atoms; R''' is a divalent hydrocarbon radical having 3 to 6 carbon atoms; R'''' is selected from the group consisting of methyl, ethyl, propyl, butyl and phenyl; X is a hydrolyzable species selected from the group consisting of methoxy, ethoxy, acetoxy and chlorine; n is 0, 1 or 2: q is 2, 3 or 4; p is 0 or 1; and m has an average value from 0 to 1.0 when n is at least 1.

5,006,574

CATIONCALLY DISPERSED SLURRIES OF CALCINED KAOLIN CLAY

Paul Sennett, Colonia, and Steven A. Brown, New Brunswick, both of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Filed Feb. 10, 1989, Ser. No. 309,456
Int. Cl.[5] C08K *3/34*
U.S. Cl. 523—351 **5 Claims**

1. A method for preparing a fluid stable aqueous slurry of particles of a calcined clay pigment suitable for use in coating or filling paper or as an extender pigment in paint which comprises providing dispersant-free particles of calcined kaolin clay and adding said particles to a solution of a water-soluble polymeric cationic dispersant in amount sufficient to impart a positive zeta potential to said particles of said pigment and to result in a pH in the range of about 3 to 4, said dispersant being selected from the group consisting of alkyl diallyl quarternary ammonium salts, quarternary ammonium cationic polyelectrolytes obtained by copolymerizing aliphatic secondary amines with epichlorohydrin and poly (quarternary ammonium) polyester salts.

5,006,575

DIE ATTACH ADHESIVE COMPOSITION

Man-Sheung Chan, Aldan, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 425,389, Oct. 20, 1989, abandoned. This application Apr. 26, 1990, Ser. No. 515,698
Int. Cl.[5] C08L *63/04*
U.S. Cl. 523—458 **12 Claims**

1. An adhesive composition for attaching IC chips to high surface energy inorganic substrates comprising:
(a) 60–80% by weight of flake silver particles dispersed in
(b) 40–20% by weight of a solid, homogeneous, amorphous polymeric halide-free matrix consisting essentially of 92–99.5% by weight thermoplastic phenoxy resin and 8–0.5% by weight thermally crosslinkable resin, the polymeric matrix having a Tg of 80°–160° C. and a tensile modulus of at least 1.0×10^5 psi.

5,006,576

ION EXCHANGE MEMBRANE

Mordechai Pasternak, Spring Valley, and Tansukhlal G. Dorawala, Wappingers Falls, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 141,449, Jan. 7, 1988, Pat. No. 4,952,318. This application Feb. 16, 1989, Ser. No. 311,661
Int. Cl.[5] C08J *5/22*
U.S. Cl. 521—27 **5 Claims**

1. A non-porous ion exchange membrane comprising a high molecular weight non-porous ion exchange acid resin in membrane form having carbon atoms in the backbone, bearing a pendant acid group, said membrane having been contacted with a quaternary ammonium halide containing hydrocarbyl groups each of which contains at least four carbon atoms.

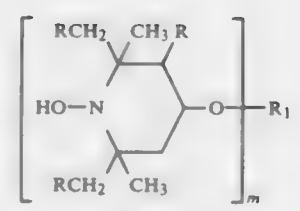
5,006,577

STABILIZATION OF AMBIENT CURED COATINGS WITH N-HYDROXY HINDERED AMINES

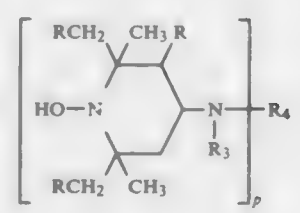
Rudolf A. Behrens, New Fairfield, and Andrew Mar, Norwalk, both of Conn., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 99,412, Sep. 21, 1987, abandoned. This application Oct. 19, 1988, Ser. No. 259,958
Int. Cl.[5] C08K *5/34, 5/35*
U.S. Cl. 524—95 **21 Claims**

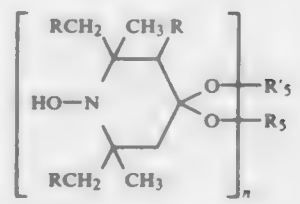
1. An ambient curable, stabilized composition comprising
(a) a resin selected from the group consisting of unmodified or modified alkyd resins, acrylic resins, acrylic alkyl resins and polyester resins and crosslinked epoxide resins; and
an effective oxidative and light stabilizing amount of a substituted hindered amine derivative corresponding to the formulae A-O



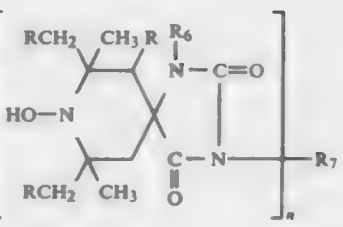
(A)



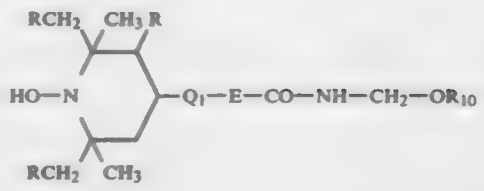
(B)



(C)

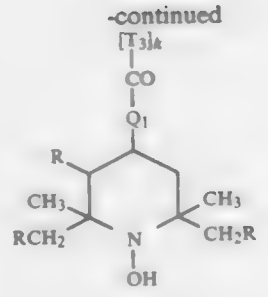


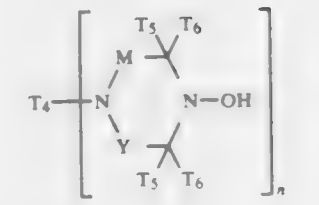
(D)

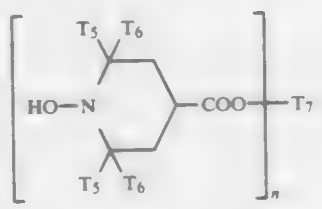


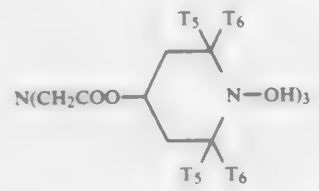
(E)

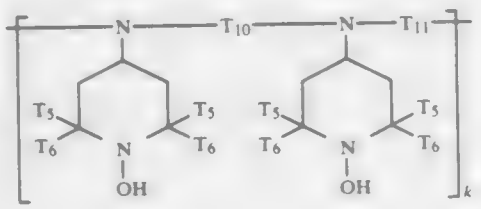
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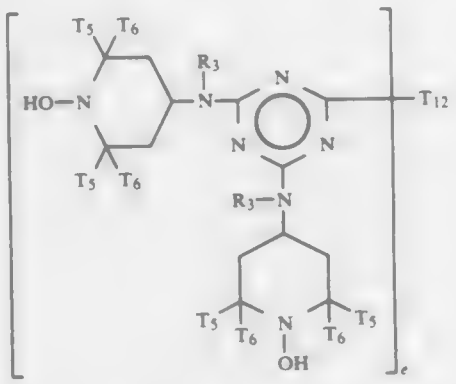


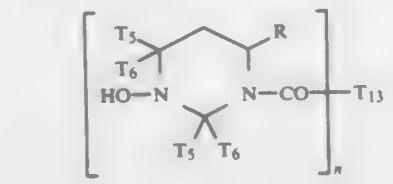






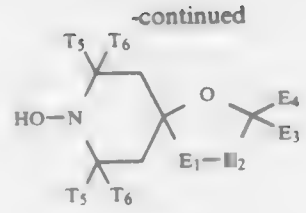






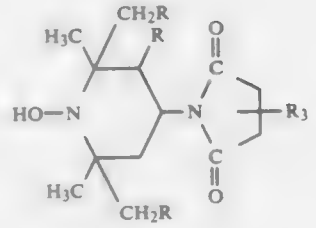
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(F)



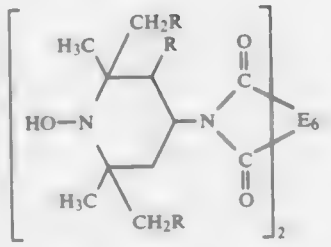
(M)

(N)



(G)

(O)



(H)

wherein

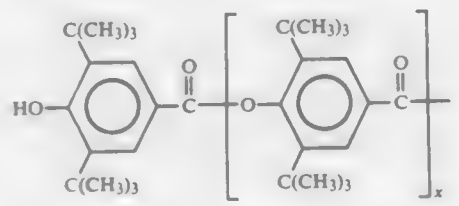
(I) R is hydrogen or methyl

m is 1–4,

when m is 1,

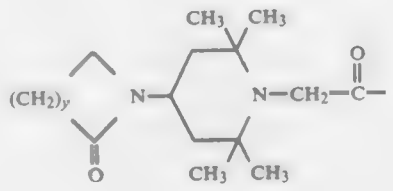
R_1 is hydrogen, C_1–C_{18} alkyl optionally interrupted by one or more oxygen atoms, C_2–C_{12} alkenyl, C_6–C_{10} aryl, C_7–C_{12}-aralkyl, glycidyl, a monovalent acyl radical of an aliphatic, cycloaliphatic, araliphatic or aromatic carboxylic acid, or of carbamic acid; or

(J)



(K)

wherein x is 0 or 1, or



wherein y is 2–4;

when m is 2,

R_1 is C_1–C_{12} alkylene, C_4–C_{12} alkenylene, xylylene, a divalent acyl radical of an aliphatic, cycloaliphatic araliphatic or aromatic dicarboxylic acid or a dicarbamic acid;

(L) when m is 3, R_1 is a trivalent acyl radical of an aliphatic, unsaturated aliphatic, cycloaliphatic, or aromatic tricarboxylic acid;

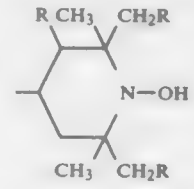
when m is 4, R_1 is a tetravalent acyl radical of a saturated or unsaturated aliphatic or aromatic tetracarboxylic acid;

p is 1, 2 or 3,

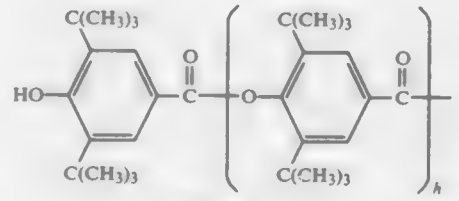
R_3 is hydrogen, C_1–C_{12} alkyl, C_5–C_7 cycloalkyl, C_7–C_9 aralkyl, C_2–C_{18} alkanoyl, C_3–C_5 alkenoyl or benzoyl;

when p is 1,

R_4 is hydrogen, C_1–C_{18} alkyl, C_5–C_7 cycloalkyl, C_2–C_8 alkenyl unsubstituted or substituted by a cyano, carbonyl or carbamide group, aryl, aralkyl, or it is glycidyl, a group of the formula $—CH_2—CH(OH)—Z$ or of the formula —CO—Z or —CONH—Z wherein Z is hydrogen, methyl or phenyl, or a group of the formulae



or



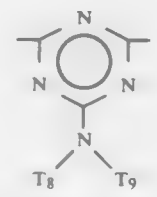
with h as 0 or 1;

or R_3 and R_4 together when p is 1 can be alkylene or 4 to 6 carbon atoms or 2-oxo-polyalkylene or the cyclic acyl radical of an aliphatic or aromatic 1,2- or 1,3-dicarboxylic acid,

when p is 2,

R_4 is a direct bond or is C_2–C_{12} alkylene, C_6–C_{12} arylene, xylylene, a $—CH_2CH(OH)—CH_2$ group, or a group $—CH_2—CH(OH)—CH_2—O—X—O—CH_2—CH(OH)—CH_2—$ wherein X is C_2–C_{10} alkylene, C_6–C_{15} arylene or C_6–C_{12} cycloalkylene; or, provided that R_3 is not alkanoyl, alkenoyl or benzoyl, R_4 can also be a divalent acyl radical or an aliphatic, cycloaliphatic or aromatic dicarboxylic acid or dicarbamic acid, or can be the group —CO—; or

R_4 is



where T_8 and T_9 are independently hydrogen, alkyl of 1 to 18 carbon atoms, or T_8 and T_9 together are alkylene of 4 to 6 carbon atoms or 3-oxapentamethylene;

when p is 3,

R_4 is 2,4,6-triazinyl

n is 1 or 2,

when n is 1,

R_5 and R'_5 are independently C_1–C_{12} alkyl, C_2–C_{12} alkenyl, C_7–C_{12} aralkyl, or R_5 is also hydrogen, or R_5 and R'_5 together are C_2–C_8 alkylene or hydroxyalkylene or C_4–C_{22} acyloxyalkylene;

when n is 2,

R_5 and R'_5 together are $(—CH_2)_2C(CH_2—)_2$;

R_6 is hydrogen, C_1–C_{12} alkyl, allyl, benzyl, glycidyl or C_2–C_6 alkoxyalkyl;

when n is 1,

R_7 is hydrogen, C_1–C_{12} alkyl, C_3–C_5 alkenyl, c_7–C_9 aralkyl, C_5–C_7 cycloalkyl, C_2–C_4 hydroxyalkyl, C_2–C_6 alkosyalkyl, C_6–C_{10} aryl, glycidyl, a group of the formula $—(CH_2)_t—COO—Q$ or of the formula $—(CH_2)_t—O—CO—Q$ wherein t is 1 or 2, and Q is C_1–C_4 alkyl or phenyl; or

when n is 2,

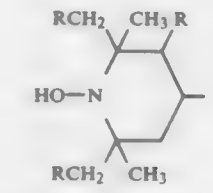
R_7 is C_2–C_{12} alkylene, C_6–C_{12} arylene, a group $—CH_2CH(OH)—CH_2—O—X—O—CH_2—CH(OH)—CH_2—$ wherein X is C_2–C_{10} alkylene, C_6–C_{15} arylene or C_6–C_{12} cycloalkylene, or a group $—CH_2CH(OZ')CH_2—(OCH_2—CH(OZ')CH_2)_2—$ wherein Z' is hydrogen, C_1–C_{18} alkyl, allyl, benzyl, C_2–C_{12} alkanoyl or benzoyl;

Q_1 is $—N(R_8)—$ or —O—;

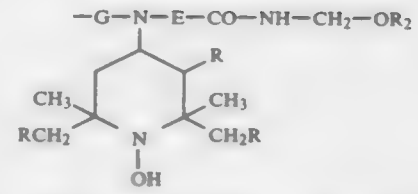
E is C_1–C_3 alkylene, the group $—CH_2—CH(R_9)—O—$ wherein R_9 is hydrogen, methyl or phenyl, the group $—(CH_2)_3—NH—$ or a direct bond;

R_{10} is hydrogen or C_1–C_{18} alkyl;

R_8 is hydrogen, C_1–C_{18} alkyl, C_5–C_7 cycloalkyl, C_7–C_{12} aralkyl, cyanoethyl, C_6–C_{10} aryl, the group $—CH_2—CH(R_9)—OH$ wherein R_9 has the meaning defined above; a group of the formula



or a group of the formula



wherein G can be C_2–C_6 alkylene or C_6–C_{12} arylene; or R_8 is a group $—E—CO—NH—CH_2—OR_{10}$;

T_3 is ethylene or 1,2-propylene, or is the repeating structural unit derived from an alpha-olefin copolymer with an alkyl acrylate or methacrylate;

k is 2 to 100;

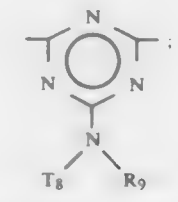
T_5 is methyl,

T_6 is methyl or ethyl, or T_5 and T_6 together are tetramethylene or pentamethylene;

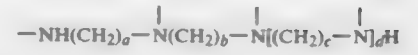
M and Y are independently methylene or carbonyl;

T_7 is the same as R_7;

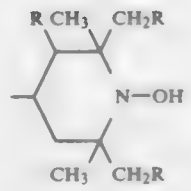
T_{10} and T_{11} are independently alkylene of 2 to 12 carbon atoms, or T_{11} is



T_{12} is piperazinyl, $—NR_{11}—(CH_2)_f—NR_{11}—$ or



where R_{11} is the same as R_3 or is also



a, b and c are independently 2 or 3, d is 0 or 1 and f is 0–20; e is 2, 3 or 4;

T_{13} is the same as R with the proviso that T_{13} cannot be hydrogen when n is 1;

E_1 and E_2, being different, each are —CO— or —N(E_5)— wherein E_5 is hydrogen, C_1–C_{12} alkyl or alkoxycarbonylalkyl of 4 to 22 carbon atoms;

E_3 is hydrogen, alkyl or 1 to 30 carbon atoms, phenyl, naphthyl, said phenyl or said naphthyl substituted by chlorine or by alkyl of 1 to 4 carbon atoms, or phenylalkyl of 7 to 12 carbon atoms, or said phenylalkyl substituted by alkyl of 1 to 4 carbon atoms;

E_4 is hydrogen, alkyl of 1 to 30 carbon atoms, phenyl, naphthyl or phenylalkyl of 7 to 12 carbon atoms, or

E_3 and E_4 together are polymethylene of 4 to 17 carbon atoms, or said polymethylene substituted by up to four alkyl groups of 1 to 4 carbon atoms, and

E_6 is an aliphatic or aromatic tetravalent radical.

5,006,578

COMPOSITION FOR TEMPORARY PROTECTION PAINT

Tsuyoshi Masada, Sakai; Hiromiti Tomihari, Hiratsuka; Masaki Muto, Samukawa, and Naohito Saito, Sakura, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo and Yushiro Chemical Industry Co., Ltd., Chidori, both of, Japan

Filed Mar. 23, 1990, Ser. No. 497,624

Claims priority, application Japan, Mar. 24, 1989, 1-70709

Int. Cl.[5] C08K *5/51*

U.S. Cl. 524—128 **18 Claims**

1. A composition for temporary protection paint characterized by containing alkali soluble resin and an ester phosphite compound.

5,006,579

HALOGEN-CONTAINING RESIN COMPOSITION

Hiroshi Akamine, 2-7-17 Minamishinosaki, and Yoshinori Sato, 2-7-18 Minamishinosaki, both of Kazo-shi, Saitama 347, Japan

Filed Jun. 8, 1989, Ser. No. 382,792

Int. Cl.[5] C08J *5/29*

U.S. Cl. 524—238 **7 Claims**

1. A halogen-containing resin composition composed of an intimate mixture of

(A) 100 parts by weight of a halogen-containing resin, and

(B) 0.01 to 5 parts by weight of a copper salt of a mixture of glycine and a phosphoric acid.

5,006,580

SELF-BONDING CURABLE ORGANOPOLYSILOXANE COMPOSITION

Akira Kasuya, Chiba, Japan, and Toshio Suzuki, East Sussex, United Kingdom, assignors to Toray Silicone Company, Limited, Tokyo, Japan

Filed Jun. 5, 1989, Ser. No. 361,455

Claims priority, application Japan, Jun. 10, 1988, 63-142930

Int. Cl.[5] C08K *5/24*

U.S. Cl. 524—264 **8 Claims**

1. A curable organopolysiloxane composition comprising

(A) an organopolysiloxane having at least 2 silicon-bonded alkenyl groups in each molecule,

(B) an organopolysiloxane having at least 2 silicon-bonded hydrogen atoms in each molecule,

(C) a catalytic quantity of a platinum catalyst,

(D) a carbonyl complex of an element selected from the group consisting of molybdenum, tungsten, and chromium, and

(E) a compound containing a silicon-bonded alkoxy group selected from the group consisting of silanes and siloxane oligomers,

wherein the quantity of component (B) is sufficient to give a value of 0.5:1 to 1:5 for the molar ratio between the silicon-bonded hydrogen atoms in component (B) and the silicon-bonded alkenyl groups in component (A), component (D) comprises 0.0001 to 0.5 weight % of the total quantity of component (A) plus component (B), and component (E) comprises 0.01 to 10 weight % of the total quantity of component (A) plus component (B).

5,006,581

SYNTHETIC RESIN COMPOSITION

Toshio Nakane, Fuji; Kenji Hijikata, Mishima, and Yukihiko Kageyama, Fuji, all of Japan, assignors to Polyplastics Co., Ltd., Osaka, Japan

Filed Dec. 11, 1987, Ser. No. 130,907

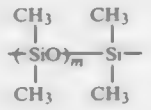
Claims priority, application Japan, Dec. 26, 1986, 61-309870

Int. Cl.[5] C08L *83/10*

U.S. Cl. 524—266 **7 Claims**

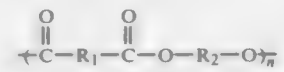
1. A synthetic resin composition which comprises a resin dispersion of a synthetic resin having a solubility parameter of 9.5 $cal^{\frac{1}{2}}cm^{-3/2}$ or higher, a modifier having a solubility parameter of 8.5 $cal^{\frac{1}{2}}cm^{-3/2}$ or lower, and a silicon-containing copolyester being a block copolymer consisting of

(a) 1 to 90% by weight of siloxane segment

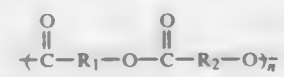


wherein m is a number between 1 and 2,000, and

(b) 99 to 1% by weight of polyester segment represented by the following formula:



or



wherein n is a number between 1 to 1,000, R_1 is selected from aromatic divalent radicals having 6 to 12 carbon atoms, or aliphatic divalent radicals having 4 to 20 carbon atoms, and R_2 is selected from divalent radical shaving 6 to 20 carbon atoms, or aliphatic divalent radicals having 2 to 20 carbon atoms, and wherein

the degree of polymerization of the siloxane segment and the polyester segment is 1 to 2,000 and 1 to 1,000 respectively.

5,006,582

ACRYLIC HOT MELT PRESSURE SENSITIVE ADHESIVE COMPOSITIONS

Paul A. Mancinelli, Frazer, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 226,993, Aug. 1, 1988. This application Mar. 31, 1989, Ser. No. 332,262

Int. Cl.[5] C08L *33/08, 93/04, 25/02;* **C08K** *5/11*

U.S. Cl. 524—271 **15 Claims**

1. An acrylic hot melt pressure sensitive adhesive composition comprising

(a) 30 to 90% by weight of a thermoplastic comb copolymer of

(i) 2–35% by weight, based on the thermoplastic copolymer, of a macromonomer of the general formula X-$(Y)_n$-Z wherein X is a reactive vinyl end group capable of copolymerization under free radical conditions with acrylic comonomers to afford the comb copolymer having pendant macromonomer side chains along an acrylic backbone; Y is a divalent linking group in which n is zero or one; and Z is a poly(methacrylate) based polymeric moiety having a T_g greater than 20° C. and a weight average molecular weight of about from 2,000 to 35,000 and being substantially unreactive under copolymerization conditions; and

(ii) 65 to 98% by weight, based on the thermoplastic copolymer, of one or more monomers selected from the group consisting of monomeric acrylic or methacrylic acid ester of a non-tertiary alcohol, the alcohol having from 1 to 18 carbon atoms;

(b) about from 10 to 70% by weight of tackifier wherein the tackifier comprises a blend of about from 95 to 80%, by weight of the tackifier blend, of at least one hydrogenated poly(aromatic) copolymer and complementally about from 5 to 15%, by weight of the tackifier blend, of a second tackifier compatible with the acrylic backbone of the comb polymer; and

(c) about from 0 to 20% by weight of plasticizer.

5,006,583

FILLER AND WAX COMPOSITION FOR INVESTMENT CASTING

Peter G. Argueso, Waccabuc, N.Y., assignor to M. Argueso & Co., Inc., Mamaroneck, N.Y.

Filed Aug. 15, 1988, Ser. No. 232,476

Int. Cl.[5] C08L *47/00;* **B28B** *7/28*

U.S. Cl. 524—277 **14 Claims**

1. A composition comprising irregularly shaped particles of cross-linked styrene-divinylbenzene copolymer produced by attrition milling of cross-linked styrene-divinylbenzene copolymer, wherein at least about 90% by weight of the irregularly shaped particles passes through a 100 mesh screen and about 50% by weight of said particles passes through a 200 mesh screen.

5,006,584

POLYDIALKYLSILALKYLENE POLYMER USEFUL IN ENHANCED OIL RECOVERY USING CARBON DIOXIDE FLOODING

Bruce W. Davis, Fullerton, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Continuation of Ser. No. 343,099, Apr. 25, 1989, abandoned, which is a division of Ser. No. 275,248, Nov. 23, 1988, abandoned. This application Feb. 22, 1990, Ser. No. 485,794

Int. Cl.[5] C08K *5/09*

U.S. Cl. 524—284 **10 Claims**

1. A composition comprising a solution of carbon dioxide, a polymer, and a cosolvent;

(a) wherein said polymer comprises a polydialkylsilalkylene polymer; and

(b) wherein said cosolvent is selected from the group consisting of:

(1) alcohols having from 1 to 8 carbon atoms,

(2) aromatics having a single ring and from 6 to 10 carbon atoms,

(3) ketones having from 3 to 10 carbon atoms,

(4) carboxylic acid esters where the carboxylic acid portion has from 2 to 4 carbon atoms and the ester portion has from 1 to 10 carbon atoms, and

(5) hydrocarbons having from 2 to 20 carbon atoms.

5,006,585

STAIN-RESISTANT PLASTICIZER COMPOSITIONS AND METHOD OF MAKING SAME

Eugene P. DiBella, Piscataway, N.J., assignor to Huls America Inc., Piscataway, N.J.

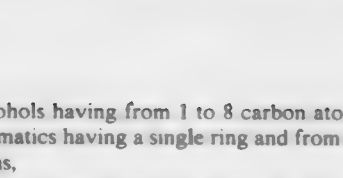
Filed Sep. 5, 1989, Ser. No. 402,570

Int. Cl.[5] C08K *5/09;* **C07C** *69/76*

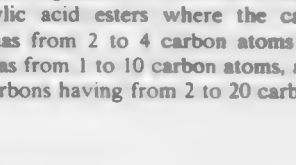
U.S. Cl. 524—293 **7 Claims**

1. Monoester compounds of the formula:



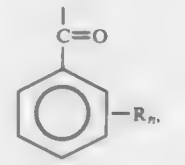


wherein X =

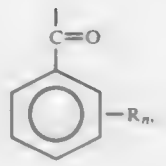


Y =

R is an alkyl group having from 1 to 4 carbon atoms, and n=0–5; with the proviso that when X is



Y is H, and when Y is



X is H.

5,006,586
HEAT RESERVE MATERIAL

Daijiro Touji, Kakogawa; Akihiro Nakahara, Ibaragi; Takefumi Nakashita, Kobe; Atsuko Mitsuba, Kobe; Yukiyasu Nakashio, Kobe, and Tsuneyuki Nagase, Takatsuki, all of Japan, assignors to Sumitomo Rubber Industries, Limited, Hyogo, Japan

Filed Apr. 13, 1989, Ser. No. 337,750
Claims priority, application Japan, Apr. 15, 1988, 63-94239
Int. Cl.[5] C08K *5/04, 5/55*
U.S. Cl. 524—377 4 Claims

1. A heat reserve material consisting essentially of:
(A) a hydrophilic polymer having a hydroxyl group on a principal chain,
(B) borate glass, and
(C) water and/or a water-soluble alcohol, wherein an amount of component (B) is within the range of 1 to 50 parts by weight based on 100 parts by weight of component (A), and an amount of component (C) is 6 to 50 times larger than the total weight of components (A) and (B).

5,006,587
POLYPROPYLENE FORMULATIONS CONTAINING SMALL AMOUNTS OF FLUOBORATES TO IMPROVE COLOR AND WATER CARRY-OVER

Ivor R. Fielding, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Sep. 25, 1989, Ser. No. 412,172
Int. Cl.[5] C08K *5/3435*
U.S. Cl. 524—405 12 Claims

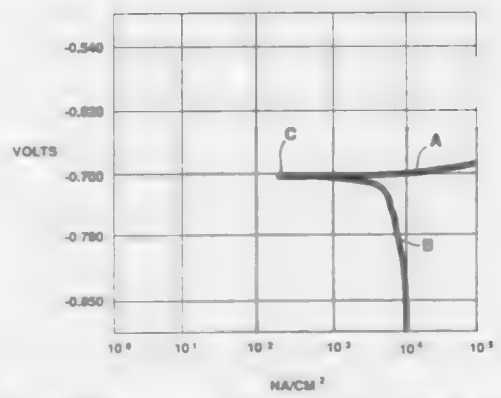
1. A polypropylene composition having improved color and water carry-over properties comprising about 0.01 to about 1.0 wt.% of a hindered amine light stabilizer and about 0.01 to about 0.5 wt.% of a fluoborate salt.

5,006,588
CORROSION AND CRACK GROWTH INHIBITING COMPOUND, COATING, AND SEALANT MATERIAL AND METHOD OF MAKING

Robert N. Miller, Acworth, Ga., assignor to Lockheed Corporation, Calabasas, Calif.

Division of Ser. No. 230,128, Aug. 9, 1988, abandoned. This application Jun. 30, 1989, Ser. No. 373,550
Int. Cl.[5] C08K *3/10, 3/34*
U.S. Cl. 524—406 6 Claims

1. A corrosion and crack growth inhibiting coating and sealing composition for application to metal surfaces comprising cerous molybdate blended with a resilient, curable elastomeric polysulfide in a concentration of from about 1% to about 5% by weight.



5,006,589
POLYESTER FILM FOR MAGNETIC RECORDING MEDIA

Seiji Sakamoto, Machida; Chikakazu Kawaguchi, Atsugi; Yoshio Meguro, Machida; Takashi Harada, Yokohama, and Toshifumi Takisawa, Nagahama, all of Japan, assignors to Diafoil Company, Limited, Tokyo, Japan

Filed Jun. 2, 1989, Ser. No. 360,781
Claims priority, application Japan, Jun. 4, 1988, 63-138051; Jun. 9, 1988, 63-142419; Jul. 14, 1988, 63-175452; Jul. 21, 1988, 63-182360; Jul. 21, 1988, 63-182362; Nov. 8, 1988, 63-281977
Int. Cl.[5] C08K *3/22*
U.S. Cl. 524—430 6 Claims

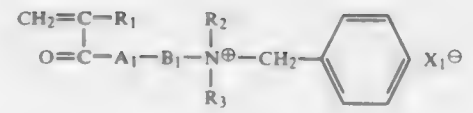
1. A polyester film for magnetic recording media, containing 0.05 to 5% by weight of inorganic particles (A) selected from the group consisting of particles of δ- aluminum oxide and particles of γ- aluminum oxide both having a Mohs hardness of 6 or above and an average particle size of 0.005 to 1.0 μm, and 0.01 to 2.0% by weight of inactive particles (B) having an average particle size which is greater than that of said particles (A) and in the range of 0.1 to 3.0 μm, the polyester film having an intrinsic viscosity in the range of 0.52 to 0.65.

5,006,590
PROCESS FOR THE PREPARATION OF DISPERSION OF WATER-SOLUBLE CATIONIC POLYMER

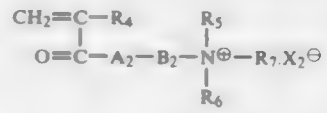
Hisao Takeda, Zama, and Mutsumi Kawano, Chigasaki, both of Japan, assignors to Kyoritsu Yuki Co., Ltd., Tokyo, Japan

Filed Sep. 28, 1989, Ser. No. 414,174
Claims priority, application Japan, Oct. 14, 1988, 63-257277
Int. Cl.[5] C08F *2/16*
U.S. Cl. 524—458 20 Claims

1. A process for preparing a dispersion of a water-soluble cationic polymer that is easily flowable and easily soluble in spite of its high molecular weight comprising: polymerizing a water-soluble monomer mixture containing at least 5 mole % of a cationic monomer represented by general formula (I) in an aqueous solution of a polyvalent anion salt, wherein said polymerization is carried out in the presence of:
(1) a water-soluble cationic polymer which is insoluble in said aqueous solution of a polyvalent anion salt; and
(2) a water-soluble cationic polymer which is soluble in said aqueous solution of a polyvalent anion salt, said water-soluble cationic polymer insoluble in said aqueous solution of polyvalent anion salt contains at least 5 mole % of cationic monomer units represented by following general formula (I) and said water-soluble cationic polymer soluble in said aqueous solution of a polyvalent anion salt contains at least 20 mole % of cationic monomer units represented by the following general formula (II):



(I)



(II)

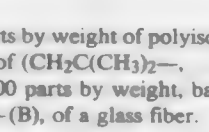
wherein R_1 and R_4 are each H or CH_3; R_2, R_3, R_5 and R_6 are each an alkyl group having 1 to 2 carbon atoms; R_7 is a hydrogen atom or an alkyl group having 1 to 2 carbon atoms; A_1 and A_2 are each an oxygen atom or NH; B_1 and B_2 are each to 4 carbon atoms or a hydroxypropylene group and X1− and X2− are each a counter anion.

5,006,591
POLYARYLENE THIOETHER COMPOSITION AND MOLDED PRODUCT THEREOF

Makoto Fukuda; Ken Kashiwadate; Toshitaka Kouyama, and Zenya Shiiki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 104,990, Oct. 6, 1987, abandoned. This application Mar. 17, 1989, Ser. No. 325,008
Claims priority, application Japan, Oct. 9, 1986, 61-241047
Int. Cl.[5] C08L *81/04*
U.S. Cl. 524—502 11 Claims

1. A polyarylene thioether composition comprising the following ingredients (A), (B) and (C):
(A) 100 parts by weight of polyarylene thioether having the repeating unit of



(B) from 3–30 parts by weight of polyisobutylene having the repeating unit of $(CH_2C(CH_3)_2-$,
(C) from 25 to 200 parts by weight, based on 100 parts by weight of (A)+(B), of a glass fiber.

5,006,592
CORE-SHELL POLYMER, COMPOSITION CONTAINING THE POLYMERS AND ITS MOLDED ARTICLES

Junji Oshima, Toyonaka; Tatsuo Fujii, Nagaokakyo, and Minoru Yamada, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 10, 1989, Ser. No. 418,632
Claims priority, application Japan, Oct. 7, 1988, 63-254553
Int. Cl.[5] C08L *51/04*
U.S. Cl. 524—504 11 Claims

1. A resin composition produced by melt-blending: (1) a core-shell polymer comprising (a) a core having epoxy groups on the surface, and (b) a shell on the core composed of monomers having neither epoxy group nor functional group that are reactive with epoxy group; and (2) engineering plastics; wherein (i) the glass transition temperatures of said core and said shell, (ii) the amounts of said core and said shell, (iii) the amount of epoxy group-containing monomers and (iv) the amount of the core-shell polymer are such that said resin composition exhibits improved impact strength.

5,006,593
CATENATED POLYMER SYSTEMS

Donald E. Brasure, Tonawanda, N.Y., and Eugene G. Sommerfeld, Mt. Laurel, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 16, 1988, Ser. No. 207,534
Int. Cl.[5] C08K *5/20;* C08L *27/12*
U.S. Cl. 524—520 4 Claims

1. A dispersion consisting essentially of a continuous phase of a compatible organic liquid carrier and a dispersed phase of a system of two or more normally incompatible polymers, the system comprising
(a) networks of polymer chains, segments of which are held together by physical interactions, and
(b) networks of chains of one or more chemically crosslinked polymers,
the networks of (a) and (b) being catenated.

5,006,594
FLUORINATED THERMOPLASTIC ELASTOMERS CONTAINING POLYMERIC ADDITIVES AND PROCESS FOR PREPARING SUCH ELASTOMERS

Richard W. Rees, Geneva, Switzerland, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 292,572, Dec. 30, 1988, abandoned. This application Dec. 6, 1989, Ser. No. 446,774
The portion of the term of this patent subsequent to Nov. 7, 2006, has been disclaimed.
Int. Cl.[5] C08L *27/12, 27/16, 27/18*
U.S. Cl. 524—520 17 Claims

1. A blend comprising:
(a) a two-phase composition having a continuous phase and a dispersed phase, the continuous phase consisting essentially of a melt-processible crystalline thermoplastic fluorocarbon resin containing a minimum of 38 percent by weight fluorine, said dispersed phase consisting essentially of an amorphous crosslinked fluoroelastomer containing a minimum of 50 percent by weight fluorine, said dispersed phase constituting between about 50 and 90 percent by weight of the two-phase composition; and
(b) 1–5 weight percent of a dispersion-process-produced, non-fibrillating, non-melt-processible tetrafluoroethylene copolymer comprising recurring units of tetrafluoroethylene and a comonomer selected from the class consisting of hexafluoropropylene, perfluoro(alkyl vinyl ether) where the alkyl group has 1–4 carbons, and a mixture of them with enough comonomer present to cause the copolymer to compound uniformly with said fluorocarbon resin and said fluoroelastomer without forming visible agglomerates.

5,006,595
SOLUBILIZATION OF COMPLEXES OF WATER-INSOLUBLE ORGANIC COMPOUNDS BY AQUEOUS SOLUTIONS OF POLYVINYLPYRROLIDONE

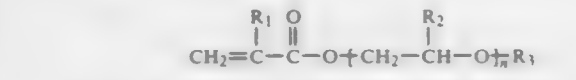
Terry E. Smith, Morristown; James R. Cho, Oakland, and Ian W. Cottrell, Kinnelon, all of N.J., assignors to GAF Chemicals Corporation, Wayne, N.J.

Division of Ser. No. 161,888, Feb. 29, 1988, Pat. No. 4,900,775. This application Sep. 29, 1989, Ser. No. 414,673
Int. Cl.[5] C08L *37/00*
U.S. Cl. 524—548 17 Claims

1. A method for preparing a water-soluble complex of a water-insoluble organic compound selected from the group consisting of furosemide, chlorhexidine, and trifluralin consisting essentially of heating an aqueous solution of polyvinylpyrrolidone to a temperature between about 40° C. and 100° C., admixing the insoluble organic compound to the heated polyvinyl-pyrrolidone solution and maintaining the mixture at the heating temperature until the organic compound is dissolved.

5,006,596
SELF-INVERTING, WATER-IN-OIL EMULSIONS
Fu Chen, Newtown, and Edward J. Connors, Blue Bell, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.
Filed Feb. 9, 1990, Ser. No. 477,697
Int. Cl.[5] C08F *2/32*
U.S. Cl. 524—555 **14 Claims**

1. Composition of a self-inverting, water-in-oil emulsion comprising a water-soluble copolymer which contains acrylamide, a cationic monomer and a third monomer having the structure:



wherein R_1 is hydrogen or methyl; R_2 is hydrogen, methyl or ethyl; R_3 is hydrogen or C_1–C_4 alkyl; and n is from 1 to 100.

5,006,597
BLACK TOPCOATING COMPOSITION
Arthur A. Luecke, Kirtland, and Terry E. Dorsett, Chardon, both of Ohio, assignors to Metal Coatings International Inc., Chardon, Ohio
Continuation of Ser. No. 104,998, Oct. 6, 1987, abandoned. This application Jun. 12, 1989, Ser. No. 364,314
Int. Cl.[5] B32B *9/06*
U.S. Cl. 524—556 **16 Claims**

1. A shelf-stable, black-pigmented coating composition for providing a smooth, uniform, baked-on coating especially adapted for use as a corrosion resistant topcoating over a previously coated base metal substrate having a coating containing chromium in non-elemental form, said coating composition being adapted as a one-package, chromium-free and particulate-metal-free composition having a pH of less than about 10, said composition comprising an aqueous colloidal dispersion of carbon black providing at least about 0.5 weight percent carbon black pigment to said composition, thickening agent in an amount of less than about 2 weight percent of thickening agent, basis weight of said composition, from about 1 to 40 weight percent of an aqueous silica sol having a pH of not above about 10, above about 0.2 percent by weight of amorphous silica and from about 4 to 40 weight percent of aqueous acrylic resin dispersion.

5,006,598
WATER-DISPERSIBLE POLYESTERS IMPARTING IMPROVED WATER RESISTANCE PROPERTIES TO INKS
Linda J. Adams, and George J. O'Neill, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 24, 1990, Ser. No. 513,724
Int. Cl.[5] C08L *67/00*
U.S. Cl. 524—601 **28 Claims**

1. A linear, water-dissipatable polyester having an inherent viscosity of at least about 0.1 as measured in a 60/40 parts by weight solution of phenol/tetrachloroethane at 25° C. and at a concentration of 0.5 gram of polyester in 100 ml of solvent, the polyester containing substantially equimolar proportions of acid moiety repeating units (100 mole %) to hydroxy moiety repeating units (100 mole %), the polyester comprising repeating units of components (a), (b), (c) and (d), as follows wherein all stated mole percentages are based on the total of all acid and hydroxy moiety repeating units being equal to 200 mole %:
(a) about 90 to about 97 mole % isophthalic acid,
(b) about 3 to about 10 mole % 5-sulfoisophthalic acid,
(c) about 70 to about 85 mole % 1,4-cyclohexanedimethanol, and
(d) about 15 to about 30 mole % diethylene glycol.

5,006,599
USE OF 3,5-DI-TERT-BUTYL-4-HYDROXYPHENYLPROPIONIC ACID FOR STABILIZING POLYETHER POLYOLS
Pramod Gupta, Bedburg; Hans-Wilhelm Engels, Kerpen, and Hanajürgen Rabe, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Dec. 14, 1989, Ser. No. 450,894
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1988, 3842945
Int. Cl.[5] C08L *75/08*
U.S. Cl. 524—740 **7 Claims**

1. A method for stabilizing a polyether polyol having a molecular weight of from about 300 to about 10,000 comprising adding an antioxidant stabilizer in an amount of about 0.01 to about 4% by weight to said polyether polyol, wherein said stabilizer comprises 3,5-di-text-butyl-4-hydroxyphenylpropionic acid.

5,006,600
PREPARATION OF PROPYLENE/ETHYLENE POLYMERS
Oskar Buechner, Dudenhofen, and Wolfgang Gruber, Frankenthal, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany
Continuation of Ser. No. 148,641, Jan. 26, 1988, abandoned. This application Apr. 12, 1989, Ser. No. 338,419
Int. Cl.[5] C08F *4/14*
U.S. Cl. 525—53 **2 Claims**

1. A process for the preparation of propylene/ethylene polymers with high impact strength, in which
(A^1) in a polymerization zone Z1, propylene is homopolymerized by gas-phase polymerization in the presence of hydrogen as a molecular weight regulator, in a reaction medium of a stirred bed of finely divided polymer by feeding into said polymerization zone Z1 a Ziegler-Natta catalyst system selected from the group consisting of systems
(1) a titanium catalyst component and
(2) an organoaluminum catalyst component of the formula AlR_mX_{3-m}, where X is OR, chlorine bromine of hydrogen, R is a C_1–C_{18}-hydrocarbon radical and m is from 1 to 3,
and systems consisting of components (1) and (2) with
(3) a further catalyst component, with the proviso that, in said polymerization zone Z1 (i) the reaction is carried out under a total pressure of from 20 to 35 bar and at a temperature of from 60° to 90° C., and (ii) the ratio of the propylene partial pressure to the hydrogen partial pressure is from 100:0.1 to 100:15, and
(A^2) in a polymerization zone Z2, ethylene is homopolymerized by gas-phase polymerization in the presence or absence of hydrogen as a molecular weight regulator, in a reaction medium of a stirred bed of finely divided polymer with the proviso that, in this further polymerization zone, (i) the reaction is carried out under a total pressure of from 20 polymerization to 45 bar and at a temperature of from 80° to 120° C., (ii) where relevant, the ratio of the ethylene partial pressure to the hydrogen partial pressure is from 100:0.01 to 100:20, and (iii) the ratio of the weight of the propylene converted to polymer in said polymerization zone Z1 to the weight of the ethylene converted to polymer in said polymerization zone Z2 is in the range of from 100:5 to 100:40,
(B) the reaction products obtained in polymerization zones Z1 and Z2 are fed to a polymerization zone Z3, in which a mixture of propylene and ethylene is polymerized by gas-phase polymerization in the presence of hydrogen as a molecular weight regulator, in a reaction medium of a stirred bed of finely divided polymer in the presence of the reaction products of polymerization zones Z1 and Z2 with the provisos that, in said polymerization zone Z3, (i) the reaction is carried out under a total pressure of from 10 to 20 bar and at a temperature of from 50° to 80° C., (ii) the ratio of the propylene partial pressure to the ethylene partial pressure is from 100:10 to 100:70 and the ratio of the propylene partial pressure to the hydrogen partial pressure is from 100:2 to 100:70, and (iii) the ratio of the weight of the propylene converted to polymer in polymerization zone Z1 to the weight of the propylene/ethylene mixture converted to polymer in polymerization zone Z3 is in the range of from 100:10 to 100;60.

5,006,601
IMPACT RESISTANT BLENDS OF THERMOPLASTIC POLYAMIDES, POLYOLEFINS AND ELASTOMERS
Robert G. Lutz, Spring; Richard Gelles, and William P. Gergen, both of Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.
Continuation of Ser. No. 133,178, Dec. 11, 1987, abandoned, which is a continuation-in-part of Ser. No. 911,558, Sep. 25, 1986, abandoned. This application Jul. 20, 1990, Ser. No. 554,956
Int. Cl.[5] C08L *77/00*
U.S. Cl. 525—66 **12 Claims**

1. Impact resistant polymeric compositions comprising:
(a) from 1 to 59 percent by weight of a polyamide having a number average molecular weight of at least 5000; and
(b) from 1 to 95 percent by weight of an isotactic propylene homopolymer;
(c) from 1 to 50 percent by weight of an elstomeric olefin copolymer to which has been grafted an acid compound or its derivative selected from the group consisting of carboxylic acids and their derivatives.

5,006,602
POLYVINYLIDENE FLUORIDE COMPOSITIONS AND PRODUCTS MADE THEREFROM
Bernard Guerin, Bures Sur Yvette, and Albert Strassel, Oullins, both of France, assignors to Atochem, France
Filed Dec. 31, 1986, Ser. No. 948,019
Claims priority, application France, Jan. 7, 1986, 86 00136
Int. Cl.[5] C08L *27/16, 51/04*
U.S. Cl. 525—72 **9 Claims**

1. A composition consisting essentially of a polyvinylidene fluoride polymer or copolymer having distributed substantially uniformly therethrough elastomeric particles, said elastomer being capable of absorbing hydrocarbons and fixing them in the composition and being present in an amount sufficient to increase the elongation and flexibility of the composition in the presence of hydrocarbons.

5,006,603
FIBER-REINFORCED RUBBER COMPOSITION AND PRODUCTION PROCESS AND USE THEREOF
Takeshi Takaki; Koubei Kaijiri; Denichi Oda; Kunio Oda; Hideo Kurihara, and Takeshi Tanabe, all of Ichihara, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan
Filed Sep. 16, 1987, Ser. No. 97,101
Claims priority, application Japan, Sep. 26, 1986, 61-225858; Oct. 9, 1986, 61-240821; Nov. 18, 1986, 61-272822; Nov. 18, 1986, 61-272823; Jan. 21, 1987, 62-12005; Jan. 21, 1987, 62-12006
Int. Cl.[5] C08L *7/00, 9/00, 23/16, 77/00*
U.S. Cl. 525—105 **5 Claims**

3. A reinforced rubber composition comprising 100 parts by weight of an ethylene-propylene-diene copolymer rubber including 2 to 100 parts by weight of fine short fibers of a fiber-forming thermoplastic polyamide buried therein, and said polyamide and said copolymer rubber being bonded through 0.2 to 5 parts by weight of a coupling agent at the interfaces of said short fibers, wherein the parts by weight of the coupling agent is based on 100 parts by weight of the total amount of said copolymer rubber and said polyamide and wherein the coupling agent is a silane coupling agent, a titanate coupling agent, an unsaturated carboxylic acid, an anhydride or a mixture thereof.

5,006,604
ABS/COPOLYESTER BLENDS
Kenneth A. Romance, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation of Ser. No. 211,948, Jun. 27, 1988, abandoned. This application Sep. 11, 1989, Ser. No. 405,405
Int. Cl.[5] C08L *67/02*
U.S. Cl. 525—173 **6 Claims**

1. A composition of matter characterized by having improved impact strength and improved balance of physical properties comprising
a. about 50–95% by weight of a copolyester having repeat units from an acid component consisting essentially of terephthalic acid and a glycol component comprising repeat units from about 60 to 10 mol % ethylene glycol and about 40 to 90 mol % cyclohexanedimethanol, and
b. about 50–5% by weight of a copolymer of about 15–30 wt % acrylonitrile, about 6–30 wt % butadiene and about 40–80 wt % styrene.

5,006,605
BIAXIALLY-STRETCHED FILM MADE OF POLY(ARYLENE SULFIDE) RESIN COMPOSITION AND PRODUCTION PROCESS THEREOF
Toshiya Mizuno; Yoshikichi Teramoto; Takeshi Saito, all of Tsuchiura, and Juichi Wakabayashi, Tamari, all of Japan, assignors to Kureha Kagaku Kogyo K.K., Tokyo, Japan
Division of Ser. No. 191,131, May 6, 1988, Pat. No. 4,894,419. This application Aug. 31, 1989, Ser. No. 401,294
Claims priority, application Japan, May 15, 1987, 62-116777; Mar. 23, 1988, 63-67272
Int. Cl.[5] C08L *81/02*
U.S. Cl. 525—189 **3 Claims**

1. A process for the production of a biaxially-stretched film made of a poly(arylene sulfide) resin composition, which comprises blending a substantially linear poly(arylene sulfide) having a melt viscosity of at least 1,000 poises with a resin composition prepared in advance and composed of 100 parts by weight of a substantially linear poly(arylene sulfide) having a melt viscosity of at least 1,000 poises and 10–100 parts of a styrene resin selected from the group consisting of polystyrene, high impact polystyrene, copolymers of styrene and a monomer selected from the group consisting of α-methylstyrene, acrylonitrile and vinyltoluene, and acrylonitrile-butadiene-styrene resins, the poly(arylene sulfide) which is blended with the resin composition prepared in advance being employed in an amount sufficient to provide a final resin composition containing 2–25 parts by weight of the styrene resin per 100 parts by weight of poly(arylene sulfide), and then biaxially stretching the final resin composition.

5,006,606
TIRE WITH RUBBER TREAD
John K. Clark, Copley, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 28, 1990, Ser. No. 500,629
Int. Cl.[5] C08L *7/00, 9/00, 9/02*
U.S. Cl. 525—233 **1 Claim**

1. A pneumatic tire having an outer circumferential tread where said tread is a sulfur cured rubber composition comprised of, based on 100 parts by weight rubber (phr), (A) about 55 to about 70 parts by weight cis 1,4-polybutadiene rubber; (B) about 15 to about 30 parts by weight of isoprene/acrylonitrile copolymer rubber comprised of from about 20 to about 40 mole percent units derived from acrylonitrile and about 60 to about 80 mole percent units derived from isoprene in which the glass transition temperature of the rubber is from about −40° C. to about −5° C.; and (C) about 15 to about 35 parts by weight of cis 1,4-polyisoprene rubber.

5,006,607

DISPERSANT SYSTEM FOR MAKING POLYVINYL CHLORIDE WHICH PRODUCES LOW COLOR CHLORINATED POLYVINYL CHLORIDE

Zaev Sharaby, South Euclid, and Robert G. Vielhaber, Avon, both of Ohio, assignors to The B. F. Goodrich Company, Brecksville, Ohio

Filed Oct. 2, 1989, Ser. No. 416,203
Int. Cl.[5] C08F 8/22
U.S. Cl. 525—356 17 Claims

1. A method for producing a chlorinated vinyl chloride polymer comprising:

polymerizing 100 parts by weight vinyl chloride, or vinyl chloride and vinyl component monomer in the presence of

from about 0.03 to about 5.00 parts by weight of a chain transfer composition comprising at least one mercaptan chain transfer agent and at least one non-polymerizable material which is characterized by being miscible with said mercaptan and substantially insoluble in water, and from about 0.02 to 0.5 parts by weight of at least one surfactant characterized in that the surfactant is a hydroxypropyl methyl cellulose ether having a methoxyl substitution of from about 15 percent to about 35 percent and a hydroxypropoxyl substitution of from about 4 percent to about 35 percent to form an intermediate, and

chlorinating said intermediate to obtain a chlorinated vinyl chloride polymer having improved color.

5,006,608

CATALYTIC PROCESS FOR OXIDATIVE, SHEAR ACCELERATED POLYMER DEGRADATION

John B. Gardiner, Mountainside; Anthony A. Loffredo, Westfield; ricardo Bloch, Scotch Plains; Nicholas C. Nahas, Chatham, all of N.J.; Keith U. Ingold, Ottawa, Canada, and Theodore V. Kowalchyn, Scotch Plains, N.J., assignors to Exxon Chemical Patents, Inc., Linden, N.J.

Filed Sep. 8, 1988, Ser. No. 241,620
Int. Cl.[5] C08F 8/50
U.S. Cl. 525—370 10 Claims

1. A process for the oxidative, shear accelerated reduction in the thickening efficiency (T.E.) of oil soluble copolymer of ethylene and at least one C_3 to C_{28} alpha-olefin, which comprises:

(1) mixing oil soluble copolymer of ethylene and at least one C_3 to C_{28} alpha-olefin having a T.E. of at least about 2.7 with catalyst selected from the group consisting of oil soluble transition metal salts of organic acids, said catalyst being present in an amount of from about 1 to about 900 parts per million, based on the amount of copolymer in said admixture, when said catalyst comprises transition metal salts of organic acids other than copper salt of organic acid and in amount of from about 1 to about 25 parts per million when said catalyst comprises oil soluble copper salt of organic acid;

(2) heating and masticating the copolymer/catalyst mixture in the presence of oxygen or an oxygen-containing gas at a temperature of from about 110° C. to 250 ° C. for a period of time of from about 2 minutes to about 6 hours in order to degrade said copolymer to a T.E. of less than about 1.0; and

(3) recovering degraded copolymer having a T.E. of less than about 1.0.

5,006,609

PREPARATION OF CYANO-CONTAINING COPOLYMERS BASED ON ETHYLENE

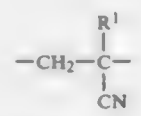
Michael Buback, Bovenden, and Stefan Rohde, Goettingen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 9, 1990, Ser. No. 462,705
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1989, 3902389
Int. Cl.[5] C08F 8/30
U.S. Cl. 525—378 1 Claim

1. A process for preparing a cyano-containing copolymer A based on ethylene which is composed of

(a) predominant proportions of the structural unit of ethylene,

(b) minor proportions of the structural unit of the formula Ia

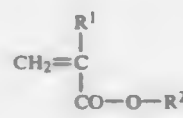


Ia

where R^1 is hydrogen or C_1–C_4-alkyl, and

(c) optional structural units derived from other comonomers,

which process comprises; reacting a base copolymer B formed from predominant proportions of ethylene, minor proportions of an α,β-unsaturated carboxylic ester of the formula Ib



Ib

where R^2 is C_1–C_8-alkyl, and further, optional comonomers, with ammonia at 120–280° C. and 150–2,500 bar.

5,006,610

COMPOSITION OF AROMATIC POLYESTER, MODIFIED POLYPHENYLENE ETHER AND DIGLYCIDYL DICARBOXYLATE

Kiyokazu Nakamura; Kiichi Kometani, both of Nagoya; Akihiko Koshino, Obu, and Kenjiro Horiuchi, Oaza-Usaka, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

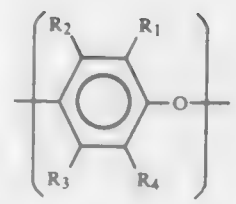
Continuation of Ser. No. 189,314, Mar. 31, 1988, abandoned.
This application May 11, 1989, Ser. No. 350,507
Claims priority, application Japan, Aug. 4, 1986, 61-181881; Oct. 2, 1986, 61-235297; Oct. 9, 1986, 61-240358
Int. Cl.[5] C08L 67/02, 71/04
U.S. Cl. 525—396 9 Claims

1. A resin composition comprising:

100 parts by weight of polyester composition comprised of (A) and (B) as follows

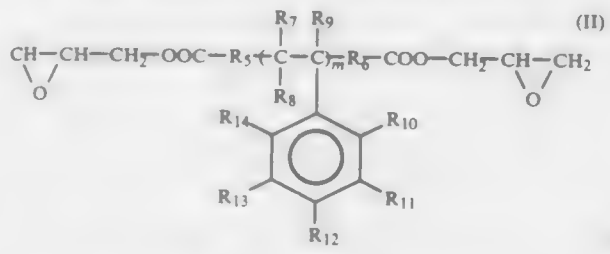
(A) 5–95% by weight of an aromatic polyester having an inherent viscosity of 0.7–2.5 dl/g by measurement of a 0.5 g/100 ml solution of o-chlorophenol by an Ostwald viscometer at 25° C.,

(B) 95–5% by weight of a modified polyphenylene ether obtained by reacting to a polyphenylene ether having an inherent viscosity of 0.10–1.5 dl/g by measurement of a 0.5 g/ml chloroform solution by an Ostwald viscometer of 25° C. and a repeating unit of a formula



(I)

where R_1 to R_4 each independently represent hydrogen, chlorine and bromine atoms, a hydrocarbon, substituted hydrocarbon, cyano, alkoxy and phenoxy radicals, 0.5–20% by weight of an active functional-group containing monomer having in the molecule both of (a) a carbon-carbon unsaturated double bond and (b) at least one functional group selected from the group consisting of carboxyl, acid anhydride and epoxy radicals reacted with the polyphenylene ether, and (C) 0.05–30 parts by weight of an epoxy compound represented by the formula



(II)

(where R_5 and R_6 each independently represent a substituted or unsubstituted hydrocarbon radical having 1–40 carbon atoms, R_7 to R_9 each independently represent a hydrogen atom, or a methyl radical, and R_{10} to R_{14} each independently represent a hydrogen atom, a halogen atom, substituted or unsubstituted hydrocarbon, cyano, alkoxy, phenoxy and nitro radicals; and m being an integer of 0–20.

5,006,611

CURABLE EPOXY RESIN COMPOSITIONS OF MATTER CONTAINING A THERMOPLASTIC WHICH HAS PHENOLIC END GROUPS

Rolf Schmid, Schwarzenburg, and Sameer H. Eldin, Fribourg, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

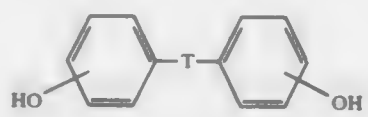
Filed Jan. 11, 1990, Ser. No. 463,044
Claims priority, application Switzerland, Jan. 20, 1989, 178/89
Int. Cl.[5] C08L 63/00
U.S. Cl. 525—423 15 Claims

1. A heat-curable composition of matter which is stable on storage and which comprises

(a) 5–70 parts by weight of an epoxy resin having a functionality of at least 3,

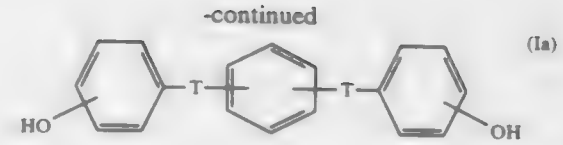
(b) 95–30 parts by weight of an epoxy resin having a functionality of 2–2.5,

(c) a diphenol (c), the amount of the diphenol being so chosen that 0.6–1.2 hydroxyl equivalents of the diphenol (c) are employed per epoxide equivalent of the epoxy resins (a) and (b), which diphenol is a compound of formula I, Ia or II

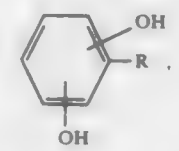


(I)

-continued



(Ia)



(II)

in which T is a direct bond, methylene, isopropylidene, O, S, CO or SO_2, and R is hydrogen or C_1–C_4-alkyl, or

said diphenol is a dihydroxynaphthalene; or a mixture of these compounds, and

(d) 10–150 parts by weight, relative to 100 parts by weight of the components (a) to (c) of a thermoplastic having phenolic end groups and having a glass transition temperature of at least 150° C. which is compatible with the composition of the components (a) to (c) and which is a polyimide, a polyether imide, a polysulfone, a polyether sulfone, a polyether or a polyether ketone.

5,006,612

POLYESTERS FOR POWDER COATING RESINS USING AN INTERMEDIATE HAVING LOW PROCESS VISCOSITY

Charles Danick, Plymouth, and K. P. Panandiker, Shorewood, both of Minn., assignors to Cargill, Incorporated, Minneapolis, Minn.

Filed Oct. 18, 1989, Ser. No. 423,270
Int. Cl.[5] C08G 59/42, 63/46
U.S. Cl. 525—438 15 Claims

1. A polymeric vehicle suitable for a powder coating composition which polymeric vehicle when cross-linked provides a coating binder with a Tg greater than 50° C., the polymeric vehicle comprises:

from about 82.4 to about 96.6 weight percent based upon the weight of the polymeric vehicle, of a carboxylated polyester resin which has an acid value in a range of from about 25 to about 40 and a number average molecular weight in the range of from about 2500 to about 4500,

from about 3.4 to about 17.6 weight percent based upon the weight of the polymeric vehicle, of a polyepoxide which has an average epoxy functionality of not more than about 4 and an average epoxy equivalent weight in the range of from about 80 to about 300;

the carboxylated polyester resin comprises the carboxylation reaction product of an aliphatic dicarboxylic acid which has 2 to 9 carbon atoms and a first polyester which has a hydroxyl value from about 60 to about 100, the first polyester having an ICI cone and plate viscosity in the range of from about 8 to about 16 poise at about 175° C., the aliphatic dicarboxylic acid and first polyester being in amounts effective for carboxylation of the first polyester to an acid value in the range of from about 25 to about 40; and

the first polyester comprises the esterification reaction product of an aromatic acid selected from the group consisting of terephthalic acid, isophthalic acid and mixtures thereof, and a diol selected from the group consisting of neopentyl glycol, cyclohexane dimethanol and mixtures thereof, the aromatic acid and the diol being in amounts effective for providing the first polyester with a hydroxyl value in the range of from about 60 to about 100.

5,006,613

TRICOMPONENT POLYMER BLENDS OF POLY(ETHYLENE TEREPTHOLATE), POLY(ETHYLENE NAPHTHALATE) AND A COPOLYESTER

Freddie A. Shepherd, and Ronald R. Light, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 30, 1990, Ser. No. 560,653
Int. Cl.[5] C08F *20/00*
U.S. Cl. 525—444 **20 Claims**

1. A clear polymer blend containing less than 10% haze comprising

(A) about 15 to about 80 weight % of poly(ethylene terephthalate),

(B) about 80 to about 5 weight % of poly(ethylene naphthalenedicarboxylate), and

(C) about 5 to about 15 weight % of a copolyester which comprises

(1) an acid component comprising repeating units of from about 10 to about 20 mole % terephthalic acid and about 80 to about 90 mole % naphthalenedicarboxylic acid, and

(2) a glycol component comprising repeating units of ethylene glycol,

wherein the total mole % of acid component and glycol component in the copolyester are each 100 mole %.

5,006,614

EPOXY RESIN COMPOSITION AND SEMICONDUCTOR DEVICE ENCAPSULATED THEREWITH CONTAINING POLYMALEIMIDE AND (ALLYL-EPOXY)NOVOLAC/SILOXANE GRAFT COPOLYMER

Kunio Itoh; Toshio Shiobara, and Koji Futatsumori, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 29, 1989, Ser. No. 373,286
Claims priority, application Japan, Jul. 5, 1988, 63-167117
Int. Cl.[5] C08L *63/02, 63/04*
U.S. Cl. 525—476 **9 Claims**

1. An epoxy resin composition comprising:

a curable epoxy resin selected from the group consisting of epoxy resins synthesized from epichlorohydrin and novolak resins, alicyclic epoxy resins, bis-phenol epoxy resins, halogen substituted derivatives thereof and mixtures thereof;

a curing agent; and

an inorganic filler,

characterized in that the composition further comprises:

(a) a copolymer obtained through addition reaction between an alkenyl group of an alkenyl group-containing epoxidized novolak resin and a SiH group of an organopolysiloxane represented by the general formula:

$$H_aR_bSiO[4-(a+b)]/2 \quad (I)$$

wherein R is a monovalent substituted or unsubstituted hydrocarbon group, the letter a has a value of from 0.01 to 0.1, the letter b has a value of from 1.8 to 2.2, and $1.81 \leqq a+b \leqq 2.3$, and having 20 to 400 silicon atoms and 1 to 5 SiH groups per molecule; and

(b) a polymaleimide resin having a melting point of up to 150° C.

5,006,615

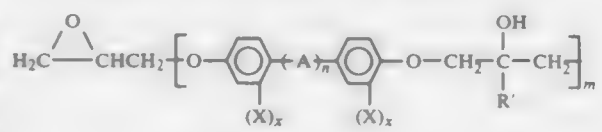
HYDANTOIN OR BARBITURIC ACID-EXTENDED EPOXY RESIN COMPOSITION

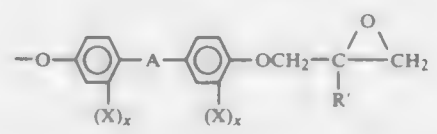
Tzong-Ming Lee, Tainan, and Ker-Ming Chen, Hsinchu, both of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jun. 15, 1990, Ser. No. 538,904
Int. Cl.[5] C08L *63/02*
U.S. Cl. 525—526 **1 Claim**

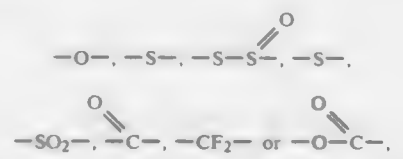
1. A resin composition for making a printed circuit board comprising:

(1) a modified epoxy resin obtained by reacting (a) a low molecular weight epoxy resin having at least two epoxide groups which have the following formula,

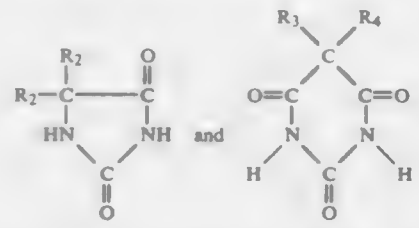




where A denotes a divalent hydrocarbon with 1–10 carbon atoms or a group represented by



X denotes a monovalent hydrocarbon with 1–10 carbon atoms or a halogen, m is 1–10 on average, n is 0 or 1, x is 0 to 4, R′ represents H or a hydrocarbon group with 1–4 carbon atoms, (b) a mono-nucleus chain extending agent containing N-heterocyclic fatty groups and at least two active hydrogen atoms or represented by the formula



and (c) at least one catalyst for catalyzing the reaction between components (a) and (b), the amount of the modified epoxy resin being 10–70% by weight based on the total weight of the cured resin composition,

(2) 5–40% by weight based on the total weight of the resin composition, of at least one polyfunctional epoxy resin having at least 3 epoxy groups per molecule,

(3) 20–40% by weight based on the total weight of the resin composition, of at least one bromine containing-epoxy resin having an equivalent of 330–1500 with a bromine content of 10–50% based on the bromine containing-epoxy resin,

(4) at least one curing agent selected from the group including anhydrides, amines, acids, Lewis acids, imidazoles, complex salts of Lewis acid and phenols, the amount of the active reactive groups in each mole of the curing agent being 0.5–1.5 per epoxide equivalent,

(5) 0.001–5% by weight, based on the total weight of the resin composition, of at least one accelerator for catalyzing the curing reaction of the components (1), (2), (3) and (4).

5,006,616

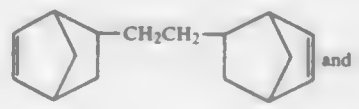
METATHESIS POLYMERIZED COPOLYMER

Shigeyoshi Hara; Zen-ichiro Endo, and Hiroshi Mera, all of Iwakuni, Japan, assignors to Hercules Incorporated, Wilmington, Del.

Filed Feb. 16, 1988, Ser. No. 155,798
Claims priority, application Japan, Feb. 16, 1987, 62-31495
Int. Cl.[5] C08F *236/20*
U.S. Cl. 526—75 **16 Claims**

1. A process of producing a cross-linked copolymer, which comprises metathesis polymerizing in the presence of a metathesis polymerization catalyst system a monomer mixture comprising:

(a) 3–100 mole % of a mixture comprising the following monomers:



(II-a)

(II-b)

(b) 97-0 mole % of at least one of metathesis polymerizable cyclic compounds.

5,006,617

EMULSION POLYMERS FREE FROM EMULSIFIERS AND PROTECTIVE COLLOIDS, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Dieter Engel, Kelsterbach, and Helmut Rinno, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 931,436, Nov. 12, 1986, abandoned, which is a continuation of Ser. No. 767,244, Aug. 20, 1985, Pat. No. 4,665,142, which is a continuation of Ser. No. 600,325, Apr. 13, 1984, abandoned. This application Sep. 20, 1988, Ser. No. 248,348
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1983, 3313922
Int. Cl.[5] C08F *236/00*
U.S. Cl. 526—87 **14 Claims**

1. A pulverulent organic polymer free from emulsifier and protective colloid and substantially free from any stabilization additive which is not fixed by a covalent bond to the polymer,

the polymer being in dry-powder form or in finely-dispersed form in a liquid medium,

the polymer comprising particles having a distribution of particle size $D_w/D_n \leqq 1.2$ within a particle diameter range between 0.02 μm and 5 μm,

the polymer being a free-radically-initiated copolymerized emulsion copolymer, having units of monomer (a) and units of monomer (b), which is the same as that prepared by a polymerization comprising:

a preliminary polymerization, in a polymerization medium, of poly-(ethylenically unsaturated) monomer (b) by itself or together with a partial amount of mono-(ethylenically unsaturated) monomer (a); the preliminary polymerization comprising that of at least 0.01 percent by weight, based on the total amount of monomers, of poly-(ethylenically unsaturated) monomer (b);

metering into the polymerization medium remaining mono-(ethylenically unsaturated) monomer (a) or that together with any remaining amount of poly-(ethylenically unsaturated) monomer (b) and any remaining amount of initiator;

completing polymerization of the resulting mixture to obtain a polymer dispersion;

the mono-(ethylenically unsaturated) monomer (a) being a member selected from the group consisting of acrylic acid ester, methacrylic acid ester, a vinyl aromatic monomer, a vinyl ester, an ethylenically unsaturated monocarboxylic acid, an ethylenically unsaturated dicarboxylic acid, an ethylenically unsaturated halogen compound and sodium vinyl sulfonate; and the poly-(ethylenically unsaturated) monomer (b) being a member selected from the group consisting of divinylbenzene and butanediol dimethacrylate,

the polymer having no more than 15% by weight of hydrophilic monomer units, based on the total amount of monomer units, and

the amount of poly-(ethylenically unsaturated) monomer units being in the range of from 0.02 to %5 by weight, based on the total amount of monomer units.

5,006,618

PROCESS FOR PREPARING HIGH DENSITY OR MEDIUM DENSITY POLYMERS

Nemesio D. Miro, League City, Tex., assignor to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 253,803, Oct. 5, 1988, Pat. No. 4,912,074, which is a continuation-in-part of Ser. No. 144,821, Jan. 15, 1988, Pat. No. 4,831,000. This application Jan. 31, 1990, Ser. No. 473,076
Int. Cl.[5] C08F *4/646*
U.S. Cl. 526—116 **22 Claims**

1. A process for polymerizing at least one olefin comprising conducting the polymerization in the presence of a catalyst composition prepared by a method comprising the steps of:

(I) preparing a catalyst precursor by a method comprising:

(a) contacting a solid, porous carrier with an aluminum compound of the formula

$$R_kAlZ_{(3-k)} \quad (I)$$

where R is a C_1–C_{10} alkyl group, Z is a halogen and k is 1,2, or 3;

(b) contacting the product of step (a) with a mixture containing a vanadium compound of the formula

$$VO_mX_{(n-2m)} \quad (II)$$

where X is a halogen, m is 0 or 1 and n is 2,3,4 or 5, and a titanium compound of the formula

$$TiX'_4 \quad (III)$$

where X′ is a halogen;

(c) contacting the product of step (b) with an ether selected from the group consisting of an alkyl ether having 2 to 18 carbon atoms, an alkyl/aryl ether having 2 to 18 carbon atoms, or a silane ether of the formula

$$R''Si(OR''')_mR^{IV}_{(3-m)} \quad (IV)$$

where R″, R‴ and R^{IV} are the same or different alkyl or aryl groups and m is 1,2,or 3; and (II) activating the precursor by combining it with an olefin polymerization catalyst activator.

5,006,619

POLYMERIZATION CATALYST AND METHOD

Thomas J. Pullukat, Hoffman Estates, and Raymond E. Hoff, Palatine, both of Ill., assignors to Quantum Chemical Corporation, Cincinnati, Ohio

Filed Feb. 27, 1984, Ser. No. 583,482

Int. Cl.[5] C08F *4/658, 10/00*

U.S. Cl. 526—128 **30 Claims**

1. The method of making polymers from polymerizable 1-olefins which comprises polymerizing at least one of said 1-olefins under polymerizing conditions with a catalyst system comprising an alkyl or aryl aluminum compound cocatalyst and a solid catalyst prepared by:

(1) reacting a multifunctional organic silicon compound of the formula $RSiX_3$, with silica or alumina or a mixture thereof having surface hydroxyl groups, where R is a hydrocarbon group or hydrocarbon derivative group and X is a group chemically reactive with said surface hydroxyl groups selected from the group consisting of $—OR^1$, $—N(R^1)_2$, $—N(H)SiR_3^1$, $—OCH_2CH_2OR^1$, $—O_2CR^1$, or mixtures, where R^1 is a hydrocarbon group or hydrocarbon derivative group;

(2) reacting the product of step (1) with a halide or alkoxide of titanium, vanadium or zirconium or mixture of these; and

(3) reacting the product of step (2) with an organomagnesium compound or complex; or

(2') reacting the product of step (1) with an organomagnesium compound or complex; and

(3') reacting the product of step (2') with a halide or alkoxide of titanium, vanadium or zirconium or mixture of these.

5,006,620

PREPARATION OF HOMOPOLYMERS AND COPOLYMERS OF PROPENE BY MEANS OF A ZIEGLER-NATTA CATALYST SYSTEM

Ralf Zolk, 7 Weinbietstrasse, 6714 Weisenheim; Juergen Kerth, 15 Wattenheimer Strasse, 6719 Carlsberg, and Rainer Hemmerich, 9 Veilchenweg, 6718 Gruenstadt, all of Fed. Rep. of Germany

Filed Aug. 30, 1989, Ser. No. 400,350

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1988, 3829519

The portion of the term of this patent subsequent to Aug. 15, 2006, has been disclaimed.

Int. Cl.[5] C08F *4/648, 4/654, 4/656*

U.S. Cl. 526—128 **3 Claims**

1. A process for preparing a homopolymer of propene or a copolymer of propene with a minor amount of another C_2-C_{12}-α-monoolefin by polymerization of the monomer(s) at from 20° to 160° C. under from 1 to 100 bar by means of a Ziegler-Natta catalyst system composed of

(1) a titanium component based on a finely divided shape-dictating silica gel and containing titanium, magnesium, chlorine and a benzenecarboxylic acid derivative,

(2) an aluminum component of the formula

$$AlR_3$$

where

R is alkyl of not more than 8 carbon atoms, and

(3) a silane component of the formula

$$R_n^1Si(OR^2)_{4-n}$$

where

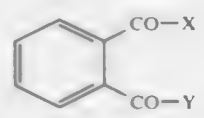
R^1 is saturated aliphatic or aromatic hydrocarbyl of not more than 16 carbon atoms,

R^2 is alkyl of not more than 15 carbon atoms, and

n is from 0 to 3,

with the provisos that the atomic ratio of titanium of titanium component (1) : aluminum of aluminum component (2) is from 1:10 to 1:800 and the molar ratio of aluminum component (2) : silane component (3) is from 1:0.01 to 1:0.8, which comprises using as the titanium component (1) a titanium component obtained by first of all

(1.1) preparing in a first stage (I) a carrier material from (Ia) a finely divided silica gel having a particle diameter of from 1 to 1,000 μm, a pore volume of from 0.3 to 5 cm^3/g, a surface area of from 100 to 1,000 m^2/g, and the formula $SiO_2.aAl_2O_3$, where a is from 0 to 2, (Ib) an organomagnesium compound of the formula MgR^3R^4, where R^3 and R^4 are each C_2–C_{10}-alkyl, (Ic) a gaseous chlorinating agent of the formula ClZ, where Z is Cl or H, and (Id) a phthalic acid derivative of the formula



where X and Y together are oxygen or singly chlorine or C_1-C_{10}-alkoxy, by first

(1.1.1) bringing together in a first substage in a liquid inert hydrocarbon with constant mixing at room temperature the finely divided silica gel (Ia) and the organomagnesium compound (Ib) by using per 10 molar parts of silicon of silica gel (Ia) from 1 to 10 molar parts of the organomagnesium compound (Ib), and keeping the mixture at from 20 ° to 140° C. for from 0.5 to 5 hours, then

(1.1.2) introducing into the product obtained from the first substage in a second substage with constant mixing at from −20° to +80° C., (i) the gaseous chlorinating agent (Ic) using from 2 to 40 molar parts of chlorinating agent (Ic) per molar part of organomagnesium compound (Ib), and (ii) the phthalic acid derivative (Id) using per molar part of organomagnesium compound (Ib) from 0.01 to 1 molar parts of phthalic acid derivative (Id) leaving the whole mixture at a temperature within the stated range for from 0.5 to 5 hours and,

(1.2) preparing in a second stage a solid-phase intermediate from (I) the carrier material obtained in the first stage, (II) a C_1-C_8-alkanol and (III) titanium tetrachloride by first

(1.2.1) bringing together in a first substage in a liquid inert hydrocarbon with constant mixing at room temperature the carrier material (I) and the alkanol (II) using from 1 to 5 molar parts of alkanol (II) per molar part of magnesium of carrier material (I), and keeping the mixture at from 20° to 140° C. for from 0.5 to 5 hours, then

(1.2.2) in a second substage introducing the titanium tetrachloride (III) with constant mixing at room temperature into the reaction mixture resulting from the first substage using from 2 to 20 molar parts of titanium tetrachloride (III) per molar part of magnesium of carrier material (I), keeping the mixture at from 10° to 150° C. for from 0.5 to 5 hours and isolating the resulting solid-phase intermediate by removing the liquid phase, then

(1.3) in a third stage subjecting the solid-phase intermediate obtained from the second stage at from 100° to 150° C. for from 0.2 to 8 hours to a single- or multi-stage or continuous extraction with titanium tetrachloride or a mixture of titanium tetrachloride and an ethylbenzene whose titanium tetrachloride content is not less than 2%, using for every 10 parts by weight of the solid-phase intermediate obtained from the second stage a total of from 10 to 1,000 parts by weight of extractant, and finally

(1.4) in a fourth stage washing the solid-phase product formed in the third stage one or more times with a liquid inert hydrocarbon and so obtaining titanium component (1).

5,006,621

CO-POLYMERS OF LONG CHAIN ALKYL ACRYLATES WITH N-CONTAINING OLEFINS AND THEIR USE AS FLOW IMPROVERS FOR CRUDE OILS

Bernd Wahle, Kaarst; Claus-Peter Herold, Mettmann; Wolfgang Zoellner, Duesseldorf; Ludwig Schieferstein, Ratingen, and Doris Oberkobusch, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Mar. 21, 1989, Ser. No. 326,598

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1988, 3809418

Int. Cl.[5] C08F *22/40*

U.S. Cl. 526—262 **15 Claims**

1. A copolymer comprising units of:

(1) an acrylate of the formula I

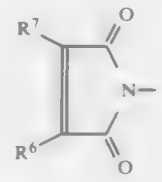
$$CH_2=CR^1—CO—OR^2 \quad (I)$$

wherein R^1 is hydrogen or methyl, and R^2 is a linear or branched, saturated or unsaturated aliphatic radical having from 16 to 34 carbon atoms, and

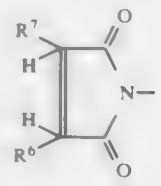
(2) N-containing olefins selected from the group consisting of (A) a compound of the formula II

$$R^3—R^4—O—CO—CR^5=CH_2 \quad (II)$$

wherein R^3 is a cyclic imide having of the formula III or IV



(III)



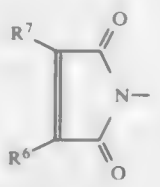
(IV)

wherein R^5 is hydrogen or methyl, R^6 and R^7 are together or separately hydrogen or C_1–C_4-alkyl groups or when taken together are ring fragments of an unsubstituted or a C_1–C_4 alkyl substituted ring having 5 or 6 carbon atoms, R^4 is (a) a straight-chain or branched alkylene group having 1 to 12 carbon atoms optionally sustituted with —OH or $—NH_2$ group, (b) a straight-chain or branched group having 1 to 12 carbon atoms containing the $—CH_2—CH_2—O—CH_2—CH_2-$ or $—CH_2—CH_2—NH—CH_2—CH_2-$ moiety when the alkylene group contains at least 4 carbon atoms, (c) a cyclic C_5- or C_6-alkylene group or (d) a C_1–C_4-alkylene- substituted phenylene group,

(B) a compound of formula V

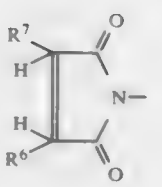
$$R^3—R^8—CO—OR^9—O—CO—CR^{10}=CH_2 \quad V$$

wherein R^3 is a cyclic imide having of the formula III or IV



(III)

-continued

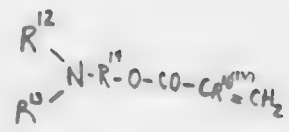


(IV)

wherein R^6 and R^7 are together or separately hydrogen or C_1–C_4-alkyl groups or when taken together are ring fragments of an unsubstituted or a C_1–C_4 alkyl substituted ring having 5 or 6 carbon atoms, R^9 is C_2–C_{10} alkylene group, R^{10} is hydrogen or methyl, R^8 is a phenylene radical or an alkylene group of the formula

wherein R^{20} is a hydrogen atom or a branched alkyl radical having from 1 to 11 carbon atoms, and R^9 is a C_2–C_{10}-alkylene group,

(C) a compound of formula VI



(IV)

wherein R^{16} is hydrogen or methyl, R^{12} is a phenyl or benzyl group, R^{13} is a C_1–C_{16}-alkyl group and R^{16} is a C_2–C_6-alkylene group,

(D) a compound of formula VII

$$R^{17}—CO—NH—R^{18}O—CO—CR^{19}=CH_2 \quad (VII)$$

wherein R^{19} is hydrogen or methyl, R^{17} is C_7-C_{33}-alkyl group, R^{18} is a C_2–C_4-alkylene group or combinations thereof in molar ratios of I, to II, V, VI or VII of from about 1:0.1 to about 1:10.

5,006,622

POLYMER COMPOSITIONS FOR CONTACT LENSES

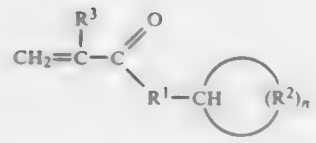
Jay F. Kunzler, Mayfield, Ohio, and Gary D. Friends, Ontario, N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Apr. 2, 1987, Ser. No. 34,292

Int. Cl.[5] C08F *32/00*

U.S. Cl. 526—309 **3 Claims**

1. The polymerization product of a mixture comprising: 35 to 90 part by weight of N-vinylpyrrolidone; 0.1 to 5 parts by weight of crosslinking agent; 0.01 to 5 parts by weight of catalyst; and 10 to 65 parts by weight of a strengthening agent represented by the general formula



wherein:
R^1 is O or NH;
R^2 is a divalent alkylene radical chosen from the group consisting of —CH_2—, —CHOH— and —CHR^4 wherein R^4 is a branched alkyl group with 3 to 8 carbon atoms, and
R^3 is H or CH_3;
and wherein at least one R^2 radical is —CHOH— and at least one R^2 is —CHR^4 and are separated by at least one —CH_2— radical, and n is 4, 5, 6 or 7.

5,006,623

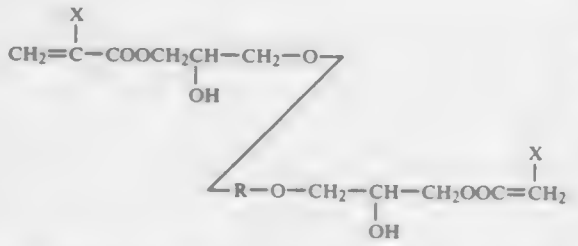
PROCESS FOR PREPARING VINYL CHLORIDE COPOLYMERS WITH DIACRYLATE OF POLYHYDRIC ALCOHOL

Junichi Watanabe, Ageo, and Tohru Yokota, Ibaraki, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

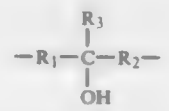
Filed Jun. 6, 1989, Ser. No. 362,256
Claims priority, application Japan, Jun. 9, 1988, 63-142459
The portion of the term of this patent subsequent to Mar. 28, 2006, has been disclaimed.
Int. Cl.[5] C08F *2/20, 220/20*
U.S. Cl. 526—320 **7 Claims**

1. A process for producing a vinyl chloride copolymer which comprises

copolymerizing a suspension of vinyl chloride monomer or a monomer mixture composed of more than 50% by weight of vinyl chloride monomer and a copolymerizable monomer as the starting material in an aqueous suspension containing an oil-soluble radical initiator and a dispersing agent with from 0.1 to 10 percent by weight based on the weight of the starting material of a crosslinking agent selected from the group consisting of polyhydric alcohol diglycidyl ether diacrylates and dimethacrylates having the formula



wherein R is an alkylene group having 2 to 8 carbon atoms or a group presented by the following formula



wherein R_1 and R_2 each denote an alkylene group having 1 to 6 carbon atoms and R_3 denotes a hydrogen atom or alkyl group having 1 to 6 carbon atoms; and X denotes hydrogen atom or methyl group, said crosslinking agent being added to the reaction system for copolymerization with the vinyl chloride mixture when the polymerization of said vinyl chloride or said mixture proceeds to a rate of from 10 to 40%.

5,006,624

FLUOROCARBON CONTAINING, REACTIVE POLYMERIC SURFACTANTS AND COATING COMPOSITIONS THEREFROM

Donald L. Schmidt; Charles E. Coburn, and Perry J. McCrackin, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 402,176, Sep. 1, 1989, Pat. No. 4,929,666, which is a continuation-in-part of Ser. No. 49,490, May 14, 1987, abandoned. This application Mar. 1, 1990, Ser. No. 486,664
Int. Cl.[5] C08F *12/30*
U.S. Cl. 526—243 **8 Claims**

1. A water-soluble or water-dispersible, crosslinkable reactive polymeric surfactant having (1) at least one pendant fluorocarbon moiety and (2) at least one pendant cationic moiety which is capable of reacting with a reactive counterion to form a crosslinked polymer.

5,006,625

PROCESS FOR PREPARING ORGANOSILAZANES

Mannarsamy Balasubramanian; Martin E. Gluckstein, and Edwin D. Hornbaker, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Jun. 30, 1989, Ser. No. 374,058
Int. Cl.[5] C08G *77/06*
U.S. Cl. 528—14 **12 Claims**

1. In a process for preparing an organosilazane by reacting an organohalosilane with ammonia in an organic solvent, the improvement which comprises increasing the molecular weight of the product by conducting the entire ammonolysis reaction at a temperature of about 15°–23° C.

5,006,626

EPOXY RESIN COMPOSITIONS

Arnold Hofer, Muttenz, Switzerland, and Hans Gempeler, Aesch, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 25, 1989, Ser. No. 411,951
Claims priority, application Switzerland, Sep. 29, 1988, 3620/88; Jul. 27, 1989, 2802/89
The portion of the term of this patent subsequent to Dec. 5, 2006, has been disclaimed.
Int. Cl.[5] C08G *59/68*
U.S. Cl. 528—94 **7 Claims**

1. An epoxy resin composition comprising an epoxy resin which is solid at room temperature and contains on average more than one epoxy group per molecule, and at least one quaternary pyrrolidinium salt as advancement catalyst.

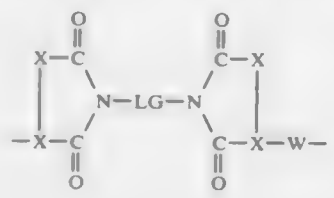
5,006,627

POWER TRANSMISSION BELTS PREPARED FROM POLYIMIDE AND POLYKETONE ELASTOMERS

Charles M. Lewis, Springfield, Mo., and Nasser Pourahmady, Ridgeville, Ohio, assignors to Dayco Products, Inc., Dayton, Ohio

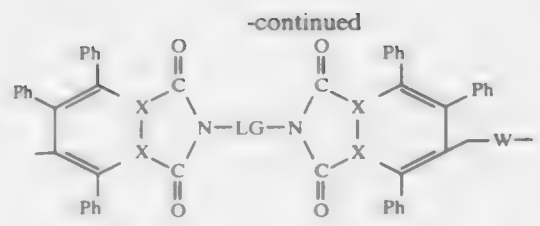
Division of Ser. No. 241,168, Sep. 2, 1988, Pat. No. 4,959,444. This application Jul. 20, 1990, Ser. No. 556,048
Int. Cl.[5] C08G *79/00*
U.S. Cl. 528—170 **16 Claims**

1. A power transmission belt prepared from a Polyimide having a repeating unit of the formula (I), (II), (III) or (IV):

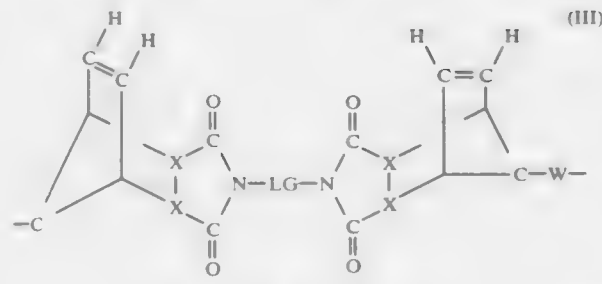


(I)

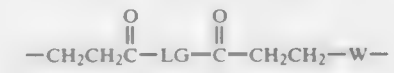
-continued



(II)



(III)



(IV)

where
LG is a linking group,
W is an oligomeric chain selected from the group consisting of a polyether, a polythioether, a polyetherthioether, a polycarbonyl, a polysulfonyl, and copolymers thereof, and
X is a carbon atom or a nitrogen atom and when X is a carbon atom, one carbon atom may be substituted by a methyl group.

5,006,628

MELT PHASE POLYARYLATE PROCESS

Winston J. Jackson, Jr., Kingsport, Tenn.; W. Ronald Darnell, Weber City, Va.; Bruce C. Bell, and Marc A. Strand, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 15, 1990, Ser. No. 567,483
Int. Cl.[5] C08G *63/02*
U.S. Cl. 528—182 **4 Claims**

1. A process for preparing a polyarylate having an inherent viscosity of at least about 0.3 measured at 25° C. using 0.50 g/100 mL of a mixture of 60 volumes of phenol and 40 volumes of 1,1,2,2-tetrachloroethane comprising heating at a temperature in the range of 130° C. to 380° C. in the melt phase a 4-dialkylaminopyridine, an acid anhydride which is derived from an aliphatic carboxylic acid which contains from 2 to 6 carbon atoms and is in the range of a stoichiometric amount to 25% molar excess, bisphenol-A and a dicarboxylic acid selected from the group consisting of isophthalic acid and mixtures of isophthalic acid and terephthalic acid wherein the ratio of isophthalic acid to terephthalic acid is in the range of 100:0 to 25:75.

5,006,629

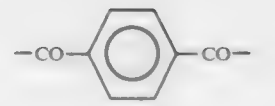
WHOLLY AROMATIC POLYAMIDE COPOLYMER

Toshihiro Santa, and Tsutomu Kiriyama, both of Matsuyama, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Oct. 30, 1989, Ser. No. 428,898
Claims priority, application Japan, Nov. 1, 1988, 63-274400; Jan. 23, 1989, 1-11862; Mar. 3, 1989, 1-50029
Int. Cl.[5] C08G *69/32*
U.S. Cl. 528—183 **10 Claims**

1. A wholly aromatic polyamide copolymer comprising:

an aromatic dicarbonyl moiety consisting of repeating units of the formula:

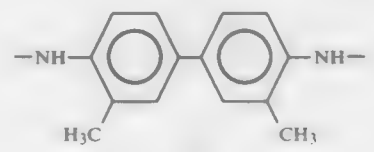


and

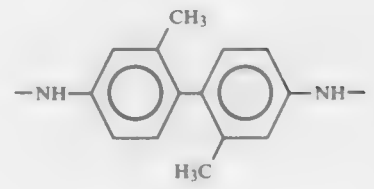
an aromatic diamine moiety comprising:

(A) at least one repeating unit selected from the group consisting of (A-1), (A-2) and (A-3), of the formulae:

(A-1)

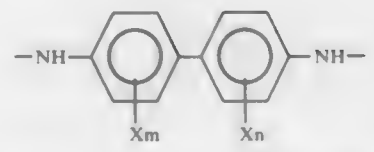


(A-2)

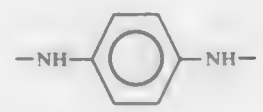


and

(A-3)

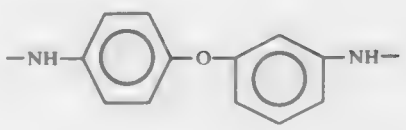


wherein X represents a halogen atom, m and n represent, respectively and independent from each other, zero or an integer of 1 to 4, wherein the sum of m and n is 1 to 8.



and

(C) repeating units of the formula:



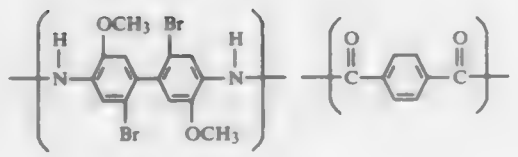
5,006,630

SOLUBLE AMORPHOUS PARA-ORIENTED AROMATIC POLYAMIDE FROM 2,2'-DIBROMO-5,5'-DIMETHOXY-[1,1'-BIPHENYL]-4,4'-DIAMINE

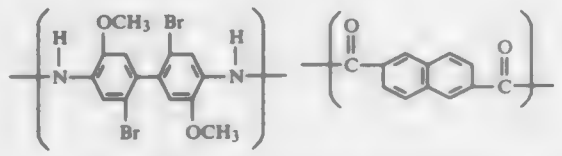
Robert S. Irwin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 30, 1989, Ser. No. 374,688
Int. Cl.[5] C08G *69/32*
U.S. Cl. 528—185 **5 Claims**

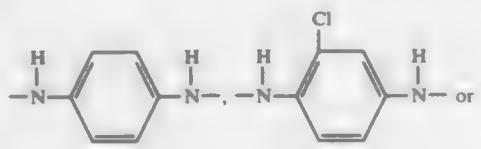
1. Amorphous para-oriented aromatic copolyamide consisting essentially of units of the formula

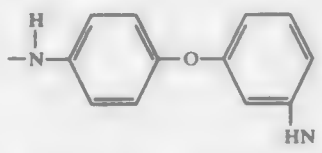


or



or copolyamide thereof in which u to 92.5 mol % of the diamino moiety is replaced by





said polymer having an inherent viscosity, ηinh, of at least 1.0, where

$$\eta inh = \frac{\ln(\eta rel)}{C}$$

where ηrel is the relative viscosity measured at 30° C. and C is the concentration in grams of polymer per deciliter of sulfuric acid.

5,006,631

AROMATIC POLYESTER CARBONATE FROM DIPHENOL MIXTURE

Masanao Kawabe, Tokyo; Masao Kimura, Kawasaki; Kazuhiro Sugiyama, Tokyo; Ikuro Yamaoka, Kawasaki, and Hiroharu Inoue, Tokyo, all of Japan, assignors to Nippon Steel Corporation and Nippon Steel Chemical Co., Ltd., both of Tokyo, Japan

Filed Jul. 19, 1989, Ser. No. 383,155

Claims priority, application Japan, Jul. 20, 1988, 63-179146; Sep. 27, 1988, 63-239863; Apr. 21, 1989, 1-100132; Apr. 21, 1989, 1-100133

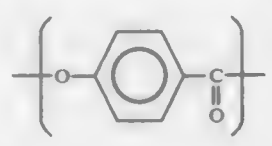
Int. Cl.[5] C08G *63/64*

U.S. Cl. 528—204 **12 Claims**

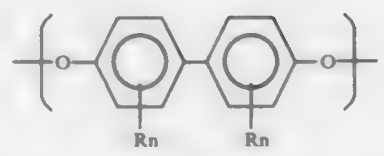
1. An aromatic polyester carbonate comprising structural units represented by the following formulae (A), (B), (C), and (D) and satisfying the following relationship when the mole fractions of the structural units represented by the formulae (A), (B), (C), and (D) are defined as a, b, c, and d, respectively:

$$0 \leq \frac{d}{a+b} \leq 0.50$$

and having an inherent viscosity [η_{inh}] in a solution at a concentration of 0.5 g/dl in p-chlorophenol as a solvent at 50° C. of 1.0 dl/g or higher, or being insoluble in the solvent, and having liquid crystal properties:



(A)



(B)

wherein R is the same or different and represent an alkyl, phenyl group or a halogen, and n represents an integer of 0 to 4;

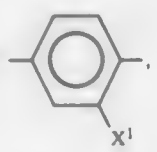


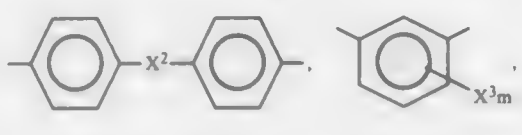
(C)

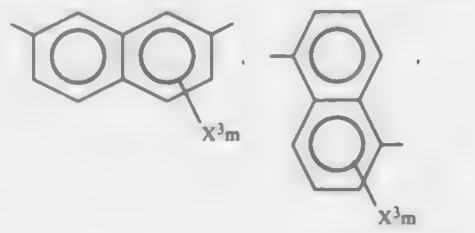
and

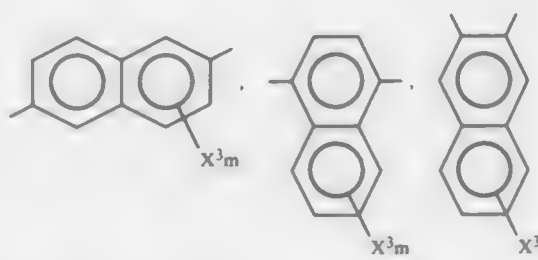


(D)

wherein Ar represents  ,







X^1 represents a substituted or non-substituted phenyl group, an alkyl group having 3 to 6 carbon atoms or a halogen;

X^2 represents —O—, —S—,



or —CH_2—;

X^3 is the same or different and represents an alkyl group, phenyl group, or a halogen; and

m represents an integer of 0 to 4.

5,006,632

PROCESS FOR PREPARING HEAT RESISTING HYDROBENZOIC ACID SERIES POLYESTERS WITH HIGH DEGREE OF POLYMERIZATION

Renxian Duan, Chengdu; Chengjiu Peng, Fushun, and Guijiang Tian, Beijing, all of China, assignors to The First Branch of Chengnang Research Institute of Chemical Industry, Sichuan, China

Filed Nov. 3, 1989, Ser. No. 431,551

Claims priority, application China, Nov. 5, 1988, 88109743.8

Int. Cl.[5] C08G *63/06, 65/38*

U.S. Cl. 528—206 **8 Claims**

1. A process for preparing hydroxybenzoic acid polyester resins with a high degree of heat resistance and a high degree of polymerization comprising the steps of

preparing phenyl hydroxybenzoate monomer by esterifying hydroxybenzoic acid with phenol, the mole ratio of phenol to hydroxybenzoic acid being greater than one to ensure an excess amount of phenol.

said esterification being conducted at a temperature from about 120°-250° C. for a period of about 1-10 hours in the presence of an esterification catalyst present in an amount of about 0.0001-0.1% based upon total weight of reactants, said catalyst being selected from the group consisting of sulfuric acid, sulfonic acid derivatives, or mixtures thereof;

distilling the reaction mixture to remove phenol and water;

discarding the water;

polymerizing said monomer by a polycondensation reaction to form said polyester resin,

said polycondensation reaction being conducted in the presence of (a) a polycondensation catalyst in the amount of about 0.0001-0.01 mole % per mole of hydroxybenzoic acid selected from the group consisting of butyltitanate, phenyltitante, organo-tin compounds or their derivatives, or mixtures thereof, and (b) a polycondensation solvent in the amount of about 100-1000 ml per mole of hydroxybenzoic acid selected from the group consisting of polychlorobiphenyl, hydroxypolydiphenyl, mixtures of polybenzyl or benzyl-substituted alkylbenzenes, polyarylethers, or mixtures thereof at a temperature no higher than about 330°-430° C. which is reached by raising the reaction temperature at a rate of about 0.1°-10° C./min.;

distilling off the phenol generated as a by-product of said polycondensation reaction and combining it with the phenol distillates collected after the esterification reaction; and

combining all the phenol distillates with additional hydroxybenzoic acid to prepare additional monomer for further polycondensation reaction to produce polyester.

5,006,633

NOVEL COMPOLYMERS AND ELECTROACTIVE POLYMERS DERIVED THEREFROM

Yutaka Shikatani; Naoki Katsuka; Yoshiyuki Shimo; Nobuyuki Kuroda, all of Kanagawa, and Kazuo Matsuura, Tokyo, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

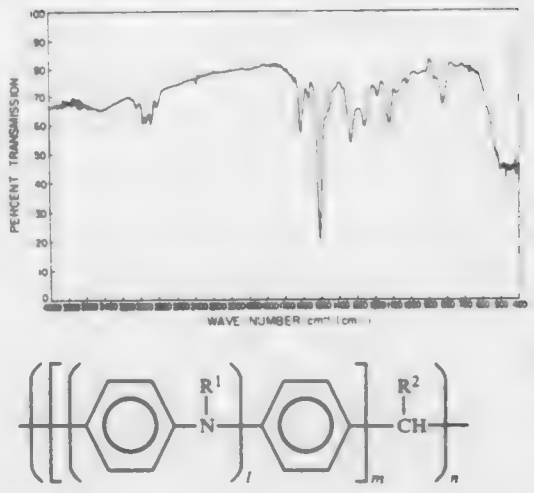
Filed Aug. 18, 1989, Ser. No. 395,803

Claims priority, application Japan, Aug. 31, 1988, 63-214843

Int. Cl.[5] C08G *12/06*

U.S. Cl. 528—230 **3 Claims**

1. A copolymer represented by the following general formula (I):



[I]

wherein R^1 is hydrogen or a hydrocarbon residue having 1 to 20 carbon atoms; R^2 is hydrogen, a hydrocarbon residue having 1 to 20 carbon atoms, furyl, pyridyl, nitrophenyl, chlorophenyl, or methoxyphenyl; l is an integer not smaller than 2; m is an integer not smaller than 1; and n is an integer not smaller than 2.

5,006,634

FLAME-RETARDANT HALOGENATED COPOLYESTER AND ELECTRIC WIRE COATED WITH THE SAME

Toshio Nakane; Michiro Naka, both of Fuji; Hiroaki Konuma, Shimizu, and Kenji Hijikata, Mishima, all of Japan, assignors to Polyplastics Co., Ltd., Osaka, Japan

Filed Feb. 17, 1989, Ser. No. 311,855

Claims priority, application Japan, Feb. 26, 1988, 63-43523

Int. Cl.[5] C08G *63/20*

U.S. Cl. 528—272 **17 Claims**

1. An electric wire coated with a coating material comprising a copolyester resin composition prepared by adding 0.1 to 3% by weight, based on the total amount of the composition, of a stabilizer to a flame-retardant halogenated copolyester prepared by the condensation polymerization of

(a) a component mainly comprising an aromatic dicarboxylic acid or an ester-forming derivative thereof,

(b) a component mainly comprising an aliphatic glycol or an ester-forming derivative thereof,

(c) an ester-forming halogenated compound and

(d) a branching compound, which has a halogen content of 0.5 to 30% by weight and contains 0.001 to 0.5 molar %, based on the total amount of the carbonyl groups of the copolyester, of said branching compound (d).

5,006,635

MOLECULAR WEIGHT CONTROLLER COMPOSITION FOR AQUEOUS POLYMERIZATION OF LACTAM TO POLYAMIDE

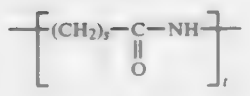
Jack A. Dellinger, Weaverville, N.C., assignor to BASF Corporation, Williamsburg, Va.

Division of Ser. No. 294,959, Jan. 6, 1989, Pat. No. 4,844,834. This application May 31, 1989, Ser. No. 359,445

Int. Cl.[5] C08G *69/16*

U.S. Cl. 528—315 **15 Claims**

1. A process of polymerizing lactams to produce a polyamide having recurring units of the formula



wherein

s is a positive integer and has a value from 3 to 11; and

t is a positive integer and represents the number of monomer units in the polymer required to achieve the desired molecular weight;

comprising:

adding to said lactams an effective amount of an aqueous molecular weight controller comprising

(a) a monofunctional primary amine having a boiling point of at least 180° C. at atmospheric pressure and a basic dissociation constant of at least 1.7×10^{-5};

(b) a monofunctional organic acid having an acid dissociation constant of at least 1.5×10^{-5}; and,

(c) an aminoacid containing a cyclic structure of 5 or 6 carbon atoms, a total number of carbon atoms in the range of from about 6 to 9, and having its amino group salified by a salifying monofunctional acid having an acid dissociation constant of at least 1.0×10^{-2}

wherein the polymerization is carried out at a temperature in the range of from about 200 to 280° C.

5,006,636

PROCESS FOR THE PRODUCTION OF SiO_2 CONTAINING POLYBENZAMIDES

Manfred Spies, Marburg, and Walter Heitz, Kirchhain, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 23, 1989, Ser. No. 299,606

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1988, 3802470

Int. Cl.[5] C08G *69/04*

U.S. Cl. 528—320 **2 Claims**

1. The process for the production of relatively high molecular weight poly-(1,4-benzamides) in admixture with SiO_2 by polycondensation of 4-aminobenzoic acid, which comprises polycondensing 4-aminobenzoid acid in the presence of (i) $SiCl_4$, (ii) a metal salt selected from the group consisting of $CaCl_2$ and LiCl, and (iii) 1,3-dimethyltetrahydro-2(1H)-pyrimidinone as solvent at temperature of 50° to 200° C. and pressures of 1×10^{-3} to 10 bar, with the amount of $SiCl_4$ being 0.5 to 2 mol per mol aminobenzoid acid.

5,006,637

METHOD FOR PREPARING COPOLYESTERCARBONATES FROM CYCLIC OLIGOMERS

Thomas L. Guggenheim, Scotia; James M. Fukuyama, Clifton Park, and John J. Kelly, Troy, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 12, 1989, Ser. No. 364,387

Int. Cl.[5] C08G *63/64*

U.S. Cl. 528—355 **17 Claims**

1. A method for preparing a copolyestercarbonate which comprises contacting at least one cyclic polycarbonate oligomer with at least one cyclic polyester oligomer in the presence of a cyclic polycarbonate polymerization catalyst, at a temperature in the range of about 300°-375° C.

5,006,638

MELT PROCESSING OF CARBON MONOXIDE/OLEFIN COPOLYMER WITH CARBON DIOXIDE

Robert Q. Kluttz, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 357,227, May 26, 1989, abandoned. This application Jan. 8, 1990, Ser. No. 462,955

Int. Cl.[5] C08G *67/02*

U.S. Cl. 528—483 **18 Claims**

1. A process for improving the melt stability of a linear alternating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon by contacting the polymer with an atmosphere containing 0.1% to 100% carbon dioxide during at least one melt processing step, and subsequently solidifying the polymer.

5,006,639

METHOD OF COAGULATING SLUDGE

Show Tono, Tokyo; Toshiyuki Miki; Yoshihide Dairokuno, both of Kanagawa, and Jyun Katsoka, Chiba, all of Japan, assignors to Aoki Corporation, Osaka, Japan

Filed Jan. 11, 1989, Ser. No. 295,796

Claims priority, application Japan, Jun. 10, 1988, 63-142946

Int. Cl.[5] C02F *1/56*

U.S. Cl. 210—727 **2 Claims**

1. A method of coagulating sludge, which comprises sequentially adding to sludge an anionic polymer coagulant having a pH of 6–8, a cationic polymer coagulant having a pH of 3–6 and an anionic polymer coagulant, each of said polymers being added in a coagulating amount.

5,006,640

POLYKETONE WITH UNSATURATED TERMINAL GROUPS

Eit Drent, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 271,130, Nov. 14, 1988, Pat. No. 4,921,938. This application Jan. 11, 1990, Ser. No. 463,706

Claims priority, application Netherlands, Nov. 12, 1987, 8702705

Int. Cl.[5] C08G *67/02*

U.S. Cl. 528—392 **7 Claims**

1. A linear alternating polymer of carbon monoxide and at least one α-olefin, the polymer comprising:

units of the formula —CO—(A)—wherein A is a mer unit from one or more α-olefins; and

a least one polymer molecule that terminates with at least one group containing a carbon-carbon double bond.

5,006,641

PROCESS FOR THE PREPARATION OF POLYHYDANTOINS WHICH CAN BE PROCESSED THERMOPLASTICALLY

Friedrich Jonas, Aachen, and Rudolf Merten, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

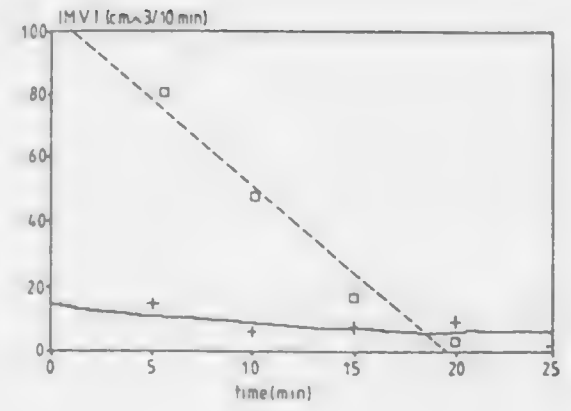
Filed Feb. 12, 1990, Ser. No. 478,408

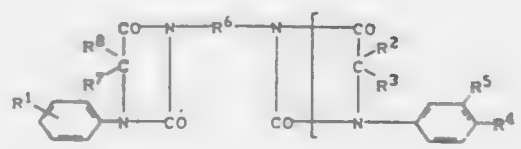
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1989, 3905792; Apr. 27, 1989, 3913856

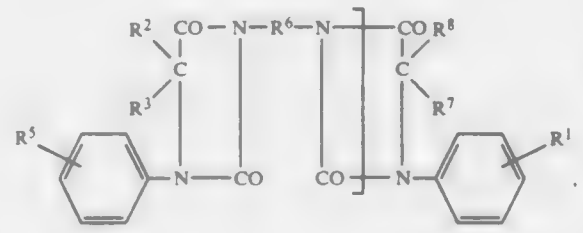
Int. Cl.[5] C08G *22/00*

U.S. Cl. 528—328 **10 Claims**

1. Process for the preparation of polyhydantoins which can be processed thermoplastically of the formula:







in which

R^1 denotes hydrogen or straight-chain or branched C_1–C_{12}-alkyl,

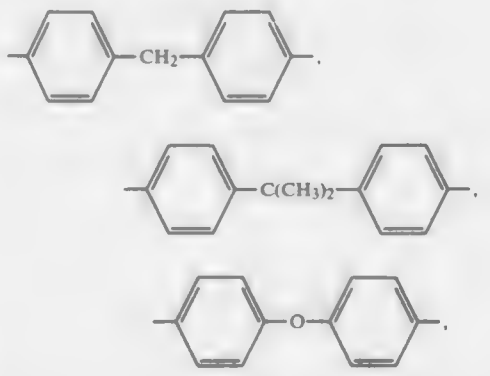
R^2 and R^3 independently of one another represent hydrogen or straight-chain or branched C_1–C_6-alkyl, or together denote



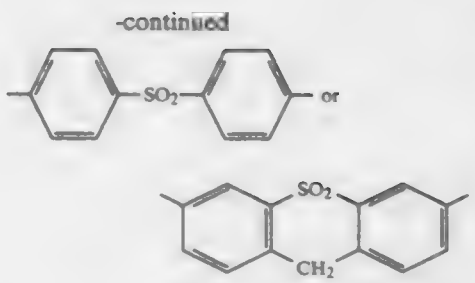
R^4 represents $—CH_2—$, $—C(CH_3)_2$, —CO—, —O— or $—SO_2—$,

R^5 denotes hydrogen, or both R^5-substituents of neighbouring rings denote ring-forming $—SO_2—$,

R^6 represents the divalent radical of a straight-chain or branched aliphatic C_2–C_{20} hydrocarbon, of a cycloaliphatic C_5–C_{10} hydrocarbon, of an aromatic C_6–C_{12} hydrocarbon or one of the groups:



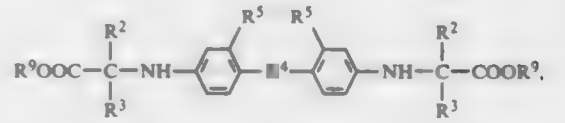
-continued



and

R^7 and R^8 independently of one another denote hydrogen or straight-chain or branched C_1–C_{12}-alkyl,

characterised in that in a first step, bis-glycine esters of the formula:



in which

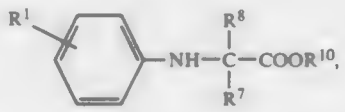
R^2 to R^5 have the above meaning, and

R^9 represents straight-chain or branched C_1–C_{10}-alkyl or C_6–C_{10}-aryl,

are reacted with between 1 and 2 moles of diisocyanate of the formula:

$$OCN—R^6—NCO,$$

in which R^6 has the above meaning, per mole of bis-glycine ester in a liquid reaction medium, and after forming the polyurea from the bis-glycine ester and the diisocyanate, is reacted further in a second step with an amount of monoglycine ester of the formula:



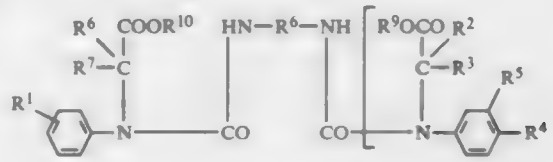
in which

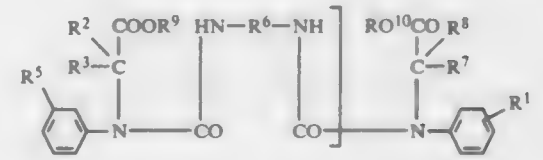
R^1, R^7 and R^8 have the above meaning, and

R^{10} represents straight-chain or branched C_1–C_{10}-alkyl or C_6–C_{10}-aryl,

equivalent to the residual amount of isocyanate end groups, to give a polyurea of the formula:

(V)





in which

R^1 to R^{10} have the above meaning,

and finally, the cyclocondensation to give the polyhydantoin is carried out with removal of R^9OH and $R^{10}OH$.

5,006,642

PURIFICATION OF VON WILLEBRAND FACTOR BY AFFINITY CHROMATOGRAPHY

Jack Newman, Burke, and David L. Farb, Woodbridge, both of Va., assignors to Rhone-Poulenc Rorer Pharmaceuticals Inc., Fort Washington, Pa.

Division of Ser. No. 67,990, Jun. 29, 1987, Pat. No. 4,774,323. This application Jun. 13, 1988, Ser. No. 205,881

Int. Cl.[5] C07K *15/06, 3/18, 3/28*

U.S. Cl. 530—383 **12 Claims**

1. In a method for increasing the therapeutic activity of von Willebrand Factor wherein an essentially purified von Willebrand Factor is obtained by adsorbing a Factor VIII/von Willebrand Factor complex obtained from plasma or commercial concentrate source onto particles bound to a monoclonal or polyclonal antibody specific to von Willebrand Factor;

first eluting Factor VIII from said particles;

next eluting von Willebrand Factor from said particles by washing said particles with a 0.05 M to 5 M aqueous solution of a chaotropic agent; and

separating the von Willebrand factor from said chaotropic agent,

the improvement which comprises: incubating said essentially purified von Willebrand Factor at a temperature of 20° C. to 55° C. for 1 to 30 hours.

5,006,643

PROCESS FOR PREPARING ISOTHIOCYANATO FUNCTIONALIZED METAL COMPLEXES

Michael J. Fazio; Douglas K. Pollock, and Nicolas J. Kotite, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 65,739, Jun. 24, 1987, and a continuation-in-part of Ser. No. 211,496, Jun. 24, 1988, abandoned, and a continuation-in-part of Ser. No. 265,158, Oct. 31, 1988, abandoned, and a continuation-in-part of Ser. No. 370,956, Jun. 21, 1989, and a continuation-in-part of Ser. No. 289,172, Dec. 23, 1988, abandoned. This application Jul. 20, 1989, Ser. No. 383,103

Int. Cl.[5] C07F *15/00;* **C07C** *263/10;* **A61K** *43/00*

U.S. Cl. 534—10 **14 Claims**

1. A process for preparing isothiocyanate compounds which comprises reacting thiophosgene with an amino functionalized polyaza chelate containing only primary and secondary amines complexed with rhodium.

5,006,644

COPPER COMPLEXES OF FURTHER SUBSTITUTED 2,4-DI-[2'-(2''-HYDROXYPHENYLAZO)-1'-HYDROXY-3'-SULFONAPHTHYL-6'-AMINO]-6-CHLORO-1,3,5-TRIAZINES

Friedrich Lehr, Efringen/Kirchen, Fed. Rep. of Germany, assignor to Sandoz Ltd., Basel, Switzerland

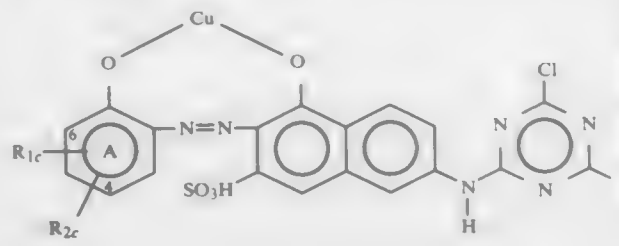
Continuation of Ser. No. 683,602, Dec. 19, 1984, abandoned, which is a continuation-in-part of Ser. No. 503,268, Jun. 10, 1983, abandoned. This application Jan. 7, 1987, Ser. No. 1,070

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1982, 3223022

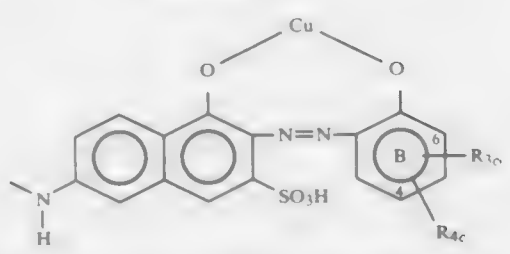
Int. Cl.[5] C09B *62/09, 62/095, 67/22, 67/24*

U.S. Cl. 534—625 **18 Claims**

1. A complex of the formula



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or a salt thereof each cation of which is independently a non-chromophoric cation,

wherein

each of R_{1c} and R_{3c} is independently $-SO_2Zc$, wherein Zc id hydroxy, phenyl or $-NHR_{10c}$,

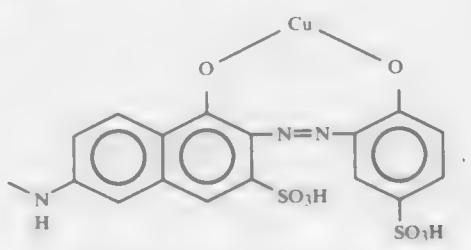
wherein R_{10c} is hydrogen, methyl, ethyl, cyclohexyl or 2- or 3-hydroxy-(C_2—3alkyl), and

each of R_{2c} and R_{4c} is independently hydrogen, chloro, nitro, methyl, acetamido or —COXc, wherein Xc is hydroxy, $-OR_{9c}$ or amino,

wherein R_{9c} is methyl or ethyl, with the provisos that (1) each of R_{1c} -R_{4c} is in the 4- or 6-position of the ring to which it is attached and (2) when one of Rings A and B has an $-SO_2NHR_{10c}$ group in its 4-position, the other of Rings A and B has a sulfo or $-SO_2NHR_{10c}$ group, or a mixture of such complexes, salts or both.

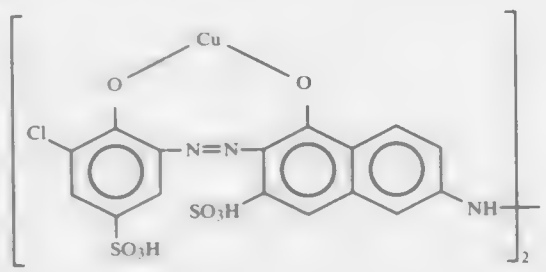
17. A mixture of complexes according to claim 1 consisting of

(A) the complex of the formula



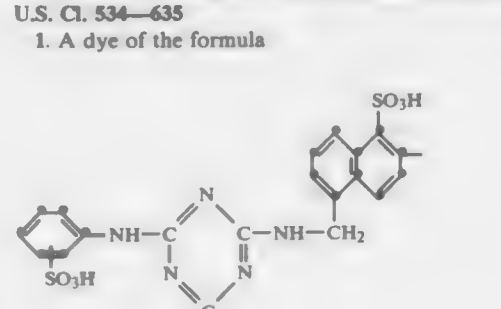
or a salt thereof each cation of which is independently a non-chromophoric cation,

(B) the complex of the formula



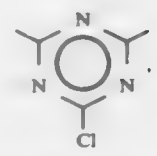
or a salt thereof each cation of which is independently a non-chromophoric cation, and

(C) the complex of the formula

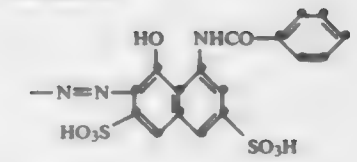


or a salt thereof each cation of which is independently a non-chromophoric cation.

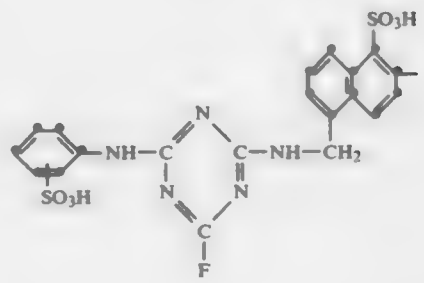
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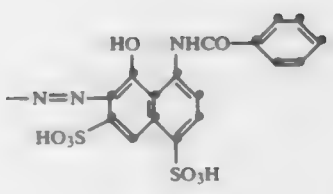
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2. A dye of the formula



(5)



3. A dye of the formula

5,006,645

DYES OF THE 1-SULFO-5-(2'-AMINO OR 2'-SUBSTITUTED AMINO-4'-FLUORO-5-TRIAZIN-6'-YL-AMINOMETHYL)-NAPHTHYL-2-AZO SERIES

Karl Seitz, Oberwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 147,094, Jan. 20, 1988, abandoned, which is a continuation of Ser. No. 40,691, Apr. 17, 1987, abandoned, which is a continuation of Ser. No. 868,369, May 27, 1986, abandoned, which is a continuation of Ser. No. 468,091, Feb. 22, 1983, abandoned, which is a continuation of Ser. No. 273,719, Jun. 15, 1981, abandoned, which is a continuation of Ser. No. 66,980, Aug. 16, 1979, abandoned, which is a continuation of Ser. No. 954,818, Oct. 26, 1978, abandoned. This application Sep. 14, 1989, Ser. No. 407,671

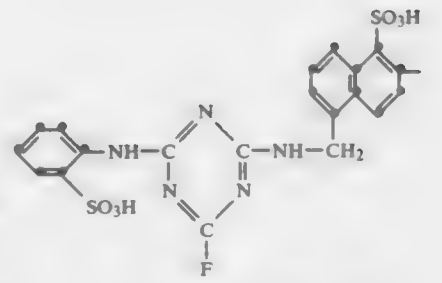
Claims priority, application Luxembourg, Oct. 31, 1977, 78,420

Int. Cl.[5] C09B *62/085, 62/09;* **D06P** *1/382, 3/66*

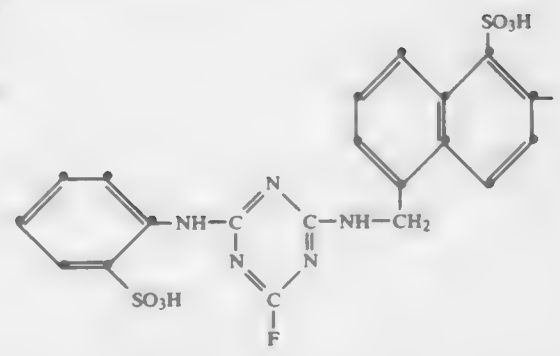
U.S. Cl. 534—635 **4 Claims**

1. A dye of the formula

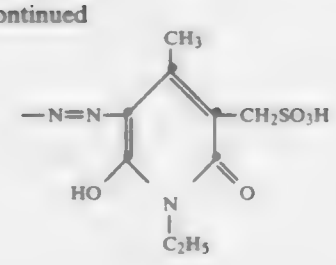
(4)

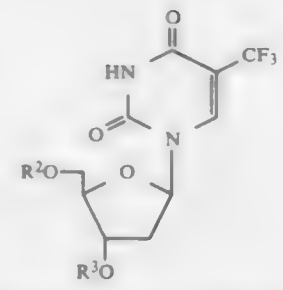


4. A dye of the formula



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(II)

(wherein R^2 and R^3 represent a protective group of a hydroxyl group) which is then subjected to the deprotection reaction to give 2'-deoxy-5-trifluoromethyl-β-uridine.

5,006,646

PROCESS FOR PREPARING 2'-DEOXY-5-TRIFLUOROMETHYL-BETA-URIDINE

Kazuo Itoh; Yoshitake Naoi, both of Tokyo; Hajime Matsushita, Kanagawa; Takashi Ebata, Kanagawa, and Hiroshi Kawakami, Kanagawa, all of Japan, assignors to Yuki Gosei Kogyo Co., Ltd. and Japan Tobacco Co., both of Tokyo, Japan

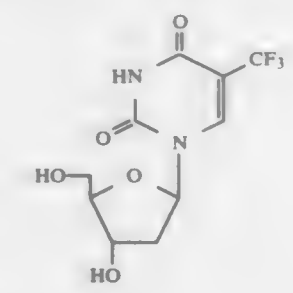
Filed Feb. 20, 1990, Ser. No. 484,974

Claims priority, application Japan, Feb. 22, 1989, 1-40156

Int. Cl.[5] C07H *1/00*

U.S. Cl. 536—23 **2 Claims**

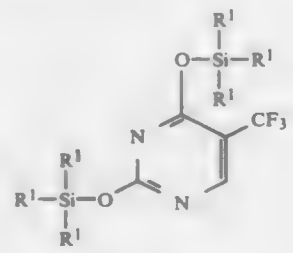
1. A process for preparing 2'-deoxy-5-trifluoromethyl-β-uridine represented by the formula (I)



(I)

which comprises condensing:

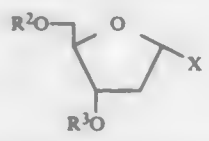
a 5-trifluoromethyl-2,4-bis(triorganosilyloxy)pyrimidine represented by the formula (IV)



(IV)

(wherein R^1 represents an alkyl group, a substituted alkyl group or a phenyl group)

and a 1-halogeno-2-deoxy-α-D-erythro-pentofuranose derivative represented by the formula (III)



(III)

(wherein R^2 and R^3 represent a protective group of a hydroxyl group, and X represents a halogen atom) in chloroform to give a 1-(2-deoxy-β-D-erythro-pentofuranosyl)-5-trifluoromethyluracil derivative represented by the formula (II)

5,006,647

PHOSPHORUS CONTAINING DISACCHARIDE DERIVATIVES

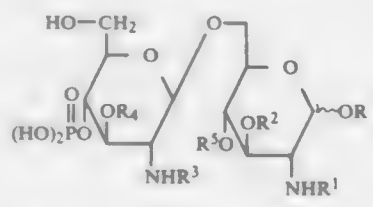
Tsuneo Kusama; Tsunehiko Soga, both of Tokyo, and Tetsuo Shiba, Osaka, all of Japan, assignors to Daiichi Seiyaku Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1988, Ser. No. 162,932

Int. Cl.[5] C07H *13/00, 5/00, 21/00;* **C07G** *3/00*

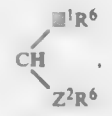
U.S. Cl. 536—117 **4 Claims**

1. A compound represented by formula (I):

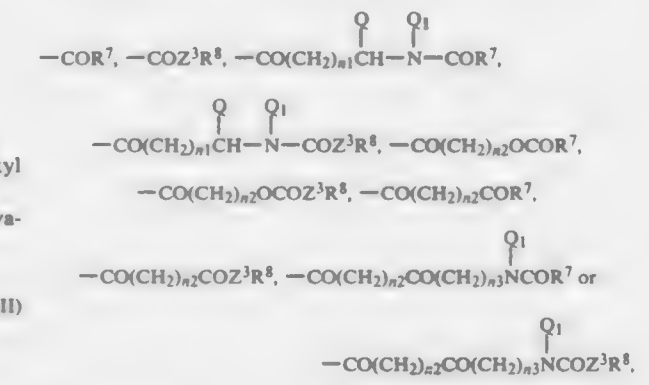


(I)

wherein R represents ZR^6 or



wherein Z, Z^1, and Z^2 each represents an alkylene group having from 1 to 6 carbon atoms, and R^6 represents a carboxyl group or a phosphonoxy group; R^1, R^2, R^3, and R^4 each represents



wherein R^7 represents an unsubstituted alkyl group having from 1 to 30 carbon atoms or an alkyl group having 1 to 30 carbon atoms substituted with one or more hydroxyl groups, Z^3 represents an alkylene group having from 1 to 9 carbon atoms, R^8 represents an unsubstituted cycloalkyl group having from 3 to 12 carbon atoms or a cycloalkyl group having 3 to 12 carbon atoms substituted with one or more hydroxyl groups, Q represents a hydrogen atom, an alkyl group having from 1 to 6 carbon atoms, —$CONH_2$, —COOH or —CH_2OH, Q_1 represents a hydrogen atom or an alkyl group having from 1 to 20, carbon atoms, n1 represents 0 or an integer of from 1 to 20, and n2 and n3 each represents an integer of from 1 to 20; and R^5 represents a hydrogen atom, a phosphono group or $—CO(CH_2)_mCOOH$, wherein m represents 0 or an integer of from 1 to 6; and a salt thereof.

5,006,648

PROCESS FOR PREPARING PARTIAL POLYOL FATTY ACID ESTERS

Pleun Van der Plank, De Lier, and Adrianus Rozendaal, Vlaardingen, both of Netherlands, assignors to Van den Bergh Foods Co., Division of Conopco Inc., New York, N.Y.

Filed Jul. 22, 1987, Ser. No. 76,445

Claims priority, application Netherlands, Jul. 23, 1986, 8601904

Int. Cl.[5] C07H *13/06*

U.S. Cl. 536—119 **21 Claims**

1. A process for the preparation of partial polyol fatty acid esters no more than half of the polyol hydroxyl groups whereof have been esterified with fatty acids by reacting one or more fatty acid alkyl esters with a polyol having at least 4 hydroxyl groups in the presence of an alkaline catalyst, comprising the steps of (a) mixing the polyol with the alkaline catalyst in the presence of a non-toxic and easily removable solvent selected from the group consisting of C_{1-5} alcohols, C_{1-5} ketones and water, at 10° C. to 80° C. to form a liquid system in which the alkaline catalyst may react with the polyol forming a catalytically active polyol anion, (b) combining this liquid system with excess fatty acid lower alkyl ester, (c) after removal of the solvent, reacting the mixture thus formed under conditions such that said polyol fatty acid esters are formed, and (d) separating the partial polyol fatty acid esters so formed from the other reaction products and starting materials.

5,006,649

3-PROPENYLCEPHEM DERIVATIVE

Takashi Kamiya; Toshihiko Naito; Shigeto Negi; Yuuki Komatu; Yasunobu Kai, all of Ibaraki; Takaharu Nakamura, Chiba; Isao Sugiyama, Ibaraki; Yoshimasa Machida, Ibaraki; Seiichiro Nomoto, Ibaraki; Kyosuke Kitoh, Ibaraki; Kanemasa Katsu, Ibaraki, and Hiroshi Yamauchi, Ibaraki, all of Japan, assignors to Eisai, Co., Tokyo, Japan

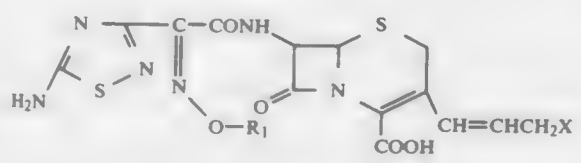
Division of Ser. No. 107,631, Oct. 13, 1987, Pat. No. 4,921,850. This application Jan. 11, 1990, Ser. No. 463,519

Claims priority, application Japan, Oct. 13, 1986, 61-241480; Nov. 6, 1986, 61-262799; Dec. 10, 1986, 61-292574; Feb. 3, 1987, 62-21866; Sep. 3, 1987, 62-219230; Sep. 7, 1987, 62-222147

Int. Cl.[5] C07D *501/24;* **A61K** *31/545*

U.S. Cl. 540—222 **5 Claims**

1. A compound of the formula:



wherein R_1 represents a fluoro-substituted lower alkyl group or a cyano-substituted lower alkyl group, and X represents iodine, bromine or chlorine, a compound wherein said amino group and/or carboxyl groups are protected with a protective group, or a salt thereof.

5,006,650

NOVEL N-1 SUBSTITUTED BETA-LACTAMS AS ANTIBIOTICS

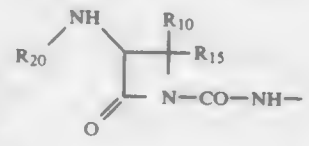
Michael R. Barbachyn, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 13,401, Feb. 11, 1987, abandoned. This application Aug. 7, 1989, Ser. No. 424,313

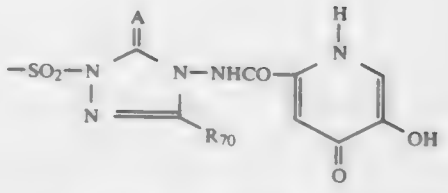
Int. Cl.[5] A61K *31/64;* **C07D** *401/12, 417/14, 205/085*

U.S. Cl. 540—363 **5 Claims**

1. A compound of Formula I



Formula I



and pharmacologically acceptable salts thereof; wherein R_{10} and R_{15} are the same or different and are

(a) hydrogen,

(b) (C_1–C_{12}) alkyl

(c) (C_2–C_8) alkenyl,

(d) (CThd 2–C_8) alkynyl,

(e) —$CH_2OCOCH_2NHR_4$,

(f) —$CH_2OCO_2R_{30}$,

(g) —CH_2F, or

(h) —CHF_2;

wherein R_4 is hydrogen or —COH;

wherein R_{30} is (C_1–C_8) alkyl;

wherein R_{20} is an acyl group derived from a carboxylic acid;

wherein A is oxygen or sulfur;

wherein R_{70} is

(a) hydrogen,

(b) (C_1–C_8) alkyl,

(c) phenyl,

(d) —OH, or

(e) —SH;

where each R_{70} member of (b) or (c) may optionally be substituted by 1 to 2 substituents selected from the group consisting of halogen, hydroxy, and amino.

5,006,651

PHOSPHINIC ACID DERIVATIVES

Michael J. Broadhurst, Royston; Balraj K. Handa, Welwyn Garden City; William H. Johnson; Geoffrey Lawton, both of Hitchin, and Peter J. Machin, London, all of England, assignors to Hoffman-La Roche Inc., Nutley, N.J.

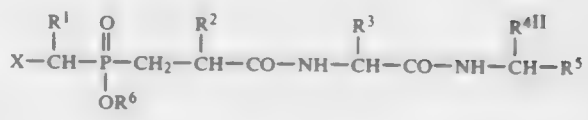
Division of Ser. No. 126,643, Dec. 1, 1987, Pat. No. 4,885,283. This application Sep. 22, 1989, Ser. No. 410,779

Claims priority, application United Kingdom, Dec. 15, 1986, 8629876; Sep. 22, 1987, 8722245

Int. Cl.[5] C07F *9/32, 9/553, 9/572, 9/576*

U.S. Cl. 540—463 **13 Claims**

1. A compound of the formula



wherein

R^1 is a hydrogen, C_1–C_6-or phenyl-(C_1–C_6-alkyl) wherein phenyl is unsubstituted or substituted with one or more

substituents selected from C_1–C_6-alkyl, C_1–C_6-alkoxy, halogen or trifluoromethyl;

R^2 is a C_2–C_5-alkyl;

R^3 is isopropyl, isobutyl, benzyl, p-hydroxybenzyl, hydroxymethyl, mercaptiomethyl, 1-hydroxyethyl, 2-methylthioethyl, carboxymethyl, 2-carboxyethyl, 3-quanidinopropyl or aminobutyl, wherein a hydroxy group can be protected by a tert-butylbenzyl, tetrahydropyranyl or acetyl group, a mercapto group can be protected by a tert-butyl or benzyl group, an amino group can be acylated by a tert, butoxycarbonyl, benzyloxycarbonyl, formyl, trityl, trifluoroacetyl, 2-(biphenylyl)isopropoxycarbonyl or isobornyloxycarbonyl group, or can be sulfonylated by a C_1–C_6-alkane-sulfonyl, benzenesulfonyl or p-toluenesulfonyl group, and a carboxyl group can be amidated to an aminocarbonyl, (C_1–C_6-alkyl-)aminocarbonyl, di(C_1–C_6-alkyl)aminocarbonyl or phenylaminocarbonyl;

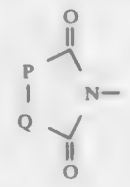
R^4 is a hydrogen or methyl; or

R^3 and R^4 taken together are a group of the formula —$(CH_2)_n$—in which n is an integer from 4 to 11 inclusive;

R^5 is a hydrogen, C_1–C_6-alkyl, carboxyl, C_1–C_6-alkoxycarbonyl or C_1–C_6-alkylaminocarbonyl;

R^6 is C_1–C_6-alkyl; and

X is either cyclic imido group of the formula



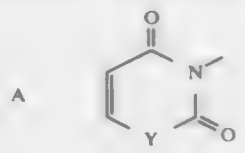
(b)

wherein

P and Q taken together are a group of the formula —CH(R′)—CH(R′)—, —CH(R′)—CH(R′)—CH(R′)—, —O—CH(R′)—, —N(R′)—CH(R′)—, —N(R′)—N(R′)—, —N=N—or —C(R′)=C(R′)—in which each

R′is a hydrogen; C_1–C_6-alkyl; phenyl unsubstituted or substituted with one or more substituents selected form C_1–C_6-alkyl, C_1–C_6-alkoxy, halogen or trifluoromethyl; phenyl-(C_1–C_6-alkyl) wherein phenyl is unsubstituted or substituted with one or more substituents selected from C_1–C_6-alkyl, C_1–C_6-alkoxy, halogen or trifuoromethyl; C_1–C_6-alkanoylamino; or an acylamino group of the formula H_2N—CH(R)—CONH—wherein R is isopropyl, isobutyl, benzyl, p-hydroxybenzyl, hydroxymethyl, mercaptomethyl, 1-hydroxyethyl, 2-methylthioethyl, carboxymethyl, 2-carboxyethyl, 3-quanidinopropyl or aminobutyl, in which the amino group can be protected by a tert.butoxycarbonyl, benzyloxycarbonyl, formyl, trityl, trifluoroacetyl, 2-(biphenylyl)-isopropoxycarbonyl or isobornyloxycarbonyl group, or

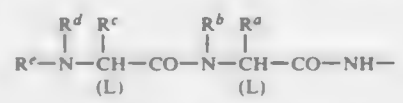
P and Q taken together are unsubstituted 1,2-phenylenethienylene, 1,2-naphthylene, 2,3-naphthylene, 1,8-naphthylene or 2,3-anthrylene or substituted by one or more substituents selected from C_1–C_6-alkyl, C_1–C_6-alkoxy, halogen, hydroxy, phenyl-(C_1–C_6-alkoxy) wherein phenyl is unsubstituted or substituted with one or more substituents selected from C_1–C_6-alkyl, C^1–C^6-alkoxy, halogen or trifluoromethyl, nitro, amino, C_1–C_6-alkanoyl-amino, mono(C_1–C_6-alkyl)amino, di(C_1–C_6-alkyl)-amino and C_1–C_6-alkylsulfonylamino; or a group of the formula



(c)

wherein

A is a residue of benzene, naphthalene or enthracene which is unsubstituted or substituted by one or more substituents selected from C_1–C_6-alkyl, C_1–C_6-alkoxy, halogen, hydroxy, phenyl-(C_1–C_6-alkoxy) wherein phenyl is unsubstituted or substituted with one or more substituents selected from C_1–C_6-alkyl, C_1–C_6-alkoxy, halogen or trifluoromethyl, nitro, amino, C_1–C_6-alkanoyl-amino, mono (C_1–C_6-alkyl)amino, di(C_1–C_6-alkyl)-amino and C_1–C_6-alkylsulfonylamino and Y is —O—, —NH—or NR^a in which R^1 is hydrogen or C_1–C_6-alkyl, or a group of the formula



(a)

Ra is isopropyl, isobutyl, benzyl, p-hydroxybenzyl, hydroxymethyl, mercaptomethyl, 1-hydroxyethyl, 2-methylthioethyl, carboxymethyl, 2-carboxyethyl, 3-quanidinopropyl or aminobutyl, wherein a hydroxy group can be protected by a tert-butyl benzyl, tetrahydropyranyl or acetyl group, a mercapto group can be protected by a tert-butyl or benzyl group, an amino group can be acylated by a tert. butoxycarbonyl, benzyloxycarbonyl, formyl, trityl, trifluoroacetyl, 2-(biphenylyl)isopropoxycarbonyl or isobornyloxycarbonyl group,, or can be sulfonylated by a C_1–C_6-alkane-sulfonyl, benzenesulfonyl or p-toluenesulfonyl group, and a carboxyl group can be amidated to an aminocarbonyl, (C_1–C_6-alkyl-)aminocarbonyl, di(C_1–C_6-alkyl)-amino-carbonyl or phenylaminocarbonyl,

R^b is hydrogen or

R^a and R^b taken together are trimethylene.

R^c is isopropyl, isobutyl, benzyl, p-hydroxybenzyl, hydroxymethyl, mercaptomethyl, 1-hydroxyethyl, 2-methylthioethyl, carboxymethyl, 2-carboxyethyl, 3-quanidinopropyl or aminobutyl, wherein a hydroxy group can be protected by a tert-butyl benzyl, tetrahydropyranyl or acetyl group, a mercapto group can be protected by a tert-butyl or benzyl group, an amino group can be acylated by a tert. butoxycarbonyl, benzyloxycarbonyl, formyl, trityl, trifluoroacetyl, 2-(biphenylyl)isopropoxycarbonyl or isobornyloxycarbonyl group,, or can be sulfonylated by a C_1–C_6-alkane-sulfonyl, benzenesulfonyl or p-toluenesulfonyl group, and a carboxyl group can be amidated to an aminocarbonyl, (C_1–C_6-alkyl)aminocarbonyl, di(C_1–C_6-alkyl)-amino-carbonyl or phenylaminocarbonyl,

R^d is hydrogen or

R^c and R^d taken together are trimethylene and R^3 is a protecting group selected from tert. butoxycarbonyl, benzyloxycarbonyl, formyl, trityl, trifluoroacetyl, 2-(biphenylyl)-isopropoxycarbonyl or isobornyloxycarbonyl, acyl is derived from a hydroxymethyl, mercaptomethyl, 1-hydroxyethyl, 2-methylthioethyl, carboxymethyl, 2-carboxyethyl, 3-quanidinopropyl or aminobutyl, wherein a hydroxy group can be protected by a tert-butyl benzyl, tetrahydropyranyl or acetyl group, a mercapto group can be protected by a tert-butyl or benzyl group, an amino group can be acylated by a tert. butoxycarbonyl, benzyloxycarbonyl, formyl, trityl, trifluoroacetyl, 2-(biphenylyl)isopropoxycarbonyl or isobornyloxycarbonyl group,, or can be sulfonylated by a C_1–C_6-alkane-sulfonyl, benzenesulfonyl or p-toluenesulfonyl group, and a carboxyl group can be amidated to an aminocarbonyl, (C_1–C_6-alkyl)aminocarbonyl, di(C_1–C_6-alkyl)-amino-carbonyl or phenylaminocarbonyl,alkanoic) acid wherein phenyl is unsubstituted or substituted with one or more substituents selected from C_1–C_6-alkyl, C_1–C_6-alkoxy, halogen or trifluoromethyl, C_1–C_6-alkyl-sulfonyl or phenyl-sulfonyl wherein phenyl is unsubstituted or substituted with one or more substituents selected from C_1–C_6-alkyl, C_1–C_6-alkoxy, halogen or trifluoromethyl.

5,006,652

INTERMEDIATES FOR ANTIBODY-VINCA DRUG CONJUGATES

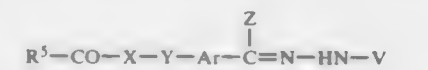
George J. Cullinan, Trafalgar; Bennett C. Laguzza, and William L. Scott, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 8, 1988, Ser. No. 230,084

Int. Cl.[5] C07D *519/04;* A61K *31/475, 39/44;* C07K *15/28*

U.S. Cl. 540—478 7 Claims

1. An intermediate of the formula



wherein

R^5 is hydroxy, an acid-activating group, a moiety which completes a salt, or an acid-protecting group;

Z is hydrogen or C_1–C_3 unbranched alkyl;

X is a bond, C_1–C_4 alkylene, C_2–C_4 alkenylene, or amino-C_1–C_4 alkylene;

Y is a bond, carbonyl, —O—, —S—, or sulfonyl, provided that Y is not a bond, —O—, or —S—when X is aminoalkylene, and that Y is not —O—, —S—, or sulfonyl when X is a bond;

Ar is pyrrolyl, m-phenyl, or p-phenyl, which phenyl groups may be mono- or disubstituted with bromo, chloro, fluoro, methoxy, nitro or C_1–C_3 alkyl;

V is a vinca drug of the formula

wherein R is H, CH_3 or CHO; when R^2 and R^3 are taken singly, R^3 is H, and one of R^1 and R^2 is ethyl and the other is H or OH; when R^2 and R^3 are taken together with the carbons to which they are attached, they form an oxirane ring in which case R^1 is ethyl; R^4 is H, (C_1–C_3 alkyl)-CO, or chlorsubstituted (C_1–C_3 alkyl)-CO.

5,006,653

ALKYLCARBAMYLMETHYLATED AMINO-TRIAZINES

Peter S. Forgione, and Balwant Singh, both of Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 864,627, May 16, 1986, Pat. No. 4,710,542. This application Nov. 12, 1987, Ser. No. 120,285

Int. Cl.[5] C07D *251/70, 251/18*

U.S. Cl. 544—196 8 Claims

1. A triazine compound selected from

(i) a triaminotriazine compound of the formula $C_3N_6(CH_2OR)_{6-x}(CH_2NHCOOR^1)_x$, or;

(ii) a benzoguanamine compound of the formula $C_3N_5(C_6H_5)(CH_2OR)_{4-y}(CH_2NHCOOR^1)_y$, or;

(iii) an oligomer of (i) or (ii), wherein the R groups are, independently, hydrogen or alkyl from 1 to 12 carbon atoms, the R^1 groups are, independently, alkyl from 1 to 12 carbon atoms, x is in the range of from about 2 to about 6, and y is in the range of from 2 to about 4.

5,006,654

METHOD OF PREPARING TRISODIUM 2,4,6-MERCAPTO-S-TRIAZINE NONAHYDRATE

Karl Ludwig, Kapellen; Edwin van Raemdonck, Beveren, both of Belgium; Klaus Stützel, Frankfurt, Fed. Rep. of Germany, and Marcel Vingerhoets, Brecht, Belgium, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 236,842, Aug. 26, 1988, Pat. No. 4,849,517. This application May 23, 1989, Ser. No. 355,462

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1987, 3729029

Int. Cl.[5] C07D *251/38*

U.S. Cl. 544—219 8 Claims

1. A method of preparing the trisodium salt of 2,4,6-trimercapto-s-triazine nonahydrate (TMT-$Na_3.9H_2O$) which comprises reacting cyanuric chloride in an aqueous medium at a temperature of 20 to 70° C. with a compound selected from the group consisting of NaSH, Na_2S and an NaSH/Na_2S mixture, the total amount of sulfur in said compound corresponding to threefold the molar amount of cyanuric chloride, while maintaining the pH above 7 during the reaction, and, following the reaction, cooling the reaction mixture 0 to 20° C. and separating the crystallized TMT-$Na_3.9H_2O$.

5,006,655

PROCESS FOR THE PREPARATION OF TETRAHYDROFOLATES

Hans R. Müller, Schaffhausen; Martin Ulmann, Dachsen; Josef Conti, Schaffhausen, all of Switzerland, and Günter Mürdel, Tengen-Büsslingen, Fed. Rep. of Germany, assignors to Eprova AG, Schaffhausen, Switzerland

Filed Jun. 29, 1989, Ser. No. 373,007

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1988, 3821875

Int. Cl.[5] C07D *475/04*

U.S. Cl. 544—258 16 Claims

1. In a process for the preparation of 5,10-methenyl-(6R)-, 5-formyl-(6S)-, or 5-methyl-(6S)-tetrahydrofolic acid, or a salt thereof, the latter two from the former, in a form substantially free of its 6-diastereomer, the step of fractionally crystallizing 5,10-methenyl-(6R,S)-tetrahydrofolic acid or a strong acid salt thereof, to obtain substantially enriched 5,10-methenyl-(6R)-tetrahydrofolic acid or a salt thereof with a non-reactive strong acid, wherein said substantially enriched 5,10-methenyl-(6R)-tetrahydrofolic acid or said salt thereof is present in at least a 70% by weight concentration.

5,006,656

PREPARATION OF 5,7-DIHYDROXY-1,2,4-TRIAZOLO[1,5-A]PYRIMIDINE-2-SULFONANILIDES

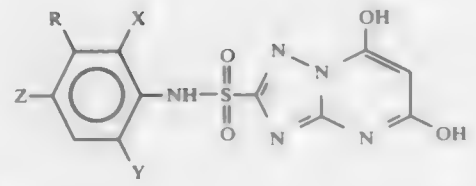
Ravi B. Shankar, and R. Garth Pews, both of Midland, Mich., assignors to DowElanco, Indianapolis, Ind.

Filed Feb. 26, 1990, Ser. No. 484,960

Int. Cl.[5] C07D *403/14*

U.S. Cl. 544—263 10 Claims

1. A process for the preparation of an N-(aryl)-5,7-dihydroxy-1,2,4-triazolo[1,5-a]pyrimidine-2-sulfonamide of the formula



wherein

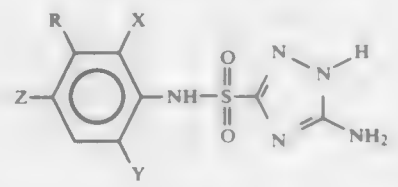
X represents H, F, Cl, Br, lower alkyl or lower alkoxy,

Y represents H, F, Cl, Br, CF_3 or NO_2,

R represents H, lower alkyl or lower alkoxy, and

Z represents H, Cl or Br,

consisting essentially of contacting an N-(3-(((aryl)amino)sulfonyl)-1H-1,2,4-triazol-5-yl)amine of the formula:



wherein

X, Y, R and Z are as previously defined,

with a malonyl halide in a polar aprotic solvent in the presence of the acid generated during the course of the reaction.

5,006,657

INTERMEDIATES IN A RESOLUTION PROCESS FOR RACEMIC SPIRO HYDANTOINS

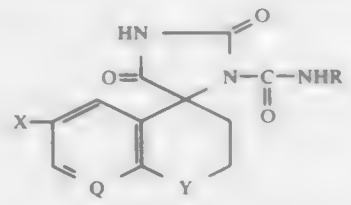
Marcus Brackeen, Durham, N.C., and Harry R. Howard, Jr., Hartford, Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 224,966, Jul. 27, 1988, Pat. No. 4,952,694. This application Jun. 25, 1990, Ser. No. 543,986

Int. Cl.[5] C07D *215/38, 491/10*

U.S. Cl. 546—18 **5 Claims**

1. A diastereomeric ureido compound of the formula



wherein:

X is hydrogen, fluorine, chlorine, bromine, C_1–C_4 alkyl or C_1–C_4 alkoxy;

Q is methine or nitrogen;

Y is methylene, oxygen or sulfur; and

R is (S)- or (R)-1-phenylethyl or (S)- or (R)-1-(1-naphthyl-)ethyl.

5,006,658

PESTIDICAL PYRIDYLOXY-DODECA-2,4-DIENOATES AND PHOSPHORIMIDATES THEREOF

Robert J. Blade, Berkhamsted, England, assignor to The Wellcome Foundation Ltd., Beckenham, England

Filed Nov. 25, 1987, Ser. No. 125,404

Claims priority, application United Kingdom, Nov. 28, 1987, 8728467

Int. Cl.[5] C07D *213/64, 213/65; C07F 9/08*

U.S. Cl. 546—24 **4 Claims**

1. A compound of the Formula:

$$Ar—O—(CH_2)_m—CH_2—(CH_2)_n(CE^1=CE^2)_d-CE^3=CE^4)COZ^1$$

where Ar is 2-pyridyl, 3-pyridyl or 4-pyridyl, in ech case unsubstituted or substituted by one or more substituents selected from the group consisting of halo, $—CF_3$ and $—SCF_3$, the sum of m and n is 4 to 6, E^1 to E^4 are each independently hydrogen, C_{1-4}-alkyl, halo-C_{1-4}-alkyl or halo, a is 0 or 1, and Z^1 is hydroxy, or a phosphorimidate group —P(O) (O-phenyl)NH-phenyl.

5,006,659

PREPARATION OF 7-CHLOROQUINOLINE-8-CARBOXYLIC ACIDS

Helmut Hagen, Frankenthal; Jacques Dupuis, Ludwigshafen, and Heinz Eilingsfeld, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

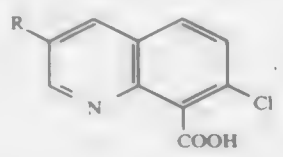
Continuation of Ser. No. 158,910, Feb. 22, 1988, abandoned. This application Jan. 16, 1990, Ser. No. 464,568

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1987, 3706792

Int. Cl.[5] C07D *215/48*

U.S. Cl. 546—170 **7 Claims**

1. A process for preparing a 7-chloroquinoline-8-carboxylic acid of the formula (I)



(I)

where

R is methyl, by direct oxidation of the corresponding 8-methylquinoline compound in the presence of sulfuric acid, which comprises performing the oxidation with nitric acid or nitrogen dioxide in the presence of a vanadium(V) or vanadium (IV) compound, said vanadium compound being soluble in sulfuric acid or a mixture of sulfuric acid and nitric acid.

5,006,660

PROCESS FOR PRODUCING ALKOXYBENZENE COMPOUND AND ARYLOXYBENZENE COMPOUND

Katsuyoshi Yamakawa, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

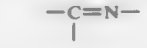
Filed Jun. 28, 1989, Ser. No. 372,544

Claims priority, application Japan, Jun. 29, 1988, 63-159419

Int. Cl.[5] C07C *231/12; C07D 213/74*

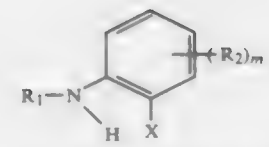
U.S. Cl. 546—316 **23 Claims**

1. A process for producing an alkoxybenzene compound or an aryloxybenzene compound, which comprises reacting a halogenobenzene compound represented by formula (I) with an alcohol or a phenol compound represented by R_3OH in the presence of copper or a copper compound, a tertiary amine having



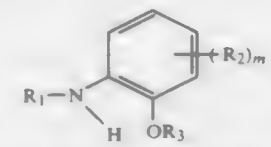
in its structure, and a base to obtain an alkoxybenzene compound or an aryloxybenzene compound represented by Formula (II):

Formula (I)



wherein X represents a halogen atom, R_1 represents a heterocyclic residue, an acyl group, an alkylsulfonyl group, an arylsulfonyl group, a carbamoyl group, a sulfamoyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, an alkoxysulfonyl group, or an aryloxysulfonyl group, R_2 represents a group that can be substituted onto an aromatic ring, m is an integer of 0 to 4, R_1 and R_2 may bond together to form a 5- to 7-membered ring, R_2 groups may bond together to form a 5- to 7-membered ring, and when m is 2 or over, R_2 groups may be the same or different,

Formula (II)



wherein R_1, R_2 and m have the same meaning as in formula (I), and R_3 represents an alkyl group or an aryl group.

5,006,661

SELECTIVE STEREOSPECIFIC BIOLOGICALLY ACTIVE BETA-LACTAMS

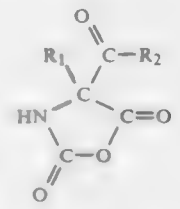
Richard A. Day, Cleves, Ohio, and John Wallace, Covington, Ky., assignors to University of Cincinnati, Cincinnati, Ohio

Division of Ser. No. 62,856, Jun. 16, 1987, Pat. No. 4,855,419. This application Jul. 19, 1989, Ser. No. 382,531

Int. Cl.[5] C07D *263/04*

U.S. Cl. 548—227 **2 Claims**

1. A cyclic anhydride compound having the formula:



wherein R_1 and R_2 are independently selected from the group consisting of hydrogen, aryl, aralkyl and saturated and unsaturated alkyl groups.

5,006,662

MANUFACTURING PROCESS FOR A NAPHTHOTRIAZOLE STILBENE FLUORESCENT AGENT

Richard B. Lund, Jackson, and Glenn W. Brown, Wagarville, both of Ala., assignors to Ciba-Geigy Corp., Ardsley, N.Y.

Continuation of Ser. No. 259,506, Oct. 17, 1988, abandoned, which is a continuation of Ser. No. 33,382, Apr. 2, 1987, abandoned. This application Oct. 19, 1989, Ser. No. 423,721

Int. Cl.[5] C07D *249/24*

U.S. Cl. 548—260 **7 Claims**

1. In a process for preparing 2-(stilbyl-4'')-(naphtho-1',2':4,5)-1,2,3-triazole-2''-sulfonic acid which involves the steps of diazotizing p-aminostilbene sulfonic acid, coupling the resulting diazonium salt with Tobias acid and then oxidizing the resulting monoazo sodium salt with air in a mixture of 2-butoxyethanol and water in the presence of a copper salt catalyst for a time sufficient to effect ring-closure, wherein the improvement comprises performing the ring-closure oxidation step with pressurized air at temperatures in the range of 105°–160° C. and at pressures in the range of 10–80 psig and in a reaction mixture which contains from 15 to 50 weight percent of 2-butoxyethanol.

5,006,663

PHOSPHORUS-CONTAINING CYCLIC NITROXIDE FREE RADICALS

Yves Berchadsky, Marseille; Nelly Kernevez, Grenoble; Francois Le Moigne; Anne Mercier, both of Marseille; Liliane Secourgeon, Saint Egreve, and Paul Tordo, Marseille, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

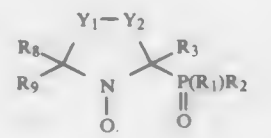
Filed Nov. 8, 1989, Ser. No. 433,597

Claims priority, application France, Nov. 21, 1988, 88 15107

Int. Cl.[5] C07F *9/40, 9/42, 9/44, 9/53*

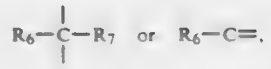
U.S. Cl. 548—412 **4 Claims**

1. A cyclic nitroxide radical having the formula (I):

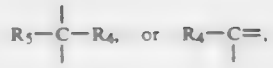


(I)

in which Y_1 represents



Y_2 represents



wherein when Y_1 represents



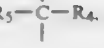
then Y_2 is



and when Y_1 represents



Y_2 is



in which R_1 and R_2 are independently chosen from the group consisting of deuterated or undeuterated alkyl, alkoxyl, dial-

kylamino and phenyl groups, hydrogen atoms, deuterium or chlorine; R_3, R_8 and R_9 are independently selected from the group consisting of deuterated or undeuterated alkyl, alkoxyl and phenyl groups; R_4, R_5, R_6 and R_7 are each independently selected from the group consisting of deuterated or undeuterated alkyl, alkoxyl, dialkylamino and phenyl groups, COOH, OH, OD, H, D, a halogen, and COOR in which R is an alkyl group.

5,006,664

AMINOALKYLTHIODIBENZOTHIEPINS AND RELATED COMPOUNDS

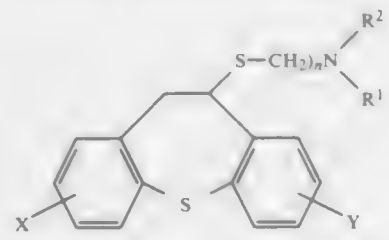
Helen H. Ong, Whippany; Vernon B. Anderson, High Bridge, both of N.J., and James A. Profitt, Goshen, Ind., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Continuation of Ser. No. 14,747, Feb. 13, 1987, abandoned, which is a division of Ser. No. 546,642, Oct. 28, 1983, Pat. No. 4,668,695, which is a continuation-in-part of Ser. No. 174,487, Aug. 1, 1980, abandoned, which is a continuation of Ser. No. 85,751, Oct. 17, 1979, abandoned, which is a continuation-in-part of Ser. No. 860,082, Dec. 13, 1977, abandoned. This application Dec. 20, 1989, Ser. No. 453,872

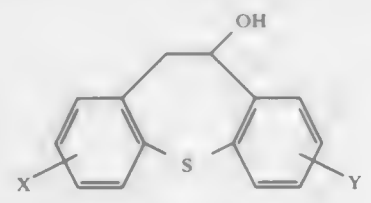
Int. Cl.[5] C07D *337/14*

U.S. Cl. 549—12 **4 Claims**

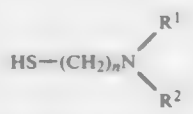
1. A method for preparing a compound of the formula



in which X and Y are the same or different and each can be hydrogen, halogen, trifluoromethyl, loweralkoxy, loweralkythio, loweralkylsulfonyl, loweralkylsulfinyl, amino, hydroxy or nitro; R^1 and R^2 are the same or different and each can be straight or branched chain loweralkyl; and n is an integer of from 2 to 4 which comprises reacting a 10,11-dihydro-10-hydroxydibenz[b,f]thiepin of the formula



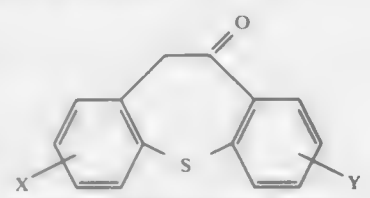
with an aminoalkylthiol of the formula



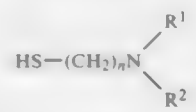
in the presence of boron trifluoride etherate and a solvent at a temperature of from about ambient to reflux.

3. A process for preparing a compound of the formula

in which X and Y are the same or different, and each can be hydrogen, halogen, trifluoromethyl, loweralkoxy, loweralkylthio, loweralkylsulfonyl, loweralkylsulfinyl, nitro or amino; R^1 and R^2 are the same or different and each can be straight or branched chain loweralkyl; and n is an integer of from 2 to 4 which comprises reacting a 10,11-dihydro-10-oxodibenzo[b,f]-thiepin of the formula



with an aminoalkylthiol of the formula



in the presence of boron trifluoride etherate and a solvent at a temperature of from about ambient to reflux.

5,006,665

PHENOLIC THIANE DERIVATIVES

Jean Rody, Rieben, and David G. Leppard, Marley, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

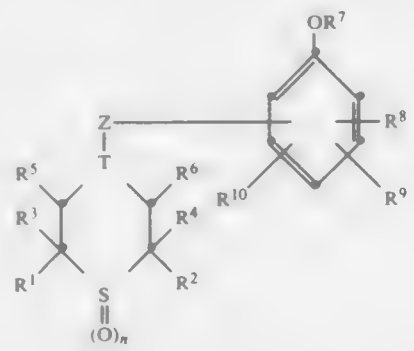
Filed Sep. 29, 1988, Ser. No. 251,082

Claims priority, application Switzerland, Sep. 30, 1987, 3800/87

Int. Cl.[5] C07D *335/02*

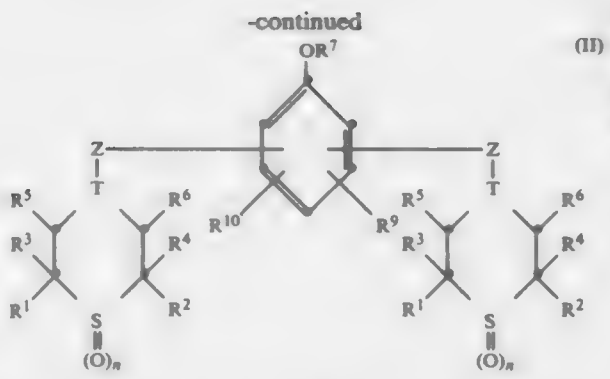
U.S. Cl. 549—28 **7 Claims**

1. A compound of the formula I or II



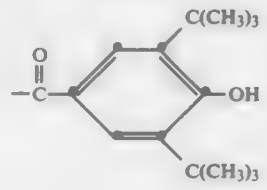
(I)

-continued

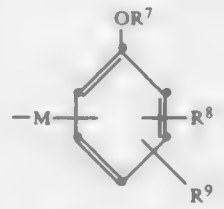


(II)

in which n is 0, 1, or 2, R^1 and R^2 independently of one another are hydrogen or methyl, R^3 and R^4 independently of one another are hydrogen, C_1–C_4alkyl, phenyl, thienyl or phenyl which is substituted by 1 or 2 C_1–C_8alkyl groups, cyclohexyl, phenyl, C_7–C_9phenylalkyl, hydroxyl, C_1–C_{18}alkoxy or halogen, R^5 and R^6 independently of one another are hydrogen, C_1–C_4alkyl, phenyl, —COO(C_1–C_{18}alkyl), —CO—CH_3 *or* —*CO-phenyl*, R^7 is hydrogen, C_1–C_8alkyl or one of the groups —CO—R^{11}, —CO—COO(C_1–C_4-alkyl), —SO_2—R^{12}, —CON(R^{13})(R^{14}), —Si(R^{15})(R^{16})(R^{17}) or

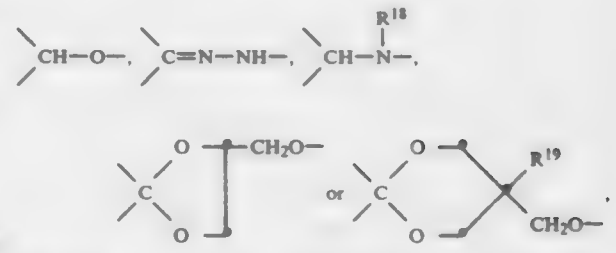


R^8 and R^9 independently of one another are hydrogen, C_1–C_{12}alkyl, C_7–C_9phenylalkyl, C_5–C_8cycloalkyl or phenyl, R^{10} is hydrogen, —OR^7 or a group of the formula III

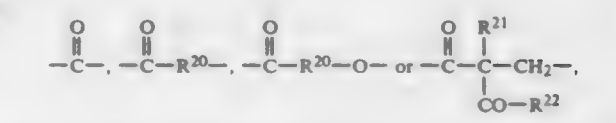


III

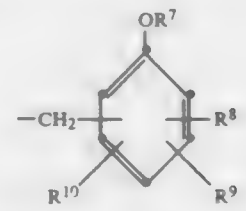
in which M is a direct bond, —O—, —S—, —S—S—, —CH_2—, —CH(C_1–C_8alkyl)- or —$C(CH_3)_2$—, R^{11} is C_1–C_{20}alkyl, C_3–C_{20}alkenyl, C_5–C_{12}cycloalkyl, C_7–C_{13}phenylalkyl, phenyl or naphthyl, R^{12} is C_1–C_{12}alkyl, phenyl, naphthyl or phenyl or naphthyl substituted by C_7–C_{24}alkyl, R^{13} is hydrogen, C_1–C_{12}alkyl or cyclohexyl, R^{14} is C_1–C_{12}alkyl, phenyl, naphthyl, C_1–C_{12}alkylsubstituted phenyl or naphthyl or cyclohexyl, R^{15}, R^{16} and R^{17} independently of one another are C_1–C_{12}alkyl, C_3–C_{12}alkenyl, phenyl, cyclohexyl or benzyl, T is a trivalent group which completes the ring to give a thiane ring and is one of the following groups:



in which R^{18} is hydrogen, C_1–C_{12}alkyl, benzyl, cyclohexyl or phenyl and R^{19} is hydrogen or C_1–C_4alkyl, Z is a divalent bonding member between T and the phenol radical and is one of the following groups:

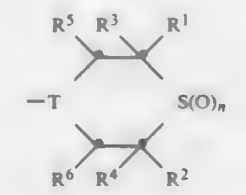


the carbonyl group of which is bonded to T and in which R^{20} is C_1–C_{14}-alkylene, R^{21} is hydrogen, C_1–C_{12}alkyl, phenyl, C_7–C_9phenylalkyl or a group of the formula IV



IV

and R^{22} is a group —O(C_1–C_4alkyl) or a group of the formula V



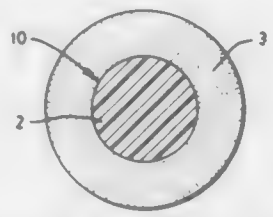
V

5,006,666

ELECTROMAGNETIC SHIELDING GASKET

Claude F. Laborie, Perrosson, France, assignor to Rollin S. A., France

Division of Ser. No. 295,702, Jan. 10, 1989, Pat. No. 4,966,637.
This application Apr. 6, 1990, Ser. No. 506,963
Claims priority, application France, Jan. 13, 1988, 88 00320
Int. Cl.[5] H05K *9/00*
U.S. Cl. 174—35 GC 8 Claims



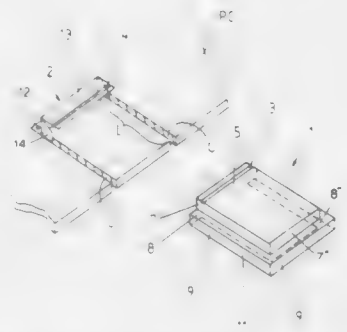
1. An electromagnetic shielding gasket consisting of a core of an elastomeric material coated by at least one layer of an electrically conductive textile material, such that the layer of electrically conductive textile material is at least partially incorporated into the elastomeric material of the core.

5,006,667

METHOD AND APPARATUS FOR SHIELDING A PRINTED CIRCUIT BOARD

Pekka Lonka, Salo, Finland, assignor to Nokia Mobile Phones Ltd., Finland

Filed Jun. 18, 1990, Ser. No. 539,618
Claims priority, application Finland, Jul. 5, 1989, 893282
Int. Cl.[5] H05K *9/00*
U.S. Cl. 174—35 R 8 Claims



1. A shielding housing for shielding a printed circuit board, or a part of it, from disturbances caused by electromagnetic interference (EMI), characterized in that the shielding housing comprises:

a first part (2) which constitutes one separate shielding-housing end, the cross section of which is approximately a -profile with a center part (15) and edge flanges (12, 13) projecting generally perpendicularly in opposite directions from opposite edges of the center part, said first part further including end flanges (14) projecting generally perpendicularly in the same direction from a side of the center part (15) of the -profile;

a second part (1) having a cover (5) and three side walls abutting it and being at an angle to it so as to leave on open side;

a flange-like inside groove being formed in said second part by means of successive bends (8, 9, 11; 8', 9', 11'; 8'', 9'', 11'') at those edges of the side walls which are opposite in relation to the cover, the width of which groove corresponds to the thickness of the printed circuit board (pc); and

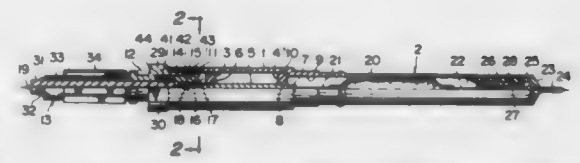
a ridge groove formed in the cover (5) close to the open side and parallel to it.

5,006,668

CONNECTING MECHANISM OF CENTRAL CONDUCTORS OF A COAXIAL CABLE AND A PROBE

Hiroshi Noguchi, Hamura, and Kazuo Kawada, Murayama, both of Japan, assignors to Stack Electronics Co., Ltd., Akishima, Japan

Filed Sep. 22, 1989, Ser. No. 411,570
Claims priority, application Japan, Apr. 26, 1989, 1-48316[U]
Int. Cl.[5] H02G *15/08*
U.S. Cl. 174—75 C 5 Claims



1. A connecting device for establishing electrical contact between an end portion of a central conductor of a coaxial cable and a conducting element of a probe which is fixedly positioned within a surrounding probe casing having an open end, said connecting device comprising a cylindrical fitting fixed to an end portion of a coaxial cable having an axially extending opening defined by a cylindrical side wall for surrounding the end portion of a coaxial cable located therein and spaced from said cylindrical side wall;

a cylindrically shaped elastic member fitted tightly within said cylindrical opening of said fitting having a first cylindrical coaxial recess at a first end thereof to receive the end portion of the coaxial cable and a second coaxial recess at a second end of the elastic member communicating with the first recess to receive the end portion of the central conductor of the coaxial cable;

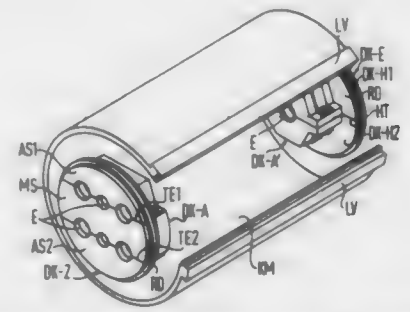
an electrically conductive pin-shaped member forcibly inserted and engaged within said second cavity of said elastic member and in contact with said central conductor of said coaxial cable, and having a flanged end portions adjacent the second end of the elastic member for contacting a probe conducting element fixedly positioned in an open-ended surrounding casing.

5,006,669

END MEMBER FOR A LONGITUDINALLY DIVIDED CABLE SLEEVE

Ernst Bachel, Geltendorf, and Anton-Guenther Licker, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 25, 1990, Ser. No. 528,423
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1989, 3923762
Int. Cl.[5] H02G *15/04*
U.S. Cl. 174—93 16 Claims



1. In an end member for sealing an end of a longitudinally

divided cable fitting, said end member being composed of a plastic material and having adaptable cable entry openings which are formed in a parting plane of the member and which are cut, when desired, said end member having integrated clamping means for gripping the inserted cables, the improvements comprising said end member being divided in a transverse direction into two outer segments and a middle segment, with each segment having a planar surface cooperating with an adjacent segment to form a parting plane therebetween, reinforcing connecting elements being arranged to extend between the segments across the parting plane between two adjacent segments, each of the parting planes having gripping means composed of two cooperating pressure plates guided in chambers provided in the respective sealing member segments, said pressure plates having correspondingly applied entry openings for receiving a cable to be inserted therein, said clamping means including outer pressure means for urging pressure plates in the outer segment inward and inner pressure means for urging the pressure plates of the middle segment outward, said outer pressure means being arranged on the connecting elements.

5,006,670

ELECTRIC POWER CABLE

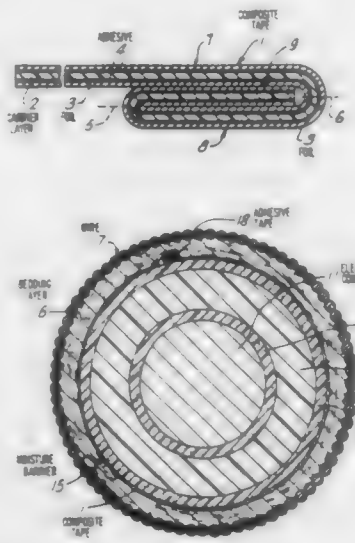
Neil R. Plant, Athens, Canada, assignor to Phillips Cables Ltd., Ontario, Canada

Filed Nov. 20, 1989, Ser. No. 438,008

Claims priority, application United Kingdom, Nov. 25, 1988, 8827681.2

Int. Cl.[5] H01B *7/28*

U.S. Cl. 174—106 SC **13 Claims**



1. An electric power cable comprising at least one cable core consisting of an electric conductor, a conductor screen surrounding the conductor, a dielectric wall of electrically insulating material surrounding the conductor screen, a dielectric screen surrounding the dielectric wall, a moisture-barrier surrounding the dielectric screen and, surrounding the moisture-barrier, a layer of metal or metal alloy, wherein the moisture-barrier of said at least one cable core consists of a composite tape comprising a carrier layer of plastics material which is sandwiched between radially inner and outer substantially fluid-impermeable foils of metal or metal alloy mechanically bonded to major surfaces of the carrier layer and electrically connected together, which composite tape surrounds the dielectric screen of the core with its longitudinally extending edges overlapping and secured to one another throughout their lengths to form a substantially moisture-tight seal between said overlapping edges, the moisture-barrier thereby effecting electrical interconnection between the underlying dielectric screen and the surrounding layer of metal or metal alloy.

5,006,671

GLASS-CLAD SUPERCONDUCTING WIRE

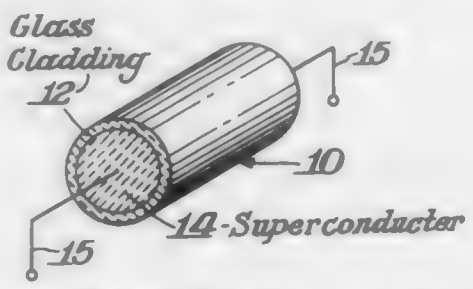
Jan Boeke, P.O. Box 2327, Chapel Hill, N.C. 27514

Continuation-in-part of Ser. No. 234,271, Aug. 19, 1988. This application Sep. 22, 1988, Ser. No. 247,898

The portion of the term of this patent subsequent to Jan. 1, 2008, has been disclaimed.

Int. Cl.[5] H01B *12/00;* **H01L** *39/24*

U.S. Cl. 174—125.1 **17 Claims**



1. A method for producing a glass-clad wire of superconducting material which comprises:

(a) filling a hollow metal container which is sealed at one end with an electrically conductive metal with a superconductive material, providing a layer of glass between the tube and the superconductive material whereby the material is annularly surrounded by a glass layer, and sealing the other end of the tube with an electrically conductive metal,

(b) drawing at least a portion of the filled container through at least one size-reducing die whereby the diameter of the container and its contents is reduced to a wire size, and

(c) heat treating the drawn wire to provide crystallinity in the superconductor material.

5,006,672

APPARATUS FOR STORING HIGH MAGNETIC FIELDS HAVING REDUCED MECHANICAL FORCES AND REDUCED MAGNETIC POLLUTION

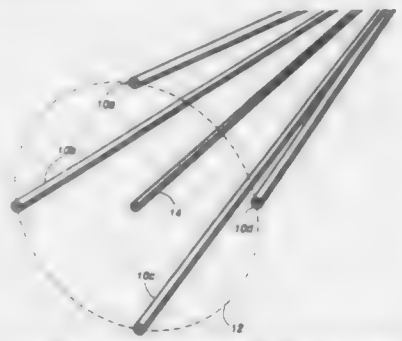
Melvin L. Prueitt; Fred M. Mueller, and James L. Smith, all of Los Alamos, N. Mex., assignors to University of California

Patent, Trademark & Copyright Office, Alameda, Calif.

Filed Mar. 29, 1989, Ser. No. 330,329

Int. Cl.[5] H01B *12/00*

U.S. Cl. 174—125.1 **26 Claims**



1. A magnetic energy storage apparatus having reduced mechanical forces and reduced magnetic pollution, which comprises in combination a set of substantially parallel, electrically isolated, elongated outer conducting elements spaced apart in a substantially equally distant manner around the surface of a cylinder having an axis and a chosen diameter, all of said outer conducting elements having a current flowing therein in a first direction, and a center, elongated conducting element disposed along the axis of the cylinder, said center conducting element having a current flowing therein in a direction opposite to the first direction, and wherein the ratio of the magnitude of the current flowing in said outer conducting elements to the magnitude of the current flowing in said center conducting element is selected such that the net force on said outer conducting elements and on said center conducting element is substantially zero away from the ends thereof.

5,006,673

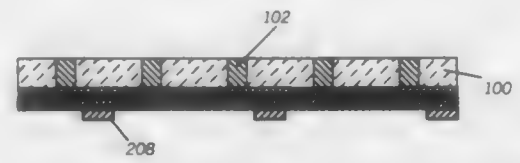
FABRICATION OF PAD ARRAY CARRIERS FROM A UNIVERSAL INTERCONNECT STRUCTURE

Bruce J. Freyman, Sunrise; Barry M. Miles, Plantation, and Jill L. Flaugher, Margate, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 7, 1989, Ser. No. 447,349

Int. Cl.[5] H05K *3/00*

U.S. Cl. 174—255 **20 Claims**



1. A method of manufacturing a chip carrier from a universal ceramic substrate, comprising the steps of:

providing a universal ceramic substrate having first and second opposed sides and an array of conductively filled through-holes pre-formed prior to a firing of said universal ceramic substrate;

providing wire bond pads and conductors connected to said conductively filled through-holes as required on said first side;

providing solder pads on said conductively filled through-holes as required on said second side; and

providing at least one insulating layer over part of said first side for die attachment.

5,006,674

DISTRIBUTOR AND DISTRIBUTOR ROTOR ELECTRODE

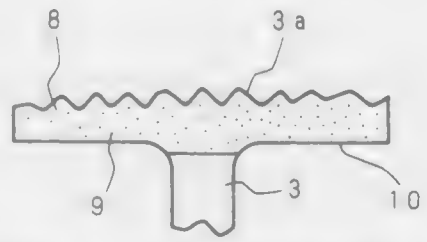
Yutaka Ohashi, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1990, Ser. No. 528,641

Claims priority, application Japan, May 30, 1989, 1-134734; Jun. 16, 1989, 1-152185

Int. Cl.[5] H01H *19/00;* **F02P** *7/02*

U.S. Cl. 200—19 R **6 Claims**



1. A distributor for an internal combustion engine, comprising:

a rotary shaft which rotates in synchronization with a crank shaft of the internal combustion engine;

a distributor rotor fixed to said rotary shaft;

a distributor rotor electrode provided in said distributor rotor; and

a plurality of circumferentially spaced lateral electrodes spaced a discharge gap from a rotation orbit of said distributor rotor electrode;

wherein a noise suppressing mica layer containing mica is formed at least on a part of the surface of a radially outermost portion of said distributor rotor electrode, and

wherein said mica layer is formed of particulate mica material uniformly dispersed in an organic resin.

6. A distributor rotor electrode provided in a distributor rotor of a distributor, comprising:

a noise suppressing mica layer containing mica and being provided at least at one face of a discharging section of said electrode, wherein said mica layer is formed of particulate mica material uniformly disperesed in an organic resin.

5,006,675

JACK WITH A SWITCH

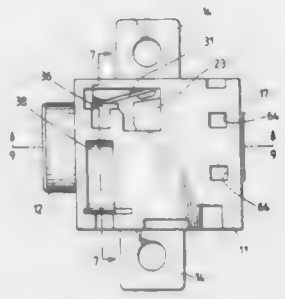
Nobuya Sakaguchi, Nara, Japan, assignor to Hosiden Electronics Co., Ltd., Osaka, Japan

Filed Mar. 30, 1990, Ser. No. 501,756

Claims priority, application Japan, Apr. 3, 1989, 1-39733[U]

Int. Cl.[5] H01H *27/00*

U.S. Cl. 200—51.09 **4 Claims**



1. A jack comprising a body of insulating material having a plug receiving hole therein, said body supporting a plurality of contact pieces and a switch, said contact pieces and switch being so arranged that, when a plug is inserted into said plug receiving hole, said plurality of contact pieces make contact with said plug and said switch is actuated to an ON or OFF state;

said body having a switch housing portion extending from a back face of said body substantially parallel to a central axis of said plug receiving hole, said plug receiving hole being separated by a partition wall from said switch housing portion;

said partition wall having a communicating hole therein through which said switch housing portion and said plug receiving hole communicate with each other;

a separator of insulating material disposed in said switch housing portion along said partition wall;

an actuating projection formed at a forward end portion of sais separator, said actuating projection protruding into said plug receiving hole through said communicating hole;

said switch comprising fixed and movable pieces disposed in said switch housing portion, said movable piece being engaged by said separator, insertion of said plug into said plug receiving hole being operative to engage said actuating projection of said separator to displace said movable piece into or out of contact with said fixed piece;

a first outer wall surface of said body parallel to said central axis of said plug receiving hole having a window communicating with said plug receiving hole;

said body having a first groove extending from said first outer wall surface, along a second outer wall surface of said body perpendicular to said first outer wall surface but parallel to said central axis of said plug receiving hole, to

a third outer wall surface of said body parallel to said first outer wall surface; and

a first one of said plurality of contact pieces being disposed in said first groove, said first contact piece having a stationary portion fixed in said first groove, a ground terminal extending from said stationary portion and projecting out of said first groove, and an elastic contact portion extending from said stationary portion substantially at right angles thereto and along said first outer wall surface of said body, said elastic contact portion having a tip end portion that projects into said plug receiving hole through said window.

5,006,676

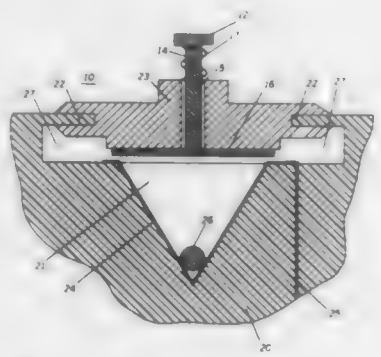
MOVEMENT SENSOR SWITCH

Henry A. Bogut, Coral Springs; Anthony Dolezal, Pompano Beach, and Jose M. Fernandez, Plantation, all of Fla., assignors to Motorola Inc., Schaumburg, Ill.

Filed Dec. 26, 1989, Ser. No. 457,138

Int. Cl.[5] H01H *35/14*

U.S. Cl. 200—61.52 **19 Claims**



1. A tilt switch comprising:

a non-conductive body including a substantially conical cavity, at least a portion of the cavity being electrically conductive;

an electrical contact arranged and constructed to form a seal above the cavity and spaced from the conductive portion of the cavity, said electrical contact being selectively movable into contact with the electrically conductive portion of the cavity for providing a momentary contact function;

a conductive ball within the cavity for selectively interconnecting the contact and the conductive portion of the cavity when the switch is tilted.

5,006,677

AUTOMOBILE BRAKE VACUUM SWITCH

John W. Smith, and James P. Meagher, both of Indianapolis, Ind., assignors to Emhart Industries Inc., Farmington, Conn.

Filed Jan. 31, 1990, Ser. No. 472,727

Int. Cl.[5] H01H *3/14*

U.S. Cl. 200—61.89 **8 Claims**

1. An automobile brake switch assembly comprising:

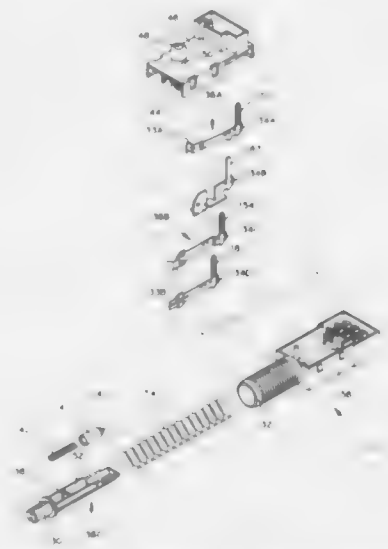
a housing including: a switch chamber, a vacuum passageway having a passageway vent hole therein; and a plunger chamber communicating with said switch chamber;

a plunger slidable within said plunger chamber;

one or more switches enclosed in said switch chamber and operable by said plunger;

a sealing member;

said plunger including means for slidably supporting said sealing member so that as said plunger moves back and forth in said plunger chamber said sealing member alternately seals and unseals said passageway vent hole; and spring means located between said plunger and said sealing member for permitting said plunger to continue moving



when said sealing member is stopped and seated in said passageway vent hole.

5,006,678

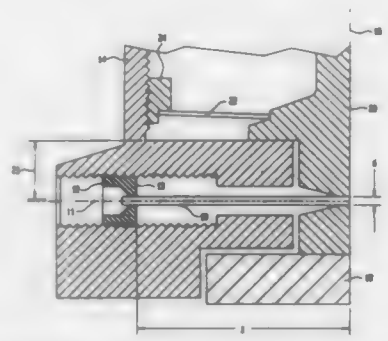
PRESSURE SWITCH WITH DEADBAND ADJUSTMENT

Lawrence A. Dunham, Northridge, Calif., assignor to ITT Corporation, New York, N.Y.

Filed Oct. 23, 1989, Ser. No. 425,773

Int. Cl.[5] H01H *35/40*

U.S. Cl. 200—83 S **20 Claims**



1. In combination:

sensor means mounted for movement on an operating axis of a housing; and

a wand inserted into said sensor means perpendicular to said operating axis, said wand being fixed and adjustable in said housing at one end and driven at the other end by said sensor means, whereby said wand provides adjustment for said sensor means.

5,006,679

HIGH VOLTAGE SWITCH ASSEMBLY

Edward Thornton, Bristol, United Kingdom, assignor to British Aerospace Public Limited Company, London, England

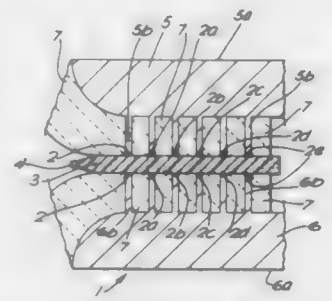
Filed May 14, 1990, Ser. No. 523,244

Claims priority, application United Kingdom, Jun. 15, 1989, 8913744

Int. Cl.[5] H01H *33/04*

U.S. Cl. 200—144 R **10 Claims**

1. A high voltage switch assembly, including a pair of electrically conductive contacts connectible in a power line from a high voltage source, and a portion of solid electrically insulating explosive material forming an electrically insulating barrier extending between said contacts, with the arrangement being such that on detonation of the explosive material at a point removed from the contacts a detonation wave is propagated



from the detonation point through the explosive material, which as it passes between the contacts establishes electrical conduction there between to initiate a switch closing action, the gaseous products of detonation following behind the detonation wave being electrically insulating and breaking electrical conduction between the contacts to initiate a switch opening action.

5,006,680

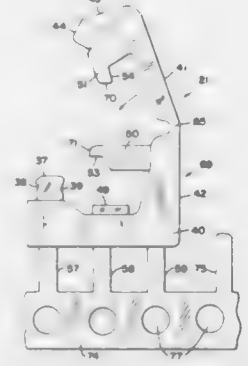
SNAP ACTION SWITCH

Joseph Thomas, Reading, Mass., assignor to Augat, Inc., North Andover, Mass.

Filed May 5, 1989, Ser. No. 348,032

Int. Cl.[5] H01H *11/00*

U.S. Cl. 200—293 **31 Claims**



1. A miniature precision action switch comprising:

a unitary resilient insulating body configured in an incomplete loop, the resilience tending to open the loop and the body having a latch within the loop to retain its loop configuration; the loop comprising a complete cover section, a complete base section and a complete side section that circumscribe an inner loop area;

a first terminal imbedded in the body and extending into the inner loop area as an exposed post;

a metallic member having: a cut-out tongue having an end; a complete surround about the tongue; a longitudinal axis; a longitudinal end adjacent the tongue end to form a space therebetween; and another longitudinal end within the loop; the member being on and electrically connected to the post with the post inserted in the space between the tongue and the adjacent surround to bend the tongue to form a spring;

a nose extending from the cover section toward the base section and toward the post to form an incomplete side section of the loop;

second and third terminals imbedded in the body and having

parts exposed on opposite sides of the other end of the member respectively;

wherein the other member end is normally connected to one of the second and third terminal exposed parts to complete an electrical circuit between the post and the one terminal, and when the nose is pressed against the surround adjacent the end of the tongue, the other end of the member is snapped to contact the exposed part of the other of the second and third terminals to complete an electrical circuit between the post and the other of the second and third terminals.

5,006,681

LEAF SPRING SYSTEM AND AN ELECTRIC SWITCH PROVIDED WITH SUCH A LEAF SPRING SYSTEM

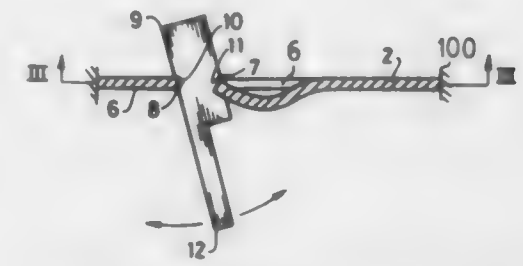
Albert J. Postmus, Hengelo, and Derk van der Scheer, Goor, both of Netherlands, assignors to Holec Systemen En Componenten B.V., Hengelo, Netherlands

Filed Dec. 28, 1988, Ser. No. 291,257

Claims priority, application Netherlands, Dec. 31, 1987, 8703173

Int. Cl.[5] H01H *5/14*

U.S. Cl. 200—409 **17 Claims**



1. A leaf spring system for operation on at least one body, the leaf spring system used in combination with an immovable base member and comprising at least one leaf spring having first and second opposite ends, and a supporting frame defining at least one frame aperture having fixed first and second opposite edges, the leaf spring being supported at the first end thereof at said first fixed edge of the frame aperture, the second end of the leaf spring projecting in the direction of and terminating at a distance from said second fixed edge of the frame aperture, thereby defining a space for accommodating the body to be hingedly supported by said second fixed edge of the frame aperture and to be engaged by the second end of the leaf spring, the body having a dimension measured upon accommodation between the supporting second fixed edge of the frame aperture and the engaging second end of the leaf spring which is greater than the distance from the second fixed edge of the frame aperture to the second end of the leaf spring when the body is not accommodated in the space, the supporting frame being immovably fixed to the immovable base member and thereby secured against movement relative to the leaf spring and body during operation of the leaf spring system, whereby the leaf spring exerts a force against the body in a longitudinal direction relative to the first fixed edge of the frame aperture.

5,006,682

LINEAR SNAP ACTION OPERATING MECHANISM AND AN ELECTRICAL SWITCH INCORPORATING SAME

Michael E. Sloff, Winston Salem, and Neal E. Rowe, Asheville, both of N.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 24, 1989, Ser. No. 356,091

Int. Cl.[5] H01H *15/18*

U.S. Cl. 200—429 **6 Claims**

1. An operating mechanism for an electrical switch having

first contact means which are movable into and out of engagement with second contact means, said mechanism comprising:

a housing having an elongated internal chamber and an elongated slot;

a rod extending through said housing longitudinally into said elongated internal chamber and longitudinally slidable relative to said elongated internal chamber;

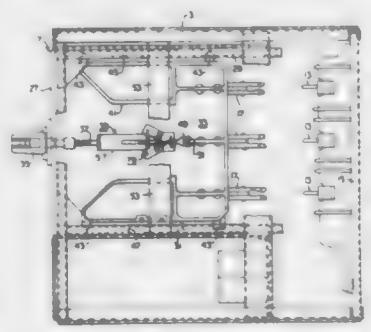
a pair of compression springs in said elongated internal chamber, one of which is loaded by movement of said rod in a first direction and the other of which is loaded by movement of the rod in the opposite direction;

latching means for movement between a latched position in which movement of said housing in correspondence with movement of said rod is prevented and an unlatched position in which the housing is released to move longitudinally, said compression springs being loaded in compression by movement of said rod with said housing in the latched position;

trip means carried by said rod projecting radially outward from said rod through said elongated slot for moving said latching means from the latched position to the unlatched position at a predetermined point of travel of said rod;

connecting means for connecting said housing to said first contact means; and

handle means connected to said rod for moving said rod in said first direction with said latching means in the latched position thus preventing movement of said housing to thus load said one spring until said trip means moves said latching means to the unlatched position thus releasing said



housing which in turn is accelerated in said first direction by said one spring to rapidly drive said first contact means into engagement with said second contact means, and for moving said rod in the opposite direction with said latching means in said latched position thus preventing movement of said housing to thus load the other spring until said trip means moves said latching means to the unlatched position thus releasing said housing which in turn is accelerated by said other spring to rapidly withdraw said first contact means from engagement with said second contact means;

said latching means comprising: a first latch unit, first mounting means mounting said first latch unit for pivotal movement between said latched position in which said first latch unit engages and prevents movement of said housing in said first direction and said unlatched position in which said housing is free to move in said first direction; a second latch unit, second mounting means mounting said second latch unit for pivotal movement between said latched position in which said second latch unit engages and prevents movement of said housing in said opposite direction, and said unlatched position in which said housing is free to move in said opposite direction; and biasing means biasing said first and second latch units to said latched positions, said trip means engaging said first and second latch units and pivoting them to their unlatched positions when the rod reaches predetermined points of travel in said first and opposite directions respectively; and

said trip means including adjustment means connected to said radial projections movable generally parallel to said rod to adjust the points in rod travel in said first and opposite directions, and hence the amount of spring compression at which said first and second latch units respectively are moved to their unlatched positions.

5,006,683

DEVICE FOR THE ELECTRICAL INDUCTION HEATING OF A FLUID CONTAINED IN A PIPELINE

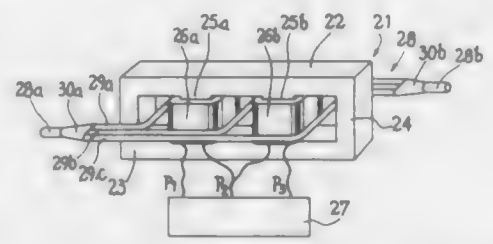
Jacques Rapin, Lyons, and Philippe Vaillant, Cambrai, both of France, assignors to Framatome, Courbevoie, France

Filed Mar. 9, 1990, Ser. No. 491,430

Claims priority, application France, Mar. 10, 1989, 89 03188

Int. Cl.[5] H05B *6/10*

U.S. Cl. 219—10.51 **5 Claims**



1. Device for the electrical induction heating of a fluid contained in a pipeline (**28**) having a closed-circuit (*29a, 29b, 29c*), said device consisting of a transformer (**21**) having two primary windings (*26a, 26b*) connected to a three-phase current source (**27**) and a secondary part consisting of the closed circuit (*29a, 29b, 29c*) of said pipeline containing the fluid, wherein said transformer (**21**) comprises a magnetic circuit (**22**) in the form of a closed frame having four parallel columns (**23, 24, 25a, 25b**), each of said primary windings being arranged around a different one of said columns of said frame (**22**) and being connected at a first end thereof to a first phase (P1) and a third phase (P3), respectively, and at a second end thereof to a second phase (P2) of said three-phase current source (**27**), said closed circuit of said pipeline consisting of three branched tubular arms (*29a, 29b, 29c*), each passing through a gap between two of said columns (**23, 24, 25a, 25b**) of said frame (**22**) of said magnetic circuit.

5,006,684

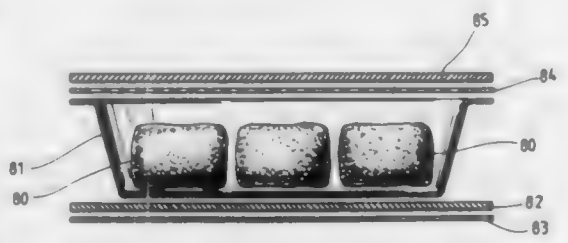
APPARATUS FOR HEATING A FOOD ITEM IN A MICROWAVE OVEN HAVING HEATER REGIONS IN COMBINATION WITH A REFLECTIVE LATTICE STRUCTURE

Dan J. Wendt, Lino Lakes; Jonathon D. Kemske, New Brighton, and Peter S. Pesheck, Brooklyn Center, all of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Continuation of Ser. No. 119,381, Nov. 10, 1987, Pat. No. 4,927,991. This application Sep. 5, 1989, Ser. No. 404,200

Int. Cl.[5] H05B *6/80*

U.S. Cl. 219—10.55 E **34 Claims**



1. An apparatus for heating a food item in a microwave oven, comprising:

a food item to be heated in a microwave oven, the food item having a surface to be heated;

a food heating device having a non-edible heater in combination with predetermined regions of higher reflectance forming a lattice structure surrounding regions of the heater having less reflectance, the heater being capable of heating sufficiently to produce a positive temperature differential with respect to the surface of the food item, the regions of the lattice structure having a reflectance at the frequency of the microwave oven, the regions of the heater having a reflectance at the frequency of the microwave oven, the lattice structure regions having higher reflectance relative to the regions of the heater at the frequency of the microwave oven, the difference between the reflectance of the regions of the lattice structure and the reflectance of the regions of the heater being ten percent or greater, the regions of the heater comprising a material which heats responsive to microwave radiation and which has a transmittance at the frequency of the microwave oven greater than 0.003 percent, the device being located in close proximity to the surface of the food item so that the heater and lattice structure may cooperate to heat said surface, the heater and lattice structure being located on the same side of the good item during heating.

5,006,685

MACHINE TOOL WITH GRINDING FUNCTION AND TRUING/DRESSING METHOD OF GRINDING STONE USING IT

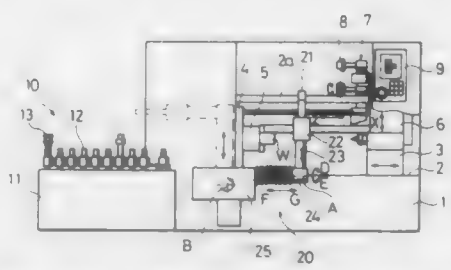
Sakae Hatano, Aichi; Yoshiharu Takada, Chiba; Kiyokazu Kainuma, Aichi; Isao Kanematsu, Aichi; Kazuo Asano, Aichi; Hisashi Yoshida, Aichi, and Yoshinori Mori, Gifu, all of Japan, assignors to Yamazaki Mazak Corporation, Aichi, Japan

Filed Aug. 3, 1988, Ser. No. 227,881

Claims priority, application Japan, Aug. 4, 1987, 62-119484[U]; Aug. 4, 1987, 62-119485[U]; Aug. 4, 1987, 62-119486[U]; Aug. 4, 1987, 62-194766; Nov. 17, 1987, 62-175713[U]

Int. Cl.[5] B23H *5/04*; **B24B** *53/00*

U.S. Cl. 219—69.2 **17 Claims**



17. A truing and dressing method in a complex machine tool having a truing and dressing apparatus, said complex machine tool having a truing and dressing apparatus comprising:

a single machine body;

workpiece holding means for holding a workpiece on which grinding machining is to be performed disposed on said machine body so as to be free to be driven and rotated about an axis parallel to a first direction;

a tool rest disposed on said machine body free to be driven and moved in at least said first direction and so as to be capable of holding at least a turning tool for electrode machining and a grinding tool for workpiece machining installed thereon;

a dressing main body provided on said machine body so as to be free to be driven and moved in said first direction;

a supporting shaft provided on said dressing main body such that the central axis of said shaft is parallel to said first direction and such that said supporting shaft is free to be driven and rotated about said central axis, said supporting shaft having a machining electrode installed thereon for truing and dressing said grinding tool;

a tool electrode provided on said dressing main body so as to be free to be driven and moved, said tool electrode being capable of engaging and contacting with said grinding tool; and

a tailstock provided on said dressing main body at a position facing said workpiece holding means;

wherein said truing and dressing method using said complex machine tool having a truing and dressing apparatus comprises:

holding a workpiece between said workpiece holding means and said tailstock;

performing grinding machining on said workpiece with said grinding tool installed on said tool rest;

rotating said machining electrode and shaping said machining electrode by turning with said turning tool installed on said tool rest;

maintaining said grinding tool installed on said tool rest at a predetermined truing and dressing position and driving said tool electrode so as to engage and contact said grinding tool with said tool electrode at said predetermined truing and dressing position; and

performing a truing dressing operation between said rotating machining electrode shaped by said turning tool and said grinding tool while said grinding tool is rotated at said predetermined truing and dressing position;

wherein said steps of grinding said workpiece with said grinding tool, shaping by turning said machining electrode and truing and dressing said grinding tool with said shaped machining electrode are all performed on said single machine body.

5,006,686

CONTROL OF STUD-WELDING APPARATUS

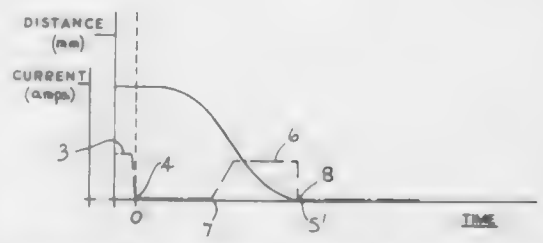
Klaus G. Schmitt, Giessen, and Harald Knetsch, Herborn, both of Fed. Rep. of Germany, assignors to Emhart Inc., Newark, Del.

Filed Sep. 6, 1990, Ser. No. 578,547

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1989, 3930929

Int. Cl.[5] B23K *9/20*

U.S. Cl. 219—99 **3 Claims**



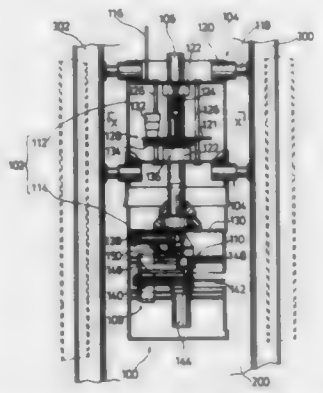
1. Method of controlling stud-welding apparatus for automatic attachment of welding studs comprising a stud-holder, an electromagnetic lifting coil arranged and adapted to lift the stud-holder away from a workpiece to which it is applied and mechanical plunge return means tending to urge the stud-holder towards the workpiece so that in operation the electromagnetic lifting coil works against the mechanical plunge return means during the lift stroke and the plunge stroke is derived from the mechanical return means characterized in that at the beginning of the plunge stroke the lifting coil is essentially current and voltage free but the plunge stroke is damped by a pulse current momentarily applied to the lifting coil a very short time before impact and ceased when the stud contacts the workpiece.

5,006,687

METHOD FOR CUTTING STEEL PIPE PILES

Tsutomu Fujita; Hidetoshi Imura, and Kohzo Akahide, all of Tokyo, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Sep. 29, 1989, Ser. No. 415,073
Int. Cl.[5] B23K 9/00
U.S. Cl. 219—121.59 3 Claims



1. A method of cutting a steel pipe in the form of an erected interlocked steel pipe pile being consisted of a steel pipe and junction joints for interlocking neighboring steel piles which are attached on the outer surface of the pipe along the whole length thereof, comprising the steps of:

inserting a plasma arc cutting means into the steel pipe to be cut, and

cutting the steel pipe at a desired level by the cutting means, including the steps of:

cutting at first the junction joints by mechanical cutting means; and then

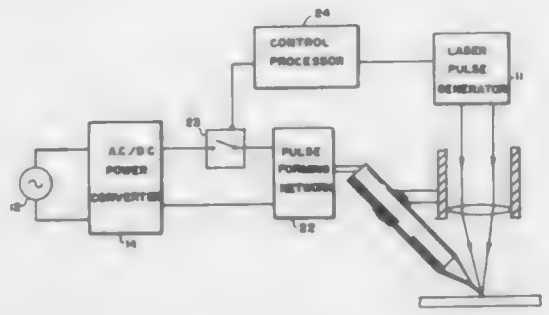
cutting the steel pipe body by the plasma arc cutting means.

5,006,688

LASER-ARC APPARATUS AND METHOD FOR CONTROLLING PLASMA CLOUD

Michael A. Cross, Severna Park, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 24, 1988, Ser. No. 261,545
Int. Cl.[5] B23K 9/067
U.S. Cl. 219—130.4 20 Claims



1. A laser-arc apparatus comprising:

a laser pulse generator for generating a laser pulse and directing said laser pulse toward a worksite on a workpiece, said laser pulse creating a plasma cloud at said worksite by heating said worksite;

an arcing means for arcing energy from an electrode thereof to said worksite;

a power supply for supplying said energy to said arcing means;

storage means for storing said energy supplied to said arcing means;

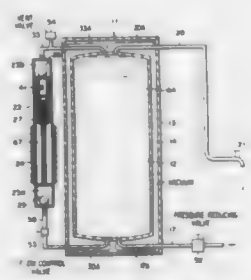
control means, including circuit means for controlling said laser pulse generator to generate a train of laser pulses, each pulse of the train having a predetermined duration and pulse interval, each pulse duration being sufficient to cause said plasma cloud to be sufficiently conductive to draw said stored energy from said storage means in said arcing means to said worksite for initiating an arc and each pulse interval being of sufficient duration for dissipating each created plasma cloud.

5,006,689

VACUUM INSULATED STORAGE-TYPE ELECTRIC WATER HEATER HAVING AN EXTERNAL BUBBLE PUMP HEATING UNIT

Yasuhiko Kurachi, Aichi; Kazumi Mori, Okazaki, and Hisao Koizumi, Zushi, all of Japan, assignors to Chubu Electric Power Company Inc., Nagoya and Kabushiki Kaisha Toshiba, Kawasaki, both of, Japan

Filed Sep. 21, 1988, Ser. No. 247,375
Claims priority, application Japan, Sep. 21, 1987, 62-236858
The portion of the term of this patent subsequent to Sep. 25, 2007, has been disclaimed.
Int. Cl.[5] H05B 1/02; F24J 2/00; F24H 1/18, 1/10
U.S. Cl. 392—450 7 Claims



1. A hot water boiling apparatus comprising:

a hot water storage tank including an inner tank adapted to store water therein and having a top wall, and an outer tank enclosing the inner tank, and a vacuum heat insulation space defined between the inner and outer tanks and substantially completely surrounding the inner tank;

a hot water supply pipe for guiding the water from an upper portion of the inner tank to the outside of the hot water tank, said supply pipe having an end portion connected to the top wall of the inner tank and passing through the vacuum insulation space and the outer tank air-tightly, said supply pipe having an insulation portion located in the vacuum insulation space and extending substantially horizontally through the vacuum space to the outer tank;

water supply means for supplying a lower portion of the inner tank with water; and

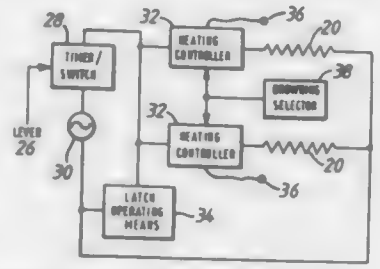
flow-type water heating means arranged external of the water storage tank in flow communication with the water storage tank, for drawing the stored water from the lower portion of the inner tank and, after heating the water, returning the heated water into the upper portion of the inner tank, said heating means including a connecting pipe which introduces the heated water into the inner tank and has an end portion connected to the top wall of the inner tank and passing through the insulation space and the outer tank air-tightly, said connecting pipe having an insulation portion located in the vacuum insulation space and extending substantially horizontally through the vacuum space to the outer tank.

5,006,690

ELECTRIC TOASTERS

Graham M. Cole, Lymington, and Percival J. Shave, both of Lymington, England, assignors to Dreamland Electrical Applicances plc, Southampton, England

PCT No. PCT/GB88/00018, § 371 Date Aug. 29, 1988, § 102(e) Date Aug. 29, 1988, PCT Pub. No. WO88/05279, PCT Pub. Date Jul. 28, 1988
PCT Filed Jan. 12, 1988, Ser. No. 238,338
Claims priority, application United Kingdom, Jan. 15, 1987, 8700878; European Pat. Off., Jan. 11, 1988, 88300187
Int. Cl.[5] H05B 1/02
U.S. Cl. 219—385 18 Claims



1. An electric toaster comprising:

a pair of electrically heatable plates which have toasting surfaces that can be brought into contact with opposed surfaces of an item to be toasted;

selector means that is manually adjustable to select a desired set point temperature;

temperature sensing means for sensing the temperature of at least one of said toasting surfaces;

heating control means responsive to said selector means and said temperature sensing means to control electrical heating of said plates such that said toasting surfaces are heated to temperatures corresponding to said selected set point temperature; and

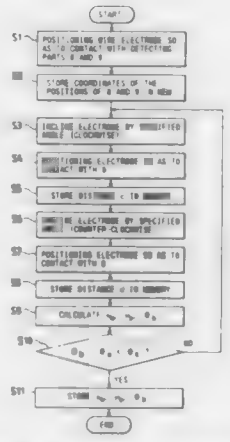
timer means for causing said electrical heating of said plates to take place for a predetermined period of time, the duration of said predetermined period of time being manually adjustable independently of said manual adjustment of said set point temperature.

5,006,691

WIRE CUT ELECTRIC DISCHARGE MACHINE

Yoshiro Nakayama, Aichi, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan

Filed Apr. 17, 1990, Ser. No. 509,834
Claims priority, application Japan, Apr. 19, 1989, 1-99145
Int. Cl.[5] B23H 7/06
U.S. Cl. 219—69.12 4 Claims



4. A method for correcting a taper angle of a wire electrode of a wire cut electric discharge machine in which upper and lower wire guides are moved horizontally under applying tension to said electrode, comprising the steps of:

setting a taper angle of said wire electrode;

calculating a distance between said upper and lower wire guides, which corresponds to the taper angle thus set;

machining a test workpiece with the taper angle and the distance calculated for test-machining;

detecting an error in the taper angle, which occurs during the test-machining;

obtaining a correction factor based on the calculated distance between the upper and lower wire guides and an actual distance thereof in the test-machining; and

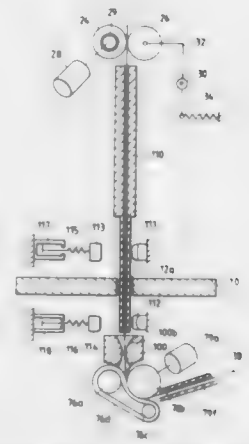
correcting the positions of the upper and lower wire guides according to the correction factor.

5,006,692

WIRE ELECTRODE SUPPLYING DEVICE FOR USE IN A WIRE CUT ELECTRIC DISCHARGE MACHINING APPARATUS

Takuji Magara; Takeshi Iwasaki; Toshio Suzuki, and Masahiro Yamamoto, all of Aichi, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Filed May 18, 1989, Ser. No. 353,421
Int. Cl.[5] B23H 7/10
U.S. Cl. 219—69.12 3 Claims



1. A wire electrode supplying device for use in a wire cut electric discharge machining apparatus having a stationary portion provided with V-guides, comprising: a wire electrode feeding mechanism; a pipe guide into which a wire electrode is inserted so as to be guided therealong toward a machining start hole formed in a workpiece to be machined; a lifting mechanism for reciprocating said pipe guide up and down; an electric feeder for supplying a machining electric current to said wire electrode; and a winding mechanism for winding and removing said wire electrode supplied through said electric feeder, wherein said pipe guide is shaped to have a plurality of outside diameters increasing stepwise, wherein an outside diameter of one end portion of said pipe guide which is minimum in outside diameter is smaller than an outer diameter of said machining start hole so that said one end portion of said pipe guide is inserted into said machining start hole in said workpiece by said lifting mechanism before said wire electrode is fed to said winding mechanism, said pipe guide and said V-guides not interfering with each other.

5,006,693

GAP VOLTAGE DETECTOR IN A WIRE-CUT ELECTRIC DISCHARGE MACHINE

Haruki Obara, Toyama, and Syuzo Izumiya, Fujiyoshida, both of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP89/00087, § 371 Date Jul. 3, 1989, § 102(e) Date Jul. 3, 1989, PCT Pub. No. WO89/07032, PCT Pub. Date Aug. 10, 1989
PCT Filed Jan. 30, 1989, Ser. No. 381,635
Claims priority, application Japan, Feb. 3, 1988, 63-22117
Int. Cl.[5] B23H *1/02, 7/14*
U.S. Cl. 219—69.12 2 Claims



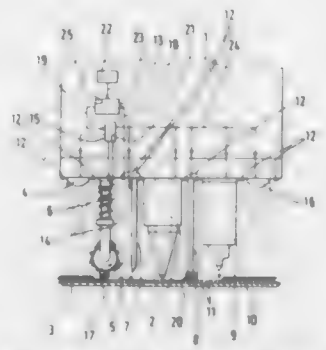
1. A gap voltage detector in wire-cut electric discharge machine, comprising:
means for detecting a first voltage between a first conductor and a workpiece;
means for detecting a second voltage between said workpiece and a second conductor which is disposed in a position opposite said first conductor; and
means for detecting a gap voltage on the basis of the sum of the thus detected first and second voltages.

5,006,694

ROBOT TYPE APPARATUS FOR PERFORMING A PLURALITY OF OPERATIONS ON A WORK PIECE

Guenther Handke, Irschenberg, and Hans-Juergen Lemke, Neubiberg, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Mar. 8, 1989, Ser. No. 321,226
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1988, 3807476
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.6 20 Claims



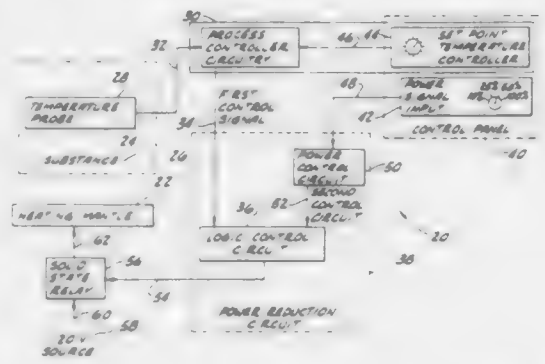
1. A robot type apparatus for performing a plurality of operations on a work piece, comprising main laser tool means for performing a primary operation with a laser beam, a first set of auxiliary tool means for performing secondary operations on said work piece prior to said primary operation, a second set of auxiliary tool means for performing secondary operations on said work piece subsequent to said primary operation, tool carrier means for supporting said main laser tool means for said primary operation and for supporting said first and second set of auxiliary tool means in such positions on said tool carrier means relative to said main laser tool means that said secondary operations can be performed to enhance or improve said primary operation, said apparatus further comprising control means for controlling the operation of said main laser tool means and said first and second sets of auxiliary tool means in a closed loop or open loop manner, drive means (15) connected to said control means for operating said main laser tool means and said first and second sets of auxiliary tool means in response to said control means, sensor means (12) arranged for sensing a surface condition on a work piece surface next to the respective auxiliary tool means to provide control signals for said control means, wherein said control means comprise a memory (22) and a computer (25) for operating said main laser tool means and said first and second sets of auxiliary tool means in response to control values stored in said memory and in response to said control signals provided by said sensor means (12), and for controlling a relative motion between said tool carrier means and said work piece.

5,006,695

PROCESS CONTROLLER INCLUDING POWER LEVEL CONTROL AND METHOD OF OPERATION

Robert C. Elliott, 499 Hillbrook Dr., St. Louis, Mo. 63011

Filed Sep. 7, 1989, Ser. No. 404,211
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—494 21 Claims



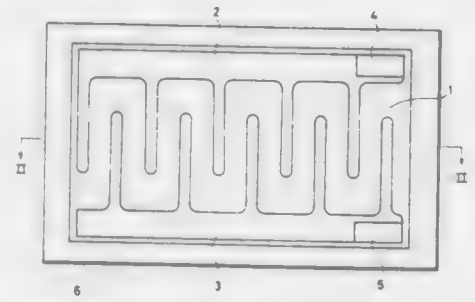
1. An apparatus for controlling means for heating a substance in accordance with a selected maximum power level which is to be applied to the means for heating and in accordance with a selected temperature to which the substance is to be heated, said apparatus for use in combination with means for sensing a temperature of the substance, said apparatus comprising:
first means for generating a first power level control signal which is a function of the difference between the selected temperature and the sensed temperature;
second means for generating a second power level control signal, independent of the first power level control signal and independent of the selected and sensed temperatures, which is a function of the selected maximum power level;
means for providing power for said means for heating; and
means for selectively applying power provided by said means for providing to the means for heating at a power level as defined by both the first and second power level control signals whereby the amount of power applied to the means for heating is reduced as the substance approaches the selected temperature thereby avoiding overheating the substance to a temperature significantly above the selected temperature.

5,006,696

FACE-LIKE HEATING DEVICE

Katsuyuki Uchida, and Hiroto Fujiwara, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Aug. 7, 1989, Ser. No. 390,607
Claims priority, application Japan, Aug. 26, 1988, 63-213177
Int. Cl.[5] H05B *3/26*
U.S. Cl. 219—505 5 Claims



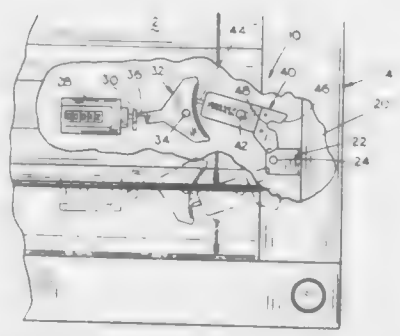
1. A face-like heating device comprising:
a sheet-like organic positive temperature coefficient (PTC) thermistor having two major surfaces,
at least one pair of electrodes formed on one major surface of said organic PTC thermistor, and
a soaking plate adhered to the other major surface of said organic PTC thermistor,
the thickness of said soaking plate being in the range of 0.1 mm to 0.3 mm,
the soaking plate being formed of a material having a thermal conductivity of 0.4 cal $cm^{-1} s^{-1} deg^{-1}$ or higher.

5,006,697

SEQUENTIAL SEAL

Lyan F. Amis, Valley, and Daniel R. Gee, Lincoln, both of Nebr., assignors to Convoy Security Company, Omaha, Nebr.

Filed Jan. 19, 1990, Ser. No. 467,492
Int. Cl.[5] G06M *1/08, 1/276*
U.S. Cl. 235—91 R 2 Claims



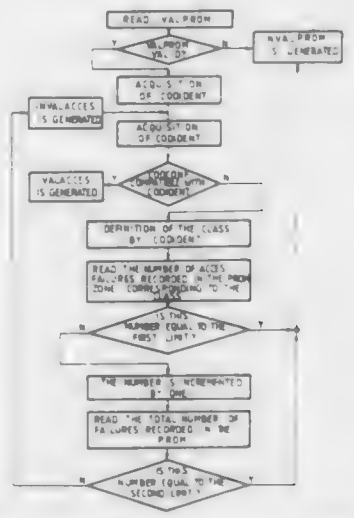
1. In combination,
a van body having a door opening formed therein defined by at least one vertically disposed door frame member,
a roll-up door selectively vertically movably mounted in said door opening and movable between open and closed positions,
and a sequential seal means operatively associated with said door, said seal means including indicator means for indicating the number of times said door has been moved from said closed position towards said open position,
said sequential seal means comprising a counter means mounted on said door and having a counter actuator extending therefrom, a spring loaded counter driver lever pivotally mounted, about a horizontal axis, in said door and movable between first and second positions, said counter drive level having inner and outer ends, said counter driver lever arm extending therefrom at the inner end thereof adapted to engage said counter actuator when said counter driver lever is moved from said first position to said second position, said counter drive lever normally being in said first position when said door is in said closed position and in said second position when said door has been moved to said open position, said counter drive lever having an arcuate cam surface at said outer end thereof, a trip driven lever pivotally mounted, about a horizontal axis, on said door outwardly of said counter driver lever and having inner and outer ends, said trip driven lever having a spring-loaded pin means mounted thereon extending from the inner end thereof which is in engagement with said arcuate cam surface, said trip driven lever being movable between first and second positions, said trip driven lever normally being in said first position to position said counter driver lever in said first position, said spring-loaded pin causing said counter driver lever to pivot to said second position when said trip driven lever is moved to said second position, said outer end of said trip driven lever having a trip lever pin receiving opening formed therein, and a trip lever pin mounted in said door frame member.

5,006,698

ANTIFRAUD METHOD AND DEVICE FOR A SELECTIVE ACCESS SYSTEM

Simon Barakat, Andresy, France, assignor to Schlumberger Industries, Paris, France

Filed Jul. 7, 1988, Ser. No. 215,959
Claims priority, application France, Jul. 7, 1987, 87 09604
Int. Cl.[5] G06K *7/00; G07G 1/14*
U.S. Cl. 235—382 11 Claims



1. A computer implemented method of protecting a selective access system against fraudulent use of at least one access means from among a plurality of access means each having a confidential code associated therewith, the method comprising the steps of:
obtaining the result of a verification of the validity of a confidential code specified by a user of an access means on each occasion that an access means is presented to the selective access system, said result being interpreted as a success if the code is valid and as a failure otherwise;
using a memory to store a trace of failures observed for a plurality of occasions on which access means are presented to the selective access system, said failures being stored by defining a plurality of memory zones in said memory and by assigning each of the access means presented to the selective access system to a class taken from a set of classes corresponding, respectively, to said plurality of memory zones, the number of classes in said set of

classes being less than the number of said access means, and by keeping a count in each of said plurality of memory zones of the number of failures associated with presented access means belonging to the class corresponding to such memory zone;

detecting when the number of failures recorded in any of the memory zones exceeds a first predetermined limit number assigned to such memory zone; and

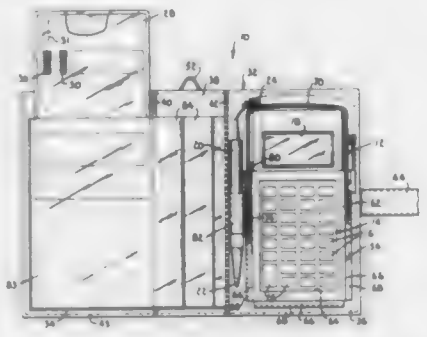
generating a signal indicative of an attempted fraud when it is detected that the number of failures in any of the memory zones exceeds said first predetermined limit number assigned to such memory zone.

5,006,699

SYSTEM FOR COLLECTING MEDICAL DATA

Donald J. Felkner, 15807 W. 136th St., Olathe, Kans. 66062, and James R. Famuliner, 1010 S. 49th St. Dr., Blue Springs, Mo. 64015

Filed Nov. 13, 1987, Ser. No. 120,367
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—472 **18 Claims**



1. A data collection system comprising:

a portable data terminal unit having a key pad for data input thereto and a cord carrying a scanning wand for reading and entering into the unit bar coded data;

a carrying case having first and second panels connected to fold between open and closed positions in the manner of a book;

a pocket on said first panel for receiving and holding said terminal unit, said pocket having a front face presenting an opening through which the keypad is exposed and accessible when the terminal unit is in said pocket;

releasable means for securing said terminal unit in said pocket, said releasable means comprising a strap on said pocket and means for releasably securing said strap in extension over the terminal unit to hold the terminal unit in said pocket;

means of maintaining said wand in a storage position in the carrying case; and

means on said carrying case for holding a document having bar coded data thereon at a location wherein the bar coded data is accessible to be scanned by said wand while the terminal unit is in said pocket.

5,006,700

DISTANCE-MEASURING APPARATUS FOR CAMERA

Toru Kosaka, Zama; Yoshiaki Ohtsubo, Yokohama, and Hiroshi Megaro, Kawasaki, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

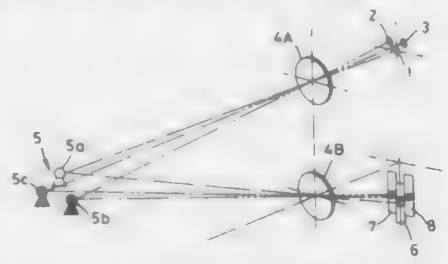
Continuation of Ser. No. 328,435, Mar. 24, 1989, abandoned. This application Aug. 20, 1990, Ser. No. 569,537
Claims priority, application Japan, Apr. 11, 1988, 63-88452
Int. Cl.[5] G01J *1/20*
U.S. Cl. 250—201.4 **8 Claims**

1. A distance-measuring apparatus for a camera, comprising:

first detecting means for detecting a distance to a central portion of an object field;

second detecting means for detecting respective distances to a plurality of peripheral portions of the object field; and

operating means adapted to operate said first and second detecting means, said operating means including means for comparing the detected distance to the central portion of said object field with a predetermined distance, said



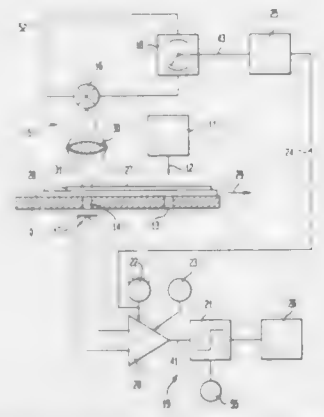
operating means operating said second detecting means so as to detect the distances to said plurality of peripheral portions simultaneously when the detected distance to said central portion is less than said predetermined distance, and operating said second detecting means so as to detect the distances to said plurality of peripheral portions sequentially when the detected distance to the central portion of said object field is greater than said predetermined distance.

5,006,701

SENSOR SYSTEM WITH SOURCE REGULATION COUPLED TO SENSOR CIRCUIT SENSITIVITY

Karl-Peter Kothe, Beerbacher Str. 15, 6100 Darmstadt-Eberstadt; Manfred W. Gekeler, Pulverhäuserweb 62, 6100 Darmstadt, and Karl-Heinz Meier, 1m Flürchen 1, 6107 Zeilhard, all of Fed. Rep. of Germany

PCT No. PCT/DE88/00603, § 371 Date Jul. 11, 1989, § 102(e) Date Jul. 11, 1989, PCT Pub. No. WO89/03080, PCT Pub. Date Apr. 6, 1989
PCT Filed Sep. 30, 1988, Ser. No. 362,394
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1987, 3733256
Int. Cl.[5] G01J *1/32*
U.S. Cl. 250—205 **16 Claims**



1. Sensor system for regulating machines in dependence on a light barrier comprising a light emitter and a light receiver, an incandescent lamp supplied by an energy source being provided as the light emitter, and an evaluating stage of adjustable sensitivity being connected to the light receiver, characterized in that the energy source of the incandescent lamp is regulated and is coupled with the evaluating stage in such a way that the desired value of the regulated energy source is automatically

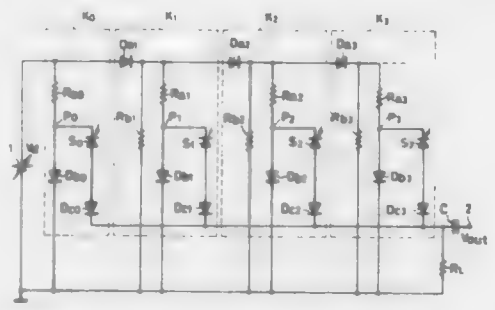
adjustable in dependence on the sensitivity setting of the evaluating stage.

5,006,702

SCANNING CIRCUIT DEVICE WITH SAWTOOTH VOLTAGE SOURCE

Hiromi Kakinuma, and Hideo Iida, both of Takasaki, Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

PCT No. PCT/JP89/00782, § 371 Date Mar. 12, 1990, § 102(e) Date Mar. 12, 1990, PCT Pub. No. WO90/01846, PCT Pub. Date Feb. 22, 1990
PCT Filed Jul. 28, 1989, Ser. No. 474,774
Claims priority, application Japan, Jul. 30, 1988, 63-190848
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.1 **9 Claims**



1. A scanning circuit device comprising:

a voltage source (1) for generating a sawtooth wave;

a first series circuit connected to a first terminal of the voltage source and having a plurality of diodes (Da_1–Da_3) interconnected in series, each diode having a first and a second electrode, with the first electrode disposed toward the voltage source, the diodes being so oriented as to be forward biased by the sawtooth wave;

a plurality of second series circuits each having a resistor (Ra_1–Ra_3) and a diode (Db_1–Db_3) interconnected in series, the second series circuits being connected one between the second electrode of each diode of the first series circuit and a second terminal of the voltage source, the diodes of the second series circuit being so oriented as to be forward biased by the sawtooth wave;

a plurality of resistors (Rb_1–Rb_3) connected one between the second electrode of each diode of the first series circuit and the second terminal of the voltage source; and

a plurality of scanned circuit elements (S_1–S_3 or L_1–L_3) connected substantially in parallel with the respective diodes of the second series circuits.

5,006,703

REFLECTIVE OPTICAL ROTARY ENCODER DISC

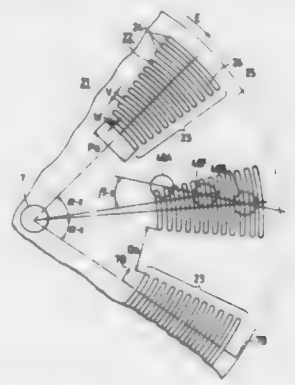
Juichi Shikunami, Kanagawa; Makoto Itonaga, Yokohama; Kanji Kayanuma, Hatano; Masakatsu Kai, Yokohama, and Nobuaki Nakamura, Fujieda, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Continuation-in-part of Ser. No. 313,672, Feb. 22, 1989, Pat. No. 4,929,822. This application Oct. 24, 1989, Ser. No. 427,203
Claims priority, application Japan, Oct. 24, 1988, 63-267814
Int. Cl.[5] G01D *5/34*
U.S. Cl. 250—231.13 **3 Claims**

1. A reflective optical rotary encoder disc for use in a reflective optical rotary encoder device for detecting an angular speed or position of a movable member with a light beam applied to and reflected from the reflective optical rotary encoder, said reflective optical rotary encoder disc comprising:

an annular rotary encoder track for reflecting the light beam, said rotary encoder track being composed of an annular pattern of angularly spaced pit units each including a plurality of radially spaced arcuate pits; and

a pit-free annular focus servo track for focusing the light beam onto the rotary encoder track, said focus servo track



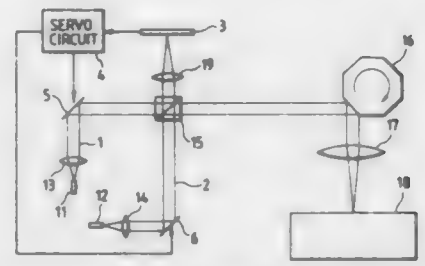
extending along and being disposed radially substantially centrally in said annular rotary encoder track.

5,006,704

OPTICAL SCANNER AND METHOD FOR GENERATING AND DETECTING A COMPOSITE DOT ON A SCANNING MEDIUM

Takeshi Mochizuki; Shigenobu Katagiri; Minoru Seino; Minoru Ohshima; Susumu Saito, and Akira Arimoto, all of Ibaraki, Japan, assignors to Hitachi Koki Co., Ltd. and Hitachi Ltd., Tokyo, both of, Japan

Filed Oct. 5, 1989, Ser. No. 418,363
Claims priority, application Japan, Oct. 19, 1988, 63-261502
Int. Cl.[5] G01J *1/32*; H01J *3/14*
U.S. Cl. 250—235 **6 Claims**



3. A method of scanning a medium comprising the steps of:

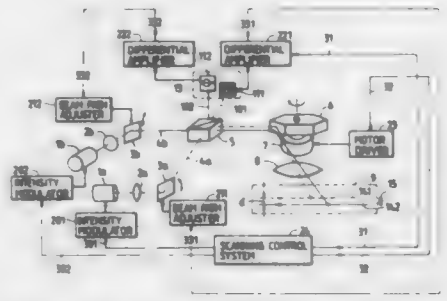
generating a plurality of light beams;

deflecting said light beams and converging said beams onto said medium to form a composite circular spot;

detecting the relative positions of said beams forming said spot on said medium and producing an output indicating said relative positions; and

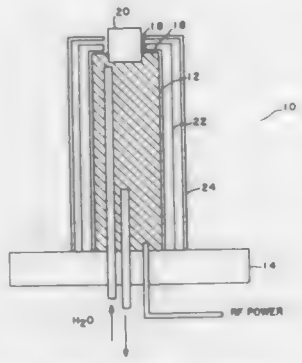
changing the diameter of said composite circular spot by changing the relative positions of said beams in response to said output.

5,006,705
LIGHT BEAM SCANNING APPARATUS WITH CONTROLLER FOR VARYING SPACING BETWEEN A PLURALITY OF SCANNING BEAMS
Susumu Saito, Hachioji; Akira Arimoto, Kodaira; Takeshi Mochizuki, Mito; Yasuyuki Tsuji, Katsuta; Minoru Ohshima, Katsuta, and Minoru Seino, Katsuta, all of Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan
Filed Aug. 7, 1989, Ser. No. 390,400
Claims priority, application Japan, Aug. 12, 1988, 63-199909
Int. Cl.[5] H01J 3/14
U.S. Cl. 250—235 45 Claims



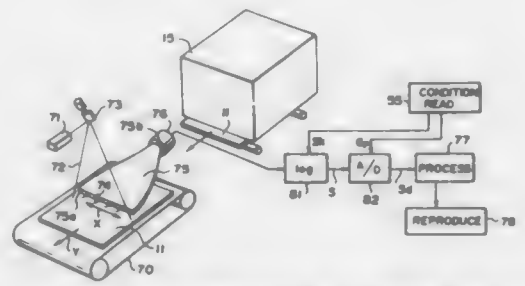
1. A light beam scanning apparatus for recording information to be recorded, comprising:
a plurality of light sources generating a plurality of beams;
intensity modulators changing intensity of the beams from said light sources in accordance with the information to be recorded;
a scanner scanning said beams in parallel on a scanned plane;
adjusters adjusting the relative positions of said beams on said scanned plane; and
a controller controlling at least one of said adjusters so that the relative positions of said beams on said scanned plane vary between at least two different relative positions in accordance with corresponding different pixel densities of the information.

5,006,706
ANALYTICAL METHOD AND APPARATUS
R. Kenneth Marcus, Clemson, S.C., assignor to Clemson University, Clemson, S.C.
Filed May 31, 1989, Ser. No. 359,157
Int. Cl.[5] H01J 49/04
U.S. Cl. 250—288 26 Claims



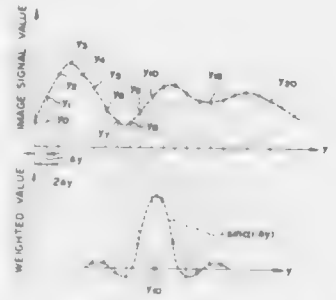
1. A method for analyzing sample materials in the solid state, comprising:
initiating a low pressure glow discharge by applying a radio frequency potential between a solid sample cathode and an anode in the presence of an inert gas;
maintaining the glow discharge such that the inert gas is ionized and the ionized gas sputters substantially only sample material;
passing the sputtered sample material into an analyzer region; and
analyzing the sputtered sample material.

5,006,707
ELECTRON MICROSCOPE IMAGE RECORDING AND READ-OUT METHOD
Nobufumi Mori; Masahiro Ohnishi; Junji Miyahara, all of Kanagawa; Tetsuo Oikawa, and Yoshiyasu Harada, both of Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd. and Jeol Ltd., both of Tokyo, Japan
Filed Jan. 19, 1990, Ser. No. 467,479
Claims priority, application Japan, Jan. 24, 1989, 1-14770
Int. Cl.[5] H01J 37/147, 37/26
U.S. Cl. 250—311 13 Claims



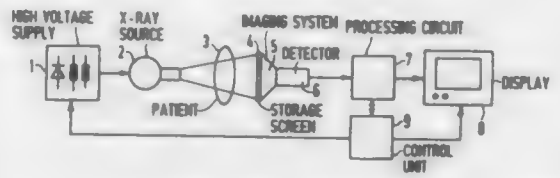
1. An electron microscope image recording and read-out method wherein each of a plurality of two-dimensional sensors capable of storing energy from an electron beam thereon is exposed to an electron beam, which has passed through a sample, in a vacuum in order to store the energy from the electron beam on a respective two-dimensional sensor, thereafter the respective two-dimensional sensor is exposed to light or heat in order to release the stored energy as emitted light, and the emitted light is photoelectrically detected in order to obtain an image signal which represents an electron microscope image of the sample,
wherein the improvement comprises the steps of:
(i) for each of said plurality of two-dimensional sensors, determining read-out conditions, which are to be used in the course of detecting the emitted light, on the basis of an electron beam exposure amount which was set in the course of storing the energy from said electron beam on said two-dimensional sensor,
(ii) storing signals, which represent the read-out conditions determined from the respective two-dimensional sensors, in a storage means so that said read-out conditions clearly correspond to which two-dimensional sensor, and
(iii) in the course of exposing a two-dimensional sensor to light or heat and detecting the light emitted by said two-dimensional sensor, reading a signal, which represents the read-out conditions corresponding to said two-dimensional sensor, from said storage means, and setting said read-out conditions when the light emitted by said two-dimensional sensor is being detected.

5,006,708
METHOD FOR GENERATING RADIATION IMAGE SIGNALS
Wataru Itoh; Nobuyoshi Nakajima, and Takefumi Nagata, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Sep. 15, 1989, Ser. No. 407,823
Claims priority, application Japan, Sep. 16, 1988, 63-231845; Apr. 6, 1989, 1-87708
Int. Cl.[5] G01N 23/04; G03B 42/02
U.S. Cl. 250—327.2 6 Claims
1. A method for generating a radiation image signal wherein a radiation image which has been recorded on a recording medium is read out at predetermined sampling intervals in order to obtain an image signal,
the method for generating a radiation image signal comprising the steps of:
(i) in the course of said radiation image being read out, applying sampling intervals corresponding to a second spatial frequency fsw higher than a first spatial frequency fss, which is the maximum of a desired spatial frequency range, along at least one direction on said



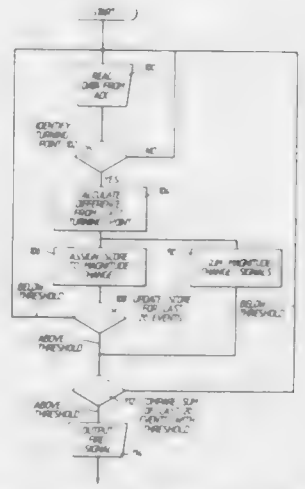
recording medium in order to obtain an original image signal,
(ii) subjecting said original image signal to filtering processing in order to transmit spatial frequency components below said first spatial frequency fss, and to reduce or eliminate spatial frequency components above said first spatial frequency fss, and
(iii) sampling the original image signal, which has been obtained from said filtering processing, at sampling intervals corresponding to said first spatial frequency fss in order to obtain an image signal.

5,006,709
X-RAY DIAGNOSTICS INSTALLATION
Rudolf Schiteenheim, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Nov. 6, 1987, Ser. No. 117,573
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1987, 3702512
Int. Cl.[5] G03B 42/02
U.S. Cl. 250—327.2 6 Claims



1. An x-ray diagnostics installation for examining a patient comprising:
means for generating x-radiation directed at said patient;
a luminescent storage screen on which x-radiation attenuated by said patient is incident, said storage screen being capable of spontaneous and stimulated emission of light corresponding to an x-ray image of said patient;
means for reading-out the image from said storage screen by exciting said storage screen with stimulating radiation;
means for detecting light emitted by said storage screen;
means for imaging light from said storage screen onto said means for detecting light, said storage screen, said means for imaging, and said means for detecting light being combined in a single unit;
an image memory in which signals from said means for detecting light are stored picture element-by-picture element;
means for controlling entry of signals into said image memory, said means for controlling entering first signals from said means for detecting light, resulting from spontaneous emission of said storage screen, into said image memory during an exposure of said patient with x-radiation, and thereafter entering second signals from said means for detecting light, resulting from stimulated read-out of said storage screen, in said image memory, and overlaying said first and second signals picture element-by-picture element; and
means for displaying an image of the overlaid first and second signals.

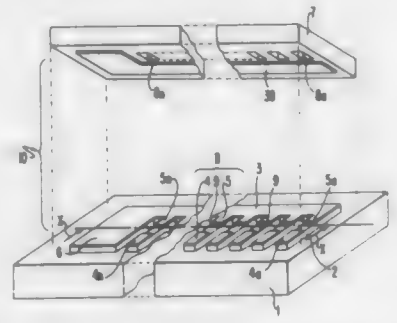
5,006,710
RECOGNITION AND PROCESSING OF WAVEFORMS
Brian D. Powell, Maidenhead, England, assignor to Detector Electronics Corporation, Minneapolis, Minn.
Filed Oct. 12, 1989, Ser. No. 420,271
Int. Cl.[5] G01J 5/02
U.S. Cl. 250—340 7 Claims



1. A system for processing signals so as to discriminate in favor of certain types of signal and against other types, comprising
means for identifying successive turning points of a signal,
means for measuring the changes in magnitude between said successive turning points of the signal,
comparing means for comparing each such magnitude change with the immediately preceding such magnitude change, and
processing means responsive to the successive comparisons to discriminate against those produced when the signal is substantially regularly varying or includes changes which are substantially of step form, and in favor of those corresponding to a substantially randomly varying signal.

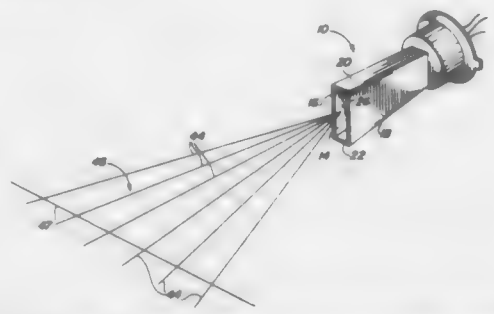
5,006,711
MULTIELEMENT INFRARED DETECTOR FOR THERMAL IMAGING
Shigeki Hamashima, Yokohama; Masaru Koseto, Kobe, and Shoji Nomura, Kakogawa, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Sep. 28, 1989, Ser. No. 413,751
Claims priority, application Japan, Oct. 5, 1988, 63-252818
Int. Cl.[5] G01J 5/04, 5/16
U.S. Cl. 250—349 14 Claims
1. A multi-element infrared detector comprising a substrate, a plurality of detector elements formed on the substrate and arranged thereon in an array at predetermined intervals, each of said detector elements having a photosensitive zone and output and common terminal electrodes formed at respective

opposite ends thereof, an aperture plate disposed over the detector elements, the aperture plate having at least one aperture for restricting the field of view of the photosensitive zone,



and an auxiliary electrode formed on a surface of said aperture plate in a position to electrically contact the common terminal electrodes of the detector elements.

5,006,712
CATOPTRIC DIFFERENTIAL SENSING DEVICE
Hans J. Keller, Staefe, Switzerland, assignor to Eltec Instruments, Inc., Daytona Beach, Fla.
Filed Oct. 8, 1987, Ser. No. 105,896
Int. Cl.[5] G01J *5/08*
U.S. Cl. 250—353 3 Claims



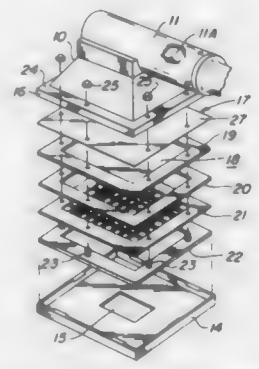
1. Apparatus for detecting fluctuations in radiation transmitted through a plurality of spaced apart detection zones arranged in a primary plane, the primary plane passing through a region for receiving radiation from each of the detection zones, said apparatus comprising:

a. sensing means positioned in the receiving region for detecting fluctuations in levels of radiation transmitted to the receiving region;

b. first reflective means for transmitting radiation from each detection zone to said sensing means through a plurality of reflective paths in the primary plane; said first reflective means comprising two substantially parallel opposing planar reflective surfaces each transversely intersecting the primary plane; and

c. second reflective mans optically coupled to said first reflective means for transmitting radiation from each detection zone to said sensing means through a plurality of reflective paths extending outside the primary plane; said second reflective means comprising two convergent and opposing reflective surfaces, each convergent surface being substantially planar and transverse to said parallel reflective surfaces.

5,006,713
ALPHA PROBE
John C. Miller, Horsham; Sudhakar Pandey, Newtown, and Earl M. Pollock, Chalfont, all of Pa., assignors to Nuclear Research Corp., Warrington, Pa.
Filed Sep. 5, 1989, Ser. No. 402,602
Int. Cl.[5] G01T *1/20*
U.S. Cl. 250—361 R 4 Claims



1. A large aperture alpha radiation detector device comprising in combination,

(a) a rectangular single funnel scintillation chamber having a large rectangular mouth area opening where scintillations are generated, and having a substantially smaller neck area opening where the target of a scintillation detector may be disposed to directly view the funnel mouth with no other physical structure disposed between the funnel mouth opening and neck opening and to generate signals in response to viewed scintillations, the inside surface of said scintillation chamber between said mouth opening and neck opening being coated with a highly reflective light dispersive coating.

(b) a side window photomultiplier tube scintillation detector disposed in a housing affixed to the neck end of said scintillation chamber with the scintillation detector target disposed as aforesaid at the funnel neck opening,

(c) a flat screen scintillator of substantially the same area as and positioned at the scintillation chamber mouth with its plane substantially orthogonal to the funnel axis, said scintillator being responsive to alpha particles radiation,

(d) a flat window of substantially the same size as, and with its plane parallel spaced closely to, but separated from, said scintillator, and facing the side of said scintillator which faces the mouth of said scintillation chamber, said window being transparent to alpha particles radiation but opaque to light to which said scintillation detector is responsive, and

(e) quick release retainer means operative to securely detachably lock scintillator and flat window to said scintillation chamber across the mouth of and closing said scintillation chamber.

5,006,714
SCINTILLATOR DOSIMETRY PROBE
Frank H. Attix, Madison, Wis., assignor to Radiation Measurements, Inc., Madison, Wis.
Filed Feb. 24, 1989, Ser. No. 315,321
Int. Cl.[5] G01T *1/29*
U.S. Cl. 250—368 8 Claims

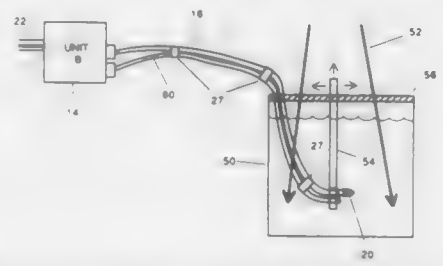
1. Apparatus for characterizing a radiation field by measuring the dose-rate at a plurality of points in the radiation field, the apparatus comprising:

a phantom filled with water in the radiation field;

a scintillator positioned in the phantom, the scintillator producing a light output proportional to the dose-rate of radiation that impinges upon the scintillator;

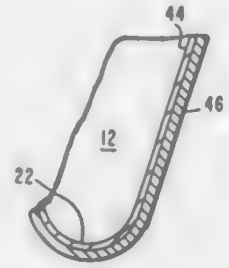
a light pipe having a first end and a second end, the first end being optically connected to the scintillator so that the light pipe conveys the light output from the scintillator;

means connected to the second end of the light pipe and located outside of the phantom for converting light to an output signal proportional to the dose-rate of radiation that impinges upon the scintillator; and



mechanical scanning means for moving the scintillator with the end of the light pipe attached through the interior of the phantom to map the radiation field within the phantom.

5,006,715
ION EVAPORATION SOURCE FOR TIN
Peter B. Back, Canoga Park, Calif.; Mark W. Utlaut, Scappoose, Oreg., and William M. Clark, Jr., Thousand Oaks, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed May 16, 1989, Ser. No. 352,440
Int. Cl.[5] H01J *27/26*
U.S. Cl. 250—423 R 6 Claims



1. A process for preparing an evaporation element for tin, comprising the steps of:

furnishing an ion evaporation source;

coating the evaporation source with gallium; and

loading the evaporation source with tin which includes a fraction of Sn^{120} greater than present in naturally occurring tin.

5,006,716
METHOD AND SYSTEM FOR DIRECTIONAL, ENHANCED FLUORESCENCE FROM MOLECULAR LAYERS
Dennis G. Hall, Pittsford, N.Y., assignor to Research Corporation Technologies, Inc., Tucson, Ariz.
Filed Feb. 22, 1989, Ser. No. 313,763
Int. Cl.[5] G01N *21/62, 21/64*
U.S. Cl. 250—458.1 42 Claims

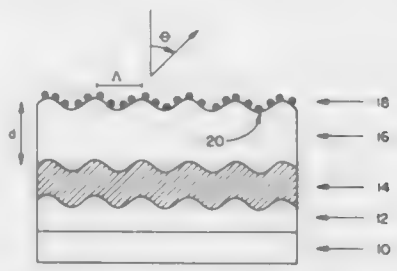
1. A method of enhancing and improving the detection of a fluorescent emitting material comprising the steps of:

(a) depositing a film of a fluorescent emitting material on a waveguide with a corrugated surface which supports propagation modes for optical radiation at the wavelength of absorption by and fluorescence from said fluorescent emitting material,

wherein the waveguide comprises a plurality of layers deposited on a grating, said plurality of layers including a layer of an electrically conductive, light reflective material forming said corrugated surface,

a layer of a dielectric material disposed over the conductive, reflective material, and having a thickness between 20 nanometers and 500 nanometers,

the depositing step including the step of depositing the fluorescent emitting material on the layer of the dielectric material, wherein the dielectric material maintains the

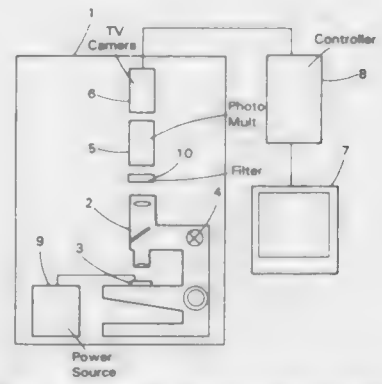


fluorescent emitting material spaced from the conductive, reflective material a distance of between 20 and 500 nanometers,

(b) exciting said fluorescence in said film through the waveguide propagation modes at the wavelength of absorption by said fluorescent emitting material and at discrete angles of emission from the film's normal,

(c) detecting said fluorescence at discrete angles from the film's normal.

5,006,717
METHOD OF EVALUATING A SEMICONDUCTOR DEVICE AND AN APPARATUS FOR PERFORMING THE SAME
Noriko Tsutsu, Osaka; Yoshiro Nakata, Ikoma, and Hideya Esaki, Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 26, 1989, Ser. No. 456,994
Claims priority, application Japan, Dec. 26, 1988, 63-328253
Int Cl.[5] H05B *33/00*
U.S. Cl. 250—484.1 18 Claims



16. An apparatus for evaluating a semiconductor device comprising:

means for obtaining an image of the semiconductor device;

means for operating the semiconductor device;

means for detecting a two-dimensional distribution of at least two kinds of luminescence of different predetermined wavelengths emitted from the operating semiconductor device;

means for calculating a two-dimensional distribution of luminescence of another wavelength which correlates with the degradation of the semiconductor device, from the detected two-dimensional distribution of said at least two kinds of luminescence, using a predetermined expres-

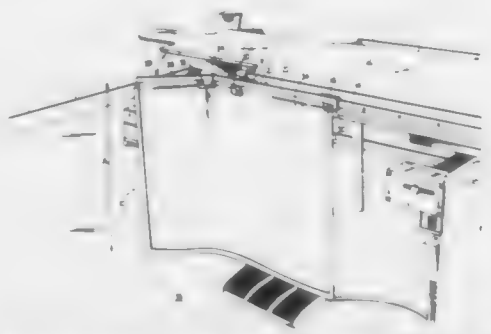
sion; and means for comparing said calculated two-dimensional distribution with said image to determine a place where hot carriers are generated.

5,006,718

X-RAY SHIELD FOR X-RAY EXAMINATION TABLE

Mark J. Lenhart, 10 Partridge La., Burlington, Mass. 01803

Filed Jul. 21, 1989, Ser. No. 383,201
Int. Cl.[5] G21F *3/00*
U.S. Cl. 250—519.1 5 Claims



1. An X-ray shield for preventing passage of X-rays in front of said shield to a person positioned behind said shield, said shield being adapted for attachment to an X-ray examination table having a horizontally positioned accessory rod adjacent the upper portion of the table, wherein said table is positioned above a floor, and a source of X-rays may cause X-rays to pass between the floor and the table, the shield comprising:

an elongated mounting bar comprising a linear main section and a linear hinge section each fixedly connected together at one end by a hinge, wherein said hinge is constructed and arranged to allow horizontal rotational movement of said linear hinge section above said hinge when said linear main section is fixedly held in a horizontal position.

a mounting bracket fixedly connected to one side of said linear section, said bracket being constructed and arranged to be horizontally slidingly engaged with the accessory rod to hold said mounting bar in a horizontal position adjacent the table, to allow said linear section to be horizontally moved and to allow said horizontal rotational movement of said linear hinge section, and

a drape comprising an X-ray opaque material, fixed at one edge to said mounting bar and extending from said mounting bar substantially the distance said mounting bar is spaced from the floor, said drape being adapted to allow said horizontal rotational movement of said linear hinge section; wherein said drape prevents the passage of X-rays from one side of said drape between the table and the floor and the other side of said drape.

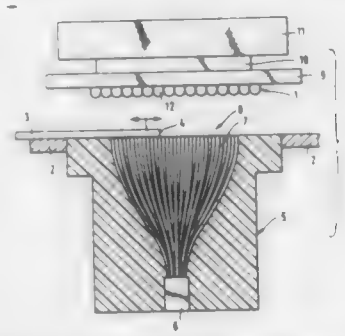
5,006,719

DEVICE FOR DETECTING THE EDGE LOCATION OF AN OBJECT

Peter T. Blaser, Dielheim, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Jul. 26, 1989, Ser. No. 385,738
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1988, 3825295
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—560 9 Claims

1. Device for detecting a position of an edge comprising a row of a multiplicity of light-emitting elements forming an angle with the edge, a single optoelectric transducer disposed adjacent said light emitter elements for receiving light emitted by said light emitting elements, first means for guiding the edge between said row of light-emitting elements and said optoelectric transducer, second means for pulsatingly energizing said light-emitting elements sequentially, and third means for scanning an output voltage of said optoelectric transducer in synchronism with the pulsating energization of said light-emitting elements.

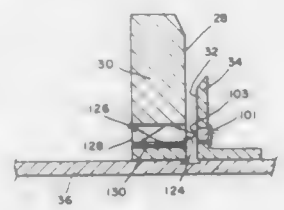


5,006,720

LIGHT SENSOR APPARATUS FOR SHEET TRANSPORT

Dwight G. Westover, Sierra Madre, Calif., assignor to TransTechnology Corporation, Sherman Oaks, Calif.

Division of Ser. No. 225,232, Jul. 28, 1988, Pat. No. 4,927,132.
This application Mar. 27, 1990, Ser. No. 499,961
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—561 5 Claims



1. In apparatus for receiving a sheet between two spaced apart walls, the improvement comprising:

light emitting and sensing means in one of said walls for emitting light energy and sensing said light energy reflected back from said sheet when interposed between said walls and in the path of said emitted light energy; and

light absorbing means in the other of said walls for absorbing light energy emitted from said light emitting and sensing means when said sheet is not interposed between said light emitting and sensing means and said light receiving means, said light absorbing means including a transparent cylindrical member in said other wall and having a polished end surface for receiving said emitted light energy, said cylinder's other end surface and said cylinder's cylindrical surface being light energy absorbent.

5,006,721

LIDAR SCANNING SYSTEM

Evan S. Cameron, Midland, Canada; Ronald P. Szumski, Raleigh, England, and James K. West, Farmington Hills, Mich., assignors to Perceptron, Inc., Farmington Hills, Mich.

Filed Mar. 23, 1990, Ser. No. 499,068
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—561 13 Claims

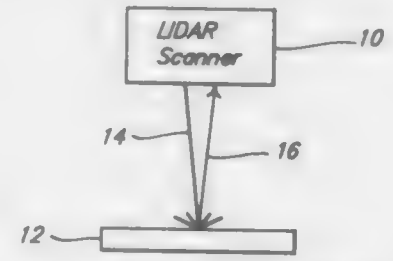
1. A LIDAR scanning system for providing a three-dimensional image of a surface, said system comprising:

a modulated light source;

a light detector;

a rotating multifaceted mirror including a first facet reflecting light emitted from said light source onto said surface, and a second facet receiving diffuse light reflected back from said surface, said diffuse light received by said second facet being reflected to said light detector; and

range determining means for determining the range of said surface relative to a predetermined datum in accordance with the state of modulation of the light received by said light detector relative to the modulated light emitted by said light source, and including zero reference means



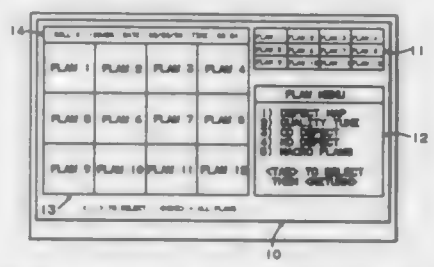
comprising a pair of fiber optic light pipes of differing predetermined lengths for receiving light at first terminals thereof located adjacent to said modulated light source and emitting light from second terminals thereof located adjacent to said light detector for providing reference signals to said light detector having known states of modulation.

5,006,722

FLAW ANNUNCIATOR WITH A CONTROLLABLE DISPLAY MEANS FOR AN AUTOMATIC INSPECTION SYSTEM

Alexander Adelson, Peekskill, N.Y., assignor to Intec Corp., Trumbull, Conn.

Filed Mar. 2, 1990, Ser. No. 487,570
Int. Cl.[5] G01N *21/88;* G09G *1/28*
U.S. Cl. 250—563 10 Claims



1. A method for detecting flaws in a moving web, comprising the steps of:

detecting each of any of a plurality of different types of flaws in the moving web and generating signals corresponding thereto; and

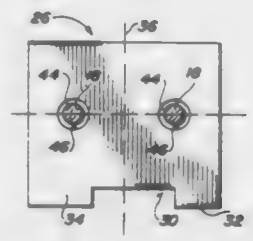
visually indicating when the detected number of flaws for any type of flaw is greater than a preselected threshold value by displaying a matrix of areas each corresponding to one type of the plurality of type of flaws, wherein each area is capable of displaying either of a first and a second color; and controlling the display for each area to initially display the area in the first color and to individually change the color of the area to the second color in response to the detection of a first preselected threshold value of detected flaws of the type corresponding to the area.

5,006,723

ELECTROMAGNETIC DOOR LOCK DEVICE

Arthur Geringer, 5029 E. Jacobs Ct., Agoura, Calif. 91301; Richard Geringer, 2663 Riata Ct., Camarillo, Calif. 93010, and David Geringer, 28364 Balkia, Agoura, Calif. 91301

Filed Apr. 30, 1990, Ser. No. 516,657
Int. Cl.[5] E05C *17/56*
U.S. Cl. 292—251.5 21 Claims



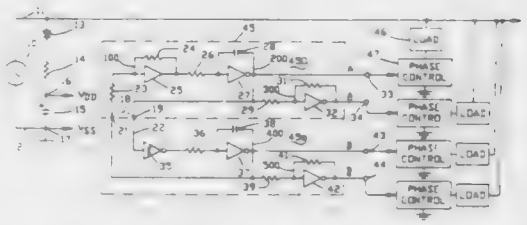
1. In an electromagnetic door lock device having an electromagnet in a housing connected to the underside of the top of a door frame, an armature attracted to the electromagnet only when the latter is energized, the armature being connected to the top of a door hinged in the door frame and movable between a resting unlocked position directly on the top of the door and an upwardly extended locked position adjacent to the underside of the housing when the electromagnet is energized, and locking means including one or a pair of tab plates connected to one or both opposite sides of the housing, each said tab plate having a depending tab adapted to intercept the armature only when the latter is in the upwardly extended position, the improvement which comprises a tab plate having a spaced pair of depending tabs defining a notch therebetween extending upwardly from the bottom thereof, said tabs being disposed unequal distances from the vertical centerline of said plate, and an armature having a protrusion extending outwardly from at least one of the two opposite sides thereof and receivable within said notch only when said armature is in said locked upwardly extended position so as to prevent said door from opening.

5,006,724

CONTROL DEVICE FOR LIGHT SETS

Ching-Chung Liu, No. 6 Lane 29, Pei Yin Street, Hsin-Chu, Taiwan

Filed Mar. 20, 1989, Ser. No. 325,569
Int. Cl.[5] H03K *3/00;* H05B *39/04*
U.S. Cl. 307—11 23 Claims



21. A control device for varying the current flow through a load, with the load being a light set of four strings, comprising:

a power supply being defined by a positive side and a negative side;

a function generator having terminals connectable to said power supply and producing at least one output signal of triangular waveform;

power switching means for modulating the current flow through the load in dependence on said triangular output signal of said function generator to attain a gradual increase and decrease of the current flow through the load, said function generator producing four output signals of triangular waveform separated from each other by a quar-

ter period and cooperating with said power switching means,

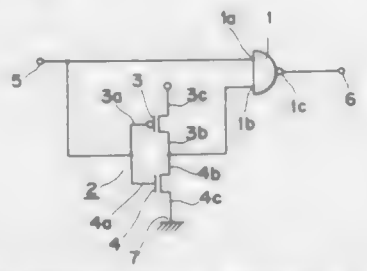
said power switching means being subdivided into two groups, with one group being coupled to the positive side of said power supply and connected with one end of two such strings of the light set, and with the other group being coupled to the negative side of said power supply and connected to one end of the other two such strings of the light set.

5,006,725

PULSE GENERATOR FOR USE IN AN INTEGRATED CIRCUIT

Masaru Nawaki, and Yasuo Torimaru, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 5, 1989, Ser. No. 347,711
Claims priority, application Japan, May 13, 1988, 63-117944
Int. Cl.[5] H03K *3/07*
U.S. Cl. 307—106 2 Claims



1. A pulse generating unit for generating an output signal having a predetermined pulse duration comprising:

delay means, coupled to a pulse signal input, for outputting a delayed-inverted pulse signal in which only pulse falling edges are delayed, said delay means comprised of only a single P-channel/N-channel MOS-FET pair inverter circuit, the transistor gain of said N-channel MOS-FET smaller than the transistor gain of said P-channel MOS-FET; and

comparator means, for comparing said pulse signal input with said delayed-inverted pulse signal and for outputting the output signal having the predetermined pulse duration, said comparator means comprised of a dual input NAND gate unit, the predetermined pulse duration of the output signal of said comparator means has the same length as that of the delay time of said single P-channel/N-channel MOS-FET pair inverter circuit.

5,006,726

PULSE GENERATOR INCLUDING COAXIAL TYPE CAPACITOR

Mitsunao Okumura, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Division of Ser. No. 171,559, Mar. 22, 1988, Pat. No. 4,843,518.
This application May 8, 1989, Ser. No. 348,811
Claims priority, application Japan, Mar. 23, 1987, 62-042928[U]; Dec. 21, 1987, 62-194342[U]
The portion of the term of this patent subsequent to Jun. 27, 2006, has been disclaimed.
Int. Cl.[5] H03K *3/537*; H01G *4/38*
U.S. Cl. 307—108 39 Claims

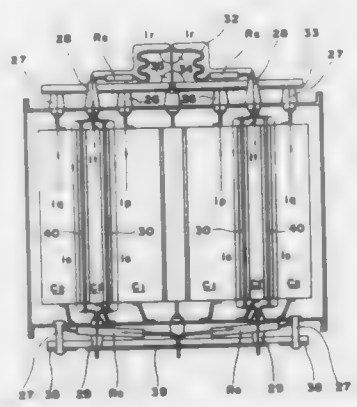
1. A pulse generator comprising a coaxial type capacitor, said capacitor including at least a first capacitor which discharges a charge accumulated therein when a pulse is generated and a second capacitor which adjusts a waveform of a pulse to be outputted,

wherein said coaxial type capacitor includes at least said first and second capacitors, and also a third capacitor, said three capacitors being arranged coaxially and adjacently with each other,

wherein said first and third capacitors between which said second capacitor is arranged are connected in parallel so as to form the discharging capacitor of the pulse generator, said second capacitor being the waveform adjusting capacitor, and

wherein currents in said first and third capacitors flow in an opposite direction to that of a current in said second capacitor when a pulse is generated; and further comprising:

charging and switching means for charging and discharging said first capacitor and thereby forming an output current pulse of said pulse generator.

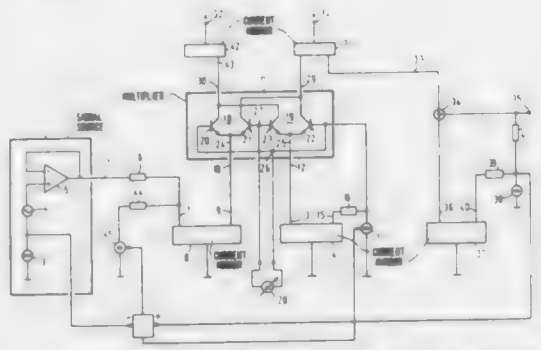


5,006,727

CIRCUIT ARRANGEMENT FOR ADJUSTING THE AMPLITUDE OF A SIGNAL

Ernst P. Ragosch, Hamburg, and Henning Schwarz, Reinbek, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 16, 1989, Ser. No. 421,870
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1988, 3835499
Int. Cl.[5] H03K *5/00*
U.S. Cl. 307—264 15 Claims



1. A circuit arrangement for adjusting the amplitude of a signal comprising:

first and second differential transistor amplifiers having cross-coupled control terminals and having two cross-coupled main current path outputs,

a signal source,

a first current mirror circuit coupled to said signal source and to a main current path input of one of said amplifiers to apply to said input the signal whose amplitude is to be adjusted,

a supply voltage source,

a second current mirror circuit coupled to said supply voltage source and to main current path input of the other one of said amplifiers to apply to said latter input a supply direct current corresponding to a d.c. component of said signal,

means for applying a control voltage to the cross-coupled terminals of the differential amplifiers in order to adjust the amplitude of said signal, whereby the amplitude adjusted signal appears on said two cross-coupled main current path outputs,

a current summing circuit coupled to said two-cross-coupled outputs,

a further voltage source, and

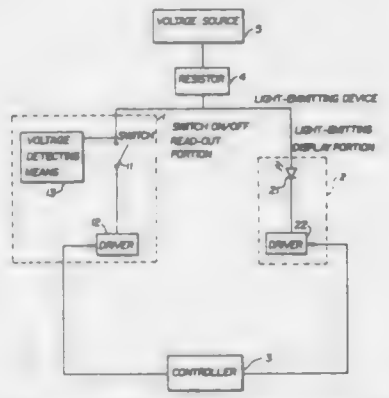
a third current mirror circuit coupled to said further voltage source and to said current summing circuit whereby said current summing circuit substracts an output direct current corresponding to the supply direct current from the amplitude adjusted signal.

5,006,728

DUAL PATH POWER SUPPLY CIRCUIT WITH TIME CONTROLLED SWITCHING

Mikio Yonekura, and Hiroyuki Tojo, both of Hachioji, Japan, assignors to Fanuc Ltd., Yamanashi, Japan

Continuation of Ser. No. 265,861, Oct. 13, 1988, abandoned. This application Apr. 23, 1990, Ser. No. 511,897
Claims priority, application Japan, Feb. 14, 1987, 62-30676
Int. Cl.[5] H03K *3/01*
U.S. Cl. 307—296.10 2 Claims



1. A power supply circuit being connected to a power source through a resistance, said supply circuit comprising:

a first current path including,

(a) a first switching means connected to said resistance and for active operation by receiving power for a first predetermined time period, and

(b) a first driver circuit means, connected to said first switching means for controlling current flow through said first current path;

a second current path including,

(a) a light emitting display device connected to said resistance and operated to be active by receiving power for a second predetermined time period, and

(b) a second driver circuit means, connected to said light emitting display device, for controlling current flow through said current path; and

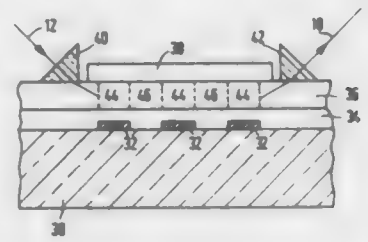
a driver circuit controller means, connected to said first and second driver circuit means, for controlling said first and second driver circuits such that power is alternately supplied between said first and second current path to operate said first switching means for the first predetermined time period and subsequently power is applied to said second current path to operation aid light emitting display device for the second predetermined time period.

5,006,729

DEVICE FOR DOUBLING THE FREQUENCY OF A LIGHT WAVE COMPRISING A NON-LINEAR OPTICAL COMPOUND

Egbert W. Meijer, Eindhoven; Wolter Ten Hoeve, Eelde; Sjef Nijhuis, Eindhoven; Gerardus L. J. A. Rikken, Eindhoven, and Edsko E. Havinga, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 24, 1990, Ser. No. 513,743
Claims priority, application Netherlands, Apr. 27, 1989, 8901069
Int. Cl.[5] H03F *7/00*; G02B *6/00*; C08F *26/06*; B32B *9/04*
U.S. Cl. 307—425 5 Claims



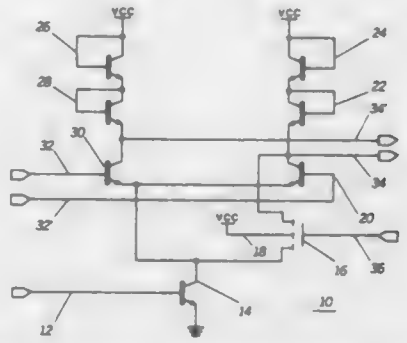
1. A device for doubling the frequency of a light wave, in which a fundamental red light wave is passed through a nonlinear optical medium, so as to form a second harmonic blue light wave, which nonlinear optical medium comprises a nonlinear optical compound, comprising an electron donor group an an electron acceptor group which are linked by a π-conjugated system, in which the electron acceptor group is a sulphone group containing a substituent selected from the group consisting of alkyl, hydroxyalkyl and alkyl(meth)acrylate moieties and in which the compound π-conjugated system is a biphenylene group.

5,006,730

BIMOS LOGIC GATES

Darrell E. Davis, Sunrise, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 345,753, May 1, 1989, abandoned. This application Sep. 21, 1990, Ser. No. 586,321
Int. Cl.[5] H03K *19/02*, *19/086*, *19/0175*
U.S. Cl. 307—446 42 Claims



1. A BIMOS logic gate for receiving external ECL level input signals and external MOS level input signals and for providing ECL level output signals, comprising:

bias means for providing a bias current;

first and second loads coupled to a voltage source;

a MOS transistor, disposed between said bias means and said first load;

first and second bipolar transistors, each transistor having first, second, and third ports, said first bipolar transistor arranged such that its first port is coupled to said first load, its second port is coupled to a complementary ECL level input, and its third port is coupled to said bias means, said

second bipolar transistor being arranged such that its first port is coupled to said second load, its second port is coupled to an ECL level input, and its third port is coupled to said bias means;

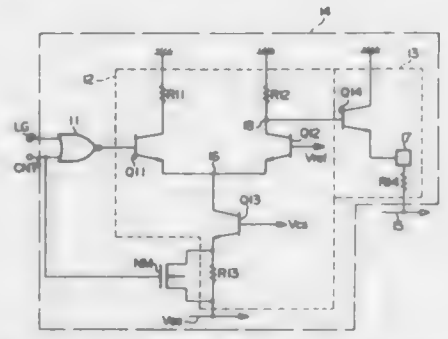
whereby, said MOS transistor receives only a single external MOS input signal, and the second ports of said first and second bipolar transistors receive input signals, said first ports of said bipolar transistors provide complementary output signals.

5,006,731

THREE STATE EMITTER COUPLED LOGIC CIRCUIT WITH A SMALL AMOUNT OF CURRENT CONSUMPTION

Akira Denda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 2, 1989, Ser. No. 416,116
Claims priority, application Japan, Oct. 6, 1988, 63-252681
Int. Cl.[5] H03K *19/02, 3/01, 17/60*
U.S. Cl. 307—455 8 Claims



1. A three state emitter coupled logic circuit shifted between a logical function mode and a high impedance state, comprising:

(a) a logic circuit responsive to an input logic signal and a three state control signal and operative to produce an internal logic signal;

(b) a difference circuit having a first series combination of a first resistor and a first bipolar transistor coupled between a first constant voltage source and a common mode, a second series combination of a second resistor and a second bipolar transistor coupled in parallel to the first series combination between the first constant voltage source and the common node, a third series combination of a third bipolar transistor and a third resistor coupled between the common node and a second constant voltage source, said first, second and third bipolar transistors being supplied at the respective base nodes thereof with the internal logic signal, a reference voltage level and a current source signal, respectively;

(c) an output circuit having a fourth series combination of a fourth bipolar transistor, an output node and a fourth resistor coupled between the first constant voltage source and an output signal line, said fourth bipolar transistor being coupled at the base node thereof to an intermediate node provided between said second bipolar transistor and said second resistor; and

(d) a bypassing circuit providing a current path bypassing said third resistor in the presence of said three state control signal of an active voltage level for establishing said three state emitter coupled logic circuit in said high impedance state, said current path being blocked in the presence of said three state control signal of an inactive voltage level for establishing said three state emitter coupled logic circuit in said logic function mode, said first constant voltage source and said second constant voltage source respectively producing a ground voltage level and a negative voltage level.

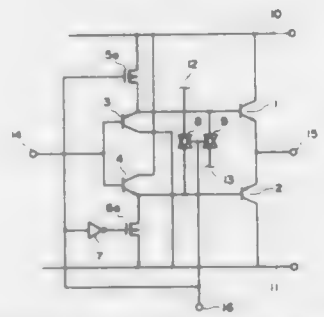
wherein said first, second, third and fourth bipolar transistors are of the n-p-n type and said bypassing circuit is formed by an n-channel type field effect transistor having a gate electrode supplied with said three state control signal.

5,006,732

SEMICONDUCTOR CIRCUIT HAVING BUFFER FUNCTION

Hiroyuki Nakamura, Isehara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1989, Ser. No. 354,757
Claims priority, application Japan, May 25, 1988, 63-125950
Int. Cl.[5] H03K *19/00*
U.S. Cl. 307—473 5 Claims



1. A semiconductor circuit having a buffer function comprising:

an input terminal for inputting a signal;

an output terminal for outputting a signal corresponding to the signal input by the input terminal;

a control signal input terminal for inputting a control signal to control whether said signal corresponding to the signal input by said input terminal is output from said output terminal or not;

a first transistor whose collector is connected to one terminal of a power supply and whose emitter is connected to an emitter of a second transistor and whose base is connected to an emitter of a third transistor;

a collector of the second transistor is connected to another terminal of the power supply and the base of the second transistor is connected to an emitter of a fourth transistor;

a first current device in which one of terminals is connected to the one terminal of the power supply and the other terminal is connected to the emitter of the third transistor and which is turned on or off by said control signal;

a collector of the third transistor is connected to the other terminal of the power supply;

a collector of the fourth transistor is connected to the one terminal of the power supply and the emitter of the fourth transistor is connected to one of a pair of terminals of a second current device;

the other terminal of the second current device is connected to the other terminal of the power supply;

the second current source is turned on or off by said control signal;

wherein said input terminal is connected to bases of the third and fourth transistors and said output terminal is connected to the emitters of the first and second transistors.

5,006,733

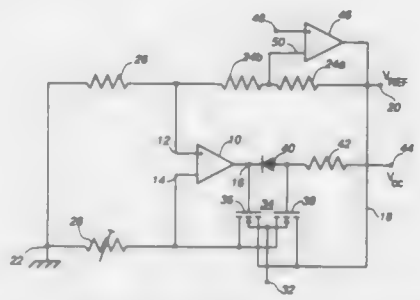
FILTER CONTROL CIRCUIT

Anthony K. D. Brown, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed May 11, 1990, Ser. No. 522,020
Int. Cl.[5] H03K *5/00, 3/01*
U.S. Cl. 307—521 13 Claims

1. A filter control circuit, comprising:

a resistance bridge circuit having first, second, third and fourth resistance arms, a first junction point between the first and second resistance arms, a second junction point between the first and third resistance arms, a third junction point between the first and second resistance arms, and a fourth junction point between the third and fourth resistance arms;



comparator means having a first input connected to the third junction point and a second input coupled to the fourth junction point and an output;

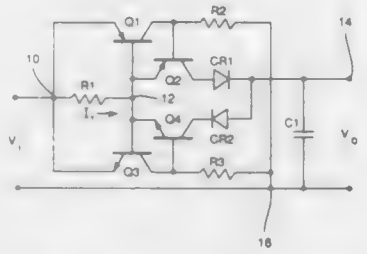
the fourth resistance arm including field effect transistor means having a plurality of gates connected to the output of the comparator means, each gate having a width different from each other gate.

5,006,734

BIDIRECTIONAL CURRENT LIMITING CIRCUIT

Dennis R. Engelbrecht, Corvallis, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 31, 1990, Ser. No. 472,986
Int. Cl.[5] H03K *5/08*
U.S. Cl. 307—544 19 Claims



1. A bidirectional current limiting circuit for limiting the current through the circuit to a maximum, comprising:

a first pair of bipolar junction transistors, each transistor having its emitter coupled to a first node and its base coupled to a second node;

resistance means for carrying the current to be limited, the resistance means connected between the first node and a second node, in parallel with the base-emitter junction of a transistor of the transistor pair; and

a second pair of bipolar junction transistors, each transistor coupled to a second node and to a third node, one transistor including means for allowing current to flow from the third node through the transistor to the second node and the other transistor including means for allowing current to flow from the second node through the transistor to the third node,

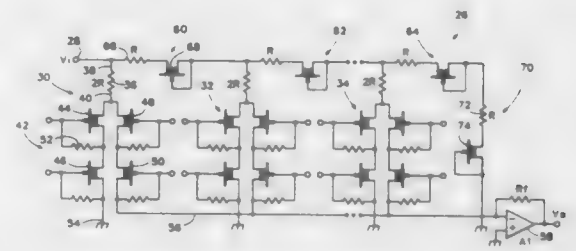
each transistor of the first pair controlling a transistor of the second pair to limit the current through the resistance means when a controlling transistor turns on, a controlling transistor turning on if the current through the resistance means in either direction reaches the maximum.

5,006,735

METHOD AND APPARATUS FOR COMPENSATING A SOLID STATE ATTENUATOR

Stewart S. Taylor, Beaverton, Oreg., assignor to TriQuint Semiconductor, Inc., Beaverton, Oreg.

Filed Jan. 23, 1990, Ser. No. 468,508
Int. Cl.[5] H03K *5/08;* H01P *1/22*
U.S. Cl. 307—568 23 Claims



1. A compensated attenuator comprising:

a terminal for applying an input voltage thereto;

a first branch electrically connected to said terminal and having a first resistance therein;

a second branch electrically connected to said terminal and having a second resistance therein;

a first solid state switching device disposed in said first branch for switching current therein between a first path and a second path, said first switching device having a third resistance that is in series with said first resistance;

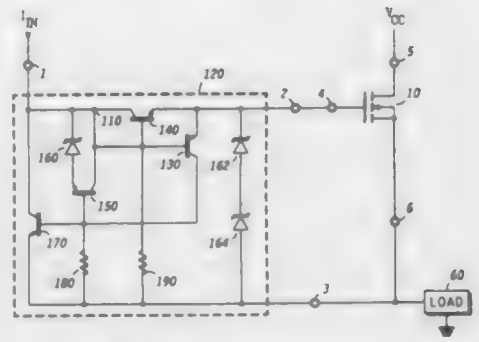
a second solid state switching device disposed in said second branch, said second switching device being biased into a conducting condition for passing current therethrough and having a fourth resistance, said third and fourth resistances having a first ratio and said first and second resistances having a second ratio equal to the first ratio.

5,006,736

CONTROL CIRCUIT FOR RAPID GATE DISCHARGE

Robert B. Davies, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 13, 1989, Ser. No. 365,403
Int. Cl.[5] H03K *17/16*
U.S. Cl. 307—570 8 Claims



1. A control circuit having an input terminal, an output terminal and a reference terminal, for coupling to a switching device, the switching device having a control terminal, a first load terminal for coupling to a source of supply voltage and a second load terminal for coupling to a load, the control circuit comprising:

current supply circuit means coupled between the input terminal and the output terminal and responsive to a current signal applied at the input terminal for providing a current path from the input terminal to the output terminal, said current supply means including a first transistor having a control terminal and first and second load terminals, said first load terminal of said first transistor coupled

to the output terminal, and said control and second load terminals coupled to the input terminal;

zener diode means coupled between the output terminal and the reference terminal for limiting the voltage thereacross;

silicon controlled rectifier means coupled to the input terminal, to the output terminal and to the reference terminal for providing a discharge path from the output terminal to the reference terminal in response to said current signal applied at the input terminal;

a second transistor having a control terminal and first and second load terminals, said second load terminal of said second transistor being coupled to the input terminal,

said silicon controlled rectifier means including a third transistor having a control terminal and first and second load terminals, said first load terminal of said third transistor being coupled to the reference terminal, said second load terminal of said third transistor being coupled to the input terminal, and said control terminal of said third transistor being coupled to said control terminal of said second transistor;

a first zener diode having cathode and anode terminals, said anode terminal being coupled to said first load terminal of said second transistor, and said cathode terminal being coupled to said second load terminals of said second and third transistors; and

a first resistor having first and second terminals, said first terminal being coupled to said control terminals of said second and third transistors, and said second terminal being coupled to the reference terminal, wherein said current supply circuit means, said zener diode means, said silicon controlled rectifier means, said second transistor, said first zener diode and said first resistor are all contained in a single integrated circuit and wherein the output terminal is for coupling to the control terminal of the switching device and the reference terminals is for coupling to the second load terminal of the switching device.

5,006,737

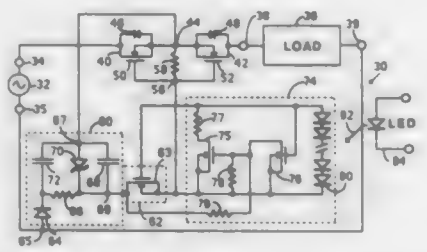
TRANSFORMERLESS SEMICONDUCTOR AC SWITCH HAVING INTERNAL BIASING MEANS

Gary V. Fay, Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Apr. 24, 1989, Ser. No. 341,881

Int. Cl.[5] H03K *17/687, 17/60, 3/42, 3/01*

U.S. Cl. 307—571 **20 Claims**



1. A transformerless AC semiconductor switch for coupling AC power to an AC load, comprising:

first and second power input means for receiving power from an AC source;

first and second power output means for coupling AC power to a load;

first and second series connected MOSFETS having connected together first power terminals and second power terminals coupled between the first power input means and the first power output means, wherein the MOSFETS have connected together gate electrodes; and

internal voltage bias means coupled between the connected together first power terminals and the connected together gate electrodes of the MOSFETS for providing a gate voltage larger than the threshold voltage of at least one of the power MOSFETS, wherein the internal voltage bias means generates the bias from the first and second power input means without use of a transformer.

5,006,738

DELAY CIRCUIT FOR INTEGRATED CIRCUIT

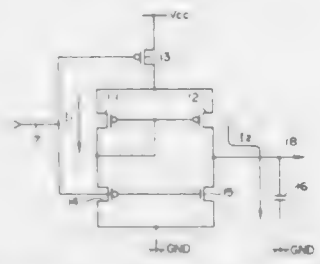
Hideki Usuki; Shumpei Kohri; Masatoshi Yano, and Hiroshi Ishida, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 263,389, Oct. 27, 1988, abandoned. This application Jun. 13, 1990, Ser. No. 537,868

Claims priority, application Japan, Oct. 31, 1987, 62-276874

Int. Cl.[5] H03K *5/13*

U.S. Cl. 307—594 **15 Claims**



1. A delay circuit for an integrated circuit for producing a predetermined delay time between a signal received at an input and a signal produced at an output, comprising:

a current mirror circuit including at least a pair of current mirror connected MIS transistors, each of said MIS transistors is a PMOS transistor having their sources coupled to source voltage and both gates of said MIS transistors are connected in common;

a constant current source connected between a drain of one of said MIS transistors and ground;

a capacitance connected between a drain of the other of said MIS transistors and ground and being chargeable by current flowing through said other of said MIS transistors, charging time of said capacitance from the current flowing through said other of said MIS transistors determining the predetermined delay time of said delay circuit;

said constant current source comprising a PMOS transistor, and a gate of said PMOS transistor of said constant current source being the input for receiving an input signal;

a NMOS transistor connected to the other of said MIS transistors and in parallel with said capacitance, a gate of said NMOS transistor being connected in common with a gate of said PMOS transistor of said constant current source so that said NMOS transistor switches to a conducting state when said PMOS transistor is in a non-conducting state and visa versa.

5,006,739

CAPACITIVE LOAD DRIVE CIRCUIT

Yuichiro Kimura; Nobuaki Kabuto; Satoru Takashimizu, all of Yokohama, and Katsuhiro Masujima, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
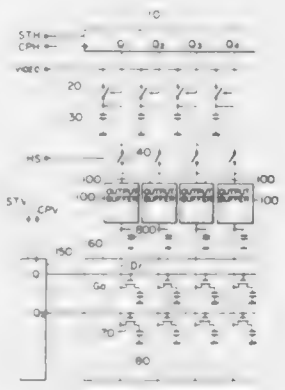
Continuation of Ser. No. 206,037, Jun. 13, 1988, abandoned. This application Aug. 15, 1990, Ser. No. 567,703

Claims priority, application Japan, Jun. 15, 1987, 62-146854; Sep. 30, 1987, 62-243705

Int. Cl.[5] H03K *3/01, 3/26*

U.S. Cl. 307—270 **8 Claims**

1. A capacitive load drive circuit using a voltage follower in which an SEPP (single-ended push-pull) circuit is connected to an output of a differential amplifier and an output of said SEPP circuit is fed back to an inverting input of said differential amplifier, wherein a non-inverting input of the differential amplifier receives an input signal for the capacitive load drive circuit, wherein the sum of on-voltage values of two bipolar transistors (or two FETs) included in said SEPP circuit is larger than zero, bases (or gates) of said two bipolar transistors (or two FETs) being directly connected together, and wherein said capacitive load drive circuit comprises a current limit circuit provided between the collector of at least one of said two bipolar transistors (or the drain of at least one of said two



FETs) and a positive or negative power supply, and wherein a constant current source is provided between an output terminal of said SEPP circuit and the positive or negative power supply.

5,006,740

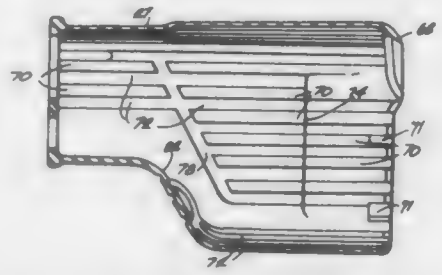
INSULATED COOLING BOOT FOR POWER TOOL

Bernhard Palm, Brookfield, Wis., assignor to Milwaukee Electric Tool Corporation, Brookfield, Wis.

Filed Jun. 13, 1990, Ser. No. 537,428

Int. Cl.[5] H02K *7/14, 9/00, 15/14, 7/10*

U.S. Cl. 310—50 **4 Claims**



1. A hand power tool including motor housing having a handle at one end and a gear case at the other end,

a transmission in said gear case, said transmission tending to build up heat,

a motor in said housing and having a shaft driving said transmission,

a fan in said housing driven by said motor,

air entry slots in said housing and an air exhaust space between said gear case and said housing so said fan can draw air into said housing through said slots and exhaust it through said space,

an insulating boot fitting over said gear case and projecting partially over said space between the gear case and the housing to divert cooling air flow between said boot and said gear case,

and spaced parallel ribs on the interior of said boot running lengthwise of said boot to channel cooling air flow forward between said boot and said gear case,

said cooling air leaving the space between said boot and said gear case adjacent the front of said power tool to blow on the working area of the tool to remove debris from the working area.

5,006,741

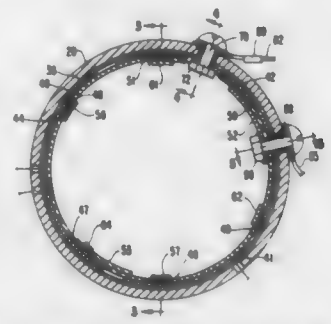
BRUSHLESS GENERATOR WITH CONCENTRICALLY ARRANGED RECTIFIER ASSEMBLY

Edmund A. Schott, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Jul. 6, 1989, Ser. No. 376,011

Int. Cl.[5] H02K *11/00;* **H02M** *1/00*

U.S. Cl. 310—68 D **19 Claims**



1. A brushless self-excited cooled dynamo electric machine comprising:

a main dynamo unit with a rotating DC field producing structure mounted on a hollow shaft, said unit being energized by an exciter dynamo unit having a rotor mounted on the hollow shaft and producing an alternating current;

means for supplying a coolant to the interior of said hollow shaft;

means for rectifying the alternating current to a direct current for supplying current to said DC field comprising a diode assembly including a first annular insulation layer positioned adjacent an internal peripheral surface of the hollow shaft, a first layer of conductive material composed of at least two electrically isolated segments supported by said first insulation layer, a second annular layer of insulation material concentric and supported by said first layer of conducting material which contains openings at spaced locations, a plurality of diodes positioned in the openings of said second layer of insulation material, said diodes each having a cathode surface and an anode surface with some of the diodes having a cathode surface in contact with said first conductive layer and others of said diodes having an anode surface in contact with said first conductive layer, a second layer of conductive material composed of two segments, one segment contacting exposed anode surfaces and one segment contacting exposed cathode surfaces of said diodes whereby stress due to centrifugal force tends to hold the layers together and compress diode chips to reduce the likelihood of diode breakage; and wherein

said layers are mounted as concentric laminates extending around a periphery of an inner wall of said hollow shaft.

5,006,742

SPLASHPROOF COVER FOR AN ELECTRIC MOTOR

Georg Strobl, Repulse Bay, and Ben T. Wong, Wah Fu, both of Hong Kong, assignors to Johnson Electric S.A., La Chaux de Fonds, Switzerland

Filed Sep. 21, 1989, Ser. No. 410,866

Claims priority, application United Kingdom, Sep. 22, 1988, 8822321

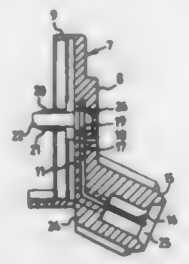
Int. Cl.[5] H02K *5/10*

U.S. Cl. 310—88 **4 Claims**

1. A splashproof cover for a slotted end cap of a motor having a pair of motor terminals protruding through the end cap, the cover comprising:

a generally circular solid molded plastic planar body integrally formed with a socket at one side of the body, tongues extending transversely to the plane of the body

for entering into the slots of the end cap, apertures in the body for receiving the motor terminals, and conductors



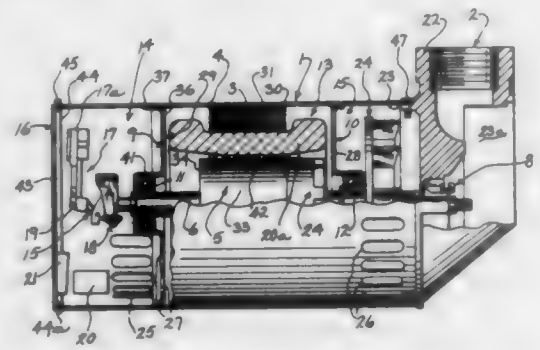
insert molded within the body and extending along the plane of the body from each aperture to inside the socket.

5,006,743

MULTIPLE COMPARTMENTED DYNAMOELECTRIC MACHINE

James L. King, and Robert E. Lykes, both of Troy, Ohio, assignors to A. O. Smith Corporation, Milwaukee, Wis.

Filed Oct. 26, 1989, Ser. No. 427,441
Int. Cl.[5] H02K *5/22*
U.S. Cl. 310—89 **2 Claims**



1. An electric motor comprising

an outer tubular round frame formed of self-supporting rigid material,

an annular stator unit having magnetic core secured centrally of said frame, a winding wound in said core and projecting from the core and terminating in inwardly spaced relation to the core, a rotor unit including a magnetic core aligned with said magnetic core of said stator and having a shaft projecting from the opposite ends of said magnetic core of said rotor unit,

first and second bearing frames secured within said round frame to define a motor compartment and including bearings, and said shaft being journaled in said bearings, and

an end wall member secured to the first end of said tubular round frame in spaced relation to the first bearing frame and defining a control compartment adjacent said bearing frame and said motor compartment, and

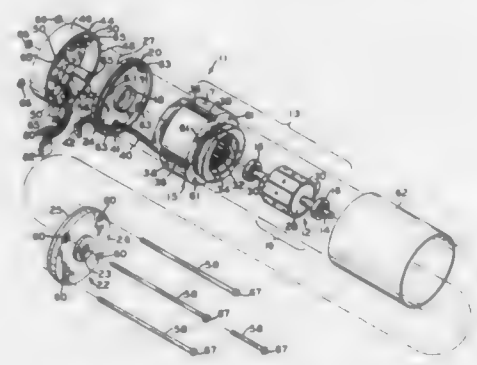
a second end wall member secured to the second end of said tubular round frame in spaced relation to said second bearing frame and defining an auxiliary compartment, said shaft projecting from said core unit through said auxiliary compartment, and including a pump unit having a pump shaft secured to said motor shaft, said pump unit having an end wall member including a mounting flange projecting into the tubular round frame and defining said second wall member closing the auxiliary compartment, said tubular round frame having openings in alignment with the auxiliary compartment to form a drip compartment for discharge of liquid passing from the pump unit into said compartment.

5,006,744

INTEGRATED ELECTRONICALLY COMMUTATED MOTOR AND CONTROL CIRCUIT ASSEMBLY

William R. Archer; Peter B. Lytle; Rajendra K. Shah, and John E. Wynberry, all of Fort Wayne, Ind., assignors to General Electric Company, Fort Wayne, Ind.

Filed Dec. 27, 1988, Ser. No. 290,031
Int. Cl.[5] H02K *11/00, 5/18, 5/02;* **H02P** *7/06*
U.S. Cl. 310—89 **22 Claims**



1. A motor assembly comprising:

an adapted having first and second opposite sides;

a stationary assembly on the first side of said adapter and having a plurality of winding stages adapted to be electrically energized to generate an electromagnetic field;

a rotatable assembly including a plurality of permanent magnet elements in magnetic coupling relation with said stationary assembly;

control means including power switching devices, said control means connected to the winding stages and positioned adjacent the second side of said adapter, for controlling said power switching devices for applying a voltage to one or more of the winding stages at a time and for commutating the winding stages in a preselected sequence to rotate the rotatable assembly about an axis of rotation;

a cap on the second side of said adapter, said power switching devices disposed on the cap, said cap including means integral with and projecting laterally from the cap and electrically insulated from and in heat exchange relationship with said power switching devices for dissipating heat generated by said power switching devices wherein said adapter is positioned between the stationary assembly and the rotatable assembly on the first side thereof and the control means and the cap on the second side thereof; and

said cap and said adapter forming a closure within which said control means is located.

5,006,745

POLYPHASE DIRECT CURRENT MOTOR

Akira Nishio; Masato Nakamura, both of Fujieda, and Akihiro Mochizuki, Shizuoka, all of Japan, assignors to Victor company of Japan, Ltd., Yokohama, Japan

Filed Aug. 3, 1989, Ser. No. 388,888
Claims priority, application Japan, Aug. 3, 1988, 63-194122; Aug. 3, 1988, 63-194123
Int. Cl.[5] H02K *17/12*
U.S. Cl. 310—177 **5 Claims**

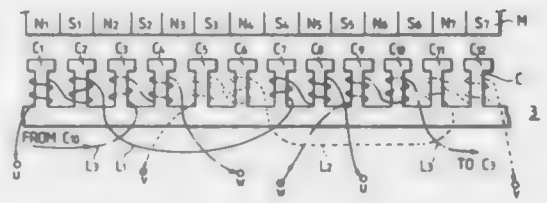
1. A three-phase direct-current motor comprising:

a field magnet having P field poles positioned as a circular array at angularly equally spaced intervals;

an armature having cores as angularly equally spaced N protruding poles providing N slots therebetween the three-phase coils disposed therein;

either said field magnet or said armature being rotatable with respect to the other; and

P and N being defined by $P=2(4n+3)$ and $N=3(2n+1)$ wherein n is an integer of 1 or more, and being selected



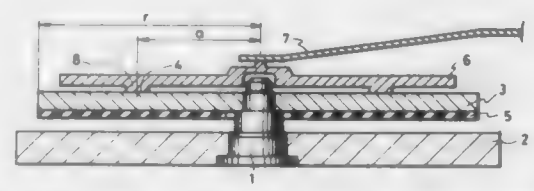
such that the least common multiple of N and P is equal to N x P.

5,006,746

TRAVELLING-WAVE MOTOR

Masao Kasuga; Takayuki Mori, and Nobuo Tsukada, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Dec. 29, 1988, Ser. No. 291,459
Claims priority, application Japan, Dec. 29, 1987, 62-332501; Jan. 9, 1988, 63-1543[U]
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—323 **33 Claims**



1. A travelling-wave motor utilizing flexible travelling waves generated in a vibrating body for driving a movable body comprising:

a ground way for fixing said travelling motor, said ground way having a supporting means;

a vibrating body secured and supported in such a manner that said vibrating body is integrated with said supporting means;

a piezoelectric vibrator secured to one side of said vibrating body for exciting travelling waves in a primary oscillation mode with respect to the radial direction in said vibrating body;

a movable body provided on said vibrating body;

an annular projection provided on one of said vibrating body and said movable body so that said vibrating body comes into contact with said movable body through the projection at a portion inside of the outermost periphery of said vibrating body; and

a pressure-regulator provided on said movable body for generating suitable contact pressure between said movable body and said vibrating body.

5,006,747

DYNAMOELECTRIC MACHINE BRUSH RIGGING AND METHOD OF ASSEMBLY

Kenneth W. Stewart, Sr., Columbus, Miss., assignor to United Technologies Motor Systems, Inc., Columbus, Miss.

Filed Apr. 2, 1990, Ser. No. 503,507
Int. Cl.[5] H02K *13/00*
U.S. Cl. 310—239 **13 Claims**

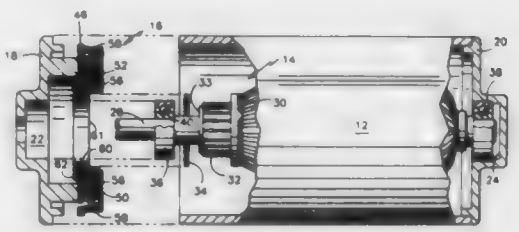
1. In combination,

an armature subassembly for a dynamoelectric machine having armature windings, an armature shaft, a commutator mounted to the armature shaft adjacent the armature windings, an antifriction bearing assembly mounted to the armature shaft in spaced disposition to said commutator, said bearing assembly having an outer diametral dimension greater than said commutator, and actuator means for displacing brush retainer means, said actuator means being positioned between said bearing means and said commutator, and

a brushcard subassembly adapted for mounting about the commutator comprising

support means for mounting brush holders radially adjacent the commutator, said support means defining a central opening to receive the commutator, said central opening being larger than the diametral dimension of said bearing assembly so as to permit the bearing assembly to pass therethrough,

at least one of said brush holders mounted to said support means so as to extend radially from a commutator in assembly,



a brush slidably supported in said holder,

spring means for urging said brush into contact with the commutator and

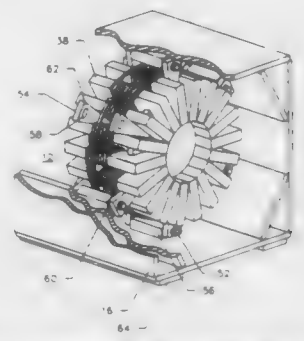
said retainer means for retaining brushes radially outwardly so as to form an unobstructed central passageway greater than the diametral dimension of said bearing assembly to permit the bearing assembly to pass through said passageway and through said central opening of said support means, said retainer means being releasably mounted to said support means for automatic displacement by said actuator means upon placement of the commutator into said central opening of the support means to allow the brush to engage the commutator.

5,006,748

STATOR MOUNTING ARRANGEMENT

Pamela D. Wintermute, Gleamont, N.Y., assignor to REM Technologies, Inc., Albany, N.Y.

Filed Aug. 17, 1989, Ser. No. 395,032
Int. Cl.[5] H02K *1/12*
U.S. Cl. 310—258 **13 Claims**



1. Apparatus for positioning and mounting a stator within a housing with the stator extending along and about a central longitudinal axis, comprising:

a support structure for the stator, the support structure having a plurality of circumferentially spaced pairs of axially separated radially outwardly projecting extensions, the extensions of each pair having opposed spaced apart axially inner laterally extending faces;

a plurality of mounting supports circumferentially distrib-

uted about the interior of the housing, each mounting support being associated with a different one of the pairs of extensions, each mounting support having a pair of laterally extending axially outer end faces, the end faces of each mounting support being axially spaced apart a distance substantially equal to the axial span between opposed axially inner laterally extending faces of a pair of said extensions associated with the support; and

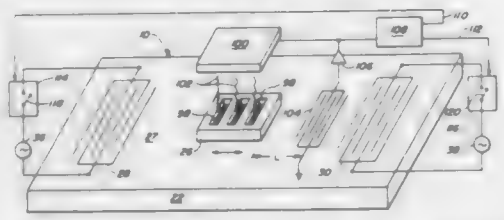
means for securing the stator within the housing such that said end faces of the mounting supports are sandwiched between the axially inner laterally extending faces of the pairs of extensions.

5,006,749

METHOD AND APPARATUS FOR USING ULTRASONIC ENERGY FOR MOVING MICROMINIATURE ELEMENTS

Richard M. White, Berkeley, Calif., assignor to Regents of the University of California, Oakland, Calif.

Filed Oct. 3, 1989, Ser. No. 416,532
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—323 **34 Claims**



1. A micromotor device for moving a micro-miniature element along a predetermined path comprising:

a substrate;

a membrane supported by said substrate having an upper layer with a planar surface for supporting the element to be moved and a lower layer of a piezoelectric material with a lower surface, said membrane being recessed within a well formed by said substrate;

ultrasonic generator means attached to one said membrane surface; and

means for supplying electrical power to said ultrasonic generator means to produce ultrasonic energy and thereby cause a flexural wave action in said membrane.

5,006,750

DISMOUNTABLE DEVICE FOR SUPPORTING A PIEZOELECTRIC RESONATOR INSIDE A CASING

Raymond Besson, Besancon; Richard Delaite, Belfort; Georges Renard, St Vit; Jean-Pascal Valentin, Pouilley Les Vignes, and Jean-Louis Vaterkowski, Rioz, all of France, assignors to Ecole Nationale Superieure de Mecanique et des Microtechniques, Besancon Cedex, France

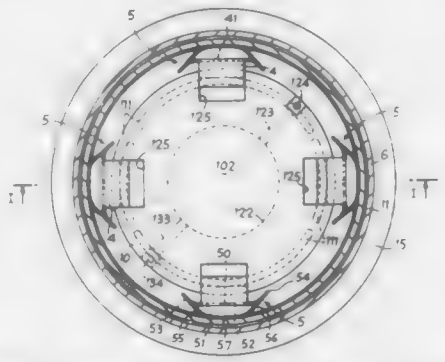
Filed Oct. 18, 1989, Ser. No. 423,254
Claims priority, application France, Oct. 28, 1988, 88 14197
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—348 **23 Claims**

1. A device for supporting a piezoelectric resonator inside a casing, said device comprising:

four independent and identical U-shaped coupling flanges made of a material whose expansion coefficient in an axial direction with respect to said resonator is substantially identical to that of the material constituting said resonator, each said coupling flange cooperating with a pair of springs, each spring being formed of circular cross-section metal wire made of a high yield strength alloy, the thus constituted set of coupling flanges and springs being symmetrical with respect to two mutually perpendicular axial planes of said resonator and with respect to a center plane of said resonator,

wherein said device is further comprised of a cylindrical element that is displaceably mounted inside said casing in a region of a lateral wall thereof, said element extending throughout the height of an inner space defined by top and bottom walls of said casing and having on the inner face thereof, a circular groove located on a center plane parallel to said top and bottom walls of said casing;

wherein for each pair of springs cooperating with a common coupling flange, one of said springs engages by a first portion into a top slot formed in a planar rear face of said coupling flange at a top portion thereof, and by a second portion in said circular groove while the other of said



springs engages by a first portion into a bottom slot formed in a rear planar face of said coupling flange at a bottom portion thereof, and by a second portion inside said circular groove,

wherein said second portions of said springs engaged in said circular groove are joined together and project rearwardly with respect to said rear face of said coupling flange; and

wherein said internal faces of said coupling flanges which are substantially perpendicular to said rear face of said coupling flanges rest directly on the periphery of the top and bottom external faces of said resonator.

5,006,751

ELECTRIC LAMP AND ADAPTER SOCKET THEREFOR

Rodney G. Marshall, 1219 Meadowridge Trail, Goshen, Ky. 40026

Filed Aug. 11, 1989, Ser. No. 392,408
Int. Cl.[5] H01J *5/54, 5/60*
U.S. Cl. 313—51 **5 Claims**



1. An electric lamp and adapter socket receivable within an internally threaded electrical socket comprising an electric light bulb formed with a conductive base, said base including a plurality of elongate registration members directed exteriorly of the base and symmetrically arranged about a central electrical contact axially aligned and extending below the registration members, and

an adapter socket receivable within the threaded electrical socket including recessed members for receiving the registration members, and

wherein the registration members include a plurality of elongate ridges symmetrically formed about the base, and

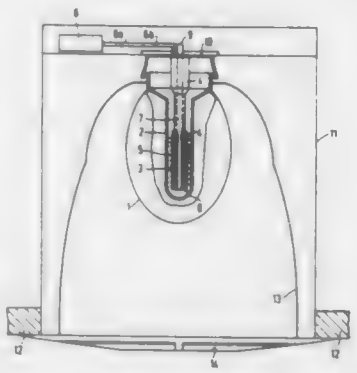
wherein the base further includes an annular recess formed medially of the base and wherein the ridges extend from the electric light bulb to the annular recess, and wherein the annular recess extends above a lowermost terminal end of the central electrical contact.

5,006,752

ELECTRODELESS LOW-PRESSURE DISCHARGE LAMP

Hendrik H. J. Eggink; Winand H. A. M. Friedrichs; Adriaan Netten; Herman H. M. Van Der AA, and Martin W. Schuiteman, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 25, 1990, Ser. No. 470,201
Claims priority, application Netherlands, Feb. 20, 1989, 89000406
Int. Cl.[5] H01J *1/50, 65/04, 61/00*
U.S. Cl. 313—161 **16 Claims**



1. An electrodeless low-pressure discharge lamp having a discharge vessel which is sealed in a gastight manner and is filled with an ionisable metal vapour and a rare gas, said lamp having a cylindrical core of a magnetic material, means comprising a metal wire winding surrounding said core for generating an electromagnetic field in said discharge vessel during the lamp operation and a high-frequency electric power supply unit connected to said wire winding said magnetic material core being provided with a cooling body, characterized in that: said cooling body is a beat pipe which is located at the area of the longitudinal axis of the core and is surrounded by the core at least as far as the proximity of its first end, while its second end is maintained at a relatively low temperature.

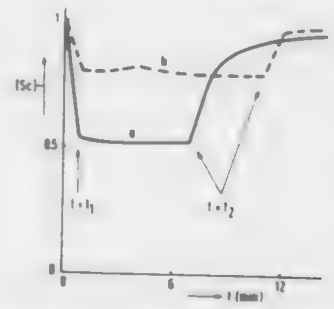
5,006,753

SCANDATE CATHODE EXHIBITING SCANDIUM SEGREGATION

Jan Hasker; Jacobus E. Crombeen; Anton K. Niessen, and Henricus J. H. Stoffelen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 15, 1988, Ser. No. 271,806
Claims priority, application Netherlands, Nov. 16, 1987, 8702727
Int. Cl.[5] H01J *19/14*
U.S. Cl. 313—346 R **17 Claims**

1. A scandate cathode having a cathode body comprising a matrix of at least a high melting-point metal and/or alloy, and a barium compound in contact with the matrix material which barium compound can supply barium to the emissive surface by chemical reaction with the matrix material, characterized in that at least the top layer of the cathode body compriaes a



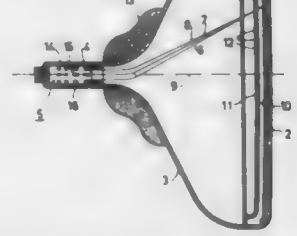
scandium metal compound or scandium alloy which can exhibit scandium segregation.

5,006,754

COLOR DISPLAY TUBE WITH MAGNETIC FIELD SHAPING PLATES

Piet G. J. Barten, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 548,276, Nov. 3, 1983, abandoned. This application Apr. 10, 1986, Ser. No. 851,282
Claims priority, application Netherlands, Nov. 18, 1982, 8204465
Int. Cl.[5] H01J *29/51, 29/76*
U.S. Cl. 313—412 **10 Claims**



1. A color display tube comprising:

(a) an evacuated envelope having a display window with an inner surface supporting a luminescent display screen;

(b) an electron gun system for producing central and first and second outer electron beams having their axes lying in a longitudinal plane intersecting the display screen, and for converging the electron beams toward a point of coincidence on said display screen;

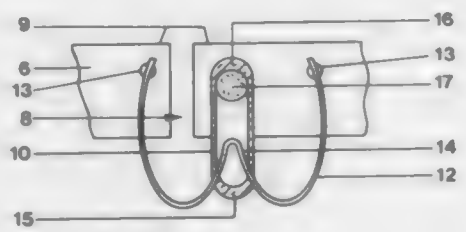
(c) first and second deflection means disposed around the electron beam axes for producing first and second deflection fields for deflecting the electron beams in a first direction parallel to the longitudinal plane and in a second direction perpendicular to said plane, respectively; and

(d) field shaping means, arranged at an end of the electron gun system from which the electron beams exit, for locally distorting at least one of the deflection fields to augment dynamic convergence of the electron beams such that there is coincidence on the display screen of respective rasters produced by said electron beams;

characterized in that the field shaping means comprises a pair of first and second ferromagnetic plate means arranged symmetrically with respect to both the longitudinal plane and the central beam axis, each of said first and second plate means intersecting said plane outside of a respective one of the first and second outer electron beams and being shaped such that it has ends which diverge from the longitudinal plane and partially surrounds the respective outer electron beam;

said first and second plate means serving to distort the second deflection field, where the electron beams enter said field, such that said field is pin-cushion-shaped and comprises a substantially bipolar field having a six-pole component;
said distorted field effecting coincidence of said rasters without substantially defocusing the electron beams.

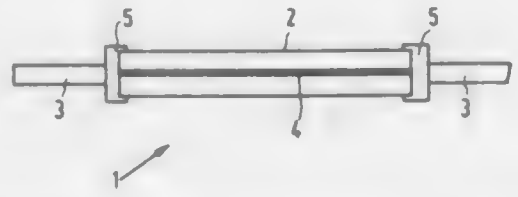
5,006,755
MERCURY DISCHARGE LAMP WITH MERCURY CONTAINING CAPSULE
Horst Wittmann, Stadtbergen; Michael Dietrich, Friedberg, and Erolf Weinhardt, Diedorf, all of Fed. Rep. of Germany, assignors to Patent Treuhand Gesellschaft fur elektrische Gluhlampen m.b.H., Munich, Fed. Rep. of Germany
Filed Feb. 6, 1990, Ser. No. 475,459
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1989, 3907277
Int. Cl.[5] H01J 61/28, 17/22
U.S. Cl. 313—546 20 Claims



1. A discharge lamp having:
a vessel (45);
a fill which includes mercury within said vessel;
electrodes (5, 36) within the vessel;
a closed capsule (10, 18, 26, 41) within the vessel, the mercury being initially retained within said closed capsule;
a heater wire (11, 31, 35) thermally coupled to the capsule which, upon application of inductive heating thereof, opens the capsule; and
electrically conductive means (6, 29, 40) secured within the vessel and electrically and mechanically coupled to the heater wire,
wherein
the capsule is a glass capsule and comprises an elongated tubular structure (10, 18, 26, 41) closed at both ends;
the heater wire is bent upon itself into essentially V or U-shape, defining two leg portions (14, 21, 25, 42) and
said leg portions are melted into one end (15, 20, 28, 43) of the elongated glass capsule and are electrically connected (22, 23, 44) internally of the glass capsule.

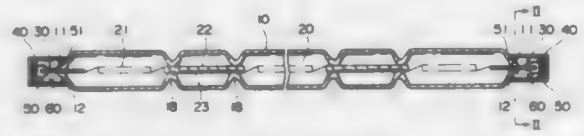
5,006,756
ALKALI METAL VAPOR DISPENSER
Cornelis van der Marel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Aug. 31, 1989, Ser. No. 401,888
Claims priority, application Netherlands, Sep. 2, 1988, 8802172
Int. Cl.[5] H01J 17/26
U.S. Cl. 313—564 8 Claims

1. A device for releasing metal vapour of an alkali metal comprising a holder containing a powder of pulverulent particles from which the alkali metal is released upon heating, characterized in that the powder comprises grains of silicon or



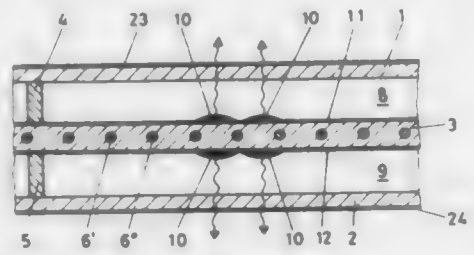
germanium with a shell of a compound of silicon or germanium and the alkali metal.

5,006,757
INCANDESCENT LAMP
Toru Odagaki, Okayama, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 11, 1989, Ser. No. 448,327
Int. Cl.[5] H01J 17/18, 5/50; H01K 1/42
U.S. Cl. 313—623 6 Claims



1. In an incandescent lamp comprising a glass envelope, a filament supported by constricted portions of the glass envelope, lead rods extending from both ends of the filament, tapered constricted portions at both ends of the glass tube to provide sealing portions by which the lead rods are surrounded respectively, and contacts connected to the outer ends of the lead rods respectively, the improvement wherein the sealing portions are formed in such a manner that their outer diameters are equal to or smaller than those of the respective contact, cylindrical bases are arranged so as to enclose the respective contacts, portions of the lead rods which project out of the sealing portions, and the sealing portions, and to be in contact at the inner ends thereof with the respective tapered constricted portions following the sealing portions, and a fixing cement is filled in the bases.

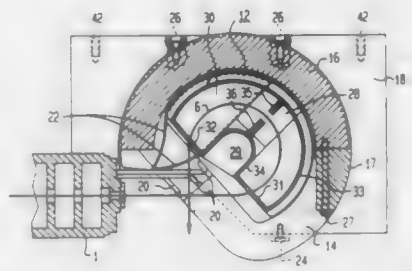
5,006,758
HIGH-POWER RADIATOR
Bernd Gellert, Wettingen, and Ulrich Kogelschatz, Hausen, both of Switzerland, assignors to Asea Brown Boveri Ltd., Baden, Switzerland
Filed Oct. 5, 1989, Ser. No. 417,473
Claims priority, application Switzerland, Oct. 10, 1988, 3778/88
Int. Cl.[5] H01J 61/06
U.S. Cl. 313—634 12 Claims



1. A high-power radiator, in particular for ultraviolet light, having a discharge space, delimited by walls and filled with filler gas emitting radiation under discharge conditions, having

electrode pairs which are connected in pairs to the two poles of a high-voltage source, at least one dielectric material which adjoins the discharge space lying between two electrodes at different potentials, wherein the aforesaid electrode pairs, spatially separated from said walls and separated from each other by dielectric material, are arranged adjacent to one another in such a way that the electrical discharge in the discharge space forms essentially only in the region of the surface of the dielectric.

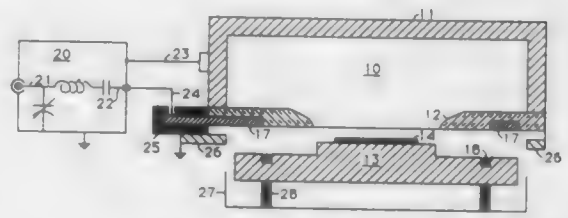
5,006,759
TWO PIECE APPARATUS FOR ACCELERATING AND TRANSPORTING A CHARGED PARTICLE BEAM
Franz Krispel, Walnut Creek, Calif., assignor to Siemens Medical Laboratories, Inc., Walnut Creek, Calif.
Filed May 9, 1988, Ser. No. 191,633
Int. Cl.[5] H05H 7/08, 7/10
U.S. Cl. 315—5.41 12 Claims



10. Apparatus for accelerating and transporting a charged particle beam, comprising:
(a) an accelerating structure having a first envelope which encloses a first evacuated space, said accelerating structure accelerating the charged particle beam within the first evacuated space and emitting the accelerated charged particle beam from said first evacuated space along a first beam axis;
(b) a magnet system having a second envelope which encloses a second evacuated space, said second envelope receiving the charged particle beam emitted along said first beam axis by said accelerating structure, and said magnet system transporting the charged particle beam within the second evacuated space along a bent beam path and emitting the charged particle beam from said second evacuated space along a second beam axis having a spatial orientation which is different from the first beam axis; and
(c) supporting means for supporting the accelerating structure and the magnet system such that the position of the second envelope with respect to the first beam axis is physically movable so as to adjust the spatial orientation of said first beam axis with respect to said second beam axis, and
wherein the second evacuated space contains a gas whose effective cross section for the charged particles is lower than that of air.

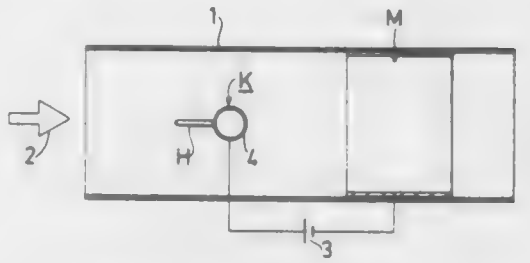
5,006,760
CAPACITIVE FEED FOR PLASMA REACTOR
Herbert G. Drake, Jr., San Rafael, Calif., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jan. 9, 1987, Ser. No. 1,773
Int. Cl.[5] H05B 31/26
U.S. Cl. 315—111.21 5 Claims

1. In a plasma reactor having an enclosed volume in which a plasma is generated between a grounded electrode and a moveable, powered electrode separated by an insulator, the improvement comprising means for capacitively coupling RF power to said enclosed volume wherein said means comprises a conductive ring for overlapping a portion of said moveable electrode and a second insulator for separating said conductive



ring from said moveable electrode to form a capacitor with said moveable electrode.

5,006,761
AIR TRANSPORTING ARRANGEMENT
Vilmos Török, Lidingö , and Andrzej Loreth, Åkersberga, both of Sweden, assignors to Astra-Vent AB, Stockholm, Sweden
PCT No. PCT/SE86/00548, § 371 Date May 27, 1988, § 102(e) Date May 27, 1988, PCT Pub. No. WO87/04020, PCT Pub. Date Jul. 2, 1987
PCT Filed Dec. 2, 1986, Ser. No. 199,258
Claims priority, application Sweden, Dec. 20, 1985, 8506067
Int. Cl.[5] H01J 7/24; H01T 23/00
U.S. Cl. 315—111.91 9 Claims



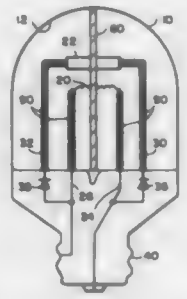
1. An arrangement for generating a flow of air along an airflow path therefor with the aid of an electric ion-wind, comprising a corona electrode in said airflow path, at least one target electrode located in said airflow path downstream of and spaced from said corona electrode as seen in the axial extension of the airflow path and being permeable to a flow of air along said path, and a d.c. voltage source having a first terminal connected to said corona electrode and a second terminal connected to said target electrode for creating an air ion producing corona discharge at said corona electrode, said corona electrode including at least one wire-like electrode element located close to the symmetry axis of said airflow path and having such dimensions and such orientation that its extension in directions perpendicular to said symmetry axis is substantially much smaller that the total cross-sectional dimensions of said airflow path, and lacking ends at which the electrical field strength exceeds the electrical field strength at the peripheral surface of the electrode element, so as to avoid punctiform corona-discharge concentrations and to confine the corona discharge to the peripheral surface of the electrode element.

5,006,762

NEGATIVE GLOW FLUORESCENT LAMP HAVING DISCHARGE BARRIER

John W. Shaffer, Danvers, Mass., assignor to GTE Products Corporation, Danvers, Mass.

Filed Apr. 9, 1990, Ser. No. 506,149
Int. Cl.[5] H01J *61/10*; H05B *37/00*
U.S. Cl. 315—205 25 Claims



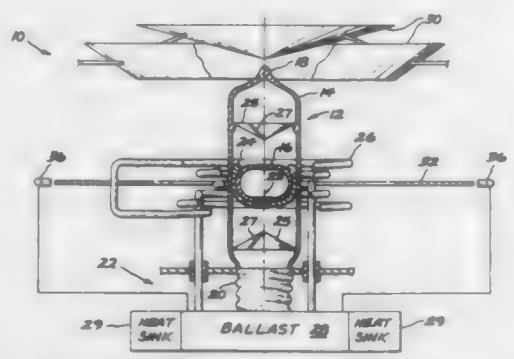
1. A negative glow fluorescent lamp comprising:
a light-transmissive envelope enclosing a fill material which emits ultraviolet radiation upon excitation;
a phosphor coating on an inner surface of said envelope, said phosphor coating emitting visible light upon absorption of ultraviolet radiation;
a cathode located in said envelope for emitting electrons;
anode means located in said envelope and spaced from said cathode for collecting said electrons;
means for coupling electrical energy through said envelope to said cathode and said anode means; and
one or more electrically insulating discharge barriers disposed adjacent to said cathode for suppressing electron bombardment of said cathode when one end thereof is positively biased relative to the other end.

5,006,763

LUMINAIRE FOR AN ELECTRODELESS HIGH INTENSITY DISCHARGE LAMP WITH ELECTROMAGNETIC INTERFERENCE SHIELDING

John M. Anderson, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 12, 1990, Ser. No. 491,920
Int. Cl.[5] H05B *41/24*
U.S. Cl. 315—248 23 Claims



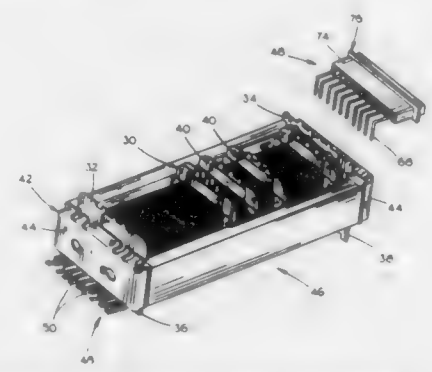
1. A luminaire, comprising:
an electrodeless high intensity discharge lamp including an elongated, light-transmissive envelope and a light-transmissive arc tube disposed within said envelope for containing a fill;
an excitation coil coupled to a radio frequency power supply and disposed about said envelope for establishing a first radio frequency magnetic field extending through said arc tube and radiating outwardly therefrom, said first radio frequency magnetic field exciting an arc discharge in said fill so as to produce visible light output which passes through said arc tube and said light-transmissive envelope;
a base assembly for mounting said lamp thereon; and
passive electromagnetic shielding means comprising at least one conductive surface situated proximate said envelope and oriented such that said first radio frequency magnetic field induces current on said surface that establishes a second radio frequency magnetic field tending to cancel, at a distance from said lamp, said first radio frequency magnetic field, said passive electromagnetic shielding means interfering minimally with said visible light output.

5,006,764

FLUORESCENT LAMP BALLAST WITH END CONNECTOR

Dail L. Swanson, and Larry J. Costa, both of Danville, Ill., assignors to Valmont Industries, Inc., Valley, Nebr.

Filed Jul. 17, 1989, Ser. No. 381,035
Int. Cl.[5] H05K *5/04*
U.S. Cl. 315—276 7 Claims



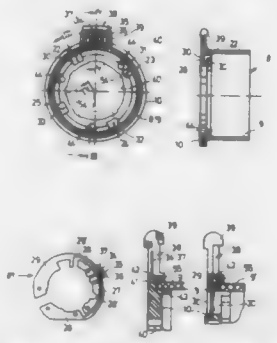
1. A ballast for a fluorescent lamp, comprising:
a base;
a cord means mounted on said base;
a plurality of coils operatively electrically associated with said core means, each of said coils having at least one conductor extending therefrom;
a cover means positioned over said core means and said coils, and secured to said base to form a totally enclosed housing;
an electrical connector means mounted in a front wall of said cover means with a forward end projecting therefrom and having a plurality of socket means in said forward end for removably receiving and electrically connecting a wiring harness to conductors from said coils;
said connector means having forward and rearward ends and left and right sides, the sockets of said connector means being formed generally horizontally from left to right at the lower end of the front wall of said cover means, for easy connection to a fixture-mounted wiring harness;
a plurality of terminal pins having a forward end extending within said sockets in said electrical connector means for electrical connection to a wiring harness, and a rearward end projecting rearwardly from said connector means into said ballast housing, the rearward end of said terminal pins being electrically connected to predetermined conductors extending from said coils.

5,006,765

DC MOTOR WITH CORELESS COIL INSTALLATION

Fritz Schmider, Horuberg, Fed. Rep. of Germany, assignor to Papst-Motoren GmbH & Co. KG, St. Georgen, Fed. Rep. of Germany

Continuation of Ser. No. 161,303, Feb. 25, 1988, abandoned, which is a continuation of Ser. No. 22,395, Mar. 6, 1987, abandoned. This application Feb. 28, 1989, Ser. No. 317,034
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1986, 3607289
Int. Cl.[5] H02K *21/22, 29/06*
U.S. Cl. 310—71 14 Claims



1. A dc motor having a stator and a rotor, the two separated from one another by a cylindrical air gap, comprising:
a coreless coil wound in a self-supporting manner from baked enamel wire into a thin-walled, cylindrical body form;
a plurality of electrical connectors provided on the coil, including the coil ends and intermediate taps in the form of wire loops, all extending from the coil body;
a ring flange having insulation on at least one of its faces receiving the mounting of the coreless coil;
a thin, flat metal electrical connecting plate included in the ring flange;
a plurality of conductor paths electrically isolated from each other formed in the connecting plate, at least one conductor path being provided for each electrical connector on the coil, and the insulation separating the coil body from the isolated conductor paths when the coil is so mounted;
an aperture provided in the insulation for each conductor path through which the conductor path is accessible for direct connection thereto of a respective connector of the coil body; and
an electrical contact surface extending radially from each of the conductor paths for further electrical connections from the outside of the motor.

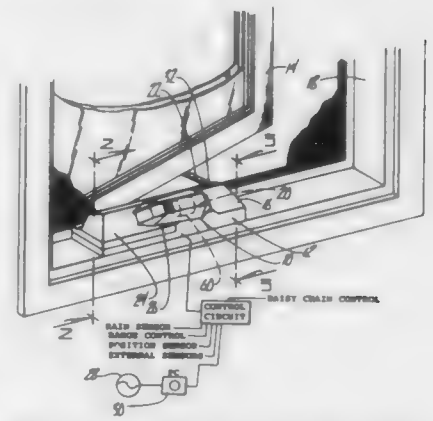
5,006,766

WINDOW OPERATOR FOR MANUALLY OR ELECTRICALLY MOTORIZED ACTUATION OF A MECHANICAL WINDOW DRIVE SYSTEM

Ralph G. Yuhas, and William H. Birmingham, both of Helena, Mont., assignors to Rolscreen Company, Pella, Iowa

Filed Aug. 14, 1989, Ser. No. 393,130
Int. Cl.[5] E05F *15/00*
U.S. Cl. 318—53 19 Claims

1. A motorized window operator for opening and closing a window having a mechanical drive system including a rotatable drive axle comprising:
a housing means which is both translatable and rotatable with respect to an engagement means;
motor means having an output shaft rotatable in opposite directions contained within the housing means;
the engagement means engaging the rotatable drive axle of the window;
gear means for transferring rotational movement of the output shaft of the motor means through the engagement means to the drive axle of the window;
translation means for moving the gear means between a first position in operative engagement with the engagement means, and a second position out of operative engagement with the engagement means; and



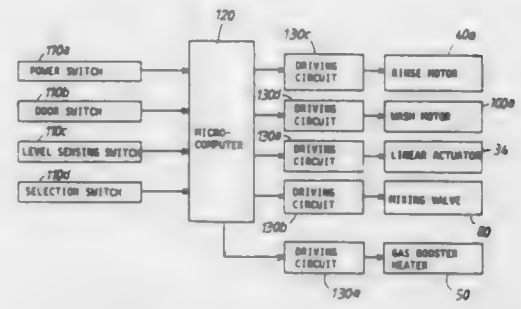
mating means mateable and engageable with the engagement means when the gear means is in the second position and allowing manual rotation of the drive axle by manual rotation of the housing means.

5,006,767

ELECTRIC CONTROL APPARATUS FOR DISHWASHING MACHINE

Fumio Maruyama, Nagoya; Tomio Suyama; Hiroaki Kamino, both of Toyoake; Koji Suyama, Shimane; Tokihiro Kuwahara, Kariya, and Osamu Nagata, Toyoake, all of Japan, assignors to Hoshizaki Denki Kabushiki Kaisha, Toyoake, Japan

Filed Mar. 2, 1990, Ser. No. 487,327
Claims priority, application Japan, Mar. 3, 1989, 1-52475; Aug. 28, 1989, 1-221120
Int. Cl.[5] B08B *3/02*
U.S. Cl. 318—103 12 Claims



1. An electric control apparatus for a dishwashing machine having a washing chamber, a first electric power operated pumping means for pumping out wash water from a wash water storage tank in said washing chamber, a second electric power operated pumping means for pumping out heated water from a heated water storage tank, and first and second revolving arms arranged within said washing chamber to be supplied with the wash and heated water from said first and second electric power operated pumping means for directing jet streams of the wash and heated water to a rack of tableware placed in said washing chamber respectively, comprising;
mixing means for mixing cold water from a source of cold water into the heated water to form mixing water;
first means for controlling said second electric power operated pumping means such that said second revolving arm directs jet stream of the mixing water from said mixing means to said rack of tableware;
second means responsive to finish in control of said first means for controlling said first electric power operated

pumping means such that said first revolving arm directs jet stream of the wash water to said rack of tableware; and

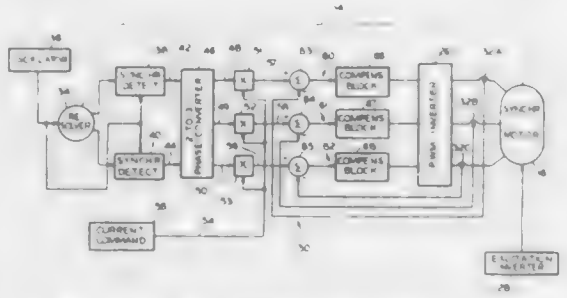
third means responsive to finish in control of said second means for controlling said second electric power operated pumping means such that said second revolving arm directs jet stream of the heated water to said rack of tableware.

5,006,768

SYNCHRONOUS MOTOR CONTROL

Gregory I. Rozman, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 19, 1989, Ser. No. 423,940
Int. Cl.[5] H02P *1/46*
U.S. Cl. 318—254 **5 Claims**



1. A start control for a brushless motor having a rotor and a stator having a three-phase stator coil comprising:

a resolver circuit including means for generating two phase displaced sinusoidal signals each representing angular position of the rotor;

a converter circuit coupled to said resolver circuit for converting said two phase displaced sinusoidal signals to three phase displaced sinusoidal signals;

means for developing a current command signal having a level representing a desired stator current level;

means coupled to said converter circuit and said developing means for combining each of said three phase displaced sinusoidal signals with said current command signal to provide three phase displaced sinusoidal current reference signals;

sensing means for sensing current through each phase of said stator coil;

a current control coupled to said sensing means and said combining means including means for developing a compensated error signal for each phase; and

an inverter circuit operatively driven by said compensated error signals and coupling a source of power to said stator coil to provide closed loop control of motor starting current.

5,006,769

ARRANGEMENT FOR DETECTING WINDING SHORTS IN THE ROTOR WINDING OF ELECTRICAL MACHINES

Zlatimir Posedel, Neuenhof, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

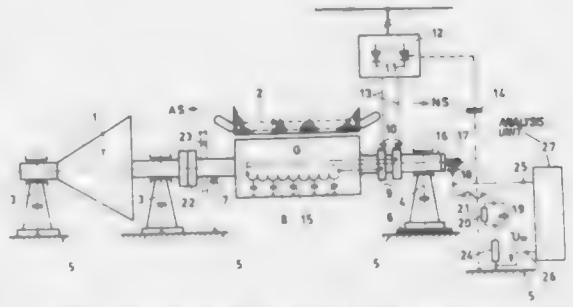
Filed Mar. 23, 1990, Ser. No. 497,720
Claims priority, application Switzerland, Apr. 5, 1989, 1264/89
Int. Cl.[5] H02H *7/08*
U.S. Cl. 318—434 **4 Claims**

1. Arrangement for detecting winding shorts in a rotor winding of an electrical machine having a drive shaft, comprising:

said drive shaft having a drive end which is directly grounded and a non-drive end;

a voltage measuring element provided at the non-drive end for recording a shaft voltage between the machine shaft and ground; and

an analysis unit coupled to said voltage measuring element and receiving said shaft voltage for evaluating at least one of even and fractional harmonics produced in the shaft



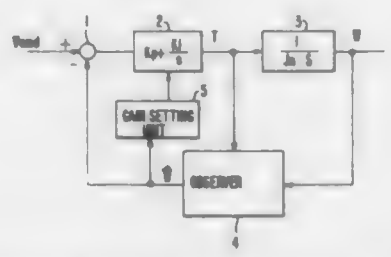
voltage and producing an output signal when the content of said at least one of said even and fractional harmonics exceed a predetermined value.

5,006,770

SERVOMOTOR VELOCITY CONTROL APPARATUS

Keiji Sakamoto, Hachioji, and Hironobu Kuwano, Oshino, both of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP88/00402, § 371 Date Dec. 9, 1988, § 102(e) Date Dec. 9, 1988, PCT Pub. No. WO88/08640, PCT Pub. Date Nov. 3, 1988
PCT Filed Apr. 25, 1988, Ser. No. 290,290
Claims priority, application Japan, Apr. 30, 1987, 62-107252
Int. Cl.[5] G05B *13/00*
U.S. Cl. 318—561 **5 Claims**



1. A servomotor velocity control apparatus for controlling the velocity of a servomotor by a discrete velocity command signal, the apparatus having a limitation on a fixed resolution with regard to discrete detection of actual velocity, comprising:

arithmetic means for computing an error between an estimated velocity of the servomotor and a commanded velocity corresponding to the discrete velocity command signal;

compensating means, which has a control gain that includes a proportional gain and a variable integration gain, for forming a torque command for the servomotor based on the error output from said arithmetic means; and

control means for setting and controlling the integration gain of said compensating means so that the integration gain becomes inversely proportional to the estimated velocity of the servomotor which is based on the discretely detected actual velocity and the torque command.

5,006,771

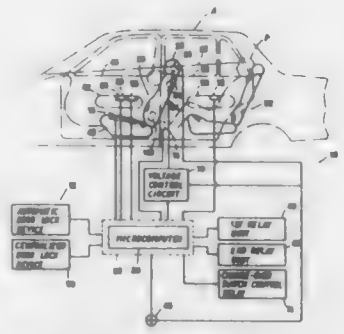
METHOD AND DEVICE FOR CONTROLLING HEADREST

Hiromitsu Ogasawara, Akishima, Japan, assignor to Tachi-S Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1990, Ser. No. 507,156
Int. Cl.[5] G05B *19/28*
U.S. Cl. 318—568.1 **6 Claims**

1. A method for controlling a headrest in automobile in

which said headrest is movably mounted on a seat such as to be movable between a use position for supporting a head of an occupant on said seat and a non-use position below a sight line of another occupant on another seat in said automobile to attain a good view field, in which said headrest is automatically controlled its movement between said use and non-use positions, responsive to a speed of said automobile, opened/-closed state of a door of said automobile and operating state of mechanical or workable parts in said automobile, thereby establishing an automatic control of said headrest, said method comprising the steps of:



permitting a manual control for causing said headrest to move between said use and non-use position by operation of an automatic operation switch;

permitting a manual adjusting control of said headrest at least in one of its fore-and-aft adjustment and vertical adjustment, by operation of a manual adjustment switch;

responding to said operation of said automatic operation switch and manual adjustment switch; and,

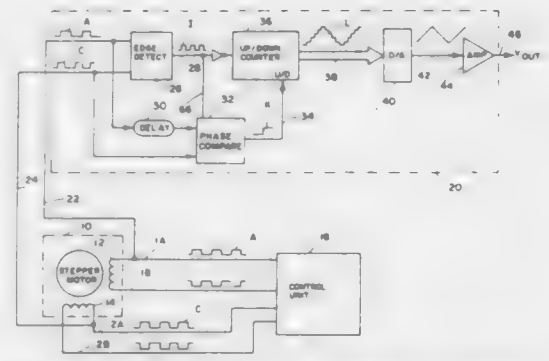
then, changing said automatic control to said manual controls of said headrest.

5,006,772

POSITION MONITOR FOR A STEPPER MOTOR

Clive M. Danby, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 21, 1989, Ser. No. 439,720
Int. Cl.[5] H02P *8/00*
U.S. Cl. 318—696 **37 Claims**



1. A position monitor for a stepper motor, comprising:

first means connected in signal communication with said stepper motor for providing a first signal and a second signal, said first signal comprising a plurality of pulses, each of said plurality of pulses representing a change of the voltage magnitude of a phase winding of said stepper motor, said second signal representing the direction of rotation of a rotor of said stepper motor;

second means, connected in signal communication with said first providing means, for providing a third signal, the magnitude of said third signal being representative of the rotational position of said rotor of said stepper motor, the magnitude of said third signal being a cumulative function of said first and second signals;

said second providing means comprises means for storing a digital value representing an accumulation of said plurality of pulses and means for selectively increasing and decreasing said digital value upon each occurrence of one of said plurality of pulses as a function of said second signal; and

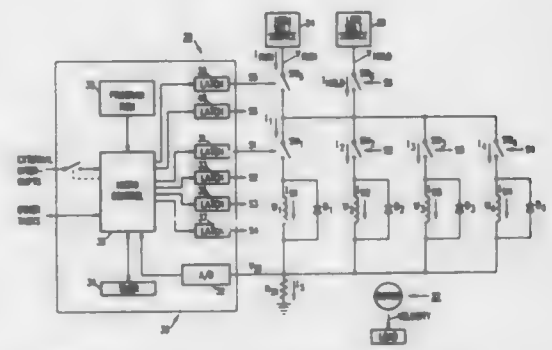
said second providing means comprises means for converting said digital value to a voltage magnitude.

5,006,773

MICROCOMPUTER CONTROL OF STEPPER MOTOR USING REDUCED NUMBER OF PARTS

Edward Goldberg, Wayland, Mass., assignor to NEC Electronics Inc., Mountain View, Calif.

Continuation of Ser. No. 377,518, Jul. 10, 1989, abandoned, Division of Ser. No. 173,960, Mar. 28, 1988, Pat. No. 4,847,544. This application Aug. 10, 1990, Ser. No. 566,804
Int. Cl.[5] H02P *8/00*
U.S. Cl. 318—696 **14 Claims**



1. With respect to an apparatus for controlling a motor having two or more substantially identical windings, a method for fabrication and operating the apparatus, the method comprising the steps of:

coupling an operative current sensing element in series with a first of the motor windings for operatively sensing current flow through the first winding;

coupling a dummy sensing element in series with a second of the motor windings, the dummy sensing element being substantially identical to the operative sensing element so that respective current carrying circuits of the first and second motor windings are substantially identical;

inserting first and second switches respectively in the current carrying circuits of the first and second windings for controlling current flow through the first and second windings;

providing control means, operatively coupled to receive a feedback signal from the operative sensing element and to transmit switch opening and closing control signals to the first and second switches; and

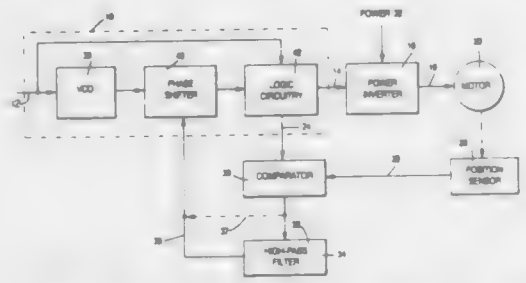
opening and closing both the first and second switches in response to the feedback signal in substantially identical manner such that substantially identical, although perhaps time-staggered, current waveforms will develop in the first and second windings.

5,006,774

TORQUE ANGLE CONTROL SYSTEM FOR CONTROLLING THE TORQUE ANGLE OF A PERMANENT MAGNET SYNCHRONOUS MOTOR

Fenton Rees, Ann Arbor, Mich., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Mar. 13, 1990, Ser. No. 492,120
Int. Cl.[5] H02P *7/42*
U.S. Cl. 318—721 8 Claims



1. A torque angle control system for maintaining a predetermined torque angle in a synchronous motor, comprising:

speed command converting means for receiving a speed command signal, correcting said speed command signal, converting said speed command signal to a synchronous motor control signal, outputting said synchronous motor control signal to control a synchronous motor, and outputting a fundamental signal related to said synchronous motor control signal;

position sensor means for sensing rotational position of a rotor of said synchronous motor and outputting a rotor position signal; and

comparing means for comparing said fundamental signal to said rotor position signal and outputting a correction signal for correcting said speed command signal thereby maintaining a predetermined torque angle in said synchronous motor by maintaining a predetermined relationship between said synchronous motor control signal and said rotor position signal;

wherein said speed command converting means includes

a voltage controlled oscillator for converting the speed command signal into a frequency signal, and

a phase shifter for receiving said frequency signal from said voltage controlled oscillator, receiving said correction signal from said comparing means, phase shifting said frequency signal in response to said correction signal and outputting a phase shifted frequency signal.

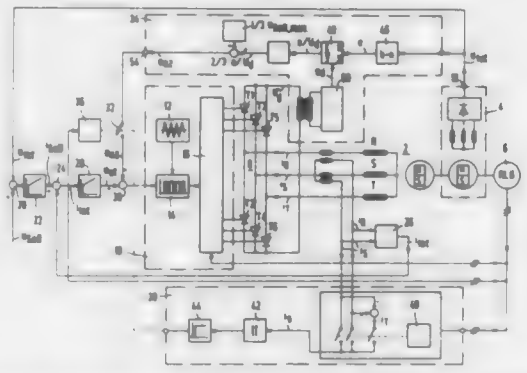
5,006,775

METHOD AND APPARATUS FOR PREVENTING A CURRENT COLLAPSE IN A PHASE NOT PARTICIPATING IN THE COMMUTATION OF A THREE-PHASE, BLOCK-CURRENT SUPPLIED SYNCHRONOUS MACHINE

Jens Hamann, Fuerth-Stadeln, and Hartmut Vogt, Herzogenaurach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 17, 1988, Ser. No. 258,826
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1987, 3736213
Int. Cl.[5] H02P *5/40;* H02K *19/10*
U.S. Cl. 318—723 4 Claims

1. A circuit arrangement for preventing a current collapse in a phase not participating in a commutation of a three-phase block current supplied synchronous machine while phase currents of two other phases are being commutated, comprising means for applying, during the commutation of said two phase currents, an additional control voltage to a control voltage controlling the speed of the synchronous machine such that the average current drop in a down-commutating phase is equal to the average negative current rise in an up-commutating phase, said block current supplied synchronous machine being equipped with a converter, a tachometer generator, a rotor position encoder and a controller, an output of the controller being tied to an input of a control unit of the converter and a summing element being arranged between the output of the controller and the input of the control unit, the summing



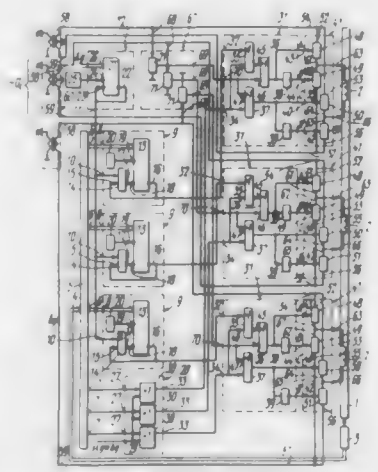
element having a second input which is linked via a switch to a device for generating an additional control voltage, the switch being switched on via a commutation pickup which is tied to an output of the rotor position encoder and being switched off via a device for determining the end of the commutation.

5,006,776

GATE-CONTROLLED ELECTRIC DRIVE

Ljudmila I. Matjukhina; Alexandr S. Mikhalev; Sergei N. Sidoruk, and Igor M. Chusbenkov, all of Minsk, U.S.S.R., assignors to Belorussky Gosudarstvenny Universitet Imeni V.I. Lenina, Minsk, U.S.S.R.

PCT No. PCT/SU87/00057, § 371 Date Jan. 17, 1989, § 102(e) Date Jan. 17, 1989, PCT Pub. No. WO88/09082, PCT Pub. Date Nov. 17, 1988
PCT Filed May 14, 1987, Ser. No. 360,938
Int. Cl.[5] H02P *5/34*
U.S. Cl. 318—723 7 Claims



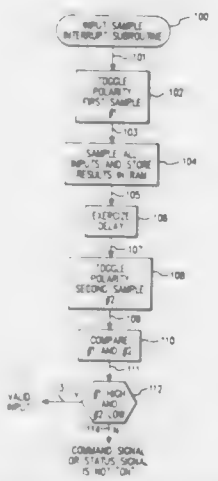
1. A gate-controlled electric drive comprising a synchronous motor having a plurality of windings; a shaft position transducer connected to said synchronous motor and having an output; a permanent memory storing width and polarity codes of power supply pulses of the windings of said synchronous motor and having an address input connected to said output of said shaft position transducer and having a plurality of outputs for setting width codes and a plurality of outputs for setting polarity codes; a plurality of pulse-width modulators, each pulse-width modulator having an input connected to a respective output for setting width codes of said memory and having a complementing input and an output; a controlled frequency divider having a control input receiving a control signal modulus code, a complementing input and an output connected to said complementing input of said pulse-width modulators; a first pulse generator having an output connected to said complementing input of said controlled frequency divider; a reverser having a control input receiving a control signal polarity code, inputs connected to respective outputs for setting polarity codes of said memory and outputs; a plurality of control units, each control unit having a control input connected to said output of a corresponding pulse-width modulator, a polarity setting input connecting to a corresponding output of the reverser, a polarity correction input and a plurality of outputs; a plurality of switching units, each switching unit having a power input, an input connected to a respective output of a respective control unit, and an output connected to a respective winding of said synchronous motor, and each switching unit including bi-directional switches connected in a bridge circuit; an m-phase transformer connected to a.c. m-phase means, output windings of said transformer being connected to said power inputs of respective switching units; and a timer connected to said m-phase transformer and to said polarity correction inputs of said control units.

5,006,777

AC INPUT SYSTEM FOR COMPUTER-BASED CONTROL SYSTEM

James L. Lagree, Plum Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 27, 1987, Ser. No. 43,573
Int. Cl.[5] H02P *3/18*
U.S. Cl. 318—798 5 Claims



1. In a computer system operative to provide control signals in response to a plurality of input signals selectively interrogated, each interrogated input signal normally representing an AC power voltage of fundamental frequency in the form of a first train of pulses of equal width having successive high and low digital levels at the frequency and phase of said AC power voltage; the combination of:

means responsive to said AC power voltage for generating a reference signal in the form of a reference train of pulses having high and low digital levels of the same width as normally for said first train, at the same said frequency, and shifted therefrom by a predetermined delay;

means responsive to said first train of pulses for sampling the digital level thereof; first upon the occurrence of one of a falling and rising edge in said reference train, secondly a half-cycle thereafter; thereby to derive consecutive first and a second samples thereupon; and

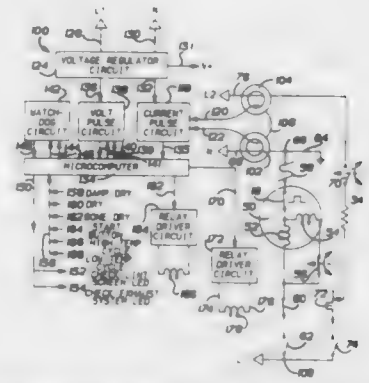
means for comparing said first and second samples for detecting in relation to a predetermined lack of parity between consecutive first and second samples an indication of invalidity of said interrogated input signal.

5,006,778

MOTOR DIAGNOSTICS AND ELECTRONIC CONTROL FOR A CLOTHERS DRYER

Larry T. Beshark, St. Joseph Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Continuation-in-part of Ser. No. 392,368, Aug. 11, 1989, and a continuation-in-part of Ser. No. 392,473, Aug. 11, 1989, and a continuation-in-part of Ser. No. 397,755, Aug. 23, 1989, and a continuation-in-part of Ser. No. 460,269, Jan. 2, 1990. This application Jan. 2, 1990, Ser. No. 460,260
Int. Cl.[5] H02P *7/36*
U.S. Cl. 318—799 20 Claims



1. A method of detecting non-cyclical changes in the velocity of a rotating member, said method consisting of the steps of:

periodically providing a velocity representation of an average velocity of said rotating member;

periodically providing a sign representation of the sign of the arithmetic difference between two consecutive velocity representations;

periodically determining the non-cyclical change in the velocity of said rotating member by observing the sign of a first predetermined number of consecutive sign representations; and

detecting a preselected non-cyclical change in the velocity of said rotating member when a second predetermined number of sign representations having the same preselected sign are present among said first predetermined number of sign representations.

5,006,779

ELECTRICAL UNIT WITH MULTI-POSITION SWITCH

Kenneth R. Feane, Glen Ellyn; Wayne D. Steward, Aurora, and Witalij Didyk, Addison, all of Ill., assignors to Pittway Corporation, Northbrook, Ill.

Continuation of Ser. No. 20,700, Mar. 2, 1987, Pat. No. 4,743,829, which is a continuation of Ser. No. 748,304, Jun. 24, 1985, Pat. No. 4,647,832, which is a continuation-in-part of Ser. No. 634,774, Jul. 26, 1984, abandoned. This application Feb. 16, 1988, Ser. No. 156,243
Int. Cl.[5] H02J *7/00;* H01M *10/46*
U.S. Cl. 320—2 17 Claims

1. An electrically powered device removably couplable to an associated power source comprising:

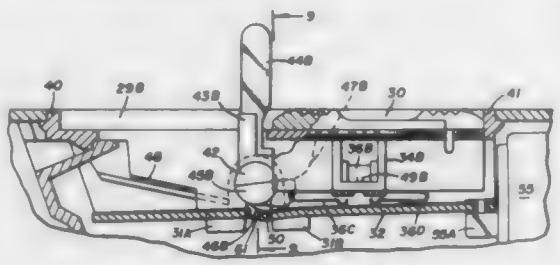
a housing;

first and second rigid conducting members for electrically coupling to the associated power source;

means mounting said members on said housing for only a first type of movement between a coupling position and a non-coupling position;

means, carried by said housing, displaceable with only a second type of movement, different from said first type,

between at least first and second positions, said conducting members are couplable to the associated power source only when said displaceable means is in said first position, said conducting members are in said non-coupling position when said displaceable means is in said second position and substantially overlying said prongs;



a source of illumination;

a rechargeable battery and a recharging circuit for said battery; and

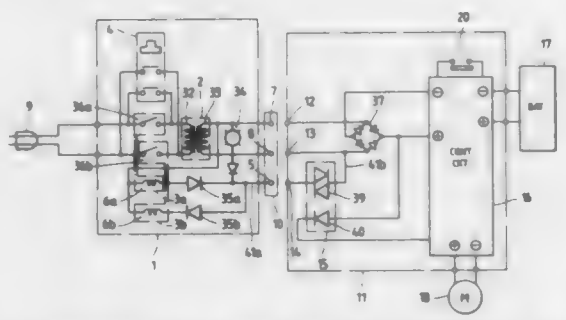
means for electrically connecting said conducting members to said recharging circuit at least when said members are in said coupling position.

5,006,780

CHARGING CIRCUIT

Kozo Tamura; Toshiharu Kodato; Syoichi Nihira; Yasuhiro Tsukamoto, and Akira Iida, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo and Tagasangyo, Ltd., Hitachi, both of, Japan

Filed Apr. 13, 1989, Ser. No. 336,785
Claims priority, application Japan, Apr. 13, 1988, 63-89084
Int. Cl.[5] H02J 7/04
U.S. Cl. 320—54 3 Claims



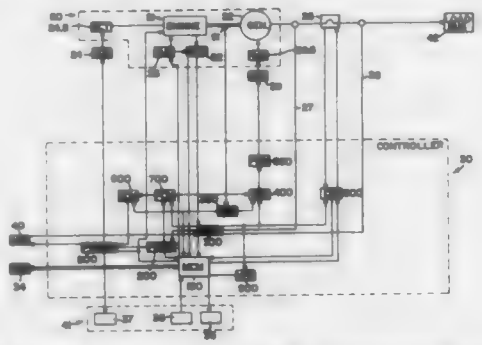
1. A charging circuit comprising a main circuit for charging a battery, and a power unit connected to an electric power source and said main circuit through a connector and including relay means with relay contact means for supplying and for interrupting current to said main circuit from said electric power source through said connector when said relay means is energized to close said relay contact means by a control means, wherein said main circuit and said power unit have signal wires, respectively, for transmitting a control signal through said connector to said relay means for opening said relay contact means when said main circuit completes charging of said battery, said power unit including an element connected between said battery and a terminal therein connected to said connector for detecting a reverse current from said battery to said terminal and for transmitting said control signal to said relay means through said connector for preventing a flow of reverse current from said battery to said terminal, said power unit further including a parallel circuit comprising a first series circuit of a first diode and a first direct current relay and a second series circuit of a second diode and a second direct current relay connected in antiparallel to said first diode and said first direct current relay, said parallel circuit being connected between said electric power source and said connector, and said relay contact means of said relay means being provided by each contact of said first and second direct current relays.

5,006,781

MICROPROCESSOR BASED INTEGRATED GENERATOR SET CONTROLLER APPARATUS AND METHOD

Mark H. Schultz, Shoreview, and David J. Koenig, Wyoming, both of Minn., assignors to Onan Corporation, Minneapolis, Minn.

Filed May 9, 1988, Ser. No. 191,560
Int. Cl.[5] H02H 7/06; H02P 9/00
U.S. Cl. 322—25 18 Claims



1. A control system for controlling the voltage and current output signals of a generator, comprising:

(a) first sensing means, operatively connected to the generator, for sensing the voltage and current output signals of the generator and for providing a sensed voltage signal and a sensed current signal; and

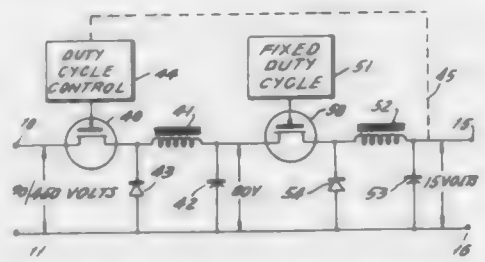
(b) first control means, operatively connected to the generator and to said first sensing means to receive said sensed voltage and current signals, for selectively controlling the voltage or current output signals of the generator in response to the magnitude of the current output signal, said first control means controlling the voltage or current signals according to a control process equation having coefficients, wherein the coefficients of said control process equation are changed according to whether the voltage or current signals are being controlled.

5,006,782

CASCADED BUCK CONVERTER CIRCUIT WITH REDUCED POWER LOSS

Brian R. Pelly, Palos Verdes Estates, Calif., assignor to International Rectifier Corporation, El Segundo, Calif.

Filed Jun. 15, 1989, Ser. No. 366,689
Int. Cl.[5] G05F 1/56
U.S. Cl. 323—225 17 Claims



1. A cascaded buck converter circuit comprising, in combination:

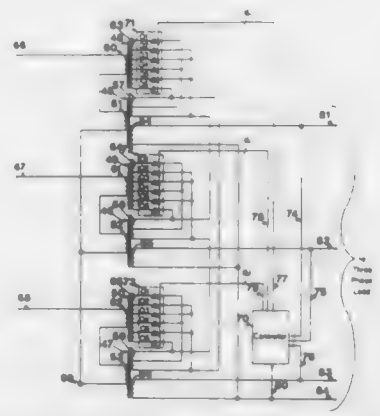
a pair of input terminals for connection to a source of input voltage; a first and a second switching transistor; a first and a second diode, a first and a second inductor and a first and a second capacitor; said pair of input terminals, said first switching transistor, said first inductor and said first capacitor connected in series circuit relation; said first diode connected in parallel with the series connection of said first inductor and said first capacitor thereby to define a first buck converter stage; said first capacitor, said second switching transistor, said second inductor and said second capacitor connected in series circuit relation; said second diode connected in parallel with the series connection of said second inductor and said second capacitor; the terminals of said second capacitor defining a pair of output terminals for connection to one of an output circuit or to a further buck converter stage; said first and second switching transistor being comprised respectively of a first and second power MOSFET each with a respective silicon area, the first and second MOSFET transistors being so selected that the total silicon area of said first and second power MOSFETs is substantially less than a silicon area associated with a single buck converter circuit having the same input and output voltages and the same output current as those of said cascaded buck converter circuit.

5,006,783

THREE PHASE VOLTAGE REGULATOR SYSTEM USING TERTIARY WINDING TRANSFORMER

Dale C. Corel, Elk Grove Village; Anthony Tamosaitis, Addison, and Pradeep Narechania, Long Grove, all of Ill., assignors to General Signal Corporation, Rochester, N.Y.

Filed Oct. 16, 1989, Ser. No. 421,903
Int. Cl.[5] G05F 1/30
U.S. Cl. 323—263 5 Claims



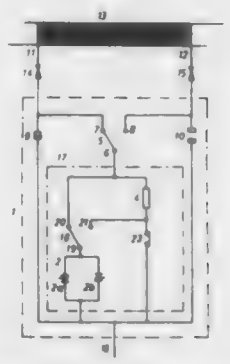
1. A three phase voltage regulator adapted to regulate voltages supplied from a three wire input source without a neutral which comprises transformer means having three phase primary windings and three phase secondary windings, said secondary windings having an output for connection to a three phase load, said transformer means also having a three phase tertiary winding having three windings at least individual ones of which are coupled to said primary windings and said secondary windings, so as to provide coupled primary, secondary and tertiary windings for each respective phase, voltage regulating means connected to said primary windings for keeping the voltage across said primary windings substantially constant, wherein said regulating means is connected in series with said primary windings, and wherein said regulating means comprises means for applying voltage form said tertiary windings to said primary windings.

5,006,784

THYRISTOR ON-LOAD CHANGE-OVER SWITCH

Ernst Sonntagbauer, Vienna, Austria, assignor to Elin-Union, Vienna, Austria

PCT No. PCT/AT88/00045, § 371 Date Dec. 6, 1989, § 102(e) Date Dec. 6, 1989, PCT Pub. No. WO88/10582, PCT Pub. Date Dec. 29, 1988
PCT Filed Jun. 14, 1988, Ser. No. 458,735
Claims priority, application Austria, Jun. 25, 1987, 1601/87
Int. Cl.[5] H01F 29/04
U.S. Cl. 323—343 2 Claims



1. An arrangement in an on-load change-over switch of an on-load tap changer for uninterrupting switch-over of the regulating winding of a transformer, comprising:

a regulating stage of the regulating winding;

said regulating stage containing a higher winding tap and a lower winding tap;

at least two selector contacts;

at least two permanent contacts;

conductors respectively connecting said at least two selector contacts and said at least two permanent contacts;

a common output line;

said higher winding tap and said lower winding tap being respectively connected to said common output line through respective ones of said at least two selector contacts and said at least two permanent contacts for conducting load current from a respective one of said higher winding tap and said lower winding tap to said common output line;

a first change-over switch;

said first change-over switch having a root connection and two switching contacts respectively connected to said higher winding tap and said lower winding tap;

said two switching contacts of said first change-over switch being respectively connected to said conductors respectively connecting said at least two selector contacts and said at least two permanent contacts;

a load relief circuit interconnecting said root connection of said first change-over switch and said common output line;

said first change-over switch switching between said higher winding tap and said lower winding tap such that said load current is briefly passed to said load relief circuit;

said load relief circuit containing a second change-over switch and a thyristor circuit;

said thyristor circuit being connected in series with said second change-over switch and containing two thyristors in antiparallel connections;

said load relief circuit further containing a series connection of a transition resistor and a bridging-over switch;

said series connection of said transition resistor and said bridging-over switch being connected to said common output line;

said second change-over switch containing two switching contacts;

one of said two switching contacts of said second change-

over switch being directly connected to said root connection of said first change-over switch; and

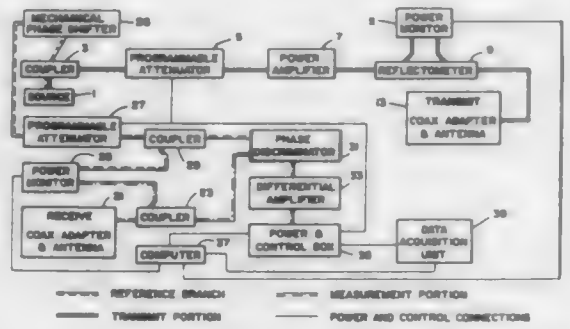
an other one of said two switching contacts of said second change-over switch being connected to said root connection of said first change-over switch through said transition resistor.

5,006,785

MICROWAVE OIL SATURATION SCANNER

David E. Revus, Yorba Linda, and Russell E. Boyer, Fullerton, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 855,539, Apr. 23, 1986, Pat. No. 4,764,718. This application Aug. 22, 1988, Ser. No. 234,984
The portion of the term of this patent subsequent to Mar. 10, 2004, has been disclaimed.
Int. Cl.[5] G01N *22/00*
U.S. Cl. 324—639 13 Claims



1. A microwave oil saturation scanner for measuring multiple fluid flow including oil and water having

(A) a transmit portion, comprising:

a source of microwave radiation;

a signal generated from said source;

means to control the strength of the signal from the microwave source connected to said microwave source;

means to transmit the signal through a sample, said transmit means is connected to said means to control the strength of the signal;

means to measure the strength of the signal that is transmitted, connected to said control means and said transmit means; and

(B) a measurement portion, comprising:

means to receive the signal that has been transmitted through the sample;

means to monitor the strength of the received signal connected to said receiving means;

means to control the strength of the signal that has been transmitted, said means being connected to said monitor means; and

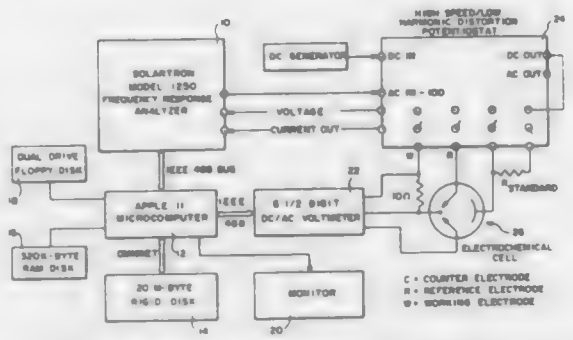
means to compare the signal that is transmitted, with the received signal and determine the amount of attenuation and phase angle shift of the received signal.

5,006,786

DEVICE FOR IN SITU MONITORING OF CORROSION RATES OF POLARIZED OR UNPOLARIZED METALS

Michael C. H. McKubre, San Mateo County, and Barry C. Syrett, Santa Clara County, both of Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation of Ser. No. 353,189, May 16, 1989, abandoned, which is a continuation of Ser. No. 38,164, Apr. 14, 1987, abandoned, which is a continuation-in-part of Ser. No. 576,119, Feb. 2, 1984, Pat. No. 4,658,365. This application May 3, 1990, Ser. No. 518,256
Int. Cl.[5] G01N *27/26*
U.S. Cl. 324—71.2 8 Claims



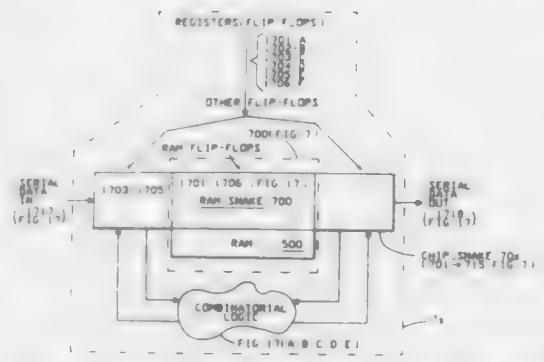
1. A method for continuous measurement of corrosion rate in a non-coated metal component submerged in an electrolyte comprising the steps of applying a moderate amplitude sinusoidal voltage perturbation having an applied fundamental frequency f to the corroding metal component, and analyzing the harmonic current response arising because of the energy needed to remove an electron from a metal to make an ion at a plurality of frequencies which are multiples or harmonics of the applied fundamental frequency f to calculate a dissolution current as a representative measure of corrosion, the harmonic current response being a function of said frequency harmonics arising in response to the sinusoidal voltage perturbation with no DC variation of potential.

5,006,787

SELF-TESTING CIRCUITRY FOR VLSI UNITS

Haluk Katircioglu, Irvine; John A. De Beule, Rancho Santa Margarita, and Debaditya Mukherjee, El Toro, all of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Jun. 12, 1989, Ser. No. 364,411
Int. Cl.[5] G01R *31/28*
U.S. Cl. 324—73.1 15 Claims



1. In a VLSI integrated circuit chip structure which includes combinatorial logic circuitry, and having build-in self-test circuitry, said self-test circuitry having registers and flip-flops controllable as latches or as multiple function shift registers, the combination comprising:

(a) means for converting said registers into multifunction shift registers (MFSRs);

(b) means for selecting one of said registers as a test data generator to generate test data while holding the other registers, except for one output register;

(c) means for placing said test data generated into the said output register as a signature;

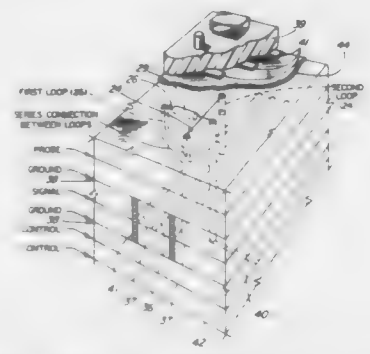
(d) means for accessing said signature for comparison against a standard reference signature.

5,006,788

METHOD AND APPARATUS FOR MONITORING ELECTROMAGNETIC EMISSION LEVELS

Richard R. Goulette, Arnprior; Stanilus K. Xavier, Kanata, and Raymond L. Greenfield, Nepean, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Division of Ser. No. 890,717, Jul. 30, 1986, Pat. No. 4,829,238. This application Dec. 28, 1988, Ser. No. 291,280
Claims priority, application Canada, Mar. 27, 1986, 505485
Int. Cl.[5] G01R *31/28*
U.S. Cl. 324—95 16 Claims



1. A method of diagnosing faults in a printed circuit board, the method comprising the steps of:

energizing a printed circuit board which is known to be good and mapping radio frequency emissions from said printed circuit board known to be good to obtain a reference signature;

energizing a printed circuit board under test and mapping radio frequency emissions from said printed circuit board under test to obtain a test signature; and

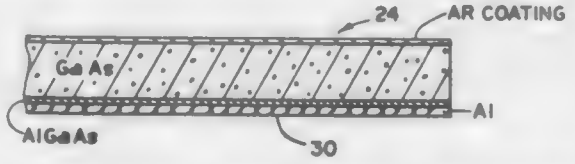
comparing the test signature to the reference signature, the presence and location of differences between the test signature and the reference signature indicating the presence and location of faults in the printed circuit board under test.

5,006,789

ELECTRO-OPTIC SIGNAL MEASUREMENT

Steven Williamson, Ann Arbor, Mich., assignor to The University of Rochester, Rochester, N.Y.

Division of Ser. No. 355,514, May 23, 1989, Pat. No. 4,928,058. This application Mar. 12, 1990, Ser. No. 491,785
Int. Cl.[5] G01R *19/00, 31/00;* G02F *1/09*
U.S. Cl. 324—96 7 Claims



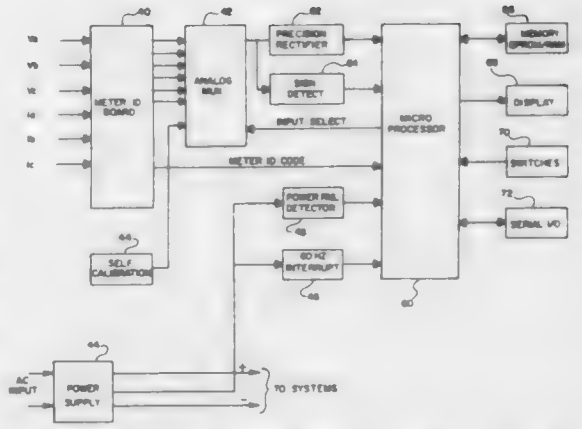
1. An electro-optic electrical field probe for measuring an electrical signal which produces a field comprising a body of electro-optic material which changes polarization of light passing therethrough in accordance with the Pockels effect and which comprises a body of semi-conductor electro-optic material having ions of at least one element with a lower atomic number Z, then the atomic number of the elements of said electro-optic material implanted therein to reduce the photoconductivity thereof, and means for disposing said body in the vicinity of said field.

5,006,790

ELECTRONIC THERMAL DEMAND MODULE

William C. Beverly, II, Davidson; Michael B. Dalton, Pineville, and David Q. Gaddis, Charlotte, all of N.C., assignors to Appalachian Technologies Corporation, Charlotte, N.C.

Filed Oct. 19, 1987, Ser. No. 109,776
Int. Cl.[5] G01R *21/133, 5/22*
U.S. Cl. 324—104 4 Claims



2. Electronic apparatus coupled to receive from a metering connection a plurality of analog voltages representing the instantaneous line voltage and load current values of at least one phase of an electrical utility service entrance and utilizing said analog voltages to selectively calculate and selectively display parameters related to the existing load conditions, said apparatus comprising in combination:

(a) means for sampling said analog voltage and repetitively generating digital numbers having a predetermined relationship to said analog voltages;

(b) means for correcting said digital numbers for variations introduced by said means for sampling;

(c) means utilizing said digital numbers to calculate said selected parameters in accordance with predetermined mathematical functions;

(d) means for selectively displaying digital numbers representing the calculated values of said selected parameters in alphanumeric form;

(e) means for selectively setting the digital number representative of selected ones of said parameters to a selected value in response to an input signal; and

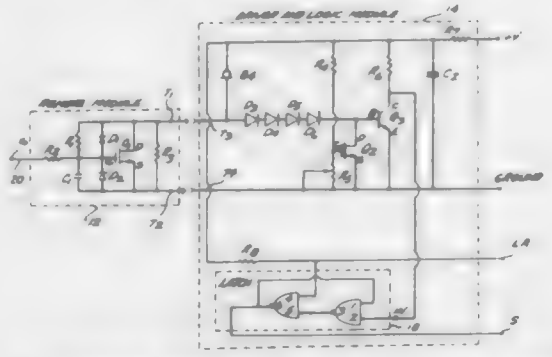
(f) means for initiation of calibration, display and other sequences associated with said means utilizing said digital numbers.

5,006,791

ELECTROSTATIC DETECTOR AND METHOD FOR DETECTING CONDUCTORS

Dan A. Cross, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 18, 1985, Ser. No. 798,996
Int. Cl.[5] G01R *19/14, 31/08*
U.S. Cl. 324—133 **18 Claims**



1. A detector for detecting a conductive region, comprising:
a conductive detection electrode for contactung the conductive region;
a capacitor for establishing an electrical charge on said detection electrode to place said detection electrode at a predetermined electrical potential;
means for detecting a decrease in said electrical potential of said detection electrode when said conductive region contacts said detection electrode;
first and second circuit terminals connectable to a source of operating potential;
a current source for supplying a control current in response to said operating potential, the first end of said current source being connected to said first circuit terminal and the second end of said current source being connected to the first terminal of said capacitor, the second terminal of said capacitor being connected to said second circuit terminal, the first terminal of said capacitor also being connected to said detection electrode; and
a first transistor switch having a control electrode connected to the first terminal of said capacitor, said first transistor switch for directing said control current to said second circuit terminal when said potential of said detection electrode remains at a predetermined potential and for blocking said control current when said potential on said detection electrode decreases from said predetermined level.

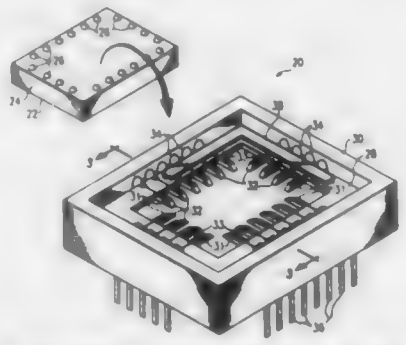
5,006,792

FLIP-CHIP TEST SOCKET ADAPTOR AND METHOD

Satwinder Malhi, Garland; Oh K. Kwon, and Shivaling S. Mahant-Shetti, both of Richardson, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 30, 1989, Ser. No. 330,839
Int. Cl.[5] G01R *1/07, 1/04*
U.S. Cl. 324—158 F **29 Claims**

1. A socket adaptor for testing a bare integrated circuit chip having solder bump leads, comprising:
a substrate constructed and arranged to receive and hold the chip;
a plurality of pressure-sensitive contacts on said substrate matched to solder bump leads on the chip, said contacts comprising cantilever beams formed from a semiconductor material; and



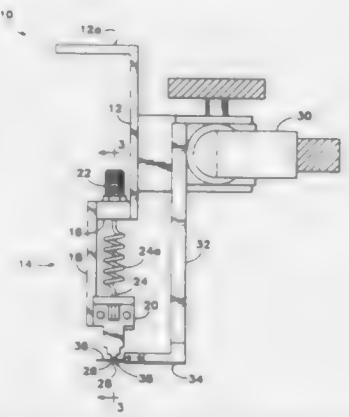
a package for holding said substrate such that the chip may be tested.

5,006,793

HIGH-FREQUENCY ACTIVE PROBE HAVING REPLACEABLE CONTACT NEEDLES

K. Reed Gleason, Portland, and Keith E. Jones, Aloha, both of Oreg., assignors to Cascade Microtech, Inc., Beaverton, Oreg.

Filed Jun. 8, 1989, Ser. No. 364,091
Int. Cl.[5] G01R *1/06, 31/02*
U.S. Cl. 324—158 P **4 Claims**



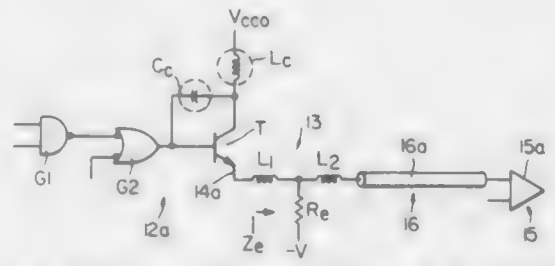
1. A circuit probe for providing two electrical connections to a circuit under test, comprising:
(a) an elongate transmission line having a first conductor and a second conductor, said transmission line having a longitudinal axis;
(b) first contact needle means connected to said first conductor of said transmission line for contacting a first selected location on said circuit under test;
(c) a conductive surface connected to said second conductor of said transmission line;
(d) wiper means for conductively contacting said conductive surface at a variable contact position, said wiper means and said conductive surface being movable with respect to each other so as to vary said contact position;
(e) second contact needle means, attached to said wiper means and spaced from said first contact needle means, for contacting a second selected location on said circuit under test; and
(f) selectively actuatable positioning means remote from said wiper means and from said conductive surface for varying said contact position so as to adjust the relationship between said first contact needle means and said second needle means, and linkage means remotely operatively interconnecting said positioning means with at least one of said wiper means and said conductive surface for causing relatively movement therebetween in response to actuation of said positioning means.

5,006,794

MODULE FOR PREVENTING INSTABILITY IN INTEGRATED CIRCUIT TESTERS

Laszlo V. Gal, Poway; James E. Judy, Jr., and Kenneth C. Prentice, both of San Diego, all of Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Mar. 21, 1988, Ser. No. 188,021
Int. Cl.[5] G01R *31/02, 1/06*
U.S. Cl. 324—158 R **11 Claims**



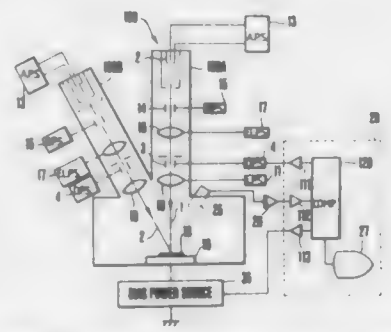
1. A system which tests the operability of an integrated circuit chip; said system being of a type in which a plurality of output transistors on said chip send output signals over respective signal lines to a tester unit which checks the state of the output signals; wherein:
each output transistor has an input node and feedback from said output signals to said input node; and,
disposed between said chip and said signal lines is an interface module which prevents said feedback from inducing oscillations in said output signals;
said interface module being characterized as including a plurality of phase shifting circuits that respectively couple said output signals from said output transistors onto said signal lines to said tester unit;
each phase shifting circuit including an inductor which together with the input impedance of one signal line to said tester unit produces a net positive phase shift of up to +90°.

5,006,795

CHARGED BEAM RADIATION APPARATUS

Masahiro Yoshizawa; Akira Kikuchi, both of Kanagawa; Kou Wada, Tokyo; Minpei Fujinami, Tokyo, and Nobuo Shimazu, Tokyo, all of Japan, assignors to Nippon Telephone and Telegraph Public Corporation, Japan

Filed Jun. 24, 1986, Ser. No. 878,015
Claims priority, application Japan, Jun. 24, 1985, 60-136147; Jun. 24, 1985, 60-136148; Aug. 5, 1985, 60-171028
Int. Cl.[5] G01B *15/00;* **G01R** *31/26*
U.S. Cl. 324—158 R **23 Claims**



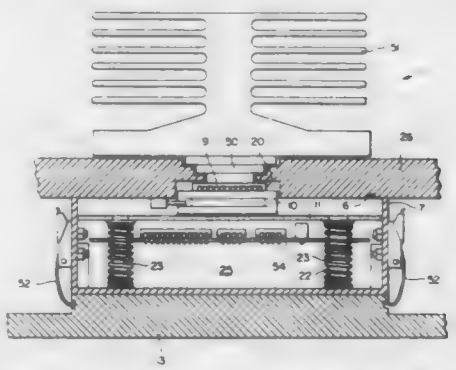
1. A charged beam radiation apparatus comprising:
auxiliary charged beam emitting means for emitting an auxiliary charged beam having a given acceleration voltage onto a predetermined portion of an electronic device which includes a pattern to be measured; said given acceleration voltage selected to produce a secondary emission ratio of less than 1 to charge said predetermined portion of said electronic device to a negative potential;
main charged beam emitting means for emitting a main charged beam having an acceleration voltage lower than said given acceleration voltage of said auxiliary charged beam onto said predetermined portion and the vicinity of said predetermined portion to generate secondary electrons;
secondary electron detecting means for detecting secondary electrons generated from a portion irradiated by said main charged beam to generate a secondary electron signal waveform; and
means for measuring the size of the pattern to be measured by detecting the edge of said pattern from said secondary electron signal waveform generated by said detecting means.

5,006,796

TEMPERATURE CONTROL INSTRUMENT FOR ELECTRONIC COMPONENTS UNDER TEST

David P. Burton, Parteen; Paul A. Dillon, Foxrock, and Malcolm I. Stephenson, Adare, all of Ireland, assignors to Irish Transformers Limited, Limerick, Ireland

Filed Oct. 27, 1988, Ser. No. 263,232
Claims priority, application Ireland, Oct. 28, 1987, 2886/87; Mar. 11, 1988, 713/88
Int. Cl.[5] G01R *31/02;* **F28F** *7/00*
U.S. Cl. 324—158 F **10 Claims**



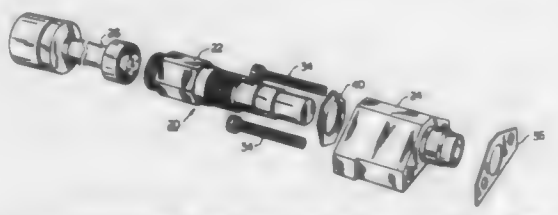
1. A temperature control instrument for an electronic component under test comprising:
a body;
a testing enclosure in said body for the component;
a socket means mounted within said testing enclosure for the reception of the component;
a thermoelectric device for heating or cooling said enclosure, said thermoelectric device having a heat transfer active face and and a reference face, said reference face being maintained at a substantially constant temperature, and a controller comprising a control circuit for controlling operation of the thermoelectric device by varying the magnitude and direction of current applied to the thermoelectric device to alter the temperature of said active face;
a mounting assembly for mounting said socket means and thermoelectric device separately and relatively movable with respect to each other between a closed position in which said active face is in contact with the electronic component and an open position in which said active face and component are spaced apart; and
temperature sensing means operatively connected to said controller for sensing temperature within the enclosure.

5,006,797

ELECTROMAGNETIC SENSOR ASSEMBLY

William L. Smith, Blue Ridge Overlook, Brevard, N.C. 28712

Filed Mar. 2, 1989, Ser. No. 317,967
Int. Cl.[5] G01P *3/48, 3/54;* G01B *7/14;* G01R *33/00*
U.S. Cl. 324—173 11 Claims



1. A sensor assembly for providing an electrical signal representative of the velocity of a movable body, comprising:

(a) sensor means for sensing the velocity of the body and providing said signal; and

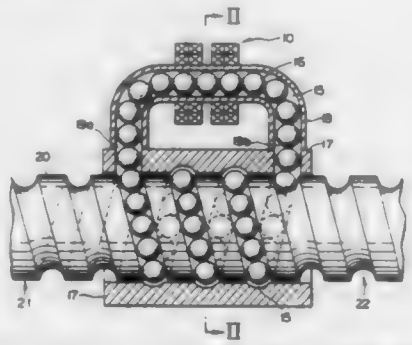
(b) mounting means disposed close to the body for locating said sensor means in a predetermined position with respect to said body, wherein said mounting means includes a mounting block having a passageway extending through said block for receiving said sensor means, first means for restricting the movement of said sensor means along a direction coexistent with respect to the longitudinal axis of said sensor means and second means for restricting the movement of said sensor means along the direction coexistent with respect to the longitudinal axis of said sensor means to a predetermined position from said body, wherein said second means for restricting the movement of said sensor means along the direction coexistent with respect to the longitudinal axis of said sensor means to the predetermined position from said body include a base plate having an aperture coexistent with the longitudinal axis of said sensor means, said aperture being sized to permit a predetermined portion of said sensor means to extend therethrough, wherein said base plate having an aperture coexistent with the longitudinal axis of said sensor means includes an elongated tubular portion having one end attached to said base plate, said barrel portion extending along the direction coexistent with respect to the longitudinal axis of said sensor means and being sized to permit at least a portion of said sensor means to extend therein.

5,006,798

POSITION DETECTION USING RELUCTANCE CHANGES INDUCED BY DISPLACEMENT OF METALLIC BALLS

Yuji Matsuki, Sayama, and Waturu Ichikawa, Tokyo, both of Japan, assignors to Kabushiki Kaisha SG, Tokyo, Japan

Filed Feb. 8, 1990, Ser. No. 476,799
Claims priority, application Japan, Feb. 9, 1989, 1-13555[U]
Int. Cl.[5] G01B *7/14;* G01R *33/00*
U.S. Cl. 324—207.17 7 Claims



1. A position detection device for a linear guide, comprising:

a linear guide including a linear guide member, a movable member being displaceable relative to said linear guide member and a ball bearing assembly provided on said movable member in a portion which comes in sliding contact with said linear guide member, said ball bearing assembly having a casing and a succession of plural metallic balls disposed within the casing to form an endless ball array with each adjacent one of said balls being in close contact with each other and said balls being rotatable and continuously displaceable in a closed loop in accordance with the relative displacement of said movable member; and

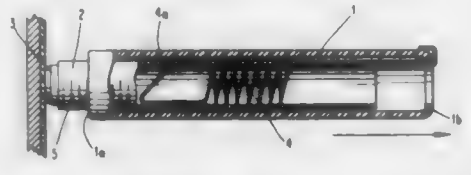
a coil assembly provided on a part of said casing and including a coil member to be excited by an AC signal so that a magnetic path is formed through said ball located at said part of said casing and a reluctance change is produced in the magnetic path in accordance with displacement of said balls, one cycle of said reluctance change being determined by displacement corresponding to the diameter of said balls, and said coil assembly producing an output signal responsive to said reluctance change.

5,006,799

LOW COST MAGNETIC COATING THICKNESS GAUGE WITH HOLDING MAGNET, BIAS SPRING AND HOLDING FORCE INDICATOR

John G. Pfanstiehl, 880 Mandalay S-407, Clearwater Beach, Fla. 34630

Filed Dec. 1, 1988, Ser. No. 278,348
Int. Cl.[5] G01B *7/10, 5/06*
U.S. Cl. 324—230 38 Claims



1. A device that measures the magnetic holding force of a material being tested, comprising:

a first elongate housing member;

a second elongate housing member slidably received within said first housing member;

said first housing member and said second housing member being manually held in use with their respective longitudinal axes positioned in a substantially orthogonal relationship to said material being tested with one of said housing members remaining in position with the material being tested while the other said housing member is telescopically pulled away from said material being tested;

a permanent magnet;

said magnet carried by one end of one of said housing members with a portion of said magnet protruding beyond said end of said housing member;

whereby said magnet is placed in contact with said material being tested; said magnet holding said one of said housing members to said material with said magnetic holding force which is inversely proportional to the thickness of the nonmagnetic surface coating which covers the ferrous substrate of said material being tested while the other said housing member is pulled away from said material being tested;

a biasing means comprised of a coiled spring having a leading end and a trailing end;

said ends disposed in interconnecting relation to said first housing member and said second housing member;

said trailing end of said biasing means fixedly secured to said first housing member and said leading end of said biasing means fixedly secured to said second housing member to provide a bias which increases in linear fashion with the distance said first housing member is pulled telescopically out from said second housing member until the bias equals said magnetic force holding said magnet in contact with said surface being tested;

a first indicia means in the form of a graduated scale, being provided on said second housing member;

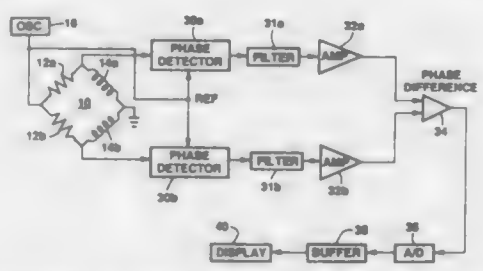
whereby said scale moves relative to said first housing member as one of said housing members is pulled away from said material being tested and whereby the magnetic holding force of said material is indicated by registration of said indicia means and said first housing member when said holding force is equal to the bias provided by said biasing means.

5,006,800

EDDY CURRENT IMAGING APPARATUS AND METHOD USING PHASE DIFFERENCE DETECTION

Kristina H. V. Hedengren; Donna C. Hurley, both of Schenectady, and John D. Young, Rexford, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 6, 1989, Ser. No. 431,791
Int. Cl.[5] G01R *33/12;* G01N *27/82*
U.S. Cl. 324—233 18 Claims



1. Apparatus for eddy current imaging using phase difference detection of an object, said apparatus comprising:

a pair of coils, at least one of said coils being adapted to be disposed proximate to the object;

means for causing relative motion between the object and said coils;

an oscillator coupled to said coils for causing said at least one of said coils to create eddy currents in the object;

a pair of phase detectors coupled to said oscillator and to said coils, said oscillator providing signals having the same phase to both of said phase detectors; and

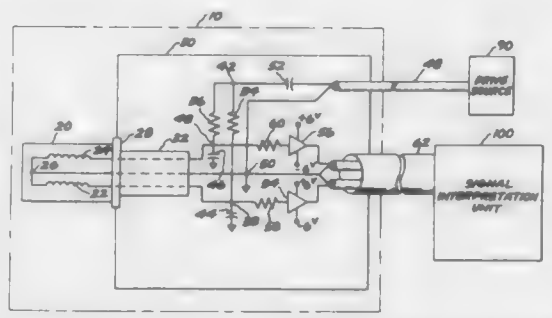
means for comparing the output signals from said phase detectors.

5,006,801

EDDY CURRENT INSPECTION PROBE WITH PROBE COIL RESONACE REDUCTION

John D. Young, Rexford, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 2, 1989, Ser. No. 360,687
Int. Cl.[5] G01N *27/82, 27/72;* G01R *33/00, 33/12*
U.S. Cl. 324—238 9 Claims



1. An inspection instrument of the type which reacts to induced eddy currents in a workpiece to be inspected, said instrument comprising:

a probe including a first probe coil and a second probe coil;

a bridge circuit including said first probe coil connected in a first bridge arm, said second probe coil connected in a second bridge arm, a first and a second resistor connected in third and fourth bridge arms respectively, said first and second bridge arms connected at a grounded first bridge node, said first and third bridge arms connected at a second bridge node, said second and fourth bridge arms connected at a third bridge node, said third and fourth bridge arms connected at a fourth bridge node, said first and fourth bridge nodes constituting input terminals for receiving an AC drive signal, and said second and third bridge nodes constituting output terminals;

first and second capacitors coupled between said second and third bridge nodes respectively and ground;

means for connecting said bridge output terminals to a remote signal interpretation unit, said connecting means having a capacitive reactance value capable of producing undesired resonance conditions with said probe coil at the frequency of said AC drive signal; and

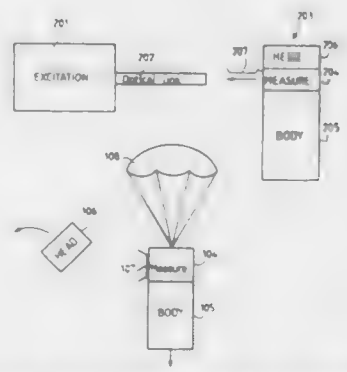
individual buffer means connected between each of said output terminals and said connecting means to isolate said capacitance reactance from said bridge circuit.

5,006,802

MAGNETIC DETECTION METHOD AND DEVICE FOR THE IMPLEMENTATION THEREOF

Martine Dolsy, Plaisaasier, France, assignor to Thomson-CSF, Puteaux, France

Filed Dec. 15, 1989, Ser. No. 451,154
Claims priority, application France, Dec. 20, 1988, 88 16804
Int. Cl.[5] G01R *33/26*
U.S. Cl. 324—304 11 Claims



1. A method for the measurement of the magnetic field by means of a helium-type releasable magnetometer, comprising excitation means and measuring means, comprising a helium cell, wherein this helium cell is excited, the excitation means and the measuring means are separated, these measuring means are released to make them go to the place where the measurement has to be made, and a measurement is made of the precession of the helium atoms under the effect of the magnetic field to be measured.

5,006,803

NUCLEAR MAGNETIC RESONANCE APPARATUS WITH SURFACE COIL DETECTION

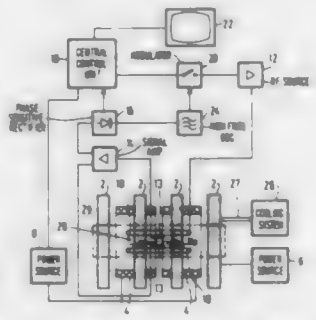
Eddy B. Boskamp, and Rudolf Kemner, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 677,939, Dec. 4, 1984, abandoned. This application Mar. 26, 1987, Ser. No. 31,064

Claims priority, application Netherlands, May 25, 1984, 8401671

Int. Cl.[5] G01R *33/36*

U.S. Cl. 324—311 14 Claims



1. A nuclear magnetic resonance apparatus comprising means for generating a homogeneous main magnetic field in an examination space, means for generating gradient fields in said examination space, means, including a first coil, for generating a local, homogeneous, radio frequency magnetic field in said examination space, and means for detecting nuclear magnetic resonance signals generated in an object under examination disposed in said examination space, said detecting means comprising a measuring coil which is separate from said first coil and an electronic circuit for decoupling said measuring coil from said first coil during generation of said radio frequency field in said examination space.

5,006,804

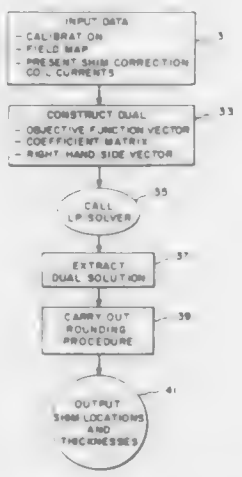
METHOD OF OPTIMIZING SHIM COIL CURRENT SELECTION IN MAGNETIC RESONANCE MAGNETS

Bizhan Dorri, Clifton Park, N.Y., and Jay F. Beneach, Gaithersburg, Md., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 4, 1989, Ser. No. 445,508

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—320 4 Claims



1. A method of shimming a magnet having correction coils, comprising the steps of:

(a) measuring the field strength in the bore of the magnet at a predetermined number of points;

(b) determining the field inhomogeneity from the measured field strengths;

(c) determining the field created by a fixed current in each shim coil operating alone, at each of the predetermined points;

(d) determining the shim correction coil currents using a linear programming solver to minimize the field inhomogeneity and the correction coil currents used in the shims, the correction coil currents being determined based on the measured field in the bore of the magnet and the field created by each of the shim coils when carrying a fixed current, with the correction coil currents each constrained to a maximum value which is adjusted for the current in the correction coils when the field strength in the bore of the magnet was measured;

(e) adjusting the currents in the correction coils to the determined values;

(f) measuring the field strength of the magnet and correction coils at the predetermined number of points in the magnet;

(g) determining the field inhomogeneity from the measured field strengths;

(h) comparing the field inhomogeneity to a desired value; and

(i) repeating steps d, e, f, g, and h until the field inhomogeneity is less than or equal the desired inhomogeneity.

5,006,805

SURFACE COIL ARRANGEMENT FOR USE IN A NUCLEAR MAGNETIC RESONANCE APPARATUS

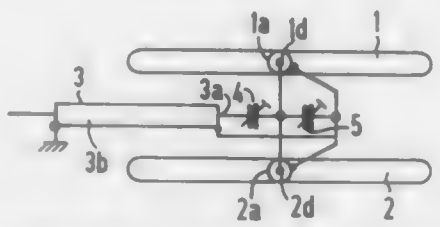
Hartwig Ingwersen, Uttenreuth, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 20, 1989, Ser. No. 409,925

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1988, 3832473

Int. Cl.[5] G01R *33/34*

U.S. Cl. 324—322 9 Claims



1. A surface coil system for use in a nuclear magnetic resonance apparatus comprising a surface coil arrangement having two identically constructed surface coils, said coils being disposed geometrically anti-parallel and being electrically connected to each other so that radio-frequency magnetic fields which uniformly penetrate both surface coils do not induce any resultant current, each surface coil being formed by a coaxial line section formed in a loop and having jacket shielding with a gap at one location in said loop, said coaxial line section having an inner conductor and having an end at which the jacket shielding and the inner conductor are electrically connected to the jacket shielding at an opposite end of said coaxial line section, with the loops of said two surface coils having opposite winding directions.

5,006,806

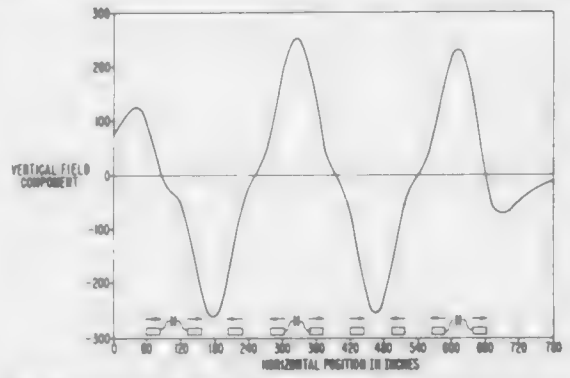
METHODS AND APPARATUS EMPLOYING PERMANENT MAGNETS FOR MARKING, LOCATING, TRACING AND IDENTIFYING HIDDEN OBJECTS SUCH AS BURRIED FIBER OPTIC CABLES

John B. Rippingale, Leesburg, Va.; Charles R. Upton, Silver Spring, Md.; Erick O. Schonstedt, Reston; Bradley L. Osman, Herndon, both of Va., and , assignors to Schonstedt Instrument Company, Reston, Va.

Continuation-in-part of Ser. No. 323,860, Mar. 15, 1989, abandoned. This application Oct. 30, 1989, Ser. No. 428,757

Int. Cl.[5] G01V *3/08, 3/165;* H01F *1/00;* F16L *55/00*

U.S. Cl. 324—326 15 Claims



8. In combination with an elongated non-magnetic object to be magnetically detected, a series of spaced permanent magnets on said object and extending along the length of said object, said magnets having magnetic axes parallel to the length of said object and being constructed and disposed so that magnetic fields of successive mangets add or subtract to produce a resultant magnetic field having a predetermined magnetic field signature including a series of peaks and valleys at points along a line substantially parallel to the length of said object, said series of permanent mangets including a plurality of pairs of successive magnets in which the magnets of each pair are constructed and disposed so that the magnetic fields thereof are additive to produce at a point along said line a peak or valley of greater magnitude than would be produced by the individual magnets of the pair, whereby a magnetic field detector moved along said line produces an output corresponding to said peaks and valleys in order to locate, trace and identify said object.

5,006,807

METHOD FOR DETERMINING UNDERSHOOT RESISTANCE OF AN ELECTRONIC DEVICE

Steven M. Blum, 3586 Ridge Blvd., Palm Harbor, Fla. 34684

Filed Dec. 27, 1988, Ser. No. 290,614

Int. Cl.[5] G01R *31/28*

U.S. Cl. 324—537 17 Claims

1. A method for determining the undershoot resistance of an electronic device having input and output pins comprising the steps of:

a. selecting an input pin to test;

b. masking output pins logically connected to said input pin;

c. providing a first high voltage to at least one nonselected input pin;

d. selecting a first pulse width;

e. selecting a first low voltage;

f. applying a voltage spike having said low voltage and pulse width to said selected input pin; and

g. monitoring nonmasked output pins for disturbances in their output voltage levels.

5,006,808

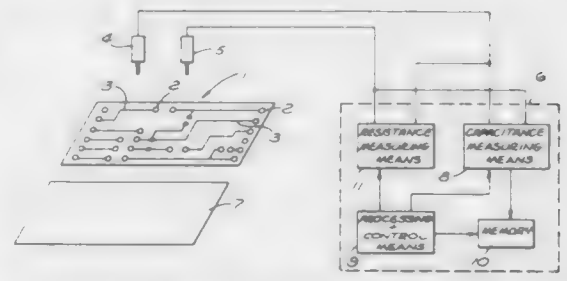
TESTING ELECTRICAL CIRCUITS

Vivian C. Watts, Lydiard Way, United Kingdom, assignor to Bath Scientific Limited, Wiltshire, United Kingdom

Continuation-in-part of Ser. No. 326,697, Mar. 21, 1989, abandoned. This application Aug. 22, 1989, Ser. No. 397,612

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—537 11 Claims



1. A method of testing for short circuits between networks of an electrical circuit comprising a plurality of such networks, the method comprising:

(a) measuring an impedance value between each of the networks and a reference;

(b) calculating, from the measured impedance values, (i) a first value, for the lowest impedance per unit length of track for a network comprising at least two points with at least one conductive track between them and (ii) a second value, for the lowest impedance of a network which comprises just a single point;

(c) identifying, from the measured impedance values, any two of the networks which have substantially the same measured impedance value;

(d) for any two such networks which have substantially the same measured impedance value, calculating a predicted lowest impedance value for those networks to be short-circuited together, using said first value and/or said second value, a knowledge of the geometrical characteristics of the two networks and their relative positions in the circuit; and

(e) effecting tests for short circuits only between any two networks which have substantially the same measured impedance value and for which this measured impedance value is greater than the predicted lowest impedance value for the two networks to be short-circuited together.

5,006,809

APPARATUS FOR MEASURING THE ELECTRICAL RESISTANCE OF A TEST SPECIMEN

Paul Mang, and Hubert Driller, both of Schmitten, Fed. Rep. of Germany, assignors to Manin GmbH & Co., Weilrod, Fed. Rep. of Germany

Filed Feb. 13, 1990, Ser. No. 479,529

Claims priority, application European Pat. Off., Feb. 16, 1989, 89102685

Int. Cl.[5] G01R *27/08*

U.S. Cl. 324—715 18 Claims

1. An apparatus for measuring a resistance of a test specimen, said apparatus comprising:

first and second test probe terminal means each for electrically connecting to the test specimen;

supply terminal means for applying thereto a reference power source;

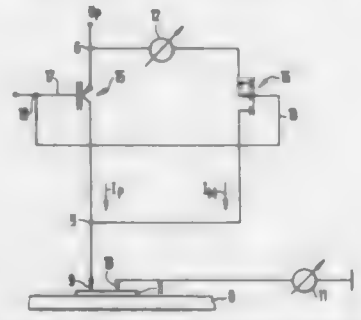
current measuring means, coupled to said second test probe terminal means, for measuring an electric current flowing through the test specimen;

first semiconductor switching means, coupled to said first test probe terminal means and said supply terminal means, for activating to allow an electric current to pass therethrough; and,

first voltage measuring means, coupled to said first semicon-

ductor switching means and said first test probe terminal means, for measuring a voltage across at least said first semiconductor switching means;

said first voltage measuring means including a serial connection of a first voltage measuring device and a second



semiconductor switching means for activating tc allow an electric current to pass therethrough;

said first semiconductor switching means including an insulated-gate-bipolar-transistor;

said seccnd semiconductor switching means including a field-effect transistor.

5,006,810

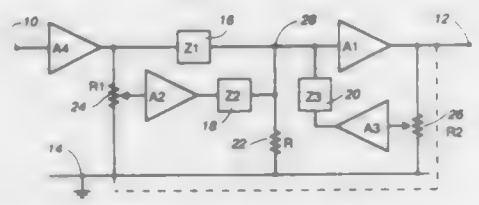
SECOND ORDER ACTIVE FILTERS

Petre Popescu, Kirkland, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Dec. 14, 1989, Ser. No. 450,790

Int. Cl.[5] H03B *1/00*; **H03K** *5/00*; **H04B** *1/10*

U.S. Cl. 328—167 **20 Claims**



1. A filter comprising:

an input terminal, an output terminal, and a common terminal;

a first reactance and a resistance coupled in series between the input and common terminals;

a first amplifier having an input coupled to a connection point between the first reactance and the resistance and having an output coupled to the output terminal;

a potential divider coupled between the output terminal and one of the input and common terminals;

a second amplifier having an input coupled to a tapping point of the potential divider and having an output; and

a second reactance coupled between the output of the second amplifier and the connection point;

wherein one of the reactances is inductive and the other is capacitive.

5,006,811

DUAL QUADRATURE FREQUENCY CONVERTER

Dennis A. Kruger, Tigard, Oreg., assignor to TriQuint Semiconductor, Inc., Beaverton, Oreg.

Filed Jan. 31, 1990, Ser. No. 472,972

Int. Cl.[5] H03D *1/18*

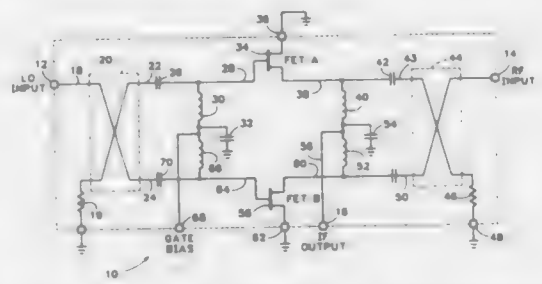
U.S. Cl. 329—354 **9 Claims**

1. Apparatus for demodulating a radio frequency signal comprising:

a first quadrature coupler having an input, a first output and a second output, said first output being connected to said input via a coupled path and said second output being connected to said input via a direct path;

means for generating a local oscillator signal on said coupler input;

a second quadrature coupler having an input, a first output and a second output, said first output being connected to said input via a coupled path and said second output being connected to said input via a direct path;



means for applying the radio frequency signal to said second coupler input;

a first mixer for mixing the signals appearing on said first outputs;

a second mixer for mixing the signals appearing on said second outputs;

means for filtering the signals so mixed; and

means for adding the filtered signals.

5,006,812

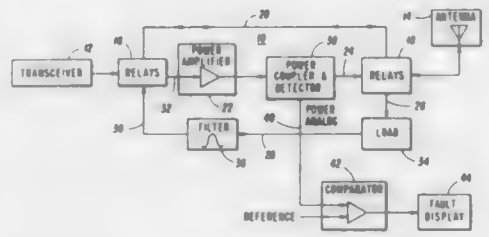
POWER AMPLIFIER WITH BUILT-IN TEST CIRCUIT

Alan R. Erickson, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 1, 1989, Ser. No. 388,180

Int. Cl.[5] G01R *35/00*

U.S. Cl. 330—2 **18 Claims**



1. A test circuit for use in checking the operation of a power amplifier, comprising:

relay means for switching said amplifier into a feedback mode in which the output of said amplifier is returned to its input;

attenuator means for attenuating the output of said amplifier as it is fed back as input to said amplifier and dissipating the power generated by said amplifier;

filter means for filtering the output of said amplifier to pass only a narrow band of frequencies before said output is fed back as input to said amplifier; and

comparison means for checking the power level of the output of said amplifier.

5,006,813

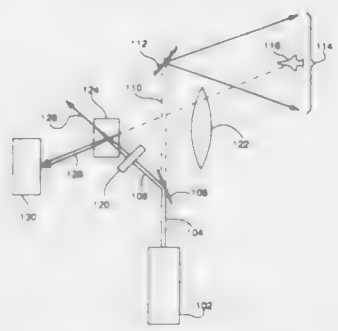
NONLINEAR OPTICAL DOPPLER IMAGING AMPLIFIER

Mohsen Khoshnevisan, Newbury Park, and Pochi A. Yeh, Thousand Oaks, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 10, 1986, Ser. No. 827,583

Int. Cl.[5] H01S *3/00*; **H03F** *7/00*; **G02B** *5/23*

U.S. Cl. 330—4.3 **14 Claims**



1. A nonlinear optical receiver for imaging a distant moving object, comprising:

a source of coherent light of frequency ω for illuminating the object, the portion of the source light which is reflected from the object constituting a signal beam;

a reference beam of coherent light of frequency ω;

a frequency shifting element for changing the frequency of the reference beam to match the Doppler-shifted frequency of the signal beam; and

a photorefractive element for receiving the signal and reference beams and coherently amplifying the signal beam by two-wave mixing, the sum of the distance between the coherent light source and the object and between the object and the photorefractive element being less than the coherence length of the coherent light.

5,006,814

CURRENT AMPLIFIER

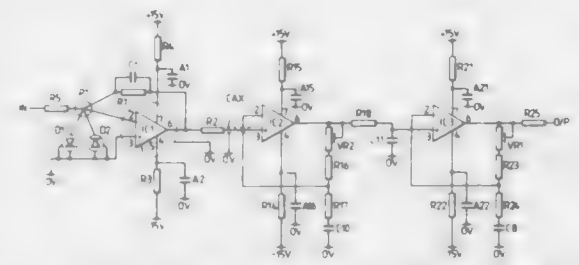
Colin J. Wilson, Hertfordshire, England, assignor to W.A. Technology Limited, Cambridge, England

Filed Oct. 10, 1989, Ser. No. 420,111

Claims priority, application United Kingdom, Oct. 26, 1988, 8825096

Int. Cl.[5] H03F *3/68*

U.S. Cl. 330—107 **13 Claims**



1. A current amplifier including two stages, a first stage formed by a primary operational amplifier connected in a virtual earth feedback configuration and having a feedback loop formed by a resistor and capacitor connected in parallel so that the primary operational amplifier has a frequency characteristic with a substantially flat frequency response up to a predetermined frequency and thereafter the frequency response rolls off at a predetermined rate, and a second stage including another operational amplifier connected in one of a virtual earth and non-inverting feedback configuration having a frequency characteristic chosen to provide in combination with the frequency characteristic of the primary amplifier a desired operating range for the amplifier, characterised in that the said predetermined frequency lies between the frequency extremes of the operating range and the frequency characteristic of the second stage has a substantially constant gain up to said predetermined frequency and a gain matched with and complementary to the roll-off of the primary operational amplifier above the predetermined frequency so that the overall frequency response of the current amplifier is substantially flat over its operating range.

5,006,815

LINEAR-GAIN AMPLIFIER ARRANGEMENT

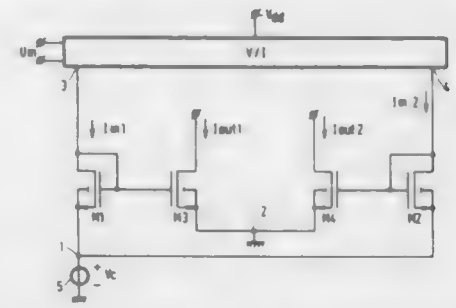
Eric A. M. Klumperink, Lichtenvoorde, and Evert Seevinck, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 6, 1989, Ser. No. 418,414

Claims priority, application Netherlands, Oct. 26, 1988, 8802631

Int. Cl.[5] H03F *3/45*

U.S. Cl. 330—253 **23 Claims**



1. A liner-gain amplifier arrangement which comprises: a current-amplifying cell comprising a first and a second current-mirror circuit of which each comprises at least an input transistor and an output transistor to form a first and a second differential pair, respectively, and means coupled to the current-amplifying cell for defining the gain of the amplifier arrangement, wherein the transistors are all of the field-effect type and are biased to operate in their saturation regions, the input transistors being connected to a voltage-to-current converter which is responsive to an applied input voltage so as to supply difference currents which are related to said input voltage by a square-law function.

5,006,816

SEMICONDUCTOR INTEGRATED CIRCUIT INCLUDING DIFFERENTIAL TRANSISTOR CIRCUIT HAVING A PAIR OF FETS

Nobuo Koide, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 373,829, Jun. 29, 1989, abandoned. This application Jun. 1, 1990, Ser. No. 530,455

Claims priority, application Japan, Jun. 30, 1988, 63-163286

Int. Cl.[5] H03F *3/45*

U.S. Cl. 330—253 **10 Claims**

1. A semiconductor integrated circuit including a differential transistor circuit having first and second FETs which each include a drain, a source, and a gate, and whose sources are connected to each other, comprising:

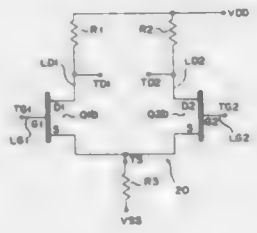
a plurality of first divided drain regions and a plurality of second divided drain regions the same in number, as that of said first divided drain regions, said first and second divided drain regions being arranged alternately, at regular intervals and respectively serving as the drains of said first and second FETs;

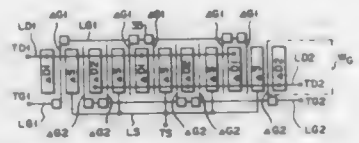
a plurality of divided source regions arranged with one source region between each adjacent pair of first and

second divided drain regions and serving as the sources of said first and second FETs;

a plurality of first divided gate electrodes, arranged between said first divided drain regions and said divided source regions and serving as the gate of said first FET;

a plurality of second divided gate electrodes, arranged between said second divided drain regions and said divided source regions and serving as the gate of said second FET;





a first drain wiring for connecting said plurality of first divided drain regions to each other; and

a second drain wiring for connecting said plurality of second divided drain regions to each other;

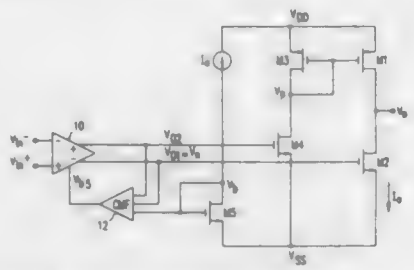
wherein said first and second drain wirings are arranged above the arrangement of said first and second divided drain regions, said divided source regions, and said first and second divided gate electrodes.

5,006,817

RAIL-TO-RAIL CMOS OPERATIONAL AMPLIFIER

Joseph N. Babanezhad, Campbell, Calif., assignor to Sierra Semiconductor, San Jose, Calif.

Filed Oct. 13, 1989, Ser. No. 420,937
Int. Cl.[5] H03F 3/45
U.S. Cl. 330—253 **12 Claims**



1. A CMOS operational amplifier comprising:

a source of differential input signals;

a differential-output differential-input folded cascode input stage comprising a differential amplifier coupled to said source for providing a differential-output signal;

a differential input single-ended-output output stage comprising an output biasing coupled to said input stage for determining the common-mode voltage of the differential-output signal of said input stage; and

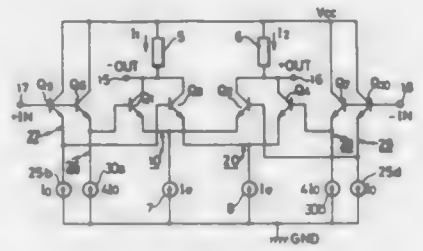
a common-mode feedback circuit coupled between said input stage and said output biasing section.

5,006,818

LINEAR DIFFERENTIAL AMPLIFIER

Mikio Koyama, Yokohama, and Hiroshi Tanimoto, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 253,577, Oct. 5, 1988, abandoned. This application Mar. 27, 1990, Ser. No. 500,044
Claims priority, application Japan, Oct. 12, 1987, 62-254783
Int. Cl.[5] H03F 3/45
U.S. Cl. 330—261 **11 Claims**



1. A linear differential amplifier, comprising:

a pair of first and second transistors with their emitters coupled to each other;

a pair of third and fourth transistors with their emitters coupled to each other, a collector of said first transistor being connected to a collector of said third transistor and a collector of said second transistor being connected to a collector of said fourth transistor;

a pair of input terminals, one of which being coupled to a base of said first transitor, the other one of which being coupled to a base of said fourth transistor;

a pair of output terminals, one of which being connected to said collectors of said first and said third transistor, the other one of which being connected to said collectors of said second and said fourth transistors;

first voltage source means for applying first offset DC voltage between one of said input terminals and a base of said third transistor, said first voltage source means including a first pair of emitter-followers with each said emitter-follower including transistors of same emitter areas but different collector currents, and first emitter current sources for each transistor of said first pair of emitter-followers which supply emitter currents corresponding to the collector currents;

second voltage source means for applying second offset DC voltage of the same magnitude as said first offset DC voltage, between one of said input terminals and a base of said second transistor, said second voltage source means including a second pair of emitter-followers with each said emitter-follower including transistors of same emitter areas but different collector currents, and second emitter current sources for each transistor of said second pair of emitter-followers which supply emitter currents corresponding to the collector currents;

constant current source means for supplying emitter currents to said first, second, third, and fourth transistors; and

load resistor means for converting collector currents of said first, second, third, and fourth transistors into output voltages.

5,006,819

TRACK AND HOLD PHASE LOCKED LOOP CIRCUIT

William A. Buchan, Corona del Mar, and John J. Quintus, Buena Park, both of Calif., assignors to Archive Corporation, Costa Mesa, Calif.

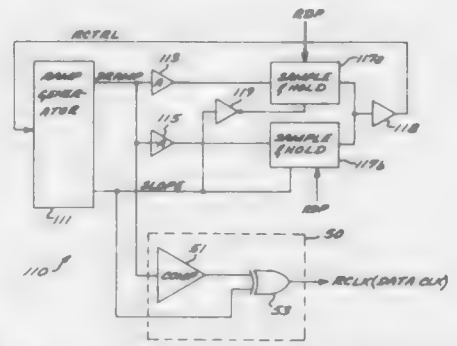
Filed May 21, 1990, Ser. No. 526,490
Int. Cl.[5] H03L 7/091, 7/099
U.S. Cl. 331—1 A **11 Claims**

1. A phase locked loop comprising:

ramp signal generating means responsive to a control signal for generating a dual slope ramp signal having alternating

first and second slopes of opposite sign that are controlled by the level of the control signal; and

sampling means responsive to sample control pulses for providing a sampling means output representative of the



amplitude of said dual ramp signal at the time of a sample pulse; and

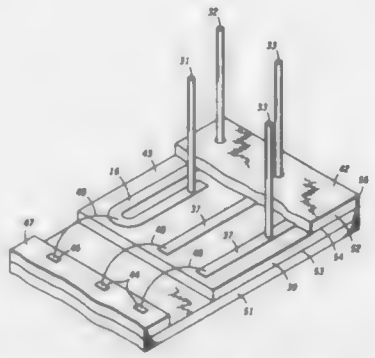
means responsive to said sampling means output for providing the control signal to said ramp generating means.

5,006,820

LOW REFLECTION INPUT CONFIGURATION FOR INTEGRATED CIRCUIT PACKAGES

Jerry E. Prioste, Scottsdale, and Keith Nelson, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 3, 1989, Ser. No. 374,791
Int. Cl.[5] H03H 7/38
U.S. Cl. 333—33 **16 Claims**



1. A semiconductor package for electrically coupling to an integrated circuit having a low reflection input configuration comprising: a first external lead; a second external lead; a conductive path coupling the first and second external leads, wherein the conductive path has a substantially constant characteristic impedance and a portion of the conductive path forms a bonding pad; and a conductor coupled between the bonding pad and the integrated circuit disposed in the semiconductor package.

5,006,821

RF COUPLER HAVING NON-OVERLAPPING OFF-SET COUPLING LINES

Ambrose W. C. Tam, Hong Lok Yuen, Hong Kong, assignor to Astec International, Ltd., Hong Kong

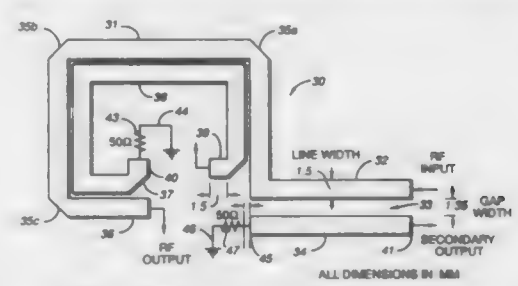
Filed Sep. 14, 1989, Ser. No. 407,343
Int. Cl.[5] H01P 5/18
U.S. Cl. 333—116 **13 Claims**

4. An RF coupler for RF transmission media, such as stripline and microstrip, comprising:

a primary RF coupling element having an elongate input end for receiving an RF signal and extending into a U-shaped portion for defining an RF coupling interface;

a first coupling means for coupling a desired RF signal from said primary RF coupling element, said first coupling means disposed in parallel adjacent relation with said elongate input end; and

a second coupling means congruent with said U-shaped portion of said primary coupling element and maintained



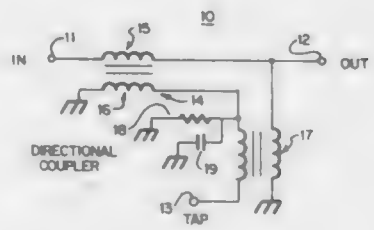
at a minimum distance from said primary element such that a desired RF signal is coupled from said primary element to said second coupling means and wherein said first and second RF coupling means are offset in a non-overlapping relation with respect to one another.

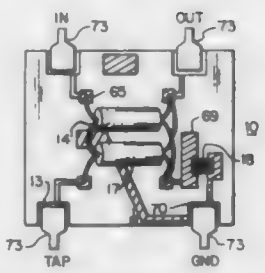
5,006,822

HYBRID RF COUPLING DEVICE WITH INTEGRATED CAPACITORS AND RESISTORS

Prabhakara Reddy, 7 Sheep Meadow Pl., The Woodlands, Tex. 77381

Filed Jan. 3, 1990, Ser. No. 460,355
Int. Cl.[5] H03H 7/48; H05K 1/16
U.S. Cl. 333—112 **10 Claims**





1. A hybrid integrated circuit without discrete capacitors or resistors comprising

a substrate formed of a refractory dielectric sheet having a front surface and a reverse surface;

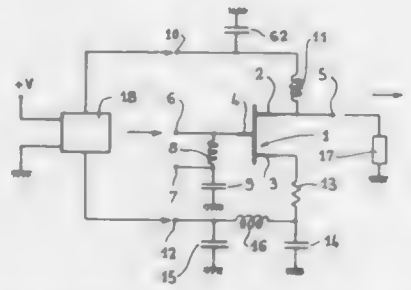
printed conductors printed on the front surface of the substrate and having one or more broadened portions formed thereon of predetermined area to serve as capacitor plates;

one or more printed resistors formed of a resistive material printed onto said substrate in contact with said printed conductors; and

a conductive ground pad printed in a predetermined pattern onto a portion of the reverse surface of said substrate at selected locations thereon and having one or more broadened portions in registry with the broadened portions of the printed conductor to serve as a grounded capacitor plate and leaving at least one substantially open space on

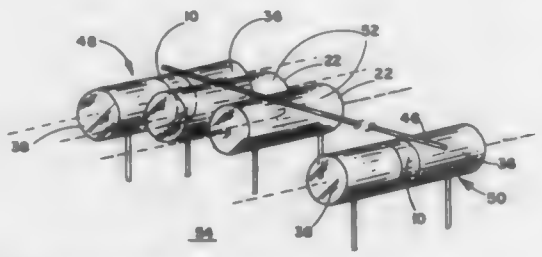
said reverse surface not occupied by said grounded capacitor plate.

5,006,823
MICROWAVE PHASE SHIFTER WITH 0 OR π PHASE SHIFT
Michel-Claude Baril, Lesigny, and Dominique Rimbert, Paris, both of France, assignors to Thomson-CSF, Puteaux, France
Filed Oct. 23, 1989, Ser. No. 425,815
Claims priority, application France, Oct. 28, 1988, 88 14135
Int. Cl.[5] H03H *7/18;* **H03C** *3/00*
U.S. Cl. 333—164 **10 Claims**



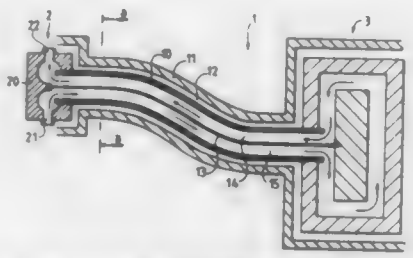
1. A microwave phase shifter for generating, in response to a control signal, a phase shift of zero or a phase shift of π comprising at least one field effect transistor having three electrodes, one of which is a gate, and to said gate an input microwave is applied, the output microwave being taken at one of the other two electrodes of said transistor, and low-frequency switching-over means for applying, between said other two electrodes, a dc bias voltage with a predetermined value but with a different polarity according to the phase shift (either zero or π) desired.

5,006,824
THIRD MODE TORSIONAL F-M RESONATOR
Aaron R. Paff, Tustin, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Apr. 7, 1986, Ser. No. 849,093
Int. Cl.[5] H03H *9/205*
U.S. Cl. 333—197 **6 Claims**



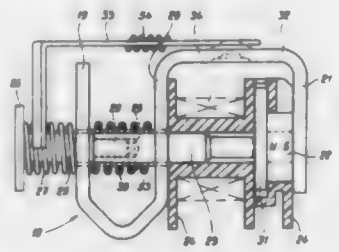
1. A bandpass filter comprising:
an input resonator formed as a first third-mode torsional electromechanical resonator coupled to receive an electrical input signal;
at least one second-mode torsional interior resonator coupled in spaced relationship to said input resonator; and
an output resonator formed as a second third-mode torsional electromechanical resonator coupled in spaced relationship to said at least one second-mode torsional interior resonator so that said at least one second-mode torsional interior resonator is physically positioned between said input resonator and said output resonator.

5,006,825
COAXIAL LINE COUPLER WITH FLUID COOLED INNER CONDUCTOR
Roland Guilbert, Yerres, and Bernard Dhoat, Orsay, both of France, assignors to Thomson-CF, Paris, France
Filed Oct. 14, 1988, Ser. No. 262,482
Claims priority, application France, Oct. 16, 1987, 87 14297
Int. Cl.[5] H01J *23/48;* **H01P** *3/06*
U.S. Cl. 333—245 **5 Claims**



1. A cooling device for microwave circuits comprising:
a coaxial cable capable of curvature and of finite length defined by a distance between two extremities of said coaxial cable, said coaxial cable capable of conveying very high power microwave energy, said coaxial cable comprised of a central conductor with a hollow interior having predefined dimensions with respect to a longitudinal length, an internal cross-section diameter, an external cross-sectional diameter, and a thickness defined therebetween, and an external conductor within which there is placed the central conductor, the cooling device comprising an inlet channel and a return flow channel, to enable the passage of a cooling fluid, forming within the central conductor such that the channels are separated in the interior of the hollow central conductor by a longitudinal separating strip movably at least partially so as to follow any curvature of said coaxial cable, and located therein, said strip having a width, which is substantially equal to the internal diameter of the central conductor allowing said strip to be inserted by sliding into the hollow central conductor, such that said strip separates the interior of the central conductor longitudinal into two conduits each conduit respectively forming one of said inlet and return flow channels for the circulation of a cooling fluid and such that said partially movable longitudinal strip forms at least part of said cooling channels.

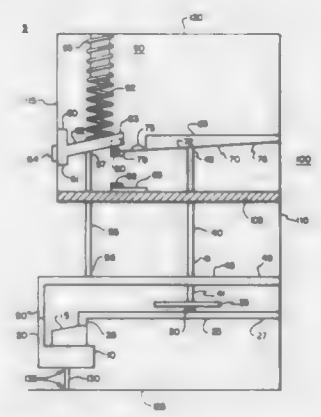
5,006,826
TRIP DEVICE FOR AN ELECTRICAL SWITCH AND AN ELECTRICAL SWITCH WITH THIS TRIP DEVICE
Jozef H. A. Knoben, Hengelo, and Jan B. Wensink, Hengevelde, both of Netherlands, assignors to Holec Systemen en Componenten B.V., Hengelo, Netherlands
Filed Jan. 3, 1990, Ser. No. 460,516
Claims priority, application Netherlands, Jan. 3, 1989, 8900007
Int. Cl.[5] H01H *75/12*
U.S. Cl. 335—35 **22 Claims**



1. A trip device for an electrical switch, comprising:
a yoke of magnetic material;

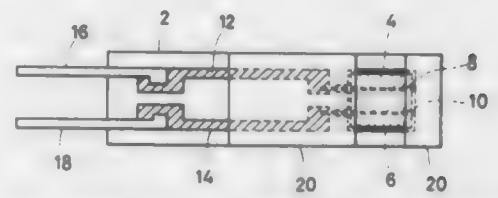
an elongated armature supported by said yoke, an end section of said armature protruding through said yoke, said armature being movable between a first and second position, said end section protruding further from said yoke with said armature in said second position than in said first position;
spring means attached to said armature for moving it to said second position;
a permanent magnet fixedly arranged such that said magnet, yoke and armature form a first magnetic circuit for holding said armature in said first position under the influence of the magnetic flux by said permanent magnet and against the force of said spring means;
at least one magnet winding for electromagnetically moving said armature to said second position; and
a second magnetic circuit for moving said armature to said second position independently of the polarity of electric current flowing in said at least one magnet winding, and comprising a further yoke of magnetic material containing said end section, the outwardly facing end of said end section merging into a head member having a higher magnetic resistance than said armature, said head member protruding through a face of the further yoke towards the outside such that the outwardly facing end of said end section is located, in said first position, at a distance from said face, said end section being surrounded by said at least one magnet winding.

5,006,827
THERMOSTAT HAVING A MOVABLE BACKSTOP
Stephen J. Brueton, Stouffville, and Adriana V. Serbanescu, Scarborough, both of Canada, assignors to Honeywell, Inc. - Honeywell Limitée, North York, Canada
Filed Apr. 19, 1990, Ser. No. 510,928
Int. Cl.[5] H01H *37/12, 37/52*
U.S. Cl. 337—361 **6 Claims**



1. A thermostat, comprising:
a setting wheel rotatably attached to said frame having an outer edge and a central region, a first ramp formed on said outer edge and a second ramp formed on said central region;
a first lever having first and second ends, said first end of said first lever being attached to said frame, and said second end of said first lever being arranged to contact said first ramp;
a first plunger having first and second ends and a longitudinal axis, said first plunger being movable along said longitudinal axis, said first end of said plunger being in contact with said first lever;
a backstop slidably attached to said frame movable in the axial direction of said first plunger, said backstop being in contact with said second end of said first plunger and being adapted to move when said setting wheel is positioned such that said first ramp contacts and caused said first lever to move which in turn causes said first plunger to move in said axial direction;
a second lever having a first and ends, said first end of said second lever being attached to said frame, said second end of said second lever movable between first and second positions, said second end of said lever further being in contact with said second ramp;
a second plunger having first and second ends in a longitudinal axis, said second plunger being movable along its longitudinal axis between third and fourth positions;
a deformable element interposed between said first end of said second plunger and said second lever, said deformation occuring as a function of temperature;
a movable contact having an elongated shape and first and second ends, said first end of said movable contact being attached to said frame, said second end of said movable contact movable between fifth and sixth positions by said second plunger; and
a fixed contact attached to said frame adapted to be contacted by said movable contact.

5,006,828
EXHAUST GAS SENSOR AND PROCESS FOR PRODUCING SAME
Yoshida Yutaka; Osaga Kazuo, both of Osaka; Hanada Mariko, Nara, and Komatsu Kazunari, Hiroshima, all of Japan, assignors to Figaro Engineering, Inc. and Mazda Motor Corporation, both of Osaka, Japan
Filed Jul. 6, 1989, Ser. No. 376,044
Claims priority, application Japan, Jul. 14, 1988, 63-175589
Int. Cl.[5] H01C *7/00*
U.S. Cl. 338—34 **4 Claims**



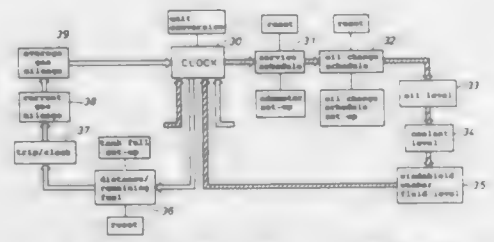
1. An exhaust gas sensor including a perovskite compound $ASnO_3$ where A represents at least one member selected from the group consisting of Ba, Sr, and Ca, and at least a pair of noble metal electrodes contacted to the $ASnO_3$,
the exhaust gas sensor being characterized in that an electrically conductive complex oxide film of $ASnO_3$ and a base metal oxide, whose base metal constituent is different from each metal constituent of $ASnO_3$, is deposited on the surface of the electrodes at the portion thereof in contact with $ASnO_3$.

5,006,829
INFORMATION DISPLAY SYSTEM FOR A VEHICLE
Osamu Miyamoto; Hideki Kanou; Kazuo Nakamura; Takeshi Imai, and Kenichi Nishida, all of Saitama, Japan, assignors to Honda Giken Kogyo K.K., Tokyo, Japan
Filed Mar. 31, 1988, Ser. No. 176,496
Claims priority, application Japan, Mar. 31, 1987, 62-79282; Mar. 31, 1987, 62-79285; Mar. 31, 1987, 62-79290
Int. Cl.[5] G08B *19/00*
U.S. Cl. 340—459 **27 Claims**

1. An information display system for a vehicle, comprising:
a plurality of sensors for detecting various conditions of the vehicle;
a display unit for displaying a selected one of a plurality of items of information relating to the conditions of the vehicle as detected by the corresponding sensors;
manual switch means for sequentially shifting the items of information which is currently displayed on the display unit; and

control unit comprising automatic selection means for producing one of the items of information on the display unit according to output from one of the sensors;

the control unit further comprising automatic shifting means for changing the item of information which is currently displayed to a display of a default item of information,



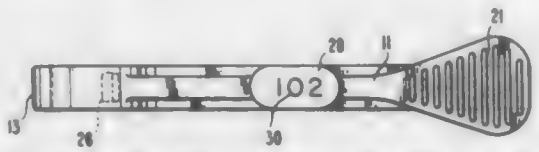
when the item of information currently displayed was manually selected, upon elapsing of a certain time interval after the manual selection of the current item of information for display wherein, if the manually selected item of information for display is selected when the vehicle is stationary, the time interval begins from the time at which the vehicle is no longer stationary.

5,006,830

METHOD AND DEVICE FOR DETERRING THE UNAUTHORIZED REMOVAL OF A NEWBORN FROM A DEFINED AREA

Rebecca Merritt, 250 E. 700 South, Lebanon, Ind. 46052

Filed Oct. 16, 1989, Ser. No. 421,860
Int. Cl.[5] G08B *23/00*; A44C *5/00*
U.S. Cl. 340—573 **15 Claims**



1. A method for deterring unauthorized removal of newborns from a defined area comprising the steps of:

providing an umbilical clamp containing a triggering element and with a distinctive identification mark thereon;

clamping the umbilical cord of a newborn immediately after birth with the provided umbilical clamp;

providing a detection system capable of determining when the triggering element comes within a predefined proximity of an exit from the defined area;

providing an alarm system that is activated when the detection system determines that the triggering element is within the predefined proximity of an exit from the defined area; and

placing the newborn with the attached triggering element within the defined area.

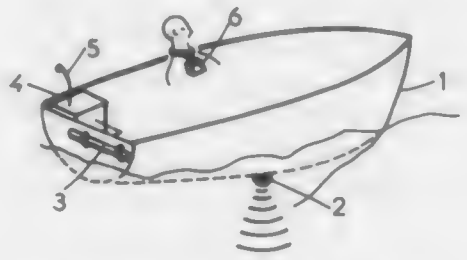
5,006,831

DEVICE PROVIDING FOR THE SAFETY OF A MAN OVERBOARD

Francois de Solminihac, Brest, France, assignor to Thomson-CSF, Puteaux, France

Filed Sep. 19, 1989, Ser. No. 409,309
Claims priority, application France, Sep. 23, 1988, 88 12464
Int. Cl.[5] G08B *13/14*
U.S. Cl. 340—573 **2 Claims**

1. A device for the rescue of a person who has fallen overboard a nautical vehicle, comprising rescue means that are on board the vehicle and are designed to be put in water under the control of a radioelectric signal automatically emitted by an emitter of signals, built into an alarm pack carried by the person when he reaches the water, this signal actuating a means for jettisoning the rescue means, said device wherein the vehicle is fitted out with a submerged acoustical device to emit acoustical signals in the water and wherein the alarm pack further includes an acoustic sensor which is sensitive to the



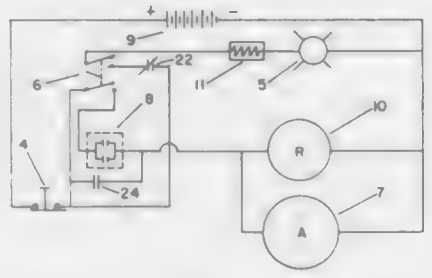
signals that are propagated in the water from an acoustical device to actuate a radio transmitter for the emission of said radioelectric signal which is then picked up by a receiver installed in said vehicle to trigger the means for jettisoning the rescue means.

5,006,832

POCKET ALARM

Armand J. Beaudry, 11502 - 66 Street, Edmonton, Alberta, Canada (T5J 1H9)

Filed May 10, 1990, Ser. No. 521,550
Int. Cl.[5] G08B *15/00*
U.S. Cl. 340—574 **11 Claims**



1. A portable alarm comprising:

a light circuit having in series a normally closed first relay contact and a light;

an alarm circuit having in series an impact switch and an alarm;

manual switch means in series with each of the light circuit and the alarm circuit for activating the light circuit and setting the alarm circuit to a ready position, the impact switch being operable upon impact to turn the alarm on when the alarm circuit is in the ready position;

an alarm maintenance circuit connected in series with the alarm circuit;

a relay in series with the impact switch, the relay being operable to open the normally closed first relay contact and to activate the alarm maintenance circuit; and

a power source for the light, alarm and alarm maintenance circuits.

5,006,833

SEWER LINE RESTRICTION ALARM PLACED IN CLEAN OUT PLUG

Edward D. Marlowe, Collinsville, Conn., and Christian P. Marlowe, Nederland, Colo., assignors to CDF, Inc., Collinsville, Conn.

Filed Jul. 25, 1989, Ser. No. 385,587
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—611 **8 Claims**

8. In combination with the main clean-out plug location in a sanitary sewer line in a residential or commercial building

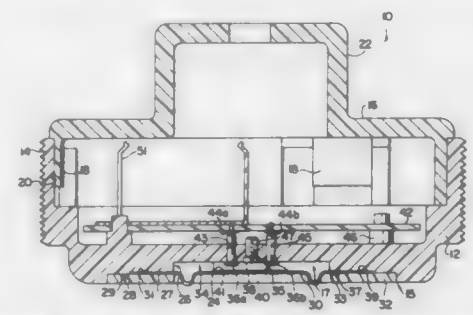
structure, an early warning sensor and alarm device for indicating the flow conditions of the sewer line, said device comprising:

a generally cylindrically shaped housing including a body portion and a cap portion, said body portion having a face and a recessed portion;

means for coupling said device to the main clean-out plug location;

means for sensing and responding to the presence of a fluid at the device, said sensing and responding means having a normal, at-rest state, said normal state corresponding to a non-restricted flow condition in the sewer line, and an operative state, said operative state corresponding to a restricted flow condition in the sewer line, said fluid presence sensing and responding means further comprising a diaphragm having a shape and size larger than said recessed portion and being hermetically sealed to said body portion to cover said recessed portion to form a variable volume chamber, said diaphragm having one surface facing inwardly into said chamber and another surface forming an integral portion of said face;

alarm means responsive to said fluid presence sensing and responding means for providing an alarm signal in response to said fluid presence sensing and responding



means being operated to its operative state, said alarm responsive means further comprising switch means extending axially from said body portion into said chamber and forming two terminals and electrical contact means mounted to said one surface of said diaphragm for movement with said one surface of said diaphragm so that motion of said one surface of said diaphragm in response to the presence of fluid upon said another surface of said diaphragm causes said electrical contact means to move into physical contact with said terminals of said switch means thereby providing a continuous electrical path through said switch means, and

means for delaying the response of said sensing and responding means to a fluid presence condition at the device "to mask out" transient flow conditions, said response time delay means further comprising orifice means for providing air communication between said chamber formed by said diaphragm and said recessed portion and an interior cavity formed between said body portion and said cap, said orifice means restricting the air discharge rate from said chamber in response to a reduction in the volume of said chamber in response to axial movement by said diaphragm, said restricting means dampening said diaphragm motion and effecting a response time delay.

5,006,834

LIQUID LEVEL ALARM

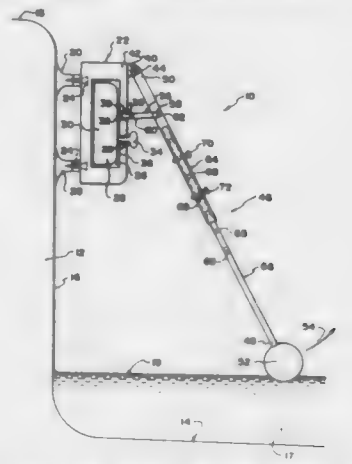
David J. Fountain, Box 480, Burns Lake, British Columbia V0J 1E0, Canada

Filed Mar. 15, 1989, Ser. No. 323,895
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—625 **22 Claims**

1. An apparatus for providing an alarm signal to indicate when liquid reaches a pre-determined level in a container, the apparatus comprising:

(a) means for pre-determining the level of the liquid at which the alarm signal will actuate;

(b) a mechanically pre-set non-electrical alarm unit having a mechanical alarm and a push-pull alarm actuator connected to said pre-determining means; and



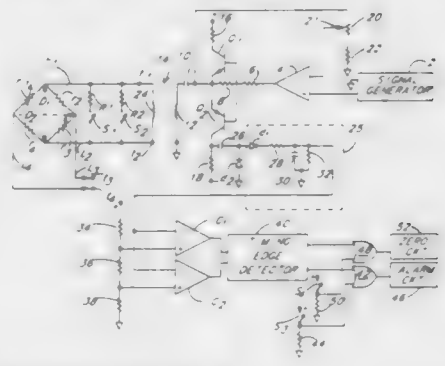
(c) a float means for resting on the surface of the liquid connected to said alarm unit and said pre-determining means and movable with respect to the predetermined level of the liquid for moving said actuator in a substantially axial direction to activate said mechanical alarm when the surface of the liquid reaches the pre-determined level of the liquid.

5,006,835

REMOTE CALIBRATING FOR PRESSURE TRANSDUCER

Allen B. Griswold, North Falmouth; Paul A. Tessier, Hudson, and Drew G. Koschek, Ashland, all of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 83,749, Aug. 7, 1987, abandoned. This application Aug. 14, 1990, Ser. No. 568,653
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—626 **6 Claims**



1. A pressure monitor having

a first pair of terminals,

means for applying an excitation voltage for a transducer between said first pair of terminals,

a second pair of terminals adapted for receiving a signal representing pressure from said transducer,

means responsive to a signal between said second pair of terminals for indicating the pressure represented by the signal, and

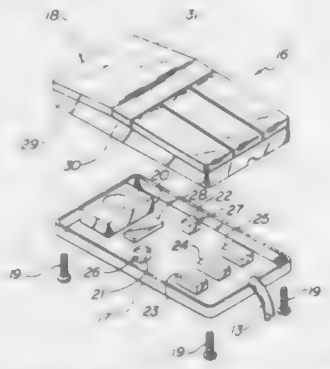
means within said monitor directly responsive to an arbitrary change in current through said first pair of terminals for calibrating said means for indicating pressure so that it indicates a pressure of zero when a zero pressure is applied to said transducer.

5,006,836

SQUEEZABLE COMPUTER CONTROL DEVICE

James L. Cooper, Tyngsboro, Mass., assignor to Wang Laboratories, Inc., Lowell, Mass.

Filed Jun. 14, 1988, Ser. No. 206,549
Int. Cl.[5] G09G 5/08
U.S. Cl. 340—710 5 Claims



1. A control mouse for providing control signals to a computer comprising a motion transducer affixed in said mouse in a position to engage an engagement surface against which said mouse is positioned, said transducer generating a motion signal indicative of the motion of said mouse relative to said engagement surface, and a communications channel connected to communicate said motion signal to a computer,

said mouse having two opposed outward facing digit-engaging portions,

said mouse being sized and shaped to be grasped by squeezing force applied by one hand of an operator with a digit engaging each of said digit-engaging portions to effect movement relative to said surface,

said mouse including pressure operated switch means installed so as to be switched to a first state by squeezing force below a predetermined threshold force applied between two digits positioned respectively at said opposed digit-engaging portions and switched to a second state by squeezing force above said threshold force applied between two digits positioned respectively at said opposed digit engaging portions,

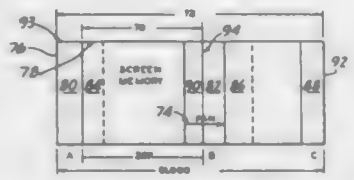
said mouse including means connected to said switch means for communicating a signal discriminating the states of said switch means to said computer.

5,006,837

PROGRAMMABLE VIDEO GRAPHIC CONTROLLER FOR SMOOTH PANNING

John J. Bowers, 4509 Coddingville Rd., Medina, Ohio 44256

Filed Jan. 26, 1989, Ser. No. 303,280
Int. Cl.[5] G09G 5/38
U.S. Cl. 340—724 15 Claims



1. A method of operating a display system for displaying data from a video memory to allow panning through virtual video memory which is larger than the video memory of the display system comprising the steps of:

(1) defining the logical screen width within video memory to be a predetermined width which is larger than screen memory,

(2) setting a start address of said screen memory at a predetermined position relative to an edge of said video memory,

(3) storing in said video memory initial first and second identical strips of graphic image data being positioned at predetermined locations within said video memory,

(4) incrementing a panning register so as to move said screen memory through a predetermined number of pixels within said video memory,

(5) storing in said video memory a further first strip of graphic image data being positioned at a predetermined location in said video memory relative to said initial first strip of graphic image data, and a further second strip of graphic image data identical to said further first strip and being positioned at a predetermined position relative to said initial second strip of graphic image data in video memory,

(6) repeating steps 4 and 5 with said further first and second strips being positioned at predetermined positions relative to one another respectively until said video memory has been filled with graphic image data ad shifting of said screen memory to an edge of said video memory is completed,

(7) resetting said start address of said screen memory a predetermined length from said edge of said video memory,

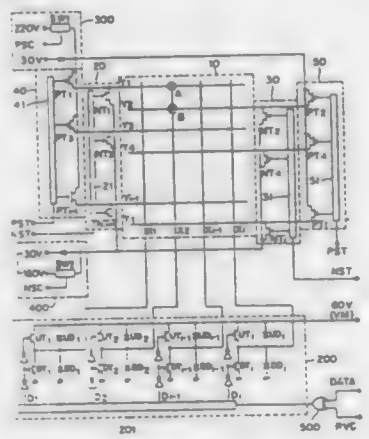
(8) repeating steps 3–7 so as to continuously pan graphic image data through virtual video memory which is larger than video memory without having to stop and refresh said graphic image data when an edge of said video memory is reached.

5,006,838

THIN FILM EL DISPLAY PANEL DRIVE CIRCUIT

Yoshide Fujioka; Toshihiro Ohba; Yoshiharu Kanatani, all of Nara, and Hisashi Uede, Wakayama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 864,509, May 19, 1986, abandoned.
This application Jun. 26, 1989, Ser. No. 372,135
Claims priority, application Japan, Jun. 10, 1985, 60-125384
Int. Cl.[5] G09G 3/30
U.S. Cl. 340—781 13 Claims



1. A drive circuit for a thin film electroluminescent (EL) display panel having a plurality of scanning electrodes extending in one direction, a plurality of data electrodes extending in a second direction orthogonal to said first direction, and an EL layer sandwiched therebetween, picture elements being defined by intersections of said scanning and data electrodes, said picture elements being controllably selected to cause luminescence thereof, the circuit comprising:

first switching circuit means connected to each of said scanning electrodes for applying a scanning voltage of negative polarity thereto;

second switching circuit means connected to each of said scanning electrodes for applying a scanning voltage of positive polarity thereto;

data electrode driver means connected to said data electrodes for selectively applying a modulation voltage or ground voltage to each said data electrode;

said scanning electrodes being grouped into odd numbered scanning electrodes and even numbered scanning electrodes and being scanned in two fields in which odd numbered scanning electrodes are provided with said negative polarity voltage and even numbered scanning electrodes are provided with said positive polarity voltage in a first field, said negative and positive polarity voltage being applied to said even and odd numbered scanning electrodes, respectively, in a second field;

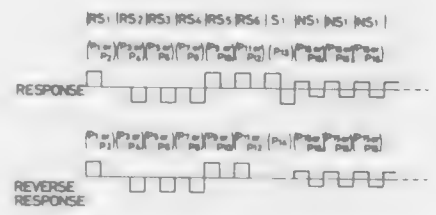
said data electrode driver means including means for applying said modulation voltage to data electrodes defining selected picture elements along intersecting selected odd numbered scanning electrodes in said first field, applying ground to data electrodes defining selected picture elements along intersecting selected even numbered scanning electrodes in said first field, applying ground to data electrodes defining selected picture elements along intersecting selected odd numbered scanning electrodes in said second field, applying said modulation voltage to data electrodes defining selected picture elements along intersecting selected even numbered scanning electrodes in said second field, and applying voltage levels to data electrodes defining non-selected picture elements along intersecting selected scanning electrodes in each field of a different voltage to that applied to data electrodes defining selected picture elements intersecting selected scanning electrodes to inhibit selection of said non-selected picture elements.

5,006,839

METHOD FOR DRIVING A LIQUID CRYSTAL OPTICAL APPARATUS

Masanori Fujita, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan

Filed Jul. 7, 1988, Ser. No. 216,388
Claims priority, application Japan, Jul. 14, 1987, 62-175134
Int. Cl.[5] G09G 3/36
U.S. Cl. 340—784 9 Claims



1. A method for driving a liquid crystal optical apparatus having a matrix of pixels formed by ferroelectric liquid crystal interposed between a scanning electrode group and a control electrode group, comprising:

sequentially applying signals to the scanning electrode group and the control electrode group wherein the voltage difference therebetween sequentially forms a first pulse group, a partial response pulse, a second pulse group and a third pulse group applied to the pixels,

wherein the first pulse group initializes the ferroelectric liquid crystal to a saturated reverse response condition,

wherein said partial response pulse holds the ferroelectric liquid crystal to the saturated reverse response condition and prepares the ferroelectric liquid crystal to turn to a desired response condition,

wherein the second pulse group turns the ferroelectric liquid crystal to the desired response condition in cooperation with said partial response pulse, said desired response condition including one of the saturated response condition, the saturated reverse response condition and an intermediate condition,

wherein the third pulse group holds the desired response condition, and

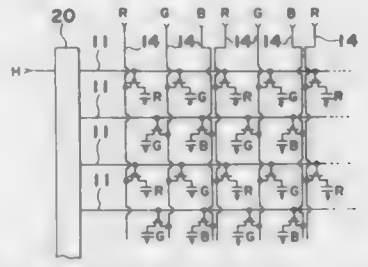
wherein the mean voltage level applied to the ferroelectric liquid crystal is O.

5,006,840

COLOR LIQUID-CRYSTAL DISPLAY APPARATUS WITH RECTILINEAR ARRANGEMENT

Hiroshi Hamada; Toshiaki Takamatsu, both of Yamatokoriyama, and Naofumi Kimura, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 722,619, Apr. 12, 1985, abandoned.
This application Nov. 27, 1989, Ser. No. 442,391
Claims priority, application Japan, Apr. 13, 1984, 59-75302
Int. Cl.[5] G09G 3/36
U.S. Cl. 340—784 4 Claims



1. A color liquid crystal display apparatus, comprising:

a plurality of picture element groups arranged in a matrix, each picture element group including,

a plurality of color picture elements each associated with a color corresponding to red, green, or blue;

a plurality of scanning electrodes linearly arranged in parallel rows and disposed over said matrix in a first direction; and

a plurality of signal electrodes linearly arranged in parallel columns and disposed over said matrix in a second direction perpendicular to said first direction,

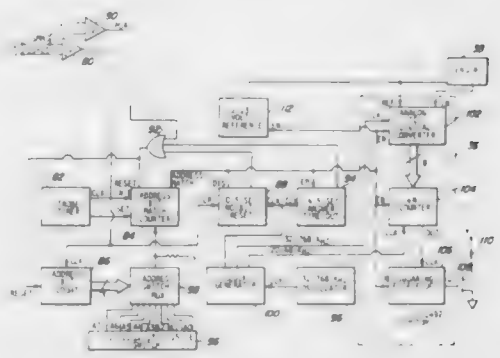
said picture elements groups being disposed over said scanning electrodes and said signal electrodes such that said color picture elements of each color are linearly arranged at a one pixel element pitch in each row in said first direction and in each column in said second direction and only color picture elements of the same color are connected to each said signal electrode to alleviate the need for a color switching circuit.

5,006,841

ADDRESSABLE TRANSDUCER WITH IMPROVED RESPONSE SIGNAL PROCESSING

Arthur D. Vines; Frederick A. Schonfeld, and Ricardo Espat, all of Albuquerque, N. Mex., assignors to Sparton Corporation, Jackson, Mich.

Filed Feb. 16, 1988, Ser. No. 156,487
Int. Cl.[5] H04Q 9/00
U.S. Cl. 340—825.07 4 Claims



1. In an addressable transducer, a response circuit for generating a signal corresponding to a measurand, comprising:

sensing means for producing an analog voltage representing the measurand,

an analog to digital converter responsive to the analog voltage for generating a digital number having a value representing the measurand

clock means for providing a fixed frequency, and

a divider coupled with the clock means and responsive to the digital number for dividing the fixed frequency by the number to yield a resultant frequency corresponding to the value of the measurand.

5,006,842

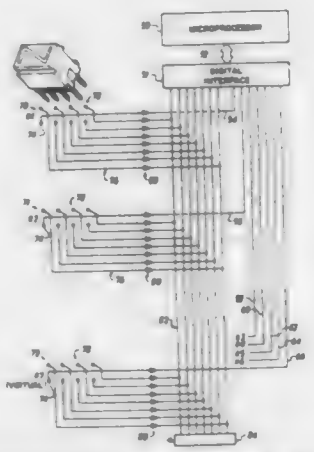
IDENTITY INSERT BLOCK FOR ELECTRONIC MODULES

Nathan H. Tobol, Wrentham, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Continuation of Ser. No. 37,756, Apr. 13, 1987, abandoned. This application Jun. 8, 1989, Ser. No. 363,664

Int. Cl.[5] H03K *17/94*

U.S. Cl. 340—825.34 **31 Claims**



1. A fixed connection identifier article for use with an electrical connection point having signal input and output channels, comprising:

(a) a body having a plurality of surfaces forming top, bottom, and side faces, including a first surface having thereon at least one visible identifying symbol, a second surface having a plurality of electrical connection pins, and substantially parallel third and fourth surfaces, said third and said fourth surfaces each being characterized by at least one corresponding interlock surface area;

(b) means for forming said input channel for receiving an electrical input signal, comprising at least one but less than all of said connection pins;

(c) said output channel comprising the remainder of said connection pins; and

(d) preselected, hard-wired electrical connections between the electrical input channel and at least one of the output channel connection pins.

5,006,843

SECURITY MODULE TO PRECLUDE UNAUTHORIZED USERS TO OPERATE MOTOR DRIVEN EQUIPMENT AND TO PROTECT VALUABLE PARTS OF THE MOTOR FROM UNAUTHORIZED EXCHANGE

Werner Haser, 40 Fieldcrest Rd., Parsippany, N.J. 07054-2411

Continuation of Ser. No. 278,575, Dec. 1, 1988, abandoned. This application May 2, 1990, Ser. No. 517,430

Int. Cl.[5] B60R *25/00*; **H04Q** *9/00*

U.S. Cl. 340—825.31 **8 Claims**

1. A security system for a motor vehicle having a dashboard and an engine compartment containing a motor and one or more vital motor accessories comprising:

a source of vehicle electrical power;

a keyboard for generating data words;

a code sender in the dashboard coupled to the keyboard including means for outpulsing the generated data words from the keyboard;

at least one security module implanted within one of the vital motor accessories comprising;

means for permanently storing a distinct data word; and

means responsive to the received data word matching the distinct data word for generating the first signal; and

means coupled between the code sender and each security module for transmitting data words between the code sender and each security module including means for sending the generated data words to the at least one security module;

the at least one security module comprising;

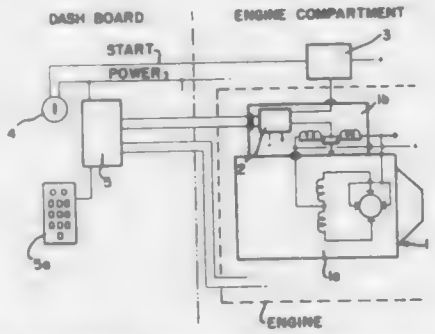
means coupled to the transmitting means for receiving the data words outpulsed from the code sender;

a code memory for storing a predetermined data word;

means coupled to the code memory and to the means for receiving the data words outpulsed from the code sender responsive to the predetermined word in the security module code memory matching one of the data words outpulsed from the code sender for generating a first signal; and

means responsive solely to the first signal for enabling the one vital motor accessory to function only when the data word received from the code sender matches the predetermined data word stored in the code memory implanted within the vital motor accessory the keyboard further comprises;

means for forming a first or second status selecting signal, and



means for coupling the first or second status selecting signal to the code sender;

the code sender further comprises;

a processor coupled to the keyboard, the outpulsing means, and the source of vehicle electrical power; and

a non-volatile memory coupled to the processor for retaining a status code;

the processor comprising;

means responsive to the first status selecting signal from the keyboard for storing a disarmed mode status code in the status code retaining memory,

means responsive to the status code in the status code retaining memory being the disarmed mode status code for generating the distinct data word, and

means for coupling the distinct data word from the processor to the outpulsing means whereby the distinct data word is outpulsed to the security modules when the vehicle electrical power is turned on;

means responsive to the second status selecting signal from the keyboard for storing an armed mode status code in the status code retaining memory;

means responsive to the status code in the status code retaining memory being the armed mode status code for generating a data word request signal when vehicle electrical power is turned on to indicate inserting of a data word; and

means responsive to the data word request signal for coupling the keyboard to the outpulsing means whereby a data word from the keyboard is sent to the outpulsing means.

5,006,844

TIRE ABNORMALITY DETECTING DEVICE

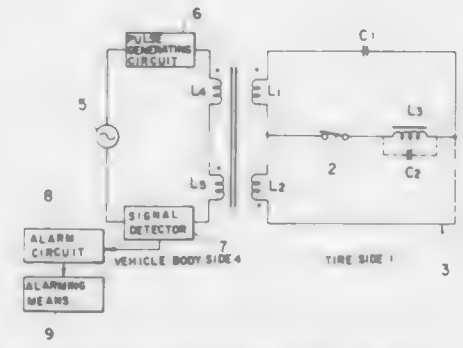
Katsuhiro Ohta; Hisami Masuda, and Mamoru Makishima, all of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jan. 29, 1989, Ser. No. 373,846

Claims priority, application Japan, Jul. 4, 1988, 63-89200[U]

Int. Cl.[5] B60C *23/02*

U.S. Cl. 340—448 **4 Claims**



1. A tire abnormality detecting device comprising:

a first unit to be provided on a vehicle body side, said first unit including

an electrical signal generating source for generating a specific electrical signal,

a first coil device, serially connected to said electrical signal generating source, for generating an induction voltage in receipt of said electrical signal, and

detecting means, serially connected to first coil device, for detecting a change in said induction voltage of said first coil device; and

a second unit provided on a tire side, said second unit including

a second coil device to be magnetically connected to said first coil device, said second coil device having first and second coils and a capacitor respectively connected in series,

a switch mechanism, connected between a junction of said first and second coils, opening and closing in response to a change in air pressure in a tire, and

a third coil device, connected in series between said switch mechanism and said capacitor, said second and third coil devices forming a resonance circuit, said third coil device having a temperature detecting magnetic core,

wherein said detecting means detects said change in said induction voltage of said first coil device generated by said second coil device according to one of (a) an open/-close condition of said switch mechanism and (b) magnetic permeability of said third coil device.

5,006,845

GAS KICK DETECTOR

Henry V. Calcar, Edmonds, Wash., and Gary L. Marsh, New Orleans, La., assignors to Honeywell Inc., Minneapolis, Minn. and Shell Offshore Inc., New Orleans, La.

Filed Jan. 13, 1989, Ser. No. 366,093

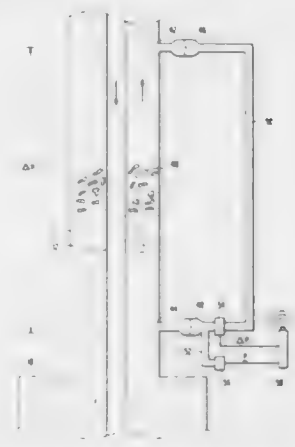
Int. Cl.[5] G01V *1/00*

U.S. Cl. 340—853 **17 Claims**

1. A method for detecting a gas kick during drilling, comprising the steps of:

determining a first average density of drilling mud in a marine riser, said marine riser being comprised of a plurality of riser sections extending from an ocean floor to a sea surface;

determining a second average density of drilling mud in an instrumented riser section of said marine riser, said instrumented riser section being positioned near said ocean floor in said marine riser; and



comparing said first average density with said second average density whereby a rapid change in a ratio of said first average density to said second average density is indicative of a gas kick.

5,006,846

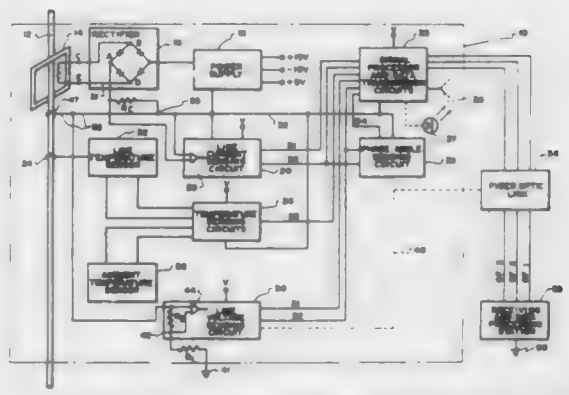
POWER TRANSMISSION LINE MONITORING SYSTEM

J. Michael Granville, 9701 Wilshire Blvd., #850, Beverly Hills, Calif. 90212; Robert E. Costa, 8435 Sale Ave., and Sam Y. Chu, 23684 Justice St., both of Canoga Park, Calif. 91304

Continuation of Ser. No. 119,750, Nov. 12, 1987, abandoned. This application Jan. 12, 1990, Ser. No. 464,707

Int. Cl.[5] H04B *9/00*

U.S. Cl. 340—870.28 **21 Claims**



1. A power transmission line monitoring system comprising;

current sampling means for sampling current on a transmission line;

rectifying means for rectifying the output of said current sampling means;

power supply means connected to the output of said rectifying means for producing power;

line current sensing means connected to said rectifying means for sensing line current;

line temperature sensing means for sensing the temperature of said transmission line;

line voltage sensing means connected to said transmission line, said line voltage sensing means including a voltage divider comprised of a small resistance connected to said transmission line in series with a very large resistance connected to earth ground;

signal processing means receiving and processing the outputs of said line current sensing means, said line tempera-

ture sensing means and said line voltage sensing means; said signal processing means including data transmission means for transmitting current, temperature and voltage data to a receiving and data processing station located remotely from said power transmission line for recording and analysis;

said data transmitting means comprising a cable that includes said very large resistance of said voltage divider; and

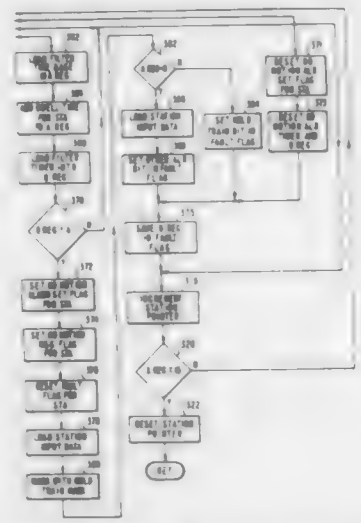
a common system return connecting said line current sensing means, said line temperature sensing means, said line voltage sensing means, said power supply and said signal processing means to said transmission line whereby system circuits are isolated from earth ground by using the power transmission line as a reference.

5,006,847

TRAIN MOTION DETECTION APPARATUS

Donald L. Rush, Penn Hills Township, Allegheny County, and Norman W. May, Pittsburgh, both of Pa., assignors to AEG Westinghouse Transportation Systems, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 672,039, Nov. 16, 1984, abandoned.
This application Apr. 5, 1988, Ser. No. 180,702
Int. Cl.[5] G08G *1/12, 1/07*
U.S. Cl. 340—994 3 Claims



1. A monitoring system for detecting when any of one or more trains operating in a transit system is not moving along the system track as desired, the system track being divided into successive track signal blocks each having means for generating a signal indicating whether a train is occupying any portion of the signal block, said monitoring system comprising:

computer means for storing the respective occupancy signals for the track blocks;

said computer means periodically comparing new and past occupancy signal values for the track blocks to indicate occupancy changes;

means for resetting an alarm timer for each block occupancy change;

means for enabling each running timer to continue operation if no occupancy change has occurred in the block to which the timer corresponds; and

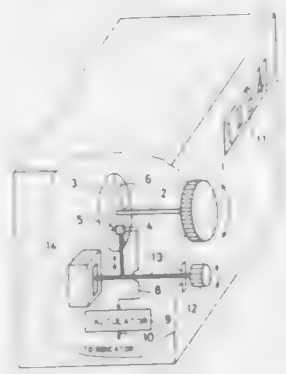
means for generating a system operator alarm when any running timer reaches a present time limit to indicate a no-motion train condition requiring system level supervisory action.

5,006,848

ROTARY ENCODER CAPABLE OF GENERATING ELECTRONIC PULSES HAVING VARIABLE FREQUENCY WITHOUT CHANGING ROTARY PLATE

Toshiyuki Fukumiza, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 6, 1989, Ser. No. 362,110
Claims priority, application Japan, Feb. 8, 1989, 1-28890
Int. Cl.[5] H03M *1/22*
U.S. Cl. 341—13 5 Claims



1. A rotary encoder comprising:

a rotary plate having a plane on which a plurality of elements to be detected are provided in a predetermined arrangement in such a manner that said elements to be detected are different in number along inner and outer concentric circles arranged with respect to a rotation center of the rotary plate;

supporting means for rotatably supporting said rotary plate;

detecting means arranged opposite to said plane of said rotary plate for detecting said elements to be detected in response to rotation of said rotary plate to generate electric pulses, said detecting means detecting said elements to be detected on a desired concentric circle with respect to the rotation center of the rotary plate; and

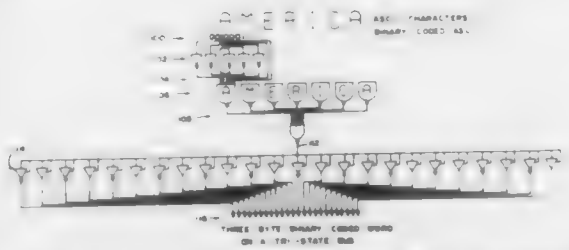
moving means for moving said detecting means along said plane of said rotary plate.

5,006,849

APPARATUS AND METHOD FOR EFFECTING DATA COMPRESSION

David W. Baarman, Zeeland, Mich., and David M. Richards, Littleton, Colo., assignors to Astro, Inc., Grand Rapids, Mich.

Filed Jul. 26, 1989, Ser. No. 385,859
Int. Cl.[5] H03M *7/30*
U.S. Cl. 341—95 26 Claims



1. A method of compressing input data into compressed data, the input data being coded character by character, said method comprising:

providing a word dictionary of recognizable character strings and a word code for each such string;

providing a phrase dictionary of recognizable word code strings and a phrase code for each such string;

comparing the input data with the word dictionary and substituting for each recognizable character string the word code associated with such string; and

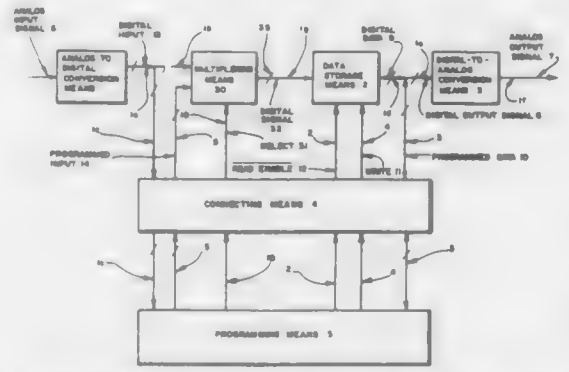
comparing the input data as modified by said first comparing step with the phrase dictionary and substituting for each recognizable string of word codes the phrase code associated with such string.

5,006,850

FUNCTION TRANSFORMER

Gordon J. Murphy, 638 Garden Ct., Glenview, Ill. 60025

Filed Apr. 18, 1988, Ser. No. 182,380
Int. Cl.[5] H03M *1/00*
U.S. Cl. 341—110 19 Claims



1. Apparatus for transforming an analog input signal into an analog output signal that approximates the value of a predetermined mathematical function of said analog input signal comprising:

(a) analog-to-digital conversion means having an input connected to receive the analog input signal and an output for providing an approximation to said analog input signal in the form of a digital code;

(b) data storage means having stored therein a plurality of precalculated digital values of the predetermined mathematical function of said analog input signal to said analog-to-digital conversion means, said data storage means having an input on address lines connected to receive as a digital input signal at least a portion of said digital signal provided at said output of said analog-to-digital conversion means and an output on data lines, for providing at the output thereof an output signal that is at least a portion of an appropriate one of the stored precalculated digital values in response to the input of said digital input signal, and

(c) digital-to-analog conversion means having an input connected to receive as a digital input signal at least a portion of said digital signal provided at said output of said data storage means and an output, for providing at the output thereof an analog output signal that corresponds to said digital input signal thereto.

5,006,851

ANALOG-TO-DIGITAL CONVERTING SYSTEM

Tetsuhiko Kaneaki, Ashiya; Mikio Oda, Kyoto; Kozo Nuriya, and Yasunori Tani, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 17, 1989, Ser. No. 380,355
Claims priority, application Japan, Jul. 18, 1988, 63-178625; Feb. 8, 1989, 1-29079; Feb. 9, 1989, 1-30534; Mar. 13, 1989, 1-59902
Int. Cl.[5] H03M *1/12*
U.S. Cl. 341—155 15 Claims

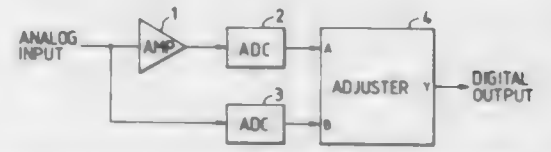
1. An analog-to-digital converting system comprising:

means for converting a first analog input signal into a plurality of second analog signals having different levels respectively;

a plurality of analog-to-digital converters;

means for applying the second analog signals to the inputs of respective converters;

means for adjusting values of output signals from the respective converters as a function of magnitudes of the values of the output signals from the respective converters to convert the output signals from the respective converters into respective adjusted signals;



means for selecting one of the adjusted signals in response to whether or not the values of the output signals from the respective converters are in a predetermined range; and,

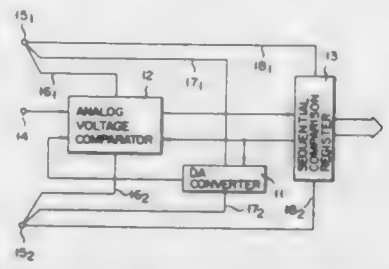
means for providing the selected signal as a system output signal.

5,006,852

ANALOG-TO-DIGITAL CONVERTER WITH ISOLATED POWER SUPPLY LINES TO THE INDIVIDUAL COMPONENTS

Junkei Goto, Kawasaki, and Tetsuya Iida, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 23, 1989, Ser. No. 355,609
Claims priority, application Japan, May 25, 1988, 63-127414
Int. Cl.[5] H03M *1/00*
U.S. Cl. 341—155 15 Claims



1. An analog-to-digital converter, comprising:

first and second current supply terminal means for providing a power source current to said analog-to-digital converter;

input terminal means for providing an analog voltage input;

digital-to-analog converter means for providing a reference signal;

comparator means coupled to the input terminal means and to the digital-to-analog converter means for comparing the analog voltage input with the reference signal to generate a digital comparison signal;

control means coupled to the comparator means and to the digital-to-analog converter means, including means for providing a digital output signal in response to the digital comparison signal, and including means for providing a digital control signal to the comparator means and the digital-to-analog converter means;

a first current supply path coupled between the comparator means and the first and second current supply terminal means, for providing a power source current to the comparator means;

a second current supply path coupled between the digital-to-analog means and the first and second current supply terminal means, for providing a power source current to the digital-to-analog converter means; and

a third current supply path coupled between the control means and the first and second current supply terminal means, for providing a power source current to the control means;

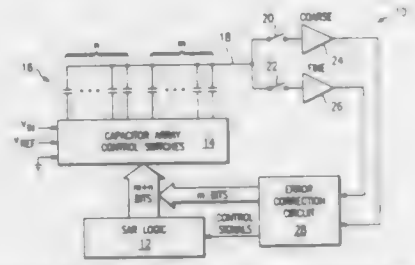
wherein said first, second, and third current supply paths are electrically isolated from one another except at the first and second current supply terminal means.

5,006,853

HYSTERESIS INSENSITIVE ANALOG TO DIGITAL CONVERTER SYSTEM USING A COARSE COMPARATOR AND A FINE COMPARATOR

Sami Kiriaki, Garland, and Khen-Sang Tan, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 12, 1990, Ser. No. 478,596
Int. Cl.[5] H03M *1/12*
U.S. Cl. 341—156 12 Claims



1. A circuit for converting an analog signal into a digital value comprising

a plurality of bits, the circuit comprising:

a capacitor array comprising a capacitor corresponding to each bit in the digital value;

a top plate coupling together a first node of each capacitor in said array;

capacitor control switching means operable to selectively couple a second node of said capacitors to a reference signal and said analog signal;

a coarse comparator circuit having an input and an output and operable to generate a predetermined number of most significant bits of the plurality of bits representing said digital value;

a fine comparator circuit having an input and an output and operable to generate the remaining bits of said plurality of bits representing said digital value such that the generation of the least significant bits of the digital value will not be affected by hystersis effects of large voltages at the inputs to said comparator circuit;

a course switch operable to selectively couple said top plate to said input or said course comparator circuit; and

a fine switch operable to selectively couple said top plate to said input of said fine comparator circuit.

5,006,854

METHOD AND APPARATUS FOR CONVERTING A/D NONLINEARITIES TO RANDOM NOISE

Bert White, Irvine, and Mehrdad Negabahn-Hagh, both of Irvine, Calif., assignors to Silicon Systems, Inc., Tustin, Calif.

Filed Feb. 13, 1989, Ser. No. 311,237
Int. Cl.[5] H03M *1/38*
U.S. Cl. 341—172 34 Claims

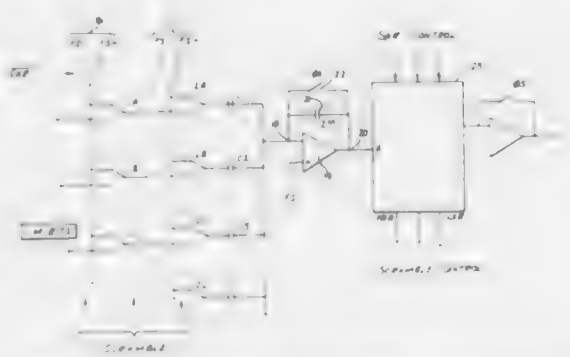
1. A circuit comprising:

a plurality of capacitors, each having a capacitance of approximately C;

a first switch coupled to a first number x of said capacitors;

a second switch coupled to a second number y of said capacitors;

a switching matrix coupled to said plurality of capacitors and to said first and second switches for selectably coupling said plurality of capacitors to each of said first and second switches such that the time-averaged ratio of the amount of time one of said capacitors is coupled to said first switch compared to the amount of time said one of



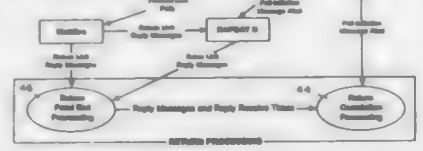
said capacitors is coupled to said second switch is approximately equal to x/y.

5,006,855

RANGING AND PROCESSING SYSTEM FOR MOBILE SURVEILLANCE AND DATA LINK

Ronald Braff, Annandale, Va., assignor to The Mitre Corporation, Bedford, Mass.

Continuation of Ser. No. 898,196, Aug. 20, 1986, abandoned.
This application Nov. 17, 1988, Ser. No. 274,643
Int. Cl.[5] H04B *7/185*
U.S. Cl. 342—357 7 Claims



1. A ranging and processing satellite system for data link with and cooperative surveillance of a plurality of mobile units from multiple control facilities comprising:

at least two satellites including means for discretely polling individual mobile units requested by one or more of the control facilities and for receiving replies from the polled mobile units, such replies including information about the mobile units' positions;

means operable in connection with the means for polling and for receiving replies, for precluding garbling between replies to polls initiated by the at least two satellites;

a cross-link communication path between the at least two satellites to exchange mobile ranging data;

processing means on at least one of the satellites to store poll commands, initiate polls according to an optimal sequence that fills in the guard times between polls with other messages, store messages between mobile units and control facilities, and to compute the ranges between the mobile unit and each of the satellites from the replies from the mobile units; and

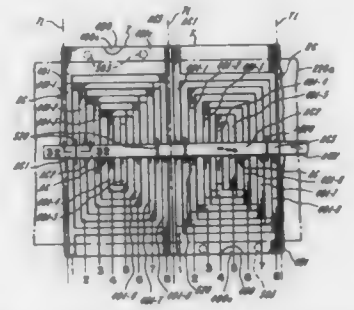
means for transmitting the computed ranges to at least one of the control facilities.

5,006,856

ELECTRONIC ARTICLE SURVEILLANCE TAG AND METHOD OF DEACTIVATING TAGS

S. Eugene Benge, Middletown, and Robert L. Froning, Kettering, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Aug. 23, 1989, Ser. No. 397,804
The portion of the term of this patent subsequent to Oct. 18, 2005, has been disclaimed.
Int. Cl.[5] G08B *13/14*
U.S. Cl. 340—572 18 Claims



1. Method of promoting the permanent deactivation of tags useable in an electronic article surveillance system, comprising the steps of: providing a resonant circuit detectable at a first energy level, the resonant circuit including a spiral conductor having a plurality of conductor portions, positioning a deactivator across and adjacent at least some of the conductor portions, the deactivator including a deactivating conductor and a normally non-conductive breakdown coating with the deactivator being normally responsive to energy applied to the resonant circuit at a second energy level higher than the first energy level for electrically connecting at least two conductor portions to the deactivating conductor, but inhibiting deactivation of the resonant circuit until energy at a third energy level higher than the second energy level is applied to the resonant circuit.

5,006,857

ASYMMETRICAL TRIANGULAR PATCH ANTENNA ELEMENT

Mark J. DeHart, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

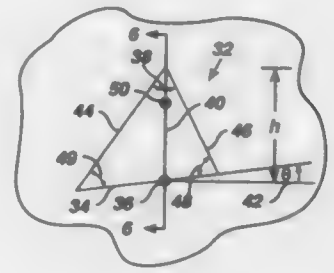
Filed Aug. 9, 1989, Ser. No. 391,478
Int. Cl.[5] H01Q *1/38*
U.S. Cl. 343—700 MS 19 Claims

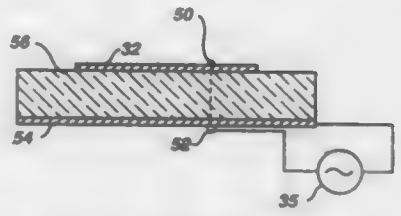
1. A planar microstrip antenna structure having a low physical profile, comprising:

an electrically conductive ground plane;

1. a dielectric layer overlying said ground plane;

an electrically conductive antenna element coupled to a second side of said dielectric layer, said antenna element having triangular shape with a first angle and a base opposite said first angle, a second angle and a second side opposite said second angle, a third angle and a third side opposite said third angle, said first angle being approximately 60° and said base being at a selected angle greater than 3° with respect to the perpendicular to a bisector of said first angle, said antenna element adapted to emit a radiation envelope pattern that is asymmetrical about boresight, the gain of said envelope pattern remaining





within 6 decibels of the maximum gain to an angle at least 60° forward from boresight toward endfire; and

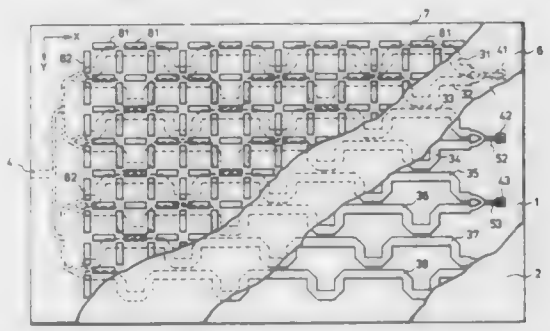
a transmission line coupled to said antenna element.

5,006,858

MICROSTRIP LINE ANTENNA WITH CRANK-SHAPED ELEMENTS AND RESONANT WAVEGUIDE ELEMENTS

Toshiaki Shirosaka, Toyono, Japan, assignor to DX Antenna Company, Limited, Kobe, Japan

Filed Jan. 8, 1990, Ser. No. 462,137
Claims priority, application Japan, Mar. 30, 1989, 1-80694
Int. Cl.[5] H01Q *1/38*
U.S. Cl. 343—700 4 Claims



1. A plane antenna comprising:

a microstrip line antenna including a plane dielectric substrate and a plurality of parallel conductor lines arranged on said substrate along a first direction, each of said conductor lines comprising a plurality of antenna elements sequentially connected together to form a crank-shaped conductor pattern, each of said elements comprising a relatively long first segment and a relatively long second segment with said first and second segments oriented in said first direction and a relatively short third segment oriented in a second direction normal to said first direction and connecting said first and second segments together in said crank-shaped conductor pattern,

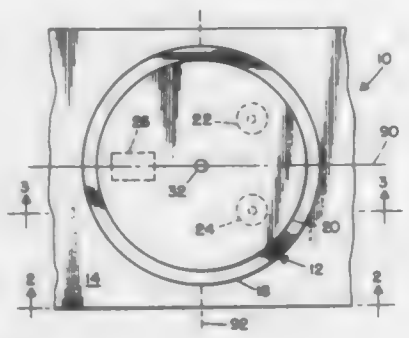
a plurality of half wavelength waveguide elements lying on a plane parallel to said substrate, extending respectively in said first and second directions and each waveguide element comprising a conductor resonant with a half wavelength of an electric wave to be used, and

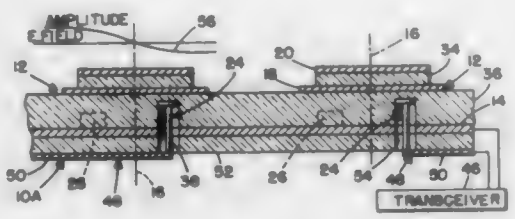
means for supporting said half wavelength waveguide elements in spaced relation to said conductor lines at at least one of a set of distances comprising about a half wavelength of said electric wave to be used and integral multiples of said half wavelength.

5,006,859
PATCH ANTENNA WITH POLARIZATION UNIFORMITY CONTROL

Mon N. Wong, Torrance; Robert J. Patin, Hawthorne; Brennan J. Trese, Los Angeles, and Krishnan K. Raghavan, Redondo Beach, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 28, 1990, Ser. No. 500,332
Int. Cl.[5] H01Q *1/38*
U.S. Cl. 343—700 MS **11 Claims**



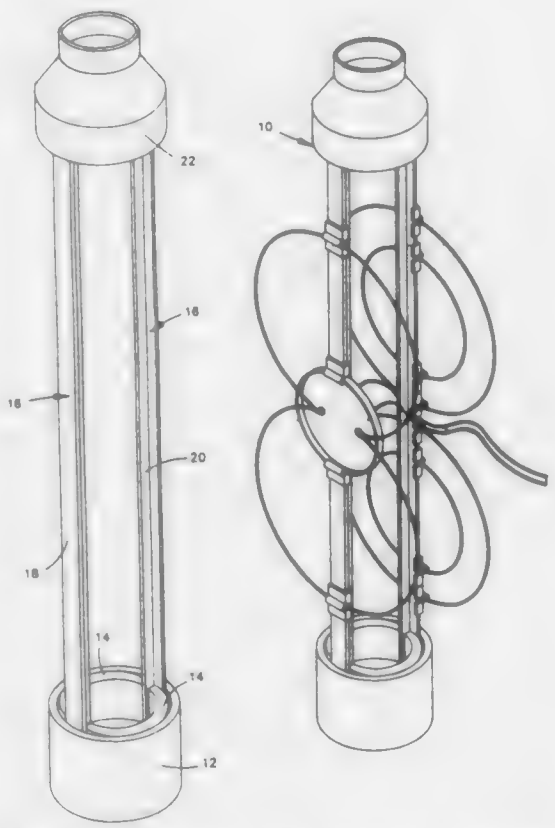


1. A patch antenna comprising:
an electrically conductive ground-plane element;
an electrically conductive patch radiator;
means for positioning said radiator in spaced-apart relation to said ground-plane element;
a first feed and a second feed disposed on said ground-plane element and capacitively coupled to said radiator, said first feed and said second feed being offset from a center of said radiator and being arranged in space-quadrature relation relative to said radiator for generation of circularly polarized radiation at said radiator; and
a capacitive reactance element disposed on said ground-plane element and capacitively coupled to said radiator, said reactance element being located equally distant from said first and second feeds and being located on a side of said radiator opposite said first and said second feeds, wherein the total reactance of said first and second feeds is larger by approximately one order of magnitude than the reactance produced by said reactance element, in order to reduce mutual coupling between said first and said second feeds and said radiator such as to counteract any elliptical polarization and to thereby ensure production of accurate and uniform circular polarization.

5,006,860
CONNECTION OF T SECTIONS BETWEEN HALF RINGS WITHIN ANNULAR HOUSING

Edward J. Schock, P.O. Box 1167, Lebanon, Pa. 17042

Filed Apr. 28, 1989, Ser. No. 345,218
Int. Cl.[5] H01Q *11/12*
U.S. Cl. 343—742 **10 Claims**

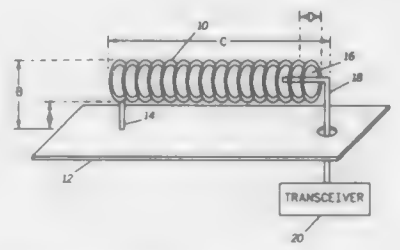


1. Connection of two T-section posts between two half rings within an annular housing, wherein:
said annular housing having a substantially circular inner wall that defines a bore within said annular housing,
said T-section posts being positioned within said annular housing such that said T-section posts extend substantially parallel to a central axis of said bore of said annular housing,
each T-section post having a stem portion extending from a center of a branch portion,
said stem portion being substantially a perpendicular bisector of said branch portion,
said branch portion of each of said T-section posts having a flat face,
said flat face of said branch portion of each of said T-section posts being positioned within said bore of said annular housing substantially against said inner wall of said annular housing,
each of said half rings being positioned within said annular housing such that each half ring has two edges that extend substantially parallel to the central axis of said bore of said annular housing,
one of said edges abutting said stem portion of one of said T-section posts and the other of said edges abutting said stem portion of the other of said T-section posts,
said edges being referred to as stem-abutting edges,
each half ring having a convex face positioned against said inner wall of said annular housing except near each T-section post,
where said branch portion of said T-section post is between said convex face of said half ring and said inner wall of said annular housing,
said stem portion of each T-section post being between one of said stem-abutting edges of one of said half rings and one of said stem-abutting edges of the other of said half rings.

5,006,861
ANTENNA

John E. Miller, Sunrise, and Frank E. Lambrecht, Hollywood, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 20, 1989, Ser. No. 340,634
Int. Cl.[5] H01Q *1/36*
U.S. Cl. 343—848 **8 Claims**



1. An antenna, comprising:
a conductive helix having first and second ends, said first end being shorted to a ground plane and said second end being open and free from electrical connections;
an open stub positioned partially within said second end of said conductive helix for receiving a radio frequency signal, and for electromagnetically coupling said radio frequency signal into said second end of said conductive helix.

5,006,862
FIXATION OF REACTIVE DYES TO PAPER BY INK-JET PRINTING

Raymond J. Adamic, Corvallis, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

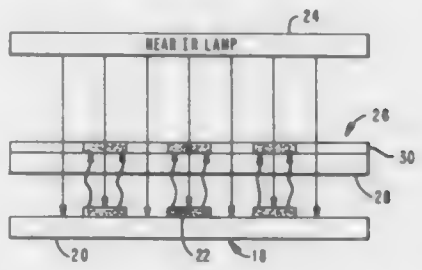
Filed Oct. 27, 1989, Ser. No. 429,251
Int. Cl.[5] B41J *2/01*
U.S. Cl. 346—1.1 **12 Claims**

1. A process for printing reactive dyes on a medium, comprising:
(a) printing said medium with an ink-jet ink comprising
(1) about 1 to 10% of a reactive dye having a reactive moiety,
(2) about 5 to 15% of an organic solvent selected from the group consisting of 2-pyrrolidone, N-methyl pyrrolidone, and glycols, and
(3) about 75 to 94% water, said ink having a pH adjusted to about 5 to 9; and
(b) treating said medium with a basic alcoholic solution containing from about 90% to about 100% alcohol, by weight, of an alcohol having from 1 to 6 carbon atoms, said alcoholic solution having a pH from about 10 to about 13.

5,006,863
MULTIPLE COPY THERMAL IMAGING

Shashi G. Talvalkar, Kettering, Ohio, assignor to NCR Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 87,543, Jul. 6, 1987, abandoned. This application Feb. 8, 1989, Ser. No. 307,456
Int. Cl.[5] G01D *9/00;* **B29C** *47/00;* **B41M** *3/12, 5/20;* **G03C** *5/18*
U.S. Cl. 346—1.1 **19 Claims**



6. A heat sensitive copy system for creating an original image and a copy of said image and accomplished in a two-step, in-line process, said copy system comprising a
first medium having a thermal transfer coating thereon, said thermal transfer coating including near infra-red absorbing material, a
second medium adjacent the first medium,
means for selectively heating a portion of the thermal transfer coating on the first medium for transferring coating material in the form of original images onto the second medium during the first step of the process,
copy medium adjacent the second medium, and
means producing near infra-red radiation for heating the original images on the second medium and transferring the original images therefrom onto the copy medium and creating copies of the original images on said copy medium during the second step of the process.

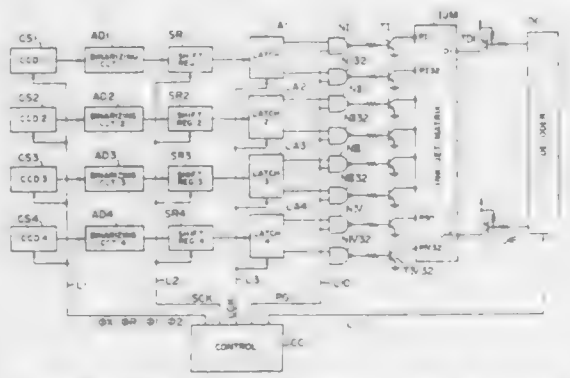
5,006,864
INFORMATION READ-OUT AND RECORDING APPARATUS

Naoki Ayata; Yoshiaki Shirato, both of Yokohama; Yasushi Takatori, Sagamihara, and Mitsuaki Seki, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 379,668, Jul. 13, 1989, abandoned, which is a continuation of Ser. No. 287,527, Dec. 19, 1988, abandoned, which is a continuation of Ser. No. 036,179, Apr. 8, 1987, abandoned, which is a continuation of Ser. No. 624,714, Jun. 26, 1984, abandoned, which is a division of Ser. No. 133,327, Mar. 24, 1980, Pat. No. 4,463,359. This application Apr. 11, 1990, Ser. No. 508,526
Claims priority, application Japan, Apr. 2, 1979, 54-39467; Apr. 2, 1979, 54-39468; Apr. 2, 1979, 54-39469; Apr. 2, 1979, 54-39470; Apr. 2, 1979, 54-39471; Apr. 2, 1979, 54-39472; Apr. 11, 1979, 54-43849; Feb. 22, 1980, 55-21348
Int. Cl.[5] B41J *2/01*
U.S. Cl. 346—33 R **159 Claims**

1. An information read-out and recording apparatus comprising:
information read-out means for serially outputting information signals;
serial-input/parallel-output register means connected to said information read-out means for storing information signals received serially from said information read-out means;
latch means connected to said register means for storing signals provided in parallel from said register means;
recording means connected to said latch means for recording on a recording medium in accordance with the output of said latch means; and
control means connected to said information read-out means, said register means, said latch means and said recording means, and having a first control function for

providing parallel storage in said latch means of the contents of said register means after a predetermined number of bits of information have been serially stored in said



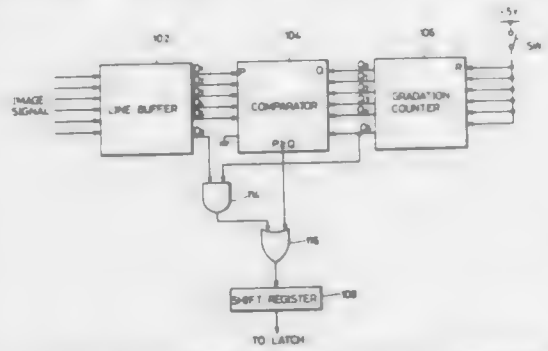
register means and a second control function for providing serial storage in said register means of at least one bit of information during operation of said recording means.

5,006,865

METHOD OF RECORDING GRADATION IMAGE IN THERMAL PRINTER

Yoshihiko Kuroiwa, Nagano, Japan, assignor to Fuji Photo Film Co., Kanagawa and Nagano Nihon Musen K.K., Nagano, both of, Japan

Filed Apr. 20, 1989, Ser. No. 340,816
Claims priority, application Japan, Apr. 20, 1988, 63-97708
Int. Cl.[5] G01D *15/10*
U.S. Cl. 346—76 PH **9 Claims**



6. A method of recording a gradation image on a thermosensitive medium in a thermal printer with heating elements, comprising the steps of:

generating first pulse signals each for forming a one-gradation image, said first pulse signals each including a first unit pulse signal and a second unit pulse signal;

generating second pulse signals each for forming a plural-gradation image from an image signal;

energizing said heating elements with said first and second pulse signals which are combined together to record said gradation image with said one-gradation image as a minimum density unit thereof;

wherein the step of energizing said hating elements further comprises:

energizing said hating elements with said first unit pulse signal;

then energizing said heating elements with said second pulse signals;

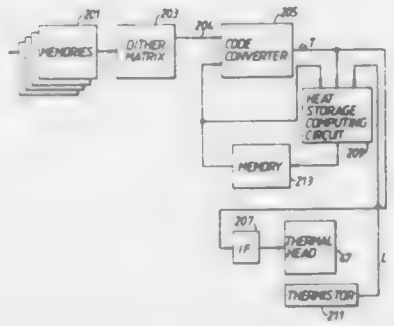
thereafter energizing said heating elements with said second unit pulse signal.

5,006,866

THERMAL PRINTING APPARATUS RESPONSIVE TO ESTIMATED STORED HEAT OF THE HEATING ELEMENT

Akihiko Someya, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 12, 1989, Ser. No. 420,824
Claims priority, application Japan, Oct. 31, 1988, 63-275221
Int. Cl.[5] Q01D *15/10*
U.S. Cl. 346—76 PH **11 Claims**



1. A thermal printing apparatus for generating heat to produce an output image according to an input image, comprising:

driving means for supplying a driving signal corresponding to the input image;

a thermal head comprising a base and a heating element array on the base, responsive to an input signal, for generating heat to produce the output image;

generating means for generating a temperature signal representative of a temperature of the base;

predicting means, for generating an estimated stored heat signal representative of an estimated stored heat in the heating element array based on the combination of the temperature signal and the driving signal; and

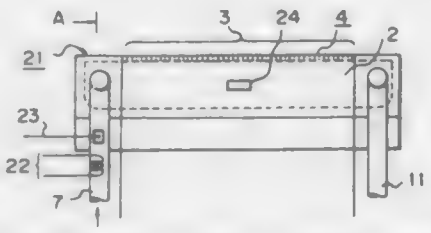
controlling means, responsive to the driving signal and the estimated stored heat signal, for generating the input signal.

5,006,867

RECORDING HEAD FOR AN INK JET RECORDING APPARATUS HAVING A PLURALITY OF TEMPERATURE DETECTION ELEMENTS

Yutaka Koizumi, Tokyo; Minoru Nozawa; Toshihiro Mori, both of Hiratsuka, and Atsushi Saito, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 272,471, Nov. 17, 1988, abandoned.
This application May 7, 1990, Ser. No. 518,238
Claims priority, application Japan, Nov. 20, 1987, 62-291965
Int. Cl.[5] B41J *2/195*
U.S. Cl. 346—140 R **10 Claims**



1. A recording head for an ink jet recording apparatus provided with a temperature adjusting device, said recording head comprising:

a discharging area provided with a plurality of ink discharging portions each having an electric-heat converting member;

a common chamber for receiving ink, said common chamber communicated with said discharging area and supplying ink to each of said ink discharging portions;

a plurality of temperature detecting elements for detecting temperature at different locations of said common chamber; and

heat controlling means for equalizing the temperature distribution of said common chamber in response to temperatures detected by said plurality of temperature detecting elements;

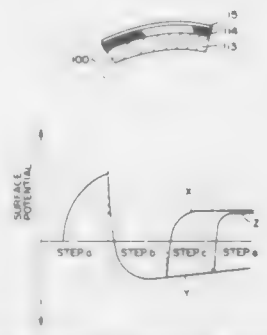
wherein the temperature distribution is equalized by adjusting the temperature of ink supplied to said common chamber.

5,006,868

METHOD AND APPARATUS FOR PRINTING TWO OR MORE COLORS USING AN ELECTROPHOTOGRAPHIC PROCESS

Koichi Kinoshita, Shizuoka, Japan, assignor to Kentek Information Systems, Inc., Allendale, N.J.

Filed Nov. 28, 1989, Ser. No. 443,246
Int. Cl.[5] G03G *15/01*; **G01D** *9/42, 15/14*
U.S. Cl. 346—157 **14 Claims**



1. A method for printing a two-color image comprising

(a) uniformly charging a surface of a photoconductive member to a surface potential of a first polarity,

(b) uniformly reverse polarity charging said surface of said photoconductive member while simultaneously selectively exposing said photoconductive member to light generated by a first light source under the control of a digital processing unit to form a first latent electrostatic image on said photocondcutive member,

(c) prior to developing said first latent electrostatic image, selectively exposing said photoconductive member to light generated by a second light source under control of said digital processing unit to form a second latent electrostatic image on said photoconductive member,

(d) developing said second latent image utilizing a first toner of a first color and having a first electrostatic charge,

(e) uniformly illuminating said photoconductive member, and

(f) thereafter developing said first latent image utilizing a second toner of a second color and having a second electrostatic charge opposite in polarity to said first electrostatic charge.

5,006,869

CHARGED PARTICLE PRINTER

W. R. Buchan, Pocasset, Mass., and Robert S. McCallum, Terra Cotta, Canada, assignors to Delphax Systems, Mississauga, Canada

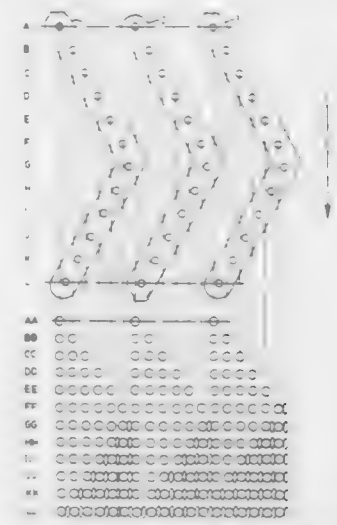
Filed Nov. 8, 1989, Ser. No. 433,110
Int. Cl.[5] G01D *15/06*
U.S. Cl. 346—159 **11 Claims**

1. A print cartridge for charged particle deposition of latent images on a receptor surface adapted to move longitudinally, the cartridge comprising:

driver electodes extending transversely with respect to said direction;

dielectric means covering the electrodes;

finger electrodes on the dielectric means extending angularly with respect to the driver electrodes, the finger and driver electrodes being separated physically from one another by the dielectric means, the finger electrodes defining apertures where the finger electrodes cross the driver electrodes to thereby define edge structures for charged particle generation upon selectively energizing the driver and finger electrodes to place dots on selected segments of the print cartridge, the segment for each finger electrode being immediately adjacent a segment of



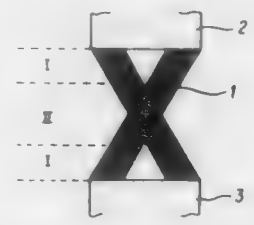
another finger electrode and the apertures being arranged in relation to the desired image such that when the image is to be a continuous line of contiguous dots, at least some of the apertures activated in each of the finger electrodes to place a dot in each segment are spaced from transversely from an adjacent aperture in the same finger electrode by an unequal whole number of dot positions, and in which the first dot is a primary dot, the electrodes being operable to energize the apertures in sequence along the length of the finger electrodes to create further primary dots which are separated from one another and then to complete the line by creating secondary dots between the primary dots.

5,006,870

THERMAL RECORDING HEAD

Shuzo Hirahara, and Kazuhiko Higuchi, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Sep. 26, 1988, Ser. No. 248,847
Claims priority, application Japan, Sep. 30, 1987, 62-249034
Int. Cl.[5] G01D *15/10*
U.S. Cl. 346—76 PH **11 Claims**



1. A thermal recording head comprising:

a plurality of electrode pairs, each of the electrode pairs including a first and a second electrode; and

a corresponding plurality of heating elements, each of the heating elements being disposed between a corresponding electrode pair and including first, second and third portions, the first and second portions being coupled to the first and second electrodes, respectively, and the third portion having a center and two ends and being positioned between and connecting the first and second portions, the third portion having a current density that increases from the respective ends towards the center of the third portion and the first and second portions having a uniformly distributed current density upon application of a voltage across the first and second electrodes.

5,006,871

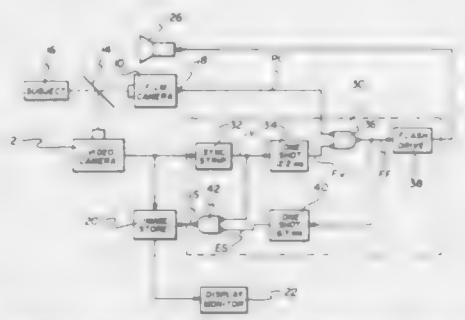
IMAGE RECORDING SYSTEM AND METHOD

Stephen A. Noble, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 23, 1990, Ser. No. 528,000

Int. Cl.[5] G03B *29/00, 7/00, 15/05;* **H04N** *5/225*

U.S. Cl. 354—76 **7 Claims**



1. An image recording system for simultaneously recording images of a subject in electronic and photosensitive media, comprising:

a photographic camera for capturing a photographic image of said subject on said photosensitive medium, said photographic camera including means for supplying a flash request signal;

a video camera for generating a video signal comprised of alternating video image fields and vertical blanking intervals, said camera including solid state imaging means for capturing a video image of said subject and means for processing said captured image during said vertical blanking intervals into successive fields of video image signals;

means for illuminating said subject with a flash illumination of a predetermined maximum duration;

means for separating vertical blanking signals from said camera video signal; and

flash synchronizing means responsive to said separated vertical blanking signals for enabling initiation of said flash illumination only during a limited time interval following each successive vertical blanking interval, said limited time interval ending at a point in the video signal image field that assures that a flash illumination of said maximum duration initiated at any time in said limited time interval will be substantially completed before the processing of the captured image from said imaging means is initiated in the next successive vertical blanking interval.

5,006,872

VIDEO ATTACHMENT SYSTEM FOR MICROSCOPES

Walter D. Parker, Saugus, Calif., assignor to Mideo Systems, Inc., Huntington Beach, Calif.

Filed Dec. 6, 1989, Ser. No. 446,633

Int. Cl.[5] G03B *17/48*

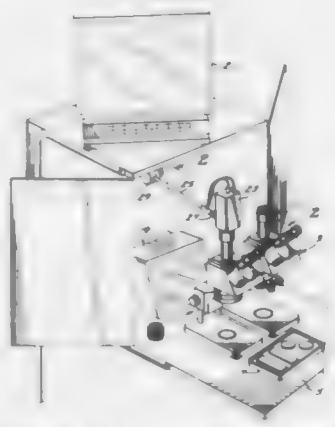
U.S. Cl. 354—79 **1 Claim**

1. A support system for supporting a video camera relative to a microscope camera port, the video camera having a lens mount opening, the support system comprising:

means for supporting the video camera at selected locations in selected positions within a three-dimensional space;

a tube securable in the microscope camera port;

a sleeve having one end engaged with said tube to form a generally cylindrical structure and adapted to provide



for adjustment of the longitudinal dimension of said generally cylindrical structure, and having the other end adapted to slidably engage the lens mount opening of the video camera in alignment with the microscope camera port, whereby the video camera is substantially supported in position by said support means; and

a diaphragm formed in said sleeve.

5,006,873

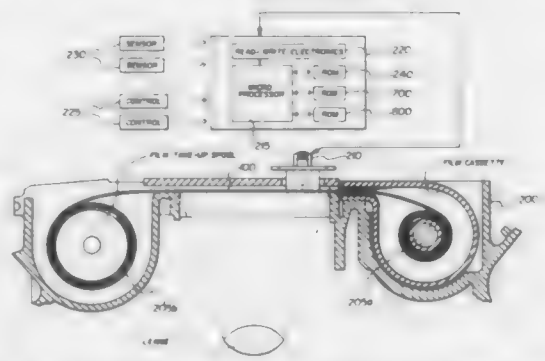
IMPLICIT MID ROLL INTERRUPT PROTECTION CODE FOR CAMERA USING DEDICATED MAGNETIC TRACKS ON FILM

Michael L. Wash, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 255,672, Oct. 7, 1988, abandoned. This application Dec. 5, 1989, Ser. No. 449,343

Int. Cl.[5] G03B *17/24*

U.S. Cl. 354—106 **12 Claims**



1. In a camera having a magnetic read/write system with a magnetic head and adapted to receive magnetically coated film, a method of preventing double exposures of individual frames of said film, said film adapted to recording of magnetic data therein by the manufacturer, thereof prior to being received in said camera, said method comprising:

recording data, including a camera-dedicated ID sentinel, with each exposure by said camera of a frame in said film so as to record at least one magnetic track in said film which starts at a location proximal said frame;

transporting successive frames of said film past said magnetic head while causing said magnetic system to search for data corresponding to said camera ID sentinel until finding one frame in which said magnetic system senses an absence of camera-dedicated ID sentinels, and thereupon juxtaposing said one frame in said camera in preparation for the exposure of said one frame.

5,006,874

APPARATUS FOR RECORDING IMAGES ON A ROLL OF FILM AND A FILM WINDING CARTRIDGE

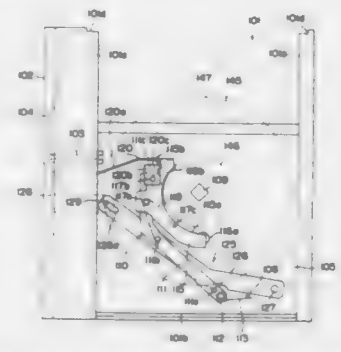
Masanori Murakami; Akiyoshi Hamada; Mitsutoshi Yagoto, all of Toyokawa, and Shinichi Mori, Gifu, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 28, 1990, Ser. No. 544,918

Claims priority, application Japan, Jun. 29, 1989, 1-168492

Int. Cl.[5] G03B *27/58*

U.S. Cl. 354—212 **11 Claims**



1. Apparatus for recording images on a roll of film, comprising:

means for feeding a film to an image recording section;

means for recording an image on the film fed by the film feeding means; and

means for winding the film on which an image was recorded, said film winding means comprising:

a reel to be wound with the film;

a first and a second casing for housing the reel in such a manner as the reel can be dismounted, said casings capable of being integrated and disintegrated by moving in a direction perpendicular to the axis of the reel;

first guide means disposed in the first casing for forcing the film wound around the reel toward the center of the reel elastically; and

second guide means disposed in the second casing for forcing the film wound around the reel toward the center of the reel elastically.

5,006,875

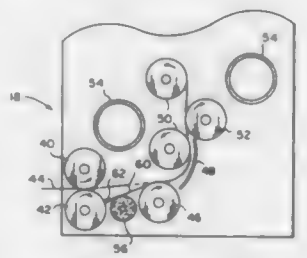
FILM PROCESSOR WITH ABSORBENT ROLLER TO ELIMINATE WATER SPOTTING

Kenneth W. Oemcke, and Evan P. Carmichael, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 11, 1990, Ser. No. 535,627

Int. Cl.[5] G03D *3/13*

U.S. Cl. 354—299 **3 Claims**



1. In a processor for sheets of film, the processor having racks of rollers for transporting the film sequentially through stations for developing the film, fixing the film, washing the film and drying the film, the rollers including a pair of squeegee rollers located where the film leaves the washing station for driving the film into the drying station, and the transport rollers in the drying station being spaced from the squeegee rollers and defining a path for the film leaving the squeegee rollers, the film path including a first portion adjacent the squeegee rollers and a second portion downstream from the first portion, the second portion being positioned at an angle with respect to the first portion so that the trailing end of the film is deflected out of the first portion of the film path when the leading end of the film enters the second portion of the path and the trailing end leaves the squeegee rollers, the improvement comprising:

an absorbent roller in the drying station located outside the first portion of the film path between the squeegee rollers and transport rollers in the drying station so that the absorbent roller is not contacted by the film as the film is driven along the first portion of the film path by the squeegee rollers, the absorbent roller being positioned with respect to the first portion of the path so that it is contacted by the trailing end of the film when the trailing end leaves the squeegee rollers and is deflected out of the first portion of the film path, whereby a bead of liquid on the trailing end of the film can be removed by the absorbent roller.

5,006,876

EXPOSURE CALCULATING DEVICE

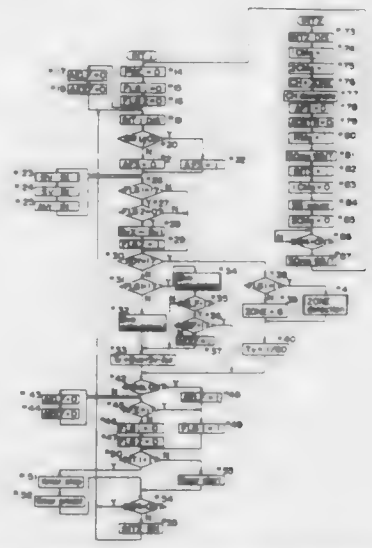
Masaaki Nakai, Kawachinagano, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 147,271, Jan. 22, 1988, abandoned, which is a division of Ser. No. 832,702, Feb. 25, 1986, Pat. No. 4,746,947. This application Oct. 16, 1989, Ser. No. 423,557

Claims priority, application Japan, Feb. 25, 1985, 60-36019; Mar. 19, 1985, 60-55017

Int. Cl.[5] G03B *7/08, 13/36*

U.S. Cl. 354—400 **2 Claims**



1. An exposure calculating device for use in a camera having a shutter, said shutter being adapted to be released in response to a shutter release operation, said exposure calculating device comprising:

means for automatically adjusting a focusing condition of an objective lens to produce an in-focus signal when the objective lens has been adjusted to its in-focus position;

means for producing a lock signal in response to a manual operation independent of the shutter-release operation,

the lock signal being effective even if the in-focus signal has not been produced;

means for measuring brightness of an object field to produce a brightness information corresponding to the measured brightness;

means for storing the brightness information;

means for controlling said storing means to store the brightness information in response to the in-focus signal or the lock signal; and

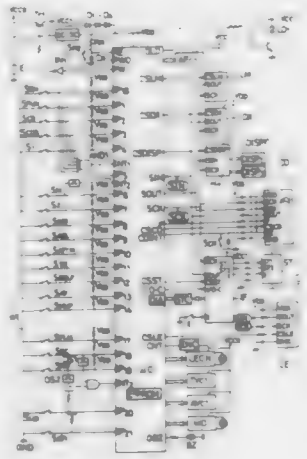
means for interrupting the operation of said controlling means when the brightness information has been stored in response to the lock signal even if the in-focus signal is produced.

5,006,877

CAMERA SYSTEM

Takehiro Katoh; Yoshihiko Azuma; Masayasu Hirano; Naohiro Kageyama; Toshihiko Ishimura; Kenji Tsuji, and Hiroshi Ootsuka, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 352,495, May 16, 1989, abandoned.
This application Apr. 17, 1990, Ser. No. 511,962
Claims priority, application Japan, May 16, 1988, 63-120305; May 28, 1988, 63-131289; May 28, 1988, 63-131290
Int. Cl.[5] G03B 7/00
U.S. Cl. 354—412 6 Claims



1. Camera system, comprising:

means for measuring brightness of a photographic scene to send a brightness value;

a plurality of exposure lines in which each exposure line selects a combination of an aperture value and a shutter speed value at each brightness value;

means for choosing one of the exposure lines;

an operable member;

means for driving a film in either of a first film driving mode in which the film is wound by only one frame in response to the operation of the operable member and a second film driving mode in which the film is wound frame by frame continuously as long as the operable member is operated; and

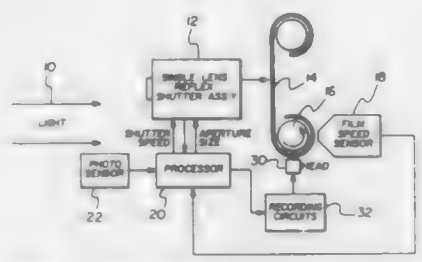
first selecting means for selecting one film driving mode from the first and second film driving modes is accordance with the exposure line chosen by the choosing means.

5,006,878

MAGNETIC RECORDING ON FILM OF BEYOND CAMERA EXPOSURE VALUE RANGE INDICATION

Robert P. Cloutier, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 11, 1989, Ser. No. 405,815
Int. Cl.[5] G03B 7/00
U.S. Cl. 354—412 7 Claims



1. A camera having a shutter assembly, means for sensing scene brightness, means for sensing film speed, and means for controlling shutter exposure time and shutter aperture size of the shutter assembly, said camera being suitable for photographically exposing successive frames of a film strip having a virtually transparent magnetic layer, and further comprising:

magnetic head means for recording in said magnetic layer of said film strip; and

a processor including means for:

a. computing an ideal exposure value from a film speed value and a scene brightness value furnished by said means for sensing said film speed and said means for sensing said scene brightness, respectively,

b. sensing maximum and minimum aperture sizes and shutter speed of which said shutter assembly is capable and computing therefrom an exposure value range of said camera, and

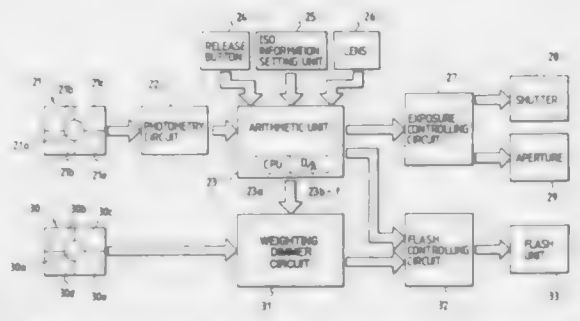
c. determining whether said ideal exposure value lies within said camera exposure value range and, if not, transmitting a beyond camera exposure value range indication to said magnetic head means for recording in said magnetic layer of said film strip in a location on said film strip adjacent or within a corresponding film frame.

5,006,879

ELECTRONIC FLASH LIGHTING DEVICE FOR CAMERA

Tadao Takagi, Yokohama, and Toshihiro Sato, Tokyo, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Sep. 21, 1989, Ser. No. 410,659
Claims priority, application Japan, Sep. 26, 1988, 63-238976
Int. Cl.[5] G03B 7/00
U.S. Cl. 354—413 14 Claims



1. An electronic flash lighting device having flash producing means to produce a flash emission for lighting a field to be photographed, comprising:

first light measuring means for measuring the brightness of the field at a non-flash-emission time of said flash producing means and outputting a corresponding first light measurement output;

second light measuring means for measuring the brightness of a plurality of divided areas of the field during flash emission of said flash producing means and outputting a plurality of corresponding second light measurement signals;

determining means for determining weights for said plurality of second light measurement signals in accordance with said first light measurement output prior to the start of flash emission of said flash producing means;

weighting means for weighting said plurality of second light measurement signals in accordance with the weights determined by said determining means; and

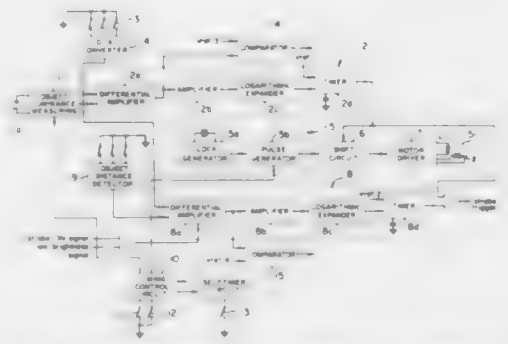
flash control means for controlling the stopping of flash emission of said flash producing means in accordance with the plurality of weighted second light measurement signals.

5,006,880

PROGRAMMABLE SHUTTER

Masuo Ogihara; Hajime Oda; Yoichi Seki, and Hiroshi Yamazaki, all of Yotsukaido, Japan, assignors to Seikosha Co., Ltd., Japan

Continuation of Ser. No. 85,979, Aug. 14, 1987, which is a division of Ser. No. 766,032, Aug. 15, 1985, Pat. No. 4,693,583.
This application Apr. 24, 1989, Ser. No. 342,660
Claims priority, application Japan, Aug. 15, 1984, 59-170277
Int. Cl.[5] G03B 7/087
U.S. Cl. 354—427 9 Claims



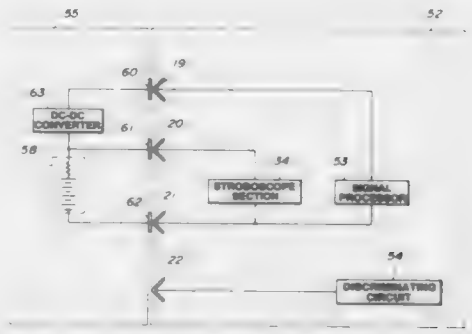
1. A programmable shutter for a camera comprising: a set of shutter sectors mounted to undergo displacement in opening and closing directions to define an exposure interval; sector driving means including a bidirectional stepping motor rotationally driveable in forward and reverse directions in response to forward and reverse driving pulses for effecting displacement of the shutter sectors in the opening and closing directions during the exposure interval; brightness measuring means for measuring the brightness of an object to be photographed during the displacement of the shutter sectors in the forward direction and producing a logarithmically compressed output signal indicative of the measured object brightness; means responsive to the output signal for processing the output signal to produce a processed signal and for logarithmically expanding the processed signal to produce a control signal after a lapse of time which is dependent on the measured object brightness to thereby determine the timing at which the shutter sectors are reversed from the forward direction to the reverse direction; and stepping motor driving means for applying forward driving pulses of a given phase to the stepping motor to effect forward stepwise rotation thereof and responsive to the control signal to forcibly reverse the phase of the driving pulses in coincidence with the control signal even during the application of a driving pulse to thereafter apply reverse driving pulses to the stepping motor to effect reverse stepwise rotation thereof.

5,006,881

BATTERY SUPPLYING APPARATUS FOR CAMERA

Yasumasa Kodama, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 11, 1989, Ser. No. 419,751
Claims priority, application Japan, Oct. 14, 1988, 63-259013
Int. Cl.[5] G03B 7/26; H04N 5/225
U.S. Cl. 354—484 12 Claims



5. An electric power supply system for a camera comprising:

image pick-up means for generating a signal representing an image in a field of view of the camera;

a signal processor for processing the signal from said image pick-up means into a recordable signal;

recording means for recording the recordable signal from said signal processor onto a recording medium;

strobe means for emitting stroboscopic light, said strobe means including a charging circuit being capable of supplying a large current for exciting a lamp to generate the stroboscopic light;

means for selectively holding a first battery package having a battery with known internal resistance or holding a second battery package having a battery with an internal resistance smaller than said known internal resistance where said first battery package and said second battery package have substantially identical dimensions;

discriminating means for determining whether said first battery package or said second battery package is held by said means for holding; and

voltage stabilizer means for stabilizing a voltage output from said first battery package and producing a substantially constant output voltage, wherein said signal processor receives the constant voltage from said voltage stabilizer when said discriminating means determines that said means for holding holds said first battery package.

5,006,882

IMAGE RECORDING APPARATUS

Keiichi Horikiri, Tokyo, Japan, assignor to Seiko Instruments Inc., Japan

Filed Aug. 3, 1989, Ser. No. 389,009
Claims priority, application Japan, Aug. 26, 1988, 63-112648[U]; Apr. 27, 1989, 1-108417
Int. Cl.[5] G03B 27/32
U.S. Cl. 355—27 27 Claims

1. An image forming apparatus for forming a latent image on a photosensitive medium having capsules containing chromogenic material and a radiation curable composition on one surface thereof and developing the latent image by rupturing the capsules and contacting the chromogenic material with a developer material, comprising:

exposure means for exposing the photosenaitive medium to light representative of an image to form a latent image thereof on the photosensitive medium;

a sheet having the developer material on one surface thereof;

feeding means for feeding the sheet into the image forming apparatus, the feeding means having suction means disposed at one end of a movable member, the other end of the member contacting the surface of the sheet at a point

of contact and being turnable around the point of contact, whereby the sheet is sucked by the suction means and lifted up by turning the suction means around the point of contact;



developing means for rupturing the capsules and contacting the chromogenic material with the developer material on the surface of the sheet; and

conveyor means for conveying the sheet fed by the feeding means to the developing means.

5,006,883

IMAGE FORMING APPARATUS

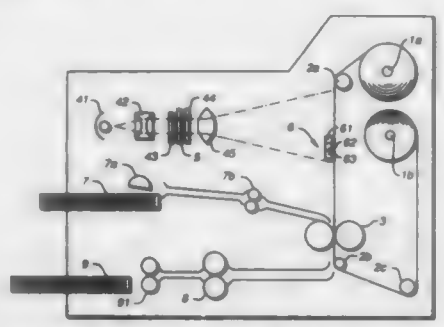
Kunio Ohashi, and Shoichi Nagata, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 27, 1989, Ser. No. 303,627

Claims priority, application Japan, Jan. 27, 1988, 63-16648

Int. Cl.[5] G03B *27/52*

U.S. Cl. 355—27 **6 Claims**



1. In an image forming apparatus of a static exposure type for forming a latent image by exposing a photosensitive body to image forming light by an optical system of a static exposure type and forming a visible image from said latent image on said photosensitive body, the improvement wherein said photosensitive body is a photosensitive sheet having one surface of sheet-like base material thereof coated with microcapsules encapsulating a light-curable agent and a colorless dye, and wherein said apparatus further comprises

an exposure detector disposed at a position facing said photosensitive body for detecting exposure of said photosensitive body when said photosensitive body is exposed to image forming light, and

a control unit for continuing image forming exposure of said photosensitive body until the cumulative light energy of exposure of said photosensitive body according to said exposure detector reaches a set value.

5,006,884

IMAGING DEVICE

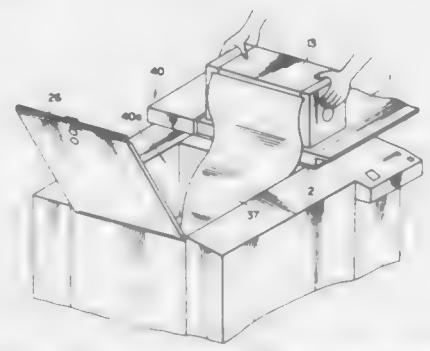
Ishida Kazuhito, Nagoya; Shibata Eiji, Ibi, and Makino Kazumasa, Tsushima, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jun. 2, 1989, Ser. No. 360,601

Claims priority, application Japan, Jun. 3, 1988, 63-138073

Int. Cl.[5] G03B *27/62*

U.S. Cl. 355—27 **5 Claims**



1. An imaging device employing a recording medium, said imaging device further comprises:

a tray member horizontally movable for placing an original thereon, said recording medium being exposed in accordance with an image of the original placed on said tray member:

a housing member for accomodating a cartridge containing said recording medium provided below said tray member said housing member having a cover openable when said tray member is located at a predetermined position; and

control means for controlling said tray member to be locked at said predetermined position when said housing member cover is opened, said control means comprises a crank member vertically displaceable in accordance with an operation of said cover and a locking member for locking said tray member at said predetermined position in accordance with an operation of said crank member.

5,006,885

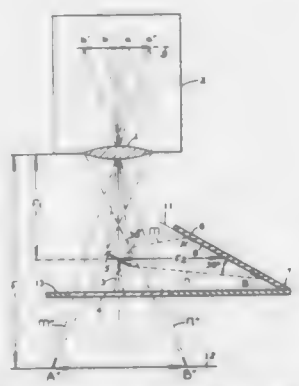
SUPERIMPOSING IMAGE APPARATUS

Nathan Greenspan, 3908 N. 29th Ave., Hollywood, Fla. 33020

Filed Sep. 10, 1990, Ser. No. 579,599

Int. Cl.[5] G03B *27/52, 27/70*

U.S. Cl. 355—43 **10 Claims**



1. A superimposing image apparatus for superimposing at least one first view on a second view, comprising optic means having a given focal length and an image plane for receiving said first and second views, at least one first mirror for reflecting said first view onto said image plane, wherein said first and second views are disposed at distances from said optic means equal to said given focal length, and said first mirror is disposed at a distance from said optic means different from said given focal length.

5,006,886

PHOTOGRAPHIC PRINTER

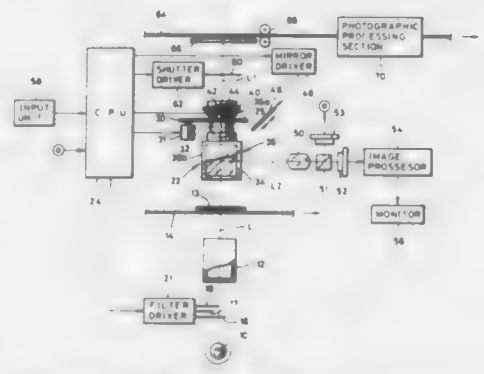
Kenji Suzuki, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 19, 1990, Ser. No. 511,138

Claims priority, application Japan, Apr. 20, 1989, 1-100963

Int. Cl.[5] G03B *27/44*

U.S. Cl. 355—46 **11 Claims**



1. A photographic printer comprising:

a light source for projecting printing light toward a photographic film to print an image, recorded on said photographic film, on a photosensitive material;

a beam splitter for reflecting a part of the printing light passing through said photographic film perpendicularly to the printing light path;

sensor means for receiving said part of said printing light;

a zoom lens, fitted to said beam splitter as a unit, for printing an image of a size equal to or smaller than a frame size of 135 film, said zoom lens being disposed between said beam splitter and said photosensitive material;

at least one fixed focus lens for printing images of a size other than that equal to or smaller than said frame size of said 135 film;

setting means for setting either one of said zoom lens or said at least one fixed focus lens in the printing light path between said photographic film and said photographic material;

reflection means, removably insertable in the printing light path between said fixed focus lens and said photographic film when said fixed focus lens is set in the printing light path, for reflecting light perpendicularly to the printing light path toward said sensor means; and

means for driving said reflection means to move in and out of said printing light path, when said at least one fixed focus lens is set in said printing light path.

5,006,887

IMAGE FORMING APPARATUS

Mitsuru Ogura, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 14, 1990, Ser. No. 479,866

Claims priority, application Japan, Mar. 7, 1989, 1-25635[U]; Mar. 7, 1989, 1-25636[U]; **Mar. 7, 1989, 1-54355**

Int. Cl.[5] G03B *27/58*

U.S. Cl. 355—72 **14 Claims**

1. An image forming apparatus comprising:

a photosensitive sheet wound in a roll;

a carriage that contains said photosensitive sheet and that is freely installed in and removed from the main body of said apparatus;

copy paper whereon a latent image that was formed on said photosensitive sheet through an exposure operation is transferred;

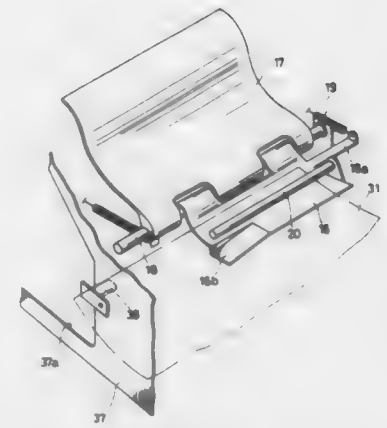
pressure developing rollers that superpose and press said photosensitive sheet and said copy paper;

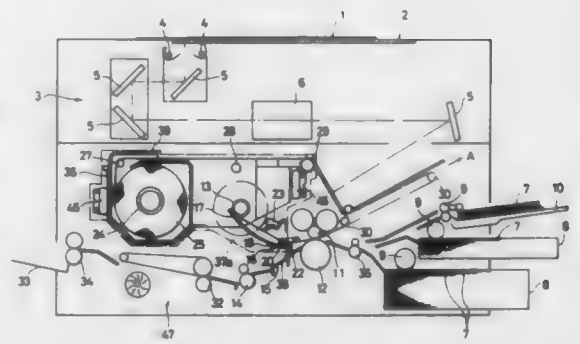
winding shaft whereon said photosensitive sheet is wound after use;

loading guide plate that guides, together with said pressure developing rollers, the forefront portion of said photosensitive sheet toward said winding shaft through a loading mechanism, when said photosensitive sheet is loaded in the main body of said apparatus;

a horizontal shaft expanding in the cross direction of said loading guide plate and in parallel with the surface of said loading guide plate;

loading guide plate maintaining means that is connected to an edge section of said loading guide plate through a junction section;





a loading guide driving member mounted on a member of the main body of said apparatus, that drives said loading guide plate to a loading position when said loading guide plate is removed together with said carriage;

winding sensing means that functions in accordance with a stretching action of said photosensitive sheet when the forefront portion of said photosensitive sheet is wound on said winding shaft; and

copy paper guide plate that guides said copy paper whereon a latent image was transferred during the image forming operation, in a prescribed transport direction,

said loading guide plate being capable of pivoting freely, formed integrally with said carriage, and installed on the opposite side of a jam processing operation section located inside said apparatus.

5,006,888

COPYING DEVICE FOR MODIFYING (DISTORTING) FILM PATTERNS

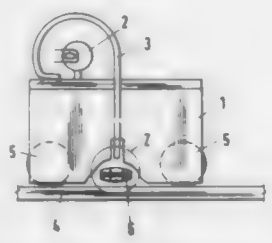
Michael Wuiff, Grambeker Weg 162, D-2410 Mölln, Fed. Rep. of Germany

Filed Nov. 30, 1989, Ser. No. 444,059

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1988, 3840568

Int. Cl.[5] G03B *27/10*

U.S. Cl. 355—84 **7 Claims**



1. Device for the modification (distortion) of film patterns which are arranged on a film to be exposed, are moved relative to the latter corresponding to a desired elongation or compression, and are exposed by means of a light source which is moved over the film pattern and the film in the axial direction determined by the relative movement between the film pattern and the film, wherein a line diaphragm is provided between the film pattern and the film on the one hand and the light source on the other hand, which line diaphragm can be moved along with the latter, characterized in that the light source (2) is substantially enclosed in a screen-like manner by a light collecting foil (3), and one edge of the foil extends parallel to the line diaphragm (6) and is adjacent to it.

5,006,889

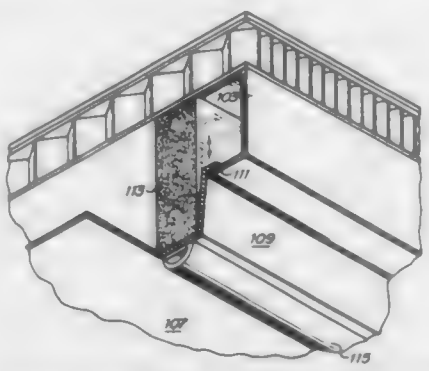
GRAPHIC MATERIAL REGISTRATION APPARATUS AND METHOD AND VACUUM HOLD DOWN APPARATUS THEREFOR

Ernest Ohlig, 2306 Holiday Rd., Newport Beach, Calif. 92660

Filed May 25, 1990, Ser. No. 528,431

Int. Cl.[5] G03B *27/20*

U.S. Cl. 355—91 **9 Claims**



1. A vacuum blanket for use with a radiation-transmissive platen disposed to secure a photographic sheet for exposure to radiation therethrough, the assembly comprising:

a flexible, substantially gas-impervious blanket having substantial dimensional stability disposed on one side of the radiation transmissive platen to form a seal therewith substantially about a peripheral boundary thereof and to receive the photographic sheet within the peripheral boundary; said blanket including side rails along the sides of the blanket oriented substantially normal thereto for supporting the blanket for movement relative to the radiation transmissive platen.

5,006,890

IMAGE FORMING APPARATUS WITH A PROVISION FOR DESIGNATING DIFFERENT COLORED IMAGE AREAS

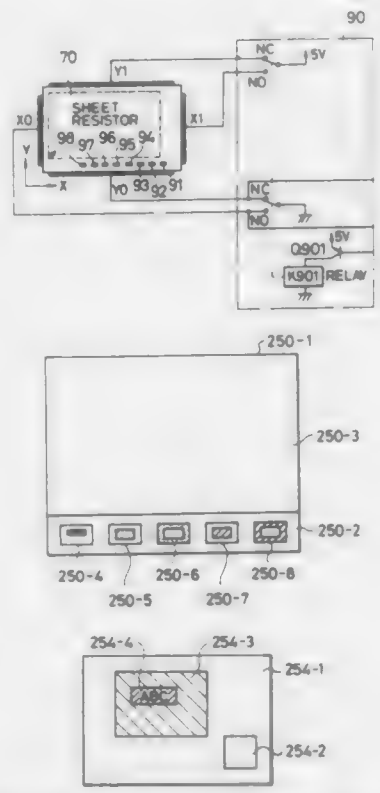
Masato Ishida, Yokohama; Hiroaki Takeda, Kawasaki; Kazuo Watanabe; Akira Suzuki, both of Yokohama; Nobuyuki Suzuki, Musashino; Isamu Sato, and Kazuki Miyamato, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 930,911, Nov. 17, 1986, abandoned. This application Aug. 29, 1989, Ser. No. 401,569

Claims priority, application Japan, Nov. 18, 1985, 60-258107; Nov. 18, 1985, 60-258108; Nov. 18, 1985, 60-258113; Nov. 18, 1985, 60-258114; Nov. 18, 1985, 60-258115; Nov. 18, 1985, 60-258116; Nov. 18, 1985, 60-258118

Int. Cl.[5] G03G *15/00, 15/01, 15/04*

U.S. Cl. 355—202 **21 Claims**



1. An image forming apparatus comprising:

exposing means for exposing an original;

designating means for designating an arbitrary area of an original;

image forming means for forming said exposed original image on a recording member, wherein said image forming means includes predetermined image forming means for forming a predetermined image within said designated area without exposing the original by said exposing means, wherein said image forming means includes a first visualizing unit and a second visualizing unit, wherein said first visualizing unit visualizes an image with a first color, and wherein said second visualizing unit visualizes an image with a second color; and

control means for controlling said image forming means such that said predetermined image and said original image are formed within said designated area with an overlap operation, wherein said control means controls said image forming mean such that said predetermined image is formed with the first color and such that said original image is formed with the second color.

5,006,891

IMAGE FORMING APPARATUS CAPABLE OF PERFORMING SERIAL PAGE COPY

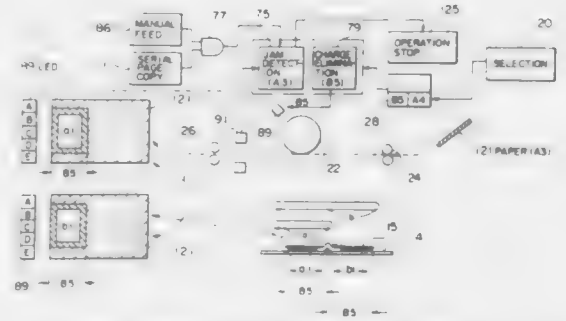
Seitaro Kasahara; Haruo Itakura, and Susumu Kurihara, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jul. 16, 1990, Ser. No. 552,939

Claims priority, application Japan, Jul. 18, 1989, 1-185100

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—208 **6 Claims**



1. An image forming apparatus with a serial page copy function, wherein, when a copy for a document such as a book is carried out, the serial page copy function performs a copy for each of pages by separately sequentially scanning a first page and a second page of the document placed on a first portion and a second portion of a platen by an optical system, comprising:

serial page copy selection means;

memory means for memorizing a serial copy sheet size enabling serial page copy in case that manual feed mode is selected as a sheet feed mode and the serial page copy is to be carried out on the manual feed mode; and

indication means for selecting the same sheet size as the registered serial copy sheet size when the serial page copy is carried out on the manual feed mode and indicating the size.

5,006,892

XEROGRAPHIC SETUP AND OPERATING SYSTEM FOR ELECTROSTATOGRAPHIC REPRODUCTION MACHINES

Daniel C. Roehrs, Webster; Angelo T. Caruso, Rochester; Robert E. Grace; Robert M. Mara, both of Fairport; John G. Elliot, Penfield; Patricia J. Saraceno, Rochester, and James M. Pacer, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 344,774, Apr. 27, 1989. This application Jun. 6, 1990, Ser. No. 534,066

Int. Cl.[5] F03G *15/00;* **G03G** *15/04*

U.S. Cl. 355—208 **4 Claims**

1. A xerographic imaging process wherein latent electrostatic images are created on a moving photoreceptor through exposure of image originals by flash exposure means, with non-image areas of said photoreceptor being discharged by ID erase lamp means, comprising the steps of:

(a) measuring the illumination intensity of said flash exposure means for each image; and

(b) adjusting the intensity of said ID erase lamp means so that the intensity of said ID erase lamp means for each

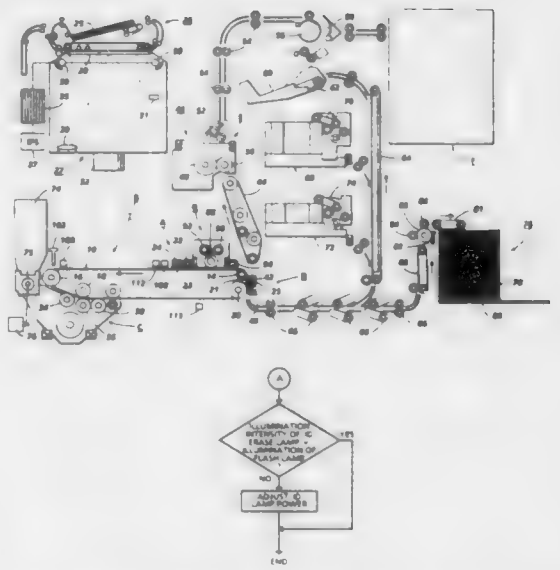


image is substantially equal to the intensity of said flash exposure means.

5,006,893

IMAGE FORMING APPARATUS WITH IMPROVED TONER REPLENISHMENT

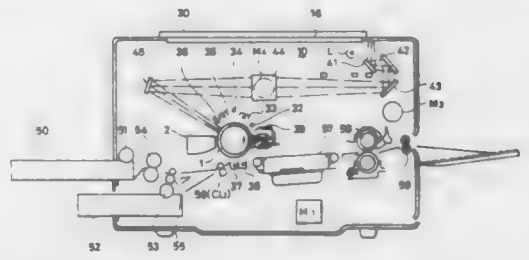
Tomoaki Yokoyama, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 16, 1988, Ser. No. 285,722

Claims priority, application Japan, Dec. 18, 1987, 62-322246; Dec. 18, 1987, 62-322247

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—208 **22 Claims**



1. An image forming apparatus comprising:

a photoreceptor on which a latent electrostatic image is formed;

latent electrostatic image forming means for forming a latent electrostatic image on said photoreceptor;

developing means for developing the latent electrostatic image on said photoreceptor by using a developer containing toner;

concentration detecting means for detecting toner concentration of said developer;

supplying means for supplying toner to said developing means;

first control means for activating said supplying means when said toner concentration detected by said concentration detecting means is lower than a prescribed concentration;

setting means for setting image forming condition; and

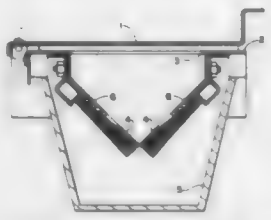
second control means for activating said supplying means when the image forming condition set by said setting means coincides with a prescribed condition irrespective of detection of toner concentration of the developer by the concentration detecting means.

5,006,894

DUST CONTAINMENT CAP FOR A PRINTING DEVICE EMPLOYING TONER

Scott S. Morris, Oklahoma City; Danny B. McGehee, Moore, and Randolph S. Canham, Yukon, all of Okla., assignors to Bull HN Information Systems Inc., Billerica, Mass.

Filed Dec. 12, 1989, Ser. No. 449,642
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—215 **9 Claims**



1. In an electrostatic printing device employing powdered toner and having a receptacle for receiving said powdered toner, said receptacle having a substantially horizontal top platelike member having a substantially rectangular opening for replenishing said toner,

a dust containment cap for use in said opening, the dust containment cap comprising:

a pair of brushes each comprising an elongate member substantially equal in length to the length of the rectangular opening and having a plurality of bristles protruding from the elongate member along substantially all of its length,

the bristles being substantially parallel to one another, substantially coplanar, substantially perpendicular to the elongate member, and slightly longer than half the width of the rectangular opening,

the brushes being mounted by their elongate members to the underside of the top platelike member along opposite long sides of the rectangular opening, each with its bristles substantially horizontal and oriented toward the principal axis of the rectangular opening,

whereby the tips of the bristles of each brush overlap slightly with the tips of the bristles of the other brush along a line substantially parallel to and slightly below the principal axis of the rectangular opening,

whereby further, the bristles form around a nozzle of a toner dispenser inserted through the opening,

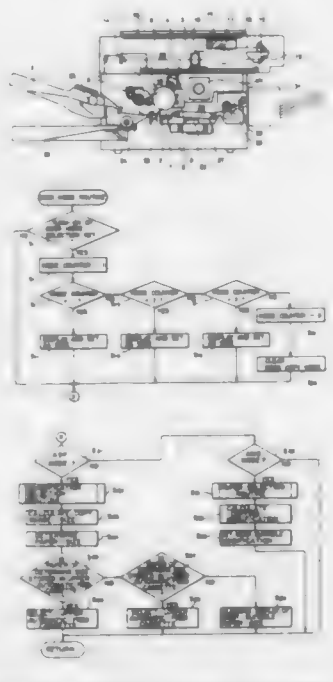
and whereby further, toner particles which become airborne within the receptacle in conjunction with the dispensing of toner through the nozzle are impeded by the bristles from escaping from the receptacle.

5,006,895

ELECTROPHOTOGRAPHIC COPYING APPARATUS WITH BOOK MODE MAGNIFICATION CAPABILITY

Kaoru Hashimoto, Hyogo, and Hiroyuki Ideyama, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 15, 1988, Ser. No. 219,725
Claims priority, application Japan, Jul. 17, 1987, 62-179711
Int. Cl.[5] G03G *15/04, 21/00*
U.S. Cl. 355—243 **16 Claims**



1. An electrophotographic copying apparatus of a slit exposure type, comprising:

a document platen having an original placing area on which an original to be copied is placed,

optical scanning means for scanning the original on said document platen and projecting an image of the original, said optical scanning means being capable of changing a projection magnification,

paper selection means for selecting a size of paper on which the image of the original is to be formed,

paper feed means including a plurality of paper feed sections storing paper sheets of different sizes, for feeding paper sheets of the size selected by said paper selection means from the corresponding one of said paper feed sections,

mode selection means for selecting either a normal mode or a division mode, said normal mode being adapted to enable the image of the original on said original placing area to be formed as it is on the paper sheet fed by said paper feed means, and said division mode being adapted to enable said original placing area to be divided into two areas and to enable images of the original on the divided areas to be formed individually on the respective paper sheets fed by said paper feed means,

area entry means for entering an area size defined by the division of said original placing area in said division mode, and

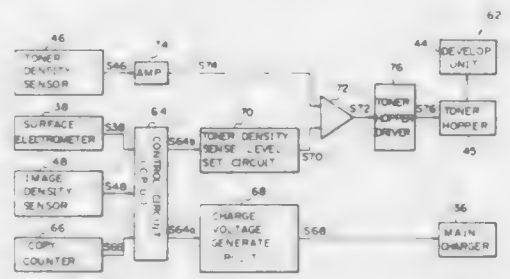
image forming means for automatically calculating, in said division mode, the projection magnification to be set in said optical scanning means based on the paper size selected by said paper selection means and the area size entered by said area entry means, thereby to execute image formation by using the calculated projection magnification.

5,006,896

IMAGE DENSITY CONTROL METHOD FOR AN IMAGE FORMING APPARATUS

Yasushi Koichi, Yamato; Norimasa Sohmiya, Soka, and Kazunori Karasawa, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 6, 1989, Ser. No. 431,826
Claims priority, application Japan, Nov. 8, 1988, 63-280431
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—246 **9 Claims**



1. A method for controlling a density of an image produced by an image forming apparatus constantly to an adequate density by using an image density sensor responsive to a density of a toner image which is formed on an image carrier of said apparatus by developing a latent image by a developer, and a toner density sensor responsive to a toner density of said developer, said toner density sensed by said toner density sensor being compared with a density sensing level set beforehand for adjusting an amount of toner supply in response to a result of comparison, said method comprising the steps of:

(a) electrostatically forming a latent image of a reference image having a predetermined pattern on the image carrier, and developing said latent image by a toner;

(b) sensing a density of a developed toner image of the reference image by the image density sensor;

(c) changing, when the sensed density of the toner image of the reference image lies in a predetermined controlled range, the density sensing level of the toner density sensor depending on a degree of said sensed density and controlling, when said sensed density does not lie in said predetermined image controllable range, the amount of supply in response to an output of the toner density sensor without changing said density sensing level and by using said density sensing level being used; and

(d) controlling, when the density of the toner image sensed by step (b) lies in an adequate image density range, controlling the supply of toner in response to an output of toner density sensor without changing the density sensing level and by using said density sensing level being used, and executing the step (c) when said density does not lie in said adequate image density range.

5,006,897

DETERMINATION OF CHARGE-TO-MASS RATIO

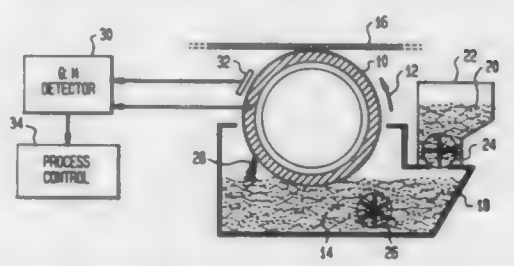
Donald S. Rimai, Webster; Joseph F. Laukaitis; Mark Zaretsky, both of Rochester, and Bruno Primerano, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 2, 1990, Ser. No. 546,983
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—246 **11 Claims**

1. Electrostatographic apparatus comprising means for developing a latent electrostatic image by the application of toner particles, said apparatus comprising:

a piezo device having an electrode capacitively coupled to another member and positioned to interact with toner particles used in the apparatus;

means for periodically electrically biasing the electrode to attract toner particles; and



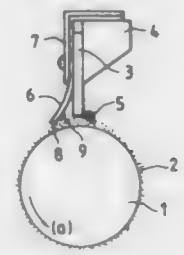
means for detecting the frequency shift of the piezo device due to the mass of attracted toner particles.

5,006,898

DEVELOPING APPARATUS FOR XEROGRAPHY

Junji Kobayashi; Hiroyoshi Tokoro; Kiyoshi Niinuma; Kensei Hosoya, and Masao Chiba, all of Ibaraki, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1989, Ser. No. 337,872
Claims priority, application Japan, Apr. 15, 1988, 63-94184
Int. Cl.[5] G03G *15/09*
U.S. Cl. 355—253 **2 Claims**



1. A developing apparatus for xerography comprising:

a developing roll;

a regulator member for controlling developer thickness located proximate to said developing roll; and

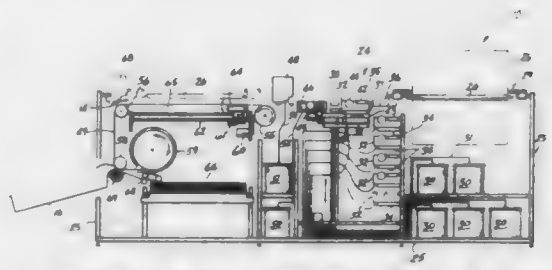
an elastic plate member arranged to elastically apply pressure, independently of said regulator member, so as to uniformly spread the developer across a length of said developing roll.

5,006,899

DEVELOPING SYSTEM FOR AN ELECTROPHOTOGRAPHIC MULTICOLOR IMAGING APPARATUS

David P. Bujese, Butler, N.J., assignor to Olin Hunt Specialty Products Inc., Cheshire, Conn.

Filed Sep. 6, 1989, Ser. No. 403,642
Int. Cl.[5] G03G *15/10*
U.S. Cl. 355—256 **36 Claims**



1. A multicolor imaging apparatus having an improved developing system for applying color toner to a charged latent image, comprising in combination:

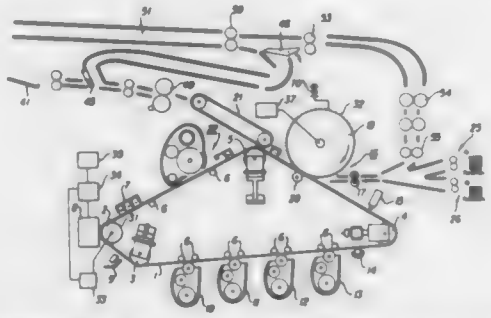
(a) means for providing the charged latent image:
(b) a plurality of individual developing units each adapted to contain a different color toner for developing the latent image, all of the individual developing units being retained in a first remote storage position, each developing unit being selectively moveable between the first remote storage position and a common second operating position in a processing path adjacent the charged latent image, the second operating position being the same for the plurality of developing units; and
(c) means to selectively transport all of the plurality of developing units between each of the first remote storage positions and the common second operating position.

5,006,900

TRANSFER APPARATUS HAVING VACUUM HOLES AND METHOD OF MAKING SUCH APPARATUS

Richard C. Baughman, Geneseo; David J. Ellingham, Rochester; William Y. Fowlkes, Brockport; Bruce J. Rubin, and Frank S. Stepanik, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 3, 1989, Ser. No. 375,110
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—271 **10 Claims**



1. Apparatus for transferring a toner image from an image-bearing member to a receiving sheet, said apparatus comprising:
a transfer member having a surface and having vacuum opening means to said surface,
means for applying a vacuum to said vacuum opening means to hold a receiving sheet on the surface of the transfer member, and
means for creating an electric field urging a toner image toward a receiving sheet held on said surface,
characterized in that said vacuum opening means include a line of closely spaced, laser drilled holes, said holes having a diameter at their narrowest point of 0.65 mm or less and being spaced to provide a concentration of at least 4 to a centimeter.

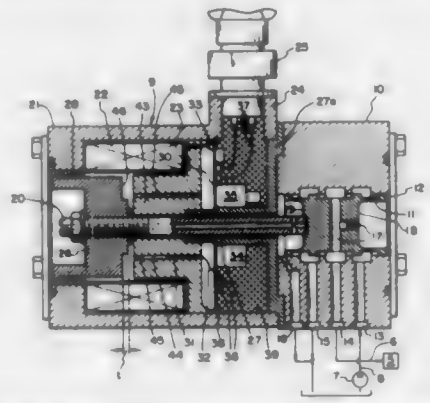
5,006,901

ELECTROMAGNET WITH PLUNGER

Heinrich Dick, Nattheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Feb. 14, 1990, Ser. No. 479,623
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1989, 3905023
Int. Cl.[5] H01F *7/08*
U.S. Cl. 335—258 **12 Claims**

1. An electromagnet and plunger assembly comprising:
a plunger,
a fixed essentially ring-shaped solenoid coil,
a fixed pole component extending from one end of said coil into the interior of said coil,
said plunger being movable in an axial direction and extending from the other end of said coil into the interior of said coil,
a control means for adjusting armature pull comprising a sensor means for measuring magnetic flux and thus magnetic induction, and
an annular gap coaxial with said electromagnet which extends through said fixed pole component so that said pole



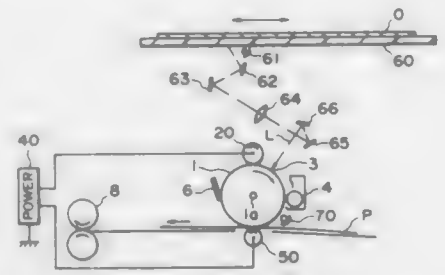
component is subdivided into parts that are magnetically insulated from each other,
said sensor means being located in the annular gap between said two pole component parts.

5,006,902

IMAGE FORMING APPARATUS HAVING A PREDETERMINED VOLTAGE APPLIED TO THE TRANSFER MEMBER

Junji Araya, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1988, Ser. No. 213,121
Claims priority, application Japan, Jun. 30, 1987, 62-163562
Int. Cl.[5] G03G *15/14, 15/02*
U.S. Cl. 355—271 **28 Claims**



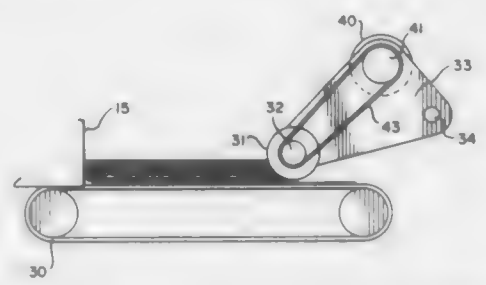
1. An image forming apparatus, comprising:
an image bearing member;
image forming means for forming an image on a surface of said image bearing member; and
transfer means for transferring the image formed on said image bearing member by said image forming means onto an image receiving member, said transfer means including a transfer member contacted to said image bearing member and voltage application means for applying a voltage between the transfer member and the image bearing member to transfer the image from said image bearing member to the image receiving material,
wherein the voltage which is applied between the transfer member and the image bearing member from said voltage application means at least during image transfer action by said image transfer means, is lower than a charge starting voltage of the transfer member between itself and the surface of the image bearing member.

5,006,903

SHEET SEPARATING DEVICE AND APPARATUS FOR USE THEREIN

Floyd E. Stearns, Warsaw, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 16, 1989, Ser. No. 422,316
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—308 **8 Claims**



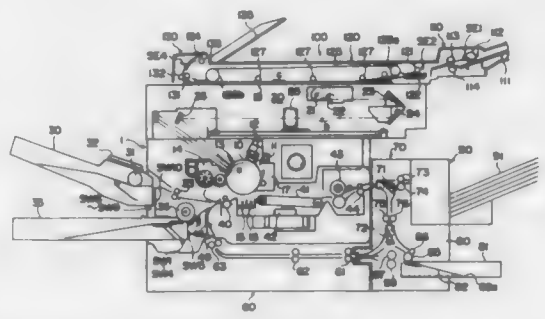
1 A device for separating a sheet from a stack of sheets, said device comprising:
feed means for engaging an outside sheet of said stack and for feeding said outside sheet along a path,
rotatable retard means for forming a nip with said feed means to prevent double feeds of said sheets between said feed means and said retard means, said retard means including
a rotatable retard member,
a brake for said retard member, said brake being adjustable between a first condition in which it exerts a first brake force on said retard member sufficient to prevent rotation of said retard member when two sheets are in said nip but permit rotation when only one sheet is in said nip, and a second condition in which said brake exerts a second brake force that is substantially reduced below the first brake force to facilitate feeding of a single sheet, and
logic and control means having means for adjusting said brake from its first condition to its second condition when only one sheet remains in said stack of sheets.

5,006,904

COPYING APPARATUS PROVIDED WITH AUTOMATIC DOCUMENT FEEDER

Hirokazu Matsuo, and Hiroyasu Nagato, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 188,798, Apr. 29, 1988, abandoned.
This application Oct. 30, 1989, Ser. No. 428,413
Claims priority, application Japan, May 1, 1987, 62-108624; May 12, 1987, 62-115336; May 12, 1987, 62-115337; May 12, 1987, 62-115338; May 12, 1987, 62-115339; May 18, 1987, 62-121652
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—313 **10 Claims**



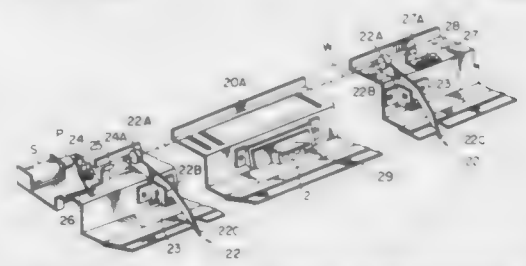
1. A copying apparatus comprising:
automatic document feeding means capable of operating in a first mode where one original document fed from document feeding means is placed onto a platen, and in a second mode where a pair of original documents fed from said document feeding means are serially placed onto said platen in the document feeding direction;
select means for selecting either the first mode or second mode;
means for feeding copy sheets to an image forming portion;
detect means for detecting the sizes of sheets in said copy sheet feeding means; and
inhibition means for inhibiting the selection of the second mode, when the longer sides of the sheets stored in said sheet feeding means are perpendicular to the sheet transport direction.

5,006,905

SEPARATING APPARATUS OF TRANSFER MATERIAL

Hisao Satoh, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Sep. 28, 1989, Ser. No. 413,847
Claims priority, application Japan, Oct. 7, 1988, 63-254304
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—315 **3 Claims**



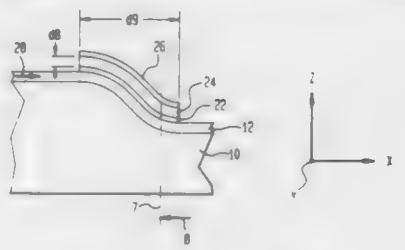
1. A separating device for separating a transfer material from a surface of a photoreceptor of an electrophotographic copying apparatus after a toner image is transferred from said photoreceptor onto said transfer material, said separating device comprising;
a supporting member, placed parallel to said photoreceptor, for supporting a pivotable claw member thereon,
said claw member, adapted for separation of said transfer material from said photoreceptor, having a weight member on a first end and a tip on a second end opposite said first end whereby said tip comes into contact with said surface of said photoreceptor by the weight of said weight member, and
a wire member, provided through said weight member for pivoting said claw member so that said tip is removed from contact with said surface by tensioning said wire member.

5,006,906

INTEGRATED SEMICONDUCTOR WAVEGUIDE/PHOTODETECTOR

Robert J. Deri, Atlantic Highlands, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Aug. 29, 1988, Ser. No. 237,087
Int. Cl.[5] H01L *29/161, 29/205, 29/225*
U.S. Cl. 357—16 **13 Claims**



1. An integrated optical device comprising:
a substrate having a step region in one main planar surface thereof,
means including an optical signal waveguiding layer having a straight portion on said main planar surface and a curved

nonplanar portion overlying said step region for propagating an optical signal along said planar surface toward and over said step region,

and means including a curved nonplanar photodetecting layer overlying substantially the entire curved nonplanar portion of said waveguiding layer in said step region for detecting in said step region the optical signal propagated along said planar surface toward and over said step region.

5,006,907

CROSSTALK PREVENTING LASER DIODE ARRAY

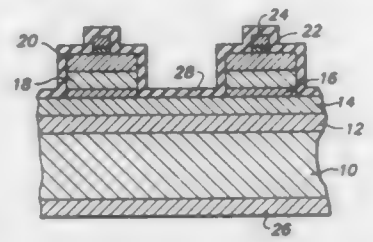
Toshiro Hayakawa, Tokyo, Japan, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 16, 1990, Ser. No. 465,697

Claims priority, application Japan, Jun. 23, 1989, 1-161792

Int. Cl.[5] H01L *33/00, 27/12, 29/161;* **H01S** *3/19*

U.S. Cl. 357—17 **4 Claims**



1. In a light-emitting diode array in which in each light-emitting diode carriers are injected from a window layer into the surface of a light emission layer, a diode junction being formed between the window layer and emission layers, comprising:

a thin carrier barrier layer having a thickness less than 0.1 micron and placed on the emission layer surface opposite to the junction side surface, with the carrier barrier layer having a wider energy gap than that of the emission layer to prevent the diffusion of carriers injected into the emission layer from the heterojunction side; and

a light absorption layer which connects each diode and being displaced on the surface of the carrier barrier layer opposite to the side having the interface between the carrier barrier layer and the emission layer, with the absorption layer having an energy gap that is the same as or narrower than the energy gap of the emission layer and suppresses crosstalk between adjacent light-emitting diodes.

5,006,908

EPITAXIAL WURTZITE GROWTH STRUCTURE FOR SEMICONDUCTOR LIGHT-EMITTING DEVICE

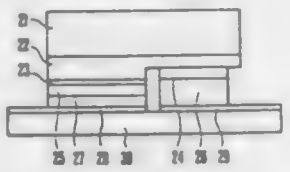
Takashi Matsuoka, and Toru Sasaki, both of Ibaragi, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Feb. 12, 1990, Ser. No. 479,068

Claims priority, application Japan, Feb. 13, 1989, 1-33279

Int. Cl.[5] H01L *33/00*

U.S. Cl. 357—17 **7 Claims**



1. An epitaxial growth structure for a semiconductor light-emitting device, comprising:

a sapphire substrate having a substantially (01$\bar{1}$0) face (M face); and

a wurtzite type Group III nitride mixed crystal semiconductor single crystal film epitaxially grown on said substrate.

5,006,909

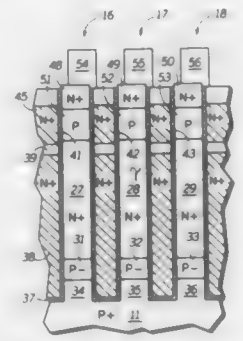
DRAM WITH A VERTICAL CAPACITOR AND TRANSISTOR

Yasunobu Kosa, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 30, 1989, Ser. No. 429,952

Int. Cl.[5] H01L *29/78*

U.S. Cl. 357—23.6 **12 Claims**



1. A memory array formed in a semiconductor substrate having a first conductivity type and a first doping concentration, comprising:

a plurality of conductive bit lines;

a plurality of pillars of monocrystalline semiconductor material extending from the substrate, each having a first layer reaching a first height and which is the first conductivity type and of a second doping concentration which is less than the first doping concentration, a second layer above the first layer reaching a second height and which is a second conductivity type, a third layer above the second layer reaching a third height and which is the first conductivity type, and a fourth layer above the third layer reaching a fourth height and in contact with a corresponding one of the plurality of conductive bit lines;

a conductive fill insulated from and surrounding the plurality of pillars to a fifth height which is below the second height;

an insulating layer above the conductive fill and surrounding the plurality of pillars to a sixth height which is below the second height; and

a plurality of conductive word lines insulated from and at least partially surrounding the third layers of corresponding pillars of the plurality of pillars to a seventh height which is greater than the third height but less than the fourth height.

5,006,910

SEMICONDUCTOR MEMORY DEVICE AND METHOD FOR PRODUCING THE SAME

Masao Taguchi, Sagamihara, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 810,255, Dec. 18, 1985, abandoned. This application Jul. 21, 1988, Ser. No. 222,305

Claims priority, application Japan, Dec. 29, 1984, 59-279911

Int. Cl.[5] H01L *29/68, 29/78, 27/02*

U.S. Cl. 357—23.6 **6 Claims**

1. A semiconductor memory device, comprising:

a semiconductor substrate having a major surface and a trench with first and second sidewalls formed therein, the first sidewall being in a first plane;

a field oxide layer selectively formed on the major surface of said semiconductor substrate, said field oxide layer having a major surface in a second plane, and a minor surface of said field oxide layer forming a continuation of said first sidewall substantially in the first plane;

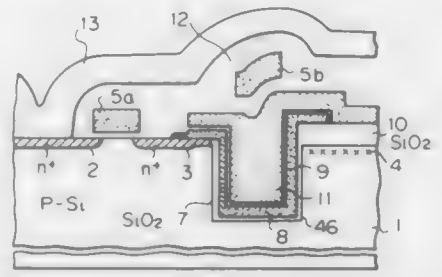
an insulating layer formed in the trench, covering said first sidewall and the minor surface of said field oxide layer, and extending to and being substantially flush with the major surface of said semiconductor substrate along said second sidewall; and

a capacitor comprising:

a conductive layer formed on said insulating layer, a first part of said conductive layer being formed on a part of said major surface of said field oxide layer and a second part of said conductive layer being formed in a third plane lower than the second plane and on the major surface of said substrate so as to cover the portion of said insulating layer that is flush with the major surface of said substrate;

a dielectric layer formed on at least the first and second parts of said conductive layer; and

an electrode formed on said dielectric layer, said electrode having a first portion formed over the second part of said conductive layer.



5,006,911

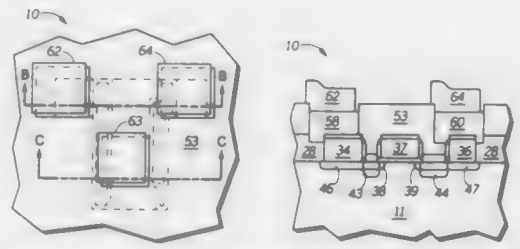
TRANSISTOR DEVICE WITH HIGH DENSITY CONTACTS

Richard D. Sivan, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 2, 1989, Ser. No. 415,833

Int. Cl.[5] H01L *29/78*

U.S. Cl. 357—23.11 **9 Claims**



1. An integrated circuit device formed in a substrate, comprising:

an active region defined by walls of a field oxide, said active region comprising a stem portion running from a top end to a bottom end, a left branch extending left substantially orthogonally from the stem on a left side of the stem portion, and a right branch extending right substantially orthogonally from the stem portion on a right side of the stem portion;

a conductive strip aligned along an intermediate portion of the stem portion, spaced from the left side and right side of the stem portion, and contained within the stem portion, said strip terminating at the field oxide at the top and bottom ends of the stem portion;

a first doped region in the substrate in the stem portion along the left side of the stem portion and a first side of the conductive strip;

a second doped region in the substrate in the stem portion along the right side of the stem portion and a second side of the conductive strip;

a first raised conductive material overlying and contained within left branch and having a boundary partially defined by a first portion of the field oxide;

a second raised conductive material overlying and contained within the right branch;

an insulating material overlying the active region, said insulating material having a first hole over the first raised conductive material, a second hole over the second raised conductive material, and a third hole over the conductive strip;

a first contact in the first hole which makes electrical contact with the first raised conductive material;

a second contact in the second hole which makes electrical contact with the second raised conductive material; and

a third contact in the third hole which makes electrical contact with the conductive strip.

5,006,912

HETEROJUNCTION BIPOLAR TRANSISTOR WITH SIGE

Colin Smith, Bawdsey, and Anthony D. Welbourn, Ipswich, both of England, assignors to British Telecommunications public limited company, United Kingdom

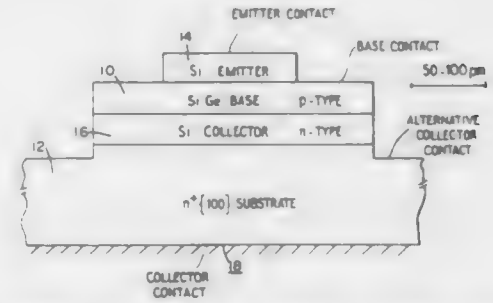
PCT No. PCT/GB88/00289, § 371 Date Jun. 1, 1989, § 102(e) Date Jun. 1, 1989, PCT Pub. No. WO88/08206, PCT Pub. Date Oct. 20, 1988

PCT Filed Apr. 14, 1988, Ser. No. 368,362

Claims priority, application United Kingdom, Apr. 14, 1987, 8708926

Int. Cl.[5] H01L *29/72*

U.S. Cl. 357—34 **17 Claims**



1. A heterojunction bipolar transistor having a doped silicon collector layer of a first conductivity type on a silicon substrate and an emitter of said first conductivity type which comprises an epitaxial layer of silicon grown on a silicon and germanium base layer of a second conductivity type which is grown on said silicon collector, wherein the active region of the transistor comprises a silicon/silicon and germanium strained lattice layer disposed between said emitter and collector layers, the lattice strain being such as to produce a predetermined valence band offset at the emitter/base junction.

5,006,913

STACKED TYPE SEMICONDUCTOR DEVICE

Kazuyuki Sugahara; Shigeru Kusunoki, and Takashi Ipposhi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 2, 1989, Ser. No. 430,402

Claims priority, application Japan, Nov. 5, 1988, 63-279631; Jul. 27, 1989, 1-196167

Int. Cl.[5] H01L *27/02, 29/68, 27/12, 29/10*

U.S. Cl. 357—41 **4 Claims**

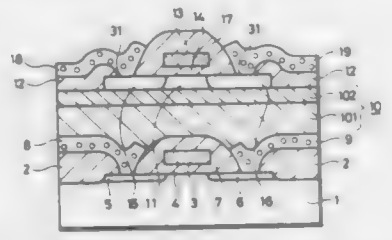
1. A stacked type semiconductor device, comprising:

a first semiconductor layer having a main surface on which a first semiconductor element is formed;

an interlayer insulating film having a first insulating layer having a glass transition point of no higher than 750° C. formed on said first semiconductor element and a second insulating layer having a glass transition point higher than

750° C. and a thickness no less than 2000Å and no more than 1 μm formed on said first insulating layer; and

a second semiconductor layer formed on said second insulating layer of said interlayer insulating film with peripheral portions isolated to have an island-like shape, having a main surface on which a second semiconductor element is formed.



5,006,914

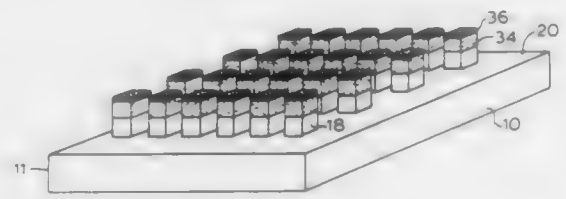
SINGLE CRYSTAL SEMICONDUCTOR SUBSTRATE ARTICLES AND SEMICONDUCTOR DEVICES COMPRISING SAME

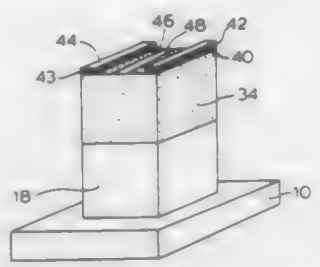
Charles P. Beetz, Jr., New Milford, Conn., assignor to Advanced Technology Materials, Inc., New Milford, Conn.

Filed Dec. 2, 1988, Ser. No. 278,964

Int. Cl.[5] **H01L** *29/161, 29/20, 29/22, 29/24*

U.S. Cl. 357—61 **17 Claims**





1. A textured substrate article, comprising:

a single crystal base of a selected crystalline material, including a generally planar primary surface and a regular periodic array of posts integrally extending from the primary surface and terminating in top surfaces; and

a single crystal epitaxial layer of a selected crystalline material deposited on the top surfaces of the posts, the single crystal epitaxial layer being selectively doped with a deposit component imparting semiconductor properties to the epitaxial layer;

the crystalline lattice constants for the base single crystal material and the epitaxial layer single crystal material being within 10% of one another;

the single crystal material of the epitaxial layer being selected from the group consisting of diamond, cubic boron nitride, boron phosphide, beta-silicon carbide, and gallium nitride;

the posts having a height of from about 0.5 to about 10 micrometers, and a cross-section dimensional characteristic of from about 0.5 to 20 micrometers; and

the spacing between adjacent posts being from about 2 to about 5 micrometers, as measured between adjacent facing surfaces of the posts.

5,006,915

ELECTRIC DEVICE AND PHOTOELECTRIC CONVERSION DEVICE COMPRISING THE SAME

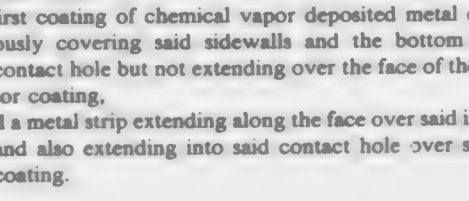
Masao Yoshikawa, and Tetsuro Suzuki, both of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Feb. 9, 1990, Ser. No. 477,484

Claims priority, application Japan, Feb. 14, 1989, 1-32798; Jun. 6, 1989, 1-142081

Int. Cl.[5] **H01L** *29/28, 23/54*

U.S. Cl. 357—61 **12 Claims**



1. A photoelectric conversion device comprising:

(a) a first electrode,

(b) an n-type inorganic semiconductor layer formed on said electrode,

(c) an electron-conductive organic layer formed on said n-type inorganic semiconductor layer, which serves as an electron acceptor layer,

(d) an electron donor layer, and

(e) a second electrode, which are successively overlaid, and at least one electrode of said first electrode or said second electrode is transparent to employed light.

5,006,916

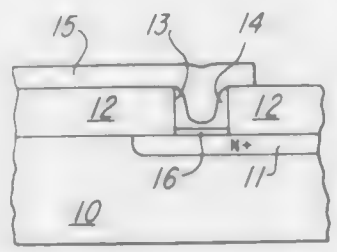
VERTICAL-WALLED CONTACTS FOR VLSI SEMICONDUCTOR DEVICES

Kendall S. Wills, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 630,471, Jul. 11, 1984, Pat. No. 4,720,908. This application Aug. 3, 1987, Ser. No. 82,718

Int. Cl.[5] **H01L** *23/54, 23/48*

U.S. Cl. 357—67 **5 Claims**



1. A semiconductor device comprising:

a region in a face of a semiconductor body,

an insulator coating on said face having a contact hole over said region, said contact hole having substantially vertical sidewalls,

a first coating of chemical vapor deposited metal continuously covering said sidewalls and the bottom of said contact hole but not extending over the face of the insulator coating,

and a metal strip extending along the face over said insulator and also extending into said contact hole over said first coating.

5,006,917

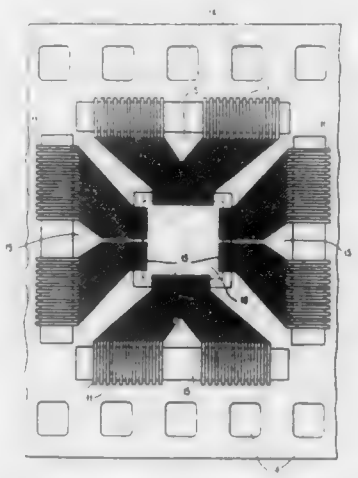
THERMOCOMPRESSION BONDING IN INTEGRATED CIRCUIT PACKAGING

Sung K. Kang, Chappaqua; Michael J. Palmer, Walden, both of N.Y.; Timothy C. Reiley, Los Gatos, Calif., and Robert D. Topa, Binghamton, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 25, 1989, Ser. No. 398,799

Int. Cl.[5] **H01L** *23/48, 23/54*

U.S. Cl. 357—70 **10 Claims**



1. An integrated circuit packaging structure comprising in combination

a central aperture in at least one insulating member supporting at least one electrical conductor,

at least one beam lead end on said at least one electrical conductor,

each said beam lead end being cantilevered into said aperture,

each said beam lead end having a deformable uniform consistency layer of metal taken from the group of Au, Pd, Pt, Ag, Ir and Ni,

said deformable layer having

a hardness on the Knoop scale in the range of that of soft Au which is approximately 90, and

a surface morphology of ridges having a spacing of approximately ½ the combination of said conductor and a pad to which said conductor is bonded, and with a depth between ridges of from about ¼ to ½ the thickness of said pad.

5,006,918

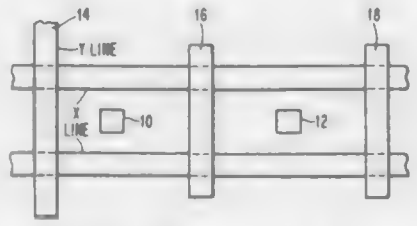
FLOATING ORTHOGONAL LINE STRUCTURE FOR X-Y WIRING PLANES

Alina Deutsch, Mount Kisco, and Barry J. Rubin, Croton-on-Hudson, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 24, 1989, Ser. No. 383,516

Int. Cl.[5] **H01L** *23/48, 29/46, 29/54*

U.S. Cl. 357—71 **1 Claim**



1. In an integrated circuit structure of the type having printed circuit wiring lines disposed on integrated circuit chips, a wiring configuration for reducing noise in the integrated circuit comprising:

at least one pair of parallel, adjacent, electrically conductive integrated circuit X-lines disposed on an integrated circuit chip said parallel adjacent electrically conductive integrated circuit lines being separated by a pitch distance d and being capacitively coupled and inductively coupled to each other wherein the difference between said capacitively and inductively coupled conductive lines produce a far end noise factor,

at least one additional integrated circuit conductive Y-line disposed orthogonally across said at least one pair of parallel electrically conductive X-lines, said at least one additional conductive X-lines functioning to reduce said capacitive and inductive coupling of said parallel adjacent conductive X-lines wherein the amount of said capacitive coupling reduction is relatively greater than the amount of said inductive coupling reduction, thereby increasing the far-end noise factor of said parallel adjacent conduction X-lines, and

at least one non-grounded conductive line of length 2d disposed orthogonally across and capacitively coupled to said at least one pair of parallel adjacent conductive X-lines for increasing the amount of said capacitive coupling of said parallel adjacent conductive X-lines to reduce the amount of said far-end noise factor,

a second integrated circuit chip disposed above said pair of parallel, adjacent, electrically conductive integrated circuit lines, said integrated circuit chip and said second integrated circuit chip being reference planes,

wherein said X-lines provide a capacitance relative to said reference planes designated C_x, wherein said Y-line disposed orthogonally across said at least one pair of X-lines provides an overlap capacitance of C_{xy}, wherein C_{12} is the coupling capacitance between said parallel X-lines, and the capacitance of said non-grounded orthogonally disposed line relative to said reference planes in $C_y = 2C_x$ and,

wherein said C_{12} coupling capacitance between said parallel X-lines is increased in value to an amount $C_{12} + \frac{1}{4}$ by said non-grounded orthogonally disposed line.

5,006,919

INTEGRATED CIRCUIT PACKAGE

David Disko, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Mar. 1, 1990, Ser. No. 487,600

Int. Cl.[5] **H01L** *23/28, 23/48, 29/44, 29/52*

U.S. Cl. 357—72 **10 Claims**



1. An integrated circuit package assembly for housing an integrated circuit die of the type having a substantially planar bottom surface, a substantially planar top surface, and a plurality of connection pads disposed on said top surface, wherein said connection pads include at least one ground connection pad, said integrated circuit package assembly affording substantially reduced ground bounce within said integrated circuit and comprising:

a sheet of substantially planar electrically conductive material;

electrically insulating bonding means for bonding said integrated circuit die bottom surface directly to said sheet of electrically conductive material;

a plurality of electrically conductive leads extending laterally from said integrated circuit die, said leads including at least one ground lead and a plurality of non-ground conductive leads;

first bond wire means connecting said integrated circuit die ground connection pad to said sheet of electrically conductive material;

second bond wire means connecting said sheet of electrically conductive material to said ground lead;

third bond wire means connecting said non-ground connection pads to said non-ground conductive leads; and

encapsulation means for encapsulating said integrated circuit die, said sheet of electrically conductive material, said first, second and third bond wire means, and a portion of each said electrically conductive leads, said encapsulation means being formed from electrically insulating material and being immediately adjacent said sheet of electrically conductive material.

5,006,920

ELECTRICAL COMPONENTS

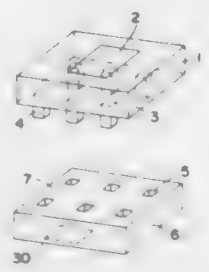
Wolfgang Schafer, Bad Vilbel, and Hans Isert, Rodermark, both of Fed. Rep. of Germany, assignors to Telenorma Telefonbau und Normalzeit GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 16, 1988, Ser. No. 168,698

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1987, 3708789; Oct. 20, 1987, 3735455

Int. Cl.[5] H01L *23/02, 23/12*

U.S. Cl. 357—74 **9 Claims**



1. In combination,

a first modular micro-electronic unit comprising

a first substrate,

a first electronic circuit incorporated at a first major surface of said first substrate, and

first etched mechanical mating means formed integrally with said first substrate at a second major surface of said first substrate oppositely disposed from said first major surface, and

a second modular micro-electronic unit comprising a second substrate and second etched mechanical mating means formed on a major surface of said second substrate,

said first and second mechanical mating means mating with each other to form a mechanical bond between said first and second modular micro-electronic units,

wherein said first and second mating means include an electrically conducting material, said first and second mating means mating together to form both an electrical bond and a mechanical bond between said first and second micro-electronic units.

5,006,921

POWER SEMICONDUCTOR SWITCHING APPARATUS WITH HEAT SINKS

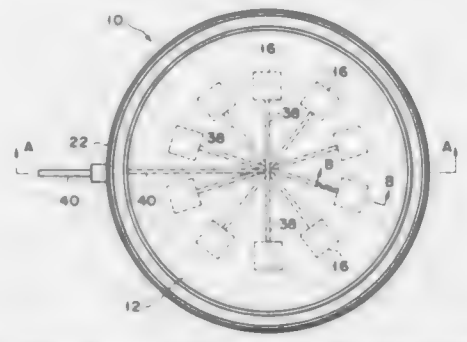
Masaru Ishizuka, Kawasaki; Yasuyuki Yokono, Tokyo; Asako Matsuura, Yokohama; Yoshio Kamei, Yoshikawa; Hiromichi Ohashi, Yokohama; Mitsuhiko Kitagawa, Tokyo; Tomiya Sasaki, both of Tokyo, and Shigeki Moana, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 31, 1989, Ser. No. 331,288

Claims priority, application Japan, Mar. 31, 1988, 63-76083; Mar. 31, 1988, 63-78977; Aug. 31, 1988, 63-214862; Sep. 30, 1988, 63-243813

Int. Cl.[5] H01L *23/42*

U.S. Cl. 357—74 **77 Claims**



1. A power semiconductor switching apparatus comprising:

an anode electrode serving as a heat sink;

a cathode electrode serving as a heat sink;

a plurality of parallel semiconductor switching element chips arranged between said anode and cathode electrodes, the number of said semiconductor switching element chips being set such that a total of rated currents flowing through the chips becomes equal to or larger than a rated current of said switching apparatus;

a plurality of gate electrode wires connected to each of said chips and

reducing and conducting means for reducing a thermal stress induced in said semiconductor switching element chips and for conducting heat from surfaces of said chips to said anode and cathode electrodes, said reducing and conducting means being located around said chips.

5,006,922

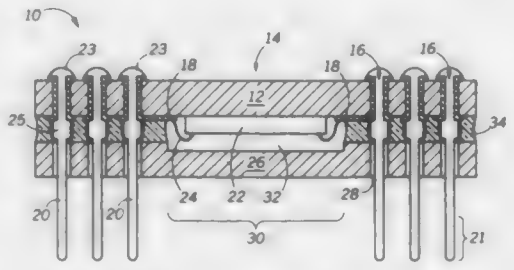
PACKAGED SEMICONDUCTOR DEVICE HAVING A LOW COST CERAMIC PGA PACKAGE

Michael B. McShane; Paul T. Lin, and Howard P. Wilson, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 14, 1990, Ser. No. 480,386

Int. Cl.[5] H01L *23/50, 23/04*

U.S. Cl. 357—74 **22 Claims**



1. A packaged semiconductor device comprising:

a single-layer ceramic base having a first plurality of through-holes therein;

an integrated circuit disposed at a predetermined location on said base;

terminal means attached to said base extending through said first plurality of through-holes in said base and having distal ends extending therefrom, said terminal means providing external electrical connection to said semiconductor device;

a cap substantially co-extensive with said base having a second plurality of through-holes therein corresponding with and aligned to said first plurality of through-holes in said base, said cap bonded to said base forming a cavity between said base and said cap hermetically enclosing said integrated circuit within said cavity; and

coupling means for electrically coupling said terminal means to said integrated circuit.

5,006,923

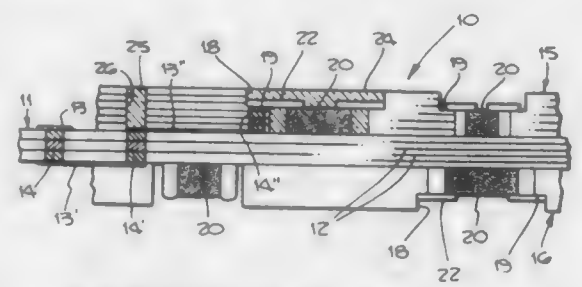
STACKABLE MULTILAYER SUBSTRATE FOR MOUNTING INTEGRATED CIRCUITS

Keith O. Warren, Newbury Park, Calif., assignor to Litton Systems, Inc., Woodland Hills, Calif.

Filed Sep. 14, 1989, Ser. No. 407,045

Int. Cl.[5] H01L *39/02, 23/16, 23/02, 23/12*

U.S. Cl. 357—80 **20 Claims**



1. A substrate for mounting integrated circuits in a multistack configuration wherein said circuits are insensitive to acceleration forces, comprising:

a first substrate of a plurality of insulated layers;

a second substrate of a plurality of insulated layers each having apertures therein which are aligned to form integrated circuit receiving apertures;

said first and second substrates formed into a single, rigid multilayer board;

integrated circuits mounted within said integrated circuit receiving apertures in said rigid multilayer board;

a layer of insulating material different from the material of said insulating layers placed at least partially over said integrated circuits and at least partially filling said integrated circuit receiving apertures;

said layer of insulating material formed into a rigid surface over said integrated circuits on said multilayer board to mount said circuits rigidly upon said multilayer board to be insensitive to acceleration forces;

said layer of insulating material further covering said rigid multilayer board;

a plurality of said rigid multilayer boards covered by said layers of insulating material stacked together into a multistack of said boards; and

said layers of insulating material bonding said plurality of said rigid multilayer boards into one multistack as said layers form said rigid surface over said integrated circuits to mount said circuits in said multistack configuration.

5,006,924

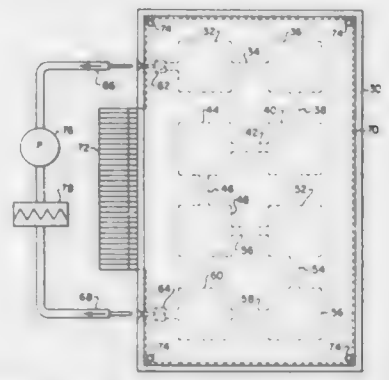
HEAT SINK FOR UTILIZATION WITH HIGH DENSITY INTEGRATED CIRCUIT SUBSTRATES

Richard F. Frankeny, Elgin, and Karl Hermann, Austin, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1989, Ser. No. 459,089

Int. Cl.[5] H01L *25/04, 23/16, 23/02;* **H02B** *1/00*

U.S. Cl. 357—82 **6 Claims**



1. A heat sink system for use with multiple integrated circuit devices mounted in a planar configuration upon a circuit substrate having an electrical connector disposed along one edge thereof, said heat sink system comprising:

a rigid thermally conductive substrate mounted in fixed relationship adjacent to said circuit membrane;

a plurality of serially interconnected compliant bags mounted to said rigid thermally conductive substrate, each of said plurality of serially interconnected compliant bags mounted in a mated relationship with one of said multiple integrated circuit devices;

an input valve mounted in fixed relationship with a first of said plurality of serially interconnected compliant bags for coupling thermally conductive fluid into said first compliant bag;

an output valve mounted in fixed relationship with a second of said plurality of serially interconnected bags for coupling thermally conductive fluid out of said second complaint bag; and

a source of pressurized thermally conductive fluid having an input connector and an output connector mounted in fixed relationship with an appropriate electrical receptacle wherein connection of said electrical connector of said circuit substrate to said appropriate electrical connector will couple said input connector to said input valve and said output connector to said output valve whereby said heat sink system will be automatically actuated.

5,006,925

THREE DIMENSIONAL MICROELECTRIC PACKAGING

Mark F. Bregman, Ridgefield, Conn.; Raymond R. Horton, Dover Plains, N.Y.; Ismail C. Noyan, Peekskill, N.Y., and Michael J. Palmer, Walden, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 22, 1989, Ser. No. 440,180

Int. Cl.[5] H01L *23/16, 23/44;* **H05K** *7/14*

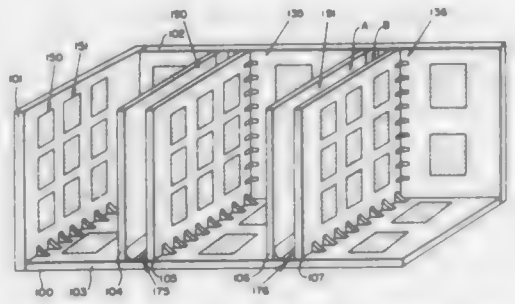
U.S. Cl. 357—82 **9 Claims**

1. A three-dimensional chip package comprising:

(a) A plurality of semiconductor substrates, each having at least one semiconductor electronic device mounted thereon, wherein at least a subset of said plurality of semiconductor substrates are joined together to form an enclosure for housing the mounted semiconductor electronic devices;

(b)) means for forming an electrical contact between at least two of said plurality of substrates; and

(c) channel means, for providing at least one cooling channel within said enclosure into which a cooling fluid may be



introduced, wherein at least a part of said at least one cooling channel is formed by positioning at least two semiconductor substrate surfaces to form channel walls.

5,006,926

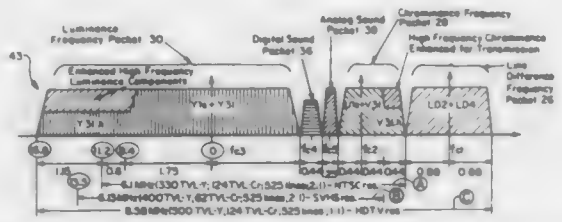
HIGH DEFINITION MULTIPLE ANALOG COMPONENT AMPLITUDE MODULATED TELEVISION TRANSMISSION SYSTEM

Mikhail Tsinberg, Riverdale, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed Oct. 3, 1988, Ser. No. 252,954

Int. Cl.[5] H04N *11/00, 11/02, 11/14*

U.S. Cl. 358—12 **16 Claims**



1. A method for forming a frequency multiplexed television signal, comprising the steps of:

(a) deriving from a first television signal, a pair of luminance signals, a pair of chrominance signals and a pair of line differential signals;

(b) time expanding each of said luminance, line differential and chrominance signals so as to form a plurality of signal components;

(d) quadrature modulating a first pair of said signal components on a first subcarrier forming a first frequency packet;

(e) quadrature modulating a second pair of said signal components on a second subcarrier forming a second frequency packet;

quadrature modulating a third pair of said signal components on a third subcarrier forming a third frequency packet; and

(f) combining said first, second and third frequency packets to generate said frequency multiplexed signal.

5,006,927

APPARATUS AND METHOD FOR SEPARATING A COMPONENT OF A COMPOSITE DIGITAL VIDEO SIGNAL

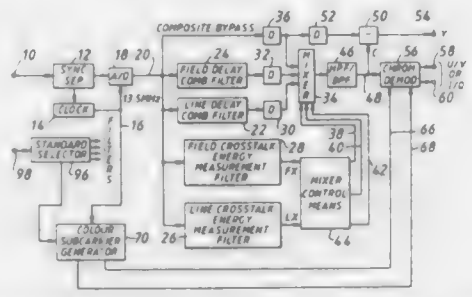
David M. Creed, Winchester; James H. Wilkinson, Basingstoke, both of United Kingdom, and Robert J. D. Lawlor, Atsugi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 7, 1989, Ser. No. 334,560

Claims priority, application United Kingdom, Sep. 23, 1988, 8822394

Int. Cl.[5] H04N *9/67, 9/78*

U.S. Cl. 358—31 **20 Claims**



1. Apparatus for separating a component of a composite digital video signal including luminance and chrominance components, the apparatus comprising:

crosstalk measuring means for measuring crosstalk between said luminance and chrominance components of the composite digital video signal to produce a crosstalk signal;

vertical comb filtering means for separating one of said luminance and chrominance components from said composite digital video signal to produce a first filtered output signal;

vertical/temporal comb filtering means for separating said one of said luminance and chrominance components from said composite digital video signal to produce a second filtered output signal; and

mixing means operative to mix respective proportions of said first filtered output signal and said second filtered output signal responsive to said crosstalk signal to produce said one of said luminance and chrominance components having reduced cross effects therein.

5,006,928

IMAGE PROCESSING METHOD IN AN ELECTRONIC VIDEO ENDOSCOPY SYSTEM

Kazuhiro Kawajiri; Takashi Miida, both of Minami, and Kiyoshi Inoue, Omiya, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 30, 1989, Ser. No. 443,481

Claims priority, application Japan, Dec. 5, 1988, 63-307463; Dec. 5, 1988, 63-307464

Int. Cl.[5] A61B *1/04, 1/06;* **H04N** *9/07, 11/22*

U.S. Cl. 358—98 **17 Claims**

1. An image processing method for use in an electronic video endoscopy system comprising the steps of:

reading analog R, G, and B surface sequential color signals from a CCD disposed in a leading end portion of an endoscope;

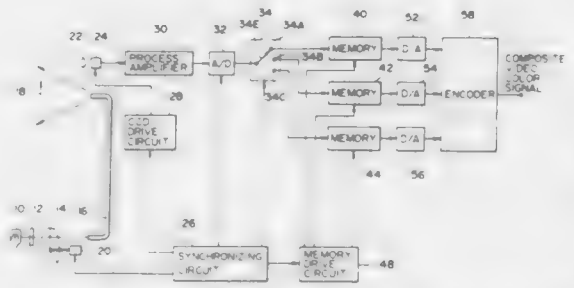
converting said analog R, G, and B surface sequential color signals to respective digital R, G, and B surface sequential color signals;

sequentially storing said digital R, G, and B surface sequential color signals in respective memories according to color; and

reading said stored digital R, G, and B surface sequential color signals simultaneously to convert said read-out stored digital R, G, and B surface sequential color signals into synchronous color signals,

odd and even field data of said CCD are interline transferred

sequentially within a field period to obtain said analog R, G, and B surface sequential color signals and corresponding odd and even field data for each of horizontal scanning



lines stored in said respective memories as said stored digital R, G, and B surface sequential color signals are read alternately therefrom to provide said synchronous color signals.

5,006,929

METHOD FOR ENCODING AND TRANSMITTING VIDEO SIGNALS AS OVERALL MOTION VECTORS AND LOCAL MOTION VECTORS

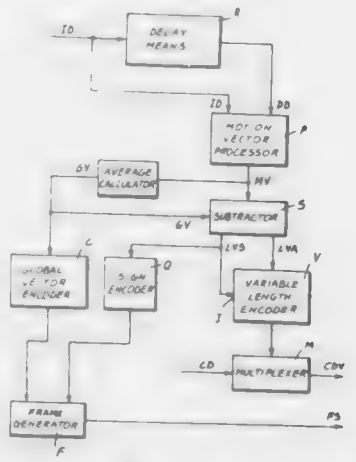
Marzio Barbero; Mario Muratori, and Mario Stroppiana, all of Turin, Italy, assignors to Rai Radiotelevisione Italiana, Turin, Italy

Filed Mar. 6, 1990, Ser. No. 489,446

Claims priority, application European Pat. Off., Sep. 25, 1989, 89830414.2

Int. Cl.[5] H04N *7/12*

U.S. Cl. 358—105 **9 Claims**



1. A method for encoding and transmitting a video signal representing a succession of images, each image being subdivided into a number of pixel blocks and a motion vector being associated with each block, the method comprising the following steps:

(a) processing the video signal with a redundancy reduction algorithm;

(b) encoding the processed video signal pixel block by pixel block;

(c) grouping the pixel blocks of each image into at least one array of pixel blocks;

(d) generating an overall motion vector for each array of pixel blocks in each image;

(e) subtracting the motion vectors associated with the pixel blocks from the respective overall motion vector to obtain corresponding local motion vectors representing the difference with respect to the respective overall motion vector;

(f) encoding the overall motion vector with fixed length, and

encoding the local motion vectors with variable length, to obtain respective coded motion vectors; and

(g) multiplexing both the coded overall vector and the coded local vectors into a transmitted signal.

5,006,930

DEVICE FOR REDUCING THE REDUNDANCY IN BLOCKS OF DIGITAL VIDEO DATA IN DCT ENCODING

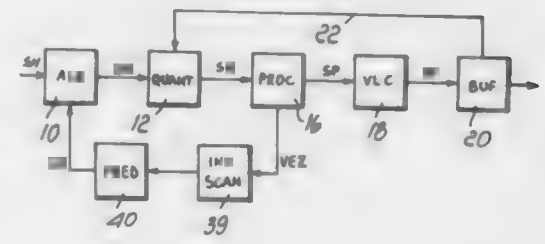
Mario Stroppiana, Turin, and Luigi Ronchetti, Como, both of Italy, assignors to RAI Radiotelevisioni Italiano, S.p.A., Italy

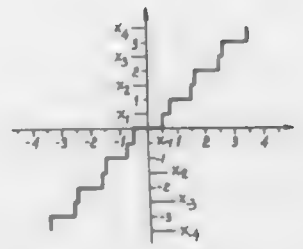
Filed Mar. 6, 1990, Ser. No. 489,485

Claims priority, application European Pat. Off., Jul. 4, 1989, 89830311.0

Int. Cl.[5] H04N *7/13*

U.S. Cl. 358—133 **6 Claims**





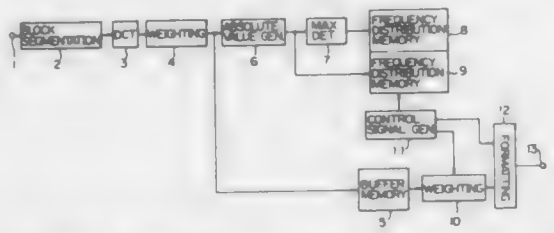
1. An improved device for DCT encoding, quantization and variable-word-length encoding of digital video signals with a reduction of redundancy of the video signal, comprising a converter which processes a digital video signal according to a redundancy-reducing algorithm operating on successive blocks of each frame or field and generates a transformed signal which is applied to a quantizer adapted to generate a quantized signal at preset transition levels on opposite sides of zero, including the zero (. . . , −3, −2, 0, 1, 2, 3, . . .), which is processed by a processor, adapted to determine the block length and the consecutive zero sequences along a preset scanning order, and adapted to output a symbolic signal, constituted by symbols designating the quantization levels of the non-null data, the zero sequences and a symbol designating the end of the block, the symbolic signal being applied to a variable-length encoder, adapted to encode data according to a preset assignment rule for generating a signal which is applied to a transmission buffer; said quantized signal generated by the quantizer further comprising two ambiguous levels (x1 and x − 1) at input values comprised in respective preset intermediate ranges respectively between the zero level and the first positive level and between the zero level and the first negative level, said processor transforming each of said ambiguous levels respectively into a first positive level and a first negative level if the preceding and subsequent input values are both non-null and non-ambiguous levels, and transforms the ambiguous level into zero level in all the other cases.

5,006,931

HIGHLY EFFICIENT CODING APPARATUS

Norihisa Shirota, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 20, 1990, Ser. No. 482,252
Claims priority, application Japan, Feb. 28, 1989, 1-46971
Int. Cl.[5] H04N 7/133
U.S. Cl. 358—133 4 Claims



1. A highly efficient coding apparatus for encoding received digital video data in block format and compressing said digital video data when required so that the total bit rate of said digital video data to be transmitted is less than a predetermined transmission bit rate capacity, comprising:

block segmentation means receiving said digital video data and for generating data in said block format,

orthogonal transformation means receiving the block formatted data and for generating coefficient data having a direct current (DC) data component and a plurality of alternating current (AC) data components each having a respective number of bits for each block,

first generating means for generating a first distribution table from the AC coefficient data components during a predetermined period,

second generating means for generating an accumulating distribution table from said first distribution table,

control means for controlling the total bit number of said AC coefficient data components generated during each said predetermined period in response to said accumulating distribution table and said predetermined transmission bit rate capacity, and

data transmitting means having said predetermined transmission bit rate capacity for transmitting said DC coefficient data component, the controlled AC coefficient data components and an additional code in each said predetermined period.

5,006,932

APPARATUS FOR PROCESSING A VIDEO SIGNAL

Michael J. Bergstrom, Carshacton, and Ajaib Hussain, Clapham, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 21, 1989, Ser. No. 342,255
Claims priority, application United Kingdom, Apr. 25, 1988, 8809749
Int. Cl.[5] H04N 5/14, 5/04, 9/79
U.S. Cl. 358—160 13 Claims

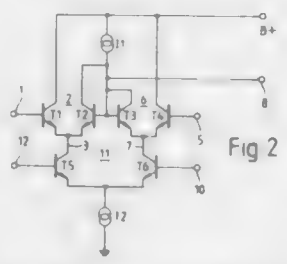


Fig 2

1. An apparatus for processing a composite video signal substantially all of the lines of which each comprise a line synchronising pulse, a front and a back porch and a vision portion, said apparatus comprising:

(a) a first input terminal for receiving said composite video signal and a second input terminal for receiving a reference voltage;

(b) a first signal path comprising a first transistor whose base is connected to said first input terminal and whose emitter is connected through a first unidirectional device to a first signal path output, and first enabling means for enabling said first signal path outside the period of the synchronising pulse in each line period, said first enabling means comprising a first switching circuit connected to the junction between said first transistor and said first unidirectional device;

(c) a second signal path comprising a second transistor whose base is connected to said second input terminal and whose emitter is connected through a second unidirectional device to a second signal path output, and second enabling means for enabling said second signal path during the period of the synchronising pulse in each line period, said second enabling means comprising a second switching circuit connected to the junction between said second transistor and said second unidirectional device; and

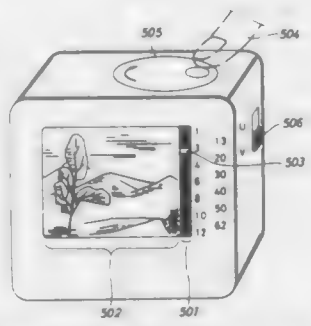
(d) means for connecting said first and second signal path outputs to an output terminal for providing a composite video signal whose magnitude during the line synchronising pulse periods is determined by said reference voltage.

5,006,933

LIQUID CRYSTAL TELEVISION

Fuminori Suzuki, Sayama, and Heihachiro Ebihara, Tokorozawa, both of Japan, assignors to Citizen Watch Co., Ltd., Japan

Filed Aug. 29, 1989, Ser. No. 400,301
Claims priority, application Japan, Aug. 30, 1988, 63-213755
Int. Cl.[5] H04N 5/440, 5/50
U.S. Cl. 358—236 8 Claims



1. In a liquid crystal television including a television receiver for receiving a television broadcast signal and outputting a video signal, a tuning voltage control unit for outputting a tuning voltage for said television receiver, and a liquid crystal display unit having a liquid crystal panel, said liquid crystal panel being arranged to simultaneously display a broadcast image and channel mark, comprising:

a plurality of common electrodes;

a plurality of segment electrodes divided into image segment electrodes and indicator segment electrodes;

an image segment driver for receiving the video signal from said television receiver and driving said image segment electrodes according to a first voltage waveform; and

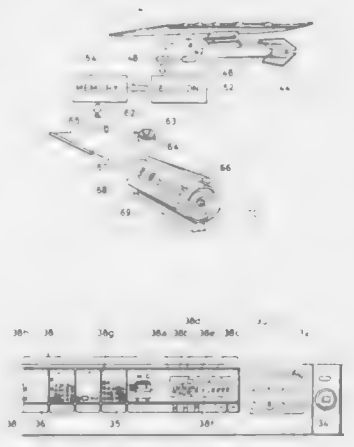
an indicator segment driver for receiving the tuning voltage from said tuning voltage control unit and driving said indicator segment electrodes according to a second voltage waveform different from that of said first voltage waveform.

5,006,934

COPYING MACHINE CAPABLE OF STORING IMAGE DATA

Kaoru Hashimoto, Hyogo; Toshikazu Kawaguchi, and Hirofumi Hasegawa, both of Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 304,226, Jan. 31, 1989, abandoned. This application Jan. 26, 1990, Ser. No. 469,690
Claims priority, application Japan, Feb. 1, 1988, 63-21647
Int. Cl.[5] G03G 15/00
U.S. Cl. 358—296 9 Claims



1. A copying machine, comprising:

a platen on which an original is placed;

image reading means having a one-dimensional image sensor and scanning means for reading images of the original placed on said platen;

memory means for storing image data corresponding to the images read by said image reading means;

image forming means for forming images based on the image data stored by said memory means;

first indicating means for indicating that said image reading means is carrying out reading operation, and

second indicating means for indicating that said image forming means is carrying out image forming operation.

5,006,935

CHARGE LATENT IMAGE RECORDING REPRODUCING SYSTEM WITH A UNIFORMLY CHARGE DETECTION REGION PROVIDING A REFERENCE INTENSITY OF A RECORDED OBJECT

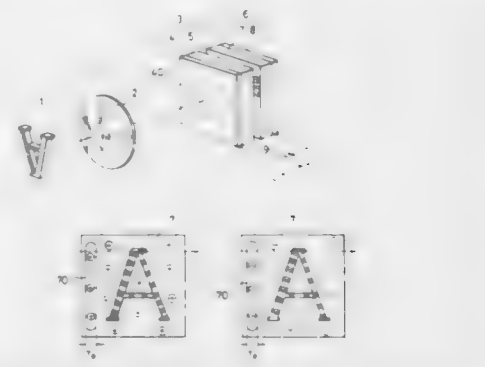
Itsuo Takanashi, Kamakura; Shintaro Nakagaki, Fujisawa, and Hirohiko Shinonaga, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Sep. 26, 1989, Ser. No. 412,310
Claims priority, application Japan, Sep. 26, 1988, 63-240294; Mar. 24, 1989, 63-72162; Mar. 24, 1989, 63-72635; Mar. 24, 1989, 63-72636
Int. Cl.[5] H04N 1/29
U.S. Cl. 358—300 12 Claims

1. A recording/reproducing system for recording and/or reproducing a charge latent image onto/from a recording medium, comprising

an optical system for directing along a path of an electromagnetic radio ray from an object toward said medium, and

recording means disposed in the path for generating said charge latent image in said medium in response to the electromagnetic radio ray from the object, said recording means comprising charge causing means for detection an uniform charge in a detection region of the recording



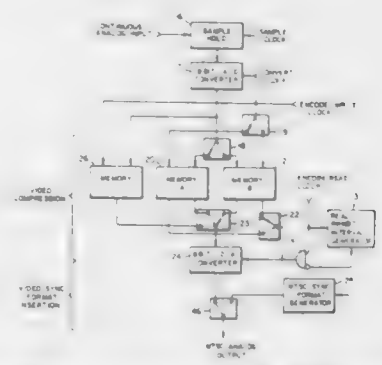
medium, said uniform charge in a detection region corresponding to a reference intensity of the object.

5,006,936

METHOD AND SYSTEM FOR HIGH DENSITY ANALOG DATA STORAGE RETRIEVAL, AND TRANSMISSION

John T. Hooks, Jr., Dallas, Tex., assignor to LTV Aerospace and Defense Company, Grand Prairie, Tex.

Continuation of Ser. No. 802,293, Nov. 27, 1985, abandoned, which is a continuation of Ser. No. 610,554, Aug. 13, 1984, abandoned. This application Nov. 2, 1988, Ser. No. 268,614
Int. Cl.[5] H04N 5/76
U.S. Cl. 358—335 15 Claims



1. A bulk analog data storage system comprising:

(a) first means for receiving a continuous analog video input signal;

(b) first sample and hold means coupled to said receiving means for sampling said input data at a first clock rate;

(c) first analog-to-digital converter means for converting each of said samples to a digital code;

(d) first and second digital memory means;

(e) first gating means coupled to said first and second memory means for alternately providing digital coded samples of said input data to said first and second memory means;

(f) first clock means coupled to said first sample and hold means and to said first and second memory means for clocking said memory means at said first clock rate when data is being written into said memory means;

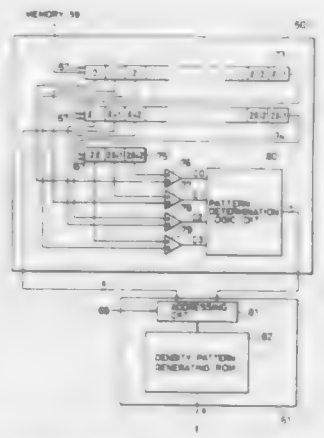
(g) second gating means coupled to said first and second memory means for multiplexing the digital coded samples of said input data as such data is alternately read from said memory means;

(h) second clocking means for clocking said first and second memory at a second clock rate which is of a higher frequency than said first clock rate;

(i) first digital-to-analog converter means for converting the digital coded samples as they are read from said second gating means into an analog formatted signal;

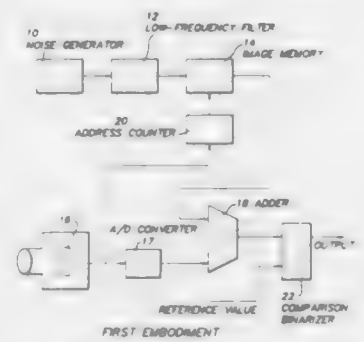
(j) first interval generator means for generating intervals of duration of a sync/blanking pulse for a selected video format, said intervals being at a repetition rate much lower than said first and second clock rates;
(k) third gating means coupled to said first interval generator and to said second clocking means for inhibiting said second clocking signal to the memory means selected by said second gating means during the generated interval, said inhibiting being for a limited period of time so that the inhibiting of the second clocking signal does not result in overwriting of data in said memory means before said data is read from a memory means;
(l) a sync/blanking format generator for generating sync/-blanking pulses for said selected video format;
(m) fourth gating means coupled to said first digital-to-analog converter means and to said sync/blanking format generator for multiplexing the analog formatted signal and the sync/blanking interval into a video signal of said selected video format; and
(n) recorder means for recording said video signals in said selected video format.

5,006,937
IMAGING DATA PROCESSING APPARATUS
Hiroshi Nonoshita, Yokohama, and Seiji Saito, Yokosuka, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 357,677, May 26, 1989, abandoned, which is a division of Ser. No. 937,334, Dec. 3, 1986, abandoned. This application Jul. 27, 1990, Ser. No. 560,294
Claims priority, application Japan, Dec. 6, 1985, 60-273468; Dec. 6, 1985, 60-273469; Dec. 25, 1985, 60-290351; Dec. 25, 1985, 60-290352
Int. Cl.[5] H04N *1/23*
U.S. Cl. 358—456 **12 Claims**



1. Image processing apparatus comprising:
input means for inputting an analog video signal;
first conversion means for converting the input analog video signal into multi-value data;
memory means for storing the multi-value data; and
second conversion means for converting the multi-value data stored in said memory means to binary data when executing its conversion process, wherein said second conversion means (1) detects a density gradient by comparing the multi-value data of pixels around a pixel to be converted with each other in each of vertical, lateral, and oblique directions, and (2) selects a multi-bit image pattern from a plurality of image patterns, in response to the detected density gradient.

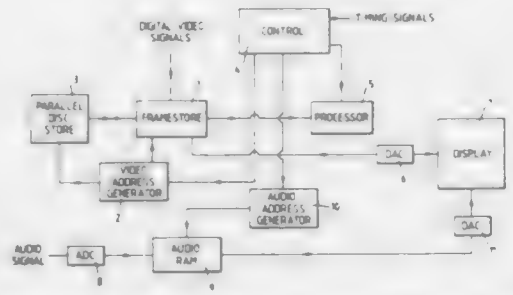
5,006,938
HALF-TONE IMAGE GENERATOR USING WHITE NOISE SOURCE
Kikuo Mita, Tokyo, Japan, assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 28, 1989, Ser. No. 458,018
Claims priority, application Japan, Sep. 5, 1989, 1-230706
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—466 **3 Claims**



FIRST EMBODIMENT

1. A half-tone binarization generator whereby input multi-level brightness information is converted to represent the brightness information as black and white level signals, comprising:
noise generating means for generating noise;
extraction means for extracting high-frequency components from the noise generated by the noise generating means;
adder means for adding the high-frequency noise from the extraction means to the multilevel brightness information;
comparison binarization means for comparing brightness information to which the high-frequency noise has been added by the adder means with a predetermined threshold value and providing a black level signal or a white level signal depending if the noise added brightness information is smaller or larger than the threshold value.

5,006,939
VIDEO EDITING AND PROCESSING SYSTEM WITH REVERSE VIDEO WITH FORWARD AUDIO REPRODUCTION
Robin A. Cawley, Burghclere, Great Britain, assignor to Quantel Limited, Newbury, United Kingdom
Continuation of Ser. No. 27,888, Mar. 19, 1987, abandoned. This application Oct. 19, 1989, Ser. No. 426,454
Claims priority, application United Kingdom, Apr. 10, 1986, 8608775
Int. Cl.[5] H04N *5/91*
U.S. Cl. 360—14.1 **7 Claims**



1. Apparatus for use in editing a sequence of video frames having an associated audio soundtrack, said apparatus comprising:
(a) a video signal storing means for storing video signals representative of each of a plurality of video frames, said plurality of video frames constituting said sequence;

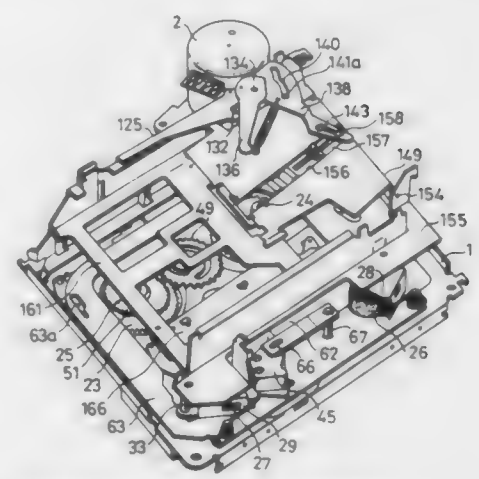
(b) audio signal storing means for storing audio signals constituting said soundtrack, said audio signal storing means storing said audio signals as audio signal frames each corresponding to that portion of the soundtrack that is associated with a respective one of said plurality of video frames; and
(c) control means for:
(i) addressing said video signal storing means to determine the output of video signals therefrom, said control means enabling video signals representative of said video frames to be output in reverse order to the order of said sequence, and
(ii) addressing said audio signal storing means to determine the output of audio signal frames therefrom in the order of said sequence, said control means furthermore enabling any selected audio signal frame to be output at the same time as its corresponding video frame is output in a verse order sequence of video frames; the apparatus thereby facilitating identification fthe position where an edit is required by enabling a reverse video frame-forward audio frame sequence to be output in which a selected frame of audio signals coincides in time with its corresponding video frame.

5,006,940
AUTOMATIC CHANGER FOR DIGITAL AUDIO CASSETTE TAPE PLAYER
Hishashi Hamachi, and Tamotsu Harada, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Sep. 30, 1988, Ser. No. 251,618
Claims priority, application Japan, Sep. 30, 1987, 62-244405
Int. Cl.[5] G11B *15/68*
U.S. Cl. 360—92 **7 Claims**



1. An automatic changer for a digital audio cassette tape player, comprising:
a plurality of holding means (6) for holding a plurality of tape cassettes, each cassette being inserted into an individual insertion opening with a lid of said tape cassette being located inwardly so that a label on each of said tape cassettes can be seen from a front side of said player;
support means (7) for supporting said holding means;
a tape conveying mechanism for conveying a selected one of said tape cassettes to and from said tape player;
conveying means for picking up selectively one of said plurality of holding means, separating said one holding means away from said support means, and setting the selected cassette held in said one holding means onto said tape conveying mechanism with the selected cassette being held by said holding means; and
moving unit drive means (19) for driving said conveying means so that the selected cassette is loaded onto said cassette tape player.

5,006,941
REVERSIBLE DRIVE MECHANISM FOR A TAPE RECORDING APPARATUS
Akira Otsuki, Iwaki, Japan, assignor to Alpine Electronics Inc., Tokyo, Japan
Filed Mar. 3, 1989, Ser. No. 319,517
Claims priority, application Japan, Apr. 6, 1988, 63-46693; Apr. 6, 1988, 63-46694
Int. Cl.[5] G11B *5/008*
U.S. Cl. 360—96.2 **4 Claims**

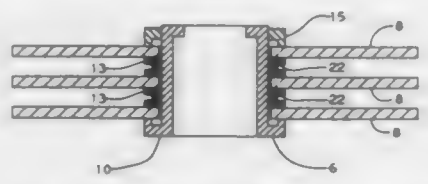


1. A tape recording apparatus comprising:
a motor rotatable both in a forward direction and a reverse direction;
a pair of capstan journals coupled to said motor such that said journals rotate in the same direction as said motor;
a pair of pinch rollers mounted on a pair of leaves, said pair of pinch rollers and said pair of leaves being movable in one direction to bring said pinch rollers into contact with said capstan journals and tape interposed between said capstan journals and said pinch rollers, and movable in another direction to separate said pinch rollers from said capstan journals;
a head base for mounting a magnetic head in operative relationship to said tape, said head base being held in a retreated position by a spring wherein said magnetic head is separated from said tape, and said head base being slidably movable into an advanced position wherein said magnetic head contacts said tape;
a head base advancing mechanism for moving said head base against a force of said spring and into said advanced position, said head base advancing mechanism comprising a sub base coupled to said head base for movement with said head base and a gear having a cam surface engaged with said sub base, said gear being rotatable by said motor such that said cam moves said sub base toward said advanced position;
a change mechanism coupled to said gear and being operative to rotate said gear in one direction regardless of said rotation direction of said motor;
a holding mechanism engaged with said gear for holding said head base in said advanced position,
wherein when said motor begins an operation to change direction of rotation when said magnetic head is reproducing, said holding mechanism is released from said gear and said head base moves into said retreated position, and said gear is rotated in the same direction regardless of the direction of rotation of said motor, whereafter said sub base is moved to said advanced position by said cam and said head base is held at said advanced position by said holding mechanism engaged with said gear.

5,006,942
RIGID MAGNETIC DATA STORAGE DISK ASSEMBLY WITH GROOVED SPACER

Peter E. Brooks, and Kimberly G. Jan, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 17, 1989, Ser. No. 339,282
Int. Cl.[5] G11B *17/08*
U.S. Cl. 360—98.08 9 Claims



1. A rigid magnetic data storage disk assembly supporting a plurality of axially aligned disks which have an opening therein, which forms an inner cylindrical surface on each said disk and having an inner diameter near the opening, said storage disk assembly comprising

a hub having a lower flange presenting a first annular support surface at one axial end of said plurality of disks;

an annular spacer positioned between and separating each adjoining pair of disks of said plurality of disks and adjoining the inner diameter of said disks;

each said spacer having an inner cylindrical surface and an outer cylindrical surface, each spacer having an annular groove extending radially inward from the outer cylindrical surface;

clamping means for said plurality of disks,

said clamping means presenting a second annular support surface axially aligned with said first annular support surface, said clamping means positioned at the other axial end of said plurality of disks; and

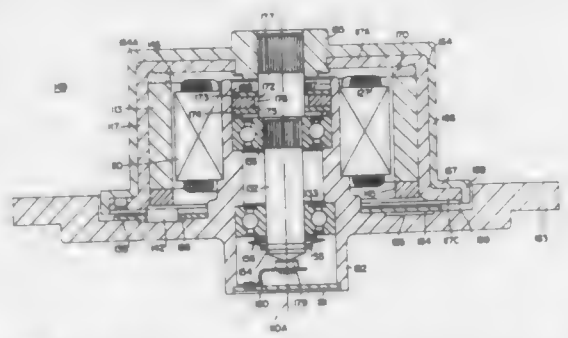
connecting means securing said clamping means to said hub to compressively retain said plurality of disks and said spacers between said first and second annular support surfaces with the grooved portions of said spacers axially aligned between said first and second annular support surfaces.

5,006,943
DISK STORAGE DRIVE

Dieter Elsässer, St. Georgen/Schwarzwald, and Johann von der Heide, Schramberg, both of Fed. Rep. of Germany, assignors to Papst-Motoren GmbH & Co., KG, St. Georgen, Fed. Rep. of Germany

Continuation of Ser. No. 32,954, Mar. 31, 1987, Pat. No. 4,779,165, which is a continuation of Ser. No. 733,231, May 10, 1985, abandoned, which is a continuation-in-part of Ser. No. 412,093, Aug. 27, 1982, abandoned. This application Oct. 18, 1988, Ser. No. 259,132
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1981, 3135385
Int. Cl.[5] G11B *5/16*
U.S. Cl. 360—99.08 24 Claims

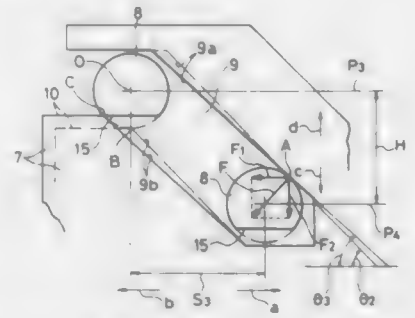
1. A disk storage drive with a brushless drive motor having a stator provided with a winding; an external rotor coaxially surrounding the stator and spaced therefrom by a substantially cylindrical air gap, said rotor having a permanent magnetic rotor magnet and a soft magnetic yoke; and a hub concentric to the yoke, said hub being connected to the rotor for rotation therewith and having a cylindrical disk support portion which can pass through a central opening of a storage disk for receiving at least one storage disk, said hub having an outwardly radially projecting flange at one end said motor including a radially extending assembly flange adjacent said one end of said hub, said assembly flange having a recess co-operating with said radially projecting flange to allow said radially projecting flange to nest in said recess, thereby making the motor more compact.



5,006,944
CASSETTE LOADING DEVICE WITH A FLAT-CUT CAM FOLLOWER

Kenji Miyasaka, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 21, 1989, Ser. No. 410,498
Claims priority, application Japan, Oct. 12, 1988, 63-133125[U]
Int. Cl.[5] G11B *17/04*
U.S. Cl. 360—99.06 3 Claims



1. In a cassette loading device comprising:

a cassette holder capable of ascending and descending between a cassette inserting position and a cassette loading position in a direction perpendicular to a cassette inserting direction together with a cassette inserted therein;

a slide member having two sides which is slidable in said cassette inserting direction;

cam means provided in said sides of said slide member and inclined with respect to said cassette inserting direction, and

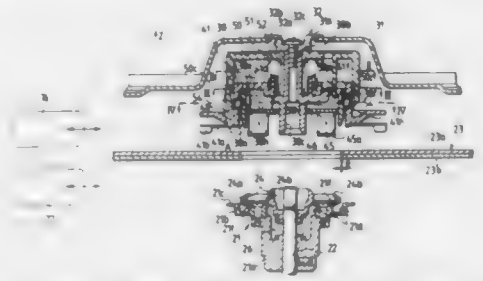
columnar cam followers arranged on the respective sides of said cassette holder so as to be coupled with said cam means of said slide member, whereby said cassette holder is raised or lowered while said slide member is moved in said cassette inserting direction;

the improvement in which a D-cut flat portion is formed on a lower portion of each of said columnar cam followers so that the amount of inclination of said cam means can be reduced without changing predetermined displacements of both said slide member and said cassette holder.

5,006,945
DISK PLAYER HAVING DUAL-SIDE PLAYBACK CAPABILITY

Shigeharu Furusawa, Saitama, Japan, assignor to Pioneer Electronic Corp., Tokyo, Japan

Filed Feb. 21, 1990, Ser. No. 482,626
Claims priority, application Japan, Feb. 22, 1989, 1-42653; Oct. 19, 1989, 1-272571
Int. Cl.[5] G11B *17/028*
U.S. Cl. 360—99.12 8 Claims



1. A dual-side use disk player of the type in which a data record disk including first and second circular substrates bonded together, each of said first and second circular substrates having a signal recording layer and a center hole, is centered on a turntable and is pressed against said turntable to thereby carry out a playback of data said disk player comprising:

a disk clamping mechanism including a support member movable to and from a disk carrying surface of said turntable within a range of three positions; said three positions being a non-clamping position farthest from said disk carrying surface, a first clamping position which is a middle position, and a second clamping position; said disk clamping mechanism further including positioning means for positioning said support member, a pressure member for pressing a part of said data record disk, which is near the center hole of said data record disk, and pressure applying means for applying a force to said pressure member to press said disk;

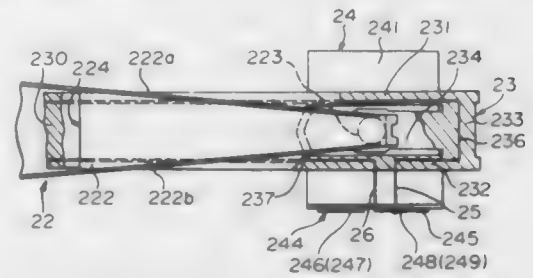
disk centering means including a first centering member movable along an axis of said turntable with respect to said disk carrying surface, said first centering member adapted to be inserted into said center hole of said first circular substrate, said disk centering means further including biasing means for biasing said first centering member in a projecting direction, and a second centering member adapted to be inserted into said center hole of said second circular substrate, said second centering member being disposed in said pressure member so as to be movable between an insertion allowing position where said second centering member is allowed to be inserted into said center hole of said second circular substrate, and an insertion prohibiting position where said second centering member is prohibited from being inserted into said center hole of said second circular substrate, whereby with the movement of said support member to said second clamping position, said second centering member is moved near said disk carrying surface and inserted into said center hole of said second circular substrate, and said first centering member is moved below said disk carrying surface; and

wherein said pressure applying means includes an attracting force generating means for attracting said pressure member toward said turntable; and further wherein said support member includes position select/hold means, whereby when said support member is at said non-clamping position, said position select/hold means is out of contact with said pressure member, and with the movement of said support member between said first clamping position and said second clamping position, said position select/hold means positions said second centering member at said insertion allowing position, and also at said insertion prohibiting position.

5,006,946
FLEXIBLE POLYMERIC RESINOUS MAGNETIC HEAD SUPPORTING DEVICE

Mikio Matsuzaki, Tokyo, Japan, assignor to TDK Corporation, Tokyo, Japan

Filed Apr. 19, 1989, Ser. No. 340,533
The portion of the term of this patent subsequent to Mar. 19, 2008, has been disclaimed.
Int. Cl.[5] G11B *5/48, 5/60*
U.S. Cl. 360—104 4 Claims



1. A magnetic head supporting device which comprises:

a supporter having a resilient spring portion and a rigid beam portion contiguous to said resilient spring;

a flexible member having one end attached to said supporter at a portion near a free end of said supporter;

a loading projection provided at one of an upper surface of said flexible member and a lower surface of said supporter at a portion near the free end of said supporter to thereby transmit a loading force from the free end of said supporter to said flexible member; and

a magnetic head having a slider with reading/writing elements connected thereto, the magnetic head being fixed to the lower surface of said flexible member, wherein said flexible member substantially exclusively comprises a plate of a polymeric resinous material positioned on the supporter and having conductors for wiring, said conductors are electrically connected to electrode for said reading/writing elements of the magnetic head, and wherein the plate of polymeric resinous material extends on the supporter along a longitudinal direction of the supporter, the conductors are embedded in the plate of polymeric resinous material and said plate has a free end portion extending to a lower portion of said rigid beam of said supporter.

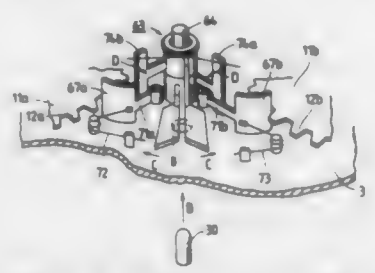
5,006,947
MAGNETIC TAPE CASSETTE HAVING IMPROVED DUST PROOFING

Shozo Onmori; Daisuke Takahashi, and Kengo Oishi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 318,866, Mar. 6, 1989. This application Jul. 5, 1990, Ser. No. 549,524
Claims priority, application Japan, Mar. 11, 1988, 63-31697[U]; Mar. 25, 1988, 63-69850[U]; Mar. 30, 1988, 63-40982[U]
Int. Cl.[5] G11B *23/087*
U.S. Cl. 360—132 2 Claims

1. A magnetic tape cassette housing a pair of tape winding bodies around which a magnetic tape is wound, the magnetic tape being pulled exteriorly of the cassette for recording and playback, comprising: a reel brake for preventing angular movement of said tape winding bodies comprising a pair of engaging pawls each pivotally supported at one end thereof and having a free and urged in a direction to engage a gear portion formed on a flange of respective one of said tape wind-

ing bodies, and a pair of rotatable body portions each having an abutment portion and an operating portion, both of which extend from said rotatable body portion radially of said body portion, said abutment portion being engageable with a respective one of said engaging pawls intermediate the length of said engaging pawl so as to move said engaging pawls out of engagement with said gear portions, a brake release insertion member being insertable into said cassette through a hole



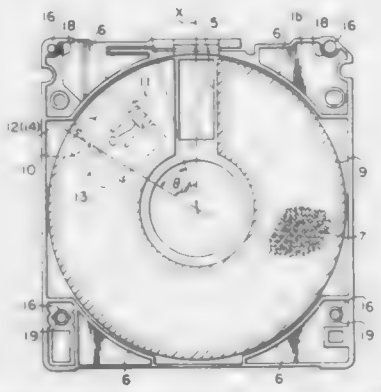
through a wall of said cassette so as to engage each of said operating portions to move said abutment portions, said rotatable body portions being urged in such directions as to hold said operating portions in contact with each other to close said hole, each abutment portion urging a respective one of said engaging pawls to move said engaging pawls out of engagement with said gear portions when said operating portions are moved away from each other, said operating portions not moving with movement of said engaging pawls.

5,006,948

DISK CARTRIDGE WITH IMPROVED CLEANING MECHANISM

Kazuya Fukunaga, Toride; Yoshitake Kato, Ibaraki, both of Japan, and Hiroyuki Yoshimura, Bonita, Calif., assignors to Hitachi Maxell Ltd., Osaka, Japan

Filed Sep. 13, 1988, Ser. No. 243,688
Claims priority, application Japan, Sep. 14, 1987, 62-228529
Int. Cl.[5] G11B *23/033*
U.S. Cl. 360—133 **5 Claims**



1. A cartridge case including an upper case, a lower case and a head insertion aperture at a predetermined position in each of said upper and lower cases;

a pair of cleaning sheets made of a non-woven fabric, one of said sheets being respectively secured to the inner surface of each of said upper and lower cases;

a disk having respective surfaces disposed rotatably between said cleaning sheets; and

at least one resilient member disposed between a corresponding one of said cases and a related one of said cleaning sheets, said resilient member being adapted to provide a cleaning position by pressing said cleaning sheets into direct contact with said surfaces of said disk,

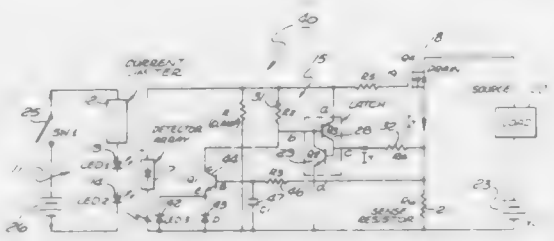
said resilient member being positioned within 60 degrees upstream of a central axis of said head insertion aperture relative to the rotating direction of said disk such that said cleaning position is provided by an inclined portion of said resilient member located within said 60 degrees.

5,006,949

TEMPERATURE COMPENSATED OVERLOAD TRIP LEVEL SOLID STATE RELAY

Ciro Guajardo, Harbor City, Calif., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Apr. 30, 1990, Ser. No. 516,430
Int. Cl.[5] H02H *5/04*
U.S. Cl. 361—18 **3 Claims**



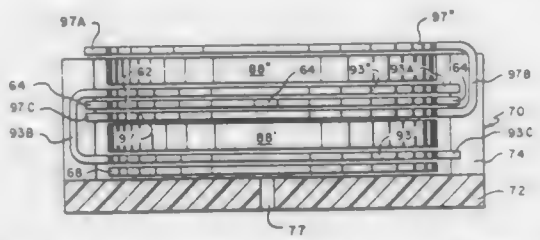
1. In a solid state relay circuit comprising a metal oxide field effect transistor connected for switching current to a load circuit, a latch circuit including first and second transistors connected to monitor a voltage caused by current in the load circuit and to shunt current away from the field effect transistor in response to current overload in the load circuit, the first and second transistors having temperature characteristics such that they turn on in response to different voltages at different temperatures, the improvement comprising second means for turning on the latch to shunt current away from the field effect transistor in response to the voltage caused by current in the load circuit, the second means comprising temperature compensating means for matching the temperature characteristics of the first and second transistors of the latch circuit whereby the latch turns on at the same voltage in the load circuit over the typical operating range of the device.

5,006,950

ELECTRICAL TRANSIENT SURGE PROTECTION WITH PARALLEL MEANS

Edward F. Allina, 605 Capri Blvd., Treasure Island, Fla. 33706

Continuation of Ser. No. 123,419, Jan. 12, 1988, Pat. No. 4,901,187, and a continuation-in-part of Ser. No. 923,524, Oct. 28, 1986, Pat. No. 4,931,895. This application Feb. 12, 1990, Ser. No. 478,345
The portion of the term of this patent subsequent to Feb. 13, 2007, has been disclaimed.
Int. Cl.[5] H02H *9/04*
U.S. Cl. 361—117 **16 Claims**



1. Electrical meter surge-protective apparatus, comprising the following, per power line to which such meter is connected:

a plurality of disklike varistors of given diameter and thickness, each having a pair of faces, juxtaposed with faces adjacent,

a first conductive laminar member juxtaposed to and electrically interconnecting respective first faces of the respective varistors, and a second conductive laminar member juxtaposed to and electrically interconnecting respective second faces of the respective varistors, and

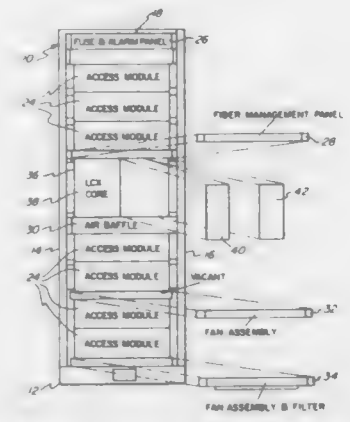
an insulating disk interposed between the respective laminar members juxtaposed to adjacent faces of the respective varistors.

5,006,951

LOCK HANDLE FOR PRINTED WIRING BOARD ASSEMBLIES AND THE LIKE

Guy D. Albert, and Robert C. Beaty, both of Raleigh, N.C., assignors to Alcatel NA Network Systems Corp., Raleigh, N.C.

Filed May 5, 1989, Ser. No. 348,034
Int. Cl.[5] H05K *7/14*; **H05F** *3/02*
U.S. Cl. 361—220 **47 Claims**



1. A locking handle assembly for use in manually inserting and extracting a component from an enclosure formed in a support having a protruding feature thereon, comprising:

a faceplate member mounted on the component, said faceplate member having means mounting said faceplate member to the component, means for pivotally mounting a handle member thereon for pivotal movement about a single axis, and means on said faceplate member for locking a handle member thereto; and

a handle member pivotally mounted on said pivotal mounting means of said faceplate member for pivotal movement about a single axis between a closed position with the component fully inserted within the enclosure and an open position with the component at least partially extracted from the enclosure, said handle member having a locking element for variably engaging said locking means of said faceplate member in a plurality of positions to adjustably hold said handle member in said closed position thereby compensating for tolerance buildup in the handle assembly, component and support, said handle member having means for engaging the protruding feature of the enclosure when said handle member is moved to its closed position.

40. A handle assembly for use in manually inserting and extracting a component from a support forming an enclosure having a protruding feature thereon, comprising:

A. a faceplate member mounted on the component, said faceplate member having means mounting said faceplate member to the component and means for pivotally mounting a handle member thereon;

B. a handle member pivotally mounted on said pivotal mounting means of said faceplate member for movement between a closed position with the component fully inserted in the enclosure and an open position with the component at least partially extracted from the enclosure, said handle member having means for engaging the protruding feature of the enclosure when said handle member is moved to its closed position; and

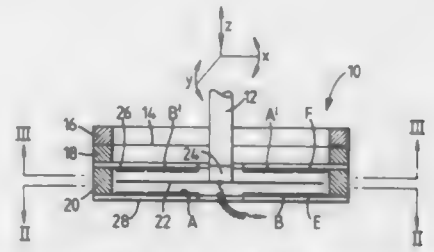
electrostatic discharge means providing grounding electric contact between the protruding feature and said handle and faceplate members for discharging electrical energy to protect the component.

5,006,952

CAPACITIVE TRANSDUCERS

David K. Thomas, Dursley, United Kingdom, assignor to Renishaw plc, Gloucestershire, United Kingdom

PCT No. PCT/GB89/00389, § 371 Date Nov. 29, 1989, § 102(e) Date Nov. 29, 1989, PCT Pub. No. WO89/09927, PCT Pub. Date Oct. 19, 1989
PCT Filed Apr. 12, 1989, Ser. No. 435,476
Claims priority, application United Kingdom, Apr. 12, 1988, 8808614
Int. Cl.[5] G01L *9/12*; **H01G** *7/00*
U.S. Cl. 361—283 **12 Claims**



9. A device which is responsive to displacement in at least two axes, the device comprising a differential capacitive displacement transducer for each said axis,

each transducer including at least two opposed outer capacitor electrodes, and a central electrode which is relatively movable in said at least two axes between the two outer electrodes,

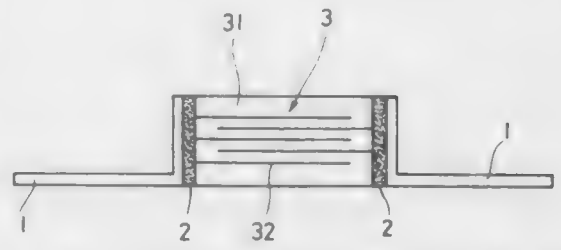
the central electrode of each transducer being common with the central electrode of the or each other transducer.

5,006,953

LEAD TYPE CHIP CAPACITOR AND PROCESS FOR PRODUCING THE SAME

Masahiro Hirama; Hiroaki Tanidokoro, and Kazuyasu Hikita, all of Saitama, Japan, assignors to Mitsubishi Mining & Cement Co., Ltd., Tokyo, Japan

Filed Jul. 25, 1989, Ser. No. 384,689
Claims priority, application Japan, Jul. 26, 1988, 63-187460
Int. Cl.[5] H01G *1/14*
U.S. Cl. 361—309 **1 Claim**



1. A lead type chip capacitor comprising a capacitor chip having a lead terminal bonded thereto through a joining or bonding layer made of a highly melting metal paste, wherein said metal paste comprises a metal powder and an organic binder, said organic binder being a cellulose selected from the group consisting of methyl-, ethyl-, and nitro-cellulose and a polymer from the group consisting of polyethylene, vinyl acetates, polyvinyl butyral, acrylic resins and methacrylic resins.

5,006,954

SOLID DIELECTRIC CAPACITOR AND METHOD OF MANUFACTURE

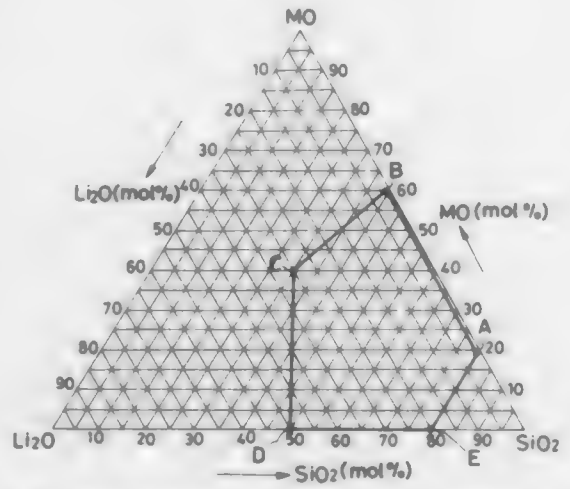
Hiroshi Kishi, Fujioka; Hirokazu Chazono, Takasaki; Minoru Oshio; Hiroshi Saito, both of Haruna; Toshiya Nakamura, and Hisamitsu Shizuno, both of Takasaki, all of Japan, assignors to Taiyo Yuden, Co., Ltd., Tokyo, Japan

Filed Feb. 21, 1990, Ser. No. 483,076

Claims priority, application Japan, Feb. 28, 1989, 1-48869

Int. Cl.[5] C04B *35/46;* **H01G** *4/12, 4/10*

U.S. Cl. 361—321 **9 Claims**



1. A solid dielectric capacitor comprising a dielectric ceramic body and at least two electrodes in contact therewith, the dielectric ceramic body consisting essentially of:

(a) 100 parts by weight of a major ingredient expressed by the formula,

$$(1-\alpha)\{(Ba_{k-x}M_x)O_kTiO_2\}+\alpha CaZrO_3,$$

where

M is at least either of magnesium and zinc;

α is a numeral in the range of 0.005 to 0.040;

k is a numeral in the range of 1.00 to 1.05; and

x is a numeral in the range of 0.01 to 0.10; and

(b) from 0.2 to 5.0 parts by weight of an additive mixture of lithium oxide, silicon dioxide and at least one metal oxide selected from the group consisting of barium oxide, strontium oxide, calcium oxide, magnesium oxide and zinc oxide, the relative proportions of lithium oxide, silicon dioxide and at least one selected metal oxide constituting the additive mixture being in that region of the ternary diagram of FIG. 2 attached hereto which is bounded by lines sequentially connecting:

the point A where the additive mixture consists of one mole percent lithium oxide, 80 mole percent silicon dioxide, and 19 mole percent metal oxide;

the point B where the additive mixture consists of one mole percent lithium oxide, 39 mole percent silicon dioxide, and 60 mole percent metal oxide;

the point C where the additive mixture consists of 30 mole percent lithium oxide, 30 mole percent silicon dioxide, and 40 mole percent metal oxide;

the point D where the additive mixture consists of 50 mole percent lithium oxide, 50 mole percent silicon dioxide, and 0 mole percent metal oxide; and

the point E where the additive mixture consists of 20 mole percent boric oxide, 80 mole percent silicon dioxide, and 0 mole percent metal oxide.

5,006,955

SOLID DIELECTRIC CAPACITOR AND METHOD OF MANUFACTURE

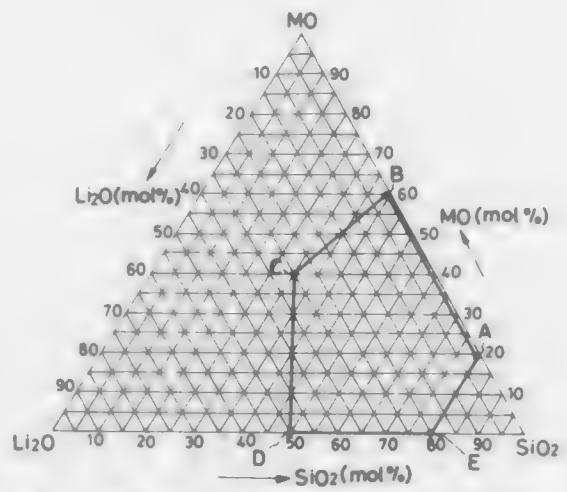
Hiroshi Kishi, Fujioka; Hirokazu Chazono, Takasaki; Minoru Oshio; Hiroshi Saito, both of Haruna; Toshiya Nakamura, and Hisamitsu Shizuno, both of Takasaki, all of Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

Filed Feb. 21, 1990, Ser. No. 482,658

Claims priority, application Japan, Feb. 28, 1989, 1-48871

Int. Cl.[5] C04B *35/46;* **H01G** *4/12, 4/10*

U.S. Cl. 361—321 **9 Claims**



1. A solid dielectric capacitor comprising a dielectric ceramic body and at least two electrodes in contact therewith, the dielectric ceramic body consisting essentially of:

(a) 100 parts by weight of a major ingredient expressed by the formula,

$$(1-\alpha)\{(Ba_{k-x}M_x)O_kTiO_2\}+\alpha CaZrO_3,$$

where

M is at least either of calcium and strontium;

α is a numeral in the range of 0.005 to 0.040;

k is a numeral in the range of 1.00 to 1.05; and

x is a numeral in the range of 0.01 to 0.05; and

(b) from 0.2 to 5.0 parts by weight of an additive mixture of lithium oxide, silicon dioxide and at least one metal oxide selected from the group consisting of barium oxide, strontium oxide, calcium oxide, magnesium oxide and zinc oxide, the relative proportions of lithium oxide, silicon dioxide and at least one selected metal oxide constituting the additive mixture being in that region of the ternary diagram of FIG. 2 attached hereto which is bounded by lines sequentially connecting:

the point A where the additive mixture consists of one mole percent lithium oxide, 80 mole percent silicon dioxide, and 19 mole percent metal oxide;

the point B where the additive mixture consists of one mole percent lithium oxide, 39 mole percent silicon dioxide, and 60 mole percent metal oxide;

the point C where the additive mixture consists of 30 mole percent lithium oxide, 30 mole percent silicon dioxide, and 40 mole percent metal oxide;

the point D where the additive mixture consists of 50 mole percent lithium oxide, 50 mole percent silicon dioxide, and 0 mole percent metal oxide; and

the point E where the additive mixture consists of 20 mole percent lithium oxide, 80 mole percent silicon dioxide, and 0 mole percent metal oxide.

5,006,956

DIELECTRIC CERAMIC COMPOSITION

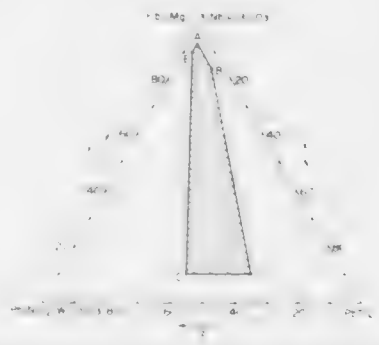
Kouji Kawakita, Joyo; Suzushi Kimura; Hideyuki Orinaka, both of Toyonaka; Youichiro Yokotani, Suita, and Mariko Ishikawa, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 7, 1989, Ser. No. 432,880

Claims priority, application Japan, Nov. 7, 1988, 63-280812; Feb. 8, 1989, 1-29088

Int. Cl.[5] H01G *4/12;* **C04B** *35/46*

U.S. Cl. 361—321 **5 Claims**



1. A dielectric ceramic composition consisting essentially of a principal component represented by the formula

$$PbTi_x(Mg_{\frac{1}{3}}Nb_{\frac{2}{3}})_y(Ni_{\frac{1}{3}}W_{\frac{2}{3}})_zO_3$$

wherein $X+y+z=1$, and substantially components of PbO in an amount of 1.0 to 25.0 mol % and NiO or WO_3 in an amount of 1.0 to 15.0 mol %, wherein said subsidiary components are added to a calcined powder of said principal component, and wherein the values of x, y and z fall within ranges represented by a polygon ABCDE of a ternary system composition diagram of $PbTi_x(Mg_{\frac{1}{3}}Nb_{\frac{2}{3}})_y(Ni_{\frac{1}{3}}W_{\frac{2}{3}})_zO_3$, such that the vertices of the polygon corresponding to compositions A, B, C, D, E are represented by the following numerical values:

A is	x =	2.5,	y =	95.0,	z =	2.5;
B is	x =	12.5,	y =	85.0,	z =	2.5;
C is	x =	60.0,	y =	10.0,	z =	30.0;
D is	x =	40.0,	y =	10.0,	z =	50.0;
E is	x =	2.5,	y =	90.0,	z =	7.5 (all units mol %)

5,006,957

SEMICONDUCTOR PORCELAIN SUBSTRATE, DIELECTRIC PORCELAIN SUBSTRATE AND CAPACITOR EMPLOYING THE COMPOSITION

Motoo Kumagai, Yokohama; Keiichi Kato, Tokyo; Humio Takeuti, Iwamisawa; Masato Nagano, Iwamisawa, and Michiaki Sakaguchi, Iwamisawa, all of Japan, assignors to Canon Kabushiki Kaisha and Nippon Oil & Fats Co., Ltd., both of Tokyo, Japan

Continuation of Ser. No. 196,478, May 20, 1988, abandoned.

Filed Jun. 7, 1990, Ser. No. 534,354

Claims priority, application Japan, May 20, 1987, 62-124530

Int. Cl.[5] H01G *4/12;* **C04B** *35/46*

U.S. Cl. 361—321 **15 Claims**

9. A capacitor comprising a pair of electrodes and a dielectric porcelain interposed between said electrodes, said dielectric porcelain having an insulating layer containing at least one oxide selected from the group consisting of iron oxide, cobalt oxide, vanadium oxide, chromium oxide, lead oxide, bismuth oxide, copper oxide, sodium oxide, and mixtures thereof present at crystal grain boundaries of a semiconductor porcelain comprisng a fired product of a ceramic-forming composition cosisting essentially of: (a) 100 moles of main components, said main components consisting of: (i) from 50.20 to 53.50 mole % of TiO_2 and (i) from 49.80 to 46.50 mole % of SrO; (b) from 2.0 to 5.0 moles of MnO_2; and (c) from 0.05 to 0.30 mole of Y_2O_3.

5,006,958

GAS INSULATION SWITCHGEAR

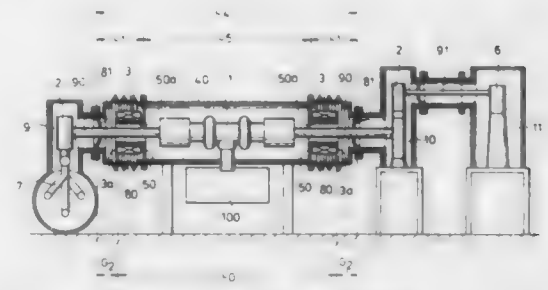
Kenzi Sasamori; Hiroshi Yamamoto, and Hiroshi Aoki, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 19, 1990, Ser. No. 467,201

Claims priority, application Japan, Jan. 31, 1989, 1-10538[U]

Int. Cl.[5] H02B *7/01*

U.S. Cl. 361—335 **2 Claims**



1. A gas insulation switchgear, comprising:

a first earthed tank containing a circuit breaker therein,

a pair of second earthed tanks, each respectively containing a disconnector therein;

an expansion joint interconnecting said first earthed tank and each of said pair of second earthed tanks;

said first earthed tank, said second earthed tanks and said expansion joints together defining a continuous gas-tight space containing an insulation gas;

a pair of conductors respectively penetrating through said pair of expansion joints and interconnecting said circuit breaker and said disconnectors; and

a pair of current transformers provided in respective hollow inside spaces of said expansion joints and having holes formed therein in a manner such that said respective pair of conductors pass through said holes formed in said current transformers.

5,006,959

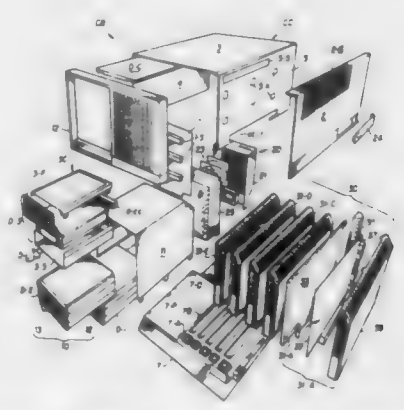
COOLING OF CIRCUIT BOARDS

D. Edmond Freige, Los Altos, and Richard N. Hibbs, Palo Alto, both of Calif., assignors to Unisys Corp., Detroit, Mich.

Filed Sep. 22, 1989, Ser. No. 411,068

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—384 **13 Claims**



1. A control unit for a desktop control system, said unit including a base means; fan means; motherboard means mounted on said base means; and a plurality of daughterboard

means, each packaged in a like envelope means and including connector means removably coupled on the motherboard means;

said base means being characterized by deck means superposed above the mother means forming plenum space thereabove; the deck means having plural slot means by which said motherboard said plurality daughterboard means removably coupled to said motherboard means; the deck means also including like vent-hole means flanking each said slot means;

each said daughterboard envelope means including intake-vent means and exhaust-hole means arranged in registry with said deck vent-holes;

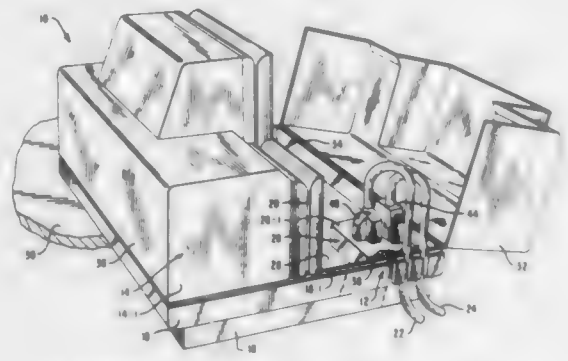
said fan means pulling cooling air into each envelope means co-coupled on the motherboard means, then out the respective exhaust-hole means, down onto the motherboard means, and thereacross.

5,006,960

MEANS FOR ROUTING CONNECTION CABLES OUT OF A TABLE TOP TERMINAL

Fredrik L. N. Kallin, Kitchener; Alistair R. Hamilton, Waterloo, and Graham Luckhurst, Kitchener, all of Canada, assignors to NCR Corporation, Dayton, Ohio

Filed Jan. 11, 1990, Ser. No. 463,646
Int. Cl.[5] H05K *5/00*
U.S. Cl. 361—390 **10 Claims**



1. An apparatus comprising:

a cabinet having a base portion including a perimeter portion;

said perimeter portion having at least one slot therein to receive a cable therein;

said base portion having a coupling member therein located adjacent to said at least one slot;

said cable having a cooperative coupling member on an end thereof, with said cooperative coupling member being coupled to said coupling member;

said cabinet also having a cover coupled to said base portion to enable said cover to be moved between opened and closed positions relative to said base portion; and

said at least one slot being located in said perimeter portion to enable said cover to be moved to said closed position only when said cable is properly positioned in said at least one slot.

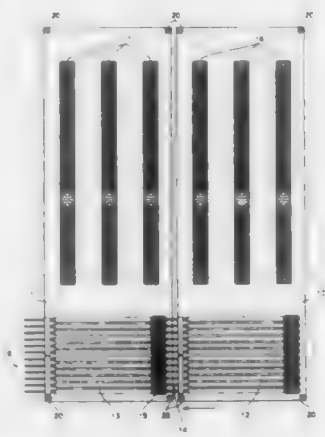
5,006,961

SEGMENTED BACKPLANE FOR MULTIPLE MICROPROCESSING MODULES

Juan A. Monico, San Jose, Calif., assignor to Catene Systems Corporation, San Jose, Calif.

Continuation of Ser. No. 185,709, Apr. 25, 1988, abandoned.
This application Oct. 12, 1989, Ser. No. 420,746
Int. Cl.[5] H05K *1/04*
U.S. Cl. 361—413 **3 Claims**

1. A segmented computer backplane adapted to have one or more printed circuit cards connected to it, said backplane forming a single unitary bus and backplane structure made up of a plurality of physically separable but interconnected backplane segments, each backplane segment comprising: a plurality of connecting means for respectively connecting a plurality of said cards to said backplane segment; a plurality of fixed electrical interconnections for making connections to and between said plurality of connecting means, said connections being completely established within said backplane segment irrespective of whether said cards are actually inserted into said connecting means; a bus segment which is removably connected with other bs segments of other backplane segments



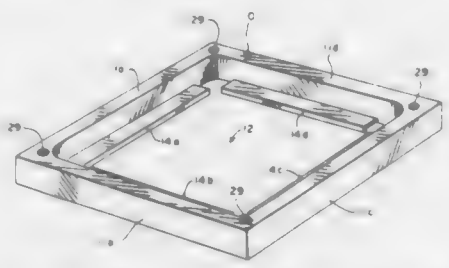
to form a unitary bus; and a bus segment connector adapted to connect said bus segment of said backplane segment to the bus segment of another backplane segment to form a unitary bus and backplane, said plurality of connected cards carrying out electrical communication among themselves entirely through the said plurality of fixed electrical interconnections of their own backplane segment without communication through said bus, whereby said connected backplane segments form a unitary backplane having its inter-segment communication carried out through said single unitary bus.

5,006,962

APPARATUS FOR SURFACE MOUNTING AN INTEGRATED CIRCUIT PACKAGE

Kevin Haley, San Jose, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 28, 1989, Ser. No. 458,558
Int. Cl.[5] H05K *7/02*
U.S. Cl. 361—417 **6 Claims**



1. An apparatus for mounting an integrated circuit onto a base, wherein leads of said integrated circuit reside upon electrical contacts of said base, comprising:

a housing member having a central opening, wherein said housing member is disposed over said integrated circuit residing on said base and wherein said integrated circuit resides within said central opening;

at least two beam members integral with said housing member and extending inwardly toward said central opening from said housing member from at least two opposing sides of said housing member, each of said beam members having a distal end which forms an angle downwardly toward leads of said integrated circuit such that each said distal end resides over lead portion of said integrated circuit residing on said contacts;

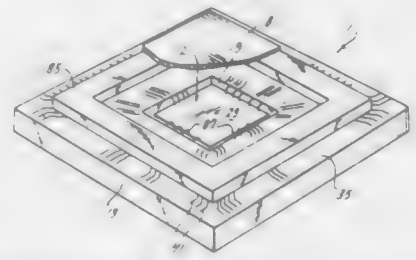
retaining means coupled to said housing member for retaining said housing member on said base, wherein tightening said retaining means causes each of said distal ends to exert a sideward force on said leads to create tension in retaining said integrated circuit stationary and a downward force to retain said leads on said contact.

5,006,963

SELECTABLE CHIP CARRIER

James B. Spangler, Tustin, and Steve G. Rector, Riverside, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Dec. 18, 1989, Ser. No. 451,639
Int. Cl.[5] H01L *23/02*
U.S. Cl. 361—417 **13 Claims**



1. A selectable chip carrier adapted to receive an integrated circuit chip which has a plurality of conductive terminal pads disposed about its periphery, and adapted to communicate with selected ones of the terminal pads, the selectable chip carrier comprising:

a base plate having:

an upper surface adapted to support an integrated circuit chip;

a dielectric substrate having:

an outer periphery;

an upper planar surface;

a lower planar surface supported by said upper surface of said base plate; and

an aperture therethrough for accommodating an integrated circuit chip, said aperture defining an inner peripheral surface of said dielectric substrate;

a plurality of parallel and insulatively separated planar conductive layers disposed adjacent one of said planar surfaces of said substrate, said conductive layers each including:

an outer periphery; and

an integrated circuit chip-accommodating aperture therethrough defining an inner periphery generally coaxial with said aperture in said dielectric substrate, each of said conductive layers extending from its outer periphery to its inner periphery;

a plurality of insulated conductive signal lines lying in a common plane and disposed on said dielectric substrate, said signal lines each including;

associated external conductive signal pads adjacent said outer periphery of said dielectric substrate; and

oppositely disposed internal conductive signal pads adjacent said inner periphery of said dielectric substrate;

electrical coupling means for association with the chip conductive terminal pads, and associated with said internal conductive pads and said planar conductive layers for conductively connecting selected ones of the chip terminal pads to selected ones of said internal signal pads and said conductive layers; and

a metalization layer disposed along said inner peripheral surface of said dielectric substrate, said metalization layer being electrically connected to said ground plane and including:

a bus disposed on said upper planar surface of said dielectric substrate around said integrated circuit chip-accommodating aperture thereof.

5,006,964

LOW RESISTIVITY LOW ESR CAPACITOR ELECTROLYTE

Sidney D. Ross, Williamstown, and Manuel Finkelstein, North Adams, both of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Apr. 30, 1990, Ser. No. 516,996
Int. Cl.[5] H01G *9/02*
U.S. Cl. 361—504 **4 Claims**

1. An electrolytic capacitor comprising spaced aluminum electrodes, an electrolyte contacting said electrodes, said electrolyte having an organic solvent and a phthalate solute with from about 1 wt. % to about 3 wt. % benzil.

5,006,965

DIMMER FOR FIBER OPTIC LIGHT TRANSMISSION SYSTEMS

Eric M. Jones, Los Angeles, Calif., assignor to Karl Storz Endoscopy-America, Inc., Culver City, Calif.

Filed Mar. 9, 1990, Ser. No. 491,562
Int. Cl.[5] F21V *7/04*
U.S. Cl. 362—32 **3 Claims**

1. A dimmer to attenuate the light provided to an input end of a fiber optic bundle, said driver attenuating light in a focused beam from a constant-intensity light source, said beam having an optical axis, said dimmer comprising:

an opaque vane with a control area disposed in said beam, normal to said optical axis, so disposed and arranged that the beam focuses a spot on said control area, said control area having a movement axis always coincident with said optical axis,

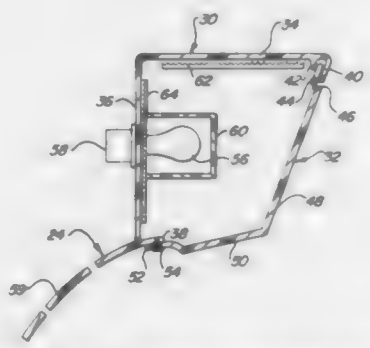
said control area having a first band on one side of the movement axis, and a second band on the other side thereof,

said first band having a substantial imperforate portion extending along said movement axis, whereby to block substantially 50% of the light in the spot, and an open portion extending along said movement axis for passing said 50% of the light, blockage or transmission being a function of the location of said first band relative to said spot,

said second band, along portions adjacent to said imperforate portion of said first band, having slots extending therethrough, interspersed with opaque bars, the width and spacing of said slots and bars being such as to provide increasing transmission of light through said second band when the vane is moved so as to move the control area relative to the spot, toward the open portion of the first band, until adjacent to the location where the imperforate and open portions of the first band join one another, the second band transmits substantially 50% of the light of the beam, and

along the portion of the second band adjacent to the open portion of the first band, the second band has slots interspersed with bands, whose width and spacing successively change such that with additional movement of the vane, the light transmitted by the second band gradually increases, being additive to the light transmitted by the open portion of the first band.

5,006,966
TRANSIT VEHICLE LIGHTING FIXTURE
Liudas K. Mikalonis, Northville, Mich., assignor to Transmatic, Inc., Waterford, Mich.
Filed Aug. 30, 1989, Ser. No. 400,426
Int. Cl.[5] B60Q *3/00*
U.S. Cl. 362—74 **5 Claims**



1. In a public transit vehicle having side windows, an aisle extending along the longitudinal axis of the vehicle and a passenger seating area on either side of the aisle, a lighting fixture arrangement for preferentially illuminating the seating area and minimizing the illumination of the aisle and side windows, comprising:
- a lighting fixture above each passenger seating area,
- each fixture having an elongated light housing extending generally parallel to the aisle, the housing comprising an upper surface, an adjacent side surface, and a translucent cover having a side wall spaced from the said side surface and a bottom wall spaced from the upper surface to define a cavity,
- a plurality of spaced incandescent lamps within the housing, and
- optical means positioned in the housing adjacent each lamp to receive light from the adjacent lamp for preferentially directing light from the lamps through the bottom wall of the translucent cover to the seating area, whereby the seating area is illuminated at a higher level than the aisle and the side windows.

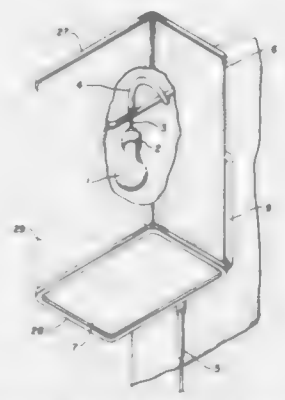
5,006,967
SELF-ILLUMINATING GLASS BLOCK CONSTRUCTION UNIT
Gary Diamond, 18220 Margate St., Tarzana, Calif. 91356
Filed May 22, 1989, Ser. No. 355,411
Int. Cl.[5] F21S *1/14*
U.S. Cl. 362—147 **5 Claims**

1. A modular device formed of a hollow glass block construction unit used for forming walls and panels, the device comprising,
- a glass block construction unit assembly having all faces made of glass forming a chamber,
- an electric light means assembly integral with said glass block unit,
- said electric light means assembly penetrating through a wall of said glass block unit,
- said electric light means assembly being removable from said glass block unit,
- electrical conductors connected to said electric light means being located at the exterior of said glass block unit,



- said construction unit assembly thereby forming a self-illuminating glass block construction unit.

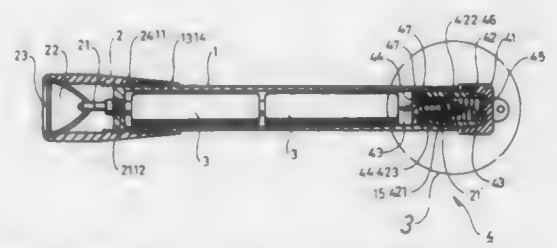
5,006,968
WALL MOUNTED LAMP WITH ADJUSTABLE PATTERN OF ILLUMINATION
Elmo E. Miller, 8201 16th St., Apt. 1126, Silver Spring, Md. 20910
Filed Dec. 27, 1989, Ser. No. 457,833
Int. Cl.[5] F21S *1/02*
U.S. Cl. 362—147 **10 Claims**



1. A wall mounted lighting fixture in which the pattern of illumination can be adjusted by a means comprising:
- a shade that is stationary with respect to a wall;
- a cane shaped tube attached to said wall, with its curved segment terminating within said shade;
- a straight tube that slides within said cane shaped tube;
- a bulb and socket suspended within said shade by an electric cord that passes through both of said tubes, which cord has a diameter providing a tight fit within said straight tube so that said cord, socket and bulb may be moved by means of said straight tube.

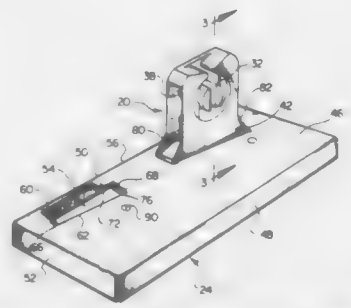
5,006,969
FLASHLIGHT WITH END CAP SWITCH
Larry Lai, Chia-Yi Hsien, Taiwan, assignor to Plum Industrial Co., Ltd., Chiayi Hsien, Taiwan
Filed Oct. 31, 1989, Ser. No. 430,619
The portion of the term of this patent subsequent to Jan. 8, 2008, has been disclaimed.
Int. Cl.[5] F21L *7/00*
U.S. Cl. 362—206 **3 Claims**

1. A flashlight comprising a conductive cylinder for receiving at least one dry cell, a mount at one end of the cylinder for a light bulb, said one end of the cylinder having an external thread, an internally threaded light-bulb shell for threading on said external thread, said cylinder having an opposite end with an internal thread, a non-conductive whorl ring with an outer thread to fit said internal thread, the whorl ring carrying an



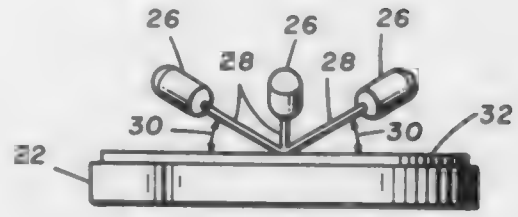
axially extending spiral spring for electrically contacting a dry cell in the casing, and a conducting cover on a rearward end of the whorl ring for selectively engaging and disengaging the casing by inwardly and outwardly threading the whorl ring on said internal thread thereby selectively completing and breaking a circuit containing the light bulb and dry cell so as to activate and deactivate the light bulb.

5,006,970
INTERLOCK ELECTRICAL SOCKET MOUNT
Edward T. Mackiewicz, Elmwood Park, Ill., assignor to Kenall Manufacturing Company, Gurnee, Ill.
Filed Dec. 29, 1989, Ser. No. 458,953
Int. Cl.[5] F21S *3/00*
U.S. Cl. 362—217 **6 Claims**



1. In a fluorescent light fixture including panel means for supporting thereon an electrical socket assembly, said socket assembly having a base and an upstanding wall,
- said wall being adapted for supporting a fluorescent lamp operatively coupled thereto,
- the improvement wherein
- said panel means is formed with cut-out zone means including a generally elongate opening for insertably receiving said upstanding wall of said socket assembly inserted upwardly through said panel means,
- said panel means including, in a sector of a perimetric margin bounding and defining said cut-out zone means, wing means integrally formed with said panel means and projecting toward said opening for invasively slidably penetrating said socket assembly at an opposed groove-like slot formed in said socket assembly adjacent said base and laterally thereof,
- said wing means constituting means for effecting mechanical intercoupling between said panel means and said socket assembly upon insertion of said wall means of said socket assembly upwardly through said opening in said panel means and upon arcuately shifting displacement of said base of said socket assembly toward said wing means for positively seating said wing means of said panel means within the slot formed in said socket assembly, lockingly to engage said socket assembly with said panel means.

5,006,971
LOW POWER SAFETY FLASHER
Lloyd T. Jenkins, 3540 Alipha Pl., Pensacola, Fla. 32503
Filed Jul. 23, 1990, Ser. No. 556,669
Int. Cl.[5] F21L *15/02*
U.S. Cl. 362—252 **4 Claims**



1. A low-power light-weight flashing light source, said source comprising:
- a. a plurality of high-intensity separate LED's, said LED's producing when energized a total of at least 6 candelas, each said separate LED producing when energized an intense central cone of light directed along an axis individual to said separate LED, said axes being oriented between 20 and 40 degrees above the horizontal plane;
- b. a refracting lens having a perimeter, said lens surrounding and covering said plurality of LED's, said lens comprising a plurality of refracting striations about said perimeter, said LED's and said striations being positioned and oriented such that said striations intercept and scatter said intense central cones of light whereby said light source may be readily seen by observers 360 degrees around said light source; and
- c. electronic power supply means for periodically and simultaneously energizing said plurality of LED's.

5,006,972
SEA WATER BATTERY POWER CONVERTER
Russell E. Hammond, and John L. Henry, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Continuation of Ser. No. 353,585, May 18, 1989, abandoned.
This application Sep. 4, 1990, Ser. No. 579,201
Int. Cl.[5] H02M *3/337*
U.S. Cl. 363—24 **15 Claims**

1. A power converter for increasing the source voltage of a direct current power source to a higher voltage, comprising:
- first means operably coupled to said direct current power source for generating a first output having a voltage higher than said source voltage;
- second means operably coupled to receive said first output from said first means for generating first and second pulse trains having a voltage and a frequency, f, said first pulse train having a phase lag with respect to said second pulse train;
- a transformer operably coupled to receive said first and second pulse trains from said second means, said transformer providing second, third, and fourth outputs each having a voltage greater than said voltages of said first and second pulse trains;
- third means operably coupled to receive said second and third outputs from said transformer for full wave rectifying said second and third outputs of said transformer;
- fourth means operably coupled to receive said fourth output

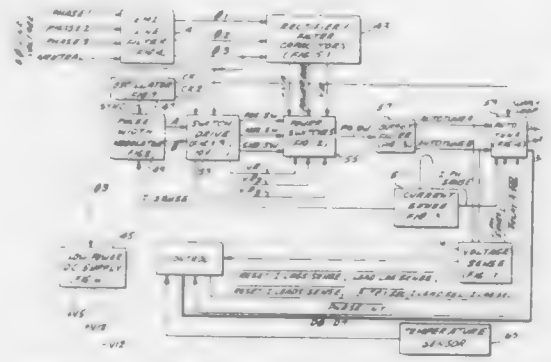
from said transformer for full wave rectifying said third output; and



fifth means operably coupled to said first, second, and fourth means for disabling said first means when said fourth output attains a minimum voltage level.

5,006,973
AUTOTUNED RESONANT POWER SOURCE
James B. Turner, Bothell, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Mar. 28, 1990, Ser. No. 500,745
Int. Cl.[5] H02M 5/40
U.S. Cl. 363—34 **9 Claims**

1. A resonant, quasi-square wave, pulse width modulated power source for supplying constant amplitude, fixed-frequency current, said resonant, quasi-square wave, pulse width modulated power source comprising:
- fixed-frequency pulse generating means for generating fixed-frequency sync pulses;
- pulse width modulation means coupled to said fixed-frequency pulse generating means for receiving said fixed-frequency sync pulses and producing fixed-frequency width modulated pulses in response thereto;
- power supply means for producing relatively high-voltage DC power;
- power switch means coupled to said pulse width modulator and to said power supply means for receiving said width modulated pulses produced by said pulse width modulator and said relatively high-voltage DC power produced by said power supply means and producing switched power pulses whose frequency and duration are controlled by the frequency and duration of the pulses produced by said pulse width modulator and whose magnitude is related to the magnitude of said relatively high-voltage DC power.
- first current sensing means for sensing the current component of said switched power pulses and producing a current sense signal whose magnitude is related thereto, said current sense signal being applied to said pulse width modulator to control the width of the pulses produced by said pulse width modulator such that the amplitude of the current component of said switched power pulses remain substantially constant;
- second current sensing means for sensing the current component of said switched power pulses and producing a current phase signal whose phase tracks the phase of the current component of said switched power pulses;
- voltage sensing means for sensing the voltage component of

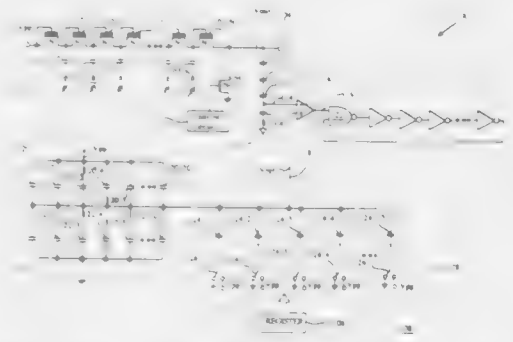


said switched power pulses and producing a voltage phase signal whose phase tracks the phase of said voltage component of said switched power pulses; and
- autotune means coupled to said second current sensing means and said voltage sensing means for receiving said current and voltage phase signals and producing a signal related to the phase difference therebetween and, thus, the phase difference between the current and voltage components of said switched power pulses, said autotune means including a capacitor bank and capacitor bank switching means for controlling the application of capacitance to the output of said power switching means and, thus, the phase difference between the current and voltage components of said switched power pulses, said autotune means also including control means for controlling said capacitor bank switching means so as to maintain the phase difference between said current and voltage phase signals and, thus, the phase difference between the current and voltage components of said switched power pulses low.

5,006,974
ON-CHIP HIGH VOLTAGE GENERATOR AND REGULATOR IN AN INTEGRATED CIRCUIT
Reza Kazerounian, Alameda; Syed Ali, Cupertino, and Boaz Eitan, Sunnyvale, all of Calif., assignors to WaferScale Integration Inc., Fremont, Calif.
Division of Ser. No. 137,782, Dec. 24, 1987. This application Apr. 27, 1990, Ser. No. 516,025
Int. Cl.[5] H02M 7/25
U.S. Cl. 363—60 **11 Claims**

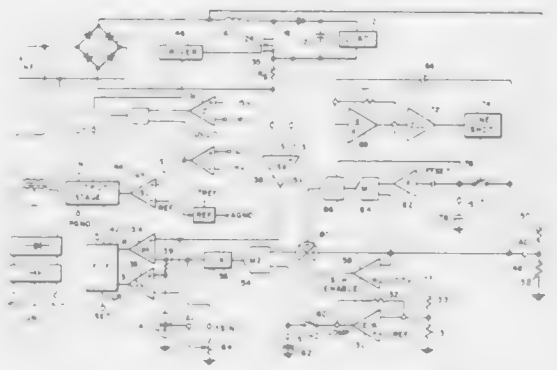
1. An integrated circuit including a voltage supply comprising:
- first means for providing an output voltage on an output lead;
- a first lead for receiving a first voltage;
- a plurality of capacitors coupled in series between said output lead and said first lead, said plurality of capacitors serving as a voltage divider;

- a second lead coupled to a node between two of the capacitors within said plurality, said second lead providing a sense voltage responsive to said output voltage;



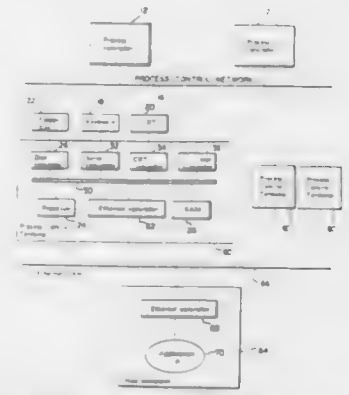
- second means for providing a reference voltage, said first means comprising means for comparing said sense voltage and said reference voltage and adjusting said output voltage in response thereto.

5,006,975
POWER FACTOR CORRECTION CIRCUIT
Herman Neufeld, Cranston, R.I., assignor to Cherry Semiconductor Corporation, East Greenwich, R.I.
Filed Nov. 3, 1989, Ser. No. 431,598
Int. Cl.[5] H02M 7/217
U.S. Cl. 363—80 **22 Claims**



1. A power factor correction circuit comprising:
- an input terminal for receiving a divided-down rectified signal;
- a sample-and-hold terminal for connection to a capacitor;
- a switch connected between said sample-and-hold terminal and said input terminal;
- means for periodically closing said switch about when the divided-down rectified signal is approximately at a peak;
- means, connected to said sample-and-hold terminal, for producing a correction signal;
- means for combining said correction signal with said divided-down rectified signal to produce a reference signal;
- voltage sensing means for generating an output voltage error signal corresponding to the deviation of the voltage at the output of a DC-to-DC converter from a predetermined reference voltage;
- means for combining the output voltage error signal with the reference signal to generate a sinusoidal reference signal;
- current sensing means for generating a current-indicating signal indicative of the current flowing into the DC-to-DC converter; and
- current control means receiving the sinusoidal reference signal and the current-indicating signal for regulating the flow of current into the DC-to-DC converter.

5,006,976
PROCESS CONTROL TERMINAL
Larry O. Jundt, Round Rock, Tex., assignor to Fisher Controls International, Inc., Clayton, Mo.
Filed Feb. 23, 1989, Ser. No. 314,549
Int. Cl.[5] G05B 9/02
U.S. Cl. 364—184 **23 Claims**



1. A process control terminal for allowing an operator to perform process control functions and application functions in addition to the process control functions, said process control terminal reserving a predetermined screen portion for process control information to eliminate the possibility that process control alarms will not appear on the screen and thus not be brought to the attention of a process control operator, said process control terminal comprising:
- a processor;
- a bus connected to said processor;
- a display terminal connected to said bus, said display terminal having a screen;
- a process control network controller connected to said bus for allowing process control information to be received from a process controller;
- a host network controller connected to said bus for allowing application information to be received from a host computer and for allowing application information to be transmitted to a host computer;
- first means for periodically determining the existence of an alarm condition, said first means causing an alarm indication to be generated in a first predetermined portion of said screen, said first predetermined portion of said screen being reserved for process control information only; and
- second means for causing said application information to be displayed on said screen, said second means including means for preventing said application information to be displayed on said first predetermined portion of said screen reserved for said process control information, said preventing means causing said application information to be displayed on a second predetermined portion of said screen to ensure that said process control information cannot be overwritten by said application information thus causing a process control operator monitoring said screen to miss an alarm condition.

5,006,977

FIGURE ELEMENT REVISING METHOD

Masaki Seki; Takashi Takegahara, both of Tokyo, and Akira Kajitani, Yamanashi, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

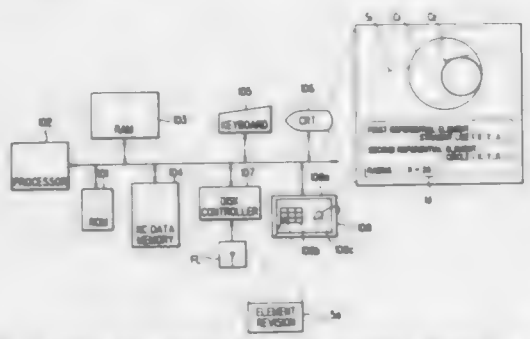
PCT No. PCT/JP88/01152, § 371 Date Jul. 14, 1989, § 102(e) Date Jul. 14, 1989, PCT Pub. No. WO89/05007, PCT Pub. Date Jun. 1, 1989

PCT Filed Nov. 15, 1988, Ser. No. 381,409

Claims priority, application Japan, Nov. 18, 1987, 62-291254

Int. Cl.[5] G05B *19/403*

U.S. Cl. 364—192 12 Claims



9. A system for revising a figure element having a figure definition statement based on previously defined figure elements, comprising:

display means for displaying figure elements and figure definition statements;

input means for selecting a figure element to be revised from a plurality of previously defined figure elements; and

control means for controlling revision of the figure element selected by said input means, said control means including

first means for distinguishably displaying on said display means the figure element selected by said input means from the figure elements remaining in the plurality of previously defined figure elements;

second means for determining if the figure element selected by said input means has a figure definition statement based on at least one of the previously defined figure elements, and for identifying the at least one of the previously defined figure elements upon which the figure element is selected is based; and

third means for distinguishably displaying on said display means the at least one of the previously defined figure elements identified by said second means.

5,006,978

RELATIONAL DATABASE SYSTEM HAVING A NETWORK FOR TRANSMITTING COLLIDING PACKETS AND A PLURALITY OF PROCESSORS EACH STORING A DISJOINT PORTION OF DATABASE

Philip M. Neches, Pasadena, Calif., assignor to Teradata Corporation, Los Angeles, Calif.

Division of Ser. No. 755,436, Jul. 16, 1985, Pat. No. 4,814,979, which is a division of Ser. No. 601,808, Apr. 19, 1984, Pat. No. 4,543,630, which is a division of Ser. No. 250,094, Apr. 1, 1981, Pat. No. 4,445,171. This application Sep. 7, 1988, Ser. No. 241,301

Int. Cl.[5] G06F *15/40, 15/16*

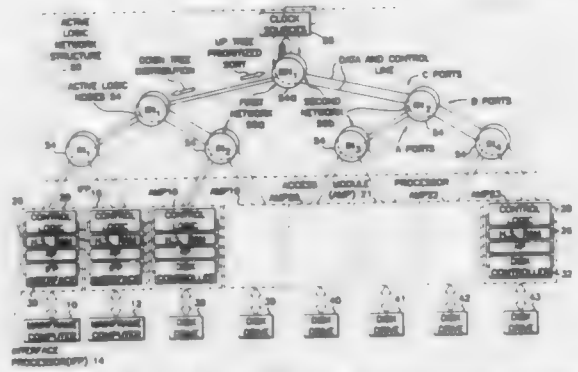
U.S. Cl. 364—200 17 Claims

1. A relational data base machine for processing message packets comprising the combination of:

(a) a plurality of processors, each of the plurality of processors generating and receiving said message packets having a data content, each said message packet defining a task, each of the plurality of processors containing a portion of the relational data base;

(b) a multiple terminal active network having a plurality of bidirectional active nodes and merging at an apex node, each said active node including means responsive to the data content of said message packets for determining priority in simultaneous collisions between two competing said message packets;

(c) at least two like processors coupled to different terminals of the network, the like processors each including means responsive to the message packets for determining



whether the task defined by the message packet is appropriate for that processor; and

(d) a plurality of secondary storages, each coupled to a different one of said processors and each having a disjoint primary subset of the relational data base and a different backup subset of the relational data base, the subsets being distributed in accordance with a predetermined pattern

5,006,979

PHASE SYNCHRONIZATION SYSTEM

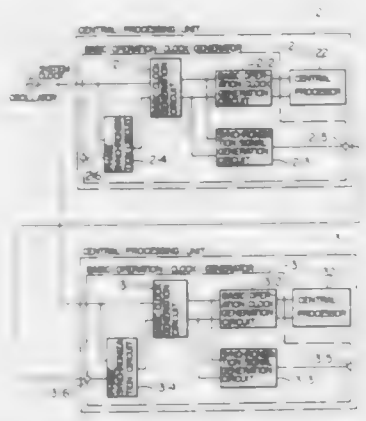
Tatsuo Yoshie, and Mitsuharu Nagai, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 23, 1986, Ser. No. 888,409

Claims priority, application Japan, Jul. 29, 1985, 60-167199

Int. Cl.[5] G06F *1/12*

U.S. Cl. 364—200 9 Claims



1. In a system including a plurality of processing units, each of said processing units having clock signal generation means for producing a basic operation clock signal on the basis of pulses of a common input clock signal and means activated by said basic operation clock signal for performing an operation, a phase synchronization system, comprising:

means for connecting respective clock signal generation means in cascade, including first means in a preceding processing unit for producing a synchronization signal each time said basic operation clock signal therein reaches a predetermined state and for supplying said synchronization signal to a succeeding processing unit, and second means in the succeeding processing unit for controlling the clock signal generation means therein to set a succeeding counter, which outputs said basic operation clock signal, to an initial state in response to synchronization, by said second means, of said synchronization signal supplied from the first means of the preceding processing unit with said common input clock signal, whereby phases of basic operation clock signals of said preceding and succeeding processing units are matched to each other at the time said initial state is set in said succeeding processing unit.

5,006,980

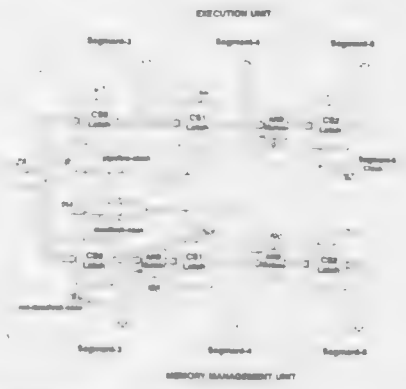
PIPELINED DIGITAL CPU WITH DEADLOCK RESOLUTION

Douglas E. Sanders, Framingham; George M. Uhler, Marlborough, and John F. Brown, III, Northborough, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 20, 1988, Ser. No. 222,008

Int. Cl.[5] G06F *9/38*

U.S. Cl. 364—200 20 Claims



1. A processor comprising:

(a) a plurality of execution stages connected in sequence and a plurality of memory access stages connected in sequence;

(b) microinstruction means for producing microinstructions for controlling the operation of said execution and memory access stages;

(c) a plurality of latches receiving output from said microinstruction means, said plurality of latches temporarily storing controls representing said microinstructions, a respective one of said plurality of latches being associated separately with each one of said stages, said controls being separately coupled from each of said latches to each one of said stages;

(d) means for advancing said controls through said plurality of latches for execution stages, and separate means for advancing said controls through said plurality of latches for said memory access stages, said separate means including means for applying said controls to a last one of said plurality of latches for said memory access stages under a selected condition whereby said memory access stages can complete a memory access operation even if said execution stages are stalled.

5,006,981

SYSTEM BUS EXPANSION FOR COUPLING MULTIMASTER-CAPABLE MULTICOMPUTER SYSTEMS

Dietmar Beltz; Hans-Juergen Nehler, and Werner Rozek, all of Jena, German Democratic Rep., assignors to Jenoptik Jena GmbH, Jena, German Democratic Rep.

Filed Nov. 8, 1988, Ser. No. 268,818

Claims priority, application German Democratic Rep., Dec. 11, 1987, 310262

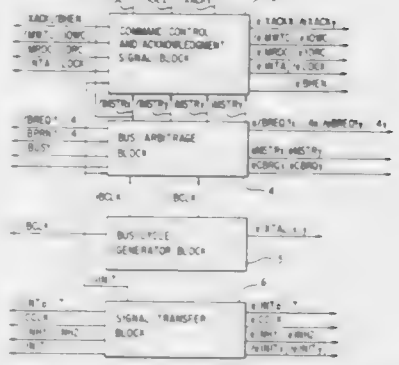
Int. Cl.[5] G06F *7/00*

U.S. Cl. 364—200 1 Claim

1. A system bus expansion for coupling multimaster-capable multi-computer systems, said multi-computer systems having spatially separated system buses having master address, data and command lines with a uniform bus protocol for defining a master and slave via bus arbitration, said system bus expansion comprising an expansion module assigned to each system bus and means for sending and receiving addresses, data, commands and status signals, and a transfer cable for intercoupling the expansion modules, said expansion modules comprising:

(a) an address transfer block having bidirectional tristate drivers, the data inputs and outputs of the drivers being connected to addess lines of the assigned system bus as well as to address lines of the transfer cable, said drivers having directional inputs connected to receive a direction control signal /iMSTRX for controlling the direction of address signals with respect to the respective master,

(b) a data transfer block having first and second tristate latchable data drivers, the inputs of said first data drivers being connected to data lines of the transfer cable and the outputs thereof being connected to data lines of the assigned system bus, the inputs of said second data drivers being connected data lines of the assigned system bus and the outputs of the second data drivers being connected to data lines of the transfer cable, said data transfer block comprising means responsive to a write command or an inactive bus command for transferring data without intermediate storage of the data in a direction away from the respective master system bus to the other master system



bus, and, in the event of an active read command, to a slave at the other system bus, or in the event of an interrupt acknowledgement signal active for said slave, to effect the intermediate storage of the data from the addressed slave to at least one of the expansion modules and interrupt data transfer from the respective system bus to the other system bus in the event of an active read command for a slave at the respective system bus, or in the event of an interrupt acknowledgement signal active for the last mentioned slave, selection of the data transfer direction being effected by selection of the first or second data drivers,

(c) a command control and acknowledgement signal block connected to the command lines of the respective system bus, and to command lines of the transfer cable, to the tristate control inputs of the first data drivers via a first signal line /iOE1, to the tristate inputs of the second data drivers via a second signal line /iOE2, and to the latch inputs of the second data drivers via a third signal line /ixACKx,

said command control and acknowledge signal block comprising means for receiving a bus command signal sent within a bus cycle from a master to prepare for a change in the data transporting direction as a function of the bus

command and to delay relaying the bus command to the other system bus independently of the bus command,

means responsive to a write command for a slave at the other system bus for relaying the write command undelayed to such slave, and for receiving an acknowledgement signal sent from the slave and passing it on directly to the respective system bus,

means responsive to a read command or an interrupt acknowledgement signal for a slave at the other system bus for relaying that command with delay to such slave, and responsive to the receipt of an acknowledgement signal from the addressed slave for changing the transport direction over determined signal lines /ieOE1 and /iOE2 in the data transfer block and effecting the intermediate storage of data in the latch data drivers and of the acknowledgement signal in at least one expansion module up to the conclusion of a transfer, and means responsive to the receipt of the acknowledgement signal for inactivating the active bus command on the other system bus, effecting the transfer of data, and, after adjustment to a static state on the respective system bus, sending the acknowledgement signal to the master,

means responsive to a write command to a lave at the respective bus for retaining the data transporting direction, and means responsive to a read command or an interrupt acknowledgement signal for preparing to make a change in the transporting direction, and

means responsive to an inactive bus command on the receptive system bus, for setting the data transporting direction to be from the respective system bus to the other system bus and canceling the intermediate storage of the acknowledgement signal,

(d) a bus arbitrage block connected via bus request signal lines and bus permission signal lines to a master of the assigned system bus and, via the bus request signal lines of the transfer cable, each of which is in turn connected via the bus arbitrage block of the coupled expansion module with a bus request signal line, to masters of the other system bus, connections being provided for this purpose between the expansion module internal lines and the address transfer block and the command control and acknowledgement signal block, said bus arbitrage block being connected to a general bus request line /cBRQ of the assigned system buys and, via general bus request line eCBRQx and eCBRQy of the cable, to the bus arbitrage block of the coupled expansion module and which is connected to a "bus tied-up" signal line /BUSY of the respective system bus and via bus side domination lines eMSTRx and eMSTRy of the transfer cable and the arbitrage block of the coupled expansion module to a "bus tied up" signal line /BUSY of the coupled system bus, said bus arbitrage block comprising means for granting permission to attain bus domination through a master, in response to assigned priorities of the masters from which the bus request signals have been received, said priorities being preprogrammed, bus side domination signals and their negations being determined for each system bus and general bus requests of each system bus being transferred to the respective other bus as a function of the system bus clock signal, and a "bus tied up" signal is transferred from the respective system bus to the other system bus,

(e) a bus clock signal generator block comprised of a bus clock signal generator and a master clock signal generator, the output of the master clock signal generator being connected to a bus clock signal line /BLCK of the respective system bus, as well as to the bus arbitrage block, the output of the master clock signal generator being connected via a signal delay unit to the input of the bus clock signal generator of the respective expansion module and via a line /eXTACKy of the transfer cable to the input of the bus clock signal generator of the other expansion module, and

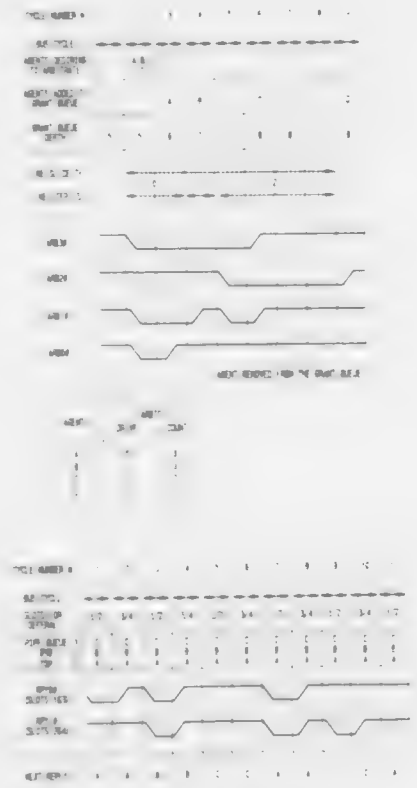
(f) a block for transferring signals connected to determined bus lines (/INH1, /INH1, /INRT0 . . . /INT7, /CCLK, /INIT) of the respective system bus and via cable lines to a corresponding block of the other expansion module, a signal being transferred, except on a given line /INIT in a preset direction, an active signal on the /INIT signal causing an inactivation of the bus domination signals, whereby the driver in the address transfer block, the data driver in the data transfer block and the command drivers in the common control and acknowledgement signal block are switched into their tristate condition.

5,006,982

METHOD OF INCREASING THE BANDWIDTH OF A PACKET BUS BY REORDERING REPLY PACKETS

Ronald J. Ebersole, Beaverton; David Johnson, Portland; David Budde, Hillsboro; Mark S. Myers, Portland, all of Oreg., and Gerhard Bier, Herxheim, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Fed. Rep. of Germany and Intel Corporation, Santa Clara, Calif.

Filed Oct. 21, 1988, Ser. No. 261,047
Int. Cl.[5] G06F *13/36*
U.S. Cl. 364—200 4 Claims



1. In a data processor in which information is transferred between a plurality of agents attached to a bus by issuing request packets that request data from one of said agents on the bus and reply packets that return data requested by a request packet, a method of mixing request and reply packets on said bus by determining the use of a next-bus cycle using a state of arbitration lines from said agents on said bus, a state of a reply deferral line, and a state of a grant queue and a pipeline queue, said method including the steps of:

(a) placing representations corresponding to requests for access to said bus in said grant queue in an order determined by the state of said arbitration lines;

(b) maintaining a pipeline queue of bus transactions where a first bus transaction of a highest priority corresponding to one agent is assigned a highest priority slot in said pipeline queue and a second bus transaction of a next highest priority corresponding to another agent is assigned a next lower priority slot in said pipeline queue, to thereby order said bus transactions in said pipeline queue in a priority sequence;

(c) forcing a request packet to take a next available bus cycle upon the condition that there is an agent identified in said grant queue and said pipeline queue is not full;

(d) forcing a reply packet to take a next available bus cycle upon the condition that said pipeline queue is full;

(e) forcing a reply packet to take a next available bus cycle upon the condition that said grant queue is empty and said pipeline queue is not empty;

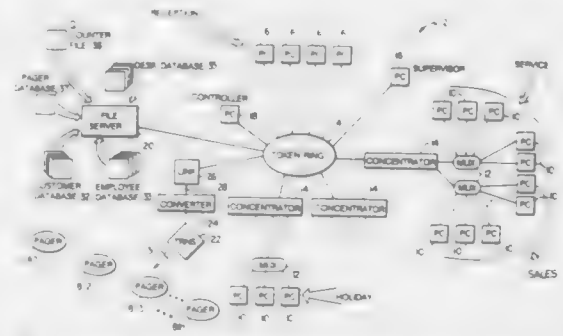
(f) returning said reply packets in said priority sequence that said bus transactions are ordered in said pipeline queue upon the condition that said reply deferral line is asserted by said one agent on said bus corresponding to said highest priority slot in said pipeline queue to thereby permit said another agent corresponding to a bus transaction in a next lower priority slot of said pipeline queue to gain access to said bus.

5,006,983

SERVICE ALLOCATION SYSTEM

Kenneth P. Wayne, Swampscott, and Jay P. Werb, Newton, both of Mass., assignors to Addax, Inc., Cambridge, Mass.

Filed Sep. 12, 1989, Ser. No. 406,157
Int. Cl.[5] G06F *15/21*
U.S. Cl. 364—401 34 Claims



20. A system for allocating service resources to a plurality of individuals who have requested services, the services being of a type requiring that the service resource and a receiver of the services come together at some common location, the system comprising:

a plurality of handheld wireless communication devices, each one of said communication devices for assignment and transfer to a different one of said plurality of individuals;

assignment means for assigning each one of said plurality of individuals to a corresponding one of a plurality of queues;

computation means for computing an expected wait time for an assigned individual based upon that individual's position in the queue to which that individual is presently assigned, the expected wait time for an assigned individual being an estimate of how long that individual must wait before being notified that service is available;

indication means for indicating that a service resource is or will become available to serve a next individual;

selection means responsive to said indicating means for selecting the next individual from one of said plurality of queues; and

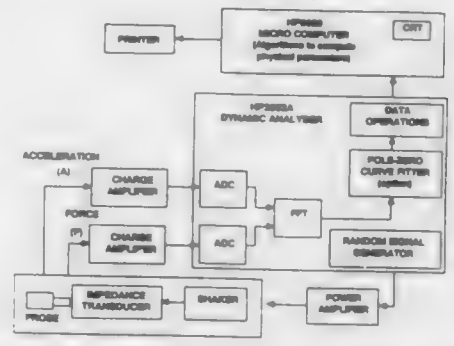
a wireless transmitter for communicating with the communication device assigned to the next individual so as to notify the next individual that a service resource is available.

5,006,984

BONE/TISSUE ANALYZER AND METHOD

Charles R. Steele, Stanford, Calif., assignor to Stanford University, Stanford, Calif.

Filed Mar. 10, 1987, Ser. No. 24,354
Int. Cl.[5] G06F *15/42*
U.S. Cl. 364—413.27 11 Claims



1. A computer-assisted method for determining bone cross-sectional bending stiffness in a subject, comprising

placing a vibratory unit against the region of the bone whose bending stiffness is to be determined,

exciting the vibratory unit, with such pressed against said bone region, in a frequency range substantially in the frequency range of 70–1,600 Hertz,

measuring the frequency-dependent mechanical response said bone region within such frequency range, and converting the response measurements to real and imaginary frequency-dependent force/displacement curves,

solving the equations of motion of a linear mechanical system (a) having a soft-tissue mass Ms, a soft-tissue spring constant Ks, soft-tissue damping factor βs, a bone mass Mb, a bone spring constant Kb, and a bone damping factor βb, and (b) characterized by a equation of motion having real and imaginary curves, and

by said solving, determining a value of K_b which corresponds to the bone bending stiffness in the excited bone region.

5,006,985

COMPUTER SYSTEM FOR MINIMIZING BODY DYSFUNCTIONS INDUCED BY JET TRAVEL OR SHIFT WORK

Charles F. Ehret, Hinsdale, Ill., and William T. Ashton, Jr., Woodside, Calif., assignors to Kinetic Software, Inc., Woodside, Calif.

Filed Jul. 15, 1988, Ser. No. 219,590
Int. Cl.[5] G06F *15/21, 15/42*
U.S. Cl. 364—413.01 26 Claims

1. A method of operating a general purpose computer to provide information to an individual to help the individual to reduce dysfunction caused by a particular trip across a plurality of time zones, the method comprising the steps of:

receiving itinerary data, the itinerary data including a trip departure time, a trip departure location, a trip destination location and a trip arrival time;

accessing a database of time zone information to determine the time zones of a plurality of locations in response to the trip departure location and the trip destination location;

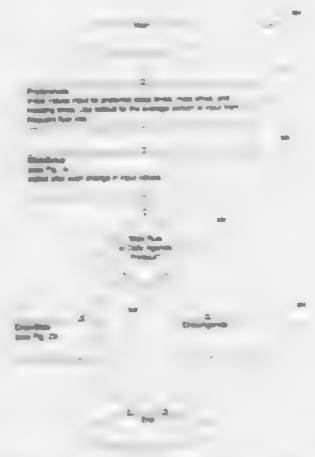
calculating a phase change between the departure and destination locations in response to the accessed time zone information;

determining a time shift day in response to the itinerary data and phase change;

determining a reference point on the time shift day;

using the reference point to generate daily recommendations of activity responsive to the itinerary data and the calculated phase change in accordance with chronobiological rules, the recommendations including a schedule for the

days surrounding the time shift day indicating sleep times, meal times, meal types, caffeine times, and a watch reset time; and



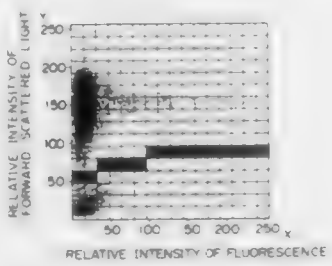
providing the daily recommendations of activity to the individual.

5,006,986

METHOD OF DEMARCATING TWO-DIMENSIONAL DISTRIBUTION

Takanobu Inoue, Hyogo, Japan, assignor to Toa Medical Electronics Co., Ltd., Kobe, Japan

Filed Dec. 5, 1988, Ser. No. 279,955
Claims priority, application Japan, Jun. 7, 1988, 63-140309
Int. Cl.[5] G06F *15/42;* **G01N** *21/64*
U.S. Cl. 364—413.08 **1 Claim**



1. A method of demarcating in a blood sample having a plurality of blood cell particles, a first particle group consisting of red blood cell particles and reticulocyte particles from a second particle group, said second particle group substantially free of red blood cell particles and reticulocyte particles by drawing a discriminant in a plot of a two-dimensional distribution prepared from signals indicative of fluorescence and scattered light detected from individual particles, comprising the steps of:

(a) preparing a specimen for measuring by mixing a sample of blood with a fluorescent dye solution, said dye solution comprising a fluorescent dye which is capable of dyeing at least said particles in said first particle group of said blood sample;

(b) introducing an aliquot of the specimen prepared in accordance with step (a), into a flow cell of a flow cytometer, irradiating particles of said aliquot of said specimen in said flow cytometer with a light of a wavelength that excites fluorescence of said fluorescent dye.

(c) measuring from said particles of said aliquot relative intensities of a fluorescence signal due to said fluorescent dye absorbed by said particles and relative intensities of a signal of scattered light from said wavelength of light;

(d) plotting a two-dimensional distribution on the basis of relative intensities of fluorescence and relative intensities of scattered light.

(e) dividing the two-dimensional distribution into a plurality of grid-shaped areas in the plot and determining the number of particles contained in each area;

(f) selecting an area in the plot containing a minimum number of particles from a plurality of areas forming a specific column;

(g) selecting an area in the plot containing a minimum number of particles from areas, which are adjacent the area selected in said step (f), from among a plurality of areas forming a column neighboring said specific column;

(h) successively selecting an area in the plot containing a minimum number of particles from areas, which are adjacent the area selected in an immediately preceding column, in each column successively adjoining the neighboring column; and

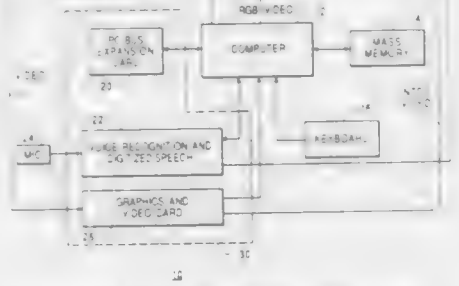
(i) setting a representative point in each area in the plot selected in each column, obtaining an approximation curve by connecting each of the points, and adopting the approximation curve as a discriminant.

5,006,987

AUDIOVISUAL SYSTEM FOR SIMULATION OF AN INTERACTION BETWEEN PERSONS THROUGH OUTPUT OF STORED DRAMATIC SCENES IN RESPONSE TO USER VOCAL INPUT

William G. Harless, 4611 Glenbrook Pkwy., Bethesda, Md. 20814

Filed Mar. 25, 1986, Ser. No. 843,552
Int. Cl.[5] G06F *15/38*
U.S. Cl. 364—419 **29 Claims**



1. An interactive audiovisual system, comprising:

means for storing a plurality of prerecorded audio and video scene signals representative of dramatic scenes;

means for designating specific ones of said scene signals as type one, type two, type three, or type four scene signals respectively representing scenes for which relevant thoughts exist, scenes for which no relevant thoughts exists, scenes depicting relevant thoughts, and scenes depicting non-relevant thoughts, for associating each of type three scene signals with one of said type one scene signals, and for associating each of said type four scene signals with all of said type two scene signals;

voice recognition means for receiving a voice signal and for generating interrupt signals representative of the meaning of words contained in said voice signals;

audiovisual output means for providing audible and visual outputs representative of said scene signals;

logic means for selectively presenting specific ones of said scene signals to said audiovisual output means in response to interrupt signals, for responding to said interrupt signals during presentation of said type one scene signals to alter presentation of the type one scene signal being presented, initiate presentation of one of said associated type three scene signals, and resume presentation of the type one scene signal being presented, and for responding to said interrupt signals during presentation of said type two scene signals to alter presentation of the type two scene signal being presented, initiate presentation of one of said type four scene signals, and resume presentation of the type two scene signal being presented.

12. A method for providing an interactive drama, comprising the steps of:

storing a plurality of prerecorded scene signals representative of dramatic scenes;

designating specific ones of said scene signals as type one, type two, type three, or type four scene signals respectively representing scenes for which relevant thoughts exist, scenes for which no relevant thoughts exist, scenes depicting relevant thoughts, and scenes depicting nonrelevant thoughts;

receiving voice input signals and generating interrupt signals representative of the meaning of words in said voice input signals;

associating said type three scene signals with specific ones of said type one scene signals;

selectively displaying specific ones of said stored dramatic scenes in response to said interrupt signals;

responding to selected ones of said interrupt signals during presentation of said type one scene signals to alter presentation of said type one scene signal being presented, initiate presentation of one of said associated type three scene signals, and resume presentation of said type one scene signal originally presented; and

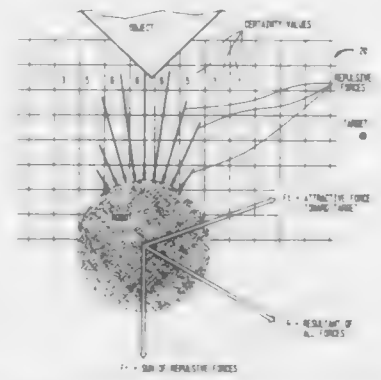
responding to said selected ones of said interrupt signals during presentation of said type two scene signals to alter presentation of said type two scene signal being presented, initiate presentation of one of said associated type four scene signals, and resume presentation of said type two scene signal originally presented.

5,006,988

OBSTACLE-AVOIDING NAVIGATION SYSTEM

Johann Borenstein; Yoram Koren, and Simon P. Levine, all of Ann Arbor, Mich., assignors to University of Michigan, Ann Arbor, Mich.

Filed Apr. 28, 1989, Ser. No. 344,638
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—424.02 **32 Claims**



1. A method of operating a vehicle to avoid an obstacle in a field of operation, the method comprising the steps of:

installing in a first memory first data defining a first array of first grid cells, each for holding data corresponding to a respective value, said first grid cells in said first array corresponding to respective predetermined subfields in the field of operation;

scanning one of said subfields in the field of operation for determining the presence of an obstacle therein;

incrementing said value in a first grid cell in said first array corresponding to said scanned one of said subfields in response to a signal responsive to said step of scanning indicating a likelihood that an obstacle is present in said scanned one of said subfields;

defining a region of operation in the vicinity of the vehicle; and

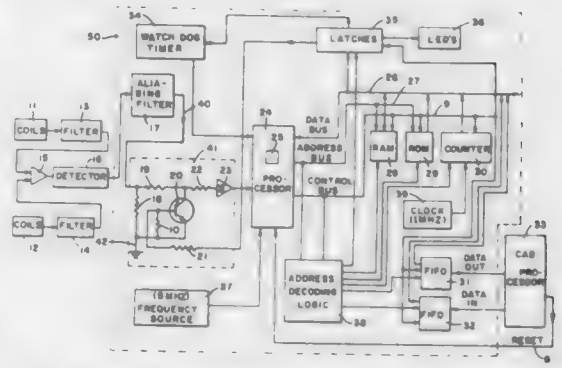
computing a plurality of vectorial values, each vectorial value being responsive to the location of each first grid cell in said first array within said defined region of operation, with respect to the location of the vehicle, and said values in said first grid cells.

5,006,989

DIGITAL VITAL RATE DECODER

John W. Parker, Rochester, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Continuation of Ser. No. 12,540, Feb. 9, 1987, abandoned. This application Jun. 12, 1989, Ser. No. 364,286
Int. Cl.[5] G06F *15/20;* **H03D** *3/18*
U.S. Cl. 364—426.05 **18 Claims**



1. In a railway signaling system in which rate code signals are propagated along rails, a vital digital system that decodes a plurality of different allowable rate code (speed) signals and receives vehicle parameters in order to specify a maximum safe speed that a railway vehicle can travel at different times along the rails, said system comprising:

(a) means on the railway vehicle which are coupled to said rails for detecting said rate code signals and providing output signals corresponding thereto;

(b) vital processing means operative in fixed cycles and responsive to said output signals for detecting said rate code signals, said processing means comprising computer means for simulating a plurality of digital filters for decoding said output signals and providing digital signals corresponding to the frequency differences therebetween;

(c) said vital processing means comprising means responsive to said digital signals for making a multiplicity of calculations thereon during each cycle for detecting whether said calculations are performed in certain sequence and said rate code signals are valid and for providing control signals said vehicle indicative of an unsafe condition when the absence of an allowable rate signal is not detected; and

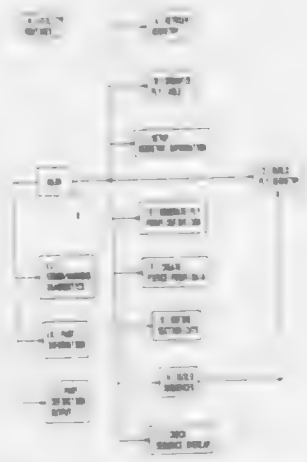
wherein said processing means provides said digital filters as infinite impulse response filters having outputs which will always differ by a constant magnitude and verifies that said output signals correspond to said allowable rate code signals and said digital filters are vital in operation.

5,006,990

METHOD AND APPARATUS FOR THE DESIGN AND CONSTRUCTION OF COMPOSITE PARTS

William E. Ward, Issaquah, and Jack R. Gumm, Jr., Auburn, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 270,310, Nov. 10, 1988, abandoned, which is a continuation of Ser. No. 37,141, Apr. 10, 1987, Pat. No. 4,849,913. This application Sep. 29, 1989, Ser. No. 415,449
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—768 4 Claims



1. A system to aid in the design and manufacture of composite parts, the composite parts fabricated from a plurality of plies of material assembled and cured in a desired orientation and arrangement to form the part, the system comprising:

a central processing unit;

input means communicating with the central processing unit;

storage means communicating with the central processing unit;

means for inputting and storing information regarding the shape, orientation and location of the plies within the composite part;

means for isolating and defining individual plies within the part; and

means automatically communicating with the isolation and definition means for generating tool path data for a numerically controlled cutting machine or the like for cutting a plurality of individual plies of nonuniform shape from a sheet of ply material, the generating means taking into account the shape of each ply and its desired orientation with respect to the composite material.

5,006,991

METHOD FOR MAKING OF DESIGN REFERENCE AND APPARATUS THEREFOR

Shigeru Obcoshi, Takahagi, and Toshiaki Yoshinaga, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 929,894, Nov. 13, 1986, abandoned. This application Jan. 9, 1990, Ser. No. 463,005
Claims priority, application Japan, Nov. 14, 1985, 60-253767
Int. Cl.[5] G06F *15/62*
U.S. Cl. 364—474.2 22 Claims

17. An apparatus for making a design reference comprising:

an input device;

a first memory for storing design object data;

a second memory for storing steps of selecting from said first memory design object data for a design object designated by said input device, preparing first information for displaying said design object using the selected design object data, preparing second information for displaying an interference check element designated by said input device and moving said interference check element relative to said design object to detect an interference between said interference check element and said design object;

processing means connected to said input device and said first and second memory for selecting design object data designated by said input device, preparing said first information, preparing said second information and moving said interference check element relative to said design object to detect an interference between said interference check element and said design object in accordance with said steps stored in said second memory; and

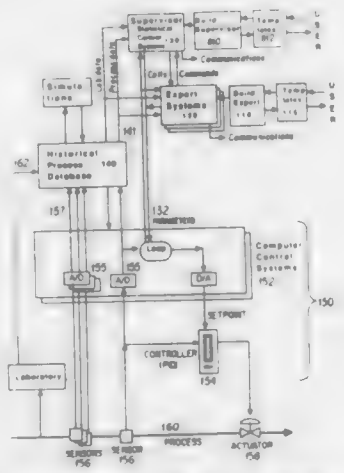
a displaying device connected to the processing means for displaying said first information, said second information and said moving of said interference check element relative to said design object as prepared and performed by said processing means.

5,006,992

PROCESS CONTROL SYSTEM WITH RECONFIGURABLE EXPERT RULES AND CONTROL MODULES

Richard D. Skeirik, Newark, Del., assignor to DuPont De Nemours and Company, Wilmington, Del.

Filed Sep. 30, 1987, Ser. No. 103,014
Int. Cl.[5] G06F *15/18*
U.S. Cl. 364—513 81 Claims



1. A computer-based method for operating a substantially continuous process, comprising the steps of:

(1) operating the process with one or more sensors connected to sense conditions in the process, and one or more actuators connected to change conditions in the process;

(2) controlling one or more of said actuators with a process controller in accordance with signals received directly from one or more of said sensors and in accordance with one or more control parameters; and

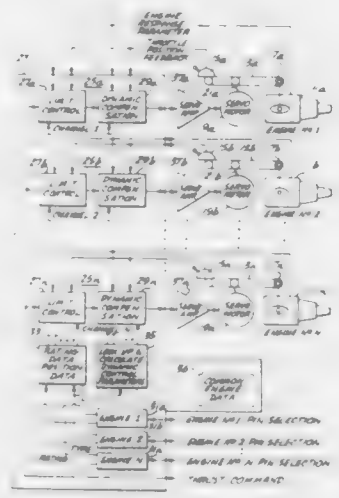
(3) running a process supervisor procedure, comprising one or more software modules, for selectively defining one or more of said control parameters for said process controller, said process supervisor procedure also calling on at least one expert subprocedure which uses a knowledge base and inference structure relevant to the process.

5,006,993

AUTOMATIC THROTTLE CONTROLLER FOR AIRCRAFT WITH INTERMIXED ENGINES

Daniel R. Virnig, Bellevue; Douglas O. Jackson, Mercer Island, and Frederick C. Blechen, Redmond, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Nov. 18, 1988, Ser. No. 273,297
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—431.01 26 Claims



1. An automatic throttle controller for producing thrust control signals for aircraft with intermixed engines, said automatic throttle controller comprising:

identification means for producing a code that identifies each side-mounted engine on an aircraft;

processing means coupled to said identification means for receiving said engine identification code produced by said identification means and producing related parameter data for each engine based on said identification code; and,

channel means coupled to said processing means for receiving said parameter data and producing a separate thrust control signal for each engine based on the parameter data associated with the related engine.

5,006,994

METHOD FOR DETERMINING THE SPECIFIC FUEL CONSUMPTION OF AN INTERNAL COMBUSTION ENGINE AND APPARATUS THEREFOR

Kjell Andersson, Stenstorp, and Lennart Eriksson, Köping, both of Sweden, assignors to ASE Europe AB, Arboga, Sweden

Filed Apr. 19, 1989, Ser. No. 340,227
Claims priority, application Sweden, Apr. 19, 1988, 8801443
Int. Cl.[5] G01F *9/00*
U.S. Cl. 364—442 2 Claims

2. A method for performing a measurement of a specific fuel consumption of an internal combustion engine, the method comprising the steps of:

obtaining respective signals from a plurality of sensors indicative of engine speed, engine torque and a change in weight of a pot containing fuel to be consumed by the engine;

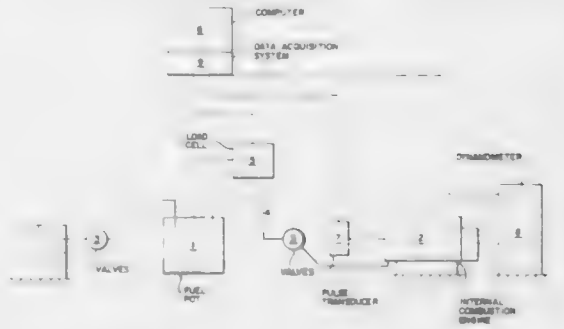
passing said signals through a conditioning system and then to a computer;

continuously recording and storing in the computer, during a measuring period, the change in weight of the fuel pot and a number of revolutions of an engine shaft;

programming the computer for performing said measurement of the specific fuel consumption at constant engine speed and engine torque, within selectable, preset limits of tolerance of said engine speed and engine torque during said measuring period, which can be varied in small increments of 0.5 second to achieve maximum accuracy;

terminating said measurement and starting a new measurement of the specific fuel consumption when the engine speed or torque exceeds the preset limits during the measurement period;

calculating a linear fuel consumption curve as a function of time with said computer by a least-squares method utilizing said change in weight, as well as calculating a mean torque and a mean speed, after the measurement period and provided the engine speed and torque are constant within the preset limits;



disqualifying said measurement and starting a new measurement of the specific fuel consumption when said mean speed or said mean torque exceeds said limits of said tolerance, or if any stored tabulated value from said curve is greater than a predetermined value: and,

calculating with the computer the fuel consumption per piston stroke based on the fuel consumption curve, the measuring period, the number of revolutions of the engine shaft during the measuring period and the number of cylinders, whereby a statistical certainty of the measurement of the specific fuel consumption can be specified.

5,006,995

AUTOMATIC WEIGHING PLANT FOR DYES IN POWDER FORM

Fabrizio Toschi, Breganze, and Fabio Toschi, Carpi, both of Italy, assignors to Color Service S.R.L., Fara Vicentino, Italy

Continuation of Ser. No. 116,958, Nov. 5, 1987, abandoned. This application Jan. 22, 1990, Ser. No. 465,646
Claims priority, application Italy, Apr. 22, 1987, 85115 A/87
Int. Cl.[5] G06F *15/46;* G01G *19/22*
U.S. Cl. 364—468 8 Claims

1. A weighing plant for use with a computer system for the weighing of dyes in powder form for the purpose of preparing dye mixtures, which comprises

a plurality of loading hoppers,

a plurality of dye drums adapted to contain dye in powder form,

a pipe system providing communication between each of the dye drums and corresponding loading hoppers,

a vacuum system for drawing the dye from the dye drums, through the pipe systems and into the loading hoppers,

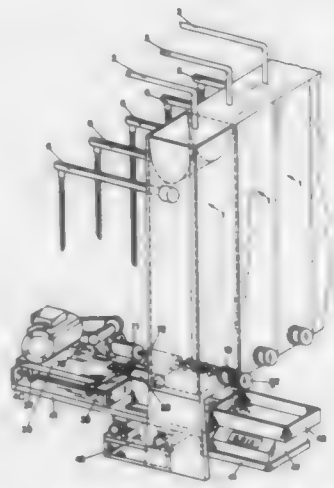
a conveyor chute rotatably disposed within the lower portion of the loading hopers, said conveyor chute extending from the inside to the outside of the loading hopper for removing the dye powder therefrom,

an electronic scale for selectively moving in logic succession under the loading hoppers for weighing the dye color removed from each of the loading hoppers, and

motor transmission means for moving from one loading

hopper to another for operatively and relatively engaging the conveyor chutes of respective loading hoppers,

said computerized system controlling the logical succession of displacement of the electronic scale under each loading



hopper, and the speed and duration of rotation of each conveyor chute whereby a dye mixture is obtained in accordance with the instructions introduced by the operator.

5,006,996

SYSTEM OF CONVEYING, STORING, RETRIEVING AND DISTRIBUTING ARTICLES OF MANUFACTURE

Katsunari Nakamura; Keiichiro Ueda; Yoshirou Irie; Toyokazu Hoshi, and Motozo Kawakami, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Mar. 20, 1989, Ser. No. 326,130

Claims priority, application Japan, Mar. 26, 1988, 63-72793; Jun. 17, 1988, 63-149771

Int. Cl.[5] **G06F** *15/46;* **B65G** *63/00*

U.S. Cl. 364—478 **3 Claims**



1. A physical distribution system comprising:

at least one article storage shelf for storing article carrying units each carrying an article;

an article conveying unit, having a terminal unit, for conveying said article to and from said article storage shelf;

a first memory unit capable of storing and retrieving without contact data relating to said article from said terminal unit of said article conveying unit, said first memory unit being provided to said article carrying unit;

a second memory unit capable of retrieving without contact data relating to an address of said article storage shelf from said terminal unit, said second memory unit being provided to said article storage shelf; and

a remote data processing unit for transferring and processing the data relating to the storage/removal of said article between said article conveying unit and said terminal unit to control storage condition of said articles in said article storage shelf, wherein during conveying said article in a warehouse, said terminal unit of said article conveying unit reads out the data relating to said article, which has been stored in said first memory unit to be transmitted and stored in said data processing unit, the data relating to the address of said article storage shelf to which said article carrying unit is placed is transmitted to said terminal unit to thereby move said article conveying unit to an aimed shelf arrival of said conveying unit to the aimed shelf, data, and upon arrival of said conveying unit to the aimed shelf, the address data of said shelf which has been stored in said second memory unit is read out to be subjected to comparison with the shelf address data from said data processing unit to thereby ensure that the data stored in said data processing unit and said article on said storage shelf coincide with each other.

5,006,997

PUMP DIAGNOSTIC SYSTEM

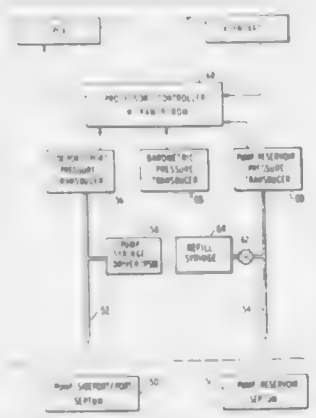
Sanford Reich, Providence, R.I., assignor to Shiley Infusaid, Inc., Norwood, Mass.

Continuation of Ser. No. 133,409, Dec. 15, 1987, abandoned.

This application Feb. 26, 1990, Ser. No. 484,284

Int. Cl.[5] **A61M** *5/00*

U.S. Cl. 364—510 **22 Claims**



21. A system for evaluating operating of an in-vivo medication delivery device having an access port and an outlet comprising:

means in fluid communication with said device for determining a steady state in-vivo pressure in said device,

means in fluid communication with said device for generating a pressure disturbance pulse in said device and determining a decay time thereof, and

means responsive to said means for determining a steady state in-vivo pressure and said means for generating a pressure disturbance for determining whether said device is functioning within predetermined limits.

5,006,998

COMPUTER SYSTEM WITH EASY INPUT MEANS FOR CONSULTATION

Chizuko Yasunobu; Fumihiko Mori, both of Yokohama; Hideo Ohata, Machida; Mari Udagawa, Nagareyama; Keiichiro Inaba, Musashino; Kenichi Hida, Kashiwa, and Yumiko Satoh, Kawasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 2, 1988, Ser. No. 266,401

Claims priority, application Japan, Nov. 5, 1987, 62-279877; Nov. 14, 1987, 62-286439

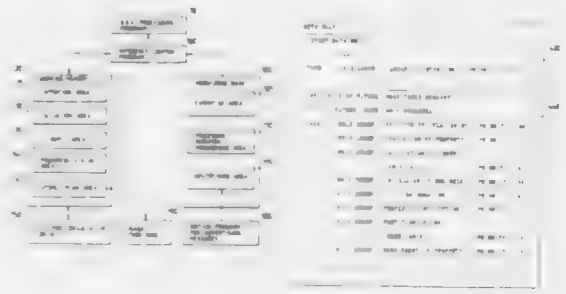
Int. Cl.[5] **G06F** *15/20, 7/28*

U.S. Cl. 364—513 **21 Claims**

1. In a computer system for consultation comprising a computer having an inference engine and a memory for storing a knowledge base, the improvement wherein:

said knowledge base memory includes a first area for storing expertise in the field of the consultation and a second area for storing processing know-how relating to a processing of the consultation;

said inference engine includes a work memory for storing facts clarified in an inference process, status of a client, intention of the client, a reply to the client and progress status of the consultation;



said first area includes advice rules, each of which has a premise condition part and a reply generation part;

said premise condition part includes statements of the status of the client, the intention of the client, and the progress status of the consultation; and

said inference engine comprises means for selecting a reply in accordance with the status of the client, the intention and the progress status, and means for offering the selected reply to the client.

5,006,999

REAL-TIME ROBOT CONTROL SYSTEM TRACKING BASED ON A STANDARD PATH

Toshitaka Kuno, Nagoya; Mitsuo Koide, Owariasahi; Masaru Nakano, Nagoya; Chisao Hayashi; Yoshito Kato, both of Aichi, and Yasuo Ishiguro, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Kabushiki Kaisha Toyota, Aichi, both of, Japan

Filed Mar. 31, 1989, Ser. No. 331,318

Claims priority, application Japan, Apr. 1, 1988, 63-81787

Int. Cl.[5] **G05B** *19/00*

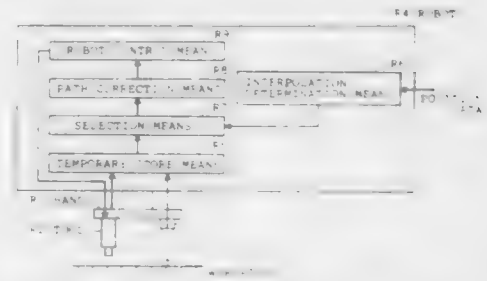
U.S. Cl. 364—513 **14 Claims**

1. A control system for an industrial robot that tracks a work-shape by moving on a standard path which is determined from position data previously stored in the system, and that has a hand with a tool and a work-shape sensor which is located a predetermined distance in front of the tool and that corrects deviations from the standard path in real-time while the tool is operating, the system comprising:

temporary storage means for receiving sensed data obtained when the tool operates, and for calculating and storing work-shape data using the sensed data;

interpolation determination means for selecting an interpolated point on the standard path as a target position for the tool;

selection means for generating a reference point corresponding to the interpolated point on the standard path, and for selecting the work-shape data that is closest to the reference point;



path correction means for generating target position and posture data for the tool based on the work-shape data from the selection means; and

robot control means for controlling the tool to trace a series of points corresponding to the target position and posture data from the path correction means.

5,007,000

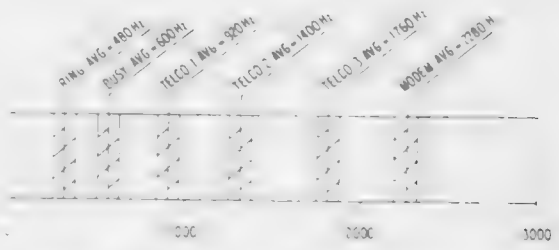
CLASSIFICATION OF AUDIO SIGNALS ON A TELEPHONE LINE

Charles A. Baldi, Loudon County, Va., assignor to International Telesystems Corp., Herndon, Va.

Filed Jun 28, 1989, Ser. No. 373,281

Int. Cl.[5] **G01L** *5/00*

U.S. Cl. 364—513.5 **21 Claims**



1. A method of classification of audio signals, including call progress tones and voice, on a telephone line comprising the steps of:

sampling an audio signal by counting the number of zero crossings of the signal during a predetermined time period to generate a first value;

using said first value as an index into a first array in which are stored band numbers corresponding to a plurality of possible values to produce a band number corresponding to said first value;

addressing with said band number of second array in which are stored counts corresponding to said band numbers to increment a count corresponding to said band number;

testing said count to determine if a threshold is exceeded to classify the audio signal as a call progress tone; and

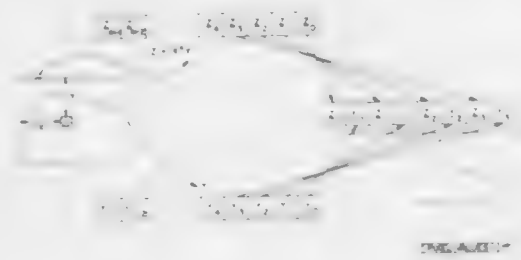
examining a number of bands and directions of changes of bands to classify the audio signal as voice.

5,007,001

METHOD FOR REORDERING THE PIXEL MAP OF A DIGITIZED IMAGE

Andrew Lloyd-Williams, 6 High View Dr., High Bridge, N.J. 08829

Filed Jan. 24, 1990, Ser. No. 469,340
Int. Cl.[5] G06F *3/14*
U.S. Cl. 364—518 20 Claims



1. A computer-implemented method of reordering a pixel map of a multi-dimensional digitized image to provide a new pixel order which approximates to a situation in which any contiguous subset of the reordered pixel map represents all regions of the image, with broader detail being depicted first, followed by increasingly fine detail, the method comprising:

(a) establishing a coordinate system and an origin for that coordinate system which provides for each pixel displacement coordinates represented by a set of positive integer values, each pixel being represented by only one such set of values and each set of coordinate values representing at most one pixel position;

(b) for each pixel in the image:

(i) establishing attributes of the pixel;

(ii) establishing a position within the overall image, and representing this position in the form of a set of coordinates relative to the origin;

(iii) converting each coordinate value in said set of coordinates to a binary repreesentation of 0's and 1's, with the inclusion of leading zeroes to ensure that all representations of that coordinate are of equal length;

(iv) for each coordinate in the set of coordinates, reversing the bit stream thus formed;

(v) interleaving the reversed bit streams representing each coordinate in a bit-wise fashion to form a pixel sequence number;

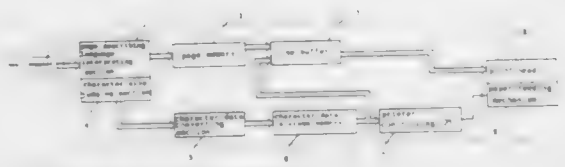
(c) reordering the storage or transmission of the attribute values corresponding to each pixel in the order of ascending pixel sequence numbers.

5,007,002

SERIAL OR LINE PRINTER ADAPTED FOR USE WITH PAGE DESCRIBING LANGUAGE

Mamoru Imaizumi, Nagoya, and Yasutada Aoyama, Ikezawa, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jul. 3, 1990, Ser. No. 547,179
Claims priority, application Japan, Jul. 11, 1989, 1-179799
Int. Cl.[5] G06K *15/00*
U.S. Cl. 364—519 18 Claims



1. A serial printer comprising:

a print means for printing one line of stored print data on a print medium for each scanning stroke of the print means;

a feed means for feeding the print medium in a direction perpendicular to a moving direction of the print means;

a first judging means for judging whether or not character data are in the print data;

a second judging means for judging whether or not there exists in the character data judged by the first judging means character data with a character size which is printable in one scanning stroke of the print means; and

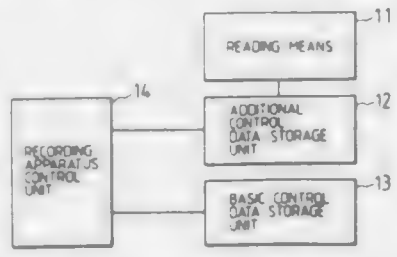
a control means for controlling the print means so as to print the character data judged by the second judging means in one scanning stroke of the print means by adjustment of a printing amount of the character data by the print means and a feeding amount of the print medium by the feed means.

5,007,003

RECORDING APPARATUS

Takanobu Suzuki, and Tsutomu Furusawa, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Division of Ser. No. 206,850, Jun. 15, 1988. This application Nov. 21, 1989, Ser. No. 439,947
Claims priority, application Japan, Jun. 15, 1987, 62-147159; Jun. 15, 1987, 62-147160; Jun. 15, 1987, 62-147161; Sep. 2, 1987, 62-217898
Int. Cl.[5] G06F *9/00*
U.S. Cl. 364—519 11 Claims



1. A recording apparatus comprising;

a recording apparatus body to which additional devices can be fitted;

storage means for storing programs for controlling said additional devices;

additional device identifying means for identifying the kinds of additional devices fitted to said recording apparatus body, said additional devices being ready for operation;

program selecting means for making effective said programs for said additional devices identified by said additional device identifying means as being ready for operation; and

a control unit for controlling said recording apparatus using said programs selected by said program selecting means and a program for controlling said recording apparatus body.

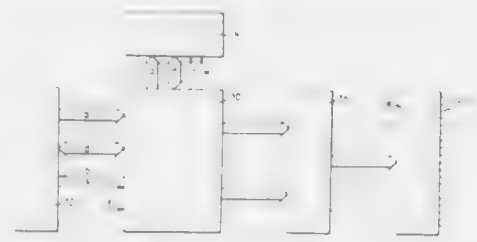
5,007,004

CONTROL CIRCUIT FOR POINT-GENERATING UNITS OF A WRITE HEAD

Sven Palmgren, Täby, and Ove Tedenstig, Märsta, both of Sweden, assignors to Facit AB, Sundbyberg, Sweden

Filed Jan. 23, 1990, Ser. No. 468,878
Claims priority, application Sweden, Apr. 6, 1989, 8901216
Int. Cl.[5] G06K *15/00*
U.S. Cl. 364—519 8 Claims

1. A circuit for controlling point-generating units of the write head (**18**) of a printer, said circuit (**10**) forming an interface between a central unit (**12**), an external direct access memory (RAM; **14**), and a driver stage (**16**) for activating the write head (**18**), characterized in that the circuit includes a control module (**26**) by means of which address coding, internal data buses, a command register incorporated in the control module and a test logic unit incorporated in said control module can be controlled, and further including a pixel buffer module (**28**) which, when required, maintains a buffer memory incorporated therein filled with pixel data, said control module (**26**) and pixel buffer module (**28**) being connected to the central unit (**12**), and further including a rotation module (**32**) which is connected electrically to the direct access memory (**14**) and which is intended to determine the format of input pixel data for a data flow regulated to the point geometry of the write head (**18**).

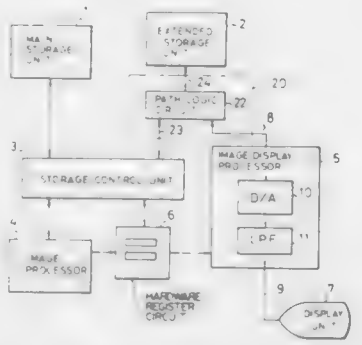


5,007,005

DATA PROCESSING SYSTEM

Yasuhiko Hatakeyama, and Tomoo Aoyama, both of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Computer Engineering Co., Ltd., Kanagawa, both of, Japan

Filed Mar. 28, 1989, Ser. No. 329,556
Claims priority, application Japan, Mar. 28, 1988, 63-73887
Int. Cl.[5] G06K *1/00*
U.S. Cl. 364—521 9 Claims



1. A data processing system comprising:

an image processor for generating animating image data for each of a plurality of screens and writing said animating image data in a screen buffer memory;

an image display processor for reading said animating image data from said screen buffer memory and generating a display screen graphic signal to be supplied to a display unit; and

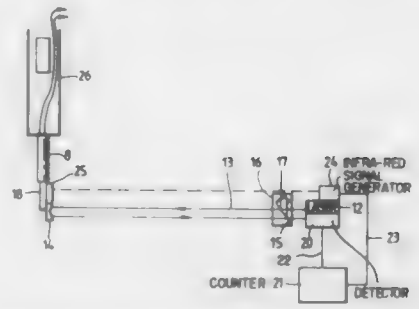
a hardware register circuit for updating data of a screen read-out control register in synchronization with each of a write operation of animating image data from said image processor and a read operation of animating image data to said image display processor.

5,007,006

METHOD OF AND APPARATUS FOR CALIBRATION OF MACHINES

Benjamin R. Taylor, Trelleck; Mark A. V. Chapman, and Jeffrey Gr.ham, both of Wotton-Under-Edge, all of United Kingdom, assignors to Renishaw plc, Gloucestershire, England

PCT No. PCT/GB88/00167, § 371 Date Oct. 25, 1988, § 102(e) Date Oct. 25, 1988, PCT Pub. No. WO88/06714, PCT Pub. Date Sep. 7, 1988
PCT Filed Mar. 7, 1988, Ser. No. 264,968
Claims priority, application United Kingdom, Mar. 6, 1987, 8705301
Int. Cl.[5] G01B *11/00*
U.S. Cl. 364—571.05 19 Claims



19. A calibration device for use with a machine having parts which are relatively movable in three orthogonal directions for positioning a tool relative to a workpiece, and having measuring devices positioned between the relatively movable parts for measuring the movements of the respective parts in said directions, said calibration device comprising:

interferometric measuring means positioned in relation to the machine for providing a measurement of a movement of a machine part in at least one of said directions independently of, and in addition to, the measurement being made of said movement by any of said measuring devices,

means for generating from the measurements made by the interferometric measuring means signals corresponding to distance intervals moved by said moving machine part,

means for transmitting said signals to the machine to initiate recording of the measurements of the movement of said moving machine part made by the measuring devices of the machine, and

means for comparing the distance intervals between the recorded measurements made by the measuring devices of the machine with the predetermined distance intervals between said output pulses, and for providing an indication of any difference between them as an error map of the machine measurements.

5,007,007

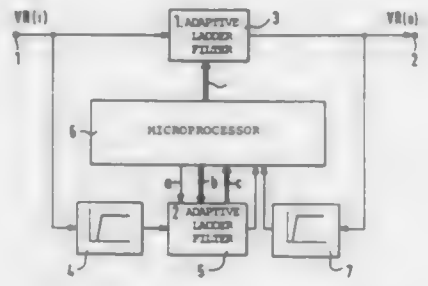
CIRCUITRY FOR CONVERTING A MEASUREMENT SIGNAL DISTURBED BY A DISTURBANCE FUNCTION INTO AN UNDISTURBED SIGNAL

Anton van Zanten, Ditzingen, and Friedrich Kost, Kornwestheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GMBH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/EP87/00484, § 371 Date Apr. 7, 1989, § 102(e) Date Apr. 7, 1989, PCT Pub. No. WO88/02954, PCT Pub. Date Apr. 21, 1988
PCT Filed Aug. 26, 1987, Ser. No. 348,001
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1986, 3634239
Int. Cl.[5] G06F *15/31*; H03F *1/26*; G06G *7/00*
U.S. Cl. 364—574 2 Claims

1. Anti-lock brake control system having means for converting an input measurement signal $V_{R(i)}$, which is disturbed at least occasionally by a disturbance function, into an undisturbed, output signal $V_{R(o)}$, said system comprising, in combination:

(a) a first digital adaptive ladder filter, having variable filter parameters and coupled to receive said input signal $V_{R(i)}$, for producing a filtered output signal $V_{R(o)}$ in which a disturbance signal is suppressed;
(b) a first high pass filter coupled to receive said input signal $V_{R(i)}$;
(c) a second digital adaptive ladder filter, having variable filter parameters and coupled to said first high pass filter downstream thereof; and



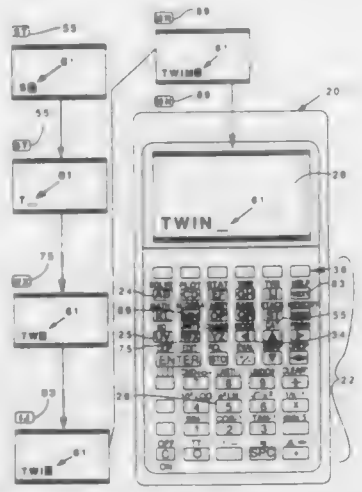
(d) control means, coupled to said first and second digital adaptive ladder filters, for switching said second adaptive filter to the adaptation mode in response to undershooting a wheel acceleration threshold after a pressure reduction, whereupon said second filter determines the filter parameters necessary for suppression of the disturbance function, and for transferring the filter parameters so determined from said second adaptive filter to said first adaptive filter.

5,007,008

METHOD AND APPARATUS FOR SELECTING KEY ACTION

Theodore W. Beers, Corvallis, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 285,834, Dec. 15, 1988, abandoned. This application Aug. 17, 1990, Ser. No. 569,269
Int. Cl.[5] G06F *3/00*
U.S. Cl. 364—709.15 11 Claims



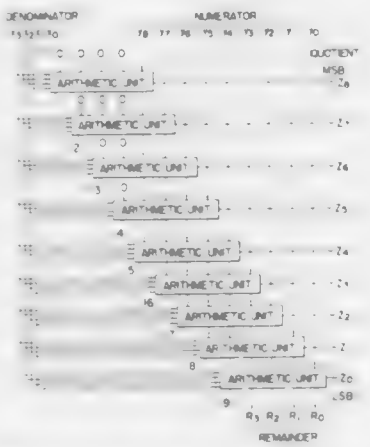
1. Apparatus for selecting key actions to be performed, comprising:
a pressable key for selecting between two key actions associated with the key;
means responsive to a predetermined pattern of pressing the key during a pending time period for determining which of the key actions is selected to be performed, said pending time period beginning with an initial press of the key;
a pair of symbols positioned adjacent to the key, each symbol representing a key action;
a display for displaying a symbol associated with a selected key action; and
means for causing the display to display to first symbol of the pair in response to the initial key press to indicate which key action will be performed if a predetermined key pressing pattern is not detected during the pending period, said means causing the second symbol to be displayed in place of the first if the predetermined pattern is detected during the pending period.

5,007,009

NON-RECOVERY PARALLEL DIVIDER CIRCUIT

Akihiro Azetsu, Suginami, Japan, assignor to Indata Systems Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1988, Ser. No. 272,899
Claims priority, application Japan, Nov. 30, 1987, 62-302823
Int. Cl.[5] G06F *7/52*
U.S. Cl. 364—764 8 Claims



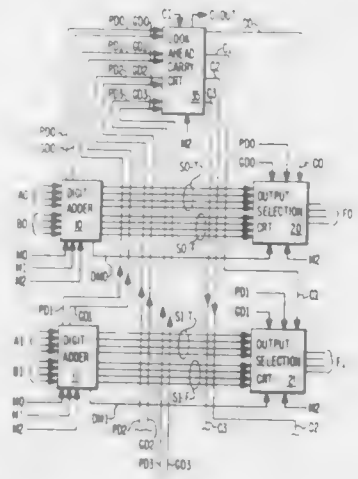
1. A dividing circuit which comprises:
an inversion circuit which inverts received denominator data x into $-x$;
a most significant arithmetic unit which receives as input the most significant bit Y_m of numerator data Y and said denominator data x and which determines a quotient $Z_m=1$ when $Y_m<0$ with a remainder $R_m=Y_m-x$ and a quotient $Z_m=0$ if $Y_m\geqq 0$ with a remainder $R_m=Y_m$;
a plurality of plural digit arithmetic units which are disposed so as to follow said most significant arithmetic unit and which are disposed in such a way that each plural digital arithmetic unit receives as an input thereto a remainder R_i of a preceding digit arithmetic unit and one bit Y_s in sequence out of the second most significant bit to the least significant bit, and receives as an input thereto said denominator data x and its inverted data $-x$, and determines the remainder $R_s=Y_s+x$ when $Y_s<0$ and the remainder $R_s=Y_s-x$ otherwise, and determines a quotient as $Z_i=1$ when $R_s\geqq 0$ and as $Z_i=0$ otherwise; and
a remainder processing circuit which receives as an input thereto the remainder data R_s of said digit arithmetic unit of the least significant digit and said denominator data x, and which controls the addition of said remainder data R_s to said denominator data x in correspondence with the most significant bit of said remainder data R_s, and which determines the result of the addition as a remainder of y/x, and wherein said quotient Z_m from said most significant arithmetic unit and each of said quotients Z_i from said plurality of digit arithmetic units are regarded as bit data of a quotient of y/x.

5,007,010

FAST BCD/BINARY ADDER

Laurence P. Flora, Covina, Calif., assignor to Unisys Corp. (Formerly Burroughs Corp.), Detroit, Mich.

Continuation of Ser. No. 696,831, Jan. 31, 1985, abandoned. This application Mar. 25, 1986, Ser. No. 844,488
Int. Cl.[5] G06F *7/50*
U.S. Cl. 364—771 9 Claims



1. Arithmetic logic means for selectively performing binary or BCD operations on two digital multi-bit operands applied thereto, said arithmetic logic means comprising:
means for receiving a mode signal indicative of whether binary or BCD operation is to be performed;
input logic circuit means to which said operands are applied for producing corresponding pairs of propagate and generate signals;
said input logic circuit means including binary arithmetic logic and BCD correction logic which are merged to provide for operation in response to said input operands and said mode signal so that, when BCD operation is indicated, correction logic operations are performed concurrently with arithmetic operations in a manner such that the propagate and generate signals produced take into account any inter-bit effects occurring because of correction logic operations; and
means responsive to said propagate and generate signals for producing a binary or BCD arithmetic result in dependence upon said mode signal.

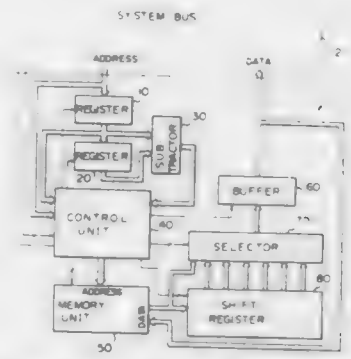
5,007,011

DATA STORAGE DEVICE INCLUDING DATA ADDRESS PREDICTING FUNCTION

Noboru Murayama, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Aug. 4, 1986, Ser. No. 892,869
Claims priority, application Japan, Aug. 10, 1985, 60-176100
Int. Cl.[5] G06F *1/00*
U.S. Cl. 364—900 9 Claims

1. A storage device having an incoming address bus for receiving incoming memory address signals, and an outgoing data bus, said storage device comprising:
memory means including a plurality of addressable locations, each of said locations for storing a piece of data;
a plurality of registers for temporarily holding data read out of said locations of said memory means;
address-reading means for sequentially reading incoming memory address signals appearing on the address bus, said incoming memory address signals representing actual addresses in said memory means;
address-predicting means for comparing a current one of said incoming memory address signal with a prior one of said sequentially read incoming address signals in a predetermined manner and producing a future memory address prediction based on said comparison;
pre-read control means, operative absent a memory read command, for generating a pre-read control signal;
data reading means, responsive to said pre-read control signal, for reading data out of a certain of said addressable locations and storing said data in said registers, said data reading means further comprising a quantity of address latch means, the quantity being the same as the quantity of said registers, each address latch means adapted for storing a future memory address which identifies an address of data stored in a corresponding one of said registers;



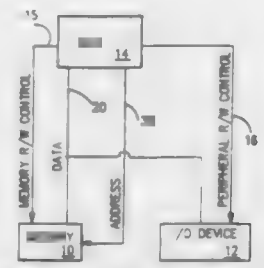
read control means for determining if any of said incoming read addresses coincide with an address corresponding to data stored in one of said registers; and
delivering means, responsive to said memory read command, for delivering data from said registers to said outgoing data bus when any of said incoming addresses is the same as the address identifying said data stores in said registers, and for delivering data from said locations of said memory means when any of said incoming addresses are not the same as the address identifying said data stored in said registers.

5,007,012

FLY-BY DATA TRANSFER SYSTEM

Vineet Dujari, Santa Clara, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 9, 1988, Ser. No. 242,744
Int. Cl.[5] G06F *13/00*
U.S. Cl. 364—900 28 Claims



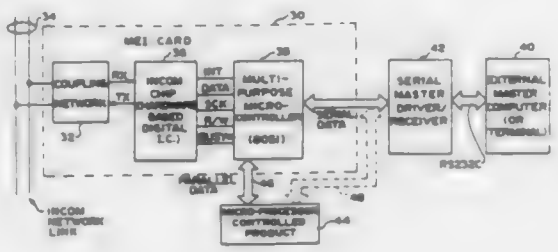
1. A method for transferring data in one access cycle between two devices over a data communications bus, the steps comprising:
(a) performing a read operation to read data from a predetermined location in a first device;
(b) latching said data into a temporary register while writing said data into a predetermined location in a second device; and
(c) terminating the read operation of said first device and providing said data from said temporary register to said second device so that said data is available to said second device after said first device no longer supplies said data to said second device.

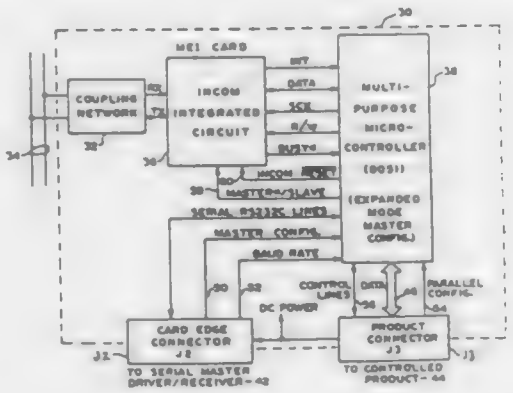
5,007,013

BIDIRECTIONAL COMMUNICATION AND CONTROL NETWORK WITH PROGRAMMABLE MICROCONTROLLER INTERFACING DIGITAL ICS AND CONTROLLED PRODUCT

Robert T. Elms, Monroeville Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 1, 1986, Ser. No. 847,404
Int. Cl.[5] G06F *13/36, 13/42, 15/46, 15/56*
U.S. Cl. 364—900 42 Claims





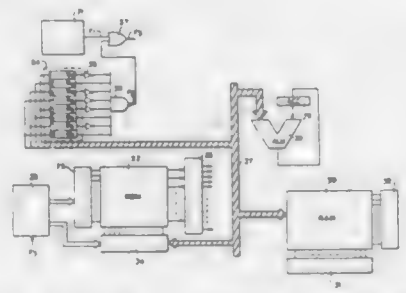
1. In a bidirectional communication and control network which includes a common link and a plurality of hardware based digital ICs coupled to said common link to receive a network message transmitted over said link from a network master and to store said received network message, the combination of, a programmable microcontroller controller to one of said digital ICs and having means for reading said received network message stored in said one digital IC and storing said network message, a controlled product connected to said microcontroller through a parallel data bus such that the microcontroller is disposed between said one digital IC and said controlled product, and means for supplying said network message stored in said microcontroller to said controlled product over said parallel data bus, a group of control lines interconnecting said microcontroller and said controlled product, and means in said microcontroller for placing a predetermined segment of said network message stored in said microcontroller on said parallel data bus and producing an output strobe signal on a first one of said control lines, said controlled product producing an output acknowledge signal indicating the completion of a transfer of said predetermined segment thereto, said microcontroller including means responsive to said output acknowledge signal for deactivating said output strobe signal, said controlled product deactivating said output acknowledge signal when said output strobe signal is deactivated, said microcontroller including means responsive to said deactivation of said output acknowledge signal for placing another predetermined segment of said network message on said parallel data bus and producing an output strobe signal on said one control line.

5,007,014

RESET CIRCUIT FOR ELECTRONIC APPARATUS

Toshio Nishimura, Jyoyo, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 131,342, Dec. 9, 1987, abandoned, which is a continuation of Ser. No. 689,847, Jan. 9, 1985, abandoned. This application Jan. 10, 1989, Ser. No. 296,332
Claims priority, application Japan, Jan. 11, 1984, 59-4172; Jan. 20, 1984, 59-8967
Int. Cl.[5] G06F *1/24*
U.S. Cl. 364—900 2 Claims



1. A reset circuit for an electronic apparatus capable of outputting a reset signal when power is switched on for said apparatus, said reset circuit comprising

memory means for storing programs for said apparatus, said memory means storing an all-clear code at a specified address therein,

an address counter for addressing said memory means, said address counter causing said all-clear code to be outputted from said memory means if said address counter is in a reset condition, and

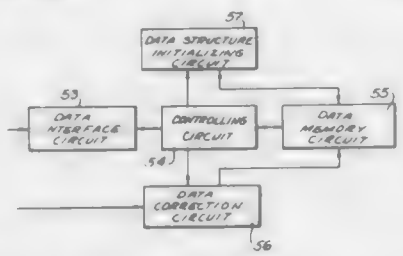
control means which serves to check whether or not said memory means is outputting said all-clear code and to release said address counter from said reset condition if said memory means is thereby found to be outputting said all-clear code such that said address counter can cause said memory means to output operation programs for said electronic apparatus.

5,007,015

PORTABLE COMPACT DEVICE

Yukio Yokozawa, Nagano, Japan, assignor to Seiko Epson Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 792,712, Oct. 30, 1985, abandoned. This application Oct. 17, 1988, Ser. No. 259,469
Claims priority, application Japan, Nov. 6, 1984, 59-233881; Aug. 28, 1985, 60-188786
Int. Cl.[5] G06F *3/00*
U.S. Cl. 364—900 15 Claims



1. A portable compact device for use with an external device supplying input data having a data structure consisting of said input data and associated indicating data which indicates the data type and stored address for the input data comprising:

interface means for providing an interface between an external device and the portable compact device;

data memory means for storing the input data received by said interface means at an address corresponding to the indicating data;

processing means coupled to the data memory means for receiving and sending the data between said interface means and said data memory means, the processing means including;

control means for processing data stored in the data memory means in accordance with the indicating data and determining whether the data structure in the data memory means allows for the processing of the input data by the control means; and

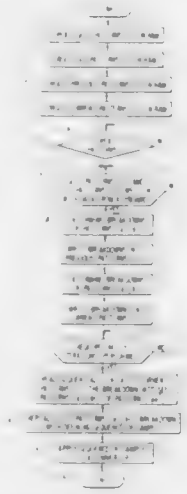
initializing means for establishing an initialized data structure in the data memory means when the control means determines that the data structure does not allow for the processing of the input data, the initialized data structure corresponding to an indicating data which indicates the data type and stored address which allows for the processing of the data stored in the data memory means.

5,007,016

FRACTAL-TYPE PERIODIC TEMPORAL SIGNAL GENERATOR

Alain Le Méhauté, Gif sur Yvette; Claude Roques-Carmes, Besancon; Dalloul Webbi, Besancon, and Jean-Francois Quiniou, Besancon, all of France, assignors to Compagnie Generale D'Electricite, Paris, France

Filed Dec. 21, 1988, Ser. No. 287,429
Claims priority, application France, Dec. 21, 1987, 87 17809
Int. Cl.[5] G06F *1/02, 1/04, 7/58, 9/302*
U.S. Cl. 364—900 4 Claims



1. A periodic temporal signal generator for generating a periodic binary signal representing a binary sequence, said binary sequence having a periodic configuration pattern a_n which comprises an arrangement of seed patterns and which is one of m pattern components of a term U_n of a sequence of terms $U_0U_1 \ldots U_n$, where m and n are integers and m is greater than 1, and where U_0 comprises an initial term of said sequence of terms and is formed by one of each of said seed patterns, said pattern components of said term U_n being defined by application of m pattern composition laws to the pattern components of the preceding term U_{n-1} of said sequence of terms, said generator comprising working memory means (**13**) for storing a definitive patterns file which contains a final arrangement of the seed patterns constituting said periodic configuration pattern a_n, and output means (**14**) coupled to said working memory means for supplying said periodic binary signal in accordance with the content of said definitive patterns file, said signal generator further comprising:

an old patterns file (**13***b*) in said working memory means for storing breakdowns into said seed patterns of old pattern components resulting from at least one application to said seed patterns of said pattern composition laws;

a previous patterns file (**13***c*) in said working memory means for storing breakdowns into said seed patterns of previous pattern components obtained during an iteration step immediately preceding the current iteration step, each of said previous pattern components corresponding to a respective one of said seed patterns in said old pattern components;

reading means coupled to said working memory means for reading said old pattern components from said old patterns file and said previous pattern components form said previous patterns file;

replacing means coupled to said reading means for replacing the seed patterns of said old pattern components with the seed pattern breakdown stored in said previous patterns file for the corresponding previous pattern component to thereby obtain seed pattern breakdowns of current pattern components and

a current patterns file (**13***d*) in said working memory coupled to said replacing means for storing said seed pattern breakdowns of said current components; and

repeating means for repeatedly actuating both said reading means and said replacing means a given number of times until said definitive patterns are obtained.

5,007,017

METHOD AND APPARATUS FOR DATA COMMUNICATION THROUGH COMPOSITE NETWORK

Hideaki Kobayashi, Kanagawa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 6, 1987, Ser. No. 35,030
Claims priority, application Japan, Apr. 4, 1986, 61-77841
Int. Cl.[5] G06F *13/00*
U.S. Cl. 364—900 10 Claims

1. A method of data communication through a composite network system in which a plurality of networks are connected to one another, wherein a center having an information collecting function connected to a first network performs data communication with a plurality of work stations connected to a second network, comprising the steps of:

formating at said center a composite command in the form of a data unit in which plural pairs of information including addresses of the work stations from which information is collected and commands to said work stations associated with said addresses are contained collectively;

transmitting said formated composite command to said second network through said first network; and

furnishing the composite command successively to work stations in said second network, and extracting respective commands to the work stations by individual work stations from the composite command on the basis of the addresses associated with the commands as contained in said composite command.

5,007,018

VITAL PROCESSOR IMPLEMENTED WITH NON-VITAL HARDWARE

David B. Rutherford, Jr., Rochester, N.Y., assignor to General Signal Corp., Stamford, Conn.

Division of Ser. No. 550,693, Nov. 10, 1983, Pat. No. 4,831,521. This application Apr. 7, 1989, Ser. No. 335,179
Int. Cl.[5] G06F *5/00*
U.S. Cl. 364—900 8 Claims

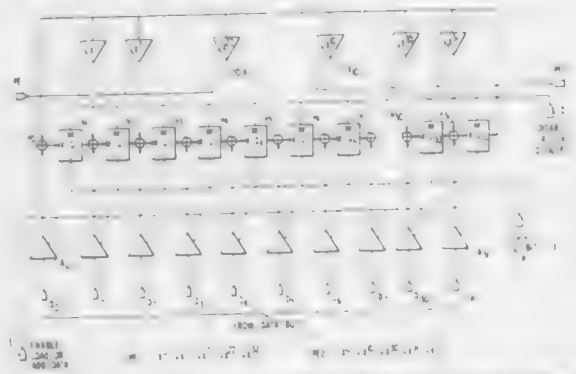
1. A method, useful in fail safe applications, of using a feedback shift register, with plural stages, arranged to provide maximal length sequences, to compute a multi-bit term from a group of at least two input multi-bit terms, the group selected from a family of groups, wherein each of said input multi-bit terms identifies a true or false state of a binary input and is unique to a particular input, said method comprising:

(a) selecting a different predetermined bit pattern dependent on which one of the groups of said family of groups of input multi-bit terms is used in the computation,

(b) preconditioning said feedback shift register by controlling each stage thereof to attain a condition identical to a corresponding bit of said selected predetermined bit pattern,

(c) exclusive OR'ing one of said input multi-bit terms, bit by bit, with a corresponding stage of said feedback shift register and applying a result to said feedback shift register, and

(d) repeating said step (c) for each other of said input multi-



bit terms to produce a resulting bit pattern in said feedback shift register,

whereby the resulting bit pattern is the computed multi-bit term.

5,007,019

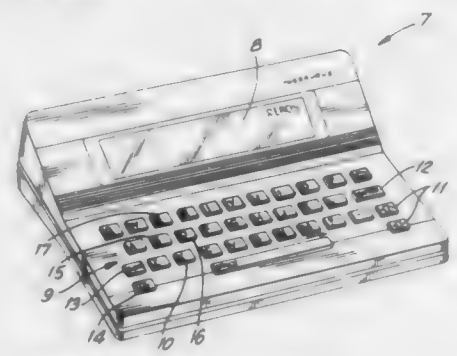
ELECTRONIC THESAURUS WITH ACCESS HISTORY LIST

Peter L. Squillante, Central Islip; Julius Egyud, Dix Hills, and Abraham Karron, Long Beach, all of N.Y., assignors to Franklin Electronic Publishers, Incorporated, Mt. Holly, N.J.

Filed Jan. 5, 1989, Ser. No. 294,058

Int. Cl.[5] G06F *15/40*

U.S. Cl. 364—900 4 Claims



3. A machine thesaurus comprising:

a display screen,

a keyboard for entering characters to be displayed on said screen,

an entry key on said keyboard to enable the user to enter a word that appears on said screen, said word being an original entry word,

first processing means responsive to said entry of said original entry word to provide on said screen a set of synonyms for said original entry word and to divide said set of synonyms into subsets, each of said subsets having the same meaning core,

second processing means to provide on said screen the meaning core definition for each of said subsets,

first edit means responsive to user selection of any word displayed on said screen by any one of said processing means to provide the user selected word as an additional entry word,

said first and second processing means being responsive to each of said additional entry words to provide a corresponding set of synonyms, synonym subsets and meaning core definitions,

memory means for retaining each of said entry words in sequence as a history list,

means for re-accessing words on said history list, and

deletion means responsive to said history list in said memory means becoming full to delete the earliest additional entry words in sequence from said history list to provide room for the latest additional entry words; said original entry word being retained in said history list.

5,007,020

METHOD FOR MEMORY ADDRESSING AND CONTROL WITH REVERSAL OF HIGHER AND LOWER ADDRESS

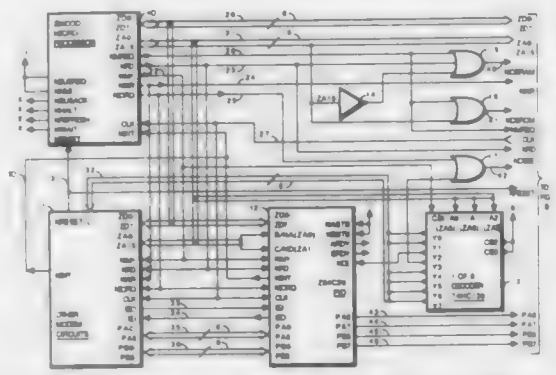
Jeffrey Inskeep, Marietta, Ga., assignor to Hayes Microcomputer Products, Inc., Norcross, Ga.

Division of Ser. No. 27,635, Mar. 18, 1987, Pat. No. 4,924,441.

This application May 7, 1990, Ser. No. 519,839

Int. Cl.[5] G06F *12/02, 13/16*

U.S. Cl. 364—900 8 Claims



1. In a processor controlled system having a processor and at least one memory, said processor providing an N bit address line, said N bit address line being dividable into an A bit higher order address, and a N-A bit lower order address, K bits of said lower order address being used to selectively enable said memory, and up to N-K bits of said N bit address line being used to specify a desired data address in said memory, said memory having L address line inputs for specifying 2^L data addresses in said memory, said L address lines being dividable into a C bit higher order address and an L-C bit lower order address, a first data of said string of data to be stored at a first memory address, and remaining data of said string of data to be stored at consecutive memory addresses, an improved method for addressing said memory for storing said string of data, comprising:

(a) setting the value of A to equal L-C;

(b) setting the value of K to equal N-L;

(c) providing said A bit higher order address from said processor to said memory as said L-C bit lower order address;

(d) providing up to N-A-K bits of said N-A bit lower order address from said processor to said memory as said C bit higher order address, where N-A-K equals C;

(e) setting said A bit higher order address and said N-A-K bits of said N-A bit lower order address to point to said first memory address;

(f) enabling said memory using up to said K bits of said N-A bit lower order address;

(g) transferring said first data to said memory;

(h) altering said A bit higher order address;

(i) transferring a next data of said string of data to said memory; and

(j) repeating steps (h) and (i) until said string of data has been transferred to said memory.

5,007,021

MAGNETO-OPTICAL DATA READING APPARATUS

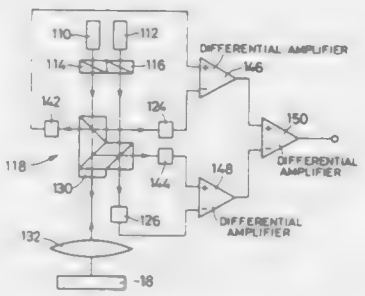
Yutaka Hattori, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Continuation-in-part of Ser. No. 637,796, Aug. 6, 1984, abandoned. This application Jan. 9, 1986, Ser. No. 816,999

Claims priority, application Japan, Aug. 6, 1983, 58-144027; Aug. 6, 1983, 58-144028; Aug. 6, 1983, 58-144029; Aug. 6, 1983, 58-144030; Aug. 6, 1983, 58-144031

Int. Cl.[5] G11C *13/06*

U.S. Cl. 365—122 5 Claims



1. An apparatus for reading out information from individual memory locations on a magneto-optical storage medium at which the information is written through magnetization of the storage medium in one of opposite directions normal to a surface of the storage medium, comprising:

a light source device for producing two beams of circularly polarized light having different wavelengths and different rotating directions, said two beams of circularly polarized light being concurrently incident upon the same memory location of said storage medium, and reflected from said storage medium;

a dichroic mirror for separating said two beams reflected from said storage medium, by a difference in wavelength between the two beams; and

a pair of data-reading optical detectors for detecting quantities of said two beams reflected from said storage medium, respectively, and generating output signals corresponding to the detected quantities to read said information from said storage medium.

5,007,022

TWO-PORT TWO-TRANSISTOR DRAM

Anthony W. Leigh, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 135,957, Dec. 21, 1987, abandoned. This application Nov. 9, 1989, Ser. No. 434,617

Int. Cl.[5] G11C *11/40, 13/00*

U.S. Cl. 365—189.04 35 Claims

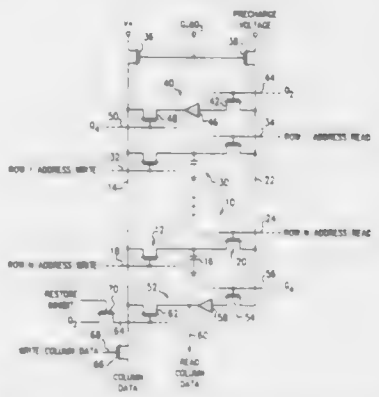
8. A column of random access memory devices said column comprising:

A. first and second bit lines capable of carrying data levels along said column;

B. plural memory cells arranged in series along said column, each cell including a storage capacitor connected between a storage node and a reference voltage to store one datum level on said storage node at a time, a first field effect transistor connected between said first bit line and said storage node, and a second field effect transistor connected between said second bit line and said storage node, said first and second transistors being capable of conducting data levels between said first and second bit lines and said storage node;

C. a refresh circuit connected to said first and second bit lines and containing circuit elements capable of refreshing a datum level in a cell; and

D. a read and restore circuit connected to said first and second bit lines and containing circuit elements capable of reading a datum level from a certain cell to form a datum



signal on a datum line and restoring said read datum level back in said certain cell.

5,007,023

BITLINE PRECHARGE CIRCUIT OF MULTI-SECTIONAL MEMORY ARRAY

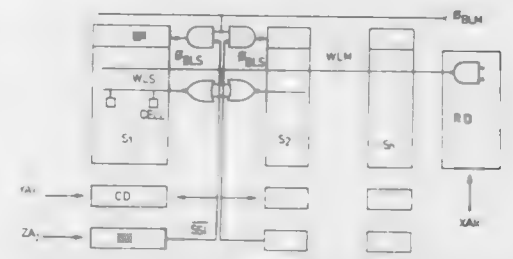
Byeongyun Kim, Seoul, and Sangki Hwang, Kyongsangbuk, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 5, 1989, Ser. No. 348,213

Claims priority, application Rep. of Korea, Jul. 21, 1988, 88-9163

Int. Cl.[5] G11C *7/00, 8/00*

U.S. Cl. 365—203 4 Claims



1. A bit line precharge circuit of a multi-sectional memory array, comprising:

first and second invertor circuits adapted to receive and invert a section decoding signal applied thereto;

a first NAND circuit adapted to receive and to NAND-gate the inverted section decoding signal from said first invertor circuit and a main bit line precharge pulse applied thereto;

a second NAND circuit adapted to receive and to NAND gate the inverted section decoding signal from said second invertor circuit and a main data line precharge pulse applied thereto;

third and fourth invertor circuits adapted to receive and to invert outputs from said first and second NAND circuits, respectively;

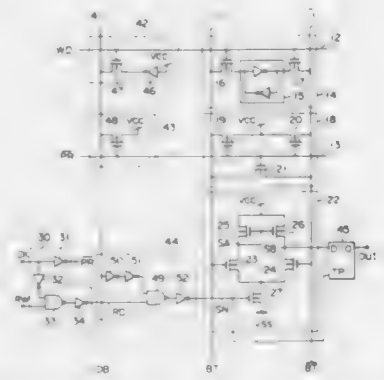
the bit line precharge circuit being adapted to receive an output of said third invertor circuit and a data line precharge circuit adapted to receive an output from said fourth invertor circuit so that the operation margin of said section decoding signal increases by as much as the width of said main bitline precharge pulse.

5,007,024

SEMICONDUCTOR MEMORY DEVICE WITH SENSE AMPLIFIER CONTROLLER

Yutaka Tanaka, Yokohama, and Masanori Haraguchi, Ayase, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jan. 18, 1990, Ser. No. 466,920
Claims priority, application Japan, Jan. 31, 1989, 1-21004
Int. Cl.[5] G11C *7/00, 11/407*
U.S. Cl. 365—207 7 Claims



1. A semiconductor memory device comprising:
a memory cell;
a pair of bit lines connected to said memory cell;
first precharging means, for precharging said pair of bit lines;
a sense amplifier for amplifying a potential difference between said pair of bit lines;
a dummy bit line having a load capacity equal to that of each of said pair of bit lines;
a dummy memory cell having a bit line drive capability equal to that of said memory cell;
second precharging means, for precharging said dummy bit line;
selecting means for simultaneously selecting said memory cell and said dummy memory cell;
dummy bit line potential sensing means for sensing that the potential of said dummy bit line is changed from a precharge potential by a predetermined potential when said dummy memory cell is selected by said selecting means; and
sense amplifier control means for receiving an enable signal which enables an operation of said sense amplifier, and a sensed signal from said dummy bit line potential sensing means to determine an operation period of said sense amplifier, in response to both the enable and the sensed signals.

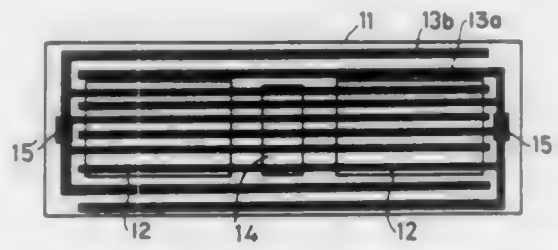
5,007,025

POWER AND SIGNAL LINE BUSSING METHOD FOR MEMORY DEVICES

Sang K. Hwang, Sang Ju; Tae S. Jung, Buchon, and Kyu H. Choi, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 31, 1989, Ser. No. 330,917
Claims priority, application Rep. of Korea, Jul. 21, 1988, 88-9162
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—226 3 Claims

1. A memory device formed on a semiconductor substrate having circuitry positioned adjacent a single memory cell array, said memory device comprising:
a plurality of power lines formed above said single memory cell array for supplying power to said circuitry, each power line being substantially parallel to and spaced apart from every other power line; and
a plurality of ground lines formed above said single memory cell array for supplying ground potential to said circuitry,



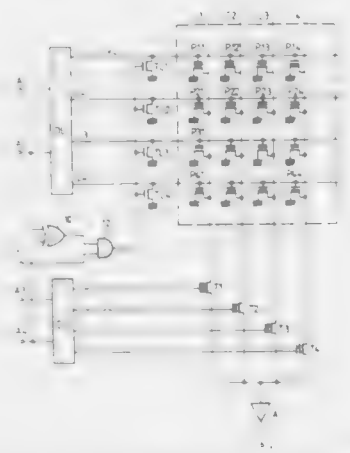
each ground line being substantially parallel to and spaced apart from every other ground line.

5,007,026

METHOD FOR THE TESTING OF ONE TIME PROGRAMMABLE MEMORIES AND CORRESPONDING MEMORY

Jean-Marie Gaultier, Rousset sur Arc; Augustin Farrugia, La Ciotat, and Bertrand Conan, Aix-en-Provence, all of France, assignors to SGS-Thomson Microelectronics S.A., Gentilly, France

Filed Mar. 21, 1989, Ser. No. 326,618
Claims priority, application France, Mar. 25, 1988, 88 03918
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—201 11 Claims



1. A one time programmable memory, comprising a memory having an array of memory cells, a decoder having inputs for receiving an address and outputs for addressing said cells, and a reading circuit for providing a signal corresponding to information which may be stored in the cells addressed by the decoder, said memory comprising a test mode terminal for receiving a test signal, and an inhibition circuit connected to said test mode terminal and to the reading circuit, said inhibition circuit comprising means enabled by said test signal for inhibiting the reading of the cells addressed by the decoder whenever the address received by the decoder has just predetermined values and for enabling the reading of the cells whenever the address has second predetermined values, whereby the signal provided by the reading circuit depends upon the address of cell received by the decoder and all cells are virgin cells.

5,007,027

DATA PROTECTION SYSTEM IN A DATA PROCESSING SYSTEM

Hiroyuki Shimoi, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 9, 1989, Ser. No. 349,310
Claims priority, application Japan, May 16, 1988, 63-118963
Int. Cl.[5] G11C *5/14*
U.S. Cl. 365—229 10 Claims



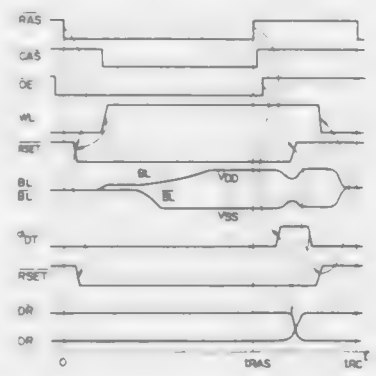
1. A data protection system for protecting data stored in a memory having a memory unit for storing the data, a power unit for supplying power to the memory unit, and a battery charged by the power source and supplying a battery voltage to the memory unit when the power source is accidentally interrupted, said data protection system comprising:
first voltage check means, connected to the battery, for comparing the battery voltage with a first reference voltage and generating a battery error signal when the battery voltage is lower than the first reference voltage; and
second voltage check means, connected to the battery for comparing the battery voltage with a second reference voltage which is higher than the first reference voltage and generating a battery charging signal when the battery voltage lies between the first reference voltage and the second reference voltage.

5,007,028

MULTIPORT MEMORY WITH IMPROVED TIMING OF WORD LINE SELECTION

Shigeo Ohshima, Tokyo; Haruki Toda, Yokohama, and Tatsuo Ikawa, Mitaka, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 293,845, Jan. 5, 1989, abandoned. This application Jul. 16, 1990, Ser. No. 552,851
Claims priority, application Japan, Jan. 19, 1988, 63-8929
Int. Cl.[5] G11C *8/00*
U.S. Cl. 365—233 18 Claims



1. A multiport memory comprising:
a storage section including bit lines and a word line, respectively defining rows and columns, a data transfer gate, and a dynamic memory cell;
a serial port having a serial access function in a column direction of said storage section;
a word line signal for selecting a word line of said storage section; and
means for disabling said word line signal in response to a row address strobe signal and a data transfer gate signal at times when the row address strobe signal is raised in a transfer cycle in which data held by said memory cell is transferred to said serial port before the data transfer to said serial port is completed by said data transfer gate in response to the data transfer gate signal, wherein the word line signal is not disabled until the data transfer to said serial port is completed by said data transfer gate.

5,007,029

UNDERSEA RELOCATION APPARATUS & METHOD

Sherman A. Scott, 120 Greenbriar Cir., Lafayette, La. 70503

Continuation of Ser. No. 836,640, Mar. 5, 1986, abandoned. This application Oct. 26, 1987, Ser. No. 220,921
Int. Cl.[5] H04B *1/59*
U.S. Cl. 367—4 6 Claims



1. An apparatus for relocating an underwater object comprising in combination:
(a) a buoyant spool having flanges on either end, said spool defining a lengthwise hole along the central axis thereof;
(b) an acoustic transponder disposed within said hole, said transponder including an end cap assembly having a releasable catch, said releasable catch opening in response to an acoustic signal received by said transponder;
(c) A spool line attached to said spool by a first end and wound about said spool between said flanges;
(d) attachment means for attaching the second end of said spool line and said releasable catch to said object.

5,007,030

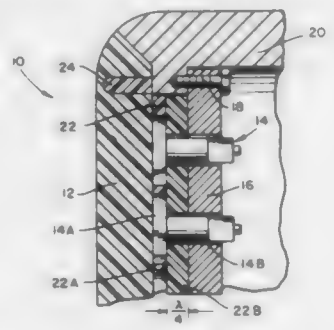
TRANSDUCER ASSEMBLY FOR DEEP SUBMERGENCE

Shelby F. Sullivan, Arcadia; Harper J. Whitehouse, Hacienda Heights, and Richard P. Hamilton, Altadena, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 5, 1970, Ser. No. 14,824
Int. Cl.[5] H04R *1/02*
U.S. Cl. 367—153 9 Claims

1. A transducer assembly, useful at depths up to 4500 ft, comprising:
a diaphragm;
at least one transducer element, comprising a flat head and a cylindrical active part, bonded by its head to the diaphragm;
pressure-resistant means for supporting the transducer assembly;
an acoustic isolator disposed between the head and active part of the at least one transducer element and between the diaphragm and the pressure-resistant means the acoustic isolator not touching the active part of the at least one transducer element;

the material of the acoustic isolator being elastically linear and equal in thickness to one-quarter wavelength of the



corresponding operating frequency of the transducer element.

5,007,031

APPARATUS FOR POSITIONING GEOPHONES IN SHALLOW HOLES

Otis G. Erich, Jr., Norwalk, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 30, 1988, Ser. No. 292,388
Int. Cl.[5] H04R *1/00*
U.S. Cl. 367—178 **16 Claims**



1. An apparatus for positioning geophones in shallow holes in the earth comprising a geophone and a geophone planting tool engageable with said geophone to implant said geophone in the earth at the bottom of a shallow hole and to level and align said geophone in said shallow hole, said geophone having an electrical conductor connected thereto, said geophone planting tool being adapted to be engaged with said geophone and held in engagement therewith during implanting, leveling and aligning thereof by pressure on said conductor and to be disengaged from said geophone after aligning, leveling and implanting said geophone by release of pressure on said conductor.

5,007,032

ACOUSTIC ALERT SENSOR

Randy M. Jensen, Inver Grove Heights, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

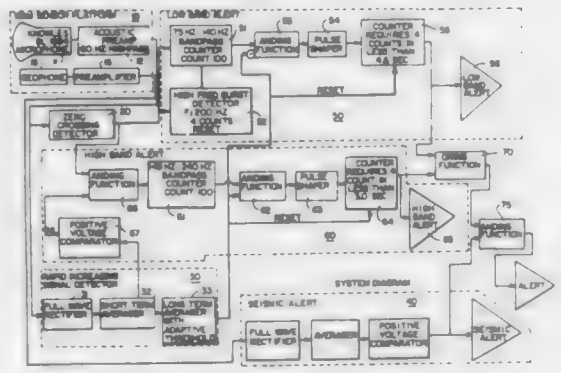
Filed Jun. 8, 1990, Ser. No. 535,267
Int. Cl.[5] H04B *1/06*
U.S. Cl. 367—136 **11 Claims**

1. An acoustic alert detector for detecting an acoustic signal produced by a vehicle, said detector comprising:

sensing means for sensing acoustic signals providing a first signal having a zero reference;

first counting means for counting a first predetermined number of crossings by said first signal of said zero reference, and for providing a second signal upon said first predetermined number of said crossings by said first signal of said zero reference being counted;

second counting means for counting a second predetermined number of said second signals, and for providing a third signal upon said second predetermined number of said second signals being counted;



first timing means for permitting said second signal to pass to said second counting means after a first predetermined time;

second timing means for resetting said first counting means after a second predetermined time, said second predetermined time being greater than said first predetermined time; and

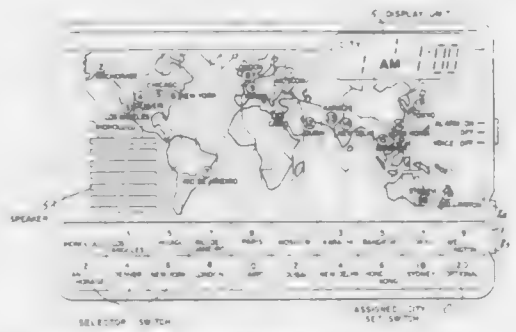
third timing means for resetting said second counting means after a third predetermined time.

5,007,033

WORLD TIMEPIECE

Maki Kubota, and Hideo Aso, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Japan

Filed Dec. 15, 1988, Ser. No. 285,002
Claims priority, application Japan, Dec. 21, 1987, 62-323585
Int. Cl.[5] G04B *19/22*
U.S. Cl. 368—21 **4 Claims**



1. A world timepiece, comprising:

actuatable selector switches corresponding respectively to main cities of desired zones out of a plurality of time-lag zones into which the world is divided, the number of said desired zones being less than the number of said time-lag zones;

an assigned city storage circuit for storing data representative of a city of an arbitrary zone selected from said time-lag zones including zones other than said desired zones as an option;

an assigned city setting circuit for setting said data into said assigned city storage circuit;

an optional switch actuatable to read out the content of said assigned city storage circuit· and

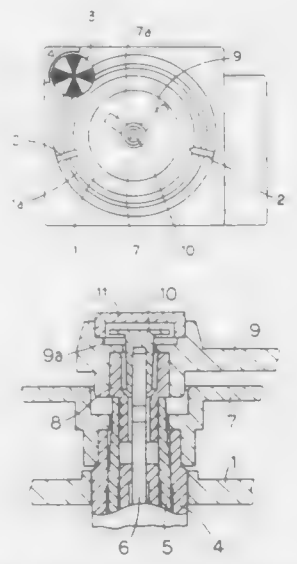
a display unit for selectively displaying the time of one of said each main city or said assigned city according to the actuation of one of said selector switches or said optional switch.

5,007,034

OPERATION INDICATOR OF TIMEPIECE AND SO ON

Shigeru Shimozono, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan

Filed Oct. 13, 1989, Ser. No. 421,178
Claims priority, application Japan, Oct. 13, 1988, 63-13[illegible]29[U]
Int. Cl.[5] G04B *19/20, 19/04*
U.S. Cl. 368—77 **18 Claims**



1. An operation indicator comprising: an hour hand shaft, a minute hand shaft, and a second hand shaft coaxially fitted and extending through a dial; an hour hand and a minute hand having a central concave portion and being secured at the end of said hour and minute hand shafts respectively; an operation indicating disk secured at the end of said second hand shaft and disposed at the central concave portion of said minute hand; and a transparent cover installed at said central concave portion.

5,007,035

DISTANCE PULSE AVERAGING UNIT

Paul A. Markow, Huntsville; Kevin R. Hammond, Madison, and Donald E. Hutchings, Decatur, all of Ala., assignors to Chrysler Corporation, Highland Park, Mich.
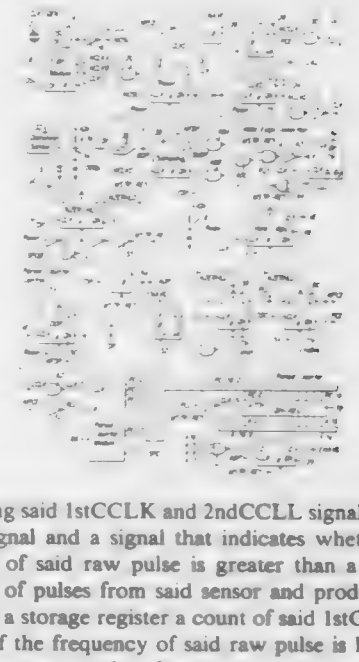
Filed Jun. 29, 1990, Ser. No. 546,608
Int. Cl.[5] G04F *8/00;* **G01R** *23/02*
U.S. Cl. 368—118 **4 Claims**

1. Apparatus for measuring periods between edges of asymmetrical pulses emanating from a measurand sensor with respect to a reference clock signal, said sensor pulses varying in frequency in proportion to rates of change of the measurand; said system comprising:

(a) clock means, having an internal reference clock oscillator, and generating therefrom: (1) a first period-counting, control- clock (1stCCLK) signal of a chosen frequency apportioned to a fixed frequency of the oscillator, (2) a second period-counting, control-clock (2ndCCLK) signal of another chosen frequency apportioned to the frequency of said 1stCCLK signal and (3) a filtered-clock (FLT-CLK) signal of the same frequency as that of said first period-counting, control-clock signal for providing clock signals used to establish valid edges of the sensor pulses;

(b) valid edge detection means having an input terminal for receiving each raw pulse signal from the sensor and another terminal for receiving said FLT-CLK signals and producing therefrom an initial valid edge (VE) pulse signal indicative of a valid edge of that raw pulse signal after buffering the raw pulse signal and after that buffered signal remains for a chosen number of pulses, in series, of said FLT-CLK signal;

(c) counting means responsive to each VE signal during the receipt of each raw pulse signal and having a terminal for



receiving said 1stCCLK and 2ndCCLL signals, said oscillator signal and a signal that indicates whether the frequency of said raw pulse is greater than a chosen frequency of pulses from said sensor and producing therefrom in a storage register a count of said 1stCCLK signal pulses if the frequency of said raw pulse is less than the chosen sensor pulse frequency or a count of said 2ndCCLK signal if the frequency of said raw pulse is greater than the chosen sensor pulse frequency, said counting terminating upon the receipt of a next VE signal.

5,007,036

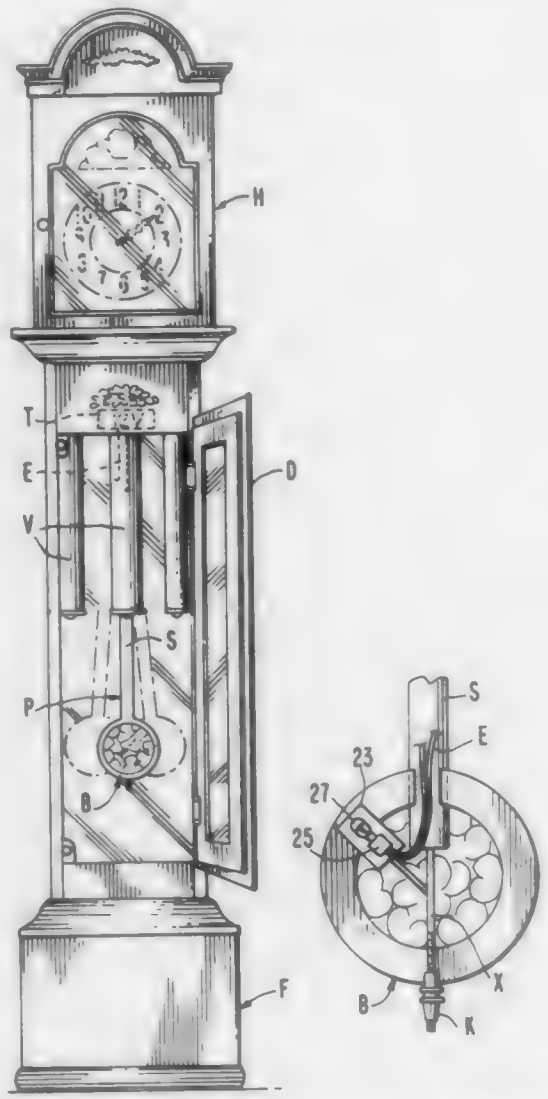
CASE CLOCK WITH ILLUMINATED PENDULUM

James H. Kelly, Jr., Hiawasee, Va., assignor to Pulaski Furniture Corporation, Pulaski, Va.

Filed Mar. 30, 1990, Ser. No. 501,552
Int. Cl.[5] G04B *15/00;* **G04F** *5/00*
U.S. Cl. 368—134 **17 Claims**

1. In a clock having a casing and a pendulum housed within a section of said casing adapted for oscillating movement along an arc, said casing section having at least one opening therein through which said pendulum is visible from the exterior, said pendulum including an arm anchored within said casing at its upper end for said oscillating movement, and carrying adjacent its lower end a head, in combination, the improvement of illuminating means for said pendulum head comprising a light

source energized by an electrical current and mounted on said pendulum head, and means for supplying electrical current to



said light source to energize the source while said pendulum is oscillating.

5,007,037

OPTICAL DISK DRIVE SYSTEM UTILIZING ELECTRON TRAPPING MEDIA FOR DATA STORAGE

Joseph Lindmayer, Potomac, Md., assignor to Quantex Corporation, Rockville, Md.

Continuation-in-part of Ser. No. 870,877, Jun. 5, 1986, Pat. No. 4,864,536, which is a continuation-in-part of Ser. No. 786,095, Oct. 10, 1985, Pat. No. 4,705,952. This application Jul. 29, 1988, Ser. No. 225,846

The portion of the term of this patent subsequent to Sep. 5, 2006, has been disclaimed.

Int. Cl.[5] **G11B** *7/00*

U.S. Cl. 369—100 **12 Claims**

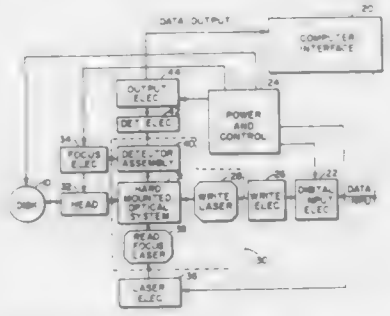
1. An optical disk drive system, comprising:

at least one optical disk fixedly mounted in a sealed housing, said optical disk comprising electron trapping media for storing and releasing digital information in the form of light energy;

means for rotatably supporting said optical disk;

means for rotating said optical disk;

transducer means comprising at least two light beam generating means and a focusing objective lens for writing digital information on and reading information from said optical disk as light energy on at least one planar surface thereof, wherein said light beam generating means used for writing digital information on said disk generates a light beam having a first predetermined wavelength which raises electronics in said electron trapping media to an elevated energy level at which they are trapped, and



said light beam generating means used for reading digital information from said disk generates a light beam having a second and different predetermined wavelength which releases a portion of said trapped electrons, resulting in the emission of light of a third predetermined wavelength;

positioning means for moving said focusing objective lens between the tracks on said optical disk, said positioning means includes means for detecting said tracks and means for moving said focusing objective lens from one track to the next adjacent track on said optical disk.

5,007,038

METHOD AND APPARATUS FOR PRODUCING AN ACCURATE ERROR SIGNAL IN AN OPTICAL RECORDING MEDIUM DRIVER

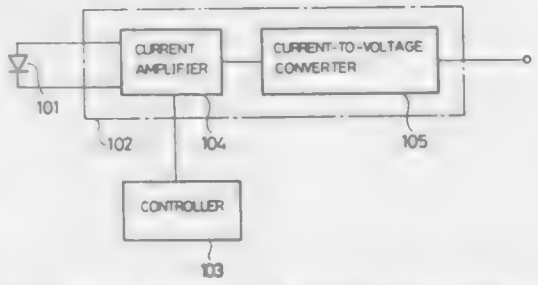
Kazuhiko Nakane; Teruo Furukawa; Masayoshi Shimamoto, and Kyosuke Yoshimoto, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1988, Ser. No. 226,722

Claims priority, application Japan, Aug. 4, 1987, 62-195691

Int. Cl.[5] **G11B** *7/00*

U.S. Cl. 369—44.11 **20 Claims**



1. A method of providing an accurate error signal in an optical recording medium driver having different operation modes including recording, reproducing, and erasing data and further using recording media having different reflectivities, comprising the steps of:

illuminating a recording surface of the recording media with a focused light beam for recording, reproducing, and erasing data.

detecting light reflected from the recording surface and forming an error signal from the detected light;

converting the error signal from a current to a voltage;

estimating a power of the reflected light from a product of the reflectivity of the recording media and a power of the light beam; and

selecting a gain of the converting step from one of a plurality of values using the estimated power.

5,007,039

OPTICAL INFORMATION RECORDING/REPRODUCING APPARATUS

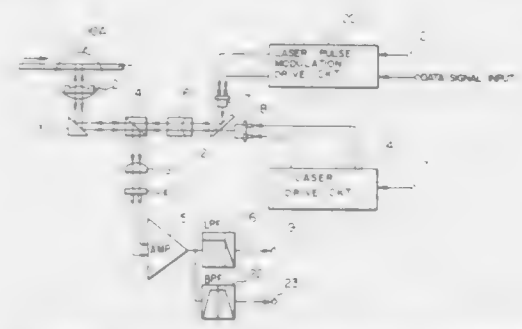
Akito Sakemoto; Hitoshi Watanabe, both of Ibaraki, and Yasunori Kanazawa, Hachioji, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Sep. 22, 1988, Ser. No. 247,854

Claims priority, application Japan, Sep. 22, 1987, 62-236294

Int. Cl.[5] **G11B** *7/125*

U.S. Cl. 369—116 **8 Claims**



1. An optical information recording/reproducing apparatus, comprising:

signal recording means for recording a signal on a recording film of a recording medium by raising temperature of said recording film through irradiation with a writing laser beam having a predetermined wave length;

signal reproducing means for reproducing said signal by irradiating with a reading laser beam the recording film of said recording medium in which said signal is recorded;

an optical system provided in common to both said writing laser beam and said reading laser beam;

the signal recorded on said recording film being reproduced substantially simultaneously with the recording of said signal through said signal reproducing means for allowing confirmation of said signal having been recorded; and

means for modulating intensity of said writing laser beam determined by said signal to be recorded with a frequency at least twice as high as the maximum frequency of said signal to be recorded.

5,007,040

MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS HAVING A RETAINING MECHANISM FOR A DISC-SHAPED MAGNETIC RECORD BEARING MEDIUM

Shigeki Okauchi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha

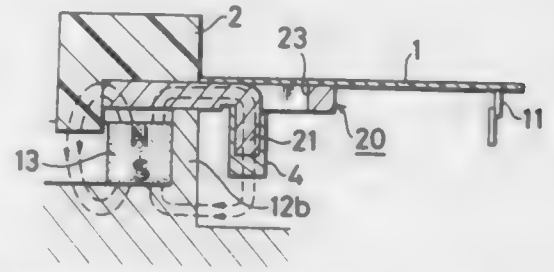
Continuation of Ser. No. 169,073, Mar. 16, 1988, abandoned, which is a continuation of Ser. No. 778,380, Sep. 20, 1985, abandoned. This application Apr. 4, 1989, Ser. No. 336,648

Claims priority, application Japan, Sep. 22, 1984, 59-143956[U]; Jan. 30, 1985, 60-14468

Int. Cl.[5] **G11B** *5/48, 5/62*

U.S. Cl. 369—270 **6 Claims**

1. A disc-shaped magnetic record bearing medium for a magnetic recording and/or reproducing apparatus, said apparatus comprising a magnetic head and a spindle having a magnet thereon, said medium having a central portion ring-shaped magnetizable member attached to the central portion, said medium being so arranged that said magnetizable member is attracted by the magnet on said spindle in the state where said medium is mounted on said spindle, said magnetizable member having a plurality of projections formed by bending portions near the outer periphery of said magnetizable member over the entire periphery, and said projections being located between said head and said magnet, spaced by a predetermined distance from the outer periphery of said magnet, said projections being



located at an outside of a part where said magnetizable member and said spindle having the magnet thereon are attached to each other, thereby shunting a sideward leakage of a magnetic flux from said magnet.

5,007,041

Patent Not Issued For This Number

5,007,042

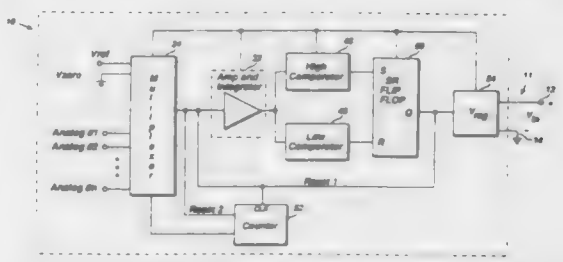
METHOD AND APPARATUS FOR TRANSMITTING ANALOG DATA EMBEDDED IN A DIGITAL PULSE TRAIN

Larry D. Santi, 5045 NE. 23rd St., Renton, Wash. 98056

Filed Sep. 8, 1989, Ser. No. 404,670

Int. Cl.[5] **H03C** *1/04;* **H03K** *3/64*

U.S. Cl. 370—9 **22 Claims**



8. A circuit for transmitting a signal on a two-wire transmission line from one of a plurality of transmitters coupled to said transmission line, comprising:

an integrator;

a multiplexer having an output coupled to said integrator;

an analog signal source coupled to the input of said multiplexer; and

a switching means for placing a signal on said two-wire transmission line, said switching means being coupled to the output of said integrator, said switching means placing a sync pulse having a selected amplitude on said two-wire transmission line when the charge on said integrator exceeds a high threshold value or is less than a low threshold value and placing a data pulse having a first amplitude different from said selected amplitude on said two-wire transmission line when the charge on said integrator exceeds said low threshold value but is less than said high threshold value, said selected amplitude identifying said signal as being generated by a select set of transmitters coupled to said transmission line.

5,007,043

METHOD FOR TRANSMITTING, VIA A PLURALITY OF ASYNCHRONOUSLY TIME-DIVIDED TRANSMISSION CHANNELS, A FLOW OF DATA CELLS, THE STATE OF A COUNTER FOR EACH TRANSMISSION CHANNEL BEING KEPT UP TO DATE IN ACCORDANCE WITH THE NUMBER OF DATA CELLS PER UNIT OF TIME

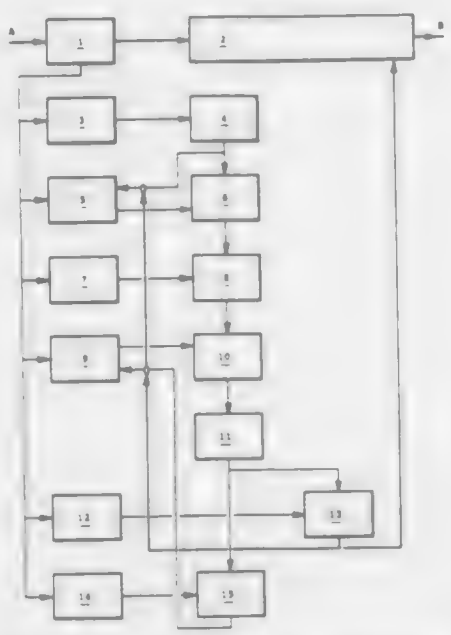
Frans van den Dool, Leidschendam, and Jacob C. van der Wal, Delft, both of Netherlands, assignors to Koninklijke PTT Nederland N.V., Groningen, Netherlands

Filed Jan. 30, 1990, Ser. No. 472,349

Claims priority, application Netherlands, Feb. 3, 1989, 8900269

Int. Cl.[5] H04J *3/16*

U.S. Cl. 370—60 **14 Claims**



1. A method for transmitting, via a transmission medium with a plurality of virtual, asynchronously time-divided transmission channels, a flow of data supplied to that transmission medium, and consisting of data cells which are each transmitted via one of those transmission channels, and each of which comprises a group of control words with one or more control words as well as a group of information words with one or more information words, the group of control words comprising a control word with a channel indication indicating via which transmission channel the relevant data cell has to be transmitted, and the state of a counter being kept up to date for each transmission channel, which state has a certain fixed minimum value, is decreased from time to time and is increased proportional to the number of data cells with a channel indication designating said transmission channel, which state of the counter is compared with a threshold value when a data cell with a channel indication designating said transmission channel arrives at the beginning of the transmission medium at a certain moment of arrival, after which the data cell is either let through to the transmission medium located downstream if the state of the counter is less than said threshold value or else not let through to the transmission medium located downstream, if the state of the counter is more than or equal to said threshold value, characterized

in that the state of the counter is decreased on the arrival of said data cell by a value which is a function of the length of time between the moment of arrival of that data cell and the moment of arrival of a certain preceding data cell with the same channel indication.

5,007,044

DIGITAL ADAPTIVE FILTER AND METHOD OF CONVERGENCE THEREIN

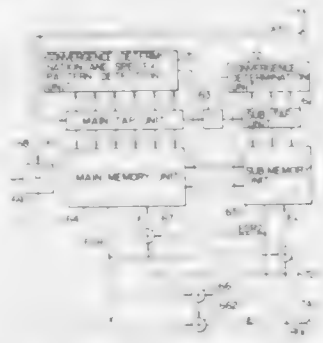
Seiji Miyoshi, Yokohama; Misao Fukuda, Tokyo; Seiichi Yamato, Fukuoka; Kouji Tokiwa, Atsugi, and Kazuyoshi Maruyama, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 20, 1989, Ser. No. 382,413

Claims priority, application Japan, Jul. 20, 1988, 63-180565; Apr. 28, 1989, 01-111664

Int. Cl.[5] H04B *3/20*

U.S. Cl. 370—32.1 **28 Claims**



1. A digital adaptive filter for cancelling an echo component generated by a partial return of a transmission signal, comprising:

main tap group means for sequentially shifting the transmission signal and outputting the shifted signal in parallel;

at least one subtap group means, operatively connected to said main tap group means, for sequentially shifting the transmission signal and outputting the shifted signal in parallel;

main tap group memory means, operatively connected to said main tap group means, for storing a first echo replica which can be stored or read by using the parallel signal from said main tap group means as an address signal;

at least one subtap group memory means, operatively connected to said at least one subtap group means, for storing a second echo replica which can be stored or read by using the parallel signal from said at least one subtap group means as an address signal and which has a greater precision than the first echo replica stored in said main memory means;

adding means, operatively connected to said main tap group memory means and said at least one subtap group memory means, for adding the first echo replica read from said main tap group memory means and the second echo replica read from said at least one subtap group memory means.

5,007,045

INTEGRATED COMMUNICATIONS SYSTEM FOR HDLC VARIABLE-LENGTH DATA PACKETS AND FIXED-LENGTH VOICE/VIDEO PACKETS

Kazuo Tsuzuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 5, 1990, Ser. No. 475,484

Claims priority, application Japan, Feb. 3, 1989, 1-24868

Int. Cl.[5] H04J *3/24*

U.S. Cl. 370—94.10 **11 Claims**

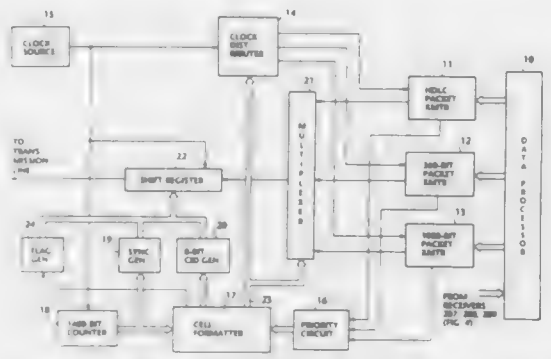
1. A method for transmitting HDLC (high level data link control) variable-length packets and non-HDLC fixed-length packets over a common transmission medium, wherein each of said variable-length and fixed-length packets is composed of one or more cells, comprising:

(a) decomposing each of said HDLC variable-length packets and each of said non-HDLC fixed-length packets into one or more cells;

(b) generating a cell identifier for each of said cells, said cell identifier identifying a type of the packet from which said cell is decomposed;

(c) transmitting a frame sync code from one end of said transmission medium;

(d) generating a frame comprising a plurality of fields each containing said cell identifier and each of said cells and transmitting the frame through said transmission medium;



(e) detecting said frame sync code at the other end of said transmission medium as a timing reference and deassembling said frame into the fields in response to said timing reference;

(f) deassembling each of the fields into a cell identifier and a cell; and

(g) composing the deassembled cells into the original HDLC variable-length packet or non-HDLC fixed-length packet according to the deassembled cell identifier.

5,007,046

COMPUTER CONTROLLED ADAPTIVE SPEAKERPHONE

Richard H. Erving, Red Bank; William A. Ford, Farmington, and Robert R. Miller, II, Convent Station, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 28, 1988, Ser. No. 298,531

Int. Cl.[5] H04J *3/00*

U.S. Cl. 370—32.1 **26 Claims**



1. A voice switching apparatus for processing speech signals on a communication line, the apparatus including means for switching between a receive state for receiving speech signals from the communication line and a transmit state for transmitting signals over the communication line and comprising:

testing means for determining the operational readiness of speech processing circuitry in the apparatus, the type of communication line to which the voice switching apparatus is connected, and for determining the type of acoustic environment in which the voice switching apparatus is employed, the testing means determining the operational readiness of the speech processing circuitry by generating a tone signal and coupling this signal in a loop configuration through the speech processing circuitry, and by detecting the returned tone signal for obtaining the condition of said circuitry;

variable switched loss means for alternately inserting loss in a receive path for attenuating speech signals received from the communication line and in a transmit path for attenuating speech signals for transmission over the communication line; and

calibration means operably responsive to the testing means for adjusting the level of attenuation inserted by the variable switched loss means and for adjusting threshold switching levels at which the apparatus switches between the receive state and the transmit state.

5,007,047

ADAPTIVE RATE CONTROL FOR ECHO CANCELLING MODEM

Manickam R. Sridhar, Norton; John L. Payton, Dedham, and Carol A. Bargoot, Bradford, all of Mass., assignors to Codex Corporation, Mansfield, Mass.

Filed Dec. 2, 1988, Ser. No. 279,370

Int. Cl.[5] H04J *3/00*

U.S. Cl. 370—32.1 **25 Claims**



1. An echo cancellation modem for receiving data signals from a remote device over a channel in accordance with one of several possible modulation schemes suitable for different channel qualities, respectively, while simultaneously sending data signals to the remote device over the same channel, said modem comprising

an echo canceller for reducing echo components appearing in the received channel signal to produce an echo reduced received channel signal having a residual echo component,

a monitor for determining the quality of the channel based on an analysis of the residual echo component, and

a controller for selecting an acceptable one of said modulation schemes based on the analysis of said monitor.

5,007,048

CIRCUIT ARRANGEMENT FOR AVOIDING OVERLOAD IN A WIDEBAND SWITCHING SYSTEM

Wolfgang Kowalk, Nürnberg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 29, 1988, Ser. No. 251,632

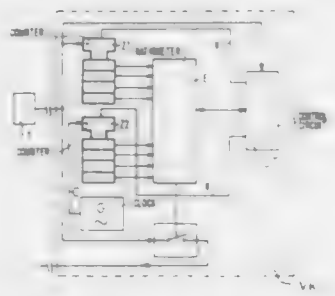
Int. Cl.[5] H04Q *11/04*

U.S. Cl. 370—60 **8 Claims**

1. A circuit arrangement for avoiding overload in a wideband switching system, in which messages are subdivided into blocks and transmitted over wideband transmission links according to an a synchronous time-division multiplex method, comprising:

block counter means for counting the blocks sent by a subscriber station;

connection time counter means for determining the connection time accumulated during the existing condition, and



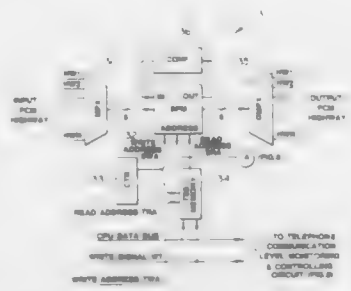
monitoring means connected to the block counter and the connection time counter for monitoring the usage of the switching system.

5,007,049

ELECTRONIC EXCHANGE HAVING A CONFERENCE TELEPHONE COMMUNICATION FUNCTION AND CONFERENCE TELEPHONE COMMUNICATION METHOD

Eiji Ohtsuka, Hino, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 22, 1989, Ser. No. 327,276
Claims priority, application Japan, Mar. 25, 1988, 63-69612
Int. Cl.[5] H04M *3/56*
U.S. Cl. 370—62 **5 Claims**



1. A conference telephone communication method in which telephone communication signals on a plurality of speakers in a time sharing multiplexed telephone communication path are added, the telephone communication signal on any particular speaker is subtracted, and the resulting signal is transferred to the remaining respective speakers, comprising the steps of:

monitoring the levels of the telephone communication signals transferred to the remaining respective speakers,

selectively attenuating the telephone communication signals, the levels of which have exceeded a preset threshold level,

transferring the attenuated signals to the remaining speakers, and

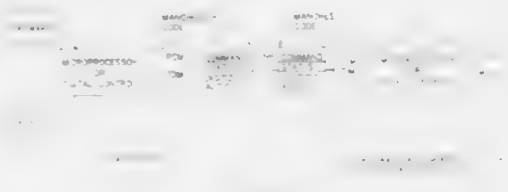
releasing the selective attenuation of the telephone communication signals, which have exceeded the threshold level, a predetermined time after conditions under which the threshold level is exceeded have disappeared.

5,007,050

BIDIRECTIONAL DIGITAL SERIAL INTERFACE FOR COMMUNICATION DIGITAL SIGNALS INCLUDING DIGITIZED AUDIO BETWEEN MICROPROCESSOR-BASED CONTROL AND TRANSCEIVER UNITS OF TWO-WAY RADIO COMMUNICATIONS EQUIPMENT

Kaspar A. Kasparian, Raleigh; Aaron S. Rogers, Knightdale; Ming-Chyuan Hsu, and John P. Fussell, both of Raleigh, all of N.C., assignors to Teletec Corporation, Raleigh, N.C.

Filed Mar. 27, 1987, Ser. No. 31,003
Int. Cl.[5] H04J *3/00*
U.S. Cl. 370—77 **29 Claims**



1. A digital serial communications link comprising:

(a) a first time division multiplexed full duplex digital interface for a two-way radio having a means for transmitting and receiving time-division multiplexed pulse code modulation signals;

(b) a second time division multiplexed full duplex digital interface for a two-way radio having a means for transmitting and receiving time-division multiplexed pulse code modulation signals; and

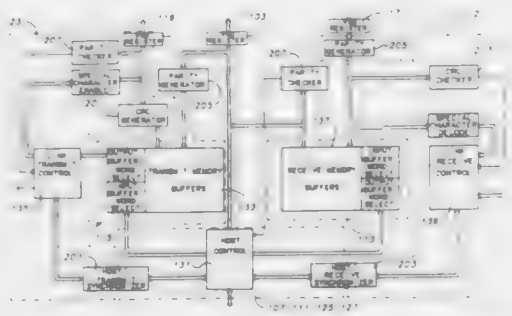
(c) a bidirectional time division multiplexed full duplex communicating medium connecting said first time division multiplexed full duplex digital interface with said second time division multiplexed full duplex digital interface.

5,007,051

LINK LAYER PROTOCOL AND APPARATUS FOR DATA COMMUNICATION

Gregory D. Dolkas, Auburn, and William R. Martin, Roseville, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 103,485, Sep. 30, 1987, abandoned. This application Mar. 3, 1989, Ser. No. 319,897
Int. Cl.[5] H04L *5/22*
U.S. Cl. 370—85.1 **12 Claims**



1. A method for controlling data transmission using an open systems interconnection model, comprising:

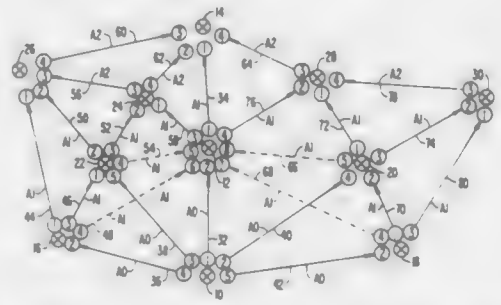
providing link layer sliding window protocol formatting of information to be transmitted such that said protocol provides transmission flow control.

5,007,052

METHOD FOR ROUTING PACKETS BY SQUELCHED FLOODING

George Flammer, San Jose, Calif., assignor to Metricom, Inc., Campbell, Calif.

Filed Apr. 11, 1989, Ser. No. 337,031
Int. Cl.[5] H04J *3/26*
U.S. Cl. 370—85.6 **8 Claims**



1. In a packet-switched communication network, a method for routing flooding packets to nodes in said network, said method comprising the steps of:

assigning at each local node a link sequence value to each communication link with said local node;

exchanging between each said local node and each remote nodes said link sequence value assigned to a common communication link such that each said local node is advised of the link sequence value assigned by each remote node to a communication link with said local node; and

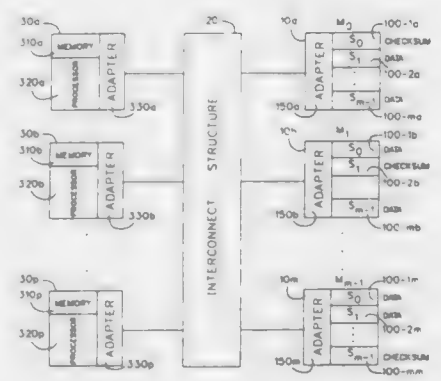
transmitting flooding packets only via communication links having link sequence values with a priority above a link sequence value threshold.

5,007,053

METHOD AND APPARATUS FOR CHECKSUM ADDRESS GENERATION IN A FAIL-SAFE MODULAR MEMORY

Balakrishna R. Iyer, Fremont, Calif.; Daniel M. Dias, Mahopac, N.Y., and Yitzhak Dishon, Stamford, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 30, 1988, Ser. No. 278,104
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—21.1 **14 Claims**



1. A method for providing fault tolerance for a memory for a computer system comprised of a plurality of memory modules having a plurality of groups of blocks, said groups of blocks being comprised of at least one backup block for storing checksums and a plurality of data blocks for storing data, said blocks in each of the said memory modules having various address labels, and wherein a unit of access is no greater than a block, said method comprising the steps of;

distributing said backup blocks for different groups of data blocks across said memory modules;

providing an address generator to identify the address label of the data in a data block and the address label of said data block's backup block;

calculating a checksum of the data in all of said data blocks of a group of blocks;

storing said checksum in an identified backup block having an identified address label;

detecting failure of a memory module; and

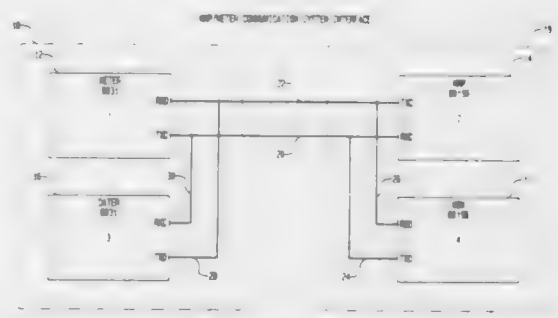
recovering the data in each one of the data blocks in said failed memory module from the other blocks in non-failed memory modules.

5,007,054

NETWORK AND PROTOCOL FOR REAL-TIME CONTROL OF MACHINE OPERATIONS

David K. Lee, Monroe, and Peter C. DiGiulio, Bridgeport, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 28, 1988, Ser. No. 291,477
Int. Cl.[5] G06F *11/00*
U.S. Cl. 371—32 **4 Claims**



1. A communication network, comprising:

a first, second, third and fourth controller node;

each of said controller nodes respectively having a transmit and receive pin and a processor means for generating data message at said transmit pin and receiving data messages received at said receive pin, said transmit pin of said first node in line communication with the receive pin of said second and third nodes and the transmit pin of said fourth node having said receive pin of said first node in line communication with said transmit pin of said second and third node and the receive pin of said fourth pin;

said processor means being programmable to respond to and generate data message bytes, each data byte having a start bit, eight data bits, a ninth programmably settable bit and one stop bit;

said processor means being further programmable to respond only to a unique address-command data message byte, said address-command byte having said ninth settable bit set, said processor means to then generate in response to said address-command byte a reply message byte with the ninth bit not set, said processor to then receive a message count byte followed uninterrupted by said data message bytes, said count byte and said data message bytes having the ninth bit not set, said processor upon receiving a complete data message conforming to the received count of said count by to then generate an acknowledgement byte;

said processor means of said first and second controller being further programmable to generate a unique address-command data message byte, said address-command byte having said settable bit set, said processor means to then respond to a reply message byte, said reply message to have said ninth bit not set, said processor to then transmit a message count byte followed uninterrupted by the data message bytes, said count byte and said data message bytes having the ninth bit not set, said processor to then receive

an acknowledgement byte indicating whether the received message was error free;

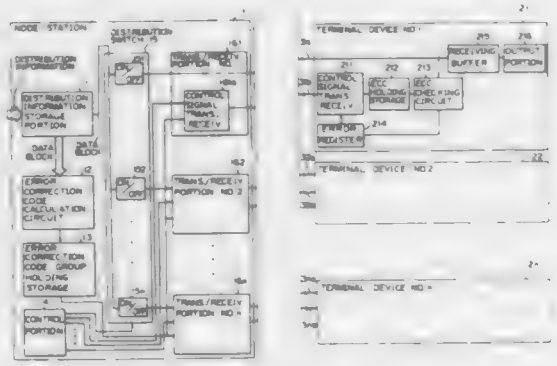
said processor means of said third controller node being further programmable to generate a data message byte only in response to a data message from said first node, said processor means to then generate a message count byte followed uninterrupted by a data message byte, said count byte and said data message bytes having the ninth bit not set, said processor to then receive an acknowledgement byte indicating whether the received message was error free.

5,007,055

INFORMATION DISTRIBUTION SYSTEM

Osamu Isono; Toshimasa Fukui; Tetsuo Nishino; Tetsuo Tachibana, all of Kawasaki, and Eisuke Iwabuchi, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 24, 1989, Ser. No. 314,792
Claims priority, application Japan, Feb. 25, 1988, 63-40820
Int. Cl.[5] G08C *25/02*
U.S. Cl. 371—32 **2 Claims**



1. An information distribution system, comprising:

a node station;

a plurality of transmission lines; and

a plurality of terminal devices connected through said transmission lines to said node station;

said node station comprising:

distribution storage means for storing information which is to be distributed to said plurality of terminal devices;

error check code formation means for forming error check code information based upon the information;

distribution means for selectively distributing the information from said distribution storage means;

transmitting/receiving means for transmitting a set-up signal, the error check code information and the information to said plurality of terminal devices and for receiving retransmission requests from said plurality of terminal devices;

control means for providing the set-up signal and the error check code information before transmitting the information from said node station to said terminal devices; and

re-transmission request response means for retransmitting the information in response to one of the re-transmission requests from one of said plurality of terminal devices;

each of said terminal devices comprising,

error checking means for receiving the information and the checking whether the information received from said node station is correct;

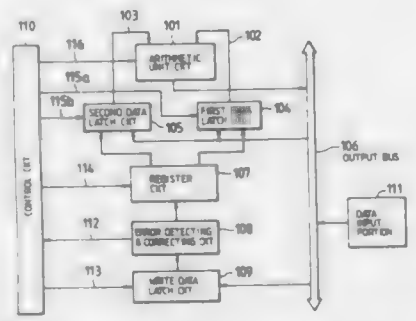
means for dividing the information transmitted from said node station into a plurality of blocks, and for transmitting the retransmission request based on the checking of said error checking means.

5,007,056

PROCESSING CIRCUIT HAVING AN ERROR DETECTING AND CORRECTING CIRCUIT THEREIN

Masaitsu Nakajima, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Filed Dec. 27, 1988, Ser. No. 289,708
Claims priority, application Japan, Dec. 25, 1987, 62-330769
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—37.1 **7 Claims**



7. A processing circuit for receiving input data having an error detecting and correcting code from a data bus, said processing circuit comprising:

(a) write data latch circuit means connected to said data bus for latching said input data;

(b) error detecting and correcting circuit means responsive to an output signal from said write data latch circuit means for checking said latched data, generating corrected data from said latched data and outputting an error correction signal when said latched data is erroneous;

(c) register circuit means for storing correct data sent from said error detecting and correcting circuit means;

(d) first and second input data latch circuit means, each connected to said data bus and said register circuit means, for temporarily latching said input data from said data bus in the absence of said error correction signal, and for temporarily latching corrected data from said register circuit means in the presence of said error correction signal;

(e) arithmetic unit circuit means coupled to said first and second input data latch means for executing an operation on at least one of said input data and said corrected data that is latched by said first and second input data latch circuit means; and

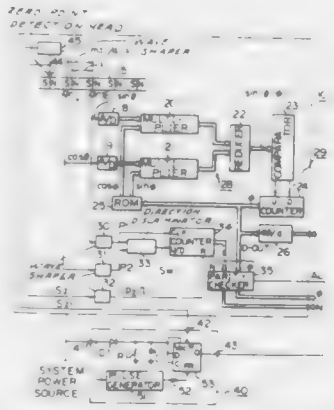
(f) control circuit means for controlling the operation of said arithmetic unit circuit means to perform a first operation on said input data that is latched by said first and second input data latch circuit means while said error detection and correction circuit means is detecting whether an error occurs in said input data, and said control circuit means controls the operation of said write data latch circuit means, said register circuit means and said first and second data latch circuit means, to prevent the result of said first operation from being output to an output bus and to provide said corrected data to said arithmetic unit circuit means only when said error correction signal is generated, thereby causing said arithmetic unit circuit means to perform a second operation on said corrected data.

5,007,057

POWER SOURCE MONITOR AND A ROTARY ENCODER WITH SUCH A MONITOR

Kenzaburou Iijima, and Yoshinori Hayashi, both of Shizuoka, Japan, assignors to Yamaha Corporation, Japan

Filed Jan. 18, 1989, Ser. No. 298,501
Claims priority, application Japan, Jan. 18, 1988, 63-7808
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—66 **4 Claims**



1. A power source monitor for a rotary encoder including a parity checker and a zero-point detection head, said rotary encoder being effective for issuing absolute position data, said power source monitor comprising:

a pulse generator connected to a power source for said rotary encoder and effective for generating a pulse signal when an input voltage thereof falls below a predescribed level;

a flip-flop having a preset terminal connected to said pulse generator and a reset terminal connected to the zero-point detection head of said rotary encoder, said flip-flop being preset on receipt of said pulse signal for generation of an alarm signal to be supplied to said parity checker, and being reset on receipt of a zero-point signal for cancelling said alarm signal; and

a capacitor connected to said power source and to said flip-flop to supply a constant input voltage to said flip-flop upon the occurrence of an interruption in power supplied by said power source.

5,007,058

MILLIMETER WAVE POWER GENERATOR

Cecil L. Hayes, Placentia; Derek T. Cheung, Thousand Oaks, and Harold R. Fetterman, Pacific Palisades, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 11, 1990, Ser. No. 508,071
Int. Cl.[5] H01S *1/00*
U.S. Cl. 372—4 **12 Claims**

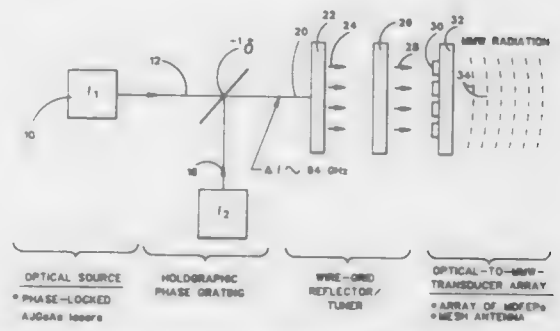
1. A millimeter wave power generator, comprising:

a source of first frequency optical radiation;

a source of second frequency optical radiation, interfering with said first frequency optical radiation and tuned to produce beat frequency optical radiation upon said interference, said beat frequency optical radiation having a preselected millimeter wave beat frequency;

means for separating said beat frequency optical radiation into a plurality of beams;

a plurality of externally powered optical-to-millimeter wave transducers, each of which is respectively driven by the beat frequency of one of said beams; and



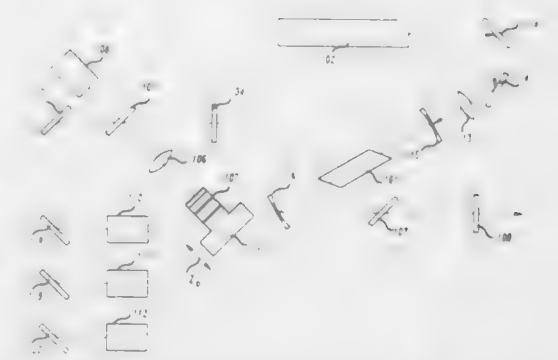
a plurality of antennas, each of which extends between and is driven by a respective pair of said transducers.

5,007,059

NONLINEAR EXTERNAL CAVITY MODELOCKED LASER

Ursula Keller, Atlantic Highlands, and Wayne H. Knox, Rumson, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 15, 1990, Ser. No. 523,622
Int. Cl.[5] H01S *3/098*
U.S. Cl. 372—18 **16 Claims**



1. An optical device comprising a laser for generating an optical beam at a first wavelength and a nonlinear external cavity means coupled optically to said laser for inducing modulation of said optical beam to modelock said optical beam, said nonlinear external cavity means including remote reflector means responsive to said optical beam for reflecting and nonlinearly varying a predetermined parameter of said optical beam.

5,007,060

LINEAR LASER WITH TWO-SWEPT FREQUENCIES OF CONTROLLED SPLITTING

David B. Hall, La Crescenta, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Aug. 1, 1989, Ser. No. 389,370
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—23 **16 Claims**

1. A dual frequency coherent radiation source, comprising:

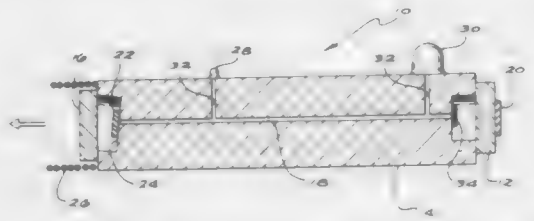
a resonant cavity defining a linear optical axis;

a faraday rotator, disposed within the resonant cavity;

magnetic means for generating a magnetic field at the faraday rotator; and

means for varying an optical path length within the resonant cavity, wherein the output of the resonant cavity simultaneously includes coherent radiation of two differing fre-

quencies having a separation generally independent of a resonant frequency of the cavity and wherein the spacing



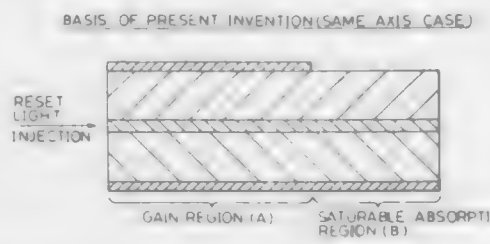
between the differing frequencies remains generally constant as the cavity length is varied.

5,007,061

BISTABLE SEMICONDUCTOR LASER DIODE DEVICE

Tetsufumi Odagawa, Ebina, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 28, 1989, Ser. No. 386,266
Claims priority, application Japan, Jul. 28, 1988, 63-188925; Jan. 13, 1989, 1-6234
Int. Cl.[5] H01S *3/10, 3/19*
U.S. Cl. 372—25 **17 Claims**



1. A bistable semiconductor laser diode device comprising a laser which emits a lasing light at a predetermined lasing wavelength and is responsive to a reset light irradiated thereon by a light irradiation means to stop the emission of the lasing light therefrom, said laser comprising a laminated semiconductor structure having first and second, outer main surfaces and plural laminated layers therebetwen including an active layer comprising a gain region in which stimulated emission occurs thereby to afford an optical gain and a saturable absorption region in which no stimulated emission occurs thereby not to obtain an optical gain at the predetermined lasing wavelength, a first electrode provided on said first main surface, and second electrodes provided on said second main surface in correspondence with said gain region of said active layer, and means for supplying a bias current to said first and second electrodes and thereby through said laminated laser structure, resetting of said laser being carried out by irradiating a light from said irradiating means onto said gain region of said laser, said light having a wavelength in accordance with which said light, as thus irradiated onto the gain region, is amplified by stimulated emission thereby to reduce carriers in said gain region of said active layer of said laser.

5,007,062

SEMICONDUCTOR LASER SOURCE MODULATED AT HIGH FREQUENCY

José Chesnoy, Paris, France, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed Sep. 6, 1989, Ser. No. 403,745
Claims priority, application France, Sep. 8, 1988, 88 11741
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—26 **13 Claims**

1. A semiconductor laser source modulated at high frequency, comprising:

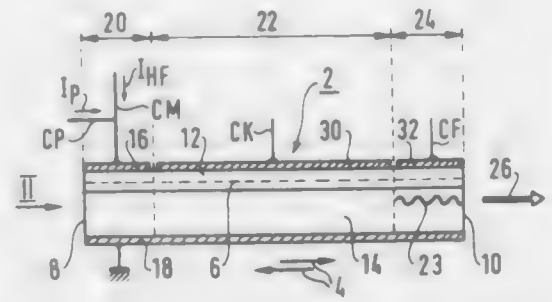
a monolithic plate having two opposite end faces, said plate being made of a selectively doped semiconductor material defining two opposing bias layers of different conductivity types and a light channel between said layers and extending between the two said end faces having a refractive index lower than that of the surrounding semiconductor material in order to guide light waves along the length of said light channel;

amplification injection means for injecting DC bias current into said plate to give rise to population inversion in said light channel so as to amplify said light waves therein with a possible positive overall amplification, lightwaves lie in a predetermined gain spectrum range having a predetermined gain spectrum width;

two reflectors each carried on a respective one of said two end faces at a respective end of said light channel for defining an optical cavity including said light channel and having an optical cavity length L such that said cavity is resonant in a succession of modes for light waves having a corresponding succession of resonant frequencies, said frequencies being separated at intervals equal to an intermode frequency

$$f_i = c/2L$$

where c is the speed of light, such that such cavity constitutes a laser oscillator for producing light waves at frequencies close to those of said resonant frequencies which lie within said gain spectrum range, the optical length of the cavity L being limited by the length of said light channel to a value corresponding to a intermode frequency in the microwave range;



modulation injection means for injecting an AC modulation current having a predetermined modulation frequency through a gain modulation section of said light channel located at one end thereof and extending over a minority fraction of the length of said light channel, in order to cause an alternating gain component to appear therein, said modulation frequency being close to said intermode frequency in order to produce said light waves in the form of a modulated carrier wave with at least one modulation component of said wave constituting an output modulation signal having said predetermined modulation frequency and lying in the microwave frequency range whereby said modulation signal constitutes a microwave frequency output signal;

dispersion limitation means disposed in said optical cavity to limit the group propagation time dispersion of said light waves in said cavity; and

a filter in said optical cavity so that said laser oscillator can produce said light waves only within a filtering spectrum range having an associated filtering width which is less than half said gain spectrum width while still being greater than said intermode frequency, thereby avoiding frequency instabilities in said waves produced by said laser oscillator;

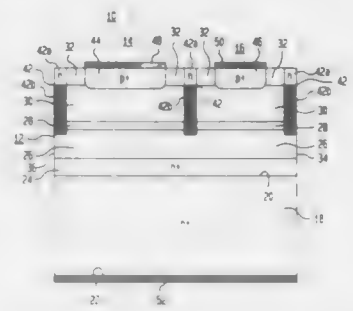
wherein said gain modulation imposes a predetermined phase to said output microwave frequency signal relative to said modulation current.

5,007,063

LASER DIODE

Keith B. Kahen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 12, 1990, Ser. No. 478,856
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **24 Claims**



1. In a laser diode comprising:

a body of a semiconductor material having a pair of spaced end surfaces;

an active layer in said body extending between said end surfaces;

means for dielectrically dividing the active layer into two sections;

means at one of said sections for generating light in the active layer of said one section; and

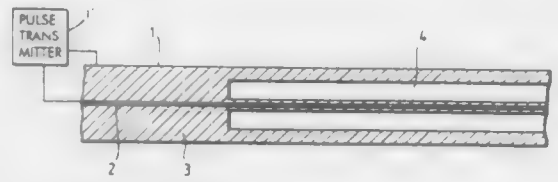
means at the other section for selectively shifting the exciton absorption spectrum of the active layer between predominantly absorbing either the TE or TM modes.

5,007,064

GAS LASER

Nigel Seddon, Filton, United Kingdom, assignor to British Aerospace plc, Bristol, England

Filed Jul. 19, 1989, Ser. No. 382,121
Claims priority, application United Kingdom, Jul. 20, 1988, 8817308
Int. Cl.[5] H01S *3/22, 3/223*
U.S. Cl. 372—55 **11 Claims**



1. A gas laser comprising:

an optical cavity;

a coaxial transmission line at least partially disposed in said optical cavity;

a lasant gas disposed in said cavity at least partially surrounding said transmission line;

means for transmitting at least one electrical pulse progressively along said transmission line and for generating a travelling wave of ionization to pump the lasant gas.

5,007,065

BILITHIC UNIDIRECTIONAL RING LASER

William R. Trutna, Jr., Atherton, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 19, 1988, Ser. No. 234,432
Int. Cl.[5] H01S *3/083*
U.S. Cl. 372—94 **11 Claims**

1. A bilithic laser resonator comprising:

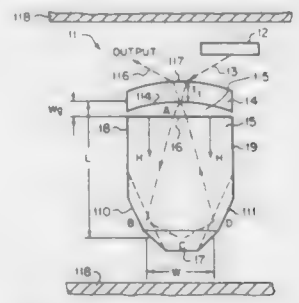
a first block;

a second block, separated by a gap of width W_g from the first block;

at least one of said first and second blocks being of a material capable of lasing;

at least one of said first and second blocks being of a material capable of producing Faraday rotation of an optical beam travelling therein;

means for varying the width W_g of said gap;



means for defining, within a region consisting of the first and second blocks and the gap between these two blocks, a resonant unidirectional ring that includes at least four non-coplanar reflection vertices

input means for injecting an input beam of light into said ring to pump the laser; and

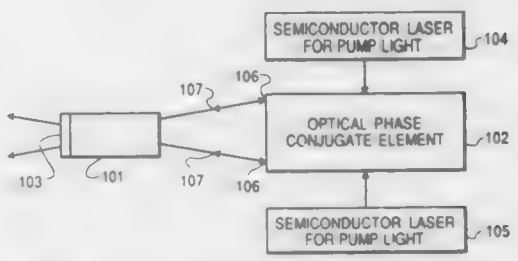
output means for extracting an output laser beam from light in said unidirectional ring.

5,007,066

SEMICONDUCTOR LASER APPARATUS

Kazuo Eda, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 12, 1990, Ser. No. 464,001
Claims priority, application Japan, Jan. 12, 1989, 1-5224
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—108 **6 Claims**



1. A semiconductor apparatus comprising:

a semiconductor laser emitting a light beam, said laser having, as an external cavity, a quadruple light wave mixing optical phase conjugate element inverting a spatial phase of an incident light beam from said semiconductor laser; and

a pair of semiconductor laser pump light sources each emitting a pump light beam;

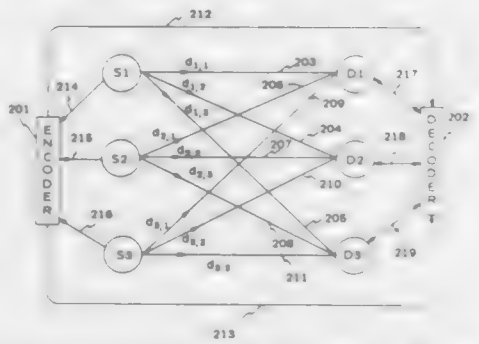
wherein a superimposed portion of spectra of wavelengths from three light beams including said two pump light beams emitted from said pair of pump light sources and entering into said optical phase conjugate element and another light beam emitted from said semiconductor laser and entering into said optical phase conjugate element is narrower than the spectral width of wavelengths of each of said three light beams individually.

5,007,067

DIVERSITY CODING FOR TRANSPARENT SELF-HEALING COMMUNICATIONS NETWORKS

Ender Ayanoglu, Atlantic Highlands; Richard D. Gitlin, Little Silver; Chih-Lin I, Red Bank, and James E. Mazo, Fair Haven, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 29, 1989, Ser. No. 414,874
Int. Cl.[5] H04B *07/02;* **H04L** *01/02*
U.S. Cl. 375—40 **14 Claims**



1. In a communications system comprising a plurality of N independent data streams and a plurality of N + M communications links, a method of providing protection against the failure of up to M of the N + M communications links, M > 1, comprising the steps of:

(a) encoding the N independent data streams to generate N + M separate coded streams, any N of which may be used to decode the N independent data streams; said step of encoding including the step of generating a matrix product GD where D is a vector comprising N digital data symbols, one digital data symbol from each of the data streams, and G is a matrix comprising M + N rows, each row comprising N digital elements;

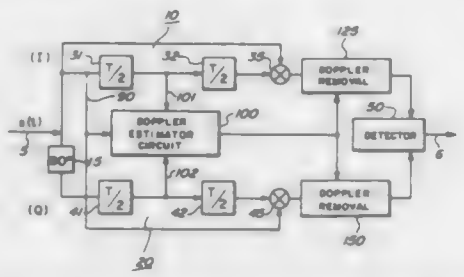
(b) transmitting each of the N + M coded streams over a separate one of the N + M communications links.

5,007,068

DOPPLER-CORRECTED DIFFERENTIAL DETECTION SYSTEM

Marvin K. Simon, La Canada, and Dariush Divsalar, Pacific Palisades, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 7, 1988, Ser. No. 203,374
Int. Cl.[5] H04B *1/10*
U.S. Cl. 375—53 **31 Claims**



1. A receiver in a communication system which produces a Doppler effect in an incoming multiple differential phase-shift-keyed signal having a given symbol interval, with the receiver for the incoming signal having a differential detector for restoring the data by multiplying the incoming signal with a full symbol interval delayed version of itself (or an equivalent sampled version thereof) and applying the restored signal to the detector's output, said receiver comprising:

means for delaying the incoming data signal (which has the Doppler effect therein) by a half symbol interval;

means in an open-loop forward acting circuit for estimating the amount of the Doppler effect from the incoming data signal and the half-symbol delayed signal; and

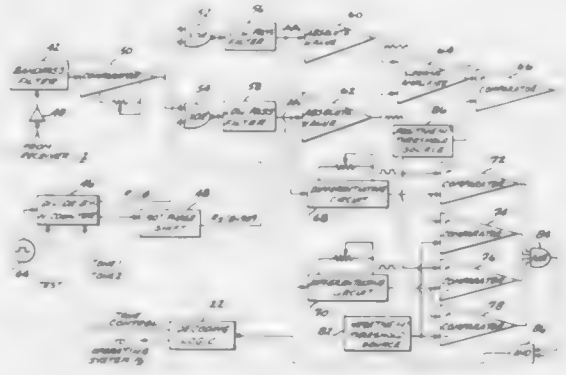
means for subtracting the estimated Doppler amount from the detector's output.

5,007,069

DECODING OF SIGNALS USING COPHASE AND DIFFERENTIATING SIGNAL DETECTION

David W. VanEss, Arlington, Wash., assignor to Talkie Tooter Inc., Sedro Woolley, Wash.

Filed Nov. 13, 1987, Ser. No. 120,594
Int. Cl.[5] H04L *27/14, 27/16*
U.S. Cl. 375—80 **22 Claims**



1. A method of detecting whether the frequency f_i of an input signal is within some frequency range defined with respect to the frequency f_r of a reference signal, said method comprising the steps of:

producing a difference signal having a frequency Δf equal to the difference between frequencies f_i and f_r;

employing information about said difference signal at more than one phase angle to determine whether the frequency Δf is less than some first value f_{c1};

employing information about the slope of said difference signal to determine whether the frequency Δf is less than some second value f_{c2}; and

providing a detection output when the frequency difference Δf is less than f_{c1} and less than f_{c2}.

5,007,070

SERVICE CLOCK RECOVERY CIRCUIT

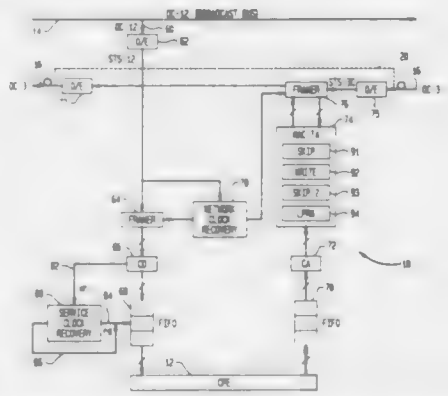
Hung-Hsiang J. Chao, Lincroft, and Cesar A. Johnston, Chatham, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Oct. 31, 1989, Ser. No. 429,840
Int. Cl.[5] H04L *7/02*
U.S. Cl. 375—118 **3 Claims**

1. A clock recovery circuit for recovering a clock signal from information transmitted asynchronously to a buffer having a capacity of a multiplicity of bytes, comprising a phase detector for receiving a first sequence of pulses indicative of a rate at which data is written into said buffer and a second sequence of pulses indicative of a rate at which data is transferred out of said buffer, said phase detector comprising first and second counters for maintaining counts of the pulses in the first and second sequences, respectively, a subtractor for subtracting said second count from said first count, counter overflow detection means for providing carry inputs from said counters to said subtractor, and a decision circuit responsive to the difference between the first and second counts for producing a signal indicative of the current occupancy of the buffer, said occupancy indicative signal being an up signal which is asserted to increase the frequency of said second sequence of

pulses and a down signal which is asserted to decrease the frequency of said second sequence of pulses,

a voltage controlled oscillator responsive to said occupancy indicative signal of said decision means for producing said second sequence of pulses, and



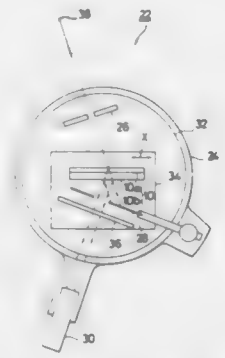
a filter located between said decision means and said voltage controlled oscillator for converting said up and down signals into a DC voltage.

5,007,071

METHOD OF INSPECTING BONDED WAFERS

Masami Nakano, and Takao Abe, both of Annaka, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Oct. 16, 1989, Ser. No. 421,756
Claims priority, application Japan, Oct. 14, 1988, 63-260316
Int. Cl.[5] G01N *23/207*
U.S. Cl. 378—74 **3 Claims**



1. A method of inspecting bonded wafers to determine whether the wafers have been completely bonded together, comprising the steps of:

placing a bonded wafer for inspection into a Lang camera;

activating an X-ray energy source of high intensity to impinge on the bonded wafer;

adjusting the position of the bonded wafer along one direction while the energy source is impinging thereon; and

obtained a Lang topograph of the bonded wafer.

5,007,072

X-RAY DIFFRACTION INSPECTION SYSTEM

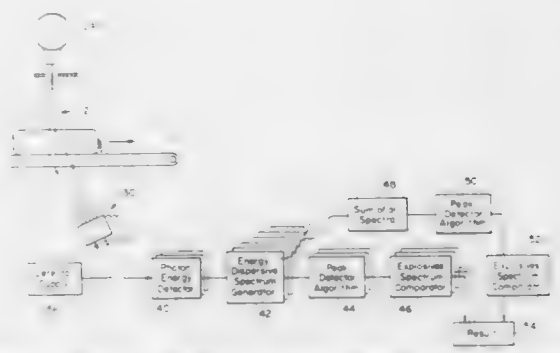
Anthony Jenkins, Medford, Mass., and Peter W. Stephens, Stony Brook, N.Y., assignors to Ion Track Instruments, Wilmington, Mass.

Filed Aug. 3, 1988, Ser. No. 227,722
Int. Cl.[5] G01N *23/201*
U.S. Cl. 378—88 **15 Claims**

1. A method of inspecting parcels to detect the presence of selected crystalline materials in the presence of other crystalline and noncrystalline materials comprising:

generating x-ray radiation from a source;

conveying a parcel containing crystalline and non-crystalline materials to be inspected continuously past the source to irradiate the materials with the radiation;



detecting radiation scattered by crystalline material within the parcel at a predetermined angle; and

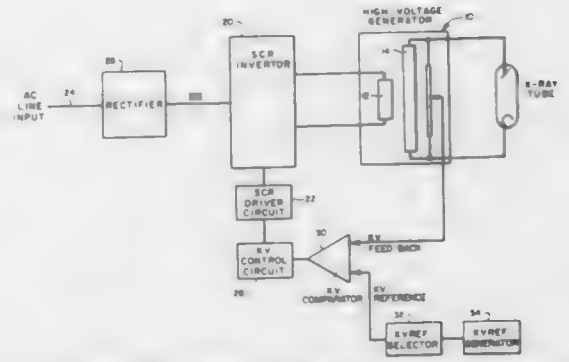
analyzing a spectrum of the detected radiation to detect the presence of a selected crystalline material on or within the parcel.

5,007,073

METHOD AND APPARATUS FOR OBTAINING A SELECTABLE CONTRAST IMAGE IN AN X-RAY FILM

James R. Craig, Glenview, Ill., assignor to Gendex Corporation, Franklin Park, Ill.

Filed Dec. 20, 1989, Ser. No. 454,029
Int. Cl.[5] H05G *1/32*
U.S. Cl. 378—112 **12 Claims**



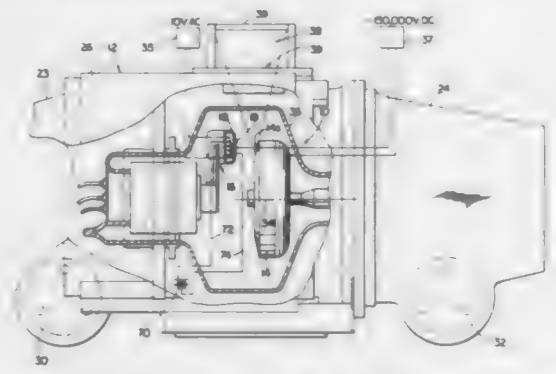
1. Apparatus for obtaining a selectable contrast image in an X-ray film comprising: high voltage generator circuit means having high voltage primary means for receiving a controlled voltage and high voltage secondary means for applying a controlled high voltage to an X-ray tube; invertor circuit means coupled with said high voltage generator circuit means for applying said controlled voltage to said primary means; driver circuit means responsive to a KV control signal for driving said invertor circuit means such that the voltage applied to said X-ray tube during an exposure is at a level determined by said KV control signal; KV comparator circuit means for comparing a KV feedback signal from said high voltage generator circuit means with a KV reference signal and for developing said KV control signal in accordance with said comparison; and reference signal selector circuit means for selecting any of a plurality of variable level KV reference signals which change in level during an exposure for application to said KV comparator circuit means.

5,007,074

X-RAY TUBE ANODE FOCUSING BY LOW VOLTAGE BIAS

Avery D. Furbee, Elmhurst; Carl F. Bauer, Chicago, and John S. Ramos, Buffalo Grove, all of Ill., assignors to Picker International, Inc., Cleveland, Ohio

Filed Jul. 25, 1989, Ser. No. 385,004
Int. Cl.[5] H01J 35/14
U.S. Cl. 378—138 19 Claims



1. An x-ray tube including a filament, an anode, a cathode focusing cup proximate the filament, means for applying a DC potential difference between the cathode focusing cup and the anode, means for applying a heating current to the filament, and an envelope enclosing the filament, anode and cup, said x-ray tube further comprising:

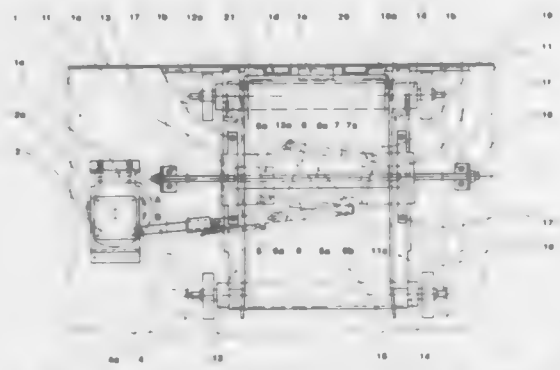
a battery having a voltage of nor more than about 30 volts and coupling means for applying a DC bias voltage from said battery between said filament and said focusing cup.

5,007,075

HOLD-DOWN DEVICE FOR A CASSETTE

Bernd Mirlieb, Fellbach, and Heinrich Killguss, Kornwestheim, both of Fed. Rep. of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/EP88/00403, § 371 Date Nov. 8, 1989, § 102(e) Date Nov. 8, 1989, PCT Pub. No. WO88/09002, PCT Pub. Date Nov. 17, 1988
PCT Filed May 9, 1988, Ser. No. 438,428
Claims priority, application Fed. Rep. of Germany, May 11, 1987, 87/06746
Int. Cl.[5] A61B 6/14; G03B 42/04, 42/02
U.S. Cl. 378—172 2 Claims



1. In x-ray film cassette handling apparatus in which cassettes having upper and lower parts for enclosing the film are centered by parallel lateral edge guide bars and the upper cassette part is raised for loading film into the cassette and unloading film from the cassette; the improvement comprising:

pivoted means carried by said edge guide bars and engageable with lateral edges of a cassette for holding the lower cassette part down when the upper part is raised,

means for biasing said pivoted means toward the cassette,

said pivoted means having a first portion for overlying an edge of the lower cassette part to hold down that part, and a second portion to engage the upper cassette part,

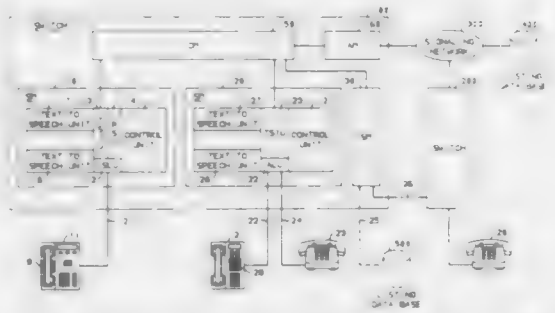
said second portion of said pivoted means extending above said edge guide bars and having upwardly diverging inclined surfaced facing the cassette edges, which surfaces are engaged by the lateral edges of said upper cassette part when said part is raised, downward closing movement of said upper cassette part exerting separating pressure on said diverging surfaces, causing said pivoted means to retract said first portion away from said cassette.

5,007,076

CALL ANNOUNCEMENT ARRANGEMENT

James R. Blakley, Chicago, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 230,224, Aug. 8, 1988, Pat. No. 4,899,358. This application Nov. 3, 1989, Ser. No. 431,586
Int. Cl.[5] H04M 1/57, 3/50
U.S. Cl. 379—67 15 Claims



1. A method of processing a call from a calling communication station to a called communication station comprising

in response to said call, effecting a search for information associated with said calling station,

determining whether said called station is busy on another call,

after determining that said called station is busy on another call, transmitting a call waiting signal to said called station,

after transmitting said call waiting signal and in response to receipt of a predefined signal from said called station, disconnecting a communication path between a calling communication station for said another call and said called station,

after disconnecting said communication path, transmitting speech signals, generated from information obtained during said search, to said called station, and

after transmitting said speech signals to said called station and in response to receipt of a prespecified signal from said called station, completing a communication path between said first-mentioned calling station and said called station.

5,007,077

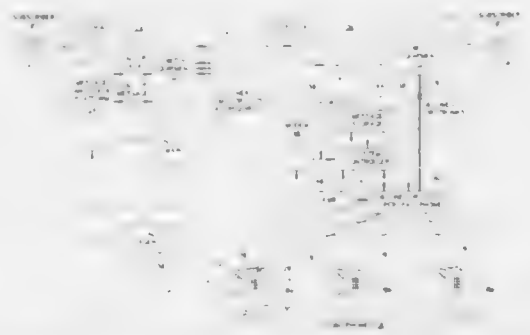
COIN TELEPHONE MESSAGE AND MANAGEMENT SYSTEM

Gary C. Fields; Mark E. Stamos, both of Oakland, and Lawrence T. Pena, San Carlos, all of Calif., assignors to Conway Engineering, Inc., Oakland, Calif.

Filed Mar. 23, 1990, Ser. No. 498,263
Int. Cl.[5] H04M 11/08, 3/42, 17/00
U.S. Cl. 379—67 18 Claims

1. A coin telephone message and management system for use at a central office location of a telephone system with a plurality of conventional remotely located coin telephone stations and an associated automated coin subsystem to which the coin telephone stations are connected by coin trunks, the coin telephone message and management system comprising:

a plurality of programmable line interface unit means each being connected to a said coin trunk for monitoring electrical signals present on the coin trunk indicative of usage of the station connected thereto, for delivering messages to a user of the station, and for generating electrical signals emulative of operation of the station for thereby controlling the automated coin subsystem,



message storage and delivery means selectively connectable to a said programmable line interface unit means for delivering at least one selectable audio message to the user of a said station via the coin trunk, and

system controller means for coordinating operations of the programmable line interface unit means and the message storage and delivery means.

5,007,078

AUTOMATED ORDER ENTRY RECORDING METHOD AND APPARATUS

Ronald K. Masson, Topanga, and Michael W. Edelson, Simi Valley, both of Calif., assignors to American Communications & Engineering, Inc., Simi Valley, Calif.

Filed Apr. 28, 1989, Ser. No. 344,666
Int. Cl.[5] H04M 1/65
U.S. Cl. 379—75 8 Claims



1. An apparatus for automatically transcribing information provided by a telephone caller to an automated message exchange system, said apparatus comprising:

(a) line connection means for connecting to an incoming telephone call;

(b) first signal processing means coupled to said line connected means for receiving and digitally storing the voice information provided by the caller;

(c) second signal processing means for retrieving said digitally stored voice information and generating a verbal representation thereof;

(d) third signal processing means for receiving touch tone codes provided by the caller and digitally storing information conveyed by said touch tone codes;

(e) fourth signal processing means for retrieving said digitally stored touch tone coded information and generating a verbal representation thereof;

(f) an audio recording device having an audio input for receiving an audio signal to be recorded; and

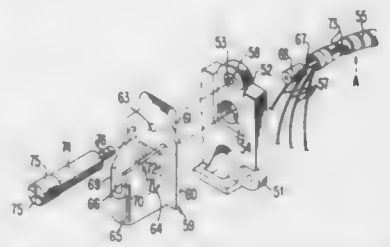
(g) control means coupled to said audio recording device for automatically placing said audio recording device in a recording mode and for applying said verbal representation of said digitally stored voice information and said verbal representation of said touch tone coded information to said audio input of said audio recording device.

5,007,079

COIN FRAUD PREVENTION UNIT AND MODULAR CONFIGURATIONS FOR PAY TELEPHONE STATIONS

Allen W. Vogl, Melbourne; Steven C. Poe, West Melbourne; John H. MacNeill, Indialantic, and Douglas J. Buron, Micco, all of Fla., assignors to International Teleservice Corporation, Melbourne, Fla.

Division of Ser. No. 407,947, Sep. 15, 1989, Pat. No. 4,918,724. This application Oct. 20, 1989, Ser. No. 424,560
Int. Cl.[5] H04M 1/15, 17/02, 1/08; G07F 3/02
U.S. Cl. 379—145 20 Claims



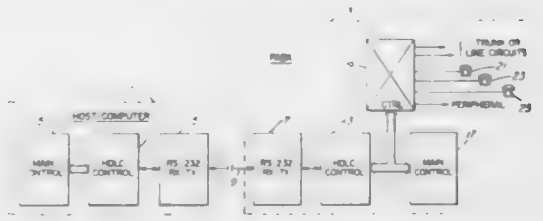
8. A device for anchoring a handset to a telephone station through a handset cord assembly, comprising a rigid anchor member having a base with first and second apertures and sloped members extending from the base, wherein edges of the sloped members remote from the base form a slot therebetween.

5,007,080

COMMUNICATION SYSTEM SUPPORTING REMOTE OPERATIONS

Ian MacMillan, Nepean, and Vish Raju, Kanata, both of Canada, assignors to Mitel Corporation, Ontario, Canada

Filed Feb. 1, 1989, Ser. No. 304,472
Claims priority, application Canada, Feb. 4, 1988, 558123
Int. Cl.[5] H04M 3/42
U.S. Cl. 379—269 17 Claims



1. Apparatus for effecting resource allocation remote operations in a pair of communication systems utilizing Open Systems Interconnect communication protocol, comprised of means within respective ones of said communication systems for generating predetermined operation data signals associated with an invoking Application Entity; means for transmitting said data signals between said communication systems in accordance with said protocol; and means within said communication systems for receiving said data signals and in response allocating a server Application Entity performing said remote operations; each of said operation data signals including a n

Invoke Address signal for identifying said Invoking Application Entity, and a Server Address signal for identifying said server Application Entity, whereby said operation data signals are directed to respective ones of said invoking and server Application Entities identified by said Invoke Address and Server Address signals, a first one of said operation data signals being comprised of an invoke operation signal generated by said invoking Application Entity within a first one of said pair of communication systems and transmitted to said server Application Entity within the other of said pair of communication systems for invoking performance of a predetermined one of said remote operations via said server Application Entity.

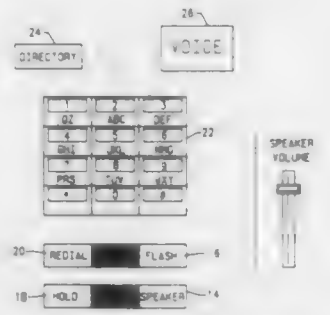
5,007,081

SPEECH ACTIVATED TELEPHONE

Peter J. Schmuckal, Menlo Park; Mitchell S. Phillips, Sunnyvale; Francis P. Keiper, III, San Jose; James C. Sprout, Los Altos, and Ronald H. Fried, Sunnyvale, all of Calif., assignors to Origin Technology, Inc., Sunnyvale, Calif.

Filed Jan. 5, 1989, Ser. No. 294,168
Int. Cl.[5] H04M *1/272*
U.S. Cl. 379—354 **4 Claims**

MICROFICHE APPENDIX INCLUDED
(448 Microfiche, 5 Pages)



1. A speech activated telephone having means for dialing a pre-stored telephone number, wherein the improvement comprising:

means for inputting a plurality of acoustic commands into said telephone in a training mode;

means for processing said plurality of acoustic commands into a plurality of processed signals;

means for storing said plurality of processed signals;

means for inputting a telephone number and an alphanumeric name associated with each acoustic command, in said training mode;

means for storing said telephone number and said alphanumeric name associated with each acoustic command;

means for receiving a dialing acoustic command in a dialing mode;

means for processing said dialing acoustic command into a voice signal;

means for comparing said voice signal to said stored processed signals;

means for automatically displaying a plurality of alphanumeric names in response to said comparing means being unable to match said voice signal with only one of said stored processed signals;

user activatable switch means for selecting one of said displayed alphanumeric names; and

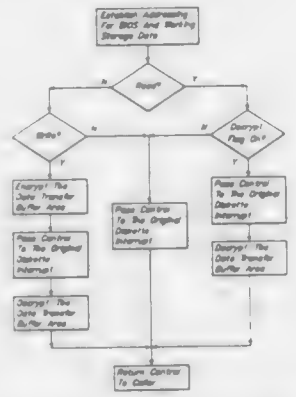
means for generating a dialing signal representative of the telephone number associated with said selected displayed alphanumeric name in response to said user activatable switch means.

5,007,082

COMPUTER SOFTWARE ENCRYPTION APPARATUS

Marty T. Cummins, Rochester, Mich., assignor to Kelly Services, Inc., Troy, Mich.

Continuation of Ser. No. 227,730, Aug. 3, 1988, Pat. No. 4,937,861. This application Feb. 26, 1990, Ser. No. 484,550
Int. Cl.[5] H04L *9/06*
U.S. Cl. 380—4 **11 Claims**



6. In a computer system having a processor means for operating on data comprising arrangements of binary digits, a power-on routine for causing said processor to scan a predetermined range of memory location addresses for instructions after power-on, means for enabling said processor means to communicate with data storage media comprising first program means including first BIOS input/output program for reading and writing data to a fixed data storage medium and second program means including second BIOS input/output program for reading and writing data to a removable data storage medium, said first and second BIOS input/output programs being selectively invoked by interrupt signals associated with an interrupt vector table stored in read/write memory, a data security system comprising:

security program means disposed within said predetermined range of memory location addresses for automatically altering said second program means during said power-on routine;

said security program means including an encryption BIOS program and a vector table altering program, said vector table altering program being automatically invoked during said power-on routine to alter said interrupt vector table to substitute said encryption BIOS program for at least a portion of said second BIOS input/output program without altering said first BIOS input/output program;

said encryption BIOS program of said security program means transforming data communicated between said removable data storage medium and said processor means such that said data stored on said removable data storage medium is represented using a different arrangement of binary digits than is used when said data is stored in said fixed data storage medium.

5,007,083

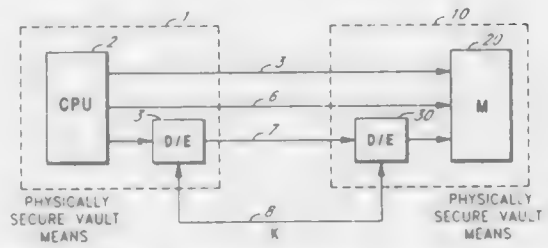
SECURE COMPUTER

James N. Constant, 1603 Danbury Dr., Claremont, Calif. 91711

Continuation of Ser. No. 244,661, Mar. 17, 1981, abandoned. This application Jan. 16, 1985, Ser. No. 692,321
Int. Cl.[5] H04L *9/06, 9/10*
U.S. Cl. 380—9 **61 Claims**

1. A means for protecting information containing at least one

of a central processing unit (CPU) and memory and at least one of an encrypter and decrypter,



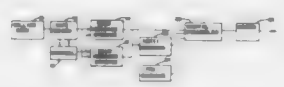
said means being temporarily inserted in a computer or information transfer device.

5,007,084

PAYMENT AUTHORIZATION AND INFORMATION DEVICE

Richard H. Materna, 705 St. Joseph Dr., Oak Brook, Ill. 60515; John S. Linse, 9418 Bay Colony Dr., Apt. 3 S., Des Plaines, Ill. 60016, and Roy A. Richardson, Pinellas Park, Fla., assignors to Richard H. Materna, Peoria and John S. Linse, Des Plaines, both of, Ill.

Filed Aug. 29, 1988, Ser. No. 237,894
Int. Cl.[5] H04L *9/06;* **G07F** *7/08*
U.S. Cl. 380—24 **9 Claims**



1. An apparatus for delivering billing information from a supplier to a user and enabling the user to direct payment of his bill, the apparatus comprising:

a. means for reading the billing information;

b. means for scrambling the read billing information;

c. means for telecommunicating the read billing information to a user;

d. means located at the site of the user for selecting read billing information addressed to the user;

e. means for storing the selected read billing information;

f. means for providing the user with a visible indication of the selected read billing information;

g. means for authorizing a transfer of funds to the supplier to pay the bill; and

h. means for communicating address changes and the like from the user to the supplier.

5,007,085

REMOTELY SENSED PERSONAL STYLUS

Evon C. Greanias, Chevy Chase, and Robert L. Donaldson, Annapolis, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 28, 1988, Ser. No. 264,409
Int. Cl.[5] H04L *9/32*
U.S. Cl. 380—25 **37 Claims**

1. A data processing system having at least one workstation equipped with an input system which controls access to said data processing system by validating a security code transmitted by a remotely sensed personal stylus, comprising:

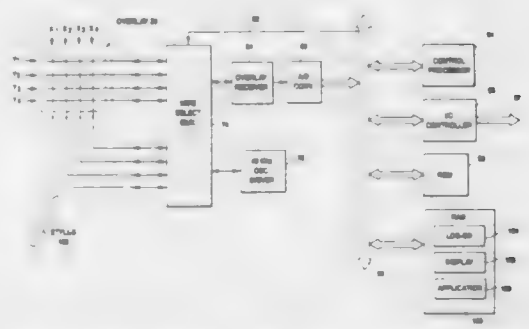
said input system comprising:

radiating means having a control input for radiating electromagnetic signals in an area proximate to said input system;

a remotely sensed personal stylus located separate from, but proximate to said workstation, for receiving electromagnetic signals radiated from said radiating means and for transmitting response signals and a security code signal in response thereto, said stylus including a receiving antenna, a means for providing a security code signal and a transmitter;

receiving means having an output for receiving transmission from said remotely sensed personal stylus;

a control processor coupled to said control input of said radiating means for executing a sequence of stored program instructions to output control signals, said control processor coupled to said receiving means for sampling said stylus transmissions to determine stylus location and to receive said security code signal;



program instructions including a log-on module which validates said unique coded signal to allow access to said data processing system;

a central processing unit having a data input coupled to said receiving means which executes a sequence of program instructions in response to data supplied by said stylus transmissions; and,

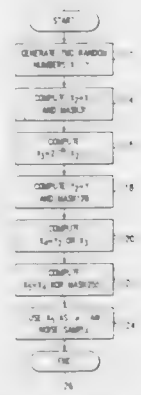
a workstation display device coupled to said central processing unit for displaying the results of said program instructions to the user.

5,007,086

APPARATUS AND METHOD FOR GENERATING LOW LEVEL NOISE SIGNALS

Kishan Shenoi, Milpitas, and Helena S. Ho, San Jose, both of Calif., assignors to DSC Communications Corporation, Plano, Tex.

Filed Jul. 16, 1990, Ser. No. 552,767
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—46 **45 Claims**



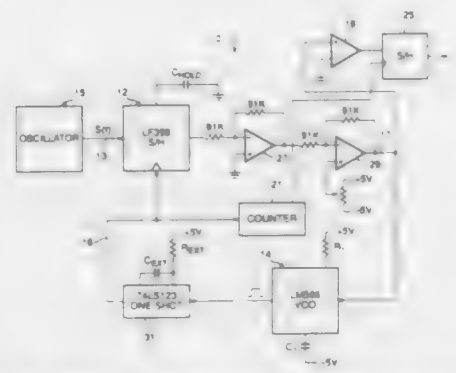
1. A method for generating low level noise samples, comprising the steps of:

producing a first random number having a first predetermined number of bits;

masking out a second predetermined number of most significant bits of said random number and producing a second random number;

adjusting said second random number to achieve a desired power level;
adjusting said adjusted random number to achieve a desired power level granularity; and
randomly generating a sign bit, combining with said adjusted random number and producing a noise sample.

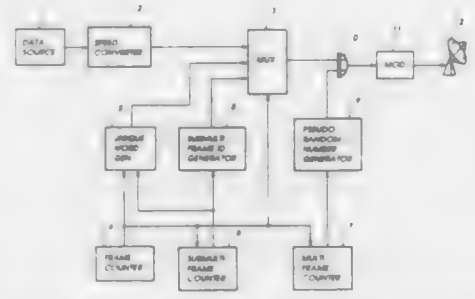
5,007,087
METHOD AND APPARATUS FOR GENERATING SECURE RANDOM NUMBERS USING CHAOS
Greg M. Bernstein, Fremont, and Michael A. Lieberman, Berkeley, both of Calif., assignors to Loral Aerospace Corp., New York, N.Y.
Filed Apr. 16, 1990, Ser. No. 510,359
Int. Cl.[5] H04L 9/04; H03K 3/84
U.S. Cl. 380—46 15 Claims



15. An apparatus for generating a random number from a deterministic circuit comprising:
periodic signal source means for producing a periodic source signal;
first sampling means having a sample control input and a signal input coupled to said periodic signal source means;
variable frequency oscillator means coupled to receive a representation of a sampled output of said first sampling means for generating a binary-valued signal having a frequency and phase state ϕ derived from said sampled output;
feedback means for feeding back in a feedback loop said binary-valued signal to control said sample control input of said first sampling means;
means for constraining operation of said deterministic circuit with a positive Lyapunov exponent through sampling said periodic source signal at sample times determined by level of said binary-valued signal such that operation is chaotic; and
means coupled to a node in said feedback loop for extracting a binary value of a signal in said feedback loop after an interval, in order to form a random number sequence having a preselected degree of uncertainty.

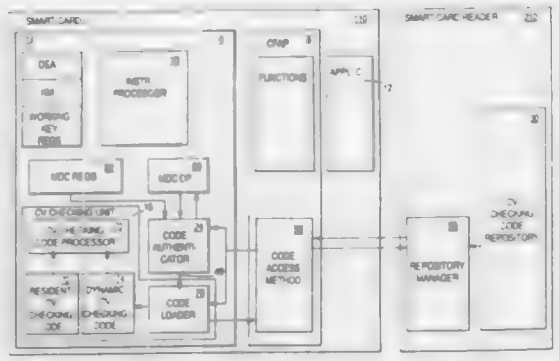
5,007,088
SCRAMBLING/DESCRAMBLING METHOD USING A MEMORY FOR STORING INITIAL PSEUDO-RANDOM BIT PATTERNS RESPECTIVELY FOR SUBMULTIFRAMES
Tomoyuki Ooi; Toshinori Hotta, and Yasuhito Isoe, all of Tokyo, Japan, assignors to NEC Corporation, Japan
Filed Feb. 27, 1989, Ser. No. 316,023
Claims priority, application Japan, Mar. 1, 1988, 63-47902
Int. Cl.[5] H04L 9/00
U.S. Cl. 380—46 7 Claims

1. A method for scrambling data bits at a transmit end of a communications system and descrambling the data bits at a receive end of the communications system, comprising:
(a) successively generating a multiframe composed of a series of submultiframes each containing a series of frames, each of said frames containing data bits, and a sync word for establishing the start timing of the frame, at least one of said frames of each submultiframe containing an identifier for uniquely identifying each of a plurality of specified time points of said multiframe;
(b) generating a pseudo-random number (PN) sequence periodic with a period of said multiframe;
(c) scrambling said data bits of each frame with said PN sequence to said receive end of;
(d) receiving said transmitted frames at said receive end and establishing frame synchronization with the received frames in response to said sync word contained in each of the received frames;



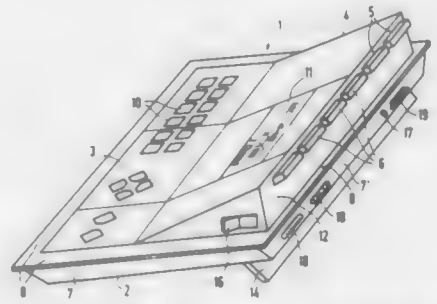
(e) storing a plurality of portions of said PN sequence in a memory, each of said portions being identical to a portion of the PN sequence which was generated at a predetermined point of each transmitted submultiframe;
(f) detecting the identifier from each submultiframe;
(g) reading one of said portions of PN sequence from said memory in accordance with said detected identifier;
(h) generating a PN sequence periodic with a period of said multiframe beginning with said portion read out of said memory; and
(i) descrambling the scrambled data bits contained in each of said sync-established frames with said PN sequence generated by the step (h).

5,007,089
SECURE KEY MANAGEMENT USING PROGRAMABLE CONTROL VECTOR CHECKING
Stephen M. Matyas; Donald B. Johnson; An V. Le, all of Manassas, Va.; William C. Martin, Concord, N.C.; Rostislaw Prymak, Dumfries, and John D. Wilkins, Somerville, both of Va., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 9, 1990, Ser. No. 506,319
Int. Cl.[5] H04K 1/00
U.S. Cl. 380—49 16 Claims



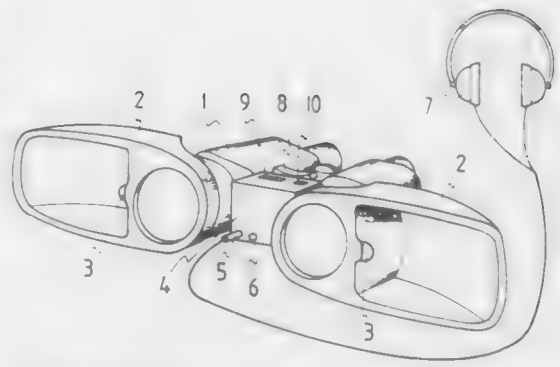
12. In a data processing system which includes a control vector based cryptographic facility, an apparatus for providing control vector checking code to be executed in the cryptographic facility, comprising:
a control vector checking code processor in said cryptographic facility, for executing control vector checking code to check control vectors;
a resident control vector checking code buffer in said cryptographic facility for storing resident control vector checking code to be executed by said control vector checking code processor;
a control vector checking code repository coupled to said cryptographic facility, for storing dynamic control vector checking code;
a dynamic control vector checking code buffer in said cryptographic facility, for receiving a portion of said dynamic control vector checking code transmitted from said repository;
said control vector checking code processor, executing said resident control vector checking code to perform a first checking operation on said control vector, and executing said dynamic control vector checking code to perform an augmented control vector checking operation on said control vector.

5,007,090
PROGRAMMING DEVICE FOR HEARING AIDS AND/OR HEARING AID COMPONENTS
Olaf Bransky; Guenter Wiede, both of Erlangen; Fritz-Dieter Stein, and Gerhard Helmreich, both of Effeltrich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Oct. 6, 1989, Ser. No. 418,255
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1988, 8812896[U]
Int. Cl.[4] H04R 29/00
U.S. Cl. 381—60 10 Claims



1. A programming device for hearing aids and hearing aid components, comprising:
a trough-shaped housing portion for containing said hearing aid components having a top open end having outer edges;
a cover plate arranged horizontally so as to cover said top open end, said cover plate having outer edges extending beyond said outer edges of said top open end of said trough-shaped housing portion;
a keyboard arrangement situated in a front portion of said cover plate;
a wedge-shaped display panel situated directly on a rear portion of said cover plate with an oblique top side inclined up and away from said front portion; and
at least two plug-in locations in a rear wall of said wedge-shaped display panel for receiving hearing aid program modules.

5,007,091
PROCEDURE AND DEVICE FOR FACILITATING AUDIOVISUAL OBSERVATION OF A DISTANT OBJECT
Esko Alasaarela, Jokirinne; Pekka Adolfsen, Kemi, and Timo Rahkonen, Jyväskylä, all of Finland, assignors to UTK Uuden Teknologian Keskus Oy, Finland
PCT No. PCT/FI88/00060, § 371 Date Oct. 20, 1989, § 102(e) Date Oct. 20, 1989, PCT Pub. No. WO88/08657, PCT Pub. Date Nov. 3, 1988
PCT Filed Apr. 22, 1988, Ser. No. 424,251
Claims priority, application Finland, Apr. 23, 1987, 871793
Int. Cl.[5] H04R 5/027
U.S. Cl. 381—26 8 Claims



1. Device for audiovisual observation of a distant object, said device comprising:
optical means for viewing the object, said optical means including focus control means for adjusting the focus of the optical means; and
listening means for listening to the object, said listening means including
at least two sound receiving means for receiving sounds, said sound receiving means producing output signals,
amplifying means connected to the sound receiving means for amplifying signals from the sound receiving means, and
headphone means connected to the amplifying means for reproducing amplified signals into sounds;
the output signals of the sound receiving means being acoustically or electronically connected so that one of the following applies:
(a) the signals from the sound receiving means are monophonic;
(b) the signals from the sound receiving means are stereophonic;
(c) a spatial stereophonic effect in the signals from the sound receiving means is produced by using an electronic means;
(d) the signals from the sound receiving means are processed in a frequency-dependent manner, so that the signals are monophonic at low frequencies to improve directivity and stereophonic at high frequencies to facilitate location of the object;
said amplifying means being provided with sound volume and tone control means for controlling the volume and tone of the amplified signals, the volume and tone control means being connected to the focus control means of the optical means so that the gain or the tone, i.e. dependency on frequency, of the amplifying means depends on the focusing adjustment of the optical means in such manner that the damping caused by a long listening distance in the sound or, in the case of tone controls, in the high-frequency sounds, is partially or totally compensated.

5,007,092

METHOD AND APPARATUS FOR DYNAMICALLY ADAPTING A VECTOR-QUANTIZING CODER CODEBOOK

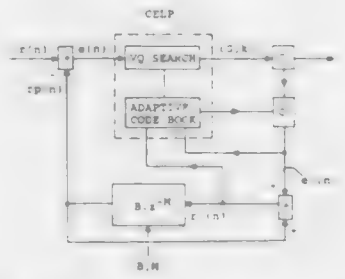
Claude Galand; Jean Menez, both of Cagnes Sur Mer, and Michèle Rosso, Nice, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 13, 1989, Ser. No. 420,966

Claims priority, application European Pat. Off., Oct. 19, 1988, 88480060.8

Int. Cl.[5] G10L *7/02*

U.S. Cl. 381—36 **7 Claims**



5. A Code Excited Linear Prediction/Long-Term Prediction (CELP/LTP) speech coding device including adaptive filtering means for filtering a speech signal s(n) and deriving therefrom a residual signal r(n); means for generating a predicted residual signal rp(n); means for subtracting said predicted residual signal from said residual signal and deriving therefrom an error residual signal e(n); vector quantizing means connected to said subtracting means, said vector quantizing means including a codebook initially loaded with predefined codewords, and search means for converting sequences of consecutive e(n) samples into a codeword address, said codeword being selected within said codebook for providing the lowest mean square error with respect to said sequence, and a gain factor; a codeword coder for encoding said selected codeword, a codeword decoder connected to said codeword coder for providing a decoded error signal e'(n); a long-term prediction (LTP) feedback loop connected to said codeword decoder for providing a decoded residual signal r'(n) and said rp(n) signal; said vector quantizing means being characterized in that it includes:

means for splitting said codebook codewords into a fixed content codebook portion and a fixed length adaptive contents codebook portion;

normalizing means connected to said codeword decoder and to said LTP feedback loop for generating normalized selected codewords CB(i) wherein:

$$CB(i) = \text{NORM}\ (a \cdot e'(i) + (1-a) \cdot r'(i))$$

wherein NORM stands for a normalization operation according to:

$$NORM\ (x(i)) = x(i)\ SQRT\left(\frac{j=L}{C/\ \text{SUM}\ x^2(j)}\right)$$
$$j=1$$

$$i = 1, 2, \ldots, L$$

wherein $a < 1$ represents a preselected weighting coefficient and SQRT represents the square root function, and C is a normalizing predefined fixed value.

loading means connected to said normalizing means for shifting said normalized selected codeword into said fixed length adaptive contents codebook portion, whereby a previously stored codeword therein is shifted out therefrom.

5,007,093

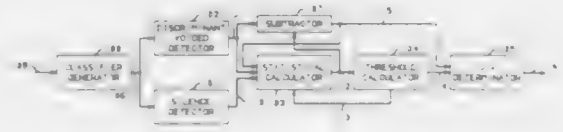
ADAPTIVE THRESHOLD VOICED DETECTOR

David L. Thomson, Warrenville, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 34,298, Apr. 3, 1987, abandoned. This application Aug. 24, 1989, Ser. No. 399,357

Int. Cl.[5] G10L *9/18*

U.S. Cl. 381—46 **11 Claims**



1. An apparatus for detecting the presence of a fundamental frequency in frames of speech, comprising:

means responsive to a set of classifiers defining speech attributes of one of said frames of speech for generating a general value indicating said presence of said fundamental frequency;

means responsive to said general value for calculating a set of statistical parameters;

means for calculating a threshold value in response to said set of said parameters;

means for calculating a weight value in response to said set of said parameters;

means for communicating said weight value and said threshold value to said means for calculating said set of parameters to be used for calculating another set of parameters for another one of said frames of speech; and

means responsive to said weight value and said threshold value and the calculated set of statistical parameters for determining said presence of said fundamental frequency in said present one of said frames of speech.

5,007,094

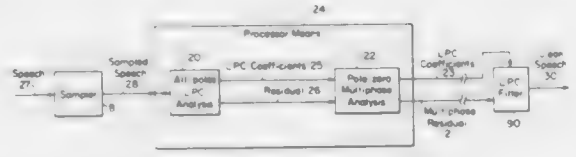
MULTIPULSE EXCITED POLE-ZERO FILTERING APPROACH FOR NOISE REDUCTION

A-Chuan Hsueh, Laguna Niquel, Calif., and Chiu-Kuang Chuang, Lexington, Mass., assignors to GTE Products Corporation, Waltham, Mass.

Filed Apr. 7, 1989, Ser. No. 335,142

Int. Cl.[5] G10L *5/00*

U.S. Cl. 381—47 **31 Claims**



1. A method of encoding speech comprising;

estimating an excitation pulse train from an original speech signal;

estimating a pole-zero filter;

applying the excitation pulse train to the estimated pole-zero filter to synthesize a speech signal; and

modifying coefficients of the pole-zone filter based on an error between the original speech signal and the synthesized speech signal.

5,007,095

SYSTEM FOR SYNTHESIZING SPEECH HAVING FLUCTUATION

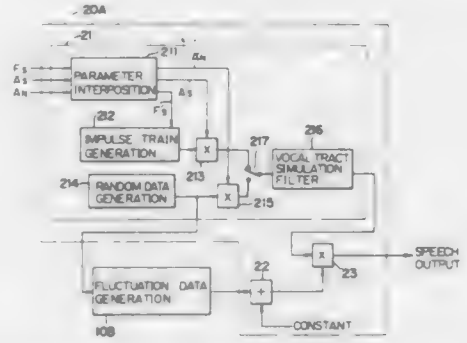
Yasuhiro Nara, Chigasaki, and Tatsuro Matsumoto, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 170,255, Mar. 18, 1988, abandoned. This application Dec. 29, 1989, Ser. No. 462,295

Claims priority, application Japan, Mar. 18, 1987, 62-061149

Int. Cl.[5] G10L *5/00*

U.S. Cl. 381—51 **22 Claims**



1. A speech synthesizing system, comprising:

means for generating a vowel signal;

means for generating a consonant signal;

means for generating random data;

fluctuation data generating means, operatively connected to said random data generating means, for receiving random data from said means for generating random data, having a first-order delaying function for outputting fluctuation data, said fluctuation data generating means comprising:

first adding means having an input terminal and connected to said means for generating random data;

integral means, connected to said first adding means, for receiving an output from said first adding means and having an output terminal, said integral comprising:

multiplying means connected to said first adding means;

second adding means connected to said multiplying means and including an input terminal;

data holding means connected to said second adding means and having an input terminal; and

feedback line means provided between the output terminal of said data holding means and the input terminal of said second adding means, said multiplying means multiplying the output from said first adding means of said fluctuation data generating means and a factor of $1/\tau$, where τ is a time constant, and said second adding means in said integral means adding the output from said multiplying means and the output from said data holding means through said feedback line means;

negative feedback means, connected between the output terminal of said integral means and the input terminal of said first adding means, for multiplying the output from said integral means and a coefficient and inverting a signal of the multiplied value, said first adding means adding random data from said random data generating means and the inverted multiplied value from said negative feedback means;

selecting means, connected to receive a selection signal, for selecting one of the vowel signal or the consonant signal in response to the selection signal; and

means, operatively connected to said selecting means, for receiving an output signal from said selecting means and for filtering the received signal on the basis of a vocal tract simulation method, the fluctuation data from said fluctuation data generating means being substantially multiplied or added to one of the vowel signal or the consonant signal as determined by said selecting means.

5,007,096

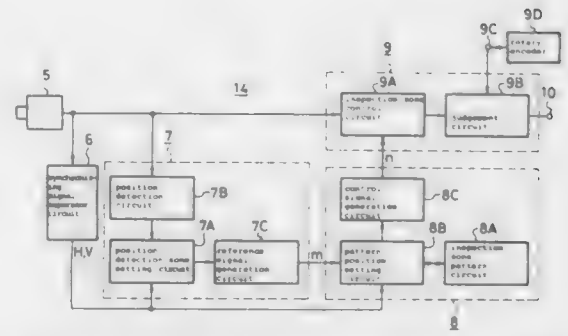
OBJECT INSPECTION APPARATUS

Hajime Yoshida, Tokyo, Japan, assignor to Hajime Industries Ltd., Tokyo, Japan

Continuation of Ser. No. 239,017, Aug. 29, 1988, abandoned, which is a continuation of Ser. No. 15,942, Feb. 18, 1987, abandoned. This application Feb. 26, 1990, Ser. No. 484,483

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—8 **8 Claims**



1. An object inspection apparatus comprising:

(a) means for continuously transporting a plurality of objects to be inspected while simultaneously rotating the plurality of objects in such a manner that each one of said plurality of objects is transported through a predetermined visual field while rotated at least once in said predetermined visual field and that after one of said plurality of objects passes through said predetermined visual field, the next object enters said predetermined visual field;

(b) a light source for irradiating the object in said visual field;

(c) pick-up means for sensing said object within said visual field at different positions generating image signals of said object including a synchronizing signal;

(d) synchronizing signal separator means for separating the synchronizing signal from the image signal from said pick-up means;

(e) inspection means for receiving said image signals to inspect whether said object has a defect; said inspection means having:

A. means for generating a reference position signal for said object at each of a plurality of different predetermined positions within said visual field, said reference position signal being derived from an image signal in a first field of said object at each of the different positions in combination with said synchronizing signal;

B. means for storing an inspection zone of predetermined shape common to said object at each of said different predetermined positions and for generating an inspection zone control signal derived from the reference position signal at each of said different predetermined positions in combination with the associated synchronizing signal;

said different predetermined positions and said inspection zones being so determined that the inspection zones do not overlap one another;

C. inspection zone control means for receiving the image signal from said pick-up means and the control signal and for delivering an image signal in a second field of each of said image signals at each of said different predetermined positions from said pick-up means within the inspection zone determined by said control signal;

D. means for receiving each of the image signals from each inspection zone control means and whether or not, said object has a defect at any of said different predetermined positions; and

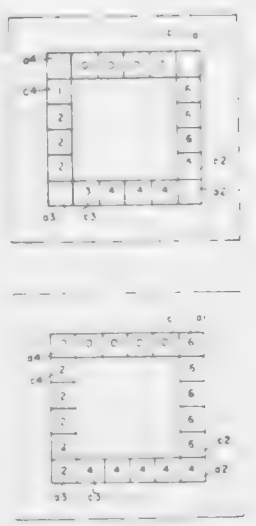
E. means for supplying an operation control signal to said judging means whereby said judging means is actuated.

5,007,097
LEAD'S POSITION RECOGNIZING DEVICE
Seiji Miznoka, Katano, and Kazumasa Okumura, Souraku, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Jun. 29, 1990, Ser. No. 545,892
Int. Cl.[5] G06K 9/00
U.S. Cl. 382—8 2 Claims



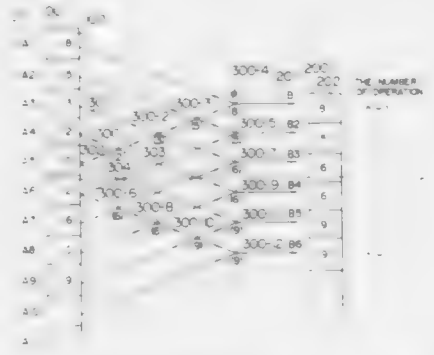
1. A lead's position recognizing device comprising:
a means for detecting outlines of regions surrounded by adjacent leads;
a means for detecting maximum points and minimum points of each outline; and
a means for detecting a position of said lead from intersecting point of a straight line connecting midpoints between maximum points and minimum points on each outline taken at a given proportion and said outline.

5,007,098
VECTORIZING METHOD
Ryohei Kumagai, Tokyo, Japan, assignor to Ezel, Inc., Tokyo, Japan
Filed Dec. 30, 1988, Ser. No. 292,309
Int. Cl.[5] G06K 9/48
U.S. Cl. 382—21 39 Claims



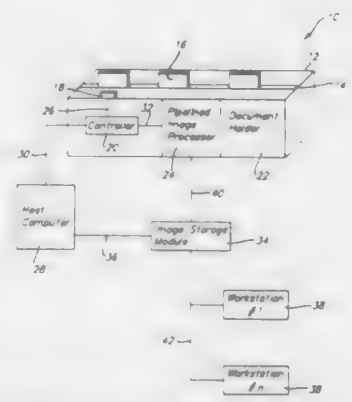
1. A vectorizing method comprising the steps of:
(a) generating an original train of codes, the values of said codes specifying boundary pixels of a configuration;
(b) identifying a pattern of code values in said original train, said pattern indicating a sequence of codes to be modified;
(c) generating a revised train of codes by modifying code values of said indicated sequence; and
(d) extracting vector points defining the borders of said configuration from said revised train of codes.

5,007,099
DATA FILTERING METHOD
Hitoshi Matsushima, Tachikawa, and Takafumi Miyatake, Hachioji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan and Hitachi, Ltd., Tokyo, Japan
Filed Jun. 29, 1988, Ser. No. 213,133
Claims priority, application Japan, Jun. 29, 1987, 62-159594
Int. Cl.[5] G06K 9/00
U.S. Cl. 382—41 26 Claims



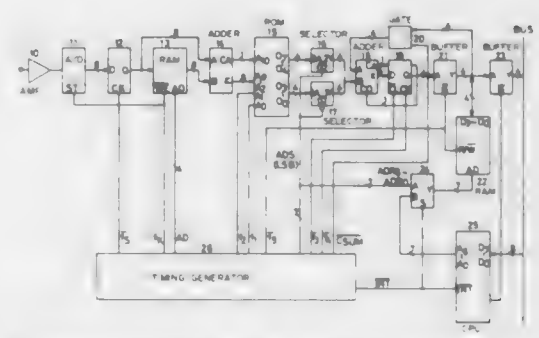
1. In a data processing system including sensing means for sensing an image and converting said image into input image data, preprocessing means connected to receive said input image data for filtering noise from said input image data, and data conversion means connected to receive said filtered input image data for converting said filtered input image data into output data, said preprocessing means including filter means for performing said noise filtering having n memory means for storing at least 2n pieces of data and operand interchangeable arithmetic means for performing a predetermined operation on said stored pieces of data, a data processing method of converting said input image data into said output data when said filter means is n-sized comprising the steps of:
sensing said image with said sensing means and converting said image into said input image data;
filtering noise from said input image data with said preprocessing means in order to produce first through (n+1)th filtered outputs of said preprocessing means;
converting said filtered input image data into said output data with said data conversion means;
said noise filtering step comprising the steps of:
(a) storing said input image data addresses of said memory means;
(b) inputting data stored in a first address of said memory means and data stored in a second address of said memory means to said arithmetic means and storing a result of an arithmetic operation performed on said data input from said first and second addresses in said first address;
(c) decrementing said first and second addresses by 1;
(d) repeating steps (b)–(c) n−2 times;
(e) inputting the first arithmetic operation result stored in said first memory and data stored in a third address of said memory means to said arithmetic means and outputting a result of an arithmetic operation performed on said first arithmetic operation result and said data input from said third address as said first filtered output of said preprocessing means;
(f) inputting the first arithmetic operation result stored in said first address and data stored in a fourth address of said memory means to said arithmetic means and outputting a result of an arithmetic operation performed on said first arithmetic operation result and said data input from said fourth address as said second filtered output of said preprocessing means;
(g) inputting said data stored in said fourth address and data stored in a fifth address of said memory means to said arithmetic means and storing a result of an arithmetic operation performed on said data input from said fourth and fifth addresses in said fourth address;
(h) inputting the arithmetic operation result stored in said fourth address and the last arithmetic operation result stored in said second address to said arithmetic means and outputting a result of an arithmetic operation performed on said arithmetic operation result input from said fourth address and the last arithmetic operation input from said second address as a filtered output of said preprocessing means;
(i) incrementing said second and fifth addresses by 1;
(j) repeating steps (g)–(i) n−2 times in order to provide the third through nth filtered outputs of said preprocessing means; and
(k) inputting the last arithmetic operation result stored in said fourth address and data stored in a sixth address of said memory means to said arithmetic means and outputting a result of an arithmetic operation performed on said last arithmetic operation result input from said fourth address and said data input from said sixth address as said (n+1)th filtered output of said preprocessing means.

5,007,100
DIAGNOSTIC SYSTEM FOR A PARALLEL PIPELINED IMAGE PROCESSING SYSTEM
Robert D'Aoust, Detroit; Robert B. Cording, Livonia; Debora Y. Grosse, Ann Arbor; Kevin Jennings, Farmington Hills; Stephen R. Krebs, Ypsilanti Township, Washtenaw County; George E. Reasoner, Jr., Tecumseh; Gerald R. Smith, Farmington, and David C. Williams, Ann Arbor, all of Mich., assignors to Unisys Corporation, Bluebell, Pa.
Filed Oct. 10, 1989, Ser. No. 419,606
Int. Cl.[5] G06K 9/54
U.S. Cl. 382—49 14 Claims



1. In a pipelined image processor for generating and processing image data corresponding to the image of at least a first portion of a document, the pipelined image processor including at least one pipe comprising sequentially coupled image data resequencer, image data processor, and image data transposer/compressor assemblies, wherein said image data is processed by said image data resequencer, image data processor, and said image data transposer/compressor assemblies in a plurality of parallel channel, each channel corresponding to a segment of at least a first portion of the document, said pipelined image processor including diagnostic apparatus for determining correct operability of the pipelined image processor, said diagnostic apparatus comprising:
communication means, coupled to said image data resequencer, image data processor, and to said transporter/-compressor for transmitting data to said resequencer, image data processor, and to said transposer/compressor and for receiving data therefrom; and
controller means, coupled to said communication means, for receiving and storing said data received by said communication means and for monitoring such data.

5,007,101
AUTO-CORRELATION CIRCUIT FOR USE IN PATTERN RECOGNITION
Hiroyuki Iwahashi, Nara; Yoshiki Nishioka, Tenri, and Mitsuhiro Hakaridani, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Japan
Filed Dec. 28, 1982, Ser. No. 454,022
Claims priority, application Japan, Dec. 29, 1981, 56-210296
Int. Cl.[5] G06K 9/36
U.S. Cl. 382—42 1 Claim



1. An auto-correlation unit for providing auto-correlation coefficients for use as feature parameters in pattern recognition for N pieces of sampled input values X_n (n=0 to N−1), said unit comprising:
means for extracting N pieces of sample input values X_n from a series of sample values in an input pattern expressed with an accuracy of optional multi-bits;
means for calculating the sum of the sample values X_n and $X_{n-\tau}$(τ=0–P, P≦N);
a read only memory associated with said means for calculating;
means for feeding to said read only memory the sum of the sampled input values as an address signal;
means for storing in said read only memory the squared value of each sum, $(X_n+X_{n-\tau})^2$;
means for fetching and outputting the squared values of each such sum of the sample input values from said read only memory when said memory is addressed by the sum of the sample input values; and
means responsive to the output $(X_n+X_{n-\tau})^2$ of said read only memory for providing an auto-correlation coefficient for use as a feature parameter according to the following formula:

$$\sum_{n=0}^{N-1}[X_n + X_{n-\tau}]^2/2 \cdot \sum_{n=0}^{N-1} X_n^2 \quad 1$$

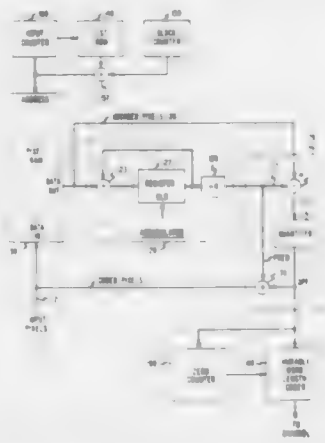
5,007,102
DATA COMPRESSION USING BLOCK LIST TRANSFORM
Barry G. Haskell, Tinton Falls, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Continuation of Ser. No. 841,571, Mar. 20, 1986, abandoned.
This application May 3, 1989, Ser. No. 351,334
Int. Cl.[5] G06K 9/36
U.S. Cl. 382—56 25 Claims

1. A method for predictively encoding scanned data signals divided into two-dimensional blocks containing a plurality of data point signals, comprising the steps of:
selecting a data point signal to be encoded in a sequence predetermined by a given ordered list where some adja-

cent data points in said list are from different, non-adjacent, lines of a block;

obtaining a set of prediction data point signals for the selected data point from among encoded data point signals and forming a neighborhood that is substantially centered in the two dimensions about the corresponding data point signals to be encoded;

developing a predicted value for said selected data point



signal in accordance with said set of prediction data point signals;

developing a quantized prediction error signal from a quantized arithmetic difference between said data point signal to be encoded and said predicted value; and

developing an encoded data point signal based on said predicted value of said selected data point signal and on said quantized prediction error signal, to add thereby to said encoded data point signals.

5,007,103

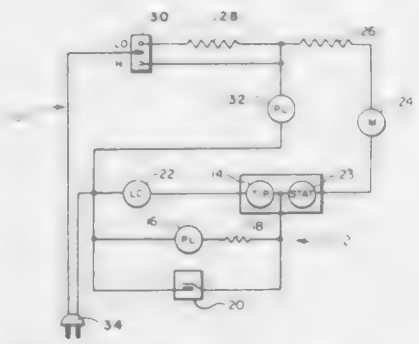
AUTOMATIC SHUT-OFF AND ALARM FOR ELECTRIC HEATER

Paul C. Tyrrell, Kansas City; Johannes B. Backes, Raytown, both of Mo.; David D. McCormick, Shawnee Mission, Kans., and John F. Jesse, Buckner, Mo., assignors to Rival Manufacturing Company, Kansas City, Mo.

Filed Oct. 21, 1988, Ser. No. 260,881

Int. Cl.[5] H05B *1/02*

U.S. Cl. 219—363 **27 Claims**



1. An electric heater assembly comprising:

at least one electrical heating element;

an electrically actuated alarm for providing an alarm warning upon actuation;

a tip-over switch having a closed position in which a short circuit is provided therethrough when said heater is in a predetermined level position and having an open position in which an open circuit is provided therethrough when said heater is tilted beyond predetermined tilt angle; and

circuit means for electrically connecting said heating element, said tip-over switch and said alarm such that said tip-over switch disables said heating element and actuates said alarm when said tip-over switch is in one of said open and closed positions and such that said tip-over switch enables said heating element and disables said alarm when said tip-over switch is in the other of said open and closed positions.

5,007,104

SPEAKER SWITCHING DEVICE

Ernest A. Brochu, 288 Margaret Henry Rd., S. Killingly, Conn. 06106

Filed Apr. 24, 1989, Ser. No. 342,020

Int. Cl.[5] H04B *1/20*

U.S. Cl. 455—74 **1 Claim**



1. A speaker switching device for a radio having a radio power supply and producing a radio speaker output and a tape deck having a tape deck power supply and producing a tape deck speaker output when a tape cartridge is inserted therein, said speaker switching device comprising

a single pair of speakers;

relay contact means;

circuit means electrically connecting the speakers to the radio speaker output and to the tape deck speaker output through the relay contact means in a manner whereby in a first position of the contact means the radio speaker output is electrically connected to the speakers and the tape deck speaker output is disconnected from the speaker and in a second position of said contact means the tape deck speaker output is electrically connected to the speakers and the radio speaker output is disconnected from the speakers;

relay energizing winding means for controlling the positioning of the relay contact means; and

current-sensitive transistor switch means electrically connecting the relay energizing winding means to the tape deck power supply when the tape deck power supply is activated by inserting a cartridge, said radio power supply inherently drawing a lower current than said tape deck power supply during normal operation, and said current-sensitive transistor switch means being ineffective to so energize said relay winding means unless said tape deck power supply is producing sufficient current to operate said tape deck as a result of inserting a cartridge therein

5,007,105

WATCH TYPE PAGING RECEIVER

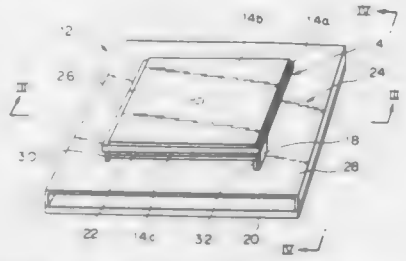
Kazuhiro Kudoh, Tokyo; Toshirou Nishiyama, and Sadayuki Anma, both of Shizuoka, all of Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 232,196, Aug. 15, 1988, abandoned. This application Sep. 4, 1990, Ser. No. 577,847

Claims priority, application Japan, Aug. 14, 1987, 62-201746; Aug. 21, 1987, 62-206380; Sep. 16, 1987, 62-229602; Sep. 16, 1987, 62-229603

Int. Cl.[5] H04B *1/06, 1/18*

U.S. Cl. 455—344 **25 Claims**



1. A portable radio communication apparatus comprising:

a body accommodating a receiving circuit of said apparatus;

display means with an optical reflector provided on said body for displaying information received by said receiving circuit; and

a main antenna including said optical reflector connected to said receiving circuit constituted by a part of structural members of said display means.

5,007,106

OPTICAL HOMODYNE RECEIVER

Joseph M. Kahn, Red Bank, N.J., and Bryon L. Kasper, Allentown, Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 8, 1989, Ser. No. 433,632

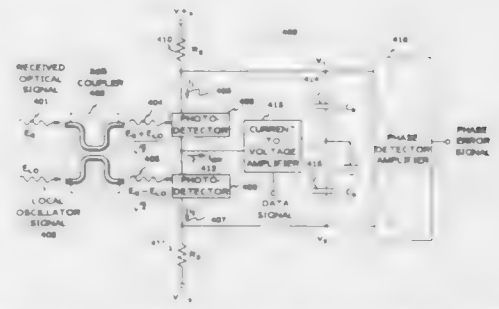
Int. Cl.[5] H04B *10/06*

U.S. Cl. 455—619 **16 Claims**

1. An optical homodyne receiver comprising:

first and second photodetectors responsive to first and second optical signals, respectively, said first photodetector connected between first and second terminals, said second photodetector connected between a third terminal and said second terminal, said first optical signal comprising the electrical-field sum of a local oscillator signal and a received optical signal, and said second optical signal comprising the electrical-field difference between said local oscillator signal and said received optical signal;

means, for detecting a data component of said received optical signal, electrically connected to said second terminal; and



means, for detecting the relative phase difference between said received optical signal and said local oscillator signal, electrically connected across said first and third terminals.

5,007,107

SEMICONDUCTOR LASER DEVICE

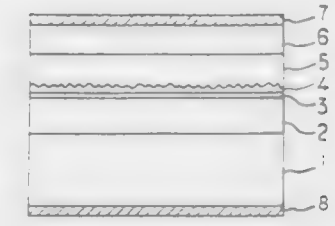
Haruhisa Takiguchi, Nara; Hiroaki Kudo, Tenri; Chitose Sakane, and Satoshi Sugahara, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 6, 1989, Ser. No. 432,063

Claims priority, application Japan, Nov. 8, 1988, 63-282999

Int. Cl.[5] H01S *3/19*

U.S. Cl. 372—96 **5 Claims**



1. In a semiconductor laser device comprising an active layer positioned between a first cladding layer and a second cladding layer, said active layer being made of, a compound semiconductor material selected from the group consisting of $(Al_xGa_{1-x})_{0.5}In_{0.5}P$ $(0 \leqq x \leqq 0.7)$, $Al_xGa_{1-x}As$ $(0 \leqq x \leqq 0.4)$, and $Ga_xIn_{1-x}P_{1-y}As_y$ $(0.5 \leqq x \leqq 1,\ 0 \leqq y \leqq 1,$ and $y = 2x - 1)$, wherein an optical guiding layer having a diffraction grating made of $(Al_xGa_{1-x})_{0.5}In_{0.5}P$ $(0 \leqq x \leqq 1)$ is positioned between said active layer and one of said cladding layers.

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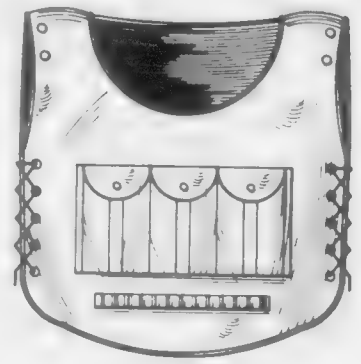
DESIGN PATENTS

GRANTED APR. 9, 1991

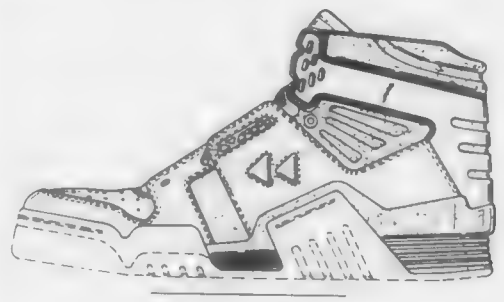
ERRATA

For CLASS	See PATENT NO.
D14-141	316,024
D12-007	316,099

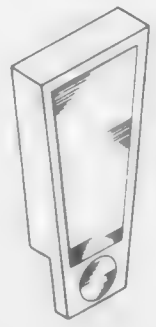
315,978
HUNTER'S VEST OR THE LIKE
James V. L. Scott, 101 St. Mi Co APO, New York, N.Y. 09137-5000
Filed Jun. 22, 1988, Ser. No. 210,296
Term of patent 14 years
U.S. Cl. D2—183



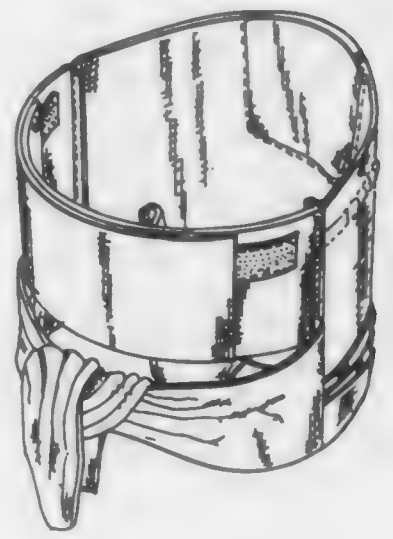
315,979
SHOE UPPER
Frank Legacki; James L. Grau, both of San Antonio, Tex.; Rory W. Fuerst, Menlo Park, Calif., and James E. Granville, San Antonio, Tex., assignors to Kaepa, Inc., San Antonio, Tex.
Filed Feb. 9, 1989, Ser. No. 308,431
Term of patent 14 years
U.S. Cl. D2—314



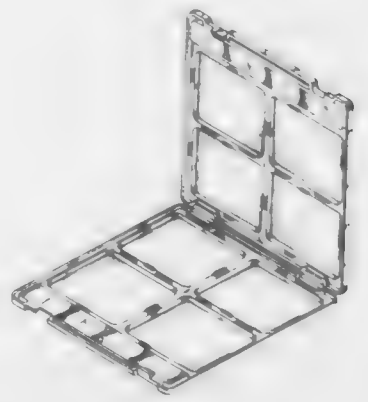
315,980
CHEERLEADING MITT
Severius E. Bradley, 1817 Butler St., Winston-Salem, N.C. 27107
Filed Jun. 25, 1987, Ser. No. 66,402
Term of patent 14 years
U.S. Cl. D2—622



315,981
STRAPLESS CARRIER FOR A CHILD
Okpemitoritse U. Oniuwaje, 4280 E. Iowa, Denver, Colo. 80222
Filed Oct. 9, 1987, Ser. No. 106,337
Term of patent 14 years
U.S. Cl. D3—31



315,982
CASE
Noriaki Kunimune, Higashiosaka, and Yukio Wada, Kyoto, both of Japan, assignors to Kunimune Kogyosho Co., Ltd., Osaka, Japan
Filed Jan. 22, 1988, Ser. No. 146,793
Claims priority, application Japan, Sep. 24, 1987, 62-38875
Term of patent 14 years
U.S. Cl. D3—35



315,983
GOLF BAG
Enrico Fumia, Turin, Italy, assignor to Pininfarina Extra S.r.l., Turin, Italy
Filed Dec. 15, 1987, Ser. No. 133,456
Claims priority, application Italy, Jun. 15, 1987, 53424/87[U]
Term of patent 14 years
U.S. Cl. D3—37



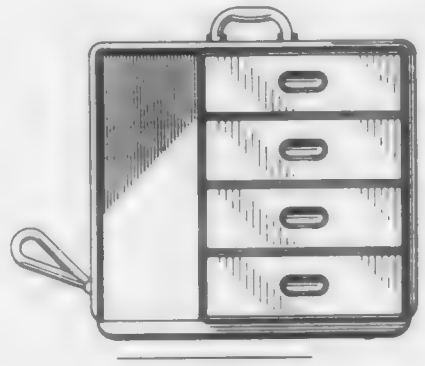
315,984
ALL PURPOSE BAG
Melvin E. Fowler, Box 19101, Amarillo, Tex. 79114
Filed May 20, 1987, Ser. No. 51,819
Term of patent 14 years
U.S. Cl. D3—71



315,985
EXPANSIBLE CARRY-ON CASE
Edward L. Gerch, Chicago, and Warner D. Rosenfeld, Glencoe, both of Ill., assignors to Kingport International Corporation, Evanston, Ill.
Filed Mar. 1, 1988, Ser. No. 162,462
Term of patent 14 years
U.S. Cl. D3—76



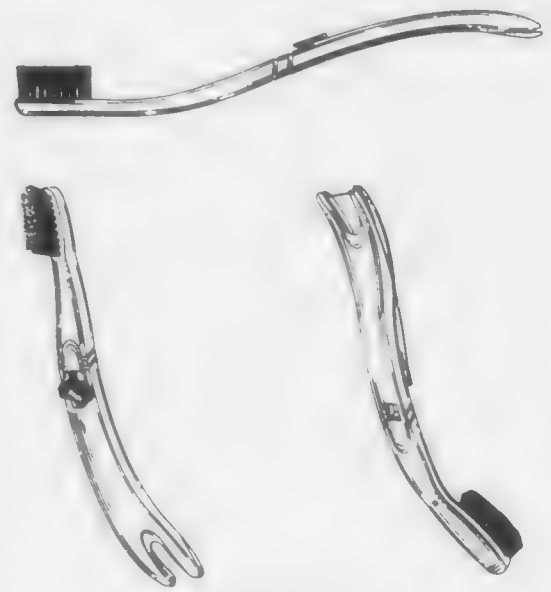
315,986
TRAVEL CLOTHING ORGANIZER
Todd A. Blevins, P.O. Box 6057, Chillicothe, Ohio 45601
Filed Jul. 6, 1988, Ser. No. 215,927
Term of patent 14 years
U.S. Cl. D3—76



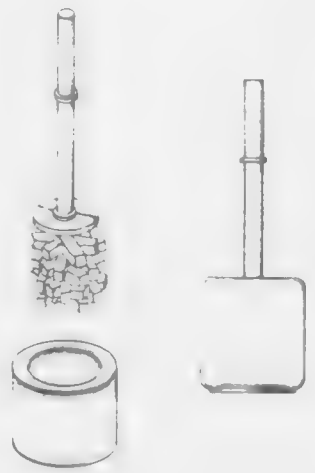
315,987
EXPANDABLE VALISE
Charles S. Tobias, Tortola, British Virgin Isls., assignor to Pusser's, Inc., Tortola, British Virgin Isls.
Filed Jun. 3, 1988, Ser. No. 202,156
Term of patent 14 years
U.S. Cl. D3—77



315,988
COMBINED TOOTHBRUSH AND DENTAL FLOSS HOLDER
Toshiki Tanaka, Hayamamachi, Japan, assignor to Kabushiki Kaisha Doctor McCoy, Ushi, Japan
Filed Nov. 10, 1988, Ser. No. 269,549
Term of patent 14 years
U.S. Cl. D4—108



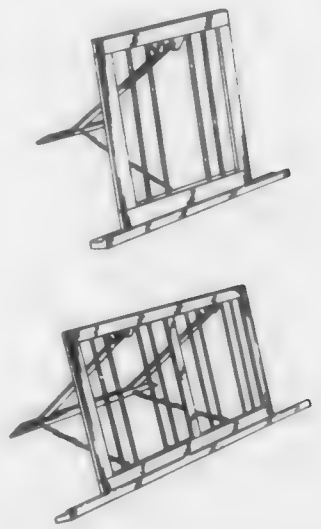
315,989
COMBINED TOILET BRUSH AND HOLDER THEREFOR OR THE LIKE
Robin Levien, London, England, assignor to American Standard Inc., New York, N.Y.
Filed May 20, 1988, Ser. No. 196,512
Claims priority, application United Kingdom, Nov. 20, 1987, 1046475
Term of patent 14 years
U.S. Cl. D4—137



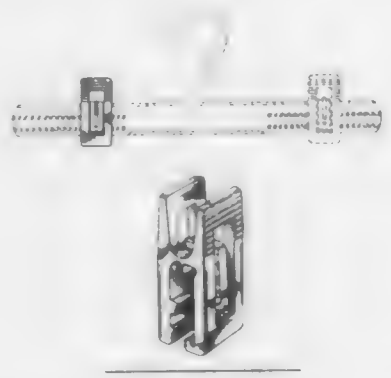
315,990
EMBOSSED WIPE OR SIMILAR ARTICLE
Timothy J. Blenke, Neenah, and Thomas J. Kopacz, Omro, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Aug. 4, 1988, Ser. No. 229,053
Term of patent 14 years
U.S. Cl. D5—26



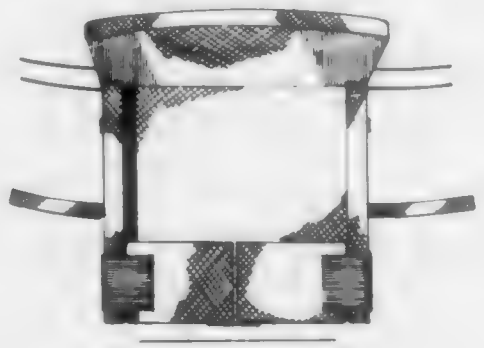
315,991
TABLE-TOP EASEL
Alma R. Ball, 364 Cahuenga Dr., Channel Islands Harbor, Oxnard, Calif. 93035
Filed Jul. 2, 1990, Ser. No. 547,067
Term of patent 14 years
U.S. Cl. D6—311



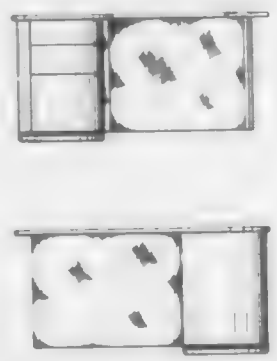
315,992
CLIP FOR A HANGER
Marc Tremblay, Pierrefonds, and Stan Eiley, Mount Royal, both of Canada, assignors to E.R.A. Display Co. Ltd., Montreal, Canada
Filed Jul. 19, 1989, Ser. No. 381,938
Term of patent 14 years
U.S. Cl. D6—328



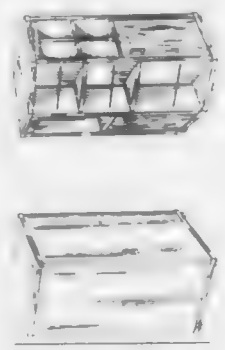
315,993
AUXILIARY SAFETY SEAT FOR USE PRIMARILY IN A HIGH CHAIR
Joseph Wenderoth, P.O. Box 157, Church Hill, Md. 21623
Filed Aug. 13, 1987, Ser. No. 84,738
Term of patent 14 years
U.S. Cl. D6—333



315,994
DESK RETURN
James J. Bayley, Santa Barbara, Calif., assignor to Hardwood House, Inc., Rochester, N.Y.
Filed Aug. 2, 1988, Ser. No. 227,594
Term of patent 14 years
U.S. Cl. D6—427



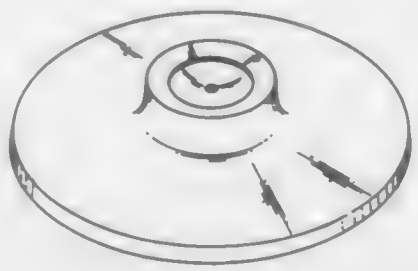
315,995
MOBILE STORAGE UNIT
Joseph E. Miller, 614 Willoughby Blvd., Greensboro, N.C. 27[illegible]
Filed Jan. 6, 1988, Ser. No. 141,287
Term of patent 14 years
U.S. Cl. D6—436



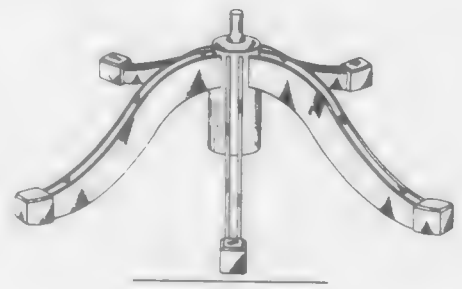
315,996
SECURITY CABINET
Douglas A. Barth, Allegany, and Gregory C. Hudson, Great Valley, both of N.Y., assignors to American Locker Group Incorporated, Jamestown, N.Y.
Filed Oct. 2, 1987, Ser. No. 103,794
The portion of the term of this patent subsequent to Jan. 26, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—445



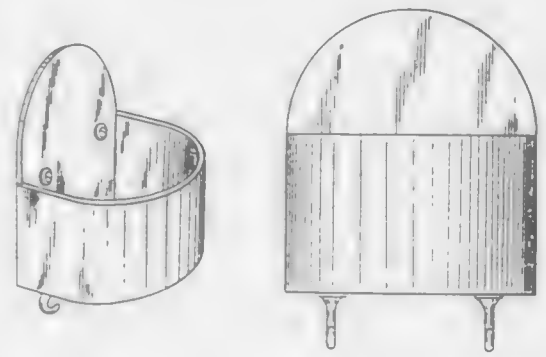
315,997
BASE FOR ELECTRONIC EQUIPMENT SUPPORT STAND
John E. Bales, and Douglas L. Johnston, both of Portland, Oreg., assignors to Comtek Industries, Inc., Portland, Oreg.
Filed Apr. 6, 1988, Ser. No. 178,089
Term of patent 14 years
U.S. Cl. D6—495



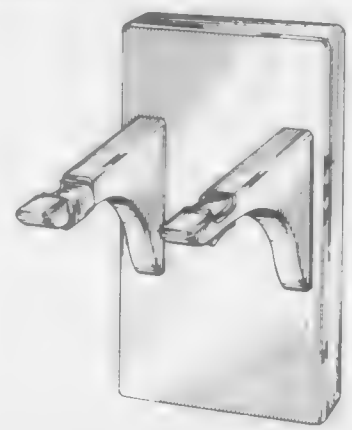
315,998
CHAIR BASE
Thomas M. Edwards, Wyoming, Mich., assignor to Herman Miller, Inc., Zeeland, Mich.
Filed Jun. 10, 1988, Ser. No. 205,110
Term of patent 14 years
U.S. Cl. D6—498



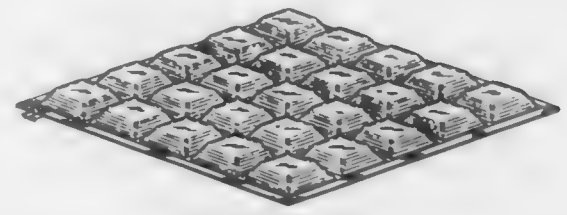
315,999
LOCKER RECEPTACLE
Thomas L. Bauer, 1130 SW. Myrtle Dr., Portland, Oreg. 97201
Filed Dec. 12, 1988, Ser. No. 283,518
Term of patent 14 years
U.S. Cl. D6—567



316,000
GUITAR HANGER
James Logan, 86 Henry St., Cambridge, Mass. 02139; Ronald Redmond, R.R. 1 Box 1288, Hinesburg, Vt. 05461, and Fedenick Botts, 165 Mesa Dr., Costa Mesa, Calif. 92627
Filed Jun. 24, 1988, Ser. No. 211,406
Term of patent 14 years
U.S. Cl. D6—572



316,001
INFLATABLE CUSHION
Twyman Guard, Denver, Colo., assignor to American Sports Plastics, Inc., Englewood, Colo.
Filed Feb. 22, 1988, Ser. No. 158,991
Term of patent 14 years
U.S. Cl. D6—601



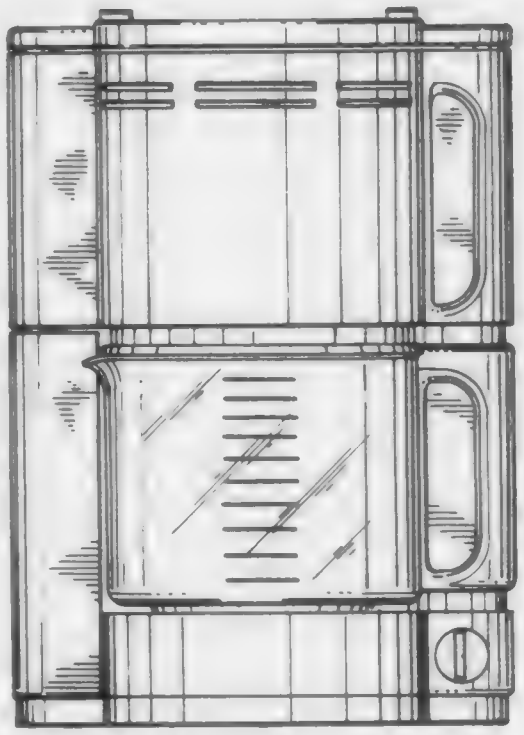
316,002
BED COVER FOR A CHILD'S BED
Judith H. Dunsmore, 52 Howard Road, Sompting, North Lancing, West Sussex, BR15 OLP, England
Filed Sep. 6, 1988, Ser. No. 241,12[illegible]
Term of patent 14 years
U.S. Cl. D6—603



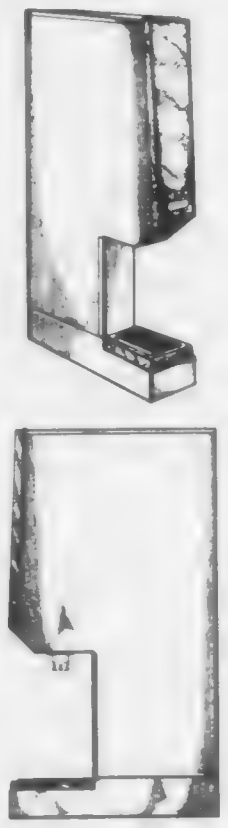
316,003
WATER COOLER CABINET
Dennis Clevenger, 5091 Harcum St., Irving, Calif. 92715
Filed Dec. 4, 1986, Ser. No. 938,135
Term of patent 14 years
U.S. Cl. D7—306

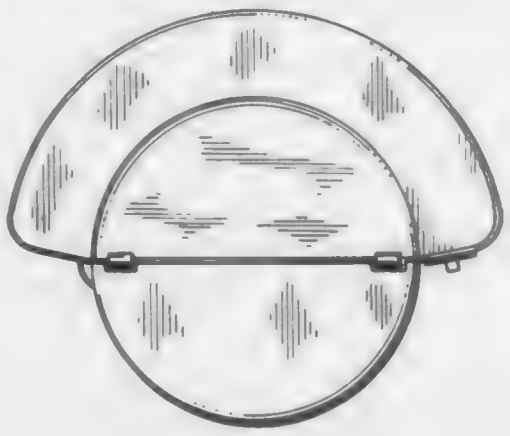


316,004
COFFEE MACHINE
Arthur Eugster, Romanshorn, Switzerland, assignor to Arthur Eugster AG, Romanshorn, Switzerland
Filed Aug. 6, 1987, Ser. No. 83,059
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1987, URA150/87
Term of patent 14 years
U.S. Cl. D7—309

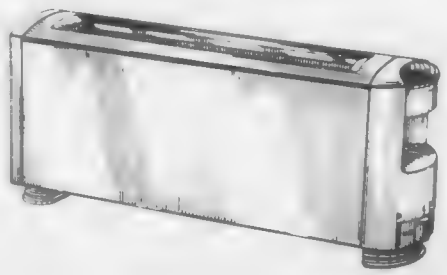


316,005
JUICE DISPENSER
George L. Thompson, Snellville; Kenneth G. Smazik; Jonathan Kirschner, both of Marietta; William S. Credle, Jr., Stone Mountain, and Rickey D. Burns, Atlanta, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.
Continuation-in-part of Ser. No. 924,532, Oct. 29, 1986, Pat. No. Des. 309,395. This application Feb. 24, 1988, Ser. No. 160,567
Term of patent 14 years
U.S. Cl. D7—311

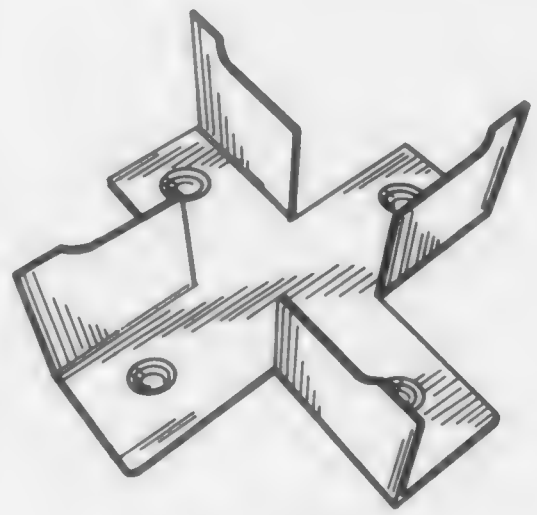




316,006
TOASTER
Lutz Gebhardt, Darmstadt, Fed. Rep. of Germany, assignor to Rowenta-Werke GmbH, Offenbach am Main, Fed. Rep. of Germany
Filed May 3, 1988, Ser. No. 189,741
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1987, 5MR10799
Term of patent 14 years
U.S. Cl. D7—330



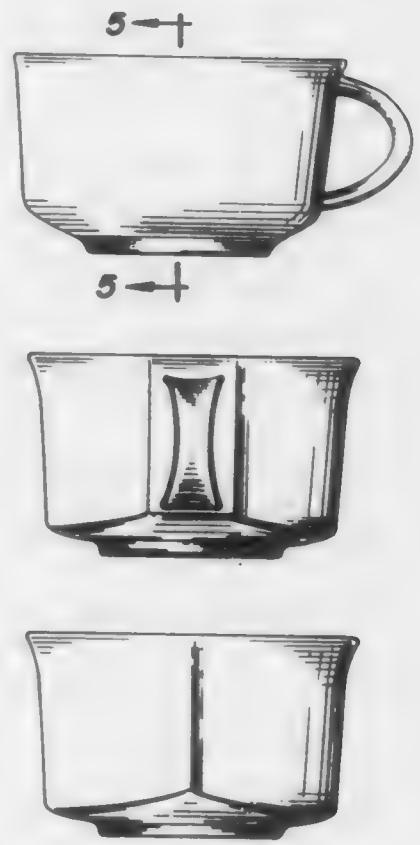
316,007
COOKING SUPPORT STAND FOR A FONDUE POT OR SIMILAR ARTICLE
Hans R. Wagner, 25 Woodale La., Santa Barbara, Calif. 93103
Filed Jan. 14, 1988, Ser. No. 143,700
Term of patent 14 years
U.S. Cl. D7—366



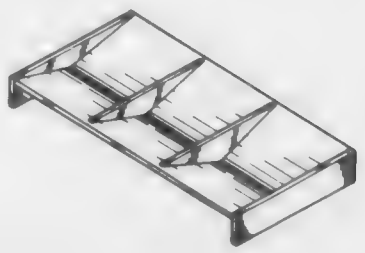
316,008
FIRE STARTER
Oak D. Norton, 1857 Park Forest Ave., State College, Pa. 16801
Filed Jun. 7, 1990, Ser. No. 534,439
Term of patent 14 years
U.S. Cl. D7—416



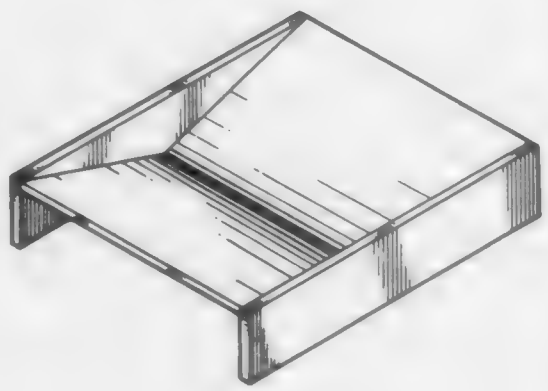
316,009
CUP OR SIMILAR ARTICLE
Ludwig Scherer, Luxembourg, Luxembourg, assignor to Villeroy & Boch S.A.R.L., Luxembourg, Luxembourg
Division of Ser. No. 146,804, Jan. 22, 1988. This application Apr. 19, 1990, Ser. No. 511,387
Term of patent 14 years
U.S. Cl. D7—536



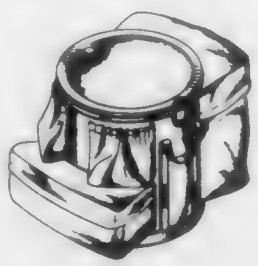
316,010
COMPARTMENTED SERVING TRAY
David W. Guy, 1008 S. First St., Pinckneyville, Ill. 62274
Filed Feb. 16, 1989, Ser. No. 311,582
Term of patent 14 years
U.S. Cl. D7—554



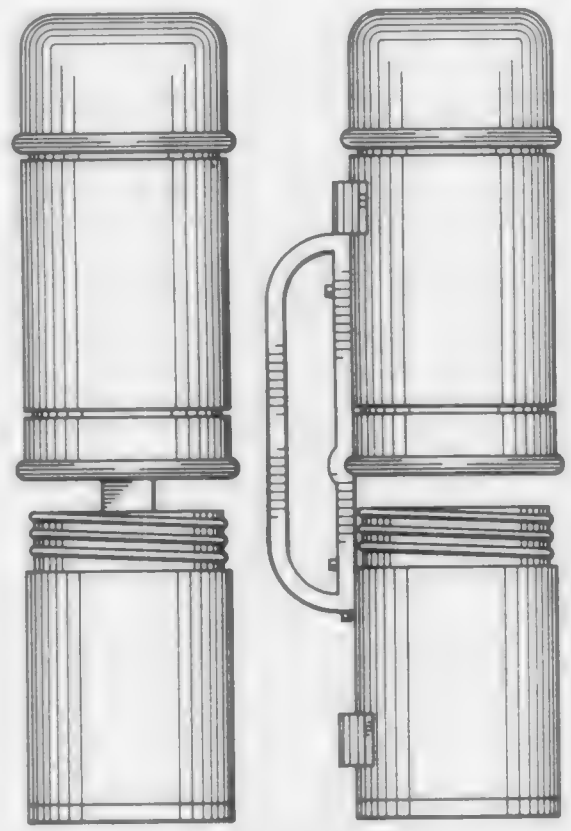
316,011
FOOD DISH
David W. Guy, 1008 S. First St., Pinckneyville, Ill. 62274
Filed Feb. 16, 1989, Ser. No. 311,581
Term of patent 14 years
U.S. Cl. D7—586



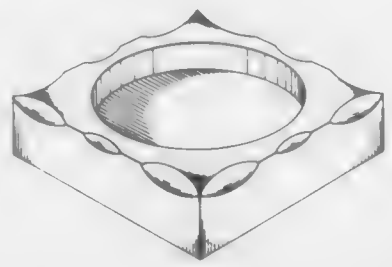
316,012
ICE CHEST
Gary Christopher, 5211 La Jolla Blvd., La Jolla, Calif. 92037
Filed Feb. 17, 1989, Ser. No. 311,894
Term of patent 14 years
U.S. Cl. D7—605



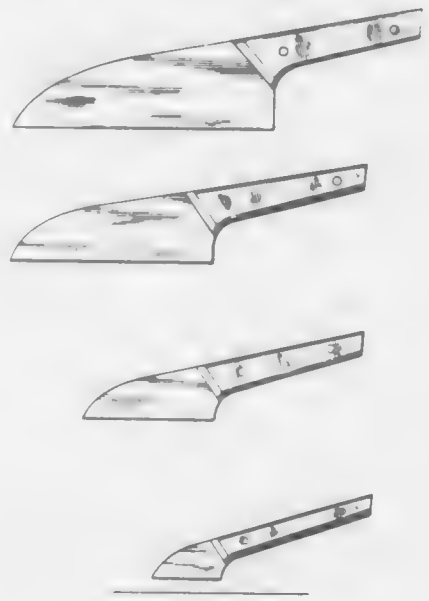
316,013
DUAL INSULATED BOTTLE
Wiley Jones, P.O. Box 1721 Brazoria, TX 77422
Filed Jun. 21, 1989, Ser. No. 369,669
Term of patent 14 years
U.S. Cl. D7—608



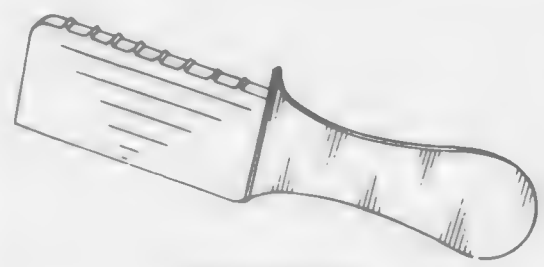
316,014
DECORATIVE DRINK COASTER
Norman R. Pinette, Jr., 159 Forest Ave., Seekonk, Mass. 02771
Filed Jul. 8, 1988, Ser. No. 216,451
Term of patent 14 years
U.S. Cl. D7—624



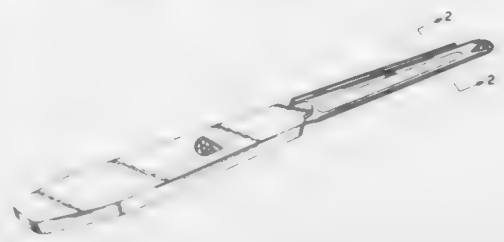
316,015
KNIFE
Joseph M. DiGangi, 5565 W. Walnut Cir., Espanola, N. Mex. 87532
Filed Aug. 20, 1987, Ser. No. 87,651
Term of patent 14 years
U.S. Cl. D7—649



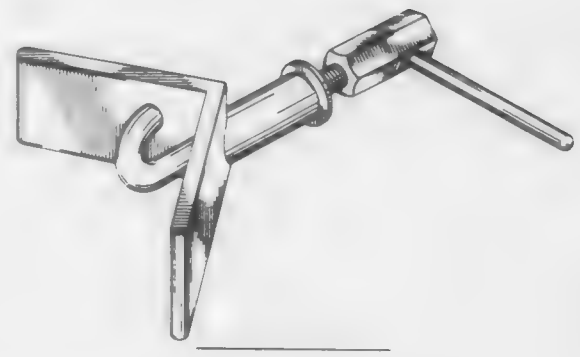
316,016
BUTTER KNIFE
A. George Nix, 8420 Fanita Dr. #36, Santee, Calif. 92071
Filed May 2, 1989, Ser. No. 346,757
Term of patent 14 years
U.S. Cl. D7—673



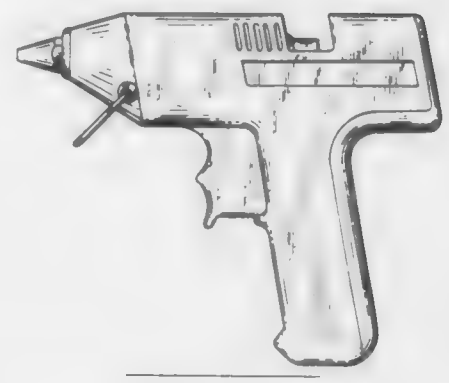
316,017
FRUIT PEELING UTENSIL
Chun T. Chung, 163-192, Youngchun-Dong, Seodaemoon-ku, Seoul, Rep. of Korea
Filed Oct. 19, 1988, Ser. No. 260,353
Claims priority, application Rep. of Korea, May 12, 1988, 6492/1988[U]
Term of patent 14 years
U.S. Cl. D7—695



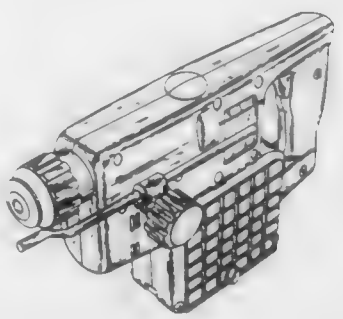
316,018
BENDING TOOL FOR SQUARING CORNERS OF WIRE FRAMES
John Penner, P.O. Box 25764, and Robert E. Nigh, P.O. Box 26202, both of Prescott Valley, Ariz. 86312
Filed Dec. 7, 1987, Ser. No. 129,672
Term of patent 14 years
U.S. Cl. D8—14



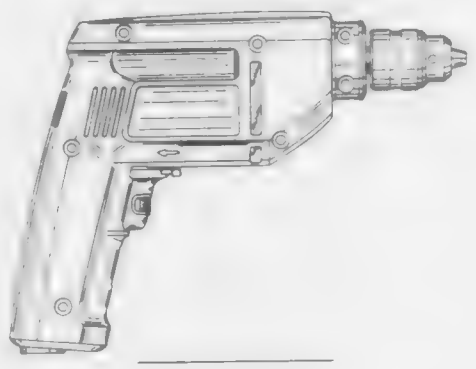
316,019
TRIGGER FEED GLUE GUN
Richard A. Belanger, Kensington, N.H., assignor to Adhesive Technologies, Inc., Hampton, N.H.
Filed Feb. 29, 1988, Ser. No. 162,364
Term of patent 14 years
U.S. Cl. D8—30



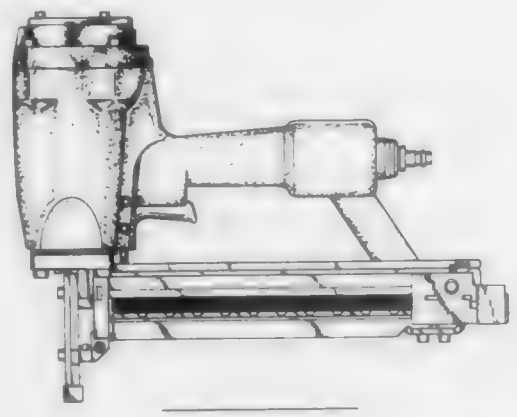
316,020
PORTABLE ELECTRIC HAMMER DRILL
Fusao Fushiya; Takashi Yamazaki, and Mikio Saito, all of Anjo, Japan, assignors to Makita Electric Works, Ltd., Japan
Filed May 12, 1988, Ser. No. 192,897
Claims priority, application Japan, Dec. 22, 1987, 62-52251
Term of patent 14 years
U.S. Cl. D8—61



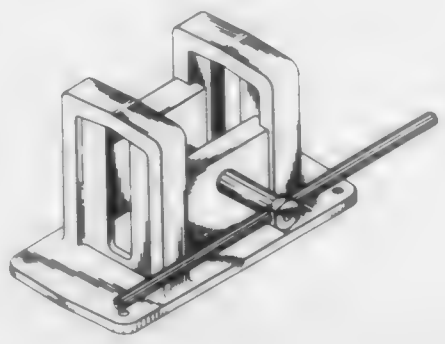
316,021
DRILL
Roderick F. Bunyea, Westminster, Md., assignor to Black & Decker Inc., Newark, Del.
Filed Mar. 11, 1988, Ser. No. 166,676
Term of patent 14 years
U.S. Cl. D8—68



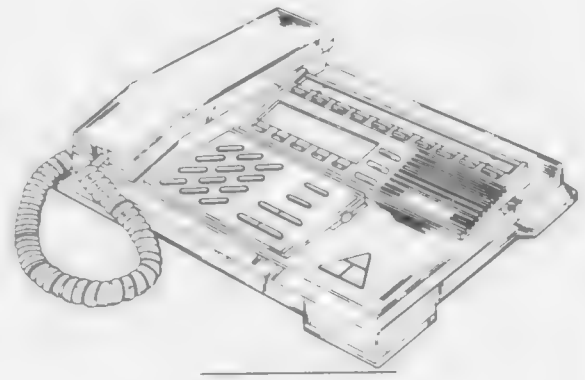
316,022
PNEUMATIC STAPLER
Roland Moraht, Krempenhege 15, 2000 Hamburg 65, Fed. Rep. of Germany
Filed Nov. 17, 1987, Ser. No. 121,740
Term of patent 14 years
U.S. Cl. D8—69



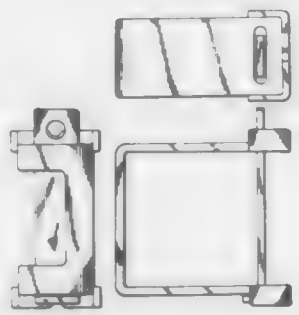
316,023
CHAIN SAW BAR STRAIGHTENER
Samuel A. Librande, 150 Vicki Ave., Hayden Lake, Id. 83835
Filed Jan. 15, 1988, Ser. No. 144,865
Term of patent 14 years
U.S. Cl. D8—71



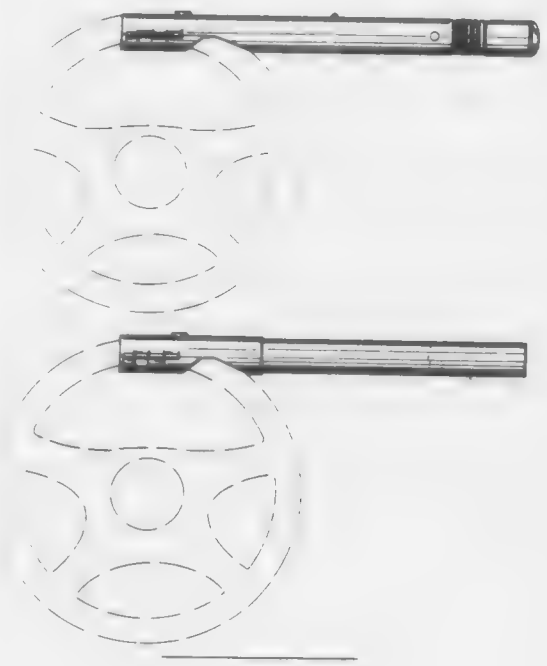
316,024
ALL DIGITAL TELEPHONE ANSWERING DEVICE
David A. Sharbaugh, Irvine, Calif., assignor to PhoneMate, Inc., Torrance, Calif.
Filed Dec. 26, 1989, Ser. No. 456,266
Term of patent 14 years
U.S. Cl. D14—141



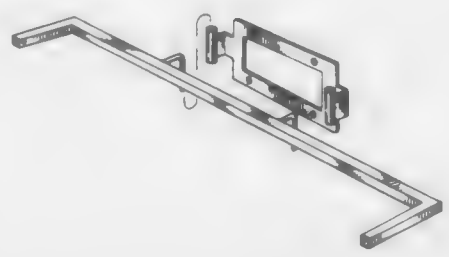
316,025
STEERING COLUMN LOCK
Hugh J. Webster, 32565 Jefferson Dr., Solon, Ohio 44139
Filed Aug. 16, 1989, Ser. No. 394,857
Term of patent 14 years
U.S. Cl. D8—331



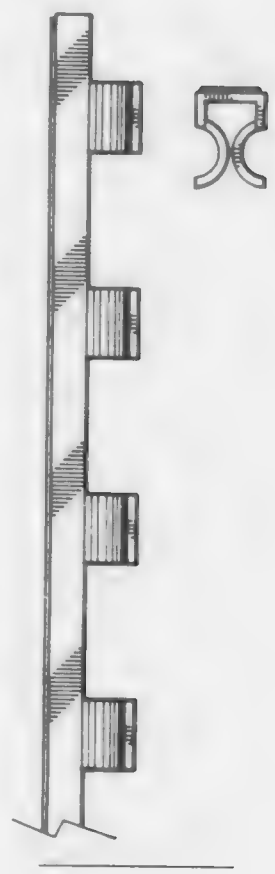
316,026
ANTI-THEFT VEHICLE STEERING WHEEL LOCK
Kip L. Fuller, Littleton, Colo., assignor to Innovision Technologies Group, Inc., Denver, Colo.
Filed Apr. 16, 1990, Ser. No. 509,495
Term of patent 14 years
U.S. Cl. D8—331



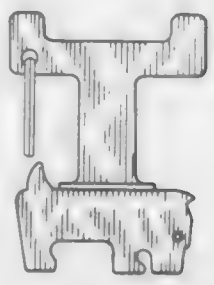
316,027
MOUNTING FOR A RETRACTABLE VEHICLE COVER
David L. Geeting, 1690 El Dorado Dr., Thousand Oaks, Calif. 91360, and Jeffrey P. Main, 3955 N. Ceanothus Pl., Unit J, Calabasas, Calif. 91302
Filed Dec. 20, 1988, Ser. No. 286,774
Term of patent 14 years
U.S. Cl. D8—349



316,028
SHOWER CURTAIN RETAINER
Ronald A. Wallace, 35 Clover St., Stratford, Conn. 06497
Filed Jul. 21, 1988, Ser. No. 222,234
Term of patent 14 years
U.S. Cl. D8—354



316,029
COMBINED FUEL PUMP DISPENSING HANDLE LEVER HOLDER AND KEY RING
Gary Taramaschi, 2501 Pico Blvd., Apt. 303, Santa Monica, Calif. 90405
Filed Dec. 26, 1989, Ser. No. 456,283
Term of patent 14 years
U.S. Cl. D8—354

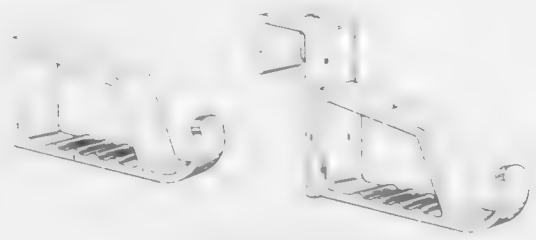


316,030
CORD WINDER FOR EAR PHONES
Michael Adielsson, Västerås, Sweden, assignor to Handeldesign V.B., Västerås, Sweden
Filed Nov. 2, 1988, Ser. No. 265,476
Claims priority, application Sweden, May 3, 1988, 88-1142
Term of patent 14 years
U.S. Cl. D8—358

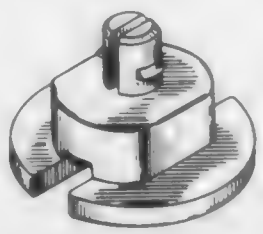




316,031
HANGER HOLDER
Sheldon H. Goodman, 4079 Princeton Blvd., South Euclid, Ohio 44121, and Steven E. Greenhut, 21545 Club Villa Ter., Boca Raton, Fla. 33433
Filed Dec. 2, 1988, Ser. No. 279,130
Term of patent 14 years
U.S. Cl. D8—363



316,032
GLIDE PAD FOR SLIDING WINDOWS, DOORS AND THE LIKE
Dennis Westphal, Galva, and Jonathan Piles, McPherson, both of Kans., assignors to CertainTeed Corporation, Valley Forge, Pa.
Filed Jul. 29, 1988, Ser. No. 226,397
Term of patent 14 years
U.S. Cl. D8—400



316,033
DISPENSER FOR PASTY PRODUCTS
Manuel Czech, Donaustauf, Fed. Rep. of Germany, assignor to Joachim Czech, Donaustauf, Fed. Rep. of Germany
Filed Jan. 27, 1989, Ser. No. 302,830
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1988, M8800744.8
Term of patent 14 years
U.S. Cl. D9—300



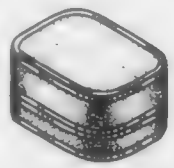
316,034
NAIL POLISH BOTTLE
Arthur DeGaetano, Stamford, Conn., assignor to Revlon, Inc., New York, N.Y.
Continuation of Ser. No. 882,808, Jul. 7, 1986, abandoned. This application Oct. 25, 1989, Ser. No. 427,929
Term of patent 14 years
U.S. Cl. D9—338



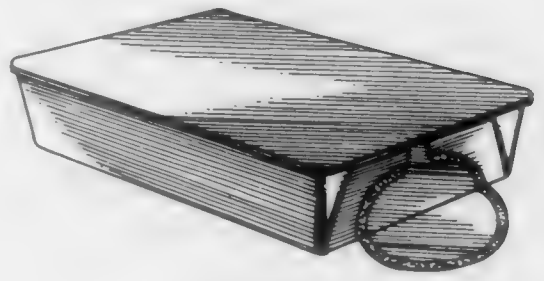
316,035
DOUBLE SECTIONED CONTAINER WITH DOUBLE POUR SPOUT
Natal Pepitone, 97-23 84th St., Ozone Park, N.Y. 11416
Filed Apr. 28, 1988, Ser. No. 187,394
Term of patent 14 years
U.S. Cl. D9—347



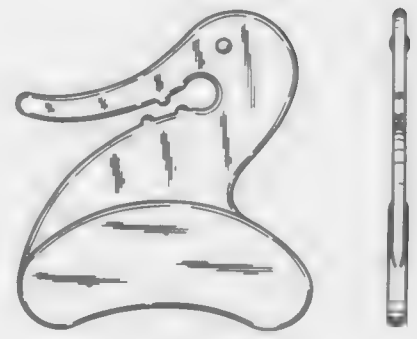
316,036
JEWELRY BOX
Myril Kaplan, 125 E. 144th St., Bronx, N.Y. 10451
Filed Apr. 3, 1986, Ser. No. 847,821
The portion of the term of this patent subsequent to Apr. 3, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—423



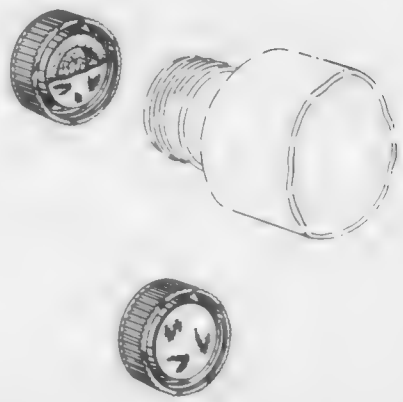
316,037
FOOD PACKAGE
John E. Kea, New Castle, Del., assignor to Westvaco Corporation, New York, N.Y.
Filed Jan. 10, 1989, Ser. No. 295,281
Term of patent 14 years
U.S. Cl. D9—425



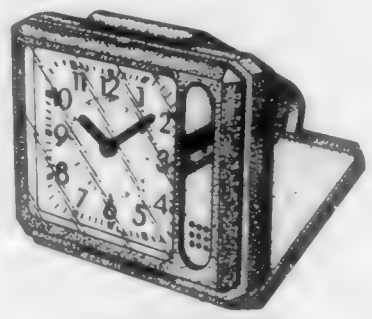
316,038
SLIP CLIP FOR CLOSING BAGS
Roland J. Gagnet, P.O. Box 6149, Toledo, Ohio 43614
Filed Sep. 6, 1988, Ser. No. 241,129
Term of patent 14 years
U.S. Cl. D9—434



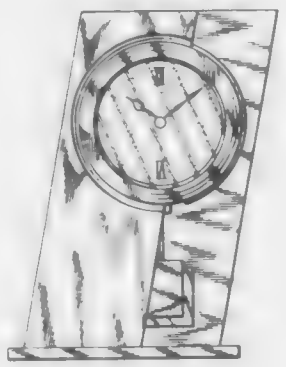
316,039
COMBINED CLOSURE AND CONTAINER FOR A DRYING AGENT
Donald J. Sykes, Upper Saddle River, N.J., and Gary E. Gendron, Boiceville, N.Y., assignors to Marpac Industries, Inc., Waldwick, N.J.
Continuation-in-part of Ser. No. 735,084, May 17, 1985, abandoned. This application Aug. 1, 1988, Ser. No. 226,984
Term of patent 14 years
U.S. Cl. D9—436



316,040
TRAVEL ALARM CLOCK
Keiko Mayuzumi, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Feb. 9, 1988, Ser. No. 154,998
Claims priority, application Japan, Aug. 31, 1987, 62-35465
Term of patent 14 years
U.S. Cl. D10—18



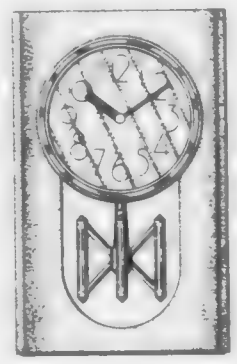
316,041
CLOCK
Keiko Mayuzumi, and Masumi Mukoyama, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Japan
Filed Apr. 11, 1988, Ser. No. 180,011
Claims priority, application Japan, Nov. 2, 1987, 62-44883
Term of patent 14 years
U.S. Cl. D10—21



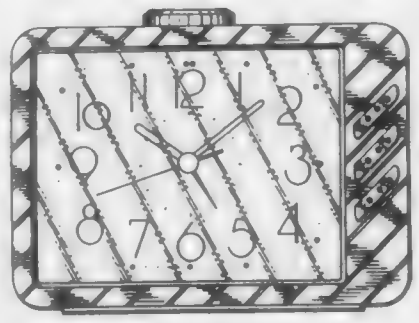
316,042
CLOCK
Asao Takashima, and Kunihiko Ito, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Japan
Filed Feb. 9, 1988, Ser. No. 154,994
Claims priority, application Japan, Aug. 13, 1987, 62-33135
Term of patent 14 years
U.S. Cl. D10—23



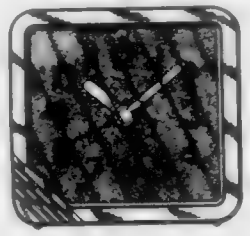
316,043
CLOCK
Asao Takashima, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jan. 25, 1988, Ser. No. 147,774
Claims priority, application Japan, Aug. 4, 1987, 62-31703
Term of patent 14 years
U.S. Cl. D10—25



316,044
CLOCK
Masahiro Aikawa, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Feb. 12, 1988, Ser. No. 155,627
Claims priority, application Japan, Sep. 3, 1987, 62-36032
Term of patent 14 years
U.S. Cl. D10—25



316,045
CLOCK
Seiji Odaka, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Feb. 12, 1988, Ser. No. 155,628
Claims priority, application Japan, Sep. 3, 1987, 62-36033
Term of patent 14 years
U.S. Cl. D10—25

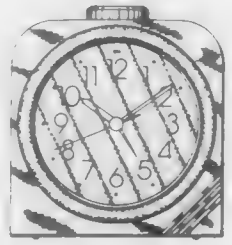


316,046
CLOCK
Kayoko Kato, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Feb. 12, 1988, Ser. No. 155,630
Claims priority, application Japan, Sep. 3, 1987, 62-36035
Term of patent 14 years
U.S. Cl. D10—25

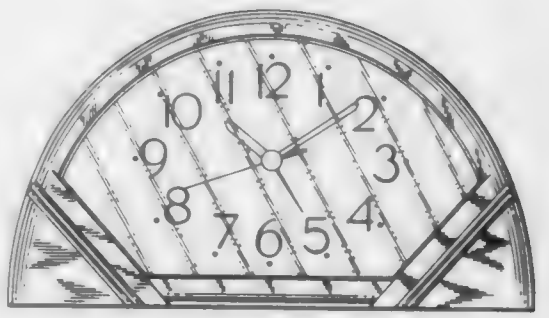
316,047
CLOCK
Tokiko Imai, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jan. 25, 1988, Ser. No. 147,772
Claims priority, application Japan, Aug. 13, 1987, 62-33139
Term of patent 14 years
U.S. Cl. D10—28



316,048
CLOCK
Masahiro Aikawa, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Feb. 9, 1988, Ser. No. 154,997
Claims priority, application Japan, Aug. 31, 1987, 62-35463
Term of patent 14 years
U.S. Cl. D10—28



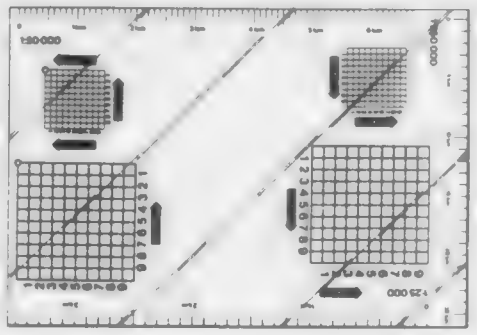
316,049
CLOCK
Kayoko Kato, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Feb. 12, 1988, Ser. No. 155,629
Claims priority, application Japan, Sep. 3, 1987, 62-36029
Term of patent 14 years
U.S. Cl. D10—28



316,050
WRISTWATCH AND BRACELET
Raymond L. Weil, Cologny, Switzerland, assignor to Raymond Weil S.A., Genève, Switzerland
Filed Sep. 10, 1987, Ser. No. 95,511
Claims priority, application Hague, Mar. 13, 1987, DMA/000597
Term of patent 14 years
U.S. Cl. D10—32



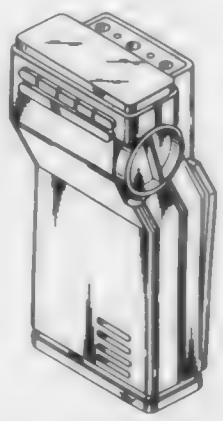
316,051
DRAFTING RULER
Svein E. Strande, Brugaten 4, Jevnaker, Norway (3520)
Filed Dec. 18, 1987, Ser. No. 135,402
Claims priority, application Norway, Jun. 18, 1987, 68376
Term of patent 14 years
U.S. Cl. D10—71



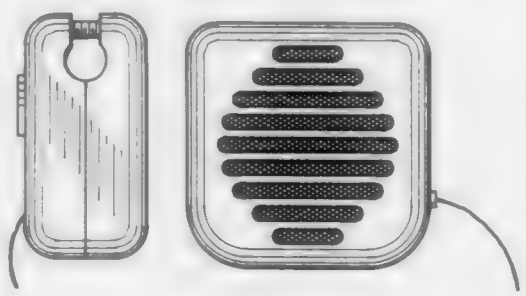
316,052
ELECTRICAL CURRENT INDICATING DEVICE
James E. Bubash, 252 Sunset Dr., Ballwin, Mo. 63011
Filed Oct. 26, 1987, Ser. No. 113,808
Term of patent 14 years
U.S. Cl. D10—78



316,053
MULTIMETER
Milton B. Hollander; William E. McKinley, and George R. Rounds, all of Stamford, Conn., assignors to Omega Engineering, Inc., Stamford, Conn.
Filed Oct. 20, 1988, Ser. No. 260,356
Term of patent 14 years
U.S. Cl. D10—78



316,054
SIGNAL MONITOR FOR AN AUTOMOTIVE TURN SIGNAL OPERATION
Leo F. Jammaron, 4915 State Hwy. 82, Glenwood Springs, Colo. 81601
Filed Oct. 31, 1988, Ser. No. 264,502
Term of patent 14 years
U.S. Cl. D10—104

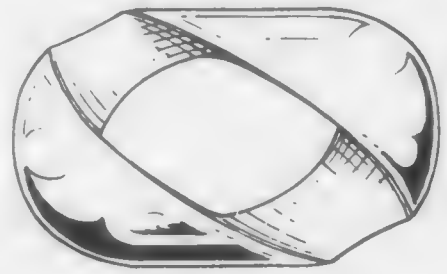


316,055
ELECTRONIC BICYCLE BELL
Edgar Rixen, Solingen, Fed. Rep. of Germany, assignor to Rixen & Karl GmbH, Solingen, Fed. Rep. of Germany
Filed Mar. 20, 1989, Ser. No. 325,478
Term of patent 14 years
U.S. Cl. D10—116

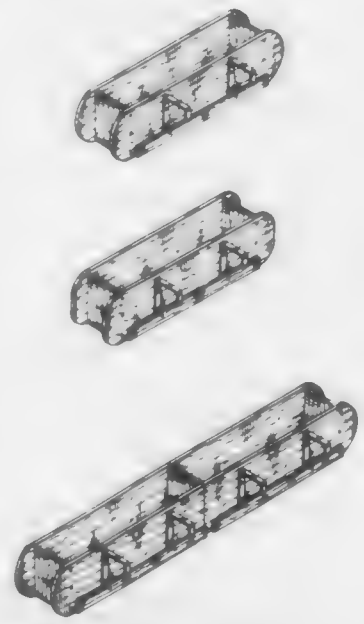
316,056
BRACELET
Daniel Lauper, Giviziez, Switzerland, assignor to Interdica S.A., Villar-sur-Glane, Switzerland
Filed Feb. 4, 1988, Ser. No. 152,053
Claims priority, application France, Aug. 7, 1987, 87 4706
The portion of the term of this patent subsequent to Feb. 19, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—12



316,057
LINK ELEMENT
Paolo Bulgari, Rome, Italy, assignor to Partecipazioni Bulgari S.p.A., Rome, Italy
Division of Ser. No. 132,118, Dec. 14, 1987, Pat. No. Des. 310,978. This application Jun. 1, 1990, Ser. No. 531,534
Claims priority, application Italy, Jun. 22, 1987, 35871/87[U]
Term of patent 14 years
U.S. Cl. D11—93



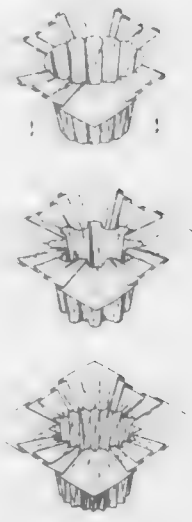
316,058
RAIL-MOUNTABLE PLANTER
Deryl K. Mitchell, and Jeannine C. Mitchell, both of 3857 25th Ave. W., Seattle, Wash. 98199
Filed Dec. 21, 1988, Ser. No. 288,536
Term of patent 14 years
U.S. Cl. D11—156



316,059
LAWN SCULPTURE
Martha L. Wieman, Livingston, Tex., and Mark Wieman, 272 Yaupon Cove, Livingston, Tex. 77351
Filed Jan. 4, 1989, Ser. No. 293,484
Term of patent 14 years
U.S. Cl. D11—158



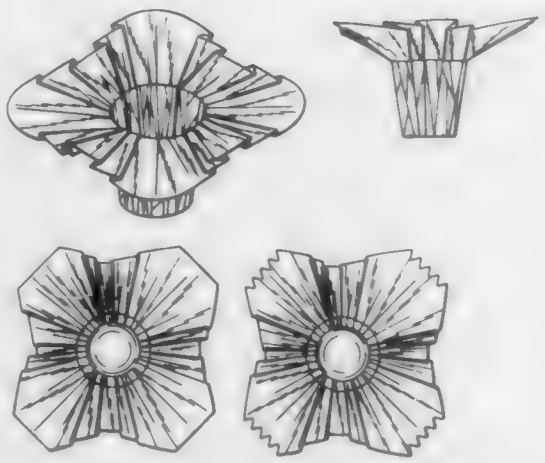
316,060
FLOWER POT COVER
Donald E. Weder; Erwin H. Weder; Wanda M. Weder, all of Highland, Calif.; Franklin J. Craig, Valley Park, Mo.; Wilma M. Donnelly, Highland, Ill.; Phyllis J. Bolk, Highland, Ill.; John W. Bergstrand, Highland, Ill., and Robert C. Abrams, Edwardsville, Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 613,053, May 22, 1984, Pat. No. D. 293,224. This application Oct. 13, 1987, Ser. No. 108,307
Term of patent 14 years
U.S. Cl. D11—164



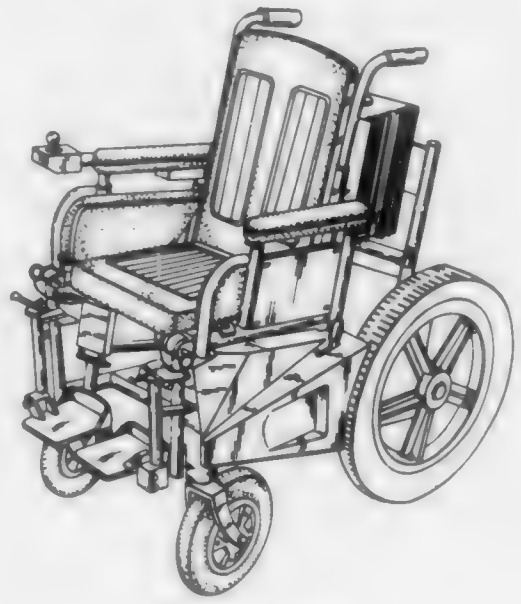
316,061
FLOWER POT COVER
Donald E. Weder, Highland, Ill., assignor to Highland Supply Corporation, Highland, Ill.
Filed Mar. 9, 1989, Ser. No. 321,464
The portion of the term of this patent subsequent to Apr. 2, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—164



316,062
FLOWER POT COVER
Donald E. Weder, Highland, Ill.; Wanda M. Weder, Highland, and Janet M. Weder, Redlands, both of Calif., assignors to Highland Supply Corporation, Highland, Ill.
Filed Jun. 2, 1989, Ser. No. 360,733
The portion of the term of this patent subsequent to Apr. 2, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—164



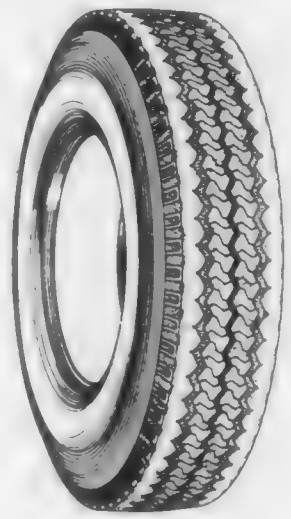
316,063
POWER DRIVE WHEELCHAIR
James J. Michel, Agoura, Calif., assignor to Everest & Jennings, Inc., Camarillo, Calif.
Filed Oct. 7, 1988, Ser. No. 254,796
Term of patent 14 years
U.S. Cl. D12—131



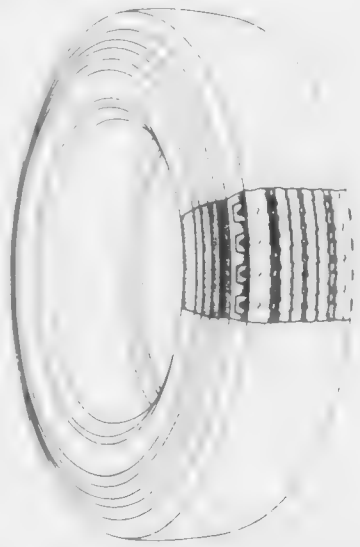
316,064
TIRE TREAD
Georges Adam, Bissen, and Claude Lardo, Luxembourg, both of Luxembourg, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jul. 11, 1988, Ser. No. 217,573
Term of patent 14 years
U.S. Cl. D12—142



316,065
AUTOMOBILE TIRE
Toru Tsuda, Tokyo; Yasutaka Enoki, Saitama, and Tetsuhito Tsukagoshi, Tokyo, all of Japan, assignors to Bridgestone Corp., Tokyo, Japan
Filed Feb. 28, 1989, Ser. No. 317,307
Claims priority, application Japan, Aug. 31, 1988, 63-34114
Term of patent 14 years
U.S. Cl. D12—142



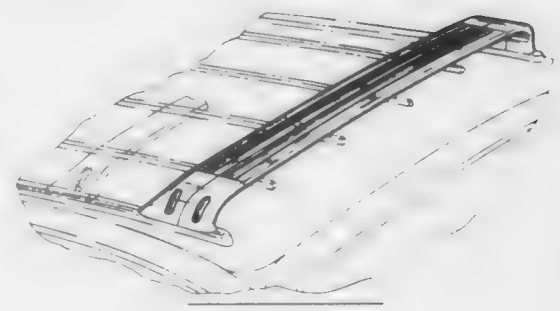
316,066
TIRE
Michael I. Wischhusen, Greenville, S.C., assignor to Michelin Recherche et Technique, Basel, Switzerland
Filed Jan. 12, 1989, Ser. No. 296,795
Term of patent 14 years
U.S. Cl. D12—143



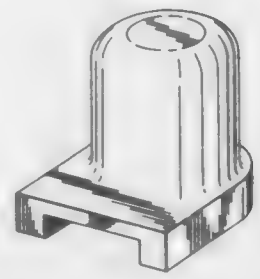
316,067
TIRE
Philip S. Hammond, Uniontown, and Paul B. Maxwell, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jan. 12, 1989, Ser. No. 296,154
Term of patent 14 years
U.S. Cl. D12—146



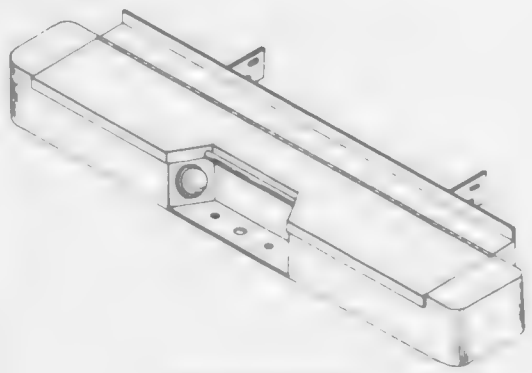
316,068
ADJUSTABLE LUGGAGE CARRIER CROSS RAIL WITH LOCKING LEVER
William A. Rasor, Goodells, and Craig Stapleton, Port Huron, both of Mich., assignors to Huron/St. Clair Incorporated, Port Huron, Mich.
Filed May 3, 1988, Ser. No. 192,403
Term of patent 14 years
U.S. Cl. D12—157



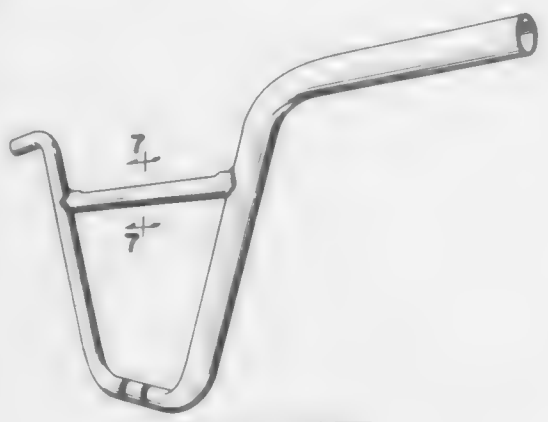
316,069
TRAILER HITCH COVER
Roderick E. Yocum, 11615 Detwiler, Columbiana, Ohio 44408
Filed Sep. 14, 1988, Ser. No. 244,254
Term of patent 14 years
U.S. Cl. D12—162



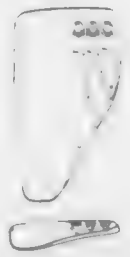
316,070
VEHICLE BUMPER
Andrew A. Riss, c/o Breezewood, Inc., P.O. Box 266, Reynoldsville, Pa. 15851
Filed Feb. 18, 1988, Ser. No. 157,336
Term of patent 14 years
U.S. Cl. D12—169



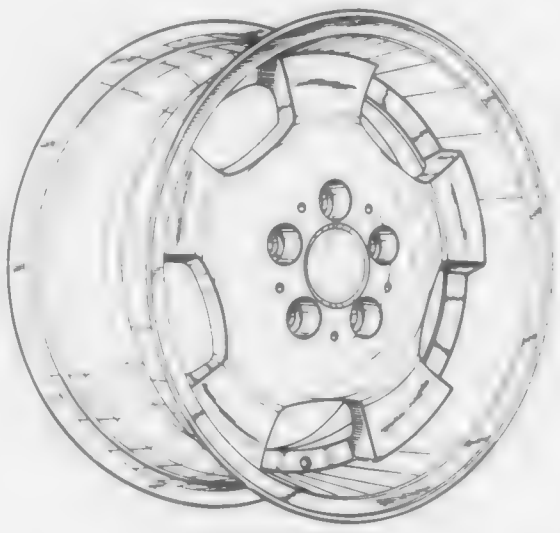
316,071
BICYCLE HANDLEBAR
David K. McMurtrey, Maysville, Ky., assignor to Leggett & Platt, Incorporated, Carthage, Mo.
Filed Jul. 14, 1986, Ser. No. 885,432
Term of patent 14 years
U.S. Cl. D12—178



316,072
AUTOMOTIVE HOOD SCOOP
Mark Wayne, 29436 Briarbank Ct., Southfield, Mich. 48034
Filed Nov. 17, 1989, Ser. No. 437,922
Term of patent 14 years
U.S. Cl. D12—190



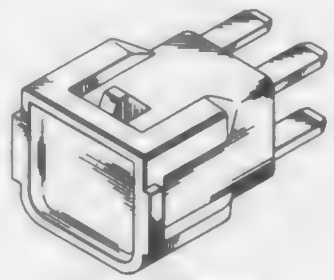
316,073
WHEEL
Adolf Koch, Waiblingen-Neustadt, Fed. Rep. of Germany, assignor to Sport-Service-Lorinser Sportliche Autoausrüstung GmbH, Waiblingen, Fed. Rep. of Germany
Filed Dec. 12, 1985, Ser. No. 808,430
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1985, 1036
Term of patent 14 years
U.S. Cl. D12—211



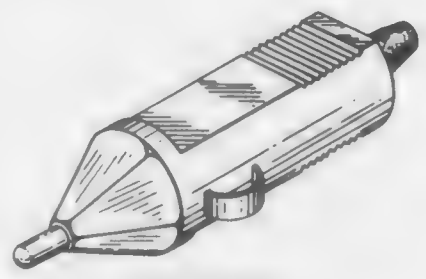
316,074
SAILING CRAFT
Toshiharu Yamada, Cypress, Calif., and Kunihiko Kobayashi, Iwata, Japan, assignors to Yamaha Hatsudoki Kabushika Kaisha, Iwata, Japan
Filed Feb. 24, 1989, Ser. No. 315,691
Term of patent 14 years
U.S. Cl. D12—303



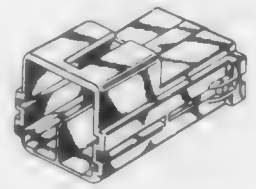
316,075
NOISE ELIMINATOR
Shizuo Tsubokura; Kunio Hoshino, and Itsuo Takayanagi, all of Shizuoka, Japan, assignors to Yazaki Corporation, Japan
Filed Sep. 8, 1988, Ser. No. 242,051
Claims priority, application Japan, Mar. 10, 1988, 63-9524
Term of patent 14 years
U.S. Cl. D13—123



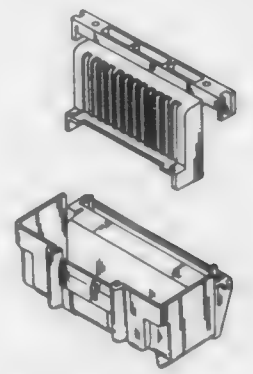
316,076
D.C. POWER CORD PLUG
Carolyn Keating, Weston, Canada, assignor to Brukar Industries Canada Limited, Etobicoke, Canada
Filed Jul. 12, 1988, Ser. No. 218,597
Claims priority, application Canada, Jun. 22, 1988, 22-06-88-20
Term of patent 14 years
U.S. Cl. D13—133



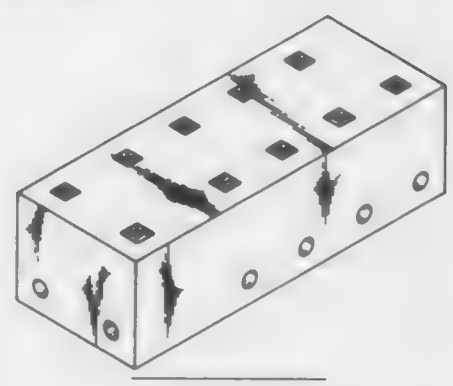
316,077
ELECTRICAL CONNECTOR HOUSING
Kenji Takenouchi; Toshihiko Makita, and Teruhisa Norizuki, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Oct. 26, 1988, Ser. No. 263,125
Claims priority, application Japan, Apr. 28, 1988, 63-17050
Term of patent 14 years
U.S. Cl. D13—133



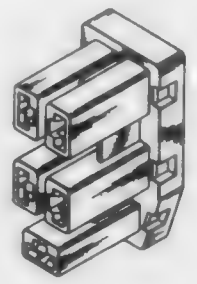
316,078
ELECTRICAL CONNECTOR ASSEMBLY
Yasuharu Moriai, and Osamu Ito, both of Suzuka, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan
Filed Dec. 21, 1988, Ser. No. 288,004
Claims priority, application Japan, Jun. 21, 1988, 63-24590
Term of patent 14 years
U.S. Cl. D13—133



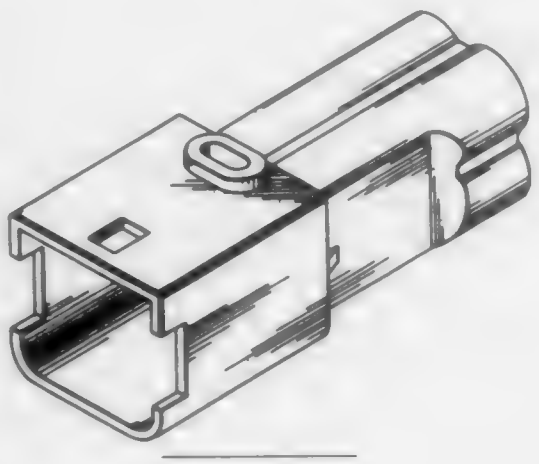
316,079
WIRE CONNECTOR
W. Bohdan Sulikowski, 5807 South 41 St., Greenfield, Wis. 53221
Filed Sep. 9, 1987, Ser. No. 94,525
Term of patent 14 years
U.S. Cl. D13—147



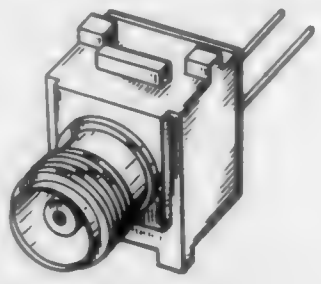
316,080
HOUSING FOR AN ELECTRICAL CONNECTOR
Shigemitsu Inabe, Shizuoka, Japan, assignor to Yazaki Corporation, Japan
Filed Oct. 7, 1988, Ser. No. 255,718
Claims priority, application Japan, Apr. 7, 1988, 63-13735
Term of patent 14 years
U.S. Cl. D13—146



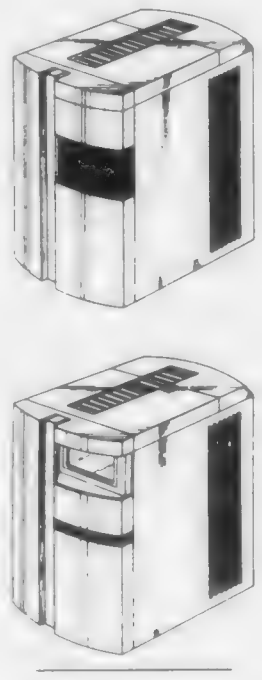
316,081
CONNECTOR HOUSING FOR A NOISE ELIMINATOR
Shizuo Tsubokura; Kunio Hoshino, and Itsuo Takayanagi, all of Shizuoka, Japan, assignors to Yazaki Corporation, Japan
Filed Sep. 8, 1988, Ser. No. 242,053
Claims priority, application Japan, Mar. 10, 1988, 63-9523
Term of patent 14 years
U.S. Cl. D13—147



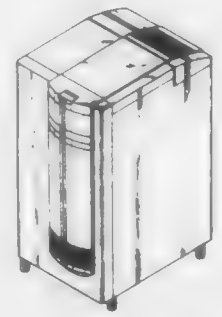
316,082
TELECOMMUNICATIONS CONNECTOR
Jay Gartwhaite, Coupeville, Wash., assignor to Leviton Manufacturing Co., Inc., Little Neck, N.Y.
Filed Dec. 7, 1988, Ser. No. 281,317
Term of patent 14 years
U.S. Cl. D13—151



316,083
ARITHMETIC PROCESSOR FOR USE IN ELECTRONIC COMPUTERS
Tetsuji Abe, Hyogo, and Hunito Mishiro, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan and Solutions Are Everything, Inc., Colo.
Filed Apr. 8, 1988, Ser. No. 179,118
Claims priority, application Japan, Dec. 15, 1987, 62-51130
Term of patent 14 years
U.S. Cl. D14—102



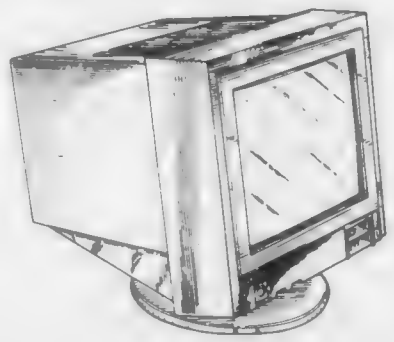
316,084
ARITHMETIC PROCESSOR FOR USE IN ELECTRONIC COMPUTERS
Tetsuya Imamura; Benito Mishiro, both of Osaka, and Yoshihiko Sugiyama, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan and Solutions Are Everything, Inc., Colo.
Filed Apr. 8, 1988, Ser. No. 179,127
Claims priority, application Japan, Dec. 15, 1987, 62-51131
Term of patent 14 years
U.S. Cl. D14—102



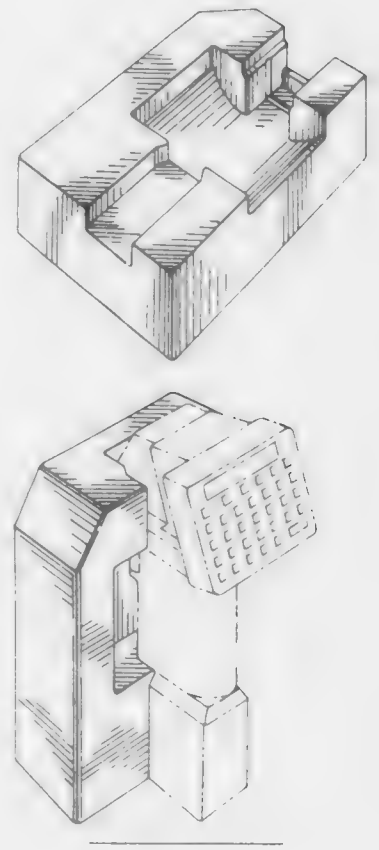
316,085
PORTABLE ELECTRONIC COMPUTER
Iino Masaaki, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Nov. 22, 1988, Ser. No. 274,945
Claims priority, application Japan, May 23, 1988, 63-19969
Term of patent 14 years
U.S. Cl. D14—106



316,086
VIDEO DISPLAY TERMINAL
Stig Gauffin, Stockholm, Sweden, assignor to Facit AB, Sundbyberg, Sweden
Filed Aug. 14, 1987, Ser. No. 85,614
Claims priority, application Sweden, Feb. 25, 1987, 87-0436
Term of patent 14 years
U.S. Cl. D14—113



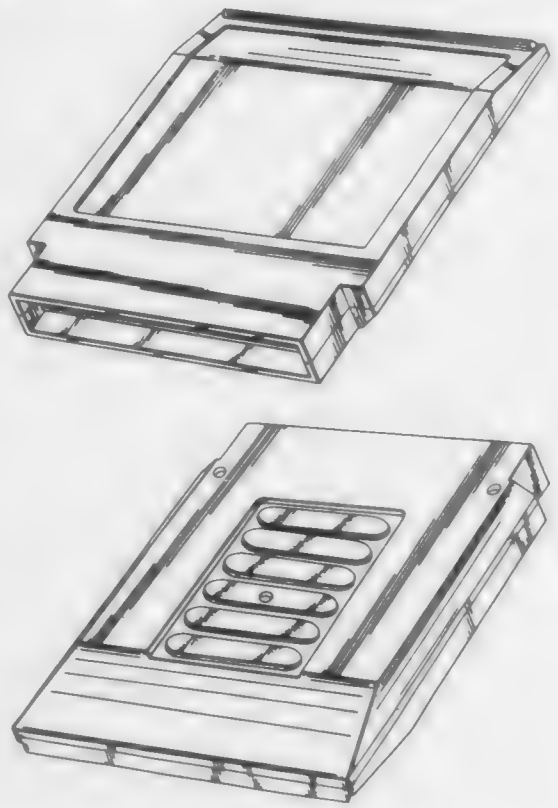
316,087
RECEPTACLE FOR ELECTRONIC BAR CODE READER
James R. Meckstroth; Donna E. Goodner, and Keving J. Ahearn, all of Charlotte, N.C., assignors to Hand Held Products, Inc., Charlotte, N.C.
Filed Sep. 30, 1988, Ser. No. 251,892
Term of patent 14 years
U.S. Cl. D14—114



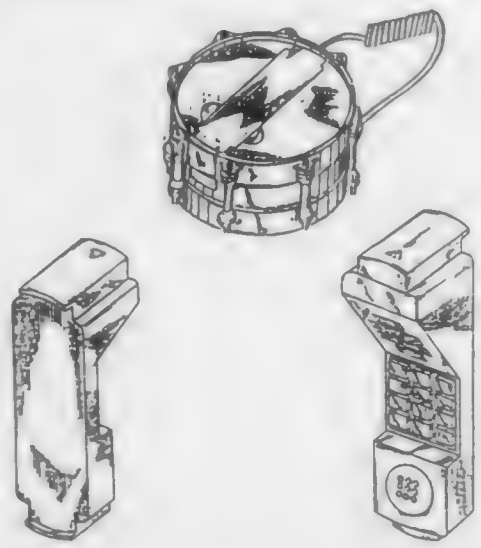
316,088
ADAPTOR FOR AN 8 CM COMPACT DISK
Eiji Yamamori, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed May 17, 1988, Ser. No. 195,012
Claims priority, application Japan, Jan. 11, 1987, 63-640
Term of patent 14 years
U.S. Cl. D14—126



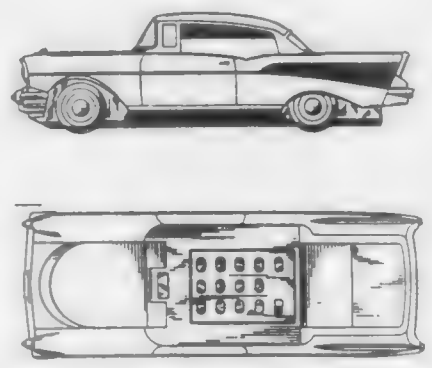
316,089
GAME CARTRIDGE
Yoshiaki Nakauma, Chigasaki, Japan, assignor to Namco Ltd., Japan
Filed Dec. 15, 1988, Ser. No. 284,479
Term of patent 14 years
U.S. Cl. D14—121



316,090
COMBINED TELEPHONE STAND AND INTEGRAL HANDSET TELEPHONE
Gregory C. Holloway, and Lynnette M. Holloway, both of General Delivery, PSC-1 Box 3000, Elmendorf AFB, Ak. 99506, assignors to Gregory Holloway and Lynnette Holloway
Filed Dec. 27, 1988, Ser. No. 290,564
Term of patent 14 years
U.S. Cl. D14—143



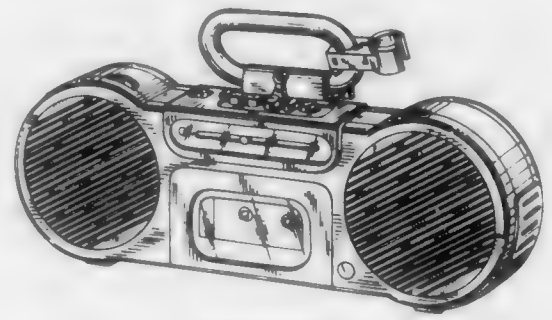
316,091
TELEPHONE SET
Kash Gobindram, Ronkonkoma, N.Y., assignor to [illegible] 'N' Gold, Ltd., Ronkonkoma, N.Y.
Filed Mar. 12, 1990, Ser. No. 493,671
Term of patent 14 years
U.S. Cl. D14—143



316,092
COMBINED AUTOMOBILE TAPE PLAYER AND RADIO RECEIVER
Young H. Ham, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea
Filed Dec. 14, 1988, Ser. No. 284,444
Claims priority, application Rep. of Korea, Jun. 23, 1988, 8605/1988
Term of patent 14 years
U.S. Cl. D14—157

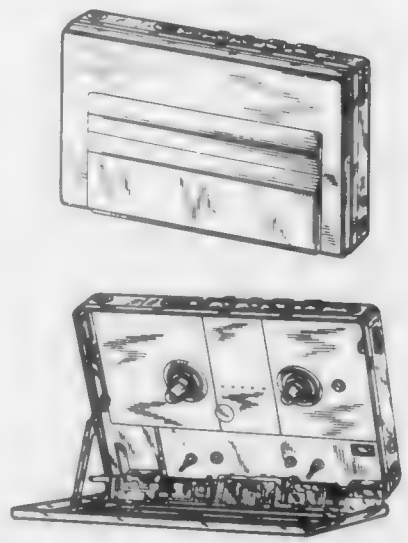


316,093
COMBINED TAPE RECORDER AND RADIO RECEIVER
Akiyoshi Okada, Tokyo, and Ichiro Hino, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Mar. 8, 1989, Ser. No. 320,932
Claims priority, application Japan, Sep. 8, 1988, 63-35573
Term of patent 14 years
U.S. Cl. D14—163

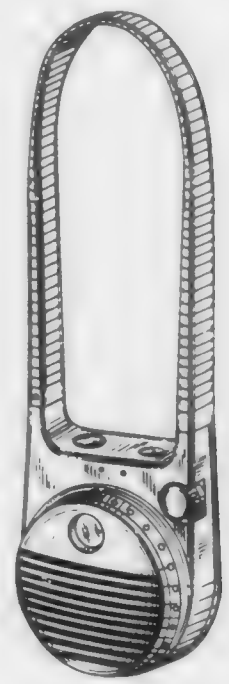


316,094
TAPE PLAYER
Masayoshi Tsuchiya, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 6, 1988, Ser. No. 280,528
Claims priority, application Japan, Jun. 6, 1988, 63-22302
Term of patent 14 years
U.S. Cl. D14—165

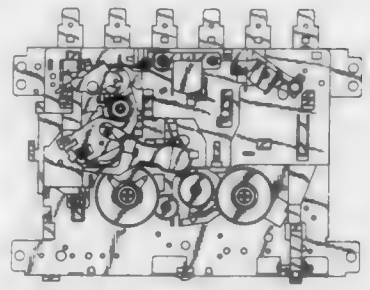
316,095
TAPE PLAYER
Masayoshi Tsuchiya, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 6, 1988, Ser. No. 280,530
Claims priority, application Japan, Jun. 6, 1988, 63-22303
Term of patent 14 years
U.S. Cl. D14—165



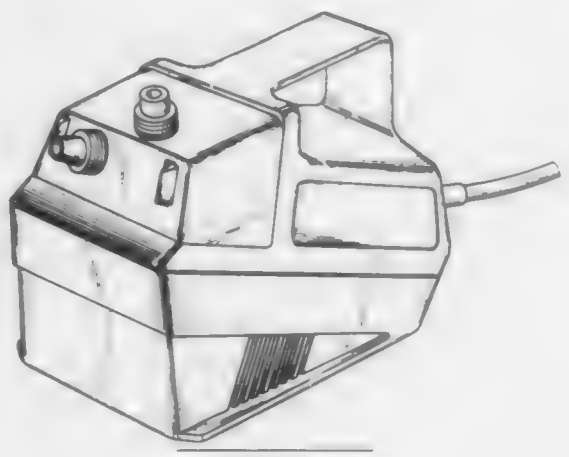
316,096
RADIO RECEIVER OR THE LIKE
Atsuo Nagai; Fumitaka Kikutani, and Takahiko Suzuki, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed May 17, 1988, Ser. No. 195,017
Claims priority, application Japan, Nov. 17, 1987, 62-47047
Term of patent 14 years
U.S. Cl. D14—196



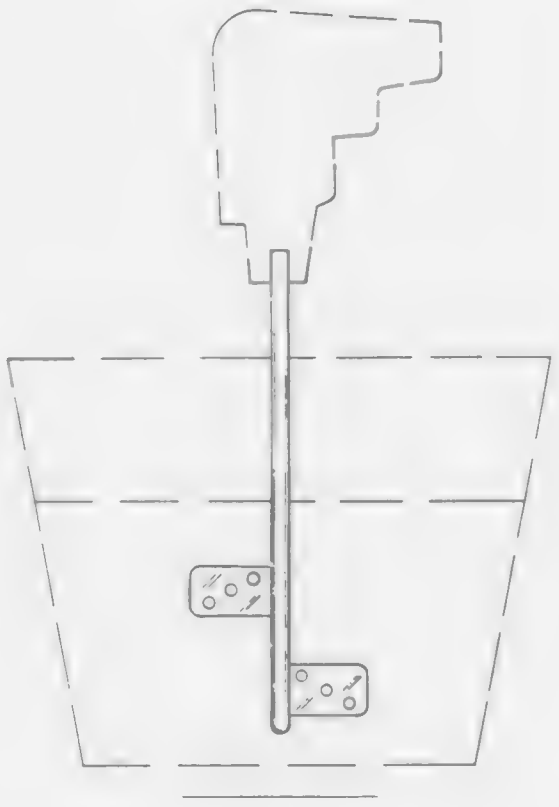
316,097
TAPE DRIVE UNIT FOR A TAPE RECORDER
Shinsaku Tanaka, Tokyo, and Tadao Arata, Inagi, both of Japan, assignors to Tanashin Denki Co., Ltd., Tokyo, Japan
Filed Mar. 18, 1987, Ser. No. 27,510
Term of patent 14 years
U.S. Cl. D14—260



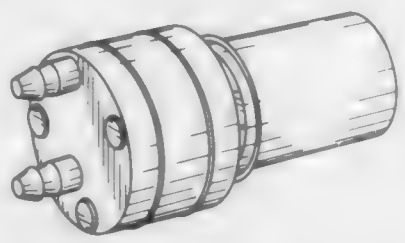
316,098
FEED PUMP FOR A PAINTING APPARATUS
Ewald Kille, Friedrichshafen, Fed. Rep. of Germany, assignor to J. Wagner GmbH, Fed. Rep. of Germany
Filed Apr. 10, 1989, Ser. No. 335,512
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1988, 88024725
Term of patent 14 years
U.S. Cl. D15—7



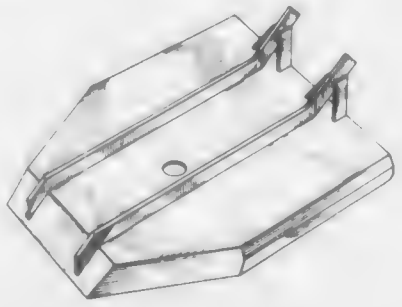
316,100
POWER-DRIVEN STIRRER FOR DRYWALL COMPOUND, PAINT, OR THE LIKE
Francis J. Kief, 1954 Church Rd., Baltimore, Md. 21222
Filed Sep. 2, 1988, Ser. No. 240,228
Term of patent 14 years
U.S. Cl. D15—19



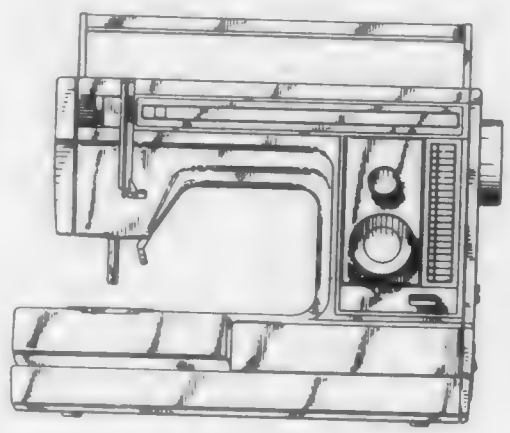
316,099
SUBMERSIBLE PUMP
Niels H. Hartz, Huskvarna, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Jun. 1, 1989, Ser. No. 360,209
Claims priority, application Sweden, Dec. 15, 1988, 88-2900
Term of patent 14 years
U.S. Cl. D15—7



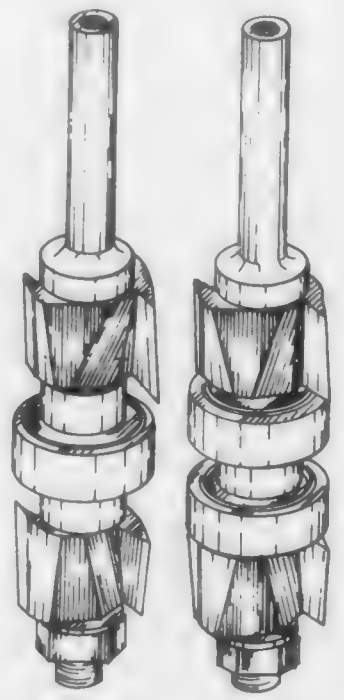
316,101
ROTARY CUTTER HOUSING FOR MOWERS OR THE LIKE
James E. McCanse, Oregon, Ill., and Richard E. TenEyck, Wichita, Kans., assignors to M&W Gear Company, Gibson City, Ill.
Filed Sep. 19, 1988, Ser. No. 246,527
Term of patent 14 years
U.S. Cl. D15—27



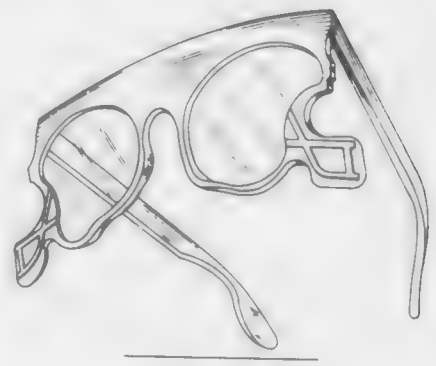
316,102
SEWING MACHINE
Koji Uchida, Hachioji, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan
Filed Sep. 2, 1986, Ser. No. 903,116
Term of patent 14 years
U.S. Cl. D15—70



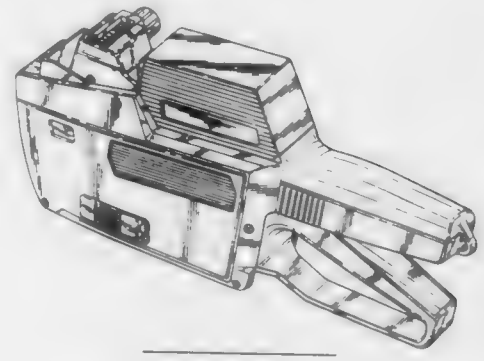
316,103
ROUTER BIT
Will M. Lassiter, 1703 Deep River Rd., High Point, N.C. 27260
Filed Jun. 16, 1989, Ser. No. 367,224
Term of patent 14 years
U.S. Cl. D15—139



316,104
SUNGLASSES
Robby L. Reynolds; Debbie Reynolds, and Justin Reynolds, all of 1417 Raquel La., Modesto, Calif. 95355
Filed May 9, 1988, Ser. No. 192,115
Term of patent 14 years
U.S. Cl. D16—102



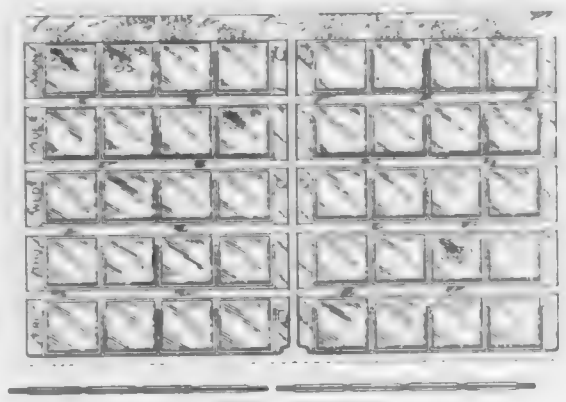
316,105
HAND-HELD LABELLING GUN
Klaus-Dieter Hermann, Ritterweg 17, D-6932 Hirschhorn, Fed. Rep. of Germany
Filed May 12, 1988, Ser. No. 193,490
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1987, 439
Term of patent 14 years
U.S. Cl. D18—19



316,106
HAND HELD COPYING MACHINE
Katsumi Yamatogi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jul. 27, 1988, Ser. No. 224,784
Claims priority, application Japan, Jan. 29, 1988, 63-3335
Term of patent 14 years
U.S. Cl. D18—36



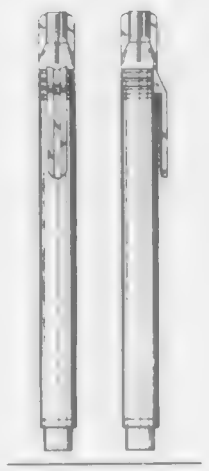
316,107
DATED HOLDER FOR MAINTAINING AND DISPLAYING LESSON PLANNING CARDS
Vivian S. Lockner, Rte. 2, Box 2345, Bluff City, Tenn. 37618
Filed Apr. 17, 1989, Ser. No. 339,584
Term of patent 14 years
U.S. Cl. D19—20



316,108
FILE FOLDER
Jacques Gerriet, Fleury sur Andelle, France, assignor to Arianex Systemes, Bernay, France
Filed Nov. 16, 1987, Ser. No. 121,146
Claims priority, application France, May 14, 1987, 87 2854
Term of patent 14 years
U.S. Cl. D19—26



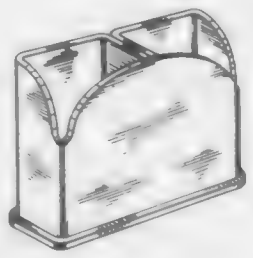
316,109
MARKER PEN
George Pappageorge, Englewood Cliffs, N.J., assignor to Mark-Tex Corporation, Englewood, N.J.
Filed Jan. 11, 1988, Ser. No. 421,401
Term of patent 14 years
U.S. Cl. D19—48



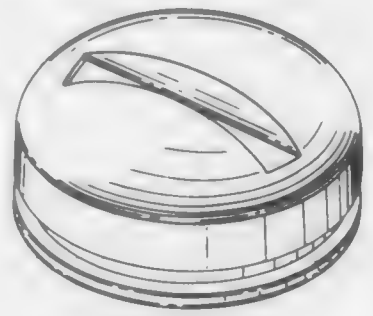
316,110
CLIP
Kurt Lorber, Aichwald, Fed. Rep. of Germany, assignor to Laurel-Plastic Kurt Lorber, Fed. Rep. of Germany
Filed Jul. 21, 1988, Ser. No. 222,574
Claims priority, application World Int. Prop. O., Jun. 20, 1988, DM/011 187
Term of patent 14 years
U.S. Cl. D19—65



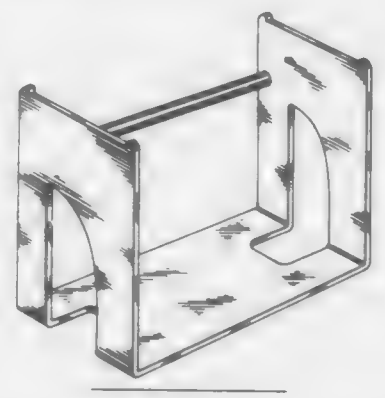
316,111
HOLDER FOR WRITING INSTRUMENTS
Robert E. Hawes, Jr., Huntington Bay, and Eric Aaldenberg, Bayside, both of N.Y., assignors to Esselte Pendaflex Corporation, Garden City, N.Y.
Filed Mar. 22, 1988, Ser. No. 171,533
Term of patent 14 years
U.S. Cl. D19—85



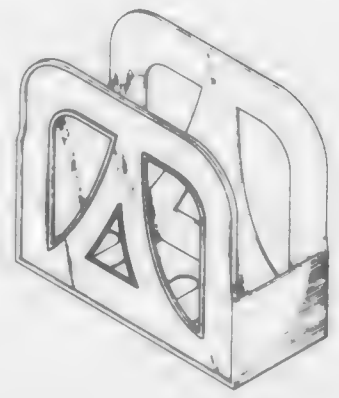
316,112
NOTEPAPER DISPENSER
David C. Windorski, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jan. 8, 1988, Ser. No. 204,218
Term of patent 14 years
U.S. Cl. D19—86



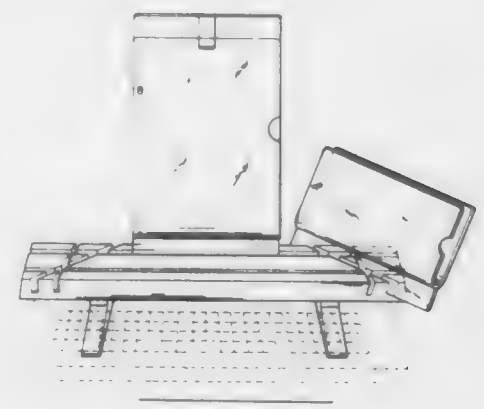
316,113
RACK FOR HANGING FILE FOLDERS
Robert E. Hawes, Jr., Huntington Bay, and Eric Aaldenberg, Bayside, both of N.Y., assignors to Esselte Pendaflex Corporation, Garden City, N.Y.
Filed Mar. 22, 1988, Ser. No. 171,538
Term of patent 14 years
U.S. Cl. D19—90



316,114
VERTICAL FILE RACK
Shih-Ming Hwang, No. 11, Alley 12, Lane 7, Ching-Tyan Street, Taipei, Taiwan
Filed Mar. 28, 1988, Ser. No. 179,894
Term of patent 14 years
U.S. Cl. D19—90

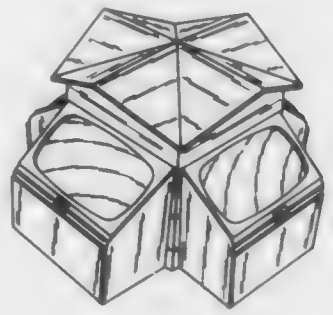


316,115
DOCUMENT HOLDER FOR A COMPUTER TERMINAL
Dale G. Davis, Warren, Mich., and Shane E. Davis, 8228 Paige, Warren, Mich. 48089, assignors to Shane E. Davis, Warren, Mich.
Filed Mar. 18, 1988, Ser. No. 169,774
Term of patent 14 years
U.S. Cl. D19—91

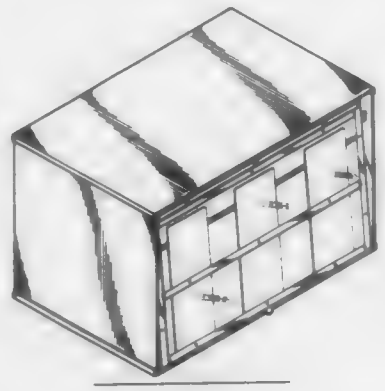


316,116
NOTE TRAY
Robert E. Hawes, Jr., Huntington Bay, and Eric Aaldenberg, Bayside, both of N.Y., assignors to Esselte Pendaflex Corporation, Garden City, N.Y.
Filed Mar. 22, 1988, Ser. No. 171,532
Term of patent 14 years
U.S. Cl. D19—92

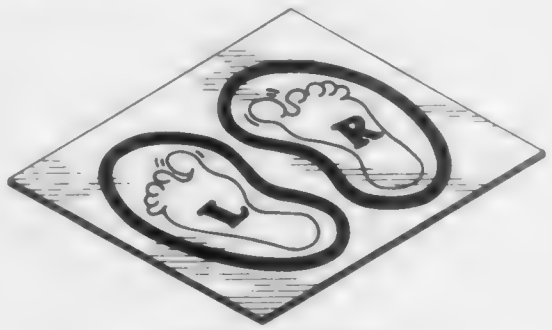
316,117
MULTIPLE UNIT VENDING MACHINE
Eldin H. Irwin, 225 Rue de Paresse, Tavares, Fla. 32778
Filed Feb. 2, 1987, Ser. No. 9,930
The portion of the term of this patent subsequent to Apr. 2, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D20—4



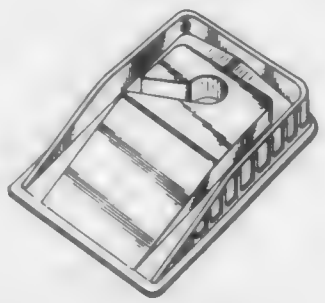
316,118
NEWSPAPER RACK
Lawrence Cole, 400 Valencia St., San Francisco, Calif. 94103
Filed Jan. 16, 1990, Ser. No. 445,349
Term of patent 14 years
U.S. Cl. D20—6



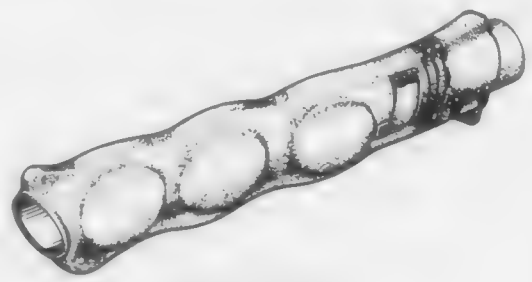
316,119
DECAL SET FOR INSTRUCTING CHILDREN IN THE PROPER USE OF FOOTWEAR
Bruce B. McDermott; Karen A. McDermott, and Christopher B. Ammond, all of Cherry Hill, N.J., assignors to Karbyco International, Cherry Hill, N.J.
Filed Feb. 2, 1988, Ser. No. 152,593
Term of patent 14 years
U.S. Cl. D20—11



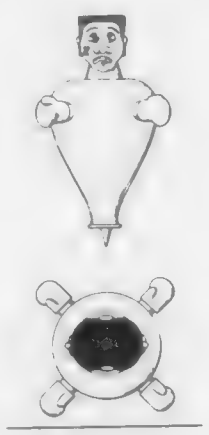
316,120
GOLF PUTTING DEVICE
Saul Morris; David J. Morris, both of Chattanooga, Tenn., and Michael R. Baya, Marietta, Ga., assignors to Habitat International, Inc., Roosville, Ga.
Filed Oct. 7, 1987, Ser. No. 105,321
Term of patent 14 years
U.S. Cl. D21—8



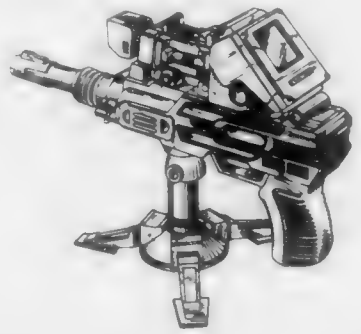
316,121
BLOWING TOY
Jeffrey A. Alward, Chicago, Ill., assignor to Strombecker Corporation, Chicago, Ill.
Filed Sep. 6, 1988, Ser. No. 240,577
Term of patent 14 years
U.S. Cl. D21—48



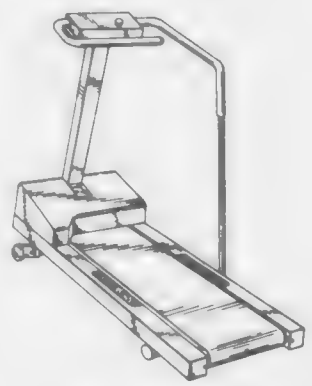
316,122
BOXING TOP
Roger L. Watford, 2126 Wilderness Point, Kingwood, Tex. 77339
Filed Jun. 20, 1988, Ser. No. 209,044
Term of patent 14 years
U.S. Cl. D21—95



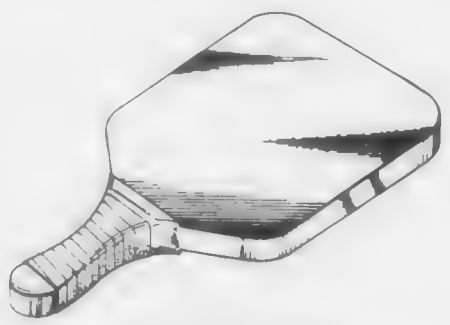
316,123
TOY GUN
Joseph J. C. Shiung-Fei, Kowloon, Hong Kong, assignor to Tiger Electronics, Inc., Vernon Hills, Ill.
Filed Sep. 9, 1988, Ser. No. 243,050
Term of patent 14 years
U.S. Cl. D21—146



316,124
TREADMILL WITH SIDERAIL
William T. Dalebout, and Ty Measom, both of Logan, Utah, assignors to Weslo, Inc., Logan, Utah
Filed Jan. 19, 1989, Ser. No. 299,746
Term of patent 14 years
U.S. Cl. D21—192



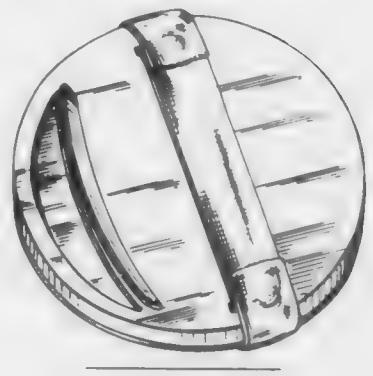
316,125
SPORTS PADDLE
John E. Poulakis, 2180 Tillingham Ct., Dunwoody, Ga. 30338
Filed May 6, 1988, Ser. No. 190,953
The portion of the term of this patent subsequent to Apr. 9, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—213



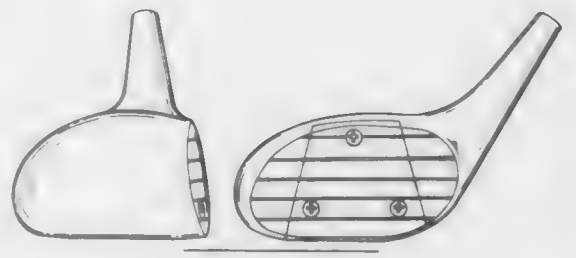
316,126
SPORTS PADDLE
John E. Poulakis, 2180 Tillingham Ct., Dunwoody, Ga. 30338
Filed May 6, 1988, Ser. No. 190,954
The portion of the term of this patent subsequent to Apr. 9, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D21—213



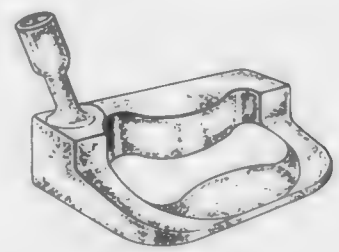
316,127
GAME PADDLE
Wildon Dumaine, 11 Bay 47th St., Brooklyn, N.Y. 11214
Filed Oct. 28, 1988, Ser. No. 264,184
Term of patent 14 years
U.S. Cl. D21—213



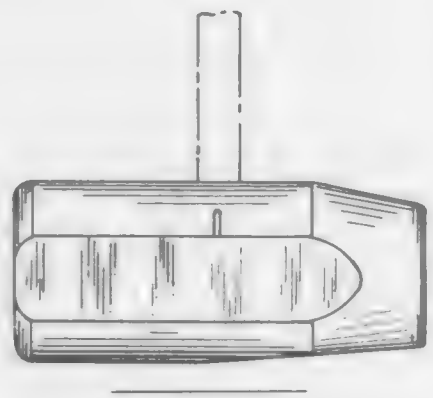
316,128
GOLF CLUB HEAD
Robert D. Kinney, III, 30 Ravensworth, Conroe, Tex. 77302
Filed Jul. 28, 1988, Ser. No. 225,704
Term of patent 14 years
U.S. Cl. D21—214



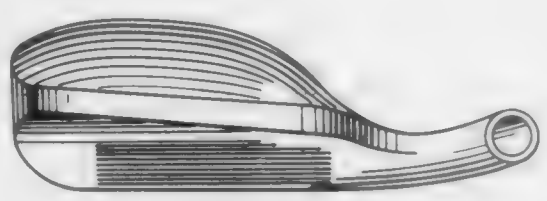
316,129
GOLF PUTTER HEAD
Thomas W. Bryson, P.O. Box 100, Canmore, Alberta, Canada T0L 0M0
Filed Jun. 22, 1988, Ser. No. 211,299
Claims priority, application Canada, Dec. 23, 1987, 22-12-87-3
Term of patent 14 years
U.S. Cl. D21—217



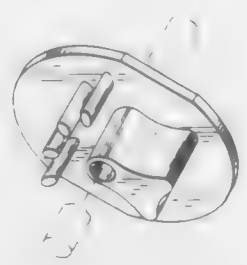
316,130
PUTTER HEAD
Leonard Urban, 39 Birch Dr., Swoyersville, Pa. 18704
Filed Aug. 15, 1988, Ser. No. 233,112
Term of patent 14 years
U.S. Cl. D21—218



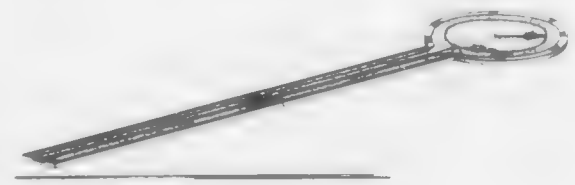
316,131
IRON GOLF CLUB HEAD
Anthony J. Antonious, 205 E. Joppa Rd., Towson, Md. 21204
Filed Jun. 16, 1988, Ser. No. 207,451
Term of patent 14 years
U.S. Cl. D21—220



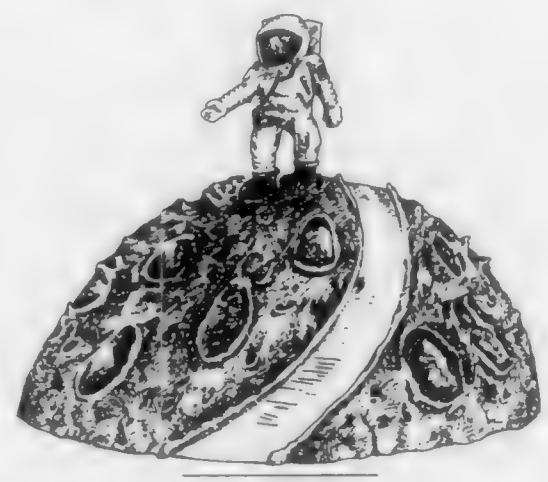
316,132
SKI POLE BASKET
John H. Ehlert, 6606 Rock Ledge Dr., Brecksville, Ohio 44141
Filed Jun. 27, 1988, Ser. No. 211,849
Term of patent 14 years
U.S. Cl. D21—230



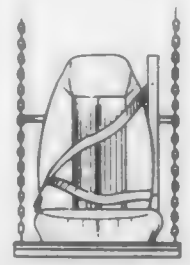
316,133
BILLIARD TRAINING AID
William F. Weiss, Jr., P.O. Box 5512, Auburn, Calif. 95604
Filed Jun. 24, 1988, Ser. No. 211,323
Term of patent 14 years
U.S. Cl. D21—232



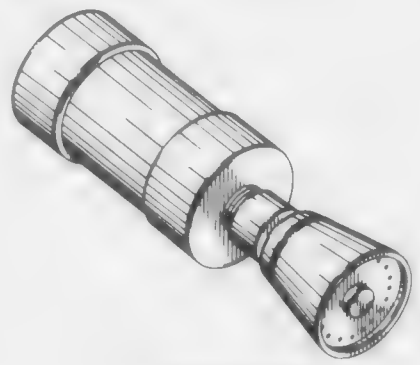
316,134
PLAYGROUND SLIDE
Constantine P. Gianacakos, 17652 Robbins Rd., Grand Haven, Mich. 49417
Filed Apr. 10, 1989, Ser. No. 335,5[illegible]
Term of patent 14 years
U.S. Cl. D21—244



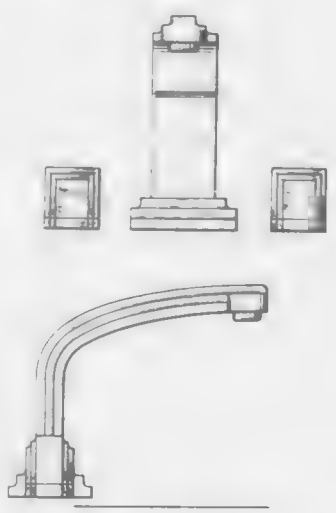
316,135
RESTRAINING SAFETY SWING SEAT
John A. Barber, Jr., 39 Pitken St., Burlington, Vt. 05401
Filed Apr. 22, 1988, Ser. No. 184,713
Term of patent 14 years
U.S. Cl. D21—246



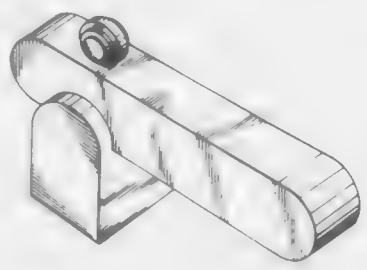
316,136
COMBINED SHOWER HEAD AND FILTER
David Underwood, 7713 Sagebrush Ct. South, N. Richland Hills, Tex. 76180
Filed Sep. 5, 1989, Ser. No. 402,247
Term of patent 14 years
U.S. Cl. D23—228



316,137
FAUCET SET
Regina Razumov, San Diego, Calif., assignor to Harden Industries, Inc., Los Angeles, Calif.
Filed Jan. 22, 1988, Ser. No. 146,821
Term of patent 14 years
U.S. Cl. D23—242



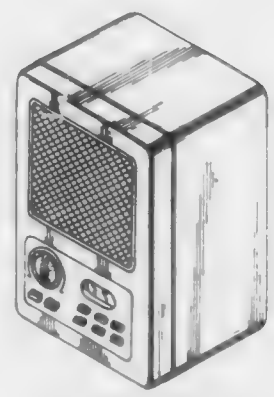
316,138
LAVATORY SPOUT
Stanley M. Paul, Rye, N.Y., assignor to Paul Associates, Inc., Long Island City, N.Y.
Filed May 6, 1988, Ser. No. 1[illegible],937
Term of patent 14 years
U.S. Cl. D23—257



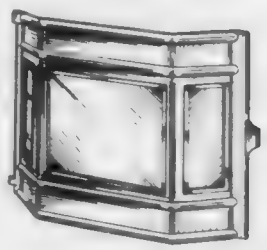
316,139
BATHTUB HAND RAIL
Fred DiVito, Asharoken; Christopher Beal, Lindenhurst, and Joseph Zanetti, East Islip, all of N.Y., assignors to Lumex, Inc., Bay Shore, N.Y.
Filed Nov. 19, 1987, Ser. No. 122,419
Term of patent 14 years
U.S. Cl. D23—303



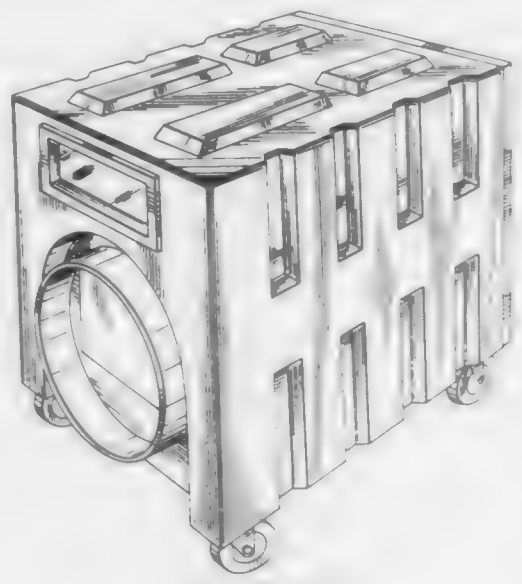
316,140
ELECTRIC HEATER
Wen T. Lee, Tainan, Taiwan, assignor to Chao-Yang Electric Mfg., Co., Ltd., Tainan, Taiwan
Filed Apr. 14, 1989, Ser. No. 338,130
Term of patent 14 years
U.S. Cl. D23—335



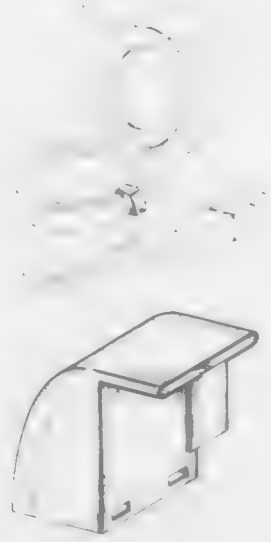
316,141
WOOD STOVE DOOR
Oliver J. Whitfield, 4208 242nd St. SW., Mountlake Ter., Wash. 98043
Filed Mar. 8, 1989, Ser. No. 321,[illegible]
Term of patent 14 years
U.S. Cl. D23—347



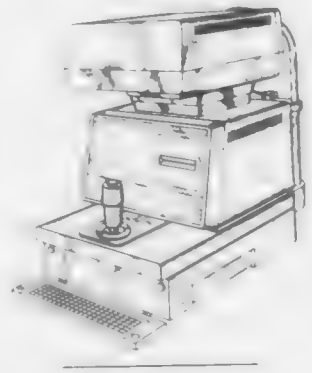
316,142
AIR PURIFICATION UNIT
Rickey S. Lutterbach, and Jeffrey A. Granacki, both of Michigan City, Ind., assignors to Control Resource Systems, Inc., Michigan City, Ind.
Filed Feb. 15, 1989, Ser. No. 310,712
Term of patent 14 years
U.S. Cl. D23—364



316,143
NOZZLE FOR COMMODE DEODERIZER
Jan D. Lipps, P.O. Box 94, Stinnett, Tex. 79083
Filed Apr. 26, 1988, Ser. No. 186,221
Term of patent 14 years
U.S. Cl. D23—371

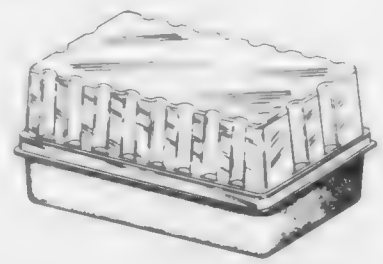


316,144
REFRACTOMETER
Hiroshi Nishimura, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 9, 1988, Ser. No. 230,114
Claims priority, application Japan, Feb. 12, 1988, 63-5419
Term of patent 14 years
U.S. Cl. D24—17



316,145
COMBINED AUTOMATIC IMPLANTABLE CARDIOVERTER AND DEFIBRILLATOR
Lyle A. Ware, Bloomington, Minn., assignor to Mieczyslaw Mirowski, Owings Mills, Md.
Filed Jun. 23, 1987, Ser. No. 65,498
Term of patent 14 years
U.S. Cl. D24—17

316,146
COMBINED SHIPPING AND STORAGE CONTAINER FOR SYRINGES
John B. Payne, West Des Moines, Iowa, and David R. Jones, West Palm Beach, Fla., assignors to Diamond Scientific Company, Des Moines, Iowa
Filed May 12, 1988, Ser. No. 193,491
Term of patent 14 years
U.S. Cl. D24—31



316,147
SANITARY NAPKIN
Serge Cadieux, Pierrefonds, Canada, assignor to Johnson & Johnson Inc., Montreal, Canada
Continuation of Ser. No. 242,267, Sep. 12, 1988, abandoned. This application Jul. 25, 1990, Ser. No. 560,459
Term of patent 14 years
U.S. Cl. D24—51

316,148
SANITARY NAPKIN
Serge Cadieux, Pierrefonds, Canada, assignor to Johnson & Johnson Inc., Montreal, Canada
Continuation of Ser. No. 242,268, Sep. 12, 1988, abandoned. This application Jul. 25, 1990, Ser. No. 560,457
Term of patent 14 years
U.S. Cl. D24—51

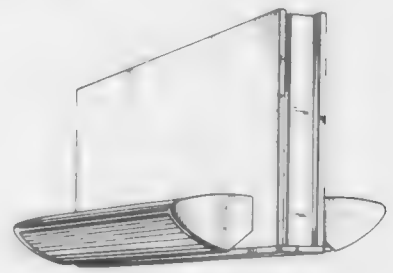
316,149
MALE GARMENT FOR ATTACHING A DISPOSABLE URINE COLLECTING RECEPTACLE
Anna M. Johnson, 37331 Park Ave., Willoughby, Ohio 44094
Filed Mar. 2, 1988, Ser. No. 162,862
Term of patent 14 years
U.S. Cl. D24—54



316,150
ORTHOTIC ANKLE FLEXURE
Bruce M. Day, Scandia, and Gene R. Berglund, Mahtomedi, both of Minn., assignors to Gillette Children's Hospital Association, St. Paul, Minn.
Filed Jan. 22, 1988, Ser. No. 147,154
Term of patent 14 years
U.S. Cl. D24—64



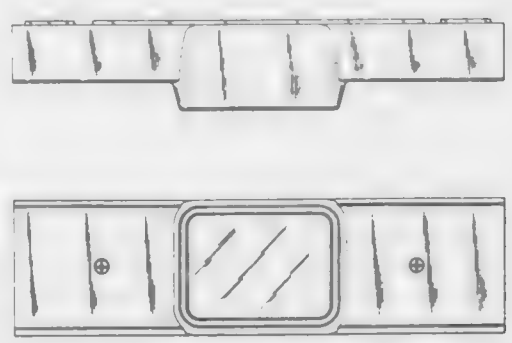
316,151
EXTENSION PANEL
Charles Heidmann, Strasbourg, France, assignor to Steelcase Strafor, Strasbourg, France
Filed Feb. 22, 1989, Ser. No. 314,421
Claims priority, application France, Aug. 30, 1988, 885 495
Term of patent 14 years
U.S. Cl. D25—138



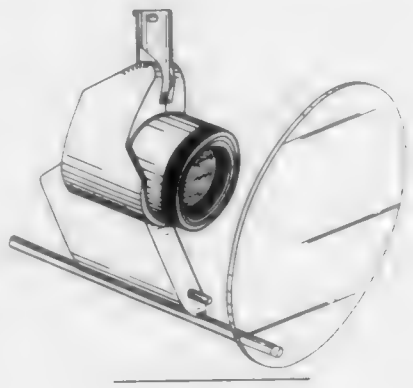
316,152
OIL LAMP
David Barbuto, Rte. 3, P.O. Box 1143, Tilton, N.H. 03726
Filed Nov. 17, 1986, Ser. No. 931,420
Term of patent 14 years
U.S. Cl. D26—11



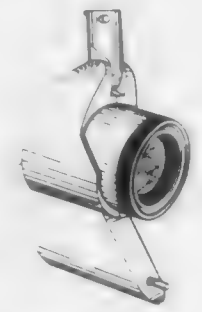
316,153
VEHICLE MOUNTED STROBE LIGHT FOR EMITTING LIGHT SIGNALS FOR THE CONTROL OF TRAFFIC LIGHTS
Harold W. Lyons, Killingworth, Conn., assignor to Minnesota Mining & Manufacturing Co., St. Paul, Minn.
Filed Oct. 13, 1988, Ser. No. 257,294
Term of patent 14 years
U.S. Cl. D26—28



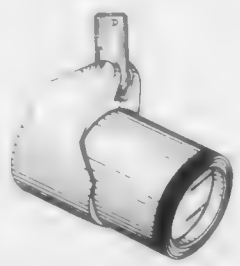
316,154
SPOTLIGHT
Bruno Gecchelin, Milan, Italy, assignor to Iguzzini Illuminazione S.p.A., Recanati, Italy
Filed Mar. 7, 1988, Ser. No. 164,628
Claims priority, application Italy, Sep. 15, 1987, 22337/87[U]
Term of patent 14 years
U.S. Cl. D26—63



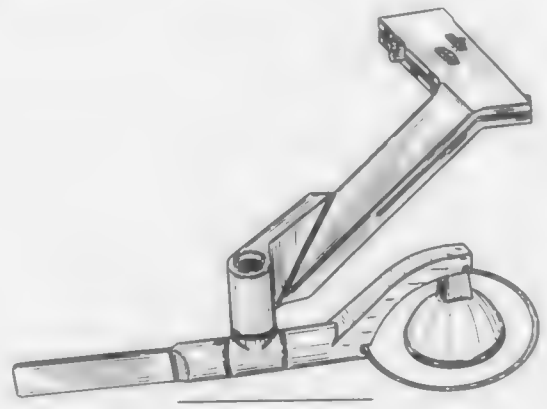
316,155
SPOTLIGHT
Bruno Gecchelin, Milan, Italy, assignor to Iguzzini Illuminazione S.p.A., Recanati, Italy
Filed Mar. 7, 1988, Ser. No. 164,632
Claims priority, application Italy, Sep. 15, 1987, 22337/87[U]
Term of patent 14 years
U.S. Cl. D26—63



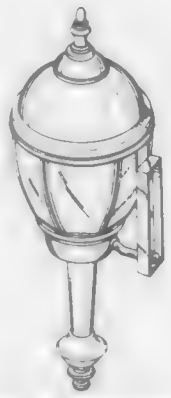
316,156
SPOTLIGHT
Bruno Gecchelin, Milan, Italy, assignor to Iguzzini Illuminazione S.p.A., Recanati, Italy
Filed Mar. 7, 1988, Ser. No. 164,981
Claims priority, application Italy, Sep. 15, 1987, 22337/87[U]
Term of patent 14 years
U.S. Cl. D26—63



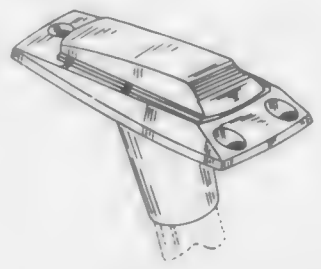
316,157
ADJUSTABLE INTERIOR LIGHTING FIXTURE
Richard Sapper, Montagnola, Switzerland, assignor to Artemide Litech S.p.A., Pregnana Milanese, Italy
Filed Apr. 29, 1988, Ser. No. 188,511
Claims priority, application Italy, Oct. 30, 1987, 53779/87[U]
Term of patent 14 years
U.S. Cl. D26—63



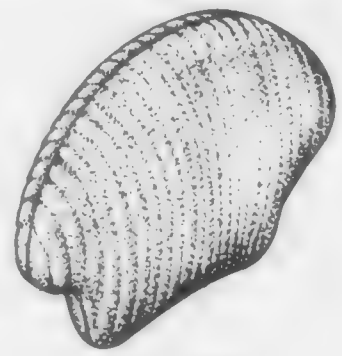
316,158
WALL MOUNTABLE LANTERN
Young J. Choi, Jugong Apt. 403-701, Dunchon-dong, Kangdong-ku, Seoul, Rep. of Korea
Filed Dec. 14, 1988, Ser. No. 284,112
Claims priority, application Rep. of Korea, Nov. 17, 1988, 15452
Term of patent 14 years
U.S. Cl. D26—87



316,159
SUPPORT BASE FOR BOAT LIGHT POLE
Warwick M. Whitley, II, Panama City, Fla., assignor to Attwood Corporation, Lowell, Mich.
Filed Nov. 23, 1988, Ser. No. 275,542
Term of patent 14 years
U.S. Cl. D26—142

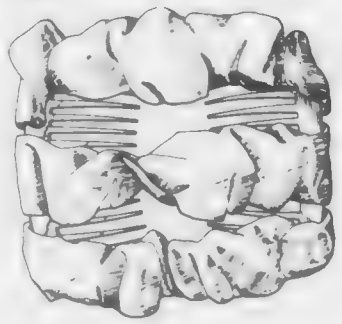


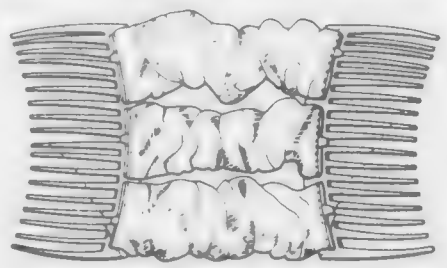
316,160
GELATIN CAPSULE
Gregory A. Schurig, Clearwater, Fla., and Joseph M. Bortolotti, Windsor, Canada, assignors to R. P. Scherer Corporation, Clearwater, Fla.
Filed Sep. 22, 1989, Ser. No. 410,968
Term of patent 14 years
U.S. Cl. D28—1



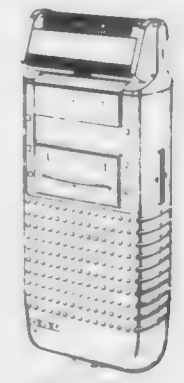
316,161
COMBINATION HAIR ORNAMENT AND RETAINING COMBS
Francesca B. Kuglen, 3744-14th Ave., Oakland, Calif. 94602
Filed Jul. 28, 1988, Ser. No. 225,727
Term of patent 14 years
U.S. Cl. D28—41







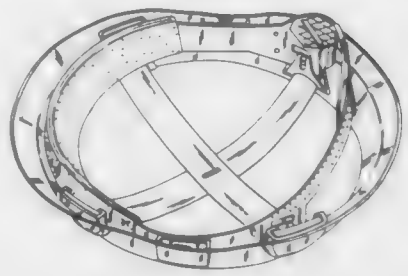
316,162
ELECTRIC DRY SHAVER
Roland Ullmann, Offenbach-Rumpenheim, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany
Filed Nov. 16, 1987, Ser. No. 121,773
Claims priority, application Fed. Rep. of Germany, May 27, 1987, 73 MR 9586
The portion of the term of this patent subsequent to Dec. 18, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D28—49



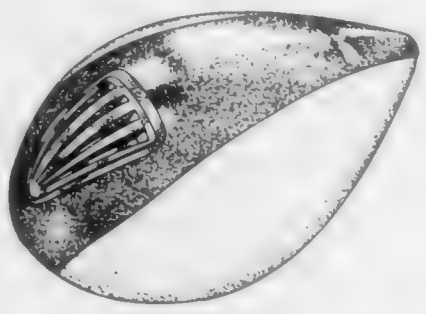
316,163
DENTAL FLOSSER
Charles A. Brewer, 105 Via Waznier, Newport Beach, Calif. 92660
Filed Aug. 24, 1988, Ser. No. 236,045
Term of patent 14 years
U.S. Cl. D28—64



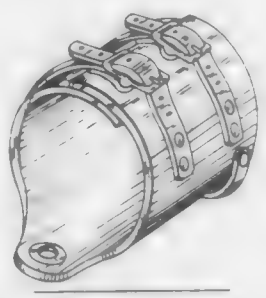
316,164
HOLDER FOR FACE VISOR, HEARING PROTECTOR AND SIMILAR EQUIPMENT
Rupert Fürthbauer, Lichtensteig, Switzerland, and Leif Palmaer, Kristinagatan 14, S-331 00 Värnamo, Sweden, assignors to Optrel AG, Switzerland and Leif Palmaer, Sweden
Filed Apr. 14, 1988, Ser. No. 182,074
Claims priority, application Sweden, Oct. 14, 1987, 872287
Term of patent 14 years
U.S. Cl. D29—12



316,165
BICYCLE RACING HELMET
James J. Gentes, Soquel, and Steven K. Sasaki, Santa Cruz, both of Calif., assignors to Giro Sport Design, Inc., Soquel, Calif.
Filed Jun. 28, 1988, Ser. No. 212,857
Term of patent 14 years
U.S. Cl. D29—12



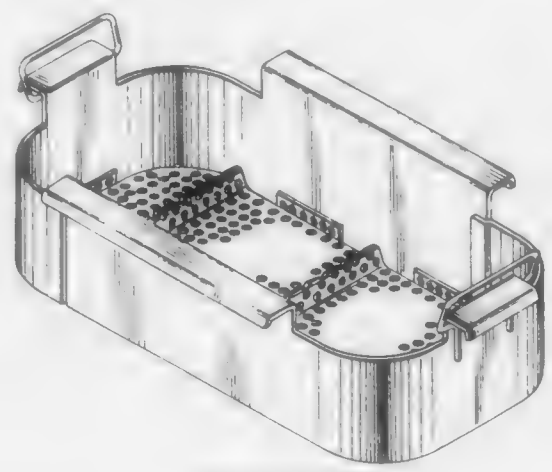
316,166
WRIST STRAP FOR ARROW RELEASE
Steven W. Fullmer, 502 Wagner Creek Rd., Talent, Oreg. 97540
Filed Mar. 2, 1987, Ser. No. 20,654
Term of patent 14 years
U.S. Cl. D29—20



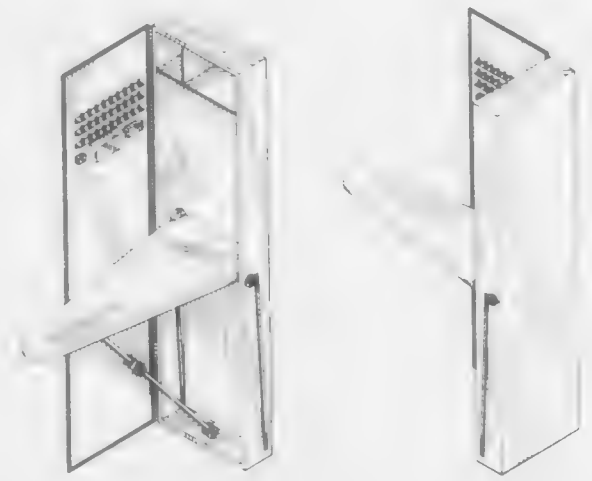
316,167
VACUUM CLEANER
Salvatore Petralia, Sayreville, and H. Gerald Young, South Plainfield, both of N.J., assignors to TRC Acquisition Corporation, Atlanta, Ga.
Continuation-in-part of Ser. No. 836,468, Feb. 19, 1986, Pat. No. D 301,784. This application Oct. 31, 1988, Ser. No. 265,429
Term of patent 14 years
U.S. Cl. D32—22



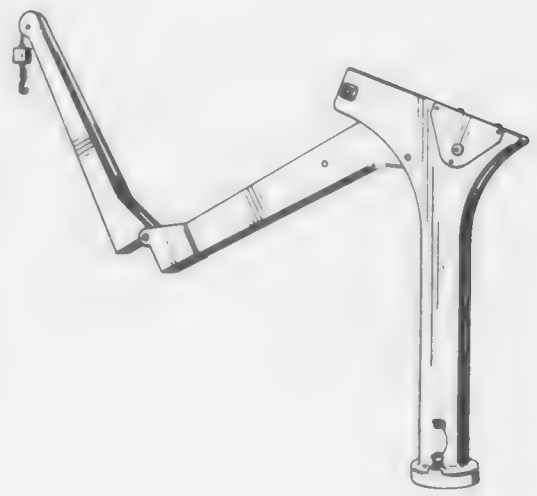
316,168
TRAY UNIT FOR AN ULTRASONIC CLEANING MACHINE
Alan Miller, New York, N.Y., assignor to Ipco Corp., White Plains, N.Y.
Filed Dec. 20, 1988, Ser. No. 287,993
Term of patent 14 years
U.S. Cl. D32—25



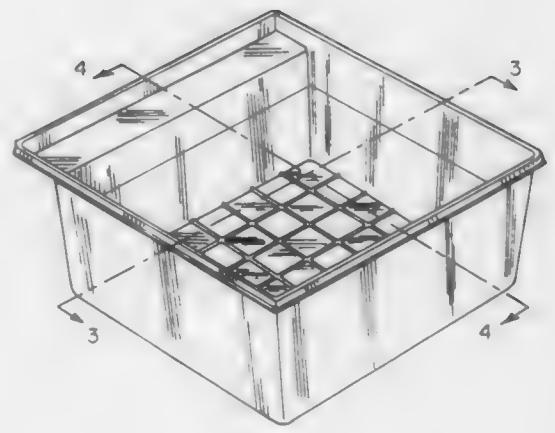
316,169
COMBINED IRONING BOARD AND CABINET THEREFOR
Glen Bryan, and Elenora Bryan, both of 4603 W. Main St., Rapid City, S. Dak. 57702
Filed Feb. 25, 1988, Ser. No. 160,108
Term of patent 14 years
U.S. Cl. D32—66



316,170
FOLDING DAVIT
James G. Lomax, P.O. Box 317 Waters Runaway Bay, Queensland, Australia 4216
Filed Jan. 24, 1989, Ser. No. 301,259
Term of patent 14 years
U.S. Cl. D34—33



316,171
PAINT RECEPTACLE
Richard W. Chatham, Greensboro, and Charles W. Walker, Stoneville, both of N.C., assignors to Tru-Blu Products, Greensboro, N.C.
Filed Feb. 15, 1989, Ser. No. 311,578
Term of patent 14 years
U.S. Cl. D34—40



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF APRIL, 1991

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

See—
Rippingale, John B., Upton, Charles R.; Schonstedt, Erick O.; Osman, Bradley L. and . 5,006,806, Cl. 324-326.000.
Shaw, Ronald D.; Shaw, Leory E., Shaw, Lee A.; and . 5,005,331, Cl. 52-396.000.
Tucek, Miroslav; and . 5,005,377, Cl. 62-374.000.

A. O. Smith Corporation. *See*—
King, James L., and Lykes, Robert E., 5,006,743, Cl. 310-89.000.

A/S Niro Atomizer. *See*—
Jensen, Jens P., 5,006,204, Cl. 159-3.000.

AB Asea-Atom. *See*—
Jonsson, Erik, and Tornblom, Lars, 5,006,300, Cl. 376-203.000.

Abandaco, Inc.. *See*—
Blackburn, William A.; and Sosnowich, Michael P., 5,005,216, Cl. 2-79.000.

Abbott Laboratories. *See*—
Bouma, Stanley R., Blecka, Lawrence J., and Miller, Philip, 5,006,473, Cl. 436-516.000.
Gattaz, Wagner F., 5,006,462, Cl. 435-7.400.
Jordan, Willie W., 5,005,721, Cl. 220-23.400.
Khalil, Omar S., Hanna, Charles F., Zurek, Thomas F.; and Grigalauski, Denise A., 5,006,309, Cl. 422-56.000.

Abe, Mitsutaka. *See*—
Nishizawa, Kazunori, Abe, Mitsutaka; Matsumoto, Hiroshi; and Imamura, Shinji, 5,005,249, Cl. 15-250.270.

Abe, Takao. *See*—
Nakano, Masami, and Abe, Takao, 5,007,071, Cl. 378-74.000.

Ace Company, Inc. *See*—
Jensen, Raliegh J., 5,005,619, Cl. 144-230.000.

Achille, Felix, Stevens, Brad, and Clingerman, George, to Dow Chemical Company, The. Polymeric blend and laminated structures prepared therefrom. 5,006,383, Cl. 428-35.900.

Acker, Loren C.; and Harmony, Daniel C., to Engineering & Research Associates, Inc. Hollow core coaxial catheter. 5,006,119, Cl. 606-27.000.

Ackeret, Walter, to Rieter Machine Works, Ltd. Comber with electric motor driven intermittent feed roller. 5,005,262, Cl. 19-234.000.

Ackerman, Michael. *See*—
Ryan, Kyle A., Ackerman, Michael; Hale, Bruce; and Payne, Ward, 5,005,839, Cl. 273-240.000.

A'Costa, Anthony. Flash suppressor for firearms. 5,005,463, Cl. 89-14.200.

Acton, Elizabeth; Cargill, Alexander M., Ross, Colin F., and Eatwell, Graham P., to Rolls-Royce plc. Active control of unsteady motion phenomena in turbomachinery. 5,005,353, Cl. 60-39.281.

Acuna, Eduardo M. Apparatuses and methods for liquid-undissolved-solids separation. 5,006,264, Cl. 210-741.000.

Acushnet Company. *See*—
Brown, Robert A., and Wu, Shenshen, 5,006,297, Cl. 264-234.000.

Adachi, Takeshi; Mizuno, Kotaro; Yamada, Shigeru; Suzuki, Hideo; and Kimpara, Mamoru, to Yamaha Corporation. Musical tone visualizing apparatus which displays an image of an animated object in accordance with a musical performance. 5,005,459, Cl. 84-453.000.

Adamic, Raymond J., to Hewlett-Packard Company. Fixation of reactive dyes to paper by ink-jet printing. 5,006,862, Cl. 346-1.100.

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Adamski, Joseph R.. *See*—
Clawson, Lawrence G., and Adamski, Joseph R., 5,005,383, Cl. 68-133.000.

Adapt Engineering Pty. Limited. *See*—
Gerardis, Patrick, and Tester, John, 5,005,502, Cl. 112-141.000.

Addax, Inc. *See*—
Wayne, Kenneth P.; and Werb, Jay P., 5,006,983, Cl. 364-401.000.

Adelman, John P., Bond, Chris T., Nilaver, Gajanan, and Zimmerman, Earl A., to Oregon Health Sciences University. Vectors and host cells expressing prepromotilin and motilin-associated peptide (MAP). 5,006,469, Cl. 435-240.100.

Adelson, Alexander, to Intec Corp. Flaw annunciator with a controllable display means for an automatic inspection system. 5,006,722, Cl. 250-563.000.

ADEV Gesellschaft fur Entwicklung und Vertrieb von medizintechnishen Artikeln mbH. *See*—
Grundei, Jaana, and Timmermann, Andreas, 5,005,564, Cl. 128-75.000.

Adolfsen, Pekka. *See*—
Alasaarela, Esko, Adolfsen, Pekka, and Rahkonen, Timo, 5,007,091, Cl. 381-26.000.

Adria Limited. *See*—
Moss, Stanley H., 5,005,381, Cl. 66-149.00S.

Advanced Composite Materials Corporation. *See*—
Jackson, Michael B.; and Roth, Peter A., 5,006,417, Cl. 428-614.000.

Advanced Micro Devices, Inc.. *See*—
Disko, David, 5,006,919, Cl. 357-72.000.
Dujari, Vineet, 5,007,012, Cl. 364-900.000.

Advanced Sleep Products. *See*—
Luchonok, Jeffrey J., 5,005,237, Cl. 5-451.000.

Advanced Technology Materials, Inc.. *See*—
Beetz, Charles P., Jr., 5,006,914, Cl. 357-61.000.

AEC, Inc.. *See*—
Dziedzic, Joseph H., Jr.; Rubino, Daniel A.; and Schaeffer, Raymond J., 5,006,019, Cl. 406-152.000.

AEG Aktiengesellschaft. *See*—
Bohm, Harald; Jutting, Wolfgang; and Bretting, Jork, 5,006,427, Cl. 429-101.000.

AEG Olympia Office GmbH. *See*—
Bruns, Ewald, and Bruns, Rolf, 5,005,995, Cl. 400-144.200.

AEG Westinghouse Transportation Systems, Inc.. *See*—
Rush, Donald L.; and May, Norman W., 5,006,847, Cl. 340-994.000.

Aehnelt, Hans-Peter; and Wirth, Michael, to Carl-Zeiss-Stiftung, Heidenheim/Brenz. Probe head of the switching type. 5,005,297, Cl. 33-559.000.

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Sibilo, Gerard, and Louis, Michel, 5,005,947, Cl. 350-252.000.

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Berthold, Werner; and Ohlschlager, Hans, 5,006,440, Cl. 430-429.000.
Patzold, Walter; and Kampfer, Helmut, 5,006,455, Cl. 430-571.000.
Wermicke, Ubbo; and Mitzinger, Herbert, 5,006,439, Cl. 430-379.000.

Agrawal, Rakesh; and Woodward, Donald W., to Air Products and Chemicals, Inc. Nitrogen generator with dual reboiler/condensers in the low pressure distillation column. 5,006,137, Cl. 62-11.000.

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Aiello, Robert P., Riley, Michael J., and Millay, Herbert D., to Shell Oil Company. Gasoline composition for reducing intake valve deposits in port fuel injected engines. 5,006,130, Cl. 44-432.000.

Aime, Michel; and Sager, Edmund, to Inventio AG. Apparatus for damping oscillations in elevator cars. 5,005,671, Cl. 187-1.00R.

Air Products and Chemical, Inc.. *See*—
Parks, David L., Jr., and Martin, Carl J., 5,006,325, Cl. 423-390.000.

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Agrawal, Rakesh, and Woodward, Donald W., 5,006,137, Cl. 62-11.000.
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Chen, Michael S. K.; Painter, Corning F., Pastore, Steven P.; Roth, Gary; and Winchester, David C., 5,006,141, Cl. 65-27.000.
DiMartino, Stephen P., Sr.; and Sorensen, James C., 5,006,132, Cl. 55-16.000.
Garg, Diwakar; Wrecsics, Ernest L., Schaffer, Leslie E.; Mueller, Carl F., Dyer, Paul N., and Fabregas, Keith R., 5,006,371, Cl. 427-249.000.
Maroulis, Peter J.; Clark, Patrick J., Morris, Victoria J.; Byerley, Robert A., and Booker, John, 5,006,315, Cl. 422-89.000.

Aisin AW Co., Ltd. *See*—
Kimura, Hiromichi, Iwatsuki, Kunihiro, Taniguchi, Hiroji, Taniguchi, Takuji, and Ishikawa, Kazunori, 5,005,444, Cl. 74-868.000.
Sakakibara, Shiro, Imai, Norio, Kondo, Hidehiro, and Kamiya, Kazuo, 5,005,442, Cl. 74-866.000.
Takase, Isao; Takemoto, Haruki, Tatsuta, Mitsugu, Maseki, Shinobu; Kano, Takenori, Yokoyama, Fumitomo, and Niimi, Mamoru, 5,006,102, Cl. 475-282.000.

Aisin Seiki Kabushiki Kaisha. *See*—
Fukumoto, Ryoichi, Hayakawa, Shigeru, and Torii, Nozomu, 5,005,882, Cl. 292-216.000.
Kazaoka, Kenichi; and Okazaki, Hiroshi, 5,006,052, Cl. 418-61.100.
Momose, Yutaka, Watanabe, Tetsumi, and Yamaguro, Akira, 5,005,349, Cl. 60-517.000.

Akagi, Toshimichi. *See*—
Tashima, Seiji; Okimoto, Haruo, Akagi, Toshimichi, and Niwa, Yasushi, 5,005,359, Cl. 60-600.000.

Akahide, Kohzo. *See*—
Fujita, Tsutomu, Imura, Hidetoshi; and Akahide, Kohzo, 5,006,687, Cl. 219-121.590.

Akamine, Hiroshi, and Sato, Yoshinori. Halogen-containing resin composition. 5,006,579, Cl. 524-238.000.

Akasaki, Yutaka, Aonuma, Hidekazu, Hongo, Kazuya, Sato, Katsuhiro, Nukada, Katsumi, and Marumo, Teruumi, to Fuji Xerox Co., Ltd. Electrophotographic photosensitive member with additive in charge generating layer 5,006,435, Cl. 430-58.000

Akkumulatorenfabrik Dr. Leopold Jungfer *See*—
Frey, Helmut, 5,006,040, Cl. 414-789.900

Alasaarela, Esko, Adolfsen, Pekka, and Rahkonen, Timo, to UTK Uuden Teknologian Keskus Oy. Procedure and device for facilitating audiovisual observation of a distant object 5,007,091, Cl. 381-26.000

Albany International Corporation *See*—
Davenport, Francis L., 5,005,610, Cl. 139-383.0AA

Albert-Frankenthal AG *See*—
Kobler, Norbert, and Puschnerat, Helmut, 5,005,476, Cl. 101-363.000

Albert, Guy D., and Beaty, Robert C., to Alcatel NA Network Systems Corp. Lock handle for printed wiring board assemblies and the like 5,006,951, Cl. 361-220.000

Albest Metal Stamping Corporation *See*—
Hirsch, Nathan A., 5,005,269, Cl. 24-668.000

Albrecht, Ernst, and Dinges, Harald, to G. M. Pfaff Aktiengesellschaft Thread cutting device having a translatably slidable knife and catcher, being driven for forming uniformly short stitch thread ends in a zig zag sewing machine 5,005,504, Cl. 112-292.000

Alcatel NA Network Systems Corp. *See*—
Albert, Guy D., and Beaty, Robert C., 5,006,951, Cl. 361-220.000

Alcatel N.V. *See*—
Chesnoy, Jose, 5,007,062, Cl. 372-26.000

Alexandru, Lupu *See*—
Schwarz, William M., Marchessault, Robert H., Alexandru, Lupu, and Henrissat, Bernard, 5,006,170, Cl. 106-20.000

Alfred Teves GmbH *See*—
Boehm, Peter, Jakobi, Ralf, and Bauer, Jurgen, 5,005,465, Cl. 91-369.100
Reinartz, Hans-Dieter, Steffes, Helmut, Von Hayn, Holger, and Meier, Thomas, 5,005,350, Cl. 60-562.000
Schiel, Lothar, and Rueffer, Manfred, 5,005,918, Cl. 303-114.000

Ali, Syed *See*—
Kazerounian, Reza, Ali, Syed, and Eitan, Boaz, 5,006,974, Cl. 363-60.000

Alikhan, Mir I., Colrud, Sandra M., and Sneyd, James C., to Kimberly-Clark Corporation Tampon with single layer powder bonded wrap 5,006,116, Cl. 604-365.000

Allebach, Gene E. *See*—
Hite, William H., and Allebach, Gene E., 5,005,397, Cl. 72-405.000

Allen, Richard C. *See*—
Hamer, R. Richard L., Freed, Brian, and Allen, Richard C., 5,006,563, Cl. 514-646.000

Allergan, Inc. *See*—
Chandraratna, Roshantha A. S., 5,006,550, Cl. 514-456.000

Allied-Signal *See*—
Elsenbaumer, Ronald L., 5,006,278, Cl. 427-385.500
Kavesh, Sheldon, Kim, Kwang, Kwon, Young D., and Prevorsek, Dusan C., 5,006,390, Cl. 428-105.000

Allied-Signal Inc. *See*—
Andersen, Blaine W., and Tervo, John N., 5,005,804, Cl. 251-215.000
Draskovich, Barry S., 5,006,423, Cl. 428-698.000
Green, George D., Munk, Stephen A., and Barnes, Darryl K., 5,006,408, Cl. 428-395.000

Allina, Edward F. Electrical transient surge protection with parallel means. 5,006,950, Cl. 361-117.000

Alloy Engineering Company *See*—
Freund, William P., 5,006,064, Cl. 432-205.000

Alpcan SA *See*—
Fister, Christian, and Grasset, Yves, 5,005,266, Cl. 24-601.500

Alpine Electronics Inc. *See*—
Otsuki, Akira, 5,006,941, Cl. 360-96.200

Altech Co., Ltd. *See*—
Yokoyama, Naoomi, 5,006,186, Cl. 156-211.000

Alza Corporation *See*—
Edgren, David E., and Theeuwes, Felix, 5,006,346, Cl. 424-473.000

Amada Company, Limited *See*—
Sartorio, Franco, Grassi, Fabrizio, Prunotto, Gianpaolo, and Sgandurra, Francesco, 5,005,394, Cl. 72-310.000

Amano, Yoshikazu *See*—
Kato, Keiko, Kageyama, Shigeki, Amano, Yoshikazu, Arai, Fuminori, and Katsuyama, Harumi, 5,006,458, Cl. 435-4.000

American Combustion, Inc. *See*—
Gitman, Gregory M., 5,005,493, Cl. 110-246.000

American Communications & Engineering, Inc. *See*—
Masson, Ronald K., and Edelson, Michael W., 5,007,078, Cl. 379-75.000

American Cyanamid Company *See*—
Forgione, Peter S., and Singh, Balwant, 5,006,653, Cl. 544-196.000

American Institute of Taxidermy, Inc. *See*—
Rinehart, John R., 5,005,310, Cl. 43-17.000

American National Can *See*—
Genske, Roger P., 5,006,384, Cl. 428-36.700.

American Standard Inc. *See*—
Basile, Peter A., Madan, Ashvani K., Snyder, Fred E., and Stillman, Harold M., 5,005,226, Cl. 4-354.000
Hart, James E., and McKay, Albert A., 5,005,915, Cl. 303-22.200

Amis, Lynn F., and Gee, Daniel R., to Convoy Security Company. Sequential seal 5,006,697, Cl. 235-91.00R

Ammermann, Eberhard *See*—
Seele, Rainer, Kober, Reiner, Karbach, Stefan, Sauter, Hubert, Ammermann, Eberhard, Lorenz, Gisela, Rademacher, Wilhelm, and Jung, Johann, 5,006,152, Cl. 71-92.000

Ammonia Casale S.A. *See*—
Zardi, Umberto, and Pagani, Giorgio, 5,006,316, Cl. 422-148.000

Amoco Corporation *See*—
Fielding, Ivor R., 5,006,587, Cl. 524-405.000

AMP Incorporated *See*—
Counsel, Eugene F., and Werner, Walter M., 5,006,081, Cl. 439-783.000
Dery, Ronald A., Deak, Frederick R., and Zimmerman, Richard H., 5,006,286, Cl. 264-40.200
Loose, Winfield W., Robertson, James W., and Shay, Francis J., 5,006,077, Cl. 439-409.000

Amundson, Eric K., and Manners, Herbert C. Retrofittable sewer trap 5,005,603, Cl. 137-192.000

Andersen, Blaine W., and Tervo, John N., to Allied-Signal Inc. Balanced-torque butterfly valve 5,005,804, Cl. 251-215.000

Anderson, Alfred J. *See*—
Koehler, Harold W., Anderson, Alfred J., and Finelli, Alfred A., 5,005,731, Cl. 222-54.000

Anderson, Charles C., Kestner, Diane E., Lewis, Mark A., and Opitz, Gary R., to Eastman Kodak Company. Photographic support material comprising an antistatic layer and a barrier layer 5,006,451, Cl. 430-527.000

Anderson, Dirk M., Baker, Paul E., Cantrell, Michael A., Cerretti, Douglas P., Cosman, David J., Gimpel, Steven D., Grabstein, Kenneth H., Larsen, Alf D., and McKereghan, Kate N. Process for preparing bovine interleukin-2 5,006,465, Cl. 435-69.520

Anderson, Donn R., to Minnesota Mining & Manufacturing Company. Form used for ordering custom printed products 5,005,871, Cl. 283-61.000

Anderson, Eddy. Extensible and retractable step assembly 5,005,667, Cl. 182-15.000

Anderson, Forrest L. Three dimensional imaging device using ellipsoidal backprojection 5,005,418, Cl. 73-625.000

Anderson, Janet Y. *See*—
Bern, Barbara J., and Anderson, Janet Y., 5,005,217, Cl. 2-104.000

Anderson, John M. to General Electric Company. Luminaire for an electrodeless high intensity discharge lamp with electromagnetic interference shielding 5,006,763, Cl. 315-248.000

Anderson, Larry D., to Asten Group, Inc. Split heddle with superimposed blades with aligned apertures 5,005,608, Cl. 139-93.000

Anderson, Marc A., and Xu, Qunyin, to Wisconsin Alumni Research Foundation. Metal oxide porous ceramic membranes with small pore sizes 5,006,248, Cl. 210-500.250

Anderson, Richard J. *See*—
Lee, Shy-Fuh, Anderson, Richard J., Luehr, Gary W., and Scott, Carole R., 5,006,150, Cl. 71-88.000

Anderson, Thomas A., Kalar, Richard G., Markfelt, Reinhold S., and Wagner, Walter R., to Johnson Filtration Systems Inc. Mounting system for increasing the wear life of a vibrating screen panel 5,006,228, Cl. 209-365.300

Anderson, Vernon B. *See*—
Ong, Helen H., Anderson, Vernon B., and Profitt, James A., 5,006,664, Cl. 549-12.000

Andersson, Kjell, and Eriksson, Lennart, to ASE Europe AB. Method for determining the specific fuel consumption of an internal combustion engine and apparatus therefor 5,006,994, Cl. 364-442.000

Anderzen, Gert A. *See*—
Sandvik, Lars V., and Anderzen, Gert A., 5,005,867, Cl. 280-804.000

Andoh, Kazuto *See*—
Morigaki, Masakazu, Ishikawa, Takatoshi, Andoh, Kazuto, Seto, Nobuo, Koshimizu, Toshio, and Ueda, Shinji, 5,006,456, Cl. 430-372.000

Andreas, David W. *See*—
Watkins, James D., Andreas, David W., and Cox, David H., 5,006,405, Cl. 428-323.000

Andress, Harry J., Horodysky, Andrew G., and Kaminski, Joan M., to Mobil Oil Corporation. Friction reducing additives and compositions thereof 5,006,272, Cl. 252-49.600

Andryszak, Kenneth R. *See*—
Benn, Raymond C., Davidson, Jeffrey M., and Andryszak, Kenneth R., 5,006,163, Cl. 75-229.000

Angelchik, Jean P. Apparatus and method for laparoscopic implantation of anti-reflux prosthesis 5,006,106, Cl. 600-37.000

Angerbauer, Rolf, Fey, Peter, Hubsch, Walter, Philipps, Thomas, Bischoff, Hilmar, Petzinna, Dieter, Schmidt, Delf, and Thomas, Gunter, to Bayer Aktiengesellschaft. Certain 7-[2,6-diisopropyl-4-phenyl-5-lower alkoxymethyl-pyrid-3-yl]-3,5-dihydroxy-6-enoates and derivatives useful for treating circulatory diseases. 5,006,530, Cl. 514-277.000

Anma, Sadayuki *See*—
Kudoh, Kazuhiro, Nishiyama, Toshirou, and Anma, Sadayuki, 5,007,105, Cl. 455-344.000

Annan, Robert K. *See*—
Woo, Kenneth J., and Annan, Robert K., 5,005,485, Cl. 102-531.000.

Anstey, Henry D., to Deere & Company. Mounting for the spiral flights at the opposite ends of a bale wrapping material spreader roll 5,005,747, Cl. 226-190.000.

Anthony, Donald R., and Williamson, George C., III, to Atlantic Richfield Company. Pipe insulation and corrosion protection system 5,006,185, Cl. 156-193.000

Antibioticos S.A. of Bravo Murillo 38 *See*—
Sanchez, Florentina S., Susan, Victor R., Carramolino-Fitera, Laura, and Ortega, Agustin P.A., 5,006,471, Cl. 435-254.000

Aoike, Tatsuyuki *See*—
Kanai, Masahiro, Aoike, Tatsuyuki, Matsuda, Koichi, and Kawakami, Soichiro, 5,006,180, Cl. 136-258.000.

Aoki Corporation *See*—
Tono, Show, Miki, Toshiyuki, Dairokuno, Yoshihide, and Kataoka, Jyun, 5,006,639, Cl. 210-727.000.

Aoki, Hiroshi *See*—
Sasamori, Kenzi, Yamamoto, Hiroshi, and Aoki, Hiroshi, 5,006,958, Cl. 361-335.000

Aoki, Masaki *See*—
Fujii, Eiji, Torii, Hideo, and Aoki, Masaki, 5,006,363, Cl. 427-39.000

Aomori, Kohkichi, to Kabushiki Kaisha Toshiba Endoscope 5,005,558, Cl. 128-4.000

Aonuma, Hidekazu *See*—
Akasaki, Yutaka, Aonuma, Hidekazu, Hongo, Kazuya, Sato, Katsuhiro, Nukada, Katsumi, and Marumo, Teruumi, 5,006,435, Cl. 430-58.000

Aoyama, Tomoo *See*—
Hatakeyama, Yasuhiko, and Aoyama, Tomoo, 5,007,005, Cl. 364-521.000

Aoyama, Yasutada *See*—
Imaizumi, Mamoru, and Aoyama, Yasutada, 5,007,002, Cl. 364-519.000

Apex Engineering Inc. *See*—
Draffen, Dale; Dunning, William E.; McGregor, Larry D.; Walker, Donald L., and Sisk, Harold R., 5,005,983, Cl. 366-340.000

Appalachian Technologies Corporation *See*—
Beverly, William C., II, Dalton, Michael B., and Gaddis, David Q., 5,006,790, Cl. 324-104.000

Applied Power Inc. *See*—
Fritz, Frank M., Knutson, Dale A., and Janecke, James P., 5,005,803, Cl. 251-129.150.

APV UK Limited *See*—
Sillett, Christopher, 5,005,472, Cl. 99-468.000.

Aqua Systems Division of Chem-Free, Inc. *See*—
Steffero, Robert F., Sr., 5,006,240, Cl. 210-223.000.

Aqualon Company *See*—
Modi, Jashawant J., and Banyai, Bruce E., 5,006,168, Cl. 106-2.000

Arai, Fuminori *See*—
Kato, Keiko, Kageyama, Shigeki, Amano, Yoshikazu, Arai, Fuminori, and Katsuyama, Harumi, 5,006,458, Cl. 435-4.000.

Arai, Hideaki *See*—
Suga, Toshiyuki, Arai, Hideaki, and Kitajima, Shinichi, 5,005,547, Cl. 123-425.000

Arai, Shoji *See*—
Tamano, Yutaka, and Arai, Shoji, 5,006,501, Cl. 502-167.000

Aranyi, Ernest, to United States Surgical Corp. Anastomosis surgical stapling instrument 5,005,749, Cl. 227-19.000

Araya, Junji, to Canon Kabushiki Kaisha. Image forming apparatus having a predetermined voltage applied to the transfer member 5,006,902, Cl. 355-271.000

ARC Sonics Inc. *See*—
Nyberg, Christopher A., Jackson, James G., and Brdicko, Jan, 5,005,773, Cl. 241-30.000

Arch Development Corporation *See*—
Winston, Roland, Gleckman, Philip L., and O'Gallagher, Joseph J., 5,005,958, Cl. 350-442.000

Archer, David H., to Westinghouse Electric Corp. Power plant condenser control system 5,005,351, Cl. 60-686.000

Archer, William R., Lytle, Peter B., Shah, Rajendra K., and Wynberry, John E., to General Electric Company. Integrated electronically commutated motor and control circuit assembly 5,006,744, Cl. 310-89.000

Archive Corporation *See*—
Buchan, William A., and Quintus, John J., 5,006,819, Cl. 331-1.00A

Arco Chemical Technology, Inc. *See*—
Shih, T. Thomas, and Sim, William J., 5,006,206, Cl. 203-55.000.

Argueso, Peter G., to M. Argueso & Co., Inc. Filler and wax composition for investment casting 5,006,583, Cl. 524-277.000.

Arima, Yoshihiro, Otuka, Soiti, and Kazushige, Nishida, to Toyo Tire and Rubber Co., Ltd. Joint boot molded of a thermoplastic polyester elastomer 5,006,376, Cl. 428-34.100.

Arimoto, Akira *See*—
Mochizuki, Takeshi, Katagiri, Shigenobu; Seino, Minoru; Ohshima, Minoru, Saito, Susumu; and Arimoto, Akira, 5,006,704, Cl. 250-235.000.
Saito, Susumu, Arimoto, Akira, Mochizuki, Takeshi, Tsuji, Yasuyuki, Ohshima, Minoru, and Seino, Minoru, 5,006,705, Cl. 250-235.000.

Armor-Inox SA *See*—
Dreano, Claude, 5,005,471, Cl. 99-330.000

Arnaud, Johnny, to Hydrotreat, Inc. Filter bag securing ring. 5,006,243, Cl. 210-232.000.

Arrowsmith, John E., and Cross, Peter E., to Pfizer Inc. Indane sulfonamide anti-arrhythmic agents and use. 5,006,561, Cl. 514-605.000

Artifex Ltd. *See*—
Hafeli, Paul B., 5,006,121, Cl. 606-85.000.

Aryanitakis, Nicolaos C., BLack, Vincent J., Corley, Richard E., Jr.; Nolan, Richard G., and Olson, Leonard T., Jr., to International Business Machines Corporation. Optoelectronic assembly. 5,005,939, Cl. 350-96.200.

Asahi Kogaku Kogyo Kabushiki Kaisha *See*—
Takahashi, Nagashige, and Ouchi, Teruo, 5,005,755, Cl. 228-126.000.
Tejima, Yasuyuki; Ogawa, Ryota, and Sato, Makoto, 5,005,968, Cl. 353-122.000.

Asai Germanium Research Institute Co., Ltd. *See*—
Kakimoto, Norihiro, Kumano, Kazuo, and Nakamura, Kunie, 5,006,553, Cl. 514-492.000.

Asai, Nobuko *See*—
Kitaura, Yoshihiko; Ito, Fumitaka, Stevens, Rodney W., and Asai, Nobuko, 5,006,541, Cl. 514-367.000

Asano, Kazuo *See*—
Hatano, Sakae, Takada, Yoshiharu, Kainuma, Kiyokazu; Kanematsu, Isao; Asano, Kazuo, Yoshida, Hisashi, and Mori, Yoshinori, 5,006,685, Cl. 219-69.200.

ASE Europe AB *See*—
Andersson, Kjell, and Eriksson, Lennart, 5,006,994, Cl. 364-442.000

Asea Brown Boveri Ltd. *See*—
Gellert, Bernd, and Kogelschatz, Ulrich, 5,006,758, Cl. 313-634.000
Posedel, Zlatimir, 5,006,769, Cl. 318-434.000

Asha Corporation. *See*—
Clenet, Alain J.-M., 5,005,899, Cl. 296-214.000

Ashton, William T. Jr. *See*—
Ehret, Charles F.; and Ashton, William T., Jr., 5,006,985, Cl. 364-413.010.

Askanazi, Jeffrey, and Gil, Karen, to Clintec Nutrition Co. Method of use of branched-chain amino acids infusions to influence appetite. 5,006,559, Cl. 514-561.000

Aslanian, Jerry L. Flow control device for administration of intravenous fluids 5,005,604, Cl. 137-556.000

Asmo Co., Ltd. *See*—
Nishizawa, Kazunori, Abe, Mitsutaka, Matsumoto, Hiroshi, and Imamura, Shinji, 5,005 249, Cl. 15-250.270

Aso, Hideo: *See*—
Kubota, Maki; and Aso, Hideo, 5,007,033, Cl. 368-21.000.

Astec International, Ltd. *See*—
Tam, Ambrose W. C., 5,006,821, Cl. 333-116.000.

Asten Group, Inc. *See*—
Anderson, Larry D., 5,005,608, Cl. 139-93.000

Astle, William B., Jr. Efficient gas hot-air furnace and heating process. 5,005,556, Cl. 126-110.00R

Astra-Vent AB *See*—
Torok, Vilmos; and Loreth, Andrzej, 5,006,761, Cl. 315-111.910

Astro, Inc. *See*—
Baarman, David W.; and Richards, David M., 5,006,849, Cl. 341-95.000.

AT&T Bell Laboratories: *See*—
Ayanoglu, Ender; Gitlin, Richard D.; I, Chih-Lin; and Mazo, James E., 5,007,067, Cl. 375-40.000.
Blakley, James R., 5,007,076, Cl. 379-67.000.
Cocco, Eugene R.; and Rothman, Bobby W., 5,005,284, Cl. 29-884.000
Erving, Richard H.; Ford, William A.; and Miller, Robert R., II, 5,007,046, Cl. 370-32.100.
Haskell, Barry G., 5,007,102, Cl. 382-56.000.
Kahn, Joseph M., and Kasper, Bryon L., 5,007,106, Cl. 455-619.000.
Keller, Ursula, and Knox, Wayne H., 5,007,059, Cl. 372-18.000
O'Bryan, Henry M., Jr.; Rhodes, Warren W., and Thomson, John, Jr., 5,006,504, Cl. 505-1.000.
Thomson, David L., 5,007,093, Cl. 381-46.000.

Atlantic Richfield Company: *See*—
Anthony, Donald R.; and Williamson, George C., III, 5,006,185, Cl. 156-193.000.
Bloys, J. Benjamin, Carpenter, Robert B., and Wilson, William N., 5,005,646, Cl. 166-293.000.
Dooley, R. Dennis; Morris, Daryl W.; Scott, Dana L., and Watts, Jimmy A., 5,005,245, Cl. 15-104.040

Atlas Copco Aktiebolag. *See*—
Wennerbo, Orjan E. V., and Nilstam, Bo, 5,005,467, Cl. 91-461.000

Atlas Copco MCT AB: *See*—
Rodert, Jorgen A. R., 5,005,656, Cl. 175-306.000

Atochem: *See*—
Guerin, Bernard; and Strassel, Albert, 5,006,602, Cl. 525-72.000.

Atochem North America, Inc. *See*—
Hung, Paul L. K.; and Tseng, Kenneth K. S., 5,006,436, Cl. 430-284.000.

Atsuta, Mitsuru; Sakashita, Takeshi; Miyamoto, Ryoichi; Tanimura, Yukinori, and Fuji, Saburo, to Mitsui Petrochemical Industries, Ltd. Curable compositions for dental drugs having sustained release property. 5,006,340, Cl. 424-405.000

Attix, Frank H., to Radiation Measurements, Inc. Scintillator dosimetry probe. 5,006,714, Cl. 250-368.000

Atwal, Karnail, to E. R. Squibb & Sons, Inc. Antiarrhythmic agents. aryl cyanoguanidine potassium channel blockers. 5,006,523, Cl. 514-227.500.

Augat, Inc. *See*—
Thomas, Joseph, 5,006,680, Cl. 200-293.000.

Auksi, Gunnar, to R. R. Donnelley & Sons Company. Apparatus and method for individually printing signatures during delivery to a binding line conveyor. 5,005,815, Cl. 270-1.001.

Auld, Gregg D.: *See*—
Franklin, Richard D.; Auld, Gregg D., Murray, David E., Lescisin, John J., Vaia, Albert R.; and Dunn, Thomas E., 5,006,304, Cl. 376-316.000.

Aurelle, Yves: *See*—
Roques, Henri, Aurelle, Yves; and Lopez, Louis, 5,006,260, Cl. 210-708.000.

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Duran, John A., 5,006,025, Cl. 411-183.000.

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Katoh, Takehiro; Azuma, Yoshihiko; Hirano, Masayasu; Kageyama, Naohiro; Ishimura, Toshihiko; Tsuji, Kenji, and Ootsuka, Hiroshi, 5,006,877, Cl. 354-412.000.

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Sharaby, Zaev; and Vielhaber, Robert G., 5,006,607, Cl. 525-356.000.

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Kolton, Chester; and Spater, Stuart S., 5,005,741, Cl. 223-85.000

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Rinderer, Eric R., 5,005,792, Cl. 248-205.100.

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Durham, Daniel K.; Conkle, Urban C.; and Downs, Hartley H., 5,006,274, Cl. 252-180.000.

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Scott, Randy W.; and Baker, Joffre B., 5,006,252, Cl. 210-635.000.

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Ballu, Patrick J., to Tecnoma. Portable liquid sprayer, particularly for the treatment of plants. 5,005,440, Cl. 74-579.00R.

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Jennewein, Manfred A.; and Ballweg, Achim, 5,005,691, Cl 198-465.400.

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Bando Kagaku Kabushiki Kaisha: *See*—
Hakoda, Keizo, and Samejima, Hisashi, 5,006,059, Cl. 425-573.000

Banerji, Roth, to Exxon Chemical Patents Inc. Food wrap film 5,006,398, Cl. 428-220.000.

Banks, Rodney H.: *See*—
Hoots, John E., and Banks, Rodney H., 5,006,311, Cl 422-62.000

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Miyagi, Junichi, and Shimazu, Isao, 5,005,411, Cl. 74-473.00R

Banyai, Bruce E: *See*—
Modi, Jashawant J., and Banyai, Bruce E., 5,006,168, Cl. 106-2.000

Barakat, Simon, to Schlumberger Industries. Antifraud method and device for a selective access system 5,006,698, Cl 235-382.000

Barbachyn, Michael R., to Upjohn Company, The. Novel N-1 substituted beta-lactams as antibiotics. 5,006,650, Cl. 540-363.000

Barber, James E. Multiple access newspaper receptacle 5,005,761, Cl 232-1.00C

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Bares, John E., and Whittaker, William, to Carnegie-Mellon University. Orthogonal legged walking robot. 5,005,658, Cl. 180-8.100.

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Baril, Michel-Claude, and Rimbert, Dominique, to Thomson-CSF Microwave phase shifter with 0 or π phase shift. 5,006,823, Cl 333-164.000

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Cooke, James E., Barkan, Philip; and Kovacs, Gregory, 5,006,050, Cl. 417-478.000.

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Green, George D.; Munk, Stephen A.; and Barnes, Darryl K., 5,006,408, Cl. 428-395.000.

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Spielberger, Seymour, 5,005,926, Cl. 350-1.100

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Jensen, William S., and Ng, David, 5,005,439, Cl. 74-574.000

Barten, Piet G. J., to U.S. Philips Corporation. Color display tube with magnetic field shaping plates. 5,006,754, Cl. 313-412.000.

Barth, Walter, Borst, Erich, Helm, Winfried, and Stabler, Manfred, to Robert Bosch GmbH. Protective hood for grinding machines, particularly angle grinders, and suitable fastening receptacle for the latter 5,005,321, Cl. 51-170.00T.

Bartlett, Robert R.: *See*—
Schwab, Wilfried; Bartlett, Robert R.; Gebert, Ulrich; Schorlemmer, Hans U., Dickneite, Gerhard, and Sedlacek, Hans H., 5,006,515, Cl. 514-89.000.

Bartloff, William F.: *See*—
Marks, Larry D., Stiles, Richard C., and Bartloff, William F., 5,005,740, Cl. 222-651.000.

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Lebisch, Helmut, Basel, Rainer; Fuchs, Georg, Dietmar, Hermann, Wipfelder, Ernst, and Hekele, Wilhelm, 5,006,055, Cl. 425-2.000

BASF Aktiengesellschaft: *See*—
Buback, Michael, and Rohde, Stefan, 5,006,609, Cl. 525-378.000
Buechner, Oskar, and Gruber, Wolfgang, 5,006,600, Cl. 525-53.000
Fath, Wolfgang, Nachtrab, Rainer, and Polster, Rudolf, 5,006,173, Cl. 106-410.000.
Hagen, Helmut, Dupuis, Jacques; and Eilingsfeld, Heinz, 5,006,659, Cl. 546-170.000.
Kovacs, Jenoe, Melzer, Milena; Balz, Werner; Lenz, Werner, Loch, Werner; and Jakusch, Helmut, 5,006,406, Cl. 428-323.000
Lang, Siegfried, 5,006,345, Cl. 424-467.000.
Poralla, Dieter M., and Kohler, Walter, 5,006,558, Cl. 514-557.000.
Seele, Rainer; Kober, Reiner; Karbach, Stefan; Sauter, Hubert, Ammermann, Eberhard, Lorenz, Gisela; Rademacher, Wilhelm, and Jung, Johann, 5,006,152, Cl. 71-92.000
Weber, Reinhold, Weilbacher, Manfred; Tatzel, Hermann, Zuern, Ludwig, Zettler, Hans D., and Hinselmann, Klaus, 5,006,566, Cl 521-79.000.

BASF Corporation: *See*—
Dellinger, Jack A., 5,006,635, Cl 528-315.000

Bashark, Larry T., to Whirlpool Corporation. Motor diagnostics and electronic control for a clothers dryer 5,006,778, Cl 318-799.000

Basile, Peter A., Madan, Ashvani K.; Snyder, Fred E., and Stillman, Harold M., to American Standard Inc. Flushing mechanism with low water consumption 5,005,226, Cl 4-354.000.

Bath Scientific Limited: *See*—
Watts, Vivian C., 5,006,808, Cl 324-537.000.

Batt, Douglas G., to Du Pont de Nemours, E. I., and Company. Esters of 2-arylmethyl-1-naphthol derivatives as 5-lipoxygenase inhibitors. 5,006,555, Cl 514-510.000

Bauer, Brian A. Dart quarterback 5,005,842, Cl 273-408.000

Bauer, Carl F: *See*—
Furbee, Avery D., Bauer, Carl F. and Ramos, John S., 5,007,074, Cl 378-138.000

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Rohling, Holmer, Bauer, Christoph, Friedrichs, Harald M., and Thometschek, Roderich, 5,005,700, Cl 206-459.000

Bauer, Jurgen *See*—
Boehm, Peter; Jakobi, Ralf, and Bauer, Jurgen, 5,005,465, Cl 91-369.100

Bauer, Rudolf *See*—
Sobotta, Rainer, Langbein, Adolf, Merz, Herbert; Bauer, Rudolf, and Mierau, Joachim, 5,006,533, Cl 514-304.000.

Baughman, Milo Retractable stairs for vehicles 5,005,850, Cl 280-166.000

Baughman, Richard C., Ellingham, David J., Fowlkes, William Y., Rubin, Bruce J., and Stepanik, Frank S., to Eastman Kodak Company Transfer apparatus having vacuum holes and method of making such apparatus 5,006,900, Cl 355-271.000

Baum, Peter S Projecting tessellator 5,005,974, Cl 350-171.000

Baum, Seymour, to Gussco Manufacturing, Inc. Shipping and storage casing 5,005,324, Cl 52-98.000

Bausch & Lomb Incorporated *See*—
Kunzler, Jay F., and Friends, Gary D., 5,006,622, Cl 526-309.000

Baxter International Inc *See*—
Bacehowski, David V., Cullis, Herbert M., and Van Baelen, Armand R., 5,006,103, Cl 494-45.000

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Dull, Raymond P., Lavas, Bernard R., and Baxter, William D., 5,005,325, Cl 52-126.400

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Angerbauer, Rolf, Fey, Peter, Hubsch, Walter, Philipps, Thomas, Bischoff, Hilmar, Petzinna, Dieter, Schmidt, Delf, and Thomas, Gunter, 5,006,530, Cl 514-277.000
Fischer, Reiner, Jensen-Korte, Uta, Kunisch, Franz; Marhold, Albrecht, Ooms, Pieter, Schallner, Otto; Santel, Hans-Joachim, Schmidt, Robert R., Krauskopf, Birgit, and Strang, Harry, 5,006,148, Cl 71-72.000
Gesing, Ernst R., Santel, Hans-Joachim, Schmidt, Robert R., and Strang, Harry, 5,006,156, Cl 71-93.000
Gupta, Pramod, Engels, Hans-Wilhelm, and Rabe, Hansjurgen, 5,006,599, Cl 524-740.000
Jonas, Friedrich, and Merten, Rudolf, 5,006,641, Cl 528-328.000
Mohrs, Klaus-Helmut, Fruchtmann, Romanis, and Kohlsdorfer, Christian, 5,006,534, Cl 514-311.000
Noonenbruch, Heinz-Gerd, Heitmann, Ulrich, and Bormann, Heinrich, 5,006,564, Cl 521-54.000
Spies, Manfred, and Heitz, Walter, 5,006,636, Cl 528-320.000
Vetter, Hans, Ohlschlager, Hans, Odenwalder, Heinrich, Morcher, Bernhard, Sommer, Friedhelm, and Rosenhahn, Lothar, 5,006,457, Cl 430-613.000

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Fraser, Howard H., Jr. and Bayyouk, Jacob A., 5,005,376, Cl 62-296.000

Beach, Wayner H., Den Besten, Leroy E., and Rowlett, Don C., to Kennametal Inc. Block and locking mechanism for a stump grinding cutter bit and method of securing and retaining. 5,005,622, Cl 144-241.000

Beaty, Keith D. *See*—
Lazzara, Richard J., and Beaty, Keith D., 5,006,069, Cl. 433-173.000

Beaty, Robert C *See*—
Albert, Guy D., and Beaty, Robert C., 5,006,951, Cl 361-220.000

Beauchemin, Gratien, Gadoury, Andre, and Gravel, Claude, to Centre de Recherche Industrielle du Quebec Method and apparatus for detecting humidity in cut lumber 5,006,225, Cl 209-3.300

Beaudry, Armand J Pocket alarm. 5,006,832, Cl. 340-574.000

Beaver, Terry R *See*—
Hartman, David R., Jutte, Ralph B., Beaver, Terry R., and Hill, Homer G., 5,006,293, Cl 264-137.000

Becicka, Kenneth F. *See*—
Yourgalite, Ray A.; Moore, Malcolm, Chamberlain, Neal C., Becicka, Kenneth F., Hilgeman, Samuel J., and Moore, Kevin D., 5,005,335, Cl. 53-399.000

Beck, Theodore R.; and Brooks, Richard J., to Electrochemical Technology Corp., and Brooks Rand, Ltd Electrolytic reduction of alumina. 5,006,209, Cl. 204-67.000.

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von der Heyde, Richard; and Becker, Erich, 5,006,049, Cl. 417-476.000

Becker, Markus. Container, particularly a silo container. 5,005,327, Cl. 52-192.000

Beckman, James H. *See*—
Richards, Judith M., and Beckman, James H., 5,005,758, Cl. 229-68.00R.

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Cartmell, Robert L., 5,005,592, Cl 128-899.000.
Schulte, Harvey, and Noto, Sal, 5,005,981, Cl. 366-219.000.

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Beers, Theodore W., to Hewlett-Packard Company. Method and apparatus for selecting key action. 5,007,008, Cl. 364-709.150.

Beetz, Charles P., Jr., to Advanced Technology Materials, Inc. Single crystal semiconductor substrate articles and semiconductor devices comprising same 5,006,914, Cl 357-61.000

Begey, Jean-Marie *See*—
Bonaventure, Laurent, Begey, Jean-Marie, Perrissoud, Claude, and Lagier, Serge, 5,005,303, Cl. 36-120.000

Behm, Steven M., Marple, Virgil A., and Burton, Robert M., to MSP Corporation Volumetric flow controller for aerosol classifier 5,006,227, Cl 209-143.000

Behrens, Rudolf A., and Mar, Andrew, to Ciba-Geigy Corporation Stabilization of ambient cured coatings with N-hydroxy hindered amines 5,006,577, Cl 524-95.000

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Jackson, Winston J., Jr., Darnell, W. Ronald, Bell, Bruce C., and Strand, Marc A., 5,006,628, Cl 528-182.000

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Chao, Hung-Hsiang J.; and Johnston, Cesar A., 5,007,070, Cl 375-118.000
Deri, Robert J., 5,006,906, Cl 357-16.000

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Gandiglio, Romolo, and Bellone, Ernestino, 5,005,849, Cl 280-97.000

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Matjukhina, Ljudmila I., Mikhalev, Alexandr S., Sidoruk, Sergei N., and Chushenkov, Igor M., 5,006,776, Cl 318-723.000

Beltz, Dietmar, Nehler, Hans-Juergen, and Rozek, Werner, to Jenoptik Jena GmbH System bus expansion for coupling multimaster-capable multicomputer systems 5,006,981, Cl 364-200.000

Benchmark Structural Ceramics Corporation *See*—
Hida, George T., 5,006,290, Cl 264-65.000

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Levrai, Roland, and Le Normand, Pascal, 5,005,914, Cl 303-9.630

Benedetto, Piero, Bezzi, Salvatore, and Odone, Paola, to Fiat Auto S.p.A. Vehicle structure and the method for its assembly 5,005,898, Cl 296-194.000

Benesch, Jay F *See*—
Dorn, Bizhan, and Benesch, Jay F., 5,006,804, Cl 324-320.000

Benge, S. Eugene, and Froning, Robert L., to Monarch Marking Systems, Inc Electronic article surveillance tag and method of deactivating tags 5,006,856, Cl 340-572.000

Benjamin, Linda A *See*—
Avery, Noyes L., Benjamin, Linda A. Horodysky, Andrew G., and Law, Derek A., 5,006,271, Cl 252-45.000

Benn, Raymond C.; Davidson, Jeffrey M., and Andryszak, Kenneth R., to Inco Alloys International, Inc. Turbine blade superalloy II 5,006,163, Cl 75-229.000

Benson, Bradley J., and Wright, JoRae Pulmonary administration of pharmaceutically active substances 5,006,343, Cl 424-450.000

Berchadsky, Yves, Kernevez, Nelly, Le Moigne, Francois, Mercier, Anne, Secourgeon, Liliane, and Tordo, Paul, to Commissariat a l'Energie Atomique. Phosphorus-containing cyclic nitroxide free radicals. 5,006,663, Cl 548-412.000

Berg, Lloyd, Wendt, Craig M., and Szabados, Rudolph J., to Berg, Lloyd Dehydration of formic acid by extractive distillation 5,006,205, Cl 203-15.000

Bergeron, Charles W. Extended circumference intake poppet valve system for opening and sealing a single valve seat 5,005,538, Cl 123-79.00R

Bergstrom, Michael J.; and Hussain, Ajaib, to U.S. Philips Corporation Apparatus for processing a video signal 5,006,932, Cl 358-160.000

Berke, Joseph J.; Muller, George H., and Spear, A. Gil, Jr. Spectacles with combined sliding and pivoting rear vision elements 5,005,964, Cl. 351-50.000.

Bern, Barbara J.; and Anderson, Janet Y. Nursing bib 5,005,217, Cl 2-104.000

Berne Fried Racing Enterprises, Inc *See*—
Letovsky, Howard; and Fried, Bernard, 5,006,072, Cl 434-61.000

Bernstein, Greg M., and Lieberman, Michael A., to Loral Aerospace Corp. Method and apparatus for generating secure random numbers using chaos. 5,007,087, Cl. 380-46.000

Berry, Bruce R. *See*—
Grobbel, William J.; and Berry, Bruce R., 5,006,279, Cl. 252-542.000

Berry, Nancy K. Pet feed bowl construction. 5,005,524, Cl 119-51.110

Berry, Richard M.: *See*—
Paleologou, Michael; and Berry, Richard M., 5,006,211, Cl 204-182.400

Bert, Carlton R. Packaging of roughage material 5,006,357, Cl 426-413.000.

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Bertoni, Italo A. Swimming pool rope anchor method and device. 5,005,229, Cl. 4-505.000.

Berwind Pharmaceutical Services, Inc.: *See*—
Hilborn, G. Roland, 5,006,362, Cl. 427-3.000.

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Zelenak nee Zoltai, Maria; and Berzsenyi, Las/ zlo, 5,006,352, Cl. 426-67.000.

Besson, Raymond; Delaite, Richard; Renard, Georges; Valentin, Jean-Pascal, and Vaterkowski, Jean-Louis, to Ecole Nationale Superieure de Mecanique et des Microtechniques. Dismountable device for supporting a piezoelectric resonator inside a casing. 5,006,750, Cl. 310-348.000.

Bettencourt, Daniel, Jr.: *See—*
Goldberg, Edward M., Bettencourt, Daniel, Jr., Tosti, James C., Jr., and Jones, Norman S., 5,005,478, Cl. 101-425.000.

Betz Laboratories, Inc. *See—*
Chen, Fu, and Connors, Edward J., 5,006,596, Cl. 524-555.000

Beverly, William C., II, Dalton, Michael B., and Gaddis, David Q., to Appalachian Technologies Corporation. Electronic thermal demand module. 5,006,790, Cl. 324-104.000

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Schonafinger, Karl; Beyerle, Rudi, Just, Melitta, Bohn, Helmut, and Ostrowski, Jorg, 5,006,540, Cl. 514-361.000

Bezzi, Salvatore. *See—*
Benedetto, Piero; Bezzi, Salvatore, and Odone, Paola, 5,005,898, Cl. 296-194.000

Bice, Archie R., Edison, David H., Fish, Floyd H., Jr., Hopkins, Mark W., and Okine, Richard K., to Du Pont de Nemours, E. I., and Company. Process for making composites of stretch broken aligned fibers. 5,006,294, Cl. 264-138.000

Bier, Gerhard. *See—*
Ebersole, Ronald J., Johnson, David Budde, David, Myers, Mark S., and Bier, Gerhard, 5,006,982, Cl. 364-200.000

Biersach, James R. Honeycomb structure and method of making same. 5,006,391, Cl. 428-116.000

Bijvoets, Theodorus. Thermo-electric device with each element containing two halves and an intermediate connector piece of differing conductivity. 5,006,178, Cl. 136-211.000

Bilgic, Haluk A. *See—*
Smegal, John A., Bilgic, Haluk A., Ryan, Robert C., and Grieshop, Vance J., 5,006,224, Cl. 208-254.00H

Billco Manufacturing, Inc. *See—*
Trautmann, Hugh M., and Shaner, H. Dale, 5,005,250, Cl. 15-309.200

Bilodeau, Luc. *See—*
Trahan, Alain, Grondin, Paul-Andre, and Bilodeau, Luc, 5,005,503, Cl. 112-277.000

Bindra, Charanjit S. *See—*
Simpson, Harold G., and Bindra, Charanjit S., 5,005,323, Cl. 52-90.000

Binversie, Gregory J., Macier, James E., and Mate, David W., to Outboard Marine Corporation. Internal Combustion engine with recessed intake manifold. 5,005,535, Cl. 123-52.00M

Birmingham, William H. *See—*
Yuhas, Ralph G., and Birmingham, William H., 5,006,766, Cl. 318-53.000

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Angerbauer, Rolf, Fey, Peter, Hubsch, Walter, Philipps, Thomas, Bischoff, Hilmar, Petzinna, Dieter, Schmidt, Delf, and Thomas, Gunter, 5,006,530, Cl. 514-277.000

Bishop, Robert J. Sectional highway barrier with resilient cylindrical inserts. 5,006,008, Cl. 404-6.000

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Mainstone, Kenneth A., and Moeller, Robert F., 5,006,056, Cl. 425-186.000

Black, Derek J. M. *See—*
North, Peter C., Cavalla, David J., and Black, Derek J. M., 5,006,544, Cl. 514-385.000

BLack, Vincent J. *See—*
Arvanitakis, Nicolaos C., BLack, Vincent J., Corley, Richard E., Jr., Nolan, Richard G., and Olson, Leonard T., Jr., 5,005,939, Cl. 350-96.200

Blackburn, William A. and Sosnowich, Michael P., to Abandaco, Inc. Self-ventilating protective garment. 5,005,216, Cl. 2-79.000

Blade, Robert J., to Wellcome Foundation Ltd., The. Pesticideal pyridyloxy-dodeca-2,4-dienoates and phosphorimidates thereof. 5,006,658, Cl. 546-24.000

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Brandt, Christopher D., Kettler, David C., Windish, Willis E., and Blake, William W., 5,006,100, Cl. 475-138.000

Blakley, James R., to AT&T Bell Laboratories. Call announcement arrangement. 5,007,076, Cl. 379-67.000

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Klintworth, William C., Jr., 5,005,566, Cl 128-90.000
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Danick, Charles, and Panandiker, K P., 5,006,612, Cl 525-438.000
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Schwenger, Willy, 5,005,890, Cl 294-103.100
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Cassou, Robert, to Instruments Medecine Veterinaire. Container for biological liquids. 5,006,117, Cl. 604-403.000.
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Childs, Eric G *See—*
McWhorter, David J., Williams, Bolie C., III, Childs, Eric G., and Schaeper, Gary R., 5,005,802, Cl. 251-1.300

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Hofer, Arnold; and Gempeler, Hans, 5,006,626, Cl. 528-94.000
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Schmid, Rolf, and Eldin, Sameer H., 5,006,611, Cl. 525-423.000
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Schaus, John M., 5,006,525, Cl. 514-232.800

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Sonntagbauer, Ernst, 5,006,784, Cl. 323-343.000

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Reik, Wolfgang, and Elison, Hans-Dieter, 5,005,636, Cl. 192.70-170

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Herfurth, Eike, 5,005,768, Cl. 239-417.000

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Eltec Instruments, Inc. *See—*
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ELTECH Systems Corporation *See—*
Dietrich, Joseph J., Niksa, Andrew J., and Stewart, James J., 5,006,216, Cl. 204-257.000

Emerson Electric Co. *See—*
Steiner, Robert E., and Soultanian, Daniel S., 5,005,252, Cl. 15-339.000
Wallick, Claude R., Jr., and Schmitt, Thomas J., 5,005,280, Cl. 29-434.000

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Schmitt, Klaus G., and Knetsch, Harald, 5,006,686, Cl. 219-99.000

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Suzuki, Seizo, Sakuma, Nobuo, Yamaguchi, Katsumi, and Endo, Osamu, 5,005,928, Cl. 350-6.100

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Hara, Shigeyoshi, Endo, Zen-ichiro, and Mera, Hiroshi, 5,006,616, Cl. 526-75.000

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Rahrooh, Ghobad, and Engel, Rudiger A., 5,006,354, Cl. 426-231.000

Engel, Wolfhard, Eberlein, Wolfgang, Mihm, Gerhard, Trummlitz, Gunther, Mayer, Norbert, and De Jonge, Adriaan, to Karl Thomae GmbH. Condensed diazepinones, processes for preparing them and pharmaceutical compositions containing these compounds. 5,006,522, Cl. 514-221.000

Engelbrecht, Dennis R., to Hewlett-Packard Company. Bidirectional current limiting circuit. 5,006,734, Cl. 307-544.000

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Medly, Zoltan M., 5,006,175, Cl. 106-439.000
Sennett, Paul, and Brown, Steven A., 5,006,574, Cl. 523-351.000

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Gupta, Pramod, Engels, Hans-Wilhelm, and Rabe, Hansjurgen, 5,006,599, Cl. 524-740.000

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Acker, Loren C., and Harmony, Daniel C., 5,006,119, Cl. 606-27.000

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Bucholtz, Brian C., and Miller, Thomas J., 5,005,677, Cl. 188-299.000

Envirotech Corporation *See—*
Davis, Steven S., 5,006,241, Cl. 210-225.000

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Müller, Hans R., Ulmann, Martin, Conti, Josef, and Murdel, Gunter, 5,006,655, Cl. 544-258.000

Erich, Otis G., Jr., to Union Oil Company of California. Apparatus for positioning geophones in shallow holes. 5,007,031, Cl. 367-178.000

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Andersson, Kjell, and Eriksson, Lennart, 5,006,994, Cl. 364-442.000

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Webster, James M., Jr., 5,005,623, Cl. 150-159.000

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Sontag, Heinz, Elias, Hartmut, Ludwig, Wolfgang, Fritzsch, Walter, Eschner, Wolfgang, Hundhausen, Rainer, and Kratz, Harald, 5,005,979, Cl. 356-375.000

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Briscoe, Terry L., and Sprunger, Paul C., 5,005,304, Cl. 37-141.00R

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Vines, Arthur D., Schonfeld, Frederick A., and Espat, Ricardo, 5,006,841, Cl. 340-825.070

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Morin, Francois, 5,005,950, Cl. 350-333.000

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Van Overloop, Ronald R., 5,005,754, Cl. 227-178.000

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Balasubramanian, Mannarsamy, Gluckstein, Martin E., and Hornbaker, Edwin D., 5,006,625, Cl. 528-14.000
Eisenbraun, Allan A., and Blocker, Wesley C., 5,006,370, Cl. 427-240.000
Kolich, Charles H., Meltsner, Bernard R., and Braxton, Henry G., Jr., 5,006,324, Cl. 423-300.000
Semen, John, and Rogers, John J., 5,006,492, Cl. 501-97.000

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Fearnot, Neal E., and Evans, Merry L., 5,005,574, Cl. 128-419.0PG

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Banerji, Roth, 5,006,398, Cl. 428-220.000
Chang, Main, 5,006,500, Cl. 502-107.000
Gardiner, John B., Loffredo, Anthony A., Bloch, Ricardo, Nahas, Nicholas C., Ingold, Keith U., and Kowalchyn, Theodore V., 5,006,608, Cl. 525-370.000
Robinson, Peter M., and Van Det, Nguyen, 5,006,263, Cl. 210-728.000

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Green, George A., and Kaczmarek, Stanislaus A., 5,006,249, Cl. 210-603.000

Thaler, Warren A., Manalastas, Pacifico V., Drake, Evelyn N., and Lundberg, Robert D., 5,006,147, Cl. 71-27.000
Wiehe, Irwin A., Gorbaty, Martin L., and Olmstead, William N., 5,006,223, Cl. 208-125.000.

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Aylott, David H., 5,005,595, Cl. 132-73.000

Ezel, Inc. *See—*
Kumagai, Ryohei, 5,007,098, Cl. 382-21.000.

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Lundahl, E. Cordell, and Jensen, Laurel H., 5,005,342, Cl. 56-10.200

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Butcher, Richard H., 5,006,282, Cl. 261-29.000

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Palmgren, Sven, and Tedenstig, Ove, 5,007,004, Cl. 364-519.000.

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Dreschmann, Peter, and Walter, Wilhelm, 5,005,992, Cl. 384-484.000

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Fairborn, John W., to Chevron Research and Technology Company. Attenuation of borehole tube-waves. 5,005,666, Cl. 181-102.000.

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Camuffo, Sergio, 5,005,857, Cl. 280-690.000.

Falempin, Francois, Sans, Claude; Champigny Patrick; Laruelle, Gerard, and Garrel, Jean-Marie, to Office National d'Etudes et de Recherches Aerospatiales (ONERA). Two dimensional and asymmetric supersonic air intake for the combustion air of an aircraft engine. 5,005,782, Cl. 244-53.00B.

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Felkner, Donald J., and Famuliner, James R., 5,006,699, Cl. 235-472.000.

Fan, Roxy N., to Du Pont de Nemours, E. I., and Company. Solid imaging method utilizing compositions comprising thermally coalescible materials. 5,006,364, Cl. 427-44.000.

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Nakashima, Seiichiro, Toyoda, Kenichi; and Torii, Nobutoshi, 5,006,035, Cl. 414-680.000
Seki, Masaki, Takegahara, Takashi; and Kajitani, Akira, 5,006,977, Cl. 364-192.000
Yonekura, Mikio, and Tojo, Hiroyuki, 5,006,728, Cl. 307-296.100.

Fanuc Ltd. *See—*
Obara, Haruki; and Izumiya, Syunzo, 5,006,693, Cl. 219-69.120.
Sakamoto, Keiji, and Kuwano, Hironobu, 5,006,770, Cl. 318-561.000

Farb, David L. *See—*
Newman, Jack, and Farb, David L., 5,006,642, Cl. 530-383.000

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Chang, C. P., and Farb, Joseph, 5,006,480, Cl. 437-47.000.

Farb, Joseph E., to Hughes Aircraft Company. Method of making a latch-up free, high voltage, CMOS bulk process for sub-half micron devices. 5,006,477, Cl. 437-34.000.

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Farng, Liehpao O., and Horodysky, Andrew G., to Mobil Oil Corporation. Mixed resorcinol-hydroxyester borates as antioxidants. 5,006,270, Cl. 252-42.700

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Gravina, Edoardo, 5,005,753, Cl. 227-120.000.
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Faulkner, Douglas L. Sampling valve. 5,005,432, Cl. 73-863.860.

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Kueffer, Max; and Feiss, Roy L., 5,005,605, Cl. 137-625.390

Feitel, Frederick F. Apparatus and method for removing volatile organic contaminants from particulate material. 5,005,495, Cl. 110-344.000.

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Roos, Erwin, 5,006,020, Cl. 407-113.000.

Felkner, Donald J.; and Famuliner, James R. System for collecting medical data. 5,006,699, Cl. 235-472.000.

Fenne, Kenneth R., Steward, Wayne D., and Didyk, Witalij, to Pittway Corporation. Electrical unit with multi-position switch. 5,006,779, Cl. 320-2.000.

Ferguson, Gregory A., to Precision Handling Devices. System for dispensing a continuous web from a roll on which the web is wound. 5,005,779, Cl. 242-68.700.

Fernandez, Angel. Seat belt retractor with an electric motor. 5,005,777, Cl. 242-54.00R.

Fernandez, Jose M.: *See—*
Bogut, Henry A.; Dolezal, Anthony, and Fernandez, Jose M., 5,006,676, Cl. 200-61.520

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Ferrari, Matthew F.; Ferrari, Harry M., and Shallenberger, John M., 5,005,834, Cl. 273-73.00C.

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Hayes, Cecil L.; Cheung, Derek T.; and Fetterman, Harold R., 5,007,058, Cl. 372-4.000.

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Pischinger, Franz, Scheid, Ernst, Hilger, Ulrich; and Schmitz, Gunter, 5,005,402, Cl. 73-61.10R.

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Benedetto, Piero; Bezzi, Salvatore; and Odone, Paola, 5,005,898, Cl. 296-194.000
Gandiglio, Romolo; and Bellone, Ernestino, 5,005,849, Cl. 280-97.000.
Tornelli, Vittorino; and Maggioni, Virginio, 5,005,858, Cl. 280-707.000.

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Fort, Francois, 5,005,943, Cl. 350-96.260.

Fielding, Ivor R., to Amoco Corporation. Polypropylene formulations containing small amounts of fluoborates to improve color and water carry-over. 5,006,587, Cl. 524-405.000

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Figaro Engineering, Inc.: *See—*
Yutaka, Yoshida; Kazuo, Onaga; Mariko, Hanada; and Kazunari, Komatsu, 5,006,828, Cl. 338-34.000.

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Cheung, Nelson; Nix, Robert J.; and Figiel, Janusz, 5,006,385, Cl. 428-57.000.

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Max, Reinhold; and Filsinger, Karl-Heinz, 5,005,822, Cl. 271-213.000.

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Depew, Llewellyn E., 5,006,018, Cl. 406-18.000.

Finch, Harry *See—*
Skidmore, Ian F.; Lunts, Lawrence H. C., Finch, Harry, Naylor, Alan; and Campbell, Ian B., 5,006,556, Cl. 514-539.000

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Blanchet-Fincher, Graciela B.; Chang, Catherine T.; and Fincher, Curtis R., Jr., 5,006,434, Cl. 430-49.000.

Finelli, Alfred A. *See—*
Koehler, Harold W.; Anderson, Alfred J., and Finelli, Alfred A., 5,005,731, Cl. 222-54.000.

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Ross, Sidney D.; and Finkelstein, Manuel, 5,006,964, Cl. 361-504.000

Finley, John W.: *See—*
Klemann, Lawrence P.; Finley, John W.; and Scimone, Anthony, 5,006,351, Cl. 426-611.000.

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Duan, Renxian; Peng, Chengjiu; and Tian, Guijiang, 5,006,632, Cl. 528-206.000

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Fraser, Robert W., 5,006,380, Cl. 428-35.200

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Fischer, Michael J ; and Wilson, W Eugene, to Reliance Electric Industrial Company Vibration-proof coupling 5,006,007, Cl 403-290 000.

Fischer, Reiner; Jensen-Korte, Uta, Kunisch, Franz; Marhold, Albrecht, Ooms, Pieter, Schallner, Otto, Santel, Hans-Joachim; Schmidt, Robert R ; Krauskopf, Birgit; and Strang, Harry, to Bayer Aktiengesellschaft N-aryl-substituted nitrogen-containing heterocycles, and their use as herbicides and plant growth regulators 5,006,148, Cl 71-72 000

Fish, Aaron M., Branover, Alexander; Dausseing, Jean-Paul, and Miresmaili, Masoud, to Ilco Unican Inc Cylinder lock modified for use with a card reader unlocking mechanism 5,005,884, Cl 292-336 300

Fish, Elson B., to Plas/Steel Products, Inc Method for making fiber reinforced plastic tubing 5,006,291, Cl 264-103 000

Fish, Floyd H , Jr *See—*
Bice, Archie R , Edison, David H , Fish, Floyd H , Jr , Hopkins, Mark W , and Okine, Richard K., 5,006,294, Cl 264-138 000

Fisher Controls International, Inc *See—*
Jundt, Larry O., 5,006,976, Cl 364-184 000

Fister, Christian, and Grasset, Yves, to Alpcan SA Self-closing carabiner 5,005,266, Cl. 24-601 500

Flammer, George, to Metricom, Inc Method for routing packets by squelched flooding 5,007,052, Cl 370-85 600.

Flanigan, David A *See—*
Stokke, Olaf M.; Flanigan, David A , Ramsey, Robert B , Williams, Robert E., and Huycke, John, 5,005,655, Cl. 175-66 000

Flaugher, Jill L *See—*
Freyman, Bruce J.; Miles, Barry M , and Flaugher, Jill L , 5,006,673, Cl. 174-255 000

Fleetwood Systems, Inc *See—*
Mojden, Andrew E., 5,005,340, Cl 53-500 000

Fleissner, Gerold, to Fleissner Maschinenfabrik AG Process for producing nonwoven fabrics with steam pretreatment of binder powder 5,006,183, Cl 156-62 200

Fleissner Maschinenfabrik AG *See—*
Fleissner, Gerold, 5,006,183, Cl 156-62 200

Fleming, Stephen S *See—*
Diaz, David P , 5,005,219, Cl 2-244 000

Fletcher, M Ray, to Fletcher Machine, Inc Lamina clipping device and method 5,005,454, Cl 83-13.000

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Fletcher, M Ray, 5,005,454, Cl. 83-13 000

Fletcher, Philip *See—*
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Flex Products, Inc *See—*
Phillips, Roger W., Spellman, Vernon C , Gossett, Wayne L , Kamerling, Marc A , Coombs, Paul G., Todd, David W , and Silver, Steven A., 5,005,719, Cl 215-230 000

Flora, Laurence P , to Unisys Corp (Formerly Burroughs Corp) Fast BCD/binary adder 5,007,010, Cl. 364-771 000.

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Peatross, Christopher M., and Flowers, Ferdinand E , 5,005,711, Cl. 211-70.700.

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Glarsey, Eugene A , 5,005,408, Cl 73-301.000.

FMC Corporation *See—*
Hall, Richard E ; and Goyden, Denise D , 5,006,319, Cl 423-54 000
Tieckelmann, Robert H , Bull, Randy A , and Kurschner, Lisa M , 5,006,124, Cl. 8-111 000.
Yourgalite, Ray A.; Moore, Malcolm; Chamberlain, Neal C , Becicka, Kenneth F , Hilgeman, Samuel J , and Moore, Kevin D , 5,005,335, Cl 53-399 000

Fogel, Lou Integral leg brace and pedal for the handicapped 5,005,825, Cl 272-73 000

Fohl, Artur, to TRW Repa GmbH Force-limiting energy absorber for safety belt systems 5,005,909, Cl 297-472 000.

Ford Motor Company *See—*
Ciampa, Jerry D , and Kummer, Lawrence J., 5,005,900, Cl 297-216 000
Niederprum, Klaus, 5,005,712, Cl 211-150 000

Ford, Vernon Self-locking tool 5,005,450, Cl 81-318 000

Ford, William A *See—*
Erving, Richard H.; Ford, William A., and Miller, Robert R , II, 5,007,046, Cl. 370-32 100

Forgione, Peter S , and Singh, Balwant, to American Cyanamid Company Alkylcarbamylmethylated amino-triazines 5,006,653, Cl 544-196 000

Fort, Francois, to Fibres Optiques Recherche et Technologie Rigid video-endoscope having a rotatable device for adjusting the orientation of an image relative to an image receiving device 5,005,943, Cl 350-96 260.

Fortunato, Sheila R *See—*
Yamaguchi, Hiroshi, Furukawa, Koichi, Livingston, Philip O , Lloyd, Kenneth O., Oettgen, Herbert F , Old, Lloyd J., and Fortunato, Sheila R , 5,006,470, Cl 424-85.800

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Newkirk, Raymond K , and West, William G , 5,006,197, Cl 156-514 000.

Fosset, Jean *See—*
Sauvinet, Vincent, Fosset, Jean, Valere, Michel, Defort, Daniel; and Boutrouille, Maurice, 5,005,769, Cl 239-429 000

Fossing, Michael, and Jensen, Bent T , to Danish Container Supply ApS Elevating and transporting device 5,006,031, Cl 414-458 000

Foster, Matthew R., to Marmon Corporation Hatcher with internally mounted exhaust duct and exhaust damper control means 5,005,523, Cl 119-37 000

Foster Wheeler Energy Corporation *See—*
Polcer, John, 5,005,529, Cl 122-235 150

Fountain, David J Liquid level alarm 5,006,834, Cl 340-625 000

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Volland, Michel, Grandvallet, Gilles, and Fourneaux, Roger, 5,005,609, Cl 139-116 200

Fowlkes, William Y *See—*
Baughman, Richard C , Ellingham, David J , Fowlkes, William Y , Rubin, Bruce J , and Stepanik, Frank S., 5,006,900, Cl 355-271 000

Fox, Mansel F Oscillating force turbine 5,005,357, Cl 60-398 000

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Tobol, Nathan H , 5,006,842, Cl. 340-825 340

Framatome *See—*
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Franceschini, Jacqueline, and Margarit, Josette, to Laboratoires Delagrange Dihydrobenzofuran- and chroman-carboxamide derivatives, processes for the preparation thereof and use thereof as neuroleptics 5,006,570, Cl 514-422 000

Frank, Margaret A , to E R Squibb & Sons, Inc Composite compression and support dressing 5,006,401, Cl 428-231 000

Frankeny, Richard F., and Hermann, Karl, to International Business Machines Corporation Heat sink for utilization with high density integrated circuit substrates 5,006,924, Cl 357-82 000

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Squillante, Peter L., Egyud, Julius, and Karron, Abraham, 5,007,019, Cl 364-900 000

Franklin, Richard D , Auld, Gregg D., Murray, David E , Lescisin, John J , Vaia, Albert R , and Dunn, Thomas E , to Westinghouse Electric Corp Pressure pulse cleaning method 5,006,304, Cl 376-316 000

Franks, George J , Jr Adjustable ground clamp 5,006,074, Cl 439-92 000

Franks, Kerry D *See—*
Bugin, Marion, Jr , Dawson, Gary D , Franks, Kerry D , Geiss, Richard O , and Kerska, Donald H , 5,005,550, Cl 123-520 000

Fraser, Howard H , Jr , and Bayyouk, Jacob A , to Carrier Corporation Refrigerant injection into oil for sound reduction 5,005,376, Cl 62-296 000.

Fraser, Robert W , to First Brands Corporation Draw tape bag with multilayer draw tape 5,006,380, Cl 428-35 200

Fratesi, Gary R Thigh and knee protective device 5,005,565, Cl 128-80 00C

Fraunhofer Gesellschaft zur Forderung der angewandten Forschung e V *See—*
Maier, Dieter, and Boley, Dieter, 5,005,689, Cl 198-347 300

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Freed, William J *See—*
Wyatt, Richard J , Freed, William J , and Staub, Richard A , 5,006,122, Cl 606-130 000

Freeman, Derek J *See—*
Lidgitt, Peter J , Freeman, Derek J., and Cooper, Paul F , 5,006,232, Cl 210-96 100.

Freet, E Thomas, to Nature Sleep Corporation Water bed mattress 5,005,238, Cl 5-451 000

Freige, D Edmond, and Hibbs, Richard N , to Unisys Corp Cooling of circuit boards 5,006,959, Cl 361-384 000.

French, Jimmy M *See—*
Bolick, Roger E , II; and French, Jimmy M , 5,006,327, Cl 423-515 000.

Frenkel, Ronald E P Intraocular lens pressure monitoring device 5,005,577, Cl 128-645 000

Freund, William P., to Alloy Engineering Company. Furnace seal 5,006,064, Cl 432-205 000

Frey, Helmut, to Akkumulatorenfabrik Dr Leopold Jungfer. Apparatus for forming sets of accumulator plates 5,006,040, Cl 414-789 900

Freyman, Bruce J , Miles, Barry M , and Flaugher, Jill L , to Motorola, Inc Fabrication of pad array carriers from a universal interconnect structure 5,006,673, Cl 174-255 000

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Friedman, Robert H , and Surles, Billy W , to Texaco Inc. Treating underground formations 5,005,647, Cl 166-295 000

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Friel, Daniel D , to Edgecraft Corporation Knife sharpener 5,005,319, Cl 51-58.000.

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Friesen, David Self cleaning screen 5,006,135, Cl 55-286 000.

Frinzel, Udo *See—*
Pempeintner, Alfons; and Frinzel, Udo, 5,005,549, Cl. 123-479.000.

Frischmann, Peter G *See—*
Ballard, Donald E , Frischmann, Peter G , and Taub, Alan I , 5,005,456, Cl 83-170 000

Fritz, Frank M ; Knutson, Dale A ; and Janecke, James P , to Applied Power Inc High response, compact solenoid two-way valve 5,005,803, Cl 251-129 150

Fritz, William E., and Pankow, James C., to Gen-Tech, Inc Railroad hopper car outlet gate end tube seal 5,005,739, Cl. 222-542 000.

Fritzsch, Walter *See—*
Sontag, Heinz, Elias, Hartmut, Ludwig, Wolfgang, Fritzsch, Walter, Eschner, Wolfgang, Hundhausen, Rainer, and Kratz, Harald, 5,005,979, Cl 356-375 000

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Fu, Shan C Portable extensible flag pole with a flag 5,005,512, Cl 116-173.000

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Fuji Electric Co., Ltd *See—*
Nakamura, Katsunari, Ueda, Kenichiro; Irie, Yoshirou, Hoshi, Toyokazu, and Kawakami, Motozo, 5,006,996, Cl 364-478 000
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Ishizeki, Seiichi, 5,005,405, Cl. 73-123 000
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Suzuki, Kazuo, Tachibana, Fusao, and Chonan, Mitsugi, 5,005,533, Cl 123-52 0MB.
Watanabe, Kenzo, 5,005,540, Cl 123-90.120.

Fuji Koki Mfg Co Ltd *See—*
Tanaka, Hazime, Okamoto, Teiichi, Yoshiga, Kenji, and Watanabe, Kazuhiko, 5,005,370, Cl 62-211.000

Fuji Photo Film Co *See—*
Kuroiwa, Yoshihiko, 5,006,865, Cl 346-76.0PH

Fuji Photo Film Co , Ltd *See—*
Ishikawa, Takatoshi; Umemoto, Makoto, Sakai, Nobuo, and Furusawa, Genichi, 5,006,438, Cl 430-372 000
Itoh, Wataru, Nakajima, Nobuyoshi, and Nagata, Takefumi, 5,006,708, Cl 250-327 200
Kato, Eiichi, 5,006,441, Cl 430-114 000
Kato, Keiko; Kageyama, Shigeki, Amano, Yoshikazu, Arai, Fuminori, and Katsuyama, Harumi, 5,006,458, Cl 435-4 000
Kawajiri, Kazuhiro, Miida, Takashi, and Inoue, Kiyoshi, 5,006,928, Cl 358-98 000
Mori, Nobufumi; Ohnishi, Masahiro, Miyahara, Junji, Oikawa, Tetsuo, and Harada, Yoshiyasu, 5,006,707, Cl 250-311 000
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Toya, Ichizo, Ohmura, Kunioki, and Okazaki, Masaki, 5,006,449, Cl 430-508 000
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Yokoya, Hiroaki; and Tachikawa, Hiromichi, 5,006,433, Cl 430-49 000

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Fuji Xerox Co , Ltd *See—*
Akasaki, Yutaka, Aonuma, Hidekazu, Hongo, Kazuya; Sato, Katsuhiro, Nukada, Katsumi, and Marumo, Teruumi, 5,006,435, Cl 430-58 000
Suzuki, Takanobu; and Furusawa, Tsutomu, 5,007,003, Cl 364-519 000

Fuji, Eiji, Torii, Hideo; and Aoki, Masaki, to Matsushita Electric Industries Co , Ltd Plasma assited MO-CVD of perooskite dalectric films. 5,006,363, Cl. 427-39 000

Fuji, Kenichi *See—*
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Fuji, Shunji, to Tsubakimoto Emerson Co Overload clutch 5,005,684, Cl 192-56 00R

Fuji, Tatsuo *See—*
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Fujimoto, Kuniharu *See—*
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Fujimoto, Masayuki *See—*
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Fujimura, Hideo, and Hanaki, Hironobu, to Dai Nippon Insatsu Kabushiki Kaisha Heat transfer sheet 5,006,502, Cl 503-227.000

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Fujioka, Yoshide; Ohba, Toshihiro, Kanatani, Yoshiharu; and Uede, Hisashi, to Sharp Kabushiki Kaisha Thin film EL display panel drive circuit 5,006,838, Cl 340-781 000

Fujita, Fumio *See—*
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Fujita, Tsutomu, Imura, Hidetoshi, and Akahide, Kohzo, to Kawasaki Steel Corporation Method for cutting steel pipe piles 5,006,687, Cl 219-121 590.

Fujitsu Limited *See—*
Hamashima, Shigeki; Koseto, Masaru, and Nomura, Shoji, 5,006,711, Cl 250-349 000
Isono, Osamu, Fukui, Toshimasa, Nishino, Tetsuo; Tachibana, Tetsuo; and Iwabuchi, Eisuke, 5,007,055, Cl 371-32 000
Kunikane, Tatsuro; and Yokota, Takashi, 5,005,935, Cl 350-96 160
Miyoshi, Seiji, Fukuda, Misao, Yamato, Seiichi, Tokiwa, Kouji, and Maruyama, Kazuyoshi, 5,007,044, Cl 370-32 100
Nara, Yasuhiro, and Matsumoto, Tatsuro, 5,007,095, Cl 381-51 000
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Shimoi, Hiroyuki, 5,007,027, Cl 365-229 000
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Fujiwara, Hiroto *See—*
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Fukazawa, Hiromitsu, and Ogawa, Motosuke, to Dupont-Mitsui Fuluorochemicals Co., Ltd Volatile foaming agent composition 5,006,568, Cl 521-98 000

Fukuda, Kosei, to Tenox Corporation Corotating preventor of excavated soils in a ground improvement apparatus 5,006,016, Cl 405-240 000

Fukuda, Makoto; Kashiwadate, Ken, Kouyama, Toshitaka, and Shiiki, Zenya, to Kureha Kagaku Kogyo Kabushiki Kaisha Polyarylene thioether composition and molded product thereof 5,006,591, Cl 524-502 000.

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Fukui, Kazuyuki, Hattori, Yoshihiro, and Hada, Yoshinobu, to Minolta Camera Kabushiki Kaisha Developing device 5,005,517, Cl 118-689 000

Fukui, Toshimasa *See—*
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Fultz, William A , and McLochlin, David M , to Interlake Companies, Inc , The Line shaft accumulation conveyor 5,005,693, Cl 198-781 000

Furbee, Avery D , Bauer, Carl F , and Ramos, John S , to Picker International, Inc X-ray tube anode focusing by low voltage bias 5,007,074, Cl 378-138 000

Furer, Gerd, Heinzelmann, Karl-Fritz, and Osterloff, Kurt, to Zahnradfabrik Friedrichshafen AG Device for cleaning lubricating oil in a gearbox 5,005,437, Cl 74-467 000

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Alblrecht, Ernst, and Dinges, Harald, 5,005,504, Cl. 112-292.000
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Gaddy, Edward M., to Solarex Corporation. Interconnect for electrically connecting solar cells. 5,006,179, Cl. 136-244.000.
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Gahan, Michael, to Ciba-Geigy Corporation. Granules of alkyl esters containing hydroxyphenyl groups. 5,006,284, Cl. 264-9.000
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Galand, Claude, Menez, Jean, and Rosso, Michele, to International Business Machines Corporation. Method and apparatus for dynamically adapting a vector-quantizing coder codebook. 5,007,092, Cl. 381-36.000
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Curtiss, Lawrence E., 5,005,934, Cl. 350-96.150
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Lass, Joseph; Merkle, Hansjurgen; Hierweger, Alexander, and Lob, Erwin, 5,005,872, Cl. 283-85.000
Garcia, Henry E. *See*—
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Garrison, Michi E., Pelmulder, John P., and Renger, Herman L., to Pacesetter Infusion, Ltd. Air-in-line detector infusion system. 5,006,110, Cl. 604-65.000
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Virkar, Anil V., 5,006,494, Cl. 501-152.000
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Harrison, Pamela J., and Hein, Richard D., 5,005,811, Cl. 267-220.000
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Treacy, Debra J., and Mazdiyasni, Khodabakhsh S., 5,006,508, Cl. 505-1.000
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Anderson, John M., 5,006,763, Cl. 315-248.000
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Askanazi, Jeffrey, and Gil, Karen, 5,006,559, Cl. 514-561.000.
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Servais, Albert; and Somerhausen, Bernard, 5,006,418, Cl. 428-621.000.
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Skidmore, Ian F.; Lunts, Lawrence H. C.; Finch, Harry; Naylor, Alan; and Campbell, Ian B., 5,006,556, Cl. 514-539.000.
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Davis, Billy F.; Hancock, Michael P.; and Hayes, Scott L., 5,005,694, Cl. 206-3.000.
Gold, Philip W.: *See*—
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Goldberg, Edward, to NEC Electronics Inc. Microcomputer control of stepper motor using reduced number of parts. 5,006,773, Cl. 318-696.000.
Goldberg, Edward M.; Bettencourt, Daniel, Jr.; Tosti, James C., Jr.; and Jones, Norman S., to Precision Engineered Systems Inc. Blanket wash system with sub-ambient pressure circulation. 5,005,478, Cl. 101-425.000.
Goldberg, Herbert F. Refractometer readout system. 5,005,972, Cl. 356-135.000.
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Tennigkeit, Jurgen; and Lorenz, Herbert, 5,006,127, Cl. 8-406.000.
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Clark, John K., 5,006,606, Cl. 525-233.000
Klemmensen, Daniel F.; and Beers, Roger N., 5,005,625, Cl. 152-510.000.
Stanley, John H., 5,005,613, Cl. 141-45.000.
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Gordon, Richard A. Tab for animal tank cover. 5,005,522, Cl. 119-5.000.
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Kaplan, Stuart L.; and Goss, John R., 5,006,154, Cl. 71-92.000.
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Hall, Richard E.; and Goyden, Denise D., 5,006,319, Cl. 423-54.000.
Gozani, Tsahi; and Shea, Patrick M., to Science Applications International Corporation. Explosive detection system. 5,006,299, Cl. 376-159.000.
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Anderson, Dirk M.; Baker, Paul E.; Cantrell, Michael A.; Cerretti, Douglas P.; Cosman, David J.; Gimpel, Steven D.; Grabstein, Kenneth H.; Larsen, Alf D.; and McKereghan, Kate N., 5,006,465, Cl. 435-69.520.
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Roehrs, Daniel C.; Caruso, Angelo T.; Grace, Robert E.; Mara, Robert M., Elliot, John G., Saraceno, Patricia J., and Pacer, James M., 5,006,892, Cl. 355-208.000

Graham, Jeffrey *See—*
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Granville, J. Michael, Costa, Robert E., and Chu, Sam Y. Power transmission line monitoring system. 5,006,846, Cl. 340-870.280.

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Gravel, Claude *See—*
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Gravina, Edoardo, to Fasco S.p.A. Cartridge for a riveting gun 5,005,753, Cl. 227-120.000

Greanias, Evon C., and Donaldson, Robert L., to International Business Machines Corporation. Remotely sensed personal stylus. 5,007,085, Cl. 380-25.000

Green, George A., and Kaczmarek, Stanislaus A., to Exxon Research and Engineering Company. Anaerobic waste water treating process. 5,006,249, Cl. 210-603.000

Green, George D., Munk, Stephen A., and Barnes, Darryl K., to Allied-Signal Inc. Stain-resistant polymers derived from itaconic acid useful as coatings for fibers. 5,006,408, Cl. 428-395.000

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Greenlee, Mark L. *See—*
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Greenlee, William J., Veber, Daniel F., and Williams, Peter D., to Merck & Co., Inc. Di- or tripeptide renin inhibitors containing lactam conformational restriction in achpa. 5,006,511, Cl. 514-19.000

Greenough, Ronald L., to MacMillan Bloedel Limited. Boom sticks. 5,006,014, Cl. 405-72.000

Greenspan, Nathan. Superimposing image apparatus. 5,006,885, Cl. 355-43.000

Greenwood, Mark H., to Children On The Go, Inc. Foldable toilet seat. 5,005,223, Cl. 4-235.000

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Smegal, John A., Bilgic, Haluk A., Ryan, Robert C., and Gnieshop, Vance J., 5,006,224, Cl. 208-254.00H

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Griffin, Richard D. Outdoor post assembly. 5,006,009, Cl. 404-11.000

Griffis, Edgar E. Method and apparatus for eviscerating scallops. 5,005,258, Cl. 452-18.000.

Grigalauski, Denise A. *See—*
Khalil, Omar S.; Hanna, Charles F.; Zurek, Thomas F., and Grigalauski, Denise A., 5,006,309, Cl. 422-56.000.

Grimes, James T. *See—*
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Grobbel, William J., and Berry, Bruce R. Water-based coating removers. 5,006,279, Cl. 252-542.000

Grogan, Larry N. *See—*
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Groke, Karl, Miggitsch, Hans; Musil, Horst; and Polzer, Josef, to Leopold & Co., Chem. Pharm. Fabrik Aktiengesellschaft. Composition for destroying malignant tumors. 5,006,551, Cl. 514-461.000.

Grollier, Jean F., to L'Oreal. Composition for inducing and stimulating the growth of hair and/or retarding its loss, based on an amphoteric surface-active agent and on a pyrimidine derivative. 5,006,332, Cl. 424-70.000.

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Grote, Michael G. *See—*
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Groveman, Grant D. *See—*
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Grunder, Jaana, and Timmermann, Andreas, to ADEV Gesellschaft fur Entwicklung und Vertrieb von medizintechnishen Artikeln mbH. Cervical support. 5,005,564, Cl. 128-75.000.

Grunke, Richard, Peichl, Lothar; Puchinger, Franz, and Wydra, Gerhard, to MTU Motoren-und Turbinen-Union Muenchen GmbH. Structural component made of a titanium alloy and covered by a protective coating and method for producing the coating. 5,006,419, Cl. 428-623.000.

Gryziewicz, Lewis J. *See—*
Jerzewski, Robert L., Wong, Thomas M.; Gryziewicz, Lewis J., Jain, Nemichand B., and Thakur, Ajit B., 5,006,344, Cl. 424-465.000

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Barlow, Robert W., Swanson, Steven E., and Lynch, Thomas M., 5,005,941, Cl. 350-96.210
Barlow, Robert W., Lynch, Thomas M.; and Swanson, Steven E., 5,005,942, Cl. 350-96.210
Grossman, Mark W., Speer, Richard, and George, William A., 5,006,165, Cl. 75-407.000.
Hsueh, A-Chuan, and Chuang, Chiu-Kuang, 5,007,094, Cl. 381-47.000
Shaffer, John W., 5,006,762, Cl. 315-205.000

Guajardo, Ciro, to Teledyne Industries, Inc. Temperature compensated overload trip level solid state relay. 5,006,949, Cl. 361-18.000.

Guerin, Bernard, and Strassel, Albert, to Atochem. Polyvinylidene fluoride compositions and products made therefrom. 5,006,602, Cl. 525-72.000

Guggenheim, Thomas L.; Fukuyama, James M.; and Kelly, John J., to General Electric Company. Method for preparing copolyestercarbonates from cyclic oligomers. 5,006,637, Cl. 528-355.000

Guilbert, Roland, and Dhont, Bernard, to Thomson-CF. Coaxial line coupler with fluid cooled inner conductor. 5,006,825, Cl. 333-245.000

Guiler, Richard S., to E. J. Brooks Company. Tamper indicator for a locking seal. 5,005,883, Cl. 292-327.000.

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Gulton Industries, Inc. *See—*
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Gumbert, Hans, to U.S. Philips Corporation. Product carrier for circuit boards. 5,005,814, Cl. 269-309.000

Gumm, Jack R., Jr. *See—*
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Gunther, Martin, to Hewlett-Packard Company. Optical probe. 5,005,576, Cl. 128-634.000

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Hafeli, Paul B., to Artifex Ltd. Bone broaches and methods of manufacturing thereof. 5,006,121, Cl. 606-85.000

Hagen, Helmut, Dupuis, Jacques, and Eilingsfeld, Heinz, to BASF Aktiengesellschaft. Preparation of 7-chloroquinoline-8-carboxylic acids. 5,006,659, Cl. 546-170.000.

Haggstrom, Rolf P., to BLH Electronics, Inc. Weigh module. 5,005,429, Cl. 73-862.650.

Hajime Industries Ltd. *See—*
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Hakamdani, Mitsuhiro *See—*
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Hakoda, Keizo, and Samejima, Hisashi, to Bando Kagaku Kabushiki Kaisha. Mold for injection molding of toothed power transmission belt. 5,006,059, Cl. 425-573.000

Hale, Bruce *See—*
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Haley, Kevin, to Intel Corporation. Apparatus for surface mounting an integrated circuit package. 5,006,962, Cl. 361-417.000

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Hall, David B., to Litton Systems, Inc. Linear laser with two-swept frequencies of controlled splitting. 5,007,060, Cl. 372-23.000

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Hall, Dennis G., to Research Corporation Technologies, Inc. Method and system for directional, enhanced fluorescence from molecular layers. 5,006,716, Cl. 250-458.100.

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Popelier, Maurice A.; McCunn, Myron L., Winter, David C., Marchael, Dennis L., Hall, James W., and Rohren, Ronald E., 5,005,597, Cl. 134-25.100.

Hall, John D. Instrumented drift fish aggregating device and method. 5,005,309, Cl. 43-4.000

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Halleo Fabricators, Inc. *See—*
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Hamel, James A. *See—*
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Hamer, R. Richard L., Freed, Brian, and Allen, Richard C., to Hoechst-Roussel Pharmaceuticals Inc. Alkylamino- and alkylamino alkyl diarylketones. 5,006,563, Cl. 514-646.000

Hamilton, Alistair R. *See—*
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Markley, Lowell D., Hamilton, Christopher T., Swisher, Beth A., and Secor, Jacob, 5,006,159, Cl. 71-98.000

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Heren, Lawrence P., to L R Nelson Corporation Slitted dirt seal for inground sprinkler heads, 5,005,767, Cl 239-288.000

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Chang, C. P.; and Farb, Joseph, 5,006,480, Cl. 437-47.000.
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Ritter, Joachim, and Stark, Johann, 5,005,683, Cl. 192-45.000
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Cullen, John S.; Incorvia, Samuel A., Nigon, Christopher S., and Boezkowski, Frederick A , 5,005,763, Cl. 239-57.000
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Lee, Tzong-Ming; and Chen, Ker-Ming, 5,006,615, Cl. 525-526.000
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Jones, Floyd B. Spin-on oil filter adaptor for four cylinder continental aircraft engines. 5,006,237, Cl. 210-168.000

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Jordan, Willie W., to Abbott Laboratories. Vial seal. 5,005,721, Cl. 220-23.400

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Junkers, John K. Torque wrench. 5,005,447, Cl. 81-57.390

Just, Melitta. *See*—
Schonafinger, Karl, Beyerle, Rudi, Just, Melitta, Bohn, Helmut, and Ostrowski, Jorg, 5,006,540, Cl. 514-361.000

Justus, Gyula. *See*—
Kiss, Laszlo, Justus, Gyula, Zsuppan, Jozsef, and Knollmar, Tibor, 5,006,149, Cl. 71-81.000

Jutte, Ralph B. *See*—
Hartman, David R., Jutte, Ralph B., Beaver, Terry R., and Hill, Homer G., 5,006,293, Cl. 264-137.000

Jutting, Wolfgang. *See*—
Bohm, Harald, Jutting, Wolfgang, and Bretting, Jork, 5,006,427, Cl. 429-101.000

Kabushiki Kaisha Hokkaido Nissin. *See*—
Emura, Tatuo, and Ohba, Kiyoshi, 5,006,350, Cl. 426-46.000

Kabushiki Kaisha Imasen Denki Seisakusho. *See*—
Suzuki, Yoshio, Umeda, Kaoru, and Kitoh, Norimasa, 5,005,906, Cl. 297-362.000

Kabushiki Kaisha Kobe Seiko Sho. *See*—
Miyaoka, Satoshi, 5,005,466, Cl. 91-420.000

Kabushiki Kaisha Komatsu Seisakusho. *See*—
Nire, Takashi, and Watanabe, Takehito, 5,006,365, Cl. 427-66.000
Ota, Kazuo, 5,005,929, Cl. 350-6.500

Kabushiki Kaisha SG. *See*—
Matsuki, Yuji, and Ichikawa, Wataru, 5,006,798, Cl. 324-207.170

Kabushiki Kaisha Showa Seisakusho. *See*—
Satoh, Yutaka, and Takeuchi, Yoshinori, 5,005,859, Cl. 280-721.000

Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. *See*—
Mori, Shinji, Buma, Kozi, and Shinto, Hiroaki, 5,005,860, Cl. 280-731.000

Kabushiki Kaisha Tominaga Jyushi Kogyosho. *See*—
Tominaga, Kazutoshi, 5,006,238, Cl. 210-169.000

Kabushiki Kaisha Toshiba. *See*—
Aomori, Kohkichi, 5,005,558, Cl. 128-4.000
Goto, Junkei, and Iida, Tetsuya, 5,006,852, Cl. 341-155.000
Hattori, Hitoshi, 5,006,051, Cl. 418-60.000
Hirahara, Shuzo, and Higuchi, Kazuhiko, 5,006,870, Cl. 346-76.0PH
Ishizuka, Masaru, Yokono, Yasuyuki, Matsuura, Asako, Kamei, Yoshio, Ohashi, Hiromichi, Kitagawa, Mitsuhiko, Sasaki, Tomiya, and Monma, Shigeki, 5,006,921, Cl. 357-74.000
Koide, Nobuo, 5,006,816, Cl. 330-253.000
Koyama, Mikio, and Tanimoto, Hiroshi, 5,006,818, Cl. 330-261.000
Kurachi, Yasuhiko, Mori, Kazumi, and Koizumi, Hisao, 5,006,689, Cl. 392-450.000
Murashige, Yoshinori, 5,005,366, Cl. 62-126.000
Ohno, Tadayoshi, Nagato, Hitoshi, and Kanai, Tsutomu, 5,005,993, Cl. 400-120.000
Ohshima, Shigeo, Toda, Haruki, and Ikawa, Tatsuo, 5,007,028, Cl. 365-233.000
Ohtsuka, Eiji, 5,007,049, Cl. 370-62.000
Okazaki, Kiyoshi, 5,005,580, Cl. 128-660.030
Sagou, Seiji, and Ohtake, Yasuhisa, 5,006,432, Cl. 430-23.000
Someya, Akihiko, 5,006,866, Cl. 346-76.0PH
Tanaka, Yutaka, and Haraguchi, Masanori, 5,007,024, Cl. 365-207.000
Wakayama, Shigeru, and Miura, Akira, 5,006,374, Cl. 427-430.100

Kabushiki Kaisha Toyota. *See*—
Kuno, Toshitaka, Koide, Mitsuo, Nakano, Masaru, Hayashi, Chisao, Kato, Yoshito, and Ishiguro, Yasuo, 5,006,999, Cl. 364-513.000

Kabuto, Nobuaki. *See*—
Kimura, Yuichiro, Kabuto, Nobuaki, Takashimizu, Satoru, and Masujima, Katsuhiro, 5,006,739, Cl. 307-270.000

Kaczmarek, Stanislaus A. *See*—
Green, George A., and Kaczmarek, Stanislaus A., 5,006,249, Cl. 210-603.000

Kadota, Koji. *See*—
Yoshida, Ryuichi, Sawada, Takashi, Yamamural Tetsushi, and Kadota, Koji, 5,005,660, Cl. 180-117.000

Kadota, Yasushi. *See*—
Yamamoto, Takeomi, Endo, Nariaki, Kadota, Yasushi, and Yamakawa, Tadasu, 5,005,541, Cl. 123-90.350

Kageyama, Naohiro. *See*—
Katoh, Takehiro, Azuma, Yoshihiko, Hirano, Masayasu, Kageyama, Naohiro, Ishimura, Toshihiko, Tsuji, Kenji, and Ootsuka, Hiroshi, 5,006,877, Cl. 354-412.000

Kageyama, Shigeki. *See*—
Kato, Keiko, Kageyama, Shigeki, Amano, Yoshikazu, Arai, Fuminori, and Katsuyama, Harumi, 5,006,458, Cl. 435-4.000

Kageyama, Yukihiko. *See*—
Nakane, Toshio; Hijikata, Kenji; and Kageyama, Yukihiko, 5,006,581, Cl. 524-266.000

Kahen, Keith B., to Eastman Kodak Company. Laser diode. 5,007,063, Cl. 372-45.000.

Kahn, Joseph M., and Kasper, Bryon L., to AT&T Bell Laboratories. Optical Homodyne Receiver. 5,007,106, Cl. 455-619.000.

Kai, Masakatsu. *See*—
Shikunami, Juichi, Itonaga, Makoto; Kayanuma, Kanji; Kai, Masakatsu, and Nakamura, Nobuaki, 5,006,703, Cl. 250-231.130

Kai, Yasunobu. *See*—
Kamiya, Takashi; Naito, Toshihiko; Negi, Shigeto; Komatu, Yuuki; Kai, Yasunobu, Nakamura, Takaharu, Sugiyama, Isao, Machida, Yoshimasa; Nomoto, Seiichiro; Kitoh, Kyosuke; Katsu, Kanemasa; and Yamauchi, Hiroshi, 5,006,649, Cl. 540-222.000.

Kaijin, Kouhei. *See*—
Takaki, Takeshi; Kaijin, Kouhei; Oda, Denichi, Oda, Kunio; Kurihara, Hideo; and Tanabe, Takeshi, 5,006,603, Cl. 525-105.000.

Kainuma, Kiyokazu. *See*—
Hatano, Sakae, Takada, Yoshiharu, Kainuma, Kiyokazu; Kanematsu, Isao; Asano, Kazuo, Yoshida, Hisashi; and Mori, Yoshinori, 5,006,685, Cl. 219-69.200.

Kajima Corporation. *See*—
Yoshida, Hiroshi, Shibazaki, Mitsuhiro; Kubo, Hiroaki; and Jinbo, Shunji, 5,006,017, Cl. 405-263.000

Kajita, Yusuke. *See*—
Hirata, Toichi, Tanaka, Hideaki; Sugiyama, Genroku; and Kajita, Yusuke, 5,005,358, Cl. 60-426.000

Kajitani, Akira. *See*—
Seki, Masaki, Takegahara, Takashi; and Kajitani, Akira, 5,006,977, Cl. 364-192.000.

Kajiya, Ichiro. *See*—
Takahashi, Masami; and Kajiya, Ichiro, 5,005,948, Cl. 350-252.000

Kakegawa, Hisao. *See*—
Satoh, Toshio; Matsumoto, Hitoshi, Kakegawa, Hisao; Kato, Yoshiko; Riku, Juichi, Yoshinaga, Junji; and Kanamoto, Yoshifumi, 5,006,548, Cl. 514-427.000

Kakimoto, Norihiro, Kumano, Kazuo; and Nakamura, Kunie, to Asai Germanium Research Institute Co., Ltd. Agent for improving reduced functions of organs caused by inhibited blood circulation. 5,006,553, Cl. 514-492.000

Kakinuma, Hiromi; and Iida, Hideo, to Taiyo Yuden Co., Ltd. Scanning circuit device with sawtooth voltage source. 5,006,702, Cl. 250-208.100.

Kalar, Richard G. *See*—
Anderson, Thomas A., Kalar, Richard G.; Markfelt, Reinhold S., and Wagner, Walter R., 5,006,228, Cl. 209-365.300.

Kallin, Fredrik L. N. Hamilton, Alistair R.; and Luckhurst, Graham, to NCR Corporation. Means for routing connection cables out of a table top terminal. 5,006,960, Cl. 361-390.000.

Kamahori, Masao. *See*—
Watanabe, Yoshio; Taki, Mamoru; Miura, Junkichi; Kamahori, Masao, Miyagi, Hiroyuki; Matsumura, Yasuhide; and Kanetomo, Masafumi, 5,005,434, Cl. 73-864.210.

Kamata, Masamoto. *See*—
Masuda, Sadakazu, Fujita, Fumio; Murakami, Tadayoshi; Yoshino, Masahiko, Yagi, Ryuichi; and Kamata, Masamoto, 5,006,181, Cl. 148-111.000

Kambayashi, Shigemi. *See*—
Endo, Misao; and Kambayashi, Shigemi, 5,005,897, Cl. 296-192.000

Kamei, Yoshio. *See*—
Ishizuka, Masaru; Yokono, Yasuyuki; Matsuura, Asako; Kamei, Yoshio; Ohashi, Hiromichi; Kitagawa, Mitsuhiko, Sasaki, Tomiya, and Monma, Shigeki, 5,006,921, Cl. 357-74.000.

Kamerling, Marc A.. *See*—
Phillips, Roger W.; Spellman, Vernon C.; Gossett, Wayne L.; Kamerling, Marc A., Coombs, Paul G.; Todd, David W.; and Silver, Steven A., 5,005,719, Cl. 215-230.000.

Kamino, Hiroaki. *See*—
Maruyama, Fumio, Suyama, Tomio, Kamino, Hiroaki, Suyama, Koji, Kuwahara, Tokihiro; and Nagata, Osamu, 5,006,767, Cl. 318-103.000.

Kaminski, Joan M.. *See*—
Andress, Harry J.; Horodysky, Andrew G.; and Kaminski, Joan M., 5,006,272, Cl. 252-49.600.

Kamiya, Kazuo. *See*—
Sakakibara, Shiro; Imai, Norio, Kondo, Hidehiro; and Kamiya, Kazuo, 5,005,442, Cl. 74-866.000.

Kamiya, Takashi; Naito, Toshihiko, Negi, Shigeto; Komatu, Yuuki; Kai, Yasunobu, Nakamura, Takaharu; Sugiyama, Isao, Machida, Yoshimasa; Nomoto, Seiichiro; Kitoh, Kyosuke; Katsu, Kanemasa; and Yamauchi, Hiroshi, to Eisai, Co. 3-propenylcephem derivative. 5,006,649, Cl. 540-222.000.

Kampfer, Helmut. *See*—
Patzold, Walter, and Kampfer, Helmut, 5,006,455, Cl. 430-571.000

Kanai Juyo Kogyo Company, Limited. *See*—
Oda, Takumi, 5,005,260, Cl. 19-104.000.

Kanai, Masahiro; Aoike, Tatsuyuki, Matsuda, Koichi; and Kawakami, Soichiro, to Canon Kabushiki Kaisha. Pin heterojunction photovoltaic elements with polycrystal GaP (H,F) semiconductor film. 5,006,180, Cl. 136-258.000.

Kanai, Tsutomu. *See*—
Ohno, Tadayoshi; Nagato, Hitoshi; and Kanai, Tsutomu, 5,005,993, Cl. 400-120.000.

Kanamori, Iwao; and Okabe, Minoru, to Olympus Optical Co., Ltd. Objective lens system for endoscopes. 5,005,957, Cl. 350-432.000.

Kanamoto, Yoshifumi. *See*—
Satoh, Toshio; Matsumoto, Hitoshi; Kakegawa, Hisao; Kato, Yoshiko; Riku, Juichi, Yoshinaga, Junji; and Kanamoto, Yoshifumi, 5,006,548, Cl. 514-427.000.

Kanatani, Yoshiharu. *See*—
Fujioka, Yosihide; Ohba, Toshihiro; Kanatani, Yoshiharu; and Uede, Hisashi, 5,006,838, Cl. 340-781.000.

Kanazawa, Yasunori. *See*—
Sakemoto, Akito; Watanabe, Hitoshi; and Kanazawa, Yasunori, 5,007,039, Cl. 369-116.000.

Kaneaki, Tetsuhiko; Oda, Mikio; Nuriya, Kozo; and Tani, Yasunori, to Matsushita Electric Industrial Co., Ltd. Analog-to-digital converting system. 5,006,851, Cl. 341-155.000.

Kanebo Limited. *See*—
Jimbo, Keiji; Yasui, Yuuji; and Taninaga, Sigeru, 5,005,697, Cl. 206-235.000.

Kaneda, Naoya; Wada, Hiroyuki, Hirasawa, Masahide; and Suda, Hirofumi, to Canon Kabushiki Kaisha. Lens position control device. 5,005,956, Cl. 350-429.000.

Kaneko, Masaharu; and Nakajima, Takanori, to Mitsubishi Kasei Corporation. Liquid crystal composition and display element using the same. 5,006,276, Cl. 252-299.100.

Kanematsu, Isao. *See*—
Hatano, Sakae; Takada, Yoshiharu; Kainuma, Kiyokazu; Kanematsu, Isao; Asano, Kazuo, Yoshida, Hisashi; and Mori, Yoshinori, 5,006,685, Cl. 219-69.200.

Kanetomo, Masafumi. *See*—
Watanabe, Yoshio; Taki, Mamoru; Miura, Junkichi; Kamahori, Masao; Miyagi, Hiroyuki; Matsumura, Yasuhide; and Kanetomo, Masafumi, 5,005,434, Cl. 73-864.210.

Kang, Sung K.; Palmer, Michael J., Reiley, Timothy C., and Topa, Robert D., to International Business Machines Corporation. Thermocompression bonding in integrated circuit packaging. 5,006,917, Cl. 357-70.000.

Kano, Takenori. *See*—
Takase, Isao; Takemoto, Haruki; Tatsuta, Mitsugu; Maseki, Shinobu; Kano, Takenori; Yokoyama, Fumitomo; and Niimi, Mamoru, 5,006,102, Cl. 475-282.000.

Kanou, Hideki. *See*—
Miyamoto, Osamu; Kanou, Hideki; Nakamura, Kazuo; Imai, Takeshi, and Nishida, Kenichi, 5,006,829, Cl. 340-459.000.

Kao Corporation. *See*—
Kawai, Michio; Tanaka, Sadahiro; and Osanai, Osamu, 5,005,975, Cl. 356-237.000.

Kaplan, Stanley. Strip-out preventing anchoring assembly and method of anchoring. 5,006,023, Cl. 411-17.000.

Kaplan, Stuart L.; and Goss, John R., to Shell Oil Company. Method of synchronizing flowering in plants. 5,006,154, Cl. 71-92.000.

Kar, Kishore K., and Nowak, David J., to Dow Chemical Company, The. Filter apparatus and method for removing solids from fluids. 5,006,265, Cl. 210-741.000.

Karafian, Maxim; and Tsang, Irving C., to Stone & Webster Engineering Corporation. Apparatus for production of synthesis gas using convective reforming. 5,006,131, Cl. 422-201.000.

Karasawa, Kazunori. *See*—
Koichi, Yasushi; Sohmiya, Norimasa; and Karasawa, Kazunori, 5,006,896, Cl. 355-246.000

Karbach, Stefan. *See*—
Seele, Rainer; Kober, Reiner; Karbach, Stefan; Sauter, Hubert; Ammermann, Eberhard, Lorenz, Gisela, Rademacher, Wilhelm, and Jung, Johann, 5,006,152, Cl. 71-92.000.

Karino, Hiroyuki. *See*—
Ohba, Nobuyuki; Ikeda, Atsuhiko; Matsunari, Kenji; Yamada, Yuji, Hirata, Michiya; Nakamura, Yasuo, Takeuchi, Akira; and Karino, Hiroyuki, 5,006,157, Cl. 71-95.000.

Karl Storz Endoscopy-America, Inc. *See*—
Jones, Eric M., 5,006,965, Cl. 362-32.000.

Karl Thomae GmbH. *See*—
Engel, Wolfhard; Eberlein, Wolfgang; Mihm, Gerhard, Trummlitz, Gunther; Mayer, Norbert; and De Jonge, Adriaan, 5,006,522, Cl. 514-221.000.

Karle, Anton. *See*—
Rembold, Helmut; Pflug, Hannes; Christ, Wilhelm; Siebert, Hans-Joachim; Eblen, Ewald; Rodriguez-Amaya; Laufer, Helmut, Schmitt, Alfred; Pape, Werner; Buisson, Dominique, Lauvin, Pierre; Potz, Detlev, Simon, Nikolaus; Pigeroulet, Jean, and Karle, Anton, 5,005,548, Cl. 123-450.000.

Karlsson, Harry L., to Sandvik AB. Roller bit. 5,005,989, Cl. 384-94.000.

Karr, Steven G. *See*—
O'Donnell, Matthew, Welles, Kenneth B., II; Crawford, Carl R., Pelc, Norbert J.; and Karr, Steven G., 5,005,419, Cl. 73-626.000

Karron, Abraham. *See*—
Squillante, Peter L.; Egyud, Julius; and Karron, Abraham, 5,007,019, Cl. 364-900.000.

Karsunky, Ulrich. *See*—
Martini, Thomas; Keil, Karl-Heinz; Karsunky, Ulrich; and Sternberger, Klaus, 5,006,129, Cl. 8-554.000

Kasahara, Seitaro; Itakura, Haruo; and Kurihara, Susumu, to Konica Corporation. Image forming apparatus capable of performing serial page copy. 5,006,891, Cl. 355-208.000.

Kasei Optonix, Ltd.. *See*—
Yoneshima, Kunihiko; and Takahashi, Fumio, 5,006,277, Cl. 252-301.60S.

Kashiwadate, Ken: *See*—
Fukuda, Makoto, Kashiwadate, Ken; Kouyama, Toshitaka, and Shiiki, Zenya, 5,006,591, Cl 524-502.000

Kasparian, Kaspar A., Rogers, Aaron S., Hsu, Ming-Chyuan, and Fussell, John P., to Teletec Corporation. Bidirectional digital serial interface for communication digital signals including digitized audio between microprocessor-based control and transceiver units of two-way radio communications equipment. 5,007,050, Cl. 370-77.000.

Kasper, Bryon L. *See*—
Kahn, Joseph M., and Kasper, Bryon L., 5,007,106, Cl 455-619.000

Kasuga, asao; Mori, Takayuki; and Tsukada, Nobuo, to Seiko Instruments Inc. Travelling-wave motor. 5,006,746, Cl. 310-323.000.

Kasuya, Akira, and Suzuki, Toshio, to Toray Silicone Company, Limited. Self-bonding curable organopolysiloxane composition. 5,006,580, Cl. 524-264.000.

Katagiri, Shigenobu *See*—
Mochizuki, Takeshi; Katagiri, Shigenobu; Seino, Minoru, Ohshima, Minoru, Saito, Susumu, and Arimoto, Akira, 5,006,704, Cl 250-235.000.

Kataoka, Jyun *See*—
Tono, Show, Miki, Toshiyuki; Dairokuno, Yoshihide; and Kataoka, Jyun, 5,006,639, Cl. 210-727.000

Kataoka, Keiji, to Hitachi, Ltd. Optical projection apparatus with the function of controlling laser coherency. 5,005,969, Cl. 353-122.000.

Kataoka, Naoki *See*—
Shikatani, Yutaka; Kataoka, Naoki, Shimo, Yoshiyuki, Kuroda, Nobuyuki; and Matsuura, Kazuo, 5,006,633, Cl. 528-230.000.

Katayama, Yoshio *See*—
Fujioka, Hideaki; and Katayama, Yoshio, 5,005,916, Cl 303-103.000.

Katircioglu, Haluk; De Beule, John A.; and Mukherjee, Debaditya, to Unisys Corporation. Self-testing circuitry for VLSI units. 5,006,787, Cl. 324-73.100.

Kato, Eiichi, to Fuji Photo Film Co., Ltd. Liquid developer for electrostatic photography. 5,006,441, Cl. 430-114.000.

Kato, Keiichi *See*—
Kumagai, Motoo; Kato, Keiichi, Takeuti, Humio; Nagano, Masato; and Sakaguchi, Michiaki, 5,006,957, Cl 361-321.000

Kato, Keiko; Kageyama, Shigeki; Amano, Yoshikazu, Arai, Fuminori, and Katsuyama, Harumi, to Fuji Photo Film Co., Ltd. Analytical element having a polyacrylamide or derivative to minimize background for assaying enzyme activity. 5,006,458, Cl 435-4.000.

Kato, Kenji, Koike, Mikio, Orii, Akira, and Fuchigami, Shinichi, to Janome Sewing Machine Co., Ltd. Automatic embroidering machine with pattern input means. 5,005,500, Cl 112-121.120.

Kato, Shigeru *See*—
Takanashi, Itsuo; Tanaka, Hedeshi, Kato, Shigeru; Osada, Naomi, and Ichito, Toshikatsu, 5,005,998, Cl. 400-208.000.

Kato, Tsuyoshi: *See*—
Kobayashi, Yasutomo; and Kato, Tsuyoshi, 5,005,885, Cl 292-336.300.

Kato, Yoshiko, Yoshinaga, Junji; Shogaki, Takeshi; Kurano, Satoko, and Yano, Ikuya, to Sawai Pharmaceutical Co., Ltd. α,α-trehalose trimycolates and pharmaceutical compositions. 5,006,514, Cl 514-53.000.

Kato, Yoshiko: *See*—
Satoh, Toshio, Matsumoto, Hitoshi, Kakegawa, Hisao, Kato, Yoshiko; Riku, Juichi, Yoshinaga, Junji, and Kanamoto, Yoshifumi, 5,006,548, Cl. 514-427.000

Kato, Yoshitake *See*—
Fukunaga, Kazuya; Kato, Yoshitake, and Yoshimura, Hiroyuki, 5,006,948, Cl. 360-133.000.

Kato, Yoshito: *See*—
Kuno, Toshitaka; Koide, Mitsuo; Nakano, Masaru; Hayashi, Chisao; Kato, Yoshito; and Ishiguro, Yasuo, 5,006,999, Cl 364-513.000.

Katoh, Kazunobu *See*—
Yagihara, Morio; Okada, Hisashi, and Katoh, Kazunobu, 5,006,445, Cl. 430-264.000

Katoh, Takehiro, Azuma, Yoshihiko; Hirano, Masayasu; Kageyama, Naohiro, Ishimura, Toshihiko, Tsuji, Kenji, and Ootsuka, Hiroshi, to Minolta Camera Kabushiki Kaisha. Camera system. 5,006,877, Cl. 354-412.000

Katsu, Kanemasa *See*—
Kamiya, Takashi, Naito, Toshihiko; Negi, Shigeto, Komatu, Yuuki, Kai, Yasunobu; Nakamura, Takaharu, Sugiyama, Isao, Machida, Yoshimasa; Nomoto, Senchiro, Kitoh, Kyosuke, Katsu, Kanemasa; and Yamauchi, Hiroshi, 5,006,649, Cl 540-222.000

Katsumata, Shin, and Corcoran, Mark W., to Sundstrand Corporation. Floating annular seal with thermal compensation. 5,006,043, Cl 415-113.000

Katsuyama, Harumi *See*—
Kato, Keiko, Kageyama, Shigeki; Amano, Yoshikazu; Arai, Fuminori, and Katsuyama, Harumi, 5,006,458, Cl. 435-4.000.

Katsuyama Kinzoku Kogyo Kabushiki Kaisha *See*—
Sugimoto, Mutsumi, 5,005,267, Cl. 24-637.000

Kaufold, Roger W. *See*—
Dorfman, Mitchell R., Kaufold, Roger W.; Kushner, Burton, Rotolico, Anthony J.; and Tilkaran, Roopnarine, 5,006,321, Cl 427-192.000

Kaukeinen, Joseph Y., to Eastman Kodak Company. Method of making a fiber optic array. 5,006,201, Cl. 156-633.000.

Kavesh, Sheldon, Kim, Kwang; Kwon, Young D., and Prevorsek, Dusan C., to Allied-Signal. Rigid polyethylene reinforced composites having improved short beam shear strength. 5,006,390, Cl 428-105.000.

Kawabe, Masaki *See*—
Watanabe, Tsutomu; Sagiyama, Masaru, Kawabe, Masaki; and Morita, Masaya, 5,006,420, Cl. 428-629.000

Kawabe, Masanao, Kimura, Masao, Sugiyama, Kazuhiro; Yamaoka, Ikuro; and Inoue, Hiroharu, to Nippon Steel Corporation, and Nippon Steel Chemical Co., Ltd. Aromatic polyester carbonate from diphenol mixture. 5,006,631, Cl. 528-204.000.

Kawabe, Nozomu *See*—
Yamamoto, Susumu; Murai, Teruyuki; Kawabe, Nozomu, and Tobioka, Masaaki, 5,006,289, Cl. 264-61.000

Kawada, Kazuo *See*—
Noguchi, Hiroshi, and Kawada, Kazuo, 5,006,668, Cl 174-75.00C

Kawada, Susumu *See*—
Uemura, Satoshi, Kawada, Susumu; Sekine, Yoshitada; and Miyauchi, Tatsuo, 5,005,277, Cl. 29-407.000

Kawagishi, Hideyuki, to Canon Kabushiki Kaisha. High contrast liquid crystal element. 5,005,953, Cl. 350-341.000.

Kawaguchi, Chikakazu *See*—
Sakamoto, Seiji, Kawaguchi, Chikakazu, Meguro, Yoshio, Harada, Takashi; and Takisawa, Toshifumi, 5,006,589, Cl. 524-430.000

Kawaguchi, Toshikazu *See*—
Hashimoto, Kaoru, Kawaguchi, Toshikazu; and Hasegawa, Hirofumi, 5,006,934, Cl. 358-296.000

Kawai, Michio, Tanaka, Sadahiro; and Osanai, Osamu, to Kao Corporation. Surface profile analyzer. 5,005,975, Cl. 356-237.000

Kawai, Yoshio *See*—
Inokuchi, Kiyoshi, Okadome, Kenichiro; Muto, Yoichi, Kawai, Yoshio, Onuma, Tadashi; and Shirakami, Toshiharu, 5,006,111, Cl. 604-67.000

Kawajiri, Kazuhiro, Muda, Takashi; and Inoue, Kiyoshi, to Fuji Photo Film Co., Ltd. Image processing method in an electronic video endoscopy system. 5,006,928, Cl. 358-98.000

Kawakami, Hiroshi *See*—
Itoh, Kazuo; Naoi, Yoshitake; Matsushita, Hajime, Ebata, Takashi, and Kawakami, Hiroshi, 5,006,646, Cl 536-23.000.

Kawakami, Motozo *See*—
Nakamura, Katsunari; Ueda, Kenichiro, Irie, Yoshirou; Hoshi, Toyokazu, and Kawakami, Motozo, 5,006,996, Cl. 364-478.000

Kawakami, Soichiro. *See*—
Kanai, Masahiro, Aoike, Tatsuyuki; Matsuda, Koichi; and Kawakami, Soichiro, 5,006,180, Cl. 136-258.000.

Kawakita, Kouji, Kimura, Suzushi, Orinaka, Hideyuki; Yokotani, Youichiro, and Ishikawa, Mariko, to Matsushita Electric Industrial Co., Ltd. Dielectric ceramic composition. 5,006,956, Cl. 361-321.000.

Kawamoto, Atsushi *See*—
Kuzuo, Ryuichi, Kawamoto, Atsushi; Tada, Junya, Ohmori, Kenji, and Sekiya, Hiroko, 5,006,388, Cl. 428-64.000.

Kawamura, Hideo, to Isuzu Ceramics Research Institute Co., Ltd Engine cycle control system. 5,005,539, Cl. 123-21.000

Kawamura, Hideo, to Isuzu Motors Limited. Exhaust gas recirculation system of engine. 5,005,552, Cl. 123-571.000.

Kawano, Mutsumi *See*—
Takeda, Hisao; and Kawano, Mutsumi, 5,006,590, Cl. 524-458.000

Kawasaki Industries, Ltd *See*—
Okamoto, Osamu Nakaya, Teruomi; Suzuki, Seizo; Kuwano, Naoaki; Sakai, Yoshinori; Oda, Hiroshi; Uegusa, Masao, and Iba, Goji, 5,005,786, Cl. 244-161.000.

Kawasaki Jukogyo Kabushiki Kaisha *See*—
Yoshida, Ryuichi, Sawada, Takashi, Yamamural Tetsushi, and Kadota, Koji, 5,005,660, Cl 180-117.000

Kawasaki, Keiji, Sekiguchi, Michio; and Matsuhisa, Tadaaki, to NGK Insulators, Ltd. Detecting flaws formed in surfaces of rotating members with ultrasonic waves. 5,005,417, Cl. 73-593.000

Kawasaki Steel Corporation. *See*—
Fujita, Tsutomu, Imura, Hidetoshi; and Akahide, Kohzo, 5,006,687, Cl. 219-121.590.
Kiyota, Yoshisato, 5,006,164, Cl 75-255.000.

Kawase, Hideyuki, Sahashi, Noboru; and Hashizume, Tamotsu, to NGB Spark Plug Co., Ltd. Method of producing a joined article through bonding with low melting point glass. 5,006,143, Cl 65-43.000

Kawashima, Masaki; and Miyagaki, Kouichi, to Kawashima, Masaki Strapped fastener assemblage. 5,005,699, Cl. 206-344.000.

Kayanuma, Kanji *See*—
Shikunami, Juichi, Itonaga, Makoto; Kayanuma, Kanji; Kai, Masakatsu; and Nakamura, Nobuaki, 5,006,703, Cl. 250-231.130

Kazaoka, Kenichi, and Okazaki, Hiroshi, to Aisin Seiki Kabushiki Kaisha. Orbital rotor compressor having an inlet passage in the rotor. 5,006,052, Cl 418-61.100.

Kazerounian, Reza, Ali, Syed; and Eitan, Boaz, to WaferScale Integration Inc. On-chip high voltage generator and regulator in an integrated circuit. 5,006,974, Cl 363-60.000

Kazuhito, Ishida; Eiji, Shibata; and Kazumasa, Makino, to Brother Kogyo Kabushiki Kaisha. Imaging device. 5,006,884, Cl. 355-27.000

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Kazuhito, Ishida, Eiji, Shibata; and Kazumasa, Makino, 5,006,884, Cl. 355-27.000.

Kazunari, Komatsu *See*—
Yutaka, Yoshida, Kazuo, Onaga, Mariko, Hanada; and Kazunari, Komatsu, 5,006,828, Cl. 338-34.000.

Kazuo, Onaga: *See*—
Yutaka, Yoshida; Kazuo, Onaga; Mariko, Hanada; and Kazunari, Komatsu, 5,006,828, Cl. 338-34.000.

Kazushige, Nishida *See*—
Arima, Yoshihiro, Otuka, Soiti; and Kazushige, Nishida, 5,006,376, Cl 428-34.100.

Kedem, Dan; and Rubinstein, Mordechai, to Du-Kedem Technologies, Ltd., and Du-Kedem Projects Ltd. Fruit picking device. 5,005,347, Cl 56-328.100

Keil, Karl-Heinz *See*—
Martini, Thomas, Keil, Karl-Heinz, Karsunky, Ulrich, and Sternberger, Klaus, 5,006,129, Cl. 8-554.000

Keiper, Francis P., III: *See*—
Schmuckal, Peter J., Phillips, Mitchell S., Keiper, Francis P., III, Sprout, James C., and Fried, Ronald H., 5,007,081, Cl 379-354.000

Kelders, Jan *See*—
Raar, Hans; and Kelders, Jan, 5,005,999, Cl 400-208.000

Kelleher, Barbara J., Walsh, Michael J., and Cone, Richard E., to Hartley Associates Inc. Infant car bed for a vehicle. 5,005,234, Cl 5-94.000.

Keller, Alfred E *See*—
Veatch, Fred C., and Keller, Alfred E., 5,006,258, Cl. 210-677.000

Keller, Hans J., to Eltec Instruments, Inc. Catoptric differential sensing device. 5,006,712, Cl. 250-353.000

Keller, Rene: *See*—
Mandrin, Charles, and Keller, Rene, 5,006,133, Cl. 55-53.000

Keller, Ursula, and Knox, Wayne H., to AT&T Bell Laboratories. Nonlinear external cavity modelocked laser. 5,007,059, Cl. 372-18.000

Keller, Wilhelm A. Dispensing apparatus for operating double cartridges. 5,005,735, Cl. 222-137.000

Kellogg Company *See*—
Webster, Jeffrey, Richey, Stephen and Tuttup, Robert, 5,005,410, Cl. 73-335.000

Kelly, James H., Jr. to Pulaski Furniture Corporation. Case clock with illuminated pendulum. 5,007,036, Cl. 368-134.000

Kelly, John J. *See*—
Guggenheim, Thomas L., Fukuyama, James M., and Kelly, John J., 5,006,637, Cl 528-355.000

Kelly, Michael G *See*—
Fyler, Donald C., Van Duyne, Edward A., and Kelly, Michael G., 5,005,823, Cl. 271-228.000

Kelly Services, Inc.: *See*—
Cummins, Marty T., 5,007,682, Cl 380-4.000

Kelman, Josh, to Davidson Textron Inc. Energy absorbing bumper fastener system. 5,005,887, Cl 293-120.000

Kemkers, Pieter, Van Roosmalen, Johannes H. M., and Venema, Bernardus G. J. L., to U.S. Philips Corporation. Method of positioning products on a tape comprising compartments as well as an apparatus for implementing the method. 5,005,338, Cl 53-494.000

Kemner, Rudolf: *See*—
Boskamp, Eddy B., and Kemner, Rudolf, 5,006,803, Cl. 324-311.000

Kempf, Stephan: *See*—
Sichmann, Eggo, Krug, Thomas, and Kempf, Stephan, 5,006,213, Cl. 204-192.140

Kemske, Jonathon D. *See*—
Wendt, Dan J.; Kemske, Jonathon D., and Pesheck, Peter S., 5,006,684, Cl. 219-10.55E

Kenall Manufacturing Company *See*—
Mackiewicz, Edward T., 5,006,970, Cl. 362-217.000

Kendall Company, The *See*—
Gilman, Thomas H., and Westlake, Betsy C., 5,005,567, Cl 128-165.000

Kennametal Inc. *See*—
Beach, Wayner H., Den Besten, Leroy E., and Rowlett, Don C., 5,005,622, Cl 144-241.000

Kennedy, Melvin R., and Lubinski, Joseph J., to Lewis Galoob Toys, Inc. Ultra-miniature vehicle. 5,006,090, Cl. 446-462.000.

Kennedy, William J.; Leach, Peter E., and Grogan, Larry N., to Velcro Industries B.V. Foamed seat cushion. 5,005,242, Cl. 5-481.000

Kent-Moore Corporation: *See*—
Manz, Kenneth W., 5,005,369, Cl 62-195.000.
Manz, Kenneth W., and Parks, Richard, 5,005,375, Cl 62-292.000

Kentek Information Systems, Inc. *See*—
Kinoshita, Koichi, 5,006,868, Cl. 346-157.000

Kerbaugh, Michael L., Koburger, Charles W., III; and Macheeney, Brian J., to International Business Machines Corporation. Forming wide dielectric-filled planarized isolation trenches in semiconductors. 5,006,482, Cl 437-67.000

Kernevez, Nelly *See*—
Berchadsky, Yves, Kernevez, Nelly, Le Moigne, Francois, Mercier, Anne, Secourgeon, Liliane, and Tordo, Paul, 5,006,663, Cl 548-412.000

Kerska, Donald H *See*—
Bugin, Marion, Jr., Dawson, Gary D.; Franks, Kerry D., Geiss, Richard O., and Kerska, Donald H., 5,005,550, Cl 123-520.000

Kerth, Juergen: *See*—
Zolk, Ralf; Kerth, Juergen, and Hemmerich, Rainer, 5,006,620, Cl. 526-128.000

Kestner, Diane E. *See*—
Anderson, Charles C., Kestner, Diane E., Lewis, Mark A., and Opitz, Gary R., 5,006,451, Cl 430-527.000

Kettler, David C *See*—
Brandt, Christopher D., Kettler, David C., Windish, Willis E. and Blake, William W., 5,006,100, Cl. 475-138.000

Key-Tech, Inc.: *See*—
Durand, David, 5,006,397, Cl. 428-209.000

Keystone International Holdings Corp.: *See*—
Kueffer, Max; and Feiss, Roy L., 5,005,605, Cl 137-625.390

Khalil, Omar S.; Hanna, Charles F., Zurek, Thomas F., and Grigalauski, Denise A., to Abbott Laboratories. Immunoassay device with liquid transfer between wells by washing. 5,006,309, Cl. 422-56.000.

Khoshnevisan, Mohsen, and Yeh, Pochi A., to Rockwell International Corporation. Nonlinear optical doppler imaging amplifier. 5,006,813, Cl 330-4.300

Kibler, Jack M.; Schmotzer, Jack K., and Stauffer, Charles C., to Electric Power Research Institute, Inc. Automated membrane filter sampler. 5,005,430, Cl 73-863.010

Kikkawa, Atsushi *See*—
Nagata, Shinichi, Kikkawa, Atsushi, and Endo, Kenji, 5,005,959, Cl 350-452.000

Kikuchi, Akira *See*—
Yoshizawa, Masahiro, Kikuchi, Akira, Wada, Kou; Fujinami, Minpei, and Shimazu, Nobuo, 5,006,795, Cl. 324-158.00R

Killguss, Heinrich *See*—
Mirlieb, Bernd; and Killguss, Heinrich, 5,007,075, Cl. 378-172.000.

Kim, Bang M. *See*—
Woodmansee, Donald E., and Kim, Bang M., 5,006,373, Cl 427-422.000.

Kim, Byeongyun, and Hwang, Sangki, to Samsung Electronics Co., Ltd. Bitline precharge circuit of multi-sectional memory array. 5,007,023, Cl. 365-203.000

Kim, Dong Seok *See*—
Lee, Chong Jin, and Kim, Dong Seok, 5,006,068, Cl 433-169.000

Kim, Kwang *See*—
Kavesh, Sheldon; Kim, Kwang, Kwon, Young D., and Prevorsek, Dusan C., 5,006,390, Cl. 428-105.000

Kim, Kwang-Shick Artificial stone wick for a burner and processes for the preparation thereof. 5,006,498, Cl. 502-68.000

Kim, Soo K., to Goldstar Co., Ltd. Impedance roller structure for VCR. 5,005,748, Cl 226-190.000

Kimberly-Clark Corporation *See*—
Alikhan, Mir I., Colrud, Sandra M., and Sneyd, James C., 5,006,116, Cl 604-365.000

Kimpara, Mamoru *See*—
Adachi, Takeshi, Mizuno, Kotaro; Yamada, Shigeru, Suzuki, Hideo, and Kimpara, Mamoru, 5,005,459, Cl 84-453.000

Kimura, Hiromichi, Iwatsuki, Kunihiro; Taniguchi, Hiroji; Taniguchi, Takuji, and Ishikawa, Kazunori, to Toyota Jidosha Kabushiki Kaisha; and Aisin AW Co., Ltd. Hydraulic control apparatus for automatic transmission for motor vehicle. 5,005,444, Cl. 74-868.000

Kimura, Masao: *See*—
Kawabe, Masanao; Kimura, Masao, Sugiyama, Kazuhiro, Yamaoka, Ikuro; and Inoue, Hiroharu, 5,006,631, Cl 528-204.000.

Kimura, Naofumi *See*—
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Kimura, Nariko *See*—
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Kimura, Suzushi *See*—
Kawakita, Kouji, Kimura, Suzushi; Orinaka, Hideyuki; Yokotani, Youichiro; and Ishikawa, Mariko, 5,006,956, Cl 361-321.000.

Kimura, Yuichiro, Kabuto, Nobuaki, Takashimizu, Satoru, and Masujima, Katsuhiro, to Hitachi, Ltd. Capacitive load drive circuit. 5,006,739, Cl 307-270.000.

Kinetic Software, Inc.: *See*—
Ehret, Charles F.; and Ashton, William T., Jr., 5,006,985, Cl. 364-413.010

Kinetics Concepts, Inc. *See*—
Vrzalik, John H., 5,005,240, Cl 5-453.000

King, Donald D., to Thermo King Corporation. Air conditioner unit for mounting on or in the roof of a vehicle. 5,005,372, Cl. 62-244.000

King, Ernest L., and Durham, Lee R. Fishing caddy apparatus. 5,005,847, Cl. 280-47.190

King, James L.; and Lykes, Robert E., to A. O. Smith Corporation. Multiple compartmented dynamoelectric machine. 5,006,743, Cl 310-89.000

Kinoshita, Koichi, to Kentek Information Systems, Inc. Method and apparatus for printing two or more colors using an electrophotographic process. 5,006,868, Cl. 346-157.000

Kinsinger, Malcolm H., to Caterpillar Inc. Track adjusting mechanism. 5,005,920, Cl 305-10.000

Kinstler, William G. Illuminated vehicle sign. 5,005,306, Cl 40-591.000

Kinuhata, Satoru; Takami, Masao, Shibata, Eiji, and Tamura, Tadahiko, to Sumitomo Rubber Industries Inc. Method for correcting tire deflection in tire grooving and apparatus therefor. 5,005,628, Cl. 157-13.000

Kirby, Roy *See*—
Goodwin, John C.; Kirby, Roy, and Langley, Ernest A., 5,005,725, Cl. 220-261.000

Kiriaki, Sami, and Tan, Khen-Sang, to Texas Instruments Incorporated. Hysteresis insensitive analog to digital converter system using a coarse comparator and a fine comparator. 5,006,853, Cl. 341-156.000.

Kiriyama, Tsutomu *See*—
Santa, Toshihiro; and Kiriyama, Tsutomu, 5,006,629, Cl 528-183.000

Kishi, Hiroshi; Chazono, Hirokazu, Oshio, Minoru; Saito, Hiroshi, Nakamura, Toshiya, and Shizuno, Hisamitsu, to Taiyo Yuden Co., Ltd. Solid dielectric capacitor and method of manufacture. 5,006,954, Cl 361-321.000

Kishi, Hiroshi, Chazono, Hirokazu, Oshio, Minoru, Saito, Hiroshi, Nakamura, Toshiya, and Shizuno, Hisamitsu, to Taiyo Yuden Co.,

Ltd. Solid dielectric capacitor and method of manufacture 5,006,955, Cl 361-321.000.
Kishimoto, Toshiki, and Imamura, Kuniyasu, to Sumitomo Metal Mining Company Limited. Process for preparing single crystal of potassium titanium arsenate. 5,006,199, Cl. 156-621.000.
Kisida, Hirosi *See*—
Tsushima, Kazunori; Matsuo, Noritada; Kisida, Hirosi, and Yano, Toshihiko, 5,006,538, Cl 514-345.000.
Kiss, Laszlo, Justus, Gyula, Zsuppan, Jozsef, and Knollmar, Tibor, to Szekszardi Allami Gazdasag KSZE Novenytermelesi Rendszer. Method and composition for the treatment of field plant seeds 5,006,149, Cl. 71-81.000
Kistner, Kenneth J., to Specified Equipment Systems Company, Inc Method and apparatus for applying multicomponent materials 5,005,765, Cl. 239-135.000.
Kistner, Kenneth J Material processor. 5,005,982, Cl. 366-272.000
Kita, Fujio, to Mitsubishi Denki K.K. X-Y table device in automatic sewing machine 5,005,501, Cl. 112-121.120.
Kitagawa, Mitsuhiko *See*—
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Kitajima, Shinichi. *See*—
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Kitaura, Yoshihiko; Ito, Fumitaka; Stevens, Rodney W., and Asai, Nobuko, to Pfizer Inc Antiallergy and antiinflammatory agents 5,006,541, Cl 514-367.000.
Kitchens, John D. *See*—
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Kitoh, Kyosuke *See*—
Kamiya, Takashi; Naito, Toshihiko; Negi, Shigeto, Komatu, Yuuki, Kai, Yasunobu; Nakamura, Takaharu, Sugiyama, Isao, Machida, Yoshimasa, Nomoto, Seiichiro, Kitoh, Kyosuke; Katsu, Kanemasa; and Yamauchi, Hiroshi, 5,006,649, Cl. 540-222.000
Kitoh, Norimasa: *See*—
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Kitrilakis, Sotiris: *See*—
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Kittle, Carl E., Paxton, Dennis L., and Camacho, Abraham, to Deere & Company Wheel tread adjusting device 5,005,913, Cl. 301-128.000
Kiyota, Yoshisato, to Kawasaki Steel Corporation. Starting material for injection molding of metal powder 5,006,164, Cl 75-255.000
Klahn, Thomas *See*—
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Klazinga, Aan H *See*—
Huizinga, Tom, Hoek, Arend; Schaper, Hennie, and Klazinga, Aan H., 5,006,496, Cl 502-61.000.
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Nerger, Klaus K.; Klein, Hans J., and Burkart, Gunther, 5,005,889, Cl 294-86.400
Kleinschmidt, David C.: *See*—
Howard, Norman B.; and Kleinschmidt, David C., 5,006,360, Cl 426-601.000
Klemann, Lawrence P.; Finley, John W., and Scimone, Anthony, to Nabisco Brands, Inc. Cyclohexyl diol diesters as low calorie fat mimetics. 5,006,351, Cl 426-611.000
Klemmensen, Daniel F., and Beers, Roger N., to Goodyear Tire & Rubber Company, The Pneumatic tire having air retention innerliner 5,005,625, Cl 152-510.000.
Klestadt, Ralph H. *See*—
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Klick, Alan B. Means and method of a game board for receiving magnetic pieces. 5,005,841, Cl. 273-345.000.
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Holtgreve, Johannes, 5,005,328, Cl. 52-199.000.
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Jakobs, Willy, 5,005,775, Cl 241-232.000
Kloeckner-Humbolt-Deutz Aktiengesellschaft *See*—
Suessegger, Albert, 5,005,770, Cl. 241-19.000.
Klumperink, Eric A. M., and Seevinck, Evert, to U.S. Philips Corporation. Linear-gain amplifier arrangement. 5,006,815, Cl 330-253.000
Kluth, Alvin J. Envelope mailer 5,005,337, Cl 53-460.000
Kluttz, Robert Q., to Shell Oil Company Melt processing of carbon monoxide/olefin copolymer with carbon dioxide 5,006,638, Cl 528-483.000
Knauer, Peter, to Man Roland Druckmaschinen AG Rotary printing machine construction. 5,005,475, Cl 101-218.000
Knavish, Leonard A., and Harrell, William C., to PPG Industries, Inc. Melting glass with oxidation control and lowered emissions. 5,006,144, Cl. 65-134.000.
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von der Heyde, Richard; and Becker, Erich, 5,006,049, Cl 417-476.000
Knoben, Jozef H. A., and Wensink, Jan B., to Holec Systemen en Componenten B.V. Trip device for an electrical switch and an electrical switch with this trip device 5,006,826, Cl 335-35.000
Knoll, Guenter, Leonhard, Rolf, Kraft, Wolfgang, and Lucas, Bernhard, to Robert Bosch GmbH Coagulator for systems for the purifying of exhaust gases of fossil fuels 5,006,134, Cl. 55-146.000.
Knollmar, Tibor *See*—
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Knutson, Dale A *See*—
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Kobayashi, Hideaki, to Hitachi, Ltd Method and apparatus for data communication through composite network 5,007,017, Cl 364-900.000
Kobayashi, Junichiro, Hiramatsu, Shigeru, and Takakuwa, Hidemi, to Sony Corporation. Method for manufacture of semiconductor device 5,006,478, Cl 437-41.000
Kobayashi, Junji, Tokoro, Hiroyoshi, Ninuma, Kiyoshi, Hosoya, Kensei, and Chiba, Masao, to Hitachi Koki Co., Ltd Developing apparatus for xerography 5,006,898, Cl 355-253.000
Kobayashi, Yasutomo, and Kato, Tsuyoshi, to Nifco, Inc Apparatus for operating linkage or car door by pivotal lever 5,005,885, Cl 292-336.300
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Kodama, Yukio, to Fuji Jukogyo Kabushiki Kaisha Power transmission system for a four-wheel drive vehicle 5,005,662, Cl 180-233.000
Kodato, Toshiharu *See*—
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Koichi, Yasushi; Sohmiya, Norimasa, and Karasawa, Kazunori, to Ricoh Company, Ltd Image density control method for an image forming apparatus. 5,006,896, Cl. 355-246.000.
Koide, Mitsuo *See*—
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Kolbenschmidt Aktiengesellschaft *See*—
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Kolskog, Albert Deep banding knife with rod attachment. 5,005,497, Cl 111-123.000
Kolton, Chester, and Spater, Stuart S., to B & G Plastics, Inc. Folded tail belt hanger with enhanced belt retention 5,005,741, Cl. 223-85.000.
Komatsu, Shigeru Dental implant with y-shaped body 5,006,070, Cl 433-176.000
Komatsubara, Kenichi *See*—
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Kamiya, Takashi; Naito, Toshihiko, Negi, Shigeto, Komatu, Yuuki, Kai, Yasunobu; Nakamura, Takaharu, Sugiyama, Isao, Machida, Yoshimasa; Nomoto, Seiichiro, Kitoh, Kyosuke; Katsu, Kanemasa; and Yamauchi, Hiroshi, 5,006,649, Cl. 540-222.000
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Konica Corporation *See*—
Kasahara, Seitaro, Itakura, Haruo, and Kurihara, Susumu, 5,006,891, Cl 355-208.000
Satoh, Hisao, 5,006,905, Cl. 355-315.000
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Koninklijke PTT Nederland N.V *See*—
van den Dool, Frans, and van der Wal, Jacob C., 5,007,043, Cl 370-60.000
Konishiroku Photo Industry Co., Ltd *See*—
Sasaki, Masao, Nishijima, Toyoki, Takada, Shun, and Onodera, Kaoru, 5,006,454, Cl. 430-546.000
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Satoh, Yuji, and Kono, Hiromi, 5,005,680, Cl. 192-3.550
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Nakane, Toshio; Naka, Michiro, Konuma, Hiroaki, and Hijikata, Kenji, 5,006,634, Cl 528-272.000.
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Koon, Terry D., to Level Electronics, Inc Fluid level sensing system 5,005,407, Cl 73-290.00R
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Koren, Yoram *See*—
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Kosa, Yasunobu, to Motorola, Inc Dram with a vertical capacitor and transistor 5,006,909, Cl 357-23.600
Kosaka, Toru, Ohtsubo, Yoshiaki, and Meguro, Hiroshi, to Nikon Corporation Distance-measuring apparatus for camera 5,006,700, Cl 250-201.400.
Koschek, Drew G *See*—
Griswold, Allen B., Tessier, Paul A; and Koschek, Drew G., 5,006,835, Cl. 340-626.000
Koseto, Masaru: *See*—
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Koshimizu, Toshio: *See*—
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Fazio, Michael J.; Pollock, Douglas K., and Kotite, Nicolas J., 5,006,643, Cl 534-10.000
Kouno, Katsumi *See*—
Itoh, Hiroshi; Sugaya, Masami, Soga, Yoshinobu; Morisawa, Kunio; Habuchi, Ryoji; Kouno, Katsumi; and Hatton, Yuji, 5,006,093, Cl 474-28.000
Kouyama, Toshitaka *See*—
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Kovacs, Jenoe; Melzer, Milena; Balz, Werner, Lenz, Werner; Loch, Werner; and Jakusch, Helmut, to BASF Aktiengesellschaft Magnetic recording media 5,006,406, Cl. 428-323.000
Kowalchyn, Theodore V.: *See*—
Gardiner, John B., Loffredo, Anthony A., Bloch, Ricardo, Nahas, Nicholas C., Ingold, Keith U., and Kowalchyn, Theodore V., 5,006,608, Cl. 525-370.000
Kowalk, Wolfgang, to U.S. Philips Corporation Circuit arrangement for avoiding overload in a wideband switching system 5,007,048, Cl 370-60.000.
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Kraatz, Gary W.. *See*—
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Kraft General Foods, Inc *See*—
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Krauth, Richard G Con:rolled percolation system and method for heap leach mining 5,005,806, Cl 266-101.000
Krebs, Stephen R.: *See*—
D'Aoust, Robert; Cording, Robert B., Grosse, Debora Y., Jennings, Kevin; Krebs, Stephen R., Reasoner, George E., Jr., Smith, Gerald R., and Williams, David C., 5,007,100, Cl 382-49.000
Kreutner, William; Bolser, Donald, Chapman, Richard, and Aziz, Sultan, to Schering Corporation Use of GABA-B selective agonists as anti-tussive agents 5,006,560, Cl. 514-114.000
Krishnan, Sivaram: *See*—
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Dennison, Kathleen A., Kolcinski, Bruce E., Krishnan, Subramanian, and Russell, Patrise M., 5,006,247, Cl 210-500.380
Krispel, Franz, to Siemens Medical Laboratories, Inc Two piece apparatus for accelerating and transporting a charged particle beam 5,006,759, Cl 315-5.410
Kristal, Phyllis K.. *See*—
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Kristensen, Knud N *See*—
Van Gordon, Todd D., Swanson, John H.; Kristensen, Knud N., and Sherman, Adam, 5,005,734, Cl. 222-107.000
Kroll, Joachim; and Kollner, Walter Crane, in particular a large mobile crane 5,005,714, Cl. 212-196.000
Krug, Thomas: *See*—
Sichmann, Eggo; Krug, Thomas, and Kempf, Stephan, 5,006,213, Cl 204-192.140
Kruger, Dennis A., to TriQuint Semiconductor, Inc Dual quadrature frequency converter 5,006,811, Cl 329-354.000
Kruse, Steinar. Seatbelt positioning assembly for a pregnant person 5,005,865, Cl. 280-801.000.
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Kubota, Maki; and Aso, Hideo, to Seikosha Co., Ltd World timepiece. 5,007,033, Cl 368-21.000.

Kucher, Donald C *See—*
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Kudoh, Kazuhiro, Nishiyama, Toshirou, and Anma, Sadayuki, to NEC Corporation Watch type paging receiver 5,007,105, Cl 455-344.000

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Kuhlman, Robert D *See—*
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Kumagai, Motoo, Kato, Keiichi, Takeuti, Humio, Nagano, Masato, and Sakaguchi, Michiaki, to Canon Kabushiki Kaisha, and Nippon Oil & Fats Co., Ltd. Semiconductor porcelain substrate, dielectric porcelain substrate and capacitor employing the composition 5,006,957, Cl 361-321.000

Kumagai, Ryohei, to Ezel, Inc. Vectorizing method 5,007,098, Cl 382-21.000

Kumamoto, Kazuo *See—*
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Kumano, Kazuo *See—*
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Kumano, Shinji *See—*
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Kumar, Lori D., and Schobel, Alexander M., to Warner-Lambert Company Denture adhesive composition 5,006,571, Cl 523-120.000

Kumiai Chemical Industry Co., Ltd *See—*
Ohba, Nobuyuki, Ikeda, Atsuhiko, Matsunari, Kenji, Yamada, Yuji, Hirata, Michiya, Nakamura, Yasuo, Takeuchi, Akira and Karino, Hiroyuki, 5,006,157, Cl 71-95.000

Kummer, Lawrence J *See—*
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Kung, Patrick C., Ip, Stephen, Brown, Michael, and McKeen, Linda A., to T Cell Sciences, Inc. Therapeutic and diagnostic methods using soluble T cell surface molecules 5,006,459, Cl 435-5.000

Kunikane, Tatsuro, and Yokota, Takashi, to Fujitsu Limited Wavelength-division multiplexing optical transmission system 5,005,935, Cl 350-96.160

Kunisch, Franz *See—*
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Kunishige, Keiji, to Olympus Optical Co., Ltd Distance detecting apparatus 5,005,970, Cl 356-1.000

Kuno, Toshitaka, Koide, Mitsuo, Nakano, Masaru, Hayashi, Chisao, Kato, Yoshito, and Ishiguro, Yasuo, to Toyota Jidosha Kabushiki Kaisha, and Kabushiki Kaisha Toyota Real-time robot control system tracking based on a standard path 5,006,999, Cl 364-513.000

Kunzler, Jay F., and Friends, Gary D., to Bausch & Lomb Incorporated Polymer compositions for contact lenses 5,006,622, Cl 526-309.000

Kurachi, Yasuhiko, Mori, Kazumi, and Koizumi, Hisao, to Chubu Electric Power Company Inc., and Kabushiki Kaisha Toshiba Vacuum insulated storage-type electric water heater having an external bubble pump heating unit 5,006,689, Cl 392-450.000

Kurahashi, Nobuyuki *See—*
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Kurano, Satoko *See—*
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Kureha Kagaku Kogyo K K *See—*
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Kureha Kagaku Kogyo Kabushiki Kaisha *See—*
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Kurihara, Hideo *See—*
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Kurihara, Junichi *See—*
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Kurihara, Kazumasa, and Takahashi, Tsutomu, to Diesel Kiki Co., Ltd. Control system for automatic transmission apparatus for vehicles. 5,005,687, Cl 192-0.073.

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Kuriyama, Masaaki, to Minolta Camera Kabushiki Kaisha Microfilm image processing apparatus having automatic focus control capabilities. 5,005,967, Cl 353-101.000

Kuroda, Nobuyuki *See—*
Shikatani, Yutaka, Kataoka, Naoki, Shimo, Yoshiyuki, Kuroda, Nobuyuki, and Matsuura, Kazuo, 5,006,633, Cl 528-230.000

Kuroiwa, Yoshihiko, to Fuji Photo Film Co., and Nagano Nihon Musen K K Method of recording gradation image in thermal printer 5,006,865, Cl 346-76.0PH

Kurschner, Lisa M *See—*
Tieckelmann, Robert H., Bull, Randy A., and Kurschner, Lisa M., 5,006,124, Cl 8-111.000

Kurtz, John M Method and apparatus for transferring high viscosity liquid work product from a drum to a work station 5,005,612, Cl 141-7.000

Kusama, Tsuneo, Soga, Tsunehiko, and Shiba, Tetsuo, to Daiichi Seiyaku Co., Ltd. Phosphorus containing disaccharide derivatives 5,006,647, Cl 536-117.000

Kusano, Hiroshi, Ito, Tsuyoshi, and Kubota, Hirohisa, to Mitsubishi Kasei Corporation Cell culture microcarriers 5,006,467, Cl 435-180.000

Kushida, Takeo, Takefuta, Hideyasu, and Muramatsu, Hajime, to Diesel Kiki Co., Ltd. Acceleration sensor 5,005,412, Cl 73-517.00R

Kushner, Burton *See—*
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Kusunoki, Shigeru *See—*
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Kuzuo, Ryuichi, Kawamoto, Atsushi, Tada, Junya, Ohmori, Kenji and Sekiya, Hiroko, to Sumitomo Metal Mining Company Limited Magnetic disc 5,006,388, Cl 428-64.000

Kwon, Oh K. *See—*
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Kwon, Young D *See—*
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Kyoei Steel Ltd *See—*
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Kyoritsu Yuki Co., Ltd *See—*
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Kyowa Gas Chemical Industry Co., Ltd *See—*
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L R Nelson Corporation *See—*
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Laakmann, Katherine D., and Levy, Michael B., to Luxar Corporation Hollow lightpipe and lightpipe tip using a low refractive index inner layer 5,005,944, Cl 350-96.320

Laboratoires Delagrange *See—*
Franceschini, Jacqueline and Margarit, Josette, 5,006,570, Cl 514-422.000

Labonc, Claude F., to Rollin S A Electromagnetic shielding gasket 5,006,666, Cl 174-35.0GC

Lafferty, John J., DeMarinis, Robert M., and Shah, Dinubhai H., to SmithKline Beecham Corporation α-adrenergic receptor antagonists and methods of use thereas 5,006,521, Cl 514-215.000

LaFrate, Louis A *See—*
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Lagier, Serge *See—*
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Lagree, James L., to Westinghouse Electric Corp AC input system for computer-based control system 5,006,777, Cl 318-798.000

Lagueux, Ken R *See—*
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Laguzza, Bennett C *See—*
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Lahm, George P., to Du Pont de Nemours, E I., and Company Triphenyl pyrazoline compounds which are useful as insecticides 5,006,524, Cl 514-232.200

Lahr, Christopher J Method for exercising a patient's anal canal 5,005,586, Cl 128-774.000

Lai, Hoi K., Davis, Robert A., and Blem, Allen R., to Uniroyal Chemical Company, Inc., and Uniroyal Chemical Ltd./Ltee. Azole derivatives of naphthalenone oxime ethers 5,006,153, Cl 71-92.000.

Lai, Larry, to Plum Industrial Co., Ltd. Flashlight with end cap switch. 5,006,969, Cl. 362-206.000

Laimio, Kai, to Oy Partek AB Method for the transfer of an overhead conveyor carriage from one track onto another and an overhead conveyor system. 5,005,488, Cl 105-148.000.

Lam, Yiu-kuen T., Hensens, Otto D., Chang, Raymond S.; Schwartz, Cheryl D., and Zink, Deborah L., to Merck & Co., Inc. Fermentation analogs of virginiamycin M1. 5,006,466, Cl. 435-120.000.

Lambrecht, Frank E. *See—*
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Lamothe, Andre Extracts of thermal waters and their applications. 5,006,257, Cl 210-650.000

Lampl, Heinz, to Head Sportgerate Gesellschaft m.b.H. & C.OHG. Ski. 5,005,853, Cl. 280-610.000

Lanesek, Thomas S., to Surface Technology, Inc. Electroless coating method 5,006,367, Cl. 427-129.000

Land O'Lakes, Inc *See—*
Dahlstrom, Donald, Dybing, Stephen, and Gaffney, Barney J., 5,006,349, Cl 426-39.000

Landoni, Giannino Device for disabling and enabling stitching needles in a quilting machine or a multi-needle embroidery machine. 5,005,499, Cl 112-117.000

Lang, Siegfried, to BASF Aktiengesellschaft. Direct tableting auxiliary. 5,006,345, Cl 424-467.000

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Langley, Ernest A. *See—*
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Lanxide Technology Company, LP *See—*
Dwivedi, Ratnesh K., 5,005,631, Cl. 164-97.000.

Lanzen, Richard G Hanger for open bag. 5,005,791, Cl 248-99.000

Lapinski, John R., and Grote, Michael G., to McDonnell Douglas Corporation. Isothermal multi-passage cooler. 5,005,640, Cl 165-170.000.

LaPrade, Ronald E., to Noven Pharmaceuticals, Inc. Apparatus for iontophoretic drug delivery. 5,006,108, Cl 604-20.000.

Larin, Marxen P Cryogenic sorption pump. 5,005,363, Cl. 62-55.500.

Larsen, Alf D *See—*
Anderson, Dirk M.; Baker, Paul E.; Cantrell, Michael A.; Cerretti, Douglas P.; Cosman, David J., Gimpel, Steven D.; Grabstein, Kenneth H., Larsen, Alf D., and McKereghan, Kate N., 5,006,465, Cl 435-69.520.

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Lasenga, Werner *See—*
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Lashley, R Craig *See—*
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Lass, Joseph, Merkle, Hansjurgen, Hierweger, Alexander; and Lob, Erwin, to GAO Gesellschaft fur Automation und Organisation mbH Multilayer identity card usable as a printing block and a method of producing it 5,005,872, Cl 283-85.000.

Latham, Robert P. Hydraulic power system for outboard motor 5,006,086, Cl 440-88.000

LaTondress, Nancy T. and Thomas, H E., to Reemay, Inc. Stable roll transport bundle 5,005,706, Cl 206-595.000

Latz, Rudolf, Scherer, Michael, Geisler, Michael, and Jung, Michael, to Leybold Aktiengesellschaft Microwave cathode sputtering arrangement 5,006,219, Cl. 204-298.160

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Lavidson Textron Inc *See—*
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Law, Derek A *See—*
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Lawlor, Robert J D *See—*
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Lawrence, Joseph W Rapid action cam-lock clamp 5,005,813, Cl 269-236.000

Lawton, Geoffrey: *See—*
Broadhurst, Michael J.; Handa, Balraj K.; Johnson, William H.; Lawton, Geoffrey, and Machin, Peter J., 5,006,651, Cl. 540-463.000.

Lazarus, Konrad: *See—*
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Carter, Charles G.; Lee, David L., Michaely, William J.; and Kraatz, Gary W., 5,006,158, Cl 71-98.000

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Lee, Un K., to Hyundai Motor Company. Insulator device for strut type suspension system of automobile 5,005,855, Cl. 280-662.000.

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Lehtonen, Markku S., to Metsa-Serla Oy Connector for connecting wooden beams to one another 5,006,006, Cl. 403-283.000.

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Le Mehaute, Alain, Roques-Carmes, Claude, Wehbi, Dalloul, and Quiniou, Jean-Francois, to Compagnie Generale d'Electricite Fractal-type periodic temporal signal generator. 5,007,016, Cl 364-900.000.

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Handke, Guenther, and Lemke, Hans-Juergen, 5,006,694, Cl 219-121.600

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Lenzen, Reiner, to TRW Vehicle Safety Systems Inc Igniter for airbag propellant grains. 5,005,486, Cl. 102-531.000.

Leonard, George H., to Hamlin Transmission Corporation Self-positioning belt tensioner. 5,006,094, Cl 474-101.000

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Groke, Karl; Miggitsch, Hans; Musil, Horst, and Polzer, Josef, 5,006,551, Cl. 514-461.000

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Rody, Jean, and Leppard, David G., 5,006,665, Cl 549-28.000.

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Franklin, Richard D., Auld, Gregg D., Murray, David E., Leseisin, John J., Vaia, Albert R., and Dunn, Thomas E., 5,006,304, Cl. 376-316.000.

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Koon, Terry D., 5,005,407, Cl. 73-290.00R.

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Resch, Carol M., 5,006,529, Cl. 514-721.000.

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Machin, David, and van de Pas, Johannes C., 5,006,273, Cl. 252-174.230.

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Kennedy, Melvin R., and Lubinski, Joseph J., 5,006,090, Cl. 446-462.000.

Lewis, Mark A. *See—*
Anderson, Charles C., Kestner, Diane E., Lewis, Mark A., and Opitz, Gary R., 5,006,451, Cl. 430-527.000.

Lewis, Thomas F., Davidson, Bradley W., Williams, Richard A., Nowak, Michael T., and Kline, John F., to Presstek, Inc. Method and apparatus for imaging printing plates by spark discharge. 5,005,479, Cl. 101-467.000.

Lexa, Anthony F., to Joyner Engineers and Trainers, Inc. Method and apparatus for control rod drop monitoring. 5,006,301, Cl. 376-259.000.

Leybold Aktiengesellschaft. *See—*
Latz, Rudolf, Scherer, Michael, Geisler, Michael, and Jung, Michael, 5,006,219, Cl. 204-298.160.
Stehmann, Eggo, Krug, Thomas, and Kempf, Stephan, 5,006,213, Cl. 204-192.140.

Li, Cheng-Chia. Retractable truck canopy frame. 5,005,896, Cl. 296-100.000.

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Bachel, Ernst, and Licker, Anton-Guenther, 5,006,669, Cl. 174-93.000.

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Lidgitt, Peter J., Freeman, Derek J., and Cooper, Paul F., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence, in Her Britannic Majesty's Government of the. Sewage treatment plant. 5,006,232, Cl. 210-96.100.

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Lieberman, Michael A. *See—*
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Shepherd, Freddie A., and Light, Ronald R., 5,006,613, Cl. 525-444.000.

Lignyte Co., Ltd. *See—*
Uragami, Tadashi, 5,006,255, Cl. 210-640.000.

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VanBortel, David P., McNamee, John A., and Lin, Luke C., 5,006,396, Cl. 428-189.000.

Lin, Paul T. *See—*
McShane, Michael B., Lin, Paul T., and Wilson, Howard P., 5,006,922, Cl. 357-74.000.

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Peterman, Eric C., and Lindstedt, John S., 5,006,207, Cl. 204-18.100.

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Materna, Richard H., Linse, John S., and Richardson, Roy A., 5,007,084, Cl. 380-24.000.

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Lipscomb, George F. *See—*
Thackara, John I., Lipscomb, George F., Yoon, Hyun-Nam, and De Martino, Ronald N., 5,006,285, Cl. 264-1.300.

Little, Richard I., to MNM Enterprises, Inc. Fiber optic pressure transducer. 5,005,584, Cl. 128-748.000.

Litton Systems, Inc. *See—*
Hall, David B., 5,007,060, Cl. 372-23.000.
Warren, Keith O., 5,006,923, Cl. 357-80.000.

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Vick, Kenneth W., Webb, J. C., and Litzkow, Carl A., 5,005,416, Cl. 73-587.000.

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Liu, Ching-Chung. Control device for light sets. 5,006,724, Cl. 307-11.000.

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Lo, Tsung I. Automobile steering lock. 5,005,388, Cl. 70-209.000.

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Miller, Robert N., 5,006,588, Cl. 524-406.000.

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Thackara, John I., Lipscomb, George F., Yoon, Hyun-Nam, and De Martino, Ronald N., 5,006,285, Cl. 264-1.300.

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Muisener, Charles M., 5,006,233, Cl. 210-96.100.

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Logan, Kathryn V., and Walton, Jesse D., Jr., to Georgia Tech Research Corporation. Method for the formation of refractory products from and disposal of asbestos. 5,006,490, Cl. 501-155.000.

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Bradlow, Leon, and Chasalow, Fred I., 5,006,517, Cl. 514-178.000.

Lonka, Pekka, to Nokia-Mobile Phones Ltd. Method and apparatus for shielding a printed circuit board. 5,006,667, Cl. 174-35.00R.

Loose, Leland D., to Pfizer Inc. Tenidap as an inhibitor of the release of elastase by neutrophils. 5,006,547, Cl. 514-414.000.

Loose, Winfield W., Robertson, James W., and Shay, Francis J., to AMP Incorporated. Insulation displacing barrel terminal. 5,006,077, Cl. 439-409.000.

Lopez, Louis. *See—*
Roques, Henri, Aurelle, Yves, and Lopez, Louis, 5,006,260, Cl. 210-708.000.

Loral Aerospace Corp. *See—*
Bernstein, Greg M., and Lieberman, Michael A., 5,007,087, Cl. 380-46.000.

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Grollier, Jean F., 5,006,332, Cl. 424-70.000.

Lorenz, Gisela. *See—*
Seele, Rainer, Kober, Reiner, Karbach, Stefan, Sauter, Hubert, Ammermann, Eberhard, Lorenz, Gisela, Rademacher, Wilhelm, and Jung, Johann, 5,006,152, Cl. 71-92.000.

Lorenz, Herbert. *See—*
Tennigkeit, Jurgen, and Lorenz, Herbert, 5,006,127, Cl. 8-406.000.

Loreth, Andrzej. *See—*
Torok, Vilmos, and Loreth, Andrzej, 5,006,761, Cl. 315-111.910.

Louis, Michel. *See—*
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Louks, Paul T., to Dow Chemical Company, The. Plastic particle coated with processing aid and method of coating. 5,006,368, Cl. 427-189.000.

LRS, Inc. *See—*
McGarvey, David C., and Whitman, David C., 5,005,615, Cl. 141-198.000.

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Wheetley, Michael J., 5,006,021, Cl. 408-1.00R.

LTV Aerospace and Defense Company. *See—*
Hooks, John T., Jr., 5,006,936, Cl. 358-335.000.

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Corso, Angela N., Corso, Angelo, Corso, Carlo, and Corso, Antonio, 5,006,269, Cl. 252-39.000.

Lucas, Bernhard. *See—*
Knoll, Guenter, Leonhard, Rolf, Kraft, Wolfgang, and Lucas, Bernhard, 5,006,134, Cl. 55-146.000.

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Capewell, Terence J., 5,005,788, Cl. 244-231.000.

Luchonok, Jeffrey J., to Advanced Sleep Products. Mattress corner adhesion patches. 5,005,237, Cl. 5-451.000.

Luckhurst, Graham. *See—*
Kallin, Fredrik L. N.; Hamilton, Alistair R., and Luckhurst, Graham, 5,006,960, Cl. 361-390.000.

Ludwig, Karl; van Raemdonck, Edwin, Stutzel, Klaus; and Vingerhoets, Marcel, to Degussa Aktiengesellschaft. Method of preparing trisodium 2,4,6-mercapto-s-triazine nonahydrate. 5,006,654, Cl. 544-219.000.

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Sontag, Heinz, Elias, Hartmut; Ludwig, Wolfgang; Fritzsch, Walter, Eschner, Wolfgang, Hundhausen, Rainer; and Kratz, Harald, 5,005,979, Cl. 356-375.000.

Luecke, Arthur A.; and Dorsett, Terry E., to Metal Coatings International Inc. Black topcoating composition. 5,006,597, Cl. 524-556.000.

Luehr, Gary W. *See—*
Lee, Shy-Fuh; Anderson, Richard J.; Luehr, Gary W.; and Scott, Carole R., 5,006,150, Cl. 71-88.000.

Luenemann, Brigitte. Wart treatment. 5,006,338, Cl. 424-195.100.

Luk Lamellen und Kupplungsbau GmbH. *See—*
Reik, Wolfgang; and Elison, Hans-Dieter, 5,005,686, Cl. 192-70.170.

Lund, Richard B., and Brown, Glenn W., to Ciba-Geigy Corp. Manufacturing process for a naphthotriazole stilbene fluorescent agent. 5,006,662, Cl. 548-260.000.

Lundahl, E. Cordell; and Jensen, Laurel H., to Ezra C. Lundahl, Inc. Crop processor. 5,005,342, Cl. 56-10.200.

Lundberg, Robert D. *See—*
Thaler, Warren A., Manalastas, Pacifico V., Drake, Evelyn N.; and Lundberg, Robert D., 5,006,147, Cl. 71-27.000.

Lundy, Charles E., White, Roger J., and Krishnan, Sivaram, to Mobay Corporation. Gamma radiation resistant polycarbonate composition. 5,006,572, Cl. 523-136.000.

Lunsford, T. J. Bag handle apparatus. 5,005,891, Cl. 294-171.000.

Lunts, Lawrence H. C.. *See—*
Skidmore, Ian F.; Lunts, Lawrence H. C.; Finch, Harry; Naylor, Alan, and Campbell, Ian B., 5,006,556, Cl. 514-539.000.

Lutes, Richard E. Disposable mouse trap. 5,005,312, Cl. 43-61.000.

Lutz, Robert G.; Gelles, Richard, and Gergen, William P., to Shell Oil Company. Impact resistant blends of thermoplastic polyamides, polyolefins and elastomers. 5,006,601, Cl. 525-66.000.

Luxar Corporation. *See—*
Laakmann, Katherine D.; and Levy, Michael B., 5,005,944, Cl. 350-96.320.

Lykes, Robert E.. *See—*
King, James L., and Lykes, Robert E., 5,006,743, Cl. 310-89.000.

Lynch, Gregory A., to Inter-City Products Corporation (USA). Thermostat speed bar graph for variable speed temperature control system. 5,005,365, Cl. 62-126.000.

Lynch, Thomas M. *See—*
Barlow, Robert W., Swanson, Steven E.; and Lynch, Thomas M., 5,005,941, Cl. 350-96.210.
Barlow, Robert W., Lynch, Thomas M., and Swanson, Steven E., 5,005,942, Cl. 350-96.210.

Lyon, Gregory S., to Thomson Industries, Inc. Linear motion bearing. 5,005,988, Cl. 384-44.000.

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Espenan, Jean-Michel, 5,006,227, Cl. 210-321.890.

Lytle, Peter B. *See—*
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M. Argueso & Co., Inc. *See—*
Argueso, Peter G., 5,006,583, Cl. 524-277.000.

Maarschalkerweerd, Jan, to Trojan Technologies, Inc. Fluid purification device. 5,006,244, Cl. 210-243.000.

Mabboux, Michel, to Salomon S. A. Ski boot. 5,005,301, Cl. 36-117.000.

MacArthur, Charles D. *See—*
Noel, Bruce W., Borella, Henry M., Cates, Michael R., Turley, W. Dale, MacArthur, Charles D., and Cala, Gregory C., 5,005,984, Cl. 374-29.000.

MacCracken, Calvin D.; and Silvetti, Brian M., to Calmac Manufacturing Corporation. Coolness storage air conditioner appliance. 5,005,368, Cl. 62-139.000.

MacDon Industries Ltd. *See—*
Patterson, Roger L., 5,005,343, Cl. 56-14.400.

Machacek, Zdenek. *See—*
Borst, Herbert A., Machacek, Zdenek, Schnittger, Ernest; Schulte, Richard D.; Scott, Richmond, and Tilman, Paul A., 5,005,275, Cl. 29-235.000.

Macheeney, Brian J. *See—*
Kerbaugh, Michael L.; Koburger, Charles W., III; and Macheeney, Brian J., 5,006,482, Cl. 437-67.000.

Machida, Yoshimasa. *See—*
Kamiya, Takashi, Naito, Toshihiko; Negi, Shigeto, Komatu, Yuuki; Kai, Yasunobu; Nakamura, Takaharu, Sugiyama, Isao, Machida, Yoshimasa; Nomoto, Seiichiro; Kitoh, Kyosuke, Katsu, Kanemasa; and Yamauchi, Hiroshi, 5,006,649, Cl. 540-222.000.

Machin, David; and van de Pas, Johannes C., to Lever Brothers Company, Division of Conopco, Inc. Concentrated aqueous liquid detergents containing viscosity reducing polymers. 5,006,273, Cl. 252-174.230.

Machin, Peter J. *See—*
Broadhurst, Michael J.; Handa, Balraj K., Johnson, William H., Lawton, Geoffrey, and Machin, Peter J., 5,006,651, Cl. 540-463.000.

Macier, James E.. *See—*
Binversie, Gregory J.; Macier, James E., and Mate, David W., 5,005,535, Cl. 123-52.00M.

MacKay, Douglas M. *See—*
Roberts, Paul V., Hopkins, Gary D.; Semprini, Lewis; McCarty, Perry L.; and MacKay, Douglas M., 5,006,250, Cl. 210-610.000.

Mackey, Edward R. Pressurized cork-removal apparatus for wine bottles and other containers. 5,005,446, Cl. 81-3.480.

Mackiewicz, Edward T., to Kenall Manufacturing Company. Interlock electrical socket mount. 5,006,970, Cl. 362-217.000.

MacMillan Bloedel Limited. *See—*
Greenough, Ronald L., 5,006,014, Cl. 405-72.000.

MacMillan, Ian; and Raju, Vish, to Mitel Corporation. Communication system supporting remote operations. 5,007,080, Cl. 379-269.000.

MacNeill, John H. *See—*
Vogl, Allen W.; Poe, Steven C., MacNeill, John H.; and Buron, Douglas J., 5,007,079, Cl. 379-145.000.

Macomber, Lance R. Hoe attachment for a line trimmer. 5,005,653, Cl. 172-41.000.

Madan, Ashvani K.. *See—*
Basile, Peter A.; Madan, Ashvani K.; Snyder, Fred E.; and Stillman, Harold M., 5,005,226, Cl. 4-354.000.

Madry, Steven J. *See—*
Holtzclaw, James R.; Madry, Steven J., and Lashley, R. Craig, 5,005,399, Cl. 73-23.390.

Maekawa, Masashi; Kotani, Kunio; Ukaji, Ryoji, Shimizu, Hiroshi, and Sato, Kenichi, to Ichikoh Industries, Ltd. Door mirror for vehicles. 5,005,797, Cl. 248-479.000.

Magara, Takuji; Iwasaki, Takeshi; Suzuki, Toshio, and Yamamoto, Masahiro, to Mitsubishi Denki K K. Wire electrode supplying device for use in a wire cut electric discharge machining apparatus. 5,006,692, Cl. 219-69.120.

Maggioni, Virginio. *See—*
Torrielli, Vittorino; and Maggioni, Virginio, 5,005,858, Cl. 280-707.000.

Mahant-Shetti, Shivaling S. *See—*
Malhi, Satwinder, Kwon, Oh K.; and Mahant-Shetti, Shivaling S., 5,006,792, Cl. 324-158.00F.

Maier, Dieter, and Boley, Dieter, to Fraunhofer Gesellschaft zur Forderung der angewandten Forschung e V. Storage system. 5,005,689, Cl. 198-347.300.

Main, Harvey M. Speed wrench and hand grip combination. 5,005,448, Cl. 81-63.000.

Mainstone, Kenneth A.; and Moeller, Robert F., to Black Clawson Company, The. Film extrusion apparatus including a quickly replaceable chill roll. 5,006,056, Cl. 425-186.000.

Maissant, Jean-Pierre. Method and device for introducing a carburetted mixture under pressure in a chamber of a two-stroke engine. 5,005,537, Cl. 123-65.0VB.

Makishima, Mamoru. *See—*
Ohta, Katsuhiro; Masuda, Hisami, and Makishima, Mamoru, 5,006,844, Cl. 340-448.000.

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Fushiya, Fusao, 5,005,295, Cl. 30-390.000.

Malhi, Satwinder; Kwon, Oh K., and Mahant-Shetti, Shivaling S., to Texas Instruments Incorporated. Flip-chip test socket adaptor and method. 5,006,792, Cl. 324-158.00F.

Malhotra, Shadi L., to Xerox Corporation. Ink jet transparencies and papers. 5,006,407, Cl. 428-336.000.

Man Roland Druckmaschinen AG. *See—*
Knauer, Peter, 5,005,475, Cl. 101-218.000.
Rebel, Herbert, and Hummel, Peter, 5,005,474, Cl. 101-148.000.

Manalastas, Pacifico V.. *See—*
Thaler, Warren A., Manalastas, Pacifico V., Drake, Evelyn N., and Lundberg, Robert D., 5,006,147, Cl. 71-27.000.

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Mandrin, Charles; and Keller, Rene, to Sulzer Brothers Limited. Method and apparatus for deoxidation of sea-water. 5,006,133, Cl. 55-53.000.

Mang, Paul; and Driller, Hubert, to Mania GmbH & Co. Apparatus for measuring the electrical resistance of a test specimen. 5,006,809, Cl. 324-715.000.

Mangan, Louis H. Ornamental article. 5,006,375, Cl. 428-13.000.

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Mang, Paul; and Driller, Hubert, 5,006,809, Cl. 324-715.000

Mann, Arnold, to VDO Adolf Schindling AG Setting device for a feed device of an internal combustion engine. 5,005,546, Cl 123-339.000

Manners, Herbert C *See*—
Amundson, Eric K.; and Manners, Herbert C., 5,005,603, Cl 137-192.000.

Mannesmann Aktiengelselischaft *See*—
Nerger, Klaus K., Klein, Hans J , and Burkart, Gunther, 5,005,889, Cl. 294-86.400

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Manz, Kenneth W , to Kent-Moore Corporation Refrigerant purification with automatic air purge. 5,005,369, Cl 62-195.000

Manz, Kenneth W , and Parks, Richard, to Kent-Moore Corporation Refrigeration equipment service apparatus with quick-disconnect couplings. 5,005,375, Cl 62-292.000.

Mar, Andrew: *See*—
Behrens, Rudolf A ; and Mar, Andrew, 5,006,577, Cl 524-95.000

Mara, Robert M. *See*—
Roehrs, Daniel C ; Caruso, Angelo T , Grace, Robert E , Mara, Robert M , Elliot, John G , Saraceno, Patricia J , and Pacer, James M , 5,006,892, Cl 355-208.000.

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Mottschke, Lothar, and Tronnier, Hagen, 5,006,337, Cl 424-195.100.

Marchael, Dennis L.: *See*—
Popelier, Maurice A ; McCunn, Myron L , Winter, David C , Marchael, Dennis L , Hall, James W , and Rohren, Ronald E , 5,005,597, Cl 134-25.100.

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Schwarz, William M.; Marchessault, Robert H , Alexandru, Lupu, and Henrissat, Bernard, 5,006,170, Cl. 106-20.000

Marcus, R. Kenneth, to Clemson University Analytical method and apparatus. 5,006,706, Cl. 250-288.000

Margarit, Josette *See*—
Franceschini, Jacqueline; and Margarit, Josette, 5,006,570, Cl. 514-422.000

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Fischer, Reiner; Jensen-Korte, Uta, Kunisch, Franz, Marhold, Albrecht, Ooms, Pieter, Schallner, Otto, Santel, Hans-Joachim, Schmidt, Robert R., Krauskopf, Birgit, and Strang, Harry, 5,006,148, Cl 71-72.000.

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Yutaka, Yoshida; Kazuo, Onaga, Mariko, Hanada, and Kazunari, Komatsu, 5,006,828, Cl. 338-34.000.

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Anderson, Thomas A.; Kalar, Richard G , Markfelt, Reinhold S.; and Wagner, Walter R., 5,006,228, Cl. 209-365.300

Markle, Stephen; Hutchings, William; Schutte, Marlin, and Howk, Richard, to General Signal Corporation Chuck mechanism for detachably connecting impeller shaft and drive unit of mixing apparatus. 5,005,843, Cl 279-29.000

Markley, Lowell D.; Hamilton, Christopher T.; Swisher, Beth A , and Secor, Jacob, to DowElanco Substituted cyclohexanediones and their herbicidal uses. 5,006,159, Cl 71-98.000

Markow, Paul A , Hammond, Kevin R., and Hutchings, Donald E , to Chrysler Corporation. Distance pulse averaging unit 5,007,035, Cl 368-118.000.

Markowski, Winfried, to Bundesanstalt fur Materialforschung und -prufung (BAM) Machine and method for uniaxial mechanical material testing. 5,005,424, Cl 73-834.000

Marks, Larry D., Stiles, Richard C., and Bartloff, William F , to Whirlpool Corporation. Mechanically actuated additive dispenser for dishwasher 5,005,740, Cl. 222-651.000

Marlowe, Christian P.: *See*—
Marlowe, Edward D.; and Marlowe, Christian P , 5,006,833, Cl 340-611.000

Marlowe, Edward D , and Marlowe, Christian P , to CDF, Inc Sewer line restriction alarm placed in clean out plug. 5,006,833, Cl 340-611.000.

Marmarosi, Katalin *See*—
Sarkozy, Peter, Pap, Laszlo ; Szego, Andras, Nagy, Lajos, Szekely, Istvan, Marmarosi, Katalin, and Grosch, Janos, 5,006,545, Cl 514-395.000

Marmon Corporation *See*—
Foster, Matthew R., 5,005,523, Cl 119-37.000

Maroulis, Peter J , Clark, Patrick J ; Morris, Victoria J , Byerley, Robert A , and Booker, John, to Air Products and Chemicals, Inc Automated preparative gas chromatograph. 5,006,315, Cl 422-89.000

Marple, Virgil A *See*—
Behm, Steven M , Marple, Virgil A., and Burton, Robert M , 5,006,227, Cl. 209-143.000.

Marrocco, Anthony R.. *See*—
Pare, Rodney H., Tata, Peter D , and Marrocco, Anthony R., 5,005,255, Cl. 16-115.000

Marsch, Wilhelm *See*—
Wolfer, Dietrich; and Marsch, Wilhelm, 5,006,372, Cl. 427-387.000.

Marsh, Gary L.. *See*—
Calcar, Henry V., and Marsh, Gary L., 5,006,845, Cl 340-853.000.

Marshall, Ernest H. Shift mechanism. 5,005,438, Cl 74-538.000

Marshall, Rodney G Electric lamp and adapter socket therefor. 5,006,751, Cl. 313-51.000.

Marshfield Clinic *See*—
Mazza, Joseph J , 5,005,585, Cl. 128-754.000

Martel, Olivier *See*—
Demazeau, Gerard, Martel, Olivier, Devalette, Michel, and Verdon, Eric, 5,006,318, Cl. 423-21.100

Marth, Egon *See*—
Stemmler, Kurt, Weckop, Ludwig, and Marth, Egon, 5,005,816, Cl 270-39.000

Martin, Carl J *See*—
Parks, David L., Jr , and Martin, Carl J , 5,006,325, Cl 423-390.000.

Martin, Charles R., Rousser, Robert; and Brabec, Daniel L , to United States of America, Agriculture Rapid, single kernel grain characterization system 5,005,774, Cl 241-101.200

Martin, Donn D *See*—
Meier, Albert H , Cincotta, Anthony H , and Martin, Donn D , 5,006,526, Cl 514-250.000.

Martin, Gary *See*—
Clemens, Clive; and Martin, Gary, 5,005,904, Cl. 297-284.000.

Martin Marietta Energy Systems, Inc. *See*—
Liu, Chain T , and Sikka, Vinod K , 5,006,308, Cl. 420-445.000

Martin, Russell E. Disposable taco holder. 5,005,704, Cl 206-564.000.

Martin, Samuel W , and Supron, Steven A. Apparatus for folding and sealing a form along a transverse edge 5,006,195, Cl 16-442.100.

Martin, William C. *See*—
Matyas, Stephen M , Johnson, Donald B.; Le, An V , Martin, William C , Prymak, Rostislaw, and Wilkins, John D , 5,007,089, Cl 380-49.000

Martin, William R *See*—
Dolkas, Gregory D ; and Martin, William R., 5,007,051, Cl 370-85.100

Martini, Thomas, Keil, Karl-Heinz, Karsunky, Ulrich, and Sternberger, Klaus, to Hoechst Aktiengesellschaft Dyeing textile material with pigment dyes, pre-treatment with quaternary ally ammonium salt polymer 5,006,129, Cl 8-554.000.

Maruma Jyusharyo Kabushiki Kaisha *See*—
Moriki, Yasumitsu, and Numakura, Hirotomo, 5,005,654, Cl. 173-12.000

Marumo, Teruumi *See*—
Akasaki Yutaka, Aonuma, Hidekazu; Hongo, Kazuya, Sato, Katsuhiro, Nukada, Katsumi; and Marumo, Teruumi, 5,006,435, Cl 430-58.000

Maruyama, Fumio, Suyama, Tomio; Kamino, Hiroaki; Suyama, Koji; Kuwahara, Tokihiro, and Nagata, Osamu, to Hoshizaki Denki Kabushiki Kaisha. Electric control apparatus for dishwashing machine 5,006,767, Cl 318-103.000

Maruyama, Haruhisa. Ishiguro, Ken-ichi, Watanabe, Hiroaki; and Yagisawa, Osamu, to Pioneer Electronic Corporation Apparatus for injection molding information recording disks. 5,006,058, Cl 425-556.000

Maruyama, Hiromi *See*—
Suzuki, Norio, Oda, Sennosuke; Maruyama, Hiromi and Hoshino, Kenichi, 5,006,426, Cl 429-94.000

Maruyama, Kazuyoshi *See*—
Miyoshi, Seiji, Fukuda, Misao; Yamato, Seiichi, Tokiwa, Kouji, and Maruyama, Kazuyoshi, 5,007,044, Cl 370-32.100

Marvalaud, Incorporated *See*—
Pond, Robert B , Sr., 5,006,414, Cl. 428-469.000

Marzupio, Maurizio *See*—
Borrione, Pierluigi A , Caizzi, Vittorio, Marzupio, Maurizio, and Morris, Jean E., 5,006,215, Cl. 204-253.000

Maseki, Shinobu *See*—
Takase, Isao, Takemoto, Haruki; Tatsuta, Mitsugu, Maseki, Shinobu; Kano, Takenori, Yokoyama, Fumitomo, and Niimi, Mamoru, 5,006,102, Cl 475-282.000

Massachusetts Eye and Ear Infirmary *See*—
Congdon, Richard G , 5,005,230, Cl 5-60.000

Massachusetts Institute of Technology *See*—
Blanco, Ernesto E., Chesnais, Pascal R., Kristal, Phyllis K , and Lippman, Andrew B., 5,005,559, Cl 128-4.000

Massmann, Hans-Joachim Portal system 5,006,036, Cl 414-744.500

Masson, Ronald K , and Edelson, Michael W , to American Communications & Engineering, Inc Automated order entry recording method and apparatus 5,007,078, Cl. 379-75.000

Masters, David R *See*—
Holcombe, Cressie E , Northcutt, Walter G , Jr , Masters, David R., and Chapman, Lloyd R., 5,006,306, Cl 420-3.000.

Masuda, Hisami *See*—
Ohta, Katsuhiro, Masuda, Hisami, and Makishima, Mamoru, 5,006,844, Cl 340-448.000.

Masuda, Katsuhiko *See*—
Takano, Masami, Hamada, Tetsurou, and Masuda, Katsuhiko, 5,005,685, Cl. 192-58.00B.

Masuda, Sadakazu; Fujita, Fumio; Murakami, Tadayoshi Yoshino, Masahiko, Yagi, Ryuichi, and Kamata, Masamoto, to Nippon Kokan Kabushiki Kaisha Lubricating method for warm rolling of high silicon steels 5,006,181, Cl. 148-111.000.

Masuda, Tsuyoshi; Tomihari, Hiromiti; Muto, Masaki; and Saito, Naohito, to Dainippon Ink and Chemicals, Inc , and Yushiro Chemical Industry Co , Ltd Composition for temporary protection paint 5,006,578, Cl 524-128.000.

Masujima, Katsuhiro *See*—
Kimura, Yuichiro, Kabuto, Nobuaki, Takashimizu, Satoru, and Masujima, Katsuhiro, 5,006,739, Cl. 307-270.000.

Mate, David W *See*—
Binversie, Gregory J.; Macier, James E ; and Mate, David W , 5,005,535, Cl 123-52.00M.

Materna, Richard H., Linse, John S., and Richardson, Roy A., to Materna, Richard H , and Linse, John S Payment Authorization and Information Device 5,007,084, Cl 380-24.000.

Mathews, Herbert H., and Welch, Joseph L., to Coburn Optical Industries, a Division of Pilkington Visioncare, Inc. Lens blocking apparatus 5,005,633, Cl 164-334.000

Mathews, Ronald J , and Woodings, Robert T , to Woodings Industrial Corporation Extension bar for blast furnace tap hole drill 5,005,807, Cl 266-271.000

Mathivat, Denis, Colmon, Daniel, and Philibert, Daniel, to Saint-Gobain Vitrage Apparatus for bending glass plates into convex shape 5,006,146, Cl 65-273.000

Matjukhina, Ljudmila I , Mikhalev, Alexandr S.; Sidoruk, Sergei N.; and Chushenkov, Igor M , to Belorussky Gosudarstvenny Universitet Imeni V I Lenina Gate-controlled electric drive. 5,006,776, Cl. 318-723.000.

Matsuda, Hiroshi *See*—
Haruta, Masahiro, Matsuda, Hiroshi, Munakata, Hirohide, and Nishimura, Yukuo, 5,006,446, Cl 430-270.000

Matsuda, Koichi *See*—
Kanai, Masahiro, Aoike, Tatsuyuki, Matsuda, Koichi, and Kawakami, Soichiro, 5,006,180, Cl. 136-258.000

Matsuda, Yasuhiko *See*—
Sado, Chiharu, and Matsuda, Yasuhiko, 5,005,278, Cl 29-408.000

Matsuguchi, Noboru, and Matsuguchi, Tadashi, to Daimatsu Kagaku Kogyo Co , Ltd. Postcard and its manufacturing method 5,005,874, Cl 283-101.000

Matsuguchi, Tadashi *See*—
Matsuguchi, Noboru, and Matsuguchi, Tadashi, 5,005,874, Cl. 283-101.000

Matsuhisa, Tadaaki *See*—
Kawasaki, Keiji, Sekiguchi, Michio, and Matsuhisa, Tadaaki, 5,005,417, Cl 73-593.000

Matsuki, Yuji, and Ichikawa, Wataru, to Kabushiki Kaisha SG Position detection using reluctance changes induced by displacement of metallic balls 5,006,798, Cl 324-207.170

Matsumaru, Shigeo; Mochizuki, Akihiro, and Isoi, Syuzi, to Kyowa Gas Chemical Industry Co , Ltd Molded article of methacrylic resin 5,006,415, Cl 428-522.000

Matsumoto, Hiroshi *See*—
Nishizawa, Kazunori, Abe, Mitsutaka, Matsumoto, Hiroshi, and Imamura, Shinji, 5,005,249, Cl 15-250.270

Matsumoto, Hitoshi *See*—
Satoh, Toshio Matsumoto, Hitoshi, Kakegawa, Hisao, Kato, Yoshiko, Riku, Juichi, Yoshinaga, Junji, and Kanamoto, Yoshifumi, 5,006,548, Cl 514-427.000

Matsumoto, Tatsuro. *See*—
Nara, Yasuhiro, and Matsumoto, Tatsuro, 5,007,095, Cl 381-51.000

Matsumura, Yasuhide *See*—
Watanabe, Yoshio, Taki, Mamoru, Miura, Junkichi, Kamahori, Masao, Miyagi, Hiroyuki, Matsumura, Yasuhide, and Kanetomo, Masafumi, 5,005,434, Cl 73-864.210

Matsunari, Kenji *See*—
Ohba, Nobuyuki, Ikeda, Atsuhiko; Matsunari, Kenji, Yamada, Yuji, Hirata, Michiya, Nakamura, Yasuo, Takeuchi, Akira; and Karino, Hiroyuki, 5,006,157, Cl 71-95.000

Matsuo, Hirokazu, and Nagato, Hiroyasu, to Minolta Camera Kabushiki Kaisha Copying apparatus provided with automatic document feeder 5,006,904, Cl 355-313.000

Matsuo, Noritada *See*—
Tsushima, Kazunori, Matsuo, Noritada, Kisida, Hiroshi, and Yano, Toshihiko, 5,006,538, Cl 514-345.000

Matsuoka, Takashi, and Sasaki, Toru, to Nippon Telegraph and Telephone Corporation Epitaxial Wurtzite growth structure for semiconducter light-emitting device 5,006,908, Cl 357-17.000

Matsushima, Hitoshi, and Miyatake, Takafumi, to Hitachi, Ltd , and Hitachi, Ltd Data filtering method 5,007,099, Cl 382-41.000

Matsushima, Shunichi *See*—
Suzuki, Hideo; Matsushima, Shunichi; Obata, Masahiko; Sakama, Masao, Nakada, Akira, and Kumano, Shinji, 5,005,460, Cl 84-600.000

Matsushita Electric Industrial Co , Ltd *See*—
Eda, Kazuo, 5,007,066, Cl 372-108.000
Hori, Tohru, Sato, Tomi, Komoda, Hideaki, and Fujii, Kenichi, 5,006,395, Cl 428-141.000
Kaneaki, Tetsuhiko, Oda, Mikio, Nuriya, Kozo, and Tani, Yasunori, 5,006,851, Cl 341-155.000.
Kawakita, Kouji, Kimura, Suzushi, Orinaka, Hideyuki, Yokotani, Youichiro, and Ishikawa, Mariko, 5,006,956, Cl 361-321.000
Mizuoka, Seiji, and Okumura, Kazumasa, 5,007,097, Cl. 382-8.000.
Nakajima, Masaitsu, 5,007,056, Cl 371-37.100
Suzuki, Norio, Oda, Sennosuke, Maruyama, Hiromi, and Hoshino, Kenichi, 5,006,426, Cl 429-94.000
Takahashi, Masami, and Kajiya, Ichiro, 5,005,948, Cl 350-252.000
Tsukamoto, Masahide, Nishimura, Yutaka, and Fukui, Yasuo, 5,006,189, Cl 156-247.000
Tsutsu, Noriko, Nakata, Yoshiro, and Esaki, Hideya, 5,006,717, Cl 250-484.100
Yoshida, Yoshikazu, and Tanaka, Kunio, 5,006,218, Cl 204-298.060

Matsushita Electric Industries Co , Ltd *See*—
Fujii, Eiji, Torii, Hideo, and Aoki, Masaki, 5,006,363, Cl 427-39.000

Matsushita Electric Industry Co , Ltd *See*—
Itoh, Tatsuo, Mizuguchi, Shinichi, Kubo, Keishi, and Sato, Takeo, 5,005,938, Cl 350-96.180

Matsushita, Hajime *See*—
Itoh, Kazuo, Naoi, Yoshitake; Matsushita, Hajime; Ebata, Takashi; and Kawakami, Hiroshi, 5,006,646, Cl. 536-23.000.

Matsushita, Masao. *See*—
Yonezawa, Yasuo; Ohnishi, Toshiya; Okumura, Shin'ichi; Sakai, Akiyoshi, Nakano, Hiroki; Matsushita, Masao, Morikawa, Atsushi, and Yoshihara, Motoshi, 5,005,371, Cl. 62-238.600

Matsuura, Asako *See*—
Ishizuka, Masaru; Yokono, Yasuyuki; Matsuura, Asako; Kamei, Yoshio; Ohashi, Hiromichi, Kitagawa, Mitsuhiko, Sasaki, Tomiya; and Monma, Shigeki, 5,006,921, Cl. 357-74.000

Matsuura, Kazuo. *See*—
Shikatani, Yutaka; Kataoka, Naoki, Shimo, Yoshiyuki; Kuroda, Nobuyuki, and Matsuura, Kazuo, 5,006,633, Cl. 528-230.000

Matsuzaki, Mikio, to TDK Corporation Flexible polymeric resinous magnetic head supporting device 5,006,946, Cl. 360-104.000.

Matthews, James F *See*—
Den Hartog, Herman C.; Konsza, Eileen E ; Matthews, James F , and Werner, Ervin R., Jr , 5,006,413, Cl 428-463.000

Mattick, Michael J.; and Huffman, John W , to Pneumo-Beam International, Ltd. Inflatable tent structure 5,005,322, Cl 52-2.00J

Matyas, Stephen M., Johnson, Donald B , Le, An V , Martin, William C., Prymak, Rostislaw, and Wilkins, John D , to International Business Machines Corporation Secure key management using programable control vector checking 5,007,089, Cl 380-49.000.

Maw, Samuel H., Jr. *See*—
Stuck, Robert M., and Maw, Samuel H , Jr., 5,006,355, Cl 426-243.000

Max, Reinhold, and Filsinger, Karl-Heinz, to Heidelberger Druckmaschinen AG Sheet delivery 5,005,822, Cl 271-213.000

Maxwell, Thomas P.. *See*—
Gourley, Ted H.; Maxwell, Thomas P , Hacker, Thomas G , Miller, William W , and Yafuso, Masao, 5,006,314, Cl. 422-82.070

May, Norman W. *See*—
Rush, Donald L ; and May, Norman W., 5,006,847, Cl. 340-994.000

Mayer, Norbert *See*—
Engel, Wolfhard; Eberlein, Wolfgang, Mihm, Gerhard, Trummlitz, Gunther, Mayer, Norbert, and De Jonge, Adriaan, 5,006,522, Cl 514-221.000.

Mayurnik, George, and Kucher, Donald C , to International Dioxcide, Inc Gaseous generator system for preparing chlorine dioxide 5,006,326, Cl 423-477.000

Mazda Motor Corporation *See*—
Ninde, Kazuo, Yamada, Hideki, Higashi, Haruki, and Nakamura, Noboru, 5,005,663, Cl. 180-247.000
Tashima, Seiji, Okimoto, Haruo, Akagi, Toshimichi, and Niwa, Yasushi, 5,005,359, Cl 60-600.000
Yutaka, Yoshida, Kazuo, Onaga, Mariko, Hanada, and Kazunari, Komatsu, 5,006,828, Cl 338-34.000

Mazdiyasni, Khodabakhsh S *See*—
Treacy, Debra J , and Mazdiyasni, Khodabakhsh S , 5,006,508, Cl 505-1.000.

Mazo, James E *See*—
Ayanoglu, Ender, Gitlin, Richard D , I. Chih-Lin, and Mazo, James E , 5,007,067, Cl 375-40.000

Mazurek, Stanley L , and Winkless, Robert A , to Continental Can Co , Inc End shape modification to reduce end hook wrinkling 5,005,728, Cl 220-619.000

Mazza, Joseph J , to Marshfield Clinic Biopsy needle construction 5,005,585, Cl 128-754.000

McCallum, Robert S *See*—
Buchan, W R and McCallum, Robert S , 5,006,869, Cl 346-159.000

McCarthy, Kevin J *See*—
Giarrocco, Martin A , III, and McCarthy, Kevin J , 5,005,801, Cl 249-211.000

McCarty, Perry L *See*—
Roberts, Paul V , Hopkins, Gary D Semprini, Lewis, McCarty, Perry L , and MacKay, Douglas M , 5,006,250, Cl 210-610.000

McConnell, Ralph E , to Century Wrecker Corporation Carrier vehicle with tilt lock-out arrangement 5,006,033, Cl 414-477.000

McCormick, David D *See*—
Tyrrell, Paul C , Backes, Johannes B , McCormick, David D , and Jesse, John F , 5,007,103, Cl 219-363.000

McCoy, Thomas C. Trolling motor mount 5,005,798, Cl 248-642.000

McCracken, Doc J Light brush and grass hydraulic mower 5,005,344, Cl 56-14.700

McCrackin, Perry J *See*—
Schmidt, Donald L ; Coburn, Charles E , and McCrackin, Perry J , 5,006,624, Cl 526-243.000

McCrary, Marcus R Mobile promotional vehicle 5,005,893, Cl 296-21.000

McCunn, Myron L *See*—
Popelier, Maurice A , McCunn, Myron L , Winter, David C , Marchael, Dennis L , Hall, James W , and Rohren, Ronald E , 5,005,597, Cl 134-25.100

McDonald, Ray S , to Medtronic, Inc Needle placement sensor 5,006,115, Cl 604-175.000

McDonnell Douglas Corporation *See*—
Lapinski, John R , and Grote, Michael G , 5,005,640, Cl 165-170.000
Spangler, James B , and Rector, Steve G , 5,006,963, Cl 361-417.000

McGarvey, David C , and Whitman, David C , to I.R.S, Inc Safety tank apparatus for liquid storage 5,005,615, Cl 141-198.000

McGehee, Danny B. *See—*
Morris, Scott S., McGehee, Danny B., and Canham, Randolph S., 5,006,894, Cl. 355-215.000.

McGhie, James R.; and Dieleman, Robert Truck mounted jeep having adjustable axle and loading capacity. 5,005,851, Cl. 280-407.100

McGregor, Larry D. *See—*
Draffen, Dale, Dunning, William E., McGregor, Larry D., Walker, Donald L., and Sisk, Harold R., 5,005,983, Cl. 366-340.000

McIlquham, Carl J. Protective article of clothing. 5,005,215, Cl. 2-22.000.

McKay, Albert A. *See—*
Hart, James E., and McKay, Albert A., 5,005,915, Cl. 303-22.200.

McKeand, Thomas J., Jr. *See—*
Vaughn, Walter L., McKeand, Thomas J., Jr., and Patton, Robert T., 5,006,267, Cl. 210-755.000.

McKeen, Linda A. *See—*
Kung, Patrick C.; Ip, Stephen; Brown, Michael; and McKeen, Linda A., 5,006,459, Cl. 435-5.000.

McKereghan, Kate N. *See—*
Anderson, Dirk M.; Baker, Paul E., Cantrell, Michael A., Cerretti, Douglas P., Cosman, David J.; Gimpel, Steven D., Grabstein, Kenneth H.; Larsen, Alf D.; and McKereghan, Kate N., 5,006,465, Cl. 435-69.520

McKubre, Michael C. H.; and Syrett, Barry C., to Electric Power Research Institute, Inc. Device for in situ monitoring of corrosion rates of polarized or unpolarized metals. 5,006,786, Cl. 324-71.200

McLeod, Rick, and Palmer, Gary E., to Hako Minuteman, Inc. Adapter for mounting vacuum motor. 5,005,251, Cl. 15-327.100.

McLochlin, David M. *See—*
Fultz, William A.; and McLochlin, David M., 5,005,693, Cl. 198-781.000

McMurtry, J. A. Solar energy system for generating electricity. 5,005,360, Cl. 60-659.000.

McNamee, John A. *See—*
VanBortel, David P., McNamee, John A.; and Lin, Luke C., 5,006,396, Cl. 428-189.000

McNelley, Jerald R. In-line fuel heater. 5,005,551, Cl. 123-557.000

McNew, Quinton B. *See—*
Edwards, John W., Harper, Daniel R., and McNew, Quinton B., 5,005,921, Cl. 305-35.0EB.
Edwards, John W., Harper, Daniel R.; and McNew, Quinton B., 5,005,922, Cl. 305-35.0EB

McShane, Michael B., Lin, Paul T., and Wilson, Howard P., to Motorola, Inc. Packaged semiconductor device having a low cost ceramic PGA package. 5,006,922, Cl. 357-74.000.

McWhorter, David J., Williams, Bolie C., III, Childs, Eric G., and Schaeper, Gary R., to Cooper Industries, Inc. Variable bore packer for a ram type blowout preventer. 5,005,802, Cl. 251-1.300.

Meagher, James P. *See—*
Smith, John W., and Meagher, James P., 5,006,677, Cl. 200-61.890

Mecke, Norbert; and Schmedes, Albert, to Pelikan Aktiengesellschaft. Ink eradicator for inks containing triaryl methane dyestuffs. 5,006,171, Cl. 106-21.000

Med Inventio AG. *See—*
Heimbeck, Hans J., 5,005,960, Cl. 350-573.000.

Med-Safe Systems, Inc. *See—*
Shillington, Richard A., 5,005,793, Cl. 248-229.000

Medernach, Louis J., to Eagle Air Ltd. Crop lifter for swathers or combines. 5,005,346, Cl. 56-312.000.

Medical Engineering and Development Institute, Inc. *See—*
Fearnot, Neal E., and Evans, Merry L., 5,005,574, Cl. 128-419.0PG

Medtronic, Inc. *See—*
McDonald, Ray S., 5,006,115, Cl. 604-175.000

Meenan, Gary F. *See—*
Oblad, Hayward B.; and Meenan, Gary F., 5,006,231, Cl. 210-96.100

Meguro, Hiroshi. *See—*
Kosaka, Toru, Ohtsubo, Yoshiaki, and Meguro, Hiroshi, 5,006,700, Cl. 250-201.400.

Meguro, Yoshio. *See—*
Sakamoto, Seiji, Kawaguchi, Chikakazu, Meguro, Yoshio, Harada, Takashi, and Takisawa, Toshifumi, 5,006,589, Cl. 524-430.000

Meier, Albert H., Cincotta, Anthony H., and Martin, Donn D., to Louisiana State University. Method of treating a vertebrate animal to reduce plasma triglycerides and cholesterol levels and to alleviate and prevent atherosclerosis. 5,006,526, Cl. 514-250.000

Meier, Karl-Heinz. *See—*
Kothe, Karl-Peter; Gekeler, Manfred W., and Meier, Karl-Heinz, 5,006,701, Cl. 250-205.000.

Meier, Thomas. *See—*
Reinartz, Hans-Dieter; Steffes, Helmut; Von Hayn, Holger; and Meier, Thomas, 5,005,350, Cl. 60-562.000

Meijer, Egbert W., Ten Hoeve, Wolter, Nijhuis, Sjef, Rikken, Gerardus L. J. A., and Havinga, Edsko E., to U.S. Philips Corporation. Device for doubling the frequency of a light wave comprising a non-linear optical compound. 5,006,729, Cl. 307-425.000.

Meilink Industries, Inc. *See—*
Cufr, Robert J., 5,005,387, Cl. 70-86.000

Meltsner, Bernard R. *See—*
Kolich, Charles H., Meltsner, Bernard R., and Braxton, Henry G., Jr., 5,006,324, Cl. 423-300.000.

Melzer, Milena. *See—*
Kovacs, Jenoe, Melzer, Milena, Balz, Werner, Lenz, Werner; Loch, Werner, and Jakusch, Helmut, 5,006,406, Cl. 428-323.000

Menez, Jean. *See—*
Galand, Claude, Menez, Jean, and Rosso, Michele, 5,007,092, Cl. 381-36.000

Menguzzato, Gianni. *See—*
Gaiatto, Daniele, Menguzzato, Gianni, and Villis, Michelle, 5,005,220, Cl. 2-421.000

Menichini, Frank A., to Custom Pack, Inc. Resilient pole-guard. 5,006,386, Cl. 428-58.000

Mennona, Vincent J., Jr., to Motorola, Inc. Snap fit contact assembly. 5,006,073, Cl. 439-77.000.

Menon, Krishna S., and Witham, Michael J., to Eastman Kodak Company. Reverse osmosis water purification systems. 5,006,234, Cl. 210-98.000.

Menon, Krishna S. *See—*
Edwards, Evan A., Harissis, Peter J., and Menon, Krishna S., 5,006,246, Cl. 210-264.000

Mera, Hiroshi. *See—*
Hara, Shigeyoshi, Endo, Zen-ichiro; and Mera, Hiroshi, 5,006,616, Cl. 526-75.000.

Mercier, Anne. *See—*
Berchadsky, Yves, Kernevez, Nelly, Le Moigne, Francois; Mercier, Anne, Secourgeon, Liliane; and Tordo, Paul, 5,006,663, Cl. 548-412.000.

Merck & Co., Inc. *See—*
DiNinno, Frank P.; and Greenlee, Mark L., 5,006,519, Cl. 514-210.000.
Greenlee, William J., Veber, Daniel F., and Williams, Peter D., 5,006,511, Cl. 514-19.000
Lam, Yiu-kuen T., Hensens, Otto D.; Chang, Raymond S., Schwartz, Cheryl D.; and Zink, Deborah L., 5,006,466, Cl. 435-120.000.
Zambias, Robert A., and Hammond, Milton L., 5,006,549, Cl. 514-444.000

Merck & Co. Inc., Inc. *See—*
Baker, Robert K., Pessolano, Arsenio A.; Rupprecht, Kathleen M., and Durette, Philippe L., 5,006,532, Cl. 514-301.000.

Merkle, Hansjurgen. *See—*
Lass, Joseph, Merkle, Hansjurgen; Hierweger, Alexander; and Lob, Erwin, 5,005,872, Cl. 283-85.000

Merlin C.T.C. Production Division Nederland B.V. *See—*
Raar, Hans; and Kelders, Jan, 5,005,999, Cl. 400-208.000.

Mermelstein, Seymour, to Swimex Systems, Inc. Flow controlling. 5,005,228, Cl. 4-488.000.

Merrick Industries, Incorporated. *See—*
Merrick, Robert G., 5,005,458, Cl. 83-599.000

Merrick, John H. Neck exerciser device and methods. 5,005,826, Cl. 272-94.000

Merrick, Robert G., to Merrick Industries, Incorporated. Low cost punch mechanism. 5,005,458, Cl. 83-599.000.

Merritt, Rebecca. Method and device for deterring the unauthorized removal of a newborn from a defined area. 5,006,830, Cl. 340-573.000

Mersman, Wesley D. *See—*
Muyres, David A., Mersman, Wesley D.; Dykstra, Steven P.; and Clark, Russell L., 5,005,895, Cl. 296-97.800.

Merten, Rudolf. *See—*
Jonas, Friedrich, and Merten, Rudolf, 5,006,641, Cl. 528-328.000

Merz, Herbert. *See—*
Sobotta, Rainer; Langbein, Adolf; Merz, Herbert; Bauer, Rudolf, and Mierau, Joachim, 5,006,533, Cl. 514-304.000

Merz, Theodore F. *See—*
Dirksing, Robert S., and Merz, Theodore F., 5,006,004, Cl. 401-261.000

Messerschmitt-Boelkow-Blohm GmbH. *See—*
Handke, Guenther, and Lemke, Hans-Juergen, 5,006,694, Cl. 219-121.600.

Mester-Coop Elelmiszeripari es Ker. Leanyvallalat. *See—*
Zelenak nee Zoltai, Maria, and Berzsenyi, Las/ zlo., 5,006,352, Cl. 426-67.000

Met. Rev. Inc. *See—*
Weyls, John, and Lindemann, Ray C., 5,006,262, Cl. 210-719.000

Metal Coatings International Inc. *See—*
Luecke, Arthur A., and Dorsett, Terry E., 5,006,597, Cl. 524-556.000

Metricom, Inc. *See—*
Flammer, George, 5,007,052, Cl. 370-85.600.

Metsa-Serla Oy. *See—*
Lehtonen, Markku S., 5,006,006, Cl. 403-283.000

Metzeler Schaum GmbH. *See—*
Noonenbruch, Heinz-Gerd, Heitmann, Ulrich; and Bormann, Heinrich, 5,006,564, Cl. 521-54.000

Metzner, Dieter, to MTS Schweinfurt GmbH. Syringe pump. 5,006,112, Cl. 604-155.000.

Michael, Richard D. Animal litter deodorizing additive. 5,005,520, Cl. 119-172.000

Michaels, John. Router guide. 5,005,617, Cl. 144-134.00D

Michaely, William J. *See—*
Carter, Charles G., Lee, David L., Michaely, William J., and Kraatz, Gary W., 5,006,158, Cl. 71-98.000

Michell, Ernest W. J., and Page, Shona M., to Cookson Group PLC. Smoke suppressant additive for halogenated polymer composition. 5,006,174, Cl. 106-426.000.

Micich, Robert G. *See—*
Kornely, Michael G., Jr., Micich, Robert G., and Miller, John M., 5,005,757, Cl. 228-178.000

Microbial Developments Ltd. *See—*
Day, Carol A., and Holton, Brian W., 5,006,347, Cl. 426-36.000

Mideo Systems, Inc. *See—*
Parker, Walter D., 5,006,872, Cl. 354-79.000

Mierau, Joachim. *See—*
Sobotta, Rainer, Langbein, Adolf; Merz, Herbert, Bauer, Rudolf, and Mierau, Joachim, 5,006,533, Cl. 514-304.000.

Miggitsch, Hans. *See—*
Groke, Karl, Miggitsch, Hans; Musil, Horst, and Polzer, Josef, 5,006,551, Cl. 514-461.000.

Mihm, Gerhard. *See—*
Engel, Wolfhard; Eberlein, Wolfgang, Mihm, Gerhard, Trummlitz, Gunther, Mayer, Norbert, and De Jonge, Adriaan, 5,006,522, Cl. 514-221.000.

Miida, Takashi. *See—*
Kawajiri, Kazuhiro, Miida, Takashi, and Inoue, Kiyoshi, 5,006,928, Cl. 358-98.000

Mikalonis, Liudas K., to Transmatic, Inc. Transit vehicle lighting fixture. 5,006,966, Cl. 362-74.000.

Mikhail, Ameer G. Individually wrapped cigarettes in cigarette pack or box. 5,005,698, Cl. 206-257.000

Mikhalev, Alexandr S. *See—*
Matjukhina, Ljudmila I., Mikhalev, Alexandr S., Sidoruk, Sergei N., and Chushenkov, Igor M., 5,006,776, Cl. 318-723.000

Miki, Toshiyuki. *See—*
Tono, Show; Miki, Toshiyuki, Dairokuno, Yoshihide, and Kataoka, Jyun, 5,006,639, Cl. 210-727.000

Miles, Barry M. *See—*
Freyman, Bruce J., Miles, Barry M., and Flaugher, Jill L., 5,006,673, Cl. 174-255.000

Miles Inc. *See—*
Dove, George B., and Mitra, Gautam, 5,006,472, Cl. 435-270.000
Hecter, Richard F., Schaller, Klaus, Moeschler, Heinrich F., and Plempel, Manfred, 5,006,513, Cl. 514-43.000.

Millay, Herbert D. *See—*
Aiello, Robert P., Riley, Michael J., and Millay, Herbert D., 5,006,130, Cl. 44-432.000

Miller, Bernard. Axially movable tool and guide. 5,006,022, Cl. 408-16.000

Miller, David E. *See—*
Diaz, Juan A., Goldston, Mark R.; White, Spencer, Miller, David E., Legassie, Charles P., Russell, Wayne, and Ringel, Judith C., 5,005,300, Cl. 36-114.000

Miller, Elmo E. Wall mounted lamp with adjustable pattern of illumination. 5,006,968, Cl. 362-147.000

Miller, John C., Pandey, Sudhakar, and Pollock, Earl M., to Nuclear Research Corp. Alpha probe. 5,006,713, Cl. 250-361.00R

Miller, John E., and Lambrecht, Frank E., to Motorola, Inc. Antenna. 5,006,861, Cl. 343-848.000

Miller, John M. *See—*
Kornely, Michael G., Jr., Micich, Robert G., and Miller, John M., 5,005,757, Cl. 228-178.000

Miller, Philip. *See—*
Bouma, Stanley R., Blecka, Lawrence J., and Miller, Philip, 5,006,473, Cl. 436-516.000

Miller, Robert N., to Lockheed Corporation. Corrosion and crack growth inhibiting compound, coating, and sealant material and method of making. 5,006,588, Cl. 524-406.000

Miller, Robert R., II. *See—*
Erving, Richard H., Ford, William A., and Miller, Robert R., II, 5,007,046, Cl. 370-32.100

Miller, Thomas J. *See—*
Bucholtz, Brian C., and Miller, Thomas J., 5,005,677, Cl. 188-299.000

Miller, William W. *See—*
Gourley, Ted H., Maxwell, Thomas P., Hacker, Thomas G., Miller, William W., and Yafuso, Masao, 5,006,314, Cl. 422-82.070

Milliken Research Corporation. *See—*
Carroll, Patrick R., 5,005,606, Cl. 139-1.00C

Milwaukee Electric Tool Corporation. *See—*
Palm, Bernhard, 5,006,740, Cl. 310-50.000

Mimmack, William E., and Thompson, William J., to Cubic Corporation. Laser boresighting method and apparatus for weaponry. 5,005,973, Cl. 356-152.000

Minami, Hiroshi. *See—*
Yoshinaka, Toshio, Hamano, Hideo, Minami, Hiroshi, and Ogawa, Shinji, 5,006,098, Cl. 475.86.000

Minardi, Raye E. Protective cushion for child's auto seat. 5,005,903, Cl. 297-250.000

Miner Enterprises, Inc. *See—*
Overheidt, Robert P., 5,005,490, Cl. 105-282.200

Mingyen Electronics Industry Co., Ltd. *See—*
Jow, Wen-Yuh, 5,006,048, Cl. 417-410.000

Minnesota Mining & Manufacturing Company. *See—*
Anderson, Donn R., 5,005,871, Cl. 283-61.000
Bucci, Marco, 5,006,452, Cl. 430-544.000
Dennison, Kathleen A., Kolcinski, Bruce E., Krishnan, Subramanian, and Russell, Patrise M., 5,006,247, Cl. 210-500.380
Gourley, Ted H., Maxwell, Thomas P., Hacker, Thomas G., Miller, William W., and Yafuso, Masao, 5,006,314, Cl. 422-82.070.

Minolta Camera Kabushiki Kaisha. *See—*
Fukui, Kazuyuki, Hattori, Yoshihiro; and Hada, Yoshinobu, 5,005,517, Cl. 118-689.000
Hashimoto, Kaoru; and Ideyama, Hiroyuki, 5,006,895, Cl. 355-243.000.
Hashimoto, Kaoru; Kawaguchi, Toshikazu, and Hasegawa, Hirofumi, 5,006,934, Cl. 358-296.000

Katoh, Takehiro, Azuma, Yoshihiko, Hirano, Masayasu, Kageyama, Naohiro, Ishimura, Toshihiko, Tsuji, Kenji, and Ootsuka, Hiroshi, 5,006,877, Cl. 354-412.000.
Kuriyama, Masaaki, 5,005,967, Cl. 353-101.000.
Matsuo, Hirokazu; and Nagato, Hiroyasu, 5,006,904, Cl. 355-313.000
Murakami, Masanori; Hamada, Akiyoshi, Yagoto, Mitsutoshi; and Mori, Shinichi, 5,006,874, Cl. 354-212.000
Nakai, Masaaki, 5,006,876, Cl. 354-400.000.
Yokoyama, Tomoaki, 5,006,893, Cl. 355-208.000.

Miresmaili, Masoud. *See—*
Fish, Aaron M., Branover, Alexander; Dausseing, Jean-Paul, and Miresmaili, Masoud, 5,005,884, Cl. 292-336.300

Mirlieb, Bernd; and Killguss, Heinrich, to Eastman Kodak Company. Hold-down device for a cassette. 5,007,075, Cl. 378-172.000

Miro, Nemesio D., to Mobil Oil Corporation. Process for preparing high density or medium density polymers. 5,006,618, Cl. 526-116.000

Mishra, Surendra K., to Tetra Technologies, Inc. apparatus for treatment of oily sludge. 5,006,239, Cl. 210-181.000

Mita, Kikuo, to Eastman Kodak Company. Half-tone image generator using white noise source. 5,006,938, Cl. 358-466.000

Mitel Corporation. *See—*
MacMillan, Ian, and Raju, Vish, 5,007,080, Cl. 379-269.000

Mitra, Gautam. *See—*
Dove, George B., and Mitra, Gautam, 5,006,472, Cl. 435-270.000

Mitre Corporation, The. *See—*
Braff, Ronald, 5,006,855, Cl. 342-357.000

Mitsuba, Atsuko. *See—*
Touji, Daijiro, Nakahara, Akihiro, Nakashita, Takefumi, Mitsuba, Atsuko; Nakashio, Yukiyasu, and Nagase, Tsuneyuki, 5,006,586, Cl. 524-377.000

Mitsubishi Denki K.K. *See—*
Kita, Fujio, 5,005,501, Cl. 112-121.120.
Magara, Takuji, Iwasaki, Takeshi, Suzuki, Toshio, and Yamamoto, Masahiro, 5,006,692, Cl. 219-69.120
Nakayama, Yoshiro, 5,006,691, Cl. 219-69.120

Mitsubishi Denki Kabushiki Kaisha. *See—*
Deguchi, Mikio, 5,006,192, Cl. 156-345.000.
Fukumizu, Toshiyuki, 5,006,848, Cl. 341-13.000
Nakane, Kazuhiko, Furukawa, Teruo, Shimamoto, Masayoshi, and Yoshimoto, Kyosuke, 5,007,038, Cl. 369-44.110
Ohashi, Yutaka, 5,006,674, Cl. 200-19.00R
Ohmae, Katsuhiko, 5,005,425, Cl. 73-861.220
Ohmae, Katsuhiko, 5,005,427, Cl. 73-861.220
Sasamori, Kenzi; Yamamoto, Hiroshi, and Aoki, Hiroshi, 5,006,958, Cl. 361-335.000
Sugahara, Kazuyuki, Kusunoki, Shigeru, and Ipposhi, Takashi, 5,006,913, Cl. 357-41.000
Sugiyama, Takeshi, 5,005,435, Cl. 74-7.00A

Mitsubishi Jukogyo Kabushiki Kaisha. *See—*
Ishibashi, Yoshimitsu, 5,005,473, Cl. 100-154.000

Mitsubishi Kasei Corporation. *See—*
Kaneko, Masaharu; and Nakajima, Takanori, 5,006,276, Cl. 252-299.100
Kusano, Hiroshi, Ito, Tsuyoshi, and Kubota, Hirohisa, 5,006,467, Cl. 435-180.000

Mitsubishi Mining & Cement Co., Ltd. *See—*
Hirama, Masahiro, Tamidokoro, Hiroaki, and Hikita, Kazuyasu, 5,006,953, Cl. 361-309.000

Mitsui Kinzoku Kogyo Kabushiki Kaisha. *See—*
Shibata, Thoru, 5,005,392, Cl. 70-264.000

Mitsui Petrochemical Industries, Ltd. *See—*
Atsuta, Mitsuru, Sakashita, Takeshi, Miyamoto, Ryoichi, Tanimura, Yukinori, and Fuji, Saburo, 5,006,340, Cl. 424-405.000.

Mitsutake, Tanchiro. *See—*
Motonari, Kazunori, Kumamoto, Kazuo, Furuda, Shigeto, Ito, Yutaka, and Mitsutake, Tanchiro, 5,006,411, Cl. 428-421.000

Mitzinger, Herbert. *See—*
Wernicke, Ubbo, and Mitzinger, Herbert, 5,006,439, Cl. 430-379.000.

Miura, Akira. *See—*
Wakayama, Shigeru; and Miura, Akira, 5,006,374, Cl. 427-430.100

Miura, Junkichi. *See—*
Watanabe, Yoshio, Taki, Mamoru, Miura, Junkichi, Kamahori, Masao, Miyagi, Hiroyuki, Matsumura, Yasuhide, and Kanetomo, Masafumi, 5,005,434, Cl. 73-864.210

Miya, Yasuhiro. *See—*
Sawada, Kouji; Miya, Yasuhiro, Tanabe, Masato, Nanno, Takanobu, and Miyakawa, Shinji, 5,005,810, Cl. 267-140.100

Miyagaki, Kouichi. *See—*
Kawashima, Masaki, and Miyagaki, Kouichi, 5,005,699, Cl. 206-344.000

Miyagi, Hiroyuki. *See—*
Watanabe, Yoshio, Taki, Mamoru, Miura, Junkichi, Kamahori, Masao; Miyagi, Hiroyuki, Matsumura, Yasuhide, and Kanetomo, Masafumi, 5,005,434, Cl. 73-864.210

Miyagi, Junichi, and Shimazu, Isao, to Toyota Jidosha Kabushiki Kaisha; and Banno Kogyo Kabushiki Kaisha. Shift control arrangement for manual transmission. 5,005,411, Cl. 74-473.00R

Miyahara, Junji. *See—*
Mori, Nobufumi, Ohnishi, Masahiro, Miyahara, Junji, Otkawa, Tetsuo; and Harada, Yoshiyasu, 5,006,707, Cl. 250-311.000

Miyajima, Takeshi, to Hitachi Construction Machinery Co., Ltd. Ultrasonic method for measurement of depth of surface opening flaw in solid mass. 5,005,420, Cl. 73-629.000

Miyakawa, Shinji: *See*—
Sawada, Kouji, Miya, Yasuhiro, Tanabe, Masato, Nanno, Takanobu, and Miyakawa, Shinji, 5,005,810, Cl. 267-140.100

Miyamato, Kazuki: *See*—
Ishida, Masato; Takeda, Hiroaki; Watanabe, Kazuo, Suzuki, Akira, Suzuki, Nobuyuki; Sato, Isamu, and Miyamato, Kazuki, 5,006,890, Cl. 355-202.000

Miyamoto, Osamu; Kanou, Hideki; Nakamura, Kazuo, Imai, Takeshi, and Nishida, Kenichi, to Honda Giken Kogyo K.K. Information display system for a vehicle. 5,006,829, Cl. 340-459.000

Miyamoto, Ryoichi: *See*—
Atsuta, Mitsuru, Sakashita, Takeshi; Miyamoto, Ryoichi, Tanimura, Yukinori, and Fuji, Saburo, 5,006,340, Cl. 424-405.000.

Miyaoka, Satoshi, to Kabushiki Kaisha Kobe Seiko Sho. Cavitation-preventing pilot valve control system for power shovel hydraulic circuit. 5,005,466, Cl. 91-420.000

Miyasaka, Kenji, to Sony Corporation. Cassette loading device with a flat-cut cam follower. 5,006,944, Cl. 360-99.060

Miyatake, Takafumi: *See*—
Matsushima, Hitoshi, and Miyatake, Takafumi, 5,007,099, Cl. 382-41.000

Miyauchi, Tatsuo: *See*—
Uemura, Satoshi, Kawada, Susumu, Sekine, Yoshitada, and Miyauchi, Tatsuo, 5,005,277, Cl. 29-407.000

Miyoshi, Seiji, Fukuda, Misao, Yamato, Seiichi, Tokiwa, Kouji, and Maruyama, Kazuyoshi, to Fujitsu Limited. Digital adaptive filter and method of convergence therein. 5,007,044, Cl. 370-32.100

Mizuguchi, Shinichi: *See*—
Itoh, Tatsuo, Mizuguchi, Shinichi, Kubo, Keishi, and Sato, Takeo, 5,005,938, Cl. 350-96.180

Mizuno, Kotaro: *See*—
Adachi, Takeshi, Mizuno, Kotaro, Yamada, Shigeru, Suzuki, Hideo, and Kimpara, Mamoru, 5,005,459, Cl. 84-453.000

Mizuno, Toshiya, Teramoto, Yoshikichi, Saito, Takeshi, and Wakabayashi, Juichi, to Kureha Kagaku Kogyo K.K. Biaxially-stretched film made of poly(arylene sulfide) resin composition and production process thereof. 5,006,605, Cl. 525-189.000

Mizuoka, Seiji, and Okumura, Kazumasa, to Matsushita Electric Industrial Co., Ltd. Lead's position recognizing device. 5,007,097, Cl. 382-8.000.

MNM Enterprises, Inc.: *See*—
Little, Richard L., 5,005,584, Cl. 128-748.000

Mobacc B. V.: *See*—
Tempelman, Antonie P., 5,005,738, Cl. 222-402.190

Mobay Corporation: *See*—
Lundy, Charles E., White, Roger J., and Krishnan, Sivaram, 5,006,572, Cl. 523-136.000

Mobil Oil Corporation: *See*—
Andress, Harry J., Horodysky, Andrew G., and Kaminski, Joan M., 5,006,272, Cl. 252-49.600
Avery, Noyes L., Benjamin, Linda A., Horodysky, Andrew G. and Law, Derek A., 5,006,271, Cl. 252-45.000
Farng, Liehpao O., and Horodysky, Andrew G., 5,006,270, Cl. 252-42.700
Herbst, Joseph A., Owen, Hartley, and Schipper, Paul H., 5,006,497, Cl. 502-67.000
Hsieh, John T. T., and Pruden, Ann L., 5,006,506, Cl. 502-204.000
Jennings, Alfred R., Jr., and Smith, Roger C., 5,005,645, Cl. 166-280.000
Miro, Nemesio D., 5,006,618, Cl. 526-116.000
Pappal, David A., and Sarli, Michael S., 5,006,495, Cl. 502-42.000

Mobius, Dietmar: *See*—
Vogel Viola, and Mobius, Dietmar, 5,006,410, Cl. 428-411.100

Mochizuki, Akihiro: *See*—
Matsumaru, Shigeo Mochizuki, Akihiro, and Isoi, Syuzi, 5,006,415, Cl. 428-522.000
Nishio, Akira, Nakamura, Masato, and Mochizuki, Akihiro, 5,006,745, Cl. 310-177.000

Mochizuki, Takeshi, Katagiri, Shigenobu, Seino, Minoru, Ohshima, Minoru, Saito, Susumu, and Arimoto, Akira, to Hitachi Koki Co., Ltd., and Hitachi Ltd. Optical scanner and method for generating and detecting a composite dot on a scanning medium. 5,006,704, Cl. 250-235.000

Mochizuki, Takeshi: *See*—
Saito, Susumu, Arimoto, Akira, Mochizuki, Takeshi, Tsuji, Yasuyuki, Ohshima, Minoru, and Seino, Minoru, 5,006,705, Cl. 250-235.000

Modi, Jashawant J., and Banyai, Bruce E., to Aqualon Company. Water soluble polymers as alcohol replacement in lithographic fountain solutions. 5,006,168, Cl. 106-2.000

Modly, Zoltan M., to Engelhard Corporation. High infra-red reflecting brown rutile pigment compositions. 5,006,175, Cl. 106-439.000

Modrey, Henry J. Connector for optical fibers and the like. 5,005,940, Cl. 350-96.210

Moeglin, Steven J.: *See*—
Warmuth, Ivan J., II, and Moeglin, Steven J., 5,005,808, Cl. 267-64.270

Moeller, Robert F.: *See*—
Mainstone, Kenneth A., and Moeller, Robert F., 5,006,056, Cl. 425-186.000

Moeschler, Heinrich F.: *See*—
Hector, Richard F., Schaller, Klaus, Moeschler, Heinrich F., and Plempel, Manfred, 5,006,513, Cl. 514-43.000

Mogulewsky, Martine, Nedelec, Lucien, Nique, Francois, and Philibert, Daniel, to Roussel Uclaf. Novel 17β-hydroxy-19-nor-steroids. 5,006,518, Cl. 514-179.000

Mohaupt, Henry H. Gas generator with improved ignition assembly. 5,005,641, Cl. 166-63.000

Mohrs, Klaus-Helmut; Fruchtmann, Romanis, and Kohlsdorfer, Christian, to Bayer Aktiengesellschaft. Substituted ethers, thioethers and amines for use as lipoxygenase inhibitors. 5,006,534, Cl. 514-311.000.

Mojden, Andrew E., to Fleetwood Systems, Inc. Apparatus for inspecting and packaging can ends. 5,005,340, Cl. 53-500.000

Mojonnier, Daniel K.: *See*—
Votava, Paul, III; and Mojonnier, Daniel K., 5,006,230, Cl. 210-94.000

Momose, Yutaka, Watanabe, Tetsumi, and Yamaguro, Akira, to Aisin Seiki Kabushiki Kaisha. Stirling engine. 5,005,349, Cl. 60-517.000

Monarch Marking Systems, Inc.: *See*—
Benge, S. Eugene; and Froning, Robert L., 5,006,856, Cl. 340-572.000

Monckton, Susan P.: *See*—
Pope, Brent K.; Monckton, Susan P.; and Nath, Kaser R., 5,006,348, Cl. 426-40.000

Mondek, Martin J.: *See*—
Bland, Gerald F.; Mondek, Martin J.; and Zdanowicz, Lawrence E., 5,006,085, Cl. 440-75.000

Monico, Juan A., to Catene Systems Corporation. Segmented backplane for multiple microprocessing modules. 5,006,961, Cl. 361-413.000

Monma, Shigeki: *See*—
Ishizuka, Masaru, Yokono, Yasuyuki; Matsuura, Asako; Kamei, Yoshio, Ohashi, Hiromichi, Kitagawa, Mitsuhiko Sasaki, Tomiya; and Monma, Shigeki, 5,006,921, Cl. 357-74.000

Moore, Boyd B., to Shell Oil Company. Logging tool centralizer. 5,005,642, Cl. 166-241.000

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Morbark Industries, Inc.: *See*—
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Morcher, Bernhard: *See*—
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Morey, Norval, to Morbark Industries, Inc. Drum-type wood chipper. 5,005,620, Cl. 144-373.000

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Mori, Fumihiko: *See*—
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Mori, Kazumi: *See*—
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Mori, Kei. Light radiator. 5,005,931, Cl. 350-96.100

Mori, Nobufumi; Ohnishi, Masahiro, Miyahara, Junji, Oikawa, Tetsuo, and Harada, Yoshiyasu, to Fuji Photo Film Co., Ltd., and Jeol Ltd. Electron microscope image recording and read-out method. 5,006,707, Cl. 250-311.000

Mori, Shinichi: *See*—
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Mori, Shinji, Buma, Kozi, and Shinto, Hiroaki, to Kabushiki Kaisha Tokai-Rika Denki-Seisakusho. Air bag assembly mounting mechanism. 5,005,860, Cl. 280-731.000

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Mori, Toshihiro: *See*—
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Moriki, Yasumitsu, and Numakura, Hirotomo, to Maruma Jyusharyo Kabushiki Kaisha. High torque hydraulic shoe bolt wrench. 5,005,654, Cl. 173-12.000

Morin, Francois, to Etat Francais Represente Par le Ministere des Postes. Giant liquid crystal display means. 5,005,950, Cl. 350-333.000

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Itoh, Hiroshi, Sugaya, Masami, Soga, Yoshinobu; Morisawa, Kunio, Habuchi, Ryoji, Kouno, Katsumi; and Hattori, Yuji, 5,006,093, Cl. 474-28.000

Morita, Kunihiko, to Nippon Thompson Co., Ltd. Rectilinear motion rolling guide unit. 5,005,987, Cl. 384-43.000.

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Morris, Scott S.; McGehee, Danny B., and Canham, Randolph S., to Bull HN Information Systems Inc. Dust containment cap for a printing device employing toner. 5,006,894, Cl. 355-215.000.

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Moshe, Bill L. Overarm router shaper. 5,005,616, Cl. 144-134.00A.

Moss, Stanley H., to Adria Limited. Hosiery finishing apparatus. 5,005,381, Cl. 66-149.00S

Mottschke, Lothar, and Tronnier, Hagen, to Marbert GmbH. Medicinal compositions based on spent brewers' grains extract, a process for the preparation thereof, and the use of spent brewers' grains extract for the preparation of cosmetic compositions, and a special brewers' grains extract. 5,006,337, Cl. 424-195.100.

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Davies, Robert B., 5,006,736, Cl. 307-570.000.
Davis, Darrell E., 5,006,730, Cl. 307-446.000.
Drake, Herbert G., Jr., 5,006,760, Cl. 315-111.210
Earle, Richard W., 5,006,190, Cl. 156-247.000.
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Freyman, Bruce J.; Miles, Barry M., and Flaugher, Jill L., 5,006,673, Cl. 174-255.000
Kosa, Yasunobu, 5,006,909, Cl. 357-23.600.
McShane, Michael B., Lin, Paul T., and Wilson, Howard P., 5,006,922, Cl. 357-74.000
Mennona, Vincent J., Jr., 5,006,073, Cl. 439-77.000.
Miller, John E., and Lambrecht, Frank E., 5,006,861, Cl. 343-848.000.
Prioste, Jerry E., and Nelson, Keith, 5,006,820, Cl. 333-33.000
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MSP Corporation: *See*—
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MTS Schweinfurt GmbH: *See*—
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Muggeo, Alain, and Vuillaume, Denis, to Valinox. Method of producing bimetallic tubes and the tubes obtained by this method. 5,005,756, Cl. 228-127.000

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Muller, George H.: *See*—
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Muller, Hans R., Ulmann, Martin; Conti, Josef, and Murdel, Gunter, to Eprova AG. Process for the preparation of tetrahydrofolates. 5,006,655, Cl. 544-258.000.

Muller, John, to Lavidson Textron Inc. Two-piece stud assembly. 5,005,265, Cl. 24-453.000.

Muller, Robert; and Weller, Gerhard, to Dr. Ing. h.c.F. Porsche AG. Four wheel drive for a motor vehicle. 5,006,099, Cl. 475-86.000.

Muller, Werner H., to Hoechst Aktiengesellschaft. Radiation sensitive reproduction composition and element with perfluoroalkyl group containing polymer. 5,006,443, Cl. 430-192.000.

Multiform Desiccants, Inc.: *See*—
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Munakata, Hirohide: *See*—
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Munson, James R., to Dallas Group of America, Inc., The. Treatment of fruit-based or vegetable-based beverages with precipitated magnesium silicate. 5,006,356, Cl. 426-330.400.

Muragaki Co., Ltd.: *See*—
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Muragaki, Ryoichi, to Muragaki Co., Ltd. Method of supplying thread from a reel to sewing machine and hanger used therein. 5,005,505, Cl. 112-302.000.

Muraguchi, Yutaka, to Hoko Sangyo Co., Ltd. Device for cleaning cylindrical objects, such as bolts. 5,005,244, Cl. 15-88.000.

Murai, Teruyuki: *See*—
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Murakami, Kenjiro; Iinuma, Hirokazu, and Kodaka, Toshikazu, to Seiko Epson Corporation. Apparatus for feeding both cut sheet and fan fold paper in a printer. 5,005,746, Cl. 226-101.000

Murakami, Masanori, Hamada, Akiyoshi; Yagoto, Mitsutoshi, and Mori, Shinichi, to Minolta Camera Kabushiki Kaisha. Apparatus for recording images on a roll of film and a film winding cartridge. 5,006,874, Cl. 354-212.000.

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Muramatsu, Hajime: *See*—
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Murata Manufacturing Co., Ltd.: *See*—
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Sakamoto, Yukio, and Yoshio, Hanato, 5,006,392, Cl. 428-137.000
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Murata, Yoshiyuki, to Casio Computer Co., Ltd. Plucking-sound generation instrument and plucking-data memory instrument. 5,005,461, Cl. 84-646.000

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Murphy, Lawrence J., Jr. Gravimetric titration apparatus for the determination of the iodine number of carbon black. 5,006,312, Cl. 422-62.000

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Kuno, Toshitaka, Koide, Mitsuo, Nakano, Masaru, Hayashi, Chisao, Kato, Yoshito, and Ishiguro, Yasuo, 5,006,999, Cl 364-513.000

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Touji, Daijiro, Nakahara, Akihiro, Nakashita, Takefumi, Mitsuba, Atsuko, Nakashio, Yukiyasu, and Nagase, Tsuneyuki, 5,006,586, Cl 524-377.000

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Nakaya, Teruomi *See*—
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Hoots, John E., and Banks, Rodney H., 5,006,311, Cl 422-62.000
Huang, Shu Jen W., and Stenger, Claudia V., 5,006,261, Cl 210-712.000

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Shimizu, Yoichi, 5,005,607, Cl 139-91.000

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Hite, William H., and Allebach, Gene E., 5,005,397, Cl 72-405.000

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Jones, Robert L., and Wilson, Norman H., 5,006,539, Cl 514-357.000
Schram, Cornelius J., 5,006,266, Cl 210-748.000

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Freet, E. Thomas, 5,005,238, Cl 5-451.000

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Skidmore, Ian F., Lunts, Lawrence H. C., Finch, Harry, Naylor, Alan, and Campbell, Ian B., 5,006,556, Cl 514-539.000

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Kallin, Fredrik L. N., Hamilton, Alistair R., and Luckhurst, Graham, 5,006,960, Cl 361-390.000
Talwalkar, Shashi G., 5,006,863, Cl 346-1.100

Neal, Roger *See*—
Taylor, Keith, and Neal, Roger, 5,005,661, Cl 180-219.000

NEC Corporation *See*—
Denda, Akira, 5,006,731, Cl 307-455.000
Kudoh, Kazuhiro, Nishiyama, Toshirou, and Anma, Sadayuki, 5,007,105, Cl 455-344.000
Ooi, Tomoyuki, Hotta, Toshinori, and Isoe, Yasuhito, 5,007,088, Cl 380-46.000
Tsuzuki, Kazuo, 5,007,045, Cl 370-94.100

NEC Electronics Inc *See*—
Goldberg, Edward, 5,006,773, Cl 318-696.000

Neches, Philip M., to Teradata Corporation, Relational database system having a network for transmitting colliding packets and a plurality of processors each storing a disjoint portion of database, 5,006,978, Cl 364-200.000

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Loercks, Juergen, and Neisius, Horst, 5,006,140, Cl 65-3.100

Nelson, Keith *See*—
Proste, Jerry E., and Nelson, Keith, 5,006,820, Cl 333-33.000

Nelson, Steven Golf driving and putting exerciser and training aid 5,005,836, Cl 273-191.00R

Nelson, Thomas E. Thermal insulation jacket 5,005,531, Cl 122-494.000

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Nerger, Klaus K., Klein, Hans J., and Burkart, Gunther, to Mannesmann Aktiengelsellschaft, Gripper assembly for an industrial robot 5,005,889, Cl. 294-86.400

Netten, Adriaan *See*—
Eggink, Hendrik H. J., Friedrichs, Winand H. A. M., Netten, Adriaan, Van Der AA, Herman H. M., and Schuiteman, Martin W., 5,006,752, Cl 313-161.000

Neufeld, Herman, to Cherry Semiconductor Corporation, Power factor correction circuit, 5,006,975, Cl 363-80.000

Neuman, Guenter, and Haley, William J., to Borg-Warner Automotive, Inc, Continuously variable transmission power train configuration 5,006,092, Cl 474-8.000

Newkirk, Raymond K., and West, William G., to Forward Technology Industries, Inc, Multiple fixture apparatus for fusion bonding 5,006,197, Cl 156-514.000

Newman, Jack, and Farb, David I., to Rhone-Poulenc Rorer Pharmaceuticals Inc, Purification of von Willebrand Factor by affinity chromatography, 5,006,642, Cl 530-385.000

Ng, David *See*—
Jensen, William S., and Ng, David, 5,005,439, Cl 74-574.000

NGB Spark Plug Co., Ltd *See*—
Kawase, Hideyuki, Sahashi, Noboru, and Hashizume, Tamotsu, 5,006,143, Cl 65-43.000

NGK Insulators, Ltd *See*—
Kawasaki, Keiji, Sekiguchi, Michio, and Matsuhisa, Tadaaki, 5,005,417, Cl 73-593.000

NGK Spark Plug Co., Ltd *See*—
Morikawa, Asao, and Kondo, Kazuo, 5,006,167, Cl 106-1.180

Niederer, Kurt W., to Toter, Inc, Method of emptying a container 5,006,039, Cl 414-786.000

Niederprum, Klaus, to Ford Motor Company, Storing and transporting rack for body panels and other flat components 5,005,712, Cl 211-150.000

Niederst, Ken W *See*—
Nugent, Richard M., Jr., Niederst, Ken W., and Seiner, Jerome A., 5,006,381, Cl 428-35.400

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Ewalds, Johannes M., Hordijk, Johan C., and Nieuwkoop, Evert, 5,005,393, Cl 70-277.000.

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Kobayashi, Yasutomo, and Kato, Tsuyoshi, 5,005,885, Cl 292-336.300.

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Cullen, John S., Incorvia, Samuel A., Nigon, Christopher S., and Boczkowski, Frederick A., 5,005,763, Cl 239-57.000

Nihira, Syoichi *See*—
Tamura, Kozo, Kodato, Toshiharu, Nihira, Syoichi, Tsukamoto, Yasuhiro, and Iida, Akira, 5,006,780, Cl 320-54.000

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Niimi, Mamoru *See*—
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Ninuma, Kiyoshi *See*—
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Meijer, Egbert W., Ten Hoeve, Wolter, Nijhuis, Sjef, Rikken, Gerardus L. J. A., and Havinga, Edsko E., 5,006,729, Cl 307-425.000

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Yoshida, Hajime, 5,006,169, Cl 106-2.000.

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Kosaka, Toru, Ohtsubo, Yoshiaki; and Meguro, Hiroshi, 5,006,700, Cl. 250-201.400
Ohshita, Koichi, 5,005,955, Cl. 350-423.000
Takagi, Tadao; and Sato, Toshihiro, 5,006,879, Cl. 354-413.000

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Dietrich, Joseph J.; Niksa, Andrew J.; and Stewart, James J., 5,006,216, Cl. 204-257.000.

Nilaver, Gajanan. *See*—
Adelman, John P.; Bond, Chris T.; Nilaver, Gajanan, and Zimmerman, Earl A., 5,006,469, Cl. 435-240.100.

Nilstam, Bo. *See*—
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Nippon Conlux Co., Ltd. *See*—
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Nippon Kokan Kabushiki Kaisha *See*—
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Nippon Oil Company, Limited. *See*—
Shikatani, Yutaka, Kataoka, Naoki; Shimo, Yoshiyuki, Kuroda, Nobuyuki, and Matsuura, Kazuo, 5,006,633, Cl. 528-230.000

Nippon Oil & Fats Co., Ltd. *See*—
Kumagai, Motoo, Kato, Keiichi; Takeuti, Humio; Nagano, Masato, and Sakaguchi, Michiaki, 5,006,957, Cl. 361-321.000

Nippon Paint Co., Ltd. *See*—
Umeda, Yasushi, and Satoh, Hisao, 5,006,447, Cl. 430-272.000

Nippon Seiko Kabushiki Kaisha. *See*—
Yamaguchi, Mikio, 5,005,862, Cl. 280-775.000.

Nippon Signal Co., Ltd., The *See*—
Sakurai, Masaaki; and Yoda, Mitsuru, 5,006,422, Cl. 428-694.000

Nippon Steel Chemical Co., Ltd. *See*—
Kawabe, Masanao; Kimura, Masao, Sugiyama, Kazuhiro; Yamaoka, Ikuro; and Inoue, Hiroharu, 5,006,631, Cl. 528-204.000

Nippon Steel Corporation. *See*—
Kawabe, Masanao; Kimura, Masao; Sugiyama, Kazuhiro; Yamaoka, Ikuro, and Inoue, Hiroharu, 5,006,631, Cl. 528-204.000

Nippon Telegraph and Telephone Corporation *See*—
Aida, Kazuo; Nishi, Shigendo, and Nakagawa, Kiyoshi, 5,005,937, Cl. 350-96.160.
Matsuoka, Takashi, and Sasaki, Toru, 5,006,908, Cl. 357-17.000

Nippon Telephone and Telegraph Public Corporation *See*—
Yoshizawa, Masahiro; Kikuchi, Akira, Wada, Kou; Fujinami, Minpei, and Shimazu, Nobuo, 5,006,795, Cl. 324-158.00R.

Nippon Thompson Co., Ltd. *See*—
Morita, Kunihiko, 5,005,987, Cl. 384-43.000.

Nique, Francois. *See*—
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Nire, Takashi, and Watanabe, Takehito, to Kabushiki Kaisha Komatsu Seisakusho Method of manufacturing a thin film EL device by multisource deposition method 5,006,365, Cl. 427-66.000.

Nishi, Norihisa, Nakamura, Makoto, and Noguchi, Satoshi, to Taiyo Fishery Co., Ltd Process for the production of surimi. 5,006,353, Cl. 426-231.000

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Nishida, Kenichi *See*—
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Nishihara Environmental Sanitation Research Corporation Limited *See*—
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Nishijima, Toyoki *See*—
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Nishikawa, Kiyoshi Instrument for skin-stimulating therapy. 5,005,561, Cl. 128-60.000

Nishimura, Shozo, to Tanashin Denki Co. Ltd. Apparatus for preventing tape from being rolled 5,005,745, Cl. 226-24.000

Nishimura, Toshio, to Sharp Kabushiki Kaisha Reset circuit for electronic apparatus 5,007,014, Cl. 364-900.000

Nishimura, Yukuo *See*—
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Nishimura, Yutaka *See*—
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Nishio, Akira, Nakamura, Masato, and Mochizuki, Akihiro, to Victor company of Japan, Ltd Polyphase direct current motor 5,006,745, Cl. 310-177.000

Nishioka, Yoshiki *See*—
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Nishiyodo Air Conditioner Co., Ltd *See*—
Yonezawa, Yasuo, Ohnishi, Toshiya, Okumura, Shin'ichi, Sakai, Akiyoshi, Nakano, Hiroki; Matsushita, Masao, Morikawa, Atsushi; and Yoshihara, Motoshi, 5,005,371, Cl. 62-238.600

Nishizawa, Kazunori, Abe, Mitsutaka; Matsumoto, Hiroshi; and Imamura, Shinji, to Asmo Co., Ltd Vehicle windshield wiper 5,005,249, Cl. 15-250.270.

Nissan Motor Co., Ltd *See*—
Narita, Yasushi, 5,005,441, Cl. 74-866.000
Sugano, Kazuhiko, 5,005,443, Cl. 74-868.000
Uemura, Satoshi, Kawada, Susumu, Sekine, Yoshitada; and Miyauchi, Tatsuo, 5,005,277, Cl. 29-407.000

Nissei Industries. *See*—
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Niwa, Yasushi *See*—
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Nix, Robert J. *See*—
Cheung, Nelson, Nix, Robert J., and Figiel, Janusz, 5,006,385, Cl. 428-57.000.

NKK Corporation *See*—
Watanabe, Tsutomu; Sagiyama, Masaru, Kawabe, Masaki, and Morita, Masaya, 5,006,420, Cl. 428-629.000

Noble, Stephen A., to Eastman Kodak Company. Image recording system and method 5,006,871, Cl. 354-76.000

Noel, Bruce W., Borella, Henry M., Cates, Michael R.; Turley, W Dale, MacArthur, Charles D., and Cala, Gregory C., to United States of America, Energy. Optical heat flux gauge 5,005,984, Cl. 374-29.000

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Noguchi, Hiroshi, and Kawada, Kazuo, to Stack Electronics Co., Ltd Connecting mechanism of central conductors of a coaxial cable and a probe 5,006,668, Cl. 174-75.00C

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Nojiri, Howard H., to Spectra-Physics, Inc Method and apparatus for mounting data gathering system 5,005,670, Cl. 186-61.000

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Nolan, Richard G *See*—
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Hamashima, Shigeki, Koseto, Masaru, and Nomura, Shoji, 5,006,711, Cl. 250-349.000

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Norden, Timothy D. *See*—
Szajewski, Richard P., Burns, Paul A., Poslusny, Jerrold N., Platt, Norma B., and Norden, Timothy D., 5,006,448, Cl. 430-505.000

Norling, Brian L. *See*—
Novack, Mitchell J., Norling, Brian L., and Woodruff, James R., 5,005,413, Cl. 73-517.0AV

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North American Philips Corp., Signetics Division *See*—
De Jong, Jan L. and DeGroot, Jacob G., 5,006,476, Cl. 437-31.000

North, Peter C., Cavalla, David J., and Black, Derek J M., to Glaxo Group Limited Imidazole derivatives and pharmaceutical use thereof 5,006,544, Cl. 514-385.000

Northcutt, Walter G., Jr *See*—
Holcombe, Cressie E., Northcutt, Walter G., Jr Masters, David R., and Chapman, Lloyd R., 5,006,306, Cl. 420-3.000

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Brown, Anthony K. D., 5,006,733, Cl. 307-521.000
Goulette, Richard R., Xavier, Stanilus K., and Greenfield, Raymond L., 5,006,788, Cl. 324-95.000
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Novack, Mitchell J., Norling, Brian L., and Woodruff, James R., to Sundstrand Data Control, Inc Accelerometer with coplanar push-pull force transducers 5,005,413, Cl. 73-517.0AV

Noven Pharmaceuticals, Inc *See*—
LaPrade, Ronald E., 5,006,108, Cl. 604-20.000

Nowak, David J *See*—
Kar, Kishore K., and Nowak, David J., 5,006,265, Cl. 210-741.000.

Nowak, Michael T *See*—
Lewis, Thomas E.; Davidson, Bradley W., Williams, Richard A.; Nowak, Michael T., and Kline, John F., 5,005,479, Cl. 101-467.000.

Nowlan, Bud C. Ladder step support 5,005,668, Cl. 182-121.000.

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Bregman, Mark F.; Horton, Raymond R., Noyan, Ismail C., and Palmer, Michael J., 5,006,925, Cl. 357-82.000.

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Miller, John C.; Pandey, Sudhakar; and Pollock, Earl M., 5,006,713, Cl. 250-361.00R.

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Akasaki, Yutaka; Aonuma, Hidekazu, Hongo, Kazuya, Sato, Katsuhiro; Nukada, Katsumi; and Marumo, Teruumi, 5,006,435, Cl. 430-58.000.

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Nuriya, Kozo *See*—
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Nyberg, Christopher A., Jackson, James G., and Brdicko, Jan, to ARC Sonics Inc. Sonic generator 5,005,773, Cl. 241-30.000

O/Y Kyro A/B, Tamglass Corp.: *See*—
Shafir, Aaron, 5,005,318, Cl. 51-5.00C

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Deyo, Charles C., Wolters, Thomas R., and Oas, Robert H., 5,005,283, Cl. 29-829.000

Obara, Haruki, and Izumiya, Syunzo, to Fanuc Ltd Gap voltage detector in a wire-cut electric discharge machine 5,006,693, Cl. 219-69.120.

Obata, Masahiko. *See*—
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Wahle, Bernd, Herold, Claus-Peter, Zoellner, Wolfgang, Schiefer-stein, Ludwig, and Oberkobusch, Doris, 5,006,621, Cl. 526-262.000

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Oblad, Hayward B., and Meenan, Gary F., to Consolidation Coal Company Flocculant control system 5,006,231, Cl. 210-96.100.

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O'Brien, Michael J., to Eastman Kodak Company Device for converting a displacement in a direction into a force in the same direction 5,005,961, Cl. 350-611.000

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Obst, Frank, to Stocko Metallwarenfabriken Henkels und Sohn GmbH & Co Application apparatus. 5,005,752, Cl. 227-114.000

O'Connell, Mark, to Thomas Industries, Inc Compressor with a segmented piston rod assembly. 5,006,047, Cl. 417-238.000

Oda, Denichi *See*—
Takaki, Takeshi, Kaijiri, Kouhei, Oda, Denichi, Oda, Kunio, Kurihara, Hideo, and Tanabe, Takeshi, 5,006,603, Cl. 525-105.000

Oda, Hajime *See*—
Ogihara, Masuo, Oda, Hajime, Seki, Yoichi, and Yamazaki, Hiroshi, 5,006,880, Cl. 354-427.000

Oda, Hiroshi: *See*—
Okamoto, Osamu, Nakaya, Teruomi, Suzuki, Seizo, Kuwano, Naoaki, Sakai, Yoshinori, Oda, Hiroshi, Uegusa, Masao, and Iba, Goji, 5,005,786, Cl. 244-161.000

Oda, Kunio: *See*—
Takaki, Takeshi; Kaijiri, Kouhei, Oda, Denichi, Oda, Kunio, Kurihara, Hideo, and Tanabe, Takeshi, 5,006,603, Cl. 525-105.000

Oda, Mikio: *See*—
Kaneaki, Tetsuhiko, Oda, Mikio, Nuriya, Kozo, and Tani, Yasunori, 5,006,851, Cl. 341-155.000

Oda, Sennosuke. *See*—
Suzuki, Norio, Oda, Sennosuke, Maruyama, Hiromi; and Hoshino, Kenichi, 5,006,426, Cl. 429-94.000

Oda, Takumi, to Kanai Juyo Kogyo Company, Limited Stationary flat, top bar and carding engine. 5,005,260, Cl. 19-104.000

Odagaki, Toru, to Ushio Denki Kabushiki Kaisha Incandescent lamp 5,006,757, Cl. 313-623.000.

Odagawa, Tetsufumi, to Fujitsu Limited Bistable semiconductor laser diode device 5,007,061, Cl. 372-25.000

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Egawa, Toshihiko, and Odashima, Satoshi, 5,005,949, Cl. 350-276.00R.

Odenwalder, Heinrich: *See*—
Vetter, Hans; Ohlschlager, Hans; Odenwalder, Heinrich; Morcher, Bernhard; Sommer, Friedhelm, and Rosenhahn, Lothar, 5,006,457, Cl. 430-613.000.

Odone, Paola: *See*—
Benedetto, Piero; Bezzi, Salvatore, and Odone, Paola, 5,005,898, Cl. 296-194.000.

O'Donnell, Matthew; Welles, Kenneth B., II; Crawford, Carl R., Pelc, Norbert J.; and Karr, Steven G., to General Electric Company Method and apparatus for coherent imaging system 5,005,419, Cl. 73-626.000.

Oe, Takanori; Sueoka, Hiroyuki; Hisadome, Masao, and Yamagami, Keiji, to Yoshitomi Pharmaceutical Industries, Ltd Fused pyrazole compounds and pharmaceutical use thereof. 5,006,520, Cl. 514-212.000.

Oemcke, Kenneth W., and Carmichael, Evan P., to Eastman Kodak Company. Film processor with absorbent roller to eliminate water spotting. 5,006,875, Cl. 354-299.000

Oettgen, Herbert F. *See*—
Yamaguchi, Hiroshi; Furukawa, Koichi, Livingston, Philip O., Lloyd, Kenneth O., Oettgen, Herbert F., Old, Lloyd J., and Fortunato, Sheila R., 5,006,470, Cl. 424-85.800

Office National d'Etudes et de Recherches Aerospatiales (ONERA) *See*—
Falempin, Francois, Sans, Claude; Champigny Patrick, Laruelle, Gerard, and Garrel, Jean-Marie, 5,005,782, Cl. 244-53.00B

O'Gallagher, Joseph J *See*—
Winston, Roland, Gleckman, Philip L., and O'Gallagher, Joseph J., 5,005,958, Cl. 350-442.000.

Ogasawara, Hiromitsu, to Tachi-S Co., Ltd Method and device for controlling headrest 5,006,771, Cl. 318-568.100

Ogata, Kojiro *See*—
Nagasawa, Kiyoshi, Ono, Kozo, Ogata, Kojiro, Murayama, Ken, and Hoshino, Yoshihiro, 5,005,298, Cl. 33-573.000.

Ogawa, Motosuke *See*—
Fukazawa, Hiromitsu, and Ogawa, Motosuke, 5,006,568, Cl. 521-98.000.

Ogawa, Ryota *See*—
Tejima, Yasuyuki, Ogawa, Ryota, and Sato, Makoto, 5,005,968, Cl. 353-122.000.

Ogawa, Shinji *See*—
Yoshinaka, Toshio; Hamano, Hideo, Minami, Hiroshi, and Ogawa, Shinji, 5,006,098, Cl. 475-86.000

Ogihara, Masuo, Oda, Hajime, Seki, Yoichi, and Yamazaki, Hiroshi, to Seikosha Co., Ltd. Programmable shutter 5,006,880, Cl. 354-427.000

Ogino, Sumihito, and Takahashi, Ryo, to Yokogawa Medical Systems, Limited Table mechanism 5,005,492, Cl. 108-145.000

Ogura, Mitsuru, to Sharp Kabushiki Kaisha Image forming apparatus 5,006,887, Cl. 355-72.000

Ohashi, Hiromichi *See*—
Ishizuka, Masaru, Yokono, Yasuyuki, Matsuura, Asako, Kamei, Yoshio, Ohashi, Hiromichi, Kitagawa, Mitsuhiko, Sasaki, Tomiya, and Monma, Shigeki, 5,006,921, Cl. 357-74.000

Ohashi, Kunio, and Nagata, Shoichi, to Sharp Kabushiki Kaisha Image forming apparatus 5,006,883, Cl. 355-27.000

Ohashi, Yutaka, to Mitsubishi Denki Kabushiki Kaisha Distributor and distributor rotor electrode. 5,006,674, Cl. 200-19.00R

Ohata, Hideo *See*—
Yasunobu, Chizuko, Mori, Fumihiko, Ohata, Hideo, Udagawa, Mari, Inaba, Kenichiro, Hida, Kenichi and Satoh, Yumiko, 5,006,998, Cl. 364-513.000.

Ohba, Kiyoshi *See*—
Emura, Tatuo, and Ohba, Kiyoshi, 5,006,350, Cl. 426-46.000

Ohba, Nobuyuki, Ikeda, Atsuhiko, Matsunari, Kenji, Yamada, Yuji, Hirata, Michiya, Nakamura, Yasuo, Takeuchi, Akira, and Karino, Hiroyuki, to Kumiai Chemical Industry Co., Ltd., and Ihara Chemical Industry Co., Ltd Pyrrolin-2-one compounds which are useful as herbicides 5,006,157, Cl. 71-95.000

Ohba, Toshihiro *See*—
Fujioka, Yoshide, Ohba, Toshihiro, Kanatani, Yoshiharu, and Uede, Hisashi, 5,006,838, Cl. 340-781.000

Ohcoshi, Shigeru, and Yoshinaga, Toshiaki, to Hitachi, Ltd Method for making of design reference and apparatus therefor 5,006,991, Cl. 364-474.200.

Ohio State University, The *See*—
Stevens, Vernon C., 5,006,334, Cl. 424-88.000

Ohlig, Ernest. Graphic material registration apparatus and method and vacuum hold down apparatus therefor 5,006,889 Cl. 355-91.000

Ohlschlager, Hans *See*—
Berthold, Werner, and Ohlschlager, Hans, 5,006,440, Cl. 430-429.000
Vetter, Hans, Ohlschlager, Hans, Odenwalder, Heinrich, Morcher, Bernhard, Sommer, Friedhelm, and Rosenhahn, Lothar, 5,006,457, Cl. 430-613.000

Ohmae, Katsuhiko, to Mitsubishi Denki Kabushiki Kaisha Vortex flowmeter. 5,005,425, Cl. 73-861.220

Ohmae, Katsuhiko, to Mitsubishi Denki Kabushiki Kaisha Karman vortex flowmeter with signal waveform shaper circuit 5,005,427, Cl. 73-861.220

Ohmori, Kenji: *See*—
Kuzuo, Ryuichi; Kawamoto, Atsushi, Tada, Junya; Ohmori, Kenji, and Sekiya, Hiroko, 5,006,388, Cl. 428-64.000

Ohmura, Kazumi, Nishiyama, Jun, and Chayama, Yukio, to Tsubakimoto Chain Company Linear motor driven conveying apparatus 5,005,487, Cl. 104-292.000.

Ohmura, Kunioki *See*—
Toya, Ichizo, Ohmura, Kunioki; and Okazaki, Masaki, 5,006,449, Cl. 430-508.000

Ohnishi, Masahiro *See*—
Mori, Nobufumi, Ohnishi, Masahiro, Miyahara, Junji, Oikawa, Tetsuo; and Harada, Yoshiyasu, 5,006,707, Cl. 250-311.000

Ohnishi, Toshiya *See*—
Yonezawa, Yasuo; Ohnishi, Toshiya, Okumura, Shin'ichi, Sakai, Akiyoshi, Nakano, Hiroki, Matsushita, Masao, Morikawa, Atsushi, and Yoshihara, Motoshi, 5,005,371, Cl. 62-238.600

Ohnishi, Tsuyoshi Therapeutic usages of inhibitors for a potassium efflux channel 5,006,512, Cl. 514-21.000

Ohno, Tadayoshi, Nagato, Hitoshi, and Kanai, Tsutomu, to Kabushiki Kaisha Toshiba Electrothermal printer with a resistive ink ribbon and differing resistance current return paths 5,005,993, Cl. 400-120.000

Ohshima, Minoru *See*—
Mochizuki, Takeshi, Katagiri, Shigenobu, Seino, Minoru, Ohshima, Minoru, Saito, Susumu, and Arimoto, Akira, 5,006,704, Cl. 250-235.000
Saito, Susumu, Arimoto, Akira, Mochizuki, Takeshi, Tsuji, Yasuyuki, Ohshima, Minoru, and Seino, Minoru, 5,006,705, Cl. 250-235.000

Ohshima, Shigeo, Toda, Haruki, and Ikawa, Tatsuo, to Kabushiki Kaisha Toshiba Multiport memory with improved timing of word line selection 5,007,028, Cl. 365-233.000

Ohshita, Koichi, to Nikon Corporation Keplerian zoom finder optical system 5,005,955, Cl. 350-423.000

Ohta, Katsuhiro, Masuda, Hisami, and Makishima, Mamoru, to TDK Corporation Tire abnormality detecting device 5,006,844, Cl. 340-448.000

Ohta, Masanori, to Isuzu Jidosha Kabushiki Kaisha Cylinder liner unit for use in an internal combustion engine 5,005,469, Cl. 92-169.400

Ohtake, Yasuhisa *See*—
Sagou, Seiji, and Ohtake, Yasuhisa, 5,006,432, Cl. 430-23.000

Ohtsubo, Yoshiaki *See*—
Kosaka, Toru, Ohtsubo, Yoshiaki, and Meguro, Hiroshi, 5,006,700, Cl. 250-201.400

Ohtsuka, Eiji, to Kabushiki Kaisha Toshiba Electronic exchange having a conference telephone communication function and conference telephone communication method 5,007,049, Cl. 370-62.000

Ohtsuka, Koji, and Goto, Hirokazu, to Sanken Electric Co., Ltd. Fabrication of P-N junction semiconductor device 5,006,483, Cl. 437-179.000

Oikawa, Tetsuo *See*—
Mori, Nobufumi, Ohnishi, Masahiro, Miyahara, Junji, Oikawa, Tetsuo, and Harada, Yoshiyasu, 5,006,707, Cl. 250-311.000

Oilar, Clayton D., to Oilar, Clayton Dale Insulated beverage cup 5,005,717, Cl. 215-13.100

Oilar, Clayton Dale *See*—
Oilar, Clayton D., 5,005,717, Cl. 215-13.100

Oishi, Kengo *See*—
Onmori, Shozo, Takahashi, Daisuke, and Oishi, Kengo, 5,006,947, Cl. 360-132.000

Oka, Kengo, to Sumitomo Rubber Industries, Ltd. Golf ball 5,005,838, Cl. 273-232.000

Oka, Yoshiyuki, to Sejima, Shiro; Oka, Yoshiyuki, and Murata, Ken Coagulant for soil and/or sand method for preventing washout using the same 5,006,176, Cl. 106-633.000

Okabe, Minoru *See*—
Kanamori, Iwao, and Okabe, Minoru, 5,005,957, Cl. 350-432.000

Okada, Hisashi, and Yagihara, Morio, to Fuji Photo Film Co., Ltd. Silver halide photographic material 5,006,444, Cl. 430-264.000

Okada, Hisashi *See*—
Yagihara, Morio, Okada, Hisashi, and Katoh, Kazunobu, 5,006,445, Cl. 430-264.000

Okadome, Kenichiro *See*—
Inokuchi, Kiyoshi, Okadome, Kenichiro, Muto, Yoichi, Kawai, Yoshio, Onuma, Tadashi, and Shirakami, Toshiharu, 5,006,111, Cl. 604-67.000

Okamoto, Hiroyuki, and Hoshino, Kunio, to Yazaki Corporation. Connector with built-in through capacitors 5,006,079, Cl. 439-607.000

Okamoto, Osamu, Nakaya, Teruomi, Suzuki, Seizo; Kuwano, Naoaki, Sakai, Yoshinori, Oda, Hiroshi, Uegusa, Masao, and Iba, Goji, to National Aerospace Laboratory of Science & Technology Agency, and Kawasaki Industries, Ltd. Docking and active damping device for space structures 5,005,786, Cl. 244-161.000

Okamoto, Teiichi *See*—
Tanaka, Hazime, Okamoto, Teiichi, Yoshiga, Kenji, and Watanabe, Kazuhiko, 5,005,370, Cl. 62-211.000

Okauchi, Shigeki, to Canon Kabushiki Kaisha. Magnetic recording and/or reproducing apparatus having a retaining mechanism for a disc-shaped magnetic record bearing medium 5,007,040, Cl. 369-270.000

Okazaki, Hiroshi *See*—
Kazaoka, Kenichi, and Okazaki, Hiroshi, 5,006,052, Cl. 418-61.100

Okazaki, Kiyoshi, to Kabushiki Kaisha Toshiba Destroying wave treatment apparatus. 5,005,580, Cl. 128-660.030

Okazaki, Masaki *See*—
Toya, Ichizo, Ohmura, Kunioki, and Okazaki, Masaki, 5,006,449, Cl. 430-508.000

Oki Electric Industry Inc. Co *See*—
Harada, Yusuke, 5,006,484, Cl. 437-192.000

Okimoto, Haruo *See*—
Tashima, Seiji, Okimoto, Haruo, Akagi, Toshimichi, and Niwa, Yasushi, 5,005,359, Cl. 60-600.000

Okine, Richard K *See*—
Bice, Archie R., Edison, David H., Fish, Floyd H., Jr., Hopkins, Mark W., and Okine, Richard K., 5,006,294, Cl. 264-138.000

Okubo, Yasuhiro *See*—
Takeishi, Kazuo, Okubo, Yasuhiro, and Itoh, Takashi, 5,006,251, Cl. 210-618.000

Okumura, Kazumasa *See*—
Mizuoka, Seiji, and Okumura, Kazumasa, 5,007,097, Cl. 382-8.000

Okumura, Mitsunao, to Murata Manufacturing Co., Ltd. Pulse generator including coaxial type capacitor 5,006,726, Cl. 307-108.000

Okumura, Shin'ichi *See*—
Yonezawa, Yasuo, Ohnishi, Toshiya, Okumura, Shin'ichi, Sakai, Akiyoshi, Nakano, Hiroki, Matsushita, Masao, Morikawa, Atsushi, and Yoshihara, Motoshi, 5,005,371, Cl. 62-238.600.

Old, Lloyd J *See*—
Yamaguchi, Hiroshi, Furukawa, Koichi, Livingston, Philip O., Lloyd, Kenneth O., Oettgen, Herbert F., Old, Lloyd J., and Fortunato, Sheila R., 5,006,470, Cl. 424-85.800

Olin Corporation *See*—
Bolick, Roger E., II, and French, Jimmy M., 5,006,327, Cl. 423-515.000
Schneider, Mark D., Hoskins, Randy L., Galbraith, Lyle D., and Dusenberry, Gary L., 5,005,481, Cl. 102-393.000

Olin Hunt Specialty Products Inc *See*—
Bujese, David P., 5,006,899, Cl. 355-256.000

Olmstead, William N *See*—
Wiehe, Irwin A., Gorbaty, Martin L., and Olmstead, William N., 5,006,223, Cl. 208-125.000

Olson, Leonard T., Jr *See*—
Arvanitakis, Nicolaos C., BLack, Vincent J., Corley, Richard F., Jr., Nolan, Richard G., and Olson, Leonard T., Jr., 5,005,939, Cl. 350-96.200

Olson, Lynne A., and Stanley, Patricia M., to Ecolab Inc. Cellulase compositions and methods that introduce variations in color density into cellulosic fabrics, particularly indigo dyed denim 5,006,126, Cl. 8-401.000

Olsson, Mats A., to Infrasonik AB Air-driven low-frequency sound generator with positive feedback system. 5,005,511, Cl. 116-137.00R

Olympus Optical Co., Ltd *See*—
Kanamori, Iwao, and Okabe, Minoru, 5,005,957, Cl. 350-432.000
Kunishige, Keiji, 5,005,970, Cl. 356-1.000

Onan Corporation *See*—
Schultz, Mark H., and Koenig, David J., 5,006,781, Cl. 322-25.000

O'Neill, George J *See*—
Adams, Linda J., and O'Neill, George J., 5,006,598, Cl. 524-601.000

O'Neill, James F *See*—
Hawkins, William G., Drake, Donald J., and O'Neill, James F., 5,006,202, Cl. 156-644.000

Ong, Helen H Anderson, Vernon B., and Profitt, James A., to Hoechst-Roussel Pharmaceuticals Inc Aminoalkylthiodibenzothiepins and related compounds 5,006,664, Cl. 549-12.000

Onmori, Shozo, Takahashi, Daisuke, and Oishi, Kengo, to Fuji Photo Film Co., Ltd magnetic tape cassette having improved dust proofing 5,006,947, Cl. 360-132.000

Ono, Kozo *See*—
Nagasawa, Kiyoshi, Ono, Kozo, Ogata, Kojiro, Murayama, Ken, and Hoshino, Yoshihiro, 5,005,298, Cl. 33-573.000

Onodera, Kaoru *See*—
Sasaki, Masao, Nishijima, Toyoki, Takada, Shun, and Onodera, Kaoru, 5,006,454, Cl. 430-546.000

Onuma, Tadashi *See*—
Inokuchi, Kiyoshi, Okadome, Kenichiro, Muto, Yoichi, Kawai, Yoshio, Onuma, Tadashi, and Shirakami, Toshiharu, 5,006,111, Cl. 604-67.000

Ooi, Tomoyuki, Hotta, Toshinori, and Isoe, Yasuhito, to NEC Corporation Scrambling/descrambling method using a memory for storing initial pseudo-random bit patterns respectively for submultiframes 5,007,088, Cl. 380-46.000

Ooms, Pieter *See*—
Fischer, Reiner, Jensen-Korte, Uta, Kunisch, Franz, Marhold, Albrecht, Ooms, Pieter, Schallner, Otto, Santel, Hans-Joachim, Schmidt, Robert R., Krauskopf, Birgit, and Strang, Harry, 5,006,148, Cl. 71-72.000

Ootsuka, Hiroshi *See*—
Katoh, Takehiro, Azuma, Yoshihiko; Hirano, Masayasu, Kageyama, Naohiro, Ishimura, Toshihiko, Tsuji, Kenji, and Ootsuka, Hiroshi, 5,006,877, Cl. 354-412.000

Ophaug, Darrell P *See*—
Raine, Peter D., and Ophaug, Darrell P., 5,005,880, Cl. 292-17.000

Opitz, Gary R *See*—
Anderson, Charles C., Kestner, Diane E., Lewis, Mark A., and Opitz, Gary R., 5,006,451, Cl. 430-527.000

Oregon Health Sciences University. *See*—
Adelman, John P., Bond, Chris T., Nilaver, Gajanan, and Zimmerman, Earl A., 5,006,469, Cl. 435-240.100

Origin Technology, Inc *See*—
Schmuckal, Peter J., Phillips, Mitchell S., Keiper, Francis P., III, Sprout, James C., and Fried, Ronald H., 5,007,081, Cl. 379-354.000

Orii, Akira *See*—
Kato, Kenji, Koike, Mikio; Orii, Akira; and Fuchigami, Shinichi, 5,005,500, Cl. 112-121.120

Orinaka, Hideyuki *See*—
Kawakita, Kouji; Kimura, Suzushi, Orinaka, Hideyuki; Yokotani, Youichiro, and Ishikawa, Mariko, 5,006,956, Cl. 361-321.000.

Ormco Corporation *See*—
Pickrell, Floyd W., Jr., Reher, James F.; and Sterrett, Terry L., 5,005,730, Cl. 221-71.000

Ortega, Agustin P A *See*—
Sanchez, Florentina S., Susan, Victor R., Carramolino-Fitera, Laura; and Ortega, Agustin P. A., 5,006,471, Cl. 435-254.000.

Osada, Naomi *See*—
Takanashi, Itsuo, Tanaka, Hedeshi, Kato, Shigeru, Osada, Naomi; and Ichito, Toshikatsu, 5,005,998, Cl. 400-208.000

Osanai, Osamu *See*—
Kawai, Michio, Tanaka, Sadahiro; and Osanai, Osamu, 5,005,575, Cl. 356-237.000.

Oscar Mayer Foods Corporation *See*—
Hustad, Gerald O., and Griesbach, Ray H., 5,005,707, Cl. 206-632.000

Oshima, Junji; Fujii, Tatsuo, and Yamada, Minoru, to Takeda Chemical Industries, Ltd. Core-shell polymer, composition containing the polymers and its molded articles 5,006,592, Cl. 524-504.000

Oshima, Kazuo, and Iwasaki, Shizuo, to Bridgestone Corp. Pneumatic radial tire having a folded belt including a polyvinyl alcohol cords 5,005,626, Cl. 152-527.000.

Oshio, Minoru *See*—
Kishi, Hiroshi, Chazono, Hirokazu; Oshio, Minoru; Saito, Hiroshi; Nakamura, Toshiya; and Shizuno, Hisamitsu, 5,006,954, Cl. 361-321.000.
Kishi, Hiroshi, Chazono, Hirokazu, Oshio, Minoru; Saito, Hiroshi; Nakamura, Toshiya, and Shizuno, Hisamitsu, 5,006,955, Cl. 361-321.000

Oshiro, Yasuo; Sato, Seiji; and Kurahashi, Nobuyuki, to Otsuka Pharmaceutical Co., Ltd. Carbostyril derivatives. 5,006,528, Cl. 514-253.000

Osman, Bradley L *See*—
Rippingale, John B., Upton, Charles R.; Schonstedt, Erick O., Osman, Bradley L., and , 5,006,806, Cl. 324-326.000

Ostergaard, David A., to Cedarapids, Inc. Impeller bar installation and repositioning means for impact crushers having open type rotors 5,005,772, Cl. 241-30.000

Osterloff, Kurt *See*—
Furer, Gerd; Heinzelmann, Karl-Fritz, and Osterloff, Kurt, 5,005,437, Cl. 74-467.000

Ostrowski, Jorg *See*—
Schonafinger, Karl, Beyerle, Rudi, Just, Melitta, Bohn, Helmut, and Ostrowski, Jorg, 5,006,540, Cl. 514-361.000

Ota, Kazuo, to Kabushiki Kaisha Komatsu Seisakusho. Apparatus including a laser scanner 5,005,929, Cl. 350-6.500.

Otai Tekko Kabushiki Kaisha and Koyo Seiko Co., Ltd. *See*—
Yamamoto, Takeomi, Endo, Nariaki, Kadota, Yasushi; and Yamakawa, Tadasu, 5,005,541, Cl. 123-90.350.

Otis Elevator Company *See*—
Nakai, Keiichiro, and Nakanishi, Yoshinori, 5,005,672, Cl. 187-17.000
Rivera, James A., 5,005,673, Cl. 187-52.0LC.

Otsuka Pharmaceutical Co., Ltd. *See*—
Oshiro, Yasuo, Sato, Seiji; and Kurahashi, Nobuyuki, 5,006,528, Cl. 514-253.000.

Otsuki, Akira, to Alpine Electronics Inc. Reversible drive mechanism for a tape recording apparatus 5,006,941, Cl. 360-96.200

Ott, Donald E. Panel-framing assembly and assembly method therefor. 5,005,333, Cl. 52-476.000.

Ottenheimer, Charles J Liquid chilling apparatus. 5,005,378, Cl. 62-378.000.

Otuka, Soiti. *See*—
Arima, Yoshihiro; Otuka, Soiti, and Kazushige, Nishida, 5,006,376, Cl. 428-34.100.

Ouchi, Teruo *See*—
Takahashi, Nagashige, and Ouchi, Teruo, 5,005,755, Cl. 228-126.000.

Outboard Marine Corporation *See*—
Binversie, Gregory J., Macier, James E.; and Mate, David W., 5,005,535, Cl. 123-52.00M
Bland, Gerald F.; Mondek, Martin J.; and Zdanowicz, Lawrence E., 5,006,085, Cl. 440-75.000

Overheidt, Robert P., to Miner Enterprises, Inc. Railway hopper car sliding gate sealing mechanism. 5,005,490, Cl. 105-282.200.

Owen, Hartley *See*—
Herbst, Joseph A.; Owen, Hartley; and Schipper, Paul H., 5,006,497, Cl. 502-67.000

Owens-Corning Fiberglas Corporation *See*—
Hartman, David R., Jutte, Ralph B., Beaver, Terry R.; and Hill, Homer G., 5,006,293, Cl. 264-137.000

Oy Partek AB. *See*—
Laimio, Kai, 5,005,488, Cl. 105-148.000

Pacer, James M *See*—
Roehrs, Daniel C., Caruso, Angelo T., Grace, Robert E., Mara, Robert M.; Elliot, John G., Saraceno, Patricia J., and Pacer, James M., 5,006,892, Cl. 355-208.000

Pacesetter Infusion, Ltd *See*—
Garrison, Michi E., Pelmulder, John P., and Renger, Herman L., 5,006,110, Cl. 604-65.000

Paciullo, Francis P., to Colgate-Palmolive Company. Litter box liner. 5,006,379, Cl. 428-35.200

Packham, Jackie F Rag rug loom. 5,005,273, Cl. 28-149.000.

Paff, Aaron R., to Rockwell International Corporation. Third mode torsional F-M resonator. 5,006,824, Cl. 333-197.000.

Pagani, Giorgio: *See*—
Zardi, Umberto; and Pagani, Giorgio, 5,006,316, Cl. 422-148.000.

Page, Shona M.. *See*—
Michell, Ernest W. J.; and Page, Shona M., 5,006,174, Cl. 106-426.000.

Pagnier, Thierry: *See*—
Duclot, Michel J.; and Pagnier, Thierry, 5,006,430, Cl. 429-191.000

Painter, Corning F.: *See*—
Chen, Michael S. K.; Painter, Corning F.; Pastore, Steven P.; Roth, Gary; and Winchester, David C., 5,006,141, Cl. 65-27.000.

Paleologou, Michael; and Berry, Richard M., to Pulp and Paper Research Institute of Canada Electrodialytic water splitting process for the treatment of aqueous electrolytes. 5,006,211, Cl. 204-182.400.

Pall Corporation: *See*—
Cooper, Roydon B., 5,006,235, Cl. 210-136.000

Palm, Bernhard, to Milwaukee Electric Tool Corporation Insulated cooling boot for power tool. 5,006,740, Cl. 310-50.000.

Palmer, Gary E.: *See*—
McLeod, Rick; and Palmer, Gary E., 5,005,251, Cl. 15-327.100.

Palmer, Michael J.: *See*—
Bregman, Mark F.; Horton, Raymond R.; Noyan, Ismail C.; and Palmer, Michael J., 5,006,925, Cl. 357-82.000
Kang, Sung K.; Palmer, Michael J.; Reiley, Timothy C.; and Topa, Robert D., 5,006,917, Cl. 357-70.000

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Purdes, Andrew J., to Texas Instruments Incorporated. Diamond growth method. 5,006,203, Cl. 156-646.000.

Puschnerat, Helmut. *See—*
Kobler, Norbert; and Puschnerat, Helmut, 5,005,476, Cl. 101-363.000.

Puskas, Elek, to Para-Flite, Inc. High drag slider reefing system for parachutes. 5,005,785, Cl. 244-152.000.

QST Industries, Inc.. *See—*
Isoe, Mark R., 5,006,393, Cl. 428-137.000

Quam, Dorothy M.. *See—*
Quam, William M.; and Quam, Dorothy M., 5,005,560, Cl. 128-57.000.

Quam, William M.; and Quam, Dorothy M. Integral foot massage and support apparatus. 5,005,560, Cl. 128-57.000.

Quantel Limited *See—*
Cawley, Robin A., 5,006,939, Cl. 360-14.100.

Quantex Corporation *See—*
Lindmayer, Joseph, 5,006,366, Cl. 427-71.000
Lindmayer, Joseph, 5,007,037, Cl. 369-100.000

Quantum Chemical Corporation *See—*
Pullukat, Thomas J.; and Hoff, Raymond E., 5,006,619, Cl. 526-128.000.

Quarmby, Simon C.. *See—*
Davis, Paul J.; Quarmby, Simon C., and Schoenmakers, Albert W., 5,006,341, Cl. 424-442.000.

Quick, Bradley S., to James L. Taylor Manufacturing Co. Automatic clamp tightener. 5,006,193, Cl. 156-350.000.

Quick & Easy Tire Products, Inc.. *See—*
Tannehill, J. C., 5,005,627, Cl. 157-001.100.

Quintou, Jean-Francois: *See—*
Le Mehaute, Alain; Roques-Carmes, Claude, Wehbi, Dalloul, and Quintou, Jean-Francois, 5,007,016, Cl. 364-900.000

Quintus, John J.. *See—*
Buchan, William A.; and Quintus, John J., 5,006,819, Cl. 331-1.00A.

Quipp, Incorporated *See—*
Sjogren, Christer A., 5,006,041, Cl. 414-790.400

R.G.B S.p.A.: *See—*
Brusasco, Enzo, 5,005,436, Cl. 74-459.000

R. J. Reynolds Tobacco Company: *See—*
Fagg, Barry S., 5,005,593, Cl. 131-297.000

R. R. Donnelley & Sons Company: *See—*
Auksi, Gunnar, 5,005,815, Cl. 270-1.001.

Raar, Hans; and Kelders, Jan, to Merlin C.T.C. Production Division Nederland B.V. Ink cassette with control means for alternately driving one of two spool bearing therein. 5,005,999, Cl. 400-208.000.

Rabe, Hansjurgen. *See—*
Gupta, Pramod; Engels, Hans-Wilhelm; and Rabe, Hansjurgen, 5,006,599, Cl. 524-740.000.

Rademacher, Wilhelm *See—*
Seele, Rainer; Kober, Reiner; Karbach, Stefan, Sauter, Hubert; Ammermann, Eberhard, Lorenz, Gisela, Rademacher, Wilhelm, and Jung, Johann, 5,006,152, Cl. 71-92.000

Radiation Measurements, Inc.: *See—*
Attix, Frank H., 5,006,714, Cl. 250-368.000.

Radtke, Manfred; and Ueffinger, Friedrich, to Eastman Kodak Company. Sheet stacking and stapling apparatus. 5,005,751, Cl. 227-111.000

Raemer, Daniel B.; Walt, David R.; and Munkholm, Christianne, to Brigham & Women's Hospital. CO_2 indicator and the use thereof to evaluate placement of tracheal tubes. 5,005,572, Cl. 128-207.140.

Raggio, William A. *See—*
Woolf, Lawrence D., Elsner, Frederick H.; and Raggio, William A., 5,006,507, Cl. 505-1.000.

Raghavan, Krishnan K. *See—*
Wong, Mon-N., Patin, Robert J., Trese, Brennan J., and Raghavan, Krishnan K., 5,006,859, Cl. 343-700.0MS

Ragosch, Ernst P., and Schwarz, Henning, to U.S. Philips Corporation. Circuit arrangement for adjusting the amplitude of a signal. 5,006,727, Cl. 307-264.000

Rahkonen, Timo *See—*
Alasaarela, Esko; Adolfsen, Pekka, and Rahkonen, Timo, 5,007,091, Cl. 381-26.000

Rahrooh, Ghobad; and Engel, Rudiger A. Deaeration process for the manufacture of fruit juices. 5,006,354, Cl. 426-231.000.

Rai Radiotelevisione Italiana *See—*
Barbero, Marzio; Muratori, Mario; and Stroppiana, Mario, 5,006,929, Cl. 358-105.000

RAI Radiotelevisions Italiano, S.p.A. *See—*
Stroppiana, Mario; and Ronchetti, Luigi, 5,006,930, Cl. 358-133.000.

Raine, Peter D.; and Ophaug, Darrell P., to Square D Company. Self-sealing snap-in receptacle, especially for circuit breaker cover retention. 5,005,880, Cl. 292-17.000

Raju, Vish *See—*
MacMillan, Ian; and Raju, Vish, 5,007,080, Cl. 379-269.000.

Ramirez, Richard J *See—*
Lee, Roger W., and Ramirez, Richard J., 5,005,451, Cl. 81-487.000

Ramos, John S *See—*
Furbee, Avery D., Bauer, Carl F., and Ramos, John S., 5,007,074, Cl. 378-138.000

Ramsay, Richard P. Telescopic carrying case. 5,005,743, Cl. 224-202.000

Ramsey, Robert B *See—*
Stokke, Olaf M.; Flanigan, David A.; Ramsey, Robert B., Williams, Robert E., and Huycke, John, 5,005,655, Cl. 175-66.000

Rapin, Jacques, and Vaillant, Philippe, to Framatome. Device for the electrical induction heating of a fluid contained in a pipeline. 5,006,683, Cl. 219-10.510.

Rare Research *See—*
Bailey, Ronald F., 5,005,257, Cl. 452-185.000

Rausco, Anthony *See—*
Schwarz, Fred M., Crawley, Clifton J., Jr., Rausco, Anthony, and Lagueux, Ken R., 5,005,352, Cl. 60-39.020

Rautanen, Suorama *See—*
Salminen, Ari; and Rautanen, Suorama, 5,006,399, Cl. 428-224.000

Raytheon Company *See—*
Clawson, Lawrence G.; and Adamski, Joseph R., 5,005,383, Cl. 68-133.000
Szewczyk, Robert M., 5,005,480, Cl. 102-213.000.

Reams, William H., to United States of America, Navy. Combined mine safety deployment and activation system. 5,005,482, Cl. 102-420.000

Reasoner, George E., Jr *See—*
D'Aoust, Robert; Cording, Robert B.; Grosse, Debora Y.; Jennings, Kevin, Krebs, Stephen R. Reasoner, George E., Jr., Smith, Gerald R., and Williams, David C., 5,007,100, Cl. 382-49.000.

Reavley, Francis Coin count verifier. 5,006,091, Cl. 453-59.000

Rebel, Herbert, and Hummel, Peter, to MAN Roland Druckmaschinen AG. Attachment for a damping unit of an offset printing press. 5,005,474, Cl. 101-148.000

Recasens, Joseph *See—*
Zanoli, Alain P.B., and Recasens, Joseph, 5,005,635, Cl. 165-9.100

Rector, Steve G. *See—*
Spangler, James B.; and Rector, Steve G., 5,006,963, Cl. 361-417.000

Reddy, Prabhakara Hybrid RF coupling device with integrated capacitors and resistors. 5,006,822, Cl. 333-112.000.

Reebok International Ltd.. *See—*
Diaz, Juan A.; Goldston, Mark R.; White, Spencer; Miller, David E., Legassie, Charles P., Russell, Wayne, and Ringel, Judith C., 5,005,300, Cl. 36-114.000.

Reedom, Eddie R. Seat belt cushion in the form of people places and things. 5,005,866, Cl. 280-801.000.

Reemay, Inc *See—*
LaTondress, Nancy T.; and Thomas, H. E., 5,005,706, Cl. 206-595.000.

Rees, Fenton, to Sundstrand Corporation. Torque angle control system for controlling the torque angle of a permanent magnet synchronous motor. 5,006,774, Cl. 318-721.000

Rees, Richard W., to Du Pont de Nemours, E. I., and Company. Fluorinated thermoplastic elastomers containing polymeric additives and process for preparing such elastomers. 5,006,594, Cl. 524-520.000

Reeves, Richard L.; and Woodland, Dennis Bi-directional flexible seal. 5,005,634, Cl. 165-9.000.

Reher, James F. *See—*
Pickrell, Floyd W., Jr., Reher, James F.; and Sterrett, Terry L., 5,005,730, Cl. 221-71.000

Reich, Sanford, to Shiley Infusaid, Inc. Pump diagnostic system. 5,006,997, Cl. 364-510.000.

Reid, William W., and Young, Joseph L., to Reid, William W.; Young, Joseph L., and U.S. Gold Corporation. Microbiological oxidation process for recovering mineral values. 5,006,320, Cl. 423-150.000

Reik, Wolfgang, and Elison, Hans-Dieter, to Luk Lamellen und Kupplungsbau GmbH. Torque transmitting and torsion damping apparatus for use in motor vehicles. 5,005,686, Cl. 192-70.170

Reiley, Timothy C. *See—*
Kang, Sung K., Palmer, Michael J., Reiley, Timothy C., and Topa, Robert D., 5,006,917, Cl. 357-70.000

Reinartz, Hans-Dieter; Steffes, Helmut; Von Hayn, Holger; and Meier, Thomas, to Alfred Teves GmbH. Tandem master cylinder. 5,005,350, Cl. 60-562.000

Reliance Electric Industrial Company *See—*
Fischer, Michael J. and Wilson, W. Eugene, 5,006,007, Cl. 403-290.000

Relson, Morris *See—*
Turney, David L., and Relson, Morris, 5,005,305, Cl. 40-449.000

REM Technologies, Inc *See—*
Wintermute, Pamela D., 5,006,748, Cl. 310-258.000

Rembold, Helmut, Pflug, Hannes, Christ, Wilhelm, Siebert, Hans-Joachim, Eblen, Ewald, Rodriguez-Amaya, Laufer, Helmut, Schmitt, Alfred, Pape, Werner, Buisson, Dominique, Lauvin, Pierre, Potz, Detlev, Simon, Nikolaus, Pigeroulet, Jean, and Karle, Anton, to Robert Bosch GmbH. Fuel injection pump. 5,005,548, Cl. 123-450.000

Renard, Georges *See—*
Besson, Raymond, Delatte, Richard, Renard, Georges, Valentin, Jean-Pascal, and Vaterkowski, Jean-Louis, 5,006,750, Cl. 310-348.000

Renger, Herman L *See—*
Garrison, Michi E., Pelmulder, John P., and Renger, Herman L., 5,006,110, Cl. 604-65.000

Renishaw plc *See—*
Taylor, Benjamin R., Chapman, Mark A. V., and Graham, Jeffrey, 5,007,006, Cl. 364-571.050
Thomas, David K., 5,006,952, Cl. 361-283.000

Resch, Carol M., to Lever Brothers Company. Soap compositions of enhanced antimicrobial effectiveness. 5,006,529, Cl. 514-721.000

Research Corporation Technologies, Inc *See—*
Hall, Dennis G., 5,006,716, Cl. 250-458.100

Research & Education Institute, Inc. Harbor-UCLA Medical Center *See—*
Bustillo, Maria del Carmen, 5,005,583, Cl. 128-738.000

Retech, Inc. *See—*
Schlienger, Max P., 5,005,494, Cl. 110-341.000

Revus, David E., and Boyer, Russell E., to Chevron Research Company. Microwave oil saturation scanner. 5,006,785, Cl. 324-639.000

Rex, Donald K. *See—*
Paterra, Jeffrey H., and Rex, Donald K., 5,005,996, Cl. 400-196.100

Rheinheimer, Joachim, Eicken, Karl, Plath, Peter, Westphalen, Karl-Otto, and Wuerzer, Bruno. Pyridine derivatives and their use as herbicides. 5,006,155, Cl. 71-92.000

Rheinmetall GmbH *See—*
Witt, Wolfram, 5,005,484, Cl. 102-501.000

Rhodes, Richard D., Jr., and Fredericks, W. David, to Davidson Textron Inc. Molding method for stabilizing the location of a skin insert. 5,006,288, Cl. 264-46.600

Rhodes, Warren W. *See—*
O'Bryan, Henry M., Jr., Rhodes, Warren W., and Thomson, John, Jr., 5,006,504, Cl. 505-1.000

Rhone-Poulenc Chimie *See—*
Cailly, Francinet; Leveque, Alain, and Sabot, Jean-Louis, 5,006,254, Cl. 210-639.000
Demazeau, Gerard, Martel, Olivier, Devalette, Michel, and Verdon, Eric, 5,006,318, Cl. 423-21.100

Rhone-Poulenc Rorer Pharmaceuticals Inc *See—*
Newman, Jack, and Farb, David L., 5,006,642, Cl. 530-383.000

Rhone-Poulenc Sante *See—*
Coffee, Edward C. J., 5,006,546, Cl. 514-397.000.

Ribio, Manuel J., de la Vega, Alberto, and Mueller-Lobeck, Eberhard. Method of making tortillas. 5,006,358, Cl. 426-496.000

Ricco, Mario, Damiani, Vincenzo, and Picciallo, Michele, to Weber S.r.l. System for determining axial displacement of a rod, particularly the plunger of an electromagnetic fuel injector. 5,005,404, Cl. 73-119.00A

Richard Wolf GmbH: *See—*
Wurster, Helmut; and Krauss, Werner, 5,005,579, Cl. 120-660.030

Richards, David M. *See—*
Baarman, David W.; and Richards, David M., 5,006,849, Cl. 341-95.000

Richards, Judith M., and Beckman, James H., to Eastman Kodak Company. Envelope constructed for ink jet printing. 5,005,758, Cl. 229-68.00R

Richardson, Roy A *See—*
Materna, Richard H., Linse, John S., and Richardson, Roy A., 5,007,084, Cl. 380-24.000

Richey, Stephen *See—*
Webster, Jeffrey; Richey, Stephen; and Tuttup, Robert, 5,005,410, Cl. 73-335.000.

Ricoh Company, Ltd. *See—*
Koichi, Yasushi; Sohmiya, Norimasa, and Karasawa, Kazunori, 5,006,896, Cl. 355-246.000
Murayama, Noboru, 5,007,011, Cl. 364-900.000.
Suzuki, Seizo; Sakuma, Nobuo; Yamaguchi, Katsumi; and Endo, Osamu, 5,005,928, Cl. 350-6.100
Yoshikawa, Masao; and Suzuki, Tetsuro, 5,006,915, Cl. 357-61.000.

Riedl, Reinhold; and Lazarus, Konrad. Mobile and steerable lifting and setting-down apparatus for large transportable receptacles. 5,006,032, Cl. 414-458.000

Rieter Machine Works, Ltd. *See—*
Ackeret, Walter, 5,005,262, Cl. 19-234.000

Rikken, Gerardus L. J. A. *See—*
Meijer, Egbert W.; Ten Hoeve, Wolter, Nijhuis, Sjef, Rikken, Gerardus L. J. A., and Havinga, Edsko E., 5,006,729, Cl. 307-425.000

Riku, Juichi. *See—*
Satoh, Toshio, Matsumoto, Hitoshi, Kakegawa, Hisao, Kato, Yoshiko, Riku, Juichi, Yoshinaga, Junji, and Kanamoto, Yoshifumi, 5,006,548, Cl. 514-427.000

Riley, Michael J: *See—*
Aiello, Robert P., Riley, Michael J., and Millay, Herbert D., 5,006,130, Cl. 44-432.000

Rimai, Donald S.; Laukaitis, Joseph F.; Zaretsky, Mark, and Primerano, Bruno, to Eastman Kodak Company. Determination of charge-to-mass ratio. 5,006,897, Cl. 355-246.000

Rimbert, Dominique *See—*
Baril, Michel-Claude, and Rimbert, Dominique, 5,006,823, Cl. 333-164.000

Rinderer, Eric R. to B-Line Systems, Inc. Bracket for mounting an electrical switchbox on a wall stud. 5,005,792, Cl. 248-205.100

Rinehart, John R., to American Institute of Taxidermy, Inc. Floating tip-up fishing rig. 5,005,310, Cl. 43-17.000

Ringel, Judith C. *See—*
Diaz, Juan A., Goldston, Mark R., White, Spencer, Miller, David E., Legassie, Charles P., Russell, Wayne, and Ringel, Judith C., 5,005,300, Cl. 36-114.000

Rinno, Helmut *See—*
Engel, Dieter, and Rinno, Helmut, 5,006,617, Cl. 526-87.000

Rippingale, John B., Upton, Charles R., Schonstedt, Erick O., Osman, Bradley L., and, to Schonstedt Instrument Company. Methods and apparatus employing permanent magnets for marking, locating, tracing and identifying hidden objects such as burried fiber optic cables. 5,006,806, Cl. 324-326.000

Rissanen, David Engine preheating device. 5,005,542, Cl. 123-142.50R

Ritter, Helmut, to Wilkinson Sword GmbH. Process for making a hydrophilic coating on a formed part and safety razor made using this process. 5,005,287, Cl. 30-41.000

Ritter, Joachim, and Stark, Johann, to INA Walzlager Schaeffler KG. Switchable clamping roller overrunning clutch. 5,005,683, Cl. 192-45.000

Rival Manufacturing Company *See—*
Tyrrell, Paul C., Backes, Johannes B., McCormick, David D., and Jesse, John F., 5,007,103, Cl. 219-363.000

Rivera, James A., to Otis Elevator Company. Coordinated elevator car door-hall door movement. 5,005,673, Cl. 187-52.0LC

Rixson-Firemark Inc *See—*
Bailey, Kevin L., and D'Hooge, Richard E., 5,005,881, Cl. 297-45.000.

Robbins, Edward S. Composite container assemblies. 5,005,726, Cl. 220-403.000

Robbins, John, and Boston, Ricky L., to Texas Instruments Incorporated. Method for backside damage of silicon wafers. 5,006,475, Cl. 437-10.000

Robert Bosch GmbH *See—*
Barth, Walter, Borst, Erich, Helm, Winfried, and Stabler, Manfred, 5,005,321, Cl. 51-170.00T
Holland, Martin, Ziegenbein, Botho, and Seipler, Dieter, 5,005,414, Cl. 73-517.00R.
Knoll, Guenter, Leonhard, Rolf, Kraft, Wolfgang, and Lucas, Bernhard, 5,006,134, Cl. 55-146.000
Rembold, Helmut, Pflug, Hannes, Christ, Wilhelm, Siebert, Hans-Joachim; Eblen, Ewald, Rodriguez-Amaya, Laufer, Helmut, Schmitt, Alfred, Pape, Werner, Buisson, Dominique, Lauvin, Pierre; Potz, Detlev, Simon, Nikolaus, Pigeroulet, Jean, and Karle, Anton, 5,005,548, Cl. 123-450.000.
Smith, Loren, 5,005,878, Cl. 285-319.000
van Zanten, Anton, and Kost, Friedrich, 5,007,007, Cl. 364-574.000
Wendel, Friedrich, and Dick, Dieter, 5,005,545, Cl. 123-337.000

Robert Lonardo, Trustee of the Robert Lonardo Living Trust Agreement *See—*
Lonardo, Robert, 5,005,231, Cl. 5-61.000

Roberts, Emma F. *See—*
Roberts, Leo B., and Roberts, Emma F., 5,005,294, Cl. 30-324.000

Roberts, Leo B.; and Roberts, Emma F. Skimmer/separator ladle. 5,005,294, Cl. 30-324.000.

Roberts, Paul V., Hopkins, Gary D., Semprini, Lewis; McCarty, Perry L., and MacKay, Douglas M., to Leland Stanford Junior University, The Board of Trustees of the. Pulsing of electron donor and electron acceptor for enhanced biotransformation of chemicals. 5,006,250, Cl. 210-610.000.

Robertson, James W.: *See—*
Loose, Winfield W.; Robertson, James W.; and Shay, Francis J., 5,006,077, Cl. 439-409.000.

Robertson, M. D. Pneumatic bearing jack and adaptors. 5,005,812, Cl. 269-47.000.

Robinson, Darrell, and Shincovich, John T., to Ekstrom Industries, Inc. Bladed meter socket cover. 5,006,076, Cl. 439-146.000

Robinson, Peter M.; and Van Det, Nguyen, to Exxon Chemical Patents, Inc. Cationic polymers. 5,006,263, Cl. 210-728.000.

Robinson, Steven P.: *See—*
Julien, Gerald J., and Robinson, Steven P., 5,005,678, Cl. 188-378.000.

Robinson, Thomas C.; and Kitrilakis, Sotiris. Blood pumping and processing system. 5,006,107, Cl. 604-4.000.

Rockwell International Corporation: *See—*
Brandewie, Jerry V., 5,006,479, Cl. 437-45.000.
Deyo, Charles C.; Wolters, Thomas R.; and Oas, Robert H., 5,005,283, Cl. 29-829.000.
Erickson, Alan R., 5,006,812, Cl. 330-2.000.
Hayes, Cecil L.; Cheung, Derek T.; and Fetterman, Harold R., 5,007,058, Cl. 372-4.000.
Khoshnevisan, Mohsen; and Yeh, Pochi A., 5,006,813, Cl. 330-4.300.
Paff, Aaron R., 5,006,824, Cl. 333-197.000.

Rodel, Gunther: *See—*
Tamm, Rolf; Huber, Bernhard, Rodel, Gunther; and Stengele, Erich, 5,005,976, Cl. 356-312.000.

Rodert, Jorgen A. R., to Atlas Copco MCT AB. Device in impact machines. 5,005,656, Cl. 175-306.000.

Rodriguez-Amaya. *See—*
Rembold, Helmut; Pflug, Hannes; Christ, Wilhelm; Siebert, Hans-Joachim; Eblen, Ewald; Rodriguez-Amaya, Laufer, Helmut, Schmitt, Alfred; Pape, Werner; Buisson, Dominique, Lauvin, Pierre; Potz, Detlev; Simon, Nikolaus; Pigeroulet, Jean; and Karle, Anton, 5,005,548, Cl. 123-450.000.

Rody, Jean; and Leppard, David G., to Ciba-Geigy AG. Phenolic thiane derivatives. 5,006,665, Cl. 549-28.000.

Roehrs, Daniel C., Caruso, Angelo T., Grace, Robert E., Mara, Robert M., Elliot, John G., Saraceno, Patricia J.; and Pacer, James M., to Xerox Corporation. Xerographic setup and operating system for electrostatographic reproduction machines. 5,006,892, Cl. 355-208.000.

Rogers, Aaron S.: *See—*
Kasparian, Kaspar A.; Rogers, Aaron S.; Hsu, Ming-Chyuan, and Fussell, John P., 5,007,050, Cl. 370-77.000.

Rogers, Bobby E., and Zimmer, Robert L. Medical valve assembly. 5,006,114, Cl. 604-167.000.

Rogers, John J.: *See—*
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Rohde, Stefan. *See—*
Buback, Michael; and Rohde, Stefan, 5,006,609, Cl. 525-378.000.

Rohling, Holmer; Bauer, Christoph, Friedrichs, Harald M., and Thometschek, Roderich, to Dragerwerk Aktiengesellschaft. Gas tight packaging with a safety device. 5,005,700, Cl. 206-459.000.

Rohm, Gunter H. Drive for relatively axially shifting chuck parts. 5,005,453, Cl. 82-142.000.

Rohm and Haas Company: *See—*
Siegers, John, 5,006,253, Cl. 210-636.000.

Rohr, Robert D., to Seaquist Closures. Flexible dispensing closure having a slitted resilient outlet valve and a flanged vent valve. 5,005,737, Cl. 222-212.000.

Rohren, Ronald E. *See—*
Popelier, Maurice A.; McCunn, Myron L., Winter, David C., Marchael, Dennis L., Hall, James W., and Rohren, Ronald E., 5,005,597, Cl. 134-25.100.

Rollin S. A. *See—*
Labone, Claude F., 5,006,666, Cl. 174-35.0GC

Rolls-Royce plc. *See—*
Acton, Elizabeth; Cargill, Alexander M., Ross, Colin F., and Eatwell, Graham P., 5,005,353, Cl. 60-39.281

Rolscreen Company. *See—*
Yuhas, Ralph G.; and Birmingham, William H., 5,006,766, Cl. 318-53.000.

Romance, Kenneth A., to Eastman Kodak Company. ABS/copolyester blends. 5,006,604, Cl. 525-173.000.

Ronchetti, Luigi. *See—*
Stroppiana, Mario; and Ronchetti, Luigi, 5,006,930, Cl. 358-133.000.

Roos, Erwin, to Feldmuehle Aktiengesellschaft. Cutter insert for machining. 5,006,020, Cl. 407-113.000.

Roques-Carmes, Claude. *See—*
Le Mehaute, Alain, Roques-Carmes, Claude, Wehbi, Dalloul, and Quiniou, Jean-Francois, 5,007,016, Cl. 364-900.000.

Roques, Henri; Aurelle, Yves; and Lopez, Louis, to Institut National des Sciences Appliquees de Toulouse. Coalescer device and method using movable filling. 5,006,260, Cl. 210-708.000.

Rose, Rene, to Schlumberger Industries. Method of making an electronic memory card. 5,005,282, Cl. 29-827.000.

Rosenhahn, Lothar. *See—*
Vetter, Hans; Ohlschlager, Hans; Odenwalder, Heinrich Morcher, Bernhard, Sommer, Friedhelm, and Rosenhahn, Lothar, 5,006,457, Cl. 430-613.000.

Rosenlof, Darwin. *See—*
Pracchia, Louis, Vetter, Ronald F., and Rosenlof, Darwin, 5,006,429, Cl. 429-112.000.

Ross, Colin F. *See—*
Acton, Elizabeth; Cargill, Alexander M., Ross, Colin F., and Eatwell, Graham P., 5,005,353, Cl. 60-39.281

Ross, Sidney D., and Finkelstein, Manuel, to Sprague Electric Company. Low resistivity low ESR capacitor electrolyte. 5,006,964, Cl. 361-504.000.

Rossler, Peter. Machine for crushing material. 5,005,614, Cl. 241-73.000.

Rosso, Michele. *See—*
Galand, Claude; Menez, Jean, and Rosso, Michele, 5,007,092, Cl. 381-36.000.

Roth, Gary. *See—*
Chen, Michael S. K., Painter, Corning F., Pastore, Steven P., Roth, Gary, and Winchester, David C., 5,006,141, Cl. 65-27.000.

Roth, Karen L. Dual purpose waste receptacle. 5,005,727, Cl. 220-404.000.

Roth, Peter A.. *See—*
Jackson, Michael B.; and Roth, Peter A., 5,006,417, Cl. 428-614.000.

Rothman, Bobby W. *See—*
Cocco, Eugene R.; and Rothman, Bobby W., 5,005,284, Cl. 29-884.000.

Rotolico, Anthony J.: *See—*
Dorfman, Mitchell F.; Kaufold, Roger W., Kushner, Burton, Rotolico, Anthon, J.; and Tilkaran, Roopnarine, 5,006,321, Cl. 427-192.000.

Rouse, Marshall J., to Westinghouse Electric Corp. Apparatus for accurately assembling large scale machine parts. 5,005,276, Cl. 29-244.000.

Rouse, Melvin R. Autoclavable dental burr holder. 5,006,066, Cl. 433-77.000.

Roussel Uclaf. *See—*
Moguilewsky, Martine; Nedelec, Lucien; Nique, Francois; and Philibert, Daniel, 5,006,518, Cl. 514-179.000.

Rousser, Robert. *See—*
Martin, Charles R., Rousser, Robert, and Brabec, Daniel L., 5,005,774, Cl. 241-101.200.

Rowe, Neal E. *See—*
Sloff, Michael E.; and Rowe, Neal E., 5,006,682, Cl. 200-429.000.

Rowlands, Ivor T. Nuclear power plant. 5,006,303, Cl. 376-282.000.

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Mathivat, Denis, Colmon, Daniel, and Philibert, Daniel, 5,006,146, Cl. 65-273.000.

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Yonezawa, Yasuo, Ohnishi, Toshiya, Okumura, Shin'ichi, Sakai, Akiyoshi, Nakano, Hiroki, Matsushita, Masao, Morikawa, Atsushi and Yoshihara, Motoshi, 5,005,371, Cl. 62-238.600.

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Okamoto, Osamu, Nakaya, Teruomi, Suzuki, Seizo, Kuwano, Naoaki, Sakai, Yoshinori, Oda, Hiroshi, Uegusa, Masao, and Iba, Goji, 5,005,786, Cl. 244-161.000.

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Suzuki, Hideo, Matsushima, Shunichi, Obata, Masahiko, Sakama, Masao, Nakada, Akira, and Kumano, Shinji, 5,005,460, Cl. 84-600.000.

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Itaba, Yasushi, Yoshifuji, Yutaka, Kondo, Takayoshi, Izawa, Minoru, Sakamoto, Ichiro, and Yoshino, Tadao, 5,006,378, Cl. 428-34.900.

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Mabboux, Michel, 5,005,301, Cl. 36-117.000.

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Szafranski, Pierre, 5,005,854, Cl. 280-626.000.

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Greer, Douglas S., and Gevins, Alan S., 5,005,578, Cl. 128-653.00A.

Samejima, Hisashi: *See—*
Hakoda, Keizo, and Samejima, Hisashi, 5,006,059, Cl. 425-573.000.

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Hwang, Sang K., Jung, Tae S., and Choi, Kyu H., 5,007,025, Cl. 365-226.000.
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Lee, Shy-Fuh, Anderson, Richard J., Luehr, Gary W., and Scott, Carole R., 5,006,150, Cl. 71-88.000.
Lehr, Friedrich, 5,006,644, Cl. 534-625.000.
Pedrazzi, Reinhard, 5,006,128, Cl. 8-437.000.

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Karlsson, Harry L., 5,005,989, Cl. 384-94.000.

Sandvik, Lars V., and Anderzen, Gert A., to General Engineering (Netherlands) B. V. Pivotally mounted locking station for passive safety belt carriage. 5,005,867, Cl. 280-804.000.

Sanjurjo, Angel, to CommTech Development Partners II. Process for producing crystalline silicon ingot in a fluidized bed reactor. 5,006,317, Cl. 422-245.000.

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Yukishita, Takeshi, 5,006,245, Cl. 210-256.000.

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Handa, Kenichi, 5,006,084, Cl. 440-75.000.
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Santa, Toshihiro, and Kiriyama, Tsutomu, to Teijin Limited. Wholly aromatic polyamide copolymer. 5,006,629, Cl. 528-183.000.

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Fischer, Reiner, Jensen-Korte, Uta, Kunisch, Franz, Marhold, Albrecht, Ooms, Pieter, Schallner, Otto, Santel, Hans-Joachim, Schmidt, Robert R., Krauskopf, Birgit, and Strang, Harry, 5,006,148, Cl. 71-72.000.
Gesing, Ernst R., Santel, Hans-Joachim, Schmidt, Robert R., and Strang, Harry, 5,006,156, Cl. 71-93.000.

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Roehrs, Daniel C., Caruso, Angelo T., Grace, Robert E., Mara, Robert M., Elliot, John G., Saraceno, Patricia J., and Pacer, James M., 5,006,892, Cl. 355-208.000.

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Jacobsen, Stephen C., Iversen, Edwin K., and Knutti, David F., 5,005,600, Cl. 137-83.000.

Sarkozy, Peter; Pap, Laszlo, Szego, Andras, Nagy, Lajos, Szekely, Istvan, Marmarosi, Katalin, and Grosch, Janos, to Chinoin Gyogyszer Es Vegyeszeti Termekek Gyara Rt. Veterinary compositions against endoparasites containing cypermethrin and albendazole. 5,006,545, Cl. 514-395.000.

Sarli, Michael S.. *See—*
Pappal, David A., and Sarli, Michael S., 5,006,495, Cl. 502-42.000.

Sartorio, Franco; Grassi, Fabrizio, Prunotto, Gianpaolo, and Sgandurra, Francesco, to Amada Company, Limited. Programming system for the single arm bending robot. 5,005,394, Cl. 72-10.000.

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Sasaki, Tomiya: *See—*
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Sasaki, Toru *See—*
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Sasamori, Kenzi, Yamamoto, Hiroshi, and Aoki, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha Gas insulation switchgear 5,006,958, Cl 361-335.000.

Sato, Isamu *See—*
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Sato, Katsuhiro *See—*
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Sato, Kenichi *See—*
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Sato, Makoto *See—*
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Sato, Mikio, and Yamaguchi, Tsuneo, to Wako Sangyo Kabushiki Kaisha Mechanically secured wool filter cartridge 5,006,242, Cl 210-232.000

Sato, Seiji *See—*
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Sato, Tomi *See—*
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Sato, Toshihiro *See—*
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Sato, Yoshinori *See—*
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Satoh, Hisao, to Konica Corporation Separating apparatus of transfer material 5,006,905, Cl 355-315.000

Satoh, Hisao *See—*
Umeda, Yasushi, and Satoh, Hisao, 5,006,447, Cl 430-272.000

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Satoh, Yuji, and Kono, Hiromi, to Diesel Kiki Co., Ltd Apparatus for controlling gear transmission and clutch of vehicles 5,005,680, Cl 192-3.550

Satoh, Yumiko *See—*
Yasunobu, Chizuko, Mori, Fumihiko Ohata, Hideo, Udagawa, Mari, Inata, Kenichiro, Hida, Kenichi, and Satoh, Yumiko, 5,006,998, Cl 364-513.000

Satoh, Yutaka, and Takeuchi, Yoshinori, to Kabushiki Kaisha Showa Seisakusho Motor vehicle suspension with rotary damper 5,005,859, Cl 280-721.000

Sauerbrey, Roland High jump ribbon assembly 5,005,828, Cl 272-103.000

Saunders, Walter S Torque converter utilizing streamwise vorticity 5,005,356, Cl 60-330.000

Sauter, Hubert *See—*
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Sauvinet, Vincent, Fosset, Jean, Valere, Michel, Defort, Daniel, and Boutrouille, Maurice, to Saint Gobain-Vitrage International Distribution of a pulverulent solid 5,005,769, Cl 239-429.000

Savaskan, Gultekin *See—*
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Sawada, Kouji, Miya, Yasuhiro, Tanabe, Masato, Nanno, Takanobu and Miyakawa, Shinji, to Tokai Rubber Ind., Ltd., and Toyota Jidosha Kabushiki Kaisha Fluid-filled cushioning device having sealing arrangement for easy assembling 5,005,810, Cl 267-140.100

Sawada, Takashi *See—*
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Sawai Pharmaceutical Co., Ltd *See—*
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Scala, Giancarlo, to Fasco S p A Magazine for compressed-air riveting guns 5,005,750, Cl 227-109.000

Schad, Robert D High strength boat hull structure 5,005,510, Cl 114-357.000

Schaeffer, Raymond J *See—*
Dziedzic, Joseph H., Jr., Rubino, Daniel A., and Schaeffer, Raymond J., 5,006,019, Cl 406-152.000

Schaeper, Gary R *See—*
McWhorter, David J., Williams, Bobie C., III, Childs, Eric G., and Schaeper, Gary R., 5,005,802, Cl 251-1.300

Schafer, Wolfgang, and Isert, Hans, to Telenorma Telefonbau und Normalzeit GmbH Electrical components 5,006,920, Cl 357-74.000

Schaffer, Leslie E *See—*
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Schaffner, James H., Bridges, William B., and Popa, Adrian E., to Hughes Aircraft Company Electro-optic modulator 5,005,932, Cl 350-96.140

Schaller, Klaus *See—*
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Schaper, Hennie *See—*
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Schaus, John M., to Eli Lilly and Company Dopamine agonists method 5,006,525, Cl 514-232.800

Scheid, Ernst *See—*
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Schenk, Donald E *See—*
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Schenk, Henry W *See—*
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Scherer, Michael *See—*
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Schering Corporation *See—*
Kreutner, William, Bolser, Donald, Chapman, Richard and Aziz, Sultan, 5,006,560, Cl 514-114.000

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Schiel, Lothar, and Rueffer, Manfred, to Alfred Teves GmbH Automotive vehicle brake system 5,005,918, Cl 303-114.000

Schipper, Paul H *See—*
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Schiteenhelm, Rudolf, to Siemens Aktiengesellschaft X-ray diagnostics installation 5,006,709, Cl 250-327.200

Schlienger, Max P., to Retech, Inc Apparatus and method for high temperature disposal of hazardous waste materials 5,005,494, Cl 110-341.000

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Barakat, Simon, 5,006,698, Cl 235-382.000
Rose, Rene, 5,005,282, Cl 29-827.000

Schlumberger Technology Corporation *See—*
Jasinski, Raymond, Fletcher, Philip, and Vercaemer, Claude, 5,005,406, Cl 73-153.000
Ruseev, Mario and Vandenabeele, Patrick, 5,005,422, Cl 73-784.000

Schmaling, Roderick N., to Pitney Bowes Inc Apparatus for moistening envelope flap 5,006,194, Cl 156-442.100

Schmedes, Albert *See—*
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Schmid, Rolf, and Eldin, Sameer H, to Ciba-Geigy Corporation Curable epoxy resin compositions of matter containing a thermoplastic which has phenolic end groups 5,006,611, Cl 525-423.000

Schmider, Fritz, to Papst-Motoren GmbH & Co KG DC motor with coreless coil installation 5,006,765, Cl 310-71.000

Schmidt, Delf *See—*
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Schmidt, Donald L Coburn, Charles E., and McCrackin, Perry J., to Dow Chemical Company, The Fluorocarbon containing, reactive polymeric surfactants and coating compositions therefrom 5,006,624, Cl 526-243.000

Schmidt, Eric R., to Wallace Computer Services, Inc Method of producing a label-providing continuous business form 5,006,191, Cl 156-268.000

Schmidt, Robert R *See—*
Fischer, Reiner Jensen-Korte, Uta, Kunisch, Franz, Marhold, Albrecht, Ooms, Pieter, Schallner, Otto, Santel, Hans-Joachim Schmidt, Robert R., Krauskopf, Birgit, and Strang, Harry, 5,006,148, Cl 71-72.000
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Rembold, Helmut, Pflug, Hannes, Christ, Wilhelm, Siebert, Hans-Joachim, Ehlen, Ewald, Rodriguez-Amaya, Laufer, Helmut, Schmitt, Alfred, Pape, Werner, Burtson, Dominique, Lauvin, Pierre, Potz, Detlev, Simon, Nikolaus, Pigeroulet, Jean, and Karle, Anton, 5,005,548, Cl 123-450.000

Schmitt, Klaus G., and Knetsch, Harald, to Emhart Inc Control of stud-welding apparatus 5,006,686, Cl 219-99.000

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Schonafinger, Karl; Beyerle, Rudi; Just, Melitta, Bohn, Helmut; and Ostrowski, Jorg, to Cassella Aktiengesellschaft. Substituted 3-aminosydnonimines, processes for their preparation and their use 5,006,540, Cl 514-361.000.

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Schorr, Theodore H., to Spectra-Physics, Inc. Window seal for optical scanner 5,005,329, Cl 52-204.000.

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Schram, Cornelius J, to National Research Development Corporation Manipulating means utilizing ultrasonic wave energy for use with particulate material 5,006,266, Cl 210-748.000.

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Schucker, Douglas W, to Motorola, Inc Direct contact TAB method 5,006,486, Cl 437-220.000

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Schultz, Mark H, and Koenig, David J., to Onan Corporation Microprocessor based integrated generator set controller apparatus and method 5,006,781, Cl 322-25.000

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Scipar, Inc.: *See—*
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Scott, Randy W., and Baker, Joffre B., to Invitron; and University of Kansas. Purified protease nexin 5,006,252, Cl 210-635.000

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Scott, Sherman A. Undersea relocation apparatus & method 5,007,029, Cl 367-4.000.

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Kasuga, asao; Mori, Takayuki; and Tsukada, Nobuo, 5,006,746, Cl 310-323.000.

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Fujita, Masanori, 5,006,839, Cl. 340-784.000
Kubota, Maki; and Aso, Hideo, 5,007,033, Cl. 368-21.000
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Short, Edward H, III; and Ellis, Jim E., to BS&B Safety Systems, Inc Fail safe rupture disk assembly 5,005,722, Cl. 220-89.100
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White, Bert, and Negabhan-Hagh, Mehrdad, 5,006,854, Cl 341-172.000.
Sillett, Christopher, to APV UK Limited Aseptic processing system 5,005,472, Cl 99-468.000.
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Simm, Wolfgang, Steine, Hans-Theo, and Streb, Karl P., to Castolin S.A Apparatus for flame spraying of powder materials 5,005,764, Cl 239-79.000
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Park, Marcus G., 5,006,042, Cl 414-795.400
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Singh, Surjit, to Scipar, Inc. Method of suppressing formation of contrails and solution therefor 5,005,355, Cl 60-204.000.
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Young, Raymond L.; and Sjovall, James A., 5,005,682, Cl 192-0.034.
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Bischof, Horst, and Skerbinjek, Wolfgang, 5,005,302, Cl. 36-119.000.
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Yamaguchi, Hiroshi; Furukawa, Koichi, Livingston, Philip O.; Lloyd, Kenneth O.; Oettgen, Herbert F.; Old, Lloyd J., and Fortunato, Sheila R., 5,006,470, Cl. 424-85.800.

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Prueitt, Melvin L., Mueller, Fred M., and Smith, James L., 5,006,672, Cl. 174-125.100.

Smith, John C., and Jacobson, William O., to Union Oil Company of California. Multiple fracture production device and method. 5,005,649, Cl. 166-308.000.

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Smith, Jon D., to Dry Dock Industries, Inc. Fastener receiving cap. 5,006,027, Cl. 411-522.000.

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Ife, Robert J.; Brown, Thomas H.; and Leach, Colin A., 5,006,535, Cl. 514-313.000.

Smith, Loren, to Robert Bosch GmbH. Coupler element. 5,005,878, Cl. 285-319.000.

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Galgana, Russell J., 5,006,029, Cl. 414-327.000.

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Smith, William L. Electromagnetic sensor assembly. 5,006,797, Cl. 324-173.000.

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Lafferty, John J.; DeMarinis, Robert M., and Shah, Dinubhai H., 5,006,521, Cl. 514-215.000.

Smyly, George M., Sr. Separative trailer tongue hitching method. 5,005,852, Cl. 280-477.000.

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Gassiat, Alain L., 5,005,676, Cl. 188-218.0XL

S.A. Saurer Diederichs: *See*—
Volland, Michel; Grandvallet, Gilles; and Fourneaux, Roger, 5,005,609, Cl. 139-116.200

Societe de Fabrication de Material Orthopedique: *See*—
Cotrel, Yves, 5,005,562, Cl. 128-69.000

Societe Europeenne des Produits Refractaires: *See*—
Zanoli, Alain P. B.; and Recasens, Joseph, 5,005,635, Cl. 165-9.100.

Societe Moderne d Batiment Industriel: *See*—
Todisco, Serge, 5,005,330, Cl. 52-303.000

Soga, Tsunehiko: *See*—
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Soga, Yoshinobu: *See*—
Itoh, Hiroshi; Sugaya, Masami; Soga, Yoshinobu; Morisawa, Kunio; Habuchi, Ryoji, Kouno, Katsumi, and Hattori, Yuji, 5,006,093, Cl. 474-28.000

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Gaddy, Edward M., 5,006,179, Cl. 136-244.000.

Soliman, Mohamed Y.; Kuhlman, Robert D., and Poulsen, Don K., to Halliburton Company. Method of determining fracture parameters for heterogenous formations. 5,005,643, Cl. 166-250.000.

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Sollac. *See*—
DeSmet, Gabriel, 5,005,396, Cl. 72-309.000.

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Somack, Ralph: *See*—
Saifer, Mark, Somack, Ralph; and Williams, L. David, 5,006,333, Cl. 424-78.000

Somerhausen, Bernard: *See*—
Servais, Albert, and Somerhausen, Bernard, 5,006,418, Cl. 428-621.000

Someya, Akihiko, to Kabushiki Kaisha Toshiba. Thermal printing apparatus responsive to estimated stored heat of the heating element. 5,006,866, Cl. 346-76.0PH.

Sommer, Friedhelm: *See*—
Vetter, Hans; Ohlschlager, Hans; Odenwalder, Heinrich; Morcher, Bernhard; Sommer, Friedhelm, and Rosenhahn, Lothar, 5,006,457, Cl. 430-613.000.

Sommerfeld, Eugene G.: *See*—
Brasure, Donald E.; and Sommerfeld, Eugene G., 5,006,593, Cl. 524-520.000.

Sondergedl, Horst. Chair for an office or the like. 5,005,905, Cl. 297-320.000.

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Sontag, Heinz, Elias, Hartmut; Ludwig, Wolfgang, Fritzsch, Walter; Eschner, Wolfgang; Hundhausen, Rainer, and Kratz, Harald, to Dornier GmbH. Optical position detection. 5,005,979, Cl. 356-375.000.

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Catalano, Paul D., 5,005,713, Cl. 211-191.000.
Creed, David M., Wilkinson, James H., and Lawlor, Robert J. D., 5,006,927, Cl. 358-31.000.
Kobayashi, Junichiro, Hiramatsu, Shigeru; and Takakuwa, Hidemi, 5,006,478, Cl. 437-41.000.
Kodama, Yasumasa, 5,006,881, Cl. 354-484.000
Miyasaka, Kenji, 5,006,944, Cl. 360-99.060
Shirota, Norihisa, 5,006,931, Cl. 358-133.000
Usuki, Hideki, Kohri, Shumpei, Yano, Masatoshi; and Ishida, Hiroshi, 5,006,738, Cl. 307-594.000.

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DiMartino, Stephen P., Sr.; and Sorensen, James C., 5,006,132, Cl. 55-16.000.

Sorensen, Joseph A., and Gatzemeyer, Dwight L., to Peterson Manufacturing Co., Inc. Hand tool or improved bar clamp. 5,005,449, Cl. 81-152.000.

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Blackburn, William A., and Sosnowich, Michael P., 5,005,216, Cl. 2-79.000

Soultanian, Daniel S.: *See*—
Steiner, Robert E., and Soultanian, Daniel S., 5,005,252, Cl. 15-339.000.

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Spangler, James B.; and Rector, Steve G., to McDonnell Douglas Corporation. Selectable chip carrier. 5,006,963, Cl. 361-417.000.

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Vines, Arthur D.; Schonfeld, Frederick A.; and Espat, Ricardo, 5,006,841, Cl. 340-825.070

Spater, Stuart S. *See*—
Kolton, Chester; and Spater, Stuart S., 5,005,741, Cl. 223-85.000

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Berke, Joseph J.; Muller, George H.; and Spear, A. Gil, Jr., 5,005,964, Cl. 351-50.000.

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Kistner, Kenneth J., 5,005,765, Cl. 239-135.000.

Spectra-Physics, Inc.: *See*—
Nojiri, Howard H., 5,005,670, Cl. 186-61.000
Schorr, Theodore H., 5,005,329, Cl. 52-204.000.

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Parks, David W., Parks, Thomas A.; and Green, Raymond, 5,005,888, Cl. 294-50.000.

Speer, Larry W., to Eastman Kodak Company. Device for aiding in measuring pigmented marking particle level in a magnetic brush development apparatus. 5,005,516, Cl. 118-657.000.

Speer, Richard: *See*—
Grossman, Mark W.; Speer, Richard; and George, William A., 5,006,165, Cl. 75-407.000.

Spellman, Vernon C.: *See*—
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Ross, Sidney D., and Finkelstein, Manuel, 5,006,964, Cl. 361-504.000.

Sprout, James C.: *See*—
Schmuckal, Peter J.; Phillips, Mitchell S.; Keiper, Francis P., III; Sprout, James C.; and Fried, Ronald H., 5,007,081, Cl. 379-354.000.

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Raine, Peter D.; and Ophaug, Darrell P., 5,005,880, Cl. 292-17.000.

Square Head, Inc.: *See*—
Pare, Rodney H.; Tata, Peter D.; and Marrocco, Anthony R., 5,005,255, Cl. 16-115.000

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Barth, Walter; Borst, Erich; Helm, Winfried; and Stabler, Manfred, 5,005,321, Cl. 51-170.00T

Stack Electronics Co., Ltd. *See*—
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Haessig, David L., 5,005,636, Cl. 165-16.000.

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Standard Oil Company, The. *See*—
Cheung, Lim H., 5,005,665, Cl. 181-101.000
Davis, James C., 5,006,256, Cl. 210-645.000.
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Steele, Charles R., 5,006,984, Cl. 364-413.270.

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Stanley, Patricia M.: *See*—
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Stanley Works Limited, The *See*—
Gilbert, Richard, 5,005,290, Cl. 30-162.000.

Stanton, Dorothy R. Animal marking and urination control device. 5,005,525, Cl. 119-95.000

Stark, Johann: *See*—
Ritter, Joachim; and Stark, Johann, 5,005,683, Cl. 192-45.000

Staub, Norman C.: *See*—
Serikov, Vladimir; Rumm, Mark, and Staub, Norman C., 5,005,582, Cl. 128-691.000

Staub, Richard A.: *See*—
Wyatt, Richard J., Freed, William J., and Staub, Richard A., 5,006,122, Cl. 606-130.000

Stauffer, Charles C.: *See*—
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Harmon, Lonnie R., 5,005,809, Cl. 267-103.000.

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Buckman, William G.; Steen, Henry B., III; and Buckman, William G., Jr., 5,006,046, Cl. 417-54.000.

Steffero, Robert F., Sr., to Aqua Systems Division of Chem-Free, Inc. Water-treatment system. 5,006,240, Cl. 210-223.000.

Steffes, Helmut: *See*—
Reinartz, Hans-Dieter; Steffes, Helmut; Von Hayn, Holger; and Meier, Thomas, 5,005,350, Cl. 60-562.000.

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Stegherr, Ludolf. Means for positioning arched halving-joints of frame portions and for milling bevels into these frame portions. 5,005,618, Cl. 144-136.00R.

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Bransky, Olaf; Wiede, Guenter; Stein, Fritz-Dieter; and Helmreich, Gerhard, 5,007,090, Cl. 381-60.000.

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Hall, Steven E.; and Stein, Philip D., 5,006,542, Cl. 514-381.000.

Steinbrecher, Gary A. Leaper's obstacle. 5,005,827, Cl. 272-102.000.

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Simm, Wolfgang; Steine, Hans-Theo; and Streb, Karl P., 5,005,764, Cl. 239-79.000.

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Stemmler, Kurt; Weckop, Ludwig; and Marth, Egon, to Winkler & Dunnebier Maschinenfabrik und Eisengiesserei KG. Interfolder device with dynamic pressure section connected at the outlet side of the folding rollers. 5,005,816, Cl. 270-39.000.

Stengele, Erich: *See*—
Tamm, Rolf; Huber, Bernhard; Rodel, Gunther, and Stengele, Erich, 5,005,976, Cl. 356-312.000.

Stenger, Claudia V.: *See*—
Huang, Shu-Jen W.; and Stenger, Claudia V., 5,006,261, Cl. 210-712.000.

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Jenkins, Anthony; and Stephens, Peter W., 5,007,072, Cl. 378-88.000.

Stephenson, Malcolm I.: *See*—
Burton, David P.; Dillon, Paul A.; and Stephenson, Malcolm I., 5,006,796, Cl. 324-158.00F

Stern, Bradley M.; and Doane, James. Retractable sling for transporting coaster-type vehicles. 5,005,868, Cl. 280-814.000

Sternberg, Esther M.; Wilder, Ronald L.; Chrousos, George P.; and Gold, Philip W., to United States of America, Health and Human Services. Evaluative means for detecting inflammatory reactivity. 5,006,330, Cl. 424-9.000.

Sternberger, Klaus: *See*—
Martini, Thomas; Keil, Karl-Heinz, Karsunky, Ulrich; and Sternberger, Klaus, 5,006,129, Cl. 8-554.000.

Sternenberg, James E.: *See*—
Morris, Gene A.; Patel, Deepak C.; and Sternenberg, James E., 5,005,805, Cl. 251-229.000

Sterner, Carl L. Combination road repair machine with improved crack-filling capabilities. 5,006,012, Cl. 404-107.000.

Sterrett, Terry L.: *See*—
Pickrell, Floyd W., Jr.; Reher, James F.; and Sterrett, Terry L., 5,005,730, Cl. 221-71.000.

Steudle, Ernst; and Stumpf, Burkhard, to Steudle, Ernst. Process and apparatus for the determination of the concentration of a substance dissolved in a solvent by means of an osmometer. 5,005,403, Cl. 73-64.300

Stevens, Brad: *See*—
Achille, Felix; Stevens, Brad; and Clingerman, George, 5,006,383, Cl. 428-35.900.

Stevens, Rodney W.: *See*—
Kitaura, Yoshihiko; Ito, Fumitaka, Stevens, Rodney W.; and Asai, Nobuko, 5,006,541, Cl. 514-367.000

Stevens, Vernon C., to Ohio State University, The. Antigenic modification of polypeptides. 5,006,334, Cl. 424-88.000.

Steward, Wayne D. *See*—
Fenne, Kenneth R., Steward, Wayne D., and Didyk, Witaly, 5,006,779, Cl. 320-2.000

Stewart, David B. *See*—
Stewart, William R.; and Stewart, David B., 5,005,259, Cl. 19-97.000.

Stewart, James J.: *See*—
Dietrich, Joseph J.; Niksa, Andrew J.; and Stewart, James J., 5,006,216, Cl. 204-257.000

Stewart, Kenneth W., Sr., to United Technologies Motor Systems, Inc. Dynamoelectric machine brush rigging and method of assembly. 5,006,747, Cl. 310-239.000.

Stewart, William R., and Stewart, David B., to William R. Stewart & Sons Ltd. Opening roller for open end spinning machines. 5,005,259, Cl. 19-97.000.

Stiles, Richard C.: *See*—
Marks, Larry D.; Stiles, Richard C.; and Bartloff, William F., 5,005,740, Cl. 222-651.000.

Stillman, Harold M.: *See*—
Basile, Peter A.; Madan, Ashvani K.; Snyder, Fred E.; and Stillman, Harold M., 5,005,226, Cl. 4-354.000

Stocko Metallwarenfabriken Henkels und Sohn GmbH & Co *See*—
Obst, Frank, 5,005,752, Cl. 227-114.000.

Stoffelen, Henricus J. H.: *See—*
Hasker, Jan; Crombeen, Jacobus E.; Niessen, Anton K.; and Stoffelen, Henricus J. H., 5,006,753, Cl. 313-346.00R

Stokes, John F., to Honeywell Inc. Method of making an electrostatic silicon accelerometer. 5,006,487, Cl. 437-228.000.

Stokes, Rick W. Paper rack. 5,005,709, Cl. 211-50.000.

Stokke, Olaf M.; Flanigan, David A.; Ramsey, Robert B., Williams, Robert E.; and Huycke, John, to Conoco Inc. Partially halogenated ethane solvent removal of oleophylic materials from mineral particles. 5,005,655, Cl. 175-66.000.

Stone, Herman, to PMC, Inc. Density reduction in flexible polyurethane foams. 5,006,569, Cl. 521-118.000.

Stone & Webster Engineering Corporation: *See—*
Karafian, Maxim, and Tsang, Irving C., 5,006,131, Cl. 422-201.000.

Stoody, William R. Flaccid bag bottle for dispensers. 5,005,733, Cl. 222-105.000.

Strand, Marc A.: *See—*
Jackson, Winston J., Jr.; Darnell, W. Ronald; Bell, Bruce C.; and Strand, Marc A., 5,006,628, Cl. 528-182.000.

Strang, Harry: *See—*
Fischer, Reiner; Jensen-Korte, Uta; Kunisch, Franz; Marhold, Albrecht, Ooms, Pieter; Schallner, Otto; Santel, Hans-Joachim; Schmidt, Robert R.; Krauskopf, Birgit; and Strang, Harry, 5,006,148, Cl. 71-72.000.
Gesing, Ernst R.; Santel, Hans-Joachim; Schmidt, Robert R.; and Strang, Harry, 5,006,156, Cl. 71-93.000.

Strassel, Albert: *See—*
Guerin, Bernard; and Strassel, Albert, 5,006,602, Cl. 525-72.000.

Streb, Karl P.: *See—*
Simm, Wolfgang; Steine, Hans-Theo; and Streb, Karl P., 5,005,764, Cl. 239-79.000.

Stresswave Technology Limited: *See—*
Holroyd, Trevor J., 5,005,415, Cl. 73-587.000.

Strobl, Georg; and Wong, Ben T., to Johnson Electric S.A. Splashproof cover for an electric motor. 5,006,742, Cl. 310-88.000.

Strong, Finn A. Aquarium assembly. 5,005,521, Cl. 119-5.000.

Strong, Thomas F. Automatic proportioning fertilizer injector. 5,005,601, Cl. 137-205.500.

Stroppiana, Mario; and Ronchetti, Luigi, to RAI Radiotelevisions Italiano, S.p.A. Device for reducing the redundancy in blocks of digital video data in DCT encoding. 5,006,930, Cl. 358-133.000.

Stroppiana, Mario: *See—*
Barbero, Marzio; Muratori, Mario; and Stroppiana, Mario, 5,006,929, Cl. 358-105.000.

Stuck, Robert M.; and Maw, Samuel H., Jr. Apparatus and method for cooking food products, specially for broiling whole chickens and other meats. 5,006,355, Cl. 426-243.000.

Stumpf, Burkhard: *See—*
Steudle, Ernst, and Stumpf, Burkhard, 5,005,403, Cl. 73-64.300.

Stutzel, Klaus: *See—*
Ludwig, Karl; van Raemdonck, Edwin, Stutzel, Klaus, and Vingerhoets, Marcel, 5,006,654, Cl. 544-219.000.

Suda, Hirofumi: *See—*
Kaneda, Naoya; Wada, Hiroyuki; Hirasawa, Masahide, and Suda, Hirofumi, 5,005,956, Cl. 350-429.000.

Sueoka, Hiroyuki: *See—*
Oe, Takanori; Sueoka, Hiroyuki; Hisadome, Masao; and Yamagami, Keiji, 5,006,520, Cl. 514-212.000.

Suessegger, Albert, to Kloeckner-Humbolt-Deutz Aktiengesellschaft. Sifter for sifting granular material and grinding system having introduction therein to of such a sifter. 5,005,770, Cl. 241-19.000.

Suga, Toshiyuki; Arai, Hideaki, and Kitajima, Shinichi, to Honda Giken Kogyo Kabushiki Kaisha. Abnormal combustion-detecting device and combustion control device for internal combustion engines. 5,005,547, Cl. 123-425.000.

Sugahara, Kazuyuki, Kusunoki, Shigeru; and Ipposhi, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Stacked type semiconductor device. 5,006,913, Cl. 357-41.000.

Sugahara, Satoshi: *See—*
Takiguchi, Haruhisa; Kudo, Hiroaki; Sakane, Chitose; and Sugahara, Satoshi, 5,007,107, Cl. 372-96.000.

Sugano, Kazuhiko, to Nissan Motor Co., Ltd. Shift control system for automatic transmission. 5,005,443, Cl. 74-868.000.

Sugaya, Masami: *See—*
Itoh, Hiroshi; Sugaya, Masami; Soga, Yoshinobu; Morisawa, Kunio; Habuchi, Ryoji; Kouno, Katsumi; and Hattori, Yuji, 5,006,093, Cl. 474-28.000.

Sugimoto, Fumio: *See—*
Shii, Hikaru; and Sugimoto, Fumio, 5,006,292, Cl. 264-127.000.

Sugimoto, Mutsumi, to Katsuyama Kinzoku Kogyo Kabushiki Kaisha. Buckle assembly for seat belt. 5,005,267, Cl. 24-637.000.

Sugimoto, Yoichi: *See—*
Yahagi, Toshio, Iwagawa, Yoshihiro; Sugimoto, Yoichi; and Satoh, Tsuyoshi, 5,005,917, Cl. 303-113.000.

Sugiyama, Genroku: *See—*
Hirata, Toichi; Tanaka, Hideaki, Sugiyama, Genroku; and Kajita, Yusuke, 5,005,358, Cl. 60-426.000.

Sugiyama, Isao: *See—*
Kamiya, Takashi; Naito, Toshihiko; Negi, Shigeto; Komatu, Yuuki; Kai, Yasunobu; Nakamura, Takaharu; Sugiyama, Isao; Machida, Yoshimasa; Nomoto, Seiichiro; Kitoh, Kyosuke, Katsu, Kanemasa; and Yamauchi, Hiroshi, 5,006,649, Cl. 540-222.000.

Sugiyama, Kazuhiro: *See—*
Kawabe, Masanao; Kimura, Masao; Sugiyama, Kazuhiro, Yamaoka, Ikuro; and Inoue, Hiroharu, 5,006,631, Cl. 528-204.000.

Sugiyama, Keishi: *See—*
Ichitsubo, Norio; and Sugiyama, Keishi, 5,006,080, Cl. 439-634.000.

Sugiyama, Takeshi, to Mitsubishi Denki Kabushiki Kaisha. Pinion shift lever starter with waterproof boat. 5,005,435, Cl. 74-7.00A.

Sugiyama, Yuichi; Isono, Takashi; Nakamura, Yukihiro; Takaiwa, Akihiro; and Komatsubara, Kenichi, to SDS Biotech Kabushiki Kaisha. Imino[(3-halogenophenyl)amino]acetic acid derivatives and herbicides containing same. 5,006,160, Cl. 71-111.000.

Sullivan, Shelby F., Whitehouse, Harper J.; and Hamilton, Richard P., to United States of America, Navy. Transducer assembly for deep submergence. 5,007,030, Cl. 367-153.000.

Sulzer Brothers Limited: *See—*
Mandrin, Charles, and Keller, Rene, 5,006,133, Cl. 55-53.000.

Sumigawa, Yukio, to Sanshin Kogyo Kabushiki Kaisha. Tilting device for marine propulsion unit. 5,006,083, Cl. 440-61.000.

Sumitomo Chemical Company, Limited: *See—*
Tsushima, Kazunori, Matsuo, Noritada; Kisida, Hiroshi; and Yano, Toshihiko, 5,006,538, Cl. 514-345.000.

Sumitomo Electric Industries, Ltd.: *See—*
Fujioka, Hideaki; and Katayama, Yoshio, 5,005,916, Cl. 303-103.000.
Yamamoto, Susumu; Murai, Teruyuki; Kawabe, Nozomu; and Tobioka, Masaaki, 5,006,289, Cl. 264-61.000.

Sumitomo Metal Industries, Ltd. *See—*
Yasumura, Ichiro; and Fujimoto, Kuniharu, 5,005,395, Cl. 72-128.000.

Sumitomo Metal Mining Company Limited: *See—*
Kishimoto, Toshiki; and Imamura, Kuniyasu, 5,006,199, Cl. 156-621.000.
Kuzuo, Ryuichi; Kawamoto, Atsushi; Tada, Junya; Ohmori, Kenji; and Sekiya, Hiroko, 5,006,388, Cl. 428-64.000.

Sumitomo Rubber Industries Inc. *See—*
Kinuhata, Satoru, Takami, Masao; Shibata, Eiji; and Tamura, Tadahiko, 5,005,628, Cl. 157-13.000.

Sumitomo Rubber Industries, Ltd.. *See—*
Oka, Kengo, 5,005,838, Cl. 273-232.000.
Touji, Daijiro, Nakahara, Akihiro, Nakashita, Takefumi; Mitsuba, Atsuko, Nakashio, Yukiyasu, and Nagase, Tsuneyuki, 5,006,586, Cl. 524-377.000.

Sundstrand Corporation: *See—*
Danby, Clive M., 5,006,772, Cl. 318-696.000.
Katsumata, Shin; and Corcoran, Mark W., 5,006,043, Cl. 415-113.000.
Rees, Fenton, 5,006,774, Cl. 318-721.000.
Rozman, Gregory I., 5,006,768, Cl. 318-254.000.
Schott, Edmund A., 5,006,741, Cl. 310-68.00D.

Sundstrand Data Control, Inc *See—*
Novack, Mitchell J., Norling, Brian L.; and Woodruff, James R., 5,005,413, Cl. 73-517.0AV.

Sung, Henry H. Device for protecting golf clubs. 5,005,624, Cl. 150-160.000.

Suntory Limited: *See—*
Nakayama, Toru, Yoshizumi, Hajime; Yamamoto, Hiroshi, and Yoshizawa, Kiyoshi, 5,006,468, Cl. 435-228.000.

Supron, Steven A *See—*
Martin, Samuel W.; and Supron, Steven A., 5,006,195, Cl. 16-442.100.

Surface Technology, Inc *See—*
Lancsek, Thomas S., 5,006,367, Cl. 427-129.000.

Surles, Billy W. *See—*
Friedman, Robert H., and Surles, Billy W., 5,005,647, Cl. 166-295.000.
Friedman, Robert H.; and Surles, Billy W., 5,005,648, Cl. 166-295.000.

Susan, Victor R *See—*
Sanchez, Florentina S.; Susan, Victor R.; Carramolino-Fitera, Laura, and Ortega, Agustin P. A., 5,006,471, Cl. 435-254.000.

Suyama, Koji: *See—*
Maruyama, Fumio; Suyama, Tomio; Kamino, Hiroaki; Suyama, Koji, Kuwahara, Tokihiro; and Nagata, Osamu, 5,006,767, Cl. 318-103.000.

Suyama, Tomio: *See—*
Maruyama, Fumio; Suyama, Tomio, Kamino, Hiroaki; Suyama, Koji, Kuwahara, Tokihiro, and Nagata, Osamu, 5,006,767, Cl. 318-103.000.

Suzuki, Akira. *See—*
Ishida, Masato, Takeda, Hiroaki; Watanabe, Kazuo; Suzuki, Akira; Suzuki, Nobuyuki, Sato, Isamu; and Miyamato, Kazuki, 5,006,890, Cl. 355-202.000.

Suzuki, Fuminori, and Ebihara, Heihachiro, to Citizen Watch Co., Ltd. Liquid crystal television. 5,006,933, Cl. 358-236.000.

Suzuki, Hideo, Matsushima, Shunichi; Obata, Masahiko; Sakama, Masao; Nakada, Akira, and Kumano, Shinji, to Yamaha Corporation Musical tone control apparatus. 5,005,460, Cl. 84-600.000.

Suzuki, Hideo. *See—*
Adachi, Takeshi; Mizuno, Kotaro; Yamada, Shigeru; Suzuki, Hideo, and Kimpara, Mamoru, 5,005,459, Cl. 84-453.000.

Suzuki, Kazuo, Tachibana, Fusao; and Chonan, Mitsugi, to Fuji Jukogyo Kabushiki Kaisha. Two cycle engine with fuel injector. 5,005,533, Cl. 123-52.0MB.

Suzuki, Kenji, to Fuji Photo Film Co., Ltd. Photographic printer. 5,006,886, Cl. 355-46.000.

Suzuki, Nobuyuki. *See—*
Ishida, Masato; Takeda, Hiroaki; Watanabe, Kazuo; Suzuki, Akira, Suzuki, Nobuyuki, Sato, Isamu; and Miyamato, Kazuki, 5,006,890, Cl. 355-202.000.

Suzuki, Norio; Oda, Sennosuke, Maruyama, Hiromi; and Hoshino, Kenichi, to Matsushita Electric Industrial Co., Ltd. Alkaline storage battery. 5,006,426, Cl. 429-94.000.

Suzuki, Seizo; Sakuma, Nobuo, Yamaguchi, Katsumi; and Endo, Osamu, to Ricoh Company, Ltd. Optical scanning system. 5,005,928, Cl. 350-6.100.

Suzuki, Seizo: *See—*
Okamoto, Osamu; Nakaya, Teruomi; Suzuki, Seizo; Kuwano, Naoaki; Sakai, Yoshinori; Oda, Hiroshi; Uegusa, Masao; and Iba, Goji, 5,005,786, Cl. 244-161.000.

Suzuki, Tadasu, to Tsubakimoto Chain Co. Ratchet type tensioner. 5,006,095, Cl. 474-111.000.

Suzuki, Takamitsu; Iwanami, Takeshi; and Yonezawa, Minoru, to Yamaha Hatsudoki Kabushiki Kaisha; Yamaha Hatsudoki Kabushiki Kaisha; and Yamaha Hatsudoki Kabushiki Kaisha. Engine induction system. 5,005,536, Cl. 123-52.0MV.

Suzuki, Takanobu; and Furusawa, Tsutomu, to Fuji Xerox Co., Ltd. Recording apparatus. 5,007,003, Cl. 364-519.000.

Suzuki, Tetsuro: *See—*
Yoshikawa, Masao; and Suzuki, Tetsuro, 5,006,915, Cl. 357-61.000.

Suzuki, Toshio: *See—*
Kasuya, Akira; and Suzuki, Toshio, 5,006,580, Cl. 524-264.000.
Magara, Takuji, Iwasaki, Takeshi, Suzuki, Toshio; and Yamamoto, Masahiro, 5,006,692, Cl. 219-69.120.

Suzuki, Yoshio; Umeda, Kaoru; and Kitoh, Norimasa, to Honda Giken Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Imasen Denki Seisakusho Reclining device. 5,005,906, Cl. 297-362.000.

Swaneck, Edward H. Sheet register control for printing machines. 5,005,819, Cl. 271-107.000.

Swanson, Dail L.; and Costa, Larry J., to Valmont Industries, Inc. Fluorescent lamp ballast with end connector. 5,006,764, Cl. 315-276.000.

Swanson, John H.: *See—*
Van Gordon, Todd D.; Swanson, John H.; Kristensen, Knud N.; and Sherman, Adam, 5,005,734, Cl. 222-107.000.

Swanson, Steven E.: *See—*
Barlow, Robert W., Swanson, Steven E.; and Lynch, Thomas M., 5,005,941, Cl. 350-96.210
Barlow, Robert W., Lynch, Thomas M.; and Swanson, Steven E., 5,005,942, Cl. 350-96.210.

Swedberg, Sally A., to Hewlett-Packard Company. Halogenated surface with reduced protein interaction. 5,006,313, Cl. 422-70.000.

Swimex Systems, Inc *See—*
Mermelstein, Seymour, 5,005,228, Cl. 4-488.000

Swisher, Beth A. *See—*
Markley, Lowell D.; Hamilton, Christopher T.; Swisher, Beth A.; and Secor, Jacob, 5,006,159, Cl. 71-98.000

Swiss Serum & Vaccine Institute *See—*
Gluck, Reinhard, and Germanier, Rene, 5,006,335, Cl. 424-89.000.

Syrett, Barry C *See—*
McKubre, Michael C. H.; and Syrett, Barry C., 5,006,786, Cl. 324-71.200

Szabados, Rudolph J. *See—*
Berg, Lloyd; Wendt, Kraig M., and Szabados, Rudolph J., 5,006,205, Cl. 203-15.000

Szafranski, Pierre, to Salomon S.A. Alpine safety ski binding. 5,005,854, Cl. 280-626.000.

Szajewski, Richard P.; Burns, Paul A., Poslusny, Jerrold N.; Platt, Norma B., and Norden, Timothy D., to Eastman Kodak Company. Photographic material and process. 5,006,448, Cl. 430-505.000.

Szego, Andras *See—*
Sarkozy, Peter, Pap, Laszlo, Szego, Andras; Nagy, Lajos; Szekely, Istvan, Marmarosi, Katalin, and Grosch, Janos, 5,006,545, Cl. 514-395.000.

Szekely, Istvan *See—*
Sarkozy, Peter, Pap, Laszlo, Szego, Andras, Nagy, Lajos; Szekely, Istvan, Marmarosi, Katalin, and Grosch, Janos, 5,006,545, Cl. 514-395.000

Szekszardi Allami Gazdasag KSZE Novenytermelesi Rendszer: *See—*
Kiss, Laszlo, Justus, Gyula; Zsuppan, Jozsef, and Knollmar, Tibor, 5,006,149, Cl. 71-81.000

Szewczyk, Robert M., to Raytheon Company. Optical fuze. 5,005,480, Cl. 102-213.000

Szumski, Ronald P *See—*
Cameron, Evan S., Szumski, Ronald P., and West, James K., 5,006,721, Cl. 250-561.000

T Cell Sciences, Inc.: *See—*
Kung, Patrick C., Ip, Stephen, Brown, Michael; and McKeen, Linda A., 5,006,459, Cl. 435-5.000

Tachi S Co., Ltd *See—*
Nagata, Kojiro, 5,005,894, Cl. 296-68.100
Ogasawara, Hiromitsu, 5,006,771, Cl. 318-568.100

Tachibana, Fusao: *See—*
Suzuki, Kazuo, Tachibana, Fusao, and Chonan, Mitsugi, 5,005,533, Cl. 123-52.0MB

Tachibana, Tetsuo *See—*
Isono, Osamu, Fukui, Toshimasa, Nishino, Tetsuo; Tachibana, Tetsuo; and Iwabuchi, Eisuke, 5,007,055, Cl. 371-32.000

Tachikawa, Hiromichi *See—*
Yokoya, Hiroaki, and Tachikawa, Hiromichi, 5,006,433, Cl. 430-49.000

Tada, Junya *See—*
Kuzuo, Ryuichi, Kawamoto, Atsushi; Tada, Junya, Ohmori, Kenji; and Sekiya, Hiroko, 5,006,388, Cl. 428-64.000

Tagasangyo, Ltd.: *See—*
Tamura, Kozo; Kodato, Toshiharu; Nihira, Syoichi; Tsukamoto, Yasuhiro; and Iida, Akira, 5,006,780, Cl. 320-54.000.

Taguchi, Masao, to Fujitsu Limited. Semiconductor memory device and method for producing the same. 5,006,910, Cl. 357-23.600.

Taiyo Fishery Co., Ltd.: *See—*
Nishi, Norihisa; Nakamura, Makoto; and Noguchi, Satoshi, 5,006,353, Cl. 426-231.000

Taiyo Yuden Co., Ltd.: *See—*
Kakinuma, Hiromi; and Iida, Hideo, 5,006,702, Cl. 250-208.100.
Kishi, Hiroshi; Chazono, Hirokazu; Oshio, Minoru; Saito, Hiroshi; Nakamura, Toshiya; and Shizuno, Hisamitsu, 5,006,954, Cl. 361-321.000
Kishi, Hiroshi; Chazono, Hirokazu; Oshio, Minoru; Saito, Hiroshi; Nakamura, Toshiya; and Shizuno, Hisamitsu, 5,006,955, Cl. 361-321.000.
Ueda, Syuusaku; and Fujimoto, Masayuki, 5,006,491, Cl. 501-96.000.

Takabayashi, Yasuhiro, to Fuji Electric Co., Ltd. Method and apparatus for controlling the temperature of a reforming reaction catalyst. 5,006,425, Cl. 429-23.000.

Takada, Shun: *See—*
Sasaki, Masao; Nishijima, Toyoki; Takada, Shun, and Onodera, Kaoru, 5,006,454, Cl. 430-546.000.

Takada, Yoshiharu: *See—*
Hatano, Sakae; Takada, Yoshiharu, Kainuma, Kiyokazu; Kanematsu, Isao; Asano, Kazuo, Yoshida, Hisashi; and Mori, Yoshinori, 5,006,685, Cl. 219-69.200.

Takagi, Nobukazu: *See—*
Shimoda, Tatsuya, Seto, Takeshi; Endo, Kenichi; Yamaha, Yoshikazu; and Takagi, Nobukazu, 5,006,045, Cl. 417-42.000.

Takagi, Tadao; and Sato, Toshihiro, to Nikon Corporation. Electronic flash lighting device for camera. 5,006,879, Cl. 354-413.000.

Takahashi, Daisuke: *See—*
Onmori, Shozo; Takahashi, Daisuke; and Oishi, Kengo, 5,006,947, Cl. 360-132.000.

Takahashi, Fumio: *See—*
Yoneshima, Kunihiko; and Takahashi, Fumio, 5,006,277, Cl. 252-301.60S.

Takahashi, Masami; and Kajiya, Ichiro, to Matsushita Electric Industrial Co., Ltd. Lens mounting apparatus for a television camera. 5,005,948, Cl. 350-252.000.

Takahashi, Nagashige; and Ouchi, Teruo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Flexible tube of endoscope and method of and apparatus for producing the same. 5,005,755, Cl. 228-126.000.

Takahashi, Osamu; Sakai, Minoru; Furusawa, Genichi; and Hirano, Tsumoru, to Fuji Photo Film Co. Ltd. Silver halide color photographic material having improved dye image stability. 5,006,453, Cl. 430-546.000.

Takahashi, Ryo: *See—*
Ogino, Sumihito; and Takahashi, Ryo, 5,005,492, Cl. 108-145.000

Takahashi, Tsutomu: *See—*
Kurihara, Kazumasa; and Takahashi, Tsutomu, 5,005,687, Cl. 192-0.073.

Takaiwa, Akihiro: *See—*
Sugiyama, Yuichi; Isono, Takashi, Nakamura, Yukihiro; Takaiwa, Akihiro; and Komatsubara, Kenichi, 5,006,160, Cl. 71-111.000.

Takaki, Takeshi; Kaijiri, Kouhei; Oda, Denichi; Oda, Kunio, Kurihara, Hideo; and Tanabe, Takeshi, to Ube Industries, Ltd. Fiber-reinforced rubber composition and production process and use thereof. 5,006,603, Cl. 525-105.000.

Takaku, Hitoshi, to Jidosha Kiki Co., Ltd. Brake booster. 5,005,464, Cl. 91-6.000.

Takakuwa, Hidemi: *See—*
Kobayashi, Junichiro; Hiramatsu, Shigeru; and Takakuwa, Hidemi, 5,006,478, Cl. 437-41.000.

Takamatsu, Toshiaki: *See—*
Hamada, Hiroshi, Takamatsu, Toshiaki, and Kimura, Naofumi, 5,006,840, Cl. 340-784.000.

Takami, Masao: *See—*
Kinuhata, Satoru, Takami, Masao; Shibata, Eiji; and Tamura, Tadahiko, 5,005,628, Cl. 157-13.000.

Takanashi, Itsuo, Tanaka, Hedeshi; Kato, Shigeru, Osada, Naomi; and Ichito, Toshikatsu, to Victor Company of Japan, Ltd. Cartridge for a printer system. 5,005,998, Cl. 400-208.000.

Takanashi, Itsuo; Nakagaki, Shintaro, and Shinonaga, Hirohiko, to Victor Company of Japan, Ltd. Charge latent image recording reproducing system with a uniformly charge detection region providing a reference intensity of a recorded object. 5,006,935, Cl. 358-300.000.

Takano, Masami; Hamada, Tetsurou, and Masuda, Katsuhiko, to Honda Giken Kogyo Kabushiki Kaisha. Torque transmitting device. 5,005,685, Cl. 192-58.00B

Takao, Toshiyuki; and Igata, Toshiaki, to Fuji Photo Film Co., Ltd. Information recording medium. 5,006,387, Cl. 428-64.000.

Takase, Isao; Takemoto, Haruki, Tatsuta, Mitsugu; Maseki, Shinobu, Kano, Takenori, Yokoyama, Fumitomo; and Niimi, Mamoru, to Aisin Aw Co., Ltd. Floating structure for interconnecting three clutches with a single actuator in an automatic transmission. 5,006,102, Cl. 475-282.000

Takashimizu, Satoru: *See—*
Kimura, Yuichiro; Kabuto, Nobuaki; Takashimizu, Satoru, and Masujima, Katsuhiro, 5,006,739, Cl. 307-270.000

Takatori, Yasushi: *See—*
Ayata, Naoki, Shirato, Yoshiaki, Takatori, Yasushi, and Seki, Mitsuaki, 5,006,864, Cl. 346-33.00R

Takeda Chemical Industries, Ltd. *See*—
Oshima, Junji, Fuji, Tatsuo; and Yamada, Minoru, 5,006,592, Cl 524-504.000.
Takeda, Hiroaki. *See*—
Ishida, Masato; Takeda, Hiroaki; Watanabe, Kazuo, Suzuki, Akira, Suzuki, Nobuyuki, Sato, Isamu, and Miyamato, Kazuki, 5,006,890, Cl 355-202.000.
Takeda, Hisao, and Kawano, Mutsumi, to Kyoritsu Yuki Co., Ltd Process for the preparation of dispersion of water-soluble cationic polymer, 5,006,590, Cl. 524-458.000
Takefuta, Hideyasu *See*—
Kushida, Takeo, Takefuta, Hideyasu, and Muramatsu, Hajime, 5,005,412, Cl 73-517.00R.
Takegahara, Takashi *See*—
Seki, Masaki, Takegahara, Takashi, and Kajitani, Akira, 5,006,977, Cl. 364-192.000
Takeishi, Kazuo; Okubo, Yasuhiro; and Itoh, Takashi, to Director General, Public Works Research Institute, Ministry of Construction, and Nishihara Environmental Sanitation Research Corporation Limited Process for treating organic waste water 5,006,251, Cl 210-618.000.
Takemoto, Haruki: *See*—
Takase, Isao, Takemoto, Haruki, Tatsuta, Mitsugu, Maseki, Shinobu, Kano, Takenori, Yokoyama, Fumitomo, and Niimi, Mamoru, 5,006,102, Cl 475-282.000
Takeuchi, Akira *See*—
Ohba, Nobuyuki, Ikeda, Atsuhiko, Matsunari, Kenji Yamada, Yuji, Hirata, Michiya, Nakamura, Yasuo, Takeuchi, Akira, and Karino, Hiroyuki, 5,006,157, Cl 71-95.000
Takeuchi, Yoshinori *See*—
Satoh, Yutaka, and Takeuchi, Yoshinori, 5,005,859, Cl 280-721.000
Takeuti, Humio *See*—
Kumagai, Motoo; Kato, Keiichi, Takeuti, Humio, Nagano, Masato, and Sakaguchi, Michiaki, 5,006,957, Cl 361-321.000
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Watanabe, Yoshio; Taki, Mamoru, Miura, Junkichi, Kamahori, Masao, Miyagi, Hiroyuki, Matsumura, Yasuhide, and Kanetomo, Masafumi, 5,005,434, Cl. 73-864.210
Takiguchi, Haruhisa, Kudo, Hiroaki, Sakane, Chitose, and Sugahara, Satoshi, to Sharp Kabushiki Kaisha Semiconductor laser device 5,007,107, Cl 372-96.000.
Takisawa, Toshifumi *See*—
Sakamoto, Seiji, Kawaguchi, Chikakazu, Meguro, Yoshio, Harada, Takashi, and Takisawa, Toshifumi, 5,006,589, Cl 524-430.000
Talkie Tooter Inc. *See*—
VanEss, David W., 5,007,069, Cl 375-80.000
Talvalkar, Shashi G., to NCR Corporation Multiple copy thermal imaging 5,006,863, Cl 346-1.100
Tam, Ambrose W. C., to Astec International, Ltd RF coupler having non-overlapping off-set coupling lines 5,006,821, Cl 333-116.000
Tamano, Yutaka, and Arai, Shoji, to Tosoh Corporation Amine catalyst for forming fine-cell rigid polyurethane foam 5,006,501, Cl 502-167.000
Tamfelt OY AB *See*—
Salminen, Ari, and Rautanen, Suorama, 5,006,399, Cl 428-224.000
Tamm, Rolf; Huber, Bernhard; Rodel, Gunther; and Stengele, Erich Electrothermal atomization of a sample for spectroscopic purposes 5,005,976, Cl 356-312.000.
Tamosaitis, Anthony *See*—
Corel, Dale C.; Tamosaitis, Anthony, and Narechania, Pradeep, 5,006,783, Cl 323-263.000
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Virr, Michael J., 5,005,528, Cl 122-4.00D
Tamura, Kozo, Kodato, Toshiharu, Nihira, Syoichi Tsukamoto, Yasuhiro, and Iida, Akira, to Hitachi, Ltd., and Tagasangyo, Ltd Charging circuit 5,006,780, Cl 320-54.000
Tamura, Tadahiko *See*—
Kinuhata, Satoru, Takami, Masao, Shibata, Eiji, and Tamura, Tadahiko, 5,005,628, Cl 157-13.000
Tan, Khen-Sang *See*—
Kiriaki, Sami, and Tan, Khen-Sang, 5,006,853, Cl 341-156.000
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Sawada, Kouji, Miya, Yasuhiro, Tanabe, Masato, Nanno, Takanobu, and Miyakawa, Shinji, 5,005,810, Cl 267-140.100
Tanabe, Takeshi *See*—
Takaki, Takeshi, Kaijiri, Kouhei, Oda, Denichi, Oda, Kunio, Kunihara, Hideo; and Tanabe, Takeshi, 5,006,603, Cl 525-105.000.
Tanaka, Hazime, Okamoto, Teiichi, Yoshiga, Kenji, and Watanabe, Kazuhiko, to Fuji Koki Mfg. Co. Ltd Thermal expansion valve 5,005,370, Cl. 62-211.000.
Tanaka, Hedeshi *See*—
Takanashi, Itsuo, Tanaka, Hedeshi, Kato, Shigeru, Osada, Naomi, and Ichito, Toshikatsu, 5,005,998, Cl 400-208.000
Tanaka, Hideaki *See*—
Hirata, Toichi, Tanaka, Hideaki, Sugiyama, Genroku, and Kajita, Yusuke, 5,005,358, Cl. 60-426.000
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Yoshida, Yoshikazu; and Tanaka, Kunio, 5,006,218, Cl 204-298.060
Tanaka, Sadahiro *See*—
Kawai, Michio, Tanaka, Sadahiro, and Osanai, Osamu, 5,005,975, Cl 356-237.000
Tanaka, Yutaka, and Haraguchi, Masanori, to Kabushiki Kaisha Toshiba Semiconductor memory device with sense amplifier controller 5,007,024, Cl 365-207.000
Tanashin Denki Co. Ltd *See*—
Nishimura, Shozo, 5,005,745, Cl 226-24.000.
Tanghe, Hans *See*—
Delcorps, Michel, and Tanghe, Hans, 5,006,377, Cl 428-34.700
Tani, Yasunori *See*—
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Tanidokoro, Hiroaki *See*—
Hirama, Masahiro, Tanidokoro, Hiroaki, and Hikita, Kazuyasu, 5,006,953, Cl 361-309.000
Taniguchi, Hiroji *See*—
Kimura, Hiromichi, Iwatsuki, Kunihiro; Taniguchi, Hiroji, Taniguchi, Takuji, and Ishikawa, Kazunori, 5,005,444, Cl 74-868.000.
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Jimbo, Keiji, Yasui, Yuuji, and Taninaga, Sigeru, 5,005,697, Cl 206-235.000
Tanis, Steven W. Inverted weir for conduit 5,005,428, Cl 73-861.520
Tannehill, J. C., to Quick & Easy Tire Products, Inc. Device for sealing between 4 tubeless tire and a rim during tire inflation process 5,005,627, Cl 157-001.100
Tarman, Paul B. *See*—
Lee, Bernard S., Tarman, Paul B., and Punwani, Dharam V., 5,006,062, Cl. 432-14.000
Tashima, Seiji, Okimoto, Haruo, Akagi, Toshimichi, and Niwa, Yasushi, to Mazda Motor Corporation Air supply control systems for turbocharged internal combustion engines 5,005,359, Cl. 60-600.000
Tata, Peter D. *See*—
Pare, Rodney H., Tata, Peter D., and Marrocco, Anthony R., 5,005,255, Cl. 16-115.000
Tatsuta, Mitsugu *See*—
Takase, Isao, Takemoto, Haruki, Tatsuta, Mitsugu, Maseki, Shinobu, Kano, Takenori, Yokoyama, Fumitomo, and Niimi, Mamoru, 5,006,102, Cl. 475-282.000
Tatzel, Hermann *See*—
Weber, Reinhold, Weilbacher, Manfred, Tatzel, Hermann, Zuern, Ludwig, Zettler, Hans D., and Hinselmann, Klaus, 5,006,566, Cl 521-79.000
Taub, Alan I. *See*—
Ballard, Donald E., Frischmann, Peter G., and Taub, Alan I., 5,005,456, Cl. 83-170.000
Taylor, Benjamin R., Chapman, Mark A. V., and Graham, Jeffrey, to Renishaw plc Method of and apparatus for calibration of machines 5,007,006, Cl. 364-571.050
Taylor, Brooks E., and Neely, Marshall A., to Card-Monroe Corporation Computer controlled tufting machine and a process of controlling the parameters of operation of a tufting machine 5,005,498, Cl 112-80.320
Taylor, James D., to United States of America, Air Force Variable geometry airship 5,005,783, Cl 244-97.000
Taylor, Keith, and Neal, Roger Motorcycle mounting for radar 5,005,661, Cl 180-219.000
Taylor, Keven Jet ski transporter carriage and related methods 5,005,846, Cl. 280-30.000
Taylor, Stewart S., to TriQuint Semiconductor, Inc. Method and apparatus for compensating a solid state attenuator 5,006,735, Cl 307-568.000
TDK Corporation *See*—
Matsuzaki, Mikio, 5,006,946, Cl. 360-104.000
Ohta, Katsuhiro; Masuda, Hisami; and Makishima, Mamoru, 5,006,844, Cl. 340-448.000
Technology Development Corporation *See*—
Nikkola, Donald E., 5,006,054, Cl. 420-552.000
Tecnoma *See*—
Ballu, Patrick J., 5,005,440, Cl. 74-579.00R
Tedenstig, Ove *See*—
Palmgren, Sven, and Tedenstig, Ove, 5,007,004, Cl. 364-519.000
Tegeler, John J. *See*—
Helsley, Grover C., Tegeler, John J., and Shoger, Kirk D., 5,006,531, Cl. 514-278.000
Teijin Limited *See*—
Santa, Toshihiro, and Kiriyama, Tsutomu, 5,006,629, Cl 528-183.000
Tejima, Yasuyuki, Ogawa, Ryota, and Sato, Makoto, to Asahi Kogaku Kogyo Kabushiki Kaisha Contrast decreasing apparatus in image forming optical system 5,005,968, Cl 353-122.000
Telectronics N.V. *See*—
Scott, Steven E., 5,005,587, Cl. 128-786.000
Teledyne Industries, Inc. *See*—
D'Annunzio, Joseph C., 5,006,189, Cl 428-76.000
Guajardo, Ciro, 5,006,949, Cl 361-18.000
Teleflex Incorporated *See*—
Hochstein, Peter A., 5,005,409, Cl. 73-304.00C
Telenorma Telefonbau und Normalzeit GmbH *See*—
Schafer, Wolfgang, and Isert, Hans, 5,006,920, Cl 357-74.000
Teletec Corporation *See*—
Kasparian, Kaspar A., Rogers, Aaron S., Hsu, Ming-Chyuan; and Fussell, John P., 5,007,050, Cl 370-77.000

Tempelman, Antonie P. to Mobacc B. V. Aerosol valve device 5,005,738, Cl 222-402.190
Ten Hoeve, Wolter *See*—
Meijer, Egbert W.; Ten Hoeve, Wolter, Nijhuis, Sjef, Rikken, Gerardus L. J. A., and Havinga, Edsko E., 5,006,729, Cl 307-425.000
Tennefos, David A., and Tennefos, Victoria I. Condom caddy package 5,005,695, Cl. 206-69.000
Tennefos, Victoria I. *See*—
Tennefos, David A., and Tennefos, Victoria I., 5,005,695, Cl 206-69.000
Tennessee Valley Authority *See*—
Trundle, Mark H., and Jones, William C., 5,006,302, Cl 376-260.000
Tennigkeit, Jurgen, and Lorenz, Herbert, to Goldwell GmbH Agent for the oxidative dyeing of hair, method for the preparation of the agent and use of the agent 5,006,127, Cl. 8-406.000
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Fukuda, Kosei, 5,006,016, Cl. 405-240.000
Teradata Corporation *See*—
Neches, Philip M., 5,006,978, Cl. 364-200.000
Teramoto, Yoshikichi *See*—
Mizuno, Toshiya, Teramoto, Yoshikichi, Saito, Takeshi, and Wakabayashi, Juichi, 5,006,605, Cl. 525-189.000
Terlecky, Boris S., to Trailer Train Company Stand alone well car with double axle suspension system, 5,005,489, Cl. 105-158.200
Terry, Betty A., to Pitney Bowes, Inc. Replaceable ink pad 5,006,404, Cl. 428-316.600
Tervo, John N. *See*—
Andersen, Blaine W., and Tervo, John N., 5,005,804, Cl 251-215.000
Tessier, Paul A. *See*—
Griswold, Allen B., Tessier, Paul A., and Koschek, Drew G., 5,006,835, Cl 340-626.000.
Tester, John *See*—
Gerardis, Patrick, and Tester, John, 5,005,502, Cl. 112-141.000
Tetenborg, Konrad, to Windmoller & Holscher. Apparatus for filling sacks 5,005,341, Cl 53-570.000
Tetra Technologies, Inc *See*—
Mishra, Surendra K., 5,006,239, Cl. 210-181.000.
Tetrahex, Inc. *See*—
Weisse, Dick O., 5,005,800, Cl 249-175.000
Te Velde, Ties S., to U.S. Philips Corporation Liquid crystal display device 5,005,951, Cl 350-334.000
Texaco Inc. *See*—
Friedman, Robert H., and Surles, Billy W., 5,005,647, Cl 166-295.000
Friedman, Robert H., and Surles, Billy W., 5,005,648, Cl 166-295.000
Najjar, Mitri S., and Muan, Arnulf, 5,005,986, Cl 374-179.000.
Pasternak, Mordechai, and Dorawala, Tansukhlal G., 5,006,576, Cl 521-27.000
Sequeira, Avilino, Jr., 5,006,222, Cl 208-33.000
Texas Instruments Incorporated. *See*—
Kiriaki, Sami, and Tan, Khen-Sang, 5,006,853, Cl 341-156.000
Leigh, Anthony W., 5,007,022, Cl. 365-189.040
Malhi, Satwinder; Kwon, Oh K.; and Mahant-Shetti, Shivaling S., 5,006,792, Cl 324-158.00F
Purdes, Andrew J., 5,006,203, Cl. 156-646.000.
Robbins, John, and Boston, Ricky L., 5,006,475, Cl. 437-10.000.
Wills, Kendall S., 5,006,916, Cl 357-67.000.
Thackara, John I., Lipscomb, George F., Yoon, Hyun-Nam; and De Martino, Ronald N., to Lockheed Missiles & Space Company, Inc Electro-optic channel waveguide 5,006,285, Cl. 264-1.300.
Thakur, Ajit B *See*—
Jerzewski, Robert L.; Wong, Thomas M.; Gryziewicz, Lewis J., Jain, Nemichand B., and Thakur, Ajit B., 5,006,344, Cl 424-465.000
Thaler, Warren A., Manalastas, Pacifico V.; Drake, Evelyn N.; and Lundberg, Robert D., to Exxon Research and Engineering Company Biodegradable barrier films of ionomer polymer, 5,006,147, Cl 71-27.000
Theeuwes, Felix *See*—
Edgren, David E., and Theeuwes, Felix, 5,006,346, Cl. 424-473.000
Thermo King Corporation *See*—
King, Donald D., 5,005,372, Cl 62-244.000
Thierheimer, Charles L., Jr *See*—
Chieng, Ching K., and Thierheimer, Charles L., Jr., 5,006,172, Cl 106-22.000
Thomas, Charles A., Jr., and Thomas, Eric A., to Pantox Corporation. Method for measuring DNA damage in single cells 5,006,460, Cl 435-6.000
Thomas, David K., to Renishaw plc Capacitive transducers. 5,006,952, Cl 361-283.000
Thomas, Eric A. *See*—
Thomas, Charles A., Jr.; and Thomas, Eric A., 5,006,460, Cl. 435-6.000
Thomas, Gunter *See*—
Angerbauer, Rolf, Fey, Peter; Hubsch, Walter; Philipps, Thomas, Bischoff, Hilmar, Petzinna, Dieter, Schmidt, Delf, and Thomas, Gunter, 5,006,530, Cl. 514-277.000.
Thomas, H. E. *See*—
LaTondress, Nancy T., and Thomas, H. E., 5,005,706, Cl 206-595.000
Thomas Industries, Inc *See*—
O'Connell, Mark, 5,006,047, Cl 417-238.000
Thomas, Joseph, to Augat, Inc Snap action switch 5,006,680, Cl 200-293.000
Thomas, Richard R. *See*—
Hodgson, Susan A., Park, Jae M., and Thomas, Richard R., 5,006,412, Cl 428-458.000
Thometschek, Roderich *See*—
Rohling, Holmer, Bauer, Christoph, Friedrichs, Harald M., and Thometschek, Roderich, 5,005,700, Cl 206-459.000
Thompson, William J. *See*—
Mimmack, William E., and Thompson, William J., 5,005,973, Cl 356-152.000
Thomson-Brandt Armements: *See*—
Deffayet, Jean, 5,005,483, Cl 102-489.000
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Guilbert, Roland, and Dhont, Bernard, 5,006,825, Cl 333-245.000
Thomson-CSF *See*—
Bani, Michel-Claude, and Rimbert, Dominique, 5,006,823, Cl 333-164.000
de Solminihac, Francois, 5,006,831, Cl 340-573.000.
Doisy, Martine, 5,006,802, Cl 324-304.000
Thomson, David L., to AT&T Bell Laboratories Adaptive threshold voiced detector. 5,007,093, Cl 381-46.000
Thomson Industries, Inc *See*—
Lyon, Gregory S., 5,005,988, Cl 384-44.000
Thomson, John, Jr *See*—
O'Bryan, Henry M., Jr., Rhodes, Warren W., and Thomson, John, Jr., 5,006,504, Cl 505-1.000
Thornton, Alfred *See*—
Lieberman, Ephraim; Bordoni, Maurice, and Thornton, Alfred, 5,006,329, Cl. 424-1.100
Thornton, Edward, to British Aerospace Public Limited Company High voltage switch assembly 5,006,679, Cl. 200-144.00R
Thornton, William E., Jr.; and Whitemore, Henry B., to United States of America, National Aeronautics and Space Administration Method and apparatus for waste collection and storage 5,005,457, Cl 83-206.000
Thuen, Ted. *See*—
Breed, Allen K.; Thuen, Ted, and Grossi, Carl T., 5,005,861, Cl 280-734.000
Tian, Guijiang *See*—
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Tieckelmann, Robert H.; Bull, Randy A., and Kurschner, Lisa M., to FMC Corporation. Wet processing of denim 5,006,124, Cl 8-111.000
Tilkaran, Roopnarine *See*—
Dorfman, Mitchell R., Kaufold, Roger W., Kushner, Burton, Rotolico, Anthony J.; and Tilkaran, Roopnarine, 5,006,321, Cl 427-192.000.
Tilman, Paul A. *See*—
Borst, Herbert A.; Machacek, Zdenek, Schnittger, Ernest, Schulte, Richard D.; Scott, Richmond; and Tilman, Paul A., 5,005,275, Cl 29-235.000.
Timell, Hans. Mounting device with transfer means for advancing tubular sleeves between different work stations 5,005,274, Cl 29-33.00P.
Timmermann, Andreas *See*—
Grundei, Jaana; and Timmermann, Andreas, 5,005,564, Cl 128-75.000.
Toa Medical Electronics Co., Ltd. *See*—
Inoue, Takanobu, 5,006,986, Cl. 364-413.080
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Itaba, Yasushi; Yoshifuji, Yutaka, Kondo, Takayoshi, Izawa, Minoru, Sakamoto, Ichiro, and Yoshino, Tadao, 5,006,378, Cl 428-34.900.
Tobioka, Masaaki. *See*—
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Tobol, Nathan H., to Foxboro Company, The Identity insert block for electronic modules. 5,006,842, Cl 340-825.340.
Toda, Haruki *See*—
Ohshima, Shigeo; Toda, Haruki; and Ikawa, Tatsuo, 5,007,028, Cl 365-233.000.
Todd, David W. *See*—
Phillips, Roger W.; Spellman, Vernon C.; Gossett, Wayne L., Kamerling, Marc A., Coombs, Paul G.; Todd, David W.; and Silver, Steven A., 5,005,719, Cl 215-230.000.
Todisco, Serge, to Societe Moderne d Batiment Industriel. Assembly of battens particularly for the covering of sloping roofs. 5,005,330, Cl 52-303.000.
Toivio, Ikka; and Tolvio, Terttu. Apparatus for transferring patients. 5,005,233, Cl 5-83.000.
Tojo, Hiroyuki *See*—
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Tokai Rubber Ind., Ltd. *See*—
Sawada, Kouji; Miya, Yasuhiro; Tanabe, Masato; Nanno, Takanobu; and Miyakawa, Shinji, 5,005,810, Cl. 267-140.100
Tokiwa, Kouji. *See*—
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Tokuhara, Chikara; and Hara, Tetsuro, to Koito Manufacturing Co., Ltd., and Nissei Industries Method of making a pinch-sealed, gas-filled incandescent lamp. 5,006,088, Cl. 445-27.000.

Tokyo Electric Co., Ltd.: *See—*
Umebara, Takao; and Yagome, Takeshi, 5,005,669, Cl 186-61.000
Tokyo Ohka Kogyo Co., Ltd *See—*
Hijikata, Isamu, Uehara, Akira, and Samezawa, Mitsuo, 5,006,220, Cl. 204-298.330.
Tolvio, Terttu *See—*
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Tomihari, Hiromiti *See—*
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Tominaga, Kazutoshi, to Kabushiki Kaisha Tominaga Jyushi Kogyo-sho Filter for use in a fish culturing tank 5,006,238, Cl. 210-169.000.
Tomoff, Toma. Polarimeter 5,005,977, Cl. 356-367.000
Tono, Show; Miki, Toshiyuki, Dairokuno, Yoshihide, and Kataoka, Jyun, to Aoki Corporation. Method of coagulating sludge 5,006,639, Cl. 210-727.000.
Topa, Robert D. *See—*
Kang, Sung K., Palmer, Michael J., Reiley, Timothy C., and Topa, Robert D., 5,006,917, Cl. 357-70.000.
Toray Industries, Inc *See—*
Nakamura, Kiyokazu, Kometani, Kiichi, Koshino, Akihiko, and Horiuchi, Kenjiro, 5,006,610, Cl 525-396.000.
Toray Silicone Company, Limited *See—*
Kasuya, Akira, and Suzuki, Toshio, 5,006,580, Cl. 524-264.000
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Toru, Nobutoshi *See—*
Nakashima, Seiichiro; Toyoda, Kenichi; and Toru, Nobutoshi, 5,006,035, Cl. 414-680.000.
Toru, Nozomu *See—*
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Tornblom, Lars *See—*
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Torok, Vilmos, and Loreth, Andrzej, to Astra-Vent AB. Air transporting arrangement 5,006,761, Cl. 315-111.910
Torremans, Joseph L. G. *See—*
Janssens, Frans E., Torremans, Joseph L. G.; and Diels, Gasto S. M., 5,006,527, Cl 514-253.000
Torrielli, Vittorino; and Maggioni, Virginio, to Fiat Auto S.p.A. Hydropneumatic vehicle suspension system of variable attitude 5,005,858, Cl. 280-707.000.
Toschi, Fabio: *See—*
Toschi, Fabrizio; and Toschi, Fabio, 5,006,995, Cl. 364-468.000
Toschi, Fabrizio; and Toschi, Fabio, to Color Service S.R.L. Automatic weighing plant for dyes in powder form. 5,006,995, Cl. 364-468.000.
Tosoh Corporation: *See—*
Tamano, Yutaka; and Arai, Shoji, 5,006,501, Cl. 502-167.000.
Tosti, James C., Jr *See—*
Goldberg, Edward M.; Bettencourt, Daniel, Jr., Tosti, James C., Jr., and Jones, Norman S., 5,005,478, Cl. 101-425.000
Toter, Inc *See—*
Niederer, Kurt W., 5,006,039, Cl. 414-786.000.
'Totes', Incorporated: *See—*
Uffindell, Paul J., 5,005,254, Cl. 16-111.00R.
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Yano, Ikuya *See—*
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Yokoyama, Naoomi, to Altech Co., Ltd Manufacturing method of square bottom bags 5,006,186, Cl 156-211 000

Yokoyama, Tomoaki, to Minolta Camera Kabushiki Kaisha Image forming apparatus with improved toner replenishment 5,006,893, Cl 355-208 000

Yokozawa, Yukio, to Seiko Epson Kabushiki Kaisha Portable compact device 5,007,015, Cl 364-900 000

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Yoshida, Hajime, to Hajime Industries Ltd. Object inspection apparatus 5,007,096, Cl 382-8 000

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Yoshinaka, Toshio, Hamano, Hideo, Minami, Hiroshi, and Ogawa, Shinji, to Toyota Jidosha Kabushiki Kaisha Power transfer mechanism for motor vehicle 5,006,098, Cl 475-86 000.

Yoshino, Masahiko *See—*
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Yoshizawa, Tomomi, and Kimura, Nariko, to Konica Corporation Method of image formation using a silver ahlide color photographic material 5,006,437, Cl. 430-359 000

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Young, John D., to General Electric Company Eddy current inspection probe with probe coil resonace reduction 5,006,801, Cl 324-238 000.

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Hedengren, Kristina H V., Hurley, Donna C., and Young, John D., 5,006,800, Cl 324-233 000

Young, Joseph L. *See—*
Reid, William W., and Young, Joseph L., 5,006,320, Cl 423-150 000

Young, Raymond L., and Sjovall, James A., to Sioux Tools, Inc Air powered torque control tool driver with automatic torque disconnect 5,005,682, Cl 192-0.034

Yourgalite, Ray A., Moore, Malcolm, Chamberlain, Neal C., Becicka, Kenneth F., Hilgeman, Samuel J., and Moore, Kevin D., to FMC Corporation. Stretch wrapping robotic palletizer 5,005,335, Cl 53-399 000.

Yueng, Edwards; and Kuhr, Werner G., to Iowa State University Research Foundation, Inc. Means and method for capillary zone electrophoresis with laser-induced indirect fluorescence detection 5,006,210, Cl. 204-180.100.

Yuhas, Ralph G., and Birmingham, William H., to Rolscreen Company Window operator for manually or electrically motorized actuation of a mechanical window drive system. 5,006,766, Cl 318-53 000

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Itoh, Kazuo, Naoi, Yoshitake, Matsushita, Hajime, Ebata, Takashi, and Kawakami Hiroshi, 5,006,646, Cl 536-23 000

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Yukishita, Takeshi, to Sanki System Product Co., Ltd Water purifying device 5,006,245, Cl. 210-256 000

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Yutaka, Yoshida; Kazuo, Onaga, Mariko, Hanada, and Kazunari, Komatsu, to Figaro Engineering, Inc., and Mazda Motor Corporation Exhaust gas sensor and process for producing same 5,006,828, Cl 338-34 000.

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Furer, Gerd; Heinzelmann, Karl-Fritz, and Osterloff, Kurt, 5,005,437, Cl. 74-467 000
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Zambias, Robert A., and Hammond, Milton L., to Merck & Co., Inc Novel 7-aroyl-4-hydroxy-3-methyl-benzofurans as dual inhibitors of cyclooxygenase and 5-lipoxygenase 5,006,549, Cl 514-444 000

Zanoli, Alain P B., and Recasens, Joseph, to Societe Europeenne des Produits Refractaires Refractory elements for the construction of heat regenerators. 5,005,635, Cl 165-9 100

Zardi, Umberto, and Pagani, Giorgio, to Ammonia Casale S A Reactors for heterogeneous synthesis 5,006,316, Cl 422-148 000

Zaretsky, Mark: *See*—
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Zdanowicz, Lawrence E.: *See*—
Bland, Gerald F., Mondek, Martin J.; and Zdanowicz, Lawrence E., 5,006,085, Cl. 440-75.000.
Zelenak nee Zoltai, Maria; and Berzsenyi, Las/ zlo , to Mester-Coop Elelmiszeripari es Ker. Leanyvallalat: Process for the production of an oxygenated restorative drink. 5,006,352, Cl. 426-67.000.
Zettler, Hans D.: *See*—
Weber, Reinhold; Weilbacher, Manfred; Tatzel, Hermann, Zuern, Ludwig, Zettler, Hans D., and Hinselmann, Klaus, 5,006,566, Cl 521-79.000.
Ziegenbein, Botho: *See*—
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Zilske, Wolfgang: *See*—
Kuhn, Werner; and Zilske, Wolfgang, 5,006,208, Cl. 204-44.000
Zimmer, Robert L.: *See*—
Rogers, Bobby E.; and Zimmer, Robert L., 5,006,114, Cl. 604-167.000.
Zimmerman, Earl A.: *See*—
Adelman, John P.; Bond, Chris T.; Nilaver, Gajanan, and Zimmerman, Earl A., 5,006,469, Cl. 435-240.100
Zimmerman, Harold M. Sludge/soil mixing machine. 5,005,980, Cl 366-162.000.
Zimmerman, Richard H.: *See*—
Dery, Ronald A., Deak, Frederick R., and Zimmerman, Richard H., 5,006,286, Cl. 264-40.200.
Zink, Deborah L.: *See*—
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Zoellner, Wolfgang: *See*—
Wahle, Bernd; Herold, Claus-Peter, Zoellner, Wolfgang, Schieferstein, Ludwig, and Oberkobusch, Doris, 5,006,621, Cl 526-262.000.
Zolk, Ralf, Kerth, Juergen; and Hemmerich, Rainer. Preparation of homopolymers and copolymers of propene by means of a Ziegler-Natta catalyst system. 5,006,620, Cl. 526-128.000
Zsuppan, Jozsef: *See*—
Kiss, Laszlo , Justus, Gyula, Zsuppan, Jozsef; and Knollmar, Tibor, 5,006,149, Cl. 71-81.000
Zuern, Ludwig: *See*—
Weber, Reinhold; Weilbacher, Manfred; Tatzel, Hermann; Zuern, Ludwig, Zettler, Hans D.; and Hinselmann, Klaus, 5,006,566, Cl 521-79.000.
Zumbrunnen, Michael L.: *See*—
Goth, Gary F., Moran, Kevin P.; and Zumbrunnen, Michael L., 5,005,638, Cl. 165-80.400.
Zurek, Thomas F.: *See*—
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501 Sirc Societe Industrielle de Reliure et de Cartonnage: *See*—
Desmoulhere, Georges, 5,005,870, Cl 281-21.100

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF APRIL, 1991

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AMCA International Corporation: *See*—
Heckelsberg, Robert E., Re. 33,566, Cl. 52-520.000
Camp, Ronnie W.: *See*—
Killip, Graham R., Camp, Ronnie W., and Orr, Clyde, Jr., Re. 33,567, Cl. 73-863.110.
Devices for Vascular Intervention, Inc.: *See*—
Gifford, Hanson S., III; and Simpson, John B., Re. 33,569, Cl 606-159.000.
General Electric Company: *See*—
Harnden, John D., Jr.; and Kornrumpf, William P., Re. 33,568, Cl 310-332.000
Gifford, Hanson S., III; and Simpson, John B., to Devices for Vascular Intervention, Inc. Single lumen atherectomy catheter device. Re. 33,569, Cl. 606-159.000
Harnden, John D., Jr., and Kornrumpf, William P., to General Electric Company. Piezoelectric ceramic switching devices and systems and methods of making the same. Re. 33,568, Cl. 310-332.000
Heckelsberg, Robert E., to AMCA International Corporation. Roofing structure. Re. 33,566, Cl. 52-520.000.
Killip, Graham R., Camp, Ronnie W.; and Orr, Clyde, Jr., to Micromeritics Instrument Corporation. Temperature controlling apparatus for use with pore volume and surface area analyzers. Re. 33,567, Cl 73-863.110.
Kornrumpf, William P.: *See*—
Harnden, John D., Jr.; and Kornrumpf, William P. Re. 33,568, Cl 310-332.000.
Micromeritics Instrument Corporation: *See*—
Killip, Graham R., Camp, Ronnie W., and Orr, Clyde, Jr., Re. 33,567, Cl 73-863.110
Orr, Clyde, Jr.: *See*—
Killip, Graham R., Camp, Ronnie W., and Orr, Clyde, Jr., Re. 33,567, Cl 73-863.110
Simpson, John B.: *See*—
Gifford, Hanson S., III; and Simpson, John B., Re. 33,569, Cl 606-159.000

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Gorin, Georges J., to Tegal Corp. Plasma reactor apparatus and method. B1 4,464,223, 4-9-91, Cl. 156-643.000
Tegal Corp.: *See*—
Gorin, Georges J., B1 4,464,223, Cl. 156-643.000

LIST OF DESIGN PATENTEES

Aaldenberg, Eric: *See*—
Hawes, Robert E., Jr., and Aaldenberg, Eric, 316,111, Cl. D19-85.000
Hawes, Robert E., Jr., and Aaldenberg, Eric, 316,113, Cl D19-90.000.
Hawes, Robert E., Jr., and Aaldenberg, Eric, 316,116, Cl. D19-92.000
Abe, Tetsuji, and Mishiro, Benito, to Matsushita Electric Industrial Co., Ltd.; and Solutions are Everything, Inc. Arithmetic processor for use in electronic computers. 316,083, 4-9-91, Cl. D14-102.000
Abrams, Robert C.: *See*—
Weder, Donald E.; Weder, Erwin H.; Weder, Wanda M.; Craig, Franklin J.; Donnelly, Wilma M., Bolk, Phyllis J.; Bergstrand, John W.; and Abrams, Robert C., 316,060, Cl. D11-164.000.
Adam, Georges; and Lardo, Claude, to Goodyear Tire & Rubber Company, The. Tire tread. 316,064, 4-9-91, Cl. D12-142.000.
Adhesive Technologies, Inc.: *See*—
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Adielsson, Michael, to Handeldesign V.B. Cord winder for ear phones. 316,030, 4-9-91, Cl. D8-358.000.
Ahearn, Kevin J.: *See*—
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American Sports Plastics, Inc.: *See*—
Guard, Twyman, 316,001, Cl. D6-601.000.
American Standard Inc.: *See*—
Levien, Robin, 315,989, Cl. D4-137.000
Ammond, Christopher B.: *See*—
McDermott, Bruce B., McDermott, Karen A., and Ammond, Christopher B., 316,119, Cl. D20-11.000
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Arianex Systemes: *See*—
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Arthur Eugster AG: *See*—
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Ball, Alma R. Table-top easel. 315,991, 4-9-91, Cl. D6-311.000.
Barber, John A., Jr. Restraining safety swing seat. 316,135, 4-9-91, Cl D21-246.000.
Barbuto, David. Oil lamp. 316,152, 4-9-91, Cl. D26-11.000.
Barth, Douglas A., and Hudson, Gregory C., to American Locker Group Incorporated. Security cabinet. 315,996, 4-9-91, Cl. D6-445.000.
Bauer, Thomas L. Locker receptacle. 315,999, 4-9-91, Cl. D6-567.000
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Blevins, Todd A. Travel clothing organizer 315,986, 4-9-91, Cl. D3-76.000.

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Clevenger, Dennis. Water cooler cabinet 316,003, 4-9-91, Cl. D7-306.000

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13 5,005,628
001 1 5,005,627
CLASS 159
3 5,006,204
CLASS 160
84 1 5,005,629
CLASS 164
16 5,005,630
97 5,005,631
122 5,005,632
334 5,005,633
CLASS 165
9 5,005,634
9 1 5,005,635
16 5,005,636
69 5,005,637
80 4 5,005,638
104 25 5,005,639
170 5,005,640
CLASS 166
63 5,005,641
241 5,005,642
250 5,005,643
272 5,005,644
280 5,005,645
293 5,005,646
295 5,005,647
5,005,648
308 5,005,649
339 5,005,650
381 5,005,651
CLASS 172
1 5,005,652
41 5,005,653
CLASS 173
12 5,005,654
CLASS 174
35 GC 5,006,666
35 R 5,006,667
75 C 5,006,668
93 5,006,669
106 SC 5,006,670
125 1 5,006,671
5,006,672
255 5,006,673
CLASS 175
66 5,005,655
306 5,005,656
CLASS 177
246 5,005,657
CLASS 180
8 1 5,005,658
65 1 5,005,659
117 5,005,660
219 5,005,661
233 5,005,662
247 5,005,663
287 5,005,664
CLASS 181
101 5,005,665
102 5,005,666
CLASS 182
15 5,005,667
121 5,005,668
CLASS 186
61 5,005,669
5,005,670
CLASS 187
1 R 5,005,671
17 5,005,672
52 LC 5,005,673
CLASS 188
24 11 5,005,674
24.14 5,005,675
218 XL 5,005,676
299 5,005,677
378 5,005,678
CLASS 190
110 5,005,679
CLASS 192
0.034 5,005,682
0.073 5,005,687
3.55 5,005,680
7 5,005,681
45 5,005,683
56 R 5,005,684
58 B 5,005,685
70.17 5,005,686
CLASS 194
206 5,005,688
CLASS 198
347 3 5,005,689
350 5,005,690
465 4 5,005,691
624 5,005,692
781 5,005,693
CLASS 200
19 R 5,006,674
51.09 5,006,675
61.52 5,006,676
61.89 5,006,677
83 S 5,006,678
144 R 5,006,679
293 5,006,680
409 5,006,681
429 5,006,682
CLASS 203
15 5,006,205
55 5,006,206
CLASS 204
18.1 5,006,207
44 5,006,208
67 5,006,209
180.1 5,006,210
182.4 5,006,211
192.14 5,006,212
5,006,213
197 5,006,214
253 5,006,215
257 5,006,216
297 R 5,006,217
298.06 5,006,218
298.16 5,006,219
298.33 5,006,220
426 5,006,221
CLASS 205
3 5,005,694
69 5,005,695
83.5 5,005,696
235 5,005,697
257 5,005,698
344 5,005,699
459 5,005,700
491 5,005,701
562 5,005,702
563 5,005,703
564 5,005,704
586 5,005,705
595 5,005,706
632 5,005,707
CLASS 208
33 5,006,222
125 5,006,223
254 H 5,006,224
CLASS 209
3.3 5,006,225
19 5,006,226
143 5,006,227
365.3 5,006,228
CLASS 210
94 5,006,230
96.1 5,006,231
5,006,232
5,006,233
98 5,006,234
136 5,006,235
162 5,006,236
168 5,006,237
169 5,006,238
181 5,006,239
223 5,006,240
225 5,006,241
232 5,006,242
5,006,243
243 5,006,244
256 5,006,245
264 5,006,246
321 89 5,006,229
500.25 5,006,248
500.38 5,006,247
603 5,006,249
610 5,006,250
618 5,006,251
635 5,006,252
636 5,006,253
639 5,006,254
640 5,006,255
645 5,006,256
650 5,006,257
677 5,006,258
692 5,006,259
708 5,006,260
712 5,006,261
719 5,006,262
727 5,006,639
728 5,006,263
741 5,006,264
5,006,265
748 5,006,266
755 5,006,267
CLASS 211
41 5,005,708
50 5,005,709
70 6 5,005,710
70.7 5,005,711
150 5,005,712
191 5,005,713
196 5,005,714
CLASS 213
62 A 5,005,715
CLASS 215
1 C 5,005,716
13 1 5,005,717
220 5,005,718
230 5,005,719
252 5,005,720
CLASS 219
10 51 5,006,683
10 55 E 5,006,684
69 12 5,006,691
5,006,692
5,006,693
69 2 5,006,685
99 5,006,686
121.59 5,006,687
121.6 5,006,694
121.63 5,006,268
130 4 5,006,688
363 5,007,103
385 5,006,690
494 5,006,695
505 5,006,696
CLASS 220
23 4 5,005,721
89 1 5,005,722
210 5,005,723
222 5,005,724
261 5,005,725
403 5,005,726
404 5,005,727
619 5,005,728
908 5,005,729
CLASS 221
71 5,005,730
CLASS 222
54 5,005,731
91 5,005,732
105 5,005,733
107 5,005,734
135 5,005,736
137 5,005,735
212 5,005,737
402 19 5,005,738
542 5,005,739
651 5,005,740
CLASS 223
85 5,005,741
87 5,005,742
CLASS 224
202 5,005,743
211 5,005,744
CLASS 226
24 5,005,745
101 5,005,746
190 5,005,747
5,005,748
CLASS 227
19 5,005,749
109 5,005,750
111 5,005,751
114 5,005,752
120 5,005,753
178 5,005,754
CLASS 228
126 5,005,755
127 5,005,756
178 5,005,757
CLASS 229
68 R 5,005,758
125 260 5,005,759
125 38 5,005,760
CLASS 232
1 C 5,005,761
CLASS 235
91 R 5,006,697
382 5,006,698
472 5,006,699
CLASS 239
20 5,005,762
57 5,005,763
79 5,005,764
135 5,005,765
214 5,005,766
288 5,005,767
417 5,005,768
429 5,005,769
CLASS 241
19 5,005,770
23 5,005,771
30 5,005,772
5,005,773
73 5,005,614
101 2 5,005,774
232 5,005,775
CLASS 242
18 PW 5,005,776
54 R 5,005,777
61 5,005,778
68 7 5,005,779
199 5,005,780
CLASS 244
3 26 5,005,781
53 B 5,005,782
97 5,005,783
136 5,005,784
152 5,005,785
161 5,005,786
163 5,005,787
231 5,005,788
CLASS 248
58 5,005,789
75 5,005,790
99 5,005,791
205 1 5,005,792
229 5,005,793
346 5,005,794
449 5,005,795
451 5,005,796
479 5,005,797
642 5,005,798
CLASS 249
19 5,005,799
175 5,005,800
211 5,005,801
CLASS 250
201 4 5,006,700
205 5,006,701
208.1 5,006,702
231.13 5,006,703
235 5,006,704
5,006,705
288 5,006,706
311 5,006,707
327.2 5,006,708
5,006,709
340 5,006,710
349 5,006,711
353 5,006,712
361 R 5,006,713
368 5,006,714
423 R 5,006,715
458 1 5,006,716
484 1 5,006,717
519 1 5,006,718
560 5,006,719
561 5,006,720
5,006,721
563 5,006,722
CLASS 251
1 3 5,005,802
129 15 5,005,803
215 5,005,804
229 5,005,805
CLASS 252
39 5,006,269
42 7 5,006,270
45 5,006,271
49 6 5,006,272
174 23 5,006,273
180 5,006,274
299 1 5,006,276
301 6 S 5,006,277
542 5,006,279
CLASS 260
424 5,006,281
CLASS 261
29 5,006,282
93 5,006,283
CLASS 264
1 3 5,006,285
9 5,006,284
40 2 5,006,286
41 5,006,287
46 6 5,006,288
61 5,006,289
65 5,006,290
103 5,006,291
127 5,006,292
137 5,006,293
138 5,006,294
139 5,006,295
210 7 5,006,296
234 5,006,297
512 5,006,298
CLASS 266
101 5,005,806
271 5,005,807
CLASS 267
64 27 5,005,808
103 5,005,809
140 1 5,005,810
220 5,005,811
CLASS 269
47 5,005,812
236 5,005,813
309 5,005,814
CLASS 270
1 001 5,005,815
39 5,005,816
CLASS 271
9 5,005,817
107 5,005,818
5,005,819
127 5,005,820
198 5,005,821
213 5,005,822
228 5,005,823
CLASS 272
67 5,005,824
73 5,005,825
94 5,005,826
102 5,005,827
103 5,005,828
130 5,005,829
134 5,005,830
136 5,005,831
137 5,005,832
CLASS 273
29 A 5,005,833
73 C 5,005,834
183 B 5,005,835
191 R 5,005,836
195 B 5,005,837
232 5,005,838
240 5,005,839
269 5,005,840
345 5,005,841
408 5,005,842
CLASS 279
29 5,005,843
CLASS 280
1 5 5,005,844
5,005,845
30 5,005,846
47 19 5,005,847
79 11 5,005,848
97 5,005,849
166 5,005,850
407 1 5,005,851
477 5,005,852
610 5,005,853
626 5,005,854
662 5,005,855
688 5,005,856
690 5,005,857
707 5,005,858
721 5,005,859
731 5,005,860
734 5,005,861
775 5,005,862
777 5,005,863
800 5,005,864
801 5,005,865
5,005,866
804 5,005,867
814 5,005,868
CLASS 281
15 1 5,005,869
21 1 5,005,870
CLASS 283
61 5,005,871
85 5,005,872
92 5,005,873
101 5,005,874
CLASS 285
73 5,005,875
311 5,005,876
315 5,005,877
319 5,005,878
405 5,005,879
CLASS 292
17 5,005,880
216 5,005,882
251 5 5,006,723
327 5,005,883
336.3 5,005,884
5,005,885
5,005,886
CLASS 293
120 5,005,887
CLASS 294
50 5,005,888
86 4 5,005,889
103 1 5,005,890
171 5,005,891

CLASS 296
3 5,005,892
21 5,005,893
68 1 5,005,894
97 8 5,005,895
100 5,005,896
192 5,005,897
194 5,005,898
214 5,005,899
CLASS 297
45 5,005,881
216 5,005,900
229 5,005,901
250 5,005,902
5,005,903
284 5,005,904
320 5,005,905
362 5,005,906
5,005,907
443 5,005,908
472 5,005,909
483 5,005,910
CLASS 299
31 5,005,911
CLASS 301
111 5,005,912
128 5,005,913
CLASS 303
9 63 5,005,914
22 2 5,005,915
103 5,005,916
113 5,005,917
114 5,005,918
119 5,005,919
CLASS 305
10 5,005,920
35 EB 5,005,921
5,005,922
CLASS 307
11 5,006,724
106 5,006,725
108 5,006,726
264 5,006,727
270 5,006,739
296.10 5,006,728
425 5,006,729
446 5,006,730
455 5,006,731
473 5,006,732
521 5,006,733
544 5,006,734
568 5,006,735
570 5,006,736
571 5,006,737
594 5,006,738
CLASS 310
50 5,006,740
68 D 5,006,741
71 5,006,765
88 5,006,742
89 5,006,743
5,006,744
177 5,006,745
239 5,006,747
258 5,006,748
323 5,006,746
5,006,749
332 Re 33,568
348 5,006,750
CLASS 312
201 5,005,923
237 5,005,924
282 5,005,925
CLASS 313
51 5,006,751
161 5,006,752
346 R 5,006,753
412 5,006,754
546 5,006,755
564 5,006,756
623 5,006,757
634 5,006,758
CLASS 315
5.41 5,006,759
111.21 5,006,760
111.91 5,006,761
205 5,006,762
248 5,006,763
276 5,006,764
CLASS 318
53 5,006,766
103 5,006,767
254 5,006,768
434 5,006,769
561 5,006,770
568.1 5,006,771
696 5,006,772
5,006,773
721 5,006,774
723 5,006,775
5,006,776
798 5,006,777
799 5,006,778
CLASS 320
2 5,006,779
54 5,006,780
CLASS 322
25 5,006,781
CLASS 323
225 5,006,782
263 5,006,783
343 5,006,784
CLASS 324
71.2 5,006,786
73.1 5,006,787
95 5,006,788
96 5,006,789
104 5,006,790
133 5,006,791
158 F 5,006,792
5,006,796
158 P 5,006,793
158 R 5,006,794
5,006,795
173 5,006,797
207.17 5,006,798
230 5,006,799
233 5,006,800
238 5,006,801
304 5,006,802
311 5,006,803
320 5,006,804
322 5,006,805
326 5,006,806
537 5,006,807
5,006,808
639 5,006,785
715 5,006,809
CLASS 328
167 5,006,810
CLASS 329
354 5,006,811
CLASS 330
2 5,006,812
4 3 5,006,813
107 5,006,814
253 5,006,815
5,006,816
261 5,006,818
CLASS 331
1 A 5,006,819
CLASS 333
33 5,006,820
112 5,006,822
116 5,006,821
164 5,006,823
197 5,006,824
245 5,006,825
CLASS 335
35 5,006,826
258 5,006,901
CLASS 337
361 5,006,827
CLASS 338
34 5,006,828
CLASS 340
448 5,006,844
459 5,006,829
572 5,006,856
573 5,006,830
5,006,831
574 5,006,832
611 5,006,833
625 5,006,834
626 5,006,835
710 5,006,836
724 5,006,837
781 5,006,838
784 5,006,839
5,006,840
825 07 5,006,841
825 31 5,006,843
825 34 5,006,842
853 5,006,845
870 28 5,006,846
994 5,006,847
CLASS 341
13 5,006,848
95 5,006,849
110 5,006,850
155 5,006,851
5,006,852
156 5,006,853
172 5,006,854
CLASS 342
357 5,006,855
CLASS 343
700 5,006,858
700 MS 5,006,857
5,006,859
742 5,006,860
848 5,006,861
CLASS 346
1 1 5,006,862
5,006,863
33 R 5,006,864
76 PH 5,006,865
5,006,866
5,006,870
140 R 5,006,867
157 5,006,868
159 5,006,869
CLASS 350
1 1 5,005,926
3 64 5,005,927
6 1 5,005,928
6 5 5,005,929
96.10 5,005,930
5,005,931
96 14 5,005,932
5,005,933
96 15 5,005,934
96 16 5,005,935
5,005,936
5,005,937
96 18 5,005,938
96 20 5,005,939
96 21 5,005,940
5,005,941
96 26 5,005,943
96 32 5,005,944
128 5,005,945
162.12 5,005,946
171 5,005,974
252 5,005,947
5,005,948
276 R 5,005,949
333 5,005,950
334 5,005,951
335 5,005,952
341 5,005,953
354 5,005,954
423 5,005,955
429 5,005,956
432 5,005,957
442 5,005,958
452 5,005,959
573 5,005,960
611 5,005,961
625 5,005,962
629 5,005,963
CLASS 351
50 5,005,964
119 5,005,965
221 5,005,966
CLASS 353
101 5,005,967
122 5,005,968
5,005,969
CLASS 354
76 5,006,871
79 5,006,872
106 5,006,873
212 5,006,874
299 5,006,875
400 5,006,876
412 5,006,877
5,006,878
413 5,006,879
427 5,006,880
484 5,006,881
CLASS 355
27 5,006,882
5,006,883
5,006,884
43 5,006,885
46 5,006,886
72 5,006,887
84 5,006,888
91 5,006,889
202 5,006,890
208 5,006,891
5,006,892
5,006,893
215 5,006,894
243 5,006,895
246 5,006,896
5,006,897
253 5,006,898
256 5,006,899
271 5,006,900
5,006,902
308 5,006,903
313 5,006,904
315 5,006,905
CLASS 356
1 5,005,970
30 5,005,971
135 5,005,972
152 5,005,973
237 5,005,975
312 5,005,976
367 5,005,977
372 5,005,978
375 5,005,979
CLASS 357
16 5,006,906
17 5,006,907
5,006,908
23.11 5,006,911
23.6 5,006,909
5,006,910
34 5,006,912
41 5,006,913
61 5,006,914
5,006,915
67 5,006,916
70 5,006,917
71 5,006,918
72 5,006,919
74 5,006,920
5,006,921
5,006,922
80 5,006,923
82 5,006,924
5,006,925
CLASS 358
12 5,006,926
31 5,006,927
98 5,006,928
105 5,006,929
133 5,006,930
5,006,931
160 5,006,932
236 5,006,933
296 5,006,934
300 5,006,935
335 5,006,936
456 5,006,937
466 5,006,938
CLASS 360
14.1 5,006,939
92 5,006,940
96.2 5,006,941
98.08 5,006,942
99.06 5,006,944
99.08 5,006,943
99 12 5,006,945
104 5,006,946
132 5,006,947
133 5,006,948
CLASS 361
18 5,006,949
117 5,006,950
220 5,006,951
283 5,006,952
309 5,006,953
321 5,006,954
5,006,955
5,006,956
5,006,957
335 5,006,958
384 5,006,959
390 5,006,960
413 5,006,961
417 5,006,962
5,006,963
504 5,006,964
CLASS 362
32 5,006,965
74 5,006,966
147 5,006,967
5,006,968
206 5,006,969
217 5,006,970
252 5,006,971
CLASS 363
24 5,006,972
34 5,006,973
60 5,006,974
80 5,006,975
CLASS 364
184 5,006,976
192 5,006,977
200 5,006,978
5,006,979
5,006,980
5,006,981
5,006,982
401 5,006,983
413 01 5,006,985
413 08 5,006,986
413 27 5,006,984
419 5,006,987
424 02 5,006,988
426 05 5,006,989
431 01 5,006,993
442 5,006,994
468 5,006,995
474 2 5,006,991
478 5,006,996
510 5,006,997
513 5,006,992
5,006,998
5,006,999
513 5 5,007,000
518 5,007,001
519 5,007,002
5,007,003
5,007,004
521 5,007,005
571 05 5,007,006
574 5,007,007
709 15 5,007,008
764 5,007,009
768 5,006,990
771 5,007,010
900 5,007,011
5,007,012
5,007,013
5,007,014
5,007,015
5,007,016
5,007,017
5,007,018
5,007,019
5,007,020
CLASS 365
122 5,007,021
189 04 5,007,022
201 5,007,026
203 5,007,023
207 5,007,024
226 5,007,025
229 5,007,027
233 5,007,028
CLASS 366
162 5,005,980
219 5,005,981
272 5,005,982
340 5,005,983
CLASS 367
4 5,007,029
136 5,007,032
153 5,007,030
178 5,007,031
CLASS 368
21 5,007,033
77 5,007,034
118 5,007,035
134 5,007,036
CLASS 369
44 11 5,007,038
100 5,007,037
116 5,007,039
270 5,007,040
CLASS 370
9 5,007,042
32.1 5,007,044
5,007,046
60 5,007,043
5,007,047
5,007,048
62 5,007,049
77 5,007,050
85 1 5,007,051
85 6 5,007,052
94 10 5,007,045
CLASS 371
21 1 5,007,053
32 5,007,054
5,007,055
37 1 5,007,056
66 5,007,057
CLASS 372
4 5,007,058
18 5,007,059
23 5,007,060
25 5,007,061
26 5,007,062
45 5,007,063
55 5,007,064
94 5,007,065
96 5,007,107
108 5,007,066
CLASS 374
29 5,005,984
44 5,005,985
179 5,005,986
CLASS 375
40 5,007,067
53 5,007,068
80 5,007,069
118 5,007,070
CLASS 376
159 5,006,299
203 5,006,300
259 5,006,301
260 5,006,302
282 5,006,303
316 5,006,304
353 5,006,305
CLASS 378
74 5,007,071
88 5,007,072
112 5,007,073
138 5,007,074
172 5,007,075
CLASS 379
67 5,007,076
5,007,077
75 5,007,078
145 5,007,079
269 5,007,080
354 5,007,081
CLASS 380
4 5,007,082
9 5,007,083
24 5,007,084
25 5,007,085
46 5,007,086
5,007,087
5,007,088
49 5,007,089
CLASS 381
26 5,007,091
36 5,007,092
46 5,007,093
47 5,007,094
51 5,007,095
60 5,007,090
CLASS 382
8 5,007,096
5,007,097
21 5,007,098
41 5,007,099
42 5,007,101
49 5,007,100
56 5,007,102
CLASS 384
43 5,005,987
44 5,005,988
94 5,005,989
130 5,005,990
208 5,005,991
484 5,005,992
CLASS 392
450 5,006,689
CLASS 400
120 5,005,993
124 5,005,994
144 2 5,005,995
196.1 5,005,996
197 5,005,997
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173 5,006,069
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521 5,006,078
607 5,006,079
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462 5,006,090

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	314	315,979		605	316,012			316,046			316,078		48	316,109		347	316,141
	622	315,980		608	316,013		28	316,047		146	316,080		65	316,110		364	316,142
D3—	31	315,981		624	316,014			316,048		147	316,079		85	316,111		371	316,143
	35	315,982		649	316,015			316,049			316,081		86	316,112	D24—	17	316,144
	37	315,983		673	316,016		32	316,050		151	316,082		90	316,113			316,145
	71	315,984		695	316,017		71	316,051	D14—	102	316,083			316,114		31	316,146
	76	315,985	D8—	14	316,018		78	316,052			316,084		91	316,115		51	316,147
		315,986		30	316,019			316,053		106	316,085		92	316,116			316,148
	77	315,987		61	316,020		104	316,054		113	316,086	D20—	4	316,117		54	316,149
D4—	108	315,988		68	316,021		116	316,055		114	316,087		6	316,118		64	316,150
	137	315,989		69	316,022	D11—	12	316,056		121	316,089		11	316,119	D25—	138	316,151
D5—	26	315,990		71	316,023		93	316,057		126	316,088	D21—	8	316,120	D26—	11	316,152
D6—	311	315,991		331	316,025		156	316,058		141	316,024		48	316,121		28	316,153
	328	315,992			316,026		158	316,059		143	316,090		95	316,122		63	316,154
	333	315,993		349	316,027		164	316,060			316,091		146	316,123			316,155
	427	315,994		354	316,028			316,061		157	316,092		192	316,124			316,156
	436	315,995			316,029			316,062		163	316,093		213	316,125			316,157
	445	315,996		358	316,030	D12—	131	316,063		165	316,094			316,126		87	316,158
	495	315,997		363	316,031		142	316,064			316,095			316,127		142	316,159
	498	315,998		400	316,032			316,065		196	316,096		214	316,128	D28—	1	316,160
	567	315,999	D9—	300	316,033		143	316,066		260	316,097		217	316,129		41	316,161
	572	316,000		338	316,034		146	316,067	D15—	7	316,098		218	316,130		49	316,162
	601	316,001		347	316,035		157	316,068			316,099		220	316,131		64	316,163
	603	316,002		423	316,036		162	316,069		19	316,100		230	316,132	D29—	12	316,164
D7—	306	316,003		425	316,037		169	316,070		27	316,101		232	316,133			316,165
	309	316,004		434	316,038		178	316,071		70	316,102		244	316,134		20	316,166
	311	316,005		436	316,039		190	316,072		139	316,103		246	316,135	D32—	22	316,167
	330	316,006	D10—	18	316,040		211	316,073	D16—	102	316,104	D23—	228	316,136		25	316,168
	366	316,007		21	316,041		303	316,074	D18—	19	316,105		242	316,137		66	316,169
	416	316,008		23	316,042	D13—	123	316,075		36	316,106		257	316,138	D34—	33	316,170
	536	316,009		25	316,043		133	316,076	D19—	20	316,107		303	316,139		40	316,171
	554	316,010			316,044												

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	5,005,563		5,005,568		5,006,158		5,006,872		5,006,195		5,006,069
	5,005,726		5,005,578		5,006,228		5,006,889		5,006,233		5,006,073
	5,006,284		5,005,582		5,006,230		5,006,923		5,006,404		5,006,081
	5,006,322		5,005,588		5,006,250		5,006,949		5,006,541		5,006,086
	5,006,662		5,005,590		5,006,252		5,006,959		5,006,547		5,006,108
	5,007,035		5,005,598		5,006,285		5,006,961		5,006,577		5,006,214
04	5,005,284		5,005,601		5,006,296		5,006,962		5,006,653		5,006,358
	5,005,286		5,005,615		5,006,299		5,006,963		5,006,833		5,006,382
	5,005,360		5,005,624		5,006,310		5,006,965		5,006,914		5,006,673
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	5,005,428		5,005,636		5,006,314		5,006,972		5,007,054		5,006,730
	5,005,470		5,005,641		5,006,317		5,006,974		5,007,104		5,006,799
	5,005,554		5,005,644		5,006,333		5,006,978	10	5,005,319		5,006,807
	5,005,604		5,005,649		5,006,336		5,006,984		5,005,320		5,006,861
	5,005,804		5,005,657		5,006,342		5,007,010		5,005,477		5,006,885
	5,005,924		5,005,666		5,006,343		5,007,012		5,005,631		5,006,950
	5,005,930		5,005,674		5,006,346		5,007,030		5,006,168		5,006,971
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	5,006,423		5,005,730		5,006,472		5,007,058		5,006,630		5,005,493
	5,006,486		5,005,732		5,006,474		5,007,060		5,006,992		5,006,116
	5,006,736		5,005,733		5,006,476		5,007,065	11	5,006,122		5,006,263
	5,006,737		5,005,781		5,006,477		5,007,068	12	5,005,224		5,006,490
	5,006,820		5,005,793		5,006,479		5,007,077		5,005,231		5,006,588
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	5,005,798		5,005,832		5,006,507		5,007,083		5,005,283		5,005,378
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	5,005,237		5,005,836		5,006,550		5,007,094		5,005,399	16	5,005,619
	5,005,238		5,005,866		5,006,554		4,464,223		5,005,416		5,006,142
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	5,005,331		5,005,936		5,006,723		5,005,784		5,005,599		5,005,312
	5,005,345		5,005,954		5,006,749		5,005,844		5,005,653		5,005,335
	5,005,357		5,005,981		5,006,759		5,006,002		5,005,667		5,005,340
	5,005,373		5,006,010		5,006,760		5,006,320		5,005,790		5,005,382
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For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987 and at 1091 O.G. 2 on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17,1990.

The search fee of the European Patent Office was changed due to a difference in the amount of the fee in German Marks and the exchange rate of the U.S. dollar in relation to the German Mark as of Jan. 3, 1991, and was announced in the *Official Gazette* at 1122 O.G. 564 on Jan 1, 1991.

International fees were changed on March 1, 1991 due to a difference in the exchange rate of the U.S. dollar in relation to the Swiss Franc and were announced in the *Official Gazette* at 1122 O.G. 629 on Jan. 22, 1991.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Apr. 17, 1989 and were announced in the *Official Gazette* at 1100 O.G. 24 on Mar. 7, 1989.

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USPTO was ISA but not IPEA	185.00	370.00
USPTO was neither ISA nor IPEA	250.00	500.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	18.00	36.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	60.00	120.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	60.00	120.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	30.00	30.00

Dec. 21, 1990

HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Apr. 17, 1989. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on April 12, 1988 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,736,466 through 4,737,993
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on April 10, 1984 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,441,211 through 4,442,550
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months are set forth in 37 CFR 1.20(e), and (f), as amended Nov. 5, 1990, which are reproduced below:

37 CFR § 1.20 Post-issuance fees and surcharges

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant.....$245.00

"(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant.....$495.00"

"(h) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Aug. 27,1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)).....$415.00
By other than a small entity.....$850.00"

"(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f)).....$835.00
By other than a small enttity.....$1670.00"

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(k), (l) and (m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27,1982.....$120.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity(§1.9(f)).....$60.00
By other than a small entity.....$120.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been unavoidable.....$550.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED FEBRUARY 3, 1991
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
Re. 31,827	06/555,295	02/05/85
(4,371,879)	(06/261,611)	(02/01/83)
4,370,786	06/235,443	02/01/83
4,370,790	06/218,218	02/01/83
4,370,811	06/233,010	02/01/83
4,370,821	06/256,654	02/01/83
3,370,861	06/333,224	02/01/83
4,370,864	06/218,838	02/01/83
4,370,878	06/232,733	02/01/83
4,370,880	06/269,877	02/01/83
4,370,910	06/221,413	02/01/83
4,370,911	06/343,232	20/01/83
4,370,912	06/244,113	02/01/83
4,370,926	06/229,997	02/01/83
4,370,930	06/220,478	02/01/83
4,370,934	06/224,026	02/01/83
4,370,944	06/228,682	02/01/83
4,370,950	06/325,196	02/01/83
4,370,962	06/246,618	02/01/83
4,370,965	06/257,467	02/01/83
4,371,016	06/242,618	02/01/83
4,371,022	06/266,716	02/01/83
4,371,037	06/216,452	02/01/83
4,371,040	06/296,369	02/01/83
4,371,045	06/249,783	02/01/83
4,371,072	06/218,775	02/01/83
4,371,080	06/236,420	02/01/83
4,371,089	06/299,387	02/01/83
4,371,100	06/229,953	02/01/83
4,371,107	06/324,082	02/01/83
4,371,112	06/233,573	02/01/83
4,371,116	06/222,549	02/01/83
4,371,123	06/239,006	02/01/83
4,371,135	06/228,576	02/01/83
4,371,144	06/252,956	02/01/83
4,371,145	06/307,464	02/01/83
4,371,160	06/240,478	02/01/83
4,371,174	06/219,833	02/01/83
4,371,196	06/248,471	02/01/83
4,371,202	06/218,647	02/01/83
4,371,215	06/221,569	02/01/83
4,371,220	06/224,845	02/01/83
4,371,224	06/219,695	02/01/83
4,371,246	06/234,595	02/01/83
4,371,268	06/219,910	02/01/83
4,371,270	06/266,611	02/01/83
4,371,273	06/225,688	02/01/83
4,371,275	06/263,100	02/01/83
4,371,295	06/245,454	02/01/83
4,371,309	06/237,929	02/01/83
4,371,312	06/248,829	02/01/83
4,371,316	06/246,652	02/01/83
4,371,317	06/232,687	02/01/83
4,371,341	06/253,359	02/01/83
4,371,344	06/260,043	02/01/83
4,371,353	06/256,508	02/01/83
4,371,372	06/278,210	02/01/83
4,371,375	06/322,179	02/01/83
4,371,386	06/265,260	02/01/83
4,371,395	06/280,717	02/01/83
4,371,410	06/280,195	02/01/83
4,371,421	06/254,871	02/01/83
4,371,424	06/276,073	02/01/83
4,371,426	06/293,065	02/01/83
4,371,437	06/243,435	02/01/83
4,371,444	06/261,853	02/01/83
4,371,456	06/255,221	02/01/83
4,371,457	06/218,312	02/01/83
4,371,462	06/341,216	02/01/83
4,371,469	06/258,482	02/01/83
4,371,490	06/235,603	02/01/83
4,371,492	06/302,698	02/01/83
4,371,499	06/258,974	02/01/83
4,371,523	06/220,779	02/01/83
4,371,549	06/268,945	02/01/83
4,371,555	06/313,834	02/01/83
4,371,557	06/226,671	02/01/83
4,371,560	06/318,388	02/01/83
4,371,567	06/251,770	02/01/83
4,371,568	06/263,771	02/01/83
4,371,569	06/306,753	02/01/83
4,371,572	02/235,753	02/01/83
4,371,573	06/322,547	02/01/83
4,371,577	06/372,139	02/01/83

Patent Number	Serial Number	Issue Date
4,371,598	06/280,593	02/01/83
4,371,617	06/244,857	02/01/83
4,371,623	06/233,031	02/01/83
4,371,631	06/289,142	02/01/83
4,371,634	06/321,709	02/01/83
4,371,638	06/294,521	02/01/83
4,371,649	06/283,943	02/01/83
4,371,654	06/273,504	02/01/83
4,371,658	06/239,835	02/01/83
4,371,665	06/334,454	02/01/83
4,371,668	06/242,031	02/01/83
4,371,683	06/356,292	02/01/83
4,371,686	06/302,119	02/01/83
4,371,714	06/221,237	02/01/83
4,371,715	06/305,535	02/01/83
4,371,722	06/277,815	02/01/83
4,371,725	06/326,646	02/01/83
4,371,773	06/249,376	02/01/83
4,371,775	06/251,058	02/01/83
4,371,776	06/277,729	02/01/83
4,371,804	06/288,910	02/01/83
4,371,823	06/219,966	02/01/83
4,371,857	06/261,312	02/01/83
4,371,877	06/256,349	02/01/83
4,371,880	06/293,490	02/01/83
4,371,881	06/269,568	02/01/83
4,371,900	06/227,612	02/01/83
4,371,908	06/345,356	02/01/83
4,371,913	06/217,721	02/01/83
4,371,914	06/217,722	02/01/83
4,371,915	06/217,723	02/01/83
4,371,944	06/225,508	02/01/83
4,371,972	06/227,833	02/01/83
4,639,946	06/783,612	02/03/87
4,639,948	06/734,926	02/03/87
4,639,955	06/760,031	02/03/87
4,639,959	06/762,684	02/03/87
4,639,961	06/645,346	02/03/87
4,639,964	06/731,446	02/03/87
4,639,965	06/734,330	02/03/87
4,639,973	06/720,672	02/03/87
4,639,975	06/738,232	02/03/87
4,639,977	06/834,163	02/03/87
4,639,989	06/721,442	02/03/87
4,640,006	06/745,099	02/03/87
4,640,012	06/737,781	02/03/87
4,640,013	06/529,854	02/03/87
4,640,016	06/810,913	02/03/87
4,640,018	06/822,399	02/03/87
4,640,026	06/668,104	02/03/87
4,640,027	06/790,108	02/03/87
4,640,030	06/618,565	02/03/87
4,640,031	06/551,371	02/03/87
4,640,034	06/733,998	02/03/87
4,640,035	06/409,025	02/03/87
4,640,038	06/776,540	02/03/87
4,640,043	06/744,752	02/03/87
4,640,044	06/755,856	02/03/87
4,640,045	06/704,964	02/03/87
4,640,052	06/832,842	02/03/87
4,640,054	06/692,966	02/03/87
4,640,063	06/765,140	02/03/87
4,640,070	06/842,572	02/03/87
4,640,072	06/793,697	02/03/87
4,640,073	06/825,792	02/03/87
4,640,075	06/818,204	02/03/87
4,640,076	06/763,524	02/03/87
4,640,078	06/706,560	02/03/87
4,640,091	06/817,056	02/03/87
4,640,094	06/825,848	02/03/87
4,640,103	06/765,627	02/03/87
4,640,107	06/807,967	02/03/87
4,640,109	06/618,671	02/03/87
4,640,114	06/696,230	02/03/87
4,640,130	06/665,800	02/03/87
4,640,136	06/680,378	02/03/87
4,640,137	06/739,676	02/03/87
4,640,140	06/684,864	02/03/87
4,640,142	06/493,934	02/03/87
4,640,144	06/764,795	02/03/87
4,640,146	06/488,495	02/03/87
4,640,154	06/530,733	02/03/87
4,640,164	06/729,599	02/03/87
4,640,176	06/662,345	02/03/87
4,640,177	06/665,139	02/03/87
4,640,189	06/818,995	02/03/87
4,640,191	06/765,272	02/03/87
4,640,194	06/676,661	02/03/87
4,640,203	06/802,246	02/03/87
4,640,215	06/824,639	02/03/87
4,640,223	06/853,690	02/03/87
4,640,226	06/790,507	02/03/87
4,640,231	06/738,472	02/03/87
4,640,232	06/655,575	02/03/87
4,640,242	06/642,871	02/03/87
4,640,259	06/720,238	02/03/87
4,640,260	06/821,046	02/03/87
4,640,263	06/720,031	02/03/87
4,640,268	06/709,512	02/03/87
4,640,269	06/635,834	02/03/87
4,640,272	06/540,402	02/03/87
4,640,277	06/611,507	02/03/87
4,640,278	06/642,422	02/03/87
4,640,279	06/763,549	02/03/87
4,640,282	06/706,547	02/03/87
4,640,284	06/757,380	02/03/87
4,640,297	06/694,091	02/03/87
4,640,300	06/682,772	02/03/87
4,640,307	06/555,690	02/03/87
4,640,310	06/686,206	02/03/87
4,640,313	06/563,065	02/03/87
4,640,315	06/803,716	02/03/87
4,640,318	06/810,879	02/03/87
4,640,326	06/694,603	02/03/87
4,640,334	06/804,667	02/03/87
4,640,339	06/819,297	02/03/87
4,640,343	06/649,669	02/03/87
4,640,346	06/843,713	02/03/87
4,640,348	06/792,278	02/03/87
4,640,359	06/797,354	02/03/87
4,640,365	06/726,802	02/03/87
4,640,371	06/744,607	02/03/87
4,640,372	06/801,294	02/03/87
4,640,377	06/628,586	02/03/87
4,640,382	06/644,982	02/03/87
4,640,383	06/825,224	02/03/87
4,640,384	06/849,120	02/03/87
4,640,385	06/747,557	02/03/87
4,640,388	06/698,904	02/03/87
4,640,401	06/730,006	02/03/87
4,640,417	06/721,225	02/03/87
4,640,418	06/720,997	02/03/87
4,640,420	06/543,750	02/03/87
4,640,424	06/840,523	02/03/87
4,640,425	06/599,425	02/03/87
4,640,426	06/826,921	02/03/87
4,640,430	06/809,866	02/03/87
4,640,444	06/632,083	02/03/87
4,640,447	06/665,758	02/03/87
4,640,450	06/735,891	02/03/87
4,640,455	06,846,835	02/03/87
4,640,456	06/788,390	02/03/87
4,640,464	06/699,145	02/03/87
4,640,466	06/718,570	02/03/87
4,640,467	06/755,519	02/03/87
4,640,469	06/766,425	02/03/87
4,640,472	06/808,062	02/03/87
4,640,476	06/738,368	02/03/87
4,640,482	06/653,901	02/03/87
4,640,483	06/704,790	02/03/87
4,640,486	06/744,934	02/03/87
4,640,487	06/723,740	02/03/87
4,640,490	06/840,687	02/03/87
4,640,493	06/747,978	02/03/87
4,640,495	06/694,354	02/03/87
4,640,508	06/679,257	02/03/87

Patent Number	Serial Number	Issue Date
4,640,509	06/731,917	02/03/87
4,640,510	06/615,311	02/03/87
4,640,511	06/676,114	02/03/87
4,640,515	06/827,735	02/03/87
4,640,516	06/829,933	02/03/87
4,640,518	06/672,480	02/03/87
4,640,519	06/581,224	02/03/87
4,640,520	06/698,483	02/03/87
4,640,528	06/760,595	02/03/87
4,640,537	06/817,459	02/03/87
4,640,539	06/789,320	02/03/87
4,640,543	06/680,551	02/03/87
4,640,590	06/747,359	02/03/87
4,640,594	06/649,983	02/03/87
4,640,597	06/700,157	02/03/87
4,640,598	06/798,389	02/03/87
4,640,608	06/250,929	02/03/87
4,640,614	06/679,570	02/03/87
4,640,623	06/795,345	02/03/87
4,640,626	06/757,445	02/03/87
4,640,632	06/369,756	02/03/87
4,640,637	06/612,081	02/03/87
4,640,642	06/693,666	02/03/87
4,640,651	06/685,612	02/03/87
4,640,659	06/684,106	02/03/87
4,640,662	06/740,735	02/03/87
4,640,674	06/815,488	02/03/87
4,640,678	06/780,666	02/03/87
4,640,679	06/661,041	02/03/87
4,640,680	06/735,993	02/03/87
4,640,681	06/771,156	02/03/87
4,640,683	06/588,590	02/03/87
4,640,684	06/780,023	02/03/87
4,640,692	06/759,386	02/03/87
4,460,694	06/668,370	02/03/87
4,640,701	06/720,784	02/03/87
4,640,705	06/511,513	02/03/87
4,640,713	06/672,966	02/03/87
4,640,721	06/741,525	02/03/87
4,640,735	06/698,379	02/03/87
4,640,744	06/573,112	02/03/87
4,640,745	06/767,285	02/03/87
4,640,756	06/736,164	02/03/87
4,640,759	06/710,130	02/03/87
4,640,763	06/787,196	02/03/87
4,640,767	06/675,470	02/03/87
4,640,771	06/439,167	02/03/87
4,640,796	06/801,877	02/03/87
4,640,797	06/861,048	02/03/87
4,640,803	06/766,816	02/03/87
4,640,808	06/692,681	02/03/87
4,640,810	06/619,946	02/03/87
4,640,826	06/813,168	02/03/87
4,640,842	06/764,711	02/03/87
4,640,847	06/690,523	02/03/87
4,640,858	06/666,272	02/03/87
4,640,869	06/731,222	02/03/87
4,640,885	06/749,665	02/03/87
4,640,895	06/432,848	02/03/87
4,640,896	06/514,828	02/03/87
4,640,899	06/747,199	02/03/87
4,640,904	06/747,536	02/03/87
4,640,912	06/502,446	02/03/87
4,640,915	06/476,860	02/03/87
4,640,916	06/803,217	02/03/87
4,640,918	06/764,370	02/03/87
4,640,923	06/816,936	02/03/87
4,640,925	06/828,377	02/03/87
4,640,928	06/782,508	02/03/87
4,640,936	06/714,385	02/03/87
4,640,937	06/757,523	02/03/87
4,640,938	06/664,120	02/03/87
4,640,961	06/748,060	02/03/87
4,640,976	06/763,867	02/03/87
4,640,977	06/852,487	02/03/87
4,640,979	06/630,194	02/03/87
4,640,984	06/637,200	02/03/87
4,640,989	06/633,538	02/03/87
4,640,990	06/566,461	02/03/87
4,641,003	06/669,184	02/03/87
4,641,004	06/699,794	02/03/87
4,641,011	06/780,257	02/03/87
4,641,012	06/778,908	02/03/87
4,641,015	06/691,641	02/03/87
4,641,046	06/745,475	02/03/87
4,641,051	06/710,093	02/03/87
4,641,063	06/807,324	02/03/87
4,641,080	06/683,083	02/03/87
4,641,091	06/650,699	02/03/87
4,641,100	06/385,228	02/03/87
4,641,106	06/736,302	02/03/87
4,641,107	06/736,346	02/03/87
4,641,114	06/761,598	02/03/87
4,641,117	06/759,979	02/03/87
4,641,120	06/797,574	02/03/87
4,641,123	06/666,387	02/03/87
4,641,125	06/779,480	02/03/87
4,641,126	06/679,186	02/03/87
4,641,132	06/652,501	02/03/87
4,641,134	06/653,268	02/03/87
4,641,149	06/768,319	02/03/87
4,641,163	06/456,613	02/03/87
4,641,177	06/809,844	02/03/87
4,641,198	06/687,003	02/03/87
4,641,203	06/568,737	02/03/87
4,641,209	06/555,892	02/03/87
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4,641,372	06/652,467	02/03/87
4,641,376	06/769,808	02/03/87
4,641,378	06/617,905	02/03/87

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in theindicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b).

4,715,620, Re. S. N. 07/662,730, Filed Mar. 1, 1991, Cl. 282/9, MANIFOLD FORM ASSEMBLY, Gary J. Thompson, Owner of Record: *Inventor*, Attorney or Agent: Andrew S. McConnel, Ex. Gp.: 326

4,761,058, Re. S. N. 07/562,108, Filed Aug. 2, 1990, Cl. 350/331T, BIASING LIQUID CRYSTAL DISPLAYS HAVING CAPACITORS AND TRANSISTORS, Yukitoshi Okubo, et al., Owner of Record: *Inventor*, Attorney or Agent: Steven E. Warner, Ex. Gp.: 254

4,761,140, Re. S. N. 07/559,689, Filed July 26, 1990, Cl. 439/621, FUSE BLOCK WITH REJECTION FEATURE, Gayle L. Sappingotn, Owner of Record: *Cooper Industries, Inc., Houston, Tex.*, Attorney or Agent: David A. Rose, Ex. Gp.: 322

4,802,444, Re. S. N. 07/638,812, Filed Jan. 8, 1991, Cl. 119/29, THERAPEUTIC PET TOY, Joseph P. Markham, et al., Owner of Record: *Bounce, Inc., Lakewood, Colo.*, Attorney or Agent: Gary D. Fields, Ex. Gp.: 333

4,809,422, Re. S. N. 07/665,423, Filed Mar. 6, 1991, Cl. 29/568, MACHINE TOOL WITH INDEX MEANS, Koichiro Kitamura, Owner of Record: *Kitamura Machinery Co., Ltd., Takaoka-Si, Japan*, Attorney or Agent: Jean D. Kuelper, Ex. Gp.: 322

4,913,998, Re. S. N. 07/664,535, Filed Mar. 4, 1991, Cl. 430/96, SILVER-BASED ELECTROSTATIC PRINTING MASTER, Allan Cairncross, et al., Owner of Record: *E. I. du Pont de Nemours and Company, Wilmington, De.*, Attorney or Agent: Alason G. Bowen, Ex. Gp.: 156

4,952,382, Re. S. N. 07/634,106, Filed Dec. 26, 1990, Cl. 423/244, PROCESS FOR REMOVING SULFUR OXIDES WITH AN ABSORBENT WHICH CONTAIN AN ANIONIC CLAY, Imanuel H. Vanbroekhoven, Owner of Record: *Akzo N.V., BM Arnhem, Netherlands*, Attorney or Agent: William P. Berridge, Ex. Gp.: 113

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

4,554,644, Reexam. No. 90/002,294, Requested Mar. 11, 1991, Cl. 365/154, STATIC RAM CELL, Peter C. Chen, et al., Owner of Record: *Fairchild Camera and Instrument Corp., (A. K. A. Fairchild Semiconductor Corp.,) Mountain View, Calif.*, Attorney or Agent: Micheal J. Pollock, Limbach, Limbach & Sutton, San Francisco, Calif., Ex. Gp.: 233, Requester: Owner

4,573,477, Reexam. No. 90/002,290, Requested Feb. 28, 1991, Cl. 128/663, ULTRASONIC DIAGNOSTIC APPARATUS, Koroku Namekawa, et al., Owner of Record: *Aloka Co., Ltd., Tokyo, Japan*, Attorney or Agent: William L. Androlia, Koda & Androlia, Los Angeles, Calif., Ex. Gp.: 335, Requester: Owner

4,641,668, Reexam. No. 90/002,291, Requested Feb. 28, 1991, Cl. 128/661, ULTRASONIC BLOOD FLOW IMAGING METHOD AND APPARATUS, Koroku Namekawa, Owner of Record: *Aloka Co., Tokyo, Japan*, Attorney or Agent: William L. Androlia, Koda & Androlia, Los Angeles, Calif., Ex. Gp.: 335, Requester: Owner

4,679,126, Reexam. No. 90/002,289, Requested Mar. 01, 1991, Cl. 362/226, MINIATURE LAMP ARRAYS HAVING IMPROVED LAMP RETENTION FEATURES, Robert H. Van Sickler, Owner of Record: *General Electric Corp., Cleveland, Ohio*, Attorney or Agent: John P. McMahon, Cleveland, Ohio, Ex. Gp.: 346, Requester: Owner

4,826,283, Reexam. No. 90/002,292, Requested Mar. 7, 1991, Cl. 350/096.12, LiB_3O_5 CRYSTAL AND ITS NONLINEAR OPTICAL DEVICES, Chen Chuangtian, et al., Owner of Record: *Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences, Fujian, China*, Attorney or Agent: Armstrong, Nikado, Marmelstein & Kubovcik, Washington, D.C., Ex. Gp.: 251, Requester: Owner

4,836,218, Reexam. No. 90/002,286, Requested Feb. 25, 1991, Cl. 128/773, METHOD AND APPARATUS FOR THE ACOUSTIC DETECTION AND ANALYSIS OF JOINT DISORDERS, Thomas Gay, et al., Owner of Record: *Arthroteck, Inc., Hartford, Conn.*, Attorney or Agent: Fishman, Dionne & Cantor, Windsor, Conn., Ex. Gp.: 335, Requester: Owner

4,838,552, Reexam. No. 90/002,293, Requested Mar. 8, 1991, Cl. 273/138A, MULTILINE SLOT MACHINE, Takashi Hagiwara, Owner of Record: *Sigma Enterprises, Inc., Tokyo, Japan*, Attorney or Agent: Brian D. Ogonowski, Skjerven, Morrill, MacPherson, et al., San Jose, Calif., Ex. Gp.: 334, Requester: Owner

4,904,922, Reexam. No. 90/002,287, Requested Feb. 27, 1991, Cl. 323/316, APPARATUS FOR CONVERTING BETWEEN DIGITAL AND ANALOG VALUES, Joseph H. Collies, Owner of Record: *Brooktree Corp., San Diego, Calif.*, Attorney or Agent: Roston & Schwartz, Los Angeles, Calif., Ex. Gp.: 212, Requester: Fliesler, Dubb, Meyer & Lovejoy, San Francisco, Calif.

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrants at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, their assigns or legal representatives shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

K.W.C., Inc., Beachwood, Ohio, Reg. No. 1,150,436, for the mark "THE BEAR NECESSITIES", Canc. No. 18,852.

No-Glug Jug Corp., Jacksonville, Fla., Reg. No. 764,868, for the mark "NO-GLUG" (stylized), Canc. No. 19,142.

Lakeside Industries, Inc., West Hartford, Conn., Reg. No. 988,835, for the mark "SKIL-BALL" (stylized), Canc. No. 19,219.

Hussein Kabil, dba Green Grove Citrus, McAllen, Tex., Reg. No. 1,060,458, for the mark "TOPPER" and design, Canc. No. 19,270.

Hussein Kabil, dba Green Grove Citrus, McAllen, Tex., Reg. No. 1,082,817, for the mark "SUPREME" design, Canc. No. 19,271.

Day-Off, Inc., Newport Beach, Calif., Reg. No. 1,311,951, for the mark "DAY-OFF" and design, Canc. No. 18,469.

Ivy Associates, Inc., Glencoe, Ill., Reg. No. 917,869, for the mark "IVY PERSONNEL", Canc. No. 19,160.

Republic Paint & Varnish Co., Chicago, Ill., Reg. No. 560,266, for the mark "CONTRACTOR'S", Canc. No. 19,218.

JEAN BROWN
Administrator of the
Trademark Trial and
Appeal Board
For JEFFREY M. SAMUELS
Assistant Commissioner for
Trademarks

PATENT NOTICES

Certificates of Correction For Week of April 16, 1991

Re. 33,041	4,858,253	4,888,756	4,903,143
Re. 33,135	4,860,960	4,888,791	4,903,556
4,629,514	4,863,436	4,889,291	4,903,681
4,714,055	4,863,852	4,889,398	4,903,930
4,735,889	4,863,883	4,889,525	4,904,516
4,760,044	4,864,301	4,889,614	4,904,782
4,774,096	4,866,248	4,890,290	4,905,297
4,777,861	4,866,324	4,890,325	4,906,121
4,778,282	4,866,494	4,890,772	4,906,674
4,782,856	4,866,710	4,890,986	4,907,169
4,785,487	4,867,475	4,891,207	4,907,476
4,786,309	4,870,391	4,891,610	4,907,490
4,786,766	4,871,136	4,892,282	4,907,680
4,796,359	4,871,979	4,892,579	4,907,699
4,810,749	4,873,607	4,892,630	4,907,742
4,811,250	4,874,924	4,892,947	4,907,977
4,816,394	4,875,059	4,893,038	4,908,694
4,816,942	4,875,885	4,893,051	4,909,252
4,824,680	4,876,332	4,893,138	4,909,650
4,829,929	4,877,040	4,894,199	4,910,813
4,830,498	4,877,051	4,894,302	4,911,536
4,835,104	4,877,853	4,895,627	4,911,643
4,835,412	4,878,086	4,895,662	4,911,695
4,839,385	4,878,261	4,895,711	4,912,217
4,843,617	4,879,470	4,895,865	4,912,558
4,844,560	4,880,507	4,896,233	4,916,476
4,845,262	4,880,657	4,896,237	4,917,453
4,849,010	4,880,702	4,896,683	4,917,490
4,850,575	4,880,997	4,897,610	4,918,020
4,851,526	4,881,543	4,897,700	4,821,606
4,851,768	4,882,282	4,897,750	4,922,053
4,852,376	4,883,026	4,898,031	4,930,807
4,853,084	4,883,294	4,898,437	4,943,573
4,853,319	4,884,079	4,899,106	4,956,901
4,855,586	4,884,499	4,899,166	4,961,991
4,855,753	4,884,666	4,900,053	4,965,094
4,856,862	4,885,183	4,900,258	4,973,644
4,856,869	4,885,712	4,901,335	4,976,082
4,857,768	4,886,978	4,901,403	4,987,244

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Since there are variations in the scope of patent collections among the PDLs and in their hours of service to the public, anyone contemplating use of the patents at a particular library is urged to contact that library, in advance, about its collection and hours in order to avert possible inconvenience.

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PATENT EXAMINING CORPS

JAMES E. DENNY, Acting Assistant Commissioner
STEPHEN G. KUNIN, Acting Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone Number Area Code 703
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	308-0661
ORGANIC CHEMISTRY GROUP 120—JOHN F. TERAPANE, JR., Director	308-1235
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP— 130 BARRY S. RICHMAN, Director	308-0651
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	308-2351
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GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350— A. L. SMITH, Director	308-0651

Expiration of patents: The patents within the range of numbers indicated below expire during March 1991 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,795,014 to 3,800,328 inclusive
Plant Patents ..... 3,501 to 3,534 inclusive

REEXAMINATIONS

APRIL 16, 1991

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification, matter printed in italics indicates additions made by reexamination.

B2 4,480,214 (1448th)

STARTER CIRCUIT FOR GASEOUS DISCHARGE LAMP

Gregory L. Sodini, Memphis, Tenn., assignor to Fl Industries, Livingston, N.J.

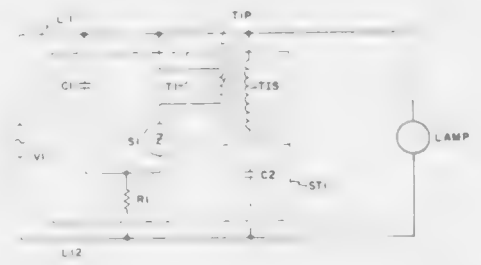
Reexamination Request No. 90/001,845, Sep. 19, 1989.

Reexamination Certificate for Patent No. 4,480,214, issued Oct. 30, 1984, Ser. No. 369,262, Apr. 16, 1982.

Reexamination Certificate B1 4,480,214, issued Jan. 31, 1989.

Int. Cl.[4] **H05B** *41/14*

U.S. Cl. 315—290



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–14** are cancelled.

[1. A starter for a gaseous discharge lamp adapted to be powered across the two conductors from an alternating current source, the starter circuit being connected across the two conductors in parallel with said lamp, said starter circuit including a first and second path both in parallel across the source, said first path including a series resistance-capacitance network in which there is a choke coil in series resistance with the resistance of said resistance capacitance network and further with the combination of a voltage threshold sensitive switch and pulse transformer primary in parallel with the capacitance of said network, said switch being adapted to close a circuit to the primary of the transformer when the threshold voltage of the switch is reached by the network, and said second path including the secondary of said pulse transformer coupled across said two conductors for transmitting high voltage, high frequency pulses to said lamp to start said lamp, with said pulse transformer having a turns ratio of approximately one to thirty to generate high voltage, high frequency starting current from said transformer secondary for starting said lamp.]

B1 4,489,022 (1449th)

FORMING COHERENT REFRACTORY MASSES

Pierre Robyn, Nivelles, and Pierre Deschepper, Charleroi, both of Belgium, assignors to Glaverbel SA, Brussels, Belgium

Reexamination Request No. 90/001,894, Nov. 20, 1989.

Reexamination Certificate for Patent No. 4,489,022, issued Dec. 18, 1984, Ser. No. 420,502, Sep. 17, 1982.

Claims priority, application United Kingdom, Nov. 25, 1981, 8135569

Int. Cl.[5] **F27D** *1/16*

U.S. Cl. 264—30

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13** and **14** is confirmed.

New claims **15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27** and **28** are added and determined to be patentable.

1. A process of forming a refractory mass comprising burning particles of exothermically oxidisable material having an average grain size less than 50 μm while mixed with particles of incombustible refractory material during projection of the mixture against a surface to form a coherent refractory mass on said surface, said oxidisable material comprises silicon and aluminum, the aluminium being present in an amount not exceeding 9% by weight of the total mixture, and wherein the aluminum and silicon are together present in an amount not exceeding 15% by weight of the total mixture.

B1 4,732,026 (1450th)

METHOD OF LAP WELDING EVENTUAL CAN BLANK CONSISTING OF METAL SHEET OR THE LIKE

Kunikatsu Ban, Mie, Japan, assignor to N.P.W. Technical Laboratories, Mie, Japan

Reexamination Request No. 90/001,872, Oct. 30, 1989.

Reexamination Certificate for Patent No. 4,732,026, issued Mar. 22, 1988, Ser. No. 838,502, Mar. 11, 1986.

Claims priority, application Japan, Mar. 11, 1985, 60-48699

Int. Cl.[4] **B21D** *39/02, 51/28;* **B23K** *11/06*

U.S. Cl. 72—52

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–4** are cancelled.

New claims **6** and **8** (renumbered **6** and **5**) are added and determined to be patentable.

5. A method of lap welding a blank of metal sheet or a covered metal sheet to form a can, comprising the steps of; overlapping both edge portions of the blank to form a lap joint having a width being less than three times the thickness of said blank, simultaneously heating and applying a pressure to the lap joint in an air atmosphere by feeding the lap joint between upper and lower wire electrodes held by upper and lower roller electrodes, respectively, thereby welding the lap joint, said lap joint being electrically heated during application of pressure to said lap joint between upper and lower wire electrodes, each of said upper and lower electrodes having a contact width more than three times width of said lap joint, wherein sequences of thermal press bond sections are formed without the formation of a melting zone in said air atmosphere, each of said thermal press bond sections having a vicker's hardness ranging from 170 to 210, and the center-to-center distance between adjacent thermal press bond sections being set to be in a range of 0.8±0.2 mm.

B1 4,773,812 (1451st)

RECEPTACLE LIFT AND SLIM PROFILE POWER UNIT THEREFOR

Jimmy O. Bayne, and Robert E. Wyman, both of Simpsonville, S.C., assignors to Bayne Machine Works, Inc.

Reexamination Request No. 90/001,993, Apr. 10, 1990.

Reexamination Certificate for Patent No. 4,773,812, issued Sep. 27, 1988, Ser. No. 44,045, Apr. 29, 1987.

Int. Cl.[5] **B65F** *3/02*

U.S. Cl. 414—408

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–15** is confirmed.

Claims 22–24 are cancelled.

Claims 16, 19–21, and 25 are determined to be patentable as amended.

Claims 17, 18, 26 and 27, dependent on an amended claim, are determined to be patentable.

New claims 28–31 are added and determined to be patentable.

25. A hydraulic rotary motor [as in claim 24 further], comprising:

housing means adapted for the controlled flow of hydraulic fluids therethrough, said housing means being defined by joined upper and lower blockheads, and having hydraulic fluid ports on opposing ends thereof for the complementary flow of fluids therethrough relative said housing means;

piston means received in said housing means for controlled reciprocably movement therein actuated by the passage of hydraulic fluid through said housing means in one direction therethrough at a time, with complementary fluid exit and entry through said opposing end fluid ports, said piston means including a piston rod supporting rack teeth thereon;

pinion gear output shaft means, operatively associated with said housing means and projecting therefrom through an opening defined with a cooperating seal member to prevent escape of any hydraulic fluid from said housing means other than through one of said fluid ports thereof, for being rotatably driven by engagement of pinion teeth thereof with said rack teeth of said piston means;

whereby said output shaft means may be rotated for driving a load by controlled reciprocable movement of said piston means in one direction at a time with said pinion teeth and rack teeth immersed in said hydraulic fluid within said housing means for maintenance-free lubrication thereof;

said housing means includes at least one cylinder for reciprocable receipt of said piston means, with said piston rod thereof being reciprocably movable on approximately one longitudinally bi-sected side of said cylinder, and said output shaft means being receivable in generally the other longitudinally bi-sected side of said cylinder so that engagement of said pinion and rack teeth is provided within said cylinder, whereby hydraulic fluid received in such cylinder provides lubrication for such teeth;

said output shaft means is rotatably mounted transversely to the direction of movement of said piston rod, and includes two opposing ends which project from said housing means, both of which are adapted for rotatably driving a load secured thereto;

a second cylinder substantially parallel with said first cylinder and radially displaced therefrom, such that rack teeth supported on a piston rod reciprocally received in such [second] cylinder also engage said pinion teeth of said output shaft means[.], and

means for supplying hydraulic fluid to said second cylinder so that said rack teeth on said piston rod of said second cylinder and said rack teeth of said piston rod of said first mentioned cylinder jointly drive said output shaft in one direction or the other.

REISSUES

APRIL 16, 1991

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue

Re. 33,570

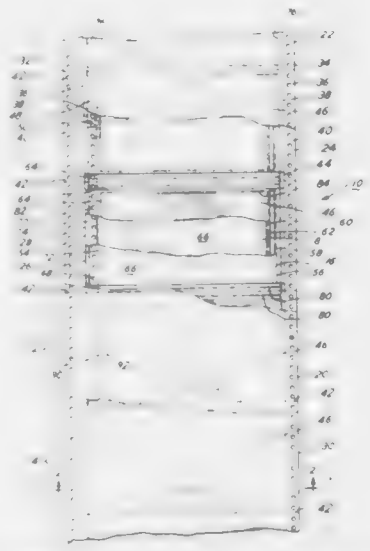
CONTINUOUS FILLED ENVELOPE ASSEMBLY WITH NON-MARGINAL SPACED FEED HOLES

Robert E. Ashby, Quakertown, Pa., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Original No. 4,645,123, dated Feb. 24, 1987, Ser. No. 282,589, Jul. 13, 1981. Application for reissue Dec. 14, 1988, Ser. No. 284,385

Int. Cl.[5] B65D *27/10*

U.S. Cl. 229—69 **12 Claims**



1. A continuous business form assembly constituting a filled envelope assembly and comprising four webs, each of three of the webs being continuous in a longitudinal direction and having two spaced marginal edges in a transverse direction, a marginal row of spaced feed holes extending along a each marginal edge, a line of marginal perforations extending along each marginal row of spaced feed holes, the marginal row of spaced feed holes and marginal perforations thereby defining two continuous, marginal feed strips along the two marginal edges, and each of the three webs further having a line of non-marginal perforations adjacent a first of the lines of marginal perforations and two spaced transverse lines of perforations, the line of non-marginal perforations defining a non-marginal strip adjacent one of the marginal feed strips and the transverse lines of perforations defining a sheet on the web;

the three webs being superimposed with the feed holes, perforations, feed strips, and sheets thereof superimposed and the three webs being attached along the non-marginal strips;

two of the three webs being first and second webs and the other of the three webs being an intermediate third web located between the first and second webs, the intermediate third web defining transversely extending die cuts along the transverse lines of perforations of the intermediate third web between the marginal lines of perforations thereof, the die cuts thereby interrupting the transverse lines of perforations of the intermediate web between the marginal lines of perforations thereof;

the first web being attached to the second web along the transverse lines of perforations and through the die cuts, to form an envelope of the sheets of the first and second webs and an envelope insert of the the third web;

the intermediate third web having a non-marginal row of spaced feed holes extending along the line of non-marginal perforations of the intermediate third web in the non-marginal strip of the intermediate third web, the non-marginal strip of the third web thereby being a non-marginal feed strip;

the continuous business form assembly further comprising a non-continuous fourth web superimposed on the intermediate third web between the intermediate third web and the first web, the non-continuous fourth web having transverse edges in the transverse direction along the die cuts and marginal edges spaced in the transverse direction, one of the marginal edges of the non-continuous fourth web extending along the first of the lines of marginal perforations of the third web, the fourth web further having a line of marginal perforations superimposed upon the line of non-marginal perforations of the third web and a row of spaced feed holes superimposed on the non-marginal row of spaced feed holes of the third web, the non-continuous fourth web being attached along the non-marginal strip of the third web to the third web.

5. A continuous business form assembly constituting a filled envelope assembly and comprising four webs, each of three of the webs being continuous in a longitudinal direction and having two spaced marginal edges in a transverse direction, a marginal row of spaced feed holes extending along each marginal edge, the marginal row of spaced feed holes thereby defining two continuous, marginal feed strips along the two marginal edges, and each of the three webs further having a line of non-marginal perforations and two spaced transverse lines of perforations, the line of non-marginal perforations defining a non-marginal strip adjacent one of the marginal feed strips; and the transverse lines of perforations defining a sheet on the web;

the three webs being superimposed with the feed holes, perforations, feed strips, and sheets thereof superimposed and the three webs being attached along the non-marginal strips;

two of the three webs being first and second webs and the other of the three webs being an intermediate third web located between the first and second webs, the intermediate third web defining transversely extending die cuts along the transverse lines of perforations of the intermediate third web between the marginal feed strips thereof, the die cuts thereby interrupting the transverse lines of perforations of the intermediate web between the marginal feed strips thereof;

the first web being attached to the second web along the transverse lines of perforations and through the die cuts, to form an envelope of the sheets of the first and second webs and an envelope insert of the third web;

the intermediate third web having a non-marginal row of spaced feed holes extending along the line of non-marginal perforations of the intermediate third web in the non-marginal strip of the intermediate third web, the non-marginal strip of the third web thereby being a non-marginal feed strip;

the continuous business form assembly further comprising a non-continuous fourth web superimposed on the intermediate third web between the intermediate third web and the first web, the non-continuous fourth web having transverse edges in the transverse direction along the die cuts and marginal edges spaced in the transverse direction, one of the marginal edges of the non-continuous fourth web extending along the first of the marginal feed strips of the third web, the fourth web further having a line of marginal perforations superimposed upon the line of non-marginal perforations of the third web and a row of spaced feed holes superimposed on the non-marginal row of spaced feed holes of the third web, the non-continuous fourth web being attached along the non-marginal strip of the third web to the third web.

9. A continuous business form assembly including a plurality of filled envelope assemblies, each of which includes at least a pair of first and second outer webs which comprise a plurality of first

envelopes, said first and second outer webs extending continuously in a longitudinal direction, each of said first envelopes being defined in part by transversely extending lines of perforations spaced longitudinally of each other along said first and second webs; said first and second webs having a plurality of feed holes arranged longitudinally along marginal edges of said first and second webs; each of said assemblies further comprising a pair of insert envelope webs and an insert web, wherein at least one of said pair of insert envelope webs and said insert web are laterally abbreviated with respect to said first and second outer webs, and another of said pair of insert envelope webs and said insert web extend across the entire width of the web, and further wherein said pair of insert envelope webs and said insert web each include feed means permitting said insert envelope webs and said insert web to be fed independently of said first and second outer webs.

Re. 33,571

SYSTEM AND METHOD FOR AUTOMATIC TRANSACTION

Kenichi Takahashi, Niigata, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Original No. 4,692,600, dated Sep. 8, 1987, Ser. No. 736,702, May 22, 1985. Application for reissue Sep. 8, 1989, Ser. No. 404,906

Claims priority, application Japan, Jul. 31, 1984, 59-159060

Int. Cl.[5] G06K *5/00*

U.S. Cl. 235—379 **43 Claims**



11. A system for automatic banking transactions, comprising:

medium reader means for receiving a medium from a customer and for reading data from said medium in which information identifying said customer is recorded;

an operation unit provided with at least one combination transaction selection key to input the selection of the combination transaction, and at least one number key to input numerical values by the customer;

display means for displaying instructions and data for operation to the customer;

control means for identifying the customer in response to the information identifying said customer and providing customer banking information;

said control means further performing a first banking transaction based upon said customer banking information and one selection of said combination transaction selection key and thereafter performing a second banking transaction based upon the customer banking information and said selection of the combination transaction selection key with automatic flow from the first banking transaction to the second banking transaction in response to only one reading data from said medium and only one selection of said combination transaction selection key.

Re. 33,572

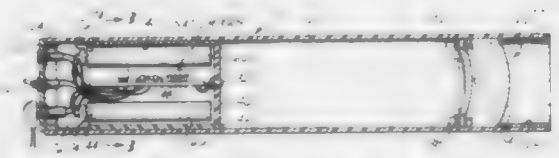
INVISIBLE LIGHT BEAM PROJECTOR AND NIGHT VISION SYSTEM

Brad E. Meyers, c/o B.E. Meyers Co. Inc., 17525 NE. 67th Ct., Redmond, Wash. 98052

Original No. 4,707,595, dated Nov. 17, 1987, Ser. No. 3,253, Dec. 29, 1986. Continuation of Ser. No. 694,444, Jan. 30, 1985, abandoned. Application for reissue Jul. 13, 1989, Ser. No. 379,271

Int. Cl.[5] G01J *1/00*

U.S. Cl. 250—504 R **46 Claims**



1 An invisible light beam projector, comprising a tubular body having a forward end and a rearward end;

an invisible light beam emitting diode having an emitting lens,

mounting means inside of said tubular body mounting the diode at a location within the body, between the two ends of the body, with the lens of the diode directed towards the forward end of the body;

control circuit means for *causing* the diode [adapted] to be repetitiously charged and discharged, and on each discharge causing the diode to light and transmit a narrow beam of invisible light through the emitting lens towards the forward end of the tubular body, said control circuit means functioning to turn the diode on and off at a rate resulting in the diode being on between about 10–20% of the time and off during the remainder of the time, and when on being powered by a current that is substantially larger than the diode could stand if on continuously, and

projection lens means within the tubular body, forwardly of the diode, of a type which is always in focus in a range between a predetermined minimum distance from the light projector and infinity, said projection lens means being positioned and adapted to receive the narrow beam of invisible light from the diode lens and enlarge and collimate this light into a collimated beam of invisible light in sharp focus, to produce a lighting spot having a sharp and definite edge

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Re. 33,573

FOLDING ICE-CREAM CARTON, CARTON BLANK AND METHOD

Thomas W. Froom, 10 Burncoat Way, Pittsford, N.Y. 14534

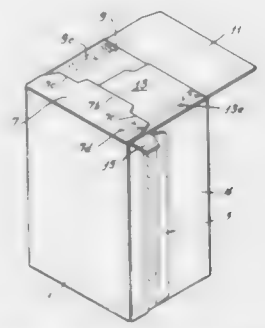
Original No. 4,526,563, dated Jul. 2, 1985, Ser. No. 530,367, Sep. 8, 1983. Division of Ser. No. 331,557, Dec. 17, 1981, Pat. No. 4,431,129, which is a division of Ser. No. 158,167, Jun. 10, 1980, Pat. No. 4,328,656, which is a division of Ser. No. 842,747, Oct. 17, 1977, Pat. No. 4,239,115. Application for reissue Mar. 9, 1987, Ser. No. 23,845

Int. Cl.[5] B65B *43/08, 43/26*

U.S. Cl. 493—151 **17 Claims**

1 A method for closing an end of a carton tube formed of front, rear, cover, and bottom panels fastened together into a tube by means of a front cover flap fastened to the front panel, having respectively connected to said panels and said front cover flap, by fold lines, front and rear panel inner end wall-forming flaps, one of which is adapted to overlie the other when they are folded in; a side cover flap having a tuck-in tab projecting from the mid-portion thereof, which side cover flap is adapted, when it is folded in, to overlie the overlying inner end wall-forming flap; a bottom panel flap adapted, when folded in, to overlie the tuck-in tab of the side cover flap; and, a glue-flap extension of the front cover flap adapted, when folded in, to overlie the fold-in side cover flap, which method

comprises folding in one of the inner end wall-forming flaps, folding in the other inner end wall-forming flap so that it overlies the one already folded in, folding in the side cover flap thereover, applying strips of glue along and adjacent the fold lines between the folded-in inner end wall-forming flaps and the panels to which they are connected, the glue strip adjacent the rear panel [being terminated short of the folded-down side cover flap and] being disposed between the tuck-in tab and the rear panel, and the other glue strip extending up over the folded-down side cover flap between the tuck-in tab and the front panel, and then folding the outer end wall-forming flap



and the glue-flap extension into contact with said glue strips and causing them to adhere thereto [without a mandrel].

PLANT PATENTS

GRANTED APRIL 16, 1991

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing

7,496

MINIATURE ROSE PLANT NAMED 'LUIS DESAMERO'

Cecilia D. Bennett, deceased, late of Chula Vista, Calif., by Susan O'Brien, executrix, assignor to Susan O'Brien, special administrator, Chula Vista, Calif.

Filed Jan. 2, 1990, Ser. No. 460,233
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—8 **1 Claim**

1. A new and distinct variety of miniature rose plant named, 'Luis Desamero' of hardy, dwarf, vigorous growth, well-branched and attractive in appearance, substantially as illustrated and described, characterized by its hybrid tea-form blooms, ranging from near Primrose Yellow to near Mimosa Yellow, with flowers borne usually one to a stem but occasionally in sprays of 3 to 5 or more.

7,497

ALMOND TREE, CRUZ

Irwin H. Bonds, Hilmar, Calif., assignor to Ruben A. Cruz, Modesto, Calif.

Filed Oct. 16, 1989, Ser. No. 422,412
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—30 **1 Claim**

1. A new and distinct variety of almond tree substantially as illustrated and described and which is somewhat similar to the Nonpareil almond tree (believed unpatented) which matures at approximately the same time of the season, but which is distinguished therefrom and characterized principally as to novelty, by producing a crop which is ripe for commercial harvesting and shipment approximately seven to ten days after the Nonpareil variety of almond tree and which further has a longer blooming period than the Nonpareil variety of almond tree, the new variety of almond tree "Cruz" facilitating the pollenization of other almond trees growing in the immediate geographical vicinity thereof.

7,498

HEATHER PLANT NAMED ERICA 'AUGUSTINA'

Bruno L. Imazio, 197 Sunset Beach Rd., Watsonville, Calif. 95076

Filed Aug. 14, 1989, Ser. No. 393,674
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—54 **1 Claim**

1. A new and distinct cultivar of Heather plant named Erica 'Augustina', substantially as herein shown and described characterized particularly as to novelty by its early blooming habit; attractive deep, rich rose-magenta color; and vigorous long stems desirable for cut flowers.

7,499

GERANIUM PLANT NAMED FISPOL

Ingeborg Schumann, Hoehr-Grenzhausen, Fed. Rep. of Germany, assignor to Florfis AG, Binningen, Switzerland

Filed Oct. 25, 1989, Ser. No. 426,564
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of geranium plant named Fispol, as illustrated and described.

7,500

CHRYSANTHEMUM PLANT NAMED DESIREE

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Nov. 14, 1989, Ser. No. 435,820
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct Chrysanthemum plant named Desiree, as described and illustrated.

7,501

AGLAONEMA PLANT NAMED SUPERBA

B. Frank Brown, Palm Bay, Fla., assignor to Hartman Plant Laboratories, Inc., Sebring, Fla.

Filed Jul. 5, 1989, Ser. No. 375,603
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—88 **1 Claim**

1. A new and distinct cultivar of Aglaonema plant named 'Superba', as described and illustrated.

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PATENTS

GRANTED APR. 16, 1991

ERRATA

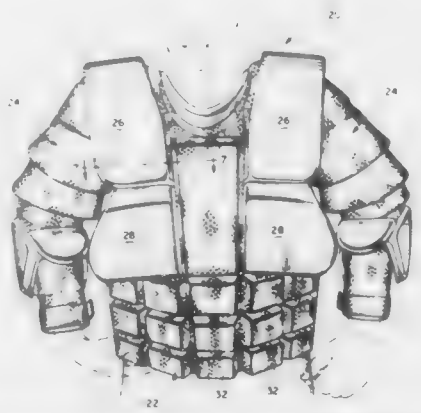
For CLASS	See PATENT NO.
047-073	5,007,135
074-866	5,007,147
280-248	5,007,498
296-097	5,007,532
222-571	5,007,557
223-089	5,007,562
424-451	5,007,790
434-206	5,007,840
439-189	5,007,888
204-192	5,008,003
106-450	5,008,223
503-207	5,008,231
503-227	5,008,232
585-011	5,008,460
235-483	5,008,552
323-315	5,008,586
364-200	5,008,786

PATENTS

GRANTED APRIL 16, 1991

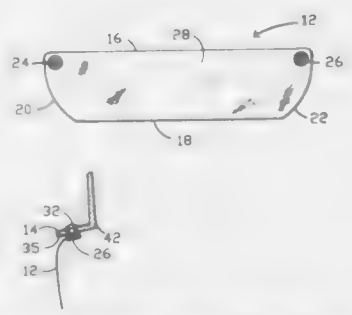
GENERAL AND MECHANICAL

5,007,108
CHEST PROTECTOR
Raymond Laberge, St. Luc, and Robert Beauregard, L'Acadie, both of Canada, assignors to Sport Maska Inc., St. Hyacinthe, Canada
Filed Aug. 29, 1989, Ser. No. 399,883
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—2 **18 Claims**



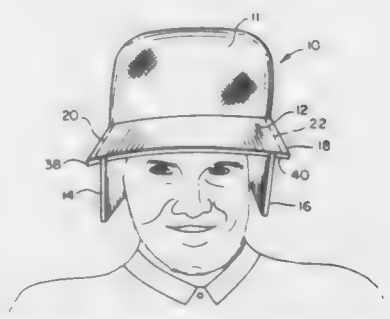
1. A chest protector for a sports player, said chest protector comprising:
a chest protector section, and
two arm protector sections secured at one end to said chest protector section,
each of said two arm protector sections including
a plurality of padding sections, each having two ends and each having at least one pad member, one of said two ends of at least one padding section being secured to an adjacent padding section centrally, intermediate the ends of the adjacent padding section by moving means for slidably mounting one padding section with respect to an adjacent padding section.

5,007,109
HEAD GEAR HAVING PROTECTIVE LENS
Robert L. Wheeler, 823 A E. Gulf Blvd., Indian Rocks Beach, Fla. 33535
Filed Oct. 20, 1989, Ser. No. 425,617
Int. Cl.[5] A42B *1/06*
U.S. Cl. 2—10 **19 Claims**



1. A device for shielding the eyes from direct or reflected sunlight, comprising:
a thin flexible lens of flat configuration when in repose;
said lens having a forward surface, a rearward surface, and a predetermined configuration;
a first pair of releasable fastening members being fixedly secured to opposite upper corners of said forward surface of said lens;
each member of said first pair of fastening members having an operative part that projects upwardly from said forward surface;
a headwear member;
a forwardly projecting bill member integral to said headwear member;
said bill member having a top surface and a bottom surface;
said bill member having a leading edge and an arcuate trailing edge that follows the contour of said headwear member;
a second pair of releasable fastening members fixedly secured to said bottom surface of said bill member at opposite ends thereof in closely spaced relation to said trailing edge;
said first and second pair of fastening members being of independent construction relative to one another;
said first and second pair of fastening members being releasably securable to one another;
said lens having a gradual bend formed therein adjacent said respective upper corners of said lens when said first and second independently constructed fastening members are releasably secured to one another, said respective upper corners being in closely spaced, parallel relation to said bill member bottom surface when said first and second independently constructed fastening members are releasably secured to one another.

5,007,110
FOCUS VISION VISOR
Charles A. Gilbert, P.O. Box 979, USSAH, Washington, D.C. 20317
Filed Jul. 12, 1990, Ser. No. 551,343
Int. Cl.[5] A42B *1/06*
U.S. Cl. 2—10 **3 Claims**



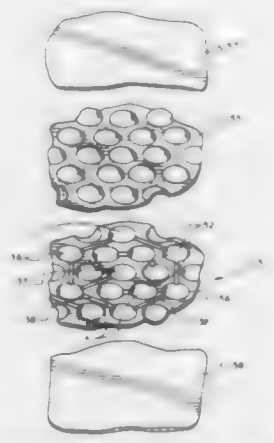
1. A focus vision visor of the type adapted for fitting to the crown of a headpiece comprising:
(a) a horizontally extending visor defining a front edge, side edges and a rear edge adapted for attachment to the crown;
(b) a pair of blinders secured to each side edge of said visor so as to depend vertically thereof, each blinder being made of resilient material so as to abut the human cheek and having an inside and an outside defined by top, bottom, rear and front, each said blinder being pivotably secured at its top so as to be inset with respect to the side edges of said visor such that the side edges of the said visor overhang said blinders, said blinders being stitched to the side edges of said visor so as to be biased inwardly, the inner edge is foldable within the crown and said blinders being conformed such that their inner edge is foldable within the inside of the crown; and
(c) securement means attached to the underside of said visor and the in side of said blinder, such that each side blinder

may be stored in horizontal abutment with the underside of said visor.

5,007,111
SHOCK ABSORBING BOOT AND CUSHIONING MATERIAL

Mark B. Adams, 206 Ransui Mansion, 1-10 Minamizemi, Gifu Shi, Gifu Ken, Japan T502

Filed Sep. 14, 1989, Ser. No. 407,332
Int. Cl.[5] A41D *13/06*
U.S. Cl. 2—22 **29 Claims**



1. A cushion pad, comprising a plurality of fluid containing resilient cells or compartments as a dispersion array formed in a material; tube means for allowing fluid flow between cells or compartments in said dispersion array of cells, where each dispersion array comprises two or more cells with a first cell, wherein, for said first cell in each said dispersion array, at least one proximal cell is provided, with such proximal cell being a cell that is closer to the first cell than any other cell, and for each first cell at least one distal cell exists in each said dispersion array, a distal cell being any cell that is not a proximal cell; and the first cell in each dispersion array is connected by tube means to at least one distal cell.

5,007,112
PROTECTIVE COVERALLS WITH IMPROVED VENTILATION

Milton A. Lewis, Jr., Richmond, Va.; Jeffrey S. Mason, Covington, Ind.; Carson B. Swinford, Danville, Ill., and Timothy R. Wiseman, Sr., Richmond, Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

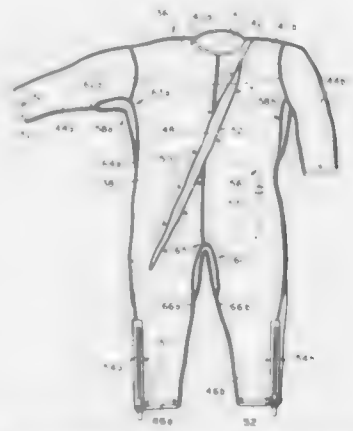
Filed Nov. 30, 1989, Ser. No. 444,497
Int. Cl.[5] A41D *13/00, 13/02*
U.S. Cl. 2—79 **8 Claims**

1. Improved one-piece protective coveralls of the type affording a barrier and thermal protection against hot and/or corrosive liquids having a generally continuous outer shell of woven aramid fabric covered by a liquid impervious layer and an inner multilayer thermally insulating liner inside of said outer shell, said inner liner being fabricated from at least one layer of low density nonwoven fabric fastened to a woven fabric, said outer shell and inner liner having corresponding torso, sleeve and leg portions, wherein the improvement comprises:

an elongate underarm opening under each arm of said liner extending downwardly from the position of the wearer's armpit into and along the underside of the sleeve and downwardly into and along the side of the torso portion;

an elongate leg inseam opening on the underside of the torso portion of said liner fabric and extending from position of the wearer's crotch downwardly into and along the inside of each leg; and

a stretchable, air permeable fabric attached to said liner fabric and covering and defining the size and shape of said openings;

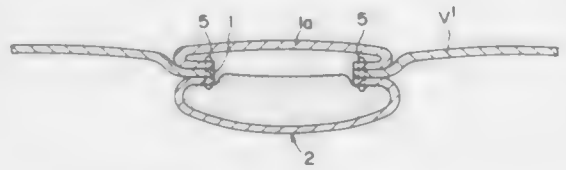


whereby ventilation and greater freedom of movement is provided in said inner liner without substantially decreasing the protection provided by the coveralls.

5,007,113
CLOTHING, ESPECIALLY OF THE PULLOVER TYPE

Robert Bouadjadja, 133 rue Antoine-Durafour, 42100 St. Etienne, France

PCT No. PCT/FR88/00425, § 371 Date Apr. 27, 1989, § 102(e) Date Apr. 27, 1989, PCT Pub. No. WO89/01743, PCT Pub. Date Mar. 9, 1989
PCT Filed Apr. 24, 1988, Ser. No. 358,348
Int. Cl.[5] A41B *1/00, 1/02, 1/18;* **A41D** *27/08*
U.S. Cl. 2—115 **4 Claims**



1. An article of clothing comprising:

a fabric layer suitable for wearing;

at least one decorative element attached to an outer surface of said fabric layer, said at least one decorative element being stuffed with material to form a relief;

at least one inner layer attached to an inner surface of said fabric layer along the contours of said at least one decorative element; and,

wherein an inside of said fabric layer is smooth and stitchless.

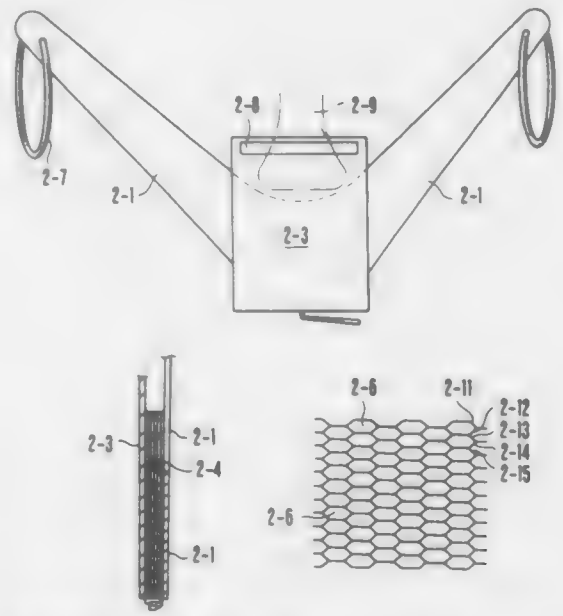
5,007,114
HUMIDITY-RETAINING MASK

Yasuhiko Numano, Tokyo, Japan, assignor to Japan Air Lines Co., Ltd., Tokyo, Japan

Filed Jun. 27, 1989, Ser. No. 371,975
Claims priority, application Japan, Jul. 14, 1988, 63-173762; Apr. 15, 1989, 1-94329
Int. Cl.[5] A61M *16/00*
U.S. Cl. 2—206 **7 Claims**

1. A humidity retaining mask for humidifying dry air of an environment to be respired by a wearer of the mask, said mask comprising:

an expandable mask body consisting of a honeycomb structure of moisture absorbing material defining a plurality of tubular cavities when the mask body is in an expanded state, said mask body having a recessed portion in an upper part thereof for accommodating the nostrils of a wearer of the mask and a lower part opposed to said upper part, and said tubular cavities extending between and open at the upper and lower parts of the mask body; and

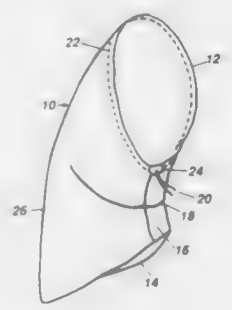


ear straps attached to said mask and adapted to extend over the ears of a wearer of the mask to secure said mask body in a position in which the nose of the wearer confronts said recessed portion.

5,007,115
ADJUSTABLE HEAD AND NECK GARMENT

Nancy A. Denbow, 31197 Niakwa Rd., Evergreen, Colo. 80439, and Anne M. Bertino, 9605 S. 48th St., #2047, Phoenix, Ariz. 85044

Filed Feb. 13, 1990, Ser. No. 479,342
Int. Cl.[5] A42B *1/06, 1/04*
U.S. Cl. 2—208 **8 Claims**



1. An adjustable head and neck garment comprised of a tubular shaped body, with the sides of the tube varying in length from a maximum on one side of said tube to a minimum on the opposite side, such that the ends of said tube are at acute angles to the body of said tube, wherein a longitudinal cross section of said tube which intersects both said maximum and minimum length sides of said tube has an essentially trapezoidal shape.

5,007,116
PORTABLE URINAL

Masao Yamamoto, Tokyo, Japan, assignor to K. K. Mizuho, Tokyo, Japan

Filed Nov. 21, 1988, Ser. No. 274,258
Claims priority, application Japan, Aug. 16, 1988, 62-107850[U]
Int. Cl.[5] A47K *11/12*
U.S. Cl. 4—144.2 **1 Claim**



1. A portable urinal comprising:

a urine-storage bag constructed of a waterproof material, said urine-storage bag being provided at its top with a mouth element that can be located so as to cover the genitourinary area of a human body when in use; and a fastener located below said mouth and comprising a grooved channel provided along one half of the interior wall of said urine-storage bag and a mating ridge which is provided on the other half of the interior wall of said urine-storage bag, said ridge is adapted to engage said grooved channel in a snap-fit manner, both said grooved channel and said ridge extending across the entire width of said urine-storage bag so as to seal off said bag adjacent to said mouth element, and

a pouch positioned within said bag which is constructed of a water-permeable, water-insoluble material, said pouch being filled with a water-absorbing agent which when contacted with a portion of said urine in said bag will swell to form a gel, the wall strength of said pouch being such that the pouch will break into fragments when said water-absorbing agent becomes swollen with said urine, and thereby dispense said agent to the remainder of said urine in said bag to render a gel of the entire contents of said bag.

5,007,117
VACUUM TOILET SYSTEM WITH SIMULTANEOUS RINSE AND DISCHARGE

Sven Oldfelt, Vaxholm, Sweden, and Gary L. Stahl, Winnebago, Ill., assignors to Oy Wärtsilä Ab, Helsinki, Finland

Filed Dec. 21, 1988, Ser. No. 288,620
Int. Cl.[5] E03D *11/00*
U.S. Cl. 4—432 **18 Claims**

1. An improved vacuum toilet system comprising:

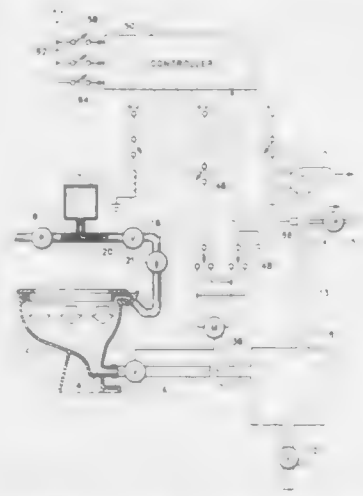
a waste-receiving bowl defining an interior space for receiving waste material and having an outlet,

a sewer pipe defining an interior space that can be placed at a pressure that is lower than that in the interior space of the waste-receiving bowl.

a discharge valve connected between the outlet of the waste-receiving bowl and the sewer pipe for controlling passage of material between the waste-receiving bowl and the sewer pipe,

rinse means for controlling supply of rinse liquid to the waste-receiving bowl, and

control means connected to the discharge valve and to the rinse means and responsive to a user stimulus to open and close the discharge valve in accordance with a predetermined operating cycle comprising an opening phase, an open phase and a closing phase, wherein the improvement resides in that, in order to reduce the level of noise gener-



ated by induction of air into the sewer pipe during the operating cycle of the discharge valve while maintaining a low level of water consumption, the control means control the rinse means in such manner that rinse liquid is supplied during the opening phase of the operating cycle of the discharge valve but substantially no rinse liquid is supplied while the discharge valve is closed or during the open phase of the operating cycle of the discharge valve.

5,007,118

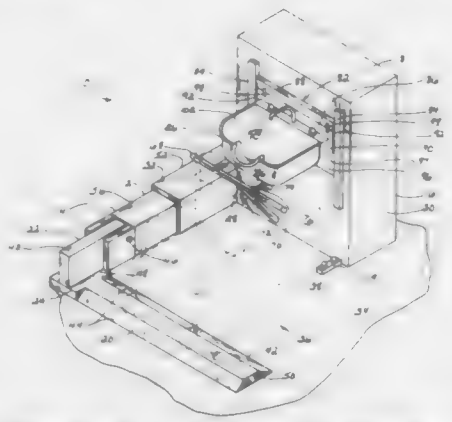
HEAD CARE STATION AND KIT AND METHOD FOR RECLINING THE OCCUPANT OF A WHEELCHAIR AGAINST A HEAD SUPPORT

Larry W. Ebersole, 7826 Newlin Dr., Fort Wayne, Ind.

Filed Mar. 30, 1989, Ser. No. 330,705

Int. Cl.[5] **A45D** *19/00, 19/08, 44/10*

U.S. Cl. 4—515 **29 Claims**



1. A head care station comprising a foundation member having a front portion and a back portion, a pedestal mounted on said back portion, a wheelchair jack mounted to said front portion, said wheelchair jack having a bearing member movable between a floor position and an elevated position, a head support connected to said pedestal, said head support being movable between a lower position and an upper position, a bolster connected to said pedestal, said bolster being disposed at a vertical elevation above said elevated position of said wheelchair jack, said wheelchair jack and said bolster defining between them in conjunction with the floor upon which said head care station rests a wheelchair occupancy space.

21. A head care station comprising a bolster and a wheelchair jack disposed in spaced relation to said bolster, said wheelchair jack having a bearing member pivotably movable relative to said bolster between a floor position and an elevated position, said wheelchair jack and said bolster and the floor on which a wheelchair and said bolster and said wheelchair jack are supported, thereby defining a wheelchair occupancy space free of other structure, whereby a wheelchair on said floor in said wheelchair occupancy space is held secure and urged against said bolster while being raised and pivoted about its axle by said wheelchair jack.

5,007,119

INFANT'S CHAIR FOR SHAMPOOING

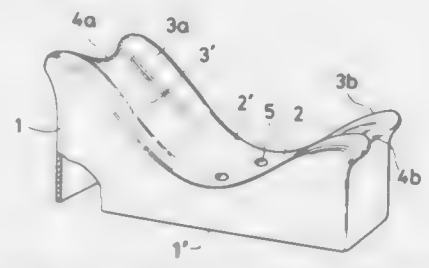
Sumiko Yamaguchi, Shizuoka, Japan, assignor to Sumiko Yamaguchi and Tomohiro Shirakawa, both of Fuji, Japan

Continuation of Ser. No. 637,602, Aug. 3, 1984, abandoned. This application Mar. 1, 1989, Ser. No. 319,872

Claims priority, application Japan, Aug. 11, 1983, 58-145632; Sep. 29, 1983, 58-149613

Int. Cl.[5] **A45D** *44/02*

U.S. Cl. 4—523 **13 Claims**



1. A chair for supporting varying sizes of infants during a shampooing operation, comprising:

a base portion having a bottom horizontal surface for placement upon a support surface, and an upper infant supporting surface having opposite ends and opposite lateral edges;

said infant supporting surface comprising a smoothly depressed concave seating portion adapted to receive an infant's buttocks, and first and second back supporting portions extending upwardly from opposite ends of said seating portion for alternatively supporting an infant's back, said back supporting portions being of dissimilar length and each being provided at its upper end with a hollow adapted to support the back of an infant's neck while said infant's buttocks are supported by said seating portion and said infant's back is supported by one of said back supporting portions;

each one of said hollows being formed by a concavity centered with respect to its respective back supporting portion, said concavity extending upwardly toward a respective one of said opposite ends of said infant supporting surface;

said seating portion defined a continuously smooth concave curvature extending between said opposite lateral edges of said infant supporting surface;

said first back supporting portion including an inclined surface extending upwardly in a first direction at a first predetermined angle with respect to said concave seating portion from one end of said smoothly depressed concave seating portion of said chair toward one end of said chair and having a first predetermined length for stably supporting the torso portion of a first infant's body, having a first length dimension, as defined between the buttocks of said first infant and the neck of said first infant, which is characteristic of an average sized child within the range of 2-3 years of age; and

said second back supporting portion including an inclined surface extending upwardly in a second direction, opposite to said first direction, at a second predetermined angle with respect to said concave seating portion from the other end of said smoothly depressed, concave seating portion of said chair toward the other end of said chair and having a second predetermined length, which is less than said first predetermined length of said first inclined surface, for stably supporting the torso portion of a second infant's body, having a second length dimension, as defined between the buttocks of said second infant and the neck of said second infant, which is smaller in length than said torso portion of said first infant supported upon said first inclined surface, and which is characteristic of an average sized child of up to and including at least one year of age, said first and second inclined surfaces, together with said smoothly depressed, concave seating portion, having a substantially V-shaped configuration.

5,007,120

SHOWER CURTAIN LINER CONTROL DEVICE

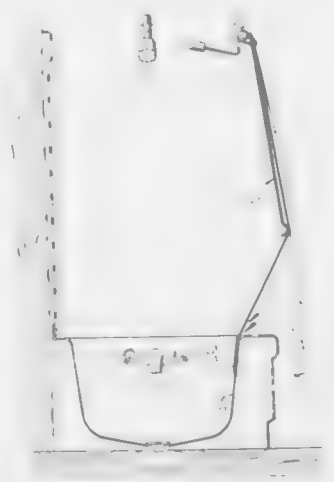
Charles A. Annand, 4 Ridgewood Drive, Truro, Nova Scotia, Canada B2N 5C5

Filed Apr. 23, 1989, Ser. No. 344,994

Claims priority, application Canada, Jan. 20, 1989, 588731

Int. Cl.[5] **A47K** *3/00*

U.S. Cl. 4—558 **9 Claims**



1. A shower curtain control device for controlling the position of a shower curtain having an inner and outer surface of the type suspended form a curtain rod of circular cross section having an inner surface toward the tub and an opposite outer surface positioned above an outside rim of a bathtub, said curtain being attached to curtain rod hooks slidable along said curtain rod to enable the curtain to be extended from an open position to a closed position in which said inner surface of the curtain defines one side of a shower area, said device comprising:

a mounting section having an opening for receiving said curtain rod and permitting both rotational pivoting and sliding movement of said device on said curtain rod,

said mounting section including an inverted U-shape defining the rod receiving opening between a pair of downwardly extending legs jointed by a curved mid-portion for riding on top of said rod, one leg extending on the side of said inner surface of said curtain rod, the other leg extending on the side of said outer surface of said curtain rod,

an elongated member connected to said other leg and depending therefrom and having a lower end portion for engagement with the inner surface of the curtain at a location spaced between the support rod and rim of said bathtub, and

weight means including an elongated portion joined to said one leg of said pair and extending at an angle relative thereto projecting over said shower area for causing pivoting of said mounting section in a direction to swing said lower end portion of said elongated member outward from the shower area, whereby said curtain is held outward relative to the outer rim of said bathtub.

5,007,121

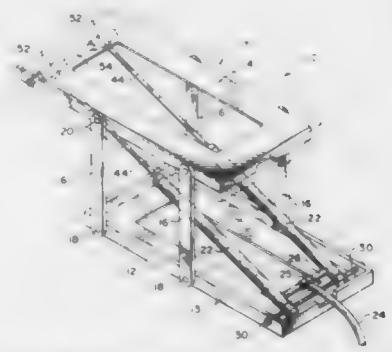
HYDRAULIC LIFT FOR BATHTUBS

Robert J. McEathron, 857 Townsite Road, Nanaimo, British Columbia, Canada V9S 1L8

Continuation of Ser. No. 244,700, Sep. 14, 1988, abandoned. This application May 29, 1990, Ser. No. 529,789

Int. Cl.[5] **A47K** *3/12*

U.S. Cl. 4—566 **4 Claims**



1. A device for raising and lowering a person in a bathtub, comprising:

(a) a base frame sized to fit in the bottom of a standard bathtub and having first and second opposing sides and forward and rearward ends;

(b) a substantially horizontal platform having first and second opposing sides and forward and rearward ends which correspond to those of said base frame;

(c) two pairs of rigid support members of equal length, each support member having upper and lower ends, the upper ends of the first pair of support members being pivotally attached about fixed pivot points at spaced locations to one side of said platform and the lower ends of said first pair of support members being pivotally attached, about fixed pivot points at spaced locations to one side of said base, and the upper ends of the second pair of support members being pivotally attached about fixed pivot points at spaced locations to the second side of said platform and the lower ends of said second pair of support members being pivotally attached about fixed pivot points at spaced locations to the second side of said base, the distance between the points of attachment of said upper ends of a pair of support members being approximately equal to the distance between the points of attachment of said lower ends of said pair of support members, whereby at any point during upward motion of said platform relative to said base the said four points of attachment of each pair of support members forms a parallelogram with the base frame and platform; and

(d) means for pivoting said platform relative to said base comprising a pair of hydraulic cylinders connected to household water supply for hydraulic pressure and each having a first end pivotally connected to said base via a bar, the axis of rotation of said pivotal connection of said first end of said hydraulic cylinders being perpendicular to the length of said base and located closer to said rearward end of said base than said pivotal connections of said lower ends of said support members, and a second end pivotally connected to said platform via a sleeve, the axis

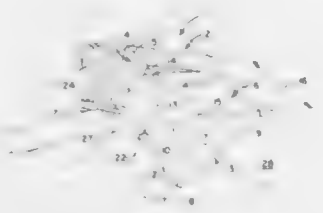
of rotation of said pivotal connection of said second end of said hydraulic cylinders being perpendicular to the length of said horizontal platform and located closer to said forward end of said platform than said pivotal connections of said upper ends of said support members.

5,007,122

HEAD RESTRAINT

Annette S. Daughdrill, 13228 Briargrove Ave., Baton Rouge, La. 70810

Filed Aug. 6, 1990, Ser. No. 563,049
Int. Cl.[5] A47G *9/00*
U.S. Cl. 5—434 6 Claims



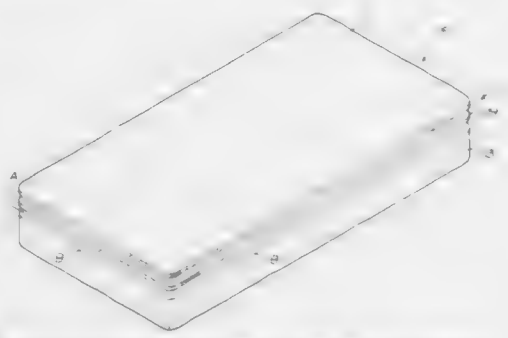
1. A head restraint adapted to immobilize the head of a patient in a supine position, comprising a resilient block having an exterior surface and including:
a. a bottom;
b. an inclined front face having a top edge;
c. a rear face;
d. sidewalls;
e. a cavity in said front face forming an interior cavity wall dimensioned to contact a substantial portion of the top, rear and sides of a patient's head, while leaving the face of the patient exposed, the intersection of said cavity and said front face having a circumference less than the rear peripheral circumference of the head of a patient, and
f. a split, opening between said cavity and said exterior surface, intersecting said rear face, said top edge and said front face above said cavity.

5,007,123

FLEXIBLE COVERING FOR REDUCING MOISTURE/VAPOR/BACTERIA TRANSMISSION

Donald M. Salyards, Winona, Minn., assignor to Comfortex, Inc., Winona, Minn.

Filed Jul. 5, 1990, Ser. No. 548,243
Int. Cl.[5] A47C *27/00*
U.S. Cl. 5—448 20 Claims



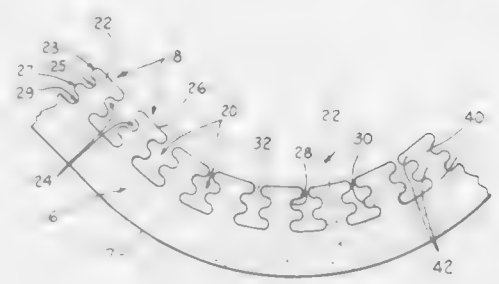
10. A sanitary and therapeutic mattress comprising:
a core;
an outer covering for forming a first moisture/vapor/bacteria barrier, the outer covering having a flexibility sufficient to reduce tissue pressures which cause the formation of body sores, and
an inner covering for forming a second moisture/vapor/bacteria barrier, the inner covering being positioned between the outer covering and the core of the mattress and having a flexibility substantially equal to the flexibility of the outer covering;
wherein the outer and inner coverings are made of materials selected such that moisture vapor transmission through both the outer and inner coverings is less than about 10.7 grams/hr/mz at a temperature of about 99 degrees F and a relative humidity of about 85%.

5,007,124

SUPPORT PAD WITH UNIFORM PATTERNED SURFACE

Richard W. Raburn, Mauldin, and Daniel J. Schaefer, Greenville, both of S.C., assignors to Span-America Medical Systems, Inc., Greenville, S.C.

Filed Nov. 4, 1988, Ser. No. 267,202
Int. Cl.[5] A47C *27/14*
U.S. Cl. 5—481 12 Claims



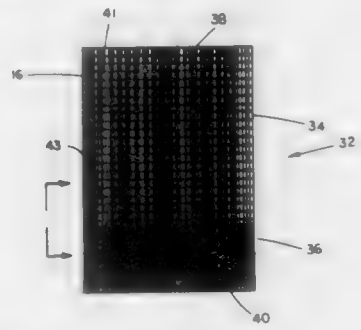
1 A mattress pad, comprising:
a generally rectangular base of resilient material, said base having a relative longitudinal axis, and a generally planar support surface on one side of said base adapted for resting on a mattress or the like; and
a plurality of elongated members formed of resilient material, and integrally associated with side base on a second side thereof opposite said one said thereof, said elongated members being situated parallel to one another and generally perpendicular to said base longitudinal axis, with predetermined constant longitudinal spacing between adjacent such members so as to form a uniform support surface with said second side;
wherein each of said elongated members have generally the same predetermined profile, viewed in a cross-sectional plane situated parallel to said base longitudinal axis and normal to said base second side, said profile having at least three distinct regions of different widths, whereby progressive collapse of said members responsive to a load received thereon results in varying resilient support characteristics presented to such load, so that relatively heavier loads are correspondingly provided relatively greater resilient support even though said pad has a uniform support surface on said second side thereof with said members all having predetermined constant spacing therebetween; and
wherein said different width regions include at least one relatively smaller width region which is situated in said profile so as to have at least one relatively larger width region between itself and said base.

5,007,125

BLANKET HAVING IMPROVED THERMAL CHARACTERISTICS IN THE PORTION COVERING THE FEET

Daniel B. Owenby, Swannanoa, N.C., assignor to Beacon Manufacturing Company, Swannanoa, N.C.

Filed Dec. 26, 1989, Ser. No. 457,307
Int. Cl.[5] A47G *9/02*
U.S. Cl. 5—486 6 Claims



1. A blanket comprising:
a rectangular panel constructed of woven yarn; said panel having an upper portion and a lower portion; said upper portion and said lower portion being woven together; said panel including a plurality of warp yarns and a plurality of filler yarns; said warp yarns running continuously through said upper portion and said lower portion; at least a part of said lower portion having more filler yarns per linear unit than said upper portion such that the thermal insulation characteristics of said part of said lower portion is substantially greater than the thermal insulation characteristics of said upper portion whereby the lower extremities of the user are enabled to be better insulated than other parts of the user's body; the parts of said filler yarns which pass over said warp yarns in said part of said lower portion form a weave which is more raised than the weave of said filler yarns which pass over said warp yarns in said upper portion.

5,007,126

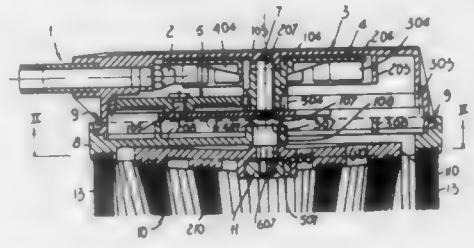
Patent Not Issued For This Number

5,007,127

HYDROBRUSH WITH SPEED-REDUCER OF THE EPICYCLIC TYPE

Bizzarri Paolo, Monte S. Pietro, Italy, assignor to Gordon S.n.C. di Bizzarri Paolo e C., Minerbio, Italy

Filed Oct. 11, 1989, Ser. No. 419,777
Claims priority, application Italy, Oct. 26, 1988, 15174 8/88
Int. Cl.[5] A46B *13/06*
U.S. Cl. 15—29 3 Claims



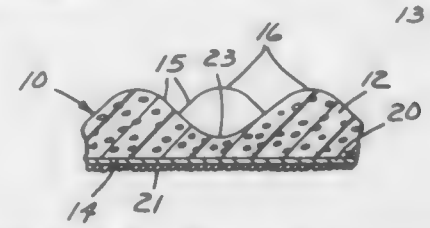
1. A hydrobrush comprising:
an enclosed housing including (a) an outer body (3) having a top, a peripheral side depending from said top and having an inner crown gear (303), and an upper bushing (103) depending from and integrally formed with said top, and (b) a collar (8) which is secured to said peripheral side of said body, said collar including a lower bushing (108) and spokes (208) which mount said lower bushing beneath said upper bushing;
a small Pelton turbine disposed in said enclosure, said turbine including a water jet means which is connectable to a pressure of a water main for producing a driving water jet and an impeller which is rotatable mounted about said upper bushing and disposed to be rotated by the water jet, said impeller including a hub (104) having an integral toothed wheel (504);
a shaft (7) including an upper end portion (207) which is rotatably mounted by said upper bushing, an intermediate portion (107) which extends through said hub of said impeller, a further portion (407) which is rotatably mounted by and which extends through said lower bushing, and a lower end portion (507–607);
a support (6) which is keyed to said intermediate portion of said shaft for rotation therewith;
a plurality of satellite gears mounted for rotation to said support and meshingly engaging both said toothed wheel of said hub and said inner crown gear of said outer body, said satellite gears having a diameter greater than that of said toothed wheel such that rotation of said impeller and toothed wheel thereof causes a lower rate of rotation with greater torque of said satellite gears, said support member and said shaft; and
a cleaning brush which is attached to said lower end portion of said shaft for rotation therewith.

5,007,128

COMPOUNDING, GLAZING OR POLISHING PAD

Richard L. Englund, and Thomas W. Schwartz, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 298,508, Jan. 18, 1989, Pat. No. 4,962,562. This application Dec. 28, 1989, Ser. No. 458,411
Int. Cl.[5] B24B *29/00*
U.S. Cl. 15—230.16 50 Claims



1. A paint finishing pad adapted to be used on a drive assembly including a back up pad having a generally planar support surface and a drive motor for moving the back up pad in a plane parallel to said support surface while using the finishing pad to apply glazing or compounding material to a painted surface and thereby remove imperfections along the polish and painted surface, said finishing pad comprising:
a layer of resiliently compressible open cell polymeric foam having a generally planar rear surface, said layer comprising a plurality of spaced projecting portions projecting a first distance at a right angle from said rear surface, and a plurality of recessed portions between said projecting portions and projecting a second distance at a right angle from said rear surface, which second distance is significantly less than said first distance, said projecting and recessed portions at least partially defining a front surface for said layer of foam opposite said rear surface, said open cell polymeric foam from which said layer is formed being a reticulated urethane foam; and
means attached to said rear surface adapted for releasably attaching said paint finishing pad tot he support surface of the drive unit;
said layer of foam being sufficiently resiliently compressible to allow the layer of foam to be pressed manually against the painted surface to compress the portions of the layer

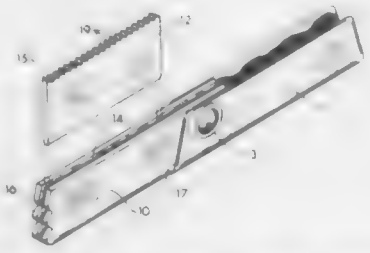
of foam toward the rear surface of the layer of foam and cause the parts of the front surface of the layer of foam defined by both the projecting portions and the recessed portions to generally conform to the painted surface and press the glazing or compounding material into engagement with the painted surface for efficient removal of imperfections, and subsequently to allow the layer of foam to be manually pressed against the painted surface with a lesser force only sufficient to compress parts of the projecting portions of the layer of foam to complete polishing of the painted surface.

5,007,129

GOLFER'S CLEANING TOOL

Melvin F. Hainey, 10609 Pinehurst Dr., Austin, Tex. 78747

Filed Jun. 12, 1989, Ser. No. 364,899
Int. Cl.[5] A63B *57/00*
U.S. Cl. 15—236.[illegible] 2 Claims



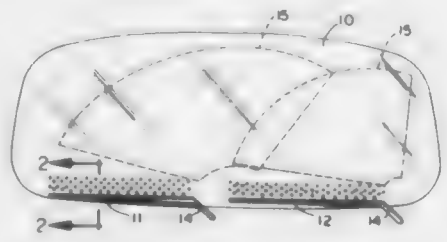
1. A golfer's tool comprising a first rectangular member formed longitudinally into a U-shaped holder having a first and second end and adapted to receive a scraping element, a scraping element mounted in said holder, said scraping element comprising an elongated blade having a plurality of teeth on one edge thereof extending between ends of said blade with one tooth closely adjacent one end of said blade, said one end of said blade being positioned closely adjacent said first end of said holder, a second rectangular member formed longitudinally into a U-shaped handle/shield, means pivotally mounting said second end of said first member in one end of said second member so that said first member can be pivoted into said second member to a closed position to position said edge of said blade within said second member with the first end of said first member extruding beyond the other end of said second member, means defining a gripping surface on the first end of said first member for engagement by a finger to pivot said first member from a closed position to an open position whereby said one tooth can be used to clean grooves in the face of a golf club and the plurality of teeth can be used for roughening the grip of a golf club.

5,007,130

WIPER CLEANING SYSTEM

Julin J. Jacoby, 1919 Paper Mill Rd., Huntingdon Valley, Pa. 19006

Continuation-in-part of Ser. No. 406,309, [illegible]p. 12, 1989, Pat. No. 4,934,013. This application Feb. 26, 1990, Ser. No. 484,763
Int. Cl.[5] A47L *25/00*; B60J *1/20*; B60S *1/62*
U.S. Cl. 15—250 R 11 Claims



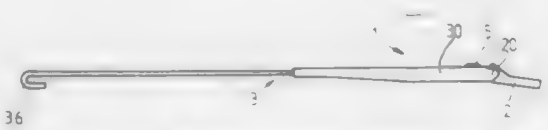
1. A wiper cleaning system for removing debris and other foreign matter from a wiper for a surface such as a windshield serviced by a wiper, said system comprising a plurality of discrete raised elements projecting from said surface, said elements being arranged in horizontally extending rows that are vertically spaced, said rows extending for a distance corresponding to the length of the wiper, said elements being arranged in parallel horizontal alignment in each row and in generally vertical alignment in alternate rows and in staggered alignment in adjacent rows, said elements being spaced from each other by a distance such that debris and other foreign matter removed from the wiper by the system can be channeled therebetween.

5,007,131

BLADE CARRYING ASSEMBLY FOR A WINDSHIELD WIPER INCLUDING A LOCK

Jean-Claude Chevalier, Issoire, and Guy Raymond, Champeix, both of France, assignors to Valeo Systems d'Essuyage, Issy-Les-Moulineaux, France

Filed Mar. 16, 1989, Ser. No. 324,537
Claims priority, application France, Mar. 22, 1988, 88 036[illegible]
Int. Cl.[5] A47L *1/02*
U.S. Cl. 15—250.19 10 Claims



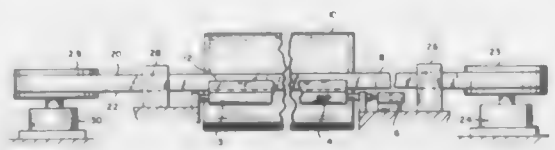
1. A blade carrying assembly for a windshield wiper, said assembly comprising:
- a coupling head,
- a wiper arm to carry at one end thereof a wiper blade and articulated at another end thereof to said coupling head about a pivot axis;
- spring means biassing said wiper arm about said pivot axis relative to said coupling head in a direction to urge said one end of said wiper arm to a windshield wiping operative position, and
- a lock member rotatably mounted on said wiper arm and having locking means for, upon rotation of said lock member to a locking position thereof, limiting the extent of rotation of said wiper arm about said pivot axis in said direction.

5,007,132

HYDRAULIC DRIVE FOR PULL THROUGH DOCTOR BLADE TRANSFER SYSTEM

Robert A. Reid, Charlton City, and Ronald F. Goodnow, Leicester, both of Mass., assignors to Thermo-Electron Web Systems, Inc., Auburn, Mass.

Filed Jun. 7, 1990, Ser. No. 534,686
Int. Cl.[5] B08B *1/02*
U.S. Cl. 15—256.53 4 Claims



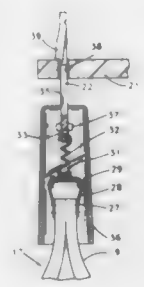
1. For use in a doctoring apparatus wherein a coiled elongated doctor blade is payed off one rotatable reel while simultaneously being taken upon another rotatable reel, with an intermediate portion of the blade extending between said reels being supported by a blade holder arranged to apply said blade to a moving surface toe doctored, a hydraulic drive system for longitudinally shifting said blade across said surface and through said blade holder from one to the other of said reels, said system comprising:
- first and second hydraulic motors, each motor being drivingly connected to one of said reels, said motors being of the type which are powered by a pressurized flow of hydraulic fluid admitted thereto via a high pressure port and discharged therefrom via a low pressure port;
- a reservoir containing a supply of hydraulic fluid;
- pump means for withdrawing hydraulic fluid from said reservoir and for discharging a pressurized flow of said fluid;
- low pressure conduit means communicating with the low pressure ports of said hydraulic motors to provide a fluid connection therebetween;
- high pressure conduit means communicating with said reservoir, said pump means, and the high pressure ports of said hydraulic motors; and
- control value means associated with said high pressure conduit means, said control valve means being adjustable between a first setting at which said pump means is connected to the high pressure port of said first hydraulic motor and the high pressure port of said second hydraulic motor is connected to said reservoir, and a second setting at which said pump means is connected to the high pressure port of said second hydraulic motor and the high pressure port of said first hydraulic motor is connected to said reservoir;
- whereupon when said control valve means is adjusted to said first setting, said first reel is driven to take up said doctor blade thereon, with the doctor blade being simultaneously payed off said second reel, causing said second motor to pump the low pressure fluid discharge received from said first motor via said low pressure conduit means back to said reservoir, and when said control valve means is adjusted to said second setting, said second reel is driven to take up said doctor blade thereon, with said doctor blade being payed off said first reel and causing said first motor to pump the low pressure fluid discharge received from said second motor via said low pressure conduit means back to said reservoir.

5,007,133

CONVERTIBLE VACUUM CLEANER

John R. Lackner, North Ridgeville; Stanley E. Grzywna, Elyria; Ralph A. Weber, Richmond Heights, all of Ohio, and Thomas E. Baird, Springfield, Ill., assignors to The Scott Fetzer Company, Cleveland, Ohio

Filed Jun. 6, 1990, Ser. No. 534,192
Int. Cl.[5] A47L *9/14*
U.S. Cl. 15—351 5 Claims



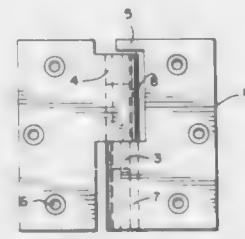
1. A vacuum cleaner comprising a power unit having structure defining a nozzle and an outlet and being operable to draw in dirt-laden air through said nozzle and to discharge said air through said outlet, an elongated dust bag connected at one end to said outlet, an elongated first handle, pivot apparatus for mounting said first handle on said power unit for movement between first and second positions, a connector mounted on the other end of said dust bag for movement between an extended position and a retracted position, said connector being releasably mounted to said handle at a fixed location spaced from said pivot apparatus and resilient means connected between said connector and said other end of said dust bag for resiliently urging said connector toward said retracted position, said resilient means operating to compensate for pivotal movement of said handle to maintain said bag extended in all positions of said handle.

5,007,134

REMOVABLE HINGE AT SPECIFIC ANGULAR ORIENTATION

Ferdinand G. Stanford, 826 Covey Hill Road, Hemmingford, Quebec, Canada H0L 1H0

Filed Sep. 2, 1986, Ser. No. 902,661
Claims priority, application Canada, Feb. 19, 1986, 502191
Int. Cl.[5] E05D *7/10*
U.S. Cl. 16—266 1 Claim



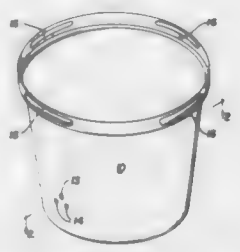
1. A dual purpose hinge for an inwardly opening door comprising in combination:
- a first hinge blade with a first sleeve;
- a second hinge blade with a second sleeve aligned with said first sleeve;
- a hinge pin fixed in said second sleeve of said second hinge blade and projecting therebelow into said first sleeve;
- said first hinge blade including a projecting tongue at the top edge of said first hinge blade;
- said second hinge blade including a slot at the top edge of said second sleeve arranged to permit said tongue on said first hinge blade to slide into said slot on said second sleeve allowing said second hinge blade to be disconnected from said first hinge blade only when said hinge blades are abutting.

5,007,135

PLANT GROWING RECEPTACLE

Robert Rigsby, 18671 Palm Creek Dr., Ft. Myers, Fla. 33917

Filed Jun. 18, 1990, Ser. No. 539,885
Int. Cl.[5] A01G *9/02*, *27/00*
U.S. Cl. 47—73 6 Claims



1. A plant growing receptacle having a plant positioned therein for further growth said receptacle comprising an open top and a side wall extending downwardly to a closed bottom wall, a first root exiting opening formed in said side wall at a distance above said bottom wall, drain openings formed in said side wall intermediate said root exiting opening and said closed bottom wall, a wall portion extending between said drain openings and said closed bottom wall having no openings therein and with said bottom wall being capable of retaining

water, a source of water for irrigating said plant in said receptacle, said source extending over the upper open end of said receptacle, a mixture of soil and fertilizer placed within said receptacle to promote further growth of the plant therein, said irrigating regulated as to allow feeding of water to the upper portion only of the receptacle and to the mixture of said soil and fertilizer therein, said water gravitating towards the bottom of said container and in its travel toward the bottom of the container some of the water, soil and fertilizer gravitating towards the bottom of the receptacle to there form a slurry of water, soil and fertilizer thereon, intermediate the said drain openings and bottom of said receptacle thus providing a moist environment within the receptacle.

5,007,136

PROCESS FOR THE PRODUCTION OF A YARN FROM FIBER MATERIAL

Peter Artzt, Reutlingen, and Heinz Mueller, Metzingen-Neuhausen, both of Fed. Rep. of Germany, assignors to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Fed. Rep. of Germany

Continuation of Ser. No. 383,854, Jul. 21, 1989, abandoned. This application Jul. 24, 1990, Ser. No. 559,388

Int. Cl.[5] **D01B** *9/00*; **D01G** *12/00*

U.S. Cl. 19—65 A **15 Claims**



1. A process for producing yarn, comprising the following steps:

(a) supplying fiber to a card;

(b) carding said fiber to remove impurities therefrom and forming a card sliver from the carded fiber,

(c) analyzing a sample of said card sliver to determine fiber length distribution therein;

(d) combing said card sliver to remove a predetermined portion of said fibers in accordance with the results of the analysis conducted on said sample of said card sliver and producing a combed sliver;

(e) drawing said combed sliver to align the fibers in said combed sliver;

(f) opening said combed sliver to form opened fibers and to remove impurities therefrom,

(g) conveying said opened fibers to an open-end spinning device; and

(h) spinning yarn from said opened fibers

5,007,137

CARDING APPARATUS

Horst Graute, Coesfeld, Fed. Rep. of Germany, assignor to Hergeth Hollingsworth GmbH, Dulmen, Fed. Rep. of Germany

Filed Jan. 4, 1990, Ser. No. 460,706

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1989, 3901313

Int. Cl.[5] **D01G** *25/00, 15/46*

U.S. Cl. 19—296 **29 Claims**

1. Carding apparatus for forming air laid fibrous webs, comprising:

means for feeding fibers;

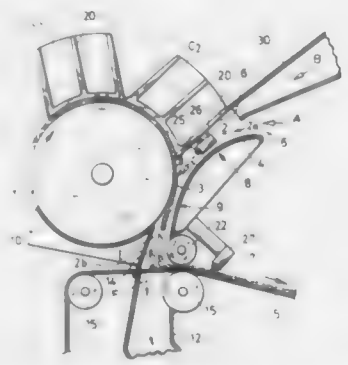
a driven main cylinder;

an air-permeable web conveying means receiving a web from said main cylinder;

an air passage substantially tangential to the main cylinder adjacent a fiber doffing zone and extending to said air-permeable web conveying means;

a suction means arranged beneath the web conveying means;

an air suction gap having a substantially nozzle-shaped cross section forming an upper portion of the air passage producing a laminar air stream;



said main cylinder exerting a centrifugal force, said centrifugal force throwing the fibers in the fiber doffing zone into said laminar air stream generated in said air passage and conveying said fibers to the web conveying means for deposit as a continuous fiber web; and

whereby carding apparatus especially suitable for manufacturing nonwovens is provided.

5,007,138

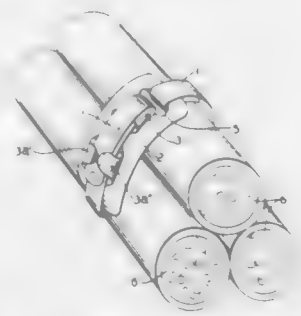
DEVICE FOR STRAPPING CABLES, PIPES OR OTHER SIMILAR ITEMS, TOGETHER OR TO SUPPORTS

David A. Pritchard, 3 Harvest Road, Englefield Green, Egham, Surrey, and Michael J. Donnelly, 137 Slough Road, Datchet, Berkshire, both of England

Continuation of Ser. No. 661,409, Oct. 16, 1984, abandoned. This application Aug. 25, 1986, Ser. No. 899,947

Int. Cl.[4] **B65D** *63/06*

U.S. Cl. 24—23 B **9 Claims**



1. A strapping device for joining cables, pipes or similar items together or to a support, and which may be assembled around such items easily and without the use of tools, said strapping device comprising

an elongate strip of bendable material having one end and an opposite end and so as to define an opposite end portion adjacent said opposite end, and substantially parallel longitudinal side edges,

a buckle plate attached to said one end of said strip, said buckle plate having an outer surface, and means mounted on said plate for receiving and holding said opposite end portion of said strip after the strip has been wrapped around the items to be joined, said strip receiving and holding means comprising

(a) a bridge portion extending transversely of said buckle plate at a location longitudinally spaced from said one end of said strip and defining a first longitudinal passageway, with said first passageway having a transverse width greater than the width of said strip and being sized so as to be adapted to receive a portion of the strip therethrough, and

(b) a pair of transversely spaced apart ears extending outwardly from said outer surface of said plate at a location longitudinally spaced from said bridge portion and on the side of said bridge portion opposite said one end of said strip, said ears each having an outwardly extending base portion and a transversely extending outer end portion, with said base portions of said ears being transversely spaced apart a distance greater than the width of said strip so as to be adapted to receive a portion of the strip therebetween, and with said outer end portions extending generally parallel to said outer surface of said plate and so as to define a transverse gap between said outer end portions, and such that said ears collectively define a second longitudinal passageway which is in longitudinal alignment with said first passageway, and with said ears being configured and dimensioned so as to permit said opposite end portion of said strip to be longitudinally inserted through said second passageway and then through said first passageway, then bent over said bridge portion so as to provide a superposed end portion which is positioned over the portion of the strip passing through said second passageway, and then passing the superposed end portion of the strip through said gap and into said second passageway by tilting said superposed end portion and transversely inserting one of said side edges thereof sideways through said gap and beneath one of said ears until the other of said side edges thereof has passed through said gap and into said second passageway, and then pushing said superposed end portion transversely in the opposite direction until the other of said side edges is positioned under the other of said ears, and so that the superposed end portion is secured within said second passageway.

5,007,139

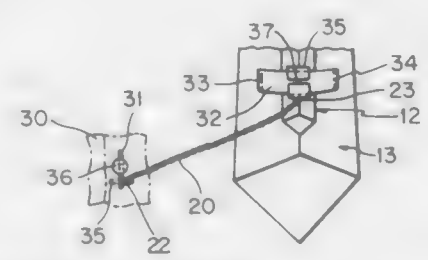
NECKTIE RETAINER

Mark E. Ahern, 1278 Southwest Highpoint La., Palm City, Fla. 34990

Continuation-in-part of Ser. No. 404,180, Sep. 7, 1989, abandoned. This application Jul. 10, 1990, Ser. No. 550,204

Int. Cl.[5] **A41D** *25/10*

U.S. Cl. 24—49 R **4 Claims**



1. A necktie retainer in combination with a necktie and the garment of the wearer, said necktie when being worn having a large end portion with front and rear sides that lies essentially flat against said garment, said large end portion having a cross member positioned in transverse relationship to the long dimension and on said rear side thereof, said cross member having length, height and thickness dimensions and further having the portions thereof at the ends of said length dimension attached to said large end portion, comprising in combination:

a tensor member having a movement establishing length between first and second ends,

means retaining said first end of said tensor member to the garment of the wearer,

a detachable member attached to said second end of said tensor member,

said detachable member having an essentially "C" shape,

the opening of said "C" shape being a transverse slot of the order of said thickness dimension of said cross member, and

the top to bottom internal dimension of said "C" shape being of the order of said height dimension of said cross member such that said detachable member grips said cross member.

5,007,140

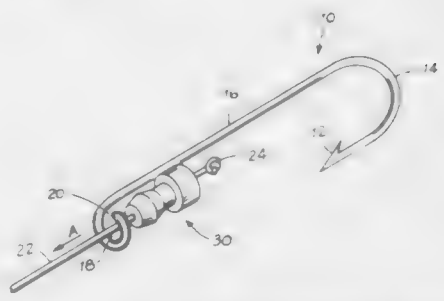
SNAP-ON FASTENER

Charles D. Brookey, 11291 E. Broadway, Tucson, Ariz. 85748

Filed Feb. 26, 1990, Ser. No. 484,906

Int. Cl.[5] **F16G** *11/00*; **A01K** *91/04*

U.S. Cl. 24—129 R **8 Claims**



1. A fastener for an eye and line combination, comprising:

(a) an eye, wherein an opening in the rim constituting said eye is provided for inserting said line into said eye; and

(b) a stopper of size suitable for mechanical coupling and cooperation with said eye, said stopper having a hole capable of receiving said line and of preventing a knot tied on it from sliding through it, having a groove for receiving and holding in place the inside perimeter of said eye, and further having a stop to prevent said stopper from sliding out of said eye when a pulling force is applied to said line, said stop consisting of an enlarged end portion of said stopper.

5,007,141

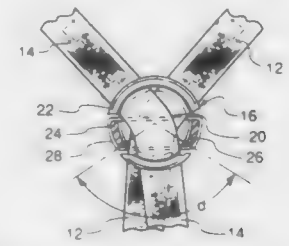
STRAP RETAINER FOR HEAD GEAR

James J. Gentes, Soquel, Calif., assignor to Giro Sport Design, Soquel, Calif.

Filed Jun. 30, 1989, Ser. No. 373,417

Int. Cl.[5] **A44B** *11/00*; **A42B** *7/00*

U.S. Cl. 24—163 R **21 Claims**



1. A strap retainer, comprising:

a first generally planar configured member;

a second generally planar configured member disposed in spaced-apart relationship to said first member;

a first post connecting one side of said first member to a corresponding side of said second member;

a second post disposed in spaced-apart relationship to said first post and connecting another side of said first member to another corresponding side of said second member; and

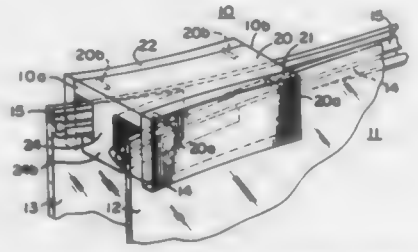
resilient band means disposed about said posts and cooperating with said first and second members and said first and second posts to form a pair of passageways, one on each side of said band means, through which each strap of a pair of straps may be respectively passed, whereby independently pulling on one of said straps results in said strap being freely pulled through its respective passageway, but simultaneously pulling on both of said straps results in said straps combining to engage and stretch said band means causing said band means to resist displacement of said straps and causing said straps and said band means to bind against said first and second members so as to further resist displacement of said straps.

5,007,142

METHOD OF ASSEMBLING A SNAPPED-TOGETHER MULTIPART PLASTIC SLIDER WITH A PLASTIC RECLOSABLE FASTENER

Fox J. Herrington, Holcomb, N.Y., assignor to Mobil Oil Corp., Fairfax, Va.

Filed Mar. 7, 1990, Ser. No. 490,107
Int. Cl.[5] A44B *19/16*
U.S. Cl. 24—400 **12 Claims**



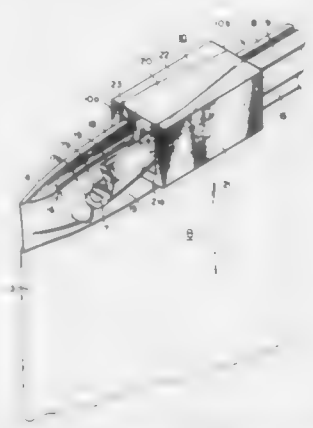
10. A multipart plastic slider for straddling relation with a profiled plastic reclosable fastener particularly suited for thermoplastic bags and the like formed by a pair of flexible plastic sheets having a top edge with separable fastener means extending along the length thereof comprising reclosable interlocking rib and groove profile elements on the respective sheets, the straddling slider for closing or opening the reclosable fastener elements comprising a wedge-shaped separator finger and interlocking complimentary structure formed from plastic for moving along the fastener, the complimentary structure comprising a transverse support member having the wedge-shaped separator finger depending therefrom, said support member having interlocking structure on the opposite sides thereof, a pair of spaced depending side walls supported on said support member for engaging and automatically interlocking with said interlocking structure, said depending side walls extending from an opening end of the slider to a closing end, the side walls being spaced wider apart at the opening end to permit separation of the rib and groove elements by the wedge-shaped separator finger extending between the side walls at the opening end, the side walls being space sufficiently close together at the closing end to press the rib and groove elements into interlocking relationship as the slider is moved in a fastener closing direction, at least one of said separator finger and said side walls having shoulder structure on the bottom thereof for cooperating with the bottom of the fastener to prevent the slider from being lifted off the top edge of the fastener while the slider straddles the fastener.

5,007,143

ROLLING ACTION ZIPPER PROFILE AND SLIPPER THEREFOR

Fox J. Herrington, Holcomb, N.Y., assignor to Mobil Oil Corp., Fairfax, Va.

Filed Mar. 7, 1990, Ser. No. 490,110
Int. Cl.[5] A44B *19/16*
U.S. Cl. 24—400 **11 Claims**



1. A plastic reclosable fastener with slider particularly suited for thermoplastic bags and the like comprising a pair of flexible plastic strips having separable fastener means extending along the length thereof comprising reclosable interlocking male and female profile elements on the respective strips, said strips including profiled tracks extending along the length thereof parallel to the male and female elements, said male and female elements having complimentary cross sectional shapes such that they are closed by pressing the bottom of the elements together first and then rolling the elements to a closed position toward the top thereof, a straddling slider on said tracks for closing or opening the reclosable fastener elements comprising an inverted U-shaped plastic member having a back for moving along the top edges of said tracks with side walls depending therefrom for cooperating with said tracks and extending from an opening end of the slider to a closing end, said side walls having a greater spacing at the opening end than the closing end, a separator finger depending from said back between said side walls and inserted between said tracks, said separator finger being shaped throughout the length thereof for first holding the top of the male and female elements open while the slider first presses the bottom of the elements together and then permitting the slider to press the top of the elements together while the slider moves in a closing direction, said slider having shoulders projecting inwardly from said depending side walls and shaped throughout the length thereof for cooperation with said depending separator finger in creating the rolling action in opening and closing said reclosable interlocking male and female profile elements.

5,007,144

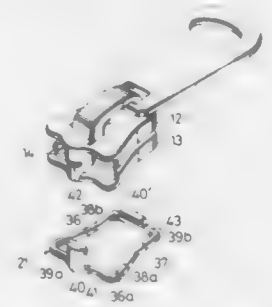
SLIDE FASTENER SLIDER

Yasuharu Terada, Uozu, and Susumu Ishii, Kurobe, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Apr. 2, 1990, Ser. No. 502,733
Claims priority, application Japan, Mar. 31, 1989, 1-38538; Apr. 17, 1989, 1-44771
Int. Cl.[5] A44B *19/26*
U.S. Cl. 24—415 **7 Claims**

6. A slide fastener slider comprising a slider body including an upper wing and a lower wing jointed together at their one ends by a connecting neck and having respective inwardly directed lateral flanges, and a thermal insulating backing substantially coextensive with and secured to said lower wing, said backing having a hook at one end engageable in a recess formed in said neck and a hook at the opposite end engageable

in a recess formed in a rear end of said upper wing, said backing having a web surrounded by a continuous inwardly di-



rected peripheral flange, and said web defining with the outer surface of said lower wing an air accommodating pocket

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5,007,145

END-LOCKING DEVICE FOR SLIDE FASTENERS

Sam H. Kim, 43-3, Myungju-dong, Kangneung-si, Kangwon-do, 210-30, Rep. of Korea

PCT No. PCT/KR89/00001, § 371 Date Sep. 18, 1989, § 102(e) Date Sep. 18, 1989, PCT Pub. No. WO89/06504, PCT Pub. Date Jul. 27, 1989
PCT Filed Jan. 18, 1989, Ser. No. 411,451
Claims priority, application Rep. of Korea, Jan. 18, 1988, 1988-348
Int. Cl.[4] A44B *19/38*
U.S. Cl. 24—433 **18 Claims**



1. An end-locking device for slide fasteners comprising,
a socket terminal disposed at one end of a first row of zipper teeth and adapted to receive one end of a second row of zipper teeth through its mouth, said socket terminal including locking means provided with a recessed portion for interlocking engagement and mounted to pivot on said socket terminal in an opening formed therein; and
engaging means having a recessed portion for being brought into interlocking engagement with said locking means and located at the end of the second row of zipper teeth,
wherein said recessed portion of said locking means engages with said recessed portion of said engaging means to releasably lock the end of the second row of zipper teeth in said socket terminal when the end of the second row of zipper teeth is fully seated within said socket terminal, and the interlocking engagement between said portions is released when said locking means is caused to pivot.

5,007,146

PLASTIC PROFILE FASTENER

Daniel Meidan, 90 Elise Terrace, North York, Ontario, Canada M2R 2X1

Filed May 10, 1990, Ser. No. 521,493
Int. Cl.[5] A44B *21/00*; B65D *33/14*
U.S. Cl. 24—683 **14 Claims**



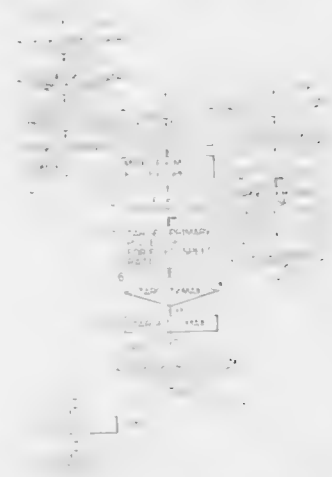
1. In a plastic profile fastener of the type comprising a female member having an axially elongated groove profile and a male member having a complimentary axially elongated male projection for engagement within said groove profile.
the improvement wherein said groove profile is provided with a plurality of male fastener elements and wherein said male projection is provided with a plurality of female fastener elements for engagement with said male elements when said male projection is engaged in said groove profile, said male and female fastener elements each presenting a cooperating surface component transverse to the axis of said fastener serving to limit the relative axial movement of said members.

5,007,147

CONTROL SYSTEM FOR STEPLESSLY VARIABLE POWER TRANSMISSION

Shoji Imai, and Yoshimi Kanemoto, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 302,198, Jan. 27, 1989, abandoned. This application May 22, 1990, Ser. No. 527,711
Claims priority, application Japan, Jan. 29, 1988, 63-18910
Int. Cl.[5] B60K *41/18*
U.S. Cl. 74—866 **8 Claims**



1. A steplessly variable power transmission comprising
a steplessly variable transmission mechanism in which a

speed ratio between an input shaft and an output shaft provided in the transmission is steplessly changed,

speed ratio control means for controlling the speed ratio in accordance with an engine operating condition,

load change detecting means for detecting a rate of change in an engine load when an engine load zone to which a value of the engine load belongs is changed from an intermediate zone to a specific zone other than the intermediate zone, and

speed ratio hold means for maintaining the speed ratio at a constant value determined in accordance with the rate of change in the engine load obtained through the load change detecting means and providing the speed ratio control means with control signals determining the constant value of the speed ratio

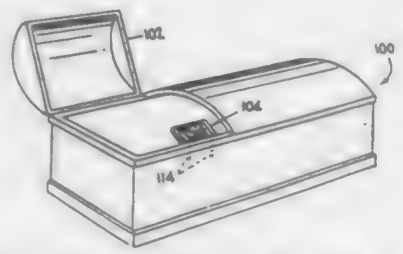
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5,007,148

PLAQUE

Sam Bida, 2160 Crawford St., Ely, Nev. 89301

Division of Ser. No. 100,356, Sep. 23, 1987, Pat. No. 4,883,554.
This application Nov. 8, 1988, Ser. No. 268,507
Int. Cl.[5] A61G *17/04*; G09F *3/10, 19/00*
U.S. Cl. 27—1 **12 Claims**



1. A plaque comprising a base, a thin sheet of metal foil mounted on said base, said sheet having an upper viewing surface with information inscribed therein in the form of indentations in said viewing surface, said indentations extending inwardly of and below said viewing surface, material having a high degree of visibility disposed in said indentations so that the information may be readily perceived by the human eye, a layer of transparent protective material disposed over said sheet and in contact with said viewing surface, and a layer of fixative interposed between said material having a high degree of visibility and said layer of protective material

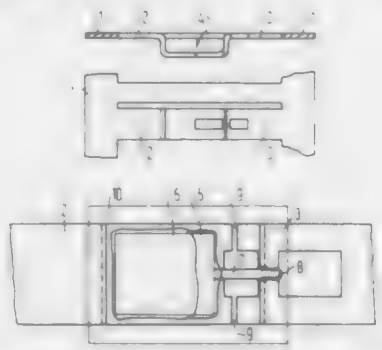
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5,007,149

METHOD FOR MANUFACTURING A SOLID ELECTROLYTE CAPACITOR IN A CHIP STRUCTURE

Werner Schnabel, Nattheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 30, 1990, Ser. No. 574,796
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1989, 3931263
Int. Cl.[5] H01G *4/00*
U.S. Cl. 29—25.03 **4 Claims**



1. A method of manufacturing a solid electrolyte capacitor including a capacitor chip and a carrier band, the chip comprising a cathode plate and an anode wire and the carrier band comprising an anode section as an anode terminal, a cathode section as a cathode terminal and an intermediate recess section connected between the anode and cathode sections, comprising the steps of:

(a) placing the capacitor chip in the recess section, and

(a1) electrically connecting the cathode plate to the cathode section,

(b) electrically connecting the anode wire to the anode section, and

(c) separating the anode section from the cathode section by cutting the carrier band between the anode section and the cathode section

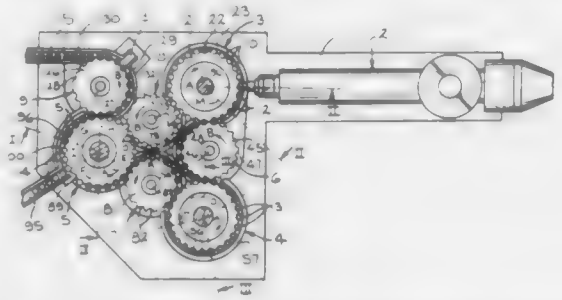
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5,007,150

APPARATUS FOR THE APPLICATION OF A GASKET INSIDE CLOSURES COMPRISING A CUP, SUCH AS SCREW-ON AND CROWN CAPS

Rodiero Alieri, Imola, Italy, and Paul L. Thomason, Largo, Fla., assignors to Tredegar Molded Products Company, Richmond, Va.

Continuation of Ser. No. 488,402, Feb. 28, 1990, which is a continuation of Ser. No. 192,656, May 11, 1988, abandoned, which is a continuation of Ser. No. 860,58, May 7, 1986, abandoned. This application Jul. 20, 1990, Ser. No. 555,104
Claims priority, application Italy, Jun. 24, 1985, 3474 A/85
Int. Cl.[5] B29C *1/04*
U.S. Cl. 29—33 J **14 Claims**



1. An apparatus for forming plastic liners and placing them in closures comprising:

(a) means for supplying softened thermoplastic material;

(b) individual mold means for receiving individual batches of thermoplastic material,

(c) a first rotary turret carrying the individual mold means and having means for forming and depositing the individual batches in the individual mold means;

(d) a second rotary turret having means for pressing the batches into plastic cylindrical closure liners;

(e) a third rotary turret having means for removing the closure liners from the individual mold means and for placing the closure liners into closures carried by the third rotary turret;

(f) means for transferring the individual mold means between the first, second, and third rotary turrets.

5,007,151

MACHINE TOOL TURRET

Nagle V. Gusching, Sidney, Ohio, assignor to The Monarch Machine Tool Company, Sidney, Ohio

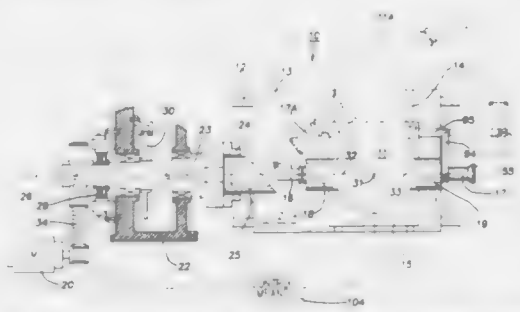
Continuation-in-part of Ser. No. 263,041, Oct. 26, 1988, Pat. No. 4,856,153. This application Aug. 3, 1989, Ser. No. 389,268
Int. Cl.[5] B23B *7/04, 39/20*
U.S. Cl. 29—33 J **5 Claims**

1. A machine tool turret for a machine tool having a rotatable workpiece spindle rotatable about a c axis, comprising in combination:

first and second tool spindles journaled on said turret for rotation about first and second tool axes, respectively;

means mounting said turret for compound movement of said tool spindles in an x-c plane defined by an x axis perpendicular to said c axis;

means to lock each said tool spindle against rotation for machining of a rotating workpiece by a non-rotating tool



in each said tool spindle, and for machining of a rotating or non-rotating workpiece by a rotating tool in each said tool spindle when unlocked and rotated; and

including drive means to rotate selectively each of said tool spindles;

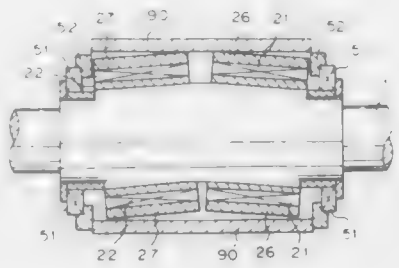
said drive means being a single motor connectable to rotate alternatively each of said tool spindles.

5,007,152

VARIABLE-CROWN ROLL

Atsushi Tomizawa; Susumu Inoue, both of Kobe, and Takeshi Masui, Nishinomiya, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Nov. 9, 1989, Ser. No. 435,210
Claims priority, application Japan, Oct. 27, 1989, 1-280709
The portion of the term of this patent subsequent to Aug. 29, 2006, has been disclaimed.
Int. Cl.[5] B21B *13/02*
U.S. Cl. 29—116.2 **32 Claims**



1. A variable-crown roll comprising:

a curved arbor; and

a plurality of antifriction bearings which are mounted on said arbor, said bearings being symmetrically disposed with respect to the lengthwise center of said arbor, said bearings on one side of the lengthwise center of said arbor being symmetric with respect to said bearings on the other side of the lengthwise center.

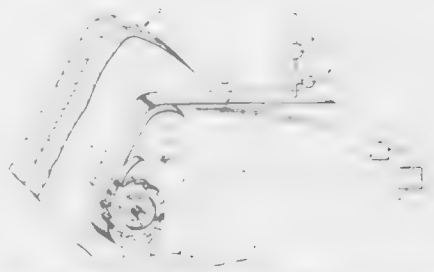
5,007,153

METHOD FOR TIGHTENING THREADED CONNECTORS

John K. Junkers, 7 Arrowhead La., Saddle River, N.J. 07458

Filed Jun. 29, 1989, Ser. No. 374,915
Int. Cl.[5] B23Q *17/20*
U.S. Cl. 29—407 **7 Claims**

1. A method of tightening a threaded connector including a bolt and a nut, comprising the steps of turning a nut on a bolt; continuously monitoring a relationship between a pressure applied for turning the nut and an angular distance of the turning of the nut; based on said monitored relationship between the pressure applied for the turning of the nut and the angular distance of the turning of the nut, determining a position of the nut when an elongation of the bolt starts; and thereafter turning the nut only over such an additional angular distance from the determined position, that a desired elongation of the bolt located below a yield point of the bolt is achieved.

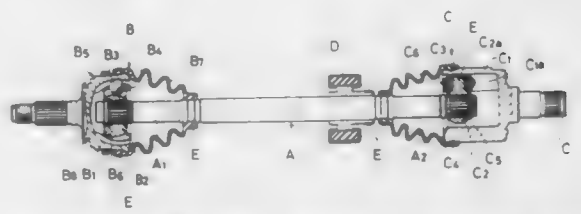


5,007,154

METHOD OF ASSEMBLING A VEHICULAR DRIVING SHAFT

Yoshiharu Kamata; Nobuyoshi Nagatsuma; Mituharu Ozawa, and Hiroshi Yoshioka, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1989, Ser. No. 323,742
Claims priority, application Japan, Mar. 17, 1988, 63-63838; Mar. 18, 1988, 63-65536
Int. Cl.[5] B21D *39/03*
U.S. Cl. 29—430 **3 Claims**



1. A method of assembling a vehicular driving shaft in which a joint unit is attached to each of both ends of the driving shaft, said method comprising the steps of:

orienting the driving shaft vertically with respect to the ground;

conveying the driving shaft to a plurality of assembling stations while holding said driving shaft in a vertical posture in which an axial line of the driving shaft extends vertically with respect to the ground; and

assembling component parts of the joint units to the driving shaft, each of said component parts being assembled to the driving shaft at each of the stations while the driving shaft is held in said vertical posture.

5,007,155

LATCH PIN INSTALLATION APPARATUS AND METHOD

John J. Jordan, Freehold Township, Monmouth County, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 30, 1990, Ser. No. 516,575
Int. Cl.[5] B23P *11/00*
U.S. Cl. 29—434 **2 Claims**

1. In apparatus for installing a pivot pin member in a latch in a shipping container having a cover portion and a base portion and a keeper member on one of the cover and base portions, the latch having

securing means for engaging the keeper member to hold the cover and base portions together,

lock means for tightening the securing means, and

aperture means in the securing means and the lock means for receiving the pivot pin member,

the improvement comprising

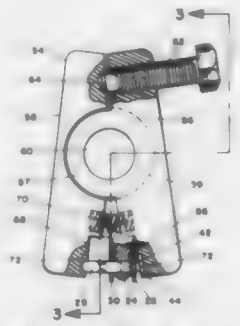
first and second working members, each having opposite first and second endportions,

the first endportions opposing one another and the second endportions opposing one another,

means pivotally interconnecting the working members at their midportions,

motive means carried by one of the working members for moving the first endportions in a direction away from one another and thereby moving the second endportions in a direction toward one another,

whereby the second endportions are operative to press the pivot pin member into the aperture means in the latch members,



the motive means including a bolt member threadedly received in the first endportion of the first working member and mounted for axial movement in a direction spaced from and normal to the axis of pivotal interconnection of the working members,

the bolt member operatively engaging the first endportion of the second working member to move the first endportions in a direction away from one another upon rotation of the bolt member, and

means biasing the second endportions in a direction away from one another,

the second endportions including opposing faces and means defining opposing cavities in the opposing faces for receiving opposite ends of the pivot pin member,

the cavities having open end portions transverse to the opposing faces and being arranged in opposing pairs in the opposing faces.

5,007,156

METHOD OF SELECTIVELY CONNECTING A SET OF WINDING MEANS FOR A DYNAMOELECTRIC MACHINE INTO AT LEAST TWO DIFFERENT ELECTRICAL CONFIGURATIONS

Jerome P. Hurtgen, Ft. Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 213,720, Jun. 30, 1988, Pat. No. 4,880,391. This application Jul. 19, 1989, Ser. No. 381,854

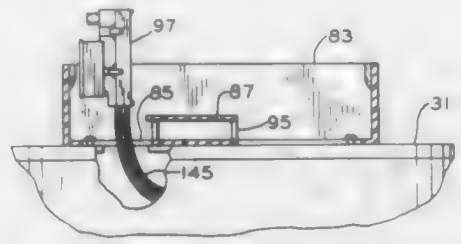
Int. Cl.[5] H02K *15/00*

U.S. Cl. 29—596 **19 Claims**

11. A method of selectively connecting a set of winding means for a dynamoelectric machine into at least two different electrical configurations with the winding means being adapted for excitation upon the energization of the dynamoelectric machine, the dynamoelectric machine including means for housing at least the winding means and having at least one opening therein, a conduit box associated with the housing means and having at least one aperture disposed so as to communicate with the at least one opening, each winding means having a plurality of leads adpated to be connected to each other and to a power source in the at least two different electrical configurations and with the leads passing through the at least one opening and the at least one aperture in part into the conduit box, a mounting table in the conduit box and having an abutment surface thereon, a terminal block having a plurality of connection apertures therein, and a plurality of lead terminations, the method comprising the steps of:

connecting the lead terminations to the leads of the winding means passed into the conduit box, repsectively;

disposing the terminal block in a preselected orientation at least adjacent the mounting table in the conduit box;



releasably inserting each lead termination into a predetermined one of the connection apertures in the terminal block while maintaing the terminal block at least generally in the preselected orientation thereof;

moving the terminal block from the preselected orientation thereof into another preselected orientation in overlaying engagement with the abutment surface of the mounting table, and

releasably engaging the terminal block in its another preselected orientation to the mounting table at least upon the occurrence of the moving step.

5,007,157

MACHINE TOOL

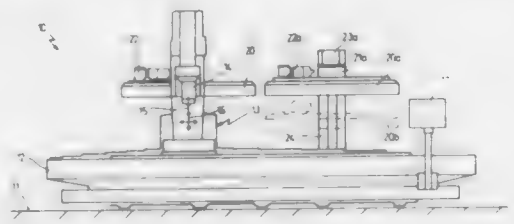
Hans-Henning Winkler, Tuttlingen, and Eugen Rütschle, Mühleim, both of Fed. Rep. of Germany, assignors to Chiron-Werke GmbH & Co. KG, Tuttlingen, Fed. Rep. of Germany

Filed Sep. 6, 1990, Ser. No. 578,875

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1989, 3930071

Int. Cl.[5] B23Q *3/157*

U.S. Cl. 29—568 **5 Claims**



1. A machine tool comprising:

a stationary machine bed;

a support;

means for displacing said support relative to said machine bed within a predetermined operating area;

a spindle stock arranged on said support for being displaced therewith, said spindle stock having a first receptacle for receiving a detachable toolholder magazine therein, said first receptacle being provided with first transfer means for transferring said toolholder magazine and being provided with first connector means for feeding energy to said toolholder magazine;

a stationary rack arranged within said operating area, said rack having a plurality of second receptacles, said second receptacles being each provided with second transfer means for transferring a toolholder magazine and being each provided with second connector means for feeding energy to said toolholder magazine;

a plurality of toolholder magazines, each having transfer elements for being transferred between said first receptacle on said spindle stock and one of said second receptacles on said rack, said toolholder magazines having each individual drive means for transporting toolholders within said toolholder magazine, said drive means being linked to third connectors mating said first or said second connector, respectively, when said toolholder magazine is inserted into said first or said second receptacle, respectively

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5,007,158

METHOD OF MANUFACTURING MAGNETIC HEADS

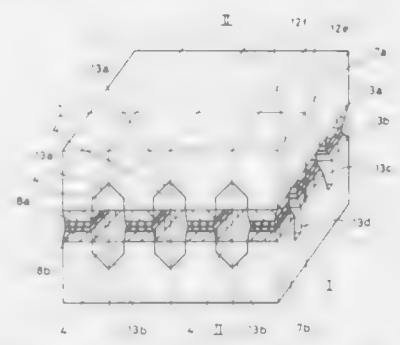
Kazuo Ino, Matsubara; Yoshiaki Shimizu, Minoh; Hiroyuki Okuda, Daitoh; Kousou Ishihara, Daitoh, and Takashi Ogura, Daitoh, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Feb. 8, 1989, Ser. No. 307,654

Claims priority, application Japan, Feb. 9, 1988, 63-28091; May 31, 1988, 63-133608; Jul. 27, 1988, 63-187727

Int. Cl.[5] G11B *5/42*

U.S. Cl. 29—603 **16 Claims**



1. A method of manufacturing a magnetic head having a magnetic gap between a pair of magnetic core halves abutted with each other through a nonmagnetic material, said method comprising the steps of:

preparing first and second magnetic core half members of ferromagnetic oxide having gap forming surfaces to be abutted with each other for defining said magnetic gap;

selectively forming a ferromagnetic thin film of a ferromagnetic metal material on said gap forming surface of at least said second magnetic core half member, said ferromagnetic thin film being so formed as (a) to expose a portion to be provided with a track width regulating groove and at least one of a coil groove and a joining member receiving groove in said gap forming surface of said first magnetic core half member and (b) to expose, in said gap forming surface of said second magnetic core half member, a portion to be provided with a track width regulating groove and a portion to be opposite to said at least one of said coil groove and said joining member receiving groove to be provided on said gap forming surface of said first magnetic core half member;

performing mechanical working on said exposed portion of said gap forming surfaces therein to provide said track width regulating groove and said at least one of said coil groove and said joining member receiving groove in said first magnetic core half member and to provide said track width regulating groove in said second magnetic core half member; and

abutting said first and second magnetic core half members between said gap forming surfaces to join the same with each other.

5,007,159

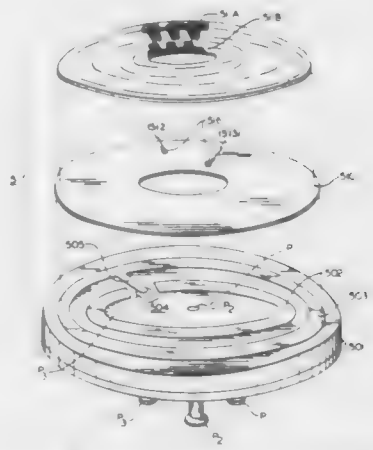
METHOD OF MANUFACTURING AN ELECTRICAL COMPONENT, E.G. A DIGITAL CONTACTING ENCODER

Kenneth Brown, Evansville, Ind., and Richard E. Riley, Riverside, Calif., assignors to Hamilton Standard Controls, Inc., Farmington, Conn.

Filed Mar. 29, 1989, Ser. No. 329,737

Int. Cl.[5] H01H *11/00*

U.S. Cl. 29—622 **7 Claims**



1. A method of manufacturing an electrical component which component includes

a rigid base having an exterior side and an interior side;

at least two, externally exposed electrical contacts on the exterior side of said base, one of them being a common contact and the other being a strip contact;

an electrical signal varying element, including

a relatively rigid substrate having a top side and an underside, and

at least one, longitudinally extended strip of signal affecting, conductive material located on the top side of said substrate;

a movable, bridging member electrically connected to said common contact and associated with said strip, movably sweeping along said strip causing an electrical signal imposed across said common contact and said strip contact to vary due to the changing relative position of said bridging member with respect to the length of said longitudinally extended strip;

comprising the steps of:

(a) forming a longitudinally extended, affixed conductive layer on the interior side of said base in physical and electrical connection with said strip contact, with said conductive layer providing a serial link in said conductive path, the presence of said conductive layer allowing greater tolerance in positioning said strip in relation to said strip contact;

(b) interfacing said conductive layer to the underside of said substrate, with the conductive layer located between said substrate and said base substantially coincident in alignment with said longitudinally extended strip, so that said conductive layer is electrically connected with said strip and said strip contact, and so that there is only one conductive path from said external strip contact to said strip within the component, the presence of said conductive layer allowing relatively great latitude in the alignment and placement of said strip with respect to said external strip contact; and

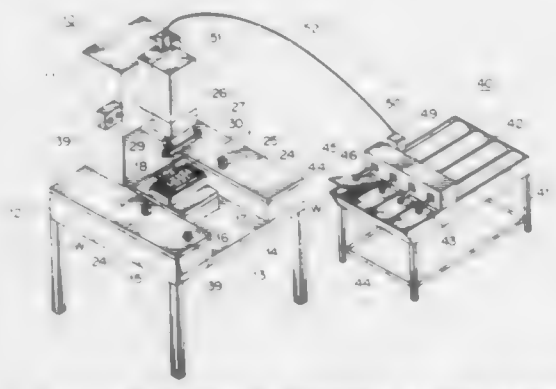
(c) joining said substrate and said base together and using said conductive layer so that said conductive layer provides a serial link in the only conductive path from said external strip contact to said strip.

5,007,160

APPARATUS FOR PRESS-INSTALLING WIRES

Masahiko Ishida, Kosai; Nobuaki Yamakawa, and Masahiro Shiida, both of Shizouka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jul. 12, 1989, Ser. No. 378,673
Claims priority, application Japan, Jul. 14, 1988, 63-173693
Int. Cl.[5] H01R *43/04*
U.S. Cl. 29—753 **1 Claim**



1. A wire press-installing apparatus for securely seating wires into multiple rows of receiver terminals erected at a predetermined pitch on a base of a joint block, comprising:

a receiver block means for securely holding the joint block thereon;

a table means on which the receiver block means is mounted and means for intermittently moving the receiver block means by a distance equal to the pitch of the receiver terminals on the joint block;

a ram means disposed above the table means and opposite the receiver block means for vertically moving a wire press-installing blade toward and away from the receiver block;

wire axis aligning jig means mounted on the table for temporarily holding the wire such that the wire faces a row of receiver terminals arranged on the base of the joint block;

a plurality of containers, each having a cover and containing specifically rated wires therein; and

a means for selecting one of the plurality of containers as having the next wire to be installed in the receiver terminals, said cover being openable in response to a signal from the selecting means and in response to the ram means having moved the distance equal to the pitch of the receiver terminals on the joint block.

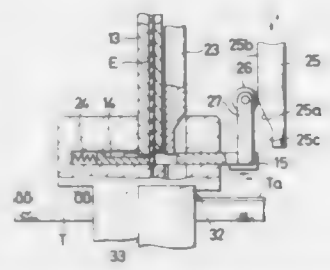
5,007,161

APPARATUS FOR FEEDING AND TRANSFERRING DISCRETE COUPLING ELEMENTS

Yasuhiko Matsuda, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Continuation of Ser. No. 480,893, Feb. 16, 1990, abandoned. This application Jul. 23, 1990, Ser. No. 559,405
Claims priority, application Japan, Feb. 21, 1989, 1-18398[U]
Int. Cl.[5] A41H *37/06*
U.S. Cl. 29—769 **6 Claims**

1. An apparatus for feeding and transferring discrete coupling elements each having a head portion and a pair of bifurcated leg portions successively one at a time onto a stringer tape, which apparatus comprises a feed unit including a vertically disposed feed chute having an elongate vertical opening, a transfer unit including a first slide and a second slide both supported on a base for horizontal reciprocating movement and defining therebetween a pocket registrable with said vertical opening, a transfer chute integral with said base and having a vertical opening for receiving an element from said pocket and transferring the same onto said tape, and means connected



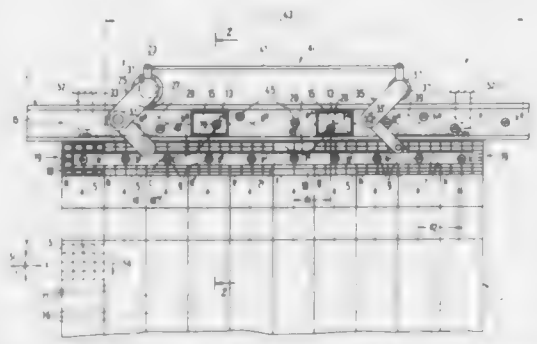
to said second slide and adapted to effect horizontal reciprocating movement of said slides.

5,007,162

METHOD AND DEVICE FOR PLACING COMPONENTS ON A SUPPORT

Adrianus A. R. Weeber, Alkmaar, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 3, 1990, Ser. No. 460,460
Claims priority, application Netherlands, Jan. 6, 1989, 8900027
Int. Cl.[5] H05K *3/30*; B23P *19/00*
U.S. Cl. 29—839 **14 Claims**



1. A method of placing components on a support, in which within a placement cycle a number of components are picked up from a presentation position in which the components are in a first array of a given spacing in a given direction by means of a pick-up device comprising a number of pick-up elements in a second array in a second spacing in the given direction, after which the pick-up device is moved above the support and all the pick-up elements are positioned one by one above the desired position on the support by the relative movement of the pick-up device with respect to the support and the relevant component is placed in this position in a third spacing of a third array, characterized in supplying the components positioned in said first array in tray packings, picking up the components one by one from the different tray packings to place them in the second array and then placing the components one by one on the support in said third array wherein the spacings of the first, second and third arrays differ.

5,007,163

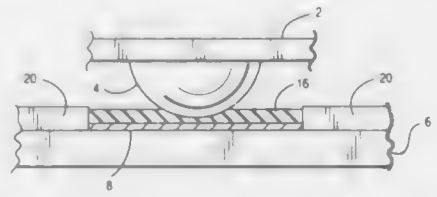
NON-DESTRUCTURE METHOD OF PERFORMING ELECTRICAL BURN-IN TESTING OF SEMICONDUCTOR CHIPS

Keith R. Pope, and Gustav Schrottke, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 18, 1990, Ser. No. 510,497
Int. Cl.[5] H05K *3/34*
U.S. Cl. 29—840 **6 Claims**

1. A method of temporarily bonding electronic chips to metallized pads on a circuitized substrate comprising the steps of:

choosing a first metal indium and a second metal gallium as a pair of metals for spontaneously forming a eutectic molten mixture at a temperature in the range of from about 10 deg. C. to about 30 deg. C.;



providing a solder dam at each substrate pad;

depositing a first of said pair of metals on substrate pads;

depositing a second of said pair of metals over chip terminal bumps; and

bringing chip terminal bumps and metallized pads into contact.

5,007,164

METHOD AND APPARATUS FOR PRODUCING LINEAR BODY WITH WATERPROOF PLUG

Sanae Kato, Gotenba, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Sep. 8, 1989, Ser. No. 404,534
Claims priority, application Japan, Sep. 12, 1988, 63-226394
Int. Cl.[5] B23P *19/00*
U.S. Cl. 29—854 **19 Claims**



1. A method for mounting a waterproof plug to the front end of a covered electric wire, comprising the steps of:

feeding waterproof plugs to a first position of a transfer path one by one from a magazine in such a manner that the opening of each waterproof plug is maintained parallel with said transfer path as each waterproof plug is fed to said first position;

feeding a covered electric wire to a mounting position at a second position of said transfer path in an uncovered state of the front end thereof; and

transferring the waterproof plug from the first position to the second position and inserting the uncovered end of the electric wire into the opening of the waterproof plug.

5,007,165

METHOD OF PRODUCING A CAM SHAFT

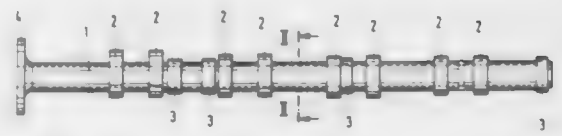
Miroslan Podhorsky, Elisabethstrasse, Fed. Rep. of Germany, assignor to Balckeürr Aktiengesellschaft, Ratingen, Fed. Rep. of Germany

Filed Aug. 30, 1990, Ser. No. 575,306
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1989, 3929179
Int. Cl.[5] B23P *15/00*
U.S. Cl. 29—888.1 **2 Claims**

1. A method of producing a member that has a core pipe upon which are secured, via expansion of said core pipe, components that are spaced from one another and have a prescribed position on said core pipe, with said expansion of said core pipe being effected by introducing a hydraulic fluid into said core pipe said method including the further steps of:

providing components that are made of a ductile material selected from the group consisting of spheroidal graphite iron and sintered materials.

subjecting surface portions of said components to a mechanical abrasion; and



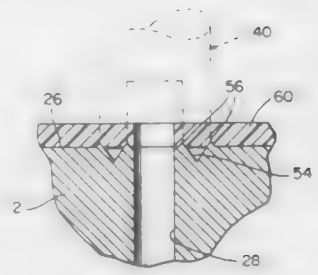
melting said surface portions of said components via a controlled laser beam in such a way as to first slightly reduce an adhesive pressure between said components and said core pipe as a consequence of said melting of said surface portions, and subsequently, after hardening of said melted surface portion and due to temperature equalization in said components and said core pipe, to increase said adhesive pressure to a higher value.

5,007,166

METHOD OF DECREASING AIR/FUEL LEAKAGE IN A CARBURETOR

Gary H. Erb, 513 N. Cherry, O'Fallon, Ill. 62269

Filed Nov. 29, 1989, Ser. No. 442,623
Int. Cl.[5] B23P *15/00*; B01D *47/00*
U.S. Cl. 29—888.011 **8 Claims**



1. A method of decreasing air/fuel leakage in a carburetor including a main body defining at least one air-fuel mixture intake passage extending therethrough and a planar mounting face upon which a main jet plate is mounted with a planar face of said jet plate closely opposing said mounting face and a gasket sheet disposed and clamped between said faces and having a plurality of openings therethrough communicating with a plurality of corresponding air and fuel passage ends, each having a given diameter, opening through said faces in registry with other, said method comprising:

(a) separating said main body from said jet plate and said gasket sheet;

(b) forming circular grooves in one of said faces about the corresponding passage ends and forming at least one circular raised ridge on said one face substantially concentric with and radially adjacent each groove; and

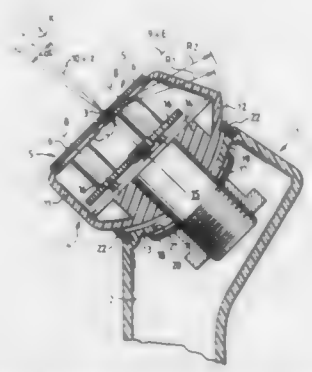
(c) reassembling said main body and said jet plate with said gasket sheet clamped therebetween, said circular raised ridges forming zones of increased pressure engagement between said one face and said gasket sheet about the corresponding passage ends by penetrating said circular raised ridges into said gasket sheet.

5,007,167
BLADE MODIFICATION TOOL AND PROCESS
Jamie R. Hill, 1325 SE. Fourth St., Cape Coral, Fla. 33904
Filed Dec. 4, 1989, Ser. No. 445,375
Int. Cl.[5] B27B *11/004*
U.S. Cl. 29—889.1 6 Claims



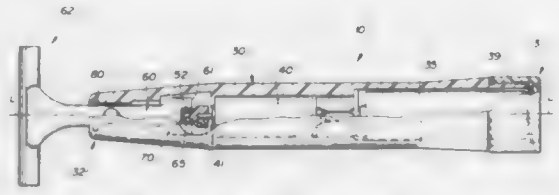
6. A process for converting a helicopter rotor blade to a shorter, approved length comprising the steps of:
installing a blade bolt through a pin bolt support bracket located on a horizontal tubular base and the base end of said rotor blade;
locating the leading edge of said rotor blade into three "V" shaped support brackets;
installing lateral support arms on each side of said rotor blade and tightening the adjusting screws to a firm grip on said rotor blade;
strapping the out board end of said rotor blade to said base to secure portion of blade to be cut off; and
cutting off out board twenty four inches of said rotor blade.

5,007,168
ELECTRIC DRY SHAVING APPARATUS WITH A MOVABLE SHAVING HEAD ARRANGEMENT
Werner Messinger, Kronberg; Karl Trölltsch, Frankfurt am Main, and Bernd Tewes, Wiesbaden, all of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany
Filed Dec. 20, 1989, Ser. No. 453,718
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1988, 3843936
Int. Cl.[5] B26B *19/20, 19/14, 19/16, 19/44*
U.S. Cl. 30—43 19 Claims



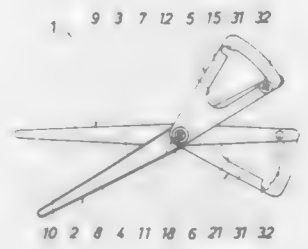
1. A dry shaving apparatus comprising a housing, a shaving head movably carried on said housing, said shaving head including at least one shaving assembly, said shaving assembly including a circular upper cutter and a rotary lower cutter, said lower cutter having an axis of rotation aligned at right angles to a shearing plane (E) extending parallel to the outer surface of said upper cutter, said shaving head having an axis of symmetry intersecting said shearing plane (E) at right angles in the geometric center of said shaving head, and structure supporting said shaving head on said housing so that said geometric center is provided as a stationary pole for said shaving head axis of symmetry which is movable with said shearing plane (E) in any direction, relative to the housing.

5,007,169
VIBRATING RAZOR
Vincent C. Motta, West Norwalk, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Dec. 11, 1989, Ser. No. 448,779
Int. Cl.[5] B26B *19/28, 19/02, 21/14*
U.S. Cl. 30—45 34 Claims



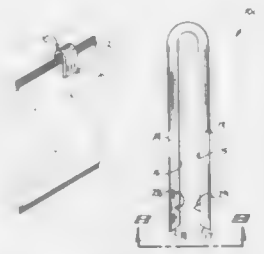
1. An electric vibrating razor comprising:
an electric motor with a rotatable shaft;
a battery for powering said electric motor;
a substantially hollow handle which substantially encases said electric motor and said battery wherein said handle has a longitudinal axis;
a solid shaver head pivotally attached to said handle wherein said shaver head has a distal end with means for supporting a cartridge, and a proximal end;
means for coupling said proximal end of said shaver head to said rotatable shaft.

5,007,170
SCISSORS FOR BOTH RIGHT AND LEFT HAND USE
Tatsushige Mayama, Osaka, Japan, assignor to NT Incorporated, Osaka, Japan
Division of Ser. No. 363,880, Jun. 9, 1989, abandoned. This application Apr. 25, 1990, Ser. No. 513,019
Int. Cl.[5] B26B *13/20*
U.S. Cl. 30—232 5 Claims



1. Scissors comprising:
a front blade having upper and lower cutting edges;
a rear blade having upper and lower cutting edges;
connecting means pivotally connecting the front blade and the rear blade for slidable pivoting movement relative to each other;
a front handle having a first finger receiving portion thereon, and
a rear handle having a second finger receiving portion thereon,
characterized in that the connecting means engages not only the front and rear blades but also the front and rear handles so that the front and rear handles and the first and second finger receiving portions provide thereon respectively are pivotal on the connecting means.

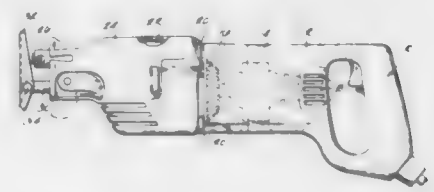
5,007,171
BAG OPENER APPARATUS
John H. Horning, Jr., 51934 Lily Rd., South Bend, Ind. 46637
Filed May 7, 1990, Ser. No. 519,810
Int. Cl.[5] B67B *7/00*
U.S. Cl. 30—294 1 Claim

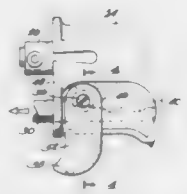


1. A bag opener apparatus comprising,
a "U" shaped body, the "U" shaped body including a first leg spaced from and parallel to a second leg in a first position and in an unparallel relationship in a second position when the first and second legs are squeezed together relative to one another, and
the first and second legs joined together, including an elongate arcuate intersection, the "U" shaped body formed of a memory retentive deformable material, and
the first leg including a first interior surface, and the second leg including a second interior surface, wherein the first and second interior surfaces are parallel relative to one another in the first position, and
the first and second legs coextensively aligned relative to one another in the first position, and
knife means mounted to the first interior surface to effect severing of a bag directed between the first and second interior surfaces, and
wherein the knife means includes an elongate knife defined by a "V" shaped cross-sectional configuration, and
wherein the first leg includes a first side edge spaced from and parallel to a second side edge, and the "V" shaped knife aligned with the first interior surface at the first side edge and extending above the first interior surface at the second side edge a predetermined height, and
including an elongate groove defined by a "V" shaped cross-sectional configuration aligned with the knife, wherein the groove is formed within the second interior surface, and the knife and the groove are aligned relative to one another, and
wherein the first leg includes a first beveled terminal end edge, and the second leg includes a second beveled terminal end edge, wherein the first and second beveled end edges are in confronting relationship to receive the bag therebetween, and
wherein the groove is defined by a predetermined depth, the predetermined depth less than that defined by the predetermined height of the knife adjacent the second side edge.

5,007,172
QUICK CHANGE GUIDE SHOE
Bernhard Palm, Brookfield, Wis., assignor to Milwaukee Electric Tool Corporation, Brookfield, Wis.
Filed Jun. 13, 1990, Ser. No. 537,474
Int. Cl.[5] B27B *11/02*
U.S. Cl. 30—377 2 Claims

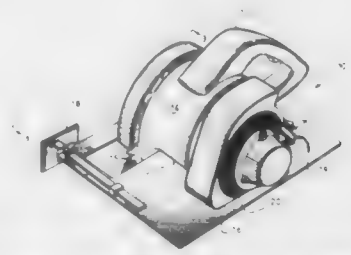
1. A power saw having a body including a nose section and including,
a reciprocating saw blade projecting from said nose section,
a post mounted in said nose section for slideable movement generally parallel to said saw blade,
a guide shoe mounted for limited pivotal movement on said post,
a plurality of transverse grooves spaced along the length of said post,
a lock pin rotatably mounted in said nose section transverse and spaced from the axis of said post,
said pin being rotatable between a lock position and a release position and having a portion engageable with whichever of said grooves is positioned adjacent the pin,





a portion of said pin being shaped to clear and not engage said post when said pin is rotated to said release position,
an end of said pin projecting from said nose section,
and a lever mounted on said end of said pin for actuating said pin.

5,007,173
GASOLINE ENGINE POWERED HAND-HELD CIRCULAR SAW
Robert E. Rush, 560 Mellon Bridge Rd., Oxford, Ala. 36203
Filed Jun. 14, 1990, Ser. No. 537,800
Int. Cl.[5] B23D *45/16;* B25F *11/00*
U.S. Cl. 30—391 5 Claims



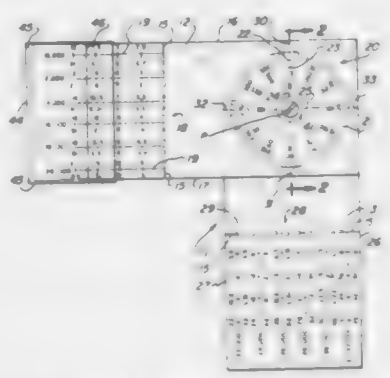
1. A gasoline engine powered hand-held circular saw, comprising:
(a) a casing having a front, a top, and a bottom;
(b) a fuel tank disposed substantially on said front of said casing;
(c) a circular saw blade disposed substantially within said casing;
(d) an internal combustion engine disposed substantially along side said circular saw blade within said casing, said internal combustion engine having a crankshaft with an end, said circular saw blade being connected to said end of said crankshaft of said internal combustion engine; and
(e) a handle disposed substantially on said top of said casing so that the saw can be easily handled and used.

5,007,174

TOPOGRAPHIC MEASURING DEVICE

Robert J. Cook, 316 W. Prospect, Apt. 209, Fort Collins, Colo. 80526

Filed Jan. 22, 1990, Ser. No. 468,233
Int. Cl.[5] H01L 7/10
U.S. Cl. 33—1 SD [redacted] Claims



1 A measuring device for topographic sheets having different distance scales comprising:

transparent top and bottom arms pivotally connected together to move relative to one another about a pivot, each of said arms having a pair of longitudinal edges,

a plurality of different distance scales extending along each of said arms, each of said distance scales extending parallel to the longitudinal edges of the associated arm and having a series of spaced graduation lines arranged perpendicular to the longitudinal edges of the associated arm,

said top arm carrying a protractor with a center, said protractor having a protractor line with 0 to 180 indicia,

said bottom arm having pointer means adjacent and operatively associated with said protractor, said pointer means being offset 90 degrees on the bottom arm with respect to the orientation of said protractor line on said top arm when said top and bottom arms are superposed on one another,

one of said distance scales on one of said arms being used to measure the distance between two selected points on a selected one of said topographic sheets by the placement of said one distance scale for that sheet so that both of said points intersect said selected distance scale,

the other of said arms being rotated until a selected line associated with said other arm is parallel to a reference line to provide an indication of the angle formed by said one distance scale with said reference line and readable on said protractor.

5,007,175

SYSTEM FOR MATERIALIZING A POINT IN SPACE, APPLICATIONS THEREOF AND A TOOLING ASSEMBLY FOR SAID SYSTEM

Jean-Claude Schwarz, Le Puy Sainte Reparade, France, assignor to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Feb. 21, 1990, Ser. No. 482,548
Claims priority, application France, Feb. 21, 1989, 89 02243
Int. Cl.[5] G01C 3/00
U.S. Cl. 33—286 27 Claims

1. A system fore materializing in space a point whose coordinates in a system of reference axes are known, comprising

an optical aiming apparatus, occupying a pre-determined position with respect to said system of axes and making it possible to determine, in said system of axes, the coordinates of any point aimed at, and

a tooling assembly comprising a stand, one part at least of which is movable with respect to said system of axes and a hemispherical ball joint mounted in a spherical concave seat fixed to said movable part of the stand, the center of



said ball joint being marked so as to be visible by said aiming apparatus

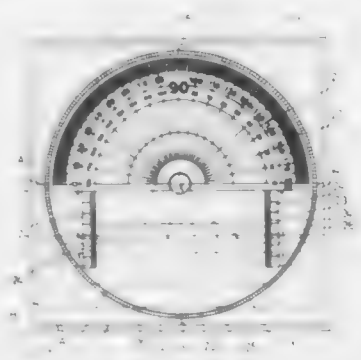
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5,007,176

SIMPLY-CONSTRUCTED INSTRUMENT FOR MEASURING HORIZONTAL LINE, VERTICAL LINE AND ANGLES

Ming-Chuan Huang, P. O. Box 55-1670, Taipei 10477 , Taiwan

Filed Oct. 1, 1990, Ser. No. 591,242
Int. Cl.[5] G01C 9/20
U.S. Cl. 33—377 4 Claims



1 An instrument for measuring angles comprising:

a casing generally square shaped and formed with four sides walls, a transparent covering plate and a base plate, said casing forming an inner jacket and two axial lines crossing each other at a center of said transparent covering plate of said casing, of which one axial line is perpendicular to two vertical side walls but parallel to the other two horizontal side walls, and the other axial line is perpendicular to the two horizontal side walls but parallel to the two vertical side walls;

a coloured liquid filled in said inner jacket of said casing; and a rotating disc generally made of transparent material pivotally mounted at a center of said transparent covering late of said casing including an upper half circle portion above a central diametrical line passing the center of said covering plate of said casing radially formed with a plurality of angular graduations in term of degrees and a lower half circle portion below the central diametrical line formed with two vertical columns parallel with each other, said two columns respectively formed with a plurality of horizontal graduations of which any two corresponding horizontal graduations of said two columns are interpolated to form a reference line between the two horizontal graduations parallel to said diametrical line,

whereby upon a rotation of said rotating disc about a pivot formed at the center of said casing to allow said reference line between said two horizontal graduations to be parallel

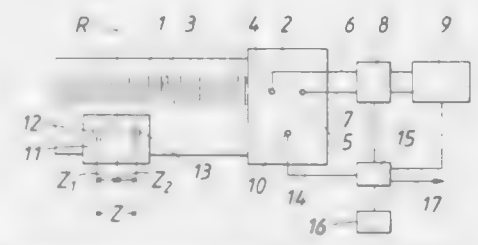
to a liquid level of said coloured liquid, an angle an be obtained by matching the angular graduation with one of said axial lines formed on said covering plate when said casing is laid on or coincided with a plane to be measured.

5,007,177

INCREMENTAL MEASURING SYSTEM

Heinz Rieder, Oberndorf, and Max Schwaiger, Ostermiething, both of Austria, assignors to RSF-Elektronik Gesellschaft m.b.H., Tarsdorf, Austria

Filed Jan. 22, 1990, Ser. No. 467,945
Claims priority, application Austria, Feb. 3, 1989, 219/[redacted]
Int. Cl.[5] G01B 7/02, 11/02
U.S. Cl. 33—706 5 Claims



1 In an incremental measuring system comprising.

a scale member provided with a scale consisting of a sequence of scale increments and further provided with a plurality of reference marks spaced apart along said scale,

a scanning unit mounted to perform relative to said scale member a non-contacting scanning movement in opposite directions along said scale and comprising a plurality of scale-scanning sets for scanning said scale and for producing analog measured-value signals in response to the scanning of said scale, and a reference mark scanning set for scanning said reference marks and for producing a reference mark signal in response to the scanning of said reference marks, and

evaluating means for receiving said measured-value signals and for deriving from said measured-value signals digital countable signals and a direction signal indicating the direction of said scanning movement, said evaluating means comprising counting means for counting said countable signals in a sense depending on said direction signal and for generating a count indicating the position of said reference mark scanning relative to said scale, and an evaluating circuit for receiving said reference mark signal and for generating a reference pulse when said counting means indicate that said scale member is being scanned by said reference mark scanning set at a reference point, which registers with a predetermined one of said scale increments and is spaced along said scale from each of said reference marks,

the improvement comprising

at least one reference mark carrier releasably secured to said scale member,

said reference marks comprising at least one pair of first and second reference marks on said carrier and spaced along said scale,

selecting means for defining for said reference point on said carrier a location which is disposed between said first and second reference marks and is spaced first and second distances from said first and second reference marks, respectively, which selecting means comprise memory means for storing said first and second distances, and wherein

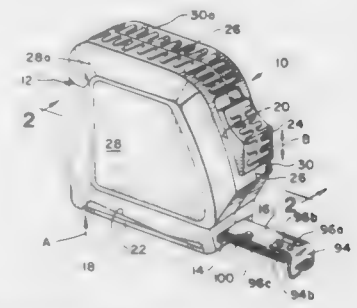
said evaluating circuit comprises a pulse shaper stage for generating said reference pulse and a control circuit for indicating in dependence on said direction signal and on said reference mark signal that said reference mark scanning set is scanning one of said first and second reference marks by a scanning movement toward the other of said first and second reference marks, and for causing said pulse shaper stage to generate said reference pulse when said counting means indicate that said reference mark scanning set has moved from said one reference mark toward the other over said one of said stored distances.

5,007,178

MEASURING TAPE DEVICE

Robert J. Dewire, Naperville, and Walter A. Kozlowski, Schaumburg, both of Ill., assignors to Sears, Roebuck & Co., Chicago, Ill.

Filed Jun. 29, 1989, Ser. No. 374,005
Int. Cl.[5] G01B 3/10
U.S. Cl. 33—767 10 Claims



1. A measuring tape device, comprising.

a casing having an aperture through which a coilable measuring tape can be extracted and retracted;

a coilable measuring tape disposed in the casing with a distal end projecting from the aperture;

a first brake mechanism mounted on and normally recessed within the bounds of the casing for normally applying a controlled drag on the tape which allows the tape to be extracted or retracted against the drag to any given length and held at said length and being selectively operable to release the normal application of the controlled drag; and

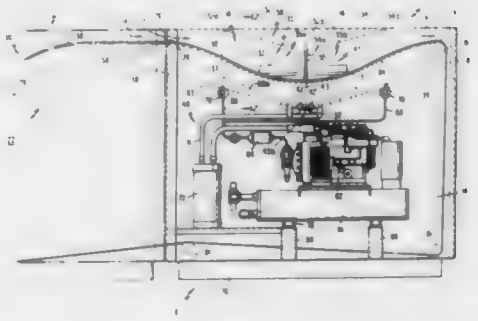
a second brake mechanism mounted on the casing and being selectively operable for applying a positive lock on the tape greater in magnitude than the drag of the first brake mechanism to prevent accidental extraction or retraction of the tape.

5,007,179

COLD AIR LOCK VAPOR SEAL FOR PROCESS SOLVENT VAPOR RECOVERY AND CONTROL

Joel E. Rodgers, Sr., Convent Station, N.J.; Ambrose J. Schmitz, Lake Barrington, Ill., and Alton D. Romig, Mine Hill, N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Sep. 21, 1989, Ser. No. 410,216
Int. Cl.[5] F26B 3/00, 21/06
U.S. Cl. 34—22 37 Claims



23. A method of limiting outflux of a solvent vapor from a degreaser containing a supply of solvent through which de-

greaser articles to be degreased are conveyed from an entrance end of the degreaser for discharge through an exit end, comprising the steps of:

(a) conveying said articles from the entrance end into contact with at least one of said solvent supply or a vapor zone thereof;

(b) directing said articles from contact with the solvent supply or vapor thereof through the conveyor exit end;

(c) causing said articles to pass through a conveyor flow path in said exit end provided with chilled air in a section of the flow path which is elevationally lower than flow path sections in said exit end respectively disposed upstream and downstream from the chilled air section; and

(d) collecting solvent liquid condensed within the chilled air section.

28. The method of claim **23**, wherein said articles pass into an inlet of the conveyor flow path which is elevationally above a vapor zone within the degreaser in communication with the inlet.

5,007,180

METHOD OF AND AN APPARATUS FOR THE SEPARATION OF CONDENSABLE HARMFUL SUBSTANCES

Michael Christ, Stuttgart, and Wolfgang Teichmann, Filderstadt, both of Fed. Rep. of Germany, assignors to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

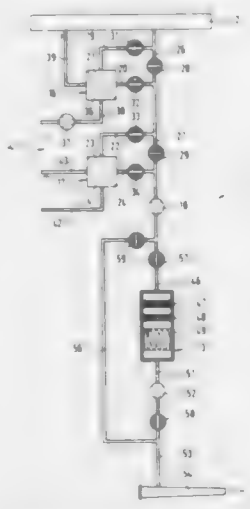
PCT No. PCT/EP88/00807, § 371 Date Jun. 12, 1989, § 102(e) Date Jun. 12, 1989, PCT Pub. No. WO89/03499, PCT Pub. Date Apr. 20, 1989

PCT Filed Sep. 7, 1988, Ser. No. 375,011

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1987, 3734388

Int. Cl.[5] F26B *3/00*

U.S. Cl. 34—32 **18 Claims**



1. A method of separating condensable harmful substances and solid particles from a process gas or waste air, comprising the steps of:

pre-filtering a warm waste air in a first heat-exchanger stage by cooling this air with a first cooling medium to below the dew point of first condensable harmful substances and dispersed solid particles to produce a first condensate containing impurities, discharging the first cooling medium for heat recovery and heating the process gas, and extracting the first condensate containing impurities;

pre-filtering said warm waste air in a following second heat-exchanger stage by cooling this air with a second cooling medium to below the dewpoint of second condensable harmful substances to produce a second condensate containing impurities, and extracting the second condensate containing impurities; and

mechanically final filtering the waste air in a third stage after it has been cleansed twice in said first and said second stage.

5,007,181

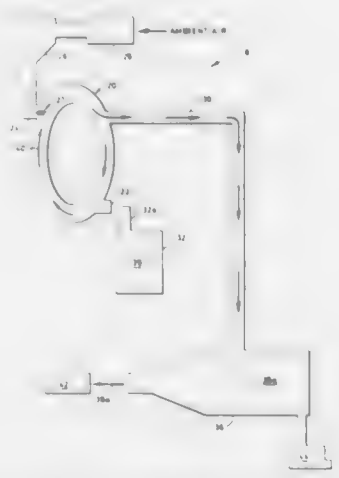
DEAGGLOMERATING DIRECT-FIRED FLASH DRYER FOR DRYING STIR-IN PHOSPHORS AND METHOD OF USING SAME

Douglas M. Jackson, Monroeton, and John A. Arbie, Sr., Towanda, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jan. 22, 1990, Ser. No. 473,778

Int. Cl.[5] F26B *17/00*

U.S. Cl. 34—57 R **9 Claims**



1. An improved direct-fired flash dryer for drying stir-in halophosphate phosphor to a deagglomerated state, comprising:

a glass toroidal drying chamber;

a teflon-coated feeder for transferring a wet phosphor cake from filtering means to said drying chamber;

an inlet blower to provide a gaseous stream to said drying chamber for circulation therein;

means for heating said gaseous stream;

a phosphor collector connected by glass conveying means to said drying chamber for collecting said phosphor; and

and exhaust fan connected by glass conveying means to said collector to draw said gaseous stream through said drying chamber and said collector.

5,007,182

BODY DRYER

Sam Fishman, 6 Amberly Ct., Marlboro, N.J. 07746, and Michael J. Marchese, 12812 Willoughby La., Bayonet Point, Fla. 34667

Filed Jan. 31, 1990, Ser. No. 473,019

Int. Cl.[5] F26B *19/00*

U.S. Cl. 34—90 **24 Claims**

1. An apparatus for drying a user's body comprising:

a support frame;

a platform means dimensioned to permit a user to stand on a surface thereof and supported on the frame, the platform means being formed with an upwardly extending surface portion positioned to bear against and cause the toes of the user to spread, said platform means being formed with aperture means therethrough permitting airflow therethrough to the body of the user standing thereon; and



a fan means mounted under the platform means for directing air through said aperture means.

5,007,183

VACUUM DRIER APPARATUS

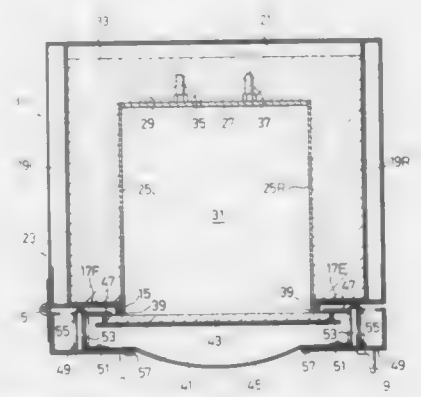
Nobutoshi Kobayashi, and Tetsuo Murakami, both of Tokyo, Japan, assignors to Nippon Scientific Co., Ltd. and Kusumoto Chemicals Co., Ltd., both of Tokyo, Japan

Filed Sep. 18, 1990, Ser. No. 583,999

Claims priority, application Japan, Sep. 20, 1989, 1-242137

Int. Cl.[5] E26B *13/30*; **E06B** *7/28, 9/00*

U.S. Cl. 34—92 **5 Claims**



1. A vacuum drier apparatus, comprising:

a vacuum drying chamber having a vacuum drying space for performing a vacuum drying on an object to be dried therein, the vacuum drying space having an opening section; and

an openable door having an opening window, which is provided in front of the vacuum drying chamber to close off the opening section of the vacuum drying space, the door including:

a transparent glass plate provided on a rear side of the opening window facing toward the opening section of the vacuum drying space, which seals off the opening section when the door is closed;

a transparent protection member provided on a front side of the opening window facing away from the opening section of the vacuum drying space, in front of the glass plate; and

elastic supporter means located between the glass plate and the protection member, for supporting the glass plate and the protection member with respect to each other, such that the glass plate can be pressed tightly to seal off the opening section of the vacuum drying space, while the protection member can be pushed away from an edge of the front side of the opening window by an external pressure exerting on the protection member.

5,007,184

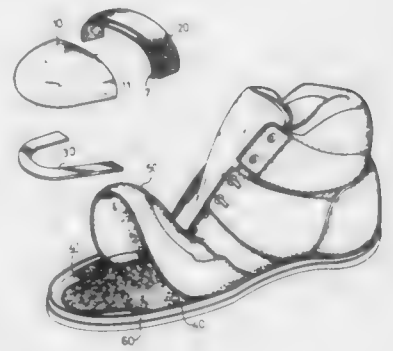
SAFETY SHOE

Chien A. Lee, Room 704, No. 592, Lin Sen N. Rd., Taipei, Taiwan

Filed Jun. 21, 1989, Ser. No. 369,121

Int. Cl.[5] A43B *23/08*

U.S. Cl. 36—77 R **2 Claims**



1. A safety shoe comprising:

a steel toe box (**10**) having an inwardly turned relatively wide flange (**11**), said flange (**11**) having a larger width at two opposing respective end portions (**12**) and having a smaller width at a central portion (**14**) for increasing the tensile strength of said toe box (**10**), said flange (**11**) having a gradually thinner thickness from a junction portion to an edge thereof;

a polyethylene liner (**20**) having a shoulder for mounting and partial contiguous interface with said steel toe box (**10**);

a U-shaped pad (**30**) made of a hardened material having a size and shape substantially matching with a size and shape of said flange (**11**) of said steel toe box (**10**) for supporting said steel toe box (**10**); and,

a middle sole (**40**) having a front end that lies below a front end of said flange (**11**) and having a U-shaped cutout (**41**) for alignment with and retention of said U-shaped pad (**30**), said middle thickness sole (**40**) having a thickness that is greater than a thickness of said U-shaped pad (**30**).

5,007,185

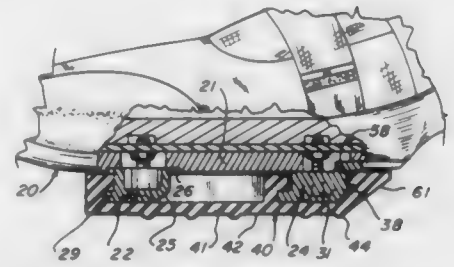
CLEAT COVER FOR BUCYCLE SHOE

Margaret A. Lazarski, P.O. Box 6594, Denver, Colo. 80206

Filed Oct. 13, 1989, Ser. No. 421,448

Int. Cl.[5] A43B *5/00*

U.S. Cl. 36—135 **9 Claims**



1. A cleat cover for use on a bicycle shoe equipped with a pair of bicycle pedal engaging shoe cleats defining spaced apart longitudinally aligned front and rear cleats mounted on a sole plate of said bicycle shoe, each cleat having a body portion defining a forwardly extending lip overhanging the sole plate and the rear cleat further defining a rearwardly directed notch

adjacent the sole plate, said cleat cover comprising a removable elastomeric shallow cup shaped housing for surrounding and covering said front and rear cleats, means on said housing for releasably engaging the forwardly extending lip of each of said cleat and securing said housing to said cleats, and means on said housing for releasably engaging within the rearwardly directed notch of said rear cleat, said lip engaging means and notch engaging means releasably gripping and securing said cover in cleat enclosing relationship whereby said cleats are protected by said cover to adapt said bicycle shoe for temporary use as a walking shoe.

5,007,186

DEVICE FOR IMPROVING THE SEAL BETWEEN THE CUFF OF A SKI BOOT AND THE LEG

Horst Bischof, Graz, and Wolfgang Skerbinjek, Baernbach, both of Austria, assignors to Koflach Sport Gesellschaft mbH & Co. KG, Voecklabruck, Austria

Filed Dec. 2, 1988, Ser. No. 279,064
Claims priority, application Austria, Dec. 7, 1987, 3219/87
Int. Cl.[5] A43B *5/04, 11/00;* **A43C** *11/00*
U.S. Cl. 36—121 22 Claims



1. In a ski boot having at least one movable cuff part and an opposing inner liner, an improvement in the seal between the boot and a user's leg when the boot is closed around the user's leg, comprising the combination of:

band means for encircling one movable cuff part and the inner liner of the boot and for providing an adjustable closing seal between said movable cuff part, the inner liner and the leg; and

at least one coupling means mounted on the boot for releasably attaching said band means to the boot wherein said coupling means is optionally attached at said movable cuff part or at said inner liner at a point approximately on the longitudinal central axis of the boot on the external surface of said inner liner or at both said locations and wherein the coupling means mounted onto said movable cuff part is designed differently from the coupling means mounted on said inner liner so as to provide varying, selectable mounting positions of said band onto said coupling means.

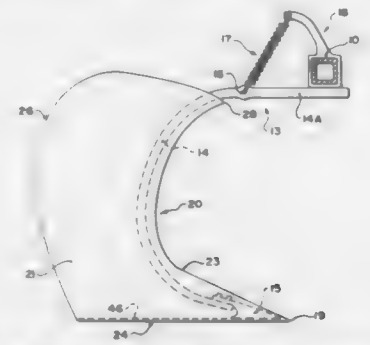
5,007,187

SNOW PLOW ARRANGEMENT FOR MOISTURE RETENTION IN A FIELD

Mervin R. J. Lloyd, Box 55, D'Arcy, Saskatchewan, Canada S0L 0N0

Filed Aug. 7, 1989, Ser. No. 390,236
Int. Cl.[5] E01H *4/00*
U.S. Cl. 37—220 11 Claims

1. Apparatus for improving moisture retention in the field comprising a frame, means for transporting the frame across the ground in a working direction, and a plurality of snow plow members each mounted on the frame and spaced in relation transverse to the working direction, each being shaped to form a furrow in snow on the ground and each being spaced and arranged such that the furrow formed by one is spaced from the furrow formed by the next, each of the snow plow members having a leading edge with a lowermost and forwardmost apex on a bottom end thereof and a pair of



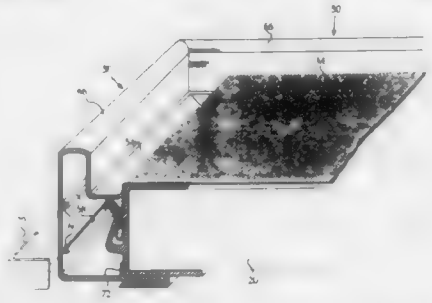
diverging side surfaces extending from the leading edge to trailing edges thereof and wherein the distance between one snow plow member and the next snow plow member is greater than the width of each of the snow plow members across said trailing edges thereof, each of the diverging side surfaces having a lowermost leading edge lying in a substantially horizontal plane containing the apex, the leading edge being c-shaped so as to extend in a curved line rearwardly and upwardly from the apex to a rearmost point and from the rearmost point in a curved line forwardly and upwardly to an uppermost point forward of the rearmost point.

5,007,188

FRAMING SYSTEM AND COMPONENT PARTS THEREOF

Harold E. Feist, 374 Delaware Avenue, Toronto, Ontario, Canada M6H 2T8

Filed Nov. 28, 1989, Ser. No. 442,271
Claims priority, application Canada, Jun. 19, 1989, 603198
Int. Cl.[5] A47G *1/06*
U.S. Cl. 40—152 16 Claims



13. A member for use in a framing system, said member having a generally rectangular C shaped cross section having a top wall, side wall and bottom wall, a jaw extending along said side wall defining therewith a pocket opening towards said top wall;

a lip extending along said bottom wall and defining therewith a slot opening towards said side wall, and

said pocket and said slot being substantially coextensive with said side wall and said bottom wall respectively.

5,007,189

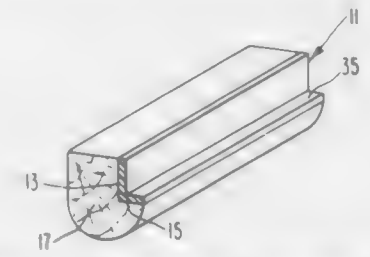
SEAL FOR ART DISPLAY FRAMES OF WOOD

Kendrick Buckwalter, 18 Chetwynd Rd., Paoli, Pa. 19301

Filed Mar. 17, 1988, Ser. No. 169,278
Int. Cl.[5] A47G *1/06*
U.S. Cl. 40—152 1 Claim

1. A wooden picture frame, having a rabbet configuration, as part thereof, which is sealed against the passage of liquids, gasses, vapors and tiny life forms emanating from said rabbet configuration comprising in combination: a wooden frame

including an inside wall section and a ledge section protruding therefrom whereby said inside wall section and said ledge section together substantially form the shape of the letter "L"; sealing means formed substantially in the shape of the letter "L", having a base section and an elongated section extending from said base section; said sealing means formed and disposed so that said base section is in abutment with said ledge section



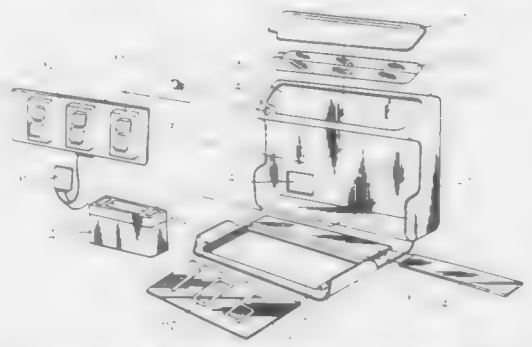
and of substantially the same width and length of said ledge section and said sealing means further formed and disposed so that said elongated section is in abutment with said inside wall section and of substantially the same width and length of said inside wall section; said sealing means formed of material which is impervious to the passage of liquids, gases, vapors and tiny life forms.

5,007,190

SOLAR HOUSE-NUMBER INDICATING DEVICE

Chih-Yes Shyu, 4F, No. 144, Chu-Lin Road, Yung Ho, Taipei, Taiwan

Filed May 11, 1990, Ser. No. 522,101
Int. Cl.[5] G09F *13/04*
U.S. Cl. 40—564 1 Claim



1. A house-number indicating device comprising:

a house means provided with a front opening and an inner space defined by a pair of opposed, side wall, a rear wall, a flat bottom wall and a top wall, said top wall being formed with a top opening taking a major portion thereof and a bore locating in a corner, said rear wall being formed with at least a rear opening;

a door means attached to said housing means for closing said front opening of the housing means and being movable to open said opening;

a first and a second transparent means integrally formed in the door means;

rail means located on the inside surface of the door means disposed on opposite sides of the first transparent means;

a tunnel member located on the inside surface of the door means covering the second transparent means from inside of the door means and defining a passageway transverse to the rail means;

a first transparent plate marked with a series of desired numbers and releasably and slidably mounted on the rail means, said series of numbers facing the first transparent plate;

a second plate marked with a desired road name and releasably and slidably mounted in the tunnel member along the passageway defined thereby;

a solar battery characterized in converting solar energy into electric power and placed on the flat bottom in the inner space of the housing means;

a radiant solar energy collecting surface and a transparent layer for protecting the radiant solar energy collecting surface, which are corresponding in shape to the top opening, sequentially and fixedly fitted in the opening, said radiant solar energy collecting surface being connected to the solar battery;

a L.E.D. digital device having means for displaying digits which are selective to be corresponding to the series of numbers marked on the first transparent plate;

a control circuit means having a control circuit electrically connected to the L.E.D. digital device for number selection and ON-OFF controls and a series of switches for operating the number selection control and fitted in the opening of the rear wall of the housing means with the switches thereof exposing externally; and

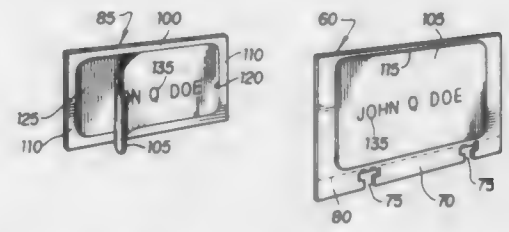
a sensor unit located in said bore characterized in self-adjusting its resistance compliant with the sunlight absorbed thereby for operating ON-OFF control of the control circuit of the control circuit means.

5,007,191

BUSINESS CARD AND CARD STOCK WITH LIFT-OUT PANEL AND BONDED EDGES

Gerald B. Klein, 13451 Stuart Ct., Broomfield, Colo. 80020

Continuation-in-part of Ser. No. 177,375, Apr. 4, 1988, Pat. No. 4,905,392. This application Nov. 7, 1988, Ser. No. 267,859
Int. Cl.[5] G09F *3/10*
U.S. Cl. 40—638 11 Claims

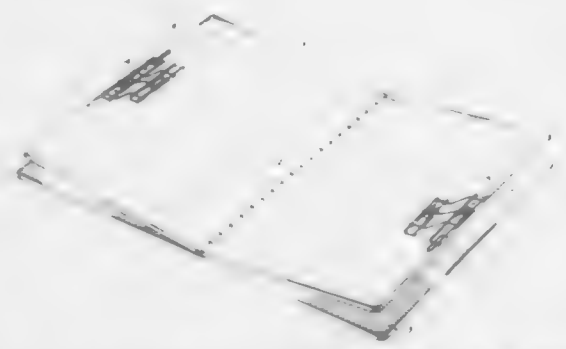


1. A business card, or the like, formed as a laminate including a face sheet adapted to carry information at its front side and having a contact adhesive at its back side, and a backing sheet secured to the face sheet by the contact adhesive, the improvement comprising:

(a) a score-cut means delineating and defining a lift-out panel in the face sheet and an edge margin strip between an edge of the panel and an edge of the business card; and

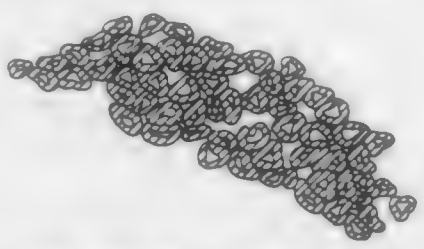
(b) a release means on the backing sheet engaging the lift-out panel of the face sheet to permit the lift-out panel to be separated from the edge margin strip at the score-cut means and lifted out and removed from the body of the card with the contact adhesive at the back side of the lift-out panel being intact while the edge margin strip of the face sheet and corresponding marginal portion of the backing sheet remain tightly and permanently bonded together by the contact adhesive, said release means extending a short distance beyond the score-cut means and a short distance into the marginal edge strip, whereby to insure a positive and easy separation of the lift-out panel and contact adhesive thereon from the backing sheet.

5,007,192
LAPBOARD
Nelson Hochberg, P.O. Box 192, Flagstaff, Ariz. 86002
Filed Oct. 19, 1988, Ser. No. 259,715
Int. Cl.[5] G09F *3/18*
U.S. Cl. 40—661 2 Claims



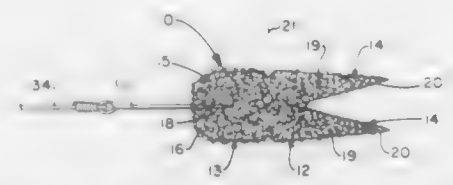
1 A navigation lapboard for holding aviation charts, flight logs, or the like, comprising in combination:
(a) a clear base sheet for supporting two or more charts or the like, and having first and second opposing edges,
(b) a hinged spring clip secured to said clear base sheet between the first and second opposing edges thereof, and
(c) first and second clear cover sheets for covering two or more charts or the like, each of said first and second clear cover sheets being attached to said hinged spring clip and generally overlying said clear base sheet;
whereby each of said first and second clear cover sheets can hinge out to permit a chart or the like to be inserted between each of said clear cover sheets and said clear base sheet

5,007,193
FISHING LURE WITH IMPROVED ELASTOMERIC SKIRT
George R. Goodley, Kinston, N.C.; Phillip R. Harman, Waynesboro, and Charles W. Prather, Charlottesville, both of Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Jan. 17, 1990, Ser. No. 466,553
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.28 11 Claims



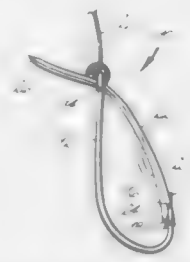
6. An artificial fishing lure comprising a body having attached thereto a fish hook and a skirt of multiple flexible strands, each strand being formed from coalesced multiple filaments of synthetic elastomeric polymer, the polymer being a clear spandex polymer or a clear thermoplastic elastomer, the individual filaments of the strand being circular, non-circular or hollow in cross-section, the skirt comprising 10 to 300 strands, each strand being formed of 40 to 300 coalesced filaments and having a void fraction of at least 0.25 and a titer in the range of 940 to 13,000 dtex.

5,007,194
ARTIFICIAL FISHING LURES
Archibald S. Coody, Hemphill, Tex., assignor to Fred Arbogast Company, Inc., Akron, Ohio
Filed Jan. 26, 1990, Ser. No. 470,850
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.29 9 Claims



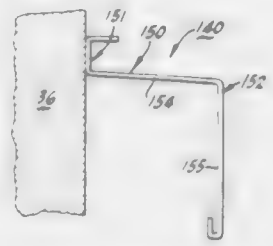
1 An artificial fishing lure for use in association with a fish hook having at least one point, said lure comprising:
a body having a forward head portion and a trailing portion, said body portion is natural sheepskin which presents at least one planar surface and which exhibits supple flexibility, at least when immersed in water;
a plurality of relatively long fibers which are the natural wool fibers presented from the planar surface of said sheepskin and extending outwardly from said head portion;
said head portion adapted to be penetrated by the point of a fish hook

5,007,195
WEEDLESS FISHING HOOK AND LURE
James A. Patterson, 2074 20th St., Sarasota, Fla. 34236
Filed Apr. 3, 1990, Ser. No. 504,343
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.43 6 Claims



6 A weedless-type fish hook comprising
three fish hooks each having connected, coextending shanks each with a hooking end and a common eyelet end;
each said hooking end having a sharp distal tip and a barb spaced from said tip;
a length of very thin, flexible, pliable, pierceable entirely hollow tubing, one end of which is securely fitted over each said hooking end so as to conceal each said tip and each said barb within one said tubing, the other free end of each said tubing being slidably insertable through said eyelet end;
each said tip piercing through the corresponding said tubing and exposing each said tip for use when said tubing is manually flexed by hand between said tip and said eyelet end toward said shanks prior to use;
said tubing is internally lubricated.

5,007,196
INSECT GUARD SYSTEM AND METHOD OF USE
Anne L. Saunders, and John G. Fields, both of P.O. Box 979, Jamestown, Calif. 95327
Continuation-in-part of Ser. No. 367,848, Jun. 19, 1989, which is a continuation of Ser. No. 119,787, Nov. 12, 1987, Pat. No. 4,839,984. This application Feb. 8, 1990, Ser. No. 477,351
Int. Cl.[5] A01M *19/00, 1/22*
U.S. Cl. 43—112 6 Claims



1. A system for repelling crawling insects, comprising an elongated electrically insulating substrate comprising a flange section for mounting to a protected structure and an L-shaped shield section including a generally outwardly-extending base and a downwardly-extending leg spaced from the protected structure; a pair of elongated spaced-apart conductors mounted on the inside of the base and extending generally in the direction of the elongation; and power assembly means connected to said conductors for establishing a voltage differential providing a short circuit current of less than about 15 milliamps across said conductors, whereby crawling insects crossing the spaced conductors are subjected to electrical shock caused by bridging the voltage differential.

5,007,197
TERMITE CONTROL SYSTEM
Betty G. Barbett, P.O. Box 366, Barbers Point, Hi. 96862-0366
Filed Oct. 4, 1989, Ser. No. 417,066
Int. Cl.[5] A01M *1/24*
U.S. Cl. 43—124 11 Claims

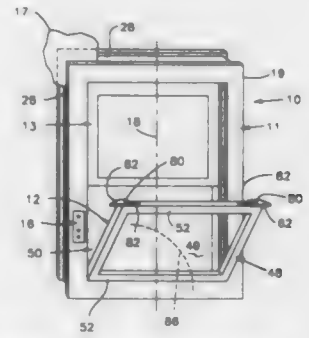


1. The method of termite treatment comprising determining proper spacing for drip tubing by a using a sample of the tubing on compacted soil in a slab area to determine rate of water movement into the soil, laying pressure-compensating drip tubing on top of the soil with openings in the tubing facing downward, and spacing lengths of the tubing at predetermined distances according to the rate of water movement determination, leaving first and second ends of the tubing exposed and extending outward from the slab area, covering the tubing with sand, covering the sand with a vapor barrier, covering the vapor barrier with gravel and pouring cement on top of the gravel and vapor barrier, thereby forming a slab, and releasing insecticide through the drip tubing into the soil beneath the slab.

5,007,198
PROCESS FOR THE ACCELERATED PRODUCTION OF TRIPLOID SEEDS FOR SEEDLESS WATERMELON CULTIVARS
Dennis J. Gray, Howey-in-the-Hills, and Gary W. Elmstrom, Leesburg, both of Fla., assignors to University of Florida, Gainesville, Fla.
Filed Jun. 8, 1988, Ser. No. 204,158
Int. Cl.[5] A01H *5/00, 4/00*; C12N *5/00*
U.S. Cl. 47—[illegible] 9 Claims

1. A process for producing triploid seed for seedless watermelons, said process comprising the following steps:
i. Producing and identifying a suitable tetraploid parental cultivar;
ii. Cloning the tetraploid parental cultivar using in vitro tissue culture techniques;
iii Transplanting and growing the new plants in a suitable soil medium;
iv. Planting the tetraploid plants in a field or greenhouse in a mixed stand with diploid plants; and
v Collecting the triploid seed from the fruit produced when the tetraploid plants are pollinated by the diploid plants.

5,007,199
ANTI-INTRUSION WINDOW
John E. Dunagan, Solon, and Stanley Bernath, Pepper Pike, both of Ohio, assignors to Larmco Security, Inc., Walton Hills, Ohio
Filed Feb. 15, 1990, Ser. No. 480,238
Int. Cl.[5] G08B *13/08*
U.S. Cl. 49—13 [illegible] Claims



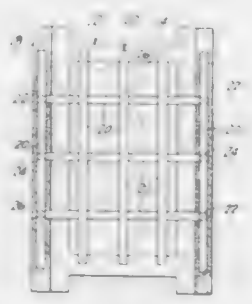
1. An anti-intrusion window comprising:
a frame assembly adapted to be attached to a building structure;
a sash assembly supported by said frame assembly for movement with respect to said frame assembly along a path of travel;
a position indicator supported by one of said assemblies;
a sensor supported by the other of said assemblies so that said sensor and said position indicator move with respect to one another when said sash assembly is moved along said path of travel, said sensor effective to detect the presence of said position indicator near said sensor; and,
an alarm system for triggering an alarm in response to the momentary presence of said position indicator near said sensor;
said sash assembly comprising means for moving said sash assembly along a second path of travel between a position on said first path of travel and a cleaning position wherein opposite sides of said sash are accessible for cleaning from the same side of the window and said sensor and said position indicator are supported by said assemblies such that movement along said second path to said cleaning position maintains said position indicator and said sensor apart to prevent said momentary presence.

5,007,200

WINDOW SECURITY SYSTEM

Gustavo Londono, 9117 Tivoli Pl., Boca Raton, Fla. 33434

Filed Feb. 12, 1990, Ser. No. 478,518
Int. Cl.[5] E05B 65/10
U.S. Cl. 49—141 18 Claims



1 A releasable window security device for protecting against entrance to a building through a window, said security device comprising:

a security grill for positioning on the exterior of said building;

first and second pairs posts extending perpendicularly from said grill, said first pair of said posts being of sufficient length to extend to the interior of said building and including an opening at the distal end thereof;

at least four guide means mountable around said window for receiving said first and second pairs of posts, at least two of said guide means including spring means biased against said second pair of posts when said posts are received in said guide means; and

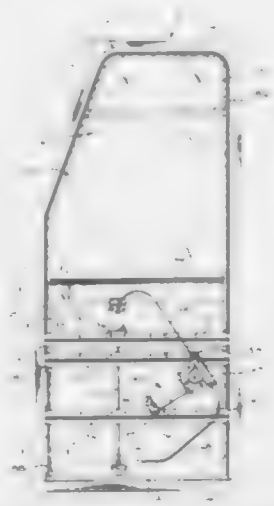
a pair of actuable latch means, each for being mounted in the interior of said building at a position to engage a different one of said openings for maintaining said device in a fixed position protecting said window and each being actuable to be disengaged from said openings simultaneously to permit the automatic release of said device from said window.

5,007,201

DOOR CONSTRUCTION

Terence P. D'Hoore, Mishawaka, Ind., and Mark L. Smith, Niles, Mich., assignors to Excel Industries, Inc., Elkhart, Ind.

Filed Apr. 4, 1990, Ser. No. 504,390
Int. Cl.[5] E05F 11/38
U.S. Cl. 49—348 6 Claims



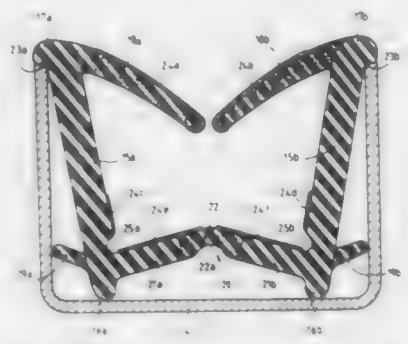
1. In a door construction including a peripheral door frame defining opposite sides, cover panel secured to said door frame, said door frame including means for housing a reciprocative window, and means for shifting said window between up and down positions, the improvement wherein said door frame defines a groove running substantially the length of said frame, mounting braces, carrying side means for shifting, said mounting braces spanning said door frames, said mounting braces connected to said frame sides by fasteners extending through the mounting braces and seated in said groove, a channel oriented transverse with respect to said groove, an outer door panel seated in said channel.

5,007,202

SEALING SLIDEWAY FOR A MOVING SHEET, AND IN PARTICULAR FOR A MOTOR VEHICLE WINDOW

Henri Guillon, Vaux-Sur-Seine, France, assignor to Hutchinson, Paris, France

Filed Feb. 24, 1989, Ser. No. 315,301
Claims priority, application France, Feb. 26, 1988, 88 02370
Int. Cl.[5] E06B 7/16; F16J 15/22
U.S. Cl. 49—441 11 Claims



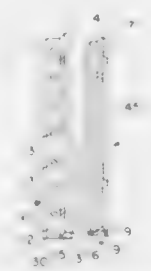
1 A guiding slideway for a moving sheet, the slideway comprising two sealing lips connected to two side flanges which are interconnected by a traverse web, wherein said web comprises first and second webs connected to each other at a first end of each web and respectively connected to said side flanges at a second end of each web, said pair of webs forming at their junction an angle projecting towards said lips when the slideway is not locked into a run channel, and forming an angle projecting away from said lips when the slideway is locked into a run channel, wherein the sum of the lengths of said first and second webs is greater than the space allowed for the web within the run channel, whereby the slideway is locked within the run channel by a toggle action when inserted therein.

5,007,203

REPLACEABLE WEATHER SEAL

Matthew M. Katrynuik, 958 St. Matthews Avenue, Winnipeg, Manitoba, Canada R3G 0J6

Filed Mar. 15, 1990, Ser. No. 493,623
Int. Cl.[5] E06B 7/16
U.S. Cl. 49—493 7 Claims



1 A replaceable weather seal suitable for attaching to a frame with screws, which is comprised of

(a) foam, which along its entire length has a first portion that is thicker than its second portion, a second portion that is substantially flat, and a third portion that extends vertically up from the second portion and then curves downwardly,

(b) an insert of approximately the same length as the foam, which insert is made of a non-deformable material, wherein a first portion and a third portion of the entire length of said insert is raised relative to its second portion, and its second portion is relatively flat;

(c) a cover that is made of a water and tear resistant material;

(d) wherein said insert is placed beneath the foam such that the first portion of the foam lies above the first portion of the insert, the second portion of the foam lies above the second portion of the insert and the vertically extending part of the third portion of the foam lies above the third portion of the insert, the cover is then sealingly attached around the foam and insert in such a manner that it closely conforms to the shape defined by the foam and insert, thereby forming a weather sealing member which is comprised of the covered foam and insert; and

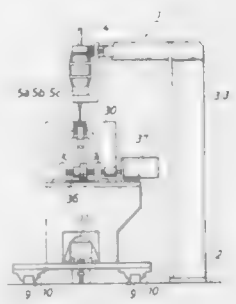
(e) a carrier that is substantially flat along a first portion of its entire length and approximately "U"-shaped along a second portion of its entire length, wherein the approximately "U"-shaped portion is constructed so that its outside side portion defines an open slit along the entire length of the carrier into which the first and second portions of the weather sealing member holdingly fit and within which the weather sealing member is held when the replaceable weather seal is in use.

5,007,204

APPARATUS FOR SHAPING INGOTS INTO RIGHT CIRCULAR CYLINDRICAL FORM

Hiroyuki Ibe, and Takashi Mori, both of Fukui, Japan, assignors to Shin-Etsu Handotai Company Limited, Tokyo, Japan

Filed Sep. 14, 1989, Ser. No. 407,482
Claims priority, application Japan, Sep. 16, 1988, 63-230111; Nov. 10, 1988, 63-282558
Int. Cl.[5] B24B 49/00
U.S. Cl. 51—165.77 4 Claims



2. An apparatus for shaping monocrystal ingots of roughly circular cylindrical form into exact right circular cylindrical form comprising:

(i) an automatic center axis determining unit having

a support means for supporting the ingot,

a measure means for dimensionally measuring a plurality of cross sections taken normally to a roughly presupposed axis of the ingot,

a compute means for computing the location of a center of each of the cross sections based on the dimensional information of the cross sections obtained from said measure means and determining the optimum center axis based on the location of the thus obtained centers of the cross sections, and

a mark means for visibly marking the points at which the determined optimum center axis passes through the end faces of the ingot;

(ii) an automatic external cylindrical grinding unit;

(iii) an ingot setting unit having

a chuck means for chucking the marked ingot,

a monitor means for monitoring the points marked by the mark means,

an align means for aligning the marked points of the ingot monitored by said monitor means with the spin center line of said external cylindrical grinding unit, and

a convey means for conveying the ingot into the grinding position of said external cylindrical grinding unit; and

(iv) an automatic diameter control unit having

a diameter measure means for measuring a local diameter of the ingot without coming in contact with the ingot and in a real-time manner;

an arithmetic process means for comparing the value of the measured diameter received from the diameter measure means with a predetermined reference value, and for generating a control signal in response to the result of the comparison; and

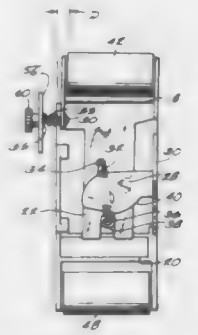
a grinder control means for controlling the grinder to determine its grinding depth in response to the control signal from the arithmetic process means.

5,007,205

TENSIONER RELEASE AND MECHANISM FOR BELT SANDERS

Joseph G. Farmerie, New Berlin, Wis., assignor to Milwaukee Electric Tool Corporation, Brookfield, Wis.

Filed Jun. 27, 1988, Ser. No. 211,866
Int. Cl.[5] B24B 23/06
U.S. Cl. 51—170 EB 6 Claims



1. A belt sander comprising,

a base,

a rear roller mounted on said base,

a yoke mounted on said base for reciprocable motion,

a front roller mounted on said yoke for movement farther from or closer to said rear roller to tension or relieve tension of a sanding belt mounted on the rollers,

cam means rotatably mounted on said base operatively engaging said yoke for moving said yoke from or towards said rear roller,

spring means connected to said yoke and said cam means and operative to bias said front roller against a sanding belt mounted on said rollers when said cam means is in its normal position, said cam means being out of contact with said yoke when said cam means is in its said normal position,

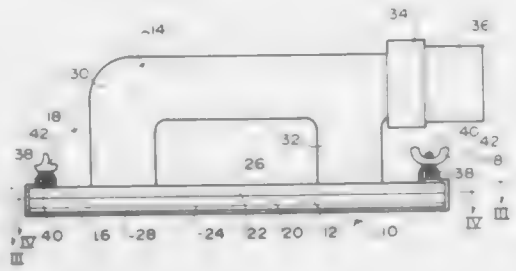
and means rendering the force of said spring means ineffective at some point in movement of said cam means from said normal position to a release position in which said front roller has moved closer to said rear roller to enable removal of said sanding belt.

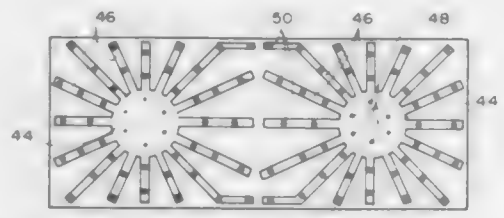
5,007,206

DUSTLESS DRYWALL SANDER

Patrick J. Paterson, Box 354, Ile Des Chene, Manitoba, Canada R0A 0T0

Filed Oct. 5, 1989, Ser. No. 417,455
Int. Cl.[5] B24B *23/00*
U.S. Cl. 51—170 R 15 Claims





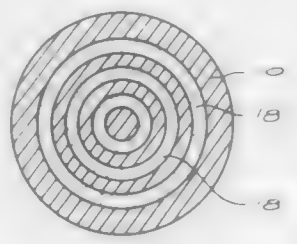
1. A sanding apparatus comprising:
a body with a flat front face and a rear face,
vacuum passage means in the body,
a plurality of spaced apart inlet openings through the front face of the body, communicating with the vacuum passage means;
at least one exhaust opening in the body, communicating with the vacuum passage means;
a handle secured to the body and having a vacuum duct therethrough, the vacuum duct communicating with the vacuum passage means through the exhaust opening;
a flexible sanding pad comprising a plurality of layers of an open mesh screen material, the pad being unattached to and removably overlying the front face of the body;
a porous abrasive mesh overlying the sanding pad; and
clamp means for clamping the abrasive mesh to the body whereby the sanding pad is held on the front face of the body by the abrasive mesh.

5,007,207

ABRASIVE PRODUCT

Cornelius Phaal, Glade Cottage, St Anne's Glade, Bagshot, Surrey, GU195EF, England

Filed Dec. 13, 1988, Ser. No. 283,620
Claims priority, application South Africa, Dec. 22, 1987, 87/9598
Int. Cl.[5] B23F *21/03*
U.S. Cl. 51—204 2 Claims



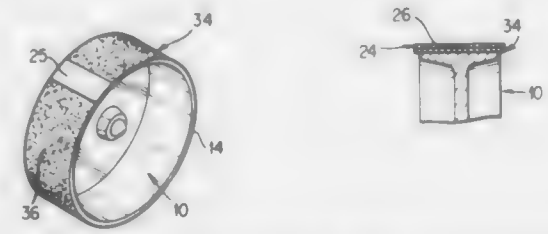
1 A tool insert comprising a disc-shaped abrasive compact having major flat surfaces on each of opposite sides thereof, at least a part of the periphery of one of the major flat surfaces providing a cutting edge for the insert, a cemented carbide support bonded to the other major flat surface, at least one curved recess located behind the cutting edge and extending into the cemented carbide support from the compact and carbide interface and containing abrasive compact material, said recess having the form of a spiral radiating out from the center of the abrasive compact.

5,007,208

ANCHOR FOR ROTARY SANDING DRUM

Theodore F. Garfield, Sunset La., Harrison, N.Y. 10528

Filed Jun. 22, 1989, Ser. No. 369,981
Int. Cl.[5] B24B *1/00, 7/19, 7/30*
U.S. Cl. 51—281 R 8 Claims



1. A method for preventing axial slippage, during utilization, of a closed loop sanding belt mounted on a rotating circular drum, comprised of a resilient material; said method comprising the steps of: (a) positioning an elongated strip of sandpaper on the outer surface of said drum, with sandpaper grit of said strip facing outwardly away from said drum; and (b) placing said closed loop sanding belt directly on said strip and in contact with the sandpaper grit thereof; and wherein the length of said strip is less than the outer circumference of said drum.

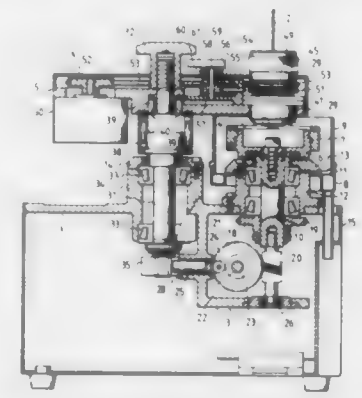
5,007,209

OPTICAL FIBER CONNECTOR POLISHING APPARATUS AND METHOD

Kazuharu Saito; Hiroyasu Matsukura; Hiroshi Komase; Haruhiro Tsuneda, all of Nagano; Junji Watanabe, Tokyo; Tadao Saito, Tokyo; Toshiroh Doy, Tokyo, and Kazuo Matsunaga, Tokyo, all of Japan, assignors to K.K. Sankyo Seiki Seisakusho, Nagano and Nippon T&T Corp., Tokyo, both of, Japan

Filed Jan. 13, 1989, Ser. No. 296,729
Claims priority, application Japan, Jun. 26, 1987, 62-159126; Jan. 14, 1988, 63-6483; Jan. 22, 1988, 63-12157
Int. Cl.[5] B24B *19/00*
U.S. Cl. 51—283 R 8 Claims

1. An optical fiber connector polishing apparatus comprising:
a chuck for supporting an optical fiber connector in such a manner that said optical fiber connector is rotatable in a clockwise/counterclockwise reciprocation mode;
a swing arm which holds said chuck to swing said chuck, in a horizontal plane, between a first fixed position and a second fixed position;
a reciprocating rotatable motor provided on said swing arm for rotating said chuck in said clockwise/counterclockwise reciprocation mode;
positioning means for positioning said swing arm selectively at said first or second fixed position on a swing locus thereof;
polishing means including a polishing element and rotation means for rotating said polishing element at high speed;
swinging means for swinging said swing arm in a horizontal plane in such a manner that the end of said optical fiber connector swings along a radial direction of the circular rotation of said polishing element and within a radial length thereof continuously while an end portion of said optical fiber connector is being polished with said polishing element; and
a reference member for positioning said end portion of said optical fiber connector at a reference position with respect to said chuck, such that said optical fiber connector will be polished to a predetermined length when a polishing operation is conducted with said polishing means,
said polishing element being arranged at said first fixed position and said reference member being arranged at said second fixed position of said swing arm, respectively

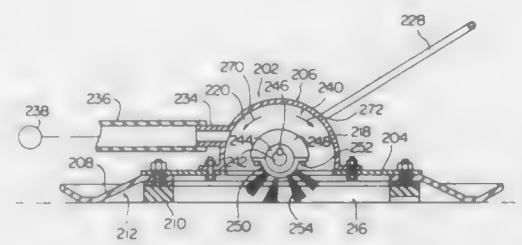


5,007,210

DEVICE CAPABLE OF SUCTION-ADHERING TO A WALL SURFACE AND MOVING THEREALONG

Fukeshi Urakami, 5-21-204 Konandai 4-chome, Konan-Ku, Yokohama, Japan

Division of Ser. No. 171,123, Mar. 21, 1988, Pat. No. 4,934,475.
This application Apr. 25, 1990, Ser. No. 514,148
Claims priority, application Japan, Apr. 4, 1987, 62-83431; Apr. 27, 1987, 62-103744; Jun. 1, 1987, 62-137887; Mar. 3, 1988, 63-48683
Int. Cl.[5] B24C *3/06;* B24B *23/00*
U.S. Cl. 51—429 6 Claims



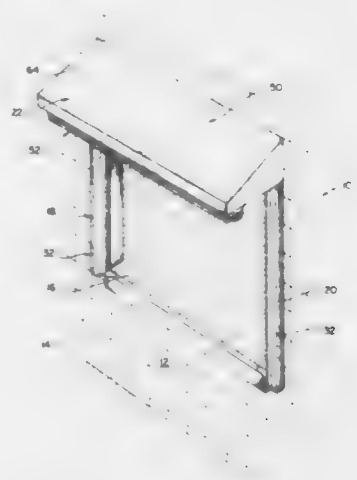
1. A device for moving along a wall surface, said device comprising a main body and vibration generating means mounted on the main body, means for providing a holding force for holding the device against the wall surface, said vibration generating mean being adapted to impart a lifting force in a direction away from a wall surface to reduce the holding force, said vibration generating means also imparting a force in a predetermined direction along the wall surface to the main body by the vibration it generates, and consequently to move the main body in said predetermined direction along the wall surface, said vibration generating means including an eccentric weight means secured to a rotating shaft mounted rotatably on the main body of the device, said force in a direction away from the wall surface, and said force in the predetermined direction along the wall surface being imparted by the rotating of the eccentric weight means.

5,007,211

INFLATABLE DOCK SEAL

Wilfred P. Ouellet, Cranston, R.I., assignor to L.K. Goodwin Co., Inc., Providence, R.I.

Filed Mar. 16, 1990, Ser. No. 495,285
Int. Cl.[5] E04B *1/34*
U.S. Cl. 52—2.12 14 Claims



1. In an inflatable dock seal for a loading dock opening in a building wall, said opening having opposite side extremities and a top extremity extending between said side extremities, said dock seal including a pair of opposite side seal sections securable to said wall adjacent opposite side extremities of said opening, a top seal section securable to said wall adjacent the top extremity of said opening so that said top seal section extends between said side seal sections, each of said side seal sections and said top seal section including an inflatable portion which is inflatable to an expanded disposition and retractable to a collapsed disposition, means for inflating said inflatable portions to the expanded dispositions thereof and means for retracting said inflatable portions to the collapsed dispositions thereof upon deactuation of said inflating means, the improvement comprising said retracting means comprising substantially constant force resilient spring means for retracting at least a portion of said inflatable portions, said resilient spring means applying substantially constant, uniform retracting forces to said portion of said inflatable portions as said inflatable portions are moved between the collapsed and the expanded dispositions thereof.

5,007,212

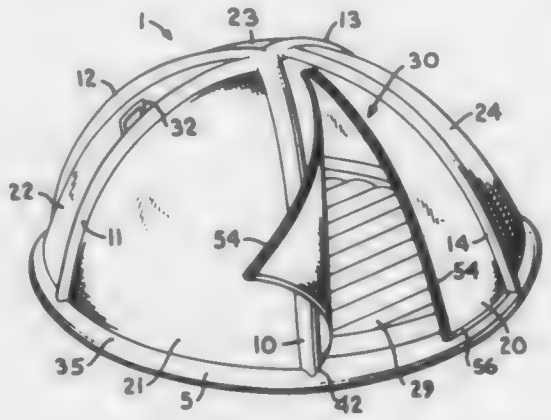
INFLATABLE SHELTER

Monty Fritts, 1006 S. Elm, and Darren J. Myers, Rt. 4, Box 99, both of Ottawa, Kans. 66067

Filed Mar. 21, 1990, Ser. No. 496,870
Int. Cl.[5] E04H *15/00*
U.S. Cl. 52—2.18 2 Claims

1. A shelter comprising:
(a) a circular floor made from a flexible, water-resistant material and including a perimeter;
(b) an inflatable, annular, cross-sectionally tubular base frame with an inner edge, an outer edge, a base frame top and a base frame bottom, said base frame surrounding said floor and being fixedly attached at said base frame bottom to said floor perimeter;
(c) a plurality of inflatable, arcuate, cross-sectionally tubular support ribs each having a rib inner edge, a rib outer edge, opposite rib side edges, a rib lower end and a rib upper

end, each said rib at its lower end being attached to said base frame top and generally centered on said base frame;
(d) said ribs and said base frame comprising a flexible, air-impervious material;
(e) an apex;
(f) said ribs terminating at their upper ends at said apex;
(g) a wall comprising a plurality of flexible, water-resistant wall panels each having opposite side edges, a top and a lower edge, each said side panel being fixedly and integrally connected at its side edges to a respective adjacent pair of support ribs, each said side edge being substantially centered at its connection to a respective rib between said rib inner and outer edges, each said panel bottom edge being fixedly connected to base frame top and said connection therebetween being substantially centered between said base frame inner and outer edges, said wall panel tops being connected to said apex;
(h) a zippered door located in one of said wall covering panels between a respective pair of said support ribs, said apex and said base frame, said door comprising a first slit extending generally from said apex to said base frame and further comprising a horizontal slit extending along said base frame substantially between a respective pair of ribs;
(i) a pair of windows each located in a respective wall covering panel and including a pane of flexible, transparent material and a window frame connecting said window pane to said wall panel;
(j) a mattress including an inflatable annular, cross-sectionally tubular mattress frame with an inner edge, an outer edge, a top and a bottom, said mattress frame being positioned within and retained by said base frame with said mattress frame outer edge frictionally engaging said base frame inner edge and said mattress frame bottom resting on said floor, said mattress further including a plurality of elongated, juxtaposed, inflatable tubes with diameters approximately equal to a diameter of said mattress frame, said inflatable tubes extending across said mattress frame in substantially coplanar relationship with said mattress frame, each said tube including opposite ends fixedly connected to said mattress frame at said mattress frame inner edge, said elongated mattress tubes resting on said floor;
(k) said base frame including an air chamber;
(l) each said support rib having an air chamber;
(m) said mattress having a pneumatically discrete air chamber;
(n) said rib upper ends being fluidically interconnected at said apex and said ribs being fluidically interconnected with said base frame at their lower ends.



5,007,213

LOCK SYSTEM FOR PASSING OBJECTS FROM A RADIOACTIVELY CONTAMINATED CHAMBER INTO A CONTAINER

Burkart Schulte, Minden; Hakan Sterner, Hanover; Gerhard Wetzka, Veitshöchheim, and Norbert Hardt, Hanover, all of Fed. Rep. of Germany, assignors to Deutsche Gesellschaft für Wiederaufarbeitung von Kernbrennstoffen mbH, Hanover, Fed. Rep. of Germany

Filed Sep. 18, 1989, Ser. No. 408,545

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1988, 3831775

Int. Cl.[5] **E06B** *5/00*

U.S. Cl. 52—29 **6 Claims**



1. A lock system for passing objects from a contaminated first chamber through the lock system and into a container disposed in a contamination-free second chamber wherein the container can be docked at the lock system, the two chambers being separated by a partition wall, the lock system comprising:
opening means formed in said partition wall;
a disc defining a center point and being rotatably mounted in said opening means for rotation about an axis passing through said center point; and,
a plurality of lock openings formed in said disc and arranged therein along an imaginary circle concentric to said center point.

5,007,214

OPENABLE DOME-SHAPED ROOF STRUCTURE

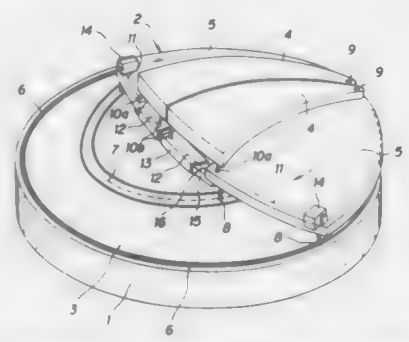
Takashi Itami; Tadao Yuri, both of Tokyo, and Toru Aoyagi, Chofu, all of Japan, assignors to Ohbayashi Corporation, Osaka, Japan

Filed Apr. 5, 1990, Ser. No. 504,906

Claims priority, application Japan, Apr. 10, 1989, 1-88085; Apr. 28, 1989, 1-107757; Oct. 19, 1989, 1-270427; Nov. 9, 1989, 1-290096; Nov. 17, 1989, 1-297510

Int. Cl.[5] **E04B** *1/346*

U.S. Cl. 52—66 **10 Claims**



1. An openable dome-shaped roof structure comprising:
a peripheral side wall;
a first slide guide means provided upon said side wall along a circle;

a crescent-shaped fixed roof section having an arc-shaped outer periphery fixedly supported by said side wall and an arc-shaped inner periphery;
a second slide guide means provided upon said fixed roof section along a circular arc which is concentric with said circle;
a pair of slidable roof sections provided above the level of said fixed roof section and symmetrically arranged relative to a first diametral line of said circle, which line divides said slidable roof sections into equal two parts, said slidable roof sections meeting with each other at a first point where said diametral line intersects with said circle at the opposite side of said fixed roof section, each said slidable roof section being defined by an outer arc portion extending along said circle from said first point to a respective second point where said arc-shaped outer and inner peripheries of said fixed roof section meet with each other, an inner arc portion extending along said arc-shaped inner periphery of said fixed roof section from said second point to a third point where said second slide guide means terminates, and a substantially linear portion extending from said first point to said third point;
a third slide guide means provided upon each said slidable roof section along and near said inner arc portion thereof;
a pair of pivotable roof sections symmetrically arranged relative to said diametral line in such a manner that said pivotable roof sections close a space of a dome-shaped roof not covered by said fixed roof section and said slidable roof sections, each said pivotable roof section being provided above the level of a respective said slidable roof section and pivotably connected thereto at a position adjacent said first point;
means for pivotably moving said pivotable roof sections upon said slidable roof sections along said third slide guide means; and
means for slidably moving said slidable roof sections upon said fixed roof section along said first and second slide guide means.

5,007,215

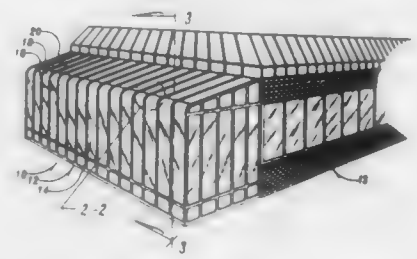
SUNROOM

Mearl Minter, Oskaloosa, Iowa, assignor to Rolscreen Company, Pella, Iowa

Filed Apr. 24, 1989, Ser. No. 342,094

Int. Cl.[5] **E04B** *7/02;* **E04C** *3/18;* **E04D** *1/36*

U.S. Cl. 52—90 **19 Claims**



1. A sunroom comprising,
a frame support structure including a roof having support beams, said beams being elevated at one end and extending downwardly at the other end,
each of said beams having top and bottom sides and being constructed of wood and including a channel shaped top side extending longitudinally of said beam for receiving water, and
a pair of spaced apart metal reinforcement plates extending the substantial length and longitudinally of said beams in the bottom of said channel and fixedly secured to said beam whereby water received in said channel is adapted to run operatively over said plates to the other end of said beam.

5,007,216

VENTILATION BAFFLE AND INSULATION STOP

David H. Pearson, 1350-13 Ave. SE., Salmon Arm B.C., Canada V1E 2G7

Filed Jul. 18, 1989, Ser. No. 381,471

Int. Cl.[5] **E04B** *1/74;* **F24F** *7/00*

U.S. Cl. 52—94 **5 Claims**



1. A baffle for use in a house having an attic defined by:
(a) a vertical exterior wall having a horizontal top wall plate;
(b) parallel floor joists supported by said top wall plate; and
(c) spaced apart, inclined roof rafters securely connected to said top wall plate and said floor joists, said roof rafters having a roof covering fastened on their upper surface;
said attic having a vent around its outer periphery between said top wall plate and the underside of said roof covering enabling the flow of ventilating air between an exterior soffit and insulating material installed between said floor joists in the interior of said attic, wherein said baffle is installable between adjacent roof rafters to block the flow of ventilating air through said insulating material, said baffle having:
(d) a rectangular panel;
(e) a bottom flap hingedly connected to said rectangular panel along a first fold line and attachable to said wall plate;
(f) first and second side flaps hingedly connected along second and third fold lines on opposed sides of said rectangular panel, said side flaps being attachable to the inner face of said roof rafters; and
(g) a top flap hingedly connected along a fourth fold line to said rectangular panel and provided at either end thereof with a hingedly connected flap adapted to be secured to said inner face of said roof rafters;
wherein said first and second side flaps are provided with a plurality of printed lines perpendicular to said second and third fold lines and dividing said flaps into first and second sections of variable relative lengths, the length of said second section being chosen according to the distance between said wall plate and said underside of said roof, and scored lines provided on said second section parallel to said second and third fold lines for selectively varying the width of said second section and thereby adjust the width of said rectangular panel to different rafter spacings.

5,007,217

MULTIPLE PANE SEALED GLAZING UNIT

Michael Glover, and Gerhard Reichert, both of Ottawa, Canada, assignors to Lauren Manufacturing Company, New Philadelphia, Ohio

Continuation of Ser. No. 117,094, Nov. 5, 1987, abandoned, which is a continuation-in-part of Ser. No. 909,947, Sep. 22, 1986, abandoned. This application Apr. 10, 1989, Ser. No. 338,054

Claims priority, application Canada, Sep. 21, 1987, 547355

The portion of the term of this patent subsequent to May 23, 2006, has been disclaimed.

Int. Cl.[5] **E06B** *7/12;* **E04C** *2/54*

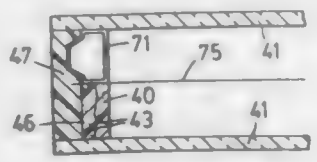
U.S. Cl. 52—172 **7 Claims**

1. A multiple plane insulating sealed glazing unit comprising two or more glazing sheets, said sheets being maintained in an

essentially parallel and spaced apart relationship to each other by a peripheral resilient spacing and sealing assembly, defining an insulating airspace between said sheets, which spacing and sealing assembly comprises an inner spacer strip sandwiched between said sheets, and located inwardly of the glazing edges, thereby creating an outwardly facing perimeter channel therebetween;

said inner spacer strip being composed of a moisture permeable flexible or semi-rigid silicone foam material preformed to have, when in the uncompressed condition, two opposite sides spaced so as to provide the desired spacing of said glazing sheets and containing desiccant material, said spacer strip having a preapplied ultra-violet resistant pressure sensitive adhesive on said opposite sides thereof and which abut said sheets, said adhesive having high tack and non-outgassing properties and said spacer strip having an inwardly directed face which is resistant to ultra-violet radiation, and having physical properties which permit said spacer strip to be coiled for storage, and

said spacing and sealing assembly further comprising an outer sealant filling said outer perimeter channel.



5,007,218

MASONRY BLOCK WALL SYSTEM AND METHOD

Fred G. Bengtson, Tempe, and Donald V. LoPiccolo, Phoenix, both of Ariz., assignors to Superlite Builders Supply, Inc., Phoenix, Ariz.

Continuation of Ser. No. 599,526, Apr. 12, 1984, abandoned. This application Oct. 14, 1986, Ser. No. 918,465

Int. Cl.[5] E04B *1/06;* **E06B** *1/04*

U.S. Cl. 52—204 **2 Claims**



1. A wall structure comprising

(a) a concrete footer having an anchoring means therein;

(b) a plurality of post-tensioning rods connected to said anchoring means and extending vertically from said footer;

(c) a plurality of stacked masonry building blocks arranged in courses with mortar therebetween and having voids therein;

(d) a plate positioned on the top course of said blocks;

(e) said rods extending through said voids in non-contacting relationship to said blocks, grouting or other masonry products and through said plate;

(f) tensioning means mounted on said plate and secured to said post-tensioning rods for maintaining a predetermined tension in said rods;

(g) said masonry building blocks each having opposing parallel faces interconnected by a single web member;

(h) means defining thermal insulation material in said voids to increase the thermal resistance of said wall structure to provide a wall structure having an R value greater than 10; and

(i) a steel lintel member extending over an opening provided in said wall structure, said lintel including a plurality of vertically extending rods connected thereto, each of said rods extending through voids in said blocks positioned above said lintel.

5,007,219

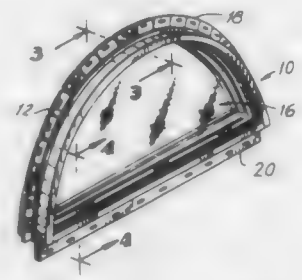
ROUND TOP WINDOW

Bertram Sayer, Princeton, N.J., assignor to 501 Thermal Profiles, Inc., Keasbey, N.J.

Filed Feb. 11, 1988, Ser. No. 154,896

Int. Cl.[5] E06B *1/26*

U.S. Cl. 52—204 **18 Claims**



1. A round top window frame comprising

a first individually formed flexible elongated member having a first end and a second end, with said first elongated member having a curved configuration,

a second individually formed elongated member having a first end and a second end, with said second elongated member shorter than said first elongated member,

first attachment means for attaching said first end of said first elongated member and said first end of said second elongated member,

second attachment means for attaching said second end of said first elongated member to said second end of said second elongated member,

a first stop member,

first stop member attachment means for attaching said first stop member and said first elongated member,

a second stop member, and

second stop member attachment means for attaching said second stop member and said second elongated member, with said first and second elongated members forming a frame.

5,007,220

NON-PERIODIC AND PERIODIC LAYERED SPACE FRAMES HAVING PRISMATIC NODES

Haresh Lalvani, 92 Horatio St., #3M, New York, N.Y. 10014

Continuation of Ser. No. 36,395, Apr. 9, 1987, abandoned. This application Dec. 2, 1988, Ser. No. 282,991

Int. Cl.[5] E04H *12/00*

U.S. Cl. 52—311 **22 Claims**

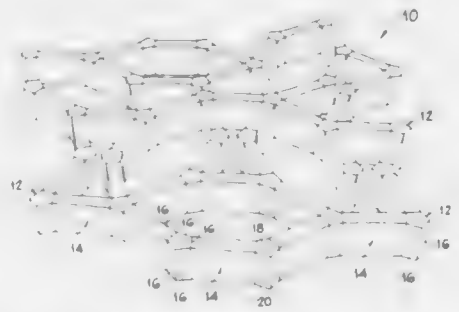
1. A space frame, the combination comprising:

a plurality of prismatic nodes arranged in a first spaced, non-periodic, planar array, each of said prismatic nodes having a substantially continuous outer surface comprising a top surface and a bottom surface, each being identical regular polygons with p-sides, and p-side surfaces having opposite edges,

each of said side surfaces being coupled to said top and bottom surfaces, and each opposite edge of each of said side surfaces being coupled to a respective opposite edge of an adjoining side surface;

a plurality of struts of substantially equal length located in the same plane as said planar array of prismatic nodes, each of said struts having opposite ends; and

means, coupled to each of said struts and each of said prismatic nodes, for coupling the opposite ends of each strut to two adjacent prismatic nodes to form at least one set of identical polygonal areas bounded by said struts and nodes, thereby forming a continuous space frame having a pattern defined by said polygonal areas that does not repeat and does not have translational symmetry,



wherein the angle between any given pair of struts connected to the same prismatic node is determined by the angle between the respective p-side surfaces to which the struts are coupled, and

wherein p is selected from the group consisting of the odd numbers greater than three and the even numbers greater than six.

5,007,221

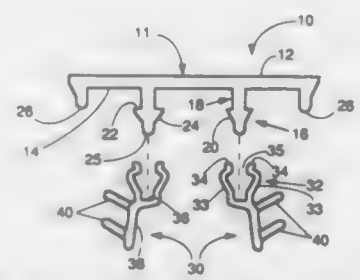
SNAP-IN GLAZING POCKET FILLER

Thomas E. Matthews, Lilburn, and Charles P. Touton, Roswell, both of Ga., assignors to Kawneer Company, Inc., Norcross, Ga.

Filed Feb. 23, 1990, Ser. No. 484,171

Int. Cl.[5] E04C *3/00;* **E04D** *1/36*

U.S. Cl. 52—464 **11 Claims**



1. A snap-in glazing pocket filler for use with a structural frame member having walls defining a glazing pocket, comprising:

an elongated metal plate having a rear face and having a width sufficient to cover said glazing pocket, said elongated plate having a pair of flanges projecting rearwardly from said rear face thereof; and

a pair of plastic retaining legs having corresponding snap-on sockets formed thereon for engaging said rearwardly projecting flanges on said rear face of said elongated plate to fasten said plastic retaining legs to said plate, said retaining legs extending rearwardly and outwardly of said plate to engage said walls defining said glazing pocket.

5,007,222

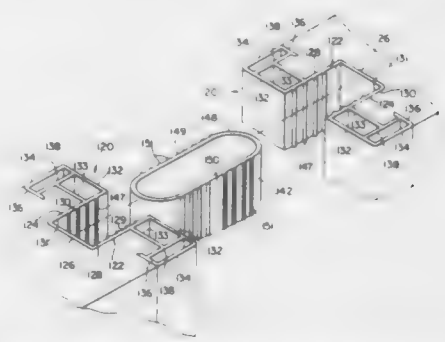
FOAMED BUILDING PANEL INCLUDING AN INTERNALLY MOUNTED STUD

Harry W. Raymond, 203 Richey St., P.O. Box 395, Lock Haven, Pa. 17745

Continuation-in-part of Ser. No. 273,760, Nov. 14, 1988, Pat. No. 4,862,660, which is a continuation of Ser. No. 72,718, Jul. 13, 1987, abandoned. This application Jun. 23, 1989, Ser. No. 370,988

Int. Cl.[5] E04B *1/76, 2/00;* **E04C** *2/34, 2/26*

U.S. Cl. 35—586 **12 Claims**



1. A structural column assembly for use as a structural support element to join two modular wall units together end-to-end, each of said wall units having an exterior surface and an interior surface, said column assembly comprising:

first and second end columns, each of said end columns having a pair of opposed planar side walls having a distal end and a proximal end and a planar end wall joining said proximal ends of each of said pairs of side walls into a generally U-shaped member, each of said pairs of side walls being arranged to be generally parallel with the exterior and interior surfaces of said wall units, each of said planar side walls having an inside face and an outside face, each of said outside faces having a primary leg extending outwardly from said distal end, said primary leg defining an elongated planar wall generally perpendicular to said outside face and having a termination at a predetermined transverse distance from said outside face, a planar outside vertical strip positioned at said termination of said primary leg generally parallel to said outside face along the full length of said end column and having a free end, said planar strip terminating along said free end in an inwardly directed finger, and a planar inside vertical strip positioned generally parallel and spaced from said planar outside vertical strip joining said primary leg to said finger, said end columns defining an interior space when said planar walls defined by said primary legs are placed into intimate contact with each other; and

insert means for insertion into said interior space for securing said end columns to each other.

5,007,223

BLIND ANCHORING OF WALL FIXTURES

Andrew P. Holland, 4100 Rosemary St., Chevy Chase, Md. 20815

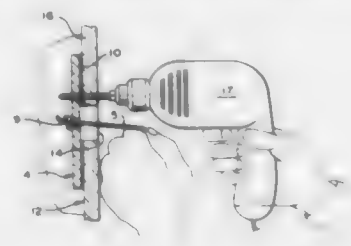
Filed Feb. 20, 1990, Ser. No. [illegible]1,323

Int. Cl.[5] E04B *1/00*

U.S. Cl. 52—741 **8 Claims**

1. A method of blind anchoring for mounting a screw-securable fixture on a dry wall panel having an inaccessible inner surface, comprising marking on the panel in a selected location positions of any screw holes in a base flange of said fixture, cutting an opening through said panel inside said hole markings, inserting through said opening a longitudinally elongated stiff machinable plate member trailing a strong flexible string extending substantially centrally through and beyond a back of said member and having on a trailing side thereof a self-sticking adhesive coating, manipulating said plate member through

said opening into position to back said hole markings, pulling said plate member by said string to adhere the adhesive coating to said inner surface of said panel, and, while holding said plate



member in position by said adhesive and pull on said string, drilling holes in situ in said plate member through said panel in said marked positions for anchoring said fixture on said panel by screw means secured to said plate member

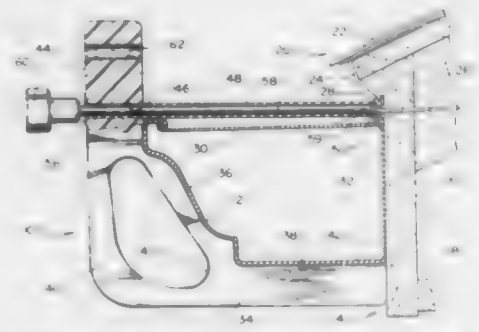
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5,007,224

TOOL AND METHOD FOR INSTALLING ROOF GUTTERS ON BUILDINGS

Carl L. Segneri, 16054 University Ave., South Holland, Ill. 60473

Filed Apr. 26, 1990, Ser. No. 514,749
Int. Cl.[5] B25C *1/02*
U.S. Cl. 52—741 13 Claims



1. A gutter installation hand tool which comprises:

(a) means for temporarily positioning a gutter that is to be installed on a residence or other building in the desired place against the wall of the building by (i) providing support for the bottom wall of the gutter, and (ii) preventing the gutter from moving away from the building wall, all without any attachment of the gutter or the positioning means to the building;

(b) a piston positioned to contact, at its forward end, the head of a nail to drive the nail through at least one of the rear wall of the gutter and the rear portion of the associated hanger, and then into the building wall, when the piston is struck with a hammer on its other end; and

(c) means for holding and guiding (i) a nail to secure the gutter to the building, and (ii) said nail-driving piston while the piston is in contact with the head of the nail,

said tool being configured to be held in one of the user's hands to maintain said temporary positioning of the gutter,

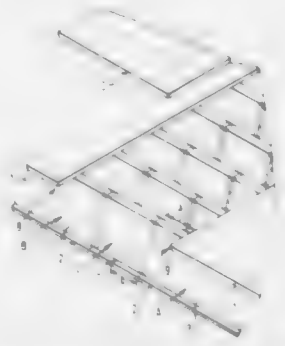
whereby the gutter may be temporarily maintained in place against the building wall by the tool held in one of the user's hands, and then at least partially secured to the building when the user strikes the free end of the nail-driving piston with a hammer held in the user's other hand to drive a nail positioned in the holding and guiding means through the rear wall of the gutter and/or the rear portion of the associated hanger, and then into the building wall.

5,007,225

CONSTRUCTION OF LARGE SANDWICH STRUCTURES

James A. Teasdale, Newcastle upon Tyne, England, assignor to British Shipbuilders, England

PCT No. PCT/GB86/00579, § 371 Date Jul. 21, 1987, § 102(e) Date Jul. 21, 1987, PCT Pub. No. WO87/02086, PCT Pub. Date Apr. 9, 1987
PCT Filed Sep. 29, 1986, Ser. No. 64,255
Claims priority, application United Kingdom, Sep. 27, 1985, 8523933
Int. Cl.[5] E04C *2/32*
U.S. Cl. 52—[illegible] 4 Claims



1. A composite structure having a metal panel comprising first and second parallel plates having opposing faces, a corrugated metal stiffener sandwiched between said plates and having a plurality of parallel corrugations defining peaks and troughs, each corrugation having an end, said first and second plates being secured to the peaks and troughs, respectively, of said stiffener by weld lines extending along the peaks and troughs, said panel being assembled to a like panel with the corrugations of both panels aligned end-to-end, with straight edges of said first plates opposing one another, and with straight edges of said second plates opposing one another, wherein said straight edge of each first plate extends parallel to and forwardly of a plane containing the ends of the corrugations of the respective panel, and said straight edge of each second plate extends parallel to and rearwardly of said plane, and (a) a butt weld joins said first plate edges (b) a corrugated insert piece is joined at each of said opposing faces by butt welds to the ends of the corrugations on the respective panels and (c) a plate insert is butt-welded at parallel edges thereof to said straight edges of said second plates.

5,007,226

INSULATED REFRIGERATOR DOOR CONSTRUCTION

Thomas E. Nelson, Anchorage, Ky., assignor to Soltech, Inc., Shelbyville, Ky.

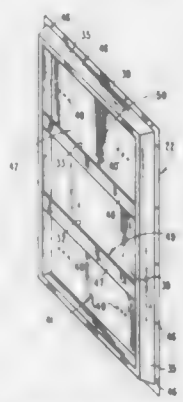
Filed May 1, 1989, Ser. No. 345,967
Int. Cl.[5] E04B *1/78*; E04C *2/34*
U.S. Cl. 52—809 4 Claims

1. An insulated refrigerator door which is designed and arranged to enable the natural flow of air from the lower interior of the refrigerator up through the door insulation and back to the upper interior of the refrigerator, said insulated refrigerator door comprising:

an outer door panel;

an inner door panel defining therein a plurality of vent holes positioned in a series across the lower portion of said panel and a plurality of vent holes positioned in a series across the upper portion of said panel; and

an insulation panel disposed and filling the cavity between said inner and outer door panels and including a flexible permeable layer positioned adjacent to the interior surfaces of said inner and outer door panels, insulation material being disposed between said inner and outer panels and within said flexible permeable layer, said vent holes being designed and arranged for flow communication with said insulation material by way of said flexible permeable layer, wherein said insulation panel is arranged with a plurality of pouches constructed from material



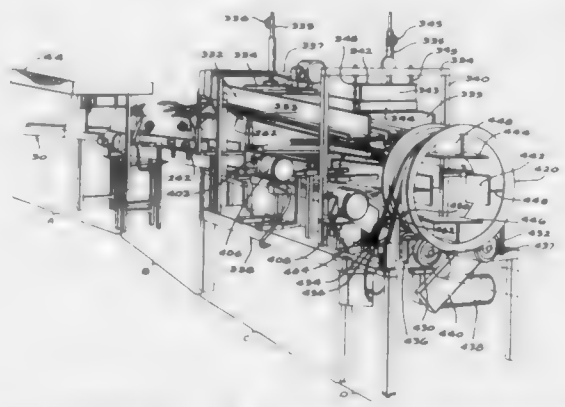
comprising said flexible permeable layer, each pouch being filled with insulation and separated from each other by a seam.

5,007,227

APPARTAUS AND METHOD FOR PACKAGING CITRUS FRUIT

Stanley McClusky, and Jerry L. Hayd, both of Bakersfield, Calif., assignors to McClusky Machinery Sales & Service, Edison, Calif.

Division of Ser. No. 260,437, Oct. 20, 1988, Pat. No. 4,907,396. This application Jan. 12, 1990, Ser. No. 465,999
Int. Cl.[5] B65B *61/00*
U.S. Cl. 53—243 8 Claims



1. In combination with an apparatus for packaging citrus fruit in a box the combination of:

a rotatable drum having means for receiving a box;

said box receiving means including side plates and top and bottom plates defining a box opening;

the longitudinal dimension of said plates being less than the axial dimension of said rotatable drum;

means for rotating said drum through 180° including a set of wheels engaged with said drum;

and means for causing said drum to pause in its rotation while a box inverted through 180° by said drum is pushed from said drum by a succeeding box.

5,007,228

ADJUSTABLE BOTTLE GRIPPER BELT

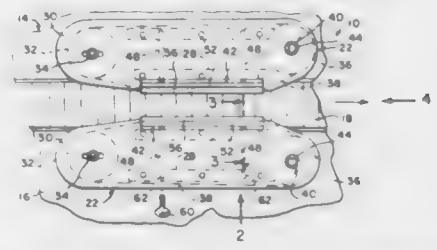
Kenneth Herzog, 135 Industrial Blvd., Riverhead, N.Y. 11[illegible]1

Filed Nov. 8, 1989, Ser. No. 433,115
Int. Cl.[5] B65[illegible] *7/28*; B67B *3/20*
U.S. Cl. 53—282 3 Claims

1. Apparatus for gripping a container when being capped in a container filling and capping machine of the type having a table top with a conveyor for allowing the container to travel therealong and a capping mechanism disposed above the conveyor, said apparatus comprising at least two adjustable container gripper belt assemblies oppositely mounted on the table top adjacent the conveyor so that said assemblies can be adjusted to grip containers of various sizes that travel on the conveyor and prevent rotation of the container when a cap is rotatably mounted onto a threaded bottle neck of the container by the capping mechanism, wherein each of said adjustable container gripper belt assemblies includes:

(a) a pair of horizontally spaced apart stationary bars mounted above the table top in parallel relationship to the conveyor;

(b) a pair of elongated plates mounted on the bars in a sandwiched relationship above and below said bars;



(c) an idler pulley being adjustable and rotatably mounted between said plates at one side thereof;

(d) a drive pulley rotatably positioned between said plates at the other side thereof;

(e) a continuous flexible gripper belt extending about said idler pulley and said drive pulley;

(f) means for rotatably driving said drive pulley so that said gripper belt will move at same speed as the conveyor;

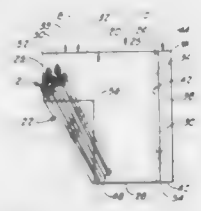
(g) means mounted on each said bar below the container top for horizontally adjusting said belt of each said assembly to individually engage with containers of varying size and shape.

5,007,229

METHOD OF WRAPPING UTILIZING A SELF ADHERING WRAPPING MATERIAL

Donald E. Weder, Highland; William F. Straeter, Breese; Joseph G. Straeter, Highland, all of Ill.; Franklin J. Craig, Valley Park, Mo.; Wilma M. Donnelly, Hi[illegible]hland, Ill., and Jack W. Redditt, Nashville, Tenn., assignors to Highland Supply Corporation, Highland, Ill.

Filed Jun. 20, 1989, Ser. No. 368,597
Continuation-in-part of Ser. No. 249,761, Sep. 26, 1988, which is a continuation-in-part of Ser. No. 219,083, Jul. 13, 1988, Pat. No. 4,897,031, which is a continuation of Ser. No. 613,080, May 22, 1984, abandoned, which is a continuation-in-part of Ser. No. 235,541, Aug. 11, 1988, Pat. No. 4,835,834, which is a continuation of Ser. No. 876,405, Jun. 20, 1986
Int. Cl.[5] B65[illegible] *11/56*, *11/48*
U.S. Cl. 53—3[illegible] 56 Claims



1. A method of wrapping at least a portion of an item, comprising:

providing a wrapping material comprising a sheet of material sufficiently sized to wrap at least a portion of the item, wherein the sheet of material comprises an upper surface and a lower surface; and a cling material [illegible]ured to a portion of the sheet material, wherein the cling material is capable of connecting to the sheet of material and itself

upon contacting engagement and wherein the sheet of material with the cling material connected thereto is wrappable about the item whereby portions of the cling material contactingly engage and connect to portions of the wrapping material for generally securing the sheet of material wrapped about at least a portion of the item; and

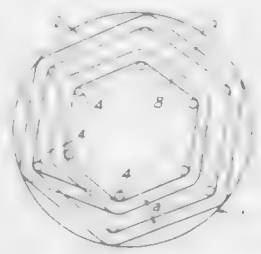
wrapping the item by disposing the sheet of material about the item so that portions of the cling material contactingly engage and connect to portions of the wrapping material for generally securing the sheet of material about at least a portion of the item.

5,007,230

SAFE PACKAGING FOR DETONATING CORD

Didier Gaston, Kourou, Guyana, assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Feb. 6, 1990, Ser. No. 475,664
Claims priority, application France, Feb. 8, 1989, 89 01617
Int. Cl.[5] B65B *63/04*
U.S. Cl. 53—397 **2 Claims**



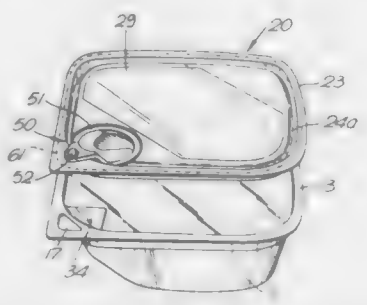
1. A method of packaging a detonating cord comprising explosive material contained in a sheath, said method comprising the step of winding the detonating cord on a support in such a manner that every portion of the detonating cord in the winding , is spaced apart from the nearest portions which are substantially parallel thereto by a distance (a) lying in a range between the distance below which detonation is transmissible from one portion to the nearest portion, and the distance beyond which said containing sheath is no longer destroyed by the detonation of a nearest portion.

5,007,231

CONTAINER

Ole Ingemann, Ryslinge, Denmark, assignor to PLM AB, Malmo, Sweden

Division of Ser. No. 46,048, Apr. 16, 1987, Pat. No. 4,795,055.
This application Dec. 23, 1988, Ser. No. 289,385
Claims priority, application Sweden, Aug. 18, 1986, 8503830
Int. Cl.[5] B65B *7/28, 61/18*
U.S. Cl. 53—412 **10 Claims**



1. A method for sealing an open top of a container having a closed bottom and containing goods to be sealed against the ambient atmosphere, said method comprising

attaching a first lid to the open top of the container by a peelable connection so that the lid seals the contents in the container,

attaching a second lid to the container by a permanent sealed connection in a region outside the first lid to form a closed, sealed space between the lids, and

forming the second lid with a weakened portion surrounding said peelable connection between said first lid and the open top of the container to enable separation of said second lid at said weakened portion and provide access to said first lid to enable its removal to gain access to the contents in the container.

5,007,232

APPARATUS AND METHOD OF USE OF STERILIZING CONTAINERS USING HYDROGEN PEROXIDE VAPOR

Vance L. Caudill, Columbus, Ohio, assignor to Abbott Laboratories, Abbott Park, Ill.

Filed Nov. [illegible], 1989, Ser. No. 439,130
Int. Cl.[5] B65B *55/06, 55/10, 31/02*
U.S. Cl. 53—426 **14 Claims**



1. Apparatus for aseptically filling a container, said apparatus comprising:

a housing,

a source of liquid hydrogen peroxide,

means for providing a flow of heated gas,

means for causing said hydrogen peroxide to mix with said heated gas, the mixing thereby vaporizing said hydrogen peroxide,

means inside said housing for dispensing the vaporized hydrogen peroxide, said means for dispensing said vaporized hydrogen peroxide including means for dispensing said vaporized hydrogen peroxide into said container,

fill tube means extending into said housing for dispensing product into said container,

means within said housing for sealing said container, and

means providing for the passage of said container between the interior and the exterior of said housing.

5,007,233

MULTIWALL BAG AND METHOD OF PACKAGING UTILIZING MULTIWALL BAGS

Ajit K. Bose, Lawrenceville, N.J., assignor to Union Camp Corporation, Wayne, N.J.

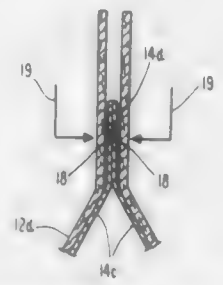
Filed Aug. 31, 1989, Ser. No. 401,336
Int. Cl.[5] B65B *7/06*
U.S. Cl. 53—449 **10 Claims**

1. A method of packaging bulk material in a multiwall bag which includes a ply of uncoated paper which provides an inner surface, comprising the steps of:

providing a thermoplastic bag, said thermoplastic bag having a top inner surface;

inserting said thermoplastic bag within the multiwall bag, wherein an outer surface of said thermoplastic bag substantially contiguously contacts the inner surface of said ply of uncoated paper;

substantially filling said thermoplastic bag with the bulk material;



ultrasonically sealing the top inner surface of said thermoplastic bag filled with the bulk material through the walls of the multiwall bag and forming a seal between said multiwall bag and said thermoplastic bag that is weaker than the seal of the inner surfaces of said thermoplastic bag; and

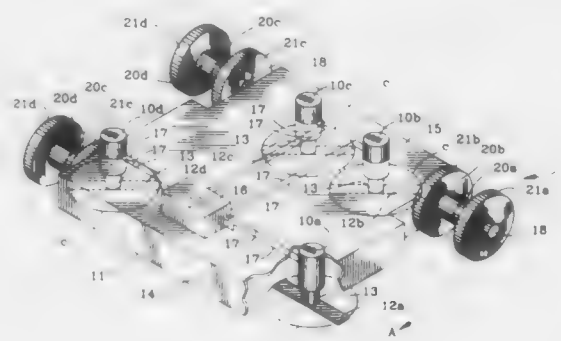
closing said multiwall bag.

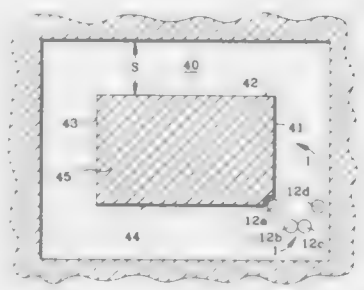
5,007,234

AUTOMATIC SELF-GUIDING LAWN MOWER AND MOWING METHOD

Darlene M. Shurman, 609 16th St., NW.; Gerald L. Shurman, 1221 Cleveland Ave., NW., and Louis W. Shurman, 316 15th St., NW., all of, Canton, Ohio 44703

Continuation-in-part of Ser. No. 441,628, Nov. 27, 1989, abandoned. This application Aug. 15, 1990, Ser. No. 568,221
Int. Cl.[5] A01D *34/78, 69/02*
U.S. Cl. 56—10.2 **16 Claims**





13. A method of mowing a lawn with an automatic self-guiding lawn mower having at least first and second motor means for driving operatively connected blade means and wheel means, respectively, for cutting the lawn and moving the mower, including the steps of:

(a) manually cutting a border around the lawn;

(b) positioning the mower adjacent to a peripheral edge of an uncut area of the lawn;

(c) actuating the first motor means for driving the operatively connected blade means;

(d) actuating the second motor means for driving the operatively connected wheel means to move the mower in a curved path into the uncut area of the lawn;

(e) sensing a predetermined change in the operation of the first motor means when the attached blade means moves to a certain position in an uncut area of the lawn; and

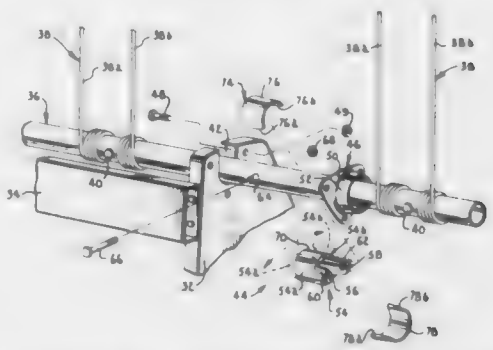
(f) causing a certain change in the second motor means upon detection of the predetermined change in the first motor means when the mower means reaches said certain position in the uncut area so that the mower moves in a generally straight line along the peripheral edge of the uncut area of the lawn.

5,007,235

TINE TUBE BEARING ASSEMBLY FOR A HARVESTING REEL

Dwight E. Nickel, Newton; Michael L. O'Halloran, Hesston, and Cecil L. Case, Newton, all of Kans., assignors to Hay & Forage Industries, Hesston, Kans.

Filed Jun. 7, 1990, Ser. No. 534,833
Int. Cl.[5] A01D *57/03*
U.S. Cl. 56—12.4 **17 Claims**



1. In a harvester reel having a plurality of circumferentially spaced tine bars which are oscillated about their longitudinal axes within openings in carrier arms for the bars during operative rotation of the reel, thereby changing the angle of presentation of crop-engaging tines on the bars as the bars describe a circular path of travel during rotation of the reel, an improved bearing assembly on each carrier arm for its tine bar comprising:

a generally cylindrical housing secured to the arm against rotation relative thereto and having an annular wall projecting laterally outwardly from the arm generally in the axial direction of the tine bar,

said wall being axially aligned with the opening in the carrier arm and circumscribing the tine bar in radially outwardly spaced relation thereto;

a cylindrical bearing collar secured to the tine bar in surrounding relationship therewith for oscillating movement with the tine bar relative to the housing,

said collar being at least partially axially received within the housing in radially spaced relation to said wall thereof to define an annular region between the wall and the collar; and

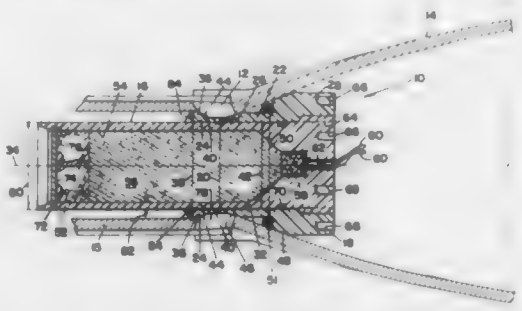
a bushing retained within said region against rotary movement relative to the housing and disposed in sliding engagement with the collar of the tine bar to support the latter during its oscillation.

5,007,236

REMOVABLE ROCKET MOTOR IGNITER

Robert I. Myers, New Hope; Bryce D. Brubaker, and Robert E. Overall, both of Huntsville, all of Ala., assignors to Morton Thiokol, Inc., Chicago, Ill.

Filed Oct. 26, 1987, Ser. No. 113,783
Int. Cl.[5] F02K 9/00
U.S. Cl. 60—256 17 Claims



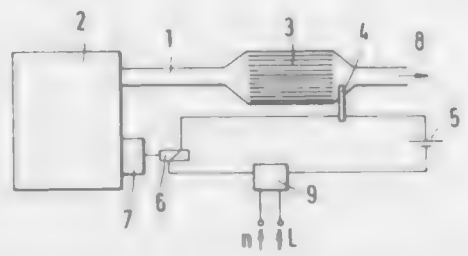
1. An igniter removably insertable in a rocket motor nozzle throat, the igniter comprises a sleeve having an axis and a generally cylindrical aperture means extending axially therethrough for insertion of an igniter tube therein, said sleeve comprises a body portion and a plurality of tab members extending axially from one end of said body portion and spaced apart circumferentially thereof, a first portion on each said tab member which extends radially outwardly such that a diameter defined by the plurality of said first tab member portions in combination is greater than a diameter of the nozzle throat, said tab members being composed of a material which allows said tab members to flex whereby said first tab member portions are movable radially inwardly so that said plurality of said first tab member portions may be inserted through the nozzle throat, said body portion having a diameter greater than a diameter of the nozzle throat, and the igniter further comprises an igniter tube containing ignition material which igniter tube is removably insertable in said sleeve aperture means and removably attachable to said sleeve, means for igniting said ignition material, and frangible means for effecting separation of said plurality of first tab member portions from said sleeve at a predetermined pressure in the rocket motor.

5,007,237

DIESEL INTERNAL COMBUSTION ENGINE WITH TEMPERATURE-DEPENDENT ADJUSTMENT OF START OF FUEL INJECTION

Eckart Müller, Gifhorn, Fed. Rep. of Germany, assignor to Volkswagen A.G., Wolfsburg, Fed. Rep. of Germany

Filed Jul. 27, 1989, Ser. No. 386,283
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1988, 3828540
Int. Cl.[5] F01N 3/00; F02N 17/00
U.S. Cl. 60—285 3 Claims



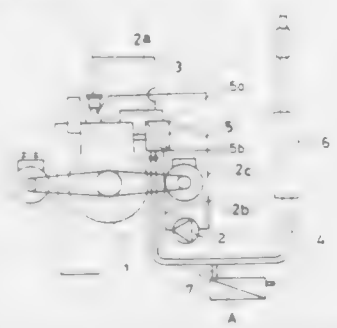
1. A diesel internal combustion engine having an arrangement for temperature-dependent adjustment of fuel injection start-up comprising catalyst means which is effective only for promoting oxidation of hydrocarbons in exhaust gas in an exhaust gas line of the engine at a temperature exceeding a start-up temperature, temperature sensor means for detecting the temperature of the catalyst means, and a control means for delaying fuel injection start-up only when the temperature sensor means detects a temperature that exceeds the start-up temperature of the catalyst means

5,007,238

APPARATUS FOR EVAPORATING CONDENSED LIQUID

Hideo Seko, Hashima, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 23, 1989, Ser. No. 370,852
Claims priority, application Japan, Jun. 23, 1988, 63-083376[U]
Int. Cl.[5] F01N 3/02; H05B 3/02
U.S. Cl. 60—309 6 Claims



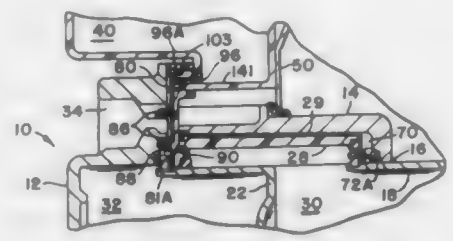
1. An apparatus for evaporating condensed liquid in a gas heat pump comprising:
a casing having therein a space;
a powdery ceramic material provided in the casing,
inlet means for guiding the condensed liquid into the casing, and
heating means for heating the condensed liquid within the casing

5,007,239

MASTER CYLINDER WITH SANDWICHED COMMUNICATION INTERFACES

John E. Steer, South Bend, Ind., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Dec. 12, 1989, Ser. No. 449,196
Int. Cl.[5] B60T 11/20, 11/232, 11/236, 11/28
U.S. Cl. 60—562 22 Claims



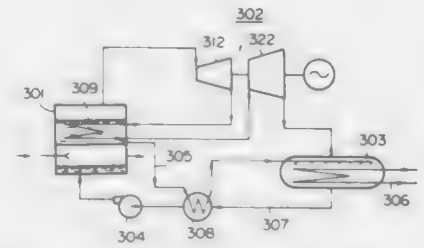
1. A master cylinder, comprising a first housing part and a second housing part and having an end of one part received at the end of the other part so that the parts define therebetween an interior opening comprising a bore, a sleeve member received within said second housing part, first piston means slideably received within an end opening of said second part, second piston means received within said bore and biased by first resilient means, second resilient means biasing the first piston means, a reservoir communicating with said bore, and first and second interface members captured between said first and second parts, the interface members having sealing members molded thereupon to provide fluid flow paths between the reservoir and bore and between said bore and fluid outlets.

5,007,240

HYBRID RANKINE CYCLE SYSTEM

Tetsuyoshi Ishida; Shigeyoshi Kawano, both of Kure; Ikuo Kohtaka, Kamo; Kojiro Yamada; Hiroyuki Kaku, both of Hiroshima, and Tsuneo Narita, Tokyo, all of Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 9, 1989, Ser. No. 308,812
Claims priority, application Japan, Dec. 18, 1987, 62-320579; Feb. 12, 1988, 63-30648; Mar. 24, 1988, 63-70438; Mar. 24, 1988, 63-70440
Int. Cl.[5] F01K 25/06
U.S. Cl. 60—673 8 Claims



1. A hybrid Rankine cycle system, comprising:
separating means including a heating device for separating working medium steam from weak absorbent solution including said working medium and a substance having a boiling point higher than a heating temperature in said heating device, thereby leaving a strong absorbent solution, said substance being selected from the group consisting of alkali metal halides and alkali earth metal halides;
wherein said separating means includes a boiler for heating said weak absorbent solution to separate said steam and said strong absorbent solution therefrom;
a steam driven prime mover through which said steam from said separating means expands to produce work outside, wherein said prime mover is a multiple-stage turbine, and said system includes heat transfer means disposed within said separating means for transferring heat from steam and/or said strong absorbent solution in said separating means to steam passing out from one stage of said turbine, and wherein the steam from said heat transfer means is delivered into a next stage of said turbine;
an absorber condenser means for introducing thereinto said strong absorbent solution to absorb into steam from said prime mover to produce said weak absorbent solution;
means for delivering said weak absorbent solution towards said separating means; and
means for delivering said strong absorbent solution from said separating means towards said absorber condenser means.

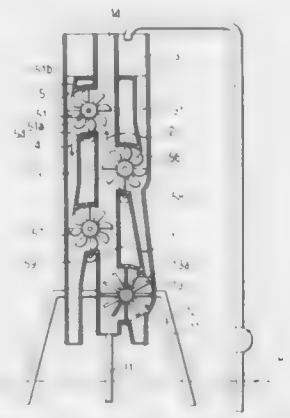
5,007,241

KINETIC ENERGY RECOVERY DEVICE OF LIQUID AND GAS

Yutaka Saitou, 24-25, 1-chome, Kikui, Nishi-ku, Nagoya-shi, Aichi-ken, Japan

Filed Sep. 12, 1989, Ser. No. 406,397
Int. Cl.[5] F01B 21/04; F02B 73/00
U.S. Cl. 60—698 10 Claims

1. A kinetic energy recovery device comprising:
(a) a gas guide member;
(b) a liquid guide member installed along said gas guide member, said gas guide member and said liquid guide member partly communicating with each other;
(c) a vane wheel supported rotatable by a rotary shaft supported at the communicating portion between said gas guide member and said liquid guide member in the lateral direction with respect to the longitudinal direction of both guide members and rotating on receiving the rotating force from a gas flow rising in said gas guide member and a liquid flowing down in said gas guide member;
(d) a first liquid storage member installed on the upper end of said liquid guide member;
(e) a second liquid storage member installed at lower side of said liquid guide member;



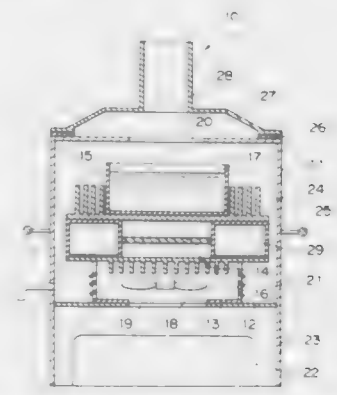
(f) a liquid pumping-up means for pumping up a liquid from said second liquid storage means into said first liquid storage member;
(g) an energy recovery means; and
(h) means for transmitting the rotation of said vane wheel to said energy recovery means.

5,007,242

THERMOELECTRIC HUMIDIFIER AND DISPLAY CASE PROVIDED WITH SUCH HUMIDIFIER

Hitoshi Nakayama, Kamagaya, Japan, assignor to Snow Brand Milk Products Co., Ltd., Hokkaido, Japan

Filed Sep. 19, 1989, Ser. No. 409,338
Claims priority, application Japan, Sep. 30, 1988, 63-128485[U]
Int. Cl.[5] F25B 21/02
U.S. Cl. 62—3.2 7 Claims



1. A humidifier for producing cooled and humidified air, comprising:
(1) a Peltier effect element having a heat radiating side and a cooling side;
(2) means for passing air near said cooling side for producing cooled air,
(3) a reservoir for containing a quantity of water disposed apart from but near said heat radiating side such that radiated heat to said reservoir and said water is sufficient to heat said water and to produce water vapor from the quantity of water such as to substantially humidify said cooled air;
(4) passage means for passing said cooled air into and mixing with said water vapor, whereby cooled and substantially humidified air is produced; and

(5) an outlet to exhaust said cooled and humidified air from said humidifier.

5,007,243

VESSEL FOR MAKING HIGH-PURITY FINE PARTICLES OF ACTIVE METALS

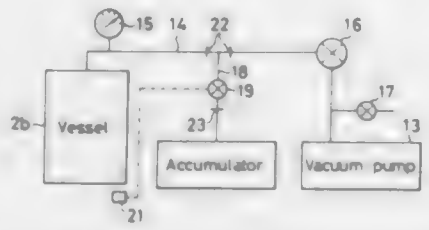
Toru Yamaguchi, Sakura; Yukio Inazuki, Sayama, and Hideo Nakazawa, Funabashi, all of Japan, assignors to IHI Master Metal Ltd. and Ishikawajima-Harima Heavy Industries Co., Ltd., Tokyo, Japan

Division of Ser. No. 378,531, Jul. 11, 1989, Pat. No. 4,971,258. This application Nov. 21, 1989, Ser. No. 440,056

Claims priority, application Japan, Aug. 26, 1988, 63-210620; Sep. 2, 1988, 63-218486

Int. Cl.[5] F25B *19/00*

U.S. Cl. 62—51.1 **9 Claims**



1. Apparatus for use in manufacturing high-purity fine particles of reactive metals, comprising

a hermetically sealable vessel for containing inert gas atmosphere therein;

a pair of rubber gloves for conducting operations within the vessel under the inert gas atmosphere;

a cryogenic cooling device attached to one wall of the vessel so as to condense the moisture remaining in the inert gas atmosphere into dew droplets; and

an accumulator for equalizing the inner pressure of the vessel with the ambient atmospheric pressure.

5,007,244

DISASTER PREVENTION SYSTEM AND CONSTRUCTION FOR AN UNDERGROUND SPACE

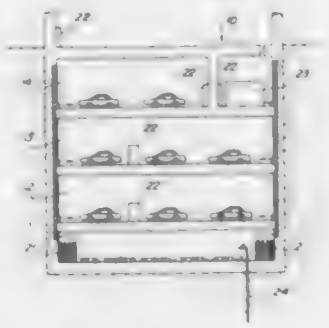
Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Oct. 11, 1989, Ser. No. 419,936

Claims priority, application Japan, Dec. 21, 1988, 63-322760; Feb. 21, 1989, 1-40886

Int. Cl.[5] F17C *1/00*

U.S. Cl. 62—53.1 **4 Claims**



1. A disaster prevention system for an underground space comprising liquid air storage means for storing liquid air in said underground space, a power generator means in said underground space, conduit means in said underground space leading from said liquid air storage means to a plurality of locations in said underground space such that liquid air released from said liquid air storage means provides compressed air in said conduit means, said conduit means having a plurality of compressed air outlets located at a plurality of locations in said underground space such that the compressed air in said conduit means is discharged through said outlets to thereby maintain said underground space at pressure higher than atmospheric pressure, said conduit means comprising a conduit means portion leading to said generator means such that the air for operating said generator means is supplied by said liquid air storage means via said conduit means.

5,007,245

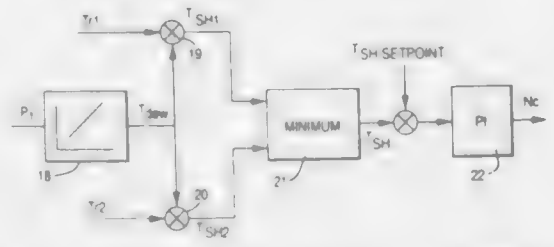
VAPOR CYCLE SYSTEM WITH MULTIPLE EVAPORATOR LOAD CONTROL AND SUPERHEAT CONTROL

John F. Defenbaugh, Rockford, and Albert L. Markunas, Roscoe, both of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Sep. 1, 1989, Ser. No. 401,866

Int. Cl.[5] F25B *1/00*

U.S. Cl. 62—117 **22 Claims**



1. A vapor control system, comprising a variable speed compressor, a condenser operatively associated with the compressor, a plurality of evaporators operatively associated with the compressor and the condenser, means for controlling compressor speed to provide a refrigerant superheat temperature at least equal to a selected value so as to provide substantially only refrigerant vapor at an inlet of the compressor, and means for individually controlling load temperature of each evaporator.

5,007,246

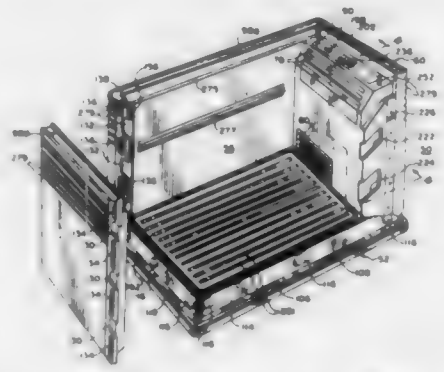
MODULAR MECHANICAL REFRIGERATION UNIT

Richard W. Kruck, Sodus Township, Berrien County; Omer N. Cur; Douglas D. Leclear, both of St. Joseph Township, Berrien County; Steven J. Kuehl, Royalton Township, Berrien County, all of Mich., and Ralph R. Burin, Milton Township, DuPage County, Ill., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Division of Ser. No. 489,441, Mar. 12, 1990, which is a division of Ser. No. 218,233, Jul. 12, 1988, Pat. No. 4,907,419. This application May 18, 1990, Ser. No. 412,981

Int. Cl.[5] F25B *49/02*

U.S. Cl. 62—131 **7 Claims**



1. A system in a refrigeration unit for detecting when a closure panel of the unit is ajar comprising a first switch positioned to be engaged by a hinge side of said closure panel and having contacts which are open when said closure panel is open, said first switch contacts being closed in response to closure of said closure panel, a second switch positioned to be engaged by the outer edge of said closure panel and having contacts which are normally closed when said closure panel is open, said second switch contacts being opened in response to complete closure of said closure panel, delay means responsive to closure of said first switch contacts for initiating a time delay of predetermined duration, and means for energizing an alarm if said second switch contacts are not opened before the end of said time delay of predetermined duration.

5,007,247

REFRIGERATION OR HEAT PUMP INSTALLATION

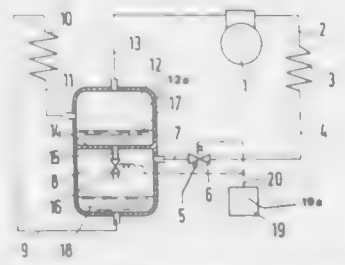
Per Danig, Holte, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Sep. 25, 1989, Ser. No. 411,880

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1988, 3833209

Int. Cl.[5] F25B *41/00*

U.S. Cl. 62—174 **16 Claims**



1. A refrigeration or heat pump installation that utilizes a fluid refrigerant, comprising a liquid separator having an intermediate chamber and a liquid chamber, the liquid chamber having an upper portion and a lower portion above the intermediate chamber, a compressor, a suction conduit fluidly connecting the compressor to the upper portion of the liquid chamber, a condenser, a pressure conduit connecting the condenser to the compressor, an evaporator, a third circuit for conducting fluid from the intermediate chamber to the evaporator, a fourth conduit for conducting fluid from the evaporator to the liquid chamber and control means for controlling fluid flow from the condenser to the intermediate chamber and liquid flow from the lower portion of the liquid chamber to the intermediate chamber, the control means including first switching valve means operable between an opened and a closed position for controlling the flow of fluid from the condenser to the liquid separator, second switching valve means operable between an opened and a closed position for controlling the liquid flow to the intermediate chamber and being operated in the opposite sense from the first switching valve means, the first switching valve means including an expansion valve

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5,007,248

BEVERAGE COOLING SYSTEM

Eliahu Maier, Petach Tikva; Yair Kovesh, and Abraham Zorea, both of Kfar Szold, all of Israel, assignors to Lordan & Co., Mobile Post Galil Elyon, Israel

Filed Oct. 30, 1989, Ser. No. 429,145

Int. Cl.[5] B60H *1/32*

U.S. Cl. 62—244 **4 Claims**

4. A vehicle having an integrated air conditioning system and beverage cooling system comprising:

means for compressing a refrigerant fluid,

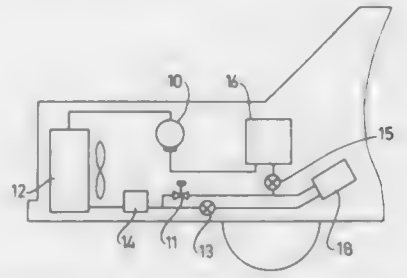
first means for receiving and evaporating the compressed refrigerant fluid,

means associated with said air conditioning system for circulating air across said first means for receiving and evaporating,

second means in heat conductive engagement with a beverage container for receiving and evaporating the compressed refrigerant fluid; and

first and second means located downstream of said means for compressing and upstream of respective said first and said second means for receiving and evaporating for receiving and causing expansion of the refrigerant fluid;

wherein said first means for receiving and evaporating receives the refrigerant fluid in liquid form at a first pressure and at a first temperature and is operative to reduce the pressure of the liquid too a second pressure and the temperature of the liquid to a second temperature, the second pressure and the second temperature being respectively substantially lower than the first pressure and the first temperature; said second means for receiving and evaporating receiving the refrigerant fluid in liquid form at a third pressure and at a third temperature and being operative to reduce the pressure of the liquid to a fourth pressure and the temperature of the liquid to a fourth temperature, the fourth pressure and the fourth temperature being respectively substantially lower than the third pressure and the third temperature;



wherein said first means for receiving and causing expansion comprises means for providing a first constriction to the fluid flow and aid second means for receiving and causing expansion comprises means for providing a second constriction to the fluid flow greater than said first constriction;

and wherein said first means for receiving and causing expansion and said first means for receiving and evaporating are arranged in series with and downstream of said second means for receiving and causing expansion and said second means for receiving and evaporating, there also being provided a valve associated with a fluid flow path extending between an inlet located upstream of said second means for receiving and causing expansion and an outlet located between said second means for receiving and evaporating and said first means for receiving and causing expansion, the fluid being permitted to flow through said valve when aid valve is open, substantially to the exclusion of fluid flow through said second means for receiving and causing expansion and said second means for receiving and evaporating, fluid flow being diverted through said second means for receiving and causing expansion and said second means for receiving and evaporating when said valve is closed.

5,007,249

IN STORE KEEP-A-COOLER

Albert Van Druff, Jr., Lawrenceville, Ga., assignor to Cornerstone Products Inc., Norcross, Ga.

Filed Mar. 2, 1990, Ser. No. 487,147

Int. Cl.[5] A47F *3/04*

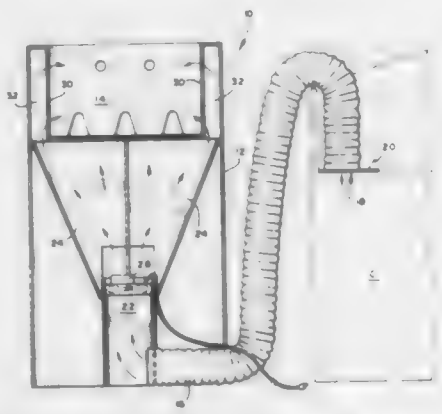
U.S. Cl. 62—255 **10 Claims**

1. An auxiliary, portable storage and cooling unit for use in combination with a primary source of refrigerated air comprising:

a housing having inner and outer wall surfaces and including a support base and upper opening;

a product storage compartment formed in said upper opening of said housing;

a refrigerated air flow path including, an air inlet duct having an inlet opening structured to be in fluid communication with said primary source of refrigerated air, an air inlet chamber connected to said air inlet duct;



a plurality of funnel-shaped air distribution ducts increasing in size upwardly and outwardly from said air inlet chamber toward said housing inner wall surfaces;

a plurality of air distribution chambers located between said product storage compartment and said inner wall surfaces of said housing; and

air flow openings formed in said product storage compartment permitting flow of refrigerated air from said air distribution chambers into said product storage compartment.

5,007,250

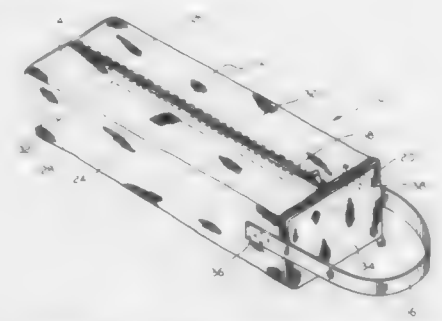
INSULATED COOLING CONTAINER FOR CANNED LIQUIDS

Ronald L. Musielak, Downers Grove, Ill., assignor to R.V.R. Enterprises, Ltd., Lombard, Ill.

Filed Nov. 1, 1989, Ser. No. 429,988

Int. Cl.[5] F25D *3/08*

U.S. Cl. 62—372 **10 Claims**



1. A portable insulated cooling container comprising a first compartment adapted to receive beverage containers to be maintained in a cool state; a second compartment adapted to receive a coolant material, a pliant substantially non-insulating material in said cooling container separating said first compartment and said second compartment; a first opening in said first compartment, and first closure means to selectively open and close said first compartment; a second opening in said second compartment, and second closure means to selectively open and close said second compartment; said first and second compartment being independently accessible through said first and second openings, respectively.

5,007,251

INSTALLATION FOR AIR-CONDITIONING BY ABSORPTION

Jean-Luc Thuez, St-Germain-en-Laye, and Robert Dehausse, Joinville, both of France, assignors to A.R.M.I.N.E.S., Paris, France

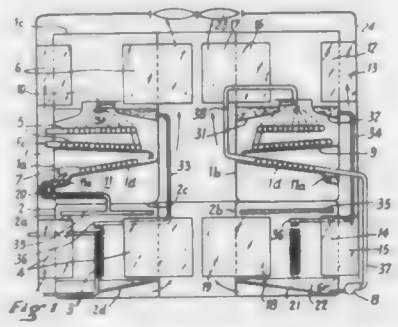
PCT No. PCT/FR88/00598, § 371 Date Aug. 2, 1989, § 102(e) Date Aug. 2, 1989, PCT Pub. No. WO89/05427, PCT Pub. Date Jun. 15, 1989

PCT Filed Dec. 7, 1988, Ser. No. 392,953

Claims priority, application France, Dec. 7, 1987, 87 16981

Int. Cl.[5] F25B *15/00*

U.S. Cl. 62—476 **20 Claims**



1. Installation for air-conditioning by absorption, comprising:

a high-pressure enclosure **1** containing a heater heated to high temperature, in which a refrigerating fluid is driven by evaporation to form a gaseous refrigerant, and a condenser on which the refrigerating fluid is liquidified; and

a low-pressure enclosure **2** containing an evaporator on which the liquified refrigerant is vaporized for producing a desired cold and an absorber on which the gaseous refrigerant is reabsorbed in the depleted solution before being returned to the heater via a pump;

said high-pressure enclosure **1** and said low-pressure enclosure **2** each having a generally toric-shaped casing with a common vertical axis, said high-pressure enclosure **1** being located above and superimposed on said low-pressure enclosure **2**;

means enclosing a high-pressure and a low-pressure central free space in each said enclosure, said high-pressure central free space in said high-pressure enclosure is de-limited by central cylindrical wall **1***a* and being coaxial with said common vertical axis, and said low-pressure central free space in said low-pressure enclosure is de-limited by central cylindrical wall **1***b* and coaxial with said vertical axis; and

cooling means **16–18** positioned in said central free space delimited by said cylindrical inner walls **1***b* of said two casings of said two enclosures **1, 2**, for ensuring partial or total exchange of heat energy produced by condensation, absorption and possible evaporation.

5,007,252

COMBINATION NECKLACE

Shigetoshi Mochizuki, Chofu-City, Japan, assignor to Satoru Yagi, San Francisco, Calif.

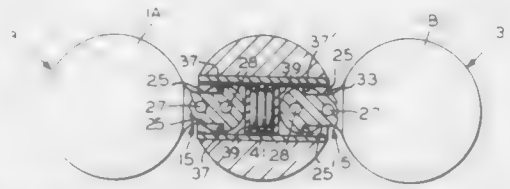
Filed Nov. 8, 1989, Ser. No. 433,651

Claims priority, application Japan, Jun. 20, 1989, 1-61737

Int. Cl.[5] A44C *5/00*

U.S. Cl. 63—3 **5 Claims**

1. A combination necklace comprising a first necklace formed of a plurality of first stones, means for joining the first stones together into a first string of stones, a pair of first connection fittings, said first connection fittings being joined to a respective first stone at each end of the first string, each of said first connection fittings comprising a first end stone which includes an outwardly projecting mating part, a second necklace formed of a plurality of second stones of a type similar to the first stones, means for joining the second stones together into a second string of stones, and a pair of second connection fittings, said second connection fittings being joined to a respective second stone at each end of the second string, each of said second connection fittings comprising a second end stone which includes an outwardly projecting mating part, and at least one joining stone of a type similar to the first stones, said first and second stones and first and second end stones and said joining stone having substantially the same predetermined size and shape, said joining stone including means for removably



engaging said connection fittings to join ends of either of the first and second strings together, said last-mentioned means includes a bore formed through the joining stone with the bore having first and second openings on opposite sides of the joining stone, said bore being sized sufficient to slidably receive said mating parts of the first and second connection fittings through respective first and second openings, said joining stone including an engagement protrusion concealed within the bore for releasably holding the mating parts of the first and second connection fittings to the joining stone.

5,007,253

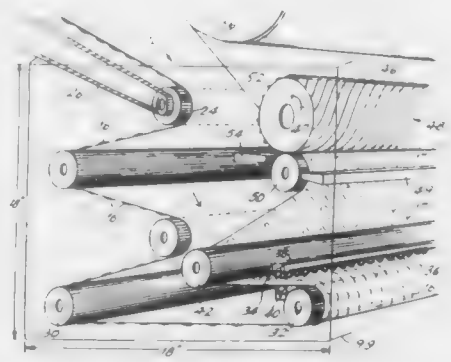
PORTABLE LACE CLIPPING AND SHEARING APPARATUS FOR SYNCHRONOUS OPERATION WITH A LACE-KNITTING MACHINE

Thomas Rahner, 1126 17th Ave., West Belmar, N.J. 07719

Continuation-in-part of Ser. No. 173,079, Mar. 25, 1988, abandoned. This application Feb. 6, 1989, Ser. No. 306,947

Int. Cl.[5] D04B *35/00*

U.S. Cl. 66—149 R **10 Claims**



1. A portable and wheelable clipping and shearing machine for finishing lace sheet produced by a lace machine, said portable machine comprising:

a housing and a plurality of wheel means mounted to the housing for supporting the housing and enabling the housing to be wheeled to a location adjacent a lace machine;

a take up roller, supported by the housing, for taking up lace sheet as it emerges from said lace machine and a conveying means for conveying lace sheet through said clipping and shearing machine along a predetermined path;

clipping means, supported by the housing, for clipping floats disposed on said lace sheet to cut said floats into strands, each one of said strands being connected at one end thereof to a respective motif located on said lace sheet;

shearing means, supported by the housing, for shearing said strands from said lace sheet close to said respective motives; and

coupling and synchronizing means for detachably coupling said portable machine to the lace machine in a manner enabling said portable machine to be driven from said lace machine and in a manner wherein the speed of movement of said lace sheet through said portable machine is synchronized to the speed at which said lace sheet emerges from said lace machine, said coupling and synchronizing means comprising the sole mechanical linkage between said portable machine and said lace machine whereby said machines may be easily and rapidly disattached and attached from and to one another.

5,007,254

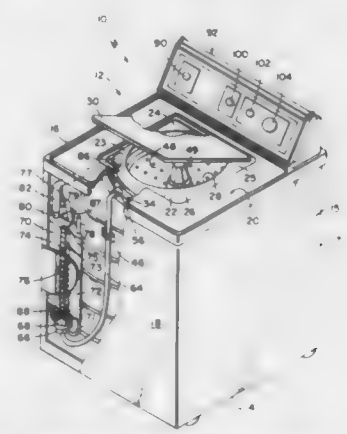
ADDITIVE FLUID VIEWING

Robert E. Wolfe, Millis, and Ronald A. Goyette, Ashby, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 458,218, Dec. 28, 1989, abandoned. This application Nov. 9, 1990, Ser. No. 610,739

Int. Cl.[5] D06F *39/02*; **G01F** *23/02*

U.S. Cl. 68—17 R **6 Claims**



1. A clothes washing machine comprising:

a cabinet having a front defining wall provided with a vertically elongated window;

a drain tub disposed in said cabinet and adapted for holding wash water;

a spin tub rotatably disposed within said drain tub, for processing a wash load in said cabinet; and

an additive liquid dispensing system disposed in said cabinet for dispensing additive liquid to said wash water, said dispensing system comprising a reservoir including housing means having a hollow interior portion for holding a multi-load quantity of the additive liquid and supplying respective smaller quantities of the additive liquid to successive wash loads in said drain tub, said dispensing system further comprising additive liquid viewing means comprising a transparent portion of said reservoir aligned with said window for determining the level reached by the quantity of additive liquid in said housing means.

5,007,255

AUTOMATIC LOADING AND UNLOADING SYSTEM FOR DYEING MACHINES USING WOUND-UP FABRIC AND RELATIVE DEVICE FOR ITS ACCOMPLISHMENT

Giampietro Brazzoli, Milan, Italy, assignor to Brazzoli S.p.A., Italy

Filed Nov. 27, 1989, Ser. No. 442,023

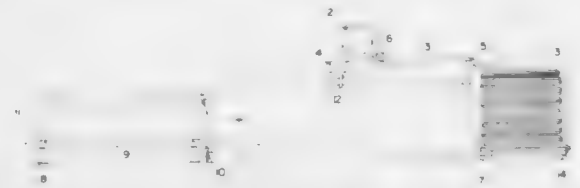
Claims priority, application Italy, Nov. 29, 1988, 22785 A/88

Int. Cl.[5] D06F *23/16*

U.S. Cl. 68—210 **7 Claims**

1. Automatic loading and unloading device for a dyeing machine of the type having a kier for receiving fabric folded up into cords, characterized by the fact that, the fabric to be dyed is folded outside the dyeing machine kier, and comprising a perforated vat similar in form and dimension to the kier of the

dyeing machine, means at the exterior of said machine for folding into said vat the fabric which is to be dyed, said folded fabric being disposed to be introduced with the vat into said machine where it undergoes a dyeing operation, said machine having thereon a water tight introduction door through which



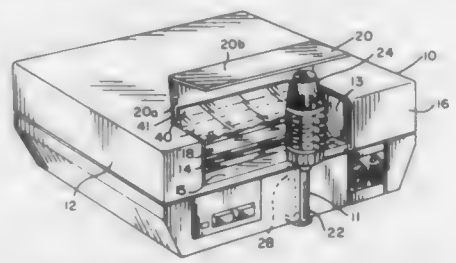
said vat passes in and out of said machine, and the dyed fabric being disposed to be drawn out in the vat from the machine after the dyeing procedure, and to be immediately substituted with another amount of fabric to be dyed prefolded in another vat.

5,007,256

CARTRIDGE OPERATED ENTERTAINMENT SYSTEM WITH REMOVAL DETERRENT DEVICE FOR PREVENTING UNAUTHORIZED USE

Thomas E. Lowe, 35W528 Parsons, Dundee, Ill. 60118

Filed Sep. 20, 1989, Ser. No. 409,682
Int. Cl.[5] **E05B** *73/00*
U.S. Cl. 70—14 **23 Claims**



1. A cartridge-operated entertainment system comprising:
a housing having a cartridge receiving access opening,
a removable deterrent device for preventing unauthorized use of said entertainment system,
said deterrent device comprising a base with first means removably engageable with said housing and second means positionable adjacent said access opening for preventing insertion of a cartridge into said opening when said first means is engaged with said housing,
a removable locking head selectively positionable and lockable on said second means for preventing disengagement of said first means from said housing,
said housing including a door that is selectively movable between an open position for permitting access to said cartridge receiving access opening and a closed position, and
a flexible shield secured to an underside of said door for covering and protecting said cartridge receiving access opening from dust and other foreign matter when said deterrent device base is engaged with said housing and said cover is in an open position.

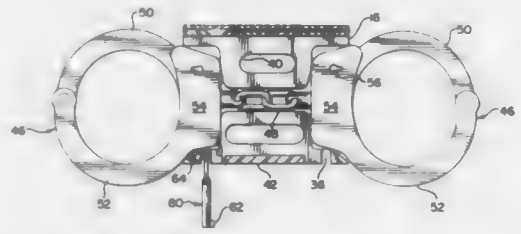
5,007,257

SAFETY SHIELD FOR DOUBLE-LOCK HANDCUFFS

Charles E. Thompson, 945 Garfield St., Oak Park, Ill. 60304

Filed Oct. 9, 1990, Ser. No. 594,414
Int. Cl.[5] **E05B** *75/00*
U.S. Cl. 70—16 **7 Claims**

1. A safety shield for handcuffs having a pair of wristlets connected by a chain, first lock means on each wristlet for disengagement and opening thereof after application to a wrist and second lock means on each wristlet for fixing the preset contracted position thereof on a wrist, comprising:
a rigid body having hinged members movable between open and closed positions operationally mountable on said wristlets to enclose said chain and first and second lock means and form a rigid connection between the wristlets; and



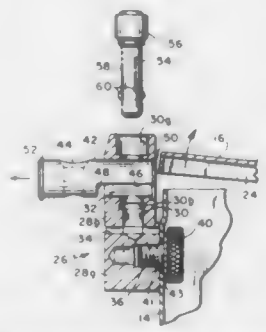
access means on said rigid body for enabling access to said second lock means,
whereby said rigid body is operationally mountable on said handcuffs before application to the wrists and said second lock means can be actuated after application to the wrists with said body members in the operationally closed position.

5,007,258

BOX LOCK ASSEMBLY

John C. Mahaney, Rutland, Mass., assignor to Olson Manufacturing Co., Holden, Mass.

Filed May 18, 1990, Ser. No. 525,736
Int. Cl.[5] **B65D** *55/14*
U.S. Cl. 70—159 **13 Claims**



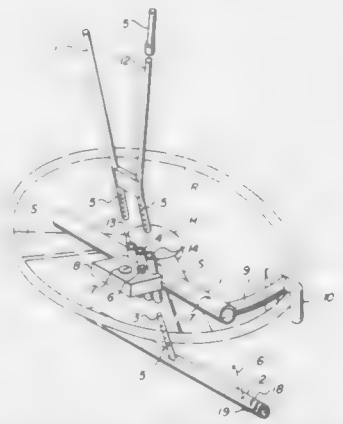
1. For use in combination with an electric meter box or other like enclosure having a base wall, a side wall, and a cover which may be opened to gain access to the interior of the box, and which when closed, overlaps said side wall and prevents such access, a lock assembly for maintaining said cover in its closed position, said lock assembly comprising:
a housing having a base portion and a head portion, said head portion defining a lock chamber intersected by a through first passageway;
means accessible from the interior of said box for securing said base portion to the exterior of said side wall at a location such that said head portion protrudes above the level of the closed cover;
a post member having a second passageway extending therethrough, said post member being receivable in said first passageway for selective movement between an operative position at which said post member overlaps the closed cover to prevent opening thereof and said second passageway is aligned with said lock chamber, and an inoperative position at which said post member is clear of the closed cover to permit opening thereof; and
a barrel lock removably receivable in said lock chamber to extend through the thus aligned second passageway to thereby prevent movement of said post member from said operative position to said inoperative position.

5,007,259

AUTOMOBILE ANTI-THEFT DEVICE

David Mellard, 701 SE. 22nd St., Fort Lauderdale, Fla. 33316

Filed Feb. 8, 1990, Ser. No. 476,785
Int. Cl.[5] **B20R** *25/02*
U.S. Cl. 70—209 **16 Claims**



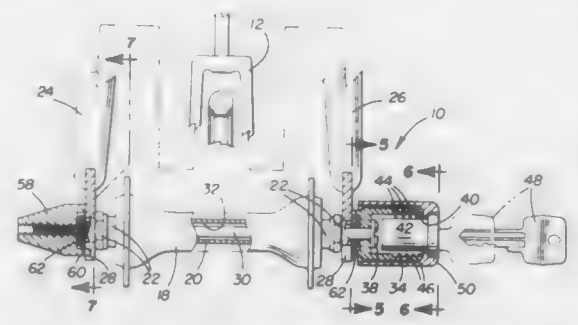
1. An anti-theft device for a motor vehicle having a driver's seat with a seatback and a steering wheel with opposite sides, a rim and a spoke, comprising a first rod disposed on one side of the rim and the spoke of the steering wheel, a projector bar, a second rod being disposed on the other side of the rim and the spoke of the steering wheel, a locking spike attached to said second rod, first means for locking between said first and second rods, and second means for locking said projector bar to said first rod with said projector bar extending toward the seatback regardless of the rotational position of the steering wheel for preventing a person from sitting on the driver's seat.

5,007,260

BICYCLE LOCKING SYSTEM

Harry Sharp, 430 Sanchez, Apt. B, San Francisco, Calif. 94114

Filed Jun. 29, 1990, Ser. No. 546,241
Int. Cl.[5] **E05B** *71/00*
U.S. Cl. 70—233 **19 Claims**



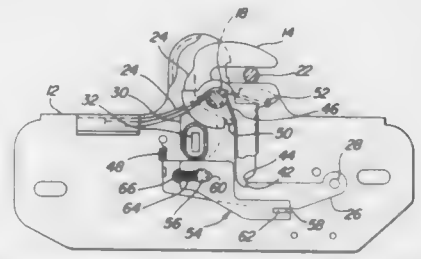
1. A system for lockingly affixing a removable component between a bifurcated portion of a wheeled vehicle comprising:
shaft means for passing between the bifurcated portion of the wheeled vehicle, said shaft means defining a bore therethrough;
spindle means for passing through said shaft means bore, the spindle means having an integrally formed enlarged end, said enlarged end formed to receive a wrench capable of turning said spindle means and said spindle means further defining a threaded end distal of said enlarged end;
a lug threadably engageable with said spindle means threaded end, said lug defining engagement means for engaging said bifurcated portion whereby said lug becomes non-removable when said spindle means is passed through said shaft means bore and when said spindle means is threadably engaged therewith; and
cylindrically shaped lock means for rotatably covering said enlarged end while said spindle means is passed through said shaft means and said lug is engaged with said bifurcated portion.

5,007,261

ELECTRICALLY ACTUATED LOCK MECHANISM WITH ELECTRICAL FAILURE PROTECTION

Norman G. Quantz, 2584 Norway Lake Rd., Lapeer, Mich. 48446

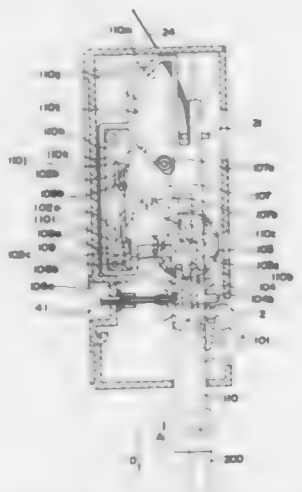
Filed Jul. 20, 1989, Ser. No. 383,198
Int. Cl.[5] **E05B** *60/19*
U.S. Cl. 70—240 **20 Claims**



1. A locking mechanism for entrapping a lock bar comprising:
a support frame;
a lock member pivotally attached to said support frame, said lock member having a lock dog and a guide tab;
a release member slidably attached to said lock member, said release member having a linear slot receiving said guide tab therein, said release member being displaceable along said linear slot between an engage and release position;
latch means having a latch member pivotally attached to said support frame and displaceable between an open and a locked position, said latch member having a dog catch engaging said lock dog to lock said latch member in said locked position, and a catch slot receiving said lock bar in said open position and entrapping said lock bar in said locked position, said latch means further being pivotable in response to forcibly rotating said latch member beyond said locked position to displace said release member to said release position;
first resilient means for producing a force biasing said latch member towards said open position;
second resilient means for producing a force biasing said lock member towards a locked position engaging said lock dog with said dog catch;
third resilient means for producing a force biasing said release member to said engage position;
a housing attached to said support frame;
a cam gear rotatably disposed in said housing, said cam gear having a predetermined cam surface;
an electric motor for rotating said cam gear;
at least one stud, protruding from said cam gear, engaging said latch means as said cam gear rotates through a first rotational interval to displace said latch member to said locked position, said at least one stud further engaging said release member when said release member is in said engage position to displace said lock member during a second rotational interval of said cam gear to disengage said lock dog from said dog catch, said at least one stud not engaging said release member when said release member is displaced by said latch means to said release position; and
cam actuated switch means responsive to the displacement of said latch means from said open position towards said locked position for providing electrical power to said electric motor and responsive to a first contour of said cam surface for terminating said electrical power to said electric motor after said latch member is in said closed position, said cam actuated switch means further being

responsive to an unlock signal for providing electrical power to said electric motor and responsive to a second contour of said cam surface for terminating said electrical power to said electric motor after said latch member is released from said locked position by the disengagement of said dog catch.

5,007,262
DIAL LOCK
Hatsuo Nakai, Toyonaka, Japan, assignor to Clover Co., Ltd., Osaka, Japan
Continuation-in-part of Ser. No. 215,584, Jul. 6, 1988, Pat. No. 4,905,488. This application Jun. 16, 1989, Ser. No. 367,722
Int. Cl.[5] E05B *37/02*
U.S. Cl. 70—312 4 Claims



1. A setting part of a dial clock comprising:
a lock pin having a plurality of projections formed at fixed spatial intervals along said axial direction thereof;
a slide bar having a projection and recess in a fixed configuration at said side thereof abutting one end of said lock pin, subjected to control over said movement thereof by engagement of said projection and recess with said lock pin, and serving for opening and closing said door while acting in association with said locking part to lock said door;
lock gears disposed on the same axis as the rotating axis of said lock pin, numerically corresponding to projections of said lock pin, having gates to detachably engage with projections of said lock pin of the inner periphery and also having gearing teeth on the outer periphery thereof;
intermediate gears having internal teeth to detachably engage with external teeth of said lock gears and further having gearing teeth on the other part, for example, the outer periphery thereof;
dials having gearing teeth to interlock with external teeth of said intermediate gears and each provided with code digits on the outer periphery thereof;
return-to-zero gears fixed to said dials for returning said dials to the zero-indicating positions;
interlocking levers to catch said slide bar while engaging with said return-to-zero gears when said dials are all set at zero and to permit locking operation of said slide bar when at least one of said dials is set at any number other than zero;
return cams provided on said slide bar for controlling the operation of said interlocking levers;
arms acting in association with locking and unlocking operation of said slide bar and driving said return-to-zero gears for adapting said dials to return to the zero-indicating positions at the time of locking and unlocking; and
manual operation plates having gearing teeth to engage with said external gearing teeth of said intermediate gears.

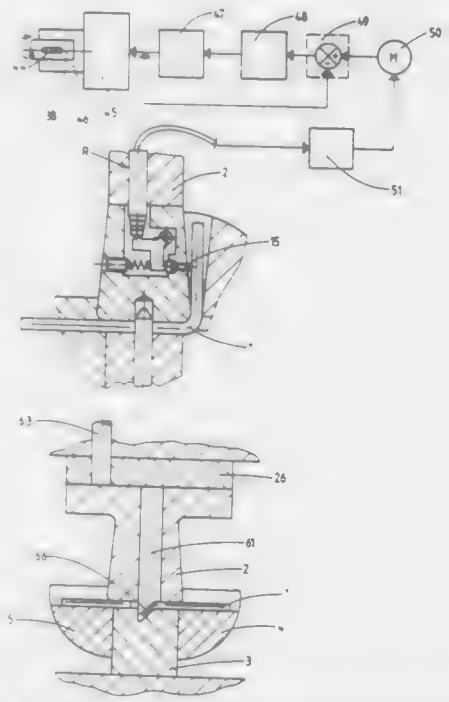
5,007,263
SECURITY DEVICE
Bryan V. Taylor, #601 - 7275 Salisbury Avenue, Burnaby, Canada V5E 4E1
Filed Jun. 22, 1990, Ser. No. 542,085
Int. Cl.[5] E05B *13/04*
U.S. Cl. 70—416 4 Claims

1. An improved security device mountable on an inside surface of a closure and comprising:
(a) a U-shaped member;
(b) a locking plate having upper, middle and lower regions, said locking plate having a first opening in said upper region being adapted to engage a latch of a deadbolt and a second opening in said middle region being adapted to engage a key head of a key inserted into a deadbolt; and
(c) pivotal connecting means in said lower region for removably connecting said U-shaped member to said locking plate with said U-shaped member extending below said locking plate;
(d) whereby said U-shaped member may engage a shaft of an interior doorknob of said closure, and said locking plate, while attached to said U-shaped member, may engage a latch or a key head associated with a deadbolt while in a locked position to prevent rotation thereof and unlocking of a said deadbolt

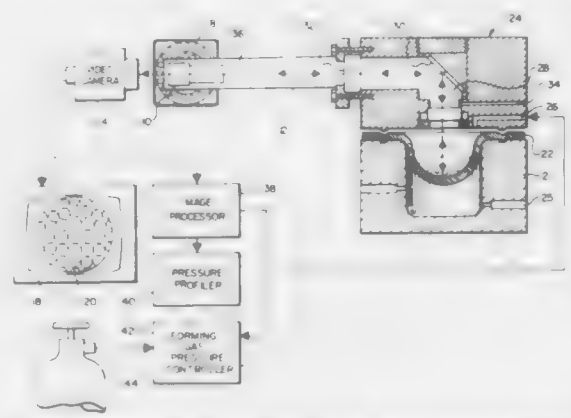
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5,007,264
METHOD AND APPARATUS FOR THE BENDING OF WORKPIECES
Johannes Haack, Lyss, Switzerland, assignor to Feintool International Holding, Lyss, Switzerland
Filed Nov. 9, 1988, Ser. No. 269,192
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1987, 3739173
Int. Cl.[5] B21D *5/04*
U.S. Cl. 72—10 28 Claims

1. Apparatus for bending a workpiece by swivel bending jaws wherein the bent portion assumes a predetermined bending angle with respect to the workpiece, which comprises: a bending anvil; a bending punch spaced from the bending anvil and movable towards and away from the bending anvil; at least one swivel bending jaw associated with the bending anvil and movable in the direction of the bending punch; wherein the bending anvil, bending punch and swivel jaw are adapted to hold a workpiece between the bending anvil on the one hand and bending punch and swivel jaw on the other hand and wherein the swivel jaw is adapted to bend at least one first leg of the workpiece in the direction of the bending punch; and means in the bending punch for determining the actual bending angle of the bent leg by direct measurement of the distance between the bending punch and the bent leg of the workpiece.

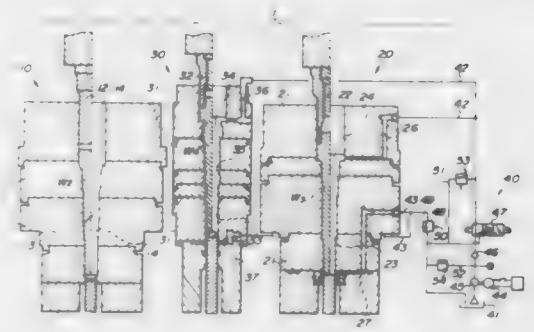


5,007,265
OPTICAL MONITOR FOR SUPERPLASTIC FORMING
Murray W. Mahoney, Camarillo, Calif., and Amit K. Ghosh, Ann Arbor, Mich., assignors to Rockwell International, El Segundo, Calif.
Filed Dec. 19, 1988, Ser. No. 285,987
Int. Cl.[5] B21D *26/02*
U.S. Cl. 72—37 12 Claims



1. A device for optically monitoring the strain rate of a blank during superplastic forming of the blank against a die, comprising:
a light source positioned to direct light against the blank while it is being formed against said die;
a video camera positioned and focused to view light reflected from reference marks on the blank being formed and to provide a video signal of the reflected light;
a video monitor for receiving the video signal and for displaying the reference marks; and
means for measuring the strain rate occurring in the blank as it is being superplastically formed as a function of a detected change in dimensions of the reference marks during said superplastic forming of the blank.

5,007,266
SUCCESSIVE COLD WORKING PROCESS
Shohachi Nishiuchi; Shigeo Ohta; Hitoshi Imai, and Haruo Meguro, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 8, 1989, Ser. No. 320,466
Int. Cl.[5] B21J *3/00*; B21C *23/32*; B21K *1/00*
U.S. Cl. 72—44 20 Claims



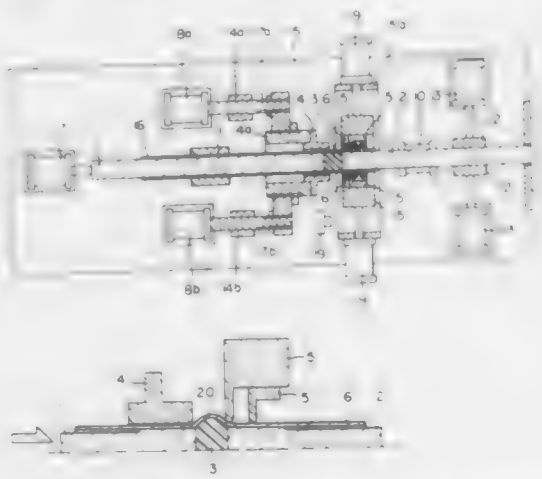
1. A method of successively cold working a billet, comprising the steps of:
(a) forming a chemically converted lubricating coating on a surface of the billet;
(b) forging said billet into an intermediate product at a temperature below a transformation temperature of the billet;
(c) positioning said intermediate product in a die cavity in a die assembly;
(d) entirely immersing and covering said intermediate product with lubricating oil while said intermediate product is positioned in said die cavity in said die assembly; and
(e) forging said intermediate product at a temperature below the transformation temperature substantially simultaneously with a step (d) before the intermediate product gains a predetermined hardness due to age hardening resulting from said forging step (b).

5,007,267
METHOD AND APPARATUS FOR MANUFACTURING BELLOWS PIPE
Katsushi Washizu, Numazu, and Mitsumasa Ohtaka, Okazaki, both of Japan, assignors to Usui Kokusai Sangyo Kaisha Limited, Japan
Filed Feb. 9, 1990, Ser. No. 478,140
Claims priority, application Japan, Feb. 14, 1989, 1-34096
Int. Cl.[5] B21D *15/10*
U.S. Cl. 72—59 10 Claims

1. A bellows pipe manufacturing method for forming a bellows pipe having opposed first and second ends comprising,
providing a solid fixed core, a solid movable core and a solid elastic body all of which are dimensioned to be inserted into the pipe,
slidably moving the first end of the pipe over the solid fixed core,
inserting the solid elastic member into the second end of the pipe and into contact with the fixed core,
inserting the solid movable core into the second end of the pipe and into contact with the elastic member,
moving the solid movable core toward the solid fixed core for compressing the elastic body in an axial direction of the pipe to resiliently expand the elastic body radially of the pipe such that a peripheral portion of the pipe changes to an annular convex portion,
moving the solid movable core away from the solid fixed

core for permitting the elastic body to resiliently return to an unexpanded condition,

changing the annular convex portion to a bellows portion using a forming and holding means external of the pipe, and



pinching the bellows portion on opposed sides thereof and shifting the pipe to a selected position using the forming and holding means,

wherein the steps from the step of moving the movable core toward the fixed core are repeated with respect to the pipe shifted to the selected position to successively form bellows portions at selected intervals in the pipe

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5,007,268

METHOD AND DEVICE FOR EDGE-FINISHING

Nigel B. Kelly, No. 1 Bellevue, Clifton, United Kingdom BS8 1DA , assignor to Nigel Brian Kelly, Clifton and Originations Limited, Woodland Way, both of, United Kingdom

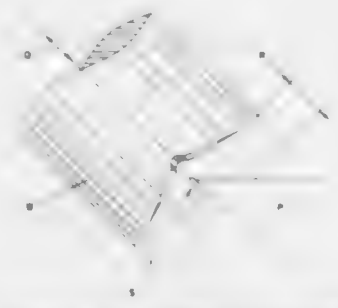
Filed Feb. 5, 1990, Ser. No. 477,186

Continuation of Ser. No. 356,675, May 23, 1989, abandoned, which is a continuation of Ser. No. 209,478 filed as PCT GB 86/00777 on Dec. 18, 1986, published as WO87/03830 on Jul. 2, 1987, abandoned.

Claims priority, application United Kingdom, Dec. 19, 1985, 8531222; Jul. 30, 1986, 8618523

Int. Cl.[5] B25D *1/00*

U.S. Cl. 72—76 4 Claims



1. An edge-finishing device suitable for a right-angled edge of a workpiece, comprising a tip for reciprocation against the edge, the tip having a notch with outer flank surfaces which are at an obtuse angle to one another and serve to guide the tip initially onto the workpiece edge, the notch having inner flank surfaces which are at an obtuse angle to one another and serve to beat a burr or other protrusion thin enough to be broken or driven off from the edge and the base of the notch having a curved surface which, in use, determines the finish given to the edge of the workpiece.

5,007,269

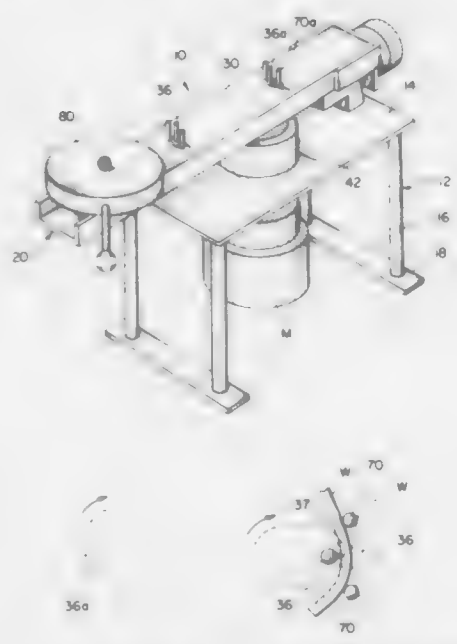
WIRE BENDING DEVICE

Joseph H. Masse, 151 Coggeshall St., New Bedford, Mass. 02746

Filed Nov. 21, 1989, Ser. No. 440,037

Int. Cl.[5] B21D *7/00*

U.S. Cl. 72—173 7 Claims



1. A device for bending wire, or strip comprising a housing having a bending station, said housing including a generally elongated horizontally disposed frame having a flat upper generally horizontal surface in part forming said bending station and defining the plane of movement through which said wire moves while being bent, said bending station further including a generally vertically oriented driving pin projecting upwardly through said plane and freely terminating thereabove and guide means including a pair of laterally-spaced vertically-oriented guide pins projecting upwardly through said plane and freely terminating thereabove and disposed laterally to opposite sides of said driving pin so as to form a wire path laterally extending across said bending station frame upper surface within said plane whereby wire fed laterally in said plane to said bending station between said driving pin and said guide pins is contacted by said driving pin and forced against said guide pins so as to bend such wire, said frame including a generally elongated actuation arm having opposed ends longitudinally disposed therein and having at one end thereof said driving pin mounted thereto, means for moving said actuating arm in a longitudinal reciprocating motion including a cam eccentric and pivot means in said actuating arm for regulating the lateral motion of said one end, said wire engaging guide pin means disposed in longitudinal opposition to said driving member and laterally spaced from the driving pin extending further than the lateral extent of the eccentric travel path of said driving pin.

5,007,270

WEB HANDLING APPARATUS FOR METAL RIBBON STOCK

Bernard J. Wallis, 2215 Dacosta, Dearborn, Mich. 48128

Filed Nov. 7, 1989, Ser. No. 432,865

Int. Cl.[5] B21D *53/02*

U.S. Cl. 72—187 4 Claims

1. In a metal fin forming machine wherein a metal web is fed from a coil to a plurality of continuously rotating rolls for

corrugating the web, the improvement comprises a web handling apparatus comprising:

a frame,

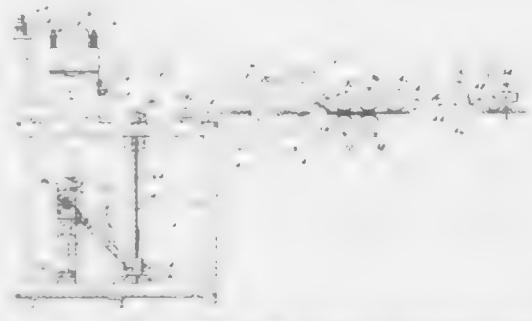
uncoiling means adjacent said coil and fixedly attached to said frame for uncoiling the metal web from the coil,

said uncoiling means having a housing with a pair of drive pinch rollers centrally located and attached to said housing,

an entry guide roller attached to an entrance of said housing for guiding the metal web into said drive pinch rollers and an exit guide roller attached to an exit of said housing for guiding the web from the housing,

a drive motor mounted alongside said frame for driving said pinch rollers,

an accumulator apparatus disposed between said uncoiling means and the metal fin forming machine comprising a pair of vertical tracks on said frame and a movable track roller assembly movably mounted on said vertical tracks for taking up slack in the metal web.



a dancer arm in advance of said metal fin forming machine, pivoted at one end to one of said accumulator rollers over which the web is fed by said uncoiling means,

pivot means for pivoting the other end of said dancer arm about a fixed axis while permitting axial movement thereof relative to said pivot means,

a RVDT transducer attached to the pivot means and electrically connected to said drive motor to provide a signal due to rotary movement of said arm for controlling the speed of said drive motor, and

said movable track roller assembly comprising first and second movable guide rollers supported on said movable track roller assembly and guided on said tracks for vertical movement thereon and

first and second stationary guide rollers supported on said frame and located above said movable track roller assembly, said web being trained in succession from said uncoiling means under said first movable guide roller, thereafter over said first stationary guide roller, under said second movable guide roller, over said second stationary guide roller and into said metal fin forming machine.

5,007,271

DEVICE AND A METHOD FOR EMBOSSING A METAL FOIL

Karl Boegli, Rue des Essertons 2, 2074 Marin, Switzerland

Continuation of Ser. No. 651,752, Sep. 18, 1984, abandoned. This application Oct. 1, 1990, Ser. No. 593,265

Claims priority, application European Pat. Off., Oct. 21, 1983, 83810484.2

Int. Cl.[5] B21D *13/04*

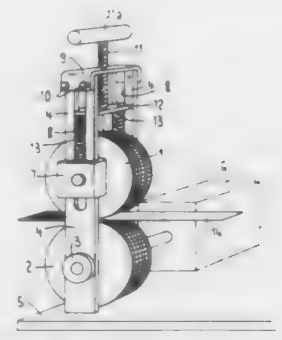
U.S. Cl. 72—196 11 Claims

1. A device for embossing a delicate metal foil packaging material comprising:

a pair of opposing, embossing rollers, each having a hard, generally cylindrical surface and an array of pointed pyramid-shaped teeth means for embossing the delicate metal foil extending along said surface in both the axial and circumferential directions, the pitch between adjacent teeth being on the order of about 0.4 millimeters and the size of each tooth being on the order of about 0.25 to 0.3 millimeters;

a drive means operatively connected to drive a first of said rollers;

a second of said rollers being displaceably and adjustably



mounted opposite said first roller and positioned so that the teeth of the first roller are staggered relative to the teeth of the second roller whereby the teeth of the first roller are operable, when engaged by the opposing teeth of the second roller, to synchronously drive the second roller.

5,007,272

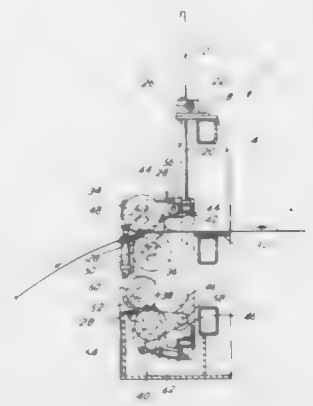
TENSION ROLLER

Douglas S. Matsunaga; Jan W. Slabowski, both of Schiller Park, and Tadeusz Marecki, Chicago, all of Ill., assignors to Braner, Inc., Schiller Park, Ill.

Filed Nov. 9, 1989, Ser. No. 433,754

Int. Cl.[5] B21B *31/08*

U.S. Cl. 72—226 8 Claims



1. A tensioning machine positioned along a metal slitting line, said machine constituting means for maintaining tension of slit metal, said machine comprising a main frame, a second frame slidably mounted to said main frame, first and second sets of rotatable tension rollers carried by said second frame, adjustment means connecting each first and second set of tension rollers wherein said first set of tension rollers is in an operating position and engages slit material to apply tension to the slit material prior to recoiling, said second set of tension rollers in a standby position, and drive means for rotating said first set of tension rollers when in the operating position, and means for shifting said second frame relative to said first frame wherein the first set of tension rollers is in a standby position with the second set of tension rollers in said operating position.

5,007,273

FOUR-HIGH ROLL OR SIX-HIGH ROLL STAND HAVING LATERALLY SUPPORTED WORKING ROLLS

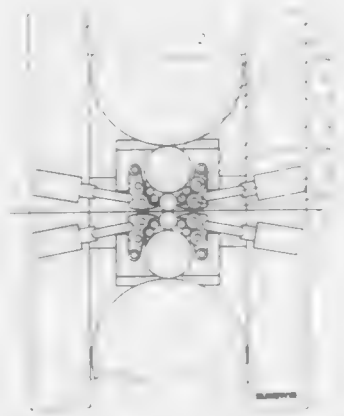
Gerhard Kummerhoff, Hemer, Fed. Rep. of Germany, assignor to Sundwiger Eisenhütte Maschinenfabrik Grah & Co., Hemer-Sundwig, Fed. Rep. of Germany

Filed Jul. 23, 1990, Ser. No. 556,901

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1989, 3925408

Int. Cl.[5] B21B *13/14*

U.S. Cl. 72—242.2 1 Claim



1. Four- or six-high roll stand having laterally supported working rolls (4), each support having a radially unmounted lateral intermediate roll (5) resting against the associated working roll (4), and two radially mounted supporting rollers (6, 8), characterized in that the support has a further lateral intermediate roll (7) and in that one lateral intermediate roll (5) is supported against one of the two supporting rollers (6) and the further lateral intermediate roll (7), which is supported against the other supporting roller (8) and, in the case of a four-high roll stand, against the supporting roll of the said supporting roller and, in the case of a six-high roll stand, against the intermediate roll (3) of the said supporting roller.

5,007,274

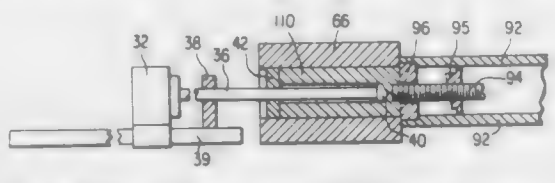
BILLET PRE-PIERCER APPARATUS AND METHOD

Charles L. Stewart, 1733 Addison Rd., Palos Verdes Estates, Calif. 90274

Filed Sep. 20, 1989, Ser. No. 409,800

Int. Cl.[5] B21C *23/08*

U.S. Cl. 72—254 22 Claims



1. An apparatus for pre-piercing billets, comprising:

a generally cylindrical container having first and second open ends for receiving and supporting a generally cylindrical billet;

a mandrel bar mounted adjacent said first end of said cylinder for axial movement along the axis of said cylinder for penetrating the billet;

bolster means disposed adjacent said second end of said cylinder for engaging the billet during penetration of the billet by said mandrel bar, said bolster means including a bolster pin which is axially movable along said axis of said container, said bolster pin having an end which contacts the billet during penetration of the billet by said mandrel bar such that the billet deforms about said end of said bolster pin, and

a movable support carried by said mandrel bar toward the billet during advancement of said mandrel bar prior to pre-piercing the billet, said movable support being configured to enter said generally cylindrical container to engage a portion of said container so as to provide additional structure rigidity to said mandrel bar to resist deflection of said mandrel bar during penetration of the billet

5,007,275

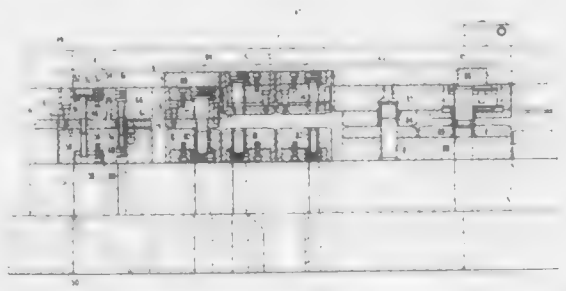
PROGRESSIVE DIE FOR DRAWLESS FIN

Harlan F. Voss, Punta Gorda, Fla., assignor to Tridan Tool & Machine, Inc., Danville, Ill.

Division of Ser. No. 462,618, Jan. 9, 1990. This application Aug. 13, 1990, Ser. No. 566,969

Int. Cl.[5] B21D *28/14, 28/34*

U.S. Cl. 72—335 8 Claims



1. A progressive die for forming a collared hole in a sheet of material comprising:

a main frame;

a plurality of spaced apart first punches mounted on said main frame at a first station and arranged in a pattern about a center point;

a plurality of first bushings mounted on said main frame at said first station and arranged in said pattern to receive said first punches and form a plurality of first holes in a sheet of material leaving material extending between said holes;

a main punch mounted on said main frame at a second station;

a main bushing mounted on said main frame to receive said main punch removing some of said material extending between said holes forming a main hole in said sheet of material and leaving portions of material extending inwardly in said main hole;

a straightening punch mounted on said main frame at a third station;

a straightening busing mounted on said main frame to receive said straightening punch to bend said portions outwardly and form a collared hole in said sheet of material, said straightening punch having an outside diameter larger than said main punch to first draw material continuously around said main hole and then bend said portions outwardly forming a collar continuously surrounding said main hole; and,

means for forcing a sheet of material through the die and stopping said sheet of material sequentially at said first station, said second station and said third station.

5,007,276

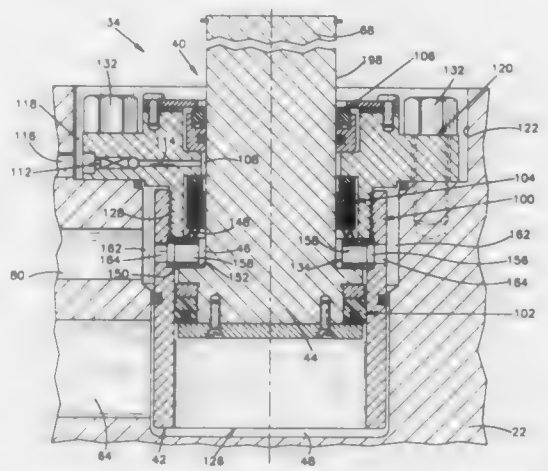
SEAL ARRANGEMENT FOR USE IN A PRESS ASSEMBLY

Paul M. Kadis, Chardon, and Susan E. Pfaff, Seven Hills, both of Ohio, assignors to Teledyne Industries, Inc., Cleveland, Ohio

Filed May 9, 1990, Ser. No. 521,095

Int. Cl.[5] B21D *24/08*

U.S. Cl. 72—351 35 Claims



1. A press assembly operable from an open condition to a closed condition to deform a workpiece, said press assembly comprising a first movable member for engaging a first side of the workpiece, a second movable member for engaging a second side of the workpiece, said first member being movable in a first direction toward said second member during operation of said press assembly from an open condition toward a closed condition, said first and second members being movable together in the first direction with at least a portion of the workpiece disposed between said first and second members during operation of said press assembly from the open condition toward the closed condition, and a cushion assembly operable toward a retracted condition to provide a yieldable force opposing movement of at least one of said members in the first direction during operation of said press assembly from the open condition toward the closed condition, said cushion assembly including a cylinder, a piston disposed in said cylinder and cooperating with said cylinder to at least partially define first and second variable volume chambers, a piston rod connected with said piston, said piston rod extending from said piston through said second variable volume chamber to an outer end portion disposed adjacent to one end of said cylinder, first high pressure seal means connected with said piston and disposed in sealing engagement with said cylinder for blocking fluid flow between said first and second variable volume chambers, second high pressure seal means connected with said cylinder and disposed in sealing engagement with said piston rod for blocking fluid flow from said second variable volume chamber along said piston rod, low pressure seal means connected with said cylinder at a location adjacent to said one end of said cylinder and disposed in engagement with said piston rod for blocking contaminants in the environment outside said cylinder from entering said cylinder, said second high pressure seal means and said low pressure seal means cooperating with said cylinder and said piston rod to at least partially define a third chamber for receiving fluid which leaks past said second high pressure seal means, and pressure relief means for exhausting fluid pressure from the third chamber when the fluid pressure in the third chamber reaches a predetermined fluid pressure to thereby prevent exposure of said low pressure seal means to excessive fluid pressures during operation of said press assembly.

5,007,277

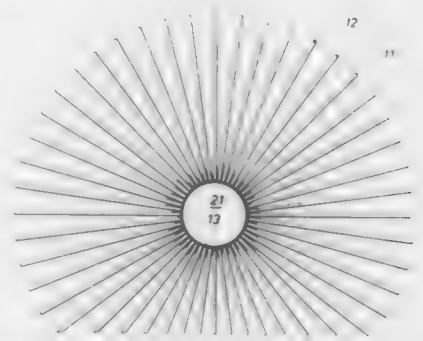
METHOD FOR FORMING PRECISION LIQUID/VAPOR SEPARATED BRISTLE ASSEMBLY

Boyd B. Moore, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 30, 1989, Ser. No. 428,527

Int. Cl.[5] B21D *53/00*

U.S. Cl. 72—379.2 4 Claims



1. A method for forming bristles to be used in a bristle assembly comprising:

forming a plurality of slots in a thin rectangular shaped sheet to form a plurality of narrow flat bristles, said slots extending from one edge of the sheet toward the opposite edge, and terminating short of said opposite edge;

bending the portion of the sheet adjacent said opposite edge to form a flange on said sheet, said flange including at least a portion of said slots; and

bending said flange into a cylindrical shape with the narrow strips projecting radially outward.

5,007,278

DIE DEVICE

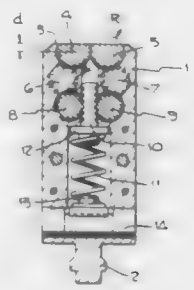
Rolf Haberstock, Rheinhöhe 14, Küssaberg, Fed. Rep. of Germany D-7897

Filed Jan. 16, 1990, Ser. No. 465,385

Claims priority, application Switzerland, Jan. 18, 1989, 154/89

Int. Cl.[5] B21D *5/02*

U.S. Cl. 72—383 21 Claims



1. A die device for use in bending metal stock having:

a body with a flat upper surface;

a pair of die bars in direct meshing engagement supported rotatably around their lengthwise axis having substantially flat upper surface and substantially cylindrical undersurfaces and being arranged contiguously, side-by-side in a lengthwise direction; and

coupling means by which each die bar, of the pair of die bars, is engaged with the other die bar to effect a desired force-coupling such that each die bar rotates in a direction opposite that of the other die bar, a number of teeth being formed in the cylindrical undersurfaces of each die bar, said teeth being contained only in a predetermined angle of the cylindrical undersurface of each die bar, said angle

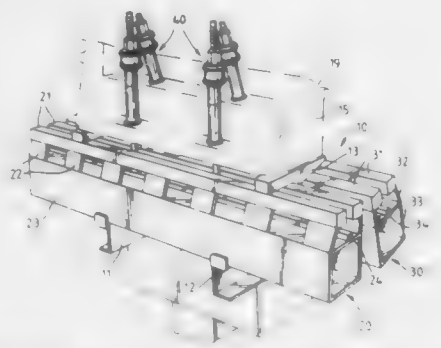
corresponding to a maximum desired angle of rotation of each die bar during a bending process, said coupling means further including said die bars being engaged with each other by cogwheel means adapted to rotate said die bars, which effect the desired force-coupling.

5,007,279

CYLINDER HEAD STRAIGHTENER

Derek L. Miall, 150 Wakefield Street, Bald Hills, Queensland 4036, Australia

Filed Mar. 16, 1990, Ser. No. 494,969
Claims priority, application Australia, Mar. 16, 1989, PJ3254
Int. Cl.[5] B21D *41/00*
U.S. Cl. 72—394 8 Claims



1. Apparatus for straightening a cylinder head of an internal combustion engine, said apparatus comprising:

a pair of elongate members adjustably spaced from each other and on which said head is mounted in use, each elongate member having a slot extending longitudinally along its upper side;

at least two tensionable members, each having (i) a retaining member at one end thereof which is captively received in the slot of an associated elongate member yet is adjustable in position along said slot, (ii) a shank portion which in use is located in a respective bore through the head, and (iii) adjustable tensioning means at the other end thereof for applying a force to said head;

whereby said head can be straightened by selected application of forces thereto by said tensionable members at predetermined locations.

5,007,280

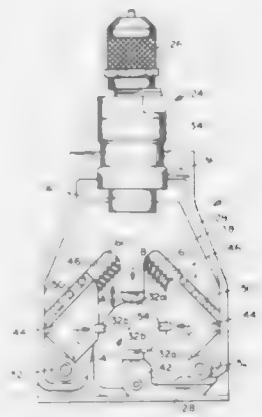
TOOL HEAD FOR USE IN CRIMPING ELECTRICAL CONNECTORS

Robert L. Quinn, St. Petersburg, and Frank Pansari, Jr., Clearwater, both of Fla., assignors to Molex Incorporated, Lisle, Ill.

Filed Jan. 26, 1990, Ser. No. 470,671
Int. Cl.[5] H01R *43/04*
U.S. Cl. 72—402 15 Claims

1. In a tool head for use in crimping a connector to a conductor comprising means defining a crimping area of the tool head into which the connector and conductor extend in a longitudinal direction, at least three crimping nibs mounted around said crimping area, each said nib having a connector crimping face and being mounted for radial movement relative to said connector so that a portion of each said face acts to crimp said connector to secure said connector to said conductor during a crimping operation of the tool head, each said nib being mounted in said crimping area of said tool head so that the connector is crimped at spaced points located generally about the circumference of the connector, the improvement comprising:

first and second nibs having substantially identical connector crimping faces each defined by a major dimension and a minor dimension, said major dimension being larger than said minor dimension, and wherein said first nib is oriented such that said minor dimension is generally parallel to said longitudinal direction and said second nib is oriented such



that said minor dimension is generally perpendicular to said longitudinal direction.

5,007,281

PLASTIC WORKING METHOD AND APPARATUS

Syozo Aoshima, Nagoya; Kunio Hirota, Aichi; Hiroshi Sakakibara; Naoyuki Sawai, both of Nagoya, and Takeaki Sato, Kasugai, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Division of Ser. No. 227,301, Aug. 2, 1988, Pat. No. 4,936,125.
This application Apr. 24, 1990, Ser. No. 513,624
Claims priority, application Japan, Aug. 8, 1987, 62-198847; Aug. 8, 1987, 62-198848
Int. Cl.[5] B21J *9/02*
U.S. Cl. 72—406 3 Claims



1. In a plastic working apparatus including a frame, a first die having a shaping face, and a second die confronting the first die for mounting thereon a workpiece, the workpiece being depressed by co-operation of the first and second die, thereby applying a plastic work to the workpiece, the improvement comprising:

a die holder means having one end connected to the first die;

moving means for providing swivelling motion through an angle in three dimensional space to the die holder means for depressing the workpiece against the second die so that the first die moves against the workpiece in a compound motion;

guide means cooperating with said die holder for guiding vertical movement of the one end of the die holder, to thus enable vertical reciprocating motion of the first die; and

changing means for changing said angle of the die holder means with respect to an imaginary axis which extends through the workpiece to provide a vertical reciprocating motion of the first die relative to said second die.

5,007,282

STAMPING AND FORMING MACHINE HAVING INTERCHANGEABLE PUNCH SUB-ASSEMBLY

Johannes C. W. Bakermans, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 18, 1990, Ser. No. 467,095
Int. Cl.[5] B21D *37/04*
U.S. Cl. 72—481 20 Claims



1. A punch sub-assembly which is intended to be removably secured to a reciprocable punch ram which is cooperable with a die assembly in a stamping and forming machine, the sub-assembly comprising:

punch holder means, stripper plate means, and at least one punch,

the stripper plate means and the punch holder means being coupled to each other by lost motion coupling means which permits relative movement of the stripper plate means between an extended position and a retracted position with respect to the punch holder means, the stripper plate means being spaced from the punch holder means when in its extended position and being adjacent to the punch holder means when in its retracted position,

the punch has a fixed end, an intermediate shank portion, and a free end, the fixed end being fixed to the punch holder means, the shank portion extending from the fixed end towards the stripper plate means and into an opening in the stripper plate means which conforms to the cross-section of the punch,

spring means serving to bias the stripper plate means to its extended position,

fastener means for securing the punch holder means to a punch ram, and

aligning pin means secured to the punch holder means and extending therefrom in the direction which is opposite to the direction of the punch, the aligning pin means having an end portion which is dimensioned for reception in an aligning hole in a punch ram whereby,

a complete punch assembly is produced when the sub-assembly is secured to a punch ram.

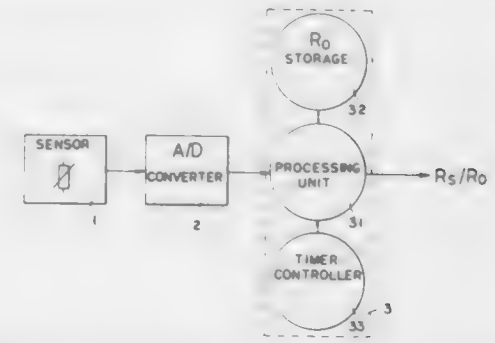
5,007,283

METHOD AND DEVICE FOR PROCESSING MEASURED VALUES

Stefan Ambos, Waiblingen, Fed. Rep. of Germany, assignor to Conducta Gesellschaft fur Meb-und Regeltechnik mbH & Co., Gerlingen, Fed. Rep. of Germany

Filed May 31, 1989, Ser. No. 359,477
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1988, 3819101
Int. Cl.[5] G01N *27/04*; G01D *18/00*
U.S. Cl. 73—1 G 6 Claims

1. A method for processing measured values in a gas detection device evaluating a resistance variation of a gas sensor forming part of said device for a range of gas concentrations to be measured, comprising the steps of determining and storing at least once a basic resistance value (Ro) of said, without the influence of the gas to be measured, and determining for every subsequent measurement of the gas component, the concentration of which is to be measured, the ratio between a resulting



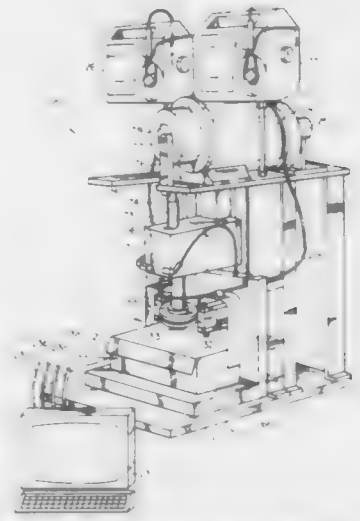
total resistance value (Rs) of said gas sensor dependent on gas concentration and the basic resistance value (Ro), by an arithmetic operation, and using thereafter the value (Rs/Ro) so obtained.

5,007,284

PISTON RING AND LINER WEAR SIMULATOR AND METHOD OF USING SAME

Ralph J. Slone, 945 Driftwood Ave., Columbus, Ind. 47203

Filed Feb. 27, 1990, Ser. No. 485,571
Int. Cl.[5] G01M *19/00*
U.S. Cl. 73—120 [illegible] Claims



1. A wear simulator for piston rings and cylinder liners comprises:

a piston ring holder having means for receiving a piston ring;

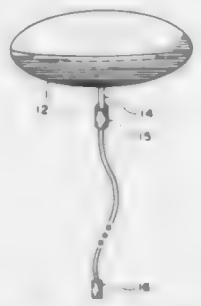
a cylinder liner holder having means for receiving a portion of a cylinder liner;

positioning means connected to said cylinder liner holder for placing a cylinder liner portion received by said cylinder liner holder in contact with a piston ring received by said piston ring holder;

reciprocating means connected to said piston ring holder for imparting a reciprocating stroke to a piston ring received by said piston holder; and

force measuring means cooperatively arranged with said cylinder liner holder for providing a signal corresponding to the level of frictional force between a piston ring received by said piston ring holder and a cylinder liner portion received by said cylinder liner holder.

5,007,285
LOW COST DRIFTER
John M. Dahlen, Duxbury; Narender K. Chhabra, Bedford; Richard K. Araujo, Tewksbury; James R. Scholten, Sudbury; Robert W. Reid, Acton, and Matti Soikkeli, Braintree, all of Mass., assignors to The Charles Stark Draper Laboratory, Cambridge, Mass.
Filed Mar. 17, 1989, Ser. No. 325,522
Int. Cl.[5] G01W *1/00*
U.S. Cl. 73—170 A 11 Claims



1. An economical drifter for following ocean currents comprising:
a buoy that includes a buoy hull of miniataure size, and data transmitting means disposed therein to take local measurement data and transmit said data to a communications satelite over a period of many years at sea; and
a drogue suspended from said bouy to provide a net slippage error of less than two centimeters per second when said drouge is immersed in an ocean current.

5,007,286
SOLID-STATE TRANSDUCER BASED DYNAMIC FLUID FLOW SENSING SYSTEM
Robert G. Malcolm, 1849 Watkins Lk. Rd., Pontiac, Mich. 48054, and Thomas W. Richardson, 3969 Lakewood, Prayton Plains, Mich. 48020
Filed Aug. 3, 1989, Ser. No. 389,123
Int. Cl.[5] G01G *71/10*
U.S. Cl. 73—181 23 Claims



6. A system for measuring relative fluid velocity with respect to a marine vessel, the system comprising:
solid-state pressure sensing transducer means for generating an electronic output signal in proportion to a sensed dynamic pressure of flowing fluid with respect to said marine vessel;
wherein said solid-state pressure sensing transducer means comprises:
a piezoresistive transducer sensor for sensing dynamic pressure;
constant current source means for exciting said piezoresistive transducer sensor;
differential amplifier means for amplifying a difference between two input signals from said piezoresistive transducer sensor into a differential floating output signal; and
single ended amplifier means for translating said differential floating output signal into a single output signal with reference to a ground; and
sensor housing means connected to said marine vessel, said sensor housing means having a forwardly facing external surface generally opposed to a direction of fluid flow supporting at least a portion of said transducer means such that asid solid-state pressure sensing transducer means is generally flush with the forwardly facing external surface and directly exposed to fluid flowing past said marine vessel

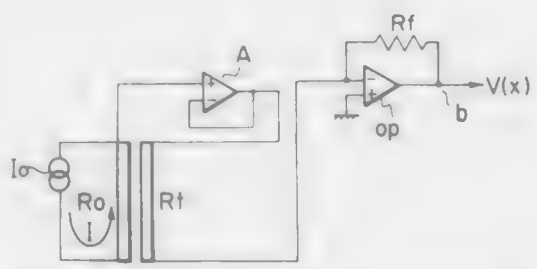
5,007,287
FILLER CAP OF JAR FOR WASHER
Kazuhiko Nagai, Yokohama, Japan, assignor to Jidosha Denki Kogyo K.K., Kanagawa, Japan
Filed Nov. 22, 1989, Ser. No. 440,172
Claims priority, application Japan, Nov. 24, 1988, 63-153398[U]
Int. Cl.[5] G01F *13/00, 23/02*
U.S. Cl. 73—290 B 1 Claim



1. A filler cap for a washer jar adapted to hold a supply of detergent liquid comprising:
a stopper portion for plugging a filler hole provided in a top portion of the washer jar;
a transversely extending knob portion connected to and extending upwardly from said stopper portion and having an increasing thickness in the upward direction from the stopper portion to define a pair of finger gripping surfaces on opposite sides thereof;
a pawl portion disposed circumferentially about a lower end of said stopper portion for engagement with the filler hole;
an air hole extending through said stopper and having a first opening disposed on one of said finger gripping surfaces of said knob portion and a second opening in a bottom surface of said stopper portion; and
a tubular gauge having a passage open at both ends thereof connected to said stopper portion with said passage in communication with said hole and adapted to extend into a bottom portion of the washer jar;
whereby upon gripping said plug portion and closing said first opening of said hole by means of a person's fingers and removing said stopper portion from said washer jar an amount of liquid will be retained in said passage of said tubular gauge indicative of the liquid level in the washer jar

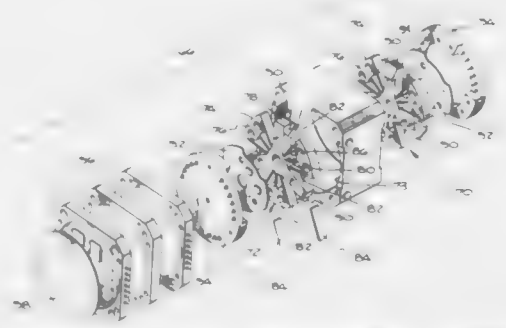
5,007,288
HEAT-RADIATION TYPE LEVEL SENSOR
Kazuyuki Sasaki, and Ichiro Katsuoka, both of Susono, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Dec. 1, 1989, Ser. No. 444,341
Claims priority, application Japan, Dec. 2, 1988, 63-156629[U]; Dec. 12, 1988, 63-311927
Int. Cl.[5] G01F *23/24*
U.S. Cl. 73—295 3 Claims

1. A heating radiating type liquid level sensor for indicating the weight of liquid within a tank, comprising:
a liquid level measuring assembly having a liquid level measuring resistor, said liquid level measuring resistor having a first temperature coefficient that causes a change in resistance due to an amount of heat generated when a current from a current source flows therethrough, said liquid level measuring resistor is substantially dipped in said liquid, with a level thereof being measured, when said liquid is filled to a maximum level in said tank;
a buffer amplifier for amplifying and outputting a voltage developed across said liquid level measuring resistor when said current flows therethrough; and



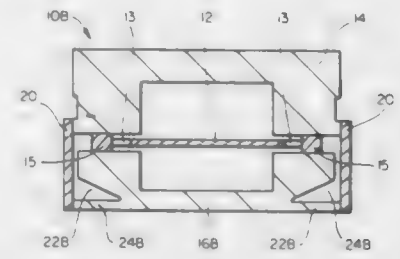
an inverting feedback amplifier for amplifying said voltage outputted from said buffer amplifier, said voltage outputted from said buffer amplifier representing the weight of said liquid within said tank, said inverting feedback amplifier having a feedback resistor and a series input resistor which has a second temperature coefficient, said series input resistor being substantially dipped in said liquid when said liquid is filled to a maximum level in said tank and functioning as a temperature compensating resistor, wherein
said first temperature coefficient is larger than said second temperature coefficient.

5,007,289
THREE AXIS INERTIAL MEASUREMENT UNIT WITH COUNTERBALANCED, LOW INERTIA MECHANICAL OSCILLATOR
Robert E. Stewart, Woodland Hills, and Samuel N. Fersht, Studio City, both of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.
Continuation of Ser. No. 251,918, Sep. 30, 1988, abandoned. This application Mar. 20, 1990, Ser. No. 497,766
Int. Cl.[5] G01R *9/00*
U.S. Cl. 73—510 4 Claims



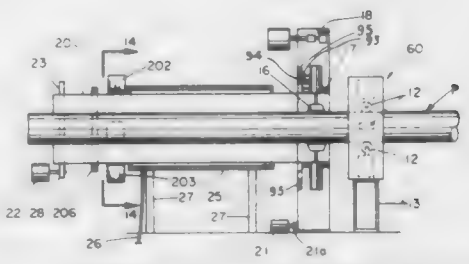
1. A mounting device for the dithered rotation of a measurement unit, comprising:
a mounting member having inwardly extending radial mounting webs with mounting pads on the outer periphery of said mounting member to mount said mounting device;
a rotor member having outwardly extending radial mounting legs for mounting said measurement unit, said legs mounted between said inwardly extending radial mounting webs; and
said inwardly extending radial mounting webs including: web members joining said mounting member to said rotor member; and driving web members on each side of said first mentioned web members for further joining said mounting member to said rotor member and for providing said dithered rotation to said rotor member;
wherein said mounting device is a low inertia mounting device.

5,007,290
METHOD AND APPARATUS FOR PRODUCING PRELOAD OF AN ACCELEROMETER ASSEMBLY
Bert Egley, Tacoma, and Richard A. Hanson, Redmond, both of Wash., assignors to New SD, Inc, San Francisco, Calif.
Filed Oct. 31, 1989, Ser. No. 429,709
Int. Cl.[5] G01P *15/08*
U.S. Cl. 73—517 R 12 Claims



1. In an accelerometer in which a generally planar proofmass assembly is supported between upper and lower members clamped together under a compressive load normal to the plane of said proofmass by band means bonded to the upper and lower members, the improvement comprising means forming part of at least one of said members, said last-mentioned means being more compliant in the direction of said compressive load than the rest of said one member and the other of said members, whereby said more compliant means compresses a greater distance under and in the direction of said compressive load than the rest of said one member and the other member, and wherein said band means is bonded to said more compliant means of one member, with the latter in its compressed position, and to the other of said members, whereby to maintain said members including said compliant means under said compressive load.

5,007,291
ULTRASONIC INSPECTION APPARATUS WITH CENTERING MEANS FOR TUBULAR MEMBERS
William T. Walters, La Marque, and Carroll R. Thompson, Woodlands, both of Tex., assignors to Scan Systems, Inc., Channelview, Tex.
Filed Oct. 5, 1989, Ser. No. 417,439
Int. Cl.[5] G01N *29/20, 29/26*
U.S. Cl. 73—640 6 Claims



1. An apparatus for positioning devices for the transmission of acoustic energy in non-contacting fixed spaced relation to the outer diameter surface of a tubular member in a procedure for the non-destructive testing and inspection of the tubular member, said apparatus comprising:

a plurality of contact elements comprising at least two pairs of rollers in which the rollers of each pair are disposed in contact with the outer surface of the tubular member in alignment with each other and the central axis of the tubular member in diametrically opposed positions relative thereto and said pairs of rollers are disposed and aligned in mutual orthogonal relationship,

a proximity sensor for sensing the distance of said devices from the tubular member and generating an electrical signal corresponding to said sensed distance, and

driving means responsive to said proximity sensor signal for driving the rollers of each pair in a linear radial direction with respect to said tubular member axis whereby the axis is moved to coincidence with the center of the circular array of transmitting devices.

5,007,292

MULTICOMPONENT TRANSDUCER

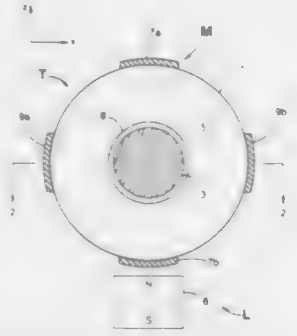
Christopher Crowe; Ralph L. Cordell, both of Tulsa, and Seun K. Kahng, Norman, all of Okla., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 239,367, Aug. 31, 1988, Pat. No. 4,905,517. This application Nov. 13, 1989, Ser. No. 435,841

The portion of the term of this patent subsequent to Mar. 6, 2007, has been disclaimed.

Int. Cl.[5] G01P *15/08*

U.S. Cl. 73—654 **10 Claims**



1 A multicomponent transducer, comprising:

(a) a nonconductive, nonmagnetic inertial mass, wherein the inertial mass is coated with a conductive coating;

(b) means for ferrohydrodynamically levitating the inertial mass, whereby the inertial mass is responsive to motion along at least two separate axes; and

(c) motion sensing means for sensing components of motion of the inertial mass along the separate axes.

5,007,293

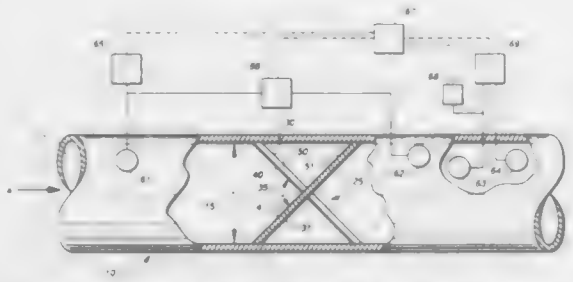
TWO-PHASE FLOW METER

Douglas B. Jung, 3209 Franz Valley Rd., Santa Rosa, Calif. 95404

Filed Dec. 16, 1988, Ser. No. 285,735

Int. Cl.[5] G01F *1/74, 15/08*

U.S. Cl. 73—861.04 **11 Claims**



1 A flow meter for measurement of a two-phase liquid and vapor mixture flowing within a conduit, said conduit having an inside surface, said flow meter comprising:

spin generating element means for generating a spin to said two-phase mixture flowing within said conduit, said spin generating means comprising a pair of blades presenting opposing planar surfaces to said flowing two-phase mixture, said spin generating element means conditioned to separate said liquid and said vapor and to urge said liquid to flow against said inside surface of said conduit in the form of an annulus, and to urge said vapor to flow through said annulus;

first measurement means for measurement of the liquid-vapor rate, and

second measurement means for measurement of the annular vapor rate.

5,007,294

PROCESS AND DEVICE FOR MEASURING THE TENSION OF RACKET STRINGS

Klaus Matjasic, Schwalmtal, Fed. Rep. of Germany, assignor to Karl-Eberhard Mauve, Fed. Rep. of Germany

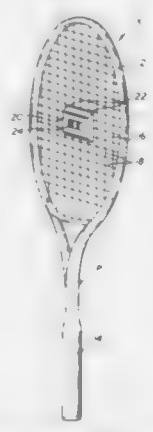
PCT No. PCT/EP88/00957, § 371 Date Jun. 21, 1989, § 102(e) Date Jun. 21, 1989, PCT Pub. No. WO89/03709, PCT Pub. Date May 5, 1989

PCT Filed Oct. 25, 1988, Ser. No. 378,228

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1988, 3736219

Int. Cl.[5] G01L *5/10*

U.S. Cl. 73—862.41 **20 Claims**



1. A method of measuring the tension of racket strings wherein the strings form a membrane mounted on the racket, which comprises:

providing a device including means for measuring the frequency at which said device oscillates and for producing a signal corresponding thereto;

affixing said device to said membrane;

aperiodically inducing said membrane to oscillate freely at the natural frequency of said membrane and said device; and

converting the signal produced by said measuring means to a value representing the tension of said strings

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5,007,295

MAGNETOELASTIC FORCE TRANSDUCER

Pär Gustafsson; Jarl Sobel, and Lars Ornholmer, all of Västeras, Sweden, assignors to Asea Brown Boveri AB, Västeras, Sweden

Filed Jan. 3, 1990, Ser. No. 460,515

Int. Cl.[5] G01L *1/12*

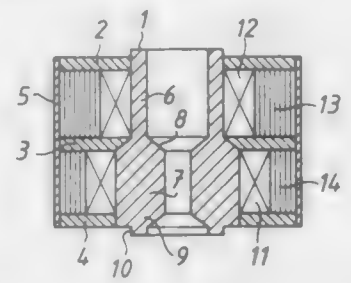
U.S. Cl. 73—862.69 **8 Claims**

1. A magnetoelastic force transducer comprising a force-absorbing rotationally symmetrical core of magnetoelastic material provided with two excitation windings supplied with alternating current, two measuring windings, flux closure yokes in the form of a first, a second, and a third flange, and a surrounding sleeve, said core comprising:

a thin-walled tubular section and a thick-walled tubular or solid section with an intermediate first transition zone and a second transition zone located at the other end of the tick-walled tubular or solid section, said second zone changing into a short zone with the same outer diameter as the outer diameter of the thin-walled tubular section;

a first force-dependent magnetic circuit consisting of the thin-walled tubular section of the core, the first transition zone, the first and second flanges and that part of the sleeve which lies between these flanges and an excitation winding and a measuring winding;

a second force-independent magnetic circuit consisting of the thick-walled tubular or solid section of the core, the first and second transition zones, the second and the third



flanges and the remaining part of the sleeve, and an excitation winding and a measuring winding;

the frequency of the supply voltage being chosen such that the penetration depth into the magnetoelastic material is much smaller than the wall thickness of the thick-walled tubular section and much smaller than the radius of the thick-walled section when this thick-walled section is formed as a solid part;

the numbers of turns of the excitation windings being adapted such that the magnetic conditions are the same in the two magnetic circuits;

the measuring windings being connected in opposition; and

the numbers of turns of the measuring windings being adapted such that the output voltage of the transducer amounts to the desired level in the case of an unloaded transducer

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5,007,296

APPARATUS FOR MEASURING A LIQUID SPECIMEN

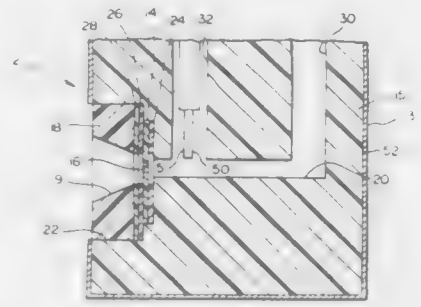
Takahito Hukuhara, Kakogawashi, Japan, assignor to 501 Toa Medical Electronics Co., Ltd., Kobe, Japan

Filed Oct. 19, 1989, Ser. No. 424,343

Claims priority, application Japan, Jan. 26, 1989, 1-7912

Int. Cl.[5] G01N *15/14*

U.S. Cl. 73—865.87 **7 Claims**



1. A particle detector for detecting particles in an electrolyte, comprising:

a body;

means for forming an aperture in said body;

a fluid path in said body communicating with said aperture;

a syringe liquid path in said body communicating with said aperture;

said syringe liquid path terminating in said fluid path;

a first electrode in said body;

said first electrode being disposed in said syringe liquid path near a junction of said syringe liquid path with said fluid path;

a second electrode external to said body;

a colorimeter in series flow with said fluid path; and

means for preventing direct electrical conduction through said body, whereby electrical conduction between said first and second electrodes is constrained to flow in said electrolyte through said aperture.

5,007,297

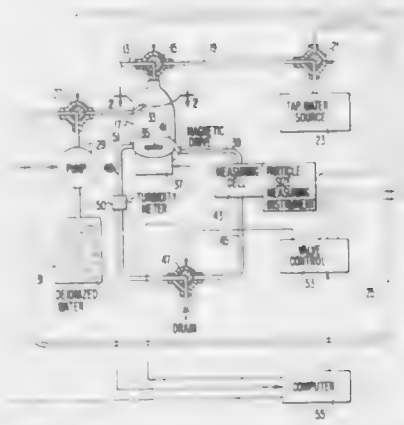
PARTICLE SIZE MEASURING SYSTEM WITH AUTOMATIC DILUTION OF SAMPLE

Holger T. Sommer, Greenbelt, Md., assignor to Pacific Scientific Company, Newport Beach, Calif.

Filed Dec. 6, 1988, Ser. No. 280,334

Int. Cl.[5] G01N *15/00*

U.S. Cl. 73—865.5 **6 Claims**



1. A particle measuring system comprising a mixing chamber for receiving a sample of particles to be measured, means to continuously introduce a diluent into said mixing chamber while withdrawing a mixture of said diluent and said sample from said mixing chamber, measuring means to receive a mixture of said diluent and said sample from said mixing chamber in a fluid stream and to measure the size of the particles entrained in said fluid stream, a stirrer within said mixing chamber, and control means to rotate said stirrer within said mixing chamber while automatically repeatedly reversing the direction of rotation of said stirrer, wherein said control means reverses the direction of rotation of said stirrer after an interval which varies randomly between limits.

5,007,298

TOROIDAL-TYPE INFINITELY VARIABLE TRANSMISSION

Hisashi Machida, Maebashi, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1989, Ser. No. 404,824

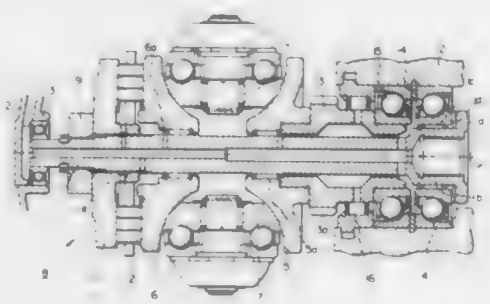
Claims priority, application Japan, Oct. 31, 1988, 63-275073

Int. Cl.[5] F16H *15/08, 13/00*

U.S. Cl. 74—200 **1 Claim**

1. In a toroidal-type infinitely variable transmission comprising an input shaft having one end connected to a rotation drive, an output disk and an input disk successively disposed on said input shaft from a rotation drive side of said input shaft with a predetermined interval between said input disk and said output disk, power rollers rollably and tiltably disposed between said input disk and said output disk, and a pressing mechanism having a loading cam and disposed on said input shaft at a rear

side of said input disk and having a pressure adjusting elastic member interposed between a flange of said input shaft formed at said rotation drive side thereof and an axial opposing surface of a bearing disposed at the rotation drive side of said input shaft for receiving an axial force of said input shaft, the improvement comprising:



a needle-shaped roller bearing disposed between said input shaft and said bearing receiving the axial force of said input shaft to allow said input shaft to slide in an axial direction with a reduced sliding resistance against a spring force of said elastic member when a thrust in an axial direction increases to thereby prevent slip between said loading cam and said input shaft

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5,007,299

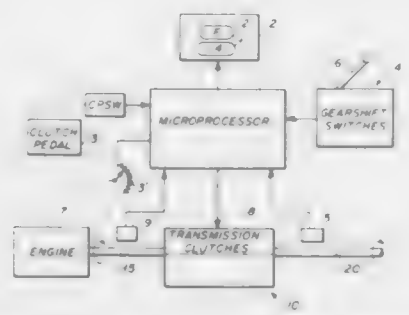
METHOD OF OVERRIDING RATIO MATCHING FEATURE IN POWER SHIFT TRANSMISSIONS

Garth H. Bulgrien, Ephrata, Pa., assignor to Ford New Holland, Inc., New Holland, Pa.

Division of Ser. No. 444,312, Dec. 1, 1989. This application May 10, 1990, Ser. No. 521,630

Int. Cl.[5] **B60K** *20/10*

U.S. Cl. 74—335 **17 Claims**



1. A method of controlling the operation of a vehicle transmission operably connected to an engine and having a plurality of clutches for selectively interconnecting an engine driven input drive shaft, an output drive shaft operatively coupled to ground engaging wheels of said vehicle to effect movement thereof over the ground, and a plurality of gears rotatably housed in said transmission in driving relationship with said input and output drive shafts such that a selective engagement of said clutches will effect a varying of the speed of operation of said output shaft for a given speed of operation of said input shaft, said transmission further having an electrical control system including a microprocessor responsive to switches actuated by manual movement of a gearshift means between a plurality of positions, including forward, reverse, and neutral positions, for controlling said clutches in the transmission, said microprocessor being operable to engage a ratio matching routine when said gearshift means is placed in said neutral position to select a gear having a gear ratio substantially equivalent to the ratio derived from the respective speeds of rotation of said input and output shafts, the method comprising

signalling said microprocessor for an upshift or a downshift of said transmission while engaged in said ratio matching routine; and

exiting said ratio matching routine and entering a gear selection routine in said microprocessor while said gearshift remains in said neutral position to effect a selection of an alternative gear other than the gear selected by said ratio matching routine.

5,007,300

MULTI-AXIS HAND CONTROLLER

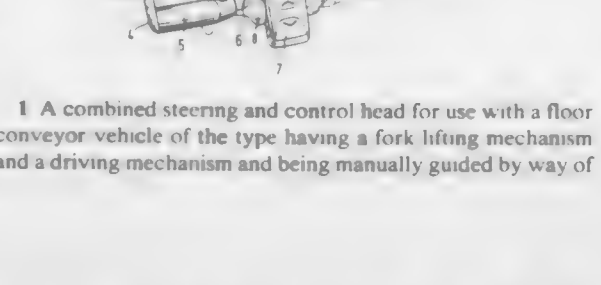
Kumar V. Siva, Lightwater, United Kingdom, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Jan. 22, 1990, Ser. No. 468,249

Claims priority, application United Kingdom, Mar. 3, 1989, 8904955

Int. Cl.[5] **G05G** *9/00*; **B25J** *3/00*

U.S. Cl. 74—471 XY **2 Claims**



1. A hand controller whereby an operator can control movements of a mechanism, the controller comprising a base, a support frame connected to the base by three parallel non-telescopic link arms with universal joints at each end so as to allow displacements of the frame relative to the base, and an operating handle connected by four serially arranged links to the support frame, the said links respectively allowing rotation of the handle about three independent axes and linear displacement of the handle relative to the support frame.

5,007,301

COMBINED STEERING AND CONTROL HEAD FOR A FLOOR CONVEYOR VEHICLE

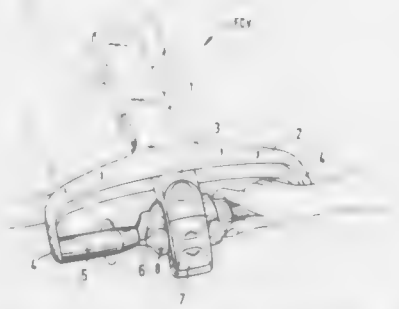
Robert Powell, Pforzheim, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Nov. 30, 1989, Ser. No. 443,327

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1988, 3840800

Int. Cl.[5] **B62D** *1/06*; **G05G** *1/10*

U.S. Cl. 74—557 **8 Claims**



1 A combined steering and control head for use with a floor conveyor vehicle of the type having a fork lifting mechanism and a driving mechanism and being manually guided by way of

a shaft coupled to the combined steering and control head, said combined steering and control head comprising:

a steering head at the end of the shaft;

a shaft horn on the combined steering and control head and located adjacent the end of the shaft;

handles on the combined steering and control head arranged one on each side of the shaft horn;

driving control means disposed next to the horn for controlling the drive mechanism; and

a lifting and lowering switch means arranged adjacent an end face of the horn for controlling a lifting mechanism of a lifting fork;

wherein the driving control means includes an approximately disk-shaped segment having at a circumference thereof a first actuating surface which extends transversely with respect to the handles, and

a second actuating surface arranged at the circumference of the disk shaped segment and opposite to the first actuating surface such that at least one of the actuating surfaces can be gripped together with an operating surface of the lifting and lowering switch means.

5,007,302

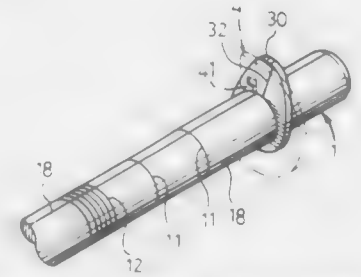
ALIGNMENT APPARATUS FOR A STROKE CONTROLLING MECHANISM OF A MACHINE TOOL

Tien C. Chen, No. 11, Chiu Chia Lane, Sung Chu Li, Pei Tun Chu, Taichung, Taiwan

Filed Sep. 29, 1989, Ser. No. 414,693

Int. Cl.[5] **F16H** *53/00*; **G01B** *3/02*

U.S. Cl. 74—568 R **3 Claims**



1. An alignment apparatus in combination with a stroke controlling mechanism, said stroke controlling mechanism comprising a cam shaft with a number of cams disposed thereon; said alignment apparatus comprising at least one circular line being formed around said cam shaft, at least one longitudinal line being formed on an outer surface of said cam shaft in a direction parallel to a longitudinal axis of said cam shaft, and a check line being formed on a side surface of each said cam; said cams being disposed on said cam shaft by aligning said check line of each said cam with said longitudinal line and by aligning each said cam with each said circular line; a removable C-shaped protractor mounted on said cam shaft for aligning of said cams on said cam shaft when said check line of each said cam is not aligned with said longitudinal line; a notch which has a diameter substantially equal to an outer diameter of said cam shaft being formed in a center of said protractor so that said protractor is engageable onto said cam shaft.

5,007,303

VARIABLE INERTIAL MASS FLYWHEEL

Hiroshi Okuzumi, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 13, 1989, Ser. No. 337,488

Claims priority, application Japan, Apr. 13, 1988, 63-92300

Int. Cl.[5] **F16F** *15/10, 15/18*; **F16D** *27/00*

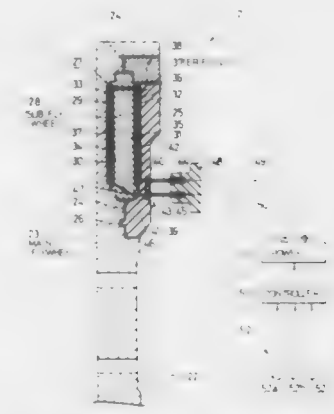
U.S. Cl. 74—573 F **5 Claims**

1. A variable inertial mass flywheel connected to an engine via an engine output shaft, which comprises:

(a) a main flywheel member connected to the engine output shaft and rotatable therewith;

(b) a subflywheel member disposed opposingly to said main flywheel member and rotatable relative to said main flywheel member;

(c) at least one pair of electrodes formed on both opposing surfaces of said main flywheel member and said subflywheel member;



(d) a power supply controller, connected to said electrodes, for controllably generating an electric field between said electrodes formed on said main flywheel member and said subflywheel member; and

(e) a fluid disposed between said electrodes, a viscosity of said fluid being varied according to the intensity of the electric field generated between said electrodes to controllably couple or decouple said subflywheel member to or from said main flywheel member via said fluid.

5,007,304

FLUID FILLED ELASTOMERIC DAMPING DEVICE

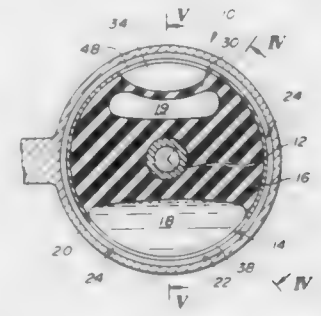
Takanobu Ide, Isehara, Japan, assignor to Nissan Motor Company, Ltd., Japan

Filed May 15, 1989, Ser. No. 352,382

Claims priority, application Japan, May 18, 1988, 63-65414[U]

Int. Cl.[5] **F16F** *15/22, 15/10*; **G05G** *1/00*

U.S. Cl. 74—573 F **2 Claims**



1. An elastomeric damping device comprises:

concentric rigid inner and outer sleeves having a space therebetween;

a resilient member within said space connecting said inner and outer sleeves together and thereby subdividing said space into two pockets;

a working chamber in one of said pockets enclosed between said resilient member and said outer sleeve, said working chamber containing a fluid;

a flexible wall member integral with said resilient member, disposed in the other of said pockets;

a compensation chamber within the other of said pocket

enclosed between said flexible wall member and said outer sleeve;

a generally tubular bracket fitted on said outer sleeve; and

a passageway defined between said bracket and said outer sleeve and communicating with said working chamber and said compensation chamber to provide fluid communication therebetween;

in which said outer sleeve is axially separated to include first and second sleeve sections and a spacer section interposed between said first and second sleeve sections, said spacer section being in the form of a split ring and having an opening for providing fluid communication between said working chamber and said passageway;

in which said resilient member and flexible wall member having a pair of axially spaced annular sealing lips projecting outward from an outer circumferential surface, said sealing lips being interposed between matched ends of said first and second sleeve sections and said spacer section and sealingly contacting an inner circumferential wall of said bracket.

5,007,305

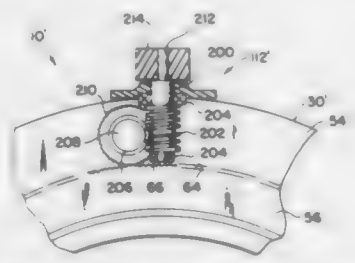
RING BALANCER

Rene Linder, Genestrenio, Switzerland, assignor to Schmitt Industries, Inc., Portland, Oreg.

Division of Ser. No. 201,482, Jun. 1, 1988, Pat. No. 4,951,526. This application Aug. 20, 1990, Ser. No. 570,320

Int. Cl.[5] F16F *15/22*

U.S. Cl. 74—573 R **12 Claims**



1. A balancer for dynamically balancing a machine having an elongated rotatable element power driven in at least a first rotational direction about a longitudinal rotational axis, comprising:

an annular case with first and second radially extending annular sidewalls and a central aperture extending fully through said first and second sidewalls and sized to receive the rotatable element therein with the rotatable element projecting fully through said central aperture and beyond said first and second sidewalls to permit positioning of said case at an intermediate position on the rotatable element, said case having an interior annular chamber extending about said central case aperture in substantially coaxial alignment with the rotatable element;

means for fixedly attaching said case to the rotatable element for rotational travel therewith;

a first friction engagement wheel supported by said case for rotational travel therewith, said first engagement wheel being selectively rotatable about a first engagement wheel rotational axis in first wheel first and second opposing rotational directions;

first contact members mounted to the machine in position to rotate as said first engagement wheel as said first engagement wheel passes by, said first contact members being selectively movable to frictionally contact said first engagement wheel to selectively rotate said first engagement wheel in said first wheel first or second rotational direction as said first engagement wheel travels by said first contact members carried by said rotating case;

a second friction engagement wheel supported by said case for rotational travel therewith, said second engagement wheel being selectively rotatable about a second engagement wheel rotational axis in second wheel first and second opposing rotational directions;

second contact members mounted to the machine in position to rotate said second engagement wheel as said second engagement wheel passes by, said second contact members being selectively movable to frictionally contact said second engagement wheel to selectively rotate said second engagement wheel in said second wheel first or second rotational direction as said second engagement wheel travels by said second contact members carried by said rotating case;

first and second eccentrically weighted balancing members coaxially and rotatably mounted within said case chamber for rotational travel with said case, each said balancing member having a rotational axis in substantially coaxial alignment with the rotatable element, and each said balancing member being selectively rotatable in first and second opposing rotational directions relative to the other of said balancing members and to said case, each said balancing member having an engagement portion extending at least partially about said balancing member;

first force transmission means, supported by said case for rotational travel therewith, for drivably interconnecting said first engagement wheel and said first balancing member engagement portion to convert rotation of said first engagement wheel in said first wheel first and second rotational directions into rotation of said first balancing member in said first balancing member first and second rotational directions, respectively; and

second force transmission means, supported by said case for rotational travel therewith, for drivably interconnecting said second engagement wheel and said second balancing member engagement portion to convert rotation of said second engagement wheel in said second wheel first and second rotational directions into rotation of said second balancing member in said second balancing member first and second rotational directions, respectively, whereby said first and second engagement wheels are rotated in selected directions by said first and second stationary contact means when selectively operated as said first and second engagement wheels revolve with said case to progressively and independently rotate each of said first and second balancing members until the machine is dynamically balanced

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5,007,306

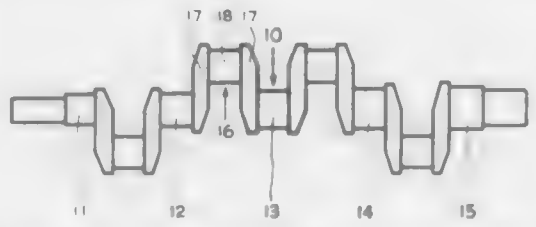
CRANKSHAFTS WITHOUT TORSIONAL VIBRATION RESONANCE

Yun S. Wei, 6501 Stewart Rd., Apt. 13, Cincinnati, Ohio 45236

Continuation-in-part of Ser. No. 866,937, May 27, 1986, which is a continuation-in-part of Ser. No. 584,005, Feb. 27, 1984, abandoned, which is a continuation-in-part of Ser. No. 366,486, Apr. 8, 1982, abandoned. This application Oct. 19, 1989, Ser. No. 423,939

Int. Cl.[5] F16C *3/04*

U.S. Cl. 74—595 **3 Claims**



1. In a piston engine crankshaft having main journals and cranks, the improvement comprises whereas the ratio of natural frequencies of torsional vibration of at least one crank behind the frontmost crank to its preceeding adjacent crank ranging from 1.05 to 1.25 by making the outside diameters of at least one pair of the adjacent main journals different to one another.

5,007,307

POWER PLANT FOR VEHICLES

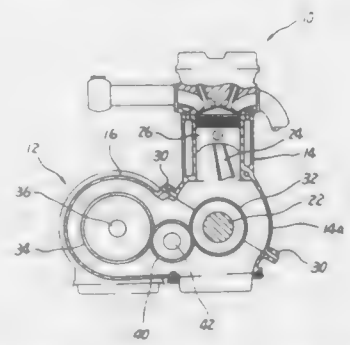
Tsuyoshi Tamazawa, Yokohama, and Yoshimasa Hayashi, Kamakura, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 26, 1989, Ser. No. 343,214

Claims priority, application Japan, Apr. 26, 1988, 63-101354

Int. Cl.[5] F16H *57/02*

U.S. Cl. 74—606 R **10 Claims**



1. A power plant for an automotive vehicle comprising:

(A) a first independent unit comprising an engine having a cylinder block,

a crankshaft supported on said cylinder block, and

a crankshaft gear installed on said crankshaft;

(B) a second independent unit comprising a transmission arranged in parallel with said crankshaft and including a transmission casing,

an input shaft arranged in parallel with said crankshaft and supported on said transmission casing,

an input gear installed on said input shaft,

an intermediate shaft interposed parallelly between said input shaft and said crankshaft and supported on said transmission casing, and

an idler gear which is installed on said intermediate shaft and which meshes with said crankshaft gear and said idler gear; and

(C) means for detachably attaching said first unit to said second unit.

5,007,308

LINE PRESSURE CONTROL FOR AUTOMATIC TRANSMISSION

Yasushi Narita, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 19, 1989, Ser. No. 382,120

Claims priority, application Japan, Jul. 19, 1988, 63-178057; Aug. 2, 1988, 63-192010; Aug. 23, 1988, 63-207369

Int. Cl.[5] B60K *41/18*

U.S. Cl. 74—866 **14 Claims**

1. A line pressure control system for an automatic transmission when the automatic transmission undergoes a shifting operation where the line pressure is used to activate a friction element, the line pressure control system, comprising:

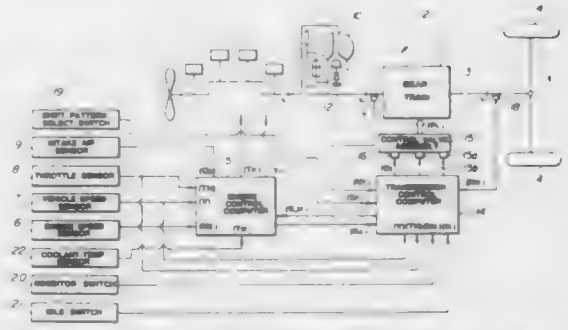
means for storing a target value of a predetermined variable that is representative of a quality of the shifting operation occurring under predetermined circumstances;

means for determining an actual value of said predetermined variable for the shifting operation after occurrence of the shifting operation and generating an actual value indicative signal indicative of said actual value determined;

means for detecting circumstances surrounding said occurrence of the shifting operation;

means for comparing said circumstances detected with said predetermined circumstances and generating a deviation indicative signal when a deviation therebetween fails to fall in a predetermined range;

means for comparing said actual value indicative signal with said target value when said deviation indicative signal is absent and generating a comparison result signal indicative of a difference between said actual value measured and said target value; and



means for adjusting the magnitude of the line pressure in response to said comparison result indicative signal during the next occurrence of the shifting operation in such a direction as to decrease said difference indicated by said comparison result indicative signal, whereby the friction element is activated by the line pressure adjusted during the next occurrence of the shifting operation.

5,007,309

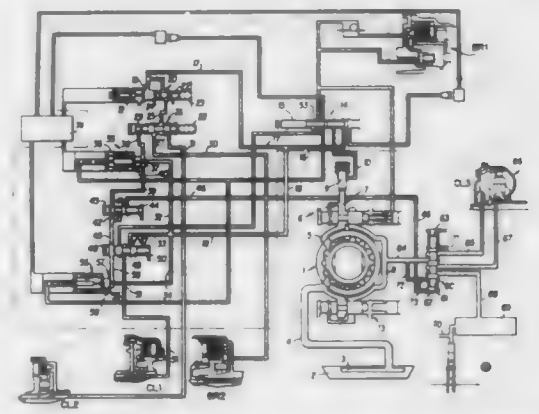
AUTOMATIC TRANSMISSION CONTROL SYSTEM AND METHOD OF OPERATION

Robert W. Lemon, Farmington Hills, and John Arzoian, Dearborn, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jun. 8, 1989, Ser. No. 363,653

Int. Cl.[5] B60K *41/22*; **F16H** *61/14*

U.S. Cl. 74—869 **5 Claims**



1. A method of controlling the operation of an automatic transmission of a vehicle having a fluid torque converter with a bypass clutch connecting a drive shaft from a prime mover to an output shaft of a speed change gear assembly of the transmission and a plurality of friction engaging elements arranged in the speed change gear assembly to provide a plurality of forward speed ratios between the input shaft and the output shaft of the speed change gear assembly upon selective engagement of the engaging elements by selectively enabling or preventing the flow of fluid from a source of pressurized fluid through two passages in a hydraulic circuit by controlling only two solenoid values in response to signals generated by a central processing unit that processes input signals derived from sensed vehicle operating parameters comprising:

opening the second passage to the source of pressurized fluid

to cause engagement of first and second friction engaging elements to produce a first forward drive gear condition while maintaining the first passage closed;

closing both passages from the source of pressurized fluid to cause engagement of only the first friction engaging element to produce a second forward drive gear condition;

opening the first passage to the source of pressurized fluid while maintaining the second passage closed to the pressurized fluid to engage only a third friction engaging element to produce a third forward drive gear position;

and opening both of the passages to the source of pressurized fluid to engage the second and third friction engaging elements along with the torque converter bypass clutch to produce a fourth, direct drive lockup forward drive condition.

5,007,310

SCREW WITH DIFFERENTIATED SECTIONS FOR CORKSCREWS

Ferdinando Cellini, Via Percoto 11, Maniago (PN), Italy 33085

Continuation of Ser. No. 283,833, Dec. 13, 1988, abandoned. This application Feb. 5, 1990, Ser. No. 474,303

Claims priority, application Italy, Dec. 22, 1987, 83517 A/87

Int. Cl.[5] B67B *7/00*

U.S. Cl. 81—3.45 **3 Claims**



1 A corkscrew comprising

a lever body;

a support element; and

an elongate member pivotally connected to said lever body and comprising a helix portion formed into a plurality of helices, having

a point at the distal end thereof; and

at least a first segment comprising at least one helix and a second segment comprising at least one helix, said second segment being closer to said distal end of said elongate member than said first segment; wherein a cross-section of said elongated member in said first segment is constant and has a first width, and a cross-section of said elongate member in said second segment is constant and has a second width; and

wherein said second width is smaller than said first width

5,007,311

SLIDABLE DRIVING STUD FOR USING IN SOCKET WRENCH AND ITS MANUFACTURING PROCESS

Clark J. Lee, 429-6 Chung Cheng Rd, Fu Liao Li, Tsao Tun Town, Nantou Hsien, Taiwan

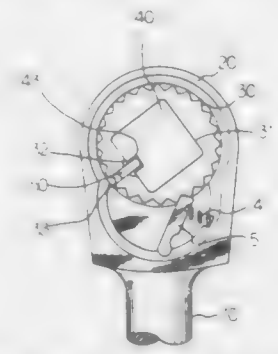
Filed Aug. 10, 1990, Ser. No. 565,429

Int. Cl.[5] B25B *13/46*

U.S. Cl. 81—61 **1 Claim**

1. An improved ratchet wrench comprising

a head, a handle extending therefrom, a ratchet wheel rotatably mounted in the head having a polygonal receiving hole along an axis perpendicular to the handle, ratchet means for connecting the ratchet wheel to rotate with the handle around said axis in only one direction, and a driving stud having a length greater than the length of the receiving hole and having a longitudinally extending guide groove in one side thereof, said driving stud being slidably mounted in the receiving hole and maintained in position by a pin mounted in the ratchet wheel and engaging within the guide groove on the driving stud, wherein the improvement comprises the longitudinal guide groove extending from one end to the opposite end of the driving stud, and a pair of socket detent members being mounted



on the guide groove and adjacent to the opposite ends of the driving stud for limiting the relative movement of the pin within the guide groove, whereby one portion of the driving stud is retained within the ratchet wheel as one of the detent members engages with the pin and the other portion of the driving stud protrudes from one side of the ratchet wheel with another detent member thereon to retain a socket

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5,007,312

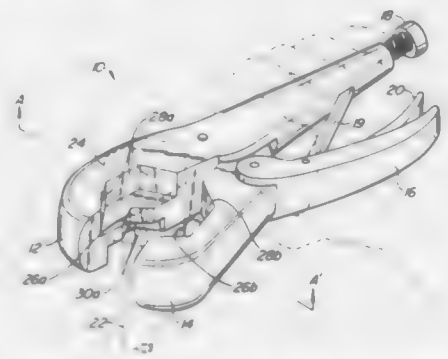
WRENCH FOR METAL TUBING CONNECTORS

Carey G. Bailey, 2171 Shetland Rd., Livermore, Calif. 94550

Filed Jan. 11, 1990, Ser. No. 463,353

Int. Cl.[5] B25B *7/02*

U.S. Cl. 81—426.5 **5 Claims**



1. A double jawed locking hand vise comprising locking means for locking the jaws of said vise in a preselected closed position,

adjustment means for setting said closed position;

said jaws of said vise comprising co-facial surfaces having gripping means for securely holding a tubular piece therebetween,

a first securing means for securing a first nut of preselected size and shape against rotation with respect to said tubular piece held in said gripping means, a second securing means for alternatively securing a second nut of preselected size and shape against rotation with respect to said tubular piece held in said gripping means, said gripping means being concentrically disposed with said first or second nut, wherein each of said securing means comprises substantially planar surfaces angled with one another to accommodate said respective nut of preselected size and shape when said jaws are in a closed or a substantially closed position, to thereby prevent rotation of said respective nut with respective to said tubular piece.

5,007,313

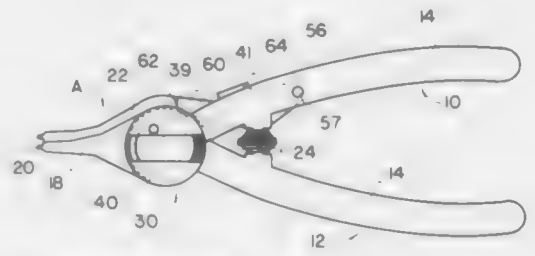
PLIERS

James R. Jeromson, Jr., Aurora, and J. Edward C. Anderson, Moreland Hills, both of Ohio, assignors to Milbar Corporation, Chagrin Falls, Ohio

Continuation of Ser. No. 182,016, Apr. 29, 1988, abandoned, which is a continuation-in-part of Ser. No. 46,851, May 7, 1987, abandoned. This application Jul. 10, 1989, Ser. No. 378,448

Int. Cl.[5] B23P *19/04*

U.S. Cl. 81—486 **27 Claims**



1 A plier tool comprising:

(a) a pair of levers each including a handle portion, a jaw portion including a tip and a boss portion fixedly interconnecting the handle and jaw portions;

(b) a pivot interconnecting the levers in a permanently intended, boss portion juxtaposed, but relatively movable and slidable relationship;

(c) the tool including a work position selection means to permit the shifting of the levers in a sliding motion as the boss portions are maintained in their juxtaposed, slidable relationship by the pivot, the motion including relative longitudinal movement such that one tip is passed by the other as the levers are moved between a first working position in a crossed relationship and a second working position in a side by side relationship and such said one tip is passed by the other as the levers are moved from the second to the first position; and,

(d) the work position selection means including a position locating means for retaining the bosses in at least one of the working positions when the tool is in use, the locating means being constructed such that when the tool is used in one of the working positions reaction forces occasioned by work operation apply position retention force to the locating means and when in the other of the working positions the selection means overcomes reaction forces tending to move the levers from the working position.

5,007,314

LATHE

Dietmar F. Hafla, Hohengehren, and Guenther Sommer, Esslingen, both of Fed. Rep. of Germany, assignors to Index-Werke Komm. -Ges. Hahn & Tessky, Esslingen, Fed. Rep. of Germany

PCT No. PCT/DE89/00004, § 371 Date Aug. 22, 1989, § 102(e) Date Aug. 22, 1989, PCT Pub. No. WO89/06176, PCT Pub. Date Jul. 13, 1989

PCT Filed Jan. 6, 1989, Ser. No. 415,290

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1988, 3800403

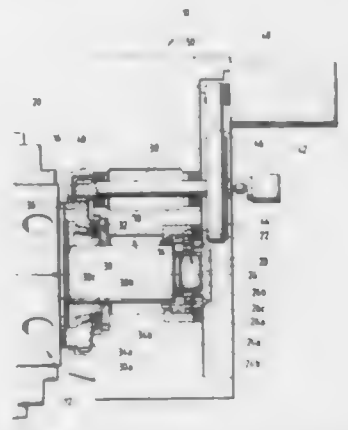
Int. Cl.[5] B23B *3/00*

U.S. Cl. 82—120 **4 Claims**

1. A lathe comprising a main work spindle mounted for numerically controlled rotation about a main spindle axis, a tool turret having a turret body with several stations as well as a turret shaft fixedly connected to said turret body and being mounted on a turret slide for rotation about a turret axis, at least one of said turret body stations being provided with a driveable tool, said lathe also comprising turret drive means for numerically controlled rotation of said turret body and turret shaft about the turret axis, the improvement comprising:

(a) turret shifting means for axially displacing said turret relative to said slide between a first and a second axial position;

(b) releaseable locking means for securing said turret against rotation, said locking means comprising a first ring of teeth connected with said turret in a rotationally fixed manner and a second ring of teeth connected with said slide in a rotationally fixed manner, said first and second rings of teeth being arranged adjacent to the turret body and displaceable relative to one another in the direction of the turret axis by displacing the turret by said shifting



means so that the teeth of said two rings are interengaged when the turret is in its second axial position;

(c) a first bearing means for said turret, said first bearing means being arranged adjacent to said locking means and having two conical races, one of which being connected with the turret so that the two conical races are displaceable relative to one another in the direction of the turret axis in order to make said first bearing means free of radial play when the turret is in its first axial position; and

(d) a second means for said turret, said second bearing means being spaced from said first bearing means in the direction of the turret axis and being axially displaceable as a unit together with the turret.

5,007,315

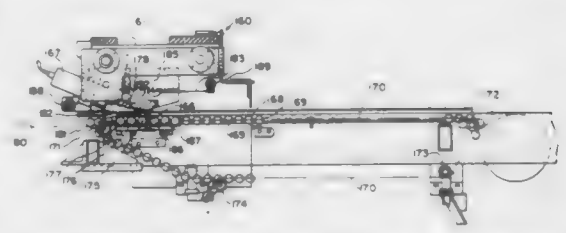
AUTOMATIC SIDEWALL SERVICER

Joseph H. Alexander; Stanley L. Radcliffe; Martin N. Robertson, all of Summit County; Eugene A. Bator, and John E. Anderson, both of Portage County, all of Ohio, assignors to General Tire, Inc., Akron, Ohio

Division of Ser. No. 77,705, Jul. 24, 1987. This application Nov. 21, 1988, Ser. No. 274,260

Int. Cl.[5] B26D *5/00*

U.S. Cl. 83—72 **5 Claims**



1. Apparatus for cutting a strip of unvulcanized rubbery material comprising:

(a) a plurality of rollers freely rotatable about parallel axes lying in a common plane for supporting the strip to be cut

and for conveying the strip in a direction perpendicular to said roller axes;

(b) a guide means mounted above the roller and extending parallel to the roller axes and beyond both lateral edges of the strip conveyed on the rollers;

(c) a carrier mounted on the guide means and slidable back and forth along the guide means in a direction parallel to the roller axes;

(d) a cutting anvil located between two of said plurality of rollers, said anvil having a head surface located above the rollers, said head surface being sloped at an acute angle to the plane of the roller axes in the same direction as the direction in which the strip is to be conveyed;

(e) an ultrasonic cutter also mounted on the carrier and including an ultrasonically vibrated knife blade which is inclined at the same angle as the sloped head surface of the anvil and has a portion resting on top of said sloped head surface of the anvil;

(f) said anvil and said ultrasonic cutter both being connected to said carrier and being movable with said carrier back and forth parallel to the axes of said rollers between positions that are outside the lateral edges of the strip conveyed on said rollers;

(g) means in close proximity to the anvil for clamping the strip to the rollers on both the upstream and downstream sides of the anvil, in respect of the direction of travel of the strip on the rollers; and

(h) a sensor movable with the carrier which senses a thickness of the strip and controls speed at which the cutter moves along the anvil in relation to the thickness of the strip.

5,007,316

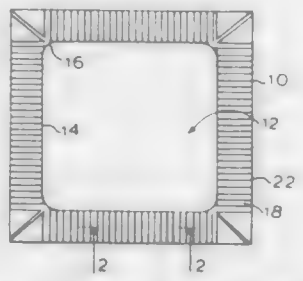
APPARATUS FOR CUTTING SHEET MATERIALS

Stephen O. Ketcham; Paul W. Ortiz, both of Mt. Vernon; Jamie S. Jarvis, Evansville, and Clyde S. McCray, Mt. Vernon, all of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Continuation of Ser. No. 943,457, Dec. 19, 1986, abandoned. This application Mar. 14, 1990, Ser. No. 494,932

Int. Cl.[5] B26F *1/14*

U.S. Cl. 83—167 9 Claims



6. A punch and die assembly for cutting from sheet of synthetic, polymeric resin, an article, which comprises;

a cutting die block for use in a punch and die assembly, which comprises;

a die plate having a face surface, a back surface and a peripheral surface which extends perpendicular to said die face surface, said peripheral surface defining an outer boundary of the face and back surfaces of the plate;

said plate having a punch receiving aperture located inwardly of the peripheral surface and communicating between the face surface and the back surface;

said punch receiving aperture being defined by a die cutting edge on the face surface at a boundary between the face surface and the aperture;

collecting means comprising a plurality of open grooves extending from the die cutting edge towards the peripheral surface for collecting slivers and bits of waste material generated as a result of such cutting;

a punch adapted by size and configuration to pass into the aperture of the block; and

wherein said particle is cut only along the die cutting edge and said collecting means provides a repository for said slivers and bits of waste material.

5,007,317

APPARATUS FOR THE PROGRAM CONTROLLED LONGITUDINAL AND TRANSVERSE CUTTING OF WORKPIECE PLATES

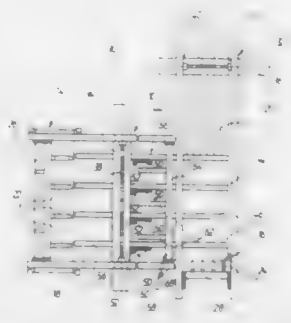
Erwin Jenkner, Lindenstrasse 13, Gechingen, Fed. Rep. of Germany D-7261

Filed Apr. 10, 1990, Ser. No. 508,061

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1989, 3911639

Int. Cl.[5] B27B *5/06;* B23D *47/04*

U.S. Cl. 83—256 3 Claims



1. An apparatus for the program-controlled cutting of workpiece plates into multiple workpiece plate pieces, said apparatus being operably arranged for longitudinal cutting of edge strip stacks from workpiece plate stacks, subsequent longitudinal sectioning of said workpiece plate stacks into workpiece plate piece stacks, transverse sectioning of said plate piece stacks cut from said workpiece plate stacks, and transverse sectioning of said edge strip stacks, said apparatus for the program-controlled cutting of workpiece plates into multiple workpiece plate pieces comprising:

a longitudinal cutting saw for cutting said edge strip stacks from said workpiece plate stacks and for cutting said workpiece plate stacks into said workpiece plate piece stacks;

a first advancing device for feeding said workpiece plate stacks to said longitudinal cutting saw;

a first support table for supporting said workpiece plate stack as they are fed to said longitudinal cutting saw by said first advancing device;

a transverse cutting saw for cutting said workpiece plate piece stacks and said edge strip stacks, operably arranged generally perpendicular to said longitudinal cutting saw;

a second advancing device for feeding said workpiece plate piece stacks and said edge strip stacks to said transverse cutting saw;

a second support table for supporting said workpiece plate piece stacks and said edge strip stacks as they are fed to said transverse cutting saw by said second advancing device;

a transport device for moving said edge strip stacks and said workpiece plate piece stacks from said longitudinal cutting saw to said second support table; and

a pick-up device for collecting each said edge strip stack as it is cut from a workpiece plate stack, up to a predetermined number of edge strip stacks,

said pick-up device including a lifting device for raising said collected edge strip stacks to a holding position to permit said workpiece plate piece stacks to pass under said collected edge strip stacks and advance to said transverse cutting saw,

said lifting device being operably arranged to collect said predetermined number of edge strip stacks so that once said predetermined number of edge strip stacks has been collected, operation of said longitudinal saw is interrupted, said lifting device lowers said edge strip stacks from said holding positions for advancing to said transverse saw for transverse cutting.

5,007,318

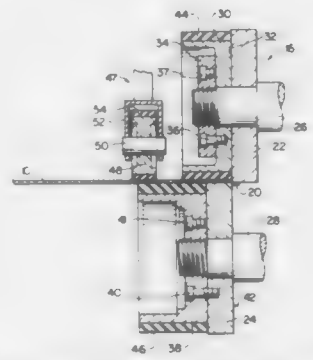
METAL STRIP EDGE TRIMMING APPARATUS

Laurence C. Cox, Portage; Raymond Dugan; Daniel D. Evans, both of Chesteron; Robert Griffith, Hamlet; Terry L. Handley, Westville, and Jeffrey J. Leeper, Valparaiso, all of Ind., assignors to National Steel Corporation, Pittsburgh, Pa.

Filed Dec. 20, 1989, Ser. No. 453,599

Int. Cl.[5] B23D *25/12*

U.S. Cl. 83—425.2 8 Claims



1. For use in an edge trimming operation for trimming the opposite marginal side edges of a running length of metal strip, a pair of edge trimmers positioned one adjacent each side edge of the strip, said edge trimmers each comprising an upper cutter disc mounted above the plane of the strip and a lower cutter disc mounted below the plane of the strip, said upper and lower cutter discs being mounted for rotation about spaced parallel horizontal axes extending transversely of the strip and cooperating to receive and trim the strip along a trim line extending closely adjacent one marginal edge of the strip, the improvement wherein each said edge trimmer further comprises,

first strip edge stabilizing means mounted for coaxial rotation with said lower cutter disc, said lower cutter disc having a cylindrical outer surface and said first strip edge stabilizing means having a cylindrical outer surface extending inward from and forming an extension of the cylindrical surface of said lower cutter disc in contact with the bottom surface of a strip to be trimmed,

second strip edge stabilizing means mounted for coaxial rotation with said upper cutter disc, said second strip edge stabilizing means having a cylindrical outer surface extending inward from said top cutter disc and contacting the top surface of the strip adjacent said trim line in opposition to said lower cutter disc and a portion of said first stabilizing means,

said first stabilizing means extending inwardly from said trim line a distance greater than said second stabilizing means, and

movable holddown roll means mounted for rotation about an axis parallel to the axis of said upper and lower cutter discs and contacting the top surface of a strip in opposition to said first stabilizing means at a location of said second stabilizing means.

5,007,319

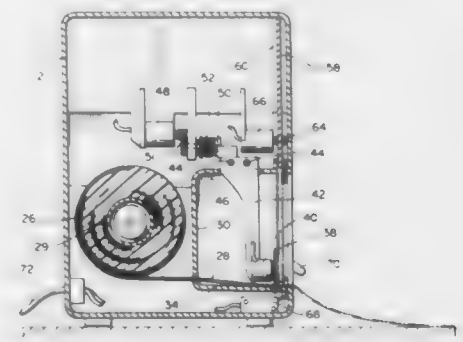
PLASTIC WRAP DISPENSER

Joseph M. Armbruster, 2700 NE. 47th St., Lighthouse Point, Fla. 33064

Filed Aug. 7, 1987, Ser. No. 82,482

Int. Cl.[5] B26D *1/18;* B65H *75/32*

U.S. Cl. 83—488 6 Claims



1. A dispenser for sheet film material comprising a housing, means within said housing for rotatably supporting a supply roll of film material, said housing including a discharge slot receiving the film material therethrough, said housing including a supporting surface extending horizontally outwardly from the slot and forming the sole support for the free end of the film material to enable the free end to be grasped and manually pulled to unwind a desired quantity of film material from the supply roll, powered means located outwardly of and spaced from the discharge slot for severing the film material with the free end of the film material being released from grasp and resting on the supporting surface before and after being cut, said means for severing the film material including a circular cutter blade rotatably supported and having its rotational axis disposed above the supporting surface, a motor driving said blade, a supporting carriage for said motor and blade, means guiding movement of the carriage, means moving the carriage and the blade and motor transversely of the film material for cutting the film material, said supporting surface including a groove extending parallel to the discharge slot for receiving a peripheral portion of the cutter blade to assure that the film material is cut by the cutter blade, and a closure door concealing the cutter blade, discharge slot, supporting surface and groove receiving the periphery of the cutter blade, said door being mounted for movement between open and closed positions.

5,007,320

COMPASS

Stuart Craig, Willowdale, and Earl Helland, Toronto, both of Canada, assignors to Inventive Ideas Incorporated, Toronto, Canada

Continuation-in-part of Ser. No. 209,956, Jun. 22, 1988, abandoned. This application Jun. 22, 1989, Ser. No. 369,235

Int. Cl.[5] B26D *5/00*

U.S. Cl. 83—745 26 Claims

1. A compass for sweeping an arc of a circle on a target material comprising:

a base having a lower surface engagable with said material;

a support member rotatably supported on said base;

a toolholder mounted on said support member and being moveable therewith to sweep an arc of a circle upon rotation of said support member about an axis relative to said base, said toolholder including radial adjustment means permitting the radial position of said toolholder with respect to said axis to be varied;

a toolpost mounted on said toolholder for supporting a tool, said toolpost permitting movement of said tool relative to said support member in a direction generally normal thereto between an operative position wherein said tool extends beyond said lower surface to contact said material

and an inoperable position wherein said tool is retracted from said lower surface; and

depth adjustment means allowing the position of said tool in said operative position to be varied, said depth adjustment



means being operable independently of said radial adjustment means such that the position of said tool in said operative position does not change when the radial position of said toolholder is adjusted.

5,007,321

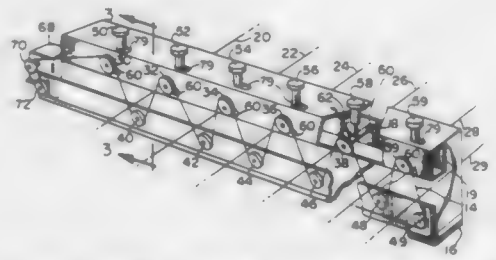
POWER OPERATED STRING VIBRATING DEVICE FOR SELECTIVELY VIBRATING A STRING OF A STRINGED MUSICAL INSTRUMENT

Frederick J. Mastroni, Jr., 89 Gregory Pl., Richboro, Pa. 18954

Filed May 16, 1989, Ser. No. 352,785

Int. Cl.[5] G10D *3/16*

U.S. Cl. 84—325 **9 Claims**



1. A power operated string vibrating device for selectively vibrating a string of a stringed musical instrument having at least one string, said string vibrating device comprising:

a support member positioned on said musical instrument proximate said string;

a first pulley rotatably mounted on said support member on a first side of said string for receiving a cable;

a second pulley for receiving a cable rotatably mounted on a shaft which is mounted on said support member on a second side of said string, said support member receiving said shaft in a cam-like slot for guiding said second pulley and shaft between a first position and a second position;

a spring interconnected between said shaft and said support member for biasing said second pulley and shaft towards said first position;

an endless cable drivingly interconnected to said pulleys, said cable being alternately drivingly engaged between said first and second pulleys such that when said second pulley is in said first position, said cable does not contact the string and, when said second pulley is in said second position, said cable contacts the string;

an electric motor positioned on said support member and having a drive pulley drivingly engaged to said cable for driving said cable, said electric motor driving said cable at selectively variable speeds;

at least one guide pulley for guiding said cable between said first and second pulleys and said drive pulley; and

a finger engageable button secured to said shaft and slidably positioned on said support member for selectively moving said second pulley between said first and second positions, whereby when said second pulley is in said first position, said string does not produce sound and when said second pulley is in said second position, said string is vibrated by said cable and thereby produces sound.

5,007,322

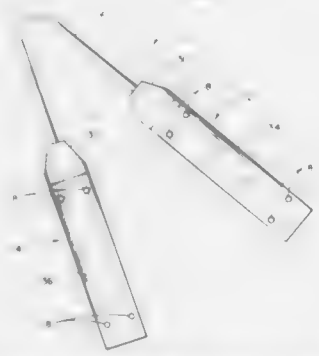
PERCUSSION IMPLEMENT HANDLE

Farrell Morris, 726 Vosswood Dr., Nashville, Tenn. 37205

Filed Jan. 3, 1990, Ser. No. 460,503

Int. Cl.[5] G10G *5/00*

U.S. Cl. 84—453 **5 Claims**



1. A new and useful percussion handle for grasping plural percussion implements comprising:

(a) means for grasping each of said percussion implements;

(b) means to bias said grasping means apart;

(c) said biasing means comprises a frame joining said grasping means;

(d) each of said grasping means comprises a handle for releasably grasping said percussion implement;

(e) said grasping means comprises a partially cylindrical handle releasably attached to a semicylindrically shaped member acting in combination to form substantially a cylinder; and

(f) a channel to receive said implement formed by said connection of said handle and said section.

5,007,323

POLYPHONIC ELECTRONIC MUSICAL INSTRUMENT

Ryuji Usami, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Aug. 1, 1988, Ser. No. 226,936

Claims priority, application Japan, Aug. 7, 1987, 62-196455; Aug. 17, 1987, 62-203200

Int. Cl.[5] G10H *7/00*

U.S. Cl. 84—607 **6 Claims**

1. A polyphonic electronic musical instrument for simultaneously generating a plurality of tone signals through a time-division process on a plurality of channels, comprising:

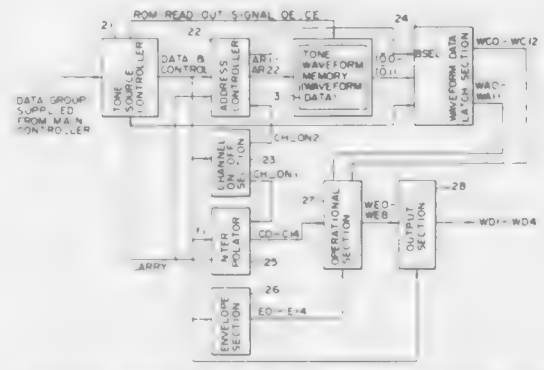
first memory means for storing tone waveform data;

second memory means for storing waveform control data including access data for accessing said first memory means for each channel;

allotting means for successively allotting on a time-division basis a channel time for each of a plurality of channels as a process time of that channel;

dividing means for dividing each channel time alloting by said allotting means into a plurality of divisions; and

read/write control means for functioning in at least one division of time provided by said dividing means for accessing said first memory means by reading out the waveform control data corresponding to the current channel time from said second memory means, and also for functioning in at least one of the remaining divisions of time for writing the waveform control data of a given channel designated at that time to be changed in an area of said second memory means corresponding to said given channel.



5,007,324

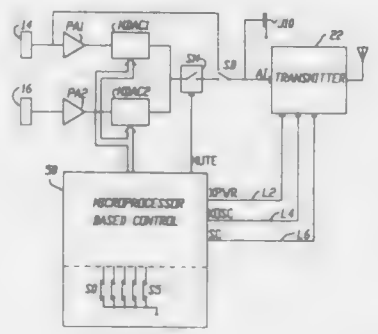
SPECIAL EFFECTS CONTROL FOR PORTABLE MUSICAL INSTRUMENT

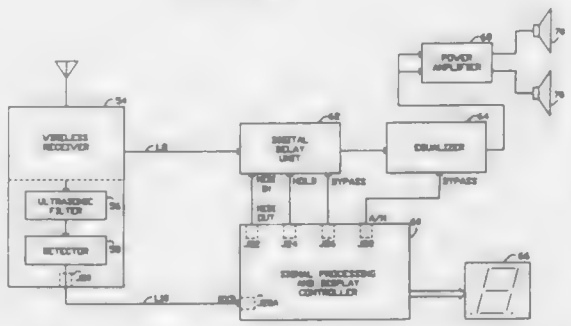
Glenn DeMichele, 2217 West Leland Ave., Chicago, Ill. 60625

Filed May 14, 1989, Ser. No. 347,815

Int. Cl.[5] G10H *1/46, 1/02*

U.S. Cl. 84—741 **45 Claims**





1. In combination:

a portable musical instrument having audio-frequency vibration-sensing means responsive to sound-indicating vibrations from said instrument for converting said vibrations into sound-indicating electrical signals;

communication means for communicating said sound-indicating signals to remote audio amplifier means adapted for connection to loudspeaker means;

user-operable first alteration means affixed to said instrument and operable over a range of states for altering said sound-indicating signals over a corresponding range of signal alterations;

generating means associated with said instrument for generating a range of status-indicating electrical signal conditions indicative of the chosen state of said first alteration means;

visual display means adapted for placement remote from said instrument for providing a readily visible indication at the remote location from where the operator is playing the instrument and powered by a source remote from said instrument for producing a plurality of different display conditions; and

display control means responsive to said status-indicating signal conditions for selectively actuating said display means to produce a display condition indicative of said chosen state of operation of said instrument.

5,007,325

APPARATUS FOR CLEARING MINES

David M. MacWatt, Elgin, Scotland, assignor to Aardvark Clear Mine Limited of Shevock Farm, Insch, Scotland

Continuation of Ser. No. 380,778, Jul. 18, 1989, abandoned, which is a continuation of Ser. No. 170,066, Mar. 14, 1988, abandoned, which is a continuation of Ser. No. 816,206, Jan. 6, 1986, abandoned. This application Feb. 22, 1990, Ser. No. 485,776

Claims priority, application United Kingdom, Jan. 10, 1985, 8500569

Int. Cl.[5] F41H *11/16*

U.S. Cl. 89—1.13 **4 Claims**



1. A flail vehicle comprising a tractor unit and rotatable ground-beating means mounted at one end of the tractor unit, the ground-beating means comprising a shaft which is rotatable about a central axis, said central axis being substantially parallel to the ground and transverse to the direction of travel of the vehicle, said shaft carrying a distributed array of flexible flail chains extending radially outwardly from said shaft, each of said flail chains having a direct connection to said shaft, the distribution of flail chains within said array being such that each said connection is angularly and axially offset around and along said shaft from the nearest adjacent said connection, and wherein any two of said connections in said array which are adjacent in a direction substantially parallel to said central axis of the shaft are mutually spaced apart by at least thirty centimeters as measured along the shaft in a direction parallel to said central axis.

5,007,326

CAST SINGLE PLATE P900 ARMOR

William A. Gooch, Jr., Bel Air; Matthew S. Burkins, Baltimore, both of Md.; Leo F. Mills, Bettendorf, Iowa; James W. Ogilvy, Detroit, Mich., and Antonio J. Ricchiazzi, Havre de Grace, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 16, 1990, Ser. No. 468,324

Int. Cl.[5] F41H *5/04*

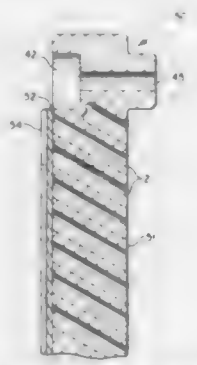
U.S. Cl. 89—36.02 **4 Claims**

1. A defensive applique armor for covering and protecting a substrate which may be exposed to attack by projectiles:

said applique comprising a flat armor plate composed of

castable metal having predetermined thickness and having a plurality of slotted holes,

said slotted holes being sufficiently small so that a projectile cannot pass therethrough.



said slotted holes being set at obliquity, and

said applique further comprising a thin skin castable metal layer which increases the maintainability or protecting ability of said armor.

5,007,327

SERVO ACTUATOR

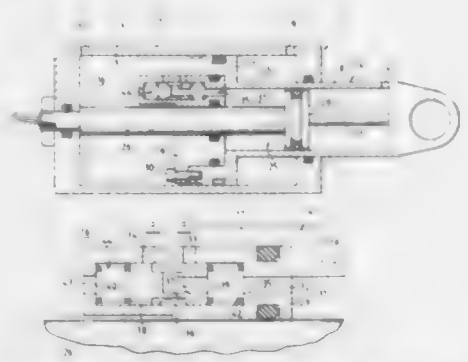
Toshio Kamimura, and Shigeyuki Takagi, both of Gifu, Japan, assignors to Teijin Seiki Company Limited, Osaka, Japan

Filed Sep. 8, 1989, Ser. No. 404,566

Claims priority, application Japan, Sep. 9, 1988, 63-225897

Int. Cl.[5] F15B *11/08*

U.S. Cl. 91—422 **7 Claims**



1. A hydraulic servo actuator adapted to control a driven member in accordance with an operation of a servo circuit through which servo oil flows, comprising:

a main cylinder and an associated main piston, said main piston being reciprocal within said cylinder and said main cylinder divided by said piston into a first chamber and a second chamber which are adapted to be in fluid communication with said servo circuit;

damper means provided within said main piston for dampening reciprocating movement of said main piston, said damper means having a sub piston and a detecting rod coupled at one end to said sub piston and at the other end to said main cylinder for defining a damper chamber in association with said main piston, and

throttle means for imparting a predetermined restriction to the servo oil that flows between said second chamber and said damper means along a predetermined passage formed within said piston.

5,007,328

LINEAR ACTUATOR

John H. Otteman, 4005 Hecker Pass Hwy., Gilroy, Calif. 95020

Filed Jul. 24, 1989, Ser. No. 384,715

Int. Cl.[5] F01B *7/00*

U.S. Cl. 92—63 **1 Claim**



1. A linear actuator having an axis, said actuator comprising

a body having a peripheral sidewall, and inside said side wall, a first and second cylinder wall axially spaced apart and concentric on said axis;

a coupler for releasably mounting said body to a next assembly, enabling the body, when the coupler is loosened, to be rotated around said axis,

a partition between cylinder walls dividing them from one another;

a first piston slidably and sealingly fitted in said first cylinder wall, said first piston having a first face and a second face;

a second piston slidably and sealingly fitted in said second cylinder wall, said second piston having a first face and a second face;

a partition providing a fluid sealing barrier between said first and second cylinder walls;

vent ports means through said body venting said second faces to the atmosphere;

force bias means exerting an axial bias force against said second face of first piston;

inlet port means entering said body through said peripheral side wall for enabling supply of fluid under pressure to regions inside said cylinder walls, applied to said first faces of both pistons;

abutment means on said pistons enabling said pistons to contact one another for transmission of bias force to hold them in abutment;

one of said pistons including a post sealingly and slidingly fitted to said partition to pass therethrough, so as to accomplish said abutment of said pistons;

said inlet port being a single port passing into one of said cylinder walls, and in which by-passing conduitry extends through said post between regions facing both of said first faces;

and in which the uppermost of said pistons includes a central axially extending recess, and in which a guide pin is fixed to said body, projecting axially into said recess in a sliding close-fitting relationship to prevent the piston from cocking, and to serve as a limit stop for upward movement of said piston.

5,007,329

WORKING PISTON, IN PARTICULAR FOR A BRAKE BOOSTER

Bernd Toepperwien, Russelsorf, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 11, 1989, Ser. No. 336,171

Claims priority, application Fed. Rep. of Germany, Apr. [redacted], 1988, 3813144

Int. Cl.[5] F01B *19/00*

U.S. Cl. 92—98 D **10 Claims**



1. A working piston for a brake booster, comprising a substantially plate-shaped piston (3) is centrally held by a guide housing (1) and is axially guided in a working cylinder, and wherein a rolling diaphragm (2) which, on its outer circumference, is sealingly fixed on the inside wall of the working cylinder and which substantially covers the piston surface, is held immediately adjacent the central mounting of the plate-shaped piston (3) in a groove (8) in the guide housing (1) wherein the centrally held plate-shaped piston (3) has a surrounding arching portion (10) by means of which the plate-shaped piston rests on a corresponding supporting surface (11, 12) on the guide housing (1).

5,007,330

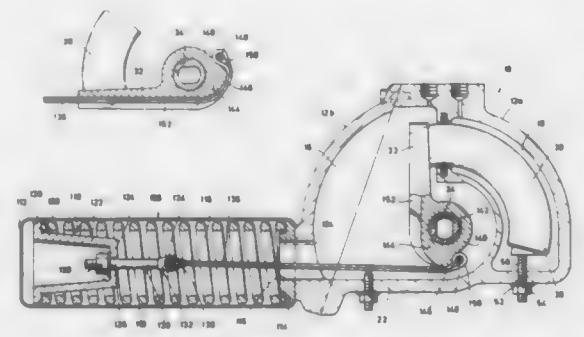
ROTARY ACTUATOR AND SEAL ASSEMBLY FOR USE THEREIN

William B. Scobie, Houston, and Robert A. Frenzel, Waller, [redacted]ith of Tex., assignors to Keystone International Holdings Corp., Houston, Tex.

Filed Dec. 18, 1989, Ser. No. 452,207

Int. Cl.[5] F01C *9/00*

U.S. Cl. 92—120 **23 Claims**



1. A rotary actuator comprising:

a housing defining an arcuate chamber, said housing including a first monolithic portion and a second portion, said arcuate chamber being completely contained within said first portion, said first portion defining an aperture in open communication with said arcuate chamber, said second portion being adjacent to said first portion such that said second portion faces said aperture;

a piston disposed in said housing for reciprocable movement in said arcuate chamber;

a shaft journaled in said housing and connected to said piston, said shaft being rotated in response to movement of said piston;

a seal means disposed between said piston said housing for effecting sealing between said piston and said housing;

means to introduce fluid pressure into said housing to effect movement of said piston in a first direction; and

means to effect movement of said piston in an opposite, second direction.

20. An apparatus for sealing between relatively movable members comprising:

a first member, said first member having a surface defining a bore, a peripheral groove being formed in said surface in surrounding relationship to said bore, said groove having peripherally extending, spaced first and second side walls;

a second member disposed in said bore and relatively movable with respect to said first member;

a seal assembly for effecting fluid tight sealing between said first and second members, said seal assembly including:

a resilient, generally elliptical seal ring, said second member being received in and sealingly engaged by said seal ring;

a generally flexible band in surrounding, engaged relationship with said seal ring;

said seal assembly being received in said groove such that said resilient seal ring is in sealing engagement with said first and second side walls in said groove, said band serving to prevent outward movement of said seal ring away from said second member, said groove having a depth sufficient to permit said seal assembly to float.

5,007,331

DRY RUN-HIGH PRESSURE STAGE OF A MULTISTAGE PISTON COMPRESSOR

Peter Greiner, Damooser Weg 15, DE- 7981 Vogt, and Hubert Pflüger, Schlier-Wetzisreute, both of Fed. Rep. of Germany, assignors to Peter Greiner, Vogt, Fed. Rep. of Germany

Filed Dec. 12, 1989, Ser. No. 449,576

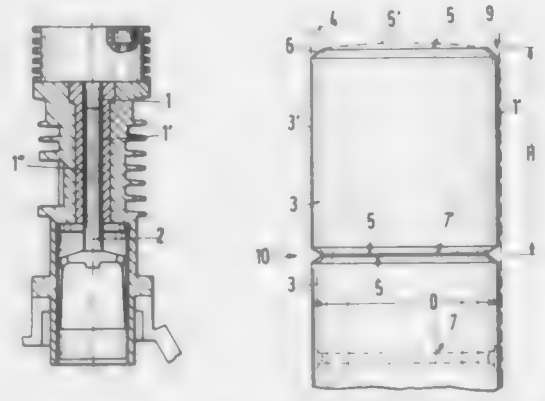
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1988, 3841833

Int. Cl.[5] F16J *15/18*

U.S. Cl. 92—165 R **7 Claims**

1. A dry-run, high-pressure stage of a multi-stage piston compressor comprising a cylinder defining a compression chamber and having a working barrel whose interior wall defines a bore, a piston including a tappet guided for reciprocal displacement in the working barrel bore, the tappet having a free end extending into the bore, and at least two cylindrical self-lubricating sealing elements loosely placed on top of each other on the free tappet end and sealing the working barrel bore from the compression chamber, the cylindrical sealing elements having a height corresponding at least to the diameter thereof, circumferential guide surfaces extending at least along

a portion of the circumferential surfaces of the sealing elements and defining an annular gap with the interior working barrel wall, and two end faces having circumferentially extending chamfers.



5,007,332

PISTON FOR PISTON MACHINES
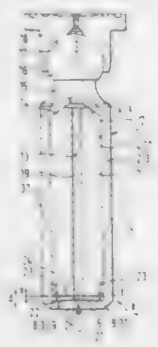
Ludwig Wagenseil, Vöhringen, Fed. Rep. of Germany, assignor to Hydromatik GmbH, Elchingen, Fed. Rep. of Germany

Filed Mar. 30, 1990, Ser. No. 502,460

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1989, 3912213

Int. Cl.[4] F01B *31/00;* **F04B** *21/04;* **F16J** *1/00*

U.S. Cl. 92—181 R **11 Claims**



1. A piston for piston machines comprising a hollow body, open at least at its free end, having an axial cavity in which there is a filler piece at least partly filling the latter and consisting of a material of lower specific gravity than the material of the piston, said filler piece being secured in said cavity and being held axially in said cavity by a locking element arranged at the free end of said hollow body and a spring arranged between said locking element and said filler piece, wherein said filler piece is inserted axially into said cavity and the axial securing and locking is effected solely by said spring and said locking element, said spring being pretensioned by said locking element so far that it acts against said filler piece with a spring force greater than the maximum inertial forces of the filler piece acting against said spring to be expected when in operation.

5,007,333

AUTOMATIC COFFEE MACHINE

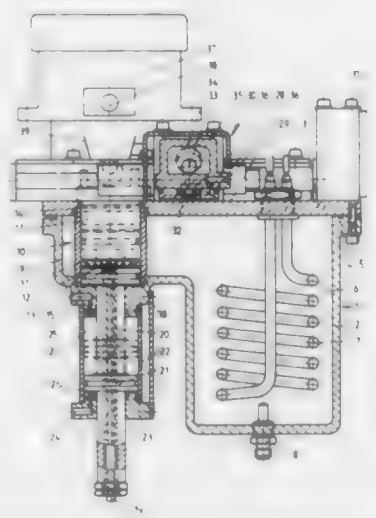
Peter Sager, Boppelsen, Switzerland, assignor to HGZ Maschinenbau AG, Dallikon, Switzerland

Filed Nov. 27, 1989, Ser. No. 441,514

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1988, 3843568

Int. Cl.[5] A47J *31/42*

U.S. Cl. 99—286 **10 Claims**



1. An automatic coffee machine, in particular for the preparation of individual cups and small pots, comprising a housing, an instantaneous water heater for the preparation of hot water in said housing, a brewing chamber comprising a stationary tube section having a vertical axis and upper and lower ends and upper and lower locking pieces with at least a portion of said tube section being located within said housing and adapted to be surrounded by hot water, feeding means for feeding coffee powder into said brewing chamber, radial drive means for moving said upper locking piece toward and away from the vertical axis of said tube section and axial drive means for moving said upper locking piece along the vertical axis of said tube section toward and away from said upper end of said tube section, said upper locking piece having inlet means for introducing hot water into said brewing chamber and comprising a support piece and a partially conically shaped centering piece mounted on said support piece and adapted for limited radial and axial movement with respect thereto and having a single gasket for sealing said brewing chamber and said inlet means, said gasket having a diameter sufficient to seal said brewing chamber at the upper end of said tube when said centering piece is centered over said upper end, and said lower locking piece being adapted to function as a piston within said tube section and having a gasket adapted to bear against the walls of said tube, means for maintaining said lower locking piece within said tube section, and vertical drive means for driving said lower locking piece for movement solely within said tube section.

5,007,334

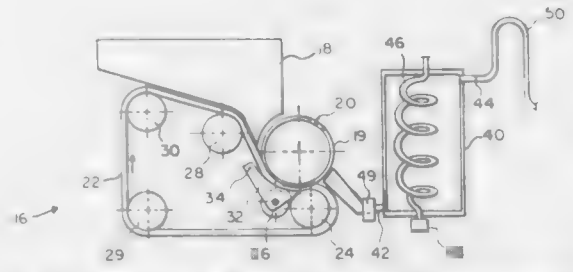
APPARATUS FOR MAKING ENZYME INACTIVATED VISCOUS FRUIT PULP AND PRODUCTS THEREFROM

Gerald W. Kobes, and Thomas A. Eisele, both of Selah, Wash., assignors to Tree Top, Inc., Selah, Wash.

Division of Ser. No. 437,290, Nov. 16, 1989, Pat. No. 4,950,493, which is a continuation of Ser. No. 935,291, Nov. 26, 1986, abandoned. This application Jun. 20, 1990, Ser. No. 541,253

Int. Cl.[4] A23L *1/212*

U.S. Cl. 99—483 **8 Claims**



1. An apparatus for making enzyme inactivated fruit pulp from fruit having an outer skin surrounding an inner meat, comprising:

means for simultaneously separating said meat from said skin and for converting said meat to pulp;

means for heating said pulp to a temperature sufficiently high to inactivate enzymes which tend to discolor said meat, said heating means communicating with said separating and converting means; and

means for conveying said pulp from said separating and converting means to said heating means.

5,007,335

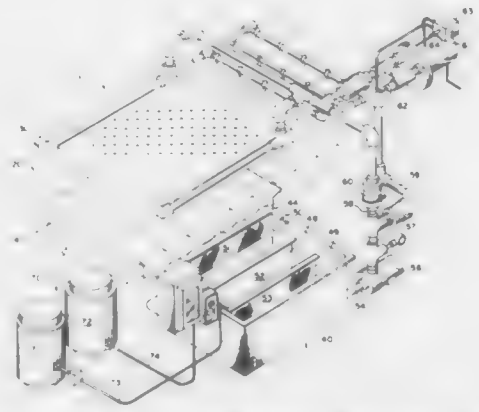
APPARATUS FOR TREATING FRESH FRUIT AND THE LIKE TO PREVENT AND RETARD THE GROWTH OFF FUNGUS

Charles R. Orman, San Bernardino; Paul E. Johnson, Riverside, and Bruce C. Adams, Pomona, all of Calif., assignors to Sunkist Growers, Inc., Sherman Oaks, Calif.

Division of Ser. No. 204,722, Jun. 10, 1988. This application Aug. 24, 1989, Ser. No. 398,791

Int. Cl.[5] A23B *7/00, 7/16*

U.S. Cl. 99—487 **8 Claims**



1. An apparatus for treating debris laden fresh fruit in a primary treating step to prevent and retard the growth of fungi comprising in combination:

(a) means for scrubbing said debris laden fruit in a fruit scrubbing station wherein said fruit is contacted by scrubbing means to remove the debris from said fruit;

(b) means for simultaneously with said scrubbing means drenching said fruit with a falling liquid in a quantity sufficient to remove substantially all debris carried by said fruit, said liquid containing a funicide;

(c) means for simultaneously maintaining the quantity and concentration of fungicide of said falling liquid in an amount to apply fungicide from said falling liquid to said fruit;

(d) means for simultaneously maintaining the conditions of said falling liquid within a range to deposit said fungicide on said fruit sufficient to prevent fungus growth on said fruit, said means for applying said fungicide being capable of applying fungicide in an amount not exceeding that which would deleteriously affect the quality of said fruit; and

(e) means for simultaneously treating said scrubbing means with said fungicide to prevent and retard the growth of fungus on said scrubbing means.

5,007,336

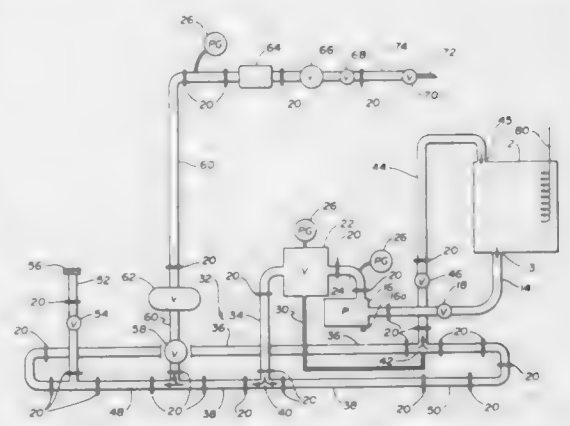
APPARATUS FOR TREATING SLAUGHTERED ANIMALS

Douglas H. Bernhardt, Minnetonka; Guillermo R. Matheu, Eden Prairie; Spencer E. Crum, Minneapolis, and John T. Adelmann, Prior Lake, all of Minn., assignors to Meat Processing Service Corporation, Minneapolis, Minn.

Filed Feb. 11, 1987, Ser. No. 13,580

Int. Cl.[5] A23B *4/00;* **A23L** *3/34*

U.S. Cl. 99—487 **23 Claims**



1. Apparatus for injection of treatment solution into slaughtered animals comprising:

a container for holding a quantity of treatment solution;

means for establishing flow of solution from the container source;

automatic valve means for receiving the flow of solution, the valve means including control means for downstream pressure control of the solution flow;

header means for receiving solution flow from the control valve;

conduit means joining the header means to container for recirculating solution thereto;

pressure sensing means positioned proximate the joining area of the header means and conduit means thereat for sensing pressure;

control line means connecting the pressure sensing means to the control means to the automatic valve whereby pressure downstream of the control valve is controlled to a steady value, and

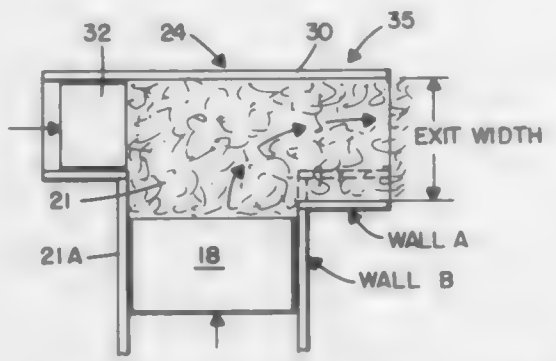
at least one dispensing conduit means connected to the header means for accepting solution therefrom at controlled pressure and being constructed and arranged for injecting the solution into the circulatory system of a slaughtered animal.

5,007,337

OVERSIZE BALE RELEASE MECHANISM FOR WASTE MATERIAL BALER

Horace R. Newsom, Midland, Tex., assignor to Mosley Machinery Co., Inc., Waco, Tex.

Filed Oct. 3, 1989, Ser. No. 416,707
Int. Cl.[5] B30B *1/00, 15/32*
U.S. Cl. 100—188 R 7 Claims



1. A waste baling machine including a compressing chamber of generally parallelopiped configuration having fixed opposite top and bottom walls and a fixed first sidewall, a horizontally extending charging passage including said fixed top and bottom walls and having an exit at said compressing chamber opposite said fixed first wall, a charging plunger reciprocable in said charging passage for pushing waste material into said compressing chamber and defining, in one position, a fourth compressing chamber wall, a horizontally extending discharge passage defined by said top and bottom walls, said fixed first sidewall and another sidewall adjacent the exit end of said charging passage and leading from said compressing chamber at right angles to said charging passage, and an ejection plunger advanceable through said compressing chamber and said discharge passage for ejecting bales of compressed waste material which, when in a retracted position, defines a fifth compressing chamber wall, wherein the sidewall of the discharge passage which is adjacent the exit end of said discharge passage comprises a first vertically oriented planar surface supported on a structure which is mounted for back and forth horizontal movement in a direction parallel to the sidewalls of said charging passage, said first vertically oriented planar surface normally being positioned substantially adjacent the exit end of said charging passage and perpendicular to the sidewalls of said discharge passage and together with said fixed first sidewall defining the normal width of the discharge passage, said structure being movable if desired to a second position at which said first vertically oriented planar surface is displaced parallel to itself from said normal position in a direction to increase by a desired amount the width of the discharge passage throughout its length to permit the ejection therethrough of an oversize compressed bale of waste material,

wherein the sidewall of said charging passage which is adjacent said first vertically oriented planar surface is shorter than the opposing sidewall of the charging passage by approximately twice the desired increase in the width of said discharge passage and is extended by substantially said desired distance by an extender plate which is much thinner than said sidewall, and

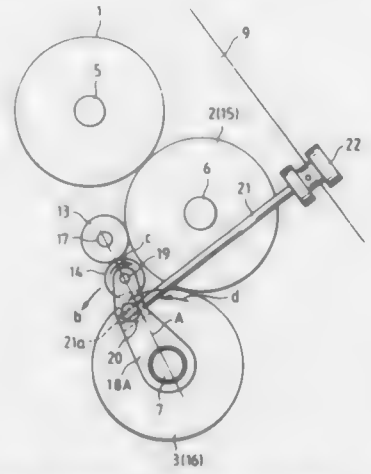
wherein said structure has a second vertically oriented planar surface disposed adjacent and perpendicular to said first vertically oriented planar surface for slidably engaging the outer surface of said extender plate as said structure is moved back and forth.

5,007,338

IMAGE POSITION ADJUSTING DEVICE IN PRINTING MACHINE

Koji Ishii, Fuchu, Japan, assignor to Ryobi Ltd., Hiroshima, Japan

Filed Jul. 11, 1989, Ser. No. 377,996
Claims priority, application Japan, Jul. 14, 1988, 63-176279
Int. Cl.[5] B41F *5/22, 13/14*
U.S. Cl. 101—142 14 Claims



1. An image position adjusting device for controlling an imaging position in a longitudinal direction of a sheet in a printing machine, the printing machine including side frames (**9, 10**), a plate cylinder (**1**), a blanket cylinder (**2**), an impression cylinder (**3**), a sheet feed cylinder (**4**), and gear transmission means (**11, 12**) for synchronously rotating the plate cylinder (**1**) and the blanket cylinder (**2**), the image position adjusting device comprising:

a first intermediate gear (**13** 13A) rotatably supported to the side frames (**9, 10**);

a second intermediate gear (**14**) in meshing engagement with the first intermediate gear (**13** 13A), the second intermediate gear (**14**) being drivingly engaged with a gear (**15, 16**) which is coaxial with and rotatable together with one of the impression cylinder (**3**) and the blanket cylinder (**2**);

a supporting shaft (**17, 8**) extending between the side frames (**9, 10**) for mounting the first intermediate gear (**13** 13A) such that said first intermediate gear (**13** 13A) is rotatable in a stationary position about an axis of said supporting shaft (**17, 8**);

means (**18** 18A 18B) for pivotally moving the second intermediate gear (**14**), the second intermediate gear (**14**) being meshedly moved along the first intermediate gear (**13** 13A) in response to the pivotal movement of the moving means for rotating said gear (**15 16**) and said one of the impression and blanket cylinders in an amount which is different than an amount of rotation occurring during the same time period of the remaining one of the blanket and impression cylinders; and

means (**20** *20a* **21** *21a* **22**) for driving the moving means, the driving means being connected between one of the side frames (**9, 10**) and the moving means;

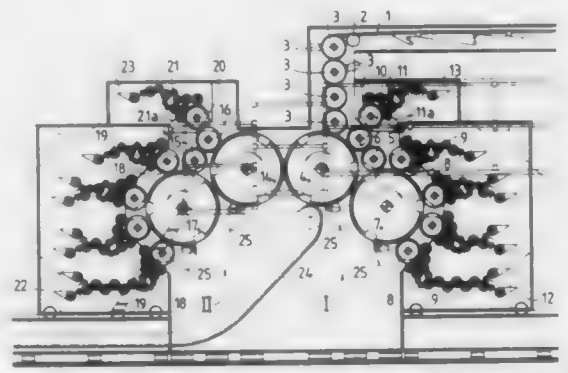
wherein the second intermediate gear has a rotation axis which is positioned on a line connecting between a rotation axis of the first intermediate gear and a rotation axis of said one of the impression cylinder and the blanket cylinder when the driving means is at a reference position, wherein none of said second intermediate gear, said first intermediate gear and said one of said impression cylinder and blanket cylinder through which said line is connected have the same rotational axis.

5,007,339

CONVERTIBLE MULTI-COLOR PRINTING MACHINE, ESPECIALLY FOR THE PRINTING OF BANKNOTES

Albrecht J. Germann, Wurzburg, Fed. Rep. of Germany, assignor to De La Rue Giori S.A., Lausanne, Switzerland

Filed May 4, 1989, Ser. No. 347,503
Claims priority, application Switzerland, May 18, 1988, 1888/88
Int. Cl.[4] B41F *5/16, 5/22;* B41L *15/10*
U.S. Cl. 101—177 10 Claims



1. A convertible multi-color printing machine for printing paper (**1**), especially banknotes, comprising:

two cooperating impression cylinders (**4, 14**) arranged and constructed to pass said paper (**1**) therebetween and to apply a multi-colored image on a respective side of said paper;

a plurality of inking units (**9**), each inking unit having a different color;

a plurality of convertible cylinders (**8**), each convertible cylinders being inked by a corresponding inking unit (**9**);

converting means for converting said convertible cylinders (**8**) to one of color selecting cylinders and offset plate cylinders;

a blanket cylinder (**7**) having a periphery, with said convertible cylinders (**8**) being arranged around and in contact with said periphery;

blanket cylinder mounting means for selectively mounting said blanket cylinder into one of an offset printing position in which said blanket cylinder (**7**) contacts one of said impression cylinders (**4**), and a collect printing position in which blanket cylinder is spaced away from said impression cylinders (**4, 14**);

an image transfer cylinder (**6**) in contact with said one of said impression cylinders (**4**) for applying a multi-colored image thereon;

a collect plate cylinder (**5**) carrying a collect printing plate;

a collect plate mounting means for selectively mounting said collect plate cylinder to an operative position and an inoperative position, in said operative position said collect plate cylinder being in contact with said blanket cylinder (**7**) so that the collect printing plate is inked by said blanket cylinder (**7**) in said collect printing position, and with said image transfer cylinder for picking up said multi-colored image; and

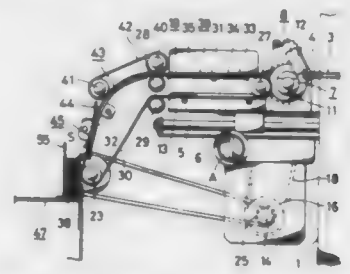
an additional single-color printing unit having an additional plate cylinder (**10**) with a single color image and an additional inking unit (**11**), said additional single-color printing unit being in contact with said image transfer cylinder (**6**) for transferring said single color image thereto.

5,007,340

PRINTER WITH SHEET FEEDING APPARATUS

Kazuaki Sugimoto; Tomio Nishijima, both of Numazu; Teruhisa Inoue, Tagata; Yoshihiko Sugimoto, Susono; Masashi Suzuki, Sunto, and Izumi Matsushita, Tagata, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Jan. 23, 1990, Ser. No. 469,021
Claims priority, application Japan, Jan. 24, 1989, 1-14796; Jan. 25, 1989, 1-15651; Jan. 26, 1989, 1-16676; Jan. 27, 1989, 1-18574; Jan. 27, 1989, 1-18575
Int. Cl.[4] B05C *17/06*
U.S. Cl. 101—227 9 Claims



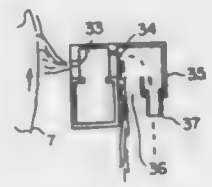
1. A printer with a sheet feeding apparatus comprising a printer case incorporating a printing mechanism for printing onto continuous forms, said printer case having a continuous forms discharging port adjacent to which a cutter is provided, said cutter being locationally followed downstream by a sheet feeding belt which rotates at a rate higher than the feed rate of said continuous forms, said belt being equipped therealong with a sheet traversing section which seizes and horizontally feeds each sheet of paper cut by said cutter from said continuous forms, a sheet direction changing section which perpendicularly changes the feed direction of said sheet, and a sheet pushing section which pushes said sheet onto a sheet stacker.

5,007,341

KEYLESS PRINTING PRESS

Takafumi Nakano; Akikazu Seo, both of Mihara; Hiromitsu Soeda, and Kazufumi Sueoka, both of Hiroshima, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo and Ryomei Engineering Co., Ltd., Hiroshima, both of, Japan

Filed Aug. 23, 1989, Ser. No. 397,655
Claims priority, application Japan, Aug. 23, 1988, 63-109547
Int. Cl.[4] B41F *31/08*
U.S. Cl. 101—349 14 Claims



1. In a keyless printing press including an ink source roller, a closed and pressurized delivery nozzle disposed in opposition to said ink source roller and provided with a plurality of delivery ports aligned in a direction parallel to the axial direction of said ink source roller, and an ink circulation system for circulating a mixture of printing ink and water under pressure into said delivery nozzle and through said delivery ports onto said ink source roller, the improvement comprising means for, while a portion of the mixture containing an acceptable proportion of water is discharged through said delivery ports onto said ink source roller, simultaneously ensuring that a portion of the mixture including an excessive proportion of water will be discharged from said delivery nozzle without being discharged onto said ink source roller, said means comprising:

at least one outflow port provided in said delivery nozzle at a level higher than any of said delivery ports and directed in a direction other than toward said ink source roller;

whereby said circulation system will discharge a portion of

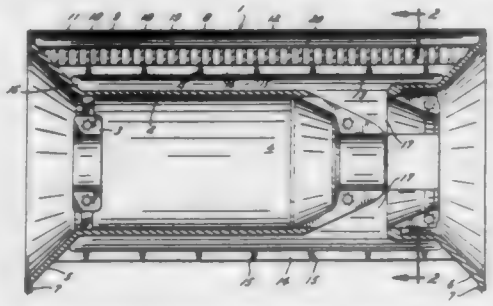
the mixture with a lesser proportion of water from a lower portion of the interior of said delivery nozzle through said delivery ports onto said ink source roller and will discharge the portion of the mixture with the excessive proportion of water from an upper portion of said interior of said delivery nozzle through said at least one outflow port away from said ink source roller.

5,007,342

AIR CUSHION DRUM OR SHEET-FED PRINTING PRESSES

Paul Abeadroth, Offenbach am Main; Harry Brandes, Obertshausen, and Rudolf Raab, Hanau, all of Fed. Rep. of Germany, assignors to Man Roland Druckmaschinen AG, Fed. Rep. of Germany

Filed Aug. 9, 1989, Ser. No. 391,165
Int. Cl.[5] B41F *13/08*
U.S. Cl. 101—420 9 Claims



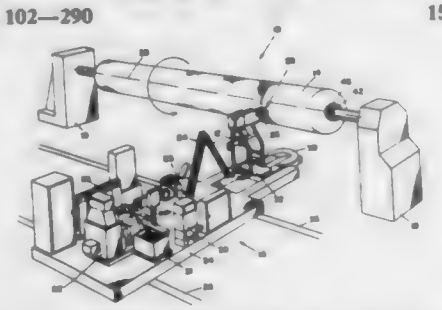
1. An air cushion drum for supporing sheets in sheet-fed printing presses, said drum comprising in combination, an inner drum body and an outer drum casing, said outer drum casing having a plurality of orifices therein, said body and said casing defining a cavity therebetween, means for supplying air streams into the drum cavity so that air issuing from said orifices in the drum casing forces the sheets away therefrom, and a sound-absorbent layer disposed in said cavity between said inner drum body and said outer drum casing opposite said orifices in said casing, said sound-absorbent layer being disposed concentrically in said cavity and spaced radially inwardly from said outer drum casing so as to define an air distribution space therebetween, and said sound-absorbent layer forming an air-permeable partition through which said air streams flow from said supply means into said air distribution space and then out through said orifices in said outer drum casing.

5,007,343

ROCKET MOTOR INSULATION AND LIKE MADE WITH THIN TACKY RIBBON

John D. Marks, Salt Lake County, Utah, assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 165,408, Feb. 26, 1988, and Ser. No. 762,743, Sep. 12, 1985, which is a division of Ser. No. 378,588, May 17, 1982, Pat. No. 4,596,619, said Ser. No. 165,408, is a continuation of Ser. No. 851,988, Apr. 14, 1986, abandoned, which is a continuation-in-part of Ser. No. 378,588,.
This application Mar. 4, 1988, Ser. No. 164,319
Int. Cl.[5] C06D *5/06*
U.S. Cl. 102—290 15 Claims



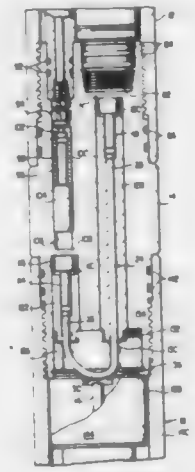
1. An elastomeric liner for sealing and insulating a rocket motor case having a dome and a center axis which extends through the apex of said dome, said liner made by a method comprising adjacently positioning and tacking together substantially circumferentially relative to said center axis integral segments of a thin tacky ribbon comprising curable elastomer in forming a continuous, variably thick, layer of said elastomer for lining around said center axis at least that portion of said rocket motor case which includes said dome, and then curing said elastomer in providing said liner.

5,007,344

DUAL FIRING SYSTEM FOR A PERFORATING GUN

Thomas D. Ricles, Kingwood, and Richard M. Ward, Laporte, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 1, 1988, Ser. No. 278,659
Int. Cl.[5] F42B *3/00*; E21B *7/00*
U.S. Cl. 102—31.2 26 Claims



1. A dual firing system for use with detonation perforating apparatus in a well completion operation, comprising:
an elongate detonator having two ends each fireable by a different source;
a first firing apparatus adapted for activating said detonator in response to a first input thereto;
a second firing apparatus adapted for activating said detonator for firing said perforating apparatus in the event said first firing apparatus fails such that a dual firing of said perforating apparatus is permitted;
a housing for containing said first and second firing apparatus and said detonator as a unit attachable with resect to one end of the perforating apparatus; and
a chamber in said housing for containing said elongate detonator in fluid isolation from said first and second firing apparatus, said chamber having two bulkhead membrane sidewall areas each adjacent a respective said detonator end, said bulkhead membranes being adapted for penetration for setting off said detonator.

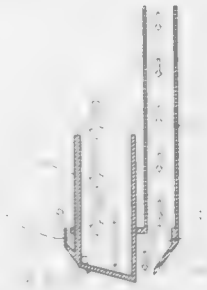
5,007,345

METHOD AND APPARATUS FOR CHARGING WATERLOGGED BOREHOLES WITH EXPLOSIVES

Phil O'Garr, R.R. #3, Frankford, Ontario, Canada K0K 2C0

Filed Aug. 30, 1989, Ser. No. 400,695
Int. Cl.[5] F42B *3/00*
U.S. Cl. 102—313 12 Claims

1. A method of charging waterlogged boreholes with water resistant particulate explosive material, comprising inserting a pneumatic line with upwardly directed nozzles at the lower end thereof and a material supply line into a borehole, blowing compressed air through said pneumatic line such that at least a portion thereof is directed through said nozzles to form a substantially water-free air pocket around the lower end of the supply line, supplying particulate explosive material through the supply line to a charging zone in the vicinity of the lower



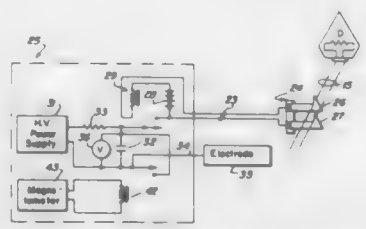
end thereof, and gradually withdrawing said line as the borehole fills up with explosive material.

5,007,346

DEVICE FOR DETECTING AND/OR SWEEPING ELECTRICALLY CONTROLLED MINES

James L. Kirkland, Panama City, Fla., assignor to United States of America as Represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 11, 1967, Ser. No. 675,277
Int. Cl.[5] B63G *9/00*; F42B *22/42*
U.S. Cl. 102—402 10 Claims



1. Means for detecting an insulated electrical conductor located within a subaqueous medium, comprising:
means submerged within said subaqueous medium for penetrating the insulation of and making electrical contact with said electrical conductor upon impact therewith;
a source of high potential electrical energy;
an electrode means connected to said source of high potential energy disposed within the aforesaid subaqueous medium in such manner as to make electrical connection therewith;
means connected to said insulated electrical conductor contacting means and to said electrode means for timely and effectively connecting said high potential electrical source to the electrical conductor of said insulated electrical conductor in response to the impact of said electrical conductor contacting means thereon; and
means connected across said high potential electrical energy source and responsive to variations in said high potential electrical energy source for indicating the connection of said high potential electrical source to the aforesaid insulated electrical conductor.

5,007,347

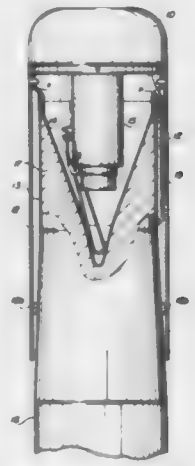
MODULAR MISSILE UPGRADE APPARATUS

Sidney R. Greene, Tucson, Ariz., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 19, 1989, Ser. No. 382,154
Int. Cl.[5] F42B *10/00, 12/02*
U.S. Cl. 102—473 6 Claims

1. A kit for the conversion of a missile to provide an improved warhead module (13), said kit comprising:

(a) an adapter (11) having a first neck and a second neck, said first neck being attachable to said warhead module;
(b) a probe module (10) attachable to the second neck of said adapter; and,



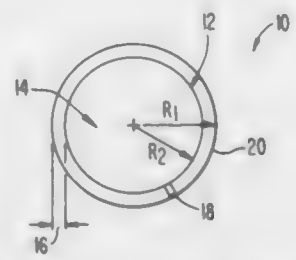
(c) a faring (12) attachable to the second neck, said faring extending past said warhead module.

5,007,348

SPHERICAL PROJECTILE FOR ELECTROMAGNETIC ACCELERATION

George T. Pinson, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 792,116, Oct. 28, 1985, abandoned. This application Sep. 8, 1987, Ser. No. 96,294
Int. Cl.[5] F42B *15/00*
U.S. Cl. 102—501 10 Claims



1. A projectile for electromagnetic acceleration comprising:
a generally spherical shell having an exterior surface and defining an enclosed void, lightweight foam material filling said void, the ratio of the area of said exterior surface to the mass of said shell being substantially greater than that of a corresponding solid body, said shell having an orifice therein for eliminating any pressure differential between said void and the outside of said shell; and
means on a substantial portion of said exterior surface for holding an electric charge which is sufficient to accelerate said shell in response to an electric field in a manner similar to the reaction of an ion to an electric field.

5,007,349

MOBILE TRACK LEVELING, LINING AND TAMPING MACHINE

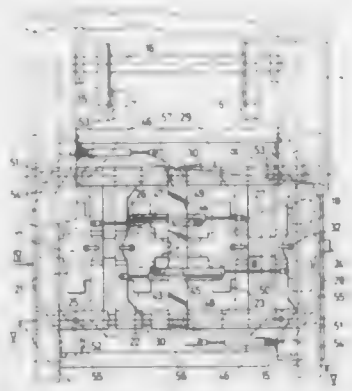
Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Jan. 24, 1990, Ser. No. 469,174

Claims priority, application European Pat. Off., Mar. 10, 1989, 89890069.1

Int. Cl.[5] E01B 27/11

U.S. Cl. 104—12 15 Claims



1. A mobile track leveling, lining and tamping machine, a track comprising two rails fastened to ties supported on ballast and each rail having a gage side and a field side, which comprises the combination of

(a) a machine frame mounted for mobility along the track in an operating direction and carrying drive, brake, operating energy source and operating control means,

(b) two widely spaced undercarriages supporting the machine on the track, including a rear undercarriage in the operating direction,

(c) four ballast tamping units mounted between the undercarriages and immediately preceding the rear undercarriage in the operating direction, the ballast tamping units being mounted for independent transverse and vertical adjustment with respect to the machine frame, a respective one of the ballast tamping units being arranged at the gage side and the field side of each rail, and each ballast tamping unit comprising

(1) a pair of vibratory tamping tools reciprocable in the direction of the track and immersible in the ballast with a respective one of the ties positioned between the tamping tools,

(d) a carrier frame for the four ballast tamping units, the carrier frame being pivotal about a substantially vertical axis constituted by a line of intersection between a vertical plane of symmetry extending in the longitudinal direction of the machine and a vertical plane of symmetry extending transversely thereto and passing between the pairs of tamping tools of the four ballast tamping units,

(e) transverse and vertical guide means on the pivotal carrier frame for independently vertically and transversely adjusting each unit,

(f) power drive means linking each unit to the pivotal carrier frame for independently vertically and transversely adjusting each unit,

(g) a power drive for pivoting the carrier frame about the vertical axis whereby the pairs of tamping tools may be centered with respect to obliquely positioned ties,

(h) a track leveling and lining unit mounted on the machine between the two undercarriages and immediately preceding the ballast tamping units in the operating direction, and

(i) a leveling and lining reference system controlling the track leveling and lining unit operation.

5,007,350

UNIVERSAL MOBILE TRACK LEVELING, LINING AND TAMPING MACHINE

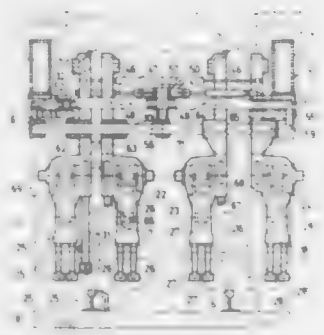
Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Jan. 24, 1990, Ser. No. 469,355

Claims priority, application European Pat. Off., Mar. 10, 1989, 89890068.3

Int. Cl.[5] E01B 27/11

U.S. Cl. 104—12 4 Claims



1. A universal mobile track leveling, lining and tamping machine useful for work in track switches and tangent track, the track comprising two rails fastened to ties supported on ballast and each rail having a gage side and a field side, which comprises the combination of

(a) a machine frame mounted for mobility along the track in an operating direction and carrying drive, brake, operating energy source and operating control means,

(b) two widely spaced undercarriages supporting the machine on the track, including a rear undercarriage in the operating direciton,

(c) four ballast tamping units mounted between the undercarriages and immediately preceding the rear undercarriage in the operating direction, the ballast tamping units being mounted for independent transverse and vertical adjustment with respect to the machine frame, a respective one of the ballast tamping units being arranged at the gage side and the field side of each rail, and each ballast tamping unit comprising

(1) a frame and

(2) a pair of vibratory tamping tools mounted on the frame and reciprocable in the direction of the track and immersible in the ballast with a respective one of the ties positioned between the tamping tools,

(d) an independent vertical guide means for independently vertically adjusting each ballast tamping unit,

(e) at least one transverse guide means for independently transversely adjusting the ballast tamping units, the ballast tamping unit frames being transversely displaceably mounted on the transverse guide means,

(f) a mechanical coupling for releasably connecting the frames of the tamping units at the gage and field sides of each rail for common transverse displacement thereof,

(g) independent power drive means connected to each ballast tamping unit for independently vertically and transversely adjusting each unit along a respective one of the vertical guide means and the transverse guide means,

(h) a track leveling and lining unit mounted on the machine between the two undercarriages and immediately preceding the ballast tamping units in the operating direction, the track leveling and lining unit comprising

(1) power-driven, transversely and vertically adjustable lifting hooks and flanged lining rollers, and

(i) a leveling and lining reference system controlling the track leveling and lining unit operation.

5,007,351

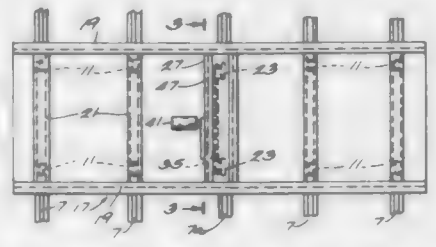
MOBILE CARRIAGE WITH CENTER DRIVE

James C. Muth, Eagle, Wis., assignor to Spacesaver Corporation, Fort Atkinson, Wis.

Filed Feb. 3, 1989, Ser. No. 306,540

Int. Cl.[5] B61C 9/00; B60L 13/02; A47F 3/08; A47B 53/00

U.S. Cl. 105—101 1 Claim



1. A center drive mobile carriage system comprising:

a. a pair of spaced and parallel end rails fixed to a support surface;

b. at least one intermediate rail fixed to the support surface and located parallel to and between the pair of end rails, the intermediate rail being formed with a longitudinal groove therein;

c. at least one carriage supported on the end and intermediate rails for moving therealong, the carriage comprising:

i. an elongated frame that spans the end rails;

ii. first wheel means for supporting the carriage on the end rails;

iii. a pair of second wheels mounted to the carriage for supporting the carriage on the intermediate rail, each second wheel having a flange that engages the groove in the intermediate rail and a sprocket; and

iv. a chain trained around the two second wheels; and

d. drive means for moving the carriage along the rails, the drive means comprising:

i. a source of power mounted to the carriage frame and having an output shaft;

ii. a power sprocket connected to the power source output shaft and meshing with the carriage chain; and

iii. adjustment means for changing the location of the power source output shaft and power sprocket on the carriage frame to thereby adjust the tension of the carriage chain.

5,007,352

PALLET CONSTRUCTION

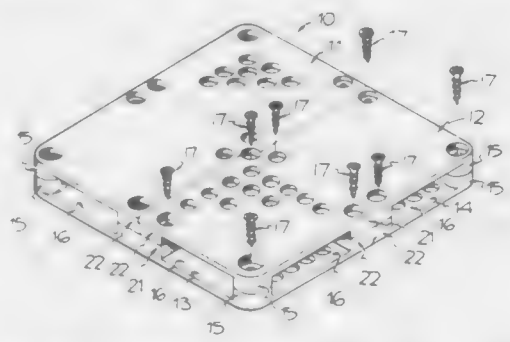
Guido M. Calkoen, Glen Waverley, Australia, assignor to Design Count Pty. Ltd., Australia

Filed Jun. 22, 1988, Ser. No. 209,582

Claims priority, application Australia, Jun. 22, 1987, PI02603

Int. Cl.[5] B65D 19/12

U.S. Cl. 108—56.1 9 Claims



1. A pallet comprising:

a plurality of generally identical pallet forming members arranged in two connected layers and forming a pallet bottom and a pallet top,

each said pallet forming member having a width and a length substantially twice the width, and

each said layer being constructed of said pallet forming members arranged side by side with the pallet forming members in one said layer being arranged at ninety degrees relative to the pallet forming members in the other said layer such that the four pallet sides are of substantially equal lengths.

5,007,353

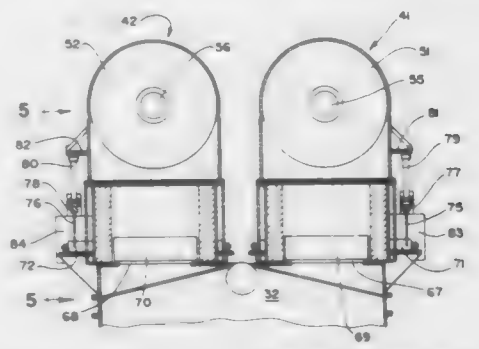
INCINERATOR IMPROVEMENTS

John N. Basic, Sr., 41 W. 202 Whitney Rd., St. Charles, Ill. 60174

Continuation-in-part of Ser. No. 659,849, Oct. 9, 1984, Pat. No. 4,706,578, which is a continuation of Ser. No. 362,853, Mar. 29, 1982, Pat. No. 4,475,469, which is a continuation-in-part of Ser. No. 248,054, Mar. 27, 1981, Pat. No. 4,438,705. This application Jun. 1, 1987, Ser. No. 60,761

Int. Cl.[5] F23B 5/00; F23C 9/00; F23G 5/06

U.S. Cl. 110—212 279 Claims



1. In an incinerator system for bulk refuse and hydrocarbon-containing liquids having:

(1) a main combustion chamber with:

(a) a first inlet opening for the introduction of solid bulk refuse; and

(b) a first outlet opening for the egress of the gaseous products of combustion from said main chamber; and

(2) a reburn unit with:

(a) a second inlet opening, coupled to and in fluid communication with said first outlet opening;

(b) a second outlet opening for the egress of the gaseous products of combustion from said reburn unit;

(c) burner means, coupled to said reburn unit, for burning a fuel in said reburn unit; and

(d) oxygenating means, coupled to said reburn unit, for introducing an oxygen-containing gas into said reburn unit,

the improvement wherein:

(A) said reburn unit includes first and second separate reburn sections;

(B) said first outlet opening has first and second outlet ports each for permitting the egress of the gaseous products of combustion from said main combustion chamber;

(C) said second inlet opening has first and second inlet ports, coupled to and in fluid communication with, respectively, said first and second outlet ports, said first and second inlet ports opening into said first and second reburn sections, respectively;

(D) said second outlet opening includes third and fourth outlet ports from said first and second reburn sections, respectively;

(E) said burner means includes first and second burner sections, coupled to said first and second reburn sections, respectively, for burning a fuel in said first and second reburn sections, respectively, and

(F) said oxygenating means includes first and second oxy-

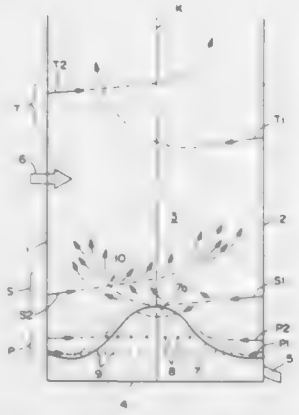
genating sections, coupled to said first and second reburn sections, respectively, for introducing an oxygen-containing gas into said first and second reburn sections, respectively.

5,007,354

COMBUSTION AIR SUPPLY SYSTEM FOR A RECOVERY FURNACE

Erik Uppstu, Slivikkala, Finland, assignor to Oy Tampella Ab, Tampere, Finland

Filed Feb. 16, 1990, Ser. No. 480,926
Claims priority, application Finland, Feb. 20, 1989, 890803
Int. Cl.[5] F23G *7/04*
U.S. Cl. 110—238 **11 Claims**



1. A combustion air supply system for a recovery furnace which includes a combustion chamber defined by a front and a rear wall, side walls and a floor serving as heat transfer surfaces, means mounted above the floor for delivering into the combustion chamber a waste liquor, particularly black lye, obtained from an industrial process and serving as fuel, and an outlet means communicating with combustion chamber floor and intended for discharging melt substance from a carbonization layer building up on the floor as a result of incineration, said combustion air supply system comprising:

combustion air inlet ports disposed in at least one wall of the combustion chamber, said combustion air inlet ports including secondary air inlet ports which are located in the vertical direction of the combustion chamber between a waste liquor supply point and the carbonization layer formed on the floor of the combustion chamber during the processing, said secondary air inlet ports being divided into two arrays in such a manner that:

(a) the combustion air coming in through inlet ports of a first array is directed such that at least a portion of the air contact the outer surface of the carbonization layer, and the remaining portion of the air bypasses substantially along the central region of the carbonization layer;

(b) the combustion air coming in through inlet ports of a second array is adapted to bypass substantially above the combustion air coming through inlet ports of the first array; and

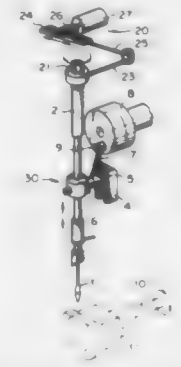
(c) said inlet ports making up said first and second arrays are located on the opposite walls of the combustion chamber.

5,007,355

LEATHER OR SIMILAR WORK SEWING MACHINE HAVING FLAT-NEEDLE CONTROLLER AND SEWING METHOD BY USE OF THE SEWING MACHINE

Gennai Yanagisawa, Matsumoto, Japan, assignor to Kabushiki Kaisha Iida, Kawaguchi, Japan

Filed Aug. 2, 1989, Ser. No. 389,057
Claims priority, application Japan, Aug. 10, 1988, 63-198072
Int. Cl.[5] D05B *15/08, 19/00*
U.S. Cl. 112—54 **3 Claims**



1. A sewing machine for leather comprising a needle bar holding a flat needle and supported for movement up and down, and up/down movement mechanism for up/down moving said needle bar, and a control means for controlling the movement of said flat needle, said flat-needle control means including:

a circumferential position control means comprising a needle-bar rotating means and a control motor connected to said needle-bar rotating means for controlling a circumferential position of said flat needle, said needle-bar rotating means being provided on said needle bar at a portion thereof so as to rotate integrally with said needle bar while allowing said needle bar to move up and down; and

a needle bar holding means attached to a portion of said needle bar where said up/down movement mechanism is connected to said needle bar so that said needle-bar holding means is connected to said up/down movement mechanism and said needle-bar holding means moves up/down integrally with said needle bar while allowing said needle bar to rotate.

5,007,356

CUTTER ACTUATOR OF A BUTTON PERFORATING SEWING MACHINE

Katsuo Hiratsuka; Yoshiyuki Odaka, and Takeshi Yoshida, all of Tochigi, Japan, assignors to SSMC Inc., Edison, N.J.

Filed Jul. 3, 1989, Ser. No. 374,808
Claims priority, application Japan, Jul. 26, 1988, 63-97940[U]
Int. Cl.[5] D05B *3/00*
U.S. Cl. 112—68 **4 Claims**

1. A cutting actuator adapted for use on a button perforating machine, said actuator comprising:

a first wheel supported on said machine and continuously rotated about an axis;

a second wheel rotatable about said axis;

a clutch disposed adjacent the first and second wheels, the clutch having a first clutch position wherein said first wheel engages the second wheel and causes the second wheel to be driven by and rotated with the first wheel, the clutch having a second clutch position wherein the first and second wheels are disengaged and the second wheel does not rotate;

a cutting actuator lever supported on the machine and coupled to the clutch, the lever having a first lever position wherein the clutch is placed in the first clutch position and the second wheel is rotated, the lever having a second lever position wherein the clutch is placed in the second clutch position and the second wheel does not rotate;

solenoid means coupled to the lever, said solenoid means when actuated placing the lever in the first lever position and when deactuated placing the lever in the second lever position;

a first elongated cutting arm having a knife at one end;

a second elongated cutting arm having a block at one end, and



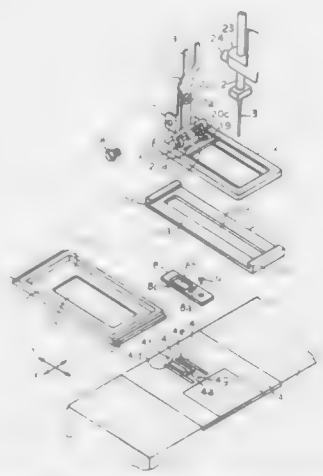
cam means coupled to the first and second arms, said cam means coupled to the second wheel and responsive to rotation of the second wheel to move the knife and block into button hole forming position with respect to any sewn material disposed between the knife and block, said cam means when the second wheel does not rotate moving the knife and block out of button hole forming position.

5,007,357

EMBROIDERING DEVICE FOR A SEWING MACHINE

Hideaki Takenoya, and Yoshikazu Ebata, both of Tokyo, Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Jun. 26, 1989, Ser. No. 371,417
Claims priority, application Japan, Jun. 24, 1988, 63/154612; Sep. 30, 1988, 63/244584
Int. Cl.[5] D05B *21/00*; D05C *7/04, 9/04*
U.S. Cl. 112—103 **3 Claims**



1. An embroidering device for a sewing machine including a frame, stitch forming means comprising a vertically reciprocating and laterally swinging needle bar and a needle attached to a lower end of the needle bar, a needle plate attached to the sewing machine frame, a presser bar having a presser foot attached to a lower end thereof for pressing a fabric to be sewn against the needle bar, and a feed dog movable in synchronism with a vertical movement of the needle bar to transport, in cooperation with the presser foot, a fabric to be sewn in a direction transverse to lateral swinging and vertical reciprocating directions of the needle bar, said embroidering device comprising:

first guide means associated with the needle plate of the sewing machine;

first drive means to be supported on the needle plate of the sewing machine and comprising a first elongate member engaging said first guide means and to be connected with the feed dog for displacement thereby relative to said first guide means in the direction in which the fabric to be sewn is transported;

second drive means comprising a second elongate member having an intermediate part to be pivotally supported on the presser bar, an upper end to be operatively connected to the needle bar, and a lower end;

second guide means supported at said lower end of said second elongate member; and

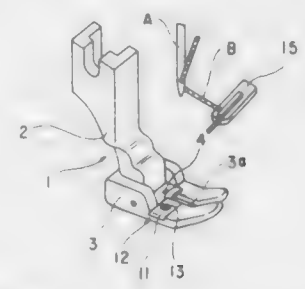
fabric expanding means connected with said first elongate plate for movement therewith relative to said second guide means and for movement relative to said first elongate plate in the lateral swinging direction of the needle bar.

5,007,358

CLOTH PRESSER PROVIDED WITH A THREAD END HOLDER

Kiyoshi Kawakubo, and Shuichi Sato, both of Tochigi, Japan, assignors to SSMC Inc., Edison, N.J.

Filed Jul. 3, 1989, Ser. No. 374,892
Claims priority, application Japan, Jul. 26, 1988, 63-97941[U]
Int. Cl.[5] D05B *29/06, 27/04*
U.S. Cl. 112—235 **2 Claims**



1. In combination:

a cloth presser;

a thread end holder positioned beside the cloth presser and adapted to hold an end of an extension thread;

a presser supporter;

said cloth presser foot pivotally mounted on the presser supporter, said foot having a base with a pair of projections projecting laterally from the base;

a needle location groove disposed between the pair of lateral projections and extending in a direction of projection;

a thread end guide groove disposed in the base and communicating with the needle location groove;

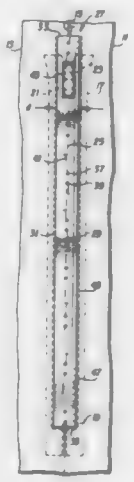
a needle thread restriction plate mounted on the cloth presser foot for preventing a needle thread from sliding into the thread end guide groove;

a stationary knife secured to rear surface of one of the lateral projections of the cloth presser foot and having a cutting blade disposed at the right angles to and intersecting the thread end guide groove;

the needle thread restriction plate covering an upper surface of the thread end guide groove at an inclined angle $\theta 1$ defined between an inclined portion of the needle thread restriction plate and a sewn material, said angle $\theta 1$ is larger

than an inclination angle $\theta 2$ defined between the extension thread and the sewn material.

5,007,359
ZIPPER STITCHING GUIDE
Mildred P. Saaders, 3 Dogwood Hill Dr., Jackson, Miss. 39211
Filed May 24, 1990, Ser. No. 527,801
Int. Cl.[5] D05B *35/06, 3/12*
U.S. Cl. 112—265.2 **13 Claims**



1. A stitching guide for attachment of a zipper to a base material comprising

a flexible strip of elongated material having at least one sustantially straight longitudinal edge;

a plurality of in-line perforations in said strip extending along a longitudinal line substantially parallel to said one substantially straight longitudinal edge adapted for pin insertion; and

at least one slot in said strip, said slot having a geometrical configuration adapted to circumscribe a slide on a zipper.

5,007,360
MAST
Joseph Abraham, 235 A Darby St., Newcastle, NSW, Australia 2300 ; Michael Hamonet, 3 Warhurst Street, Toronto, NSW; Phillip Gracie, Rofe Street, Coal Point, NSW, both of Australia 2283 , and Warwick J. Hood, 10 Ford Street, Balmain, NSW, Australia 2041
Continuation of Ser. No. 165,195, filed as PCT AU87/00088 on Apr. 2, 1987, published as WO87/05962 on Oct. 8, 1987, abandoned. This application Nov. 22, 1989, Ser. No. 441,201
Claims priority, application Australia, Apr. 2, 1986, 05295
Int. Cl.[5] B63B *15/00*
U.S. Cl. 114—90 **17 Claims**

1. A boat mast comprising:

a fore elongated shell member having a top, a bottom and a length therebetween, and edges and defining a curved cross section with an open trailing side;

an aft elongated shell member having a top, a bottom and a length therebetween, and edges and defining a cross section including at least one flat wall and an open side, the open side of the aft member being disposed generally opposite and facing the open trailing side of the fore member, the edges of the fore and aft members being disposed generally opposite each other and spaced apart;

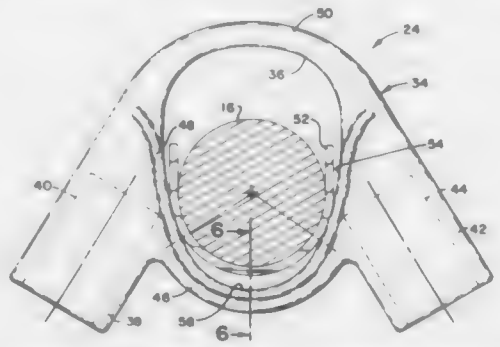
spacers, disposed at intervals along the length of the mast, joining opposing edges of the aft and fore members while preserving the space separating the opposing edges, the space defined between opposing edges providing access to an interior of the mast; and

a fitting for providing an anchorage point for rigging, the fitting being positioned along a neutral axis defined by the



interior of the mast so that loads transmitted by the rigging are applied adjacent the neutral axis of the mast.

5,007,361
BOOM-MAST COUPLER FOR WINDSURFER
Thomas M. Swanstrom, 179 Bergquist Rd., Duluth, Minn. 55608
Filed Apr. 6, 1989, Ser. No. 334,460
Int. Cl.[5] B63H *9/10*
U.S. Cl. 114—98 **18 Claims**



1. A boom-mast connector for a windsurfer or the like comprising:

a collar portion having a concave inner surface which is adapted to receive a windsurfer mast, said concave inner surface of said collar portion being shaped so as to be adapted to contact a windsurfer mast at separate first and second contact areas, in a wedge-type fashion, without the need for additional structure on said collar portion for urging the mast into said concave inner surface;

a first projection having a first socket defined therein which is adapted to receive a first boom of a windsurfer;

a second projection having a second socket defined therein which is adapted to receive a second boom of a windsurfer; wherein said collar portion, said first projection and said second projection are of unitary construction.

5,007,362
PORTABLE OUTRIGGER ASSEMBLY
Mark A. Balogh, Star Rte., P.O. Box 79, Cedar Island, N.C. 28520
Filed Feb. 9, 1990, Ser. No. 477,636
Int. Cl.[5] B63B *43/14*
U.S. Cl. 114—123 **22 Claims**



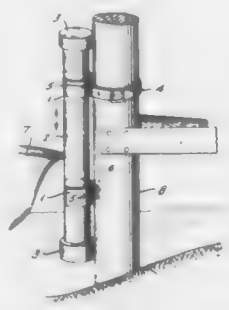
1. A portable outrigger assembly for a boat such as a kayak, sailboat and canoe comprising:

a. an inflatable hull;

b. support means for supporting said inflatable hull in spaced-apart relationship to said boat and comprising an elongate support arm having a first and second end, said support arm being adapted to be removably connected to said boat at the first end; and

c. hull attachment means secured to the second end of said support arm and connected to said inflatable hull for securing said inflatable hull to said support arm, said hull attachment means including means to selectively change the cross-sectional shape of said inflatable hull to modify the lift capability thereof comprising first hull engagement means at the terminal portion of the second end of said support arm for engaging one side of said hull and second hull engagement means spaced-apart from said first hull engagement means toward the first end of said support arm for engaging the opposing side of said hull, said second hull engagement means being further adapted to be urged toward the first end of said support arm and thereby to increase the width and decrease the height of said hull as desired to modify the lift capability thereof.

5,007,363
GUNNEL SAVER DOCK AND MOORING FENDER
Roy James, R.D. 1-Box 92, Smyrna, Del. 19977
Filed Jul. 26, 1989, Ser. No. 386,216
Int. Cl.[5] E02B *3/22*
U.S. Cl. 114—219 **4 Claims**



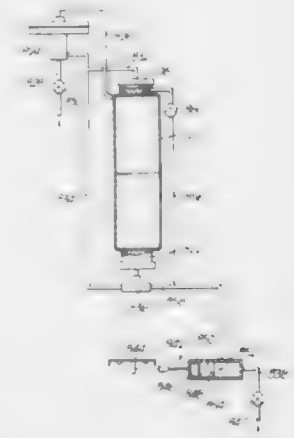
1. A docking and mooring fender apparatus comprising an elongated buoyant cylindrical fender element which has an enlarged stop element at each of its' ends,

at least one generally cylindrical guide element having attachment means for attachment to a mooring facility,

said fender element being slidably retained within said at least one guide element so as to be able to rise and fall with tide or waves,

said enlarged stop elements being adapted to contact said at least one guide element to thereby limit said fender elements extend of travel within said at least one guide element.

5,007,364
GAS CONTROL VALVES AND APPARATUS FOR CONTROLLING BUOYANCY IN WATER
Brian L. Buckle, Colwyn Bay, United Kingdom, assignor to Buoyco (M.M.) Limited, Clwyd, England
Filed Jul. 26, 1989, Ser. No. 385,021
Claims priority, application United Kingdom, Jul. 26, 1988, 8817737
Int. Cl.[5] B63G *8/22*
U.S. Cl. 114—331 **4 Claims**



1. Apparatus for producing hovering in water comprising a buoyancy chamber, first valve means for controlling a supply of gas to said buoyancy chamber, second valve means for controlling venting of gas from said chamber, said second valve means comprising a pneumatically actuable venting valve and a gas control valve for sensing the occurrence of a condition in which the gas pressure in said chamber exceeds ambient water pressure by a predetermined amount and for communicating gas from a supply of gas to said pneumatically actuable venting valve to open the venting valve to vent gas from said chamber whilst said condition persists, and means for sensing descent of the apparatus and for actuating said first valve means to release gas into said buoyancy chamber.

5,007,365
AIR-LEAK INDICATOR FOR VEHICLE TIRE
Feng-Lin Hwang, No. 21, Pa Te Rd., Li Tu District, Keelung City, Taiwan
Filed Jan. 17, 1990, Ser. No. 466,192
Int. Cl.[5] B60C *23/04;* **G01L** *19/12*
U.S. Cl. 116—34 R **1 Claim**

1. An air-leak indicator for use in cooperation with a tire air valve of a tire comprising;

a tubular body having a transparent mid-section;

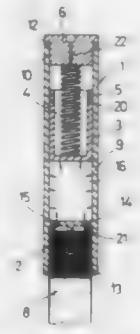
fastening means at a lower end of said tubular body for engaging, a tire valve stem;

a horizontal annular partition with holes there through, fixed in said tubular body above said fastening means;

a tire valve actuator projection mounted at the center of said annular partition and projection downward, coaxially with said fastening means;

a tubular indicator piston having bands of different fluorescent colors around an outer periphery of said tubular

indicator piston, each color band representing a predetermined pressure range;
said tubular indicator piston having a closed bottom and being slidably contained within said tubular body above the annular partition;
said tubular indicator piston having seal means along the outer periphery thereof to provide airtight cooperation between said tubular indicator piston and an inner periphery of said tubular body;
an end cap threaded to an upper end of said tubular body;
said end cap having a hole communicating with an interior of said tubular body;



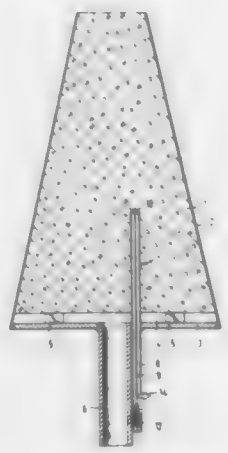
a return spring mounted between an under side of said end cap and said closed bottom of said tubular indicator piston;
wherein, air pressure from the tire is released to act upon the closed bottom of said tubular indicator piston against the bias of the return spring when said fastening means engages the tire valve stem and said actuator projection opens the tire air valve and actuates said tubular indicator piston, said transparent mid-section permitting a viewer to observe the tubular indicator piston and determine the relative air pressure of the tire.

5,007,366

REFRACTORY GAS PERMEABLE BUBBLING PLUG

Rudolf Handler, Neunkirchen, Austria, assignor to Veitscher Magnesitwerke-Actien-Gesellschaft, Vienna, Austria

PCT No. PCT/AT89/00035, § 371 Date Nov. 28, 1989, § 102(e) Date Nov. 28, 1989, PCT Pub. No. WO89/09836, PCT Pub. Date Oct. 19, 1989
PCT Filed Apr. 13, 1989, Ser. No. 457,766
Claims priority, application Austria, Apr. 13, 1988, 958/88
Int. Cl.[5] C21B *7/24;* **G01D** *5/26;* **C21C** *5/48*
U.S. Cl. 116—208 **7 Claims**



1. A refractory, gas-permeable bubbling plug for a vessel containing a molten metal radiating heat, the plug having a cold end remote from the molten metal and a hot end facing the molten metal, the hot plug end being subject to wear by the heat radiated from the molten metal to leave a remaining plug size after wear, and the plug comprising at least one measuring probe displaying the remaining plug size, the measuring probe comprising a small tube having a tip extending into the plug and spaced a predetermined distance from the cold plug end, and an end section protruding from the cold plug end, a wire movably mounted within the small tube, a spring preloading the wire, a connection connecting an end of the wire to the tip of the small tube and detachable by the effect of the radiated heat, and an optical display unit attached to the wire in the protruding end section of the measuring probe tube.

5,007,367

INFLATABLE BALLOON DISTRESS SIGNAL DEVICE

Lawrence A. Matteucci, 777 Meadowsweet Dr. #108; Shirley J. Rager, 223 Baltimore Ave., both of Corte Madera, Calif. 94925, and Ambrose P. Maher, 381 Lynbrook Dr., Pacifica, Calif. 94044

Filed Dec. 12, 1988, Ser. No. 283,167
Int. Cl.[5] A63H *27/10;* **B64B** *1/50;* **B65H** *49/18*
U.S. Cl. 116—210 **3 Claims**



1. A distress signal device comprising:
a generally spherical balloon;
a net containing said balloon;
said net having a bottom opening smaller in diameter than the maximum horizontal diameter of said ballon;
a base member;
four guide lines extending between and converging continuosly from said net at 90° intervals around said balloon to said base member;
a spindle carrying said base member having four spools to wind said guide lines thereon; means for inflating said balloon with lighter-than-air gas; and
means for anchoring said base member to the ground.

5,007,368

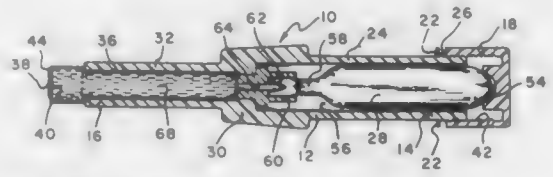
EMERGENCY SKI ALTERING DEVICE AND METHOD

Timothy P. Bush, 9 Bayberry Dr., Tuckerton, N.J. 08087

Filed Feb. 26, 1990, Ser. No. 484,256
Int. Cl.[5] G08B *1/00*
U.S. Cl. 116—211 **31 Claims**

1. A device to alert other skiers of a downed skier that is incapacitated in the snow out of direct sight from the other skiers, the device comprising:
(A) a cartridge comprising:

(i) an interior storage volume sufficient to store a charge of liquid,
(ii) aperture means to provide an opening to the interior storage volume for continuously dispensing said charge of liquid from the cartridge as the cartridge is projected through the air, and
(iii) a closure means to
(a) prevent inadvertant opening of the aperture means prior to actuating the trigger means, and
(b) be openable to permit dispensing of said charge of liquid from the opening of the cartridge, and



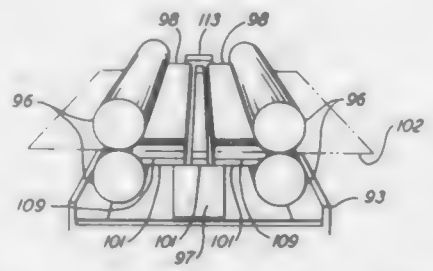
(B) a body comprising:
(i) projection means to provide a source of power to project the cartridge from the body, and
(ii) trigger means on the body to actuate the projection means, and
(C) said charge of liquid in the cartridge having physical characteristics to disperse from the aperture means into droplets as the cartridge is projected through the air and to have high visibility when sprinkled on the snow.

5,007,369

APPARATUS FOR SOLDER COATING PRINTED CIRCUIT PANELS

Gilbert V. Morris, Amherst, N.H., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 199,604, May 31, 1988, Pat. No. 4,903,631. This application Sep. 1, 1989, Ser. No. 402,224
Int. Cl.[5] H05K *3/22*
U.S. Cl. 118—56 **7 Claims**



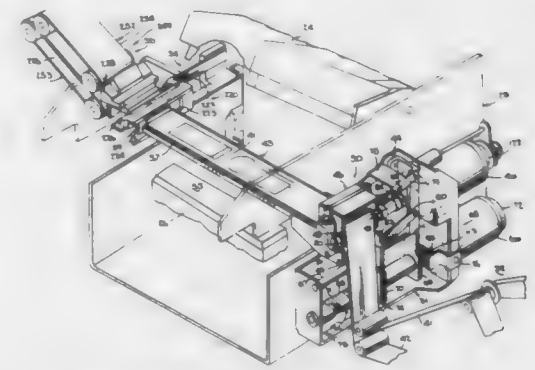
1. In apparatus for soldering printed circuit panels comprising a plurality of stations through which the printed circuit panels are conveyed in line, through a horizontal path, the stations including a preheat station having heating means and means for conveying the panels through the preheat station to elevate the temperature of the panels, a flux station for coating the panels with a flux and including means for conveying the panels through the flux station, a soldering station including at least one solder immersion chamber through which said printed circuit panels may be horizontally conveyed for coating the panels with molten solder, the improvement wherein the solder station comprises a solder manifold below the travel path of the panels through the soldering station, and means for pumping molten solder into the manifold whereby to form a standing wave of molten solder, the crest of which extends above the travel path of the panels, said standing wave of molten solder having sufficient volume flow so as to flood at least in part the top side of the panels as they are conveyed through the standing solder wave, said soldering station also comprising a solder immersion chamber defined by upper and lower retainer guide means and two pairs of rolls, the rolls functioning to convey printed circuit panels horizontally through the chamber, each roll pair including an upper roll and a lower roll, the guide means being parallel to the rolls and the lower guide means positioned close to the lower rolls to minimize solder leakage, an opening in the lower guide means parallel to the rolls, the manifold parallel to and below the solder chamber communicating with the opening in the lower guide means, the manifold including side plates terminating below the travel path of said panels for draining excess solder from said manifold.

5,007,370

MAILING MACHINE TAPE MODULE AND TAPE TAKE-UP AND MOISTENING SYSTEM THEREOF

Hugh St. L. Dannatt, 119 Milwaukee Ave., Bethel, Conn. 06801

Filed Dec. 28, 1988, Ser. No. 291,468
Int. Cl.[5] B05C *1/04*
U.S. Cl. 118—246 **2 Claims**



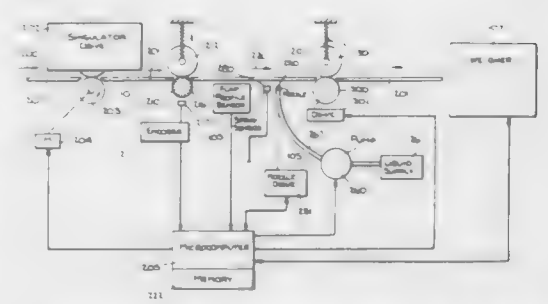
1. A device for moistening tape comprising:
a reservoir;
a roller rotatable in said reservoir;
a conveyer mounted to engage said roller to rotate it in said reservoir and to receive said tape between said conveyer and said roller and advance said tape with rotation of said roller.

5,007,371

CONTROL SYSTEM FOR MOISTENER

Kevin J. O'Dea, Sandy Hook; Norman J. Bergman, Danbury; Peter C. Digiulio, Bridgeport; Donald T. Dolan, Ridgefield, and James L. Vanderpool, Easton, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

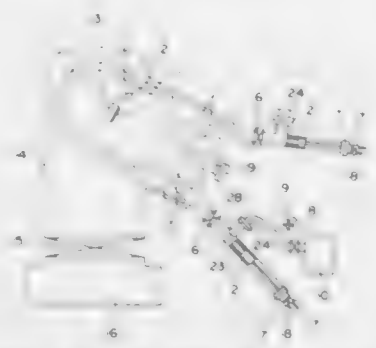
Filed Dec. 28, 1988, Ser. No. 291,088
Int. Cl.[5] B05B *3/18, 13/04*
U.S. Cl. 118—680 **3 Claims**



1. A moistening arrangement for moistening the flaps of envelopes comprising a guide path for guiding envelopes, a moistener, means for moving said moistener transversely of said guide path, first means for moving envelopes at a first speed onto said guide path, means for detecting said first speed, second means for moving envelopes away from said guide path at a second speed, means for detecting said second speed, said

first and second means being spaced apart a distance less than the lengths of said envelopes, means for sensing the widths of the flaps of envelopes at a determined position between said first and second means, and means for controlling the position of said moistener as a function of the speed of said first means for an initial portion of the envelope, and as a function of the speed of the second means for a final portion of the envelope.

5,007,372
VACUUM DEPOSITING APPARATUS
Shintarou Hattori; Takayuki Takahagi, and Akira Ishitani, all of Shiga, Japan, assignors to Research Development Corporation, Tokyo, Japan
Filed Dec. 5, 1988, Ser. No. 280,152
Claims priority, application Japan, Dec. 4, 1987, 62-308426; Dec. 4, 1987, 62-308427; Dec. 4, 1987, 62-308428
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—715 10 Claims



1. A vacuum depositing apparatus, comprising a vacuum vessel containing a substrate used for the purpose of applying a vapor-deposited film thereupon by means of vapor deposition; a sputtering cell charged with a material to be vapor-deposited, a collimator containing long channels to impart directivity to the evaporated material to be vapor deposited from the spouting cell to the substrate, thereby serving a rectifying function between said spouting cell and said substrate, said collimator being installed between said substrate and said spouting cell along a straight line connecting the center of said substrate with the center of said spouting cell for the purpose of preventing impurities from contaminating the vapor-deposited film, wherein said collimator is maintained at a temperature lower than that of said spouting cell or that of said substrate.

3. A vacuum depositing apparatus, comprising a vacuum vessel containing a substrate used for the purpose of applying a vapor-deposited film thereupon by means of vapor-deposition; one or more spouting cells charged with a material to be vapor-deposited, each spouting cell including one or more separation mechanisms which make it possible to charge the spouting cell with said material under substantially atmospheric pressure, while said substrate is kept under vacuum

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5,007,373
SPIRAL HOLLOW CATHODE
Keith O. Legg, Dunwoody, Ga., and Yonhua Tzeng, Auburn, Ala., assignors to Ionic Atlanta, Inc., Atlanta, Ga.
Filed May 24, 1989, Ser. No. 356,433
Int. Cl.[5] C23C *16/50*
U.S. Cl. 118—723 9 Claims

9. An apparatus for generating uniform electron beams and plasmas over a large area comprising:

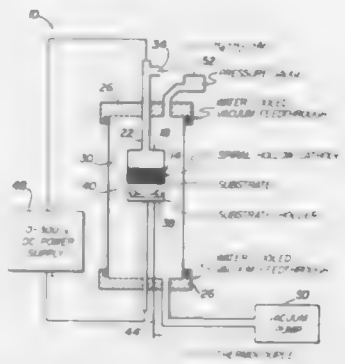
a. a cathode having a spiral shape in which spaces approximately 0.5 mm wide exist between adjacent layers and composed of a metal approximately 0.08 mm thick, 10 mm wide, and 150 mm long selected from the group consisting of tungsten, tantalum, and molybdenum;

b. a cylinder for receiving the cathode;

c. a gas mixture for flowing through the layers of the cathode,

d. an anode toward which the electrons in the electron beams are emitted.

e. a thermocouple imbedded in the anode for measuring its temperature.



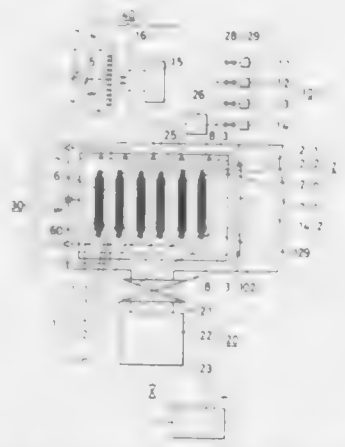
f. a substrate positioned on the anode for receiving the emitted electrons.

g. a vessel for containing the cylinder, anode, and gas mixture;

h. means for eliminating unwanted air from the vessel; and

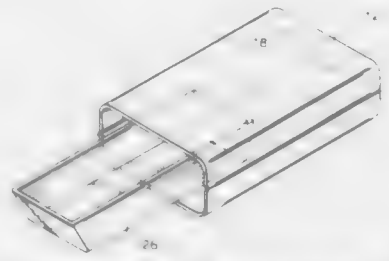
i. a pressure gauge for measuring the pressure inside the vessel.

5,007,374
APPARATUS FOR FORMING THIN FILMS IN QUANTITY
Shunpei Yamazaki, Tokyo; Shinji Imatou; Mitsunori Tsuchiya, both of Atsugi; Kenji Itoh, Zama; Takashi Inushima, and Atsushi Kawano, both of Atsugi, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Atsugi, Japan
Filed Mar. 17, 1989, Ser. No. 324,668
Claims priority, application Japan, Mar. 22, 1988, 63-67572
Int. Cl.[5] C23C *16/50*
U.S. Cl. 118—723 6 Claims



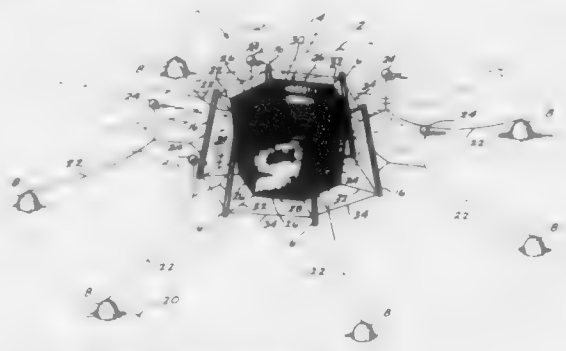
1. A plasma processing apparatus comprising a vacuum chamber, a gas introduction system for feeding a reactive gas into said vacuum chamber, a pair of electrodes provided in said vacuum chamber for generating plasma gas therebetween, a plurality of substrate holders arranged in subtantially parallel with the electric field induced between said electrodes in order not to provoke disturbance of the electric field, a first power source for applying first electric energy between said pair of electrodes and a second power source for applying second electric energy to said substrate holders.

5,007,375
LITTER BOX ENVELOPES
Francis P. Paciullo, Middlesex, N.J., assignor to Colgate-Palmolive Co., Piscataway, N.J.
Filed Apr. 16, 1990, Ser. No. 509,118
Int. Cl.[5] A01K *45/00*
U.S. Cl. 119—170 2 Claims



1. A litter box envelope for use in combination with a litter box received therein, comprising a top sheet and a bottom sheet bonded to each other along their side edges and an end edge of each thereof, a scratch proof, tear resistant facing sheet bonded to said top sheet, said facing sheet bonded to said top sheet, said facing sheet being formed of non-woven nylon fibers, which are spun bonded and heat treated, said bottom sheet being underneath said litter box, said top sheet being above said litter box.

5,007,376
SPAR BOUY PEN SYSTEM
Gary F. Loverich, and Barry A. Griffin, both of Bainbridge Island, Wash., assignors to Nor'Eastern Trawl Systems, Inc., Bainbridge Island, Wash.
Filed Apr. 18, 1989, Ser. No. 339,676
Int. Cl.[5] A01K *61/00*
U.S. Cl. 119—3 8 Claims



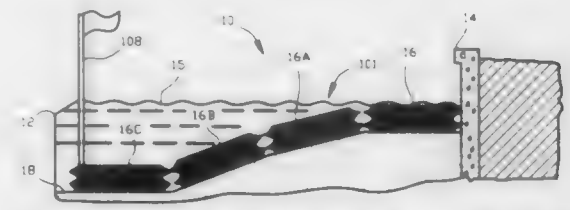
1. A spar buoy pen comprising:

a flexible water-permeable wall;

at least two buoyancy members having an elongated shape and weighted to float substantially vertically attached to said flexible wall at spaced-apart locations whereby at least one of the elongated buoyancy members is connected to said flexible wall by a first upper attachment line and a second lower attachment line, said first upper attachment line being shorter than said second lower attachment line so that said at least one buoyancy member is displaced from the vertical position at a pre-determined angle; and

separate anchor means attached to each said buoyancy member, each said anchor means urging the buoyancy member attached thereto away from said flexible wall so that said flexible wall is suspended between the buoyancy members.

5,007,377
APPARATUS AND METHOD FOR MARINE HABITAT DEVELOPMENT
August A. Muench, Jr., 3031 SW. Manatee Ave., Ruskin, Fla. 33570
Filed Feb. 6, 1990, Ser. No. 475,912
Int. Cl.[5] A01K *61/00*
U.S. Cl. 119—4 17 Claims



1. An improved apparatus for the development of a marine habitat through the growth of mollusks, comprising:

a plurality of generally cylindrical retaining members;

each of said plurality of retaining members having a mesh wall extending between a first and a second end;

said mesh wall of each of said plurality of generally cylindrical retaining members being selected for inhibiting the movement of adult mollusks therethrough and for simultaneously enabling the movement of smaller marine life therethrough;

a plurality of fastening means for interconnecting said plurality of generally cylindrical retaining members with a mesh wall of each said plurality of retaining members directly engaging with a mesh wall of an adjacent one of said plurality of retaining members;

each of said plurality of fastening means comprising a deformable element extending through adjacent mesh walls of adjacent retaining members for securing said adjacent retaining members into an array; and

means for closing said first and second ends of each of said plurality of retaining members for retaining adult mollusks therein when said plurality of retaining members is immersed within water and for facilitating the movement of smaller marine life therethrough thereby developing a marine habitat concurrently with the growth of the mollusks.

5,007,378
MILKING MACHINE TEAT CUP ASSEMBLY
Reed A. Larson, Watertown, Wis., assignor to Hi-Life Rubber Inc., Johnson Creek, Wis.
Filed Mar. 17, 1989, Ser. No. 325,218
Int. Cl.[5] A01J *5/04*
U.S. Cl. 119—14.47 18 Claims

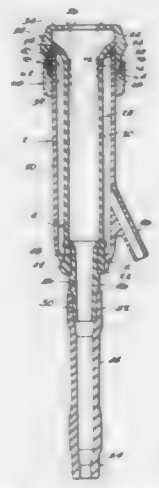
1. A milking machine teat cup assembly comprising:

a shell including a tubular body having an outer wall and an upper end portion terminating in a rim;

a flexible liner including a suction portion which fits inside said shell and has an outer wall, and a head portion having an opening for receiving a cow's teat and a peripheral cuff which surrounds the upper end portion of said shell and is spaced outwardly from the outer wall of said suction section to define an annular recess which receives the upper end portion of said shell and sealingly engages said rim, said cuff including an outer surface having a lower portion;

an annular sleeve surrounding said body of said shell and slidably mounted on said shell for relative axial movement between an unlocked position wherein said sleeve is axially displaced from said cuff and a locked position wherein at least a portion of said sleeve overlies at least the lower portion of said cuff to clamp said cuff into

sealing engagement with the upper end portion of said shell and to protect said cuff against impacts; and



detent means on said sleeve and said cuff for releasably holding said sleeve in the locked position against movement in an axial direction relative to said cuff.

5,007,379

AIR CIRCULATING SYSTEM FOR POULTRY HOUSING

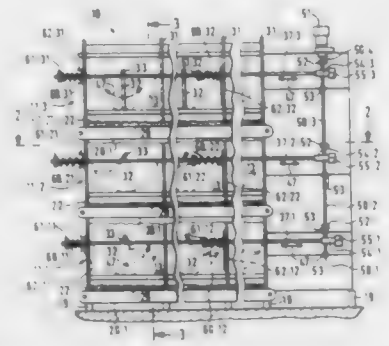
Karl H. Lackner, Ittlingen, Fed. Rep. of Germany, assignor to Firma Salmet Gesellschaft mit Beschrankter Haftung & Co., Kommanditgesellschaft, Ittlingen, Fed. Rep. of Germany

Filed Mar. 15, 1990, Ser. No. 493,747

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1989, 3908336

Int. Cl.[5] A01K *31/00*

U.S. Cl. 119—17 **14 Claims**



1. Drive mechanism for an air circulating system of a battery of poultry cages having a poultry dropping receptacle extending beneath the battery of cages, the air circulating system drying collected poultry droppings by air currents sweeping over the poultry dropping receptacle, and with the air circulating system including a plurality of air ventilator flaps longitudinally spaced from each other and supported on transverse axle means, the drive mechanism includes means for pivotably displacing the respective air ventilator flaps including traction means extending in a longitudinal direction of the battery of poultry cages and engaging the respective air ventilator flaps at a small distance from the transverse axle means, means for driving said traction means in a reciprocating fashion, and at least one spring means arranged at each of said traction means for normally biasing the respective traction means in a direction opposite to a driving direction provided by the means for driving.

5,007,380

FOWL FEEDER

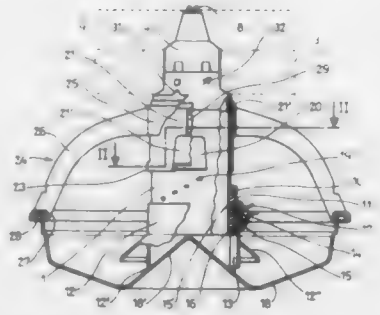
Antonio R. Badia, and José F. Tarazaga, both of Vilafranca del Penedes, Spain, assignors to Tecnica e Innovationes Ganaderas, S. A., Vilafranca del Penedees, Spain

Filed Dec. 27, 1989, Ser. No. 457,979

Claims priority, application Spain, Jan. 13, 1989, 8900123

Int. Cl.[5] A01K *39/01*

U.S. Cl. 119—53 **5 Claims**



1. A fowl feeder comprising a central tubular body member having a first end adapted to be attached to a suspension member so that said body member will hang vertically therefrom, said body member having a second, open end; a plate member including a projection portion; means supporting said plate member on said central tubular body member with said projecting portion extending adjacent said second open end of said body member to control dispensing of feed through said second open end; said plate member including a rim; said means supporting said plate member comprising a first ring member attached to said rim, a second ring member surrounding the exterior of a portion of said central tubular member and a plurality of arms extending between and connecting said first and second ring members with said supporting means being rotatable relative to said central tubular member; a sleeve member rotatably mounted about a portion of said body member; said sleeve member and said body member each having lateral apertures disposed so that said apertures may be moved into and out of alignment by relative rotation between said sleeve member and said body member to control dispensing of feed through said apertures to said plate member; said sleeve member having a flared portion adjacent said aperture thereof to prevent access of the fowl to said aperture; said central tubular body member having resilient tooth means and said sleeve having a slit cooperating with said tooth means; said sleeve member having a circumferential shoulder; said second ring member including a double shoulder portion and said one end of said body member having a shoulder on which said circumferential shoulder and shoulder portion are supported; said sleeve member having a protrusion engaging said second ring member to prevent relative rotation therebetween.

5,007,381

METHOD TO DECREASE BLACK SMOKE OF DIESEL

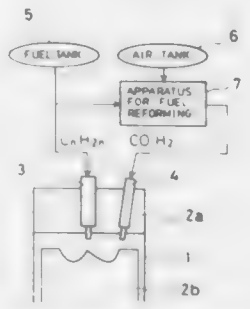
Toshiaki Kakegawa, Tsukuba, and Shoichi Furuhama, Tokyo, both of Japan, assignors to Advance Combustion Engineering Institute Co., Ltd., Tsukuba, Japan

Filed Jan. 22, 1990, Ser. No. 468,328

Int. Cl.[5] F02B *75/12*

U.S. Cl. 123—1 A **4 Claims**

1. A method for decreasing black smoke of an operating diesel engine, characterized in that a fuel injection nozzle to inject the fuel into a combustion chamber in a cylinder of the diesel engine and an auxiliary injection nozzle to inject combustible gas or non-combustible gas into the combustion chamber of the cylinder are provided, and that said combustible gas



or non-combustible gas is injected into the cylinder in the latter stage of combustion.

5,007,382

CYCLE CHANGEABLE ENGINE

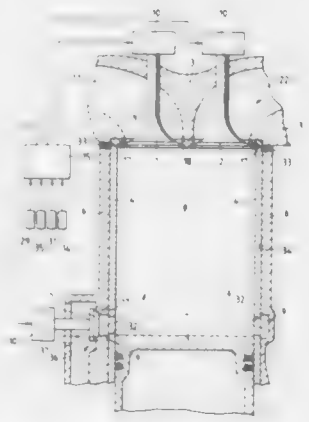
Hideo Kawamura, Samukawa, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan

Filed Apr. 25, 1990, Ser. No. 514,445

Claims priority, application Japan, May 9, 1989, 1-114142

Int. Cl.[5] F02B *69/06;* **F01L** *9/04*

U.S. Cl. 123—21 **8 Claims**



1. A cycle changeable engine capable of changing over its operating cycle to either one of two-cycle or four-cycle operation, comprising:

a cylinder block;

cylinder liners, each being fitted into each of cylinders formed in said cylinder block;

a cylinder head disposed fixedly in said cylinder block;

first intake ports and exhaust ports, each being formed in said cylinder head;

first intake valves for a four-cycle operation, each being disposed in each said first intake port;

exhaust valves, each being disposed in each said exhaust port;

intake openings formed at lower peripheral portion of said cylinder liners;

second intake ports formed at the lower port of said cylinder block and communicating with said intake openings;

second intake valves for a two-cycle operation being disposed in each said second intake port;

electromagnetic valve driving devices for opening and closing said first intake valves, said exhaust valves and said second intake valves, respectively, by electromagnetic force;

detection means for detecting the operational conditions of said engine, said detection means including a rotation sensor for detection of the number of revolutions of said engine; and

a controller for opening and closing either one of the groups of said first intake valves and said second intake valves and keeping the other group under the closed state in response to the detection signal by said detection means; wherein in response to the detection signal from said rotation sensor representing that the engine speed is a low speed, said first intake valves are kept closed and said second intake valves are opened and closed while said engine is operated in the two-cycle operation.

5,007,383

WATER-COOLING SYSTEM FOR A WATER-COOLED HORIZONTAL CYLINDER ENGINE

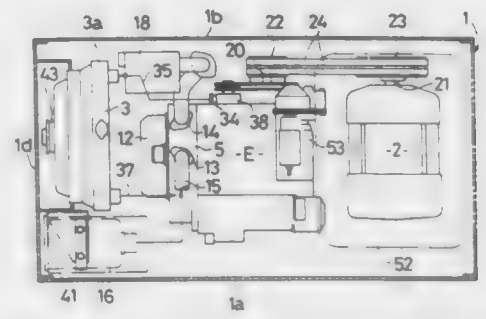
Ryoichi Ito; Koji Iwai, and Tsuyoshi Nishida, all of Sakaishi, Japan, assignors to Kubota Limited, Japan

Division of Ser. No. 139,753, Dec. 30, 1987, Pat. No. 4,883,024. This application Aug. 21, 1989, Ser. No. 396,503

Claims priority, application Japan, Jan. 23, 1987, 62-15001

Int. Cl.[5] F01P *1/02*

U.S. Cl. 123—41.49 **6 Claims**



1. A water-cooling system for a water-cooled horizontal cylinder engine, comprising:

a cylinder head provided in front of a cylinder block of the water-cooled horizontal cylinder engine;

a forwardly facing radiator, located substantially in front of and with its rear facing the cylinder head;

a radiator fan disposed to face the radiator;

a water jacket formed in the cylinder block and the cylinder head, an outlet port of the water jacket being connected to an inlet port of the radiator through a hot water pipe therebetween, and a water outlet port of the radiator being connected to an inlet port of the water jacket through a cool water pipe therebetween; and

an air cleaner and a muffler provided to be located forwardly of the engine, one to the left and the other to the right thereof and opposing each other when seen from the cylinder head, the air cleaner and muffler each being disposed so as to not extend above a maximum height of said radiator, and the muffler being positioned to one side of the cylinder head and substantially between the cylinder head and the radiator.

5,007,384

L-HEAD TWO STROKE ENGINES

Gordon P. Blair, Newtownabbey, Northern Ireland, assignor to The Queen's University of Belfast, Belfast, Northern Ireland

Filed Feb. 22, 1990, Ser. No. 484,072

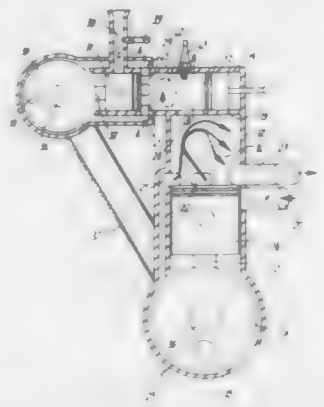
Claims priority, application United Kingdom, Feb. 22, 1989, 8904043

Int. Cl.[5] F02B *75/04*

U.S. Cl. 123—48 A **7 Claims**

1. An L-head two stroke engine comprising a first cylinder and a second cylinder, the two cylinders being connected to one another in perpendicular relation, a first piston mounted for reciprocable movement in the first cylinder and a second piston mounted for reciprocable movement in the second

cylinder, a first crank and a second crank, a drive means drivably connecting the first and second cranks, means for supplying fuel to one of the cylinders, ignition means for igniting fuel



in said one cylinder and means providing a communication between the two cylinders whereby in operation the compression ratio in said one cylinder is less than that in the other cylinder.

5,007,385

CRANKLESS ENGINE

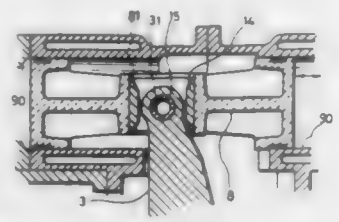
Hiromasa Kitaguchi, Chi-101, Simamachi, Komatsu-shi, Isikawa-ken, 923-03, Japan

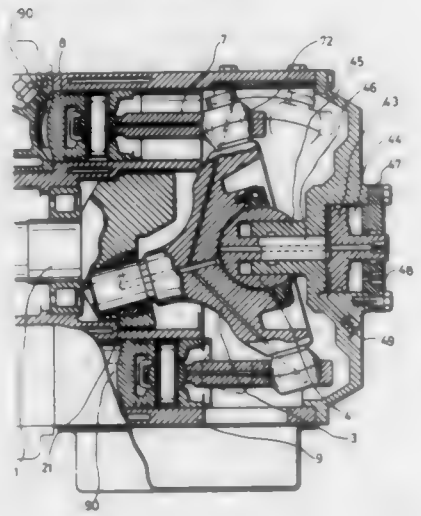
Filed Mar. 30, 1990, Ser. No. 501,712

Claims priority, application Japan, Jul. 15, 1989, 1-183410; Feb. 6, 1990, 2-26958

Int. Cl.[5] F02B *75/04*

U.S. Cl. 123—48 B **21 Claims**





1. A crankless engine comprising a piston which reciprocates in a cylinder and a rocking member capable of changing a rocking fulcrum, said rocking member comprising a pin portion and an outer-periphery connection both formed integrally with each other, said piston and said outer-periphery connection being interconnected through a joint, and a front end of said pin portion being pivotally connected inclinedly through a rotatably-supported rotary shaft, in which the reciprocating motion of said piston and the rotating motion of said rotary shaft are transformed from one to the other.

5,007,386

INTAKE SYSTEM FOR AUTOMOTIVE ENGINE

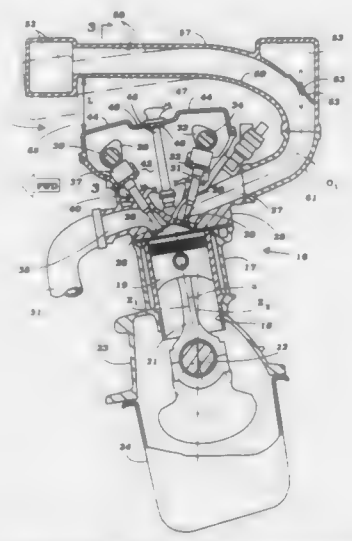
Takehiro Washizu, and Tsutomu Nagamatsu, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Feb. 22, 1990, Ser. No. 483,103

Claims priority, application Japan, Feb. 22, 1989, 1-40380

Int. Cl.[5] F02M *35/10*

U.S. Cl. 123—52 MC **16 Claims**



1. An internal combustion engine disposed transversely in an engine compartment having an air flow opening at one end thereof, a plurality of cylinders lying in a cylinder bank, each having at least one intake port facing in the same direction in said engine compartment and away from said air flow opening, and a plurality of manifold runners, each extending from a respective one of said intake ports and in the direction in said engine compartment opposite to that which said intake ports face to be at least in part over said cylinder bank toward said air flow opening, said cylinder bank being inclined from a vertical plane in said engine compartment in said opposite direction to increase the spacing between said cylinder bank and said manifold runners for air flow around said runners.

5,007,387

FOUR VALVE PER CYLINDER ENGINE HEAD

Masachika Arao, 21400 Lassen St., Unit G, Chatsworth, Calif. 91311

Filed Jan. 29, 1990, Ser. No. 471,366

Int. Cl.[5] F01L *1/18;* **F02P** *15/02*

U.S. Cl. 123—90.022 **4 Claims**

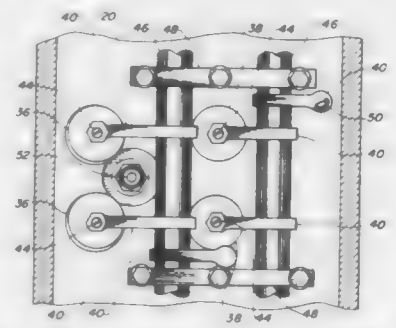
3. An improved head assembly for an internal combustion gasoline engine having an integral camshaft and push rod system comprising:

a head having a pair of exhaust valve ports with seats and a pair of intake valve ports with seats for each cylinder, also a plurality of push rod passages in linear alignment with the engine camshaft, and a threaded spark plug hole centrally located between the ports, the general area around the ports with the threaded hole recessed with the areas underneath and between the engine forming a combustion chamber,

a pair of exhaust valves disposed longitudinally parallel and having angularity from minus 2 to plus 2 degrees relative to said engine cylinder centerline in said engine and contiguous with the appropriate port for relieving the combustion gases on an exhaust stroke,

a pair of inlet valves disposed angularly with respect to each cylinder in said engine contiguous with the appropriate port for introducing a combustible mixture of fuel and air into the engine on a suction stroke,

a plurality of rocker arms and valve springs, the arms contacting said valves and the springs surrounding the valve stem for lifting the valves and returning them into contact



with the valve seats under the influence of the springs at the appropriate timing,

a pair of rocker arm shafts unitedly retaining the rocker arms in rotatable linear containment allowing each set of valves to react in sequence for operation of the engine, and

a plurality of push rods drivingly communicating between the engine camshaft and said rocker arms such that each pair of valves are lifted from the head in a sequence producing a cyclic action allowing the engine to operate.

5,007,388

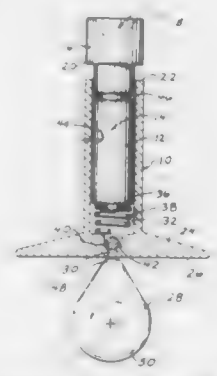
HYDRAULIC VALVE LIFTER

Richard W. Seilenbinder, Hales Corners, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Apr. 23, 1990, Ser. No. 512,767

Int. Cl.[5] F01L *1/14, 1/24*

U.S. Cl. 123—90.55 **10 Claims**



1. A hydraulic lifter for an internal combustion engine having a crankcase containing a hydraulic fluid, comprising:

an axially movable cylinder having an axial bore therein and having a lifter face that engages a cam on a camshaft;

a piston having a valve end and a base end, said piston being axially slidable within the axial bore, and the valve end of said piston engaging a valve member interconnected with an engine valve;

a chamber located within said axial bore and adjacent the base end of said piston;

an outer spring, disposed within said chamber that engages said piston base end; and

valve means in fluid communication with both said chamber and with said crankcase for transferring hydraulic fluid from said crankcase to said chamber in response to a pressure decrease within said chamber.

5,007,389

IGNITION PLUG FOR INTERNAL COMBUSTION ENGINES AND A PROCESS FOR IGNITING GAS MIXTURE BY THE USE THEREOF

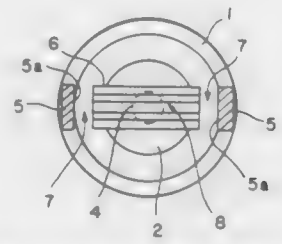
Ryobei Kashiwara, Raitsu Ootori 106, 456-1, Ootori-kitamachi 8-cho, Sakai-shi, Osaka-fu; Hideaki Kashiwara, 3-B, 611, 151-30, Ninomaru-cho, Mukojima, Fushimi-ku, Kyoto-shi; Hidehiko Noguchi, 7-14, Taiho 3-chome, Kanan-cho, Minamikawachi-gun, Osaka-fu, and Takeaki Kashiwara, 3,37-411, Nagayoshidedo 3-chome, Hirano-ku, Osaka-shi, all of Japan

Filed Nov. 9, 1988, Ser. No. 268,788

Claims priority, application Japan, Dec. 17, 1987, 62-321045; Sep. 30, 1988, 63-248394

Int. Cl.[4] F02P *1/00;* **H01T** *13/20*

U.S. Cl. 123—169 MG **19 Claims**



1. An ignition plug for an internal combustion engine comprising;

(a) an insulating body;

(b) a high tension center electrode positioned axially within the body and having an axial end;

(c) an ignition member fixed to the axial end of said center electrode, said ignition member having at least one end facing radially outward from the center electrode and a groove having a longitudinal axis, said groove facing axially away from the center electrode;

(d) at least one ground electrode radially spaced from the end of the ignition member on the center electrode and positioned along the longitudinal axis of said groove to define a spark gap between the ground electrode and the end of the ignition device;

whereby a gas mixture can be ignited by a spark between the end of the ignition member and the ground electrode and whereby expanding combustion gases impinge against the ground electrode and are diverted along the longitudinal axis of the groove.

5,007,390

STARTING FUEL SUPPLYING DEVICE FOR INTERNAL COMBUSTION ENGINE

Seiichi Tanaka, and Tamotsu Suzuki, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 303,942, Jan. 30, 1989, abandoned. This application Aug. 6, 1990, Ser. No. 563,816

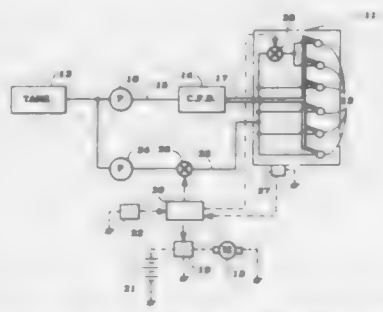
Claims priority, application Japan, Feb. 12, 1988, 63-30184

Int. Cl.[5] F02M *1/10*

U.S. Cl. 123—180 T **7 Claims**

1. In an internal combustion engine having a plurality of combustion chambers and a main charge forming system for supplying a fuel air mixture to all combustion chambers of said engine, the improvement comprising means independent of said main charge forming system for supplying supplemental

fuel to said engine, and temperature responsive means for controlling the amount of supplemental fuel supplied to said



engine by controlling the number of combustion chambers to which fuel is supplied.

5,007,391

ENGINE START FACILITATING VALVE

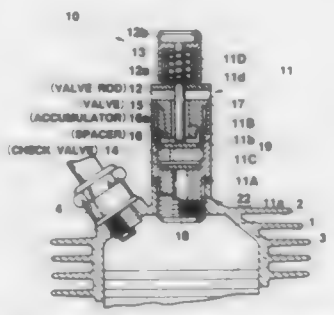
Shigeki Nomoto, Tokyo, Japan, assignor to Komatsu Zenoah Company, Tokyo, Japan

Filed Sep. 29, 1989, Ser. No. 414,900

Claims priority, application Japan, Sep. 30, 1988, 63-127392[U]; Jul. 31, 1989, 1-90209[U]

Int. Cl.[5] F02N *17/00*

U.S. Cl. 123—182 **10 Claims**



1. An engine start facilitating valve, comprising:

(a) a valve housing attached to the engine;

(b) spacer member disposed within said valve housing and formed with at least one accumulator space for accumulating engine explosion pressure;

(c) a check valve member disposed within said valve housing, for opening/closing communication between an engine combustion chamber and the accumulator space;

(d) a valve member disposed within said valve housing, for opening/closing communication between the accumulator space and atmospheric pressure;

(e) a valve rod for elastically urging said valve member to open condition by a valve spring, at engine compression stroke cylinder pressure being released to atmospheric pressure through said opened check valve member and said opened valve member, at engine explosion stroke and after, cylinder pressure being accumulated in the accumulator space to close said valve member against the valve spring, at engine halt accumulated pressure being released through both said check valve member and said valve member.

5,007,392

CYLINDER HEAD STRUCTURE FOR MULTIPLE CYLINDER ENGINES

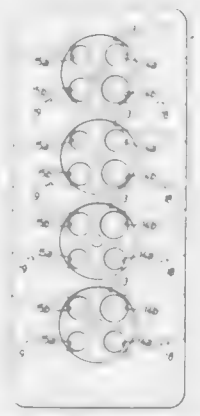
Tomonori Niizato; Katsumi Noguchi, and Kiyoshi Tsukimura, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1989, Ser. No. 388,259

Claims priority, application Japan, Aug. 1, 1988, 63-192377

Int. Cl.[5] F02B *15/00*

U.S. Cl. 123—193 H **8 Claims**



1. A cylinder head structure for a multiple cylinder engine, comprising, at least for each of its cylinders located at either longitudinal end of its cylinder bank:

a combustion chamber (**13**) defined by the cylinder (**1**) and a piston (**2**) received therein;

an intake passage (**18**) communicated with an intake manifold (**20**) at its one end and with said combustion chamber at its other end; and

an exhaust passage (**19**) communicated with an exhaust manifold (**21**) at its one end and with said combustion chamber at its other end;

at least one of said intake passage and said exhaust passage being curved toward a longitudinally central part of said cylinder bank as it extends from its other end to its one end, said curved passage being communicated with said combustion chamber at its other end by at least two ports (**14***a*, **14***b*, **15***a*, **15***b*) which are controlled by valves (**12***a*, **12***b*) and arranged along a longitudinal direction of said cylinder bank, and one of said ports involving a relatively larger flow rate being disposed closer to a longitudinally central part of said cylinder bank than the other port involving a relatively smaller flow rate.

5,007,393

INTEGRAL LIFTING HOOK FOR AN OUTBOARD ENGINE

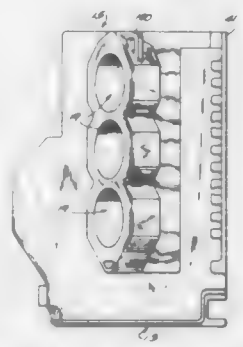
George L. Broughton, Zion, Ill.; Paul W. Breckenfeld, Kenosha, Wis.; David W. Mate, McHenry; James A. Nettles, Round Lake, both of Ill., and Duane E. Rogers, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed May 17, 1990, Ser. No. 525,251

Int. Cl.[5] F02F *7/00*

U.S. Cl. 123—195 R **12 Claims**

1. An outboard motor comprising a lower unit, a propeller shaft rotatably supported by said lower unit and adapted to support a propeller, and an internal combustion engine supported by said lower unit and drivingly connected to said propeller shaft, said internal combustion engine including an



engine block defining at least one cylinder and having a lifting hook integrally formed on said engine block.

5,007,394

COMBUSTION CHAMBER FOR COMPRESSION IGNITION INTERNAL COMBUSTION ENGINE

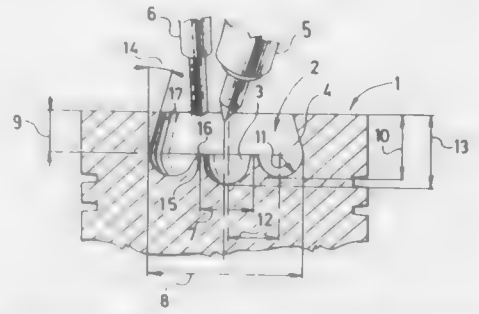
Jaroslav Brychta; Eduard Lutisan, and Vladimir Jirkovsky, all of Prague, Czechoslovakia, assignors to AVIA koncern, Prague, Czechoslovakia

Filed May 10, 1990, Ser. No. 521,600

Claims priority, application Czechoslovakia, May 12, 1989, 2858-89

Int. Cl.[5] F02F *3/00*

U.S. Cl. 123—279 **4 Claims**



1. A combustion chamber for a compression ignition internal combustion engine with multiport jet direct fuel injection, said chamber comprising

a hollow cavity formed in a piston head wherein said cavity is defined by a rotary side wall surface and a shaped bottom;

said shaped bottom of the combustion chamber in the piston head having a peripheral rotary surface and an internal rotary surface;

said peripheral rotary surface being separated from said internal rotary surface by a barrier of circular plan;

said barrier having a top, said piston head having a planar surface, said rotary surfaces each having diameters, distances from said planar surfaces being referred to as depths, the following ratios being adhered to:

the ratio between the depth of the top of the barrier and the maximum depth of the peripheral rotary surface being in the range from 0.4 to 0.7;

the ratio between the maximum diameter of the internal rotary surface and the maximum diameter of the peripheral rotary surface being in the range from 0.25 to 0.45; and

the ratio between the maximum depth of the internal rotary surface and the maximum depth of the peripheral rotary surface being in the range 0.85 to 1.15.

5,007,395

THROTTLE VALVE FOR AN INTERNAL COMBUSTION ENGINE

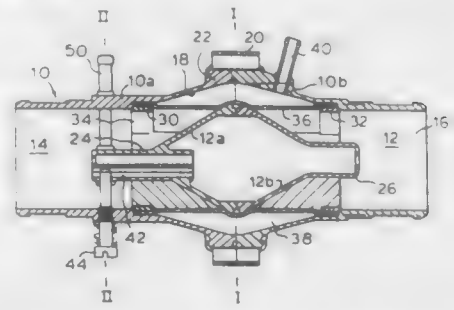
Robert Wakeling, Feering, England, assignor to Ford Motor Company, Dearborn, Mich.

PCT Filed Jul. 7, 1988, Ser. No. 340,721, filed as PCT/GB88/536 on Mar. 9, 1989, published as WO89/00639 on Jan. 26, 1989

Claims priority, application United Kingdom, Jul. 10, 1987, 8716352

Int. Cl.[5] F02D *9/18*; **F02M** *9/10*; **F16K** *31/126*

U.S. Cl. 123—337 **2 Claims**



1. A throttle valve for an internal combustion engine in which a flow path is defined between a central core (**12**) including a by-pass passage (**42**) to supply air when the engine is idling, and a tube (**36**) having a resiliently flexible wall, which tube (**36**) separates the flow path from an adjacent working fluid chamber (**38**), whereby changes in the pressure within the chamber (**38**) cause deformation of the tube wall resulting in changes in the tube cross-section between a wide open throttle position and a valve closed position, the flexible walled tube (**36**) being designed to take up a valve closed position when the pressures on its opposite sides are equal, characterised in that the flexible walled tube (**36**) is uniformly cylindrical in its relaxed state.

5,007,396

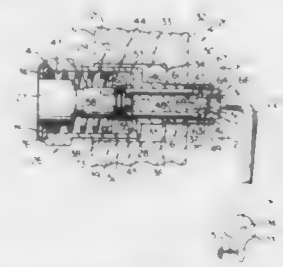
THROTTLE VALVE ADJUSTMENT CONSTRUCTION, THROTTLE VALVE ADJUSTMENT UNIT THEREFOR AND METHODS OF MAKING THE SAME

Carl A. Wellenkotter, Rochester, Mich., and David E. Counts, Louisville, Tenn., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 13, 1989, Ser. No. 434,231

Int. Cl.[5] F02M *3/05*

U.S. Cl. 123—339 **12 Claims**



1. In a throttle valve adjustment construction comprising a support means, a throttle valve adjustment arm movably carried by said support means and having moving means for tending to move said arm in one direction to a closed throttle condition thereof, and a temperature operated throttle valve adjustment means carried by said support means and being operatively associated with said arm to adjust the position of said arm at said throttle closed condition thereof, said throttle valve adjustment means comprising a temperature responsive device that comprises a piston member and a cylinder member that are adapted to provide relative movement therebetween when said device senses certain temperatures, said throttle valve adjustment means having a movable stop member opera-

tively associated with said temperature responsive device to be positioned thereby in various positions thereof in relation to the temperature being sensed by said device, said adjustment arm being adapted to be moved by said moving means into abutting relation with said stop member in said various positions thereof when said arm is in said throttle closed condition thereof, said throttle valve adjustment means comprising a housing means carrying said temperature responsive device and said movable stop member, said support means carrying said housing means, the improvement wherein said housing means has a stop surface against which said arm is adapted to abut when said arm is in said throttle closed condition thereof and said temperature responsive device has moved said movable stop member in one direction beyond a certain position thereof.

5,007,397

IGNITION TIMING CONTROL DEVICE

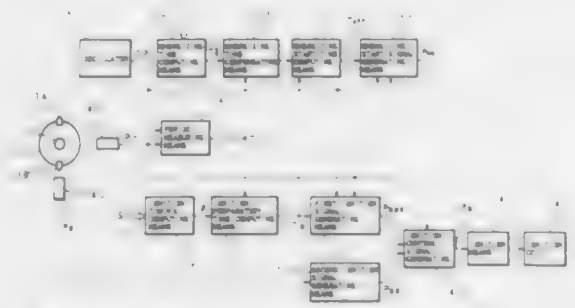
Masahiro Akasu, Himeji, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan

Filed Mar. 7, 1989, Ser. No. 320,128

Claims priority, application Japan, Mar. 7, 1988, 63-54303; Mar. 7, 1988, 63-54304; Mar. 7, 1988, 63-54305

Int. Cl.[5] F02P *5/15*

U.S. Cl. 123—422 **20 Claims**



1 An ignition timing control device comprising,

a first position detecting means for detecting the first crank angle position of an engine,

a second position detecting means for detecting the second crank angle position different in angle from said first crank angle position,

a revolution period measuring means for measuring the engine revolution period in reference to at least one of said first and second crank angle positions,

an energizing time computing means for computing an energizing time used to increase the primary current of an ignition coil of said engine to a specified rate,

an ignition timing computing means for computing the ignition timing corresponding to the current running condition of the engine,

an ignition stand-by time computing means for computing stand-by time for ignition after detection of the first crank angle position in reference to both said revolution period and said ignition time,

an energizing preparatory time computing means for computing preparatory time for energizing the ignition coil after detection of the first crank angle position in reference to both said ignition stand-by time and said energizing time for the ignition coil,

an energizing preparatory time compensating means for estimating the subsequent running condition of the engine and compensating said computed energizing preparatory time according to said estimated subsequent running condition of the engine,

an energizing start command generating means for producing a command signal for commencement of energizing the ignition coil when the energizing preparatory time from the detection of the first crank angle position has expired,

first ignition command generating means for producing a command signal for interrupting energizing the ignition coil when the ignition stand-by time from the detection of the first crank angle position has expired,

second ignition command generating means for producing a command signal for interrupting energizing the ignition coil on detection of the second crank angle position, and

an ignition control means for starting energizing the ignition coil upon output of the said energizing start command and interrupting energizing the ignition coil according to any one of said first and second ignition commands outputted earlier;

wherein the energizing preparatory time compensating means compensates the energizing preparatory time in reference to the estimated engine revolution period.

5,007,398

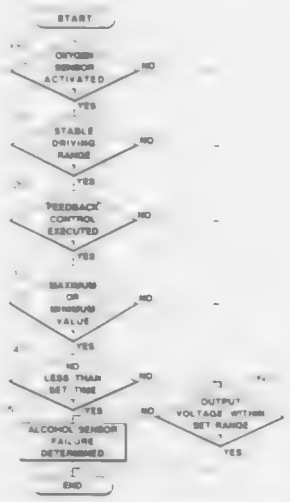
ALCOHOL SENSOR FAILURE DETECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Masuo Kashiwabara, Gunma, Japan, assignor to Japan Electronic Control Systems Co., Ltd., Isezaki, Japan

Filed Apr. 12, 1990, Ser. No. 507,835

Int. Cl.[5] F02D *41/22*

U.S. Cl. 123—479 **8 Claims**



1. An alcohol sensor failure detection system for an internal combustion engine, comprising:

air/fuel mixture induction means for receiving an intake air and a fuel to form an air/fuel mixture to be fed into an engine combustion chamber;

fuel supply means for supplying a controlled amount of the fuel into said induction means;

an alcohol sensor associated with said fuel supply means for producing a first signal indicative of alcohol concentration contained in the fuel to be fed into said induction means from said fuel supply means;

sensor means for producing a second signal indicative of an air/fuel ratio of the air/fuel mixture;

first means for deriving a first amount of the fuel to be fed into said induction means from said fuel supply means, said first amount derived based on said first signal and predetermined other signals indicative of respective engine operating conditions;

second means for deriving a correction coefficient variable between predetermined maximum and minimum values depending on said second signal, said correction coefficient being derived through a FEEDBACK control which is executed in a predetermined engine driving range such that the air /fuel ratio of the air/fuel mixture is maintained at a target value in said predetermined engine operating range with a second amount of the fuel derived by third means which corrects said first amount with said correction coefficient, said second amount of the fuel being fed into said induction means from said fuel supply means;

fourth means for determining whether said FEEDBACK control is executed;

fifth means, in response to a positive decision of said fourth means, for determining whether said correction coefficient is said predetermined maximum or minimum value;

sixth means, in respone to a positive decision of said fifth means, for measuring a time in which said correction coeffient is retained to said predetermined maximum or minimum value;

seventh means for determining a failure of the alcohol sensor when said measured time is no less than a predetermined value.

5,007,399

METHOD AND APPARATUS FOR SELF-DIAGNOSIS OF AIR LEAKAGE IN CONTROL SYSTEM OF INTERNAL COMBUSTION ENGINE

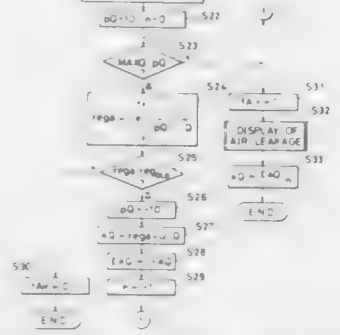
Shinpei Nakaniwa, Isesaki, Japan, assignor to Japan Electronic Control Systems Co., Ltd., Isesaki, Japan

Filed May 25, 1990, Ser. No. 528,615

Claims priority, application Japan, May 25, 1989, 1-130025

Int. Cl.[5] F02M *51/00*

U.S. Cl. 123—489 **6 Claims**



1. A method for the self-diagnosis of the leakage of air in a control system of an internal combustion engine, in which a flow quantity of air sucked in the internal combustion engine is detected and an engine control quantity including at least a quantity of a fuel to be supplied into the engine is set based on the detected air flow quantity, said method comprising setting an air-fuel ratio correction value for correcting the fuel supply quantity set based on the detected value of the sucked air flow quantity so that the air-fuel ratio in an air-fuel mixture sucked into the engine, which is detected through the detection of an exhaust component of the engine, is brought close to a target air-fuel ratio, wherein when there is observed a tendency that the proportion of the correction of the fuel supply quantity by the set air-fuel ratio correction value increases in a correction-increasing direction in a driving region having a smaller sucked air flow quantity, it is judged that the leakage of air into the suction system of the engine occurs.

5,007,400

HYDRAULIC CONTROL DEVICE FOR FUEL INJECTION SYSTEMS OF INTERNAL COMBUSTION ENGINES

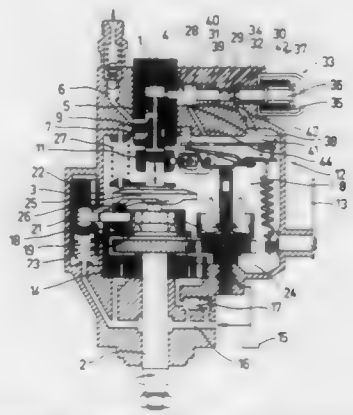
Rudolf Babitzka, Kirchberg-Neuhof, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 24, 1989, Ser. No. 328,396

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1988, 3819996

Int. Cl.[5] F02M *37/04*

U.S. Cl. 123—506 **17 Claims**



1. A hydraulic control for fuel injection systems of internal combustion engines; comprising,

a piston cylinder;

a pump piston in said piston cylinder, a pump piston work chamber (**4**) formed by said pump piston and said piston cylinder;

a stepped control piston (**29**) having a large diameter end (**39**) having a first control face (**31**) and a smaller diameter end having a smaller second control face (**32**) guided axially displaceably and radially sealingly in a corresponding stepped housing bore (**30**) forming a control chamber (**40**) and a closable work chamber (**42**), said first control face (**31**), can be acted upon by fluid from said piston work chamber present in said control chamber (**40**) against a pressure acting on said second control face in said closable work chamber (**42**) defined by said housing bore (**30**) and by said second control face (**32**) embodied by said smaller diameter face end (**32**) of the control piston (**29**) remote from the larger diameter first control face (**31**); a rear side of said larger diameter end of said stepped control piston being subjected to a fluid therein and a biasing force,

a controllable outflow relief conduit (**38**) extending from said closable work chamber (**42**) to a fluid-filled suction chamber (**8**); said controllable outflow conduit including a valve seat (**37**) with a predetermined maximum opening cross-section;

a control valve (**33**) operative relative to said valve seat (**37**) for a fuel flow control between said closable work chamber and said suction chamber, said control valve thereby controlling a movement of said control piston under action of fuel pressure in said control chamber and thereby controlling a take-off fuel quantity out of the pump work chamber via a relief conduit (**44**);

said control valve (**33**) having a movable valve element when closed having an end with a functional face (**43**) exposed to a pressure in said closable work chamber (**42**), said pressure acting in the opening direction of the movable valve element and being delimited by said maximum opening cross section; and

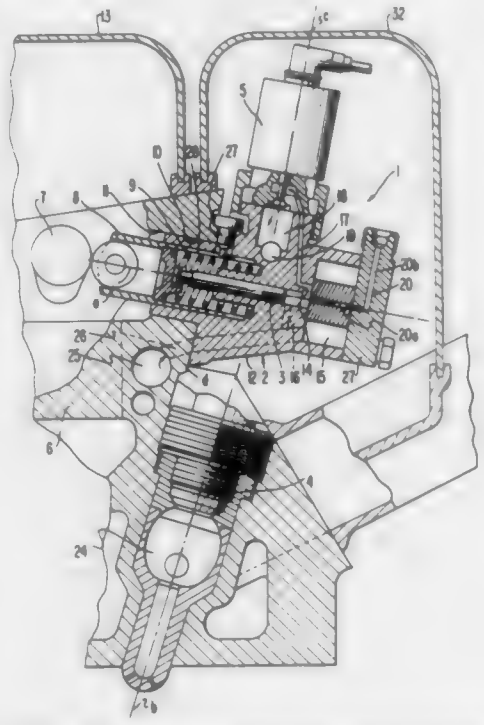
a ratio of said first control face (**31**) to that of said second working face (**32**) is equal to or smaller than a ratio of said second working face (**32**) to said functional face (**43**) of said movable valve element.

5,007,401

MAGNETIC VALVE CONTROLLED INJECTION DEVICE

Michael Grohn, Waiblingen-Hegnach; Mario Mürwald, Kernen; Frank Thoma, and Karlheinz Hoffmann, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed Sep. 30, 1987, Ser. No. 102,711
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1986, 3633136
Int. Cl.[5] F02M 37/04
U.S. Cl. 123—509 18 Claims



1. A magnetic valve controlled fuel injection device comprising:

a fuel pump in a pump casing; and

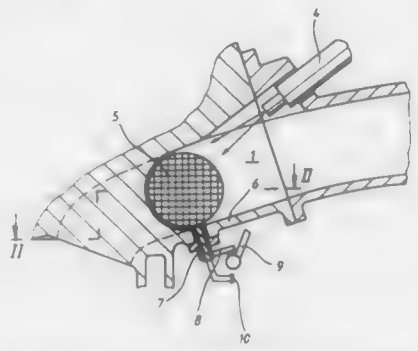
a fuel nozzle for internal combustion engines; a mounting means hole for the fuel pump casing in a cylinder head of the engine; a guide fuel pump piston means in the casing displaceable longitudinally thereof by a camshaft means via a drive element, supported from the cylinder head side; said pump piston means shutting off a control hole emerging in a pump working space; a second mounting hole means provided in the cylinder head for the fuel nozzle; pressure conduit means starting from the pump working space and leading to the fuel nozzle and to a magnetic valve means controlling the beginning of pumping and the end of pumping as a function of operating parameters of the internal combustion engine; the magnetic valve means forming a structural unit jointly with at least one of the fuel pump and the fuel nozzle; the first mounting hole means for the pump being provided in the cylinder head; the pump being located separately from the fuel nozzle and connected to the fuel nozzle by a relatively short exposed pressure pipe means; the first mounting hole means for the pump allowing for unencumbered removal of the pump from the camshaft means; the fuel nozzle being independently fastened to the cylinder head by said second hole mounting means to be removable towards the outside of the engine; and a portion of the casing, facing away from the drive element and the magnetic valve means being both located outside the space enclosed by the cylinder head and a cylinder head cover.

5,007,402

INTAKE SYSTEM FOR A MIXTURE-COMPRESSING INTERNAL-COMBUSTION ENGINE

Dieter Scherenberg, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz AG, Fed. Rep. of Germany

Filed Jun. 28, 1990, Ser. No. 544,833
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1989, 3921739
Int. Cl.[5] F02M 31/00
U.S. Cl. 123—549 12 Claims



11. A method of operating an intake system for a mixture-compressing internal combustion engine, having an electrically heatable heating element of flat form which is arranged in the intake channel downstream of a fuel-injection nozzle and transversely relative to the direction of flow and which is intended for heating the fuel/air mixture, wherein the heating element is made rotatable in such a way that, above a specific engine cooling-water temperature, it can be transferred from its transverse working position into a position of rest lying in the direction of flow,

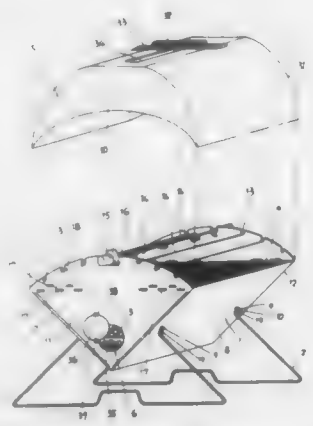
said method including controlling the position of the heating element as a function of the engine cooling water temperature.

5,007,403

FAN-SHAPED BARBECUE KETTLE

Ming-Tang Chen, No. 23-4, Alley 21, Lane 205, Yong Xing Road, Dali, Taichung, Taiwan

Filed Jul. 25, 1990, Ser. No. 557,041
Int. Cl.[5] F24B 3/00
U.S. Cl. 126—25 R 7 Claims



1. A fan-shaped barbecue kettle, comprising:

a kettle shell, which is a hollow body having fan-shaped end walls with a pair of legs connected to two side walls and either of whose fan-shaped end walls has a convexly arc upper rim wherein a few recesses are provided in an opposing manner to support the ends of a barbecue spit and there is provided a fixed hole in the vicinity of a central recess to which a motor may be secured to drive a barbecue spit to turn; a groove created by some inwardly extending convex points on either of the fan-shaped end walls to allow lateral insertion thereto of a roasting grill to take position at a height about equal to the height of said side walls; there being provided an air inlet in the lower half central portion of either fan wall;

said pair of legs bent to be triangle-like without a head angle and having two L-ends which can get caught and connected to said kettle shell's two side walls;

a roasting grill, comprising two separable roasting grills, each being formed of two narrower roasting grills pivoted together, respectively inserted in said groove of the fan-shaped end wall from along the kettle shell's side wall to make out a plane roasting grill;

a lid, which is shaped in conformance to the kettle shell's upper configuration and has two side plates concavely arc-shaped, and the top center of which is provided with a handhold which is pivotedly connected to a connection piece of an air-outlet flute provided at the same location, so that turning said handhold may control said air-outlet flute to open or close;

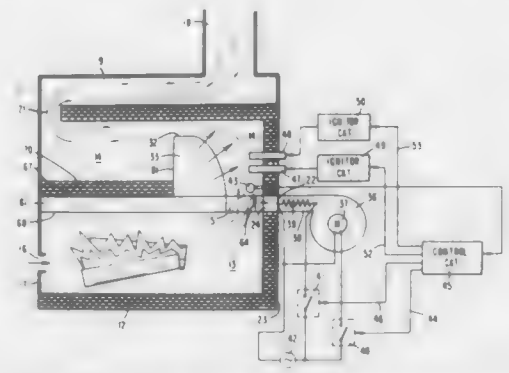
an air inlet which comprises a hole and a slightly larger adapted cover, the hole being provided in a lower half of either fan-shaped end wall within the contact with a charcoal support grill while the cover is provided with two lugs, one said lug being riveted above the hole whereby the degree of opening of the hole is controlled by moving the cover via the other lug.

5,007,404

WOODSTOVE FOR HEATED AIR FORCED INTO A SECONDARY COMBUSTION CHAMBER AND METHOD OF OPERATING SAME

Robert E. Hall, Cary, N.C.; Graig A. Spolek, Portland, Oreg.; John H. Wasser, Raleigh, and Nelson L. Butts, Hillsborough, both of N.C., assignors to The United States of America as represented by the Administrator of the U.S. Environmental Protection Agency, Washington, D.C.

Filed Jun. 26, 1990, Ser. No. 543,312
Int. Cl.[5] F24C 1/14
U.S. Cl. 126—77 43 Claims



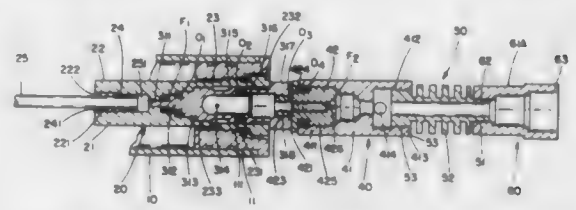
1. A woodstove comprising a primary combustion chamber for receiving a load of wood fuel, a secondary combustion chamber in fluid flow relation with the primary chamber, fan means for forcing air from outside the woodstove into the secondary chamber, the air from outside the woodstove forced into the secondary chamber being heated prior to entering the secondary chamber, and means for controlling the fan means in response to the temperature of gases in the secondary chamber.

5,007,405

SOLDERING TOOL

David Hsu, 801, No. 125, Sec. 3 Roosevelt Rd., Taipei, Taiwan

Filed Apr. 24, 1990, Ser. No. 513,617
Int. Cl.[5] B23K 3/02
U.S. Cl. 126—414 10 Claims



1. A gas powered soldering tool comprising a cylindrical gas tank (10) at the rear end thereof, said gas tank having at the rear end thereof a gas intake rod (25), for the storage of fuel gas and serving as a tool holder, and having a soldering tip (61B) at the front end thereof, a rear barrel assembly (20) and a front barrel assembly (40), said rear barrel assembly and said front barrel assembly containing the pressure regulation means and switching means (317), said rear barrel being held firmly at the front end thereof to said gas tank, said rear barrel assembly and said front barrel assembly being connected by a connector (42), said connector being part of said front barrel assembly, the major part of said rear barrel assembly being disposed within said gas tank, said rear barrel assembly having a channel (221) in the interior thereof for communication with said gas intake rod, a valve assembly (30) between said rear barrel assembly and said front barrel assembly, first threading means (233, 313) for connecting the front end of said rear barrel assembly to said valve assembly, said valve assembly comprising at the rear end thereof a stem (31), a needle valve (311) projecting to the rear from said stem, a gas inlet orifice (314) in said stem, and switching means (317) at the front end of said valve assembly, said stem being hollow from said gas inlet orifice to the front end of said valve assembly to provide a passage for communication with said front barrel assembly, said front barrel assembly having a nipple (422) at the rear end thereof which provides a passage (424) and a nozzle (426) in front of said passage, second threading means (318, 423) for connecting said front barrel assembly to said nipple, said front barrel assembly being provided with air inlet orifices (414) and serving as a chamber for mixing air with said gas exiting from said nozzle, a cooling fin unit (50) disposed in front of said front barrel assembly, third threading means (413, 53) connecting said cooling fin unit with said front barrel assembly, a passage (50) provided within said cooling fin unit extending to the soldering tip, whereby a gas route is completed from said intake rod, through said rear end passage (221) of said rear barrel assembly, said needle valve, said gas inlet hole (314), through said valve, the said nozzle, said air-gas mixing space (414), leading within said passage of the fin unit to the fuel tip.

5,007,406

BENDING CONTROL DEVICE OF ENDOSCOPE

Nagashige Takahashi, and Teruo Ouchi, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

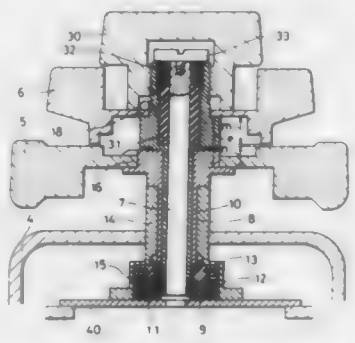
Filed Oct. 30, 1989, Ser. No. 429,006
Claims priority, application Japan, Nov. 4, 1988, 63-280061; Nov. 4, 1988, 63-280062
Int. Cl.[5] A61B 1/00
U.S. Cl. 128—4 15 Claims

1. A bending control device of an endoscope for bending a bendable portion, formed at the distal end of an insert part of the endoscope, by manual operation of a control part connected to the proximal end of said insert part, comprising:

an up and down bending control knob rotatably and detachably provided on said control part to control ending of

said bendable portion in upward and downward directions;

a right and left bending control knob rotatably and detachably provided on said control part, in coaxially superposed relation to said up and down bending control knob,



to control ending of said bendable portion in rightward and leftward directions; and

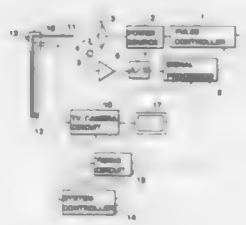
a single attaching and removing means for manually attaching and removing both of said bending control knobs to and from said control part.

5,007,407

ENDOSCOPE HAVING PICTURE IMAGE FREEZE DEVICE

Katsuya Kikuchi, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 23, 1989, Ser. No. 397,784
Claims priority, application Japan, Aug. 23, 1988, 63-207436
Int. Cl.[5] A61B 1/04, 1/06
U.S. Cl. 128—6 15 Claims



1. An endoscope including a scope, comprising:

light source means for emitting at least one light pulse in a boundary portion of adjacent first and second fields;

means for obtaining photoelectrically a detection signal from the light pulse;

means for calculating a difference between first and second field illuminances of the light pulse from the detection signal; and

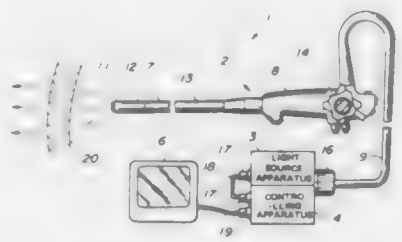
means for controlling the light source means depending on the difference, to reduce the difference to at least a predetermined value.

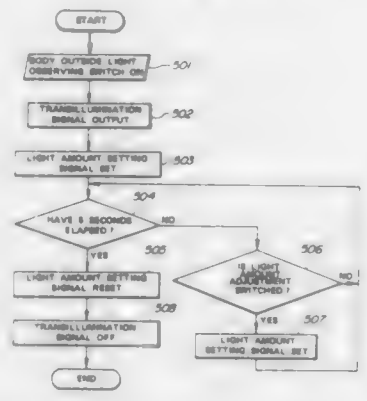
5,007,408

ENDOSCOPE LIGHT SOURCE APPARATUS

Shouichi Ieoka, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1989, Ser. No. 432,642
Claims priority, application Japan, Mar. 16, 1989, 64-65056; Oct. 12, 1989, 64-267183
Int. Cl.[5] A61B 1/06
U.S. Cl. 128—6 34 Claims





1. An endoscope apparatus comprising:

an endoscope provided with an insertable part tip part to be inserted into a body cavity and having an observing window for observing an object to be imaged and an illuminating window for emitting an illuminating light to illuminate said object;

a light source apparatus including an illuminating light feeding means for generating an illuminating light to be fed to said endoscope and a light amount increasing means for increasing for a preset time the light amount of the illuminating light generated by said illuminating light feeding means when a body outside light observing signal is input for confirming from outside the body a position within the body cavity of said endoscope tip part; and

a body outside light observing signal generating means for generating said body outside light observing signal.

5,007,409

MEDICAL SPECULUM BLADE SHEATH

Susan G. Pope, 6025 Bruns Ct., Oakland, Calif. 94611

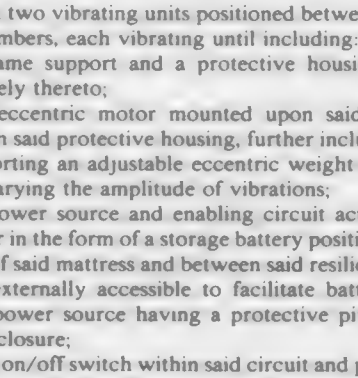
Filed Oct. 12, 1989, Ser. No. 420,759
Int. Cl.[5] A61B 1/32
U.S. Cl. 128—17 3 Claims

1. A sheath for the blade of a medical speculum having upper and lower elongated metal blades adjustably coupled together at the proximal or rear end, each blade having a substantially semicircular cross section terminating at a distal end, said sheath comprising:

a soft resilient material having a semicircular cross section with a convex first surface and concave second surface separated to form an arcuate longitudinal pocket between an open first end and a closed distal end adapted to receive the speculum blade;

a solid tip on said resilient material, said tip extending past the distal end of said pocket and tapered to a thin soft edge;

a finger tab of material extending lengthwise from said first convex surface of said resilient material at said open first end; and



a vent hole between said arcuate pocket and at least one surface of said sheath adjacent the closed distal end thereof to facilitate installation and removal of said sheath from a speculum blade.

5,007,410

VIBRATING MATTRESS

Sabrena R. DeLaney, 200 Hampstead Ave., 206-C, Savannah, Ga. 31405

Filed Nov. 20, 1989, Ser. No. 440,059
Int. Cl.[5] A61H 1/00
U.S. Cl. 128—33 2 Claims

1. In a mattress of the type adapted for imparting vibrations to a reclining human, the combination comprising:

(a) top and bottom resilient members sandwiched upon each other;

(b) at least two vibrating units positioned between said resilient members, each vibrating until including:

(i) a frame support and a protective housing mounted securely thereto;

(ii) an eccentric motor mounted upon said frame and within said protective housing, further including a shaft supporting an adjustable eccentric weight as a control for varying the amplitude of vibrations;

(iii) a power source and enabling circuit activating said motor in the form of a storage battery positioned on one side of said mattress and between said resilient members and externally accessible to facilitate battery charge, said power source having a protective pivoted cover with closure;

(iv) and on/off switch within said circuit and presented on one side of said resilient members, so as to be externally actuable;

(v) a safety light mounted adjacent each on/off switch, so as to enable monitoring and operation of each said vibrating unit;

(vi) a pivotable protective cover with closure for each said switch; and

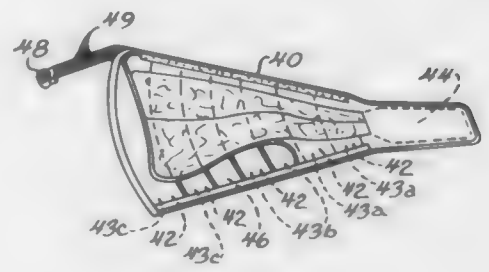
(c) a resonating means in the form of a variable resistor positioned in said enabling circuit, so as to vary the frequency vibration of each said vibrating unit.

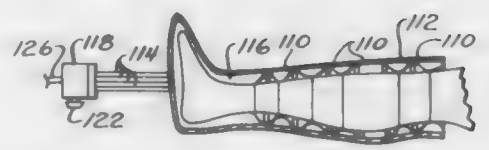
5,007,411

DEVICE FOR APPLYING COMPRESSIVE PRESSURES AGAINST A PATIENT'S LIMB

John F. Dye, Bridgewater, Mass., assignor to The Kendall Company, Mansfield, Mass.

Filed Apr. 12, 1989, Ser. No. 336,984
Int. Cl.[5] A61H 9/00
U.S. Cl. 128—64 29 Claims





1. A device for applying compressive pressures against a patient's limb during periodic compression cycles comprising:

a sleeve for applying pressure against a length of a patient's limb, said sleeve having a plurality of chambers arranged longitudinally along the sleeve;

means for intermittently inflating each of said chambers to provide a predetermined pressure during periodic compression cycles; and

means for deflating said chambers to establish a base static pressure after each said compression cycle.

5,007,412

BACK SUPPORT VEST

Terry L. DeWall, 6110 N. 100th Plz., Omaha, Nebr. 68134

Filed Jun. 11, 1990, Ser. No. 535,686
Int. Cl.[5] A61F 5/02
U.S. Cl. 128—78 8 Claims

1. A back support vest, comprising:

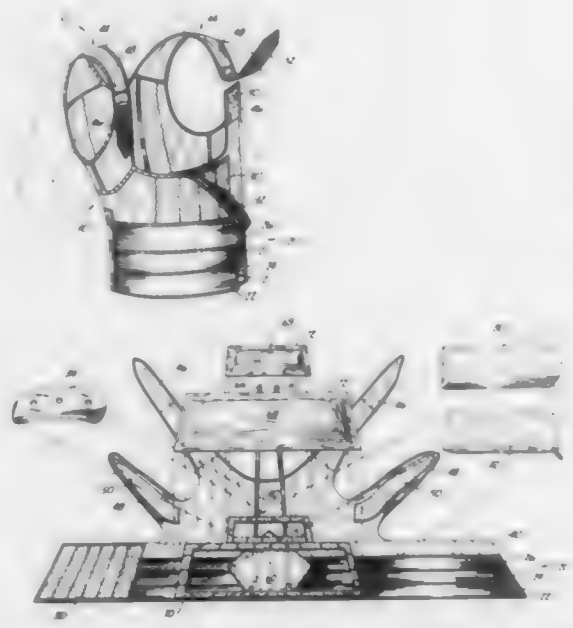
a lower back supporting section including an elastic material disposed to encircle a human body in the lumbar and lumbosacral region

an upper back support section having front and rear lateral portions and including a non-elastic material attached to and extending above said lower section and disposed to encircle the body in the thoracolumbar and thoracic region and a common means for releasably securing the ends of both the upper and lower sections includes overlapping ends attached with a hook and loop type fastener; wherein said fastener extends over the entire opposing surfaces of the overlapping ends of the upper and lower sections;

a pair of shoulder straps disposed to join front and rear lateral portions of the upper section; and,

a reinforced section including multiple layers of non elastic material attached to said vest and disposed to span the lower section and the upper section, said reinforced sec-

tion being centered on and extending across the dorsolumbar region and extending upwardly therefrom, and.



vertical supports attached to the rear of said vest and disposed to span the lower section and the upper section in spaced parallel relationship to the spine.

5,007,413

SUPPORTING DEVICE FOR USE IN FIRST AID TO PERSONS INJURED IN ACCIDENTS OR THE LIKE

Halldis Aalvik Thune, Loveien 30, 3500 Honefoss, Norway

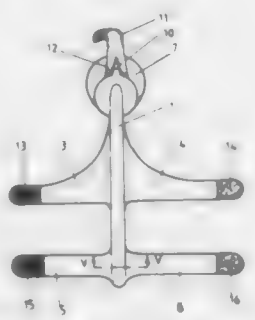
PCT No. PCT/NO86/00031, § 371 Date Dec. 11, 1986, § 102(e) Date Dec. 11, 1986, PCT Pub. No. WO86/05968, PCT Pub. Date Oct. 23, 1986

PCT Filed Apr. 17, 1986, Ser. No. 9,327

Claims priority, application Norway, Apr. 18, 1985, 851560; Nov. 22, 1985, 854673

Int. Cl.[5] A61F *5/02*

U.S. Cl. 128—78 **6 Claims**



1. A supporting device for use in administering first aid to a person injured in an accident, particularly to a person having a back and/or neck injury, said device comprising:

a main member to be positioned centrally along the back of an injured person, said main member having formed therein an elongated pocket opening upwardly in the normal position of use;

fastening members extending from said main member at positions to be mounted around the abdominal and chest area of the injured person and around the head or neck of the injured person;

said main member and said fastening members being formed of flexible material; and

an elongated supporting member in the form of a substantially flat metal rod accommodated in said pocket of said main member in a manner such that said metal rod may be selectively manually pulled from and pushed into said pocket, said metal rod having a length sufficient to support the back and neck of the injured person when said metal rod is within said pocket

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5,007,414

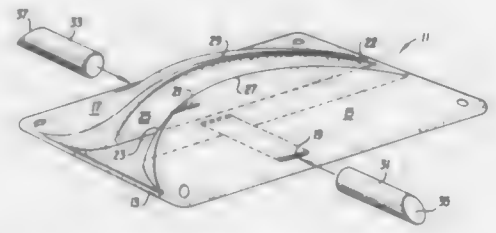
SPINE STRETCHER AND ALIGNER

Charles D. Sexton, 944 Waialae Cir., NE., Palm Bay, Fla. 32905

Filed Aug. 1, 1989, Ser. No. 387,729

Int. Cl.[5] A61F *5/02*

U.S. Cl. 128—78 **11 Claims**



1 A spine stretcher and aligner comprising

a base,

a first resilient member extending above said base, said first member having a first arcuate upper edge extending substantially the length of said member and extending upwardly of said base;

a second resilient member extending above said base, said second member having a second arcuate upper edge opposed to and spaced from said first upper edge of said first member, said second arcuate upper edge having substantially the same configuration as said first arcuate upper edge;

said first and second arcuate upper edges having a curvature greater than the normal lordosis of the human spine;

said arcuate edges being configured such that the apex of said upper arcuate edges is nearest one end of said members

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5,007,415

JOINT BRACE

DeLos E. Marion, deceased, late of Goodland, Ind. by Martha M. Marion, heir , assignor to John E. Garber, Indianapolis, Ind., a part interest

Filed Aug. 4, 1989, Ser. No. 389,696

Int. Cl.[5] A61F *5/00*

U.S. Cl. 128—80 C **16 Claims**

1. A brace for a human joint comprising:

bending means positionable adjacent a human joint and being operable to limit movement of said joint in certain directions but allowing pivoting action of said joint about a joint movable pivot axis, said bending means having a first end and an opposite second end and including a plurality of bendable strips extending therebetween being slidably mounted together in side by side relationship and bendable about a non-fixed strip axis;

first mounting means on said first end of said bending means operable to mount the brace on one side of said human joint and limit relative motion between said first end and said one side; and,

second mounting means on said second end of said bending means operable to mount the brace on the other side of



said human joint and limit relative motion between said second end and said other side.

5,007,416

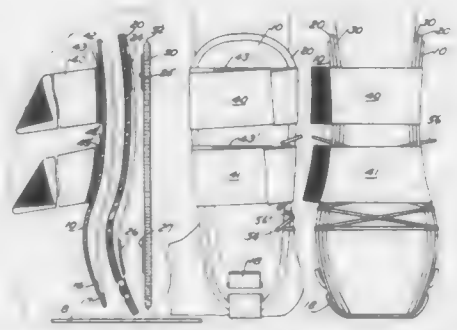
THERAPEUTIC ANKLE SUPPORT SYSTEM

Paul W. Burns, 36 Greco La., Warwick, R.I. 02886, and Gary Burns, 512 Old Baptist Rd., North Kingstown, R.I. 02852

Filed Apr. 12, 1990, Ser. No. 507,915

Int. Cl.[5] A61F *3/00*

U.S. Cl. 128—80 H **5 Claims**



1 Orthopedic splint comprising a pair of rigid arcuately shaped shells, said sheels having a pair of spaced slots at one end thereof, a first flexible foam pad insert having the shape of the shell and substantially coextensive therewith, means securing a first said insert to each said shell, said first insert having first surface fastener patches thereon, a second flexible therapeutic pad insert having second surface fastener patches that releasably engage the surface fastener patches on the first insert, fastener straps for encircling the exterior of the shells when the shells are fitted about a body part.

5,007,417

ANKLE BRACE

Kelly M. Bender, Ashland, Wis., assignor to Mikros U.S.A., Inc., Ashland, Wis.

Filed Apr. 2, 1990, Ser. No. 503,056

Int. Cl.[5] A61F *3/00, 5/00, 13/06*

U.S. Cl. 128—80 H **20 Claims**

1 An ankle brace comprising:

a flexible base configured to fit around the rearward and side portions of the foot and ankle having medial and lateral forward edges positionable in straddling spaced apart relationship to the foot and ankle on medial and lateral sides thereof;

tongue means separate from the base configured to cover the front superior ankle and foot portions between the lateral and medial forward edges of the base, said tongue means having a tongue member narrower than the distance between the forward edges of the base when positioned on a foot and a first edge positionable in parellel spaced side-by-side relationship to the medial edge of the base, and a second edge positionable in parallel spaced side-by-side relationship to the lateral edge of the base when the base and tongue means are installed on a foot;

first lace fastening means including lace eyelets and a lace cooperating between the first edge of the tongue member and the medial edge of the base to fasten them together, and second lace fastening means including lace eyelets and a lace cooperating between the second edge of the tongue means and the lateral edge of the base to fasten them together and secure the tongue member and the base in encompassing relationship to a foot and ankle.

5,007,418

RESILIENT SEMI-RIGID ORTHOPEDIC SUPPORT DEVICES

Dennis C. Bartizal, Woodbury, and Anthony J. Campagna, Roseville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 83,685, Aug. 7, 1987, Pat. No. 4,893,617, which is a continuation-in-part of Ser. No. 903,281, Sep. 3, 1986, Pat. No. 4,968,542. This application Nov. 9, 1989, Ser. No. 433,846

Int. Cl.[5] A61F *5/04*

U.S. Cl. 128—90 **23 Claims**

1. An orthopedic support material, comprising:

a flexible sheet material impregnated with a curable resin which cures upon exposure to a curing agent into a resilient and semi-rigid state having an Immobilization Value between about 45 pounds and about 400 pounds and a Resiliency Value of at least about 80 percent; and

a layer of cushioning material adjacent said resin-impregnated flexible sheet material.

5,007,419

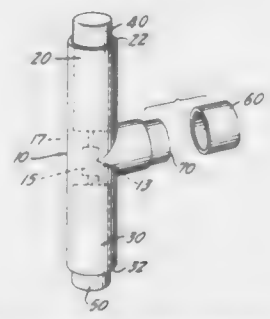
INHALER DEVICE

Allan Weinstein, 9205 Pegasus Ct., Potomac, Md. 20854, and Robert Weinstein, 6903 Alderley Way, West Bloomfield, Mich. 48033

Filed Sep. 25, 1989, Ser. No. 395,776

Int. Cl.[5] A61M *11/00*

U.S. Cl. 128—200.23 **11 Claims**



1. An inhaler device comprising a housing having first and second chambers,

said first chamber having a first internal compartment and a first removable canister of a first medication housed in said first compartment,

said second chamber having a second internal compartment and a second removable canister of a second medication housed in said second compartment,

said housing further having at least one common outlet nozzle in fluid communication with said canisters of medication, and means for independently allowing aerosol

spray from either one of said first or second canisters to be discretely released through said common outlet nozzle

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5,007,420

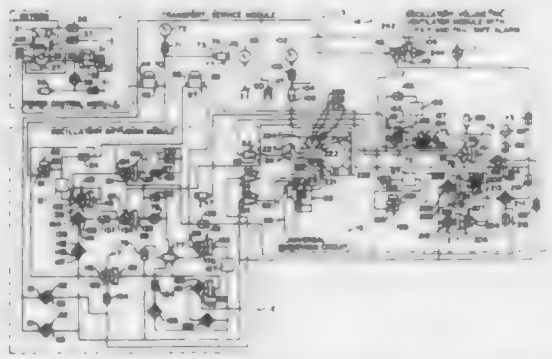
VENTILATOR HAVING AN OSCILLATORY INSPIRATORY PHASE AND METHOD

Forrest M. Bird, P.O. Box 817, Sandpoint, Id. 83864

Continuation of Ser. No. 671,491, Nov. 14, 1984, abandoned, which is a continuation-in-part of Ser. No. 516,133, Jul. 21, 1983, Pat. No. 4,592,349, which is a continuation-in-part of Ser. No. 291,622, Aug. 10, 1981, abandoned, which is a continuation-in-part of Ser. No. 269,929, Apr. 3, 1981, abandoned, and Ser. No. 250,586, Jun. 2, 1981, abandoned. This application Jan. 14, 1988, Ser. No. 145,734

Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—200.14 35 Claims



1. In a ventilator for use with a source of gas under pressure for supplying such gas to the airway of a patient, an inlet adapted to be connected to the source of gas, an outlet adapted to be connected to the airway of the patient, oscillator means having an inlet and an outlet, means coupling the inlet of the oscillator means to the inlet of the ventilator, and means coupling the outlet of the oscillator to the outlet of the ventilator and pneumatic control means coupled to the inlet of the ventilator and coupled to said oscillator means causing said oscillator means to supply successive small volumes of gas through the outlet of the oscillator means and the outlet of the ventilator to the airway of the patient to cause diffusive ventilation of the lungs of the patient, said pneumatic control means operating solely under pneumatic control, said oscillator means including a body having the inlet and the outlet, a flow passage interconnecting the inlet and outlet of the body, a valve seat encircling the flow passage, a valve member mounted in the body in the flow passage and being movable between open and closed positions with respect to the valve seat to control the flow of gas through the flow passage from the inlet to the outlet of the body, diaphragm means carried by the body for moving the valve member between said open and closed positions, said valve member being disposed on one side of the diaphragm means, a servo port mounted on the body on the other side of the diaphragm means, means connecting the outlet of the body to the servo port for supplying gas to one side of the diaphragm means for moving the diaphragm means to cause movement of the valve member to one of said open and closed positions, said means connecting the outlet of the oscillator means to the servo port including adjustable metering valve means for controlling the rate of flow of gas into and out of the servo port to thereby control the rate of oscillation of the oscillation means and thereby the frequency rate the successive small volumes of gas supplied to the outlet of the ventilator.

5,007,421

BREATHING APPARATUS

John S. S. Stewart, 74 The Common, Parbold, Wigan, Lancashire WN8 7EA, England

PCT No. PCT/GB86/00581, § 371 Date Jul. 28, 1987, § 102(e) Date Jul. 28, 1987, PCT Pub. No. WO87/01949, PCT Pub. Date Apr. 9, 1987

PCT Filed Sep. 30, 1986, Ser. No. 67,785

Claims priority, application United Kingdom, Oct. 1, 1985, 8524181

Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—204.180 26 Claims



1. A breathing apparatus for persons, including aircraft passengers, said apparatus being operable in a first breathing mode to receive respiratory gasses from a first respiratory gas source and in a second breathing mode to receive respiratory gasses from a second respiratory gas source, comprising:

(a) conveyance means for conveying respiratory gasses to and from a person;

(b) first supply means for supplying respiratory gasses to said conveyance means from said first respiratory gas source the first supply means forming part of a first breathing circuit;

(c) second supply means for supplying respiratory gasses to said conveyance means from said second respiratory gas source, the second supply means forming part of a second breathing circuit;

(d) conversion means for automatically converting the mode of operation of the apparatus, upon activation, from said first breathing mode to said second breathing mode by cutting-off supply of respiratory gasses from said first supply means to said conveyance means while permitting supply of respiratory gasses from said second supply means to said conveyance means;

(e) carbon dioxide absorption means for absorbing carbon dioxide in said second breathing circuit after conversion of said mode of operation to said second breathing mode by said conversion means.

5,007,422

METHOD FOR COMBINER CARDIAC PACING AND DEFIBRILLATION

Benjamin Pless; Michael Sweeney, both of Menlo Park; Roger Winkle, Palo Alto, all of Calif., and Anthony Nathan, Bushey Heath, England, assignors to Ventritex, Inc., Sunnyvale, Calif.

Filed Jun. 6, 1989, Ser. No. 362,163

Int. Cl.[5] A61N *1/362*

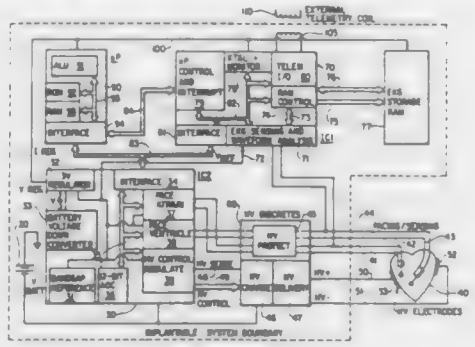
U.S. Cl. 28—419 PG 23 Claims

1. A method for treating cardiac arrhythmia with an implanted pulse generator having sensing leads adapted to be connected to the atrium and the ventricle, which comprises the steps of:

sensing the ventricle to determine if a ventricular arrhythmia is present;

sensing the atrium to determine if an atrial arrhythmia is present;

if the sensed atrial arrhythmia is determined to be more severe than the sensed ventricular arrhythmia, then not treating for a ventricular arrhythmia; but



if the sensed atrial arrhythmia is determined to be less severe than the ventricular arrhythmia, then treating for a ventricular arrhythmia.

5,007,423

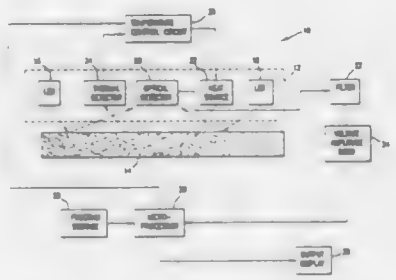
OXIMETER SENSOR TEMPERATURE CONTROL

Ronald L. Branstetter; Jonathan P. Jaeb, and Jeffrey M. Gabelmann, all of San Antonio, Tex., assignors to Nippon Colin Company Ltd., Japan

Filed Oct. 4, 1989, Ser. No. 417,209

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—633 19 Claims



1. A blood oxygen saturation monitoring system for non-invasive measurement of oxygen saturation of arterial blood in tissue of a patient, comprising:

a first source of electromagnetic radiation at a first wavelength;

a second source of electromagnetic radiation at a second wavelength;

means for positioning said first and second sources of electromagnetic radiation on the patient so as to illuminate a sample of blood in the tissue;

detecting means for receiving electromagnetic radiation reflected by said sample of blood;

data processing means for calculating the blood oxygen saturation of said tissue responsive to said detected reflected electromagnetic radiation; and

means for maintaining said tissue at a predetermined temperature responsive to the temperature of said tissue.

5,007,424

POLAROGRAPHIC/AMPEROMETRIC MEASURING SENSOR

Walter Ahsbahs, Merzhausen, and Helmut Leist, Waldkirch, both of Fed. Rep. of Germany, assignors to Hellige GmbH, Freiburg, Fed. Rep. of Germany

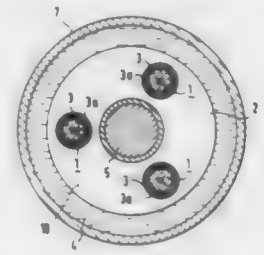
Continuation of Ser. No. 236,108, Aug. 1, 1988, filed Jun. 29, 1990, Ser. No. 547,528

Claims priority, application European Pat. Off., Aug. 3, 1987, 87111196.9

Int. Cl.[5] G01N *27/404*

U.S. Cl. 128—635 18 Claims

1. A sensor element particularly adapted for transcutaneous, polarographic/amperometric measurement of oxygen partial pressure in the blood of a living organism, said sensor element having a body portion made of heat conducting insulating material and a measuring face at least a portion of the area of which constitutes a reference electrode surface, said measuring face having a gas permeable membrane tautly stretched thereover, a layer of electrolyte material dispersed between the said measuring face and the said gas permeable membrane, said measuring face also having disposed in the plane thereof at



least one electrode assembly comprising a working electrode, a layer of insulating material completely surrounding the working electrode, said working electrode having a counter electrode completely surrounding said working electrode and disposed peripherally of the layer of insulating material to thereby separate said working electrode and said counter electrode with the said layer of insulating material and a sheath of insulation encircling said counter electrode to separate electrically said counter electrode from said reference electrode.

5,007,425

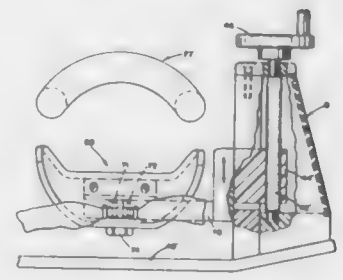
PATIENT AND COIL SUPPORT STRUCTURE FOR MAGNETIC RESONANCE IMAGERS

Denis W. Vanek, Cuyahoga Hts., and G. Neil Holland, Chagrin Falls, both of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio

Filed Aug. 19, 1988, Ser. No. 234,313

Int. Cl.[5] A61B *5/055*

U.S. Cl. 128—653 A 5 Claims



1. A support stand which is selectively positionable within an image region of a magnetic resonance imaging apparatus that includes a means for establishing a static magnetic field through the image region, a means for causing magnetic field gradients across the static magnetic field, a means for inducing magnetic resonance of selected dipoles of a patient within the imaging region, a means for receiving magnetic resonance signals emanating from the resonating dipoles, and an image reconstruction means for reconstructing an image representation from the received magnetic resonance signals, the support stand comprising:

a base constructed of a non-ferrous, non-conductive material;

a non-ferrous, non-conductive screw rotatably and vertically mounted in the base;

a follower which supports one of an orthopedic device and (ii) a resonance signal receiving coil, the follower being constructed of a non-ferrous, non-conductive material with a threaded vertical interior bore that threadedly receives the screw therein, the follower being movably

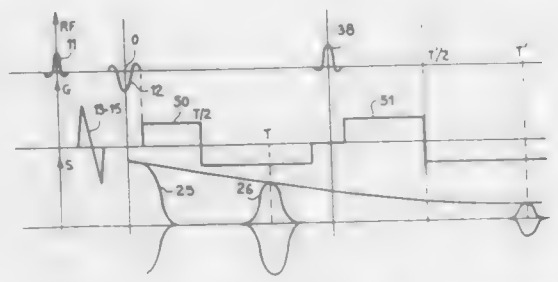
supported on the screw too be raised and lowered by relative rotation therebetween.

5,007,426

METHOD FOR DEPICTION OF MOVING PARTS IN A BODY BY NUCLEAR MAGNETIC RESONANCE EXPERIMENT

Patrick Le Roux, Gif sur Yvette, France, assignor to General Electric CGR S.A., Issy les Moulineaux, France

PCT No. PCT/FR87/00450, § 371 Date Jul. 18, 1988, § 102(e) Date Jul. 18, 1988, PCT Pub. No. WO88/04046, PCT Pub. Date Jun. 2, 1988
PCT Filed Nov. 13, 1987, Ser. No. 246,666
Claims priority, application France, Nov. 21, 1986, 86 16259
Int. Cl.[5] A61B 5/055
U.S. Cl. 128—653 OAF 2 Claims



1. A method for depicting, in an image, moving parts in a body by nuclear magnetic resonance experiment comprising the steps of:

subjecting a part of said body firstly, to an orienting magnetic field and, secondly, while maintaining said orienting field, subjecting said part to several excitation sequences each of which includes, a first main step followed by a second main step, itself followed by a period of time during which it may be assumed that the equilibrium of magnetic moments is re-established.

said first main step including:

flipping an initial orientation of magnetic moments of said body by means of a first radiofrequency electromagnetic excitation comprising two successive excitation pulses,

applying said two successive pulses to make said orientation of said magnetic moments of said body flip by two equal and mutually opposite flipping angles, with respect to said initial orientation of said moments,

applying a bipolar field gradient pulse between said two successive excitation pulses,

applying first field gradient pulses after said excitation to induce, in a first free precession signal resulting from a free precession of said magnetic moments, first dephasings for discriminating contributions of each part of the body,

said first field gradient pulses including a gradient echo type pulse,

measuring and processing said first free precession signal, to represent said moving parts of the body,

said second main step beginning, after the first free precession signal is measured, said second main step includes the body being subjected to a second radiofrequency excitation to again cause the flipping with a flipping angle of the magnetic moments,

applying second field gradient pulses after said second excitation to induce, in a second free precession signal resulting from said free precession of magnetic moments, dephasing for discriminating contributions of each part of the body,

measuring and processing said second free precession signal, to also represent moving parts of the body,

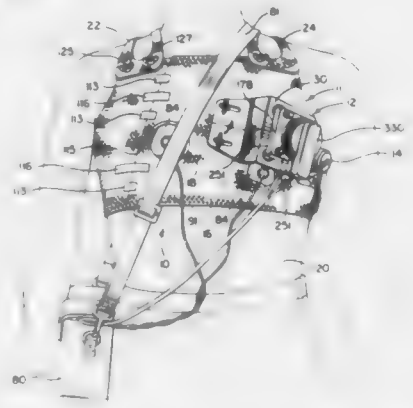
and further processing together the first and second processed free precession signal in order to depict a pure speed or a pure density image.

5,007,427

AMBULATORY PHYSIOLOGICAL EVALUATION SYSTEM INCLUDING CARDIAC MONITORING

Arata Suzuki, Ramsey, N.J.; William T. Tyberg, Springvalley, N.Y.; George Banks, Emerson, and Marcia Suzuki, Ramsey, both of N.J., assignors to Capintec, Inc., Ramsey, N.J.

Continuation-in-part of Ser. No. 46,854, May 7, 1987, Pat. No. 4,920,969, which is a division of Ser. No. 785,549, Oct. 8, 1985, abandoned. This application Sep. 15, 1987, Ser. No. 96,521
Int. Cl.[5] A61B 5/04
U.S. Cl. 128—659 9 Claims



1. A vest for use in an ambulatory physiological evaluation system, said vest comprising:

a flexible, planar vest member to be worn about the torso of a patient, said member including an enlarged chest area that covers the chest of the wearer, a pair of strips disposed on opposite sides of said chest area, each of said strips passing below one of the arms of the patient and lying against the back of the patient;

fist securing means at the end of each strip for joining the strips to arrange said member about the torso in a snug fit so that the member remains relatively stationary relative to the torso during movement of the patient;

a pair of planar elongated straps, each of said straps spanning across one of the shoulders of said patient, one end of each strap terminating in means for movably mounted said strap to said chest area, the other end of each strap terminating in means for securing said strap to one of said strips of said vest member; quick release means dividing the vest top to bottom in a first area of the vest for covering the right side of a wearer's chest; and

mounting means on a second area of the vest for apparatus to be used in said evaluation system, said mounting means being located on a second area of the vest for covering a left part of the wearer's chest.

5,007,428

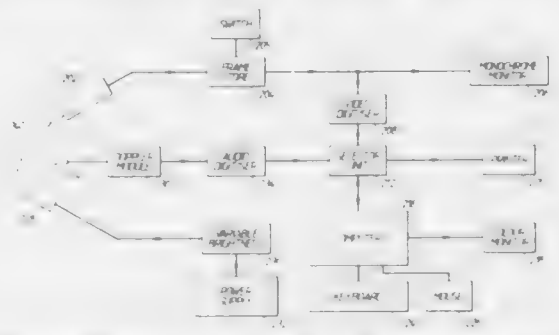
APPARATUS FOR EXAMINING A BODY OF LIVING TISSUES

David J. Watmough, Banchory, United Kingdom, assignor to The University Court of the University of Aberdeen, Aberdeen, United Kingdom

PCT Filed Apr. 21, 1988, Ser. No. 424,252, filed as PCT/GB88/00302 on Dec. 5, 1989, published as WO88/08272 on Nov. 3, 1988
Claims priority, application United Kingdom, Apr. 21, 1987, 8709406
Int. Cl.[5] A61B 8/00
U.S. Cl. 128—660.04 6 Claims

1. An apparatus for the examination of a body of living tissues, the apparatus comprising means for illuminating the body of living tissues with infra-red containing electromagnetic radiation, means for receiving electromagnetic radiation which is transmitted through the body of living tissues, means for producing an image of the received radiation, means for applying ultrasound to a region of the body of living tissues,

means for receiving reflected ultrasonic signals from the region, characterised by means for producing a signal which is representative of the velocity of blood flow in the region and



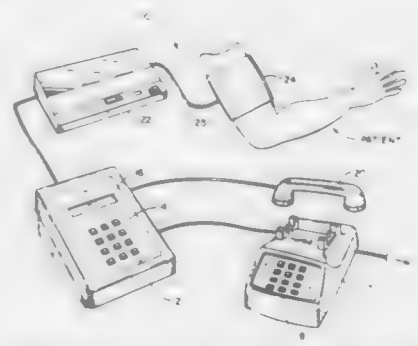
means for generating from the signal a graphical representation which provides an indication of blood flow velocity in the region.

5,007,429

INTERFACE USING 12-DIGIT KEYPAD FOR PROGRAMMING PARAMETERS IN AMBULATORY BLOOD PRESSURE MONITOR

James E. Treatch, Phoenix, and James R. Mikesell, Scottsdale, both of Ariz., assignors to PulseTrend, Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 98,550, Aug. 21, 1987, Pat. No. 4,830,018. This application Apr. 11, 1989, Ser. No. 336,244
Int. Cl.[4] A61B 5/022
U.S. Cl. 128—677 4 Claims



1. In a user interactive data entry and data downloading system including a control unit having a stored program microcomputer, a prompt display and a 12-character telephone keypad, and a communication link to an ambulatory patient monitor, the ambulatory patient monitor including a stored program microcomputer, a method for directing user selection of blood pressure test parameters for transfer to the ambulatory patient monitor, the method comprising the steps of:

initially entering an idle routine from which any one of a plurality of menu items can be entered by selection of a predetermined key of the keypad, the menu items including a subroutine for assembling a set of blood pressure test parameters,

displaying on the prompt display indication of execution of the idle routine,

monitoring the keypad for selection of a key,

entering a subroutine upon selection of a key associated with the subroutine,

displaying on the prompt display indication of selection of the subroutine;

the step of displaying indication of entry of a subroutine including upon entry of the subroutine for assembling blood pressure test parameters, directing, through further visual prompts on the prompt display, selection by the user of blood pressure test parameters through the keypad to establish a blood pressure test regimen;

determining the reasonableness of the selected blood pressure test parameters upon selection;

rejecting a selected blood pressure test parameter if unreasonable and directing, through visual prompts, selection of a new blood pressure test parameter;

transferring the selected blood pressure test parameters to the ambulatory patient unit after completion of the set of blood pressure test parameters; and

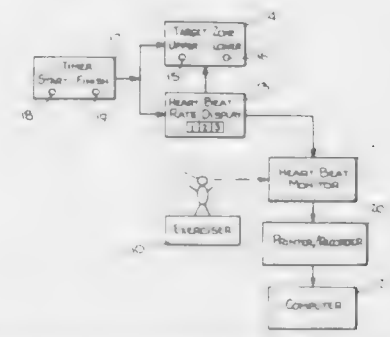
exiting the assembly subroutine and returning to the idle state after completing transfer of the blood pressure test parameters to the ambulatory patient unit.

5,007,430

RHYTHMIC BIOFEEDBACK TECHNIQUE

Irving I. Dardik, R.D. 1, Box 253 Hillcrest Dr., Great Meadows, N.J. 07838

Filed Nov. 5, 1986, Ser. No. 927,176
Int. Cl.[4] A61B 5/04
U.S. Cl. 128—696 5 Claims



1. A rhythmic biofeedback technique for inducing relaxation to counteract the adverse physiological and psychological effect of chronic stress on an individual of a given age and physical condition, the technique comprising the steps of:

A. electronically monitoring the heart beat of an individual being treated and displaying the prevailing rate to him as he undergoes a rhythmic conditioning session constituted by successive exercise-relaxation cycles extending for a predetermined period, each cycle having a duration which is a small fraction of said period;

B. electronically producing a first indication when the prevailing rate reaches a peak representing a predetermined safe upper limit and electronically producing a second indication when the prevailing rate reaches a predetermined acceptable lower limit, said predetermined upper and lower limits defining a target heart rate zone for the particular individual being treated, the boundaries of this zone being a function of the individual's age and physical condition; and

C. in the course of each cycle of the conditioning session requiring the individual to operate within said target zone by raising his level of exertion, as indicated by said first indication, to a peak representing said safe upper limit, following which he is required to reduce his exertion until he reaches said acceptable lower limit as indicated by the second indication at which a recovery-relaxation response takes place

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5,007,431

APPARATUS AND METHOD FOR UPDATED RECORDING OF IRREGULARITIES IN AN ELECTROCARDIOGRAM WAVEFORM

Robert F. Donehoo, III, Huntsville, Ala., assignor to Care Systems, Inc., Huntsville, Ala.

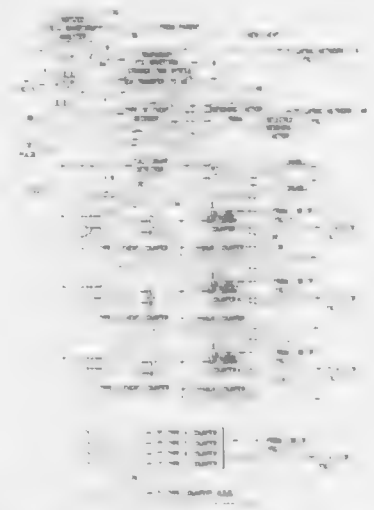
Filed May 3, 1988, Ser. No. 189,833
Int. Cl.[4] A61B 5/04
U.S. Cl. 128—696 20 Claims

1. A system for storing, on an updated priority basis, seg-

ments of an electrocardiogram (ECG) waveform from a patient containing at least one of a plurality of selected abnormal cardiac events, hereinafter referred to as event, said updated priority basis determined by selected characteristics comprising the ECG segment containing a new event not fully processed and stored by said system, type of the new event, age (A) of prior stored, like type events as the new event, weighing factor (WF) of the new event, and total number (T) of like type events stored prior to storing the new event, and comprising:

first memory storage means disposed for temporarily storing the characteristics of each said new event, and for maintaining a current total (T) of each different selected type of said event stored prior to storing the new event, and for incrementing said T of like type, prior stored said events as said new event by one;

second memory storage means comprising N memory blocks (MB's) for storing, where n is a positive integer, and on said updated priority basis upon occurrence of



each said new event, the characteristics of N events each stored in a different memory block;

first logic means responsive to said first memory storage means and operative on said second memory storage means for determining a highest product of (A)×(WF)×(T) in each said MB, said highest product identifying the memory block of said N memory blocks containing a lowest priority type of said event (LPEMB) and for decrementing by one the value of T contained in each said N memory block containing the like type of event as contained in said LPEMB; and

second logic means responsive to the decrementing of T by said first logic means for entering the characteristics of the new event in said LPEMB, replacing the characteristics of a prior stored said event in said LPEMB with the characteristics of the new event, and to increment by one the T in each said MB containing the like type of event as the type of new event now entered into the LPEMB.

5,007,432

RADIATION DETECTION METHOD AND APPARATUS

Hans J. Keller, Staefa, and Walter A. Kuster, Tuggen, both of Switzerland, assignors to Eltec Instruments, Inc., Daytona Beach, Fla.

Continuation of Ser. No. 42,709, Apr. 27, 1987, abandoned. This application Jul. 10, 1989, Ser. No. 377,725

Int. Cl.[5] A61B *5/00*

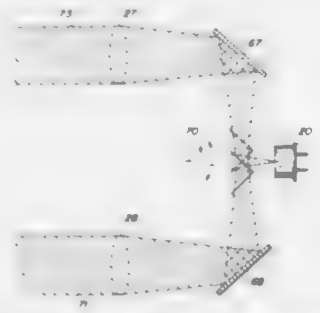
U.S. Cl. 128—736 **17 Claims**

1. A medical diagnostic apparatus for detecting the temperature differential between two sites on the surface of a person's body comprising:

a single thermal radiation detector;

a plurality of lenses arranged to respectively receive thermal radiation from different sites on the person's body along different optical paths and to focus the received radiation onto the single detector;

means for alternately interrupting the flow of thermal radiation from the different sites to the detector so that the thermal radiation from not more than one of the sites is received by the detector at any time;



means for converting the received thermal radiation from each site to corresponding temperature indicative signals;

means for averaging the temperature indicative signals derived from each corresponding site to determine the surface temperature of each site; and wherein

the plurality of lenses are concentric and lie in a common plane.

5,007,433

STIMULATION DEVICE

Joachim Hermsdörffer; Günther Galfe; Stefan Lautenbacher, all of München; Reinhard Korte, Göttingen; Hans-Joachim Krause, Göttingen/Elliehausen; Frans Krüll, Göttingen; Arno May, Göttingen; Dietmar Oberdorfer, Göttingen, and Ulrich Plüquett, Göttingen, all of Fed. Rep. of Germany, assignors to Phywe Systeme GmbH, Gottingen, Fed. Rep. of Germany

Filed Jun. 22, 1989, Ser. No. 369,720

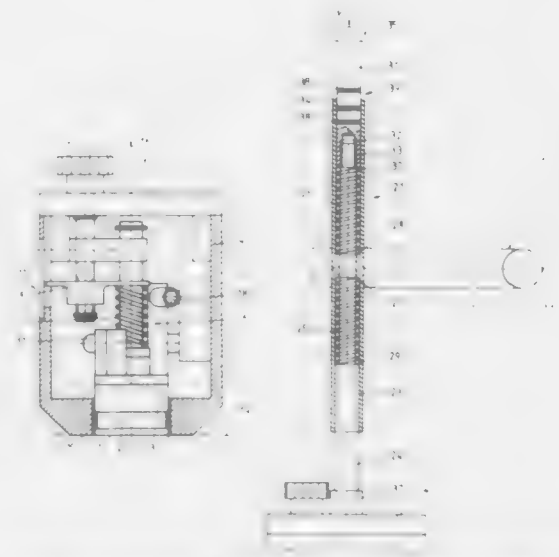
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1988, 3821219

Int. Cl.[5] A61B *19/00*

U.S. Cl. 128—742 **10 Claims**

1. A stimulation device for the determination of the temperature perception and pain sensation of a patient by cutaneous contact stimulation comprising a casing including a bearing surface for engaging the skin of the patient, a stimulator received in said casing adjacent the bearing surface of said casing and a Peltier element for changing the temperature of said stimulator, characterized in that the stimulator (1) is arranged moveably along an axis (5) in the casing (4), a first pressure means (6) for biasing with a force of a predetermined magnitude said stimulator toward a starting position in which the stimulator protudes a predetermined distance (14) from said casing beyond said bearing surface (15), and a second pressure means (21) for supporting said casing and biasing the bearing surface of said casing toward the skin of the patient with force

sufficient to retract said stimulator by moving said stimulator in a direction toward into said casing to a position in which the



protruding portion of said stimulator becomes substantially coextensive with said bearing surface.

5,007,434

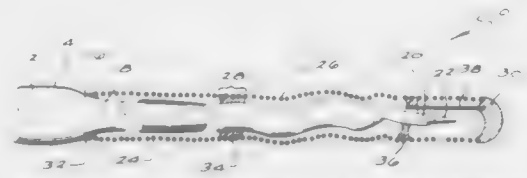
CATHETER TIP ATTITUDE CONTROLLING GUIDE WIRE

A. Thomas Doyle, Mountain View; William S. Tremulis, Redwood City, and Colleen L. McQueen, Santa Clara, all of Calif., assignors to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.

Filed Feb. 7, 1989, Ser. No. 307,606

Int. Cl.[5] A61B *6/00*

U.S. Cl. 128—772 **21 Claims**



1 A guidewire which is adapted to control the attitude of the distal tip of a catheter slidably mounted thereover comprising

(a) an elongated shaft having a proximal portion, a distal portion with a distal tip and an intermediate portion between the proximal and distal portions; and

(b) the intermediate portion of the elongated shaft having a plurality of permanent bends along the length thereof spaced proximally at least 1.5 cm from the distal tip of the distal portion so that, upon the longitudinal movement of a catheter over the guidewire, the attitude of the distal tip of the catheter is thereby controlled

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5,007,435

CONNECTOR FOR MULTICONDUCTOR PACING LEADS

Phong D. Doan, Shoreview; James E. Upton, New Brighton; Douglas N. Hess, Maple Grove; Wayne R. Bass, Coon Rapids, and Keith A. Ufford, Maple Grove, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Division of Ser. No. 198,540, May 25, 1988, Pat. No. 4,922,607. This application Apr. 23, 1990, Ser. No. 513,461

Int. Cl.[5] A61N *1/05*

U.S. Cl. 128—784 **7 Claims**



1 A connector pin assembly, comprising.

an elongated conductive connector pin having a proximal end and a distal end;

a first insulative sheath coaxially mounted around said connector pin, said first insulative sheath terminating proximal to the distal end of said connector pin.

first connector ring mounted around said first insulative sheath, said first connector ring having a proximal end a distal end, the distal end of said first connector ring terminating proximal to the distal end of said connector pin.

a first conductive extension electrically and mechanically coupled to the distal end of said connector ring and extending distally therefrom;

a first electrical conductor coupled to the distal end of said connector pin; and

a second conductor electrically and mechanically coupled to the distal end of said extension.

5,007,436

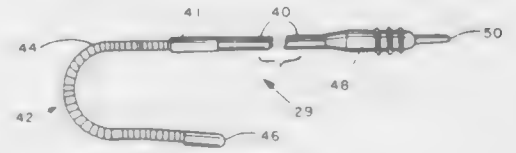
CARDIOVERSION AND DEFIBRILLATION LEAD SYSTEM

Karel F. A. A. Smits, Oirsbeek, Netherlands, assignor to Medtronic, Inc., Minneapolis, Minn.

Division of Ser. No. 408,466, Sep. 18, 1989, abandoned, which is a continuation of Ser. No. 220,642, Jul. 18, 1988, abandoned, which is a division of Ser. No. 925,030, Oct. 30, 1986, Pat. No. 4,744,952, which is a division of Ser. No. 746,694, Jun. 20, 1985, Pat. No. 4,641,656. This application Mar. 26, 1990, Ser. No. 498,873

Int. Cl.[5] A61N *1/05*

U.S. Cl. 128—786 **7 Claims**



1 An implantable lead, comprising

a connector assembly, including at least one electrical connector;

an elongated lead body having a proximal end and a distal end, said proximal end of said lead body mounted to said connector assembly, said lead body including a first segment having a generally straight configuration extending from said connector assembly to a first point, and a second, curved segment extending distal to said first point, said lead body including a first elongated electrode, exposed to the exterior of said lead body at least from said

first point to the distal end of said elongated lead body, and wherein said lead body also includes an elongated insulative sheath extending from said first electrode to said connector assembly; and

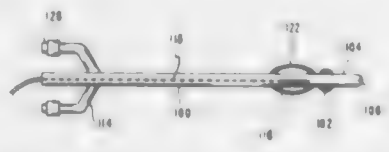
a conductor extending from said first electrode to said connector assembly, mounted within said elongated insulative sheath.

5,007,437

CATHETERS FOR TREATING PROSTATE DISEASE

Fred Sterzer, Princeton, N.J., assignor to MMTC, Inc., Princeton, N.J.

Continuation of Ser. No. 367,718, Jun. 16, 1989, abandoned.
This application Apr. 19, 1990, Ser. No. 512,520
Int. Cl.[5] A61N *5/02*
U.S. Cl. 428—786 15 Claims



1. In a catheter adapted to be inserted into an orifice of a male patient for treating prostate disease, wherein said catheter comprises means including microwave antenna means for irradiating said patient's prostate with a given distribution of microwave field intensity, thereby to heat tissue of said patient to a temperature which tends to vary as a direct function of microwave power and as an inverse function of the distance of that tissue to said microwave antenna means, and wherein the maximum microwave power to be employed is limited to an amount at which the temperature of the patient's heated tissue most proximate to said microwave antenna means does not exceed a given safe maximum temperature; the improvement wherein said catheter further comprises

an inflatable balloon inside of which said microwave antenna means is situated, said balloon being structured to have a cross-section which is expandable in size from a first value no larger than the cross-section of said orifice when said balloon is deflated to a second value substantially larger than the cross-section of said orifice when said balloon is inflated to a given pressure, said given pressure being sufficient to squeeze and compress tissue of said patient adjacent said balloon and permit the size of said balloon cross-section to be expanded to its second value;

whereby said catheter may be (1) inserted into said orifice while in a deflated state and positioned therein at a location at which both said balloon and said microwave antenna means are in cooperative relationship with said patient's prostate for effecting the irradiation of said patient's prostate with said given distribution of microwave field intensity when said catheter is fully inserted into said orifice, and (2) said balloon may be inflated to said given pressure when said catheter is fully inserted for expanding the size of its cross-section to said second value, resulting in both prostate tissue and that non-prostate tissue situated between said inflated balloon and said prostate tissue being squeezed and compressed so as thereby to increase the minimum distance between said microwave antenna means situated inside of said balloon and heated tissue of said patient; and

means for inflating said balloon to said given pressure;

whereby the maximum microwave power may be increased without exceeding said given maximum safe temperature and the temperature differential between the heated prostate tissue more proximate to said microwave antenna means and the heated prostate tissue more distal to said microwave antenna means is reduced.

5,007,438

ENDERMIC APPLICATION KITS FOR EXTERNAL MEDICINES

Shunro Tachibana, 1-6-18, Kusagae, Chuo-ku, Fukuoka-shi, Fukuoka-ken, and Uichi Shibata, Tokyo, both of Japan, assignors to Shunro Tachibana, Fukuoka and Meiji Seika Kaisha, Ltd., Tokyo, both of, Japan

Division of Ser. No. 120,555, Nov. 13, 1987, Pat. No. 4,821,740.
This application Mar. 28, 1989, Ser. No. 329,914
Claims priority, application Japan, Nov. 26, 1986, 61-282703
Int. Cl.[5] A61N *1/00*
U.S. Cl. 128—798 22 Claims



1. A device for administering medication to a host through the skin of the host comprising enclosure means, a layer of medication disposed within said enclosure means, and ultrasonic oscillating means comprising an ultrasonic oscillator element disposed in said enclosure means and operable to cause the medication within said layer of medication to pass from said enclosure means into said skin to thereby administer said medication to said host

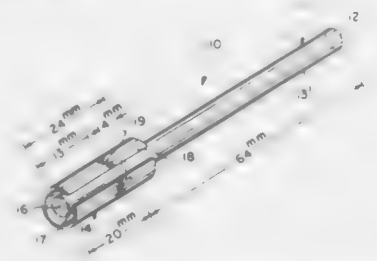
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5,007,439

METHOD OF FABRICATING AN ALL-TOBACCO CIGARETTE CONTROLLING TAR DELIVERY AND AN ALL-TOBACCO CIGARETTE

Richard D. Chumney, Jr., Mechanicsville, Va., assignor to The American Tobacco Company, New York, N.Y.

Division of Ser. No. 861,169, May 9, 1986, Pat. No. 4,726,385.
This application Nov. 17, 1987, Ser. No. 121,840
Int. Cl.[5] A24D *3/06*
U.S. Cl. 131—331 13 Claims



1. A method of fabricating an all-tobacco cigarette having a tobacco lighted-end column and a tobacco tip-end column, each tandemly-arranged, comprising the steps of:

(a) selecting the length of the tip-end column for a cigarette of particular length and controlling the type and compaction of tobacco in such column;

(b) fabricating the lighted-end tobacco column;

(c) fabricating the tip-end tobacco column to consist of at least about 20% expanded tobacco with the remainder unexpanded tobacco

(d) placing a paper wrapper having ventilation holes of predetermined size and number formed therein over said tip-end column, and

(e) assembling the tip-end and lighted-end tobacco columns into a cigarette,

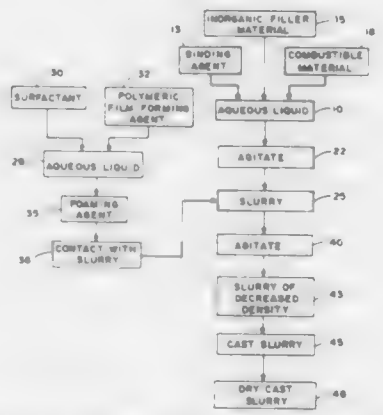
whereby a cigarette of acceptable overall resistance to draw and desired "tar" delivery can be attained.

5,007,440

PROCESS FOR PROVIDING SMOKABLE MATERIAL

Amy L. Robinson, Winston-Salem, and Chandra K. Banerjee, Pfafftown, both of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Nov. 14, 1989, Ser. No. 436,409
Int. Cl.[5] A24D *1/18*
U.S. Cl. 131—369 22 Claims



1. A process for providing a smokable material, the process comprising the steps of:

(a) providing a slurry of combustible material within an aqueous liquid,

(b) contacting the slurry with a foaming agent which includes an intimate mixture of surfactant and polymeric film-forming agent,

(c) subjecting the slurry and foaming agent to conditions sufficient to provide a slurry of decreased density, and

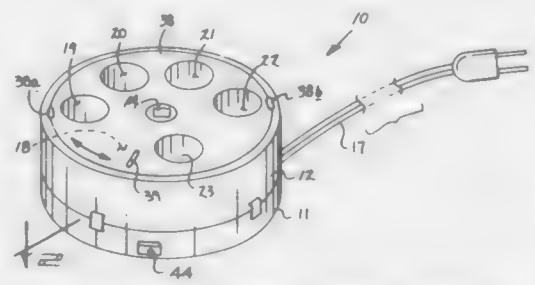
(d) forming the slurry into a predetermined shape.

5,007,441

ELECTRIC NAIL POLISH REMOVER

Michael D. Goldstein, P.O. Box 391, Gladwyne, Pa. 1[illegible]35

Filed Dec. 29, 1989, Ser. No. 459,250
Int. Cl.[5] A45D *29/05*
U.S. Cl. 132—73.6 7 Claims



1. A fingernail polish removal apparatus comprising,

a lower housing mounted overlying an upper housing, and

motor means selectively actuatable mounted within the lower housing medially thereof and including a rotatable shaft projecting into the upper housing from the lower housing, and

a series of five fingernail positions formed within the upper housing, and

elongate cleaning means directed surroundingly about each position in operative association with the shaft for contact and cleaning of a fingernail of an associated finger directed into each position, and

wherein the five fingernail positions defined by four finger positions and one thumb position, and a lid is removably mounted to the upper end of the upper housing including an individual opening coaxially aligned with each finger position and thumb position, and

wherein the upper and lower housing are of circular configuration and coaxially aligned relative to one another, and

wherein the four finger positions are positioned in a semi-circular array within a semi-cylindrical portion of the upper housing with the thumb position oriented through a diameter bisecting the semi-circular array of the four finger positions, the thumb position including an actuator switch abutment at a lower terminal end of the thumb position for actuation of the motor means and the shaft, wherein the actuator switch is mounted within the lower housing underlying a flexible membrane mounted in a floor portion of the upper housing, and

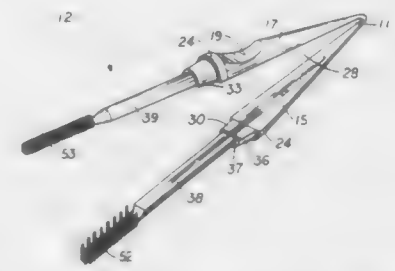
wherein the shaft includes a splined upper portion in engagement with a toothed inner face of the elongate cleaning means, and the elongate cleaning means is defined by an endless serpentine belt, the serpentine belt further including a sponge face opposed to the toothed face directed interiorly of each finger and thumb position.

5,007,442

DOUBLE BLOCKING MEMBERS SEALING A SINGLE OPENING MEANS

Suzy C. Hirzel, 933 Shellwood Way, Sacramento, Calif. 95831

Continuation of Ser. No. 142,027, Jan. 11, 1988, abandoned. This application Sep. 6, 1990, Ser. No. 404,110
Int. Cl.[5] A45D *40/26*
U.S. Cl. 132—218 5 Claims



1. In combination, a container having an open end and an applicator for mascara inserted in said opening, said applicator comprising a pair of elongated rods pivotally connected at one of their respective ends, and at their other ends having first and second cooperating applicator members, said rods upon pivoting between a first non-parallel position and a second substantially parallel position matingly engage said first and second applicator members for cooperating insertion into said opening of said container,

each of said rods including a first and second portion of a stopper member located substantially midway between the two ends of each rod, said first and second portions forming a stopper for said open end of the container by pivoting the rods to said second position,

said rods including a handle portion on said ends opposite said first and second applicator members.

5,007,443

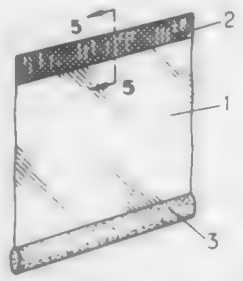
PROTECTIVE DEVICE FOR PROTECTING EARLIER TREATED HAIR

Jean C. Fulgoni, 2, rue Diderot, 92170, Vanves, France

Filed Apr. 28, 1988, [illegible]r. No. 187,245
Claims priority, application France, May 12, 1987, 87 06644
Int. Cl.[5] A45D *19/18*
U.S. Cl. 132—270 4 Claims

1. A protective device for carrying out a permanent wave with a permanent wave product on a hair solely in the vicinity of the root thereof and to protect from the action of the permanent wave product the part of the hair which is not situated close to the root, said device including a flexible and liquid-

tight sheet (1), a reinforcement zone (2) extending along a first edge of said sheet and an arresting means (3) comprising a strip or pad of an absorbent material fixed to and extending along the edge of the sheet opposite said first edge, the length of the sheet being sufficient so that the arresting means and the reinforcement zone are situated substantially opposite each other when the protective device is in the functional position about



the hair to be protected; characterized in that the device further comprises fixing means for temporarily and removably fixing the protective device to the hair prior to winding said device and the hair on a roller, said fixing means being provided on said reinforcement zone or forming said reinforcement zone, and wherein all or part of said fixing means are formed by a strip carrying hook shaped elements.

5,007,444

APPARATUS FOR FLUSHING SMALL-DIAMETER HYDRAULIC PIPE SYSTEMS AND THE LIKE

Göran Sundholm, Magisterviägen 34 B, SF-02700 Grankulla, Finland

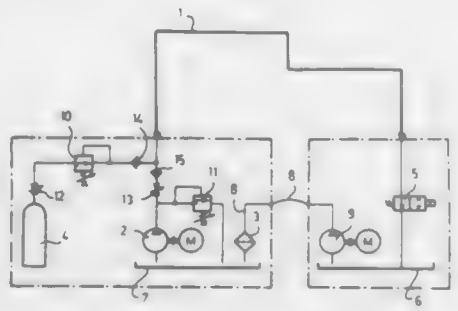
PCT No. PCT/FI87/00138, § 371 Date Feb. 28, 1989, § 102(e) Date Feb. 28, 1989, PCT Pub. No. WO88/03065, PCT Pub. Date May 5, 1988

PCT Filed Oct. 20, 1987, Ser. No. 326,542

Claims priority, application Finland, Oct. 23, 1986, 864289; Jan. 12, 1987, 870102

Int. Cl.[5] **B08B** *3/10*

U.S. Cl. 134—102 **8 Claims**



1. An apparatus for flushing at least a portion of a hydraulic pipe system, comprising a hydraulic pump means for flushing a liquid through the pipe system, and filter means together forming a flushing circuit comprising:

means for coupling a flushing circuit to a pipe system;

means for feeding a gas into the flushing liquid arranged in combination with the hydraulic pump means, and

the flushing circuit including valve means arranged to at first be closed when the pipe system has been filled with flushing liquid and gas, means for compressing the gas entrained in the pipe system, and said valve means thereafter being opened for expanding the compressed gas, in order to create a forceful flushing pulse through the pipe system.

5,007,445

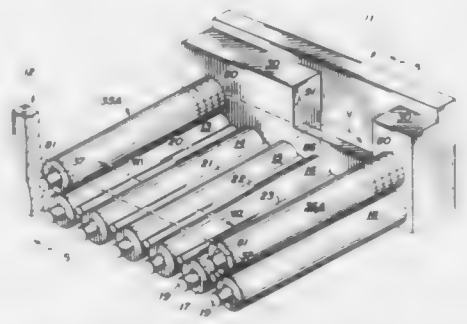
DYNAMIC FLOOD CONVEYOR WITH WEIR

Don P. Pender, Tempe, Ariz., assignor to Advanced Systems Incorporated, Phoenix, Ariz.

Filed Feb. 26, 1990, Ser. No. 485,167

Int. Cl.[5] **B08B** *3/04*

U.S. Cl. 134—122 R **3 Claims**



1. A dynamic flood conveyor for processing the upper surface of a circuit board substrate by moving the substrate through a body of fluid, said substrate having an upper surface, said conveyor including

(a) a pair of upstanding spaced apart side walls;

(b) generally horizontally oriented adjacent parallel support rollers for supporting and transporting said circuit board substrate, said support rollers

(i) including at least first and second end rollers,

(ii) each spanning the space between said side walls,

(iii) each having first and second ends each rotatably mounted in one of said walls, and

(iv) each having a cylindrical outer surface spanning the space between said side walls, each of the uppermost portions of said cylindrical surfaces of said rollers generally lying in and defining a common generally horizontal imaginary plane;

(c) means for rotating each of said support rollers in a common direction;

(d) fluid containment means extending above said horizontal plane and spanning the space between said side walls;

(e) an upper fluid containment roller spaced apart from said fluid containment means, spanning the space between said side walls, positioned above and generally parallel to said end roller, and including

(i) a horizontally oriented shaft,

(ii) a pair of ends each rotatably mounted in one of said side walls,

(iii) a plurality of cylindrical segments slidably contacting one another and rotatably mounted on said shaft, each of said segments having an aperture formed therethrough which is shaped and dimensioned to permit said segments to be vertically displaced with respect to said shaft and said end roller, said segments extending from one of said side walls to the other of said side walls and positioned above and generally parallel to said end roller and continuously contacting at least one of a second contact pair, said second contact pair comprising

said cylindrical outer surface of said end roller, and

the upper surface of said circuit board substrate passing between said fluid containment roller and said end roller,

selected ones of said segments remaining in contact with said end roller simultaneously with the remaining others of said segments being upwardly displaced with respect to said selected ones of said segments on contacting the upper surface of said circuit board substrate passing between said fluid containment roller and said end roller while moving toward said fluid containment means;

(f) a reservoir of fluid in said flood conveyor, said fluid reservoir contacting said fluid containment roller and fluid containment means and generally extending

(i) above said support rollers,

(ii) between and contacting said fluid containment roller and fluid containment means, and

(iii) above said imaginary plane,

(g) means for injecting fluid into said reservoir;

said fluid containment roller and fluid containment means acting as dams to retain fluid in said reservoir; and,

said upward displacement of said remaining others of said selected ones of said segments of said fluid containment roller minimizing the fluid escaping from said reservoir over said end roller when said circuit board substrate passes between said fluid containment roller and said end roller into said reservoir.

5,007,446

TEMPERATURE ACTUATED FLOW CONTROL DEVICE

Lee A. Grove, Elkhart, Ind., assignor to Remote Controls, Inc., Mishawaka, Ind.

Continuation-in-part of Ser. No. 427,255, Oct. 25, 1989, Pat. No. 4,947,886, Continuation-in-part of Ser. No. 341,474, Apr. 21, 1989, Pat. No. 4,884,595. This application Jun. 1, 1990, Ser. No. 532,064

Int. Cl.[5] **F16K** *11/18, 31/64;* **F16L** *55/14*

U.S. Cl. 137—72 **31 Claims**

15. A flow control device, comprising:

a valve having a valve body with a fluid-holding chamber therein;

inlet means opening into the chamber for supplying a fluid flow into the chamber under a positive pressure;

outlet means opening into the chamber and having an outlet opening in the body;

a collapsible tubing having one end sealingly attached to the outlet opening and an opposite end extending into the chamber, the opposite end having an inlet;

a piston moveably mounted in the chamber in spaced relation to the inlet of the collapsible tubing for insertion into and withdrawal from the inlet;

a shaft having a cam mounted thereon having a first position where it biases the piston into the inlet of the collapsible tubing to block fluid flow from the chamber through the outlet means wherein insertion of the piston into the collapsible tubing causes a pressure decrease in the collapsible tubing downstream of the inlet wherein the fluid pressure in the fluid chamber causes a portion of the collapsible tubing downstream of its inlet to collapse around the piston, the collapse of the collapsible tubing around the piston cooperating in conjunction with the piston to block fluid flow from the chamber through the outlet means, the cam having a second position where it permits the piston to be biased out of the inlet of the collapsible tubing by bias means for biasing the piton out of the inlet to unblock fluid flow from the chamber through the outlet means;

second bias means for rotating the shaft from a first position to a second position to rotate the cam from its first position to its second position;

a temperature sensitive link mechanically coupling the shaft to the body to prevent the shaft from rotating when the temperature to which the flow control device is exposed is less than a predetermined temperature, the link decoupling the shaft and body when the temperature to which the flow control device is exposed reaches or exceeds the predetermined temperature which permits the shaft to be rotated by the second biasing means to its second position to pen the valve by permitting the collapsible tubing to uncollapse.

5,007,447

PNEUMATIC FEED SAFETY APPARATUS WITH RE-SETTING CONTROL

Gérard Penitot, Paris; Marcel Cartigny, Neuilly-sur-Marne; Joël Roynard, Villeneuve-le-Comte; Bruno Valdenaire, Le Raincy; Marc Astier, Montrouge; Bernard Mery, Cachan, and Michael Wendling, Strasbourg, all of France, assignors to Quiet S.A., Chelles, France

Filed Feb. 12, 1990, Ser. No. 478,693

Claims priority, application France, Feb. 13, 1989, 89 01845

Int. Cl.[5] **F16K** *17/02, 37/00*

U.S. Cl. 137—102 **13 Claims**

1. An apparatus with a re-setting action, for producing a signal for triggering off at least one safety measure on an installation including at least a pneumatic feed in the event of a drop in the pressure of said pneumatic feed, comprising:

a body having a first orifice for connection to the pneumatic feed;

an internal chamber in the body;

a first duct in the body communicating the first orifice with the chamber;

a second duct communicating with said chamber;

means connected to the chamber for establishing a signal in a first state when the pressure, of the feed is higher than a threshold and in a second state when said pressure falls below said threshold, the signal in its first state being the presence of a pressure in the second duct and in its second state being the absence of pressure in the second duct, the means for establishing the signal comprising: a first seat through which the first duct opens into the chamber; a third duct communicating the chamber with an exhaust orifice of the body; a second seat through which the third duct opens into the chamber, the second seat being of larger diameter than the first seat; a valve member movable in the chamber between a first position in which it is applied against the first seat and a second position in which it is applied against the second seat; and a resilient return member operatively disposed between the body and the valve member to urge the valve member towards its first position under a force of an intensity corresponding to said threshold;

means for regulating the value of said threshold; and

a voluntary re-setting means comprising an actuating mem-

ber which is accessible from the exterior of the body, and a thrust means disposed in opposite operative relationship to the resilient return member with respect to the valve member between the latter and the actuating member, the thrust means being displaceable in said body with a movement of an amplitude which is at least equal to the value of the displacement of the valve member when it moves from one of the seats to the other.

5,007,448

FILLING DEVICE FOR LIQUID FILLED TIRES

Harvey A. Olinger, Huntington Beach, Calif., assignor to Advanced Commercial Products, Inc., Santa Ana, Calif.

Filed Feb. 9, 1990, Ser. No. 477,757
Int. Cl.[5] F16K *24/00;* **B65B** *31/04*
U.S. Cl. 137—223 **14 Claims**



1. A filling device for filling tires or tubes having a conventional tire valve member, said device being adapted for filling said tires or tubes with liquid, after removal of the valve stem assembly of said valve member, said device comprising.

a barrel means;

bore means axially extending through said barrel means, said bore means including first and second aligned bore portions of different sizes;

means on said first bore portion for attachment tot he end of said tire valve member;

air vent means in fluid flow communication between the interior of said first bore portion and the outer atmosphere;

tube means in fluid flow communication with said second bore portion and having an end extending beyond the terminal end of said first bore portion a distance sufficient for cooperative engagement with said tire valve member when said filling device is attached to said tire valve member;

fitting means coupled to the other end of said barrel means for attachment to pressurized source of liquid, the parts of said filling device being configured, dimensioned and arranged that pressurized liquid flowing through said fitting means flows through said tube means into the tire, while air escaping from the tire enters into said first bore portion for discharge through said vent means.

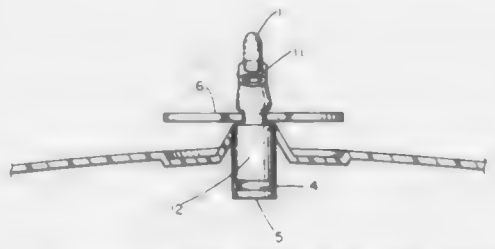
5,007,449

DEFLATOR

Anthony J. Marrone, II, 91-413B, Eva Beach Rd., Eva Beach, Hi. 96706

Filed Jan. 2, 1990, Ser. No. 459,685
Int. Cl.[5] F16K *15/18, 31/44*
U.S. Cl. 137—223 **4 Claims**

1. A deflating tool, for use in conjunction with cut-check valves, being constructed of suitable rigid material having a slot in its body of suitable length and width which tapers from the perimeter of the tool at a suitable fixed rate so as to accommodate the stem of the cut-check valve at its widest part and squeeze the valve stem, without damaging it, as the slot is moved passed the stem, so that the stem deforms a sufficient amount to open the cut-check valve, said surface of the deflating tool slot being smoothly finished so as not to damage the valve stem.



5,007,450

ADD-ON LIQUID OVERFLOW SHUT-OFF VALVE FOR TANK

Franklyn P. Babb, and Matthew T. Babb, both of 1666 S. Santa Fe, Vista, Calif. 92084

Continuation-in-part of Ser. No. 538,524, Jun. 15, 1990, abandoned. This application Sep. 10, 1990, Ser. No. 579,539
Int. Cl.[5] F16K *43/00, 31/32, 33/00*
U.S. Cl. 137—315 **24 Claims**



1. An add-on liquid overflow shut-off valve for a tank comprising:

(a) A valve body, a moveable float spaced-apart therefrom and a connecting arm extending therebetween, all adapted for insertion and removal as one integral, portable unit through a standard tank lid opening for suspension below said opening so that said float is responsive to the liquid level in the tank, said valve body including a flanged portion extending exterior of the tank lid opening to receive connections from a pneumatic source and to a pneumatic driven pump;

(b) pneumatic ingress and egress means formed in said top flanged portion of said valve body in spaced-apart relation for passing only gas through said valve;

(c) spaced-apart first and second pneumatic passageways formed interior of said valve body extending respectively from said ingress means and said egress means;

(d) a third pneumatic passageway formed interior of said body interconnecting said first and second passageways to allow a flow of gas therethrough;

(e) a shaft pivotally received in said body, interrupting said third pneumatic passageway, having a fourth pneumatic passageway formed therethrough for pneumatic alignment with said third pneumatic passageway when the liquid is below a predetermined level in the tank, said shaft having one end thereof extending outside said valve body for connection to said arm;

(f) said connecting arm causing rotation of said shaft as a function of said float movement on top of the liquid in the tank, to align said fourth pneumatic passageway with said third pneumatic passageway when the liquid is below the predetermined level, to allow gas to flow from said ingress means through said first, second, third, and fourth pneumatic passageways to said egress means to drive the pump and continue to deliver liquid into the tank, and then to rotate into a position wherein said fourth pneumatic passageway rotates out of alignment with said third pneumatic passageway shutting off the gas flow to the pump when the liquid reaches the predetermined level, said valve body, float and connecting arm able to be withdrawn as a unit from the filled tank through the tank opening for immediate insertion into another tank for subsequent use; and,

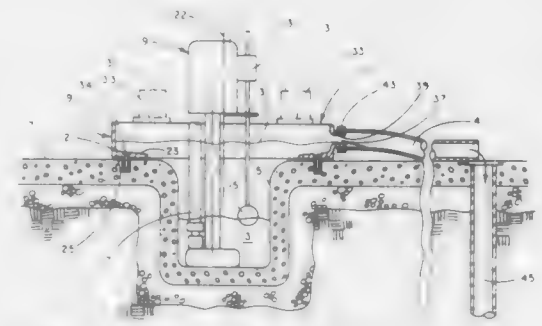
(g) means for connecting said valve body to an electrical ground.

5,007,451

SUMP PROTECTION SYSTEM

Andrew Bralich, 2485 W. 9th St., Oshkosh, Wis. 54904

Filed May 30, 1989, Ser. No. 358,132
Int. Cl.[5] E02D *19/06;* **F04B** *49/04*
U.S. Cl. 137—362 **2 Claims**



1. A sump protection system comprising:

a. an uncovered retainer comprising:

i. a tube having a central axis and a predetermined diameter and a predetermined height, the diameter being approximately nine times greater than the height, the tube having an exposed top end and a lower end;

ii. an annular flange extending radially from the tube lower end, the flange having an inner diameter sufficient to surround a sump in a building floor and being detached therefrom, the flange having upper and bottom surfaces; and

iii. a spout formed in the tube;

b. seal means bonded to the flange bottom surface and contactable with the building floor for cooperating with the tube and flange to confine any water rising above the sump to be confined within the retainer; and

c. hose means clamped to the spout for directing any water within the retainer to a selected location therefrom,

so that the building portions in the vicinity of the sump are protected against any water overflowing from the sump.

5,007,452

BOWL FILL FOR A TANK VALVE

Bruce A. Antunez, 1143 Indian Springs, Glendora, Calif. 91740

Filed Mar. 22, 1989, Ser. No. 326,916
Int. Cl.[5] F16K *31/18, 33/00*
U.S. Cl. 137—441 **5 Claims**

1. In combination with a tank valve for refilling a toilet tank and simultaneously supplying water to a toilet bowl, said tank valve having a riser, a valve mounted to said riser said valve having a body, a valving chamber in the body, an inlet valve entering said valving chamber from the riser, and a downwardly directed outlet port from said valving chamber, the improvement comprising:

a cuff surrounding said riser, said cuff having a bottom with an aperture to pass the riser, and a peripheral sidewall extending upwardly from the bottom with an upper edge spaced by a gap from the body through which water



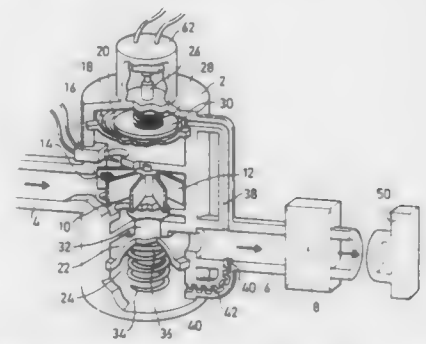
discharged form the outlet port into said cuff flows into the toilet tank, a fill port through said cuff for connection to a hose through which water from the cuff flows to the toilet bowl simultaneously with flow through the gap to the toilet tank, said sidewall selectively being so proportioned and arranged that the flow through the gap and through the fill port are suitably proportioned for both purposes.

5,007,453

FLUID FLOW CONTROL DEVICE

Yehuda Berkowitz; Gavriel M. Hi, both of Edmond Fleg str. 48, and Yehuda Mizrahi, Stella Maris Road 30, all of Haifa, Israel

Filed Apr. 2, 1990, Ser. No. 502,892
Claims priority, application Israel, Apr. 19, 1989, 90041
Int. Cl.[5] F16K *17/34*
U.S. Cl. 137—458 **16 Claims**



1. A flow control device insertable into a pressurized fluid line upstream of a fluid utilization device, comprising:

a housing containing an inlet port connectable to the fluid line, and an outlet port connectable to the utilization device;

a normally-open valve connected to the outlet port;

an electrical control system for closing said valve upon the occurrence of a predetermined condition;

a power supply for supplying electrical power to said electrical control system;

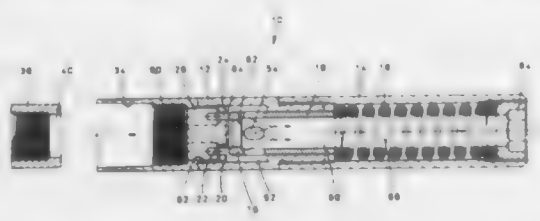
an electrical switch which is normally open to disconnect said power supply from the electrical control system;
and a flow sensor for sensing the flow of fluid through said outlet port and effective, when significant fluid flow is sensed, to close said electrical switch and thereby to connect said power supply to the electrical control system; said flow sensor comprising:
a displaceable diaphragm in said housing and defining a control chamber with a portion of the housing;
biassing means for biassing said diaphragm in the direction of expanding said control chamber;
a fluid connection from said outlet port to said control chamber to lower the pressure therein upon the significant flow of fluid through said outlet port, and thereby to displace said diaphragm in the direction of contracting said control chamber;
and a switch actuator movable by said diaphragm, when moved to contract said chamber, to close said switch and thereby to connect the power supply to the electrical control system;
said housing including a main chamber, and a liquid metering device in said main chamber controlling said electrical control system to close said valve when a predetermined quantity of fluid has flowed through said main chamber or when the fluid is flowing through said main chamber at an excessive rate.

5,007,454

FLUID CONTROL VALVE WITH TUBULAR POPPET

Leighton Lee, II, Guilford, Conn., assignor to The Lee Company, Westbrook, Conn.

Filed Sep. 21, 1989, Ser. No. 410,653
Int. Cl.[5] F16K *15/08*
U.S. Cl. 137—508 **20 Claims**



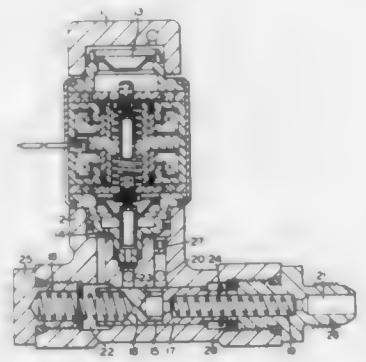
1. A fluid control valve comprising;
(A) housing means for forming a generally axially extending body defining an axially extending flow path;
(B) dual concentric valve seat means comprising opposing inside and outside valve seat means which define an opening comprising a section of the flow path through the valve;
(C) generally sleeve-like poppet means slidably received within said body, said poppet means having an upstream end equal to or greater than the opening in transverse aspect, having inside and outside surfaces and an axially extending flow passage defined by the inside surface of at least one orifice through the poppet wall for providing fluid communication between the exterior of said poppet means and the flow passage within the poppet means and being sealingly engageable with said valve seat means to prevent the flow of fluid through the opening and being axially displacable from said valve seat means to permit the flow of fluid through the opening and the fluid media passes through either the gap between the inside surface of the upstream end of said poppet means and the inside valve seat means or the gap between the outside surface of the upstream end of said poppet means and the outside valve seat means and thence into the poppet flow passage; and
(D) biasing means for biasing said poppet means against said valve seat means in a first upstream axial direction so that said poppet means sealingly engages said valve seat means unless and until the force exerted against said poppet by the pressure of the fluid media in the second downstream axial direction exceeds the opposing force exerted against the poppet by the biasing means axially displacing said poppet from said valve seat means in said second axial direction and allowing flow through the valve.

5,007,455

PILOT-OPERATED HYDRAULIC ANTILOCK MODULATOR

Michael J. Hawker, Lincoln, United Kingdom, assignor to Clayton Dewandre Co., Ltd., Lincoln, United Kingdom

Filed Feb. 15, 1989, Ser. No. 311,319
Claims priority, application United Kingdom, Feb. 15, 1988, 8803434
Int. Cl.[5] F15B *13/043*
U.S. Cl. 137—5[illegible].16 **43 Claims**



1. A pilot-operated hydraulic modulator which includes a provision for each of a supply, a delivery and an exhaust flow of fluid, said pilot-operated hydraulic modulator comprising
(a) a housing member;
(b) a main piston means disposed for reciprocal movement within said housing member;
(c) a means for producing a pressure balance across said main piston means;
(d) an auxiliary piston means disposed for reciprocal movement within said housing member, said auxiliary piston means moves in response to a predetermined movement of said main piston means;
(e) an inlet valve means operable in response to said reciprocal movement of one of said main piston means and said auxiliary piston means for controlling fluid communication between a supply and a delivery fluid communication port;
(f) an exhaust valve means operable in response to said reciprocal movement by an opposite one of said main piston means and said auxiliary piston means for controlling fluid communication between said delivery and an exhaust fluid communication port;
(g) biasing means engageable with said auxiliary piston means for urging said auxiliary piston means in a predetermined direction;
(h) means for supplying a pilot signal pressure to said main piston means, said main piston means moving in response to said pilot signal pressure and during at least a portion of its movement said main piston means controls movement of said auxiliary piston means away from a stopped position toward which said auxiliary piston means is biased; and
(i) a biasing means engageable with said main piston means for urging said main piston means in a predetermined direction toward said auxiliary piston means.

5,007,456

CLOSING ARRANGEMENT FOR DUCTS HAVING LARGE CROSS-SECTIONAL AREAS, PARTICULARLY FLUE GAS DUCTS

Volker von Erichsen, Recklinghausen, Fed. Rep. of Germany, assignor to Stober & Morlock Wärmekraft Gesellschaft mbH

Filed Oct. 20, 1989, Ser. No. 424,596
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1988, 3836861
Int. Cl.[5] F16K *11/16*
U.S. Cl. 137—601 **3 Claims**



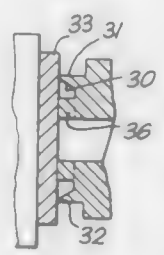
1. A closing arrangement for ducts defined by walls and having large cross-sectional areas, particularly flue gas ducts for power plants, the arrangement comprising at least two flaps which are mounted on at least one flap shaft and are arranged in one of the ducts and within the duct walls, lever arrangements comprising crank arms and tightening arms for swinging the flaps between an open position and a closed position being connected to the flaps, at least one drive shaft being connected to the lever arrangements, wherein the drive shaft extends transversely of the at least one flap shaft, wherein the flaps each have a central longitudinal axis, the flap shaft being arranged centrally in the longitudinal axis of each flap and the tightening arm of each lever arrangement acting on the flap eccentrically relative to the longitudinal axis, the arrangement further comprising a joint lever having first and second ends, the first end of the joint lever being rigidly connected to the centrally located longitudinal axis of each flap, the joint lever being arranged at an angle relative to the flap, wherein the second end of the joint lever is connected to the tightening arm in an articulated manner.

5,007,457

PNEUMATIC OSCILLATORS

Norman S. Jones, Stanbridge, England, assignor to Instruments and Movements Limited, London, England

Continuation of Ser. No. 352,962, May 17, 1990, abandoned. This application Jul. 20, 1990, Ser. No. 556,303
Claims priority, application United Kingdom, May 20, 1988, 8812004
Int. Cl.[5] F16K *1/32*
U.S. Cl. 137—624.14 **7 Claims**



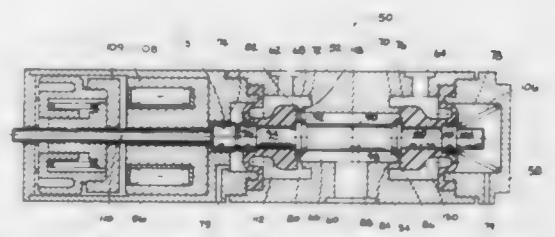
1. A pneumatic oscillator comprising a reciprocable piston or equivalent operating a poppet valve arrangement including a port to control a gas flow path from a gas source to a gas outlet, said poppet valve arrangement biassed to the path-closing condition with feedback of gas pressure at said gas outlet to supplement the bias in opposition to source pressure at the poppet valve, said poppet valve arrangement having a sealing lip providing for sharp definition of a line of contact on a resilient facing to define a switching control area, and stop means adapted to limit penetration of the facing by the lip in the flow path-closing condition, said stop means being positioned to engage said resilient facing downstream of said switching control area.

5,007,458

POPPET DIAPHRAGM VALVE

Jerald J. Marcus, Otsego, and John F. Berninger, Portage, both of Mich., assignors to Parker Hannifin Corporation, Cleveland, Ohio

Filed Apr. 23, 1990, Ser. No. 514,913
Int. Cl.[5] F16K *31/06, 11/02*
U.S. Cl. 137—625.5 **13 Claims**



1. A fluid valve for directing fluid flow therethrough, comprising:
a valve body;
said body including:
a first chamber;
first inlet means for introducing fluid into said first chamber;
a second chamber, said second chamber having a first side and an opposed second side;
first outlet means for delivering fluid from said first side of said second chamber,
first fluid passage means extending between said first and second chambers, said first fluid passage means including a first opening into said first side of said second chamber;
a stem mounted for axial movement on said valve body, said stem movable between a first position and a second position, said stem including a first reduced portion;
movement means for selectively moving said stem between said first and second positions;
a first poppet diaphragm mounted on said stem for movement therewith in said second chamber, said poppet diaphragm including:
a first resilient body portion, said first body portion including a first hole therethrough, said first reduced portion of said stem extending through said first hole, said first body portion adjacent said stem abutting said first reduced portion whereby said first body portion is fixed on said stem; said first body portion further having a first face adjacent said first opening, said first face adapted for blocking said first opening when said stem is in the first position, and said first face disposed of said first opening when said stem is in the second position;
a flexible first web portion, said web portion extending outward of said first body portion to first peripheral portions, said first peripheral portions of said web engaging said valve body, said first poppet diaphragm maintaining said first side of said second chamber in fluid tight relation with said first opening and said first outlet means;
whereby movement of said stem between said first and

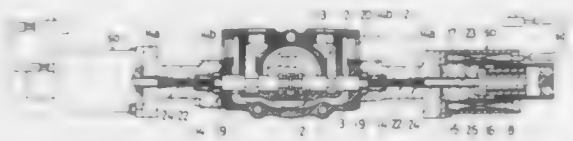
second positions selectively places said first inlet and first outlet in fluid communication.

5,007,459

HYDRAULIC CONTROL SYSTEM

Masaharu Asaoka, Saitama, Japan, assignor to Kayaba Industry Co. Ltd., Japan

Filed May 29, 1990, Ser. No. 529,923
Claims priority, application Japan, May 30, 1989, 1-62764[U]
Int. Cl.[5] F15B *13/044*
U.S. Cl. 137—625.65 3 Claims



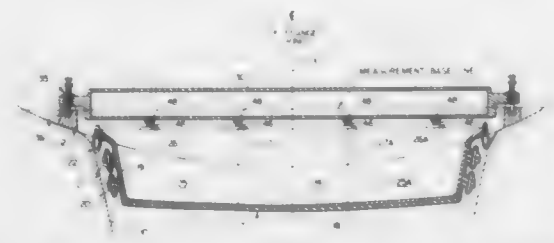
1. A hydraulic control system comprising:
a valve body;
a solenoid provided on one side of said valve body and including a movable core;
a push rod arranged so as to be moved with said movable core of said solenoid;
a spool arranged in said valve body and positioned opposite to the distal end of said push rod;
said spool being positionally changed depending upon an excitation current of said solenoid;
an accessory port formed on one side of said valve body for mounting an accessory component therethrough on said valve body;
a cap member detachably interposedly arranged between said valve body and said solenoid, said cap member abutting said one side of said valve body and having a diameter sufficiently smaller than said valve body so as to not obstruct said accessory port; and
a push bar insertedly arranged in said cap member so as to permit said push rod to be contacted at the distal end thereof through said push bar with said spool.

5,007,460

ADJUSTABLE NOZZLE DAM ASSEMBLY AND METHOD OF INSTALLING SAME

Louis J. Zezza, Brookfield, and Frank Fiorelli, Danbury, both of Conn., assignors to Nuclear Energy Services, Inc., Danbury, Conn.

Filed Apr. 3, 1989, Ser. No. 331,794
Int. Cl.[5] F16L *55/12*
U.S. Cl. 138—89 15 Claims



1. In a nozzle dam assembly for use in nozzles having nominally varying longitudinal profiles flaring to circular wall openings about which are fixed flange rings of nominally varying eccentricity relative to such openings, said assembly including a circular dam adapted to face into and seal the associated nozzle adjacent its opening and a support frame abutting the backside of the dam and adapted to be removably affixed across the associated ring, the improvement which comprises adjustment means for selectively locating said dam at its optimum sealing position within the nozzle notwithstanding the particular nozzle profile and the particular eccentricity of the ring relative to the opening comprising
(a) adjustable hanger bars adapted to rest slideably on the ring while supporting the dam in selected depth positions along the nozzle axis,
(b) adjustable abutments on the frame restraining the dam against outward movement along the nozzle axis from the selected depth position determined by the hanger bars but permitting movement of the dam in a plane perpendicular to the nozzle axis,
(c) adjustable plates supporting the hanger bars and dam in selected vertical positions perpendicular to the nozzle axis, and
(d) pins adapted to be affixed to the ring and support the adjustable plates and bars and dam in selected horizontal positions perpendicular to the nozzle axis.

5,007,461

METHOD FOR THE CLEANING OF THE INTERIOR OF INSTALLED CONDUITS

Werner Naf, Richterswil, Switzerland, assignor to interTechno AG, Richterswil, Switzerland

Filed Jun. 7, 1988, Ser. No. 203,695
Claims priority, application Switzerland, Jul. 9, 1987, 2604/87; Feb. 2, 1988, 346/88
Int. Cl.[5] F16L *55/18*
U.S. Cl. 138—97 6 Claims

1. A method of repairing, cleaning and coating the inside of an installed conduit, comprising the steps of:
drying the inside of a conduit to be coated by flow-through of pre-dried compressed air,
flowing-through the inside of said conduit a mixture of compressed air and particles of an abrasive medium with a mean exterior diameter of >0.8 mm and a specific weight of >3.0 g cm^{-3} in an amount of >1.0 g m^{-3}, said mixture flowing through said conduit with a mean speed of >10 m s^{-1} to remove materials adhering to the inside wall of said conduit,
cleaning said conduit by flowing-through pre-dried and preheated compressed air until the outside temperature of the line is $>40°$ C. to remove any remaining materials which have been removed from the inside wall of said conduit, and
subsequently coating the inside of the conduit by means of blowing in and blowing around an adhesive resin by means of compressed air, said adhesive resin being a solvent-free, self-setting resin with at least 5% by weight of inorganic oxidic adhesives with a mean diameter of <0.08 mm.

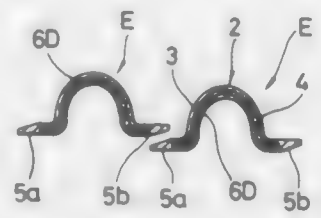
5,007,462

SYNTHETIC RESIN UNDERGROUND PIPE HAVING HIGH PRESSURE-WITHSTANDING CAPABILITY

Shiro Kanao, No. 9-18, Nanpeidai 4-chome, Takatsuki-shi, Osaka, Japan

Continuation of Ser. No. 227,413, Jun. 29, 1988, abandoned, which is a continuation of Ser. No. 127,543, Dec. 1, 1987, abandoned, which is a continuation of Ser. No. 831,893, Feb. 24, 1986, abandoned. This application May 9, 1990, Ser. No. 520,990
Claims priority, application Japan, Feb. 25, 1985, 60-26173[U]; Aug. 9, 1985, 60-23193; Aug. 9, 1985, 60-123191[U]; Aug. 9, 1985, 60-123192; Dec. 12, 1985, 60-191581[U]
Int. Cl.[5] F16L *11/11*
U.S. Cl. 138—154 7 Claims

1. A synthetic resin pipe for underground use, comprising:
an integral, pipe wall corrugation helically wound to form a pipe, said corrugation having an outwardly projecting portion and flange portions on opposing sides of said projecting portion, adjacent flange portions being connected together to form a pipe having a helical trough portion adjacent said projecting portion; and
a thin metal plate reinforcing member disposed within said outwardly projecting portion of said helically disposed corrugation, said reinforcing member being made of one of steel and iron so as to increase both the internal and external pressure withstanding capabilities of said pipe, wherein said metal plate is embedded within synthetic resin such that the synthetic resin ; completely surrounds and covers the complete surface of said thin metal plate reinforcing member to prevent water condensation



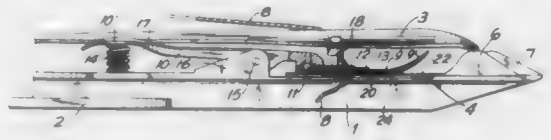
thereon and rusting thereof during underground use of said pipe,
wherein said reinforcing member is generally U-shaped defining a bight, legs and free ends, and the legs open toward the interior of said pipe and said free ends project laterally in a longitudinal direction of said pipe into a portion of each of said flanged portions so as to be partially disposed within said trough portion along the entire length of said pipe.

5,007,463

WEFT CLAMPING SYSTEM FOR INSERTER RAPIER

Luciano Corain; Gianni Maitan, both of Vicenza; Renato Perlini, Verona, and Mario Bacchetti, Padua, all of Italy, assignors to Nuovopignone-Industrie Meccaniche e Fonderia, S.p.A., Florence, Italy

Filed Aug. 3, 1989, Ser. No. 389,305
Claims priority, application Italy, Aug. 19, 1988, 21718 A/88
Int. Cl.[5] D03D *47/20*
U.S. Cl. 139—448 4 Claims



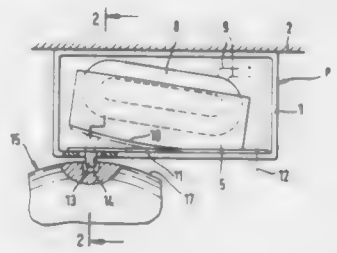
1. A Weft inserter rapier for shuttleless wearing looms comprising a weft clamping and retaining system, said weft clamping and retaining system having an elastic clamping foot which is urged by a spring-loaded lever with which said clamping foot is linked against a horizontal clamping plane provided along an external edge of a body of the rapier, in which said elastic clamping foot has a cross-section which has a substantially reverse-"U"-shape, said substantially reverse "U" shape cross-section defining side walls in which each of both of the side walls are spaced apart from each other and are urged against adjacent metal blades which are supported on said horizontal clamping plane through a support made of an elastomeric material.

5,007,464

ELECTROMAGNETIC WEFT BRAKE

Joannes J. H. M. Gorris, Eindhoven, Netherlands, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed May 15, 1989, Ser. No. 352,168
Claims priority, application Switzerland, May 20, 1988, 01934/88
Int. Cl.[5] D03D *47/36*
U.S. Cl. 139—455 17 Claims



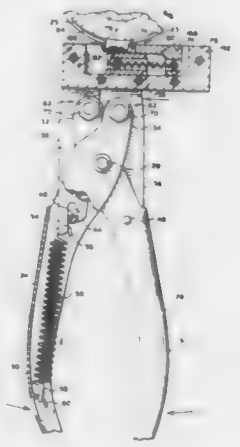
1. In combination,
a winding drum for a loom for receiving yarn windings thereon; and
an electromagnetic device for limiting delivery of yarn windings from said drum, said device having at least one pole piece having an abutment surface thereon; a winding for conducting an electrical current therethrough to generate an electromagnetic force in said pole piece; and a spring strip fixedly mounted at one end relative to said pole piece and having a free end portion extending in spaced opposed relation to said abutment surface, said free end portion of said spring strip being movable between an extended position spaced from said abutment surface to limit delivery of yarn windings from said drum and a retracted position against said abutment surface in dependence on said electromagnetic force to allow delivery of yarn windings from said drum, at least one of said abutment surface and said end portion of said spring strip being curved.

5,007,465

HAND OPERATED BAND BENDING TOOL

David W. Tonkiss, Glendale, Calif., assignor to Joslyn Corporation, Chicago, Ill.

Filed Dec. 6, 1989, Ser. No. 446,938
Int. Cl.[5] B21F *15/06*
U.S. Cl. 140—150 19 Claims



1. A band finishing tool for bending a free end of a band extending from one side of a buckle over the buckle, said buckle formed with a slot defining internal edges, comprising:
means for holding said internal edges of the buckle and

allowing said free end to be bent over the buckle and contact the band on the other side of the buckle; and

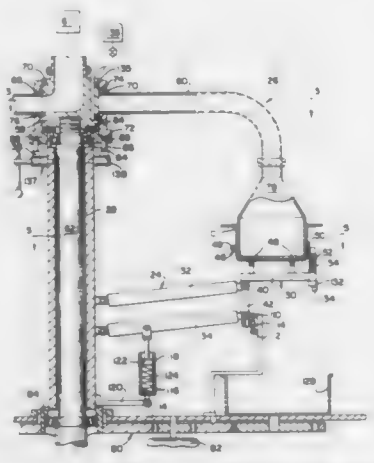
means for bending said free end over said buckle to be in contact with said band on said other side of the buckle.

5,007,466

METHOD AND APPARATUS FOR FILLING ICE CREAM CONTAINERS

Martin J. Mueller, Palm Harbor, Fla.; Martin Mueller, Wonder Lake, Ill., and Michael A. Weingandt, Duneden, Fla., assignors to Osgood Industries, Inc., Oldsmar, Fla.

Filed Jul. 19, 1989, Ser. No. 381,858
Int. Cl.[5] B65B *3/34*
U.S. Cl. 141—1 24 Claims



1. An apparatus for filling containers with ice cream, said filling apparatus comprising:

means for continually moving at least one ice cream container along a predetermined path of travel;

means for filling said container with ice cream as the container continually moves along a segmented portion of its predetermined path of travel, said filling means comprising ice cream distribution means connected to a source of ice cream and defining an ice cream outlet, and conduit means movable relative to said ice cream outlet for delivering ice cream from said outlet to said container, said conduit means comprising at least one ice cream conduit having an inlet end which is moved into and out of fluid communication with said ice cream outlet, with ice cream passing through said conduit so long as the outlet end of the conduit and said ice cream outlet are joined in fluid communication relative to each other; and

means for controlling the speed of movement of said conduit means relative to said outlet and of said container as it moves relative to said outlet along at least said segmented portion of its travel thereby affecting the volume of ice cream filled into said container by increasing the speed of movement to reduce the filling of said container, and by decreasing the speed of movement to increase the filling of said container,

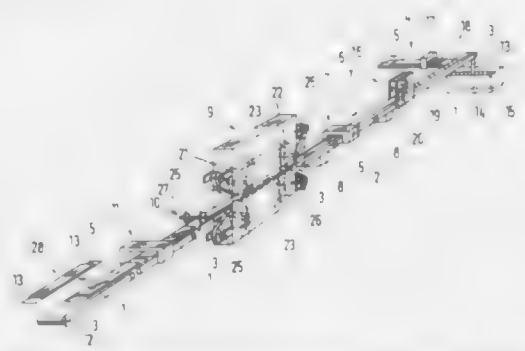
said controlling means comprising variable speed drive means for driving said container moving means and said conduit means in concert with each other relative to said ice cream outlet, and means for monitoring the quantity of ice cream with which said container is filled relative to a predetermined value, and for controlling the speed of said drive means to promote accuracy during filling of said containers.

5,007,467

METHOD AND APPARATUS FOR PRODUCING CATHODES FOR DRY-CELL BATTERIES, ESPECIALLY LITHIUM BATTERIES

Josef Nelles, Meschede, Fed. Rep. of Germany, assignor to Accumulatorenwerke Hoppecke Carl Zoellner & Sohn GmbH & Co. KG, Brilon, Fed. Rep. of Germany

Filed Sep. 26, 1989, Ser. No. 412,666
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1989, 3921288
Int. Cl.[5] H01M *4/72, 4/82*
U.S. Cl. 141—1.1 7 Claims



1. In a method of producing cathodes for dry-cell batteries, especially lithium batteries, including pasting a pasty cathode material on a metallic carrier material and subsequently compressing said cathode material therewith, and finally welding a current shunting to an end of said carrier material, the improvement comprising the steps of:

continuously unrolling a strip-like carrier material from a supply roll;

automatically feeding a dosed quantity of said pasty cathode material to said carrier material and subsequently pasting this cathode material onto said carrier material;

while continuously transporting said pasted carrier material further, automatically compressing same;

while still continuously transporting said pasted carrier material further, cutting same at a cut location to form predetermined cathode lengths;

finally automatically connecting said current shunting to said carrier material, with the further improvement of:

between said pasting and compressing steps, removing cathode material from said pasted carrier material, in conformity with the cathode length, in the vicinity of a given cut location to expose said carrier material to form a later contact location for said current shunting.

5,007,468

FLUID DISPENSING NOZZLE CONSTRUCTION HAVING A DIAPHRAGM SUBASSEMBLY THEREIN AND METHODS OF MAKING THE SAME

Paul R. Wilder, Hamilton, and James E. Kesterman, Cincinnati, both of Ohio, assignors to Dover Corporation, New York, N.Y.

Filed Nov. 19, 1987, Ser. No. 123,042
Int. Cl.[5] B65B *1/30*
U.S. Cl. 141—209 8 Claims

1. A fluid dispensing nozzle comprising

a main valve,

lever means for controlling said main valve, and

automatic shut off means for disposing said lever means in an "on" condition or an "off" condition,

said shut off means including

a diaphragm assembly comprising

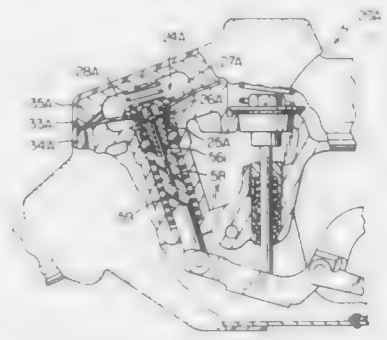
a diaphragm having an upper and lower surface,

a pin and

means for mounting the diaphragm on the upper end of the pin comprising first and second clamping elements between which a central portion of the diaphragm is clamped,

characterized in that

the first and second clamping elements are telescoped to a



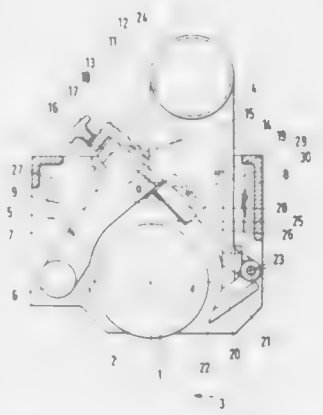
clamping position and have, respectively, cooperating snap fit connecting surfaces which are readily assembled to mount the diaphragm on the pin and which require destruction of at least one of the elements to remove the diaphragm from the pin.

5,007,469

PRESSING APPARATUS FOR A PROCESSING MACHINE

Heiner Englert, Lauda-Königshofen, and Bernhard Martin, Tauberbischofsheim, both of Fed. Rep. of Germany, assignors to Michael Weinig Aktiengesellschaft, Tauberbischofsheim, Fed. Rep. of Germany

Filed Oct. 6, 1989, Ser. No. 418,022
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1988, 8812623[U]
Int. Cl.[5] B27G *19/00*
U.S. Cl. 144—252 R 20 Claims



1. In a pressing apparatus for a processing machine, including at least one adjustable pressing element that is provided for a workpiece which is to be processed and that is associated with a processing tool, the improvement comprising:

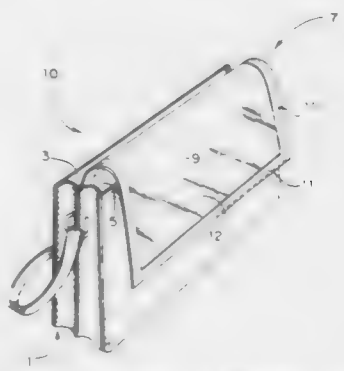
means for adjusting said pressing element relative to said processing tool at an angle to a direction of transport of said workpiece through said machine

5,007,470

PURSE WITH REMINDER DEVICE

Carol A. Freeman, 16000 Pemberville Rd., Pemberville, Ohio 43450

Filed Apr. 27, 1990, Ser. No. 515,186
Int. Cl.[5] A45C *1/02, 15/02*
U.S. Cl. 150—114 3 Claims



1. An improved purse having a reminder device incorporated therewith comprising:

(a) a purse having at least one compartment with an access opening;

(b) a flap having means for attachment to said purse, such that said flap is moveable to a position in overlying relation to said access opening;

(c) said flap including:

(i) a transparent portion;

(ii) a backing portion; and

(iii) means to removably attach at least a portion of said transparent portion to said backing portion, said transparent portion and said backing portion forming a chamber viewable through said transparent portion when said flap is in said position;

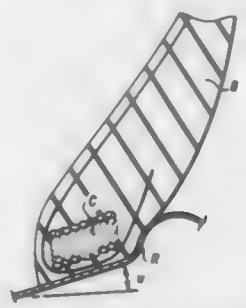
(d) said chamber receiving a reminder message facing said transparent portion.

5,007,471

BEADS OF PNEUMATIC TIRES FOR VEHICLE WHEELS

Luigi Maiocchi, Vernate fraz. Moncucco, Italy, assignor to Pirelli Coordinamento Pneumatici S.p.A., Italy

Filed Apr. 19, 1988, Ser. No. 183,639
Claims priority, application Italy, Apr. 28, 1987, 20293 A/87
Int. Cl.[5] B60C *15/04*
U.S. Cl. 152—540 30 Claims



1. A pneumatic tire for vehicle wheels comprising

two beads each reinforced with a circumferentially inextensible metal bead core ring package having a cross section generally in the shape of a parallelogram and having generally axially extending bases inclined at a predetermined angle with respect to the axis of rotation of the tire,

each said bead core comprising a plurality of radially superimposed coils of straps arranged side-by-side and radially offset with respect to one another.

each of said coils being straps having a cross section including two axially extending rectilinear and parallel opposite sides, their corresponding extremities at one side of such section being connected by a profile symmetric to the corresponding profile at the other side of the section with respect to a pre-established straight line "r" perpendicular to said pair of parallel sides,

the distance from said line "r" varying along the profile in such a way to include, along its length, at least one inversion in the trend of the values of said varying distance,

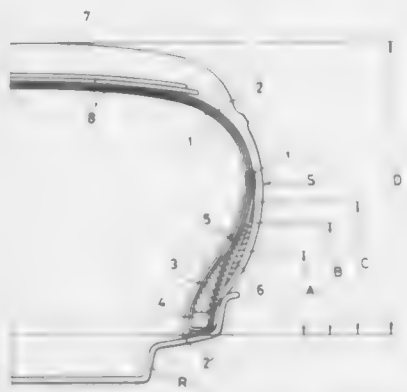
the side-by-side contact among said straps along their corresponding profiles determing their reciprocal radially offset position and the degree of said inclination of the parallelogram base.

5,007,472

PNEUMATIC RADIAL TIRE WITH IMPROVED BEAD STRUCTURE

Tetsuya Kuze; Takashi Yamashita, and Toshihiko Suzuki, all of Hiratsuka, Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Apr. 25, 1990, Ser. No. 514,641
Claims priority, application Japan, Apr. 26, 1989, 1-104533
Int. Cl.[5] B60C *15/06, 13/00, 15/00*
U.S. Cl. 152—546 4 Claims



1. Pneumatic radial tire characterized in that carcass layers of two-ply structure consisting of an inner carcass layer and an outer carcass layer is disposed;

said inner carcass layer is turned up from inside to outside around each bead core in such a manner as to wrap a bead filler therein;

a steel cord reinforcing layer is disposed outside said turnup portion of the inner carcass layer;

said outer carcass layer is disposed in such a manner that it covers the outside of said steel cord reinforcing layer and its tip extends to at least near said bead core;

a second filler is disposed outside said outer carcass layer;

said second filler has a hardness below that of said bead filler and within the range of 70 to 93 in terms of JIS hardness;

the cord angle of said steel cord reinforcing layer is from 15° to 30° to a tire circumferential direction; and

the height B of the steel cord reinforcing layer from a bead base to its upper end is specified by the following relationship, where; the height of said bead filler from said bead base to its upper is A, the height of said second filler from said bead base to its upper end C and a sectional height of said tire D:

$$0.2\,D < B < 0.5\,D \quad (1)$$

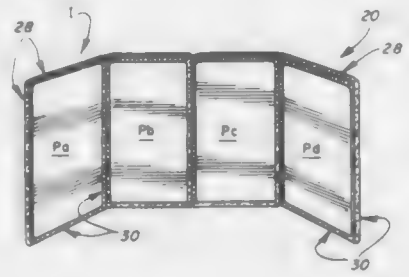
$$C > B > A \quad (2)$$

5,007,473

PORTABLE PARTITION SYSTEM

David P. Evensen, Wheeling, Ill., assignor to Nimlock Company, Niles, Ill.

Continuation of application Ser. No. 388,662 filed Aug. 2, 1989 abandoned. This application Aug. 20, 1990, Ser. No. 569,511
Int. Cl.[5] A47G *5/00*
U.S. Cl. 160—135 4 Claims



1. A portable partition system comprising only a plurality of planar, substantially inflexible, independent, lightweight, self-contained display panel components adapted to assume either an operative or inoperative mode, at least one panel component having a multilateral peripheral configuration including spaced substantially parallel front and back sides having corresponding upright peripheral segments thereof cooperating to form a recessed pocket extending substantially the full height of the panel component, and an elongate support member of one piece construction formed of substantially rigid material, said support member including an inner portion fixedly accommodated within the elongate pocket and substantially occupying same and an outer portion integral with said inner portion and protruding from an open side of said pocket, said outer portion having a substantially convex exterior surface on which is mounted a first attaching means, said outer portion and first attaching means extending substantially the full length and width of the pocket; a second panel component having an elongate exterior surface portion on which is mounted a second attaching means; when in an operative mode, said one panel component assuming an upright abutting relation with said second panel component whereby the first attaching means thereof is pressed against the second attaching means of the second panel component effecting a frictional interconnection therebetween, said abutting panel components while interconnected forming an upright partition and being adapted to assume any selected upright relative angular position, and when in an inoperative mode, said panel components being disconnected and independent of one another and being adapted to assume a compact portable unit wherein the independent panel components are arranged in stacked relation with planar surfaces of the stacked panel components being in proximate, superposed face to face relation.

5,007,474

METHOD OF PROVIDING A GATING MEANS, AND PRODUCTS PRODUCED THEREBY

Ralph A. Langensiepen, Newark, Del.; Michael K. Aghajanian, Bel Air, Md., and Robert J. Wiener, Newark, Del., assignors to Lanxide Technology Company, LP, Newark, Del.

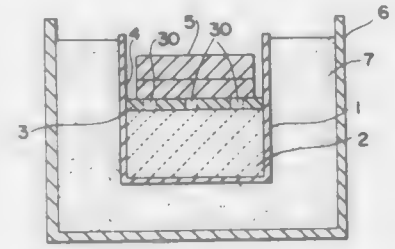
Filed Nov. 10, 1988, Ser. No. 269,315
Int. Cl.[4] B22D *19/14*
U.S. Cl. 164—97 43 Claims

1. A method for making a metal matrix composite, comprising:

providing a substantially non-reactive filler;

providing a source of molten matrix metal;

interposing a gating means for controlling the flow of molten matrix metal into said filler, said gating means being located between said source of molten matrix metal and said filler; and



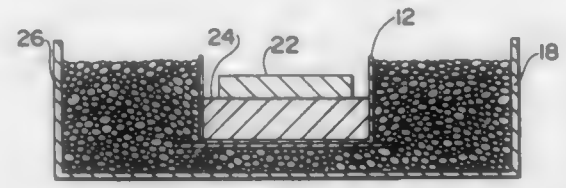
spontaneously infiltrating through said gating means at least a portion of the filler with molten matrix metal.

5,007,475

METHOD FOR FORMING METAL MATRIX COMPOSITE BODIES CONTAINING THREE-DIMENSIONALLY INTERCONNECTED CO-MATRICES AND PRODUCTS PRODUCED THEREBY

Christopher R. Kennedy, Newark, Del., and Michael K. Aghajanian, Bel Air, Md., assignors to Lanxide Technology Company, LP, Newark, Del.

Filed Nov. 10, 1988, Ser. No. 269,369
Int. Cl.[5] B22D *19/14*
U.S. Cl. 164—97 42 Claims



1. A method for making a metal matrix composite, comprising:

providing a substantially non-reactive three-dimensionally interconnected material;

providing at least one substantially non-reactive filler within at least a portion of said three-dimensionally interconnected material; and

spontaneously infiltrating molten matrix metal into at least a portion of the three-dimensionally interconnected material containing said substantially non-reactive filler.

5,007,476

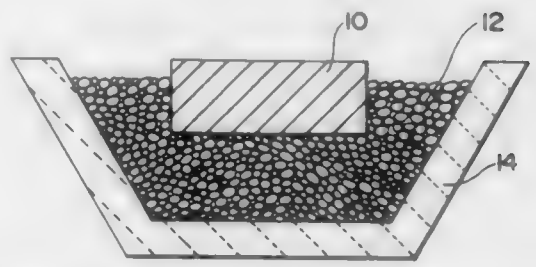
METHOD OF FORMING METAL MATRIX COMPOSITE BODIES BY UTILIZING A CRUSHED POLYCRYSTALLINE OXIDATION REACTION PRODUCT AS A FILLER, AND PRODUCTS PRODUCED THEREBY

Marc S. Newkirk, Newark, Del., and Michael K. Aghajanian, Bel Air, Md., assignors to Lanxide Technology Company, LP, Newark, Del.

Filed Nov. 10, 1988, Ser. No. 269,306
Int. Cl.[4] B22D *19/14*
U.S. Cl. 164—97 44 Claims

1. A method for making a metal matrix composite, comprising:

providing a permeable mass of filler comprising a comminuted oxidation reaction product; and



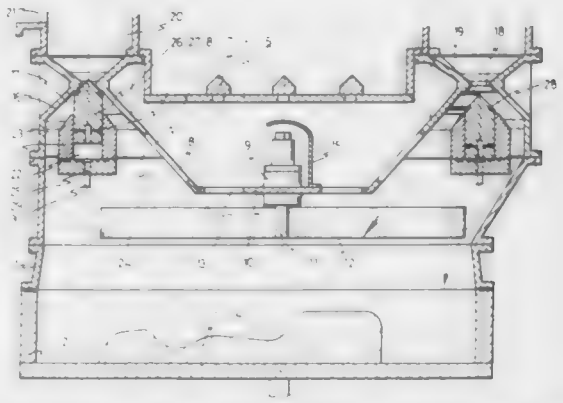
spontaneously infiltrating at least a portion of the permeable mass with a molten matrix metal.

5,007,477

AIR IMPACT SAND-BOX MOULDING MACHINE

Agustin A. Erana, Zorrostea, 4 Poligono Ind. Ali-Gobeo, 01010 Vitoria Alava, Spain

Filed Apr. 3, 1990, Ser. No. 503,611
Claims priority, application Spain, Apr. 6, 1989, 8901201
Int. Cl.[5] B22C *15/00*
U.S. Cl. 164—169 5 Claims



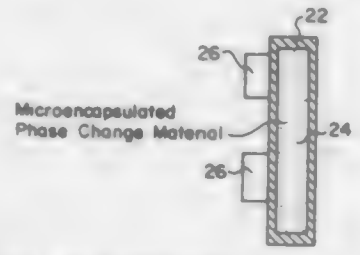
1. In an air impact sand-box moulding machine comprising a machine body, a sand-supplying hopper, a compacting chamber for compacting sand on a model positioned within a moulding box, a frame connected to said body and coupled to a mouth of said box wherein compacting is carried out by sudden pnuematic discharge from a boiler and wherein a valve means is provided including a plunger which is maintained in a closed position due to pressure of the boiler when blast air is not released, the improvement comprising a motor positioned in an upper area of said compacting chamber, said motor including a vertical shaft coaxial with a central axis of said sand-supplying hopper and rotary vanes attached to said shaft and positioned right above said frame which forms with said box said compacting chamber so that said vanes, upon rotation thereof, evenly spread out sand reaching said compacting chamber within said chamber, a metering hatch positioned inside said hopper above said motor, a support plate provided at a mouth of said hopper and supporting said motor, said support plate having apertures for permitting sand to fall therethrough into said compacting chamber, said support plate being provided with a protective plate integrally connected thereto to protect said motor from the sand falling into said compacting chamber upon opening of said metering hatch.

5,007,478

MICROENCAPSULATED PHASE CHANGE MATERIAL SLURRY HEAT SINKS

Subrata Sengupta, Coral Gables, Fla., assignor to University of Miami, Coral Gables, Fla.

Filed May 26, 1989, Ser. No. 357,719
Int. Cl.[5] F28D *20/00*; H01L *23/44, 23/473*
U.S. Cl. 165—10 20 Claims



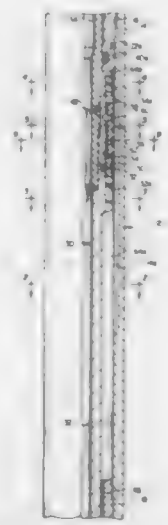
1. A heat sink device comprising
a sealed container, and
a slurry of a microencapsulated phase change material and a fluid sealed within said container, said slurry being free flowing within said container.

5,007,479

HYDRAULIC UP-DOWN WELL JAR AND METHOD OF OPERATING SAME

Charles W. Pleasants, Carrollton, and Keith W. Scott, Farmersville, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Continuation of Ser. No. 269,996, Nov. 14, 1988, abandoned.
This application Oct. 11, 1989, Ser. No. 423,483
Int. Cl.[5] E21B *31/113*
U.S. Cl. 166—178 11 Claims



1. A hydraulic jar connected in a string of components for use in a wellbore, said jar comprising:
a. an inner mandrel assembly;
b. an outer housing assembly extending around said inner mandrel assembly in a coaxial relation thereto;
c. means respectively connecting said mandrel assembly and said housing assembly to two of said components;
d. a fluid chamber defined between said mandrel assembly and said housing assembly;
e. means for forming a restricted flow passage in said fluid chamber for dividing said chamber into two sections in fluid flow communication with said passage;
f. one of said assemblies being movable relative to the other from a cocked position to a jarring position to vary the volume of each chamber section and force the fluid to flow from one of said chamber sections, through said flow passage and to the other chamber section;
g. means responsive to said one assembly moving relative to the other assembly a predetermined distance from said cocked position for increasing the size of said flow passage and therefore the rate of said fluid flow and the rate of movement of said one assembly towards said jarring position, and
h. means for providing a high impact load to one of said components in response to said one assembly reaching said jarring position;
i said means for increasing the size of said flow passage being adjustable between a first position and a second position without changing said connection between said assemblies and said components to permit said impact loading in opposite directions, respectively.

8. A method for operating a hydraulic jar connected in a string of components in a wellbore, said method comprising the steps of:
a. connecting a mandrel assembly and a housing assembly to two of said components, respectively;
b. forming a fluid chamber between said mandrel assembly and said housing assembly;
c. forming a restricted flow passage in said chamber to divide said chamber into two sections in fluid flow communication;
d. moving one of said assemblies relative to the other in one direction from a cocked position to a jarring position to vary the volume of each chamber section and force the fluid to flow through said flow passage from one of said chamber sections to the other;
e. increasing the size of said flow passage during said step of moving to increase the rate of said fluid flow and the rate of movement of said one assembly;
f. providing a high impact load to one of said components connected to said jar in response to said one assembly reaching said jarring position; and
g. adjusting the axial position of said groove without changing said connection between said assemblies and said components to permit said impact loading by movement of said one assembly in a direction opposite said one direction.

5,007,480

USE OF MANGANESE OXIDE IN DRILLING MUD AND OIL WELL CEMENT SLURRIES

Sverre Anderssen, Kristiansand, Norway, assignor to Elkem a/s, Norway

Filed Feb. 24, 1989, Ser. No. 315,466
Claims priority, application Norway, Mar. 8, 1988, 881017
Int. Cl.[5] C09K *7/04*; E21B *21/00, 33/14*
U.S. Cl. 166—292 28 Claims

1. An oil well cement slurry comprising cement, water, and a manganomanganic oxide particulate material, the material containing at least about 90% by weight of manganomanganic oxide, the material having a density between about 4.50 and about 4.75 g/cm^3 and a particle size of at least about 98% below about 10 μm.

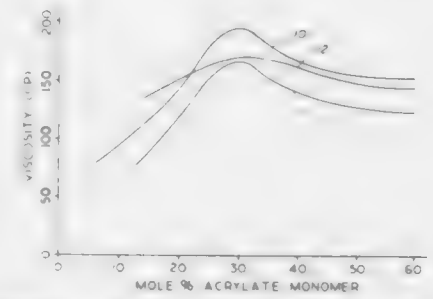
13. An oil well drilling mud comprising water and a weighted component, the weighted component having as an essential ingredient therein a manganomanganic oxide particulate material, the material containing at least about 90% by weight of manganomanganic oxide, the material having a density between about 4.50 and about 4.75 g/cm^3 and a particle size of at least about 98% below about 10 μm.

5,007,481

METHOD OF TREATING SUBTERRANEAN FORMATIONS USING A NON-DAMAGING FRACTURING FLUID

Dennis A. Williams, Houston; Roger L. Horton, Kingwood; John C. Newlove, Kingwood, and Robert E. Chumley, Kingwood, all of Tex., assignors to Exxon Chemical Patents, Inc., Linden, N.J.

Filed Feb. 2, 1990, Ser. No. 473,863
Int. Cl.[5] E21B *43/267*
U.S. Cl. 166—300 12 Claims



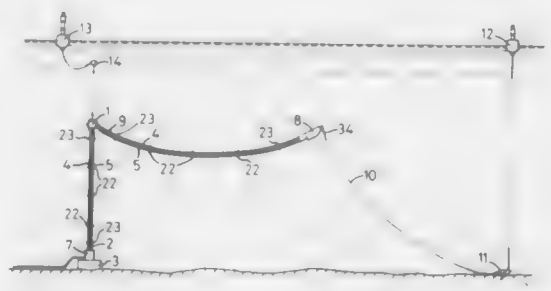
1. A process for fracturing a subterranean formation wherein an aqueous fracturing fluid is injected through a well and into the formation at a pressure and rate sufficient to form a fracture therein, the improvement wherein the aqueous fracturing fluid includes
(a) an effective amount of a copolymer of acrylamide and potassium acrylate crosslinked with a titanium or zirconium compound, the acrylamide comprises from 60 to 78 mole % of the copolymer and the potassium acrylate comprises 22 to 40 mole % of the copolymer and the concentration of the crosslinked copolymer being sufficient to provide the aqueous fracturing fluid with a viscosity of between 20 cp and 1,000 cp at 170 sec^{-1} at a temperature of at least 200° F.; and
(b) an effective amount of an oxidative gel breaker capable of degrading the copolymer after about 2 hours.

5,007,482

OFFSHORE OIL PRODUCTION SYSTEM

Donald G. W. Forsyth; Robert W. Marshall, and Alan M. Thompson, all of Glaslow, Scotland, assignors to British Petroleum Co. p.l.c., London, England

Filed Mar. 9, 1990, Ser. No. 490,879
Claims priority, application United Kingdom, Mar. 9, 1989, 8905364
Int. Cl.[5] E21B *43/01*
U.S. Cl. 166—345 17 Claims



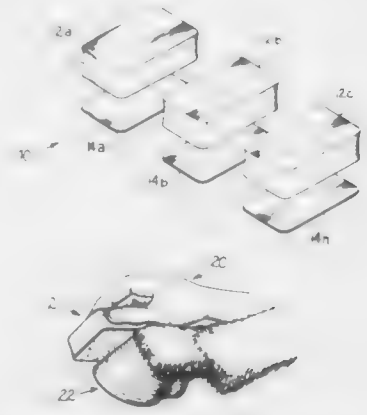
1. A swivel-less offshore oil production and mooring system comprising:
(a) a subsea base located on the sea bed associated with
(b) a subsea connector, adpated for connecting a subsea well head production system to a production riser,
(c) a subsea restraining buoy located at a position below the sea surface but above the sea bed,
(d) a buoyant riser endpiece adapted for a swivel-less connection to a loading vessel, located in its rest position at a position below the sea surface but above the sea bed, and anchorable to the sea bed,
(e) a flexible lower support line pivotally connecting the restraining buoy to the subsea base,
(f) a flexible upper support line pivotally connecting the restraining buoy to the riser endpiece, and
(g) a flexible production riser connected to the subsea connector and supported by the lower support line, the subsea restraining buoy and the upper support line and connected to the riser endpiece.

5,007,483

HOOF-BUFFING TOOL KIT FOR FARRIERS

Douglas K. McGuire, 39609 Luckiamute Rd., Philomath, Oreg. 97370

Filed Feb. 3, 1988, Ser. No. 151,764
Int. Cl.[5] A01L *11/00*
U.S. Cl. 168—48.1 3 Claims



2. A kit of buffing tools for imparting a gloss to the curved exterior surface of horses' hooves, comprising:
a. a multiplicity of substantially rectangular blocks, each block being:
1. fabricated of a resilient material; and
2. of a size to be gripped comfortably by a user's hand; and having
A. at least two principal faces with substantially planar surfaces hereon:
B. each of said planar surfaces:
I. having removably affixed thereto a different one of several grades of abrasive material;
b. said multiplicity of blocks collectively:
1. representing a progression, from coarser to finer, of said several grades of said abrasive material; and
2. imparting said gloss to said hooves when applied thereto, in order of said progression, in a buffing procedure.

5,007,484

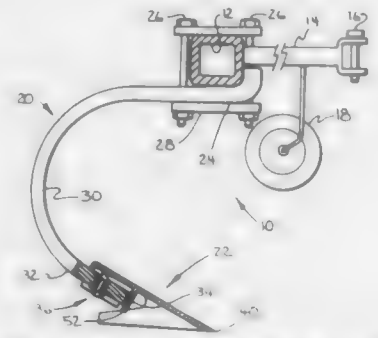
METHOD AND APPARATUS FOR CHANGING CULTIVATOR PLOW BLADES

Greg N. Johanson, R.R. 2, Box 122, Elmore, Minn. 56027

Filed Oct. 30, 1989, Ser. No. 428,988
Int. Cl.[5] A01B *39/22*
U.S. Cl. 172—1 11 Claims

6. A plow blade comprising
(a) a longitudinal plate having a soil cutting leading edge;
(b) a downward projecting blade stop on an underside of the plate providing means for receiving a portion of the working forces from an abutment on a cultivator shank, said stop being spaced rearward of said leading edge;
(c) clip means on a back side of the plate separate from and

spaced rearwardly of said blade stop for slip fit upon the leading end of a cultivator shank; and



(d) downward facing lock means on said plate back side and spaced rearward of said blade stop, for engaging a blade lock on the cultivator shank and for locking the blade upon the shank.

5,007,485

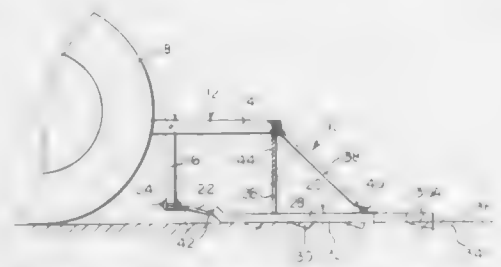
EARTH CRUST BREAKER

Robert J. Moss, Rte. #1, Box 8G, Hoxie, Kans. 67740

Filed Oct. 16, 1989, Ser. No. 421,666

Int. Cl.[5] A01B *31/00*

U.S. Cl. 172—500 **4 Claims**



1. An earth crust breaker drawn by a tool bar having a horizontal member and a vertical member on a tractor comprising:

(a) an elongated U-shaped frame having an angular upwardly extending front end attached to the bottom of the vertical member of the tool bar;

(b) a pair of spaced apart posts, each extending vertically from one side of said frame to the free end of the horizontal member of the tool bar wherein a flexible rubber tarpaulin strap extending diagonally from the free end of the horizontal member to the rear end of said frame to hold up the rear end and prevent said frame from flexing down when it is out of the ground and turning around;

(c) a plurality of specifically placed knife blades extending from the bottom of said frame and fixed movably thereon to penetrate the ground and make slices into the crust thereby chopping it up; and

(d) a double hinge provided on the front end of said frame which allows said frame to flex and adjust to the unevenness of the ground and also helps shed any trash the frame encounters.

5,007,486

PERFORATING GUN ASSEMBLY AND UNIVERSAL PERFORATING CHARGE CLIP APPARATUS

Thomas D. Ricles, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

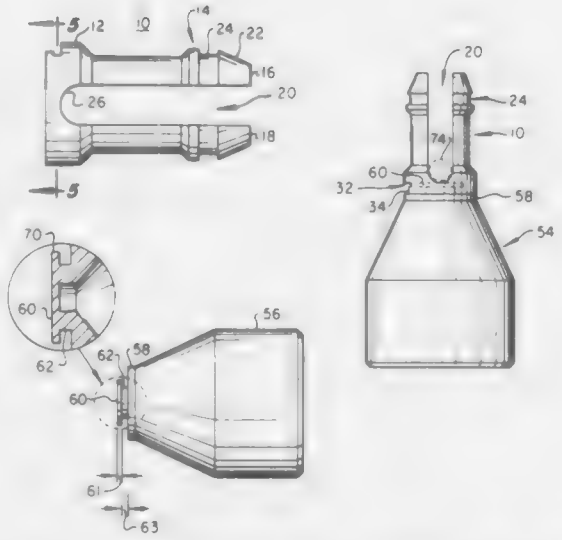
Filed Feb. 2, 1990, Ser. No. 473,729

Int. Cl.[5] E21B *43/117*

U.S. Cl. 175—4.6 **17 Claims**

1. In a perforating gun assembly for use in perforating a casing located down hole in a bore hole, said gun assembly including a cylindrical carrier housing, and a plurality of first ports formed in the housing through which a jet from a shaped charge can emerge, a firing cord for the shaped charge, the shaped charge having a flat washer-type collar at one end, and a plurality of second ports formed in the housing, an improved clip for holding the charge comprising:

a body portion;



a slot therein for receiving the flat washer-type collar of the shaped charge to hold the shaped charge;

a retainer on the body portion for extending through a said second port in the housing a support the shaped charge, and

an opening in the retainer for trapping and positioning the firing cord against the charge for proper firing operation.

5,007,487

METHOD AND APPARATUS FOR MAKING DRILL HOLES UNDER SPATIALLY RESTRICTED CONDITIONS

Olof Dahle, Reken, and Manfred Fischbach, Hattingen, both of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH and Hebezeug & Fischbach GmbH, both of, Fed. Rep. of Germany

Filed Feb. 12, 1990, Ser. No. 479,366

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1989, 3905999

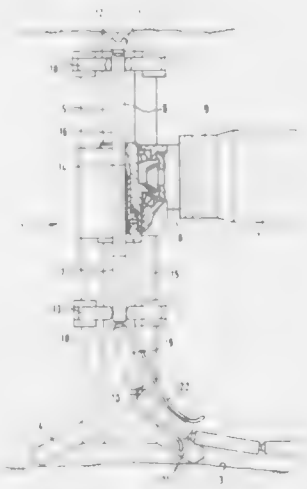
Int. Cl.[5] E21B *17/04*

U.S. Cl. 175—57 **10 Claims**

1. A drilling apparatus for drilling straight holes under spatially restricted conditions which comprises:

a longitudinally extending cradle; a fixed front clamping tong mounted on said cradle adapted to clamp a drill rod; a fixed rear clamping tong mounted on said cradle adapted to clamp a drill rod; a movable drive clamping tong mounted on said cradle intermediate said front and rear clamping tongs adapted to clamp and drive a drill rod; drive means for rotating and advancing said drive clamping tong to thereby rotate and advance a drill rod; a drill rod having a plurality of hollow segments; interlock means at each end of said segments for interlocking adjacent segments to form a straight rigid drill rod when said adjacent segments are brought into engagement with each other; a flexible member which passes through each of said segments such that said segments are movable longitudinally along said flexible member between a first position in which two adjacent segments are interlocked to form a straight rigid drill rod portion and a second position in which adjacent segments are spaced from each other to enable said flexible member to bend and said spaced segments to move along a curved defined by said flexible member.

10. A method of drilling bore holes utilizing a drill hole apparatus having a longitudinally extending cradle, a fixed front clamping tong mounted on said cradle adapted to clamp a drill rod, a fixed rear clamping tong mounted on said cradle adapted to clamp a drill rod, a movable drive clamping tong mounted on said cradle intermediate said front and rear clamping tongs adapted to clamp and drive a drill rod, drive means for rotating and advancing said drive clamping tong to thereby rotate and advance a drill rod, wherein said drill rod has a plurality of hollow segments, interlock means at each end of said segment for interlocking adjacent segments to form a



straight rigid drill rod when said adjacent segments are brought into engagement with each other, and a flexible member which passes through each of said segments such that said segments are movable longitudinally along said flexible member between a first position in which two adjacent segments are interlocked to form a straight rigid drill rod portion and a second position in which adjacent segments are spaced from each other to enable said spaced segments to move along a curve defined by said flexible member comprising the steps of:

opening said front clamping tong;

closing the rear clamping tong;

moving the drive clamping tong to a position adjacent said rear clamping tool;

closing said drive clamping tong;

opening said rear clamping tong;

operating said drive means to interlock adjacent drill rod segments, rotate said drill rod and move said drive clamping tong and said drill rod upwardly toward said front clamping tong.

5,007,488

DRILLING NIPPLE GAS TRAP

William S. Donovan, Littleton, Colo., assignor to Donovan Brothers Incorporated, Littleton, Colo.

Filed May 16, 1990, Ser. No. 524,163

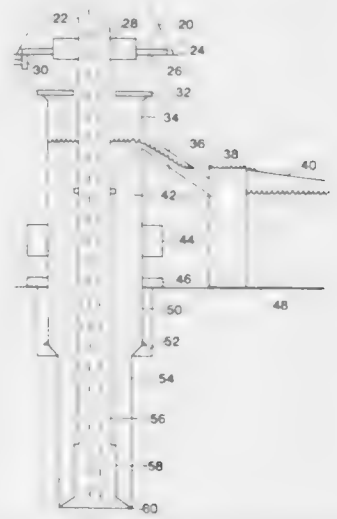
Int. Cl.[5] E21B *21/00*

U.S. Cl. 175—59 **15 Claims**

1. A device for gathering gas which evolves from the drilling mud exiting a well bore, comprising:

a gas sampling tube located such that entrained gas which evolves into the atmosphere as the drilling mud exists a well bore impinges upon an inlet of said sampling tube;

a means which creates a lower pressure at the inlet of said sampling tube than the atmosphere about said sampling



tube causing said gas to enter said sampling tube and flow to gas analyzers.

5,007,489

DRILLING FLUID METHODS AND COMPOSITION

Dorothy P. Enright; William M. Dye; F. Martin Smith, and Alphonse C. Perricone, all of Houston, Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Apr. 27, 1990, Ser. No. 515,573

Int. Cl.[5] E21B *2/00*; **C09K** *7/00*

U.S. Cl. 175—65 **53 Claims**

1. A method for the prevention of balling of formation cuttings upon the surface of drilling equipment used in conjunction with the drilling, completion or workover of a subterranean well, comprising the steps of:

(1) preparing an aqueous system;

(2) adding to said system a composition comprising:

(a) a non-water soluble polyglycol having a molecular weight of from between about 1,200 and about 10,000;

(b) a surfactant having a hydrophilic/hydrophobic balance of about 4 or more; and

(c) a hydrotrope;

(3) forming an oil-in-water emulsion of said composition within said system by shearing of said system;

(4) introducing the emulsified system into the well for circulation through and out of said well; and

(5) contacting the surface of said drilling equipment with the composition to provide a non-aqueous interface between the equipment surface and the aqueous system.

5,007,490

PROGRESSIVE CAVITY DRIVE TRAIN WITH ELASTOMERIC JOINT ASSEMBLY FOR USE IN DOWNHOLE DRILLING

Russell D. Ide, P.O. Box 744, 641 Arnold Rd., Coventry, R.I. 02816

Filed Jun. 20, 1990, Ser. No. 540,682

Int. Cl.[5] E21B *4/02*

U.S. Cl. 175—107 **24 Claims**

1. A downhole drilling apparatus which includes a progressive cavity drive train comprising:

a housing structure;

a stator, the stator having a longitudinal axis;

a rotor having a true center, the rotor being located within the stator;

the stator and the rotor each having coacting helical lobes which are in contact with one another at any transverse

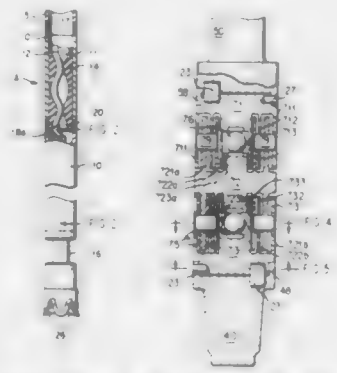
section, the stator having one more helical lobe than the rotor such that a plurality of cavities are defined between the rotor and the stator, and the rotor being adapted to rotate within the stator such that the true center of the rotor orbits the axis of the stator, the orbit having a predetermined radius and the orbiting motion of the rotor causing a progression of the cavities in the direction of the axis of the stator;

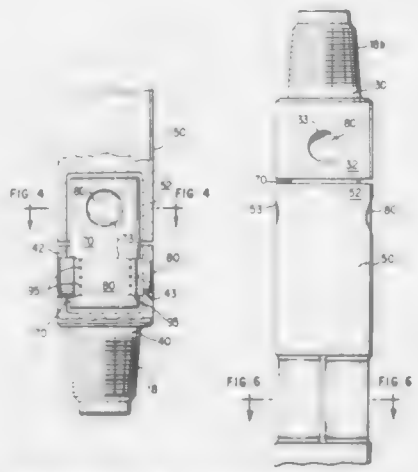
a first stub shaft having a longitudinal axis and first and second longitudinal ends, the first end of the first stub shaft being connected to and movable with the rotor;

a first joint assembly fixed to the second end of the first stub shaft; the joint assembly comprising first, second and third longitudinally arranged joint portions, the first portion and the second portion being coupled through an elastomer so as to be pivotable with respect to one another, the second portion being coupled to the third portion through an elastomer so as to be pivotable with respect to one another, the first portion of the first joint assembly being fixed to the first stub shaft;

an intermediate shaft having first and second ends, the first end being fixed to the third portion of the first joint assembly;

a second joint assembly, the second joint assembly comprising first, second and third longitudinally arranged joint portions, the first portion and the second portion being coupled through an elastomer so as to be pivotable with respect to one another, the second portion being coupled





to the third portion through an elastomer so as to be pivotable with respect to one another, the first portion of the second joint assembly being fixed to the second end of the intermediate shaft;

a second stub shaft having a longitudinal axis which is substantially colinear with the axis of the stator and first and second longitudinal ends, the second stub shaft being rotatably mounted about its longitudinal axis within the housing structure, the first end of the second stub shaft being fixed to the second end of the intermediate shaft, the second end of the second stub shaft being connected to a drill bit drive shaft, and

whereby the first and second stub shafts are coupled such that in response to the flow of fluid through the stator the first stub shaft can rotate about its axis and orbit about the axis of the second stub shaft at the same time the second stub shaft rotates about its longitudinal axis so as to cause rotation of the drill bit drive shaft.

22. A coupling comprising: a first stub shaft having first and second longitudinal ends; a second stub shaft having first and second longitudinal ends and an intermediate shaft having first and second longitudinal ends; the second longitudinal end of the first stub shaft being pivotably connected to the first longitudinal end of the intermediate shaft and the first longitudinal end of the second stub shaft being pivotably connected to the second longitudinal end of the intermediate shaft; and

wherein the pivotable connection between the first stub shaft and the intermediate shaft and the second stub shaft and the intermediate shaft is provided by a joint assembly which includes a plurality of concentric annular extensions secured to each of the second end of the first stub shaft, the first end of the second stub shaft and the first and second ends of the intermediate shaft, the concentric annular extensions formed on the stub shafts being spaced so as to fit within spaces between the concentric annular extensions formed on the intermediate shaft such that the annular extensions on the stub shafts can be interleaved with the annular extensions on the intermediate shaft, the joint assemblies further comprising an elastomeric layer extending between and bonded to the interleaved annular extensions of the stub shafts and the intermediate shaft, the elastomeric layer being flexible in shear so as to allow pivoting of the stub shafts with respect to the intermediate shaft.

5,007,491

DOWNHOLE DRILLING APPARATUS PROGRESSIVE CAVITY DRIVE TRAIN WITH SEALED COUPLING

Russell D. Ide, P.O. Box 744, 641 Arnold Rd., Coventry, R.I. 02816

Filed Jun. 20, 1990, Ser. No. 540,692
Int. Cl.[5] E21B *4/02*; **F01C** *1/10*; **F16D** *3/02*, *3/16*
U.S. Cl. 175—107 **12 Claims**

1. A progressive cavity drive train comprising:

a housing structure;

a stator, the stator having a longitudinal axis;

a rotor having a true center, the rotor being located within the stator,

the stator and the rotor each having coacting helical lobes which are in contact with one another at any transverse section, the stator having one more helical lobe than the rotor such that a plurality of cavities are defined between the rotor and the stator, and the rotor being adapted to rotate within the stator such that the true center of the rotor orbits the axis of the stator, the orbit having a predetermined radius and the orbit causing a progression of the cavities in the direction of the axis of the stator;

a first stub shaft having a longitudinal axis and first and second longitudinal ends, the first end of the first stub shaft being connected to and movable with the rotor, the second end of the first stub shaft comprising a yoke;

a second stub shaft having first and second longitudinal ends and a longitudinal axis which is substantially colinear with the axis of the stator, the second stub shaft being rotatably mounted about its longitudinal axis within the housing structure, the second end of the second stub shaft comprising a yoke;

a sealed universal joint assembly coupling the yoke formed on the first stub shaft to the yoke formed on the second stub shaft, the sealed universal joint including at least two transverse cylindrical bores and one cylindrical pivot pin extending through each of the cylindrical bores such that an annular space is formed between the outer surface of each of the cylindrical pivot pin and the inner surface of the cylindrical bore through which it extends, a plurality of rollers provided in the annular space and an elastomer encasing the rollers and substantially filling the annular space so as to isolate the rollers from the universal joint's environment; and

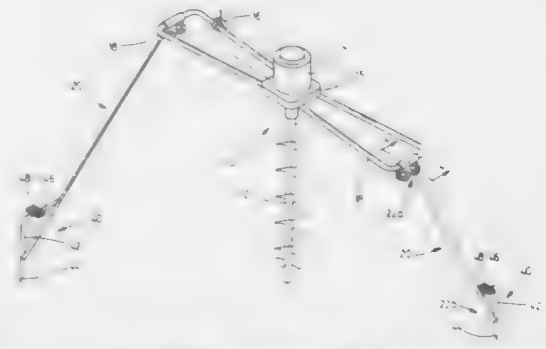
whereby the sealed universal joint couples the first and second stub shafts such that the first stub shaft can rotate about its axis and orbit about the axis of the second stub shaft at the same time the second stub shaft rotates about its longitudinal axis.

5,007,492

SAFETY STABILIZER FOR AUGER

Patrick C. P. Giroux, 902 Port Union Road, West Hill, Ontario M1C 2L9, Canada

Filed May 1, 1990, Ser. No. 517,341
Claims priority, application Canada, May 1, 1989, 599194
Int. Cl.[5] E21B *7/20*
U.S. Cl. 175—170 **8 Claims**



1. A safety stabiliser apparatus for an auger of the type having an auger screw, an engine and drive mechanism mounting on top the auger for operating said screw, and at least two handle means extending to either side of said engine, said stabiliser apparatus, in turn, comprising:

rotatable and swingable upper joint means and means for attaching same to respective said handle means;

support leg assemblies connected to respective said joint means, each said assembly including a leg member having an upper end and a lower end, and,

anchor means at the lower end of each said leg member adapted to securely engage the ground, said anchor means rotatable and swingable relative to the ground, said upper joint means and said anchor means thereby permitting movement of said leg member about both a vertical axis and a horizontal axis relative to said handle means, and relative to the ground, thereby to allow said handle means on said auger to descend towards the level of the ground and to rotate relative to the axis of said auger while said anchor means remains anchored in position on the ground.

5,007,493

DRILL BIT HAVING IMPROVED CUTTING ELEMENT RETENTION SYSTEM

Robert B. Coolidge, Spring, and David M. Nguyen, Houston, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

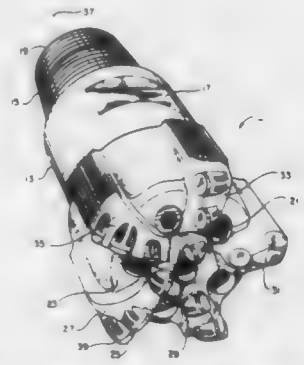
Filed Feb. 23, 1990, Ser. No. 484,406
Int. Cl.[5] E21B *10/46*
U.S. Cl. 175—329 **12 Claims**

12. A drill bit having an improved cutting element retention system for drilling a well borehole having a bottom, the bit comprising:

a bit body having a connecting end for engaging the mating connecting end of a pipe string used to support the bit within the well bore, the bit body having an opposite end which defines a bit face;

a plurality of fixed cutter cutting elements secured on the bit face, each fixed cutter cutting element having a mounting body with a leading face and a layer of superhard material carried on the leading face of the mounting body to define a cutting face for the cutting element; and

at least one trough formed in the mounting body on the bit face behind the cutting ace of each cutter cutting element,



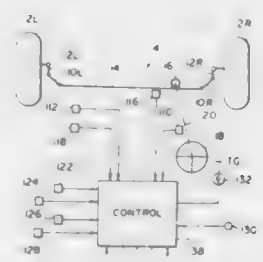
each trough being sized and shaped whereby each cutting element has a characteristic wear flat bearing created by contact between the cutting element and the borehole bottom, the surface area of the wear flat bearing area of each cutting element retention system approaching a constant cross-sectional area throughout the entire cutting element usage.

5,007,494

REAR WHEEL TURNING SYSTEM

Hiroshi Ohmura; Satoru Tanabe; Junji Yoshioka, and Hirotaka Kanazawa, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed May 30, 1989, Ser. No. 358,020
Claims priority, application Japan, May 30, 1988, 63-132260; Nov. 18, 1988, 63-292187
Int. Cl.[5] B62D *5/04*
U.S. Cl. 180—79.1 **10 Claims**





1. A rear wheel turning system for a vehicle comprising:

a rear wheel turning member which is connected to rear wheels of the vehicle and turns the rear wheels,

an electric motor which is operatively connected to the rear wheel turning member by way of a driving force transmitting system and to a steering wheel and displaces the rear wheel turning member, thereby causing the rear wheels to turn in response to an operation of the steering wheel,

a rear-wheel-neutralizing means which urges the rear wheel

turning member to a neutral position in which the rear wheels are held in a straight-ahead position, and

a pair of clutch mechanisms which are provided in series in a driving path of the driving force transmitting system between the electric motor and the rear wheel turning member and are adapted such that they disconnect the latter from the former, which permits the latter to return to the neutral position under the force of the rear-wheel-neutralizing means,

wherein said driving force transmitting system comprises a worm gear mechanism provided on an output shaft of the electric motor and a rack-and-pinion mechanism provided on the rear wheel turning member, and said clutch mechanisms are provided between the worm gear mechanism and the rack-and-pinion mechanism

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5,007,495

PROPULSIVE AIR STREAM DEFLECTING APPARATUS FOR AIR CUSHION VEHICLE

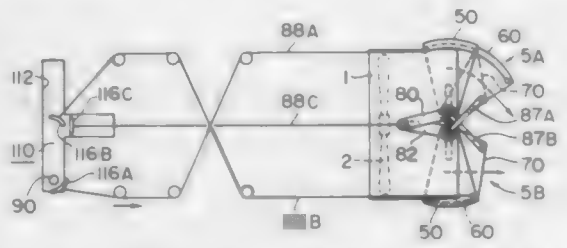
Ryuichi Yoshida, Takarazuka; Tetsushi Yamamura, Takasago, and Koji Kadota, Kobe, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Filed Nov. 15, 1989, Ser. No. 436,784

Claims priority, application Japan, Nov. 16, 1988, 63-148499[U]

Int. Cl.[5] **B60V** *1/14*

U.S. Cl. 180—117 **6 Claims**



1 A propulsive air stream deflecting apparatus of an air cushion vehicle including a hull, said apparatus comprising:

an air duct mounted on the hull and having a longitudinal axis, the air duct having a rear open end;

a propeller fan installed within said duct for producing a propulsive air stream flowing through the air duct out said rear open end to provide thrust to the hull,

a pair of deflecting assemblies mounted to said duct,

each of said deflecting assemblies including a plurality of deflecting members each having a substantially arcuate deflecting wall, said deflecting members being nestable one within the other along the deflecting walls thereof,

vertically extending pivots mounting said deflecting assemblies, respectively, to said duct at the rear open end thereof in positions that are symmetrical with respect to said longitudinal axis,

the arcuate deflecting walls of the deflecting members of each respective one of the deflecting assemblies being concave toward the vertically extending pivot mounting said respective one of the deflecting assembles to the duct,

the deflecting members of each respective one of the deflecting assemblies being pivotal, about the pivot mounting said respective one of the deflecting assemblies to the duct, between a retracted nested state and a final telescopically extended state;

said duct having first guide means for supporting and guiding said vertically extending pivots in a manner in which the pivots are movable toward and away from one another, laterally with respect to the longitudinal axis of said duct, between respective laterally inward and outward positions; and

control means, operatively connected to said deflecting assemblies and to said pivots, for positioning the deflecting members in both of said deflecting assemblies in said nested retracted state while positioning said pivots at said laterally inward positions to maintain the arcuate deflecting walls of the deflecting members of said deflecting assemblies out of the path of the stream of air flowing from the rear open end of said duct such that a propulsion thrust state is provided in which a forward thrust on the hull is generated by said propeller fan,

for maintaining said pivots at said laterally inward positions while selectively moving the deflecting members of either one of said deflecting assemblies from said nested retracted state toward said final telescopically extended state to move the arcuate deflecting walls of the selected one of said deflecting assemblies into the path of the stream of air flowing from the rear open end of said duct such that a steering state is provided in which a sidewards thrust on the hull is generated by said propeller fan, and

for moving the deflecting members of both of said deflecting assemblies toward said final telescopically extended state while moving said vertically extended pivots from said laterally inward toward said laterally outward positions to cover the rear open end of said deflecting duct while locating terminal ends of the deflecting assemblies to the outside of said air duct such that a steering state is provided in which the arcuate deflecting walls guide the air flowing from the rear open end of said duct toward the front of the vehicle whereby a rearward thrust on the hull is generated by said propeller fan,

said control means comprising a first linkage linking said vertically extending pivots to one another, said first linkage being articulatable between a folded state which locates the pivots at said laterally inward positions and an extended state which locates the pivots at said laterally outward positions, a second linkage linking a most telescopically extendable one of the plurality of deflecting members of one of said deflecting assemblies to the vertically extending pivot mounting the other of said deflecting assemblies to the hull and linking a most telescopically extendable one of the plurality of deflecting members of said other of said deflecting assemblies to the vertically extending pivot mounting said one of the deflecting assemblies to the hull such that when said vertically extending pivots are in said laterally outermost positions, the second linkage places the deflecting members of each of said deflecting assemblies in said final telescopically extended state, and an actuator selectively operable to telescopically extend the deflecting members of either of said deflecting assemblies from said retracted nested state toward said final telescopically extended state and operable to articulate said first linkage between the folded state and the extended state thereof.

5,007,496

AUTOMATED UNDERGROUND HAULAGE TRUCK

Brian T. Whitten; Pierre Veraart; Andrew Kwasniewski, and Kurt Vollenwyder, all of Kingston, Canada, assignors to Inco Limited, Toronto, Canada

Continuation of Ser. No. 189,040, May 2, 1988, abandoned. This application Jan. 18, 1990, Ser. No. 466,867

Int. Cl.[5] **E01B** *25/28*

U.S. Cl. 180—131 **12 Claims**

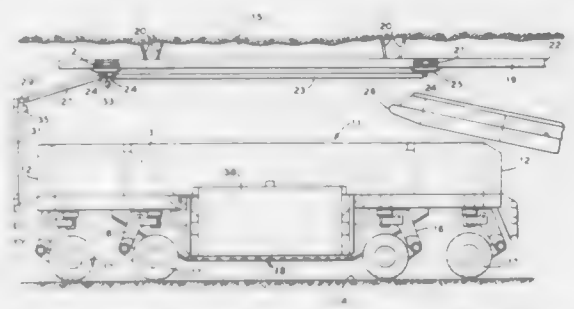
1 A system for guiding a steerable, self-propelled generally rectangular vehicle along a non-tracked route comprising:

a a substantially continuous, elongated guide means fixed along said route in a substantially constant relationship to the ideal path of said vehicle, said vehicle being longitudinally symmetrical and having interlinked front and rear wheels arranged to pivot in mirror image with respect to the vertical transverse plane at body center of said vehicle on axes which, when extended, intersect on an extension of said central transverse plane of said vehicle;

b a draw bar swivelly connected at one end to said vehicle and swivelly connected at an opposite end to one end of a spacer bar, said spacer bar having opposed ends which are connected to said guide means for movement therealong;

c first detection means for sensing the angle between said drawbar and a longitudinal reference line of said vehicle and second detection means for sensing the angle between said spacer bar and said drawbar;

d means responsive to the output of said at least two detection means to determine any directional and lateral posi-



tional error of said vehicle with respect to said guide means and to program sequence of steering maneuvers to correct any said error; and

e steering means connected with said interlinked front and rear wheels adapted to carry out said programmed sequence of steering maneuvers.

5,007,497

ARM SUPPORT DEVICE FOR A ROTATING ELEMENT

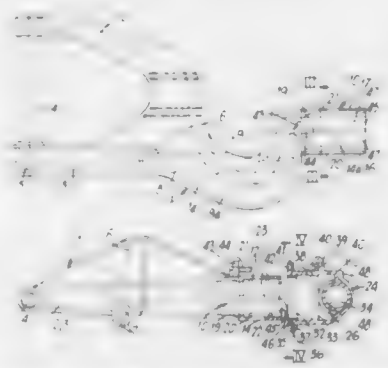
Daniel Trema, Bezons, France, assignor to Elf France, Courbevoie, France

Filed Mar. 2, 1989, Ser. No. 317,921

Claims priority, application France, Mar. 14, 1988, 88 03280

Int. Cl.[5] **B62K** *25/20;* **B62M** *9/16*

U.S. Cl. 180—219 **8 Claims**



1. A single swinging suspension rear arm for the driving wheel of a motorcycle comprising:

a free end portion adapted to have a rotary axle maintained thereon in a rigid and adjustable manner, and comprising axial outside polygonally disposed bearing surfaces;

a bracket piece removably and adjustably mounted on the free end portion of the arm and adapted to receive the rotary axle, said bracket piece comprising an inner wall having transversely positioned bearing faces adapted to contact the corresponding axial outside bearing faces of the free end portion of the arm when the bracket piece is mounted thereon, and at least one slot axially disposed in said inner wall at a position opposed to one of said inner wall bearing faces, said bracket piece adapted to move axially along the arm; and

screw means adapted to radially close the slot thereby preventing further movement of the bracket piece along said arm.

5,007,498

DRIVING ASSEMBLY

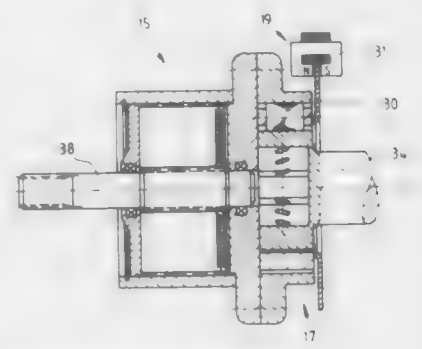
Helmut Wiese, Neunkirchen-Seelscheid, and Paul-Erich Schönenbrücher, Much-Kranüchel, both of Fed. Rep. of Germany, assignors to Viscodrive GmbH, Lohmar, Fed. Rep. of Germany

Filed Aug. 29, 1989, Ser. No. 399,823

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1988, 3830199

Int. Cl.[5] **B60K** *23/08*

U.S. Cl. 280—248 **12 Claims**



1. A driving assembly, comprising:

a drive member;

a driven member;

a viscous shear coupling; and

a clutch between the drive member and the viscous shear coupling, the clutch comprising a drive part connected to the drive member and a driven part connected to the viscous shear coupling, torque-transmitting elements between said parts, a control member interposed between said parts and with which said elements are engaged, a brake comprising a first member connected to the control member and a second non-rotatable member, said first and second members being permanently held out of contact, means selectively operable to apply said brake to brake said control member independently of said drive part and said driven part such that at all times if the driven part overruns the drive part, the clutch transmits no torque, while if the drive part overruns the driven part, torque is transmitted from the drive part to the driven part by said torque-transmitting elements when the brake is applied to brake the control member but the clutch transmits no torque from the drive part to the driven part when the said control member is not braked.

5,007,499

SILENCER FOR A CENTRIFUGAL COMPRESSOR

Charles E. Ebbing, Fayetteville, and Donald G. Neville, Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 23, 1990, Ser. No. 483,618

Int. Cl.[5] **F01N** *1/24*

U.S. Cl. 181—258 **16 Claims**

1. An improved silencer device having a sound absorptive material and adapted for placement in a discharge line of a centrifugal compressor comprising:

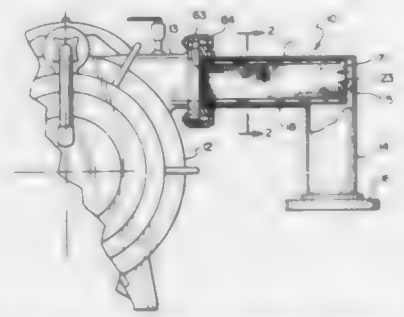
a sound attenuation frame for mounting in said discharge line of the compressor;

at least one pad of absorptive material installed in said frame, said material being of a brittle nature and thus susceptible, if not protected, of having parts thereof broken off by movement of said material within the discharge line;

a cloth enclosure disposed within said sound attenuation frame and around said at least one pad of material to allow a transmission of sound therethrough but to generally inhibit a direct impingement of a compressed gas on said pad, said cloth enclosure being composed of a fine weave

material consisting of fibers which resist brittle fracture/-failure; and

a metal screen placed adjacent said cloth enclosure and



secured within said sound attenuation frame for containing said at least one pad of absorptive material in said cloth enclosure and for further protecting said pad from impingement by compressed fluid thereon

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5,007,500

DEVICE FOR THE MAINTENANCE OF LARGE-CAPACITY CONTAINERS

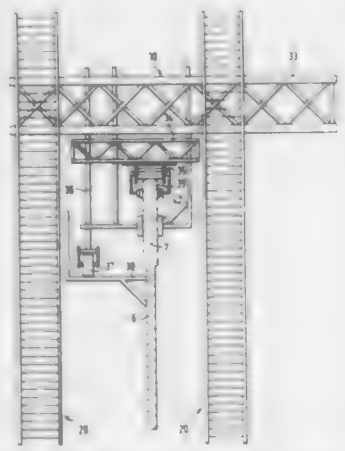
Harald Klänne, Berlin, Fed. Rep. of Germany, assignor to ISB Generalunternehmen fur Industriespezialbau, Berlin, Fed. Rep. of Germany

Filed Jan. 5, 1989, Ser. No. 293,632

Claims priority, application Fed. Rep. of Germany, Jan. 6, 1988, 3800344; Sep. 8, 1988, 3830589

Int. Cl.[5] E04G *3/10, 3/14*

U.S. Cl. 182—38 **12 Claims**



1. A device for the maintenance of a large-capacity container having a substantially round cross section and an upper edge, comprising:

a scaffolding structure for accommodating a plurality of working platforms along a wall, said scaffolding structure being fulcrumed swingably around a vertical centerline which forms an axis of symmetry of the large-capacity container as a rotational axis, the scaffolding structure being movably placeable on an area of the upper container edge, the scaffolding structure comprising:

(a) a pivot which is centrally mountable on a roof of the container;

(b) a plurality of pivoting swivel arms for extending radially outwardly from the pivot mounting and having free ends for protruding beyond the container wall; and

(c) ladder lattices fastenable to the free ends of the swivel arms.

5,007,501

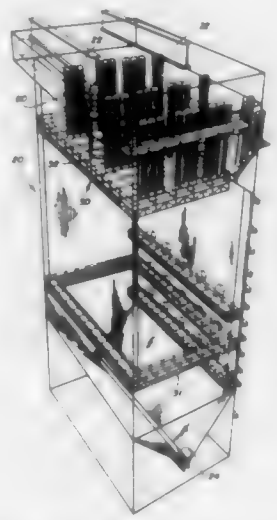
APPARATUS FOR FACILITATING THE INTERNAL INSPECTION AND REPAIR OF LARGE PRESSURE VESSELS

Peter J. Baston, 1450 Meadowood Village Dr., Ft. Worth, Tex. 76120

Filed Sep. 1, 1989, Ser. No. 402,836

Int. Cl.[5] E04G *3/10, 3/14*

U.S. Cl. 182—128 **15 Claims**



1. An apparatus having particular utility in serving as a work platform within a large pressure vessel such as a boiler-furnace for generating steam, such pressure vessels being of the type commonly found in power plants for generating electricity, and such pressure vessels having a top and a bottom and a plurality of side walls, and having a relatively small access hole near the bottom, and the size of the access hole being large enough so that a workman may crawl therethrough in order to gain entrance to the pressure vessel, comprising the combination of:

a. a plurality of metal trusses, each of which has a relatively short height and a length such that the trusses can be individually inserted through a relatively small access hole that is routinely provided near the bottom of a pressure vessel to admit workmen, and the trusses being configured for connection with each other in an end-to-end manner in directions that are both parallel and perpendicular to the length direction of a given truss;

b. a plurality of thin deck members configured to rest on top of the trusses to create a work platform when the trusses are oriented in a generally horizontal working position within the pressure vessel;

c. means for structurally connecting the trusses and deck members together inside the pressure vessel without the use of any tools; and

d. cable means for selectively raising and lowering the work platform within the pressure vessel, including a plurality of steel cables adapted to be temporarily suspended from the top of the pressure vessel.

5,007,502

SELF-LEVELING SAW HORSE

Alan F. Shapiro, 24A McClellan St., Amherst, Mass. 01002, assignor to Alan F. Shapiro, Amherst, Mass. and David Edwardson, New York, N.Y.

Filed Jul. 16, 1990, Ser. No. 552,826

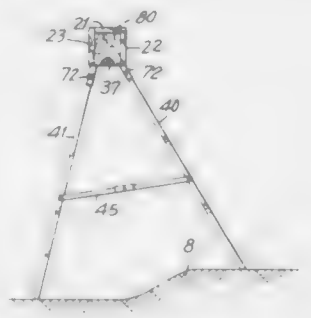
Int. Cl.[5] B27B *21/00;* **B25H** *1/06*

U.S. Cl. 182—155 **23 Claims**

1. A saw horse, comprising:

a trestle, including a substantially flat surface for supporting weight and a downwardly opening box formed with two side walls, running substantially the entire length of the trestle and two end walls connecting the side walls;

two pairs of legs adapted to rotate from a closed position in which each of the legs is contained within the box formed by the trestle and an open position where each of the legs is in a generally vertical orientation, each leg having an enlarged opening proximate its upper end in the open position, a support surface at its lower end in the open position and first, second and third working surfaces for leveling the pairs of legs, stably supporting weight on the trestle and enabling rotation of the legs about the enlarged opening from the closed position to the open position and vice versa, respectively;



a first rod coupled between the side walls proximate a first end wall and extending through the openings in both legs forming one of the pairs of the legs; and

a second rod coupled between the side walls proximate the second end wall and extending through the openings in both legs forming the second of the pairs of legs;

the first operating surface on each leg of a pair of legs being in contact with the first operating surface of the other leg of its pair and the second surfaces of each leg of a pair being in contact with the underside of the top surface of the trestle when the sawhorse is in the open position;

whereby exerting pressure on the top surface of the trestle causes sliding adjustment of the first operating surfaces of each pair to level the trestle and stably support the saw horse on uneven surfaces.

5,007,503

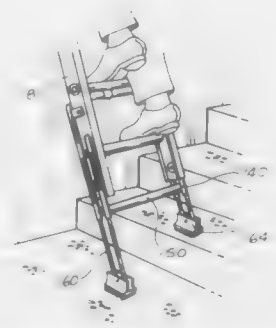
LADDER LEVELLING DEVICE WITH LOCKING MEANS

Walter Sturm, 81 Benchlands Drive, Cochrane, Alberta, Canada T0L 0W1

Filed Jul. 19, 1990, Ser. No. 554,430

Int. Cl.[5] E06C *7/44*

U.S. Cl. 182—202 **8 Claims**



1. A device for adapting the length of a pair of legs to the unevenness of a surface, said device comprising a pair of vertically reciprocally extendable legs, each extendable leg guidable mounted in a tubular member attached to said pair of legs, said tubular member in the shape of a downwardly open U, a longitudinally slidable chain like connecting element accommodated in said tubular member, said connecting element being connected at its each end to one of said pair of extendable legs, said connecting element comprising a flexible core having thereon a plurality of spheres, each of said spheres separated by a spacer, said tubular member including coextensive locking means through which said connecting element passes, said locking means having a passage substantially in line with said tubular member and a chamber having a plurality of socket means adapted to releasably receive said sphere on said connecting elements, said chamber being positioned on substantially the same place as said passage, whereby weight on said extendable legs forces said connecting element to extend into said chamber wherein said spheres are received in said socket means and retained therein until weight is removed from both of said legs.

5,007,504

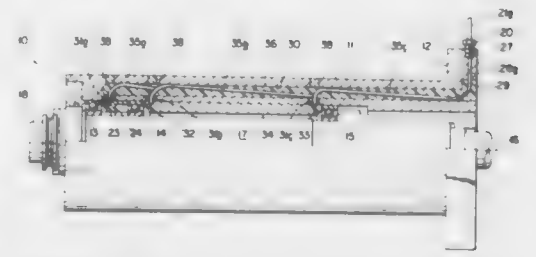
LUBRICATION APPARATUS AND METHOD

Raymond L. Hallbach, Simpsonville, S.C., assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Apr. 10, 1990, Ser. No. 507,080

Int. Cl.[5] F16N *21/00*

U.S. Cl. 184—8 **8 Claims**



1. A lubrication apparatus for a machine, comprising:

an elongate bearing support member having an axis defined along its length;

an air stream and lubricant supply site proximal one end of said support member;

a rotary bearing spaced along said axis from said one end;

a conduit extending between said supply site and said bearing, within an elongate hole in a wall of said support, said conduit having at least one bend; and

means for affixing said conduit in position with said support, said conduit providing a smooth, non-linear transition path for conveying an air stream and lubricant from said supply site to said bearing.

5,007,505

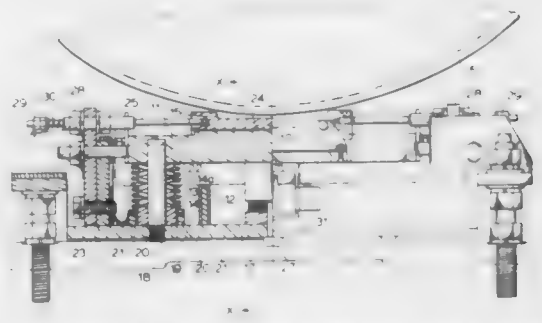
ELEVATOR TRACTION SHEAVE BRAKE

Robert Lindegger, Scarborough, Canada, assignor to Northern Elevator Limited, Ontario, Canada

Filed Mar. 19, 1990, Ser. No. 495,138

Int. Cl.[5] B66B *5/16*

U.S. Cl. 187—89 **28 Claims**



1. An elevator traction sheave brake for use on a counterbalanced elevator comprising:

(a) a horizontally disposed supporting member mounted to a fixed carriage and located either above or below a traction sheave along the projection of a substantially vertical diameter of the traction sheave, adjacent a rim of the traction sheave and between hoist ropes, the supporting member being adapted to be moved in substantially vertical directions towards or away from the rim of the traction sheave;

(b) a horizontally disposed friction member adjacent to the supporting member in between the supporting member and the traction sheave mounted to the fixed carriage, adapted to be moved in substantially vertical directions either towards or away from the rim of the traction sheave in conjunction with the supporting member and adapted to be moved in substantially horizontal directions substantially parallel to the planes of the faces of the traction sheave independently of the supporting member and having a means for braking which uses friction to produce a dynamic retarding torque and a static holding torque when compressed against the traction sheave;

(c) at least one positioning member adapted to move both the supporting member and the friction member in conjunction in a substantially vertical direction towards the rim of the traction sheave thereby bringing the braking means into contact with the traction sheave at a preset initial braking position so that further rotation of the traction sheave tends to draw the braking means back towards the projection of the substantially vertical diameter of the traction sheave;

(d) at least one biasing member adapted to resist movement of the braking means away from the traction sheave following initial contact of the braking means with the traction sheave; and

(e) fixed means for controlling the movement of the friction member in the substantially horizontal directions to provide a preset braking profile.

5,007,506

ELEVATOR REMOTE-CONTROL METHOD

Shigehiko Suzuki, and Kenzo Tachino, both of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Mar. 20, 1990, Ser. No. 496,222
Claims priority, application Japan, May 18, 1989, 1-122789
Int. Cl.[5] B66B *3/00*
U.S. Cl. 187—101 **4 Claims**



1. In an elevator remote-control method for an elevator control system having an elevator control circuit which controls a service situation of an elevator and which performs maintenance control for the elevator, and a remote monitoring center which is connected to the elevator control circuit through a telephone circuit and which monitors the service situation of the elevator,

wherein when the elevator control circuit has received a maintenance command for maintenance control from the remote monitoring center, said control circuit performs maintenance control of the elevator and executes a maintenance control program stored therein;

an elevator remote-control method comprising,

when said elevator control circuit has received said maintenance command,

executing a call-back program which comprises a ring-off processing step of disconnecting said telephone circuit, and a reconnection step of dialing said remote monitoring center to reconnect said telephone circuit,

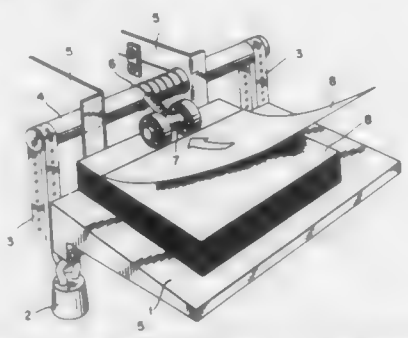
whereupon said control circuit executes any program of the maintenance control program conforming to the maintenance command.

5,007,507

METHOD OF, AND A DEVICE FOR, CONTROLLING THE ROTATION OF AN ELEMENT ABOUT AN AXIS OF MEANS OF A WRAP SPRING

Jeichienus A. van der Werff, Montfoort, Netherlands, assignor to Hadewe B. V., Drachten, Netherlands

Filed Jun. 7, 1989, Ser. No. 362,501
Claims priority, application Netherlands, Jun. 7, 1988, 8801461
Int. Cl.[5] F16D *51/04;* **B65H** *31/10, 1/10*
U.S. Cl. 188—77 W **13 Claims**



1. A device for controlling the rotation of an element about an axis, comprising:

means for exerting a continuous torque on the element; and

means for selectively precluding rotation of the element, said rotation precluding means including

a wrap spring wrapped around the element, one end of said wrap spring being anchored

a control member attached to an other end of said wrap spring such that said wrap spring is wrapped tightly about the element to preclude rotation of the element when said control member is in a first position, and said wrap spring is wrapped loosely about the element so that the element may rotate under said continuous torque when said control member is out of said first position, rotation of the element under said continuous torque causing said control member to return to said first position to thereby preclude further rotation of the element.

5,007,508

FRICTION SYSTEM USING REFRACTORY COMPOSITE MATERIALS

Alain Lacombe, Pessac, France, assignor to Societe Europeenne de Propulsion, Suresness, France

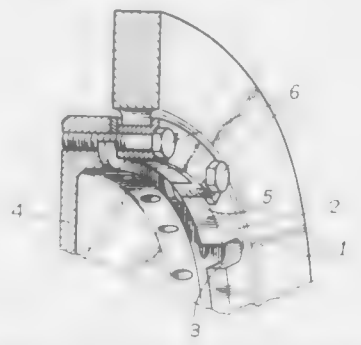
Continuation of Ser. No. 248,319, Sep. 16, 1988, abandoned, which is a continuation of Ser. No. 10,321, Feb. 3, 1987, abandoned. This application Mar. 1, 1990, Ser. No. 488,481
Claims priority, application France, Feb. 5, 1986, 86 01590
Int. Cl.[5] F16D *65/12, 69/02*
U.S. Cl. 188—251 A **7 Claims**

1. A friction system, comprising:

a first friction element having a first confronting surface, and

wherein said first friction element is made of a carbon-carbon composite material;

a second friction element having a second confronting surface, and wherein said second friction element is made of a multiphase composite material comprised of a fibrous reinforcement having fibers selected from the group consisting of carbon fibers and silicon carbide fibers, and a matrix having a principal phase which forms a major part



of said matrix and is comprised of silicon carbide, and a secondary phase which forms a minor part of said matrix and is comprised of a refractory material selected from the group consisting of titanium carbide, zirconium carbide, tantalum carbide, boron carbide, elemental boron, silicon nitride, boron nitride and pyrolytic carbon, and

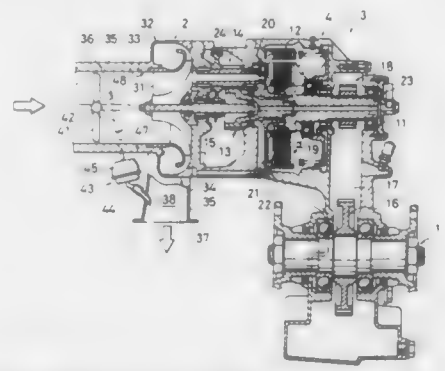
wherein said first confronting surface of said first friction element confronts and is frictionally coupled to said second confronting surface of said second friction element.

5,007,509

BRAKE SYSTEM

Yoshihisa Koizumi, Fujisawa, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan

Filed Oct. 2, 1989, Ser. No. 416,084
Claims priority, application Japan, Oct. 31, 1988, 273026
Int. Cl.[4] F16D *57/06*
U.S. Cl. 188—271 **19 Claims**



1. A brake system for a vehicle, comprising:

an impeller connected to a member of a power transmission line of the vehicle for applying a brake force to said member;

means for housing the impeller, and an air passage for introducing or discharging external air to and from the impeller;

a throttle valve disposed in the air passage for adjusting the air flow rate in the air passage; and

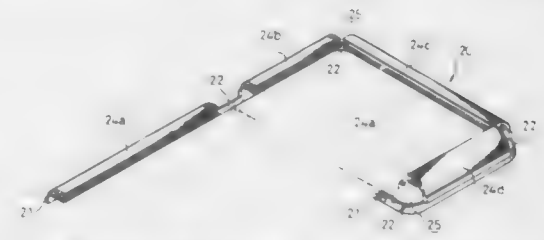
control means for actuating the throttle valve in accordance with the air flow rate in the air passage.

5,007,510

FRAME ASSEMBLY FOR CASE OR SIMILAR ARTICLE

Vichai Houng, No. 198-200, Sec. 1, Kang Ning Rd., Taipei, Taiwan

Filed Jul. 26, 1990, Ser. No. 558,281
Int. Cl.[5] A45C *13/04*
U.S. Cl. 190—122 **4 Claims**



1 A frame assembly for a case or similar article comprising:

a first and a second one-piece frame each forming a closed loop and having adjacent ends, said first and second frames each being composed of a plurality of side portions interconnected by a respective curved brace portion, two said side portions and said one corresponding curved brace portion defining a corner opening, each frame having a first peripheral groove extending along an inside wall of each side portion adapted for receiving a side wall, said first frame comprising an engagement groove engageable with a tapered projection of said second frame;

a plurality of corner pieces each insertable into a corresponding corner opening of each frame; and

hinge means being disposed on a respective outer wall of said first and second frames so that said first and second frames are hingedly pivotal with respect to each other.

5,007,511

BI-DIRECTIONAL BACK STOPPING CLUTCH

Robert J. Ostrander, Sterling Heights, Mich., assignor to Dana Corporation, Toledo, Ohio

Filed Nov. 2, 1989, Ser. No. 430,811
Int. Cl.[5] F16D *51/12*
U.S. Cl. 192—8 R **8 Claims**



1. In a bi-directional back stopping clutch including a brake drum, a pair of adjacent brake shoes located within said brake drum, said adjacent shoes defining two spaced openings therebetween, a pair of output pins having first ends located in said spaced openings and having second ends, an output member having a pair of spaced openings receiving said second pin ends, and means for applying a driving torque through said shoes and said pins to said output member, said pins skewing in response to a predetermined back driving torque on said output member to move said brake shoes in contact with said brake drum, the improvement wherein each pin has a first rounded surface located at the point of contact with said output member opening, a second rounded surface located at the point of contact with one of said shoes as said pin becomes skewed, and a third rounded surface located at the point of contact with the other of said shoes as said pin becomes skewed, and wherein said rounded surfaces are spaced to provide a predetermined leverage ratio β/α, wherein β equals the distance in the direction of the axis of such pin between said

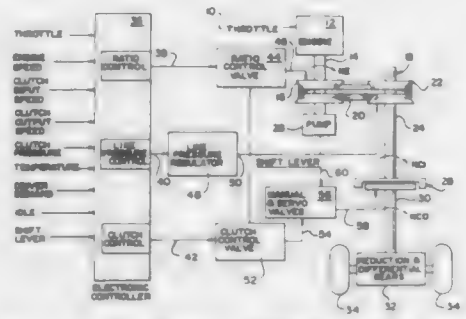
first and second rounded surfaces and α equals the axial distance on such pin between said second and third rounded surfaces, said pin having a smaller diameter at the location of said first rounded surface than at the locations of said second and third rounded surfaces.

5,007,512

TECHNIQUE FOR CLUTCH CONTROL IN CONTINUOUSLY VARIABLE TRANSMISSION SYSTEMS

Werner P. Petzold, Harwood Heights, Ill., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Aug. 31, 1989, Ser. No. 402,052
Int. Cl.[5] B60K *41/22*
U.S. Cl. 192—3.51 23 Claims



1. In a continuously variable transmission system for providing torque transfer in a vehicle having a fluid actuated clutch apparatus and operable in a plurality of operating modes including a forward mode and a reverse mode, a clutch control system for regulating fluid flow for controlling torque transfer by said fluid actuated clutch apparatus, comprising:

means for sensing the vehicle operating mode, and

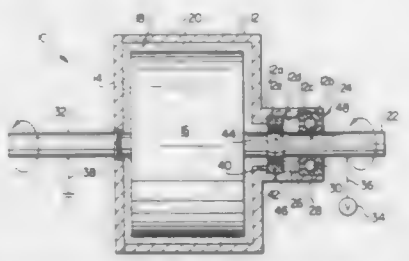
means responsive to said means for sensing the vehicle operating mode for supplying a first set of parameters for controlling fluid flow to said fluid actuated clutch apparatus in response to a sensing of a forward mode and a second set of fluid transfer parameters for controlling fluid flow to said fluid actuated clutch apparatus in response to a sensing of a reverse mode.

5,007,513

ELECTROACTIVE FLUID TORQUE TRANSMISSION APPARATUS WITH FERROFLUID SEAL

J. David Carlson, Cary, N.C., assignor to Lord Corporation, Erie, Pa.

Filed Apr. 3, 1990, Ser. No. 503,831
Int. Cl.[5] F16D *37/02*; F16J *15/40*
U.S. Cl. 192—21.5 24 Claims



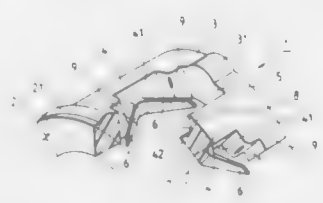
1. Apparatus for controlling the transmission of force, said apparatus comprising first and second members adapted for relative movement, said first member defining a chamber and having a circular opening, said second member extending within said chamber in a spaced relation to said first member, an electroactive fluid disposed in the space between said members, a shaft extending from said second member and through said opening, the diameter of said shaft being less than the diameter of said opening to define an annular space, means for applying an electric field between said members and to said fluid for transmitting forces between said members by said fluid according to the strength of said electric field, a ferrofluid disposed in said annular space and immiscible with said electroactive fluid, and magnetic circuit means for applying a concentrated magnetic field in said annular space and to said ferrofluid to maintain said ferrofluid in said annular space as a seal.

5,007,514

RETAINER FOR ONE-WAY CLUTCH

Tsuneichi Hattori, Fukuoka, and Kazuo Iga, Nara, both of Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Feb. 20, 1990, Ser. No. 483,202
Claims priority, application Japan, Feb. 22, 1989, 1-20126[U]
Int. Cl.[5] F16D *3/34*
U.S. Cl. 192—45 6 Claims



1. A retainer for a one-way clutch, said retainer being made of a synthetic resin and including a pair of axially spaced annular portions having a circular periphery and a plurality of parallel column portions each having first and second sides, said annular portions and said column portions being integrally molded from said resin and cooperating to define roller pockets between adjacent column portions, said column portions extending between and coupling said annular portions to each other and being disposed at equal angular intervals along the circular periphery of said annular portions, and, two elastic finger members integrally extending into a roller pocket in cantilever manner from adjacent proximal ends at said first side of each of said column portions and flaring outwardly to terminate at spaced distal ends, said distal ends of said elastic finger members being positioned to engage a roller in the roller pocket to urge the engaged roller toward the second side of a second column defining a second side of the roller pocket, said second side of each of said column portions including an inner projecting part and an outer projecting part projecting toward the first side of the next adjacent column portion, wherein the width of each of said elastic finger members gradually decreases from the proximal end thereof toward the distal tip thereof, and wherein the first side of each of said column portions includes stops for limiting the elastic deformation of said elastic finger members toward said first side.

5,007,515

VISCOUS COUPLING APPARATUS

Minoru Shimizu, Tochigi, Japan, assignor to Tochigifujisangyo Kabushiki Kaisha, Japan

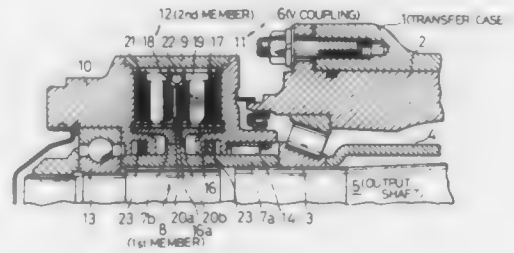
Filed Jan. 3, 1989, Ser. No. 292,839
Claims priority, application Japan, Jan. 12, 1988, 63-3147
Int. Cl.[5] F16D *35/00*
U.S. Cl. 192—58 A 5 Claims

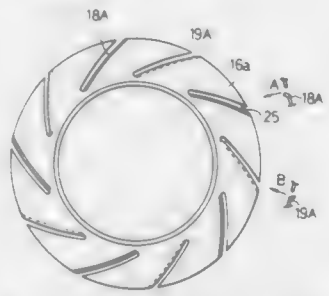
1. A viscous coupling apparatus for transmitting torque from a first rotary member to a second rotary member, comprising

(a) a working chamber formed between the first and second rotary members and filled with a viscous fluid;

(b) a series of first annular resistance plates fixedly arranged at axially spaced intervals on an outer circumferential surface of the first rotary member within the working chamber; and

(c) a series of second annular resistance plates alternating with said first resistance plates and also fixedly arranged at axially spaced intervals on an inner circumferential surface of the second rotary member within the working chamber, one of the annular resistance plates of one of said series being formed with a plurality of vortically shaped blades protruding from both side surfaces thereof at the same angular positions, said one resistance plate being located at a central position within the working chamber to agitate the viscous fluid within the working chamber.



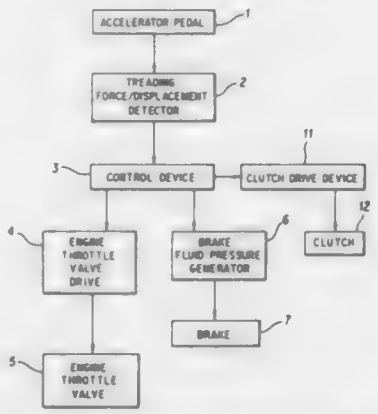


5,007,516

MOTOR VEHICLE BRAKING APPARATUS USING ACCELERATOR PEDAL

Nagao Miyazaki, Osaka-sayama, Japan, assignor to Japan Electronics Industry, Limited, Osaka, Japan

Filed Aug. 30, 1989, Ser. No. 400,614
Claims priority, application Japan, Oct. 11, 1988, 63-133227; Apr. 15, 1989, 1-96027
Int. Cl.[5] B60K *41/28*
U.S. Cl. 192—0.072 11 Claims



1. A motor vehicle braking apparatus for a vehicle having brakes operated by pressure of a brake fluid, an engine throttle valve and an accelerator pedal comprising: a treading force/-displacement detector for detecting a treading force/displacement of the accelerator pedal of the vehicle; and a control device for controlling the engine throttle valve opening degree and the brakes,

said control device being arranged such that:

(i) the accelerator pedal serves as a normal accelerator pedal for increasing the opening area of the engine throttle valve with increase in accelerator pedal treading force/displacement detected value;

(ii) the engine throttle valve is closed when the detector detects a treading force/displacement exceeding a first predetermined treading force/displacement value;

(iii) when the detector detects a treading force/displacement value greater than a second predetermined treading force/displacement value which is greater than said first predetermined treading force/displacement value, the brake fluid pressure is increased or decreased according to the size of the detected treading force/displacement value;

(iv) the brake fluid pressure is released when the treading force/displacement is smaller than said second predetermined treading force/displacement value;

(v) the accelerator pedal is restored to serve as a normal accelerator pedal when the treading force/displacement is smaller than a third predetermined treading force/displacement value near zero, after the throttle valve has been closed in response to the detection of said first value; and

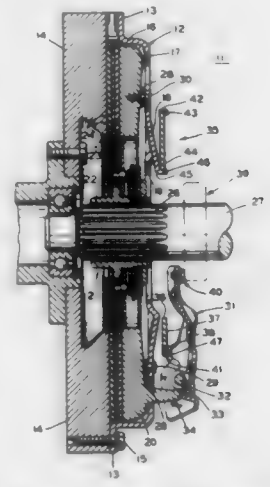
(vi) the engine throttle valve is held closed until the accelerator pedal is so restored to serve as a normal accelerator pedal, following said closing of the throttle valve.

5,007,517

ADJUSTABLE HYSTERESIS DAMPER

Richard A. Flotow, Butler, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Dec. 27, 1989, Ser. No. 457,373
Int. Cl.[5] F16D *3/14*
U.S. Cl. 192—106.1 14 Claims



1. A clutch driven disc assembly comprising:

a hub;

a facing and disc subassembly mounted on and rotatable relative to said hub; and

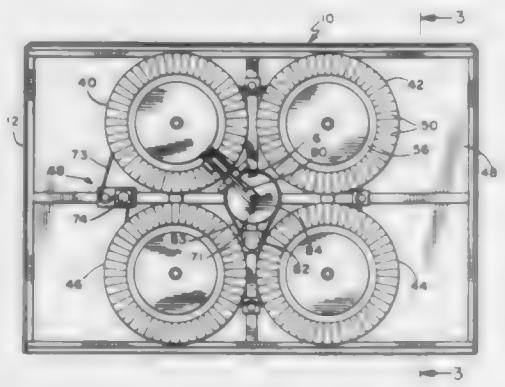
adjustment means mounted on said hub and abutting said subassembly for applying an axial load to said subassembly, said adjustment means threadably engaging said hub for selectively adjusting the axial load.

5,007,518

APPARATUS FOR RENTING ARTICLES

Theodore J. Crooks, La Mesa; Terry L. Zentz, and Matthew G. Morris, both of San Diego, all of Calif., assignors to Sam Crivello, San Diego, Calif.

Filed Feb. 13, 1989, Ser. No. 309,353
Int. Cl.[5] G07F *7/00, 11/52*
U.S. Cl. 194—212 **12 Claims**



4. A videotape rental machine, comprising:

an outer housing;

storage means within the housing having locations for storing a plurality of videocassettes comprising:

a plurality of rotatable drums arranged in a single plane parallel to the front wall of the housing and rotatably mounted on the rear wall of the housing, each drum having a plurality of videocassette storage compartments around its outer periphery;

transport means for retrieving selected videotapes from their storage locations and delivering them to customers, and for retrieving returned videotapes from the customers and returning them to the associated storage locations comprising

a rotatable picker assembly rotatable in a plane parallel to the front faces of the drums and between the drums and the front wall of the housing between said delivery position and a plurality of pickup positions including a pickup position aligned with a home position corresponding to a storage compartment position on each of the drums; and

drive means for rotating said picker assembly back and forth between said pickup positions and said delivery position and rotating said drums to position predetermined storage compartments at said pickup position; and

control means for controlling operation of said transport means, comprising:

means responsive to entry of a selection code on a selection device to control said transport means to retrieve the selected videotape from its storage location and deliver it to a customer; and

a memory for storing data associating each storage location with a selection code representing a videotape to be stored at that location; the housing having a front panel comprising:

an array of separate display areas each containing pictorial indicia representing a particular videotape stored in the machine and the selection code associated with said particular videotape;

a selection device adjacent to said display area array and associated with said control means for allowing a customer to select a videotape on the selection code associated with that videotape on the selection device; and

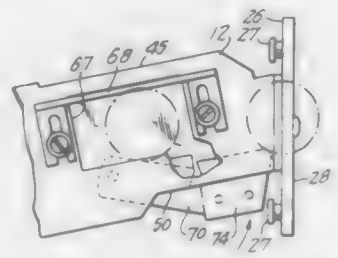
delivery means for delivering videocassettes to customers and receiving returned videocassettes.

5,007,519

COIN DROP CONSTRUCTION

Leonard Mercurio, Dix Hills, N.Y., assignor to Set-O-Matic Sales Corp., Cedarhurst, N.Y.

Filed Jan. 22, 1990, Ser. No. 468,006
Int. Cl.[5] G07F *5/16;* **G07D** *5/04*
U.S. Cl. 194—230 **7 Claims**



1. An improved coin drop construction suitable for replacing the coin slide elements of a coin collector box forming part of a coin operated appliance comprising: a front mounting plate adapted to overlie an opening in said appliance, and a coin guide element carried by an inner surface of said mounting plate and serving to guide inserted coins to said collection box, said guide element including first and second plates interconnected in spaced parallel relation to define an elongated coin channel therebetween, said mounting plate having a coin receiving opening communicating with said channel; a first coin blocking means pivotally mounted between said plates at a first end thereof, said means including a first end located in the area of said coin receiving opening, and having an upper longitudinal edge surface forming a path for conducting a coin therealong; an elongated track member in fixed relation between said plates and having an upper surface forming a continuation of said upper edge of said first coin blocking means when at a lower limit of its path of travel, resilient means bearing upon said first coin blocking means to at least partially block said opening, insertion of a coin through said opening serving to momentarily displace said first coin blocking means downwardly to permit passage of said coin, release of said coin permitting said first coin blocking means to return to its initial position, in which said upper edge is positioned above said upper surface, and said coin is rolled over said edge under the action of gravity to a second end of said track member; a second coin blocking means positioned at said second end of said track member, said second coin blocking means including a pivotally mounted plate forming a continuation of said upper surface of said track member in the presence of an underweight coin, and being pivotally displaced under the weight of a properly weighted coin to allow said coin to fall into said coin collection box.

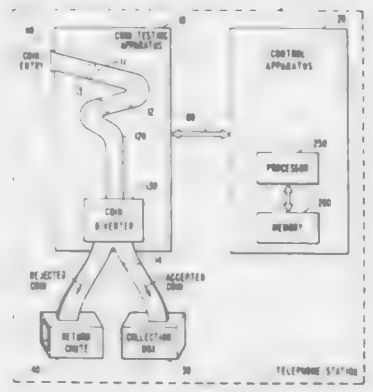
5,007,520

MICROPROCESSOR-CONTROLLED APPARATUS ADAPTABLE TO ENVIRONMENTAL CHANGES

Dawn E. Harris, Indianapolis, and William H. Orr, Carmel, both of Ind., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 20, 1989, Ser. No. 368,619
Int. Cl.[5] G07D *5/08*
U.S. Cl. 194—317 **12 Claims**

8. A microprocessor-controlled electronic coin chute (ECC) having memory means storing coin acceptability criteria within a stored program for use in determining coin denomination, the ECC including first and second oscillators, each having a different resonant frequency that changes in response to the presence of a coin, coin denomination measurements being limited to the measurement of the frequencies of said first and second oscillators, the ECC further including means for changing coin acceptability criteria in accordance with changes in an environmentally-dependent parameter by modifying the stored program in accordance with the frequency of each oscillator measured when the coin is not in the presence



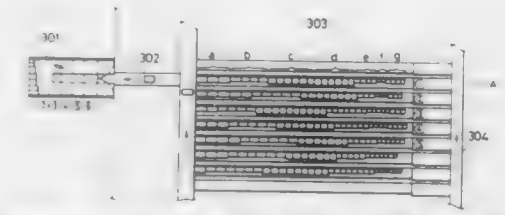
of the oscillating circuits, said parameter being related to the frequency of the oscillating circuits.

5,007,521

METHOD FOR MERGING GOODS AND APPARATUS THEREFOR

Nobuhiro Tanaka, Miyashiromachi, Japan, assignor to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 344,497, Apr. 27, 1989, abandoned, which is a continuation of Ser. No. 78,394, Jul. 24, 1987, abandoned. This application Jul. 23, 1990, Ser. No. 555,782
Claims priority, application Japan, Jul. 24, 1986, 61-174265; Jul. 24, 1986, 61-174266; Jul. 24, 1986, 61-174267
Int. Cl.[5] B65G *1/00*
U.S. Cl. 198—347.4 **5 Claims**



1. A method of merging goods in a physical distribution system prior to sorting and diverting said goods, comprising the steps of:

(a) picking a unit of goods according to predetermined batch picking data;

(b) counting a number of goods in each unit;

(c) storing goods as a unit, wherein one unit is stored on a single one of a plurality of storage lines;

(d) merging units of goods from each of said plurality of storage lines by changing a speed of carrying out goods from each of said plurality of storage lines according to a size of goods arranged thereon; and

(e) sorting said goods into a plurality of groups based on predetermined dimension data.

5,007,522

APPARATUS FOR TRANSPORTING PACKAGING MATERIAL TO A PACKAGING MACHINE

Heinz Focke, and Oskar Balmer, both of Verden, Fed. Rep. of Germany, assignors to Focke & Co., (GmbH & Co.), Verden, Fed. Rep. of Germany

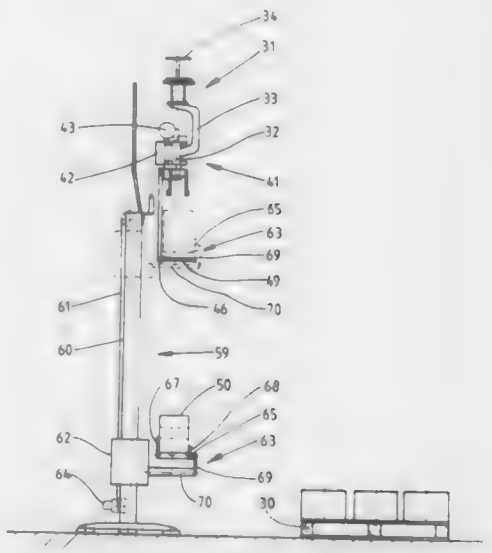
Filed May 31, 1989, Ser. No. 359,302
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1988, 3820735; Aug. 17, 1988, 3827917
Int. Cl.[5] B65G *47/36*
U.S. Cl. 198—468.8 **9 Claims**

1. An apparatus for transporting packaging material, especially reels of web-shaped packaging material, from a stock to at least one reception station in a region of at least one of a plurality of packaging machines, said apparatus comprising:

a plurality of material conveyors (41) which are movable along a conveyor track extending above the packaging machines and each of which has a material holder (44) with rigid immovable supporting members (48, 49) for the positive reception of reels (26, 27, 28) of different sizes, the reels resting with their circumferential surface (50) on said supporting members (48, 49); and

at least one transfer conveyor in the region of a feed station (38, 39, 40) and at least one transfer conveyor in the region of a discharge station (71), and each having a material carrier (63, 75) which is movable upwardly and downwardly for receiving or transferring a reel from or to a material conveyor (41);

said material carrier (63, 75) being arranged in the region of the conveyor track of said material conveyor (41), and the design of said material carrier (63, 75) being matched to the design of said supporting members of said material holder (44), such that supporting members (48, 49), located in the path of upward movement of said material carrier, and said material carrier (63, 75) pass one another



during an upward movement of said material carrier, while at the same time a reel is transferred by one transfer conveyor lifting it off the other, wherein said material holder (44) comprises rigid supporting struts (45, 46) and at least two spaced-apart supporting members designed as unidirectional supporting spars (48, 49) having free ends, each of said supporting spars (48, 49) projecting from a respective supporting strut (45, 46) such that the free ends of said supporting spars are approximately parallel to one another, said supporting spars projecting approximately perpendicular to a direction of movement of said material conveyors (41), wherein said material carrier (63, 75) has supporting rods (65, 66; 76, 77) which pass said supporting spars of said material holder (44) during the upward movement of said material carrier, and wherein said supporting rods of said material carrier (63, 75) are spaced at a sufficiently different distance that a pair of them can move through the space between said supporting spars of said material holder (44), and

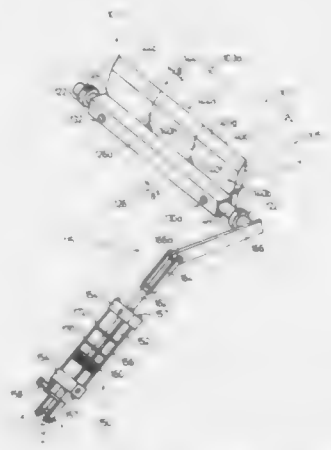
further wherein after a reel is transferred from the material holder (44) to the material conveyor (41), the reel moves along the material conveyor (41) and then the material carrier (63,75) moves downwards.

5,007,523

CONVEYOR BELT SCRAPER MECHANISMS

Allen J. Morefield, P.O. Box 534, Tazewell, Va. 24651

Continuation-in-part of Ser. No. 232,663, Aug. 16, 1988, abandoned. This application Mar. 30, 1990, Ser. No. 503,439
Int. Cl.[5] B65G *45/00*
U.S. Cl. 198—497 12 Claims



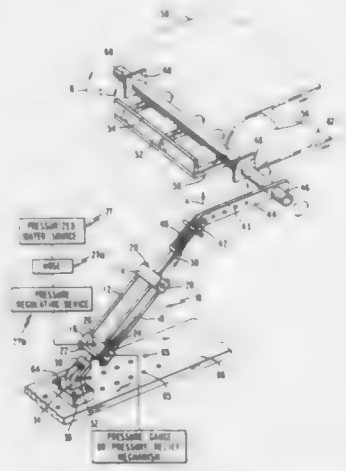
1. A conveyor belt scraping assembly comprising:
a) a support shaft means;
b) individual scraper elements detachably mounted to the support shaft means; and
c) means for moving the individual scraper elements into and out of contact with the conveyor belt wherein said individual scraper elements are formed of resilient material, at least one of said scraper elements adapted to contact center portions of the conveyor belt being formed of a material having a hardness greater than the hardness of the material forming adjacent ones of said scraper elements adapted to contact side portions of conveyor belt.

5,007,524

APPARATUS AND METHOD FOR SAFELY ACTUATING A BELT SCRAPER MECHANISM WITH PRESSURIZED WATER

Allen J. Morefield, P.O. Box 534, Tazewell, Va. 24651

Continuation of Ser. No. 232,663, Jul. 16, 1988, abandoned. This application Jul. 30, 1990, Ser. No. 560,258
Int. Cl.[5] B65G *45/00*
U.S. Cl. 198—499 20 Claims



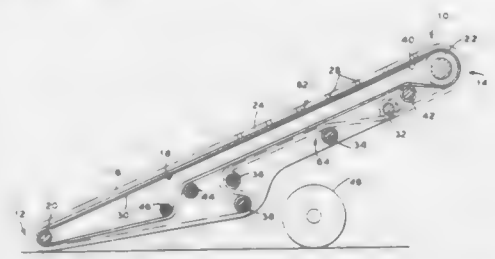
12. Apparatus for cleaning a moving conveyor belt, comprising:
a belt cleaning mechanism powered by pressurized water for safely actuating the belt cleaning mechanism;
cylinder means for receiving said pressurized water at a pressure sufficient to move a piston slidingly guided within the cylinder means and connected to a force transmitting connecting rod;
means for connecting said connecting rod to said belt cleaning mechanism to actuate a scraper thereof into a belt cleaning position to scrape the moving belt with a controllable scraping action, wherein said piston and cylinder arrangement includes a pair of end blocks respectively at opposite ends of the cylinder and a plurality of tension rods extending between the end blocks along the sides of the cylinder and means for applying a predetermined force to the end blocks through the tension rods to close off opposite ends of the cylinder, at least said end blocks, cylinder and said piston having materials having water contacting surfaces which are non-corrodible by water.

5,007,525

BELT AND CHAIN FLIGHT CONVEYOR

Richard Crawshay, North Vancouver, Canada, assignor to Inco limited, Toronto, Canada

Filed Aug. 21, 1989, Ser. No. 396,277
Claims priority, application Canada, Oct. 21, 1988, 580997
Int. Cl.[5] B65G *15/44*
U.S. Cl. 198—690.2 6 Claims



1. A conveying apparatus, the apparatus comprising an endless conveyor having a proximal end and a distal end, the endless conveyor being a transporting leg and a returning leg, the endless conveyor including a belt conveyor and a chain flight conveyor rotating about a pair of opposed sprocketless drums disposed at the proximal end and the distal end, the chain flight conveyor parallel to and in superimposed contact with the belt conveyor for a substantial distance along the transporting leg, the width of the belt conveyor being wider than the chain flight conveyor, means for supporting the endless conveyor, and means for causing the endless conveyor to travel in a predetermined direction.

5,007,526

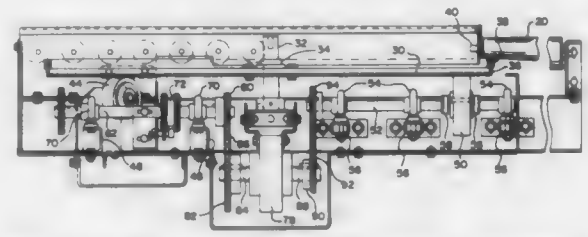
CONVEYOR CURVE AND LIVE ROLLER, LINE SHAFT CONVEYOR SYSTEM INCORPORATING SAME

Francis P. Fazzina, Grand Rapids, and Guy G. Hollister, Spring Lake, both of Mich., assignors to ERMANCO Incorporated, Spring Lake, Mich.

Filed Oct. 5, 1989, Ser. No. 417,290
Int. Cl.[5] B65G *13/02*
U.S. Cl. 198—787 24 Claims

1. A curve for a live roller, line shaft conveyor system, said curve comprising:
a first segment of driven conveyor rollers, said first segment associated with a first drive shaft for driving said first segment of driven conveyor rollers, said first drive shaft extending transversely beneath said first segment;
a second segment of driven conveyor rollers, said second segment associated with a second drive shaft for driving said second segment of driven conveyor rollers, said second drive shaft extending transversely beneath said second segment;

a curve segment of driven conveyor rollers extending beneath and connecting said first segment and said second segment;
a drive disc for driving said curve segment of driven rollers, said drive disc having an annular lip associated therewith and including an edge member thereon, said edge member being positioned against the bottom surfaces of said curve segment of driven rollers to rotate said driven rollers in said curve segment when said drive disc is rotated;



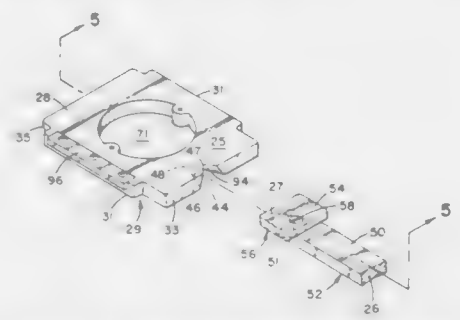
said drive disc being positioned for rotation within a horizontal plane and supported therein by at least one idler wheel and a drive wheel, said idler wheel and said drive wheel retaining said edge member against the bottom surface of said driven rollers in said curve segment to drive said rollers when said drive disc is rotated within said horizontal plane.

5,007,527

PALLET HAVING A SIDEWALL COMPRISING AN ARCUATE SURFACE

William D. Ach, Brooklyn Park; Edmund J. Anderson, Minneapolis; Lynn B. Behrends, Delano; Wayne P. Desrude, Brooklyn Park, and Gene J. Klos, Minnetonka, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 179,417, Apr. 8, 1988, abandoned. This application Feb. 28, 1989, Ser. No. 316,513
The portion of the term of this patent subsequent to May 29, 2007, has been disclaimed.
Int. Cl.[5] B65G *47/00*
U.S. Cl. 198—803.01 6 Claims



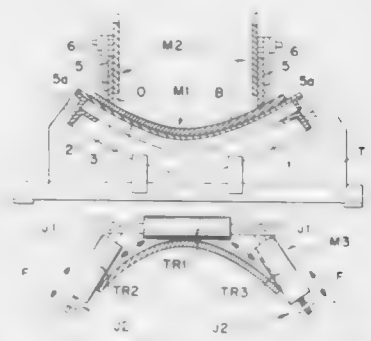
1. A pallet for carrying a workpiece around a corner portion of a transfer mechanism in a predetermined pallet orientation, said pallet comprising:
(a) a first sidewall having arcuate groove means having a first arcuate surface for cooperating with a curved guide rail at a corner of a pallet transfer mechanism; and
(b) a second sidewall substantially opposite said first sidewall including at least one receiving cavity extending inwardly from said second sidewall angularly downwardly to define a tapered notch forming part of said second sidewall for receiving a tapered end of an engaging bar;
(c) said at least one cavity being configured for imparting vertical and horizontal lift upon engagement with an engaging bar end, said at least one cavity having a generally triangular cross section, a rounded top wall and downwardly dependent side walls, said top wall sloping downwardly from an opening of the at least one cavity to the back of the at least one cavity such that the triangular cross section decreases in area from the opening of the at least one cavity to the back of the at least one cavity.

5,007,528

BELT CONVEYOR SUPPORTING ARRANGEMENT

Nagahama Hideharu, Hyogo, Japan, assignor to Yoko Co., Ltd., Hyogo, Japan

Filed Jun. 5, 1989, Ser. No. 361,365
Claims priority, application Japan, Jun. 5, 1988, 63-074917[U]
Int. Cl.[5] B65G *15/08*
U.S. Cl. 198—823 9 Claims



1. A supporting arrangement for a conveyor belt movable in a running direction, the arrangement being positioned where bulk materials are transferred from one of a chute and feeder and comprising:
a supporting frame extending in the running direction of the belt, said supporting frame has an arc shape in cross section and said supporting frame extends in the running direction;
a cushioning device mounted on the supporting frame for absorbing impact of bulk materials dropped onto the conveyor belt, said cushioning device comprising a resilient plate mounted on the frame in an arc trough shape generally conforming to the arc shape of the frame; and
a backing contact top plate having a lubricated contact surface for smoothly supporting the conveyor belt, said backing plate being mounted on the resilient plate of the cushioning device in an arc trough shape corresponding to the shape of the plate, the contact surface of said backing plate being provided with a plurality of generally parallel channels having sidewalls and a bottom surface, said channels extend in the running direction of the belt, said channels reducing contact area between the belt and the backing plate and upon movement of the belt in the running direction, an air flow is generated in the channels along the running direction of the belt.

5,007,529

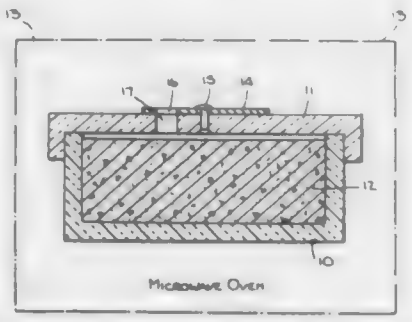
MICROWAVE-HEATABLE AIR-FRESHENER PACKAGE

Donald Spector, 380 Mountain Rd., Union City, N.J. 07087

Filed Dec. 18, 1989, Ser. No. 452,052
Int. Cl.[5] A61L *9/02*; A24F *25/00*; F16G *13/00, 11/00*
U.S. Cl. 206—0.5 7 Claims

1. An air-freshener package activated by microwave energy, said package comprising:
(a) a rigid container whose walls are formed of thermal insulation material having dielectric properties permeable to microwave energy, and having a vent therein; and
(b) a porous pad of dielectric material permeable to microwave energy housed in the container and impregnated with a liquid fragrance which is responsive to microwave energy whereby when the package is irradiated in a microwave over for a relatively short period of time, the liquid fragrance is heated to an elevated temperature to generate an aromatic vapor which when the package is thereafter removed from the oven and placed in a room, is

discharged through the vent into the atmosphere, the thermally insulated container maintaining said liquid fra-



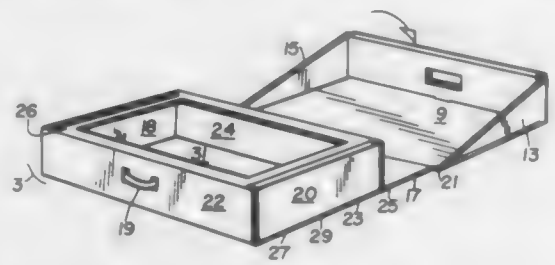
grance at said elevated temperature for a prolonged period after the package is removed from the oven.

5,007,530

SINGLE PIECE DISPOSABLE CAT LITTER BOX

Donald Weismantel, 621 Hapsfield Apt. 106, Buffalo Grove, Ill. 60089

Filed Feb. 23, 1990, Ser. No. 483,763
Int. Cl.[5] B65D *5/20, 5/44*
U.S. Cl. 206—45.210 **2 Claims**



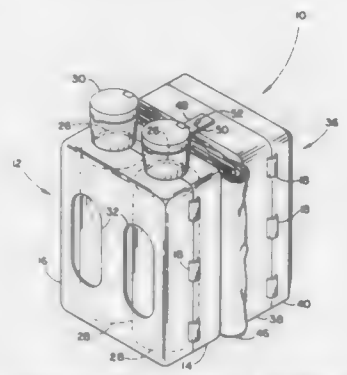
1. A container comprising:
a cover portion comprising an upper surface and a pair of side surfaces projecting downwardly from said upper surface, said upper surface having a rear edge and a forward edge;
a main box portion comprising a front wall, a rear wall, a pair of side walls, each of said walls of said main box portion having an upper surface and a lower surface, said walls defining therebetween a storage volume;
a hinge-member portion having a first end connected to said rear edge of said upper surface of said cover portion, and a second end connected to said lower portion of said front wall of said main box portion;
said cover portion also comprising a front wall, said pair of side surfaces of said cover portion being substantially triangular in shape, each said side surface becoming narrower in height in a direction from said front wall of said cover portion toward said rear edge of said upper surface of said cover portion;
said hinge-member portion comprising a first section, a second section, and a third section, a first fold line between said first and second sections, and a second fold line between said second and third sections; said hinge-member portion being connected to said lower surface of said front wall of said main box portion by said first section, and said hinge-member portion being connected to said upper surface of said cover portion by said third section; said first and third section being pivotally connected to said main box portion and said cover portion, respectively, whereby said hinge-member portion may folded in upon itself for placing the main box portion into the interior of the cover portion after the cover portion has been removed from its closing state on the main box portion;
said main box portion also comprising a lower wall, the upper surface portions of said walls of said main box portion defining an annular shroud;
the container being made of one-piece of flexible material, said cover portion, said main box portion, and said hinge-member portion being formed integrally together;
a third fold line at said first end of said hinge-member portion for pivotally connecting said hinge-member portion to said main box portion, and a fourth fold line at said second end of hinge-member portion for pivotally connecting said hinge-member to said cover portion; whereby said cover portion and said main box portion is pivotal relative to said hinge-member portion.

5,007,531

SHOWER KIT

Jimi Lighten, 5311 College Oaks Dr., No. 20, Sacramento, Calif. 95841

Filed Dec. 22, 1989, Ser. No. 455,[illegible]3
Int. Cl.[5] A47K *5/08*
U.S. Cl. 206—77.1 **20 Claims**



1. A article carrying kit comprising, in combination:
a. a first container comprising a mating pair of shells defining a cavity;
b. a second container, similar in size to the first, also comprising a mating pair of shells defining a cavity;
c. at least one flexible member joining said first and second containers such that one of said containers may be folded over the other while leaving sufficient space therebetween for a folded face cloth; and,
d. means for releasably binding said containers to one another while maintaining said space therebetween.

12. A shower kit of flexible, water-impervious material comprising, in combination:
a. a first container comprising a mating pair of shells having a hinge along one of their mating edges, said shells defining a cavity when mated;
b. a second container, similar in size to the first, also comprising a mating pair of shells having a hinge along one of their mating edges, said shells defining a cavity when mated;
c. at least one flexible strap joining said first and second containers such that one of said containers may be folded over the other while leaving sufficient space therebetween for a folded face cloth; and,
d. means for releasably binding said containers to one another while maintaining said space therebetween.

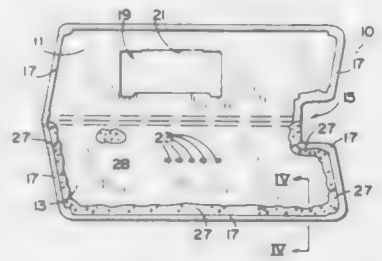
20. A shower kit of flexible, water-impervious material and of one-piece construction comprising, in combination:
a. a first container comprising a mating pair of shells, said shells defining a cavity when mated, said shells having at least one aperture defined by their mating edges through which the neck of a liquid-retaining receptacle may project, and one of said shells defining an access hole through which a liquid-containing receptacle may be manipulated;
b. a second container, similar in size to the first, also comprising a mating pair of shells, said shells defining a cavity when mated;
c. at least one flexible strap joining said first and second containers such that one of said containers may be folded over the other while leaving sufficient space therebetween for a folded face cloth; and,
d. means for releasably binding said containers to one another while maintaining said space therebetween.

5,007,532

VISOR AND METHOD FOR MAKING THE SAME

Patrick W. Binish, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Nov. 20, 1989, Ser. No. 439,451
Int. Cl.[5] B60J *3/02*
U.S. Cl. 296—97.1 **42 Claims**



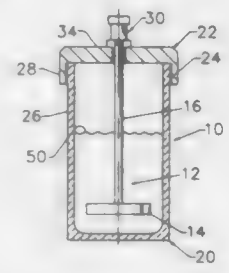
1. An automobile type visor comprising:
a self-supporting relatively thin wall member which is folded to form the core of said visor, said core having abutting edge portions;
a decorative material for covering the outside of said core and having an edge portion turned over the edges of said core into the interior of said core;
a layer of adhesive within and near said abutting edges of said core for holding said core closed and for adhering to said decorative material.

5,007,533

WET BLADE RAZOR STORAGE APPARATUS

Ahnal A. Purohit, Lisle, Ill., assignor to Anshal, Inc., Darien, Ill.

Filed Mar. 19, 1990, Ser. No. 495,471
Int. Cl.[5] B65D *81/22, 81/24*
U.S. Cl. 206—208 **11 Claims**



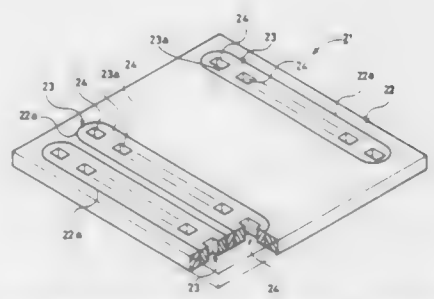
1. Apparatus for storing, during nonuse, a wet razor having a blade and a handle cantilevered away from the blade, comprising the combination of
an open-top vessel;
closure means for the vessel;
razor holding means in the vessel operable to releasably hold the razor blade within the vessel spaced below the closure means therefor;
the combination including said vessel being filled with mineral oil to a level above the blade to have the blade submerged in said mineral oil; and
a hygroscopic material contained in the vessel with the mineral oil.

5,007,534

RETAINER FOR CHIP-TYPE ELECTRONIC PARTS

Kuniaki Tamaki; Norio Sakai, and Kenji Minowa, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Sep. 27, 1989, Ser. No. 413,334
Claims priority, application Japan, Sep. 27, 1988, 63-242988
Int. Cl.[5] B65D *73/00*
U.S. Cl. 206—329 **4 Claims**



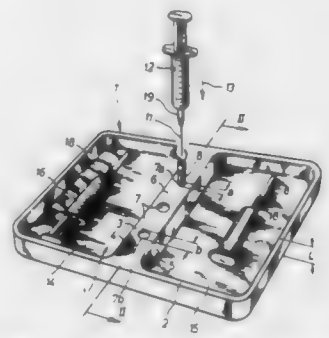
1. A retainer for chip-type electronic parts, comprising
a frame made substantially of rigid material and having a plurality of interior openings defining respective inner walls;
a plurality of respective retainer plate means disposed within said interior openings and having outer edges fixed to said inner walls;
each said retainer plate means comprising an elastic retainer plate having a plurality of retaining holes formed therein, said retaining holes being sized for receiving said chip-type electronic parts, and having inner surfaces which exert an elastic retaining force on said chip-type electronic parts held therein;
each said elastic retainer plate being made substantially completely of elastic material, and having substantially only such elastic material interposed between said retaining holes.

5,007,535

SYRINGE TRAY

Curt T. Meseke, Leer/Ostfriesl.; Winfried Winkler, Aachen, and Renate Hilbig, Hamm, all of Fed. Rep. of Germany, assignors to Hammerlit GmbH, Leer/Ostfriesland, Fed. Rep. of Germany

Filed Sep. 26, 1989, Ser. No. 412,813
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1988, 8812156[U]; Jul. 13, 1989, 3923119; Aug. 23, 1989, 8910067[U]
Int. Cl.[5] B65D *83/10*
U.S. Cl. 206—366 **18 Claims**



1. A syringe tray for depositing and transporting medical syringes having a hypodermic needle and a cap therefor, including a tray base and further comprising:
means associated with said tray base and including hole

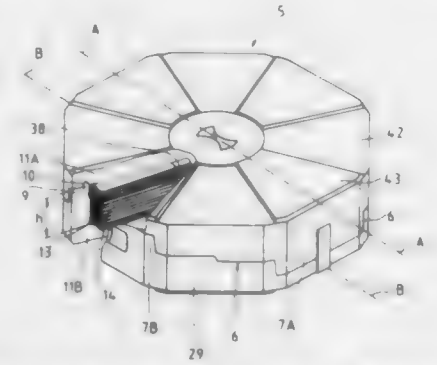
means, with said caps being adapted to be disposed in said hole means in a predetermined manner, said means associated with said tray base comprising at least one raised portion that is in the form of a ridge that extends upwardly from the plane of said tray base and includes a wall that is remoted from said tray base and is provided with said hole means, said ridge having two ends and increasing in width from one end to the other, said hole means being successively disposed holes that increase in diameter from said one end of said ridge to the other, with said increase in width of said ridge corresponding to said increase in diameter of said holes.

5,007,536

PACKAGING CONTAINER FOR A PLURALITY OF RECORDING MEDIA IN THE FORM OF A CIRCLE

Dietmar Huebner, Oberkirch; Peter Nagel, Willstaett; Ekkehard Hirschberg, Weinheim; Klaus Schoettle, Heidelberg, and Bozidar Pavelka, Willstaett, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 25, 1990, Ser. No. 470,379
Int. Cl.[5] B65D *85/67*
U.S. Cl. 206—394 14 Claims



1. A packaging container for a plurality of recording media which, at least after having been wound into roll form, have the shape of flat annular disks and are axially stacked on top of each other between two identical end members each having a skirt portion such that said members when assembled with said skirt portions in mutually abutting relationship, envelop the stack of recording media in the form of a box, said disk-shaped recording media being centered within said box by a central holder provided in each said end member,

said skirt portion having a multitude of teeth extending in a continuous zigzag pattern around the circumference of the skirt portion, the teeth of said two members tightly interfitting upon assembly of the box and the height of the largest tooth corresponding roughly to the internal height of the container, and

said members also having a transverse system of teeth extending radially of the container,

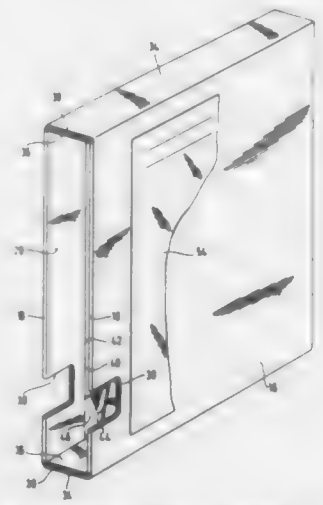
such that the separation line between the two end members is greatly lengthened and both the stability of the container and its protection against the penetration of dust are substantially increased.

5,007,537

SLEEVE FOR A PHOTOPRINT CASSETTE

Peter Ackeret, Kusnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland

PCT No. PCT/EP87/00374, § 371 Date Jun. 7, 1988, § 102(e) Date Jun. 7, 1988, PCT Pub. No. WO88/00721, PCT Pub. Date Jan. 28, 1988
PCT Filed Jul. 11, 1987, Ser. No. 196,215
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1986, 3624263; Sep. 13, 1986, 3631212
Int. Cl.[5] B65D *85/48*
U.S. Cl. 206—455 62 Claims



1. A sleeve for a picture cassette, including a first large side wall, a second large side wall parallel to said first large side wall, a narrow top wall, a narrow bottom wall parallel to said narrow top wall, and a rear wall, said large side walls being interconnected by said top, bottom, and rear walls, front-defining edges of said large side walls and of said top and bottom walls remote from said rear wall defining an open front, one of said large side walls comprising a pocket for holding a flat object, said pocket including a first inner wall portion separating said pocket from a cassette-receiving space, a free edge of said first inner wall portion defining an access opening for free insertion and removal of said flat object into and from said pocket via said open front, said pocket and said access opening extending substantially over an inner height of said sleeve between said top and bottom walls, said first inner wall portion being connected to a flap along a folding line perpendicular to said rear wall, said flap being folded about said folding line so as to lie parallel to an adjacent one of said top, bottom, and side walls and mounted to keep said first inner wall portion in a position substantially parallel to said one large side wall.

5,007,538

INTERLEAVED SPIRAL WRAPPING OF FOAM PRODUCT AND STRETCH FILM FOR PACKAGING CARBONLESS PAPER ROLLS

Roger J. Mushinski; Charles E. Lewis, and Lawrence J. Casey, all of Appleton, Wis., assignors to Appleton Papers Inc., Appleton, Wis.

Division of Ser. No. 21,919, Mar. 4, 1987, Pat. No. 4,884,385.
This application Jun. 20, 1989, Ser. No. 369,533
The portion of the term of this patent subsequent to Jun. 26, 2007, has been disclaimed.
Int. Cl.[5] B65D *81/14, 85/66*
U.S. Cl. 206—523 2 Claims

1. A foam wrap package for protecting a roll of carbonless paper, comprising:

interleaved foam and film wrapped under tension around the outer periphery of roll of paper, said interleaved foam and film overlapping edges of and conforming to said roll, said film including a leading edge;

means for attaching said leading film edge to said roll;

first and second end pieces secured to flat side walls of said roll of paper; and

means for holding said first and second end pieces flush to said flat side walls;

said film being supplied from a single source of film and said foam being supplied from a single source of foam wherein the interleaved layers of foam and film are positioned on said roll of carbonless paper with said film overlapping said foam, said film being stretch film and said foam being a polyolefin packaging foam wherein the foam and film are interleaved to provide three wraps of foam about the periphery of said roll of carbonless paper whereby said foam wrap package may be handled without damaging said roll of carbonless paper.

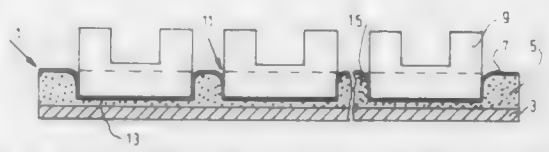


5,007,539

PACKAGE AND PACKING BODY FOR SMALL COMPONENTS

Hans-Werner Rüter, Klein Nordende, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 369,569, Jun. 21, 1989, abandoned, which is a division of Ser. No. 298,191, Jan. 13, 1989, Pat. No. 4,860,521, which is a continuation of Ser. No. 83,545, Aug. 6, 1987, abandoned. This application Apr. 9, 1990, Ser. No. 506,496
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1986, 3626765
Int. Cl.[5] B65D *81/02;* B65B *15/04*
U.S. Cl. 206—524 5 Claims



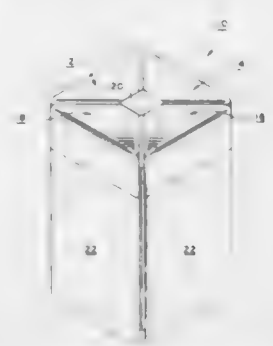
1. A package with small components including a packing body having a multi-layer construction which comprises a substantially rigid base plate and a thermoplastically deformable elastic carrier layer which is fixedly connected to the base plate and which has compartments, each compartment holding an associated small component and corresponding to the shape of its associated small component whereby each such small component is firmly held in place, said package being made in accordance with a method comprising a heating said carrier layer between a temperature in the range of 70° to 180° C., placing a small component on said carrier layer and applying pressure to said small component to press it into said heated carrier layer toward said base plate which forms its associated compartment in said carrier layer, said compartment thereby corresponding to the shape of its associated small component, said carrier possessing the specific property that when said pressure is applied in a prescribed manner the bottom of said compartment immediately adjacent said base plate remains substantially undeformed during the formation of said compartment in said carrier layer.

5,007,540

PERSONAL CARE PACKAGE

John C. Beasley, Dallas, Tex., and Pierre F. Dinand, Levallois, France, assignors to Stuart Jacobson Associates, Inc., Dallas, Tex.

Continuation of Ser. No. 179,236, Apr. 8, 1988, abandoned. This application Apr. 17, 1990, Ser. No. 511,974
Int. Cl.[5] B65D *69/00, 21/00*
U.S. Cl. 206—581 5 Claims



1. A package of personal care items, comprising:

a plurality of selectively shaped individual containers from which contained personal care commodities can be dispensed;

each of said containers, in section, having a geometrical configuration selected to cooperate with the others of said containers, on being juxtaposed, to effect an arrangement in which said containers, when collectively assembled, complementarily interfit with one another; and

attachment means comprising complementary hook and loop strips on the confronting surfaces of the containers to releasably retain said containers in said juxtaposed relationship.

5,007,541

CARTON FOR GRANULAR MATERIALS

Charles L. Gunn, Lawrenceburg, Ind.; Harold Davis, Reading, Ohio; Milton D. Spahni, Jr., Harrison, Ohio, and Ronald H. Wanless, Lebanon, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 16, 1990, Ser. No. 495,258
Int. Cl.[5] B65D *5/54*
U.S. Cl. 206—611 20 Claims

1. A side fill container for housing granular materials comprising:

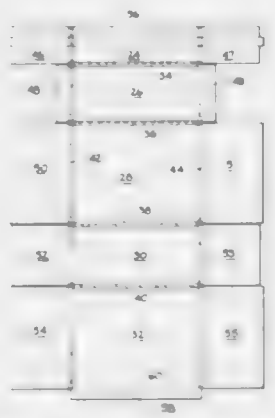
(a) an enclosure including a top wall and a bottom wall opposing each other, a front wall and a back wall opposing each other, and two end walls opposing each other, wherein:

(b) each of the end walls further comprises two main layers attached to each other in face to face relation and having a top edge, a third layer attached in face to face relation to the main layers, and a fourth layer having a horizontal tear strip therein, the fourth layer being attached to the main layers below the tear strip;

(c) the front wall further comprises an inner layer having a top edge and an outer layer, the outer layer having a horizontal tear strip therein which connects with the tear strips of the end walls forming one continuous tear strip, the inner and outer layers being attached to each other below the tear strip;

(d) an ear being attached to each of the end walls above the tear strip and further being attached to the top wall, the

ear holding the top wall against the top edge of the main layers; and



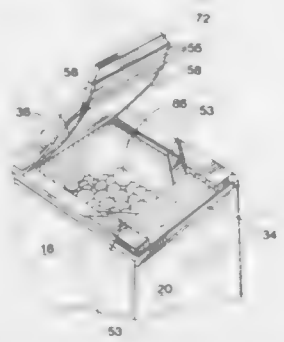
(e) a glue flap being attached to the top edge of the inner layer of the front wall via a perforated score line, the glue flap also being attached to the top wall.

5,007,542

RECLOSEABLE CARTON WITH POURING SPOUT

Harry I. Roccaforte, 3929 Forest Ave., Western Springs, Ill. 60558

Filed Aug. 14, 1990, Ser. No. 567,320
Int. Cl.[5] B65D *5/70*
U.S. Cl. 206—621.6 **14 Claims**



1. A recloseable pouring spout structure for a wall of a carton comprising:

an outer wall panel having inner and outer surfaces and a leader tab therein defined by a pair of parallel tear lines of substantially equal length formed by intermittent cuts through the outer wall panel, each tear line having a first end and a second end, said leader tab further having a finger edge connecting the first ends of said tear lines;

first and second tear areas of substantially equal length formed in said outer wall panel, each said tear area having a first end that adjoins one of the second ends of one of the tear lines and a second end, each said tear area being defined by a partial cut in the inner surface of the outer wall panel and a partial cut in the outer surface of said outer wall panel substantially parallel to and displaced from the partial cut in the inner surface, each of said tear areas extending from its first end to its second end in a direction generally the same as the direction in which the tear lines extend;

an inner wall panel having inner and outer surfaces and a spout opening therethrough with a lead edge, said outer surface of the inner wall panel lying against and affixed to the inner surface of the outer wall panel by adhesive means that substantially encircles the spout opening and extends across the inner surface of the outer wall panel at the leader tab, such that the spout opening is located substantially between the first and second tear areas; and

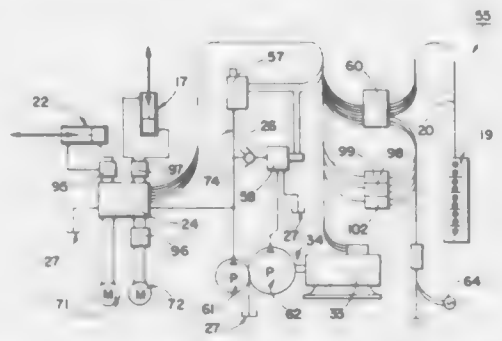
a plurality of parallel, transverse, delamination ribs formed by partial cuts in the outer surface of the inner wall panel adjacent the lead edge of the spout opening, said transverse delamination ribs being located below the inner surface of the leader tab, such that said transverse delamination rib partial cuts are oriented substantially at right angles to the direction of extent of the tear lines and extend substantially between the tear lines and such that the outer surface of at least one of the transverse delamination ribs is affixed to the inner surface of the leader tab by said adhesive means.

5,007,543

CRANE APPARATUS

Mack A. Cooke, 910 Neal St., Greensboro, N.C. 27403

Filed Aug. 21, 1989, Ser. No. 396,077
Int. Cl.[5] B66C *13/40*
U.S. Cl. 212—160 **5 Claims**



1. In a crane apparatus having a base, a turret rotatably mounted on said base for movement about a vertical axis, a hydraulic actuator for rotating said base, a boom with an inside extendable segment and a outside segment, a hydraulic actuator for moving said inside extendable segment relative to said outside segment, means for mounting said boom on said turret, a winch with a lead line, means mounting said winch and said lead line on said boom, a hydraulic actuator for driving said winch, a hydraulic source and circuit therefor, a high volume pump and a low volume pump connected to said hydraulic source, means for driving said pumps, a directional control valve assembly for directing hydraulic fluid from said pumps to said hydraulic actuators, the improvement comprising:

a pendant control device, an electrical cord with first and second ends, said cord being connected to said device at one of said ends and removably connected to said base at the other one of said ends, said device including a plurality of parallel connected two-stage switches for controlling said hydraulic actuators, each of said switches when actuated to a first stage being operative to drive a respective hydraulic actuator at a low speed and when actuated to a second stage being operative to drive a respective hydraulic actuator at a high speed relative to said low speed;

a normally open electrically operated pump unloading valve connected to said high volume pump and a normally closed pressure switch connected in series with said electrically operated unloading valve;

each of said two-stage switches when actuated to said first stage being operative to place said directional control valve assembly in fluid communication with only said low volume pump to drive a selected hydraulic actuator at said low speed;

each of said two-stage switches when actuated to said second stage being operative to close said unloading valve to place said directional control valve assembly in fluid communication with said high volume pump whereby said low volume pump and said high volume pump are concurrently operated to supply fluid to a selected hydraulic actuator to drive it at said high speed; and

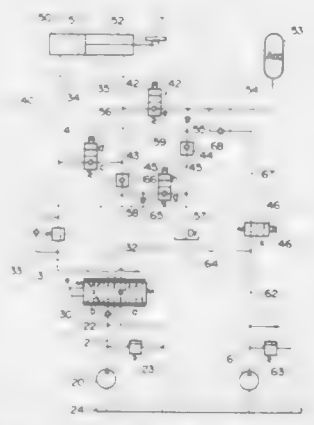
said pressure switch being operative to open said unloading valve in response to a predetermined pressure in said hydraulic circuit when a hydraulic actuator is driven at high speed to prevent the stalling of said means for driving said pumps.

5,007,544

MECHANISM FOR SUPPRESSING DISPLACEMENT OF TRAVELLING CRANE

Yoshimi Saotome, Takasago; Kiyotsuna Kuchiki, and Norihiko Hayashi, both of Kakogawa, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Apr. 6, 1990, Ser. No. 505,401
Claims priority, application Japan, Sep. 9, 1989, 1-234055
Int. Cl.[5] B66C *23/26, 13/06;* **F16D** *31/62*
U.S. Cl. 212—265 **4 Claims**



1. A mechanism for suppressing the displacement of a travelling crane, including:

a wheeled supported car body; a boom pivotally supported on said car body;

a hydraulic cylinder with first and second oil chambers for raising and lowering said boom, said hydraulic cylinder being connected between said body of the travelling crane and the boom;

a main hydraulic pump;

a direction control valve for controlling oil from said main hydraulic pump selectively with respect to said first oil chamber which functions to maintain the load of said hydraulic cylinder and to said second oil chamber located on the side opposite to said first oil chamber;

a displacement suppressing accumulator connected between said cylinder and said direction control valve;

a mode change-over valve mechanism selectively operable in either a crane travelling mode position in second oil chambers and said accumulator being in fluid communication with one another and a crane operation mode position in which said communication is cut off and pressure oil is supplied to or discharged from said first and second oil chambers independently;

a mode selection switch for selecting a mode position for said mode change-over valve mechanism;

a boom position detecting means;

an auxiliary pressure oil source;

a change-over valve for controlling said auxiliary pressure oil source, said change-over being selectively shiftable between a first position in which said auxiliary pressure oil source is in communication with said first oil chamber of said cylinder and to a second position to which said communication is cut off; and

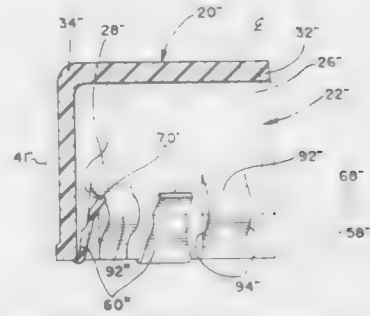
a control means operable to shift said change-over valve to said first position to supply a predetermined amount of oil to said first oil chamber of said cylinder from said auxiliary pressure oil source when said mode selection switch is in the crane travelling mode position and a detected value by said boom position detecting means is smaller than a predetermined lower limit value of a selected boom travelling range.

5,007,545

REMOVAL RESISTANT MEMBER

Leo R. Imbery, Jr., Crystal Lake, Ill., assignor to Seaquist Closures, Crystal Lake, Ill.

Filed Mar. 15, 1990, Ser. No. 494,238
Int. Cl.[5] B65D *47/02*
U.S. Cl. 215—14 **1 Claim**



1. A mounting member for being mounted to a container that has an exterior surface portion and an annular bead projecting from the circumference of said surface portion, said mounting member comprising:

a skirt for being disposed around said container exterior surface portion with at least a first annular section of the skirt extending axially on one side of said container annular bead, said first annular section of said skirt defining a plurality of circumferentially spaced-apart inwardly convex lugs for engaging said annular bead of said container;

extension means for extending from the peripheral edge of said first annular section;

first flexible connecting means for connecting said extension means to said skirt first annular section at a first bend region to accommodate radially inward movement of said extension means to an orientation generally alongside said skirt first annular section;

a plurality of circumferentially spaced tabs each extending from and radially inwardly of said extension means; and

second flexible connecting means for connecting each said tab to said extension means at a second bend region to accommodate radially inward pivoting of each said tab toward said container when sufficient relative axial displacement is effected between said mounting member and container to engage said container annular bead with the distal end of said tab and thereby resist further axial displacement.

5,007,546

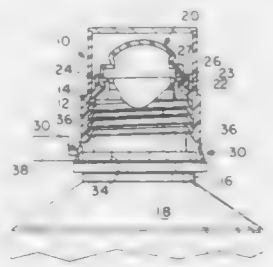
BOTTLE CAPS

Howard Rose, St. Helen's, and Ian G. C. McAffer, Westerham, both of Great Britain, assignors to Waverley Pharmaceuticals Limited, Great Britain

Filed Mar. 14, 1989, Ser. No. 322,901
Claims priority, application United Kingdom, Jul. 14, 1987, 8716514
Int. Cl.[5] B65D *1/02*
U.S. Cl. 215—32 **10 Claims**

1. A bottle cap for use with moulded plastics bottles which have an integral flanged seal over the aperture of the threaded neck, a frangible membrane joining the seal to the neck, the cap having a complementary screw-thread to that of the neck and at least two inwardly projecting resilient members located above the screw-thread such that, when the cap is screwed onto the bottle, the members pass around the seal with resilient deformation and, on unscrewing the cap, engage the flanged

seal in a lifting action, characterized in that at least one of the inwardly projecting members comprises an upwardly directed blade, adapted to engage an undersurface of the flanged seal,



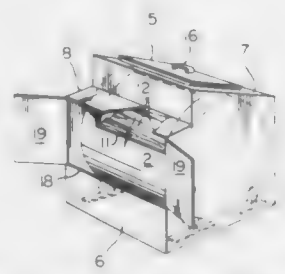
such that upon unscrewing of the cap, said upwardly directed blade will cut into the undersurface while lifting the flanged seal to provide an efficient severance of the seal from the bottle neck.

5,007,547

MULTI-PORT CONTAINER

Seguard Corbett, 2nd Floor, 839 - 5th Avenue S.W., Calgary, Alberta, Canada T2P 3C8

Filed Jun. 2, 1989, Ser. No. 360,525
Int. Cl.[5] B65D *88/54*
U.S. Cl. 220–581 **12 Claims**



1. A multi-port container comprising housing means; first and second openings in separate walls of said housing means permitting access to the interior thereof; drum means for receiving material in said container; a third opening in said drum means for loading said drum means or removing material therefrom; and roller means supporting said drum means for rotation in said housing means, whereby said drum means can be rotated to align said third opening with said first or second opening to permit loading and unloading of said drum means at different locations on said housing means.

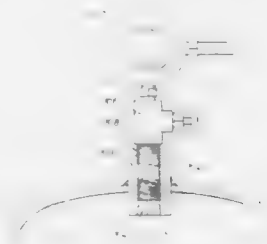
5,007,548

GAS CYLINDER SAFETY DEVICE

Larry S. Corley, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 26, 1990, Ser. No. 557,819
Int. Cl.[5] F16K *17/00*
U.S. Cl. 220—3 **12 Claims**

1. In a pressure vessel capable of storing fluids under pressure comprising a shell and a channel formed through the shell for fluid to flow into or out of the vessel wherein unrestricted flow out of the vessel through the channel could exert a force on the vessel which exceeds the empty weight of the vessel, the improvement being a means internal to the vessel to restrict flow through the channel from the vessel, the means to restrict



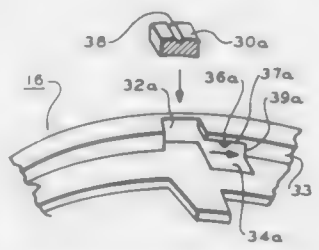
the flow being effective to limit the force exerted on the vessel to less than that exerted by gravity on the pressure vessel.

5,007,549

ELECTRICAL OUTLET BOXES AND COVERS THEREFOR

Eugene J. Suk, Pittsburgh, Pa., assignor to Industries, Inc., Livingston, N.J.

Continuation of Ser. No. 347,180, May 4, 1989, abandoned. This application Jun. 8, 1990, Ser. No. 535,290
Int. Cl.[5] H02G *3/14*
U.S. Cl. 220—3.8 **10 Claims**



1. An apparatus for covering an electrical outlet box, comprising:

a ring, said ring being capable of being fitted within the interior of said electrical outlet box, said electrical outlet box having a diameter, and said ring including an inner wall and an outer wall, wherein said inner wall includes at least one first groove means, said at least one first groove means being bounded by at least one wall portion, said at least one wall portion having at least one protruding portion extending from said at least one wall portion; and

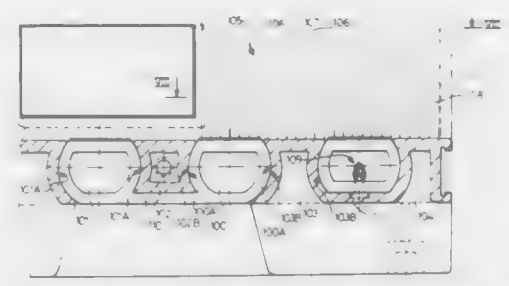
a cover, said cover including a top portion, said top portion having a diameter greater than that of said electrical outlet box and of said ring, and a downwardly depending circular portion, said downwardly depending circular portion including at least one tab means projecting from said downwardly depending circular portion, said at least one tab means including at least one second groove means, said at least one tab means capable of being received by said at least one first groove means, said at least one tab means capable of interlocking with said at least one first groove means and said at least one second groove means capable of mating and interlocking with said at least one protruding portion upon rotation of said cover relative to said ring, thereby enabling said downwardly depending circular portion to mate with said ring.

5,007,550

CONTAINER

Jean-Pierre Avot, les Loges en Josas, France, assignor to Sonabat-Chantal - a French Society, de Bretagne, France

Filed Aug. 15, 1989, Ser. No. 393,939
Claims priority, application France, Aug. 16, 1988, 88 10920
Int. Cl.[5] B65D *6/16*
U.S. Cl. 220—8 **3 Claims**



1. A container of adjustable width including a base, a back, a front edge and two side walls,

Said container formed by two elements (1, 2) each including one of said side walls (3, 13) bounded by part of the back (4, 14) and part of the base (5, 15),

the back parts (4, 14) and the base parts (5, 15) of the two elements (1, 2) overlapping each other telescopically to enable the width (L) of the container to be adjusted by the movement of the two elements (1, 2) towards or away from each other,

the base parts (5, 15) and the back parts (4, 14) of each element (1, 2) formed with fingers leaving intervals between them, the fingers and intervals having similar configuration in cross-section so that the shape of the fingers correspond to the shape of the intervals,

the fingers of one of said elements (1, 2) sliding into the intervals between the fingers of the other of said elements (2, 1), wherein

the fingers of the one element have rounded convex sides and flat upper surfaces, while the fingers of the other element have rounded concave sides and flat upper and lower surfaces, the contact between the concave and convex surfaces provides an interlocking engagement of the elements that restricts movement perpendicular to the telescopic movement.

5,007,551

RECEPTACLES DESIGNED TO ENABLE THEIR JUXTAPOSITION

Stefan Baroï, 40, Chemin de la Chevillarde, 1208 Geneva, Switzerland

PCT No. PCT/CH88/00030, § 371 Date Sep. 27, 1988, § 102(e) Date Sep. 27, 1988, PCT Pub. No. WO88/06132, PCT Pub. Date Aug. 25, 1988
PCT Filed Feb. 8, 1988, Ser. No. 278,941
Claims priority, application France, Feb. 12, 1987, 87 02176
Int. Cl.[5] B65D *21/02*
U.S. Cl. 220—23.4 **16 Claims**

1. Juxtaposable containers, each consisting of a hollow modular cell comprising at least one neck and at least one recess serving as a receptacle for an identical neck of another cell, each modular cell being connectable to at least one other modular cell, wherein each neck and each recess are equipped with matching snapping means, and wherein these means are activated as a result of the engagement of a neck of one cell into a recess of the juxtaposed cell, wherein the modular cells are cubic, wherein at least one face is equipped with a neck (2, 2', 2''), and wherein at least one other face is equipped with a recess (3, 3', 3''), the outer dimensions of the necks corresponding to the inner dimensions of the recesses, and the necks and recesses being concentric with the geometrical center of the faces of the cube which are equipped with them, wherein the neck (2, 2', 2'') and the recesses (3, 3', 3'') are truncated cones, and wherein the height (h) of the necks is identical to the depth (h') of the recesses, wherein the generatrix (a) of the cone in



which the necks (2, 2', 2'') and the recesses (3, 3', 3'') are inscribed forms an angle of 45° with the axis of symmetry (XX, YY) with which they are concentric, wherein the faces (10) of each container are joined by means of a bevel (p), and wherein a generatrix (a) of each neck (2, 2', 2'') is inscribed in the geometrical plane of each bevel

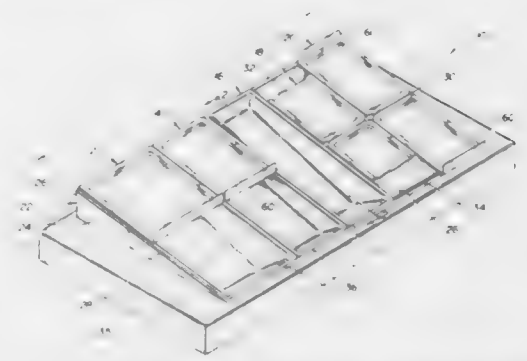
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5,007,552

SERVING BAR AND CONTAINER FOR FOOD

Daniel E. Sage, Dayton, and James C. Patrick, Jr., Troy, both of Ohio, assignors to Ponderosa Corporation, Dayton, Ohio

Filed Dec. 11, 1987, Ser. No. 131,567
Int. Cl.[4] A47F *5/00*
U.S. Cl. 220—23.83 **11 Claims**

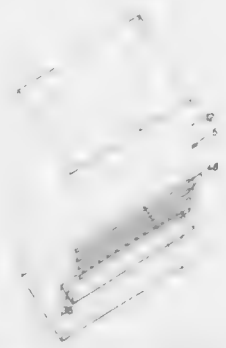


1. A container for food adapted for being seated, with similar containers, in a serving bar having a substantially rectangular opening for receiving said containers and a substantially rectangular upper edge at the periphery of the opening, opposing edges of said upper edge supporting said container and one edge being higher than the other to elevate one end of said container, said container comprising:

a pan having a bottom, a first and second set of opposing sidewalls extending therefrom to an opening and defining a compartment for holding the food, and lips extending outwardly from said sidewalls of said first set for engaging the edges of the serving bar; and,

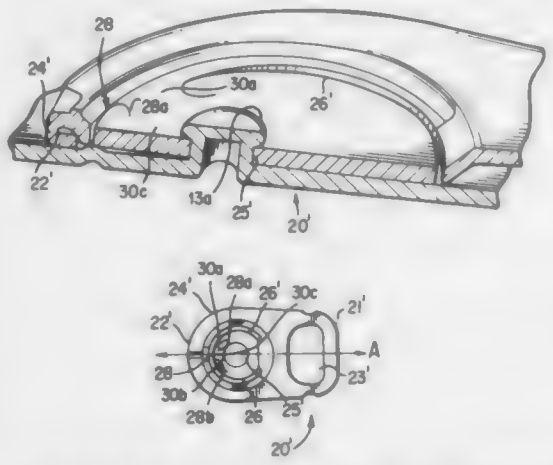
a first cover engageable with the periphery of one end of said pan adjacent said opening for closing a portion of said opening adjacent the elevated end of said pan; said first cover comprising a body engageable with the periphery of one end of said pan, a flange extending generally perpendicularly from one end of said body and latchable with either one of said lips of said pan, and a ledge extending generally perpendicularly from the other end of said body in a direction opposite to that of said flange of said first cover.

5,007,553
CONTAINER FOR A PAINT BRUSH
Lee J. Curtis, 74 Patshull Road, London NW5 2LD, England
Filed Jan. 4, 1990, Ser. No. 461,052
Claims priority, application United Kingdom, Jan. 13, 1989, 8900773
Int. Cl.[5] A45D *44/18*; **B65D** *25/00*; **A47L** *13/56*
U.S. Cl. 220—90 **7 Claims**



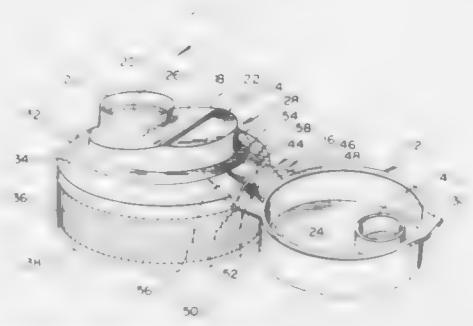
1. A container for a paint brush, which container comprises a body and a lid, the body having a base and a walled portion which upstands from the base, the lid having an aperture through which a handle of the paint brush passes and slits which extend from the aperture and which enable parts of the lid defining the aperture to grip the handle of the paint brush adjacent the aperture whereby, when the lid is on the body, the handle of the paint brush can extend beyond the lid and a brush part of the paint brush can be suspended in the body above the base of the body, the walled portion of the body having an inwardly projecting integrally formed shelf on which to rest the paint brush inside the body when the lid is not on the body, and the walled portion of the body also having integrally formed ribs which extend parallel to the base and which are for facilitating wiping excess paint from the paint brush.

5,007,554
CONTAINER LIFT TAB
Charles Hannon, 27 Sargent Rd., Scarsdale, N.Y. 10583, and Leonard J. Vallender, Valhalla, N.Y., assignors to Charles Hannon, Scarsdale, N.Y.
Filed Apr. 25, 1989, Ser. No. 343,046
Int. Cl.[5] B65D *41/32*
U.S. Cl. 220—269 **11 Claims**



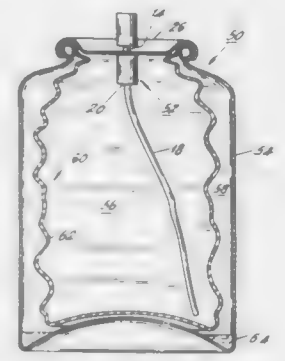
1. A lift tab, for fulcrum opening of a top of metal container, comprising an elongated metal member having means for fixed engagement of a portion of the tab to the metal container top, wherein with said tab being fixedly engaged to said container top, said tab comprises first and second ends located on opposite sides of the fixed engagement portion, with the second end adapted to partially overlap a weakened section of the container top, and said tab further comprising a fulcrum pivoting area between the fixed engagement portion and the second end, whereby elevation of the first end causes the tab to swivel through the pivoting area with the second end being forced into pushing engagement with the weakened section of the container top thereby causing the weakened section to tear open, characterized in that the tab further comprises means to permit increased elevation of the first end of the tab to a predetermined height without concomitant increase in lifting force, said means comprising a secondary fulcrum operably positioned between the fulcrum pivoting area and the second end, with said secondary fulcrum intersecting a longitudinal axis between said first end and said second end, and which longitudinal axis passes through the position at which said tab is fixedly engaged to said container top, wherein the secondary fulcrum initially operates until the pre-determined height is reached and whereby the tab further includes secondary fulcrum limiting means which limits further operation of the fulcrum pivoting area for causing the tearing open of the weakened section of the container top, wherein the means to permit increased elevation comprises a lanced line positioned between the fulcrum pivoting area and the second end, with the lanced line intersecting said longitudinal axis.

5,007,555
BIASED HINGE CAP
James M. Beck, Carol Stream, Ill., assignor to Creative Packaging Corp., Wheeling, Ill.
Filed Dec. 19, 1989, Ser. No. 452,427
Int. Cl.[5] B65D *47/08*
U.S. Cl. 220—339 **16 Claims**



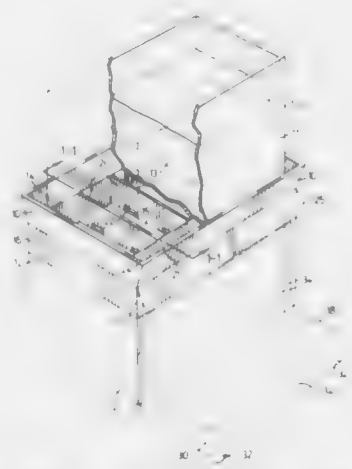
1. A hinge closure comprising:
a cap body portion adapted to be secured to a container having a dispensing opening therein, said cap body portion including a top portion raised above a shoulder and including a periphery therearound, said cap body including a mating portion;
a lid hinged to said cap body by a solid one-piece unitary hinge member integrally formed between said cap body and said lid, said hinge member being attached on one side directly to said lid and on an opposite side to said cap body by a film hinge and including a central planar portion; and
said hinge member including a side shoulder depending from either side of said central planar portion of said hinge member when said lid is in its opened position and being attached on one end directly to said lid and on an opposite end to said cap body by said film hinge so that a snap is provided in said side shoulders during operation of said hinge member and said side shoulders mate with said mating portion of said cap body in a closed position of said lid.

5,007,556
METERING DISPENSER
Myron J. Lover, Mountainside, N.J., assignor to Block Drug Company, Inc., Jersey City, N.J.
Filed Apr. 18, 1990, Ser. No. 510,681
Int. Cl.[5] B65D *83/14*
U.S. Cl. 222—386.5 **10 Claims**



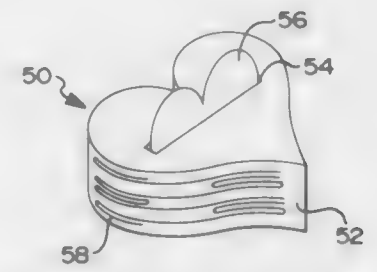
1. A dispenser, comprising:
(A) a container for containing fluid to be dispensed;
(B) a metering valve connected to said container, said metering valve comprising:
(a) a metering chamber;
(b) a valved inlet for introducing a metered dose of the fluid into said metering chamber when said valved inlet is open; and
(c) a valved outlet for dispensing the metered dose from said metering chamber when said valved inlet is closed; and
(C) a barrier for pressurizing the fluid so that substantially no vapor or gas remains within said metering chamber when said valved inlet is open.

5,007,557
SPILL CONTAINER WITH UNFOLDING FLEXIBLE COMPARTMENT
James Spence, 310 Blantyre Avenue, Scarborough, Ontario, Canada M1N 2S7
Filed Mar. 19, 1990, Ser. No. 495,806
Int. Cl.[5] B65D *25/02*
U.S. Cl. 220—571 **19 Claims**



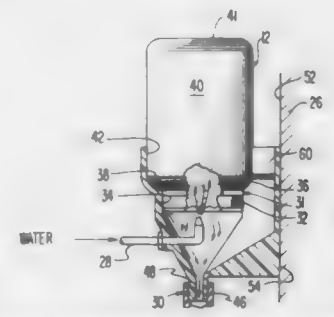
1. A spill container adapted for use in conjunction with a leak susceptible fluid container, said spill container comprising a receptacle for receiving leaking fluid, and a foldably flexible water-proof compartment openly connected to the receptacle for receiving a flow of fluid therefrom, the receptacle comprising a containing wall defining a hollow fluid-trapping vessel, a first opening for receiving leaking fluid, and a second opening connecting the receptacle to the flexible water-proof compartment, the flexible water-proof compartment comprising a base portion, a side wall portion and a third opening sealably continuous with the second opening, said flexibly water-proof compartment storable in a retracted fluid-receiving position adjacent to the receptacle and unfoldably responsive without human intervention to a fluid pressure exerted through the second opening by a fluid column in the receptacle, whereby said spill container is adapted to extend to accommodate an accidental leak of volume exceeding the fluid volume of the receptacle without spillover from the receptacle.

5,007,558
ORNAMENTALLY-SHAPED, INTERFOLDED PAPER PRODUCTS
Joyce Allen, 17671 Rowe, Detroit, Mich. 48205, and Kathy M. Bonner, 17679 Rowe, Detroit, Mich. 48205
Filed May 13, 1988, Ser. No. 193,570
Int. Cl.[5] B65H *1/00*
U.S. Cl. 221—48 **4 Claims**



1. A dispenser for interfolded tissue product comprising:
a sheet material assembly of discrete, ornamentally-shaped forms consisting of a non-polygonal perimeter and including at least one curvilinear portion with interfolded webs including half-web folds which are interfolded with themselves and with previous, upstream folded webs, and packed in a box dispenser having a single opening therein for pop-up removal of individual discrete sheets of ornamentally-shaped tissue paper,
said box dispenser having a like shape to the shape of the ornamentally-shaped forms contained therein.

5,007,559
METHOD AND APPARATUS FOR DISPENSING A PARTICULATE MATERIAL
Cecil B. Young, 7411 Rhondda Dr., Lorton, Va. 22079
Continuation of Ser. No. 887,593, Jul. 21, 1986, abandoned. This application Jun. 1, 1989, Ser. No. 361,692
Int. Cl.[5] B67B *7/00*
U.S. Cl. 222—1 **20 Claims**



1. A method for dispensing detergent to a washing machine comprising:
(a) forming a container from plastic material with a shoulder

and a neck portion integral therewith prior to insertion of detergent therein;

(b) placing the detergent in particulate form within a container, said container having a mouth for receiving the detergent;

(c) covering the container mouth with a cover material which is impermeable to particulate matter while permitting passage of water, said covering step being made prior to delivery of said container to said washing machine;

(d) said washing machine having an exterior portion and an interior portion, said washing machine having an inlet connected to said interior portion for receiving the detergent, said inlet being in communication with a fixed receptacle facing upwardly, said receptacle having a complementary portion for engaging said container mouth;

(e) delivering said container to the vicinity of said washing machine;

(f) arranging said container with respect to said receptacle to form a closed path between the container and said inlet, said particulate matter being supported above the inlet by said cover material, within the container and exposed to said inlet;

(g) subjecting said particulate material while supported within said container above said inlet to controlled amounts of fluid to dissolve particulate material in the vicinity of the container mouth sufficiently to permit passage of detergent through said cover material and to said inlet; and

(h) the step of subjecting said particulate material while supported within said container above and said inlet including spraying fluid from a position exterior to said container through said cover material to said mouth of said container to dissolve material in the vicinity of the mouth in the lower portion of the container while detergent in the upper part of the container remains substantially dry.

9. A container for dispensing detergent in particulate form for use with a washing machine having a complementary receptacle comprising:

(a) a hollow body portion containing particulate detergent therein;

(b) said container having a shoulder portion and a neck portion integral therewith, said shoulder portion and said neck shaped to cooperate with said receptacle to form a substantially closed path therebetween;

(c) a mouth connected to said neck portion to permit access to the interior of the container; and

(d) said mouth being covered by a cover material impervious to the particulate detergent while being pervious to a fluid sprayed through said cover from a position exterior of said container for dissolving said detergent sufficiently to pass through said cover of the wire mesh, said cover material being fixed to said container independently of said receptacle.

5,007,560

BEER DISPENSING AND MONITORING METHOD AND APPARATUS

John J. Sassak, 36855 Schoolcraft, Livonia, Mich. 48150

Filed Mar. 1, 1989, Ser. No. 317,584
Int. Cl.[5] B67D *5/08*
U.S. Cl. 222—1 **16 Claims**

1. A method for delivering liquid beer to a container such that a head of foam is disposed in the container, comprising the steps of:

delivering a first part of the liquid beer at a non-foaming temperature to a dispensing location;

delivering a second part of the liquid beer at a greater, foaming temperature to the dispensing location;



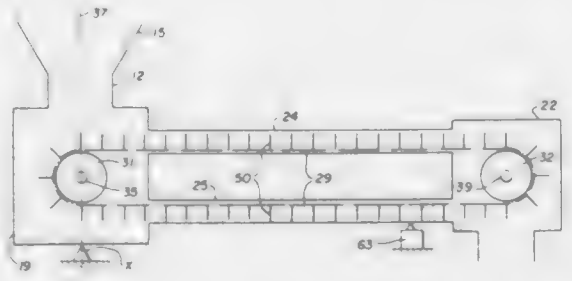
dispensing the first and second parts of the liquid beer to the container such that a head of foam forms on the liquid beer in the container.

5,007,561

NON-FLOODING SET RATE FEEDER

Richard C. Wahl, Essex Falls, and Ralph J. Winters, Nutley, both of N.J., assignors to Vibra Screw, Incoporated, Totowa, N.J.

Continuation of Ser. No. 13,943, Feb. 12, 1987, abandoned. This application Feb. 2, 1990, Ser. No. 474,216
Int. Cl.[5] B67D *5/08*
U.S. Cl. 222—55 **17 Claims**



1. Apparatus mounted for pivotal movement about an horizontal axis for feeding fluid-like particulate material comprising:

a substantially enclosed trough housing having side walls and a bottom wall to contain and support said material, said trough housing having an inlet spaced above said bottom wall for receiving said material from a supply means, said inlet and said trough housing including said side walls being symmetrical about a vertical axis of symmetry so that material entering and contained and enclosed by said trough housing will be uniformly distributed on said bottom wall and within said trough housing side walls about said axis of symmetry,

an outlet means having an exit opening for discharging the material,

a first tube member interconnecting said trough housing and said outlet means,

a series of connected pusher means movable into said trough housing and through said material contained in said enclosed trough housing and out of said trough housing into said first tube member for moving material in a uniform quantity from said trough means to said outlet means,

a variable speed control motor coupled to said pusher means through a first pulley,

displacement means for measuring a displacement from the horizontal of said apparatus and for producing an output signal corresponding to said displacement, and

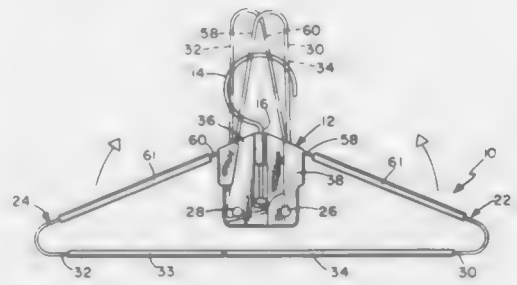
control means responding to said output signal for regulating the speed of said motor.

5,007,562

COLLAPSIBLE CLOTHES HANGER

Joyce Brink, and James E. Brink, both of 1142 Bobolink Dr., Vista, Calif. 92083

Filed Jul. 10, 1989, Ser. No. 377,279
Int. Cl.[5] A47G *25/42, 25/40, 25/16*
U.S. Cl. 223—89 **14 Claims**



12. A collapsible clothes hanger, comprising:

a central support bracket;

a suspending member extending in a first direction from the support bracket for suspending the hanger from a support;

first and second hanger arms pivotally mounted on said support bracket for movement between a first, extended position in which they extend in generally opposite directions away from said support bracket and angled downwardly relative to said suspending member, and a second, collapsed position in which they extend generally parallel to one another upwardly in said first direction from said support bracket in the same direction as said suspending member;

said support bracket including releasable retaining means for releasably retaining portions of said hanger arms in both said extended and collapsed positions; and

said support bracket having oppositely directed channels comprising said releasable retaining means for receiving portions of said hanger arms in both said positions, said hanger arm portions being a snap fit in said channels.

5,007,563

DISPENSING HEAD FOR AN ADDITIVE PRODUCT FOR MOUNTING ON A RECEPTACLE AND A RECEPTACLE EQUIPPED WITH SUCH A HEAD

Vincent de Laforcade, Clamart, France, assignor to L'Oreal, Paris, France

Filed Nov. 7, 1989, Ser. No. 432,854
Claims priority, application France, Nov. 9, 1988, 8814644
Int. Cl.[5] B67D *5/56;* **B65D** *25/40*
U.S. Cl. 222—145 **12 Claims**

1. A dispensing head for an additive with the head having means for attachment to an outlet of a container for a product of the type that is dispensed in the form of a foam or a paste, said head having first wall means defining a central conduit having at one end said means for attachment, second wall means disposed about said first wall means to define a chamber for the additive, aperture means for dispensing the additive from said chamber, said aperture means disposed on a top wall of said chamber opposite to said end of said conduit, said chamber having an opening in communication with said central conduit, tube means slidably disposed relative to said central conduit and movable between a storage position wherein said opening of said chamber is closed by said tube means, and



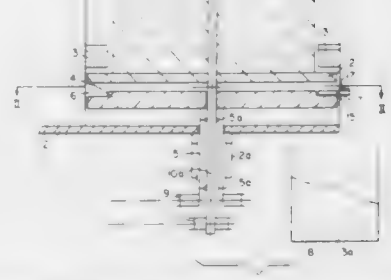
another position, wherein said opening of said chamber is unobstructed.

5,007,564

DOSING OR FEEDING APPARATUS FOR PRECISELY FEEDING LOOSE BULK MATERIAL

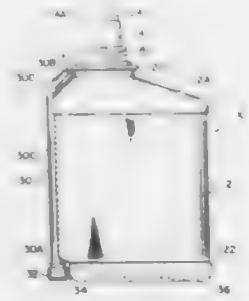
Matthias Beth, Griesheim; Hansgeorg Binz, Eschborn, and Ludger Toerner, Eppertshausen, all of Fed. Rep. of Germany, assignors to Carl Schenck AG, Darmstadt, Fed. Rep. of Germany

Filed May 25, 1989, Ser. No. 357,311
Claims priority, application Fed. Rep. of Germany, May 30, 1988, 3818338
Int. Cl.[5] G01F *13/00*
U.S. Cl. 222—217 **16 Claims**



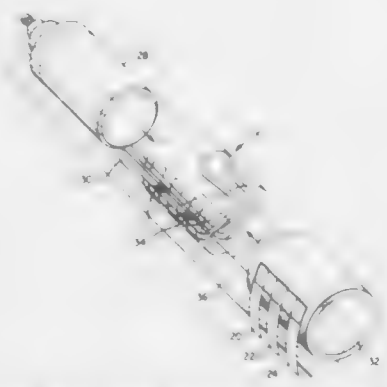
1. A dosing or feeding apparatus for feeding precisely measured portions of loose bulk material, especially powdered or fine grained material, comprising a cylindrical container for storing said bulk material, rotating turntable means arranged for substantially closing a bottom end of said cylindrical container, said turntable means comprising a discharge groove having a defined vertical cross-sectional groove area, said discharge groove being arranged around said turntable next to its circumference, said discharge groove opening radially outwardly, drive means arranged for rotating said turntable means, a discharge opening in said container, and stripper means reaching into said discharge groove through said discharge opening, said stripper means being so dimensioned and positioned that said stripper means substantially completely cover said vertical cross-sectional groove area for stripping said precisely measured portions of bulk material out of said groove through said discharge opening with each revolution of said turntable.

5,007,565
INTEGRAL VENT TUBE
Simon J. Richter, Marietta, Ga., and Frank G. Hohmann, Deville, N.J., assignors to The Coca-Cola Company, Atlanta, Ga.
Continuation of Ser. No. 623,192, Jun. 21, 1984, abandoned.
This application Jan. 13, 1987, Ser. No. 2,991
Int. Cl.[5] B67D 3/00
U.S. Cl. 222—481 38 Claims



1. A disposable package for dispensing liquids with a controlled rate of flow comprising:
a container having a base end and a discharge end opposite thereto, sidewalls extending from said base end toward said discharge end and a neck connecting the sidewalls to the discharge end and defining a discharge opening through which liquids may be dispensed; and
a flow rate control tube having an openable, sealed end and an open end, the tube having the openable, sealed end thereof disposed in the container base end and a major portion extending substantially longitudinally of said container on the outside of said sidewalls, said tube having a minor portion connecting said major portion to said open end of said tube at the container neck, said open end communicating through said neck with the inside of said container, said major portion of said tube having a predetermined inside diameter, permitting the free flow of air therethrough, and said minor portion of said tube having an inside diameter which gradually decreases toward the open end of said tube to limit the size of any air bubbles which might be formed and minimize liquid pressure and flow rate fluctuations.

5,007,566
WATER BOTTLE INSULATOR
Larry D. Fick, Dallas, Tex., assignor to New Visions Corporation, Dallas, Tex.
Filed Aug. 24, 1989, Ser. No. 398,009
Int. Cl.[5] B62J 7/00
U.S. Cl. 224—32 R 17 Claims



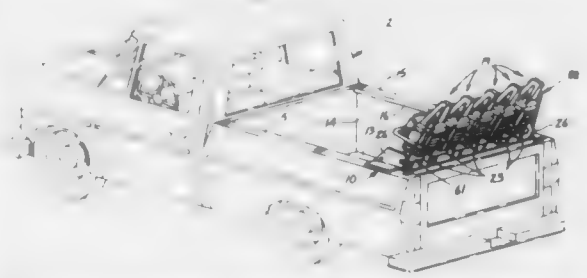
1. A bicycle water bottle insulator, comprising:
a substantially cylindrical sidewall sized to be fit around a bicycle water bottle cage and having an insulating layer;
a bottom having an insulating layer and a peripheral margin, a bottom margin of said cylindrical sidewall affixed to said peripheral margin, said cylindrical sidewall having a top margin opposed to said bottom margin;
said cylindrical sidewall having a slit longitudinally extending from said top margin toward said bottom margin for permitting said insulator to be fitted around a bicycle water cage and a bicycle water bottle, said bicycle water bottle cage having attachments for positioning said cage on a bicycle frame, said slit of said sidewall adapted to receive said attachments;
a plurality of transverse straps having first ends affixed to said cylindrical sidewall and spaced from each other, said straps longitudinally positioned so that when said insulator is fit around said bottle cage and said attachment bolts are received into said slit, said straps are longitudinally displaced from said attachments and are operable to be passed between said cage, second, free ends of said straps opposed to said first ends; and
means for fastening said second ends to said cylindrical sidewall operable to fasten each second end to a point across said slit from a respective first end.

5,007,567
SUPPORT RACK FOR BICYCLES AND THE LIKE
Jeffrey P. Foster, 13276 Research Blvd. #208, Austin, Tex. 78750
Filed Jun. 5, 1990, Ser. No. 533,411
Int. Cl.[5] B60D 43/00; B60R 9/00
U.S. Cl. 224—42.13 6 Claims



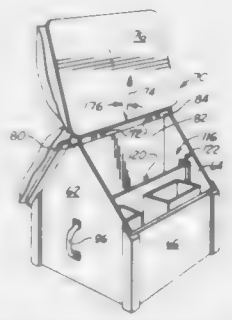
1. A bicycle support rack mountable on a spare tire externally mounted on a vehicle with the central axis of the tire in a generally horizontal plane, the rack comprising the combination of
a frame including means defining a generally rectangular opening having a long dimension smaller than the outer diameter of the tire and a short dimension no smaller than the axial width of the tire so that said frame can be placed over the upper portion of an externally mounted, spare tire
a support portion fixedly attached to said frame and extending therefrom so as to lie in a generally horizontal plane when said frame embraces said tire, said support portion including recess means for receiving a bicycle frame;
a support strut connected to and extending downwardly from said support portion and frame adjacent a plane containing the outer generally vertical surface of said tire;
a diagonal brace connected to and extending between said support portion and said strut;
an elongated retaining bar positionable above said bicycle frame in a generally horizontal plane with an inner end of said bar penetrating said plane containing said outer, generally vertical surface of said tire and extending to a location adjacent the wheel on which said tire is mounted; and
means for locking said bar in said position, whereby said rack cannot be removed from said tire and said bicycle cannot be removed from said rack without first disengaging said means for locking.

5,007,568
TRUCK SIDEWALL MOUNTED CHAIN SAW CARRIER
Jimmy C. Da Vault, P.O. Box 78, Colburn, Id. 83865
Filed Feb. 6, 1990, Ser. No. 475,681
Int. Cl.[5] F16M 1/00
U.S. Cl. 224—42.45 R 28 Claims



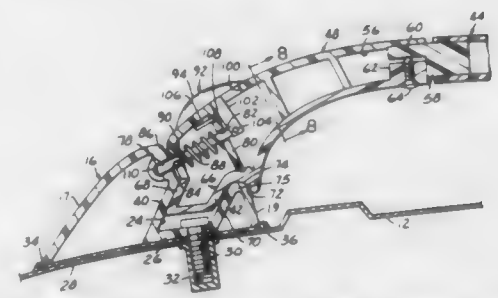
1. A truck mountable chain saw carrier, for releasably securing and supporting a chain saw in a substantially upright condition, with the chain saw having a handle enclosure, an elongated blade extending downwardly from an engine case and a plurality of saw dog points on the engine case adjacent the blade, the carrier comprising:
an elongated frame;
the frame including opposed frame ends;
upstanding frame end plates adjacent the frame ends;
the end plates including base ends and top ends;
a saw dog receiving bar extending between the end plates and having a cross sectional dimension sufficient for the saw dog bar to be received between adjacent ones of the plurality of saw dog points for supporting the saw with the blade extending downwardly therefrom;
a blade receiver spaced toward the base ends of the end plates downwardly from the saw dog receiving bar for releasably receiving the saw blade with the saw dog receiving bar received between saw dog points on the saw; and
truck mounting brackets on the frame for attaching the frame to a truck with the saw dog receiving bar and the blade receiver oriented such that a saw mounted to the carrier is supported in a substantially upright orientation by the saw dog receiving bar and with the blade projecting downwardly to the receiver.

5,007,569
BACKSEAT STORAGE CONTAINER APPARATUS
Constance K. Zarb, 4097 Hardwoods, West Bloomfield, Mich. 48033
Filed Jan. 31, 1990, Ser. No. 472,848
Int. Cl.[5] B60R 7/04
U.S. Cl. 224—275 29 Claims



18. A hand-portable lightweight storage apparatus for use by one or two persons in the backseat of an automotive vehicle, comprising:
a housing having a floor structure, a roof structure, and an outer wall structure including at least front and rear wall sections which are substantially symmetrical about a central axis of the housing extending therebetween, the floor structure and outer wall structure being configured to form an internal storage space within the housing that is accessible to persons using the storage apparatus in the backseat of the vehicle, the roof structure having at least one high portion located generally above the central axis and two inclined sections normally arranged to slop generally downwardly from such high portion, thereby providing left and right normally inclined roof sections, the two inclined roof sections being arranged to pivot independently of one another and to pivot relative to the remainder of the housing; and
means, supported at least in part by the roof structure, for cushioning heads of persons in the backseat of the automotive vehicle on either side of the apparatus and resting at least in part against the apparatus.

5,007,570
LUGGAGE RACK FOR A VEHICLE
Francis Himmel, Sterling Heights, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Apr. 2, 1990, Ser. No. 502,952
Int. Cl.[5] B60R 9/04
U.S. Cl. 224—321 4 Claims



1. In a luggage rack for mounting on the roof of a vehicle, the luggage rack comprising a pair of elongated side rails, each side rail being securable to the roof of a vehicle adjacent to one side of the vehicle and extending fore and aft of the vehicle, each side rail having an elongated slot therein, a pair of stanchions, each stanchion having a tongue, the tongue of each stanchion being receivable in an elongated slot of a side rail and slidable therealong, a cross member extending between the stanchions, the improvement comprising each stanchion having a hollow interior, a locking pin within the hollow interior, the stanchion having an opening extending from the exterior thereof to the hollow interior, the locking pin slidably extending through said opening, spring means urging the locking pin in a direction to project out from the stanchion, manually engagable locking pin retraction means attached to the locking pin for drawing the locking pin against the force of the spring means into the stanchion, said manually engagable locking pin retraction means including a slide button on the exterior of the stanchion, the stanchion having a slot therethrough positioned under the slide button, a lever extending from the slide button through the slot into the stanchion hollow interior, and means pivotably connecting the lever to the locking pin whereby movement of the slide button in one direction causes retraction of the locking pin and movement of the slide button in the other direction causes extension of the locking pin, each side rail having a plurality of spaced apart pockets along the length thereof adjacent to the elongated slot, each locking pin being receivable in a pocket of a side rail to maintain the stanchions in a fixed position, the locking pins being retractable out of the pockets by the locking pin retraction means to permit sliding of

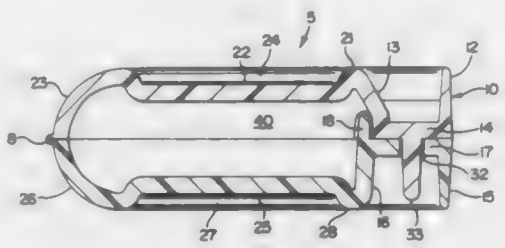
the stanchions in the elongated slots to different adjusted positions.

5,007,571

SPROCKET FEED STRIP REMOVER

James S. Nasby, Skokie, and Michael J. Rood, Hoffman Estates, both of Ill., assignors to Perf-Mate Company, Skokie, Ill.

Filed Aug. 29, 1988, Ser. No. 237,955
Int. Cl.[5] B26F *3/02*
U.S. Cl. 225—106 5 Claims



1. A manually operable clamp for removing a margin strip from printer paper having sprocket feed margin strips containing spaced sprocket tooth receiving openings and detachably connected to the main body of the printer paper by a tear line of perforations, comprising:

upper and lower jaws connected by a longitudinal live hinge, each said jaw having an elongated rectangular clamping surface which is matingly engageable with a corresponding opposed elongated rectangular clamping surface and on the other jaw;

one of said jaws having a portion that includes one of said clamping surfaces and has within said one clamping surface a plurality of aligned pin-receiving openings therein corresponding in size and spacing to said sprocket tooth receiving openings and said portion also having inwardly of said pin-receiving openings and parallel thereto longitudinal fence means against which the elongated edges of said margin strips abut when said sprocket tooth receiving openings therein are in registration with said pin-receiving openings;

the other jaw having a portion that includes the other of said clamping surfaces and has within said other clamping surface a plurality of aligned pins projecting therefrom corresponding in size, number and spacing to said pin-receiving openings and matingly insertable therein when said jaws are closed with said clamping surfaces engaged; and

live hinge having sufficient flexibility so as to allow sufficient shifting of said jaws relative to each other to permit said pins to enter said sprocket receiving holes in stacks of various thickness of said margin strips.

5,007,572

ELECTRICAL STAPLER

Lin Chung-Cheng, 2FL., No. 7-2, Lane 27, Chungshan N. Rd., Sec. 2, Taipei, Taiwan

Filed Aug. 27, 1990, Ser. No. 572,425
Int. Cl.[5] B25C *5/02, 7/00;* B27F *7/79, 7/36*
U.S. Cl. 227—7 1 Claim

1. An electrical stapler comprising:

a base provided with a battery container;

a motor serving as a driving means;

a stapling mechanism wherein a Y-shaped linkage is pivoted to a fixing plate, and front end of said Y-shaped linkage is formed with a through hole, a fixing rod being inserted into said through hole, two ends of said fixing rod being respectively connected with two compression springs, other ends of said springs being mounted on a fixing member;

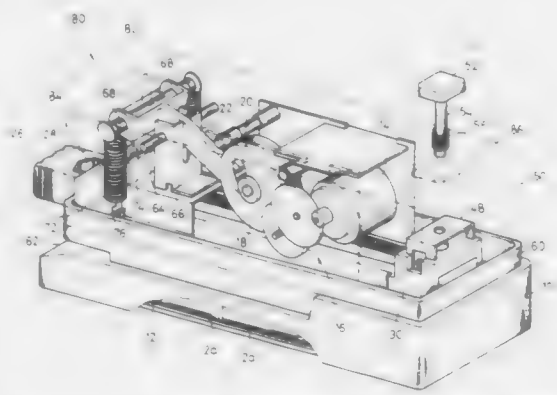
a gear set having several gears one of which meshes with said motor and another of which is a driven gear disk, on one side of said driven gear being disposed symmetrical biasing rods which can press one end of said Y-shaped linkage when operated;

a fine switch suitable to be pressed by said biasing rods to control opening/closing of a circuit;

a middle board fixed on said base to form a stapling groove therebetween;

a magazine portion having a staple groove rear end of which is disposed an arch hook and an engaging recess;

a slide groove a rear vertical wall of which is formed with two opposite slide channels, a transverse movable rod being disposed in and between said slide channels, a fixing rod being disposed at rear end of said slide groove, a pressing plate being disposed under said fixing rod, a buffer pad being disposed between said pressing board and fixing rod, a restoring spring being fitted on said fixing rod, one end of said restoring spring being extended to lower portion of said movable rod, the other end of said restoring spring being engaged with said middle board so that said movable rod can be restored to its original position, a through hole being formed on upper surface of rear end of said slide groove;



a magazine means formed by said magazine portion and slide groove;

a -shaped plate going through said through hole of said slide groove to abut against said movable rod;

an upper cover covering said base and having a hole corresponding to said -shaped plate;

a pressing button having a lower shaft rod, a spring being fitted on said shaft rod, lower end of said shaft rod being extended through said hole of said upper cover to abut against said -shaped plate; and

a limit switch disposed in said base and slightly protruding beyond said stapling groove; whereby when said limit switch is touched and activated by papers to be stapled, said motor will drive said gear set so as to rotate said gear disk, making said biasing rods separated from said Y-shaped linkage so that said pressing plate is no more bound and will be bounded downward by a spring to strike out a staple placed in said stapling groove, and when another biasing rod again abuts against said Y-shaped linkage and touched said fine switch, said motor stops and one stapling movement is completed.

5,007,573

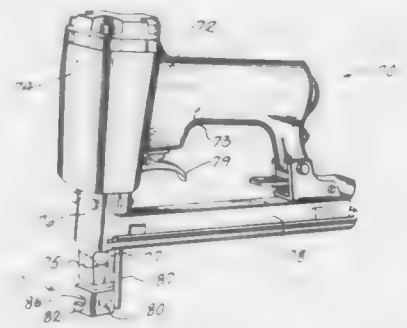
STAPLE GUN SUPPORT ASSEMBLY

Arvo F. Uuskallio, Hartland, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Nov. 20, 1989, Ser. No. 439,613
Int. Cl.[5] B25C *5/02*
U.S. Cl. 227—139 5 Claims

1. In a tool for applying a fastener to a mounting bracket including upper and lower spaced apart ears having aligned fastener-receiving openings formed therethrough, said tool

including a housing having a manual grip portion, fastener driving means in said housing for driving a fastener through a driveway, fastener guide means aligned with said fastener driving means having said driveway therein with an upper receiving end and a lower discharge end, and a fastener magazine defining a longitudinal axis for holdng and sequentially feeding fasteners to said fastener guide means, the improvement comprising:



positioning means on said fastener guide means including longitudinal alignment means for longitudinally aligning said driveway relative to the fastener receivng openings in the mounting bracket, and lateral alignment means for laterally aligning said driveway relative to the fastener-receiving openings in the mounting bracket; and

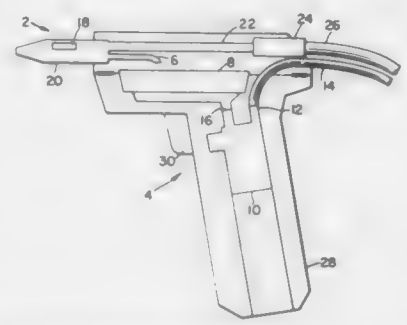
support means on said fastener guide means for supporting the lower ear of said bracket during a fastener driving operation.

5,007,574

DESOLDERING DEVICE

Michael Carlomagno, Redwood City; Hamid Poostpasand, and Steven James, both of Mountain View, all of Calif., assignors to Metcal, Inc., Menlo Park, Calif.

Filed Sep. 14, 1989, Ser. No. 407,115
Int. Cl.[5] B23K *3/04, 3/047*
U.S. Cl. 228—20 20 Claims



1. A desoldering tool, comprising;

a base unit having an upper member and a lower member,

means securing said upper member to said lower member to permit movement of said upper member relative to said lower member to expose the interior of said lower member,

a solder collection chamber located in said lower member,

means for developing a partial vacuum below and above said solder collection chamber,

a cartridge having a heater and a tip with a bore therethrough, said cartridge disposed in said upper member and having a tail pipe extending from said tip to a position above said solder collection chamber, said tail pipe having a passage extending therethrough and communicating with said bore in said tip, and

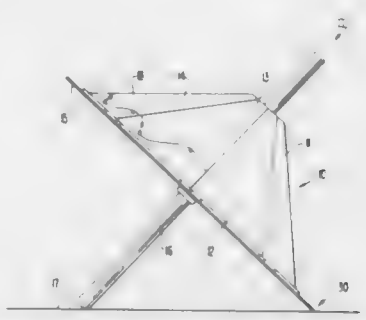
a heater located at least immediately adjacent said tip.

5,007,575

DEVICE FOR PRODUCING CONE-SHAPED BODIES OF GLASS, PARTICULARLY TIFFANY-STYLE LAMPSHADES

Peter Degenhardt, Arnoldstrasse 63, D-2000, 50 Hamburg, Fed. Rep. of Germany

Filed May 24, 1989, Ser. No. 408,041
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1988, 8807147[U]
Int. Cl.[5] B23K *37/04*
U.S. Cl. 228—44.3 6 Claims



1. A device for producing essentially cone-shaped bodies having flat sides composed of n attached adjoining segments, n being an integer, each segment being composed of a number of glass pieces fastened to each other, whereby boundaries of adjoining segments lie in a common plane or in a straight line, the device having a form body for the placing thereon of glass pieces that are to be soldered, said form body defining a base, a bottom plate placed at the base of the form body, and a rod arranged axially in the middle of the bottom plate and the form body, characterized by the fact that

the rod (16) is adjustably mounted relative to the form body and the bottom plate in an axial direction, said rod having a lower portion,

the bottom plate (15) is a polygon having n-sides, and

each said boundary line is diametrically opposite a side of the bottom plate,

whereby, when the lower portion of the rod (16) and any side of the bottom plate (15) are placed on a supporting surface (17), the diametrically opposite boundary line (18) of two segments of the form body (10) is adjustable to a horizontal position through axial adjustment of the rod (16).

5,007,576

TESTABLE RIBBON BONDING METHOD AND WEDGE BONDING TOOL FOR MICROCIRCUIT DEVICE FABRICATION

Helen Congleton, Huntington Beach; Carol L. Slaton, Irvine; Angelo Koudounaris, Hermosa Beach; Gerald B. Smith, Huntington Beach, and Vicente Soto, Riverside, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 26, 1989, Ser. No. 456,446
Int. Cl.[5] B23K *101/36;* H05K *3/32;* H01L *21/603*
U.S. Cl. 228—103 17 Claims

1. A method of fabricating an electrical device, comprising the steps of:

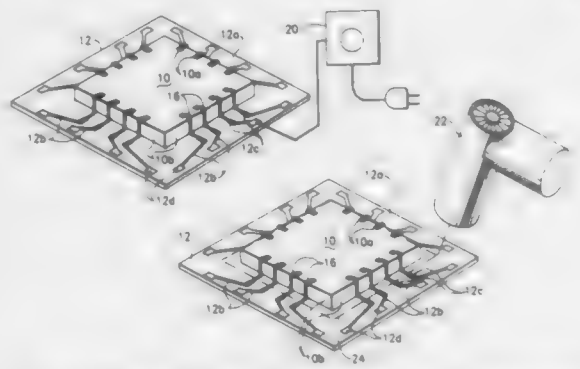
(a) providing an electrical circuit component having a plurality of electrical contacts;

(b) providing a temporary substrate having a plurality of electrical contacts conjugate to the contacts of the component respectively;

(c) removably fixing the component to the temporary substrate with the respective contacts in mutual alignment;

(d) electrically connecting the contacts of the component to the respective contacts of the temporary substrate with lead wires in such a manner that portions of the lead wires connected to the component will substantially retain their shapes relative to the component after the lead wires are

severed from the temporary substrate near points of connection of the lead wires to the contacts of the temporary substrate;



(e) severing the lead wires near said points of connection, leaving said portions thereof extending outwardly from the component; and

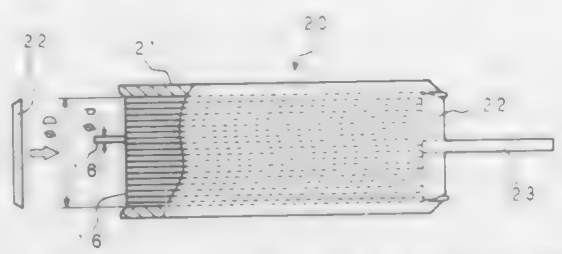
(f) removing the component from the temporary substrate

5,007,577

MULTIPLE-COKE COMPLEX MATERIAL AND METHOD OF MANUFACTURING THE SAME

Kazuyuki Nakasuji; Chihiro Hayashi, both of Osaka, and Yoshiyuki Suzushima, Suita, all of Japan, assignors to Sumitomo Metal Industries Ltd. and Sumitomo Special Metals Co., Ltd., both of Osaka, Japan

Filed Nov. 21, 1989, Ser. No. 439,534
Claims priority, application Japan, Nov. 22, 1988, 63-295264
Int. Cl.[5] B23K *20/04*
U.S. Cl. 228—265 14 Claims



1. A method of manufacturing multiple-core complex material comprising:

a first step of preparing a multiple-layer clad complex core member with a circular cross section;

a second step of densely filling a plurality of said complex core members into a metallic casing where the ratio of inner diameter (D) of said metallic casing to the outer diameter (d) of said complex core member D/d is not less than 12, and of evacuating said metallic casing to form a multiple-core complex billet;

a third step of heating said complex billet; and

a fourth step of diffusion bonding to bond the core members to each other by a hot working at a reduction of area being not less than 20%.

5,007,578

WRAP-AROUND BODY WITH PROMOTIONAL FLAP EXTENSION

Ronald A. Simone, #261 - 3424 Vintage Dr., Modesto, Calif. 95356

Filed Aug. 6, 1990, Ser. No. 562,845
Int. Cl.[5] B65D *3/28*
U.S. Cl. 229—1.5 B 7 Claims

1. A rolled wrap around body free of corners and formed from a blank which wraps around for more than 360° providing a main body portion and an overlap portion, and first and second spaced apart secured regions on said wrap around body wheresaid blank is secured upon itself, said first secured region defining a free end on said overlap portion, said second secured region located inwardly-away from said free end of said overlap portion, said main body portion presenting a constant wrap around surface on which to secure said first and second spaced apart region, said first secured region being releasable under force and providing a liftable flap back to said second secured region.

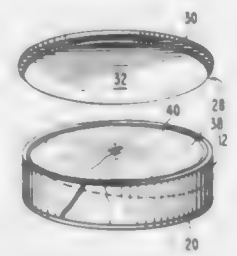


5,007,579

FIBERBOARD CYLINDRICAL CONTAINER WITH SPIRALLY WOUND TUBULAR BODY AND CLOSURE THEREFOR

Henry H. Thomas, Jr., 9 William St., Rumson, N.J. 07760

Filed Aug. 29, 1990, Ser. No. 574,110
Int. Cl.[5] B65D *3/10*
U.S. Cl. 229—5.5 7 Claims



1. A cylindrical container consisting of:

(a) a tubular body,

(b) a first end closure for sealing the bottom of said tubular body,

(c) said first end closure comprising a first disc having a diameter slightly greater than the diameter of said tubular body, a second slightly smaller disc, and an adhesive layer extending over the overlapping area of said discs to permanently join same together,

(d) said second disc being sized to create a friction fit with the interior of said tubular body,

(e) a second end closure for sealing the top of said tubular body,

(f) said second end closure comprising a first disc having a diameter slightly greater than the diameter of said tubular body, a second slightly smaller disc, and an adhesive layer extending over the overlapping area of said discs to permanently join same together,

(g) said second disc being sized to create a friction fit with the interior of said tubular body,

the invention being characterized in that

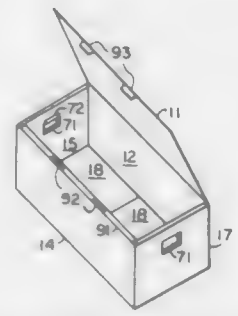
(h) said tubular body is formed from a length of spirally wound paperboard tube possessing significant axial strength to resist buckling and sufficient hoop strength to resist deformation.

5,007,580

FOLDABLE CONTAINER

Wayne P. Morrison, 950 Raco Dr., Ste. A, Lawrenceville, Ga. 30245, and Neil T. Castleberry, St. Augustine, Fla., assignors to Wayne P. Morrison, Lawrenceville, Ga.

Filed Feb. 21, 1990, Ser. No. 482,523
Int. Cl.[5] B65D *5/20*
U.S. Cl. 229—117.17 7 Claims



1. A container formed from a cut and scored foldable blank of cardboard, said blank having a longitudinal direction and a lateral direction, comprising in combination:

(A) a top wall, a back wall, a bottom wall and a front wall, where said top wall is connected to said back wall by a lateral score line, said back wall is connected to said bottom wall by a lateral score line, and said bottom wall is connected to said front wall by a lateral score line, where the lateral dimension of said back wall and said front wall is less than the lateral dimension of said bottom wall and said top wall;

(B) a pair of middle side walls connected to said front wall by a pair of longitudinal score lines, where the lateral dimension of said middle side walls is less than the longitudinal dimension of said bottom wall;

(C) a pair of outer side walls connected to said back wall by a pair of longitudinal score lines, where the longitudinal dimensions of said outer side walls is greater than the longitudinal dimensions of said middle side walls;

(D) a pair of inner side walls connected to said outer side walls by a pair of double score lines of non-equal length, where said inner side walls are separated from said top wall by a pair of longitudinal slits, where the lateral dimension of said inner side wall is less than the lateral dimension of said outer side walls, and where the longitudinal dimension of said inner side walls is greater than the longitudinal dimension of said middle side walls;

(E) a pair of bottom panels connected to said outer side walls by a pair of lateral score lines, and where said bottom panels are separated from said bottom wall by a pair of longitudinal slits, and where said bottom panels are separated from said middle side walls by a pair of lateral slits, and where the sum of the longitudinal dimension of both said bottom panels is less than the lateral dimension of said bottom wall, and further where the lateral dimension of said bottom panels is less than the longitudinal dimension of said bottom wall;

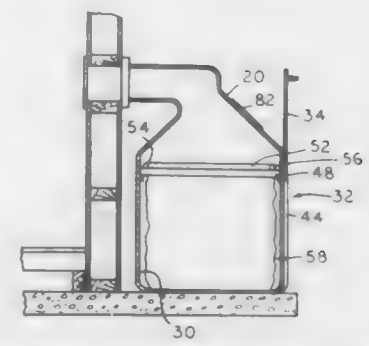
(F) a pair of angle slits connecting said longitudinal slits separating said top wall from said inner side walls to said longitudinal score lines connecting said back wall to said outer side walls, another pair of angle slits connecting said longitudinal score lines connecting said back wall to said outer side walls to said longitudinal slits separating said bottom wall from said bottom panels, and still a third set of angle slits connecting said longitudinal slits separating said bottom wall from said bottom panels to said longitudinal score lines connecting said front wall to said middle side walls.

5,007,581

GARBAGE COLLECTION DEVICE

Ray C. Douglas, R.R. 3 Box 34, Brodhead, Wis. 53520

Filed Jul. 5, 1989, Ser. No. 375,735
Int. Cl.[5] B65D *91/00*
U.S. Cl. 232—43.2 13 Claims



1. A garbage collection device extending through an outside wall of a dwelling for the reception therein of recyclable garbage, said device comprising:

a garbage receptacle disposed externally relative to the outside wall for the reception therein of the recyclable garbage;

cover means cooperating with said receptacle for covering said receptacle, said cover means defining a chute for the passage therethrough of the garbage;

a conduit means having a first and a second end, said first end cooperating with said chute, said conduit means extending through the outside wall of the dwelling such that when the recyclable garbage is inserted into said conduit means through said second end thereof, the recyclable garbage passes through said conduit means and said chute into said receptacle;

said receptacle including:

a housing, said housing being formed integrally with said cover means, said housing defining an unloading opening;

a door having a first and a second side and a first and a second edge, said door sealingly cooperating with said opening for permitting selective access to said receptacle for unloading thereof; and

said housing further including:

a first and a second channel member, said channel members being disposed parallel and spaced relative to each other adjacent to said first and second sides of said door for slidably receiving therein said first and second sides of said door such that when said door is disposed in a closed disposition thereof, said first and second edges of said door sealingly engage said housing, said door being guided by said channels from said closed disposition to an unloading disposition for permitting access to said receptacle.

5,007,582

REDUCED PRESSURE STEAM HEAT TREATING DEVICE

Takayuki Morii, Kako, and Hideaki Yumoto, Kakogawa, both of Japan, assignors to TLV Company, Limited, Kakogawa, Japan

Filed Nov. 22, 1989, Ser. No. 439,944
Int. Cl.[5] F24F *11/00*
U.S. Cl. 236—40 13 Claims

1. A reduced pressure steam heat treating device as comprising a pressure reducing valve having an inlet connected to a steam source and an outlet, a heat exchanger chamber having an inlet connected to the outlet of said pressure reducing valve and an outlet, an ejector having a suction chamber connected to the outlet of said heat exchanger chamber, means for feeding operation fluid to said ejector, and means for controlling the temperature of said operation fluid to control the sucking

pressure of said ejector, wherein said operation fluid feeding means comprises a fluid storage tank, pumping means for forcedly feeding the operation fluid in said storage than to a



jetting nozzle of said ejector, means for returning said operation fluid from said ejector to said storage tank, and means for replenishing said fluid storage tank with operation fluid of relatively low temperature.

5,007,583

DEVICE FOR ACCOMODATING EXPANSION IN FLUID CIRCULATION SYSTEMS

Anton Schwarz, Seefeld, Austria, assignor to A. Schwarz & Co., Seefeld, Austria

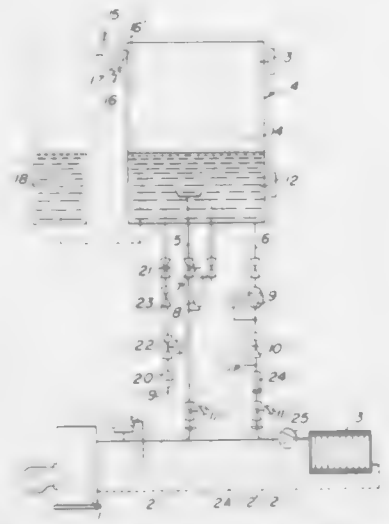
PCT No. PCT/AT88/00025, § 371 Date Jan. 4, 1989, § 102(e) Date Jan. 4, 1989, PCT Pub. No. WO88/08943, PCT Pub. Date Nov. 17, 1988

PCT Filed May 4, 1988, Ser. No. 314,056

Claims priority, application Austria, May 5, 1987, 1118/87; Jun. 2, 1987, 1400/87

Int. Cl.[5] F24D *3/10*

U.S. Cl. 237—66 **19 Claims**



1. Device for expansion absorption in fluid circulation systems, in particular of heating or cooling installations, having at least one expansion vessel in gas exchange with the atmosphere, into which liquid from the fluid circulation system is received and from which liquid is returned to the fluid circulation system via a pressure pump, and in one conduit to the expansion vessel an overflow valve adjustable to the operating pressure of the installation is provided, a lower pressure prevailing in the expansion vessel than in the fluid circulation system, characterized in that the expansion vessel (4) is connected to the fluid circulation system via separate inflow and outflow conduits (5, 6) and that in the outflow conduit (6) from the expansion vessel (4) a continuously running forcing and circulating pump (9) is arranged.

5,007,584

FUEL INJECTION DEVICE

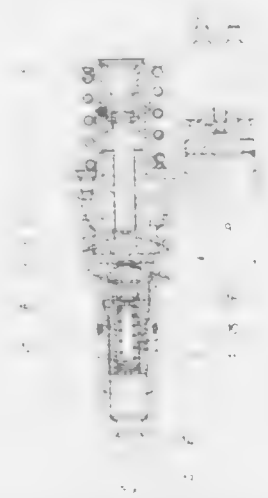
Francois Rossignol, Morvant, France, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 20, 1989, Ser. No. 424,782

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1988, 3844489

Int. Cl.[5] F02M *57/00*

U.S. Cl. 239—88 **20 Claims**



1. A fuel injection device having a housing (2), a fuel pump piston (3) in a bore in said housing, a pump work chamber (6) formed by an end of said fuel pump piston (3) and said housing, a fuel injection line (15) connected to said pump work chamber and communicating with an injection nozzle (13) via an interposed closing valve (16) having a valve closing element (21) operative toward the pump work chamber and an actuating element (19), a magnetic control valve (8) connected to said pump work chamber via a first pressure line (7) to control injection, said pump work chamber being connected with a relief line (9) which supplies fuel under pressure to one side of said actuating element (19) remote from the pump work chamber of said closing valve that closes toward said pump work chamber, a fuel return connecting line (20), said fuel connecting return line being opened and closed by said actuating element (19), and said actuating element of said closing valve (16) is embodied as a differential piston (19, 24, 25), said differential piston includes a first face (18) which urges said closing valve in a closing direction said first face (18) is larger in surface area than an effective surface area of a second face of said closing element subjected to fuel pressure in the opening direction whereby said closing valve (16) is closed by fuel pressure on said first face (18).

5,007,585

ROADSIDE SPRAY APPARATUS

Johnny L. Kubacak, P.O. Box 156, 300 Christine Road, Jourdanton, Tex. 78026, and Gary D. Byrd, P.O. Box 13, Bulverde, Tex. 78163

Continuation of Ser. No. 636,066, Jul. 30, 1984, abandoned, which is a continuation of Ser. No. 348,509, Feb. 12, 1982, abandoned, which is a continuation-in-part of Ser. No. 67,552, Aug. 17, 1979, Pat. No. 4,315,602. This application Apr. 10, 1985, Ser. No. 722,411

Int. Cl.[5] B05B *1/20*

U.S. Cl. 239—176 **1 Claim**

1. The Spraying apparatus for spraying chemicals to the side of a moving vehicle in a plurality of laterally adjacent swaths comprising:

means for mounting said apparatus on a vehicle;

said apparatus including an independently movable spray head;

said spray head including a plurality of sets of spray nozzles;

the nozzles in each set being mounted on the spray head and oriented to collectively spray a predetermined width of swath at a predetermined distance from the side of the vehicle;



said nozzles in each set selected to distribute chemical spray in predetermined droplet sizes, with the sets covering the furthest swath zones delivering the larger droplet sizes and the set adjacent the vehicle delivering the smaller droplet size;

each set communicating with a chemical source through a separate control means for operating each respective set of nozzles as a unit;

said control means being selectively activated to selectively deliver chemical spray to selected sets to provide the desired spray pattern and width of coverage.

5,007,586

ROTARY SPRINKLERS

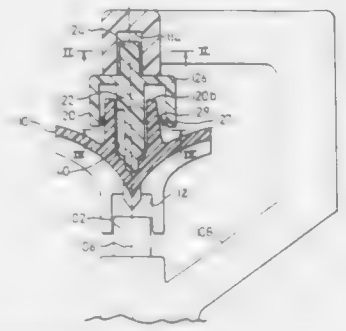
Amir Cohen, Tuvalium, Israel, assignor to Agroteam Consultants Ltd, Timrat and Plastro-Gvat, Kibbutz Gvat, both of, Israel

Continuation-in-part of Ser. No. 174,732, Mar. 29, 1988, Pat. No. 4,886,211. This application Aug. 29, 1989, Ser. No. 400,246

Claims priority, application Israel, May 13, 1987, 82513; Jul. 21, 1989, 91062

Int. Cl.[5] B05B *3/08*

U.S. Cl. 239—222.17 **20 Claims**



1. A rotary sprinkler comprising:

a nozzle outputting a jet axially thereof;

a rotor rotatably mounted with respect to the nozzle in alignment with the axial jet and having a surface formation impinged by the axial jet to deflect the jet laterally of the nozzle and to rotate the rotor;

and a retarding device having a first surface rotatable with the rotor with respect to the nozzle, a second surface non-rotatable with respect to the nozzle, and a viscous liquid between said first and second surfaces;

characterized in that said first surface of the retarding device is a cavity formed in a surface of the rotor opposite to that having said surface formation i pinged by the axial jet, and that said second surface of the retarding device is carried by a pin non-rotatably mounted with respect to said nozzle and disposed within said cavity; said cavity in the rotor being covered by a cover removably attached to the rotor and penetrated by said pin centrally of the cover.

5,007,587

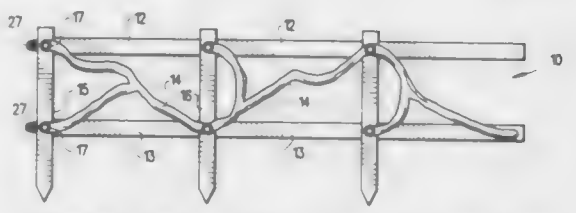
COMBINED FENCE AND IRRIGATION SYSTEM

Allen P. Daroca, 103 Lakeland Dr., Slidell, La. 70458

Filed Dec. 12, 1989, Ser. No. 448,979

Int. Cl.[5] B05B *9/00*

U.S. Cl. 239—289 **15 Claims**



1. A combined fence and irrigation system, comprising:

a plurality of generally vertical spaced posts;

a plurality of generally horizontal rails connecting said posts;

fluid passages in said posts and said rails;

each of said posts and said rails provided with countersunk circular apertures communicating with said fluid passages;

a radial ledge formed around each of said circular apertures;

a resilient bushing in each of said circular apertures, each of said bushing having a cylindrical central portion and terminating in spaced radially extending flanges, said radial ledge received between said flanges;

a connecting tube having opposite ends provided with oppositely facing stepped diameter frusto conical ridges, said connecting tube opposite ends frictionally engaged in said bushings, forming a sealed fluid connection;

fluid connection means for connecting said fluid passages with a water supply line; and

fluid distribution means for distributing water to an area adjacent said fence.

5,007,588

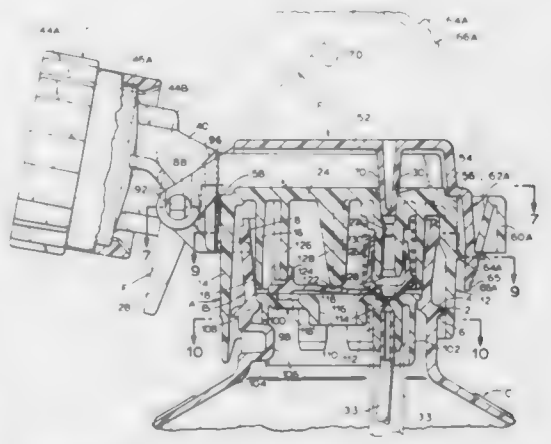
ASPIRATION-TYPE SPRAYER

Ho Chow, Cliffside Park, and Joseph E. Testa, Woodcliff Lake, both of N.J., assignors to Hunter-Melnor, Inc., Memphis, Tenn.

Filed Dec. 8, 1988, Ser. No. 281,559

Int. Cl.[5] B05B *7/04*

U.S. Cl. 239—318 **III Claims**



1. A chemical sprayer comprising a container for the chemical to be sprayed, an aspiration assembly comprising a structure having an aspiration means adapted to communicate with the interior of said container and means for guiding a flow of fluid past said aspiration means and out from said structure,

means for mounting said assembly on said container, a cover receivable on said structure in an operative position, and releasable means for retaining said cover in said operative position, said cover having a part extending therefrom which, when said cover is in said operative position, engages and substantially completely seals said aspiration means so as to prevent the chemical from escaping from the container, in which said aspiration means comprises an aspiration passage having an end open toward said cover when said cover is in said operative position, said cover part then entering and blocking said aspiration passage, and in which said aspiration assembly has an air bleed passage communicating with said aspiration passage below its open end, said cover part, when said cover is in said operative position, reaching and blocking said air bleed passage.

5,007,589

PROCESS FOR SIMULTANEOUSLY LEACHING AND FINE MILLING A SUBDIVIDED SOURCE MATERIAL

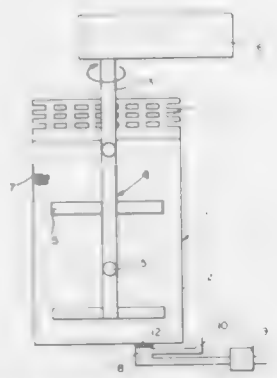
Dennis E. Evans, Rivonia, and Keith S. Liddell, Weltevreden Park, both of South Africa, assignors to Metprotech Limited, Douglas, Isle of Man

Continuation of Ser. No. 317,470, Mar. 3, 1989, abandoned, which is a continuation-in-part of Ser. No. 172,650, Mar. 24, 1988, abandoned. This application May 30, 1990, Ser. No. 529,702

Claims priority, application South Africa, Mar. 26, 1987, 87/2229

Int. Cl.[5] **B02C** *17/16*

U.S. Cl. 241—21 **10 Claims**



1. A process for simultaneously leaching and fine milling a sub-divided source material which comprises the steps of feeding said source material substantially continuously as a slurry in a leach solution, to the grinding chamber of a stirred mill having a rotatably driven impact impeller with outwardly extending stirring arms each of which has a tip at its free end, said grinding chamber containing particulate grinding media, subjecting said source material to fine milling within said grinding chamber, and withdrawing finely milled source material from said grinding chamber together with leach solution wherein said impeller is driven at a power density in kilowatts of power input per cubic meter of grinding media of at leas 100 kW/m^3, and at an impeller speed imparting to the media particles a momentum defined by the multiple of the arm tip speed and the individual mean media particle mass of at least 0.15 gram-meters per second, and the difference between the density of the grinding media and density of said slurry of source material is at least 1 Kg/liter.

5,007,590

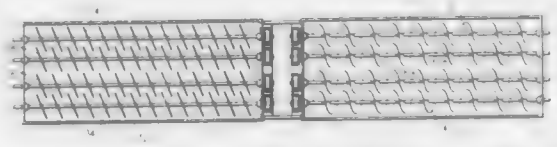
APPARATUS AND METHOD FOR MIXING SOLID OR SEMI-SOLID WASTES WITH ADDITIVES

Patrick D. Taylor, Rockwall, Tex., assignor to Itex Enterprises, Inc., Dallas, Tex.

Filed Jan. 23, 1990, Ser. No. 469,092

Int. Cl.[5] **B02C** *23/20*

U.S. Cl. 241—25 **16 Claims**



1. A method for treating solid or highly viscous semi-solid waste materials containing lumps of waste comprising the steps of:

reducing the size of the lumps in the waste material with a plurality of paddle-type chopper augers, said paddle-type chopper augers being mounted in a separator,

homogenizing the waste material by means of pin mixers, and

mixing the homogenized waste material with a predetermined amount of at least one selected additive.

5,007,591

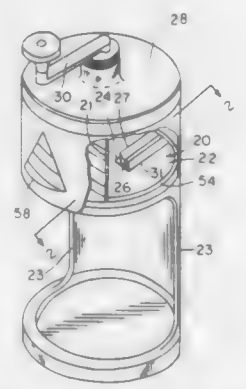
ICE SHAVER APPARATUS

Thomas E. Daniels, Jr., 917 E. 9140 South, Sandy, Utah 84094

Filed Jan. 12, 1990, Ser. No. 465,907

Int. Cl.[5] **B02C** *18/00, 19/08*

U.S. Cl. 241—37.5 **14 Claims**



1. An improvement in ice shaving apparatus of the type including (a) an ice receiving chamber having a cylindrical, upstanding sidewall and a substantially flat floor, (b) an elongate opening in said floor, (c) an elongate blade having a knife edge projecting through said opening into said chamber, (d) a removable cover for said chamber and (e) means for moving ice placed in said chamber against said knife edge to cut shavings from said ice, said improvement comprising

an elongate, blunt, blade guard positioned adjacent to said blade, said blade guard being movably mounted beneath said opening in said floor of said chamber for movement from a recessed position in which a leading edge of said blade guard is recessed beneath the knife edge of said blade to an extending position in which the leading edge extends through said opening in said floor of said chamber to project into said chamber at least to the same distance as said knife edge of said blade projects into said chamber and to thereby provide a guard for said knife edge,

means for biasing said blade guard to its extending position; and

means for depressing said blade guard to its recessed position when said cover is positioned on said ice containing chamber.

5,007,592

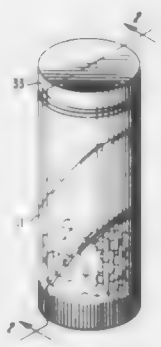
DISPOSABLE PEPPERMILL

George W. Poncy, 3725 Investment La., Riviera Beach, Fla. 33404

Filed Apr. 15, 1987, Ser. No. 38,648

Int. Cl.[5] **B02C** *42/04*

U.S. Cl. 241—169.1 **4 Claims**



1. A food grinder comprising a hollow cylinder, means defining a female grinding element on one end of said hollow cylinder, a male grinding element positioned within said female grinding element, said male grinding element and female grinding element comprising means to grind food contained within said cylinder when said male element is turned within said female element, a knob rotatably mounted on the other end of said cylinder, a connecting rod connecting said male grinding element with said knob and comprising means to turn said male grinding element when said knob is rotated on said cylinder, said connecting rod being molded in one piece with said knob.

5,007,593

APPARATUS FOR EXPOSING THE REINFORCING BARS OF REINFORCED CONCRETE PILLARS

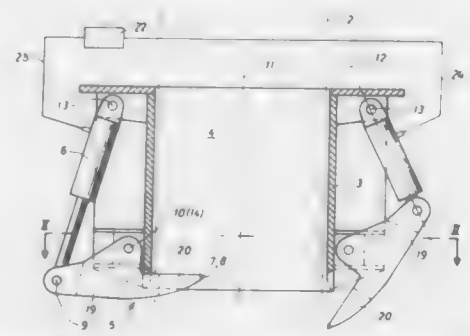
Zsolt Bérczes, Küsnacht, Switzerland, assignor to Diaber AG, Kuesnacht, Switzerland

Continuation of Ser. No. 336,102, Apr. 11, 1989, abandoned. This application Jul. 10, 1990, Ser. No. 550,792

Claims priority, application Switzerland, Apr. 27, 1988, 1580/88; Nov. 15, 1988, 4235/88

Int. Cl.[5] **B02C** *1/10*

U.S. Cl. 241—264 **6 Claims**



1. Apparatus for crushing a vertical reinforced concrete pillar to expose reinforcing bars contained therein, comprising:

(a) a horizontally arranged tubular frame (3) containing a central through passage for receiving the pillar in generally centered relation therein, said through passage having a vertical longitudinal axis (11);

(b) a plurality of crushing tool means connected with said frame in circumferentially spaced relation about said central through passage, each of said crushing tool means including:

(1) a chisel (5) pivotally connected intermediate its ends with said frame for pivotal movement about a horizontal pivot axis (14) normal to a vertical plane which contains said through passage longitudinal axis (11) and which bisects said pivot axis, said chisel having first and second arm portions on opposite sides of said pivot axis, said first arm portion being forked at its free end, thereby defining a pair of tine portions each having a first cutting edge (7,8) for engaging the pillar, said first cutting edges extending generally parallel with the pivot axis of said chisel;

(2) said chisel also including on each tine portion thereof a generally plate-shaped crushing member (15 spaced from an associated first cutting edge, said crushing member extending normal to said tine portion and generally normal to its associated first cutting edge, said crushing member including adjacent said first cutting edge a second cutting edge (17) inclined at an acute angle (α) relative to a line normal to its associated tine portion; and

(3) a plurality of piston and cylinder motor means (6) each pivotally connected at its ends between said frame and the free end of said second arm portion of the associated chisel for pivoting said chisels in opposite directions between crushing and disengaged positions relative to said frame, respectively, said pillar normally being centered relative to said frame when said chisels are initially pivoted in a crushing direction toward positions in which their cutting edges are in engagement with said pillar; and

(c) flow control means (22) for controlling the flow of pressure fluid to said piston and cylinder motor means in such a manner that strokes of said pistons cause the chisels to maintain the pillar in centered relation relative to said frame during pivotal movement of said chisels in the crushing direction.

5,007,594

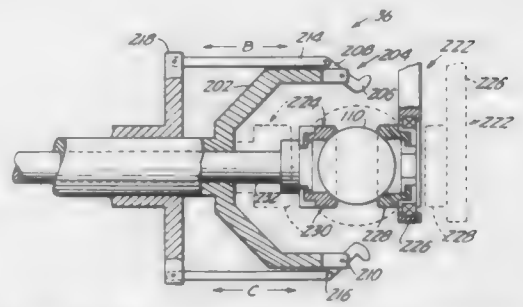
PREPARATION OF WOUND GOLF BALL CORES

Robert A. Brown, Mattapoisett, Mass., assignor to Acushnet Company, New Bedford, Mass.

Division of Ser. No. 53,948, May 26, 1987, Pat. No. 4,846,910. This application Apr. 5, 1989, Ser. No. 333,985

Int. Cl.[5] **A63B** *47/00;* **B65H** *54/64*

U.S. Cl. 242—3 **11 Claims**



8. A machine for preparing a wound golf ball core comprising:

(a) a winding station for winding thread about a frozen center and forming a wound golf ball core; and

(b) a mechanical arm for manipulating and tying the thread onto said frozen center and for manipulating and tying off the thread on said wound golf ball core thereby preparing a wound golf ball core, wherein said tying means comprises a collet and a plurality of fingers attached to said collet.

5,007,595

CHUCK STRUCTURE

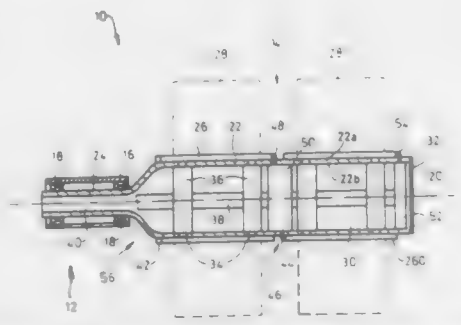
Peter Busenhart, Winterthur; Ruedi Schneeberger, Turbenthal, both of Switzerland; Erwin Holbein, Spartanburg, S.C.; Armin Wirz, Ossingen, Switzerland; Adolf Flüeli, and Hansueli Maier, both of Winterthur, Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Division of Ser. No. 279,184, Dec. 2, 1988, Pat. No. 4,953,802, which is a continuation of Ser. No. 911,816, Sep. 26, 1986, Pat. No. 4,811,910. This application Oct. 10, 1989, Ser. No. 419,603

Claims priority, application United Kingdom, Oct. 2, 1985, 8524303

Int. Cl.[5] **B65H** *54/547*

U.S. Cl. 242—46.4 **6 Claims**



1. A high speed chuck having an axis of rotation, comprising:

a first elongated tubular portion with an external circumference and possessing a length sufficient to receive a plurality of bobbin tubes for rotation about the axis of rotation to enable formation of a respective package in use on each of said plurality of bobbin tubes;

a second elongated tubular portion integral with said first elongated tubular portion and of reduced external diameter relative thereto and having an exterior;

said first elongated tubular portion and said second elongated tubular portion having a common longitudinal axis substantially coincident with said axis of rotation;

said first elongated tubular portion having substantially constant wall thickness through substantially its entire length and defining an internal chamber accommodating bobbin tube engaging means for holding each one of said plurality of bobbin tubes at said external circumference of said first elongated tubular portion for rotation about said axis of rotation and formation of the respective package;

said first elongated tubular portion possessing an end region disposed remote from said second elongated tubular portion for permitting insertion and positioning of said bobbin tube engaging means in said internal chamber of said first elongated tubular portion; and

bearing means cooperating with said second elongated tubular portion such that said first elongated tubular portion and said second elongated tubular portion are rotatable about said common longitudinal axis at a high speed for take-up of filamentary material at a speed of at least 3000 m/min.

5,007,596

TAPE CASSETTE REEL HAVING AN UPPER REEL MOLDED BY DICHROMATIC MOLDING PROCESS

Yuji Iwahashi, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 18, 1989, Ser. No. 452,203

Claims priority, application Japan, Dec. 29, 1988, 63-331502

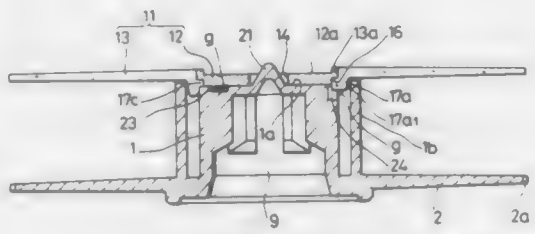
Int. Cl.[5] **B65H** *75/14*

U.S. Cl. 242—71.800 **4 Claims**

1. A tape cassette reel comprising:

(a) an integrally formed lower flange portion and reel hub, the reel hub having an end face, and

(b) an upper flange portion having an opaque central portion, an outer peripheral flange portion and a bonding surface between them, the upper flange portion being bonded to the reel hub, and wherein a shock-absorbing rib portion is formed at a radially inner peripheral side surface



of the outer peripheral flange portion so as to abut the end face of the reel hub, and a pouring gate mark is formed on the radially inner surface side of the shock-absorbing rib portion during molding of the outer peripheral flange portion.

5,007,597

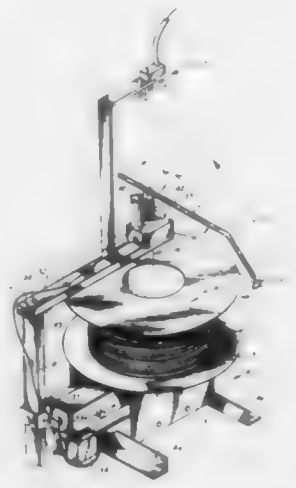
AUTOMATIC DISPENSER FOR ELONGATED FLEXIBLE COILED ELEMENTS

Johnnie L. Jones, 5650-10 Mile Rd., Rockford, Mich. 49341

Filed Jan. 31, 1989, Ser. No. 304,724

Int. Cl.[5] **B21C** *47/18;* **B65H** *49/34*

U.S. Cl. 242—82 **17 Claims**



1. An automatic dispenser for elongated flexible elements including a frame, means on said frame for supporting an elongated element carrier for rotational movement about a given axis during the removal of said element from said carrier; drive means for rotating said carrier about said axis at variable speeds; and control means for controlling the actuation and variable speed of said drive means in response to the tension exerted on said element; said control means including a rotatable means, the degree of rotation of said rotatable means determining the speed of said drive means and rotational speed of said carrier; the improvement comprising:

a first guide means mounted for rotation substantially about said given axis; said first guide means having a guide member adapted to receive therethrough and guide an elongated flexible element received from said carrier;

a second guide means located at a spaced position from said first guide means and adapted to receive said element after the element is passed through said first guide member; said second guide means being located with relation to said first guide means so that a tension exerted on said element after passing through said first and second guide means

induces said guide member of said first guide means to follow a circular path in one direction about said given axis, the degree of rotation of said guide member along such rotational path being proportionally dependent upon the tension exerted on the element whereby the greater the tension on said element the greater degree of rotation of said guide member;

means for biasing said guide member to rotate about said given axis in a direction along said circular path opposite to said one direction;

said first guide means being operatively connected to said rotatable means causing said control means to control the degree of rotation of said rotatable means in proportion to the tension on said element and thus control the speed of said drive means and rotational speed of said carrier in proportion to the tension on said element whereby increase of tension on said element proportionally increases the rotational speed of said carrier and decrease in the tension on said element proportionally decreases the rotational speed of said carrier.

5,007,598

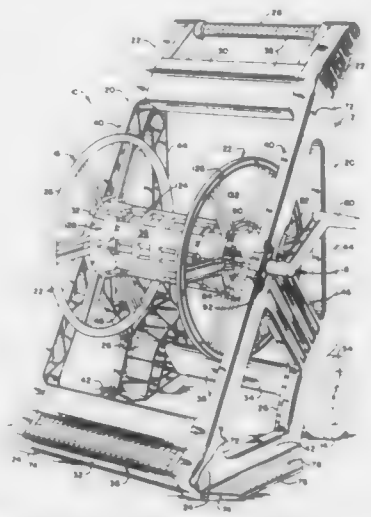
HOSE REEL ASSEMBLY

Kenneth J. Spear, Vienna, W. Va., and Ronald R. Fowler, Coolville, Ohio, assignors to O. Ames Co., Parkersburg, W. Va.

Filed Oct. 25, 1989, Ser. No. 426,212

Int. Cl.[5] **B65H** *75/34*

U.S. Cl. 242—86.2 **40 Claims**



1. A portable hose reel assembly comprising

a pair of molded plastic side frames each of similar generally triangular shaped configuration providing three corner structures,

said side frames being disposed in transversely spaced parallel relation with corresponding corner structures facing one another,

a first of said three corner structures of each side frame having first socket means therein opening in a direction toward the corresponding corner structure,

a second of said three corner structures of each side frame having second socket means therein opening in a direction toward the corresponding corner structure,

transverse frame members each formed of plastic by blow molding so as to define an elongated hollow tubular central portion having closed end portions on opposite ends of said central portion,

the closed end portions of said transverse frame members being shaped to respectively fit snugly within said first and second socket means,

each closed end portion and the associated socket means having interengaging surface means operable in response to the transverse movement of the closed end portion into the associated socket means to retain the closed end portion against transverse movement out of the associated socket means so that when all of said closed end portions are retained in snugly fitting relation with the associated socket means said transverse frame members and said side frames constitute a hose reel supporting frame structure,

a third of said three corner structures of said side frames having aligned shaft receiving openings therein,

a shaft extending through said shaft receiving openings,

supporting wheels on said shaft for enabling the hose reel supporting frame structure to be rollingly supported for manual movement along a generally horizontally extending surface by an operator grasping a central portion of a transverse frame member associated with said first socket means,

means on said second corner structures for engaging a generally horizontally extending surface on which said supporting wheel are engaged for stably fixedly supporting said hose reel supporting frame structure on said generally horizontally extending surface,

a hose reel structure for receiving a length of hose in coiled formation thereon, and

means for rotatably supporting said hose reel structure between said side frames in a position such that said hose reel structure is disposed above a generally horizontally extending surface on which said hose reel supporting frame structure is manually moved or stably fixedly supported as aforesaid.

5,007,599

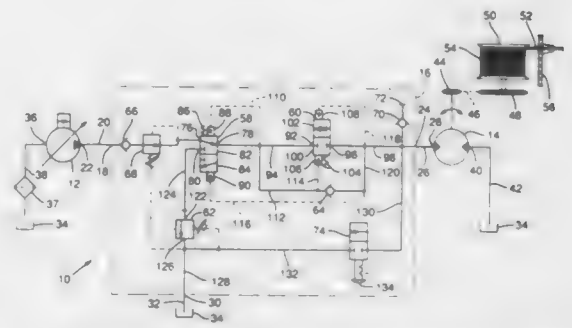
HYDRAULICALLY-ACTUATED CONTROLLER FOR REEL DRIVE

Allen P. Forsyth, Portland, Oreg., assignor to Atlas Copco Construction and Mining Holding AB, Stockholm, Sweden

Filed Jul. 28, 1989, Ser. No. 386,956

Int. Cl.[5] **B65H** *75/42*

U.S. Cl. 242—86.51 **21 Claims**



1. A hydraulic controller for use with a reel used for windably storing a flexible cable extending from the reel to a tie point to which a distal terminus of the cable is affixed, the reel paying out a required length of the cable whenever the distance between the reel and said tie point is increasing, maintaining the unwound cable extending from the reel to the tie point in a taut condition when said distance is remaining constant, and paying in the cable when said distance is decreasing, the reel powered by a hydraulic motor hydraulically coupled to a source of pressurized hydraulic fluid, the controller comprising:

a first port hydraulically coupled to the source of pressurized hydraulic fluid, a second port hydraulically coupled to the motor, and a third port hydraulically coupled to a reservoir of hydraulic fluid;

a hydraulic pressure-actuated valving means for valving the flow of hydraulic fluid from the first port to the second port and from the second port to the third port, the valving means assuming a pay-in mode when the distance between the reel and the tie point is either decreasing or

remaining constant, and a pay-out mode when said distance is increasing;

(a) in which pay-in which the valving means passing pressurized hydraulic fluid from the first port to the second port to drive the hydraulic motor to urge the reel to rotate in a pay-in direction; and

(b) in which pay-out mode the valving means occluding passage of hydraulic fluid from the first port through the valving means to the second port and passing a partially restricted flow of pressurized hydraulic fluid from the second port to the third port so as to hydraulically brake rotation of the motor when the reel is rotating in a pay-out direction;

the valving means comprises a first, a second, a third, and a fourth valve, the first, second, third, and four valves hydraulically intercoupled, wherein;

(a) the first valve is a two-position valve having an inlet port, an outlet port, and an exhaust port, the inlet port coupled to the first port of the valving means;

(b) the second valve is a two-position valve having an inlet port coupled to the second port of the valving means and an outlet port coupled to both the outlet port of the first valve and the second port of the valving means;

(c) the third valve is an adjustable pressure-relieving pressure-control valve having an inlet port coupled to the exhaust port of the first valve and an outlet port coupled to the third port of the valving means; and

(d) the fourth valve is a check valve having an inlet port coupled to the outlet port of the second valve and an outlet port coupled to the second port of the valving means.

5,007,600

TWO STAGE REEL MECHANISM FOR TAPE RECORDER

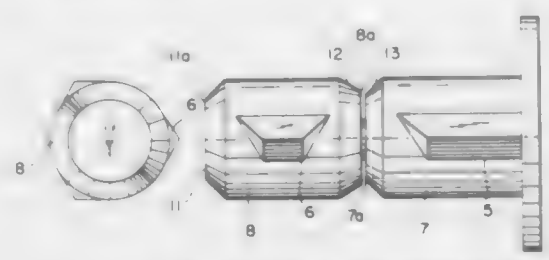
Satoru Koizumi, Higashihiroshima, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 264,082, Oct. 28, 1988, abandoned, which is a division of Ser. No. 933,391, Nov. 21, 1986, Pat. No. 4,815,675. This application Jan. 25, 1990, Ser. No. 469,678

Claims priority, application Japan, Nov. 29, 1985, 60-184729; Nov. 29, 1985, 60-184730

Int. Cl.[5] **G11B** *15/32*

U.S. Cl. 242—194 **5 Claims**



1. A two stage reel mechanism of a tape recorder on which first and second compact type cassette tapes supported in a stacked arrangement by a cassette holder of said recorder can be interchangeably loaded, said first cassette tape and said second cassette tape being identical in shape and size with each other, said first cassette tape being provided with a first hub which has a plurality of first projections at an inner circumference thereof, said second cassette tape being provided with a second hub which has a plurality of second projections at an inner circumference thereof, said holder being movable toward and away from a main body of said recorder between a closed position, wherein said first and second cassette tapes can be recorded and played, and an open position, wherein said first and second cassette tapes can be inserted in and removed from said holder, said two stage reel mechanism comprising:

a first reel operatively connected to a reel driving means for transmitting a rotating force from the reel driving means to said first cassette tape, said first reel being provided with a plurality of first engaging members made of rigid material at its periphery for engaging in a rotating direction of said first reel with said first projections when said holder is in said closed position, said first reel being juxtapositioned to a bearing portion of a tape winding or tape feeding reel; and

a second reel, operatively connected to the reel driving means and coaxially provided with said first reel for transmitting a rotating force of the driving means to said second cassette tape, said second reel being provided with a plurality of second engaging members made of rigid material at its periphery for engaging in a rotating direction of said second reel with said second projections when said holder is in said closed position,

wherein the diameters of said first and second reels are equal, the height measured from the center of the axis of rotation of said first and second reels to the top or outermost dimension of said respective first and second engaging members is equal, at least the leading end of said second reel has a tapered portion, and said second engaging member is shaped as a prism extending along an axial direction of said second reel, including two side surfaces for abutting said second projections so as to transmit said rotating force, and having a first base portion at a leading end thereof and a second base portion at the other end thereof, said first base portion comprising a pyramid whose vertex is pointed out toward said leading end of said second reel and is situated on said second reel, said second base portion comprising a pyramid whose vertex is pointed out toward the other end of said second reel and is situated on said second reel.

5,007,601

WATER DEPTH MEASURING DEVICE FOR A FISHING REEL

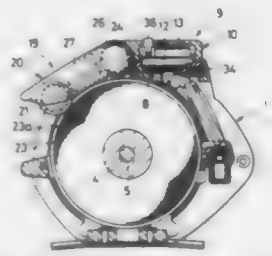
Masaharu Emura, and Takehiro Kobayashi, both of Hiroshima, Japan, assignors to Ryobi Ltd., Hiroshima, Japan

Continuation of Ser. No. 399,407, Aug. 28, 1989, abandoned, which is a continuation of Ser. No. 155,849, Feb. 16, 1988, abandoned. This application Feb. 9, 1990, Ser. No. 478,020

Claims priority, application Japan, Feb. 16, 1987, 62-21617[U]

Int. Cl.[5] **A01K** *97/12*

U.S. Cl. 242—223 **8 Claims**



1. A water depth measuring device for a fishing reel comprising:

a reel body having a spool rotatably supported therein;

reel rotation signal generating means connected to a supporting arm rotatably mounted on said reel body, said signal generating means for generating a magnetic flux line cast signal corresponding to a case length of fishline in response to the rotation of said spool, said signal generating means including a first roller for contacting a fishline wound on said spool, a second roller having a magnet attached thereto for generating said line cast signal, and means for linking said first roller to said second roller to rotate said second roller in response to the rotation of said first roller;

a watertight compartment mounted on said reel body; and

line cast sensor means disposed in said watertight compartment and adapted to detect said magnetic flux line cast signal through a wall of said watertight compartment,

line cast indicator means connected to said sensor for indicating the length of a fishline cast from said spool.

5,007,602

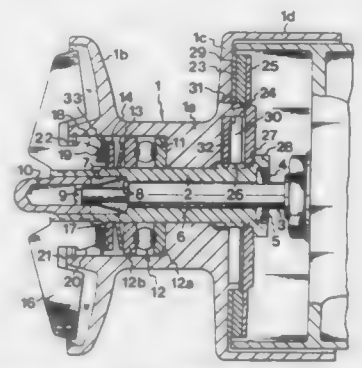
CLICK MECHANISM IN A FISHING REEL

Karl L. Carlsson, Asarum, Sweden, assignor to Abu Garcia Produktion AB, Svangsta, Sweden

Filed Mar. 16, 1990, Ser. No. 494,340

Int. Cl.[5] **A01K** *89/027*

U.S. Cl. 242—246 **3 Claims**



1. A click mechanism in a fishing reel, said click mechanism being adapted to produce a click sound on relative rotation between a shaft having a first member non-rotatably connected thereto, and a second member rotatably mounted on the shaft, said mechanism comprising

a snap-action click ring provided between said first member and said second member;

first teeth formed on the side of said first member facing said snap-action click ring; and

second teeth formed on the side of said second member facing the snap-action click ring;

said snap-action click ring having a first resilient tongue and a second resilient tongue which extend in the same direction in the circumferential direction of said snap-action click ring but are outwardly bent in opposite directions in the axial direction thereof;

said first resilient tongue engaging said first teeth, and said second resilient tongue engaging said second teeth; and

said first and said second teeth and said first and said second tongue being so designed that on rotation of said second member relative to said shaft in one direction, the second tongue snaps over said second teeth and produces a click sound, while said first tongue with respect to said one direction holds the snap-action click ring in non-rotatable engagement with said first teeth, and that on rotation of said second member relative to the shaft in the opposite direction, said second tongue with respect to said opposite direction holds the snap-action click ring in non-rotatable engagement with said second teeth, thereby entraining the snap-action click ring in the rotary motion of said second member, at the same time as said first tongue snaps over said first teeth and produces a click sound.

5,007,603

ADJUSTABLE LOAD BOLT ADAPTER BRACKET ASSEMBLY

Kraig A. Kirschner, Corona, Calif., assignor to Automated Fire Control, Incorporated, South El Monte, Calif.

Continuation-in-part of Ser. No. 537,907, Jun. 11, 1990. This application Jul. 25, 1990, Ser. No. 558,077

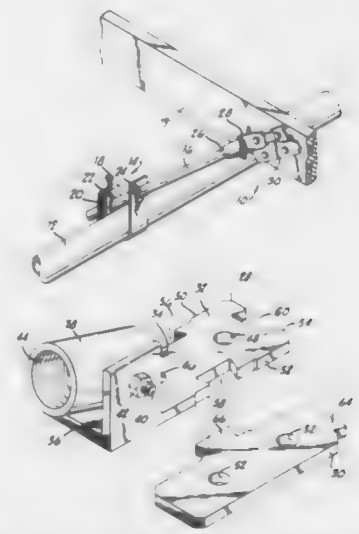
Int. Cl.[5] **F16L** *3/00*

U.S. Cl. 248—59 **4 Claims**

1. An adjustable bracket assembly for selective use with a varying number of fasteners to secure a bracing element to a fixed structure, said assembly comprising:

an attachment member having means thereon for engaging a bracing element and defining a flat plate portion extending from said means, said plate portion having a pair of axially aligned fastener receiving apertures therein and a locking tab securing channel formed in opposite sides and one end of said plate portion; and

an adapter plate for cooperation with said attachment member to provide additional fastener receiving apertures for the securement of the bracing element to the structure, said plate defining a plurality of axially aligned fastening



receiving apertures therein, a first locking tab extending from one end thereof and a second locking tab extending from one side thereof, one of said tabs being adapted to be received within one of said channels for interlocking said adapter plate with said attachment member in a selected disposition adjacent thereto whereby the number of available fastener receiving apertures for use in securing the bracing element to the fixed structure can be increased by the number of fastener receiving apertures in said adapter plate and the footprint defined by said attachment member and interlocked adapter plate can be varied to fit the available space on a fixed structure.

5,007,604

SIDE LOAD TYPE PIPE HANGER WITH SINGLE BOLT CLOSURE

Peter S. Richards, Issaquah, Wash., assignor to Progressive Fastening, Inc., Seattle, Wash.

Continuation of Ser. No. 730,285, May 3, 1985, abandoned. This application Nov. 9, 1988, Ser. No. 269,969

Int. Cl.[5] **F16L** *3/08*

U.S. Cl. 248—62 **11 Claims**

1. A pipe hanger, comprising:

a piper receiving saddle constructed from a flat metal bar formed into a generally C-shape and comprising a first straight arm portion having an inner end, a second straight arm portion having an inner end, and an interconnecting, substantially semi-circular bight portion connected directly to the inner ends of said arm portions, said first and second arm portions each extending at a tangent from the bight portion and each having a free outer end, said outer ends defining between them a pipe avenue for accommodating a pipe which is moved sideways through said avenue into the saddle;

a support leg having an end that is butt welded to an external surface of said saddle; and

an improved system for securing a pipe within the C-shaped saddle, comprising:

a bolt comprising a rod body, an enlarged head at the first end of said rod body and a threaded end portion at the second end of said rod body,

a nut including a central opening that is threaded with threads which complement the threads on the bolt, said nut including a small size first end portion having a cross-sectional shape that is other than circular, and a large size second end portion;

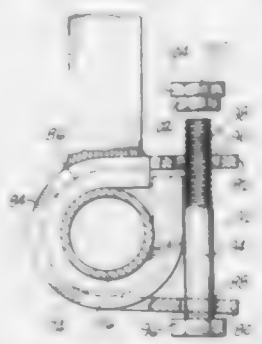
a first opening in said first arm portion which is smaller in size than the head of the bolt but is larger in size than the rod body of the bolt;

a second opening in said second arm portion, said second opening being substantially larger in size than the rod body of the bolt, so that the rod body also fits loosely in said second opening, and smaller in size than the second end portion of the nut, and being sized and complementary shaped to snugly receive the small size first end portion of the nut, and hold said first end portion of the nut, and the nut itself, against turning,

whereby a pipe section can be moved sideways through said avenue between the free ends of the first and second arm portions, into said C-shaped saddle, and the bolt can be inserted threaded end portion first through the first opening, and then through the second opening, and then the nut can be applied to the bolt with its small size first end portion directed towards the second opening, and the bolt can be screwed into the nut and the nut can be moved endwise to place the small size first end portion of the nut snugly within the second opening, and the head of the bolt can be rotated for drawing the nut and bolt together and applying a clamping force on the pipe section, with the fit of the small size first end portion of the nut within the second opening serving to hold the nut against rotation while the bolt is being rotated, and with the snug engagement of the small end of the nut within the second opening, backed by the large end of the nut, resulting in the nut and bolt substantially stiffening the second arm portion as the nut and bolt assembly are drawn together, so that bending will occur within the first arm portion;

with the first opening being sized to allow sideways alignment movement of the bolt in the first opening as said first arm portion bends and the bolt becomes aligned with the nut, during tightening of the bolt within the nut; and

with the first straight arm portion bending towards the second straight arm portion when the nut and bolt assembly are drawn together.



5,007,605

HOSE AND CABLE SUPPORT

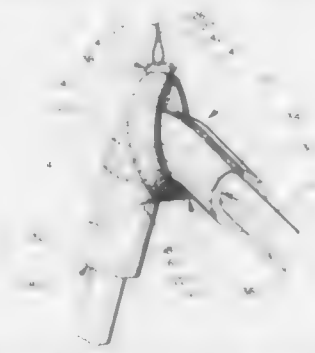
Daniel P. Horvath, Grande Prairie, Canada, assignor to Hosehandlers International Inc., Edmonton, Canada

Filed Mar. 30, 1989, Ser. No. 330,745
Int. Cl.[5] F16L *3/00*
U.S. Cl. 248—62 10 Claims

1. An apparatus for suspending hoses or cables, comprising:

a. an elongate support of a polymer plastic material having a support surface in the shape of an arch with a vertex, depending haunches and intrados, such that a hose or cable may be supported upon the vertex and haunches of the arch, the support having a first end and a second end, the intrados being reinforced, such that the radius of the arch does not vary under the weight of the hose or cable, the support having side walls adjacent the support surface, such that the side walls form an interior channel which prevents transverse movement of the hose or cable, and

b. a strap embedded in the intrados substantially equidistant between the first end and the second end of the support, the strap having a first portion which extends from one side of the support terminating in a first end and a second portion which extends from the opposed side of the support terminating in a second end, the second portion being longer than the first portion, the first end and second end of the strap being formed in loops, such that when the second portion is placed under a hose or cable and then fed through the loop in the first portion a force exerted by a suspension line secured to the loop on the second portion will cause the second portion to pass through the loop in the first portion thereby drawing the support into a position wherein the support surface underlies the hose or cable



5,007,606

SUPPORT STAND FOR FOOD POUCHES

Ronald R. Allen, 211 N. Victoria; William D. McEwen, 727 Viewcrest Dr., both of Ventura, Calif. 93003

Filed Jan. 23, 1990, Ser. No. 468,611
Int. Cl.[5] A47G *23/02*
U.S. Cl. 248—152 6 Claims



1. A support stand for receiving and supporting a flexible pouch of the type used for containing dehydrated food or the like, said support stand comprising:

first and second substantially identical plate members each defining an upright side wall, and a generally rectangular base wall joined to said side wall along a bend line at a lower edge thereof and extending generally angularly with respect to said side wall;

each of said base walls defining a leading edge and trailing edge extending downwardly and outwardly from said bend line, each of said base walls further defining and elongated slot opening at the leading edge thereof and extending generally in parallel with said bend line approximately to a midpoint between the leading and trailing edges thereof;

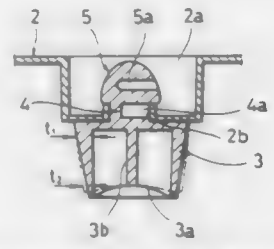
said plate members being releasably and slidably interlocked by orienting said plate members with the leading edges of their respective base walls in facing relation and slidably fitting said base wall of each plate member into the slot formed in the base wall of the other plate member, thereby interconnecting said plate members with said base walls interlocked in a generally X-shaped profile and with said side walls projecting upwardly from said base walls in spaced and generally parallel relation to define a substantially horizontally oriented pouch-receiving trough, said plate members being slidably separable and nested one upon the other to pack in a substantially minimum profile geometry.

5,007,607

SUPPORT UNIT FOR HOME APPLIANCES

Tae Y. Kim, Suwon, Japan, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 30, 1989, Ser. No. 400,876
Claims priority, application Rep. of Korea, Dec. 30, 1988, 88-22121
Int. Cl.[5] F16M *11/00*
U.S. Cl. 248—188.9 32 Claims



1. A support unit of home appliances, comprising:

a supporting body on which a base plate of home appliances is fixed said supporting body having a longitudinal axis and exterior sidewalls forming an inner space, said supporting body including:

a rib formed in said inner space and extending completely radially across from oppositely disposed portions of said sidewalls of said supporting body;

a curved face formed at a bottom of the rib for adding elasticity;

a surface thickness of said supporting body whereby the thickness of a lower surfaces thinner than that of an upper surface;

a neck having a fixing hole thereinto extending radially and substantially perpendicularly to said longitudinal axis, said fixing hole opening to the exterior of the neck, formed on the supporting body; and

an inserting protrusion having an orifice thereinto extending radially and substantially perpendicularly to said longitudinal axis, said orifice opening to the exterior of the neck.

5,007,608

TELEVISION WALL BRACKET

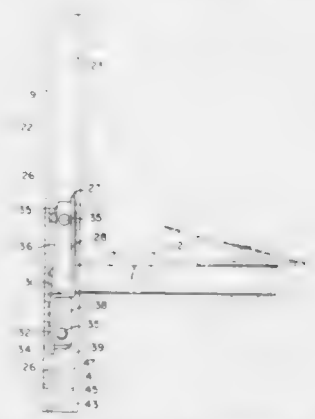
Joseph W. Carroll, Jr., West Chester, Pa., assignor to Kim Manufacturing Company, Downingtown, Pa.

Filed Aug. 28, 1989, Ser. No. 399,172
Int. Cl.[5] A47F *1/10*
U.S. Cl. 248—297.2 11 Claims

1. A wall bracket mounting device for attaching a television set to a wall, comprising:

an elongated bracket adapted to be mounted on a wall, the elongated bracket including a flat back plate having at least one row of locking elements formed therein and a pair of U-shaped confronting channels extending along opposite side edges thereof defining trackways of a predetermined width with a pair of vertical inner track surfaces spaced from said back plate; and

a rigid slide assembly including a rigid angled member having a rigid lower flat portion, a middle juncture position, and a rigid upper flat portion parallel to and forwardly spaced from said lower flat portion and an elongated support arm projecting outwardly from the middle juncture portion, wherein said rigid slide assembly is engageable within said pair of U-shaped confronting channels and operable between a first position wherein said upper flat portion is rotated toward the back plate with the lower flat portion rotated away and disengaged from the back plate such that the rigid slide assembly may be adjusted vertically in the elongated bracket and a second position wherein said lower flat portion of said rigid slide assembly contacts said back plate and said upper flat portion of said rigid slide assembly contacts said pair of vertical inner track surfaces so as to lock the rigid slide assembly in a predetermined position, the locking of said rigid slide assembly against vertical movement provided by the pivotal movement of said rigid slide assembly about the intersection defined by the support arm and the vertical longitudinal axis of the rigid slide assembly to enable engagement of the rigid slide assembly with the elongated bracket such that pivoting of said rigid slide assembly with respect to said elongated bracket being the only means necessary for adjusting movement of said rigid slide assembly in said elongated vertical bracket.

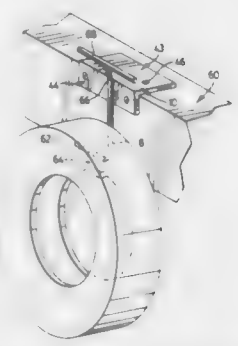


5,007,609

TIRE RETAINER FOR DOCK

Atis Bredovskis, 368 Rouge Hills Dr., West Hill, Ontario, Canada M1C 2Z5

Filed Oct. 10, 1989, Ser. No. 419,333
Int. Cl.[5] A47H *1/16*
U.S. Cl. 248—303 1 Claim



1. A tire retainer, for use in combination with a tire having walls and being U-shaped in cross-section, for the purpose of

retaining the tire between a vertical surface and the hull of a boat, said tire retainer comprising:

a hook retainer formed for securement to a dock or the like;

a single-piece hook and cleat assembly mounted on said hook retainer;

said hook of said single-piece hook and cleat assembly having a cradle to accept the edge of a tire wall and a free end to enter the interior space between the walls of the tire;

said cleat of said single-piece hook and cleat assembly integrally formed at the end opposite the free end of said hook for securing a rope or the like from a boat, said cleat bent sufficiently forwardly to extend over the cradle to assist in avoiding dislodgement of the tire as a result of upward forces, but not bent to an extent likely to result in damage to a boat hull; and

said tire retainer shaped to permit quick dismounting and remounting of the tire thereon, and to accommodate limited movement of the tire in response to upward forces without the tire being dislodged or the hook retainer being torn from its securement.

5,007,610

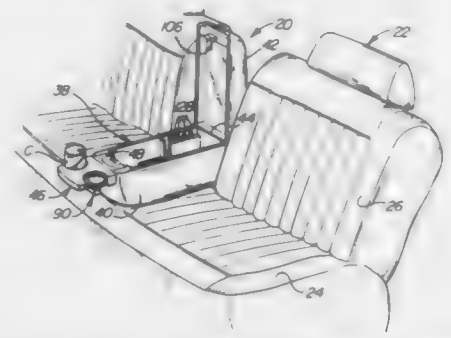
ARMREST COMPARTMENT WITH CUPHOLDER

Ned Christiansen, Three Rivers, and David Kellogg, Kalamazoo, both of Mich., assignors to Lear Seating Corporation, Southfield, Mich.

Filed Jan. 22, 1990, Ser. No. 468,079

Int. Cl.[5] **A47C** *7/62*

U.S. Cl. 248—311.2 **43 Claims**



1. A beverage container holding assembly for recessed storage in a vehicular armrest (20), said assembly comprising, girth support means (46) having a predetermined support width for surrounding and supporting the side wall of a beverage container (C) said girth support means (46) including a first articulated arm (54) moveable in a curvilinear path in response to actuation of said collapsing means (50); hinge means (48) defining a hinge axis (A) extending parallel to said support width for rotatably connecting said girth support means (46) to an armrest (20); and characterized by collapsing means (50) operatively connected to said girth support means (46) for automatically collapsing said support width to a smaller storage width in response to arcuate movement of said girth support means (46) about said hinge axis (A) to allow compact storage of said assembly in the armrest (20).

5,007,611

OPERATION MECHANISM OF LIFTER FOR AUTOMOTIVE SEAT

Shigeru Kanai, Tokyo, Japan, assignor to Tachi-S Co. Ltd., Tokyo, Japan

Filed Jan. 4, 1990, Ser. No. 461,086

Int. Cl.[5] **B60N** *1/02*

U.S. Cl. 248—422 **6 Claims**

1. An operation mechanism of a lifter for an automotive seat, comprising:

a drive mechanism for raising and lowering a seat frame of said seat;

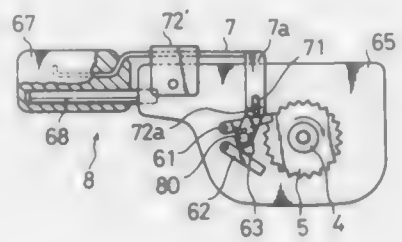
a drive shaft connected with said drive mechanism;

a gear fixed on said drive shaft;

a housing which is rotatably supported on said drive shaft, said housing has an operation lever connected integrally therewith;

a pair of first and second latch pawls provided within said housing in such a manner that said first latch pawl is to be engaged with one side of said gear so as to permit said gear to rotate only in a one direction, and said second latch pawl is to be engaged with the other side of said gear so as to permit said gear to rotate only in a direction opposite to said one direction;

a cam means fixed on a shaft which is rotatably secured within said housing an arm, having a dependent leg, which is so arranged that its one end is operatively connected with said cam means whereas its other end extends towards said operation lever, and wherein there is provided a link means between said arm and said cam such that one end of said link means is fixed on said shaft while the other end of said link means is pivotally connected



with said one end of said arm, whereby forward and backward movement of said arm causes said link means to rotate in same direction about said shaft, which causes rotation of said cam means by said shaft to disengage one of said first and second latch pawls from said gear, with the other of them remaining in engagement with said gear;

an arm which is so arranged that its one end is operatively connected with said cam means whereas its the other end that extends towards said operation lever;

wherein said operation lever includes a support rod and a handle attached slidably on said support rod, such that said handle is movable along said support rod in a longitudinal direction thereof, and wherein, to said handle is connected said the other end of said arm, whereby drawing forwards and backwards said handle along said longitudinal direction of said operation lever results in actuating said cam by said arm to thereby selectively disengage one of said first and second latch pawls from said gear, and set a rotational direction of said gear to actuate said drive mechanism to effect desired one of raising and lowering motions of said seat frame.

5,007,612

RAIL MATE

Robert A. Manfre, 389 Hendrickson Ave., Valley Stream, N.Y. 11580

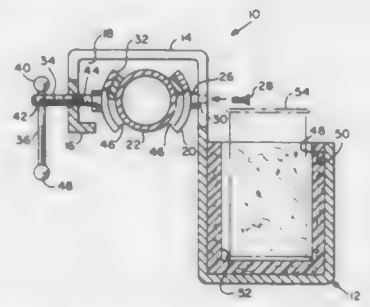
Filed Apr. 23, 1990, Ser. No. 512,879

Int. Cl.[5] **F16M** *13/00*

U.S. Cl. 248—558 **6 Claims**

1. A rail mate for a boat handrail of either cylindrical or rectangular shape comprising a main body providing means for receiving and vertically stabilizing a cold beverage container and keeping said beverage container cool and for receiving and supporting food and other articles, a rail engaging clamp of inverted channel shaped integrally attached to said main body and comprising a base wall having opposite longitudinal side edges of the base wall a rail engaging lip projecting from the free end of the second side wall, parallel to the base part way towards the first side wall so that the side walls, base and lip define a rail receiving enclosure with a rail admitting mouth

formed between an adjacent free end of the lip and the first side wall, the beverage receiving and stabilizing means and the food receiving and supporting means being formed on an extension of the first side wall remote from the base wall, first and second clamp members releasably fastened to respective side walls so as to extend within the enclosure, means to advance one clamp



member relatively towards the other clamp member into cooperative clamping engagement with cylindrical boat rail of substantially smaller cross sectional size than the enclosure, whereby, after removal of the clamp members, a boat rail of rectangular shape inserted through the mouth can be received in the enclosure in a force-fit to extend along the channel engaged by all four sides thereof.

5,007,613

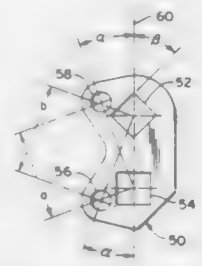
VALVE AND ACTUATOR APPARATUS ALLOWING MULTIPOSITION RELATIONSHIP

James E. Barker, Sauk Rapids, and Timothy J. Cash, Little Falls, both of Minn., assignors to General Signal Corporation, Stamford, Conn.

Filed Aug. 20, 1990, Ser. No. 569,687

Int. Cl.[5] **F16K** *5/00, 31/16*

U.S. Cl. 251—58 **30 Claims**



1. A linkarm apparatus for joining an associated valve having a rotatable mounted first shaft on which a butterfly is mounted and an associated actuator having a second shaft which reciprocally moves in a linear path, said apparatus including:

a plate having first and second means for engaging the first shaft and first and second means for engaging the second shaft, said first and second means for engaging the first shaft including means limiting engagement between said first shaft and said first and second means for engaging the first shaft to specific angular positions, said specific angular positions being rotated an angle beta from each other.

5,007,614

PRESSURE RESPONSIVE TWO-WAY SHUT-OFF VALVE

Hanford N. Lockwood, Jr., San Mateo, Calif., assignor to Hanford N. Lockwood, San Mateo, Calif.

Continuation of Ser. No. 370,219, Jun. 22, 1989, Pat. No. 4,911,403. This application Jan. 12, 1990, Ser. No. 463,747

Int. Cl.[5] **F16K** *15/18*

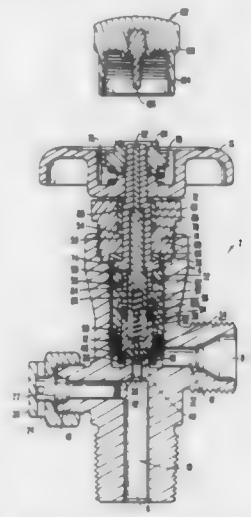
U.S. Cl. 251—83 **7 Claims**

1. A shut-off valve for use with high pressure gas cylinder adapted to retain a residual gas pressure in the cylinder, the valve comprising:

an elongated, tubular housing having a first open end defining an axial port and a second open end defining an axially oriented access opening in general axial alignment with the port, the housing further defining a generally radially oriented port in fluid communication with the axial port via a passage formed by an axial portion communicating with the axial port, a radial portion communicating with the radial port, and an intermediate chamber fluidly connecting the portions, the axial portion terminating in a valve seat defining first and second seating surfaces;

a valve plug disposed in the chamber and axially moveable between a closed position in which it is proximate the valve seat and an open position in which it is remote from the seat, the plug including a relatively hard first sealing member adapted to sealingly engage the first seating surface, for forming a high pressure seal, and a relatively soft second sealing member adapted to sealingly engage the second seating surface for forming a low pressure seal;

a valve actuator including a stem having a portion rotatably and axially substantially immoveably mounted to the housing and an axially moveable, rotatable segment threadably engaging an interior of the housing so that rotation of the portion results in an axial movement of the



segment, the stem extending from the exterior of the housing through the access opening into engagement with an end of the plug facing towards the access opening so that axial movement of the stem segment towards the valve seat moves the sealing members into sealing engagement with the corresponding seating surfaces, the segment and the plug being further constructed so that the plug can move axially relative to the segment when the segment is relatively remote from the valve seat, and spring means for resiliently urging the plug into its closed position, the spring means being constructed so that a positive pressure differential between the axial port and the radial port in excess of the residual pressure moves the plug in opposition to the spring means towards its open position; and

selective coupling means directly between the segment of the stem and the plug including an axially movable pin operable from the exterior of the housing and extending through the access opening, a coupling member activated by the pin and movable between a first position in which the segment of the stem and the plug are axially movable relative to each other and a second position in which the segment of the stem and the plug are axially immovable relative to each other and are axially movable together as unit relative to the housing, for coupling the plug, when it is in its closed position, with the segment by moving the coupling member into its second position, so that, thereaf-

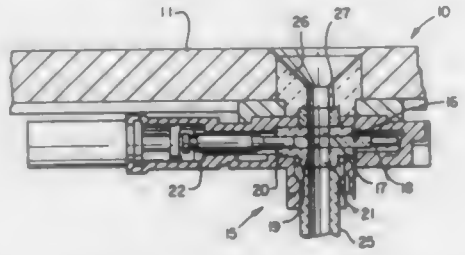
ter, operation of the actuator moves the plug from its closed position to its open position even when the pressure at the radial port exceeds the pressure at the axial port.

5,007,615

REFRACTORY SLIDE GATE ASSEMBLY AND METHOD

Mark C. Kernion, East Pittsburgh, and Ben Davies, deceased, late of Pittsburgh, both of Pa. by Evelyn Davies, executrix , assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 12, 1988, Ser. No. 283,253
Int. Cl.[5] B22D *41/08*
U.S. Cl. 251—368 23 Claims



1. A valve for high temperature molten metals comprising:

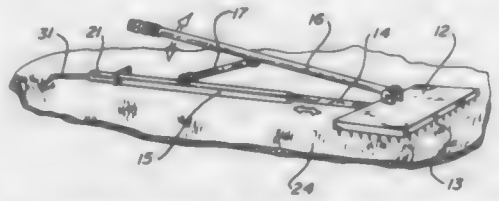
A pair of plates disposed for slidable movement therebetween, each of said plates having an aperture therethrough which when in registration permit passage of molten metal therethrough and which when out of registration prevent said passage of molten metal, at least one of said plates having at least its molten metal contacting surfaces of a refractory material consisting essentially of carbon bonded magnesite.

5,007,616

CARPET STRETCHING TOOL

Kelvin M. Scarpino, 508 Douglas Dr., Denver, Colo. 80221

Filed Mar. 9, 1990, Ser. No. 491,165
Int. Cl.[5] B25B *25/00*
U.S. Cl. 254—212 8 Claims



1. In a carpet stretching tool including a head having a plurality of needles projecting downwardly from a bottom surface to penetrate a carpet and engage said carpet, a rod member secured to said head and projecting away from said head, a tubular member slidably telescoping over said rod member and disposed in a horizontal position, lever and link means connected to said head and tubular member to move said head away from said tubular member, an improved anchor assembly mounted at the rear end of said tubular member, said anchor assembly comprising:

a support body sized to telescopically insert into an open rear end of said tubular member, said body having an inclined socket turned at a first selected angle to the longitudinal axis of the support body,

an elongated anchor member having a straight, elongated shank portion inserted into said socket and an inclined penetrating portion with the longitudinal axis of the inclined penetrating portion turned down at a second selected angle to the longitudinal axis of said shank portion so that said inclined penetrating portion is turned down at a forwardly and downwardly inclined selected third angle to a line perpendicular to said floor surface, a free end of said inclined penetrating portion having a beveled section terminating in a point to provide a relatively blunt penetrating surface for piercing the carpet and engaging the floor surface for anchoring the rear end of said tubular member to said floor surface during the stretching of the carpet away from the anchor member upon the actuation of said lever and link means,

said first selected angle being about twelve degrees to provide a vertical distance between the bottom of said tubular member and said point which accommodates relatively thick carpets,

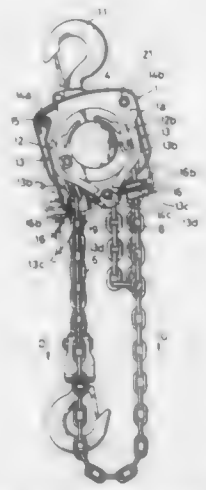
said second selected angle being about fifty-two degrees and said third selected angle being about twenty-six degrees to cause said beveled section and point to anchor firmly in said floor surface.

5,007,617

HAND-OPERATED CHAIN BLOCK

Yosaku Nishimura, Osaka, Japan, and Glenn S. Smith, Issaquah, Wash., assignors to Vital Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 3, 1989, Ser. No. 389,602
Int. Cl.[5] B66D *1/28*
U.S. Cl. 254—372 4 Claims



1. A hand-operated chain block comprising a load sheave rotatably supported by and between a pair of side plates, a hand chain, a hand chain wheel positioned a first surface of one of said side plates facing away from said load sheave mechanically coupled to said load sheave, and enclosing means for substantially enclosing entire periphery of said hand chain wheel, wherein

said enclosing means consists of a plurality of stays, a hand chain wheel cover, a pair hand chain guide plates, and a guide plate fixing member,

said plurality of stays are mounted on said first surface of one of said side plates about said hand chain wheel, a first and a second stay are positioned above the axis of rotation of said hand chain wheel when said hand-operated chain block is suspended from above, while a third stay is positioned beneath the axis of rotation of the hand chain wheel,

said hand chain wheel cover possesses a pie-shaped section, and is mounted on said plurality of stays so as to partially cover said hand chain wheel,

each of said hand chain guide plates is mounted on one of said first and second stays and covers a portion of said hand chain wheel which is perpendicular to its axis of rotation,

each of said hand chain guide plates includes a metal plate in a folded pattern with a pivotal support portion formed at an upper end portion thereof in a curved pattern, and with a tubular hand chain guide portion formed at a lower end portion thereof,

said pivotal support portion of said hand chain guide plates encircling said first and second stays so that said hand chain guide plates are oscillatably suspended and supported by said first and second stays,

the hand chain wound on said hand chain wheel passes through said hand chain guide portion, being guided by said hand chain guide portion, and

said guide plate fixing member is mounted on said stay, so that part of the lower end portion of both hand chain guide plates may be simultaneously.

5,007,618

STANDING AND WALK STARTING APPARATUS

Fred G. Libby, R.D. #1 Box 508E, Mays Landing, N.J. 08330

Filed Feb. 20, 1990, Ser. No. 481,431
Int. Cl.[5] E04H *17/00*
U.S. Cl. 256—1 18 Claims

1. A device to aid a person to stand up from a sitting position on a seat and to start walking, the device comprising:

(a) a floor base panel comprising:

(i) a rear portion positionable proximate the rear of the seat,

(ii) two side portions, one on each side of the seat, and

(iii) a front portion of an area sufficient to allow the person to stand on in front of the seat,

(b) a pair of inclined members, one each over opposite side portions, each comprising

(i) a rear end attached proximate the rear portion of the base panel, and

(ii) a length and angle of inclination of about twenty-five to about sixty degrees upwardly from the rear to the front sufficient to position a front end of each inclined member at a height and horizontal position to allow the person to grasp the front ends to pull with the person's handsdownwardly and rearwardly against the front ends to aid in rising from the seat.

(c) support means attached between the side portions of the base panel and the inclined members to vertically support the inclined members, and

(d) stability means to prevent horizontal movement of the base panel relative to the seat

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5,007,619

CHAIN LINK FENCE

Aldo Sibeni, 10 Executive Dr., Manhasset Hills, N.Y. 11040

Filed Jan. 13, 1989, Ser. No. 297,182
Int. Cl.[5] B21F *27/00*
U.S. Cl. 256—34 22 Claims

1 A chain link fence assembly, comprising chain link fencing;

a bottom horizontal member engaged by the fencing;

a top horizontal member engaged by the fencing;

a plurality of horizontally spaced slats extending through spaces between the wires and connecting to the bottom horizontal member and engaging the top horizontal member;

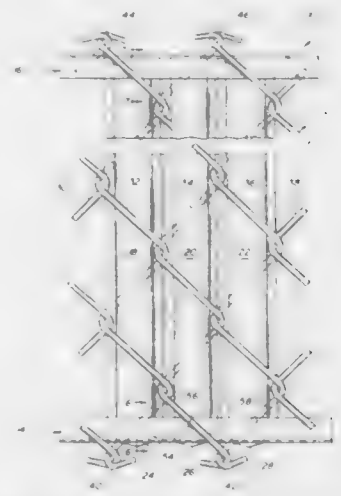
the slats having respective lock tabs formed therein and integral therewith projecting outwardly from the bottom ends thereof,

said bottom horizontal member having a plurality of horizontally spaced cutouts respectively receiving the horizontally spaced lock tabs;

wherein each lock tab has a pair of opposite recesses disposed on opposite edges thereof,

the recesses forming a pair of opposite projecting portions,

the projecting portions being flexible for insertion of the lock tab into its respective cutout and being resilient for returning to its original shape after insertion into the



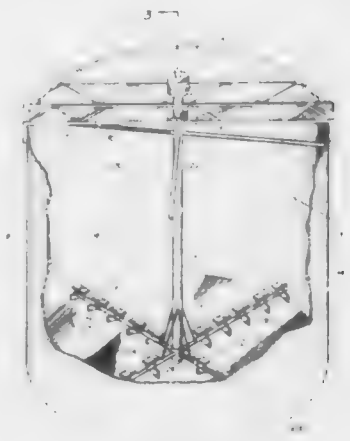
cutout in order to lock the slat into the respective connecting cutout of the bottom horizontal member.

5,007,620

APPARATUS FOR BIOLOGICAL PROCESSING OF METAL-CONTAINING ORES

Robert C. Emmett, Jr., and Lawrence T. O'Connor, both of Salt Lake City, Utah, assignors to Envirotech Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 5,670, Jan. 21, 1987, which is a continuation-in-part of Ser. No. 827,324, Feb. 7, 1986, Pat. No. 4,732,608, and a continuation-in-part of Ser. No. 884,205, Jul. 10, 1986, Pat. No. 4,728,082. This application Aug. 23, 1988, Ser. No. 235,238
The portion of the term of this patent subsequent to Mar. 1, 2005, has been disclaimed.
Int. Cl.[5] C22B *3/02*
U.S. Cl. 266—160 11 Claims



9 A reactor for use in processing metal-ladened solids through use of a bioleaching process, said reactor comprising:

a containment means, having a base member, for containing a metal-bearing solids slurry,

an upright rotatable center shaft rotatably mounted within said containment means;

a plurality of radial arms mounted on said center shaft, above said base member;

a frame support stationarily mounted within said containment means elevationally above said radial arms, said frame having an open lattice configuration;

a plurality of flexible porous membrane diffusers spacedly mounted on said frame, each said diffuser having a horizontally oriented diffuser face for introducing oxygen-containing gas, in the form of bubbles, into said slurry;

a supply means mounted on said diffusers for supplying oxygen-containing gas to said diffusers; and

a plurality of rake-like members mounted on said radial arms to be rotatable therewith, said rakes being positioned below said diffusers and proximate said base member, wherein a rotation of said center shaft effects a raking action by said rake members over said base member to sweep solids which have settled on said base member from said solids slurry.

5,007,621

APPARATUS FOR MOUNTING A GAS WASHING SINK IN A CENTERED MANNER IN PERFORATED BRICK

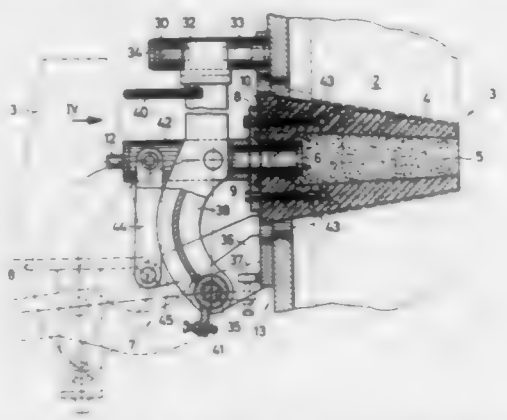
Hans Rothfuss, Taunusstein; Raimund Brückner, Engenhahn-Niedernhausen; Peter Keutgen, Kreuzau; Josef Seeger, Düren; Manfred Winkelmann, Krefeld, and Herbert Metzger, Duisburg, all of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Sep. 28, 1989, Ser. No. 413,673

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1988, 3833504

Int. Cl.[1] **C21C** *5/48*

U.S. Cl. 266—220 **66 Claims**



1. An apparatus for mounting a gas washing sink in a centered manner within an opening through a perforated brick in a wall of a metallurgical vessel, to enable gas to be introduced through the sink into molten metal within the vessel, and for removing the sink from the perforated brick, said apparatus comprising:

a support assembly to be fixedly mounted on the exterior of the wall of the metallurgical vessel adjacent the opening in the perforated brick, said support assembly including two columns having slots therethrough;

fastening means including mounting means for mounting the sink at a position centered relative to said fastening means, said fastening means being mounted with respect to said support assembly for movement relative thereto between an operating position, whereat said fastening means is centered with respect to the opening through the perforated brick and thereby the sink is pressed into the opening through the perforated brick in a centered manner, and a maintenance position, whereat the sink is withdrawn from the opening through the perforated brick, said fastening means comprising a cross member having opposite ends with bores therethrough, said columns extending through respective said bores, and said cross member being slidable in opposite directions, relative to said columns;

means, operable between said support assembly and said fastening means, for moving said fastening means and thereby the sink relative to said support assembly to said operating position, said moving means comprising wedges drivable into said slots and operable against said cross member to move said cross member to said operating position; and

withdrawal means, operable between said support assembly and said fastening means, for moving said fastening means and thereby the sink relative to said support assembly from said operating position to said maintenance position.

5,007,622

AUTOMOBILE SUN VISOR HINGE SPRING

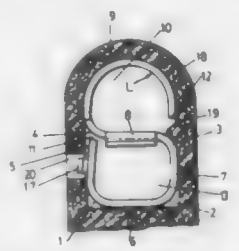
Carlos Gabas, Barcelona, Spain, assignor to Industrias Techno-Matic, S.A., Barcelona, Spain

Filed Mar. 16, 1990, Ser. No. 495,467

Claims priority, application Spain, Mar. 17, 1989, 8900980

Int. Cl.[5] **F16F** *1/18*; **E05C** *5/00*; **B60J** *3/00*; **F16B** *21/00*

U.S. Cl. 267—158 **4 Claims**



1. A spring for automobile sun visor hinge, comprising a member formed from a resilient metal sheet of a substantially rectangular profile by successively folding the sheet to substantially 90° about successive first, second, third and fourth rounded edges, said member including first, second, third and fourth generally rectangular portions and a channel-shaped curved portion, said first rectangular portion having a free edge located relatively closely adjacent to the fourth rounded edge that forms one end of the fourth rectangular portion and separates said fourth rectangular portion from said channel-shaped curved portion, said channel-shaped curved portion having a free end edge located relatively closely adjacent to the third rounded edge that forms another end of said fourth rectangular portion and separates said fourth rectangular portion from the third rectangular portion.

5,007,623

METHOD FOR FEEDING THE PRIMARY WEB OF A MINERAL WOOL WEB BY MEANS OF A PENDULUM CONVEYOR ONTO A RECEIVING CONVEYOR AND AN ARRANGEMENT OF SUCH A PENDULUM CONVEYOR

Matti Unkuri, and Tom Nurmi, both of Pargas, Finland, assignors to Oy Partek AB, Pargas, Finland

PCT No. PCT/FI87/00151, § 371 Date May 8, 1989, § 102(e) Date May 8, 1989, PCT Pub. No. WO88/03509, PCT Pub. Date May 19, 1988

PCT Filed Nov. 11, 1987, Ser. No. 354,433

Claims priority, application Finland, Nov. 12, 1986, 864613

Int. Cl.[5] **B65H** *45/10*

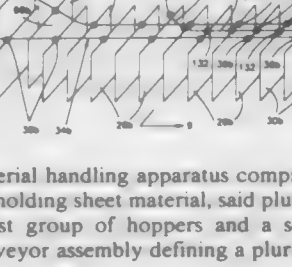
U.S. Cl. 270—39 **8 Claims**

1. A method for making a mineral wool web, comprising:

(a) providing a receiving conveyor having a generally horizontal, upwardly presented carrying run which advances longitudinally in a given direction;

(b) providing a pendulum-type conveyor arrangement which includes two generally vertically arranged endless conveyor belts which are disposed laterally adjacent one another, relative to said given direction, above said carrying run of said receiving conveyor, with respective carrying runs disposed in spaced, confronting relation, with the endless conveyor belts respectively entrained about respective upper and lower rollers rotating in respective directions to cause said spaced, confronting carrying runs of said endless conveyor belts to advance downwardly towards said carrying run of said receiving conveyor, whereby said pendulum-type conveyor has a carrying gap with an upper inlet end and a lower outlet end;

(c) while oscillating said pendulum-type conveyor assembly transversally of said given direction so as to reversingly sweep said outlet end of said carrying gap from adjacent one side edge of said carrying run of said receiving conveyor, to adjacent an opposite side edge of said carrying run of said receiving conveyor, continuously feeding a primary web of uncured mineral wool into said inlet end of said carrying gap between said carrying runs of said



endless conveyor belts of said pendulum-type conveyor arrangement, whereby said primary web is fed downwards by said carrying runs of endless conveyor belts and out onto said carrying run of said receiving conveyor so as to progressively provide on said carrying run of said receiving conveyor a multiple layer web of successively laid zig-zag folds of said primary webs of uncured mineral wool advancing in said given direction;

(d) During substantially all of each half cycle of oscillation of said pendulum-type conveyor assembly, in which a respective one of said endless conveyor belt leads and a respective other said endless conveyor belt trails said carrying gap, causing the respective said trailing endless conveyor belt to have said lower roller thereof disposed closer to, yet spaced above, said carrying run of said receiving conveyor than is said lower roller of the respective said leading endless conveyor belt.

5,007,624

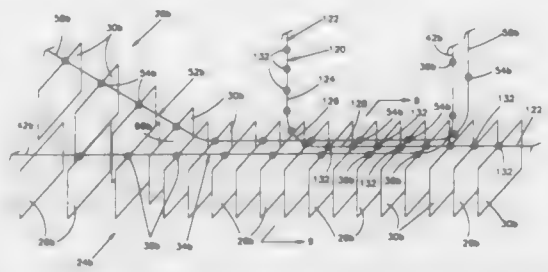
SHEET MATERIAL HANDLING APPARATUS AND METHOD

Mohanjit S. Chandhoke, Clinton, N.Y., assignor to AM International Incorporated, Chicago, Ill.

Filed May 25, 1989, Ser. No. 357,054

Int. Cl.[5] **B65H** *39/00*

U.S. Cl. 270—52 **60 Claims**



1. Sheet material handling apparatus comprising a plurality of hoppers for holding sheet material, said plurality of hoppers including a first group of hoppers and a second group of hoppers, a conveyor assembly defining a plurality of collating spaces movable past each of said hoppers in turn, first feed means for feeding sheet material from the first group of hoppers to each of said collating spaces in turn during movement of said collating spaces past the first group of hoppers to sequentially form a first series of sheet material assemblages, second feed means for feeding sheet material from the second group of hoppers to each of said collating spaces in turn during movement of said collating spaces past the second group of hoppers to sequentially form sheet material assemblages of a second series of sheet material assemblages, first gripper conveyor means for sequentially gripping sheet material assemblages of the first series of sheet material assemblages being transported by said conveyor assembly at a first delivery location, for sequentially conveying the sheet material assemblages of the first series of sheet material assemblages to a receiving location, and for sequentially releasing sheet material assemblages of the first series of sheet material assemblages at the receiving location in an interleaved relationship with sheet material assemblages of the second series of sheet material assemblages, said first gripper conveyor means including a first plurality of grippers each of which is operable from an open condition to a closed condition to clampingly grip a sheet material assemblage of the first series of sheet material assemblages at the first delivery location and operable from a closed condition to an open condition to release a sheet material assemblage of the first series of sheet material assemblages at the receiving location in an interleaved relationship with a sheet material assemblage of the second series of sheet material assemblages, second gripper conveyor means for sequentially gripping sheet material assemblages of the second series of sheet material assemblages being transported by said conveyor assembly a second delivery location, for sequentially conveying the sheet material assemblages of the second series of sheet material assemblages to the receiving location, and for sequentially releasing sheet material assemblages of the second series of sheet material assemblages at the receiving location in an interleaved relationship with sheet material assemblages of the first series of sheet material assemblages, said second gripper conveyor means including a second plurality of grippers each of which is operable from an open condition to a closed condition to clampingly grip a sheet material assemblage at the second delivery location and operable from a closed condition to an open condition to release a sheet material assemblage of the second series of sheet material assemblages at the receiving location in an interleaved relationship with a sheet material assemblage of the first series of sheet material assemblages.

5,007,625

SELECTABLE SHEET OFFSETTING

Henry T. Kremers, Rochester, and Khalid M. Rabb, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 24, 1989, Ser. No. 398,858

Int. Cl.[5] **B42B** *2/00*

U.S. Cl. 270—53 **16 Claims**

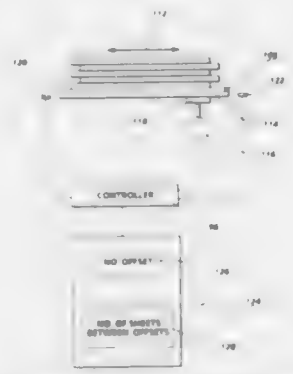
1. An apparatus for regulating offsetting stacks of sheets reproduced from at least one original document, including:

means for controlling offsetting of adjacent stacks of sheets from one another so that in one mode successive stacks of sheets are offset from one another and in another mode offsetting of the stacks of copy sheets from one another is inhibited, said controlling means includes means for selecting the number of sheets of each stack to be offset from one another;

means for receiving and supporting the sheets; and

means, responsive to said controlling means, for moving said receiving and supporting means at selected intervals to offset each stack from one another, said moving means being de-energized in response to said controlling means

inhibiting offsetting of the stacks of copy sheets from one another, wherein the sheets of each stack are uncollated



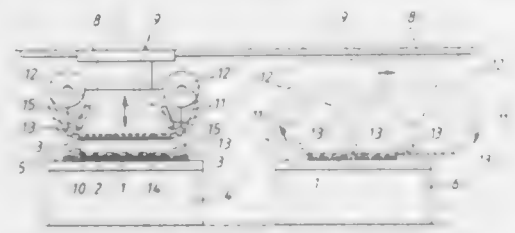
and said controlling means energizes said moving means to offset successive stacks of uncollated sheets.

5,007,626

APPARATUS FOR PICKING UP A FLAT WORK PIECE FROM AN ADHERING SUBSTRATE

Gottfried Blaimschein, Arnhalmweg 33, A-4407 Steyr, Austria

Filed Mar. 7, 1990, Ser. No. 490,054
Claims priority, application Austria, Mar. 17, 1989, 614/89
Int. Cl.[5] B65H 3/20
U.S. Cl. 271—33 10 Claims



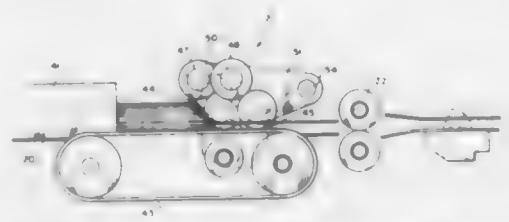
1. An apparatus for picking up a flat work piece from a substrate to which it adheres, which comprises
(a) a pickup table having a surface for receiving the substrate carrying the flat work piece,
(b) a receiving table spaced from the pickup table and having a surface for receiving the flat work piece picked up from the substrate, and
(c) a vertically adjustable tool carrier movable between the tables and carrying a pickup device comprising
(1) a pressure platen configurated to conform to the flat work piece and having opposite ends,
(2) an adhesive strip extending over the pressure platen between the ends thereof,
(3) two guide rollers respectively recessed from the opposite ends of the pressure platen, the guide rollers being arranged to guide the adhesive strip under tension over the pressure platen, and
(4) two reeling drums receiving respective ends of the adhesive strip beyond the guide rollers and rotatable to displace the adhesive strip in an operating direction by reeling the adhesive strip on one of the drums and unreeling the same from the other drum,
(5) the tool carrier being arranged to be lowered until the adhesive strip contacts the flat work piece and then picks up the flat work piece from the substrate on the pickup table surface upon raising the tool carrier, to be moved to the receiving table with the picked-up flat work piece adhering to the adhesive strip and then to be lowered until the flat work piece rests on the receiving table surface, and the adhesive strip is displaceable parallel to the receiving table surface and in a direction opposite to the direction of the tool carrier movement whereby the adhesive strip is pulled off the flat work piece resting on the receiving table surface.

5,007,627

SCUFF SHEET SEPARATING DEVICE

John Giannetti, Penfield; Jerry F. Sleve, Henrietta, and Robert H. Shea, Victor, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 137,775, Dec. 24, 1987, Pat. No. 4,844,435. This application Jun. 15, 1989, Ser. No. 366,399
The portion of the term of this patent subsequent to Jul. 4, 2006, has been disclaimed.
Int. Cl.[5] B65H 3/04
U.S. Cl. 271—35 9 Claims



1. A sheet separating device for separating a sheet from a stack, said separating device including
feed means located in contact with the outside sheet of a received stack,
retard means positioned in contact with said feed means at the leading edge of the stack to prevent double feeding along a feed path between said retard means and said feed means,
said retard means including at least one rotatable retard member and a brake for said retard member,
the coefficients of friction of the feed means and of the retard member being greater than that of the sheets to be fed,
the brake exerting a braking force upon rotation of the retard member sufficient to prevent rotation when two or more sheets are in said path but permitting rotation when only one or no sheets are present in said path, and
a rigid pivot arm supporting said retard means, said pivot arm being pivotable about a pivot located downstream of said retard means, on the same side of the feed path as the retard means and separated from such path by a distance sufficient to cause rotation of the retard means about said pivot into a fed sheet in response to a force against the retard means parallel to the path.

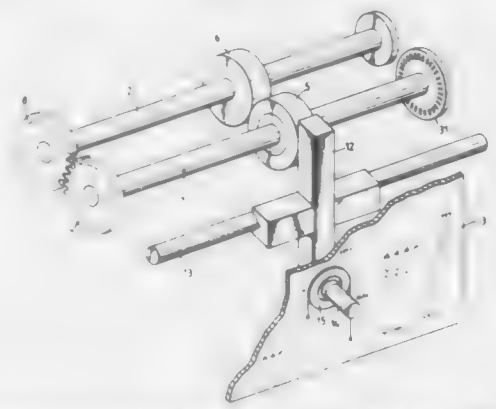
5,007,628

APPARATUS FOR SENSING SHEETS

John A. Skinner, Hampshire, England, assignor to De La Rue Systems, Ltd., United Kingdom

Filed May 26, 1989, Ser. No. 358,202
Claims priority, application United Kingdom, May 31, 1988, 8812893
Int. Cl.[5] B65H 7/02
U.S. Cl. 271—263 9 Claims

1. Apparatus for sensing the passage of sheets through a nip, said apparatus comprising:
a pair of guide members whose surfaces define said nip, said guide members being movable in a cyclic manner to advance the sheets through said nip;
sensing means for sensing the deflection of said guide members relative to one other, said sensing means including a signal generator providing a train of signals the frequency of which varies with the amount of relative deflection of said guide members, and a counter arranged to count said signals from said signal generation during an interval of predetermined length;
detecting means responsive to the output of said sensing means to establish the presence or absence of a sheet between said guide members as a function of a count supplied from said sensing means; and
said sensing means including a substantially flat coil and a core so mounted that relative displacement of said guide members by the passage of a sheet causes relative move-



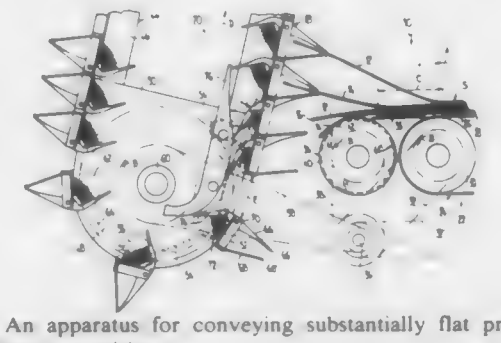
ment between said core and said coil, and said coil being connected to said signal generator and effective for controlling said frequency of said signal generator in accordance with the degree of penetration of said core through said coil.

5,007,629

APPARATUS FOR CONVEYING SUBSTANTIALLY FLAT PRODUCTS, ESPECIALLY PRINTED PRODUCTS

Jürg Eberle, and Hans-Ulrich Stauber, both of Hinwil, Switzerland, assignors to Ferag AG, Hinwil, Switzerland

Filed Jan. 3, 1989, Ser. No. 292,989
Claims priority, application Switzerland, Jan. 8, 1988, 50/88
Int. Cl.[5] B65H 5/02
U.S. Cl. 271—277 22 Claims



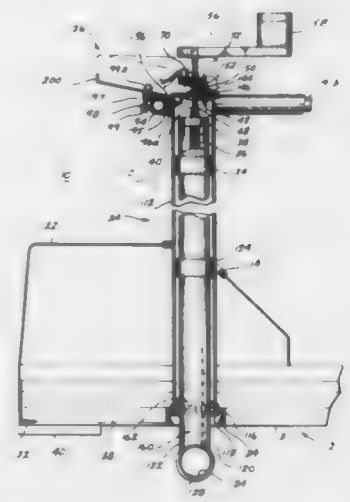
1. An apparatus for conveying substantially flat printed products, comprising:
an infeed device for the infeed of products in the imbricated formation in which a pair of two superposed products are laid one on top of the other such that all like parts coincide, and in which said pair of two superposed products bear in imbricated formation upon a pair of upstream products with respect to a predetermined direction of travel of the imbricated formation;
said infeed device defining a conveying plane for the products and delivering the products to a take-over region;
a conveying device having a predetermined direction of travel;
said conveying device being provided with individually controllable grippers arranged in succession in said predetermined direction of travel of said conveying device;
said individually controllable grippers serving for engaging the infed products at leading product edges at the take-over region;
said predetermined direction of travel of the conveying device extending from an underside of the products upwardly and transversely with respect to the conveying plane of the infeed device; and
a separation device for spacing from one another at the take-over region the leading edges of the pairs of superposed products in order to introduce into each gripper a single product.

5,007,630

EXERCISE TREADMILL

Kenneth G. Real, Redmond, and Gary M. Bang, Edmonds, both of Wash., assignors to Precor Incorporated, Bothell, Wash.

Filed Oct. 7, 1988, Ser. No. 255,546
Int. Cl.[5] A63B 22/02
U.S. Cl. 272—69 30 Claims



1. An exercise treadmill, comprising:
(a) a frame structure;
(b) a deck for supporting an endless belt defining a running surface, the deck mounted on the frame structure;
(c) a self-contained lift mechanism extending upwardly from a forward, central portion of the frame structure to extend upwardly a substantial elevation above the running surface for raising and lowering the forward portion of the treadmill;
(d) wherein the self-contained lift mechanism comprises:
(i) an elongate outer post assembly secured to a forward, central portion of the treadmill frame structure and extending upwardly a substantial elevation above the running surface;
(ii) a ground-engaging inner post assembly telescopically disposed within the outer post assembly to extend downwardly beneath the outer post assembly; and,
(iii) means for selectively sliding the inner post assembly relative to the outer post assembly to extend the lift mechanism to raise the forward portion of the treadmill, and to retract the lift mechanism to lower the forward portion of the treadmill;
(e) means for engaging and disengaging the self-contained lift mechanism with the frame structure from the underside of the frame structure; and,
(f) means for detachably securing a lower end portion of the self-contained lift mechanism to the underside of the treadmill frame structure and means fixed to the ground engaging inner post assembly to prevent the inner post assembly from rotating relative to the treadmill frame structure while allowing the inner post assembly to raise and lower relative to the treadmill frame structure.

5,007,631

STRUCTURE OF CLIMBING EXERCISER WITH A COUNTER-WEIGHT FREEWHEEL MECHANISM

Leao Wang, No. 1, Lane 154, Charng Long Rd., Toupienkeng Taiping Hsiang, Taichung Hsien, Taiwan

Filed May 22, 1990, Ser. No. 526,590
Int. Cl.[5] A63B *23/04*
U.S. Cl. 272—70 **6 Claims**



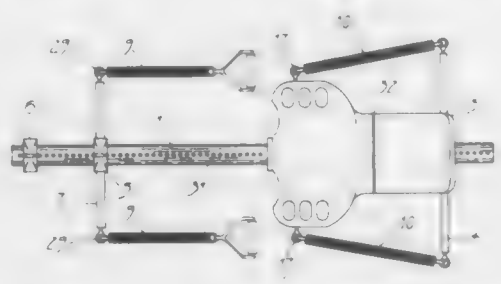
1. A climbing exerciser comprising:
(a) a generally vertical frame body
(b) first and second pedals each slidably attached to a lower portion of the frame body so as to move along a predetermined path of travel;
(c) first and second handles adapted to be gripped by the user;
(d) connecting means comprising a first rod slidably attached to the frame body and having the first handle and first pedal attached thereto; and, a second rod slidably attached to the frame body and having the second handle and second pedal attached thereto for connecting the first handle to the first pedal and the second handle to the second pedal such that movement of each pedal causes similar movement of each associated handle;
(e) a freewheel rotatably attached to the frame body; and,
(f) drive means interconnecting each pedal and the freewheel such that downward movement of each pedal along its path of travel causes rotation of the freewheel.

5,007,632

COMBINATION SIT-UP, ROWING, ARM, LEG AND FOOT EXERCISE DEVICE

William T. Wilkinson, P.O. Box 378, Chesapeake City, Md. 21915

Filed Oct. 12, 1989, Ser. No. 420,375
Int. Cl.[5] A63B *69/06, 21/04*
U.S. Cl. 272—72 **19 Claims**



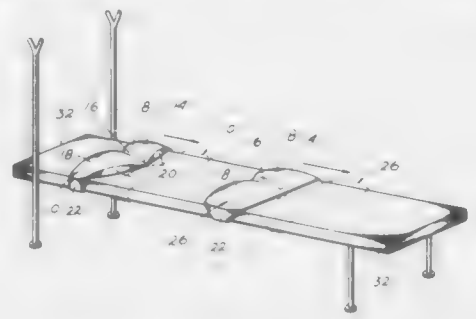
1. A combination sit-up, rowing, arm, leg, foot exercise device comprising:
a center pole with front and rear ends and top and bottom surfaces having a plurality of holes along the top surface and a corresponding plurality of holes along the bottom surface;
a seat with a front edge, two side edges, rear edge, and top and bottom surfaces rigidly attached to the center pole; a seat spring catch rigidly mounted to each side edge of the seat;
a plurality of seat rocker legs attached to the bottom surface of the seat;
a plurality of telescoping legs mounted perpendicularly to the seat bottom surface;
a seat back with a bottom edge and a top edge with the bottom of the seat back mounted to the rear edge of the seat with a hinge joint;
a seat cross pole with two ends removably mounted to the top edge of the seat back;
a seat cross pole spring catch mounted to each end of the rear seat cross pole;
a plurality of sit-up assist elements with two ends each end having a hook, one hook engaging the seat catch and the other hook engaging a corresponding seat cross pole catch; a rear accessory catch rigidly mounted to the back of the seat back;
a foot cross pole bracket engaging the center pole such that the foot cross pole bracket may transverse along the center pole in the lengthwise direction;
a foot cross pole with two ends rigidly attached to the foot cross pole bracket such that the foot cross pole is perpendicular to the center pole;
a foot cross pole bracket spring catch rigidly mounted to the foot cross pole bracket;
a foot cross pole bracket lock rigidly fixing the foot cross pole bracket to the center pole using one of the holes in the top and bottom surface of the center pole;
a center foot cross pole spring catch rigidly mounted to the foot cross pole bracket;
a center foot cross pole spring catch rigidly mounted to the foot cross pole bracket;
a center pole spring catch removably mounted to the center pole using one of the plurality of holes contained in the center pole between the seat and the foot cross pole bracket;
a leg tension elements attached to the center pole spring catch and the center foot cross pole spring catch;
a plurality of foot treadles with top and bottom ends pivotably mounted to the foot cross pole;
a foot treadle spring catch mounted on the bottom end of the foot treadle;
a front leg mounted to the center pole at the front end of the center pole;
a front leg spring catch mounted to the front leg;
a plurality of foot treadle tension elements with two ends, each end having a hook, one hook engaging the front leg spring catch and the other hook engaging a foot treadle spring catch;
a plurality of rowing tension elements with two ends, one end having a hook and the other end having a handle for grasping, the hook end of the rowing tension elements engaging the corresponding foot cross pole spring catch;
a rear support bracket removably attached to the center pole;
a rear support catch and lock which secures the rear support bracket to the center pole using the holes in the center pole;
a seat support arm which attaches to the rear support catch and the rear support bracket
a plurality of seat back tension elements mounted to the seat spring catch at one end and at the other end mounted to the rear support lock and spring catch.
a body belt consisting of two sections each with two ends, one end of each section attached to the seat back and a means for coupling the other ends to one another;
a plurality of rear arm tension elements attached to the rear support lock and spring catch.

5,007,633

SPINAL COLUMN SUPPORT ATTACHMENTS FOR A WEIGHT LIFTER'S BENCH

Brett J. Lemire, 5606 Laguna Oaks Dr., Elk Grove, Calif. 95758

Filed Apr. 20, 1990, Ser. No. 512,134
Division of Ser. No. 385,380, Jul. 27, 1989, Pat. No. 4,953,857
Int. Cl.[5] A63B *21/078*
U.S. Cl. 272—123 **2 Claims**



1. In combination, a weight lifter's bench suitable for a human to lay on in a supine position to lift weights, said bench having a first and a second spinal column support pad positioned on an upper surface of said bench, each said support pad being releasably and justably affixed stationary by strapping means to said bench:
each said support pad having a bottom surface placed against said upper surface of said bench, each said support pad having a top surface oppositely disposed from said bottom surface, each said sport pad further having two ends oppositely disposed from one another, each end placed adjacent a side edge of the bench, each said support pad further having two narrow edges oppositely disposed from one another extending between said two ends of said support pad;
each said support pad having a generally centered elongated narrow groove in said top surface extending lengthwise generally from one said side edge of said support pad to said oppositely disposed side edge of said support pad, said narrow groove dividing said top surface of said support pad into two generally rounded domes, said rounded domes sized and placed to support a human on either side of the spinal column thereby stabilizing and maintaining a generally normal spinal column curvature, said narrow groove sized and placed to provide open space for receiving and generally relieving pressure on an area of the spinal column during support on either side thereof by said rounded domes, said first support pad positioned on said bench toward a head end of said bench to support a human's curvical spinal curvature, said second support pad positioned on said bench to support the human's generally normal lumbar spinal curvature simultaneous with said first support pad supporting the human's cervical spinal curvature.

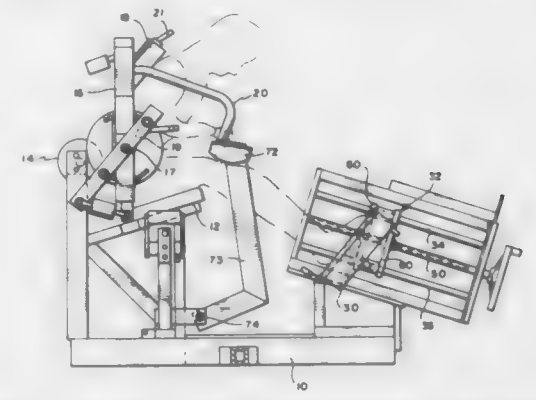
5,007,634

METHOD AND APPARATUS FOR RESTRAINING THE LEGS AND PELVIS FOR EXERCISING AND/OR TESTING THE LOWER TRUNK OF THE HUMAN BODY

Arthur A. Jones, 1155 NE. 77th St., Ocala, Fla. 32670

Continuation-in-part of Ser. No. 60,679, Jun. 11, 1987, Pat. No. 4,836,536, Ser. No. 236,367, Aug. 25, 1988, Pat. No. 4,902,009, and Ser. No. 181,372, Apr. 14, 1988, Pat. No. 4,834,365, which is a continuation-in-part of Ser. No. 60,679, , said Ser. No. 236,367, is a continuation-in-part of Ser. No. 60,679,. This application Jun. 5, 1989, Ser. No. 361,055
Int. Cl.[5] A63B *21/00*
U.S. Cl. 272—134 **13 Claims**

1. In combination with a machine for exercising lower trunk portions of the human body and including a seat, apparatus for restraining movement of the pelvis of a person seated on said seat, the apparatus comprising a pelvic pad located rearwardly of said seat to engage the body at the rear of the pelvis, and leg restraining apparatus for preventing movement of the pelvis comprising in combination, footrest means for supporting the feet with the legs bent at the knees and with the femurs extending downwardly and rearwardly of the seat, and a thigh restraining means movable between a first position spaced from the thighs and a second position overlying and engaging the



thighs to prevent upward movement of the legs while lower movement of the legs is prevented by said footrest means, and means mounting the footrest means for adjustable movement along a generally horizontal direction towards or away from the legs of the person to be restrained for placing the legs in a desired position to be restrained, and wherein said footrest means extends at an angle to the horizontal for supporting the feet at said angle to the horizontal.

5,007,635

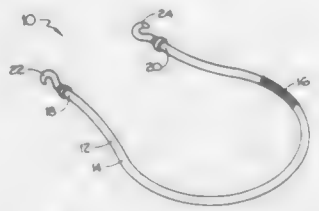
EXERCISE DEVICE

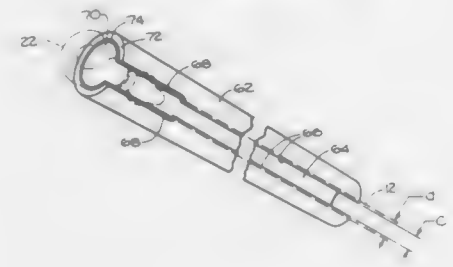
Ralph Tiller, 1534 Old Creek Ct., Cardiff, Calif. 92007

Filed Apr. 12, 1989, Ser. No. 336,720
Int. Cl.[5] A63B *21/06, 21/00*
U.S. Cl. 272—117 **14 Claims**

6. An exercise device, comprising:
an elongated elastic hollow tube having a first and second end, said hollow tube being filled with a fluid;
hook means fixedly mounted in said first and second ends for detachably securing said tube to said hook means and for sealing said fluid within said first and second ends of said tube;
said tube being filled with said fluid so that compression of one portion of said fluid filled tube results in elastic expansion of other portions of said tube; and

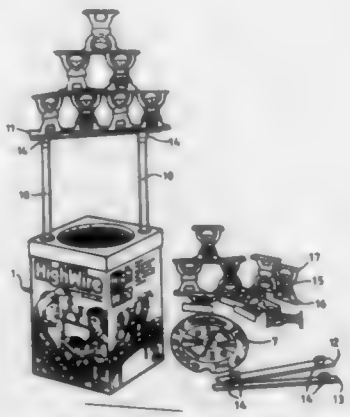
a substantially cylindrical hollow handle, said handle having a slot formed therein for removably receiving said first





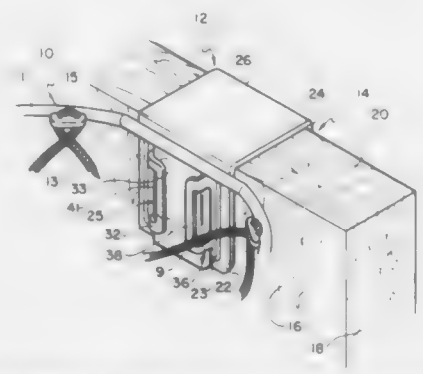
end including said hook means into said hollow handle for holding said end of said tube within said handle.

5,007,636
GAME APPARATUS
David A. Pagani, 10C Seaview Mansion, Discovery Bay, Lantau, Hong Kong
Filed Jan. 17, 1990, Ser. No. 466,202
Claims priority, application United Kingdom, Jan. 17, 1989, 8900991
Int. Cl.[5] A63F 7/36
U.S. Cl. 273—448 12 Claims



1. A Game Apparatus comprising a plurality of game apparatus elements, a container for the elements and a lid for the container, an upper surface of the container being provided with means for mounting at least some of the game apparatus elements upon the container so that the container functions as a base for the assembled game apparatus and the lid of the container including means for randomly choosing one of a plurality of instructions for use in playing a game with the game apparatus.

5,007,637
SELECTIVELY MOUNTABLE BASKETBALL HOOP STRUCTURE
Charles F. Foley, Charlotte, N.C., assignor to InnoLand, Inc., Pineville, N.C.
Filed Aug. 16, 1989, Ser. No. 394,640
Int. Cl.[5] A63B 63/08, 63/04
U.S. Cl. 273—1.5 R 13 Claims



1. A selectively mountable hoop structure for use in playing basketball-type games, comprising:
a hoop member defining an opening adapted for passage therethrough of a ball, said hoop member including a mounting portion; and
a bracket for selective mounting of said hoop member, said bracket being of a generally U-shape for selective alternative receipt of an exposed edge of a building door and like structural members of buildings, said bracket having means compatible with said mounting portion of said hoop member for receiving said mounting portion selectively in alternative first and second orientations relative to said bracket for selectively altering the relative verticality and horizontality of said hoop member, said mounting portion receiving means including a pair of spaced tabs projecting from said bracket and defining therebetween a first slideway for insertion of said mounting portion of said hoop member in said first orientation, said tabs having respectively aligned openings therethrough defining a second slideway for insertion of said mounting portion of said hoop member in said second orientation.

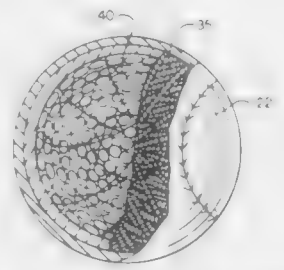
5,007,638
PITCHBACK DEVICE FOR ATHLETIC PRACTICE
Benjamin Yukl, 29308 Eddy Rd., Wickliffe, Ohio 44092
Filed Feb. 17, 1987, Ser. No. 15,422
Int. Cl.[5] A63B 69/40
U.S. Cl. 273—26 A 4 Claims



1. In a trampoline comprising

a closed, rigid planar frame having a plurality of substantially parallel and equal length frame legs extending therefrom for supporting said frame on a support surface,
said frame legs being attached to the perimeter of said frame to form the corners of a rectangular configuration, said planar frame having a resilient material within its perimeter, said material being stretched in the plane of said frame and attached thereto by elastic means to thereby form a rebound surface;
the improvement comprising support means for converting said trampoline to a ball rebound surface, said support means comprising
a support member comprising first and second parallel legs and a generally perpendicular cross leg, each of said first and second legs having a first and second end, and said first ends of said first and second legs being joined by said cross leg;
each of said first and second legs having its second end pivotally attached intermediate the ends of a respective frame leg at one end of said rectangular configuration, and
at least one elongated brace member having one of its ends pivotally attached to and intermediate the ends of a frame leg at the other end of said rectangular configuration;
said first leg of said support member having attachment means intermediate its ends for attachment of said brace member, said brace member having a plurality of attachment means along the length thereof, said attachment means on said first leg and said brace member cooperating to adjustably orient said planar frame in a plurality of inclined positions relative to a support surface, and
said support member and said brace member being pivotable into a substantially common plane beneath said planar frame such that said planar frame will be supported in a substantially horizontal position only by said frame legs.

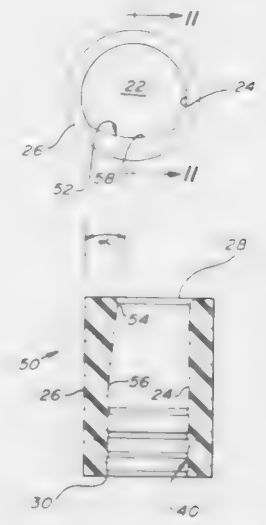
5,007,639
GAME BALL
Dean R. Watson, Algonquin, Ill., and Thomas E. Gallagher, IV, Colorado Springs, Colo., assignors to T. G. & Watson, Inc., Algonquin, Ill.
Filed Sep. 10, 1990, Ser. No. 580,084
Int. Cl.[5] A63B 37/06, 37/12
U.S. Cl. 273—60 R 7 Claims



1 A game ball for use in playing such games as baseball, softball or the like comprising:
a plurality of film encased bubbles arranged to form a substantially spherical object, and
an outer covering surrounding said bubbles.

5,007,640
FINGER INSERT FOR A BOWLING BALL
David A. Bernhardt, 12219 Craven, Utica, Mich. 48087
Continuation-in-part of Ser. No. 498,009, Mar. 23, 1990. This application Apr. [illegible], 1990, Ser. No. 513,[illegible]
Int. Cl.[5] A63B 43/02
U.S. Cl. 273—63 A 14 Claims

1 An insert for a finger hole in a bowling ball, comprising:
a tubular body having an outer wall surface adapted to be inserted into a finger hole of the bowling ball;
said body having an inner wall surface extending substantially coaxial to a central axis of said outer wall surface and defining first and second finger openings at opposite terminal ends of said body which are adapted to receive a bowler's fingertip therein,
ridge means for generating additional gripping force during delivery of the ball, said ridge means extending along the periphery of said inner wall surface adjacent said second finger opening;



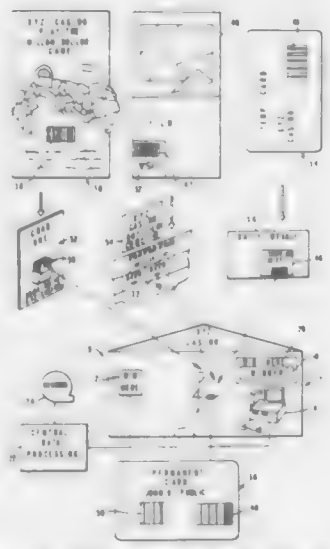
surface means for providing greater fingertip contact area than is provided by said ridge means on a portion of said inner wall surface adjacent said first finger opening adapted for engagement with the bowler's fingertip, said surface means comprising a thickened finger pad which is a generally arcuate surface tapering from a maximum to a minimum thickness from said first finger opening toward said second finger opening, respectively, so as to blend into said inner wall surface

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5,007,641
GAMING METHOD
Charles B. Seidman, Merion, Pa., assignor to Take One Marketing Group, Inc., Merion, Pa.
Filed Sep. 20, 1989, Ser. No. 410,101
Int. Cl.[4] A63B 71/00
U.S. Cl. 273—138 A 21 Claims

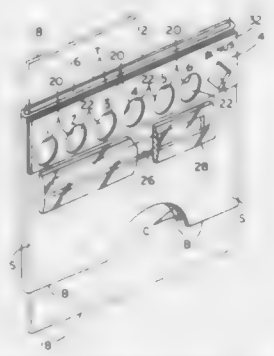
1. A promotional gaming method comprising the steps of
(a) distributing tokens to patrons;
(b) automatically reading a code on each of said tokens at a redemption location within an establishment upon presentation of said tokens by patrons and automatically comparing the code on each presented token with one or more predetermined winning codes;
(c) awarding prizes to only some of the patrons who present tokens bearing said code matching said one or more predetermined winning codes;
(d) said tokens including a multiplicity of tokens bearing a common machine readable code which common code matches said one or more predetermined winning codes, said step of awarding prizes including the step of randomly assigning prizes to patrons who present tokens bearing said common code, said step of randomly assigning said prizes being performed upon presentation of said

tokens, said step of randomly assigning said prizes including the step of actuating a random selection process in



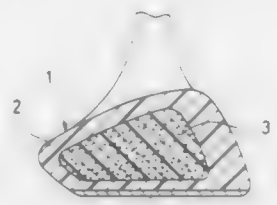
response to presentation of a token bearing said common code.

5,007,642
COMPARATOR
Mark Henry, 558 Ramona St., Sierra Madre, Calif. 91024, and Hillary Saenz, 724 E. Chestnut St., Glendale, Calif. 91205
Filed Mar. 15, 1990, Ser. No. 493,710
Int. Cl.[5] A63F *3/06*
U.S. Cl. 273—148 R **11 Claims**



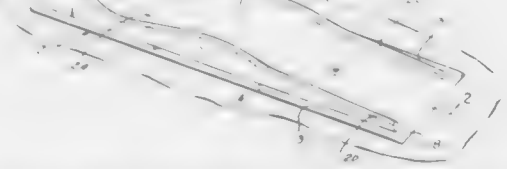
1. A comparator for visually comparing a first series of the numbers written on the comparator with a second series of numbers imprinted on a sheet of paper, comprising:
(a) a backing member;
(b) facing means overlaying said backing member for cooperation therewith to define a passageway through which the sheet of paper can be passed, said facing means having a plurality of transversely spaced apertures adjacent said viewing means and further including:
(i) a writing surface accessible through said apertures, whereby the first series of numbers can be written on said writing surface; and
(ii) viewing means for viewing the second series of members imprinted on the sheet of paper as the sheet of paper is passed through said passageway.

5,007,643
GOLF CLUB HEAD
Takaharu Okumoto, Chigasaki; Tatsuo Nishimoto, and Hideaki Wakaki, both of Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan
Filed Nov. 3, 1989, Ser. No. 431,120
Claims priority, application Japan, Nov. 4, 1988, 63-277429
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 R **5 Claims**



1. A golf club head comprising an outer shell made from a fiber-reinforced resin and an inner core made of a syntactic foam formed in the outer shell, said syntactic foam comprising a matrix resin containing glass microballoons ranging from 25 to 45 parts by weight per 100 parts by weight of the matrix resin and whiskers ranging from 3 to 8 parts by weight per 100 parts by weight of the matrix resin mixed therein.

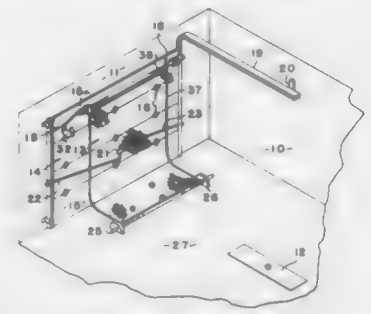
5,007,644
GOLF PUTTING PRACTICE TARGET
Edward A. Bluthardt, 6612 Lakepointe, Utica, Mich. 48089, and Jeffrey L. Goins, 55605 Card Rd., New Haven, Mich. 48048
Filed Apr. 23, 1990, Ser. No. 512,794
Int. Cl.[5] A63B *57/00, 67/02*
U.S. Cl. 273—178 B **12 Claims**



1. A golf putting practice target comprised of a target piece adapted to rest on a supporting surface; said target piece formed with an entrance ramp comprised of an upwardly ascending smooth and uninterrupted surface bounded by confining sidewalls spaced apart a distance on the order of several inches;
said entrance ramp rising at a very gentle inclination to a peak,
said entrance ramp thereafter descending into a curved intermediate depression, bounded at the rear by a back ramp surface rising to a peak at a height above said entrance ramp, said intermediate depression and back ramp being smooth and uninterrupted.

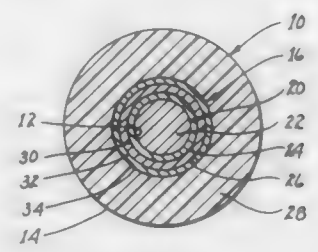
5,007,645
GOLF PRACTICE DEVICE
William Weigl, 1805 Conwood Dr., and George Churley, 174 Merry Robin Rd., both of Troy, Ohio 45373
Filed Aug. 29, 1989, Ser. No. 399,994
Int. Cl.[5] A63B *69/00*
U.S. Cl. 273—181 F **12 Claims**

1. A golf practice device for use within a garage and for mounting on the interior of a garage door in both a use condition and a storage condition while enabling raising and lowering of said door whether said device is in either of said use or storage conditions,
said device comprising a ball-striking net against which light-weight golf balls can be driven from a golfer's practice position within said garage, said net having a height generally at least as high as said door and a horizontal width greater than half the door height,



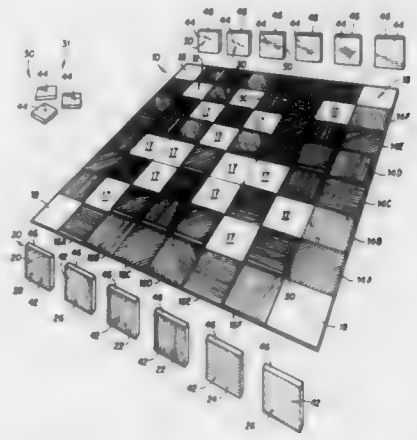
bracket means mounted on the interior upper half of the door for suspending the net at its upper edge inwardly of said door when in use condition whereby to arrest balls striking the net, and, when so suspended, being spaced inwardly from the door, said bracket means also supporting the net in storage condition on the inside of the door, and,
means for maintaining the bottom of the net inwardly of and away from the door when the net is in its use condition.

5,007,647
GOLF BALL AND METHOD OF MAKING SAME
James D. Gulick, Peoria, Ariz., assignor to Sports Glow, Inc., Scottsdale, Ariz.
Filed Dec. 15, 1989, Ser. No. 452,259
Int. Cl.[5] A63B *43/06, 37/12*
U.S. Cl. 273—213 **9 Claims**



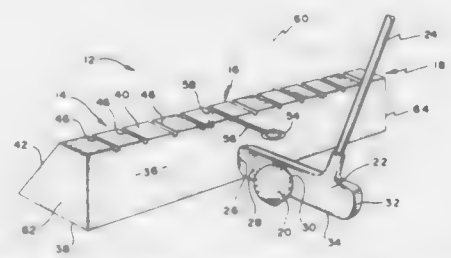
9. A glow-in-the-dark golf ball comprising, in combination:
a core member having an exterior surface;
a cover encircling said core member and having an exterior surface; and
glow-in-the-dark glowing means continuously encircling said core member and located between said exterior surface of said core member and said exterior surface of said cover for receiving at least one of light and heat energy to generate a glow of light and for emitting said glow of light that is visible in a dark environment after receiving said at least one of light and heat energy.

5,007,648
GAME APPARATUS
Alvin F. Polan, 126 Spectator La., Owings Mills, Md. 21117
Filed Nov. 17, 1989, Ser. No. 437,690
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—236 **8 Claims**



1. A game apparatus, comprising:
(a) a playing board with 36 unmarked playing squares forming a square array having six horizontal ranks and six vertical rows,
(b) a border extending around the square array, the border having six border squares on each side of the square array adjacent to each rank and row, with one of four distinct indicia marked upon each border square, distinct indicia being marked throughout the border spares with no adjacent border square having a similar indicia;
(c) four sets of ten playing pieces, each having a front face and a back face, with each set of ten playing pieces having a common indicia marked on the front face matching one of the four distinct indicia marked upon the border squares; the four sets of ten playing pieces each having the

5,007,646
GOLF PUTTING PRACTICE DEVICE
James A. Baber, 6447 Via Arboles, Anaheim, Calif. 92807, and Joseph J. Cibere, 1541 Calle Artigas, Thousand Oaks, Calif. 91360
Filed Jul. 31, 1990, Ser. No. 560,782
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—183 E **10 Claims**



1. A golf putting practice device comprising:
a base having an elongated, generally vertical, planar putter guide surface;
at least a first groove formed in an upper face of said base and extending generally perpendicular to said putter guide surface; and
a sight adjustably positionable in said groove and having a sight loop formed at a first end of a sight arm, said sight arm extending outwardly from said base in a cantilever manner to position said sight loop above a sweet spot of a golf club when a toe portion of a golf club is in abutting engagement with said planar putter guide surface of said base of said golf putting practice device.

back face marked with a fifth indicia common to all four sets of ten playing pieces; and

(d) wherein a playing piece is selectively positioned each in turn upon one of the unused playing squares on the square array front face up without matching indicia on the front face of any adjacent playing piece or adjacent border indicia, and once played each playing piece remains in place on the selected playing square for the duration of the game.

5,007,649

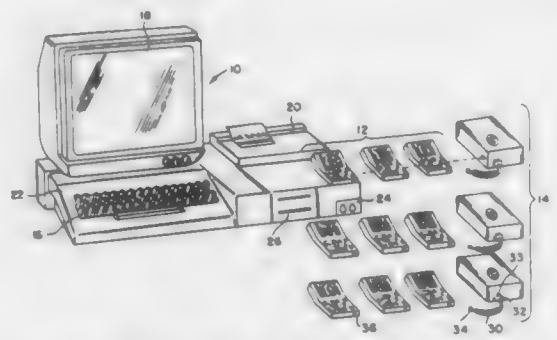
GAMING SYSTEM WITH SYSTEM BASE STATION AND GAMING BOARDS

John Richardson, San Diego, Calif., assignor to Selectro-Vision, Ltd., San Diego, Calif.

Continuation-in-part of Ser. No. 820,521, Jan. 16, 1986, Pat. No. 4,848,771. This application Mar. 28, 1989, Ser. No. 329,910

Int. Cl.[5] A63F *3/06*

U.S. Cl. 273—237 **30 Claims**



1. A method for managing money during the playing of a bingo game, including the steps of:

(a) electronically storing in a system base station the total number of bingo cards sold during the course of a gaming session comprised of a scheduled sequence of one or more successive, independent bingo games;

(b) electronically storing in a system base station the amount of all winning bingo card payouts made during said gaming session;

(c) electronically storing in a system base station a validation code which uniquely identifies each specific said gaming session;

(d) downloading said validation code and data representing at least one bingo card into at least one handset;

(e) electronically storing said validation code and said bingo card in memory means of said handset; and

(f) confirming a win condition of said handset by comparing said validation code electronically stored in said system base station with said validation code electronically stored in said handset, and producing a win indication if said validation codes are identical.

5,007,650

METHOD OF PLAYING A BOARD GAME OF COLLEGE SOCIAL LIFE

Keith Reed, 2211 Sweetbriar Rd., Morrisville, Pa. 18067, and Keith Coleman, 25 Spinythorn Rd., Levittown, Pa. 19506

Filed Sep. 21, 1989, Ser. No. 410,428

Int. Cl.[5] A63F *3/00*

U.S. Cl. 273—249 **4 Claims**

1. A method of playing a board game representing various social and/or non-academic aspects of college or university life, involving various physical interactions between the players or teams of said game and the consumption of beverages by said players or said teams of said game according to the rules of said game, comprising;

selection of a first player or team and subsequent players or teams by chance means,

said first player or team selecting a designated first playing piece,

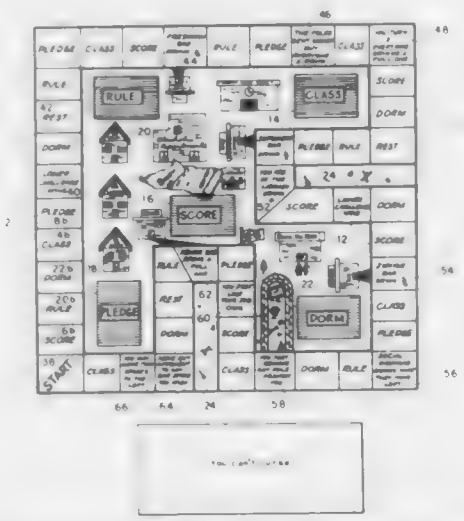
said subsequent players or teams selecting remaining playing pieces,

said first and said subsequent players or teams placing said first and said remaining playing pieces upon the starting point of the playing path of the game board of said board game,

said first and said subsequent players or teams in turn determining subsequent positions for said playing pieces within spaces along said playing path by chance means,

following a first subset or second subset of instructions contained in said spaces as determined by said positions of said playing pieces upon said playing path,

drawing a game card of the appropriate class as determined by said class of said second subset of said instructions, if



said position of said playing piece corresponds with one of said classes of said second subset of said instructions upon said playing path, said cards containing instructions for one of the following: physical interaction between players, consumption of beverages, rules imposing a physical limitation on a player drawing the card,

performing said physical interaction between said players or said teams, said consumption of said beverages by said players or said teams as required by said instructions and/or said game card, and/or abiding by any rule provided by a rule containing game card as required and appropriate according to said position of said playing piece upon said playing path, said first subset of instructions including removing any one of said rules for a particular player or team, and

continuing said playing of said game in the above manner until the game is completed.

5,007,651

KIT FOR BOARD GAMES

Stanley I. Mason, Jr., 61 River Rd.; Elizabeth L. Fuller, 72 River Rd., both of Weston, Conn. 06883, and Roy E. Doty, 35 Grey Hollow Rd., Norwalk, Conn. 06850

Filed Dec. 12, 1988, Ser. No. 282,747

Int. Cl.[5] A63F *3/00*

U.S. Cl. 273—256 **3 Claims**

1. A board game kit including

movable playing pieces,

movable barriers,

a game board, said board having a circumferential track thereon, said track including pluralities of sequential spaces to receive said movable pieces, as a player moves them around said track, said sequential spaces running the width of said track, and barrier spaces running across the

width of said tracks to receive said movable barriers, said barrier spaces being spaced from one another and positioned between pairs of said pluralities of sequential spaces,

said board including at least one diametrical track interconnecting opposite sides of said circumferential tracks, said diametrical track being formed of additional said sequential spaces to receive said movable pieces, and



said movable barriers being shaped for complementary, frictional interfit with one another such that said barriers may be secured to one another end to end or stacked one above another,

whereby said one or more of said movable barriers can be positioned in a said barrier space thereby providing variable height and length deterrents to moving said movable pieces in said circumferential track while playing said game.

5,007,652

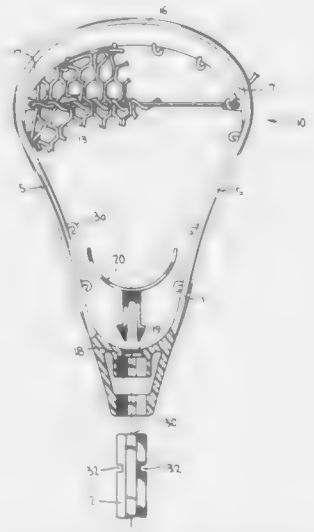
LACROSSE STICK

Richard B. C. Tucker, Baltimore; Jackie L. Davis, Aberdeen, and Fielding H. Lewis, Jr., Queenstown, all of Md., assignors to Wm. T. Burnett & Co., Inc., Baltimore, Md.

Continuation-in-part of Ser. No. 414,258, Sep. 29, 1989, Pat. No. 4,940,243. This application Jul. 10, 1990, Ser. No. 550,562

Int. Cl.[5] A63B *59/02*

U.S. Cl. 273—326 **4 Claims**



1. A head for a lacrosse stick comprising a generally V-shaped frame adapted to receive a web, said frame being defined by two side walls joined at a juncture and diverging therefrom, a transverse wall joining the ends of said side walls opposite of said juncture, and tab means positioned on at least said side walls for securement of a web onto said frame, said tab means being integrally formed with at least said side walls, and constructed and arranged to have a slot therein to permit a web string to be snapped into said tab, said slot being constructed and arranged to retain said string.

5,007,653

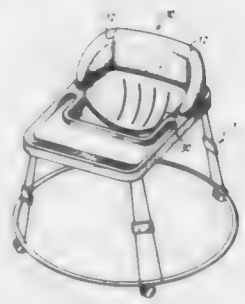
HEAD REST STRUCTURE FOR BABY STROLLERS

Kin K. Chen, No. 24, Lane 53, Sec. 3, Anho Rd., Tainan City, Taiwan

Filed Mar. 26, 1990, Ser. No. 498,589

Int. Cl.[5] B62B *9/00*

U.S. Cl. 280—87.051 **1 Claim**



1. In baby strollers of the type having a cushioned head rest filled with foam material, a seat back, and securing means for supporting and mounting the combination of the seat back and the cushioned head rest on a frame of the baby stroller, wherein the improvements comprise:

said cushioned head rest comprising a base part and an upper part, said upper part having substantially an inverted U-shaped cross-section providing a cavity and having a pair of side surfaces extending along said foam material which is received within said cavity and outwardly extending rim portions at the base of said side surfaces, and base part extending below and across said upper part and said rim portions being fixedly secured to the underlying portions of said base part, said seat back being secured to one of said fixedly secured rim and base portions of said cushioned head rest; and

said securing means being disposed in said cavity directly under said foam material within said cushioned head rest and said base part sealing the cavity and thereby said foam material against leakage thereunto, said securing means extending through said base part and comprising a threaded fastener for engagement with the frame of the baby stroller.

5,007,654

TRUCK STEP

Charles J. Sauber, 10 N. Sauber Rd., Virgil, Ill. 60182

Filed Jun. 29, 1989, Ser. No. 373,250

Int. Cl.[5] B60R *3/02*

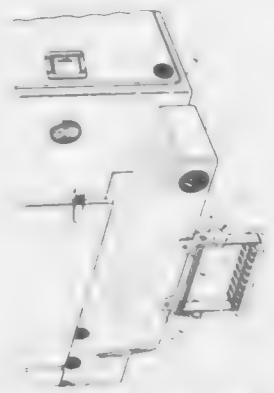
U.S. Cl. 280—166 **5 Claims**

1. For use in connection with a vehicle body structure, step means attachable to said vehicle body structure comprising:

a frame member having means for securing to the vehicle body structure, said frame member including an inverted U-shape bracket having spaced apart legs which are disposed in substantially vertical parallel planes, each leg having a substantially triangular aperture, one point of the triangular aperture extending downward with respect to the leg, and at least one leg having a V-shaped guide channel having a detent; and

a step member comprising a platform and substantially paral-

lel arms coupled to opposite sides of the platform, each said arm having an axial pin and at least one arm having a guide pin, said pins being disposed such that the guide pins are movable in the guide channels and the axial pins are received in the apertures and define a rotational axis of the step member, said axial pins being movable in the apertures to shift the rotational axis of the step member, said axis having a first position such that the axial pins are



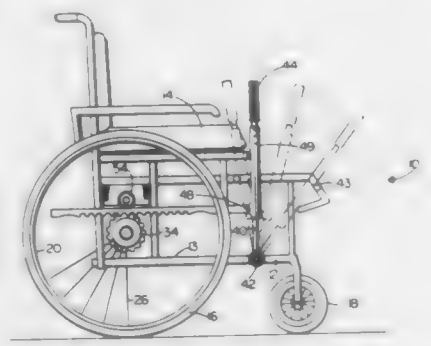
seated in the downwardly extending points of the apertures and the guide pins are engaged in the detent under the force of gravity and the platform is rigidly coupled to the frame member so that the platform may be used as a step, and a second position such that the axial pins are not seated in the downwardly extending points of the apertures and the guide pins are movable in the guide channel whereby the step member may be swung forwardly or rearwardly upon contact with an obstruction.

5,007,655

VARIABLE SPEED LEVER PROPELLED WHEELCHAIR

Mark Hanna, 2813 Bunch Walnuts Rd., Chesapeake, Va. 23322

Filed Jan. 5, 1990, Ser. No. 461,425
Int. Cl.[5] B62M *1//16*
U.S. Cl. 280—250.1 **13 Claims**



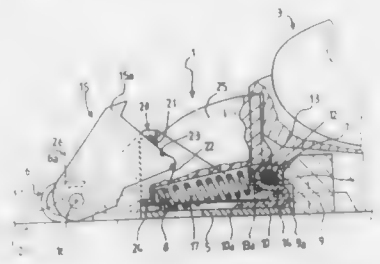
1. A manually-propelled device comprising:
a frame having a seat for supporting an individual;
means supporting said frame for locomotion of said device including a pair of wheels carried by said frame adjacent opposite sides thereof;
means for mounting said wheels for rotation relative to said frame; and
means carried by said frame and operable by the individual seated in the device for propelling said device in a forward direction, including at least one lever pivotally connected to said frame, a rotatable drive sprocket carried by said frame for rotating at least one of said wheels in a direction to propel the device in a forward direction, and means interconnecting said lever and said sprocket for rotating said drive sprocket to propel the device in the forward direction;
said interconnecting means including an element movable through two positions relative to and in engagement with said sprocket, said element in said first position thereof relative to said sprocket engaging and driving said sprocket, said element in said second position thereof relative to said sprocket engaging said sprocket in non-driving relation thereto thereby disconnecting the drive connection between said lever and said sprocket and freeing said one wheel for rotation.

5,007,656

CROSS-COUNTRY SKI BINDING WITH AUTOMATIC CLOSURE

Eric Girault, Seynod, and Paul Arnulf, Alby sur Cheran, both of France, assignors to Salomon S.A., Annecy Cedex, France

Filed Aug. 2, 1989, Ser. No. 388,387
Claims priority, application France, Aug. 5, 1988, 88 10773
Int. Cl.[5] A63C *9/20*
U.S. Cl. 280—615 **47 Claims**



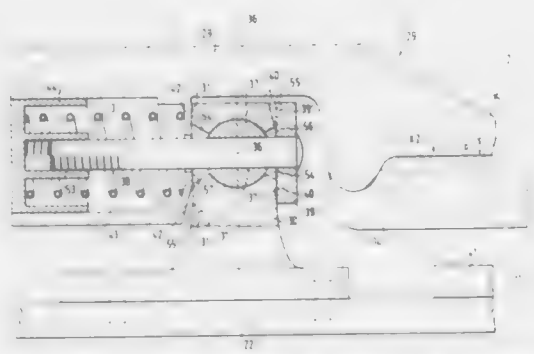
1. An automatic cross-country ski binding for a shoe or a boot having a traverse journal axle, said binding comprising a housing adapted to receive said journal axle, a latch being movable between a latching position and a position of insertion for latching said journal axle in said housing, wherein said latch is rotationally mounted about a rotational axis, and wherein said rotational axis of said latch is mounted for longitudinal displacement in the binding, said latch being elastically biased in longitudinal and rotational displacement by biasing means towards the latching position of said journal axle of the boot in said housing.

5,007,657

LATERALLY RELEASABLE BINDING UNIT

Martin Bogner, Ostfildern; Otto Harsányi, Leonberg, both of Fed. Rep. of Germany, and Henri Peyre, Saint Benin d'Azy, France, assignors to GEZE Sport International GmbH, Leonberg, Fed. Rep. of Germany

Filed Jul. 5, 1989, Ser. No. 375,7[illegible]
Claims priority, application Fed. Rep. of Germany, Jul. [illegible], 1988, 3825682
Int. Cl.[4] A63C *9/085*
U.S. Cl. 280—626 **9 Claims**



1. Laterally releasable ski safety binding unit for holding a front end of a ski boot on a ski, the binding unit comprising:

an upright carrier spigot fixed relative to the ski;
a release spring arranged substantially longitudinally on the ski and braced at one end on the carrier spigot, the other end exerting a release force having a substantial component in the longitudinal direction of the ski;
a sole clamp for holding the ski boot, the sole clamp having a receiving chamber remote from the ski boot for accommodating said release spring, and a limb configuration comprising one of (a) two side limbs and a hold down means comprising a clamp adjacent to said side limbs and (b) two side limbs and a hold down means, such that upon the release force exceeding a predetermined force exerted on the side limbs via the ski boot, said limbs swing outwardly sideways about a substantially upright pivot axis and thereby release the ski boot, the sole clamp being rotatably arranged on said carrier spigot mounted on the ski and vertically tiltably mounted about a transverse axis of the ski;
said release spring exerting a force having a downward component onto the hold down means to thereby press the hold down means with the force component against the top side of the sole of the ski boot;
a ball guide disposed within said carrier spigot and having a slide bore therein;
a draw rod passing through said slide bore;
a support disc secured to the rear of said draw rod against a substantially flat rear support surface of the carrier spigot, said support disc disposed between said draw rod and said carrier spigot and having a substantially flat counter surface in facing relationship with said rear support surface;
said draw rod extending into said receiving chamber and urged in the direction away from the ski boot by the front end of said release spring such that the support disc is pressed against said rear support surface;
the opposing, rear end of said release spring being braced against an abutment fixed relative to the sole clamp and having a substantially flat contact surface to thereby press said contact surface against a substantially flat front support surface of said carrier spigot;
the front and rear support surfaces of said carrier spigot and the counter and contact surfaces of the support disc and the abutment including cooperating tilted surface portions arranged to permit relative pivotal movements of said draw rod and thereby of said hold down means, about an axis transverse to the length of the ski such that within a predetermined vertical tilting region of the hold down means as a result of such pivotal movements, the hold down force is significantly reduced relative to the normal release hold down force.

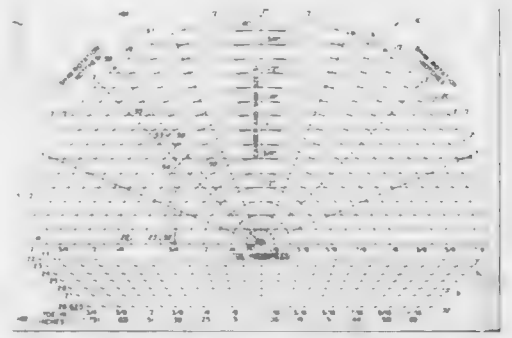
5,007,658

SHIM AND COMPUTERIZED CHART FOR SIMULTANEOUSLY ADJUSTING CAMBER AND TOE-IN

James L. Blechschmidt, Tempe; Robert D. Johnson, and Robert F. Powell, both of Mesa, all of Ariz., assignors to Shimco, Inc., Mesa, Ariz.

Filed Mar. 16, 1990, Ser. No. 494,963
Int. Cl.[5] B62D *17/00*
U.S. Cl. 280—661 **3 Claims**

1. Orientation apparatus for
selecting from a plurality of different sized tapered shims at least one selected shim to be positioned in the wheel assembly of a vehicle to alter the alignment of the assembly by adjusting the camber and toe-in of the wheel assembly by selected amounts, and,
determining the orientation of the selected shim necessary to alter the alignment of said wheel assembly by the selected amounts of camber and toe-in,
the wheel assembly including
an axle member,
spindle means attached to the axle member for rotatably receiving and carrying a wheel, and
bolts for removably, fixedly securing the spindle means to the axle member, the bolts each having an imaginary longitudinal centerline,
each of the tapered shims having a taper different from the taper of the other of the tapered shims and including
(a) a first generally smooth contact surface lying in a first imaginary plane;
(b) a second generally smooth contact surface lying in a second imaginary plane, the second imaginary plane being at an acute angle with respect to the first plane, the first and second imaginary planes intersecting along a line and each being perpendicular to a third common imaginary plane;
(c) at least one arcuate opening formed through the tapered shim;
each of the shims being interposed between the spindle means and the axle member in any of at least three operative positions to adjust the alignment of the wheel,
(d) a first operative position which adjusts the camber of the wheel;
(e) a second operative position which adjusts the toe-in of the wheel; and,
(f) a third operative position which simultaneously adjusts both the toe-in and camber of the wheel:
the arcuate opening being shaped, contoured and dimensioned such that
(g) the bolts pass through the opening when the shim is interposed between the spindle means and the axle member and the bolts are utilized to fixedly secure the spindle means to the axle member;



(h) when the spindle means is, with the shim interposed therebetween, loosely secured to the axle member with the bolts, the shim can be rotated about an axis generally parallel to the longitudinal centerline of one of the bolts;
said orientation apparatus including
(a) chart means correlating camber and toe-in adjustment values with the orientation of each of the shims and including
(i) a first graduated axis indicating toe-in values,
(ii) a second graduated axis perpendicular to said first graduated axis and indicating camber values, each of said values on said first and second axis representing a size of shim and representing the maximum amount by which said represented size of shim can adjust the toe-in and camber of the wheel assembly, said toe-in and camber values increasing by selected increments as the distance along said axes from the intersection of the axes increases,
(iii) arcuate alignment lines interconnecting equivalent values on said first and second axes, each of said alignment lines indicating the amount by which the toe-in and camber of the wheel assembly is altered when a shim of the size represented by the equivalent values interconnected by the alignment line is interposed between the spindle and the axle of said wheel assembly in a selected position with respect to said bolts, said selected position being obtained by rotating the shim with respect to said bolts about said axis

generally parallel to the longitudinal centerline of one of said bolts,

(b) dial means including

(i) an outer peripheral edge,

(ii) a point of rotation on said dial means within said outer peripheral edge,

(iii) a first rule line passing through said point of rotation, and,

(iv) a second rule line passing through said point of rotation and perpendicular to said first rule line,

(c) mounting means for mounting said dial means on said chart means for

(i) movement in a first direction parallel to said first graduated axis,

(ii) movement in a second direction parallel to said second graduated axis, and,

(iii) rotation about said point of rotation,

said orientation apparatus permitting a shim size to be selected by

determining the desired toe-in and camber change of the wheel assembly of a vehicle,

moving said point of rotation of said dial means along said second graduated axis to the value on said second graduated axis corresponding to said desired toe-in value,

moving said dial means to a first reference position by moving said point of rotation away from said second graduated axis and parallel to said first graduated axis a distance equal to the distance from said second graduated axis of the value on said first graduated axis corresponding to said desired camber change, and

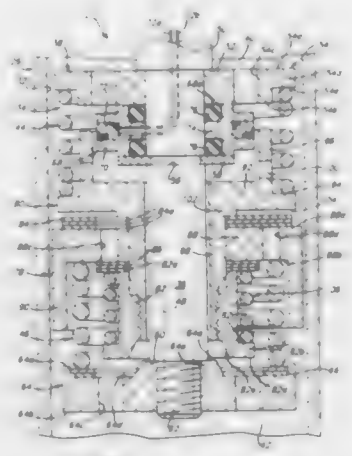
selecting the one of said arcuate alignment lines closest to said first reference position, said selected arcuate line interconnecting equivalent values on the first and second graduated axes representing the size of the shim selected.

5,007,659

INTERNAL DAMPING FORCE SENSOR

Yoram Guy, Ann Arbor, Mich., assignor to Monroe Auto Equipment Company, Monroe, Mich.

Filed Mar. 7, 1990, Ser. No. 489,920
Int. Cl.[5] B60G *11/26*
U.S. Cl. 280—707 33 Claims



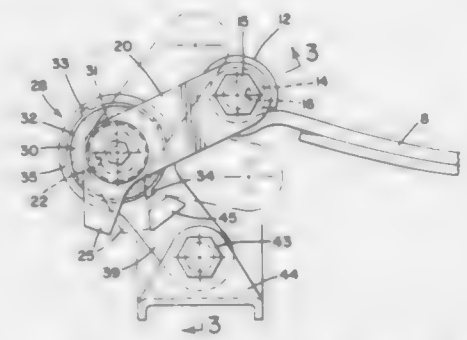
1 A hydraulic damper for damping the relative movement between the sprung and unsprung masses of an automobile comprising a pressure cylinder to store damping fluid, an axially displaceable piston rod extending in a sealed manner into the cylinder, a damping piston reciprocably fitted to said piston rod and dividing the cylinder into a first and second chamber, a spoiler member connected to said piston for reciprocable movement relative to said piston rod, bias means for resisting axial movement of said piston relative to said rod, valve means associated with said piston for restrictively allowing damping fluid to flow between said chambers when said piston rod reciprocates within said cylinder, alternating voltage generator means external to said cylinder for energizing an electrical coil coaxial to the rod and generating a magnetic field about said spoiler, current sensing means remote to said piston for detecting movement of said spoiler relative to said magnetic field and operable to generate an electrical current signal in response to said movement, and electrically controllable flow means for regulating flow of damping fluid between said upper and lower chambers in response to said electrical control signal.

5,007,660

SUSPENSION SYSTEM

Roy L. Orndorff, Jr., Kent, and Mark J. Bono, Munroe Falls, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 297,642, Jan. 17, 1989, abandoned. This application Aug. 17, 1989, Ser. No. 394,904
Int. Cl.[5] B60G *11/38*
U.S. Cl. 280—715 14 Claims



1. A motor vehicle suspension system having a frame, a wheel support member, a leaf spring secured to said wheel support member, first means pivotally connecting one end of said leaf spring to said frame, second means connecting the other end of said leaf spring to said frame, said second means comprising a torsion spring member, said torsion spring member having a central shaft, a lever member pivotally interconnecting said other end of said leaf spring to said central shaft, an annular elastomeric member having an inner bore with an inner annular surface, said annular elastomeric member having an outer annular surface, said inner annular surface secured to said shaft, an outer housing member secured to said outer annular surface of said elastomeric member, said outer housing member pivotally connected to said frame, and said outer housing member having a stop member, and said lever member having an abutment movable into engagement with said stop member upon rotation of said central shaft to thereby make said leaf spring as the sole suspension means.

5,007,661

SAFETY APPARATUS

Reiner Lenzen, Almont, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Filed May 16, 1989, Ser. No. 352,758
Int. Cl.[5] B60R *21/32*
U.S. Cl. 280—735 14 Claims

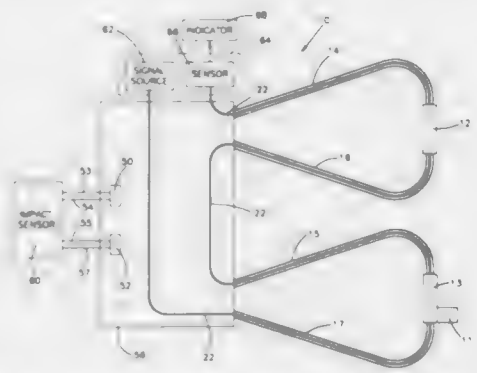
1 An apparatus comprising:

an actuatable safety device for protecting an occupant of a vehicle;

at least a pair of ignitable pyrotechnic transmission lines, one end of each pyrotechnic transmission line being connected to said safety device, ignition of either pyrotechnic transmission line effecting actuation of said safety device;

signal means for providing a signal;

conduit means coupled at one end to said signal means for receiving said signal from said signal means and extending through one pyrotechnic transmission line, through at least a portion of the actuatable safety device, and through the other pyrotechnic transmission line, said conduit means conducting said signal received from said signal means,



sensor means coupled to the other end of said conduit means for sensing receipt of said signal conducted through said conduit means; and

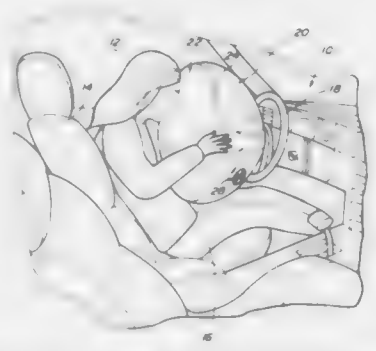
indicator means responsive to said sensor means for indicating a change in said signal conducted through said conduit means.

5,007,662

AIR BAG RELIEF VALVE

William M. Abramczyk, Rochester Hills; Edward I. Hull, West Bloomfield, and James R. Feustel, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 16, 1989, Ser. No. 421,882
Int. Cl.[5] B60R *21/28*
U.S. Cl. 280—739 10 Claims



1. An improved air bag for an automotive inflatable occupant restraint system of the type having a source of inflating gas connected to the air bag for pressurization thereof, the air bag comprising:

a flexible body portion having an internal chamber in fluid communication with the inflating gas source;

a discharge port formed through said body portion for directing said gas out of said chamber to the atmosphere; and

a valve comprising:

an annular base portion fixedly secured to said body portion;

a centrally located support portion positioned within said base portion;

a plurality of apertures formed through said support portion in circumferentially spaced relationship; and

a plurality of flap members hingedly connected to said support portion for movement between a position enclosing said discharge port and positions opening said discharge port in response to the pressurization of said chamber.

5,007,663

APPARATUS FOR PRODUCING ADDRESS LABELS

John Moran, P.O. Box 10458, Marina Del Rey, Calif. 90295

Filed Aug. 14, 1989, Ser. No. 393,968
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—81 3 Claims



1. A multiple ply label assembly suitable for producing a separate label in the course of printing a document sheet, said label assembly comprising

a label ply having upper and lower surfaces;

said base ply lower surface having low tack adhesive means applied thereto for removably bonding said base ply to the surface of the document sheet so that said base ply can be readily peeled from the sheet without damaging or leaving discernible residue on the sheet;

said base ply upper surface having a layer of release material applied thereto;

a label ply having upper nd lower surfaces;

said label ply lower surface having high tack adhesive means applied thereto suitable for nonremovably bonding said label ply to a surface of an end use sheet so that said label ply cannot readily be peeled from the end use sheet without damaging or leaving discernible residue on the sheet;

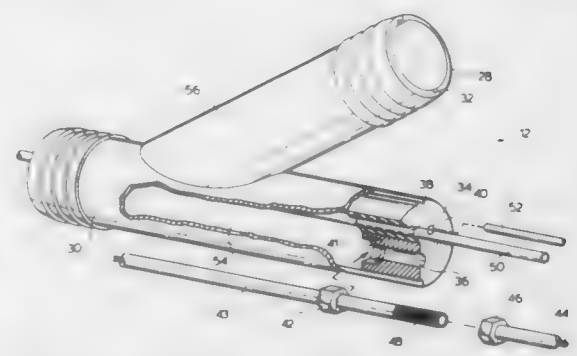
said label ply being superimposed on said base ply with said label ply adhesive means contacting said layer of release material to enable said label ply to be readily peeled from said base ply and be nonremovably bonded to the end use sheet surface.

5,007,664

JOINT IN FUME-EXTRACTING WELDING GUN

Robert N. Mann, Mississauga, Canada, assignor to Mig Vac Inc., Mississauga, Canada

Filed Oct. 17, 1989, Ser. No. 422,760
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—330 3 Claims



1. A joint suitable for joining services to a welding gun, comprising:

two semi-circulary contoured pre-molded polymeric material elements each having curvilinear extremities of complimentary shape to the other to permit said elements to be snap-locked together along a longitudinal line of join of said elements one to another at said curvilinear extremities,

said joint having an elongate cylindrical first hollow body member and an elongate cylindrical second hollow body member extending at an angle to and merging with said first hollow body member so as to provide fluid-flow communication therebetween,

said first hollow body member being closed at one end by a cylindrical end closure integrally formed with one of said two pre-molded elements,

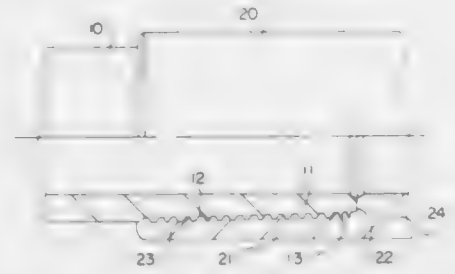
said end closure having a first bore therethrough with a keyed recess at an end thereof interior of said first hollow body member and further bores therethrough.

5,007,665

COUPLING FOR WELL CASINGS

Cipriano Bovisio, Via Borsa 12, 20100 Milano; Carlo Foglieni, Via San Bernardino, 95, 24100 Bergamo; Fulgenzio Fumagalli, Via Treviglio, 44, Fara D'Adda (Bergamo); Norberto Morlotti, Via Degli Albani, 17, 24100 Bergamo, and Mario Palladini, Via Trieste, 32, 24044 Dalmine (Bergamo), all of Italy

Filed Dec. 21, 1987, Ser. No. 136,599
Claims priority, application Italy, Dec. 23, 1986, 48786 A86
Int. Cl.[5] F16L *15/00*
U.S. Cl. 285—334 3 Claims



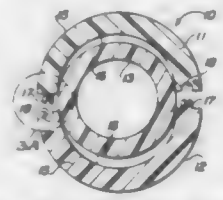
1 A casing joint comprising a pair of tubes and a hollow sleeve, each of said pair of tubes having at least one externally threaded end and said hollow sleeve having internally threaded opposite ends adapted to receive the externally threaded ends of the pair of tubes, wherein the internal threading on each of the opposite ends of the hollow sleeve terminates in an abutment extending radially inwardly and axially toward its respective end of the hollow sleeve to define a frustoconical surface, each externally threaded end of the pair of tubes having a complementarily shaped end surface for engagement with said abutment surfaces of the hollow sleeve, the external threading on the pair of tubes and the internal threading of the hollow sleeve being so dimensioned that, when the pair of tubes are received in the opposite ends of the hollow sleeve, the crest of the internal threading on the opposite ends of the hollow sleeve contacts the root of the external threading on the pair of tubes received in the hollow sleeve and the crest of the external threading of the tubes received in the sleeve is spaced from the root of the internal threading on the opposite ends of the hollow sleeve; and wherein forward faces of the internal threading on the opposite ends of the hollow sleeve are inclined outwardly toward their respective end of the hollow sleeve by an angle up to about 3 degrees with respect to a plane extending transversely through said hollow sleeve, forward faces of the external threading on the ends of the pair of tubes are inclined outwardly towards their respective end of the tube by an angle of up to about 3 degrees with respect to a plane extending transversely through the tube, back faces of the internal threading on the opposite ends of the hollow sleeve are inclined outwardly away from their respective end of the hollow sleeve by an angle from about 23 to about 28 degrees relative to a plane extending transversely through said hollow sleeve, and back faces of the external threading on the ends of the pair of tubes extends outwardly away from the corresponding ends of the tubes at an angle of about 23 to about 28 degrees with respect to a plane extending transversely through the said tubes.

5,007,666

TONGUE AND GROOVE SNAP-FIT PIPE COUPLING

Vincent Kyfes, Mesa, Ariz., assignor to C & L Development Inc. and Chill Tech, Inc., both of Mesa, Ariz., part interest to each

Filed Jan. 19, 1990, Ser. No. 467,190
Int. Cl.[5] F16L *47/06*
U.S. Cl. 285—373 3 Claims



1. A longitudinally divided plastic pipe fitting for encompassing conduits comprising:

a pair of substantially similar interlocking plastics segments,

each of said segments comprising a generally arcuate shaped body having at least two longitudinal edges,

one of said edges comprising a tongue split longitudinally thereof in a direction substantially perpendicular to its length into two interconnected parts separated by a triangular slot, said slot being widest along the outside surface of said tongue, and further narrowing as it progresses to the interior of said tongue,

the other of said edges comprises a groove conforming to and receiving the tongue formed on the juxtapositioned edge of the other of said segments,

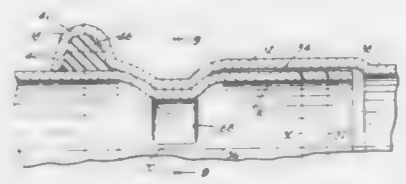
said tongue when forced into the opening in said groove in the other of said segments causing its two parts to engage each other along the length of its slot and when fully in the groove opening under memory of the plastic of said parts to form again said triangular slot causing the tongue to interlock with the periphery of said groove thereby interlocking the segments together.

5,007,667

CRIMPED SLEEVE TO TUBE JOINT

Heinz Unewisse, Muehlheim/Ruhr, and Herbert Foering, Solingen, both of Fed. Rep. of Germany, assignors to Mannesmann AG, Dusseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 285,498, Dec. 16, 1988, abandoned. This application Sep. 18, 1989, Ser. No. 408,768
Claims priority, application Fed. Rep. of Germany, Sep. [illegible], 1988, 3833748; Oct. 6, 1988, 3834353
Int. Cl.[5] F16L *13/14*
U.S. Cl. 285—[illegible]2.2 36 Claims



1. A crimped sleeve to the tube joint, including:

a tube of circular transverse cross-section;

a sleeve of circular transverse cross-section telescoped over said tube;

a seal ring containing flange at one end of said sleeve;

a seal ring contained within said seal ring containing flange;

said seal ring containing flange having been compressively reduced into engagement with the outer circumference of said tube, and said sleeve and said tube having been crimped at a location spaced from said one end to immobilize said sleeve against axial and circumferential movement relative to said tube, further including:

at least two crimps extending inwardly of the outer periphery of said respective sleeve and tube, and each extending arcuately of the circumference of said respective sleeve and tube on a constant radius of said respective sleeve and tube taken from the longitudinal axis of said sleeve and tube, said respective crimps being separated from each other circumferentially of said sleeve and tube by struts provided by axially extending portions of said sleeve and tube extending axially along the original radius of said respective sleeve and tube at the radially outermost porcave inwardly of the outer surface of said respective sleeve and tube;

said respective crimps each including radially outwardly divergent portions at the respective opposite ends of said circumferentially extending crimps;

said crimps, when viewed in transverse cross-section taken in a plane which includes the longitudinal axis of said respective sleeve and tube, extending symmetrically to opposite sides of a plane transverse to the longitudinal axis of said respective sleeve and tube, and each including radially inwardly convergent side faces providing transitions between the outer circumference of said respective sleeve and tube and a radially inner portion of said respective crimps;

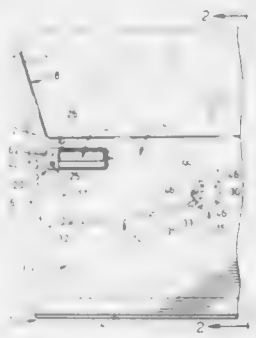
said respective inwardly convergent side faces each extending on the surface of an imaginary cone having its perpendicular axis coincident with the longitudinal axis of said respective sleeve and tube.

5,007,668

INTEGRATED CONTROL DEVICE FOR A VEHICLE DOOR AND DOOR FITTED WITH THIS DEVICE

Nevio Di Giusto, Venaria, Italy, assignor to Fiat Auto S.p.A., Turin, Italy

Filed Jun. 1, 1990, Ser. No. 531,573
Int. Cl.[5] E05C *3/26*
U.S. Cl. 292—216 6 Claims



1. An integrated control device for a vehicle door, of the type comprising a lock equipped with an engaging fork, an outer handle and an inner handle that activate the lock, characterized in that said outer handle and said lock are held connected to each other by an L-shaped bracket, which supports said outer handle on a first wing and said lock on a second wing, projecting laterally from the first wing and supporting on its opposite side with respect to the first wing, said engaging fork; said inner handle being held fixed and idle by a second supporting bracket and being connected to said lock by a flexible cable whose ends are securely fixed to said supporting brackets, said brackets being equipped with means of fixing to said door.

5,007,669

LEVERAGED SECURITY DOOR LOCK

Kevin L. Pomerleau, 8621 Montezuma, #311, San Diego, Calif. 92115

Filed May 9, 1990, Ser. No. 520,744
Int. Cl.[5] E05C *17/12*
U.S. Cl. 292—262 10 Claims

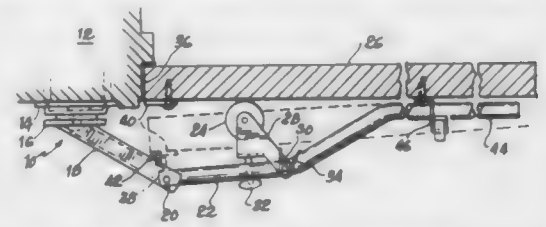
1. A leveraged security lock for a door system comprising a door frame having a door mounted in said frame and having a hinged edge and an opening edge, said lock having:

(a) a rigid leverage bar having a pivoted end and a distal end;

(b) a bar mount mounted to said frame and pivotally mounting said bar such that same may be alternatively swung clear of said door in an open mode, or across the opening of said door, to obstruct the opening of said door in a closed mode;

(c) latch means mounted to said door system to latch said bar in said closed mode to prevent the opening of said door; and,

(d) said bar having a rolling bearing between the pivoted end



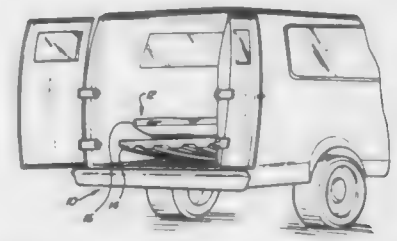
and the distal end thereof for bearing against said door, such that the pressure applied to the distal end of said bar forcing same toward the closed mode yields the user a mechanical advantage.

5,007,670

REMOVABLE AND ADJUSTABLE FITTABLE VEHICLE BED LINER ASSEMBLY

Ronald D. Wise, 1305 Riverside Rd., Old Hickory, Tenn. 37138

Filed Oct. 31, 1989, Ser. No. 429,386
Int. Cl.[5] B62D *33/00*
U.S. Cl. 296—39.1 [illegible] Claims



1. A liner assembly for lining the bed portion of a pickup truck, a van and the like, said assembly comprising:

a liner having multiple layers;

one of said multiple layers is a base layer;

said base layer having a top side and a bottom side;

said base layer further having a width and a length;

another of said multiple layers is a resiliently yieldable layer fixed to said top side of said base layer;

said resiliently yieldable layer having a width and a length equivalent to that of said base layer;

said resiliently yieldable layer further having a top side and a bottom side;

means for adjusting said length and said width of said base layer and said resiliently yieldable layer; and

a plurality of pairs of detachably interattachable portions, comprised of a hooked portion attached to said bottom side of said base layer and a looped portion attached to said bed portion.

5,007,671

UNDER THE RAIL LINER WITH TABS

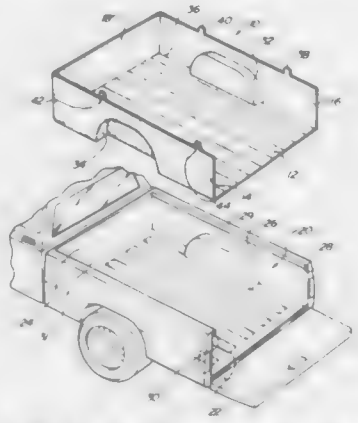
John C. Oprea, Caro, Mich., assignor to Durakon Industries, Inc., Lapeer, Mich.

Filed Dec. 22, 1989, Ser. No. 455,681
Int. Cl.[5] B60R *13/01*
U.S. Cl. 296—39.2 4 Claims

1. A protective liner for a truck bed, said bed having a floor, a front wall and two opposing side walls, each side wall having a lipped end portion, comprising:

a liner member adapted to be received into said truck bed,

said liner member having a bottom, a front wall and two opposing side walls, said opposing liner side walls respectively associated with said truck bed side walls, said liner side walls each having a first and second end, said first end of each liner side wall connected to said liner bottom and said second end of each liner side wall having a resilient portion, wherein the vertical height of said resilient portion and liner side wall is greater than the vertical height



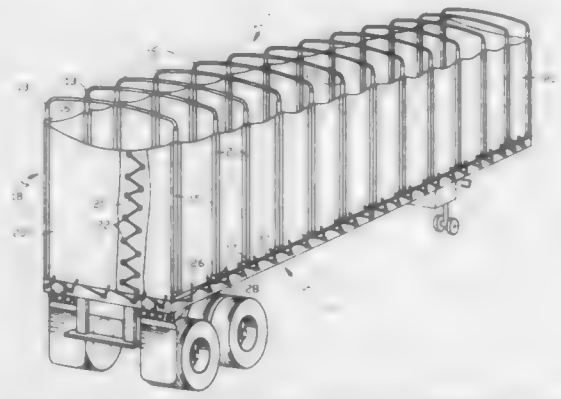
of said truck bed side wall and wherein said resilient portion is deformed and retained in its deformed position within said lipped end of said truck bed side walls, said resilient portion of each said liner side wall urging its associated liner side wall against its respectively associated truck bed side wall and against said truck bed floor wherein said urging acts to retain said liner member within said truck bed.

5,007,672

COVER SYSTEM FOR FLAT BED VEHICLES

Ralph E. Koch, Poseyville, Ind., assignor to Ralph E. Koch Trucking, Inc., Poseyville, Ind.

Filed Aug. 16, 1990, Ser. No. 568,413
Int. Cl.[5] B60P *7/04*
U.S. Cl. 296—100 **11 Claims**



1. A cover system for covering a load on a vehicle having a flat bed and a plurality of side post brackets, comprising:

a plurality of longitudinally arranged inverted U-shaped bows having a bow shaped section extending transversely across the flat bed and a pair of downwardly extending legs;

a plurality of side posts each having a lower end adapted to be received in one of the side post brackets and an upper end defining a socket adapted to receive therein one of said pair of downwardly extending legs of said U-shaped bows;

a top cover formed of a flexible, sheet-like tarpaulin material supported by said plurality of U-shaped bows and sized to extend over the top of a load carried on the flat bed of the vehicle; and

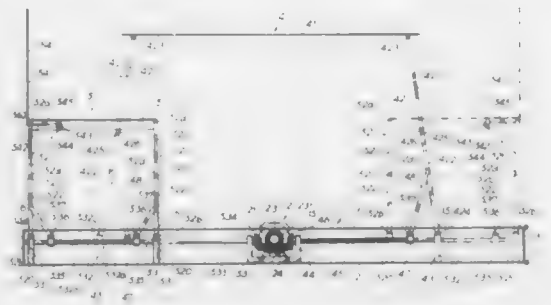
a side cover means including a plurality of side cover sections formed of a flexible, sheet-like tarpaulin material, said side cover sections formed separate from each other and from said top cover and each having a plurality of pockets sized to receive therein said side posts, each pocket having a portion thereof which is arranged to overlie said upper end of a corresponding one of said side posts and defining an opening through which is adapted to be received a corresponding one of said pair of downwardly extending legs of said U-shaped bows, said side cover sections extending from the top ends of said posts to the flat bed of the vehicle.

5,007,673

COLLAPSIBLE TABLE AND CHAIR SET

Yen-Feng Cheng, 5F, No. 64, Chien-Kang St., Shih-Lin District, Taipei City, Taiwan

Filed Aug. 13, 1990, Ser. No. 567,118
Int. Cl.[5] A47B *39/00*
U.S. Cl. 297—159 **6 Claims**



1. A collapsible table and chair set comprising:

a base platform;

a driving means including a driving motor operatively rotatable forwardly or reversely, a main transmission shaft coupled to an inner shaft of the driving motor, a master bevel gear rotatably mounted in a central portion of said base platform driven by said main transmission shaft driven by said driving motor;

an erection and lay-down means including a reel operatively coupled to and driven by an outer shaft of said driving motor, a wire rope having an inner end portion wound on said reel and an outer end portion formed as a loop adapted to be hung on a hook fixed on a wall;

a table including a table plate and a plurality of linkages pivotally secured under the table plate and secured on said platform, a plurality of table worms radially rotatably mounted on said platform and operatively driven by said master bevel gear and said driving motor, and a plurality of table sleeves each having worm gear engageable with each said table worm and having a supporting link pivotally secured between said sleeve and said linkage for operatively raising said linkage for extending the table, or lowering said linkage for folding the table;

a plurality of chairs radially disposed around said table each said chair including a pair of seat bars pivotally connected with a plurality of linking legs pivotally secured to said platform, a two-way chair worm radially and rotatably mounted on the platform and operatively engageable with and driven by said master bevel gear and said driving motor, each said two-way worm having a rightwardly-threaded worm portion engageable with a chair sleeve secured with a transverse rod which is pivotably connected with two inner chair supporting links pivotally connected to a pair of inner linking legs formed on an inner portion of the chair, and a leftwardly-threaded worm portion engageable with another chair sleeve secured with another transverse rod which is pivotally connected with two outer chair supporting links pivotally connected to a pair of outer linking legs formed on an outer portion of the chair; and

a control means having a first selector switch for operatively extending or retracting a table and chair set, and a second selector switch for operatively erecting a folded table and chair set or laying down the table and chair set, whereby upon a forward rotation of said driving motor and said master bevel gear, said worms will be forwardly rotated to radially move said sleeves for raising said linkages and linking legs for upwardly extending the table and chairs;

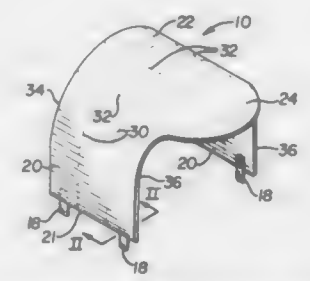
and whereby upon a rotation of the reel, the wire rope can be receivably wound on the reel from a lower end portion of the wire rope to erect a folded table and chair set when an upper end portion of the wire rope is hanged on a wall and the table and chair set is folded.

5,007,674

INFANT SHADE APPARATUS

John Franc, 129 Schley Ave., Pittsburgh, County of Allegheny, Pa. 15205

Filed Jun. 15, 1987, Ser. No. 61,476
Int. Cl.[5] A47C *7/62*
U.S. Cl. 297—184 **12 Claims**



1. A sun shade for use in conjunction with an infant carrier such as a car seat to shield an infant from the elements comprising:

an expanse of resiliently flexible sheet-form foam rubber;

an envelope of sheet-form material substantially completely covering said expanse of foam rubber;

plural elongated attachment means extending along juxtaposed surface portions of said expanse of foam rubber and said envelope to secure said envelope and said foam rubber together at least at intervals along the extent of each said attachment means;

said elongated attachment means being cooperable with said expanse of foam rubber and said envelope to permit said shade to be formed as a self-supporting arched structure having a pair of spaced apart base portions and a continuously arched body extending over the space between said base portions; and

selectively releasable means affixed to said shade adjacent said base portions for co-action with such a carrier to retain said shade with respect to such a carrier as such a self-supporting arched structure.

5,007,675

FORE-AND-AFT ADJUSTER FOR BICYCLE SEAT

Mario S. Musto, 60 Roan Pl., Woodside, and Scott W. Davis, 314 Palomar Dr., Redwood City, both of Calif. 94062

Continuation-in-part of Ser. No. 379,597, Jul. 14, 1989, abandoned. This application Apr. 10, 1990, Ser. No. 507,000
Int. Cl.[5] B62J *1/00*
U.S. Cl. 297—195 **22 Claims**

1. A bicycle seat adjuster for a bicycle which is arranged to move in a predetermined forward motion direction and which has a frame and an elongated seat post having upper end and lower ends, said lower end being attached to and supported by said frame, said seat adjuster comprising:

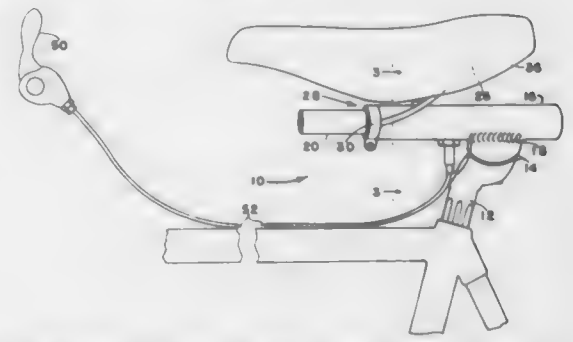
an outer tubular member having an extended length and a uniform bore along its length, said outer tubular member having a lower surface and an upper surface opposite to said lower surface,

mounting means for mounting said outer tubular member on said upper end of said seat post such that said uniform bore is aligned generally with said predetermined forward motion direction and said lower surfaces said upper end of said elongated seat post,

a slot of uniform width in said outer tubular member, said slot running longitudinally along said outer tubular member and parallel to said bore, said slot extending from said bore outwardly to the outside of said outer tubular member, said slot defining two facing and uniformly spaced slot walls, said slot being formed in said upper surface of said outer tubular member,

an inner member having an outer surface sized to fit slidingly within said bore, said inner member being positioned within said bore,

a slidable seat support member having two opposing faces spaced apart so as to fit slidingly within said two facing and uniformly spaced slot walls, said support member having lower and upper ends,



attachment means for attaching said lower end of said seat support member to said inner member so that said seat support member extends generally normal to said inner member and so that said inner member and said seat support member are united for common sliding motion within a given range of adjustment with respect to said outer member, said seat support member extending through said slot in said upper surface of said outer tubular member and protruding upwardly from said upper surface of said outer tubular member,

seat fastening means for fastening a bicycle seat to said upper end of said seat support member,

locking means for locking said inner member to said outer member in a plurality of positions within said given range of adjustment, and

urging means for continuously urging said seat support member in a given direction with respect to said outer tubular member, said given direction paralleling said predetermined forward motion direction,

whereby a seat attached to said seat support member can be slidingly adjusted fore and aft with respect to said frame of said bicycle, yet will be prevented from side movement in with a simple, reliable mechanism.

5,007,676

QUICK DETACHABLE VEHICLE SEAT COVER

Jack Lien, No. 30, Yen Chi Street, Kaohsiung, Taiwan

Filed Oct. 12, 1989, Ser. No. 420,404
Int. Cl.[5] A47K *27/00*
U.S. Cl. 297—218 **7 Claims**

1. A rapidly detachable vehicle seat cover including:

a cover cloth having a size corresponding to a vehicle seat and first fastening strips attached at its side edges;

a plurality of fastening elements detachably secured to said vehicle seat and connecting said cover thereto; said fasten-

ing elements each including a belt-like flexible rubber pad having several grooves for receiving respective clips, and second fastening strips covering said flexible rubber pad and tightly sealed thereto by a high frequency heat weld-





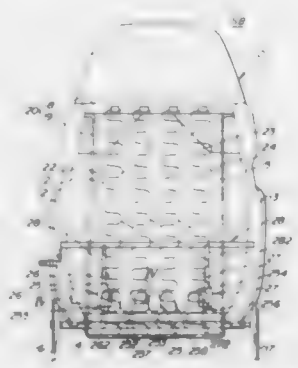
ing process; said clips respectively having a fixed half secured between said flexible rubber pad and said second fastening strip and a free half suspended from said flexible rubber pad.

5,007,677

VEHICULAR SEAT LUMBAR SUPPORT DEVICE

Makoto Ozawa, Odaware; Yasuo Hirama, Chigasaki, and Shyuzi Mizuno, Kanagawa, all of Japan, assignors to Ikeda Bussan Co., Ltd., Ayase and Nissan Shatai Company, Limited, Hiratsuka, both of, Japan

Filed Nov. 24, 1989, Ser. No. 441,043
Claims priority, application Japan, Nov. 29, 1988, 63-301294
Int. Cl.[5] A47C *3/00*
U.S. Cl. 297—284 8 Claims



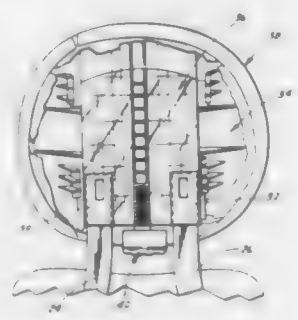
1. A vehicular seat back lumbar support device comprising.
a seat back frame, said seat back frame including opposite side panels;
a plurality of vertical main springs, said plurality of vertical main springs being mounted on said seat back frame for resiliently supporting a seat back surface, said seat back frame constituting a structural base of a seat back;
a supporting member, said supporting member laterally extending between said opposite side panels of said seat back frame and being pivotally supported thereby;
a pair of arm members, said arm members being secured to said supporting member
a pair of support brackets, said support brackets being pivotally connected to said arm members through pivot portions;
a lateral spring, said lateral spring positioned at a portion of the seat back surface whereby a lumbar portion of a seat occupant is supported, said lateral spring being equipped with fixing portions which are fixed to said vertical main springs, said lateral spring having both resilient end portions bent rearward and said resilient end portions being supported by said support brackets; and
moving means, said moving means being arranged between said seat back frame and said supporting member for rotating said supporting member;
wherein, said moving means allows said pivot portion of said support bracket, by rotating said supporting member, to move from a normal position to a lumbar support position which is located forward of said normal position, so that said support brackets resiliently forwardly bias said lateral spring and said plurality of main vertical springs so as to provide a smoothly distributed degree of support across said lumbar portion of said seat occupant.

5,007,678

CHAIR BACK HEIGHT ADJUSTMENT MECHANISM

Larry DeKraker, Holland, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed Oct. 11, 1989, Ser. No. 419,097
Int. Cl.[5] A47C *1/00*
U.S. Cl. 297—353 19 Claims



1. A chair back assembly, comprising:
an inner bracket having a socket adapted to receive a back support member, said inner bracket including a locking detent configured to engage the back support member and lock the inner bracket to said member;
an inner shell having a surface facing said bracket, said inner shell configured to define a chair back member;
slide means on said inner shell and said bracket for slideably mounting said inner shell for vertical adjustment relative to said bracket, said slide means including a slide and a cooperating guide, each on one of said inner shell and bracket;
adjustment means on said bracket and shell for releasably latching said shell to said bracket to permit thereby selective vertical positioning of said shell with respect to said bracket in a single handed fashion, and
an outer shell secured to said inner shell, said outer shell dimensional and configured to enclose said inner bracket.

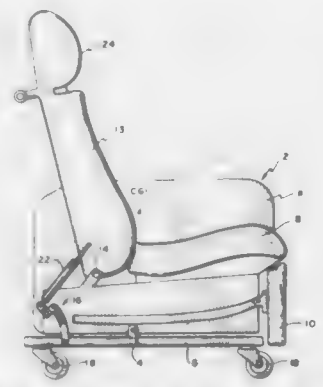
5,007,679

RECLINING CHAIR

Neil W. Mizelle, P.O. Box 5985, High Point, N.C. 27285

Filed Jun. 12, 1989, Ser. No. 364,377
Int. Cl.[5] A47C *1/02*
U.S. Cl. 297—374 13 Claims

1. A reclining chair, comprising,
a base member,
a chair assembly including a seat and a back, said back being tiltable relative to the seat from a generally upright sitting position to a generally horizontal reclining position,
a pivot means connecting the chair assembly to the base member for pivotal movement about a pivot axis that is fixed relative to the base member and the chair assembly,
said chair assembly being rearwardly tiltable on the pivot means for movement from a first position to a second position,
releasable locking means for holding the chair assembly at a fixed inclination angle relative to said base member,
said chair assembly, when the back is in said reclining position and the chair assembly is in its first position with an occupant seated thereon, having a center of gravity that is forward of the pivot axis so that the weight of the chair assembly moves it toward said first position; and,



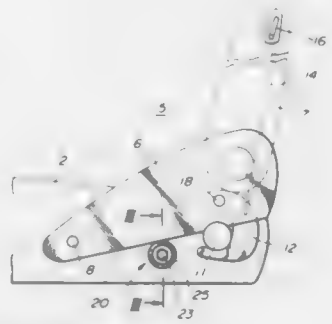
said center of gravity, when the back is in said reclining position and the chair assembly is in its second position, being behind the pivot axis so that the weight of the chair assembly moves it toward said second position, whereby the chair will be stable in both of said first and second positions.

5,007,680

VEHICULAR SEAT WITH SEATBACK INCLINING MECHANISM

Fumio Miyauchi, and Shyuzi Mizuno, both of Kanagawa, Japan, assignors to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Oct. 5, 1989, Ser. No. 417,491
Claims priority, application Japan, Oct. 28, 1988, 63-40572[U]
Int. Cl.[5] B60N *2/02*
U.S. Cl. 297—379 7 Claims



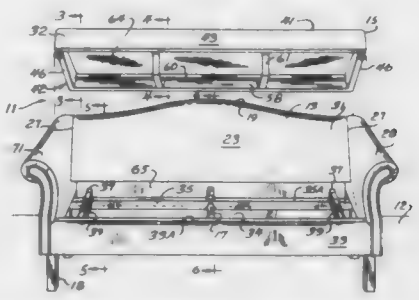
1. A vehicular seat comprising:
a seat cushion;
a seatback;
a base plate having one end pivotally connected to said seat cushion through a pivot pin;
a reclining device mounted on said base plate, said reclining device having a pivotal arm secured to said seatback;
a striker secured to said seat cushion;
a latch member pivotally connected to said base plate, said latch member being latchingly engageable with said striker;
cancelling means for cancelling the latching engagement between said latch member and said striker; and
a stopper structure secured to said seat cushion at a position between said striker and said pivot pin of said base plate, said stopper structure being positioned away from said striker by a given distance, said stopper structure having thereon an elastomeric member against which a lower edge portion of said base plate is pressed when said latch member is brought into a latching engagement with said striker.

5,007,681

FLUID-RESISTANT, UPHOLSTERED FURNITURE SEAT ADAPTED TO AID HOUSEKEEPING

Louis M. Meier, Dubuque, Iowa, and Lloyd G. Berning, Hazel Green, Wis., assignors to Flexsteel Industries, Inc., Dubuque, Iowa

Filed Sep. 8, 1989, Ser. No. 404,870
Int. Cl.[5] A47C *7/00*
U.S. Cl. 297—440 14 Claims



1. A fluid resistant, upholstered furniture seat for use in health care and adapted for standing on a platform such as a floor, comprising:
a backrest portion defining an in-back side, an out-back side, a top edge and a bottom edge, said in-back side being substantially vertically oriented;
said backrest portion including a backrest frame member and a fluid-resistant upholstery cover covering said in-back-side;
a removable seat portion defining a substantially flat top surface and a bottom side;
said removable seat portion including a seat portion frame member associated with said bottom side, a monolithic fluid barrier upholstery cover covering said substantially flat top surface, a seat cushion disposed between said monolithic fluid barrier upholstery cover and said seat portion frame member;
a seat portion support frame member affixed to said backrest frame member for providing support for, without being coupled to, said removable seat portion so that said substantially flat top surface is substantially horizontally oriented and extends outwardly from said backrest member, adjacent said in-back side and said bottom edge;
structural means including bearing stop means disposed on either the lower portion of said seat portion frame member or on the upper portion of said seat portion support frame member for preventing forward or aft displacement of said seat portion frame member on said support frame while allowing said seat portion frame member to be lifted vertically in removing said seat portion frame member from said support frame member;
said removable seat portion covering said support frame and said opening formed in said support frame, with said substantially flat top surface of said removable seat portion inclining in decreasing elevation towards said backrest member when said removable seat portion is carried on said seat portion support frame; and
a plurality of feet adapted for supporting said back-rest member and said seat support frame above said platform.

5,007,682

VEHICULAR SEAT ASSEMBLY

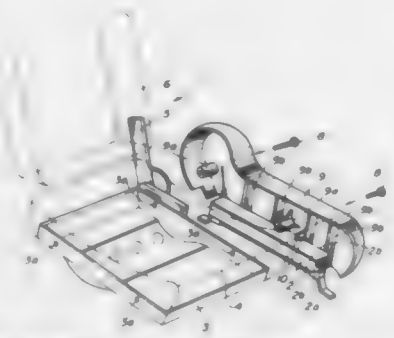
Isao Kuwabara; Yoshio Watanabe; Susumu Yoshimura, and Hidekazu Maruyama, all of Kanagawa, Japan, assignors to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Apr. 7, 1989, Ser. No. 334,444

Claims priority, application Japan, Sep. 22, 1988, 63-124195[U]

Int. Cl.[5] B60N *1/00*

U.S. Cl. 297—452 **8 Claims**



1. A vehicular seat assembly comprising:

two seat sliders each including a lower rail secured to a vehicular floor and an upper rail slidably disposed on said lower rail;

a seat frame securely mounted on the upper rails of the seat sliders;

a seat cushion mounted on said seat frame;

a side decorative panel extending along one lateral side of said seat frame for concealing unsightly portions;

at least two studs integrally formed on said side decorative panel, said studs being secured to the lateral side of said seat frame; and

a projection integrally formed on said side decorative panel and having a free unattached end which is seated on the upper rail of one of said seat sliders.

5,007,683

METHOD AND EQUIPMENT FOR NARROW ORE MINING

Roland Granskog, Skelleftea, Sweden, assignor to ALIMAK AB, Sweden

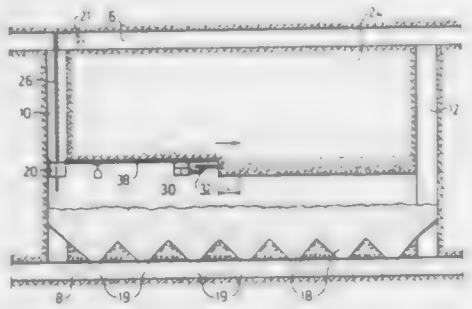
PCT No. PCT/SE88/00023, § 371 Date Aug. 14, 1989, § 102(e) Date Aug. 14, 1989, PCT Pub. No. WO88/06225, PCT Pub. Date Aug. 25, 1988

PCT Filed Jan. 22, 1988, Ser. No. 382,705

Claims priority, application Sweden, Feb. 19, 1987, 8700687

Int. Cl.[5] E21C *35/16, 41/00;* **B66B** *17/04*

U.S. Cl. 299—10 **14 Claims**



1. A method for mining a narrow ore body in a mine having a mining chamber comprising the steps of:

forming a raise which substantially follows the narrow ore body and is in communication with the chamber;

providing a lift cage movable along the raise, the cage including a guide and mining equipment movably attached to the guide from which mining operations within the chamber can be carried out;

suspending a plurality of guide rail sections from a roof of the chamber so that the guide of the cage can be aligned with the guide rail sections suspended from the chamber roof by appropriately positioning the cage in the raise to permit movement of the mining equipment from the guide to the guide rail sections; and

moving the mining equipment along the guide and the guide rail sections;

whereby ore can be mined with the working equipment as the equipment is moved along the chamber roof.

5,007,684

WATER SPRAY UNIT FOR MINING

George A. Parrott, Barnsley, England, assignor to Minnovation Limited, Barnsley, England

Filed Feb. 5, 1990, Ser. No. 475,335

Int. Cl.[5] E21C *35/22*

U.S. Cl. 299—81 **16 Claims**



1 A water spray unit adapted, in use, to be located in a receiving bore provided in a pick box, said water spray unit comprising an elongate nozzle portion and a fastener for said nozzle portion, and internal water-receiving chamber provided in said nozzle portion, a water inlet orifice in communication with said chamber and, at one end of said nozzle portion, a water discharge orifice in communication with said chamber, an external screw thread provided on said fastener and drive surfaces also provided on said fastener for screwing or unscrewing, with said one end of said nozzle portion being distal from said fastener and terminating in a nose having a frusto-conical sealing surface, adapted, in use, to be forced by said fastener, in tight, water-sealing engagement with a complementary frusto-conical seat of said receiving bore.

5,007,685

TRENCHING TOOL ASSEMBLY WITH DUAL INDEXING CAPABILITY

Wayne H. Beach, Roaring Spring, and Steven D. Shirk, Altoona, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Jan. 17, 1989, Ser. No. 297,909

Int. Cl.[5] E21C *35/18*

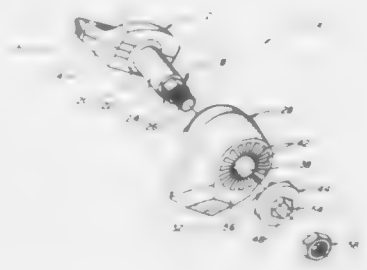
U.S. Cl. 299—91 **23 Claims**

1. A trenching tool assembly with an indexable cutter bit shank comprising:

a) a carrier block formed with a bore extending through the carrier block and an indexing surface having a plurality of serrations;

b) a cutter bit having a shank adapted to extend through the bore in the carrier block; and

c) at least one indexing means for orienting the shank of the cutter bit within the bore of the carrier block in a plurality of different radial settings, the indexing means including a plurality of serrations engageable with the serrations in the indexing surface of the carrier block at any one of different angular positions.



5,007,686

PROCESS FOR ROUNDING BRISTLE TIPS ON BRUSHES

Rolf M. Klein; Reinhart Poprawe, both of Aachen, and Gerd W. Herziger, Roetgen-Rott, all of Fed. Rep. of Germany, assignors to Blendax GmbH, Fed. Rep. of Germany

Filed Oct. 31, 1989, Ser. No. 429,740

Int. Cl.[5] A46D *1/04*

U.S. Cl. 300—21 **12 Claims**



1. A process for rounding off the tips of bristles used in brushes and made of thermoplastic material said process comprising subjecting said tips of said bristles to a pulsed laser beam operating in the kilowatt range and having a pulse duration in the microsecond range.

5,007,687

ANTI-SKID-CONTROLLED HYDRAULIC BRAKE SYSTEM

Dieter Kircher, Dortelweil, and Paul Schwarzer, Hofheim, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

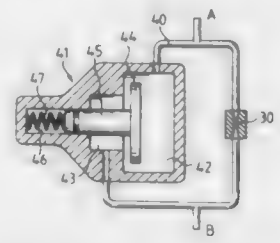
Division of Ser. No. 287,307, Dec. 20, 1988, Pat. No. 4,919,495. This application Jan. 12, 1990, Ser. No. 464,097

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1987, 3744070

Int. Cl.[5] B60T *11/10*

U.S. Cl. 303—113 **5 Claims**

1. An anti-skid controlled hydraulic brake system including a master cylinder, a pressure medium storage reservoir, at least one hydraulically controlled wheel brake connected to said master cylinder via a brake line and to said reservoir via a relief line, pressure modulation means in each of said brake and relief lines for modulating the pressure applied to said brake in response to pressure control signals, a pump having an intake connected to said reservoir and an outlet connected via pressure line means to said brake line at a first location, and throttling valve means for throttling flow between said pump and said master cylinder, a first check valve connected to said brake line in parallel with said throttling valve means accommodating flow from said master cylinder toward said wheel brake, and a second check valve connected to said brake line in parallel with said throttling valve means accommodating flow only from said wheel brake toward said master cylinder.



5,007,688

MOBILE INTENSIVE CARE UNIT

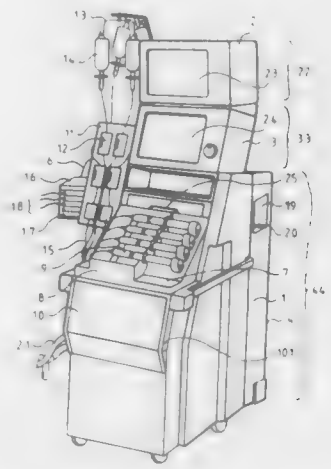
Jörg Bayerlein; Eric Hecker; Peter Hoeck, all of Stockelsdorf, Fed. Rep. of Germany, and Francesco Milani, Giubiasco, Switzerland, assignors to Drägerwerk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany

Filed Apr. 13, 1989, Ser. No. 337,669

Claims priority, application Fed. Rep. of Germany, May 5, 1988, 3815273

Int. Cl.[5] A47B *81/00*

U.S. Cl. 312—7.2 **11 Claims**



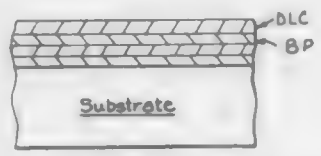
1. A mobile intensive care unit for the reception of devices and instruments, comprising: a lower section mounted on roller means for movement of the unit, said lower section defining a compartment and including an upper surface defining a horizontal depositing surface; an intermediate section arranged above said lower section, said intermediate section defining an inclined surface extending from said depositing surface upwardly and rearwardly, said inclined surface including liquid dosing unit receiving elements for receiving liquid dosing units, said liquid dosing receiving elements being provided at spaced locations, said liquid dosing receiving elements releasably holding liquid dosing elements and cooperating to form an array of liquid dosing elements; an intermediate section positioned above and behind said inclined surface, said intermediate section including a setting and control unit; and an upper section positioned substantially vertically above said intermediate section, said upper section including a viewing and indicator unit; and, an extension arm mounted on said lower portion, said extension arm extending outwardly on one side of said unit, said extension arm is supported on tracks within a hollow compartment formed in said lower section, said hollow compartment and tracks extending through said lower section such that said extension arm may be positioned on either a first side or a second side of said lower section.

5,007,689

INFRA-RED TRANSMITTING OPTICAL COMPONENTS AND OPTICAL COATINGS THEREFOR

Christopher J. Kelly, Hyndland, Scotland, and Keith L. Lewis, Malvern, England, assignors to Barr & Stroud - U.K. Ministry of Defence, United Kingdom

Filed Aug. 30, 1989, Ser. No. 400,333
Claims priority, application United Kingdom, Sep. 8, 1988, 8821116
Int. Cl.[5] G02B *1/10, 5/26*
U.S. Cl. 350—1.6 13 Claims



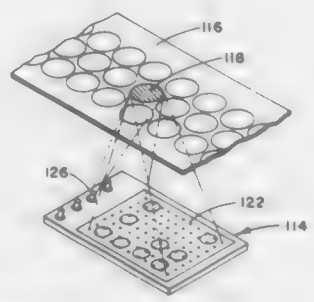
1. An infra-red transmitting optical component having an anti-reflecting coating thereon of boron phosphide, the coating having been deposited on the component by plasma-assisted chemical vapor deposition at a temperature of less than about 500° C. and having a disordered non-crystalline structure.

5,007,690

HOLOGRAPHIC DATA STORAGE AND RETRIEVAL SYSTEM

Mao-Jin Chern, Rancho Palos Verdes; Ronald T. Smith, Redondo Beach, both of Calif., and Brent C. Frogget, Los Alamos, N. Mex., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 21, 1989, Ser. No. 326,711
Int. Cl.[5] G02B *5/32;* G11B *7/00;* G11C *13/04*
U.S. Cl. 350—3.68 4 Claims



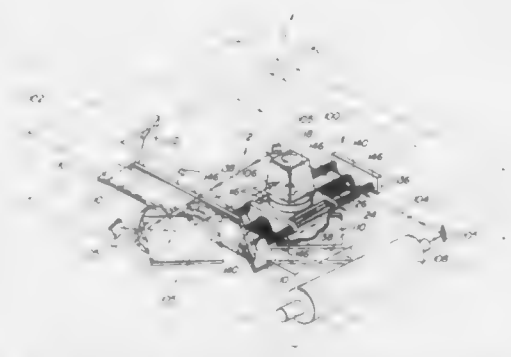
1. A holographic data storage and retrieval system comprising:
- a plurality of reflective diffusing holographic memory elements having holographically stored therein data to be read;
- a laser positioned to illuminate said reflective diffusing holographic memory elements;
- a detector array positioned to be illuminated by laser light reflected by said reflective diffusing holographic memory elements, said detector array having a plurality of detectors thereon so that at least one of said detectors is illuminated to correspond to data information stored in said memory elements, and said detector array is moveable with respect to said plurality of reflective holographic memory elements so that one of said memory elements can be positioned with respect to said array to be illuminated by said laser and reflect to said array;
- means for selecting which of said reflective holographic memory elements will reflect laser light to said detector array;
- a memory plate is fixed in position and said detector array is movable with respect to said memory plate so as to permit movement of said detector array to a selected position with respect to said memory plate to read the reflections from said laser off of said selected memory element; and
- an optical reflective holographic reader wherein said detector array and said laser are both mounted on said reader and said reader is movable with respect to said memory plate wherein said reader faces said memory plate and said reader is movable on rectangular axes with respect to said memory plate and said plurality of memory elements on said memory plate is arranged in a rectangular pattern.

5,007,691

METHOD AND APPARATUS FOR BEAM SWEEPING IN A LASER SCANNER

Mohan L. Bobba, and Howard H. Nojiri, both of Eugene, Oreg., assignors to Spectra-Physics, Inc., San Jose, Calif.

Filed Aug. 28, 1989, Ser. No. 398,920
Int. Cl.[5] G02B *26/08*
U.S. Cl. 350—6.7 18 Claims



1. Beam sweeping apparatus for use in a laser scanner to receive a laser beam traveling along a path from a laser beam generating means and sweep the laser beam onto reflecting means which projects a scanning pattern beyond the laser scanner for each sweep of said laser beam, said beam sweeping apparatus comprising:
- mirror means for receiving and directing said laser beam onto said reflecting means;
- rotary drive means for supporting and rotating said mirror means to sweep said laser beam onto said reflecting means; and
- linear drive means for supporting and linearly moving said rotary drive means generally along the path of said laser beam to vary the point of focus of said laser beam along its projected direction beyond the laser scanner and thereby expand the effective depth of field of the laser scanner.

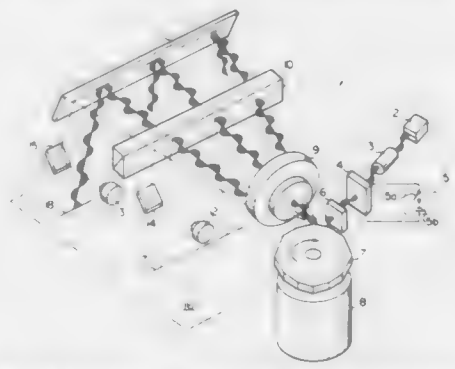
5,007,692

LASER BEAM SCANNING SYSTEM

Kazuo Matsuura, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 21, 1989, Ser. No. 455,598
Claims priority, application Japan, Dec. 29, 1988, 63-334762
Int. Cl.[5] G02B *26/08;* H01J *3/14*
U.S. Cl. 350—6.8 10 Claims

1. A laser beam scanning system comprising:
- laser beam generating means for generating a laser light beam which is linearly polarized;
- electro-optical means for selectively varying or not varying the polarized direction of the laser light beam generated from said laser beam generating means;
- a first beam receiving station;
- a second beam receiving station;
- scanning means for scanning the first and second beam receiving stations with the laser light beam after it has passed through said electro-optical means, and
- means for directing the laser light beam of which the polarized direction has been varied by said electro-optical means to said first beam receiving station and for directing the laser light beam of which the polarized direction has not been varied to said second beam receiving station.

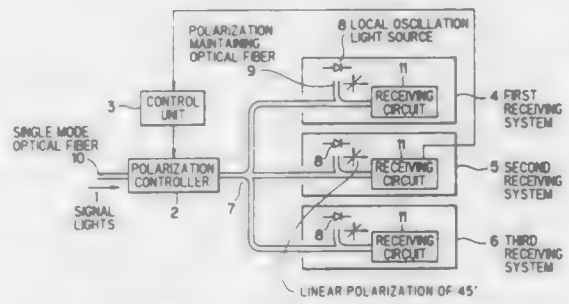


5,007,693

METHOD FOR CONTROLLING POLARIZATIONS OF SIGNAL LIGHTS IN AN OPTICAL FREQUENCY DIVISION MULTIPLEX COHERENT COMMUNICATION SYSTEM

Shuntaro Yamazaki; Takashi Ono, and Haruhito Shimizu, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Mar. 16, 1990, Ser. No. 494,381
Claims priority, application Japan, Mar. 16, 1989, 1-65716
Int. Cl.[5] H04B *10/00;* G02F *2/00*
U.S. Cl. 350—96.13 4 Claims



1. A method for controlling polarizations of signal lights in an optical frequency division multiplex coherent communication system, comprising steps of:
- propagating frequency division multiplex signal lights through an optical fiber;
- controlling polarizations of said frequency division multiplex signal lights collectively;
- controlling relative polarization states of local oscillation lights in receiving systems including optical heterodyne or homodyne receivers to coincide to each other; and
- receiving said frequency division multiplex signal lights having collectively controlled polarizations in accordance with said local oscillation lights separately by said receiving systems.

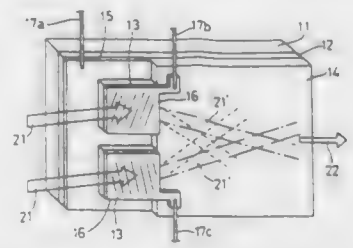
5,007,694

LIGHT WAVELENGTH CONVERTER

Osamu Yamamoto, and Toshihiko Yoshida, both of Nara, Japan, assignors to Sharp, Kabushiki Kaisha, Osaka, Japan

Filed Dec. 28, 1989, Ser. No. 457,320
Claims priority, application Japan, Dec. 29, 1988, 63-334135
Int. Cl.[5] G02B *6/10*
U.S. Cl. 350—96.14 7 Claims

1. A light wavelength converter comprising a substrate that is made of a non-linear optics material; an optical waveguide that is formed on the surface of said substrate; a light source that irradiates said optical waveguide with a pair of lights having a fundamental wavelength, said pair of lights being propagated within said optical waveguide and intersecting each other within said optical waveguide to thereby generate a second harmonic light; and a light deflection means that changes the intersection angle between the pair of lights based on an electric signal that is input into said light deflection means.

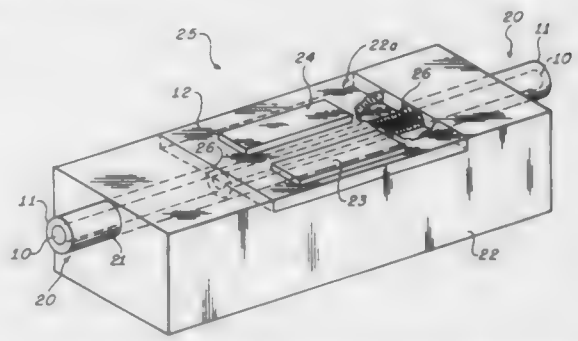


5,007,695

FIBER OPTIC PHASE MODULATOR USING ELECTRO-OPTIC MATERIAL IN EVANESCENT FIELD

Chin L. Chang, West Covina, Calif., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 29, 1989, Ser. No. 415,014
Int. Cl.[5] G02B *6/00;* G02F *1/29*
U.S. Cl. 350—96.14 7 Claims



1. A phase modulator for use with an optical fiber having a fiber core and cladding, a light wave propagating in said fiber core having an evanescent field in said cladding, comprising
- electro-optical material disposed proximate said fiber core to access said evanescent field, said electro-optic material having a variable index of refraction, the propagation velocity of said light wave being determined by said index of refraction, and
- electrode means disposed proximate said electro-optic material to apply an electric field having an electric field distribution thereacross that is parallel to said electro-optic material, said electric field arranged to vary said index of refraction and said propagation velocity of said light wave in accordance with applied electric field, thereby modulating the phase of said light wave.

5,007,696

ELECTRO-OPTIC CHANNEL WAVEGUIDE

John I. Thackara, Sunnyvale; George F. Lipscomb, Palo Alto, both of Calif.; Hyun-Nam Yoon, New Providence, and Ronald N. De Martino, Wayne, both of N.J., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

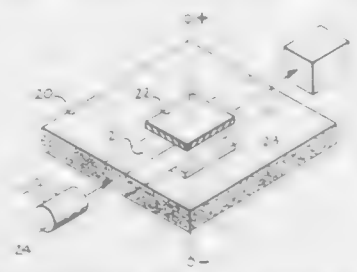
Division of Ser. No. 225,450, Jul. 28, 1988. This application Jan. 8, 1990, Ser. No. 461,727
Int. Cl.[5] G02B *6/10*
U.S. Cl. 350—96.14 19 Claims

1. A polymer structure having an electro-optic channel

waveguide formed therein, said polymer structure consisting of a substantially non-linear optical polymer, said polymer structure comprising a waveguide portion and a cladding portion, said cladding portion abutting said waveguide portion so as to define a configuration for said channel waveguide, said waveguide portion and said cladding portion of said polymer structure being substantially identical to each other in chemical composition, said waveguide and cladding portions of said polymer structure being differentially poled with respect to each other, said channel waveguide being formed in said polymer structure by the process of:

(a) maintaining an electric field as a poling field in a portion of said polymer structure that is to become said waveguide portion, said poling field being patterned to define the configuration for said electro-optic channel waveguide;

(b) maintaining said polymer structure in a temperature range above glass-transition temperature for said polymer while said poling field is being maintained in said portion of said polymer structure that is to become said waveguide portion, said polymer structure being maintained above glass-transition temperature for a time sufficient to cause dipolar moieties of said polymer in said portion of



said polymer structure that is to become said waveguide portion to become sufficiently aligned by said poling field so as to produce a higher index of refraction in said portion that is to become said waveguide portion than in an adjacent portion of said polymer structure that is to become said cladding portion, said higher index of refraction being sufficient to support a guided mode of optical radiation of at least one polarization in said channel waveguide, and

(c) cooling said polymer structure below glass-transition temperature while said poling field continues to be maintained in said portion of said polymer structure that is to become said waveguide portion, said poling field being maintained in said portion that is to become said waveguide portion for a sufficient time as said polymer structure is being cooled below glass-transition temperature so that the aligned dipolar moieties of said polymer in said portion of said polymer structure that is to become said waveguide portion can achieve thermal relaxation only after a time that is long relative to a useful lifetime of said polymer structure in an application utilizing said waveguide portion of said polymer structure as said electro-optic channel waveguide.

5,007,697

FIBRE OPTIC DATA COUPLER

Rajan Chadha, Glasgow, Scotland, assignor to The British Petroleum Company, plc, London, England

Filed Aug. 11, 1989, Ser. No. 392,755

Claims priority, application United Kingdom, Aug. 17, 1988, 8819574

Int. Cl.[5] G02B *6/26;* **G02F** *1/00*

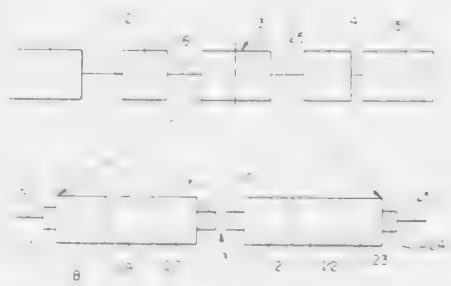
U.S. Cl. 350—96.15 **10 Claims**

1. A fibre optic data coupler comprising:

(a) a fibre optic data link input module comprising an input connector for a fibre optic connected to a fibre optic receiver for providing a digital electrical output signal corresponding to the fibre optic signal,

(b) a coupler drive module for converting the digital electrical output signal to an analogue drive signal for input to an inductive coupler,

(c) an inductive coupler unit comprising an inlet element for receiving the analogue drive signal and an outlet element for transmitting an induced analogue drive signal, corresponding to the input signal,



(d) a coupler output module for converting the induced analogue drive signal to a digital electrical output signal for input to a fibre optic data link output module, and

(e) a fibre optic data link output module comprising a fibre optic transmitter module, for providing a fibre optic signal corresponding to the digital electrical input signal, connected to a connector for a fibre optic.

5,007,698

OPTICAL FIBER AMPLIFIER/MULTIPLEXER

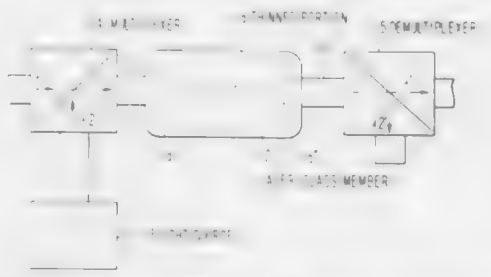
Kazuya Sasaki, Mitaka; Sakae Yoshizawa, Tokyo; Shinya Inagaki, Tokyo, and Keiko Takeda, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 15, 1990, Ser. No. 567,614

Claims priority, application Japan, Aug. 15, 1989, 1-209700

Int. Cl.[5] G02B *6/26;* **H01S** *3/30;* **H04J** *1/00*

U.S. Cl. 350—96.15 **24 Claims**



1. An optical waveguide amplifier for amplifying an optical signal propagating therein, comprising:

a laser glass member, doped with a rare earth element, and optical waveguide means, including:

input end means for receiving the optical signal from a light source, and

amplifying means, formed substantially thinner than the input end means, for contacting the laser glass member and for amplifying the optical signal.

5,007,699

FIBER OPTIC REFLECTIVE TREE ARCHITECTURE

James C. Stout, Phoenix, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 19, 1989, Ser. No. 423,901

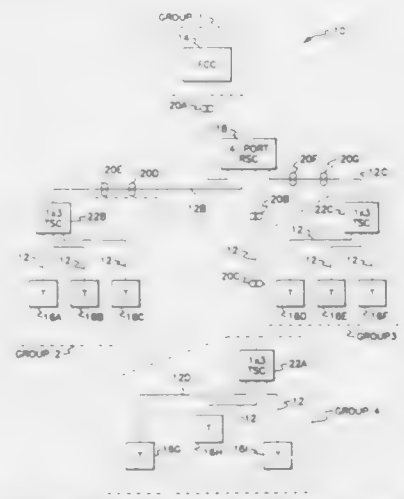
Int. Cl.[5] G02B *6/28;* **G02F** *1/00*

U.S. Cl. 350—96.16 **3 Claims**

1. A fiber optic network contained within a structure, the structure being divided into a first plurality of compartments by a second plurality of bulkheads, said fiber optic network comprising:

(a) a reflective star coupler, being located in a predetermined compartment of said structure, and having m ports;

(b) a third plurality of terminals, each terminal being located in one of said compartments, each terminal capable of at least receiving optical signals containing information therein in accordance with a predefined protocol, the terminals being divided into a fourth plurality of terminal groups, each terminal group having a least one terminal, such that each terminal within the terminal group has at least one coupling through a common bulkhead to said reflective star coupler, the number of terminal groups being m corresponding to the number of ports of said reflective star coupler;



(c) m fiber optic cables, each fiber optic cable operatively connected to a port of the reflective star coupler and to a predetermined terminal group, such that each bulkhead has at most one coupling of the fiber optic cable through said bulkhead; and

(d) said each terminal terminal group having more than one terminal in the terminal group and contained in a single compartment, comprises:

(i) a 1 × n transmissive coupler, having an input port and n output ports; and

(ii) a plurality of terminals, each terminal operatively connected to the transmissive coupler, and wherein the input port is operatively connected to the reflective star coupler via one of said m fiber optic cables, where m is equal to the number of terminals in the terminal group.

5,007,700

EDGE-EMITTING DIODE-TO-OPTICAL FIBER COUPLING TECHNIQUE

Donald J. Albares, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 318,989, Mar. 3, 1989, Pat. No. 4,930,854. This application Apr. 13, 1990, Ser. No. 509,107

Int. Cl.[5] G02B *6/42*

U.S. Cl. 350—96.17 **12 Claims**

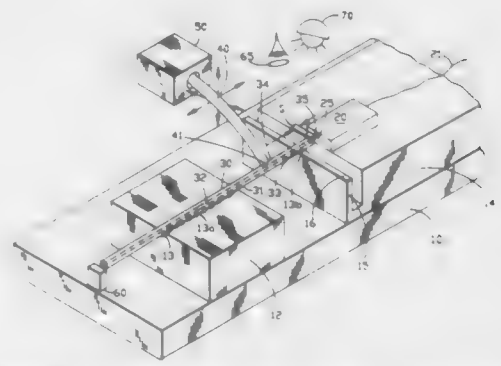
1. A method of end-on optically coupling an optical fiber to the emitting aperture of an edge-emitting diode (EED) mounted on a base comprising:

mounting a semiconductor chip provided with a V-shaped groove on said base in a spaced-apart relationship with respect to said EED;

applying a UV curable optical cement in said V-shaped groove and on an exposed lateral surface of an overhanging portion of said optical fiber;

placing said optical fiber in said V-shaped groove to locate said overhanging portion including said lateral surface having the UV curable optical cement applied thereto on an end support rigidly affixed to said EED;

positioning said optical fiber to a position in which the end of said optical fiber has a position of desired optical alignment with said emitting aperture of said EED and a desired separation from said emitting aperture of said EED; and



radiating UV energy on said UV curable optical cement to cure it and to secure said optical fiber in said V-shaped groove and on said end support via said lateral surface on said overhanging portion o said optical fiber in said position of said desired optical alignment of said end of said optical fiber with said emitting aperture of said EED and said desired separation of said end of said optical fiber from said emitting aperture of said EED.

5,007,701

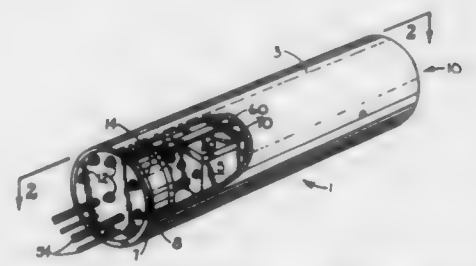
SPLICE CLOSURE APPARATUS

Gene Roberts, Clinton, Mo., assignor to Windsor Communications, Inc., Windsor, Mo.

Filed Jun. 29, 1989, Ser. No. 373,343

Int. Cl.[5] G02B *6/36;* **H02G** *15/08*

U.S. Cl. 350—96.20 **16 Claims**



1. In a splice closure having an internal compartment wherein a cable passes through a wall of the closure; the improvement comprising:

(a) compression anchoring means positioned in said compartment for securing said cable within said closure; and

(b) a hoop encircling said anchoring means to prevent radial expansion of said anchoring means, when compressed, beyond said hoop.

4. In a fiber optics closure adapted to receive a plurality of elongate fiber optic members wherein the elongate fiber optic members are passed through a compressible sealing barrier and joined in an internal compartment; the improvement comprising:

(a) said sealing barrier having an inner compressible portion and an outermost wall constructed of a non-conductive and non-corrosive material; said outermost wall adapted to cooperate with an inner wall and bolt means to compress said sealing barrier therebetween upon tightening of said bolt means when in an operational configuration; and

(b) said outermost wall including a plurality of back-to-back

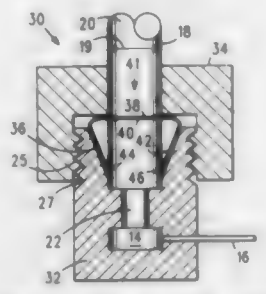
components with one of said components directly abutting said compressible portion; said components constructed of resilient material to prevent damage to said fiber optics from inadvertent overtightening of said bolt means.

5,007,702

FIBER OPTIC CABLE RETAINER

Eugene E. Segerson, 108 W. Erie, Tempe, Ariz. 85282

Filed Jan. 30, 1990, Ser. No. 472,523
Int. Cl.[5] G02B *6/26*
U.S. Cl. 350—96.20 15 Claims



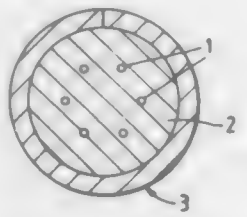
1. A device facilitating unidirectional movement of a fiber optic cable during assembly, comprising, a body portion, a retainer of a springy material and a locking portion, wherein the body portion has an opening therein for admitting the fiber optic cable extending from an exterior of the body portion to an internal electro-optical component, wherein an outer part of the opening nearest the exterior is larger than an interior part of the opening, wherein the retainer resides in the outer part of the opening, wherein the retainer has an interior diameter at a first end oriented toward the interior part of the opening slightly smaller than the cable and an interior diameter at an opposite end larger than the cable so that when the cable is pushed through the retainer toward the interior the smaller end of the retainer expands slightly to allow passage of the cable and when an attempt is made to retract the cable the smaller end of the retainer bites into the cable, and wherein the locking portion is coupled to the body portion and presses against the retainer to adjust the cross-section of the interior end thereof.

5,007,703

METHOD OF MAKING OPTICAL FIBRE CABLES

Peter G. Hale, London, and John N. Russell, Ringwood, both of United Kingdom, assignors to STC plc, London, England

Filed Dec. 21, 1989, Ser. No. 454,184
Claims priority, application United Kingdom, Dec. 22, 1988, 8829871
Int. Cl.[5] G02B *6/44*; H02G *15/00*; B21D *39/00*
U.S. Cl. 350—96.23 10 Claims



1. A method of manufacturing a core for an optical fibre submarine cable comprising the steps of feeding a plurality of optical fibres in a spaced apart relationship into a space delimited by one or more elongate elements from which a tubular structure can be formed, injecting a liquid filling material into the space, forming said tubular structure and permitting or causing the liquid filling material to be converted to a solid material in which the fibres are embedded at respective positions spaced apart from one another and the tubular structure

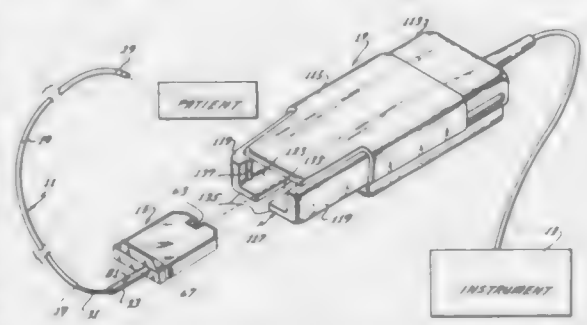
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5,007,704

OXIMETER

Ronald L. McCartney, Orange, Calif., assignor to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 859,855, May 1, 1986, abandoned, which is a continuation of Ser. No. 546,500, Oct. 28, 1983, abandoned. This application Mar. 14, 1989, Ser. No. 323,054
The portion of the term of this patent subsequent to Dec. 8, 2004, has been disclaimed.
Int. Cl.[5] G02B *6/38*
U.S. Cl. 350—96.21 14 Claims



1. An apparatus comprising: at least one fiber optic light conductor; a connector body having a proximal end and an exterior face at said proximal end; means for mounting the fiber optic light conductor on the connector body with an end of the fiber optic light conductor being adjacent the face and capable of transmitting light to or from a location on said face;

a receptacle having a cavity for receiving the connector body, a floor, a face partly defining said cavity and means for transmitting light to or from a location on said face of said receptacle;

guide means at least partially on the receptacle comprising a cam surface on the face of the receptacle and a cam follower surface on the face of the connector body for guiding the connector body along a path in the cavity to move said faces toward each other to place said faces in confronting relationship and said locations substantially into engagement;

said path having a first section extending in a first direction into said cavity and a second section extending in a second direction along said cam surface on said receptacle, wherein said cam follower surface on said connector body cooperates with said cam surface on said receptacle to lift the proximal end of said connector body off the floor of said receptacle to place said locations substantially into engagement;

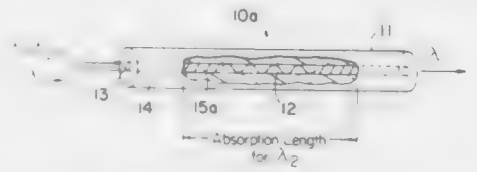
said connector body having a cam surface; and said receptacle having biasing means for cooperation with said cam surface on said connector body when the connector body is in the cavity of the receptacle and said locations are nearly in engagement for urging the connector body farther into the cavity along said path to move said faces toward each other and to place said locations on said faces in substantial engagement.

5,007,705

VARIABLE OPTICAL FIBER BRAGG FILTER ARRANGEMENT

William W. Morey, West Hartford; Fred J. Leonberger, Glastonbury; William H. Glenn, Vernon, and Gerald Meltz, Avon, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 26, 1989, Ser. No. 456,449
Int. Cl.[5] G02B *6/16*
U.S. Cl. 350—96.29 20 Claims



1. A variable light filtering arrangement comprising

at least one optical fiber section including a waveguiding core;

at least one permanent Bragg grating region in said optical fiber section, including a plurality of grating elements constituted by periodic refractive index variations of a predetermined initial periodicity and cumulatively redirecting, of the light launched into said core for guided propagation therein, that having an axial wavelength within a narrow band around a central wavelength that is determined by the periodicity and refractive index variations of said grating elements; and

means for so applying at least to said grating region of said optical fiber section an external influence that is representative of a parameter other than structural strain as to modify at least one of the periodicity and refractive index variations of said grating region with an attendant change in said central wavelength within a predetermined wavelength range to an extent indicative of the magnitude of said parameter.

5,007,706

POLYMERIC OPTICAL FIBER

Theodore L. Parker, Lafayette, Calif., and Donald J. Perettie, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

PCT No. PCT/US87/00372, § 371 Date Oct. 8, 1987, § 102(e) Date Oct. 8, 1987, PCT Pub. No. WO87/05117, PCT Pub. Date Aug. 27, 1987
PCT Filed Feb. 19, 1987, Ser. No. 143,997
Int. Cl.[5] G02B *1/04*
U.S. Cl. 350—76.34 5 Claims

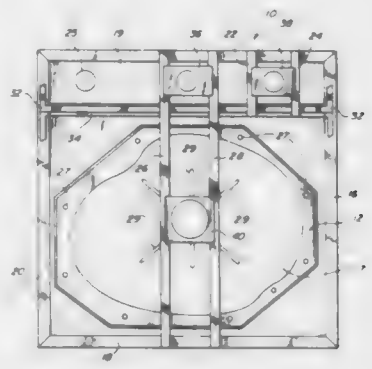
1. A polymeric optical fiber having a core and cladding structure characterized by (a) the core essentially comprising a copolymer of at least one monovinylidene aromatic monomer and alpha-methylstyrene prepared by anionically polymerizing the monovinylidene aromatic monomer and from 30 to 70 weight percent of alpha-methylstyrene based on the combined weight of monomer, at a temperature greater than 61° C. and less than the ceiling temperature of the monovinylidene aromatic monomer; and (b) the cladding essentially comprising a polymer having a refractive index of at least 3 percent less than the refractive index of the copolymer core and having sufficient adhesion to the copolymer core such that less than 15 percent attenuation of light transmission occurs upon bending of the polymeric optical fiber to a radius equal to thrice the radius of the polymeric optical fiber.

5,007,707

INTEGRATED SOUND AND VIDEO SCREEN

Jose J. Bertagni, 39 Seabrook Cove, Newport Beach, Calif. 92660

Filed Oct. 30, 1989, Ser. No. 428,893
Int. Cl.[5] G03B *21/56*
U.S. Cl. 350—118 25 Claims



1. A sound transducer comprising:

a plurality of sound transducers arranged adjacent to one another so as to form a grid pattern wherein the sound transducers are flat sound transducers, each of said flat sound transducers having a substantially flat sound producing diaphragm with substantially omnidirectional sound dispersion characteristics and wherein the flat diaphragms of the flat sound transducers have a reflective surface such that the sound transducer system may serve as a projection screen;

the grid pattern being formed by the sound transducers being divided into a plurality of separately addressable sound producing regions where a sound producing region includes at least one sound transducer; and

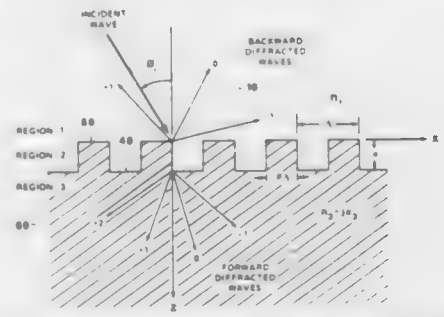
control means for controlling the separately addressable sound producing regions such that the sound produced by the sound transducers may be controlled in conjunction with a video image that is being projected on the projection screen.

5,007,708

TECHNIQUE FOR PRODUCING ANTIREFLECTION GRATING SURFACES ON DIELECTRICS, SEMICONDUCTORS AND METALS

Thomas K. Gaylord; Elias N. Glytsis, both of Atlanta, Ga.; M. Gamal Moharam, Charlottesville, Va., and William E. Baird, Oxford, Ga., assignors to Georgia Tech Research Corporation, Atlanta, Ga.

Filed Jul. 26, 1988, Ser. No. 224,571
Int. Cl.[5] G02B *26/00*; G02F *1/00*
U.S. Cl. 350—162.2 28 Claims



9. A method of manufacturing an antireflection rectangular groove surface-relief grating comprising the steps of:

selecting a substrate material on which to form the surface-relief grating;

determining the polarization and range of wavelengths and angles of incidence of the electromagnetic waves incident on said substrate;

selecting a lossless medium in which said electromagnetic waves propagate;

determining the plurality of filling factors and corresponding groove depths for said rectangular-groove grating which will make said grating equivalent to a single homogeneous lossy layer;

selecting a filling factor and corresponding groove depth from said plurality of filling factors and corresponding groove depths; and

forming said rectangular groove diffraction grating characterized by said selected filling factor and corresponding groove depth on said substrate.

5,007,709

DIFFRACTION GRATING AND MANUFACTURING METHOD THEREOF

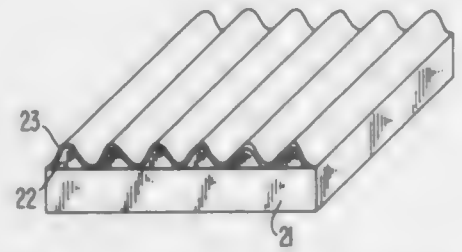
Masanori Iida, Nara; Kiyokazu Hagiwara, Hirakata; Hiroyuki Asakura, Osaka; Misoru Nishioka, Kobe, and Koichi Murase, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 17, 1988, Ser. No. 290,196

Claims priority, application Japan, Dec. 28, 1987, 62-331972; Dec. 28, 1987, 62-331978

Int. Cl.[5] G02B *5/18*

U.S. Cl. 350—162.22 **6 Claims**



1. A diffraction grating for diffracting light incident thereupon, comprising:

a substrate;

a photosensitive layer formed on said substrate and having formed on a surface thereof a pattern of cyclic grooves; and

a reflection film formed on said surface of said photosensitive layer,

wherein said grating has a groove profile $\eta(x)$ given by:

$$\eta(x)=h[\sin(Kx)+\gamma\sin(2Kx-90^\circ)],$$

where a direction perpendicular to the groove is indicated by x-axis, a groove pitch is indicated by d, $K=2\pi/d$, and parameters h and γ satisfy the following conditions:

$$0.26\leqq 2h/d\leqq 0.52$$

$$0.05\leqq\gamma\leqq 0.32,$$

wherein when the wavelength λ of the incident light is normalized with respect to the groove pitch d to a normalized wavelength λ/d, the normalized wavelength λ/d satisfies the following condition:

$$0.67\leqq\lambda/d\leqq 1.15,$$

and wherein said grating is used in a mount satisfying the following condition:

$$\Theta_L-5^\circ\leqq\Theta\leqq\Theta_L+5^\circ,$$

where Θ denotes the incident angle of the incident light and Θ_L denotes the first order Littrow angle.

5,007,710

MULTI-LAYERED SURFACE REFLECTING MIRROR

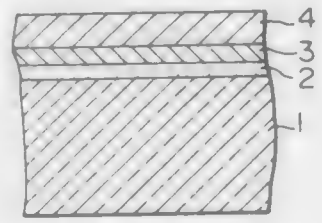
Yuji Nakajima, Suginami, and Masashi Mochizuki, Hoya, both of Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Oct. 23, 1989, Ser. No. 425,119

Claims priority, application Japan, Oct. 31, 1988, 63-275097

Int. Cl.[5] G02B *5/08, 5/28*

U.S. Cl. 350—166 **10 Claims**



1. A multi-layered surface reflecting mirror comprising a substrate, a metal or semiconductor film formed on one side of the substrate and a dielectric multi-layered film formed on the metal or semiconductor film, said dielectric multi-layered film consisting of a low refractive index material layer having an optical thickness in the range of 0.05 λo ($\lambda o/20$)–0.4 λo (2/5 λo), where λo is the wavelength of a light used as the reference measurement for design purposes, and a high refractive index material layer having an optical thickness of $\lambda o/2$, said low refractive index material layer being closer to the metal or semiconductor film relative to said high refractive index material layer, and said high refractive index material layer being closer to the atmosphere relative to said low refractive index material layer.

5,007,711

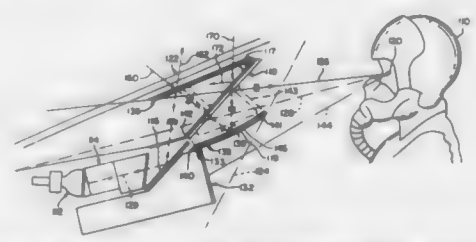
COMPACT ARRANGEMENT FOR HEAD-UP DISPLAY COMPONENTS

Robert S. Wood, Hillsboro, and Mark A. Thomas, Lake Oswego, both of Oreg., assignors to Flight Dynamics, Inc., Portland, Oreg.

Filed Nov. 30, 1988, Ser. No. 278,198

Int. Cl.[5] G02B *5/32, 27/14;* **G03H** *1/30*

U.S. Cl. 350—174 **19 Claims**



1. An arrangement for head-up display system components within the cockpit of an aircraft, wherein the cockpit includes a canopy through which the pilot observes the outside real world scene, an over-nose vision surface beneath which the pilot cannot view the outside real world scene, and an imaginary ejection plane extending across the cockpit forward of the pilot, the arrangement comprising:

wavelength selective combiner means located forward of the pilot and mounted to extend across the pilot's line of sight when the pilot views the outside real world scene, for reflectively diffracting wavelengths of incident light lying within a preselected bandwidth and striking the combiner means within a preselected range of angles of incidence and for transmitting other wavelengths of incident light;

source means mounted within the cockpit beneath the over-nose vision surface forward of and spaced away from the ejection plane for projecting information-carrying source light of wavelengths lying within the preselected bandwidth;

upper mirror means of wavelength selective character mounted within the cockpit above the over-nose vision surface, forward of the combiner means, and across the pilot's line of sight through part of the combiner means for reflectively diffracting the source light emanating from the source means to strike the combiner means at a first angle of incidence to the combiner means, the first angle of incidence lying outside the preselected range of angles of incidence; and

collimator means mounted below the over-nose vision surface for collimating the source light reflectively diffracted by the upper mirror means and for directing the collimated source light to the combiner means at a second angle of incidence to the combiner means, the second angle of incidence lying within the preselected range of angles of incidence

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5,007,712

OPTICAL PICK-UP UNIT

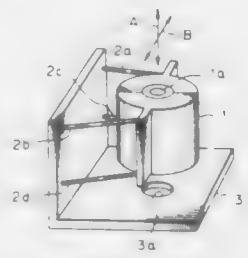
Ikuya Kikuchi, and Ryo Sato, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 22, 1988, Ser. No. 234,547

Claims priority, application Japan, Jan. 21, 1988, 63-6061[U]

Int. Cl.[5] G02B *7/02*

U.S. Cl. 350—255 **2 Claims**



1. An optical pick-up unit mounted on a pick-up carriage of an optical disc player, said pick-up unit comprising:

a holder for holding an objective lens having an optical axis passing therethrough;

a base mount mounted on said pick-up carriage;

resilient support means for resiliently supporting said holder so that said holder can be translated in each of a focusing and a tracking direction relative to said base mount, said focusing direction being parallel to the optical axis of said lens and said tracking direction being transverse to said focusing direction; and

wherein said resilient support means comprises first and second pairs of resilient filamentary members interconnecting between said base mount and said holder, said filamentary members each being of equal length and attached to said holder at points equidistant from said optical axis of said lens, said points lying in a plane which passes through the optical axis of said lens, said first pair of filamentary members being disposed in a first plane perpendicular to the focusing direction, and said second pair of filamentary members being disposed in a second plane spaced from and parallel to said first plane and perpendicular to the focusing direction, the filamentary members within each of said first and second pairs being spaced apart from one another on said base mount and said holder, and wherein, a greater distance separates the filamentary members with respect to each of said first and second pairs on the base mount than on the holder.

5,007,713

BEAM CONVERTING APPARATUS WITH A PARALLEL LIGHT BEAM INPUT AND OUTPUT FROM ONE PRISM PLANE

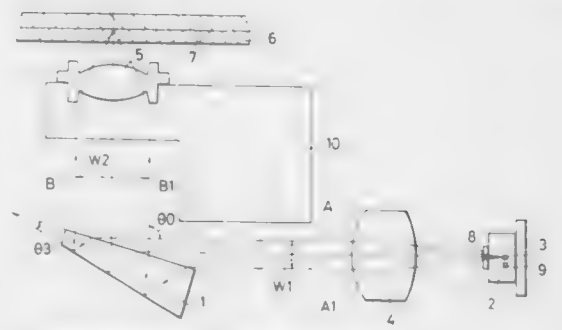
Koji Yoshifusa, and Taizo Yokota, both of Higashihiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 24, 1990, Ser. No. 527,779

Claims priority, application Japan, May 27, 1989, 1-133488

Int. Cl.[5] G02B *5/04, 13/10;* **G11B** *7/135*

U.S. Cl. 350—286 **4 Claims**



1. A beam converting apparatus comprising:

a semiconductor laser element,

means for converting the laser beam from the semiconductor laser element into a parallel beam, and

a prism possessing a first plane for receiving and transmitting the parallel beam and a second plane for fully reflecting so that the beam entering from the first plane may be emitted from the first plane, wherein the apex angle of the first plane and second plane is defined so that the sum of the incidence angle ($\theta 1$)to the normal of the first plane and the exit angle ($\theta 2$) to the normal of the first plane of the beam fully reflected from the second plane emitted from the first plane, ($\theta 1+\theta 2$), is about 90 degrees.

5,007,714

OPTICAL DEVICE

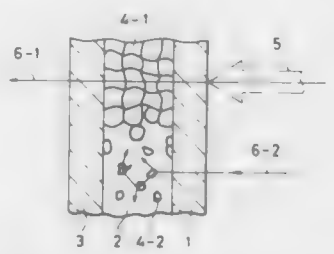
Yukuo Nishimura, Sagamihara; Masahiro Haruta, Tokyo; Hirohide Munakata, Yokohama; Yoko Kuwae; Toshihiko Miyazaki, both of Tokyo, and Satoshi Yuasa, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 810,249, Dec. 18, 1985, abandoned. This application Nov. 16, 1987, Ser. No. 120,789

Claims priority, application Japan, Dec. 24, 1984, 59-272351; Dec. 24, 1984, 59-272352; Dec. 24, 1984, 59-272353; Dec. 24, 1984, 59-272354; Dec. 24, 1984, 59-272355; Dec. 24, 1984, 59-272356; Dec. 26, 1984, 59-276945; Dec. 26, 1984, 59-276946; Dec. 26, 1984, 59-276947

Int. Cl.[5] G02F *1/01;* **G02B** *5/23;* **G09G** *3/34*

U.S. Cl. 350—353 **2 Claims**



1. An optical device, which comprises a liquid layer containing a liquid-absorbable and releasable polymer that absorbs and releases a liquid under thermal action, and a liquid, wherein said liquid-absorbable and releasable polymer is a crosslinked polymer and absorbs a liquid to undergo swelling and releases the liquid to undergo shrinking, and said liquid contains pig-

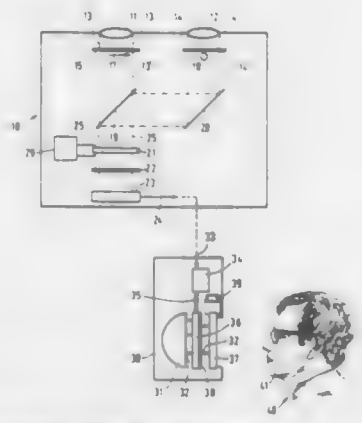
ments or polymer-bound dyes, wherein said pigments or polymer-bound dyes do not penetrate the inside of said liquid-absorbable and releasable polymer when said polymer absorbs the liquid.

5,007,715

DISPLAY AND PICK-UP DEVICE FOR STEREOSCOPIC PICTURE DISPLAY

Antonius G. H. Verhulst, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 21, 1989, Ser. No. 313,666
Claims priority, application Netherlands, Mar. 10, 1988, 8800595
Int. Cl.[5] G02F 1/13; H04N 13/00
U.S. Cl. 350—334 15 Claims



1. A stereoscopic system, comprising:

imagining means for forming first and second optical images of a scene and for combining said images in superposed relation, said first image being characterized by a first optical polariation and said second image being characterized by a second optical polarization, different from said first optical polarization; and

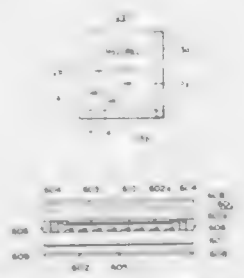
first display means, in optical communication with said imaging means, for formig a first pattern of optical picture elements corresponding to said first image and a second pattern of optical picture elements corresponding to said second image, the optical picture elements of said first and second patterns being characterized by the same optical polarization.

5,007,716

LIQUID CRYSTAL DEVICE

Yukio Hanyu, and Toshiharu Uchimi, both of Atsugi, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 11, 1989, Ser. No. 295,509
Claims priority, application Japan, Jan. 11, 1988, 63-004312
Int. Cl.[5] G02F 1/133
U.S. Cl. 350—336 14 Claims



1. A liquid crystal device, comprising:

(a) a first substrate having a plurality of first elongated electrodes formed thereon, each first elongated electrode defining two longitudinal edges and having a first linear projection associated therewith along one of said longitudinal edges, said first substrate being provided with a uniaxial orientation axis in the direction from said first linear projection toward the other of said two longitudinal edges of said first elongated electrode associated therewith,

(b) a second substrate having a plurality of second elongated electrodes disposed thereon opposite to and intersecting with said first elongated electrodes, said second substrate being provided with a uniaxial orientation axis in the same direction as the uniaxial orientation axis provided to said first substrate, and,

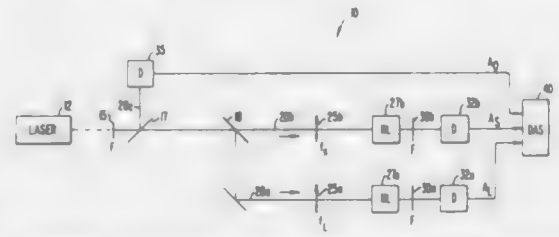
(c) a chiral smectic liquid crystal disposed between said first and second substrates in a thickness small enough to suppress the formation of a helical structure inherent to said chiral smectic liquid crystal in its bulk state, said chiral smectic liquid crystal having an inclination of forming or actually forming a pair of a hairpin defect and a lightning defect, said hairpin defect being formed after said lightning defect in the direction of the uniaxial orientation axes.

5,007,717

REAL TIME ANALYZER FOR PULSED LASER SYSTEMS

Antonello Cutolo, Via Albino 30, 80127 Napoli; Salvatore Solimeno, Mostra d'Oltremare, 80125 Napoli, both of Italy, and John M. J. Madey, 2120 Amherst St., Palo Alto, Calif. 94306

Filed May 11, 1988, Ser. No. 192,577
Int. Cl.[5] G02F 1/01; G01J 1/42, 1/40; H01J 40/14
U.S. Cl. 350—353 38 Claims



1. A method for measuring a beam parameter of a laser beam characterized by at least one laser pulse comprising the steps of:

directing first, second, and third portions of the laser beam along separate first, second, and third beam paths;

focusing the first and second beam portions, each to a different degree;

passing the first and second beam portions through respective non-linear elements to generate radiation at a harmonic of the fundamental frequency in each of the first and second non-linear elements;

generating respective first and second signals representative of the energy of the harmonic radiation generated in the first and second non-linear elements;

generating a third signal representative of the total energy of the third beam portion; and

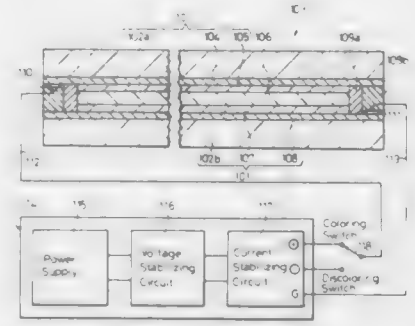
combining the first, second, and third signals to provide at least one value representative of a beam parameter.

5,007,718

ELECTROCHROMIC ELEMENTS AND METHODS OF MANUFACTURING AND DRIVING THE SAME

Jun Minoura; Shigeyuki Takahahi; Hisaki Kato; Toshiyasu Ito; Takaaki Mori; Mamoru Kato; Junichi Shimada, all of Nishikasugai, and Katsuaki Okabayashi, Aichi, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi and Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Apr. 1, 1988, Ser. No. 176,708
Claims priority, application Japan, Apr. 2, 1987, 62-82075; Apr. 28, 1987, 62-105419; Apr. 28, 1987, 62-105420; Aug. 13, 1987, 62-202246
Int. Cl.[5] G02F 1/01; G09G 3/34
U.S. Cl. 350—357 11 Claims



1. An electrochromic element comprising:

a pair of electrochromic bases, each comprising a substrate, an electrode layer disposed on said substrate, and a color-forming layer dispersed on said electrode layer, said electrochromic bases being superposed such that their respective color-forming layers face each other,

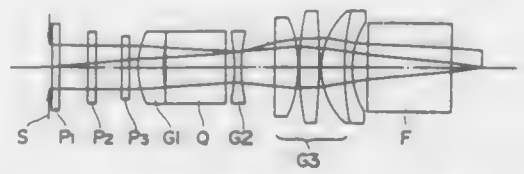
an ultraviolet-setting solid electrolyte disposed between said color-forming layers of said electrochromic bases, said solid electrolyte being a mixture including an ultraviolet-setting polymeric compound, an organic solvent and an ion conducting salt.

5,007,719

VARIFOCAL IMAGING OPTICAL SYSTEM HAVING MOIRE ELIMINATING FUNCTION

Akira Hasegawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1990, Ser. No. 516,207
Claims priority, application Japan, Apr. 29, 1989, 1-109894
Int. Cl.[5] G02B 15/14
U.S. Cl. 350—425 21 Claims



1. An imaging optical system comprising an imaging lens system for forming an image of an object on a given image plane, the imaging lens system comprising a varifocal lens portion for allowing the imaging lens system as a whole to have different magnifications without changing the positional relationship between the object and the image plane, and a front lens portion arranged on the object side of the varifocal lens portion, the imaging lens system satisfying the following condition:

$$|\phi_{3T}| - |\phi_{3W}| \cong 0.8|(Z-1)SA31|$$

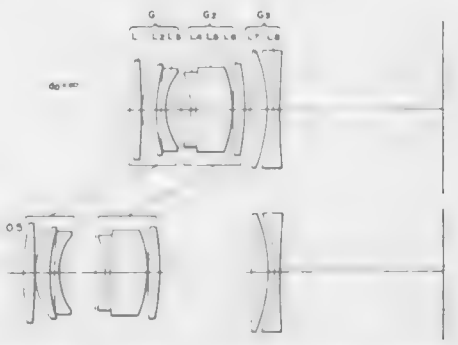
where Z is the ratio of the maximum value to the minimum value of the magnification of the imaging lens system; SA31 is the third-order coefficient of spherical aberration of the front lens portion; $|\phi_{3T}|$ is the sum of the third-order coefficients of spherical aberration of the respective lens surfaces of the imaging lens system in the state of the maximum magnification; and $|\phi_{3W}|$ is the sum of the third-order coefficients of spherical aberration of the respective lens surfaces of the imaging lens system in the state of the minimum magnification.

5,007,720

LENS SYSTEM ENABLING CLOSE DISTANCE PHOTOGRAPHING

Yoshinari Hamanishi, Wako, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Apr. 23, 1990, Ser. No. 513,068
Claims priority, application Japan, Apr. 26, 1989, 1-106901
Int. Cl.[5] G02B 9/64, 15/22
U.S. Cl. 350—463 8 Claims



1. A lens system enabling close distance photography which comprises a 1st lens group having positive refractive power, a 2nd lens group having positive refractive power and a 3rd lens group having negative refractive power, arranged in this order from the object side, wherein the 3rd lens group comprises a positive lens and a negative lens fixed relative to the image plane and the 1st lens group and the 2nd lens group are so constructed that, in focussing from infinite distance to the closest distance, they move toward the object and away from the 3rd lens group while expanding the space between them, and wherein, when the synthetic focal distance of the entire optical system at infinite distance focussing is f, the focal distance of the 1st lens group is f_1, the focal distance of the 2nd lens group is f_2, the focal distance of the 3rd lens group is f_3, the synthetic focal distance of the 1st lens group and the 2nd lens group is f_{12} and the shape factor of the positive lens in the 3rd lens group is q, the following conditions are satisfied:

wherein the shape factor g is so defined that,

$$q = (rb + ra)/(rb - ra)$$

where ra stands for the radius of curvature of the object side surface of the lens and rb stands for the radius of curvature of the image side surface of the lens.

5,007,721

MECHANICALLY ROTATED DOPPLER FREQUENCY SHIFTER

John B. Morris, Billerica; Uve H. W. Lammers, Chelmsford, and Richard A. Marr, Billerica, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

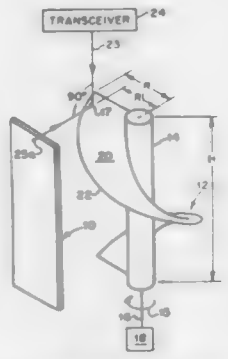
Filed May 25, 1990, Ser. No. 529,032
Int. Cl.[5] G02B 5/10, 7/18, 27/00; H01Q 15/16
U.S. Cl. 350—486 12 Claims

1. A Doppler frequency shifter for a transmitted high frequency narrow beam, the combination comprising:

a transmitter for radiating said narrow beam, and a receiver for receiving Doppler shifted reflections of said beam;

a cylinder mounted for rotation on its axis, said axis being parallel to said beam;

a first reflector comprising a helix having a smooth reflecting surface for reflecting said beam, said helix being mounted on said cylinder and said transmitted beam impinging thereon at a radial distance Ri from said axis, the surface of said reflector being defined by an infinite number of lines drawn from every point on the outer edge of said helix to the cylinder, the extension of such lines being



perpendicular to and passing through the outer edge of said helix and the axis of said cylinder;

means for rotating said reflector on said axis, whereby said beam impinges on said surface along different heights of said helix and the length of travel of said. beam to said helix varies as said helix is rotated; and

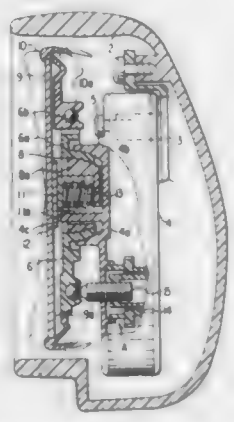
a second reflector for intercepting reflected beam from said first reflector, and for reflecting said intercepted beam toward said receiver.

5,007,722

MIRROR APPARATUS WITH VIBRATOR FOR REMOVING WATER DROPS

Keiji Mori, Kariya, and Hidekazu Kogita, Toyota, both of Japan, assignors to Aiskin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 1, 1989, Ser. No. 345,302
Claims priority, application Japan, Apr. 30, 1988, 63-058903[U]
Int. Cl.[5] G02B *5/08*; B60R *1/06*
U.S. Cl. 350—382 5 Claims



1. A mirror apparatus comprising:

a body;

a mirror member having at opposite sides thereof a reflecting surface and a backside and positioned within the body;

a vibrating member comprising means for generating vibrations and secured to the backside of the mirror member; and

a compressed spring comprising pressing means for continually pressing on the vibrating member in a direction towards the backside of the mirror member,

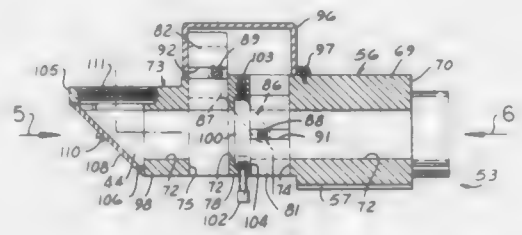
whereby vibrations from the vibrating members are effectively transmitted to the mirror member.

5,007,723

DOCUMENTATION ILLUMINATION MODULE FOR A MICROSCOPE SYSTEM

Larry K. Kleinberg, Toluca Lake, Calif., assignor to Storz Instrument Company, St. Louis, Mo.

Division of Ser. No. 50,948, May 15, 1987, Pat. No. 4,856,873.
This application Feb. 21, 1989, Ser. No. 312,904
Int. Cl.[5] G02B *21/06, 21/36*
U.S. Cl. 350—508 28 Claims



1. An illumination module for a microscope system providing illumination from a light source to a field of view and to documentation equipment such as a camera for recording an image from the field of view by operation of said module, said module comprising:

means for transmitting light from the light source to the field of view to produce a reflected image;

said means receiving the reflected image and transmitting the reflected image without a beam splitter to the documentation equipment; and

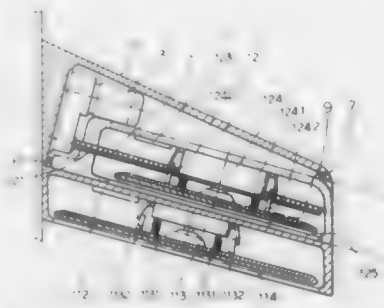
said means including prism means to transmit the light to the field of view and the reflected image to the documentation equipment.

5,007,724

AUXILIARY MIRROR ANGLE CHANGING DEVICE FOR A MAIN AND AUXILIARY REARVIEW MIRROR

Mei-Wen H. Hou, No. 200, Fu-Chiang Road, Sec. 2, Yung Kang Shiang, Tainan Hsien, Taiwan

Filed May 30, 1990, Ser. No. 530,322
Int. Cl.[5] G02B *7/18*
U.S. Cl. 350—604 1 Claim



1. An auxiliary mirror angle changing device for a main and auxiliary rearview mirror comprising;

a main mirror frame;

an auxiliary mirror frame normally being moved in the interior of the main mirror frame and possible to be moved sidewise out of the main mirror frame by a motor connected with a reduction gear set to rotate a worm inserting and engaging in a threaded hole in the rear end wall of the auxiliary mirror frame, said motor being started by a switch and stopped by one of two micro switches fixed respectively at the front end and the rear end of the main mirror frame, said micro switch being actuated by touching of one of two touch blocks provided on and under the rear end wall of the auxiliary mirror frame, said auxiliary mirror frame possible to be inclined in its angle by a device comprising;

a digital motor mounted in said auxiliary mirror frame;

a control electric circuit having its output connected with the digital motor for rotating the digital motor clockwise or counterclockwise and connected with the micro switches which can start said control electric circuit when it is touched by one of the touch block; and

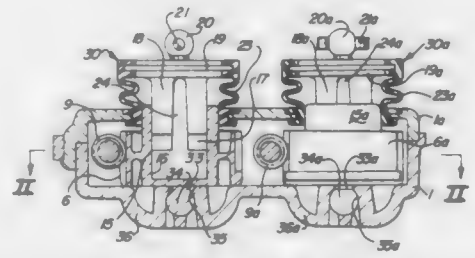
a base connected with the shaft of the digital motor enveloping said motor in its interior and being inclined backward or forward by clockwise or counterclockwise rotation of the digital motor to press a plurality of springs fixed on the back of the auxiliary mirror to incline said mirror to a certain angle wanted by pushing up or down a control switch.

5,007,725

MECHANISM WITH TORQUE-LIMITING DEVICE FOR CONTROLLING A REARVIEW MIRROR

Stéphane Manzoni, Saint-Claude, France, assignor to Societe Manzoni Bouchot, France

Continuation of Ser. No. 881,938, Jul. 3, 1986, abandoned, which is a continuation of Ser. No. 491,633, May 5, 1983, Pat. No. 4,598,605. This application Oct. 27, 1987, Ser. No. 115,655
Claims priority, application France, May 13, 1982, 82 08347
The portion of the term of this patent subsequent to Jul. 8, 2003, has been disclaimed.
Int. Cl.[5] B60R *1/02*
U.S. Cl. 350—633 5 Claims



1. A torque-limiting mechanism for operating a rearview mirror of a vehicle, said torque-limiting mechanism comprising:

a casing having a cavity therein;

a cover member mounted to said casing, said cover member having at least one opening therein;

a support member attached to said mirror, said support member further being spaced a predetermined distance from said cover member of said casing;

rotation to translation means mounted in said cavity of said casing, said rotation to translation means comprising:

a pinion gear member located in said cavity, said pinion gear member having a bore with a threaded portion therein and a spherical member mounted thereto;

a selectively translatable control member having a central axis, said selectively translatable control member being translatable along said central axis and having an external threaded diameter portion mounted to said threaded portion of said bore of said pinion gear member said selectively translatable control member further having an end portion and an opposite end portion, said end portion being pivotally attached to said support member along said central axis to permit said mirror to pivot with respect to said selectively translatable control member about a pivot axis which extends perpendicularly through said central axis, the translation of said selectively translatable control member along said central axis causing a change in the operating position of said mirror about said pivot axis thereby pivoting said mirror with respect to said selectively translatable control member about said pivot axis, said selectively translatable control member being operatively connected to said pinion gear member, whereby rotation of said pinion gear member causes the translation of said selectively translatable control member along said central axis, the center of said spherical member of said pinion gear member lying along said central axis;

motor means mounted in said casing said motor means comprising screw means tangentially engaging said pinion gear member and adapted to impart rotational movement to said pinion gear member; and

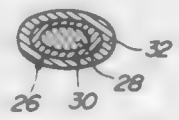
a spherical bearing attached to said casing engaging said spherical member of said pinion gear member, whereby said pinion gear member is able to pivot within said spherical bearing as a result of non-axial loads which will be imparted to said selectively translatable control member when said selectively translatable control member is translated to cause a change in the operating position of said mirror.

5,007,726

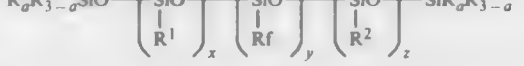
COATED EYEGLASSES FRAME MEMBER

Akio Suzuki, Gunma; Hirofumi Kishita, Annaka; Shigehisa Sonegawa, Annaka; Masaaki Matumura, Annaka, and Takeshi Hoashimoto, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1989, Ser. No. 432,491
Claims priority, application Japan, Nov. 8, 1988, 63-281671
Int. Cl.[5] G02C *5/02, 5/12, 5/14*
U.S. Cl. 351—41 6 Claims



1. A frame member for eyeglasses having a surface coated with a cured fluorine-containing silicone, wherein the cured fluorine-containing silicone is a cured product of an addition reaction between an alkenyl group-containing organopolysiloxane and an organohydrogenpolysiloxane, wherein said alkenyl group-containing organopolysiloxane has the general formula (1):



wherein R^1 is an alkenyl group having 2 to 6 carbon atoms, R^2 is an alkyl group having 1 to 8 carbon atoms or a phenyl group, Rf is a fluorinated substituent selected from the group consisting of

$$F(CFCF_2O)_nCFCF_2OCH_2CH_2CH_2-,$$
$$\quad\;\; CF_3 \qquad CF_3$$

$$F(CFCF_2O)_nCFCH_2OCH_2CH_2CH_2-,$$
$$\quad\;\; CF_3 \qquad CF_3$$

$$C_mF_{2m+1}CH_2CH_2OCH_2CH_2CH_2-,$$

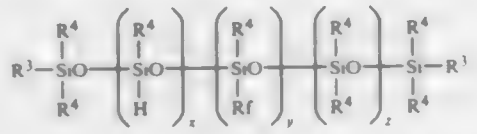
$$C_mF_{2m+1}CH_2OCH_2CH_2CH_2-,$$

$$C_mF_{2m+1}CH_2CH_2-, \text{ and } C_mF_{2m+1}CH_2CH_2CH_2-$$

wherein n is an integer of 1 to 5 and m is an integer of 3 to 10,

and letters a, x, y, and z are integers within the ranges: $1 \leqq a \leqq 3$, $0 \leqq x$, $1 \leqq y$, and $0 \leqq z$, and said organohydrogenpolysiloxane has the general formula (2):

(2)



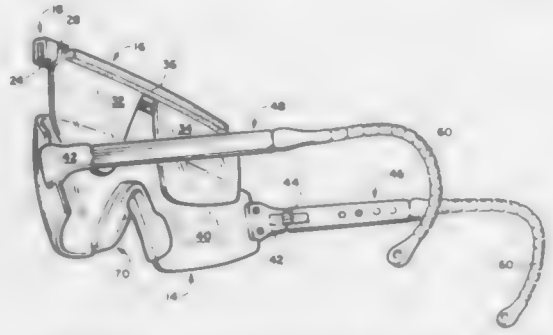
wherein R^3 is selected from the group consisting of hydrogen, an alkyl group having 1 to 8 carbon atoms and a phenyl group, R^4 is an alkyl group having 1 to 8 carbon atoms or a phenyl group, Rf is a fluorinated substituent as defined above, and letters x, y, and z are integers within the ranges $0 \leqq x$, $1 \leqq y$, and $0 \leqq z$.

5,007,727

COMBINATION PRESCRIPTION LENS AND SUNGLASSES ASSEMBLY

Alan Kahaney, 2212 Place Monaco, Del Mar, Calif. 92014, and Robert Sved, 39557 Via Temprano, Murietta, Calif. 92362

Filed Feb. 26, 1990, Ser. No. 484,884
Int. Cl.[5] G02C *9/00*
U.S. Cl. 351—47 **5 Claims**



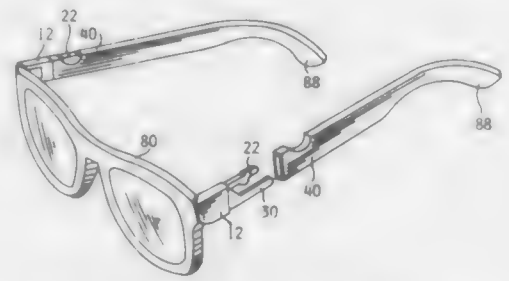
1. A combination prescription lens and sunglasses assembly comprising:
- a pair of sunglasses having a one-piece lens having a longitudinally extending top edge;
- a left eye prescription lens having a top edge, an inside edge, a front surface and a rear surface;
- a right eye prescription lens having a top edge, an inside edge, a front surface, and a rear surface;
- an elongated support member having a predetermined length, said support member having a top wall, a front wall, a rear wall and a bottom wall, said elongated support member having an arcuate longitudinal curvature when viewed in top plan view;
- means for fixedly securing the top edges of said respective left and right prescription lenses to the rear wall of said elongated support member to form a prescription lens assembly; and
- mounting means for detachably securing said elongated support bar on the top edge of the one piece lens of said pair of sunglasses so that said prescription lenses are positioned rearwardly of the one-piece lens of said sunglasses, said mounting means is a longitudinally extending groove in the bottom wall of said elongated support member.

5,007,728

DETACHABLE TWO-PIECE TEMPLE

Robert M. Magorien, 4324 Leatherwood Ct., Camarillo, Calif. 93010

Filed Dec. 26, 1989, Ser. No. 457,147
Int. Cl.[5] G02C *5/20*
U.S. Cl. 351—118 **1 Claim**



1. A detachable two-piece temple comprising:

A front piece having a front surface and a back surface, said front piece further comprising:
- (1) means to swivelly attach the front surface of said front piece to the back of an eyeglass frame.
- (2) a resilient locking rod that includes a lock notch and that integrally extends from the back surface of said front piece.
- (3) a guide rod spaced from said locking rod and that integrally extends from the back of said front piece.
- (4) a plurality of first snap lock fasteners located on the outer surface of said front piece.

B. a back piece having a front section and a back section
- (1) said front section having a forward facing cavity that further comprises:
  - (a) a locking rod cavity sized to accept and retain said resilient locking rod,
  - (b) a guide rod cavity sized to accept and retain said guide rod,
  - (c) a locking-rod release opening having a lock notch catch sized to catch and hold said lock notch when said locking rod is inserted into said locking rod cavity such that when so held, said front and back pieces are held together, where said locking-rod release opening also functions and is sized to allow said lock notch to be depressed and allow said back piece to be pulled away from said front piece.
- (2) said back section consisting of a temple ear-piece extension that fits over the ear of the eyeglass user,
- (3) a plurality of first snap lock fasteners located on the outer surface of said back piece, and

C. a combination top and side safety shield, with the top and side sections of said shield having an opening in alignment with said locking rod release opening, and with the side section of said shield having a corresponding plurality of second snap lock fasteners that when pressed into said first snap lock fasteners on said front and back pieces said combination top and side safety shield is corrected aligned and held in place, wherein said combination shield is made oversize to allow the specific eyeglass user to cut and shape said shield to conform to the contour of the individual's face.

5,007,729

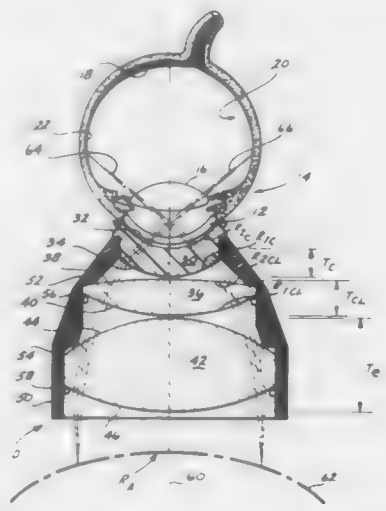
WIDE ANGLE OPHTHALMIC LENS

Phillip J. Erickson; Janet L. Crossman, both of Bellevue; Gregory L. Heacock, Seattle, all of Wash., and Martin A. Mainster, Overland Park, Kans., assignors to Ocular Instruments, Inc., Bellevue, Wash.

Filed Oct. 27, 1989, Ser. No. 427,882
Int. Cl.[5] A61B *3/00;* **G02C** *7/04*
U.S. Cl. 351—219 **6 Claims**

1. An ophthalmic lens for observing the fundus including the peripheral retinal regions of the eye and for delivering laser energy thereto comprising:

a contact lens having a posterior surface and an anterior surface, said posterior surface having a radius of curvature (R_{2C}) compatible with the anterior surface of a cornea, the



anterior surface of the contact lens having a predetermined radius of curvature R_{1C},

an entry lens positioned anterior to the contact lens, the entry lens being aspheric, the surfaces of the entry lens being defined by the formula:

$$Z = \frac{CK^2}{1 + \sqrt{1 - C^2EK^2}},$$

wherein

$C=(1/R)$,

$E=b+1$, and

$K^2=x^2+y^2$,

wherein for the anterior surface of the lens, R ranges from 14 mm to 50 mm and b ranges from -54 to -4, and wherein for the posterior surface of said lens, R ranges from 10 mm to 25 mm and b ranges from -0.6 to -2, said entry lens having a thickness ranging from 8.5 mm to 16.5 mm, and

a center lens positioned between the contact lens and the entry lens, the optical axes of the contact lens, the center lens, and the aspheric lens being substantially coincident, the center lens having a posterior surface having a radius of curvature R_{2CL}, the anterior surface of the entry lens having a radius of curvature R_{1CL}, the center lens element receiving light rays emerging from the eye and the contact lens and refracting the light rays toward the optical axis of the ophthalmic lens, the entry lens collecting the light rays emerging from the center lens and producing an aerial image anterior to and in close proximity to the entry lens, the contact lens and the center lens element being positioned relative to each other and to the entry lens and having their radii of curvature chosen such that light rays originating in the peripheral retinal region of the eye are positioned within the aerial image produced by the entry lens,

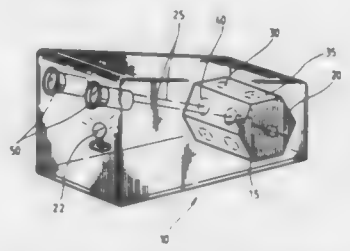
wherein the indices of refraction of said contact lens can range from 1.44 to 1.97, R_{1C} can range from 10.49 mm to 11.95 mm and the thickness of the contact lens (T_C) can range from 0.41 mm to 7.03 mm, and wherein the indices of refraction for the center lens can range from 1.60 to 1.97, R_{2CL} can range from 60.37 mm to 97.61 mm, R_{1CL} can range from 18.48 mm to 29.88 mm and the thickness of the center lens (T_{CL}) can range from 4.29 mm to 5.29 mm.

5,007,730

METHOD AND APPARATUS FOR MEASURING VISION BLOCKAGE RESULTING FROM GLARE

John A. McAllister, 7810 Overbrook, Houston, Tex. 77063, Tim C. Taylor, 4140 Southwest Freeway, No. 208, Houston, Tex. 77027

Continuation of Ser. No. 835,796, Mar. 3, 1986, abandoned. This application Jun. 16, 1988, Ser. No. 220,892
Int. Cl.[5] A61B *3/02, 3/10*
U.S. Cl. 351—243 **2 Claims**



1. Apparatus for measuring glare-induced vision blockage in a subject, said apparatus comprising:
- a hollow polygonal cylinder mounted for rotation about a longitudinal axis;
- each face of said cylinder comprising a plate;
- each said plate having a light-passing window formed therein;
- a viewer arranged to permit said subject to perceive at least one said plate;
- a light source interior to said cylinder;
- a pattern of alternating light and dark segments arranged about each said window;

said patterns being of varying actual sizes; and

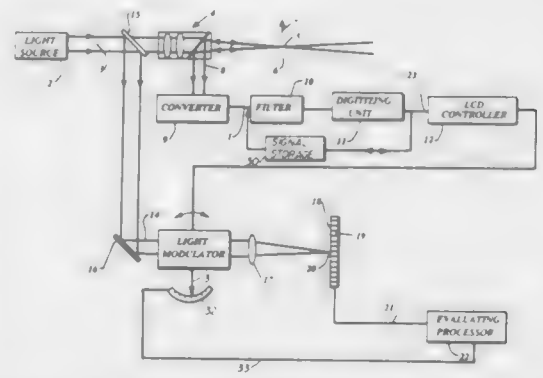
an arm adapted to selectively rotate said cylinder.

5,007,731

DOPPLER FLUID FLOW VELOCITY MEASURING APPARATUS AND METHOD UTILIZING IMAGING OF SCATTERED LIGHT

Karl-Aloys Bütefisch, Bovenden, Fed. Rep. of Germany, assignor to Deutsche Forschungsanstalt fur Luft-und Ramfahrt, Bonn, Fed. Rep. of Germany

Filed May 3, 1989, Ser. No. 347,181
Claims priority, application Fed. Rep. of Germany, May 6, 1988, 3815474
Int. Cl.[4] G01P *3/36*
U.S. Cl. 356—28.5 **11 Claims**



11. A method of measuring fluid flow velocity in a wind tunnel or the like, with said method comprising the steps of:

illuminating the fluid with a coherent light beam to produce Doppler-shifter scattered light;

registering the Doppler-shifted scattered light and converting the registered light into electric signals;

displaying the electric signals as an image;

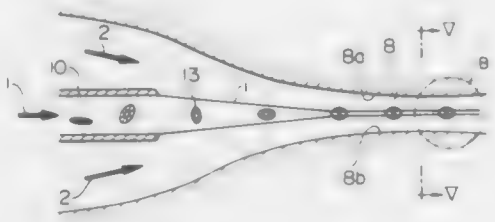
illuminating the displayed image with a coherent light beam to produce the Fourier transformation of the image;
focusing the Fourier transformation in a Fourier plane to generate a Fourier-transformed image; and
evaluating the Fourier transformed image to determine the fluid flow.

5,007,732

FLOW-CELL DEVICE

Hiroshi Ohki, Tsuchiura; Hideaki Kamohara, and Ryo Miyake, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 18, 1988, Ser. No. 182,430
Claims priority, application Japan, Apr. 20, 1987, 62-97130
Int. Cl.[5] G01N *21/00, 21/85*
U.S. Cl. 356—73 **9 Claims**



1. A sheath flow type flow-cell device for a flow-cytometer comprising:
a first inlet for sheath fluid,
a flow passage communicating with said first inlet and contracted toward downstream, said flow passage having a substantially rectangular cross section,
a straight capillary flow passage connected to said flow passage downstream thereof, said capillary flow passage having a substantially rectangular cross section,
a second inlet for sample fluid,
a nozzle communicating with said second inlet and opened within said flow passage in the same direction as the flow direction of said straight capillary flow passage,
a discharge port provided at a terminal end of said straight capillary flow passage, and
flow regulating means for regulating the flow of said sheath fluid in said straight capillary flow passage to be a laminar flow having a gradient of flow velocity, wherein said straight capillary flow passage has opposing first and second side walls connected by top and bottom walls and wherein said flow regulating means comprises said second said wall having a rougher surface than a surface of said first said wall.

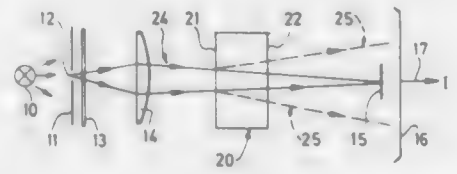
5,007,733

PROCESS AND DEVICE FOR DETERMINING THE CLOUD POINT OF A DIESEL OIL

Dominque Laurent; Gerard Fortunato, both of Lyons; Bernard Damin, Oullins, and Marcel Napoleon, St Verges Mepieu Montalieu Vercieu, all of France, assignors to Elf France, Paris, France

Filed Jun. 7, 1985, Ser. No. 742,580
Claims priority, application France, Jun. 12, 1984, 84 9127
Int. Cl.[5] G01N *33/28*
U.S. Cl. 356—70 **4 Claims**

1. A device for determining a cloud point comprising:
a directed light course having an optical axis;
a diaphragm having a central hole aligned on the optical axis of the light source;
lens means to focus a light beam emitted by the light source and delimited by the diaphragm onto a light-trapping means centered on the optical axis and having a predetermined cross-section sufficiently large to capture the entire focussed light beam;
a light filter interposed between the diaphragm and the lens means;
a test cell to receive diesel oil therein and wherein the test cell is defined by a chamber delimited by two opposite, parallel, planar, transparent walls disposed perpendicular to the optical axis of the light source;
each of said walls comprising a planar window element of transparent material, the cell being provided with an inlet conduit and an outlet conduit for the diesel oil,
photo-electric light-detecting means disposed downstream from the light-trapping means, with reference to the direction of propagation of the light beam, and having a light receiving zone of a size substantially larger than the cross section of the light trapping means, said photo-electric



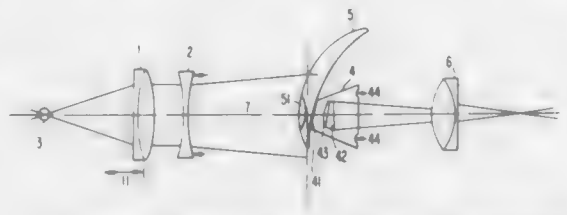
means being adapted to emit a signal when receiving scattered light which is not trapped by the light-trapping means; and
means for adjusting the temperature of the diesel oil in the cell comprised of thermo-electric sensors for measuring the temperature of the diesel oil and the temperature of the material delimiting the cell, and Peltier elements equipped with radiators adapted to receive a flow of heat-exchange fluid and
means of adjusting the temperature of the diesel oil in the cell, whereby the temperature of the diesel oil is adjusted at the instant when the photo-electric means receiving such scattered light represents the cloud point of the diesel oil in the cell.

5,007,734

APPARATUS FOR MEASURING THE REFRACTION CHARACTERISTICS OF OPHTHAMOLOGICAL LENSES

Karl-Heinz Wilms, Hans-Bierling-Str. 47, D-8089 Emmering, Fed. Rep. of Germany

PCT No. PCT/DE87/00385, § 371 Date Apr. 29, 1988, § 102(e) Date Apr. 29, 1988, PCT Pub. No. WO88/01735, PCT Pub. Date Mar. 10, 1988
PCT Filed Aug. 30, 1987, Ser. No. 192,517
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1986, 3629676
Int. Cl.[5] G01M *11/02*
U.S. Cl. 356—124 **11 Claims**



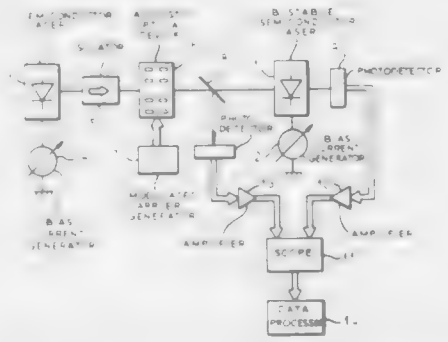
1. An apparatus for measuring the refraction characteristics of ophthalmological lenses comprising a projection optic for projecting light of a light source via a field aperture and the ophthalmological lens arranged on a lens support means onto a light reception means, the refraction characteristics of the ophthalmological lens being determined from an image site in at least one direction, means for varying the vergency of the light beam on the object side of the ophthalmological lens between a position in which the refraction characteristics for the object distance are determined infinitely and at least one alterable position in which the refraction characteristics are determined for finite object distances, the lens support means being arranged stationary and enabling the ophthalmological lens to be definedly raised and positioned diagonally in the beam path, and compensation means for the diagonally arranged opthalmological lens for enabling adjustment to a specific dioptric measuring range being arranged for disposition in the beam path.

5,007,735

METHOD OF CHARACTERIZING BISTABLE SEMICONDUCTOR LASERS

Riccardo Calvani, Pino Torinese, and Renato Caponi, Turin, both of Italy, assignors to Cselt - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Apr. 13, 1989, Ser. No. 337,383
Claims priority, application Italy, May 24, 1988, 67475 A/88
Int. Cl.[4] G01N *21/41;* **H01S** *3/30*
U.S. Cl. 356—128 **9 Claims**



1. A method of measuring characteristic parameters of a bistably operating semiconductor laser which comprises the steps of:
(a) biasing said bistably operating semiconductor laser with a current causing said bistably operating semiconductor laser to function as a laser amplifier;
(b) generating an optical pump signal by modulating a light beam emitted by a pumping semiconductor laser at a pumping wavelength exceeding an operating wavelength of said bistably operating semiconductor laser and energizing said bistably operating semiconductor laser with said pump signal to cause bistably operating semiconductor laser to operate in a bistable operating condition;
(c) measuring an output power (I2) of a light beam emitted by said bistably operating semiconductor laser and measuring an input power (I1) of pump signal energizing said bistably operating semiconductor laser;
(d) determining a hysteresis loop formed as a relationship of said output power (I2) to said input power (I1) having switching points (P1, P2) between two stable states of said bistably operating semiconductor laser;
(e) memorizing values of said input and output powers of each of said points; and
(f) computing from memorized values of said input and output powers of at least one of said points a value (n2) of a nonlinear coefficient of refractive index of material constituting said bistably operating semiconductor laser.

5,007,736

SYSTEM FOR TARGET DESIGNATION BY LASER

Jean-Pierre Daniel, and Jean-Pierre Fauchard, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 14, 1979, Ser. No. 22,116
Claims priority, application France, Feb. 14, 1978, 78 04092
Int. Cl.[5] G01B *11/26;* **G01C** *1/00;* **F41G** *7/00;* **G01N** *1/20*
U.S. Cl. 356—152 **8 Claims**

1. An airborne target-designation system installed partly on an aircraft and partly on a pod carried by said aircraft, comprising:
target-predesignation means aboard the aircraft for generating a first set of off-aim signals representing angular deviations of a first line of sight from a first reference direction based upon the structure of the aircraft;
monitoring display means aboard the aircraft;
automatic acquisition equipment in the pod including a laser illuminator and a pick-up camera trained upon a common second line of sight, said camera feeding video signals to said display means for producing thereon an image of a target lying on said second line of sight, said equipment further including orientation means controlled by first servo circuitry and operatively linked with optical means in line with said camera and said illuminator for keeping said second line of sight trained upon the target in response to said first set of off-aim signals in a search mode and in response to said video signals in a tracking mode, said orientation means generating a second set of off-aim signals representing angular deviations of said second line of sight from a predetermined second reference direction based upon the structure of the pod;
selector means for establishing either one of said modes; and
alignment means for correlating said lines of sight with each other, said alignment means including pilot-operated means aboard the aircraft for generating corrective signals upon observation of an offset of the target image from a

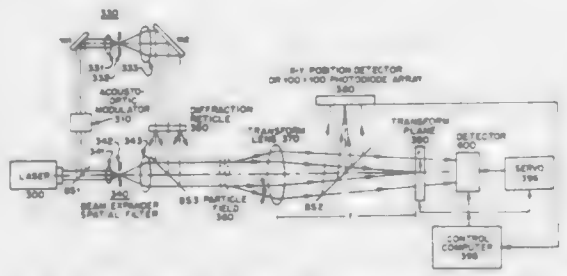
reference point on said monitoring means, processing means switchable by said selector means to receive said first set of off-aim signals from said target-predesignation means and to translate same into error signals fed to said first servo circuitry in said search mode to slave said second line of sight to said first line of sight, said processing means being switchable by said selector means to receive said second set of off-aim signals from said orientation means and to translate same into instruction signals fed to second servo circuitry in said target-predesignation means in said tracking mode to slave said first line of sight to said second line of sight, and a connection extending from said pilot-operated means to said processing means for supplying said corrective signals thereto, said processing means vectorially combining the received set of off-aim signals with said corrective signals to produce said error signals in said search mode and said instruction signals in said tracking mode, said connection including a non-volatile memory for storing said corrective signals and switch means operable to disconnect said memory from said pilot-operated means upon mutual alignment of said lines of sight whereby the corrective signals thereafter supplied to said processing means have the value required to achieve said mutual alignment

5,007,737

PROGRAMMABLE DETECTOR CONFIGURATION FOR FRAUNHOFER DIFFRACTION PARTICLE SIZING INSTRUMENTS

Edwin D. Hirleman, Jr., Mesa, Ariz., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 1, 1988, Ser. No. 266,952
Int. Cl.[5] G01N *15/02*
U.S. Cl. 356—336 8 Claims



1. A particle sizing system for determining particle size distributions in liquids and gases in a particle field using Fraunhofer diffraction patterns, said particle sizing system comprising:

a means for illuminating said particle field with a Fraunhofer diffraction pattern, said Fraunhofer diffraction pattern having a center axis;

a transform lens which receives and focuses said Fraunhofer diffraction pattern from said particle field at its focal point to produce an output;

a transform plane which is fixed at the focal point of said transform lens, said transform plane comprising a spatial light modulator which physically separates different bands of light of said Fraunhofer diffraction pattern in order to produce an output by passing only light through concentric rings which are adjustable in radius and width about the diffraction pattern's center axis, said spatial light modulator thereby allowing adjustable detection of selective particle size distributions since light scattered by very large is concentrated about comparatively small angles from said center axis, while light scattered by comparatively small particles in the particle field goes into comparatively large angles about said center axis of said diffraction pattern from said transform lens;

a detector which receives and measures said Fraunhofer diffraction pattern from said transform plane at increments that are adjusted by said spatial light modulator to indicate thereby said particle size distribution by detecting magnitudes of discrete angular distributions of scattered light in said Fraunhofer diffraction pattern from said transform plane;

an on-line test means which tests said particle sizing system using a particle field sample with a known particle size distribution which is compared to detected particle size distributions measured by said detector, said particle field sample comprising a diffraction reticle which includes a transparent sheet with a particle array of circular apertures with said known particle size distribution;

a means for detecting the center axis of said Fraunhofer diffraction pattern from said transform plane, said detecting means outputting a detection signal; and

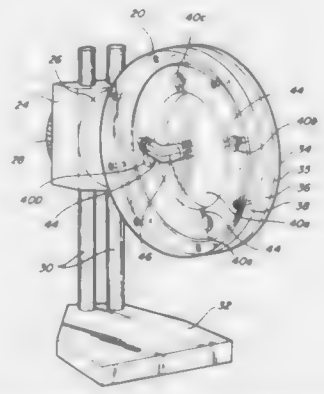
a means for controlling said spatial light modulator and said detector, said controlling means receiving said detection signal from said detecting means, and physically moving said detector so that it is aligned with the center axis of said Fraunhofer diffraction pattern from said transform lens, said controlling means also adjusting said spatial light modulator to pass only light through concentric rings which are incrementally adjusted in radius and width about said center axis of said Fraunhofer diffraction pattern, said controlling means also receiving and displaying measurements made by said detector to indicate thereby said particle size distribution in said particle field.

5,007,738

INTERFEROMETRIC TEST STANDARD

Ralph M. Grant, 4480 Sheldon Rd., Rochester, Mich. 48308-1006

Filed Mar. 14, 1990, Ser. No. 493,218
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—347 28 Claims



1. An interferometric test block, for calibrating interferometric analysis apparatus comprising:

a body of relatively rigid material having a first substantially planar face;

a sheet of relatively flexible material supported by said body and bonded to said face; and

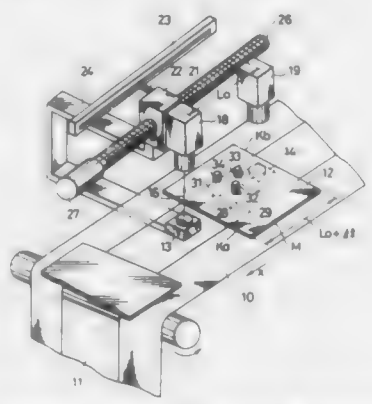
means defining a cavity in said body, said cavity operable to weaken the support provided for the sheet by the body at that portion of said sheet overlying said cavity, so that when a predetermined deforming force is imposed on said test block, said overlying portion of sheet will deform, whereby interferometric measurements of said sheet before and after the imposition of said deforming force may be compared with a predetermined standard to calibrate said interferometric analysis apparatus.

5,007,739

LENGTH MEASURING APPARATUS

Masami Shimano, and Atuhiro Sano, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 24, 1989, Ser. No. 432,918
Claims priority, application Japan, Oct. 24, 1988, 63-267675
Int. Cl.[5] G01B *11/04*
U.S. Cl. 356—383 6 Claims



1. A measuring apparatus for measuring the actual length of a sheet moving at a constant speed in one direction, said apparatus comprising:

front edge detecting means for detecting the front edge of said sheet and for outputting a front edge signal;

rear edge detecting means disposed at a distance substantially equal to a desired sheet length from said front edge detecting means in said one direction for detecting the rear edge of said sheet and for outputting a rear edge signal;

inclination detecting means for detecting the angle of inclination of said sheet with respect to said one direction and for outputting an angle signal representative of said inclination angle;

said inclination detecting means comprising three sets of photosensors arranged at the apices of an isosceles triangle of which a perpendicular bisector of the base is parallel to said one direction and passes through the apex remote from the base; and

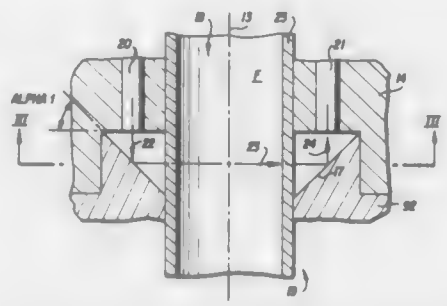
arithmetic means for determining an apparent length of said sheet in said one direction based on said front and rear edge signals output from said front edge and rear edge detecting means and for correcting said apparent length to said actual length based on said angle signal from said inclination detecting means.

5,007,740

OPTICAL PROBE FOR FLUID LIGHT TRANSMISSION PROPERTIES

Anthony C. Jeannotte, and Anthony C. Gilby, both of Foxboro, Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed Mar. 30, 1989, Ser. No. 330,533
Int. Cl.[5] G01N *21/00, 1/10*
U.S. Cl. 356—436 45 Claims



1. In an optical sensing system including a source of radiant energy and an optical detector, a probe for optical sampling comprising:

(a) a chamber having an optical entry and an optical exit and a fluid port,

(b) means for directing radiant energy from said source into and through said chamber to an exit;

(c) means for collecting said radiant energy exiting from said chamber;

(d) first pathway means for conveying radiant energy to said means for directing radiant energy through said chamber; and

(e) second pathway means for conveying radiant energy away from said chamber exit to said detector,

(f) means for sealing said fluid port and providing thereby a stilling well;

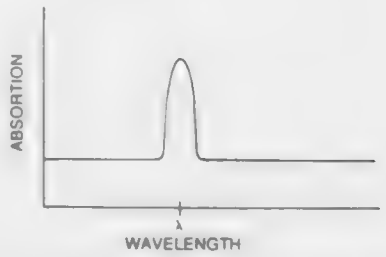
wherein said means for directing radiant energy into and through said chamber to said exit and said means for collecting radiant energy comprise surface portions of an interior conical reflecting surface.

5,007,741

METHODS AND APPARATUS FOR DETECTING IMPURITIES IN SEMICONDUCTORS

Gary E. Carver, Flemington, N.J.; Gregory L. Koos, Yardley, and John D. Michalski, Furlong, both of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 25, 1989, Ser. No. 412,043
Int. Cl.[5] G01N *21/55*
U.S. Cl. 356—448 8 Claims



1. A method for detecting and measuring a specific impurity which is not a conductivity-determining impurity in a crystalline semiconductor wafer comprising the steps of:

forming a light beam containing an optical frequency capable of being absorbed by the specific impurity.

polarizing the beam such that it contains light predominantly of a p-type polarization;

splitting the beam into first and second light components;

directing the first light component at a first semiconductor wafer containing an unknown density of the specific impurity;

directing the second light component at a second semiconductor wafer containing a known density of the specific impurity;

the first and second light components being respectively directed at the first and second wafers at an angle of incidence substantially equal to the principal angle of incidence;

detecting p-type polarized light of the first light component reflected from the first water;

detecting p-type polarized light of the second light component reflected from the second wafer;

measuring the difference of intensity of the detected first and second p-type polarized light components;

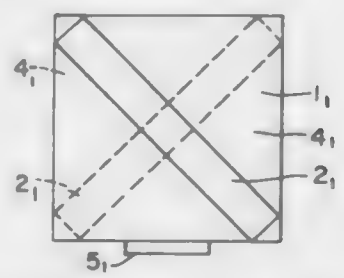
and using the measured intensity difference to determine the density of the specific impurity contained in the first wafer.

5,007,742

TEMPERATURE-SENSING MEMBER

Masayoshi Usui, Numazu, and Hiroshi Kanesaka, Kawasaki, both of Japan, assignors to Usui Kokusai Sangyo Kaisha Limited, Japan

Filed Dec. 19, 1989, Ser. No. 452,820
Claims priority, application Japan, Dec. 27, 1988, 63-330620
Int. Cl.[5] G01K *5/62, 13/00*
U.S. Cl. 374—136 13 Claims



1. A temperature-sensing member for directly indicating magnitudes of temperature changes of a fluid, comprising:

a columnar base having a longitudinal axis, opposed ends and an outer surface extending between the opposed ends, the outer surface defining at least first and second opposed surface areas extending longitudinally between the opposed ends, said base being formed from a first material having a coefficient of thermal expansion; and

at least one strip member of a second material having a coefficient of thermal expansion different from that of said base,

said strip member being secured directly on at least the first and second opposed surface areas of the outer surface of said base at acute angles with respect to the longitudinal axis of said base, portions of the strip member on the first surface area being angularly offset in a first direction relative to the longitudinal axis, and portions of the strip member on the second surface area being angularly offset in an opposed direction relative to the axis, such that the opposed ends of the base twist relative to one another in response to changes of temperature;

temperature indicating means mounted in proximity to one said end of the base for providing a direct indication of the magnitude of the temperature change.

5,007,743

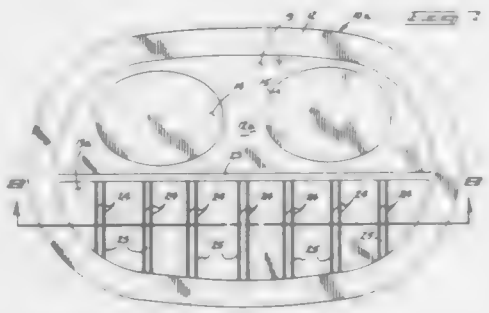
FOOD METERING DISH

Leanne M. Brennan, R.D. #2, Box 475, Drums, Pa. 18222

Filed Nov. 20, 1989, Ser. No. 439,164

Int. Cl.[5] G01K *1/14*; **G01F** *15/00*

U.S. Cl. 374—141 **1 Claim**



1. A food metering dish including,

a floor and a continuous wall directed upwardly and in surrounding relationship to the floor to define a cavity within the dish, and

a first and second concave recess integrally formed within the floor, and

a first and second container selectively positionable within the first and second respective concave recess to maintain positioning of the first and second container relative to the floor, and

wherein the first and second container each includes measuring gradients formed to the container to enable an individual to ascertain individual portions within the container, and

wherein the first and second container each includes a respective first and second lid, the first and second containers defined by a respective first and second internal diameter, and the first and second lid each including an annular skirt defining an external diameter equal to the internal diameter of the first and second container, and

wherein indicia are imparted on the floor to provide caloric equivalence of preselected foods, and

wherein the continuous wall is hollow and defines a surrounding chamber therewithin in surrounding relationship relative to the floor, and

further including a thermometer integrally formed within the wall in contact with the chamber, and

wherein the chamber is completely filled with a mineral oil which may be heated to an elevated temperature to maintain a predetermined temperature gradient relative to foods contained within the cavity, and

wherein the dish is defined as an ellipse, and the floor is defined as an ellipse, and further including a major partition wall coextensive with and directed across the floor aligned with a major axis defined by the floor, and the first and second concave recess positioned aligned relative to one another on a first side of the major partition, and

wherein a second side of the major partition defines a further cavity between the second side of the major partition and an interior surface of the wall, and further including plural pairs of spaced ribs integrally formed to the floor between the second side of the partition and the interior surface of the wall, and further including partition walls defined by a width substantially equal to a predetermined width between the plural pairs of ribs for selective positioning of the partition walls between the ribs to control food portions contained between the partition walls, and the partition walls defined by a height equal to a predetermined height defined by the major partition wall.

5,007,744

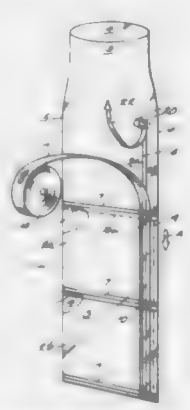
STRIP OF INTERCONNECTED PRE-OPENED RECLOSABLE BAGS

Paul W. Scarberry, Menomonee Falls; Rodney L. Kazemba, Hartland, and Ralph A. Hestekin, West Bend, all of Wis., assignors to Sharp Packaging, Inc., Sussex, Wis.

Filed Dec. 21, 1989, Ser. No. 454,330

Int. Cl.[5] B65D *30/32, 33/16*

U.S. Cl. 383—37 **8 Claims**



1 In a strip having a plurality of flat pre-opened bags detachably connected together of the type including two layers of heat sealable flexible packaging material, a pair of spaced longitudinal closed edges and a plurality of spaced parallel transverse seals extending between the closed edges and joining the two layers together to define a plurality of bags therebetween, in which each bag in the strip includes (1) a first wall and a second wall consisting of sections of the two layers of the strip, (2) closed margins consisting of sections of the spaced longitudinal closed edges of the strip, (3) an open end along the first wall adjacent a transverse seal, (4) a first line of weakness along the second wall underlying the open end, and (5) a closed margin defined by a transverse seal, the improvement wherein:

each bag in the strip further includes an open zone in the first wall adjacent one closed margin of the bag, an adhesive tape closure adhered to an exterior surface of the first wall surrounding the open zone and adhered to an interior surface of the second wall within the open zone, and a second line of weakness defined in the first and second walls of the bag between the adhesive tape closure and said one closed margin of the bag,

whereby a filled bag of the strip is opened by removing sections of the first and second walls along the second line of weakness and peeling the walls apart along the adhesive tape closure within the open zone and reclosed by resealing the adhesive tape closure to the second wall within the open zone.

5,007,745

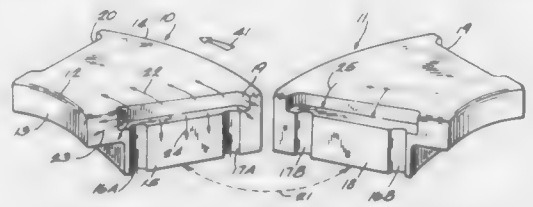
LOW FLOW TILTING PAD THRUST BEARING

James H. Ball, New Berlin, and Willis W. Gardner, Waukesha, both of Wis., assignors to Delaware Capital Formation, Inc., Wilmington, Del.

Filed Sep. 26, 1989, Ser. No. 412,503

Int. Cl.[5] F16C *17/04*

U.S. Cl. 384—307 **8 Claims**



1. A tilting pad thrust bearing for a shaft comprising:

retainer means including radially spaced apart generally circular inner and outer concentric wall members and a closure member spanning between the wall members to define an annular chamber, concentric to an axis,

a plurality of bearing pads constituting segments of a ring for being arranged circumferentially adjacent each other in said annular chamber about said axis, each pad having a thrust bearing surface for interfacing relatively rotationally with a planar collar on said shaft which collar is transverse to said axis, each pad having an inner end radially spaced from said axis and an outer end more radially remotely spaced from said axis, said pads having radially extending opposite edges that are leading and trailing in respect to the direction of relative rotation,

each pad having formed in its leading and trailing edges of said bearing surfaces, respectively, a groove which has opposite end walls and extends over less than the radial extent of the pad and which is open toward said bearing surface and open toward an edge of the pad so as to form in combination a radially extending pocket in conjunction with a corresponding groove in an adjacent pad,

the leading and trailing edges of each pad containing at least one channel extending axially of the edge and terminating in said groove, the channel in the edge of one pad forming a duct in conjunction with a corresponding channel in an adjacent pad for conducting oil for cooling and lubricating said pads to said pocket, said edges of adjacent pads being spaced from each other by a small amount to create a small gap between them to allow for controlled leakage of oil conducted to the pockets, said pads being tiltable on an axis lying on a radial line to develop a lubricant wedge between said bearing surfaces and collar when there is relative rotation between said pads and collar.

5,007,746

THRUST BEARING WITH RESILIENT RETENTION TANG

Albert J. Matzelle, Howell, and William E. Scheerer, St. Johns, both of Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Filed Dec. 26, 1989, Ser. No. 457,139

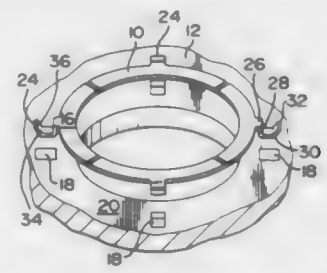
Int. Cl.[5] F16C *17/04, 33/10*

U.S. Cl. 384—420 **6 Claims**

1. A thrust bearing adapted for positive spring-biased retention within a bearing housing, said bearing comprising;

a bearing body; and

resilient mounting means projecting from said bearing body, said mounting means comprising a pair of resilient spring projections diverging outwardly from a central portion, each one of said pair of spring projections having a free end portion cantilevered about said bearing body, said spring projections each comprising at least one chamfered camming surface for engaging said housing, for deflecting said spring projections, and for forming a spring-biased engagement between said spring projections and said housing.



5,007,747

RADIAL ROLLER BEARING

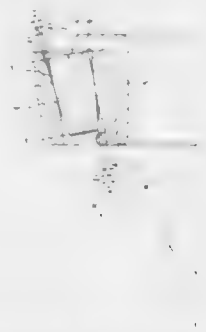
Masamichi Takeuchi, and Yasuo Asai, both of Osaka, Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed May 22, 1990, Ser. No. 526,883

Claims priority, application Japan, May 22, 1989, 1-58921[U]

Int. Cl.[5] F16C *33/58*

U.S. Cl. 384—450 **5 Claims**



1. A radial roller bearing comprising:

a inner ring;

a outer ring; and

a plurality of rollers disposed between said rings and a retainer for said rollers;

at least one surface of raceway surfaces of said inner ring, a raceway surface of said outer ring and rolling contact surfaces of said rollers being crowned so that the amount of crowning is 0.0007 to 0.002;

one end surface of each roller being formed spherically convex;

at least one of elements of said inner ring and said outer ring being provided with a rib at its one end opposed to a convex end surface of each roller, said convex end surface of each roller being in contact with said rib, said contact surface of said rib being formed spherically concave in contact with said convex end surface of each roller.

5,007,748

PRINTER FOR BAR CODE USING THIN AND THICK BAR CODE FONTS

Ho C. Lee; John R. O'Toole, both of Endicott; Alex T. Shalkey, and Jack L. Zable, both of Vestal, all of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed May 16, 1989, Ser. No. 352,806

Int. Cl.[5] B41J *5/00*

U.S. Cl. 400—103 **11 Claims**

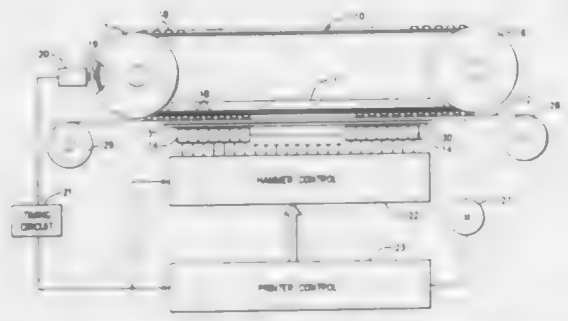
1. An impact printing device for printing bar code patterns on an information carrier, said patterns including a combination of parallel thin and wide bars separated by spaces wherein

said wide bars can have an imprint width which is a multiple of said thin bars, comprising

a movable type carrier,

a plurality of bar code type elements on said type carrier,

said bar code type elements including first type elements having a pair of imprint forming parallel thin bars and second type elements having a single imprint forming thick bar, and



a plurality of print hammer means each defining a print position of a print line and each operable selectively to successively impact combinations of said first and second type elements at the same print position to form completed bar code imprints at said print position having a wide bar imprint with a width greater than said single thick bars of said second type elements.

5,007,749

CARTRIDGE INCLUDING TENSION MEANS FOR A TYPEWRITER CORRECTION RIBBON

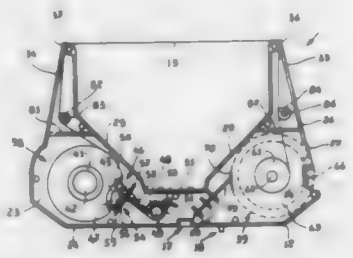
Remo Falconieri, S. Giorgio, and Sergio Uggetti, Ivrea, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Apr. 25, 1989, Ser. No. 343,825

Claims priority, application Italy, May 9, 1988, 67425 A/88

Int. Cl.[5] B41J *35/28*

U.S. Cl. 400—208 18 Claims



1. A cartridge for a correction ribbon for typewriters, comprising a container accommodating a supply reel on which said correction ribbon is initially wound and a receiving reel on which said correction ribbon is rewound after having been used, said receiving reel co-operating with a feed mechanism of said typewriter to produce a unidirectional feed movement of said ribbon in each correction cycle and a tensioning device for said supply reel for tensioning said ribbon in opposition to said feed movement said feed mechanism, said tensioning device comprising a toothed ring having a series of peripheral teeth integral with said supply reel, and a spring element having a fixed part bearing against said container and a yielding part having an end engaged with said teeth of said toothed ring to urge said supply reel in a direction opposite to said feed movement of said correction ribbon for tensioning said ribbon, and in which said end of said spring element of being intermittently disengaged from said teeth during said feed movement of said ribbon and being held in engagement with one of said teeth for a given operating travel during which the end of said spring element applies said tensioning action to said supply reel

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5,007,750

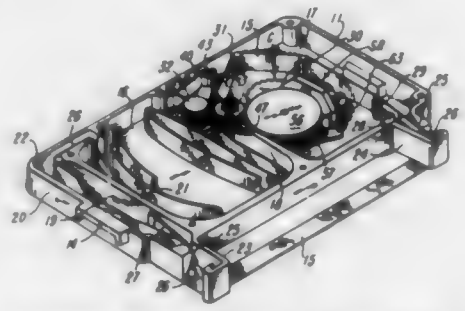
REPLACEABLE INKING CARTRIDGE WITH DEPLETION COUNTER

Donald E. Goubeaux, Miamisburg, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Continuation of Ser. No. 916,988, Oct. 8, 1986, abandoned, which is a division of Ser. No. 356,077, Mar. 8, 1982, Pat. No. 4,636,097, which is a continuation of Ser. No. 152,058, May 20, 1980, abandoned. This application Oct. 19, 1987, Ser. No. 110,593

Int. Cl.[5] B41J *35/36*

U.S. Cl. 400—249 1 Claim



1 A replaceable inking cartridge, comprising: a housing including a cover, the housing defining interior space, the interior space including a stuffing chamber, an endless ink ribbon, a portion of the ink ribbon being confined in the stuffing chamber, another portion of the ink ribbon extending to a zone outside the interior space and adapted to cooperate with printing means, means mounted on the housing for feeding the ink ribbon, a counter disposed within the interior space but outside the stuffing chamber in a location inaccessible for resetting without opening the cover, and means for preventing further operation of the counter when the counter has reached a predetermined count.

5,007,751

PRINTER HAVING CARRIAGE ZEROING DEVICE

Kiyoshi Yamakawa, Gifu, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Japan

Filed Oct. 13, 1988, Ser. No. 256,971

Claims priority, application Japan, Oct. 16, 1987, 62-262507

Int. Cl.[5] B41J *19/30*

U.S. Cl. 400—322 16 Claims



1. A printer comprising:

a carriage having a print head mounted thereon and movable along a line of printing;

a stepper motor for moving the carriage;

carriage-position detecting means for detecting arrival of the carriage at a detection point within a range of movement of the carriage;

a carriage stop disposed at one of opposite ends of said range of movement of the carriage, for determining said one end of said range of movement;

first setting means operable upon power application to the printer, for activating said stepper motor to move said carriage in a direction toward said carriage stop until the carriage arrives at said detection point, and further activating the carriage in said direction by a first predetermined number of steps from said detection point such that the stepper motor is activated without displacement thereof with the carriage held in abutting contact with said carriage stop for at least a last one of said first predetermined number of steps, whereby a zero point of the carriage is established for the first time after said power application;

distance detecting means operable after said zero point of the carriage is established, for detecting a distance between said carriage stop and said detection point by activating said stepper motor to move said carriage in a direction opposite to said direction toward said carriage stop and counting a number of steps needed for moving said carriage from said carriage stop to said detection point;

said distance detecting means including a distance memory for storing data indicative of the counted number of steps representing said distance between said carriage stop and said detection point; and

second setting means operable when it is required to establish the zero point of the carriage for a second and subsequent times after said power application, for activating said stepper motor to move the carriage in said direction toward said carriage stop until the carriage arrives at said detection point, and further activating the carriage from said detection point in said direction toward said carriage stop by a sum of said counted number of steps stored in said distance memory and a second predetermined number of additional steps which number is smaller than said first predetermined number, so that the stepper motor is activated without displacement thereof with the carriage held in abutting contact with said carriage stop for at least a last one of the summed number of steps, whereby the zero point of the carriage is established.

5,007,752

PAPER FEED ROLLER ARRANGEMENT FOR PRINTER

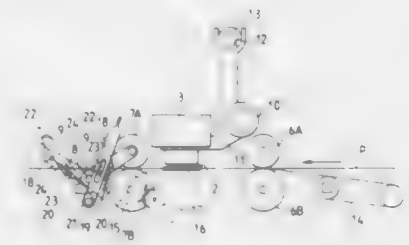
Yoshiyuki Yasumi, and Hiroshi Sato, Iwate, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Aug. 1, 1989, Ser. No. 388,265

Claims priority, application Japan, Aug. 5, 1988, 63-103745[U]

Int. Cl.[5] B41J *13/03*

U.S. Cl. 400—636 5 Claims



1. A paper feed roller arrangement for a printer wherein a print head for printing with an ink ribbon of a ribbon cassette is disposed in an opposing relationship to a platen, said paper feed roller arrangement comprising:

two pairs of paper feed rollers, one of said pairs being disposed adjacent to and on the upstream side of said print head and the other of said pairs of rollers being disposed adjacent to and on the downstream side of said print head when considered with respect to a paper feeding direction, one roller of said downstream pair of feed rollers located in a ribbon cassette installation path; and

means for moving said one roller of said downstream pair of feed rollers toward and away from said print head, wherein a range of motion of said one roller includes a portion outside said path of the ribbon cassette when the ribbon cassette is to be exchanged.

5,007,753

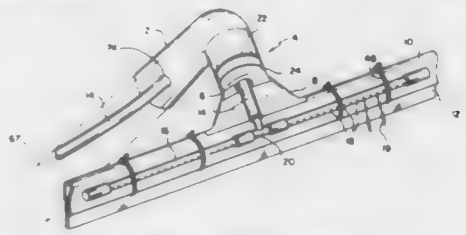
WINDOW CLEANING APPARATUS WITH ROTATABLE HEAD

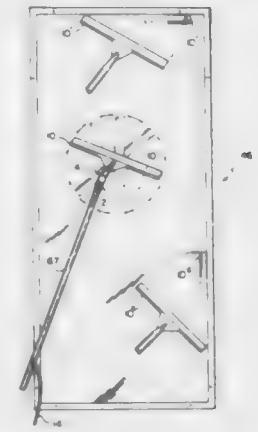
Raymond B. England, Jr., P.O. Box 511, Albion, N.Y. 14411

Filed Dec. 30, 1988, Ser. No. 295,293

Int. Cl.[5] A47L *13/26, 13/30*

U.S. Cl. 401—139 4 Claims





1. Window cleaning apparatus for cleaning a window comprising:

a. a cleaning head;

b. a cleaning element which is attached to the cleaning head;

c. a rotatable sleeve coupling having a closed, flanged end and an open, tubular end, said coupling being comprised of

1. a smaller hollow cylinder having a side wall having an opening therethrough an open end and a closed flanged end formed by collapsing together a part of the cylinder side wall into a flattened surface, said smaller hollow cylinder containing an annular groove disposed on its outer surface in proximity to its open end,

2. a larger hollow cylinder having a side wall with an opening therethrough, two open ends and an annular rim with an opening therethrough, two open ends and an annular rim disposed on its inner surface in proximity to one of its open ends, said rim being rotatably mateable with the annular groove of the smaller cylinder;

the open end of the smaller hollow cylinder being telescopically fitted in to the open end of the larger hollow cylinder which is in proximity to the annular rim so that the annular rim on the inner surface of the large cylinder is rotatably mated with the annular groove on the outer surface of the smaller cylinder;

d. a fastening means which attaches the cleaning head to the closed, flanged end of the rotatable sleeve coupling;

e. a handle which is attached to the open, tubular end of the rotatable sleeve coupling the handle having a bend therein adjacent the rotatable sleeve coupling wherein when the handle is held to extend with a substantial vertical component the cleaning head rotates in a plane parallel to a

substantially vertically oriented window which is being cleaned;

f. a perforated, fluid distribution conduit attached to the outer surface of one of the side walls of the elongated channel forming the cleaning head for distribution fluid onto a window surface;

g. a fluid supply conduit for supplying fluid to the perforated fluid distribution conduit from a fluid source having one of its ends in communication with the perforated fluid distribution conduit and another of its ends in communication with the fluid source, said fluid supply conduit passing through the opening in the side wall of the smaller hollow cylinder and the surface of the rotatable sleeve coupling in a manner such that a part of said fluid supply conduit is positioned inside of the rotatable sleeve coupling; and

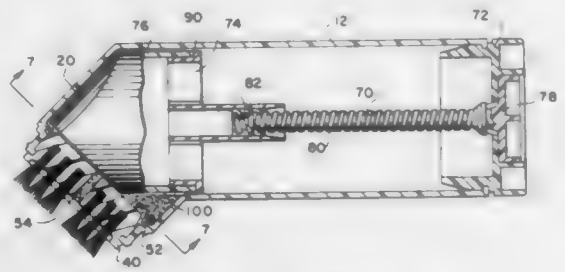
h. a rotatable union situated in the part of the fluid supply conduit positioned inside of the rotatable sleeve coupling, said rotatable union being comprised of two of the ends of the fluid supply conduit formed by severing the fluid supply conduit into two sections which are re-connected by a sleeve, each of said ends having an annular, beaded lip positioned thereon which permits their full rotation in relation to the sleeve and to each other.

5,007,754

SHOE POLISH APPLICATOR

Clarence D. Zierhut, Richardson, Tex., assignor to King Imports, Inc., San Antonio, Tex.

Filed Feb. 13, 1989, Ser. No. 309,376
Int. Cl.[5] A46B *11/02*
U.S. Cl. 401—174 1 Claim



1. A shoe polish applicator, comprising:

a hollow body having a plurality of internal walls defining a reservoir for shoe polish, said internal walls comprising a rearward internal side wall having elliptical cross-sections about a rearward axis and a forward internal side wall having circular cross-sections about a forward axis, said rearward and forward internal side walls being joined at a shoulder;

said rearward and forward axes intersecting at an obtuse included angle;

a planar forward internal end wall of said body joined to said forward internal side wall and being perpendicular to said forward axis;

extruder means for extruding said shoe polish from an opening in said forward internal end wall;

said extruder means including a plunger constrained for movement within said body and translation means for translating said plunger within said body;

said plunger including an external side wall elliptical about a plunger axis coaxial with said rearward axis of said body and spaced closely with said rearward internal side wall, a first external front wall partially cylindrical about said forward axis of said body and joined to said plunger side wall, and a second external front wall being planar and parallel to said forward end wall, said first and second external front walls being closely spaced to said forward internal side and end walls, respectively, when said plunger is translated to a forward-most position by way of said means for translation;

brushes extending from a surface about said opening in said forward internal end wall, said forward internal end wall being planar and having a circular perimeter, with said opening being centrally located in said forward internal end wall; and

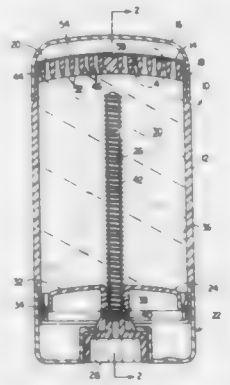
a removable cap for covering said opening and brushes fixed to the hollow body, said cap including a stopper integral with the cap and extending from an internal surface thereof to seal the opening when the cap is fixed to the hollow body.

5,007,755

COSMETIC PRODUCT

Harold R. Thompson, Norwell, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Oct. 5, 1989, Ser. No. 417,260
Int. Cl.[5] A45D *40/06, 40/08*
U.S. Cl. 401—175 21 Claims



1. A packaged cosmetic product comprising

container structure that includes annular chamber wall structure,

application surface structure at one end of said annular chamber wall structure, said application surface structure defining an application surface with an array of dispensing ports and having an array of elongated divider webs that define a corresponding array of directly connected distribution passages, said elongated divider webs having body portions, leading end surface portions of width less than said distribution passages to define flared entrance ports to said distribution passages, and relieved trailing end portions to define dispensing ports of cross-sectional areas greater than the minimum cross-sectional areas of the corresponding distribution passages at said application surface,

gel cosmetic material of less than 200,000 centipoises viscosity in said container structure, and

dispenser structure for urging said gel cosmetic material through said distribution passages and said corresponding directly connected dispensing ports to said application surface.

5,007,756

BALLPOINT PEN WITH CONDOM

Remo C. Wey, 31; Rue pres Guetins, CH-2520 La Neuveville, Switzerland

PCT No. PCT/CH88/00045, § 371 Date Oct. 5, 1988, § 102(e) Date Oct. 5, 1988, PCT Pub. No. WO88/06534, PCT Pub. Date Sep. 7, 1988
PCT Filed Feb. 25, 1988, Ser. No. 278,947
Claims priority, application Switzerland, Feb. 25, 1987, 007051/87
Int. Cl.[5] B43K *29/00*
U.S. Cl. 401—195 1 Claim



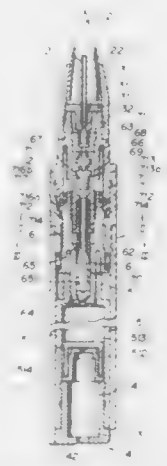
1. A ballpoint pen with a discreetly packed condom comprising a non-retractable writing head part connected to a cylindrical shell, the writing head part having a writing point connected to a filler containing writing fluid, wherein the cylindrical shell consists of individual cylindrical shells each being open at both ends, each of said cylindrical shells accommodating one condom, said cylindrical shells being threadably connectable with one another and threadably connectable with said writing head part, and the cylindrical shells having means for removing a condom.

5,007,757

LIQUID CONTAINER

Shigeo Iizuka, Funabashi, Japan, assignor to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Filed Aug. 30, 1989, Ser. No. 400,884
Claims priority, application Japan, Sep. 2, 1988, 63-115833[U]; Sep. 8, 1988, 63-118257[U]
Int. Cl.[5] A45D *34/04*
U.S. Cl. 401—278 9 Claims



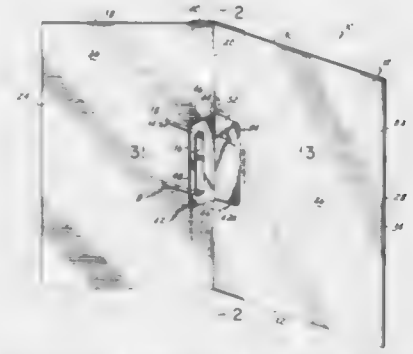
1. A liquid container comprising.

5,007,758

FILE FOLDER

Murray B. Blumberg, Woodmead Springs, South Africa, assignor to Press Engineering Pty. Ltd., Johannesburg, South Africa

Filed Jan. 3, 1990, Ser. No. 460,506
Int. Cl.[5] B42F *13/00*
U.S. Cl. 402—75 12 Claims



1. In combination, a folder and a fastener for securing loose papers to the folder,

said folder having a first panel with first and second opposed faces and first and second opposed parallel side edges,

a cover strip,

said fastener comprising an elongate strip of sheet material, said fastener having a central body portion and a pair of opposed prongs extending from opposite ends of the central body portion,

said first panel having an internal flap formed from material of said first panel and being defined by a parting line that terminates at spaced first and second ends and a hinge line extending between said first and second ends, said flap being pivotal about said hinge line between a first position in which it is flush with said panel and a second position in which it projects upwardly from said first face of said panel thereby to define an opening in said panel,

said cover strip being secured to said panel on said second face of said panel, said cover strip being larger than said opening and overlying said opening, and

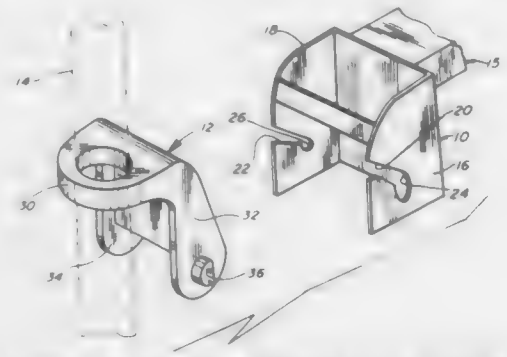
said folder further having securing means adapted to secure the flap to the cover strip with said body portion of said fastener sandwiched between said flap and said cover strip and with said prongs extending upwardly from said first face of said first panel.

5,007,759

ARRANGEMENT FOR ASSOCIATING AN ELECTRICAL DEVICE WITH A MOUNTING THEREFOR

Henry W. Scherer, Mt. Prospect, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Nov. 7, 1988, Ser. No. 267,584
Int. Cl.[5] B25G *3/00*
U.S. Cl. 403—13 19 Claims



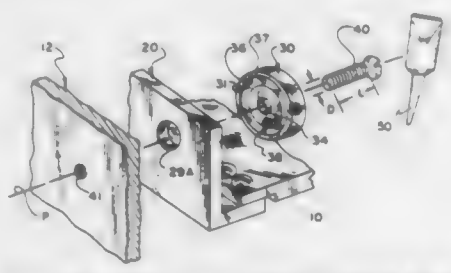
1. A system for preventing different types of electrical devices from being associated with inappropriate mountings, the electrical device including a fitting, the mounting including a support arrangement, the fitting and the support arrangement including cooperating support structure to support the electrical device with respect to the support arrangement, said cooperating support structure including predetermined different dimensions for each different type of electrical device and corresponding support arrangement such that each type of electrical device can be associated only with the corresponding support arrangement and preventing other combinations of support arrangements and electrical devices of different types from being associated, said cooperating structure comprising two spaced-apart protuberances on a first of said fitting or support arrangement and two spaced-apart receiving arrangements on the other of said fitting or support arrangement, said two protuberances each having a cross section of different predetermined dimension, said receiving arrangements each being dimensioned to interfit with and receive a respective one of said two protuberances, a first type of electrical device and corresponding first support structure and a second type of electrical device and corresponding second support structure including protuberances and receiving arrangements of the same predetermined dimensions but being reversed left to right from said first type to said second type.

5,007,760

DEVICE FOR ALIGNING AND MOUNTING A COPIER OR PRINTER SUBSYSTEM

Charles E. Mullen, Spencerport, and Arthur H. Crater, Warsaw, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 225,498, Jul. 28, 1988, abandoned. This application Jan. 12, 1990, Ser. No. 464,274
Int. Cl.[5] F16B *43/00*
U.S. Cl. 403—13 6 Claims



1. A device for aligning by precisely marking the trial and error achieved aligned position of, and then fastening in such position, a subsystem, of an electrostatographic copier or printer, including a mounting portion having a first alignment and screw mounting aperture therein substantially larger than a major diameter of a mounting screw being used for fastening such subsystem to a support frame, after such trial and error aligning thereof, such that the subsystem can thereafter be removed from the copier or printer, serviced, and then reinstalled in such precise aligned position therein without further need of such initial trial and error alignment thereof, the device comprising:

(a) a solid member having first and second ends, a front side, and a back side suitable for moving over, and placing tightly, against the mounting portion of such subsystem;

(b) a second screw mounting aperture formed in said first end from said front side clear through to said back side for aligning and mounting or fastening the subsystem therethrough, said second screw mounting aperture being substantially smaller than said first screw mounting aperture in said mounting portion for substantially narrowing and precisely marking an aligned position through said first and larger aperture, and said second screw mounting aperture being substantially the same size as the major diameter of the mounting screw being used for mounting such subsystem therethrough to the support frame;

(c) a recess formed at one of said ends in said back side for forming a cavity and holding adhesive against such mounting portion of the subsystem; and

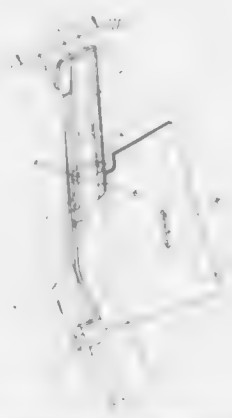
(d) first and second adhesive introduction perforations at said second end formed from said front side clear through into said recess in said back side, for introducing an adhesive therethrough into the cavity formed by said recess against such mounting portion, thereby permanently bonding said aligning device against such mounting portion, and thereby permanently narrowing and marking such precise aligned position through said first and larger aperture such that the subsystem thereafter can be removed with the aligning device bonded thereto, serviced, and reinstalled in precise alignment without further need of such trial and error alignment thereof.

5,007,761

SEAL ARRANGEMENT FOR CONNECTING SEALS

Dietrich Wulff, Aidlingen; Hans-Ludwig Jäger, Böblingen, and Joachim Weisse, Herrenberg, all of Fed. Rep. of Germany, assignors to Daimler-Benz, Fed. Rep. of Germany

Filed Sep. 5, 1989, Ser. No. 402,536
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1988, 3829968
Int. Cl.[5] B25G *3/00*; F10D *1/00*
U.S. Cl. 403—287 7 Claims



1. Sealing arrangement for connecting two seals with different seal profiles comprising:

a transition connection means, which is arranged between respective end regions of the two seals for connection to the two seals;

the transition connection means is fixedly connected to a first of the two seals and releasably connected to the second of the two seals;

said connection means having a sleeve-shaped seal receiving portion designed as a sealing surface and an accurately fitting lug;

said second of the two seals being releasably inserted into said receiving portion provided on the transition connection means; and

wherein the lug engages in an accurately fitting recess in the second of said two seals when the said second of the two seals is so inserted.

5,007,762

RELEASABLE LOCKING MECHANISM

John A. Duran, Glendora, Calif., assignor to Avibank Mfg., Inc., Burbank, Calif.

Filed Jan. 9, 1990, Ser. No. 463,381
Int. Cl.[5] F16D *1/10*
U.S. Cl. 403—341 31 Claims



1. A locking mechanism comprising:

a first connecting member having a cavity with a bottom wall therein for receiving one end of a second connecting member therein;

a second connecting member having a terminal end receivable in said cavity and generally conforming to the configuration of said cavity, said terminal end having a bottom wall generally conforming to the bottom wall of said cavity so that said terminal end bottoms out in said cavity thereby preventing lateral movement of said first and second connecting members, said second connecting member having a locking sleeve with an inner wall axially slidable thereon normally held in a position away from said terminal end by means of a spring biased detent on said connecting member disposed in a groove on the inner wall of said sleeve, and first releasable locking sleeve means associated with said second connecting member and said locking sleeve for releasing said locking sleeve and allowing the same to be slid to a position overlying said terminal end thereby retaining said terminal end in said cavity when said terminal end is disposed in said cavity.

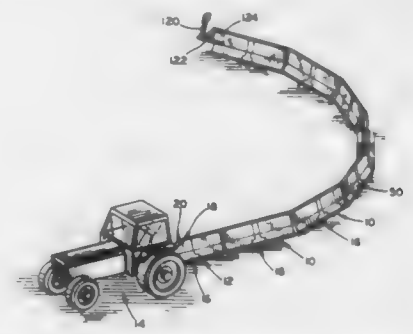
5,007,763

TRAFFIC BARRIERS WITH BUILT-IN CARRIERS

William B. Burgett, Rte. #3, Lost Run Rd., Fredericktown, Ohio 43019

Filed Feb. 1, 1990, Ser. No. 473,643
Int. Cl.[5] E01F *13/00*
U.S. Cl. 404—6 14 Claims

1. In combination, a plurality of rigid, non-articulated elongate traffic barrier sections, each of said traffic barrier sections having connecting means at ends thereof for pivotally connecting the barrier sections in end-to-end relationship, each of said traffic barrier sections having a traffic barrier carrier built in at a central portion of the section between the ends of the section to aid in raising the section for transportation from one location to another, each of said carriers comprising wheel means movably carried by the carrier, and moving means connected to said wheel means for moving said wheel means between an upper position in which said barrier section is supported on a surface and a lower position in which the section is raised above the surface.

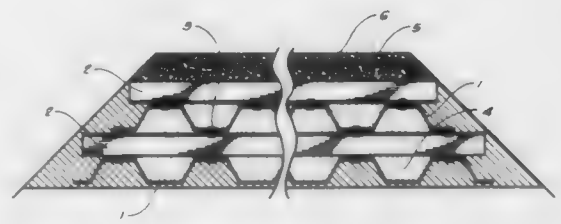


5,007,764

INSULATED TRAFFICKED SURFACE

Eero Pontynen, Vesitorninkatu 9 A 9, 05820 Hyvinkaa 2, Finland

PCT No. PCT/FI89/00059, § 371 Date Jan. 24, 1990, § 102(e) Date Jan. 24, 1990, PCT Pub. No. WO89/09853, PCT Pub. Date Oct. 19, 1989
PCT Filed Mar. 30, 1989, Ser. No. 435,5[illegible]
Int. Cl.[5] E01C *3/06*
U.S. Cl. 404—70 8 Claims



1. An insulated trafficked surface comprising:

a first sheet of steel having corrugations;

a second sheet of steel having corrugations, said second sheet of steel being attached perpendicular to and overlying said first sheet, each of said first and second sheets having a plurality of cavities formed between corrugations;

a plurality of fastener rigidly affixing said first and second sheets together;

a heat insulating fill material filling said cavities of said first and second sheets;

a covering layer of aggregate material formed on a top surface of said first and second sheets; and

a surface layer of pavement formed over a top surface of said covering layer.

5,007,765

SEALING METHOD FOR JOINTS

John E. Dietlein, Bay City; Russel P. Kamis, Bay County, and Peggy L. Dixon, Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Sep. 16, 1988, Ser. No. 245,[illegible]7
Int. Cl.[5] E01C *11/02*
U.S. Cl. 404—74 17 Claims

1. A method of sealing joints between surfaces, said method comprising the steps of

(A) cleaning the facing joint surfaces,

(B) installing a backer rod between the joint surfaces so that the space between the joint surfaces is filled by the backer rod and the upper surface of the backer rod is recessed

sufficiently from the panel surface to allow installation of a sealant, the backer rod being an essentially open cell foam rod having an impervious skin.

(C) applying a sealant in the space over the backer rod between the joint surfaces, and

(D) allowing the sealant to cure, to form a continuous seal between the joint surfaces.

5,007,766

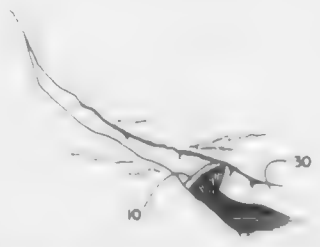
SHAPED BARRIER FOR EROSION CONTROL AND SEDIMENT COLLECTION

W. Wayne Freed, Signal Mountain, and Robert M. Smith, Ooltewah, both of Tenn., assignors to Synthetic Industries, Inc., Chickamauga, Ga.

Continuation-in-part of Ser. No. 383,878, Jul. 21, 1989. This application Nov. 27, 1989, Ser. No. 441,513

Int. Cl.[5] **E02B** *3/04*

U.S. Cl. 405—24 **11 Claims**



1. An erosion control barrier for placement onto a normally dry watercourse subject to erosion from surface water runoff over the watercourse, comprising:

a structured array of fibers having a predetermined and uninterrupted orientation which spans across the entire width of the watercourse;

means fixing the fiber array in the predetermined orientation;

attachment means operatively associated with the array at the fixing means and extending therefrom, wherein the attachment means has a distal end with a point operative to penetrate the earth in the watercourse and thereby secure the structured array of fibers in fixed relation to the watercourse; and

the fibers having stiffness sufficient to remain substantially upright when the array is thus fixed in a dry watercourse and when surface water is flowing on the watercourse,

so that the structure of fibers reduces the energy of water flowing along the watercourse and thereby causes deposition of sediment carried through the array by the flowing water and also entraps entrained particles of sediment within the fibrous structure.

5,007,767

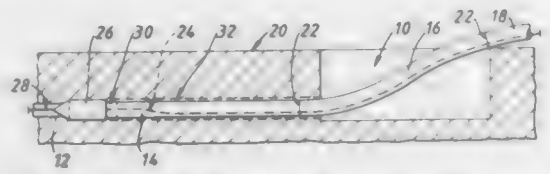
METHOD FOR JOINING POLYOLEFIN PIPES BY FUSION

Trevor G. Stafford, Tyne & Wear, England, assignor to British Gas Corporation, London, England

Continuation of Ser. No. 884,940, Jul. 14, 1986, abandoned. This application Sep. 19, 1988, Ser. No. 246,243

Int. Cl.[5] **B65H** *69/08*

U.S. Cl. 405—154 **11 Claims**



1. A method for fusion joining, end to end, lengths of pipe liner of the same diameter and wall thickness and made of polyolefin plastic material in which the wall thickness is in the range 2 to 4 millimeters and the ratio of the outside diameter of the pipe liner lengths to wall thickness is at least 40:1, comprising: closing respective aligned circular clamps around lengths of pipe liner adjacent the ends to be joined to reduce non-circularity of the ends, to hold the lengths, and to prevent deformation into oval shape of said ends of said pipe liner under their own weight; trimming the ends to leave trimmed ends more closely adjacent the respective clamps, the trimmed ends being substantially aligned and normal to the lengthwise direction of the lengths; reducing the distance between the clamps to force the trimmed ends against respective opposite faces of a heated body to form initial internal and external beads; reducing the pressure under which the ends engage the body faces, maintaining the ends in engagement with the body faces; separating the clamps to separate the ends from the body; retracting the body; and reducing the distance between the clamps to force the ends into engagement against each other to complete the internal and external beads and to form a strong, fluid-tight fusion joint between said lengths of pipe, the yield strength of said fusion joint being at least equal to the yield strength of the pipe liner wall over a major portion of the angular extent of the pipe liner wall, and being at least 75% of the yield strength of the pipe liner wall over a minor portion of the angular extent thereof, the total time during which the ends from the body and the period between separation of the ends from the body and their engagement against each other being short enough to ensure that the maximum distance which either bead extends away from the adjacent surface of the pipe liner wall is less than half the wall thickness.

5,007,768

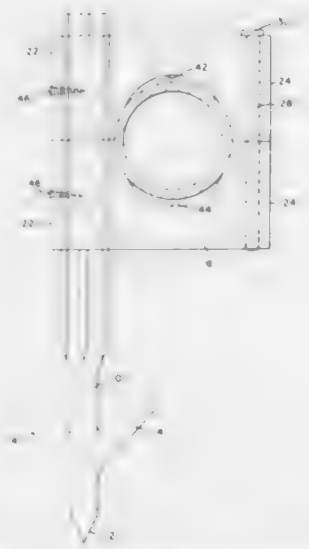
ANCHORING STRUCTURE FOR UNDERGROUND PIPES

George W. Waller, Rte. 13, 190 Strickland Rd., Alpharetta, Ga. 30201

Filed Apr. 17, 1990, Ser. No. 510,181

Int. Cl.[5] **F16L** *3/00*

U.S. Cl. 405—154 **10 Claims**



1. A pipe anchor for securely anchoring in the ground different diameter pipes, said anchor comprising:

a. a stake body having a longitudinal axis and a non-circular cross section, the stake body including at least one laterally extending wing member to prevent stake movement after the stake body is driven into the ground;

b. first and second clamping members each independently slidably carried on the stake body at axially spaced positions therealong to define a pipe-receiving gap between the clamping members, each clamping member movable toward and away from the other and having a stake-body-receiving opening corresponding substantially in cross section and size with the cross section and size of the stake body to permit the clamping members to be independently positioned at a desired axial position along the stake body, each clamping member having in a laterally extending edge thereof, relative to the stake body axis, a recess including a plurality of substantially circular arcs to permit the clamping members to engagingly receive within the recesses pipes having different diameters; and

c. attachment means carried by each of the clamping members for securely attaching the clamping members in a desired axial position on the stake body.

5,007,769

METHOD AND DEVICE FOR ATTACHING A REMOVABLE GUIDE POST

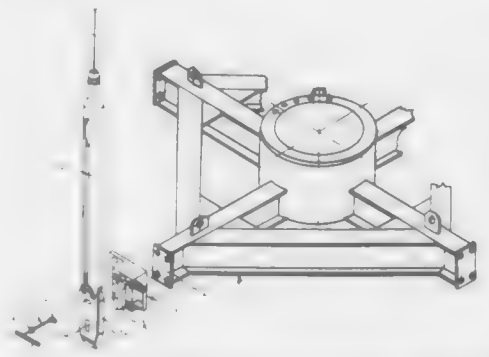
Bernard Legris, Stavanger; Magne Oppedal, Hommersak, both of Norway, and Eric Traonmilin, Billere, France, assignors to Elf Aquitaine Norge A/S, Stavanger, Norway

Continuation of Ser. No. 75,360, Jul. 20, 1987, abandoned. This application Jan. 4, 1989, Ser. No. 293,577

Claims priority, application Norway, Jul. 22, 1986, 86-2945

Int. Cl.[5] **E02B** *17/00;* **E21B** *43/10*

U.S. Cl. 405—195 **17 Claims**



1. A method for attaching a removable guide post to a guide base of an offshore hydrocarbon well installation on the floor of a body of water comprising, the steps of,

providing a protrusion extending laterally from a surface on the guide base,

providing a cavity on the guide post for receiving the protrusion of the guide base to connect the guide post to the guide base,

the cavity and protrusion having cooperating surfaces to cause the guide post to move laterally onto the protrusion in response to upward movement of the guidepost,

lowering the guide post with a guide line from a surface station to suspend the guide post in the vicinity of the guide base,

moving the guide post laterally to a position in which a lower surface of the projection is above an upwardly facing surface of the cavity, to generally align the protrusion on the guide base with the cavity of the guide post, and

exerting tension on the guide line to lift the guide post and move the cavity of the guide post into connecting engagement with the protrusion on the guide base.

5,007,770

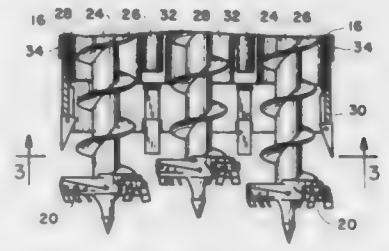
METHOD AND APPARATUS FOR CONSTRUCTING A SUBSURFACE RETAINING WALL

Robert J. Simmons, 27308 Airvfen Ave., Hayward, Calif. 94542, and Key S. Kwak, 419 Beverly Pl., Castro Valley, Calif. 94546

Filed Dec. 4, 1989, Ser. No. 445,373

Int. Cl.[5] **E02D** *5/56*

U.S. Cl. 405—240 **8 Claims**



1. A method for constructing a subsurface retaining wall from existing grade elevations with a plurality of individual wall elements and without use of forms, shoring or underpinning, the method comprising the steps of:

excavating a first rectilinear hole to a depth defining the desired vertical dimension of the wall to be constructed, the width of said rectilinear hole defining the desired thickness of said wall and the horizontal length of said hole defining the horizontal dimension of an individual wall element

filling said first hole with a suitable first retaining wall element

excavating a second rectilinear hole to a depth defining the desired vertical dimension of the wall to be constructed, said second hole having substantially the same width and length as said first hole, one edge of said second hole being in open communication with the adjacent edge of said first hole and said first retaining wall element, and

filling said second hole with a suitable second retaining wall element.

5,007,771

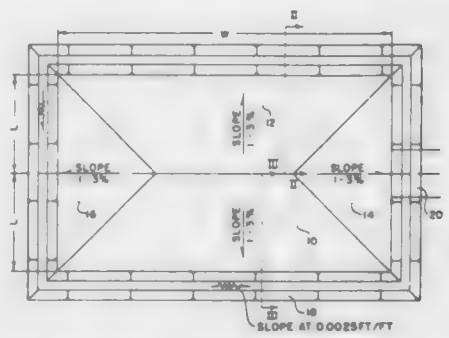
METHOD FOR TREATING CONTAMINATED SOIL BY BIOLOGICAL DEGRADATION ON A SLOPED SURFACE

Jaw K. Fu, Pittsburgh; Arch J. Merritt, deceased, late of Pittsburgh by Helene Merritt, executrix , and John R. Smith, Pittsburgh, all of Pa., assignors to Keystone Environmental Resources, Inc., Monroeville, Pa.

Continuation of Ser. No. 150,536, Feb. 1, 1988, abandoned. This application Feb. 26, 1990, Ser. No. 485,228

Int. Cl.[5] **E02D** *3/00*

U.S. Cl. 405—258 **10 Claims**



1. A method for treating organically contaminated soil comprising the steps of arranging said contaminated soil in a treatment bed sloping from its interior toward one or more of its edges and having a collecting trench around said edges, applying nutrients to the soil to encourage growth therein of micro-

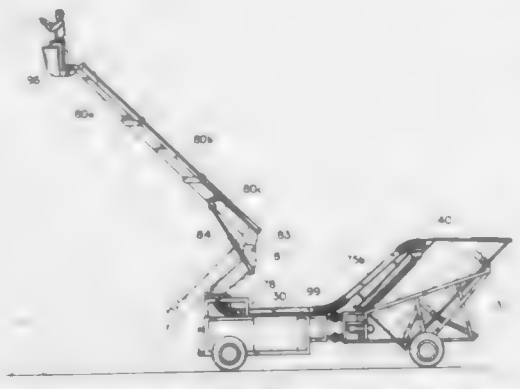
organisms capable of degrading the organic compound contaminants and applying water to said treatment bed on its surface and concurrently withdrawing water through said collecting trench; the shape of the treatment bed and the steepness of its slope being selected to minimize both vertically downward migration of water and water erosion of the shaped treatment bed.

5,007,772

FRUIT HARVESTING MACHINE

Frank J. McKenna, 15914 Chadbourne, Shaker Heights, Ohio 44120; Richard K. Horst, 16201 Burton City Rd.; James F. Horst, 16155 Burton City Rd., both of Orrville, Ohio 44667, and Rodney L. Arney, 15995 Hackett Rd., Dalton, Ohio 44618

Continuation of Ser. No. 261,337, Oct. 24, 1988, abandoned.
This application Jul. 10, 1990, Ser. No. 550,811
Int. Cl.[5] B60P *1/60*
U.S. Cl. 406—39 **10 Claims**



1. In a machine for harvesting fruit from trees including a supporting vehicle, a hopper mounted on the vehicle, an extensible boom having a bottom arm rotatably mounted on the vehicle, a man-supporting bucket on the outer end of the boom, a conduit system extending through said boom and from said boom to the hopper, and means for maintaining sub-atmospheric pressure in said hopper to conduct fruit from the bucket through the conduit system into said hopper, the improvement comprising the boom having inner, middle and outer telescopically slidable boom sections enclosing inner, middle and outer telescopically slidable fruit conduit sections, the boom sections and conduit sections respectively increasing in size from outside to inside, the outer end of the outer conduit section being fixedly mounted to the outer end of the outer boom section, the inner end of the inner conduit section being fixedly mounted to the inner end of the inner boom section, the outer end of the inner conduit section being supported by slidable support means mounted on the inner end of the middle boom section and the outer end of the middle conduit section being slidably supported on the outer boom section by the outer end of the middle conduit being provided with outwardly extending plug means slidably received in longitudinal groove means on the outer boom section.

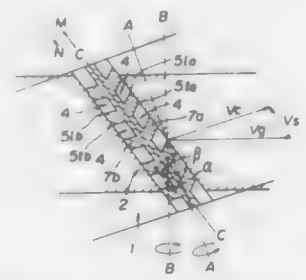
5,007,773

SHAVING CUTTER

Koichi Souketani; Yukio Ito, both of Toyama; Yoshio Sasaki, Toyota; Teiji Kurita, Toyota, and Jun Tamiya, Toyota, all of Japan, assignors to Nachi-Fujikoshi Corporation, Toyama, Japan

Filed Jun. 14, 1989, Ser. No. 366,178
Claims priority, application Japan, Jun. 17, 1988, 63-149539
Int. Cl.[5] B23F *21/00*
U.S. Cl. 407—27 **14 Claims**

1. In a helical toothed shaving cutter for shaving of gears which cutter is provided with a multiplicity of serrations extending on the cutter tooth flanks and including ribs made up by said serrations of said cutter, said ribs forming said cutter tooth flanks, the improvement wherein said ribs are arranged on each side of an axial centerline of each of the cutter teeth



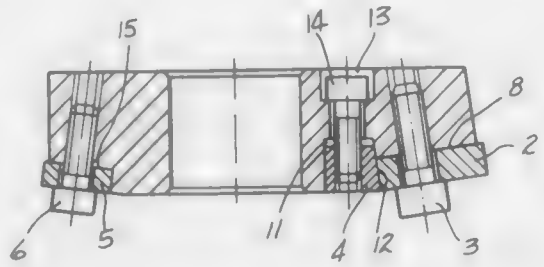
and each of said ribs has a leading cutting edge having a positive rake angle and a trailing cutting edge having a negative rake angle as viewed in the direction of a lateral sliding of the teeth along the tooth trace of said cutter.

5,007,774

CUTTING OR DRAWING TOOL

Roland Kromer, Ettlingen, Fed. Rep. of Germany, assignor to Maag Gear-Wheel & Machine Company Limited, Zurich, Switzerland

Continuation of Ser. No. 261,688, Oct. 24, 1988, abandoned.
This application Sep. 12, 1990, Ser. No. 581,407
Claims priority, application Switzerland, Dec. 8, 1987, 04784/87
Int. Cl.[5] B23B *29/24, 27/00*
U.S. Cl. 407—94 **11 Claims**



1. A cutting apparatus for producing profiles on a workpiece comprising:
- a cutter plate holder having first, second and third bearing surfaces defining a channel;
- at least one cutter plate located within said channel and bearing on said first, second and third bearing surfaces;
- positioning means located within said cutter plate holder in abutting relationship with said at least one cutter plate for positioning the position of said at least one cutter plate within said channel against said second and third bearing surfaces; and
- clamping means for securely clamping said at least one cutter plate in said channel against said first bearing surface at said position.

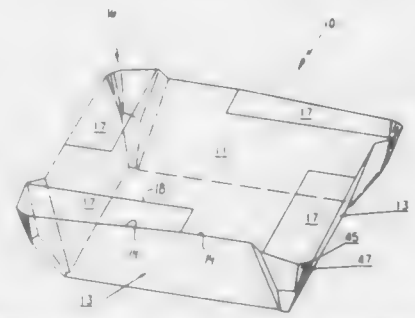
5,007,775

CUTTING INSERT FOR CHIP REMOVING MACHINING

Glenn G. E. Pantzar, Arsunda, Sweden, assignor to Sandvik AB, Sandviken, Sweden

Filed Aug. 29, 1989, Ser. No. 400,066
Claims priority, application Sweden, Sep. 6, 1988, 8803122
Int. Cl.[5] B23C *5/02*
U.S. Cl. 407—113 **20 Claims**

1. A cutting insert for chip cutting machining comprising a body of generally polygonal shape having a chip face, an opposite bottom face and at least one clearance face intersecting said chip face to define a cutting edge which extends to a corner of said body, a portion of said chip face extending along said cutting edge beveled in a direction linearly inclined toward and intersecting said cutting edge and simultaneously toward a midplane of said insert disposed intermediate said chip face and said bottom face such that a first angle of inclination disposed at a first location adjacent said corner and formed by the intersection of said beveled portion and said midplane is larger than a second angle of inclination formed by the intersection of said beveled portion and said midplane at a second location situated farther from said corner than said first location.

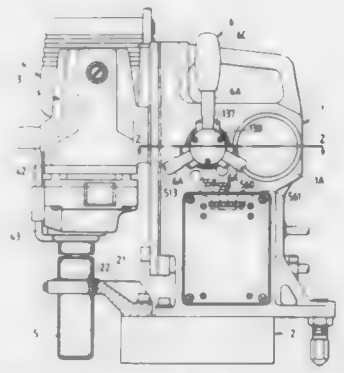


5,007,776

CONTROLLER FOR BORING APPARATUS

Michihiro Shoji, Tokyo, Japan, assignor to Nitto Kohki Co., Ltd, Japan

Filed Jun. 19, 1990, Ser. No. 540,197
Claims priority, application Japan, Jun. 23, 1989, 1-73942[U]; Jun. 23, 1989, 1-73943 [U]
Int. Cl.[5] B23B *45/14*
U.S. Cl. 408—6 **13 Claims**



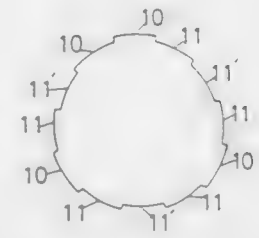
1. A controller for a magnetic base drill unit comprising a frame having a magnetic base which magnetically adheres to a workpiece, an electric drill having a drill motor, and a feed motor fixed to the frame for causing the electric drill to advance upon and recede from the workpiece, the controller comprises:
- hole cutting termination detection means for detecting the termination of the hole cutting in the workpiece by the electric drill,
- feed motor reversing means responsive to the output of the hole cutting termination detection means for reversing the rotational direction of the feed motor, and for applying to the feed motor a voltage which is higher than the voltage applied to the feed motor during the advancing mode of the electric drill, and
- safety circuit means for detecting that a voltage higher than a predetermined voltage to be applied to the feed motor in the advancing mode of the electric drill is applied to the feed motor during the advancing mode, and for stopping the supply of power to the drill motor and the feed motor.

5,007,777

HOLE SAW

Noboru Itokazu, 5-33-808, Nankonaka 5-chome,, Suminoe-ku, Osaka-shi, Osaka 559, Japan

PCT No. PCT/JP87/00992, § 371 Date Aug. 18, 1988, § 102(e) Date Aug. 18, 1988, PCT Pub. No. WO88/04588, PCT Pub. Date Jun. 30, 1988
PCT Filed Dec. 18, 1987, Ser. No. 251,221
Claims priority, application Japan, Dec. 18, 1986, 61-195381[U]; Mar. 25, 1987, 62-44791[U]; Mar. 25, 1987, 62-44792[U]; May 8, 1987, 60-69089[U]; Dec. 23, 1987, 62-162800[U]
Int. Cl.[5] B23B *41/02*
U.S. Cl. 408—67 **23 Claims**



1. A hole saw comprising:
- a basal part having a coupling for joining to a rotary power source;
- a centering drill operatively mounted along a central axis of said basal part; and
- a tubular body having a first end joined to said basal portion and a second end provided with a cutting edge having cutting teeth, said cutting edge comprising a portion thereof having varying cross-sectional contour which locates said cutting teeth at different distances from said central axis, said cutting edge having a plurality of sections having cylindrical cross-sectional contours and a plurality of retreat sections, the retreat sections being provided between the cylindrical sections whereby a contour of said cutting edge alternates between a cylindrical section and a retreat section, the retreat sections having a cylindrical cross-sectional contour generally centered about the central axis, said cylindrical sections also being generally centered about the central axis but having a diameter therefrom which is greater than a diameter from the central axis to the retreat sections, the retreat and cylindrical sections each having a stepped portion therebetween, and each retreat section has a plurality of subsections positioned at varying distances from the central axis and interconnected by stepped portions.

5,007,778

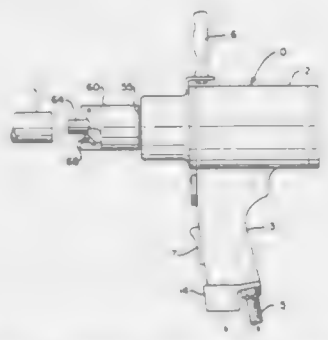
PORTABLE POWER TOOL FOR MILLING TUBE ENDS

Tollief O. Hillestad, 108 9th Ave., W., Summerland Key, Fla. 33042, and Mark W. Hillestad, 220 Hatch Rd., Wadsworth, Ohio 44281

Continuation-in-part of Ser. No. 334,314, Apr. 6, 1989, Pat. No. 4,915,552, which is a continuation-in-part of Ser. No. 254,958, Nov. 7, 1988, Pat. No. 4,889,454. This application Feb. 21, 1990, Ser. No. 482,767
Int. Cl.[5] B23B *45/04*
U.S. Cl. 408—125 **56 Claims**

1. A portable, pneumatic-powered, rotary vane motor adapted to operate a rotary tool, the motor comprising:
- a pneumatic-powered, radial-vane rotary motor having a housing containing a cylindrical stator, said cylindrical stator having an inner surface defining a stator chamber, a circular rotor hub operatively supported by the housing and eccentrically set within the cylindrical stator, said motor housing being circular and the axis of the rotor hub being offset from the axis of said circular housing, said rotor hub containing a plurality of circumferentially

spaced, radially directed slots, each slot containing a radially directed vane adapted to extend radially outward to bear against the inner surface of the cylindrical stator during rotary movement of the rotor hub whereby said radially extended vanes define a plurality of expansible cavities within the stator chamber, a sealing point located between said rotor hub and said inner surface of said cylindrical stator whereby said vanes are maximally retracted at said sealing point;



a gas inlet port communicating with the interior of said stator chamber and located circumferentially adjacent to said sealing point between the rotor hub and the inner surface of the cylindrical stator, said gas inlet port adapted to admit gas under pressure to said expansible cavities within the stator chamber; and

a gas outlet port communicating with stator chamber and located at least 180 circumferential degrees from the gas inlet port, said gas outlet adapted to exhaust spent gas from said expansible cavities.

5,007,779

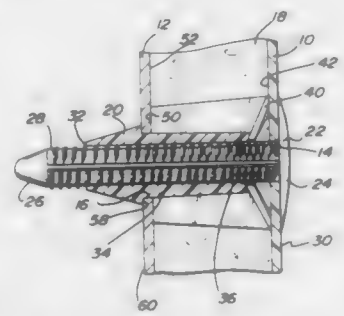
STANDOFF RETAINER

James L. Goran, Orchard Lake, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 10, 1989, Ser. No. 419,183

Int. Cl.[5] F16B *13/06*

U.S. Cl. 411—48 **19 Claims**



1. A standoff retainer for receiving a push-pin to secure a first panel to a second panel in spaced planar facing relationship with respect thereto, the panels each having an aperture formed therethrough, the standoff retainer comprising:

an elongated body positionable to extend between said panel apertures;

a through bore extending axially through said body between said panel apertures and adapted to receive said push-pin in axially locking relationship;

a mounting flange surrounding said through bore and abuttingly engagable with said first panel;

a plurality of circumferentially spaced standoff ribs extending perpendicularly from said mounting flange and having distal ends abuttingly engagable with said second panel;

snap-fit locking means integrally formed with said body for engaging said second panel aperture in the snap-fit axially fast relationship; and

means defining a funnel on the surface of said mounting flange facing said first panel, said funnel surrounding said through bore.

5,007,780

ATTACHMENT MEMBER ANCHORED BY HARDENABLE MASS TO PANEL-SHAPED STRUCTURAL COMPONENT

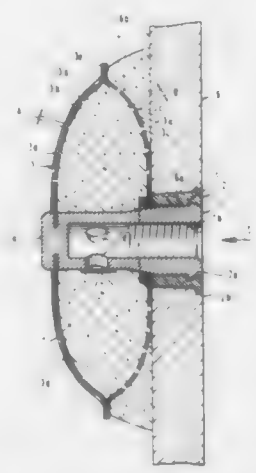
Armin Hoffmann, Landsberg/Lech; Wolfgang Ludwig, Landsberg, and Erich Leibhard, Munich, all of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Fürstentum, Liechtenstein

Filed Apr. 12, 1990, Ser. No. 508,953

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1989, 3912526

Int. Cl.[5] F16B *39/02*

U.S. Cl. 411—82 **12 Claims**



1. Attachment elements to be fixed to panel-shaped structural components by a hardenable material comprising an axially elongated dowel sleeve (1) having a first end (1*a*) leading in the direction in which said dowel sleeve is inserted through a borehole in the structural component and an oppositely directed second end, said dowel sleeve having a passageway extending from the second end toward the first end, said dowel sleeve having apertures extending therethrough from said passageway to exterior of said dowel sleeve, load attachment means within said passageway, an annular part encircling said dowel sleeve and having a first end and a second end with the first end located closer to the first end of said dowel sleeve than the second end of said annular part, said annular part arranged to fit closely in the borehole in the structural component through which said dowel sleeve is inserted and a bag-like member arranged to receive the hardenable material and fixed to said dowel sleeve adjacent the first end thereof and to said annular part adjacent the first end thereof, said bag-like member arranged to be inserted through the borehole in the structural component so that in the inserted condition said bag-like member is located on an inner side of the structural component opposite an outer side through which the dowel sleeve is first inserted, said bag-like member having a first side and an oppositely facing second side with said first side facing the inner side of the structural component after said dowel sleeve and annular part are inserted through the borehole in the structural component, said first side of said bag-like member being fixed to said annular part, wherein the improvement comprises that said apertures in said dowel sleeve open into said bag-like member, at least said first side of said bag-like member comprises openings therethrough for permitting excess hardenable material injected into said bag-like member through said dowel sleeve and apertures therein to pass outwardly from said bag-like member, said second side of said bag-like member is connected to said dowel sleeve, and said first and second sides being joined together radially outwardly from said annular part.

5,007,781

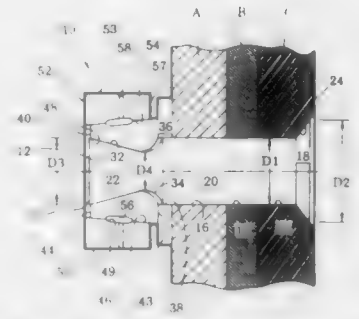
TAPERED SPLIT-BUSHING FASTENER

Jack E. Jensen, and Ebrahim Parekh, both of San Diego, Calif., assignors to General Dynamics Corporation, Convair Division, San Diego, Calif.

Filed Sep. 10, 1990, Ser. No. 580,016

Int. Cl.[5] F16B *21/00*

U.S. Cl. 411—337 **6 Claims**



1. A tapered split-bushing fastener comprising:

an elongated smooth pin having a predetermined length, said pin having a front end and a rear end;

in sequence from its front end to its rear end, said pin has a head portion, a shank portion and a rear portion;

said shank portion having an outer diameter D1, said head portion having a diameter D2 that is greater than D1;

said rear end portion having an outer diameter D3 that is no greater than D1 and it tapers axially forwardly from its rear end to a diameter D4 that is less than D1 by a predetermined amount;

a tubular split-bushing having a front end, a rear end, and inner annular surface and an outer annular surface, said bushing being split longitudinally into at least two pieces, said outer annular surface of said tubular split-bushing having a first circumferential annular groove therearound;

said tubular split-bushing being removably engagable around the tapered surface of the rear portion of said pin;

a tubular sleeve having a front end, a rear end and a lateral outer side wall;

said tubular sleeve having a bore hole that extends from its front end to its rear end, said bore hole having a second circumferential annular groove therearound and said bore hole matingly engages the outer annular surface of said split-bushing and said first and second circumferential annular grooves align to forming a closed chamber thereby; and

means for substantially filling said closed chamber with an adhesive for locking said tubular sleeve on said split-bushing so that neither of them can be removed from the rear end portion of said elongated pin.

5,007,782

COMBINED PAPER PUNCH AND BINDING APPARATUS

Charles T. Groswith, III, Los Altos; Richard D. Phipps, Morgan Hill; Robert L. Lathrop, Jr.; John F. Stewart, both of San Jose, and Rick J. Kaufmann, Los Gatos, all of Calif., assignors to Taurus Tetraconcepts, Inc., Mountain View, Calif.

Filed Jul. 18, 1989, Ser. No. 381,612

Int. Cl.[5] B42B *9/00*

U.S. Cl. 412—40 **23 Claims**

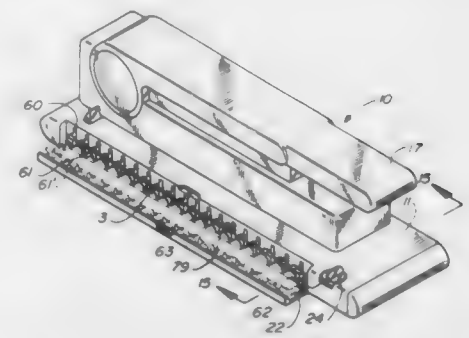
1. A combined punching and binding apparatus comprising:

a base portion;

a first punch mechanism in said base portion and accessible to a first stack of paper sheets insertable along a first linear edge of said base portion for punching a first hole pattern in the first stack of paper sheets;

a second hole around mechanism in said base portion and accessible to a second stack of paper sheets insertable along a second linear edge of said base portion for punching a second hole pattern in the second stack of paper sheets;

a punch operational crank pivotally connected to said base portion;



means interconnecting said crank and each of said hole punch mechanisms for independently punching the first and second hole patterns in any stack of paper sheets inserted into said mechanisms at said first and second linear edges, respectively; and

binding means attached to said base portion for binding one of the first or second stacks of sheets.

5,007,783

POSITIONING APPARATUS FOR AN AUTOMATIC CARRIER SYSTEM

Sei Matsuo, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 325,581, Mar. 17, 1989, abandoned. This application Apr. 2, 1990, Ser. No. 503,181

Claims priority, application Japan, Jun. 2, 1988, 63-134373

Int. Cl.[5] B65G *21/20, 67/02*

U.S. Cl. 414—222 **3 Claims**



1. An apparatus for positioning a workpiece relative to an automatic assembling machine comprising:

a carrier disposed adjacent said automatic assembling machine, said carrier supporting a pallet, fixed to said carrier, and a subpallet, slidably mounted on said pallet, said subpallet having means for holding said workpiece, said subpallet also having at least two positioning projections;

a robotic arm disposed on said automatic assembling machine having a positioning member capable of moving into and out of contact with said positioning projections, said positioning member made up of at least two positioning cylinders having tapered openings at one end thereon, said

tapered openings having a smallest diameter at the centers of said positioning cylinders;

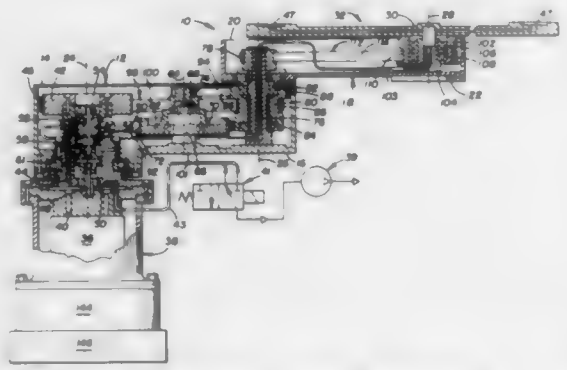
wherein, when said carrier is placed such that said workpiece is positioned within a short distance of a desired position relative to said automatic assembling machine, said positioning member can be moved toward said carrier, and said positioning projections on said subpallet are engaged with said tapered openings of said positioning cylinders, said tapered openings causing said positioning projections to move toward the center of said tapered openings, thus causing said subpallet to slide on said pallet, thereby causing said workpiece to be disposed in said desired position relative to said automatic assembling machine.

5,007,784

DUAL END EFFECTOR ROBOTIC ARM

Genco Genov, Sunnyvale, and James Cameron, Mountain View, both of Calif., assignors to Genmark Automation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. [redacted],754, Jan. 20, 1989. This application Sep. 20, 1989, Ser. No. 410,087
Int. Cl.[5] B25J 9/06
U.S. Cl. 414—225 11 Claims



4. A workpiece processing apparatus, comprising:

a workpiece holder adapted to hold a plurality of workpieces to be processed;

a work station adapted to hold and process successively held workpieces;

a workpiece receiver adapted to receive successively processed workpieces;

a robotic arm, comprising:

a plurality of sequentially pivotally attached links each having proximal and distal end portions, with the proximal end portion of each link except a proximalmost of said links being pivotally attached relative to the distal end portion of the preceding link;

a relatively static structure to which the proximal end portion of the proximalmost of said links is pivotally mounted;

an end effector structure having a central portion and two substantially oppositely extending hands each capable of picking up a workpiece, said central portion being centrally pivotally mounted to the distal end portion of a distalmost of said links;

said links, end effector structure and static structure being of a construction sufficient to allow said robotic arm to reverse across the pivot axis of said proximal end portion of the proximalmost of said links;

radial drive means for driving said links in a manner such that the pivot axis of said central portion of said end effector structure moves only substantially linearly radially along a line passing through and perpendicular to said pivot axis of said proximal end portion of the proximalmost of said links and to the pivot axis of said central portion of said end effector structure and said end effector structure is maintained at a selected angle to said line; and

rotational drive means for rotating said relatively static structure and with it said links about the pivot axis of said proximal end portion of said proximalmost of said links;

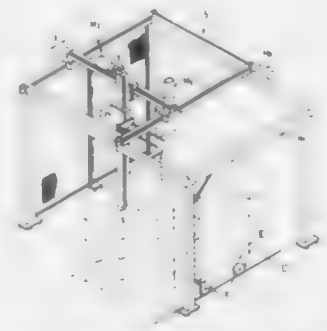
said robotic arm being positioned and of a construction sufficient to remove successive workpieces from said holder using either of said hands, position said workpieces successively at said work station using either of said hands, remove said workpieces successively from said work station using either of said hands and position said workpieces successively in said receiver using either of said hands.

5,007,785

METHOD AND APPARATUS FOR UNLOADING STACKS OF TRAYS

Jelle van der Schoot, Aalten, Netherlands, assignor to Staalkat B. V., Aalten, Netherlands

Continuation-in-part of Ser. No. 270,590, Nov. 14, 1988, Pat. No. 4,917,559. This application Nov. 14, 1989, Ser. No. 435,968
The portion of the term of this patent subsequent to Apr. 17, 2007, has been disclaimed.
Int. Cl.[5] B65G 59/02, 67/24
U.S. Cl. 414—331 12 Claims



1. Apparatus for unloading stacks of trays from a movable storage container, comprising:

(1) a storage container having vertically-disposed supports and a plurality of horizontally-disposed sections connecting said supports and forming a plurality of horizontally-disposed shelves which are positioned at different vertical levels of said container for holding on each shelf at least three laterally adjacent stacks of trays, each shelf having a front side and a back side and a centrally located guide strip extending from near the back side to near the front side with the guide strip being substantially parallel to the other two sides of the shelf and having short guide ribs extending from the said other two sides at right angles thereto;

(2) unloading means for unloading a stack of trays from said container and having a configuration such that the unloading means is capable of being inserted under a lowermost tray of the middle stack of said trays of said three adjacent stacks of trays and supporting that middle stack of trays;

(3) unloading moving means for moving said unloading means; and

(4) control means for controlling the movement of the unloading means such that the unloading means is movable:

(a) vertically adjacent said container such as to place said unloading means at the top of a first shelf to be unloaded;

(b) horizontally forward such as to insert said unloading means under said lowermost tray of said middle stack of trays;

(c) vertically to slightly elevate the stack of trays from the shelf;

(d) laterally such as to loosen said middle stack of trays from said adjacent stacks so that the middle stack of trays is removable without interference from the other stacks of trays of the said three adjacent stacks of trays; and

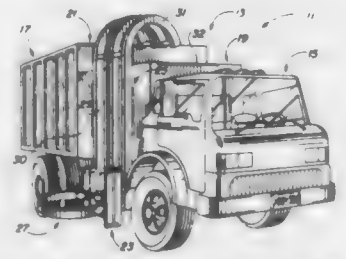
(e) horizontally backwards such as to remove said middle stack of trays from said container.

5,007,786

REFUSE COLLECTION SYSTEM, REFUSE COLLECTION TRUCK AND LOADER ASSEMBLY THEREFOR

John W. Bingman, Mesa, Ariz., assignor to Sunbelt Automated Systems, Inc., Phoenix, Ariz.

Filed Dec. 8, 1988, Ser. No. 281,558
Int. Cl.[5] B65F 3/02
U.S. Cl. 414—409 13 Claims



13. An improved refuse collection system including a refuse truck having a truck cab for housing at least an operator, a truck frame, and a bed carried by said frame, said bed including an elongated bottom, a pair of longitudinal sides, a front end, and a rear tailgate defining a substantially hollow bed interior divided into an open top loading station and a refuse storage portion, said system including a refuse container-loading apparatus comprising:

rail means operatively fixedly mounted to at least one of said truck frame and one side of said bed adjacent said open top loading station at substantially one side of said truck, said rail means including means for forming a first set of wheel channels and a drive chain channel, said rail means including a relatively vertical lower end portion and a partially semicircular arcuately downwardly turned upper end portion extending over said one side of said bed and facing on said open top loading station;

carriage means including wheel means operatively disposed within said set of wheel channels for up and down movement therein and having a down home position and an up dump position;

means operatively carried by said carriage means for retainably engaging and releasing a selected refuse container;

means operatively coupling said carriage means and said engaging and releasing means for extending said engaging and releasing means to a pick-up position a predetermined distance from said one side of said bed and spaced from said rail means for retainably engaging a refuse container to be emptied and releasing an emptied refuse container and retracting said engaging and releasing means to a home position adjacent said one side of said bed for enabling said carriage means to lift and lower same along said rail means for dumping purposes;

a single finite length of sprocket drive chain having first and second end portions which are unconnected from one another housed within said drive chain channel for up and down movement along said rail means;

means for operatively coupling and uncoupling said drive chain to said carriage means;

hydraulic motor means for driving said drive chain up and down said rail means; and

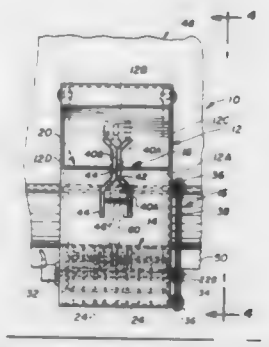
speed control responsive to the actual speed, acceleration and deceleration of said carriage means for automatically controllably adjusting the speed, acceleration and deceleration of said hydraulic motor means for minimizing the time required to lift a refuse can to be emptied, dump the contents thereof into said open top loading station and lower said emptied refuse container to said home position while simultaneously optimizing to dumping efficiency of system.

5,007,787

BAG CLAMPING DEVICE FOR WASTE MATERIAL DEBAGGING APPARATUS

Llewellyn R. Schnader, New Holland, Pa., assignor to Ford New Holland, Inc., New Holland, Pa.

Filed Dec. 26, 1989, Ser. No. 456,707
Int. Cl.[5] B65G 65/34
U.S. Cl. 414—412 6 Claims



1. A material debagging apparatus comprising:

a receptacle defining a chamber for holding bagged material;

means for rupturing a bag disposed in said chamber and at least partially filled with material, said rupturing means being carried on said receptacle;

drive means for operating said rupturing means to cause rupturing of the bag;

means mounted on said receptacle for releasably clamping the bag in order to releasably secure the bag to said receptacle; and

said clamping means including a pair of clamp members positioned side-by-side and normally disposed in a clamping condition for clamping and securing a top end portion of the bag, at least one of said clamp members being yieldably movable relative to said other clamp member to dispose said clamp members in a nonclamping condition for releasing the bag top end portion.

5,007,788

PITCH CHANGING DEVICE FOR CHANGING PITCHES OF PLATE-LIKE OBJECTS AND METHOD OF CHANGING PITCHES

Takanobu Asano, Yokohama; Kenichi Yamaga, and Wataru Ohkase, both of Sagamihara, all of Japan, assignors to Tel Sagami Limited, Kanagawa, Japan

Filed Apr. 24, 1989, Ser. No. 342,345
Claims priority, application Japan, Apr. 25, 1988, 63-103403; May 17, 1988, 63-119580; Jul. 19, 1988, 63-179773
Int. Cl.[5] B65G 65/00
U.S. Cl. 414—417 6 Claims

1. A pitch changing device for changing pitches of semiconductor wafers arranged in parallel to each other, comprising:

means for unloading a plurality of wafers arranged in containing means at predetermined pitches while the pitches are kept unchanged; and

holding means for holding the unloaded wafers while the pitches are depth unchanged,

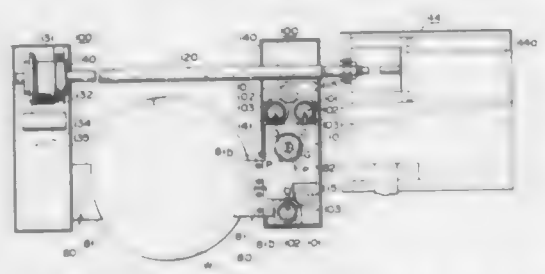
said holding means including,

a plurality of movable members for respectively holding the unloaded wafers,

elastic means, including a plurality of springs, for varying the pitches between the wafers which are held by the movable members, and

driving means, including a drive shaft surrounded by the

springs, flow allowing expansion/contraction of said springs, wherein pitches of the wafers are changed when



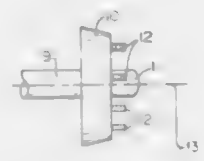
said springs are expanded/contracted by the driving means while the wafers are respectively held by the movable members.

5,007,789

VEHICLE WHEEL MOUNTING APPARATUS

Michael A. Painter, 15401 Stonewood Ter., Sherman Oaks, Calif. 91403

Filed Sep. 29, 1989, Ser. No. 414,[illegible]1
Int. Cl.[5] B60B *29/00*
U.S. Cl. 414—427 5 Claims



1. A vehicle wheel mounting apparatus for mounting a vehicle tire and wheel upon a vehicle axle comprising:

(a) a mounting base having a top and bottom surfaces;

(b) a plurality of wheel assemblies secured to the bottom surface of said mounting base;

(c) a positioning guide secured to the mounting base and extending upwardly from the top surface thereof;

(d) a wheel positioning member comprising an arcuate positioning frame having arcuate top and bottom surfaces and first and second longitudinal edge surfaces, the latter being in parallel spaced relation to each other;

(e) a plurality of equally spaced roller assemblies, each roller assembly including an axle and a cylindrical roller suitably journaled thereabout, each axle being secured between the first and second longitudinal edge surfaces, said roller assemblies being in parallel relation to each other, the cylindrical surface of each of said rollers uniformly extending above the arcuate top surface of said positioning frame, the cylindrical surfaces of said rollers being in contact with and adapted to uniformly support the vehicle tire whereby the tire may be rotated about its axis for alignment with the axle;

(f) guide means for guiding the vertical movement of said wheel positioning member along the positioning guide, said guide means coupled to the first longitudinal edge surface of said positioning frame; and

(g) hoisting means for lifting said wheel positioning member relative to the mounting base, said hoisting means being coupled intermediate the positioning frame and said mounting base.

5,007,790

SUSTAINED-RELEASE ORAL DRUG DOSAGE FORM

John W. Shell, Hillsborough, Calif., assignor to DepoMed Systems, Inc., Hillsborough, Calif.

Filed Apr. 11, 1989, Ser. No. 336,440
Int. Cl.[5] A61K *9/48*
U.S. Cl. 424—451 9 Claims

1. A sustained-release oral drug dosage form for releasing a solution of drug into the stomach comprising:

a plurality of solid particles of a solid-state drug dispersed within a hydrophilic, water-swellable polymer that (i) swells via imbibition of gastric fluid to increase the particle size to a level that promotes retention in the stomach over said time period, (ii) permits dissolution of the dispersed drug by imbibed gastric fluid while the drug is within the particle and release of the resulting solution via a leaching action from the particles, thus assuring that drug only in solution reaches contact with the gastric mucosa, and (iii) maintains its physical integrity for at least a substantial portion of the time period during which the drug is released into he stomach and thereafter rapidly dissolves,

wherein said drug is selected from the group consisting of calcium carbonate, cimetidine, ranitidine, indomethacin, ibuprofen, naproxen, prednisone, prednisolone, dexamethasone, piroxicam, aspirin, nifedipine, and potassium chloride,

and wherein said polymer is selected from the group of polymers consisting of crosslinked gelatin, crosslinked albumin, crosslinked sodium alginate, crosslinked carboxymethylcellulose, crosslinked polyvinyl alcohol, and crosslinked chitin,

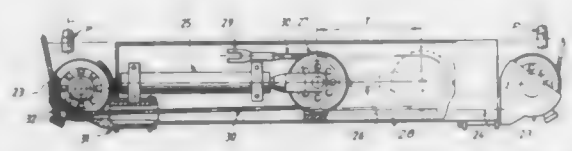
and wherein said dosage form is in the form of a tablet or capsule that maintains the particles in a packed mass prior to their ingestion and then rapidly disintegrates in gastric fluid to permit the particles to disperse in the stomach after their ingestion.

5,007,791

ISO CONTAINER HANDLING SYSTEM

T. Trafford Boughton, Amersham, England, assignor to T. T. Boughton & Sons Ltd., Great Britain

Filed Nov. 10, 1988, Ser. No. 269,859
Claims priority, application United Kingdom, Nov. 13, 1[illegible]7, 8726608
Int. Cl.[5] B60P *1/00*
U.S. Cl. 414—494 19 Claims



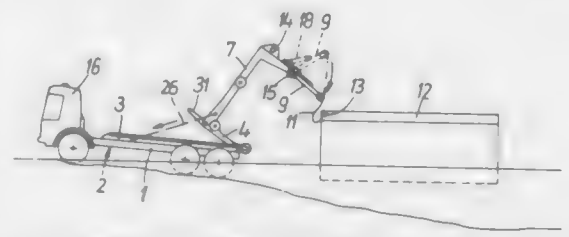
1. A load handling device for a vehicle comprising a mast, one end of which is pivotally mounted adjacent the rear of the vehicle for movement about a first horizontal axis, a horizontal cross-member mounted for movement along the length of the mast, elongate flexible tension elements each having a part extending from each end of the cross-emember and provided with load-engaging means at its respective free end, and the device further including means mounted within the cross-member for varying the length of that part of each flexible tension element extending from the respective end of the cross-member.

5,007,792

VEHICLE-MOUNTED LOAD HOISTING DEVICE

Hans Wiedeck, Mendener Strasse 82, D-4430 Mülheim, Fed. Rep. of Germany, and Michel Chiesura, Residence les Arcs Rue Moliere, F-42160 Andrezieux Boutheon, France

Filed Jul. 18, 1988, Ser. No. 220,672
Claims priority, application Fed. Rep. of Germany, Jul. 17, 1987, 3723604
Int. Cl.[5] B60P *1/16*
U.S. Cl. 414—500 17 Claims



1. In a vehicle-mounted load hoisting device for loading and unloading a load from a vehicle, including

a pivot frame having first and second ends; said pivot frame being mounted on the vehicle at said first end for pivotal motion about a first axis extending horizontally and transversely to a longitudinal direction of the vehicle;

a stop face provided on said pivot frame;

a cantilever arm having first and second ends; said cantilever arm being connected at the first end thereof to the second end of said pivot frame for pivotal motion relative to said pivot frame about a second axis extending spaced from and parallel to said first axis;

a power means supported on the vehicle and being articulated to said cantilever arm for pivoting said cantilever arm about said second axis into contact with said stop face;

the improvement comprising

(a) a pivot arm having first and second ends; said pivot arm being articulated at the first end thereof to the second end of said cantilever arm for pivotal motion relative to said cantilever arm about a third axis oriented parallel to said first and second axes and being spaced therefrom;

(b) a pulley mounted at the second end of said pivot arm;

(c) a winch;

(d) an elongated, flexible hoisting means wound on the winch and trained about said pulley and being adapted to extend from said pulley for attachment to the load;

(e) locking means for locking said cantilever arm and said pivot frame together to form a rigid unit pivotal about said first axis; in said rigid unit said cantilever arm being in contact with said stop face and extending as a longitudinally aligned continuation of said cantilever arm; and

(f) a pair of catch hooks for standard pallets and standard containers; said catch hooks are pivotal out of the way.

5,007,793

BULK CONTAINERS AND APPARATUS FOR LOADING BULK CONTAINERS ONTO A TRUCK

John M. Irvin, 2905 Dolphin Dr., Miramar, Fla. 33025

Filed Aug. 21, 1989, Ser. No. 396,579
Int. Cl.[5] B60P *1/36, 1/44*
U.S. Cl. 414—502 23 Claims

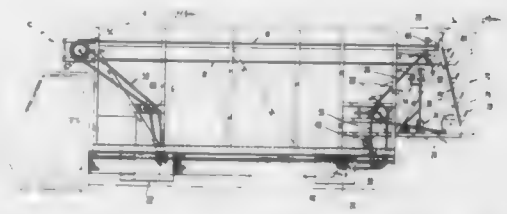
1. A self-loading truck for loading containers having interfacing means, comprising:

an elongate truck bed having a forward end and a rearward end;

lifting chain means mounted at the rearward end of said truck bed for releasably engaging said interfacing means and lifting and suspendedly supporting said containers to be loaded from a support surface onto said truck, said lifting chain means includes a pair of laterally spaced lift chain members, each member of said pair being disposed on an opposite side of said truck bed relative to the other member of said pair and each chain member forming a continuous loop;

horizontally disposed displacement chain means for suspendedly supporting above said truck bed containers lifted from said support surface by said lifting chain means;

said displacement chain means being mounted to said truck and extending substantially the entire longitudinal extent of said truck bed, said displacement chain means includes



a pair of laterally spaced, horizontally disposed chain members, each member of said pair of horizontal chain members being disposed on an opposite side of said truck bed relative to the other member of said pair of horizontal chain members and each horizontal chain member forming a continuous loop; and

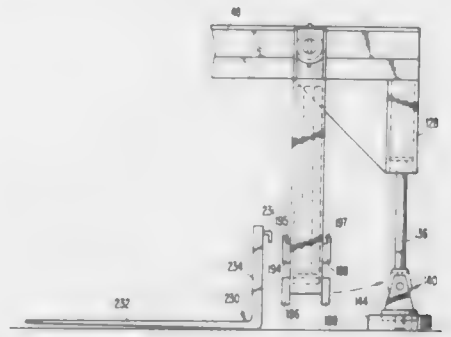
said lifting chain means being closely spaced to a rearward end of said displacement chain means so that containers lifted by said lifting chain means are deposited by said lifting chain means onto said displacement chain means.

5,007,794

LOAD-CARRYING ATTACHMENT FOR MOTOR VEHICLES

José O. Lombard, Miami, Fla., assignor to Luis A. Figueroa, Coral Gables, Fla.

Division of Ser. No. 171,892, Mar. 22, 1988, Pat. No. 4,880,347.
This application Apr. 27, 1989, Ser. No. 343,684
Int. Cl.[5] B60P *1/46*
U.S. Cl. 414—542 20 Claims



1. A load-carrying attachment for a cargo carrying vehicle to unload cargo from or load cargo onto said vehicle when said attachment is attached to said vehicle, said attachment comprising:

a pair of spaced horizontal support beam assemblies having first and second ends, said beam assemblies being connected, said first ends of said support beam assemblies being attachable to said vehicle;

first and second leg members, said first leg member being attached to one of said support beam assemblies, said second leg member being attached to the other of said support beam assemblies;

an elongated mast having a longitudinal axis and being slidably attached to said beam assemblies such that said mast is movable along said beam assemblies, said mast being positioned between said beam assemblies, said mast also

being rotatably attached to said beam assemblies about a horizontal axis substantially perpendicular to said beam assemblies and substantially perpendicular to the longitudinal axis of said mast so as to be rotated between a use position and a non-use position;

a carriage slidably attached to said mast such that said carriage can slide parallel to the longitudinal axis of said mast; and

first means removably attachable to said carriage for engaging a load;

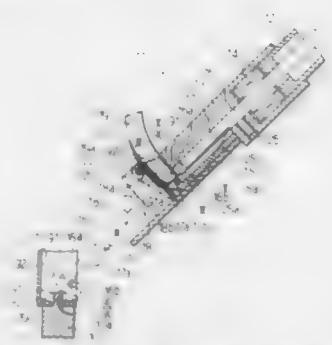
wherein said attachment is capable of unloading cargo from or loading cargo onto said vehicle when said horizontal support beam assemblies are attached to said vehicle.

5,007,795

SUPPLY HEAD OF NUT FEEDER

Masahiro Yoshimura, Nagoya, Japan, assignor to Yajima Kogyo, Inc., Nagoya, Japan

Filed Oct. 6, 1989, Ser. No. 418,311
Int. Cl.[5] B65L *1/00*
U.S. Cl. 414—737 2 Claims



1. A supply head of a nut feeder comprising:

(a) a chute having a cylindrical body for transferring a T-shaped welding nut, said nut including a cylindrical tapped portion, and a flange portion formed in the tapped portion and having convexly curved arcuate end surfaces in a major axis direction and both end surfaces in a minor axis direction made planes in parallel to each other;

(b) a sleeve arranged at a front end of the supply head body for connecting said chute to the font end, a coil mounted to said sleeve and a bottom plate fixed to a lower side of the front end, said bottom plate having a pair of grooves;

(c) a nut holder fixed to said bottom plate between said grooves and having a semi-arc shaped receiving surface abutting on the outer circumferential surface of the lower side of the tapped portion of a nut transferred through said chute and holding the axial direction of the tapped portion of the nut in parallel to said sleeve;

(d) a rod arranged movable forward and backward in the sleeve axial direction within said sleeve and selectively magnetized by energization of said coil, a front end of said rod having a holding surface attracting an end surface of the tapped portion of a transferred nut when said coil is energized to magnetize said rod and said rod is moved forward to insert a projection in the tapped hole of the tapped portion of the nut at the center of the holding surface;

(e) a guide member fixed to the front end of said rod, said guide member having two side walls with each side wall movable in one of said bottom plate grooves and guiding an end surface in the minor axis direction of the flange portion of the transferred nut; and

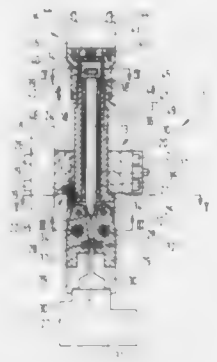
(f) a shutter being opend or closed freely so as to lock the front side of the transferred nut at the front end of said sleeve.

5,007,796

HANDLING SYSTEM FOR WORKPIECES

Walter Sticht, Karl-Heinrich-Waggerl-Strasse 8, A-4800 Attnang-Puchheim, Austria

Continuation of Ser. No. 300,222, Jan. 23, 1989, abandoned, which is a continuation of Ser. No. 175,608, Mar. 28, 1988, abandoned, which is a continuation of Ser. No. 804,292, Dec. 3, 1985, abandoned. This application Feb. 27, 1990, Ser. No. 488,442
Claims priority, application Austria, Dec. 7, 1984, 3887/84
Int. Cl.[5] B25J *15/04*
U.S. Cl. 414—751 7 Claims



1. A system for handling a workpiece, comprising

(a) a carrier frame,

(b) a gripper device secured to the carrier frame, the gripper device comprising

(1) gripping means having gripping elements actuatable to

(2) a housing including a cylindrical housing member and a bearer head adjoining one end of the cylindrical housing member and carrying the gripping means,

(3) means for actuating the gripping means arranged in the housing, the actuating means comprising a guiding rod extending through the cylindrical housing member and cooperating with the gripping elements, the cylindrical housing member defining a longitudinal guide for the guiding rod, and

(4) a driving device coupled to the guiding rod at an end of the cylindrical housing member opposite the one end for moving the guiding rod along the longitudinal guide and thereby to actuate the gripping means,

(c) bearing means for the cylindrical housing member, the bearing means comprising

(1) a clamping device holding the cylindrical housing member and securing the housing member with respect to the carrier frame, the clamping device comprising two cooperating clamping parts clamping the cylindrical housing member therebetwenn radially with respect to a longitudinal axis of the cylindrical housing member, the clamping parts and the bearer head having facing end faces extending in planes extending perpendicularly to the longitudinal axis of the cylindrical housing member, and

(2) the cylindrical housing member having a surface configuration designed to enable the housing member to fit the bearing means and to be held thereby,

(d) a first coupling device between the bearer head and the clamping device and cooperating therewith for holding the bearer head non-rotatably with respect to the bearing means, the first coupling device comprising

(1) aligned bores extending in the end faces of the bearer head and the clamping parts substantially parallel to the longitudinal axis and holding pins inserted into the aligned bores, and

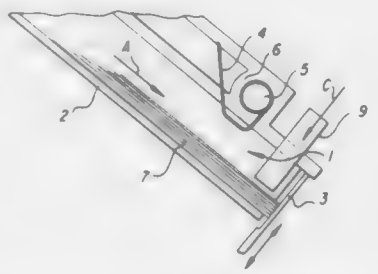
(e) wherein the driving device is replaceably coupled to the guiding rod at the opposite cylindrical housing member end.

5,007,797

HOLD-BACK DEVICE FOR SELECTIVELY SEPARATING SHEETS FED SERIATEM TO A STACK

Rolf Munz, Kernen, Fed. Rep. of Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 15, 1989, Ser. No. 437,006
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1988, 3839305
Int. Cl.[5] B65G *57/00*; B65H *31/32*
U.S. Cl. 414—790.8 3 Claims



1. Apparatus for stacking sheets fed seriatem to a collecting bin where they are collected one on top of the other in a stack, said apparatus comprising:

a hold-back device which is arranged above the stack of sheets and in the area of the leading edges of said stacked sheets and can be temporarily introduced between the complete stack of sheets and sheets subsequently fed to said stack, said hold-back device including at least one rotatably mounted flexible separating finger which is driven by a motor and is directed in opposition to the direction of sheet transport and rotatable both in the direction of sheet transport and in the opposite direction, the separating finger being rotatable when temporarily introduced between the complete stack of sheets and sheets subsequently fed to said stack into a position in which it rests on the sheet stack and forms an inclined feeding surface for subsequently arriving sheets

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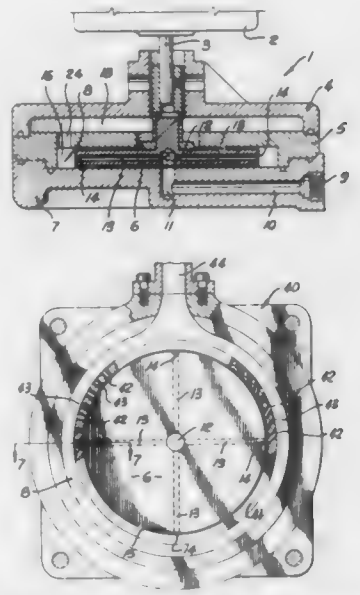
5,007,798

CENTRIFUGAL PUMP

Brian Keane, Clareville, Australia, assignor to Vaqua Limited, Frenchs Forest, Australia

PCT No. PCT/AU87/00423, § 371 Date Aug. 4, 1989, § 102(e) Date Aug. 4, 1989, PCT Pub. No. WO88/04733, PCT Pub. Date Jun. 30, 1988
PCT Filed Dec. 15, 1987, Ser. No. 397,487
Claims priority, application Australia, Dec. 15, 1986, PH9514
Int. Cl.[5] F04D *1/12*
U.S. Cl. 415—88 11 Claims

1. A centrifugal pump having an impellor mounted for rotation about an axis, said impellor having a central inlet chamber with a peripheral wall concentric with said axis and at least one passage extending outwardly from an inlet port in said wall to an exit port radially spaced from said chamber; wherein, stationary inlet port means are located within said chamber for separating the spinning impellor from incoming fluid entering said inlet port means thereby to prevent induced rotation of said incoming fluid, said stationary inlet port means including an annular portion concentric with said axis and in substantial alignment with said impellor inlet port, at least one channel extending radially outwardly from the interior to the exterior



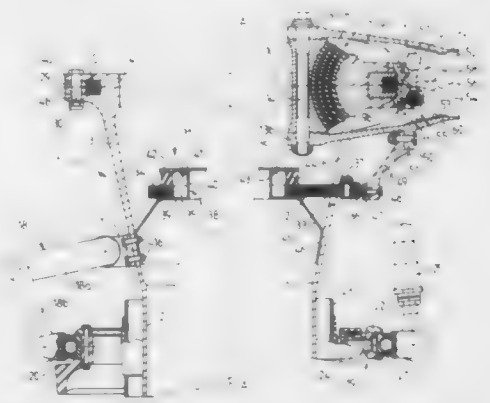
of said annular portion for supplying said incoming fluid to said impellor passage.

5,007,799

FLAPPING RESTRAINER DEVICE FOR ROTORCRAFT ROTOR BLADES, AND ROTOR HEAD COMPRISING SAID DEVICE

René L. Mouille, Aix-en Provence, and Robert J. Suzzi, Marseille, both of France, assignors to Societe Nationale Industrielle et Aerospatiale, Paris, France

Filed Sep. 22, 1989, Ser. No. 411,128
Claims priority, application France, Sep. 23, 1988, 88 12491
Int. Cl.[5] F01D *3/00*
U.S. Cl. 416—104 21 Claims



1. A flapping restrainer device for the blades of a rotorcraft main rotor, of the type including a hub mast assembly having a retaining means for the retention and articulation of the blades on the hub and at least one tubular part below the retaining means, comprising:

lower flapping restrainer means for restraining flapping of the blades, said lower flapping restraining means comprising at least one rigid component for support of the blades, said at least one rigid component being mounted to slide radially on a support fixed coaxially in the tubular part of the hub mast assembly;

each said blade having a lower supporting runner connected for movement with a root of the respective said blade so

as to limit the displacement of each respective said blade in a downward direction by engagement with said at least one rigid component; wherein said at least one rigid component is a plate having a plurality of branches;

resilient restoring means for resiliently biasing said plate toward a predetermined position;

wherein the number of said branches is equal the number of said blades, said plurality of branches being regularly distributed in a circumferential direction about said plate, each of said plurality of branches extending outwardly in a direction which is substantially radial in relation to said plate; each of said plurality of branches being engaged in respective openings disposed in said hub mast assembly, wherein each said lower supporting runner is disposed substantially entirely externally of said hub mast assembly, and wherein each said lower supporting runner is restrained against said external radial end of a corresponding one of said branches to limit downward flapping of each corresponding said blade.

5,007,800

ROTOR BLADE FIXING FOR TURBOMACHINE ROTORS

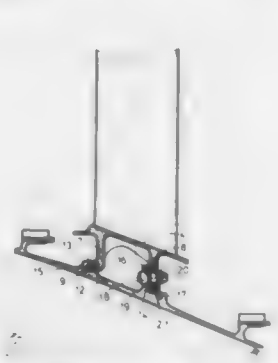
Michel G. P. Hacault, Massy Villaine; Bertrand J. J. M. Heurtel, Vert Saint Denis, and Jacques R. Serre, Melun, all of France, assignors to Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation "S.N.E.C.M.A.", Paris, France

Filed Oct. 4, 1989, Ser. No. 417,324

Claims priority, application France, Oct. 5, 1988, 88 13004

Int. Cl.[5] F01D *5/30*

U.S. Cl. 416—220.00 R **4 Claims**



1. A turbomachine rotor having:

a rotor drum, said drum being provided with

at least two radially outwardly directed flanges spaced axially apart from each other and defining an upstream drum flange and a downstream drum flange with respect to the direction of flow of gases through said turbomachine rotor,

a circular row of evenly spaced holes through said downstream drum flange, and

an annular groove adjacent the base of said downstream drum flange on the downstream side thereof;

a stage of rotor blades mounted circumferentially on said rotor drum, said stage including a plurality of blade platforms, each of said platforms carrying

at least two radially inwardly directed flanges spaced axially apart from each other and defining an upstream platform flange and a downstream platform flange cooperating respectively with said upstream and downstream flanges of said drum,

said downstream platform flange having at least one hole registering with at least one of said holes in said downstream drum flange;

a generally cylindrical pin projecting through each pair of registering holes of said downstream drum and platform flanges, each of said pins having

a substantially central radial collar interposed between said downstream drum flange and said downstream platform flange, and

an annular groove disposed downstream of said collar; and

a plurality of scalloped segments disposed in said annular groove of said drum,

each of said segments having its radially outer edge defining teeth separated by a plurality of cut-outs, each of said teeth being received in said annular groove of one of said pins to hold said pins and said rotor blades in position radially, axially and tangentially,

and each of said segments carrying a tongue at each end thereof, one of said tongues extending radially and the other of said tongues being bent at right angles to permit movement of said segment to engage said teeth in said grooves of said pins, said other tongue thereafter being radially straightened to lock said segments, said pins and said rotor blades in position.

5,007,801

IMPELLER MADE FROM A SHEET-METAL DISK AND METHOD OF MANUFACTURING SAME

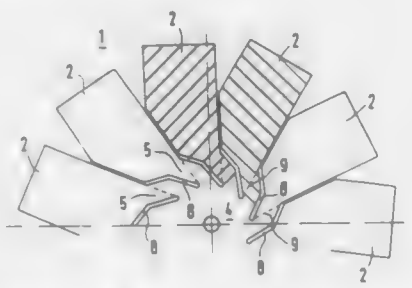
Reinhold Hopfensperger, Dietelskirchen, and Werner Eichhorn, Landshut, both of Fed. Rep. of Germany, assignors to Standard Elektrik Lorenz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Aug. 9, 1988, Ser. No. 230,145

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1987, 3726522

Int. Cl.[5] F01D *5/14*

U.S. Cl. 416—223 R **9 Claims**



1. An impeller made from a sheet-metal disk, comprising:

a plurality of radially outwardly extending blades having widths, said blades being formed by radial cuts in the sheet-metal disk,

a circular-saw-blade-shaped flat center piece having sawtooth-shaped projections, and

a plurality of blade roots bent out of the plane of said center piece and extending from said sawtooth-shaped projections, connecting said blades at approximately a right angle with the plane of said center piece, to said center piece, said blades having radially inward portions extending radially outward from said roots, said radially inward portions having opposite edges defined by the cuts, said radially inward portions of the respective blades having such dimensions that in a development of the impeller with said roots and said blades in the plane of said center piece, the edges of adjacent blades are substantially aligned with fold lines along which said roots are bent out of the plane of said center piece and said blades are separated by approximately S-shaped slots, each of said slots originating at one end thereof at a radially inward end of the fold line along which one of the roots is bent, said each of said slots terminating at a radially outward end thereof along an outward line which is located radially outside of and aligned with the fold line of another of the roots which is adjacent to one of the roots, the outward ends of said slots separating said edges of adjacent blades from each other by gaps which are narrower than the widths of the blades.

6. A method of manufacturing an impeller from sheet material, comprising the following steps:

providing a flat blank,

stamping the blank to form a center piece having sawtooth-shaped projections, blade roots adjacent the sawtooth-shaped projections, and successively adjacent blades extending radially outward from the blade roots, the blades having radially inward portions connected to the roots, the radially inward portions having opposite edges, said step of stamping includes the step of separating the blades with approximately S-shaped slots, each of the slots originating at one end thereof at a radially inward end of the straight line along which one of the blade is bent, each of the slots terminating at a radially outward end thereof along an outward line which is located radially outside of and aligned with the straight line of another of the blades which is adjacent to the one of the blades, the radially outward ends of said slots separating the opposite edges of a respective one of the blades from one of the edges of an adjacent blade by a respective gap which is narrower than widths of the blades, and

bending the blades out of the plane of the center piece by about 90 angular degrees on a straight line at the boundary between the sawtooth-shaped projections and the blade roots.

5,007,802

Patent Not Issued For This Number

5,007,803

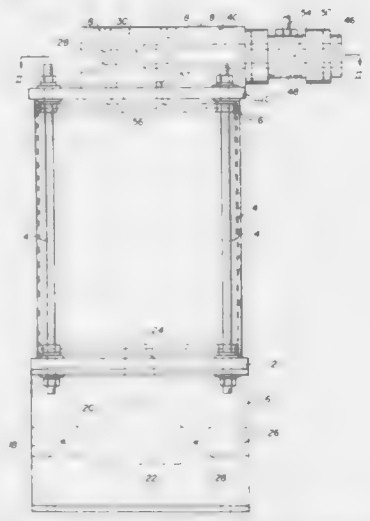
AIR OPERATED VACUUM PUMP

Anthony M. DiVito, Youngstown, and Lee H. Giesecke, Warren, both of Ohio, assignors to Global Pump, Inc., East Palestine, Ohio

Filed Sep. 28, 1989, Ser. No. 414,092

Int. Cl.[5] F04F *1/02*

U.S. Cl. 417—137 **15 Claims**



1. A method of pumping corrosive and erosive liquids, abrasive slurries and the like, the method comprising:

providing a fluid-tight pump body having respective inlet and outlet orifices communicating therewith in a lower portion of the pump body and one-way check valve means associated with each of said orifices;

providing nozzle means having an axial bore positioned in an upper portion of said pump body said nozzle means having an inlet end adapted to be placed in communication with a source of pressurized air and having an outlet end communicating with said pump body and in spaced relationship to a first end of an axially aligned exhaust passage;

providing pinch valve means having an elastomeric sleeve in said exhaust passage to permit air flow through said exhaust passage when in an open position and to shut off air flow therethrough when in a closed position; and

providing control means to selectively open and close said pinch valve means;

introducing a flow of pressurized air through said nozzle means and said exhaust passage to create a vacuum condition within said pump body when said pinch valve means is in an open position and to create a pressurized condition within said pump body when said pinch valve means is in a closed position;

regulating the flow of pressurized air to a first flow rate valve through the nozzle means when the vacuum condition exists within the pump body; and

regulating the flow of pressurized air to a second flow rate valve through the nozzle means when the pressurized condition exists within the pump body.

5,007,804

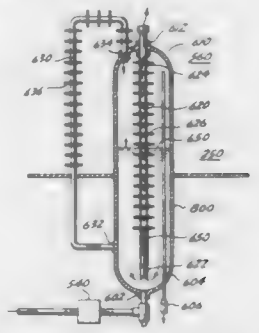
FUEL REACTOR

Robert J. Boucher, P.O. Box 985, Bonner, Mont. 59823

Division of Ser. No. 492,972, Mar. 13, 1990, which is a division of Ser. No. 276,884, Nov. 28, 1988, Pat. No. 4,922,839. This application Jul. 30, 1990, Ser. No. 560,062

Int. Cl.[5] F04B *19/24;* **F04F** *1/18*

U.S. Cl. 417—209 **3 Claims**



1 A steam pump for inputting a fluid and outputting high temperature-high pressure steam comprising:

a check valve for allowing flow of the fluid to the steam pump but preventing reverse flow;

a pump vessel including an inlet at a first end for receiving the fluid and an outlet at a second end for outputting the high temperature-high pressure steam;

means for predeterminedly heating the second end of the vessel; and

a heat pipe mounted in the pump vessel such that one end thereof extends towards said vessel first end and a second end connects to said vessel outlet.

whereby fluid flows into said vessel filling said vessel towards said vessel second end where it is heated and converted to steam forcing fluid up said heat pipe where it is heated, converted to steam and emerges from said pump vessel outlet.

5,007,805

REVERSIBLE VARIABLE DISPLACEMENT HYDRAULIC DEVICE

James C. Goade, Joliet, Ill., and Claude H. Werner, Manhattan, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jul. 2, 1990, Ser. No. 548,808

Int. Cl.[5] F04B *49/00, 1/30;* **F01B** *13/04*

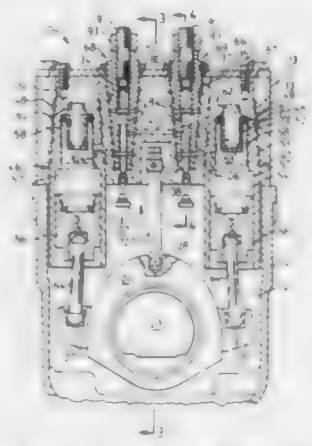
U.S. Cl. 417—216 **38 Claims**

1. A reversible, variable displacement hydraulic device having a case and a drain cavity defined by the case, an angularly adjustable swash plate resiliently biased to a centered position and moveable in a clockwise direction from the centered position to control the displacement of the device in a first direction of operation and in a counterclockwise direction from the centered position to control the displacement of the device in a second direction of operation, first actuator means

for angularly moving the swash plate in the clockwise direction, and second actuator means for angularly moving the swash plate in the counterclockwise direction, comprising:

first and second servo valve means for controlling communication of hydraulic actuating fluid to the first and second actuator means respectively;

an elongate feedback plate pivotally connected to the case and having opposite end portions disposed in operational contact with the first and second servo valve means;



a "T" shaped follow-up lever pivotally connected to the case and having a pair of arms spaced from the end portions of the feedback plate;

a pair of springs disposed between the arms of the lever and the end portions of the feedback plate; and

means for connecting the lever to the swash plate so that the lever is pivoted in response to angular movement of the swash plate.

5,007,806

FUEL PUMP

Peter D. Bellis, and Frederick Nesselrotte, both of Carson City, Nev., assignors to Mallory, Inc., Carson City, Nev.

Filed Mar. 30, 1989, Ser. No. 330,496
Int. Cl.[5] F04B *17/00, 35/00*
U.S. Cl. 417—360 34 Claims



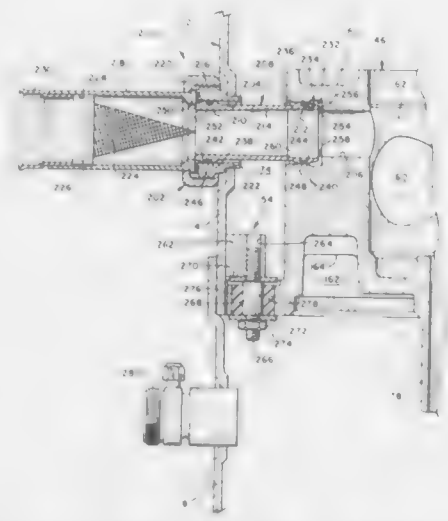
1. In a fuel pump, the combination comprising a fuel reservoir member, said fuel reservoir member being formed with a plurality of fuel chambers, said chambers comprising an inlet chamber and an outlet chamber, means to supply fuel to said inlet chamber, means to deliver fuel from said outlet chamber to a point of use, said fuel reservoir member chambers also including a bypass chamber, means interconnecting said bypass chamber with said outlet chamber; said fuel pump also comprising pump means interconnecting said inlet chamber and said outlet chamber and adapted to suck fuel from said fuel supply means into said inlet chamber, through said pump means, out said outlet chamber, and to said fuel delivery means; said bypass chamber and said pump means providing two substantially separate paths of fuel flow in said fuel reservoir member, bypass plunger means normally closing off the flow of fuel through said bypass chamber, one of said substantially separate paths including said fuel supply means and said fuel delivery means when said bypass plunger means is closed, the second of said substantially separate paths including said bypass chamber when said bypass plunger means is open, and all of said chambers and said interconnecting means therebetween being configured so as to create turbulence in the flow of any fuel supplied to said outlet chamber by said pump means and bypassed through said bypass chamber and said interconnecting means, whereby all of the fuel passing through said fuel pump remains below its vaporization temperature to thereby prevent vapor lock of said fuel pump, said fuel pump comprising an electric motor portion and a pump portion, said electric motor portion comprising a drive shaft extending into said pump portion, said fuel pump also comprising a mounting bracket, said mounting bracket comprising a flange portion formed with a round opening, vibration damper means in said flange portion round opening, means to sandwich said flange between said electric motor and said pump portions of said fuel pump with said electric motor and pump portions on opposite sides of said vibration damper means, and one of said electric motor and pump portions having a portion thereof extending into said flange round opening, whereby said fuel pump can be rotated within said opening around the axis thereof for adjustment of said fuel pump with respect to said mounting bracket.

5,007,807

HERMETIC COMPRESSOR HAVING RESILIENT INTERNAL MOUNTING

Edwin L. Gannaway, Adrian, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Mar. 8, 1989, Ser. No. 320,554
Int. Cl.[5] F04B *39/00*
U.S. Cl. 417—363 20 Claims



1. In a vertically disposed compressor assembly comprising a compressor mechanism within a hermetically sealed housing having a sidewall, wherein said compressor mechanism includes a radially extending mounting flange having a top surface and a bottom surface, a mounting apparatus for resiliently mounting said compressor mechanism to said housing sidewall, comprising:

a plurality of circumferentially spaced mounting bores formed in said mounting flange, each said mounting bore extending vertically through said mounting flange between said top surface and said bottom surface thereof;

a plurality of anchoring members corresponding to said plurality of mounting bores, each said anchoring member being connected to said housing sidewall and extending substantially coaxially through a respective said mounting bore, thereby defining an annular space intermediate the anchoring member and the mounting bore;

a plurality of resilient members corresponding to said plurality of mounting bores, each said resilient member being disposed within a respective mounting bore in a manner to substantially occupy said annular space; and

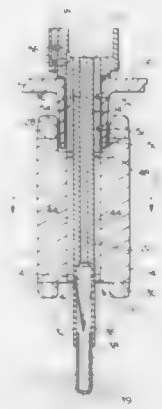
a plurality of axial support means corresponding to said plurality of anchoring members, for axially supporting said compressor mechanism, each said axial support means being connected to a respective anchoring member and contacting said mounting flange bottom surface at a location thereon circumjacent a respective said mounting bore, whereby said compressor mechanism is axially supported and movement of said compressor mechanism in a lateral plane is resiliently restrained.

5,007,808

SLOTTED ROTOR LUBRICATION SYSTEM

Howard H. Fraser, Jr., Lafayette, and Mark P. Weldon, Liverpool, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 15, 1989, Ser. No. 451,152
Int. Cl.[5] F04B *39/02*
U.S. Cl. 417—368 5 Claims



1. A vertical rotor structure for a hermetic compressor, the rotor structure comprising:

a shaft having a central portion of a predetermined diameter and an upper portion of a greater diameter which fits into a bearing of the compressor, said shaft having an axial central bore, and means on a lower end of said shaft for carrying a liquid lubricant into the bore of said shaft;

a rotor disposed on the central portion of said shaft and formed of a stack of laminations, with an upper one of said laminations abutting a lower end of said upper portion of the shaft, said stack having a central bore to receive said shaft central portion and at least one slot therein continuous with said central bore and extending generally axially;

a lower distribution channel communicating radially from the central bore to a lower end of said at least one slot for permitting the lubricant to flow into said at least one slot where it is driven by rotational forces to an upper end of the at least one slot; and

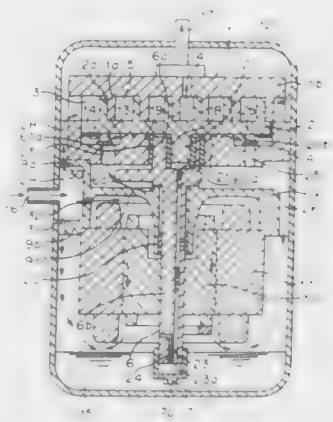
at least one upper distribution channel in said shaft upper portion which communicates through a lower end of the upper portion directly with the upper end of said at least one slot and which conducts the lubricant from the upper end of said at least one slot to one or more bearing surfaces of said upper portion.

5,007,809

SCROLL COMPRESSOR WITH DIVIDING CHAMBER FOR SUCTION FLUID

Tadashi Kimura; Tetsuzo Matsugi, and Yasuyuki Suzuki, all of Wakayama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1989, Ser. No. 442,152
Claims priority, application Japan, Dec. 7, 1988, 63-310327
Int. Cl.[5] F04B *39/06;* F04C *18/04;* H02K *9/12*
U.S. Cl. 417—371 10 Claims



1. A scroll compressor comprising:

a compression mechanism comprising a combination of a fixed scroll and an orbiting scroll;

a main shaft for driving the orbiting scroll;

an electric motor rotor and stator for driving the shaft;

a first bearing frame for supporting the orbiting scroll in the axial direction via a bearing;

a second bearing frame for supporting the shaft in the radial direction via a bearing;

a hermetic shell including the compression mechanism in an upper portion, the rotor and stator in a lower portion, and a suction pipe for inspiring a working fluid; and

means forming a dividing chamber arranged in the shell so as to communicate with the suction pipe and having efflux holes for respectively directing the inspired working fluid into three separate paths, said paths comprising a first path directed to the compression mechanism in the upper portion, a second path directed to the stator and rotor in the lower portion, and a third path directed to an upper coil end of the stator placed in a position lateral to the chamber.

5,007,810

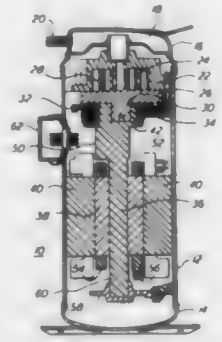
SCROLL COMPRESSOR WITH UNITARY CRANKSHAFT, UPPER BEARING AND COUNTERWEIGHT

Howard H. Fraser, Jr., Lafayette, and Thomas R. Barito, East Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 4, 1989, Ser. No. 445,552
Int. Cl.[5] F04B *35/04;* F04C *18/04, 29/00*
U.S. Cl. 417—410 5 Claims

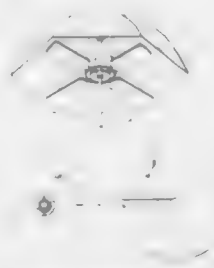
1. A scroll compressor of the type including a shell which contains a fixed scroll and an orbiting scroll which is disposed off the axis of the fixed scroll for revolving about the axis of the fixed scroll, rotation-preventing means for holding the orbiting scroll against rotation but permitting it to revolve in an orbiting motion, an electric motor stator mounted within said shell and having a cylindrical passage therethrough of a predetermined radius, an electric motor rotor assembly rotatably journalled within the shell for driving said orbiting scroll in its

orbiting motion, the rotor assembly including an elongated crankshaft, a generally cylindrical rotor mounted on said crankshaft and fitting in said generally cylindrical passage of said stator, a crank situated at an upper end of said crankshaft and that is journalled in a journal housing member beneath said orbiting scroll, said crank including eccentric mounting means for driving said orbiting scroll and imparting said orbiting motion thereto, a counterweight on said crankshaft which balances the off-axis orbiting motion of said orbiting scroll, and



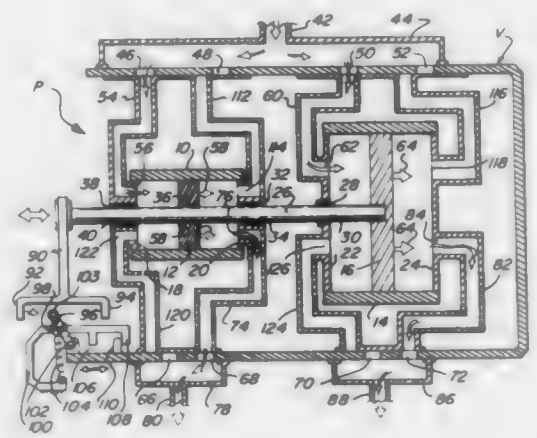
a lower bearing rotatably journalling a lower end of said crankshaft; wherein the improvement comprises said counterweight being integrally formed with said shaft, said counterweight being disposed within a radius no greater than said predetermined radium so as to be dimensioned to pass through said stator passage upon installation, and said conterweight being formed immediately adjacent the position of said crank below said journal housing, there being no structure other than the rotor assembly within said predetermined radius between said motor stator and said journal housing.

5,007,811
ELECTRIC FAN FOR PATIO UMBRELLA
Michael H. Hopkins, 315 W. 2nd St., Brenham, Tex. 77833
Filed Jul. 13, 1989, Ser. No. 379,085
Int. Cl.[5] A45B *23/00*
U.S. Cl. 135—16 **22 Claims**



1. An electric fan drive mountable on and about a unitary support shaft comprising:
a rotatable drive ring wherein said support shaft is positioned substantially perpendicular to and extending through said drive ring;
support means positioned on the outer surface of said unitary support shaft for rotatably supporting said drive ring;
an electric motor fixedly positioned adjacent said support shaft, said motor having at least one rotatable motor shaft extending from said motor; and
drive means coupling said motor shaft to said drive ring and adapted to transfer rotary motion from said motor shaft to said drive ring.

5,007,812
HYDRAULIC PUMP WITH PULSATING HIGH AND LOW PRESSURE OUTPUTS
Joseph R. Hartt, 6352 S. Poplar Ct., Englewood, Colo. 80122
Filed Sep. 5, 1989, Ser. No. 402,603
Int. Cl.[5] F04B *21/02*
U.S. Cl. 417—534 **17 Claims**



1. A method for providing a pulsating high pressure fluid output simultaneously with a pulsating low pressure output from a single high pressure, substantially non-compressible fluid input comprising the step of:
supplying a substantially non-compressible fluid from a single fluid supply inlet at a first pressure simultaneously to one side of a first cylinder of given diameter and one side of a second cylinder of given diameter to move a piston within each cylinder from one end thereof to the other; and
simultaneously discharging the same fluid from the first cylinder on the side of the piston opposite the one side at a high pressure and from the second cylinder on the side of the piston opposite the one side at a lower pressure

3. An hydraulic pump for providing a simultaneous pulsating high pressure and pulsating low pressure fluid output from a single, substantially non-compressible fluid input at a predetermined pressure, said pump comprising:
a first double acting piston and cylinder having first diameters, respectively, said first cylinder having a pair of first and second inlets on opposite sides of said first piston and a pair of first and second outlets on the opposite side of said first piston;
a second double action piston and cylinder having second diameters, respectively, said second cylinder having a pair of first and second inlets on opposite sides of said second piston and a pair of first and second outlets on opposite sides of said second piston;
a common piston rod interconnecting said pistons; and
means for alternately supplying a single, substantially non-compressible fluid to said first inlets of said first and second cylinders on said one side of each of said of said pistons, and then to said first inlets on said other side of each of said pistons to cause said first and second pistons to reciprocate within said first and second cylinders, respectively, so that said first piston discharges the same fluid through an outlet on the opposite side of said first piston from the inlet through which fluid enters to provide high pressure pulsating fluid output from said outlets of said first cylinder and said second piston discharges the same fluid through an outlet on the opposite side of said second piston from the inlet through which fluid enters to provide low pressure pulsating fluid output from said outlets of said second cylinder.

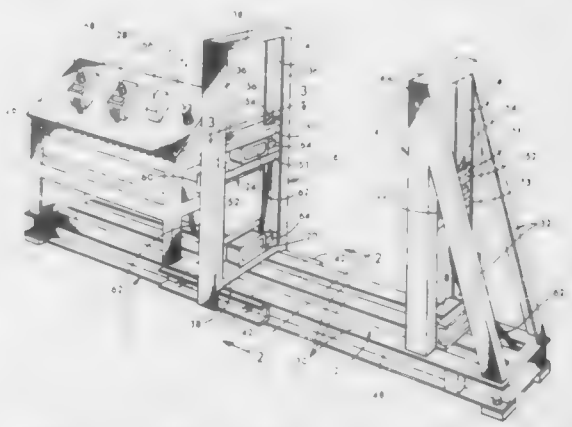
5,007,813
ROTARY ROLLING PISTON COMPRESSOR WITH FIXED VANE HAVING A RELIEVED INCLINE SECTION
Caio N. F. N. Da Costa, Joinville, Brazil, assignor to Empresa Brasileira de Compressores S/A - Embraco, Joinville, Brazil
Filed Jun. 12, 1989, Ser. No. 365,176
Claims priority, application Brazil, Jun. 15, 1988, 8802997
Int. Cl.[5] F04C *18/356, 29/02*
U.S. Cl. 418—63 **11 Claims**



1. A rotary rolling piston compressor comprising:
a shell,
a cylinder mounted within said shell,
a piston having an eccentric portion for rotation within said cylinder,
a shaft for rotating said piston,
a slot formed on an external part of said cylinder,
the shell containing lubricating oil which is also in the slot,
a vane whose lower end is within said slot, means for biasing the vane lower end to provide for reciprocating motion between the slot walls as the vane upper end rides against the rotating piston, the vane defining with the cylinder and piston on one side of the vane a suction chamber and on the other side a compression chamber,
the upper portion of the vane on the suction chamber side being planar in a plane parallel to the face of the compression chamber side of the vane, the lower portion of said vane on the suction chamber side having at least one relieved inclined section of not more than about 5° to the vertical axis of the vane which is within the walls of the slot to produce a hydrodynamic wedge with the lubricating oil between the inclined section and the side wall of the slot on the suction chamber side as the vane moves down toward the lower end of the slot.

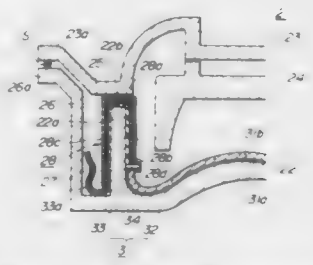
5,007,814
DEVICE FOR SEPARATING AND CLOSING A SPLIT MOLD HAVING TWO HALVES
Raymond L. Saunders, 16895 Town Hall Rd., Walworth, Wis. 53184, and Joseph M. Forrestal, 1800 Patton Pl., Janesville, Wis. 53546
Filed Feb. 5, 1990, Ser. No. 475,035
Int. Cl.[5] B29C *45/64*
U.S. Cl. 425—3 **8 Claims**

1. A device for separating and closing in a horizontal press a split mold having two halves to permit access to said mold halves, the device comprising:
(a) a base which the split mold may be positioned and supported, wherein the base has at least one horizontal beam adapted to carry the weight of the split mold positioned thereon;
(b) a stationary platen that extends upwardly from and is rigidly connected to the base and has an electromagnet mounted thereon capable of exerting an attractive electromagnetic force upon a first of the two halves of the split mold when the mold is positioned upon the base and the first of the two mold halves is positioned adjacent the stationary platen;
(c) a movable platen that extends upwardly from the base and that opposed the stationary platen, the movable platen capable of travel toward and away from the stationary platen and the movable platen having an electromagnet mounted thereon capable of exerting an attractive electromagnetic force upon a second of the two halves of the split mold when the mold is positioned upon the base and the second of the two mold halves is positioned against the movable platen;
(d) a cross member rigidly affixed to the movable platen and extending in the direction of the base beam and slidably engaged with the base beam to retain the perpendicularity of the movable platen relative to the base; and
(e) means for moving the movable platen toward and away from the stationary platen, the movement of the movable



platen toward the stationary platen acting to close the clearances between the halves of the split mold and the platens and the movement of the movable platen away from the stationary platen separating the first of the two mold halves from the second of the mold halves by the attractive electromagnetic force of the electromagnet of the stationary platen holding the first mold half against the stationary platen and the attractive electromagnetic force of the electromagnet of the movable platen holding the second mold half against the movable platen.

5,007,815
MOLD ASSEMBLY FOR PRODUCING SKIN-COVERED FOAMED PLASTIC ARTICLE
Makoto Shoji, Kanagawa, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase, Japan
Filed Oct. 25, 1989, Ser. No. 426,554
Claims priority, application Japan, Oct. 31, 1988, 63-142207[U]
Int. Cl.[5] B29C *39/10, 39/26*
U.S. Cl. 425—117 **7 Claims**



1. A mold assembly for producing a skin-covered foamed plastic article, comprising:
a lower mold having a cavity formed therein, said lower mold including a bottom wall, an outer wall which extends around a periphery of said bottom wall, and an inner wall which extends inside of a first portion of said outer wall with a given clearance defined therebetween, said inner wall having two opposed ends integrally connected to said outer wall, said inner wall being adapted to be covered with an outside part of an outer skin member when said outer skin member is properly positioned

within said cavity, said cavity being defined by said bottom wall, a portion of said outer wall, and said inner wall;

a retaining member constructed of a resilient material, said retaining member defining a channel which is adapted to resiliently and detachably receive therein said inner wall with said outside part of said outer skin sandwiched therebetween, said retaining member including a top base wall, an inner wall extending downwardly from an inner edge of said top base wall, and an outer wall extending downwardly from an outer edge of said top base wall; and

an upper mold which is adapted to be placed on top of said lower mold to lose said cavity, said upper mold having a depressed portion which contacts said top base wall of said retaining member when said upper mold is properly positioned on said lower mold.

5,007,816

INJECTION MOLDING MACHINE HAVING A DISPLACEMENT CONTROL FOR AN INJECTING UNIT CARRIER

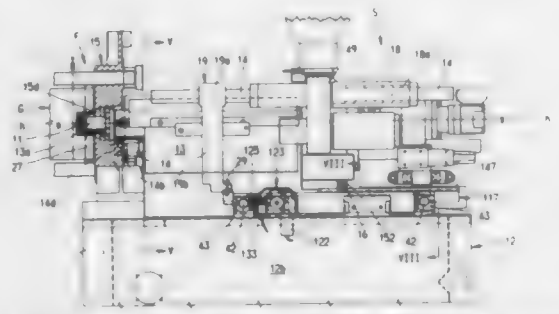
Karl Hehl, Arthur-Hehl-Str. 32, 7298 Loburg 1, Fed. Rep. of Germany

Filed Oct. 26, 1989, Ser. No. 431,174

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1988, 3837640; Nov. 5, 1988, 3837641

Int. Cl.[5] B29C *45/76*

U.S. Cl. 425—135 **15 Claims**



1. In an injection molding machine for selective use with a first injection mold having a first stationary mold part formed with a central gate and with at least one second injection mold having a second stationary mold part formed with an off-center gate for forming a non-symmetrical sprue, which machine comprises

a machine pedestal defining a horizontal longitudinal direction and provided with horizontal tracks extending in a transverse direction at right angles to said longitudinal direction,

a clamping unit mounted on said pedestal and operable in said longitudinal direction and comprising a stationary mold support, which is adapted to carry said first stationary mold part with said central gate disposed at a first location and to carry said second stationary mold part with said off-center gate disposed at a second location, said stationary mold support being formed with an opening which extends in a plane in said transverse direction and registers in said longitudinal direction with said first and second locations,

an injecting unit defining an injection axis extending in said longitudinal direction,

a cast iron carrier, which carries said injecting unit and is coupled thereto for a movement in said transverse direction and is displaceable on said track means in said transverse direction together with said injecting unit between a first operating position, in which said injection axis is aligned in said longitudinal direction with said first location, and at least one second operating position, in which said injecting axis is aligned in said longitudinal direction with said second location,

a screw drive, which engages said machine pedestal, said screw drive being operatively connected to said carrier and operable to move said carrier and said injecting unit to each of said operating positions and to fix said carrier in each of said operating positions,

actuating means for reciprocating said injecting unit relative to said carrier in each of said operating positions in said longitudinal direction through said opening of said stationary mold support to and from injecting positions adjacent to said first and second locations,

the improvement residing in that

said carrier is formed with at least one retaining opening, said at least one retaining opening extending in said transverse direction and having an open outer end,

said screw drive being incorporated in a control device, said control device being operable under program control to control operation of said screw drive, said control device comprising a displacement measuring device for measuring displacement of said carrier along said tracks, and

said control device being detachably mounted in said at least one retaining opening and is held therein against a movement relative to said carrier in said longitudinal direction and said control device being movable out of said retaining opening through said open outer end thereof in said transverse direction.

5,007,817

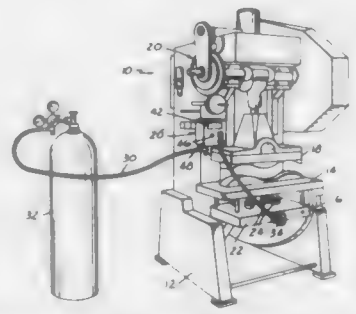
PRESS WITH DIE CUSHION GAS MONITOR

Bernard J. Wallis, 2215 Dacosta, Dearborn, Mich. 48128

Filed Jan. 19, 1990, Ser. No. 467,189

Int. Cl.[5] B30B *15/14, 15/28*

U.S. Cl. 425—136 **11 Claims**



1. A pressure monitor for use in a press that includes a pair of die sections, a ram for propelling one of said die sections against the other for forming a workplace positioned therebetween, and a die cushion coupled to one of said die sections for cushioning force of engagement of said die sections, said die cushion including at least one gas cylinder coupled to said one section and a manifold for feeding gas under pressure to said cylinder, said pressure monitor comprising:

a pressure sensor coupled to said manifold for supplying an electrical pressure signal as a function of gas pressure in said manifold,

means for comparing said pressure signal to a predetermined threshold for supplying an alarm signal when gas pressure in said manifold is less than said threshold, and

means coupled to said ram and responsive to said alarm signal for disabling operation of said ram.

5,007,818

APPARATUS FOR THERMOPLASTICALLY SHAPING POLYMERIC RESINS

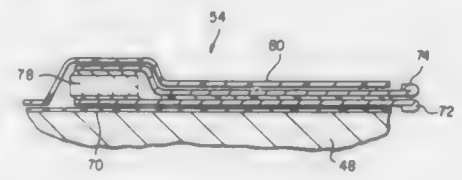
Martin B. Barancik, Evansville, Ind., and Erich O. Teutsch, Pittsfield, Mass., assignors to General Electric Company, Mt. Vernon, Ind.

Continuation-in-part of Ser. No. 28,647, Mar. 20, 1987, Pat. No. 4,897,028. This application Sep. 19, 1989, Ser. No. 409,356

The portion of the term of this patent subsequent to Jan. 30, 2007, has been disclaimed.

Int. Cl.[4] B29F *1/08*

U.S. Cl. 425—144 **6 Claims**



1 An apparatus for the production of a thermoplastically moldable polymeric resin article of a predetermined shape, by shaping the resin while in a thermoplastic state and which comprises; a mold having

(i) mold walls including an interior molding surface defining the predetermined shape; and

(ii) means associated with the mold walls for controlling the thermoplasticity of the resin being shaped;

the improvement, which comprises;

as the means for controlling the thermoplasticity of the resin being shaped, a thin-film resistance heater disposed on the molding surface.

5,007,819

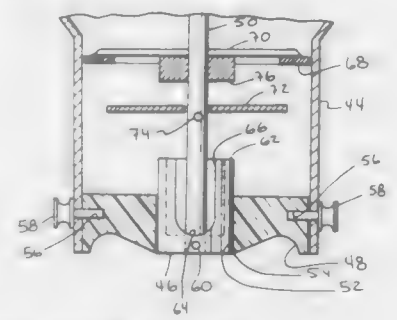
DOUGH DISPENSER

Edward M. Anderson, 2620 E. Medicine Lake Dr., Plymouth, Minn. 55441

Filed Apr. 12, 1988, Ser. No. 180,390

Int. Cl.[4] A21C *3/04, 11/16*

U.S. Cl. 425—184 **19 Claims**



1. A dough dispenser, comprising

(a) a dough hopper;

(b) a removable cutter defining a dough outlet of said hopper;

(c) a reciprocable piston in and normally closing said outlet;

(d) piston drive means connected to said piston for moving the piston along its length within this said outlet; said drive means moving a stroke which is less than a height of said piston;

(e) a dough dispensing port in and through one radial side of the piston, said port being movable from a normal closed position within the outlet to an alternative dispensing position which is at least in part out of the outlet; and

(f) in which at least a portion of said piston is always within said outlet.

5,007,820

MACHINE FOR KNEADING DOUGH PORTIONS INTO A ROUND SHAPE

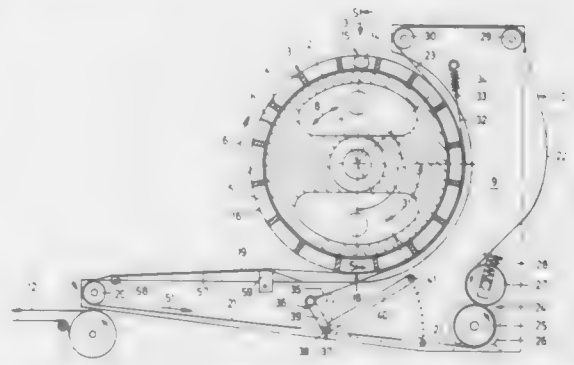
Wilhelm Schwab, Knittlingen, and Gerhard Müller, Asperg, both of Fed. Rep. of Germany, assignors to Werner & Pfleiderer, GmbH, Fed. Rep. of Germany

Filed Jun. 6, 1989, Ser. No. 362,070

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1988, 3821045

Int. Cl.[5] B21C *3/00*

U.S. Cl. 425—333 **23 Claims**



1. A machine for kneading dough portions into a generally spherical shape, comprising:

a cylindrical kneading drum movable rotatably about the drum central axis and movable axially thereof, the drum having a rotatable, compartmented drum mounted concentrically thereof, the compartmented drum comprising kneading chambers extending radially of the drum and open radially outwardly and radially inwardly toward the kneading drum, the machine further comprising an endless kneading belt looped around the compartmented drum and having a portion in contact with the compartmented drum over a contact zone of less than 180° of peripheral arc of the compartmented drum peripheral surface, wherein the endless belt has a positive drive means which is independent of bearing forces between the belt and the compartmented drum surface, tension of the belt being such that bearing forces exerted by the kneading belt on the compartment drum is less than forces exerted on the belt by the dough portions being kneaded, and wherein the kneading belt is movable radially of the compartmented drum

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5,007,821

INJECTION MOLDING MANIFOLD HAVING A PAIR OF COOLING BORES ON OPPOSITE SIDES OF THE MELT PASSAGE

Harald H. Schmidt, Georgetown, Canada, assignor to Mold-Masters Limited, Georgetown, Canada

Filed Mar. 5, 1990, Ser. No. 489,044

Claims priority, application Canada, Feb. 23, 1990, 2010961

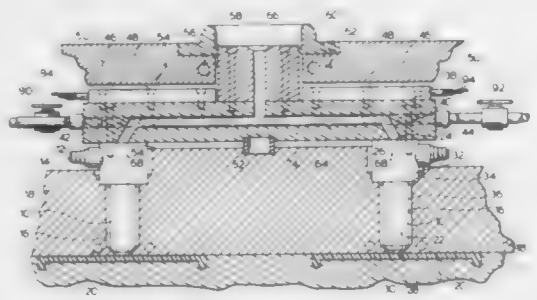
Int. Cl.[4] B29C *45/73*

U.S. Cl. 425—548 **3 Claims**

1. In an elongated injection molding steel heated manifold having a first end, an opposite second end and a melt passage with a longitudinal portion extending therethrough to convey melt received at an inlet from a molding machine to a plurality of outlets, each outlet leading to a heated nozzle, the improvement comprising;

a pair of cooling bores to convey cooling fluid therethrough extending longitudinally through the manifold from said first end of the manifold to said second end of the manifold, the pair of cooling bores extending parallel to the longitudinal portion of the melt passage and being equally spaced on opposite sides of the longitudinal portion of the melt passage, each cooling bore extending from an inlet at

the first end of the manifold to an outlet at the second end, each cooling bore having a spiral vane mounted directly



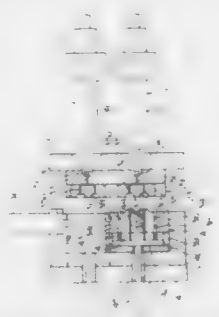
therein to provide one way turbulent flow of the cooling fluid therethrough.

5,007,822

INJECTION MOLDING MACHINE

Hitoshi Hara, Funabashi, and Katsutoshi Inoue, Chiba, both of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

PCT No. PCT/JP88/00859, § 371 Date Apr. 19, 1989, § 102(e) Date Apr. 19, 1989, PCT Pub. No. WO89/01860, PCT Pub. Date Mar. 9, 1989
PCT Filed Aug. 29, 1988, Ser. No. 362,461
Claims priority, application Japan, Aug. 28, 1987, 62-212929
Int. Cl.[5] B29C *45/04*
U.S. Cl. 425—575 4 Claims



1. An injection molding machine comprising:

a plurality of stationary molds securely disposed in a row on a stationary platen and transversely arranged parallel to one another;

a moving mold which forms at least one mold cavity when coupled with each said stationary molds;

a mold holder formed with a passage within which the moving mold is disposed and is linearly slidable in a direction parallel to the row of stationary molds, said mold holder being mounted on a moving platen;

a plurality of injection units coupled, respectively, with said plurality of stationary molds;

transfer means for conveying the moving mold along said passage to positions, respectively, opposite each of said plurality of stationary molds; and

clamping means for moving said movable platen to apply pressure between said moving mold and a respective stationary mold;

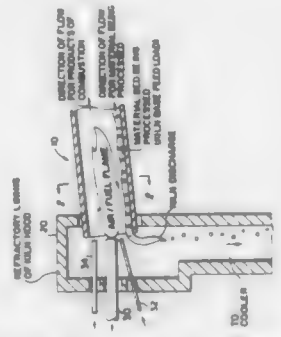
wherein said moving mold protrudes a short distance of not more than 0.05 mm toward said stationary mold from an end surface of said mold holder facing said stationary mold, said distance being selected such that slanting between said moving and stationary molds under pressure from within, due to off-center pressure of said clamping means, is minimized.

5,007,823

DUST RECYCLING TO ROTARY KILNS

Leo G. Mayotte, Whitehall, and Prince B. Eleazer, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 1, 1989, Ser. No. 444,493
Int. Cl.[5] F27B *15/00, 7/32*
U.S. Cl. 432—14 4 Claims



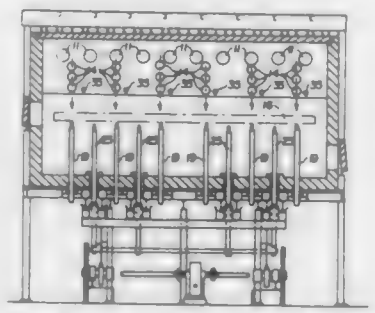
1. In a process for the operation of a rotary kiln for the thermal processing of a mineral feed by combustion of a fuel with air producing a flame in said kiln and in which a dust is generated from the mineral feed and is recovered from the combustion products exiting said kiln and recycled to said kiln, the improvement which comprises: enriching the air fed into said kiln to combust fuel introduced into said kiln with oxygen concurrently with the recycling of said dust, raising the amount of oxygen sufficiently to raise the concentration of oxygen to above 21% in said kiln and to thereby tend to shorten and intensify said flame and balancing the amount of dust being recycled to said kiln with consequent cooling of and lengthening of said flame against the amount of oxygen enrichment, thereby maintaining the temperature profile of said kiln at the same level as when the kiln was operated without oxygen enrichment and without dust recycling, and wherein the material being processed is a mineral selected from the group consisting of aluminas, clays, limes, cements and other oxides, and the amount of dust recycled comprises between 2% and 20% by weight of the feed material.

5,007,824

SKID MARK ERASURE SYSTEM

Clarence W. Sidwell, 320 Fort Duquesne Blvd., Pittsburgh, Pa. 15222-2363

Division of Ser. No. 369,345, Jun. 15, 1989, Pat. No. 4,936,771, which is a continuation-in-part of Ser. No. 89,406, Aug. 26, 1987, abandoned, which is a continuation-in-part of Ser. No. 886,117, Jul. 16, 1986, abandoned. This application May 11, 1990, Ser. No. 523,051
Int. Cl.[5] F27B *9/14*
U.S. Cl. 432—20 1 Claim



1. A method for removing skid marks from metal shapes transported through a reheat furnace, said furnace of the type having a plurality of parallel spaced-apart, water-cooled support rails longitudinally extending therein for supporting the metal shapes thereon as the metal shapes are moved through said furnace, the method comprising:

providing a plurality of high thrust burner means aligned in longitudinally extending, spaced-apart arrays positioned above each of the water-cooled support rails, wherein the high thrust burner means includes a plurality of spaced burner pairs, each of said burner pairs being aligned in a converging manner such that a flame developed by each overlap one another to produce a higher temperature zone in the overlap region;

sensing the presence of cold skid marks on the metal shapes and controlling said high thrust burner means for activating selected burners located above metal shapes having skid marks detected thereon and for deactivating other selected burners located above metal shapes having no skid mark detected thereon;

directing a high velocity flame front from each of said activated burners to impinge directly upon a surface of said metal shapes at a location above said water-cooled support rails;

heating the metal shapes in the location above said eater-cooled support rails and thereby removing a skid mark therefrom; and

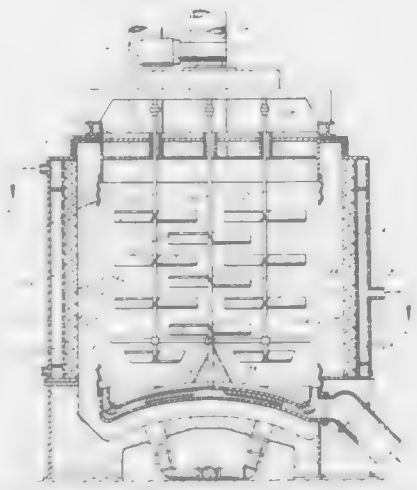
including the step of directing high velocity flame fronts from burner means positioned below said metal shapes and aligned along said support rails.

5,007,825

HEAT RECLAMATION APPARATUS

Robert M. Williams, 16 La Hacienda, Ladue, Mo. 63124

Filed May 21, 1990, Ser. No. 525,650
Int. Cl.[5] F27D *1/08*
U.S. Cl. 432—99 4 Claims



4 Apparatus for processing gypsum material in a heat conservation furnace comprising:

(a) a kettle for receiving gypsum material to be heat treated.

(b) a furnace surrounding said kettle and including an outer wall, an inner porous luminous fire wall spaced from said outer wall and having a flame illuminated heating space surrounding said kettle;

(c) means said furnace dividing said space between said outer wall and said porous luminous fire wall into separate portions;

(d) controllable means connected into said furnace outer wall for supplying fuel and air into each of said separate portions one at a time for combustion in said separate portions of said porous luminous fire wall to release products of combustion into said heating space, and said controllable means including means for evacuating products of combustion from said heating space through each of said separate portions of said porous luminous fire wall one at a time; and

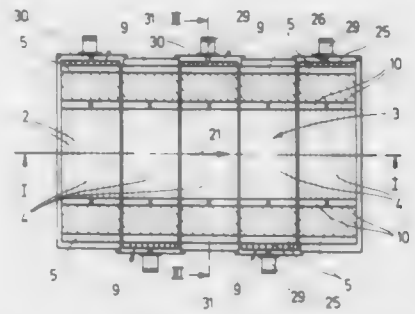
(e) control means operably connected to said controllable mean for alternating the release of the products of combustion into said heating space and the evacuation of the products of combustion from said heating space in a sequence that maintains the temperature of the kettle higher than the temperature of the porous luminous fire wall, and alternates said separate portions of said porous luminous fire wall into a heat sink for returning the heat therein to support combustion.

5,007,826

ROLLER HEARTH FURNACE FOR THE HEAT TREATING OF METAL AND CERAMIC PARTS

Joachim Wünning, Berghalde 20, 7250 Leonberg 7, Fed. Rep. of Germany

Filed May 15, 1989, Ser. No. 351,794
Claims priority, application Fed. Rep. of Germany, May 14, 1988, 3816503; European Pat. Off., Apr. 4, 1989, 89105863.8
Int. Cl.[5] F27D *3/00*
U.S. Cl. 432—121 20 Claims



1 A roller hearth furnace for the heat treatment of parts passing therethrough, comprising:

a thermally insulated housing forming a heating space therein, and

a plurality of roller modules removably mounted in said housing for transporting parts longitudinally through said heating space, said roller modules being successively arranged along a direction of transport of the parts, each roller module including:

a pair of transversely spaced apart bearing beams removably supported in recesses formed in said housing, and

a plurality of rotatably driven rollers having their ends supported by said bearing beams, said rollers extending transversely of the direction of travel of the parts and being successively arranged along such direction of transport, said rollers being rotatable about stationary axes and being removable from said heating space along with said bearing beams in a direction transversely of said direction of transport.

5,007,827

ORTHODONTIC TWEEZERS

Paul A. DiFranco, 511 W. Talcott, Parkridge, Ill. 60068

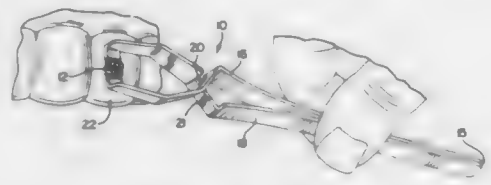
Filed Jul. 11, 1989, Ser. No. 378,005
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—4 3 Claims

1. In a tweezer comprising a pair of generally flat elongated members placed in an adjacent lengthwise relationship with one another, each member having a first end and a second end, the first ends of the members being fixably secured to one another, the first member and the second member crossing over one another between said first ends and said second ends, wherein the improvement comprises:

a first means for gripping integrally formed at the second end of the first member, the first means for gripping including a first vertical member having a first peripheral

edge extending generally in the direction of the longitudinal axis of the tweezer and a first horizontal member extending inwardly from the first vertical member at said first peripheral edge;

and a second means for gripping being integrally formed at the second end of the second member, the second means for gripping including a second vertical member having a second peripheral edge extending generally in the direc-



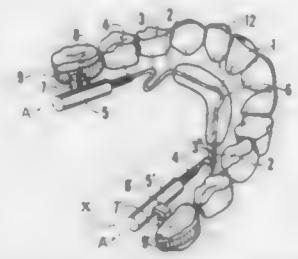
tion of the longitudinal axis of the tweezer and a second horizontal member extending inwardly from the second vertical member at said second peripheral edge thereof, towards the first horizontal member, whereby the first and second means for gripping cooperate to form a U-shaped gripping jaw adapted to grip an orthodontic brace behind the wings of the brace for placement of the brace on a tooth.

5,007,828

MOLAR CONTROLLING AND POSITIONING ORTHODONTIC APPLIANCE WITH SIMPLIFIED ORIENTATION, PRESSURE AND ADJUSTMENT MECHANISMS

Farel Rosenberg, Beverly Hills, Calif.

Filed Feb. 8, 1990, Ser. No. 476,734
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—18 **2 Claims**



1. A dental appliance for use as a molar movement inducer, inhibitor and controller comprised of:

a. A semi-rigid pad with a soft tissue contacting lower surface to be held in place against a tissue covered basal, bony area posterial to the front teeth.

b. A U-shaped wire embedded at its center n said semirigid pad and bent at each end into an S-shaped spring;

c. An externally threaded plunger rigidly attached at each end of said S-shaped spring;

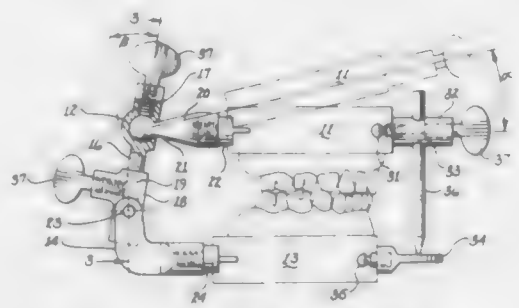
d. A pair of hollow cylinders internally threaded and engaging said plungers, each cylinder provided with an insert to permit detachable joining to a receptacle attached to the lingual surface of said molar, whereby the hollow cylinders can be initially fully threaded onto said plungers, the pad placed against the applicable tissue covered basal bony area and each cylinder inserted into its corresponding receptacle, this attachment serving to produce a posterior force on each molar.

5,007,829

DENTAL ARTICULATOR APPARATUS

Frank C. Farrell, 18402 N. 70th Dr., Peoria, Ariz. 85345

Filed Aug. 22, 1988, Ser. No. 234,847
Int. Cl.[5] A61C *11/00*
U.S. Cl. 433—61 **10 Claims**



1 A dental articulator apparatus, comprising:

a ball joint having a ball member and a socket member, said ball member having an associated first joining means for removably coupling said ball member to a posterior aspect of a first teeth cast and said socket member further having a socket portion, a downwardly extending stem portion and first securing means for controlling movement of said ball member within said socket member;

second joining means for removably coupling to a posterior aspect of a second teeth cast said second joining means comprising a substantially L-shaped member having upstanding co-planar members defining a vertical slot therebetween, a pintle member disposed horizontally across said vertical slot and supported by said upstanding co-planar members and a substantially horizontal leg portion adapted to removably couple to the second teeth cast; and

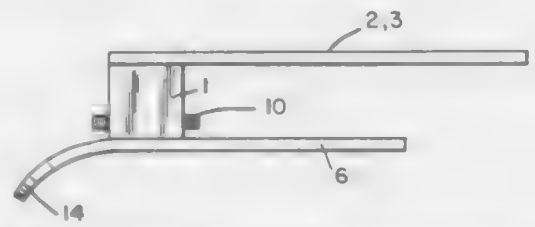
a pivot member, pivotally coupled to said pintle member, having an internal bore adapted to reciprocally receive said downwardly extending stem portion of said socket member and second securing means for securing said downwardly extending stem portion.

5,007,830

DEVICE FOR DETERMINING THE OCCLUSAL PLANE

Eugene Joffe, 79-10 34th Ave., Jackson Hts., N.Y. 11372

Filed Jun. 6, 1989, Ser. No. 362,268
Int. Cl.[5] A61C *19/04*
U.S. Cl. 433—68 **7 Claims**



1 A device for determining an occlusal plane for teeth positioning in detal prostheses, comprising

two first members pivotable about vertical axes in a first plane which can be aligned with an ear-nose plane of a patient;

a second member vertically adjustable relative to said first members and therefore said first plane so as to be brought in contact with plastic material on a base plate placed on an occlusal surface of remaining teeth or placed in correspondence with a lip line, said second member being movable parallel to said first members so that upon said contact said second member determines a position of a required occlusal surface;

means for moving said second member relative to said first members and including an adjusting element manually movable by a user;

a holding body, said first members being arranged pivotally relative to said holding body, said second member being arranged vertically displaceable relative to said holding body and having two pins;

two pivot pins each defining a respective one of said axes of pivoting of said first members,

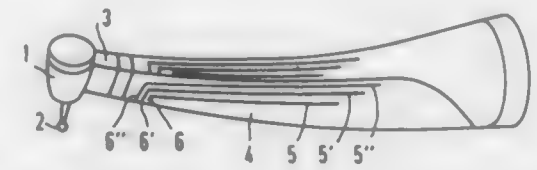
said holding body having two guiding openings in which said pins of said second member are vertically movably, said holding body further having two further guiding openings in which said pivot pins are turnably received, said first mentioned guiding openings being coaxial with said second mentioned guiding openings.

5,007,831

DENTAL HANDPIECE COMPRISING A GRIP PART

Thomas Bierbaum, Lorsch, and Johann Hain, Heppenheim-Kirschhausen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 3, 1989, Ser. No. 346,734
Claims priority, application Fed. Rep. of Germany, May 16, 1988, 3816612
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—114 **15 Claims**



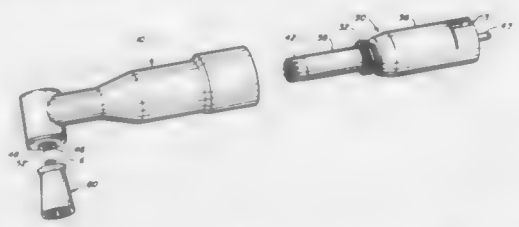
1. In a dental handpiece having an elongated grip part provided with a surface that is a non-slip surface in comparison to the remaining surface of the handpiece, the improvements comprising the non-slip surface being formed by a plurality of thin lines having a roughened surface, said thin lines having first portions extending in a longitudinal direction of the handpiece, each of said lines having a second portion extending at an angle to the first portion to form a line pattern and said lines being arranged in at least two quadrants on the circumference of the grip part that lie diametrically opposite one another.

5,007,832

DISPOSABLE RIGHT ANGLE DENTAL HANDPIECE

Mosbe Meller, Lakewood, and Michael Feldman, Howell, both of N.J., assignors to MTI Precision Products, Inc., Lakewood, N.J.

Filed Mar. 30, 1990, Ser. No. 502,454
Int. Cl.[5] A61C *1/08*
U.S. Cl. 433—126 **28 Claims**



1. A disposable dental handpiece comprising:

an outer housing made of a disposable plastic material and having an elongated opening therein for receiving a drive shaft means;

a cavity in said outer housing for receiving a driven rotatable gear member;

means for coupling a working member to said driven gear member for performing a working operation in an oral cavity of a patient;

a re-usable drive shaft means removably mounted in said elongated opening in said outer housing, said re-usable drive shaft means including:

a metallic drive shaft housing removably mounted in said outer housing;

a rotatable metal drive shaft mounted in said drive shaft housing and being rotatable relative to said drive shaft housing, said metal drive shaft having means at one end portion thereof which is driven by a dental drive means of a dental tool, so as to be rotatably driven within said outer housing; and

a driving gear at a distal end portion of said drive shaft, which distal end portion is opposite from said one end portion thereof, for engaging with said driven gear; and

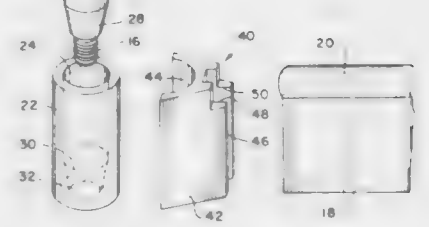
means for removably coupling said re-usable drive shaft means to said outer housing for removably securing said re-usable driven shaft means in said elongated opening of said outer housing such that said driving gear is in engagement with said driven gear during use, and for permitting disengagement of said re-usable drive shaft means from said outer housing for disposal of said outer housing.

5,007,833

BUTTRESS CHANNEL

Norman K. Barbone, Mansfield, Ohio, assignor to Implant Plastics Corporation, Mansfield, Ohio

Filed Jul. 10, 1990, Ser. No. 550,661
Int. Cl.[5] A61C *13/12, 13/225, 8/00*
U.S. Cl. 433—172 **12 Claims**



1. A structural element for forming a transition joint between a support bar and an associated mounting sleeve in the fabrication of support structure for holding prosthetic teeth, said structural element comprising:

a solid elongated body molded of a resinous plastic material, an outwardly open recess extending longitudinally of the body along a first side thereof, said recess being sized and adapted throughout its length to closely engage an exterior of said mounting sleeve in a direction axially thereof, an outwardly open elongated groove having a width to resiliently engage the support bar, said groove extending longitudinally of the body along a second side opposite said first side, said second side being narrower than said first side and said body tapering in thickness from said first side to said second side.

5,007,834

MANUFACTURE AND INSTALLATION OF A DENTAL PROSTHESIS

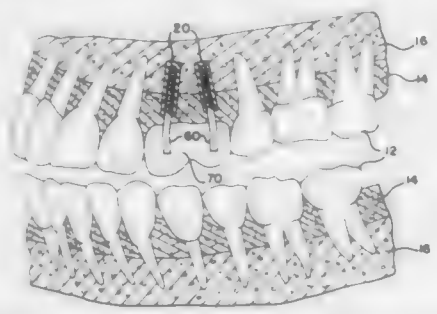
Sergio Rubinstein, 1451 Brandywine La., Buffalo Grove, Ill. 60089, and Masayuki Hoshi, 9004 Kennedy Dr., Des Plaines, Ill. 60016

Filed Oct. 12, 1989, Ser. No. 420,274
Int. Cl.[5] A61C *8/00*
U.S. Cl. 433—173 **17 Claims**

1. A method of making an article used in the manufacture of

a dental prosthesis of the type utilizing an implant member, having a threaded bore, adapted to be placed beneath gum tissue and into underlying bone structure, comprising the following steps:

providing an analog of said implant member;



providing a temporary threaded shank, formed of meltable material;

screwing said shank into said analog; and

forming on an upper surface of said shank a temporary model of a post for said prosthesis, said model being formed of meltable material.

5,007,835

DENTAL IMPLANT

Maurice Valen, 198-45 Foothill Ave., Holliswood, N.Y. 11423

Filed Aug. 17, 1989, Ser. No. 394,906

Int. Cl.[5] A61C *8/00*

U.S. Cl. 433—174 **20 Claims**



1. A dental implant and tap combination for threaded insertion of said dental implant into a drilled and tapped bore hole having tapped wall threads created by a first tap for tapping into maxillary bone and a second tap for tapping into mandibular bone, said drilled and tapped bore hole providing a bore hole wall of undercut threads for the subsequent threading of said dental implant, said dental implant having a thread length of rounded threads, said rounded threads of said dental implant radially extending beyond an outer diameter of threads of said first or second tap causing compression against the wall of said undercut threads and said bore hole, whereby a controlled compressive force is provided by the threaded dental implant against said bore hole wall in said jaw bone for providing sufficient holding strength to withstand masticatory loads, but insufficient compression for causing necrosis.

5,007,836

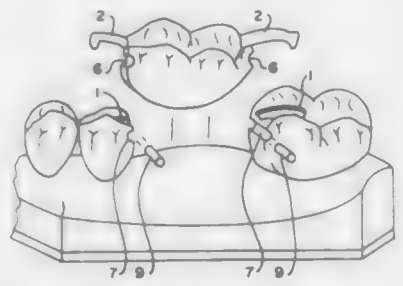
GROOVE LOCK DENTAL BRIDGE ATTACHMENT AND METHOD

Donald W. Gayso, 1092 Perkins Ter., Memphis, Tenn. 38115

Filed May 26, 1988, Ser. No. 198,875

Int. Cl.[5] A61C *13/12*

U.S. Cl. 433—181 **14 Claims**



1. An artificial dental appliance for being positioned between adjacent first and second abutment teeth, each of said abutment teeth having an outer end and being modified to have a groove in said outer end thereof, said appliance comprising:

(a) bridge means for extending between said outer end of said first abutment tooth and said outer end of said second abutment tooth, said bridge means having a first side for being positioned adjacent said outer end of said first abutment tooth and having a second side for being positioned adjacent said outer end of said second abutment tooth, said first side of said bridge means having a groove therein, said second side of said bridge means having a groove therein; said groove in said outer end of said first abutment tooth and said groove in said first side of said bridge means being aligned with one another when said appliance is positioned between said abutment teeth; said groove in said outer end of said second abutment tooth and said groove in said second side of said bridge means being aligned with one another when said appliance is positioned between said abutment teeth;

(b) first securing means for securing said first side of said bridge means to said first abutment tooth, said first securing means including retaining means for being inserted into said groove in said outer end of said first abutment tooth and said groove in said first side of said bridge means; said retaining means of said first securing means including a retaining pin for being inserted into said groove in said outer end of said first abutment tooth and said groove in said first side of said bridge means; and

(c) second securing means for securing said second side of said bridge means to said second abutment tooth, said second securing means including retaining means for being inserted into said groove in said outer end of said second abutment tooth and said groove in said second side of said bridge means; said retaining means of said second securing means including a retaining pin for being inserted into said groove in said outer end of said second abutment tooth and said groove in said first side of said bridge means; each of said retaining pins including a handle portion for allowing easy removal thereof.

5,007,837

DIFFERENTIAL PHOTOPOLYMERIZATION PROCESS USED FOR FILLING A DENTAL CAVITY AND A TOOL INTENDED FOR ITS IMPLEMENTATION

Marc Werly, Paris, France, assignor to Ellena, Wissembourg, France

Filed Mar. 24, 1988, Ser. No. 172,562

Claims priority, application France, Mar. 26, 1987, 87 04230

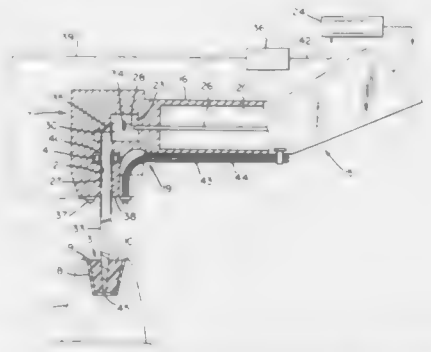
Int. Cl.[5] A61C *5/04*

U.S. Cl. 433—226 **11 Claims**

1. A process of filling a cavity with photosensitive resin materials which are capable of being solidified by means of photopolymerization, comprising the steps of:

depositing a layer of a first resin material, which is photosensitive at a first predetermined level of luminous radiation, upon the walls of said cavity;

subsequently depositing a mass of a second resin material, which is photosensitive at a second predetermined level of luminous radiation which is different than said first predetermined level of luminous radiation, upon said layer of said first resin material;



subsequently exposing said first and second resin materials to said luminous radiation at said second predetermined level so as to harden only said second resin material by photopolymerization; and

subsequently exposing said first and second resin materials to said luminous radiation at said first predetermined level so as to harden said first resin material by photopolymerization.

5,007,838

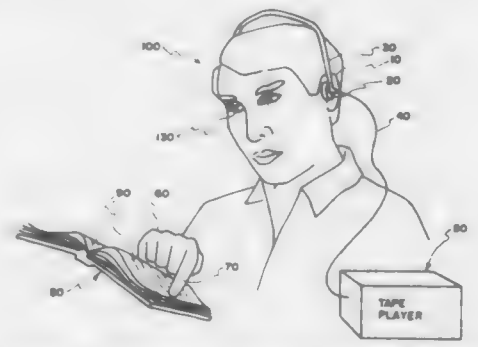
TACTILE ENHANCEMENT METHOD FOR PROGRESSIVELY OPTIMIZED READING

Kirby Cochran, Provo, Utah, assignor to American Business Seminars, Inc., Provo, Utah

Filed Feb. 20, 1990, Ser. No. 482,388

Int. Cl.[5] G09B *17/00*

U.S. Cl. 434—178 **15 Claims**



2. A method which associatively stimulates a reader's senses comprising auditory, visual, and tactile to increase reading speed and comprehension, said method comprising the steps of:

causing the reader to ingest reading material as his finger travels across a page;

providing a reader-training prerecorded stereophonic audio recording which comprises two separate and independent channels of prerecorded signals, the prerecorded signals collectively comprising reading-rate-setting signals, subliminal affirmation signals, and aural interference reduction signals;

delivering the reading-rate-setting signals to only one ear and thence directly to one hemisphere of the brain of the reader to stimulate and focus rapid reader eye movement in conjunction with rapid tactile scanning of sequential lines of print on a page of written material at rates which suppress the tendency for subvocalization of individual words;

delivering the subliminal affirmation signals predominately related to the spoken word to one ear only and thence directly to one hemisphere of the brain;

delivering aural interference reduction signals to both ears and of the reader to reduce the detrimental effect of external noise.

5,007,839

VACUUM CLEANER HOSE CONSTRUCTION, INSERT THEREFOR AND METHODS OF MAKING THE SAME

Homer N. Holden, Sylva, and Philip K. Loyer, Waynesville, both of N.C., assignors to Dayco Products, Inc., Dayton, Ohio

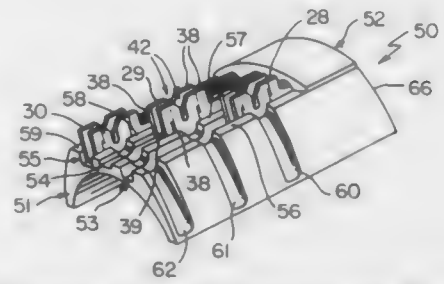
Division of Ser. No. 234,783, Aug. 22, 1988, Pat. No. 4,894,021.

This application Oct. 26, 1989, Ser. No. 427,269

The portion of the term of this patent subsequent to Jan. 16, 2007, has been disclaimed.

Int. Cl.[5] H01R *4/60*

U.S. Cl. 439—191 **11 Claims**



1. In a vacuum cleaner hose construction that comprises an elongated vacuum hose having an end and an electrical conductor extending helically therealong and being provided with an end portion at said end, an electrical terminal connector carried by said hose and being fixed to said end portion, and an insert for holding said connector and its interconnected end portion in a predetermined position, the improvement wherein said insert has opposed ends one of which has a substantially straight sot means therein and an angular groove means therein leading to said slot means and intersecting the same at an angle relative thereto, the other of said opposed ends of said insert having opening means therein, said connector having opposed ends respectively disposed in said slot means and said opening means to be held thereby, said end portion of said conductor being disposed in said angular groove means.

5,007,840

OPERATIONS PROCESSOR

Martin Gaskell, 21 Western Road, Tring, Herts., HP23 4BQ, United Kingdom

Filed Dec. 12, 1989, Ser. No. 449,554

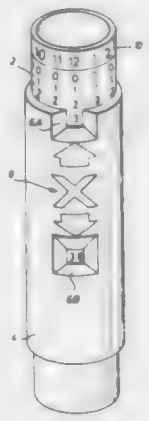
Claims priority, application United Kingdom, Dec. 14, 1988, 8829200

Int. Cl.[5] G09B *19/02*

U.S. Cl. 434—206 **3 Claims**

1. A multiplication operations processor comprising at least two concentric cylinders, the first of said cylinders having marked thereon a periodical array of numbers which comprises a first table having a first row of numbers representing a first operand and a column of numbers representing a second operand under each number of said first row and a second table displayed under said first table representing a solution to a multiplication of said first and second operands in which the first row of said first table comprises the numbers 1 to 12 consecutively and inclusively and each of the columns comprises numbers 0 to 12 consecutively, and said first of said cylinders retained within the second of said cylinders, and the

second of said cylinders having two or more indicating means, and the first of said indicating means exposing the second



operand and the second of said indicating means exposing the solution of said multiplication operation.

5,007,841

INTEGRATED-CIRCUIT CHIP INTERCONNECTION SYSTEM

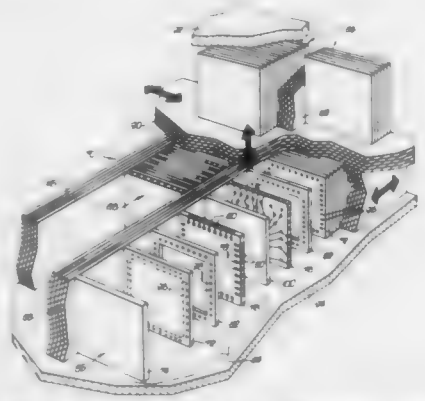
Robert Smolley, Porteuguese Bend, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation-in-part of Ser. No. 499,137, May 31, 1983, abandoned, and a continuation-in-part of Ser. No. 499,136, May 31, 1983, Pat. No. 4,574,331, and a continuation-in-part of Ser. No. 737,631, May 24, 1985, Pat. No. 4,581,679. This application Mar. 3, 1986, Ser. No. 835,818

The portion of the term of this patent subsequent to Apr. 8, 2003, has been disclaimed.

Int. Cl.[5] **H05K** *1/14*

U.S. Cl. 439—66 **55 Claims**



1. An integrated-circuit (IC) chip packaging construction, comprising:

an integrated circuit chip having a plurality of contact areas;

a rigid insulating board having a plurality of openings therethrough, with at least some of the openings at positions corresponding to the IC chip contact areas;

a circuit board having contact areas at positions corresponding to some of the openings in the insulating board;

a plurality of conductive connector elements disposed in selected ones of the openings in the insulating board, each of said connector elements including a wadded strand of conductive wire that is deformed when compressed and makes multiple electrical contacts with the IC chip and circuit board contact areas; and

means for compressing the IC chip toward the circuit board, thereby compressing the connector elements and making electrical contact between the IC chip contact areas and the circuit board contact areas.

5,007,842

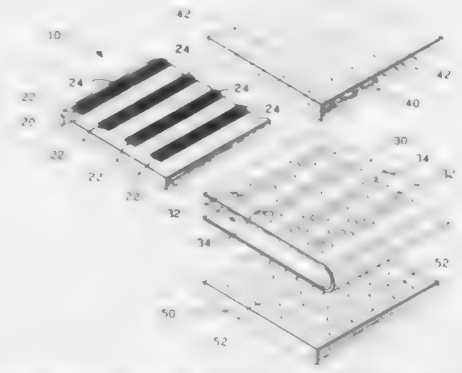
FLEXIBLE AREA ARRAY CONNECTOR

Frederick R. Deak, Kernersville, and David B. Wrisley, Jr., Greensboro, both of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 11, 1990, Ser. No. 596,163

Int. Cl.[5] **H01R** *9/09*

U.S. Cl. 439—66 **5 Claims**



1. A flexible area array connector for electrically connecting circuit pads on a pair of spaced substrates, said connector comprising:

a force application plate having a slot therethrough;

a spring member secured within said slot so as to extend beyond both surfaces of said plate;

a flexible interconnect member having conductive pads on a surface thereof;

said flexible member being folded around said force plate so that said conductive pads overlie said spring member on both surfaces of said plate; and

said flexible member and said force plate being disposed between substrates so that said conductive pads face circuit pads on the substrates.

5,007,843

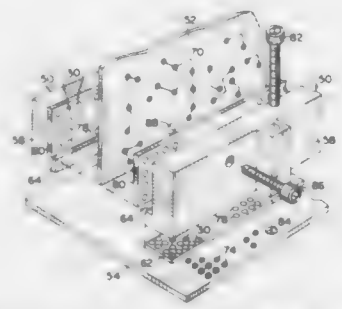
HIGH-DENSITY CONTACT AREA ELECTRICAL CONNECTORS

Robert Smolley, Porteuguese Bend, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation-in-part of Ser. No. 835,818, Mar. 8, 1986, which is a continuation-in-part of Ser. No. 499,137, May 31, 1983, abandoned, and Ser. No. 499,136, May 31, 1983, Pat. No. 4,574,331, and Ser. No. 737,631, May 24, 1985, Pat. No. 4,581,679. This application Mar. 16, 1987, Ser. No. 26,327

Int. Cl.[5] **H01R** *9/09*

U.S. Cl. 439—66 **12 Claims**



1. An improved edge card connector for making electrical connections between an electronic component and a circuit board having edge contact areas, comprising:

an edge card connector housing having a plurality of contact areas to which leads from the electronic component are connected;

a first rigid insulating board disposed between the connector housing and the circuit board, the insulating board having a plurality of openings at positions corresponding to the connector housing contact areas and the circuit board contact areas;

a plurality of conductive connector elements disposed in selected ones of the openings in the insulating board; and

means for compressing the connector housing and the circuit board together, thereby compressing the connector elements and making electrical contact between the connector housing contract areas and the circuit board contact areas;

wherein the connector housing includes:

an edge card connector housing having a first plurality of contact areas for connecting leads in the connector housing to the circuit board contact areas and a second plurality of contact areas for connecting the leads in the connector housing to contact areas on the electronic component;

a second rigid insulating board disposed between the connector housing and the electronic component, the insulating board having openings at positions corresponding to the connector housing contact areas and the electronic component contact areas;

a plurality of conductive connector elements disposed in selected ones of the openings in the second insulating board; and

means for compressing the connector housing and the electronic component together, thereby compressing the connector elements and making electrical contact between the connector housing contract areas and the electronic component contact areas.

5,007,844

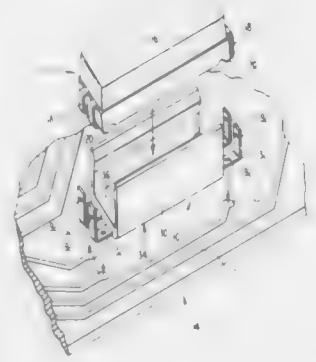
SURFACE MOUNT METHOD AND DEVICE

Scott C. Mason, Fort Collins, and Robert A. Slutz, Loveland, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 17, 1990, Ser. No. 466,169

Int. Cl.[5] **H01R** *9/09*

U.S. Cl. 439—68 **23 Claims**



1. A device for effecting electrical and mechanical connections between a surface mount electrical component and conductive pads on a printed circuit board, said device comprising:

socket means for receiving a surface mount electrical component, said component comprising a body member and a plurality of J-shaped leads; and

a plurality of contact elements mounted on said socket means, each of said contact elements having a first portion for soldering the contact element to a conductive pad on a printed circuit board and a second portion for soldering said contact element to a J-shaped lead of said electrical component, said first portion extending away from said socket means, and said second portion being at a distal end of the first portion to define an intermediate portion between the socket means and the second portion that overlays the conductive pad when said socket means is positioned on said printed circuit board, said intermediate portion providing an access space for soldering said contact element to said conductive pad and for visually inspecting a resulting solder joint.

5,007,845

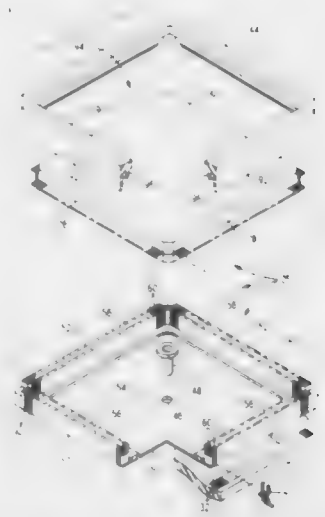
LOW HEIGHT CHIP CARRIER SOCKET

Dimitry G. Grabbe, Middletown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 3, 1989, Ser. No. 431,519

Int. Cl.[5] **H01R** *9/09*

U.S. Cl. 439—73 **13 Claims**



1. A low height chip carrier socket for electrically connecting leads on the chip carrier to respective pads on a mounting surface, wherein the leads are spaced apart and projecting from a peripheral edge of the chip carrier, said socket comprising:

(a) a body having a chip carrier receiving cavity;

(b) a plurality of contacts in said body arranged for electrically connecting each of said leads to a respective one of said pads, each said contact including a contacting portion and an opposed backup portion;

(c) means for positioning and aligning each of said plurality of contacts with respective ones of said leads when said chip carrier is in said cavity so that each said lead is adjacent its respective contacting portion; and

(d) locking means for wedging between each said lead and said backup portion so that each said lead is urged into pressing electrical contact with its respective contacting portion, said locking means including means for forming each said lead about the contacting portion of its respective contact.

5,007,846

SPECIALIZED FRAME FOR RETAINING AN EDGE CONNECTOR ON A PRINTED CIRCUIT BOARD

Gonen Ravid, 29034 Acanthus Ct., Agoura Hills, Calif. 91301

Filed Jun. 11, 1990, Ser. No. 536,963

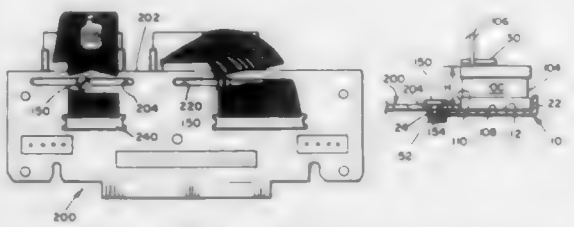
Int. Cl.[5] **H01R** *23/70*

U.S. Cl. 439—79 **13 Claims**

1. A frame for retaining and mounting on a printed circuit board an edge connector having a multiplicity of female connector members, the printed circuit board including at least one elongated slot running adjacent an edge of the printed circuit board, the frame comprising:

a. a bottom including a front edge, a rear edge, a first side edge and a second side edge;

b. a front lip affixed along said front edge of said bottom and extending generally perpendicular to the front edge;
c. a transverse opening extending through the bottom at a location adjacent said rear edge of said bottom;
d. a first side bracket having a sidewall affixed to said first side edge of said bottom and extending generally perpendicular to the side edge and a top lip affixed to the sidewall at a location remote from the bottom and extending generally perpendicular to the side wall and generally parallel to the bottom;
e. a second side bracket having a sidewall affixed to said second side edge of said bottom and extending generally perpendicular to the side edge and a top lip affixed to the sidewall at a location remote from the bottom and extending generally perpendicular to the side wall and generally parallel to the bottom; and



f. the top lips of each respective first and second side bracket extending toward each other and over the bottom;
g. attaching means for attaching the frame to the printed circuit board;
h. whereby said edge connector is retained within said frame such that the edge connector rests between the bottom and the top lip of the first and second side brackets, the front of the edge connector lies adjacent the front lip and the female connector members are unobstructed by the front lip, and the frame is attached to the printed circuit board by attaching means which extend through the slot in the printed circuit board and through the transverse opening in the frame with the frame affixed beneath the printed circuit board such that the edge of the printed circuit board adjacent the slot functions as a rear lip to retain the edge connector between the front lip of the frame and the printed circuit board.

5,007,847

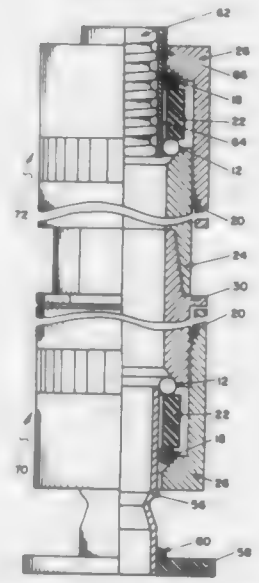
UNIVERSAL GROUND ADAPTER ASSEMBLY

David S. Dixon, Old Lyme, and Nicholas Schade, Oakdale, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 18, 1990, Ser. No. 539,954
Int. Cl.[5] H01R *4/66*
U.S. Cl. 439—100 **10 Claims**

1. A universal ground adapter assembly, electrically and mechanically connecting first and second members defining interior spaces of selected same and different particular outside dimensions selected over a range of comparatively greater and lesser outside dimensions, and shielding the interior spaces of the first and second members against electromagnetic interference, comprising:

first and second subassemblies each having opposing ends, one end of one of the first and second subassemblies having an electrically conductive connection annulus itself having ends, the connection annulus terminates on one of its ends in an outer threaded wall defining an electrically conductive male connector and terminates on the other of its ends in an outer threaded wall of a preselected outer dimension, one end of the other one of the first and second subassemblies having an electrically conductive connection annulus itself having ends, the connection annulus of the other one of the first and second subassemblies terminates on one of its ends in an inner threaded wall defining an electrically conductive female connector and terminates on the other of its ends in an outer threaded wall having a preselected outer dimension, said male and said female connectors each having a preselected predetermined dimension reciprocally selected to allow male/-female interconnection therebetween, each of the other ends of the first and second subassemblies having an electrically conductive member receiving annulus itself having ends, one end of each of the electrically conductive



member receiving annuli having an inner preselected dimension selected to closely fit around the particular outside dimension of a respective one of said first and second members and the other end of each of the electrically conductive member receiving annuli terminating in an inner threaded wall having a preselected inside dimension, the preselected inside dimensions of said threaded walls of said ends of said member receiving annuli and said preselected outside dimensions of said ends of said connection annuli being selected to allow their mutual threaded interconnection, the preselected outside dimensions of said ends of said connection annuli being selected in direct proportion to the particular outside dimensions of corresponding ones of said first and second members being connected within said range;

means cooperative with said connection and member receiving annuli of each of said first and second subassemblies for electrically contacting respective ones of said first and second members; and

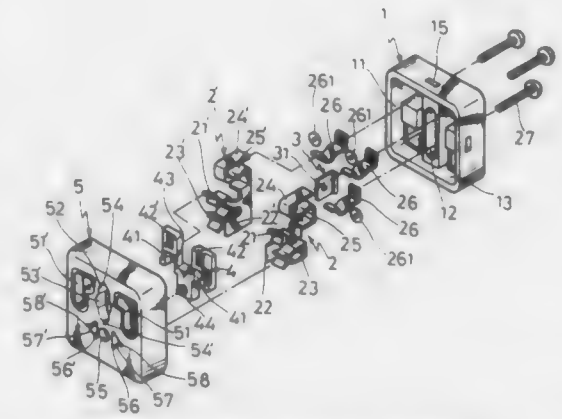
means cooperative with said electrical contacting means and said connection and member receiving annuli of each of said first and second subassemblies for environmentally sealing said electrically contacting means.

5,007,848

MULTIPURPOSE SAFETY RECEPTACLE

Chiu-Shan Lee, No. 133-2, Lane 163, San Ho Rd., Section 4, San Chung City, Taipei Hsien, Taiwan

Filed Aug. 3, 1989, Ser. No. 388,876
Int. Cl.[5] H01R *13/652, 27/00*
U.S. Cl. 439—101 **9 Claims**



1. A multipurpose safety receptacle including:

an upper cover comprising a pair of L-shaped pin holes bilaterally disposed at the top, an oval hole in the middle, a first round hole in the oval hole, two square holes set on the top and the lower end respectively of said oval hole, a second round hole set at a lower position below said oval hole, and a pair of openings each symmetrically set at a side of the second round hole, said pair of openings each being comprised of an elongated hole, a round hole and a square hole;

a division plate comprising bilaterally two opposite guide rails and two opposite slots, and a notch and a round hole in the middle;

a bottom block having two receiving troughs spaced apart laterally from each other and a ground connection trough disposed between said receiving troughs, and a plurality of retaining holes spaced around the periphery of said block;

two conductive frames being respectively set in said two receiving troughs of said bottom block, each comprising a spring leaf, a receiving plate, an U-shaped conducting plate, an U-shaped frame, said U-shaped frame comprising a corrugated track for setting therein of a control plate;

a ground connection frame having slightly inclined top end vertically bending downward to define a curved portion at both lateral sides for easy connection thereto of ground connection pins of different size;

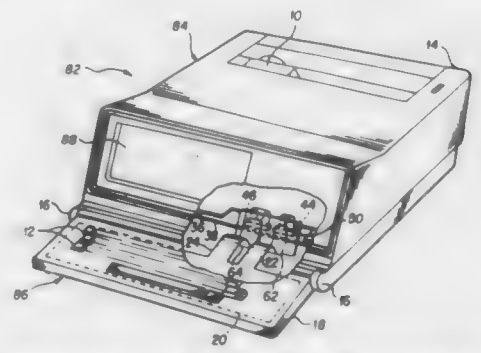
characterized in that when a plug which has L-pins is connected thereto the L-pins are inserted to contact said guide rails of said division plate and further moved downward to contact said spring leaves of said conductive frames to let electric power be connected; when a plug which has flat plug pins is connected thereto the flat plug pins are inserted to set in between said receiving plates and said U-shaped conducting plates and to get connected with said receiving plates and said U-shaped conductive plates so as to let electric power be connected; when a plug which has two round plug pins or square plug pins is connected thereto the plug pins are inserted therein to set in said U-shaped conducting plates to let electric power be connected.

5,007,849

SIGNAL LINE CONNECTING STRUCTURE FOR A KEYBOARD OF ELECTRONIC APPARATUS

Akira Shinoda, Ohbu, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Japan

Filed Jan. 29, 1990, Ser. No. 471,890
Claims priority, application Japan, Mar. 27, 1989, 1-34415[U]
Int. Cl.[5] H01R *35/00*
U.S. Cl. 439—165 **10 Claims**



1. A keyboard signal line connecting structure electrically connecting a keyboard to a host apparatus comprising:

a hinge member pivotally connecting the keyboard to a front face of the host apparatus so that the keyboard can assume a folding attitude uprightly facing the front face of the host apparatus and a virtually horizontal laid-down attitude whereby the keyboard is operable by an operator;

a key switch circuit board having a plurality of key switches arranged in a matrix in the keyboard;

a main controller board disposed inside the host apparatus, provided with electronic component parts for controlling the host apparatus; and

a flexible connecting printed circuit board which is one-piece with the key switch circuit board, said flexible connecting printed circuit board connecting a number of signal lines of the key switch circuit board to corresponding signal lines of the main controller board, extending from said key switch circuit board to the main controller board, and being provided with a bend section which increases its degree of bend when the keyboard assumes one of the folding attitude and the laid-down attitude, and decreases its degree of bend when said keyboard assumes the other attitude, said bend section being located inside a space within said host apparatus and wherein a portion of said keyboard extends inside of said space of said host apparatus, said portion including a slot wherein said flexible connecting printed circuit board passes from inside said keyboard through said slot and into said space.

5,007,850

CATHODE RAY TUBE SOCKET HAVING AN IMPROVED HIGH VOLTAGE DISCHARGE HOUSING

Hirofumi Inaba, and Yasunori Nishikawa, both of Yao, Japan, assignors to Hosiden Electronics Co., Ltd., Osaka, Japan

Filed Sep. 14, 1989, Ser. No. 407,081
Claims priority, application Japan, Sep. 29, 1988, 63-128607; Sep. 29, 1988, 63-128608
Int. Cl.[5] H01R *13/53;* **H01J** *29/00*
U.S. Cl. 439—182 **5 Claims**

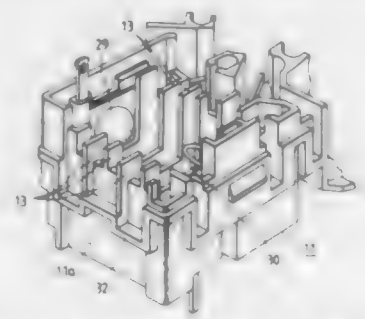
1. A cathode ray tube socket which is provided with a socket body having a plurality of contacts disposed in a circle and a high voltage discharge gap housing provided on one side of said socket body,

said high voltage discharge gap housing comprising a case formed as a unitary structure with said socket body and having an open end face, and a cover which overlies said opened face of said case;

said case having a plurality of plate-shaped first ribs formed on an inner wall surface of said case, said plurality of first

rib extending along said inner wall surface in a direction across a high voltage discharge in parallel and spaced-apart relation to one another; and

said cover having a plurality of plate-shaped second ribs formed on an inner wall surface of said cover to extend



therealong in a direction across the high voltage discharge, each of said second ribs being aligned with a corresponding one of said first ribs, end portions of each of said second ribs being located opposite to end portions of a corresponding one of said first ribs in a close but spaced-apart relation thereto

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5,007,851

POWER SOCKET

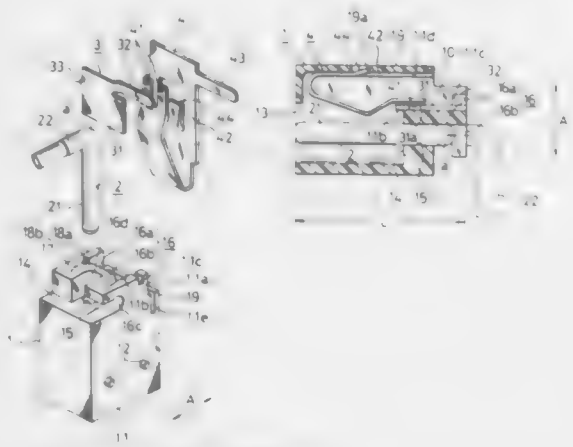
Koji Matsumoto, Yao, Japan, assignor to Hosiden Corporation, Yao, Japan

Filed Oct. 4, 1990, Ser. No. 592,593

Claims priority, application Japan, Oct. 12, 1989, 1-119276[U]

Int. Cl.[5] H01R *29/00*

U.S. Cl. 439—188 **21 Claims**



1. A power socket comprising:

a housing;

an opening into and from which a plug is to be inserted and removed, said opening formed at the front end surface of said housing;

a rear wall having a pin insertion hole and formed at that position of the rear end surface of said housing which is opposite to said opening;

a pin having a plug connection portion and a terminal portion molded in an L-shape, said plug connection portion being inserted through said pin insertion hole into the hollow portion of said housing, said terminal portion extending along said rear wall and projecting toward a circuit board on which said power socket is to be mounted;

a stationary contact piece having (i) a plate portion having a stationary contact and (ii) a terminal which extends from said plate portion and which projects from said housing toward said circuit board, said stationary contact piece being disposed, with respect to said pin, in a direction along the surface of said circuit board;

a fixing portion formed at said stationary contact piece for securing said stationary contact piece to said housing;

a movable contact piece made of a metallic piece molded substantially in an U-shape, said movable contact piece being provided at one end thereof with movable contacts adapted to be separated from or come in contact with said stationary contact and at the other end thereof with a seat plate portion from which a terminal extends, said terminal projecting from said housing toward said circuit board, said movable contact piece being disposed, with respect to said pin, in said direction along the surface of said circuit board, said movable contact piece being adapted to be displaced by a plug inserted in or removed from said plug connection portion so that said movable contacts are separated from and come in contact with said stationary contact;

a fixing portion formed at said movable contact piece for securing said movable contact piece to said housing; and

an engagement fixing body engaged with the rear portion of said terminal portion of said pin for securing said terminal portion to said housing, said engagement fixing body being formed on said rear wall.

5,007,852

ELECTRICAL CABLE ASSEMBLY

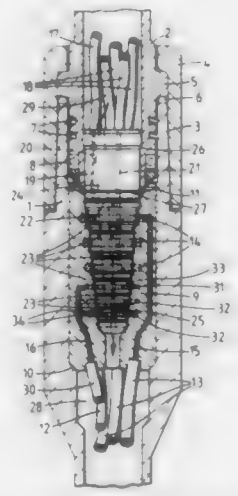
Alan J. Dean, Aberdeenshire, and Hans P. Hopper, Abderdeen, both of Scotland, assignors to The British Petroleum Company p.l.c., London, England

Continuation of Ser. No. 173,226, Mar. 24, 1988, abandoned. This application Jan. 17, 1990, Ser. No. 469,751

Claims priority, application United Kingdom, Mar. 26, 1987, 07308

Int. Cl.[5] H01R *4/60*

U.S. Cl. 439—201 **9 Claims**



1. An electrical cable assembly formed of at least two lengths of joined pipe each length comprising:

(i) a length of hollow pipe having means at either end for joining lengths of the pipe,

(ii) at least one electrical cable within the pipe, and

(iii) a connector at each end of the cable adjacent to the ends of the pipe having at least one electrical contact so that on joining the lengths of the pipe the connectors are also automatically joined to form an electrical path through the joint,

(iv) the connector at one end of the pipe being a male connector and at the other end being a female connector,

(v) at least one electrical contact on each connector being a ring contact, and

(vi) each length of pipe having a passageway through its between the connectors, each connector having a passageway through it between the pipes, and each connection having access from the passageway to the area of the contacts, so that fluid fed to one end of the cable assembly can pass down a pipe, through the connector to the next pipe and so on and so that, at each connector, dielectric fluid can pass to the area of the contacts, whereby the contacts of each of the connectors can be flushed with fluid before use and, when in use, are immersed in dielectric fluid.

5,007,853

CASING SYSTEM FOR THE LAYING OF ELECTRICAL SUPPLY CONDUCTORS

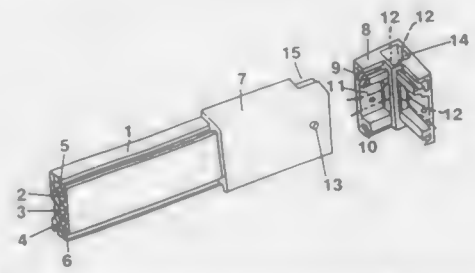
Axel Olsen, Fjordskraenten 7, Graese Bakkeby, Frederikssund 3600, Denmark

Continuation-in-part of Ser. No. 254,798, Oct. 4, 1988, abandoned. This application Feb. 21, 1990, Ser. No. 483,983

Claims priority, application Denmark, Feb. 19, 1987, 847/87

Int. Cl.[5] H01R *4/64*

U.S. Cl. 439—211 **12 Claims**



1. A casing system for laying electric supply conductors and, if desired, signal conductors along the outer surface of walls of buildings, comprising

unitary elongated casing sections of insulating material and of a variety of fixed lengths, each such section having a front wall and a rear wall and at least two longitudinal cavities extending from end to end of the section in positions mutually displaced in a transverse direction parallel to said front wall,

an electric supply conductor being mounted in each of at least two such longitudinal cavities at a loose fit and being held therein against longitudinal displacement,

each casing section being constructed with a number of access modules distributed over the length of the section and each providing access for the touch and creep proof connection of outer conductors or installation components from the front side of the casing section to the supply conductors in the longitudinal cavities,

sliding cover sections profiled for positive sliding engagement with said casing sections and having a shape and a length such as to be capable of covering a gap of substantial length between two aligned casing sections,

corner sections having two legs disposed at an angle to each other, and end sections having one leg, each leg being shaped for positive sliding engagement with a sliding cover section in such a manner as to define a confined space between the sliding cover and the leg and to be capable of covering a gap of substantial length between the leg considered and the end of an aligned casing section,

said sliding cover sections being constructed for fixation relative to a wall of a building along which one or more casing sections are mounted.

5,007,854

LOCKING DEVICE FOR CONNECTORS OF PRINTED CIRCUIT BOARDS

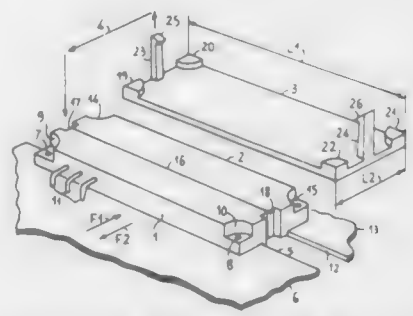
Giampietro Crespiatico, Via Dell'Aprica 26, 20158 Milano, and Luciano Mondori, Via A. Righi 4, 20082 Binasco (MI), both of Italy

Filed May 8, 1990, Ser. No. 520,688

Claims priority, application Italy, Jun. 8, 1989, 20812 A/89

Int. Cl.[5] H01R *13/62*

U.S. Cl. 439—367 **1 Claim**



1. The combination comprising a pair of connectors for printed circuit boards and a related locking device, each of said connectors:

(A) being shaped as a rectangular parallelepiped having a length, a width and a height,

each of said connectors having:

(B) an insertion face disposed perpendicular to said width,

(C) a lower surface for fixing to a printed circuit board, said lower surface being disposed perpendicular to said height,

(D) an upper surface opposite said lower surface, and

(E) a pair of angular recesses located on said upper surface at the two corners of said parallelepiped opposite to said insertion face,

said pair of connectors being:

(F) coupled by mating of the respective insertion faces

said locking device comprising:

(G) a rectangular, elongated plate having:

(1) a length equal to the length of said connectors,

(2) a width equal to the encumbrance of a coupled pair of said connectors in the direction of said connector width,

(3) upper and lower faces,

(4) a tenon at each of its corners protruding from said lower face, and

(5) two end arms situated intermediate the width of said plate and extending perpendicularly therefrom in the same direction as said tenons, each of said arms ending in a locking tooth, and

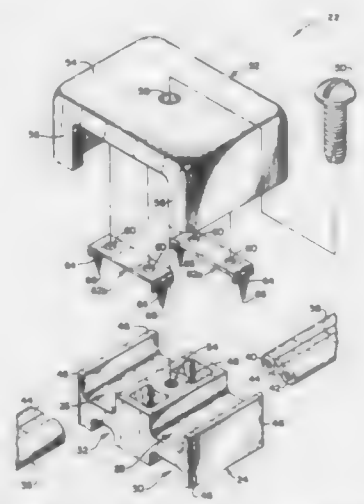
(H) said plate being overlapped to said coupled connectors with its lower face overlaying said upper surfaces of said connectors, said tenons being inserted in said connector recesses and said end arms locking, with their respective teeth, said plate to said coupled connectors, thereby preventing disconnection of said coupled connectors and removal of said plate from said coupled connectors.

5,007,855

CABLE CONNECTOR

Steven T. O'Brien, Champlin, and Jay J. Kakuk, Plymouth, both of Minn., assignors to The Toro Company, Minneapolis, Minn.

Filed Jun. 20, 1990, Ser. No. 542,491
Int. Cl.[5] H01R 4/24
U.S. Cl. 439—411 3 Claims



1. A low voltage cable connector for mechanically and electrically interconnecting a pair of low voltage electrical cables, said cables comprising electrically conductive material encased in electrically insulating material, said connector comprising:

(a) a pair of electrically conductive jumper elements, wherein each of said elements comprises a pair of spaced sharp protrusions wherein said sharp protrusions are electrically connected;

(b) a cap comprising electrically resistive material with means for engaging said electrically conductive jumper elements;

(c) a base comprising electrically resistive material with a plurality of channel-like cavities for accepting said electrical cables and wherein said base is sized so as to nest within said cap and wherein said cavities on said base are positioned so as to receive said protrusions such that said cables are penetrated by said protrusions when said base nests within said cap; and

(d) fastening means for retaining said cap to said base wherein said protrusions penetrate said insulating material and make electrical contact with said conductive material of said cables, wherein said base comprises a generally rectangular-like cross section and wherein said base comprises four said cavities,two of said cavities of equal width and depth for accepting cable of equal size, extending parallel to each other on one side of said base, and two of said cavities of unequal width and depth for accepting cable of unequal size extending off-parallel to each other along opposite side of said base; and wherein said base nests within said cap so that either set of said cavities will receive said protrusions of said elements engaged in said cap.

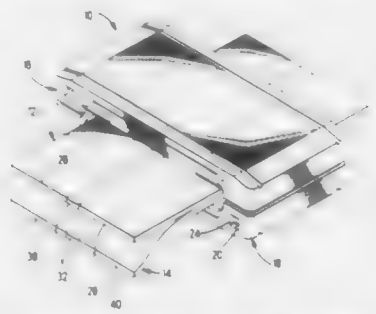
5,007,856

HOUSING FOR AN ELECTRICAL CONNECTION

Dean A. Puerner, Maricopa, Ariz., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 21, 1989, Ser. No. 454,259
Int. Cl.[5] H01R 13/58
U.S. Cl. 439—452 6 Claims

1. A housing means for enclosing a termination site of flat electrical cable of substantial width and defining a substantially wide exit for the cable from the site, comprising first and second housing members securable together about the termination site, at least one of said housing members including a resilient cable-clamping means integral therewith, said cable-clamping means being opposed from a cable-engaging portion of the other said cover member for firmly clamping major side surfaces of at least a first said cable extending from said termination site and defining a cable exit, each said first cable-clamping means including a cable-engaging platform having a cable-remote base portion joined by deformable hinges to side portions of said cover member laterally to each side of said cable exit, said cable-remote base portion being deflectable normally outwardly against spring bias into a relief slot therebehind upon said cover members being urged together and clamping against said cable major surfaces, the deflection resulting from elastic deformation of said hinges, providing insulative structure generally closing off the aperture but adjustable to variations in cable thickness at said first cable exit of the interconnection and providing vibration resistance for at least a limited range of cable thicknesses at the cable exit.

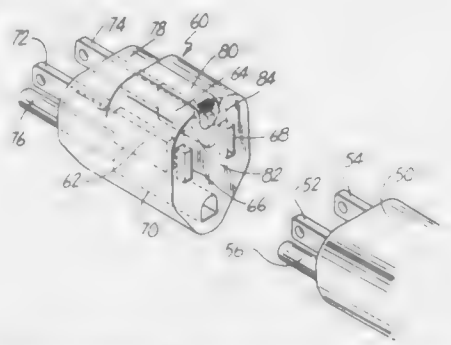


5,007,857

ELECTRICAL RECEPTACLE WITH POWER INDICATOR LIGHT

Duane E. Wright, R.R. 1 - Box 33A, Maddock, N. Dak. 58348

Filed Jul. 30, 1990, Ser. No. 559,653
Int. Cl.[5] H01R 3/00
U.S. Cl. 439—490 14 Claims



1. A unitary electrical receptacle configured for electrical connection with an electrical male plug having a pair of contact blades, the receptacle comprising:

a first pair of receptacle contacts configured for electrical connection with the pair of contact blades;

a second pair of receptacle contacts electrically insulated from the first pair of receptacle contacts and configured for making electrical connection with the first pair of receptacle contacts through the pair of contact blades when the pair of contact blades are electrically connected to the first pair of receptacle contacts; and

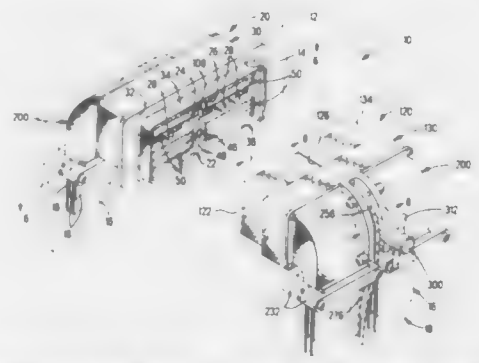
a lamp electrically connected in series between the second pair of receptacle contacts and adapted for interconnection to the first pair of receptacle contacts when the male plug is inserted into the receptacle.

5,007,858

ELECTRICAL CONNECTOR FOR FLAT POWER CABLE

John K. Daly, Scottsdale; Earl R. Kreinberg, Phoenix; Dean A. Puerner, Maricopa, and Marty E. Adcock, Scottsdale, all of Ariz., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 20, 1990, Ser. No. 511,662
Int. Cl.[5] H01R 13/533, 9/07
U.S. Cl. 439—498 15 Claims



1. A connector for use with a plurality of flat cables each including at least one flat conductor of substantial width and incremental thickness, the connector being suitable for housing terminations to respective ones of the cable conductors for transmission of electrical power at substantial levels of current and voltage across a mating interface, the terminations extending laterally across the width of respective ones of the flat cables, comprising:

a shell member including at least one housing-receiving cavity extending from a rearward shell face to a front face through a transverse body section of substantial bulk material having good heat transfer properties, each said housing-receiving cavity being defined by wall sections of said shell member;

dielectric means including respective cavity means to house an end of each said flat cable to which is terminated a respective terminal means defining a termination, each said terminal means including contact sections extending forwardly into forward cavity means of said dielectric means for mating with a corresponding contact means of a mating electrical article, each said termination extending laterally across the width of the respective said flat cable and having major upper and lower surfaces, and each said dielectric means including an outwardly facing wall of limited thickness along one of said major upper and lower surfaces of each said termination therein; and

each said dielectric means containing said at least one termination being retained within said shell member and disposed within a respective said housing-receiving cavity such that at least one said cavity wall section coextends along and adjacent said wall of said dielectric means along said one of said major upper and lower surfaces of each said termination such that said wall section of said shell member is proximate said one of said major upper and lower surfaces of each said termination and defines a heat transfer system for dissipating heat from each said termination during in-service use.

5,007,859

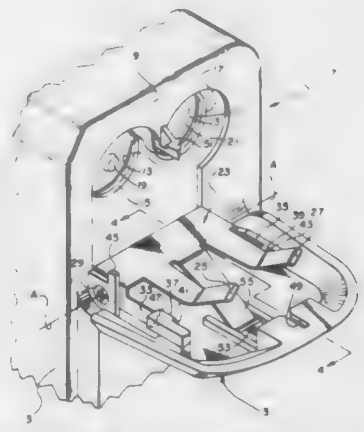
BATTERY-CONTAINING APPARATUS

Jude A. Sangregory, Spencerport, and Anthony DiRisio, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 16, 1990, Ser. No. 465,670
Int. Cl.[5] H01R 3/00
U.S. Cl. 439—500 4 Claims

1. A battery-containing apparatus comprising a body portion defining a chamber having an opening for inserting at least one battery into said chamber, a door, mounting means supporting said door for pivotal movement relative to said chamber between a closed position covering said opening and an open position for uncovering the opening and for translational movement relative to the chamber in the closed position between a latched position for securing the door closed and an unlatched position for allowing the door to be opened, and a contact carrier including an electrically conductive contact for making electrical connection with a corresponding contact of the battery, characterized in that:

said mounting means includes cooperating means located on said body portion, said door, and said contact carrier for supporting the contact carrier for pivotal movement with



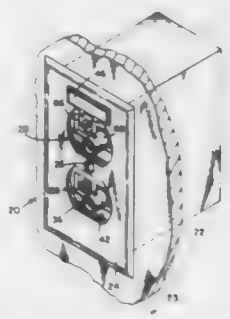
the door between the closed and open positions, to electrically connect said conductive contact of the contact carrier and the corresponding contact of the battery when the door is pivoted to its closed position and to disconnect the two contacts when the door is pivoted to its open position, and furthermore for supporting the door in its closed position for translational movement relative to the contact carrier between the latched and unlatched positions, to maintain the conductive contact of the contact carrier and the corresponding contact of the battery in fixed stationary relation when the door is translated in its closed position from its unlatched position to its latched position.

5,007,860

MODULAR HIGHER DENSITY COMMUNICATIONS COUPLING SYSTEM

Scott T. Robinson, Redmond; William K. Deaning, Everett; John M. Redfield, Brier, and John H. Garthwaite, Coupeville, all of Wash., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Filed Jan. 19, 1990, Ser. No. 463,328
Int. Cl.[5] H01R 13/60
U.S. Cl. 439—540 16 Claims



1. A telecommunications coupling device for mounting a pair of connectors through a single industry standard-sized hole, comprising:

a main body member;

a registration ridge extending forward from said main body member, at least a first portion of said ridge being adapted to extend into said hole to align said main body member with respect to said hole;

a pair of apertures through said main body member, and adjacent each other, said pair of apertures being generally surrounded by said registration ridge for alignment of both apertures with said hole;

a pair of retaining members extending rearwardly from said main body member, adjacent to said apertures, said retaining members being adapted to retain a pair of connector housings for supporting said respective connector in alignment with said respective apertures to permit coupling to a telecommunication apparatus; and

a pair of support members extending rearwardly from said main body member, adjacent to said apertures, said support members extending rearwardly beyond said retaining members, said support members having slots therein adapted to receive a termination plate and support said termination plate in a position above said retaining members and spanning said pair of apertures.

5,007,861

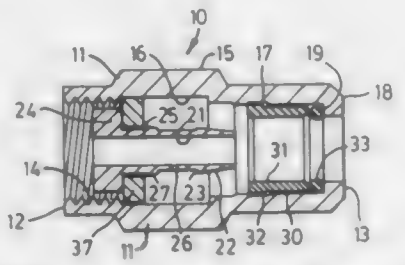
CRIMPLESS COAXIAL CABLE CONNECTOR WITH PULL BACK CABLE ENGAGEMENT

Albert Stirling, Gormley, Canada, assignor to Stirling Connectors Inc., Markham, Canada

Filed Jun. 1, 1990, Ser. No. 532,292

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—578 **12 Claims**



1. A connector for use with a coaxial cable of the type having a core with a central wire conductor and a foil conductor and having a deformable outer insulating jacket, said connector also being for use with a threaded coupling unit, said connector comprising:

a generally cylindrical body open at both ends, having a threaded portion at one end engageable with said coupling unit, and at the other end being adapted to receive said cable;

a rigid bushing with a bore of a diameter to closely receive said cable, mounted within said body proximal to said other end thereof;

an annular mandrel with a bore of a diameter to closely receive said core of said cable, slidably housed within said body proximal to said one end thereof, said mandrel having a sleeve adapted to engage the cable beneath said jacket, contacting said foil, to thereby stretch and increase the outer diameter of the jacket to a diameter greater than the internal diameter of the bushing, the sleeve being engageable with the cable by pushing the mandrel and the cable together,

said mandrel being movable longitudinally within said body from a first position in which the sleeve is not surrounded by the bushing whereby the sleeve may be engaged to the cable, to a second position via an intermediate position in both of which positions the sleeve is at least partially within the bushing whereby the jacket frictionally engages the bushing to retain the cable in the connector the mandrel being displaced to the intermediate position by pulling the cable away from the connector after engagement of the cable with the mandrel, and the mandrel being displaced to the second position by screwing the connector onto the coupling unit.

5,007,862

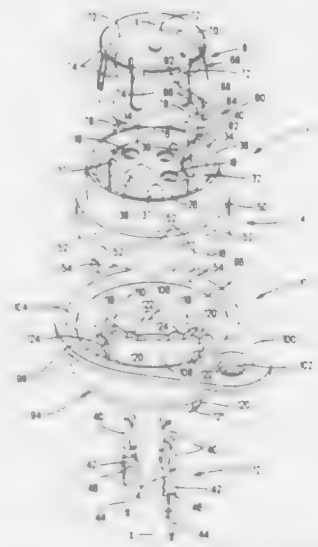
SHIELDED CONNECTOR HAVING A MULTIPLY ORIENTABLE HOUSING

George R. Defibaugh, Mechanicsburg; Earl C. Myers, Jr., Harrisburg, and Steven G. Smith, Linglestown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 15, 1990, Ser. No. 540,678

Int. Cl.[5] H01R *13/648*

U.S. Cl. 439—607 **17 Claims**



1. A circular cross section electrical connector for mounting in a position on a circuit board, the connector comprising,

a dielectric housing having a mating first end face and a second end face opposite thereto, a plurality of electrical terminal receiving cavities each opening into both of said faces and at least one housing orienting lug projecting from said second end face proximate to the radially outer periphery thereof;

an electrical terminal retained in each cavity and having a contact tail projecting from said second end face substantially normally thereof for insertion into a hole in the circuit board and a mating portion extending in the opposite direction to said tail; and

an outer metal shield having a peripheral wall defining a seat for receiving said housing with said second face thereof leading, a rudimentary wall projecting radially inwardly from the peripheral wall and defining a central hole for the passage of said contact tails therethrough, a plurality of openings being distributed in spaced relationship circumferentially of said rudimentary wall, in each of which openings said at least one orienting lug is selective engagable in order- to select the angular orientation of said dielectric housing with respect to said outer metal shield

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5,007,863

MODULE-TYPE MULTI-FUNCTION ELECTRICAL POWER ADAPTER FOR AUTOMOBILES AND THE LIKE

Jialuo Xuan, 914 Sherman Ave., #2F, Evanston, Ill. 60202

Filed Sep. 17, 1990, Ser. No. 583,689

Int. Cl.[5] H01R *25/00*

U.S. Cl. 439—639 **3 Claims**

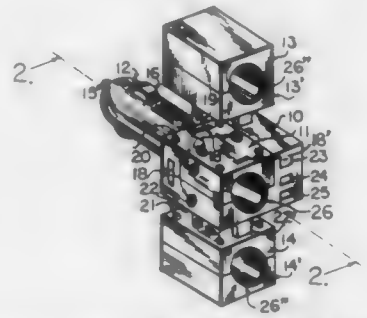
1. A module-type multi-function electrical power adapter, for use with electrical cigarette lighter socket in automobiles and boats, which comprises:

a master module and additional modules, each provides a socket for accommodating one accessory, said master module having cylindrical extender insertable into the cigarette lighter socket and constructed to receive the two-prong power connection; said additional modules able to be attached to the said master module; each additional module also be able to receive another module; and

housing means defining a plastic bottom half portion and a plastic top half portion, both having stepped edges for rigid combination by screws, forming a narrow round slot to hold a cylindrical wall element or socket for both said master module and said additional modules;

insulator means having ring shape to mount on a small end of said wall element to insulate a negative lead from a positive central lead in either said master module or said additional modules;

insulator means having cylindrical shape to insulate the central positive contact from outside negative contact in the said cylindrical extender of the said master module; having an enlarged outside end to hold a negative contact, having a cylindrical inner space to hold said positive contact, spring, electrical fuse, and spacing block;



positioning hole means on sides of the said master module, having rectangular shape to receive positioning pins with correct sizes from said additional module;

positioning pin means on the said additional module being able to match the said positioning holes on the said master module;

receiving ring means on sides of said master module, having side portions being punched inwardly to keep tight tough with inserting power connecting legs from said additional module, having one end to be riveted onto the said master module;

power connecting leg means on said additional module having cylindrical shape and shorter than said positioning pins to ensure correct power connection, having one end to be riveted onto the said additional module;

power lead means having ring-shaped ends to be inserted into a slot on said wall element or put under said power connecting legs or said receiving rings for easy assembly without welding;

inner structure means of the said master module having space for a printed-circuit board mounted by a central screw.

5,007,864

DEVICE FOR ADAPTING A PACEMAKER LEAD TO A PACEMAKER

William H. Stutz, Jr., Burbank, Calif., assignor to Siemens-Pacesetter, Inc., Sylmar, Calif.

Filed Nov. 27, 1989, Ser. No. 441,844

Int. Cl.[5] H01R *25/00*

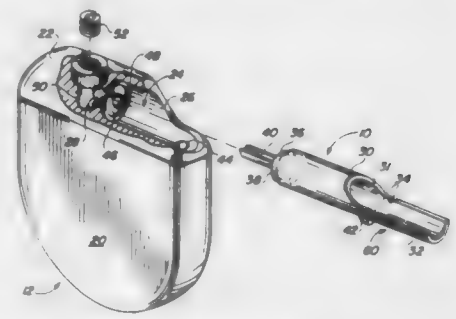
U.S. Cl. 439—651 **28 Claims**

1. An adapter for use in a coping a generally cylindrical terminal electrode assembly to a device having a jack for receiving the assembly, the terminal electrode assembly being undersized relative to the dimensions of the jack, the adapter comprising:

a thin-walled tubular portion defining a hollow bore terminating in an end wall at a distal end thereof and an entry opening at a proximal end thereof, the outer diameter of the tubular portion being selected to match the inner diameter of the jack, the diameter of the tubular portion being selected to match the outer diameter of the terminal electrode assembly;

means for releasably latching the adapter within the jack of the device;

means for releasing the latching means and withdrawing the adapter from the jack, wherein the releasing and withdrawing means is detachable from the adapter; and



wherein the releasing and withdrawing means further comprises:

a tab extending from one side of the tubular portion outwardly past the entry opening; and

means defining a pair of notches located to establish a separation point to facilitate breaking off the tab from the tubular portion.

5,007,865

ELECTRICAL RECEPTACLE TERMINAL

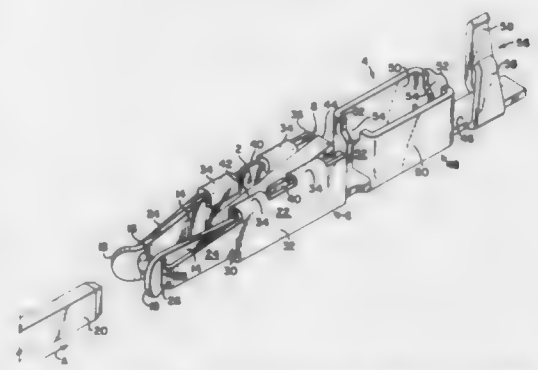
Erich D. Jakobeit, Ruesselsheim, Fed. Rep. of Germany, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 26, 1990, Ser. No. 498,874

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1987, 8713038[U]

Int. Cl.[5] H01R *4/48*

U.S. Cl. 439—839 **5 Claims**



1. A stamped and formed electrical terminal comprising a receptacle portion, a wire connecting portion and a backing spring portion, the receptacle portion comprising a channel shaped body having a base and a pair of side walls upstanding from opposite edges of the base, a pair of cantilever contact springs projecting in juxtaposed relationship, each from a respective side all at one end of the body, each contact spring having a bowed contact surface proximate to its free end, said contact surfaces being bowed towards each other to receive a male contact element between them the wire connecting portion extending from the other end of the body, the backing spring portion comprising a backing spring support secured to the body and from which project a pair of cantilever backing springs resiliently restraining movement of the contact springs away from each other, each backing spring having a free end portion projecting substantially normally thereof and having a

free end engaging the respective contact spring at a position opposite to its contact surface; characterized in that the backing spring support is also channel shaped and receives the body of the receptacle portion, said support having a base superposed with the base of the body and side walls each of which is substantially parallel to a side wall of the body, a pair of flanges projecting from the free longitudinal edge of each side wall of the backing spring support and being spaced from each other longitudinally of said free longitudinal edge and engaging a free edge of a respective side wall of the body from which free edge upstands a lug between said flanges,

a cantilever locking tongue projecting from the base of said body at said one end thereof, obliquely away therefrom and between the side walls of said body and having a free end at the other end of the body, proximate to, but lying above, the free longitudinal edge of said side walls of the body.

5,007,866

TRIMMING/TILTING SYSTEM FOR MARINE PROPULSION UNIT

Ryozo Okita, Hamamatsu, Japan, assignor to Sanshin Industries Co., Ltd., Hamamatsu, Japan

Filed Oct. 4, 1989, Ser. No. 416,865
Claims priority, application Japan, Oct. 4, 1988, 63-250306
Int. Cl.[5] B63H *21/26*
U.S. Cl. 440—61 **9 Claims**



1. A hydraulic tilt and trim system for an outboard drive unit mounted on the transom of a marine vessel for tilting movement of the drive unit and movement between a plurality of trim positions, comprising first and second fluid motors each adapted to effect tilting and trimming movement and each connected to said drive unit and said transom, said fluid motors having cylinder housings and moveable members defining first and second fluid chambers in each fluid motor, a pump for delivering hydraulic fluid to said fluid motors, and a selector valve for effecting quick tilting-up movement of the drive unit by permitting hydraulic fluid to flow to only one of said fluid motors and for effecting slow trimming movement of the drive unit between a plurality of trim positions by permitting hydraulic fluid to flow simultaneously to both of said fluid motors.

5,007,867

WEED RING FOR TROLLING MOTOR

Michael P. Kelley, Broken Arrow, Okla., assignor to Zebco Corporation, Tulsa, Okla.

Filed May 16, 1989, Ser. No. 352,570
Int. Cl.[5] B63H *5/16*
U.S. Cl. 440—71 **12 Claims**

12. An improved trolling motor of the type having a propeller, a housing with axially spaced leading and trailing ends, a shaft carrying the propeller and journalled for rotation in the housing, and means for rotatably driving the shaft and propeller, the improvement comprising:

said housing trailing end having an outer, radially outwardly facing surface and an annular radially inwardly facing surface;

said propeller having a hub with an annular radially outwardly facing outer surface to which a plurality of blades are attached; and

cooperating means on the housing, shaft and propeller for mounting the propeller with respect to the housing so that the radially inwardly facing housing surface is radially outside of, in axially overlapping relationship with, and in close proximity to, the outwardly facing propeller surface,

wherein the cooperating means includes a strip attached to the housing outer surface defining said radially inwardly facing housing surface,

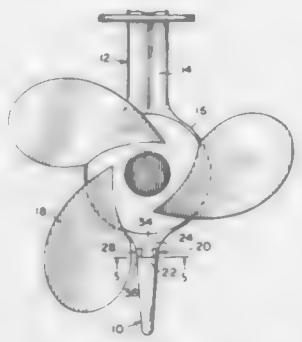
wherein at least portions of the outer surfaces of the housing trailing end and propeller housing are spaced from each other in an axial direction to define a radially opening space and the strip overlaps the radially opening space so that the radially opening space is completely blocked in a radial direction by said strip over substantially the entire circumferential extend of the radially opening space.

5,007,868

REPLACEABLE SKEG FOR A MARINE PROPULSION DEVICE

Trenton Fry, Northland Lodge, Orr, Minn. 55771

Filed Jan. 22, 1990, Ser. No. 468,254
Int. Cl.[5] B63H *5/16*
U.S. Cl. 440—071 **2 Claims**



1. A replaceable skeg for a marine propulsion device of the type having a drive shaft housing, a gear case housing fixed, to the bottom end of the drive shaft housing and rotatably mounted propelling element on the rear end of the gear case housing, said skeg comprising a means for removably connecting the top of said skeg to the lower portion of the gear case housing so that when said skeg is hit by an underwater obstruction, said skeg will fracture at said removable connecting means and break away, leaving the lower portion of the gear case housing intact and undamaged in which another said skeg can be installed thereto,

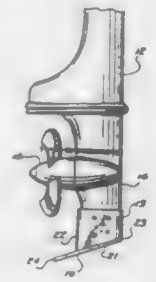
wherein said removable connecting means includes a dovetail tongue and groove joint between the top of said skeg and the lower portion of the gear case housing, and wherein said dovetail tongue and groove joint is tapered, being wider at the leading edge and narrower at the trailing edge of the top of said skeg and the lower portion of the gear case housing to ensure a tight fit for said skeg.

5,007,869

PROP-SAVER (PROPELLER GUARD DEVICE)

Allen W. Zoellner, P.O. Box 283, Topock, Ariz. 86436

Continuation-in-part of Ser. No. 492,960, Mar. 13, 1990, abandoned. This application Jul. 19, 1990, Ser. No. 555,373
Int. Cl.[5] B63H *5/16*
U.S. Cl. 440—71 **3 Claims**



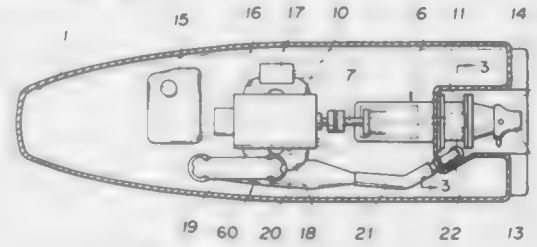
1. A propeller guard for mounting on the lowermost portion of a skeg of a marine drive having propeller blades, said guard comprising an oval shaped sleeve with a vertical longitudinal axis, a top and a bottom, said top being open as to allow the sleeve to be slipped over said skeg, said guard further comprising a generally flat fin attached to and closing said bottom of said sleeve, with said fin having an angle of pitch of 3 to 5 degrees to said vertical longitudinal axis of said sleeve and extending downward and rearwardly, said fin having a trailing edge at least as wide as the circumference of the rotational path of said propeller blades and said guard further comprising means for readily attaching and detaching said sleeve to said skeg.

5,007,870

JET PROPULSION CRAFT PROVIDED WITH EXHAUST NOISE ELIMINATING APPARATUS

Susumu Okubo, and Yutaka Sasaki, both of Hamamatsu, Japan, assignors to Suzuki Jidosha Kogyo Kabushiki Kaisha, Kamimura, Japan

Filed Jun. 21, 1989, Ser. No. 369,174
Claims priority, application Japan, Jul. 6, 1988, 63-166933
Int. Cl.[5] B63H *21/32*
U.S. Cl. 440—89 **15 Claims**



1. A jet propulsion craft for propulsion upon a water surface, comprising:

a hull structure generally comprising a bottom plate and an upper plate;

an engine mounted upon said bottom plate at substantially a middle portion of said hull structure as considered in the longitudinal direction thereof, said engine being provided with an exhaust port;

an exhaust system extending rearwardly from said engine and provided with an inlet end and an outlet end, said inlet end being operatively connected to said engine exhaust port;

a jet pump mounted upon said bottom plate at a rear portion of said hull structure and driven by said engine, said jet pump being adapted to ingest water and to exhaust said ingested water outwardly as a water jet from a jet nozzle for propelling said jet propulsion craft with respect to said water surface;

an exhaust gas noise eliminating means operatively connected to said outlet end of said exhaust system and mounted upon a rear portion of said hull within the vicinity of said jet nozzle for eliminating said exhaust gas noise; and

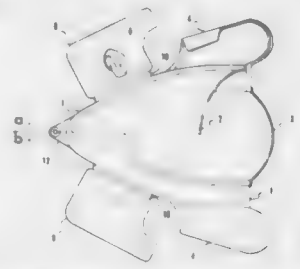
an exhaust gas discharging port operatively connected to said exhaust gas noise eliminating means for discharging said exhaust gas at reduced noise levels.

5,007,871

DIVE-PLANE

William R. Dyer, 4517 126th St. SE., Everett, Wash. 98208

Filed Jul. 31, 1989, Ser. No. 387,588
Int. Cl.[5] A63C *15/00*
U.S. Cl. 441—65 **7 Claims**



1. An aquatic dive plane device for under water search and exploration, comprising:

(a) a body of buoyant plastic material to float said dive plane device, said body being shaped such that it has a generally pointed, closed front end and rearwardly extending, spaced apart side portions having both inside and outside edges, said side portions being of predetermined length and defining an open operator area therebetween and rearwardly of said front end,

(b) arm support means attached to each of said side portions on the outside edge thereof,

(c) a wing member made of buoyant plastic material affixed to the outer edge of each side portion forwardly of said arm support means, said wing members having top and bottom surfaces and being affixed along said outer edge by hinge means for limited up and down movement,

(d) handle means detachable secured to the top surface of each of said wing members to be grasped by the operator for control of said wing members and said dive plane device and

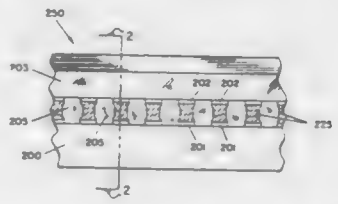
(e) Upper an lower semi-parabolic transparent fairing means removably attached to said body.

5,007,872

SCREENED INTERCONNECT SYSTEM

Sang T. Tang, Pomona, Calif., assignor to Babcock Display Products, Inc., Anaheim, Calif.

Filed Jun. 12, 1989, Ser. No. 364,629
Int. Cl.[5] H01J *9/00*
U.S. Cl. 445—25 **15 Claims**



1. An interconnect system for electrically interconnecting electrical conductors on parallel plates comprising,

first and second planar plates of substantially electrically non-conducting material,

a plurality of closely spaced conductor paths on a surface of each of said first and second planar plates,

said conductor paths are on the order of 0.5 mm wide with spacing on the order of 0.5 mm therebetween,

said first and second planar plates arranged in parallel, spaced apart relation with the plurality of conductor paths on said first planar plate in alignment with the plurality of conductor paths on said second planar plate, and

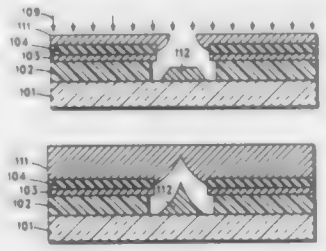
independent and unsupported interconnections formed of a conductive material having substantially the same thermal coefficiently of thermal expansion as said first and second planar plates and joined to the aligned conductor paths on said first and second planar plates in order to electrically interconnect said aligned conductor paths.

5,007,873

NON-PLANAR FIELD EMISSION DEVICE HAVING AN EMITTER FORMED WITH A SUBSTANTIALLY NORMAL VAPOR DEPOSITION PROCESS

Herbert Goronkin, Scottsdale, Ariz., and Robert C. Kane, Woodstock, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 9, 1990, Ser. No. 477,694
Int. Cl.[5] H01J *9/02*
U.S. Cl. 445—49 **20 Claims**



1. A method of forming a substantially non-planar cold-cathode field emission device, comprising the steps of:

(a) providing a body having a cavity formed therein;

(b) forming an emitter within the cavity through use only of a substantially, but not absolutely, normal encapsulated by build up of material deposited onto the body at the edge of the cavity through said substantially normal vapor deposition process.

5,007,874

METHOD OF MAKING A CATHODE FROM TUNGSTEN AND IRIDIUM POWDERS USING A REACTION PRODUCT FROM REACTING A GROUP III A METAL WITH BARIUM PEROXIDE AS AN IMPREGNANT

Louis E. Branovich, Howell; Donald W. Eckart, Wall; Bernard Smith, Ocean, and Gerard Freeman, Freehold, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 15, 1990, Ser. No. 597,637
Int. Cl.[5] H01J *9/04*
U.S. Cl. 445—50 **9 Claims**

1. Method of making a cathode for operation in microwave devices from tungsten and iridium powders using a reaction product formed from reacting a Group III A metal powder with barium peroxide powder in the mole ratio of 2 to 3 as an impregnant, said method including the steps of

(A) mixing the tungsten and iridium powders,

(B) adding about 2 percent by weight of an activator to the mixture,

(C) ball milling the mixture for about 8 hours,

(D) pressing the ball milled mixture into a billet at about 48,000 psi in a die,

(E) sintering the billet at about 1800° C. for about thirty minutes in dry hydrogen of less than −100 dewpoint,

(F) backfilling the billet with copper in dry hydrogen at about 1500° C.,

(G) machining the billet to the desired geometry,

(H) removing the copper by etching in nitric acid,

(I) thoroughly rinsing in deionized water, methanol and then drying,

(J) firing the billet in dry hydrogen at about 140° C for about 15 minutes,

(K) impregnating the billet with reaction product formed from reacting a Group III A metal powder with barium peroxide powder in the mole ratio of 2 to 3 by firing the billet in a dry hydrogen furnace at a temperature at which the impregnant melts for about two minutes,

(L) removing the billet from the furnace after the furnace is cooled, and

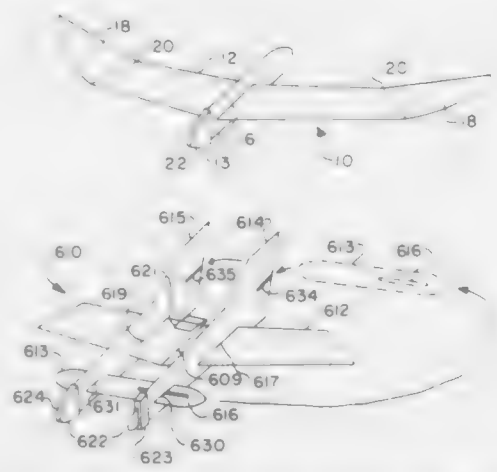
(M) removing any loose pieces of impregnant from the billet

5,007,875

MULTIPLE CONFIGURATION MODEL AIRCRAFT

Madhava Dasa, P.O. Box 461, Kula, Hi. 96790-0461

Filed Oct. 2, 1987, Ser. No. 103,954
Int. Cl.[5] A63H *27/18*
U.S. Cl. 446—66 **4 Claims**



1. A model aircraft kit including constituent parts which are adapted to be assembled together in connected relation in differing model aircraft configurations providing correspondingly different model aircraft appearances and aerodynamic characteristics, comprising:

a wing panel having a longitudinal center line and and left and right wing portions symmetrical about the centerline,

a first planar member of elongate configuration having a slot therein extending in the direction of elongation, said wing panel being insertable into said slot of said first planar member in the first configuration of the model aircraft, and

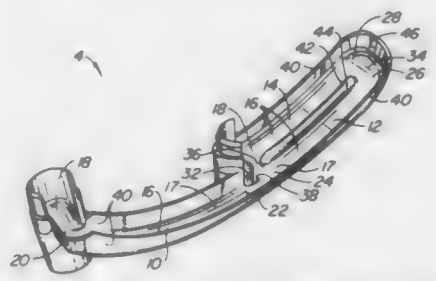
at least one second planar member having an elongate body portion, a first end portion at one end of said body portion and a second, enlarged end portion at the opposite end of said body portion, said second planar member also having a first slot in said body portion thereof extending in the direction of elongation and of such length in said body portion thereof extending in the direction of elongation and of such length as to receive said wing panel, and a third slot in said second end portion, said wing panel being insertable into said second slot in the second and third configurations of the model aircraft and said first planar member being insertable into said first slot in the second configuration thereof and into said third slot in the third configuration thereof.

5,007,876

BANKED HAIRPIN MARBLE RACE TOY

Daniel B. Klitsner, San Francisco, Calif., assignor to Discovery Toys, Inc., Martinez, Calif.

Filed Jul. 1, 1988, Ser. No. 214,243
Int. Cl.[5] A63H *29/08*; A63F *9/14*
U.S. Cl. 446—168 **20 Claims**



1. A marble race toy for use with a marble race game of the type in which a marble moves along a tortuous path comprising:

a marble track having an entrance and an exit;

the track including a first portion, having first and second ends, sloping downwardly from the entrance, a second portion, having third and fourth ends, sloping upwardly from the second end, a third portion, having fifth and sixth ends, sloping downwardly from the fourth end, and a U-shaped track portion, coupling the fourth and fifth ends, which generally reverses the direction of the marble;

the first end being adjacent the entrance;

the sixth end being adjacent the exit;

the first and second portions forming a smoothly curving track portion together defining a vertically oriented flat plane;

the second and third portions being juxtaposed, generally parallel to one another, and having a common wall therebetween dividing the second and third portions;

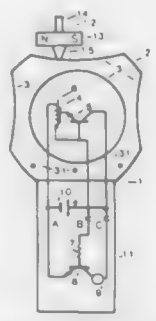
the first, second, third, fourth, fifth and sixth ends being at first through sixth elevations, the first elevation being above the fourth and fifth elevations which are above the second, third and sixth elevations.

5,007,877

NOVELTY MAGNETIC TOP

Thomas A. Watson, 2358 Workman St., Montreal, Quebec, Canada H3J 1L6

Filed Jan. 16, 1990, Ser. No. 468,131
Int. Cl.[5] A63H *1/02*
U.S. Cl. 446—242 **9 Claims**



1. A novelty magnetic toy having a stator coil and an electric circuit, a magnetic top, supporting means for the top in close proximity to and externally of the coil for supporting the top for rotation relative to and external of the coil, a source of electric potential in the electric circuit and means in the electric circuit operable by the coil current induced by rotation of the magnetic top for momentarily connecting the source of electric potential across the coil to momentarily impose a magnetic field on the magnetic top to accelerate rotation thereof, the supporting means mounted externally on a head which contains the coil, a shank connected to the head, wherein the shank is arranged to form a handle.

5,007,878

PROCESS FOR CALIBRATION OF STANDARDIZATION OF NATURAL INTESTINES

Peter A. Klöpping, An der Alster 3, D-2000 Hamburg 1, Fed. Rep. of Germany

Filed Dec. 4, 1989, Ser. No. 444,874
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1988, 3841808
Int. Cl.[5] A22C *11/00*
U.S. Cl. 452—198 **5 Claims**

1. A process for the calibration or standardization of natural intestines for use as skins for foods and the like, comprising:

placing the natural intestines around a carrier having a desired caliber; and

subjecting the natural intestines to a microwave field.

5,007,879

DOG CHEW PROCESSING METHOD

Richard L. Lawson, 3272 N. Greenwood, Sanger, Calif. 93657

Continuation of Ser. No. 443,457, Nov. 29, 1989, Pat. No. 4,985,964. This application Oct. 12, 1990, Ser. No. 596,276
Int. Cl.[5] A22C *17/00*
U.S. Cl. 452—198 **9 Claims**



1. A method for processing a hoof for use as a pet chew, the hoof having a bottom and an upper edge, comprising the following steps:

cleaning the hoof;

removing a portion of the bottom of the hoof, the portion having a thickness; and

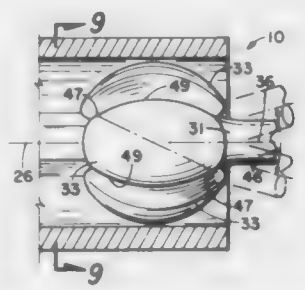
limiting the thickness of said portion so as not to create a hole in the bottom of the hoof.

5,007,880

BEVEL SPLINED ARTICULATED JOINT

Stanley L. Walker, Rte. 4, Box 13, Eureka Springs, Ark. 72632

Filed May 9, 1990, Ser. No. 521,231
Int. Cl.[5] F16D *3/18*
U.S. Cl. 464—159 **8 Claims**



1. A joint articulable to a maximum predetermined angle ϕ comprising:

a cylindrical socket having a major inner diameter complimentary to a predetermined diameter 'd' and a preselected number 'n', at least three, longitudinal internal splines

integrally and uniformly extending inwardly from said major diameter and centered on planes cyclically angularly disposed through a longitudinal axis of said socket;

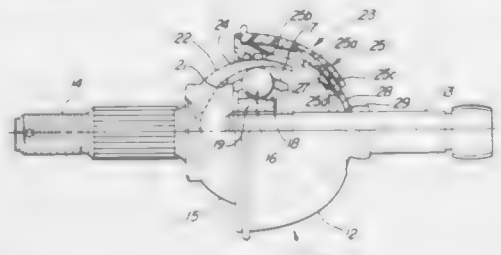
a ball having a preselected number 'n', at least three, of external splines integrally outwardly extending from said ball, said splines being centered on planes cyclically angularly disposed through a longitudinal axis of said ball and having an exterior surface defined by rotation of a circular arc about said ball axis, said arc having a radius 'r_{spline}' $= d(1 - \text{Tan } \phi/2)$ and said arc point of origin being spaced from said axis by a distance 'x_{spline}' $= d(0.50 - \text{Tan } \phi/2)$, said external splines having exterior edges, said exterior edges of adjacent external splines being spaced at a constant distance and said external splines being meshably insertable between said internal splines when said ball and socket longitudinal axes are aligned.

5,007,881

MULTI-COMPONENT, MULTI-SEGMENT, NON-FLEXIBLE BOOT FOR MECHANICAL JOINT

Daniel W. Hazebrook, Detroit, Mich., assignor to GKN Automotive, Inc., Auburn Hills, Mich.

Filed Feb. 24, 1986, Ser. No. 832,865
Int. Cl.[5] F16D *3/84*
U.S. Cl. 464—171 **4 Claims**



1. A boot for sealing a power transmitting mechanical joint, said joint comprising an input shaft, an output shaft, an outer race connected to one of said input shaft and said output shaft, and means to transmit power from the other of said input shaft and output shaft to said outer race, said outer race having a spherical outer surface, said input shaft and said output shaft being subject to articulation relative to one another during the operation of said mechanical joint, said boot comprising:

a first boot segment formed by at least two separate concentrically mounted components, at least one of said at least two concentrically mounted components being an inner component, at least one other of said at least two concentrically mounted components being an outer component, said outer component being formed from a first semi-rigid material, said inner component being formed from a second semi-rigid material, said first semi-rigid material having a hardness greater than said second semi-rigid material, said inner component being mounted to said spherical outer surface of said outer race, said inner component further surrounding and sealing engaging a portion of said spherical outer surface of said outer race, said outer component having a first portion mounted contiguous said inner component and a second portion spaced a predetermined distance from said inner component to define a spherical groove therebetween, said spherical groove facing one of said input shaft and said output shaft, said first portion being capable of articulating with respect to said outer race without the loss of the sealing relationship therewith; and

a second boot segment formed from a semi-rigid material, said second boot segment having one end portion extended into said spherical groove defined by said inner and outer component of said first boot segment, said second boot segment further having an opposite end portion sealingly engaging the other of said input shaft and said output shaft, said one end portion further being sealing and slidingly received in said spherical groove of said first boot segment and being sealingly articulatable with respect to said first boot segment, said second boot segment together with said first boot segment, sealing the power transmitting mechanical joint between said outer race and the other of said input shaft and said output shaft to retain lubricant within said joint and to prevent dirt and other contaminants from entering said joint;

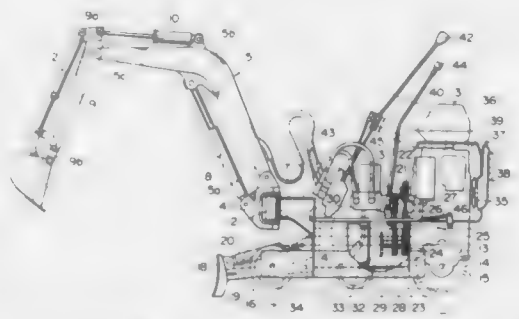
said spherical groove in said first boot segment having a predetermined length so that the articulation of said second boot segment with respect to said first boot segment causes said one end portion of said second boot segment to bottom in said spherical groove in said first boot segment, said boot being capable of further articulation by the articulation of said first boot segment with respect to said outer race of said power transmitting mechanical joint after said one end portion of said second boot segment bottoms in said spherical groove in said first boot segment.

5,007,882

BELT TRANSMISSION FOR VERY SMALL SIZE SHOVEL CAR

Takeshi Mizumoto, and Yoshiaki Murakami, both of Ehime, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jul. 23, 1990, Ser. No. 555,650
Claims priority, application Japan, Aug. 7, 1989, 1-204167
Int. Cl.[5] F16H *7/00, 7/08*
U.S. Cl. 474—84 **2 Claims**



1. A belt transmission for a very small size shovel car which includes an engine, a transmission case connected to said engine by way of said belt transmission for driving said shovel car to run, and a hydraulic pump for operating a working boom, comprising a first pulley mounted on an output shaft of said engine, a second pulley mounted on an input shaft of said transmission case, a first belt extending between and around said first and second pulleys, a belt tension clutch movable to and from an operative position in which it engages with said first belt to cause said first belt to transmit power from said first pulley to said second pulley, a third pulley also mounted on said input shaft of said transmission case, a fourth pulley mounted on an input shaft of said hydraulic pump, and a second belt extending between and around said third and fourth pulleys.

5,007,883

CHAIN-BELT

Edward H. Cole, Jr., Ithaca, and John D. Bilynsky, Auburn, both of N.Y., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Mar. 20, 1990, Ser. No. 496,833
Int. Cl.[5] F16G *5/16*
U.S. Cl. 474—242 **13 Claims**

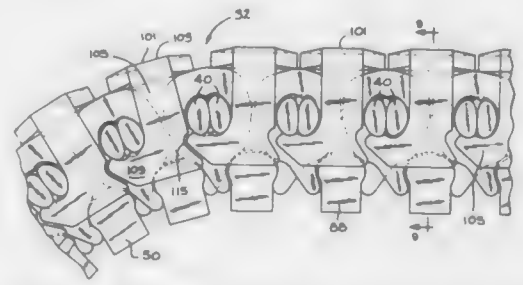
1. A power transmission (**10**) chain-belt (**32**) especially adaptable for connecting the pulleys (**12, 14**) of a pulley transmission (**10**) comprising:

a plurality of interleaved sets (**34**) of links (**36**), each set (**34**) having a plurality of transversely arranged links (**36**);

pivot means (**40**) joining said adjacent sets (**34**) of links (**36**) to form an endless loop;

at least one toe (**42A, 42B**) extending from each link (**36**) in at least some sets (**34**) of links (**36**), at least said toes (**42A, 42B**) on adjacent links (**36**) being in opposed relationship and said toes (**42A, 42B**) defining a passageway (**80**);

a plurality of load blocks (**50**) connected to said links (**36**), said load blocks (**50**) being positioned in said passageway (**80**) defined by said toes (**42A, 42B**), each load block (**50**) having edge surfaces (**88**) for contacting said pulleys (**12, 14**) of said transmission (**10**), and



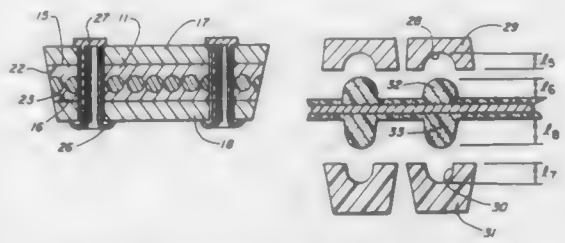
a retainer bracket (**101**) positioned on each sets (**34**) of links (**36**), said retainer bracket (**101**) having a first section (**103**) that extends across the side of said links (**36**) that is in spaced apart, opposed relationship to said passageway (**80**) and a second section (**105**) that extends along the sides of said links (**36**), said retainer bracket (**101**) being held in place on said links (**36**) by said pivot means (**40**), said retainer bracket (**10**) contacting said ends of said load block (**50**) to restrain said load block (**50**) from movement transverse to the direction of travel of said chain-belt (**32**).

5,007,884

BELT FOR HIGH LOAD TRANSMISSION

Takashi Masuda; Kengiro Hashimoto, both of Kobe; Shinichi Takagi, Nishinomiya, and Masayuki Tanaka, Kobe, all of Japan, assignors to Mitsuboshi Belting Ltd., Japan

Division of Ser. No. 235,162, Aug. 23, 1988. This application Jan. 9, 1990, Ser. No. 462,611
Claims priority, application Japan, Sep. 1, 1987, 62-133862
Int. Cl.[5] F16G *5/16, 1/22*
U.S. Cl. 474—242 **15 Claims**



1. In a power transmission belt for transmitting high loads, said belt including:

an elastomeric neutral belt defining an outer flat surface and an inner flat surface, said belt including longitudinally spaced outer and inner aligned projections having heights;

a tensile cord extending longitudinally in said neutral belt;

a plurality of pairs of aligned longitudinally, equally spaced first and second blocks adjacent said outer and inner surfaces respectively of said neutral belt, at least one of said blocks being provided with a recess for receiving one of said projections having a depth different than the height of said projection and surfaces for contacting a neutral belt flat surface, said blocks having an outer portion comprising thermoset synthetic resin material having friction-reducing fibers distributed therein; and

means for securing said blocks to said neutral belt, said securing means extending through said neutral belt and the aligned blocks to said outer and inner surfaces, said securing means comprising means for causing said surfaces of said one block to be compressed against a neutral belt flat surface,

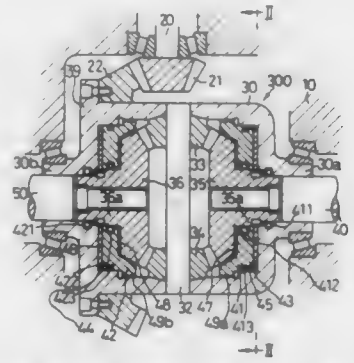
whereby said belt flat surface and said surfaces of one said block are in clamped, high friction engagement.

5,007,885

DRIVING TORQUE TRANSMITTING DEVICE

Masaji Yamamoto; Shigeo Tanooka, both of Okazaki, and Toshifumi Sakai, Aichi, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 227,806, Aug. 3, 1988, abandoned. This application Dec. 19, 1989, Ser. No. 453,190
Claims priority, application Japan, Aug. 3, 1987, 62-193908; Aug. 19, 1987, 62-205550
The portion of the term of this patent subsequent to Mar. 6, 2007, has been disclaimed.
Int. Cl.[5] F16H *1/44*
U.S. Cl. 475—231 **5 Claims**



1. A driving torque transmitting device for transmitting driving torque from a driving torque supply to two output shafts connected to wheels, comprising:

an input shaft rotatably supported on a housing to be rotated by said driving torque supply and provided with an input gear at its one end;

a cylindrical case body supported within said housing so as to be rotatable about a rotational axis perpendicular to the rotational axis of said input shaft and provided on its outer periphery with a ring gear meshing said input gear each other so as to be rotated;

two output shafts arranged to be rotatable about an axis coinciding with said rotational axis of said cylindrical case body, each end of said two output shafts penetrating end walls of said case body;

two first engaging members each provided on an outer surface of said ends of said output shafts so as to be rotatable with and axially slidable relative to said output shafts;

two second engaging members provided within said case body in contact with each of said first engaging members;

two piston members each provided on an outer surface of said ends of said output shafts in contact with respective first engaging members so as to form two closed actuating chambers charged with viscous fluid together with two radially extending walls formed integrally with said case body; said piston members being rotatable with and axially slidable relative to said case body; and

two blade members each being rotatable bodily with each of said output shafts and disposed within each of said closed actuating chambers in relative slidable contact relation

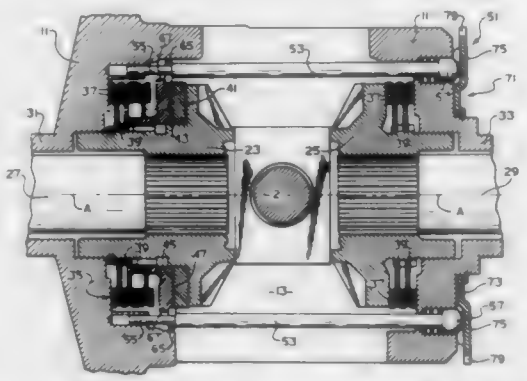
with said piston members, each of said blade members having an axial width which is narrower in an axial direction than said closed actuating chambers so that upon rotation of each of said blade members respectively with said closed actuating chambers, a high pressure is generated due to said viscous fluid being compulsorily moved between two respective surfaces defining respectively said closed actuating chambers, so as to axially respectively move said piston members respectively toward said first engaging members and so as to tightly respectively engage the same with said second engaging members for torque transmission between respective output shafts and said case body, wherein each of said blade members includes at least two radially extending blade portions which are formed to provide a circumferential space section between every two blade portions of said at least two radially extending blade portions so as that a large volume of said viscous fluid is filled within said circumferential space sections.

5,007,886

LIMITED SLIP DIFFERENTIAL

Ralph E. Helmquist, Battle Creek, and David A. Janson, Plymouth, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 26, 1989, Ser. No. 457,072
Int. Cl.[5] F16H *1/44*
U.S. Cl. 475—231 16 Claims



1. A differential gear mechanism of the type including a gear case defining an axis of rotation and a gear chamber; differential gear means disposed in said gear chamber including at least one input gear and first and second output gears; means for limiting differentiating action of said differential gear means in response to an input signal, said limiting means including clutch means operable between an engaged condition, effective to retard relative rotation between said gear case and said output gears, and a disengaged condition; said limiting means further including cam means operatively associated with said clutch means, and including first and second cam members, said second cam member being axially movable relative to said first cam member in response to relative rotation therebetween away from a neutral position, to effect said engaged condition of said clutch means; and an elongated actuation member being mounted for movement relative to said gear case and operable to be in engagement with said second cam member; characterized by:

(a) said elongated actuation member being supported by said gear case at two axially spaced-apart locations disposed on axially opposite sides of said input gear, and including a terminal portion extending through said gear case to the exterior thereof;

(b) said elongated actuation member being axially movable relative to said gear case, and including means biasing said actuation member toward a normally disengaged condition in which said first and second cam members remain in said neutral position;

(c) said actuation means further including means operable in response to said input signal to engage said actuation member and cause axial movement thereof, in opposition to the force of said biasing means; and

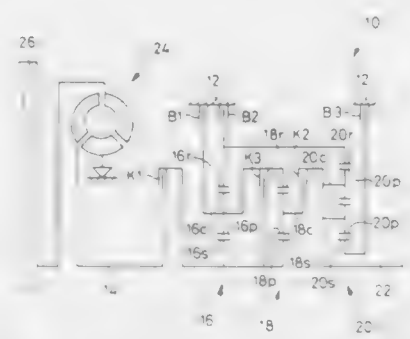
(d) said elongated actuation member being operably engaged with said second cam member, such that axial movement of said actuation member results in axial movement of said second cam member, relative to said first cam member, away from said neutral position.

5,007,887

PLANETARY GEAR TRANSMISSION FOR MOTOR VEHICLE

Toshiyuki Asada, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Nov. 17, 1989, Ser. No. 437,838
Claims priority, application Japan, Nov. 21, 1988, 63-294158
Int. Cl.[5] F16H *57/10*
U.S. Cl. 45—[illegible] 24 Claims



1. A planetary gear transmission for a motor vehicle, including an input member, an output member, a first single-pinion type planetary gear unit having a first sun gear, a first planetary gear meshing with the first sun gear, a first ring gear meshing with the first planetary gear and a first carrier rotatably supporting the first planetary gear, a second single-pinion type planetary gear unit having a second sun gear, a second planetary gear meshing with the second sun gear, a second ring gear meshing with the second planetary gear and a second carrier rotatably supporting the second planetary gear, and a third double-pinion type planetary gear unit having a third sun gear, at least one pair of third planetary gears which mesh with each other and one of which meshes with the third sun gear, a third ring gear meshing with the other of said at least one pair of third planetary gears, and a third carrier rotatably supporting said at least one pair of third planetary gears, said first, second and third planetary gear units being disposed coaxially with each other in the order of description, for transmitting power from said input member to said output member, at a selected one of different speed reduction ratios, wherein the improvement comprises:

said first and second sun gears being associated with each other by one of fixing means for fixing said first and second sun gears to each other, and a coupling device by which said first and second sun gears are connectable to each other;

said first carrier and said second ring gear being associated with each other by one of fixing means for fixing said first carrier and said second ring gear, and a coupling device by which said first carrier and said second ring gear are connectable to each other,

said first and third ring gears being associated with each other by one of fixing means for fixing said first and third ring gears to each other, and a coupling device by which said first and third ring gears are connectable to each other; and

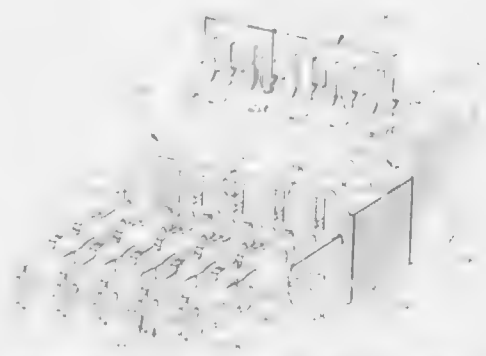
said second and third carriers being associated with each other by one of fixing means for fixing said second and third carriers to each other, and a coupling device by which said second and third carriers are connectable to each other.

5,007,888

ELECTRICAL INTERCONNECTION ASSEMBLY

Alain Goutiere, Cergy Saint Christophe, France, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 13, 1990, Ser. No. 493,027
Claims priority, application France, Mar. 13, 1989, 89 03251
Int. Cl.[5] H01R *29/00*
U.S. Cl. 439—189 2 Claims



1. An electrical interconnection assembly comprising a housing having an array of electrical contact members therein, said contacts arranged for exposure to opposed openings in said housing, whereby electrical connection may be made therewith, where said contacts are elongated members having male tabs at each end thereof and disposed in parallel relationship within said housing, and including means for electrically engaging certain adjacent elongated contact members, characterized in that said means comprise a plurality of laterally disposed planar members accessible to said array of contact members through a lateral slot in a wall of said housing, and that each said planar member includes a slot for slidably receiving one elongated member, and means adapted to engage a wall of said housing to secure said elongated contact members from premature withdrawal from said housing.

5,007,889

APPARATUS FOR FEEDING CONTAINER BLANKS TO CONTAINER BOTTOM FORMING MANDREL

Shigeru Wakabayashi; Masao Shimokawa, and Masaki Takahashi, all of Tokushima, Japan, assignors to Shikoku Kakoki Co., Ltd., Tokushima, Japan

Filed Dec. 27, 1989, Ser. No. 457,651
Claims priority, application Japan, Dec. 28, 1988, 63-170924[U]
Int. Cl.[5] B31B *5/06, 3/78*
U.S. Cl. 493—316 6 Claims



1. An apparatus for feeding blanks to a forming mandrel, each of the blanks having first to fourth four side wall panels divided by scores and joined to one another endlessly, the blank being folded to a flat form along the score between the first side wall panel and the second side wall panel and along the score between the third side wall panel and the fourth side wall panel so as to be unfoldable into a tube of rectangular to square cross section, the apparatus being adapted to unfold each blank to the tubular form and feed the tubular blank to the forming mandrel at rest at a feed station, the apparatus comprising:

a magazine having a delivery opening at one end thereof for accommodating a multiplicity of vertical flat blanks as arranged side by side from said one end toward the other end of the magazine, with the second and third side wall panels directed toward the delivery opening and with the second side wall panel positioned under the third side wall panel, the delivery opening being positioned at one side of an extension of the axis of the mandrel obliquely thereabove,

transport means for delivering the blanks from the delivery opening one by one and transporting each blank to a position on the extension of axis of the mandrel, the transport means having transport arms and a suction member for holding the second side wall panel of the blank thereto by suction, the suction member being attached to the forward ends of transport arms, the transport arms being fixed at their base ends to a first rotatable shaft from moving said arms disposed below the magazine and extending in parallel to the extension of axis of the mandrel,

means for unfolding the blank from the flat form to the tubular form by forming a fold in the opposed flat portions of the blank while the blank is being transported by the transport means, the unfolding means having an unfolding arm, the unfolding arm being fixed at its base portion to a second rotatable shaft for moving said arm extending in parallel to the first rotatable shaft, the second rotatable shaft being disposed on opposite side to the first rotatable shaft with respect to the path of movement of the second side wall panel of the blank held to the suction member so as to render the forward end of the unfolding arm movable into and out of the path of movement,

a holder for holding the tubular blank on the extension of axis of the mandrel in alignment therewith movably along the extension, and

a transfer assembly for transferring the blank from the holder to the mandrel.

5,007,890

WEB PLOW FOLDING

Ronald W. Alverth, Warrenville; Thomas H. Schumacher, Downers Grove, and Thaddeus M. Przybylowski, Worth, all of Ill., assignors to WPC Machinery Corporation, Downers Grove, Ill.

Continuation of Ser. No. 224,115, Jul. 25, 1988, abandoned. This application Dec. 6, 1989, Ser. No. 446,977
Int. Cl.[5] B65H *45/16*
U.S. Cl. 493—434 16 Claims

1. Apparatus for folding an elongated flexible web material having a path of travel there-through generally in the lengthwise direction of the apparatus, the web having a width that includes a main unfolded portion and a folded side portion after having passed through the apparatus, said apparatus comprising:

a frame,

entrance and exit rollers supported from said frame transversely of said path,

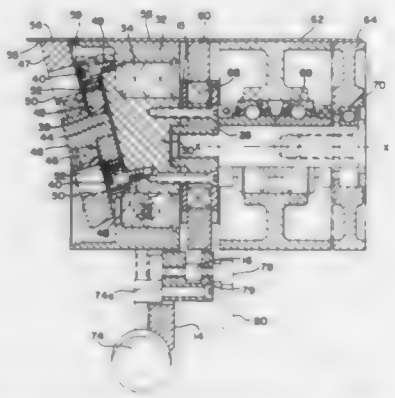
a plow folder assembly supported on the frame intermediate of said entrance and exit rollers and cooperative therewith to effect longitudinal folding of one side portion of said web material as it is moved along said lengthwise path from said entrance to said exit rollers, said plow folder assembly being in contact with the web material at an elevation that is generally different from the elevation of

said entrance and exit rollers, said plow folder assembly comprising:

a support means for attaching said plow folder assembly to said frame;

a generally hollow cylindrical roller means having an axis of rotation and being supported for rotation by said support means, said cylindrical roller means extending transversely relative to the lengthwise direction of the apparatus, the roller means presenting an arcuate portion of its periphery which provides a support surface for the main unfolded portion of the web material, said roller means having a predetermined diameter and having a hollow recess for receiving a portion of a rotatable plow folder member;

a plow folder means being attached to said support means adjacent said cylindrical roller means, said plow folder means having a frusto-conical peripheral outer portion rotatable about an axis of rotation and said outer portion having an outer diameter smaller than the inside diameter



of said recess of said cylindrical roller means so that said plow folder means at least partially fits within said recess of said cylindrical roller means, said frusto-conical peripheral outer portion being adapted to contact the web material along an arcuate angle and provide a relatively sharp edge for initiating the formation of a fold in the web material, said plow folder means being oriented relative to said cylindrical roller means such that the portion of said frusto-conical peripheral outer surface along said arcuate angle which is adapted to contact the web material is generally coextensive with the outer surface of said arcuate portion of the periphery of said cylindrical roller means so as to present a substantially uninterrupted support for the web material;

means for adjusting the angular orientation of said plow folder means generally around the axis of rotation of said cylindrical roller means to thereby adjust the angular orientation of said arcuate angle of said plow folder means and of said cylindrical roller means which contacts the web material.

5,007,891

DEVICE FOR PRODUCING AN ADDITIONAL FOLD IN FOLDING DEVICES OF ROTARY PRINTING PRESSES

Eduard von Hein, Bern, Switzerland, assignor to Maschinenfabrik Wifag, Bern, Switzerland

Filed Oct. 25, 1989, Ser. No. 427,463

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1988, 3836342

Int. Cl.[5] **B65H** *45/16*

U.S. Cl. 493—444 **7 Claims**

1. A print copy folding device arrangement, comprising:

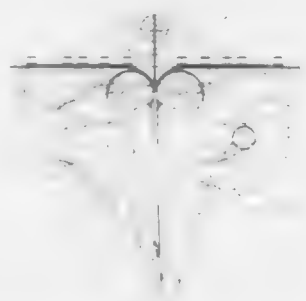
folding blade means;

first folding roller;

a second folding roller, said second folding roller rotating in a direction opposite to the direction of rotation of said first folding roller, said first folding roller and said second folding roller each having a central rotational axis and being driven in cadence with print copies, said first folding roller including a peripheral surface divided into three peripheral area segments sequentially arranged around the circumference of said first folding roller, including

a first peripheral area having a surface extending about a first circumferential portion of said first roller,

a second peripheral area including a recessed peripheral surface, said recessed peripheral surface being disposed



radially inwardly with respect to said surface of said first peripheral area and having residual peripheral surfaces disposed at each side of said recessed peripheral surface, said residual peripheral surface forming a continuation of said surface of said first peripheral area,

a third peripheral area extending about a third circumferential portion of said first roller, said third peripheral area having a recessed surface; and,

conveyor belt means engaging each of said rollers for removing the folded print copies from the folding zone.

5,007,892

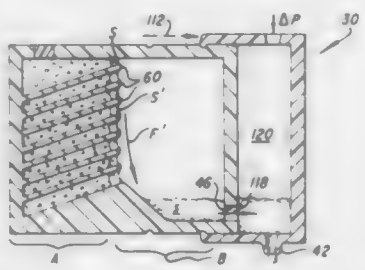
PHASE SEPARATION CONTAINER WITH FIXED MEANS PREVENTING REMIXING

Richard L. Columbus, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.J.

Filed Mar. 20, 1989, Ser. No. 325,725

Int. Cl.[5] **B04B** *11/04*

U.S. Cl. 494—17 **9 Claims**



1. In a centrifuge container for separating two phases of different specific gravities in a liquid by centrifuging the heavier phase away from the lighter phase, said container including a compartment for said liquid defined by opposing walls, and means in said compartment for maintaining said phases in separate regions of the compartment after centrifugation,

the improvement wherein said means comprise fixed maintaining means that will accommodate expected variations in phase volumes, including porous mechanical means for resisting flow of the heavier phase out of its compartment portion in the presence of shear forces occurring when the lighter phase is drawn off, said mechanical means being disposed in said compartment region to be occupied by said heavier phase.

5,007,893

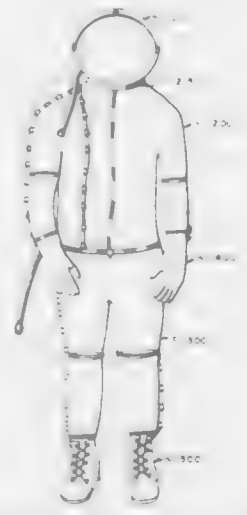
COMBINATION ANTI-G AND PRESSURE SUIT

Roderick J. Row, P.O. Box 923, Destin, Fla. 32541

Filed Mar. 16, 1988, Ser. No. 169,049

Int. Cl.[5] **A62B** *17/00*

U.S. Cl. 600—20 **7 Claims**



1. An anti-G suit adapted to simulate liquid immersion from the neck to the feet of a wearer thereof and capable of providing for both negative and positive protection during vertical accelerations, which comprises:

an inner, air-impervious, elastic suit adapted to fit from the neck to the feet over the body of the wearer;

an outer, air-impervious flexible, non-distensible suit adapted to fit from the neck to the feet over the body of the wearer, said outer suit being joined to said inner suit such that said inner and outer suits define a plurality of air-impervious separate toroidal segments which are adapted to encircle the wearer's body from the neck to the feet, said toroidal segments being stacked one upon another in the vertical direction when said suit is worn in the wearer's normal standing position;

helmet means adapted to be affixed to the neck region of said suit;

collar sealing means for preventing any air from leaking between said helmet means and the space between said helmet means and the body of the wearer in use;

means for introducing respiratory air into said helmet means at a controlled substantially constant pressure regardless of any gross accelerations to which the wearer is subjected;

means for exhausting exhaled air from said helmet means;

means for introducing and removing a pressurized gas into each of said toroidal segments, the pressure of the gas being transmitted during use to the body of the wearer through said inner suit; and

means cooperative with said means for introducing and removing a pressurized gas into said toroidal segments for continuously adjusting the gas pressure in each respective segment during use in accordance with the following equation:

$$P_s = P_r + (Sg \times V \times G)$$

where P_s is the gas pressure in each respective segment, P_r is the pressure of the respiratory air in said helmet, Sg is the gravity gradient of the body fluid of the wearer in use, V is the vertical center height of each respective segment relative to an arbitrary mid-chest location (V_o) at which thoracic external displacement due to respiration will encounter an average external pressure equal to internal respiration pressure, and G is the acceleration of gravity, to match the internal body fluid pressures of the wearer encircled thereby in use resulting from vertical accelerations, thereby providing both positive and negative G protection.

5,007,894

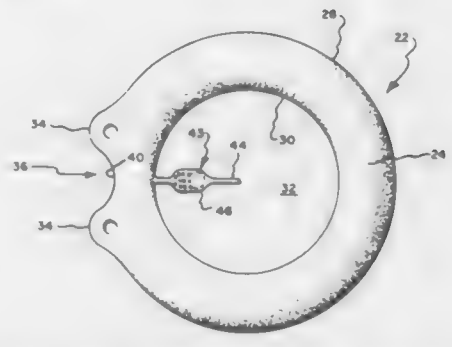
FEMALE INCONTINENCE DEVICE

Goran Enhorning, 21 Oakland Pl., Buffalo, N.Y. 14222

Filed Feb. 10, 1989, Ser. No. 309,383

Int. Cl.[5] **A61F** *2/00*

U.S. Cl. 600—29 **7 Claims**



1. A female incontinence device capable of being removably inserted into the vagina for supporting the tissue of the vaginal wall to each side of the urethra, comprising:

an annular inflatable body section for insertion into the vagina, the body section having an exterior surface capable of contacting the walls of the vagina when inflated so that relative movement of said body section with respect to the vagina is restricted,

said body section including two projections, there being a U-shaped surface between the projections, the projections supporting the superior vaginal tissue on each side of the urethra in such a manner that the tissue therebetween is stretched and can offer counter pressure when intra-abdominal pressure is suddenly raised as occurs during coughing, sneezing, laughing and physical exercise such that the intra-abdominal pressure is transmitted to the upper urethra so that the greatest difference between intra-urethral and simultaneous bladder pressure remains positive regardless of the changes in the intra-abdominal pressure so continence is preserved; and

means for inflating and deflating the body section so that proper support of the superior wall of the vagina is accomplished.

5,007,895

WOUND PACKING INSTRUMENT

George S. Burnett, 935 Gossett Rd., Spartanburg, S.C. 29302

Filed Apr. 5, 1989, Ser. No. 333,338

Int. Cl.[5] **A61F** *13/20*

U.S. Cl. 604—11 **22 Claims**

1. An instrument for placing a material into a wound, comprising:

an elongated shaft being capable of sterilization;

a tip at a distal end of said shaft adapted for atraumatic contact with the wound;

said tip having means for holding a portion of material to be inserted into the wound; and

said means for holding being configured to hold the material during insertion into the wound and permitting release of



the material for withdrawal of the instrument from the wound;

wherein said instrument is of one piece construction

5,007,896

ROTARY-CATHETER FOR ATHERECTOMY

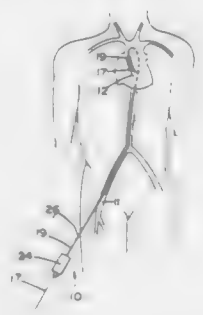
Samuel Shiber, Woburn, Mass., assignor to Surgical Systems & Instruments, Inc., Mundelein, Ill.

Continuation-in-part of Ser. No. 286,509, Dec. 19, 1988, Pat. No. 4,894,051, which is a continuation-in-part of Ser. No. 243,900, Sep. 13, 1988, Pat. No. 4,886,490, which is a continuation-in-part of Ser. No. 78,042, Jul. 27, 1987, Pat. No. 4,819,634, Ser. No. 205,479, Jun. 13, 1988, Pat. No. 4,883,458, and Ser. No. 225,880, Jul. 29, 1988, Pat. No. 4,842,579, said Ser. No. 78,042, is a continuation-in-part of Ser. No. 18,083, Feb. 24, 1987, said Ser. No. 205,479, is a continuation-in-part of Ser. No. 18,083, , said Ser. No. 225,880, is a continuation-in-part of Ser. No. 18,083, , which is a continuation-in-part of Ser. No. 874,546, Jun. 16, 1986, Pat. No. 4,732,154, which is a continuation-in-part of Ser. No. 609,846, May 14, 1984, abandoned. This application Mar. 16, 1989, Ser. No. 324,616

The portion of the term of this patent subsequent to Mar. 22, 2005, has been disclaimed.

Int. Cl.[5] A61B *17/32*

U.S. Cl. 604—22 22 Claims



1. An atherectomy system insertable into a human blood vessel for coring and removing an obstruction therein, comprising in combination:

a flexible guide-wire insertable into said blood vessel,

a flexible rotary-catheter defining continuous passage and being rotatably disposed and slidable over said flexible guide-wire, said flexible rotary-catheter having a proximal and distal ends,

a rotary coring means for cutting and ingesting obstruction material, located at said distal end,

a coupling means for rotating said flexible rotary-catheter around said flexible guide-wire, located at said proximal end,

means for diametricaly stabilizing and means for transmitting torque being incorporated in said flexible rotary-catheter.

5,007,897

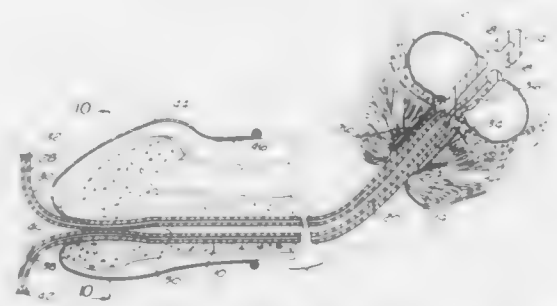
DRUG DELIVERY CATHETER

Irvin M. Kalb, 327 Alta Ave., Santa Monica, Calif. 90402, and Michael J. Ram, 1 Horseshoe Rd., Bell Canyon, Calif. 91307

Filed May 30, 1989, Ser. No. 358,083

Int. Cl.[5] A61M *25/00*

U.S. Cl. 604—43 4 Claims



1. A system for the controlled, continuous delivery over an extended period of time of a drug containing fluid to the prostate comprising a catheter including an elongated tubular member having an external distal end and a proximal end for placement into the urinary bladder through the male urethra, expandable means adjacent the proximal end to retain the catheter in sealing abutment against the neck of the bladder, an expandable porous membrane bag integral with and spaced from the outer surface of said tubular member, distal to the expandable means for retention of the catheter, a drug lumen within said tubular wall connecting the space between the outer surface of said tubular member and the membrane bag with a valve mounted on the distal end of the lumen for the introduction of the drug to the prostate, said membrane positioned so that upon placement of the catheter the membrane bag is adjacent the prostate ducts, the catheter having a lumen within the wall of said tubular member connecting the expandable retention means with a valve on the distal end of said tubular member the elongated tubular member also having a drainage lumen therein extending from the proximal end only partially along the length of the elongated member, the expansion lumen and the drug lumen for a portion of their length being enclosed within tubular members having semicircular crosssections and opposing flat surfaces.

5,007,898

BALLOON DILATATION CATHETER

Robert F. Rosenbluth, Laguna Niguel; Jay A. Lenker, Laguna Beach, and George R. Greene, Costa Mesa, all of Calif., assignors to Advanced Surgical Intervention, Inc., San Clemente, Calif.

Filed Jun. 2, 1988, Ser. No. 201,686

Int. Cl.[5] A61M *29/02*

U.S. Cl. 604—54 16 Claims

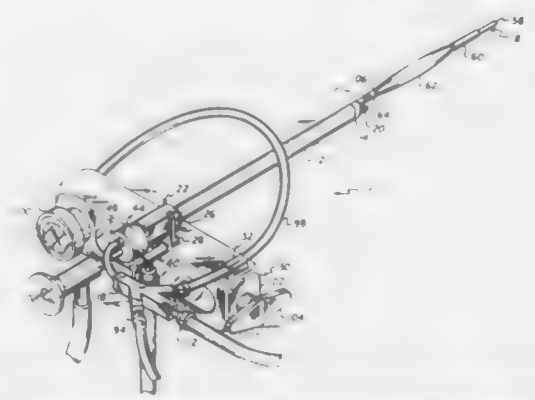
1. An intraurethral dilatation apparatus for relieving the symptoms of obstructive prostatism, said device comprising:

an axially elongate introduction sheath, adapted for insertion into the urethra to receive and guide both a catheter shaft and a cystoscopic lens therethrough, so as to minimize trauma to the urethral lining during the insertion of said catheter and said lens;

a tubular, axially elongate, catheter shaft for insertion through said sheath, having a distal end to facilitate manipulation of said device within the urethra;

an expansible locating balloon, disposed near the distal tip of said catheter shaft and bonded thereto; and

a dilatation balloon, on said catheter shaft situated proximally of said expansible locating balloon, said dilatation ballon outwardly radially expandable to a preselected configuration in response to inflation thereof, wherein said dilatation balloon exhibits proximal and distal shoulders, and



wherein a portion of said locating balloon overlaps at least a portion of said distal shoulder of said dilatation balloon.

5,007,899

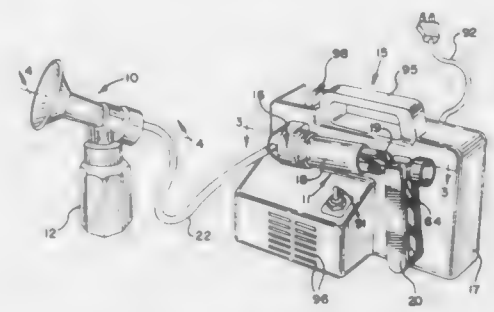
DRIVE UNIT ADAPTED FOR USE WITH MANUAL PISTON PUMP

Karl O. A. H. Larsson, Schweiz, Switzerland, assignor to ISG-/AG, Zug, Switzerland

Filed Feb. 29, 1988, Ser. No. 162,056

Int. Cl.[5] A61M *1/06*

U.S. Cl. 604—74 13 Claims



1. An improved breast pump assembly including a hand-held manually operable breast pump having a hand-drivable piston pump with a piston rod specifically adapted to be grasped to drive a piston received for reciprocating movement within a chamber of a piston cylinder to generate, in use, a periodic suction within a breast-hood emplaced on a breast to effect the expression of mother's milk, wherein the improvement comprises:

a motor drive unit having means for releasably receiving and holding the hand-drivable piston pump, said drive unit further having means for driving the piston rod for reciprocating movement of the piston in the piston chamber.

5,007,900

PERCUTANEOUS ENDOSCOPIC GASTROSTOMY DEVICE

George J. Picha, Independence, and Dean J. Secrest, Euclid, both of Ohio, assignors to Applied Medical Technology, Inc., Independence, Ohio

Filed Oct. 31, 1989, Ser. No. 429,769

Int. Cl.[5] A61M *5/32*

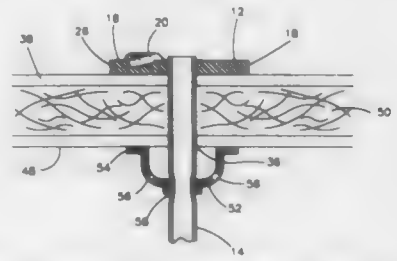
U.S. Cl. 604—106 25 Claims

1. A catheter insertable into a passage through a wall using a rod having a tip, said catheter comprising:

a resilient tube having a distal end, a central axis and a proximal end;

a pair of resilient diametrically opposed, oppositely extending wings connected about the distal end; and

a pocket in at least one of said wings, said pocket being spaced radially outward from the central axis of said tube



and being adapted to receive the tip of the rod, whereby the pair of wings may be urged to a position collateral with the tube by inserting the tip in the pocket and orienting the rod collateral with the tube.

5,007,901

INTRAVENOUS CATHETER INSERTION DEVICE

Jack W. Shields, 1950 Las Tunas Rd., Santa Barbara, Calif. 93103

Continuation of Ser. No. 440,859, Nov. 24, 1989, abandoned. This application Sep. 12, 1990, Ser. No. 582,128

Int. Cl.[5] A61M *5/50*

U.S. Cl. 604—110 4 Claims



1. An integral intravenous catheter placement assembly for introducing a catheter into the vein of a patient comprising, in combination, an intravenous catheter and an intravenous catheter insertion assembly,. said intravenous catheter having a distal end adapted for insertion within a vein of a patient, said catheter further having a proximal end having a luer-lock hub attached thereto, said luer-lock hub providing means for the secure attachment of said intravenous catheter to said intravenous catheter insertion assembly, said intravenous catheter insertion assembly further comprising a needle trap with a luer-lock fitting on its distal end to releasably engage said proximal hub on said intravenous catheter, a hollow introducer needle having a proximal end and a sharp distal end, said introducer needle being disposed within the lumen of said intravenous catheter, and a needle guide breakably attached to the proximal end of said hollow introducer needle.

5,007,902

CATHETER SET FOR PLEXUS ANESTHESIA

Hans-Hinrich Witt, Koerle, Fed. Rep. of Germany, assignor to B. Braun Melsungen AG, Melsungen, Fed. Rep. of Germany

Filed Feb. 22, 1989, Ser. No. 313,706

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1988, 8803153[U]

Int. Cl.[5] A61M *5/162*

U.S. Cl. 604—117 5 Claims

1. A catheter set for plexus anesthesia, comprising:

a puncture cannula,

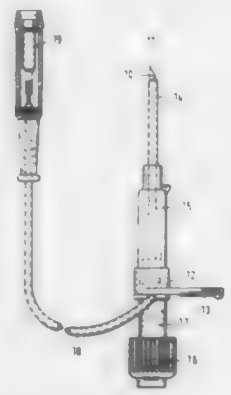
a capillary releasably fastened to the puncture cannula,

a catheter adapted for insertion through the capillary, the catheter having a front end and a rear end, the front end of the catheter being open,

an electrically conductive guide wire adapted for insertion into the catheter, the guide wire having a front end and a rear end,

means for indicating the relative position of the guide wire and the catheter, and

an electric contact provided at the rear end of the guide



wire, the electric contact being adapted for electrical connection to a neurostimulator,

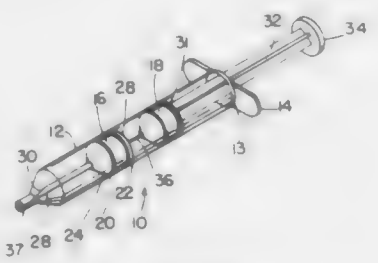
wherein the position of the catheter in the fascia can be determined by neurostimulation through the guide wire.

5,007,903

SYRINGE ADAPTED TO PREVENT NEEDLE STICKS

Terence R. Illiard, Seattle, Wash., assignor to Real World Design & Development Company, Seattle, Wash.

Filed Nov. 22, 1988, Ser. No. 274,817
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—195 14 Claims



1. An improved syringe, comprising:

a syringe barrel;

a first, forward piston member and a second rear piston member, said first and second piston members being positioned in succession within the syringe barrel and adapted for fluid-tight movement therein;

a hollow needle extending from the front end of the first piston member and in fluid communications with the space between the first and second piston members, wherein said needle extends outwardly from the front end of the barrel when the first piston member is in its forwardmost position within the barrel;

a plunger attached to the second piston member, the plunger extending from the rear end of the barrel;

a connecting member, independent of the needle and the barrel, extending between the first and second piston members and connected thereto, wherein said connecting member is positioned within the barrel and is collapsible such that when the first and second piston members are in a first relationship relative to each other, forward movement of the second piston member results in forward movement of the first piston member and such that when the first and second piston members are in a second relationship relative to each other, rearward movement of the second piston member results in rearward movement of said first piston member and such that the second piston member can move a selected distance toward and away from the first piston member within the barrel without moving the first piston member when the first and second piston members are not in said first or second relationship

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5,007,904

PLUNGER FOR POWER INJECTOR ANGIOGRAPHIC SYRINGE, AND SYRINGE COMPRISING SAME

Larry L. Deasmore, Raleigh, N.C., and Thomas A. Lindner, Brookfield, Wis., assignors to Coeur Laboratories, Inc., Raleigh, N.C.

Filed Jan. 19, 1989, Ser. No. 299,974
Int. Cl.[5] A61M *5/20*
U.S. Cl. 604—228 12 Claims



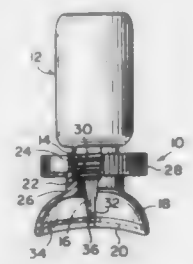
1. A plunger for a power-driven angiographic syringe, said plunger comprising a body of generally convergent distal profile having a proximal face with ram-engageable coupling structure thereon, said coupling structure comprising a wall extending rearwardly from said proximal face of the plunger body and partially circumferentially thereon, said wall terminating at a proximal extremity, with a radially inwardly extending flange joined at an outer peripheral portion thereof to a proximal extremity of the wall, the radially inwardly extending flange and the wall forming with the proximal face of the plunger body a cavity transversely open to insertion thereinto of a ram head of a driving mechanism for said power-driven angiographic syringe, said coupling structure being transversely engageable by, and transversely disengageable from, said ram head of said driving mechanism for said power-driven angiographic syringe, but once transversely engaged by said ram head, being non-disengageable by rotation of said ram head relative to said plunger, in the absence of any transverse translation of the driving mechanism and plunger relative to one another.

5,007,905

EYE DROP APPLICATOR

George C. Bauer, P.O. Box 825, Meredith, N.H. 03253

Filed Feb. 20, 1990, Ser. No. 481,634
Int. Cl.[5] A61M *35/00*
U.S. Cl. 604—295 1 Claim



1. An improved eye drop applicator for an eye dropper vial of the type having an externally threaded neck and a nozzle, said improved eye drop applicator comprising:

(a) a cup having a lip portion adapted to fit around an eyeball of a user of said improved eye drop applicator so as to keep the eye lid open;

(b) a sleeve having an internally threaded passageway extending from the apex of said cup, in which said internally threaded passageway is removably connected to the externally threaded neck of the eye dropper vial, so that the user can squeeze the eye dropper vial to direct an eye drop from the nozzle of the eye dropper vial onto the center of the eyeball, said internally threaded passageway of said sleeve having an annular shoulder therein to prevent the tip of the nozzle of the eye dropper vial from penetrating too far into said cup thereby maintaining the nozzle in a desired spaced relationship to the eyeball of the user of said improved eye drop applicator;

(c) an enlarged collar concentrically affixed onto said sleeve to help aid the user of said improved eye drop applicator to removably connect said internally threaded passageway of said sleeve to the externally threaded neck of the eye dropper vial; and

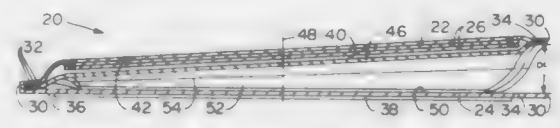
(d) a protective shield having a central aperture and is affixed within said cup with said central aperture directly under the tip of the nozzle of the eye dropper vial, whereby said protective shield will help prevent the eyeball of the user of said improved eye drop applicator from making contact with the tip of the nozzle of the eye dropper vial.

5,007,906

DECOUPLED SANITARY NAPKIN

Thomas W. Osborn, III, Cincinnati, and Deborah C. Schmitz, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 27, 1989, Ser. No. 429,252
Int. Cl.[5] A61F *13/15, 13/20*
U.S. Cl. 604—385.1 9 Claims



1. A sanitary napkin having two spaced apart transverse edges, said sanitary napkin comprising:

a liquid pervious topsheet;

a liquid resistant backsheet joined to said topsheet along one said transverse edge and unattached to said topsheet along the other said transverse edge, whereby said backsheet may be separated from said topsheet at said unattached transverse edge;

an absorbent core associated with said topsheet and intermediate said topsheet and said backsheet; and

a means for controlling the separation of said topsheet from said backsheet.

5,007,907

RESECTOSCOPE APPARATUS

Shinichi Nishigaki, Tokyo, and Shiro Bito, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 7, 1988, Ser. No. 254,741
Claims priority, application Japan, Oct. 7, 1987, 62-254069
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—46 8 Claims

1. A resectoscope apparatus comprising:

an elongate hollow sheath to be inserted into a body cavity;

an electrode inserted through said sheath to make such treatments as of resecting and coagulating tissues within the body cavity by using a high frequency current;

an operating part which can operate said electrode from outside the body;

a cord for feeding a high frequency current to said electrode from a high frequency current source;

an optical sighting tube inserted through said sheath and having an optical system which can observe the body cavity interior; and

a connecting means mechanically removably connecting said electrode shaft part at the rear end to said slider,

wherein said electrode is made integral at least on the rear



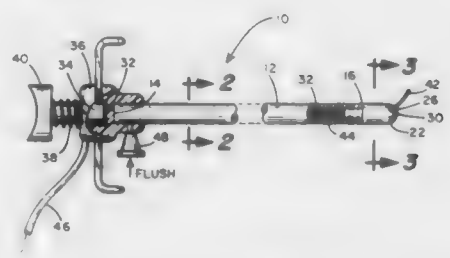
end side with said cord, wherein said electrode on the rear end side and said cord are made integral as electrically connected as insulated from outside, wherein said electrode has a shaft part connected at the rear end to said operating part and inserted in said sheath and a tip electrode part provided at the tip of said shaft part and projected and retracted from said sheath tip by the operation of said operating part, wherein said operating part has a connecting part removably connectable to said sheath at the rear end and a slider connected with said electrode shaft part at the rear end and slidable in the axial direction.

5,007,908

ELECTROSURGICAL INSTRUMENT HAVING NEEDLE CUTTING ELECTRODE AND SPOT-COAG ELECTRODE

Mark A. Rydell, Golden Valley, Minn., assignor to Everest Medical Corporation, Brooklyn Center, Minn.

Filed Sep. 29, 1989, Ser. No. 414,448
Int. Cl.[5] A61B *17/39*
U.S. Cl. 606—47 8 Claims



1. An electrosurgical instrument comprising:

(a) an elongated tubular member having a proximal end, a distal end and plural lumens extending between said proximal and distal ends;

(b) a bullet-shaped ceramic tip member affixed to said distal end of said tubular member, said tip member having a longitudinal bore formed therein, said bore exiting through an opening in the exterior of said tip member at a location displaced laterally from the longitudinal axis of said tubular member;

(c) a first conductor disposed in one of said lumens;

(d) means connected to said proximal end of said tubular member and joined to said first conductor for selectively displacing said first conductor whereby the distal end of said first conductor may be made to pass through said longitudinal bore and said opening;

(e) a conductive surface adhered to said exterior of said ceramic tip member and surrounding but spaced from said opening; and

(f) a second conductor passing through another of said plural lumens and electrically joined to said conductive surface.

5,007,909

APPARATUS FOR INTERNALLY FIXING THE SPINE

Chaim Rogozinski, 4453 Forest Dr. South, Jacksonville, Fla.

Filed Nov. 5, 1986, Ser. No. 928,647
Int. Cl.[5] A61F *5/00*
U.S. Cl. 606—61 **5 Claims**



1. A method for correcting deformaties or instabilities of the spine by posterior surgical procedures, which method comprises:

surgically exposing the spine posteriorly;

affixing clamps onto the laminae of vertebrae;

beginning at either end of the line of affixed clamps attaching rod attachment means to each of said clamps; and

beginning at either end of said line of affixed clamps inserting a rod into said rod attachment means;

compression or distraction being applied to the spine between a first clamp and a second clamp in the line of clamped vertebrae by fixedly securing said rod to said first clamp and compressing or distracting said second clamp with respect to said first clamp and fixedly securing said rod to said second clamp, proceeding from the secured second clamp to the next clamp in the line of clamped vertebrae and compressing or distracting the next clamp with respect to said second clamp and fixedly securing said rod to said next clamp until all clamps are secured to said rod.

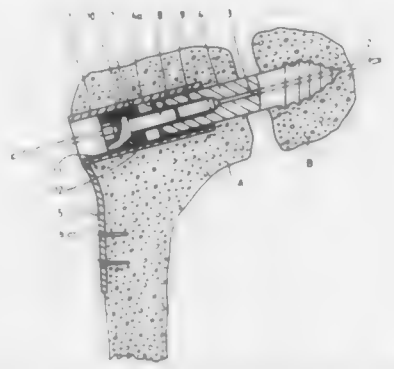
5,007,910

DEVICE FOR COMPRESSION SCREWING

Emmanuel Anapliotis, Kiebitzweg 5, D-1000 Berlin 33; Gernot Regener, Bockafeldstrrasse 1e, D-1000 Berlin 20; Uwe Ahrens, Nürnberger Strasse 46, D-1000 Berlin 30, and Hermann Jehle, Kreiskrankenhaus Alte Waibstädter Str. 2, D-6920 Sinsheim, all of Fed. Rep. of Germany

Filed Dec. 22, 1989, Ser. No. 453,289
Claims priority, application Fed. Rep. of Germany, Jan. 4, 1989, 8900121[U]
Int. Cl.[5] A61F *5/04*
U.S. Cl. 606—65 **6 Claims**

1. Device for compression screwing fractures of the femural neck, consisting of a plate of a sleeve, the sleeve being hollow and cylindrical in shape, the plate of the sleeve being attached by screws to the femur shaft and of a bone screw being located within the sleeve which is provided with a female thread on its head side into which a compression screw having a respective male thread fits, whereby said compression screw is supported by means of the (bottom edge of its head (or) by a respective, especially conical contact surface) for the limitation of its movement against a fixing ring being located within said sleeve in such a way that it can be displaced, sliding with its surface along the inner surface of said sleeve and having a conical surface in an axial direction that is adapted to the bottom edge of the head of said compression screw and the cone angle of which is sized in such a way that the adhesive friction between the outer surface of the fixing ring and the inner surface of said



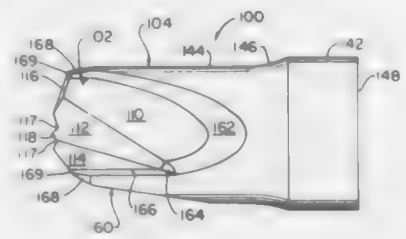
sleeve is greater than the compressional force acting in the longitudinal direction of said compression screw.

5,007,911

DRILL HEAD ASSEMBLY FOR CRANIAL PERFORATORS

John W. Baker, 4 Wachusett Dr., Acton, Mass. 01720

Continuation of Ser. No. 108,421, Oct. 14, 1987, abandoned.
This application Oct. 18, 1989, Ser. No. 423,660
Int. Cl.[5] A61B *17/16*
U.S. Cl. 606—80 **24 Claims**



1. A perforator comprising:

(1) a drill head assembly comprising (a) an inner drill having a plurality of inner cutting flutes, each terminating in a front cutting edge, and (b) an outer drill comprising a plurality of outer cutting flutes, each terminating in a front cutting edge, said drill head assembly being constructed so that the leading portions of said front cutting edges of said outer cutting flutes are contiguous with the peripheral portions of said front cutting edges of said inner cutting flutes so long as said drill assembly is enabled and said inner drill encounters a resistive surface; and

(2) drive means for enabling said drill head assembly when said inner drill is encountering a resistive surface, and disabling said drill head assembly when said inner drill is no longer encountering said resistive surface while said outer drill is still encountering said resistive surface.

5,007,912

ARRANGEMENT FOR FIXING A KNEE-JOINT IN DEFINED POSITIONS AND FOR POSITIONAL CONTROL OF INSTRUMENTS FOR REPLACING THE KNEE-JOINT WITH A PROSTHESIS

Björn Albrektsson, Värslevägen 39, Askim, Sweden S-436 43 , and Stig Wennberg, Villa Holma Pl 6266, Angered, Sweden S-424 57

Filed May 30, 1990, Ser. No. 530,611
Int. Cl.[5] A61F *5/04, 5/37;* **A61G** *13/00*
U.S. Cl. 606—87 **9 Claims**

1. Arrangement for fixing a knee-joint in defined positions and for positional control of instruments for replacing the knee-joint of a patient with a prosthesis, which arrangement is

designed to be connected to an operating table (1) intended to support the patient, characterized in that the arrangement comprises, on the one hand, a stand (3) which can be connected to the operating table (1), an alignment instrument (2) which is supported by the stand and is used for aligning both femur and the tibia relative to a reference axis, and, on the other hand, a positional control unit (47) which can be connected to the stand in defined positions and is used for positional control of at least one instrument (48) relative to the knee-joint, which alignment instrument comprises a fixture (4),



supported by the stand, for the trunk of the patient, which trunk fixture is adjustable and can be locked in selected positions by displacement transverse to the said reference axis, and a limb fixture, supported by the stand, for fixing the knee-joint (20, 22) and ankle-joint (23) of the patient, in that the said limb fixture (11) for fixing the knee-joint and ankle-joint consists of a fixation frame which is pivotably mounted on the stand by means of a pivot hinge (13) and which, by means of its pivotability, can be set in different angular positions relative to the operating table.

5,007,913

APPARATUS AND METHOD FOR IMPLANTATION OF INTRAOCULAR LENSES

David H. Dulebohn, Tonka Bay, and Winston R. Lindberg, Plymouth, both of Minn., assignors to Alcon Surgical, Inc., Fort Worth, Tex.

Filed Sep. 19, 1989, Ser. No. 409,329
Int. Cl.[4] A61F *9/00*
U.S. Cl. 606—107 **36 Claims**



1. An apparatus for insertion of an intraocular lens into a patient's eye comprising:

manipulating tool means for holding and transporting the lens through an incision into the eye and releasing the lens in the eye;

a sling means having an elastromeric resilient surface and connection means for attachment to the manipulating tool means and being resilient to extend to substantially encapsulate the lens when folded upon itself;

the surface of the sling means being adapted to receive and substantially encapsulate a lens folded upon itself; and

the manipulating tool means being adjustable between a first position where the connection means allows manipulation of the sling means to encapsulate and hold the lens within the sling means, and a second position where the connection means allows manipulation of the sling means to resiliently open to receive the lens before insertion into the eye, and to release the lens from its folded state once in the eye

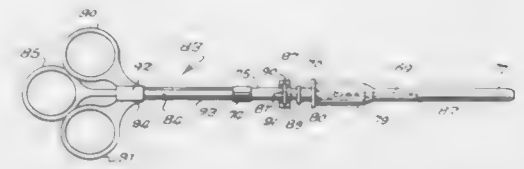
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5,007,914

CATHETER-INSERTION DEVICE

Paul E. Schweigerling, 130 Rolling Green La., Elma, N.Y. 14059

Division of Ser. No. 208,670, Jun. 20, 1988, Pat. No. 4,889,118.
This application Nov. 15, 1989, Ser. No. 473,716
Int. Cl.[4] A61M *25/01*
U.S. Cl. 606—108 **8 Claims**



1 A device for inserting a catheter into a body vessel of a patient wherein said catheter is of the type having a catheter hub and an elongated tube attached thereto and is mounted on a cannula of the type having a cannula hub with an elongated needle having a pointed tip which extends into and beyond said tube of said catheter comprising first engagement means for engaging and holding said cannula hub, second engagement means for engaging said catheter hub, first finger-receiving means, first connecting means connecting said first finger-receiving means to said first engagement means, second finger-receiving means, second connecting means connecting said second finger-receiving means to said second engagement means, means mounting said first and second connecting means for movement relative to each other, said first and second engagement means initially occupying a position wherein said cannula and catheter may be cooperatively mounted on said device with said pointed tip extending beyond said tube to permit said pointed tip of said cannula and said tube to be initially inserted into said body vessel, and said first and second finger-receiving means being movable relative to each other while said first engagement means continues to hold said cannula to cause said first engagement means to withdraw said cannula from said catheter after said tube has been inserted into said body vessel and while said second engagement means remains in engagement with said catheter to cause it to remain in position in said body vessel.

5,007,915

DEPILATORY DEVICE

Avraham Nussbaum, Moshav Mazor, Israel, assignor to Crestmoore Ltd., Hong Kong

Continuation of Ser. No. 258,584, Oct. 17, 1988, Pat. No. 4,923,463. This application Nov. 28, 1989, Ser. No. 442,778
Claims priority, application Israel, Feb. 28, 1988, 85568
The portion of the term of this patent subsequent to May 8, 2007, has been disclaimed.
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—133 **6 Claims**

1. A depilatory apparatus comprising:

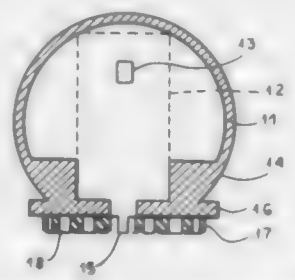
a manually grippable and portable housing including an exterior plate adapted to be moved in juxtaposed relationship to an area of a user's skin from which hair sprouts;

the housing provided with an electric motor and switching means operatively associated therewith for optionally engaging it with and disengaging it from a source of energy;

a plurality of pins arranged to project outwardly from the housing through the plate for engagement with and sub-

stantially normal to said skin with the pins connected operatively to the motor for rotation;

an endless belt engaged to run continuously about at least two of the pins, whereby when the pins contact the hair, strands of the hair are caught between at least one of the



last-mentioned pins and the belt for clamping the strands therebetween to depilate the strands of hair along said skin;

the motor having a shaft to which the pins are coupled, the number of pins being from 2 to 30 inclusive, the belt being made of an elastomeric material.

5,007,916

METHOD AND MATERIAL FOR PREVENTION OF SURGICAL ADHESIONS

Cary B. Linsky, East Brunswick, and Timothy J. Cunningham, Flemington, both of N.J., assignors to Johnson & Johnson Medical, Inc., Arlington, Tex.

Division of Ser. No. 768,280, Aug. 22, 1985. This application Nov. 16, 1989, Ser. No. 437,234

Int. Cl.[5] A61B *17/08*

U.S. Cl. 606—151 **14 Claims**

1. A PostoPerative adhesion barrier comPrising a conformable fabric constructed of a bioresorbable material, said fabric being characterized by having a density of 8.0 to 15 mg/cm2 and a Porosity of 12 to 20 Percent oPen area

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5,007,917

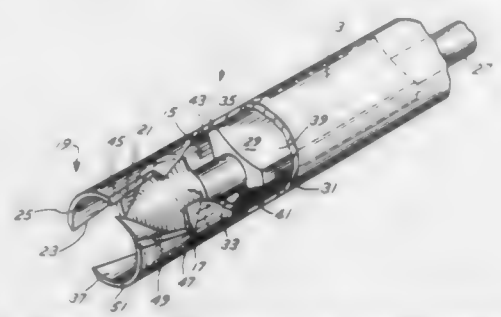
SINGLE BLADE CUTTER FOR ARTHROSCOPIC SURGERY

James A. Evans, Galesburg, Mich., assignor to Stryker Corporation, Kalamazoo, Mich.

Filed Mar. 8, 1990, Ser. No. 490,913

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—170 **8 Claims**



1. A surgical instrument for cutting tissue comprising:

a cylindrical tube having an open distal end and a side window formed in its distal end through which tissue may enter said tube for cutting;

a tissue cutter head rotatable within said tube relative to said open end and said window, said cutter head including:

(i) a cylindrical base portion having a radial surface closely conforming to the inside surface of said tube;

(ii) a sole blade located along one circumferential side of and extending distally from said base portion and bearing a first and a second cutting edge, said first cutting edge disposed on said blade for traveling in a cylindrical locus closely adjacent to the inside surface of said tube relative to said window for passing across one edge of said window during at least a portion of the rotation of said cutter head for cutting tissue protruding laterally through said window, and said second cutting edge for cutting tissue protruding axially through said distal end, said first and second cutting edges meeting in a sole point, said sole point being the most distal point of said cutter head, and

(iii) a sole debris channel formed by a cavity in said cutter head and passing through said base portion for receiving tissue severed by said first and second cutting edges

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5,007,918

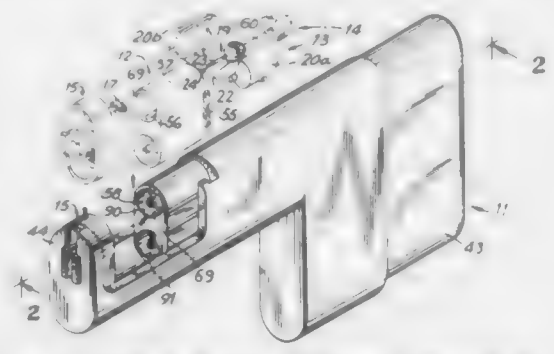
EAR PIERCING CARTRIDGE ASSEMBLY

Samuel J. Mann, Englewood, N.J., assignor to Inverness Corporation, Fair Lawn, N.J.

Filed Jan. 24, 1990, Ser. No. 469,626

Int. Cl.[5] A44C *7/00*; **A61B** *17/34*

U.S. Cl. 606—188 **11 Claims**



1. An ear piercing assembly comprising in combination:

a piercing earring including an ornamental head and a piercing pin projecting from the head;

a cartridge adapted to receive the piercing earring and substantially envelope the piercing earring, the cartridge including an elongated opening partially supporting the piercing pin, and a further opening proximate the ornamental head of the earring, said further opening being in axial alignment with the elongated opening, the elongated opening having a smaller lateral dimension than the further opening;

a shield means positioned within said cartridge between the ornamental head of the piercing earring and the further opening so that the pressure across the ornamental head from a push rod which enters the further opening is distributed by said shield means; and

a housing means for receiving the cartridge and for positioning the cartridge openings in alignment with a push rod to prevent displacement of the cartridge when a push rod is displaced through the earring cartridge.

5,007,919

METHOD AND APPARATUS FOR PATIENT PROTECTION AGAINST VESSEL RUPTURE FROM BALLOON-TIPPED CATHETERS

Fidel H. Silva, 967 E. Center Fork Cir., Sandy, Utah 84094, and Dwayne R. Westenskow, 3439 Winesap, Salt Lake City, Utah 84121

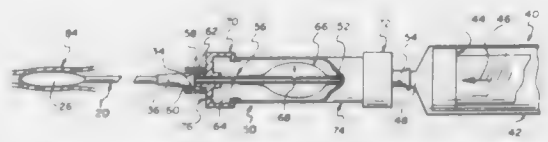
Filed Oct. 11, 1989, Ser. No. 419,828

Int. Cl.[5] A61M *29/02*

U.S. Cl. 606—194 **15 Claims**

3. A safety inflation apparatus for use with a catheter including a catheter balloon disposed thereon, said catheter balloon having both a first predetermined inflation threshold pressure and a normal inflated diameter in a substantially externally unconstrained state, said apparatus being adapted to prevent damage to a body cavity of lesser internal diameter than said normal inflated diameter of said balloon when inflation of said catheter balloon within the external constraint of said body cavity is attempted, and said apparatus comprising:

relief conduit means having fluid inlet means adapted to receive fluid and fluid outlet means adapted to dispense said fluid through said catheter to said catheter balloon within said body cavity,



a fluid relief aperture in said conduit means between said fluid inlet means and said fluid outlet means communicating the interior of said relief conduit means with the exterior thereof; and

safety reservoir means preloaded in tension against expansion, in communication with said relief conduit means through said relief aperture, and expandable at a second threshold pressure between that of said catheter balloon in its said substantially unconstrained state and that at which damage to said body cavity would normally result.

5,007,920

TENDON SECTIONING SUPPORT CLAMP

Randall J. Torre, 842 S. Clover, San Jose, Calif. 9512[illegible]

Filed Mar. 24, 1989, Ser. No. 328,492

Int. Cl.[4] A61B *17/28*

U.S. Cl. 606—207 **7 Claims**



1. Apparatus for supporting in place a tendon or other smooth muscle during surgical procedures comprising:

first and second elongated members;

pivot means medially interconnecting said first and second elongated members;

an elongated lateral block fixedly attached to a distal end of said first elongated member, said elongated lateral block extending transversely therefrom;

an elongated support block fixedly attached to a distal end of said second elongated member, said elongated support block extending transversely therefrom being adjacent thereto and generally longitudinally parallel with said elongated lateral block, said elongated support block having an open channel formed in an upper surface thereof, said channel extending longitudinally substantially the length of said elongated support block, said channel being generally transverse to said first and second elongated members; and

ratchet means disposed between said first and second elongated members coupling said elongated members together, said lateral block and said support block disposed in spaced apart relationship within said ratchet means are disengaged, said lateral block and said support block disposed adjacent to and in contact with the other along longitudinal facing edges thereof and urged toward each other when said ratchet means is engaged.

5,007,921

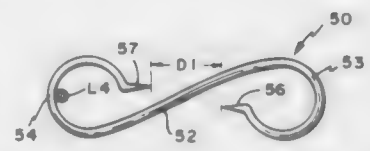
SURGICAL STAPLE

Alan W. Brown, 4 Hartley Cir., Apt. 824, Owing Mills, Md. 21117

Filed Oct. 26, 1989, Ser. No. 426,373

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—221 **5 Claims**



1. A surgical staple comprising a generally S-shaped planar member formed of relatively resilient material possessing inherent spring-back characteristics; said generally S-shaped planar member having opposite surfaces and a pair of skin piercing projections projecting transversely away from one of said opposite surfaces and generally toward each other at generally opposite looped ends of said generally S-shaped member; said pair of skin piercing projections being spaced from each other a first predetermined linear distance in a generally unstressed, neutral, operative condition of said staple; said skin piercing projections being spaced from each other a second predetermined linear distance greater than said first predetermined linear distance in a generally stressed, force-induced inoperative conditon of said staple; and said generally S-shaped planar member having spaced surface means against which forces are applied for transforming said generally planar member from its generally unstressed condition to its generally stressed condition whereby said piercing projections can be pierced into the skin on opposite sides of a wound and upon cessation of such applied forces said generally planar member automatically returns to its generally unstressed condition to automatically draw opposite margins of the wound toward each other

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5,007,922

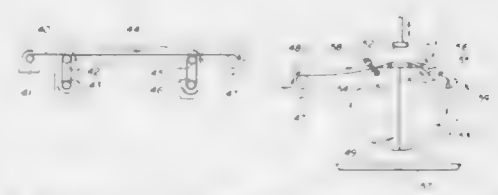
METHOD OF MAKING A SURGICAL SUTURE

Chao Chen, Edison, and Arthur Taylor, Plainfield, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Nov. 13, 1989, Ser. No. 434,3[illegible]

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—228 **3 Claims**



1. A method for producing a surgical suture having a reduced diameter end portion comprising:

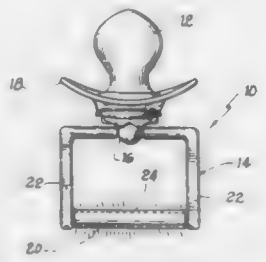
(a) winding a monofilament in a helical configuration;

(b) heating a portion of said monofilament to an elevated temperature;
(c) drawing said heated portion while in said helical configuration to reduce the diameter of said heated and drawn portion; and
(d) severing said monofilament to produce a suture having a reduced diameter end portion.

5,007,923
CRYSTALLINE COPOLYESTERS OF AMORPHOUS (LACTIDE/GLYCOLIDE) AND P-DIOXANONE
Rao S. Bezwada, Whitehouse Station; Hugh D. Newman, Jr., Chester, and Shalaby W. Shalaby, Lebanon, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.
Filed Jan. 31, 1990, Ser. No. 472,990
Int. Cl.[5] A61B *17/00; C08G 63/00*
U.S. Cl. 606—231 **13 Claims**

1. A crystalline copolyester of p-dioxanone and an amount of an amorphous prepolymer of lactide and glycolide effective to modify the in vivo breaking strength retention and in vivo absorption profile of the copolyester relative to the in vivo breaking strength retention and in vivo absorption profile of a p-dioxanone homopolymer.

5,007,924
LUMINESCENT PACIFIER
Tina M. Jekel, 11117 Scripps Ranch Blvd., San Diego, Calif. 92131
Filed Aug. 9, 1989, Ser. No. 391,039
Int. Cl.[5] A61J *17/00*
U.S. Cl. 606—234 **2 Claims**



1. A luminescent pacifier comprising:
(a) a nipple portion for insertion in a baby's mouth;
(b) a handle portion connected to said nipple portion for grasping by the baby, said handle portion including a crossbar;
(c) said handle having a removable luminescent clip which removably snaps onto said bar member so that said baby can find the pacifier in the dark and the clip can be removed from the pacifier and charged up while the baby uses the pacifier in the daytime.

5,007,925
PROSTHETIC DEVICES COATED WITH POLYPEPTIDES WITH TYPE IV COLLAGEN ACTIVITY
Effie C. Tsilibary, and Leo T. Furcht, both of Minneapolis, Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.
Division of Ser. No. 106,858, Oct. 8, 1987, Pat. No. 4,876,332. This application Aug. 22, 1989, Ser. No. 397,012
Int. Cl.[5] A61F *2/06, 2/16, 2/24, 2/00*
U.S. Cl. 623—1 **9 Claims**

1. A prosthetic device designed for placement in vivo, comprising a surface coated with a polypeptide consisting essentially of:

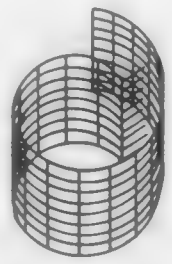
met-phe-lys-lys-pro-thr-pro-ser-thr-leu-lys-ala-gly-glu-leu-arg,

thr-ala-gly-ser-cys-leu-arg-lys-phe-ser-thr-met,

asn-pro-leu-cys-pro-pro-gly-thr-lys-ile-leu,

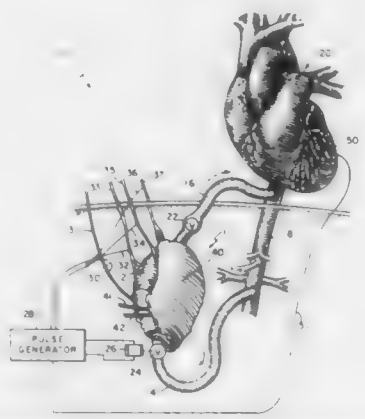
or mixtures thereof.

5,007,926
EXPANDABLE TRANSLUMINALLY IMPLANTABLE TUBULAR PROSTHESIS
Garrett Derbyshire, Philadelphia, Pa., assignor to The Trustees of the University of Pennsylvania, Philadelphia, Pa.
Filed Feb. 24, 1989, Ser. No. 315,465
Int. Cl.[5] A61F *2/06*
U.S. Cl. 623—1 **7 Claims**



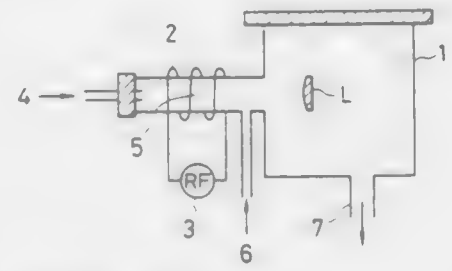
2. An implantable tubular prosthesis for insertion into a body duct comprising:
a resilient member having longitudinal sides and transverse ends, said resilient member disposed in a generally tubular configuration about a transverse axis, said resilient member comprising a flexible mesh comprising individual longitudinal and transverse wires bound together, said mesh having a plurality of openings therein, the mesh having a projecting portion for engaging with a select number of said openings to permit the selective radial expansion and locking of the tubular prosthesis in at least one fixed diameter.

5,007,927
MUSCLE-POWERED CARDIAC ASSIST DEVICE
Stephen F. Badylak; Leslie A. Geddes, both of West Lafayette, Ind., and Jerry L. Wessale, Lindenhurst, Ill., assignors to Purdue Research Foundation, West Lafayette, Ind.
Filed Oct. 24, 1989, Ser. No. 426,301
Int. Cl.[5] A61F *2/16*
U.S. Cl. 623—3 **8 Claims**



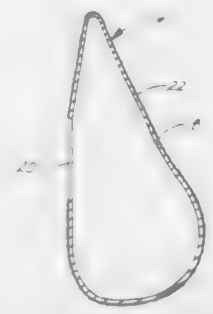
1. An apparatus for enhancing circulation of blood in skeletal muscle in use for powering a cardiac assist device including a blood reservoir in fluid communication with a patient's circulatory system, wherein said skeletal muscle is positioned to compress the blood reservoir in response to a muscle contracting stimulus from a pulse generator said circulation enhancing apparatus comprising
a valve positioned to control blood flow from the patient's circulatory system into the blood reservoir, and
means for activating the valve in a timed relationship to the muscle contracting stimulus.

5,007,928
INTRAOCULAR IMPLANT HAVING COATING LAYER
Moriyuki Okamura, Sagamihara; Ikuo Nakajima, Tokyo, and Toshiji Nishiguchi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 26, 1989, Ser. No. 357,281
Claims priority, application Japan, May 31, 1988, 63-133155
Int. Cl.[5] A61F *2/16*
U.S. Cl. 623—6 **9 Claims**



1. An intraocular implant comprising:
a lens substrate;
a coating layer formed of a first material; and
an adhesion layer disposed between said lens substrate and said coating layer, said adhesion layer comprising a second material different from said first material, said second material having at least one compound selected from the group consisting of:
(a) a hydrocarbon compound;
(b) a halogenated hydrocarbon compound;
(c) a hetero-element-containing hydrocarbon compound;
(d) an organic metal compound; and
(e) an organosilane compound.

5,007,929
OPEN-CELL, SILICONE-ELASTOMER MEDICAL IMPLANT
Joel Quaid, Santa Barbara, Calif., assignor to Medical Products Development, Inc., Santa Barbara, Calif.
Continuation of Ser. No. 361,786, May 30, 1989, abandoned, which is a continuation of Ser. No. 927,272, Nov. 4, 1986, abandoned. This application Jul. 27, 1990, Ser. No. 559,973
Int. Cl.[5] A61F *2/10*
U.S. Cl. 623—8 **8 Claims**



1. A medical implantable device of substantially homogeneous composition comprised of silicone elastomer, said implantable device having an external surface integral therewith, at least a portion of said surface having an open-cell structure, said medical implantable device made by the method comprising the steps of:
(a) applying a layer of silicone elastomer to said medical implantable device; and
(b) applying solid particles to the surface before the layer is fully cured; and
(c) fully curing the layer; and
(d) dissolving the solid particles with a solvent that does not dissolve the silicone elastomer to any appreciable extent.

5,007,930
COMPOSITES OF UNSINTERED CALCIUM PHOSPHATES AND SYNTHETIC BIODEGRADABLE POLYMERS USEFUL AS HARD TISSUE PROSTHETICS
Linneaus C. Dorman, Midland, Mich., and Paul A. Meyers, Dublin, Calif., assignors to The Dow Chemical Company, Midland, Mich.
Continuation of Ser. No. 357,515, May 26, 1989, abandoned, which is a division of Ser. No. 56,496, Jun. 1, 1987, Pat. No. 4,842,604, which is a continuation of Ser. No. 914,419, Oct. 2, 1986, Pat. No. 4,698,375, which is a division of Ser. No. 702,998, Feb. 19, 1985, Pat. No. 4,636,526. This application Aug. 6, 1990, Ser. No. 563,881
Int. Cl.[5] A61F *2/28*
U.S. Cl. 623—16 **9 Claims**

1. A process for the prosthetic supplementation or replacement of hard tissue which comprises coating a conventional prosthetic device with a composite material containing from about 25 to about 75 percent by weight of an unsintered calcium phosphate biomaterial and about 75 to about 25 percent by weight of synthetic biodegradable polymer.

5,007,931
POROUS COATED PROSTHESIS
Todd S. Smith, Warsaw, Ind., assignor to Boehringer Mannheim Corporation, Indianapolis, Ind.
Filed May 4, 1990, Ser. No. 518,943
Int. Cl.[5] A61F *2/32, 2/28*
U.S. Cl. 623—23 **7 Claims**



1. A femoral component for a hip prosthesis comprising:
a head member for rotatable engagement with an acetabular component;
an elongated stem member having a longitudinal axis and an external surface and intended for cementless fixation in the intramedullary canal of a femur; and
a neck member integrally joining said head member and said stem member;
said stem member extending between a proximal portion adjacent said neck member and a distal portion distal from said neck member, and including an intermediate portion between and integral with said proximal portion and said distal portion, said intermediate portion having a plurality

of longitudinally extending channels, each of said channels defined by a bottom surface and opposed sidewalls connecting said bottom surface to said external surface; and

a porous medium for encouraging bone ingrowth fixation bonded to said bottom surface of each of said channels while remaining free of said sidewalls, said porous medium presenting an outer surface generally defined by a first surface lying

in a plane generally parallel to a plane of said external surface and second and third surfaces lying generally, respectively, in angularly spaced radial planes containing said longitudinal axis.

5,007,932

ARTIFICIAL BONE JOINT

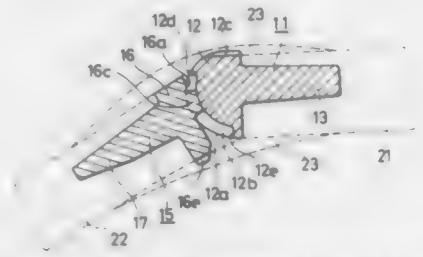
Katsutoshi Bekki; Kazuo Kondo; Yoshimasa Shibata, and Shigeo Niwa, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Continuation of Ser. No. 865,825, May 22, 1986, abandoned, which is a continuation-in-part of Ser. No. 817,116, Jan. 8, 1986, abandoned. This application Feb. 27, 1989, Ser. No. 316,526

Claims priority, application Japan, Jan. 8, 1985, 60-738[U]; Jan. 8, 1985, 60-739[U]; Jan. 8, 1985, 60-776[U]

Int. Cl.[5] A61F *2/30, 2/42*

U.S. Cl. 623—18 **23 Claims**



1 An artificial bone joint for joining first and second bones comprising:

a first member including a first elongated anchor portion having a proximal end, a distal end, and a first central longitudinal axis extending from said proximal end to said distal end in a first direction, and including a first sliding portion having a convex curved surface;

a second member including a second elongated anchor portion having a proximal end, a distal end, and a second central longitudinal axis extending from said proximal end to said distal end in a second direction, and including a second sliding portion having a concave curved surface for pivotally engaging said convex surface;

said first anchor portion including a plurality of axially spaced first recesses forming at least one pair of first anchor bosses symmetrically opposed to each other about said first central longitudinal axis having perimetrical surfaces defining a maximum cross-sectional area of the first anchor portion and each of said first recesses having a proximal end wall defined by a radially extending surface transverse to the longitudinal axis and a bottom surface inclined from a proximal to distal direction at a first angle of less than 90° with the proximal end wall to form a catching structure for said first member; and

said second anchor portion including a plurality of axially spaced second recesses forming at least one pair of second anchor bosses symmetrically opposed to each other about said second central axis having perimetrical surfaces defining a maximum cross-sectional area of the second anchor portion and each of said second recesses having a proximal end wall defined by a radially extending surface transverse to the longitudinal axis and a bottom surface inclined from a proximal to distal direction at a first angle of less than 90° with the proximal end wall to form a catching structure for said second member.

5,007,933

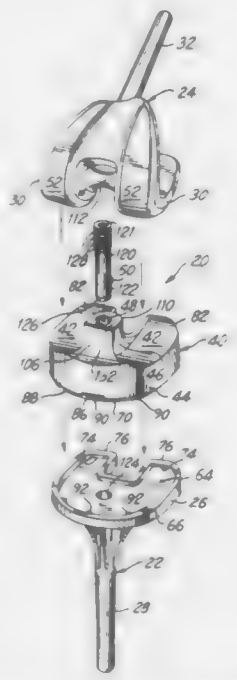
MODULAR KNEE PROSTHESIS SYSTEM

Christopher G. Sidebotham, Middletown, N.Y.; Donald E. McNulty, Warsaw, Ind., and Alan M. Lombardo, Elmwood Park, N.J., assignors to Osteonics Corp., Allendale, N.J.

Filed Jan. 31, 1989, Ser. No. 304,754

Int. Cl.[4] A61F *2/38, 2/30*

U.S. Cl. 623—20 **22 Claims**



1. In a knee prosthesis system for a prosthetic knee, the knee prosthesis system including a tibial component having a tray element, a femoral component having laterally spaced apart condylar elements, and a selectable bearing member to be carried by the tray element of the tibial component for supporting the condylar elements of the femoral component of operation of the knee prosthesis, including flexion of the prosthetic knee, the bearing member being constructed of a bearing material and having an integral eminence of bearing material projecting superiorly longitudinally upwardly from an inferior end adjacent the tibial component toward a superior end adjacent the tibial component for reception between the condylar elements of the femoral component to provide controlled restraint against excessive relative movement between the femoral component and the tibial component, control of the anterior-posterior portions of the relative movement being provided by a cam surface on the eminence and a follower on the femoral component for following the cam surface, the improvement comprising:

a stabilizing post including a stabilizing portion for projecting superiorly from the tibial component toward the femoral component; and

a recess in the eminence, the recess including a recess portion so complementary to the stabilizing portion of the stabilizing post such that when the bearing member is seated on the tray element of the tibial component, the stabilizing portion of the stabilizing post comprises means on the stabilizing post located within the recess portion of the recess in such complementary relationship with the recess portion as to be engaged positively with the material of the eminence along the recess portion so as to reinforce and stabilize the material of the eminence against forces exerted upon the eminence during operation of the knee prosthesis.

5,007,934

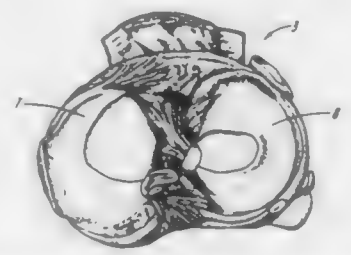
PROSTHETIC MENISCUS

Kevin R. Stone, San Francisco, Calif., assignor to ReGen Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 75,352, Jul. 20, 1987, Pat. No. 4,880,429. This application Mar. 2, 1989, Ser. No. 317,951

Int. Cl.[4] A61F *2/38*

U.S. Cl. 623—20 **34 Claims**



1. A prosthetic meniscus comprising a dry porous matrix of biocompatible bioresorbable fibers,

said fibers selected from the group consisting of natural polymers, and analogs and mixtures thereof,

said matrix being adapted to have an vivo an outer surface contour substantially the same as that of a natural meniscus,

said matrix having pore size in the approximate range of greater than 50 microns to less than about 500 microns,

whereby said matrix establishes an at least partially bioresorbable scaffold adapted for ingrowth of meniscal fibrochondrocytes, and wherein said scaffold and said ingrown meniscal fibrochondrocytes support natural meniscal load forces.

5,007,935

JOINT MEMBER FOR A HIP PROSTHESIS

Andre Vincent, La Hulpe, and Evrard Munting, Brussels, both of Belgium, assignors to S. A. Manufacture Belge De Gembloux, Gembloux, Belgium

Continuation of Ser. No. 929,192, Sep. 10, 1986, abandoned. This application May 12, 1989, Ser. No. 352,643

Int. Cl.[5] A61F *2/32*

U.S. Cl. 623—22 **21 Claims**



1. A stemless femoral prosthesis comprising:

a block shaped supporting member configured to be positioned on a V-shape resected surface in the medial surface at the proximal end of the femur;

a joint head connected to the supporting member;

an anti-rotation means extending outwardly from the supporting member;

a retaining means to be positioned on the lateral surface of the femur and operatively coupled to the anti-rotation means to exert a tensile force on the supporting member thereby urging the supporting member against the resected surfaces; and

said supporting member including supporting surfaces designed to cooperate with the V-shaped resected surface of the bone, one of the supporting surfaces positioned generally parallel to the femur axis and another of said supporting surfaces positioned essentially perpendicular thereto.

5,007,936

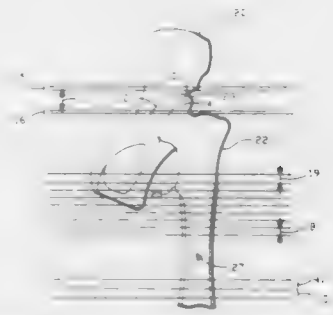
SURGICAL METHOD FOR HIP JOINT REPLACEMENT

Steven T. Woolson, Los Altos, Calif., assignor to Cemax, Inc., Fremont, Calif.

Filed Feb. 18, 1988, Ser. No. 157,259

Int. Cl.[4] A61F *2/36, 2/34, 2/32*

U.S. Cl. 623—23 **6 Claims**



1. A method of implanting a hip prosthesis in a patient having at least a portion of an acetabulum and a femur, the prosthesis including an acetabular component for attachment to a femoral component to provide predetermined anteversion and abduction angles, said method comprising the steps of:

A. selecting the size of said femoral and acetabular components;

B. defining a reference plane relative to said acetabulum by identifying the location of fixation points about the acetabulum according to at least one of CT scan data, PET data and NMR data, a first one of said fixation points being located at the superior rim of said acetabulum, a second of said fixation points being located on the inner wall of said acetabulum at a fixed distance distal to said first fixation point wherein said second fixation point is located at the posterior rim of said acetabulum, and a third one of said fixation points being located on the rim of said acetabulum at a fixed distance distal to said first fixation point thereby to define said reference plane for establishing an orientation for implanting said acetabular component;

C. positioning about the acetabulum a reference guide having predetermined anteversion and abduction angles relative to said reference plane;

D. reaming subchondral bone using an appropriate reaming device of said acetabulum relative to said guide thereby to form a properly oriented socket for placement of the acetabular component;

E. positioning a drill guide at first, second and third fixation points which are triangularly related to one another to establish said reference plane for said acetabular component;

F. drilling a hole through the central wall of the acetabulum at an angle relative to said reference plane;

G. placing a visual reference marker in said drilled hole;

H. visually aligning said reaming device with said reference guide during said reaming step thereby to obtain accurately the proper orientation of said acetabular component after implant thereof; and

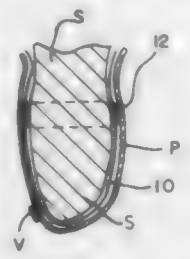
I. fixing said acetabular component in said reamed socket of said acetabulum thereby to establish the predetermined anteversion and abduction angles when functioning with said femoral component.

5,007,937

STRUCTURE FOR ENHANCED RETENTION OF ARTIFICIAL LIMBS AND METHOD OF FABRICATION

Sidney Fishman, New York, and William Lembeck, Forest Hills, both of N.Y., assignors to New York University Medical Center, New York, N.Y.

Filed Mar. 31, 1988, Ser. No. 175,828
Int. Cl.[5] A61F 2/80
U.S. Cl. 623—34 7 Claims



1. A prosthetic sock for use in a stumpreceiving socket of a patient's artificial limb, said sock comprising

an air permeable stump cladding interposed between the stump and the socket and having means at its distal end for limiting the degree to which the cladding may be drawn onto the patient's stump, said cladding having an open proximal end dimensioned to fit over the patient's stump; and

an air impermeable, elastic, annular sealing band having an axial extent which is substantially less than that of said stump cladding said band being impregnated into and through said stump cladding so as to extend thereabout at an axial position calculated to achieve a sealing effect between the socket and the stump, at least, in a closed area at the bottom of the stump when it is inserted into said socket, the artificial limb being retained on the patient's stump substantially entirely by means of differential air pressure between the closed area and the exterior of the socket.

5,007,938

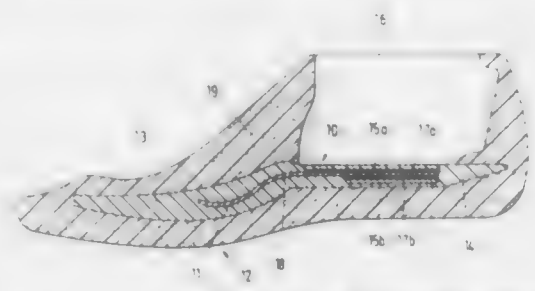
ARTIFICIAL FOOT FOR A LEG PROSTHESIS

Gregor M. Prahl, Rullstorf, Fed. Rep. of Germany, assignor to IPOS GmbH & Co. KG, Fed. Rep. of Germany

Filed Aug. 15, 1989, Ser. No. 394,093
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1989, 8908356[U]
Int. Cl.[5] A61F 2/66
U.S. Cl. 623—55 19 Claims

1. Artificial foot for a leg prosthesis, comprising a foamed plastic molded foot part and a plate-shaped reinforcing member embedded within its plantar area

said reinforcing member including at least two superimposed upper and lower leaf springs and a spacer in the form of an elastic sliding insert of polyethylene possessing a high degree of slidability between said leaf springs, an offset portion within the area of the ball of the foot and extending in the manner of a ball of the foot for supporting a foot rolling function, elastically yielding springing means having a forefoot core and a function core disposed within a calcaneal area and forming a tongue, the function core and the reinforcing member being rigidly interconnected.



characterized in that, a carbon fiber-reinforced synthetic resin leaf spring is disposed between said upper and lower leaf springs, and said synthetic resin leaf spring is configured in conformity with the rolling profile of the foot and extends as far as into the area of the offset portion.

5,007,939

ARTICLE MADE OF LACTIC ACID POLYMER CAPABLE OF BEING EMPLOYED PARTICULARLY AS A BIODEGRADABLE PROSTHESIS AND PROCESS FOR ITS MANUFACTURE

Luc Delcommune, Monfalcone, Italy, and Philippe Ghyselinck, Braine-L'Alleud, Belgium, assignors to Solvay & Cie (Societe Anonyme), Brussels, Belgium

Filed Nov. 7, 1988, Ser. No. 269,879
Claims priority, application France, Nov. 19, 1987, 87 16147
Int. Cl.[5] A61F 2/02, 2/28; A61B 17/56
U.S. Cl. 623—66 9 Claims

1. A biodegradable prosthesis comprising a molecularly oriented lactic acid polymer exhibiting at 23° C. a tensile rigidity modulus higher than 5000 MPa and a tensile resilience higher than 500 kJ/m^2.

5,007,940

INJECTABLE POLYMERIC BODIES

Eric P. Berg, Plymouth, Minn., assignor to American Medical Systems, Inc., Minnetonka, Minn.

Filed Jun. 9, 1989, Ser. No. 364,722
Int. Cl.[5] A61F 2/02, 2/12; A61M 5/00
U.S. Cl. 623—66 7 Claims

1. An injectable composition consisting of plurality of discrete physiologically-compatible, non-biodegradable, polymeric bodies, said bodies having (i) an average outside diameter of from about 0.005 to 0.20 inch, (ii) reversible deformability of about 20 to 75% of their unstressed outside diameter, and (iii) a lubricious surface.

5,007,941

PROCESS FOR DYEING LEATHER: AQUEOUS BATH CONTAINING MIXTURE OF CARBON BLACK AND ACID DYE, DIRECT DYE OR METAL COMPLEX DYE

Bruno Martinelli, Allschwil; Markus Ghezzi, Oberschwiller, both of Switzerland, and Günter Streicher, Weil am Rhein, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 21, 1989, Ser. No. 454,499
Claims priority, application Switzerland, Jan. 2, 1989, 2/89
Int. Cl.[5] D06P 1/30
U.S. Cl. 8—436 16 Claims

1. A process for dyeing leather, which comprises treating leather by the exhaust process with an aqueous liquor which contains a formulation consisting essentially of a black anionic dye selected from the group consisting of acid dyes, direct dyes and metal complex dyes and a carbon black pigment; the weight ratio of anionic dye to black pigment being from 95:5 to 50:50.

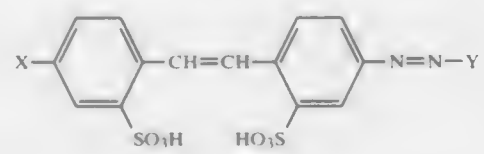
5,007,942

LIGHT-POLARIZING FILMS OR SHEETS CONTAINING STILBENE DYESTUFFS

Uwe Claussen, Leverkusen, and Friedrich W. Kröck, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 14, 1989, Ser. No. 450,757
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1988, 3843417; Jul. 1, 1989, 3921669
Int. Cl.[5] D06P 5/00; F21V 9/14; C09K 19/00
U.S. Cl. 8—506 6 Claims

1. Light-polarizing films or sheets containing dyestuffs which, in the form of the free acid, conform to the formula



in which

X signifies —CN, —CF_3, halogen, R^1CONH—, —COOH, —$CONH_2$, —$CONHR^1$, —$CONR^1R^2$, —$COOR^1$, —OH, —OR^1, —O—CO—R^1, —N—N—Y^1, or a substituted or unsubstituted heterocyclic radical,

R^1, R^2 signify alkyl, cycloalkyl, aryl or aralkyl, which may be interrupted by O and/or S, and

Y, Y^1 signify a substituted or unsubstituted aryl or heterocyclic radical.

5,007,943

SOL-GEL PROCESS ALUMINA ABRASIVE GRAIN BLENDS IN COATED ABRASIVE MATERIAL

Robert G. Kelly, Latham; Bernard T. Loughlin, Averill Park, and William F. McCutcheon, Rexford, all of N.Y., assignors to Norton Company, Worcester, Mass.

Filed Nov. 3, 1989, Ser. No. 431,400
Int. Cl.[5] B24B 1/00
U.S. Cl. 51—295 12 Claims

1. Coated abrasive material having a backing member and a layer of coated abrasive adhered thereto comprising:

(a) at least one layer of a maker coat;

(b) at least one layer of abrasive grains adhered to said backing member by said maker coat; and

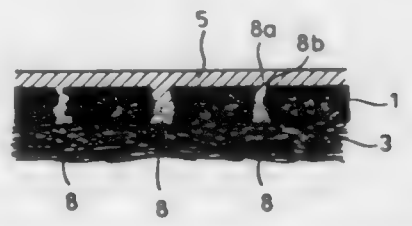
(c) a size coat on top of said at least one layer of abrasive grains said at least one layer of abrasive grains comprising a blend of sol gel process alumina abrasive grains in the proportion of from at least about 15% to about 75% by volume, and abrasive grains of alumina-zirconia abrasive grains in the amount of from about no more than 85% to about 25% by volume.

5,007,944

PROCESS FOR INCREASING THE SELECTIVITY OF ASYMMETRIC MEMBRANES

Ingo Pinnau, Hamburg, and Jan Wind, Borsbüttel, both of Fed. Rep. of Germany, assignors to GKSS Forschungszentrum Geesthacht GmbH, Geesthacht, Fed. Rep. of Germany

Filed May 11, 1987, Ser. No. 48,636
Claims priority, application Fed. Rep. of Germany, May 9, 1986, 3615649
Int. Cl.[5] B01D 53/22, 71/64
U.S. Cl. 55—16 12 Claims



1. A method for producing integral, asymmetric membranes for separating gases in mixture, comprising:

mixing together a polyether imide membrane forming polymer which forms membranes that are permeable to at least one gas in a mixture of gases, a volatile solvent for said polymer having a lower boiling point than any other component in the mixture, and an organic liquid swelling agent in which said polymer is not soluble and which does not react with either said polymer or said solvent, to form a pourable liquid mixture;

spreading said liquid mixture to form a thin film;

exposing said thin film to air or an inert gas to form a surface skin by evaporation;

contacting said thin film with a precipitation agent to form an integral, asymmetric polyether imide membrane;

treating said membrane with an organic fluid which is a solvent for polyether imide, or a swelling agent in which said membrane is not soluble, and a selective polymer dissolved in said organic fluid selected from the group consisting of polyether imide and polyvinyl fluoride, and

removing said organic fluid.

4. A method of separating gases in mixture, comprising:

contacting a mixture of gases to be separated with an integral asymmetric membrane produced by the process of claim 1, and

separating at least one gas from said gases in mixture by permeation through said membrane.

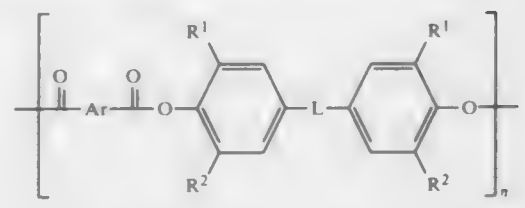
5,007,945

MEMBRANES FORMED FROM AROMATIC POLYARYLATES

Chao-Fong Tien, Macungie, and Andrew D. Surnamer, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

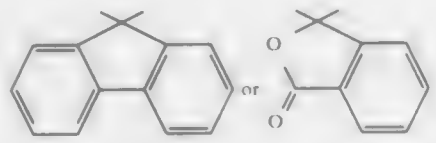
Filed Apr. 12, 1990, Ser. No. 508,763
Int. Cl.[5] B01D 53/22, 71/24
U.S. Cl. 55—16 12 Claims

1. A semi-permeable membrane formed from a polyarylate containing polymerizable units of the formula:



Wherein Ar is a C_1–C_{20} divalent hydrocarbon radical; R^1 and

R^2 are independently halo substituents; n is an integer greater than 50; and L is a multicyclo bridging group or



10. A process for separating a component of a gas mixture containing at least one other component, said process comprising: bringing said gas mixture into contact with the membrane of claim 1 which is selectively permeable toward one component of said gas mixture, whereby said component selectively permeates through said membrane from a feed side having both a higher partial pressure of said component and a higher total pressure to a permeate side having and a lower partial pressure of said component and a lower total pressure.

5,007,946

GRATING AND DUST-FILTER UNIT FOR CLOSING THE VENTILATING HOLE OF ELECTRONIC EQUIPMENT, WITH PROTECTIVE DEVICE AGAINST ELECTROMAGNETIC AND ELECTROSTATIC INTERFERENCE

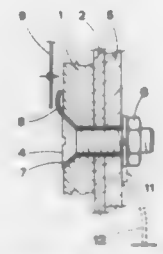
Ezio Babini, Bologna, Italy, assignor to Fittings for Industry S.R.L., Bologna Via Di Corticella, Italy

Filed May 7, 1990, Ser. No. 519,898

Claims priority, application Italy, May 12, 1989, 4808/89[U]

Int. Cl.[5] B01D *46/10*

U.S. Cl. 55—501 **3 Claims**



1. A grating and dust-filter unit for closing a ventilating hole of electronic equipment, with protective device against electromagnetic and electrostatic interference, said unit comprising:

a grating fastened to the housing of an electronic computer, through locking means;

a metal net placed above said locking means and kept in place by a cover suited to remain snap-locked to said grating;

a small bushing, for each locking means, with said locking means passing through and being electrically connected with said bushing;

said small bushing being provided with an extension turned towards the centre of said grating, so to remain below a corresponding portion of said net as well as to be electrically connected with said net, so that said net results to be electrically connected with said housing, with possibility for said net to be detached from said housing and connected with said housing respectively by being removed therefrom and being placed thereon.

5,007,947

METHOD FOR THE MANUFACTURE CAMERA MIRROR-DRUM

Kazuei Kenmoti, Hirakata, and Masamitu Miyazaki, Kadoma, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Apr. 7, 1989, Ser. No. 334,837

Claims priority, application Japan, Apr. 8, 1988, 63-87471

Int. Cl.[5] C03C *25/02*

U.S. Cl. 65—3.43 **5 Claims**



1. A method for the manufacture of camera mirror-drums comprising the steps of fusing glass in a vessel, drawing the fused glass from small holes in the bottom of said vessel to form glass fibers, forming indentations at regular intervals in said glass fibers while said fibers are still in a softened state, hardening said glass fibers, chopping said glass fibers at said indentations so that the chopped fibers are of uniform length, blending the chopped glass fibers of uniform lengths into a resin at certain proportions, and injection molding the mixture to produce a camera mirror-drum.

5,007,948

ESSENTIALLY COLORLESS SILVER-CONTAINING GLASSES THROUGH ION EXCHANGE

Roger J. Araujo, Big Flats, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Filed Mar. 19, 1990, Ser. No. 495,081

Int. Cl.[5] C03C *21/00*

U.S. Cl. 65—30.13 **8 Claims**

1. An essentially colorless, alkali metal oxide-Al_2O_3 and/or B_2O_3-SiO_2 glass, wherein at least a portion thereof contains silver ions produced through an ion exchange reaction wherein Ag^+ ions from an external source are exchanged with alkali metal ions in the glass, said glass having a base composition in which the alkali metal oxide and the Al_2O_3 and/or B_2O_3 are present in such concentrations that the glass possesses at atomic structure in which the fraction of non-bridging oxygen atoms is less than 0.03, and wherein up to a total of 7.5 cation percent Al_2O_3 and/or B_2O_3 can be replaced with at least one metal oxide selected from the group consisting of BeO, CaO, Ga_2O_3, La_2O_3, MgO, Nb_2O_5, Ta_2O_5, Yb_2O_3, ZnO, and ZrO_2, while maintaining the fraction of non-bridging oxygen atoms at less than 0.03.

5,007,949

SUPPORT FRAME FOR A GLASS SHEET

Denis Mathivat, and Jean-Marc Petitcollin, both of Thourotte, France, assignors to Saint-Gobain Vitrage International, Courbevoie, France

Filed Dec. 20, 1989, Ser. No. 453,938

Claims priority, application France, Dec. 21, 1988, 88 16892

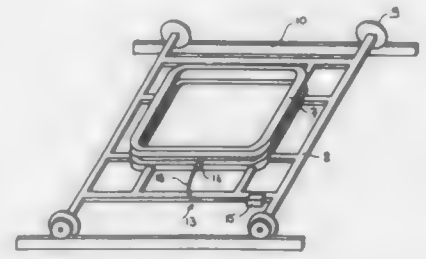
Int. Cl.[5] C03B *23/03*

U.S. Cl. 65—160 **8 Claims**

1. Support frame for a glass sheet that is heated to a temperature beyond its deformation temperature, comprising:

a moving trolley, said support frame being mounted on said moving trolley and having a shape adapted to the contour of the glass sheet, said moving trolley being movable into and out of a shaping station and to a position below an upper mold located within said shaping station, said shaping station comprising means for raising said heated glass sheet against said upper mold, wherein said moving trolley and said support frame are positioned below said upper mold when said heated glass sheet is raised against said upper mold;

a contactless detection device operatively connected to said support frame for selectively detecting the presence of



said glass sheet within an area defined by a region adjacent to said upper mold and a region adjacent to said support frame including said support frame after said glass sheet has been released from said upper mold and generating a signal indicative thereof; and

means for converting said signal received from said detection device into electrical pulses for controlling the movement of said support frame into and out of said shaping station in response to said detected signal.

5,007,950

COMPRESSED, WEDGED FLOAT GLASS BOTTOM STRUCTURE

Bert K. Krushinski, Murrysville, Pa.; Robert A. Lawhon, Chehalis, Wash.; Francis A. Radecki, Ross Township, Allegheny County, Pa., and Ronald L. Schwenninger, Ridgely, W. Va., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 22, 1989, Ser. No. 455,046

Int. Cl.[5] C03B *18/02*

U.S. Cl. 65—182.5 **18 Claims**



1. Apparatus for containing molten glass supported on molten metal comprising: a chamber having a bottom and side wall portions of refractory material suitable for contact with molten metal; the bottom including a row of refractory blocks in face-to-face abutment, each of the blocks having at least one of the abutting faces sloped so as to configure the block as an upwardly pointing, truncated wedge; pressure applying means external to the chamber at each end of the row bearing against a wall portion of the chamber that is sufficiently deformable to transmit pressure to the row of blocks for maintaining the row under compression so as to prevent upward displacement of the blocks due to molten metal migration around the blocks over a wide range of temperatures.

5,007,951

5-(N-3,4,5,6-TETRAHYDROPHTHALIMIDO)BENZOIC ACID THIOL ESTERS AS SELECTIVE HERBICIDES

Georg Pissiotas, Lörrach, Fed. Rep. of Germany; Hans Moser, Magden, Switzerland, and Hans-Georg Brunner, Lausen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

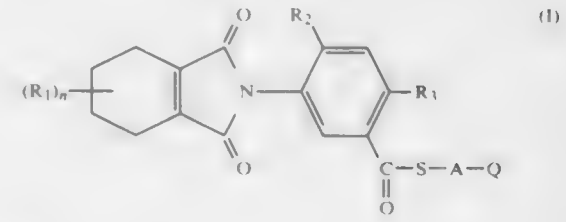
Filed Apr. 11, 1989, Ser. No. 336,399

Claims priority, application Switzerland, Apr. 20, 1988, 1449/88

Int. Cl.[5] A01N *43/34, 57/10;* **C07D** *209/04, 209/00*

U.S. Cl. 71—72 **30 Claims**

1. A 5-(N-3,4,5,6-tetrahydrophthalimido)benzoic acid thiol ester of formula I



(I)

wherein

n is 0, 1 or 2,

R_1 is C_1-C_3alkyl,

R_2 is hydrogen or halogen,

R_3 is halogen,

A is a C_1-C_4alkylene bridge, which is unsubstituted or mono- or polysubstituted by C_1-C_4alkoxy, C_1-C_4alkylthio or cyano,

Q is hydroxyl, halogen, cyano, thiocyanato, C_2-C_6alkenyl, C_2-C_6haloalkenyl, C_2-C_6cyanoalkenyl, C_2-C_{14}alkynyl, or a radical $-C(R_4)=CH-COOR_5$, $-CH(N(R_4)_2)COOR_4$, $-NR_6R_7$, $-COR_8$, $-CON(R_6)SO_2CH_3$, $-N(R_4)CH_2CN$, diallylaminocarbonyl, $-Si(R_{11})_3$, $-COOCH_2Si(CH_3)_2C_1$-C_6alkyl, $-COON=C(R_9)_2$, $-PO(OR_{12})-(O)_mR_{12}$, $-CON(R_4)SO_2C_1$-C_6alkyl, $-CON(R_4)SO_2C_1$-C_4haloalkyl, C_1-C_6alkylcarbonyl, a benzoyl or benzylcarbonyl radical whose phenyl ring is unsubstituted, mono- or polysubstituted by halogen, C_1-C_4alkyl, C_1-C_4haloalkyl, C_1-C_4alkoxy, C_1-C_4haloalkoxy, cyano or nitro, $-COOCH(CH_3)CH_2SR_4$, $-CON(R_4)CH_2C(OC_1$-C_6alkyl$)_2$, $-COO(CH_2)_{n+1}OC_3$-C_7alkenyl, $-COOC_1$-C_4cyanoalkyl, $-COO-C_1$-C_4alkylene-$N(R_4)_2$ or C_1-C_8alkanoyloxy,

A is a C_1-C_4alkylene bridge, which is mono- or polysubstituted by C_1-C_4alkoxy, C_1-C_4alkylthio or cyano, Q also is $COOR_{13}$,

R_4 is hydrogen, C_1-C_6alkyl or C_2-C_6alkoxyalkyl,

R_5 is C_1-C_6alkyl or C_1-C_6hydroxyalkyl,

R_6 and R_7 are independently of each other hydrogen, C_1-C_6alkyl, C_2-C_6alkoxyalkyl, C_3-C_6alkenyl, C_3-C_6alkenyl, C_3-C_6alkynyl or C_3-C_6cycloalkyl, 2-furanylmethyl, 2-tetrahydrofuranylmethyl, 2-(5-methyl)-tetrahydrofuranylmethyl or 2-thienylmethyl,

R_8 is a pyrrolidino, piperidino, morpholino, thiomorpholino, 4-methylpiperazino, pyrazolidino, imidazolidino or 1,2,4-triazol radical, which radical is unsubstituted or mono- or disubstituted by C_1-C_4alkyl,

R_9 is C_1-C_6alkyl or two adjacent R_9 can form a C_2-C_6alkylene bridge,

R_{11} is C_1-C_6alkyl or C_1-C_6alkoxy,

R_{12} is hydrogen, C_1-C_6alkyl, C_2-C_6alkenyl, C_3-C_6alkynyl C_3-C_7cycloalkyl, and

m is zero or 1.

26. A method of defoliating or desiccating crops of cotton and potatoes in order to facilitate the harvesting thereof, which method comprises treating the crop, shortly before harvesting, with an effective amount of a compound of formula I according to claim 1, or of a composition containing such a compound as the active ingredient.

5,007,952

HERBICIDAL NOVEL BENZOTHIAZOLONYL PYRROLES

Toyohiko Kume; Toshio Goto; Atsumi Kamochi; Akihiko Yanagi; Hiroshi Miyauchi, and Tadao Asami, all of Tokyo, Japan, assignors to Nihon Tokushu Noyaku Seizo K. K., Tokyo, Japan

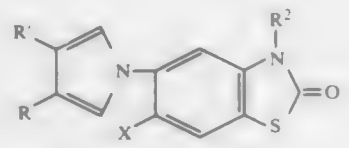
Filed Nov. 9, 1989, Ser. No. 435,223

Claims priority, application Japan, Nov. 17, 1988, 63-288796

Int. Cl.[5] A01N *43/76, 43/78, 43/86*

U.S. Cl. 71—73 **8 Claims**

1. A pyrrole of the formula



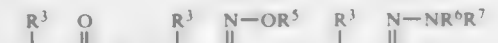
(I)

wherein

R^1 represents C_{1-4} alkyl, or one R^1 together with the other R^1 forms tetramethylene or butenylene,

X represents hydrogen or halogen,

R^2 represents hydrogen, C_{1-5} alkyl, halogeno-C_{1-5} alkyl, cyclopropylmethyl, C_{3-4} alkenyl, halogeno-C_{3-4} alkenyl, C_{3-4} alkynyl, C_{1-3} alkoxy-C_{1-2} alkyl, C_{1-3} alkylthio-C_{1-2} alkyl, C_{1-3} alkylsulfinyl-C_{1-2} alkyl, C_{1-3} alkylsulfonyl-C_{1-2} alkyl, phenylthio-C_{1-2} alkyl optionally substituted by halogen; phenylsulfinyl-C_{1-2} alkyl, phenylsulfonyl-C_{1-2} alkyl, cyano-C_{1-2} alkyl, carbamoylmethyl, thiocarbamoylmethyl, tri-C_{1-3} alkylsilylmethyl, phenyl-C_{1-2} alkyl optionally substituted by halogen, methyl or methoxy; or R^2 represents



wherein

m represents 2 or 3,

R^3 represents hydrogen or C_{1-4} alkyl,

R^4 represents C_{1-4} alkyl, or phenyl optionally substituted by halogen or C_{1-4} alkyl,

R^5 represents hydrogen, C_{1-4} alkyl, C_{3-4} alkenyl, C_{3-4} alkynyl, benzyl, C_{1-4}-alkyl-carbonyl, or C_{1-4} alkanesulfonyl,

R^6 and R^7 each represent C_{1-4} alkyl or C_{1-4} alkylcarbonyl,

R^8 represents C_{1-5} alkyl,

R^9 represents C_{1-5} alkyl or C_{1-4} alkyl-carbonyl or R^8 and R^9 together with the nitrogen atom to which they are bonded form a pyrrolidine, piperidine, N-methylpiperazine, piperazine or morpholine radical,

R^{10} represents C_{1-6} alkoxy, C_{3-7} cycloalkoxy, C_{2-3} haloalkoxy, C_{1-5} alkylamino, C_{2-8} dialkylamino, or N-C_{1-4} alkyl-N-phenylamino wherein the phenyl of the N-phenyl may be substituted by halogen and/or methyl or R^{10} represents N,N-C_{4-6} polymethyleneamino or tri-C_{1-3} alkylsilylmethoxy, and

R^{11} represents a triazole, thiazole, isoxazole, oxadiazole, thiadiazole, pyridine or pyrazine radical optionally substituted by C_{1-4} alkyl or C_{1-4} alkoxy.

7. A method of combatting unwanted vegetation which comprises applying thereto or to a locus from which it is desired to exclude such vegetation a herbicidally effective amount of a compound according to claim 1.

5,007,953

SEED TREATMENT COMPOSITIONS

Charles C. Chollet, Caldwell, Id., assignor to Snake River Chemicals, Inc., Caldwell, Id.

Continuation-in-part of Ser. No. 859,240, May 7, 1986, abandoned, which is a continuation of Ser. No. 696,443, Jan. 30, 1985, abandoned. This application Dec. 22, 1988, Ser. No. 290,236

Int. Cl.[5] A01N *31/04, 43/78, 47/14*

U.S. Cl. 71—77 **36 Claims**

1. A seed treatment dust, comprising:

(a) an effective amount of a fungicide;

(b) a diluent material; and

(c) comminuted Alder bark.

5,007,954

CONTROLLING UNDESIRABLE PLANT GROWTH USING NAPHTHINDAZOLE-4,9-QUINONES

Klaus Ditrich, Bad Durkheim; Gerhard Hamprecht, Weinheim; Bruno Wuerzer, Otterstadt; Norbert Meyer, Ladenburg; Karl-Otto Westphalen, Speyer, and Hartmut Laatsch, Goettingen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

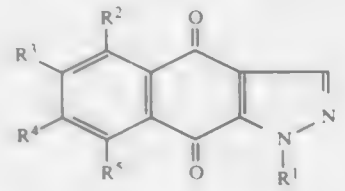
Filed Sep. 14, 1989, Ser. No. 407,318

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1988, 3831332

Int. Cl.[5] A01N *43/56, 43/90*

U.S. Cl. 71—90 **6 Claims**

1. A process for combating the growth of unwanted plants comprising: applying a herbicidally effective amount of a naphthindazole-4,9-quinone of the formula



where:

R^1 is hydrogen, C_1-C_{10}-alkyl, C_2-C_{10}-alkenyl, C_2-C_{10}-alkynyl, C_1-C_{10}-haloalkyl, C_1-C_{10}-hydroxyalkyl, C_2-C_{14}-alkoxyalkyl, C_2-C_{14}-alkylthioalkyl, C_3-C_7-cycloalkyl, C_1-C_4-alkylcabonyloxy-C_1-C_4-alkyl, C_1-C_4-alkylaminocarbonyloxy-C_1-C_4-alkyl, phenylaminocarbonyloxy-C_1-C_4-alkyl which is unsubstituted or substituted in the phenyl moiety by halogen, C_1-C_4-alkyl or C_1-C_4-alkoxy, phenylsulfonyloxy-C_1-C_4-alkyl which is unsubstituted or substituted in the phenyl moiety by halogen, C_1-C_4-alkyl or C_1-C_4-alkoxy, C_1-C_4-alkoxycarbonyl-C_1-C-alkyl, hydroxycarbonyl-C_1-C_4-alkyl, aminocarbonyl-C_1-C_4-alkyl, C_1-C_4-alkylaminocarbonyl-C_1-C_4-alkyl, di-(C_1-C_4-alkyl)-aminocarbonyl-C_1-C_4-alkyl, halo-C_3-C_4-alkynyl, unsubstituted or halogen- or C_1-C_4-alkyl-substituted heteroaryl radical with one or two nitrogen atoms, phenyl which is unsubstituted or substituted by halogen, hydroxy, nitro, amino, C_1-C_4-alkylamino, di-C_1-C_4-alkylamino, cyano, C_1-C_4-alkyl, C_1-C_4-alkoxy, C_1-C_4-haloalkoxy, C_1-C_4-haloalkyl, C_1-C_4-alkylthio or C_1-C_4-haloalkylthio, or unsubstituted or halogen-substituted benzyl, and

R^2, R^3, R^4 and R^5 are identical or different and each denotes hydrogen, halogen, nitro, cyano, hydroxy, amino, C_1-C_4-alkylamino, di-C_1-C_4-alkylamino, C_1-C_6-alkyl, C_1-C_5-haloalkyl, C_1-C_5-alkoxy, C_1-C_5-haloalkoxy, C_1-C_5-alkylthio, C_1-C_5-haloalkylthio, C_2-C_{10}-alkoxyalkyl, carboxyl, C_2-C_6alkoxycarbonyl, C_2-C_6-alkanoyloxy, C_2-C_6-haloalkanoyloxy, C_1-C_4-alkyl-carbonylamino, C_1-C_4-alkylaminocarbonyl, di-(C_1-C_4-alkyl)-aminocarbonyl, or phenyl or heteroaryl, each of which is unsubstituted or substituted by halogen, trifluoromethyl, nitro, cyano, amino, C_1-C_4-alkoxy, C_1-C_4-alkylthio or C_1-C_5-haloalkylthio,

and

R^3 and R^4, together with the two carbon atoms of the phenyl ring to which they are attached, form a heterocyclic ring or a benzene or naphthalene ring which is unsubstituted or substituted by halogen, nitro, cyano, amino, hydroxy, trifluoromethyl, C_1-C_5-alkyl, C_1-C_5-alkoxy, C_1-C_5-haloalkylthio, C_1-C_5-haloalkoxy or C_1-C_5-alkylthio,

to unwanted plants and/or their habitat.

5,007,955

CATIONIC HERBICIDES

Akira Taniuchi, Kyoto; Hironori Kataoka, Ikoma, and Etsuo Ito, Kyoto, all of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 110,389, Oct. 20, 1987, abandoned. This application Nov. 4, 1988, Ser. No. 267,705

Int. Cl.[5] A01N *41/04*

U.S. Cl. 71—103 **18 Claims**

1. A method of combatting weeds which comprises applying thereto a herbicidally effective amount of a cationic herbicidal composition which contains as an active ingredient a quaternary ammonium salt of the general formula:



wherein R_1 is an alkyl or alkenyl group of up to 22 carbon atoms; R_2 and R_3 each is an alkyl or alkenyl group of up to 22 carbon atoms, a benzyl group or a hydroxyalkyl group of up to 4 carbon atoms; R_4 is a hydroxyalkyl group of up to 4 carbon atoms; and R_5 is an alkyl group of 1 to 22 carbon atoms, a phenyl group, a C_{1-22} alkyl- or hydroxy-substituted phenyl group, or a naphthyl group.

5,007,956

ASSEMBLED CAM SHAFT

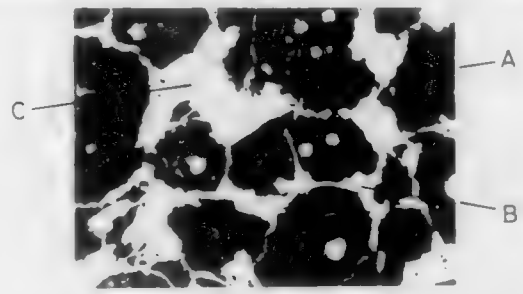
Yoshiaki Fujita, Saitama; Satoshi Kawai, and Shunsuke Takeguchi, both of Tochighi, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 35,780, Apr. 8, 1987, abandoned. This application Oct. 27, 1988, Ser. No. 263,967

Claims priority, application Japan, Apr. 11, 1986, 61-83580

Int. Cl.[5] C22C *29/04*

U.S. Cl. 75—238 **4 Claims**



1. An assembled cam shaft member whose assembled portion, except for a cam lobe is made of sintered material, said sintered material consisting essentially of 0.5 to 4.0% by weight of carbon, 0.1 to 80% by weight of phosphorus, 5 to 50% by weight of copper, at least one of 0.11 to 1% by weight of magnasese and 0.02 to 2% by weight of silicon, and the substantial balance being iron and impurities, said copper acting to braze each assembled portion to the shaft member.

5,007,957

METHOD FOR PRODUCING TUNGSTEN CARBIDE GRADE POWDERS SUITABLE FOR ISOSTATIC COMPACTION

Joseph J. Penkunas, and Theodore E. Smith, Jr., both of Sayre, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 10, 1990, Ser. No. 579,518

Int. Cl.[5] B22F *1/00*

U.S. Cl. 75—252 **5 Claims**

1. A method for producing metal carbide grade powders suitable for isostatic compaction, said method comprising:

(a) combining a binder metal powder with an esterified wax and heating said wax to a temperature above the melting point of said wax to melt said wax and maintain said wax in the molten state to form a first mixture, with the amount of wax being sufficient to result in a level of wax in the subsequently produced second mixture of no greater than about ½% by weight;

(b) combining a metal carbide powder component with said first mixture while maintaining said wax in said molten state;

(c) forming a slurry of said second mixture and water;

(d) attritor milling said slurry at a temperature below the melting point of said wax; and

(e) removing water from the resulting attritor milled mixture to form said metal carbide grade powder.

5,007,958

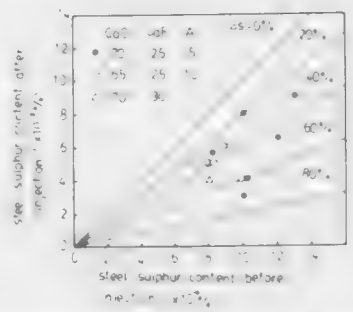
LIME-BASED INJECTION POWDER FOR STEEL-REFINING

Yeong-Huei Chung, Kaohsiung, and Der-Shyang Cheng, Kaohsiung Hsien, both of Taiwan, assignors to China Steel Corporation, Kaohsiung, Taiwan

Filed Feb. 8, 1990, Ser. No. 476,791

Int. Cl.[5] C21C *7/02, 7/04*

U.S. Cl. 75—330 **2 Claims**



1. A method of making a lime-based injection powder for use in a steel-refining, said powder having excellent waterproofing and desulphurization effects, the method comprising the steps of preparing a powder which consists of (a) more than 65% by weight of calcium oxide, (b) less than 30% by weight of fluorite, and 5-10% by weight of Al powder, and converting 5%-7% by weight of the calcium oxide into CaCO3 by reacting the calcium oxide with carbon dioxide.

5,007,959

PROCESS FOR CONVERTING OF SOLID HIGH-GRADE COPPER MATTE

Marc Reist, Notre Dame de l'Ile Perrot; Hans Persson, and Daniel Poggi, both of Pointe-Claire, all of Canada, assignors to Noranda Inc., Toronto, Canada

Filed Feb. 23, 1989, Ser. No. 313,884

Claims priority, application Canada, Apr. 29, 1988, 565626

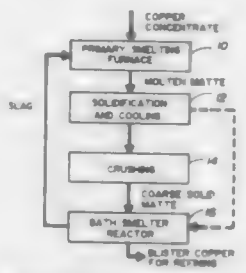
Int. Cl.[5] C22B *15/00*

U.S. Cl. 75—645 **6 Claims**

1. A process for the production of blister copper from high-grade copper matte or similar copper sulphide consisting of the steps:

(a) solidifying and cooling molten copper matte produced in a primary smelting furnace followed by crushing of the solidified matte if necessary to produce coarse particles of solid copper matte less than about fifteen centimeters in size;

(b) heating a bath smelting reactor to a temperature at which converting reactions take place and providing a bath of molten copper;



(c) continuously feeding measured quantities of said coarse particles of solid copper matte and flux into the bath smelting reactor;

(d) continuously introducing sufficient quantities of oxygen or oxygen enriched air through submerged fluid protected tuyeres such that the iron and sulphur present in the copper matte are oxidized; and

(e) periodically withdrawing molten blister copper, liquid slag and continuously withdrawing off-gas from the bath smelting reactor.

5,007,960

METHOD FOR REMOVING CHROMIUM FROM CHROMIUM CONTAINING WASTE MATERIAL

Omar Baturay, City Island, N.Y.; James E. Shirk, Jersey City, and Adam L. Sigerson, Sussex, both of N.J., assignors to Chrome Technology Inc., Trenton, N.J.

Filed Oct. 13, 1989, Ser. No. 421,136
Int. Cl.[5] C01G *37/00*
U.S. Cl. 75—743 **19 Claims**



1. A method for extracting chromium is the form of chromate from material containing chromium, said method comprising:

drying by indirect heating said material containing chromium;

sizing said dried material containing chromium to a particle size of less than 0.105 mm;

mixing said sized material containing chromium with an alkaline reactant;

reacting said mixed sized material containing chromium and alkaline reactant with oxygen by heating said mixed sized material in the presence of oxygen by indirect heating in an enclosed reaction vessel for a time and at a temperature to react substantially all the chromium to water soluble chromate thereby forming a reaction material containing water soluble chromate;

limiting the oxygen present in said enclosed reaction vessel during said reacting step to approximately stoichiometric oxygen requirements of said reaction;

removing said reaction material containing water soluble chromate from said reaction vessel and resizing and cooling said reaction material,said resized reaction material having a particle size of less than 0.105 mm; thereafter,

extracting said water soluble chromate from said reaction material using an aqueous solvent thereby providing an aqueous phase containing water soluble chromate and a clean solid phase substantially free from chromium;

evaporating said water soluble chromate containing aqueous phase thereby providing a concentrated chromate phase

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5,007,961

AQUEOUS ADDITIVE SYSTEMS, METHODS AND POLYMERIC PARTICLES

Kenneth W. Hyche, and William C. Gose, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 197,946, May 24, 1988, which is a continuation-in-part of Ser. No. 827,042, Feb. 7, 1986, Pat. No. 4,898,616, which is a continuation-in-part of Ser. No. 701,888, Feb. 15, 1985, abandoned. This application Sep. 6, 1988, Ser. No. 240,503
Int. Cl.[5] C08L *91/06*; C09D *191/06*, *191/08*
U.S. Cl. 106—18 **15 Claims**

1. Aqueous application system for applying additives to polymeric particles, the system being characterized by freedom from in situ formation of color producing complexes, said system comprising

(a) an emulsified wax,

(b) in the range of 0.025 up to 60 parts by weight of surfactant per part of emulsified wax,

(c) in the range of 0.0005 up to 2 parts by weight of a base with a pH in the range of greater than 7 to equal to or less than about 12,

(d) in the range of 0.05 up to 160 parts by weight of at least one processing, stabilizing or other functional polymer additive, and

(e) at least enough water to render the resulting combination fluid

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5,007,962

BORON NITRIDE COATINGS

Timothy W. Osborne, Brooklyn, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 19, 1989, Ser. No. 409,057
Int. Cl.[5] C04B *35/68*; B28B *7/38*
U.S. Cl. 106—38.22 **16 Claims**

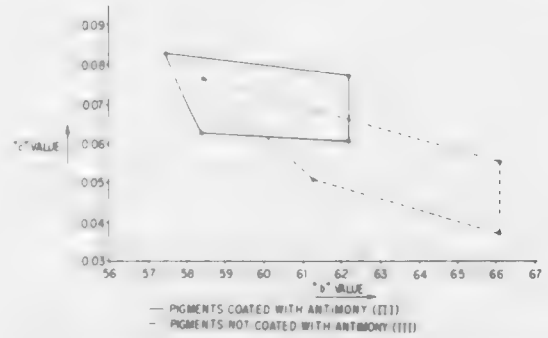
1. A boron nitride-containing composition for use as a film-forming coating comprising particulate boron nitride containing B_2O_3 dispersed in a solution of methyl chloroform and at least one solvent and wherein said particulate boron nitride containing B_2O_3 is from 1.5 to 50 weight percent, said methyl chloroform is from 10 to 70 weight percent and said solvent is from 5 to 30 weight percent, all based on the weight of the composition and wherein said particulate boron nitride is sized from 0.1 to 50 microns.

5,007,963

NOVEL PROCESS FOR THE PREPARATION OF LEAD MOLYBDATE PIGMENTS AND NOVEL LEAD MOLYBDATE PIGMENTS

Leonardus J. H. Erkens, CK Maastricht; Gerben P. Algra, RB Maastricht; Herman J. J. M. Geurts, AX Kerkrade, and Hubertus P. A. Gielkens, BD Amstenrade/Schinnen, all of Netherlands, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 17, 1988, Ser. No. 259,083
Claims priority, application Switzerland, Oct. 22, 1987, 4133875
Int. Cl.[5] C09C *1/20*
U.S. Cl. 106—433 **12 Claims**



1. In a process for the preparation of a lead molybdate pigment containing lead chromate, lead sulfate, and lead molybdate by (a) reaction of an aqueous solution of a lead salt with an aqueous solution containing chromate, molybdate and sulfate salts or (b) reaction of an aqueous solution of a lead salt with an aqueous solution of chromate salt, an aqueous solution of molybdate salt and an aqueous solution of sulfate salt, the improvement comprising

conducting said reaction in the presence of 2 to 5 mol % lead molybdate seed crystals based on the total molar amount of lead chromate, lead sulfate, and lead molybdate while keeping the pH in the acid range.

5,007,964

CALCIUM CARBONATE, CALCIUM CARBONATE PIGMENT, PROCESS FOR PREPARING SAME, COATING COMPOSITION FOR INFORMATION RECORDING PAPER AND INFORMATION RECORDING PAPER

Ryogo Tsukisaka, Takarazuka; Satoshi Kondo, Nishinomiya; Toshio Kaneguchi, Kobe, and Takashi Deguchi, Nishinomiya, all of Japan, assignors to Shiraishi Central Laboratories Co., Ltd., Hyogo, Japan

Filed Jan. 13, 1989, Ser. No. 296,963
Claims priority, application Japan, Mar. 9, 1988, 63-55476
Int. Cl.[5] C09C *1/02*
U.S. Cl. 106—464 **7 Claims**



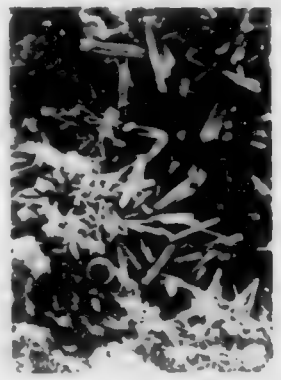
1. A calcium carbonate which is 25 to 55 m^2/g in BET specific surface area, 5 to 110 in the ratio of BET specific surface area (m^2/g)/mean particle size (μm), at least 120 ml/100 g in oil absorption as determined by the Ogura method and at least 1.8 g/g in water absorption.

5,007,965

MATERIAL FOR TREATING HEAVY METALS AND METAL IONS

Taiichio Sasae, Nagaokakyo, and Yoshio Taguchi, Tokyo, both of Japan, assignors to Kansai Engineering Co., Ltd., Kyoto, Japan

Filed Mar. 17, 1989, Ser. No. 324,883
Int. Cl.[5] C04B *7/02*
U.S. Cl. 106—800 **3 Claims**



1. A material for mixing with water containing effluents shaving harmful heavy metals and heavy metal ions therein so as to securely confine the heavy metals and ions in a solidified continuous-pore structure, comprising:

(1) a mixture of quicklime and cement with the quicklime being 10 weight % to 100 weight % of the cement.

(2) based on the weight of the quicklime and cement,

(a) 0.05 to 0.35% by weight of potassium chloride, 0.03 to 0.20% by weight of magnesium chloride, 0.03 to 0.20% by weight of sodium chloride, 0.03 to 0.25% by weight of calcium chloride, 0.00002 to 0.01% by weight of cobalt chloride, 0.00002 to 0.01% by weight of citric acid, and 0.001 to 0.02% by weight of sodium sulfate; and wherein the balance is the cement-quicklime mixture.

5,007,966

CYCLODEXTRIN COMPLEXING METHOD

Allan Hedges, Crown Point, and Frank Tenbarge, Valparaiso, both of Ind., assignors to American Maize-Products Company, Stamford, Conn.

Filed Sep. 21, 1988, Ser. No. 247,251
Int. Cl.[5] C08B *30/00*
U.S. Cl. 127—34 **6 Claims**

1. A method for forming a complex between a cyclodextrin and a guest molecule comprising the steps of:

(a) forming a mix of a cyclodextrin having a moisture content between about 25% to about 65% by weight with a guest molecule;

(b) charging a shell of a ball mill with said mix of cyclodextrin and guest molecule and with a plurality of balls;

(c) horizontally rotating said shell with said plurality of balls and said mix therein for a period of about one half hour to about 24 hours at about 50% to about 80% of critical speed to form a complex between said cyclodextrin and said guest molecule; and

(d) scraping the sides of the ball mill during rotation of said shell to remove material that sticks to the sides of the shell.

5,007,967

SEPARATION AND PURIFICATION OF BRANCHED BETA CYCLODEXTRINS

Robert N. Ammeraal, Worth, Ill., assignor to American Maize-Products Company, Hammond, Ind.

Filed Aug. 15, 1988, Ser. No. 232,307
Int. Cl.[4] C13D *3/14*; B01D *15/08*
U.S. Cl. 127—46.1 5 Claims

1. A method for sequentially separating branched beta cyclodextrins having branches of varying molecular weight into fractions of branched beta cyclodextrins having similar molecular weight branches from a solution containing branched beta cyclodextrins with varying molecular weight branches comprising: passing said solution containing branched beta cyclodextrins with varying molecular weight branches through a matrix upon which an inclusion compound is attached by means of a bridging compound thereby positioning said inclusion compound about 6 to about 18 Å from the surface of the matrix, and

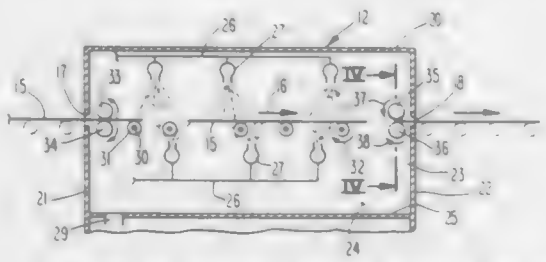
eluting sequentially by fractions branched beta cyclodextrins having similar molecular weight branches wherein longer branched beta cyclodextrins are eluted before shorter branched beta cyclodextrins.

5,007,968

PROCESS AND APPARATUS FOR TREATING ARTICLES OF SUBSTANTIAL THICKNESS

Frederick E. Coffman, and Charles H. Pelton, both of State College, Pa., assignors to Chemcut Corporation, State College, Pa.

Filed Jul. 28, 1989, Ser. No. 387,333
Int. Cl.[4] B08B *9/20*, *3/00*
U.S. Cl. 134—25.4 19 Claims



1. A process for chemically treating generally flat thick articles in a chamber with a liquid treatment fluid, wherein the fluid is applied to articles being treated along a path of travel for the articles, the process including the steps of

(a) providing a substantially closed chamber for treating articles therein;

(b) delivering articles along a path of travel through the chamber;

(c) applying a liquid treatment fluid to articles being delivered along their path of travel through the chamber;

(d) providing opposed rotating cylindrical surfaced roller members normally in engagement with each other to form a closed nip therebetween when articles are not passing through the nip;

(e) positively rotatably driving at least one of the roller members of the nip;

(i) by providing a driven member having a first axis and being carried by the at least one roller member;

(ii) by providing a drive member having a second axis; and by

(iii) engaging the driven member with the drive member;

(f) engaging the articles in the nip between the opposed rotating roller members to keep treatment fluid that is being applied to articles in the chamber from passing beyond of the nip; and

(g) opening the nip by engaging the at least one of the roller members of the nip and transversely displacing the axis of the engaged roller member away from its opposed roller member by contacting the roller members with articles as the articles pass through the nip, while continuing to positively rotatably drive the at least one roller member in the same positive manner, and without separation of said axes of the drive and driven members.

8. An apparatus for chemically treating generally flat thick articles in a chamber with a liquid treatment fluid, wherein the fluid is applied to articles being treated along a path of travel for the articles, the apparatus including

(a) means providing a substantially closed chamber for treating articles therein,

(b) means for delivering articles along a path of travel through the chamber,

(c) means for applying a liquid treatment fluid to articles being delivered along their path of travel through the chamber,

(d) means providing opposed rotating cylindrical surfaced roller members normally in engagement with each other to form a closed nip therebetween when articles are not passing through the nip,

(e) driving means positively rotatably driving at least one of the roller members of the nip;

(i) including means providing a driven member having a first axis and being carried by the at least one said roller member,

(ii) including means providing a drive member having a second axis, and

(iii) with the driven member being in engagement with the drive member,

(f) the opposed rotating roller members being disposed to provide means for engaging the articles in the nip, to keep treatment fluid that is being applied to articles in the chamber from passing beyond the nip; and

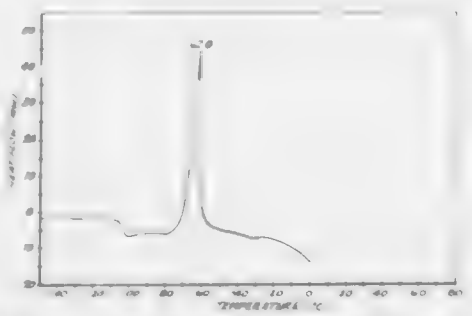
(g) the opposed roller members including means for opening the nip by engaging the at least one of the roller members of the nip with articles being treated and transversely displacing the axis of the engaged roller member away from its opposed roller member as the articles pass through the nip while said driving means continue to positively rotatably drive the at least one roller member in the same positive manner, and without separation of said axes of said drive and driven members.

5,007,969

LOW TOXICITY LIQUID SOLVENT

Patrisha A. Doscher, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 20, 1988, Ser. No. 196,903
Int. Cl.[5] C09D *9/00*; C11D *7/26*, *7/50*; C23G *5/02*
U.S. Cl. 134—38 8 Claims



1. A low toxicity solvent comprising 40–95 vol % ethylene diacetate and the remainder an alicyclic carbonate including an effective amount of ethylene carbonate, the solvent being aprotic and having a vapor pressure less than or equal to 1 mm Hg at 20° C.

6. A method of removing a residue from a solid substrate comprising the step of contacting the residue with an effective amount of the solvent of claim 1.

5,007,970

PROCESS FOR THE CLEANING OF STEAM GENERATOR HEATING SURFACES

Hellmut A. Herrmann, Kassel, and Wolfgang Hubeler, Staufenberg, both of Fed. Rep. of Germany, assignors to Schmidt'sche Heissdampf GmbH, Kassel-Bettenhausen, Fed. Rep. of Germany

Filed May 2, 1988, Ser. No. 188,314
Claims priority, application Fed. Rep. of Germany, May 2, 1987, 3714673
Int. Cl.[5] B08B *3/14*
U.S. Cl. 134—42 8 Claims

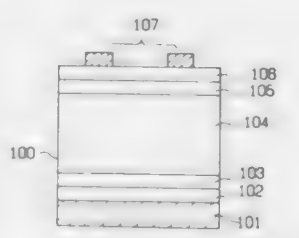
1. In a process for causing the removal of deposits from the surface of a heat exchange device by mechanical cleaning, the improvement comprising lowering the temperature of the surface to be cleaned below the softening temperature of the deposited material to be removed therefrom, at least for a period at the beginning of a cleaning cycle whereby the deposits will be hardened so as to be capable of mechanical removal.

5,007,971

PIN HETEROJUNCTION PHOTOVOLTAIC ELEMENTS WITH POLYCRYSTAL BP(H,F) SEMICONDUCTOR FILM

Masahiro Kanai, Tokyo; Tatsuyuki Aoike; Koichi Matsuda, both of Nagahama, and Soichiro Kawakami, Hikone, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 19, 1990, Ser. No. 467,537
Claims priority, application Japan, Jan. 21, 1989, 1-12509
Int. Cl.[5] H01L *31/075*, *31/0368*, *31/0376*
U.S. Cl. 136—258 4 Claims



1. A pin heterojunction photovoltaic element which generates photoelectromotive force by the junction of a p-type semiconductor layer, an i-type semiconductor layer and an n-type semiconductor layer, characterized in that at least one of said p-type and n-type semiconductor layers comprises a polycrystal semiconductor film comprised of boron atoms (B), phosphorus atoms (P), hydrogen atoms (H), and atoms (M) of a p-type or n-type dopant element, said polycrystal semiconductor film contains crystal grains of an average size in the range of 50 to 800 Å, and said polycrystal semiconductor film contains the hydrogen atoms (H) in an amount of 0.5 to 7 atomic %; and said i-type semiconductor layer comprises a non-single crystal semiconductor film containing silicon atoms (Si) as a matrix and at least one kind of atoms selected from the group consisting of hydrogen atoms (H) and fluorine atoms (F).

5,007,972

SAMARIUM-TRANSITION METAL MAGNET FORMATION

Kaplesh Kumar, Wellesley, and Herbert A. Newborn, Marblehead, both of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Jun. 9, 1988, Ser. No. 204,633
Int. Cl.[5] H01F *1/08*
U.S. Cl. 148—102 10 Claims

1. A process for fabricating high strength magnets; the process comprising the following steps in the order recited:

heating a rare earth transition metal alloy comprising samarium, at a temperature of about 1180°–1200° C. for 2–24 hours;

solution treating said alloy at a temperature of about 1150° C. for 2–24 hours;

quenching said alloy to less than 50° C.;

reducing said alloy to a powder having a particle size in the range of approximately 5–10 microns;

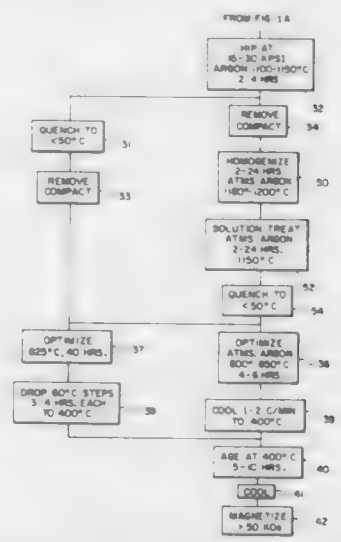
exposing said powder to a magnetic field to magnetically align said powder;

substantially immobilizing said aligned powder by cold-pressing to produce a cold compact;

hot isostatically pressing said cold compact to a densified compact;

optimizing, said densified compact by heat treatment according to one of the following sets of treatment conditions (a) and (b):

(a) a temperature of about 800°–850° C. for 4–6 hours;



(b) a temperature of approximately 825° C. for approximately 40 hours;

slow cooling said optimized densified compact as a function of its optimization treatment, as follows:

when optimizing is carried out according to optimizing treatment conditions (a) above, cooling is carried out at 1°–2° C. per minute to a temperature of approximately 400° C.; and

when optimizing is carried out according to optimizing treatment conditions (b) above, cooling is carried out in decrements of approximately 60° C. to approximately 375°–425° C., with the temperature being held for about 3–4 hours at each step;

aging said densified compact at a temperature of 375°–425° C. for approximately 5–10 hours;

cooling the aged densified compact; and

thereafter magnetizing the aged densified compact.

5,007,973

MULTICOMPONENT EXPLOSIVES

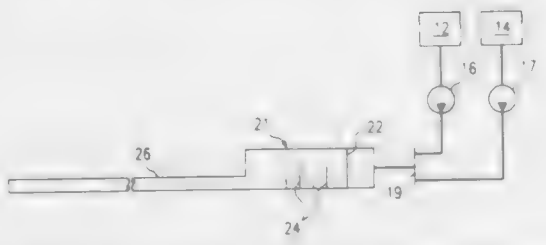
Richard E. Trapp; Gary L. Hansen, both of Salt Lake City; Robert B. Clay, Bountiful, all of Utah; Lawrence J. Dubetsky, Tamaqua, and Robert S. Olney, Bethlehem, both of Pa., assignors to Atlas Powder Company, Dallas, Tex.

Filed Oct. 12, 1989, Ser. No. 420,341
Int. Cl.[5] D03D *23/00*
U.S. Cl. 149—109.6 37 Claims

1. In a method for the formulation of an explosive composition, the steps comprising:

(a) providing a fuel component of said explosive composition comprising a suspension of a particulate metal fuel in a carrier liquid formed of a mixture of a water miscible

polyhydric alcohol and a pyrrolidone solvent and containing an amount of thixotropic thickening agent effective to provide a viscosity of said fuel component of at least 2000 centipoises at 20° C. and a shear rate of 20 rpm and no more than 100,000 centipoises at −20° C. and a shear rate of 10 rpm;



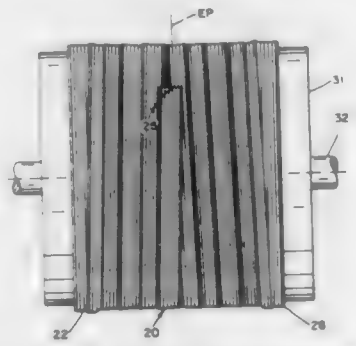
(b) providing an oxidizer component comprising an aqueous solution of an inorganic oxidizer salt; and
(c) mixing said fuel component and said oxidizer component to provide a liquid explosive composition.

5,007,974

METHOD OF MAKING A BELT OVERLAY FOR PNEUMATIC TIRES

Antonnis G. Maathuis, Fouhren, Netherlands; Jürgen Spielmann, Heisdorf, Luxembourg; Klaus Beer, Stow, and Thomas R. Oare, Suffield, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 363,812, Jun. 9, 1989, Pat. No. 4,989,658. This application May 4, 1990, Ser. No. 519,083
Int. Cl.[5] B29D *30/16, 30/00;* **B60C** *9/28*
U.S. Cl. 156—117 **1 Claim**



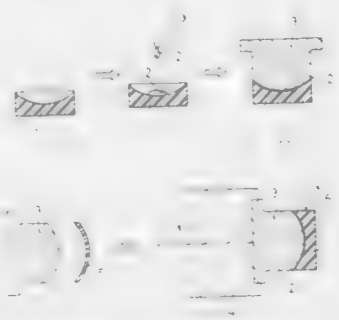
1. A method of manufacturing an overlay structure for a pneumatic tire comprising the steps of:
a. providing a belt structure which is wrapped circumferentially about a cylinder drum which is secured to a rotatable shaft;
b. providing a ribbon which comprises an elastomeric substance containing side-by-side textile cords extending longitudinally of the ribbon;
c. supplying the ribbon to the drum by a let-off means and adhering a first end of the ribbon to a radially outermost belt ply of the belt structure in close proximity to an axial centerline of the belt structure;
d. rotating the drum and shaft while at the same time the let-off device supplying the ribbon traverses laterally to a first lateral edge of the belt structure;
e. when the ribbon is disposed radially outwardly of the first lateral edge of the belt structure stopping the lateral movement of the let-off means supplying the ribbon while the drum and shaft continue to rotate;
f. causing the let-off means supplying the ribbon to traverse laterally of the belt structure to a second lateral edge of the belt structure while the drum and shaft continue to rotate;
g. when the ribbon is disposed radially outwardly of the second lateral edge of the belt structure stopping the lateral movement of the let-off means supplying the ribbon while the drum and shaft continue to rotate;
h. causing the let-off means supplying the ribbon to traverse laterally of belt structure until the let-off means is aligned with the axial centerline of the belt structure while the drum and shaft continue to rotate; and then
i. stopping both the rotation of the drum and shaft and the lateral movement of the let-off means supplying the ribbon, cutting the ribbon, and adhering a second end of the ribbon to the underlying ribbon.

5,007,975

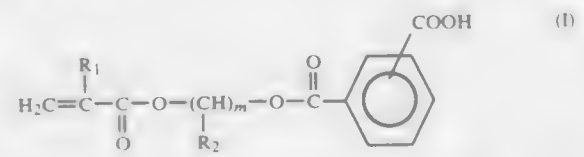
ULTRAVIOLET-HARDENABLE ADHESIVE AND BONDING METHOD EMPLOYING SAME

Yasuyoshi Yamamoto, Komaki; Yuzo Kaga, Nagoya; Toshiharu Yoshikawa, Nagoya, and Akira Moribe, Inazawa, all of Japan, assignors to Menicon Co., Ltd., Aichi, Japan

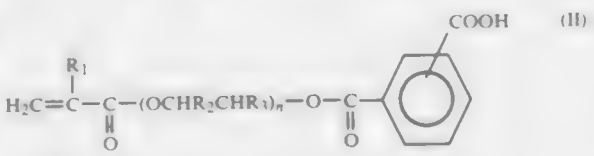
Filed Oct. 25, 1989, Ser. No. 426,203
Claims priority, application Japan, Nov. 13, 1986, 61-270650
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—154 **13 Claims**



1. A method of bonding a non-water swellable, ophthalmic-lens blank to a support member so as to subject said ophthalmic-lens blank to working and/or treatment, in producing a non-water swellable ophthalmic lens, comprising the steps of:
preparing an ultraviolet-hardenable adhesive comprising at least one photopolymerizing monomer and at least one photoinitiator, said at least one photopolymerizing monomer being selected from the group consisting of acrylates or methacrylates represented by following general formulas (I) and (II):



(I)



(II)

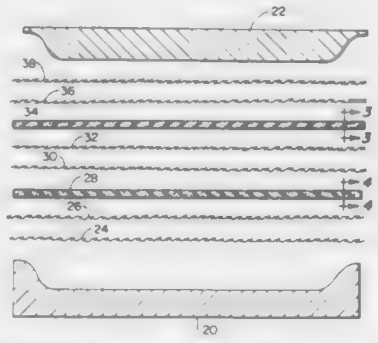
,wherein
R_1 is hydrogen or methyl,
R_2 is hydrogen or methyl,
R_3 is hydrogen or methyl,
m is a positive integer from 2 to 10;
n is a positive integer from 1 to 5; and
bonding said ophthalmic-lens blank to said support member with said ultraviolet-hardenable adhesive.

5,007,976

METHOD OF MAKING A HEADLINER

Marshall G. Satterfield, Johnstown; David M. Steinke, Baltimore, and Michael Blankenship, Pataskala, all of Ohio, assignors to Process Bonding, Inc., Johnstown, Ohio

Filed Oct. 16, 1989, Ser. No. 421,965
Int. Cl.[5] B32B *31/20*
U.S. Cl. 156—222 **70 Claims**



1 A process for forming a smooth contoured laminated panel from layers of compressible polyurethane foam, fiber glass, scrim and remay comprising,
supplying a mold having an upper part and a lower part, said parts including facing substantially mirror image, curved surfaces,
assembling on the curved surface of said mold lower part in sequence:
(a) a first layer of adhesive impregnated scrim,
(b) a first layer of open celled compressible polyurethane foam, said first polyurethane layer being impregnated with an adhesive in an amount to fill the open cells and make said polyurethane layer incompressible when heated to a curing temperature,
(c) a first layer of adhesive impregnated fiber glass,
(d) a second layer of open celled polyurethane foam,
(e) an adhesive impregnated remay, and
(f) a decorative layer,
bringing the curved surfaces of the two mold parts together to cause the assembled layers to conform to the facing mold surfaces,
heating the molds to cure the adhesive impregnating the layers, and
retracting the molds and removing the formed panel from the lower mold part.

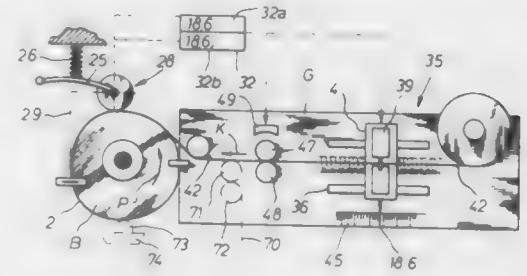
5,007,977

METHOD AND APPARATUS FOR APPLYING A STRIP TO THE PLANAR CONTOUR-PREPARED EDGE OF A ROTATING LENS

Lutz Gottschald, AM Meerbusch, Fed. Rep. of Germany, assignor to Wernicke & Co. GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Mar. 17, 1989, Ser. No. 324,897
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1988, 3808929
Int. Cl.[5] B32B *31/18*
U.S. Cl. 156—353 **8 Claims**

1. An apparatus for applying a strip to the planar contour-prepared edge of a lens, comprising:
support means for said lens;
a register for determining the circumference of said lens;
a perforating mechanism for perforating said strip;
a braking and arresting mechanism, for said strip, disposed between said perforating mechanism and said lens; and



a guide roller for guiding said strip onto said lens edge, with said guide roller being spaced from said lens.

5,007,978

APPARATUS FOR TIRE RETREADING

Frederick J. Presti, Warrington, Pa., assignor to Presti Rubber Products, Inc., New Britain, Pa.

Filed Apr. 12, 1989, Ser. No. 336,758
Int. Cl.[5] B60C *5/00;* **B29C** *35/02*
U.S. Cl. 156—394.1 **17 Claims**



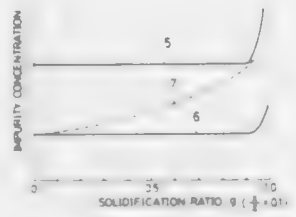
1. An inner curing envelope for use in a tire retreading process with an annular elastomeric outer envelope having an inwardly opening U-shaped radial cross-section for encasing a tread secured around the periphery and at least a portion of the side walls of a tire casing having annular beads, comprising:
first molded annular elastomeric means having an inwardly opening U-shaped continuous radial cross-section which in its unstressed state is form fit into a shape complementary to the shape of the inside of the tire casing, said shape having a peripheral portion and a pair of skirt portions integral therewith for contiguously contacting the interior surface of the tire casing; and
second seamless compression-molded annular elastomeric means attached to and contiguously extending outwardly from opposite ends of said skirt portions of said first annular means, each of said second annular means having an outwardly opening U-shaped radial cross-section form fit and reinforced adjacent to the tire bead and having an enlarged integral annular sealing rim for underlapping the outer envelope at the outer side walls of the tire casing.

5,007,979

METHOD OF FABRICATING GAAS SINGLE CRYSTAL

Seiji Mizuniwa; Akio Hattori; Tooru Kurihara, all of Hitachi; Seigi Aoyama, Kita-Ibaraki, and Konichi Nakamura, Hitachi, all of Japan, assignors to Hitachi Cable Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 235,063, Aug. 22, 1988, abandoned. This application Jan. 26, 1990, Ser. No. 471,190
Claims priority, application Japan, Sep. 7, 1987, 62-221876
Int. Cl.[5] C30B *11/06*
U.S. Cl. 156—605 **36 Claims**



1. A method of fabricating an undoped or impurity-doped semi-insulating GaAs single crystal with use of a silica boat, comprising the steps of:

(A) preparing a melt of GaAs in the silica boat, said melt containing Si as an impurity;

(B) maintaining a seed crystal in said boat at a seed crystal side;

(c) in the presence of an oxygen source, letting said melt stand for a period of time sufficient to allow oxygen near said melt to dissolve in said melt;

(D) solidifying said melt gradually from the side opposite said seed crystal toward said seed crystal side to form a polycrystalline material from a portion of said melt and to form a melt zone of unsolidified material, said gradual solidification being at a rate sufficient to cause oxygen dissolved in said melt to segregate in said melt zone;

(E) seeding said melt zone when said melt zone reaches a melt zone width at said seed crystal side, said melt zone width not exceeding ½ the length of a GaAs single crystal formed from said melt;

(F) moving said melt zone away from said seed crystal while keeping the melt zone width unchanged such that a GaAs single crystal grows from said seed crystal behind said moving melt zone, said GaAs single crystal having a substantially homogeneous Si concentration along its longitudinal axis; and

(G) solidifying said melt zone.

5,007,980

LIQUID ENCAPSULATED ZONE MELTING CRYSTAL GROWTH METHOD AND APPARATUS

Edward M. Swiggard, Vienna, Va., assignor to SFA, Inc., Hyattsville, Md.

Filed Nov. 1, 1988, Ser. No. 265,533
Int. Cl.[5] B32B *00/00*
U.S. Cl. 156—620.7 **24 Claims**

1. A method of growing single crystals comprising the steps of:

(a) introducing a seed crystal, an amount of crystal feed material, and an amount of boric oxide encapsulant material having a melting temperature lower than the melting temperature of said crystal feed material sufficient to encapsulate said crystal feed material when melted, into a non-reactive pyrolytic boron nitride vessel;

(b) heating said vessel in a furnace to a temperature above the melting point of said boric oxide encapsulant and below the melting point of said crystal feed material and said seed crystal, and melting said encapsulant to coat said pyrolytic boron nitride vessel and encapsulate said crystal feed material, said crystal feed material corresponding substantially to the shape of said vessel;

(c) passing said vessel along a substantially vertical path through a furnace zone having a length shorter than the length of said vessel and maintained at a temperature at least equal to the melting temperature of said crystal feed material to melt said crystal feed material to form a zone of molten crystal material conforming to the shape of said vessel and separated from said vessel only by a very thin layer of boric oxide encapsulant which preferentially wets the pyrolytic boron nitride vessel compared to said molten crystal material and prevents said molten crystal material



from contacting said pyrolytic boron nitride vessel, said vessel being passed into an adjacent furnace zone maintained at a temperature above the melting temperature of said encapsulant and below the melting temperature of said crystal material to crystallize said crystal material in contact with said seed crystal so as to form a single crystal of said crystal material;

(d) tipping said vessel while maintaining said vessel at a temperature above the melting point of said boric oxide encapsulant and below the melting point of the crystallized material to decant encapsulant from said vessel; and

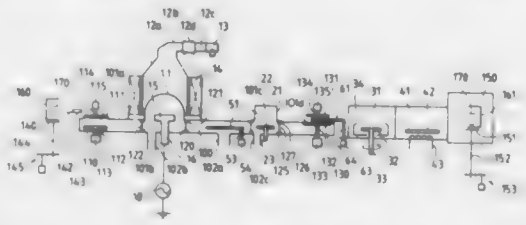
(e) recovering said single crystal of said crystal material from said vessel.

5,007,981

METHOD OF REMOVING RESIDUAL CORROSIVE COMPOUNDS BY PLASMA ETCHING FOLLOWED BY WASHING

Yoshinao Kawasaki, Kumage; Hironobu Kawahara; Yoshiaki Sato, both of Kudamatsu; Ryooji Fukuyama, Kudamatsu; Kazuo Nojiri, Higashimurayama, and Yoshimi Torii, Tachikawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 9, 1990, Ser. No. 477,474
Claims priority, application Japan, Feb. 27, 1989, 1-42976
Int. Cl.[5] H01L *21/306*
U.S. Cl. 156—643 **14 Claims**



1. A method of processing a sample comprising the steps of:

(i) etching the sample by means of a first plasma formed in a gas atmosphere,

(ii) after step (i), treating the sample by means of a second plasma to remove residual corrosive compounds formed in step (i), said second plasma being formed in a gas atmosphere different from the gas atmosphere in which the first plasma is formed,

(iii) contacting a surface of said sample etched in step (i) and treated in step (ii) with at least one liquid which effects at least one of (a) removal of residual corrosive compounds formed in step (i) which were not removed in step (ii) and (b) passivation of said surface etched in step (i) and treated in step (ii), and

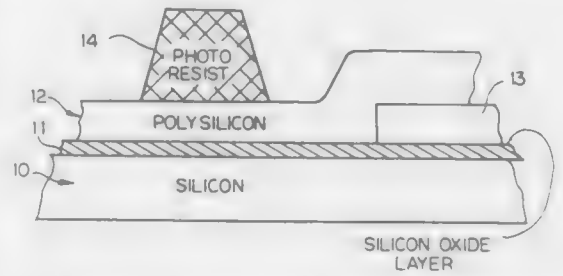
(iv) after step (iii), drying the sample.

5,007,982

REACTIVE ION ETCHING OF SILICON WITH HYDROGEN BROMIDE

Len-Yan Tsou, New City, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed Jul. 11, 1988, Ser. No. 217,536
Int. Cl.[5] H01L *21/306;* **B44C** *1/22*
U.S. Cl. 156—643 **13 Claims**



1. In a method of manufacturing semiconductor IC devices by etching comprising the steps of

(a) forming a composite structure by

(i) providing a silicon substrate,

(ii) forming a thin layer of silicon oxide on said silicon substrate,

(iii) forming a polysilicon layer on said oxide,

(iv) forming a mask of a photoresist on at least parts of said polysilicon layer,

(b) removing any surface oxides from said polysilicon layer with an oxide etching plasma, and

(c) then exposing the composite structure to a plasma containing only hydrogen bromide to selectively etch said polysilicon layer relative to said photoresist and said silicon oxide.

5,007,983

ETCHING METHOD FOR PHOTORESISTS OR POLYMERS

Narcinda R. Lerner, Woodside, and Theodore J. Wydeven, Jr., Sunnyvale, both of Calif., assignors to The United States of America as represented by the Administrator of National Aeronautics & Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 150,169, Jan. 29, 1988, abandoned. This application May 4, 1989, Ser. No. 347,591
Int. Cl.[5] H01L *21/306*
U.S. Cl. 156—643 **14 Claims**

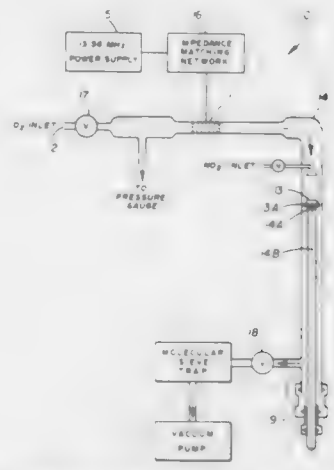
1. A method for etching a sample which is a polymer or photoresist deposited on a semiconductor substrate thereof to remove said polymer or photoresist without damaging said substrate, which method comprises the steps of:

(a) locating said sample in the etching region of a plasma reactor having both a plasma region and a separate etching region spaced apart from said plasma region;

(b) locating in the etching region of said reactor a sacrificial organic solid material that has a substantially higher reactivity with the plasma-energized reactive gas generated in said plasma region than the polymer or photoresist being etched from said sample;

(c) producing a plasma in a reactive gas in said plasma region at a reactor pressure of from 0.1 to 10.0 Torr whereby said plasma-energized gas is formed;

(d) contacting said plasma-energized gas with said sacrificial



organic solid material whereby a highly reactive gas is formed said highly reactive gas having a substantially higher reaction rate with said polymer or photoresist than said plasma-energized gas; and

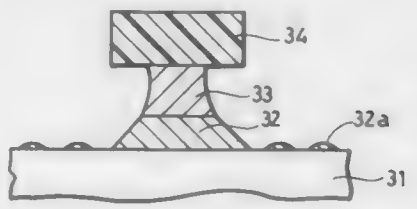
(e) contacting the sample with the resulting highly reactive gas at a sufficient concentration and for a sufficient time to etch said polymer or photoresist of said sample.

5,007,984

METHOD FOR ETCHING CHROMIUM FILM FORMED ON SUBSTRATE

Michinari Tsutsumi; Atsushi Endo, and Toshio Yada, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1988, Ser. No. 249,905
Claims priority, application Japan, Sep. 28, 1987, 62-245035; Oct. 7, 1987, 62-253423
Int. Cl.[5] B44C *1/22*
U.S. Cl. 156—656 **5 Claims**



1. A method for etching a chromium film formed on a substrate, comprising the steps of:

providing a chromium film formed on a substrate,

forming a metal film of a material different from the chromium film on the chromium film,

forming a resist having a predetermined pattern on said metal film,

first etching said metal film and said chromium film using a first etchant with which both said chromium film and said metal film are etched and with which the etching rate of said metal film is higher than the etching rate of said chromium film, said etchant comprising an acid consisting essentially of phosphoric acid, whereby sidewall surfaces of a remaining pattern of the chromium film are tapered, and

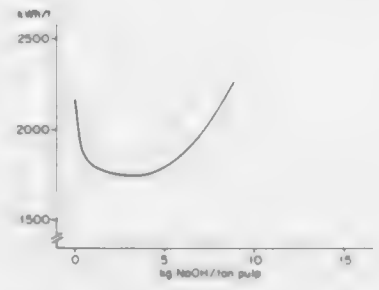
second etching said metal film using a second etchant to remove said metal film.

5,007,985

METHOD OF REDUCING THE ENERGY CONSUMPTION AT THE REFINING OF CELLULOSE CONTAINING MATERIAL

Per O. Engstrand, Täby; Lars-Ake Hammar, Farsta; Myat T. Htun, Vällingby, and Rune L. Pettersson, Stockholm, all of Sweden, assignors to STFI, Stockholm, Sweden

Continuation of Ser. No. 235,893, Aug. 11, 1988, abandoned.
This application May 2, 1989, Ser. No. 346,270
Claims priority, application Sweden, Apr. 18, 1986, 8601779
Int. Cl.[4] D21B *1/16*
U.S. Cl. 162—26 1 Claim



1. A method of reducing the energy consumption at the refining or beating of cellulose containing material to predetermined strength properties and with reduced shieves and resin content which comprises adding alkali to the material for neutralizing acid groups bounded to the fibre wall, said alkali being added to the material in the refining zone or immediately before the material enters the refining zone, and said alkali being added as sodium hydroxide in an amount of about 1-4 kg per ton for neutralization without excess.

5,007,986

CREPING DOCTOR WITH TWO SUCTION CHAMBERS IN THE SUPPORT BEAM

Tord G. Gustavsson, Forshaga; Frans O. S. Lyxell, and Karl T. I. Silja, both of Karlstad, all of Sweden, assignors to Valmet Paper Machinery, Inc., Helsinki, Finland

Filed Feb. 28, 1990, Ser. No. 486,155
Claims priority, application Sweden, Mar. 15, 1989, 8900912
Int. Cl.[4] D21G *3/04*
U.S. Cl. 162—281 9 Claims



1. A creping doctor for creping a soft paper web off a yankee cylinder, comprising a supporting beam adapted for mounting closely parallel to an envelope surface of a yankee cylinder, said supporting beam being provided with an internal space, said internal space being divided into a first longitudinal suction chamber and a second longitudinal suction chamber; a doctor blade; a doctor holder mounted to the supporting beam; means for producing a subatmospheric pressure in the internal space of the supporting beam; a first suction connection connecting said first suction chamber of the supporting beam to an external dust-generating space location between the doctor blade and the soft paper web to be creped off; and a second suction connection connecting said second suction chamber of the supporting beam for providing suction to an internal dust-generating space located between the doctor blade and the envelope surface of the yankee cylinder when said creping doctor is mounted closely parallel to the yankee cylinder

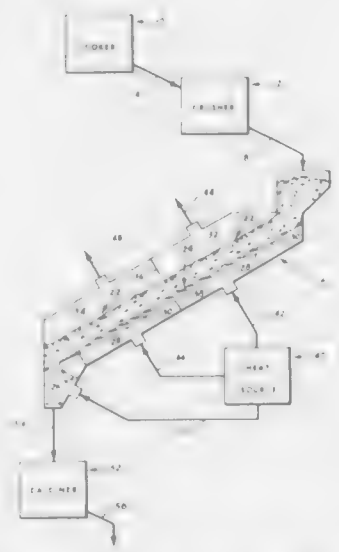
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5,007,987

METHOD FOR PRODUCING NEEDLE COKE

Michael J. Block, Fullerton; Arnold E. Kelley, Orange, and Milan Skripek, Fullerton, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation of Ser. No. 14,022, Feb. 12, 1987, abandoned, which is a continuation of Ser. No. 713,332, Mar. 18, 1985, abandoned, which is a continuation-in-part of Ser. No. 488,731, Apr. 26, 1983, Pat. No. 4,521,278, and a continuation-in-part of Ser. No. 489,217, Apr. 27, 1983, Pat. No. 4,545,859. This application Nov. 22, 1988, Ser. No. 274,622
The portion of the term of this patent subsequent to Jun. 4, 2002, has been disclaimed.
Int. Cl.[5] C10B *49/06*
U.S. Cl. 201—17 2 Claims



1. A method for reducing the friability of green needle coke made in a coking zone, said green needle coke having a Hardgrove Grindability Index above about 90 which method comprises:

(a) heating said green needle coke at temperatures between 875° F. and 1100° F. for a time between about 10 minutes and about 24 hours sufficient to effect a reduction in the friability of said green needle coke as determined by a decrease in said Hardgrove Grindability Index;

(b) cooling said heated green needle coke; and

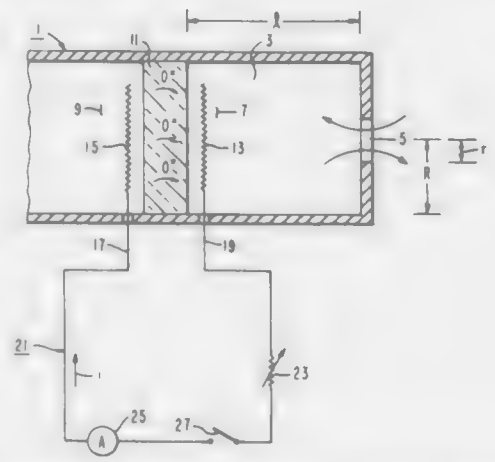
(c) recovering said cooled green needle coke without subjecting said heated or cooked green needle coke to a calcination step at a temperature above about 2000° F. said recovered green needle coke having a Hardgrove Grindability Index less than about 85.

5,007,988

METHOD FOR DETERMINING THE CONCENTRATION OF A PLURALITY OF COMBUSTIBLE GASES IN A STREAM

David H. Archer, Ross Township, and Mohammed M. Ahmed, Wilkins Township, both of Allegheny County, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 8, 1987, Ser. No. 95,382
Int. Cl.[5] B01D *59/40*
U.S. Cl. 204—153.18 13 Claims



1. A method for determining the concentration of a plurality of combustible gases in a gas stream comprising the steps of:

(a) providing an electrochemical cell apparatus including a generally cylindrical electrochemical cell formed of a ceramic material in which a cavity is formed having a diffusion limiting port forming the entrance to said cavity, and having a process side in flow communication with a portion of said gas stream flowing into said cavity through said diffusion limiting port, a reference side in fluid flow communication with a reference gas, and an electrolyte separating said process side and said reference side of said electrochemical cell;

(b) adjusting the potential difference across said electrochemical cell to create a steady state electrical current flow whereby the flow of oxygen ions from said reference side of said electrochemical cell through said electrolyte to said process side of said cell is equal to the flow of combustible gases from said gas stream through the diffusion limiting port into said cell cavity;

(c) obtaining a number of the following electrical current flow measurements, wherein said number of electrical current flow measurements is equal to the number of combustible gases in said gas stream:

1. determining the value of said steady state electrical current flowing through said electrolyte; and

2. determining the surge of electrical current flowing through said electrolyte after said flow of electrical current is interrupted and then restored, by:

interrupting said electrical current flowing through said electrolyte for a time period, t,

after said time period, t, restoring said flow of electrical current through said electrolyte; and

measuring the surge of electrical current flowing through said electrolyte over and above said steady state electrical current flow until the electrical current flow attains its steady state value;

(d) determining the total pressure of the gases in said gas stream; and

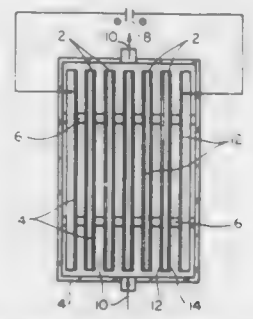
(e) converting said total pressure and said electrical current flow measurements into an indication of the concentration of each of the n combustible gases in said gas stream.

5,007,989

METHOD AND ARTICLES EMPLOYING ION EXCHANGE MATERIAL

Eric D. Nyberg, Belmont; Ken A. Klingman, Menlo Park; Jeff Curtis, San Francisco, and Ray F. Stewart, Redwood City, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 17,375, Feb. 20, 1987, Pat. No. 4,888,098, which is a continuation-in-part of Ser. No. 932,763, Nov. 19, 1986, abandoned, which is a continuation-in-part of Ser. No. 931,758, Feb. 20, 1986, abandoned. This application Oct. 17, 1989, Ser. No. 422,707
The portion of the term of this patent subsequent to Dec. 9, 2006, has been disclaimed.
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—1.11 9 Claims



1. A method of replacing an ionic species in an ion exchange material containing the ionic species, which method comprises passing a current through an electrochemical cell which comprises:

(1) a first electrode;

(2) an ioon exchange material A which

(a) contains anionic species I_{1A}, and

(b) is secured to and in electrical and physical contact with the first electrode and substantially surrounds all surfaces of the first electrode;

(3) a second electrode; and

(4) an electrolyte which electrically connects the first and second electrodes;

and in which cell an electrochemical reaction takes place at the interface between the first electrode and the ion species I_{1A} to be replaced by another ionic species, substantially all the ionic species I_{2A} sogenerated passing through the ion exchange material A.

5,007,990

ELECTROPLATING PROCESS

John J. Bladon, Wayland, Mass., assignor to Shipley Company Inc., Newton, Mass.

Continuation-in-part of Ser. No. 71,865, Jul. 10, 1987, abandoned. This application Feb. 8, 1988, Ser. No. 153,357
The portion of the term of this patent subsequent to Aug. 28, 2006, has been disclaimed.
Int. Cl.[5] C25D *5/54*
U.S. Cl. 204—15 15 Claims

1. A method for electroplating an article of manufacture comprising an electrically nonconductive body portion having a surface comprising metallic areas and nonmetallic nonconductive areas adjacent to and in contact with each other, said method comprising the steps of:

a. treating the surface of said article with an acid solution of a reduced noble metal electroless metal plating catalyst to form a deposit of the reduced noble metal plating catalyst on said nonconductive surface areas;

b. treating the surface of the article with a solution containing a dissolved chalcogen capable of reacting with the electroless metal plating catalyst to form a chalcogenide of said plating catalyst; and

c. metal plating the surface of the article by passing a current

between said article and an electrode immersed in a current between said article and an electrode immersed in an electolyte containing dissolved plating metal.

5,007,991

ORGANOALUMINUM ELECTROLYTES FOR THE ELECTROLYTIC DEPOSITION OF HIGH-PURITY ALUMINUM

Herbert Lehmkuhl, and Klaus-Dieter Mehler, both of Mülheim/Buhr, Fed. Rep. of Germany, assignors to Studiengesellschaft Kohle mbH, Mulheim/Ruhr, Fed. Rep. of Germany

Filed Jun. 5, 1990, Ser. No. 533,321

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1989, 3919068

Int. Cl.[5] C25C *3/18*

U.S. Cl. 204—58.5 **12 Claims**

1. In the electrolytic deposition of highly pure aluminum employing an organoaluminum electrolyte, the improvement which comprises effecting the deposition in a toluene solution of an electrolyte at a temperature of from 90° C. to 105° C. or in a xylene solution of an electrolyte at a temperature of from 80° C. to 135° C. and employing as the electrolyte mixtures of organoaluminum complex compounds of the formula $MF_2AlR(A)$, wherein M represents potassium or mixtures of potassium with a maximum of about 15% by mole of sodium, as well as trialkylaluminum AlR (B) which has not been complexed to an alkali metal fluoride in a molar ration of A:B of from 4:0.6 to 4.2, as well as a polyfunctional Lewis base of the formula $R'\text{-}OCH_2CH_2\text{-}OR''$ (C) in a molar ratio of B:C of from 1:0.5 to 1.1, wherein R is an alkyl group, and R' and R'' are alkyl, aryl or OCH_2CH_2OR''' with R''' being an alkyl or aryl group.

5,007,992

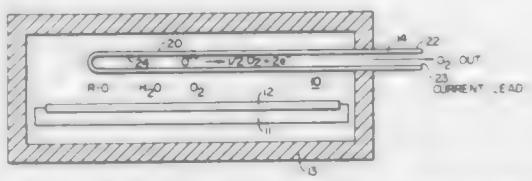
METHOD AND APPARATUS FOR REMOVING OXYGEN FROM A SEMICONDUCTOR PROCESSING REACTOR

Daniel K. Weber, 1243 Bordeaux St., Livermore, Calif. 94550

Filed May 15, 1989, Ser. No. 351,739

Int. Cl.[5] C25B *1/02*; **H01L** *21/22*

U.S. Cl. 204—59 R **20 Claims**



14. A method of removing oxygen from a process enclosure of semiconductor processing reactor comprising

disposing an electrolytic, ceramic cell within said enclosure such that said cell has a first surface exposed to said enclosure and a second surface removed from said enclosure;

disposing at least one semiconductor wafer in said enclosure;

activating said cell by heating said cell, and

passing an electric current through said cell;

whereby said cell removes oxygen from said enclosure through said first surface and releases said oxygen to said second surface.

5,007,993

ELECTROLYTIC PROCESSING APPARATUS AND METHOD WITH TIME MULTIPLEXED POWER SUPPLY

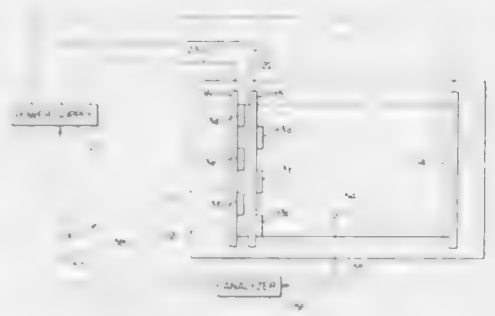
Harry F. Hull, Rau Sao Benedito, 761, 04735 Sao Paulo, and Ivan P. Da Silva, R. Dos Mainas, 30, 09790 Sao Bernardo Do Campo, SP, both of Brazil

Continuation-in-part of Ser. No. 368,666, Jun. 20, 1989. This application Jul. 5, 1989, Ser. No. 375,605

Int. Cl.[5] C25D *17/00, 21/12*

U.S. Cl. 204—228 **32 Claims**

1. Apparatus for electrolytic processing of materials, comprising an electrolytic processing bath, plural first electrodes, at least one second electrode, and computerized power supply means for supplying time multiplexed power to said electrodes



so as to selectively supply power at different times to said plural electrodes and said at least one second electrode.

5,007,994

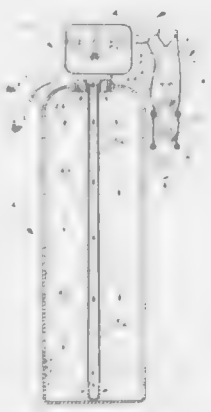
WATER PURIFICATION SYSTEM

Thomas M. Snee, 1561 Rustic Hills Dr., Eagan, Minn. 55121

Filed Nov. 18, 1988, Ser. No. 273,463

Int. Cl.[5] C02F *1/461*

U.S. Cl. 204—240 **8 Claims**



1. A water purification apparatus, comprising:

an ionization chamber containing two spaced apart ion-producing electrodes and having an inlet port and an outlet port, said inlet port being connected to an incoming water line for supplying pressurized water to be purified to said chamber, and said inlet port and said outlet port being so arranged in separate, fluid flow communication with said chamber that pressurized water to be purified from said incoming water line will pass through said inlet port and circulate about said ion-producing electrodes before flowing out of said chamber through said outlet port;

said ion-producing electrodes of said ionization chamber are made of pure copper;

a tubular connecting means having a first end and a second end, said first end communicating with said outlet port of said ionization chamber; and

a filter tank containing a first layer of granular activated carbon and a second layer comprised of gravel, said gravel including calcites mixed therewith, said filter tank having at least one inlet port and at least one outlet port and flow passage means directing water first through said layer of granular activated carbon and thereafter through said second layer, said second end of said connecting means communicating with said inlet port of said filter tank, whereby said water to be purified from said incoming water line passes through said ionization chamber before entering said filter tank, and then passes first through said layer of granular activated carbon and thence through said second layer before being discharged from said filter tank in a purified state.

5,007,995

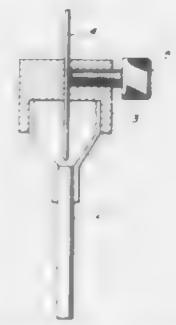
DEVICE FOR ELECTROFUSION OF CELLS

Yasuo Takahashi, Drexelhill, Pa.; Kazuo Suzuki, Stony Brook, N.Y.; Toshinobu Niimura, Port Jefferson, N.Y., and Tokio Kano, Nesconset, N.Y., assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 11, 1989, Ser. No. 350,715

Int. Cl.[5] C12N *13/00*

U.S. Cl. 204—299 R **6 Claims**



1. A device for fusing biological cells in a solution by applying a voltage, comprising:

a tube having an upper open end, a lower open end, and a side wall between the upper and lower open ends;

a lower electrode having a flat surface attached tightly to the lower open end of the tube;

a cover mounted tightly and detachably on the upper open end of the tube; and

an upper electrode penetrating through the cover and extending to the vicinity of the flat surface of the lower electrode with a space remaining between the upper electrode and the side wall of the tube.

5,007,996

DETECTION SYSTEM

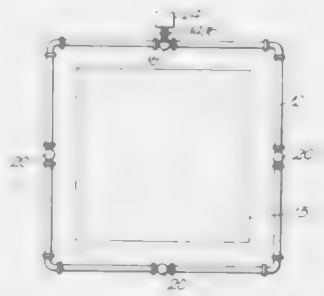
John R. P. Clarke, Cheadle, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Oct. 16, 1989, Ser. No. 422,120

Claims priority, application United Kingdom, Oct. 24, 1988, 8824895; Oct. 24, 1988, 8824896

Int. Cl.[5] G01N *27/403, 27/404*

U.S. Cl. 204—409 **25 Claims**



1. An electrochemical system for detection of a fluid component, comprising:

at least two electrodes;

an elongated element adapted to hold an electrolyte which combines with the fluid component to be detected to cause a change in an electrical parameter detectable by means of the electrodes, and disposed so that the electrodes are in contact with the electrolyte, the electrolyte being distributed along the length of the elongated element, which extends at least partly around a periphery of a zone containing a source from which said fluid component may be emitted or discharged;

means for maintaining electrolyte distributed over said elongated element; and

means for routing said element in a loop extending around the periphery of said zone such that the element is exposed to fluid flow directed outwardly from said zone and laterally towards the element at different points along its length.

5,007,997

ZEOLITE SSZ-26

Stacy I. Zones, San Francisco; Donald S. Santilli, Larkspur; James Ziemer, Hercules; Dennis L. Holtermann, Crockett; Theresa A. Pecoraro, Danville, and Robert A. Innes, San Rafael, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 172,737, Mar. 23, 1988, Pat. No. 4,910,006. This application Dec. 20, 1989, Ser. No. 454,106

Int. Cl.[5] C10G *11/05, 45/12*

U.S. Cl. 208—46 **19 Claims**

1. A process for converting hydrocarbons comprising contacting a hydrocarbonaceous feed at hydrocarbon converting conditions with a zeolite having a mole ratio of an oxide selected from silicon oxide, germanium oxide and mixtures thereof to an oxide selected from aluminum oxide, gallium oxide, iron oxide, and mixtures thereof greater than about 10:1, and having the X-ray diffraction lines of Table 1.

5,007,998

PROCESS FOR REFRACTORY COMPOUND CONVERSION IN A HYDROCRACKER RECYCLE LIQUID

Adrian J. Gruia, Lake Bluff, Ill., assignor to UOP, Des Plaines, Ill.

Filed Mar. 26, 1990, Ser. No. 499,866

Int. Cl.[5] C10G *65/10*

U.S. Cl. 208—59 **20 Claims**

11. A catalytic hydrocracking process which comprises:

(a) contacting a hydrocarbonaceous feedstock having a propensity to form 11^+ ring heavy polynuclear aromatic compounds and a liquid recycle stream in a hydrocracking zone with added hydrogen and a metal promoted hydrocracking catalyst at elevated temperature and pressure sufficient to gain a substantial conversion to lower boiling products;

(b) partially condensing the hydrocarbon effluent from said hydrocracking zone and separating the same into a hydrogen-rich gaseous stream and a first normally liquid hydrocarbonaceous stream comprising lower boiling hydrocarbons, unconverted hydrocarbons boiling above about 400° F. (204° C.) and trace quantities of 11^+ ring heavy polynuclear aromatic compounds;

(c) introducing said first normally liquid hydrocarbonaceous stream recovered in step (b) into a fractionation zone to produce a second normally liquid hydrocarbonaceous stream comprising unconverted hydrocarbons boiling above about 400° F. (204° C.) and trace quantities of 11^+ ring heavy polynuclear aromatic compounds, and a vaporous hydrocarbonaceous stream comprising said lower boiling hydrocarbons;

(d) introducing at least a portion of said second normally liquid hydrocarbonaceous stream comprising unconverted hydrocarbons boiling above about 400° F. (204° C.) and trace quantities of 11^+ ring heavy polynuclear aromatic compounds recovered in step (c) into a 11^+ ring heavy polynuclear aromatic compound conversion zone containing a zeolitic hydrogenation catalyst having pore openings in the range from about 8 to about 15 Angstroms (10^{-10} meters), a hydrogenation component and an intercalated clay component operated at conditions to selec-

tively reduce the concentration of 11+ ring heavy polynuclear aromatic compounds;

(e) condensing at least a portion of the resulting effluent from said conversion zone in admixture with said effluent from said hydrocracking zone to produce a liquid stream comprising hydrogenated hydrocarbonaceous compounds and having a reduced concentration of 11+ ring heavy polynuclear aromatic compounds compared to said unconverted hydrocarbon stream introduced into said 11+ ring heavy polynuclear aromatic compound conversion zone; and

(f) recycling at least a portion of said liquid stream comprising hydrogenated hydrocarbonaceous compounds produced in step (e) to said hydrocracking zone in step (a) as at least a portion of said liquid recycle stream.

5,007,999

METHOD FOR REDUCING SULFUR OXIDE EMISSION DURING AN FCC OPERATION

Arthur A. Chin, Cherry Hill, N.J., assignor to Mobil Oil Corp., Fairfax, Va.

Filed Apr. 13, 1989, Ser. No. 337,680

The portion of the term of this patent subsequent to Jan. 22, 2008, has been disclaimed.

Int. Cl.[5] **C10G** *11/18*

U.S. Cl. 208—113 **10 Claims**

1. In a process for reducing sulfur oxide production during an FCC cracking operation, comprising the steps of:

(a) passivating metals contaminating on an FCC catalyst by contacting the FCC catalyst with a sulfur-containing compound under conditions that enable association of the sulfur with the metals contaminants;

(b) cracking hydrocarbons with the passivated FCC catalyst in an FCC cracking zone;

(c) oxidatively regenerating the catalyst in a regeneration zone whereby the carbonaceous material deposited on the FCC catalyst in step (b) is burned off and the sulfur deposited on the FCC catalyst in step (a) is converted to sulfur oxides;

(d) reacting the sulfur oxides with a sulfur oxide adsorption additive capable of adsorbing the sulfur oxides under sulfur oxides adsorbing conditions; and

(e) converting the adsorbed sulfur oxides from step (d) to hydrogen sulfide by contacting the adsorbed sulfur oxides with a reducing gas before the regenerated FCC catalyst and sulfur oxides adsorption additive enter the FCC cracking zone;

the improvements comprising contacting the adsorbed sulfur oxides with the reducing gas in a separate treatment vessel and preventing at least 25% by weight, of the hydrogen sulfide from step (e) from entering the cracking zone.

5,008,000

CRACKING CATALYST FOR HYDROCARBON CHARGES COMPRISING AN OFFRETITE, A ZEOLITE AND A MATRIX

Christian Marcilly, Houilles; Jean-Marie Deves, and Francis Raatz, both of Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Division of Ser. No. 154,258, Feb. 10, 1988. This application Mar. 15, 1990, Ser. No. 493,601

Claims priority, application France, Feb. 11, 1987, 87 01802; Nov. 30, 1987, 87 16691

Int. Cl.[5] **C10G** *11/05*

U.S. Cl. 208—120 **12 Claims**

1. In a process for catalytic cracking of a hydrocarbon charge, comprising subjecting said charge to cracking conditions in the presence of a catalyst, the improvement wherein the catalyst contains:

(a) 20–95% by weight of at least one matrix, selected from the group consisting of alumina, silica, magnesia, clay, titanium oxide, zirconia, combinations of at least two of these compounds and alumina-boron oxide combinations,

(b) 1–60% by weight of at least one zeolite of open structure whose main dodecagonal channels have openings of at least 7 Angströms, said zeolite of open structure being selected from the group formed of X, Y, L, omega and beta zeolites,

(c) 0.5–60% by weight of at least one dealuminated offretite whose main dodecagonal channels have openings smaller than 7 Angströms and which has a SiO_2/Al_2O_3 molar ratio from about 15 to about 500, the crystalline parameters a and c of elementary mesh ranging respectively from 1.285 to 1.315 nm for a and from 0.748 to 0.757 nm for c and has a potassium content lower than 1.5% by weight, and is prepared by a process comprising:

(1) preparing a mixture of offretite with a matrix,

(2) preparing a mixture of a zeolite of open structure with a matrix, and

(3) admixing the product of (1) with the product of (2)

5,008,001

PROCESS FOR HYDROGENATION OF HEAVY OIL

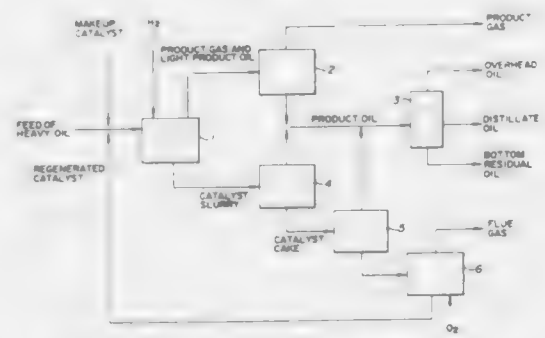
Toru Kitamura; Yoshio Ohashi; Masami Sekino, and Kenichi Murakawa, all of Sodegaura, Japan, assignors to Research Association for Petroleum Alternatives Development, Tokyo, Japan

Filed Jul. 25, 1988, Ser. No. 224,067

Claims priority, application Japan, Aug. 3, 1987, 62-192702; Mar. 7, 1988, 63-51551

Int. Cl.[5] **C10G** *45/00*

U.S. Cl. 208—143 **10 Claims**



1. A method for improving the yield of product oil in a process for hydrogenating a heavy oil in a suspension bed hydrogenation reactor having a particulate catalyst, wherein a catalyst slurry comprising used catalyst and product oil is withdrawn from the hydrogenation reactor and subjected to solid/liquid separation using heat drying to recover the product oil, followed by oxidative regeneration of the used catalyst, said heat drying carried out by

(a) a conductive heating-type drier at a temperature of 150° to 300° C. for a residence time of 0.25 to 5 hours with an oil content in the catalyst slurry of 10 to 60% by weight,

(b) a spray drier at a temperature of 350° to 500° C. for a residence time of 1 to 10 seconds with an oil content in the catalyst slurry of 50 to 95% by weight, or

(c) a riser-type drier at a temperature of 350° to 520° C. with a catalyst content in the catalyst slurry of 5 to 50% by weight.

5,008,002

PROCESS FOR PRODUCING MOLD USED FOR OBTAINING PRESS MOLDED GLASS ARTICLE

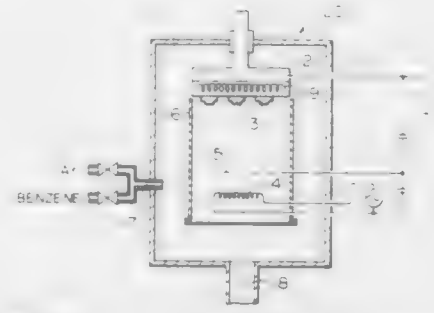
Ken Uno, Fussa; Takuo Fujino, Akishima, and Hideki Nakamori, Kashiwa, all of Japan, assignors to Hoya Corporation and Prometron Technics Corporation, both of Tokyo, Japan

Filed Jan. 19, 1990, Ser. No. 467,248

Claims priority, application Japan, Jan. 30, 1989, 1-20545

Int. Cl.[5] **B05D** *3/06*; **C23C** *14/00*

U.S. Cl. 204—192.31 **5 Claims**



1. A process for producing a mold used for obtaining a press molded glass article, which comprises a step of forming an i-carbon film on a mold base for obtaining a press molded glass article, according to an ion plating method, wherein said ion plating method is effected by, in an ion plating apparatus comprising an anode electrode, a first cathode electrode, a holder for holding said mold base and a reflector extending as far as the vicinity of the mold base holder in such a shape that it surrounds the two electrodes, applying a low voltage between the anode electrode and the first cathode electrode to generate a plasma of ions of a hydrocarbon having a C/H ratio of ½ or more, and further applying a voltage of 0.5–2.5 KV between the mold base holder and the anode electrode so that the mold base holder becomes a second cathode electrode relative to the anode electrode while keeping the reflector at the same potential as the first cathode electrode to accelerate the hydrocarbon ions to the direction of the mold base which is being kept at 200°–400° C

5,008,003

START-UP OF A HYDROREFINING PHOCESS

John A. Smegal; Robert C. Ryan, and Richard M. Nash, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 5, 1989, Ser. No. 361,196

The portion of the term of this patent subsequent to Apr. 16, 2008, has been disclaimed.

Int. Cl.[5] **C10G** *23/00*

U.S. Cl. 208—254 H **38 Claims**

1. In a hydrorefining process which comprises contacting hydrocarbonaceous oil feed and hydrogen with a catalyst comprising a hydrogenation component selected from the group consisting of Group VIB metal component, Group VIII non-noble metal component and mixtures thereof, and an alumina-containing support, at hydrorefining conditions, the improvement which comprises heating the catalyst in substantially non-sulfided form at initial start-up from a temperature below about 450° F. to hydrorefining temperature at an average rate of less than about 10° F. per hour in the presence of hydrogen and a start-up hydrocarbonaceous oil feed having a sulfur content in the form of organosulfides of greater than 0.5 moles (basis elemental sulfur) per kilogram of start-up feed.

5,008,004

AROMATICS EXTRACTION PROCESS HAVING IMPROVED WATER STRIPPER

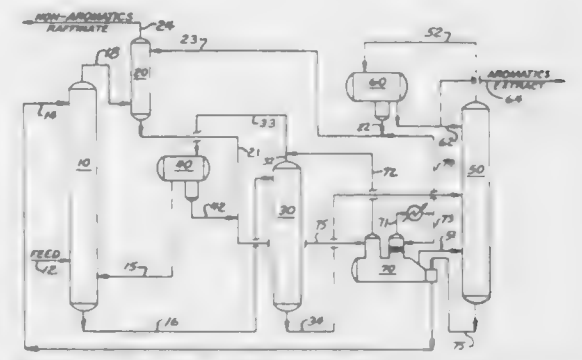
William H. Maier, Hoffman Estates, and Martin F. Bentham, Chicago, both of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 252,616, Oct. 3, 1988, Pat. No. 4,897,182. This application Dec. 29, 1989, Ser. No. 459,163

The portion of the term of this patent subsequent to Jan. 30, 2007, has been disclaimed.

Int. Cl.[5] **C10G** *21/28*

U.S. Cl. 208—321 **16 Claims**



1. A process for the recovery of an aromatic extraction solvent from a raffinate phase containing non-aromatic hydrocarbons and said aromatic extraction solvent of an extraction zone of an aromatics extraction process, said process comprising:

(a) contacting the raffinate phase with a wash water stream in a water-washing zone and recovering a raffinate product stream and a spent raffinate wash water stream comprising water and said aromatic extraction solvent;

(b) passing the spent raffinate wash water stream to a steam generation zone to provide steam and a lean solvent stream comprising said aromatic extraction solvent;

(c) contacting a process stream comprising aromatic hydrocarbons and said aromatic extraction solvent with a first portion of said steam in a steam distillation zone to provide a bottoms stream comprising said aromatic extraction solvent, and at least one of an overhead or a side-cut comprising an aqueous phase and a hydrocarbon phase comprising aromatic hydrocarbons;

(d) condensing a second portion of said steam and recycling a portion of said second portion to provide reflux in said steam generation zone, and

(e) combining said aqueous phase with the remaining portion of said second portion to provide said wash water stream.

5,008,005

INTEGRATED COKE, ASPHALT AND JET FUEL PRODUCTION PROCESS AND APPARATUS

Jer Y. Shang, McLean, Va., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Oct. 17, 1989, Ser. No. 422,479

Int. Cl.[5] **C10G** *1/00*

U.S. Cl. 208—407 **8 Claims**

1. A process for the production of coke, asphalt and jet fuel from a feed of fossil fuels containing volatile carbon compounds therein comprising the steps of:

pyrolyzing the feed in an entrained bed pyrolyzing means,

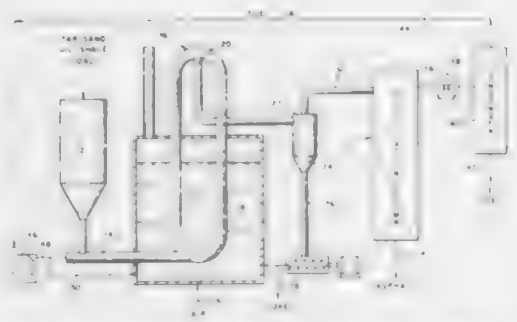
separating the volatile pyrolysis products from the solid pyrolysis products;

removing at least some coke as a result from the solid pyrolysis products;

fractionating the volatile pyrolysis products to produce an overhead stream and a bottom stream which is useful as asphalt for road pavement;

condensing the overhead stream to produce a condensed

liquid fraction and a noncondensable, gaseous fraction; and



removing water from the condensed liquid fraction to produce a jet fuel-containing product.

5,008,006

CHEMICAL CONDITIONING OF FINE COAL FOR IMPROVED FLOTATION AND PYRITE REJECTION

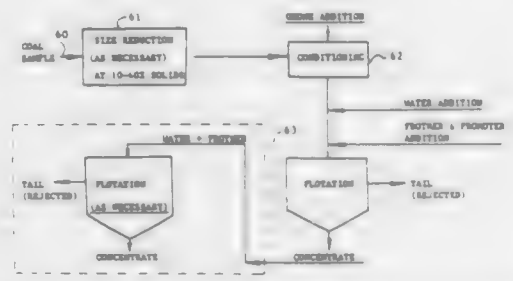
Jan D. Miller, and Yi Ye, both of Salt Lake City, Utah

Division of Ser. No. 58,909, Jun. 5, 1987, Pat. No. 4,828,686. This application Feb. 27, 1989, Ser. No. 316,081

The portion of the term of this patent subsequent to May 9, 2006, has been disclaimed.

Int. Cl.[5] **B03D** *1/002, 1/008, 1/018, 1/02*

U.S. Cl. 209—167 **9 Claims**



1. A method for separating ash and sulfur contaminants from feed coal in a flotation process, said method comprising, without limitation as to order, the steps of:

(a) grinding the feed coal to a particulate size;

(b) forming a slurry of the ground coal with water;

(c) mixing the slurry of coal with at least one compound selected from the group consisting of inorganic peroxy compounds, unorganic peroxides and inorganic superoxides in the absence of polymerization, said at least one compound being present in an amount sufficient to depress the sulfur and ash contaminants;

said steps being followed by the froth flotation of the coal wherein cleaned coal is collected with froth and sulfur and ash contaminants report to underflow.

5,008,007

APPARATUS FOR FILTERING INDUSTRIAL PROCESS LIQUIDS

Raymond L. Anderson, Walled Lake, Mich., assignor to H. R. Black Company, Warren, Mich.

Division of Ser. No. 338,944, Apr. 17, 1989. This application Apr. 16, 1990, Ser. No. 509,725

Int. Cl.[5] **B01D** *29/09, 33/04*

U.S. Cl. 210—111 **7 Claims**

1. In a filter apparatus for industrial process liquids, a tank, a continuous conveyor screen guidably and sealingly mounted within the tank and projecting therefrom, the improvement comprising:

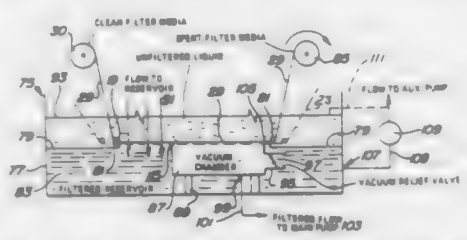
a horizontal partition spanning the tank walls and having an elongated aperture therethrough;

media sealing means upon the partition surrounding said aperture;

a continuous filter media; one side of said conveyor screen overlying the tank guidably retained for sealing engagement with said sealing means, and the other side of the conveyor screen operatively engaging said filter media, said filter media and conveyor screen spanning said aperture.

said filter media providing upon the underside of said partition an enclosed filtered liquid reservoir and upon its other side an open unfiltered liquid reservoir for receiving unfiltered liquid,

an elongated open-top vacuum chamber supported within said filtered liquid reservoir with its peripheral edge in



sealing registry with said conveyor screen and having a first outlet connected to a pump for delivering filtered liquid to a process area;

a second outlet upon said vacuum chamber communicating with said filtered liquid reservoir;

a normally closed vacuum release valve within said second outlet;

said media overlying said vacuum chamber when blocked by debris substantially stopping liquid flow through the vacuum chamber and creating a vacuum within said vacuum chamber; and

said vacuum release valve upon a preset vacuum build-up automatically opening said second outlet and simultaneously energizing said conveyor screen and media for an increment of longitudinal feed thereof until the vacuum chamber is no longer blocked with debris, re-establishing flow therethrough.

5,008,008

UNIVERSALLY ADAPTABLE POOL WATER FILTER STRUCTURE

James Lockshaw, 2401 S. Pullman, Santa Ana, Calif. 92705

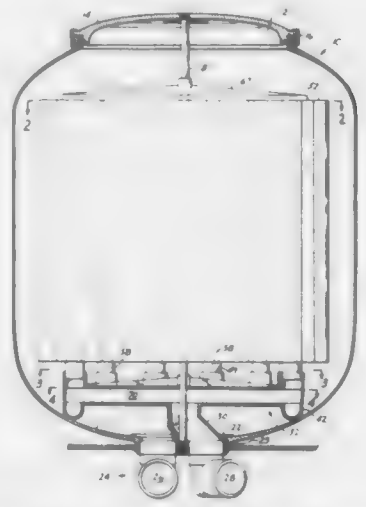
Filed Apr. 30, 1987, Ser. No. 44,592

Int. Cl.[5] **B01D** *29/13*

U.S. Cl. 210—169 **23 Claims**

1. A swimming pool water filter adapted for recirculating water to and from a swimming pool, said filter comprising a filtering medium of the cartridge, leaf or free particulate type, and a filter structure containing such medium in pool water filtering relation, said structure comprising a tank enclosing said filtering medium, said tank having a bottom opening; a integral molded common bottom fitting in said tank bottom opening, said fitting defining first and second ports each adapted for reverse alternate inward or outward water flow in opposed relation, said first port communicating a first portion of the tank interior immediately adjacent said port with swimming pool water beyond said tank, said second port having a continued extent vertically within said tank, a filtering medium support comprising a disc supporting said filtering medium adjacently above said tank bottom opening, said disc defining a plurality of openings for receiving filtered water from said filtering medium, said disc being coupled to said second port continued extent for outflow of received filtered water from said filtering medium through said second port when said filtering medium is a cartridge or leaf filter and for inflow of unfiltered water to said filtering medium when said filtering

medium is free particulate, and conversely said first port having an inward flow of unfiltered water when said second port



flow is outward and outward flow of filtered water when said second port is inward

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5,008,009

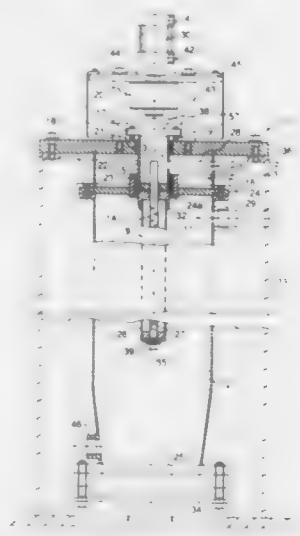
MECHANISM FOR FILTER CAKE REMOVAL

James L. Ciaffoni, Nevada City, Calif., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Jul. 17, 1989, Ser. No. 380,[illegible]1

Int. Cl.[5] **B01D** *35/20*

U.S. Cl. 210—193 **12 Claims**



1. A mechanism for discharging filter cake from a cross flow filter element wherein sullied solution traverses through said element and deposits a filter cake on said element and clean filtrate passes through and exits from said element, said mechanism comprising:

a fixed non-flexible closure partition extending across a chamber forming an upper chamber and lower closed filter chamber, said partition having at least one aperture extending therethrough, said filter element being contained in said lower filter chamber;

an inlet pipe conveying sullied solution and attached to said lower filter chamber;

means for mounting said filter element in said lower chamber, said means including at least one filtrate exit tube movably positioned through said at least one partition aperture and in flow communication with a filter element interior portion;

an outlet housing in said upper chamber surrounding and rigidly attached to said exit tube;

spring means interposed between an annular portion of said housing and an annular member which is fixed with respect to said partition; and

rapping means mounted independently of said outlet housing extending from a position above said outlet housing constructed and arranged to contact and drive said outlet housing downward by impact, forcedly compressing said spring means, whereby said outlet housing is caused to bottom against said spring means such that filter cake deposited on an exterior surface of said filter element in said lower chamber is shaken therefrom, and wherein said spring means, upon removal of said compressing force, is designed to release its resultant stored energy to return said housing and said filter element to a pre-rapped position spaced from said rapping means.

5,008,010

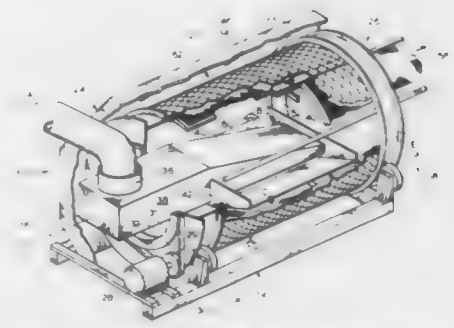
ROTATING CYLINDRICAL SCREEN WITH FINE MESH MODULAR PANELS

Herbert G. J. Langner, R.R. #1, Shallow Lake, Ont., Canada N0H 2K0

Filed May 9, 1989, Ser. No. 349,429

Int. Cl.[4] **B01D** *33/067*

U.S. Cl. 210—232 **2 Claims**



1. In a rotary screening device comprising:

a hollow cylinder journalled for rotation about its central, generally horizontally disposed, axis,

cylindrical walls of the cylinder, comprising, substantially in their entirety, screening surfaces of a screen member,

the cylinder having an inlet end and an outlet end at opposite ends of its interior,

means for rotating the cylinder,

means for directing influent to be screened into the interior of the cylinder via the inlet end and onto the screening surface,

trough means under the cylinder to collect filtrate from the influent which passes through the screen member,

wherein on rotation of the cylinder, portions of the influent which do not pass through the screen member are moved along the cylinder from the inlet end towards the discharge end,

the improvement wherein:

the screen member comprises a radially inner layer of fine mesh screening with mesh sizes in the range of 150 to 500 microns supported on a radially outer layer of supportive sheeting means having apertures therethrough larger than apertures of the fine mesh screening,

the cylinder having a framework of circular end frame members jointed by a plurality of parallel straight frame members connecting the end frame members at circumferentially spaced locations to define circumferentially spaced open segments between straight frame members,

the supportive sheeting means are permanently secured to said framework forming a cylindrical shape therewith,

longitudinally extending slot forming means on the parallel straight frame members being provided radially inwardly of the supportive sheeting means on either side of each open segment,

said fine mesh screening comprises a plurality of similar modular panels,

each panel is sized to cover one of the open segments with edge portions of the panel being axially slidably received in the slot forming means and is constructed and arranged to be separately removable by sliding axially out of the interior of the cylinder via the discharge end.

5,008,011

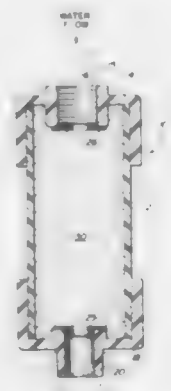
SHOWER DECHLORINATOR USING GRANULATED COPPER ALLOY FILTER MATERIAL

David T. Underwood, 1239 E. Brentrup, Tempe, Ariz. 85283

Filed Oct. 20, 1989, Ser. No. 424,823

Int. Cl.[5] E03C *1/08*; B01D *27/02*

U.S. Cl. 210—232 **15 Claims**



11. A dechlorinator for attachment between a water supply pipe and a shower head including in combination:

a housing unit having first and second ends;

first and second end caps for closing the first and second ends, respectively, of said housing unit;

first means on said first end cap for attachment to a water supply pipe;

second means on said second end cap for attachment to a shower head to deliver water from said housing unit to the shower head after the water passes through said housing unit from said first means on said first end cap; and

chlorine removal filter material in the form of randomly oriented elongated fine metallic fibers of a copper-zinc alloy substantially filling said housing unit for chemically combining with chlorine.

5,008,012

COMPACT PLASMA SEPARATOR AND AN APPARATUS CONTAINING THE SAME

Takeaki Hagihara, and Satoshi Aoki, both of Oita, Japan, assignors to Asahi Medical Co., Ltd., Tokyo, Japan

Filed May 25, 1989, Ser. No. 357,167

Int. Cl.[5] B01D *63/02*

U.S. Cl. 210—321.8 **10 Claims**

1. A compact plasma separator comprising:

a casing provided with blood introduction means for introducing blood to the casing, blood withdrawal means for withdrawing blood from the casing and at least one opening for plasma withdrawal; and

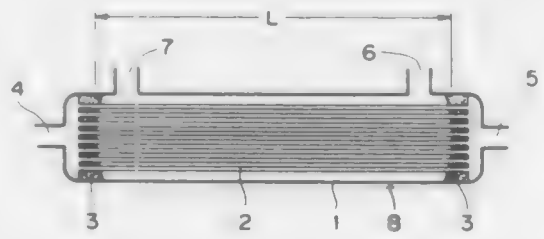
a plurality of porous hollow fibers substantially equal in length, said fibers being arranged in a substantially parallel relationship and being bonded together at both end portions thereof to form a bundle, each porous hollow fiber of said bundle having openings at both ends thereof,

said bundle being disposed in said casing along the length of said casing,

said both end portions of the hollow fibers of said bundle being fluid-tightly connected to said blood introduction means and said blood withdrawal means, respectively, said blood introduction means and said blood withdrawal means thereby being in communication through said bundle of hollow fibers,

said porous hollow fibers having an average effective length (L mm) not greater than 200 mm and a membrane surface area (S m^2) not greater than 0.3 m^2,

said average effective length (L mm) being defined as an average of the lengths of said porous hollow fibers minus the lengths of said both end portions of said porous hollow fibers at which the fibers are bonded together and fluid-



tightly connected to said blood introduction means and said blood withdrawal means, respectively,

said membrane surface area (S m^2) being defined by the formula:

$$S = n\pi DL \times 10^{-6}$$

wherein

n is the number of porous hollow fibers,

L is the average effective length and D is an average inner diameter (mm) of said porous hollow fibers,

said average effective length (L mm) and said average inner diameter (D mm) satisfying the following relationship.

$$L/D^2(mm^{-1}) \geq 2000$$

5,008,013

FILTER FOR USE IN A CARTRIDGE FOR THE PREPARATION OF A BEVERAGE

Eric Favre, Saint-Barthelemy; Petr Masek, Yverdon, and Bernard Truchement, La Tour-de-Peilz, all of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed Sep. 16, 1988, Ser. No. 245,755

Claims priority, application Switzerland, Oct. 1, 1987, 3815/87

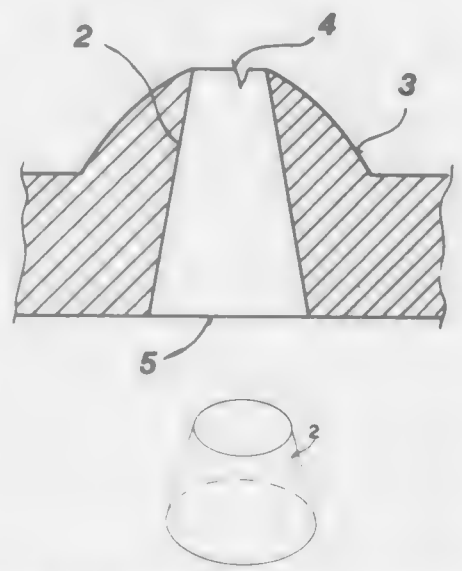
Int. Cl.[5] A47J *31/00*; B01D *39/10*

U.S. Cl. 210—482 **19 Claims**

1. A filter for preparation of extracted beverages comprising a single planar sheet of material including two planar surfaces having a plurality of uniformly distributed openings extending through the sheet and having a plurality of nipples, equal in number to the number of openings, projecting from and out of at least one of the planar surfaces to a nipple end disposed away from the planar surface from which the nipple projects, wherein each nipple is associated with one of the openings through the sheet, wherein each opening extends through each nipple, wherein each opening at the end of each nipple forms a minor base of an opening shape, wherein each opening at the other planar surface forms a major base of the opening shape and wherein the opening shape defined about the openings by the sheet and each nipple is a shape selected from a group of shapes consisting of

(i) a frustoconical shape wherein the minor base opening has a diameter of between 0.1 m and 0.3 mm and the major base opening has a diameter of between 0.2 mm and 0.5 mm

(ii) a frustopyramidal shape wherein a diagonal of a square of the minor base opening is between 0.1 mm and 0.3 mm and wherein a diagonal of a square of the major base opening is between 0.2 mm and 0.5 mm; and



(iii) a shape in a form of an equilateral truncated tetrahedron wherein sides of a triangle of the minor base opening define an opening of between 0.1 mm and 0.3 mm and wherein sides of the major base opening define an opening of between 0.2 mm and 0.5 mm.

5,008,014

SEPARATOR

David D. Lloyd, North Avon, and Peter G. Michaluk, Gloucester, both of England, assignors to Serck Baker Limited, Gloucester, England

PCT No. PCT/GB88/00715, § 371 Date Mar. 27, 1990, § 102(e) Date Mar. 27, 1990, PCT Pub. No. WO89/02313, PCT Pub. Date Mar. 23, 1989

PCT Filed Sep. 1, 1988, Ser. No. 469,405

Claims priority, application United Kingdom, Sep. 5, 1987, 8720943; Sep. 5, 1987, 8720944

Int. Cl.[5] B01D *45/12*

U.S. Cl. 210—512.1 **51 Claims**



1. A separator for separating a mixture of liquids into a more dense component and a less dense component comprises an elongated tube having a circular cross-section which reduces in diameter from a wide end means for enabling substantially all of the less dense component in the central core of said tube to be moved toward said narrow end, including to a narrow end, at least one tangentially disposed inlet at or adjacent the wide end for the introduction at relatively high velocity of a mixture of liquids to be separated, the tube having a constant taper from a location adjacent the inlet towards the narrow end, the convergence angle of the tube being about 2°, at least one outlet comprising an axially disposed tube extending into the separator at the narrow end thereof for the removal of the less dense component and at least one outlet for the removal of the more dense component, positioned in the vicinity of the narrow end of the separator, and pressure control means for controlling the pressure of the more dense component in the vicinity of the outlet for the more dense component.

5,008,015

PURIFICATION OF PHOSPHORUS COMPOUNDS

Paul M. Davies, Birmingham, and Raymond A. Smith, Walsall, both of England, assignors to Albright & Wilson Limited, Warley, England

Filed Oct. 31, 1989, Ser. No. 429,389

Claims priority, application United Kingdom, Nov. 2, 1988, 8825589

Int. Cl.[5] B01D *11/04*

U.S. Cl. 210—634 **29 Claims**

1. A process for reducing the chloride content of a crude amino organic phosphonic acid which comprises contacting an aqueous feed comprising an amino organic phosphonic acid and hydrogen chloride with a liquid hydroxylic solvent to produce an organic solution containing hydrogen chloride, and an aqueous composition comprising the amino organic phosphonic acid of reduced hydrogen chloride content, and separating the aqueous composition from the organic solution.

5,008,016

LIQUID/LIQUID EXTRACTION OF GALLIUM VALUES FROM BASIC AQUEOUS SOLUTIONS THEREOF

Alfred Altorfer, Freienstein; Ernst Wohler, Seuzach, both of Switzerland, and Nicholas P. Wynn, Toronto, Canada, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Mar. 27, 1989, Ser. No. 328,673

Claims priority, application Switzerland, Mar. 25, 1988, 01155/88

Int. Cl.[5] B01D *11/00*

U.S. Cl. 210—634 **3 Claims**

1. A process for the liquid/liquid extraction and recovery of gallium values from basic aqueous solutions thereof, comprising liquid/liquid extracting such basic aqueous solution with an organic phase which comprises a substituted hydroxyquinoline gallium extractant dissolved in an organic solvent, and whereby the gallium values, as well as sodium and aluminum values, are transferred into said organic phase, separating said organic phase from said basic aqueous phase, next contacting the organic phase with a medium consisting essentially of water to convert said coextracted sodium values into caustic soda, separating such caustic soda from said organic phase, and then recovering the gallium values from said organic phase thus stripped of sodium values.

5,008,017

METHOD FOR RECOVERING METALS FROM WASTE LIQUORS

Gary G. Kiehl, Hilton, and Robert G. Surash, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 8, 1989, Ser. No. 447,943

Int. Cl.[5] C02F *1/52*

U.S. Cl. 210—710 **8 Claims**

1. In the method of recovering silver by (1) treating a waste liquor containing silver halide salts with aluminum sulfate as a flocculating agent to form a silver bearing sludge, and (2) reducing the volume of the silver bearing sludge by the addi-

tion of an acid, the improvement which comprises subsequent to step 1 mixing the silver bearing sludge with a metal bicarbonate and a metal carbonate, the weight ratio of bicarbonate to carbonate being from about ¼ to about 3/1, the total weight of bicarbonate and carbonate being from about 1 to about 3 parts per part of silver bearing sludge, wherein said silver bearing sludge is converted to a free flowing powder.

5,008,018

PROCESS FOR THE REDUCTION IN SIZE OF THE PORES OF A FILTER MEDIUM FOR BEVERAGES

Karl Raible, Grafelfing, Fed. Rep. of Germany, assignor to Stabifix Brauerei-Technik GmbH & Co. OHG, Fed. Rep. of Germany

Filed Jan. 18, 1989, Ser. No. 298,518
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1988, 3801215; Jun. 15, 1988, 3820393
Int. Cl.[5] B01D *37/02*
U.S. Cl. 210—717 24 Claims

1. A process for filtering a beverage wherein a stabilized silica sol is used for reducing the size of the pores of the filter medium without sealing them comprising adding a stabilized silica sol continuously or batchwise to the beer to be filtered upstream of the filter medium through which the beer passes, in a quantity and control such that the silicic acid precipitation, which is the transition from SiO_2 primary particles to SiO_2 secondary particles, takes place before the beer leaves the filter medium but without the settling of the silicic acid secondary particle, wherein primary particle are SiO_2 particle of the silica sol and secondary particles are a silici acid hydrogel, whereby the resultant silicic acid precipitation reduces the size of the pores without sealing them.

5,008,019

DECONTAMINATION OF EARTH FORMATIONS

Paul B. Trost, Golden, Colo., assignor to Waste-Tech Services, Inc., Golden, Colo.

Filed May 15, 1989, Ser. No. 351,463
Int. Cl.[5] B01D *12/00*
U.S. Cl. 210—747 2 Claims

1. A decontamination process consisting essentially of displacing through a formation contaminated with organic materials fluids including amounts of an aqueous alkaline polymer solution comprising solutions selected from the group consisting of (a) sodium silicate, sodium carbonate, sodium bicarbonate, xanthan gum polymer and monochloroamine, (b) sodium carbonate, ethoxylated nonylphenol, xanthan gum polymer and sodium hypochlorite, and (c) mixtures of the components of (a) and (b); sufficient to substantially decontaminate the formation and recovering the displaced fluids.

5,008,020

TREATMENT OF DOMESTIC AND INDUSTRIAL WASTE WATERS

Robert G. Surash, Rochester, and Gary G. Kiehl, Holton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 8, 1989, Ser. No. 447,944
Int. Cl.[5] C02F *1/66*
U.S. Cl. 210—751 7 Claims

1. A method of treating waste water which comprises mixing the waste water with a metal bicarbonate and a metal carbonate, the weight ratio of bicarbonate to carbonate being from about 1/3 to about 3/1, the total weight of bicarbonate and carbonate being from about 1 to 3 parts per part of waste water wherein said waste water solidifies into a particulate form.

5,008,021

IN-SITU FORMATION OF SOLUBLE SILICATES FROM BIOGENETIC SILICA IN CHEMICAL FIXATION/SOLIDIFICATION TREATMENT OF WASTES

Jesse R. Conner, Darien, Ill., and Roy S. Rieber, Houston, Tex., assignors to enviroGuard, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 224,857, Jul. 27, 1988, abandoned. This application Jan. 26, 1990, Ser. No. 470,815
Claims priority, application United Kingdom, Jul. 28, 1987, 8717860
Int. Cl.[5] C02F *1/68, 11/14*
U.S. Cl. 210—751 14 Claims

1. A method of solidification and chemical fixation of a waste comprising:

adding to the waste at ambient-temperature and pressure biogenetic silica in the presence of a strong alkali on the order of about pH 12 and higher sufficient to form a soluble silicate with the biogenetic silica in the waste and sufficient water to form the soluble silicate, and

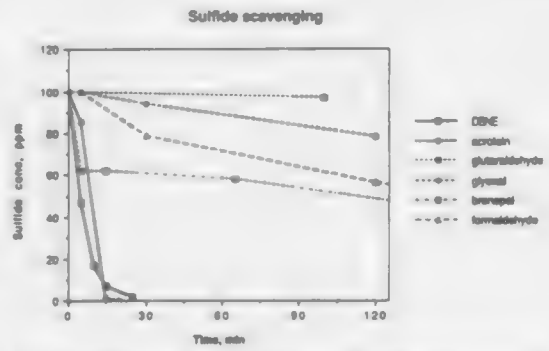
in the presence of at least one polyvalent metal ion sufficient to form a cementitious product with the resulting soluble silicate effective to solidify and chemically fix the liquid waste and to allow said strong alkali to continuously reform to react with the biogenetic silica.

5,008,022

PROCESS FOR SCAVENGING SULFIDES

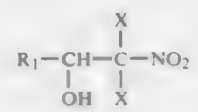
Jonathan Leder, Flemington, N.J., assignor to Union Carbide Chemicals and Plastics Technology Corporation, Danbury, Conn.

Division of Ser. No. 251,362, Sep. 30, 1988, Pat. No. 4,844,877. This application Mar. 27, 1989, Ser. No. 328,878
Int. Cl.[5] B01D *57/00;* B08B *9/02*
U.S. Cl. 210—755 24 Claims



1. A process for the scavenging of at least one sulfide from solids and liquids which comprises the steps of:

(a) contacting a solid or liquid containing at least one sulfide with a sulfide-scavenging amount of a dihalonitroalkanol of the formula:



wherein:

X represents bromo or chloro; and

R_1 represents hydrogen or substituted or unsubstituted alkyl or aryl of up to about 18 carbon atoms, and wherein any substituents are selected from the group consisting of X, hydroxyl or lower alkyl; and

(b) allowing said dihalonitroalkanol to react with said sulfide.

5,008,023

BIOCIDAL COMPOSITIONS AND USE THEREOF CONTAINING A SYNERGISTIC MIXTURE OF GLUTARALDEHYDE AND 2-(DECYLTHIO) ENTHANAMINE

John T. Conlan, Ventura, Calif., and Wilson K. Whitekettle, Conroe, Tex., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Aug. 13, 1990, Ser. No. 566,637
Int. Cl.[5] C02F *1/50;* A01N *33/08*
U.S. Cl. 210—764 5 Claims

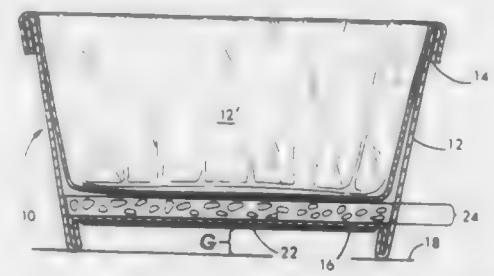
1. A method for controlling the growth of *Klebsiella pneumoniae* bacteria in an aqueous system which comprises adding to said system from about 0.1 to 200 parts per weight of a composition per one million parts per weight of said aqueous system, said composition comprising a synergistic mixture of (a) glutaraldehyde and (b) 2-(decylthio) ethanamine ratio of (a) to (b) being from about 285:1 to 1.11:1.

5,008,024

MICROWAVE CORN POPPING PACKAGE

James D. Watkins, Prior Lake, Minn., assignor to Golden Valley Microwave Foods Inc., Edina, Minn.

Filed Mar. 22, 1990, Ser. No. 497,190
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—10.55 E 5 Claims



1. A nestable and disposable corn-popping package which requires no manipulation prior to popping corn in a microwave oven comprising,

a tub-shaped container comprising a sheet of stiff or semi-flexible paper or paperboard closed upon itself in the form of an upright tube which defines upstanding side walls that slope outwardly toward the top to permit nesting of a plurality of such packages within one another during shipment and storage, the side wall terminates at the top in a free edge which defines an upper open wide mouth for the package,

the side wall has a lower edge which rests on the floor of the microwave oven during cooking,

a generally horizontal bottom wall having an edge connected to the side wall at an elevation spaced upwardly from the bottom edge of the side wall to define an upper food containing compartment and a lower compartment within the confines of the side wall between the bottom wall of the package and the floor of the microwave oven,

a layer of microwave interactive suseptor material connected to the bottom wall and being distributed thereacross,

the lower edge of the side wall is substantially continuous and uninterrupted to provide sealing engagement with the floor of the microwave oven to define a sealed compartment containing air which during cooking becomes heated above the temperature of the surrounding air in the oven,

a layer of popcorn resting on the bottom wall within the upper compartment of the tub in heat conductive relationship with the suseptor and,

a flexible cover formed from a microwave transparent material having a peripheral edge sealed to the upper wide mouth,

said flexible cover being secured only to the upper free edge of the side wall and depending downwardly therefrom into the package, the flexible cover conforming to the inner aspect of the side wall and conforming substantially to the upper surface of the popcorn to provide a hollow space of substantial size within the package into which a similar container can be nested during stacking of said containers.

5,008,025

SULFONATE-CONTAINING POLYMER/POLYANIONIC CELLULOSE COMBINATION FOR HIGH TEMPERATURE/HIGH PRESSURE FILTRATION CONTROL IN WATER BASE DRILLING FLUIDS

John Hen, Skillman, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 16, 1989, Ser. No. 437,419
Int. Cl.[5] C09K *7/02*
U.S. Cl. 252—8.51 25 Claims

11. A composition for improving filtration control of a water based drilling fluid comprising:

(a) a polyanionic cellulose or carboxymethyl cellulose in an amount of about 0.25 to about 10 lbs/bbl.; and

(b) a synthetic sulfonate containing polymer in an amount of about 0.25 to about 10 lbs/bbl. that has a molecular weight range of about 300,000 to about 10 million wherein the weight ratio of component (a) to said polymer is about 10:1 to about 1:1 which polymer comprises a vinyl polymer or copolymer in which one of the components is based on a sulfonic acid monomer or where the sulfonate is derived by sulfonating an existing vinyl polymer or copolymer which results in a drilling fluid additive having filtration control qualities substantially equal to those expected for said synthetic sulfonate containing polymer alone.

17. A method for minimizing fluid loss when drilling a well comprising:

(a) adding to a water based drilling fluid a drilling fluid additive comprising

(i) about 0.25 to about 10 lbs. per barrel of a hydroxyalkyl cellulose or an alkyl ether substituted cellulose; and

(ii) about 0.25 to about 10 lbs. per barrel of a synthetic sulfonate-containing vinyl polymer having a molecular weight range of about 300,000 to about 10 million wherein the weight ratio of component (i) to (ii) is about 10:1 to about 1:1;

(b) circulating the drilling fluid from a well while drilling at a temperature up to about 300° F. thereby substantially reducing filter loss from said fluid via said additive as expected from said synthetic sulfonate-containing vinyl polymer alone.

5,008,026

WELL TREATMENT COMPOSITIONS AND METHOD

Tommy R. Gardner; Walter R. Dill; William G. F. Ford, and Karen L. King, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 303,873, Jan. 30, 1989, abandoned. This application Jan. 12, 1990, Ser. No. 464,277
Int. Cl.[5] E21B *43/27*
U.S. Cl. 252—8.553 34 Claims

10. An acid and/or water external microemulsion well treatment composition comprising:

(a) a treatment fluid selected from the group consisting of acid, an aqueous acid solution and an aqueous non-acid solution;

(b) an alkyl alcohol having in the range of from 4 to 18 carbon atoms microemulsified into said treatment fluid;

(c) an emulsifying agent present in an amount sufficient to form and maintain a stable microemulsified dispersion of said alkyl alcohol in said treatment fluid;

(d) a mutual solvent selected from the group consisting of glycol ethers and alkyoxylates of glycol ethers; and

(e) a co-solvent selected from the group consisting of polyethylene glycol, primary alcohols and alkyoxylates of alkyl alcohols, each of said components (a)–(e) being different compounds or different mixtures of compounds.

18. A method of treating a subterranean formation to increase the production of hydrocarbons therefrom comprising contacting said formation with an acid and/or water external microemulsion well treatment composition comprising:

(a) a treatment fluid selected from the group consisting of acid, an aqueous acid solution and an aqueous non-acid solution;

(b) an alkyl alcohol having in the range of from 4 to 18 carbon atoms microemulsified into said treatment fluid;

(c) an emulsifying agent present in an amount sufficient to form and maintain a stable microemulsified dispersion of said alkyl alcohol in said treatment fluid;

(d) a mutual solvent selected from the group consisting of glycol ethers and alkyoxylates of glycol ethers; and

(e) a co-solvent selected from the group consisting of polyethylene glycol, primary alcohols and alkyoxylates of alkyl alcohols, each of said components (a)–(e) being different compounds or different mixtures of compounds.

5,008,027

Patent Not Issued For This Number

5,008,028

LIQUID COMPOSITIONS CONTAINING CARBOXYLIC ESTERS

Scott T. Jolley, Mentor, and Arturs Grava, Mayfield Heights, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation of Ser. No. 284,315, Dec. 14, 1988, abandoned. This application Jul. 19, 1990, Ser. No. 559,525

Int. Cl.[5] C09K *5/04*

U.S. Cl. 252—68 **30 Claims**

1. A liquid composition comprising

(A) a major amount of a fluorine containing hydrocarbon containing one or two carbon atoms, and

(B) a minor amount of a soluble organic lubricant comprising at least one carboxylic ester compound represented by one of the formulae

$$RO(R^1O)_nC(O)R^2 \quad (I)$$

and

$$R^3OC(O)R^2 \quad (II)$$

wherein R is a hydrocarbyl group of at least 2 carbon atoms, provided that when R^2 is H or hydrocarbyl, R contains at least 6 carbon atoms,

R^1 is a hydrocarbylene group,

R^2 is H, hydrocarbyl, $-CF_3$, $-R^4CN$, $-R^4-NO_2$, or $R^5OCH(R^6)$-,

R^3 is a $-R^4CF_3$, $-R^4CN$ or $-R^4NO_2$ group, provided that R^3 is a hydrocarbyl group when R^2 is $-R^4CN$,

n is an integer from 1 to about 50,

R^4 is a hydrocarbylene group,

R^5 is H, a lower hydrocarbyl group or $R^7C(O)$- where R^7 is a hydrocarbyl group, and

R^6 is H or a lower hydrocarbyl group.

5,008,029

DELAYED ACTION DRAIN CLEANER COMPOSITIONS

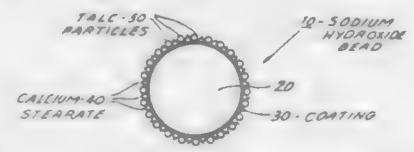
Robert Carmello, Dumont, and Richard D. Miller, Union Beach, both of N.J., assignors to Block Drug Company Inc., Jersey City, N.J.

Filed Nov. 20, 1989, Ser. No. 439,190

Int. Cl.[5] C11D *7/06, 17/00*

U.S. Cl. 252—91 **16 Claims**

1. A drain cleaner composition comprising a plurality of granules, said granules comprising an alkali metal hydroxide core having a first coating thereon and a second coating on the first coating, said first coating comprising an ethoxylated surfactant, said second coating comprising a mixture of hydrophobic components having varying hydrophobicity individually selected from the group consisting of an alkali metal salt of a C_8–C_{18} fatty acid, colloidal clay, synthetic clay, metal oxide, alkaline earth metal carbonate, bentonite, feldspar, calcite,



dolomite, diatomaceous earth, talc, pumice, silica and silicate, such that the contact of water with said first coating when the granule is contacted with water is retarded for a finite period of time.

5,008,030

ACIDIC DISINFECTANT ALL-PURPOSE LIQUID CLEANING COMPOSITION

William J. Cook, New York, N.Y.; Karen L. Wisniewski, Bound Brook; Nagaraj S. Dixit, Plainsboro, both of N.J., and Nandakumar S. Rao, Hockessin, Del., assignors to Colgate-Palmolive Co., Piscataway, N.J.

Filed Jan. 17, 1989, Ser. No. 297,807

Int. Cl.[5] C11D *3/48, 7/08*

U.S. Cl. 252—106 **20 Claims**

1. A stable acidic disinfectant all-purpose liquid cleaning composition comprising by weight:

(a) about 0.5–4% of a mixture of acid stable nonionic surfactants, said mixture consisting essentially of a water soluble nonionic surfactant and a water dispersible nonionic surfactant in a weight ratio of water-soluble to water-dispersible surfactant of from about 4:1 to 4:3;

(b) about 3–7% of an organic acid selected from the group consisting of lower aliphatic monocarboxylic acids, lower aliphatic dicarboxylic acids and mixtures thereof;

(c) at least 0.1% of an acid stable antimicrobial compound;

(d) from about 0–2% of an acid-stable cationic or anionic soil releasing agent; and,

(e) the balance water, said liquid cleaning composition having a pH of about 2–4, wherein the water soluble nonionic surfactant is selected from the group consisting of acid-stable nonionic surfactants having a hydrophilic/lipophilic balance (HLB) of at least about 11 and the water dispersible nonionic surfactant is selected from the group consisting of acid stable nonionic surfactants having a hydropholic/lipophilic balance of abut 7–10.

5,008,031

LIQUID DETERGENT

Paul Schulz, Wuppertal, and Karl Schwadtke, Leverkusen, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Mar. 15, 1989, Ser. No. 323,637

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1988, 3808695

Int. Cl.[5] C11D *3/44, 3/18, 3/20*

U.S. Cl. 252—168 **16 Claims**

1. An anhydrous liquid detergent consisting of nonionic and anionic surfactants present in a weight ratio of about 1:1 containing a solvent mixture consisting of the combination of low-polarity and mid- to high-polarity organic liquids, said low-polarity organic liquids being selected from an aliphatic and cycloaliphatic hydrocarbon having 8 to 40 carbon atoms, said mid-polarity to high-polarity organic liquids being selected from an ester, ether, ketone and alcohol, wherein the weight ratio of said low-polarity to said mid- to high-polarity organic liquids is from about 5:1 to about 1:2, said solvent mixture being present in a quantity of from about 1 to about 20% by weight, up to about 30% by weight of a particulate builder material, up to about 0.5% by weight of a cellulose ether, and up to about 25% by weight of a bleaching agent, based on the weight of said liquid detergent.

5,008,032

USE OF PARTIALLY ESTERIFIED COPOLYMERS IN LIQUID DETERGENTS

Paul Diessel, Mutterstadt; Johannes Perner, Neustadt; Walter Denzinger, Speyer; Heinrich Hartmann, Limburgerhof, and Hans-Juergen Raubenheimer, Ketsch, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 5, 1989, Ser. No. 417,474

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1988, 3837013

Int. Cl.[5] C11D *3/37*

U.S. Cl. 252—174.24 **13 Claims**

1. A liquid, alkaline detergent formulation, containing as essential constituents:

(1) about 10 to 50% by weight of one or more anionic surfactants, one or more nonionic surfactants or a mixture thereof,

(2) 0.1–20% by weight of a partially esterified copolymer obtainable by copolymerization of

(a) one or more C_4–C_{28}-olefins or a mixture of one or more C_4–C_{28}-olefins with up to 20 mol % of a C_1–C_{28}-alkyl vinyl ether and

(b) an ethylenically unsaturated dicarboxylic anhydride of from 4 to 8 carbon atoms

in a molar ratio of 1:1 to give a copolymer having a K value of from 6 to 100 (determined by the method of H. Fikentscher in tetrahydrofuran at 25° C. and a polymer concentration of 1% by weight) and subsequent partial esterification of the copolymer with a reaction product of

(A) a C_1–C_{30}-alcohol, a C_8–C_{22}-fatty acid, a C_1–C_{12}-alkyl-phenol, a secondary C_2–C_{30}-amine or a mixture thereof with

(B) one or more C_2–C_4-alkylene oxides or tetrahydrofuran in a molar ratio of (A):(B) of from 1:2 to 1:50 and hydrolysis of the anhydride groups of the copolymer to carboxyl groups, the partial esterification of the copolymer being carried on until more than about 9% of the carboxyl groups of the copolymer have been converted, and

(3) water.

5,008,033

INTERNAL MOLD RELEASE COMPOSITIONS

Louis W. Meyer, Livingston, Tex.; J. Alan Vanderhider, Fruthwilen, Switzerland, and Robert Carswell, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 466,826, Feb. 16, 1983, abandoned, and Ser. No. 570,141, Jan. 12, 1984, Pat. No. 4,876,019. This application Jun. 12, 1989, Ser. No. 365,625

Int. Cl.[5] C08K *5/09;* **C08L** *75/12, 75/02*

U.S. Cl. 252—182.13 **54 Claims**

1. An active hydrogen-containing composition comprising

(A) a material having an average of at least about 2 active hydrogen-containing groups per molecule and a weight from about 500 to about 5000 per active hydrogen-containing group, said composition having dissolved therein

(B) from about 0.5 to about 10 parts by weight per 100 parts by weight of component (A) of a metal salt of an organic material containing at least one carboxylic acid group and a saturated or unsaturated aliphatic hydrocarbon chain having at least about 7 carbon atoms wherein said metal is selected from Groups I-B, II-B, III-A, IV-B, V-B, VI-B, VII-B or VIII of the Periodic Table of the Elements, Sn, Pb, Sb or Bi:

said composition containing a sufficient quantity of at least one aliphatic primary and/or secondary amine-containing material such that component (B) is soluble in said composition, wherein

said composition is devoid of an organic material containing at least one carboxylic acid group, phosphorus-containing acid group or boron-containing acid group or mixture of such materials wherein said organic material contains a siloxane chain or contains at least one terminal or pendant saturated or unsaturated aliphatic hydrocarbon chain containing at least about 7 carbon atoms.

5,008,034

TITANIUM ACTIVATED HAFNIA AND/OR ZIRCONIA HOST PHOSPHOR CONTAINING NEODYMIUM

Philip S. Bryan, Webster; Patrick M. Lambert, Rochester; Christine M. Towers, Rochester, and Gregory S. Jarrold, Henrietta, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 437,464, Nov. 16, 1989, which is a continuation-in-part of Ser. No. 305,222, Feb. 3, 1989. This application Jun. 29, 1990, Ser. No. 546,215

Int. Cl.[5] C09K *11/67*

U.S. Cl. 252—301.40 F **13 Claims**

1. A phosphor capable of absorbing X-radiation and emitting longer wavelength radiation comprised of monoclinic crystals of a titanium activated hafnium dioxide and/or zirconium dioxide host consisting essentially of oxygen and combined elements satisfying the relationship

$$DT_{i_x}M_yNd_w$$

wherein

D represents at least one or zirconium and hafnium ions;

M represents at least one alkali metal;

w is in the range of from 5×10^{-8} to 5×10^{-4};

x is in the range of from 3×10^{-4} to 1.0; and

y is up to 1;

the phosphor exhibiting reduced afterglow when excited by X-radiation as compared to the phosphor as defined above absent neodymium.

2. A phosphor capable of absorbing X-radiation and emitting longer wavelength radiation comprised of monoclinic crystals of a titanium activated hafnium dioxide and/or zirconium dioxide host consisting essentially of oxygen and combined elements satisfying the relationship

$$DT_{i_x}M_yNd_wL_v$$

wherein

D represents at least one of zirconium and hafnium ions;

L represents at least one of samarium and europium;

M represents at least one alkali metal;

v is up to 5×10^{-4};

w is in the range of from 5×10^{-8} to 5×10^{-4};

x is in the range of from 3×10^{-4} to 1.0; and

y is up to 1;

the phosphor exhibiting (a) reduced afterglow when excited by X-radiation as compared to the phosphor as defined above absent neodumium, samarium and europium and (b) a higher prompt emission intensity when sararium and/or europium are present as compared to the phosphor defined above absent samarium and europium.

5,008,035

FLUIDIZATION OF HEAVY SLURRIES

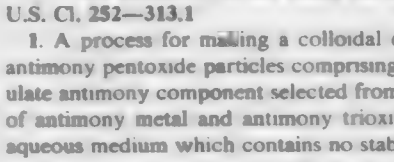
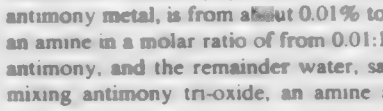
Henry T. Broom, Richmond, Tex., assignor to Nalco Chemical Company, Naperville, Ill.

Division of Ser. No. 132,836, Dec. 14, 1987, Pat. No. 4,949,743. This application May 11, 1990, Ser. No. 521,954

Int. Cl.[5] B01J *13/00;* **B01F** *17/14, 17/42*

U.S. Cl. 252—312 **2 Claims**

1. A composition useful for fluidizing oily heavy slurries, which comprises:

Ingredient	Wt. Percent
(a) water	15–85
(b) an ethoxylated nonyl phenol-formaldehyde resin having a molecular weight ranging between about 1000–25,000	40–5
(c) an alkanolamide condensate represented by  wherein R' is a hydrocarbonaceous bridging group having from 1–20 carbon atoms and chosen from linear or branched alkylene, alkaryl, aralkyl, cyclic and mixtures thereof, x and y are, individually, from 0–8, provided that the sum of x + y is at least 1.	20–2.5
(d) an alkoxylated fatty alcohol phosphate represented by  wherein: R_f is a fatty alkyl group having from 6–30 carbons and being linear or branched, R is H, CH_3, or mixture thereof, z is between 1–12, n is from 1–3; m is 3 − n, and the sum of n + m is 3	20–2.5
(e) A hydrocarbon solvent chosen from the group consisting of naphthas, aromatic naphthas, heavy aromatic naphthas, alkylated aromatics, light aromatic petroleum distillates, turpentines, dipentene rich turpentine, and mixtures thereof.	75–5

5,008,036

COLLOIDAL SOLS OF ANTIMONY PENTOXIDE IN AN AQUEOUS MEDIUM AND THEIR PREPARATION

Charles E. Crompton, Arlington Heights, Ill.; Abdulla M. Z. Kazi, Euclid, and Inderjit S. Soni, Bedford Heights, both of Ohio, assignors to Laurel Industries, Inc., Cleveland, Ohio

Filed Aug. 18, 1975, Ser. No. 605,607

The portion of the term of this patent subsequent to Sep. 7, 2009, has been disclaimed.

Int. Cl.[5] B01J *13/00*; C01G *30/00*; C09K *21/02*

U.S. Cl. 252—313.1 35 Claims

1. A process for making a colloidal dispersion of hydrous antimony pentoxide particles comprising introducing a particulate antimony component selected from the group consisting of antimony metal and antimony trioxide into an essentially aqueous medium which contains no stabilizers and contacting said antimony component with hydrogen peroxide in the aqueous medium, at a temperature of from about 0° C. to about the decomposition temperature of the reaction mixture for a length of time sufficient to convert at least a portion of the antimony component to colloidal particles of hydrous antimony pentoxide.

32. A stable aqueous antimony pentoxide sol comprising an amount of antimony pentoxide which, when expressed as antimony metal, is from about 0.01% to about 40% by weight, an amine in a molar ratio of from 0.01:1 to about 4:1, based on antimony, and the remainder water, said sol prepared by admixing antimony tri-oxide, an amine and water and to said mixture, adding H_2O_2 with refluxing, then cooling the mixture, thus forming the stable sol said amine being diethanolamine

5,008,037

EMULSIFIER FOR WATER-IN-OIL EMULSIONS

John D. Weete, Opelika, Ala., and George L. Griffith, Bethlehem, Pa., assignors to Emulsion Technology, Inc., Parrish, Ala.

Division of Ser. No. 177,956, Apr. 4, 1988, Pat. No. 4,943,389. This application Jun. 26, 1990, Ser. No. 543,531

Int. Cl.[5] B01F *17/14*; B01J *13/00*; A23J *7/00*; C07F *9/10*

U.S. Cl. 252—314 9 Claims

1. A process for preparing a water-in-oil emulsion, which comprises the steps of

(i) heating a component consisting essentially of lecithin at a temperature in the range of from about 100° C. to about 250° C. for a period of time ranging from about 15 to about 480 minutes,

(ii) mixing the product of (i) with an oil, and

(iii) adding to the product of (ii) an aqueous phase with agitation to thereby yield a water-in-oil emulsion.

5,008,038

SOLUBILIZATION OF LACTAM AND CHLORHEXIDINE IN WATER

John J. Merianos, Middletown, and Robert B. Login, Oakland, both of N.J., assignors to GAF Chemicals Corporation, Wayne, N.J.

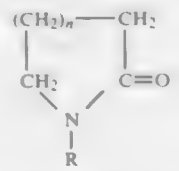
Filed Oct. 10, 1989, Ser. No. 419,176

Int. Cl.[5] B01F *3/20*; A61K *31/155*

U.S. Cl. 252—363.5 10 Claims

1. A composition of matter comprising an aqueous solution containing between about 1 and about 25 wt. % based on water of a complex of:

(a) an N-hydrocarbon substituted lactam defined by the formula



wherein n is an integer having a value of from 1 to 3 and R is a linear alkyl radical containing from 10 to 14 carbon atoms; and

(b) between about 0.08 and about 0.25 wt. % chlorhexidine based on lactam

5. Method of making the composition of claim 1 which comprises:

(a) dissolving chlorhexidine free base in lactam in an amount between about 3 and about 15 wt. % chlorhexidine free base based on lactam; and

(b) then mixing the solution of chlorhexidine free base in lactam with water to form an aqueous solution containing between about 1 and about 25 wt. % of the solution of lactam and chlorhexidine.

5,008,039

LOW FOAMING RUST INHIBITING COMPOSITION

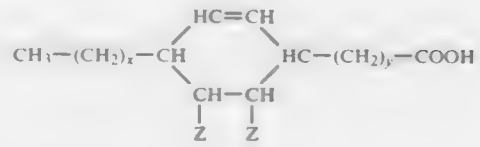
Fred E. Woodward, Palm Beach, and Alice P. Hudson, Lake Park, both of Fla., assignors to Westvaco Corporation, New York, N.Y.

Continuation of Ser. No. 169,214, Mar. 15, 1988, Pat. No. 4,956,106. This application Jun. 29, 1990, Ser. No. 545,819

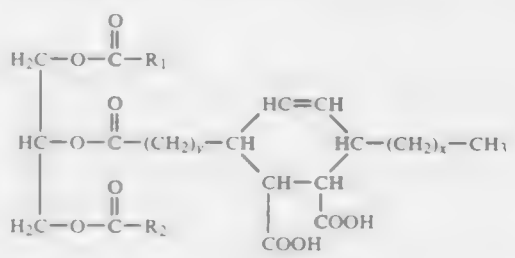
Int. Cl.[5] C23F *11/10*

U.S. Cl. 252—392 6 Claims

1. An improved method of inhibiting corrosion of metals exposed to aqueous media comprising contacting said metals with a water-soluble corrosion inhibiting composition comprising a corrosion inhibiting amount of a water-soluble dicarboxylic acid of the formula:



wherein Z is COOH or H, and one of each is present, and x and y are from 3 to 9 with x+y=12, wherein the improvement comprises reducing the foaming tendencies of said composition by the addition thereto of (1) a foam inhibiting amount of a vegetable oil adduct of the formula:



wherein x and y are integers from 3 to 9, x and y together equal 12 and R_1 and R_2 are saturated or unsaturated hydrocarbon radicals and (2) a base to adjust the pH of the composition to from about 6.5 to about 10.5.

5,008,040

PROCESS FOR PREPARATION OF POLYACETYLENE FILM

Jun Tsukamoto, Otsu, and Akio Takahashi, Kusatsu, both of Japan, assignors to Director-General of Agency of Industrial Science and Technology, Tokyo, Japan

Filed Sep. 29, 1988, Ser. No. 250,735

Claims priority, application Japan, Feb. 9, 1988, 63-26537; Apr. 19, 1988, 63-94504

Int. Cl.[5] H01B *1/00, 1/06*

U.S. Cl. 252—500 8 Claims

1. A process for the preparation of a polyacetylene film, which comprises (a) heating a Ziegler-Natta catalyst comprising an alkylaluminum compound and a titanium compound at a temperature not lower than 150° C. but below the decomposition temperature of the catalyst in an organic solvent and then, cooling the catalyst-organic solvent mixture said organic solvent having a boiling point of from 150° C. to 300° C. and being selected from the group consisting of saturated hydrocarbons, aromatic hydrocarbons and organic silicon compounds, (b) removing coarse catalyst particles having a diameter larger than 1 μm from the catalyst-organic solvent mixture to form a catalyst dispersion for polymerization, (c) contacting acetylene with the catalyst dispersion at a temperature of from −78° C. to 50° C. to effect polymerization of acetylene, and (d) drawing the formed polyacetylene film.

5,008,041

PREPARATION OF CONDUCTIVE POLYANILINE HAVING CONTROLLED MOLECULAR WEIGHT

Randy E. Cameron, Pacific Palisades, and Sandra K. Clement, Canyon Country, both of Calif., assignors to Lockheed Corporation, Calabasas, Calif.

Filed Jan. 30, 1990, Ser. No. 471,979

Int. Cl.[5] H01B *1/06*

U.S. Cl. 252—500 14 Claims

1. A process for producing conductive polyaniline which comprises

providing a mixture of aniline and dianiline in a molar proportion of aniline to dianiline in said mixture in the range of about 1 to about 100,

reacting said mixture in the presence of an oxidant and a protonic acid to polymerize said mixture of aniline and dianiline, and

forming conductive polyaniline.

5,008,042

FLUORORESIN-CONTAINING COATING COMPOSITION AND USE THEREOF

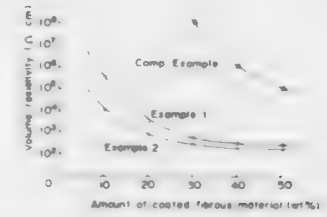
Norimasa Honda, Ibaraki, and Masahiro Sano, Minoo, both of Japan, assignors to Daikin Industries Ltd., Osaka, Japan

Filed Oct. 27, 1987, Ser. No. 113,122

Claims priority, application Japan, Oct. 28, 1986, 61-257181

Int. Cl.[5] H01B *1/20*; C08K *9/02*

U.S. Cl. 252—518 9 Claims



1. A fluororesin-containing coating composition comprising a fluororesin, a fibrous material selected from the group consisting of fibrous potassium titanate, fibrous silicon nitride, fibrous α-alumina and fibrous boron carbide coated by an electrically conductive oxide and having a diameter of 0.01 to 10 micrometers and a length of 1 to 100 micrometers, an acrylic resin selected from the group consisting of polymethyl methacrylate, polymethyl acrylate and polyethyl acrylate and a liquid medium wherein the weight ration of the fluororesin to the fibrous material is from 95:5 to 50:50, and the weight ratio of the fluororesin to the acrylic resin is from 100:0 to 85:15.

5,008,043

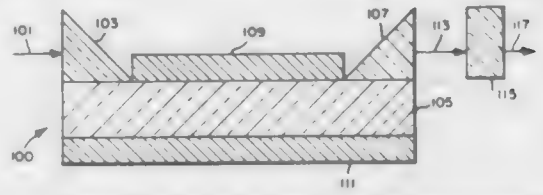
OPTICAL ARTICLE EXHIBITING A HIGH LEVEL OF SECOND ORDER POLARIZATION SUSCEPTIBILITY

Douglas R. Robello, Webster; Abraham Ulman, Brighton; Edward J. Urankar, Rochester, and Craig S. Willand, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 16, 1990, Ser. No. 494,376

Int. Cl.[5] F21V *9/00*; G02B *6/00, 6/10*

U.S. Cl. 252—582 20 Claims



1. An optical article containing, for the transmission of electromagnetic radiation, a medium exhibiting a second order polarization susceptibility greater than 10^{-9} electrostatic units comprised of polar aligned noncentrosymmetric molecular dipoles having a hydrophobic electron donor moiety linked through a conjugated π bonding system to a sulfonyl electron acceptor moiety to permit oscillation of the molecular dipole between a lower polarity ground state and a higher polarity excited state,

characterized in that the sulfonyl electron acceptor moiety includes at least two halogen substituents of its α carbon atom.

5,008,044

PROCESS FOR DECONTAMINATING RADIOACTIVELY CONTAMINATED METAL OR CEMENT-CONTAINING MATERIALS

Jozef Hanulik, Zurich, Switzerland, assignor to Recytec SA, Switzerland

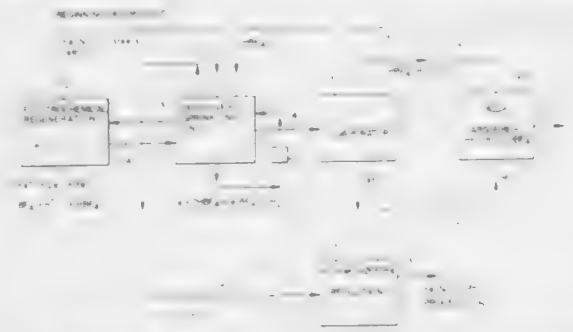
Continuation-in-part of Ser. No. 19,799, filed as PCT CH 86/00069 on May 27, 1986, Pat. No. 4,828,759. This application May 9, 1989, Ser. No 349,586

Claims priority, application Switzerland, May 28, 1985, 02238/85; May 28, 1985, 02239/85; Jun. 3, 1985, 02328/85

The portion of the term of this patent subsequent to May 9, 2006, has been disclaimed.

Int. Cl.[5] G21F *9/16, 9/08;* **C09K** *13/08;* **B08B** *9/00*

U.S. Cl. 252—628 **18 Claims**



1. A process for decontaminating radioactively contaminated porous materials using a decontamination agent selected from the group consisting of fluoroboric acid; hexafluorosilicate acid; water soluble salts of fluoroboric acid; and mixtures thereof in aqueous solution, said decontamination agent having a concentration of about 0.05 to about 50 mol/liter in said solution, said process comprising contacting said radioactively contaminated porous materials to be decontaminated with said decontamination agent; dissolving surface layers of said radioactively contaminated porous materials by said contacting with said decontamination agent, and separating said decontamination agent from radioactive contaminants and impurities by distillation.

5,008,045

METHOD AND APPARATUS FOR CENTRIFUGALLY CASTING HAZARDOUS WASTE

Frank Manchak, Jr.; Frank E. Manchak, II; Michael E. Manchak, and Peter J. Manchak, all of Goleta, Calif., assignors to Alternative Technologies for Waste, Inc., Goleta, Calif.

Continuation-in-part of Ser. No. 328,020, Mar. 23, 1989. This application Jul. 21, 1989, Ser. No. 384,087

Int. Cl.[5] G21F *9/12*

U.S. Cl. 252—633 **10 Claims**

1. A method of compacting hazardous waste materials into a stable rigid form comprising the steps of:

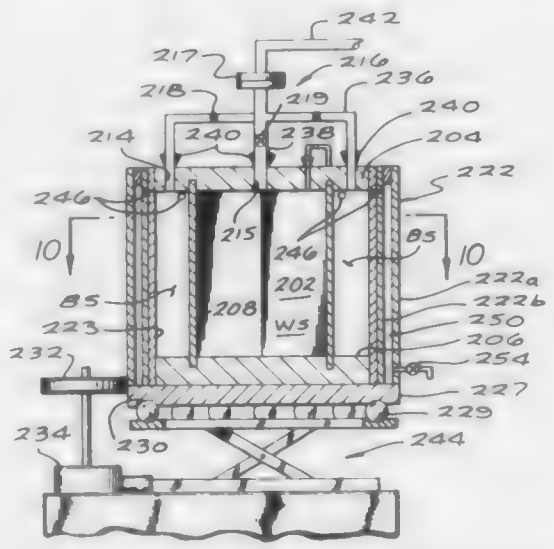
(a) placing a mold liner into a casting mold which is rotatable around a longitudinal axis, said liner having a polygonal cross section;

(b) placing a cage comprised of a pair of contaminant barrier end walls spaced from each other and a peripheral wall interconnecting said end walls into said mold liner and affixing said cage in position therein, said cage having a polygonal cross section, said mold liner and said cage defining a casting space therebetween for casting a peripheral contaminant barrier wall of polygonal cross section and substantially constant thickness;

(c) rotating said mold, mold liner and cage about said longitudinal axis;

(d) injecting a castable contaminant barrier material into said polygonal wall casting space to centrifugally cast said peripheral contaminant barrier wall of a desired wall thickness;

(e) injecting a castable hazardous waste material into the interior of said cage and centrifugally casting same therein, and



(f) removing the resulting casting comprised of said cage and said castable materials from said mold.

5,008,046

PROCESS FOR THE CONTINUOUS ESTERIFICATION OF FATTY ACIDS

Norbert Bremus, Langenfeld; Bernhard Gutsche, Hilden; Lutz Jeromin, Hilden; Eberhard Peukert, Hilden, and Bernard Schleper, Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Mar. 21, 1989, Ser. No. 326,592

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1988, 3809417

Int. Cl.[5] C11C *3/00;* **C07C** *67/08*

U.S. Cl. 260—410.6 **14 Claims**

1. A continuous process for esterification of C_2-C_{24} fatty acid with C_1-C_5 monohydric alkanol or C_2-C_3 dihydric alkanol in a liquid phase in the presence of a catalyst which comprises:

(a) introducing heated fatty acid and catalyst onto the top plate of a multiple plate reaction column, operated at a top pressure of from about 200 to about 900 hPa, the top of the reaction column is in communication with a rectifying column;

(b) introducing the alkanol, in a vapor phase, below the lowest plate of the reaction column;

(c) reacting the fatty acid and the alkanol in the liquid phase.

(d) removing a water-alkanol vapor mixture through the rectifying column; and

(e) removing an esterified fatty acid mixture from the column below the lowest plate.

5,008,047

PROCEDURE FOR THE REFINING OF OILS

Laurent Martens, Ranst, Belgium, assignor to Schelde-Delta, Antwerp, Belgium

Filed Jun. 26, 1989, Ser. No. 371,272

Claims priority, application Belgium, Jun. 29, 1988, 8800749

Int. Cl.[5] C11B *3/04*

U.S. Cl. 260—424 **18 Claims**

1. A process for refining an oil containing unhydratable phospholipids, said process comprising the steps of:

forcing a stream of oil through an immobilized solid Lewis acid catalyst in the presence of water to catalytically convert the unhydratable phospholipids into hydratable phospholipids; then

hydrating the hydratable phospholipids; and then

separating the hydrated phospholipids from the oil.

5,008,048

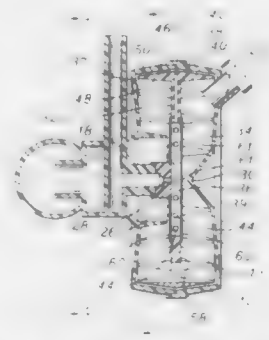
POSITION INSENSITIVE ASPIRATOR

Steven L. Ryder, 1334 Woodcrest, Fullerton, Calif. 92633

Continuation-in-part of Ser. No. 279,657, Dec. 5, 1988, abandoned, and a continuation-in-part of Ser. No. 415,914, Oct. 2, 1989. This application Mar. 15, 1990, Ser. No. 493,888

Int. Cl.[5] B01F *3/04*

U.S. Cl. 261—78.2 **18 Claims**



1. In a device for aspirating a liquid comprising a hollow housing having end walls and side walls and defining a reservoir for a liquid to be aspirated, said housing having inlet means for a carrier gas and a pressurized gas, and an outlet for said carrier gas and aspirated fluid, nozzle means within said housing communicating with said inlet means for said pressurized gas and communicating with said reservoir for producing reduced pressure within said housing and for aspirating said liquid, the improvement comprising:

an entrainment member disposed in said housing and capable of conveying liquid in said reservoir to said nozzle means for aspiration irrespective of the position and orientation of said device, said entrainment member defining a peripheral surface spaced from said housing side walls and disposed parallel thereto to provide a flow path for fluid communication between said peripheral surface and said reservoir and means providing fluid communication between said peripheral surface and said nozzle means,

whereby liquid in said reservoir is entrained in said flow path and is drawn to said nozzle outlet for aspiration due to the reduced pressure in said housing caused by a stream of gas exiting said nozzle irrespective of the position and orientation of said device.

5,008,049

METHOD FOR SEALING AN ELECTRONIC DEVICE CONTAINING A FLUID MATERIAL

James W. Rose, Delmar, and Theresa A. Sitnik, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 21, 1989, Ser. No. 410,398

Int. Cl.[5] B29C *39/38, 39/10*

U.S. Cl. 264—4 **24 Claims**

1. A method for sealing a fluid between spaced apart first and second members of a device, comprising the steps of:

forming a seal of sealant material across a space between the first and second members and essentially completely around the periphery of the device;

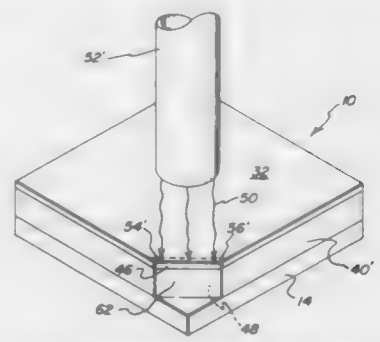
forming an aperture through the seal to provide access to an interior of the device;

introducing the fluid into the device interior through the aperture;

filling the aperture with a plug of thermoplastic material;

selectively heat treating substantially only the plug to cause at least an exterior portion of the plug to soften and flow; and

terminating the heat treatment after a duration sufficiently short to avoid contamination of said fluid, to cause the plug to resolidify and bind to a boundary of the aperture and complete the peripheral seal to completely enclose the fluid.



5,008,050

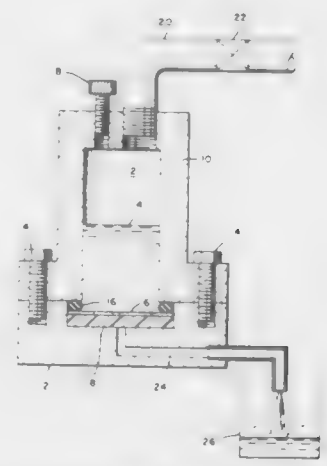
EXTRUSION TECHNIQUE FOR PRODUCING UNILAMELLAR VESICLES

Pieter R. Cullis; Michael J. Hope, and Marcel B. Bally, all of Vancouver, Canada, assignors to The Liposome Company, Inc., Princeton, N.J.

Continuation of Ser. No. 788,017, Oct. 16, 1965, abandoned, which is a division of Ser. No. 622,690, Jun. 20, 1984, abandoned. This application Feb. 13, 1989, Ser. No. 310,495

Int. Cl.[5] A61K *9/133, 37/22*

U.S. Cl. 264—4.3 **29 Claims**



1. A method for reducing the lamellarity of a population of liposomes comprising repeatedly passing the liposomes under pressure through a filter which has a pore size (equal to or less than) no larger than about 100 nm.

10. A method for preparing a population of substantially unilamellar liposomes comprising the steps of:

(a) preparing multilamellar liposomes; and

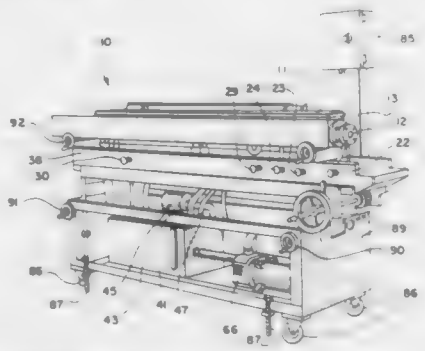
(b) repeatedly passing the liposomes under pressure through a filter which has a pore size no larger than about 100 nm.

5,008,051

VACUUM SIZING TANK WITH ELECTRONICALLY CONTROLLED VACUUM PRESSURE

Robert T. DeCoursey, 199 Euclid, Bloomingdale, Ill. 60108, and Mikel J. Messick, 784 Red Oak Dr., Bartlett, Ill. 60103

Filed Mar. 1, 1989, Ser. No. 317,681
Int. Cl.[5] B29C *43/22*
U.S. Cl. 264—40.3 16 Claims



1. In a vacuum sizing tank substantially closed to the atmosphere including:

(a) an enclosed trough capable of holding water and a vacuum, said trough having a first opening for the ingress of a molten plastic extrudate and a second opening for the egress of a cooled plastic extrudate; and

(b) vacuum means for applying a vacuum to said trough,

the improvement (1) wherein said vacuum means applies any one of a plurality of different vacuums to said trough and (2) comprising:

(A) detector means, coupled to said trough, for determining the pressure within said trough;

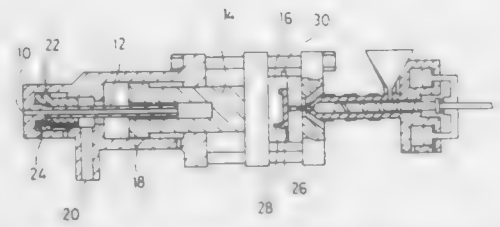
(B) control means, coupled to said detector means and said vacuum means, for (1), when said detector means determines that the pressure has fallen below a predetermined value, causing said vacuum means to decrease the vacuum applied to said trough and (2), when said detector means determines that the pressure in said trough has risen above said predetermined value, causing said vacuum means to increase the vacuum applied to said trough.

5,008,052

MOLD CLAMPING PRESSURE CONTROL METHOD FOR INJECTION COMPRESSION MOLDING AND INJECTION COMPRESSION MOLDING MACHINE

Susumu Harada, Numazu, Japan, assignor to Toshiba Machine Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1988, Ser. No. 279,197
Claims priority, application Japan, Dec. 3, 1987, 62-304439
Int. Cl.[5] B29C *45/80*
U.S. Cl. 264—40.5 2 Claims



1. A mold clamping pressure control method for injection compression molding of resin through adjustments of oil pressure in a mold clamping cylinder by means of a mold clamping pressure control valve, comprising:

detecting a resin temperature in a cavity in a mold by a resin temperature sensor;

converting detected values thereof into electric signals by a converter;

comparing in turn said electric signals with a series of preset pressure changeover temperature setting values to output one pressure changeover signal whenever said detected values correspond to said setting values; and

converting said pressure changeover signal corresponding to any of a series of pressure setting values which are predetermined according to the resin temperatures, into a valve opening-shutting amount before outputting valve opening-shutting directing signals, thereby controlling an opening-shutting amount of said mold clamping pressure control valve, whereby a plurality of different mold clamping pressures are successively applied in response to the detection of a plurality of successively different resin temperatures.

5,008,053

PROCESS FOR PRODUCING A CERAMIC PRODUCT USING SLUDGE ASHES

Ryusuke Hashimoto, Fuso; Mitsuru Iwata; Junichi Sugihara, both of Mitake, and Minoru Iwase, Mitake, all of Japan, assignors to Fujimi Ceramic Co., Ltd., Nagoya, Japan

Continuation-in-part of Ser. No. 71,273, Jun. 9, 1987, Pat. No. 4,874,153. This application Oct. 6, 1989, Ser. No. 418,141
Claims priority, application Japan, Aug. 8, 1989, 1-2051[illegible]
Int. Cl.[5] C04B *35/64*
U.S. Cl. 264—60 2 Claims



1. A process for producing a ceramic product using sludge ashes, comprising the steps of

(a) mixing at least (i) ashes obtained by burning a sludge which as been obtained by the treatment of sewage and (ii) a plastic ceramic raw material to prepare a first body,

(b) mixing at least a plastic ceramic raw material and a fusible material to prepare a second body,

(c) supplying the first and second bodies into a matrix of a molding machine such that the first and second bodies form a lower, major layer and an upper, surface layer which covers the lower layer, respectively,

(d) molding the first and second bodies as one body into an object with a desired shape, and

(e) firing a molding obtained in the step (d), thereby producing a two-layer ceramic product whereby the effects of different sewage treatments on the quality of the resultant product is largely mitigated.

5,008,054

CERAMIC INJECTION MOLDED BODY AND METHOD OF INJECTION MOLDING THE SAME

Shigeki Kato, Nagoya, and Katsuhiro Inoue, Aichi, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Dec. 22, 1989, Ser. No. 455,229
Claims priority, application Japan, Dec. 24, 1988, 63-326932
Int. Cl.[5] C04B *35/64*
U.S. Cl. 264—63 2 Claims

1. A method of producing a sintered ceramic body, comprising the steps of:

granulating a ceramic powder to form granulated particles;

kneading the granulated particles with the addition of at least one organic binder;

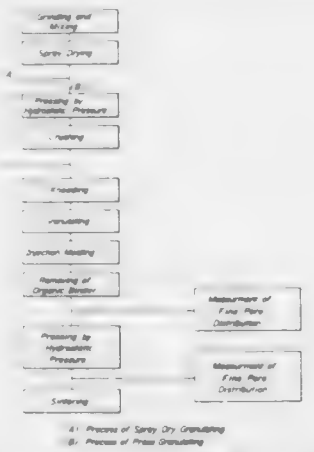
injection molding the kneaded particles to form a molded body;

heating the molded body to burnout said organic binder;

hydrostatically pressing the molded body; and

sintering the hydrostatically pressed, molded body;

wherein the granulating and kneading steps are performed under conditions selected to prevent crushing of the granulated particles during kneading, such that at least 30% of



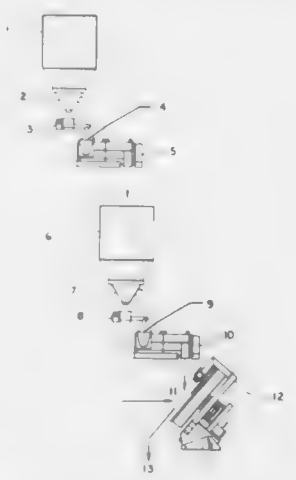
the total volume of pores in the molded body after the heating step have a diameter of at least 0.1 μm, and wherein the hydrostatic pressing step is performed under conditions selected to crush the granulated particles contained in the molded body, such that at least 50% of the total volume of pores in the hydrostatically pressed, molded body after the hydrostatic pressing step have a diameter of at most 0.1 μm.

5,008,055

PROCESS FOR PELLETIZING HIGHLY REACTIVE POWDERS

Carl A. Holley, 14315 Tall Oaks, Riverview, Mich. 48192

Filed Sep. 4, 1990, Ser. No. 577,281
Int. Cl.[5] C04B *2/02, 11/28;* B29B *9/08*
U.S. Cl. 264—117 8 Claims



1. The method of forming strong and durable pellets from dust collected from stack gases, the dust including CaSO2, CaSO4 and unreacted CaO, comprising blending a portion of water required for a total hydration with a first mixer, storing the moistened dust in a conditioning container wherein some compounds in the moistened dust are chemically reacted with said water to form hydroxides, adding more water to the reacted dust, subjecting the wetted dust to an intense second mixer, and thereafter pelletizing the wetted dust in a pelletizer.

5,008,056

REDUCTION IN DIE DROOL IN FILLED RESINS AND PRODUCT IMPROVEMENT

Stuart J. Kurtz, Martinsville, N.J., and Steve R. Szaniszlo, Laval, Canada, assignors to Union Carbide Chemicals and Plastics Technology Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 249,778, Sep. 26, 1988, abandoned. This application Dec. 21, 1989, Ser. No. 454,458
Int. Cl.[5] B29C *47/12*
U.S. Cl. 264—130 3 Claims

1. A process for reducing die drool during the die extrusion of highly filled polyolefinic resins for production of jacketing insulators for wire and cable which comprises anchoring into the surface of the die submicron particles of a fluorinated hydrocarbon polymer said anchoring being effected by creating pores in the surface of the die in contact with the polymeric resins and thereafter infusing said pores with said submicron particles of fluorinated hydrocarbon polymer.

5,008,057

METHOD OF PRODUCING A STRUCTURE, MORE PARTICULARLY A WOODEN STRUCTURE, IN THE SURFACE OF A HARDENED FIBREBOARD

Harald Risius, Aurich, and Wilhelm Oldemeyer, Meppen, both of Fed. Rep. of Germany, assignors to Glunz Aktiengesellschaft, Hamm, Fed. Rep. of Germany

Filed Nov. 29, 1989, Ser. No. 443,654
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1988, 3840292
Int. Cl.[5] B29C *59/02*
U.S. Cl. 264—134 7 Claims

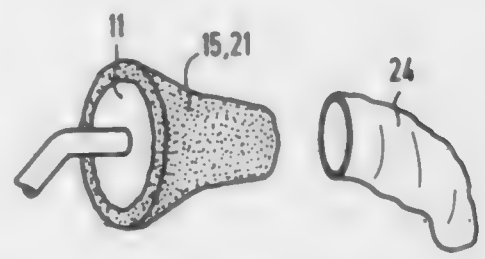
1. A method for producing a wooden structure in an initially uncoated surface of a hardened fibreboard, comprising the steps of: applying an initial coating of a resin-water mix to the uncoated surface of the fibreboard on one or both sides to soften and penetrate into the surface of the fibreboard; molding the wooden structure into the surface of the softened fibreboard by pressing said fibreboard with a short cycle press, under the action of pressure and heat, and using a structured pressure-plate to evaporate the water-part of the resin-water mix and to cure the resin part, whereby the structure of the pressure-plate is molded into the surface of the fibreboard.

5,008,058

METHOD FOR MANUFACTURING AN OTOPLASTIC OR AN EAR ADAPTOR MEMBER

Hans Henneberger, Effeltrich, and Rainer Basel, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 19, 1989, Ser. No. 299,069
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1988, 3801392
Int. Cl.[5] B29C *41/22*
U.S. Cl. 264—134 14 Claims



1. A method for manufacturing a customized ear adaptor

member including an otoplastic and adaptor member, said adaptor member having an elastic-shaped part of a desired shaped placed on a carrier part, said method comprising the steps of providing an open-celled porous deformable part on a carrier part, said deformable part being slightly larger than an auditory canal of an ear of a hearing impaired person, at least partially saturating the deformable part with a liquid hardenable material so that said material is retained in said deformable part, then inserting the at least partially saturated deformable part and the carrier part into the auditory canal of the ear of the hearing impaired person and allowing the at least partially saturated deformable part to confirm to the canal as the hardenable material hardens to permanently conform the deformable part to the shape of the auditory canal of the ear of the person to form a permanently shaped part of the desired shape and then removing the formed, shaped part from the ear.

5,008,059

METHOD FOR MANUFACTURING A PLASTIC PART HAVING A SHAPE MEMORY

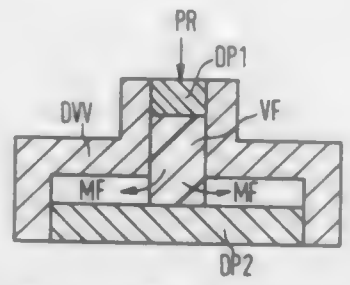
Helmut Kaeufer, Mettmann; Christian Kipfelsberger, Hepberg, and Karl-Heinz Leyrer, Bobfingen, all of Fed. Rep. of Germany, assignors to R X S Schrumpftechnik-Garnituren GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 38,236, Apr. 14, 1987, abandoned. This application Oct. 23, 1989, Ser. No. 425,437

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1986, 3612518

Int. Cl.[5] **B29C** *43/04, 61/06*

U.S. Cl. 264—230 **25 Claims**



1. A method for the manufacture of plastic parts of a thermal plastic synthetic material having a crystallite melting point and a softening point, said parts having a shape memory and being restored by the application of energy to an original shape from a second shape, the method comprising the steps of providing a preform of the original shape for the part in an apparatus having a cavity of the second shape of the part, said preform being free of cross-linked material, heating the preform to a first elevated temperature below the temperature of the crystallite melting point and softening point for the synthetic material, applying pressure to said heated preform in said cavity to change the original shape to said second shape and to introduce molecular orientations into the preform to change the preform into the part, maintaining the pressure on the part and cooling the part to a second elevated temperature below the first elevated temperature to fix the molecular orientations therein, removing the pressure after reaching the second elevated temperature, removing the part from said cavity and subsequently applying energy to cancel the molecular orientations and create restoring forces to return the part back to the original shape.

5,008,060

METHOD OF MOLDING A MULTI-INJECTION MOLDED BODY

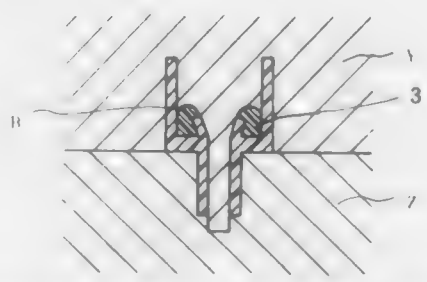
Toshiyuki Kanai, and Nobuo Shinnoh, both of Sakaki, Japan, assignors to Nissei Jushi Kogyo Kabushiki Kaisha, Nagano, Japan

Division of Ser. No. 347,908, May 5, 1989, abandoned. This application Jul. 17, 1989, Ser. No. 380,297

Claims priority, application Japan, Nov. 5, 1988, 63-114453

Int. Cl.[5] **B29C** *65/56*

U.S. Cl. 264—255 **11 Claims**



1. A method of molding a multi-injection molded body, which comprises at least a first molded body consisting essentially of a first resin and a second molded body consisting essentially of a second resin, the method comprising:

injection molding the first body so that on a surface thereof which is to be joined to the second body, there exists a concave section which opens on said surface;

reshaping the first body and thereby projecting at least a portion of a sidewall of said concave section inward to form an undercut section in the concave section;

and injecting said second resin into the concave section having said undercut section therein and into a cavity of a mold, in order to mold the second body tightly fixed to the first body by the undercut section.

5,008,061

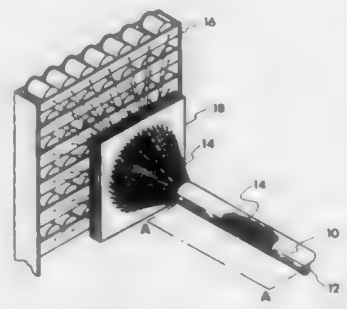
PROCESS FOR THE MANUFACTURE OF SEAMLESS METAL-CLAD FIBER-REINFORCED ORGANIC MATRIX COMPOSITE STRUCTURES

Raymond M. Bluck, San Jose, Calif.; Harold G. Bush, Yorktown, Va., and Robert R. Johnson, Saratoga, Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 921,572, Oct. 21, 1986, Pat. No. 4,923,761. This application Feb. 28, 1990, Ser. No. 486,668

Int. Cl.[5] **B29C** *45/14*

U.S. Cl. 264—257 **3 Claims**



1. A process for producing metal seamless clad composite structures comprising:

providing a hollow, metallic inner member;

providing an outer sleeve to surround the inner member and define an inner space therebetween;

attaching to the distal end of the outside diameter of said inner member a plurality of continuous reinforcing fibers;

introducing the inner member, distal end first, into one end of the outer sleeve;

sliding said inner member, distal end first, into the outer sleeve until the inner member is completely enveloped by the outer sleeve;

injecting a liquid matrix material into the space containing the reinforcing fibers between the inner member and the outer sleeve;

flowing a pressurized heat transfer medium through said inner member, to cure said matrix material and to provide structural support; and

reducing the wall thicknesses of both the inner member and the outer sleeve to the appropriate dimensions to adjust the thermal expansion coefficient of the metal-clad composite structure to the desired value.

5,008,062

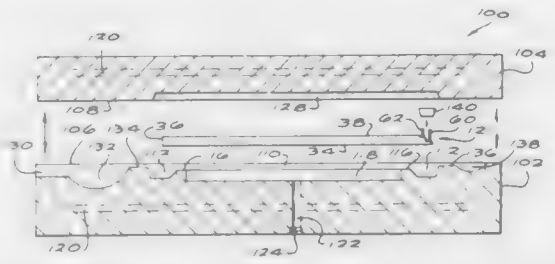
METHOD OF FABRICATING PHOTOVOLTAIC MODULE

A. Jerome Anderson, Newbury Park, and Norman L. Beze, Simi Valley, both of Calif., assignors to Siemens Solar Industries, L.P., Camarillo, Calif.

Division of Ser. No. 145,931, Jan. 20, 1988, Pat. No. 4,830,038. This application Mar. 2, 1989, Ser. No. 318,785

Int. Cl.[4] **B29C** *45/14*

U.S. Cl. 264—272.15 **7 Claims**



1. A method for forming an elastomeric casing on a predetermined portion of a thin film photovoltaic panel having front and back sides and edges forming a perimeter, and at least one thin film photovoltaic cell capable of converting radiation incident the front side of the panel to electrical energy, the method comprising the steps of:

placing the thin film photovoltaic panel in a mold having interior walls which cooperate with said predetermined portion of the panel to define a cavity encompassing the perimeter and the back side of the panel; and

introducing a flowable reaction injection molding material into the cavity and curing said material to form a unitary elastomeric casing which encapsulates the entire back side and perimeter edges of the panel and forms a seal against a portion of the front side of the panel bordering the perimeter.

5,008,063

METHOD FOR PRESS MOLDING PLASTICS ARTICLES, IN PARTICULAR THERMOPLASTIC, THERMOSETTING AND POLYURETHANE PLYMERIC ARTICLES

Giorgio Margiaria, Moncalieri, and Giuseppe Brizio, Fossano, both of Italy, assignors to Fiat Auto S.p.A., Turin, Italy

Division of Ser. No. 118,903, Nov. 9, 1987, Pat. No. 4,861,258. This application Aug. 28, 1989, Ser. No. 405,791

Claims priority, application Italy, Nov. 20, 1986, 67862 A/86

Int. Cl.[5] **B29C** *45/04*

U.S. Cl. 264—297.2 **1 Claim**

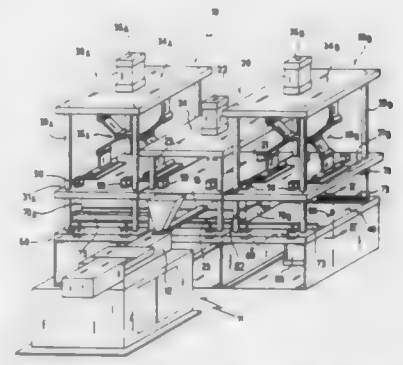
1. A method for molding plastic articles comprising:

arranging a first mold at a central molding station and a second mold at one of two cooling and extraction stations located adjacent said molding station on opposite sides thereof,

simultaneously molding an article in said first mold at the central station while applying a pressure by a first pressure applying means and cooling and extracting a molded article from said second mold at said one of two cooling and extraction stations,

positioning second pressure applying means to define an elongated transfer path for said first and second molds,

applying a closure pressure to the molds by means of said second pressure applying means,



moving the molds relative to said second pressure applying means to maintain said closure pressure to bring the second mold into the central molding station and the first mold into another of the two cooling and extraction stations, and

alternately repeating the above operations by shifting the respective molds simultaneously back and forth between the molding stations and the respective cooling and extraction stations.

5,008,064

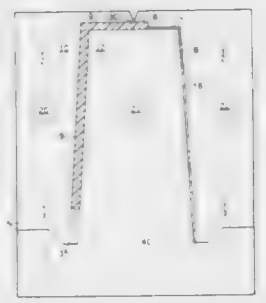
INJECTION-MOLDING DIMENSION-CONTROL AND CLAMP-REDUCTION

Jens O. Sorensen, Rancho Santa Fe, Calif., assignor to Primtec, Rancho Santa Fe, Calif.

Filed Jun. 5, 1989, Ser. No. 361,275

Int. Cl.[5] **B29C** *45/16, 45/37*

U.S. Cl. 264—308 **10 Claims**



1. A method of controlling the dimensions of a hollow plastic product injection molded within the cavity of a mold having a core section and a cavity section defining the mold cavity therebetween and separated by a parting line, comprising stabilizing the core section in relation to the cavity section and comprising the steps of:

(a) injecting a first plastic material into the mold cavity so that only a part of the mold cavity is filled;

(b) cooling the injected first plastic material in the mold cavity;

(c) injecting subsequent to injecting the first plastic material, a second plastic material into the mold cavity so that the

cooled injected first plastic material extending between the core section and the cavity section in said part of the mold cavity is sufficiently solidified to stabilize the core section in relation to the cavity section by impeding movement of the core section in relation to the cavity section caused by injecting the second plastic material, whereby the injected second plastic material fills the mold cavity; and

(d) cooling the injected plastic material in the mold cavity to thereby solidify the product;

the method being characterized by the following additional steps,

step (a) comprising the step of:

(e) continuing the injection of the first plastic material by the second plastic material without intermission;

step (b) comprising the step of:

(f) cooling a portion of the first plastic material so that it is at least partially solidified and so that another portion of the first plastic material remains fluid;

step (c) comprising the step of:

(g) injecting the second plastic material so that the second plastic material displaces some of the fluid first plastic material to thereby provide at least one flow path for the second plastic material to fill the mold cavity and so that some of the at least partially solidified first plastic material stabilizes the core section in relation to the cavity section.

5,008,065

REACTION INJECTION MOLDING METHOD

Kin-ichi Okumura, Kamakura; Koji Chono, Kurashiki; Hiroshi Ozeki, Kurashiki, and Tadao Hamada, Kurashiki, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Jul. 17, 1989, Ser. No. 380,424

Claims priority, application Japan, Jul. 19, 1988, 63-178260

Int. Cl.[5] B28B *7/38*

U.S. Cl. 264—328.6 **19 Claims**

1. In a process for molding an article wherein a mold-release agent is applied to the surface of a mold and polymerizing in said mold by ring-opening polymerization at least one norbornene monomer containing at least one norbornene group in the presence of a metathesis catalyst system to form a molded product and extracting from said mold said molded product, the improvement which comprises applying to said mold surface a mold release agent selected from the group consisting of organic fluorine compounds and mixtures thereof wherein said mold release agent does not impart whitening to said molded product.

5,008,066

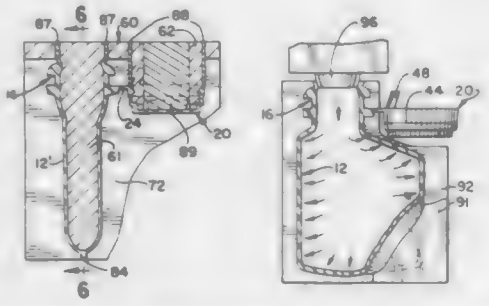
CONTAINER WITH A UNITARY CLOSURE AND METHOD FOR MAKING SAME

Bruce M. Mueller, Crystal Lake, Ill., assignor to Seaquist Closures, Crystal Lake, Ill.

Filed Apr. 6, 1989, Ser. No. 334,301

Int. Cl.[4] B29C *49/06*; **B65D** *55/16*

U.S. Cl. 264—537 **5 Claims**



1. A method for forming a container having a unitary hollow receptacle and closure comprising the sequential steps of:

(A) molding a preform of thermoplastic material, said molding of the preform including the injection molding of (1) a hollow body, (2) a closure base at one end of said hollow body to define an opening into said hollow body, and (3) a closure cover complementary to and spaced from said closure base opening but connected to said closure base to permit said closure cover to be swung about an axis between (1) a closed position engaged with said closure base for occluding said opening and (2) an open position disengaged from said closure base in the region over said opening when a substance is to be loaded into, or dispensed out of, said opening, said injection molding including providing an initially open assembly of first mold parts including a core and an open split mold having spaced-apart injection mold halves adapted to be positioned about said core relative to an injection mold parting plane, each said injection mold half being movable along a common line of action away from the other mold half to an open position and being movable along said common line of action toward the other mold half to a closed position in which said closed injection mold halves define a flow channel gate and a communicating forming cavity for said preform hollow body, closure base, and closure cover, said core including a first projecting core portion for defining the inside surfaces of said preform hollow body and closure base and having a second projecting core portion for defining the inside surfaces of said closure cover, said injection molding further including subsequently closing said injection mold halves about said first and second projecting core portions and injecting said thermoplastic material through said flow channel gate to mold said preform hollow body, closure base, and closure cover together from a single injection of said material, each said complementary closure base and closure cover being of completed finish, shape, and size upon the completion of step (A); and

(B) after the completion of step (A), blow molding said preform hollow body to form said hollow receptacle extending from said closure base and having a configuration different than said preform hollow body, said blow molding step including (1) providing second mold parts in the form of a blow molding assembly of split blow mold halves initially positioned in an open position about said preform hollow body relative to a blow mold parting plane which has the same planar orientation with respect to said preform as does the injection mold parting plane and, (2) closing said blow mold halves by moving them in opposing directions perpendicular to the blow mold parting plane and parallel to the directions of movement of said injection mold halves.

5,008,067

METHOD OF DOWNHOLE NEUTRON MONITORING

John B. Czirr, 1830 E. 400 North, Mapleton, Utah 84663

Continuation of Ser. No. 76,508, Jul. 22, 1987, abandoned. This application Mar. 7, 1990, Ser. No. 492,395

Int. Cl.[5] G01T *3/00*; **G01V** *5/00*; **G21G** *1/06*

U.S. Cl. 376—159 **2 Claims**

1. A method of downhole monitoring neutrons emanating from a pulsed-type neutron source, said neutron source having beam-on and beam-off time periods and positioned in a downhole apparatus comprising the steps of:

(a) using an oxygen containing scintillating material in a detector to monitor neutrons from said neutron source by generating scintillator light as a function of electrons and gamma rays emitted from the product of the ^{16}O (n,p) reaction, said neutron source emitting neutrons having energies greater than 11 MeV;

(b) positioning said detector in said downhole apparatus and within a borehole surrounded by a formation to be studied;

(c) reducing the effects of background gamma radiation from the ^{16}O (n,p) reaction occurring in the formation surrounding said detector by:

(1) setting the bias level of said detector to an energy level of at least 6.7 MeV; and

(2) after setting the bias level, and during the beam-off time period of said neutron source, measuring the combined energy deposition within said scintillating material from both said electrons and said gammas which equals or exceeds said 6.7 MeV bias level, said scintillating material generating scintillator light corresponding to said combined energy deposition;

(d) converting the generated scintillator light to an electrical signal; and

(e) using the electrical signal to record the flux of said neutrons from said neutron source.

5,008,068

PLANT COMPRISING A NUCLEAR REACTOR, MORE PARTICULARLY A CONTROL ROD SYSTEM FOR NUCLEAR REACTOR PLANT

Hermann Straub, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

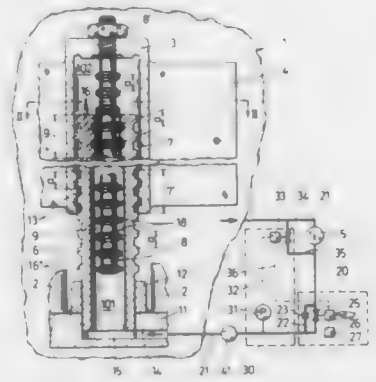
PCT No. PCT/CH88/00009, § 371 Date Sep. 6, 1988, § 102(e) Date Sep. 6, 1988, PCT Pub. No. W088/05595, PCT Pub. Date Jul. 28, 1988

PCT Filed Jan. 14, 1988, Ser. No. 264,960

Claims priority, application Switzerland, Jan. 15, 1987, 00123/87

Int. Cl.[5] G21C *7/16*, *17/00*

U.S. Cl. 376—230 **15 Claims**



1. In a nuclear reactor plant, the combination comprising

a pressure vessel for receiving a coolant;

a reactor core in said vessel including a plurality of vertical fuel elements containing fissile material;

tubular vertically movable control rods between said fuel elements, each rod having a coaxial blind bore therein;

absorber plates secured to said control rods and extending between said fuel elements;

a plurality of fixed hollow guide rods, each guide rod being disposed within said bore of a respective control rod to define a first pressure chamber between an upper end of said guide rod and said respective control rod and a first annular gap therebetween communicating said chamber with an interior of said pressure vessel;

a plurality of vertical spindles, each spindle being secured to and within a respective control rod and depending into a respective guide rod to define a second pressure chamber below a lower end of said spindle within said guide rod and a second annular gap communicating said second chamber with said first chamber;

a first restrictor in said first gap to restrict a flow of coolant therethrough;

a second restrictor in said second gap to restrict a flow of coolant therethrough;

conveying means for delivering a flow of pressurized coolant from within said vessel into said second pressure chamber below each respective spindle to vertically move said control rod connected thereto relative to said fuel elements; and

control means for producing pressure surges in said second pressure chamber.

5,008,069

DEVICE FOR COOLING A HEAT-GENERATING MEMBER

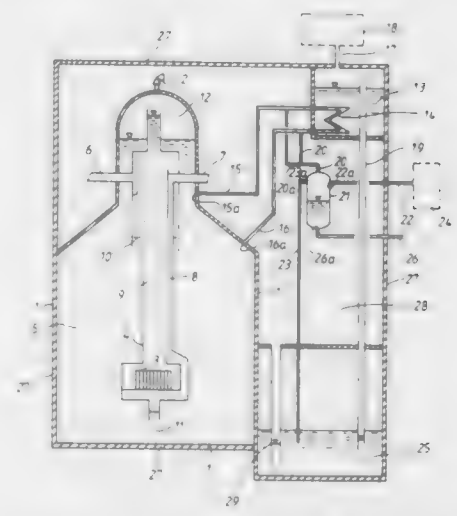
Jan Fredell, Västerås, Sweden, assignor to ABB Atom AB, Västerås, Sweden

Filed Feb. 13, 1990, Ser. No. 479,418

Claims priority, application Sweden, Feb. 13, 1989, 8900480

Int. Cl.[5] G21C *15/18*

U.S. Cl. 376—299 **10 Claims**



1. In a nuclear reactor system which includes a pressure vessel containing a reactor core and an aqueous neutron-absorbing liquid, the improvement wherein a circulation system is connected to said pressure vessel through which liquid and/or steam and any uncondensable gas can circulate, said circulation system including

a cooling device which comprises an evaporator in an evaporating pool,

a first conduit which extends from an outlet opening in an upper part of said pressure vessel to said evaporator,

a second conduit which extends from said evaporator downwardly to an inlet opening in said pressure vessel, said inlet opening being located below said outlet opening,

a discharge vessel that includes at least one outlet for gas and steam and for maintaining a lower pressure therein than in said evaporator, and

a third conduit connected to said second conduit at a point above a bottom of said second conduit and extending to said discharge vessel, said third conduit enabling a small portion of fluid flow in said second conduit to pass therethrough.

5,008,070

FUEL ASSEMBLY

Motoo Aoyama, Mito; Junichi Koyama, Hitachi; Sadao Uchikawa, Katsuta; Yasunori Bessho, Mito; Michihiro Ozawa, Hitachi; Mitsunari Nakamura, Hitachi; Akinobu Nakajima, Hitachi, and Hiromi Maruyama, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 7, 1988, Ser. No. 268,595

Claims priority, application Japan, Nov. 7, 1987, 62-281639; Jun. 24, 1988, 63-154746

Int. Cl.[5] G21C *3/00*

U.S. Cl. 376—419 **17 Claims**

1. A fuel assembly comprising a plurality of first fuel rods

each of which contains nuclear fuel material but does not contain burnable poison and a plurality of second fuel rods each of which contains nuclear fuel material and burnable poison, characterized in that an amount of the burnable poison in a lower region of said fuel assembly is smaller than that in an upper region of said fuel assembly, and that when each of said second fuel rods is divided into an upper region and a lower



region, a region of said divided regions in said second fuel rods containing a maximum burnable poison concentration Gmax and a region of said divided regions in said second fuel rods containing a minimum burnable poison concentration Gmin are located in the lower region of said fuel assembly, the maximum burnable poison concentration Gmax being located only in the lower region of said fuel assembly.

5,008,071

METHOD FOR PRODUCING IMPROVED TUNGSTEN NICKEL IRON ALLOYS

James R. Spencer, Sayre, and James A. Mullendore, Towanda, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Division of Ser. No. 140,504, Jan. 4, 1988, abandoned. This application Nov. 25, 1988, Ser. No. 275,820
Int. Cl.[5] B22F *3/24*
U.S. Cl. 419—28 1 Claim

1. A process for producing rolled sheets of tungsten heavy metal alloy having improved tensile elongation comprising:

(a) forming a relatively uniform blend of elemental metal powders, wherein the blend consists essentially of 93% by weight of tungsten, balance nickel and iron in essentially an 8:2 weight ratio of nickel to iron,

(b) pressing the powder to form a green body in the shape of a bar,

(c) sintering the green body in a reducing atmosphere at a temperature below about 1425° C. for a time sufficient to achieve a partially dense body containing sufficient strength to enable handling, and

(d) sintering the partially dense body to full density and a microstructure consisting essentially of rounded tungsten grains in a continuous second phase containing iron and nickel by liquid phase sintering in a reducing atmosphere at temperature sufficiently elevated and above the melting point of both iron and nickel to achieve liquid phase sintering, said temperature being in the range of from about 1540–1545° C. said sintering of said partially dense body forming a resulting sintered body, and

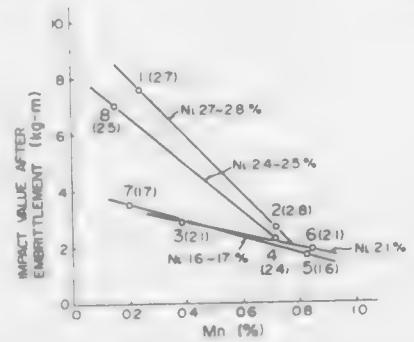
(e) forming rolled sheets from said resulting sintered body wherein said rolled sheets has a tensile elongation of about 25 percent.

5,008,072

HEAT RESISTANT STEEL AND GAS TURBINE COMPONENTS COMPOSED OF THE SAME

Masao Siga; Yutaka Fukui, both of Hitachi; Mitsuo Kuriyama, Ibaraki; Soichi Kurosawa; Katsumi Iijima, both of Hitachi; Nobuyuki Iizuka; Yosimi Maeno, both of Hitachi; Shintaro Takahashi, Hitachi; Yasuo Watanabe, Katsuta, and Ryo Hiraga, Hitachiota, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 10,793, Feb. 4, 1987, Pat. No. 4,850,187.
This application May 16, 1989, Ser. No. 352,472
Claims priority, application Japan, Feb. 5, 1986, 61-21956; Mar. 20, 1986, 61-60574
Int. Cl.[5] C22C *38/44*
U.S. Cl. 420—69 15 Claims



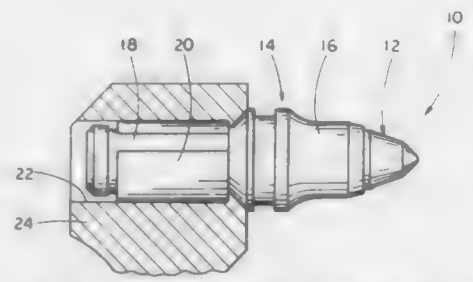
1. A heat resistant steel containing 0.05 to 0.2 wt. % of C, less than 0.5 wt. % of Si, less than 0.6 wt. % of Mn, 8 to 13 wt. % of Cr, 1.5 to 3 wt. % of Mo, 2.2 to 3 wt. % of Ni, 0.05 to 0.3 wt. % of V, 0.02 to 0.2 wt. % in total of either or both of Nb and Ta, 0.02 to 0.1 wt. % of N, a ratio (Mn/Ni) of said Mn to Ni being less than 0.11, and the balance substantially Fe.

5,008,073

MN-B STEEL ALLOY COMPOSITION

Mark S. Greenfield, Cary, N.C., assignor to Kennametal Inc., Latrobe, Pa.

Division of Ser. No. 39,208, Apr. 16, 1987, Pat. No. 4,886,710.
This application Sep. 8, 1989, Ser. No. 404,703
Int. Cl.[5] C22C *38/02*
U.S. Cl. 420—121 2 Claims



1. In a Mn-B steel alloy composition, the alloy content is percents by weight consisting essentially of: carbon, 0.33–0.38; manganese, 1.10–1.35; boron, 0.0005 minimum up to an effective amount to improve hardenability; silicon 0.15–0.30; sulfur, 0.045 maximum; and phosphorus, 0.035 maximum, wherein said composition has a minimum hardenability of 47 Rockwell C at the Jominy 6/16 position and a maximum as-rolled hardness of 22 Rockwell C such that without anneal said composition meets hardenability and machinability requirements that make it useful for fabricating mining and construction bit bodies of all sizes.

5,008,074

INOCULANT FOR GRAY CAST IRON

Rodney L. Naro, Worthington, Ohio; James M. Csonka, Valencia, Pa., and Michael A. Merritt, New Haven, W. Va., assignors to American Alloys, Inc., New Haven, W. Va.

Filed Apr. 26, 1990, Ser. No. 514,871
Int. Cl.[5] C22C *33/00*
U.S. Cl. 420—578 5 Claims

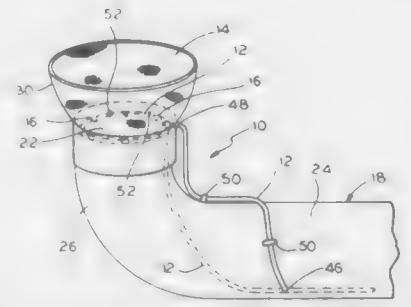
1. An inoculating alloy for gray iron, said alloy consisting essentially of 65.0–70.0% silicon, 8.0–10.0% titanium, 0 to 5% manganese, 2.0–2.5% barium, 1.0–1.5% calcium, 0 to 1.5% aluminum, the balance being iron and incidental impurities.

5,008,075

PREVENTATIVE MAINTENANCE SYSTEM FOR UNDERWATER PIPES

Paul G. Rufolo, 149 Gregory St., Mt. Prospect, Ill. 60056

Continuation-in-part of Ser. No. 464,958, Jan. 16, 1990, abandoned. This application Feb. 13, 1990, Ser. No. 479,337
Int. Cl.[5] B08B *17/02*
U.S. Cl. 422—6 33 Claims



1. An apparatus for the unattended dispersement of chemicals to be mixed into a flowing liquid passing into an underwater pipe, said apparatus comprising a first chemical feed pipe, a second chemical feed pipe, and a water intake pipe, said feed pipes being mounted to said intake pipe and said intake pipe forming part of said underwater pipe, said first feed pipe extending along the length of said intake pipe and being connected to said second feed pipe, said second feed pipe being mounted to said intake pipe at that portion of said intake pipe adjacent an intake opening of said pipe, said second feed pipe including a plurality of dispensing valves extending closely adjacent an entrance of said intake pipe to release chemicals in an unattended manner directly into liquid passed into said intake pipe, sufficient to dispense toxic chemicals substantially throughout the length of said pipe and onto organisms within said pipe, said chemicals being delivered to said second feed pipe through said first feed pipe.

5,008,076

METHOD AND AN ARRANGEMENT FOR THE PRETREATMENT OF A MOVING MATERIAL WEB

Göran Johansson, Harlösa, and Pär Olanders, Lund, both of Sweden, assignors to Roby Teknik Aktiebolag, Lund, Sweden

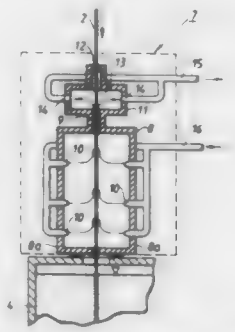
Filed May 3, 1989, Ser. No. 346,658
Claims priority, application Sweden, May 31, 1988, 8802019
Int. Cl.[5] A61L *2/00*
U.S. Cl. 422—28 15 Claims

1. A method for sterilization of a moving material web comprising the steps of:

providing a deep bath containing sterilization liquid heated to a predetermined temperature;

guiding the material web into and out of the bath in a continuous manner; and

applying heat to the material web prior to its entry into the bath containing the heated sterilizing liquid by advancing, the material web through a heating chamber to raise the



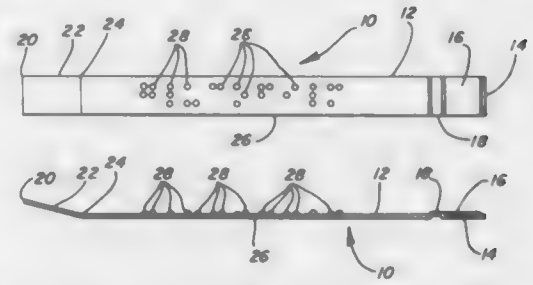
temperature of the material web to a temperature that is at least equal to said predetermined temperature.

5,008,077

EASY HANDLING REAGENT STRIP

Mohammad A. Kheiri, Elkhart, Ind., assignor to Miles Inc., Elkhart, Ind.

Filed Dec. 26, 1989, Ser. No. 457,106
Int. Cl.[5] G01N *31/22*
U.S. Cl. 422—56 7 Claims



1. A reagent strip, comprising:

an elongated carrier,

a diffusion reagent area on a first portion of said elongated carrier, and

an elongated handle constituting a second portion of said elongated carrier;

wherein said elongated handle includes at least one projection extending downwardly from said plane to render said reagent strip susceptible to tipping on a flat surface.

5. A method of forming a reagent strip, comprising the steps of:

forming an elongated planar carrier defining a body of a reagent strip, said elongated planar carrier having a first end portion and a second end portion;

securing a dry reagent pad to said first end portion of said elongated planar carrier; and

forming at least one projection on said second end portion to extend downwardly from the plane of said elongated planar carrier to render the reagent strip susceptible to tipping on a flat surface.

5,008,078

INTEGRAL MULTI-LAYER ANALYSIS ELEMENT

Nakatsugu Yaginuma, and Takaki Arai, both of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 18, 1988, Ser. No. 182,707
Claims priority, application Japan, Apr. 16, 1987, 62-94138
Int. Cl.[5] G01N *31/22*
U.S. Cl. 422—56 7 Claims

1. A multi-layer analysis element comprising an endogenous ammonia trapping layer, an ammonia producing layer comprising a reagent capable of reacting with an ammonia producing

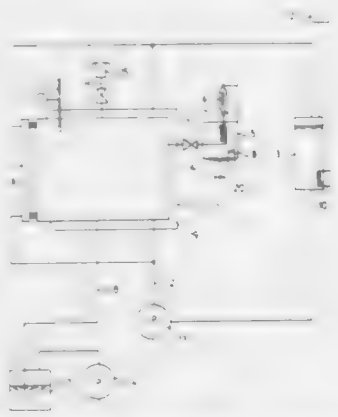
substance to produce gaseous ammonia, and at least one layer essentially incapable of trapping ammonia and essentially incapable of producing ammonia and capable of preventing the diffusion of gaseous ammonia, disposed between said endogenous ammonia trapping layer and said ammonia producing layer.

5,008,079

APPARATUS AND METHOD FOR STERILIZING OR DISINFECTING OBJECTS

Peter Wutzler; Horst Mücke, both of Erfurt, German Democratic Rep., and Lauri Santasalo, Helsinki, Finland, assignors to OY Santasalo-Sohlberg AB, Finland

Filed Jan. 19, 1989, Ser. No. 299,968
Claims priority, application Finland, Jan. 19, 1988, 880221
Int. Cl.[5] A61L *2/18*
U.S. Cl. 422—28 **13 Claims**



1. Method for sterilizing or disinfecting instruments in a closed chamber, comprising

carrying out said disinfecting or sterilizing with an organic peracid in a concentration of more than about 7 up to about 50% in aqueous solution, said organic peracid being a powerful oxidizing agent and wherein said disinfecting or sterilizing is additionally carried out with a quantity of agent of about 1 to 100 mg per liter of chamber volume.

5,008,080

SOLID-PHASE ANALYTICAL DEVICE AND METHOD FOR USING SAME

William E. Brown, III, Grayslake; Sarah E. Safford, Libertyville, and John M. Clemens, Gurnee, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 173,979, Mar. 28, 1988, Pat. No. 4,916,056, which is a continuation-in-part of Ser. No. 831,013, Feb. 18, 1986, abandoned, which is a continuation-in-part of Ser. No. 784,416, Oct. 4, 1985, abandoned. This application Feb. 6, 1990, Ser. No. 475,591
This portion of the term of this patent subsequent to Apr. 10, 2007, has been disclaimed.
Int. Cl.[5] G01N *31/22, 33/58*
U.S. Cl. 422—56 **12 Claims**

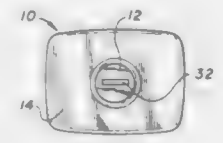
1. A solid phase assay device for use in a binding assay to determine the presence or amount of an analyte in a fluid sample through the use of a label capable of producing a detectable response, said device comprising a reaction site having:

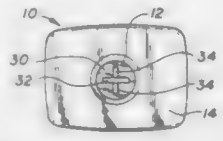
a negative control area,

a positive control area within said negative control area containing immobilized binding reagent for said label, and

an analyte binding area within said negative control area containing immobilized binding reagent for analyte in the sample,

said positive control area being shaped such that, in the presence or absence of analyte in the sample, a minus symbol is displayed representing a negative result of a valid assay, and





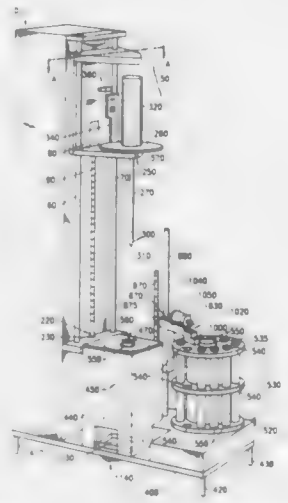
said analyte binding area being shaped such that, taken together with said minus symbol in the presence of said label and analyte, a plus symbol is formed representing a positive result of a valid assay.

5,008,081

METHOD AND APPARATUS FOR AUTOMATIC MELT INDEXING

David A. Blau, Cupertino; John Meadows; Thomas M. Sherlock, both of Los Altos Hills; Fred Stengel, Redwood City; Robert M. Studholme, Saratoga; Kenneth R. Wada, and Christopher J. Kepner, both of San Jose, all of Calif., assignors to KD Group, Mountain View, Calif.

Filed Oct. 11, 1988, Ser. No. 256,022
Int. Cl.[5] G01N *35/00*
U.S. Cl. 422—64 **11 Claims**



1. An apparatus for automatically carrying out a melt indexing test relating to a substance, comprising:

a plurality of cartridges, where each cartridge includes a bore for receiving a quantity of the substance to be tested and further includes a plug disposed at a first end of the bore, with each plug having an orifice;

a piston adapted for placement within said each said bore of said cartridges, each said piston for resting adjacent said quantity of the substance;

a heater having a receptacle for receiving a cartridge and for heating the cartridge and the substance within the cartridge, for melting the substance, thus forming a resin;

means for holding said plurality of cartridges;

means for grasping each cartridge and transferring the cartridge to the receptacle;

means for applying a force to said piston for tamping the substance when the substance is in a solid state and for driving said resin through said orifice as an extrudate; and

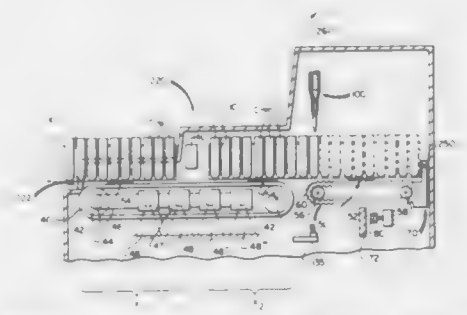
processor means having a memory for storing a predetermined sequence of commands relating to the melt index test, for automatically controlling said holding means, said grasping and transferring means, and said force applying means.

5,008,082

ANALYZERS USING LINEAR SAMPLE TRAYS WITH RANDOM ACCESS

James D. Shaw, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 25, 1988, Ser. No. 236,588
Int. Cl.[5] G01N *35/02, 35/04, 35/06*
U.S. Cl. 422—65 **11 Claims**



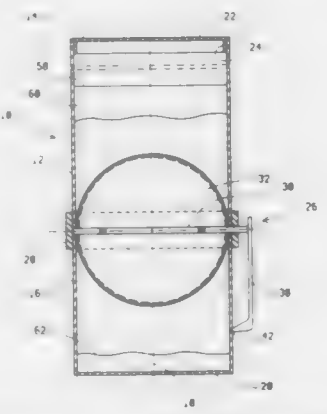
1. In an analyzer comprising supply means for supplying patient sample, aspirating and dispensing means for aspirating sample from said supply means and dispensing sample onto a test element, supply means for supplying test elements, and means for moving said aspirating and dispensing means in the analyzer relative to said supply means along a predetermined path and into operative association with said sample and a test element, respectively; the improvement wherein said supply means comprise (a) a plurality of trays each comprising means for holding a plurality of sample containers in a linear array, (b) a separate linear track for each of said trays, in which said trays are mounted, and (c) means for reciprocating each of said trays within its respective track and positioning each of said trays so that each said tray intersects said path of said aspirating and dispensing means.

5,008,083

APPARATUS FOR CENTRIFUGAL SEPARATION OF COAL PARTICLES

William Dickie, New Eagle; Joseph A. Cavallaro, Mt. Keesport, and Richard P. Killmeyer, Pleasant Hills, all of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 30, 1988, Ser. No. 238,213
Int. Cl.[5] B01L *11/00;* **B65D** *25/06;* **B03B** *5/32*
U.S. Cl. 422—101 **5 Claims**



1. Apparatus for separating by centrifugation relatively high density particles from relatively low density particles suspended in a solution which includes a liquid having a density intermediate of the densities of the high and low density particles comprising:

a cell configured for placement in a centrifuge having a lower portion in which the high density particles reside and form a sink layer when they are separated from the low density particles, an upper portion in which the low density particles reside and form a float layer after separation from the high density particles, a central portion between said lower portion and said upper portion, and an open top;

means for selectively sealing and unsealing said open top to prevent hazardous fumes from escaping;

means for selectively isolating the sink layer from the float layer when said top is sealed, without unsealing said top, and without disturbing either layer;

means for locking for maintaining the isolating means in an open position; and

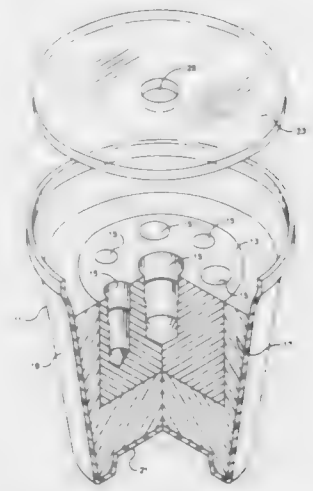
said isolating means including a rod extending horizontally through the cell, and a closure means secured to the rod.

5,008,084

INSULATED CONTAINER FOR BIOLOGICAL SAMPLES

Louis E. Kelley, Wyncote, Pa., assignor to Instruments for Research and Industry I[2]R, Inc., Cheltenham, Pa.

Filed Aug. 13, 1990, Ser. No. 565,939
Int. Cl.[5] B01L *3/00*
U.S. Cl. 422—102 **10 Claims**



1. An insulated container comprising a container having a central metal core, said core having a multiplicity of drilled holes constructed so as to receive a multiplicity of microfuge tubes in said core and foamed thermal insulation surrounding said core.

5,008,085

APPARATUS FOR THERMAL TREATMENT OF A HYDROCARBON STREAM

Richard L. Bain, Golden, and John R. Larson, Boulder, both of Colo., assignors to Resource Technology Associates, Tulsa, Okla.

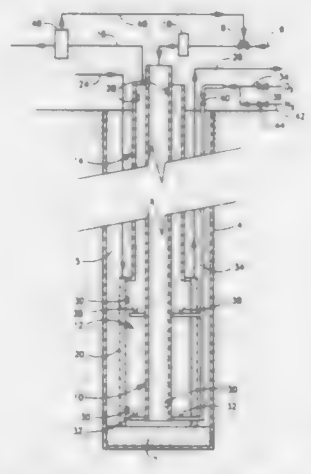
Continuation-in-part of Ser. No. 58,878, Jun. 5, 1987, Pat. No. 4,818,371. This application Mar. 31, 1989, Ser. No. 332,508
Int. Cl.[5] G05D *7/00*
U.S. Cl. 422—109 **3 Claims**

1. A vertical tube reactor apparatus disposed within a substantially vertical well bore, said apparatus being suitable for reducing the viscosity of hydrocarbons, said apparatus comprising:

(a) an influent conduit in fluid communication with an efflu-

ent conduit comprising concentrically arranged inner and outer conduits, each having an upper and a lower zone, wherein said influent conduit is said inner conduit and said effluent conduit is said outer conduit, said influent conduit adapted to receive an influent hydrocarbon stream and conduct said influent stream substantially downward, and said effluent conduit adapted to conduct an effluent product stream substantially upward, wherein said conduits provide heat-exchange contact between influent stream and said effluent product stream to produce a heated influent stream;

(b) an oxidant injection nozzle located within said effluent conduit so as to introduce oxidant into the core portion of said heated influent stream substantially parallel to the flow of said stream to produce an effluent product stream,



(c) means for sensing temperature located within at least one of said lower zones downstream from said nozzle, said means producing an output proportional to said temperature;

(d) a conduit extending to the surface of the well bore and being connected to the nozzle for conducting oxidant from the surface of the well bore to said nozzle, said oxidant conduit including a flow metering means and being located within said well bore and travelling substantially parallel to said influent and effluent conduits, and,

(e) a means for controlling the flow rate of said oxidant within said oxidant conduit, said control means being operatively associated with said metering means and said temperature sensing means so as to be responsive to the output from said temperature sensing means and adjust said oxidant flow rate in a preselected proportion to said output.

5,008,086

EROSION RESISTANT MOUNTING COMPOSITE FOR CATALYTIC CONVERTER

Richard P. Merry, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

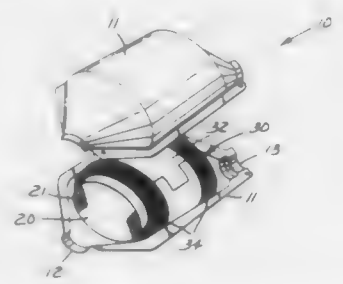
Filed Oct. 28, 1988, Ser. No. 263,683

Int. Cl.[5] B01D *50/00*

U.S. Cl. 422—180 **18 Claims**

1. An improved catalytic converter including a metallic casing, a ceramic catalytic element disposed within the casing, and a mounting composite disposed between the catalytic element and the metallic casing for positioning the catalytic element within the casing and for absorbing mechanical and thermal shock, said mounting composite comprising a resilient, flexible, high temperature resistant intumescent mounting mat having a lateral edge, wherein the improvement comprises:

a strip of metal fabric positioned between at least a portion of the lateral edge of said mounting mat and said casing so to



cover the lateral edge in order to prevent erosion of said mounting composite.

5,008,087

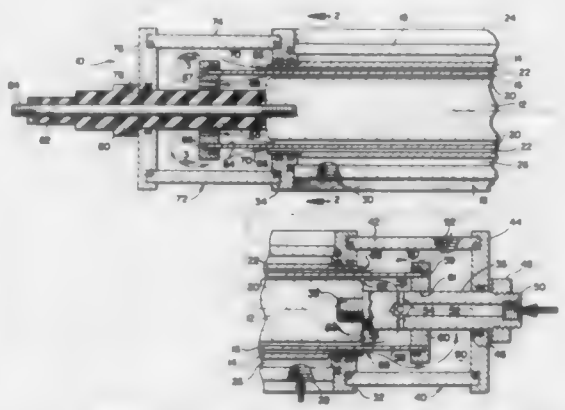
OZONE GENERATOR APPARATUS AND METHOD

Douglas R. Batchelor, Chicago, Ill., assignor to American Ozone Systems, Inc., Chicago, Ill.

Filed Jun. 6, 1990, Ser. No. 534,035

Int. Cl.[5] B01J *19/08*

U.S. Cl. 422—186.22 **13 Claims**



1. In a tubular type ozone generator having elongated inner and outer concentrically spaced electrodes with an elongated tubular dielectric member spaced between the electrodes for developing ozone from a gas, the improvement comprising:

means for supplying said gas under pressure between one of the electrodes and the dielectric member and enabling said gas to traverse the space therebetween from a first end of the ozone generator to a second end of the ozone generator for developing ozone;

sealing means at the second end of said ozone generator for receiving all of said gas and the developed ozone and directing same to the space between said dielectric member and the other of said electrodes and enabling said gas and ozone to pass therebetween from said second end of the ozone generator to said first end for developing more ozone; and

ozone outlet means at said first end for communicating ozone from said ozone generator.

5,008,088

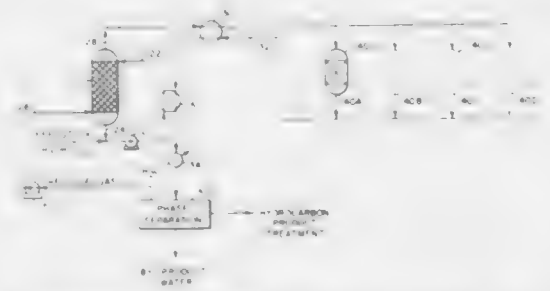
METHANOL-GAS SATURATOR FOR CATALYTIC CONVERSION SYSTEM

Dietmar R. A. Fremuth, Plainsboro, N.J.; Alan E. Rogers, Wycombe, Pa., and John C. Zahner, Princeton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 484,656, Apr. 13, 1983, Pat. No. 4,808,764. This application Jul. 13, 1988, Ser. No. 218,184

Int. Cl.[5] B01J *8/00*

U.S. Cl. 422—234 **7 Claims**



1 A reactor system for catalytically converting methanol to gasoline boiling range hydrocarbons by contacting methanol in a gaseous stream with an acid medium pore crystalline zeolite catalyst in a reaction zone comprising:

(a) means for feeding a heated liquid methanol feedstream to a multi-phase gas-liquid saturator contact unit at an inlet temperature substantially below the feedstock boiling point under superatmospheric process pressure;

(b) means for contacting the feedstock in a contact tower with sufficient compressed recycle gas from the reactor system to partially vaporize feedstock, thereby forming a gaseous methanol-recycle stream, said contact tower having an upper liquid reactant feedstream inlet above a counter-current contact section, a lower recycle gas inlet, an upper gas outlet for removing vaporized methanol in mixture with recycle gas, and a lower liquid outlet for unvaporized methanol, whereby vaporized methanol can enter the reaction zone only with recycle diluent gas;

(c) adiabatic reactor means for contacting a heated gaseous methanol-recycle stream directly with a fixed catalyst bed in the reaction zone to convert methanol to gasoline hydrocarbon product and a gaseous by-product;

(d) means for cooling reactor system effluent in heat exchange relationship with the liquid methanol feedstream to heat the liquid methanol and recover liquid hydrocarbon product;

(e) separator means for separating gaseous by-product from the liquid hydrocarbon product; and

(f) means for compressing and recycling gaseous by-product from separator means (e) to reactor means (b).

5,008,089

RECOVERY OF ALUMINA FROM BAUXITE

Gillian M. Moody, Brighouse, and Christine A. Rushforth, Bradford, both of England, assignors to Allied Colloids Limited, Great Britain

Filed Oct. 13, 1989, Ser. No. 421,165

Claims priority, application United Kingdom, Oct. 14, 1988, 8824176

Int. Cl.[5] C01F *7/06*

U.S. Cl. 423—121 **15 Claims**

1 In a process in which bauxite is digested in an aqueous alkaline liquor and the resultant red mud is flocculated with a flocculating agent and separated from the digestion liquor in a primary separation stage, the overflow liquor of the primary separation stage is optionally subjected to a secondary clarification stage in which suspended red mud particles are flocculated and separated from the liquor, and the red mud from the said primary separation stage and optional secondary clarification stage is then washed in a plurality of sequential wash stages in each of which the mud is washed with a wash liquor, flocculated with a flocculating agent and separated from the wash liquor, and the flocculating agent in at least one stage selected from the said primary separation stage, secondary clarification stage and the wash stages comprises a synthetic anionic polymeric flocculant, the improvement wherein the flocculating agent further comprises at least about 0.02 mg/l of a dextran having a molecular weight of at least about 500,000, wherein said synthetic anionic polymeric flocculant has a molecular weight of at least about 0.5 million, and is a water soluble polymer formed from 40–100% anionic monomer and 60–0% non-ionic monomer, and wherein the anionic monomer is selected from the group consisting of (meth) acrylic acid, (meth) allylsulfonic acid, vinyl sulfonic acid and 2-acrylamido-2-methyl propane sulfonic acid.

5,008,090

CATALYTIC PROCESS FOR MINIMIZING THE H_2S EMISSIONS FROM AUTOMOTIVE EXHAUST

George C. Joy, III, Arlington Heights; George R. Lester, Park Ridge, and Richard E. Marinangeli, Arlington Heights, all of Ill., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 62,024, Jun. 15, 1987, Pat. No. 4,760,044. This application May 23, 1988, Ser. No. 197,172

Int. Cl.[5] B01D *47/00;* **B01J** *8/02*

U.S. Cl. 423—212 **18 Claims**

1. A method of minimizing the formation of hydrogen sulfide when automotive exhaust is contacted with a catalytic composite comprising contacting said exhaust with a catalytic composite comprising a mixture of (1) a primary refractory inorganic oxide support having dispersed thereon at least one of a first active component selected from the group consisting of rare-earth oxides and (2) a secondary refractory inorganic oxide support selected from the group consisting of zirconia, titania, ceria, silica, magnesia, natural and synthetic zeolites having dispersed thereon at least one of a second active component which is an oxide of a metal, the metal selected from the group of metals which form a stable sulfide under fuel rich conditions, said second active component which is dispersed on the secondary support before formation of the mixture to effect a separation between the second active component and the primary support, and said mixture having at least one main catalytic metal selected from the group consisting of platinum, palladium, rhodium, ruthenium and iridium deposited thereon.

5,008,091

METHOD FOR PURIFYING AIR

Pawan K. Bassi, Benicia, Calif.; Kenneth C. Eastwell, Penticton, Canada; James S. Goudey, Calgary, Canada, and Mary E. Spencer, Edmonton, Canada, assignors to Governors of the University of Alberta, Edmonton, Canada

Filed Nov. 29, 1988, Ser. No. 277,254

Int. Cl.[5] B01J *8/00;* **C07C** *11/24;* **B01D** *47/00*

U.S. Cl. 423—245.1 **9 Claims**

1. A method of removing low molecular weight hydrocarbons selected from the group consisting of methane, ethane and ethylene from air, comprising the steps:

(a) preheating the air;

(b) passing the preheated air through a heated catalytic bed comprising a mixture of platinized, heat-conductive pellets and metal turnings, the volume ratio of metal turnings to platinized pellets lying between about 1:2 and about 2:1; and

(c) the bed being contained in an annular space defined between two substantially vertically oriented and substantially concentric tubes made of heat-conductive material, having heating means applied against the exterior of the outermost tube, in which step (a) is performed by passing the air downwardly through the innermost of the two tubes to the bottom thereof, and in which step (b) is performed by passing the air upwardly through the bed between the tubes.

5,008,092

HOMOGENEOUS POWDERS OF YTTRIUM-STABILIZED QUADRATIC ZIRCONIA

Azzdddine Samdi, Casablanca; Rene Paris, Lyons, and Marc Roubin, Meyzieu, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Sep. 29, 1988, Ser. No. 250,835
Claims priority, application France, Sep. 29, 1987, 87 13421
Int. Cl.[5] C01F 17/00
U.S. Cl. 423—263 23 Claims

1. A process for the preparation of a homogeneous powder of yttrium-stabilized, substantially quadratic zirconia, comprising (a) adjusting the pH of a mixed aqueous solution of zirconyl and yttrium acetates to a value of at least 5 so as to form a soluble mixed acetate of yttrium and zirconium, (b) eliminating solvent from such mixed aqueous solution so as to produce a solid residue of zirconium/yttrium acetate, and (c) pyrolyzing the solid residue resulting from said step (b) so as to produce a homogeneous powder of yttrium-stabilized, substantially quadratic zirconia.

5,008,093

ANHYDROUS COMPLEXES OF PVP AND HYDROGEN PEROXIDE

John J. Merianos, Middletown, N.J., assignor to GAF Chemicals Corporation, Wayne, N.J.

Filed Nov. 8, 1989, Ser. No. 434,943
Int. Cl.[5] C01B 15/01
U.S. Cl. 423—272 14 Claims

1. A high purity product which is stable complex of PVP and H_2O_2 in a molar ratio of between about 2:1 and about 1:1, respectively, and which is obtained directly as a uniform, free-flowing, fine, white powder with essentially little or no water or free hydrogen peroxide contained therein by reaction in a substantially anhydrous solvent between PVP and H_2O_2 in substantially the molar ratio predetermined for the complex and removing the solvent therefrom.

5. An anhydrous process of preparing a substantially anhydrous complex of PVP and H_2O_2 which is a uniform, fine white powder comprising reacting PVP and H_2O_2 in an anhydrous organic solvent.

5,008,094

CRYSTALLINE (METALLO)SILICATES AND PROCESS FOR PREPARING SUCH (METALLO)SILICATES

Johannes J. Keijsper; Munro Mackay, and Martin F. M. Post, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 28, 1989, Ser. No. 399,189
Claims priority, application United Kingdom, Sep. 9, 1988, 8821237
Int. Cl.[5] C01B 33/34
U.S. Cl. 423—328 12 Claims

1. A crystalline (metallo)silicates having in the as-synthesized, anhydrous form a molar composition expressed by the formula:

$$(0\text{–}9)M_{2/n}O\ (4\text{–}9)R_2)\cdot 100SiO_2\ (0\text{–}2)Al_2O_3,$$

wherein M represents an alkali or alkaline earth metal ion of valency n R represents a tetremthylammonium cation, and having an X-ray diffraction pattern containing at least the following lines:

d(A)	Intensity
10.27 ± 0.2	s-vs
4.89 ± 0.1	w-m
4.18 ± 0.1	m
3.85 ± 0.1	m
3.82 ± 0.1	w-m
3.62 ± 0.1	w-m
3.48 ± 0.1	m-vs

-continued

d(A)	Intensity
3.32 ± 0.05	w-m
3.23 ± 0.05	w-m

5,008,095

CLEAR AND COLORLESS BASIC ALUMINUM CHLOROSULFATES

Jean Boutin, Mions, France, assignor to Rhone-Poulenc Chimie, Courbevoie, France

Filed Nov. 16, 1988, Ser. No. 271,706
Claims priority, application France, Nov. 16, 1987, 87 15775
Int. Cl.[5] C01B 17/45; C01F 7/74
U.S. Cl. 423—467 11 Claims

1. A process for the preparation of a clear and colorless solution of a basic aluminum chlorosulfate, comprising reacting a slurry of calcium chloride and calcium carbonate with aluminum sulfate, separating calcium sulfate solids and a solution of basic aluminum chlorosulfate from the medium of reaction, and flocculating said solution of basic aluminum chlorosulfate with at least one nonionic or cationic polyelectrolyte flocculant.

5,008,096

CATALYST ENHANCED GENERATION OF CHLORINE DIOXIDE

James P. Ringo, Norman, Okla., assignor to Bio-Cide International, Inc., Norman, Okla.

Filed Apr. 3, 1990, Ser. No. 504,613
Int. Cl.[5] C01B 11/02
U.S. Cl. 423—477 20 Claims

1. A method for enhancing generation of chlorine dioxide from an aqueous medium containing sodium chlorite comprising:

contacting the sodium chlorite present in the aqueous medium with an amount of gaseous chlorine effective to react with the sodium chlorite in the presence of a catalytic amount of a catalyst selected from the group consisting of an elemental transition metal, a transition metal oxide and mixtures thereof for a period of time effective to generate chlorine dioxide, the transition metal selected from Group 5B, 6B, 7B, 8 and mixtures thereof.

5,008,097

AQUEOUS SOLUTION CONTAINING A NEW FERRIC FERROUS SALT FE_2CL_5 AND METHOD OF PRODUCING SAME

Shoji Yamashita, Nagoya, Japan, assignor to I.B.E. Co., Ltd., Aichi, Japan

Continuation-in-part of Ser. No. 655,220, Sep. 27, 1984, abandoned. This application Aug. 2, 1988, Ser. No. 227,626
Claims priority, application Japan, Mar. 6, 1984, 59-43209; Sep. 18, 1984, 59-195287
The portion of the term of this patent subsequent to Jan. 10, 2006, has been disclaimed.
Int. Cl.[5] B32B 15/04; C01G 49/10
U.S. Cl. 423—493 11 Claims

1 An aqueous solution of a new ferric ferrous salt Fe_2Cl_5.

5,008,098

METHOD OF COMBUSTION NEUTRALIZATION OF LIQUID WASTE PRODUCTS

Mikhail Bernadiner, ulitsa Bakuleva, 12, kv. 24, and Vladimir V. Zhizhin, ulitsa Pervomaiskaya, 10, korpus 1, kv. 30, both of Moscow, U.S.S.R.

PCT No. PCT/SU87/00073, § 371 Date Mar. 1, 1988, § 102(e) Date Mar. 1, 1988, PCT Pub. No. WO88/00671, PCT Pub. Date Jan. 28, 1988
PCT Filed Jun. 19, 1987, Ser. No. 228,755
Claims priority, application U.S.S.R., Jul. 14, 1986, 4080495
Int. Cl.[5] F23C 5/00; F27B 3/22; C01B 7/00; F23G 7/00
U.S. Cl. 423—659 8 Claims

1. In a method of combustion neutralization of liquid waste products containing organohalides, comprising treating said liquid waste products with an alkali reagent, introducing the resulting mixture in the form of a spray along a path into a stream of high-temperature fuel combustion products and subsequently removing the exhaust gases, the improvement which comprises introducing sprayed water between the stream of the combustion products and the path of the sprayed mixture, the sprayed water consumption being no less than 1.2 kg per kg of said mixture of waste products with the alkali reagent and no more than 2.5 kg per kg of the fuel being used.

5,008,099

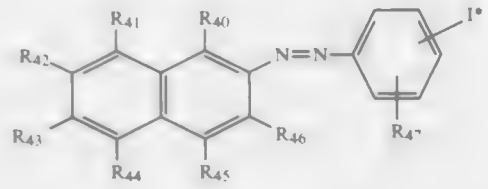
AMYLOIDOSIS AND ALZHEIMER'S DISEASE DIAGNOSTIC ASSAY AND REAGENTS THEREFOR

Steven C. Quay, Los Altos Hills; Scott M. Rocklage, Saratoga, and Warren K. Miller, Cupertino, all of Calif., assignors to Salutar, Inc., Sunnyvale, Calif.

Division of Ser. No. 178,402 Apr. 6, 1988 which is a continuation-in-part of Ser. No. 35,837 Apr. 8, 1987, abandoned.
Int. Cl.[5] A61K 49/02; C07C 245/00
U.S. Cl. 424—1.1 23 Claims

1. An amyloid binding diazo compound of Formula III or Formula IV or a water-soluble non-toxic salt thereof:

(III)



wherein:

I^* is a radioactive iodine moiety;

R_{40} R_{41} are hydrogen hydroxy or amino, and R_{40} and R_{41} are not the same group;

R_{42}, R_{43}, R_{44}, R_{45} and R_{46} are sulfo; and sulfo is not present on adjacent carbons, and

R_{47} is hydrogen, methyl or carboxy.

5,008,100

OIL-IN-WATER EMULSIONS CONTAINING POLYETHYLENE

Julius R. Zecchino, Kinnelon, N.J.; Natrajan Krishnaswamy, Spring Valley, N.Y.; Pamela A. Clement, Clark, and Anthony Vargas, Mahwah, both of N.J., assignors to Elizabeth Arden Co., Division of Conopco, Inc., New York, N.Y.

Filed Aug. 11, 1989, Ser. No. 392,835
Int. Cl.[5] A61K 7/42
U.S. Cl. 424—59 9 Claims

1. A stable oil-in-water emulsion sunscreen composition comprising from about 20% by weight to about 80% by weight water, from about 0.5% by weight to about 20% by weight oil-in-water emulsion forming surfactants, from about 0.5% by weight to about 30% by weight propylene glycol myristyl ether acetate, from about 0.2% by weight to about 5% by weight polyethylene, from about 0.5% by weight to about 30% by weight sunscreen agents, from about 0.5% by weight to about 10% by weight absorbents selected from the group consisting of aluminum starch octenyl succinate and nylon, from about 0.1% by weight to about 10% by weight humectants, 0% to about 25% by weight skin compatible non-silicone oils and hydrocarbons, and 0% to about 30% by weight silicone oils.

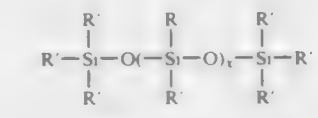
5,008,101

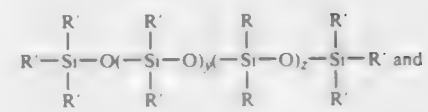
SUNSCREEN FORMULATION CONTAINING A PHENYL FUNCTIONAL ORGANOSILICON COMPOUND

Helen M. Klimisch, and Regina M. Malczewski, both of Midland County, Mich., assignors to Dow Corning Corporation, Midland, Mich.

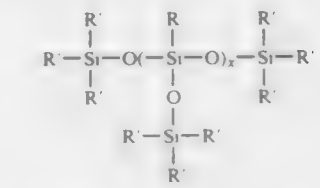
Filed Dec. 5, 1989, Ser. No. 446,267
Int. Cl.[5] A61K 7/40, 7/42, 7/44
U.S. Cl. 424—59 21 Claims

1. A method of increasing the absorbance of ultraviolet light by ultraviolet light absorbing sunscreen compounds which are applied to skin to protect the skin from excessive exposure to sunlight comprising forming a mixture which includes at least one sunscreen compound and an effective amount of a phenyl functional siloxane, applying the mixture to the skin to be protected from excessive exposure to sunlight, and exposing the skin including the mixture of the sunscreen compound and the phenyl functional siloxane to light in the ultraviolet spectrum, the phenyl functional siloxane having the formula selected from the group consisting of





and



wherein R is a phenyl radical, R′ is an alkyl radical having from one to seven carbon atoms, x is an integer of from one to one thousand, x and y are integers the sum of which is between two and one thousand.

5,008,102

BIOCOMPATIBLE INTRAOCULAR LIGHT-SCREENING COMPOSITIONS AND METHODS OF INTRAOCULAR LIGHT SCREENING

Kenneth K. York, 2300 N. Edgemont, Los Angeles, Calif. 90027

Continuation-in-part of Ser. No. 833,896, Feb. 26, 1986, abandoned. This application Dec. 23, 1987, Ser. No. 137,247
Int. Cl.[5] A61K 7/40, 7/42
U.S. Cl. 424—59 10 Claims

1. A method of protecting ocular tissues such as, but not limited to, the lens, vitreous and retina of an eye from damage caused by light selected from the group consisting of ultraviolet light, short wavelength visible light, visible light, and infrared light, comprising placing intraocularly between the source of the light and said ocular tissues, in an amount sufficient to prevent a substantial amount of said light from reaching said tissues, a temporary light-absorbing or screening substance or composition substantially undamaging to intraocular eye tissues in an amount sufficient to absorb or screen said light, said substance or composition being adapted for elimination from

intraocular eye tissues over a relatively short period of time after said placement.

5,008,103

SILICONE SURFACTANTS

William J. Raleigh, Rensselaer; Raymond J. Thimineur, Scotia, and Anthony A. Zotto, Troy, all of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Dec. 29, 1988, Ser. No. 291,909
Int. Cl.[5] A61K *7/32, 7/34, 7/38*
U.S. Cl. 424—66 1 Claim

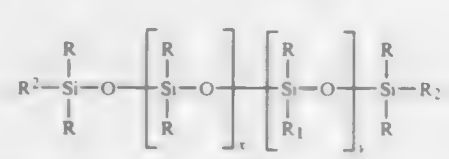
1. An antiperspirant emulsion composition comprising (a) polar liquid, containing an aqueous solution of an antiperspirant salt as a discontinuous phase;

(b) a volatile liquid having a normal boiling point less than 250° C. as a continuous phase, said volatile liquid being selected from the group consisting of methylsiloxane fluids having the average unit formula

$$(CH_3)_aSiO_{(4-a)/2}$$

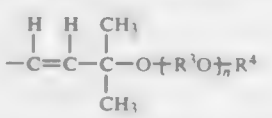
wherein a has an average value of from 2 to 3 inclusive and paraffinic hydrocarbon fluids;

(c) a polysiloxane surface active agent comprising polymers of the formula (I):



(I)

wherein each R individually is chosen from the group consisting of alkyl having from 1 to 4 carbon atoms; R^1 is a polyoxyalkylene radical of the formula



(II)

wherein each R^3 individually is an alkylene having from 2 to 6 carbon atoms, R^4 is chosen from the group consisting of R, acyl groups having at least 2 carbon atoms, and hydrogen, and n has a value from at least 1 to about 200; each R^2 individually is chosen from the group consisting of R and R^1; x has a value from about 5 to about 400; and y has a value of at least 1 except that when R^2 is R^1, y may be zero, and (d) an organic oil-in-water type surfactant having an HLB value of from 8 to 18 inclusive, which may or may not be present.

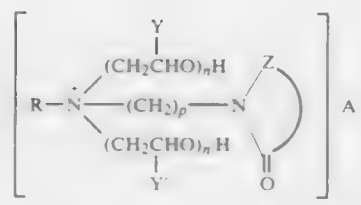
5,008,104

QUATERNIZED NITROGEN CONTAINING COMPOUNDS

Ratan K. Chaudhuri, Butler; David J. Tracy, Lincoln Park, and Robert B. Login, Oakland, all of N.J., assignors to GAF Chemicals Corporation, Wayne, N.J.

Filed Jun. 22, 1989, Ser. No. 370,226
Int. Cl.[5] C07D *223/10, 211/76, 207/26;* A61K *7/06*
U.S. Cl. 424—70 5 Claims

1. A quaternized compound having the formula



wherein n and n' are each independently integers having a value of from 1 to 25; p is an integer having a value of from 1 to 4; Y and Y' are each independently H or CH_3; R is linear alkyl, alkenyl, or amidoalkyl having from 8 to 22 carbon atoms and is optionally substituted with C_1 to C_4 alkyl; Z is linear alkylene having from 3 to 8 carbon atoms and is optionally substituted with lower alkyl and A^- is an anion.

5 A composition containing the compound of claim 1 and an inert carrier therefor.

5,008,105

COMPOSITION AND PROCESS FOR TREATING KERATINIC SUBSTANCES WITH AT LEAST ONE ANIONIC POLYMER AND AT LEAST ONE QUATERNIZED PROTEIN

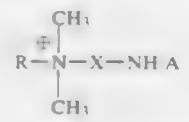
Jean F. Grollier, Paris, and Claude Dubief, Le Chesnay, both of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 665,386, Oct. 26, 1984, Pat. No. 4,796,646.
This application Dec. 15, 1988, Ser. No. 284,683
Claims priority, application Luxembourg, Oct. 28, 1983, 85067
Int. Cl.[5] A61K *7/06, 7/075, 7/13, 7/135*
U.S. Cl. 424—70 31 Claims

6. A composition for the cosmetic treatment of hair, comprising, in a cosmetically acceptable medium which is suitable for application to said hair a strongly cationic quaternised protein and either an anionic latex or an amphoteric polymer, wherein:

the anionic functional groups of said anionic latex are provided either by polymerisation or copolymerisation of anionic monomers, said polymerisation or copolymerisation is effected either by combination of an anionic free radical originating from the reaction initiator with the monomer or the monomers during the initiation of polymerisation of said monomers or by juxtaposition of these two processes of synthesis or alternatively by the introduction of end groups by a chain transfer reaction in the second process employing a reaction initiator;

said strongly cationic quaternised protein has the formula



(I)

in which A denotes a protein residue derived from hydrolysates of collagen protein, R denotes a lipophilic group containing up to 30 carbon atoms;,

said amophoteric polymer contains two moieties, moiety A and moiety B, which are distributed statistically in said amphoteric polymer chain such that

moiety A is derived from a monomer that contains at least one basic nitrogen atom and moiety B is derived from an acidic monomer that contains at least one carboxylic or sulphonic group, or

moieties A and B are groups that are derived from zwitterionic monomers of caroboxybetaines or are cationic polymer chains that contain secondary, tertiary or quaternary amine groups such that at least one of said amine groups includes a carboxylic or sulphonic group

connected to said amine group via a hydrocarbon radical, or

moieties A and B form part of a chain of a polymer that contains an α, β-ethylenedicarboxylate moiety in which one of the carboxylic groups has reacted with a polyamine that contains one or more primary, secondary, or tertiary amine groups; and

the concentration of said strongly cationic quaternised protein and said anionic latex or amphoteric polymer is between 0.01 and 10% by weight.

5,008,106

METHOD FOR REDUCING THE MICROBIAL CONTENT OF SURFACES WITH A MICROBIOCIDAL, ANHYDROUS COMPLEX OF PVP-H_2O_2

John J. Merianos, Middletown; Herbert A. Lieberman, Livingston, and Robert B. Login, Oakland, all of N.J., assignors to GAF Chemicals Corporation, Wayne, N.J.

Filed Dec. 14, 1989, Ser. No. 450,695
Int. Cl.[5] A61K *31/79;* C01B *15/01*
U.S. Cl. 424—80 29 Claims

1. A method for reducing the microbial content of surfaces which comprises contacting said surface with a microbiocidal amount of a stable complex of PVP and H_2O_2 containing between about 3 and 24% by weight of H_2O_2 in an anhydrous organic solvent which is obtained directly as a uniform, free-flowing, fine white powder by reaction between PVP and H_2O_2 in substantially the same weight ratio as predetermined for the complex.

5,008,107

ATTRACTANT COMPOSITION FOR SYNANTHROPIC FLIES

William B. Warner, Phoenix, Ariz., assignor to Farnam Companies, Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 472,708, Jan. 31, 1990, abandoned, which is a continuation-in-part of Ser. No. 197,696, May 23, 1988, abandoned, which is a continuation of Ser. No. 889,217, Jul. 25, 1986, abandoned. This application Jun. 6, 1990, Ser. No. 534,292
Int. Cl.[5] A01N *25/00*
U.S. Cl. 424—84 10 Claims

1. A synergistic attractant composition for synanthropic flies which comprises:

(a) a feeding attractant selected from the group consisting of indole and skatole; said attractant being presented in a quantity within the approximate range of 0.01 to 0.10 weight percent;

(b) cis-9-tricosene present in a quantity within the approximate range of 0.025 to 1.44 weight percent;

(c) trimethylamine hydrochloride;

(d) alcohol to serve as a solvent for said feeding attractant; and

(e) a suitable carrier.

5,008,108

COMPOSITIONS UTILIZING AN EXOCELLULAR POLYSACCHARIDE ISOLATED FROM *ZOOGLOEA RAMIGERA*

ChoKyun Rha, Boston; Pasawadee Pradipasena, Brookline; TetsuHisa Nakamura; Donald D. Easson, Jr., both of Cambridge, and Anthony J. Sinskey, Boston, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 890,864, Jul. 28, 1986, Pat. No. 4,851,393. This application Mar. 28, 1989, Ser. No. 329,593
Int. Cl.[5] A61K *7/00, 7/08, 7/16, 31/715*
U.S. Cl. 424—401 5 Claims

1. A physiological lubricant with a pH between 2 and 9 and a salt concentration between 0 and 1.0 M, comprising between approximately 0.001 to 0.3% exocellular polysaccharide produced by *Zoogloea ramigera*, having a purity of greater than about 95% and a chain stiffness parameter of up to about 0.02, wherein the particular and metal ion content, ionic strength, pH and concentration of polysaccharide and composition produce a specific charge density on the polysaccharide to yield an intrinsic viscosity of the polymer in solution of between 10.0 and 20 dl/g as calculated by the Yuan Dougherty-Stivala equation and an intrinsic viscosity of polymer in solution of between 16 and 167 dl/g as calculated by the Fuoss equation, in combination with a physiological lubricant.

4. A pharmaceutical or cosmetic product having a pH between 4 and 9, an ionic strength equivalent to between 0M and 0.2M and comprising between approximately 0.001 and 1.0% exocellular polysaccharide produced by *Zoogloea ramigera*, having a purity of greater than about 95% and a chain stiffness parameter of up to about 0.02, wherein the particular and metal ion content, ionic strength, pH and concentration of polysaccharide and composition produce a specific charge density on the polysaccharide to yield an intrinsic viscosity of the polymer in solution of between 10.0 and 20 dl/g as calculated by the Yuan Dougherty-Stivala equation and an intrinsic viscosity of polymer in solution of between 16 and 167 dl/g as calculated by the Fuoss equation, in combination with a pharmaceutical or cosmetic product selected from the group consisting of skin lotions, skin cleansers, contact lens cleansers, eye drop lubricants, cosmetic gels, cosmetic ointments, makeup, hair gels, hair conditioners, and tooth paste gels.

5,008,109

VESICLE STABILIZATION

George W. Tin, Arcadia, Calif., assignor to Vestar, Inc., San Dimas, Calif.

Continuation of Ser. No. 63,780, Jun. 18, 1987, abandoned, which is a continuation of Ser. No. 815,773, Jan. 2, 1986, abandoned, which is a continuation of Ser. No. 614,255, May 25, 1984, abandoned. This application Oct. 11, 1988, Ser. No. 257,155
Int. Cl.[5] A61F *13/00;* A61K *9/127, 47/36, 47/42*
U.S. Cl. 424—422 12 Claims

1. A method for the storage and use of small micellular particles, comprising the steps of: suspending said micellular particles in a pharmaceutically acceptable polymeric gel solution to form a suspension with a protective gel surface about said micellular particles; cooling the suspension to form a gel matrix which restricts movement of the particles; and warming the gel matrix to at least about room temperature, thereby transforming the gel matrix into an aqueous suspension suitable for use.

8. The method of claim 1 further comprising injecting the aqueous suspension in vivo after it has been transformed from a gel matrix to an aqueous suspension.

5,008,110

STORAGE-STABLE TRANSDERMAL PATCH

Arnold G. Benecke, Hamilton; Daniel J. Kinne, Cincinnati, and Andrew J. Wnuk, Wyoming, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 10, 1988, Ser. No. 269,513
Int. Cl.[5] A61K *9/00*
U.S. Cl. 424—448 20 Claims

1. A storage-stable device for the transferal delivery of an active pharmaceutical, said device comprising:

(a) a drug reservoir containing a mixtured of said pharmaceutical and a skin permeation enhancer, said reservoir having an upper surface and a lower surface;

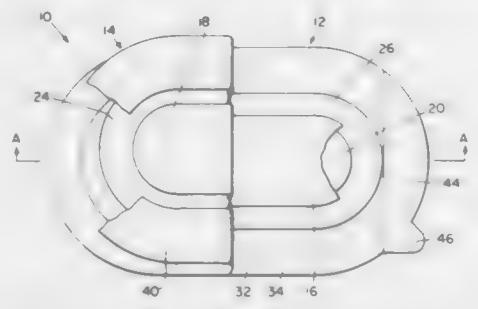
(b) a lower barrier film which is resistant to permeation by and absorption of said pharmaceutical and said skin permeation enhancer in contact with said lower surface of said reservoir;

(c) an upper barrier film which is resistant to permeation by and absorption of said pharmaceutical and said skin permeation enhance in contact with said upper surface of said reservoir;

(d) a compartment containing said drug reservoir and said

lower and said upper barrier films, said compartment comprising a top cover located adjacent and secured to said upper barrier film and a bottom cover located adjacent and secured to said lower barrier film, each of said covers being comprised of a material which is resistant to permeation by moisture, oxygen and light, said top cover and aid bottom cover being hermetically sealed together smear their peripheral edges;

(e) an outermost coverstock attached to said bottom cover of said outer compartment, said coverstock having an adhesive coating thereon, said hermetically-sealed compartment and said upper and lower barrier films together



preventing said mixture of said pharmaceutical and said skin permeation enhancer from coming into contact with said adhesive coating on said outermost coverstock as well as the entry of moisture, oxygen and light from the surrounding environment into said reservoir; and

(f) a release liner attached to said top cover of said compartment, said release liner being in contact with the periphery of said outermost coverstock, whereby peeling said release liner from said coverstock breaks said hermetic seal between said top cover and said bottom cover o said compartment, thereby exposing the adhesive at the periphery of said outermost coverstock and the upper surface of said drug reservoir.

5,008,111

PHYSIOLOGICAL MEANS OF ENHANCING TRANSDERMAL DELIVERY OF DRUGS

Nicholas Bodor, Gainesville, Fla., assignor to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 14,317, Feb. 13, 1987, Pat. No. 4,824,676, which is a continuation-in-part of Ser. No. 659,919, Oct. 11, 1984, abandoned. This application Dec. 14, 1988, Ser. No. 284,032

Int. Cl.[5] **A61F** *13/00*

U.S. Cl. 424—449 **6 Claims**

1. In an improved method of transdermally delivering a pharmaceutically active non-anticholinergic drug from a transdermal delivery system applied to an area of skin to provide transdermal delivery of said active drug through said area of skin, the improvement comprising:

pre-treating said area of skin with an anhidrotic agent in an amount sufficient to have a local antiperspirant effect on the area treated but insufficient o cause a significant systemic effect, whereby the transdermal delivery of said pharmaceutically active drug is enhanced and wherein said anhidrotic agent is an anticholinergic quaternary ammonium salt compound.

5,008,112

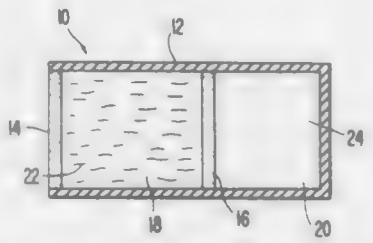
DEVICE FOR THE EXTENDED DELIVERY OF DIFFUSIBLE AGENTS

Randolph B. DePrince, and Ravi Viswanathan, both of Terre Haute, Ind., assignors to International Minerals & Chem. Corporation, Northbrook, Ill.

Filed Dec. 16, 1985, Ser. No. 809,437

Int. Cl.[5] **A61K** *9/22*

U.S. Cl. 424—468 **38 Claims**



1. A device for the continuous administration to a fluid medium of at least two agents having different rates of diffusion, said agents characterized as an agent having a relatively rapid rate of diffusion and an agent having a relatively slow rate of diffusion, which comprises: a wall, formed at least in part by a porous membrane, the remainder of said wall formed by a material impermeable to said agents and to said fluid medium, which completely surrounds and defines a reservoir, the reservoir comprising:

(a) a compartment which comprises said agent having the relatively slow rate of diffusion, wherein said compartment is partly formed by said porous membrane part of said wall permitting said agents to diffuse, and partly formed by a permeable partition, and

(b) at least one compartment which comprises said agent having the relatively rapid rate of diffusion, wherein said compartment is not in direct contact with said porous membrane part of said wall, said compartment is in contact with the portion of said wall formed by a material impermeable to said agents and to said fluid medium and is separated by said permeable partition from the compartment comprising said agent having the relatively slow rate of diffusion, such that when said device is exposed to said fluid medium, said agents having different rates of diffusion will diffuse through the porous membrane part of said wall at a substantially steady rate for a prolonged period of time.

5,008,113

METHOD FOR PREPARING FILM COATED PHARMACEUTICAL PREPARATIONS AND METHOD FOR IMPROVING PROPERTIES THEREOF

Hiroyasu Kokubo, Joetu; Fujio Sekigawa, Omiya; Tohru Chiba, Joetsu, and Yoshiro Onda, Higashikurume, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 148,000, Jan. 25, 1988, abandoned. This application May 19, 1989, Ser. No. 355,110

Claims priority, application Japan, Jan. 28, 1987, 62-17846; Jan. 28, 1987, 62-17847

Int. Cl.[5] **A61K** *9/36*

U.S. Cl. 424—480 **5 Claims**

1. A method for providing white colored film coated pharmaceutical preparations, said method comprising the steps of providing pharmaceutical preparations having a film coating material containing moisture, and irradiating said film coating with ultra violet rays to partially oxidize the material to a Yellowness Index in the range of about 5.1 to 9.8, wherein said film coating material comprises at least one member selected from the group consisting of methyl cellulose, hydroxypropylmethyl cellulose, hydroxypropyl cellulose, hydroxypropylmethyl cellulose phthalate, hydroxypropylmethyl cellulose acetate succinate, carboxymethyl cellulose and cellulose acetate phthalate.

5,008,114

PHARMACEUTICAL COMPOSITIONS WITH CONTROLLED RELEASE, AND A METHOD FOR THEIR PREPARATION

Mara L. Lovrecich, Trieste, Italy, assignor to Vectorpharma International S.p.A., Trieste, Italy

Filed Nov. 28, 1988, Ser. No. 276,489

Claims priority, application Italy, Apr. 8, 1988, 20145 A/88

Int. Cl.[5] **A61K** *9/14, 9/26*

U.S. Cl. 424—484 **13 Claims**

1. Pharmaceutical compositions comprising a microporous support having pores of an average diameter of between 5 and 150 nm, a surface area of between 30 and 600 m^2/g, and a particle diameter of less than 200 microns, said microporous support being selected from the group consisting of silica, silicates, zeolites, alumina, activated carbon and a microporous polymer, said microporous support having a pharmaceutically active substance selected from the group consisting of antihypertensive, antiinflammatory, antianxiety, antidepressive, corticosteroids and antibacterial medicaments distributed within the support pores in crystalline form, the crystal dimensions being in the nanometer range.

5,008,115

MATRIX FOR RELEASE OF ACTIVE INGREDIENTS

Chi-Long Lee, and Gerald A. Gornowicz, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 184,731, Apr. 22, 1988, Pat. No. 4,908,208. This application Mar. 2, 1990, Ser. No. 487,478

Int. Cl.[5] **A01N** *25/08;* **A61L** *9/04, 15/46*

U.S. Cl. 424—486 **7 Claims**

1. An improved method for forming active substance delivery reservoir comprising

(A) selecting a polymeric material consisting substantially of a linear thermoplastic block copolymer comprising from 1 to 30 weight percent of hard segments consisting essentially of polyurethane units derived from an organic diisocyanate and an alkylene diol containing from 2 to about 10 carbon atoms, and from 70 to 99 weight percent to soft segments comprising from 15 to 99 percent by weight, based on the weight of said copolymer, of polydiorganosiloxane units, based on the weight of said copolymer, said copolymer having a glass transition temperature between 40° and 160° C., (B) heating said copolymer to a temperature sufficient to soften it, (C) admixing into said softened copolymer an active substance chosen from the group consisting of synthetic perfumes, fragrances, insect repellants, air deodorizers, bactericides, herbicides, plant growth regulators, sex pheromones, and air fresheners, and (D) cooling the resultant composition to harden and form a matrix.

5,008,116

IMMUNOSTIMULATORY MICROSPHERE

Frederick Cahn, 57 Raleigh Rd., Belmont, Mass. 02178

Filed Nov. 14, 1988, Ser. No. 270,276

Int. Cl.[5] **A61K** *9/16*

U.S. Cl. 424—491 **11 Claims**

1. A macroporous microsphere comprising a particle and an antigenic component, selected from the group consisting of whole inactivated pathogens and submits thereof, RDNA derived polyreptides, recombinant viruses, synthesized polypeptides and anti-idiotypes, and whole microorganisms or animal cells wherein said antigenic component is physically entrapped in or chemically crosslinked, to the interior of said particle, said particle being comprised of a polymer, and said microsphere having size of 1 to 1000 μm, and pores with a mean pore diameter of 0.1 to 100 μm.

5,008,117

FORMULATION FOR PREPARING EXTEMPORANEOUS HOMOGENEOUS MICROCAPSULE SUSPENSION

Massimo Calanchi, Monza; Leonardo Gentilini, Milano, and Marco Marconi, Cinisello Balsamo, all of Italy, assignors to Eurand Italia SPA, Milano, Italy

Continuation-in-part of Ser. No. 2,660, Nov. 26, 1986, abandoned. This application Dec. 20, 1988, Ser. No. 287,401

Claims priority, application Italy, May 2, 1986, European Pat. Off. 8600280

Int. Cl.[5] **A61K** *9/16, 9/50, 9/62;* **B01J** *13/02*

U.S. Cl. 424—494 **22 Claims**

1. Method of preparing a drug microcapsule formulation consisting essentially of the drug microcapsules and a thickening or suspending agent and a binder and a solid particulate excipient, having the property of being readily dispersible and readily dissolvable in water or aqueous vehicles without clot formation so as to place the drug microcapsules in homogeneous suspension, consisting essentially of the following steps:

(a) providing a thickening or suspending agent having a grain size less than 100 mesh (Tyler) which is insoluble or only slightly soluble in a solvent in which a binder is dissolved in step (b);

(b) suspending the suspending or thickening agent in a dilute organic solvent solution of a solvent-soluble and water-soluble binder; wherein the weight of thickening or suspending agent in relation to the binder is about 4:1 to about 20:1;

(c) coating the suspension around particles of a water-soluble solid sweetener;

(d) drying to evaporate solvent and sieving the obtained product; and

(e) mixing the said product with drug microcapsules having a water-insoluble membrane-coating to provide the desired readily-dispersible formulation.

11. A dry formulation for preparing a homogeneous suspension of drug microcapsules, when it is poured into water or an aqueous base liquid, consisting essentially of (A) drug microcapsules having a polymeric membrane coating which is permeable by gastrointestinal juices, admixed with (B) coated particles consisting essentially of (a), (b), and (c), (a) being a solvent-soluble and water-soluble binder; and (b) being a thickening or suspending agent having a grain size less than 100 mesh (Tyler) which is insoluble or only slightly soluble in a dilute organic solvent solution in which the binder is soluble; the weight of thickening or suspending agent in relation to the weight of the binder being about 4:1 to about 20:1; a suspension of (a) and (b) being coated around (c), (c) being particles of a water-soluble solid sweetener; the admixture being sieved to a particle size of 870 microns or less.

5,008,118

METHOD FOR PRODUCING ORGANIC AGENT COATED WITH POWDERS OF COATING AGENT

Koichi Iwanami, Yokohama, and Masatsugu Ito, Tokyo, both of Japan, assignors to Nippon Oil and Fats, Tokyo, Japan

Filed Jun. 17, 1988, Ser. No. 208,996

Claims priority, application Japan, Jun. 23, 1987, 62-154398

Int. Cl.[5] **A61K** *9/16*

U.S. Cl. 424—498 **14 Claims**

1. A method for producing a coated organic agent comprising contacting a coating agent with core powders of an organic substance at a temperature less than the melting temperature of either the coating agent or core powder, so that said coating agent collides against said core powders with sufficient resultant frictional heating to cause adhesive binding of the coating agent of the core powder, said coating agent containing at least lipid powders having a melting point not lower than 40° C., and attaching said coating agent onto the overall surface of each of said core powders, whereby said core powders are coated by said coating agent, wherein said core powders of said organic substance are selected from the group consisting of powders of organic acids, powders of salts of organic acids,

powders of water-soluble vitamins and/or salts and/or esters thereof, powders of amino acids and/or salts and/or esters thereof and mixtures thereof, wherein said organic acids are selected from the group consisting of sorbic acid, propionic acid, fumaric acid, maleic acid, dehydroacetic acid, benzoic acid, citric acid, malic acid, succinic acid, tartaric acid, oxalic acid, L-ascorbic acid, lactic acid, acetic acid, butyric acid, adipic acid, tannic acid, gallic acid, phytic acid and mixtures thereof,

wherein said salts of organic acids are selected from the group consisting of sodium, calcium potassium, magnesium, iron, copper and zinc salts and mixtures thereof of organic acids selected from the group consisting of sorbic acid, propionic acid, fumaric acid, maleic acid, dehydroacetic acid, benzoic acid, citric acid, malic acid, succinic acid, tartaric acid, oxalic acid, L-ascorbic acid, lactic acid, acetic acid, butyric acid, adipic acid, tannic acid, gallic acid, phytic acid and mixtures thereof,

wherein said water-soluble vitamins and/or salts and/or esters thereof are selected from the group consisting of vitamin B_1, vitamin B_2, vitamin B_6, vitamin B_{12}, vitamin B_{13}, vitamin B_{14}, vitamin B_{15}, lipoic acid, nicotinic acid, nicotinamide, pantothenic acid, folic acid, p-aminobenzoic acid, biotin, choline, inositol, vitamin L, vitamin U, vitamin C, vitamin P, calcium salts of said vitamins, sodium salts of said vitamins, potassium salts of said vitamins, magnesium salts of said vitamins, iron salts of said vitamins, copper salts of said vitamins, zinc salts of said vitamins, hydrochlorates of said vitamins, nitrates of said vitamins, esters of phosphoric acid with said vitamins, esters of acetic acid with said vitamins, esters of succinic acid with said vitamins, esters of maleic acid with said vitamins, esters of glutamic acid with said vitamins, and mixtures thereof,

wherein said esters of said water-soluble vitamins are selected from the group consisting of esters of phosphoric acid, acetic acid, succinic acid, maleic acid and glutamic acid and mixtures thereof of oil-soluble vitamins selected from the group consisting of vitamin A, vitamin D, vitamin E, vitamin K and mixtures thereof, and

wherein said amino acids and/or salts and/or esters thereof are selected from the group consisting of DL-alanine, L-valine, leucine, L-isoleucine, L-phenylalanine, tyrosine, diiodetyrosine, DL-threonine, L-threonine, DL-tryptophan, L-tryptophan, serine, proline, hydroxyproline, thyroxine, DL-methionine, L-methionine, cystine, cysteine, aspartic acid, L-glutamic acid, asparagine, glutamine, D-lysine, L-lysine, hydroxylysine, arginine, histidine, β-alanine, β-aminobutyric acid, γ-aminobutyric acid, δ-amino-n-valeric acid, calcium salts of said amino acids, sodium salts of said amino acids, potassium salts of said amino acids, magnesium salts of said amino acids, iron salts of said amino acids, copper salts of said amino acids, zinc salts of said amino acids, hydrochlorates of said amino acids, nitrates of said amino acids, esters of phosphoric acid with said amino acids, esters of acetic acid with said amino acids, and mixtures thereof

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5,008,119

METHOD OF USING MANGANESE TO PROTECT AN ANIMAL FROM RADIATION DAMAGE

Junko Matsubara, c/o Department of Epidemiology, School of Medicine, University of Tokyo, No. 3-1, Hongo 7-chome, Bunkyo-Ku, Tokyo 113, Japan

PCT No. PCT/JP86/00510, § 371 Date Aug. 10, 1987, § 102(e) Date Aug. 10, 1987, PCT Pub. No. WO87/02245, PCT Pub. Date Apr. 23, 1987

PCT Filed Oct. 6, 1986, Ser. No. 62,180

Claims priority, application Japan, Oct. 14, 1985, 60-228536; Oct. 6, 1986, 61-236255

Int. Cl.[5] A61K *33/32*

U.S. Cl. 424—639 **4 Claims**

1. A method of protecting a host from radiation damage, comprising administering to a host in need thereof an effective radiation damage protecting amount of a water-soluble manganese salt in an amount effective to increase the liver metallothionein level in the host by at least fivefold within about one day following the administration.

5,008,120

METHOD OF PREPARING IRON-FORTIFIED BEVERAGE

Maki Tanaka; Telichi Tojima; Shun-ichi Dousako, and Kiyoshi Tatsumi, all of Saitama, Japan, assignors to Snow Brand Milk Products Co., Ltd., Hokkaido, Japan

Filed Jul. 12, 1990, Ser. No. 551,922

Claims priority, application Japan, Jul. 21, 1989, 1-189563; Apr. 26, 1990, 2-110953

Int. Cl.[5] A23L *1/304*

U.S. Cl. 426—74 **4 Claims**

1. A method of preparing an iron-fortified beverage containing lactoferrin capable of binding iron, comprising adjusting either an aqueous solution containing lactoferrin, iron preparation and sodium bicarbonate, or aqueous solution of iron lactoferrin to a desired ionic strength (I) sterilizing said iron lactoferrin by heat, cooling mixing said iron lactoferrin solution with a solution of beverage ingredients which has been also sterilized by heat and cooled wherein said desired ionic strength is determined by the following formula:

$$\log I \leqq -T/66.7 - 0.1$$

(wherein $60 \leqq T \leqq 80$)

$$\log I \leqq -1.3$$

($T \geqq 80$)

(T indicates temperature of sterilization in degrees Celsius.)

5,008,121

STORAGE STABLE, READILY RECONSTITUTED COMESTIBLE

Donald B. Bernacchi; Robert J. Loewe, both of Chicago, and Donna L. Immel, Green Oaks, all of Ill., assignors to Griffith Laboratories Worldwide, Inc., Alsip, Ill.

Continuation of Ser. No. 232,910, Aug. 16, 1988, which is a continuation-in-part of Ser. No. 941,690, Dec. 15, 1986, Pat. No. 4,764,386, which is a continuation-in-part of Ser. No. 779,657, Sep. 24, 1985, Pat. No. 4,744,994. This application Oct. 3, 1989, Ser. No. 416,601

Int. Cl.[5] A23P *1/08*

U.S. Cl. 426—89 **1 Claim**

1. A storage stable comestible comprising:

a comestible chosen from the group consisting of poultry, fish, red meats, egg products, vegetables, cheeses, fruits and fabricated foods having a generally continuous gelatinized starch membrane around the comestible.

5,008,122

PROCESS AND APPARATUS FOR CONTINUOUSLY REMOVING CONTAMINATES FROM EDIBLE COOKING OIL

Ellen M. Rosnack, Virginia Beach; Larry A. Pray, Suffolk; Alger C. Marable, Virginia Beach, and Gerry C. Zekert, Suffolk, all of Va., assignors to Nabisco Brands, Inc., East Hanover, N.J.

Filed Jun. 10, 1988, Ser. No. 205,215

Int. Cl.[5] A23D *5/04*

U.S. Cl. 426—417 **15 Claims**

1. A process for continuously removing contaminates from edible oil in a cooking bath having a temperature in excess of 250° F. comprising:

withdrawing a continuous stream comprising oil and contaminates from said bath;

providing a continuous stream comprising substantially clean liquid solvent for at least a portion of said contaminates, said solvent having a specific gravity different than the specific gravity of said solvent consisting essentially of tap water without substantial added acid;

mixing said oil and solvent streams in a volume flow ratio between about 1% and 40% solvent to form a mixture having a temperature in excess of about 200° F. to provide for enhanced solubility of said contaminates in said solvent and to transfer at least a portion of said contaminates from said oil to said solvent under a pressure sufficient to substantially inhibit vaporization of said liquid solvent;

separating said oil and solvent mixture by specific gravity into a stream comprising cleaned oil and a stream comprising solvent and contaminates;

returning said cleaned oil stream to said bath; and

disposing of said stream comprising solvent and contaminates.

5,008,123

FOOD PROCESSING METHOD

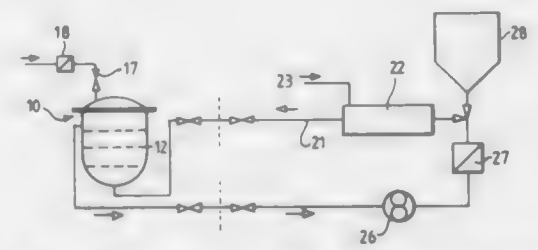
David R. Bewley, Middlesex, Great Britain; Christopher J. B. Brimelow, New Milford, Conn., and Kenneth W. Wright, Twyford, Great Britain, assignors to Nestec S.A., Vevey, Switzerland

Filed Jun. 4, 1990, Ser. No. 532,371

Claims priority, application United Kingdom, Jun. 15, 1989, 8913738

Int. Cl.[5] A23L *1/00*

U.S. Cl. 426—509 **13 Claims**



1. A method for processing meat comprising introducing meat into a mobile cooking vessel, sealing the meat-containing vessel from the atmosphere, heating a stock liquor with a heat exchanger to a cooking temperature of at least 60° C. and circulating the heated stock liquor through the vessel and the heat exchanger for a period of time sufficient to heat the meat to a cooking temperature and to cook the meat, and after cooking the meat, cooling the circulating stock liquor with the heat exchanger to a temperature suitable to cool the cooked meat to a temperature of no more than 15° C. within 45 minutes.

5,008,124

DRY MIX FOR PREPARATION OF IN-SITU SAUCE FOR FOODSTUFFS

Mildred N. Wilson, Wilton, Conn., assignor to Nabisco Brands, Inc., East Hanover, N.J.

Continuation of Ser. No. 222,719, Jul. 21, 1988, abandoned. This application Dec. 4, 1989, Ser. No. 445,915

Int. Cl.[5] A23L *1/522, 1/54*

U.S. Cl. 426—589 **5 Claims**

1. A dry mix preparation suitable for application to uncooked or partially cooked meat as either a dry mix or a liquefied dry mix, and which develops into a thickened sauce for the meat during the meat cooking process, said dry mix comprising xanthan gum, in an amount which will provide from about 0.003 to about 0.005 grams/ml. of xanthan gum based upon dissolution of the mix in one cup of water, and an ungelatinized food-grade starch, in an amount which will provide from about 0.01 to about 0.02 grams/ml. of said starch based upon dissolution of the mix in one cup of water, and further comprising flavorants and additional ingredients necessary to provide the particular type of sauce desired and such that an aqueous solution of said dry mix has a pH of from about 3.0 to about 4.5

5,008,125

SOLUBLE COFFEE WITH AROMA RECOVERED FROM THE THERMAL HYDROLYSIS OF SPENT GROUNDS

Kenneth W. Cale, Marlboro, N.J.; Naoto Imura, Yokkaichi, Japan; George A. Jasovsky, Bayonne, N.J., and Saul N. Katz, Monsey, N.Y., assignors to Kraft General Foods, Inc., Glenview, Ill.

Division of Ser. No. 339,290, Apr. 17, 1989, Pat. No. 4,900,575. This application Sep. 26, 1989, Ser. No. 412,372

Int. Cl.[5] A23F *5/48*

U.S. Cl. 426—594 **3 Claims**

1. A soluble coffee aromatized with a collected fraction of beneficial natural aromas and flavors released from the thermal hydrolysis of partially extracted roasted and ground coffee, said partially roasted and ground coffee having been subjected to atmospheric extraction to extract a majority of the arabinogalactan therefrom, which comprises:

25 to 125 ppm acetaldehyde, 10 to 40 ppm diacetyl, greater than 175 ppm total aromatics, a ratio of (acetaldehyde + diacetyl)/3-methyl butanol of 1.75 to 10 and a ratio of acetaldehyde/3-methyl butanol of 1.5 to 10.

5,008,126

LONG CHAIN DIOL DIESTERS AS LOW CALORIE FAT MIMETICS

Lawrence P. Klemann, Somerville; John W. Finley, Whippany, and Anthony Scimone, Cedar Grove, all of N.J., assignors to Nabisco Brands, Inc., East Hanover, N.J.

Filed Jun. 27, 1989, Ser. No. 372,056

Int. Cl.[5] A23D *7/00*

U.S. Cl. 426—611 **54 Claims**

1. An edible composition comprising, in addition to other edible materials, an edible fat mimetic compound of the formula

$$\begin{array}{l} A-CH-O-(CO)-F_1 \\ \quad | \\ \quad (CH_2)_n \\ \quad | \\ \quad CH_2-O-(CO)-F_2, \end{array}$$

where

A is an aliphatic chain having 7 to 28 carbon atoms,

n=0 to 2, and

F_1 and F_2 are aliphatic groups having 1 to 30 carbon atoms.

5,008,127

PROCESS FOR THE PRODUCTION OF A HIGHLY-ORIENTATED ULTRALONG CONJUGATED POLYMER

Kazufumi Ogawa, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 22, 1990, Ser. No. 482,965

Claims priority, application Japan, Feb. 27, 1989, 1-045993; Feb. 27, 1989, 1-45994; Feb. 27, 1989, 1-45995; Feb. 27, 1989, 1-45996

Int. Cl.[5] B05D *3/06*

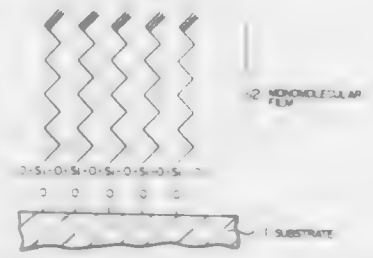
U.S. Cl. 427—36 **34 Claims**

1. A process for the production of a highly-orientated ultralong conjugated polymer, which comprises:

a step of immersing a substrate having a hydrophilic surface in a nonaqueous organic solvent containing a compound having at least an unsaturated group, such as an acetylenic group (—C≡C—), etc., and a group represented by the formula ($-SiA_xH_{3-x}$) in which A denotes a chloro or lower alkyl group and x is an integer of from 1 to 3, whereby forming a monomolecular film of the above compound on the substrate by chemisorption,

a step of selectively and linearly inactivating unsaturated

groups of the monomolecular film by means of writing with STM (scanning tunneling microscope), exposure to electron beam or exposure to X-ray, and



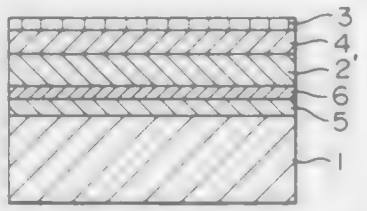
a step of irradiating the entire surface of the substrate with radiation in an inert gas atmosphere to polymerize that remaining portion of the monomolecular film which has not been inactivated.

5,008,128

PROCESS FOR PRODUCING INFORMATION RECORDING MEDIUM

Takanori Kudo, Hachioji, and Heigo Ishihara, Tokyo, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 31, 1989, Ser. No. 304,086
Claims priority, application Japan, Feb. 3, 1988, 63-21956; Jul. 18, 1988, 63-177156
Int. Cl.[5] H01F *10/02*
U.S. Cl. 427—130 10 Claims



1. A process for producing an information recording medium comprising a substrate, a magnetic layer formed on the substrate and a lubricant layer formed on the magnetic layer, which comprises forming the lubricant layer by applying a fluorine-containing isocyanate derivative, whose isocyano group is protected, to the magnetic layer, then reproducing the isocyano group and subjecting the reproduced isocyano group to polymerization, thereby forming a fluorine-containing isocyanate polymer layer.

5,008,129

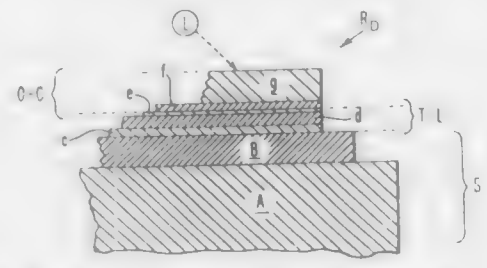
METHODS OF FABRICATING OPTICAL RECORDS WITH OVERCOATING

Norman L. Boling; Thomas Mayer, and James D. Rancourt, all of Santa Rosa, Calif., assignors to Unisys Corp., Detroit, Mich.

Division of Ser. No. 450,804, Dec. 17, 1982. This application Jan. 14, 1985, Ser. No. 691,047
Int. Cl.[5] B05D *5/00;* G03C *1/76*
U.S. Cl. 427—160 10 Claims

1. In a method for fabricating a radiation recording unit, the steps of:

depositing a radiation-sensitive record layer of metallic absorber material on a smooth optical disk substrate for recording digital data, this layer being adapted to be activated by a prescribed radiation beam to a prescribed recorded transition state at prescribed bit sites thereon; said transition state involving at least some minor deformation and/or minor translation of the record layer material at each bit site; applying buffer supercoat means upon this layer, or upon thin film means thereon, this supercoat means being adapted to isolate this layer and comprising a buffer layer of relatively soft yielding material, selected and applied so as to enhance the recording-sensitivity of the record layer while so protecting it; said buffer material being selected to be highly transparent to said beam and adapted to be relatively weakly-bonded to said record



layer such as to accommodate said deformation and/or translation, presenting little or no resistance thereto; and then applying a relatively hard protective outer-seal coating over the "soft" buffer layer, relatively strongly bonded thereto.

5,008,130

METHOD OF PRODUCING A PATTERNED FLOCKED WEB OF MATERIAL

Gerhard F. Lenarts, Mönchengladbach, Fed. Rep. of Germany, assignor to Uniroyal Textilcord, S.A., Steinfort

Filed Jun. 22, 1989, Ser. No. 369,775
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1988, 3820992
Int. Cl.[5] B05D *5/00, 1/16, 1/36*
U.S. Cl. 427—206 6 Claims

1. In a method of producing a patterned flocked web of material, the improvement therewith comprising the steps of:

first providing a patterned carrier web in the form of a textile web that has a patterned surface;

secondly applying a transparent adhesive layer to said patterned surface in such a way as to cover the same although allowing the patterned surface to appear through the transparent adhesive layer;

then covering said transparent adhesive layer with light, single-color flock to a predetermined extent;

thereupon drying and fixing the resulting arrangement; and

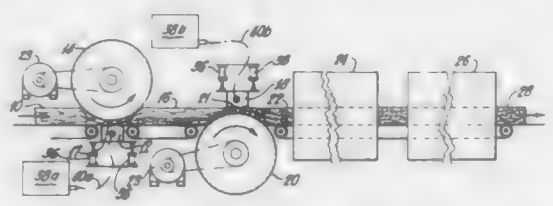
finally removing excess flock so that the pattern of the web stands out from the background in a muted and softened manner.

5,008,131

METHOD AND APPARATUS FOR IMPREGNATING A POROUS SUBSTRATE WITH FOAM

Shiv K. Bakhshi, Columbus, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jun. 14, 1982, Ser. No. 388,283
Int. Cl.[5] B05D *1/26, 3/06;* B05C *3/00, 3/18*
U.S. Cl. 427—209 29 Claims



1. Apparatus for impregnating a porous substrate with a foam comprising a foam discharge head having a surface plate adapted with one or more discharge openings for the discharge of foam therefrom, a foraminous surface positioned opposite said discharge openings to define a nip region having a thickness less than the thickness of the porous substrate so that the porous substrate is urged into sealed relation with said surface plate so that foam is substantially prevented from accumulating at the interface of said surface plate and the porous substrate as the porous substrate is transported through said nip region, a surface support conveyor positioned between said foraminous surface and the porous substrate, means for driving said foraminous surface to transport the porous substrate through said nip region, and means for supplying foam to said foam discharge head with pressure sufficient to impregnate the porous substrate.

13. A method for impregnating a porous substrate with a foam comprising transporting the porous substrate through a nip region defined by a foraminous surface and a foam discharge head, said foam discharge head comprising a surface plate having one or more discharge openings, where the transport of the porous substrate through said nip region compresses the porous substrate, thereby pressing the porous substrate into sealed relation with said surface plate to substantially prevent foam from accumulating at the interface between said surface plate and the porous substrate as the porous substrate is transported through said nip region, providing a surface support conveyor positioned between said foraminous surface and the porous substrate, and supplying foam to said discharge head with pressure sufficient to impregnate the porous substrate.

5,008,132

PROCESS FOR PREPARING TITANIUM NITRIDE COATED SILICON CARBIDE MATERIALS

Shih-Yee Kuo; Hyun-Sam Cho, and Jeffrey D. Bright, all of Salt Lake City, Utah, assignors to Norton Company, Worcester, Mass.

Filed Jun. 6, 1989, Ser. No. 362,188
Int. Cl.[5] C23C *16/08, 16/14, 16/56, 8/24*
U.S. Cl. 427—217 12 Claims

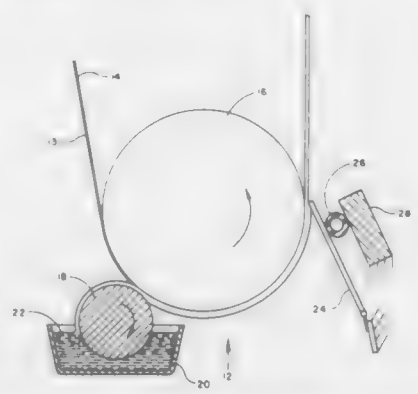
1. A process of coating silicon carbide materials selected from the group consisting of individual particles having an average particle size of about 0.5 to about 1000 microns, whiskers, and fibers with titanium nitride which comprises the steps of (i) placing a coating having a low diffusivity for carbon atop the silicon carbide materials, (ii) placing a titanium metal coating atop the low diffusivity coating, and (iii) nitriding the titanium metal to form titanium nitride.

5,008,133

METHOD OF COATING A WEB WITH A COATING MIXTURE INCLUDING MICROCAPSULES CRUSHED BY A BACK-UP MEMBER

Albert J. Herbet, 6 E. Spring, Oxford, Ohio 45056; Ronald L. Hart, 1650 E. Slater Ct., Xenia, Ohio 45385-9525, and Dale E. Work, 115 N. Madison Rd., London, Ohio 43140

Filed Jun. 6, 1990, Ser. No. 534,033
Int. Cl.[5] B05D *3/12*
U.S. Cl. 427—333 6 Claims



1. A method of forming a coating on a web which comprises forming a coating mixture including a continuous phase of a first material and a second material contained in microcapsules, the first material and the second material being adapted to interact to form the coating, applying the coating mixture to a face of the web, and passing the web between a back-up member and a doctor blade so that the doctor blade levels the coating on the web and crushes the microcapsules to cause mixing of the materials on the web.

5,008,134

ELECTROCONDUCTIVE COATING COMPOSITION

Kelvin P. Adkins, Elmstead Market, England, assignor to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 400,794, Aug. 30, 1989, Pat. No. 4,957,816, which is a division of Ser. No. 69,701, Jun. 30, 1987, Pat. No. 4,879,064. This application Jul. 19, 1990, Ser. No. 554,426
Claims priority, application United Kingdom, Jul. 2, 1986, 8616186
Int. Cl.[5] B05D *3/02;* B32B *27/36, 27/38*
U.S. Cl. 427—386 2 Claims



1. A method of producing a coated article comprising applying to at least one surface of a polymeric substrate a coating composition comprising a polymeric electrolyte and a polyepoxy resin in a weight ratio from 1:20 to 1:0.5, the polymeric electrolyte being a cationic electroconductive polymer capable of conducting a current through ionization.

5,008,135

EPOXY FLUOROCARBON COATING COMPOSITIONS AND THE PROCESS TO MAKE THE SAME

Paul J. Giordano, Hudson, and Richard C. Smierciak, Streetsboro, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 334,736, Apr. 7, 1989, abandoned, which is a continuation of Ser. No. 186,673, Apr. 21. 1988, abandoned, which is a continuation of Ser. No. 856,625, Apr. 25, 1986, abandoned, which is a continuation-in-part of Ser. No. 777,890, Sep. 19, 1985, abandoned. This application Jul. 18, 1990, Ser. No. 554,933
Int. Cl.[5] C08L *63/00, 27/18*
U.S. Cl. 427—386 31 Claims

1. A fluid coating composition comprising about 5 to about 24 percent by weight of a powdered fluorocarbon polymer wherein said florocarbon is non-melt processable and wherein said fluorocarbon has a particle size of less than 500 microns, dispersed in about 95 percent to about 70 percent by weight of an epoxy resin and an effective amount of a fluorosurfactant.

5,008,136

TEMPERATURE INDICATING PAINT AND METHOD OF PREPARING A SPECIMEN WITH THE SAME

John R. Chamberlain, Bristol, England, assignor to Rolls Royce plc, London, England

Continuation-in-part of Ser. No. 189,758, May 3, 1988, abandoned. This application Aug. 17, 1989, Ser. No. 395,360
Claims priority, application United Kingdom, May 19, 1987, 8711815
Int. Cl.[5] B05D *3/02*
U.S. Cl. 427—388.1 20 Claims

19. A method of preparing a part of a gas turbine engine with a temperature indicating paint comprising the steps of applying to the part a temperature indicating paint comprising a silver containing paste dispersed in 10% to 70% by weight of a volatile solvent, the paste comprising:

(a) 50–60% by weight of a metal particle pigment, at least a proportion of which is silver,
(b) 10–12% by weight of a chemically stable glass frit binder that is essentially non-volatile to a temperature of at least 1100° C., and
(c) an organic binder, being the remainder of the paste, volatile at a temperature less than 750° C., permitting the solvent to volatile, and stoving the part for up to five minutes at a temperature of between 750° C. and 850° C. so as to burn off the organic binder.

5,008,137

BARRIER COATINGS

Richard M. Nugent, Jr.; Ken W. Niederst, both of Allison Park, and Jerome A. Seiner, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 152,176, Feb. 4, 1988, abandoned. This application Jun. 19, 1989, Ser. No. 367,992
Int. Cl.[5] B65D *25/00*; B32B *27/08*
U.S. Cl. 428—35.4 26 Claims

1. A multilayer packaging material comprising:
(a) at least one layer of a gas-permeable polymeric material; and
(b) at least one layer of a thermoset barrier material comprised of a reaction product of: (i) an ungelled amine-functional polymeric resin which is a reaction product of a polyamine and a polyepoxide, the polyamine and the polyepoxide present in the reaction mixture at a ratio of from about 1.4:1 to about 0.83:1 based upon moles of polyamine to moles of polyepoxide, the ungelled polymeric resin further containing an average of greater than two polyamine moieties per molecule within said resin; and (ii) a material selected from the group consisting of a polyepoxide, a polyoxalate and mixtures thereof, the polymeric barrier material further characterized as containing at least about seven percent by weight amine nitrogen based on the total weight of polymeric barrier material and having an oxygen permeability of less than about 3 cc-mil/100 in^2-day-atmosphere and a carbon dioxide permeability of less than about 15 cc-mil/100 in^2-day-atmosphere at 23° C. and zero percent relative humidity.

5,008,138

PLATEN ROLLER

Jun Murata, Kawagoe, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 55,058, May 28, 1987, abandoned. This application Jun. 19, 1989, Ser. No. 368,936
Claims priority, application Japan, Jun. 5, 1986, 61-129291
Int. Cl.[5] B41J *11/057*
U.S. Cl. 428—36.4 5 Claims



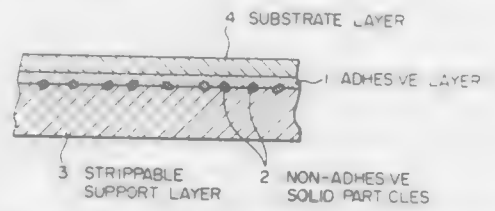
1. An impact typewriter comprising a platen roller, comprising:
a cylindrical rubber member having a glass transition temperature within the range of −10° C., with said cylindrical member being formed from a rubber material synthesized by using a polymer, carbon, an inorganic filler, an oil, sulfur, a vulcanization aid, a vulcanization accelerator and stearic acid as starting materials; and
support means for supporting said cylindrical rubber member, wherein said rubber member is mounted around said support means.

5,008,139

PRESSURE-SENSITIVE ADHESIVE LAYER

Katsura Ochi; Yasuaki Oonishi, and Kazuhisa Kinsen, all of Uozu, Japan, assignors to Nippon Carbide Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 31, 1988, Ser. No. 264,784
Claims priority, application Japan, Oct. 31, 1987, 62-274640
Int. Cl.[5] B32B *5/16, 7/06, 7/12*
U.S. Cl. 428—40 4 Claims



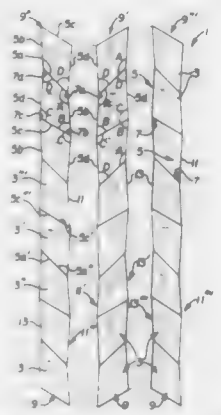
1. A pressure-sensitive adhesive sheet structure comprising
(A) a pressure-sensitive adhesive layer having, on at least one surface thereof, a layer of evenly dispersed non-adhesive solid particles having an average particle diameter of 10 to 60 microns, wherein at least about half of the solid particles project from the surface of the adhesive layer to a height corresponding to at least about one-fourth of the average particle diameter of the solid particles, and if the solid particles are hollow particles, the walls of the hollow particles are not rupturable by the pressure of bonding,
(B) a strippable support layer contacting the projecting portions of the non-adhesive solid particles on the surface of the adhesive layer and having depressions on the surface intimately receiving the projecting portions of the solid particles, and
(C) a substrate layer laminated to that surface of the pressure-sensitive adhesive layer which does not have the layer of the dispersed solid particles.

5,008,140

BIAXIALLY CORRUGATED FLEXIBLE SHEET MATERIAL

John C. Schmertz, 5308 Ellsworth Ave., Pittsburgh, Pa. 15232

Filed Jun. 1, 1989, Ser. No. 359,540
Int. Cl.[5] B32B *3/28*
U.S. Cl. 428—179 4 Claims



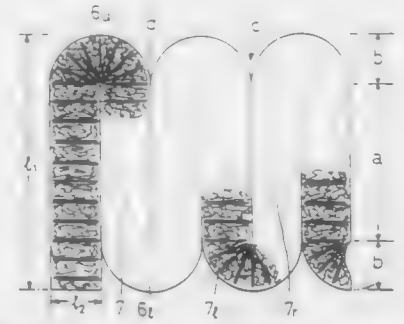
1. A biaxially flexible corrugated sheet material comprising a plurality of identical trapezium segments,
each said trapezium segment having four edges and four corners formed at the juncture of said edges, two said edges meeting at an angle to form each said corner;
said trapezium segments being arranged in a plurality of elongated strips, each said strip being a single trapezium segment wide and having first and second opposed sides formed by the free edges of said trapezium segments in said strip;
adjacent said strips being mirror images of each other and being connected to each other along their adjoining sides so that the edges of adjacent said trapezium segments meet and four said corners of four adjacent trapezium segments meet at a point, the sum of the angles of said four corners at each said point being alternately less than 360° and greater than 360° along the length of said adjacent strips;
whereby said sheet material has an undulating configuration of alternating ridges and valleys, is inherently curved, and cannot lie in a flat plane.

5,008,141

CUSHIONING MATERIAL FOR MATTRESSES

Tokihito Shinozuka, Tokyo, Japan, assignor to Paramount Bed Co., Ltd., Tokyo, Japan

Filed May 16, 1989, Ser. No. 353,329
Claims priority, application Japan, May 27, 1988, 63-129710
Int. Cl.[4] B32B *3/28, 5/06*; A47C *27/00*
U.S. Cl. 428—182 6 Claims



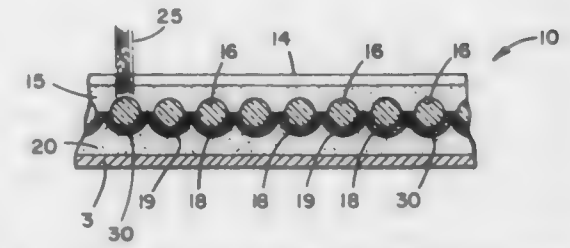
1. A cushioning material for mattresses, comprising:
a corrugated web having opposite cushioning surfaces, said corrugated web comprising means for providing a relatively soft portion at said opposite cushioning surfaces and a moderately rigid portion between said opposite cushioning surfaces, said means for providing composed of an elongated flat board continuously and alternately bent to form a plurality of consecutive side-by-side contact portions and a plurality of bent portions interconnecting said plurality of side-by-side contact portions, wherein said corrugated web extends substantially in a plane and said plurality of consecutive side-by-side contact portions extend substantially perpendicular relative to said plane, and wherein said elongated flat board is composed of a pile of crimped fibers and said flat board has a plurality of needle punctures therein, extending in a thickness direction of said flat board substantially perpendicular to the direction of elongation of said elongated flat board, formed by needling said pile of crimped fibers, such that said bent portions are relatively soft in a direction generally perpendicular to said plane of said corrugated web and said side-by-side contact portions are moderately rigid relative to said bent portions in said direction generally perpendicular to said plane of said corrugated web; and
holding means for holding said corrugated web together so as to maintain the shape of said corrugated web.
4. A cushioning material for mattresses, comprising:
a corrugated web having opposite cushioning surfaces, said corrugated web comprising means for providing a relatively soft portion at said opposite cushioning surfaces and a moderately rigid portion between said opposite cushioning surfaces, said means for providing composed of an elongated flat board continuously and alternately bent to form a plurality of consecutive side-by-side contact portions and a plurality of bent portions interconnecting said plurality of side-by-side contact portions, wherein said corrugated web extends substantially in a plane and said plurality of consecutive side-by-side contact portions extend obliquely relative to said plane, and wherein said elongated flat board is composed of a pile of crimped fibers and said flat board has a plurality of needle punctures therein, extending in a thickness direction of said flat board substantially perpendicular to the direction of elongation of said elongated flat board, formed by needling said pile of crimped fibers, such that said bent portions are relatively soft in a direction generally perpendicular to said plane of said corrugated web and said side-by-side contact portions are moderately rigid relative to said bent portions in said direction generally perpendicular to said plane of said corrugated web; and
holding means for holding said corrugated web together so as to maintain the shape of said corrugated web.

5,008,142

EMBEDDED LENS RETROREFLECTIVE SHEETING WITH FLEXIBLE, DIMENSIONALLY STABLE COATING

Bruce B. Wilson, Mounds View, and Raymond E. Grunzinger, New Scandia Township, Washington County, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 2, 1988, Ser. No. 239,950
Int. Cl.[4] G02B *5/128*; B05D *5/06*
U.S. Cl. 428—203 3 Claims



1. An embedded lens retroeflective sheeting comprising a resin matrix layer in which is partially embedded a plurality of bead lenses, a spacecoat comprising a light transmissive, polymeric layer on the side of the lenses not embedded in the resin matrix layer, and a reflective surface on the side of the spacecoat opposite the lenses; said spacecoat comprising a semi-interpenetrating polymer network which comprises:
(a) a cross-linked reactive polymer component
(b) a cross-linking agent which is at least di-functional with respect to reaction with reactive polymer component; and
(c) a non-reactive polymer component having a weight average molecular weight of between about 7,000 and 30,000, and at least 40% of which can be extracted by solvent from said spacecoat.

5,008,143

DECORATIVE OBJECTS WITH MULTI-COLOR EFFECTS

Louis Armanini, Pleasantville, N.Y., assignor to The Mearl Corporation, Ossining, N.Y.

Continuation of Ser. No. 70,022, Jul. 6, 1987, abandoned. This application Dec. 7, 1989, Ser. No. 453,385
Int. Cl.[5] C09D *5/29*
U.S. Cl. 428—207 10 Claims

1. An article exhibiting a multicolor effect consisting essentially of a transparent body, an interference pigment and an absorption colorant in which said absorption colorant is of a color which is different from the reflection color of the interference pigment or the complement thereof and in which the interference pigment and absorption colorant have the same order of magnitude of color intensity.

5,008,144

OVERPRINT AQUEOUS VARNISH

Timothy J. Baker, Claremore, and John H. Woods, Tulsa, both of Okla., assignors to Petrolite Corporation, St. Louis, Mo.

Continuation-in-part of Ser. No. 267,064, Nov. 4, 1988, Pat. No. 4,908,063. This application Nov. 28, 1989, Ser. No. 442,890

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—211 18 Claims

1. A product bearing print ink indicia protected by an overprint aqueous varnish having formulation enhancing additive comprising a mixture of

a. A finely divided mostly linear aliphatic hydrocarbon and/or modified hydrocarbon having a molecular weight of about 300–3,000; and

b. a compound represented by the formula:



wherein R and R_1 are independently hydrogen or C_1–C_{10} alkyls; R_2 is hydrogen or methyl, x is about 8 to about 75; and n is about 2 to about 65.

5,008,145

GLASS FIBER REINFORCED POLY(VINYL CHLORIDE) BLEND WITH IMPROVED HEAT DISTORTION AND TENSILE STRENGTH

Philip L. Kinson, Brecksville, and Edward M. Faber, Avon, both of Ohio, assignors to The B.F. Goodrich Company, Brecksville, Ohio

Division of Ser. No. 112,793, Oct. 23, 1987, Pat. No. 4,870,126. This application Sep. 7, 1989, Ser. No. 404,011

Int. Cl.[5] B32B *27/00*; C08K *9/00, 9/06*; D04H *1/58*

U.S. Cl. 428—288 4 Claims

1. In a shaped article formed from a glass fiber reinforced composite of a stabilized blend of poly(vinyl chloride) and a copolymer blended therewith, the improvement consisting essentially of

(a) from about 60 parts to about 85 parts by wt of poly(vinyl chloride) resin per 100 parts of said blend in which the vinyl chloride portion of each repeating unit contains from about 57% to about 67% by wt of chlorine,

(b) from 15 to 40 parts by wt of a copolymer of 20% to 30% by wt acrylonitrile with 80% to 70% by wt of a mixture comprising a major portion by wt alpha-methyl styrene and a minor portion of styrene, said copolymer forming a single phase with said poly(vinyl chloride),

(c) from 5 to about 20 parts by wt, combined, of a stabilizer, lubricant, processing aid and impact modifier, and,

(d) from about 10% to about 30% by wt of glass fibers having a diameter less than about 20 microns, wherein said glass fibers are coated with a size consisting essentially of (i) an aminosilane coupling agent having a reactive amine moiety which upon reaction with said poly(vinyl chloride) results in a compound having a peak in a proton magnetic resonance spectra at 5.65 ppm, and (ii) a polymer film former having a basicity greater than that of poly(vinyl acetate) and sufficient to leave enough said resin coupled to said fibers after thermoforming, to yield a ratio of total chlorine to carbon Cl(2p)/C(ls) of at least 0.91, measured as the ratio of areas under the peaks, after extraction of said composition, after thermoforming, with tetrahydrofuran,

whereby a glass fiber reinforced composite molded from said blend has a heat distortion temperature (HDT) of at least 80° C. and a tensile strength at least 10,000 psi (1.82 MPa).

5,008,146

ZINC-CARBON ANTIFOULING COATING

Francis L. Keohan, Plymouth, Mass., assignor to Cape Cod Research, Inc., Buzzards Bay, Mass.

Continuation of Ser. No. 267,350, Nov. 4, 1988, abandoned. This application Oct. 10, 1989, Ser. No. 419,143

Int. Cl.[5] B05D *5/00*

U.S. Cl. 428—328 5 Claims

1. A method for rendering underwater structures resistant to fouling by pestiferous organisms which comprises contacting said structures with a composition comprising 10 to 60 percent by weight metallic zinc in combination with 5 to 40 percent carbon.

5,008,147

MAGNETIC RECORDING MEDIUM

Katsumi Ryoke; Masatoshi Takahashi; Akihiro Hashimoto, and Kazuo Hasumi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 8, 1988, Ser. No. 216,566

Claims priority, application Japan, Jul. 8, 1987, 62-170511

Int. Cl.[5] G11B *23/00*

U.S. Cl. 428—323 10 Claims

1. A magnetic recording medium comprising a nonmagnetic support having on one surface thereof a magnetic layer and on the opposite surface thereof a backing layer comprising nonmagnetic particles dispersed in a binder, wherein said binder of said backing layer comprises from about 20 to 90 wt % of polycarbonate polyurethane, and said backing layer comprises from about 40 to 200 parts by weight of said binder per 100 parts by weight of said nonmagnetic particles.

5,008,148

PROCESS FOR THE PRODUCTION OF PLASTIC MOULDED ARTICLES WITH IMPROVED WEATHERING RESISTANCE

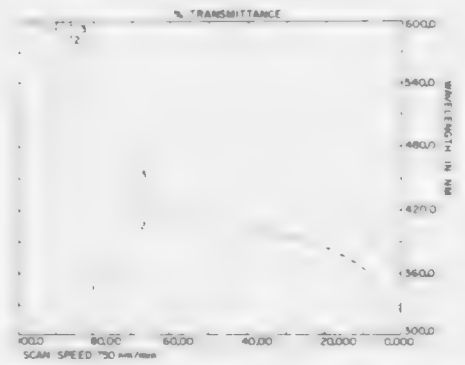
Siegfried Thurm, Meerbusch; Reimer Holm, Bergisch-Gladbach; Christian Leuschke, Dormagen; Dietrich Rathmann, Leverkusen, and Lutz Schrader, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Jun. 12, 1989, Ser. No. 366,719

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1988, 3821131

Int. Cl.[5] B32B *27/36*

U.S. Cl. 428—336 14 Claims



1. Process for coating moulded plastic articles of thermoplastic polycarbonates or thermoplastic polyarylene sulphides, characterised in that the moulded plastic articles are directly coated with metal oxides which absorb electromagnetic radiation at wave lengths of from 250 nm to 400 nm.

5,008,149

CERAMIC SUBSTRATE HAVING A METALLIC LAYER THEREON AND A PROCESS FOR MANUFACTURING THE SAME

Yasunori Taga; Hideya Yamadera, both of Nagoya; Keiji Aoki, Susono, and Tadashi Hattori, Okazaki, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi and Nippon Soken Inc., Nishio, both of, Japan

Filed Nov. 22, 1988, Ser. No. 274,481

Claims priority, application Japan, Nov. 24, 1987, 62-295823

Int. Cl.[5] B32B *15/04, 15/20*

U.S. Cl. 428—336 5 Claims

1. A ceramic substrate having a metallic layer thereon comprising:

a ceramic substrate comprising alumina;

a metallic layer containing at least molybdenum (Mo), and formed on said ceramic substrate; and

a bonding layer comprising composite oxides composed of aluminum (Al) and at least one metal selected from the group consisting of titanium (Ti), zirconium (Zr) and niobium (Nb), and formed between said ceramic substrate and said metallic layer by chemical reaction between said alumina of said ceramic substrate and said bonding layer;

in which said ceramic substrate and said metallic layer is bonded by means of said bonding layer.

3. The ceramic substrate having a metallic layer thereon according to claim 1, wherein the thickness of said bonding layer is in the range of 0.005 to 0.5 μm.

5,008,150

PHOTOGRAPHIC SUPPORT WITH AN UNDERCOATING LAYER ON A RESIN COATED BASE SHEET

Tetsuya Ashida, Tokyo, and Touru Noda, Matsudo, both of Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Filed Oct. 3, 1988, Ser. No. 252,130

Claims priority, application Japan, Oct. 2, 1987, 62-250466; Oct. 16, 1987, 62-261417; Dec. 22, 1987, 62-324965

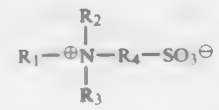
Int. Cl.[5] B32B *27/08*; G03C *1/37*; C08L *89/00*

U.S. Cl. 428—340 9 Claims

1. A photographic support comprising a resin coated base sheet and formed thereon an undercoating layer comprising

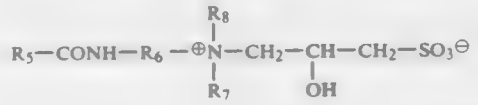
(a) a hydrophilic colloid, and

(b) at least one compound selected from the group consisting of a compound of the formula:



(I)

wherein R_1, R_2 and R_3 are independently hydrogen or an alkyl group; and R_4 is an alkylene group, and a compound of the formula:



(II)

wherein R_5, R_7 and R_8 are independently hydrogen or an alkyl group; and R_6 is an alkylene group, the coating amount of said undercoating layer being 0.01 g/m^2 to 1.0 g/m^2 on dry basis.

5,008,151

GLASS POWDER ADHESIVE SHEET

Takashi Tominaga; Souji Nishiyama; Takahumi Sakuramoto, and Makoto Honda, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Filed Aug. 12, 1988, Ser. No. 231,560

Claims priority, application Japan, Sep. 11, 1987, 62-228934

Int. Cl.[5] B32B *7/12*

U.S. Cl. 428—343 12 Claims

1. A multilayer glass powder adhesive sheet comprising:

a glass powder molding layer consisting essentially of glass powder and a resin binder; and

an adhesive layer having a thermal decomposition initiation temperature higher than that of said resin binder, provided on the surface of the glass powder molding layer wherein the difference between the thermal decomposition initiation temperature of said adhesive layer and that of said resin binder is at least 10° C.

5,008,152

INK COMPOSITION FOR THERMAL TRANSFER PRINTING AND FILM FOR THERMAL TRANSFER PRINTING

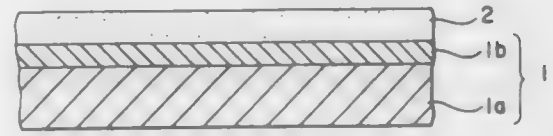
Hisanobu Mikamo, Ibaraki; Noboru Odani, and Akio Shimizu, both of Takatsuki, all of Japan, assignors to Hitachi Maxell Ltd., Osaka, Japan

Filed Jul. 11, 1989, Ser. No. 377,968

Claims priority, application Japan, Jul. 14, 1988, 63-175532; Apr. 25, 1989, 64-106954

Int. Cl.[5] B41M *5/26*; C09D *11/00*

U.S. Cl. 428—423.1 8 Claims



1. An ink composition for thermal printing, which composition comprises a coloring agent and a mixture of an thermoplastic material selected from the group consisting of thermoplastic resins and waxes as a binder.

5. A film for thermal transfer printing comprising a substrate and an ink layer which is formed on a surface of the substrate from an ink composition comprising a coloring agent and a mixture of an aromatic ester-containing polyurethane and at least one thermoplastic material selected from the group consisting of thermoplastic resins and waxes as a binder.

5,008,153

CORROSION INHIBITIVE PRETREATMENT FOR "COPPER-FREE" MIRRORS

Deborah E. Hayes, Verona, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 8, 1988, Ser. No. 281,358

Int. Cl.[5] C23C *26/00*

U.S. Cl. 428—429 11 Claims

1. An improved process of depositing a thin metallic film on a substrate by applying to the substrate a thin metallic film the improvement comprising pretreating the surface of the substrate with a pretreatment composition comprising a protective material before applying the thin metallic film to the substrate, said pretreatment composition comprising

(A) an adhesion promoter bonding or coupling to the interface of the substrate and the thin metallic film and

(B) a corrosion inhibitor wherein (A) is selected from the group consisting of a silane compound, a titanium compound, a zirconium compound, and a mixture thereof, and (B) is selected from the group consisting of a nitrogen containing heterocyclic compound, a corrosion inhibitive

metallic compound other than recited in (A) and a mixture thereof.

7. An article of matter which is prepared by the process of claim 1.

5,008,154

COMPOSITION AND METHOD FOR PRIMING AND COATING SILICONE SUBSTRATES

Michael D. Meddaugh, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 283,423, Dec. 12, 1988, Pat. No. 4,923,946.
This application Jan. 2, 1990, Ser. No. 459,858
Int. Cl.[5] B32B *9/04*; B05D *3/10*
U.S. Cl. 428—447 10 Claims

1. A method comprising applying a continuous layer of a primer composition to a moisture-cured silicone substrate, said primer composition consisting essentially of a partial hydrolyzate of an aminoalkyl-susbstituted trialkoxysilane, prepared by mixing an aminoalkyl-substituted trialkoxysilane and less than one mol of water per mol of silicon-bonded alkoxy radical in the silane, from 0.1 to 10 percent by weight, based on the weight of said partial hydrolyzate, of a carboxylic acid salt of tin and the balance a solvent component; and evaporating the solvent component from the continuous layer of primer composition to provide a primed silicone substrate.

6. An article comprising a moisture-cured silicone substrate bearing a coating composition durably adhered thereto with a continuous primer layer consisting essentially of the composition obtained by drying a primer composition consisting essentially of a partial hydrolyzate of an aminoalkyl-substituted trialkoxysilane prepared by mixing an aminoalkyl-substituted trialkoxysilane and less than one mol of water per mol of silicon-bonded alkoxy radical in the silane, from 0.1 to 10 percent by weight, based on the weight of said partial hydrolyzate, of a carboxylic acid salt of tin and the balance a solvent component.

5,008,155

AQUEOUS DISPERSIONS FOR THE PREPARATION OF CROSSLINKABLE COATINGS

Dieter Engel, Kelsterbach; Josef Mondt, Königstein/Taunus, and Klaus Zimmerschied, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 143,346, Jan. 5, 1988, abandoned, which is a continuation of Ser. No. 714,046, Mar. 19, 1985, abandoned.
This application Sep. 19, 1989, Ser. No. 409,082
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1984, 3410234
Int. Cl.[5] B32B *15/08, 27/00*
U.S. Cl. 428—463 10 Claims

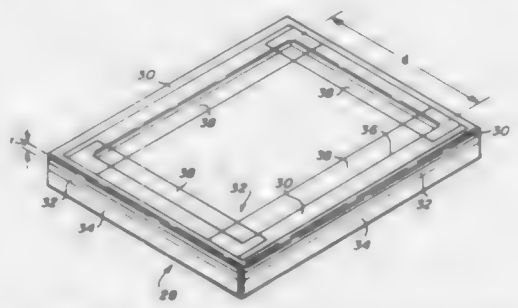
9. A solid substrate having a bake-coated surface coating thereon in the form of a crack-free film, the composition of which is that of a dried and baked aqueous dispersion, wherein the aqueous dispersion is one which is useful for producing a crosslinkable surface coating and which contains, as binder, a crosslinkable dispersion copolymer formed from olefinically-unsaturated monomers and, optionally, further comprising a member selected from the group consisting of pigment, dyestuff, extender, water-soluble and/or water-dispersible resin, extraneous crosslinking agent, crosslinking catalyst, thickener, thixotropic agent, wetting agent, anti-corrosion agent, anti-freeze agent, light stabilizer, anti-oxidant and anti-foaming agent; dispersed copolymer particles of the dispersion having average particle diameters of from 0.5 to 10 microns; the proportion of monomer units carrying crosslinkable groups in the dispersion copolymer being greater than 10% by weight, relative to the dispersion copolymer.

5,008,156

PHOTOCHEMICALLY STABLE MID AND DEEP ULTRAVIOLET PELLICLES

Gilbert H. Hong, Los Altos Hills, Calif., assignor to Exion Technology, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 929,060, Nov. 7, 1986,. This application Dec. 6, 1988, Ser. No. 280,702
Int. Cl.[5] B32B *27/08*
U.S. Cl. 428—506 18 Claims



1. A pellicle for transmitting mid and deep ultraviolet light for use in a projection printing process comprising.

a core layer selected from the group consisting of polymethylmethacrylate polymer and polyglycidylemethacrylte, and

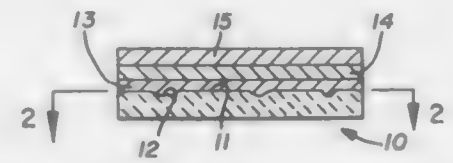
at least one antireflective layer selected from the group consisting of poly-1H, 1H Pentadecafluorooctyl methacrylate and poly-1H, 1H Pentadecafluorooctyl acrylate coated on a surface in close physical proximity to the core layer.

5,008,157

METALLIZED ARTICLE AND PROCESS FOR METALLIZING A NON-CONDUCTIVE ARTICLE

Michael N. Paxos, 1667 Pinecone, NW., North Canton, Ohio 44720

Filed Nov. 22, 1989, Ser. No. 440,252
Int. Cl.[5] B32B *15/04*
U.S. Cl. 428—612 4 Claims



1. A metallized article having an exterior surface comprising:

a substrate being of a material selected from the group consisting of ceramic, glass, porcelain and clay, said substrate containing a plurality of depressions on its exterior surface;

a first layer of palladium metal mechanically bonded to the surface of said substrate, said mechanical bond being enhanced by the interaction of said first layer with said depressions;

an intermediate layer of metal bonded to said first layer, said intermediate layer being a metal selected from the group consisting of copper and nickel; and

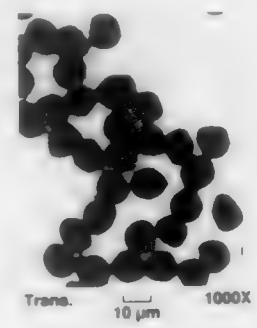
a finish layer of metal bonded to said intermediate layer, said finish layer comprising a metal selected from the group consisting of gold, platinum, rhodium, palladium, silver, bronze, brass, copper, nickel, iron, chromium, tin, zinc, and mixtures thereof.

5,008,158

PRODUCTION OF METAL MATRIX COMPOSITES REINFORCED WITH POLYMER FIBERS

Que-Tsang Fang, Murrysville, and Caroline Wei-Berk, Monroeville, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 7, 1988, Ser. No. 267,[illegible]
Int. Cl.[5] C22C *1/09*
U.S. Cl. 428—614 16 Claims



1 A metal matrix composite comprising:
non-woven liquid crystal polymer fibers; and
a metal alloy matrix surrounding said fibers, said metal alloy matrix having been formed by infiltrating a liquid phase of said metal into a preform of said fibers having no coating or surface treatment.

3 A metal matrix composite comprising:
polymer fiber having lengths of less than two inches; and
a metal alloy matrix surrounding said polymer fiber.

5,008,159

METHOD OF PRODUCING SILICON CARBIDE-BASED BODIES

Ian Higgins, Preston, and Andrew Baxendale, Up Holland, both of United Kingdom, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Nov. 3, 1989, Ser. No. 431,301
Claims priority, application United Kingdom, Nov. 10, 1988, 8826300
Int. Cl.[5] C04B *35/56*
U.S. Cl. 428—614 8 Claims

1 A method of producing a body comprising silicon carbide, the method comprising forming a porous compact comprising, silicon carbide, a carbide of a metal, and carbon, and infiltrating the compact with a mixture comprising molten said metal and molten silicon.

8. A reaction-sintered silicon carbide-based body comprising silicon carbide, metal carbide, and silicide of said metal, made by forming a porous compact comprising silicon carbide, a carbide of the metal, and carbon, and infiltrating the compact with a mixture comprising molten said metal and molten silicon.

5,008,160

METHOD OF SECURING ADHERENT COATINGS BY CVD FROM METAL CARBONYLS, AND ARTICLES THUS OBTAINED

William C. Jenkin, 382 Dorchester Rd., Akron, Ohio 44320

Division of Ser. No. 217,329, Jul. 11, 1988, Pat. No. 4,938,99.
This application Apr. 12, 1990, Ser. No. 508,356
Int. Cl.[5] B32B *15/00, 15/20*
U.S. Cl. 428—656 12 Claims

1. A composite article comprising:

(a) a substrate having a surface and comprising a metal which readily chemisorbs carbon monoxide, said metal forming at least the surface of said substrate;

(b) a thin undercoating layer of a metal which adheres to the substrate metal and which has little or no tendency to chemisorb carbon monoxide; and

(c) an outercoat layer of substantially uniform thickness, said outercoat being of a metal which adheres to the undercoat metal but does not readily adhere to the substrate metal when deposited directly thereon from a metal carbonyl;

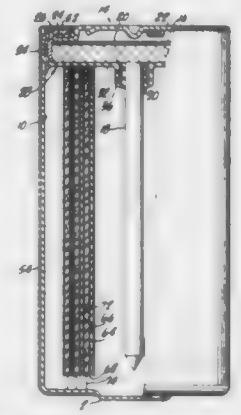
(d) said outercoat layer having been deposited on said undercoat layer at from about 225° C. to about 275° C. from vaporized carbonyl of the outercoat metal; said undercoat layer being essentially free of metal oxide surface impurities.

5,008,161

BATTERY ASSEMBLY

Lowell E. Johnston, 11515 Welebir St., Loma Linda, Calif. 92354

Filed Feb. 1, 1989, Ser. No. 304,853
Int. Cl.[5] H01M *2/06, 2/08*
U.S. Cl. 429—7 17 Claims



1. A battery comprising
a container having an opening therein;
a plate positioned in said opening;
a terminal attached to said plate and extending into said container;
a sleeve concentrically positioned about said terminal;
a nonconductive seal positioned about said terminal against said plate and between said sleeve and said terminal and extending in substantially juxtaposition with said plate to about the periphery of said plate between said plate and said container in said opening, said sleeve being compressed about said terminal to seal said container at said terminal.

5,008,162

TEST CELL STRUCTURE

Klaus Tomantschger, 6197 Montevideo Rd., Mississauga, Ontario, Canada L5N 2E8 , and Josef Soltys, 246 Third Line, Oakville, Ontario, Canada L6L 4A1

Filed May 11, 1988, Ser. No. 192,537
Int. Cl.[5] H01H *8/04*
U.S. Cl. 429—34 20 Claims

1. A test cell structure for electrochemical cell technology, said test cell having a pair of electrodes, and being capable of easy assembly and dis-assembly; said test cell being of the type which requires a flow of reactant fluids, either gases or liquids, and liquid electrolyte, into and away from the vicinity of the electrodes, where said test cell structure comprises:

a body having two opposed side faces and an electrolyte chamber extending therebetween, and an electrolyte reservoir in fluid communication with said electrolyte chamber;

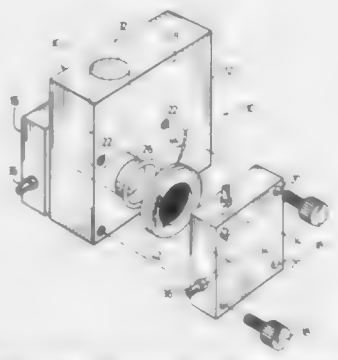
a pair of reactant fluid chamber blocks adapted for mounting to said body, one at each of said two opposed side faces thereof;

each of said reactant fluid chamber blocks having a cavity formed in a first face thereof, which cavity is open at said

first face and closed away from said first face so as to form a reactant fluid chamber adapted to face the end of said electrolyte chamber at the side face of said body to which each respective reactant fluid chamber block is mounted;

discrete means arranged for conducting reactant fluid to and away from each of said reactant fluid chambers;

and electrode mounting means for mounting a pair of substantially planar electrodes in interposed relation between



said reactant fluid chambers and said electrolyte chamber, one at each side face of said body;

said electrode mounting means each comprising a frame into which an electrode member may be placed, and having substantially fluid-tight sealing relationship with said body and said reactant fluid chamber blocks when said blocks are securely mounted to said body at each side face thereof.

5,008,163

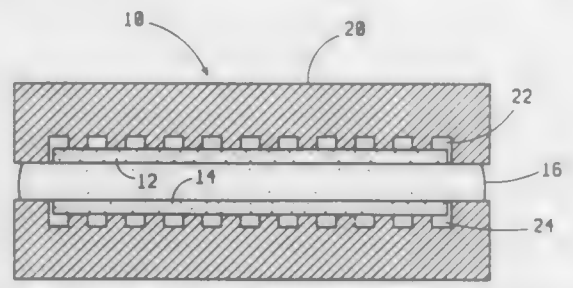
CONDUCTIVE CERAMIC COMPOSITION AND METHOD OF PREPARATION

James L. Smith, Lemont, and Eugenia H. Kucera, Downers Grove, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 26, 1989, Ser. No. 357,247

Int. Cl.[5] H01M *4/88, 4/90*

U.S. Cl. 429—40 **16 Claims**



1. A ceramic composition comprising a multivalent metal oxide, said metal oxide including an alkali metal-transition metal oxygenate, with the ratio of oxygen to multivalent metal in non-stoichiometric relation, deficient in oxygen and wherein the composition exhibits an electrical conductivity substantially greater than the electrical conductivity of a corresponding stoichiometric composition with balanced oxygen.

5,008,164

HYDROGEN-ABSORBING ALLOY ELECTRODE

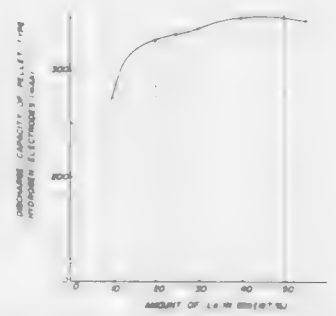
Nobuhiro Furukawa, Hirakata; Kenji Inoue, Sumoto; Mitsuzo Nogami, Yawata; Seiji Kameoka, Osaka, and Motoo Tadokoro, Ashiya, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Dec. 11, 1989, Ser. No. 448,438

Claims priority, application Japan, Apr. 18, 1989, 1-98322

Int. Cl.[5] H01M *4/24, 4/38;* **C22C** *19/03*

U.S. Cl. 429—59 **6 Claims**



1. A hydrogen-absorbing alloy electrode mainly comprising a hydrogen-absorbing alloy represented by a formula $MmNi_a$. Co_bMn_c, Mm representing a Misch metal comprising rare earth elements including La, wherein $2.5<a<3.5$, $0.4<b<1.5$, $0.2<c<1.0$, and $3.85<a+b+c<4.78$ and wherein La is contained in said alloy in a weight percent relative to the total weight of rare earth of $20<La<50$.

5,008,165

ELECTROCHEMICAL CELL

Hans-Peter Schmöde, Brilon, Fed. Rep. of Germany, assignor to Accumulatorenwerke Hoppecke Carl Zoellner Sohn GmbH & Co. KG, Brilon, Fed. Rep. of Germany

Filed Aug. 31, 1989, Ser. No. 401,018

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1988, 3829419

Int. Cl.[5] H01M *10/40, 2/16*

U.S. Cl. 429—94 **11 Claims**



1. In an electrochemical cell particularly of winding construction, where the electrodes, namely the anode and the cathode, accompanied by the respective interposition of separators, are disposed collectively in a circular arrangement in layers progressively from the inside toward the outside, comprising the improvement therewith wherein:

the most outwardly disposed electrode layer of said cell has a thickness that is less than the thickness of each respectively more inwardly disposed electrode layer of said cell;

said separators being comprised of microfibers that are set view a binder;

said electrochemical cell including an organic electrolyte, said electrolyte being an organic solvent mixture of ethylene carbonate and dioxolane in which is dissolved a conducting salt in the form of a salt of perchloric acid.

5,008,166

METHOD FOR MANUFACTURING A COLOR FILTER

Toshihiro Aoki, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 938,025, Dec. 4, 1986, abandoned. This application Nov. 8, 1989, Ser. No. 434,570

Claims priority, application Japan, Dec. 9, 1985, 60-276520

Int. Cl.[5] G03F *9/00*

U.S. Cl. 430—7 **19 Claims**

1. A method of manufacturing a color filter having color filter elements of the three primary colors which are arranged in a pattern employed in a liquid crystal display device, comprising the steps of:

a first step of forming a negative photosensitive and colorable one-layer film on at least one of a pair of substrates employed in the liquid crystal color display device and facing each other;

a second step including a first sub-step of positioning a mask having a predetermined pattern at a first position relative to said film and exposing said film at least one time, and a second sub-step of positioning said mask, substantially sequentially after said first sub-step, at a second position away from said first position and exposing said film at least one time;

a third step of removing portions of the film which are not exposed when said mask is in both of said first and said second positions in the second step, whereby preventing said portions from forming said color filter elements; and

a fourth step following either one of said first and said third steps, for coloring at least a part of said film in one of the three primary colors.

5,008,167

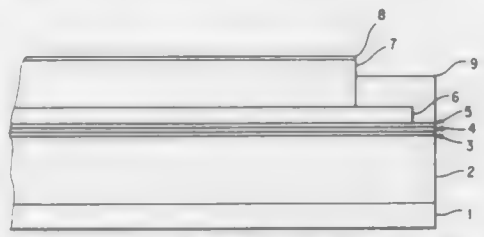
INTERNAL METAL OXIDE FILLED MATERIALS FOR ELECTROPHOTOGRAPHIC DEVICES

Robert C. U. Yu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 15, 1989, Ser. No. 451,240

Int. Cl.[5] G03G *5/14*

U.S. Cl. 430—56 **28 Claims**



1. An electrophotographic imaging member comprising a layer containing homogeneously dispersed metal oxide particles with a particle diameter of about 30 Angstroms to about 1000 Angstroms, said metal oxide particles having been produced through internal precipitation in a coating solution for said layer.

5,008,168

PHOTOSENSITIVE MEMBER FOR ELECTROPHOTOGRAPHY

Masaru Nakagawa; Fumio Sumino, both of Yokohama; Masaaki Hiro, Kanagawa; Noboru Kashimura, Kawasaki, and Shin Nagahara, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

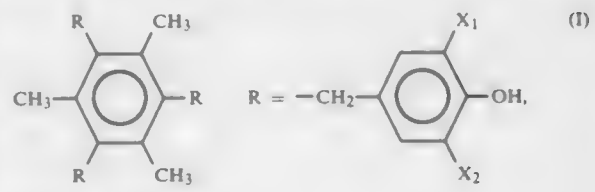
Filed Apr. 17, 1989, Ser. No. 338,844

Claims priority, application Japan, Apr. 18, 1988, 63-95851; Mar. 2, 1989, 1-51729

Int. Cl.[5] G03G *5/06*

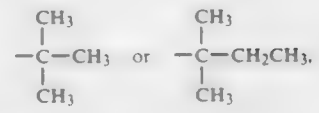
U.S. Cl. 430—56 **42 Claims**

1. A photosensitive member for electrophotography comprising: an electroconductive substrate, and a photosensitive layer disposed thereon comprising an organic photoconductor; said photosensitive layer containing, at least, a compound represented by the following formula (I):



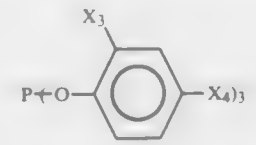
(I)

wherein X_1 denotes



and X_2 denotes a hydrogen atom, an alkyl group having 1–10 carbon atoms or an alkenyl group having 2–10 carbon atoms; and

a compound represented by the following formula (II):



(II)

wherein X_3 and X_4 respectively denote an alkyl group having 1–10 carbon atoms or an alkenyl group having 2–10 carbon atoms.

5,008,169

PHOTOCONDUCTIVE IMAGING MEMBERS WITH POLYPHOSPHAZENES

Robert C. U. Yu, Webster, and Santokh S. Badesha, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 28, 1989, Ser. No. 386,321

Int. Cl.[5] G03G *5/047*

U.S. Cl. 430—59 **33 Claims**

1. A photoconductive imaging member comprised of a supporting substrate, a ground plane layer, a hole blocking-adhesive layer comprised of polyorganophosphazene, a photogenerating layer, and a hole transport layer.

5,008,170

PHOTORECEPTOR FOR ELECTROPHOTOGRAPHY

Kenichi Karakida; Shigeru Yagi; Yuzuru Fukuda; Masayuki Nishikawa; Te N. Roh; Noriyoshi Takahashi; Masato Ono; Masaki Yokoi, and Yumiko Komori, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 23, 1989, Ser. No. 370,312

Claims priority, application Japan, Jun. 24, 1988, 63-154796

Int. Cl.[5] G03G *5/14*

U.S. Cl. 430—65 **6 Claims**

1. A photoreceptor for electrography, comprising: a photoconductive layer, a first surface layer, a second surface layer and a third surface layer formed in sequence on a support, said photoconductive layer being substantially composed of amorphous silicon and said first, second and third surface layers being substantially composed of amorphous silicon added with nitrogen atoms, and wherein the film thicknesses d_1, d_2 and d_3 of said first, second and third surface layers and the nitrogen concentrations c_1, c_2 and c_3 of said first, second and third surface layers satisfy the following relation: $d_2>d_1$, $d_2>d_3$ and $c_3>c_2>c_1$.

5,008,171

PRINTING MEMBER FOR ELECTROSTATIC PHOTOCOPYING

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

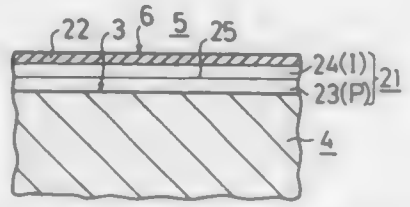
Continuation of Ser. No. 395,995, Aug. 21, 1989, which is a continuation of Ser. No. 335,708, Apr. 10, 1989, Pat. No. 4,889,782, which is a division of Ser. No. 814,083, Dec. 24, 1985, abandoned, which is a continuation of Ser. No. 502,583, Jul. 21, 1983, abandoned, which is a division of Ser. No. 276,503, Jun. 23, 1981, Pat. No. 4,418,132. This application Dec. 1, 1989, Ser. No. 444,307

Claims priority, application Japan, Jun. 25, 1980, 55-86801

The portion of the term of this patent subsequent to Dec. 26, 2006, has been disclaimed.

Int. Cl.[5] G03G *5/082, 5/147*

U.S. Cl. 430—67 **3 Claims**



1. A printing drum for an electrostatic photocopying machine comprising:

a conductive substrate;

a non-single-crystal p-type semiconductor layer formed on said conductive substrate;

a non-single-crystal intrinsic semiconductor layer formed on said p-type semiconductor layer in order to induce a built-in electric field across the interface therebetween an insulating layer formed on said intrinsic layer where the band gaps of the p-type layer and the intrinsic layer are substantially less than the band gap of an insulating layer formed on said intrinsic layer; and

said insulating layer having an external surface to permit the passage of charge photo-generated in said intrinsic layer so that charge on the external surface can be neutralized;

where said p-type layer, said intrinsic layer, and said insulating layer consist essentially of materials consisting principally of silicon, silicon with nitrogen, silicon with carbon and silicon with oxygen either in stoichiometric or non-stoichiometric amounts.

5,008,172

ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR

Takashi Rokutanzono, Numazu; Yukio Ide, Mishima; Hiroshi Nagame, Numazu; Kohichi Ohshima, Mishima; Narihito Kojima, and Shinji Nousho, both of Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 24, 1989, Ser. No. 356,140

Claims priority, application Japan, May 26, 1988, 63-126949

Int. Cl.[5] G03G *15/04*

U.S. Cl. 430—67 **14 Claims**

1. An electrophotographic photoconductor comprising an electroconductive substrate, a photoconductive layer formed on said electroconductive substrate, and a protective layer formed on said photoconductive layer, said protective layer comprising a binder resin and finely-divided particles of at least one metal oxide with the surface thereof being coated with a coupling agent selected from the group consisting of a titanate-type coupling agent, a fluorine-containing silane coupling agent, and an acetoalkoxylaluminum diisopropylate, dispersed in said binder resin.

5,008,173

PHTHALOCYANINE CRYSTAL, PROCESS FOR MANUFACTURE THEREOF AND ITS USE FOR ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MATERIAL

Yoshikazu Mimura, Tokyo; Keiichi Takano, deceased, late of Kanagawa by Isao Takano, Legal Representative , and Tomohisa Gotou, Tokyo, all of Japan, assignors to NEC Corporation, Tokyo, Japan

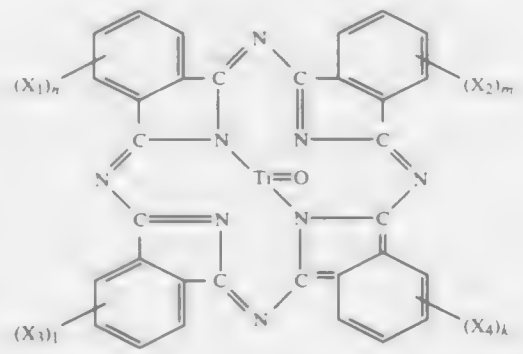
Division of Ser. No. 339,442, Apr. 17, 1989, Pat. No. 4,994,566. This application Aug. 13, 1990, Ser. No. 567,042

Claims priority, application Japan, Apr. 15, 1988, 63-93051; Mar. 15, 1989, 1-64801

Int. Cl.[5] G03G *5/06*

U.S. Cl. 430—78 **2 Claims**

1. An electrophotographic photosensitive material containing a conductive layer and a photosensitive layer, characterized in that it contains, in its photosensitive layer, a charge generation material and a charge transfer material and that it contains, as the charge generation material, a titanyl phthalocyanine compound represented by the general formula:



wherein X_1, X_2, X_3 and X_4 each independently represent various halogen atoms and n, m, l and k represent numerals of 0 to 4 and shows, in an infrared absorption spectrum, characteristic strong absorption peaks at $1,332 \pm 2\ cm^{-1}$, $1,074 \pm 2\ cm^{-1}$, $962 \pm 2\ cm^{-1}$ and $783 \pm 2\ cm^{-1}$.

5,008,174

COLOR PROOFING SYSTEM HAVING A GRADUATED LAYER OF RESINS WITH DIFFERENT SOLUBILITIES

Stephan J. W. Platzer, Califon, N.J., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed Oct. 21, 1989, Ser. No. 261,372

Int. Cl.[5] G03C *5/18, 7/00;* **G03F** *7/30*

U.S. Cl. 430—143 **11 Claims**

1. A method for forming a colored image which comprises

(A) providing a photosensitive element which comprises

(i) a substrate having a release surface; and

(ii) a coated and dried photosensitive solution, defining a photosensitive layer, on said release surface, which photosensitive layer comprises a photosensitizer selected from the group consisting of positive-working, naphthoquinone diazide compounds, and negative-working, polymeric diazonium compounds in a sufficient amount to photosensitize said photosensitive layer; and at least one pigment dispersion in sufficient amount to uniformly color said photosensitive layer, said pigment dispersion being formed by intimately pre-admixing at least one pigment and a first resinous binder compound which is the binder for the said pigment or pigments; and a second resinous binder which is different from the binder for the pigment or pigments, which second resinous binder is present in sufficient amount to uniformly bind the photosensitive layer components in a substantially uniform film and wherein said

second resinous binder is not intimately bound by pre-admixture to said pigment; and

(iii) a coated and dried a nonphotosensitive adhesive composition solution, defining an adhesive layer, directly on said photosensitive layer, which adhesive composition solution comprises one or more thermoplastic polymers and a solvent composition in which the first resinous binder and photosensitizer are insoluble or sparingly soluble and in which the second resinous binder is soluble such that after having coated and dried the adhesive composition solution on the photosensitive layer, the second resinous binder is more preferentially migrated toward the adhesive layer than toward the substrate; which adhesive layer is substantially nontacky at room temperature and can be transferred by lamination at temperatures of from about 60° C. and 180° C.; and

B. either

(a) laminating said element with heat and pressure via said adhesive layer to a developer resistant receiver sheet; and removing said substrate by the application of peeling forces; and imagewise exposing said photosensitive layer to actinic radiation to thereby form image areas in either the exposed or unexposed areas and oppositely nonimage areas in either the unexposed or exposed areas; or

(b) imagewise exposing said photosensitive layer to actinic radiation to thereby form image areas in either the exposed or unexposed areas and oppositely nonimage areas in either the unexposed or exposed areas; and laminating said element with heat and pressure via said adhesive layer to a developer resistant receiver sheet; and removing said substrate by the application of peeling forces; or

(c) laminating said element with heat and pressure via said adhesive layer to a developer resistant receiver sheet; and imagewise exposing said photosensitive layer to actinic radiation to thereby form image areas in either the exposed or unexposed areas and oppositely nonimage areas in either the unexposed or exposed areas; and removing said substrate by the application of peeling forces; and

C. thereafter removing the nonimage areas of said photosensitive layer with a liquid developer, which removing is conducted at a temperature at which said adhesive layer is substantially nontacky.

5,008,175

COPYING MATERIALS

Shane Hsieh, Bridgewater, N.J., and Paul Stahlhofen, Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Celanese Corporation, Somerville, N.J.

Continuation of Ser. No. 549,059, Nov. 7, 1983, abandoned. This application Feb. 16, 1990, Ser. No. 480,775

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1982, 3246037

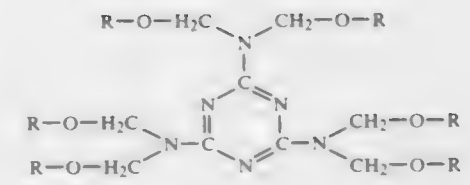
Int. Cl.[5] G03C *1/52, 1/54, 1/492, 1/72*

U.S. Cl. 430—155 **14 Claims**

1. A light-sensitive composition which comprises in admixture, a binding amount of a water-insoluble binder which is soluble in aqueous-alkaline solutions; and a light-sensitizing amount of a light-sensitive component selected from the group consisting of o- or p- quinone diazides, diazonium salt polycondensation products, or a mixture of

(a) a compound which eliminates an acid on exposure to light and

(b) a compound having at least one C—O—C— group which can be split by acid; and a thermo-crosslinking amount of a thermo-crosslinking compound which thermo-crosslinking compound is a cyclical acid amide of the general formula:



wherein R denotes a hydrogen atom or an alkyl group whereby said composition is capable of forming a photographic element when coated on a suitable support, and said binding amount is that amount which produces a difference between the exposed and unexposed areas of said element upon development, and the amount of thermo-crosslinking compound present is an amount which does not substantially reduce the shelf life of said composition and which enables said composition to be baked at lower temperatures than a similar composition without the thermo-crosslinking compound and without substantially reducing the developer resistance of said composition.

5,008,176

INFORMATION RECORDING MEDIUM HAVING A GLASS SUBSTRATE

Tetsuya Kondo, Yokohama, and Noboru Kawai, Komae, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Sep. 28, 1988, Ser. No. 250,391

Claims priority, application Japan, Sep. 29, 1987, 62-242528

Int. Cl.[5] G03F *7/09;* **G03C** *1/765*

U.S. Cl. 430—272 **20 Claims**

1. An information recording disk for recording an information signal along a track defined by a depression on the disk as a change of physical property of a recording material deposited on the track comprising:

a disk-shaped glass substrate made of a glass defined by a flat first surface at a first side and a second surface carrying a groove corresponding to the track at a second side opposite to the first side, said groove being defined by a bottom surface having a surface roughness substantially smaller as compared to the surface roughness caused at a bottom surface of a groove on a silica glass substrate when both the disk-shaped glass substrate and silica glass substrate are dry-etched under same conditions, and said disk-shaped glass substrate comprising SiO_2 component and one or both of Al_2O_3 and BaO components while free from those alkali and alkali earth elements having one or more elements selected from a group consisting of sodium, magnesium, potassium, and calcium;

a recording layer comprised of the recording material which changes in physical property responsive to a projected energy beam modulated with the information signal, said recording layer deposited on the second surface of the substrate having one side thereof making an intimate contact with the second surface, said recording layer carrying said depression which defines the track on other side of the recording layer; and

a protection layer deposited on said another side of the recording layer so that the depression on the recording layer is buried under the protection layer with an intimate contact between the protection layer and the recording layer.

5,008,177

SILVER HALIDE PHOTOGRAPHIC MATERIALS

Kensuke Goda, and Shigeru Ohno, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

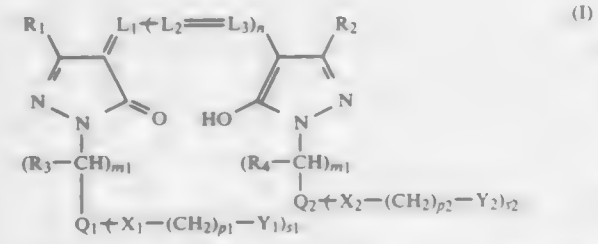
Filed Dec. 9, 1988, Ser. No. 282,164

Claims priority, application Japan, Dec. 9, 1987, 62-311421

Int. Cl.[5] G03C *1/12, 1/30*

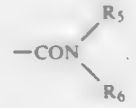
U.S. Cl. 430—522 **8 Claims**

1. A gelatino-silver halide photographic material comprising at least one light-sensitive silver halide emulsion layer and at least one non-emulsion auxiliary photographic layer provided on a support, wherein at least one of said layers comprises a compound represented by formula (I) and at least one hardener selected from the group consisting of compounds of formula (II) and formula (III);



(I)

where R_1 and R_2 each independently represents $-COOR_5$ or



R_3 and R_4 each independently represents a hydrogen atom or an alkyl group;

R_5 and R_6 each independently represents a hydrogen atom, an alkyl group or an aryl group or together a 5-membered or 6-membered ring;

Q_1 and Q_2 each independently represents an aryl group; X_1 and X_2 each independently represents a divalent linking group or a bond;

Y_1 and Y_2 each independently represents a sulfo group or a carboxyl group;

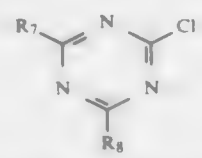
L_1, L_2 and L_3 each independently represents a methine group;

m_1 and m_2 each independently represents 1 or 2;

n represents 0, 1 or 2;

p_1 and p_2 each independently represents 0, 1, 2, 3 or 4; and

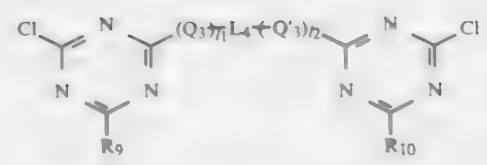
s_1 and s_2 each independently represents 1 or 2.



(II)

where R_7 represents a chlorine atom, a hydroxyl group, an alkyl group, an alkoxy group, an alkylthio group, —OM in which M is a monovalent metal atom, $-NR^IR^{II}$ or $-NHCOR^{III}$ wherein R^I, R^{II} and R^{III} are each independently a hydrogen atom, an alkyl group or an aryl group; and

R_8 has the same meaning as R_7 except that it does not represent a chlorine atom;



(III)

where R_9 and R_{10} each independently represents a chlorine atom, a hydroxyl group, an alkyl group, an alkoxy group or -OM in which M is a monovalent metal atom;

Q_3 and Q_3' each independently represents a linking group represented by —O—, —S— or —NH—;

L_4 represents an alkylene group or an arylene group; and

l_1 and l_2 each independently represents 0 or 1.

5,008,178

SHEET OR WEB CARRYING AN ANTISTATIC LAYER

Etienne A. Van Thillo, Essen, and Lucien J. Van Gossum, Kontich, both of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Feb. 2, 1989, Ser. No. 305,391

Claims priority, application European Pat. Off., Mar. 22, 1988, EP88200531.7

Int. Cl.[5] B32B *5/16;* **G03C** *1/76*

U.S. Cl. 430—527 **8 Claims**

1. A sheet or web material being a subbed or unsubbed hydrophobic resin support or paper support coated with at least one hydrophobic resin layer having at least on one side an outermost antistatic layer containing colloidal silica, wherein the antistatic layer is free from any cationic surfactant and consists for at least 70% by weight of colloidal silica having an average grain size smaller than 7 nm and a surface area of at least 500 m2 per gram, the colloidal silica being present at a coverage of at least 50 mg per m2.

5,008,179

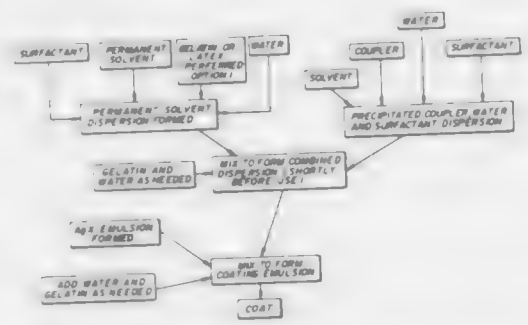
INCREASED ACTIVITY PRECIPITATED PHOTOGRAPHIC MATERIALS

Krishnan Chari, Rochester; Wayne A. Bowman, Walworth, and Brian Thomas, Fairport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 22, 1989, Ser. No. 440,160

Int. Cl.[5] G03C *7/32, 7/388*

U.S. Cl. 430—546 **31 Claims**



1. A method of forming photographic dispersions comprising

providing an aqueous dispersion of photographic coupler:

providing an aqueous dispersion of activating permanent solvent;

combining said dispersion of photographic coupler and said dispersion of permanent solvent to form a combined dispersion; and

mixing said combined dispersion with silver halide emulsion

wherein said dispersion of photographic coupler is prepared without using a colloid mill or homogenizer.

5,008,180

PHOTOGRAPHIC RECORDING MATERIAL CONTAINING A CYAN DYE-FORMING COUPLER

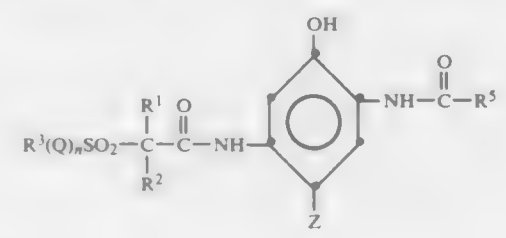
Paul B. Merkel, and David Hoke, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 335,166, Apr. 7, 1989, abandoned. This application Feb. 2, 1990, Ser. No. 474,566

Int. Cl.[5] G03C *1/08, 7/34*

U.S. Cl. 430—552 **9 Claims**

1. A photographic recording material comprising a support and a photosensitive silver halide emulsion which has associated therewith a cyan dye-forming coupler compound having the structural formula:



wherein:

R^1 is an unsubstituted or a substituted, straight or branched chain alkyl group having from 1 to about 20 carbon atoms, an unsubstituted or a substituted cycloalkyl group having from 3 to about 8 carbon atoms in the ring or an unsubstituted or a substituted aryl group;

R^2 is as defined for R^1 or is hydrogen;

R^3 is an unsubstituted or a substituted alkyl group having from 1 to about 24 carbon atoms, an unsubstituted or substituted cycloalkyl group having from 3 to about 8 carbon atoms in the ring, an unsubstituted or a substituted aryl group having from 6 to about 24 carbon atoms or an unsubstituted or a substituted heterocyclic group having from 3 to about 8 atoms in the heterocyclic ring, wherein the hetero ring atoms can be nitrogen, oxygen, or sulfur;

with the proviso that when R^3 is a primary alkyl group R^1 must contain at least 2 carbon atoms;

Q is —O— or $-NR^4-$;

R^4 is hydrogen; an unsubstituted or a substituted alkyl group having from 1 to about 24 carbon atoms; and unsubstituted or a substituted cycloalkyl group having from 3 to about 8 carbon atoms in the ring; or an unsubstituted or a substituted aryl group having from 6 to about 24 carbon atoms;

R^5 is an unsubstituted or a substituted linear or branched chain alkyl group having from 1 to about 32 carbon atoms;

n is 0 or 1; and

Z is hydrogen or a coupling off group;

with the proviso that at least one of the R^1, R^2, R^3, R^4, R^5 or Z groups is of such size and configuration as to render the coupler compound substantially nondiffusible in the layer of the photographic recording material in which it is coated.

5,008,181

SILVER HALIDE PHOTOGRAPHIC MATERIALS

Akihiko Ikegawa; Masaki Okazaki, and Tadao Sugimoto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Tokyo, Japan

Filed Sep. 26, 1988, Ser. No. 248,747

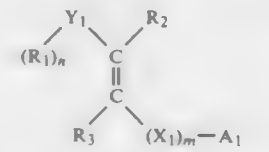
Claims priority, application Japan, Sep. 25, 1987, 62-239034

The portion of the term of this patent subsequent to May 8, 2007, has been disclaimed.

Int. Cl.[5] G03C *1/28, 1/29*

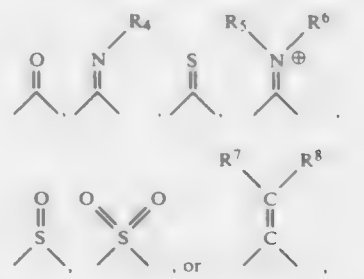
U.S. Cl. 430—572 **8 Claims**

1. A silver halide photographic material comprising a support having thereon at least one silver halide emulsion layer spectrally sensitized by at least one adsorptive spectral sensitizing dye, wherein the emulsion layer or a hydrophilic colloid layer adjacent to the emulsion layer contains at least one compound represented by the following formula (I);



(I)

wherein R_1 represents a hydrogen atom or a group which may be substituted; R_2, and R_3 each independently represents a hydrogen atom, a halogen atom or a group which may be substituted; said R_1 and R_2 or said R_1 and R_3 may combine with each other to form a carbon ring or a heterocyclic ring; Y_1 represents



wherein R_4, R_5, R_6, R_7 and R_8 each independently represents a hydrogen atom or a group which may be substituted, a cyano group, or a nitro group; A_1 represents a light-collecting dye moiety selected from a cyanine dye moiety or a merocyanine dye moiety and which has an absorption maximum in a region of 3000 n.m. or longer, and which simultaneously satisfies the following factors (1) and (2), and is bonded to X_1 or the carbon atom through the hetero atom of A_1; X_1 represents a divalent linkage group bonded to the carbon atom through the hetero group of X_1; and m and n each represents 0 or 1; wherein said compound of formula (I) is capable of releasing the light collecting dye by the addition of a nucleophilic agent to the unsaturated bond of the compound of formula (I) on photographic processing;

(1) the luminous quantum yield of the dye is at least 0.001 at room temperature at a concentration of 10^{-4} mole/dm^3 in dry gelatin, and

(2) the dye has a luminous zone at least partially overlapping with the optical adsorption zone of the adsorptive spectral sensitizing dye adsorbed in silver halide.

5,008,182

DETECTION OF AIDS ASSOCIATED VIRUS BY POLYMERASE CHAIN REACTION

John J. Sninsky, El Sobrante; Shirley Y. Kwok, San Ramon, and David H. Mack, Berkeley, all of Calif., assignors to Cetus Corporation, Emeryville, Calif.

Continuation of Ser. No. 935,581, Nov. 26, 1986, abandoned, which is a continuation-in-part of Ser. No. 818,127, Jan. 10, 1986, abandoned. This application Aug. 15, 1989, Ser. No. 394,276

Int. Cl.[5] C12Q *1/70, 1/68;* **G01N** *33/566;* **C07H** *15/12*

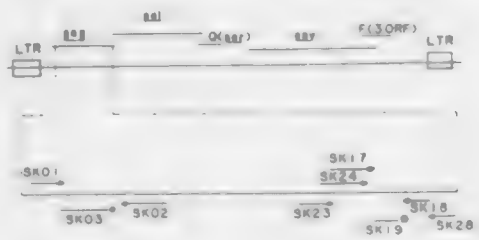
U.S. Cl. 435—5 **38 Claims**

1. A process for detecting or monitoring a nucleic acid sequence to the nucleic acids in AIDS viruses, which AIDS virus nucleic acid sequence is suspected of being contained in a sample, which process comprises:

(a) treating the sample with two oligonucleotide primers, four different nucleoside triphosphates, and an agent for polymerization, under hybridizing conditions, which primers are sufficiently complementary to substantially conserved regions among the nucleic acid sequences of AIDS viruses to hybridize therewith, such that for each

strand of the AIDS virus nucleic acid sequence an extension product of each primer is synthesized which is substantially complementary to a strand of the AIDS virus nucleic acid sequence being detected or monitored, such that the extension product synthesized from each primer, when separated from its complement, can serve as a template for syntheses of the extension product of the other primer;

(b) treating the sample under denaturing conditions to separate the primer extension products from their templates;



(c) treating the product of step (b) with oligonucleotide primers such that a primer extension product is synthesized using each of the single strands produced in step (b) as a template, resulting in amplification of the sequence specific to the nucleic acids in AIDS viruses.

(d) repeating steps (b) and (c) to synthesize detectable amounts of said AIDS virus nucleic acid sequence if present in said sample, providing an amplified nucleic acid sequence; and

(e) determining if amplification has occurred

5,008,183

ASSAY SYSTEM FOR DETECTING ANTIBODY AND A METHOD OF PRODUCING NON-HUMAN IMMUNE ANTIBODY

Kurt B. Osther, Dallas, Tex., assignor to Bio-Research Laboratories, Inc., Dallas, Tex.

Filed May 10, 1988, Ser. No. 192,241

Int. Cl.[5] G01N *33/569*

U.S. Cl. 435—5 **12 Claims**

1. In an assay for detecting the presence or absence of a human antibody which binds to an antigen of a virus or a bacteria, comprising the steps of:

(a) contacting a sample of the antigen with a test sample of human biological fluid for times and under conditions sufficient for the antigen and any antibody present in the human biological fluid to form antigen-antibody complexes;

(b) at the same time contacting another sample of the antigen with a positive control comprising a procine antibody to the antigen under the same times and conditions as in step (a), said times and conditions being sufficient for the antigen and the non-human antibody in the positive control to form antigen-antibody complexes; and

(c) detecting the formation of any antigen-antibody complexes in steps (a) and (b) by simultaneously contacting an anti-human antibody with any antigen-antibody complex as formed, for times and under conditions sufficient for any antigen-antibody complexes formed in step (a) and step (b) to react with the anti-human antibody.

5,008,184

KIT OR SYSTEM FOR DETECTING SIMA AND/OR LIMA ANTIGENS IN PHYSIOLOGICAL FLUID

Anthony W. Linnane, Camberwell, Australia, assignor to Mucan Diagnostics Pty. Ltd., Victoria, Australia

Division of Ser. No. 860,223, filed as PCT AU85/00136 on Jun. 21, 1985, published as WO86/00414 on Jan. 16, 1986, Pat. No. 4,818,682

This application Nov. 14, 1988, Ser. No. 270,765

Claims priority, application Australia, Jun. 25, 1984, PG5672

Int. Cl.[5] C12Q *1/00;* **G01N** *33/53*

U.S. Cl. 435—7.23 **4 Claims**

1. An in vitro diagnostic kit or system for detecting the presence in a patient of cancer cells or other cells producing mucin antigens by detecting the presence of SIMA and/or LIMA in a sample of a physiological fluid selected from the group consisting of blood, blood serum and blood plasma taken from the patient, said kit or system comprising a solid support having linked thereto at least one monoclonal antibody capable of immunoreaction with SIMA and/or LIMA in said sample, or fragments thereof, together with indicator means for indicating the presence of an immunoreaction between said antibody or antibodies, or fragments thereof, and the corresponding antigen(s) in said sample, said support allowing for the application of physiological fluid to be tested.

5,008,185

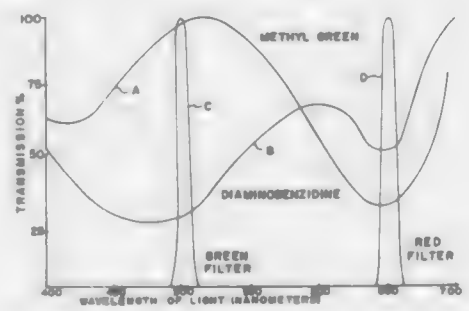
METHODS AND APPARATUS FOR THE QUANTITATION OF NUCLEAR PROTEINS

James W. Bacus, Hinsdale, Ill., assignor to Cell Analysis Systems, Inc., Lombard, Ill.

Continuation-in-part of Ser. No. 794,937, Nov. 4, 1985, Pat. No. 4,741,043. This application Oct. 6, 1987, Ser. No. 106,717

Int. Cl.[5] C12Q *1/00;* **G01N** *33/53*

U.S. Cl. 435—7.23 **32 Claims**



1. A method for measuring a nuclear antigen in a tissue sample containing cells with an immunohistochemical technique using an antibody to said nuclear antigen and a microscopic digital image measuring means, said method comprising the steps of:

staining the sample with an immunohistochemical technique to optically enhance and to stain nuclear antigens with a first spectral stain material which varies with the quantity of the nuclear antigen contained in the sample,

optically enhancing the sample with a second spectral stain material which optically enhances nuclear material in the cells,

measuring the optically-enhanced nuclear material with a microscopic digital image measuring means at a first wavelength range which allows identification of all of the enhanced nuclear material,

measuring the optically-enhanced antigen with the microscopic digital image measuring means at a second wavelength range which substantially excludes the optically-enhanced nuclear material, and

quantitating the nuclear antigen using the measurements made.

5,008,186

DETECTION OF UNIQUE CHLAMYDIA STRAIN ASSOCIATED WITH ACUTE RESPIRATORY DISEASE

J. Thomas Grayston; Cho-chou Kuo, both of Seattle, and San-pin Wang, Redmond, all of Wash., assignors to The Board of Regents of the University of Washington, Seattle, Wash.

Continuation of Ser. No. 281,913, Dec. 7, 1988, abandoned, which is a continuation of Ser. No. 858,380, May 1, 1986, abandoned. This application Apr. 30, 1990, Ser. No. 517,390

Int. Cl.[5] G01N *33/53, 33/566;* **C12N** *15/08;* **C07K** *15/28*

U.S. Cl. 435—7.36 **29 Claims**

7. A method for detecting the presence of the TWAR strain of chlamydia, *Chlamydia pneumoniae*, in a biological sample, comprising:

exposing a biological sample suspected of containing the TWAR strain to a monoclonal antibody specific for elementary bodies of the TWAR strain; and

detecting the presence of immunocomplexes formed between the monoclonal antibody and the TWAR strain.

5,008,187

ANTIFUNGAL FERMENTATION PRODUCT

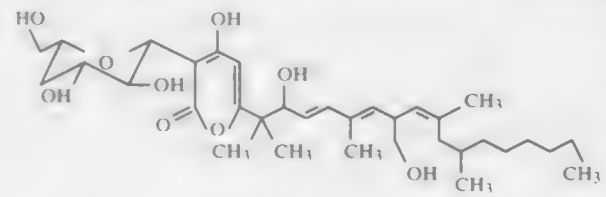
Louis Chaiet; Sheldon B. Zimmerman, both of Springfield; Richard L. Monaghan, Somerset, and George M. Garrity, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 1, 1988, Ser. No. 278,385

Int. Cl.[5] C12P *19/00, 17/00;* **A61K** *31/70;* **C13K** *13/00*

U.S. Cl. 435—72 **6 Claims**

1. An antifungal antibiotic compound having the formula



5,008,188

PROCESS FOR PRODUCING S-ADENOSYL-L-HOMOCYSTEINE

Hideaki Yamada; Yoshiki Tani; Sakayu Shimizu, all of Kyoto, and Shozo Shiozaki, Kawasaki, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 578,769, Feb. 9, 1984, abandoned. This application Nov. 4, 1987, Ser. No. 117,439

Claims priority, application Japan, Feb. 10, 1983, 58-28807

The portion of the term of this patent subsequent to Aug. 12, 2003, has been disclaimed.

Int. Cl.[5] C12P *14/40, 13/12, 19/18*

U.S. Cl. 435—88 **17 Claims**

1. A process for producing S-adenosyl-L-homocysteine, which comprises reacting adenosine with homocysteine by contacting them in an aqueous medium in the presence of cells, crushed cells or a cell-free extract of a microorganism having the ability to synthesize S-adenosyl-L-homocysteine from adenosine and homocysteine, wherein the microorganism is *Enterobacter cloacae* IFO 13535, *Streptoverticillium kentuchense* IFO 12880, *Micropolyspora angiospora* IFO 13155, or *Microellobospor violacea* IFO 12517, and collecting the synthesized S-adenosyl-L-homocysteine.

5,008,189

ENHANCED MEMBRANE SEPARATION OF MONOSACCHARIDES UTILIZING CONCENTRATION POLARIZATION

Anil R. Oroskar, Downers Grove, and James L. Johnson, Des Plaines, both of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 895,115, Aug. 11, 1986. This application Jun. 20, 1989, Ser. No. 369,433

Int. Cl.[5] C12P *19/02, 19/20;* **B01D** *61/00, 61/14*

U.S. Cl. 435—105 **13 Claims**

1. In the separation of monosaccharides from an aqueous stream containing a mixture of monosaccharides, disaccharides, trisaccharides, higher oligosaccharides, and a saccharifying enzyme by flowing the stream over a membrane through a channel and collecting the permeate enriched in monosaccharide, the improvement consisting of performing the separation under conditions where the flowing stream is characterized by a Reynolds number from about 20 to about 200 subject to the constraints that (1) the channel height is between about 0.02 and about 0.2 cm, and (2) the stream has a velocity between about 0.1 and about 2 feet per second.

5,008,190

METHOD FOR PRODUCTION OF L-PHENYLALANINE BY RECOMBINANT *E. COLI*

Sae Bae Lee; Chan H. Won; Chung Park, and Bun S. Lim, all of Seoul, Rep. of Korea, assignors to Miwon Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 13, 1987, Ser. No. 120,461

Claims priority, application Rep. of Korea, Mar. 26, 1987, 87-2816

Int. Cl.[5] C12P *13/22;* **C12N** *15/52, 1/21, 15/70*

U.S. Cl. 435—108 **13 Claims**

1. The *E. coli* MWPEC 13-60 (ATCC 67459) which has an optimum phenylalanine production capability at a temperature of 30° to 32° C.

5,008,191

MACROLIDE COMPOUNDS, THEIR PREPARATION AND THEIR USE

Takao Okazaki; Shuji Takahashi; Seigo Iwado, all of Tokyo; Keiji Tanaka, Shiga; Toshiaki Yanai, Shiga, and Hisaki Kajino, Shiga, all of Japan, assignors to Sankyo Company Limited, Tokyo, Japan

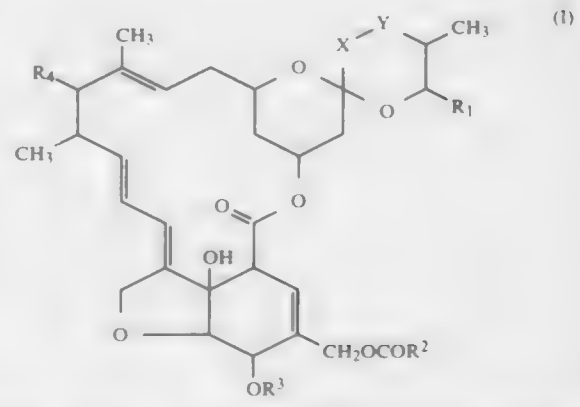
Filed Dec. 10, 1987, Ser. No. 131,413

Claims priority, application Japan, Dec. 11, 1986, 61-295452

Int. Cl.[5] C12P *17/08;* **C12N** *1/20;* **A61K** *31/335*

U.S. Cl. 435—124 **7 Claims**

1. A culture of *Streptomyces hygroscopicus* subsp *aureolacrimosus* SANK 60286 FERM BP-1190 which, when cultured, produces recoverable amounts of a compound of formula (I)



(I)

wherein X is CH_2; Y is CH_2; R^1 is methyl or ethyl; R^2 is isobutyl, 2-methyl-1-propenyl or 2-methyl-1-butenyl; and R^3 and R^4 are both hydrogen.

5,008,192

ENZYMATIC PROCESS FOR THE PREPARATION OF OPTICALLY ACTIVE CYANOHYDRINS

Uwe Neidermeyer, Walberberg; Udo Kragl, Juelich; Maria R. Kula, Hambach-Neiderzier; Christian Wandrey, Juelich; Kyriakos Makrylaleas, and Karlheinz Drauz, both of Freigericht, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Juelich GmbH, Juelich and Degussa Aktiengesellschaft, Frankfurt am Main, both of, Fed. Rep. of Germany

Filed Jan. 30, 1989, Ser. No. 303,336

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1988, 3802624; Jul. 14, 1988, 3823864

Int. Cl.[5] C12P *13/00*

U.S. Cl. 435—128 **27 Claims**

1. In a process for the preparation of an optically active (R)-cyanohydrin, which comprises the steps of reacting an aliphatic, aromatic or heteroaromatic aldehyde or ketone with hydrocyanic acid, in the presence of (R)-oxynitrilase and recovering resultant (R)-cyanohydrin, the improvement wherein said (R)-oxynitrilase is (R)-oxynitrilase (4.1.2.10) and the process is carried out in an aqueous medium, under acid conditions and at a temperature range of about −5° C. to +50° C. such that the amount of reactant undergoing a competing chemical reaction and racemization is significantly less than the amount of reactant undergoing the enzymatic synthesis, whereby said recovered resultant (R)-cyanohydrin has an improved optical purity.

5,008,193

ASCORBIC ACID INTERMEDIATES AND PROCESS ENZYMES

Stephen Anderson; David R. Light, both of San Mateo; Cara Marks, San Francisco, and William H. Rastetter, Rancho Santa Fe, all of Calif., assignors to Genentech, Inc., So. San Francisco, Calif.

Continuation-in-part of Ser. No. 620,585, Jun. 14, 1984, abandoned, which is a continuation-in-part of Ser. No. 508,410, Jun. 28, 1983, abandoned. This application May 21, 1987, Ser. No. 53,290

The portion of the term of this patent subsequent to Jul. 12, 2005, has been disclaimed.

Int. Cl.[5] C12P *7/60, 19/34;* **C12N** *9/04, 15/00, 1/00, 1/13*

U.S. Cl. 435—138 **12 Claims**

1. A process for converting glucose to 2-KLG which process comprises culturing in a medium containing glucose under suitable metabolic conditions, bacterial cells to which genetic material has been transferred wherein the transfer of said genetic material renders a bacterial host cell capable of converting glucose to 2,5-DKG but lacking the ability to convert 2,5-DKG to 2-KLG, capable of converting 2,5-DKG into 2-KLG.

5,008,194

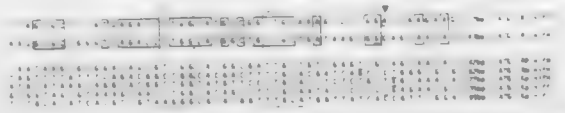
NIFH PROMOTERS OF BRADYRHIZOBIUM

Barry G. Rolfe, Curtin; John Shine, Sydney; Kieran F. Scott, Page, all of Australia, and Hauke Hennecke, Zurich, Switzerland, assignors to Lubrizol Genetics, Inc., Wickliffe, Ohio

Continuation-in-part of Ser. No. 618,439, Jun. 8, 1984, abandoned, and a continuation-in-part of Ser. No. 900,270, Aug. 26, 1986, abandoned, which is a continuation of Ser. No. 506,676, Jun. 22, 1983, abandoned. This application Oct. 16, 1987, Ser. No. 109,869

Int. Cl.[5] C12N *15/00;* **C12R** *1/41;* **C07H** *15/12*

U.S. Cl. 435—172.3 **7 Claims**



1. A method for expressing a foreign structural gene under control of a promoter capable of activating a nifH gene in a nodule selected from the group consisting of:

(1) the sequence of the Bradyrhizobium sp. (Parasponia) nifH promoters as follows:

5′ . . . CCG CGC AGA TCC TGT CCG GTG CAA ACC TCC

CTG GGG TAG CTC AGC GGC TCG TTG GCT TTT TAG

AGC GTA ATC AAG AAG CTT AAT AAG CGC GGA CAG

TGT TGG CAT GGC GAT TGC TGT TGA GTT GCA GCA

ACA CTG AGT GAG GGC TGG GTG CAC GCC GAC GCG

TAA GAC GAG CGA TGC GCT CCT TCC CTT GAA CCC

GTG TGC CCC GTT TCT GAG AGA GAA ACA AGC TCG

CGT GTC GGA AGC ACG CAA CTT TTG GCA AAT CGG

TTG ATG GAG AAC AAC ATG 3′ and

(2) the sequence of the *Bradyrhizobium japonicum* nifH regulatory region as follows.

5′ TTT GGC TGT TGG CGT TCA TGT TTG CGA TTG

TTT GTT CGT TGT CTG ACA GCC GGG CAG ATC TTG

TCA GAT CCA AAA CAG CCT ACG ATC GCG CGC CGG

CTG GTT GCT TTT GGA AAC GTA ATC AGA AGC TTA

AGG TGC CGG GTT AGA CCT TGG CAC GGC TGT TGC

TGA TAA GCG GCA GCA ACA CTG AGT GAG GGC TGA

GTG CAC GCC GAC GTG TAA GGC GAG CGA TGC GCT

CCT TCC CTT GAA CCC GTG TGC CCC CGT TTC TGC

GAG GGA AGC AAA GCT CGC AAA AGA AGC GCG CAA

CGT TTG GCA AAT CGG TTG ATG GAG AGC AGC 3′

which method comprises:

(a) introducing a DNA molecule comprising a foreign structural gene under control of said promoter into a rhizobial strain capable of forming nodules on a plant; and

(b) infecting a plant with said rhizobial strain wherein nodules are formed and expression of mRNA or protein coded by said foreign structural gene occurs within said nodules.

5,008,195

SOME NOVEL PRODUCERS OF CYCLODEXTRIN GLYCOSYLTRANSFERASES

Paul Allenza, Bartlett, Ill.; Christy G. Clifft, San Mateo, Calif., and Marie J. Morrell, Des Plaines, Ill., assignors to UOP, Des Plaines, Ill.

Filed Aug. 5, 1988, Ser. No. 228,411

Int. Cl.[5] C12N *9/10, 1/20, 1/00*

U.S. Cl. 435—193 **4 Claims**

4. A method of producing a cyclodextrin glycosyltransferase comprising growing aerobically Bacillus sp. NRRL B-18373, B-18374 or Pseudomonas sp. NRRL B-18375 in a medium containing an assimilable source of carbon, nitrogen, and mineral nutrients, at a temperature from about 20° to about 45° C., and recovering the cyclodextrin glycosyltransferase produced thereby.

5,008,196

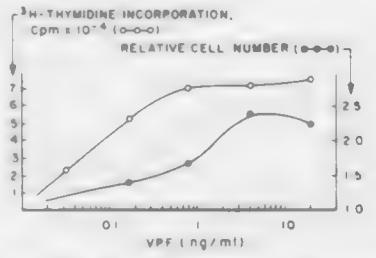
STIMULATION OF ENDOTHELIAL CELL GROWTH

Daniel T. Connolly, Manchester, and Joseph Feder, University City, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 21, 1987, Ser. No. 87,739

Int. Cl.[5] C12N *5/00;* **A61K** *37/00;* **C07K** *7/00*

U.S. Cl. 435—240.2 **1 Claim**



1. The method of stimulating endothelial cell growth in vitro comprising subjecting said cells to a growth stimulating amount of a highly purified vascular permeability factor having the following characteristics of guinea pig VPF:

(a) it has a M_r about 34,000–40,000 as determined by sodium dodecylsulfate polyacrylamide gel electrophoresis;

(b) it is a disulfide-linked protein dimer;

(c) it has a N-terminal amino acid sequence as follows:

1 5 10 15
AlaProMetAlaGluGlyGluGlnLysProArgGluValValLys

16 20 25 30
PheMetAspValTyrLysArgSerTyrCysArgProIleGluMet

31 35
LeuValAspIlePheGln; and

(d) it exhibits substantial mitogenic activity to endothelial cells in culture.

5,008,197

PROCESS AND A DEVICE FOR IMPROVED OXYGENATION OF BIOLOGICAL CULTURES

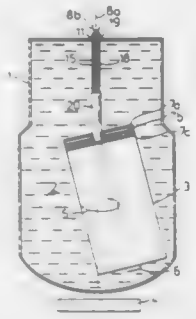
Ivar Wergeland, Granitvägen 19B, S-75243 Uppsala; Ingeborg C. Senstad, Ornevn. 51, N-1340 Bekkestua, both of Norway, and Eirik Nestaas, 70 High Rock Ter., Newton, Mass. 02167

Continuation of Ser. No. 758,667, Jul. 9, 1985, abandoned. This application Apr. 27, 1989, Ser. No. 343,662

Claims priority, application Sweden, Nov. 10, 1983, 8306190

Int. Cl.[5] C12N *5/02;* **C12M** *3/02*

U.S. Cl. 435—240.24 **9 Claims**



1 In a process for the oxygenation of biological cultures, comprising the steps of providing a liquid suspension of a biological culture in a closed reaction vessel and agitating said liquid suspension by means of a mechanical stirrer while supplying oxygen to said biological culture so as to promote the growth thereof, the improvement comprising supplying oxygen to said culture through at least one oxygen-permeable membrane carried by said stirrer, which is in direct contact with said liquid suspension.

5,008,198

MEROZOITE SURFACE GLYCOPROTEINS

Robert T. Reese, San Diego, and Harold A. Stanley, La Jolla, both of Calif., assignors to Scripps Clinic and Research Foundation, La Jolla, Calif.

Division of Ser. No. 650,810, Sep. 14, 1984, Pat. No. 4,835,259. This application May 30, 1989, Ser. No. 358,663

Int. Cl.[5] C12N *5/00;* **A61K** *35/14;* **C07K** *3/00, 13/00*

U.S. Cl. 435—240.27 **2 Claims**

1. A hybridoma cell line that produces monoclonal antibodies that bind to a merozoite surface glycoprotein of approximate molecular weight 56,000 that is present in the Geneva and FVO isolates of *Plasmodium falciparum*, said hybridoma cell line having the ATCC accession number HB 8938.

5,008,199

HYBRIDOMA CELL LINE AND MONOCLONAL ANTIBODIES TO *TREPONEMA DENTICOLA* ATCC 33520

Dou-Mei Wang, Randolph; Linda D. Sturdivant, East Orange; Thomas A. Biemer, Mine Hill, all of N.J., and Ronald Mink, Wilbraham, Mass., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Nov. 19, 1987, Ser. No. 123,014

Int. Cl.[5] C12N *5/00*

U.S. Cl. 435—240.27 **5 Claims**

1. A hybridoma cell-line capable of producing antibody IgG_3 to *Treponema denticola* TCC 33520, wherein the cell line is formed by fusing a nonsecreting mouse myeloma cell with a spleen cell from a mouse immunized with cell fragments of the spirochete Treponema denticola ATCC 33520.

5,008,200

PROPAGATING MULTIPLE WHOLE FERTILE PLANTS FROM IMMATURE LEGUMINOUS

Jerome P. Ranch, and Julie A. Buchheim, both of Champaign, Ill., assignors to United AgriSeeds, Inc., Savoy, Ill.

Continuation-in-part of Ser. No. 860,979, May 8, 1988, abandoned. This application May 23, 1988, Ser. No. 197,355

Int. Cl.[5] C12N *5/00*

U.S. Cl. 435—240.49 **23 Claims**

1. A method of producing seeds from multiple whole fertile plants, said method comprising the steps of:

(a) culturing aseptic cotyledonary tissue on a culturing media to form immature somatic embryos, said aseptic cotyledonary tissue being of Glycine max or Glycine soja or hybrid thereof, in the form of whole zygotic embryo with cotyledons 4 to 8 in length for Glycine max or hybrid and 1 to 4 mm in length for Glycine soja or in the form of cotyledons excised from said embryo or from derivation product of said cotyledonary tissue, said culture media comprising a synthetic auxin in a concentration of from about 20 to about 40 ppm, said synthetic auxin being selected from the group consisting of 2,4,5-trichlorophenoxyacetic acid, para-chlorophenoxyacetic acid, 2-methyl-4-chlorophenoxyacetic acid, and 2,4-dichlorophenoxyacetic acid; and

(b) incubating the immature somatic embryo isolated from a step (a) on a maturation medium for a length of time sufficient to reduce the water content of the somatic embryo by an amount effective to bring about an increased conversion vigor, said maturation medium comprising 6% to about 12% sucrose to foster development of the immature somatic embryos into mature somatic embryos possessing well-formed cotyledons and radicle.

5,008,201

SIMULATED HUMAN PLATELETS FROM RED BLOOD CELLS

Wayne L. Ryan, Omaha, Nebr., assignor to Streck Laboratories, Inc., Omaha, Nebr.

Filed May 24, 1990, Ser. No. 527,828
Int. Cl.[5] G01N *31/00, 33/48*
U.S. Cl. 436—10 5 Claims

1. A method of preparing lysable, blood platelet reference control comprising treating animal red blood cells larger than or within the size range of human blood platelets with a fixing agent for red blood cells for a time sufficient to partially rigidify the red blood cell membrane enabling dividing said shrunk red blood cells into distinct groups and shrinking to a permanently shrunk condition, subjecting said distinct groups of said partially fixed red blood cells to hemolysis with a hemolytic agent to partially remove hemoglobin therefrom, the hemolysis of each distinct group of cells removing a different amount of hemoglobin, subjecting the resulting red blood cells to centrifugation to collapse the red blood cell membrane around the hemoglobin remaining in said cells, said distinct group of cells and the extent of hemolysis being selected so as to provide after said centrifugation a mixture of permanently shrunken lysable cells that simulate in number, size and volume distribution the platelets present in human whole blood.

5,008,202

BLOOD DILUENT FOR RED BLOOD CELL ANALYSIS

Sherburne M. Edmondson, Sunnyvale, and Carlos E. Luna, Campbell, both of Calif., assignors to Sequoia Turner Corporation, Mountain View, Calif.

Filed Nov. 29, 1988, Ser. No. 277,334
Int. Cl.[5] G01N *31/00*
U.S. Cl. 436—18 6 Claims

1. A blood diluent useful in analysis of red blood cell number, and the enumeration of white blood cell populations and sub-populations in a whole blood sample, said diluent comprising an aqueous solution of:

(a) sodium sulfate;
(b) sodium chloride;
(c) 1, 3 dimethylurea;
(d) 1-hydroxypyridine-2-thione;
(e) EDTA;
(f) ADA Buffer; and,
(g) sodium hydroxide to obtain pH 6.9,

wherein said diluent is an electrolyte capable of conducting current, stabilizing red blood cell volumes and having no adverse effect on white blood cells.

5,008,203

METHOD FOR THE DETERMINATION OF OXYGEN DEMAND IN SULFUR RECOVERY INSTALLATIONS

Manfred Mathews, Bad Nauheim, Fed. Rep. of Germany, assignor to Ametek, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 629,172, Jul. 9, 1984, abandoned. This application Aug. 2, 1988, Ser. No. 227,772
Int. Cl.[5] G01N *35/00*
U.S. Cl. 436—55 2 Claims

1. In the method for the combustion of hydrogen sulfide containing gas mixtures for sulfur recovery and gas purification by burning the gas mixture in a furnace with oxygen, wherein the improvement comprises;

(1) continuously and rapidly predetermining and monitoring the oxygen demand of the gas mixture by continuously removing a sample of the gas mixture before being fed into the furnace and rapidly feeding the sample into a second test furnace with at least a stoichiometric amount of oxygen and completely burning the sample of the gas mixture;

(2) continuously analyzing the resulting burned sample gas mixture by passing the burned mixture into analysis instruments that measure the oxygen and sulfur dioxide content of the burned sample mixture, said instrument each generating an output signal;

(3) feeding the output signals to a computer which uses the output signals independently to calculate and generate an output signal indicative of the amount of oxygen needed for the burning of the gas mixture and



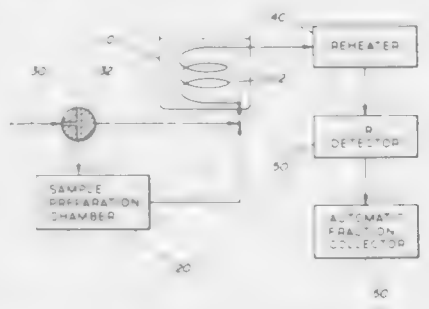
(4) controlling a regulator that feeds oxygen to the furnace for the burning of the gas mixture by having the regulator receive the output signal from the computer thereby accurately regulating the amount of oxygen being fed to the furnace for the complete combustion of the gas mixture.

5,008,204

METHOD FOR DETERMINING THE COMPOSITIONAL DISTRIBUTION OF A CRYSTALLINE COPOLYMER

Ferdinand C. Stehling, Baytown, Tex., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Filed Feb. 2, 1988, Ser. No. 151,350
Int. Cl.[5] G01N *25/00, 30/02, 31/02, 33/44*
U.S. Cl. 436—85 11 Claims



1. A method for determining the solubility distribution of a crystalline copolymer, comprising the steps of:

dissolving the copolymer in a solvent at elevated temperature;

filling a column with the solvent containing the dissolved copolymer;

crystallizing the copolymer within the column by reducing the temperature of the column to below ambient temperature;

passing pure solvent through the column at an increasing column temperature to gradually dissolve the copolymer; and

continuously measuring the concentration of the copolymer in the solvent exiting the column.

5,008,205

METHOD OF FACILITATING DETECTION OF AMINO ACID DERIVATIVES WITH ENHANCED SENSITIVITY

Marcus J. Horn, Arlington, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 10, 1988, Ser. No. 230,580
Int. Cl.[5] G01N *33/68*
U.S. Cl. 436—89 14 Claims

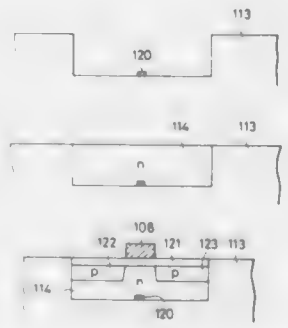
1. A method of enhancing the detectability of an amino acid in order to facilitate identification, comprising the steps of converting the amino acid to a 5-thiazolinone amino acid derivative and reacting the derivative with a mixture of an anhydrous acid and an alcohol to primarily produce a thiocarbamyl amino acid ester.

5,008,206

METHOD FOR MAKING A PHOTOELECTRIC CONVERSION DEVICE USING AN AMORPHOUS NUCLEATION SITE

Mahito Shinohara, Tokyo, and Takao Yonehara, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 70,777, Jul. 7, 1987, abandoned. This application May 24, 1989, Ser. No. 357,635
Claims priority, application Japan, Jul. 11, 1986, 61-162128
Int. Cl.[5] H01L *21/20, 31/18*
U.S. Cl. 437—3 6 Claims



1. A method for forming a photoelectric conversion apparatus comprising a semiconductor substrate provided with a photoresponsive transistor, the photoresponsive transistor having an emitter region, a collector region, and a base region, the base region being allowed to float to store therein photo-excited carriers; the method comprising the steps of:

forming an electrically insulating layer disposed on said semiconductor substrate;

forming an amorphous nucleation surface on the electrically insulating layer, wherein the nucleation surface has a nucleation density larger than that of the surface of the electrically insulating layer;

forming a semiconductor region corresponding to the nucleation surface by a vapor deposition, wherein the nucleation surface is sufficiently fine to permit the semiconductor region to be formed as a single crystal; and

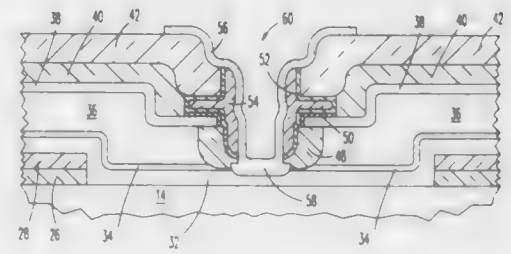
forming a semiconductor switching means within the semiconductor region for setting a potential of the base region at a predetermined level.

5,008,207

METHOD OF FABRICATING A NARROW BASE TRANSISTOR

Jeffrey L. Blouse, Stanfordville; Inge G. Fulton, Washingtonville; Russell C. Lange, Newburgh; Bernard S. Meyerson, Yorktown Heights; Karen A. Nummy, Newburgh; Martin Revitz, Poughkeepsie, and Robert Rosenberg, Peekskill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 11, 1989, Ser. No. 405,508
Int. Cl.[5] H01L *21/00*
U.S. Cl. 437—31 33 Claims



27. A method of forming a vertical bipolar transistor comprising the steps of:

providing a substrate of semiconductor material including a first device region of a first conductivity type;

forming a first layer of second conductivity type epitaxial semiconductor material over said first device region;

forming a second layer of second conductivity type epitaxial semiconductor material over said first layer, said second layer having a relatively higher dopant concentration than said first layer;

forming a third layer of protective material over said second layer;

etching said third layer to expose a portion of said second layer;

oxidizing the exposed portion of said second layer through to said first layer;

removing the oxidized portion of said second layer to expose a portion of said first layer;

forming a spacer of insulating material on the exposed edge of said second layer;

forming a second region of said first conductivity type in the surface of said exposed portion of said first layer; and

heating said substrate to drive dopant from the remaining portions of said second layer into said first layer;

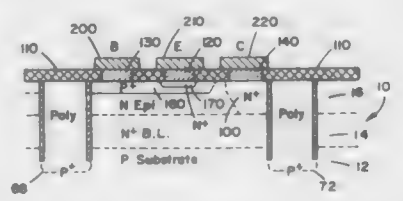
whereby to form a vertical bipolar transistor.

5,008,208

METHOD OF MAKING PLANARIZED, SELF-ALIGNED BIPOLAR INTEGRATED CIRCUITS

Michael S. Liu, Bloomington, and Huang-Joung Chen, Maple Grove, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 7, 1988, Ser. No. 281,195
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—31 17 Claims



1. A method of making a bipolar integrated circuit structure comprising the steps of:

(a) forming three implantation openings in a layer of insulat-

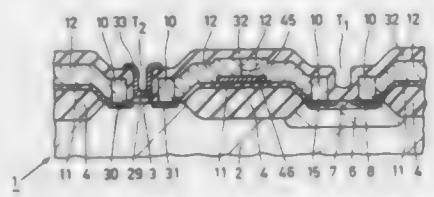
ing material on the upper surface of a semiconductor substrate;
(b) selectively forming a polysilicon layer in each implantation opening formed in the insulating material layer by selective epitaxial growth;
(c) implanting into each polysilicon-filled opening a doping material capable of diffusing into the substrate material below each said polysilicon-filled opening; and
(d) etching the upper surface of each polysilicon-filled opening formed in the insulating material layer such that the upper surface of the semiconductor structure is substantially planarized.

5,008,209

A METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE INCLUDING OUTDIFFUSION FROM POLYSILICON RIMS

Johannes A. Appels, and Henricus G. R. Maas, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 828,076, Feb. 3, 1986, abandoned, which is a continuation of Ser. No. 447,845, Dec. 8, 1982, abandoned. This application Jan. 10, 1990, Ser. No. 463,183
Claims priority, application Netherlands, Dec. 31, 1981, 8105920
Int. Cl.[5] H01L *21/225*
U.S. Cl. 437—31 **6 Claims**



1. A method of manufacturing a semiconductor device of a bipolar transistor characterized in that the starting member is a semiconductor body comprising an insulating layer which is present on a surface and in which at least an opening is provided while a layer pattern is formed which extends at least as far as an edge of the opening, whereupon at least at the area of the opening a layer is provided on the semiconductor body and on the layer pattern consisting of a material which is subjected impurities in the semiconductor body determining the first conductivity type diffuse through another part of the rim into the semiconductor body in order to form an emitter zone.

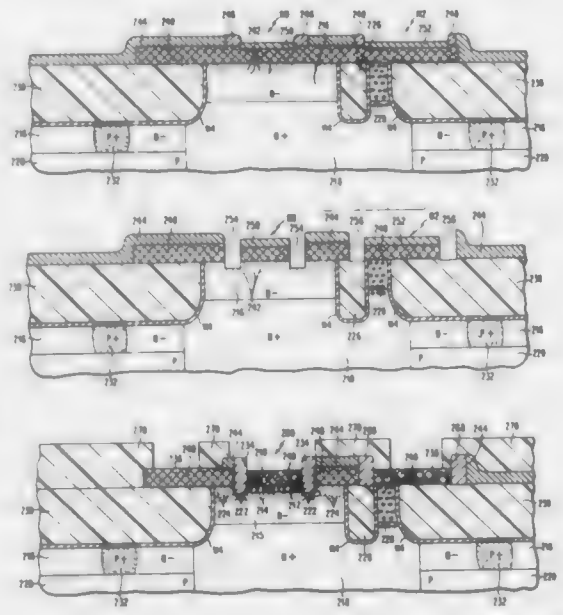
5,008,210

PROCESS OF MAKING A BIPOLAR TRANSISTOR WITH A TRENCH-ISOLATED EMITTER

Shang-yi Chiang, Walnut Creek; Wen-Ling M. Huang, Milpitas; Clifford I. Drowley, and Paul V. Voorde, both of Mountain View, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 307,876, Feb. 7, 1989. This application Apr. 18, 1990, Ser. No. 510,637
Int. Cl.[5] H01L *21/331*
U.S. Cl. 437—33 **7 Claims**

5. A method for fabricating a self-aligned, trench-isolated emitter structure which comprises a portion of a bipolar transistor, wherein said emitter structure is formed upon a semiconductor substrate region comprising at least one epitaxial layer, wherein at least the lower portion of said epitaxial layer is doped to serve as a collector for said bipolar transistor, and wherein the upper portion of said epitaxial layer is doped to serve as a base for said bipolar transistor, said base being divided into a relatively lightly-doped intrinsic base adjacent to said emitter structure and a relatively heavily-doped extrinsic base isolated from said emitter structure by a dielectric-filled trench, said method comprising the steps of:
(a) forming a first layer of conductive material over said semiconductor substrate region;
(b) implanting a base-type dopant into said first layer of conductive material;
(c) driving said base-type dopant into said epitaxial layer directly underlaying said first layer of conductive material so that said base-type dopant is adjacent to the portion of said epitaxial layer which serves as said collector;
(d) depositing a thin layer of silicon nitride over the surface of said layer of conductive material;
(e) depositing a second layer of conductive material over said layer of silicon nitride;
(f1) depositing a dielectric material upon said second layer of conductive material;
(f2) forming an aperture in said dielectric material over an area surrounded by an intended extrinsic base area, said aperture having a sidewall;
(f3) forming a sidewall spacer structure surrounding an intended emitter area and positioned upon the surface of said layer of conductive material, said sidewall spacer structure being formed on said sidewall;



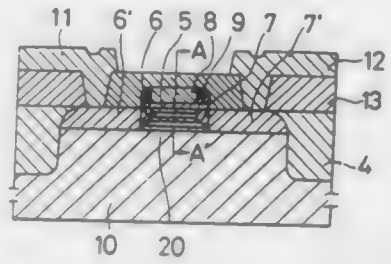
(g) creating an etch-masking layer on the portion of said conductive material surrounded by said sidewall spacer;
(h) removing said sidewall spacer structure;
(i) etching an isolation trench at the location previously occupied by said sidewall spacer structure, wherein said isolation trench extends through said second layer of conductive material, said silicon nitride layer, said first layer of conductive material, and into said portion of said epitaxial layer containing said base-type dopant, but does not extend substantially into the portion of said epitaxial layer which serves as said collector;
(j) introducing additional base-type dopant into the epilayer portion at the bottom of said isolation trench in a manner which leaves a portion of said epitaxial layer which serves as said collector essentially intact;
(k) depositing a dielectric material so as to fill said isolation trench;
(l) removing all material overlaying said first layer of conductive material surrounded by said isolation trench; and
(m) introducing an emitter dopant into said first layer of conductive material and into the upper portion of said epitaxial layer which underlays said first layer of conductive material so that a layer of emitter dopant overlays a layer of base-type dopant, forming said bipolar transistor emitter.

5,008,211

METHOD FOR FORMING FET WITH A SUPER LATTICE CHANNEL

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 260,721, Oct. 21, 1988, abandoned, which is a division of Ser. No. 102,841, Sep. 30, 1987, abandoned. This application Sep. 14, 1989, Ser. No. 406,859
Claims priority, application Japan, Oct. 8, 1986, 61-240544; Oct. 8, 1986, 61-240545; Oct. 8, 1986, 61-240546
Int. Cl.[5] H01L *21/268, 21/335*
U.S. Cl. 437—40 **3 Claims**



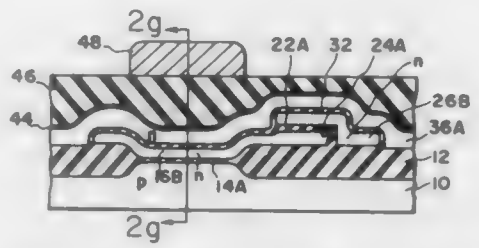
1. A method of manufacturing an insulated gate field effect transistor comprising:
forming silicon semsiconductor films and silicon compound films selected from the group consisting of Si_3N_{4-x} $(0<x<4)$, $SiO_{2-x}(0<x<2)$, and $Si_xC_{1-x}(0<x<1)$, said silicon semiconductor and silicon compound films being alternatively formed into a superlattice on a substrate be virtue of a photo CVD method where the superlattice is formed as the channel region;
forming a gate insulating film on said superlattice;
forming a gate electrode on said gate insulating film;
forming a source region and drain region adjacent to said superlattice; and
exposing said superlattice to light in order to selectively crystallize said semiconductor films to increase carrier mobility.

5,008,212

SELECTIVE ASPERITY DEFINITION TECHNIQUE SUITABLE FOR USE IN FABRICATING FLOATING-GATE TRANSISTOR

Teh-yi J. Chen, 22409 St. Andrews Ave., Cupertino, Calif. 95014

Filed Dec. 12, 1988, Ser. No. 283,340
Int. Cl.[5] H01L *21/265, 21/70*
U.S. Cl. 437—43 **20 Claims**



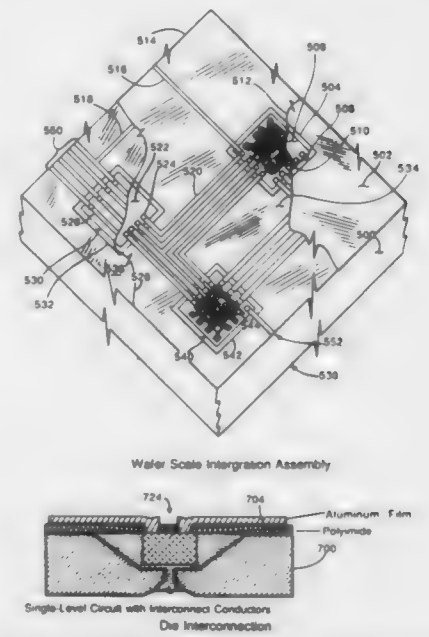
1. A method in which a first patterned layer of nonmonocrystalline semiconductor material is created on a substructure along its upper surface, characterized by the steps of:
performing a thermal oxidation to grow a main electrically insulating layer of oxide along the first patterned layer in such a way that the upper lateral edge of the remainder of the first patterned layer forms an asperity that protrudes outward, the thickness of the insulating layer along the asperity being less than the average thickness of the insulating layer;
forming a blanket layer over the insulating layer and over adjoining material of the substructure; and
selectively etching the blanket, insulating, and patterned layers with a primary etchant that attacks the material of the blanket and patterned layers more than the material of the insulating layer in order to remove (1) substantially the entire thickness of a specified section of the blanket layer located above the first patterned layer, (2) at least part of the underlying exposed section of the insulating layer including the portion located along the upper surface of the underlying part of the asperity, and (3) largely all of the underlying part of the asperity, whereby the remainder of the blanket layer forms a second patterned layer located above the remainder of the asperity.

5,008,213

HYBRID WAFER SCALE MICROCIRCUIT INTEGRATION

Edward S. Kolesar, Jr., Beavercreek, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 282,423, Dec. 9, 1988, abandoned. This application Apr. 13, 1990, Ser. No. 511,475
Int. Cl.[5] H01L *21/56, 21/60, 21/82*
U.S. Cl. 437—51 **20 Claims**



1. The method of fabricating a wafer scale integration multiple die integrated circuit comprising the steps of:
etching die receptacle wells into the planar top surface of a polished oxide coated semiconductor wafer, said receptacle wells each having a bottom area, sloping sidewall surfaces and rim portions;
depositing uncured liquid adhesive material in the bottom area of each said receptacle well;
inserting integrated circuit die having top, sidewall, and backside surfaces into said receptacle wells and said uncured adhesive resident therein to form a wafer and die assembly;
rotating said wafer and inserted die assembly into an inverted, top surface down, position wherein said liquid adhesive material is resident around said sidewall and backside surfaces of each said die;

aligning the inverted top surfaces of said die and wafer into a planar condition wherein the inverted die top surface and wafer top surface rest against a flat planar tooling member; and

applying adhesive flow promoting and cure promoting elevated temperature to the inverted wafer and die assembly to encourage adhesive flow downward into the space between die sidewall and receptacle well sidewall surfaces, and the curing of said adhesive into a solidified mass conforming with the die and receptacle well surfaces and with the surface of said flat planar tooling member.

5,008,214

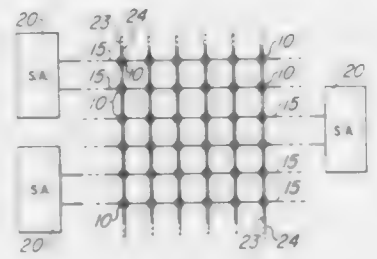
METHOD OF MAKING CROSSPOINT DYNAMIC RAM CELL ARRAY WITH OVERLAPPING WORDLINES AND FOLDED BITLINES

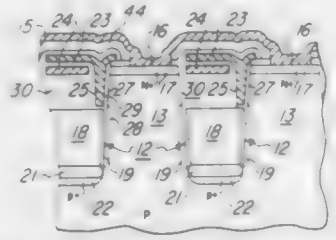
Donald J. Redwine, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 274,164, Nov. 21, 1988, abandoned, which is a division of Ser. No. 201,812, Jun. 3, 1988, abandoned. This application Jul. 21, 1989, Ser. No. 384,858

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—52 **26 Claims**





7. A method of forming first and second adjacent memory cells in a device comprising an array of memory cells created along a semiconductor surface wherein the first and second cells includes a storage capacitor and an access transistor, the method comprising the steps of:

forming a plurality of bit lines and a plurality of pairs of overlapping word lines with each overlapping pair crossing the bit lines;

creating a plurality of memory cells each positioned near a crossing of a bit line and a word line pair, for electrical association with a bit line and a word line, forming rows and columns of cells, each row of cells being positioned for electrical association with a word line pair and each memory cell comprising a transistor having a channel region and a gate for controlling conduction through the channel region; and

alternately connecting each word line of a first one of said pairs to gates of alternate transistors in a first one of said rows to effect electrical association of said first word line pair with said first row of cells.

5,008,215

PROCESS FOR PREPARING HIGH SENSITIVITY SEMICONDUCTIVE MAGNETORESISTANCE ELEMENT

Dain J. Chen; Guey F. Chi, and Ying C. Yeh, all of Chutung, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jul. 7, 1989, Ser. No. 377,248

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—83 **6 Claims**



1. A process for preparing high sensitivity indium antimonide film magnetoresistance element comprising:

(1) forming a layer of silicon oxide on the surface of a silicon single crystal wafer by oxidizing the surface of said wafer under elevated temperature;

(2) growing a layer of indium antimonide film on the surface of said layer of silicon oxide, the indium to antimony weight ratio in said layer of indium antimonide film being from 0.8 to 2.0, and

(3) annealing said layer of indium antimonide film by a two-stage annealing treatment comprising a first stage carried out in a first protective atmosphere containing from 1 to 5 weight percent of oxygen and a second stage carried out in a second protective atmosphere containing essentially no oxygen, whereby a protective oxide layer is formed on the surface of said layer of indium antimonide film and evenly distributed fine needle-like indium precipitates are formed within said layer of indium antimonide film.

5,008,216

PROCESS FOR IMPROVED CONTACT STUD STRUCTURE FOR SEMICONDUCTOR DEVICES

Hung-Chang W. Huang, San Jose, Calif., and Paul A. Totta, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 252,836, Oct. 3, 1988, abandoned. This application Dec. 11, 1989, Ser. No. 448,484

Int. Cl.[5] H01L *21/90, 21/44*

U.S. Cl. 437—192 **17 Claims**

1. A process for making a contact stud structure for the connection of semiconductor device components formed in a substrate to the wiring for interconnecting said device components to other device components comprising:

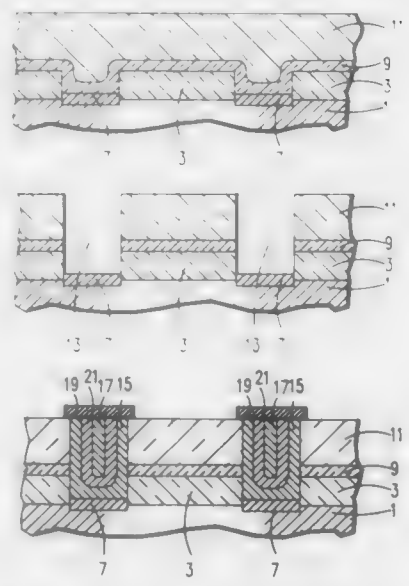
(a) depositing an insulator material having an etch-stop layer on said device substrate,

(b) forming at least one opening in said insulator material and said etch-stop layer at said device component locations,

(c) depositing a first metal layer in said opening of said insulating layer and said etch-stop layer, said first metal layer being reactive with said substrate and adhesive thereto and lining said opening in said insulator and said etch-stop layer,

(d) depositing a second metal layer conformally onto said first metal layer,

(e) depositing a third metal layer conformally onto said second metal layer and filling said opening in said insulator layer and thereby forming said contact stud, and



(f) wherein said second and third metal layers being selected from the group comprising refractory metals.

5,008,217

PROCESS FOR FABRICATING INTEGRATED CIRCUITS HAVING SHALLOW JUNCTIONS

Christopher J. Case, New Providence; Kin P. Cheung, Hoboken; Ruichen Liu; Ronald J. Schutz, both of Warren, and Richard S. Wagner, Bernardsville, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 8, 1990, Ser. No. 534,772

Int. Cl.[5] H01L *21/441*

U.S. Cl. 437—195 **6 Claims**

1. A process for fabricating a device comprising the steps of forming active regions of said device, forming a dielectric over said active regions, forming windows through said dielectric, electrically contacting said active region through said windows, and forming a metal pattern on said dielectric characterized in that a nucleation layer is formed between said dielectric and said metal pattern and said electrical contact and said metal for said metal pattern is deposited by chemical vapor deposition with a triisobutyl aluminum precursor wherein said nucleation layer comprises a material whose composition produces coverage by aluminum grains larger than 0.15 μm of at least 97.5% of said nucleating material surface before said aluminum has an average thickness of 120 Å.

5,008,218

METHOD FOR FABRICATING A THIN FILM TRANSISTOR USING A SILICIDE AS AN ETCH MASK

Genshiro Kawachi, Hitachi; Akio Mimura, Katsuta; Nobutake Konishi, Hitachiota; Kikuo Ono, and Takashi Suzuki, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 18, 1989, Ser. No. 408,729

Claims priority, application Japan, Sep. 20, 1988, 63-233425

Int. Cl.[5] H01L *21/44*

U.S. Cl. 437—201 **14 Claims**

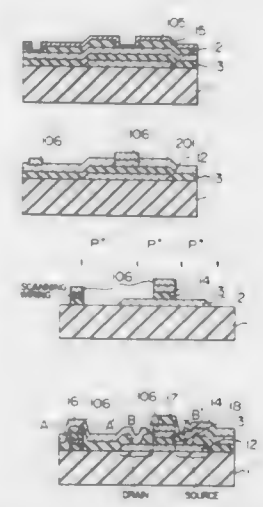
1. A method of fabricating an active matrix substrate comprising the steps of:

(a) forming an island region of a first semiconductor film on a prescribed insulating substrate;

(b) forming a first insulating film and a second semiconductor film on said first insulating film;

(c) forming a second insulating film on said second semiconductor film and thereafter forming a prescribed pattern of the second insulating film;

(d) depositing prescribed metal on the pattern and thereafter forming a compound of the second semiconductor film and the metal;



(e) removing unreacted portion of the metal and the second insulating film, and

(f) etching said second semiconductor film and said first insulating film using said compound as a mask.

5,008,219

PROCESS FOR PRODUCING GLASS

Koichi A. Hara, Ome, Japan, assignor to Hoya Corporation, Tokyo, Japan

Filed Dec. 11, 1989, Ser. No. 448,283

Claims priority, application Japan, Dec. 26, 1988, 63-326365

Int. Cl.[5] C03C *3/04*

U.S. Cl. 501—12 **4 Claims**

1. A process for producing a glass, comprising:

(a) hydrolyzing a metal alkoxide selected from the group consisting of silicon, aluminum, titanium and zirconium in the presence of an organic solvent and an aqueous ammonia solution to obtain a sol solution,

(b) concentrating the sol solution to 1.00–1.95 times the volume of the metal alkoxide used,

(c) adding a hydrofluoric or hydrosilicofluoric acid catalyst to the resulting concentrate to allow the concentrate to gel,

(d) drying the resulting gel, and

(e) heating the dried gel to obtain the desired glass.

5,008,220

BIOLOGICAL SUPPORT

Alan J. Brown, Milledgeville, Ga.; Roger James, Cornwall, and Nigel P. Glasson, Dorset, both of United Kingdom, assignors to ECC International Limited, United Kingdom

Filed Feb. 15, 1989, Ser. No. 311,221

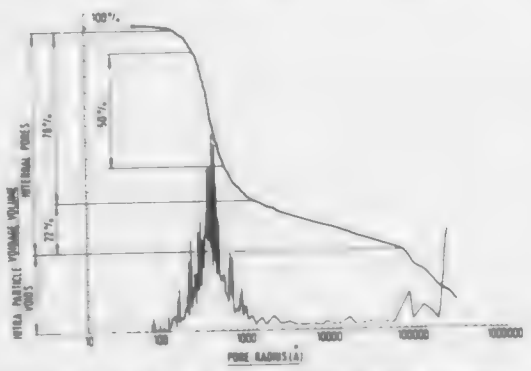
Claims priority, application United Kingdom, Feb. 15, 1988, 8803413

Int. Cl.[5] C04B *38/06*

U.S. Cl. 501—81 **20 Claims**

1. A process for preparing a porous inorganic material suitable for use as a support for immobilising biological macromolecules, which process comprises: (a) calcining a kaolinitic clay in which there is distributed from 5% to 25%, by weight of the clay, of a carbonaceous material having a particle size no greater than about 1000 Å, at a temperature and for a time such that a substantial portion of the kaolinitic clay is converted to porous, defect aluminium-silicon spinel without appreciable

formation of mullite, the spinel having an interconnecting array of pores predominantly in the size range of from about



100 to about 1000 Å; and (b) recovering said porous defect aluminium-silicon spinel without further calcination.

5,008,221

HIGH TOUGHNESS CERAMIC ALLOYS

Thomas D. Ketcham, Big Flats, N.Y., assignor to Corning Incorporated, Corning, N.Y.

Continuation of Ser. No. 926,655, Nov. 4, 1986, abandoned, which is a continuation of Ser. No. 812,469, Dec. 23, 1985, abandoned, which is a continuation-in-part of Ser. No. 722,229, Apr. 11, 1985, abandoned. This application Jun. 12, 1990, Ser. No. 537,499

Int. Cl.[5] C04B *35/48*

U.S. Cl. 501—103 **11 Claims**

1. A ceramic alloy consisting essentially of at least one member selected from the group consisting of partially stabilized ZrO_2, partially stabilized ZrO_2-HfO_2 solid solution, and partially stabilized HfO_2 exhibiting high toughness through the inclusion of 0.5–5 mole %, as expressed on the oxide basis, of a toughening agent selected from the group of $YNbO_4$ and/or $YTaO_4$ and/or $MNbO_4$ and/or $MTaO_4$, wherein M represents Mg^{+2}, Ca^{+2}, Sc^{+2}, and/or a rare earth metal selected from the group consisting of La^{+3}, Ce^{+4}, Ce^{+3}, Pr^{+3}, Nd^{+3}, Sm^{+3}, Eu^{+3}, Gd^{+3}, Tb^{+3}, Dy^{+3}, Ho^{+3}, Er^{+3}, Tm^{+3}, Yb^{+3}, and Lu^{+3} which are substituted for Y^{+3}, one $+3$ cation being substituted for one Y^{+3} cation, three $+2$ cations being substituted for two Y^{+3} cations, three $+4$ cations for four Y^{+3} cations, in which said partial stabilization is produced through the inclusion of 1.1–4.5 mole % stabilizer where the amount of toughening agent is between 0.5–4.4 mole % and of 0.6–4.5 mole % stabilizer where the amount of toughening agent is between 4.4–5 mole %, the microstructure of said alloy consisting predominantly of crystals having a tetragonal structure.

5,008,222

ALUMINUM TITANATE CERAMIC SINTERED BODY

Tsuneji Kameda, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 31, 1989, Ser. No. 330,920

Claims priority, application Japan, Mar. 31, 1988, 63-76130

Int. Cl.[5] C04B *35/46*

U.S. Cl. 501—134 **9 Claims**

1. A ceramic sintered body having a thermal variation in length (L) of less than 0.33% and a Young's Modulus of not less than 1,600 kg/mm^2 produced by sintering 1 to 10 weight % of magnesium oxide, 0.5 to 10 weight % of silicon oxide, the remainder being substantially aluminum titanate having a mean particle diameter of from 0.6μm to 8μm, wherein the thermal variation in length is defined as $(l_{max}-l_{min})/l_0$, expressed as a percentage, where the original length of the sample is l_0, its maximum length when heated from 20° C. to 1,000° C. is l_{max}, and its minimum length is l_{min}.

5,008,223

GRAYISH-BLACK ENCAPSULATED PIGMENTS AND METHOD OF THEIR PRODUCTION

Dietrich Speer, Hanau; Akos Kiss, Wasserlos; Peter Kleinschmit, Hanau, and Juergen Hanich, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 2, 1990, Ser. No. 487,295

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1989, 3906818

Int. Cl.[5] C09C *1/62, 1/48*

U.S. Cl. 106—450 **8 Claims**

1. An encapsulated pigment ranging in color from gray to black consisting essentially of a transparent crystal of zirconium silicate into which colored compounds are encapsulated as a discrete phase, said colored compound being carbon black particles with a specific surface area (according to BET) of 10 to 1000 m^2/g.

5,008,224

ADSORBENT FOR PHOSPHORUS AND METHOD FOR PRODUCTION OF ADSORBENT FOR PHOSPHORUS

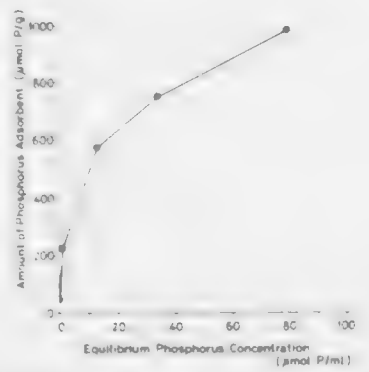
Eiji Watanabe, Inokoshi; Nasakazu Horio, Konan, and Kenzi Suzuki, Aichi, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Jun. 30, 1989, Ser. No. 373,587

Claims priority, application Japan, Jul. 7, 1988, 63-169920

Int. Cl.[5] B01J *20/12, 20/16;* **C02F** *1/28*

U.S. Cl. 502—63 **4 Claims**



1. A phosphorus adsorbent consisting essentially of a fired product obtained by comminuting volcanic ash, adding 0.6 to 1.5 part by weight, based on part by weight of the comminuted volcanic ash, of clay and water to the comminuted volcanic ash to obtain a mixture, and firing the mixture at a temperature in the range of 100° to 900° C.;

said fired product consisting substantially of alumino-silicate;

said aluminosilicate consisting essentially of at least 20% by weight of Al_2O_3, at least 40% by weight of SiO_2 and at least 1% by weight of Fe_2O_3.

5,008,225

CATALYTIC DEHYDROHALOGENATION CATALYST

Angelo J. Magistro, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 72,324, Jul. 13, 1987, abandoned, Division of Ser. No. 613,551, May 24, 1984, abandoned. This application Jun. 27, 1989, Ser. No. 372,589

Int. Cl.[5] B01J *27/10, 29/06*

U.S. Cl. 502—73 **8 Claims**

1. A dehydrohalogenation catalyst comprising from about 0.1% to about 30% by weight based on the total weight of the catalyst of at least one rare earth metal chloride deposited on a solid synthetic zeolite having a pore opening of at least 5A.

5. The catalyst of claim 1 wherein the catalyst additionally contains about 5% by weight of an alkali and/or alkaline earth metal oxide or chloride.

5,008,226

PROCESS FOR MAKING ACID ACTIVATED BLEACHING EARTH USING HIGH SUSCEPTIBILITY SOURCE CLAY AND NOVEL BLEACHING EARTH PRODUCT

Dennis R. Taylor, Willoughby Hills, Ohio, and Charles B. Ungermann, Livermore, Calif., assignors to Engelhard Corporation, Iselin, N.J.

Filed May 16, 1989, Ser. No. 352,578

Int. Cl.[5] B01J *21/16, 20/12*

U.S. Cl. 502—81 **25 Claims**

16. A method for producing bleaching earth from naturally-occurring mixture of attapulgite and bentonite clays in which the attapulgite content is from 10% to 90% by weight, said clay mixture having a slurry pH in the range of at least 5 and below 7 and a pore volume in the range of 0.25–0.35 cc/gm, mixing said clay with a solution of sulfuric acid in amount corresponding to an acid dosage in the range of 1 to 10% by weight, heating said mixture to react said clay with said acid and, without washing the resulting reaction product, recovering it for use as a bleaching earth.

5,008,227

PROCESS FOR MAKING ACID ACTIVATED BLEACHING EARTH USING HIGH SUSCEPTIBILITY SOURCE CLAY AND NOVEL BLEACHING EARTH PRODUCT

Dennis R. Taylor, Willoughby Hills, Ohio, and Charles B. Ungermann, Livermore, Calif., assignors to Engelhard Corporation, Iselin, N.J.

Filed May 16, 1989, Ser. No. 352,790

Int. Cl.[5] B01J *20/12, 20/30*

U.S. Cl. 502—83 **9 Claims**

1. A method for producing bleaching earth which comprises selecting a naturally-occurring acidic attapulgite clay having a pH in the range of 5 to 7 and a pore volume in the range of 0.25–0.50 cc/gm, mixing said clay with an acid solution in amount corresponding to an acid dosage in the range of 10 to 30%, heating said mixture at a temperature in the range of 77° to 220° F. to react said clay with said acid and, without washing the resulting reaction product, recovering it for use as a bleaching earth.

8. The method of claim 1 wherein said acid is sulfuric.

9. The bleaching earth product obtained by the method of claim 1.

5,008,228

METHOD FOR PREPARING A SILICA GEL SUPPORTED METALLOCENE-ALUMOXANE CATALYST

Main Chang, Houston, Tex., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Filed Mar. 29, 1988, Ser. No. 174,668

The portion of the term of this patent subsequent to Feb. 27, 2007, has been disclaimed.

Int. Cl.[5] C08F *4/648*

U.S. Cl. 502—111 **10 Claims**

1. A process for preparing a supported metallocene alumoxane catalyst for polymerization of olefins, comprising the steps of:

(a) adding a water-impregnated catalyst support to a stirred solution of an aluminum trialkyl in an amount sufficient to provide a mole ratio of aluminum trialkyl to water of from about 10:1 to about 1:1 and allowing the mixture to react; and

(b) adding a metallocene of a Group 4b or 5b transition metal to the reacted mixture in an amount sufficient to provide on said catalyst support a mole ratio of aluminum to transition metal of from about 1000:1 to about 1:1.

5,008,229

COMPOSITIONS CONTAINING PHOSPHONITRILE CHLORIDES

Johann Schuster, Emmerting; Martin Piehler, Mehring; Horst Müller, Emmerting, and Otto Schneider, Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 7, 1989, Ser. No. 447,325

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1989, 3903137

Int. Cl.[5] B01J *31/18*

U.S. Cl. 502—167 **8 Claims**

1. A composition which will accelerate the condensation and/or equilibration of organosiloxanes which comprises phosphonitrile chloride and/or reaction products of phosphonitrile chloride and organosiloxanes, a halogen-free organic solvent and a solubilizer.

5,008,230

CATALYST FOR PREPARING HIGH CLARITY, COLORLESS POLYETHYLENE TEREPHTHALATE

Carl S. Nichols, Charlotte, N.C., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed May 22, 1989, Ser. No. 355,534

Int. Cl.[5] B01J *23/78, 23/80, 23/84*

U.S. Cl. 502—170 **11 Claims**

1. A terephthalic acid catalyst composition for making polyethylene terephthalate from terephthalic acid comprising:

(a) a first metal catalyst of at least one of cobalt and zinc, said first metal catalyst being present in a range of from about 5 to about 60 ppm;

(b) a second metal catalyst of at least one of zinc, manganese, magnesium and calcium, said second metal catalyst being present in a range of from about 10 to about 150 ppm; and

(c) antimony, being present in a range of from about 150 to 650 ppm; wherein said first metal catalyst, said second metal catalyst, and said antimony amounts are based on the theoretical yield of polyethylene terephthalate and result in a measurable increase in the rate of said terephthalic acid polymerization without causing degradation of said polyethylene terephthalate.

5,008,231

HEAT SENSITIVE RECORDING MATERIAL

Katsuaki Yoshizawa, Amagasaki, and Yoshitaka Oeda, Ikoma, both of Japan, assignors to Kanzaki Paper Manufacturing Company Limited, Tokyo, Japan

Filed May 25, 1989, Ser. No. 356,950

Claims priority, application Japan, May 31, 1988, 63-134808

Int. Cl.[5] B41M *5/18*

U.S. Cl. 503—207 **14 Claims**

1. A heat-sensitive recording material comprising a support; a heat-sensitive recording layer formed over the support and containing a color forming material, a color developing material which forms a color on contact with the color forming material and a pigment which is about 80 to about 400 ml/100 g in oil absorption according to JIS K 5101 and about 3 to about 15 μm in average particle size; and an overcoat layer formed over the heat-sensitive recording layer and comprising a binder and a pigment, wherein the pigment is used in an amount of about 0.5 to about 3.0 parts by weight per part by weight of the binder and the coating amount of the overcoat layer is about 0.3 to about 2.0 g/m^2 on dry basis.

5,008,232

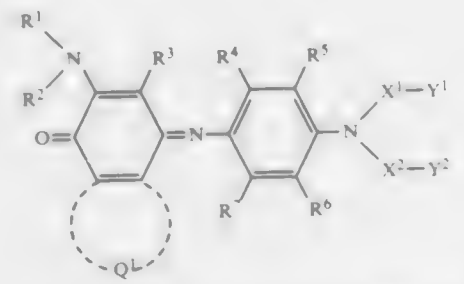
THERMAL TRANSFER DYE DONATING MATERIAL

Mitsugu Tanaka, and Seiiti Kubodera, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Tokyo, Japan

Filed Jan. 8, 1990, Ser. No. 461,893
Claims priority, application Japan, Jan. 9, 1989, 1-2468
Int. Cl.[5] B41M *5/035, 5/26*
U.S. Cl. 503—227 10 Claims

1. A thermal transfer dye donating material comprising a color material layer formed on a support, said color material layer containing a binder resin or a wax, and a dye represented by the general formula (I) below:

(I)



wherein Q^1 is an atomic group having at least one nitrogen atom and forming a five- to seven-membered nitrogen-containing heterocycle together with the carbon atoms to be bonded; R^1 is an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, an aminocarbonyl group, or a sulfonyl group; R^2 is a hydrogen atom or an alkyl group; R^3 to R^7 are independently a hydrogen atom, an alkyl group, an alkoxy group, or a halogen atom; X^1 and X^2 are independently an alkylene group; Y^1 is an alkoxy group, a halogen atom, an acylamino group, an alkoxycarbonyl group, an alkoxycarbonyloxy group, a cyano group, an alkoxycarbonylamino group, an aminocarbonylamino group, a carbamoyl group, an acyloxy group, an acyl group or a hydroxy group; Y^2 is a hydrogen atom or groups defined above as Y^1.

5,008,233

NOVEL CRYSTALLINE SILICON ENHANCED ALUMINAS

Susan L. Lambert, Rolling Meadows, Ill., assignor to UOP, Des Plaines, Ill.

Filed Sep. 7, 1989, Ser. No. 404,550
Int. Cl.[5] B01J *21/12, 27/12*
U.S. Cl. 502—231 15 Claims

1. A non-homogeneous crystalline silicon enhanced alumina (SEAL) having a bulk empirical formula of $Al_{2-x}Si_xO_3F_x$ where x varies from about 0.01 to about 0.5, the SEAL characterized in that it has a three-dimensional pore structure with the pores having diameters in the range of about 20 to about 300 Å, has a crystal structure characteristic of alumina and where the surface of the SEAL has a higher concentration of silicon than the interior of the SEAL.

7. A process for preparing a non-homogeous crystalline silicon enhanced alumina (SEAL) having a bulk empirical formula of $Al_{2-x}Si_xO_3F_x$ where x varies from about 0.01 to about 0.5 comprising contacting a crystalline alumina with a solution of a fluorosilicate salt at a temperature and for a time effective to produce a SEAL having a three-dimensional pore structure with the pores having diameters in the range of about 20 to about 300 Å, having a crystal structure characteristic of the crystalline alumina, and where the surface of the SEAL has a higher concentration of silicon than the interior of the SEAL.

5,008,234

PROCESS FOR THE PREPARATION OF CATALYTIC METAL CLUSTERS

Geoffrey A. Ozin, Toronto; Helmut X. Huber, Etobicoke; Richard A. Prokopowicz, and John Godber, both of Toronto, all of Canada, assignors to Her Majesty the Queen in the Right of Canada, as Represented by the Minister of Energy Mines and Resources Canada, Ottawa, Canada

Filed Jan. 13, 1989, Ser. No. 296,689
Claims priority, application Canada, Jun. 17, 1988, 569838
Int. Cl.[5] B01J *23/42, 23/89*
U.S. Cl. 502—326 8 Claims

1. A process of preparing catalyst compositions comprising at least one metal in monatomic or small cluster form, surface deposited on or in a support, which comprises:

vaporizing metal at low temperature and pressure in the presence of ethylene gas and gaseous solvent, to form a solvent stabilized metal-ethylene complex;

solidifying said stabilized complex;

warming the solid complex to liquid phase, removing excess ethylene, and impregnating a solid support with the solvent stabilized metal ethylene complex in the liquid phase, to deposit the complex on the support surface; and

removing solvent, decomposing the complex and forming monatomic or small cluster metal deposits on the support

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5,008,235

CATALYSTS OF CU-AL-THIRD METAL FOR HYDROGENATION

Richard W. Wegman, and David R. Bryant, both of South Charleston, W. Va., assignors to Union Carbide Chemicals and Plastics Technology Corporation, Danbury, Conn.

Filed Dec. 21, 1989, Ser. No. 454,456
Int. Cl.[5] B01J *21/04, 21/06, 23/02, 23/72*
U.S. Cl. 502—342 1 Claim

1. A reduced catalyst composition comprising copper, aluminum, and a metal, X, selected from the group consisting of magnesium, zinc, titanium, and mixtures thereof; made by a process comprising:

reducing a mixture of the oxides of copper, aluminum, and X by heating in the presence of a reducing gas under activating conditions which comprise gradually increasing the temperature from an initial temperature of about 50° C. to a final temperature of about 180° C. at a rate of about 3° C. to about 6° C. per hour.

5,008,236

HEAT-SENSITIVE RECORDING MATERIAL

Yoshiyuki Takahashi, Kawasaki; Kunitaka Toyofuku, Sakura, and Akiko Iwasaki, Urawa, all of Japan, assignors to Oji Paper Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1989, Ser. No. 458,191
Claims priority, application Japan, Apr. 5, 1989, 1-84788
Int. Cl.[5] B41M *5/18*
U.S. Cl. 503—209 6 Claims

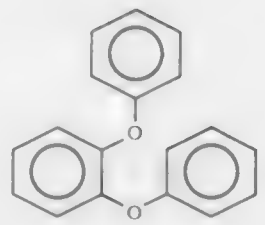
1. A heat-resistive recording material comprising:

a substrate sheet, and

a heat sensitive color-forming layer formed on at least one surface of the substrate sheet and comprising a substantially colorless dye precursor, a color-developing agent reactive with the dye precursor upon heating to develop a color, and a binder,

said heat-sensitive color-forming layer further comprising a sensitizing agent consisting essentially of 1,2-diphenoxybenzene of the formula (I):

(I)



5,008,237

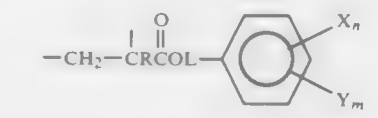
VINYL DEVELOPER RESINS

Rong-Chang Liang, Centerville; Karl A. Kintz, Kettering; Joseph G. O'Connor, and Paul C. Adair, both of Springboro, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

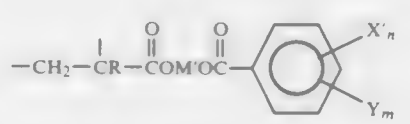
Continuation of Ser. No. 86,059, Aug. 14, 1987. This application Mar. 14, 1989, Ser. No. 323,571
The portion of the term of this patent subsequent to Oct. 31, 2006, has been disclaimed.
Int. Cl.[5] B41M *5/22;* G03C *1/68*
U.S. Cl. 503—212 23 Claims

1. A developer sheet comprising a support having a layer of a color developer on the surface thereof, said color developer being a microparticle capable of reacting with a substantially colorless electron donating color former to produce a color image and being a polymer having a repeating unit of formulae (I), (II) or (III)

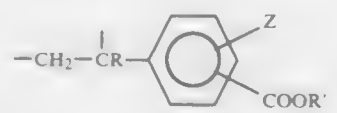
(I)



(II)



(III)

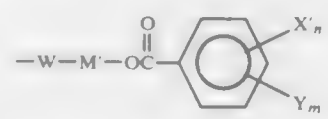


where R is a hydrogen atom or a methyl group;

L is a direct bond or a spacer group;

X is —OH, —COOH, —OM, COOR′ or a group of the formula (IV):

(IV)



Y is an alkyl group, an aryl group, or an aralkyl group;

X′ is —OH, —COOH, —OM, or —COOR′;

W is —O— or

Z is —OH or a hydrogen atom;

M is a metal atom;

M′ is a divalent metal atom;

R′ is a hydrogen atom, an alkyl group, or a metal atom as defined for M;

n is 1 or 2 and when n is 2, x or X′ may be the same or different;

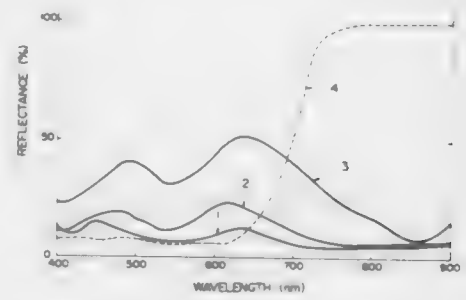
m is 0, 1, or 2 and when m is 2; Y may be the same or different.

5,008,238

LEUCO DYES AND RECORDING MATERIAL EMPLOYING THE SAME

Hiroshi Gotoh, Fuji; Shigeru Kusakata, Susono, and Isao Shiojima, Mishima, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

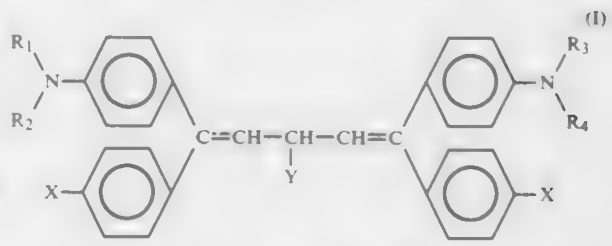
Filed Jun. 19, 1989, Ser. No. 367,684
Claims priority, application Japan, Jun. 20, 1988, 63-151964; Sep. 6, 1988, 63-223780; Sep. 16, 1988, 63-231785; Sep. 21, 1988, 63-234836
Int. Cl.[5] B41M *5/16, 5/18, 5/22*
U.S. Cl. 503—217 14 Claims



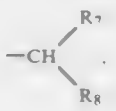
1. A recording material comprising:

a substrate and a recording layer formed thereon, said recording layer comprising a leuco dye of the formula (I):

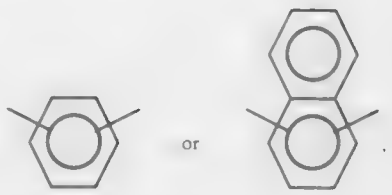
(I)



wherein R_1, R_2, R_3 and R_4 each represent an alkyl group having 1 to 10 carbon atoms; X represents hydrogen, an alkyl group having 1 to 10 carbon atoms, an alkoxyl group having 1 to 10 carbon atoms or a halogen; and Y represents R_5—Z—SO_2NH—, R_6—ZCONH—, or



in which Z represents



R_5 and R_6 each represent hydrogen, an alkyl group having 1 to 10 carbon atoms, or a halogen; R_7 and R_8 each represent hydrogen, a cyano group, or —COR_9, in which R_9

represents a lower alkyl group, a lower alkoxyl group, or a phenyl group which may be substituted by an alkyl group having 1 to 4 carbon atoms, and alkoxyl group having 1 to 4 carbon atoms, or a halogen; or R_6 is a naphthyl group which may be substituted by an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms or a halogen; with the proviso that R_7 and R_8 are not both hydrogen.

5,008,239

TRANSFER PRINTING OF NATURAL AND NATURAL/SYNTHETIC FIBRES

Henry Donenfeld, Brighton, and Eduard Lemanis, East Keilor, both of Australia, assignors to BASF Australia Ltd., Melbourne, Australia

Filed Aug. 22, 1988, Ser. No. 235,041
Claims priority, application Australia, Aug. 21, 1987, P13886
Int. Cl.[4] B41M *5/035, 5/26*
U.S. Cl. 503—227 25 Claims

1. A method of transfer printing an image onto natural or natural/synthetic blend fibres comprising the steps of:

(a) applying a disperse dyestuff in the form of an image to a temporary support, and applying a transfer agent comprising an aqueous dispersion of a powder selected from the group consisting of:
(1) a polyurethane powder;
(2) a copolyester powder;
(3) a polyamide powder;
(4) a copolyamide powder; and
(5) mixtures thereof
to the temporary support, thereby forming a dyestuff image- and transfer agent-carrying support,

(b) drying the dyestuff image- and transfer agent-carrying support to form a dried support; and

(c) transferring the dyestuff image and the transfer agent together from the dried support onto the fibres

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5,008,240

METHOD OF TREATING INFLAMMATION

Hanne Bentz, Palo Alto; Larry Ellingsworth, San Jose, and Rosa Armstrong, Palo Alto, all of Calif., assignors to Collagen Corporation, Palo Alto, Calif.

Continuation of Ser. No. 836,672, Mar. 6, 1986, Pat. No. 4,806,523, which is a continuation-in-part of Ser. No. 763,337, Aug. 6, 1985, abandoned. This application Aug. 9, 1988, Ser. No. 230,330
The portion of the term of this patent subsequent to Feb. 21, 2006, has been disclaimed.
Int. Cl.[5] A61K *37/02*
U.S. Cl. 514—2 21 Claims

1. A method of treating a patient for the alleviation of a symptom or manifestation of a disease resulting in inflammation comprising administering an anti-inflammatorily effective amount of a protein having the amino acid sequence of cartilage inducing factor A or B or TGF-β or a functional equivalent thereof to the patient wherein any functional equivalent is a substantially homologous protein with the cartilage inducing factor protein A or B or TGF-β and wherein differences in sequences between the cartilage inducing factor protein A or B or TGF-β and any substantially homologous protein does not affect the anti-inflammatory activity of the cartilage inducing factor adversely.

5,008,241

NOVEL INSULIN PEPTIDES

Jan Markussen, Herlev; Kjeld Norris, Hellerup, and Liselotte Langkjaer, Klampenborg, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Continuation of Ser. No. 75,550, Jul. 20, 1987, abandoned, which is a continuation-in-part of Ser. No. 838,472, Mar. 11, 1986, abandoned. This application Oct. 20, 1989, Ser. No. 424,503
Claims priority, application Denmark, Mar. 12, 1985, 1135/85; Mar. 10, 1986, 1070/86; Jul. 21, 1986, 3470/86; Feb. 25, 1987, 0948/87
The portion of the term of this patent subsequent to Aug. 7, 2007, has been disclaimed.
Int. Cl.[5] A61K *37/26;* C07K *7/40, 7/42*
U.S. Cl. 514—3 10 Claims

10. An aqueous solution of a human insulin analog having an amino acid residue at A21, selected from the group consisting of Glu, Asp, Lys, Arg, His, Val, Gln, Ile, Phe, Tyr, Met, Gly, Ser, Thr, Ala, Leu, Trp and hSer, wherein at least one of the amino acid residues at A4, A17, B13, and B21 is a neutral amino acid reside selected from the group consisting of Gly, Val, Ile, Leu, Phe, Tyr, Met, Asn, Gln, Ala, Ser and Thr, wherein the B27 amino acid residue is Lys or Arg and wherein the C-terminal carboxyl group of the B-chain is amidated at a pH value of 2.5-5.8 and containing therein zinc ions in a concentration from 5 μg to 200 μg zinc per ml with the proviso that the insulin analog has at least one charge more than human insulin at a pH value of 7.

5,008,242

TREATMENT OF INFLAMMATION USING 1-ANTICHYMOTRYPSIN

John Lezdey, 976 Kingston Dr., Cherry Hill, N.J. 08034, and Allan Wachter, 9822 S. Grandview, Tempe, Ariz. 85284

Continuation-in-part of Ser. No. 181,707, Apr. 14, 1989, abandoned, and a continuation-in-part of Ser. No. 242,735, Sep. 9, 1988, abandoned, which is a continuation-in-part of Ser. No. 946,445, Dec. 24, 1986, abandoned. This application Dec. 4, 1989, Ser. No. 445,005
Int. Cl.[5] A61K *37/64*
U.S. Cl. 514—8 13 Claims

1. A method for topically treating inflammation in a human afflicted with an inflammatory condition which comprises administering to said human alpha 1-antichymotrypsin topically in an amount sufficient to inhibit human skin mast cell chymase.

5,008,243

PHARMACEUTICAL COMPOSITION CONTAINING A GLYCOPROTEIN

Masanori Ikuzawa; Yoshiharu Oguchi; Kenichi Matsunaga, all of Tokyo; Noriyuki Toyoda, Sagamihara; Takao Furusho, Tokyo; Takayoshi Fujii, Tokyo, and Chikao Yoshikumi, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 898,900, Aug. 22, 1986, Pat. No. 4,820,689, which is a continuation of Ser. No. 637,831, Aug. 6, 1984, abandoned. This application Dec. 16, 1988, Ser. No. 285,664
Claims priority, application Japan, Aug. 11, 1983, 58-147231; Aug. 11, 1983, 58-147232; Aug. 11, 1983, 58-147233; Aug. 11, 1983, 58-147234; Aug. 11, 1983, 58-147235; Aug. 11, 1983, 58-147236; Aug. 11, 1983, 58-147237; Aug. 11, 1983, 58-147238; Aug. 11, 1983, 58-147239; Aug. 11, 1983, 58-147240; Aug. 11, 1983, 58-147241
Int. Cl.[5] A61K *37/02*
U.S. Cl. 514—8 13 Claims

1. A method for increasing or decreasing the production or metabolism of prostaglandins in a human, which comprises: administering to a human in need thereof a prostaglandin increasing or decreasing effective amount of glycoprotein having a molecular weight of 5000 to 300,000, as determined by ultra-centrifugation and 18 to 38% by weight of proteins, produced by:

(a) culturing a basidiomycetous fungal species belonging to the genus Coriolus;

(b) extracting the thus proliferated mycelia or fruit bodies with hot water or an aqueous alkaline solution; and

(c) removing low molecular weight substances having a molecular weight of less than 5000 from the extract.

5,008,244

METHOD FOR INCREASING FERTILITY IN ANIMALS

Lindy F. Miller, West Terre Haute, and Peter J. Thomford, Terre Haute, both of Ind., assignors to Pitman-Moore, Inc., Lake Forest, Ill.

Filed May 15, 1989, Ser. No. 352,010
Int. Cl.[5] A61K *37/02*
U.S. Cl. 514—12 20 Claims

1. A method for increasing fertility in a food producing animal selected from the bovine, porcine or ovine species, comprising:

administering a fertility increasing amount of somatotropin to said animal in the finishing stage of growth thereby increasing embryonic survival and litter size during the reproductive stage of growth.

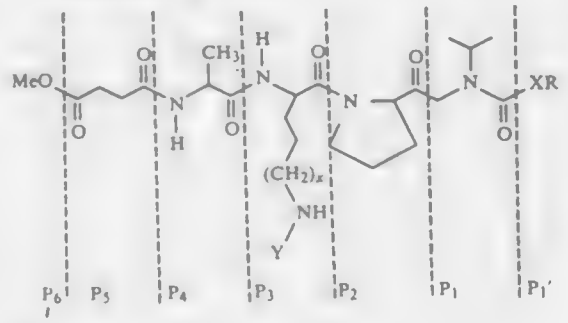
5,008,245

NOVEL PEPTIDYL CARBAMATE INHIBITORS OF THE ENZYME ELASTASE

George A. Digenis, Lexington, Ky., and Bushra J. Agha, Nanuet, N.Y., assignors to University of Kentucky Research Foundation, Lexington, Ky.

Filed Oct. 27, 1988, Ser. No. 263,385
Int. Cl.[5] A61K *37/64;* C07K *5/08*
U.S. Cl. 514—18 19 Claims

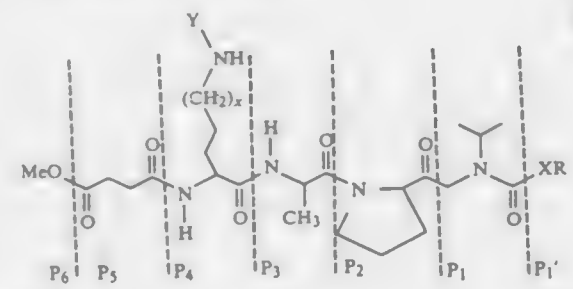
1. A compound selected from the group consisting of a compound of the formula



(I)

and

a compound of the formula

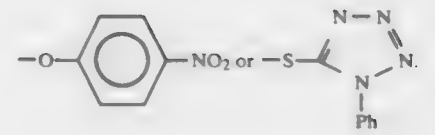


(II)

wherein

x is 1 or 2;

Y is carbobenzoxy or benzoyl; and XR is



5,008,246

PEPTIDES SUPPRESSING THE FUNCTION OF THE IMMUNE SYSTEM, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND PROCESS FOR PREPARING SAME

Istvan Schön; Olga Nyeki; Lajos Kisfaludy, deceased, late of Budapest by Maria Kisfaludy, Marta Kisfaludy, Andras Kisfaludy, legal heirs ; Laszlo Denes; György Hajos, and Laszlo Szporny, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar R. T., Budapest, Hungary

Filed Jun. 13, 1989, Ser. No. 365,457
Claims priority, application Hungary, Jun. 14, 1988, 3037/88
Int. Cl.[5] A61K *37/02;* C07K *5/08, 5/10*
U.S. Cl. 514—18 9 Claims

1. A peptide of the formulae (1) to (16) D-Arg-Lys-D-Asp,

D—Arg—Lys—D—Asp,	(1)
Arg—D—Lys—Asp,	(2)
D—Arg—D—Lys—D—Asp,	(3)
Arg—D—Lys—D—Asp,	(4)
D—Arg—Lys—Asp,	(5)
D—Arg—D—Lys—Asp,	(6)
Arg—Lys—D—Asp,	(7)
Arg—Lys—D—Asp—Val,	(8)
Arg—Lys—Asp—D—Val,	(9)
D—Arg—Lys—Asp—Val,	(10)
Arg—D—Lys—Asp—Val,	(11)
Lys(Arg)—Asp,	(12)
Lys(Arg)—D—Asp	(13)
Arg—Lys(Arg)—Asp,	(14)
Arg—Lys—Asp(Val),	(15)
Arg—Lys—D—Asp(Val)	(16)

or a pharmaceutically acceptable acid addition salt thereof suppressing the function of the immune system.

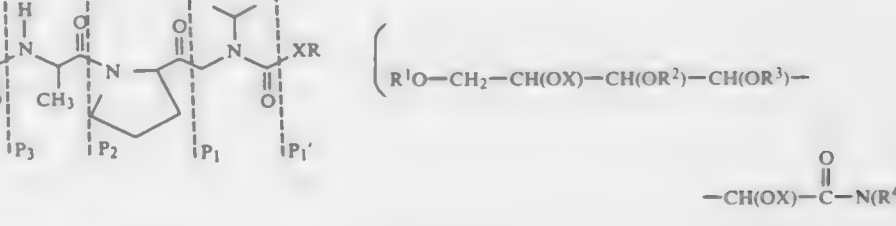
5,008,247

POLYSULFURIC ACID ESTERS OF BIS-ALDONAMIDES AND THEIR DERIVATIVES, PROCESS FOR THEIR PREPARATION AND MEDICAMENTS

Eike Meinetsberger, Munich, Fed. Rep. of Germany, assignor to Luitpold-Werk Chemisch-pharmazeutische Fabrik GmbH & Co., Munich, Fed. Rep. of Germany

Filed Oct. 12, 1988, Ser. No. 256,624
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1987, 3734815
Int. Cl.[5] C07H *15/04, 15/18, 11/00;* A61K *31/72*
U.S. Cl. 514—23 17 Claims

1. Polysulfuric acid exters of bisaldonamides an their derivatives of the formula (I):

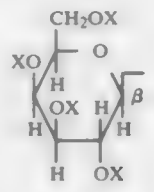


(I)

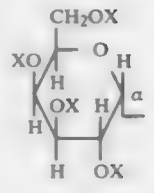
in which either

all radicals R^1, R^2 and R^3 independently of one another represent X, or

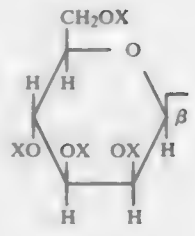
two of the radicals R^1, R^2 and R^3 stand for X, and the third stands for a radical of the formulae (II) to (VII),



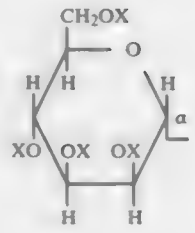
(II)



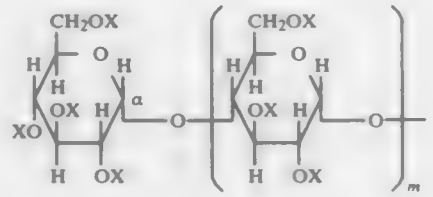
(III)



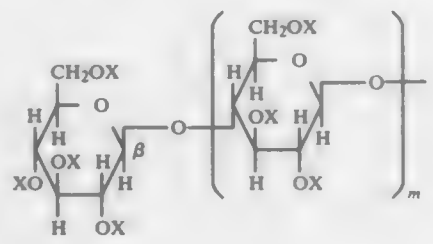
(IV)



(V)



(VI)



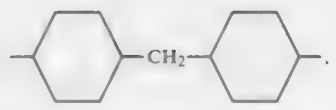
(VII)

wherein

X in the formulae (I) to (VII) represents independently a hydrogen atom or the group $—SO_3H$, wherein at least one X represents the group $—SO_3H$, m stands for 0, 1, 2, 3, 4, 5 or 6,

A in formula (I) represents a straight-chain or branched, saturated alkylene radical having 2 to 22 carbon atoms which is unsubstituted or substituted by one or more radicals $—CO_2R^5$,

or A stands for a single bond or the radical



R^4 and R^5 independently represent a hydrogen atom or a C_1–C_6-alkyl radical, and their salts of inorganic or organic bases.

17. Medicaments, containing one or more compounds of the formula (I), as claimed in claims 1 or 2, and pharmaceutically acceptable excipients and auxiliaries.

5,008,248

VETERINARY COMPOSITIONS FOR THE TREATMENT OF SCOURS AND DEHYDRATION

Robert J. Bywater, and Robert J. Dupe, both of Surrey, England, assignors to Beecham Group p.l.c., Epsom, England

Continuation of Ser. No. 930,498, Nov. 14, 1986, abandoned. This application Jan. 30, 1990, Ser. No. 474,635

Claims priority, application United Kingdom, Nov. 18, 1985, 8528307; Mar. 7, 1986, 8605689

Int. Cl.[5] A61K *31/195, 31/70*

U.S. Cl. 514—23 **14 Claims**

1. A veterinary composition, comprising by weight:

75–85% of an actively absorbed monosaccharide,

3.5–5% of an actively absorbed naturally occurring amino acid,

1–3% of a buffering agent,

5–10% of an electrolyte, and

5–10% of one or more citrate salts, said composition not containing any citric acid that is not in the form of a salt.

11. A method of treating diarrhoea in domestic animals, which method comprises administering to the animal suffering from diarrhoea a therapeutically effective amount of the composition as defined in claim 1 dissolved in an aqueous medium.

12. A method of treating hypoglycaemia associated with ovine or bovine ketosis, which method comprises administering to the animal suffering therefrom a therapeutically effective amount of the composition as defined in claim 1 dissolved in an aqueous medium.

5,008,249

THERAPEUTIC METHOD OF STIMULATING DIGESTIVE TRACT CONTRACTILE MOTION IN MAMMALS

Satoshi Omura, Tokyo, and Zen Itoh, Maebashi, both of Japan, assignors to Kitasato Kenkyusho, Tokyo, Japan

Filed Aug. 25, 1986, Ser. No. 899,985

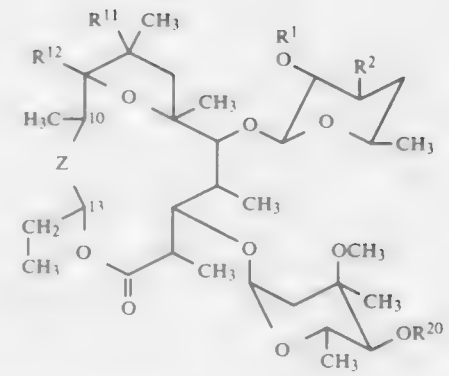
Claims priority, application Japan, Aug. 31, 1985, 60-190958; Feb. 28, 1986, 61-41413; May 31, 1986, 61-124739

The portion of the term of this patent subsequent to Jun. 30, 2004, has been disclaimed.

Int. Cl.[5] A61K *31/70*

U.S. Cl. 514—29 **14 Claims**

1. A therapeutic method of stimulating digestive tract contractile motion in mammals which comprises administering orally or non-orally to mammals in need of such treatment an effective amount of a digestive tract contractile motion stimulant composition comprising a pharmaceutically acceptable carrier and an effective digestive contractile motion stimulating amount of a compound having the formula:



wherein R^1 is selected from the group consisting of:

a hydrogen atom,

an acyl radical of C_{1-5} aliphatic carboxylic acid,

a C_{6-12} aroyl radical,

a C_{1-6} alkylsulfonyl radical,

a C_{2-12} dialkyloxyphosphoryl radical, and

a C_{12-24} diaryloxyphosphoryl radical;

R^2 is selected from the group consisting of:

a hydrogen atom,

a C_{1-6} alkanoyl radical which may be substituted by C_{1-3} alkoxycarbonyl radical,

a C_{6-12} aroyl radical,

a C_{1-6} alkylsulfonyl radical,

a C_{6-12} arylsulfonyl radical,

a C_{7-20} aralkylsulfonyl radical, and

a C_{1-3} alkyl radical which may be substituted by C_{2-6} alkoxy radical;

wherein Z stands for the formula:



where in R^5 is selected from the group consisting of:

a hydrogen atom,

a C_{1-6} alkanoyl radical,

a C_{6-12} aroyl radical,

a C_{1-6} alkylsulfonyl radical,

a C_{6-12} arylsulfonyl radical,

a C_{7-20} aralkylsulfonyl radical, and

a C_{1-3} alkyl radical which may be substituted by C_{1-4} alkylthio radical,

and R^6 is selected from the group consisting of:

a hydrogen atom,

a C_{1-6} alkanoyl radical; and

a C_{1-3} alkyl radical which may be unsubstituted by C_{1-4} alkylthio radical,

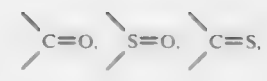
or wherein Z stands for the formula:



or Z stands for the for the formula:



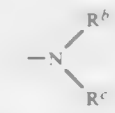
wherein Y stands for the formula B-R^8 (wherein R^8 stands for C_{6-12} aryl radical)



or the formula:



wherein each of R^9 and R^{10}, which may e the same or different, stands for a hydrogen atom or a C_{1-6} alkyl radical;



wherein R^b is selected from the group consisting of:

a hydrogen atom and

a C_{1-6} alkyl radical;

and wherein R^c is selected from the group consisting of:

a hydrogen atom,

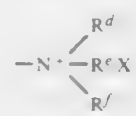
a C_{2-6} alkyl radical which may be substituted with one or more hydroxyl radicals,

a C_{2-6} alkenyl radical, and

a C_{2-6} alkynyl radical;

or together R^b and R^c from a C_{3-6} cyclic alkylamino radical together with the adjacent nitrogen atom; or

R^a stands for the formula



wherein R^d is a C_{1-6} alkyl radical, and R^e and R^f, which may be the same or different are selected from the group consisting of:

a hydrogen atom,

a C_{1-6} alkyl radical which may be substituted by hydroxyl radical, carboxy radical, cyano radical, or halogen, a C_{3-5} cycloalkyl radical, or a C_{1-3} alkoxycarbonyl radical;

a C_{7-20} aralkyl radical;

a C_{2-6} alkenyl radical; and

a C_{2-6} alkynyl radical; or

together R^e and R^f form a C_{5-7} cyclic alkylamino radical with the adjacent nitrogen atom;

X stands for an anion; and

R^{11} and R^{12} each represent a hydrogen atom or both taken together form a chemical bond.

5,008,250

NEW AVERMECTINS WITH A CLEAVED FURAN RING AND AN 8A HYDROXY GROUP

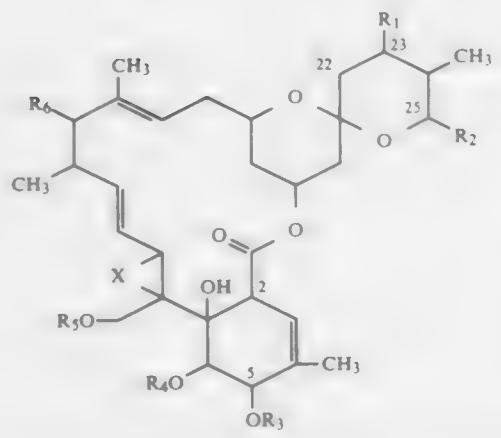
Michael H. Fisher, Ringoes; Matthew J. Wyvratt, Mountainside, and Helmut Mrozik, Matawan, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 25, 1988, Ser. No. 198,271

Int. Cl.[5] A61K *31/35, 31/70;* **C07H** *17/08*

U.S. Cl. 514—30 **14 Claims**

1. A compound having the formula:



wherein the broken line at the 22,23-position indicates a single or double bond;

R_1 is H or hydroxy; the hydroxy being present only when said broken line indicates a single bond;

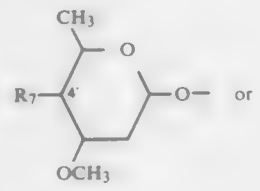
R_2 is methyl, ethyl, iso-propyl or sec-butyl

R_3 is hydrogen, methyl or acetyl;

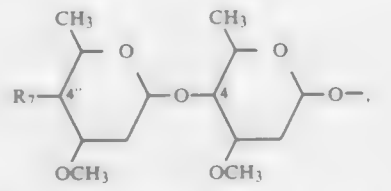
R_4 and R_5 are hydrogen or acetyl;

X is oxygen or a double bond;

R_6 is hydroxy,



or



where R_7 is hydroxy, NR_8R_9, wherein R_8 and R_9 are independently hydrogen, loweralkyl, loweralkanoyl, loweralkyl sulfonyl or substituted benzenesulfonyl, wherein the substituent is halogen or $R_{10}COO$—, wherein R_{10} is a loweralkyl, phenyl or loweralkyl substituted phenyl.

13. A method for the treatment of insect infestations of plants which comprises treating such plants or the soil in which they grow with an effective amount of a compound of claim 1.

5,008,251

METHOD OF TREATING AUTISM

Harry E. Gruber, San Diego, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Division of Ser. No. 79,657, Jul. 29, 1987, Pat. No. 4,912,092, which is a continuation-in-part of Ser. No. 845,627, Mar. 27, 1986, abandoned, which is a continuation-in-part of Ser. No. 646,785, Sep. 4, 1984, abandoned. This application Aug. 31, 1989, Ser. No. 401,156

Int. Cl.[5] A61K *31/70*

U.S. Cl. 514—43 **11 Claims**

1. A method for treatment of autism in a patient suffering from said autism which comprises administration to said patient of at least about 1 mg/kg/day of a drug selected from the group consisting of AICA riboside, AICA ribotide, ribavirin and ribavirin monophosphate.

5,008,252

PROCESS FOR INHIBITING HERPES SIMPLEX VIRUS-SPECIFIED THYMIDINE KINASE

Yung-chi Cheng, Chapel Hill, N.C., and Miroslav Bobek, Williamsville, N.Y., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, N.C. and Health Research, Inc., Buffalo, N.Y.

Filed Mar. 31, 1987, Ser. No. 28,507

Int. Cl.[5] A61K *31/70, 31/045*

U.S. Cl. 514—50 **14 Claims**

1. A method of selectively inhibiting herpes simplex virus-specified thymidine kinase comprising contacting mammalian cells infected with herpes simplex virus with an amount of 5'-ethynyl-thymidine sufficient to selectively inhibit said kinase.

5,008,253

SULFOAMINO DERIVATIVES OF CHONDROITIN SULFATES OF DERMATAN SULFATE AND OF HYALURONIC ACID AND THEIR PHARMACOLOGICAL PROPERTIES

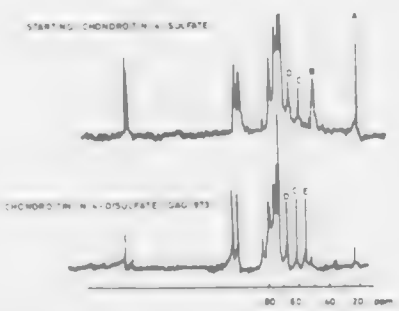
Benito Casu; Giangiacomo Torri, both of Milan; Annamaria Naggi, Legnano; Marisa Mantovani, Villa Guardia; Rodolfo Pescador, Milan; Roberto Porta, Cernobbio, and Giuseppe Prino, Milan, all of Italy, assignors to Crinos Industria Farmacobiologica SPA, Villa Guardia, Italy

Filed May 2, 1989, Ser. No. 346,502

Claims priority, application Italy, May 2, 1988, 20412 A/88

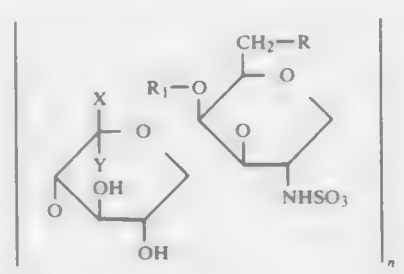
Int. Cl.[5] A61K *31/00;* **C07H** *1/00, 15/00;* **C08B** *37/00*

U.S. Cl. 514—54 **12 Claims**



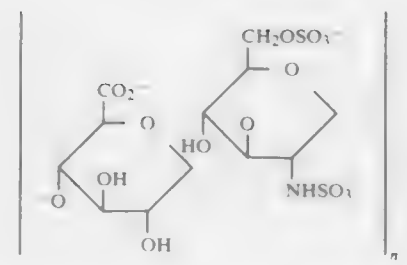
1. Synthetic sulfoamino derivatives of glycosaminoglycans selected from the group consisting of chondroitin sulfates A and C, their mixtures, dermatan sulfate and chondroitin sulfate B, the dimeric units of which have the following formula:

(I)



wherein R represents OH, SO_3^-, R_1 represents H, SO_3^-, Y represents H, COO^-, and X represents H, COO^-.

2. Synthetic sulfoamino derivatives of the hyaluronic acid, the dimeric units of which have the formula:



(II)

10. Pharmaceutical composition, comprising, a glycosaminoglycan derivative according to claims 1 or 2, together with pharmaceutically acceptable excipients.

5,008,254

SUGAR BEET PECTINS AND THEIR USE IN COMESTIBLES

Michael K. Weibel, 120 Gallows Hill Rd., Redding, Conn. 06896

Continuation-in-part of Ser. No. 334,596, Apr. 6, 1989, Pat. No. 4,923,981, which is a continuation-in-part of Ser. No. 62,445, Jun. 15, 1981, abandoned, which is a continuation-in-part of Ser. No. 512,940, Jul. 12, 1983, Pat. No. 4,831,127, which is a continuation-in-part of Ser. No. 414,931, Sep. 3, 1982, abandoned. This application Nov. 1, 1989, Ser. No. 430,166

Int. Cl.[5] C08B *37/06;* **A61K** *31/725;* **A21D** *2/18*

U.S. Cl. 514—57 **29 Claims**

1. Sugar beet pectin having at least one of the following properties:

(a) low molecular weight;

(b) highly acetylated;

(c) many hydrophobic domains;

(d) ferulic acid content up to about 3% by weight; and

(e) relatively low viscosity at about 10% by weight

said sugar beet pectin having been prepared by:

suspending sugar beet plant material in an aqueous medium to form a suspension;

adjusting the pH of said suspension to a value less that about 4.5 or greater than about 9.0;

maintaining said suspension at a temperature greater than about 125° C. for from about 15 to about 600 seconds;

subjecting said suspension to mechanical shearing; and

isolating said sugar beet pectin from said suspension.

5,008,255

METHOD FOR ENHANCING SOLUBILITY OF TRIMETHOPRIM WITH SODIUM SULFACETAMIDE, AND SYNERGISTIC PHARMACEUTICAL COMPOSITIONS DERIVED THEREFROM

John G. Edwards, Cleburne; Wesley W. Han, and Yusuf Ali, both of Fort Worth, all of Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation of Ser. No. 296,270, Jan. 12, 1989, abandoned, which is a continuation of Ser. No. 96,682, Sep. 14, 1987, abandoned, which is a continuation of Ser. No. 946,344, Dec. 24, 1986, abandoned. This application Feb. 14, 1990, Ser. No. 479,827

Int. Cl.[5] A61K *31/63, 31/505*

U.S. Cl. 514—155 **5 Claims**

1. An aqueous pharmaceutical composition consisting essentially of 0.15–1.0 wt.% trimethoprim and 3.0–30.0 wt.% sodium sulfacetamide, said composition having a pH range of from 6.0 to 6.5.

5,008,256

SALTS OF RANITIDINE AND COMPLEXES OF BISMUTH WITH CARBOXYLIC ACIDS, AND PHARMACEUTICAL COMPOSITIONS THEREOF

John W. Clitherow, Sawbridgeworth, England, assignor to Glaxo Group Limited, England

Filed Jul. 17, 1989, Ser. No. 380,378

Claims priority, application United Kingdom, Jul. 18, 1988, 8817098; Mar. 1, 1989, 8904686

Int. Cl.[5] C07F *9/94;* **C07D** *307/52, 307/54*

U.S. Cl. 514—184 **17 Claims**

1. A salt formed between ranitidine and a complex of bismuth with a carboxylic acid, or a solvate of such a salt.

7. A pharmaceutical composition for the treatment of a gastrointestinal disorder comprising an effective amount for treatment of said disorder of a salt formed between ranitidine and a complex of bismuth with a carboxylic acid, or a solvate of such a salt, together with at least one pharmaceutically acceptable carrier or diluent.

5,008,257

BRAIN-SPECIFIC DRUG DELIVERY

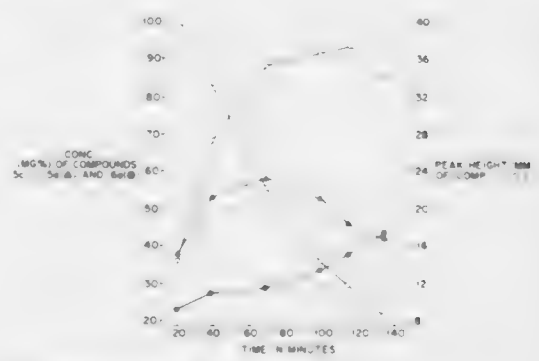
Nicholas S. Bodor, Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.

Division of Ser. No. 665,940, Oct. 29, 1984, Pat. No. 4,824,850, which is a continuation-in-part of Ser. No. 379,316, May 18, 1982, Pat. No. 4,479,932, Ser. No. 461,543, Jan. 27, 1983, abandoned, Ser. No. 475,493, Mar. 15, 1983, Pat. No. 4,622,218, and Ser. No. 516,382, Jul. 22, 1983, Pat. No. 4,540,564. This application Jan. 11, 1989, Ser. No. 295,938

Claims priority, application Canada, May 16, 1983, 428192

Int. Cl.[5] A61K *31/43, 31/545*

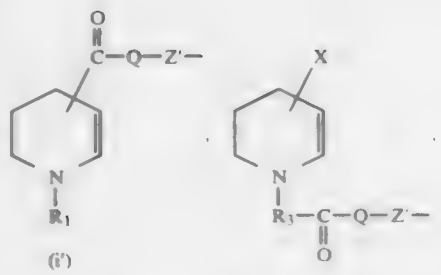
U.S. Cl. 514—192 **11 Claims**



1. A compound of the formula

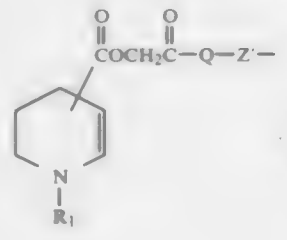
$$D—[DHC]_n \qquad (Ia)$$

or a nontoxic pharmaceutically acceptable salt thereof, wherein D is the residue of a centrally acting drug having antibiotic properties, said drug being a penicillin or a cephalosporin, said drug containing at least one reactive carboxyl functional group, said residue being characterized by the absence of a hydrogen atom from at least one of the reactive carboxyl functional groups in said drug; n is a positive integer equal to the number of said functional groups from which a hydrogen atom is absent; and [DHC] is the reduced, biooxidizable, blood-brain barrier penetrating, lipodial form of a dihydropyridine⟷pyridinium salt redox carrier, [DHC] being attached directly to the available oxygen atom of the carboxyl functional group in the drug residue, [DHC] being a radical of the formula

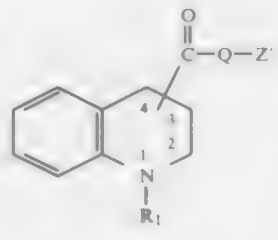


(i')

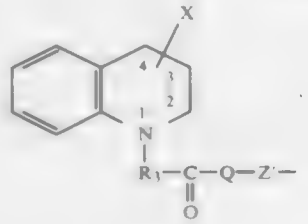
(ii')



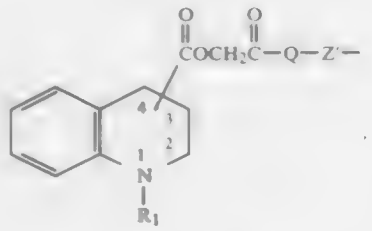
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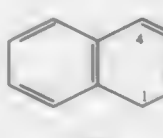
(iv')



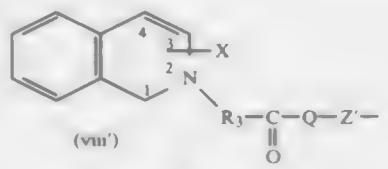
(v')



(vi')

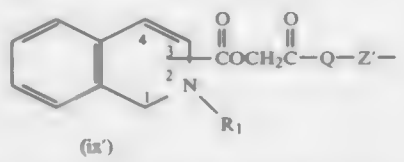


(vii')



(viii')

and



(ix')

wherein the dotted line in formulas (i'), (ii') and (iii') indicates the presence of a double bond in either the 4 or 5 position of the dihydropyridine ring; the dotted line in formulas (iv'), (v') and (vi') indicates the presence of a double bond in either the 2 or 3 position of the dihydroquinoline ring; Z' is C_1–C_8 straight or branched alkylene; Q is —O— or —NH—; R_1 is C_1–C_7 alkyl, C_1–C_7 haloalkyl or C_7–C_{10} aralkyl; R_3 is C_1–C_3 alkylene; X is —CONR'R" wherein R' and R", which can be the same or different, are each H or C_1–C_7 alkyl, or X is —CH=NOR'" wherein R'" is H or C_1–C_7 alkyl; the X substitutent in formula (ii') and the carbonyl-containing grouping in formulas (i') and (iii') can each be attached at the 2, 3 or 4 position of the dihydropyridine ring; the X substituent in formula (v') and the carbonyl-containing grouping in formulas (iv') and (vi') can each be attached at the 2, 3 or 4 position of the dihydroquinoline ring; and the X substituent in formula (viii') and the carbonyl-containing grouping in formulas (vii') and (ix') can each be attached at the 1, 3 or 4 position of the dihydroisoquinoline ring.

5,006,258

CEPHALOSPORIN DERIVATIVES

Thomas G. C. Bird, Witry-les-Reims, and Frederick H. Jung, Rilly la Montagne, both of France, assignors to I.C.I.-Pharma, Gergy Cedex, France

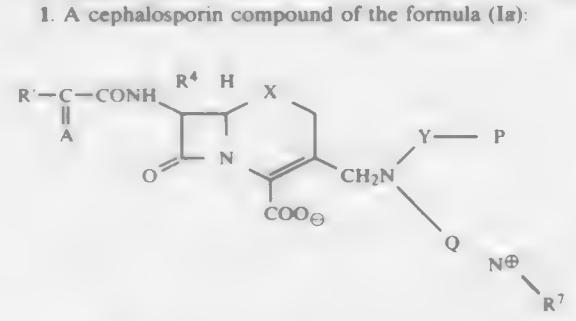
Filed Jul. 18, 1988, Ser. No. 221,945

Claims priority, application European Pat. Off., Jul. 23, 1987, 87401721.3

Int. Cl.[5] C07D *501/48;* A61K *31/545*

U.S. Cl. 514—201 **7 Claims**

1. A cephalosporin compound of the formula (Ia):



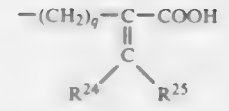
wherein:

X is sulphur or sulphinyl;

R^1 is 2-aminothiazol-4-yl or 2-aminooxazol-4-yl each optionally substituted in the 5-position by fluorine, chlorine or bromine, or R^1 is 5-aminoisothiazol-3-yl, 5-amino-1,2,4-thiadiazol-3-yl, 3-aminopyrazol-5-yl, 3-aminopyrazol-4-yl, 2-amino-pyrimidin-5-yl, 2-aminopyrid-6-yl, 4-aminopyrimidin-2-yl, 2-amino-1,3,4-thiadiazol-5-yl or 5-amino-1-methyl-1,2,4-triazol-3-yl;

A is of the formula =NOR[2] (having the syn configuration about the double bond) wherein R2 is hydrogen, (1–6C)alkyl, (3–8C)cycloalkyl, (1–3C)alkyl(3–6C)cycloalkyl, (3–6C)cycloalkyl(1–3C)alkyl, (3–6C)alkenyl, optionally substituted by carboxy, (5–8C)cycloalkenyl, (3–6C)alkynyl, (2–5C)alkylcarbamoyl, phenylcarbamoyl, benzylcarbamoyl, di(1–4C)alkyl-carbamoyl(1–4C)alkyl, (1–4C-)haloalkylcarbamoyl (1–4C)-alkyl, (1–3C)haloalkyl, (2–6C)hydroxyalkyl, (1–4C)alkoxy(2–4C)alkyl, (1–4C)alkylthio(2–4C)alkyl, (1–4C)alkanesulphinyl(1–4C)alkyl, (1–4C)alkane-sulphonyl(1–4C)alkyl, amino(2–6C)alkyl, azido(2–6C)alkyl, ureido(2–6C)alkyl, (1–4C)-alkylamino(-1–6C)alkyl, (2–8C)dialkylamino(2–6C) alkyl, (1–5C-)cyanoalkyl, 3-amino-3-carboxypropyl, 2-(amidino)ethyl, 2-(amidinothio)ethyl, 2-(N-aminoamidinothio)ethyl, tetrahydropyran-2-yl, thietan-3-yl, 2-oxopyrrolidinyl, or 2-oxotetrahydrofuranyl,

or —R2 may be of the formula IV:



in which q is 1 or 2 and R24 and R25 are hydrogen or (1–4C)alkyl, or —R2 may be of the formula V:

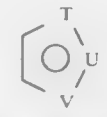
$$-CR^{32}R^{33}-(CH_2)_rCOR^{34}$$

in which r is 0–3, R32 is hydrogen, (1–3C)alkyl or methylthio, R33 is hydrogen, (1–3C)alkyl, (3–7C)cycloalkyl, cyano, carboxy, (2–5C)carboxyalkyl or methanesulphonylamino, or R32 and R33 are joined to form, together with the carbon to which they are attached, a (3–7C)carbocyclic ring, and R34 is hydroxy, amino, (1–4C)alkoxy, (1–4C) alkylmino, or of the formula NHOR35 in which R35 is hydrogen or (1–4C)alkyl;

or A may be of the formula =CH.R3 wherein R3 is hydrogen, halogen, (1–6C)alkyl, (3–7C)cycloalkyl, (2–6C)alkenyl, (3–7C)cycloalkenyl, phenyl or benzyl;

R^4 is hydrogen, methoxy or formamido;

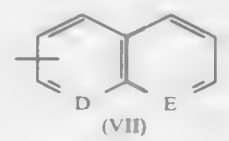
Q is a 5 or 6 membered ring containing NR^7 and 0 to 3 further heteroatoms selected from nitrogen, oxygen and sulphur and optionally fused on an available carbon-carbon or carbon-nitrogen bond to a benzene ring or a ring of the formula (VI):



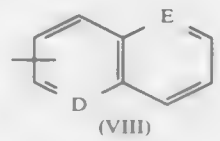
(VI)

wherein T, U and V are selected from oxygen, sulphur, nitrogen, carbon, —NH— and —CH—;

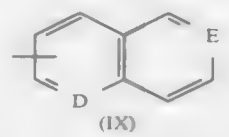
or ring Q is of the formula VII–XXVI:



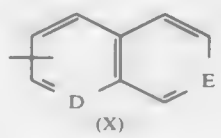
(VII)



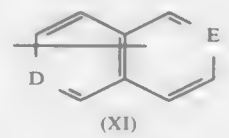
(VIII)



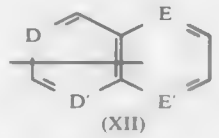
(IX)



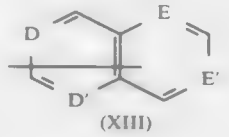
(X)



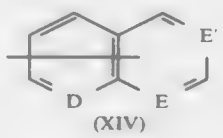
(XI)



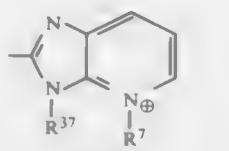
(XII)



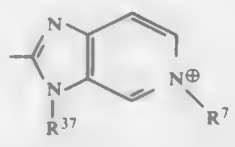
(XIII)



(XIV)

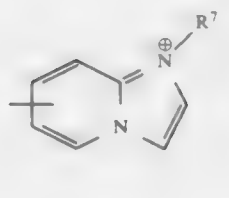


(XV)

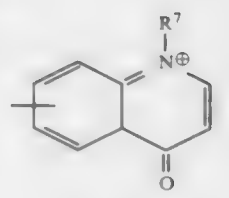


(XVI)

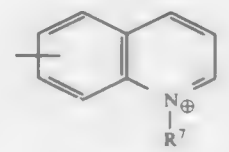
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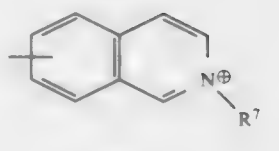
(XVII)



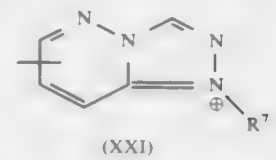
(XVIII)



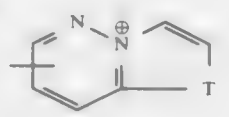
(XIX)



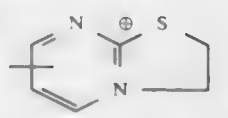
(XX)



(XXI)

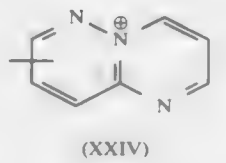


(XXII)

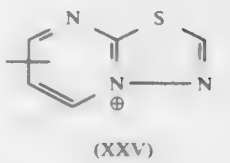


(XXIII)

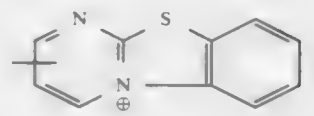
— = Single or double bond



(XXIV)



(XXV)



(XXVI)

wherein one of D, D^1, E and E^1 represents NR^7 and the remainder represent uncharged nitrogen atoms and R^{37} represents hydrogen or a group R^6 (as hereinafter defined);

Ring Q and the rings VI–XXVI being optionally substituted by at least one group R^5 or R^6 (as hereinafter defined);

on a carbon atom or atoms available for substitution by 1,2 or 3 groups R5 wherein R5 is halogen, (1–6C)alkyl, carboxy, (2–6C)alkoxycarbonyl, (2–6C)alkoxycarbonyl(1–4C)alkyl, (1–6C)-alkoxy, (1–6C)alkylthio, cyano, (1–4C-)cyanoalkyl, amino, (1–6C)-alkylamino, (2–8C)dialkylamino, phenyl (1–4C)alkylamino, nitrophenyl(1–4C)alkylamino, (3–6C)alkenylamino, amino(1–6C)alkylamino, (1–6C)alkoxy(1–6C)alkylamino, hydroxy(1–6C)alkylamino, hydroxy, mercapto, carbamoyl, (2–6C) alkylcarbamoyl, (3–10C)dialkylcarbamoyl, phenylthio and heteroarylthio (wherein heteroaryl is furan, thiophene, imidazole, thiazole, pyrazole, thiadiazole, pyridine, pyrimidine, pyrazine or pyrimidine) wherein when more than one group R5 is present these may be the same or different;

on an uncharged nitrogen atom available for substitution by a group R6 wherein R6 is (1–6C)alkyl, phenyl or benzyl;

R7 is hydrogen, (1–6C)alkyl (optionally substituted by carboxy, (1–6C)alkoxycarbonyl, carbamoyl, mono- or di-(1–4C)alkylcarbamoyl, hydroxy, (1–4C)alkoxy, amino, mono- or di-(1–4C)alkyamino, (1–4C)alkanoyl, benzoyl, cyano, carboxyaminocarbonyl, (1–6C)alkoxycarbonylaminocarbonyl, (1–4C)alkoxy(2–4C)alkoxy or phenyl), (1–6C)alkoxy, phenyl(1–6C)alkoxy, amino, (1–6C)alkylamino, (3–6C)cycloalkyl, (3–6C)cycloalkenyl, cyano(3–6C)cycloalkenyl, (2–6C)alkenyl (optionally substituted by (1–6C)alkyl, halogen, cyano, carbamoyl, mono- or di-(1–4C)alkylcarbamoyl, piperidinocarbonyl or morpholinocarbonyl), 2-ureidoethyl, 2-thioureidoethyl, 2-(thioacetylamino)-ethyl, sulphamoyl, 2-amino-2-carboxyethyl, acetylaminomethyl, phthalimidomethyl, 4-5-dihydro-imidazol-2-ylmethyl, 3,4,5,6-tetrahydropyrimidin-2-ylmethyl, 2-(1,2,3,6-tetrahydro-2,6-dioxopurin-7-ylethyl, 2-hydroxyiminopropyl (syn or anti) [(1–4C)alkoxyimino]-propyl (syn or anti) or phenyl,

or R7 is of the formula $—(CH_2)_2—NR8R9R10$ in which R8, R9 and R10 are (1–4C)alkyl,

or R7 is of the formula $—(CH_2)_s—R11$ in which s is 0–2 and R11 is pyridine, pyridazine, pyrimidine, pyrazine, 1,2,5,6-dihydro-5,6-dioxo-1,2,4-triazine, 2-[(1–4C)alkyl]-1,2,5,6-dihydro-5,6-dioxo-1,2,4-triazine, 1-[(1–4C)alkyl]tetrazole, furan, thiophene, pyrrole, 1-[(1–4C)alkyl]pyrrole, oxazole, thiazole, imidazole, 1-[1–4C)alkyl]imidazole, isoxazole, isothiazole, pyrazoke, 1,2,3-thiadiazoke, 1-[1–4C)alkyl]pyrazole, benzfuran, benzthiophene, indole, oxindole, 1-[(1–4C)alkyl]indole, benzoxazole, benzthiazole, benzimidazole, 1-[(1–4C)alkyl]benzimidazole, or 3,4-dihydro-4-oxo-2H-benzo[e]oxazine (each of these ring systems being linked to $(CH_2)_s$ through carbon and each ring system being optionally substituted by halogen, (1–6C)alkyl, (1–4C)haloalkyl, (3–6C)cycloalkyl, (3–6C)cycloalkyl(1–4C)alkyl, (2–6C)alkenyl, carboxy, (2–6C)alkoxycarbonyl, (1–6C)alkoxy, cyano, (2–6C)-cyanoalkenyl, carbamoyl, mono-or di-(1–4C)alkyl-carbamoyl, (1–4C)alkanoylamino, guanidino, hydroxy, nitro or amino),

or R7 is 2-guanidino-thiazole-4-ylmethyl, hydroxybenzoylmethyl, 2-thenyl, 2-imidazolylmethyl or cinnamyl (each optionally substituted by halogen, nitro or carbamoyl),

or R7 is $—(CH_2)_tNHCOR12$ or $—(CH_2)_tS(O)_u—R12$ in which t is 1–6, u is 0, 1 or 2 and R12 is (1–6C)alkyl or (1–6C)alkoxy,

or R7 is of the formula $(CH_2)_2N=CR13NR14R15$ or $(CH_2)_vC(=NR13)NR14R15$ or a tautomer thereof in which v is 1–6 and R13, R14, R15 are hydrogen or (1–4C)alkyl,

(wherein when R7 is or contains a phenyl group, the phenyl group is optionally substituted by 1 or 2 groups selected from halogen, (1–6C)alkyl, (1–6C)alkoxy, amino, carboxy, nitro, carbamoyl, cyano, trifluoromethyl, aminomethyl, (1–4C)alkanoyl, (1–4C)-alkanoylamino, halo(1–4C)alkyl, (2–6C)alkoxycarbonyl, mono- or di-(1–4C)alkylcarbamoyl, mesyl, vinyl, sulpho, sulphamoyl or mono- or di(1–4C)alkylsulphamoyl) or when the positively charged nitrogen atom occurs at the junction between fused rings R7 is absent;

Y is straight or branched (1–6C)alkylene optionally substituted by cyano, carboxy, (1–4C)alkoxycarbonyl, nitro, halogen, carbamoyl, mono- or di-(1–4C)alkylcarbamoyl or trifluoromethyl; or Y is $—CH_2CH_2NHCO—$ or a bond;

P represents:

(i) a benzene ring optionally fused to a further benzene ring (so forming a naphthyl group) said ring system substituted by groups W and Z which are ortho with respect to one another wherein W is hydroxy or an in vivo hydrolysable ester thereof and Z is hydroxy or an in vivo hydrolysable ester thereof;

ring system P optionally being further substituted by (1–4C)alkyl, halogen, hydroxy, cyano, trifluoromethyl, nitro, amino, mono- or di-(1–4C)alkylamino, formyl, (1–4C)alkanoyl, (1–4C)alkoxy, (1–4C)alkylthio, (1–4C)alkanoyloxy, carbamoyl or mono- or di(1–4C)alkylcarbamoyl;

and the N-oxides thereof where chemically possible;

and pharmaceutically acceptable salts thereof.

5,008,259

CEPHALOSPORIN COMPOUNDS

Patrice J. Siret, Reims; Frederick H. Jung, Rilly la Montagne, both of France, and William Bell, Macclesfield, England, assignors to Imperial Chemical Industries PLC, London, England and I.C.I.-PHARMA, Gergy Cedex, France

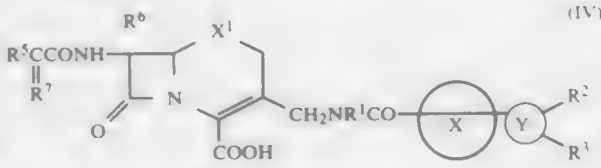
Filed May 10, 1989, Ser. No. 349,663

Claims priority, application United Kingdom, May 10, 1988, 88401143

Int. Cl.[5] C07D *501/38;* **A61K** *31/545*

U.S. Cl. 514—202 **8 Claims**

1. A compound of formula (IV)



(IV)

or a salt or ester thereof;

wherein:

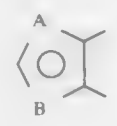
X^1 is sulphur or sulphinyl;

R^1 is hydrogen, C_{1-4}alkyl optionally substituted by halo, hydroxy, C_{1-4}alkoxy, carboxy, amino, cyano, C_{1-6}alkanoylamino, phenyl or heteroaryl, or R^1 is C_{2-6}alkenyl;

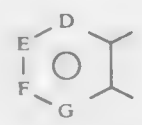
R^2 is hydroxy or an in vivo hydrolyzable ester thereof;

R^3 is ortho to R^2 and is hydroxy or an in vivo hydrolyzable ester thereof,

X is a ring selected from a group of the sub-formulae (a)–(b).



(a)



(b)

wherein A is CH or a nitrogen atom; B is oxygen, sulphur or a group NR^4; zero, one or two of D, E, F and G are nitrogen atoms and the remainder are CH groups; or X is a pyrazinone, pyridinone, pyridazinone or pyrimidinone ring, or is a thione equivalent of such a ring, said rings having a substituent R^4 on one nitrogen atom, or is pyranone, or pyranthione; the ring X being fused by any two adjacent carbon atoms to ring Y;

R^4 is hydrogen, hydroxy, C_{1-6}alkoxy, phenoxy, C_{2-6}alkenyl or C_{1-6}alkyl, (any of these groups being optionally substituted by hydroxy, C_{1-6}alkoxy, cyano, amino, C_{1-6}alkylamino, di-C_{1-6}alkylamino, carboxy, C_{1-6}alkoxycarbonyl, C_{1-6}alkanoyloxy, carbamoyl, C_{1-6}alkylcarbamoyl, di-C_{1-6}alkylcarbamoyl, C_{1-6}alkoxycarbonylamino, phenyl phenylC_{1-6}alkyl, carboxyaminocarbonyl, C_{1-6}alkoxycarbonylaminocarbonyl, benzoyl or C_{3-6}cycloalkyl) or R^4 is phenyl, C_{3-6} cyclosilkyl, amino, C_{1-6}alkylamino or di-C_{1-6}alkylamino:

wherein the fused X-Y ring system and/or any phenyl group is further optionally substituted by C_{1-6}alkyl, halo, hydroxy, hydroxy, C_{1-6}alkyl, cyano, trifluoromethyl, nitro, amino, C_{1-6}alkylamino, di-C_{1-6}alkylamino, C_{1-6}alkanoyl, C_{1-6}alkoxy, C_{1-6}alkylthio, C_{1-6} alkanoyloxy, carbamoyl, C_{1-6}alkylcarbamoyl, di-C_{1-6} alkyl carbamoyl, carboxy, carboxy C_{1-6} alkyl, C_{1-6}alkoxycarbonyl C_{1-6}alkyl, sulpho sulpho-C_{1-6}alkyl, sulphonamido C_{1-6}alkyl, C_{1-6}alkoxycarbonyl, C_{1-6}alkanoylamino, thioureido or amidino;

ring Y is a 6-membered heteroaryl ring containing only ring atoms selected from carbon and one or two nitrogen atoms, substituted on adjacent carbon atoms by groups R^2 and R^3;

wherein either ring of the fused X-Y ring system is bonded via a carbon atom to the amide linkage;

R^5 is a 2-aminothiazol-4-yl or 2-aminooxazol-4-yl each optionally substituted in the 5-position by fluorine, chlorine or bromine, or R^5 is 5-aminoisothiazol-3-yl, 5-amino-1,2,4-thiadiazol-3-yl, 3-aminopyrazol-5-yl, 3-aminopyrazol-4-yl, 2-aminopyrimidin-5-yl, 2-aminopyrid-6-yl, 4-aminopyrimidin-2-yl, 2-amino-1,3,4-thiadiazol-5-yl or 5-amino-1-methyl-1,2,4-triazol-3-yl;

R^6 is hydrogen, methoxy or formamido; and

R^7 is of the formula $=N.O.R^8$ (having the syn configuration about the double bond) wherein R^8 is hydrogen, (1-6C)alkyl, (3-8C)cycloalkyl, (1-3C)alkyl(3-6C) cycloalkyl, (3-6C)cycloalkyl(1-3C)alkyl, (3-6C)alkenyl, optionally substituted by carboxy, (5-8C)cycloalkenyl, (3-6C)alkynyl, (2-5C)alkylcarbamoyl, phenylcarbamoyl, benzylcarbamoyl, (1-4C)alkylcarbamoyl(1-4C)alkyl, di(1-4C)alkylcarbamoyl(1-4C)alkyl, (1-4C)haloalkylcarbamoyl(1-4)alkyl, (1-3C)haloalkyl, (2-6C)hydroxyalkyl, (1-4C)alkoxy(2-4C)alkyl, (1-4C)alkylthio(2-4C)alkyl, (1-4C)alkenesulphinyl(1-4C)alkyl, (1-4C)alkanesulphonyl(1-4C)alkyl, (2-6C)aminoalkyl, (1-4C)alkylamino(1-6C)alkyl, (2-8C)dialkylamino(2-6C)alkyl, (1-5C)cyanoalkyl, 3-amino-3-carboxypropyl, 2-(amidinothio)ethyl, 2-(N-aminoamidinothio)ethyl, tetrahydropyran-2-yl, thietan-3-yl, 2-oxopyrrolidinyl, or 2-oxotetrahydrofuranyl, or R^8 is of the formula V:

$$—(CH_2)_q—C(COOH)=CR^9R^{10} \qquad V$$

wherein q is one or two and R^9 and R^{10} are independently hydrogen or C_{1-4}alkyl; or R^8 is of the formula VI:

$$—CR^{11}R^{12}—(CH_2)_l—COR^{13} \qquad VI$$

wherein r is 0–3, R^{11} is hydrogen, (1-3C)alkyl or methylthio, R^{12} is hydrogen, (1-3C)alkyl, (3-7C) cycloalkyl, cyano, carboxy, (2-5C)carboxyalkyl or methanesulphonylamino, or R^{11} and R^{12} are joined to form, together with the carbon to which they are attached, a (3-7C)carbocyclic ring, and R^{13} is hydroxy, amino, (1-4C)alkoxy, (1-4C)alkylamino or of the formula $NHOR^{14}$ in which R^{14} is hydrogen or (1-4C)alkyl;

or R^7 may be of the formula $=CH.R^{15}$ wherein R^{15} is hydrogen, halogen, (1-6C)alkyl, (3-7C)cycloalkyl, (2-6C)alkenyl, (3-7C)cycloalkenyl, phenyl or benzyl.

5,008,260

CEPHEM DERIVATIVES

Hiroshi Yamauchi; Isao Sugiyama; Isao Saito; Seiichiro Nomoto; Takashi Kamiya; Yoshimasa Machida, and Shigeto Negi, all of Ibaraki, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Division of Ser. No. 818,824, Jan. 14, 1986, Pat. No. 4,748,171. This application Mar. 16, 1988, Ser. No. 167,153

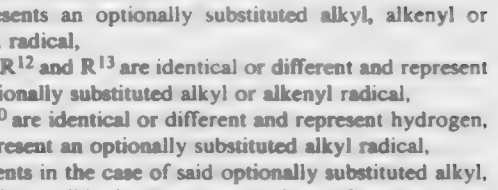
Claims priority, application Japan, Jan. 14, 1985, 60-3181; Apr. 11, 1985, 60-75333; Aug. 9, 1985, 60-174326

Int. Cl.[5] C07D *501/38;* **A61K** *31/545*

U.S. Cl. 514—202 **10 Claims**

1. A cephem derivative represented by the formula:





wherein n is 1 or 2, Y is CH, R_1 is lower alkyl, lower alkenyl, lower alkynyl or a carboxyl-substituted, a carbamoyl-substituted or a cyclopropyl-substituted lower alkyl group, and R_2 is hydroxyl, hydroxy-substituted lower alkyl or carbamoyl, or a pharmaceutically acceptable salt thereof.

5,008,261

AGENTS FOR REPELLING INSECTS AND MITES

Bernd-Wieland Krüger, Wuppertal; Klaus Sasse, Bergisch-Gladbach; Franz-Peter Hoever; Günther Nentwig, both of Cologne, and Wolfgang Behrenz, Overath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

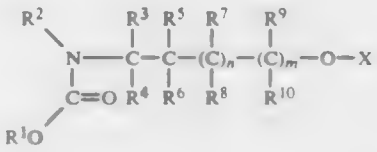
Division of Ser. No. 183,941, Apr. 20, 1988, Pat. No. 4,900,894. This application Oct. 18, 1989, Ser. No. 423,070

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1987, 3714058; Jan. 16, 1988, 3801082

Int. Cl.[5] C07D *211/22;* **A01N** *43/40*

U.S. Cl. 514—212 **4 Claims**

3. In a method of repelling insects and mites the improvement wherein the insect and mite repellent composition comprises at least one substituted α,ω-aminoalcohol derivative of the formula (I)



(I)

in which

X represents hydrogen, COR^{11}, $COOR^{12}$ or R^{13},

R^1 represents an optionally substituted alkyl, alkenyl or alkinyl radical,

R^2, R^{11}, R^{12} and R^{13} are identical or different and represent an optionally substituted alkyl or alkenyl radical,

R^3 to R^{10} are identical or different and represent hydrogen, or represent an optionally substituted alkyl radical,

substitutents in the case of said optionally substituted alkyl, alkenyl, and alkinyl radicals being selected from the group consisting of alkyl, cycloalkyl, C_1–C_4-alkoxy, halogen, and cyano,

and wherein

R^2 and R^3 or R^3 and r^7 or r^3 and R^5 and

R^7, together with the atoms to which they are bonded, can also form a 5 to 7-membered saturated monocyclic ring which is unsubstituted or substituted or substituted by alkyl, and

n and m are identical or different and denote 0 or 1,

with the proviso that X does not represent hydrogen or R^{13} if n and m represent 0.

5,008,262

METHOD OF TREATING TRICHOTILLOMANIA AND ONCHYPHAGIA

Susan E. Swedo, Lorton, Va.; Judith L. Rapoport, and Henrietta L. Leonard, both of Washington, D.C., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Apr. 19, 1988, Ser. No. 207,617

Int. Cl.[5] A61K *31/395*

U.S. Cl. 514—217 **8 Claims**

1. A method of preventing nail biting by administration of about 10–300 mg/day of clomipramine to a patient suffering from onychophagia which does not accompany schizophrenia, obsessive compulsive disorder or depression.

5,008,263

DIAZEPINE ANTIALLERGY AGENTS

Kelvin Cooper, Deal, and Michael J. Fray, Nr. Canterbury, both of England, assignors to Pfizer Inc., New York, N.Y.

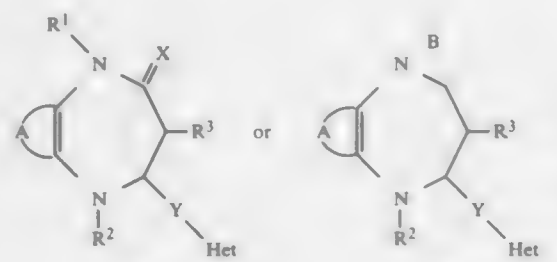
Filed Mar. 20, 1990, Ser. No. 496,393

Claims priority, application United Kingdom, Mar. 23, 1989, 8906813; Nov. 21, 1989, 8926246

Int. Cl.[5] A61K *31/55;* **C07D** *521/00*

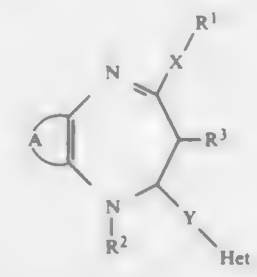
U.S. Cl. 514—220 **7 Claims**

1. A compound of formula (I), (II) or (III)



(I)

(II)



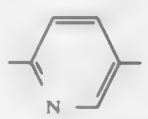
(III)

wherein;

A represents a fused benzene, pyridine, naphthalene, quinoline, thiophene, benzothiophene, pyrazole or isothiazole ring, which ring or rings being optionally substituted by 1 or 2 substituents independently selected from C_1–C_4 alkyl; C_4–C_7 cycloalkyl; halo; perfluoro - (C_1–C_4 alkyl); cyano; (C_1–C_4 alkoxy)-carbonyl; nitro; amino; amino substituted by (C_1–C_4 alkyl) sulfonyl, amino substituted by (C_1–C_4 alkyl)-oxalyl; C_1–C_4 alkoxy - (C_1–C_4 alkyl) imino; hydroxy (C_1–C_4 alkyl), (C_1–C_4 alkoxy)-C_1–C_4 alkyl, (C_1–C_4 alkoxy)-(C_2–C_4 alkoxy)-C_1–C_4 alkyl, —$CONR^5R^6$ wherein R^5 and R^6 are each independently H or C_1–C_6 alkyl, or R^5 is H or C_1–C_4 alkyl and R^6 is C_3–C_7 cycloalkyl, or 2-pyridyl, or R^5 or R^6 are joined together to form, with the nitrogen atom to which they are attached, a morpholino, pyrrolidino or piperidino group; and phenyl, thienyl or pyridyl optionally substituted by halogen, cyano, trifluoromethyl, (C_1–C_4 alkoxy) carbonyl or carbamoyl,

X is O, S or NH

Y is 1, 4 phenylene or a group of formula



R^1 is either H or C_1–C_4 alkyl optionally substituted by a substituent selected from hydroxyl, phenyl, halophenyl, pyridyl, (C_1–C_4 alkoxy) carbonyl, and di (C_1–C_4 alkyl) amino or is C_2–C_4 alkyl substituted by hydroxy or by one or two C_1–C_4 alkoxy groups or $(CH_2)_nCONR^7R^8$ where n = 1–4 and R^7 and R^8 are each independently H or C_1–C_4 alkyl.

R^2 is H or C_1–C_4 alkyl;

R^3 is H or C_1–C_4 alkyl;

the fused ring B is an imidazole, triazole, tetrazole, pyrimidine, imidazoline or tetrahydropyrimidine ring, said fused ring B being optionally substituted by 1 or 2 substituents independently selected from C_1–C_4 alkyl, C_1–C_4 haloalkyl, halo and oxo;

and "Het" is pyridyl, 1,2,4-triazolyl or imidazolyl said "Het" rings optionally fused to a benzene, thiazole or pyridine ring and at least one of said rings optionally being substituted with from one to three substituents independently selected from C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, CF_3, CN and formyl; and wherein the dashed line represents an optional bond; and their pharmaceutically acceptable salts.

7. A medicament comprising a compound for antagonising platelet activating factor of claim 1 and a pharmaceutically acceptable diluent or carrier wherein the medicament comprises 0.1 mg to 1000 mg of the claim 1 compound and the remainder is the diluent or carrier.

5,008,264

N-SUBSTITUTED-5,6-DIMETHOXY-1,2-BENZISOXAZOLE-3-PROPANAMINE AND RELATED COMPOUNDS AS ANALGESIC AND HYPOTENSIVE AGENTS

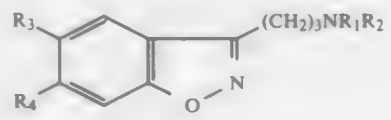
Larry Davis, Sergeantsville, N.J., assignor to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 72,954, Jul. 13, 1987. This application Oct. 9, 1990, Ser. No. 594,575

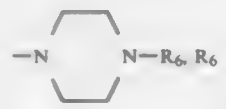
Int. Cl.[5] A61K *31/495, 31/445;* **C07D** *403/06, 401/14*

U.S. Cl. 514—253 **12 Claims**

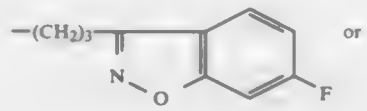
1. A compound having the formula



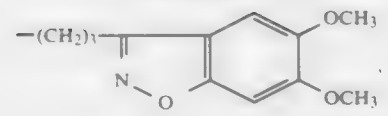
where $-NR_1R_2$ taken together is



being aryl, arylloweralkyl, diarylloweralkyl,



-continued



and R_3 and R_4 are each independently methoxy or hydroxy, the term aryl in each occurrence signifying a phenyl group having 0,1,2 or 3 substituents each of which being independently hydroxy, nitro, loweralky, loweralkoxy, halogen or CF_3 with the proviso that said aryl may not be trifluorophenyl or triiodophenyl, or a pharmaceutically acceptable acid addition salt thereof.

5,008,265

2-AMINO-7-(ALICYCLOMETHYL)-3H,5H,-PYRROLO[3,2-D]PYRIMIDIN-4-ONES AND PHARMACEUTICAL USES AND COMPOSITIONS CONTAINING THE SAME

John A. Secrist, III; John A. Montgomery; Steve E. Ealick, all of Birmingham, Ala.; Mark D. Erion, Livingston, and Wayne C. Guida, Fanwood, both of N.J., assignors to BioCryst, Inc., Birmingham, Ala.

Filed Oct. 31, 1989, Ser. No. 429,099

Int. Cl.[5] A61K *31/505;* **C07D** *487/00*

U.S. Cl. 514—258 **13 Claims**

1. A compound of the formula 2-amino-7-(substituted methyl)-3H,5H-pyrrolo[3,2-d]pyrimidin-4-one wherein substituted methyl is —CH_2—R wherein R is a cycloolefin or cycloparafin having up to nine carbon atoms in the ring structure which can be optionally substituted with at least one of halogen, hydroxy, alkoxy, alkyl, or trifluoromethyl.

6. A method for the selective suppression of mammalian T-cell function without diminished effect on humoral immunity which comprises administering to a mammal the compound of claim 1, whereby said compound inhibits purine nucleoside phosphorylase and thereby T-cell formation.

5,008,266

4(3H)-QUINAZOLINONE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS

Toshihiro Takahashi, Kawagoe; Tatsuo Horaguchi, Fujimi; Koichi Nakamaru, Ohimachi, and Yoshikuni Suzuki, Ohmiya, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

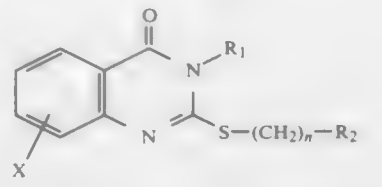
Division of Ser. No. 373,024, Jan. 26, 1988, Pat. No. 4,861,780. This application Jul. 26, 1989, Ser. No. 373,024

Claims priority, application Japan, Jan. 30, 1987, 62-20123; Aug. 20, 1987, 62-205071

Int. Cl.[5] A61K *31/505;* **C07D** *401/12*

U.S. Cl. 514—259 **10 Claims**

1. A compound of formula (I)



(I)

wherein R_1 is a hydrogen atom, a C_1–C_6 alkyl group or a phenyl group; R_2 is a (C_1–C_4) alkoxy substituted phenyl group, pyridyl, benzimidazolyl, furyl, thienyl or quinolyl; n is 1 or 2; or R_2 represents a geranyl group or a dipyridylmethyl group together with the group — (CH_2)n—; and X is a hydrogen atom, a C_1–C_6 alkyl group and pharmaceutically acceptable acid adition salts thereof, provided that when R_1 is phenyl, R_2 does not represent pyridyl, and further provided that when R_1 is C_1–C_6 alkyl, R_2 does not represent (C_1–C_4) alkoxy substituted phenyl.

6. A pharmaceutical composition which comprises as an active ingredient an effective amount of the compound of claim 1 or pharmaceutically acceptable acid addition salts thereof, optionally in admixture with additives for pharmaceutical preparation.

5,008,267

PYRIMIDINEDIONE COMPOUNDS, METHOD OF PRODUCING THE SAME AND ANTIARRYTHMIC AGENTS CONTAINING THE SAME

Tsutomu Katakami, Kamakura; Tatsuro Yokoyama, Yokohama; Michihiko Miyamoto, Yokohama; Haruki Mori, Yokohama; Nobuya Kawauchi, Yokohama; Tadahito Nobori, Yokohama; Kunio Sannobe, Yokohama; Joji Kamiya, Mobara; Masaaki Ishii, Mobara, and Kanji Yoshihara, Mobara, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

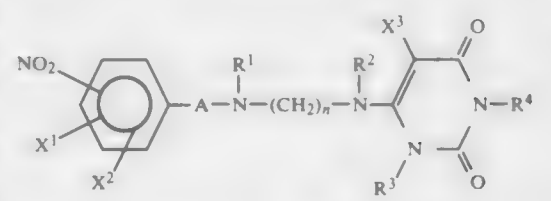
Filed Oct. 24, 1989, Ser. No. 425,730

Claims priority, application Japan, Oct. 29, 1988, 63-271992; Dec. 6, 1988, 63-306840; Dec. 6, 1988, 63-306841; Apr. 18, 1989, 1-096416; Apr. 18, 1989, 1-096417; Apr. 18, 1989, 1-096418; Sep. 6, 1989, 1-229272; Sep. 25, 1989, 1-246317; Sep. 25, 1989, 1-246318

Int. Cl.[5] A61K *31/495, 31/505;* **C07D** *403/04, 239/54*

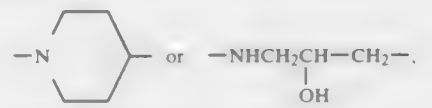
U.S. Cl. 514—269 **12 Claims**

1. A pyrimidinedione compound of the formula (1)



(1)

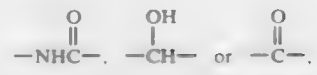
in which A represents $-(CH_2)_m-$, $-B-(CH_2)_k-$, $-D-(CH_2)_l-$,



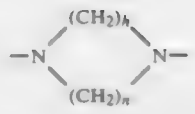
B represents an oxygen or a sulfur atom,



D represents



R^1 and R^2 each independently represent a hydrogen atom, a lower alkyloxycarbonyl group, an unsaturated lower alkyl group or a lower alkyl group, any one of the hydrogen atoms of said alkyl groups may be substituted by a group selected from the group consisting of a hydroxy group; a lower monoalkylamino group; a lower dialkylamino group; a lower alkyloxy group; a lower alkanoyloxy group; a benzoyloxy group; a benzoyloxy group substituted by a halogen atom or a lower alkyloxy group; a phenyl group; a phenyl group substituted by a halogen atom or a lower alkyloxy group; and a lower alkyloxycarbonyl group, or R^1 and R^2 may be so linked as to make an alkylene chain and thus form a heterocyclic structure;

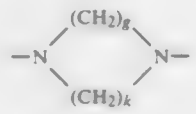


where h is 2 or 3 and n is 2 or 3;

R^3 and R^4 each independently represent a hydrogen atom or a lower alkyl group;

X^1 and X^2 each independently represent a hydrogen atom, —CO—R^6, a halogen atom, a lower alkyl group, a halogen-substituted lower alkyl group, a hydroxy group, a lower alkyloxy group, a lower alkylthio group, a lower alkyloxycarbonyl group, a carboxy group, a cyano group, an amino group, a lower alkanoyloxy group, a lower alkanoylamino group, a lower alkylsulfonamido group, a lower mono- or di-alkylamino group, a phenyl-substituted lower alkylamino group or an unsaturated lower alkyloxy group;

X^3 represents a hydrogen atom, a nitro group, a methyl group or a cyano group; R^5 represents a hydrogen atom, a lower alkanoyl group, a lower alkylsulfonyl group or a lower alkyl group, or R^1 and R^5 may be so linked as to make an alkylene chain and thus form a heterocyclic structure;



where g is 2 or 3 and k is 2, 3 or 4;

R^6 represents a lower alkyl group, a C_5-C_6 cycloalkyl group or a phenyl group, said phenyl group may be substituted by either one or two of groups selected from the group consisting of a halogen atom, a lower alkyl group, a hydroxy group and a lower alkyloxy group, or a heterocyclic ring;

n represents an integral number 2 or 3; m represents an integral number, 0, 1, 2, 3, or 4; k represents an integral number, 2, 3 or 4; and l represents an integral number, 0, 1, 2, 3 or 4.

12. A method of treating cardic arrythmias comprising administering to a person in need of same an effective amount of the compound of claim 1 or an acid addition salt of the compound of claim 1.

5,008,268

2-AMINOPYRIMIDINONE DERIVATIVES

Frans E. Janssens, Bonheiden; Ludo E. J. Kennis, Turnhout; Francois M. Sommen, Wortel, and Ann C. J. Dierckx, Kasterlee, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

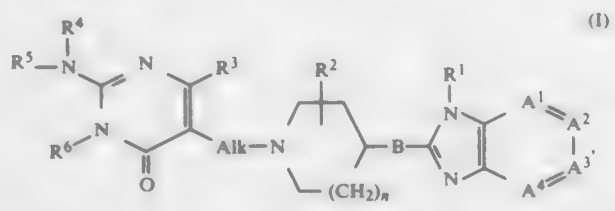
Filed Dec. 26, 1989, Ser. No. 456,391

Claims priority, application United Kingdom, Jan. 9, 1989, 8900380

Int. Cl.[5] **A61K** *31/505, 31/52;* **C07D** *401/14, 403/14*

U.S. Cl. 514—272 **18 Claims**

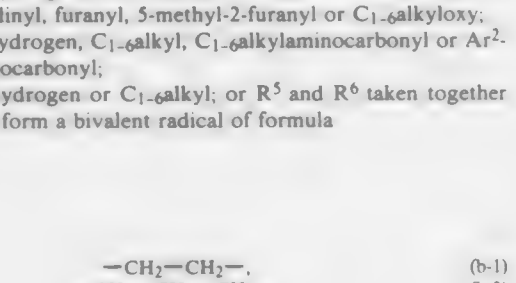
1. A chemical compound having the formula



(I)

a pharmaceutically acceptable addition salt thereof, and a stereochemically isomeric form thereof, wherein

$—A^1=A^2—A^3=A^4—$ is a bivalent radical having the formula



(a-1)
(a-2)
(a-3)
(a-4)
(a-5)
(a-6)
(a-7)

wherein one or two hydrogen atoms of said radicals (a-1) to (a-7) each independently from one another may be replaced by halo, C_{1-6}alkyl, C_{1-6}alkyloxy, hydroxy or trifluoromethyl;

R^1 is hydrogen, C_{1-10}alkyl, C_{3-6}cycloalkyl, Ar^1, mono- and di(Ar^1)-C_{1-6}alkyl, or a radical of formula —Alk—G—R^7, wherein

G is O or S; and

R^7 is hydrogen; C_{2-6}alkenyl optionally substituted with Ar^2; C_{3-6}alkynyl, C_{1-6}alkyl optionally substituted with Ar^1, hydroxy, C_{1-6}alkyloxy, carboxyl or C_{1-6}alkyloxycarbonyl;

B is NR^8, CH_2, O, S, SO or SO_2; said R^8 being hydrogen, C_{1-6}alkyl, C_{3-6}cycloalkyl, C_{1-6}alkylcarbonyl, C_{1-6}alkyloxycarbonyl or Ar^2-C_{1-6}alkyl;

R^2 is hydrogen or C_{1-6}alkyl;

n is 0, 1 or 2;

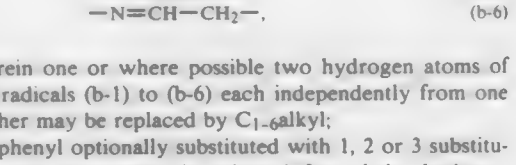
each Alk independently is C_{1-6}alkanediyl;

R^3 is hydrogen or C_{1-6}alkyl;

R^4 is hydrogen, C_{1-6}alkyl optionally substituted with Ar^2, pyridinyl, furanyl, 5-methyl-2-furanyl or C_{1-6}alkyloxy;

R^5 is hydrogen, C_{1-6}alkyl, C_{1-6}alkylaminocarbonyl or Ar^2-aminocarbonyl;

R^6 is hydrogen or C_{1-6}alkyl; or R^5 and R^6 taken together may form a bivalent radical of formula



(b-1)
(b-2)
(b-3)
(b-4)
(b-5)
(b-6)

wherein one or where possible two hydrogen atoms of said radicals (b-1) to (b-6) each independently from one another may be replaced by C_{1-6}alkyl;

Ar^1 is phenyl optionally substituted with 1, 2 or 3 substituents each independently selected from halo, hydroxy, nitro, cyano, trifluoromethyl, C_{1-6}alkyl, C_{1-6}alkyloxy, C_{1-6}alkylthio, mercapto, amino, mono- and di(C_{1-6}alkyl-)amino, carboxyl, C_{1-6}alkyloxycarbonyl and C_{1-6}alkylcarbonyl; thienyl; halothienyl; furanyl optionally substituted with C_{1-6}alkyl and/or hydroxyC_{1-6}alkyl; pyridinyl; pyrimidinyl; pyrazinyl; thiazolyl; or imidazolyl optionally substituted with C_{1-6}alkyl; and

Ar^2 is phenyl optionally substituted with 1, 2 or 3 substituents each independently selected from halo, hydroxy, nitro, cyano, trifluoromethyl, C_{1-6}alkyl, C_{1-6}alkyloxy, C_{1-6}alkylthio, mercapto, amino, mono- and di(C_{1-6}alkyl-)amino, carboxyl, C_{1-6}alkyloxycarbonyl and C_{1-6}alkylcarbonyl.

7. An anti-allergic composition comprising an inert carrier and as active ingredient an antiallergically effective amount of a compound as claimed in claim 1.

5,008,269

METHOD FOR TREATING CIRCULATORY VESSEL OCCLUSION

Elfriede Leniger-Follert, Sprinkstück 3, D-5800 Hagen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 124,938, Sep. 8, 1987, abandoned. This application Apr. 25, 1989, Ser. No. 342,756

Int. Cl.[5] **A01N** *43/40*

U.S. Cl. 514—277 **1 Claim**

1. A method for treating a circulatory disturbance and occlusion of vessels in a mammal comprising administering to said mammal the ion-exchange resin Resonium A in an amount sufficient to trap up to 135 mg of potassium per gram of resin.

5,008,270

2-AMINO-7-(HETEROCYCLOMETHYL)-3H,5H-PYRROLO[3,2-D]PYRIMIDIN-4-ONES AND PHARMACEUTICAL USES AND COMPOSITIONS CONTAINING THE SAME

John A. Secrist, III; John A. Montgomery; Steve E. Ealick, all of Birmingham, Ala.; Mark D. Erion, Livingston, and Wayne C. Guida, Fanwood, both of N.J., assignors to BioCryst, Inc., Birmingham, Ala.

Filed Oct. 31, 1989, Ser. No. 429,097

Int. Cl.[5] **A61K** *31/505;* **C07D** *487/04*

U.S. Cl. 514—258 **19 Claims**

1. A compound of the formula 2-amino-7-(substituted methyl)-3H,5H-pyrrolo[3,2-d]pyrimidin-4-one wherein substituted methyl is —CH_2—R wherein R is optionally substituted by halogen, hydroxy, alkoxy, alkyl or trifluoromethyl.

8. A method for the selective suppression of mammalian T-cell function without diminished effect on humoral immunity which comprises administering to a mammal the compound of claim 1, whereby said compound inhibits purine nucleoside phosphorylase and thereby T-cell formation.

5,008,271

DC-88A DERIVATIVES

Yutaka Kanda, Houston, Tex.; Tohru Yasuzawa, Sakai, Japan; Hiromitsu Saito, Sagamihara, Japan; Hiroshi Sano, Machida, Japan; Eiji Kobayashi, and Makoto Morimoto, both of Shizuoka, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

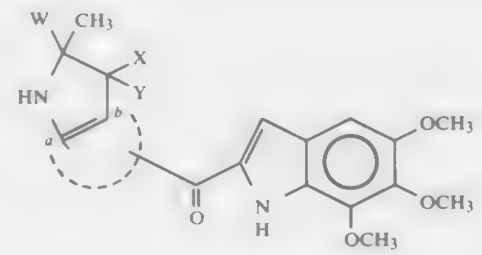
Filed Oct. 18, 1989, Ser. No. 423,788

Claims priority, application Japan, Oct. 21, 1988, 63-265582; Mar. 15, 1989, 64-62572

Int. Cl.[5] **A61K** *31/44, 31/40;* **C07D** *471/12, 209/02*

U.S. Cl. 514—292 **15 Claims**

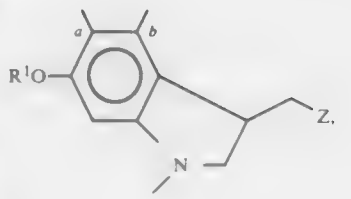
1. A DC88-A derivative represented by the general formula:

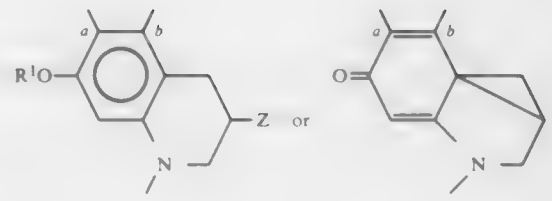


wherein one of X and Y is hydrogen, and the other is OR^2 wherein R^2 represents hydrogen, CH_3, —$COCH_3$ or —COPh wherein Ph represents substituted or unsubstituted phenyl, or X and Y are combined together to form =O;



represents





wherein Z represents chlorine or bromine;

R^1 represents hydrogen, straight or branched alkyl having 1 to 4 carbon atoms, COR^3, $CONR^4R^5$, —CO_2R^6, —$SiR^7R^8R^9$ or —CH_2OCH_3, wherein R^3 represents straight or branched alkyl having 1 to 14 carbon atoms, or unsubstituted or substituted phenyl, each of R^4 and R^5 independently represents straight or branched alkyl having 1 to 4 carbon atoms, R^6 represents straight or branched alkyl having 1 to 4 carbon atoms, allyl or aralkyl each of R^7, R^8, and R^9 independently represents straight or branched alkyl having 1 to 4 carbon atoms;

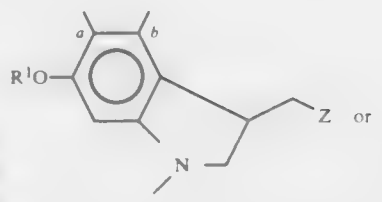
W represents hydrogen, allyl, —CO_2R^{10}, —COR^4, or CH_2OR^2

wherein

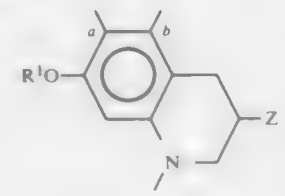
R^{10} represents straight or branched alkyl having 1 to 5 carbon atoms, substituted alkyl having 1 to 5 carbon atoms, allyl or benzyl, R^4 and R^2 have the same significance as defined above; provided that when



represents



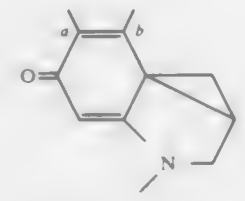
-continued



wherein R^1 is hydrogen and W is $—CO_2CH_3$ one of X and Y represents hydrogen, and the other represents $—OR^2$ wherein R^2 has the same significance as defined above; and that when



represents



and W is $—CO_2CH_3$, one of X and Y represents hydrogen, and the other represents $—OR^2$ wherein OR^2 has the same significance as defined above.

5,008,272

LACTAM DERIVATIVES

Ian H. Coates, Hertford; Alexander W. Oxford, and Peter C. North, both of Royston, all of England, assignors to Glaxo Group Limited, England

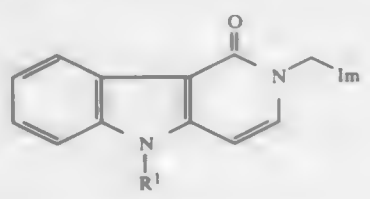
Filed Aug. 14, 1989, Ser. No. 393,145

Claims priority, application United Kingdom, Aug. 15, 1988, 8819382; Sep. 1, 1988, 8820647

Int. Cl.[5] A61K *31/445;* **C07D** *471/04*

U.S. Cl. 514—292 **7 Claims**

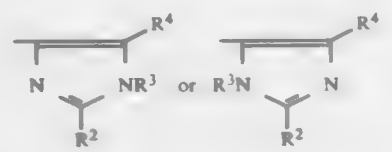
1. A compound of formula (I)



(I)

wherein

Im represents an imidazolyl group of the formula:



R^1 represents a hydrogen atom or a group selected from C_{1-6}alkyl, C_{3-6}alkenyl, C_{3-10}alkynyl, C_{3-7}cycloalkyl, C_{3-7}cycloalkylC_{1-4}alkyl, phenyl, phenylC_{1-3}alkyl, phenylmethoxymethyl, phenoxyethyl, phenoxymethyl, $—CO_2R^5$, $—COR^5$, $—CONR^5R^6$ or $—SO_2R^5$ (wherein R^5 and R^6, which may be the same or different, each represents a hydrogen atom, a C_{1-6}alkyl or C_{3-7}cycloalkyl group, or a phenyl or phenylC_{1-4}alkyl group, in which the phenyl group is unsubstituted or substituted by one or more C_{1-4} alkyl, C_{1-4}alkoxy or hydroxy groups or halogen atoms, with the proviso that R^5 does not represent a hydrogen atom when R^1 represents a group $—CO_2R^5$ or $—SO_2R^5$);

one of the groups represented by R^2, R^3 and R^4 is a hydrogen atom or a C_{1-6}alkyl, C_{3-7}cycloalkyl, C_{3-6}alkenyl, phenyl or phenylC_{1-3}alkyl group, and each of the other two groups, which may be the same or different, represents a hydrogen atom or a C_{1-6}alkyl group;

or a physiologically acceptable salt or solvate thereof.

7. A method of treating a condition mediated through 5-HT_3 receptors which comprises administering to a patient an effective amount to relieve said condition of a compound of formula (I) as defined in claim 1 or a physiologically acceptable salt or solvate thereof.

5,008,273

AMINO ACID DERIVATIVES AND THEIR PHARMACEUTICAL USE

Gerd Schnorrenberg, Gau-Algesheim; Otto Roos, Schwabenheim; Walter Lösel, Gau-Algesheim; Ingrid Wiedemann, Wiesbaden; Wolfram Gaida, Ingelheim/Rhein; Wolfgang Hoefke, Wiesbaden; Dietrich Arndts, Appenheim, and Ilse Streller, Stromberg, all of Fed. Rep. of Germany, assignors to boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

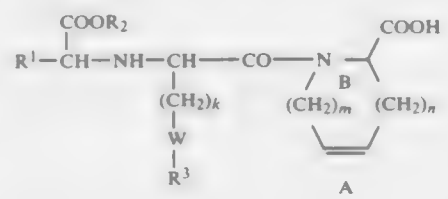
Division of Ser. No. 284,164, Dec. 14, 1988, abandoned, which is a continuation of Ser. No. 127,750, Dec. 2, 1987, abandoned, which is a continuation of Ser. No. 897,444, Aug. 18, 1986, abandoned. This application Sep. 6, 1989, Ser. No. 403,628

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1985, 3529960

Int. Cl.[5] A61K *31/435;* **C07D** *495/04*

U.S. Cl. 514—301 **14 Claims**

1. An amino acid derivative of the formula



(I)

wherein

R^1 is hydrogen or an optionally phenyl-substituted alkyl group with 1 to 6 carbon atoms;

R^2 is hydrogen or an optionally phenyl-substituted alkyl group with 1 to 4 carbon atoms;

R^3 is hydrogen, an alkyl group with 1 to 7 carbon atoms which may have an amino group or a phenyl ring in the terminal position, or the group $R^4—CO—$;

R^4 is an alkyl group with 1 to 5 carbon atoms, which, when W=NH, may have an amino group in the α position;

W is oxygen, sulphur or an NH group;

n and m are each 0, 1, or 2, the sum of n and m being 1 or 2;

k is 1, 2, 3 or 4;

A is the group



which may be linked to the ring B in either way;

or a pharmaceutically acceptable salt thereof.

5,008,274

CARBOSTYRIL DERIVATIVES AND SALTS THEREOF AND PHARMACEUTICAL COMPOSITION FOR INHIBITING ADHESION OF THROMBOCYTES

Takao Nishi; Tetsuyuki Uno; Yasuo Koga, and Gil-Namg Chu, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

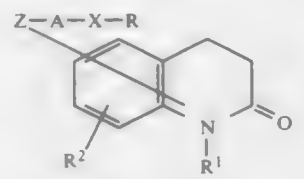
Continuation of Ser. No. 36,564, Mar. 31, 1987, abandoned. This application Aug. 16, 1988, Ser. No. 232,524

Claims priority, application Japan, Apr. 2, 1986, 61-76089; Feb. 25, 1987, 62-43457; Mar. 16, 1987, 62-60770

Int. Cl.[5] A61K *31/47, 31/505;* **C07D** *401/12, 403/12*

U.S. Cl. 514—312 **18 Claims**

1. A carbostyril compound or pharmaceutically acceptable salt thereof represented by the formula 1a,



(1a)

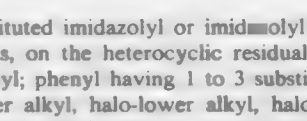
wherein

R is unsubstituted imidazolyl or imidazolyl having 1 to 3 substituents, on the heterocyclic residual ring, selected from phenyl; phenyl having 1 to 3 substituents selected from lower alkyl, halo-lower alkyl, halogen, hydroxy, amino, lower alkylamino, carboxy and lower alkoxy; cycloalkyl; phenylthio; lower alkyl; lower alkyl having 1 to 2 substituents selected from amino, lower alkylamino and carboxyl; amino; hydroxyl; cyano; carboxyl; lower alkoxycarbonyl; phenyl-lower alkyl; phenyl-lower alkyl having hydroxyl substituents on the phenyl ring; phenylsulfonyl; phenylsulfonyl having lower alkyl substituents on the phenyl ring; lower alkoxysubstituted phenyl-lower alkyl; lower alkylthio; lower alkenyl; lower alkoxy and pyridyl;

R^1 is hydrogen, lower alkyl or phenyl-lower alkyl;

R^2 is hydrogen, halogen, lower alkyl-sulfonyloxy, lower alkoxy or hyroxyl;

Z is oxygen, sulfur,



wherein R^3 is hydrogen or lower alkyl, or —NH—;

A is lower alkylene;

X is sulfur, —SO— or $—SO_2—$; and

the carbon-carbon bond between the 3- and 4-positions in the carbostyril skeleton is a single or double bond.

5,008,275

PESTICIDAL PYRIDYL-SUBSTITUTED ACRYLIC ESTER COMPOUNDS

Alexander Klausener, Krefeld; Gerd Kleefeld, Duesseldorf; Dieter Berg, Wuppertal; Stefan Dutzmann, Duesseldorf, and Gerd Hänbler, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

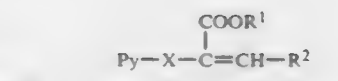
Filed Feb. 8, 1990, Ser. No. 477,271

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1989, 3904931

Int. Cl.[5] C07D *213/74, 401/04;* **A01N** *43/56, 43/74*

U.S. Cl. 514—334 **13 Claims**

1. A pyridyl-substituted acrylic ester of the formula



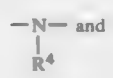
(I)

in which

R^1 represents straight-chain or branched alkyl which has 1 to 6 carbon atoms, or represents aralkyl which has 1 to 4 carbon atoms in the straight-chain or branched alkyl moiety and 6 to 10 carbon atoms in the aryl moiety and which is optionally monsubstituted to pollysubstituted in the aryl moiety by identical or different substituents from the group consisting of halogen, cyano, nitro, in each case straight-chain or branched alkyl, alkoxy or alkylthio, each having 1 to 4 carbon atoms, in each case straight-chain or branched halogenoalkyl, halogenoalkoxy or halogenoalkylthio, each having 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms, each case straight-chain or branched alkoxycarbonyl or alkoximinoalkyl, each having 1 to 8 carbon atoms in the individual alkyl moieties, cycloalkyl which has 3 to 7 carbon atoms, double-linked alkanediyl which has 3 to 5 carbon atoms, aryl, aralkyl, aryloxy or aralkyloxy, each of which has 6 to 10 carbon atoms in the aryl moiety and if appropriate 1 to 4 carbon atoms in the straight-chain or branched alkyl moiety and each of which is optionally monosubstituted to polysubstituted in the aryl moiety by identical or different substituents from the group consisting of halogen, alkyl, alkoxy, alkylthio, halogenoalkyl, halogenoalkoxy or halogenoalkylthio, each having 1 to 4 carbon atoms and if appropriate 1 to 9 identical or different halogen atoms, or heteroarylalkyl or heteroaryl, each of which has 2 to 9 carbon atoms and 1 to 4 identical or different hereto atoms in the heteroaryl moiety and if appropriate 1 to 4 carbon atoms in the straight-chain or branched alkyl moiety and each of which is optionally monosubstituted to polysubstituted in the heteroaryl moiety by identical or different substituents from the group consisting of halogen, alkyl, alkoxy, alkylthio, halogenoalkyl, halogenoalkoxy or halogenoalkylthio, each having 1 to 4 carbon atoms and if appropriate 1 to 9 identical or different halogen atoms;

R^2 represents dialkylamino which has 1 to 6 carbon atoms in each of the individual alkyl moieties, or represents a radical $—Z—R^3$,

X represents oxygen or sulphur or represents a radical



and

Py represents 2-pyridyl, 3-pyridyl or 4-pyridyl, each of which is monosubstituted to polysubstituted by identical or different substituents selected from the group consisting of halogen, cyano, nitro, in each case straight-chain or branched alkyl, alkoxy or alkylthio, each having 1 to 6 carbon atoms, in each case straight-chain or branched halogenoalkyl, halogenoalkoxy or halogenoalkylthio, each having 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms, in each case straight-chain or branched alkoxycarbonyl, alkoximinoalkyl, dialkylamino or dialkylaminocarbonyl, each having 1 to 4 carbon atoms in the individual alkyl moieties, in each case straight-chain or branched alkenyl or alkinyl, each having 2 to 8 carbon atoms, or aryl, aryloxy, arylthio, arylcarbonyl, aralkyl, aralkenyl, aralkinyl, aralkyloxy or heteroaryl, each of which has 6 to 10 carbon atoms in the aryl moiety and if appropriate 1 to 6 carbon atoms in the straight-chain or branched alkyl moiety or if appropriate 2 to 6 carbon atoms in the straight-chain or branched alkenyl moiety or alkinyl moiety or 2 to 9 carbon atoms and 1 to 4 identical or different hereto atoms in the heteroaryl moiety and each of which is optionally monosubstituted to polysubstituted in the respective aryl moiety or in the heteroaryl

moiety by identical or different substituents from the group consisting of halogen, alkyl, alkoxy, alkylthio, halogenoalkyl, halogenoalkoxy, halogenoalkylthio, dioxyalkylene, halogensubstituted dioxyalkylene and optionally substituted phenyl; where

R^3 represents straight-chain or branched alkyl which has 1 to 6 carbon atoms or represents aralkyl which as 1 to 4 carbon atoms in the straight-chain or branched alkyl moiety and 6 to 10 carbon atoms in the aryl moiety and which is optionally monosubstituted to pollysubstituted in the aryl moiety by identical or different substituents as set forth as possible aryl substituents in the case of R^1,

R^4 represents hydrogen, or represents straight-chain or branched alkyl which has 1 to 6 carbon atoms, or represents straight-chain or branched alkanoyl which has 1 to 6 carbon atoms in the alkyl moiety, or represents aralkyl or aryl which has 1 to 6 carbon atoms in the straight-chain or branched alkyl moiety and 6 to 10 carbon atoms in the respective aryl moiety and each of which is optionally monosubstituted to polysubstituted in the respective aryl moiety by identical or different substituents as set forth as possible aryl substituents in the case of R^1, and

Z represents oxygen or sulphur.

12. A method of combating fungi which comprises applying to such fungi or to a fungus habitat a fungicidally effective amount of a compound according to claim 1.

5,008,276

METHYL α-(2-SUBSTITUTED)PYRID-3-YL-β-METHOXYACRYLATES, COMPOSITIONS CONTAINING THEM AND THEIR USE AS FUNGICIDES

John M. Clough, Buckinghamshire; Christopher R. A. Godfrey; Stephen P. Heaney, both of Berkshire, and Kenneth Anderton, Lancashire, all of England, assignors to Imperial Chemical Industries PLC, London, England

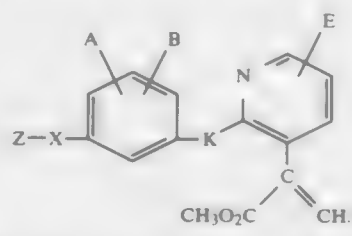
Continuation-in-part of Ser. No. 39,401, Apr. 17, 1987, Pat. No. 4,826,531. This application Oct. 17, 1988, Ser. No. 258,742

Claims priority, application United Kingdom, Oct. 15, 1987, 8724252

Int. Cl.[5] **A01K** *43/40;* **A61K** *31/50, 31/565, 31/44, 31/47, 31/495;* **C07D** *215/16, 215/20, 215/36, 211/72, 211/84, 213/63*

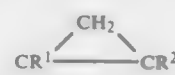
U.S. Cl. 514—335 **5 Claims**

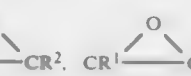
1. A fungicidal compound of the formula (I):



(I)

or a stereoisomer thereof, wherein A, B and E, which are the same or different, are H, halo, hydroxy, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkyl, C_{1-4} haloalkoxy, C_{1-4} alkylcarbonyl, C_{1-4} alkoxycarbonyl, phenoxy, nitro or cyano; K is oxygen or sulphur; X is O; $S(O)_n$, NR^4, CR^1R^2, CHR^5, CO, $CR^1(OR^2)$, $C{=}CR^1R^2$, CHR^1CHR^2, $CR^1{=}R^2$, $CHR^1CR^2{=}CH$, $C{=}C$, $OCHR^1$, CHR^1O, $OCHR^1O$, $S(O)_nCHR^1$, $S(O)_nCHR^1O$, $CHR^1S(O)_n$, CHR^1OSO_2, NR^4CHR^1, CHR^1NR^4, CO_2, O_2C, SO_2O, OSO_2, CO.CO, $COCHR^1$, $COCHR^1O$, CHR^1CO, CHOH.CHR^1, CHR^1.CHOH,





$CONR^4$, $OCONR^4$, NR^4CO, $CSNR^4$, $OCS.NR^4$, SCO.NR^4, NR^4CO_2, NR^4CS, NR^4CSO, NR^4COS, NR^4CONR^4, $S(O)_nNR^4$, $NR^4S(O)_n$, CS_2, S_2C, CO.S, SCO, N=N, N=CR^1, $CR^1{=}N$, $CHR^1CHR^2CH(OH)$, CHR^1OCO, CHR^1SCO, CHR^1NR^4CO, $CHR^1NR^4COR^4$, CHR^1CHR^2CO, O.N=CR^1, $CHR^1O.N{=}CR^2$, $COOCR^1R^2$, $CHR^1CHR^2CHR^3$, $OCHR^1CHR^2$, $(CH_2)_nO$, CHR^1OCHR^2, CHR^1CHR^2O, $OCHR^1CHR^2O$; $S(O)_nCHR^1CHR^2$, $CHR^1S(O)_nCHR^2$, $CHR^1CHR^2S(O)_n$, $CR^1{=}NMR^4$, $NR^4N{=}CR^1$, CHR^1CONR^2, $CHR^1OCO.NR^2$, $CH{=}CHCH_2O$, $COCHR^1CHR^2O$, or $(R^5)_2P^+CHR^2Q^-$; R^1, R^2 and R^3, which are the same or different, are H, C_{1-4} alkyl or phenyl; R^4 is M, C_{1-4} alkyl or COR^1, R^5 is phenyl; Q^- is a halide anion; n is 0, 1 or 2; m is 3, 4 or 5; and Z is aryl or heteroaryl, or aryl or heteroaryl substituted with one or more of halo, hydroxy, mercapto, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} alkoxy, C_{2-4} alkenyloxy, C_{2-4} alkynyloxy, halo(C_{1-4})alkyl, halo(C_{1-4})alkoxy, C_{1-4} alkylthio, hydroxy(C_{1-4})alkyl, C_{1-4}alkoxy(C_{1-4})alkyl, C_{3-6} cycloalkyl, C_{3-6} cycloalkyl(C_{1-4})alkyl, aryl, heteroaryl, aryloxy, heteroaryloxy, aryl(C_{1-4})alkyl, aryl(C_{1-4})alkyl in which the alkyl moiety is substituted with hydroxy, heteroaryl(C_{1-4})alkyl, aryl(C_{2-4})alkenyl, heteroaryl(C_{2-4})alkenyl, aryl(C_{1-4})alkoxy, heteroaryl(C_{1-4})alkoxy, aryloxy(C_{1-4})alkyl, heteroaryloxy(C_{1-4})alkyl, carbacyloxy, cyano, thiocyanato, nitro, —NR′R″, —NHCOR′, —NHCONR′R″, —CONR′R″, —COOR′, $-OSO_2R'$, $-SO_2R'$, —COR′, —CR=NR″ or —N=CR′R″ in which R′ and R″ are independently hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} alkylthio, C_{3-6} cycloalkyl, C_{3-6} cycloalkyl(C_{1-4})alkyl, phenyl or benzyl, or phenyl or benzyl substituted with halogen, C_{1-4} alkyl or C_{1-4} alkoxy; the aryl or heteroaryl rings of any of the foregoing substituents and the phenyl ring of R^5 being unsubstituted or substituted with one or more of halo, hydroxy, mercapto, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} alkoxy, C_{2-4} alkenyloxy, C_{2-4} alkynyloxy, halo(C_{1-4})alkyl, halo(C_{1-4})alkoxy, C_{1-4} alkylthio, hydroxy(C_{1-4})alkyl, C_{1-4} alkoxy(C_{1-4})alkyl, C_{3-6} cycloalkyl, C_{3-6} cycloalkyl(C_{1-4})alkyl, alkanoyloxy, benzoyloxy, cyano, thiocyanato, nitro, —NR′R″, —NHCOR′, —NHCONR′R″, —CONR′R″, —COOR′, $-OSO_2R'$, $-SO_2R'$, —COR′, —CR′=NR″ or —N=CR′R″ in which R′ and R″ have the meanings given above.

5. A method of combating fungi which comprises applying to plants, to the seeds of plants or to the locus of the plants or seeds, a compound according to claim 1.

5,008,277

N-[(ALPHA-PERHALOALKYLBENZYLOXY)PYRIDYL]-N′-BENZOYLUREA INSECTICIDES

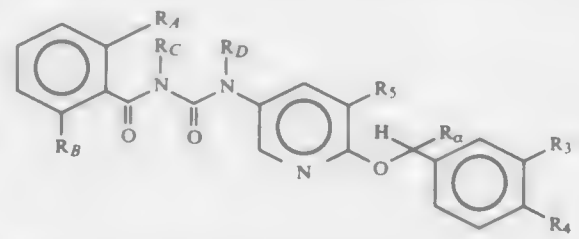
Ernest L. Plummer, Yardley, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 136,045, Dec. 21, 1989, Pat. No. 4,870,089, which is a continuation-in-part of Ser. No. 801,365, Nov. 25, 1985, abandoned. This application Jun. 30, 1989, Ser. No. 374,902

Int. Cl.[5] **C07D** *213/75, 405/12;* **A01N** *43/40*

U.S. Cl. 514—337 **23 Claims**

1. An insecticidal benzoylurea compound of the formula



wherein

R_A is selected from the group consisting of -hydrogen, -halogen, -lower alkyl, -lower alkoxy, -benzyl, and -benzyloxy;

R_B is selected from -hydrogen and -halogen;

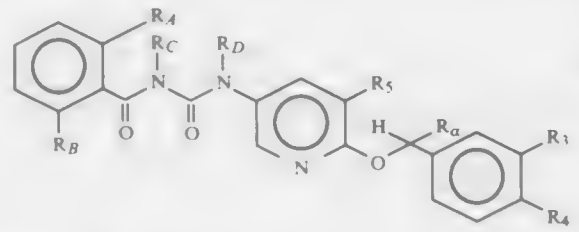
R_C and R_D together constitute a —COCO— bridge;

Rα is a lower perhaloalkyl substituent;

R_3 is selected from the group consisting of -hydrogen, -halogen and -phenylthio, and R_4 is selected from the group consisting of -hydrogen, -halogen, -lower alkyl, -lower alkoxy, -lower alkoxyalkyl, -lower haloalkoxy, -lower alkylthio, -lower alkylsulfonyl, and -diallylamino; or R_3 and R_4 together constitute a $-OCH_2O-$, $-CH_2C(CH_3)_2O-$, or $-CF_2CF_2O-$ bridge; and

R_5 is -hydrogen or -lower alkyl.

10. A method for controlling insects which comprises applying to plants upon which insects feed and whose control is desired an insecticidally effective amount of a compound of the formula



wherein

R_A is selected from the group consisting of -hydrogen, -halogen, -lower alkyl, -lower alkoxy, -benzyl, and -benzyloxy;

R_B is selected from -hydrogen and -halogen;

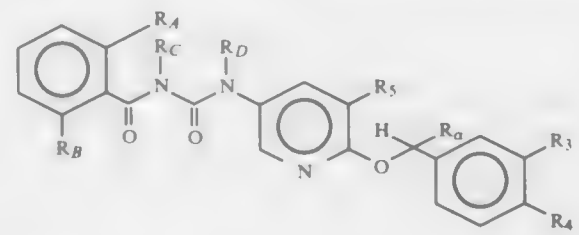
R_C and R_D together constitute a -COCO- bridge;

Rα is a lower perhaloalkyl substituent;

R_3 is selected from the group consisting of -hydrogen, -halogen and -phenylthio, and R_4 is selected from the group consisting of -hydrogen, -halogen, -lower alkyl, -lower alkoxy, -lower alkoxyalkyl, -lower haloalkoxy, -lower alkylthio, -lower alkylsulfonyl, and -diallylamino; or R_3 and R_4 together constitute a $-OCH_2O-$, $-CH_2C(CH_3)_2O-$, or $-CF_2CF_2O-$ bridge; and

R_5 is -hydrogen or -lower alkyl.

13. An insecticidal benzoylurea compound of the formula



wherein

R_A is selected from the group consisting of -hydrogen, -halogen, -lower alkyl, -lower alkoxy, -benzyl, and -benzyloxy;

R_B is selected from -hydrogen and -halogen;

R_C and R_D are both -hydrogen;

Rα is a lower perhaloalkyl substituent;

R_3 and R_4 together constitute a $-OCH_2O-$, $-CH_2C(CH_3)_2O-$, or $-CF_2CF_2O-$ bridge; and

R_5 is -hydrogen or -lower alkyl.

5,008,278

THERAPEUTICALLY ACTIVE COMPOUND AND A PROCESS FOR ITS PREPARATION

Arne E. Brandstrom, Göteborg; Per L. Lindberg, Askim, and Gunnel E. Sunden, Göteborg, all of Sweden, assignors to Aktiebolaget Hassle, Molndal, Sweden

Filed Dec. 20, 1989, Ser. No. 454,047

Claims priority, application Sweden, Dec. 22, 1988, 8804629-7

Int. Cl.[5] **A61K** *31/445;* **C07D** *213/06*

U.S. Cl. 514—338 **7 Claims**

1. 5-Fluoro-2[[(4-cyclopropylmethoxy-2-pyridinyl)methyl]-sulfinyl]-1H-benzimidazole or physiologically acceptable salts thereof, or its optical enantiomers.

5. A method for inhibiting gastric acid secretion by administering to mammals an amount of a compound as defined in claim 1 sufficient to inhibit gastric acid secretion.

5,008,279

CIRCULATION-ACTIVE FLUOROMETHOXYPHENYL DIHYDROPYRIDINE COMPOUNDS

Gerhard Franckowiak, Wuppertal; Jürgen Stoltefuss, Haan; Martin Bechem; Rainer Gross, both of Wuppertal; Michael Kayser, Leverkusen; Siegbert Hebisch, Oberhausen, and Matthias Schramm, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

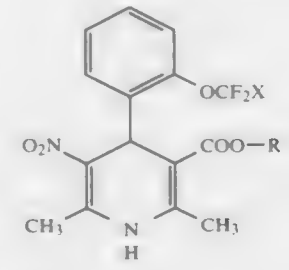
Filed Oct. 27, 1988, Ser. No. 263,671

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1987, 3737340

Int. Cl.[5] **C07D** *211/90, 401/12;* **A61K** *31/44*

U.S. Cl. 514—354 **15 Claims**

1. A fluoromethoxyphenyldihydropyridine of the formula



in which

X stands for hydrogen or fluorine and

R stands for straight-chain or branched alkyl or alkenyl having 2 to 12 carbon atoms which can be interrupted by 1 to 2 oxygen and/or sulphur atoms in the chain or for cyclic alkyl or alkenyl having up to 12 carbon atoms, which alkyl, alkenyl, cyclic alkyl or cyclic alkenyl radical can be monosubstituted or polysubstituted

(a) by hydroxyl, aryl having 6 to 12 carbon atoms, aryloxy having 6 to 12 carbon atoms, where the aryl radical is again substituted by alkyl having up to 4 carbon atoms, alkoxy having up to 4 carbon atoms or halogen, the substituents being identical or different, or

(b) by carboxyl, alkoxycarbonyl having up to 6 carbon atoms, pyridyl, piperidyl, pyrimidyl, acyloxy having up to 7 carbon atoms, sulphamoyl, carbamoyl, halogen or cyano, the substituents being identical or different, or

(c) by an amino group, where the amino group can carry one or two identical or different substituents from the group consisting of alkyl having up to 6 carbon atoms, benzyl, phenyl or acyl having up to 7 carbon atoms,

or a salt thereof.

10. A circulation-active composition comprising a circulation-active effective amount of a compound or salt according to claim 1 and a diluent.

5,008,280

2-IMINOBENZOTHIAZOLINE DERIVATIVES, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Claude Gueremy, Houilles; Patrick Jimonet, Villepreux, and Serge Mignani, Livry Gargan, all of France, assignors to Rhone-Poulenc Sante, Antony, France

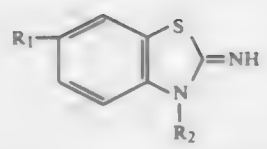
Filed Dec. 13, 1989, Ser. No. 450,231

Claims priority, application France, Dec. 15, 1988, 88 16546; Jul. 13, 1989, 89 09480

Int. Cl.[5] **C07D** *277/82;* **A61K** *31/425*

U.S. Cl. 514—367 **6 Claims**

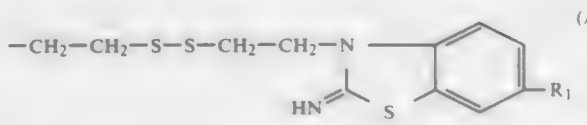
1. A compound comprising the formula



wherein R_1 represents a polyfluoroalkoxy or polyfluoroalkyl, and R_2 represents

either a residue of formula $—CH_2—(CH(R_4))_n—R_3$, wherein R_3 represents dialkylamino, piperidino, 1-pyrrolidinyl, mercapto, acylthio, alkylthio, alkylsulphinyl or alkylsulphonyl, R_4 represents hydrogen or alkyl, and n is 0 or 1,

or a residue of formula



(A)

the aforesaid alkyl radicals and alkyl and alkoxy portions containing 1 to 4 carbon atoms each in a straight or branched chain, and the said acyl portions containing 2 to 4 carbon atoms each, and its enantiomers where it contains an asymmetric centre, and its salts with inorganic or organic acids.

5,008,281

NOVEL PYRETHRINOIDS

Jacques Demassey, Montevrain; Jean-Pierre Demoute, Montreuil-Sous-Bois, and Jean Tessier, Vincennes, all of France, assignors to Roussel Uclaf, Paris, France

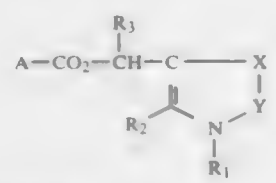
Division of Ser. No. 221,948, Jul. 20, 1988, Pat. No. 4,925,862. This application Nov. 7, 1989, Ser. No. 432,529

Claims priority, application France, Jul. 20, 1987, 87 10202

Int. Cl.[5] **A01N** *43/76, 53/00;* **C07D** *263/14, 263/24*

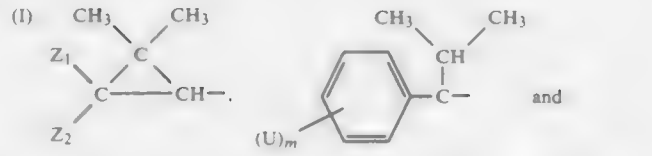
U.S. Cl. 514—376 **54 Claims**

1. All stereoisomeric forms and mixtures thereof of a compound of the formula



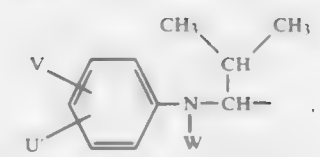
I

wherein X is —O—, Y is —C═O, —C═S or $—CH_2—$, R_1 is selected from the group consisting of hydrogen, halogen, saturated or unsaturated alkyl of 1 to 8 carbon atoms and saturated or unsaturated cycloalkyl of 3 to 8 carbon atoms, the latter two being unsubstituted or substituted with at least one halogen and carbocyclic aryl of 6 to 14 carbon atoms, R_2 is selected from the group consisting of hydrogen, $—CF_3$, $—NO_2$, —CN, halogen, alkoxy of 1 to 8 carbon atoms, aryl of 6 to 14 carbon atoms, an ester, saturated or unsaturated alkyl of 1 to 8 carbon atoms and saturated or unsaturated cycloalkyl of 3 to 8 carbon atoms, the latter two being unsubstituted or substituted with at least one halogen, R_3 is selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, —CN and —CN═CH and A is selected from the group consisting of

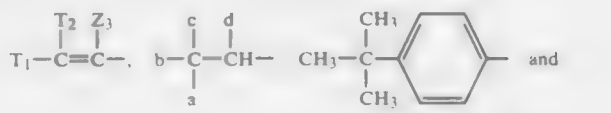


(I)

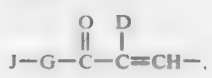
and



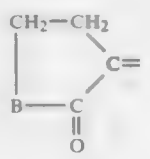
wherein Z_1 and Z_2 are methyl or Z_1 is hydrogen and Z_2 is selected from the group consisting of



and



Z_3 is hydrogen or halogen, T_1 and T_2 are individually selected from the group consisting of hydrogen, halogen, $—CF_3$, —CN, phenyl optionally substituted with a halogen and alkyl and alkoxy of 1 to 8 carbon atoms or taken together form



or taken together with the cabon to which they are attached form a cycloalkyl of 3 to 6 carbon atoms, B is —O— or —S—, a,b,c, and d are individually halogen, D is selected from the group consisting of hydrogen, halogen and alkoxy of 1 to 8 carbon atoms, G is —O— or —S—, J is selected from the group consisting of optionally unsaturated alkyl and haloalkyl of 1 to 8 carbon atoms, optionally unsaturated cycloalky of 3 to 8 carbon atoms and carboxyclic aryl of 6 to 14 carbon atoms, all optionally substituted with at least one functional group, U is selected from the group consisting of halogen and alkyl and alkoxy of 1 to 8 carbon atoms optionally substituted with at least one halogen, m is 0,1 or 1 and if 2 the Us may be different, U' and V are individually selected from the group consisting of hydrogen, halogen and $—CF_3$ and W is hydrogen or $—CH_3$.

5,008,282

CYCLIC GUANIDINE DERIVATIVES, ANTI-ULCERATIVES AND METHODS OF MANUFACTURING THE SAME

Tsuyoshi Tomiyama; Akira Tomiyama; Tadashi Shirai, all of Sakaki; Shuuichi Wakabayashi, Koushoku; Tomoyuki Kawai, Nagano; Naoto Ueyama, Ueda, and Motoharu Sonegawa, Nagano, all of Japan, assignors to Kotobuki Seiyaku Co. Ltd., Nagano, Japan

Filed Dec. 13, 1989, Ser. No. 450,264

Claims priority, application Japan, Dec. 28, 1988, 63-332550

Int. Cl.[5] **C07D** *235/30, 235/04;* **A61K** *31/415*

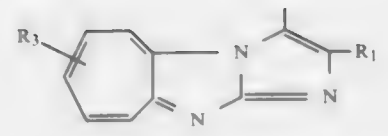
U.S. Cl. 514—393 **9 Claims**

1. A compound of the formula:



wherein:

A is



wherein:

R_1 represents a lower alkyl or phenyl group, said phenyl group being optionally substituted by a lower alkyl, alkoxy or halogeno group;

R_3 is a hydrogen atom or a lower alkyl group, and

R represents a lower alkyl, alkenyl, alkynyl, alkanoyl, alkenoyl, dialkylaminoalkyl, cyanoalkyl, alkoxycarbonylalkyl, carboxy alkenyl, alkoxycarbonyl, alkoxyalkylcarbonyl, dialkylamino carbonyl, dialkylaminothiocarbonyl, phenoxyallkylcarbonyl, piperidinoalkyl, pyridine carbonyl, substituted or unsubstituted benzoyl, or substituted or unsubstituted benzyl group and pharmaceutically acceptable acid addition salts thereof.

3. An anti-gastric ulcerative agent comprising a pharmaceutically acceptable carrier and as an active ingredient a compound defined in claim 1.

5,008,283

USE OF TENIDAP TO INHIBIT ACTIVATION OF COLLAGENASE AND TO INHIBIT THE ACTIVITY OF MYELOPEROXIDASE

Warren D. Blackburn, Jr., and Leland D. Loose, both of Groton, Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Mar. 19, 1990, Ser. No. 495,868

Int. Cl.[5] **A01N** *43/38*

U.S. Cl. 514—414 **21 Claims**

1. A method of inhibiting activation of collagenase in a mammal in need thereof which comprises administering to said mammal a collagenase activation inhibiting amount of tenidap or a pharmaceutically-acceptable base salt thereof.

5,008,284

METHOD OF REDUCING PRE- AND POST-ISCHEMIC MYOCARDIAL ARRHYTHMIAS AND FIBRILLATION

Gary J. Grover, Stockton, N.J., and James L. Bergey, Lansdale, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 311,321, Feb. 15, 1989, Pat. No. 4,931,464. This application Dec. 18, 1989, Ser. No. 452,037

Int. Cl.[5] **A61K** *31/675*

U.S. Cl. 514—423 **4 Claims**

1. A method of reducing pre- and post-ischemic arrhythmias and fibrillation as well as reducing arrhythmias associated with congestive heart failure in a mammalian species which comprises administering to a mammalian species in need of such treatment an effective amount of fosinopril or a pharmaceutically acceptable salt of fosinopril alone or in combination with a thrombolytic agent or antifibillatory agent or with a non-pharmaceutical reperfusion technique.

5,008,285

(6,11-DIHYDRO-11-OXODIBENZ[b,e]OXEPIN-YL)PENTANOIC ACIDS AND DERIVATIVES THEREOF

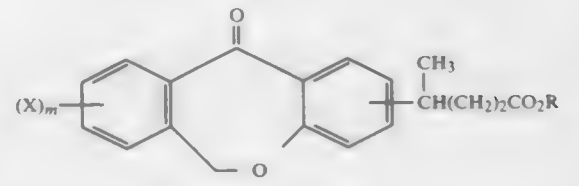
Lawrence L. Martin, Lebanon, and Linda L. Setescak, Somerville, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 252,328, Oct. 3, 1988, abandoned, which is a continuation of Ser. No. 945,626, Dec. 23, 1986, abandoned, which is a continuation of Ser. No. 604,672, Apr. 27, 1984, abandoned. This application Nov. 1, 1989, Ser. No. 430,045

Int. Cl.[5] **A61K** *31/335;* **C07D** *313/12*

U.S. Cl. 514—450 **2 Claims**

1. A method of suppressing arthritic inflammation with low gastric irritability in mammals which comprises orally administering to a mammal in need of arthritic type inflammation suppression with low gastric irritability an effective amount of a compound of the formula



wherein R is hydrogen or loweralkyl of 1 to 5 carbon atoms; X is hydrogen, loweralkyl of 1 to 5 carbon atoms, loweralkoxy of 1 to 5 carbon atoms, halogen or trifluoromethyl, and m is 1 or 2, the optical antipode thereof; or a pharmaceutically acceptable salt thereof.

5,008,286

CERTAIN SUBSTITUTED NAPHTHOFURANS WITH ANTI-TUMOR PROPERTIES

Kenneth W. Bair, Chapel Hill, N.C., assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 132,724, Dec. 11, 1987, Pat. No. 4,866,070, Continuation of Ser. No. 801,085, Nov. 22, 1985, abandoned, Continuation-in-part of Ser. No. 673,355, Nov. 20, 1984, abandoned. This application Aug. 28, 1989, Ser. No. 401,612

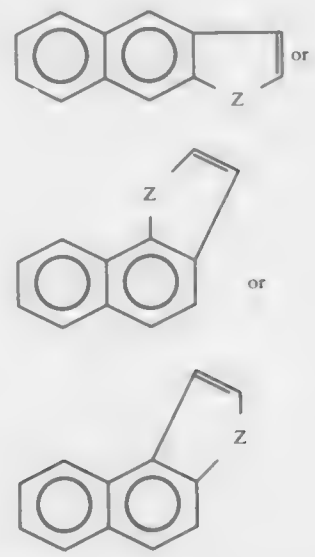
Int. Cl.[5] **A61K** *31/34;* **C07D** *307/92*

U.S. Cl. 514—468 **11 Claims**

1. A compound of the formula (I):

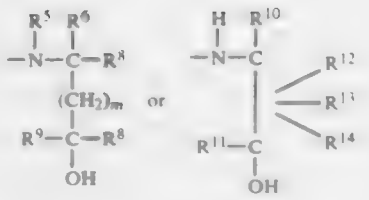
$$ArCH_2R^1 \qquad (I)$$

or a monomethyl or monoethyl ether thereof, an ester thereof derived from a C_{1-6} alkanoic acid or a pharmaceutically acceptable acid addition salt thereof wherein Ar is



wherein Z is O

wherein R^1 contains not more than eight carbon atoms and is a group:



wherein m is 0 or 1;
R^5 is hydrogen;
R^6 and R^7 are the same or different and each is hydrogen or C_{1-5} alkyl, or C_{1-5} alkyl substituted by hydroxy;
R^8 and R^9 are the same or different and each is hydrogen or C_{1-3} alkyl;
—C—C— is a five- or six-membered saturated carbocyclic ring;
R^{10} is hydrogen, methyl or hydroxymethyl;
R^{11}, R^{12} and R^{13} are the same or different and each is hydrogen or methyl; and R^{14} is hydrogen, methyl, hydroxy or hydroxymethyl.

5,008,287

PHARMACEUTICAL COMPOSITIONS HAVING ANTINEOPLASTIC ACTIVITY

Sergio Monti, Lugano, Switzerland, assignor to Onco-Pharm Development AG, Vaduz/Lichtenstein, Fed. Rep. of Germany

Filed Mar. 3, 1989, Ser. No. 318,905
Claims priority, application Switzerland, Mar. 7, 1988, 842/88
Int. Cl.[5] A61K *31/28, 31/095*
U.S. Cl. 514—492 **6 Claims**

1. A method for treating a neoplasm sensitive to treatment with a selenium compound in a human consisting of administering to said humans in need thereof an effective amount of a diselenide of formula I

R—Se—Se—R′ (I)

wherein R and R′ which can be the same or different represent a linear or branched chain C_1–C_{20}-alkyl or C_2–C_{20}-alkenyl group and a pharmaceutically acceptable vegetal oil carrier.

5,008,288

CARNITINE DIRECTED PHARMACEUTICAL AGENTS

Alfred Stracher, 47 The Oaks, Roslyn Estates, N.Y. 11576, and Leo Kesner, 1726 E. 32nd St., Brooklyn, N.Y. 11234

Division of Ser. No. 3,888, Jan. 15, 1987, Pat. No. 4,866,040, which is a continuation-in-part of Ser. No. 816,546, Jan. 6, 1986, Pat. No. 4,742,081. This application May 4, 1989, Ser. No. 347,361
The portion of the term of this patent subsequent to May 3, 2005, has been disclaimed.
Int. Cl.[5] A61K *31/24, 31/44, 37/02;* **C07K** *17/02*
U.S. Cl. 514—535 **11 Claims**

1. A compound comprising a carrier selected from the group consisting of carnitine and cysteic acid covalently bonded through an alcohol, carboxyl or amine group to a pharmaceutically active compound selected from the group consisting of pepstatin, procainamide, quinidine, propranolol and leucyl argininal.

6. A compound according to claim 1, wherein the pharmaceutically active compound is procainamide.

5,008,289

COMPOSITION FOR TREATING NASAL DISORDERS AND HEADACHES

Joel E. Bernstein, Deerfield, Ill., assignor to GalenPharma, Inc., Deerfield, Ill.

Filed Dec. 2, 1988, Ser. No. 279,586
Int. Cl.[5] A61K *31/24, 31/16*
U.S. Cl. 514—535 **7 Claims**

1. A composition for treating the symptoms of nasal disorders and headaches, said composition comprising:
a solution or suspension formulated from a pharmaceutically acceptable carrier for instillation into the nose, said solution or suspension containing capsaicin in concentrations from about 0.001% to about 1% weight
and including a pharmaceutically acceptable local anesthetic selected from the group consisting of lidocaine or benzocaine in concentrations from about 0.5% to about 20% by weight.

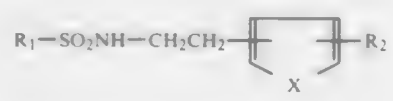
5,008,290

SULPHONAMIDOETHYL COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS COMPRISING THESE COMPOUNDS

Armin Heckel; Josef Nickl; Erich Muller; Berthold Narr; Johannes Weisenberger; Wolfgang Eisert, and Thomas Muller, all of Biberach, Fed. Rep. of Germany, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany

Division of Ser. No. 92,742, Sep. 3, 1987, Pat. No. 4,870,076. This application Mar. 3, 1989, Ser. No. 319,397
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1986, 3629929
Int. Cl.[5] A61K *31/34;* **C07D** *307/54*
U.S. Cl. 514—544 **6 Claims**

1. Sulphonamidoethyl compounds of formula



(I)

wherein
R_1 is phenyl optionally mono-, di- or trisubstituted by halo, methyl or methoxy, where the substituents may be the same or different, or benzyl, nitrophenyl, acetamidophenyl or thienyl,
R_2 is hydroxycarbonyl or alkoxycarbonyl with a total of 2 to 4 carbon atoms bonded via straight chained or branched C_1–C_5 alkylene or via C_2–C_5 alkenylene, whilst any methylene group in the above-mentioned alkylene or alkenylene groups, which must be liked to the heterocyclic group, may be replaced by hydroxymethylene or carbonyl, and
X is oxygen,
the enantiomers and salts thereof with inorganic or organic bases, if R_2 comprises hydroxycarbonyl.

5. A method for treatment of thromboembolic disorders in a warm-blooded animal which comprises administering to said animal a therapeutically acceptable amount of a compound as recited in claim 1.

5,008,291

METHOD AND COMPOSITION FOR ACHIEVING CHEMOTHERAPEUTIC ACTIVITY

John P. Minton; Thomas E. Webb, and Hussein M. Abou-Issa, all of Columbus, Ohio, assignors to Ohio State University Research Foundation, Columbus, Ohio

Continuation-in-part of Ser. No. 89,568, Aug. 26, 1987, abandoned. This application Nov. 13, 1989, Ser. No. 436,046
The portion of the term of this patent subsequent to Apr. 23, 2008, has been disclaimed.
Int. Cl.[5] A61K *31/185*
U.S. Cl. 514—578 **7 Claims**

1. A dietary supplement for use as a chemotherapeutic agent in treating mammary cancer in humans or animals via steady and prolonged inhibition of beta-glucuronidase and via elevation of the level of cellular cAMP (cyclic AMP) and of histone kinases, the supplement consisting essentially of approximately 0.01 to 0.02 parts by weight of calcium glucarate for inhibiting beta-glucuronidase and approximately 0.0003 to 0.0006 parts by weight of N-(4-hydroxyphenyl) retinamide for elevating levels of cellular cAMP and of histone kinases.

4. A method of treating mammary cancer in humans or animals comprising administering an amount, which is safe and sufficient of the dietary supplement of claim 1 including the glucarolactone-based compound and the retinoid-based compound, or a pharmaceutically acceptable salt thereof to a patient having at least one mammary tumor.

5,008,292

PESTICIDAL METHOD

Zoltán Ecsery; József Knoll; Eva Somfai; Zoltán Török; Éva Szinnyei, and Károly Mozsolits, all of Budapest, Hungary, assignors to Chinoin Gyogyszer Es Vegyeszeti Termekek Gyara R. T., Budapest, Hungary

Continuation of Ser. No. 739,185, May 30, 1985, abandoned. This application Nov. 25, 1987, Ser. No. 129,342
Claims priority, application Hungary, May 31, 1984, 2124/84
Int. Cl.[5] A01N *33/04;* **C07C** *211/03*
U.S. Cl. 514—654 **3 Claims**

1. A method of combatting insects which comprises applying onto plants to be protected or onto the insects or the environment thereof an effective amount of a pesticidal composition which comprises a compound selected from the group consisting of N-{2-(4-fluorophenyl)-1-methyl}-ethyl-N-methyl-N-propynyl amine, its optical isomers, and its acid addition salts, as an active ingredient.

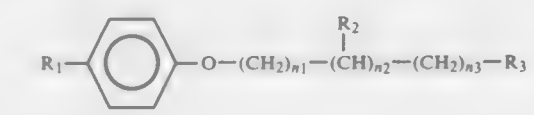
5,008,293

PROCESS FOR THE TREATMENT OF THE SKIN TO ALLEVIATE SKIN DISEASES ARISING FROM CONTACT SENSITIZATION OR IRRITATION UTILIZING P-SUBSTITUTED PHENOXY ALKANOLS

Frank M. Berger, 515 E. 72nd St., Ste. 30E, New York, N.Y. 10021

Filed Jul. 22, 1988, Ser. No. 223,146
Int. Cl.[5] A61K *31/075*
U.S. Cl. 514—718 **8 Claims**

1. A process for alleviating contact sensitization or irritation which arises when an agent giving rise to contact hypersensitivity is administered topically to the skin of the animal, which comprises administering with the said agent an amount therapeutically effective to inhibit such contact hypersensitivity or specific irritation of a substituted phenoxy alkanol having the formula:



in which:
R_1 substituted in ortho, meta or para position or combination of these is selected from hydrogen, halogen, alkyl having from one to six carbon atoms, preferably p-chlorine or p-tertiary-butyl; and bivalent cycloalkylene condensed with the phenyl group at adjacent ring carbons thereof, such as in indane;
R_2 and R_3 are hydrogen or hydroxyl and at least one of R_2 and R_3 is hydroxyl; and
n_1, n_2 and n_3 represent the number of CH_2, CHR_2 and CH_2 groups, respectively, and are numbers within the range from 1 to 10.

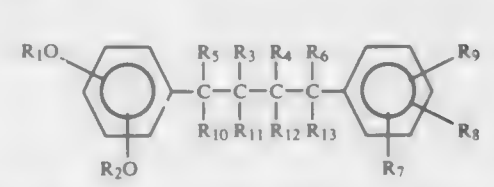
5,008,294

METHODS OF TREATING TUMORS WITH COMPOSITIONS OF CATECHOLIC BUTANES

Edward S. Neiss, Denver, and Larry M. Allen, Golden, both of Colo., assignors to Chemex Pharmaceuticals, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 52,120, May 4, 1987, abandoned, which is a continuation of Ser. No. 699,923, Feb. 11, 1985, abandoned, which is a continuation-in-part of Ser. No. 578,501, Apr. 9, 1984, abandoned, which is a continuation-in-part of Ser. No. 465,631, Feb. 10, 1983, abandoned, which is a continuation-in-part of Ser. No. 365,781, Apr. 5, 1982, abandoned, which is a continuation-in-part of Ser. No. 49,886, Jun. 19, 1979, abandoned. This application Jun. 3, 1987, Ser. No. 57,481
Int. Cl.[5] A61K *31/05*
U.S. Cl. 514—731 **34 Claims**

1. A method for inhibiting the growth of a tumor which comprises topically administering to the situs of the tumor of a mammal in need of said treatment an effective amount of a composition comprising at least 1 catecholic butane of the formula:



wherein R_1 and R_2 are independently H, lower alkyl, lower acyl, or alkylene;
R_3, and R_4, R_5, R_6, R_{10}, R_{11}, R_{12} and R_{13} are independently H or lower alkyl;
R_7, R_8 and R_9 are independently H, hydroxy, lower alkoxy, lower acyloxy, or any two adjacent groups together may be alkylene dioxy.

5,008,295

METHOD INHIBITING THE GROWTH OF CANCER CELLS

Hoyoku Nishino, Hirakata; Ryozo Iwasaki, Tokyo; Akio Okabe, Tokyo, and Yuki Yogo, Tokyo, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Jul. 28, 1988, Ser. No. 225,020
Claims priority, application Japan, Jul. 30, 1987, 62-191301
Int. Cl.[5] A61K *31/015*
U.S. Cl. 514—766 **9 Claims**

1. A method of inhibiting the growth of cancer cells which are susceptible to treatment with α-carotene, said method consisting essentially of:
administerting an effective cancer cell growth inhibiting amount of α-carotene to a mammal having said cancer cells.

5,008,296

BREATHABLE MICROPOROUS FILM

Mitchell K. Antoon, Jr., and David J. Hill, both of Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 224,632, Jul. 27, 1988, Pat. No. 4,293,650.
This application Mar. 29, 1990, Ser. No. 500,975
Int. Cl.[5] C08J 9/32, 9/36; B29C 55/12
U.S. Cl. 521—91 7 Claims

1. A breathable film composition comprising:
20 to 37% by weight of a polymer or copolymer of an α-olefin having 2-8 carbons or mixtures thereof,
60 to 75% by weight of calcium carbonate or glass beads having particle sizes of 10 to 25 micrometers,
0.1 to 3.0% by weight of calcium stearate, and
optionally, 0 to 2% by weight of a UV light, oxygen, and heat stabilizer,
wherein the moisture level in the blended composition is maintained below 700 ppm prior to forming a casting and then, based on the polymer or copolymer used, stretching the casting to produce oriented film in 2 directions from about 1.5 to 7 times in each direction in a temperature range of from about 20° to about 160° C. and each oriented film having a Gurley porosity (method B, ASTM D-726) of 0.1 second to 85 seconds so that the film has good air and water vapor transmission rates but is substantially impenetrable by liquid water.

5,008,297

METHOD FOR PRODUCING PHENOL RESIN FOAMS AND METHOD OF MAKING FOAMED LAMINATES

Akihiro Maruyama; Munehiko Kato; Takumi Ishiwaka; Katsuto Seki, and Takashi Ohashi, all of Yokohama, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed May 25, 1989, Ser. No. 356,945
Claims priority, application Japan, May 27, 1988, 63-129987; May 27, 1988, 63-129988
Int. Cl.[5] C08G 18/14
U.S. Cl. 521—136 7 Claims

1. A method for producing a phenol resin foam which comprises blending a resol phenol resin, a blowing agent and a catalyst; and foaming the resultant blend, said resol phenol resin comprising a mixture of a low molecular weight resol phenol resin with a number average molecular weight of less than 200 and a high molecular weight resol phenol resin with a number average molecular weight of greater than 200 are mixed at a weight ratio of from 5/95 to 80/20.

5,008,298

EXPANDABLE THERMOPLASTIC RESIN BEADS

Richard B. Allen, Pittsfield, Mass.; William E. Gibbs, Chesapeake, Va., and Lynn M. Hans, Pittsfield, Mass., assignors to General Electric Co., N.Y.

Division of Ser. No. 502,095, Mar. 30, 1990, Pat. No. 4,968,466, which is a division of Ser. No. 384,774, Jul. 24, 1989, Pat. No. 4,920,153, which is a division of Ser. No. 232,900, Aug. 16, 1988, Pat. No. 4,874,796, which is a division of Ser. No. 62,004, Jun. 12, 1987, Pat. No. 4,782,098. This application Aug. 29, 1990, Ser. No. 574,703
Int. Cl.[5] C08J 9/22
U.S. Cl. 521—139 7 Claims

1. A thermoformed structure of an interpolymer of from 1 to 50 parts of a polyphenylene ether resin and from 99 to 50 parts of a polymerized vinyl aromatic monomer per 100 parts of resin and monomer foam prepared by the method which comprises:
(a) subjecting a sheet of said foam having a density of less than 20 lbs./ft.^{3} to a first temperature sufficient to permit a shaped formation to be effected therein;
(b) effecting a shape in said sheet while at said temperature; and
(c) reducing the temperature of said sheet to a second temperature permitting permanent retention of said shape in said sheet at or below said second temperature.

5,008,299

RIGID POLYURETHANE FOAMS WITH LOW THERMAL CONDUCTIVITIES

Benjamin W. Tucker, Bethany, and Debkumar Bhattacharjee, Meriden, both of Conn., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 282,369, Dec. 9, 1988, abandoned. This application Feb. 20, 1990, Ser. No. 482,380
Int. Cl.[5] C08G 18/42, 18/48
U.S. Cl. 521—159 18 Claims

1. In a rigid cellular polyurethane prepared by bringing together under foam forming conditions an aromatic polyisocyanate and a polyhydric combination comprising (a) a polyester polyol derived from crude reaction residues or from scrap polyester resins and (b) a conventional polyol, the improvement which comprises employing as said conventional polyol (b) from about 5 to about 30 percent by weight based on the combined weight of (a) and (b) of a cross-linking polyether polyol to result in an initial insulation K factor of consistently about 0.093 to about 0.100 btu-in/hr. ft^2°F. in said polyurethane.

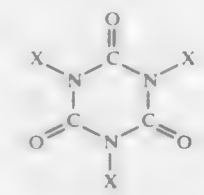
5,008,300

VISIBLE LIGHT RAY-CURABLE MONOMERIC COMPOSITION FOR FASTENING LOOSE TEETH

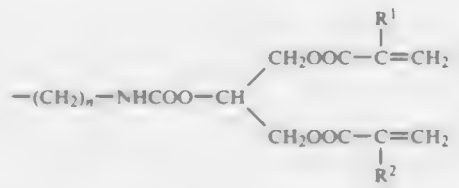
Takayuki Makino, Otake; Nobuhiro Mukai, Hiroshima, and Hitoshi Ige, Otake, all of Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan

Filed Sep. 11, 1989, Ser. No. 405,891
Claims priority, application Japan, Sep. 16, 1988, 63-230062
Int. Cl.[5] A61K 6/00; C08F 26/06, 226/06
U.S. Cl. 522—8 10 Claims

1. A visible light ray-curable monomeric dental adhesion composition consisting essentially of:
(a) a filler component consisting of at least one type of fine, solid particles having an average size of from 0.01 to 100 μm and in an amount of from 40% to 85% base on the total weight of the monomeric composition;
(b) a polyfunctional monomer component consisting of at least one type of radical polymerizable, polyfunctional monomer selected from the group consisting of 2,2-bis[4-(methacryloxyethoxy)phenyl]propane and a hexafunctional urethane acrylate compound of the formula.



wherein X is a group of the formula:



n is an integer of 1 to 10, and R^1 and R^2 are each selected from the group consisting of a hydrogen atom and a methyl radical;
(c) a monofunctional monomer component comprising at least one type of radical polymerizable, monofunctional monomer selected from the group consisting of 2-hydroxyethyl methacrylate, 2-methacryloyloxyethyl phosphate, benzyl methacrylate, and 2-ethylhexyl methacrylate;
the monofunctional monomer component (c) being present in an amount of from 1% to 80% based on the total weight of the polyfunctional monomer component (b) and the monofunctional monomer component (c), and
the polyfunctional monomer component (b) and the monofunctional monomer component (c) being present in a total amount of from 15% to 80% based on the total weight of the monomeric composition; and
(d) a photopolymerization initiator; said monomeric composition having a viscosity of 1,000 to 500,000 cps at a temperature of 25° C.

5,008,301

ULTRAVIOLET CURING CONFORMAL COATING WITH DUAL SHADOW CURE

William E. Dennis, and Bernard VanWert, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Feb. 21, 1989, Ser. No. 313,407
Int. Cl.[5] G08G 77/06; C08G 77/20
U.S. Cl. 522—13 32 Claims

1. In an ultraviolet radiation curable composition comprising a mixture of (A) an acrylamide functional polydiorganosiloxane present in an amount of at least 10 weight percent and is an acrylamide polyorganosiloxane having at least two organic groups which have acrylamide group functionality bonded to silicon atoms through Si—C bonds and on the average at least 20 but less than 1500 siloxane units per molecule, the organic groups bonded to the silicon atoms other than those having the acrylamide group functional are selected from the group consisting of methyl and phenyl; (B) a methacryloxyalkyl functional and alkoxy functional polydiorganosiloxane present in an amount of at least 20 weight percent and is a polydiorganosiloxane having endgroups where there are two alkoxy groups per endgroup bonded to silicone through an Si—O bond and one methacrylate group bonded to silicon atoms through Si—C bonds and having on the average less than 350 diorganosiloxane units per molecule, said diorganosiloxane units being selected from dimethylsiloxane units, diphenylsiloxane units, and methylphenylsiloxane units wherein at least 50 percent of the organic groups of the diorganosiloxane are methyl; (C) a photoinitiator, and (D) an organic titanate, the improvement comprising increasing the storage stability by the addition of (E) 1,1-bis-tertiary-butylperoxy cyclohexane in a sufficient quantity to also provide cure activated by heat in areas shadowed from ultraviolet radiation.

5,008,302

TITANOCENES, THE USE THEREOF, AND N-SUBSTITUTED PYRROLES

Rinaldo Hüsler, Marly, Switzerland; Bernd Klingert, Inzlingen, Fed. Rep. of Germany; Manfred Rembold, Aesch, and Eginhard Steiner, Füllinsdorf, both of Switzerland, assignors to Ciga-Geigy Corporation, Ardsley, N.Y.

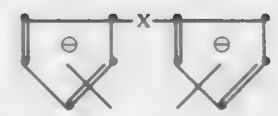
Filed Nov. 21, 1988, Ser. No. 273,522
Claims priority, application Switzerland, Dec. 1, 1987, 4683/87
Int. Cl.[5] B01J 31/00; C08F 2/50, 4/76; C07D 207/00
U.S. Cl. 522—14 21 Claims

1. A titanocene of the formula 1



(I)

in which both R^1 radicals, independently of one another, are cyclopentadienyl⊖, indenyl⊖ or 4,5,6,7-tetrahydroindenyl⊖, each of which is unsubstituted or mono- or polysubstituted by C_1–C_{18}alkyl or -alkoxy, C_2–C_{18}alkenyl, C_5–C_8cycloalkyl, C_6–C_{16}aryl, C_7–C_{16}aralkyl, SiR_3^4, GeR_3^4, cyano or halogen, or both R^1 together are a radical of the formula II

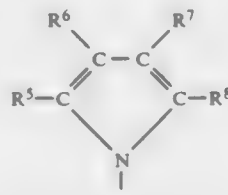


(II)

unsubstituted or substituted as above, in which X is —CH_2—n where n=1, 2 or 3, unsubstituted or phenyl-substituted alkylidene having 2 to 12 carbon atoms, cycloalklidene having 5 to 7 ring carbon atoms, SiR_2^4, SiR_2^4—O—SiR_2^4, GeR_2^4 or SnR_2^4, and R^4 is C_1–C_{12}alkyl, C_5–C_{12}cycloalkyl, C_6–C_{16}aryl or C_7–C_{16}aralkyl, R^2 is a 6-membered carbocyclic or 5- or 6-membered heterocyclic aromatic ring which is substituted by fluorine atoms in at least one of the two ortho-positions to the titanium-carbon bond, and in which the aromatic ring may contain further substituents, R^3, independently, is as defined for R^2 or R^2 and R^3 together are a radical of the formula III

—Q—Y—Q— (III)

in which Q is a carbocyclic aromatic ring where the two bonds are each in the ortho-position to the Y group and the second ortho-position to the titanium-carbon bond is in each case substituted by a fluorine atom and where Q may contain further substituents, and Y is CH_2, alkylidene having 2 to 12 carbon atoms, cycloalkylidene having 5 to 7 ring carbon atoms, NR^4, O, S, SO, SO_2, CO, SiR_2^4, GeR_2^4 or SnR_2^4, and R^4 is as defined above, wherein, in the titanocenes, R^2 and R^3 are substituted by a radical of the formula IV



(IV)

in which R^5, R^6, R^7 and R^8, independently of one another, are a hydrogen atom, linear or branched C_1–C_{18}alkyl, C_2–C_5alkenyl, C_7–C_9aralkyl or -alkaryl, C_8–C_{10}alkaralkyl, C_6–C_{10}aryl, 2-furyl, C_5–C_8cycloalkyl, C_5–C_8cycloalkenyl, C_2–C_{12}alkanoyl or C_2–C_{12}alkoxycarbonyl each of which is unsubstituted or substituted by C_2–C_8dialkylamino or -aminomethyl, bis-[2-(C_1–C_4alkoxy)ethyl]-amino or -aminomethyl, morpholino, morpholinylmethyl, piperidino, piperidinylmethyl, N-methylpiperazino, N-methylpiperazinylmethyl, pyrrolidino, pyrrolidinylmethyl, quaternary C_3–C_{10}trialkylammonium or -ammoniummethyl, C_1–C_{12}alkoxy, —$OCH_2CH_2)_1$0-C_1–C_{16}alkyl in which 1 is a number from 1 to 20, 1,3-dioxolan-2-yl, 4-methyl-1,3-dioxolan-2-yl, —$OCH_2CH_2$0—, C_1–C_{12}alkoxycarbonyl, C_2–C_{12}alkanoyloxy, C_2–C_{12}alkanoyl, C_1–C_{12}alkylthio, halogen, cyano or SiR_3^4 in which R^4 is as defined above; or are —CHO, —SiR_3^4 or —GeR_3^4 in which R^4 is as defined above; or R^5 and R^6 and/or R^7 and R^8 or R^6 and R^7 in each case together are —$(CH_2)_3$—, —$(CH_2)_4$—, —CH=CH—CH=CH—, —CH=CH—C(R^{11})=CR—, —CH_2OCH_2— or —$CH_2N(C_1$–C_4alkyl)CH_2— in which R^{11} is hydroxyl, C_1–C_4alkoxy or C_2–C_4alkanoyloxy.

17. A method of photopolymerizing a non-volatile, monomeric, oligomeric or polymeric compound containing at least one polymerizable, ethylenically unsaturated double bond, which comprises
adding an effective photoinitiating amount of at least one titanocene of formula I according to claim 1 to said compound, and
irradiating the composition obtained.

18. A method according to claim 17 wherein at least one additional photoinitiator is also added.

19. A method according to claim 18 wherein the additional photoinitiator is selected from the group consisting of a ben-

zoin alkyl ether, a benzophenone, a benzil ketal, a 4-aroyl-1,3-dioxolane, a dialkoxyacetophenone, an α-hydroxyacetophenone, an α-aminoacetophenone and an α-hydroxycycloalkyl phenyl ketone.

5,008,303

MOLDING COMPOSITION FOR MAKING CASTING PATTERNS

Oswald Gasser, Seefeld; Rainer Guggenberger, Herrsching, and Klaus Ellrich, Wörthsee, all of Fed. Rep. of Germany, assignors to ESPE Stiftung & Co. Produktions- und Vertriebs KG, Seefeld, Fed. Rep. of Germany

Filed Jan. 26, 1990, Ser. No. 471,087

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1989, 3902417

Int. Cl.[5] **B22C** *7/00, 9/02;* **C08F** *2/00*

U.S. Cl. 522—64 **7 Claims**

1. A molding composition, for making casting patterns, comprising:

(a) 10–99.89% by weight of at least one of the group consisting of di and polyfunctional acrylic acid and methacrylic acid ester, all of which burn without leaving a residue;

(b) 0.01–5% by weight of an initiator system that can initiate the radical polymerization;

(c) 0–80% by weight of at least one of the group consisting of organic fillers, pigments, and other auxiliary substances, all of which burn without leaving a residue, whereby the quantity particulars of the respective components of (a), (b), and (c) are each related to the total amount of (a)+(b)+(c); and

(d) 0.1–30% by weight, with respect to component (a), of a chemically inert organic compound that burns without leaving a residue and has a boiling point and/or sublimation point in the range of >150° C.

5,008,304

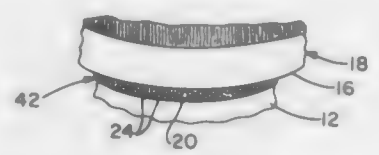
ORTHODONTIC APPLIANCE ADHESIVE

Bradley A. Kmmtt, 2616 Mayfield Rd., No. 2, Cleveland Heights, Ohio 44106

Filed May 17, 1989, Ser. No. 353,620

Int. Cl.[5] **C08J** *7/00*

U.S. Cl. 523—118 **12 Claims**



1. An adhesive composite, comprising:

an adhesive material; and

a plurality of release particles suspended within said adhesive material, said particles being coated with a hydrophobic coating for repelling said adhesive material to remain substantially unattached thereto.

5,008,305

TREATED SILICA FOR REINFORCING SILICONE ELASTOMER

Linda D. Keenan; Theodore L. Knapp; Carl M. Monroe, and Olgerts Skostins, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Feb. 6, 1989, Ser. No. 306,193

The portion of the term of this patent subsequent to Jan. 15, 2008, has been disclaimed.

Int. Cl.[5] **C08K** *9/06*

U.S. Cl. 523—212 **11 Claims**

1. An improved reinforcing silica filler having a surface area of greater than 50 m^2/g, said surface having been treated by mixing 100 parts by weight of silica, having from 0.5 to 6 parts by weight of adsorbed moisture, with a treating mixture comprising from 1 to 30 parts by weight of volatile treating agent of the formula $R_xSi(OR')_{4-x}$, wherein R is a alkyl, alkenyl, or aryl radical having from 1 to 6 carbon atoms which may be substituted with halogen atoms, R' is an alkyl radical having from 1 to 3 carbons atoms, x is 1 or 2, and R and R' are chosen so that the vapor pressure of the alkoxysilane equals or exceeds 0.0001 atmosphere at treatment temperature, for a period of time sufficient to allow the desired amount of treating agent to be adsorbed onto the surface of the particulate filler, wherein the volatile treating agent comprises a combination of from 0.2 to 10 parts by weight of volatile treating agent of the formula $Vi_xSi(OR')_{4-x}$ and from 0.2 to 15 parts by weight of volatile treating agent of the formula $Ph_xSi(OR')_{4-x}$, where Vi is vinyl radical and Ph is phenyl radical.

5,008,306

REINFORCED THERMOPLASTICS SHEET AND ITS MANUFACTURING PROCESS

Michel Goguelin, Charavines, France, assignor to Exxon Chemical Patents Inc., Florham Park, N.J.

Filed Jul. 22, 1988, Ser. No. 223,022

Claims priority, application France, Jul. 23, 1987, 87 10490

Int. Cl.[5] **C08K** *7/00*

U.S. Cl. 523—220 **26 Claims**

1. A process for preparing by the wet method a reinforced thermoplastics semi-finished product in sheet form, which process comprises the following steps:

(a) mixing

(i) a first aqueous dispersion of an ionic dispersing agent having an ionic charge with reinforcing fibers, and

(ii) a second aqueous dispersion containing at least one thermoplastics polymer powder and at least one ionic polymer additive of opposite charge to that of the ionic dispersing agent of the first dispersion, to form a mixture,

(b) incorporating into the mixture a flocculating agent in ionic polymer form, of high molecular weight and of charge opposite to that of said mixture, and

(c) draining the resulting suspension and drying the resulting semi-finished product.

5,008,307

LIQUID SILICONE RUBBER COMPOSITION CAPABLE OF YIELDING A THERMAL CONDUCTIVE VULCANIZED PRODUCT

Hiroshi Inomata, Takasaki, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Japan

Continuation of Ser. No. 178,167, Apr. 6, 1988, abandoned. This application Dec. 11, 1989, Ser. No. 449,330

Claims priority, application Japan, Apr. 6, 1987, 62-83990

Int. Cl.[5] **C08K** *7/08*

U.S. Cl. 523—220 **13 Claims**

1. A liquid silicone rubber composition capable of yielding a vulcanized product having good thermal conductivity, said composition comprising:

100 parts by weight of an organopolysiloxane having the following average unit formula

$$R_xSiO_{(4-x)/2}$$

in which each R represents an unsubstituted or substituted monovalent hydrocarbon group, and X is a value of 1.8 to 3.0, the organopolysiloxane containing at least 0.1 mole % of an aliphatic unsaturated group in one molecule and having a viscosity of from 50 to 10,000 centistokes at 25° C.;

from 0.1 to 50 parts by weight of an organohydrogenpolysiloxane having at least two ≡SiH bonds in one molecule;

from 270 to 900 parts by weight of an alumina filler made of (a) from 10 to 95 wt % of an alumina powder having a substantially spherical shape and an average size of from 10 to 50 micrometers and, correspondingly, (b) from 90 to 5 wt % of an alumina powder having an average size less than 10 micrometers; and

a catalytic amount of platinum or a platinum-containing compound catalyst for the addition reaction between the organopolysiloxane and the organohydrogenpolysiloxane.

5,008,308

THERMAL ADHESIVE COATING COMPOSITION BASED ON EPOXY RESIN, HIGH TG POLYMER, AMINE CURING AGENT AND FILM FORMING AGENT

Teruyuki Takahashi, Ashiya, and Mitsuru Kohno, Sanda, both of Japan, assignors to Kawasaki Steel Corp., Hyogo, Japan

Filed Feb. 17, 1989, Ser. No. 312,883

Int. Cl.[5] **C08L** *63/00*

U.S. Cl. 523—406 **2 Claims**

1. Thermal adhesive coating composition consisting essentially of

(A) an emulsion of a thermoplastic synthetic resin having a glass transition temperature of not lower than 60° C.,

(B) an emulsion of an epoxy resin,

(C) an amine base curing agent for the epoxy resin, said curing agent being capable of reacting with said component (B) when heated, and

(D) a film forming assistant agent having solubility in water at 20° C. of not higher than 20g/100cc and having solubility therein of water at 20° C. of not lower than 0.5g/100cc, the weight ratio of the solid resin contents in said component (A) to those in said component (B) being 60/40 to 98/2.

5,008,309

BALANCING PUTTY

Hiromitu Ibe, Kosai; Ichiro Akutagawa, Nagareyama, and Kunimitsu Matsuzaki, Yono, all of Japan, assignors to Asmo Co., Ltd. and Somar Corporation, both of, Japan

Filed Apr. 20, 1989, Ser. No. 340,734

Int. Cl.[5] **C08K** *3/30, 3/08*

U.S. Cl. 523—442 **8 Claims**

1. A balancing putty comprising:

(a) an epoxy resin;

(b) a curing agent capable of curing the epoxy resin when heated at a temperature of 60° C. or more,

(c) a first, finely divided inorganic filler having a specific gravity of 4.0 g/cm^3 or more; and

(d) a second, finely divided inorganic filler comprising a thixotropic agent having a specific gravity of less than 4.0 g/cm^3, said balancing putty having a density of at least 2.0 g/cm^3 and a consistency of 1–12 mm in terms of penetration.

5,008,310

POLYMER COMPOSITES BASED CELLULOSE-V

Alphons D. Beshay, 3595 de Courval, Trois-Rivières, Quebec G8Z 1S8, Canada

Filed May 15, 1989, Ser. No. 353,365

Int. Cl.[5] **C08L** *89/00;* **C08K** *3/00, 3/34*

U.S. Cl. 524—13 **9 Claims**

1. A composite material comprising a synthetic polymeric or copolymeric material or rubber, and an organic material selected from the group consisting of cellulosic or starch material, wherein said cellulosic or starch material is essentially grafted by a free radical generating process with isocyanate agent.

5,008,311

SUBSTANTIALLY SOLVENT FREE ASPHALTIC AND METHOD RELATING THERETO

Ronald J. Janoski, Chagrin Falls, Ohio, assignor to Tremco Incorporated, Cleveland, Ohio

Filed Mar. 17, 1989, Ser. No. 324,932

Int. Cl.[5] **C08L** *95/00, 75/08*

U.S. Cl. 524—59 **5 Claims**

1. A substantially solvent-free asphalt based material comprising:

about 15 to about 75 weight parts asphalt;

a compatibilizing agent in an amount greater than about 0.01 weight parts, wherein the amount of compatiblizing agent is not so great as to be capable of dissolving the asphalt;

about 25 to 75 weight parts polyurethane prepolymer in its cured or uncured states; wherein said compatiblizing agent comprises a polymeric material comprising:

a polymer unit, or two such units being either identical or different and linked together by an ester, carbon or ether bond, said unit having the following formula:

$$CH_3—(C_nH_{2n})—R_1$$

wherein:

n is 4 or more, and

R_1 is COOH, COO^-M^+, $COOR_2$ or R_2,

wherein:

M is a metal other than lead, cobalt, tin zirconium or titanium, and R_2 is a substantially saturated organic chain having a backbone substantially comprising carbon-carbon, carbon-oxygen, or carbon-nitrogen linkages, or combinations thereof, wherein the backbone's pendant constituents are either—H or —OH and wherein at least one pendant constituent is —OH.

5,008,312

2,6-POLYALKYLPIPERIDINE-SUBSTITUTED BISLACTAMS AND THEIR USE FOR THE STABILIZATION OF ORGANIC MATERIAL, IN PARTICULAR OF PLASTICS, AND MATERIALS STABILIZED THEREWITH

Alexander Aumueller, Deidesheim; Peter Neumann, Mannheim, and Hubert Trauth, Dudenhofen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

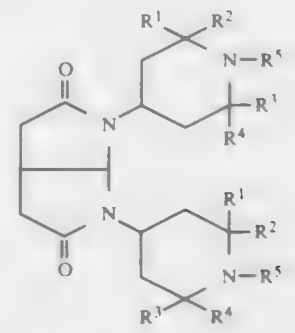
Filed Aug. 7, 1989, Ser. No. 390,216

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1988, 3827641

Int. Cl.[5] **C08K** *5/3417;* **C07D** *401/00*

U.S. Cl. 524—92 **13 Claims**

1. A bislactam of the formula I


(I)

where R^1, R^2, R^3 and R^4 independently of one another are each C_1–C_4-alkyl, or R^1 and R^2 or R^3 and R^4 or R^1 and R^2 and R^3 and R^4 form a tetra- or pentamethylene radical, and R^5 is hydrogen, carbonyl-C_1–C_8-alkyl, benzoyl, C_1–C_8-alkyl, C_7–C_{10}-phenylalkyl, the phenyl nucleus being unsubstituted or substituted by one or two C_1–C_4-alkyl, C_1–C_4-alkoxy, fluorine, chlorine or bromine radicals, or is C_1–C_3-cyanoalkyl, C_2–C_4-

hydroxyalkyl, C_2- or C_3-aminoalkyl, and the acid addition salts and hydrates of these compounds.

5,008,313

IMPACT MODIFIER FOR THERMOPLASTIC RESIN HAVING GOOD HEAT DISCOLORATION RESISTANCE AND HEAT DETERIORATION RESISTANCE, AND THERMOPLASTIC RESIN COMPOSITION COMPRISING THIS IMPACT MODIFIER

Kazuo Kishida, Hiroshima; Kiyokazu Kitai, Tokyo, and Masaaki Mohri, Hiroshima, all of Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan

Filed Mar. 27, 1989, Ser. No. 329,256

Claims priority, application Japan, Mar. 28, 1988, 63-074171

Int. Cl.[5] C08K *5/13, 5/524, 5/41*

U.S. Cl. 524—120 **13 Claims**

1. An impact modifier for a thermoplastic resin having an excellent heat discoloration resistance and heat deterioration resistance, which comprises:

(I) 100 parts by weight of a graft copolymer formed by graft-polymerizing (B) a monomer having a vinyl group in the molecule onto (A) a butadiene polymer and, incorporated therein,

(II) 0.01 to 5 parts by weight of a thioether type heat stabilizer selected from the group consisting of 3,3'-thiodipropionic acid, dialkyl 3,3'-thiodipropionates, pentaerythrityl-tetrakis (3-alkylthiopropionates), tetrakis methanes and bis-sulfides,

(III) 0.01 to 5 parts by weight of a phosphite type heat stabilizer selected from the group consisting of tris(nonylphenyl) phosphite, distearylpentaerythritol diphosphite, tris (2,4-di-tertiary-butylphenyl) phosphite, di(2,4-di-tertiarybutylphenyl) pentaerythritol diphosphite and bis(2,6-di-tertiary-butyl-4-methylphenyl)pentaerythritol diphosphite, and

(IV) 0.01 to 5 parts by weight of a phenol type heat stabilizer having a molecular weight of at least 500 which is selected from the group consisting of 1,1,3-tris(2-methyl-4-hydroxy-5-tertiary-butylphenyl)butane, n-octadecyl-3-(3',5'-di-tertiary-butyl-4'-hydroxyphenyl) propionate, tetrakis methane, triethylene glycol bis and pentaerythrityl tetrakis.

5,008,314

POLYPHENYLENE ETHER COMPOSITIONS RESISTANT TO ENVIRONMENTAL STRESS CRACKING

Gim F. Lee, Jr., Albany, N.Y., assignor to General Electric Co., Selkirk, N.Y.

Filed Dec. 21, 1989, Ser. No. 454,654

Int. Cl.[5] C08K *5/52;* **C08L** *71/12*

U.S. Cl. 524—143 **12 Claims**

1. A thermoplastic resin blend for molding articles with resistance to environmental stress cracking and having improved melt flow properties, which comprises, in homogeneous admixture

(a) from about 5 to about 95 weight percent of a polyphenylene ether resin having an average intrinsic viscosity below about 0.4; and

(b) from about 95 to about 5 weight percent of a polystyrene resin having an average intrinsic viscosity above about 0.85.

5,008,315

COMPOSITION

Linda H. Nelson, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 19, 1989, Ser. No. 452,479

The portion of the term of this patent subsequent to Sep. 26, 2006, has been disclaimed.

Int. Cl.[5] C08K *5/58*

U.S. Cl. 524—180 **13 Claims**

1. A composition comprising an admixture of

a polybutylene terephthalate

b a mold release and/or impact improving effective amount of a fluid hydrogenated or non hydrogenated oligomer of an alpha olefin.

5,008,316

INTERNAL LUBRICANT FOR GLASS REINFORCED POLYARYLENE SULFIDE

Lachhman Wadhwa, Plainfield, N.J., and Andrew M. Steurer, Kenton, Ky., assignors to Hoechst Celanese Corporation, Bridgewater, N.J.

Continuation of Ser. No. 159,812, Feb. 25, 1988, abandoned. This application Sep. 1, 1989, Ser. No. 403,047

Int. Cl.[5] C08K *5/20, 3/40*

U.S. Cl. 524—230 **30 Claims**

1. A molding composition comprising polyarylene sulfide and 0.01 to 2.0 weight percent of an internal lubricant comprising stearyl erucamide to provide said composition with mold release properties.

5,008,317

COMPOSITIONS WHICH CAN BE CROSSLINKED TO FORM FLAME RETARDANT AND/OR TRACKING RESISTANT AND ARC RESISTANT ORGANOPOLYSILOXANE ELASTOMERS

Dietrich Wolfer, Oberndorf, Austria, and Wilhelm Marsch, Haiming, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 14, 1989, Ser. No. 407,003

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1988, 3831478

Int. Cl.[5] C08K *5/54*

U.S. Cl. 524—262 **20 Claims**

1. A composition which can be crosslinked to form flame retardant and/or tracking resistant and arc resistant organopolysiloxane elastomers, comprising a crosslinkable organopolysiloxane composition containing an additive, which is obtained by mixing:

(A) 60 to 80 percent by weight of diorganopolysiloxane having 75 to 85 mol percent of dimethylsiloxane units and 15 to 25 mol percent of vinylmethylsiloxane units,

(B) 20 to 35 percent by weight of a metal oxide selected from the group consisting of titanium dioxide, zirconium dioxide, zinc oxide, Ce(III) oxide and Ce(IV) oxide, with the proviso that only titanium dioxide or zirconium dioxide is used to achieve tracking resistance and arc resistance,

(C) 0.05 to 0.25 percent by weight of platinum, selected from the group consisting of a platinum compound and a platinum complex, calculated as the element, and

(D) 1 to 5 percent by weight of an organosilicon compound having basic nitrogen bonded via carbon to silicon

in which the sum of the percentages of (A) to (D) is equal to 100 percent by weight and the percent by weight is based on the total weight of the additive.

5,008,318

NOVEL COMPOSITE FILM AND PREPARATION THEREOF

Keizou Ishii, Ashiya; Teruaki Kuwajima, Higashiosaka; Hiroshi Miwa, Itami; Akio Kashihara, Hirakata, and Shinichi Ishikura, Kyoto, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation of Ser. No. 879,583, Jun. 27, 1986, abandoned, which is a continuation-in-part of Ser. No. 652,677, Sep. 19, 1984, abandoned. This application Feb. 17, 1989, Ser. No. 313,354

Int. Cl.[5] C08K *5/10*

U.S. Cl. 524—284 **2 Claims**

1. In a resinous composition consisting essentially of

(a) a liquid medium,

(b) at least one resin which is soluble in said liquid medium (a) and forms a continuous film, and

(c) particles of at least one resin which is insoluble in the combination of said (a) and said (b), an improvement which is characterized by further containing

(d) a microdomain forming agent which is an organic compound fulfilling the requirements:

$$R \geq 160$$

at least an $In \geq 70$

$$\Sigma In/R \geq 0.5$$

wherein R represents a quantity of organic characters, In is a quantity of inorganic characters of inorganic group No. n, and n is an integer of 1 and more and corresponds to the number of inorganic groups in the molecule, and forms a composite film consisting essentially of a continuous phase of said resin (b) and a discontinuous phase of microdomains which are 0.03 to 10 microns in size and are aggregates of said resin particles (c).

5,008,319

HOMOGENEOUS MIXTURES OF SOLID ORGANIC ACIDS AND SOLID CATIONIC ESTER-BASED POLYMER FLOCCULANTS

Ronald E. Highsmith, Skaneateles, and Eric H. Larson, Marcellus, both of N.Y., assignors to Polypure, Inc., Solvay, N.Y.

Filed Feb. 1, 1990, Ser. No. 473,351

Int. Cl.[5] C08K *5/09*

U.S. Cl. 524—321 **8 Claims**

1. A homogeneous composition of a solid, water soluble organic acid and a solid cationic ester-based polymeric flocculant which is a copolymer of acrylamide and a cationic monomer, said mixture having fewer fine particles than the solid polymer flocculant particles prior to incorporation into said composition, said polymeric flocculant particles being coated by said acid, thereby said mixture being resistant to mechanical segregation or stratification.

5,008,320

PLATINUM OR RHODIUM CATALYZED MULTILAYER CERAMIC COATINGS FROM HYDROGEN SILSESQUIOXANE RESIN AND METAL OXIDES

Loren A. Haluska; Keith W. Michael, both of Midland, and Leo Tarhay, Sanford, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 938,678, Dec. 4, 1986, Pat. No. 4,911,992. This application Dec. 7, 1989, Ser. No. 447,482

Int. Cl.[5] C08K *3/10, 5/07*

U.S. Cl. 524—361 **5 Claims**

1. A composition of matter comprising a hydrocarbon solvent solution of a mixture of (a) hydrogen silesquioxane resin; (b) one or more metal oxide precursors selected from the group consisting of an aluminum alkoxide, a titanium alkoxide and a zirconium alkoxide; and (c) a metal catalyst selected from the group consisting of platinum catalysts and rhodium catalysts, wherein the hydrogen silsesquioxane resin (a) is diluted in the hydrocarbon solvent to low solids, the metal oxide precursor or precursors (b) are present in an amount such that the resultant ceramic coating contains from 0.1 % weight percent up to approximately 30 % weight percent metal oxide, and the metal catalyst (c) is present in an amount sufficient to enhance the oxidation and cure of the hydrogen silsesquioxane resin.

5,008,321

PREPARATION OF STABLE WATER-IN-OIL EMULSIONS OF HYDROLYZED POLYMERS OF N-VINYLAMIDES AND THEIR USE

Heinrich Hartmann, Limburgerhof; Walter Denzinger, Speyer; Michael Kroener, Mannheim; Norbert Sendhoff, Gruenstadt, and Enrique Freudenberg, Schifferstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 20, 1989, Ser. No. 438,034

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1988, 3842820

Int. Cl.[5] C08F *2/32*

U.S. Cl. 524—378 **5 Claims**

1. A stable water-in-oil emulsion of a hydrolyzed polymer of N-vinylamides, of the formula

$$R-CO-\underset{\displaystyle R_1}{\underset{|}{N}}-CH=CH_2 \qquad (I)$$

where R and R^1 are each H or C_1-C_6-alkyl, prepared by the steps comprising:

(a) polymerization of a compound of the formula I alone or as a mixture of other monoethylenically unsaturated monomers in the presence of polymerization initiator and emulsifiers, in the form of a water-in-oil emulsion, to give a water-in-oil polymer emulsion; and

(b) subsequent hydrolysis of the polymer in the form of the water-in-oil polymer emulsion in the presence of an acid or base and from 1–30% by weight, based on the polymer, of an emulsifier which is obtained by

(A) reacting a C_{10-22}- fatty alcohol with epichlorohydrin in a molar ratio of from 1:0.5 to 1:1.5 to give a glycidyl ether,

(B) reacting the glycidyl ether with (1) a saturated C_{2-6}-alcohol containing from 2–6 OH groups or (2) its monoether with a C_{10-22}- fatty alcohol, in a molar ratio of glycidyl ether to (1) or (2) of from 1:0.5 to 1:6, in the presence of an acid or base, and

(C) alkoxylating the reaction product from (II) with one or more C_{2-4}-alkylene oxides in a molar ratio of from 1:1 to 1:6.

5,008,322

HYDROPHOBIC POLYMER PRODUCTS

Joseph A. Vasta, deceased, late of Wilmington, and by Rita Vasta, executrix, 1412 Jan Dr., Webster Farms, Wilmington, both of Del. 19803

Filed Dec. 23, 1988, Ser. No. 288,911

Int. Cl.[5] C08K *5/04, 5/06*

U.S. Cl. 524—398 **9 Claims**

1. A polymeric product obtained by bringing together, in an organic liquid, in contact with an appropriate polymerization initiator and under conditions suitable for polymerization,

(a) styrene,

(b) 2-ethylhexyl acrylate, 2-ethyl hexyl methacrylate or butyl acrylate,

(c) acrylic acid or methacrylic acid,

(d) polyethylene oxide having a molecular weight M_n of 20,000–400,000 and

(e) a cobalt compound which provides Co^{+2} or Co^{+3} ions.

5,008,323

FLAME RETARDANT PVC RESIN COMPOSITIONS

Nicolai A. Favstritsky, and Robert J. Nulph, both of Lafayette, Ind., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

Continuation of Ser. No. 107,236, Oct. 9, 1987, abandoned. This application Sep. 13, 1989, Ser. No. 406,882

Int. Cl.[5] C08K *5/03*

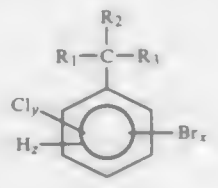
U.S. Cl. 524—469 **7 Claims**

1. A flame retardant PVC resin composition comprising:

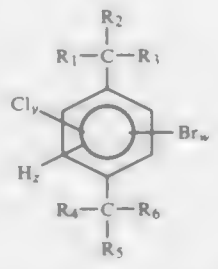
a PVC resin;

a non-flame retardant primary plasticizer;

as a flame retardant plasticizer, an effective amount of a polybrominated higher alkylbenzene, wherein the polybrominated higher alkylbenzene is a compound of the structure:



or



where x is 4 or 5, y is zero or 1, z is zero or 1, w is 2 to 4; where R_1 and R_4 are hydrogen or methyl, and R_2, R_3, R_5, R_5, R_6 are alkyl groups ranging independently from 1 to 16 carbon atoms and where the total number of carbon atoms in each of (R_1, R_2 and R_3) and (R_4, R_5 and R_6) ranges from 5 to 17; an effective amount of polybrominated higher alkylbenzene containing about 30–70 percent bromine by weight of the flame retardant plasticizer;

a stabilizer; and

an enhancing agent.

5,008,324

NOVEL DAMPING COMPOSITIONS

Paul C. Killgoar, Jr., Livonia; Marsha A. Samus, Ann Arbor, both of Mich.; Robert D. Koller, Sr., Valboune, France, and Carl P. Hemenway, Glenside, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Apr. 11, 1989, Ser. No. 336,187

Int. Cl.[5] C08K *3/34*; **C08L** *51/00*; **F16F** *1/36, 7/12*

U.S. Cl. 524—504 **10 Claims**

1. A composition useful for damping purposes comprising:

(a) crosslinked elastomer containing microscopically discrete segments of

(b) multi-phase thermoplastic elastomeric polymer having at least two polymeric phases comprising:

(1) an initial linear or lightly crosslinked polymeric phase polymerized from an alpha, beta-unsaturated monomer, wherein said alpha,beta-ethylenically unsaturated monomer comprises from 0 to about two percent by weight of multi-ethylenically unsaturated monomer,

(2) a second polymeric phase in the form of discrete domains of about 2 to about 50 nanometers in diameter dispersed within said initial polymeric phase, wherein said second polymeric phase is polymerized from at least one ethylenically unsaturated monomer comprised of about 5 percent to 100 percent by weight multifunctional monomer having at least two sites of ethylenic unsaturation,

wherein the weight ratio of said second polymeric phase to said initial polymeric phase plus said second polymeric phase is from about 1:100 to about 1:2.

7. A process for damping comprising:

(a) blending

(i) a crosslinkable elastomer;

(ii) a multi-phase thermoplastic elastomeric polymer having at least two polymeric phases comprising:

(1) an initial linear or lightly crosslinked polymeric phase polymerized from an alpha,beta-ethylenically unsaturated monomer wherein said alpha,beta-ethylenically unsaturated monomer comprises from 0 to about two percent by weight of multi-ethylenically unsaturated monomer,

(2) a second polymeric phase in the form of discrete domains of about 2 to about 50 nanometers in diameter dispersed within said initial polymeric phase, wherein said second polymeric phase is polymerized from at least one ethylenically unsaturated monomer comprised of about 5 percent to 100 percent by weight multifunctional monomer having at least two sites of ethylenic unsaturation,

wherein the weight ratio of said second polymeric phase to said initial polymeric phase plus said second polymeric phase is from about 1:100 to about 1:2;

(iii) at least one curative and optionally one or more reinforcing particulate fillers, wherein the ratio of said optional reinforcing particulate filler to said crosslinkable elastomer plus said multi-phase polymer plus said reinforcing particulate filler is up to about 1:2.5;

(b) molding said resultant blend;

(c) curing said blend to form a crosslinked elastomer containing microscopically discrete segments of said multiphase polymer;

(d) placing said cured molded blend between two surfaces, at least one of which is subject to vibrations, and damping said vibrations.

5,008,325

POLYURETHANE-UREA RESINS WITH INCORPORATED HYDROPHOBIC MICROPARTICLE FILLERS

Jorge Soto, Concord; Joginder N. Anand, Clayton, both of Calif., and Richard D. Peffley, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 23, 1990, Ser. No. 498,079

Int. Cl.[5] C08G *18/00*; **C08L** *51/00*; **C08K** *9/00*; **C08J** *3/20*

U.S. Cl. 524—504 **7 Claims**

1. An aqueous polymer dispersion having a continuous aqueous phase in which are dispersed a plurality of polymer particles, wherein a first portion of said polymer particles are polyurethane-urea polymer particles and a second portion of the particles are particles of a hydrophobic polymer to which is grafted a polyurethane-urea polymer, said second portion of particles having an average particle size of about 1000 to about 10,000 Angstroms, wherein said hydrophobic particles constitute about 0.5 to about 10 percent of the total weight of the particles.

5,008,326

PROCESS FOR PREPARING A FAST CURE, ZERO FORMALDEHYDE BINDER FOR CELLULOSE

Dennis P. Stack, Santa Ana, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

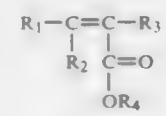
Division of Ser. No. 132,923, Dec. 15, 1987. This application Jul. 27, 1990, Ser. No. 558,667

Int. Cl.[5] C08L *27/00*

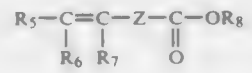
U.S. Cl. 524—519 **28 Claims**

1 A process for preparing a fast-curing, zero formaldehyde binder for nonwove cellulosic materials, comprising:

(a) copolymerizing in aqueous solution a mixture comprising one or more first water-soluble comonomers having the general formula:



wherein R_1, R_2 and R_3 are independently selected from hydrogen, halogen, nitro, amino, nitrile and organic radical and R_4 is hydrogen or an organic radical, and one or more second water-soluble comonomers having the general formula:



wherein R_5, R_6 and R_7 are independently selected from hydrogen, halogen, nitro, amino, nitrile, and organic radicals, R_8 is an organic radical having at least 2 carbon atoms and at least one hydroxyl substituent thereon and Z is an organic radical or a covalent bond, said copolymerization being carried out with between about 0.5 and about 4 parts, by weight, of said second comonomer for each part of said first comonomer; and

(b) admixing the product of said copolymerization with a non-formaldehyde emitting latex carrier, in an amount between about 2 percent and about 20 percent, by weight of said latex carrier.

5,008,327

ELECTRODEPOSITION COATING COMPOSITION

Shinji Shirai, Yugawara; Hiroyuki Negishi, Hiratsuka; Nobuyuki Tomihashi, Takatsuki, and Masayuki Yamane, Osaka, all of Japan, assignors to Kansai Paint Co., Ltd., Hyogo and Daikin Industries, Ltd., Osaka, both of, Japan

Continuation of Ser. No. 330,029, Mar. 29, 1989, abandoned. This application Aug. 8, 1990, Ser. No. 564,674

Claims priority, application Japan, Mar. 30, 1988, 63-78352

Int. Cl.[5] C09D *5/00*; **C08K** *27/12*

U.S. Cl. 524—544 **7 Claims**

1. An electrodeposition coating composition comprising a fluorine-containing copolymer, a curing agent and an aqueous medium;

said composition having a fluorine ion content of not more than 15 ppm, and

said fluorine-containing copolymer is a copolymer comprising 20 to 80% by mole of a fluoroolefin having the formula (I):



(I)

wherein X^1 and X^2 are the same or different and each is a hydrogen, a fluorine, a chlorine or a trifluoromethyl group, and 2 to 60% by mole of a hydroxy vinyl ether having the formula (II):



(II)

wherein R^1 is a bivalent aliphatic group with 2 to 10 carbon atoms, and having carboxyl groups partially neutralized with a basic compound and having an acid value of 30 to 120.

5,008,328

AQUEOUS ORGANOSILICON RESIN COATING COMPOSITIONS

Noboru Nakai, Hiratsuka, and Osamu Isozaki, Yokohama, both of Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Continuation of Ser. No. 895,098, Aug. 11, 1986, abandoned. This application Feb. 21, 1989, Ser. No. 313,367

Claims priority, application Japan, Aug. 21, 1985, 60-183275

Int. Cl.[5] C08K *5/06, 83/08*

U.S. Cl. 524—759 **17 Claims**

1. An aqueous organosilicon resin coating comprising:

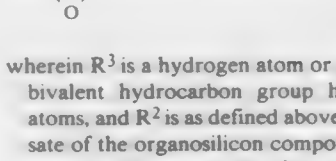
(I) an organosilicon resin which is a condensation product prepared from

(i) a first component which is at least one member selected from the group consisting of (a) an organosilicon compound represented by the formula

(A)

wherein R^1 is a hydrocarbon group having 1 to 12 carbon atoms, R^2 is a hydrocarbon group having 1 to 8 carbon atoms and a is 0, 1 or 2, and (b) a low condensate of the organosilicon compound represented by the formula (A);

(ii) a second component which is at least one member selected from the group consisting of (a) an organosilicon compound represented by the formula



(B)

wherein R^3 is a hydrogen atom or a methyl group, R^4 is a bivalent hydrocarbon group having 1 to 8 carbon atoms, and R^2 is as defined above, and (b) a low condensate of the organosilicon compound represented by the formula (B), wherein the first component and the second component are used in a ratio of the former to the latter of 50–99.5:0.5–40 mole %; and

(iii) a third component which is at least one tertiary amine compound selected from the group consisting of trimethylamine, triethylamine, tri-n-butylamine, N-methyldiethanolamine, N-dimethylethanolamine, triethanolamine, diethylaminoethanol, N,N-dimethylcyclohexylamine, pyridine, α-picoline, β-picoline, γ-picoline, 2,4-lutidine, 2,6-lutidine, N-methylpiperidine, and N-methylpyrrolidine,

said organosilicon resin containing a quaternary ammonium group which is formed by a reaction of the tertiary amine compound with a glycidyl group in the organosilicon resin; and

(II) an aqueous medium.

5,008,329

PROCESS FOR PRODUCING AQUEOUS COPOLYMER DISPERSION FROM A VINYL MONOMER MIXTURE

Tadashi Abe; Masahiro Aoki; Tsunenori Takahashi, and Takeshi Awata, all of Mie, Japan, assignors to Mitsubishi Yuka Badische Co., Ltd., Yokkaichi, Japan

Continuation of Ser. No. 181,670, Apr. 14, 1988, abandoned. This application Oct. 10, 1989, Ser. No. 419,001

Claims priority, application Japan, May 19, 1987, 62-120239

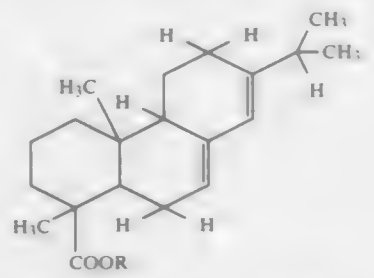
Int. Cl.[5] C08L *93/04*

U.S. Cl. 524—798 **3 Claims**

1. A process for producing an aqueous copolymer disper-

sion, wherein the polymer has a glass transition point ranging from −10° C. to −90° C., which consists of:

emulsion polymerizing, in an aqueous medium containing a polymerization initiator, 100 parts by weight of a vinyl monomer mixture consisting of (A) from 60% to 99.8% by weight of 2-ethylhexyl acrylate, (B) from 0.2 to 10% by weight of an α,β-unsaturated carboxylic acid, and (C) up to 30% by weight of a vinyl monomer other than monomers (A) and (B) in the presence of an emulsifying agent and from 0.01 to 10 parts by weight of a compound having an allyl hydrogen atom selected from the group consisting of abietic acid and derivatives thereof having the formula:



wherein R is hydrogen or alkyl and the encircled H groups represent allyl hydrogen atoms, and allyl alcohol.

5,008,330

MOLDING COMPOSITIONS WITH ACRYLONITRILE-EPDM-STYRENE COPOLYMERS

Michael K. Laughner, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 320,680, Mar. 8, 1989, abandoned. This application Sep. 22, 1989, Ser. No. 411,279

Int. Cl.[5] C08L *69/00*

U.S. Cl. 525—67 **12 Claims**

1. A moldable composition comprising:

(A) about 20 to about 95% by weight of a carbonate polymer selected from the group consisting of

(i) randomly branched carbonate polymers,

(ii) linear carbonate polymers, and

(iii) blends of randomly branched carbonate polymers with linear carbonate polymers,

(B) about 5 to about 75% by weight of a copolymer consisting of acrylonitrile/ethylene-propylene-diene rubber/styrene and optionally one or more monomers selected from the group consisting of α-methylstyrene, acrylic acid, methacrylic acid, methacrylonitrile, methyl acrylate, ethyl acrylate, n-butyl acrylate, isobutyl acrylate, methyl methacrylate, n-butyl methacrylate, isobutyl methacrylate, glycidyl methacrylate and maleic anhydride.

(C) about 1 to about 20% by weight of a core-shell graft copolymer having a butadiene polymer core and having an outer shell of a polymerized alkyl (meth)acrylate.

5,008,331

THERMOPLASTIC RESIN COMPOSITION

Kouzo Kawashima, Yokkaichi; Takao Morikawa, Yokohama; Teruo Aoyama, and Akira Kamiya, both of Yokkaichi, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Division of Ser. No. 183,897, Apr. 20, 1988, abandoned. This application Feb. 27, 1990, Ser. No. 488,429

Claims priority, application Japan, Apr. 21, 1987, 62-96269

Int. Cl.[5] C08L *51/04*

U.S. Cl. 525—84 **23 Claims**

1. A thermoplastic resin composition, consisting essentially of (A) 10–90% by weight of a graft copolymer obtained by polymerizing a monomer mixture consisting of an alkenyl cyanide compound and an aromatic alkenyl compound in the presence of a butadiene rubber latex in which 50–96% by weight of butadiene rubber particles (A-1) having an average particle diameter of at least 1,300 Å but not more than 2,000 Å, and 3–50% by weight of butadiene rubber particles (A-2) having an average particle diameter of 2,200 Å or more are dispersed, provided that the alkenyl cyanide compound content in the resin component of the graft copolymer (A) is at least 10% by weight but 29% or less by weight, and (B) 90–10% by weight of a copolymer of an alkenyl cyanide compound with an aromatic alkenyl compound having an alkenyl cyanide compound content of 31–40% by weight, the difference in the bound alkenyl cyanide compound content between the resin component of the graft polymer (A) and the copolymer (B) being 3–30% by weight and the proportion of the rubber component in the composition being 5–30% by weight.

5,008,332

THERMOPLASTIC RESIN COMPOSITION

Hironari Sano, and Kenyu Ohno, both of Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1987, Ser. No. 122,135

Claims priority, application Japan, Nov. 19, 1986, 61-275699

Int. Cl.[5] C08L *53/00, 67/02, 71/12, 77/02*

U.S. Cl. 525—92 **11 Claims**

1. A thermoplastic resin composition comprising components (1), (2) and (3) in which component (2) forms a continuous phase, component (1) forms a continuous phase intermingled with component (2) or forms a dispersed phase in component (2), and component (3) is dispersed in component (1), at least a part of component (3) having a continuous structure;

(i) said component (1) ranging from 10 to 55% by weight and being an amorphous polymer having a glass transition temperature of at least 90° C. and being selected from the group consisting of polyphenylene ether, polycarbonate, amorphous polyamide having a crystallinity less than 15%, polystyrene and acrylonitrile-butadiene-styrene resin;

(ii) component (2) ranging in an amount from 40 to 85% by weight and being a crystallized polymer which shows at least partial crystalline properties, has a melting point of at least 100° C. and is at least one material selected from the group consisting of polyolefins, crystalline polyamides having a crystallinity of at least 15%, and polyalkylene terephthalates; and

(iii) component (3) ranging in an amount from 5 to 35 % by weight of a rubbery polymer having a storage shear modulus at room temperature of 5×10^8 dyne/cm^2 or less, all weight percents being based on the weight of the thermoplastic resin composition, wherein the dispersed state of component (3) is such that the number of the rubber-like dispersed particles having compactness C (obtained by the expression $C=4\pi s/L^2$, wherein S is the area of the rubbery polymer phase and L is the circumferential length thereof) of 0.6 or less is in the range of from 30 to 90% to the number of whole rubbery polymer particles.

5,008,333

COMPATIBLE POLYPHENYLENE ETHER-LINEAR POLYESTER BLENDS HAVING IMPROVED IMPACT STRENGTH

John B. Yates, III, Glenmont, and Gim F. Lee, Jr., Albany, both of N.Y., assignors to General Electric Co., Selkirk, N.Y.

Filed Jun. 13, 1988, Ser. No. 206,248

Int. Cl.[5] C08L *53/02, 71/12*

U.S. Cl. 525—92 **13 Claims**

1. A thermoplastic composition comprising: 100 parts by weight of the following resinous components and any reaction products thereof, all percentage proportions being by weight of total resinous components:

(A) about 15 to 50% of at least one polyphenylene ether, or a blend thereof with at least one polystyrene;

(B) about 20 to 80% of at least one poly(alkylene dicarboxylate), the weight ratio of component A to component B being at most 1.2:1;

(C) from 3 to about 50% of at least one polymer containing a substantial proportion of aromatic polycarbonate units and having a weight average molecular weight of at least about 40,000 as determined by gel permeation chromatography relative to polystyrene, or a blend thereof with a styrene homopolymer; and

(D) about 1 to about 15% of at least one elastomeric impact modifier which is compatible with component (A); and

(E) about 1 to about 50 parts by weight of an alkylene acrylate copolymer per 100 parts of resinous components A through D.

5,008,334

RESINS OF EPOXY/AROMATIC DIOL COPOLYMER AND BLOCK COPOLYMER OF EPOXY/AROMATIC DIOL COPOLYMER AND A EPOXY-CAPPED POLYBUTADIENE (CO)POLYMER

Paul J. Harris, West Bloomfield, and Ronald T. Wojcik, Rochester Hills, both of Mich., assignors to BASF Corporation, Southfield, Mich.

Filed Feb. 28, 1989, Ser. No. 316,845

Int. Cl.[5] C08G *59/14, 63/66;* **C08L** *63/10*

U.S. Cl. 525—109 **34 Claims**

1. A resin comprising a mixture of

(i) an epoxy/diol copolymer which is the reaction product of a diol and one or more diepoxides; and

(ii) an A-B-A block copolymer wherein

A represents blocks of an epoxy/diol copolymer which is the reaction product of a diol and one or more diepoxides; and

B represents blocks of an epoxy capped, carboxyl-terminated polybutadiene or polybutadiene/acrylonitrile copolymer.

5,008,335

POWDER COATING COMPOSITIONS OF POLYEPOXIDES, ACRYLIC COPOLYMERS AND ALIPHATIC OR POLYESTER DIBASIC ACIDS

Paul H. Pettit, Jr., Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 31,293, Mar. 26, 1987, Pat. No. 4,921,913, Continuation of Ser. No. 763,377, Aug. 7, 1985, abandoned. This application Jan. 29, 1990, Ser. No. 471,758

Int. Cl.[5] C08L *33/02, 63/02, 63/04*

U.S. Cl. 525—111 **2 Claims**

1. A thermosetting powder coating composition comprising a coreactable particulate mixture of:

(A) 40 to 80 percent by weight of an acid group-containing acrylic polymer having a glass transition temperature in the range of 40° C. to 100° C., and a number average molecular weight of 1500 to 20,000,

(B) 5 to 30 percent by weight of an epoxy novolac resin having a number average molecular weight of 500 to 1400 which is compatible with (A), and

(C) 5 to 30 percent by weight of an epoxy resin which has a number average molecular weight of at least 100 and which is incompatible with (A).

the percentage by weight of (A), (B) and (C) based on weight of resin solids, and which composition also contains a dibasic acid selected from the class consisting of aliphatic dicarboxylic acids containing from 4 to 20 carbon atoms, a polyester terminated with carboxylic acid groups, and mixtures thereof.

5,008,336

HIGH SOLIDS COATING COMPOSITIONS

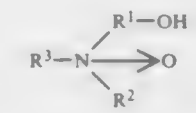
Forrest A. Richey, Jr., Charleston, and Kenneth L. Hoy, St. Albans, both of W. Va., assignors to Union Carbide Chemicals And Plastics Technology Corporation, Danbury, Conn.

Filed Jan. 30, 1990, Ser. No. 472,662

Int. Cl.[5] C08F *8/32, 20/02*

U.S. Cl. 525—124 **10 Claims**

1. Coating composition comprising polyol-containing polymer, at least one cross-linking agent reactive with hydroxyls, and at least one reactive diluent of the formula



wherein R^1 is alkylene of 1 to about 6 carbon atoms; R^2 is alkyl or alkylhydroxy or alkylene alkyl ether of 1 to about 20 carbon atoms; and R^3 is alkyl of 1 to about 10 carbon atoms, aryl of 6 to 10 carbon atoms, alkaryl of 7 to 10, carbon atoms, or aralkyl of 7 to 10 carbon atoms which R^1, R^2 and R^3 may be substituted with hydroxy, with the proviso that the reactive diluent contains at least two reactive hydroxyl groups.

5,008,337

METHOD OF CROSSLINKING RUBBER

Raman Patel, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 179,814, Apr. 11, 1988, abandoned. This application Oct. 20, 1989, Ser. No. 424,413

Int. Cl.[5] C08L *13/00, 25/02*

U.S. Cl. 525—130 **10 Claims**

1. The method of crosslinking a carboxylic-functionalized rubber comprising heating the rubber in the presence of a polyfunctional isocyanate functionalized compound and an accelerator which is a metal salt of an organic acid.

5,008,338

HYDROXYETHERS OF EPOXIDIZED POLYBUTENES

Wayne T. Riddick, Oak Park, and Vincent F. Smith, Jr., Big Rock, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Jan. 31, 1989, Ser. No. 304,766

Int. Cl.[5] C08F *8/00*

U.S. Cl. 525—177 **6 Claims**

1. A process of preparing hydroxyether terminated polybutenes from epoxidized polybutenes, wherein said epoxidized polybutene has been prepared from a polybutene having only one functional terminal double bond in an olefin structure about 70% trisubstituted, wherein molecular weight of polybutene portion of said epoxidized polybutene is from about 200 to about 20,000, which process comprises reacting a mono- or polyfunctional hydroxyl compound of from one to 2000 carbon atoms with said epoxidized polybutene in the presence of an acid catalyst selected from the group consisting of strongly acidic resin catalysts useful for non-aqueous heterogeneous acid catalysis, catalysts with non-nucleophilic anoins which do not react with said epoxide group, and Lewis acids selected for the group consisting of $ZnCl_2$, $SnCl_4$, $TiCl_3$, $TiCl_4$, $AlCl_3$, $SbCl_5$, and $FeCl_3$, wherein the molar ratio of said hydroxyl compound to said epoxidized polybutene is at least about 1:1 at a temperature within the range of from about −20° C. to about 150° C., and said acid catalyst is present in an amount of from about 0.2 to about 15 mole % of said epoxidized polybutene.

5,008,339

NOVEL POLYELECTROLYTE COPOLYMER AND MIXED POLYMERS AND COMPOSITES THEREOF

Fred C. Anson, Altadena, and Donald D. Montgomery, Pasadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation of Ser. No. 5,008, Jan. 20, 1987, abandoned, which is a continuation-in-part of Ser. No. 680,795, Dec. 12, 1984, abandoned. This application Jul. 8, 1988, Ser. No. 216,847
Int. Cl.[5] C08F 8/30
U.S. Cl. 525—181 14 Claims

1. A mixed polymer containing 10–90 percent by weight of a random, ternary, styrene copolymer in which 10–80 molecular percent of the phenyl groups of the styrene units are unsubstituted; 10–35 molecular percent of the phenyl groups of the styrene units are substituted with quaternized trialkylamine groups in which each alkyl group is the same and contains from 1 to 6 carbon atoms, and 15–45 molecular percent of the phenyl groups of the styrene units are substituted with quaternized tri-(hydroxyalkyl) amine groups in which each hydroxyalkyl is the same and contains 1 to 6 carbon atoms; and

the remainder of the mixed polymer consisting essentially of a cationic, polyelectrolyte copolymer and said mixed polymer segregating into domains having a dimension of at least 100 Angstroms.

5,008,340

CURABLE ADHESIVES

Robert Guerra, Fremont, and Pravin Soni, Union City, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Dec. 21, 1988, Ser. No. 288,331
Int. Cl.[5] C08L 23/26, 27/08
U.S. Cl. 525—193 12 Claims

1. An adhesive composition comprising:

(a) about 30 to about 50% by weight of a thermoplastic vinylidene fluoride homopolymer or copolymer;

(b) about 5 to about 40% by weight of an elastomeric vinylidene fluoride;

(c) about 5 to about 25% by weight of a thermoplastic ethylene copolymer comprising at least 50 mole% of units derived from ethylene and at least 5 mole % of units derived from at least one unsaturated comonomer containing at least one polar group;

(d) about 1 to about 10% by weight of a crosslinking agent component; and

(e) 0 to about 20% by weight of a tackifier; all percentages by weight being based on the total weight of the five components.

5,008,341

TRANSPARENT THERMOPLASTIC BLENDS

Rainer Bueschl, Roedersheim-Gronau, and Peter Klaerner, Battenberg, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 31, 1989, Ser. No. 401,239
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1988, 3831874
Int. Cl.[5] C08L 33/06, 45/00, 25/02, 27/08
U.S. Cl. 525—216 10 Claims

1. A transparent polyblend formed from

(a) 99.9–0.1% by weight of a styrene or α-methyl styrene and acrylonitrile copolymer containing from 11 to 30% by weight of acrylonitrile monomer units, and

(b) 0.1–99.9% by weight of a cycloalkyl (meth)acrylate homopolymer or copolymer with up to 99.9% by weight of units of methyl methacrylate.

5,008,342

EPOXY CONTAINING IMPACT MODIFIERS FOR THERMOPLASTIC RESINS

Shrikant V. Phadke, 14416 Brittmore Ave., Baton Rouge, La. 70817

Continuation-in-part of Ser. No. 4,088, Jan. 16, 1987, abandoned. This application Aug. 23, 1988, Ser. No. 235,364
Int. Cl.[5] C08F 255/02; C08L 51/00, 67/00, 77/00
U.S. Cl. 525—263 21 Claims

1. A modifier for improving the impact and knitline strength of polyester or polyamide resins in which it is dispersed comprising the product of a reaction in bulk at elevated temperature in the molten state and in the presence of (1) a peroxide catalyst of (2) an elastomeric backbone polymer selected from the group consisting of (a) a copolymer rubber formed by copolymerization of ethylene and one or more mono-olefins containing 3–16 carbon atoms and (b) an interpolymer rubber formed by interoplymerization of ethylene, one or more C_3–C_{16} mono-olefins, and a polyene and (3) a free radical polymerizable ethylenically unsaturated monomer having an epoxy functionality, wherein said bulk reaction product has a gel content greater than 5 percent, an epoxy functionality within the range of 2.5–13.0 per 1000 carbon atoms and degree of graft of at least 2.5%.

5,008,343

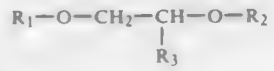
PROCESS FOR THE PREPARATION OF POLYMERS BASED ON CONJUGATED DIENES AND OPTIONALLY MONOVINYLAROMATIC COMPOUNDS

Walter Hellermann, Dorsten; Christoph Herrmann, Marl; Hans-Bernd Fuchs, Marl; Karl-Heinz Nordsiek, Marl, and Jurgen Wolpers, Haltern, all of Fed. Rep. of Germany, assignors to Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Continuation of Ser. No. 190,640, May 4, 1988, abandoned. This application Feb. 20, 1990, Ser. No. 492,317
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1987, 3724870
Int. Cl.[5] C08F 255/02, 255/06; C08K 3/06; B32B 27/08
U.S. Cl. 525—316 14 Claims

1. A process for preparing block-free conjugated diene polymers, comprising:

anionically polymerizing monomers consisting essentially of at least two compounds selected from the group consisting of 1,3-butadiene, isoprene and styrene in an inert organic solvent in the presence of an organolithium compound as a catalyst and a cocatalyst of a glycol dialkyl ether:



wherein R_3 is hydrogen, methyl or ethyl, R_1 and R_2 are alkyl groups of different numbers of carbon atoms selected from the group consisting of methyl, ethyl, n-propyl, isopropyl, n-butyl, iso-butyl, sec-butyl and t-butyl, and the total number of carbon atoms in the alkyl groups R_1 and R_2 ranges from 5 to 7.

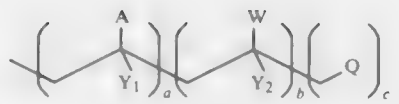
5,008,344

TEMPORARY WET STRENGTH RESINS AND PAPER PRODUCTS CONTAINING SAME

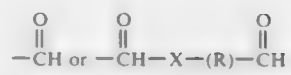
David W. Bjorkquist, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 5, 1988, Ser. No. 215,132
Int. Cl.[5] C08F 8/00
U.S. Cl. 525—328.2 11 Claims

1. A water soluble, temporary wet strength resin comprising a polymer characterized by the substantially complete absence of nucleophilic functionalities and having the formula:



wherein: A is



and X is —O—, —NH—, or —NCH_3—, and R is an unsubstituted aliphatic group; Y_1 and Y_2 are independently —H, —CH_3 or a halogen; W is a non-nucleophilic, aliphatic amide; Q is a cationic monomeric unit; the mole percent of a is from about 1% to about 70%, the mole percent of b is from about 10% to about 90%; and the mole percent of c is from about 1% to about 40%; said resin having an average molecular weight of between about 40,000 and about 400,000.

5,008,345

NO-POST-CURE METHOD OF CURING POLYACRYLATE POLYMERS

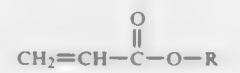
Fred R. Wolf, Avon Lake, Ohio, assignor to Zeon Chemical USA, Inc., Avon Lake, Ohio

Continuation of Ser. No. 227,396, Aug. 4, 1988, abandoned, which is a continuation-in-part of Ser. No. 101,883, Sep. 28, 1987, abandoned. This application May 18, 1990, Ser. No. 551,098
Int. Cl.[5] C08F 8/40
U.S. Cl. 525—340 16 Claims

1. A no-post-cure method of curing polyacrylate rubber having halogen and carboxy cure sites, comprising:

mixing an effective amount of a curative with said polyacrylate rubber until a uniform vulcanizable composition results:

said acrylate rubber comprising(a) from about 40 percent to about 99.8 percent by weight of an acrylate of the formula:



wherein R is selected from the group consisting of an alkyl radical containing 1 to 18 carbon atoms, an alkoxyalkyl, an alkylthioalkyl, and a cyanoalkyl radical containing 2 to 12 carbon atoms; (b) from about 0.1 percent to about 30 percent by weight of a halogen-containing monomer selected from the group consisting of halogen-containing vinylene hydrocarbons and halogen-containing vinyl monomers having the halogen group at least two carbon atoms removed from an oxygen group; (c) from about 0.1 percent to about 20 percent by weight of a carboxyl-containing monomer; and (d) up to about 35 percent by weight of a copolymerizable monomer containing a terminal vinylidene group;

said curative comprising a metallic stearate and a quaternary salt selected from the class consisting of an ammonium quaternary halogen salt, an ammonium quaternary hydroxide salt, a phosphonium quaternary halogen salt, and a phosphonium quarternary hydroxide salt;

processing said composition and maintaining said composition below an activation temperature range prior to a curing step whereby said composition does not undergo any substantial amount of cure prior to said curing step, said activation temperature range being form about 75° C. to about 85° C.,; and

heating during said curing step said composition to above an activation temperature range which causes said composition to substantially cure whereby no-post-curing is necessary and whereby said process permits large scale commercial production.

5,008,346

GRAFT COPOLYMERS OF POLY(P-PHENYLENE BENZBISIMIDAZOLE)

Robert C. Evers, Dayton; Thuy D. Dang, Springfield, both of Ohio, and D. Roger Moore, Clute, Tex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 28, 1989, Ser. No. 345,251
Int. Cl.[5] C08L 79/04
U.S. Cl. 525—426 3 Claims

1. A fusible, rod-like, graft copolymer having repeating units of the formula:

wherein X is (—CH_2CH_2CONH—)m or (—CH_2—CH(CH-3)—O—)n. wherein m has an average value of 5.0 to 35.0 and n has an average value of 1.0 to 30.0.

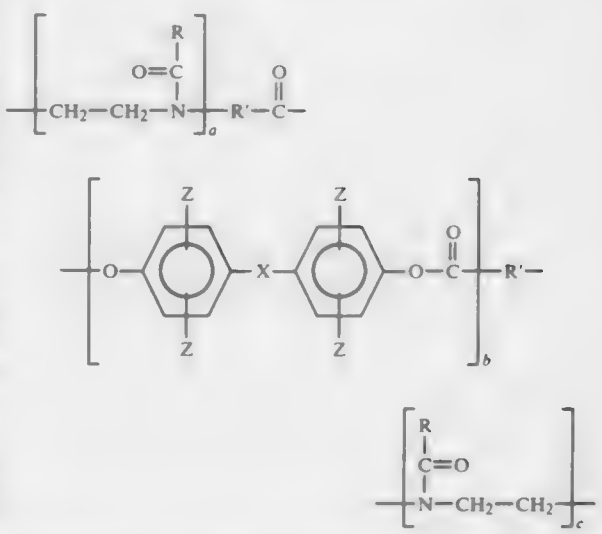
5,008,347

POLYALKYLOXAZOLINE-POLYCARBONATE-POLYALKYLOXAZOLINE TRIBLOCK COPOLYMER COMPATIBILIZER FOR POLYCARBONATE/POLYAMIDE BLENDS

Bruce P. Thill, and Bruce A. King, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 264,920, Oct. 31, 1988, Pat. No. 4,954,579. This application Jun. 18, 1990, Ser. No. 540,971
Int. Cl.[5] C08L 69/00, 77/00; C08G 64/18
U.S. Cl. 525—433 20 Claims

1. A triblock copolymer of the formula:



wherein X is a divalent C_1–C_{15} hydrocarbon radical, a single bond, —O—, —S—, —S_2—, —SO—, —SO_2—, or —CO—, R is a monovalent C_1–C_4 alkyl radical, R′ is a divalent C_7–C_{19}

alkyl radical, each Z is independently hydrogen, a halo radical, or a C_1–C_4 alkyl radical, b is a number greater than 0 equal to the number of repeated carbonate units in the polycarbonate block segment of the triblock copolymer, and a and c are each independently numbers greater than 0 equal to the numbers of repeated alkyloxazoline units in the polyalkyloxazoline block segments of the triblock copolymer.

5,008,348

INFUSIBILIZATION OF ORGANIC SILAZANE POLYMERS

Yoshifumi Takeda; Minoru Takamizawa, and Akira Hayashida, all of Joetsu, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 27, 1989, Ser. No. 371,716

Claims priority, application Japan, Jun. 30, 1988, 63-163592; Jul. 26, 1988, 63-186324

Int. Cl.[5] C08F *283/00*

U.S. Cl. 525—474 **20 Claims**

1. A method for infusibilizing an organic silazane polymer, comprising the steps of melting, shaping and then infusibilizing the organic silazane polymer, the infusibilizing step including contacting the shaped polymer at a sufficiently low temperature to maintain the polymer infusible with an inert gas containing the vapor of at least one compound selected from the group consisting of:

(1) silicon compounds having the formula

$$RaSiX_{4-a}$$

wherein

R is a radical selected from the group consisting of hydrogen, lower alkyl, alkenyl, and aryl radicals;

X is a chlorine, bromine or iodine atom, and

a has a value of from 0 to 2, and when a is equal to 2, R may be the same or different;

(2) boron compounds having the formula

$$BX_3$$

wherein X is as defined above;

(3) phosphorus compounds having the formula

$$PX_b$$

wherein

X is as defined above, and

b is equal to 3 or 5; and

(4) metal compounds having the formula

$$MX_c$$

wherein

M is a metal selected from the group consisting of Al, Ti, V, Fe, Ga, Ge, Zr, Nb, Sn, Sb, Te, Ta, W, and Bi,

c is a number equal to the valence of the metal and

X is as defined above,

and then exposing the shaped polymer to enhance the infusibility of polymer articles with an inert gas containing water vapors or ammonia.

5,008,349

SILICONE PRIMER COMPOSITIONS

Jeffrey A. Kosal, Midland County, and Terence J. Swihart, Bay County, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 26, 1989, Ser. No. 426,835

Int. Cl.[5] C08F *283/00*

U.S. Cl. 525—477 **47 Claims**

1. A composition comprising the reaction product of:

(A) a resinous copolymeric siloxane consisting essentially of $R_3SiO_{\frac{1}{2}}$ units and $Si_{4/2}$ units wherein the ratio of $R_3SiO_{\frac{1}{2}}$ units to $SiO_{4/2}$ units is 0.4:1 to 1.2:1 and each R independently denotes a monovalent hydrocarbon radical, said siloxane resin having residual hydroxyl functionality thereon; and

(B) an organosilane selected from the group consisting of those having the formulas

$$(X)_{3-a}SiR'G \quad \text{and} \quad (X)_3SiR'G$$
$$\qquad\quad R''_a$$

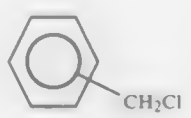
wherein X is selected from the group consisting of an alkoxy group having 1 to 3 carbon atoms, an acyloxy group having 2 to 4 carbon atoms and a halide radical, R' is a divalent hydrocarbon group having 2 to 8 carbon atoms, R'' is selected from the group consisting of an alkyl radical having 1 to 12 carbon atoms and a phenyl radical, a is 1 or 2 and G is selected from the group consisting of (i) an acryl group selected from the group consisting of

$$-OC(O)C(A)=CH_2 \quad \text{and} \quad -NC(O)C(A)=CH_2$$

in which A is independently selected from the group consisting of hydrogen and a methyl radical,

(ii) a glycidoxy group,

(iii) an aromatic group of the formula



(iv) an anilino group and

(v) an amine group selected from the group consisting of

$$-NHQ \text{ and } -NQ_2$$

wherein Q is independently selected from the group consisting of

$$-CH_2COOR''',$$

$$-CH_2CH_2COOR''',$$

$$-CH(CH_2COOR''')_2,$$

$$-CH_2CH(CH_2COOR''')_2,$$

and

$$-CH_2CH_2N(CH_2CH_2COOR''')_2$$

in which R''' is an alkyl radical having 1 to 3 carbon atoms, the ratio of said silane (B) to said siloxane resin (A) being such as to provide from about 0.1 to about 3 equivalents of X for each equivalent of hydroxyl of said component (A).

5,008,350

GLYCIDYL ETHERS OF PHENOLIC COMPOUNDS AND PROCESS FOR PRODUCING THE SAME

Noriaki Saito; Shuichi Kanagawa, and Hideshi Sakamoto, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

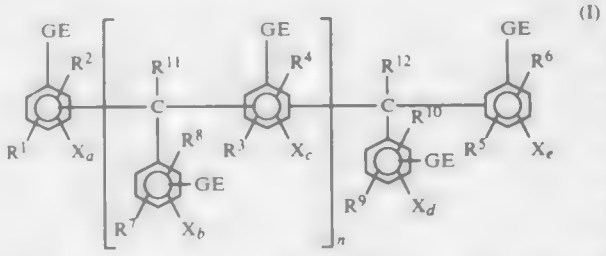
Filed Dec. 12, 1988, Ser. No. 282,569

Claims priority, application Japan, Dec. 16, 1987, 62-319289; Dec. 26, 1987, 62-331287

Int. Cl.[5] C08G *59/32*

U.S. Cl. 525—507 **3 Claims**

1. A glycidyl ether of the formula (I):



(I)

wherein each of R^1 through R^6 represents an alkyl group of from 1 to 6 carbon atoms; each of R^7 through R^{12} represents a hydrogen atom or an alkyl group of from 1 to 4 carbon atoms; X represents a chlorine or bromine atom; GE represents a glycidyl ether group; a, b, c, d, and e are 0 or 1; and n is the average number of from 0.5 to 5.

5,008,351

REACTING EPOXY RESIN AND SUBSTITUTED UREA OR BIURET WITH BLOCKED ISOCYANATE GROUP DICARBOXYLIC ANHYDRIDE COMPOUND PRODUCT

Willibald Paar, Graz, Austria, assignor to Vianova Kunstharz, A.G., Werndorf, Austria

Division of Ser. No. 195,290, May 18, 1988, Pat. No. 4,851,486. This application May 15, 1989, Ser. No. 351,477

Claims priority, application Austria, May 18, 1987, 1248/87

Int. Cl.[5] C08G *18/06, 59/14, 63/68*

U.S. Cl. 525—528 **9 Claims**

1. Process for producing self-crosslinking paint binders based on amino-modified epoxy resin esters comprising reacting 5 to 100 mole-% of the epoxy groups of an epoxy resin having an epoxy equivalent weight of from 160 to 2000 with a carboxylic compound of the formula —

$$HOOC - R_1 - CO - NR_2 - CO - NH - R_3 - /NCO/,$$

wherein

R_1 is a saturated or unsaturated aliphatic, cycloaliphatic, or aromatic hydrocarbon radical,

R_2 is an aliphatic hydrocarbon radical,

R_3 is an aliphatic, cycloaliphatic, or aromatic hydrocarbon radical, and

—/NCO/ is a blocked isocyanate group, or the group —NR_2—CO—NH—R_3—/NCO/ is a radical formed from a substituted urea or a substituted biuret carrying at least one blocked isocyanate, group,

and any remaining epoxy groups with primary and/or secondary amines, the weight ratios being chosen such that the final product does not contain free epoxy groups and has an amine value of at least 30 mg KOH/g.

5,008,352

SUBSTITUTED AROMATIC POLYMERS

Brian N. Hendy, Middlesborough, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Feb. 8, 1989, Ser. No. 307,563

Claims priority, application United Kingdom, Feb. 8, 1988, 8802796; Feb. 8, 1988, 8802797

Int. Cl.[5] C08G *75/23, 65/48*

U.S. Cl. 525—534 **15 Claims**

1. An aryl-ether polymer having aromatic rings linked to neighbouring rings in its chain through O and/or a direct link, at least some of said aromatic rings carrying a nuclear substituent sulphonamide group $SO_2NR'R''$, where R' is an aliphatic unsubstituted or substituted hydrocarbon group and R'' is hydrogen or an unsubstituted or substituted aliphatic hydrocarbon group, said neighbouring rings being part of repeating units Ph X Ph, where Ph is paraphenylene and X is SO_2 and/or CO, and being present in a molar proportion at least equal to that of said aromatic rings, said aryl-ether polymer being derived from a corresponding polymer carrying a plurality of groups SO_2Z, where Z is halogen, and possibly also groups SO_2OM, where M is 1/m of a cation of valency m, and being characterized in that said aryl-ether polymer contains, by moles, 0 to 10% of groups SO_2OM, based on the total groups SO_2OM and $SO_2NR'R''$.

13. A process of producing purified water which comprises contacting water containing dissolved impurity with one side of a cationic sulphonamide substituted polymer according to claim 1 applying to the impurity-containing water a hydrostatic pressure in excess of the osmotic pressure of that solution, and recovering purified water from the other side of that membrane.

15. A membrane comprising at least one polymer according to any one of claims 1 to 6 suitable for separation technologies, selected from the group consisting of ion-exchange, reverse osmosis and ultrafiltration.

5,008,353

ORGANIC PEROXIDE HAVING A POLYMERIZATION-REGULATING ABILITY

Takeshi Komai, Chita; Kazuo Matsuyama, Gamagori, and Isao Honma, Chita, all of Japan, assignors to Nippon Oil and Fats Co., Ltd., Japan

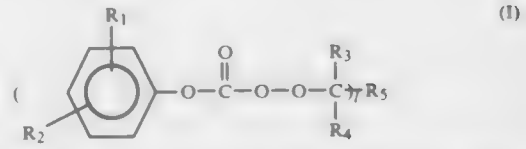
Division of Ser. No. 895,995, Aug. 13, 1986, Pat. No. 4,929,747. This application Nov. 14, 1988, Ser. No. 270,214

Claims priority, application Japan, Aug. 21, 1985, 60-181623; Aug. 21, 1985, 60-181624

Int. Cl.[5] C08F *4/34, 4/36*

U.S. Cl. 526—230.5 **11 Claims**

1. A process for polymerizing unsaturated monomers, which comprises initiating and regulating the polymerization with an organic peroxide of the formula (I) in an amount of 0.00005-14 0.2 mole based on 1 mole of the unsaturated monomer



(I)

wherein R_1 and R_2 represent hydrogen atoms; R_3 and R_4 represent the same or different lower alkyl groups having 1–4 carbon atoms; and R_5 represents an alkyl group having 2–12 carbon atoms in the case of l=1, or a $—CH_2—_m$ group (wherein m is an integer of 2–4) in the case of l=2.

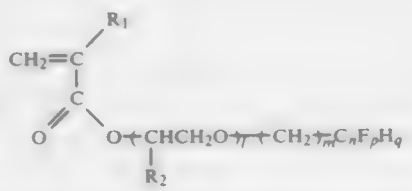
5,008,354

CONTACT LENS

Takeyuki Sawamoto, Tokyo; Masashi Nomura, Kodama, and Niro Tarumi, Akishima, all of Japan, assignors to HOYA Corporation, Tokyo, Japan

Filed Apr. 26, 1989, Ser. No. 343,389
Claims priority, application Japan, Apr. 30, 1988, 63-108423
Int. Cl.[5] C08F *18/20*; G02C *7/04*
U.S. Cl. 526—246 15 Claims

1. A contact lens having no water absorbability consisting of a polymer comprising, as an essential component, at least one fluorine-containing monomer represented by the general formula



(I)

wherein R_1 and R_2 are independently H or CH_3 and may be the same or different, l is an integer of 1–5, m is an integer of 1–2, n is an integer of 4–10, p is an integer of 8 or more, q is an integer of 0 or more, and $p+q=2n+1$.

5,008,355

SLURRY POLYMERIZATION OF MALEIC ANHYDRIDE AND ACRYLIC ACID IN A COSOLVENT SYSTEM OF ETHYL ACETATE AND CYCLOHEXANE

Mohammed Tazi, Wayne, and Krystyna Plochocka, Scotch Plains, both of N.J., assignors to GAF Chemicals Corporation, Wayne, N.J.

Filed Mar. 29, 1990, Ser. No. 501,059
Int. Cl.[5] C08F *34/02*
U.S. Cl. 526—271 10 Claims

1. A slurry polymerization process for preparing uncrosslinked copolymers of maleic anhydride and acrylic acid or methacrylic acid, optionally including a C_1–C_4 alkyl vinyl ether, having a predetermined weight average molecular weight of about 10,000 to one million which comprises:

copolymerizing about 20 to 60 mole percent of maleic anhydride, about 40 to 80 mole percent of acrylic acid or methacrylic acid, and from 0 to 25 mole percent of a C_1–C_4 alkyl vinyl ether, in the presence of a free radical initiator, at about 60° to 80° C., in a cosolvent system comprising about 10 to 75 percent by weight of ethyl acetate and about 25 to 90 percent by weight of an aliphatic or cycloaliphatic hydrocarbon having a boiling point at least 10° C. above the reaction temperature, without the presence of a protective colloid, to produce a pumpable slurry of said copolymer in said cosolvent system,

pumping the slurry from the reactor, and

recovering the copolymer therefrom as a uniform, fine powder having substantially no residual maleic anhydride.

5,008,356

CYCLO-OLEFINIC RANDOM COPOLYMER, OLEFINIC RANDOM COPOLYMER, AND PROCESS FOR PRODUCING CYCLO-OLEFINIC RANDOM COPOLYMERS

Naoshi Ishimaru, Yamaguchi; Toshiyuki Tsutsui, Ohtake; Akinori Toyota, and Norio Kashiwa, both of Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 162,200, Feb. 29, 1988. This application May 31, 1989, Ser. No. 359,131
Claims priority, application Japan, Mar. 2, 1987, 62-45152; Dec. 11, 1987, 62-312112; Dec. 15, 1987, 62-315206; Feb. 1, 1988, 63-19622
Int. Cl.[5] C08F *10/00*
U.S. Cl. 526—281 9 Claims

1. A process for producing a cyclo-olefinic random copolymer, which comprises copolymerizing an alpha-olefin and a cyclo-olefin in the presence of a catalyst formed from

(A) a compound of a transition metal of Group IVB of the periodic table having as a ligand a multidentate coordination compound in which at least two conjugated cycloalkadienyl groups or substituted products thereof are bonded via a lower alkylene group, and

(B) an aluminoxane.

5,008,357

RESIN FOR MAGNETIC RECORDING MEDIA FROM VINYL CHLORIDE POLYMER WITH QUATERNARY GROUPS

Takeshi Nakachi; Akio Hata, both of Shinnanyo, and Yoshihisa Watanabe, Uji, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 236,350, Aug. 22, 1988, Pat. No. 4,861,683, which is a continuation of Ser. No. 30,457, Mar. 25, 1987, abandoned. This application Jun. 26, 1989, Ser. No. 371,590
Int. Cl.[5] C08F *220/34*
U.S. Cl. 526—292.2 1 Claim

1. A resin used for magnetic recording media, comprising a vinyl chloride copolymer containing vinyl monomers with hydroxyl groups and methacryloyloxyethyltrimethylammonium chloride as component units, wherein

the content of the vinyl chloride is in the range of 60 to 95% by weight,

the content of the vinyl monomers with hydroxyl groups is in the range of 1 to 30% by weight,

the content of the methacryloyloxyethyltrimethylammonium chloride is in the range of 0.05 to 5% by weight in the vinyl chloride copolymer, and

the average degree of polymerization in said vinyl chloride copolymer is in the range of about 150 to 600

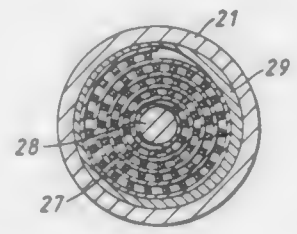
5,008,358

POLYMER COMPOSITIONS

Larry Anderson, Battersea; Gregory N. Batts; Malcolm D. Purbrick, both of Bushey; Clare E. Scriven, Harrow, and Stephen A. Jones, Barnet, all of England, assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/GB90/00014, § 371 Date Sep. 4, 1990, § 102(e) Date Sep. 4, 1990, PCT Pub. No. WO90/07528, PCT Pub. Date Jul. 12, 1990
PCT Filed Jan. 4, 1990, Ser. No. 571,617
Claims priority, application United Kingdom, Jan. 6, 1989, 8900221
Int. Cl.[5] C08F *12/16, 22/00, 20/18, 222/18*
U.S. Cl. 526—292.3 5 Claims

5. A method of making a hydrophilic crosslinkable copolymer which method comprises forming a composition comprising an ester of an ethylenically unsaturated carboxylic acid wherein the ester group contains a labile primary hydroxyl group, a halohydroxyalkyl ester of an ethylenically unsaturated carboxylic acid and a polymerisation initiator and subjecting the composition to conditions which generate free radicals from the polymerisation initiator.



5,008,359

ISOCYANATE MODIFIED CELLULOSE PRODUCTS AND METHOD FOR THEIR MANUFACTURE

Frank R. Hunter, Bellevue, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Nov. 25, 1988, Ser. No. 275,824
Int. Cl.[5] C08H *5/04*; C08G *18/00*; B32B *21/06, 23/04*
U.S. Cl. 527—103 29 Claims

1. A method for making a modified cellulose product which comprises:

impregnating a cellulosic material with an amount of essentially uncatalyzed polyisocyanate within a range of about 8 to 20% by weight of polyisocyanate to cellulosic material; and

heating the polyisocyanate-impregnated cellulosic material at a temperature within a range of about 105°–245° C. (221°–473° F.) for a time not exceeding about 5 minutes and at a pressure within a range of about 2700 to 8300 kPa (390 to 1200 psi) so as to cure the polyisocyanate.

5,008,360

ORGANOSILICON MATERIALS

John K. Bard, and Julia S. Burnier, both of Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed Oct. 16, 1989, Ser. No. 422,214
Int. Cl.[5] C08G *77/04*
U.S. Cl. 528—25 28 Claims

1. A prepreg which comprises fiber reinforcement impregnated with the partial hydrosilation reaction product of:

(a) at least one polyene having at least two non-aromatic carbon-carbon double bonds highly reactive in hydrosilation, the carbon-carbon double bonds being either in an alpha, beta or gamma position on a linear carbon moiety, next to two bridgehead positions in a strained polycyclic aliphatic ring structure, or in a cyclobutene ring;

(b) dicyclopentadiene and, optionally, one or more other polycyclic polyene having at least two chemically distinguishable non-aromatic, non-conjugated carbon-carbon double bonds in its rings;

(c) at least one cyclic polysiloxane containing three or more ≡SiH groups;

wherein about 55 to about 75% of the ≡SiH groups of the at least one cyclic polysiloxane (c) are reacted and the prepreg is substantially tack-free.

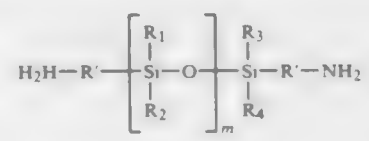
5,008,361

CRYSTALLINE POLYIMIDESILOXANES

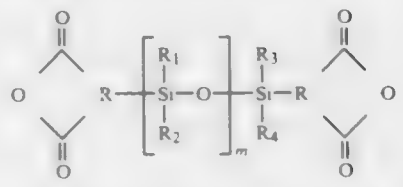
Chung J. Lee, Amherst, N.Y., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Jan. 2, 1990, Ser. No. 459,498
Int. Cl.[5] C08G *77/04*
U.S. Cl. 528—26 11 Claims

1. A crystalline polyimidesiloxane comprising a reaction product of benzophenone dianhydride and an organic diamine selected from the group consisting of bis-4(4-aminophenoxy) phenyl sulfone, 2,2-bis-4[4-aminophenoxy phenyl]-propane, and mixtures thereof, and a siloxane monomer selected from the group consisting of siloxane diamines having the formula



and siloxane dianhydrides having the formula



wherein the benzophenone dianhydride and the organic diamine(s) form an oligomer within said polyimidesiloxane of 1 to 10 repeating units, where m is 1 to 10, R is a tri-radical, and R_1, R_2, R_3, and R_4 are independently selected from substituted or unsubstituted aliphatic mono-radical of 1 to 12 carbon atoms or substituted or unsubstituted aromatic mono-radical of 6 to 10 carbon atoms and each R′ is independently selected from substituted or unsubstituted aliphatic di-radical of 1 to 12 carbon atoms or substituted or unsubstituted aromatic di-radical of 6 to 10 carbon atoms.

5,008,362

BINDERS SOLUBLE IN AQUEOUS ALKALI AND CONTAINING SILANYL GROUPS IN THE SIDE CHAIN, PROCESS FOR PREPARING SAME AND ALSO PHOTOSENSITIVE MIXTURE CONTAINING THESE COMPOUNDS

Peter Wilharm, Wiesbaden; Gerhard Buhr, Koenigstein, and Juergen Fuchs, Floersheim-Wicker, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 3, 1989, Ser. No. 332,511
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1988, 3811242
Int. Cl.[5] C08G *77/04*
U.S. Cl. 528—28 23 Claims

1. A silylated polymeric binder derived from a polymer bearing aliphatic or aromatic hydroxyl groups or both aliphatic and aromatic hydroxyl groups, at least a portion of which is modified by groups of the formulae I and II

$$[(A-B_n)_mC]-[(D_oE_p)BC]_u- \quad (I)$$

and

$$[(D_oE_p)BC]_r- \quad (II),$$

wherein

A denotes a silanyl group containing at least 2 silicon atoms in total linked to each other, but not more than 3 silicon atoms linked to each other in an unbranched chain of silicon atoms;

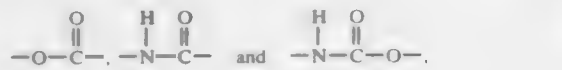
B denotes a bridging group having the formula IV:

$$-(b_1)_r-(X)-(b_2)_s- \quad (IV)$$

wherein

b_1 denotes a (C_1–C_4)alkylene of a group containing at least one C—C double bond and resulting from Diels-Alder reaction of an alkadienylene, with a dienophile;

X denotes a single bond, —O—, —S—, $—SO_2—$, —NH—, $—NR^1—$,



wherein

R^1 is a (C_1-C_3)alkyl;

b_2 denotes arylene or cycloalkylene; and

r, s each denotes 0 or 1, with the proviso that for the bridging group B the sum of the values of r and s is at least 1;

C denotes a group derived from a functional group which has been reacted with a hydroxyl group with formation of a covalent bond

D denotes a di- or polyvalent radical of a mono- or polyhydric aliphatic alcohol;

E denotes a di- or polyvalent radical of a mono- or polyhydric aromatic alcohol;

n denotes 0 or 1;

m denotes 1 or 2; and

o, p, u, and v each denote 0 or 1.

5,008,363

LOW TEMPERATURE ACTIVE ALIPHATIC AROMATIC POLYCARBODIIMIDES

Charles B. Mallon, and Howard Chu, both of Belle Mead, N.J., assignors to Union Carbide Chemicals and Plastics Technology Corporation, Danbury, Conn.

Filed Mar. 23, 1990, Ser. No. 497,925
Int. Cl.[5] C08F *8/30*
U.S. Cl. 528—49 **20 Claims**

1. A method for preparing a mixed aliphatic/aromatic polycarbodiimide comprising:

(a) polymerizing a saturated aliphatic diisocyanate or a saturated cycloaliphatic diisocyanate or a mixture thereof, optionally containing a polyfunctional isocyanate, in the presence of a polycarbodiimide polymerization catalyst to form a polycarbodiimide intermediate having free isocyanate groups;

(b) reacting said polycarbodiimide intermediate with a monofunctional isocyanate-reactive compound or a mixture thereof in an amount insufficient to react with all of said free isocyanate groups, and

(c) further polymerizing said polycarbodiimide intermediate in the presence of an aromatic diisocyanate and said catalyst under polycarbodiimide-forming conditions until essentially all of the isocyanate groups are depleted.

5,008,364

THERMOPLASTIC MOLDING MATERIALS WHICH ARE STABLE AT HIGH TEMPERTURES AND HAVE IMPROVED MELT STABILITY

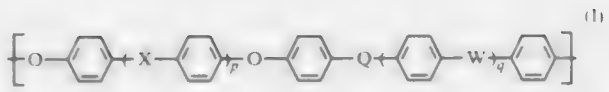
Peter Ittemann, Ludwigshafen; Georg N. Simon, Limburgerhof; Gerhard Heinz, Weisenheim; Hartmut Zeiner, Plankstadt; Hermann Buchert, Bad Duerkheim, and Joachim Seibring, Lambsheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 20, 1988, Ser. No. 209,215
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1987, 3721337; Sep. 30, 1987, 3732931
Int. Cl.[5] C08G *8/02, 75/20*
U.S. Cl. 528—172 **7 Claims**

1. A thermoplastic molding material which is stable at high temperatures and contains, an essential components,

(A) from 20 to 100% by weight of a polyaryl ether sulfone consisting of

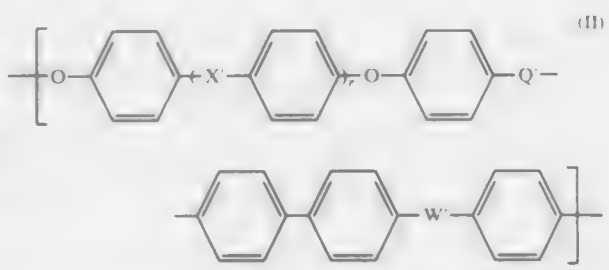
(A_1) from 0 to 100 mol % of units of the formula I



(I)

and

(A_2) from 0 to 100 mol % of units of the formula II

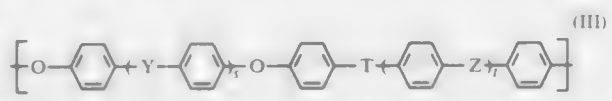


(II)

or their C_1-C_6-alkyl or alkoxy, aryl, chlorine or fluorine derivatives which are substituted in the nucleus, where X, X', Q, Q', W and W' independently of one another are each $—SO_2—$, —O—, —CO—, a chemical bond or —CR-R'— and in each case one or more of the substituents X, Q, W and X', Q, and W' are $—SO_2—$, R and R' are each hydrogen, C_1-C_6-alkyl or alkoxy, aryl or their fluorine or chlorine derivatives, and p, q and r are each 0 or 1, and furthermore

(B) from 0 to 80% by weight of a polyaryl ether ketone consisting of

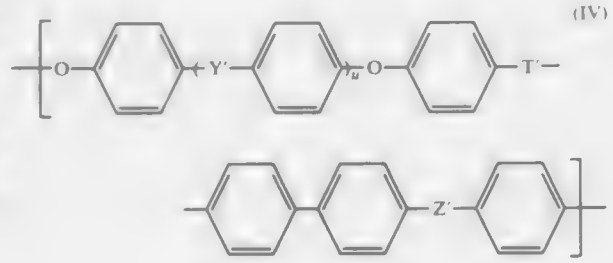
(B_1) from 0 to 100 mol % of units of the formula III



(III)

and

(B_2) from 0 to 100 mol % of units of the formula



(IV)

or their C_1-C_6-alkyl, C_1-C_6-alkoxy, phenyl, chlorine or fluorine derivatives which are substituted in the nucleus, where Y, Y', T, T', Z and Z' are each —CO—, CR''R''', a chemical bond or —O— and one or more of the substituents Y, T, and Z or Y', T' and Z' are —CO—, R'' and R''' may have the same meanings as R and R', and s, t and u are each 0 or 1, and

(C) from 0 to 90% by weight of fibrous or particulate fillers or a mixture of these,

wherein the said molding material contains not more than 100 ppm, based on total polymer and calculated as alkali metal, of an alkali metal salt as obtained by polycondensation of the respective precursor monomers in an aprotic polar solvent in the presence of an alkali metal carbonate, followed by filtration over a pressure filter and precipitation in water and extraction of the precipitated polycondensation product forming a powder with water until a residual alkali metal content of less than 100 ppm is obtained.

5,008,365

PROCESS FOR THE MANUFACTURE OF UREA-FORMALDEHYDE RESINS CONTAINING MELAMINE

Bernard Druet, Choisy Aubac, and Gerald Rochet, Fontaines Chaaly, both of France, assignors to Norsolor (Orkem Group), Paris LaDefense, France

Continuation of Ser. No. 289,274, Dec. 23, 1988, abandoned. This application Feb. 8, 1990, Ser. No. 477,144
Claims priority, application France, Dec. 23, 1987, 87 17997
Int. Cl.[5] C08G *12/32*
U.S. Cl. 528—230 **19 Claims**

1. A multistage process for the manufacture of urea-melamine-formaldehyde resins containing not more than 10% of melamine and exhibiting a final F/NH_2 molar ratio of between 0.5 and 0.575, the NH_2 groups being the sum total of the NH_2 groups of urea and of melamine which are used, comprising adding the melamine in a first stage of condensation of urea and of a source of formaldehyde, the condensation with melamine being conducted at an acidic pH, under heat, the quantity of urea and formaldehyde used being such that the F/NH_2 molar ratio at this stage is not more than 1.5, the molar equivalents of the NH_2 groups being the sum total of the NH_2 groups of urea and of melamine used until the viscosity of the solution is at least 345 mPa s at 40° C., and introducing additional urea to resultant hot condensation product in a second stage, the quantity of urea an formaldehyde used being such that the F/NH_2 molar ratio at this stage is not more than 1.5, the molar equivalents of the NH_2 groups being the sum total of the NH_2 groups of urea and of melamine used, and introducing additional urea to resultant condensation product in a second stage at an acidic pH to effect further condensation so as to obtain said final F/NH_2 molar ratio.

5,008,366

PROCESS FOR PRODUCING ADHESIVES FROM POLYETHYLENE TEREPHTHALATE

Oscar M. Bathe, Woodridge, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Apr. 25, 1990, Ser. No. 514,428
Int. Cl.[5] C08G *63/46*
U.S. Cl. 528—272 **10 Claims**

1. A process for the preparation of high tack adhesive compositions, as hot melt adhesives for paper, aluminum and polyethylene substrates and as pressure-sensitive adhesives for paper and aluminum substrates, comprising the reaction product of a trimellitic acid polyester ether and a polyol of a molecular weight ranging from about 100 to about 650, and polyethylene terephthalate, which process comprises:

(a) preparing a trimellitic acid polyester ether of at least 500 molecular weight and less than about 1500 molecular weight and an acid number of up to 10 by reacting trimellitic anhydride or trimellitic acid with a polyethylene glycol of molecular weight from about 100 to about 650, wherein mole ratio of said trimellitic anhydride or trimellitic acid to said polyethylene glycol is at least 1:3, in the presence of an esterification catalyst at a temperature within the range of from about 380° F. to about 500° F. at a pressure ranging from about 1 to about 30 atmospheres;

(b) reacting in situ said trimellitic acid polyester ether with polyethylene terephthalate at a temperature within the range of from about 450° F. to about 480° F., a pressure from about 1 to about 30 atmospheres, wherein mole ratio of said trimellitic acid polyester ether to said polyethylene terephthalate is in the range of from about 1:1 to about 1:3, to prepare a copolymer of trimellitic acid polyester ether and polyethylene terephthalate of a molecular weight within the range of from about 1000 to about 1200, a functionality of at least 3, and an acid number of from about 3 to about 10; and

(c) recovering said copolymers of trimellitic acid polyester ether and polyethylene terephthalate as a liquid at elevated temperature or as a solid at ambient temperature.

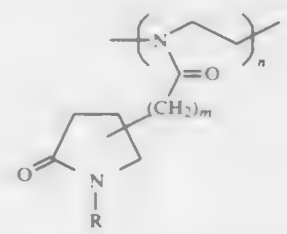
5,008,367

POLY(PYRROLIDONYL OXAZOLINE)

Gary Dandreaux, Bloomfield; Robert B. Login, Oakland; John J. Merianos, Middletown; Paul Garelick, South Plainfield; Krystyna Plochocka, Scotch Plains; Max Negrin, Bloomfield, and Jenn S. Shih, Paramus, all of N.J., assignors to GAF Chemicals Corporation, Wayne, N.J.

Division of Ser. No. 349,362, May 8, 1989, Pat. No. 4,933,463. This application Mar. 19, 1990, Ser. No. 495,078
Int. Cl.[5] C08G *69/14*
U.S. Cl. 528—326 **3 Claims**

1. A homopolymer having recurring units of the formula:



wherein n has a value of 10 to 50,000, where R is H or alkyl, and m is 0 to 4.

5,008,368

PREPARATION OF POLY(ARYLENE SULFIDE/SULFONE) POLYMER WITH ADDITION OF WATER AFTER POLYMERIZATION IS INITIATED

Afif M. Nesheiwat, Chatham, N.J., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 3, 1989, Ser. No. 389,020
Int. Cl.[5] C08G *75/14*
U.S. Cl. 528—388 **15 Claims**

1. A method of producing a poly(arylene sulfide/sulfone) polymer which comprises:

(a) contacting reactants comprising an alkali metal sulfide, a dihalogenated aromatic sulfone, a polar organic compound, at least one base and an alkali metal carboxylate under suitable conditions to initiate a polymerization reaction,

(b) thereafter adding an amount of water while maintaining polymerization conditions,

(c) terminating the polymerization reaction, and

(d) recovering the poly(arylene sulfide/sulfone) polymer.

5,008,369

PREPARATION OF POLYSULFONES

Douglas R. Robello, Webster, and Abraham Ulman, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

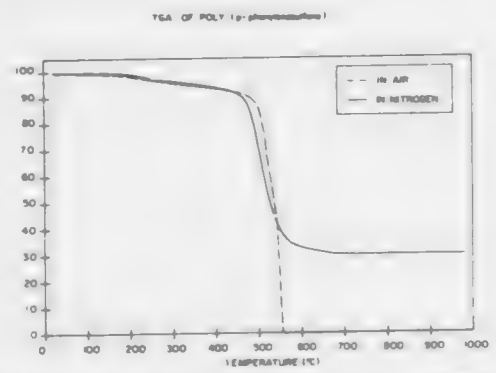
Filed Nov. 1, 1989, Ser. No. 430,039
Int. Cl.[5] C08G *75/14, 75/18, 75/20*
U.S. Cl. 528—391 **11 Claims**

1. A process for the preparation of a polysulfone, said process comprising the self-condensation of a reactant in the presence of an initiator for the self-condensation,

said reactant having a leaving group and a sulfinate group conjugated by an aromatic group Ar, to which said leaving group and aromatic group are substituted, said sulfinate group having the formula $—SO_2M^+$, wherein M is an alkali metal,

said initiator having a bridging group, selected from the carbonyl group or the sulfonyl group, bonded to two

aromatic groups, each of which has a halogen in a position ortho or para to said bridging group,



said process being conducted at a temperature sufficient to cause said self-condensation to take place.

5,008,370

POLY(ARYLENE THIOETHER-KETONES) IMPROVED IN MELT STABILITY AND PREPARATION PROCESS THEREOF

Ken Kashiwadate; Yoshikatsu Satake, both of Iwaki; Takashi Kaneko, Shiroyama; Masahiro Tada, Matsudo, and Takayuki Katto, Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo K.K., Japan

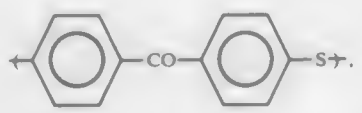
Filed Nov. 3, 1989, Ser. No. 431,118

Claims priority, application Japan, Nov. 11, 1988, 63-283553

Int. Cl.[5] C08F *283/00*

U.S. Cl. 528—481 **5 Claims**

1. A process for the preparation of a poly(arylene thioether-ketone) improved in melt stability, which comprises subjecting a poly(arylene thioetherketone) to a heat treatment for $5-5\times10^3$ minutes in a powdery state and a temperature range of 200°-350° C., said poly(arylene thioether-ketone) having predominant recurring units of the formula



wherein the —CO— and —S— are in the para position to each other, and having the following physical properties (a)–(c):

(a) melting point, Tm being 310°-380° C.;

(b) melt crystallization temperature, Tmc (420° C./10 min) being at least 210° C., and residual melt crystallization enthalpy, ΔHmc (420° C./10 min) being at least 10 J/g, wherein Tmc (420° C./10 min) and ΔHmc (420° C./10 min) are determined by a differential scanning calorimeter at a cooling rate of 10° C./min after the poly(arylene thioether-ketone) is held at 50° C. for 5 minutes in an inert gas atmosphere, heated to 420° C. at a rate of 75° C./min and then held for 10 minutes at 420° C.: and

(c) reduced viscosity being 0.2–2.0 dl/g as determined by viscosity measurement at 25° C. and a polymer concentration of 0.5 g/dl in 98 percent by weight sulfuric acid.

5,008,371

BIOLOGICALLY ACTIVE POLYPEPTIDE AND USE THEREOF

Shunji Natori, Ibaragi, Japan, assignor to Sanwa Kagaku Kenkyusho Co., Ltd., Aichi, Japan

Filed Jan. 22, 1988, Ser. No. 146,892

Claims priority, application Japan, Jan. 23, 1987, 62-14807

Int. Cl.[5] A61K *37/02;* **C12P** *21/02;* **A01N** *37/18*

U.S. Cl. 530—324 **2 Claims**

1. A purified antiviral active polypeptide having an amino acid sequence shown by the formula of

H—Ala—Thr—Cys—Asp—Leu—Leu—Ser—Gly—

—Thr—Gly—Ile—Asn—His—Ser—Ala—Cys—Ala—

—Ala—His—Cys—Leu—Leu—Arg—Gly—Asn—Arg—

—Gly—Gly—Tyr—Cys—Asn—Gly—Lys—Ala—Val—

—Cys—Val—Cys—Arg—Asn.

5,008,372

DEBLOCKING AMINO TERMINAL N-ACETYL SERINE AND N-ACETYL THREONINE RESIDUES IN PEPTIDES AND PROTEINS TO ALLOW SEQUENCING

Daniel Wellner, New York, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Feb. 12, 1990, Ser. No. 478,917

Int. Cl.[5] C07K *3/08, 15/00;* **G01N** *33/68*

U.S. Cl. 530—345 **6 Claims**

1. A method for deblocking amino terminal N-acetyl serine and N-acetyl threonine residues in proteins and peptides to allow sequencing, said method comprising the steps of:

(a) reacting the protein or peptide having N-terminal acetyl serine or N-terminal acetyl threonine residue with anhydrous trifluoroacetic acid for 1 to 15 minutes at 30 to 60° C.,

(b) removing the remaining trifluoroacetic acid,

(c) maintaining the reaction mixture from which trifluoroacetic acid has been removed at 30 to 100° C. for 60 minutes to 5 days.

5,008,373

FUSION PROTEINS AND PARTICLES

Alan J. Kingsman; Susan M. Kingsman, both of Islip; Sally E. Adams, Kidlington; Elizabeth J. C. Mellor, Oxford, and Michael H. Malim, Upleadon, all of United Kingdom, assignors to Oxford Gene Systems Limited, Oxford, England

Continuation-in-part of Ser. No. 36,807, Apr. 10, 1987. This application Oct. 26, 1987, Ser. No. 112,082

Claims priority, application United Kingdom, Nov. 1, 1986, 8626148; Sep. 4, 1987, 8708531

The portion of the term of this patent subsequent to Apr. 17, 2007, has been disclaimed.

Int. Cl.[5] C07K *3/00;* **C02K** *13/00, 15/00;* **C12N** *15/11*

U.S. Cl. 530—350 **5 Claims**

1. A fusion protein comprising a first and second amino acid sequence wherein the first amino acid sequence is encoded for by a yeast TYA gene sequence and the second amino acid sequence is encoded for by a gene sequence which encodes a biologically active amino acid sequence wherein the fusion protein self-assembles into particles containing a plurality of the same fusion protein and the particles exhibit biological activity of the second amino acid sequence.

5,008,374

IL-1α DERIVATIVES AND DRUGS

Satoru Nakai; Mayumi Kaneta; Yoshikazu Kikumoto, all of Tokushima; Yeong-Man Hong, Naruto; Kazuyoshi Kawai, Tokushima; Setsuko Takegata, Tokushima; Kiyoshi Ishii, Tokushima; Yasuo Yanagihara, Tokushima, and Yoshikatsu Hirai, Tokushima, all of Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Mar. 9, 1987, Ser. No. 23,373

Claims priority, application Japan, Mar. 14, 1986, 61-57885; Jun. 3, 1986, 61-129759; Jun. 25, 1986, 61-148393; Jul. 8, 1986, 61-160250; Aug. 27, 1986, 61-200323

Int. Cl.[5] C07K *13/00;* **A61K** *37/00*

U.S. Cl. 530—351 **8 Claims**

1. An essentially pure polypeptide having an amino acid sequence of IL-1α represented by the formula (A) which is modified in that at least one of Asn at the 36 position and Cys at the 141 position is deficient or replaced by another amino acid:

formula (A)

5 10
Ser—Ala—Pro—Phe—Ser—Phe—Leu—Ser—Asn—Val—
15 20
Lys—Tyr—Asn—Phe—Met—Arg—Ile—Ile—Lys—Tyr—
25 30
Glu—Phe—Ile—Leu—Asn—Asp—Ala—Leu—Asn—Gln—
35 40
Ser—Ile—Ile—Arg—Ala—Asn—Asp—Gln—Tyr—Leu—
45 50
Thr—Ala—Ala—Ala—Leu—His—Asn—Leu—Asp—Glu—
55 60
Ala—Val—Lys—Phe—Asp—Met—Gly—Ala—Tyr—Lys—
65 70
Ser—Ser—Lys—Asp—Asp—Ala—Lys—Ile—Thr—Val—
75 80
Ile—Leu—Arg—Ile—Ser—Lys—Thr—Gln—Leu—Tyr—
85 90
Val—Thr—Ala—Gln—Asp—Glu—Asp—Gln—Pro—Val—
95 100
Leu—Leu—Lys—Glu—Met—Pro—Glu—Ile—Pro—Lys—
105 110
Thr—Ile—Thr—Gly—Ser—Glu—Thr—Asn—Leu—Leu—
115 120
Phe—Phe—Trp—Glu—Thr—His—Gly—Thr—Lys—Asn—
125 130
Tyr—Phe—Thr—Ser—Val—Ala—His—Pro—Asn—Leu—
135 140
Phe—Ile—Ala—Thr—Lys—Gln—Asp—Tyr—Trp—Val—
145 150
Cys—Leu—Ala—Gly—Gly—Pro—Pro—Ser—Ile—Thr—
155
Asp—Phe—Gln—Ile—Leu—Glu—Asn—Gln—Ala.

5,008,375

METHOD FOR A CONTINUOUS HYDROLYZING OF KERATINACEOUS MATERIALS

Peder Fosbol, Nybrovej; Henrik Ullum, Lykkesholm, and Birgitte Korremann, Abjergvej, all of Denmark, assignors to Atlas Industries A/S, Ballerup, Denmark

PCT No. PCT/DK89/00122, § 371 Date Jan. 29, 1990, § 102(e) Date Jan. 29, 1990, PCT Pub. No. WO89/11797, PCT Pub. Date Dec. 14, 1989

PCT Filed May 16, 1989, Ser. No. 460,150

Claims priority, application Denmark, Jun. 1, 1988, 2969/88

Int. Cl.[5] A23J *1/10;* **C07K** *3/10;* **C08H** *1/06*

U.S. Cl. 530—357 **7 Claims**

1. Method for the continuous hydrolyzing of keratinaceous material, which is heated under pressure for the duration of time it takes for the desired hydrolyzation to be achieved, characterized in that the material is introduced in batches at intervals into the one end of an elongated, pressure-tight hydrolyzing vessel through a pressure-proof inlet chute, in that the material is heated by the direct injection of steam into the hydrolyzing vessel while it is conveyed by means of pressure difference through the vessel towards a pressure-tight outlet chute which is opened at intervals for the emptying of a hydrolyzed batch of material, and in that the movement of the product mass through the hydrolyzing vessel takes place as a step-like plunger flow substantially in step with the inlet chute.

5,008,376

PROCESS FOR OBTAINING CONCENTRATES HAVING A HIGH α-LACTALBUMIN CONTENT FROM WHEY

Robin C. Bottomley, Bucks, England, assignor to Express Foods Group Limited, Middlesex, England

Filed Sep. 28, 1988, Ser. No. 250,403

Claims priority, application United Kingdom, Oct. 8, 1987, 8723651

Int. Cl.[5] C07K *3/26*

U.S. Cl. 530—366 **9 Claims**

1. A process for producing an α-lactalbumin-enhanced fraction from a liquid containing whey protein including α-lactalbumin and βlactoglobulin which comprises subjecting said liquid to ultrafiltraiton using a membrane having a molecular weight cut off of about 100,000 to form a permeate having a protein content in which the proportion of α-lactalbumin is enhanced relative to the proportion obtaining in the protein content of said liquid and further ultrafiltering said permeate using a membrane having a molecular weight cut off up to 10,000 to produce a concentrate having an enhanced αlactalbumin content.

5,008,377

PRODUCTION OF PROTEINS IN ACTIVE FORMS

Joseph J. Patroni, West Preston, and Malcolm R. Brandon, Ivanhoe, both of Australia, assignors to Bunge (Australia) Pty. Ltd., Melbourne, Australia

Filed Apr. 21, 1988, Ser. No. 184,342

Claims priority, application Australia, Apr. 21, 1987, PI 1508

The portion of the term of this patent subsequent to Jan. 10, 2006, has been disclaimed.

Int. Cl.[5] C07K *3/22, 3/28, 15/14, 15/26*

U.S. Cl. 530—416 **6 Claims**

1. A method for the preparation of a protein in a soluble and physiologically active form from which organic cations have been removed, comprising:

providing a source of protein, selected from the group consisting of growth hormones, interferons, immunogens and lymphokines, in a solubilized form, wherein the source of protein in the solubilized form is obtained by treating insoluble protein aggregates with an aqueous cationic surfactant, and wherein said cationic surfactant includes an organic cation selected from the group consisting of cetyl trimethylammonium cations, cetyl pyridinium cations, tetradecyl trimethylammonium cations, dodecyl trimethylammonium cations, mixed n-alkyl dimethyl benzyl ammonium cations, N, N-dimethyl-N-(2-(2-(4-(1,1,3,3,-tetramethyl butyl)phenoxyl)ethoxy)ethyl)benzenemethanaminium cations;

contacting said source of solubilized protein with a nuclear sulfonic acid cationic exchange resin, wherein the counter ion of said cationic exchange resin is an alkali metal; and

recovering the protein in a soluble and physiologically active form from which organic cations have been removed.

5,008,378

SUBMICRON LIGNIN DISPERSIONS

Mitchell S. Dimitri, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 255,444, Oct. 11, 1988, Pat. No. 4,957,557. This application Oct. 23, 1989, Ser. No. 408,846

Int. Cl.[5] C08H *5/02*

U.S. Cl. 530—501 **4 Claims**

1. A method of producing a lignin product comprised of lignin particles of submicron median particle diameter comprising the steps of preparing an aqueous solution containing

from about 12 to 18% lignin by weight, about 2 to 15 moles of ammonium hydroxide, about 4 to 12 moles of formaldehyde, and about 0.25 to 1.25 moles of a base selected from the group consisting of sodium hydroxide and potassium hydroxide, per mole of lignin present in the solution, heating the solution to a temperature of at least about 150° F. for sufficient time to cross link the lignin to precipitate lignin particles of submicron median particle diameter suspended in an aqueous colloidal suspension.

5,008,379

CHROMIUM COMPLEXES OF SULFO GROUP CONTAINING DISAZO COMPOUNDS HAVING A RESORCINOL BISCOUPLING COMPONENT RADICAL

Herbert Holliger, Allschwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

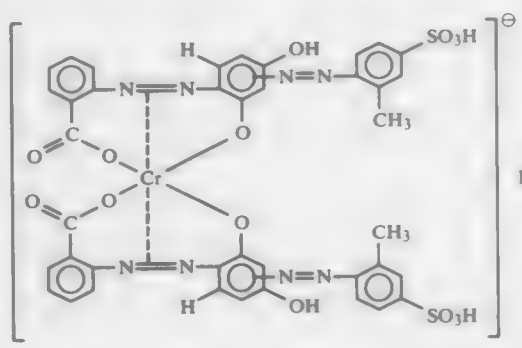
Continuation of Ser. No. 715,701, Mar. 25, 1985, abandoned, which is a continuation of Ser. No. 188,687, Sep. 19, 1980, abandoned. This application Oct. 29, 1987, Ser. No. 114,901

Claims priority, application Switzerland, Sep. 25, 1979, 8638/79

Int. Cl.[5] **C09B** *45/28, 33/04;* **D06P** *1/10, 3/00*

U.S. Cl. 534—684 **6 Claims**

1. A 1:2 chromium complex of the formula



or a salt thereof.

5,008,380

PROCESS FOR THE CONVERSION OF DAUNORUBICIN INTO DOXORUBICIN

Gaetano Palladino; Peter MacDonald, and Ettore Bigatti, all of Milan, Italy, assignors to Sicor Societa 'Italiana Corticosteroidi S.p.A., Milan, Italy

Filed Nov. 9, 1988, Ser. No. 269,199

Claims priority, application Italy, Oct. 11, 1988, 22260 A/88

Int. Cl.[5] **C07H** *15/24, 15/00*

U.S. Cl. 536—6.4 **1 Claim**

1. A process for the preparation of doxorubicin, which consists of reacting 14-bromo-daunorubicin 13, 13-diethylketal in aqueous medium, in the absence of organic solvents, with oxalic acid first at pH 1–2 and, after hydrolysis of the ketal group, at pH 2–6 to obtain doxorubicin 14-oxalate ester, hydrolyzing said ester and isolating doxorubicin from the reaction mixture.

5,008,381

SELECTIVE CLEAVAGE OF NARINGIN

Zdenek Kratky, New Milford, and John S. Tandy, Litchfield, both of Conn., assignors to Nestec S.A., Vevey, Switzerland

Continuation-in-part of Ser. No. 116,555, Nov. 3, 1987, abandoned. This application Feb. 23, 1990, Ser. No. 483,879

Int. Cl.[5] **C07H** *1/00, 1/08*

U.S. Cl. 536—8 **20 Claims**

1. A process for treating naringin for obtaining L-rhamnose and naringenin-7-O-glucoside comprising:

heating naringin in aqueous solution in agitated contact with an acidic catalyst in an amount sufficient for providing H^+ ions to naringin molecules for cleaving the O-glycosidic linkage of the naringin molecule which connects the naringin molecule L-rhamnose and naringenin-7-O-glucoside moieties while substantially avoiding cleaving the naringin molecule O-glucosidic linkage which connects the naringin molecule glucose and naringenin moieties and thereby forming a liquid reaction medium;

cooling the liquid reaction medium to form a liquid phase and a semi-solid phase;

separating the liquid phase from the semi-solid phase; and

isolating L-rhamnose from the liquid phase and isolating naringenin-7-O-glucoside from the semi-solid phase.

15. A process for treating naringin for obtaining L-rhamnose comprising:

heating naringin in aqueous solution to a temperature of from about 70° C. to 200° C. in agitated contact with an acid catalyst selected from a group consisting of a strong cationic exchange resin, hydrochloric acid having a molarity in the naringin solution which does not exceed about 0.1 M and trifluoroacetic acid having a molarity in the naringin solution which does not exceed about 0.2 M for from about 5 secs to 6 hrs for forming a reaction medium containing L-rhamnose and naringenin-7-O-glucoside;

cooling the liquid reaction medium to form a liquid phase and a semi-solid phase;

separating the liquid phase from the semi-solid phase; and

isolating L-rhamnose from the liquid phase.

5,008,382

CATIONIC AQUEOUS BITUMINOUS EMULSION-AGGREGATE SLURRIES PREPARATION

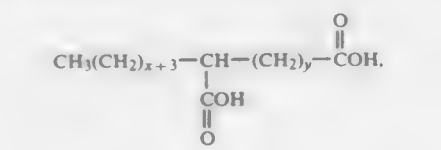
Peter Schilling, and Hans G. Schreuders, both of Charleston, S.C., assignors to Westvaco Corporation, New York, N.Y.

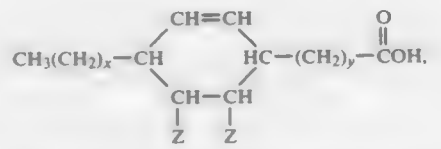
Division of Ser. No. 263,440, Oct. 27, 1988, Pat. No. 4,877,457, which is a continuation-in-part of Ser. No. 197,100, May 20, 1988, Pat. No. 4,810,299. This application Jul. 20, 1989, Ser. No. 370,052

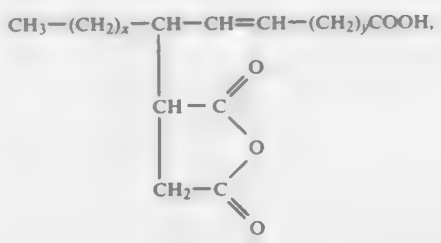
Int. Cl.[5] **C08L** *95/00;* **C09D** *3/24;* **B01J** *13/00*

U.S. Cl. 536—11 **4 Claims**

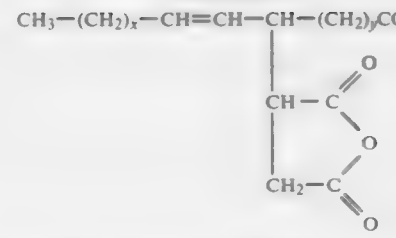
1. A composition of matter obtained by (1) modifying a polyamine by reaction with a member of the group consisting of sulfonated fatty acids, resin acids (rosin) reacted with maleic anhydride or fumaric acid, and epoxidized esters of unsaturated fatty esters from the group consisting of tallates, oleates, linoleates, glycerides, and polycarboxylic acids and their anhydrides of the formulae

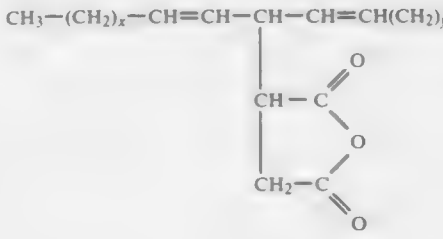


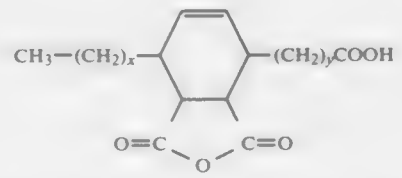




-continued







wherein x and y are integers from 3 to 9, x and y together equal 10–14, at least one Z is a carboxylic acid group and any remaining Z is hydrogen and (2) reacting the modified polyamine with a sugar-containing syrup.

5,008,383

SURFACE-ACTIVE AGENTS

John D. Bu'lock; James K. Sutherland, both of Manchester, and Michael J. Donnelly, Coventry, all of United Kingdom, assignors to 31 Research Exploitation Limited, London, England

PCT No. PCT/GB87/00243, § 371 Date Nov. 3, 1988, § 102(e) Date Nov. 3, 1988, PCT Pub. No. WO87/06236, PCT Pub. Date Oct. 22, 1987

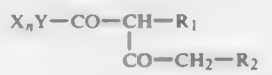
PCT Filed Apr. 9, 1987, Ser. No. 263,775

Claims priority, application United Kingdom, Apr. 12, 1986, 8608960

Int. Cl.[5] **C07H** *13/06, 15/12;* **C07C** *69/716;* **B01F** *17/00*

U.S. Cl. 536—4.1 **15 Claims**

1. A process for the preparation of a surface-active substance having the formula



(II)

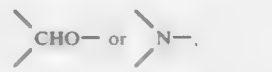
wherein;

each of R_1 and R_2, which may be the same or different, is an alkyl chain having from 6 to 20 carbon atoms;

X is a mono- or di-valent hydrophilic moiety;

n is 1 or 2; and,

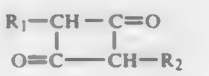
Y is $-CH_2O-$ or $-NH-$ or



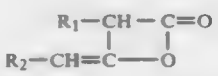
said process comprising reacting a compound of the formula

X_nYH

in which X,Y and n are as defined hereinabove, with a diketene of the formula III or IV;



(III)



(IV)

wherein R_1 and R_2 are as stated above, so that the group YH is acylated by the diketene, the acylation reaction being carried out in the presence of a non-acylable nitrogenous base as proton acceptor catalyst and in a polar aprotic solvent medium.

5,008,384

PROCESS FOR THE PRODUCTION OF O2,2'-ANHYDRO-1-(β-D-ARABINOFURANOSYL)THYMINE

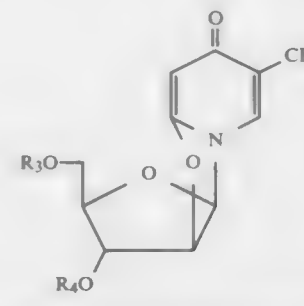
Charles W. Murtiashaw, North Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Jul. 12, 1988, Ser. No. 217,906

Int. Cl.[5] **C07H** *19/09, 19/073*

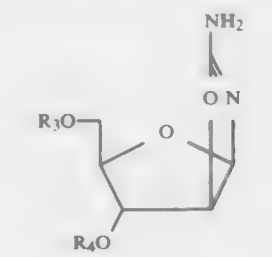
U.S. Cl. 536—23 **14 Claims**

1. A process for the production of a compound of the formula:



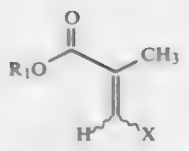
(I)

wherein R_3 is selected from the group consisting of hydrogen, triphenylmethyl or silyl which is substituted by three substituents selected from the group consisting of C_1–C_6 alkyl or phenyl and R_4 is selected from the group consisting of hydrogen, or silyl which is substituted by three substituents selected from the group consisting of C_1–C_6 alkyl or phenyl; comprising condensing a compound of the formula:



(II)

wherein R_3 is selected from the group consisting of hydrogen, triphenylmethyl, or silyl which is substituted by three substituents selected from the group consisting of C_1–C_6 alkyl or phenyl and R_4 is selected from the group consisting of hydrogen, or silyl which is substituted by three substituents selected from the group consisting of C_1–C_6 alkyl or phenyl with a compound of the formula:



(III)

wherein R_1 is selected from the group consisting of C_1-C_4 alkyl; X is selected from the group consisting of halogen, or OR_2, wherein R_2 is selected from the group consisting of H, C_1-C_4 alkyl or phenyl; in the presence of a reaction-inert solvent at a temperature of from about 0° to about 150° C.

5,008,385

CELLULOSE DERIVATIVES AND FIBERS AND MEMBRANES MADE THEREFROM

Michael Diamantoglou, Erlenbach, Fed. Rep. of Germany, assignor to Akzo N.V., Netherlands

Filed Jul. 15, 1988, Ser. No. 219,309

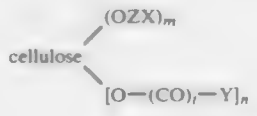
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1987, 3723897

The portion of the term of this patent subsequent to Jan. 1, 2008, has been disclaimed.

Int. Cl.[5] **C08B** *3/20, 11/20, 15/05;* **D01F** *2/02*

U.S. Cl. 536—56 **23 Claims**

1. A cellulose derivative which conforms to the following formula:



wherein

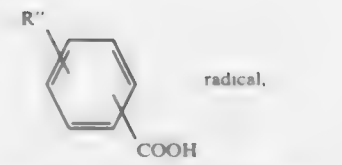
Z has a maximum carbon chain length of 18 carbon atoms and is selected from the group consisting of alkylene, alkenylene, and alkynylene radicals, which may be straight-chain or branched, and wherein the carbon chain may be interrupted by a member selected from the group consisting of O, S, N, P, Si, —CO—, —CONR—, and —COO—, and which may be substituted; cycloalkylene radicals, which may have heteroatoms selected from the group consisting of O, S, N, P and Si and which may be substituted, arylene, arylalkylene, arylalkenylene and arylalkynylene radicals, which may have heteroatoms selected from the group consisting of O, S, N, P and SI and which may be substituted; bisarylalkylene and bisarylene radicals, which may be substituted; condensed aromatic compound radicals, which may be substituted; and heterocyclic compound radicals, which may be substituted;

X is selected from the group consisting of —H, $—NR_2$ $—N^+R_3$, —COOH, a carboxylic acid salt, —COOR, $CONR_2$, —CO—R, —CS—R, —CSOH, a salt thereof, —CSOR, $CSNR_2$, $—CO_3H$, a sulfonic acid salt, $—SO_3R$, $—SO_2—R$, $—SO_2NR_2$, —SR, —SOR, $—SONR_2$, $—PO_3H_2$, a salt thereof, $—PO(OR)_2$, $PO_2H(NR_2)$, $—PO(NR_2)_2$, PO_2H_2, —POH(OR), —CN, $—NO_2$, —OR, halogen, and $—Si(OR)_3$;

R is selected from the group consisting of hydrogen; alkyl, alkynyl, and alkenyl groups having from 1 to 25 carbon atoms, which may be straight-chain or branched, and which may be substituted; cycloalkyl groups, which may have heteroatoms selected from the group consisting of O, S, N, P and Si and which may be substituted; and tolyl, benzyl, and phenyl groups, which may have heteroatoms selected from the group consisting of O, S, N, P and Si and which may be substituted;

t=0 or 1, such that when t=1,

Y is selected from the group consisting of a



radical,

$—(CH_2)_r—COOH$, $—(C_2H_3)—COOH$, $(CH_2)_r—H$

$—(C_2R''_4)—COOH$, $—CR''=CR''—COOH$, —(CH=CH—COOH); $—NR'_2$, —NHR′, $—NHSO_2R'$, and —R′; wherein

R′ has a maximum carbon chain length of 18 carbon atoms and is selected from the group consisting of alkyl, alkenyl, and alkynyl groups having from 1 to 36 carbon atoms which may be straight-chain or branched and wherein the carbon chain may be interrupted by a member selected from the group consisting of O, S, N, P, Si, —CO—, —CONR—, and —COO—, and which may be substituted; cycloalkyl radicals, which may have heteroatoms selected from the group consisting of O, S, N, P and Si and which may be substituted; aryl, arylakyl, arylalkenyl, and arylalkynyl radicals, which may have heteroatoms selected from the group consisting of O, S, N, P and Si and which may be substituted; bisarylalkyl and bisaryl radicals, which may be substituted; condensed aromatic compound radicals, which may be substituted; and heterocyclic compound radicals, which may be substituted;

R″ is selected from the group consisting of X and R′; and

r=1 to 20;

m=0 to 2.5;

n=0.01 to 2.95;

and when

t=0,

Y is a member selected from the group consisting of CS—R′, CO—OR′, CSNH—R′, $CSNR'_2$, $SO_2—OR'$, $SO_2—R'$, $SO_2NR'_2$, SO—R′, $SONR'_2$, PO_3H_2, $PO_2R'_2$, POR'_2, and $PO(OR')_2$;

and

R′ has a maximum carbon chain length of 18 carbon atoms and is a member selected from the group consisting of hydrogen; alkyl, alkenyl, and alkynyl groups having from 1 to 36 carbon atoms, which may be straight-chain or branched, wherein the carbon chain may be interrupted by a member selected from the group consisting of O, S, N, P, Si, —CO—, —CONR— and —COO—, and which may be substituted; cycloalkyl radicals which may have heteroatoms selected from the group consisting of O, S, N, P and Si and which may be substituted; aryl, arylalkyl, arylalkenyl, and arylalkynyl radicals, which may have heteroatoms selected from the group consisting of O, S, N, P and Si and which may be substituted; bisarylalkyl and bisaryl radicals, which may be substituted; condensed aromatic compound radicals, which may be substituted; and heterocyclic compound radicals, which may be substituted;

wherein

m=0 to 2.5

n=0.01 to 2.95, and

wherein a degree of polymerization of said derivative is higher than 400, and which is synthesized from cellulose in a mixture of LiCl and one or more members selected from the group consisting of dimethyl acetamide and N-methylpyrrolidone.

5,008,386

METHYLATED CYCLODEXTRIN TYPE COMPOUNDS AND PROCESS FOR PREPARING SAME

Tibor Szabó; László Institóris; József Szejtli; Lajos Szente, all of Budapest, and Ildikó Jod/e,acu/a/ l, Debrecen, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT., Budapest, Hungary

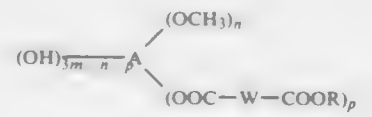
Filed Oct. 12, 1988, Ser. No. 256,857

Claims priority, application Hungary, Oct. 13, 1987, 4605/87

Int. Cl.[5] **C08B** *37/16*

U.S. Cl. 536—103 **8 Claims**

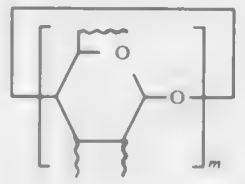
1. A partially methylated carboxyacyl-cyclodextrin of the formula (I),



(I)

wherein

A means the cyclodextrin skeleton of the formula (II)



(II)

containing the substituents in the position labelled by the wavy line;

W stands for an alkylene, alkenylene or arylene group;

R means hydrogen, alkyl, aryl or aralkyl;

m is 6, 7 or 8;

n is an integer from 1 to 2m; and

p is 2m−n+z, wherein the value of z is from 0 to 3 with the proviso that p does not equal 0 or a salt thereof.

5,008,387

PROCESS FOR PURIFYING SUCROSE FATTY ACID ESTERS

Shusaku Matsumoto, Kyoto; Yoshio Hatakawa, Higashiosaka, and Akihiko Nakajima, Kyoto, all of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Apr. 14, 1989, Ser. No. 338,012

Claims priority, application Japan, Apr. 18, 1988, 63-95243

Int. Cl.[5] **C07H** *1/00, 13/00;* **C13F** *3/00*

U.S. Cl. 536—119 **19 Claims**

10. A process for preparing a powder of a sucrose fatty acid ester which comprises subjecting an aqueous solution of a reaction mixture obtained by the reaction of sucrose and a fatty acid methyl ester in the presence of a catalyst to ultrafiltration, said reaction mixture containing the unreacted sucrose, the unreacted fatty acid methyl ester, the catalyst, a soap, a fatty acid and a volatile component, thereby separating the unreacted sucrose, a salt drived from the catalyst and the volatile component with water, bringing the remaining aqueous solution containing the sucrose fatty acid ester, the unreacted fatty acid methyl ester, the soap and the fatty acid into contact with a reverse osmosis membrane, thereby concentrating the aqueous solution, and spray drying the resulting concentrate.

5,008,388

PROCESS FOR PREPARATION OF A NEW HEMIN COMPLEX

Greis D. Ingberg, Ekenäs; Ritva L. A. Penttilä, Helsinki; Reino O. Tokola, Helsinki, and Raimo Tenhunen, Helsinki, all of Finland, assignors to Huhtamäki Oy, Turku, Finland

Continuation-in-part of Ser. No. 636,860, Aug. 1, 1984, abandoned. This application Dec. 2, 1985, Ser. No. 803,630

Claims priority, application Finland, Aug. 10, 1983, 832870

Int. Cl.[5] **C07B** *47/00;* **C07K** *3/00*

U.S. Cl. 540—145 **7 Claims**

1. A method for preparing a physiologically active, water-soluble complex of hemin and a material selected from the group consisting of L-arginine and L-lysine comprising vigorously stirring a mixture of said hemin and said material selected from the group consisting of L-arginine and L-lysine at room temperature for a period of 10 to 15 hours, the molar ratio of hemin to said material selected from the group consisting of L-arginine and L-lysine being from 1:1 to 1:4, the reaction taking place in a mixture of acetone and water which are in a ratio, on a volume basis, of from 300:10 to 300:25.

5,008,389

QUINOLINECARBOXYLIC ACID DERIVATIVES

Hirosato Kondo, Suita; Masahiro Taguchi, Hirakata; Yoshimasa Inoue, Osaka, and Fumio Sakamoto, Daito, all of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

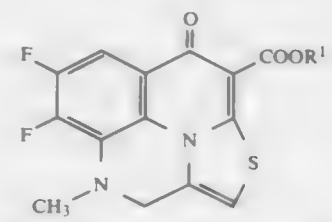
Division of Ser. No. 493,455, Mar. 14, 1990. This application Aug. 31, 1990, Ser. No. 575,633

Claims priority, application Japan, Mar. 15, 1989, 1-64617; Nov. 8, 1989, 1-290406

Int. Cl.[5] **C07D** *513/16*

U.S. Cl. 544—343 **1 Claim**

1. A quinolinecarboxylic acid derivative represented by the formula (II):



(II)

wherein R^1 is hydrogen atom of a lower alkyl.

5,008,390

COMPOUNDS FOR PREPARING 6-PHENYL-2,3-DIHYDROIMIDAZO[2,1-B]-THIAZOLES AND CORRESPONDING THIAZINES

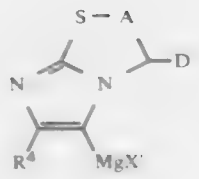
Paul E. Bender, Cherry Hill; Ivan Lantos, Blackwood, both of N.J.; Michael A. McGuire, Norristown, Pa.; Lendon N. Pridgen, Audubon, Pa., and Herbert B. Winicov, Blue Bell, Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Division of Ser. No. 856,246, Apr. 28, 1986, Pat. No. 4,803,279, which is a continuation-in-part of Ser. No. 737,137, May 23, 1985, abandoned, which is a continuation-in-part of Ser. No. 808,595, Dec. 12, 1985, abandoned. This application Nov. 3, 1988, Ser. No. 266,728

Int. Cl.[5] **C07D** *513/04*

U.S. Cl. 546—199 **5 Claims**

1. A compound of the formula



in which:
A is a methylene group optionally substituted by methyl, ethyl or gem-dimethyl, or A is a 1,2-ethanediyl group optionally substituted by methyl, ethyl or gem-dimethyl on either or both carbon atoms of the 1,2-ethandiyl group;
D is H, methyl, ethyl, or gem-dimethyl;
R^4 is
(a) phenyl;
(b) monosubstituted phenyl wherein the substituent is halogen, C_1–C_3alkoxy, C_1–C_3 alkylthio, C_1–C_4 alkyl, CF_3, 2,2,2-triethoxy, prop-2-ene-1-oxy C_1–C_3 dialkylamino, pyrrolidino or piperidino, or $R^aC(O)N(CH_2)_nCH_3$ wherein R^a is H, CH_3, CH_2CH_3 and n is 0 to 2;
(c) disubstituted phenyl wherein the substituents are independently C_1–C_4 alkyl or C_1–C_3 alkoxy, or the substituents together form a methylene-dioxy group; or
(d) 3,4,5-trimethoxyphenyl; and X, is Cl, Br, or I.

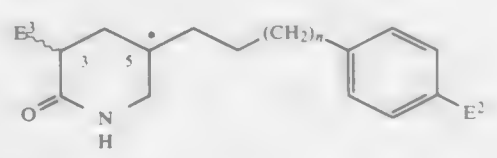
5,008,391

ENANTIOSELECTIVE SYNTHESIS OF ANTIFOLATES

Charles J. Barnett, and Thomas M. Wilson, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jul. 7, 1989, Ser. No. 377,021
Int. Cl.[5] C07D *211/76, 471/04;* **C07C** *255/17, 67/02*
U.S. Cl. 546—243 **4 Claims**

1. A compound of the formula



III

wherein
E^3 is cyano or C_1–C_3 alkoxycarbonyl;
E^2 is bromo, chloro, iodo, carboxy, C_4–C_6 tert-alkoxycarbonyl, cyano, C_1–C_3 alkylaminocarbonyl, di(C_1–C_3 alkyl-)aminocarbonyl, or [(tetra or penta)methylene]aminocarbonyl;
n is 0 or 1;
and the carbon marked * is in the R or S configuration.

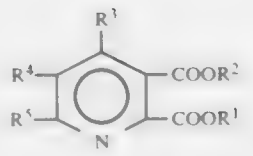
5,008,392

PROCESS FOR THE PREPARATION OF PYRIDINE-2,3-DICARBOXYLIC ACID ESTERS

Josef Meier; Wolfgang Deinhammer, and Konrad Krageloh, all of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

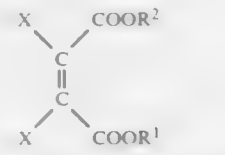
Filed Nov. 27, 1989, Ser. No. 441,367
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1988, 3840554
Int. Cl.[5] C07D *213/803*
U.S. Cl. 546—250 **5 Claims**

1. A process for the preparation of a pyridine-2, 3-dicarboxylic acid ester of the formula



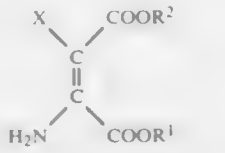
(I)

in which R^1 and R^2, which may be identical or different, are alkyl having 1 to 8 carbon atoms and R^3, R^4 and R^5, which may be identical or different, are hydrogen, alkyl having 1 to 8 carbon atoms or phenyl, comprising in a first process step,
(a) reacting a 2,3-dihalomaleic acid ester of the formula



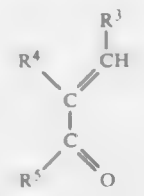
(II)

in which R^1 and R^2 are as defined above, and X is halogen with ammonia, or an ammonium salt, in the presence of an organic solvent with the exclusion of water, and at a temperature of at least 50° C., to produce a 2-amino-3-halomaleic acid ester of the formula



(III)

in which R^1, R^2 and X are as defined above, and
(b) reacting said 2-amino-3-halomaleic acid ester of the above formula (III), in a second process step, with an α,β-unsaturated aldehyde, or ketone, of the formula



(IV)

in which R^3, R^4 and R^5 are as defined above, in the presence of an acidic catalyst, an organic solvent and an acid-binding agent, at a temperature of at least 50° C. to produce the ester (I).

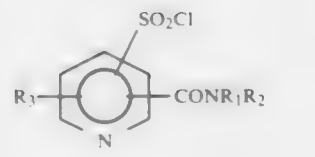
5,008,393

HERBICIDAL PYRIDINE SULFONAMIDES

Mary A. Hanagan, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 408,223, Sep. 15, 1989, which is a division of Ser. No. 234,640, Aug. 22, 1988, which is a division of Ser. No. 88,259, Aug. 24, 1987, Pat. No. 4,786,734, which is a continuation-in-part of Ser. No. 84,532, Aug. 12, 1987, abandoned, which is a continuation-in-part of Ser. No. 936,105, Nov. 28, 1987, Pat. No. 4,789,393, which is a continuation-in-part of Ser. No. 837,392, Mar. 7, 1986, abandoned. This application Mar. 20, 1990, Ser. No. 497,061
Int. Cl.[5] C07D *213/71, 401/12*
U.S. Cl. 546—261 **3 Claims**

1. A compound selected from:



wherein
R_1 is H or C_{1-C3} alkyl;
R_2 is C_1–C_3 alkyl or C_1–C_2 alkoxy; or
R_1 and R_2 may be taken together to form $-(CH_2)_n-$, wherein n is 2, 3 or 4;
R_3 is H, Cl, F, Br, CH_3, CF_3, OCH_3, OCH_2CH_3, OCF_2H, SCH_3, SCH_2CH_3, SCF_2H, NHR_4 or NR_4R_5,
R_4 is CH_3 or CH_2CH_3; and
R_5 is CH_3, CH_2CH_3, OCH_3 or OCH_2CH_3.

5,008,394

PROCESS FOR PRODUCING EBSELEN IN HIGHLY PURE FORM

Bernd-Rainer Günther, Bergheim; Rainer Losch, Bonn, and Klaus Steiner, Pulheim, all of Fed. Rep. of Germany, assignors to A. Nattermann & Cie, GmbH, Koln, Fed. Rep. of Germany

Filed Aug. 9, 1989, Ser. No. 391,890
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1988, 3827093
Int. Cl.[5] C07D *293/12*
U.S. Cl. 548—121 **4 Claims**

1. Process for the production of 2-phenyl-1.2-benzisoselenazole-3(2H)-one (Ebselen) by reduction of metallic selenium by means of sodium formaldehyde sulfoxylate (Rongalit) in aqueous alkaline solution to yield sodium selenide, subjecting of the resulting sodium selenide to reaction with diazotized anthralinic acid in alkaline reaction medium to yield the sodium salt of o-diselenosalicylic acid, subjecting to reaction of the resulting the diseleno salicylic acid with an excess of thionylchloride to yield o-chloroselenobenzoic acid chloride, subjecting to reaction of the resulting chloroselenobenzoic acid chloride with aniline in an organic solvent, wherein
(a) the reduction of the metallic selenium in soda lye with Rongalit is effected at a temperature between 20° and 50° C. and the reaction mixture, after having added all reaction components, is kept at the applied reaction temperature for another 0.5 to 2 hours,
(b) the resulting alkaline solution of sodium selenide immediately thereafter is subjected to reaction with diazotized anthranilic acid at a temperature between 0° and 10° C. for 1 to 2 hours; the resulting alkaline solution of o-diselenosalicylic acid is mixed with acetic acid to a pH between 7.5 and 8.5, the thus resulting solution is clarified as soon as it becomes turbid and thereafter is treated with activated charcoal and thereafter, for seperating the activated charcoal, the solution is mixed with acetic acid to a pH between 5 and 6, and the precipitated separated pure o-diselenosalicylic acid still moist with water is mixed with 1.2-dichloroethane, and is heated to boiling with a cyclic water separator for such a time, until or of the water has been distilled off azeotropically,
(c) the o-diselenosalicylic acid resulting from step (b) and suspended in the used solvent in finely divided form is subjected to reaction with thionylchloride in the presence of catalytic amounts of dimethylformamide; the solvent and the excess thionylchloride is distilled off from the reaction mixture; possibly still present thionylchloride is removed by adding at least twice the used solvent and distilling it off and
(d) the purified o-chloroselenobenzoic acid chloride obtained in step (c) is dissolved in 1.2-dichloroethane, and, with careful stirring, the resulting solution is added to a suspension of aniline in dilute soda lye; and the precipitated reaction product is separated, washed until neutral and is dried.

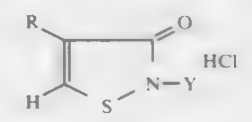
5,008,395

PURIFICATION OF ISOTHIAZOLONES

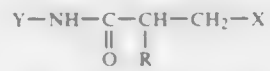
Ramesh B. Petigara, Hatfield, and Douglas N. Sharp, Bensalem, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Dec. 22, 1988, Ser. No. 289,069
Int. Cl.[5] C07D *513/00*
U.S. Cl. 548—213 **16 Claims**

1. In a crystallization process for preparing substantially pure isothiazolone by preparing crystalline isothiazolone monohydrochloride salts of the formula:



wherein R is hydrogen or methyl and Y is linear or branched alkyl, of from 3 to 10 carbon atoms, from a mixture derived by the chlorination of compounds of the formula



where X is $-SH$ or $-S-S-CH_2-CH(R)-C(=O)-NH-Y$

which comprises
conducting the chlorination in a chlorinated hydrocarbon solvent to afford a crude reaction mixture containing isothiazolone hydrochloride in a solution due to excess hydrogen chloride; the improvement comprising
(a) reducing the excess hydrogen chloride to about 1.2 moles per mol of isothiazolone while maintaining the temperature in a range of about 46° to 60° C.;
(b) cooling the reaction mixture slowly until tiny seed crystals form at about 46° C. then applying temperature/time thermal oscillating conditions to allow tiny seed crystals to grow in a timely manner into filterable crystals of the salt while avoiding formation of any new tiny crystals; and
(c) collecting the crystals

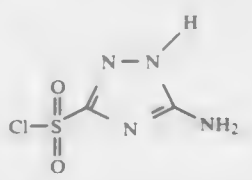
5,008,396

PROCESS FOR THE PREPARATION OF 5-AMINO-3-CHLOROSULFONYL-1,2,4-TRIAZOLE

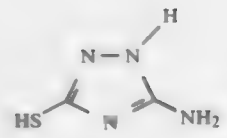
Richard C. Krauss, Midland, Mich., assignor to DowElanco, Indianapolis, Ind.

Filed Nov. 6, 1989, Ser. No. 432,289
Int. Cl.[5] C07D *249/12*
U.S. Cl. 548—263.8 **10 Claims**

1. A process for preparing 5-amino-3-chlorosulfonyl-1,2,4-triazole

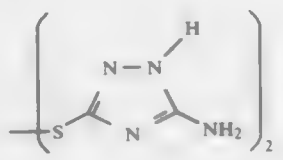


from 5-amino-3-mercapto-1,2,4-triazole



in an aqueous acid medium which comprises the consecutive steps of:

(a) contacting the 5-amino-3-mercapto-1,2,4-triazole with an oxidizing agent to convert it to the corresponding disulfide



(b) contacting the disulfide with chlorine.

5,008,397

N-SUBSTITUTED BENZIMIDAZOLE-2-CARBOXANILIDES

Peter Spang, St. Ingbert; Peter Neumann, Mannheim; Gerhard Wagenblast, Frankenthal, and Hubert Trauth, Dudenhofen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshaften, Fed. Rep. of Germany

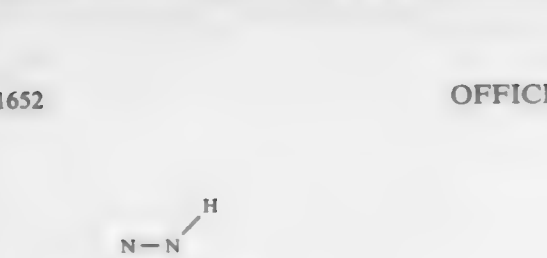
Filed Aug. 15, 1989, Ser. No. 393,962

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1988, 3828537

Int. Cl.[5] **C07D** *235/04*

U.S. Cl. 548—331 **7 Claims**

1. A compound of the formula (I)



(I)

where

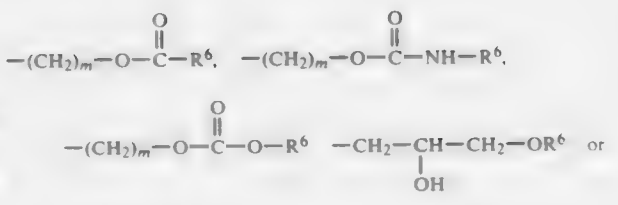
R^1 and R^2 are each independently of the other H, Cl, C_1-C_4-alkyl, C_1-C_4-alkoxy, unsubstituted or C_1-C_4-alkyl- or C_1-C_4-alkoxy-substituted phenyl or C_7-C_9-phenylalkyl,

R^3 and R^4 are each independently of the other H, C_1-C_{18}-alkyl, C_3-C_{18}-alkyl which is interrupted one or more times by —O—, C_1-C_{18}-alkoxy, C_4-C_{18}-alkoxy which is interrupted one or more times by —O—, unsubstituted or C_1-C_4-alkyl- or C_1-C_4-alkoxy-substituted phenyl, C_7-C_{15}-phenylalkyl, phenoxy, C_7-C_{15}-phenylalkyloxy, C_1-C_{12}-alkylcarbonylamino, benzoylamino, C_1-C_{12}-alkanoyloxy or benzoyloxy, or

R^3 and R^4 together are methylenedioxy or ethylenedioxy,

n is 1 or 2 and

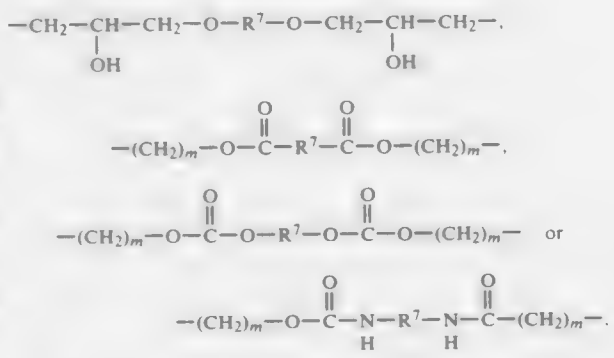
R^5 is (a)—when n is 1 —C_5-C_{18}-alkyl, C_2-C_{10}-hydroxyalkyl, C_5-C_{12}-cycloalkyl, C_2-C_{18}-alkenyl, which cycloalkyl and alkenyl may be substituted by OH, C_3-C_{18}-alkyl which is interrupted one or more times by —O—, unsubstituted or C_1-C_4-alkyl- or C_1-C_4-alkoxy-substituted C_8-C_{15}-phenylalkyl or a radical of the formula



where

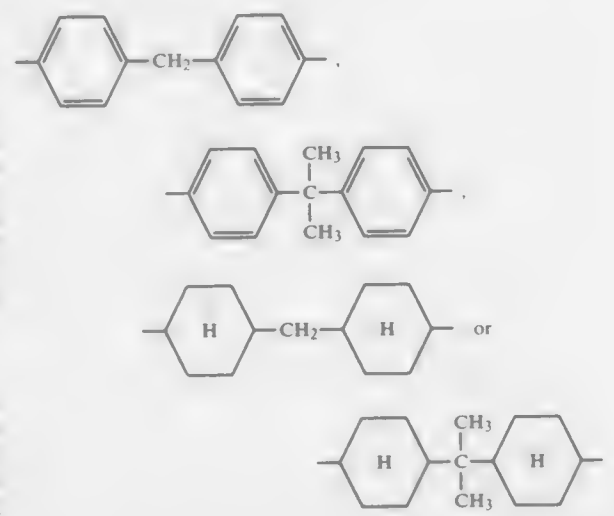
m is from 2 to 4 and

R^6 is C_1-C_{18}-alkyl, C_2-C_{18}-alkenyl, C_5-C_{12}-cycloalkyl, C_7-C_{15}-phenylalkyl, unsubstituted or C_1-C_4-alkyl- or C_1-C_4-alkoxy-substituted phenyl or naphthyl, or (b)-when n is 2-C_2-C_{10}-alkylene, C_5-C_{12}-cycloalkylene, which alkylene and cycloalkylene may be substituted by —OH, C_4-C_{12}-alkenylene, C_4-C_8-alkylene which is interrupted one or more times by —O—, or a radical of the formula



where

R^7 is C_2-C_8-alkylene, C_2-C_8-alkenylene, C_5-C_{12}-cycloalkylene, unsubstituted or C_1-C_4-alkyl- or C_1-C_4-alkoxysubstituted phenylene, naphthylene, diphenylene or a radical of the formula



5,008,398

PREPARATION OF P-NITROPHENYL-IMIDAZOLES

Hermann Koehler, Bobenheim; Klaus Ebel, Mutterstadt; Helmut Karu, Ludwigshafen, and Christof Taubitz, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

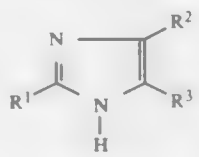
Filed Oct. 2, 1989, Ser. No. 416,027

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1988, 3835195

Int. Cl.[5] **C07D** *233/60*

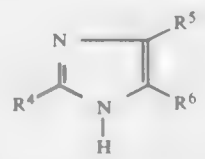
U.S. Cl. 548—342 **6 Claims**

1. In a process for the preparation of a p-nitrophenylimidazole of the formula



(I)

where R^1, R^2 and R^3 independently of one another are hydrogen, alkyl, cycloalkyl or p-nitrophenyl, with the proviso that one or more of the radicals R^1, R^2 and R^3 is p-nitrophenyl, by reacting a phenylimidazole of the formula



(II)

where R^4, R^5 and R^6 independently of one another are hydrogen, alkyl, cycloalkyl, phenyl or p-nitrophenyl, with the proviso that one or more of the radicals R^4, R^5 and R^6 is phenyl, with mixtures of sulfuric acid and nitric acid, the improvement which comprises:

carrying out the reaction in the presence of urea.

5,008,399

DIASTEREOSELECTIVE PREPARATION OF PHOSPHINATE ESTERS

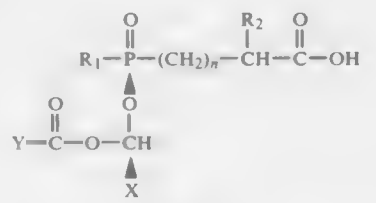
Thomas C. Sedergran, Plainsboro, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jan. 19, 1990, Ser. No. 467,451

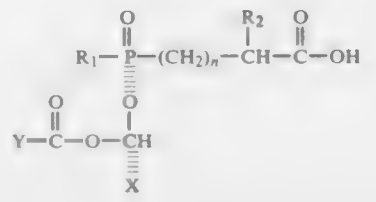
Int. Cl.[5] **C07B** *53/00*; **C07F** *9/572, 9/32*

U.S. Cl. 548—413 **11 Claims**

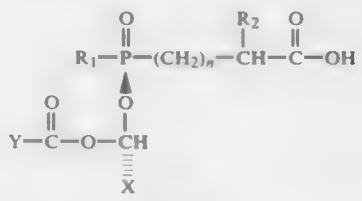
1. A process for preparing the desired diastereomeric pair containing



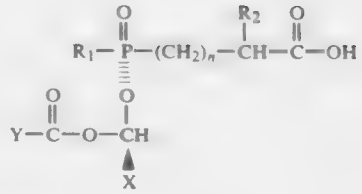
and



in increased yield, relative to the undesired diastereomeric pair containing

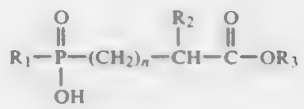


and

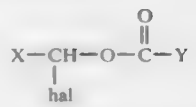


which comprises

(a) reacting a phosphinic acid ester of the formula



with a halo ester of the formula



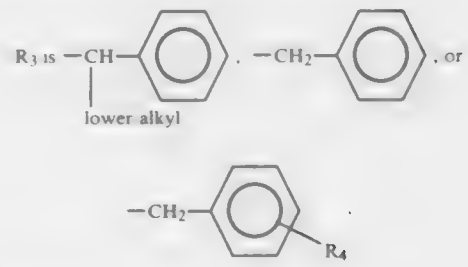
in the presence of 4-methylmorpholine, diazabicyclooctane, quinuclidine, 1-methylpyrolidine, or cinchonidine in an organic solvent at a temperature of about 40° C. to about 138° C. to give an intermediate comprising a mixture of 4 isomers;

(b) hydrogenating the mixture ob 4 isomers from step (a) to remove the R_3 ester group and give the desired diastereomeric pair in increased yield from the undesired diastereomeric pair wherein:

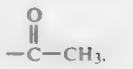
R_1 is lower alkyl, cycloalkyl, aryl, aryl-lower alkyl, or cycloalkyl-lower alkyl;

n is zero or one;

R_2 is hydrogen, lower alkyl, or aryl-lower alkyl;



R_4 is lower alkyl, lower alkoxy, phenyl,



or di(lower alkyl)amino;

Hal is Br or Cl;

X is hydrogen, lower alkyl, or phenyl; and
Y is hydrogen, lower alkyl, lower alkoxy, or phenyl

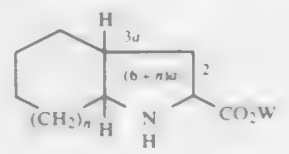
5,008,400

BICYCLIC AMINOACIDS AS INTERMEDIATES

Hansjörg Urbach, Kronberg; Rainer Henning, Frankfurt am Main; Volker Teetz, Hofheim am Taunus; Rolf Geiger, Frankfurt am Main; Reinhard Becker, Wiesbaden, and Holger Gaul, Niederneisen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 453,092, Dec. 27, 1982, abandoned. This application Nov. 21, 1984, Ser. No. 673,605
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1981, 3151690; Mar. 24, 1982, 3210701
Int. Cl.[5] C07D *209/12, 209/52*
U.S. Cl. 548—452 5 Claims

1. A compound of the formula



wherein the H atoms on the C atoms in the 3a- and (6+n)a-positions are in the trans configuration relative to one another n is 0, 1 or 2; and W' is hydrogen or a group which can be cleaved by hydrogenolysis or acid hydrolysis

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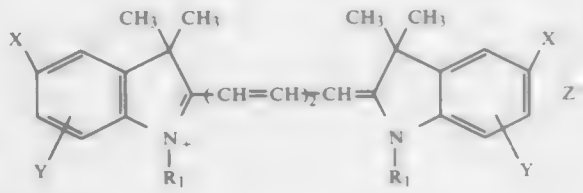
5,008,401

CYANINE COMPOUNDS

Masayuki Utsunomiya, Ashiya; Shigeo Fujita, Kawachinagano; Toshiyuki Nozawa, Sakai, and Morihiro Kamiyama, Ibaraki, all of Japan, assignors to Asahi Chemical Co., Ltd., Osaka, Japan

Filed Apr. 17, 1990, Ser. No. 509,830
Int. Cl.[5] C07D *403/06*
U.S. Cl. 548—455 5 Claims

1. A cyanine compound represented by the formula



wherein:
X is a lower alkoxy, Y is a lower alkyl or a lower alkoxy, R_1 is a lower alkyl, or a lower alkyl substituted with at least one of C_1–C_4 alkoxy, hydroxy, sulfo, carboxy, C_1–C_4 alkyl amino, acetoxy, C_1–C_4 alkoxy carbonyl, C_1–C_4 sodium sulfonate, C_1–C_4 sodium carboxylate, alkyl amino methyl, acetoxy methyl, and metho 1 carbonyl methyl, and Z^- is an anion.

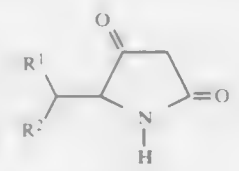
5,008,402

PROCESS FOR PRODUCTION OF 5-ALKYL TETRAMIC ACIDS

Thomas Meul, Visp, Switzerland, assignor to Lonza Ltd., Basel, Switzerland

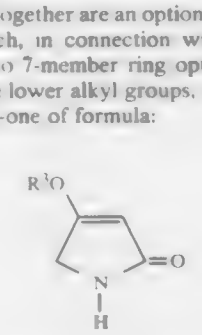
Division of Ser. No. 402,356, Sep. 5, 1989. This application Mar. 22, 1990, Ser. No. 497,718
Claims priority, application Switzerland, Sep. 6, 1988, 3337/88
Int. Cl.[5] C07D *207/36*
U.S. Cl. 548—544 16 Claims

1. Process for the production of a substituted tetramic acid of formula



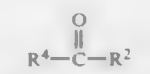
(I)

or a tautomer thereof, wherein
(a) R^1 is a straight-chain or branched alkyl group having 1 to 6 C atoms or a cycloalkyl group having 4 to 7 C atoms or a group of the form—$[CH_2]_n$—Q with n being 1 or 2 and Q being one of the above-mentioned cycloalkyl groups or a phenyl group, and R^2, independently therefrom, is hydrogen or a straight-chain alkyl group having 1 to 4 C atoms, or
(b) R^1 and R^2 together are an optionally branched alkanediyl group, which, in connection with the linking C atom, forms a 4- to 7-member ring optionally substituted with one or more lower alkyl groups, comprising (i) reacting a 3-pyrrolin-2-one of formula:



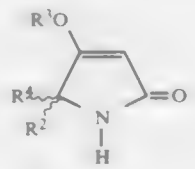
(II)

wherein R^3 is a straight-chain or branched alkyl group having 1 to 4 C atoms or a benzyl group optionally substituted with one or more lower alkyl groups, with an aldehyde or ketone of formula:



(III)

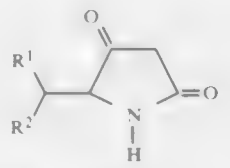
wherein either R^2 and R^4 have the meaning mentioned above for R^2 and R^1 or R^4 or the optionally substituted alkanediyl group, formed by R^2 and R^4 together, differ from R^1 or from the alkanediyl group formed by R^1 and R^2 together by the presence of one or more double or triple bonds not belonging to any aromatic system and not conjugated with the carbonyl group, in the presence of a strong base in a polar, protic solvent to form 5-alkylidene-3-pyrrolin-2-one of formula:



(IV)

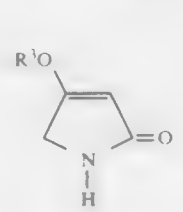
wherein R^2, R^3 and R^4 have the above-mentioned meanings, (ii) cleaving radical R^3 from the 5-alkylidene-3-pyrrolin-2-one of formula IV, and (iii) catalytically hydrogenating the exocyclic double bond as well as the multiple bonds optionally present in radical R^4 of the cleaved 5-alkylidene-3-pyrrolin-2-one with a palladium catalyst to provide the substituted tetramic acid of formula I.

12. Process for the production of a substituted tetramic acid of formula.



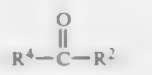
(I)

or a tautomer thereof, wherein
(a) R^1 is a straight-chain or branched alkyl group having 1 to 6 C atoms or a cycloalkyl group having 4 to 7 C atoms or a group of the form—$[CH_2]_n$—Q with n being 1 or 2 and Q being one of the above-mentioned cycloalkyl groups or a phenyl group, and R^2, independently therefrom, is hydrogen or a straight-chain alkyl group having 1 to 4 C atoms, or
(b) R^1 and R^2 together are an optionally branched alkanediyl group, which, in connection with the linking C atom, forms a 4- to 7-member ring optionally substituted with one or more lower alkyl groups, comprising (i) reacting a 3-pyrrolin-2-one of formula:



(II)

wherein R^3 is a benzyl group optionally substituted with one or more lower alkyl groups, with an aldehyde or ketone of formula:



(III)

wherein either R^2 and R^4 have the above-mentioned meanings, and (ii) catalytically hydrogenating the 5-alkylidene-3-pyrrolin-2-one of formula IV using a palladium catalyst whereby radical R^3 is cleaved from the 5-alkylidene-3-pyrrolin-2-one and the exocyclic double bond as well as the multiple bonds optionally present in radical R^4 are hydrogenated.

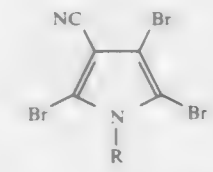
5,008,403

DEACYLATIVE BROMINATION PROCESS FOR THE PREPARATION OF MOLLUSCICIDAL 2,4,5-TRIBROMOPYRROLE-3-CARBONITRILE COMPOUNDS

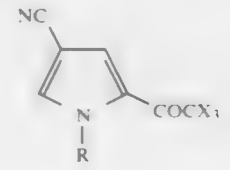
Venkataraman Kameswaran, Princeton Junction, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 7, 1989, Ser. No. 447,961
Int. Cl.[5] C07B *39/00*; C07D *207/34*
U.S. Cl. 548—561 9 Claims

1. A process for the preparation of a compound having the structure:



wherein R is hydrogen or C_1–C_6 alkyl which comprises reacting a compound having the structure



wherein R is hydrogen or C_1 to C_6 alkyl and X is fluorine or chlorine with at least about 5 molar equivalents of a base and at least about 2 molar equivalents of a brominating agent in the presence of a solvent.

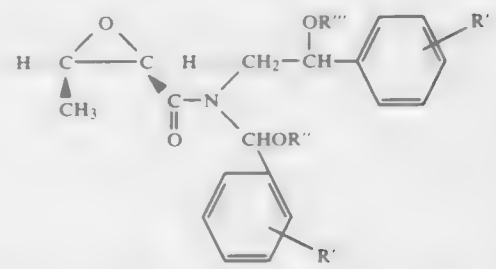
5,008,404

PREPARATION OF AZETIDINONES VIA NOVEL PROTECTED INTERMEDIATES

Samuel Chackalamannil, W. Paterson, N.J., assignor to Schering Corporation, Kenilworth, N.J.

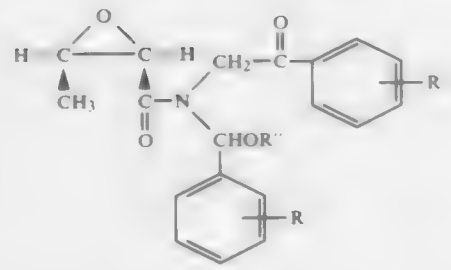
Division of Ser. No. 227,084, Nov. 28, 1988, Pat. No. 4,963,670. This application Mar. 20, 1990, Ser. No. 496,468
Int. Cl.[5] C07D *303/12, 205/08*
U.S. Cl. 549—215 4 Claims

1. A compound represented by the formula



wherein R''' is hydrogen, $—Si(CH_3)_3$ or $—Si(CH_3)_2$ t-C_4H_9 each R' is independently hydrogen, one, two or three of halogen, lower alkyl or lower alkoxy and R'' is methyl, ethyl, allyl or a phenyl.

3. A compound represented by the formula



wherein each R′ is independently hydrogen, one, two or three of halogen, lower alkyl or lower alkoxy and R″ is methyl, ethyl, allyl, or a phenyl.

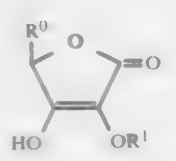
5,008,405

SELECTIVE ETHERIFICATION

Chitoshi Hatanaka, Nagaokakyo, and Satoru Oi, Nara, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jan. 19, 1990, Ser. No. 467,419
Claims priority, application Japan, Jan. 21, 1989, 1-12755
Int. Cl.[5] **C07D** *307/62*
U.S. Cl. 549—315 **10 Claims**

1. A process for producing a compound of the formula (IV)

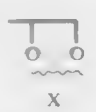


(IV)

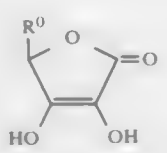
where R^0 is hydrogen, alkyl having 1 to 6 carbon atoms, phenyl, a group of the formula



or a group of the formula



(wherein X an acetal or ketal group); and R^1 is an alkyl or alkenyl group having up to 22 carbon atoms which may be substituted with phenyl or alkoxy having 1 to 22 carbon atoms, which comprises reacting a compound of the formula (I):



(I)

wherein R^0 is as defined above, with a compound of the formula (II):

$$R^1-Y \qquad \text{(II)}$$

wherein R^1 is as described above; and Y is halogen or optionally substituted sulfonyloxy, in the presence of a compound of the formula (III):

$$RO^-Z \qquad \text{(III)}$$

wherein R is hydrogen, or primary, secondary or tertiary alkyl having 1 to 10 carbon atoms; and Z is an alkali metal or an alkaline earth metal.

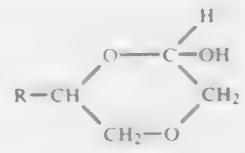
5,008,406

HEMIACETAL COMPOUNDS AND THE APPLICATIONS THEREOF

Guy Vanlerberghe, Claye-Souilly; Alexandre Zlysman, and Henri Sebag, both of Paris, all of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 874,006, Jun. 13, 1986, Pat. No. 4,827,003. This application Apr. 20, 1989, Ser. No. 340,754
Claims priority, application Luxembourg, Jun. 14, 1985, 85952
The portion of the term of this patent subsequent to May 2, 2006, has been disclaimed.
Int. Cl.[5] **C07D** *231/08*
U.S. Cl. 549—378 **2 Claims**

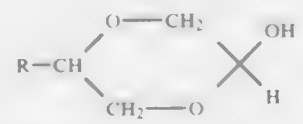
1. Compound corresponding to the formula



(ID)

in which R denotes
(i) a linear or branched hydrocarbon radical which has 1 to 32 carbon atoms and can contain one or more oxygen atoms in the chain or bear one or more OH groups or
(ii) a (C_8–C_{18} alkyl)phenyl radical.

2. Compound corresponding to the formula:



(IE)

in which R denotes
(i) a linear or branched hydrocarbon radical which has 1 to 32 carbon atoms and can contain one or more oxygen atoms in the chain or bear one or more OH groups or
(ii) a (C_8–C_{18} alkyl)phenyl radical.

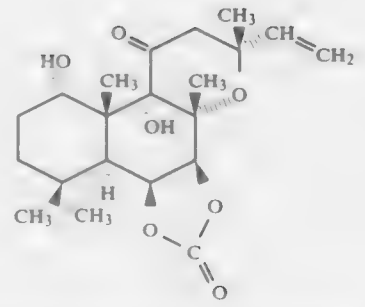
5,008,407

METHOD OF SYNTHESIZING FORSKOLIN FROM 9-DEOXYFORSKOLIN

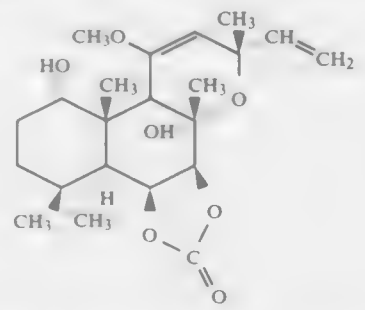
Nicholas J. Hrib, Somerville, N.J., assignor to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 300,878, Jan. 25, 1989, Pat. No. 4,897,496, which is a division of Ser. No. 147,427, Jan. 25, 1988, Pat. No. 4,822,896, which is a division of Ser. No. 846,550, Mar. 31, 1986, Pat. No. 4,734,513. This application Nov. 24, 1989, Ser. No. 456,925
Int. Cl.[5] **C07D** *311/92*
U.S. Cl. 549—383 **1 Claim**

1. A method of preparing the compound of the formula



which comprises hydrolyzing the compound of the formula



under an acidic condition to afford said compound.

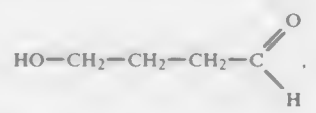
5,008,408

PREPARATION OF 1,4-BUTANEDIOL AND TETRAHYDROFURAN

Rolf Fischer, Heidelberg; Juergen Frank, Schwetzingen; Franz Merger, Frankenthal, and Hans-Juergen Weyer, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

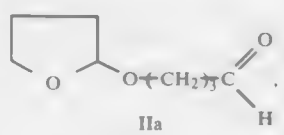
Filed Mar. 7, 1990, Ser. No. 489,709
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1989, 3909485
Int. Cl.[5] **C07D** *307/08*
U.S. Cl. 549—429 **7 Claims**

1. A two-stage process for preparing a mixture which contains 1,4-butanediol and tetrahydrofuran, which comprises:
(a) heating 4-hydroxybutyraldehyde of the formula

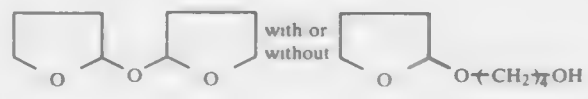


Ia

at 20°–300° C. in the presence or absence of 1,4-butanediol, and in the presence or absence of an acidic agent; and
(b) after removing the water of reaction and any acidic agent, subjecting the resulting acetals of the formulae



IIa



IIb IIc

to a catalytic hydrogenation at 50°–300° C. and 1–350 bar.

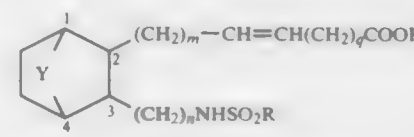
5,008,409

PROCESS FOR PREPARING 1,4-BRIDGED CYCLOHEXANE CARBOXYLIC ACID DERIVATIVES

Masayuki Narisada, Ibaraki; Mitsuaki Ohtani, Nara; Fumihiko Watanabe, Kitakatsuengi, and Kyozo Kawata, Hirakata, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

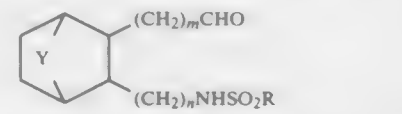
Filed Dec. 7, 1989, Ser. No. 447,513
Claims priority, application Japan, Dec. 14, 1988, 63-315970
Int. Cl.[5] **C07D** *307/00;* **C07C** *311/16, 311/20*
U.S. Cl. 549—463 **5 Claims**

1. A process for preparing a compound of Formula (I):



(I)

wherein R is phenyl or phenyl substituted with hydroxy, lower alkoxy, halogen or lower alkyl; Y is unsubstituted or substituted methylene, ethylene, vinylene or oxygen; m is 0 or 1; n is 0, 1 or 2; and q is 1, 2, 3 or 4; with proviso that when m is 0, n is not 0, and when m is 1, n is not 2, which process comprises:
(a) reacting an aldehyde of Formula (II);



(II)

wherein R, Y, m and n are as defined above, under reaction conditions for the Wittig Reaction with a ylide of Formula (III):

$$(R^1)_3P{=}CH(CH_2)_1COOM \qquad \text{(III)}$$

wherein R^1 is C_1–C_8 alkyl or aryl, M is an alkali metal and q is as defined above;
(b) treating the reaction mixture of step (a) with an alkaline earth metal halide under alkaline conditions to form the alkaline earth metal salt of the carboxylic acid of Formula (I);
(c) extracting the alkaline earth metal salt of the carboxylic acid of Formula (I) in an organic solvent; and
(d) recovering the free carboxylic acid of Formula (I) from the organic solvent.

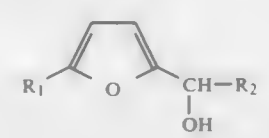
5,008,410

METHOD FOR PRODUCING FURFURYL ALCOHOLS

Kazuo Tashiro, Oita, and Kunihiko Tanaka, Nara, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

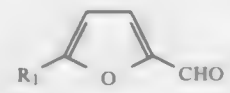
Filed May 26, 1987, Ser. No. 53,687
Claims priority, application Japan, May 28, 1986, 61-122925; May 28, 1986, 61-122926; Jul. 28, 1986, 61-177119; Jul. 28, 1986, 61-177120; Dec. 3, 1986, 61-288352; Dec. 3, 1986, 61-288353
Int. Cl.[5] **C07D** *307/02*
U.S. Cl. 549—497 **10 Claims**

1. A method for producing a furfuryl alcohol represented by the general formula (I),



(I)

wherein R_1 represents a hydrogen atom or a methyl group and R_2 represents an allyl or propargyl group, which comprises reacting a furfural represented by the general formula (II),



(II)

wherein R_1 has the same meaning as described above, with a halogen compound represented by the general formula,

$X—R_2$

wherein X represents a halogen atom and R_2 has the same meaning as described above, in water or a water/organic solvent mixed system, in the presence of at least one organic quaternary ammonium salt selected from the group consisting of tetra(C_2-C_5 alkyl)ammonium halide, benzyltri(C_2-C_3 alkyl-)ammonium chloride, dodecyltrimethyl-ammonium bromide and cetyltrimethylammonium chloride as well as an inorganic ammonium salt and zinc.

5,008,411

GLYCIDIC ACID ESTER AND PROCESS OF PREPARATION

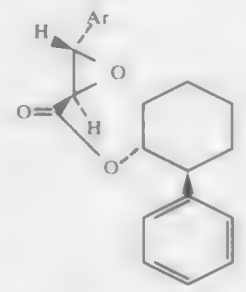
David L. Coffen, Glen Ridge; Pradeep B. Madan, Edison, and Alan Schwartz, Montclair, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 197,934, May 24, 1988, abandoned. This application Oct. 2, 1989, Ser. No. 416,295

Int. Cl.[5] **C07D** *306/13, 301/02*

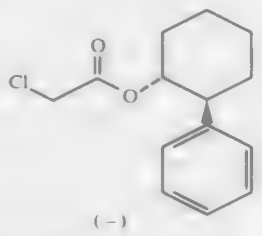
U.S. Cl. 549—519 **5 Claims**

1. A process for preparing the compound of the formula



III

wherein Ar is p-lower alkoxy phenyl,
which comprises reacting the compound of formula



II

with the compound of formula

Ar—CHO

wherein Ar is as described above,
in a solvent in the presence of a basic reagent.

5,008,412

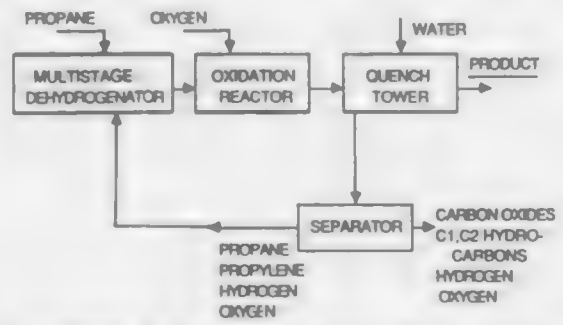
PROCESS FOR THE PRODUCTION OF OXIDES

Ramakrishnan Ramachandran; Donald L. MacLean, both of Annandale, and Donald P. Satchell, Jr., Summit, all of N.J., assignors to The BOC Group, Inc., New Providence, N.J.

Continuation-in-part of Ser. No. 215,859, Jul. 6, 1988, Pat. No. 4,859,537, which is a continuation-in-part of Ser. No. 154,157, Feb. 9, 1988, abandoned. This application Jul. 6, 1989, Ser. No. 376,331

Int. Cl.[5] **C07D** *301/04, 301/08, 301/10*

U.S. Cl. 549—523 **22 Claims**



1. A process for the production of alkylene oxides comprising:

(a) forming an alkene from a gaseous alkane by passage through a multistage catalytic dehydrogenator, comprised of a series of at least three discrete catalytic reactors, wherein a dehydrogenator product stream containing said alkene and unreacted alkane is withdrawn from a reactor intermediate the first and last of said reactors, wherein the gaseous flow between all of said reactors in sequence, up to and including the reactor from which the product stream is withdrawn, is passed through a heating means to raise the temperature thereof, and wherein the catalyst in the dehydrogenator is passed through all of said reactors, regenerated and recycled to the first reactor;

(b) introducing said alkene stream and an oxygen source selected from the group consisting of pure oxygen, air or a gas enriched in oxygen relative to air into suitable oxidation reactor for reaction in the presence of an oxidation catalyst to about 100° to 500° C. 0 to 1000 psig, and a residence time from a few seconds up to 1 hour to produce a gaseous effluent containing said oxide;

(c) quenching said gaseous effluent in a liquid to form a liquid phase containing said oxide and a gas phase;

(d) recovering said oxide from the liquid phase;

(e) introducing the gas phase quench effluent under pressure into a pressure swing adsorption unit to thereby form (i) a waste stream, and (ii) a gaseous stream comprising said unreacted alkane, alkene, a minor amount of oxygen, and nitrogen when air or oxygen-enriched air is introduced as the oxygen source into the reactor in step (b);

(f) introducing said gaseous stream into the reactor in said dehydrogenator which immediately follows in sequence the intermediate reactor from which the product stream was withdrawn, thereby removing substantially all of the oxygen contained in said stream;

(g) recycled the effluent from the last reactor of said dehydrogenator to another reactor of said dehydrogenator

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5,008,413

CATALYST FOR OXIDATION OF ETHYLENE TO ETHYLENE OXIDE

Kintoken H. Liu, Park Ridge, N.J., assignor to Scientific Design Company, Inc., Little Ferry, N.J.

Filed Oct. 23, 1989, Ser. No. 424,932

Int. Cl.[5] **C07D** *301/10*

U.S. Cl. 549—534 **18 Claims**

1. In the process for the production of ethylene oxide by contacting ethylene with molecular oxygen in the presence of a solid catalyst wherein the improvement comprises using a catalyst prepared by a process comprising the steps of:

(a) impregnating a porous support having a surface area of about 0.2 to 2.0 m^2/g with a hydrocarbon solution of a silver salt of a neo-acid having 7 or more carbon atoms sufficient to provide 3 to 25 wt % silver on the support, and separating the impregnated support form said solution;

(b) activating said impregnated support by heating in air for sufficient time to produce an active catalyst;

(c) impregnating said activated catalyst with a solution containing an alkali metal compound in the range of 650 to 8000 wppm in an amount sufficient to depress the activity and selectivity of said activated catalyst to produce a catalyst precursor, said alkali metal being selected from the group consisting of sodium, potassium, cesium, and rebidium and

(d) heat treating said catalyst precursor in a substantially inert atmosphere at a temperature of at least 450° C. for between 0.1 to 4.5 hours at a steady state to reactivate the precursor to produce an active catalyst.

5,008,414

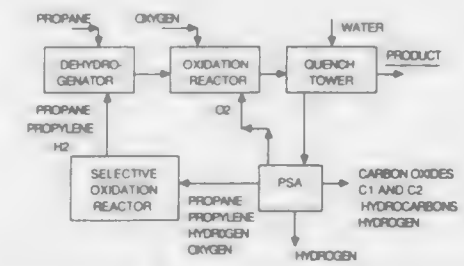
PROCESS FOR THE PRODUCTION OF OXIDES

Ramakrishnan Ramachandran, Allendale; Donald L. MacLean, Annandale; Donald P. Satchell, Jr., Summit, and Virginia A. Malik, Linden, all of N.J., assignors to The BOC Group, Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 281,581, Dec. 8, 1988, Pat. No.

Int. Cl.[5] **C07D** *301/10, 301/08, 301/32*

U.S. Cl. 549—538 **27 Claims**



1. In a process for the production of alkylene oxides comprising:

(a) forming an alkene from a gaseous alkane in a catalytic dehydrogenator;

(b) introducing a gaseous stream comprising said alkene and an oxygen source selected from the group consisting of pure oxygen or a gas enriched in oxygen relative to air into a suitable oxidation reactor and reacting them in the presence of an oxidation catalyst at about 100 to 500° C. 10 to 1000 psig, and a residence time from a few seconds up to 1 hour to produce a gaseous effluent containing said oxide;

(c) quenching said effluent in a liquid to form a liquid phase containing said oxide and a gaseous phase;

(d) recovering said oxide from said liquid phase;

(e) introducing the gaseous phase under pressure into a separator to thereby form (i) a waste stream, (ii) an adsorbed stream comprising said unreacted alkane and alkene, a minor amount of oxygen, and nitrogen when oxygen-enriched air is introduced into the reactor as the oxygen source in step (b), (iii) and a hydrogen-enriched stream;

(f) introducing said adsorbed stream into a catalytic selective oxidation unit to remove the remaining oxygen in said stream; and

(g) recycling the effluent from the selective oxidation unit to the dehydrogenator, the improvement wherein the separator also forms a oxygen-enriched stream, with nitrogen when present, which is at least partially recycled to the oxidation reactor.

5,008,415

VOLATILE FLUORINATED β-KETOIMINES AND ASSOCIATED METAL COMPLEXES

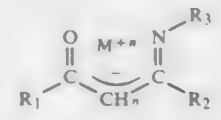
John A. T. Norman, Whitehall, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 270,719, Nov. 14, 1988, Pat. No. 4,950,790. This application Sep. 22, 1989, Ser. No. 411,275

Int. Cl.[5] **C07F** *1/08, 15/06, 7/08, 7/18*

U.S. Cl. 556—32 **7 Claims**

1. A thermally volatilizable, β-ketoiminato metal complex having the structural formula:



wherein R_1 and R_2 are independently linear or branched, perfluorinated, C_1-C_8 alkyl groups, R_3 is an unfluorinated, partially fluorinated or fully fluorinated phenyl or C_1-C_8 alkyl, hydroxyalkyl or ether group, M is a metal which is capable of forming a complex with a ligand as shown above, and n = 1, 2 or 3.

5,008,416

ORGANOGERMANIUM COMPOUND, PROCESS FOR THE PREPARATION OF SAME AS WELL AS USE THEREOF

Masayasu Kurono; Yasuaki Kondo; Takahiko Mitani; Yutaka Baba, and Kiichi Sawai, all of Aichi, Japan, assignors to Sanwa Kagaku Kenkyusho Co., Ltd., Aichi, Japan

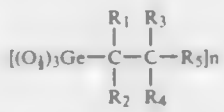
Filed Jun. 19, 1990, Ser. No. 540,535

Claims priority, application Japan, Jun. 20, 1989, 1-155585; Nov. 20, 1989, 1-299636

Int. Cl.[5] **C07F** *7/30*

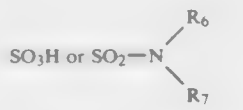
U.S. Cl. 556—89 **2 Claims**

1. An organogermanium compound of the formula



(I)

wherein R_1, R_2, R_3 and R_4 are hydrogen atom, alkyl, substituted alkyl, phenyl or substituted phenyl, and R_5 is a radical of



n is an integer of 2 or more, and R_6 and R_7 are hydrogen atom, alkyl, substituted alkyl, phenyl or substituted phenyl, and a salt thereof.

5,008,417

HALOALKYLATION PROCESS

G. Patrick Stahly, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed May 21, 1990, Ser. No. 525,827

Int. Cl.[5] **C07F** *7/22, 7/30, 9/02*

U.S. Cl. 556—104 **29 Claims**

1. A process for preparing haloalkyl-substituted compounds said process comprising treating a compound selected from the group

R_xSnZ_y, $R_{x1}{}^1PZ_{y1}$, and $R_{x2}{}^2GeZ_{y2}$

wherein R, R^1 and R^2 are the same or different and are C_1 to

C_6 linear or branched alkyl, phenyl unsubstituted or substituted with C_1 to C_6 linear or branched alkyl or halo; amino unsubstituted or having at least one hydrogen substituted with C_1 to C_6 linear or branched alkyl or phenyl unsubstituted or substituted with C_1 to C_6 linear or branched alkyl; Z is halo; and x, y, x_2 and y_2 are integers from 1 to 3; and x_1 and y_1 are integers from 1 to 4, with the proviso that the sum of x and y and the sum of x_2 and y_2 is equal to 4 and the sum of x_1 and y_1 is at least 3 but not greater than 5 with a haloalkylating reagent comprising an admixture of a haloalkyl halide with a tris(di C_1 to C_6 linear or branched alkylamino)phosphine and forming a compound selected from the group

$R_xSnZ'_y$, $R_{x1}{}^1PZ'_{y1}$, and $R_{x2}{}^2GeZ'_{y2}$

Z' is a haloalkyl group and where R, R^1, R^2, x, x_1, x_2, y, y_1 and y_2 are as previously defined.

5,008,418

TRIS(ISONITRILE)COPPER(I) ADDUCTS FOR PREPARING RADIONUCLIDE COMPLEXES

Tahir Iqbal, Lowell, Mass.; John H. Cain, Jr., Merrimack, N.H., and Jack J. Slosky, Shrewsbury, Mass., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 95,124, Sep. 11, 1987, Pat. No. 4,885,100. This application Aug. 23, 1989, Ser. No. 397,529
Int. Cl.[5] C07F *13/00, 1/08;* C07C *119/02*
U.S. Cl. 556—112 3 Claims

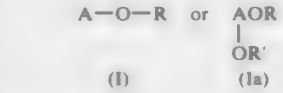
1. A process for preparing a tris(isonitrile) copper (I) adduct of the formula:

$[Cu(R'')NC_3]X$

wherein

X is an anion selected from BF_4, PF_6, ClO_4, I, Br, Cl and CF_3COO; and

R'' is alkyl of 1–20 carbon atoms or has the formula:



(I) (Ia)

wherein

A is a straight or branched chain alkylene group; and

R and R' each independently is a straight or branched chain alkyl group or taken together are a straight or branched chain alkylene group, provided that:

(1) the total number of carbon atoms in A plus R in formula (1) is 4 to 6, provided further that when the total number of carbon atoms is 6, then the carbon atom alpha to the isonitrile group is a quarternary carbon, and

(2) the total number of carbon atoms in A plus R plus R' in formula (Ia) is 4 to 9,

comprising

(1) reacting in a suitable solvent about one equivalent weight of:

(a) a tetrakis(acetonitrile)copper(I), BF_4, PF_6, or ClO_4, or

(b) cuprous iodide, bromide or chloride, with about three equivalent weight respectively of:

(a) a tetrakis(isonitrile ligand)copper(I), BF_4, PF_6, or ClO_4, or

(b) an isonitrile ligand; and

(2) removing the solvent to provide a solid tris(isonitrile)-copper(I) product.

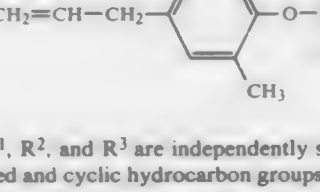
5,008,419

NOVEL PLATINUM COMPLEX

Koichi Yokoi, Kashiwa; Kazuhiko Irinoda, Chiba; Hidehiko Kohya, Narita; Susumu Sato, Shisui, and Tatsuhiko Katori, Tone, all of Japan, assignors to SS Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1989, Ser. No. 451,637
Claims priority, application Japan, Dec. 27, 1988, 63-330251
Int. Cl.[5] C07F *9/68*
U.S. Cl. 556—137 2 Claims

1. A platinum complex having the formula (I):



(I)

wherein R^1 and R^2 may be the same or different and each independently represents a methyl group or an ethyl group, and the configuration of 1,2-diaminocyclohexane is either cis-, trans-l-, trans-d-, or trans-dl-.

5,008,420

NOVEL SPINEL PRECURSORS

Carl C. Greco, Garnerville, N.Y., and Kelly B. Triplett, Stamford, Conn., assignors to Akzo nv, Arnhem, Netherlands

Filed Sep. 18, 1990, Ser. No. 584,549
Int. Cl.[5] C07F *5/06*
U.S. Cl. 556—182 12 Claims

1. An alkylaluminum alkoxide-magnesium alkoxide coordination compound containing an amount of aluminum to magnesium such that the molar ratio of aluminum to magnesium is substantially 2:1.

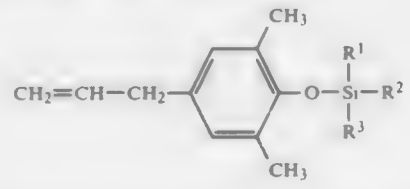
5,008,421

SILYL DERIVATIVES OF 2,6-DIMETHYL-4-ALLYL PHENOL

George L. Brownell, Pittsburgh; Mary K. Hays, Turtle Creek, and Andrew J. Sivak, Edgewood Boro, all of Pa., assignors to Aristech Chemical Corporation, Pittsburgh, Pa.

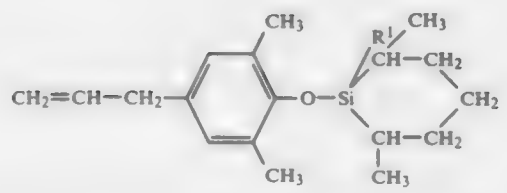
Continuation-in-part of Ser. No. 375,644, Jul. 5, 1989, Pat. No. 4,916,248. This application Oct. 10, 1989, Ser. No. 418,602
The portion of the term of this patent subsequent to Apr. 10, 2007, has been disclaimed.
Int. Cl.[5] C07F *7/08, 7/18*
U.S. Cl. 556—406 4 Claims

1. A compound of the formula



in which R^1, R^2, and R^3 are independently selected from linear, branched and cyclic hydrocarbon groups having from one to about eight carbon atoms, and at least two of R^1, R^2, and R^3 are connected to form one or more substituted or unsubstituted rings.

3. Compound of the formula



in which R^1 is selected from linear, branched and cyclic hydrocarbon groups having from one to about eight carbon atoms.

5,008,422

POLYSILAZANES AND RELATED COMPOSITIONS, PROCESSES AND USES

Yigal D. Blum, Menlo Park, and Richard M. Laine, Palo Alto, both of Calif., assignors to SRI International, Menlo Park, Calif.

PCT No. PCT/US86/02266, § 371 Date Dec. 1, 1986, § 102(e) Date Dec. 1, 1986
Continuation-in-part of Ser. No. 908,685, Mar. 4, 1986, which is a continuation-in-part of Ser. No. 727,415, Apr. 26, 1985, Pat. No. 4,612,383. This PCT application Oct. 24, 1986, Ser. No. 12,874
The portion of the term of this patent subsequent to Sep. 16, 2003, has been disclaimed.
Int. Cl.[5] C07F *7/10*
U.S. Cl. 556—412 11 Claims

1. A method of producing polysilazanes useful as preceramic polymers and containing at least one newly formed Si—N bond which comprises:

(a) providing a precursor containing at least one Si—N bond, catalytically cleaving an Si—N bond in the precursor in the presence of a transition metal catalyst effective to activate Si—N bonds, such cleavage being carried out in the presence of hydrogen or a hydrogen donor, and reacting the cleavage product to produce an initial polysilazane product; or

(b) providing one or more reactants which contain an Si—H bond and an N—H bond, and causing reaction to occur between such Si—H and N—H bonds in the presence of a transition metal catalyst effective to activate Si—H and N—H bonds, to produce an initial polysilazane product having at least two Si—N bonds.

5,008,423

POLYMERIC HYDRIDOCHLOROSILAZANES AND PROCESSES FOR THEIR PREPARATION

Thomas Gerdau, Eppstein/Taunus; Hans-Jerg Kleiner, Kronberg/Taunus; Marcellus Peuckert; Martin Brück, both of Hofheim am Taunus, and Fritz Aldinger, Rodenbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 22, 1988, Ser. No. 248,547
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1987, 3733727
Int. Cl.[5] C07F *7/10;* C08G *77/12*
U.S. Cl. 556—412 13 Claims

1. A process for the preparation of a polymeric hydridochlorosilazane, which comprises reacting an oligohydridoalkylsilazane of the formula $(R^1SiHNH)_n$, in which n is 3 to 12 and R^1 denotes an alkyl group with 1 to 6 carbon atoms, with a dichlorohydridoalkylsilane of the formula R^2SiHCl_2, in which R^2 denotes an alkyl group having 1 to 6 carbon atoms, at 30° to 300° C.

5,008,424

WATER SHEETING ZWITTERIONOMERIC AMINOFUNCTIONAL SILOXANES

Daniel J. Halloran, Midland; Kenneth A. Kasprzak, Saginaw, both of Mich.; Stefano G. Savastano, Somerset, N.J., and Terence J. Swihart, Essexville, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 460,708, Jan. 4, 1990, Pat. No. 4,950,506, which is a division of Ser. No. 293,842, Jan. 5, 1989, Pat. No. 4,898,614. This application May 4, 1990, Ser. No. 519,188
Int. Cl.[5] C07F *7/10*
U.S. Cl. 556—419 14 Claims

1. A method of making an aminofunctional siloxane zwitterionomer comprising reacting an acid anhydride with an aminofunctional siloxane selected from the group consisting of (A) a combination of a hydroxyl endblocked polydimethylsiloxane having a viscosity in the range of about 10 to 15,000 cs at twenty-five degrees centigrade, and a silane selected from the group consisting of those having the general formulae $R''_n(R'O)_{3-n}Si(CH_2)_3NHR'''$ and $R''_n(R'O)_{3-n}SiRNHCH_2CH_2NH_2$ wherein R''' is a hydrogen atom or a methyl radical, R'' is a monovalent hydrocarbon radical free of aliphatic unsaturation and contains from one to six carbon atoms, n has a value of from zero to two, R' is an alkyl radical containing from one to four carbon atoms, and R is a divalent hydrocarbon radical free of aliphatic unsaturation and contains three to four carbon atoms, (B) a combination of a hydroxyl endblocked polydimethylsiloxane having a viscosity in the range of about 10 to 15,000 cs at twenty-five degrees centigrade, a silane selected from the group consisting of those having the general formulae $(R_1O)_3—SiR_2NHR_3$ and $(R_1O)_3—SiR_2NHCH_2CH_2NH_2$ wherein R_1 is an alkyl radical containing from one to four carbon atoms, R_2 is a divalent hydrocarbon radical free of aliphatic unsaturation and contains from three to four carbon atoms, and R_3 is selected from the group consisting of the hydrogen atom and the methyl radical, and a silane having the general formula X_3SiZ wherein X is selected from the group consisting of alkoxy and acyloxy radicals containing from one to four carbon atoms, and Z is a nonhydrolyzable radical selected from the group consisting of hydrocarbon radicals, halogenated hydrocarbon radicals, and radicals composed of carbon, hydrogen, and oxygen atoms, wherein the oxygen atoms are present in hydroxyl groups, ester groups, or ether linkages, there being from one to ten carbon atoms in the Z radical, and (C) a combination of a polydimethylsiloxane having a viscosity in the range of about one to 15,000 cs at twenty-five degrees centigrade, and a silane selected from the group consisting of those having the general formulae $R''_n(R'O)_{3-n}Si(CH_2)_3NHR'''$ and $R''_n(R'O)_{3-n}SiRNHCH_2CH_2NH_2$ wherein R''' is a hydrogen atom or a methyl radical, R'' is a monovalent hydrocarbon radical free of aliphatic unsaturation and contains from one to six carbon atoms, n has a value of from zero to two, R' is an alkyl radical containing from one to four carbon atoms, and R is a divalent hydrocarbon radical free of aliphatic unsaturation and contains three to four carbon atoms.

5,008,425

TRIFLUOROMETHYLATION OF CARBONYL COMPOUNDS

G. Patrick Stahly, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 177,153, Apr. 4, 1988, abandoned, and a continuation-in-part of Ser. No. 196,680, May 20, 1988, Pat. No. 4,871,877. This application Apr. 12, 1989, Ser. No. 337,186
The portion of the term of this patent subsequent to Oct. 3, 2006, has been disclaimed.
Int. Cl.[5] C07F *7/08, 7/18, 7/10*
U.S. Cl. 556—436 13 Claims

1. A process which comprises reacting under substantially anhydrous conditions a perfluoroalkyltrihydrocarbylsilane and

a carbonyl compound in the presence of a catalyst such that the carbonyl compound is perfluoroalkylated.

5,008,426

NOVEL 6-ACYL-(6H)-DIBENZ[C,E][1,2]OXAPHOSPHORIN 6-OXIDES, THEIR PREPARATION AND THEIR USE AS PHOTOINITIATORS

Hans-Jerg Kleiner, Kronberg; Joachim Gersdorf, Wiesbaden, and Udo Bastian, Ratingen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 22, 1988, Ser. No. 235,004

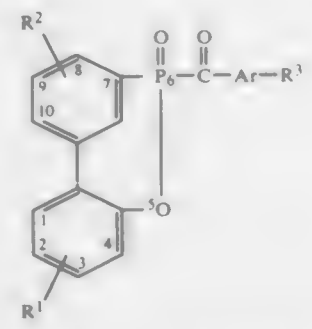
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1987, 3728169; May 26, 1988, 3817860

Int. Cl.[5] **C07F** *9/32;* **C09D** *3/727;* **C08F** *2/50;* **G03F** *7/10*

U.S. Cl. 558—82 **17 Claims**

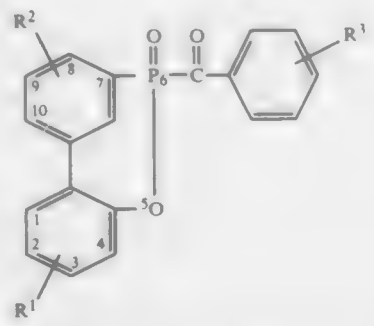
1. A 6-acyl-(6H)-dibenz(c,e)(1,2)-oxaphosphorin-6-oxide of the formula

(I)



wherein each of R^1, R^2 and R^3 are present once or more than once, wherein R^1 and R^2 represent hydrogen or chlorine, R^3 represents hydrogen, chlorine or alkyl or alkoxy each having from 1 to 6 carbon atoms and wherein Ar represents an aromatic hydrocarbon group having from 6 to 10 carbon atoms.

11. A 6-acyl-(6H)-dibenz(c,e)(1,2)-oxaphosphorin-6-oxide of the formula



wherein each of R^1, R^2 and R^3 are present once or more than once, wherein R^1 and R^2 represent hydrogen or chlorine and R^3 represents hydrogen, chlorine or alkyl or alkoxy each having from 1 to 6 carbon atoms.

5,008,427

AMMOXIDATION OF PARAFFINS

James F. Brazdil, Jr., Mayfield Village; Mark A. Toft, Lakewood, and Linda C. Glaeser, Lyndhurst, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 23, 1988, Ser. No. 289,095

Int. Cl.[5] **C07C** *253/24*

U.S. Cl. 558—319 **12 Claims**

1. A process for making an α,β-unsaturated mononitrile, selected from acrylonitrile and methacrylonitrile, by the catalytic reaction in the vapor phase of a paraffin selected from propane and isobutane with molecular oxygen and ammonia and optionally a gaseous diluent, by catalytic contact of the foregoing reactants in a reaction zone with a catalyst, the feed to said reaction zone containing a mole ratio of said paraffin to NH_3 in the range from 2.5 to 16 and a mole ratio of said paraffin to O_2 in the range from 1 to 10, said catalyst having the elements and the proportions indicated by the empirical formula:

$$VSb_mA_aD_dO_x$$

where

A is one or more Ti, Sn, Fe, Cr, Ga

D is one or more Li, Mg, Ca, Sr, Ba, Co, Ni, Zn, Ge, Nb, Zr, Mo, W, Cu, Te, Ta, Se, Bi, Ce, In, As, B, Mn and

m is 0.8–4

a is 0.01–2

d is 0–2

x is determined by the oxidation state of the cations present, which catalyst has been heated at a calcination temperature of at least 780° C.

5,008,428

INTEGRATED PROCESS FOR THE PRODUCTION OF AMINOACETONITRILES

Martin B. Sherwin, Potomac, and Jow-Lih Su, Silver Spring, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Oct. 26, 1989, Ser. No. 427,438

The portion of the term of this patent subsequent to Jan. 23, 2007, has been disclaimed.

Int. Cl.[5] **C07C** *253/30*

U.S. Cl. 558—346 **20 Claims**

1. An improved process for the production of aminoacetonitriles prepared by

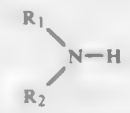
(a) contacting in a reactive absorber, under reactive conditions hydrogen cyanide, formaldehyde, and an additional nitrogen source,

(b) scrubbing the reaction products from (a) supra with a pH-controlled, aqueous scrubbing solution to form an aminoacetonitrile product, and

(c) recovering the product,

wherein the improvement comprises:

using as a source of hydrogen cyanide in step (a) the direct unpurified reactor product stream of a hydrogen cyanide production process comprising a gaseous mixture of hydrogen cyanide and ammonia, using as a source of formaldehyde in step (a) the direct unpurified reactor product stream of a formaldehyde production process comprising a gaseous mixture of formaldehyde and water using as an additional nitrogen source a composition represented by the formula



wherein R_1 and R_2 are each independently selected from alkyl, alkene, cycloalkyl groups, their amine substituted derivatives, and hydrogen.

5,008,429

PROCESS FOR INDUSTRIAL APPLICATION OF KNOEVENAGEL SYNTHESIS

Manfred Kaufhold, and Josef Metz, both of Marl, Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Dec. 6, 1989, Ser. No. 446,601

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1989, 3908998

Int. Cl.[5] **C07C** *253/30*

U.S. Cl. 558—374 **7 Claims**

1. In a Knoevenagel synthesis involving reaction of cyanoacetic acid with a ketone followed by decarboxylation in one step with a Knoevenagel synthesis catalyst, the improvement comprising adding in portions 1–10 moles of acetic acid in solution with said cyanoacetic acid per mole of ketone, to the ketone and catalyst at about 100–160° C., wherein the addition of said portions produced a controlled even flow of CO_2 waste gas.

5,008,430

MERCAPTOPYRENES, PREPARATION THEREOF AND USE THEREOF FOR THE PREPARATION OF CHARGE TRANSFER COMPLEXES

Gerhard Heywang, Bergisch Gladbach, and Friedrich Jonas, Aachen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 10, 1989, Ser. No. 335,902

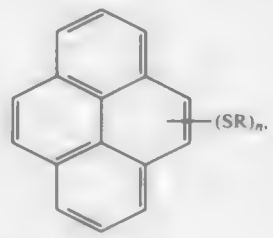
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1988, 3814534

Int. Cl.[5] **C07C** *321/28*

U.S. Cl. 558—396 **1 Claim**

1. The mercaptopyrene of the formula

(I)



wherein

n is 4 and

R is C_1–C_{22}-alkyl, benzyl or phenyl or C_1–C_{22}-alkyl, benzyl or phenyl substituted by C_1-C_4-alkyl, C_1–C_4-alkoxy or halogen.

5,008,431

BENZOPHENONE DERIVATIVE

Yutaka Akasaki; Katsumi Nukada, and Katsuhiro Sato, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1989, Ser. No. 436,620

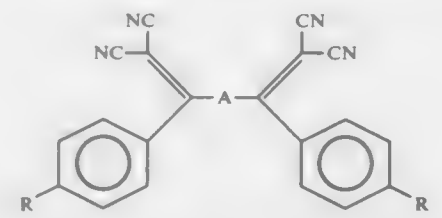
Claims priority, application Japan, Nov. 16, 1988, 63-287617

Int. Cl.[5] **C07C** *255/01*

U.S. Cl. 558—402 **2 Claims**

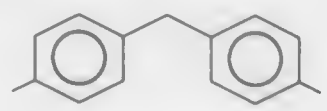
1. A benzophenone derivative represented by formula (I):

(I)

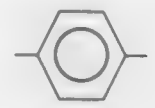


wherein A represents one of the following structural formulas (a), (b) or (c),

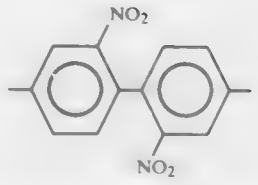
(a)



(b)



(c)



and R represents an alkyl group having 1 to 8 carbon atoms or a nitro group.

5,008,432

PRODUCTION OF MERCAPTO COMPOUNDS

John S. Roberts, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 11, 1985, Ser. No. 754,058

Int. Cl.[5] **C07C** *319/04, 323/03, 323/41, 323/60*

U.S. Cl. 558—436 **5 Claims**

1. A continuous process for the production of mercapto-substituted compounds which comprises passing a mixture of hydrogen sulfide and at least one olefinically unsaturated compound in which the double bond is conjugated with an activating group selected from the group consisting of carbonyl, carboxyl, carboxylate, carboxamide, nitrile, nitro and sulfoxide through a reaction zone comprising a bed of magnesium oxide catalyst which optionally contains silica or other suitable binding agent under reaction conditions which produce saturated sulfur compounds and separating excess hydrogen sulfide from the product mixture removed from said reaction zone.

5,008,433

2-HYDROXY-3-(4-METHOXYPHENYL)-3-(2-AMINOPHENYLTHIO)PROPIONIC ACID, 8'-PHENYLMENTHYL ESTER, ESPECIALLY FOR DILTIAZEM

James T. Palmer, Livermore, Calif., assignor to Marion Laboratories, Inc., Kansas City, Mo.

Division of Ser. No. 195,708, May 18, 1988. This application Apr. 6, 1990, Ser. No. 505,493

Int. Cl.[5] **C07C** *323/36*

U.S. Cl. 560—17 **2 Claims**

1. A (2°, 3°)-2-hydroxy-3-(4-methoxyphenyl)-3-(2-aminophenylthio)-propionic acid, (°)-8'-phenylmenthyl ester.

5,008,434

PROCESS FOR THE PREPARATION OF METHYL (+)-(2S,3S)-3-[(2-AMINOPHENYL)THIO]-2-HYDROXY-3-(4-METHOXYPHENYL)-PROPIONATES

Guy Rossey, Voisins le Bretonneux; Antonio Ugolini, Le Pecq; Isaac Chekroun, Pinay; Abkar Vartanian, Meulan, and Alexander Wick, St Nom la Breteche, all of France, assignors to Synthelabo, Paris, France

Filed Apr. 18, 1989, Ser. No. 339,979

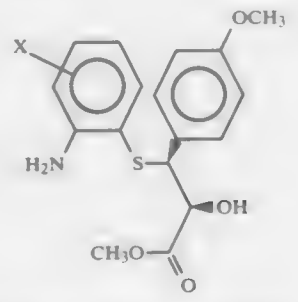
Claims priority, application France, Apr. 19, 1988, 88 05132

Int. Cl.[5] **C07C** *67/30, 323/09*

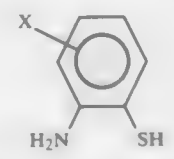
U.S. Cl. 560—17 **3 Claims**

1. A process for the preparation of a methyl (+)-(2S,3S)-3-

[(2-aminophenyl)thio]-2-hydroxy-3(4-methoxyphenyl)propionate of the formula (I):



in which X denotes hydrogen or chlorine, which process comprises reacting a 2-aminothiophenol of the formula (II):



in which X is as defined above, with methyl (−)-(2R,3S)2,3-epoxy-3-(4-methoxyphenyl)propionate, in a 1,2-dichloroethane solvent, at reflux temperature and under an inert atmosphere.

5,008,435

PREPARATION OF URETHANES

Kuo-Liang Loh; Puh Shieh, both of Hsinchu; Y. S. Chao, Kao-Hsiung, and Tsu-Kung Chuang, Hsinchu, all of China, assignors to Industrial Technology Research Institute, Taiwan

Filed Nov. 22, 1988, Ser. No. 275,261

Int. Cl.[5] C07C *261/00*

U.S. Cl. 560—24 **14 Claims**

1. A process for producing urethanes, which comprises reacting an organic hydroxyl group containing compound from the group consisting essentially of compounds having at least one aliphatic alcoholically bound hydroxyl group and having 1–20 carbon atoms, and compounds having at least one phenolically bound hydroxyl group and having 6–20 carbon atoms, and carbon monoxide, with an organic nitro group containing compound in the presence of a non-noble metal catalyst system consisting essentially of a copper catalyst.

5,008,436

UREA-CONTAINING (METH) ACRYLIC ACID DERIVATIVES OF TRIISOCYANATES

Michael Müller, Bergisch-Gladbach; Wolfgang Podszun, and Jens Winkel, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

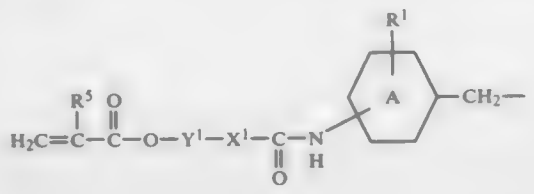
Filed May 1, 1990, Ser. No. 517,261

Claims priority, application Fed. Rep. of Germany, May 27, 1989, 3917320

Int. Cl.[5] C07C *269/00*

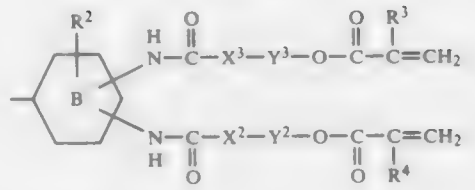
U.S. Cl. 560—26 **8 Claims**

1. A (meth)acrylic acid derivative of a triisocyanate of the formula



(I)

-continued



wherein

R^1 and R^2 are identical or different and stand for hydrogen or a lower alkyl radical,

R^3, R^4 and R^5 are identical or different and denote hydrogen or methyl,

Y^1 to Y^3 are identical or different and denote divalent straight-chain or branched hydrocarbon radicals of 2 to 15 carbon atoms which may optionally include 1 to 3 oxygen bridges and which may be unsubstituted or substituted by 1 to 4 additional (meth)acryloyloxy radicals,

X^1 to X^3 are identical or different and denote $-NR^1-$ or -O-, at least one of the radicals X^1 to X^3 denoting $-NR^1-$, and the rings

A and B are identical or different and may be aromatic or saturated.

5,008,437

SCHIFF BASE REACTION PRODUCT OF ETHYL VANILLIN AND METHYL ANTHRANILATE AND ORGANOLEPTIC USES THEREOF

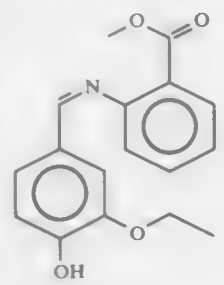
Braja D. Mookherjee, Holmdel; Robert W. Trenkle, Point Pleasant, both of N.J.; Nicholas Calderone, Laurel Hollow, N.Y., and Ronald S. Fenn, New Providence, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 134,978, Dec. 18, 1987, abandoned. This application Sep. 27, 1990, Ser. No. 588,737

Int. Cl.[5] C07C *229/00*

U.S. Cl. 560—35 **2 Claims**

2. A schiff base reaction product having the structure:



5,008,438

ORTHO-SUBSTITUTED PHENOL ETHERS AND FUNGICIDES WHICH CONTAIN THESE COMPOUNDS

Franz Schuetz, Ludwigshafen; Siegbert Brand, Weinheim; Bernd Wenderoth, Lampertheim; Hubert Sauter, Mannheim; Eberhard Ammermann, Ludwigshafen, and Cisela Lorenz, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

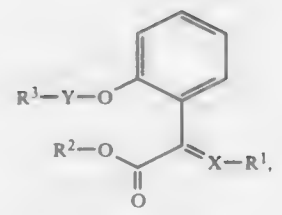
Filed Mar. 13, 1989, Ser. No. 322,727

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1988, 3811012

Int. Cl.[5] C07C *69/76*

U.S. Cl. 560—55 **7 Claims**

1. Ortho-substituted phenol ethers of the general formula I



I

where

R^1 is C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio or amino which is unsubstituted or mono- or disubstituted by C_1–C_4-alkyl,

R^2 is C_1–C_4-alkyl,

R^3 is aryloxy, arylthio or arylalkoxy, the aromatic ring being unsubstituted or substituted by one or more of the following radicals: halogen, C_1–C_6-alkyl, C_1–C_6-alkoxy, C_1–C_4-alkylthio, C_1–C_2-haloalkyl, aryl, aryl-C_1–C_2-alkoxy, C_1–C_4-alkylcarbonyl, mono- or di-C_1–C_4-alkyl-substituted amino; cyano, nitro,

X is CH or N, and

Y is saturated or unsaturated C_2–C_{12}-alkylene.

5,008,439

SYNTHESIS OF 2-(4-HYDROXYPHENOXY) ALKANOIC ACID ESTERS

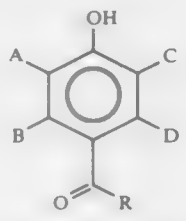
Varadaraj Elango, and Kenneth G. Davenport, both of Corpus Christi, Tex., assignors to Hoechst Celanese Corporation, North Somerville, N.J.

Filed Mar. 21, 1988, Ser. No. 170,711

Int. Cl.[5] C07C *69/76*

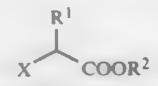
U.S. Cl. 560—61 **25 Claims**

1. A method for synthesizing 2-(4-hydroxyphenoxy)alkanoic acid esters which comprises reacting a hydroxyaromatic ketone derivative (II) of the formula

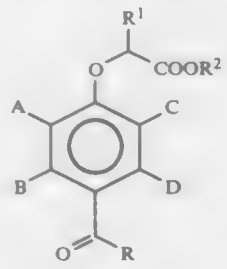


II

or a salt thereof; with a substituted ester of the formula

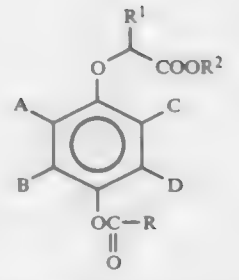


under basic conditions to thereby form a 2-(acylphenoxy)alkanoic acid ester (III) of the formula



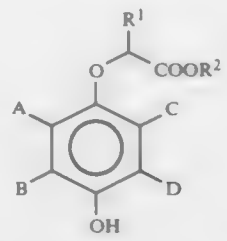
III

and then oxidizing the thusly formed 2-(acylphenoxy)alkanoic acid ester with a peracid or peroxide to obtain a 2-(acyloxyphenoxy)alkanoic acid ester (IV) of the formula



IV

and then transesterifying said 2-(acyloxyphenoxy)alkanoic acid ester with R^3OH/H^+ to obtain a 2-(4-hydroxyphenoxy)alkanoic acid ester (I) of the formula



I

wherein R is C_1 to C_{18} alkyl or C_6 to C_{10} aryl; and

wherein R^1 is H, phenyl or C_1 to C_{18} alkyl; and

wherein R^2 and R^3 are independently C_1 to C_{18} alkyl or aryl; and

wherein A, B, C and D are independently H, X, CN, C_1 to C_{18} alkyl, or C_6 to C_{10} aryl; and X is F, Cl, Br, I or a sulfonic ester.

5,008,440

HERBICIDE COMPOSITION

József Bakos; Bálint Heil; Imre Tóth; Béla Édes, all of Veszprém; István Gebhardt, Budapest; Ferenc Bihari, Budapest; Anna Durkó née Pónácz, Budapest; Gyula Elfert, Dunaharaszti; Jeno Király, Budapest; Éva Konok née Horváth, Budapest; László Lukács, Budapest; Ágnes Mészáros née Szekrényesi, Budapest; Béla Radvány, Budapest, and Lajos Sárosi, Budapest, all of Hungary, assignors to Budapesti Vegyimuvek, Budapest, Hungary

Filed Dec. 21, 1989, Ser. No. 454,775

Claims priority, application Hungary, Dec. 27, 1988, 6609/88

Int. Cl.[5] C07C *69/76*

U.S. Cl. 560—65 **6 Claims**

1. (S)-1'-Methoxycarbonylethyl 2-bromo-5-(2-chloro-4-trifluoromethylphenoxy)benzoate.

5,008,441

CAFFEIC ACID ESTERS AND METHODS OF PRODUCING AND USING SAME

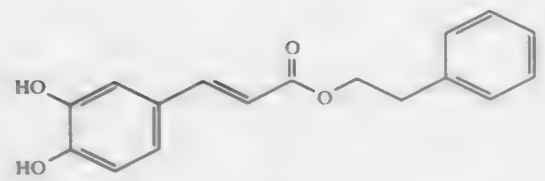
Koji Nakanishi; Eugene M. Oltz, both of New York, N.Y., and Dezider Grunberger, Teaneck, N.J., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Continuation of Ser. No. 81,649, Aug. 4, 1987, abandoned. This application Jun. 20, 1989, Ser. No. 369,060

Int. Cl.[5] C07C *69/76*

U.S. Cl. 560—75 **21 Claims**

1. A purified compound having the structure:



5,008,442

SURFACE-ACTIVE COMPOUNDS ON THE BASIS OF ARYLATED FATTY SUBSTANCES AND THEIR USE

Heinz Uhrig, Steinbach/Taunus; Klaus Ehl, Frankfurt am Main, and Reinhold Deubel, Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 565,906, Dec. 27, 1983, Pat. No. 4,597,906.
This application Apr. 21, 1986, Ser. No. 854,339
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1979, 2949694
Int. Cl.[5] C07C *69/34*
U.S. Cl. 560—149 8 Claims

1. A compound of the formula

$$A[(Y{-}O)_x{-}Y{-}Z]_m$$

in which A is the radical of an arylated fatty alcohol, Y are identical or different groups of the formulae

$$-CH_2{-}CH_2- \text{ or } -CH_2{-}CH(CH_3)-.$$

Z are identical or different radicals of the formulae —O—CO—CH=CH—COOM and —O—CO—CH_2—CH(SO_3M—)—COOM,
in which
M is a cation,
x is an integer from 1 to 150 and
m is a number from 1 to 7.

5,008,443

PROCESS FOR THE PREPARATION OF NITRAMINE-CONTAINING HOMOPOLYMERS AND CO-POLYMERS

Roger W. Day, Meriden, and Rahim Hani, Cheshire, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Division of Ser. No. 270,977, Nov. 14, 1988, Pat. No. 4,916,206.
This application Sep. 25, 1989, Ser. No. 411,380
Int. Cl.[5] C07C *67/08*
U.S. Cl. 560—169 6 Claims

1. A process for producing a nitramine-containing polymer which comprises the steps of:

(a) reacting a nitramine-containing dicarboxylic acid monomer selected from the group consisting of 4,7-dinitraza-1,10-decanedioic acid (DNDA); 5-methyl-4,7-dinitraza-1,10-decanedioic acid (MDNDA); 4-nitraza-1,7-heptanedioic acid (NHDA); 4,8-dinitraza-1,11-undecanedioic acid (DNUDA), and combinations thereof, with a diol monomer selected from the group consisting of ethylene glycol, propylene glycol, 1,4-butane diol, 1,6-hexane diol, diethylene glycol and combinations thereof, in the presence of an acid catalyst by a melt polymerization reaction, the molar ratio of said diol monomer being either equimolar or a molar excess of said diol monomer relative to said nitramine-containing dicarboxylic acid monomer, said reaction being effected at a reaction temperature of between about 60° C. and about 150° C. and a reaction pressure which is either atmospheric or subatmospheric ranging between about 0.001 mm of Hg and about 600 mm. of Hg., to form said nitramine-containing polymer, and

(b) removing by-product water during the course of the reaction.

5,008,444

PROCESS FOR THE PRODUCTION OF SUBSTITUTED ACRYLOYLOXYHYDROXYPROPYLTRIALKYLAMMONIUM CHLORIDE

William G. Chiang, Fayetteville; Richard M. Jobbins, Marcellus, and Michael P. Populе, Syracuse, all of N.Y., assignors to Polypure, Inc., Solvay, N.Y.

Continuation-in-part of Ser. No. 278,297, Nov. 30, 1988, abandoned, and a continuation-in-part of Ser. No. 278,299, Nov. 30, 1988, abandoned, and a continuation-in-part of Ser. No. 278,300, Nov. 30, 1988, abandoned. This application Dec. 26, 1989, Ser. No. 456,340
Int. Cl.[5] C07C *69/52*
U.S. Cl. 560—222 29 Claims

1. A process for preparing a 3-(R)acryloyloxy-2-hydroxypropyltrialkylammonium halide monomer comprising:

reacting the halohydroxypropyl ester of an acid of the formula CH_2=C(R)COOH wherein R is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms with from 0.05 to 2.0 moles of a trialkylamine per mole of halohydroxypropyl ester at from about 25° to about 70° C. for a time sufficient to form 3-(R) acryloyloxy-2-hydrocypropyltrialkylammonium halide and its isomer, 2-(R)acryloylocy-3-hydroxypropyltrialkylammonium halide, wherein said reaction occurs in from about 35 85% of a non-solvent for said 3-(R)acryloyloxy-2-hydroxypropyltri-alkylammonium halide and its isomer precipitating the halide monomer as the reaction proceeds.

5,008,445

PROCESS FOR THE PRODUCTION OF GLYCOL MONOESTERS

Nobuaki Shimizu, and Hiroaki Kezuka, both of Sodegaura, Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Continuation of Ser. No. 821,690, Jan. 23, 1986, abandoned, Continuation-in-part of Ser. No. 698,319, Feb. 5, 1985, abandoned. This application Jun. 5, 1987, Ser. No. 59,153
Claims priority, application Japan, Feb. 10, 1984, 59-24127; Dec. 12, 1984, 59-260790
Int. Cl.[5] C07C *67/055, 69/16, 69/28*
U.S. Cl. 560—243 26 Claims

1. A process for producing glycol monoesters using a catalyst which is regenerated, comprising

(a) reacting at least one carboxylic acid selected from the group consisting of acetic acid, propionic acid, butyric acid and isobutyric acid; at least one olefin selected from the group consisting of ethylene, propylene, butene-1, butene-2, cyclopentene and cyclohexene; and oxygen, in the presence of said catalyst containing (A) a palladium component, (B) an oxygen-containing nitrogen compound, and (C) a metal halide as major constituents, wherein the molar ratio of the oxygen-containing nitrogen compound (B) to the palladium component (A) is from 0.5 to less than 2.0 and the elemental ratio of the halogen atom in the metal halide (C) to the palladium atom in the palladium component (A) is at least 1, to produce glycol monoester; and

(b) regenerating said catalyst by reduction with hydrogen and reusing the catalyst for step (a) reaction to produce glycol monoester.

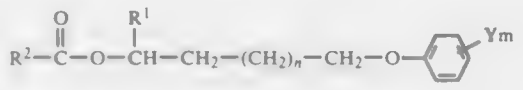
5,008,446

PREPARATION OF PHENOXY-SUBSTITUTED ESTERS AND INTERMEDIATES THEREFOR

Guenter Schulz, Ludwigshafen, and Hubert Sauter, Mannheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

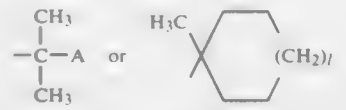
Division of Ser. No. 129,710, Dec. 7, 1987, Pat. No. 4,870,205.
This application Jun. 13, 1989, Ser. No. 365,559
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1986, 3642632
Int. Cl.[5] C07C *67/02*
U.S. Cl. 560—254 6 Claims

1. A process for the preparation of a compound of the formula I

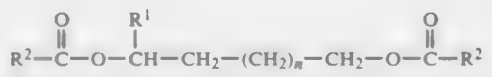


I

where R^1 is

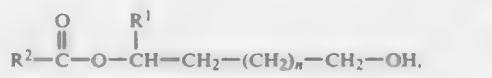


where A is C_1–C_4-alkyl, phenyl or C_7–C_{12}-aralkyl and l is 0 or 1, R^2 is C_1–C_4-alkyl, n is 0, 1, 2 or 3, m is 1, 2 or 3 and Y is hydrogen, fluorine, chlorine, bromine, C_1–C_3-alkyl, C_1–C_3-alkoxy, trifluoromethyl, phenyl or phenoxy, and, when m is greater than 1, the individual atoms or groups Y are identical or different, wherein, in a first stage, a diester of the formula II



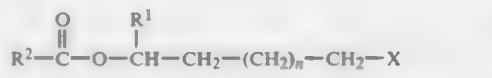
II

is hydrolyzed with one equivalent of an aqueous alkali metal hydroxide to give the alcohol of the formula IIIa



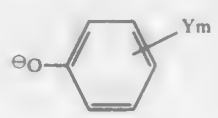
IIIa

in a second stage this alcohol is converted with a halogenating agent or a sulfonyl chloride or bromide into a compound of the formula IIIb



IIIb

where X is substituted as a nucleophilically displaceable leaving group, and then, in a third stage, the compound IIIb is reacted with a phenolate of the formula IV



IV

where Y and m have the abovementioned meanings, in the presence of an aprotic solvent to give compound I.

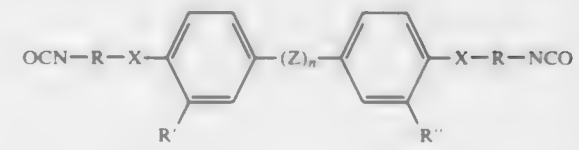
5,008,447

PROCESS FOR THE PREPARATION OF POLYURETHANES WITH LIQUID CRYSTAL PROPERTIES AND DIISOCYANATES SUITABLE FOR CARRYING OUT THE PROCESS

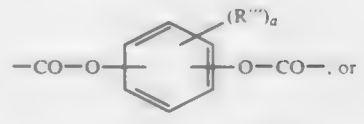
Werner Mormann, Kreuztal; Barbara Brahm, and Martin Brahm, both of Siegen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

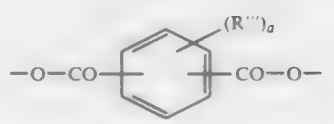
Division of Ser. No. 241,445, Sep. 7, 1988, Pat. No. 4,895,920.
This application Nov. 7, 1989, Ser. No. 433,636
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1987, 3730985
Int. Cl.[5] C07C *249/00*
U.S. Cl. 560—355 1 Claim

1. An organic diisocyanate having the formula



wherein
R is an alkylene group of 2 to 11 carbon atoms;
X is CO—O or O—CO;
Z is N=N, CH=CH, CO—O,





R′, R″, and R‴ are independently hydrogen, Cl, Br, NO_2, C_1–C_{20} alkyl, C_1–C_{20} alkoxy, C_1–C_{20} alkoxycarbonyl, or C_1–C_4 branched alkyl;
a is 1, 2, or 3; and
n is 0 or 1.

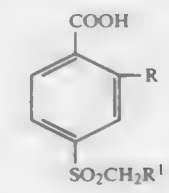
5,008,448

PREPARATION OF 2-(CHLORO, BROMO OR NITRO)-4-(ALKYL-SULFONYLK)BENZOIC ACIDS AND INTERMEDIATES

Richard W. Brown, Richmond, Calif., assignor to ICI Americas Inc., Wilmington, Del.

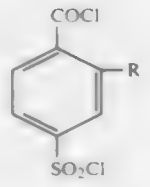
Division of Ser. No. 280,787, Dec. 7, 1988, abandoned. This application Jan. 25, 1990, Ser. No. 470,009
Int. Cl.[5] C07C *147/107*
U.S. Cl. 562—429 5 Claims

1. A process for preparing 2-(chloro, bromo or nitro)-4-(alkysulfonyl) benzoic acid compounds having the structural formula

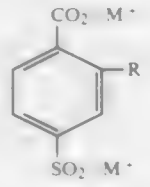


wherein R is chloro, bromo or nitro and R^1 is hydrogen or C_1–C_3 alkyl, comprising

(1) reacting a compound having the structural formula



wherein R is as defined with a reducing agent along with a base having a sodium, potassium or ammonium cation (M^{30}) in an aqueous medium to prepare a compound having the structural formula

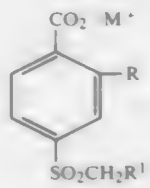


wherein R is chloro, bromo or nitro and M is sodium, potassium or ammonium and

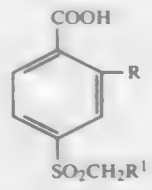
(2) reacting the prepared compound from step (1) with an α-halocarboxylic acid compound having the structural formula



wherein X is a chloro, bromo or iodo; R^1 is hydrogen or C_1–C_3 alkyl; and M is sodium, potassium or ammonium, to prepare a benzoic acid compound having the structural formula



wherein M, R and R^1 are as defined, and finally acidifying the compound to prepare the desired product having the structural formula



wherein R and R^1 are as defined.

5,008,449

METHOD OF SYNTHESIS OF HYDROXY-SUBSTITUTED-4-ALKOXYPHENYLACETIC ACIDS

Kenner C. Rice, Bethesda, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Mar. 3, 1989, Ser. No. 318,590
Int. Cl.[5] C07C *65/01*
U.S. Cl. 562—478 **5 Claims**

1. A method of synthesizing 3-hydroxy-4-alkoxyphenylacetic acid comprising the following steps:

(I) reacting 4-alkoxyphenylacetic acid with bromine to produce 3-bromo-4-alkoxyphenylacetic acid; and

(II) reacting said 3-bromo-4-alkoxyphenylacetic acid with water, strong base and a water-soluble copper salt at a temperature of 100°–120° C., and wherein the reaction mixture of step II is sufficiently concentrated such that the reaction is run at atmospheric pressure

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5,008,450

PROCESS FOR EXCHANGING DISPERSING MEDIUM OF TEREPHTHALIC ACID SLURRY

Ryoichi Yamamoto, and Hiroshi Suzuki, both of Yamaguchi, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 373,674, Jun. [illegible], 1989, abandoned, which is a continuation of Ser. No. 279,085, Dec. 2, 1988, abandoned. This application Dec. 14, 1989, Ser. No. 449,047
Claims priority, application Japan, Dec. 17, 1987, 62-319889
Int. Cl.[5] C07C *51/42*
U.S. Cl. 562—485 **15 Claims**

1. A process for exchanging a dispersing medium of a terephthalic acid slurry, which comprises introducing an aliphatic carboxylic acid slurry of terephthalic acid into a multi-stage column at the upper part thereof and water at the lower part thereof to form an upflowing stream of water in the multi-stage column, while a sedimentation of terephthalic acid particles is effected, and withdrawing an aqueous aliphatic carboxylic acid solution from the upper part of the multi-stage column and an aqueous slurry of terephthalic acid from the lower part of the multi-stage column.

5,008,451

METHYLENE AND OXYMETHYLENE BIS-ESTER PRODUCTION

Seymour J. Lapporte, Orinda, and William G. Toland, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 400,817, Jul. 22, 1982, abandoned, which is a continuation of Ser. No. 890,560, Mar. 20, 1978, abandoned, which is a continuation of Ser. No. 575,309, May 7, 1975, abandoned, which is a division of Ser. No. 398,732, Sep. 19, 1973, Pat. No. 3,927,078, which is a continuation-in-part of Ser. No. 282,623, Aug. 21, 1972, abandoned. This application Oct. 27, 1989, Ser. No. 428,816
Int. Cl.[5] C07C *51/56*
U.S. Cl. 562—891 **19 Claims**

1. A process for producing carboxylic acid anhydrides by reacting, in the fluid phase, a carboxylic acid ester of the formula $R^2CO_2R^1$, wherein R^1 is alkyl of 1 to 10 carbon atoms and R^2 is hydrogen, alkyl of 1 to 10 carbon atoms, phenyl, alkylphenyl of 7 to 10 carbon atoms or phenylalkyl of 7 to 10 carbon atoms, and carbon monoxide in the presence of catalytic amounts of a catalyst system consisting essentially of a rhodium compound, an iodide promoter and a proton donor, at a temperature of from about 50° C. to 300° C. and an initial pressure of from about 1 atmosphere to about 100 atmospheres, under substantially anhydrous reaction conditions.

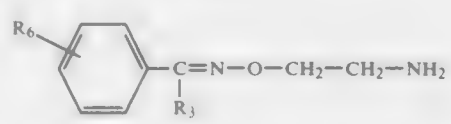
5,008,452

AMINOETHYL OXIMES

Jan V. Dijk, and Jenkin E. Davies, both of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

Continuation of Ser. No. 600,808, Apr. 16, 1984, abandoned, which is a continuation of Ser. No. 171,695, Jul. 24, 1980, abandoned, which is a division of Ser. No. 875,433, Feb. 6, 1978, Pat. No. 4,235,913, which is a division of Ser. No. 639,571, Dec. 10, 1975, Pat. No. 4,192,818, which is a division of Ser. No. 517,519, Oct. 24, 1974, Pat. No. 3,937,841, which is a division of Ser. No. 279,971, Aug. 11, 1972, abandoned, which is a division of Ser. No. 715,571, Mar. 25, 1968, Pat. No. 3,692,835. This application Dec. 20, 1989, Ser. No. 814,019
Claims priority, application Netherlands, Apr. 5, 1967, 6704810; Dec. 14, 1967, 6717001
Int. Cl.[5] C07C *249/04*
U.S. Cl. 564—256 **6 Claims**

1. A compound of the formula:



or salts thereof with pharmaceutically acceptable acids wherein R_3 is selected from the group consisting of alkoxy alkyl and alkylthio alkyl each having up to eight carbon atoms, and R_6 is a hydrogen atom or a halogen atom, wherein when R_6 is a chlorine atom, R_3 cannot be ethoxybutyl, methoxypentyl, or ethoxypentyl, and when R_6 is a bromine atom, R_3 cannot be methoxybutyl.

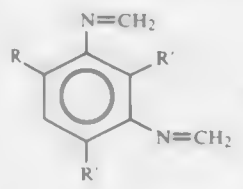
5,008,453

AROMATIC DIIMINE

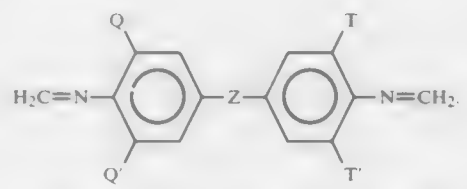
Christopher J. Nalepa; J. Kenneth Presswood, and Gordon G. Knapp; all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Apr. 14, 1989, Ser. No. 338,986
Int. Cl.[5] C07C *251/16*
U.S. Cl. 564—271 **8 Claims**

1. An aromatic diimine having one or two benzene rings and two ar-imino substituents corresponding to the formula



or



wherein R, R′, and R″ are independently selected from alkyl groups containing 1–6 carbons, Q, Q′, T, and T′ are independently selected from alkyl groups containing 1–6 carbons and Z is an alkylidene group containing 1–3 carbons.

5,008,454

PROPANEDIOL DERIVATIVES, THEIR PRODUCTION AND USE

Keizo Inoue, Tokyo; Hiroaki Nomura, Takatsuki, and Akihiro Tasaka, Suita, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

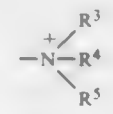
Continuation of Ser. No. 227,531, Aug. 3, 1988, abandoned. This application Mar. 12, 1990, Ser. No. 492,330
Claims priority, application Japan, Aug. 18, 1987, 62-204795
Int. Cl.[5] C07C *215/40*
U.S. Cl. 564—294 **8 Claims**

1. A compound of the formula:

$$R^1—OCH_2CH_2CH_2O—(CH_2)_n—R^2 \quad (I)$$

wherein R^1 stands for the alkyl group having 8 to 22 carbon atoms which is unsubstituted or substituted by C_{3-8} cycloalkyl, phenyl, halogen, cyano, ethynyl, oxo or C_{1-4} alkyl, C_{1-4} alkoxy, hydroxy, nitro or halogen;

R^2 stands for a quaternary ammonium group represented by the formula:



wherein R^3, R^4, and R^5 independently stand for C_{1-5} alkyl,

n denotes an integer of 3 to 10;

wherein said compound represented by the formula (I) is in the form of a pharmaceutically acceptable salt with an anion or an intramolecular salt with an anion in the molecule of said compound.

5,008,455

METHOD FOR THE PRODUCTION OF HYDROXYLAMINE DERIVATIVES

Masashi Nakajima, Takaoka; Nobuo Tomita, Tonami; Kenji Suzaki, Takaoka; Akira Kaneko, Takaoka, and Mikio Sawaki, Takaoka, all of Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 897,208, Aug. 18, 1986, abandoned. This application Dec. 6, 1989, Ser. No. 445,155
Int. Cl.[5] C07C *239/20*
U.S. Cl. 564—300 **12 Claims**

1. A process for the production of hydroxylamine derivatives having the general chemical formula:

$$NH_2OR^1 \quad (I)$$

comprising:

(a) reacting an ester of carboxylic acid having the general chemical formula:

$$R^2COOR^3. \quad (II)$$

wherein R^2 is a lower alkyl, with an hydroxylamine having the formula:

$$HONH_2 \quad (III)$$

to form a salt of hydroxamic acid having the general chemical formula:

$$R^2CONHO\ 1/n\ M. \quad (IV)$$

(b) reacting the resulting salt of hydroxamic acid having the formula (IV) with a compound having the general formula:

$$(R^1O)_2SO_2 \text{ or } R^1X \quad (V)$$

to form an ester of hydroxamic acid having the general formula:

$$R^2CONHOR^1; \quad (VI)$$

(c) reacting the ester of hydroxamic acid (VI) with a mineral acid in an aqueous solution of an alcohol having the formula:

$$R^3OH \quad (VII)$$

to produce hydroxylamine derivatives having the general formula (I) and an ester of carboxylic acid having the general chemical formula (II); and

(d) introducing the ester of carboxylic acid having the general chemical formula (II) into the reaction of step (a), wherein said process is carried out in aqueous solution;

R^1 is selected from the group consisting of an alkyl group, a substituted alkyl group, an alkenyl group, a substituted alkenyl group, an alkynyl group, a substituted alkynyl group, an aryl group, a substituted aryl group, an aralkyl group, a substituted aralkyl group, and salts thereof;

R^2 and R^3 are selected from the group consisting of lower alkyl groups;

M is an alkali metal or an alkali earth metal;

n is the valency of M;, and

X is a nucleophilic reacting group.

5,008,456

DIAMINO COMPOUNDS, DINITRO COMPOUNDS, DIOL COMPOUNDS AND A PROCESS FOR PREPARING THE DIAMINO COMPOUNDS

Shizuo Murata; Minoru Nakayama, both of Ichihara; Kenji Furukawa, Yokosuka, and Ryuji Kobayashi, Yokohama, all of Japan, assignors to Chisso Corporation, Osaka, Japan

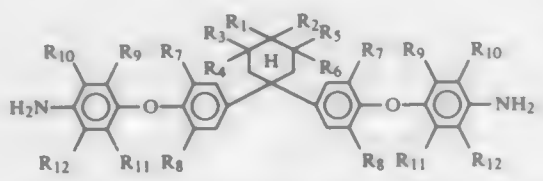
Filed Nov. 8, 1989, Ser. No. 433,116

Claims priority, application Japan, Nov. 9, 1988, 63-282679

Int. Cl.[5] C07C *211/00*

U.S. Cl. 564—322 **2 Claims**

1. A diamino compound represented by the general formula



(I)

wherein R_1–R_6 are a hydrogen atom or an alkyl group having 1 to 22 carbon atoms, respectively, and R_7–R_{12} are a hydrogen atom, an alkyl group having 1 to 3 carbon atoms, F or Cl, respectively.

5,008,457

CHIRAL PHOSPHOLANE TRANSITION METAL CATALYSTS

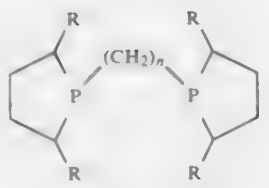
Mark J. Burk, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 17, 1990, Ser. No. 524,737

Int. Cl.[5] C07F *9/02, 9/00*

U.S. Cl. 568—12 **7 Claims**

1. A compound represented by the following formula I comprising:



I

wherein:

R is a lower alkyl, trifluoromethyl, phenyl, substituted phenyl, aralkyl or ring-substituted aralkyl; and

n is an integer having a value from 1 to 12.

5,008,458

PROCESS FOR PURIFYING CRUDE TETRABROMOBISPHENOL SULFONE BY EXTRACTION

Jeffrey E. Telschow, Tarrytown, N.Y., assignor to Akzo nv, Arnhem, Netherlands

Continuation-in-part of Ser. No. 299,495, Jan. 23, 1989. This application Dec. 19, 1989, Ser. No. 452,868

Int. Cl.[5] C07C *315/06*

U.S. Cl. 568—28 **11 Claims**

1. A process for the purification of a crude tetrabromobisphenol S composition which comprises heating the composition in the presence of a quantity of substantially organic, moderately polar solvent insufficient to substantially dissolve the tetrabromobisphenol S, which solvent removes impurities from the crude composition, followed by removal of the tetrabromobisphenol S from the solvent.

5,008,459

SUBSTITUTED PHENOLS AS STABILIZERS

Hans R. Meier; Samuel Evans, and Paul Dubs, all of Marly, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

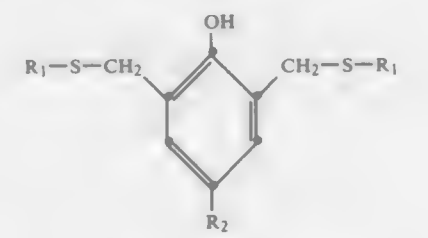
Filed Dec. 22, 1987, Ser. No. 136,686

Claims priority, application Switzerland, Dec. 24, 1986, 5235/86

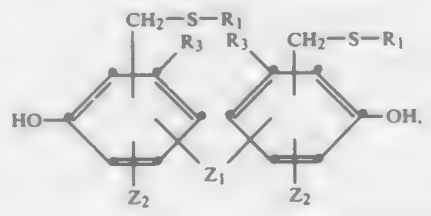
Int. Cl.[5] C07C *321/00, 323/00*

U.S. Cl. 568—46 **10 Claims**

1. A composition comprising an elastomer and at least one compound of the formulae I or/and II



(I)



(II)

in which the radicals R_1 are identical or different and independently of one another are C_1–C_{20}-alkyl which is unsubstituted or substituted by 1 or 2 hydroxyl groups or/and interrupted by —O—, or are C_1–C_4-alkylene-$COOR_2'$, C_1–C_4-alkylene-CO—$NR_2''R_4$, C_5–C_{12}-cycloalkyl, phenyl, 1-naphthyl, 2-naphthyl, C_1–C_4-alkyl-phenyl or phenyl-C_1–C_4-alkyl, R_2, R_2' and R_2'' independently of one another are C_1–C_{20}-alkyl, allyl,

methallyl, propargyl, C_5–C_{12}-cycloalkyl, phenyl or benzyl, R_3 is hydrogen, C_1–C_{20}-alkyl, C_2–C_{18}-alkenyl or halogen, R_4 is hydrogen, C_1–C_{20}-alkyl or C_2–C_{18}-alkenyl, Z_1 is —S— or —$C(Z_3)(Z_4)$— and Z_2 is hydrogen, C_1–C_{20}-alkyl or —CH_2—S—R_1, Z_3 and Z_4 independently of one another being hydrogen or methyl, with the proviso that the phenols of the formula II are free of the —CH_2—S—R_1 functional group in the m-position relative to the OH group.

5,008,460

SYNTHETIC LUBRICANTS

William E. Garwood, Haddonfield; Quang N. Le, Cherry Hill; Joosup Shim, Wenonah, and Stephen S. Wong, Medford, all of N.J., assignors to Mobil Oil Corp., Fairfax, Va.

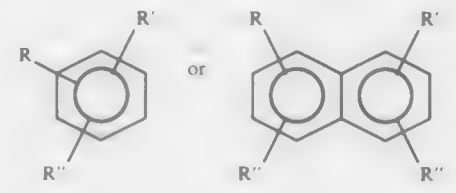
Filed May 30, 1989, Ser. No. 358,108

Int. Cl.[5] C07C *2/04*

U.S. Cl. 585—11 **20 Claims**

1. A method for manufacturing a lube base stock oil, which method comprises:

preparing a mixture consisting of (a) an alkenylaromatic hydrocarbon having the formula



(I) (II)

wherein R is the CH_2=CH— radical or the CH_2=$C(CH_3)$— radical and wherein R′ is hydrogen or the CH_2=CH— or the CH_2=$C(CH_3)$— radical and wherein R″ is individually selected from the group consisting of hydrogen and alkyl radicals having one to four carbon atoms; (b) from one to about 20 moles of an aliphatic olefin having at least about six to about forty carbon atoms per mole of alkenyl-aromatic hydrocarbon; and (c) about 0.5 to about 30 wt % of said mixture of alkenylaromatic hydrocarbon and aliphatic olefin of a ditertiaryalkyl peroxide;

maintaining said mixture at a temperature of 100° to about 200° C. for a time effective to decompose said peroxide whereby reacting said alkenylaromatic hydrocarbon with said aliphatic alpha olefin; and,

recovering an alkylaromatic base stock oil boiling above about 600° F.

5,008,461

PREPARATION OF BENZYL KETONES

Fritz Naeumann, Mannheim, and Eckhard Hickmann, Dannstadt-Schauernheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

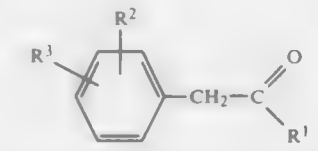
Filed Mar. 7, 1990, Ser. No. 489,690

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1989, 3910220

Int. Cl.[5] C07C *45/52*

U.S. Cl. 568—322 **6 Claims**

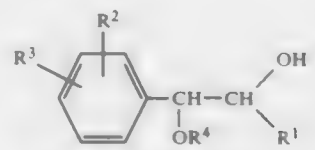
1. A process for the preparation of a benzyl ketone of the formula



(I)

where R^1 is C_1–C_8-alkyl which is unsubstituted or substituted by cycloalkyl or aryl and R^2 and R^3 are each halogen, C_1–C_4-alkyl, hydroxyl, C_1–C_4-alkoxy or C_2–C_4-methylenedioxy, which comprises:

converting a glycol monoether of the formula



(II)

where R^1, R^2 and R^3 have the abovementioned meanings and R^4 is C_1–C_8-alkyl, into said benzyl ketone with elimination of the compound R^4—OH, in the presence of a catalyst selected from the group consisting of alumina, silica, phosphates and zeolites at from 50° to 500° C. and under from 0.01 to 50 bar.

5,008,462

METHOD FOR PREPARING MONOCHLOROACETALDEHYDE TRIMER

Makoto Ishizuka, Kawaguchi, and Takashi Wakasugi, Iwaki both of Japan, assignors to Kureha Chemical Industry Co., Ltd., Tokyo, Japan

Filed Nov. 8, 1989, Ser. No. 433,284

Claims priority, application Japan, Nov. 9, 1988, 63-282980

Int. Cl.[5] C07C *45/61, 45/63*

U.S. Cl. 568—466 **13 Claims**

1. A method of preparing a monochloroacetaldehyde trimer comprising:

(a) dissolving a raw material solution in an organic solvent, wherein said raw material solution contains at least 70% by weight monochloroacetaldehyde;

(b) cooling the solution to a temperature of 0° C. or less; and

(c) reacting the solution with concentrated sulfuric acid in an amount of 10 to 70% by weight with respect to the weight of the raw material solution.

5,008,463

PROCESS FOR THE PREPARATION OF FORMALDEHYDE

Horst-Philipp Beck, Dudweiler/Saar; Gerhard Emig, Erlangen; Günther Wiesgickl, Grosswallstadt; Karlheinz Burg, and Karl-Friedrich Mück, both of Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 21, 1990, Ser. No. 541,629

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1989, 3920811

Int. Cl.[5] C07C *45/00, 47/04*

U.S. Cl. 568—487 **9 Claims**

1. A process for the preparation of formaldehyde by dehydrogenating methanol in the presence of a catalyst at elevated temperature, which comprises carrying out the reaction at a temperature of 650° to 1050° C. with the exclusion of oxygen in the presence of at least one of the compounds aluminum oxide, alkali metal aluminate and alkaline earth metal aluminate as catalyst in a reactor whose inner wall is entirely or partly composed of aluminum oxide.

5,008,464

ANISOLE BROMINATION

Larry Filius, Muskegon, Mich., assignor to East Short Chemical Company, Muskegon, Mich.

Continuation of Ser. No. 413,886, Sep. 27, 1989, abandoned. This application May 29, 1990, Ser. No. 529,682

Int. Cl.[5] C07C *41/00*

U.S. Cl. 568—656 **12 Claims**

1. A method for making 4-bromo-3-alkylanisole comprising introducing 3-alkylanisole into a reactor having a reaction zone, establishing 3-alkylanisole as a substantially solvent-free

vapor in the reaction zone of the reactor, introducing bromine vapor to the reaction zone of the reactor from a separate source of bromine and into the presence of the vaporized 3-alkylanisole to form mixed vapors, maintaining the mixed vapors in a vaporized phase for a time and a temperature sufficient to convert 3-alkylanisole to 4-bromo-3-alkylanisole.

5,008,465

PROTON-CATALYZED REACTIONS CATALYZED BY HYDROGEN ION-EXCHANGED LAYERED CLAYS

James A. Ballantine, West Cross, Wales; Reginald Gregory, Camberley, England; John H. Purnell, Bishopston, Wales; John M. Thomas, Cambridge, and David J. Westlake, Woking, both of England, assignors to The British Petroleum Company p.l.c., London, England

Continuation of Ser. No. 309,984, Feb. 10, 1989, abandoned, which is a continuation of Ser. No. 191,828, May 6, 1988, abandoned, which is a continuation of Ser. No. 35,257, Apr. 2, 1987, abandoned, which is a continuation of Ser. No. 814,206, Dec. 27, 1985, abandoned, which is a division of Ser. No. 765,164, Aug. 12, 1985, Pat. No. 4,590,294, which is a continuation of Ser. No. 417,873, Sep. 14, 1982, abandoned, which is a continuation-in-part of Ser. No. 218,552, Dec. 22, 1980, abandoned. This application May 17, 1990, Ser. No. 525,295

Claims priority, application United Kingdom, Dec. 22, 1979, 7944315; May 17, 1980, 8016384; Jul. 5, 1980, 8022101; Jul. 5, 1980, 8022102; Aug. 9, 1980, 8026028

Int. Cl.[5] C07C *41/06*

U.S. Cl. 568—697 **6 Claims**

1. In a process for preparing an ether by reacting an alcohol with an olefin at a temperature of up to 300° C. in the presence of an effective amount of a catalyst the improvement comprising using as said catalyst a hydrogen ion-exchanged layered clay which has been prepared by

(a) contacting a layered clay containing exchangeable cations with an acid at ion-exchange conditions at or near ambient temperature up to about 35° C. to produce the hydrogen ion-exchanged layered clay and

(b) thereafter washing the hydrogen ion-exchanged layered clay until all extraneous acid and cations are removed.

5,008,466

PROCESS FOR THE ISOMERIZATION OF ALKENES HAVING A TERMINAL DOUBLE BOND TO GIVE ALKENES HAVING AN INTERNAL DOUBLE BOND

Bernhard Schleppinghoff; Hans-Dieter Köhler; Christian Gabel, and Hans-Volker Scheef, all of Dormagen, Fed. Rep. of Germany, assignors to EC Erdolchemie GmbH, Cologne, Fed. Rep. of Germany

Filed Apr. 12, 1989, Ser. No. 336,926

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1988, 3812683

Int. Cl.[5] C07C *41/00, 43/00, 5/00*

U.S. Cl. 568—697 **20 Claims**

1. A process for the isomerization of alkenes having a terminal double bond to give alkenes having an internal double bond by treating alkenes having a terminal double bond or hydrocarbon feedstocks containing alkenes having a terminal double bond over catalysts containing hydrogenation-active metals in the presence of hydrogen, characterized in that the treatment is carried out in the liquid phase at a temperature from 0° to 120° C. on a macroporous or gel acid cation exchanger in the H^+ form which contains 0.001 to 10 g of one or more metals of the VIth and/or VIIth and/or VIIIth sub-group of the periodic system of the elements (Medeleev) in elementary form per liter of dry cation exchanger and which has a degree of crosslinking of 2 to 65% and a specific surface area of 5 to 750 m^2/g of dry exchange resin.

18. The process for carrying out at the same time

(a) the isomerization of alkenes having a terminal double bond to give alkenes having an internal double bond in accordance with claim 1,

(b) the selective hydrogenation of highly unsaturated accompanying compounds in hydrocarbon feed materials, and

(c) the catalysed etherification of isoalkanes in said feed materials,

characterized in that, in the process according to claim 1, said feed materials containing highly unsaturated accompanying compounds and containing said isoalkenes are used and, in addition, hydrogen is employed in a proportion of 100 to 200% of the proportion required by stoichiometry for the selective hydrogenation of the highly unsaturated accompanying compounds, and alkanols having 1 to 4 C atoms are employed in a proportion of 0.7 to 4 moles per mole of the isoalkenes.

5,008,467

PROCESS FOR DIRECT ETHERIFICATION OF A DEHYDROGENATED EFFLUENT

Bipin V. Vora, Darien, and Norman H. Scott, Arlington Heights, both of Ill., assignors to UOP, Des Plaines, Ill.

Filed Dec. 4, 1989, Ser. No. 445,503

Int. Cl.[5] C07L *41/06*

U.S. Cl. 568—697 **18 Claims**

1. A process for producing MTBE comprising:

(a) charging a feed stream comprising isobutane and at least a portion of a first recycle stream to a dehydrogenation zone, said recycle stream comprising isobutane and hydrogen, dehydrogenating said isobutane in said dehydrogenation zone, and recovering a first effluent stream comprising C_4 and lighter hydrocarbons, and hydrogen, said C_4 hydrocarbons of said first effluent stream including isobutene and isobutane;

(b) passing said first effluent to an etherification zone without separation at inlet conditions that will maintain at least a portion of said C_4 hydrocarbons in vapor phase;

(c) contacting isobutene from said first effluent stream with methanol in an etherification zone at etherification conditions and in the presence of an etherification catalyst;

(d) recovering a second effluent stream from said etherification zone having less than 5 mol. % isobutene and comprising MTBE, methanol and C_4 and lighter boiling hydrocarbons and discharging isobutane and hydrogen from said etherification zone;

(e) separating C_4 and lighter boiling hydrocarbons from said second effluent stream in a first separation zone and recovering an MTBE effluent stream essentially free of C_4 hydrocarbons, and a second recycle stream comprising C_4 hydrocarbons and methanol;

(f) combining at least a portion of said second recycle stream with said isobutane and hydrogen of said etherification zone to generate a third recycle stream; and

(g) charging said third recycle stream to a methanol removal zone and removing methanol from at least a portion of said third recycle stream to provide said first recycle stream.

5,008,468

ACID CATALYZED PROCESS

David L. King, Mountain View; Michael D. Cooper, San Jose, and Michael A. Faber, Palo Alto, all of Calif., assignors to Catalytica, Inc., Mountain View, Calif.

Continuation of Ser. No. 852,781, Apr. 16, 1986, Pat. No. 4,868,343. This application Aug. 21, 1989, Ser. No. 384,251

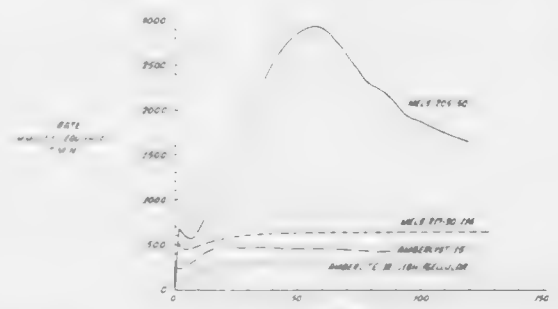
Int. Cl.[5] C07C *41/06*

U.S. Cl. 568—697 **12 Claims**

1. In a process for the conversion of an olefin into an oligomer or polymer of said olefin, in the presence of a solid acid catalyst comprising sulfonic acid groups covalently bonded to a polymeric chain, the improvement comprising increasing the rate of conversion, on an equivalent sulfonic acid basis, by providing, as said polymeric chain a compound represented by the formula:

$$M(O_3ZO_xR)n$$

wherein M is a tetravalent metal ion; Z is a pentavalent atom,



selected from the group consisting of elements of Group V of the Periodic Table of the Elements having an atomic weight greater than 30; x varies from 0 to 1; R is selected from the group consisting of organo radicals and mixtures of hydrogen radicals and organo radicals; and n varies from 1 and 2; provided that n is 1 when R is terminated with a tri- or tetraoxy pentavalent atom.

5,008,469

PROCESS FOR PRODUCING TETRABROMOBISPHENOL A

Hisao Eguchi; Masashige Kubo; Koji Kunimoto, all of Tokuyama; Sadami Shimizu, Tokyo; Masakatsu Sato, Matsudo, and Hanzo Tamabayashi, Tokuyama, all of Japan, assignors to Tosoh Corporation, Shinnanyo, Japan

Filed Jan. 25, 1990, Ser. No. 470,212

Claims priority, application Japan, Jan. 26, 1989, 1-15066; Jan. 27, 1989, 1-16296; Dec. 20, 1989, 1-328168; Jan. 11, 1990, 2-2576

Int. Cl.[5] C07C *39/367, 37/18*

U.S. Cl. 568—722 **9 Claims**

1. A process for producing tetrabromobisphenol A, which comprises brominating bisphenol A with bromine in methanol, at a temperature of between 0–50° C., wherein the substrate concentration of bisphenol A to methanol is at most 20 wt/vol%.

5,008,470

PROCESS FOR PREPARING A BISPHENOL

Joseph B. Powell, and Christopher W. Uzelmeier, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 30, 1989, Ser. No. 444,580

Int. Cl.[5] C07C *37/20, 39/16*

U.S. Cl. 568—727 **13 Claims**

1. A process for the production of a bisphenol comprising the steps of:

(a) reacting a carbonyl compound selected from the group consisting of ketones and a aldehydes with a stoichiometric excess of a phenolic compound in the presence of an effective amount of an acid ion exchange resin catalyst to produce a reaction product mixture comprising a bisphenol;

(b) contacting the reaction product mixture containing the bisphenol with an inorganic oxide adsorbent selected from the group consisting of alumina, zirconium oxide, titanium oxide and tin oxide under conditions effective to reduce the acidity of the reaction product mixture; and

(c) recovering bisphenol from the thus treated reaction product mixture.

5,008,471

PROCESS FOR THE PREPARATION OF ROOPEROL

George L. Wenteler, Pretoria; Karl H. Pegel, Durban; Siegfried Drews, Pietermaritzburg, and Hans Kündig, Witpoort/Midrand, all of South Africa, assignors to Rooperol (N.A.), Kralendijk, Netherlands

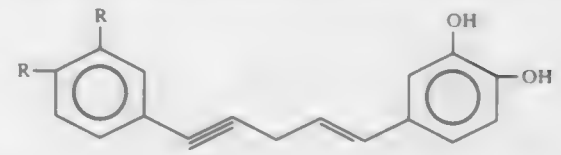
Continuation-in-part of Ser. No. 875,398, Jun. 17, 1986, abandoned. This application Jun. 13, 1989, Ser. No. 365,751

Claims priority, application South Africa, Jun. 19, 1985, 84/4640

Int. Cl.[5] C07C *39/215, 37/11*

U.S. Cl. 568—729 **1 Claim**

1. As a process for preparing a compound of the formula



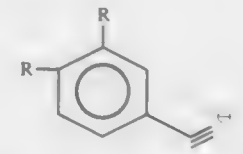
in which both Rs are H or —OH comprising the steps:

a. of treating the ethyl ester of caffeic acid with a trialkylsilyl chloride at ambient conditions in equimolar proportions in the presence of a base;

b. of reduction of the resulting product with an aluminium hydride reagent at sub-zero temperature and equimolar proportions to yield the corresponding allylic alcohol;

c. of halogenation of this allylic alcohol with thionyl chloride or a phosphorus trihalide to yield the corresponding allyl halide;

d. of coupling this allyl halide with the silyl ether of compound of the formula



in refluxing ether solutions; and

e. of hydrolysis of this coupled product with tetra alkyl ammonium flouride at ambient conditions and of equimolar proportions.

5,008,472

PREPARATION OF 4,4″-DIHYDROXYTERPHENYL

Ulrich Eichenauer, Frankfurt am Main, Fed. Rep. of Germany, assignor to Basf Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 31, 1989, Ser. No. 400,932

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1988, 3831712

Int. Cl.[5] C07C *37/04, 39/12*

U.S. Cl. 568—730 **5 Claims**

1. A process for preparing 4,4″-dihydroxyterphenyl, which comprises:

(a) sulfonating terphenyl with a sulfonating agent selected from the group consisting of sulfuric acid, sulfur trioxide, a mixture thereof, or chlorosulfonic acid, and

(b) treating the resulting terphenyl-4,4″-disulfonic acid with an alkali metal hydroxide.

5,008,473

PROCESS FOR PURIFYING PROPANEDIOL-1,3

Norbert Breitkopf, Oberhausen; Georg Dämbkes, Dinslaken, and Hanswilhelm Bach, Duisburg, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 17, 1987, Ser. No. 98,047

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1986, 3632397

Int. Cl.[5] C07C *29/86, 31/20*

U.S. Cl. 568—868 5 Claims

1. A process for the purification of turbid propanediol-1,3, produced by hydration of acrolein with water followed by hydrogenation, said process comprising extracting said diol with cyclohexane.

5,008,474

PROCESS FOR THE MANUFACTURE OF 1-CHLORO-1,1-DIFLUOROETHANE

René Wairaevens; James Franklin, both of Brussels, and Jean-Marie Yernaux, Rixensart, all of Belgium, assignors to Solvay & Cie, Brussels, Belgium

Continuation of Ser. No. 672,177, Nov. 15, 1984, abandoned, which is a continuation of Ser. No. 572,132, Jan. 19, 1984, abandoned, which is a continuation of Ser. No. 407,078, Aug. 11, 1982, abandoned, which is a continuation of Ser. No. 268,702, Jun. 1, 1981, abandoned, which is a continuation of Ser. No. 824,320, Aug. 12, 1977, abandoned. This application Mar. 9, 1990, Ser. No. 491,065

Claims priority, application Luxembourg, Sep. 22, 1976, 75857

Int. Cl.[5] C07C *17/20, 19/02*

U.S. Cl. 570—168 27 Claims



1. Continuous process for the manufacture of 1-chloro-1,1-difluoroethane by reacting hydrogen fluoride with vinylidene chloride, wherein the reaction is carried out in a liquid medium in the presence of a hydrofluorination catalyst which is a tin compound, comprising maintaining in the liquid medium a content of at least 40 mol % of 1,1-dichloro-1-fluoroethane, no more than 30 mol % of vinylidene chloride and no more than 30 mol % of 1-chloro-1,1-difluoroethane, all relative to the total number of moles of organic compounds participating in the reaction and present in the liquid medium, while feeding into the liquid medium hydrogen fluoride and vinylidene chloride in a hydrogen fluoride/vinylidene chloride molar ratio of between 1.5 and 3.7 by continuously withdrawing 1-chloro-1,1-difluoroethane from the liquid medium.

5,008,475

GAS-PHASE FLUORINATION PROCESS

Leo E. Manzer, and V. N. Mallikarjuna Rao, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 197,222, May 23, 1988, abandoned, which is a continuation-in-part of Ser. No. 70,826, Jul. 7, 1987, Pat. No. 4,766,260. This application Jan. 16, 1990, Ser. No. 465,402

The portion of the term of this patent subsequent to Aug. 23, 2005, has been disclaimed.

Int. Cl.[5] C07C *17/20, 19/02*

U.S. Cl. 570—168 9 Claims

1. A process for the preparation of 1,1,1-trifluorodichloroethane and/or 1,1,1,2-tetrafluorochloroethane by fluorination of a tetrahaloethylene, $C_2Cl_{4-x}F_x$, wherein $x=0$ to 3, comprising contacting in the gaseous phase at about 275° C. to about 450° C. said tetrahaloethylene and HF with a catalyst comprising at least one metal in an oxidation state greater than zero, said metal selected from the group consisting of chromium, manganese, rhodium, nickel, cobalt, said metal in combination with a high fluorine content aluminum-containing compound consisting essentially of aluminum and fluorine in such proportions that the fluorine content corresponds to an AlF_3 content of at least 90% by weight of the catalyst exclusive of said metal, said AlF_3 content being obtained by pretreatment of the unfluorinated catalyst with a vaporizable fluorine-containing compound.

5,008,476

PROCESS FOR THE PREPARATION OF 1,1,1,2-TETRAFLUOROETHANE

Leo E. Manzer, and V. N. Mallikarjuna Rao, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 262,298, Oct. 25, 1988, abandoned. This application Dec. 18, 1989, Ser. No. 449,407

Int. Cl.[5] C07C *17/10, 19/08, 17/20*

U.S. Cl. 570—176 20 Claims

1. In a process for preparing 1,1,1,2-tetrafluoroethane which includes the steps of

(a) reacting at least one two-carbon compound selected from the group consisting of compounds having the formula $C_2Cl_{4-x}Z_x$ and compounds having the formula $C_2Cl_{6-y}Z_y$ wherein $x=0$ to 4, $y=0$ to 6, and Z is at least one of hydrogen or fluorine and wherein the total number of fluorine atoms in the compound is ≤ 3, in the gaseous phase with chlorine in at least the stoichiometric amount needed to convert each of said two carbon compounds to $C_2Cl_2F_4$, and with HF, to produce a mixture comprising 1,1,1,2-tetrafluorodichloroethane, 1,1,2,2-tetrafluorodichloroethane and pentafluorochloroethane; and

(b) contacting the mixture produced in (a) in the gaseous phase with H_2 at a temperature of about 100° C. to about 350° C. in the presence of hydrogenolysis catalyst to produce a gaseous mixture comprising 1,1,1,2-tetrafluorochloroethane, unreacted 1,1,2,2-tetrafluorodichloroethane, and 1,1,1,2-tetrafluorodichloroethane, 1,1,1,2-tetrafluorochloroethane, 1,1,1-trifluoroethane, and unreacted pentafluorochloroethane, an improvement comprising:

(i) in step (a) reacting said at least one two-carbon compound with HF in excess of the stoichiometric amount needed to fluorinate each of said two-carbon compounds to $C_2Cl_2F_4$ for a time sufficient to produce a product comprising 1,1,1,2-tetrafluorodichloroethane and 1,1,2,2-tetrafluorodichloroethane, said reaction being conducted at a temperature of from about 300° C. to about 450° C. and in the presence of at least one catalyst selected from fluorinated alumina and AlF_3 which are suitable for both the isomerization of 1,1,2,2-tetrafluorodichloroethane to 1,1,1,2-tetrafluorodichloroethane and the formation of pentafluorochloroethane by disproportionation of $C_2Cl_2F_4$; and

(ii) in step (a) utilizing as said excess HF an effective amount of HF, at least about 1 mole in excess of said stoichiometric amount needed to fluorinate the two-carbon compounds to $C_2Cl_2F_4$, to inhibit said disproportionation without suppressing said isomerization.

5,008,477

DECABROMODIPHENYL ALKANE PROCESS

Saadat Hussain, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Mar. 14, 1990, Ser. No. 492,756

Int. Cl.[5] C07C *17/12, 25/18*

U.S. Cl. 570—208 18 Claims

1 A process for preparing a product predominate in decabromodiphenyl alkane, having an alkyl group bridging the aromatic rings, and having an average bromine number of at least 9.0, the process comprising: forming a stirrable reaction mass by feeding molten diphenylalkane to a reaction vessel to which a bromination catalyst and bromine had been previously charged, the molten diphenylalkane being maintained under a non-oxidizing atmosphere prior to the feeding, and the bromine (i) containing about 10 ppm or less impurities, and (ii) being charged in an amount which provides from about 18 to about 30 moles of bromine per mole of diphenylalkane fed; maintaining the reaction mass at a temperature which is less than or equal to about 15° C. during the feeding; subsequent to the feeding, obtaining a reaction mass temperature within the range of from about 50° C. to about 60° C.; and recovering from the reaction mass the decabromodiphenyl alkane predominant product, wherein the alkyl group contains 1 to 10 carbon atoms.

5,008,478

AGGREGATION PHEROMONES OF THE NITIDULID BEETLES *CARPOPHILUS HEMIPTERUS, CARPOPHILUS LUGUBRIS, AND CARPOPHILUS FREEMANI*

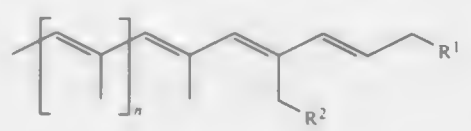
Robert J. Bartelt, East Peoria, and Patrick F. Dowd, Peoria, both of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 275,863, Nov. 25, 1988. This application Jul. 31, 1989, Ser. No. 387,555

Int. Cl.[5] C07C *9/00*

U.S. Cl. 585—16 5 Claims

1. A substantially pure hydrocarbon or a substantially pure mixtures of hydrocarbons having the structure:



wherein R^1 and R^2 are independently selected from the group consisting of hydrogen and lower alkyl, and n is zero or one.

5,008,479

PROCESS FOR PRODUCTION OF 2,6-DIMETHYLNAPHTHALENE

Takafumi Abe; Seiji Uchiyama; Takahiro Ojima, and Koichi Kida, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jul. 5, 1989, Ser. No. 375,860

Claims priority, application Japan, Sep. 27, 1988, 63-239762

Int. Cl.[5] C07C *1/00, 11/253, 1/20*

U.S. Cl. 585—320 36 Claims

1. A process for producing 2,6-dimethylnaphthalene which comprises the following three steps: (1) reacting toluene, n-butene and carbon monoxide to produce p-tolyl sec-butyl ketone; (2) hydrogenating the carbonyl group of said p-tolyl sec-butyl ketone; and (3) dehydrogenating and cyclizing said hydrogenated p-tolyl sec-butyl ketone to produce said 2,6-dimethylnaphthalene.

5,008,480

PROCESS FOR CONVERTING TOLUENE AND BUTADIENE TO STYRENE AND 1-PENTENE

Lynn H. Slaugh, Cypress, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Feb. 26, 1990, Ser. No. 484,299

Int. Cl.[5] C07C *1/00, 4/24, 5/23*

U.S. Cl. 585—323 7 Claims

1. A process for converting toluene and butadiene to styrene and 1-pentene, which process comprises:

(a) reacting toluene and 1,3-butadiene in the presence of an alkali metal catalyst,

(b) contacting the reaction product of step (a) with a double bond isomerization catalyst at a temperature sufficient to effect double bond isomerization,

(c) reacting the isomerized product of step (b) with ethylene in the presence of a disproportionation catalyst, and

(d) separating from the resulting product of step (c) product styrene and 1-pentene.

5,008,481

AROMATIZATION PROCESS UTILIZING A PILLARED LAYERED SILICATE PLUS A BASE METAL OR NOBLE METAL

Ivy D. Johnson, Medford; Pochen Chu, Voorhees, both of N.J., and Charles T. Kresge, West Chester, Pa., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 29, 1989, Ser. No. 459,212

Int. Cl.[5] C07C *2/52, 5/333*

U.S. Cl. 585—418 11 Claims

1. A process for producing aromatic hydrocarbons which comprises contacting a feed containing non-aromatic C_6 to C_{12} hydrocarbons with a catalyst at a pressure of about atmospheric to 1,000 psig, a weight hourly space velocity of about 0.05 to 300 and a temperature of about 204° to 675° C., wherein said catalyst comprises a layered silicate and pillars of an oxide of at least one element selected from Groups IB, IIB, IIIA, IIIB, IVA, IVB, VA, VB, VIA, VIIA and VIIIA of the Periodic Table of Elements separating the layers ot the silicate, said catalyst comprising at least one element selected from the group consisting of Cr, Mo, W, Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, and Pt, said layered silicate lacking sheets composed of atoms which are octahedrally coordinated with oxygen atoms.

5,008,482

DIRECT PRODUCTION OF STYRENES BY REACTION OF AROMATICS WITH ALDEHYDES

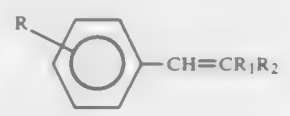
Werner O. Haag, Lawrenceville, N.J., and Rudolph M. Lago, Yardley, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Dec. 26, 1989, Ser. No. 456,704

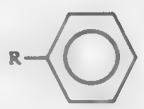
Int. Cl.[5] C07C *1/20, 1/32*

U.S. Cl. 585—437 6 Claims

1. A process for preparing a styrenic compound of the formula



where R, R_1 and R_2 are the same or different and are hydrogen, alkyl or cycloalkyl, said process comprising contacting (i) an aromatic compound of the formula



(ii) an aldehyde of the formula

$$CHO—CHR_1R_2$$

with an intermediate pore size molecular sieve catalyst under conditions sufficient to convert said aromatic compound and said aldehyde into said styrenic compound.

ELECTRICAL

5,008,483

HOLDERS WITH BUSBARS FOR A BUSBAR SYSTEM

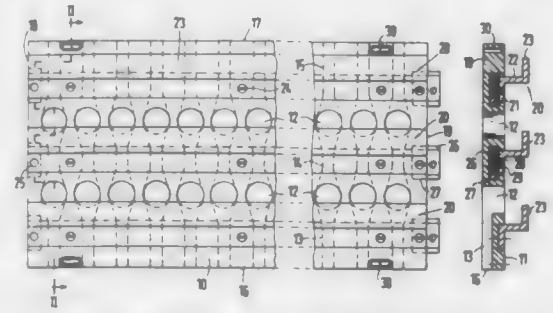
Hans Wagener, Rittershäuser Str. 14, 6344 Dietzhölztal-Rittershausen, Fed. Rep. of Germany

Filed Apr. 4, 1989, Ser. No. 333,127

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1988, 3811455

Int. Cl.[5] H02G *5/00*

U.S. Cl. 174—68.2 **13 Claims**



1. A holder with busbars for a busbar system, comprising: an insulating support with receptacles in its top, a number of busbar sections fixed in position in said receptacles at regular intervals parallel to one another,

the insulating support being designed as a carrier plate that extends over the lengths of the busbar sections fixed in position in the receptacles;

a row of openings located in the carrier plate at least between adjacent busbar sections, said openings being aligned perpendicularly to the busbar sections one above the other; and

recesses located in the bottom of the carrier plate which serve as cable ducts, said recesses connecting the openings aligned one above the other perpendicularly to the busbar sections to each other and to the longitudinal sides of the carrier plate running parallel to the busbar sections.

5,008,484

ASSEMBLY KIT FOR A BUSBAR SYSTEM

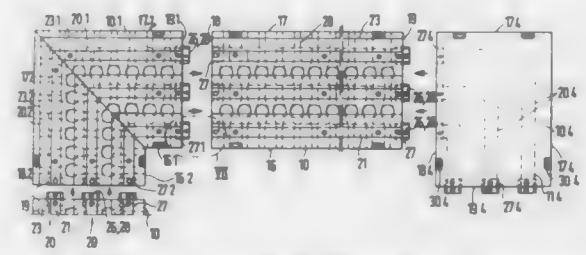
Hans Wagener, Rittershäuser Str. 14, 6344 Dietzhölztal-Rittershausen, Fed. Rep. of Germany

Filed Apr. 4, 1989, Ser. No. 333,119

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1988, 3811459

Int. Cl.[5] H02G *5/00*

U.S. Cl. 174—68.2 **13 Claims**



1. An assembly kit for a busbar system made of holders and of busbar sections which can be fixed in position in receptacles of the holders, which receptacles are parallel to one another and are spaced from one another, comprising:

a. a first type of holder composed of a rectangular carrier plate having long sides and narrow sides with its longitudinal dimension aligned in the longitudinal direction of busbar sections which are fixed in position in reptacles its top and which receptacles terminate flush with its narrow sides,

b. a second type of holder consisting of a right-angle carrier plate in which right-angled busbar sections are fixed in position in receptacles in the top thereof that terminate flush with the end faces thereof, said end faces being located perpendicularly to the busbar sections,

c. connecting elements with which busbar ends of busbar sections can be connected to one another so as to connect electrically in the area of the joints of the carrier plates constituting holders of the first type and/or of the second type connected together in a row,

d. wherein the receptacles in the carrier plates constituting the holders of the first type and of the second type are arranged at uniform intervals with respect to one another and are identical in cross section and wherein the busbar sections have a Z-shaped cross section, a cross arm being inserted into each receptacle as a mounting arm and connecting to the respective carrier plate, one spacer arm holding the corresponding other cross arm as a clamping arm at a distance from and parallel to the top of the respective carrier plate, and wherein the cross arms of Z-shaped busbar sections acting as the clamping arms on the carrier plates are all aligned to the same longitudinal side of the carrier plate.

5,008,485

CONDUCTIVE SEAL

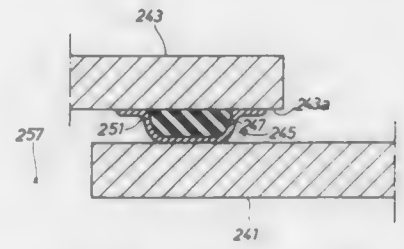
Hiroji Kitagawa, Nagoya, Japan, assignor to Kitagawa Industries Co., Ltd., Aichi, Japan

Filed Oct. 10, 1989, Ser. No. 419,590

Claims priority, application Japan, Oct. 28, 1988, 63-273873

Int. Cl.[5] H05K *9/00*

U.S. Cl. 174—35 GC **18 Claims**



1. A conductive seal for filling a gap between first and second surfaces comprising:

sealing means provided on at least one of the surfaces for filling the gap between the first and second surfaces, said sealing means comprising a material selected from a first group consisting of natural and synthetic resins;

a conductive layer formed on a surface of the sealing means, where the conductive layer is electrically connected to both surfaces, said conductive layer compatible with said sealing means and comprising a material selected from a second group comprising resinous material selected from said first group; and

a conductive agent mixed into said material of said conductive layer, said conductive agent comprising a material selected from a group consisting of metallic powder, carbon black and carbon fiber.

5,008,486

ELECTROMAGNETIC WAVE SHIELDING PANELS AND WALL STRUCTURE

Takashige Terakawa, and Wataru Kusakabe, both of Yokohama, Japan, assignors to Tokyo Keiki Co., Ltd., Tokyo, Japan

Filed Dec. 21, 1989, Ser. No. 454,482

Claims priority, application Japan, Dec. 21, 1988, 63-322758

Int. Cl.[5] H05K *9/00*

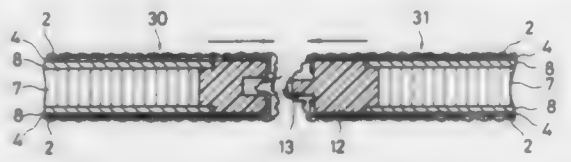
U.S. Cl. 174—35 MS **14 Claims**

13. An electromagnetic wave shielding wall structure, comprising:

at least two electromagnetic wave shielding panels each having an underlying electrically conductive foil and an overlying electrically conductive net on each of two

opposite surfaces of a plate core member formed of an electrically nonconducting substance, frame members of an electrically nonconducting substance attached to side surfaces of said core member, each frame member having a longitudinal slot formed on at least one side surface, and an electrically conductive net disposed on said electrically conductive foil to extend beyond the edges of said panel member; and

at least one wedge member fitted in the slots of the opposite



side surfaces of said electromagnetic wave shielding panels;

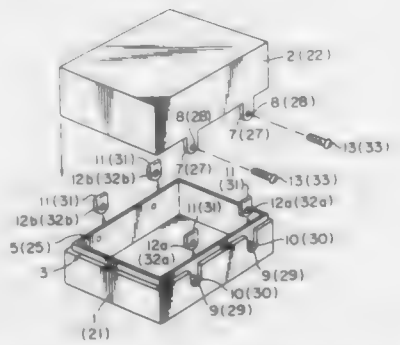
the net fringe portions of said electromagnetic wave shielding panels being laid in said slots so that the net fringe portions extending beyond the edge of one surface of said electromagnetic wave shielding panels separated and electrically isolated from those extending beyond the edge of the other surfaces of said electromagnetic wave shielding panels, the net fringe portions being pinched by said wedge member.

5,008,487

CASING STRUCTURE

Takashi Shimmyo, Musashino, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 3, 1989, Ser. No. 388,856
Claims priority, application Japan, Aug. 9, 1988, 63-105186
Int. Cl.[5] H05K *9/00*
U.S. Cl. 174—35 R **6 Claims**



1. A structure of a casing particularly for accommodating an electronic instrument or equipment comprising:

a body provided with a side wall having an inner surface on which a conductive coat is applied and an opening defined by the side wall, said side wall being provided with an inward-projected edge for defining the opening and an outward recess;

a lid provided with a side wall having an inner surface on which a conductive coat is applied and an opening defined by the side wall, said side wall being provided with an inward-recessed edge for defining the opening of the lid and an outward projected portion, said recessed edge of the lid being mated with said projected edge of the body when they are connected;

a conductive means having one end portion disposed between an outer surface of said side wall of the projected edge of the body and a conductive coat applied on an inner surface of the projected portion of the lid and the other end portion pressed to said coat on the inner surface of the side wall of the body; and

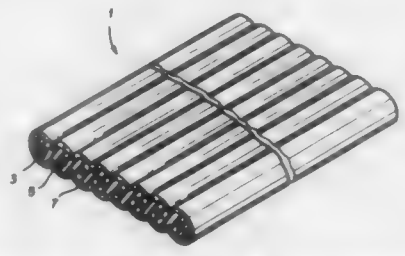
wherein said projected portion of said lid is provided with a projection extending downwardly and having a hole formed at substantially the central portion thereof, said recess of said body being provided with a cutout and a hole is formed in the side wall of the body in said recess, and both the end portions of said conductive means are provided with holes, said holes of the projection, the body wall and the conductive means being aligned when said body, said lid and said conductive means are assembled.

5,008,488

STRIP CABLE

Asaharu Nakagawa, Yokkaichi, Japan, assignor to Kitagawa Industries Co., Ltd., Aichi, Japan

Filed Dec. 1, 1989, Ser. No. 444,695
Claims priority, application Japan, Dec. 16, 1988, 63-319163
Int. Cl.[5] H01B *7/34*
U.S. Cl. 174—36 **8 Claims**



1. A strip cable formed by a process comprising the steps of:

providing a plurality of signal conductors;

forming a coating of insulating material around the signal conductors;

developing carbon fibers through a vapor-phase process by using particles of a high-melting point metal or compounds thereof which have a diameter of 0.02–0.03 microns to reduce electrical resistivity of said carbon fibers; and

forming a conductive layer on the insulating material, wherein the conductive layer is comprised of said carbon fibers dispersed throughout a flexible non-conductive material.

5,008,489

ELECTRICAL CABLES AND SERPENTINE PATTERN SHIELDING TAPE THEREFOR

Herman D. Weeks, Jr., Ramsey, and Robert Cella, Fairlawn, both of N.J., assignors to Facile Holdings, Inc., Paterson, N.J.

Filed Oct. 25, 1989, Ser. No. 426,194
Int. Cl.[5] H01B *7/34;* **B32B** *15/04*
U.S. Cl. 174—36 **20 Claims**

1. A metal shielding tape for an electrical cable, said tape having a top and a bottom surface and having an adhesive coating on the top surface thereof in a pattern of parallel serpentine strips extending longitudinally thereon.

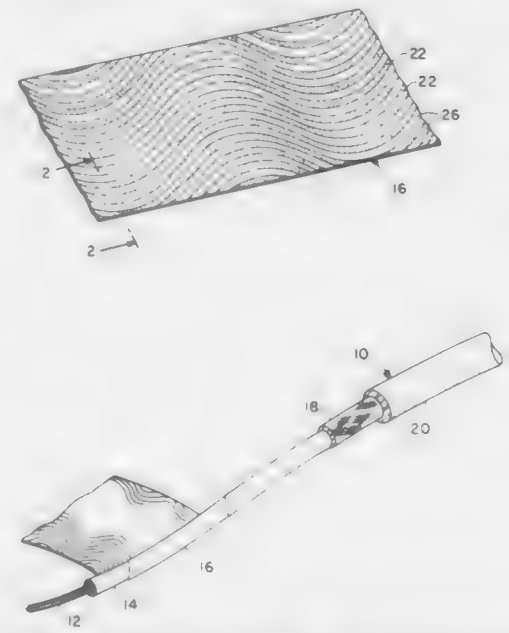
10. An electronic cable comprising:

an elongated conducting member;

an insulator surrounding the conducting member;

and a metal shielding tape having a top and a bottom side and surrounding the insulator, said metal shielding tape

having an adhesive coating on the top side thereof in a pattern of parallel serpentine strips extending longitudi-



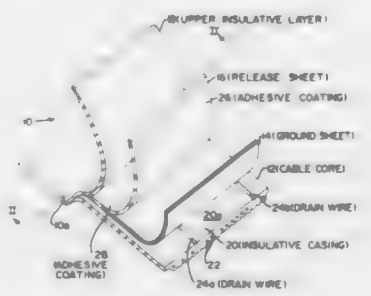
nally thereon, whereby said cable is effectively protected against electrical interference and moisture penetration.

5,008,490

STRIPPABLE ELECTRICALLY SHIELDED CABLE

Richard F. Strauss, Morrisville, Pa.; Richard A. Fiacco, Bayville, N.J.; Hosrow T. Bordbar, Stanton, Calif.; Caesar C. Chen, Fountain Valley, Calif., and David Quiroz, Santa Ana, Calif., assignors to Thomas & Betts Corporation, Bridgewater, N.J.

Filed Jan. 19, 1990, Ser. No. 467,698
Int. Cl.[5] H01B *7/08*
U.S. Cl. 174—36 **9 Claims**



1. A strippable, shielded electrical cable comprising:

a plurality of elongate, spaced electrical conductors; a casing of electrically insulative material enclosing said conductors, at least one of said conductors having an exposed portion free of said casing material;

an electrically conductive shield of permeable material overlying said casing and in electrical contact with said exposed conductor portion;

a layer of electrical insulation overlying said conductive shield; and

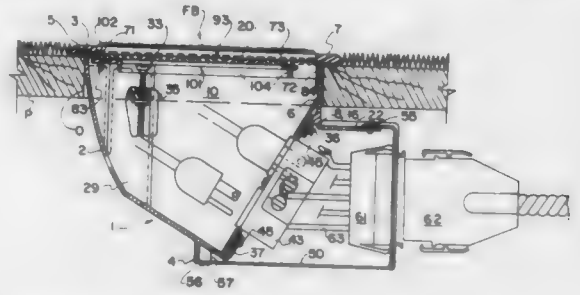
a sheet of electrical insulation disposed between said conductive shield and said layer, a first adhesive on one surface of said sheet facing said shield, said first adhesive being removably adhered to said shield, said first adhesive and said casing being removably adhered to each other through said permeable material, a second adhesive on an opposing surface of said sheet facing said layer, said second adhesive being removably adhered to said layer.

5,008,491

FLOOR BOX FOR ACCESS FLOORS

Timothy S. Bowman, Parkersburg, W. Va., assignor to Butler Manufacturing Company, Kansas City, Mo.

Continuation-in-part of Ser. No. 95,437, Aug. 27, 1987, abandoned. This application Mar. 13, 1989, Ser. No. 322,104
Int. Cl.[5] H02G *3/18*
U.S. Cl. 174—48 **28 Claims**



1. In an access floor box:

a back wall having a top edge and a bottom edge;

a front wall having a top edge and a bottom edge

the front wall arcuately extending from its top edge in a direction toward its bottom edge;

a pair of side walls each having an upper section having a top edge and a lower section, the upper sections being connected to said front and back walls and each lower section extending outwardly from the bottom edge of the back wall;

flange means adjacent the top edges of the front, back, and side walls and respectively extending outwardly of the walls;

a back foot connected to the bottom edge of the back wall and extending outwardly therefrom and connected to the respective top edges of the lower sections of the side walls which extend outwardly from the back wall;

said front, back, and side walls forming a generally rectangular-shaped chamber with the respective top edges forming a rectangular-shaped opening to the chamber; and

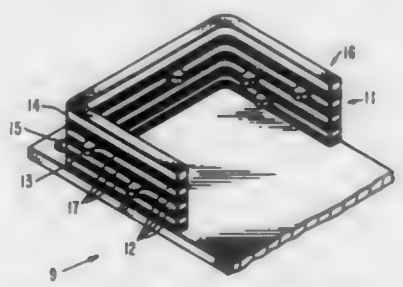
barrier means extending parallel said side walls and connected to said back foot and to the bottom edge of said front wall, the barrier means forming a plurality of channels for the passage of cable.

5,008,492

HIGH CURRENT FEEDTHROUGH PACKAGE

Raymond L. Brown, Fountain Valley, and Clifford L. Shock, Jr., Santa Ana, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 20, 1989, Ser. No. 424,414
Int. Cl.[5] H01L *23/02*
U.S. Cl. 174—52.4 **20 Claims**



1. A package having high current feedthroughs comprising:

a base comprising a low thermal coefficient of expansion material; and

a plurality of alternating thermally conductive and electrically conductive rings stacked on the base to define an enclosure, the electrically conductive rings having a plurality of internal and external tabs defining high-current feedthroughs, the thermally conductive rings providing electrical isolation between the feedthroughs.

5,008,493

HOLDER WITH BUSBARS FOR A BUSBAR SYSTEM

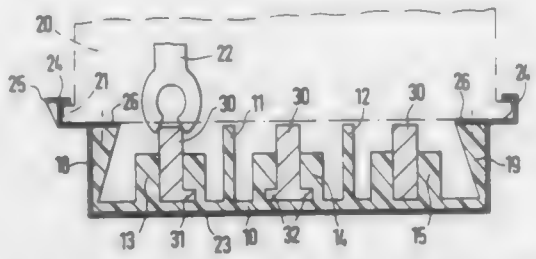
Hans Wagener, Rittershäuser Str. 14, 6344 Dietzhölztal-Rittershausen, Fed. Rep. of Germany

Filed Apr. 4, 1989, Ser. No. 333,296

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1988, 3811456

Int. Cl.[5] H02G *5/04;* **H02B** *1/04, 1/20;* **H01R** *25/14*

U.S. Cl. 174—68.2 **3 Claims**



1. A holder having currentcarrying busbars for a busbar system for connecting electrical equipment, said holder comprising a rectangularly-shaped insulating support having an upper side and parallel, equally spaced sockets in the upper side, current-carrying busbar sections fixed in said sockets, the longitudinal sides of the insulating support being aligned along the longitudinal direction of the busbar sections, the current-carrying busbar sections each having a connection portion extending perpendicularly from the top of the insulating support for plug contact with electrical equipment, the longitudinally-extending sides of the insulating support having end bridges which extend from the top of the insulating support perpendicularly and terminate in end faces which lie in the same plane as the ends of said connection portions of the current-carrying busbar sections, said insulating support further having separating partitions between the busbar sections, and the insulating support being set into a channel-shaped receptacle made of elastic material, the side walls of which enclose the end bridges at the outside, the receptacle having front faces which overlie the end faces of the end bridges and slot-shaped latching receptacles on the side walls which open toward each other for mechanical attachment of electrical equipment.

5,008,494

BUSBAR SYSTEM WITH HOLDERS AND BUSBAR SECTIONS

Hans Wagener, Rittershäuser Str. 14, 6344 Dietzhölztal-Rittershausen, Fed. Rep. of Germany

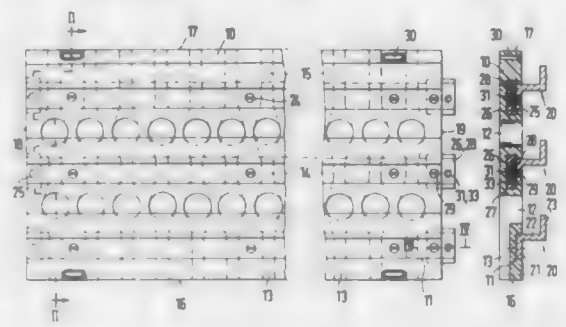
Filed Apr. 3, 1989, Ser. No. 332,708

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1988, 3811457

Int. Cl.[5] H02G *5/00*

U.S. Cl. 174—68.2 **13 Claims**

1. A busbar system with holders, the tops of said holders having a number of receptacles, busbar sections spaced at intervals and running parallel and fixed in position in said receptacles, said holders being rectangular carrier plates having narrow sides and longitudinal sides, said longitudinal sides being aligned in parallel with the busbar sections, the busbar sections abutting the narrow sides of the carrier plates, the narrow sides of the carrier plates at the facing end sections of the receptacles accommodating one-half of connecting elements aligned in the longitudinal direction of the busbar sections, said connecting elements being connected so as to conduct electrically and so that the holders are joined together in a row with the ends of the busbar sections abutting, wherein



the connecting elements are each composed of an insulating support and a contact plate, and there are threaded holes in the insulating support and aligned through-holes in the contact plate.

5,008,495

ELECTRIC CABLE WITH BURN RESISTANT CHARACTERISTICS AND METHOD OF MANUFACTURE

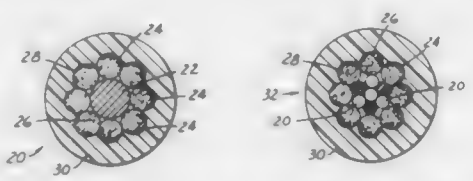
Donald Mudgett, Coopersville, Mich., assignor to Lestox, Inc., Birmingham, Mich.

Continuation-in-part of Ser. No. 330,008, Mar. 29, 1989, Pat. No. 4,906,308, and a continuation-in-part of Ser. No. 329,927, Mar. 29, 1989, Pat. No. 4,910,361, and a continuation-in-part of Ser. No. 365,748, Jun. 13, 1989, Pat. No. 4,966,638. This application Feb. 12, 1990, Ser. No. 478,600

The portion of the term of this patent subsequent to Mar. 6, 2007, has been disclaimed.

Int. Cl.[5] H01B *7/34*

U.S. Cl. 174—121 R **9 Claims**



1. A method of insulating an energy transmission member comprising the steps of:

creating a insulated transmission member by;

wrapping a glass fiber yarn around an energy transmission member;

impregnating the yarn with a metered amount of a first mixture; and

preventing the first mixture from reaching the inner periphery of the yarn and contacting the energy transmission member.

6. An insulated transmission member comprising:

at least one energy transmission member;

glass fiber yarn wrapped around said energy transmission member, said glass fiber yarn having inner periphery that contacts said transmission member;

said glass fiber yarn being impregnated by a first silicone mixture, said first silicone mixture being impregnated into the outer periphery of said glass fiber yarn, said inner periphery of said glass fiber yarn being unimpregnated such that said first silicone mixture does not contact said transmission member; and

a second silicone mixture coating disposed around the outer periphery of said glass fiber yarn.

5,008,496

THREE-DIMENSIONAL PRINTED CIRCUIT BOARD

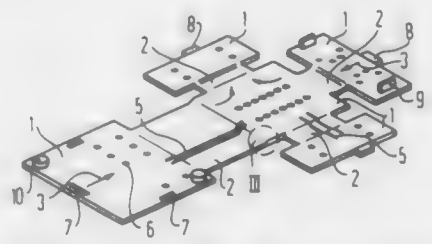
Hans-Fr. Schmidt, Eurasburg; Siegfried Rauchmaul, Munich, and Juergen Bednarz, Penzberg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 24, 1989, Ser. No. 383,648

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1988, 3831432

Int. Cl.[5] H05K *1/00*

U.S. Cl. 174—254 **20 Claims**



1. A three-dimensional printed circuit board, comprising:

two rigid plate sections capable of lying in different planes;

a flexible connecting section between adjacent plate sections; and

said plate sections and said connecting section being manufactured as a one-piece injection molded part of a thermoplastic molding material, said connecting section being formed as a weak area of a lesser thickness than said plate sections.

15. A method for forming printed circuit boards, comprising the steps of:

injection molding a part of a thermoplastic material to form rigid board sections connected by joining sections in said part, the joining sections being of a thickness substantially less than a thickness of the rigid board sections; and

bending the injection molded part at the joining sections to form a three-dimensional circuit board.

5,008,497

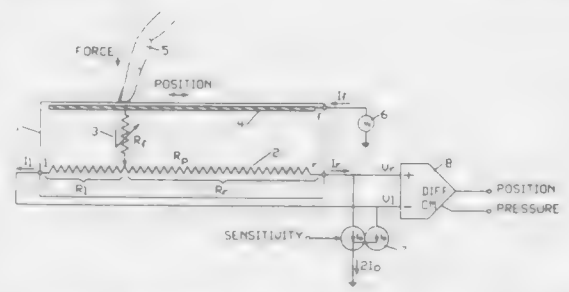
TOUCH CONTROLLER

David J. Asher, P.O. Box 8748, Albany, N.Y. 12208

Filed Mar. 22, 1990, Ser. No. 497,691

Int. Cl.[5] G08C *21/00*

U.S. Cl. 178—18 **11 Claims**



1. A touch controller comprising:

(a) a touch sensor comprising a position resistor having a definite length wherein the impedance of the position resistor changes in response to touch from a disjunct member;

(b) a current regulator electrically connected to the touch sensor for generating a pressure signal by maintaining a prescribed current through the touch sensor whereby the voltage produced by the current regulator changes as a function of the pressure applied to the touch sensor by the disjunct member; and

(c) a differential amplifier electrically connected to the position resistor for generating a position signal by amplifying the differential voltage across the length of the position resistor whereby the differential voltage across the length of the position resistor changes as a function of the position of the disjunct member on the touch sensor.

5,008,498

ROTARY SWITCH

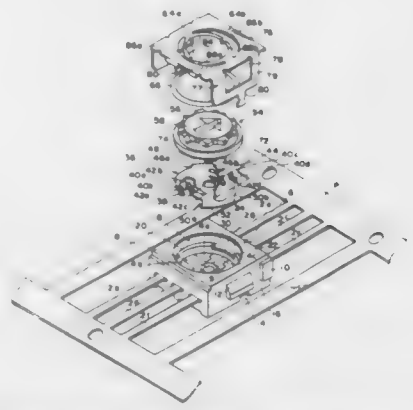
Atsuo Yamazaki, c/o Iruma Center, Copal Electronics Co. Ltd. No. 110-1, Shimoshinden, Araku, Iruma City, Saitama Prefecture, Japan

Division of Ser. No. 376,599, Jul. 7, 1989. This application Jan. 5, 1990, Ser. No. 461,549

Claims priority, application Japan, Aug. 11, 1989, 1-106294[U]; Aug. 11, 1989, 1-200966; Aug. 23, 1989, 1-110242[U]

Int. Cl.[5] H01H *19/60, 21/80*

U.S. Cl. 200—11 R **1 Claim**



1. A rotary switch, comprising:

a housing having an upwardly open chamber opening out of the top of said housing;

terminal lead fixed contacts in said housing exposed in the bottom of said chamber and spaced from each other in an asymmetrical pattern;

a planar plate-shaped contact member fixedly positioned in said chamber and having a plurality of output contact fingers corresponding to the respective terminal lead fixed contacts and movable transversely of the plane of said contact member and each output contact finger having a contact projection thereon and a contact point thereon and said contact fingers being exposed to corresponding terminal lead fixed contacts in the bottom of said chamber with the contact points normally spaced from said terminal lead fixed contacts;

a rotor rotatably mounted in said chamber and having cam patterns on the under side thereof toward said contact member for engagement with the contact projections on corresponding ones of said contact fingers for causing said contact points to contact said terminal lead contacts in the bottom of said chamber seriatim as said rotor is rotated, and further having click cams around the top thereof;

said housing having a pair of opposite side walls and a center projection projecting laterally of said housing from each side wall, and having a corner projection projecting laterally from each said side wall and spaced from the respective center projections toward one side of said housing for defining a clearance therebetween, said housing further having grooves in the bottom thereof opening out of the bottom edge of said opposite side walls; and

a case having a top wall with a central aperture therein through which the upper portion of said rotor extends, and having depending walls depending from opposite side edges of said top wall along said opposite side walls of said housing, said depending walls each having a side aperture in the center thereof for fitting in snapping engagement

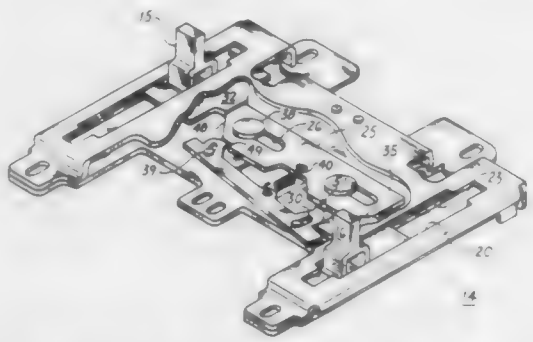
over a corresponding center projection and having a frame portion depending along one side of said side aperture having a width for fitting into said clearance and having a further frame portion extending along the other side of said side aperture having a width greater than said clearance, and depending lugs extending from the bottoms of said depending walls and bent into said grooves for fixedly. holding said case on said housing, and said casing further having click projections depending from said top wall for engagement with said click cams on said rotor for producing an audible click when said rotor is rotated, whereby said case can be fitted onto said housing oriented in only one direction toward said one side of said housing.

5,008,499

BI-STABLE INTERLOCK ARRANGEMENT FOR MOLDED CASE CIRCUIT BREAKERS

Edgar Yee, Vernon, and Richard E. Bernier, Southington, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Aug. 20, 1990, Ser. No. 569,897
Int. Cl.[5] H01H *9/26*
U.S. Cl. 200—50 C **10 Claims**



1. An interlock device for electric circuit breakers and switches comprising in combination:
- a planar metal base having first elongated slots arranged on opposite sides thereof;
- a planar metal cover on said base having second elongated slots arranged on opposite sides thereof over said first slots;
- first and second interlock handles arranged for travel within said first and second slots;
- first and second cams attached to said interlock handles, said first and second cams including first and second angulated sides;
- an interlock cam on said base extending between said first and second cams, said interlock cam including angulated ends interacting with said angulated sides to allow only one of said first and second cams and attached interlock handle to move in one direction at any one time; and
- means on said base interacting with said interlock cam to prevent said one of said cams and attached interlock handle from moving in said one direction until the other of said cams has already moved a predetermined distance in an opposite direction.

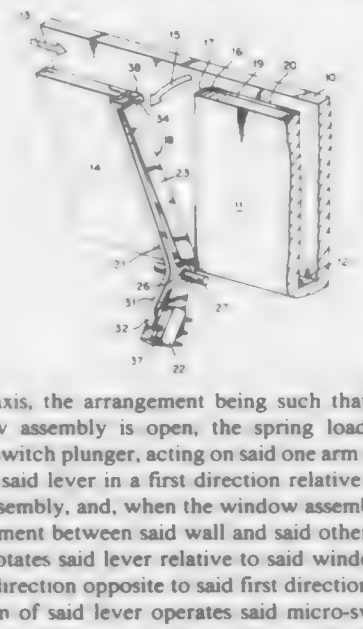
5,008,500

DOCUMENT FEEDER WINDOW CLOSED DETECTION ASSEMBLY

T. A. Hamilton, Fife, Scotland, assignor to Unisys Corporation, Blue Bell, Pa.

Filed May 18, 1990, Ser. No. 525,454
Claims priority, application United Kingdom, May 31, 1989, 8912426
Int. Cl.[5] H01H *3/16*
U.S. Cl. 200—61.7 **7 Claims**

1. A system for detecting the open or closed state of a window assembly in an equipment wall, said window assembly, mounted for rotation about a hinged axis defined by a hinge pin, comprising:
- a micro-switch mounted on an extension of the window assembly;
- a lever freely mounted for rotation on the window assembly hinge axis, one arm of said lever including a portion adapted to engage a plunger of said micro-switch and another arm of said lever including a portion adapted to engage said equipment wall at a point remote from said



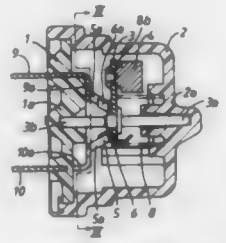
hinge axis, the arrangement being such that, when said window assembly is open, the spring loading on said micro-switch plunger, acting on said one arm of said lever, rotates said lever in a first direction relative to said window assembly, and, when the window assembly is closed, engagement between said wall and said other arm of said lever rotates said lever relative to said window assembly in the direction opposite to said first direction so that said one arm of said lever operates said micro-switch by depressing said plunger against said spring loading.

5,008,501

COLLISION DETECTING DEVICE FOR MOTOR VEHICLES

Norio Kumita; Takaaki Yamamoto, both of Okazaki; Seiichi Narita, Kariya, and Takaaki Ori, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 15, 1989, Ser. No. 408,031
Claims priority, application Japan, Sep. 15, 1988, 63-231651; Aug. 8, 1989, 1-205097
Int. Cl.[5] H01H *35/14*
U.S. Cl. 200—61.45 R **9 Claims**



1. A collision detecting device for a motor vehicle comprising:
- a cylindrical case having an open end and a bottom;
- a base plate rotatably coupled within the open end of said case and secured in place to provide a sealed chamber;
- a support shaft housed within said sealed chamber and being rotatably carried at one end thereof on the bottom of said case and at the other end thereof on said base plate;
- a rotary member provided on said support shaft for rotation therewith and having the center of gravity positioned eccentrically from its rotational axis;
- a pair of contact elements provided on said rotary member

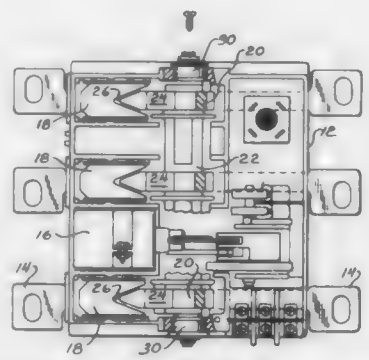
for rotation therewith and being symmetrically arranged with respect to the rotational axis of said rotary member;
- a pair of electric terminals fixed to said base plate, said electric terminals each having an internal contact portion slidably engageable with each of said contact elements and an external terminal pin for connection to an electric control circuit; and
- resilient means housed within said sealed chamber to apply a counteracting rotational force to said rotary member depending on an angle of rotation through which said rotary member has rotated.

5,008,502

POWER SWITCHING CONTACTOR

Nawaz I. Kassam, 7586 Northway Dr., Hanover Park, Ill. 60103

Filed Feb. 3, 1989, Ser. No. 307,829
Int. Cl.[5] H01H *1/32, 9/04*
U.S. Cl. 200—248 **3 Claims**



3. A power switching contactor for electrical loads comprising:
- (a) a housing for switching contacts;
- (b) a rotatable contactor shaft having a plurality of contact arms selectively engageable with a plurality of contact pads;
- (c) a means for mounting said shaft for rotation in said housing including:
  - (i) a pair of bearings each receiving one end of said shaft, and a pair of slots formed in said housing and dimensioned to receive said pair of bearings, and
  - (ii) a pair of removable filler blocks dimensioned to be received in said slots and being releasably engageable with said bearings for sealing said housing to prevent entry of foreign matter,
- (d) a plurality of alignment pillows positioned on said shaft adjacent the location where the contact arms are secured to said shaft, said alignment pillows being contoured so as to act as a fulcrum, whereby each contact arm can rock side-to-side about a corresponding pillow when its distal end engages the corresponding contact pad thereby to ensure proper electrical contact for efficient flow of electric current.

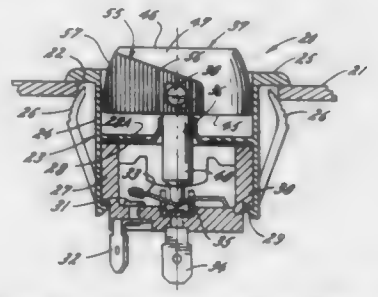
5,008,503

SWITCH WITH COLORED INDICATOR CAP

John A. Stuhlmacher, Crown Point, Ind., assignor to McGill Manufacturing Company, Inc., Valparaiso, Ind.

Filed Oct. 27, 1989, Ser. No. 427,737
Int. Cl.[5] H01H *9/18, 23/14*
U.S. Cl. 200—308 **11 Claims**

1. A switch actuator comprising an enlarged manually engageable head having a first surface, having an oppositely facing second surface and having a peripheral side surface extending between said first and second surfaces around the margins thereof, oppositely extending trunnions projecting transversely from said side surface, and an indicator cap made of resilient material and having trunnion receiving holes for positive snap action attachment to said trunnions for retaining said cap on said head, and said indicator cap and said side wall



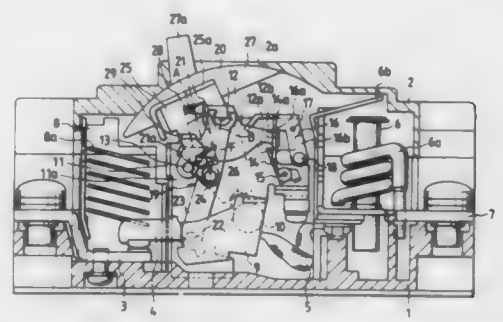
being of different colors whereby the cap visually highlights a portion of the actuator.

5,008,504

SWITCHING MECHANISM IN CIRCUIT BREAKER

Seishiro Ozaki; Nobuo Asahi, and Tsuneo Ebisawa, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Dec. 29, 1989, Ser. No. 459,363
Claims priority, application Japan, Jan. 6, 1989, 64-966
Int. Cl.[5] H01H *5/06*
U.S. Cl. 200—401 **7 Claims**



1. A switching mechanism in a circuit breaker, comprising:
- a casing;
- means movably coupled to the casing for movably holding a movable contact, said movable contact engaging a stationary contact at times when the circuit breaker is in a normal state and disengaging the stationary contact at times when the circuit breaker is a tripped state;
- a latch coupled to the casing, said latch being located from moving at times when the circuit breaker is in the normal state;
- a toggle link having upper and lower link portions being movably coupled to one another, said upper link portion having a striking part, said upper link portion being coupled to said latch, said lower link portion being coupled to said holding means,
- said toggle link and said latch being relatively pivoted for a snap action, said toggle link being subjected to an elastic force applied in a stable direction within a dead zone by a switching spring at times when the circuit breaker is in the normal state, and being subjected to a rapid variation from the stable direction resulting in the direction of the elastic force leaving the dead zone at times when the circuit breaker is in the tripped state; and
- a stopper fixedly formed on the casing adjacent said upper link portion of said toggle link, said striking part of said upper link portion and said stopper being spaced a distance from one another at times when the circuit breaker is in the normal state, and being relatively positioned so that said striking part strikes said stopper intermediate in the tripping action to shorten a radius about which a

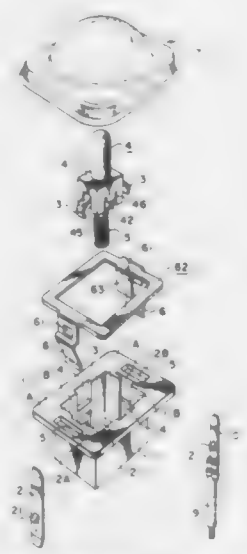
portion of the toggle link pivots, thereby to accelerate the tripping action.

5,008,505

SELF-RESETTING PUSH SWITCH

Tsunesuke Takano, and Kouichi Shinzawa, both of Tokyo, Japan, assignors to Daiichi Denso Buhin Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1990, Ser. No. 494,467
Claims priority, application Japan, Mar. 22, 1989, 1-32225[U]
Int. Cl.[5] H01H *13/52*
U.S. Cl. 200—531 **8 Claims**



1. A self-resetting push switch comprising:

an electrically insulating housing having a bottom surface establishing a closed end of said housing, and an open end opposite said closed end, and first and second pairs of opposing inner wall surfaces extending from said bottom surface;

a pair of first grooves formed on respective ones of said first pair of opposing inner wall surfaces;

a second groove formed on at least one of said second pair of said opposing inner wall surfaces, said second groove having a projection formed therein;

a first stationary contact piece inserted in one of said first grooves;

an operation rod having an integral sliding sleeve defining a lower surface, and first and second movable contact pieces projecting outwardly from said sliding sleeve, said first movable contact piece being capable of coming into sliding contact with said first stationary contact piece, said sliding sleeve having at least one engagement piece engageable with said projection within said second groove;

a spring interposed between the bottom surface of said housing and the lower surface of said sliding sleeve, and spring urging said operation rod in a direction which causes a part of said operation rod to project outwardly from said housing; and

a frame having a pair of conductive and resilient fixing piece, and a second stationary contact piece capable of coming into sliding contact with said second movable contact piece, wherein

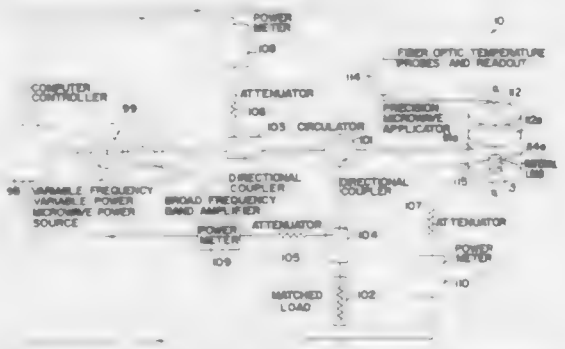
said frame is coupled to an upper portion of said housing such that said pair of conductive and resilient fixing pieces are disposed on opposing side portions of said housing.

5,008,506

RADIOFREQUENCY WAVE TREATMENT OF A MATERIAL USING A SELECTED SEQUENCE OF MODES

Jes Asmussen, Okemos, and Ronald E. Fritz, Haslett, both of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Filed Oct. 30, 1989, Ser. No. 429,063
Int. Cl.[5] H05B *6/74*
U.S. Cl. 219—10.55 M **28 Claims**



1. A method of heating of an initially liquid or solid material with a complex dielectric constant which changes as a function of radiofrequency heating over a heating time which comprises:

(a) providing a radiofrequency wave generating apparatus including a metallic radiofrequency wave applicator which is excited in one or more of its pre-selected material loaded modes of resonance as a single mode or controlled multimode in the applicator around an axis of the applicator so that there is pre-selected heating of the material in the applicator, antenna means connected to and extending inside the applicator for coupling the radiofrequency wave to the applicator; and

(b) continuously heating the liquid or solid material with an initial complex dielectric constant positioned in the applicator in a precisely oriented position with the radiofrequency wave and maintaining an initial mode of the radiofrequency wave with the material in the applicator as the dielectric constant of the material changes for a period of time during the heating and then shifting to at least one second mode in the applicator during the heating after the first mode is extinguished and maintaining the second mode as the complex dielectric constant of the material changes during the heating, wherein the modes in the applicator are maintained using measured incident and reflected power such that the reflected power from the applicator is continuously tuned to approximately zero in the applicator and the incident power is tuned to a desired level in the applicator.

5,008,507

MICROWAVE FOOD PRODUCTS AND METHOD OF THEIR MANUFACTURE

Peter S. Pesheck, Brooklyn Center; William A. Atwell; Madonna M. Krawiecki, both of Andover, and George R. Anderson, Minneapolis, both of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

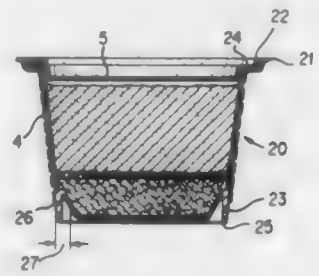
Continuation-in-part of Ser. No. 903,007, Sep. 2, 1986, Pat. No. 4,926,020. This application Aug. 13, 1987, Ser. No. 85,125
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—10.55 E **58 Claims**

1. A food product for controlled heating in a microwave oven, said food product comprising:

(a) at least one layer of edible component having thickness and dielectric properties;

(b) at least one layer of material proximate said at least one layer of edible component having thickness and dielectric properties; and

(c) the thickness of at least one of said layers and the position of said at least one layer of edible component relative to



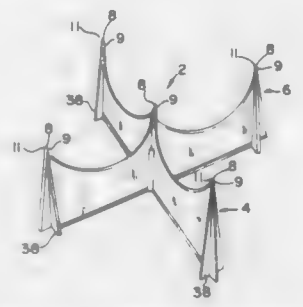
said at least one layer of material being selected for the purpose that said at least one layer of edible component will heat to within a preselected temperature range during exposure to microwave radiation.

5,008,508

COOKING APPARATUS FOR SUSPENDING A FOOD PRODUCT

Robert B. Skerker, Buffalo, N.Y., and William Prindle, Santa Barbara, Calif., assignors to Robinson Knife Manufacturing Co., Inc., Sprinville, N.Y.

Filed Mar. 13, 1990, Ser. No. 493,138
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—10.55 E **11 Claims**



1. An apparatus for suspending a food product while cooking comprising

(a) a least two reversible engageable support members;

(b) a plurality of spaced apart penetration means on each of said support members wherein each of the plurality of penetration means comprises an upwardly extending projection adapted to penetrate and suspend the food product; and

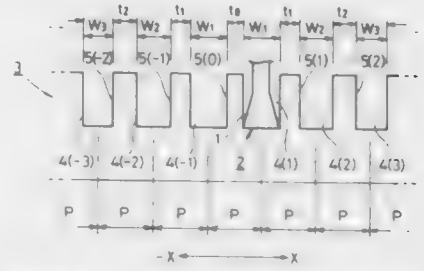
(c) means for ventilating the food product comprising a plurality of legs extending from each of the penetration means downwardly and outwardly in spaced apart relationship thereby forming a channel for the escape of moisture and gases from the food product.

5,008,509

PRODUCTION METHOD OF HONEYCOMB DIE-FORMING ELECTRICAL DISCHARGE MACHINING ELECTRODES AND PRODUCTION METHOD OF HONEYCOMB DIES

Isao Hattori, Nagoya, and Shoji Futamura, Kawasaki, both of Japan, assignors to NGK Insulators, Ltd., Nagoya City and Institute of Technology Precision Electrical discharge Works, Kawasaki, both of, Japan

Filed Mar. 15, 1990, Ser. No. 493,666
Claims priority, application Japan, Mar. 20, 1989, 1-68806
Int. Cl.[5] B23H *9/00, 1/04;* **B29C** *47/12;* **B24B** *53/06*
U.S. Cl. 219—69.15 **6 Claims**



1. A method for the production of an electrical discharge machining electrode for forming a honeycomb die, said electrode being provided with a plurality of electrode groove portions formed by cutting parallel grooves in an electrode material and with a plurality of projecting electrode portions corresponding to forming grooves of the honeycomb die and formed between their corresponding electrode groove portions, comprising the steps of:

cutting said parallel grooves by means of a grinding wheel formed in a reverse tapered shape in which the grinding width is gradually widened toward its peripheral direction; and

progressively dressing said grinding wheel during the cutting of said parallel grooves.

6. A method for the production of a honeycomb die provided with forming grooves, which have configurations corresponding to the profile of a honeycomb structure to be formed and are to be formed by electrical discharge machining using a honeycomb die-forming electrical discharge machining electrode provided with a plurality of projecting electrode portions corresponding to the forming grooves, which comprises;

using, as the honeycomb die-forming electrical discharge machining electrode, a honeycomb die-forming electrical discharge machining electrode provided with a plurality of electrode groove portions, which have been formed by cutting a plurality of grooves in an electrode material while moving a grinding wheel formed into a reverse tapered shape, in which the grinding width is gradually widened toward its peripheral direction, relative to the electrode material so as to cut a groove in the electrode material, and subsequent to the cutting of the groove, relatively moving the grinding wheel and the electrode material by desired pitches in a direction perpendicular to the grinding direction, and dressing the grinding surface of the grinding wheel at plural pitch distances relative to the movement of the grinding wheel and the electrode material toward the directions of both ends from the center portion for the purpose of narrowing the grinding width, and at the same time provided with a plurality of projecting electrode portions formed between their corresponding electrode groove portions, owing to the formation of the plural electrode groove portions, in such a manner that the thicknesses of the plural projecting electrode portions become greater stepwise toward both ends from the center of the electrode;

cutting, as a first machining step, forming grooves being in rows in one direction relative to a material to be formed by electrical discharge machining making use of the hon-

eycomb die-forming electrical discharge machining electrode; and

after completion of the first machining step, cutting, as a second machining step, forming grooves in a direction crossing perpendicularly to said one direction by electrical discharge machining making use of the honeycomb die-forming electrical discharge machining electrode in a condition that the honeycomb die-forming electrical discharge machining electrode and the material to be formed have been relatively rotated 90°;

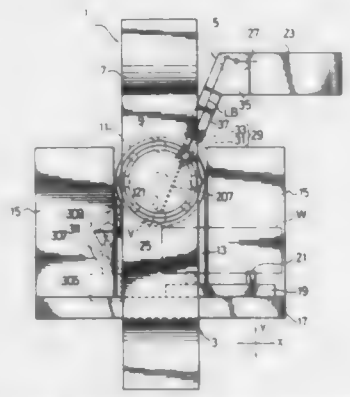
thereby cutting forming grooves, whose dimensions in width become greater stepwise toward both ends from the center, in the honeycomb die.

5,008,510

LASER PUNCH PRESS, AND BEAM DETECTION DEVICE FOR ADJUSTING THE LASER BEAM PATH

Ryoji Koseki, Fullerton, Calif., assignor to Amada Company, Limited, Kanagawa, Japan

Filed Dec. 29, 1989, Ser. No. 459,298
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.7 14 Claims



1. A punch press having a V-axis and a laser cutting device, which comprises:

a laser cutting head mounted on the punch press;

a laser generator provided in a position spaced from the punch press; and

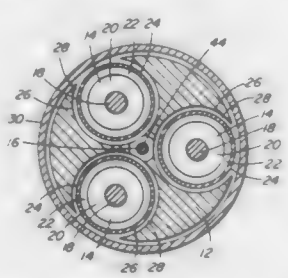
means for laser beam path adjustment of a laser beam from the laser generator to the laser cutting head, wherein the means for beam path adjustment comprises a plurality of reflective surfaces which suitably bend the laser beam and are positioned on the laser generator side spaced from the laser cutting head.

5,008,511

PLASMA TORCH WITH AXIAL REACTANT FEED

Douglas A. Ross, Richmond, Canada, assignor to The University of British Columbia, Canada

Filed Jun. 26, 1990, Ser. No. 543,403
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—121.48 20 Claims



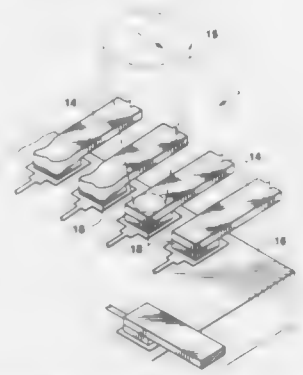
1. A plasma torch comprising a plurality of arc forming chambers arranged symmetrically about an axis, a first arc forming electrode in each said arc forming chamber, a common electrode cooperating with each of said first electrodes in said chambers to form an arc in each of said chambers a plasma passage through said common electrode opening into each of said chambers, each of said plasma passages leading from its respective of said chamber and converging toward each other in a region of convergence into a single plasma nozzle passage extending along said axis and a reactant feed passage opening axially into an end of said nozzle passage in said region of convergence thereby to inject reactant substantially axially into said plasma nozzle passage and in the direction of travel of a plasma jet formed in said plasma nozzle passage by plasma passing from chambers through said plasma passages into said plasma nozzle passage.

5,008,512

METHOD OF LASER BONDING ELECTRICAL MEMBERS

Phillip J. Spletter, Cedar Park, and Colin A. MacKay, Austin, both of Tex., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex.

Filed Sep. 8, 1989, Ser. No. 405,377
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.64 16 Claims



1. A method of bonding a first highly reflective metallic electrical member to a second highly reflective metallic electrical member by a laser comprising,

coating the first electrical member with a material that is well absorbent to the laser energy at the wavelength of the laser, has a lower melting point than either of the electrical members, and has a low solubility in a solid alloy of the electrical members,

aligning the first and second electrical members with the coating therebetween,

holding the first and second electrical members in contact with the coating to form an interface, and

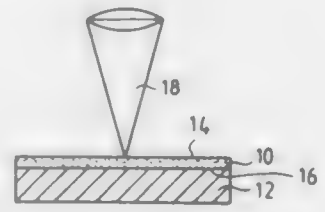
bonding the first and second members at the interface by applying a laser beam, wherein the laser characteristics are selected so that as an alloy of the electrical members solidifies a solidification front will drive the molten coating and molten compounds containing the coating away from the bond interface towards the exterior periphery of the bond, wherein substantially all of the solidified bond interface consists of an alloy of the first and second members, and wherein substantially all of the bond interface strength results from an alloy of the first and second members.

5,008,513

SHAPING OF BONDED ABRASIVE PRODUCTS

Mohammad Najafi-Sani, 4 Heerlen Road, Ormonde, Johannesburg, Transvaal, South Africa, and Philip A. Bex, 4 Hillcrest Road, Camberley, Surrey, United Kingdom

Filed Nov. 9, 1989, Ser. No. 435,199
Claims priority, application United Kingdom, Nov. 10, 1988, 8826305
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.69 7 Claims



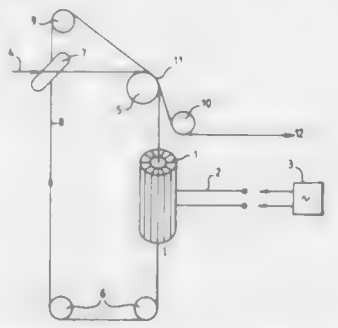
1. A method of removing a layer of material from the surface of a bonded abrasive compact including the steps of directing a laser beam at the surface of a bonded abrasive compact, while causing the laser beam to traverse the surface to damage it to a desired depth, wherein the laser beam is first caused to traverse the surface of the bonded abrasive compact in one or more passes creating substantial damage to the surface, followed by a final pass which creates lesser damage, and removing damaged material remaining on the surface.

5,008,514

METHOD AND APPARATUS FOR HEATING A METALLIC ELONGATED PRODUCT

John Kyriakis, High Wycombe, Great Britain, assignor to Beta Instrument Company Limited, Buckinghamshire, England

Filed Dec. 29, 1989, Ser. No. 459,239
Int. Cl.[5] C21D *9/62*; H05B *1/00*
U.S. Cl. 219—155 13 Claims



1. Apparatus heating a length of a metallic elongated product, comprising:

a plurality of insulating pulleys for movably guiding a portion of the product over a path including a closed loop, one of said pulleys having a double groove, and another of said pulleys being located adjacent the double-grooved pulley to receive said product from one groove thereof and to return it to the other groove thereof; and

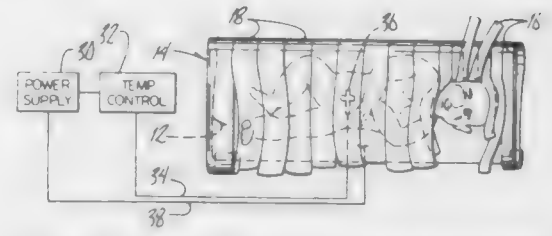
a transformer, a secondary winding whereof comprises said product disposed over said closed loop.

5,008,515

BODY TEMPERATURE RESPONSIVE TRANSPORT WARMING BLANKET

William C. McCormack, 3703 Woodland St., Ames, Iowa 50010

Filed May 10, 1990, Ser. No. 521,410
Int. Cl.[5] H05B *3/34*
U.S. Cl. 219—212 6 Claims



1. A body temperature responsive transport warming blanket comprising,

a blanket having a first section integrally connected to a second section, said second section including a plurality of strips independently operable and adapted to provide access to selected areas of the body wrapped in said blanket,

electrical heating elements extending substantially throughout said first and second sections including said plurality of strips, and

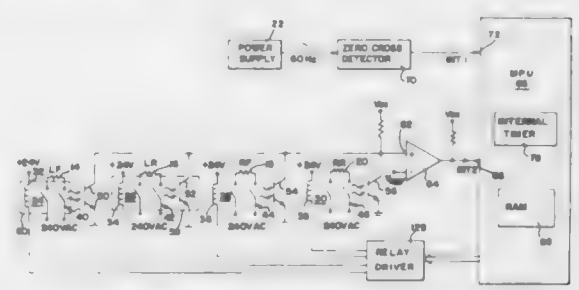
an electrical control circuit including said heating elements, a power supply and a skin contact temperature sensor adapted to be attached to said body, and a temperature control means adapted to be adjusted to a predetermined desired body temperature which is substantially continuously maintained throughout operation and use of the blanket by said heating element being operative only as required and indicated by said temperature sensor to maintain said predetermined desired body temperature within a narrow range.

5,008,516

RELAY CONTROL METHOD AND APPARATUS FOR A DOMESTIC APPLIANCE

Ronald W. Holling, Lincoln Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 4, 1988, Ser. No. 228,339
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—519 47 Claims



1. A relay control for an apparatus having a load adapted to be powered by a time varying power supply signal having a zero crossover or minimum magnitude point comprising:

relay means for coupling said power supply signal to said load, said relay means having a contact assembly with open and closed positions;

control means for generating a relay control signal to change the state of said contact assembly between said open and closed positions;

means for sensing the actual change of the state of the contact assembly;

means responsive to said control means and said sensing

means for determining the time delay between the generation of said relay control signal and the actual changing of the contact assembly's state;

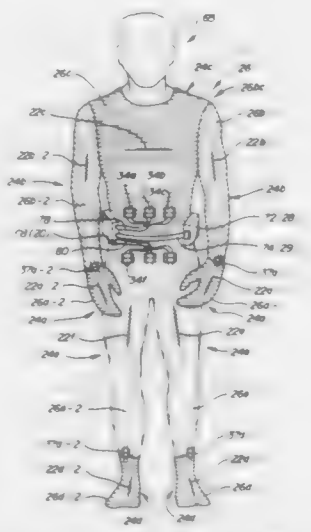
said control means being responsive to said power supply signal and said time delay determining means to cause the state of the contact assembly to change when said power supply signal is approximately at said zero crossover or minimum magnitude point.

5,008,517

ELECTRICALLY HEATED FORM-FITTING FABRIC ASSEMBLY

Kevin L. Brekkestran, Fargo, and Barry D. Batcheller, West Fargo, both of N. Dak., assignors to Environwear, Inc., Fargo, N. Dak.

Filed Sep. 8, 1989, Ser. No. 404,827
Int. Cl.[5] H05B *3/34*
U.S. Cl. 219—211 **24 Claims**



1. An electrically heated form-fitting fabric assembly for use in an electrically heated, cold-weather garment, comprising:

lightweight, stretchable, form-fitting fabric means for covering at least a portion of the body of a wearer of the garment, the fabric means being made at least primarily of a lightweight fabric having (1) a weight in the range of about 2 to 20 ounces per square yard, (2) a break elongation of at least 100 percent, (3) a tensile recovery of at least 50 percent from about a 50 percent elongation, and (4) a tensile strength of at least about 0.2 grams per denier;

flexible conductor means arranged in a serpentine fashion relative to the fabric means, for generating heat in response to an electrical current passed therethrough, thereby providing warmth to the wearer of the garment, including at least one multiple-strand conductor having an insulation jacket;

means for securing the said conductor means to the fabric means, the means for securing including stretchable stitching for securing the conductor and its insulating jacket to the fabric, the stitching further being of a pattern operable to draw portions of the fabric on opposing sides of the conductor upwardly into contact with the insulating jacket so as to partially but not completely circumscribe the conductor and its insulating jacket, said stitching circumscribing that part of the conductor which is not circumscribed by the fabric; and

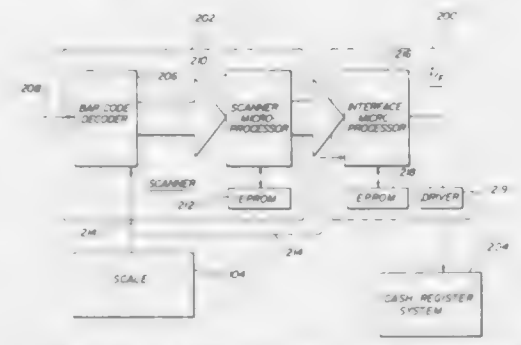
connector means for removably connecting the conductor means with a power source to thereby provide power to the conductor means, thereby enabling the conductor means to generate heat to heat the garment.

5,008,518

DATA GATHERING SYSTEM INTERFACE

Andrew P. Taussig, Eugene, and Blake L. Isaacs, Springfield, both of Oreg., assignors to Spectra-Physics, Inc., San Jose, Calif.

Filed Mar. 24, 1989, Ser. No. 328,177
Int. Cl.[5] G06K *7/14;* **G07G** *1/12*
U.S. Cl. 235—383 **10 Claims**



1. A data gathering system for use in a checkout counter to determine information relating to products to be purchased and to provide such information to a cash register system, comprising:

optical scanning means supported on a subplatter for reading coded labels on products presented to said data gathering system, said optical scanning means including a bar code decoder circuit for decoding scan signals to provide coded label data, a scanner microprocessor for correlating and supplying coded label data, and scanner memory means for storing control software for use by said scanner microprocessor,

scale means supported within said checkout counter for determining weights of said products, said scale means including said subplatter located below the upper surface of said checkout counter, said scale means capable of supplying weight data to said bar code decoder circuit of said optical scanning means, and

a common interface circuit, responsive to both said scale means and said optical scanning means, for providing weight data and coded label data to said cash register system, wherein said scanner microprocessor of said optical scanning means is capable of supplying said coded label data to said common interface circuit, and said scale means is capable of supplying said weight data to said common interface circuit via said scanner microprocessor without alteration

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5,008,519

FOOLPROOF COUPON REDEMPTION SYSTEM

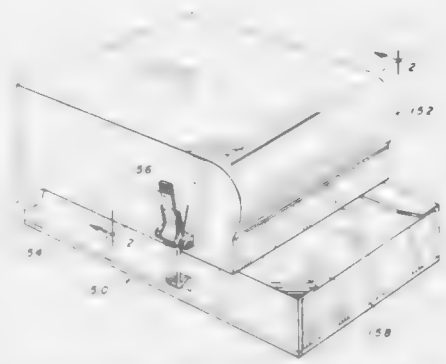
William R. Cunningham, P.O. Box 500, Anna, Ill. 62906; Carmelo S. Amareno, 3775 Bay Rd., Menlo Park, Calif. 94026, and Helmut Kayan, 222 Scenice Dr., Redwood City, Calif. 94062

Filed Nov. 16, 1988, Ser. No. 272,176
Int. Cl.[5] G06K *15/00*
U.S. Cl. 235—383 **37 Claims**

1. A coupon-redemption system for redeeming and validating coupons at a check-out counter of a supermarket, and the like, comprising, in combination:

an electronic cash register for totaling purchased goods of a consumer;

an automatic coupon-reading device for automatically transporting a coupon and reading bar code on a coupon; and



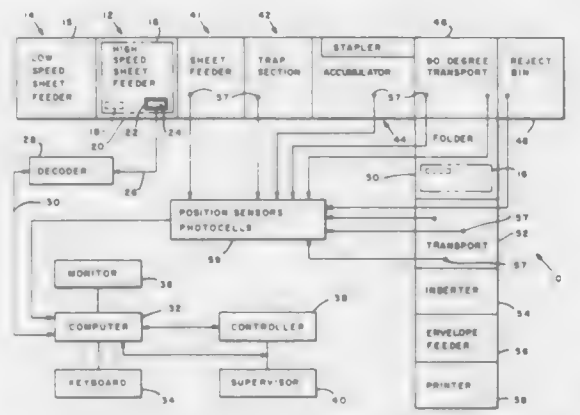
means coupling said coupon-reading device to said cash register for transferring data therebetween.

5,008,520

METHOD AND APPARATUS FOR READING A BAR CODE ON A MOVING SHEET

John Georgiou, 250 Glover Ave. #43, Norwalk, Conn. 06850; Thomas F. Gueth, 43 Whippoorwill Rd., Bethel, Conn. 06801, and James S. Ramsey, 75 Nicholdale Rd., Shelton, Conn. 06484

Filed Nov. 10, 1988, Ser. No. 269,390
Int. Cl.[5] G06F *7/10*
U.S. Cl. 235—462 **16 Claims**



1. An apparatus for reading a bar code symbol on a full sheet, the combination comprising:

feeding means for feeding a sheet at a speed of at least 120 inches/sec,

a fixed beam scanner positioned to scan the bar code symbol on a sheet as a sheet is fed from said support means,

decoding means in communication with said scanner for decoding the bar code scanned by said scanner, and

a computer in communication with said decoder means.

5,008,521

REPRODUCING APPARATUS FOR AN OPTICAL RECORDING MEDIUM

Hiroshi Ohki; Shoei Kobayashi, and Takuya Wada, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 29, 1989, Ser. No. 330,299
Claims priority, application Japan, Apr. 6, 1988, 63-86776
Int. Cl.[5] G06K *7/10;* **G07B** *7/12*
U.S. Cl. 235—454 **11 Claims**

1. A reproducing apparatus comprising:

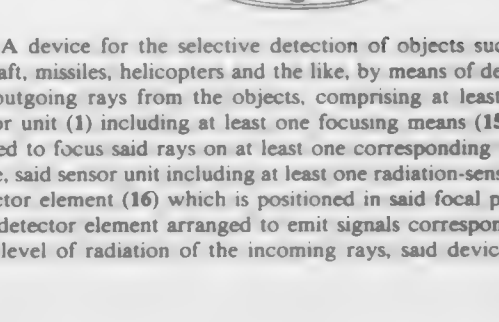
an optical recording medium from which an information signal can be optically read and onto which an information signal is discretely recorded as a plurality of recording units each comprising a plurality of track trains;

a light source;

an optical system for causing a light beam from said light source to irradiate a whole area of one of said plurality of recording units and for guiding a light beam reflected from said recording medium;

detecting means comprising a plurality of detecting elements arranged two-dimensionally for detecting said reflected beam as guided by said optical system;

extracting means for extracting a detection output of one track train of said recording unit irradiated by said light



source on the basis of an output signal of the detecting means and including a comparing means for successively comparing the detection outputs from said detecting means and a line memory means for storing an output of said comparing means; and

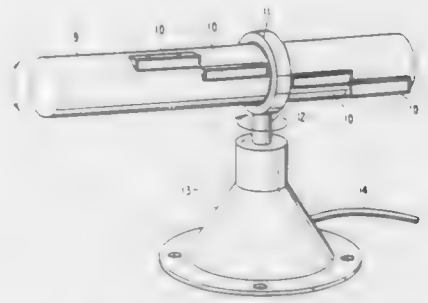
memory means for storing digitally converted detection output from said detecting means and including a first address generating circuit to generate an address in a direction parallel with said track trains and a second address generating circuit to generate an address in a direction perpendicular to the said track trains, and in which an address signal from said first address generating circuit is also supplied to said line memory means.

5,008,522

DEVICE FOR THE SELECTIVE DETECTION OF OBJECTS

Jan-Erik Lundin, Västra Frölunda, Sweden, assignor to Saab Missiles Aktiebolag, Sweden

Filed Feb. 28, 1989, Ser. No. 378,514
Claims priority, application Sweden, May 29, 1987, 8702247
Int. Cl.[5] G01J *1/20*
U.S. Cl. 250—203.6 **14 Claims**



1. A device for the selective detection of objects such as aircraft, missiles, helicopters and the like, by means of detecting outgoing rays from the objects, comprising at least one sensor unit (1) including at least one focusing means (15) arranged to focus said rays on at least one corresponding focal plane, said sensor unit including at least one radiation-sensitive detector element (16) which is positioned in said focal plane, said detector element arranged to emit signals corresponding to a level of radiation of the incoming rays, said device ar-

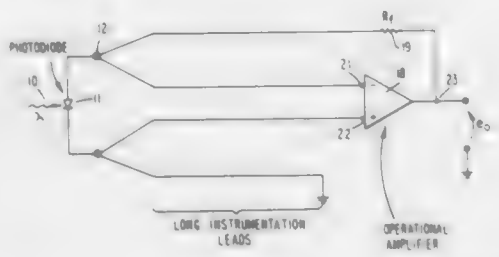
ranged to variably scan an angular field in azimuth and/or elevation, said device further comprising an evaluation unit means (2), arranged to receive said signals, for selecting objects which seem to be of similar size with respect to the angle measured from the position of the device, such objects being large objects at a long distance such as aircraft, and small objects at a short distance, such as birds, by suppressing signals whose amplitude as a function of the scanned azimuth or elevation angle shows a relatively large size compared with signals that show at relatively small size.

5,008,523

CURRENT MEASURING CIRCUIT WITH MEANS FOR NULLIFYING THE EFFECTS OF CURRENT SOURCE AND LEAD RESISTANCE

Rex M. Davis, West Chester, and Mark E. Greiner, Mason, both of Ohio, assignors to Cincinnati Electronics Corporation, Cincinnati, Ohio

Filed Sep. 26, 1989, Ser. No. 412,715
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 A **10 Claims**



1. A photodetector circuit comprising a photodiode having: (a) first and second terminals, (b) a current generator for deriving a current having an amplitude directly proportional to photons incident thereon, and (c) a resistance affecting the amount of current supplied by a current generator to the first and second terminals, a DC operational amplifier having, an inverting input terminal, a non-inverting input terminal and an output terminal, the amplifier developing a voltage between the output terminal and a reference potential level; a feedback resistor; first, second, third and fourth electric lead wires having appreciable resistance that is substantially the same for each lead wire; the first lead wire and the feedback resistor being connected in series between the first terminal and the amplifier output terminal, the second lead wire being connected between the first terminal and the inverting input terminal, the third lead wire being connected between the second terminal and the non-inverting input terminal, the fourth lead wire being connected between the second terminal and a terminal at the reference potential level, the lead wires being connected to: the first and second terminals, the feedback resistor, the amplifier input terminals and the terminal at the reference potential level so that the voltage between the amplifier output terminal and the reference potential level is directly proportional to the photon rate of the optical energy incident on the photodiode substantially independently of variations in the value of the photodiode resistance.

5,008,524

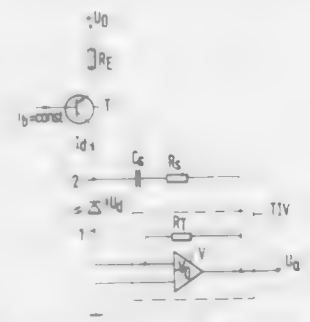
OPTICAL RECEIVER WITH EXTENDED DYNAMIC RANGE

Jörg Reutter, and Frank Krause, both of Stuttgart, Fed. Rep. of Germany, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Sep. 18, 1989, Ser. No. 408,626
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1988, 3832857
Int. Cl.[5] H04B *9/00*
U.S. Cl. 250—214 A **20 Claims**

1. Optical receiver comprising a photodiode and a transimpedance amplifier, with the photodiode contained in a direct-current circuit between a supply-voltage source and the input of the transimpedance amplifier, and further comprising an element limiting the direct current in the direct-current circuit and an alternating-current circuit fed from the photodiode, which acts as an AC voltage source, and containing an impedance which converts the alternating voltage of the photodiode into an alternating current flowing into the transimpedance amplifier,

characterized in that the alternating current circuit couples the terminal (2) of the photodiode (PD) which is not connected to the input of the transimpedance amplifier (TIV) to the output (U_a) of the transimpedance amplifier.

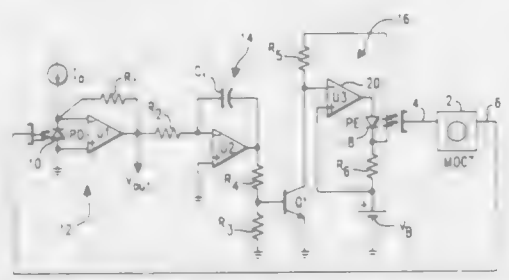


5,008,525

CURRENT MONITORING CIRCUIT ERROR COMPENSATION

Carlo F. Petronio, Ross Township, Allegheny County, Pa., assignor to ABB Power T & D Company, Inc., Blue Bell, Pa.

Filed Aug. 3, 1989, Ser. No. 389,145
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 C **9 Claims**



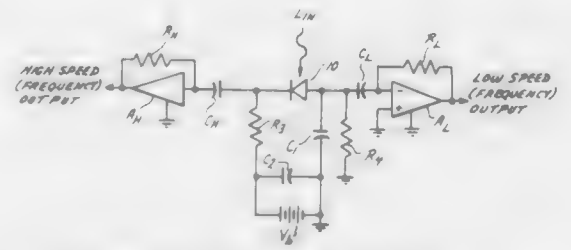
9. In a measuring device including a magneto-optic current transformer defining an optical path having an input and an output and having an optical transmission characteristic such that the relation between optical energy supplied to the input and optical energy arriving at the output is a function of an electrical parameter being monitored, an electrically driven photoemitter disposed for supplying optical energy to the optical path input, photodetector circuit means optically coupled to the optical path output for producing an electrical signal representative of the optical power arriving at the output, and a control circuit connected between the photodetector circuit means and the photoemitter for controlling the light energy supplied by the photoemitter, the transformer and the control circuit together forming a high pass filter having a corner frequency, the control circuit comprising a circuit unit whose temperature influences the corner frequency value the improvement wherein said control circuit further comprises: an amplifier and first compensation means connected to form a negative feedback path of said amplifier for supplying a negative feedback signal which is linearly proportional to the optical power emitted by said photoemitter for causing the corner frequency value to be independent of the relation between the optical power at the input to the path and the optical power at the output of the path; and second compensation means operatively connected for causing the corner frequency value to be independent of the temperature of said circuit unit.

5,008,526

PHOTODETECTOR OUTPUT COUPLING WITH LOW AND HIGH FREQUENCY OUTPUTS

Samuel I. Green, University City, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Oct. 2, 1989, Ser. No. 416,003
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—214 R **15 Claims**



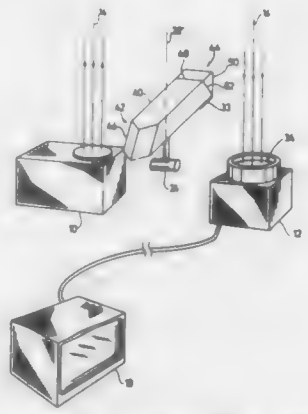
1. A photodetector output circuit, comprising:
(a) a photodetector means for detecting light impinging thereon having a first electrode and a second electrode;
(b) a first connection means for detecting high frequency components of the impinging light connected to the first electrode of the photodetector means providing a high frequency output;
(c) a second connection means for detecting low frequency components of the impinging light connected to the second electrode of the photodetector means providing a low frequency output; and
(d) electrical circuit means for analyzing the high and low frequency outputs of the photodetector means connected to the outputs of the first and second connection means.

5,008,527

OPTICAL SYSTEM EMPLOYING A TRANSMITTING SOLID CORNER CUBE

Shalom Wilk, Jerusalem, Israel, assignor to Israel Aircraft Industries Ltd., Ben Gurion International Airport, Israel

Filed Oct. 19, 1989, Ser. No. 423,118
Claims priority, application Israel, Oct. 31, 1988, 88243
Int. Cl.[5] H01J *3/14*
U.S. Cl. 250—216 **18 Claims**



1. Optical apparatus for transferring at least a portion of radiation emitted from a radiation source having a first line of sight to a radiation sensor having a second line of sight comprising:

a corner cube having first and second reflective ends arranged to intersect at predetermined orientations with said first and second lines of sight, respectively, and each having a predetermined orientation relative thereto;

prismatic means mounted onto at least one of said first and second reflective ends so as to define a common interface therewith; and

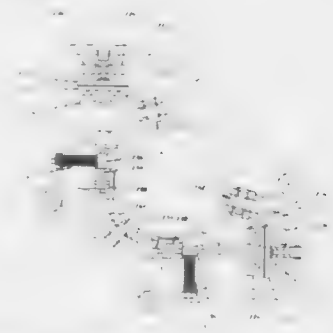
an optical coating provided at said interface defined by said at least one of said first and second reflective ends and said prismatic means for permitting passage of a first portion of radiation while deflecting a second portion of radiation.

5,008,528

INVERTIBLE TRACKBALL

Douglas Duchon, Chanhassen, Minn., assignor to Logitech S.A., Apples, Switzerland

Filed Jul. 14, 1989, Ser. No. 380,092
Int. Cl.[5] G01V *9/04*
U.S. Cl. 250—221 **7 Claims**



1. A trackball comprising

a lower housing member,

a ball suitable for rotational manipulation by the fingers and generally accessible through the upper surface of the trackball,

a skeleton member having ball receiving means therein for receiving the ball,

a plurality of optomechanical encoders having the mechanical components thereof mounted on the skeleton member and urged into mechanical engagement with the ball, the mechanical components supporting the ball,

an upper housing member having ball retaining means and capable of being fixedly mounted to the lower housing member and thereby fixedly locating at least the skeleton member therebetween.

5,008,529

PHOTOELECTRIC SWITCHING APPARATUS OF REFLECTION TYPE PROJECTING RED AND INFRARED LIGHT

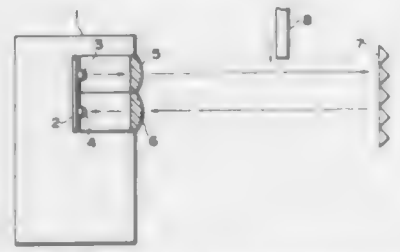
Arata Nakamura, Kyoto, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Continuation of Ser. No. 310,685, Feb. 15, 1989, abandoned.
This application Jul. 6, 1990, Ser. No. 551,046
Claims priority, application Japan, Feb. 15, 1988, 63-18535
Int. Cl.[5] G01V *9/04*; G01J *3/50*
U.S. Cl. 250—221 **12 Claims**

11. A method of detecting an object comprising the steps of:
projecting from a single light projecting diode a red light and an infrared light along a same optical axis;
reflecting the red light and absorbing the infrared light with a reflex reflector located at a position distant from the single light projecting means;
in a photo sensitive means individually detecting the red light reflected from the reflex detector along with red light reflected from an object to be detected and infrared light reflected from the object to be detected and outputting a pair of light detection signals corresponding to the red light and the infrared light;

adding the light detection signals in an adding means to produce an added output and comparing a level of the added output to a first threshold to produce a first comparison output;

subtracting the light detection signals in a subtraction means to produce a difference output and comparing a level of



the difference output to a second threshold to produce a second comparison output; and

logically combining the first and second comparison outputs in a logic circuit having predetermined logic and outputting an object detection signal in accordance with the predetermined logic.

5,008,530

AUTOCOLLIMATION LIGHT CURTAIN

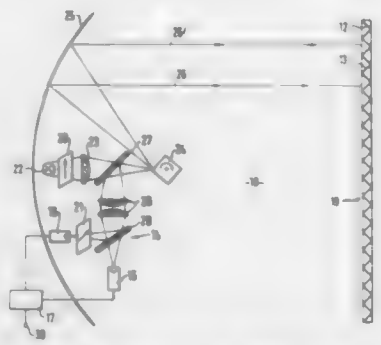
Hans-Klaus Ball, Freiburg/Brsg., Fed. Rep. of Germany, assignor to Erwin Sick GmbH Optik-Elektronik, Waldkirch, Fed. Rep. of Germany

Filed Dec. 7, 1987, Ser. No. 129,280

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1986, 3641926

Int. Cl.[5] G01V *9/04*; G08B *13/18*

U.S. Cl. 250—221 **6 Claims**



1. Autocollimation light curtain comprising a light source; a light beam generating optical system; a light deflecting device such as a mirror wheel which receives the light beam, a reflector at the end of a monitoring region which is periodically scanned by the light beam and is subdivided in the scanning direction into a plurality of fields of two types which alternate with each other; and also a light receiving system which receives a received light beam reflected out of the beam path in front of the light deflecting device and which has a photoreceiver for receiving the light reflected back from the reflector when the monitored region is free of obstacles, characterised in that the two alternating types of fields (12, 13) of the reflector (19) have characteristics which influence the spectral range and/or the state of polarisation of the incident light; in that the light receiving arrangement (14) includes a second photoreceiver (16) which is so filtered that it receives only light reflected from the one type (12) of field but not light from the other type (13) of field, whereas the first photoreceiver responds to all light reflected back from the reflector (19); and in that both photoreceivers (15, 16) are connected to a logic circuit (17) which only signals that the monitored region is free of obstacles when the second photoreceiver (16) transmits an alternating signal and the first photoreceiver (15) transmits a dc signal.

5,008,531

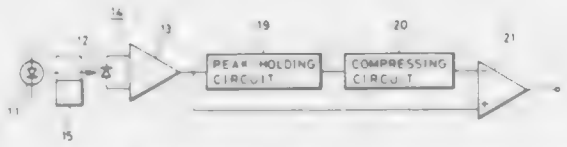
PULSED LIGHT IDENTIFYING SYSTEM

Shoichi Ono, Suwa, and Atsuhito Kobayashi, Okaya, both of Japan, assignors to Chinon Kabushiki Kaisha, Suwa, Japan

Filed Aug. 15, 1989, Ser. No. 394,067

Int. Cl.[5] G01V *9/04*; H01J *40/14*

U.S. Cl. 250—222.1 **5 Claims**



1. Apparatus for identifying the presence or absence of an object, comprising:

a light emitting part responsive to a pulsed electrical signal for emitting a pulsed light at a pulse interval;

a light receiving part responsive to said pulsed light for producing a light reception signal having a pulsed characteristic at a pulse rate;

a comparator receiving said light reception signal at a first input thereof;

a peak detection circuit including means for storing a peak value of said light reception signal;

said peak detection circuit having a time constant that is large compared to said pulse interval;

a compressing circuit;

said compressing circuit including means for producing a threshold signal equal to said peak value divided by a predetermined value; and

said threshold signal being connected to a second input of said comparator, whereby an output of said comparator is a pulse signal in synchronism with said pulsed light when there is no object intercepting said light, and which is constant when an object intercepts said light, whereby the presence or absence of said object is detectable.

5,008,532

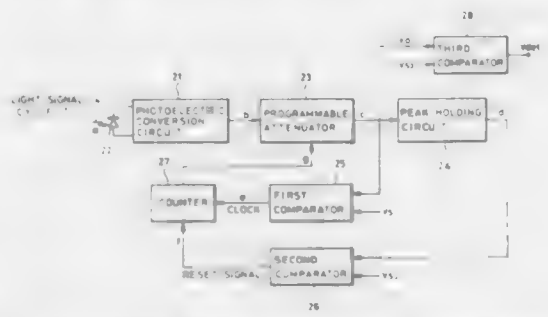
LIGHT RECEPTION SIGNAL CIRCUIT FOR PHOTOELECTRIC SWITCH

Shoichi Ono, Suwa, and Atsuhito Kobayashi, Okaya, both of Japan, assignors to Chinon Kabushiki Kaisha, Suwa, Japan

Filed Aug. 15, 1989, Ser. No. 394,213

Int. Cl.[5] G01V *9/04*; H03G *3/10*

U.S. Cl. 250—222.1 **14 Claims**



1. A photoelectric switch of a type adapted for use with a pulsating light beam having an emission period, comprising:

means for detecting said pulsating light beam to produce a light detection signal;

means for attenuating said light detection signal to produce an output signal;

means for producing a pulsating clock signal synchronized with pulsations of said pulsating light beam only when said output signal exceeds a predetermined upper threshold;

control means, responsive to said pulsating clock signal, for producing a digital control signal;

said means for attenuating being responsive to said digital control signal to add a predetermined amount of attenuation each time said pulsating clock signal is produced; and

means for removing a predetermined amount of attenuation from said light detection signal when said output signal falls below a predetermined lower threshold, whereby said output signal is maintained in a range between said upper threshold and said lower threshold.

5,008,533

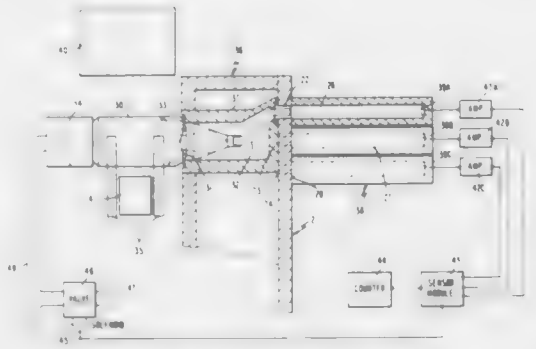
HIGH SPEED FIBER OPTIC CONTAINER INSPECTION APPARATUS AND METHOD

Harry W. Lee, Jr., Bon Air, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Jan. 29, 1990, Ser. No. 471,586

Int. Cl.[5] G01N *9/04*

U.S. Cl. 250—223 B **18 Claims**



1. A light testing apparatus for testing a plurality of container like objects moving in series order along a prescribed path, said path including a portion irradiated by a light source, said apparatus comprising:

a plurality of light conducting means for conducting light, one of said plurality associated respectively with each said object for movement therewith in position to be shielded by said object from said light source; and

sensing means responsive to light conducted by said light conducting means, whereby a defect in said object, permitting light transmission from said light source through said defect to said light conducting means, can be determined, wherein

said sensing means comprises a light sensing unit, said unit comprising a light sensor disposed within a stationary housing, said housing having an end panel thereof provided with an aperture, said aperture having a slot configuration, said aperture positioned to face said light conducting means.

5,008,534

CONTACTLESS SWITCH HAVING TRANSLATING FOCUSING/DEFOCUSING LENS

Tatsushi Yonezawa, Takatsuki, and Satosi Nozoe, Kyoto, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Aug. 30, 1989, Ser. No. 400,654

Int. Cl.[5] G01D *5/34*

U.S. Cl. 250—229 **14 Claims**

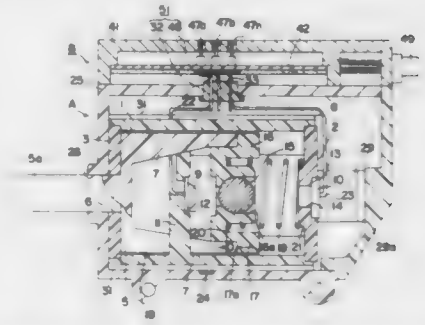
1. A contactless switch, comprising:

a casing defining an axial bore;

a light emitting element disposed in said bore to produce a light beam directed in an axial direction of said axial bore;

a light receiving element disposed in said bore opposite to said light emitting element defining a certain axial space therebetween;

a lens carrier carrying a lens element and interposed between said light emitting element and said light receiving element in an axially slidable manner; and



a plunger member having one end projecting axially out of one of axial ends of said casing and another end engaging with said lens carrier.

5,008,535

ENERGY ANALYZER AND SPECTROMETER FOR LOW-ENERGY ELECTRONS

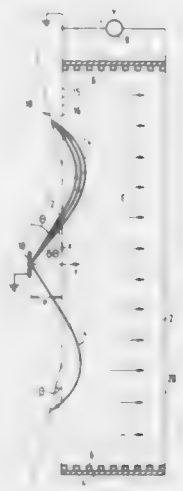
Gerardus G. P. Van Gorkom, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 29, 1989, Ser. No. 400,182

Claims priority, application Netherlands, Sep. 2, 1988, 8802170

Int. Cl.[5] H01J *40/00*

U.S. Cl. 250—305 **28 Claims**



1. An energy analyzer for low-energy electrons comprising

(a) an electrically insulating tubular section having rotational symmetry disposed about an analyzer space, a homogeneous and uniform electrical field being generated in said analyzer space, said analyzer space including an entrance aperture and an exit aperture, said exit aperture being an annular slot,

(b) a helical electrical resistance layer disposed at an inner side of said tubular section, said helical electrical resistance layer being coaxial with said tubular section,

(c) an electrical conductor disposed at ends of said tubular section, and

(d) detector means for detecting electrons emanating from said exit aperture, said detector means including an annular, flat channel plate arranged opposite to said exit aper-

ture, said annular, flat channel plate being concentric with said exit aperture,

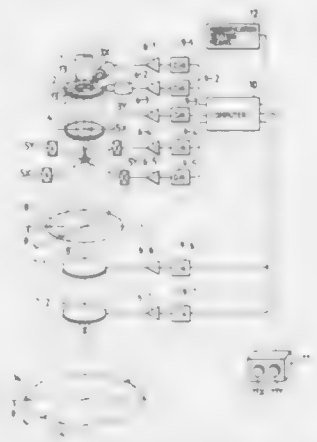
wherein said energy analyzer comprises an anode, said anode including a number of anode rings electrically insulated from one another, said number of anode rings being electrically interconnected in a two-by-two fashion.

5,008,536

ELECTRON MICROSCOPE HAVING ELECTRICAL AND MECHANICAL POSITION CONTROLS FOR SPECIMEN AND POSITIONING METHOD

Shigeto Isakozawa, and Takahito Hashimoto, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 5, 1989, Ser. No. 446,283
Claims priority, application Japan, Dec. 5, 1988, 63-307278
Int. Cl.[5] H01J *37/26*
U.S. Cl. 250—307 **11 Claims**



9. A specimen and image position controlling method, for use in an electron microscope, comprising the steps of:

setting a magnification of the electron microscope;

setting a moving distance and a moving direction of a stage on which said specimen is placed;

comparing the setting of magnification with a predetermined magnification value;

shifting only an image of said specimen when the setting of magnification is larger than the predetermined value; and

shifting only the specimen in a certain direction and for a certain distance when the setting of magnification is not larger than the predetermined value.

5,008,537

COMPOSITE APPARATUS WITH SECONDARY ION MASS SPECTROMETRY INSTRUMENT AND SCANNING ELECTRON MICROSCOPE

Hiroshi Toita, Katsuta; Hifumi Tamura, Hachioji; Issei Tobita, Ibaraki, and Hiroshi Iwamoto, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Instrument Engineering Co., Ltd., Ibaraki, both of, Japan

Filed Sep. 20, 1989, Ser. No. 409,761
Claims priority, application Japan, Sep. 22, 1988, 63-236351
Int. Cl.[5] H01J *37/26*
U.S. Cl. 250—309 **16 Claims**

1. A composite apparatus with secondary ion mass spectrometry instrument and scanning electron microscope comprising:

at least one kind of liquid metal ion source;

an ion source other than said liquid metal ion source;

a primary ion separating device for mass-separating an ion beam emitted from said ion source other than said liquid metal ion source;

deflecting means for bringing the ion beam from said ion source other than said liquid metal ion source into alignment with a primary beam axis which is an optical axis of an irradiating system;

moving means for moving a position of said liquid metal ion source so that an ion beam emitted from said liquid metal ion source is aligned with said primary beam axis;

an electron gun for emitting an electron beam;

moving means for moving a position of said electron gun so that the electron beam emitted from said electron gun is aligned with said primary beam axis;



focusing means for focusing the ion beam or the electron beam to irradiate a specimen with the focused beam;

detecting means for detecting secondary electrons and secondary ions emitted from said specimen;

analyzing means for analyzing said specimen on the basis of a signal from said detecting means; and

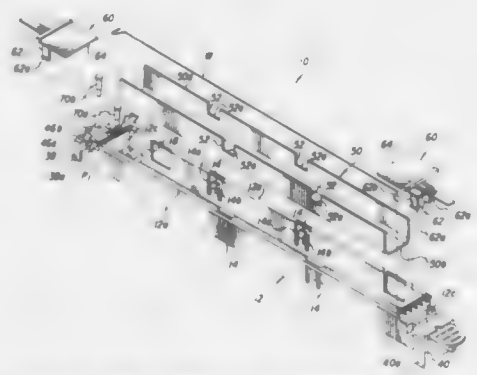
said liquid metal ion source or said electron gun being disposed between said primary ion separating device and said specimen.

5,008,538

CORONA CHARGER APPARATUS OF SIMPLIFIED CONSTRUCTION

Michael L. DeCecca, Fairport; Michael S. Kowalczyk, Rochester; Thomas W. Gray, Rochester, and Paul W. Partridge, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 3, 1989, Ser. No. 389,192
Int. Cl.[5] H01T *19/04*
U.S. Cl. 250—324 **9 Claims**



1. A corona charger apparatus comprising:

a conductive corona wire;

a generally U-shaped conductive shield;

a pair of non-conductive end caps; and

a generally U-shaped non-conductive housing, said housing

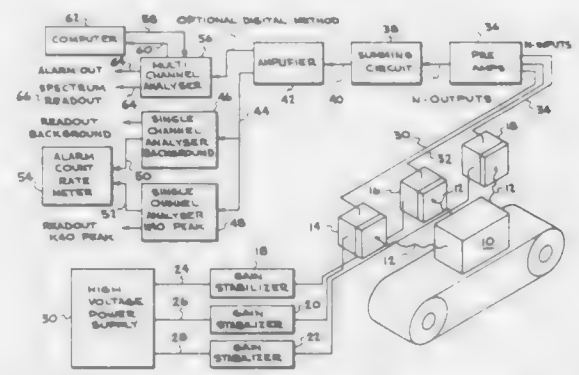
being formed with a plurality of respective integral features which include a plurality of clips respectively having a surface engaging an edge surface of said shield, and at least one cantilever beam spring urging said shield in a direction where said clip surfaces are in held in positive engagement with said edge surfaces of said shield to retain and accurately space said shield within the housing, and further integral features which locate and properly tension said corona wire, support electrical terminals, retain and locate said end caps, and enable the assembled apparatus to be accurately located by an unskilled operator.

5,008,539

PROCESS AND APPARATUS FOR DETECTING PRESENCE OF PLANT SUBSTANCES

John A. Kirby, Las Vegas, Nev., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 1, 1990, Ser. No. 561,633
Int. Cl.[5] G01N *33/00;* **G01T** *1/20*
U.S. Cl. 250—336.1 **17 Claims**



1. A process for detecting the presence of plant substances in a particular environment which comprises the steps of:

(a) measuring the background K40 gamma ray radiation level in a particular environment with a 1.46 MeV gamma ray counter system;

(b) measuring the amount of K40 gamma ray radiation emanating from a package being passed through said environment with said counter; and

(c) signaling the presence of plant substances by generating an alarm signal when the total K40 gamma ray radiation reaches a predetermined level over and above the background level.

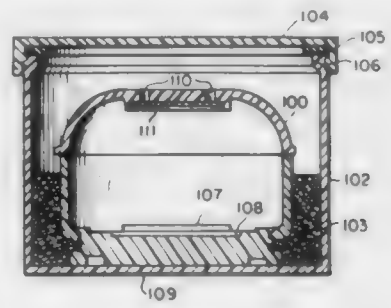
5,008,540

ELECTRET GAMMA/X-RAY LOW LEVEL DOSIMETER

John C. Dempsey, Frederick, Md., assignor to Rad Elec Inc., Frederick, Md.

Continuation-in-part of Ser. No. 936,240, Dec. 1, 1986, Pat. No. 4,853,536. This application Jul. 31, 1989, Ser. No. 387,497
Int. Cl.[5] G01T *1/14*
U.S. Cl. 250—336.1 **37 Claims**

1. An apparatus for monitoring gamma or X-ray radiation comprising a chamber having an inner surface which is electrically conductive, an electret positioned within the chamber for holding an electrostatic charge which collects ions formed in the chamber by bombardment of gamma or X-ray radiation, and a removable means connected with the chamber for



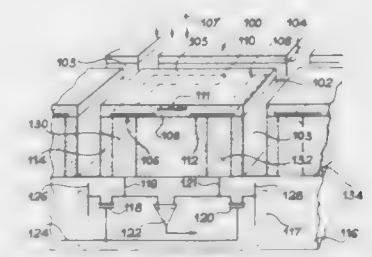
mounting the electret, said chamber enclosed in a radioactive gas tight container.

5,008,541

MONOLITHIC DETECTION OR INFRARED IMAGING STRUCTURE AND ITS PRODUCTION PROCESS

Luc Audaire, Grenoble; Jean C. Peuzin, Herbeys, and Bernard Schaub, Lans-En-Vercors, all of France, assignors to Commissariat Energie Atomique, Paris, France

Filed Nov. 17, 1989, Ser. No. 438,768
Claims priority, application France, Nov. 29, 1988, 88 15581
Int. Cl.[5] H04N *5/33;* **G01J** *5/10*
U.S. Cl. 250—338.3 **12 Claims**



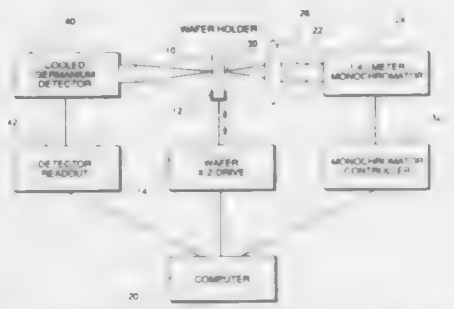
1. A monolithic detection or infrared imaging structure comprising at least one electrically and thermally insulating polymer layer (**114, 216, 218, 220**), infrared sensors (**102, 102*a*, 102*b*, 102*c*, 102*d*)**, which are insulated from one another and have a pyroelectric polymer film (**104**), whose face (**109**) in contact with the insulating layer (**114**) is equipped with two comb-shaped electrodes (**106, 108**), whose teeth (**110, 112**) are imbricated, the pyroelectric polymer film (**104**) being polarized (**111**) in a plane parallel to said face of the film in directions parallel (x) and perpendicular (y) to the teeth of the combs, an integrated circuit (**116**) having a face (**134**) in contact with the insulating layer (**114**) equipped with reading circuits (**117, 117*a*, 117*b*, 117*c*, 117*d*)** and electrical contact zones (**130, 132, 222, 224, 226**) completely traversing the insulating layer and connecting the electrodes (**106, 108**) of each sensor to a reading circuit (**117, 117*a*, 117*b*, 117*c*, 117*d*)**.

5,008,542

METHOD AND SYSTEM FOR AUTOMATED MEASUREMENT OF WHOLE-WAFER ETCH PIT DENSITY IN GAAS

David C. Look, Dayton; James S. Sewell, Kettering; Millard G. Mier, Yellow Springs; John R. Sizelove, Kettering; Dennis C. Walters, Fairborn, all of Ohio, and Scott C. Dudley, Air Force Academy, Colo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 20, 1989, Ser. No. 456,924
Int. Cl.[5] G01N *21/88, 21/35*
U.S. Cl. 250—341 **11 Claims**



4. A method for producing a map of etch pit density in a GaAs wafer surface, comprising the steps of:

a. determining etch pit density (ρ_D) at at least two points on said GaAs wafer surface;

b. focusing a light source of predetermined wavelength at a plurality of points on said GaAs wafer surface;

c. detecting the fractional transmission (T) of said light source through said GaAs wafer surface at said plurality of points;

d. selecting two locations on said GaAs surface where one of said at least two points in step a is in common with one of said plurality of points in step c; one of the locations being in an area of said GaAs wafer surface having relatively high transmission and other in an area having relatively low transmission;

e. determining the average area (a) of etch pits on said GaAs wafer surface;

f. calibrating a reference transmission point (T_O) from the fractional transmission and the etch pit density at one of said two locations in step d where the transmission is high,

g. calibrating a reference transmission point (T_E) from the fractional transmission and etch pit density at the other of said two locations in step d where the transmission is low; and

h. generating a map of etch pit density (ρ_D) at each of said plurality of points according to the equation

$$\rho_D = -\frac{1}{a}\ln\frac{T^4 - T_E^4}{T_O^4 - T_E^4}$$

5,008,543

SYSTEM FOR DETERMINING THE POSITION OF AT LEAST ONE TARGET BY TRIANGULATION

Michel P. Bertrand, Fontenay-Sous-Bois; Michel B. Bucher, Paris, and André R. Delclaux, Champigny sur Marne, all of France, assignors to Sat(Societe Anonyme De Telecommunications, France

Filed Jan. 17, 1990, Ser. No. 466,501
Claims priority, application France, Jan. 18, 1989, 89 00531
Int. Cl.[5] G01C *3/08, 3/20*
U.S. Cl. 250—342 **10 Claims**

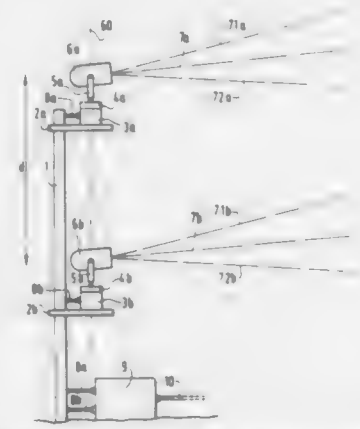
1. A system for determining the position of at least one target emitting radiation, comprising:

two passive sighting devices, sensitive to said radiation, disposed at a distance from each other and movable in rotation about a substantially vertical common axis,

means for measuring the intensity of the radiation received by one of the sighting devices along a sighting line scanning a substantially vertical sighting plane, common to the two sighting devices,

means for extracting, in response to the intensities measured, the values of the elevation angles of said target relatively to the two sighting devices, and

means for computing, in response to the values of the elevation angles, the distance of said target by triangulation in



said substantially vertical common sighting plane, wherein

each of the two sighting devices comprises its own means for measuring the intensity of the radiation received, its own drive means for driving it in rotation about said common axis and its own means for measuring its bearing angle, and

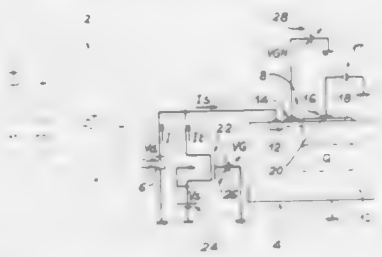
means are provided for controlling said means driving it in rotation about said common axis, in response to the values of the bearing angles measured, and arranged so that said bearing angles are equal.

5,008,544

SYSTEM FOR THE DETECTION OF INFORMATION IN THE FORM OF ELECTROMAGNETIC RADIATION AND READING THE DETECTED INFORMATION

Pierre Nicolas, Saint Egreve, and Philippe Pantigny, Grenoble, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jul. 19, 1989, Ser. No. 382,427
Claims priority, application France, Aug. 1, 1988, 88 10375
Int. Cl.[5] H01L *31/09*; G01J *5/06*
U.S. Cl. 250—349 **10 Claims**



1. System for the detection of information in the form of electromagnetic radiation and reading the detected information, said system comprising information photodetection means, which have N photodetectors, each photodetector being able to supply a current having an information carrier component and a component not carrying information, N being an integer at least equal to 1, and means for reading the information detected in this way and using for this purpose the

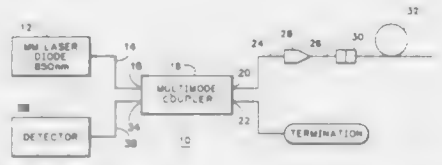
current supplied by each photodetector and N other regulatable means respectively associated with the N photodetectors, each other regulatable means being able to remove a current of regulatable intensity from the current supplied by the associated photodetector prior to the use of the latter current by the reading means so as to remove the component not carrying information from the current supplied by the respective photodetector.

5,008,545

HIGH RESOLUTION OPTICAL FAULT LOCATOR

Duwayne R. Anderson; Robert W. McMahon, both of Redmond, and Barry L. Rosenow, Bend, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 23, 1989, Ser. No. 425,770
Int. Cl.[5] G01N *21/45*
U.S. Cl. 250—358.1 **5 Claims**



1. An optical fault locator for examining a single mode optical fiber under test wherein optical pulses are input into the single mode optical fiber under test and a return optical signal is received from the single mode optical fiber under test, the optical fault locator comprising:

a high power, short wavelength optical power source for generating the optical pulses;

an optical detector compatible with the high power, short wavelength optical power source for receiving the return optical signal from the single mode optical fiber under test;

a multimode optical coupler having input ports and output ports with each input port having associated multiple output ports, the optical pulses from the optical power source being received at a first input port and coupled to an output multimode optical fiber connected to one of the output ports associated with the first input port and the return optical signal being received at a second input port and coupled to the optical detector connected to one of the output ports associated with the second input port, the multimode optical coupler equally dividing the optical power of each propagating mode from the optical source and the return optical signal between the associated output ports of the input ports; and

a single mode optical fiber spliced to the output multimode optical fiber, the single mode fiber having a connector for coupling the single mode optical fiber under test to the optical fault locator.

5,008,546

INTRAOPERATIVE BETA PROBE AND METHOD OF USING THE SAME

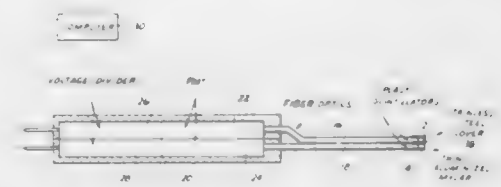
John C. Mazziotta, Beverly Hills, Calif.; Farhad Daghighian, New York, N.Y., and Edward J. Hoffman, Van Nuys, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Jun. 18, 1990, Ser. No. 539,794
Int. Cl.[5] G01T *1/161, 1/20, 1/203*
U.S. Cl. 250—366 **20 Claims**

1. A probe system for preferentially detecting beta radiation over background gamma radiation from a source of beta and gamma radiation comprising:

a first means for detecting beta and gamma radiation at an arbitrarily selected location; and

a second means for selectively detecting only one type of radiation of said beta and gamma radiation, said second and first means coupled together,



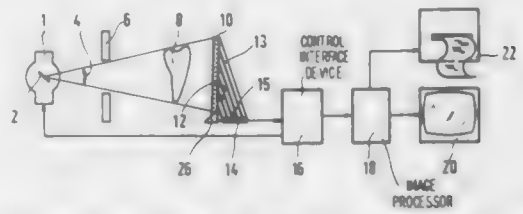
whereby beta radiation from near sources is reliably detected and differentiated from gamma radiation emitted from far sources.

5,008,547

DENTAL X-RAY IMAGE DETECTION SYSTEM

Roberto Molteni, and Giulio Zanmarchi, both of Monza, Italy, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 30, 1989, Ser. No. 444,930
Claims priority, application European Pat. Off., Dec. 8, 1988, 88202809.5
Int. Cl.[5] A61B *6/14*
U.S. Cl. 250—368 **18 Claims**



1. A dental X-ray detection system for detecting at least one tooth at a time, said system including an optically sensitive sensor optically coupled to a luminescent screen, an optical fibre device for coupling said screen to said sensor comprising in combination with said screen and sensor:

at least one optical fibre having an optical axis, said at least one fibre having first and second end surfaces, one end having a first surface oblique with respect to said optical axis, said first surface defining a first area of a given magnitude, one of said end surfaces comprising means for receiving an X-ray image transmitted thereto by said luminescent screen, said second end surface defining a second area of a second magnitude different than the first area magnitude, the other of said surfaces comprising means for transmitting said received image to said sensor, said device further comprising a cascade of two optically coupled fibre optics devices each comprising means for reducing a dimension of the received X-ray image independently of each other.

5,008,548

PERSONAL UV RADIOMETER

Nahum Gat, 1227 9th St., Manhattan Beach, Calif. 90266

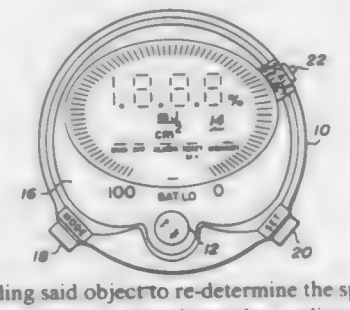
Filed Aug. 1, 1989, Ser. No. 388,115
Int. Cl.[5] G01J *5/32*
U.S. Cl. 250—372 **36 Claims**

1. In the method of preventing overexposure of an object located in a three dimensional field of ambient ultraviolet radiation of the range of 250 to and including 400 nanometers in wavelength in which such radiation travels toward the object from a plurality of directions, said method including the steps of monitoring ultraviolet radiation dosage by means of a ultraviolet radiation dosimeter and removing or covering said object upon attainment of predetermined exposure to prevent significant additional radiation from reaching said object, the improvement in which the step of monitoring radiation dosage includes the steps of:

moving an ultraviolet radiation sensor about the space surrounding said object to determine the specific direction from which ultraviolet radiation of 250 through 400 nanometers in wavelength traveling toward said object is of a maximum intensity level;

retaining said radiation sensor oriented in said specific direction for a desired interval to monitor ultraviolet radiation dosage received by said object while said object remains exposed to said radiation field;

moving said ultraviolet radiation sensor about the space



surrounding said object to re-determine the specific direction from which said ultraviolet radiation traveling toward said object is of a maximum intensity level after the lapse of said desired interval;

retaining said radiation sensor oriented in said specific direction as redetermined to continue to monitor ultraviolet radiation dosage received thereafter by said object while said object remains exposed to said radiation field; and

withdrawing said object from said ultraviolet radiation field in the event the dosage exceeds a predetermined threshold.

5,008,549

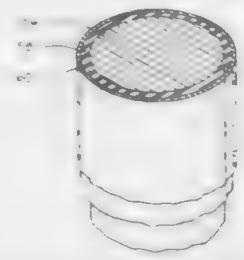
HIGH PERFORMANCE, VACUUM COMPATIBLE ELECTROMAGNETIC LENS COIL

Albert V. Crewe, Palos Park, Ill., assignor to Orchid One Corporation, Palos Hills, Ill.

Filed Apr. 10, 1990, Ser. No. 507,170

Int. Cl.[5] H01F *7/22*

U.S. Cl. 250—396 ML **30 Claims**



1. A high performance, vacuum compatible electromagnetic electron lens coil for electron beam systems having reduced gaseous emissions and improved heat dissipation capability, comprising a wound coil of electrically conductive wire sheathed in a selected thermoplastic resin insulator, said wire insulator being coated with a hermetic layer of low vapor pressure metal, the low vapor pressure and hermetic sealing properties of the layer providing ultra high vacuum compatibility of the coil, while the high thermal conduction property of the layer provides high heat dissipation capability and therefore permits high current densities in the coil, whereby said coil can provide low cost, highly efficient, high electromagnetic performance in an unsealed state in a high vacuum environment.

5,008,550

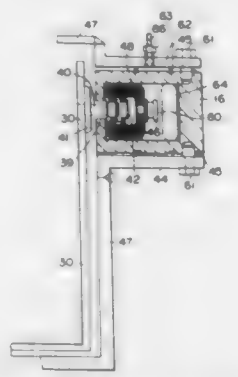
CONVEYOR SYSTEM FOR IRRADIATED FOOD PRODUCTS

Lawrence G. Barrett, Lynchburg, Va., assignor to Applied Food Processors, Inc., Lynchburg, Va.

Division of Ser. No. 184,878, Apr. 22, 1988, Pat. No. 4,908,221, which is a division of Ser. No. 819,254, Jan. 16, 1986, Pat. No. 4,760,264. This application Nov. 27, 1989, Ser. No. 441,642

Int. Cl.[5] A23L *3/26*

U.S. Cl. 250—453.1 **7 Claims**



1. A conveyor system for conveying food products through an irradiator, said conveyor system comprising a plurality of baskets with walls, each of said baskets having at least one shaft extending outwardly from one of said walls in a generally horizontal fashion, said system further comprising a first roller chain connected to said shafts, said roller chain being attached to a plurality of spaced chain guides with slots for moveably receiving said chain, said chain and said guides being independently removably positioned within a first generally rectangular casing.

5,008,551

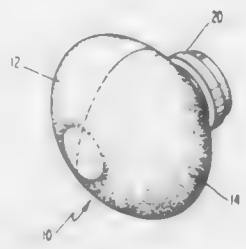
PHOSPHORESCENT LUMINOUS DOOR KNOBS COVER

Timothy T. Randolph, 1415 Alameda Dr. S., Lakeland, Fla. 33805

Filed May 16, 1989, Ser. No. 352,805

Int. Cl.[5] F21K *2/00*

U.S. Cl. 250—462.1 **4 Claims**



1. A luminescent door knob cover comprising:

a first rigid cover member having a first part that conforms to a first half of a door knob and having an integral second part that conforms to a first half of a door knob neck;

a second rigid cover member having a first part that conforms to a second half of said door knob and having an integral second part that conforms to a first half of said door knob neck;

said first and second parts of said respective first and second cover members being formed entirely of a hardened carrier means having phosphorescent powder admixed therein;

said carrier means having a predetermined thickness;

an annular band disposed in circumscribing relation to said integral second parts of said first and second cover members when said first and second cover members are disposed in overlying relation to said door knob and in confronting relation to one another;

said first and second cover members exhibiting bilateral symmetry with respect to one another;

a parting line being formed where said first and second cover means meet when disposed in confronting relation to one another;

a hinge means hingedly connecting together said first and second cover members;

said hinge means being formed at a preselected location in axial alignment with said parting line; and

said hinge means being formed by a substantially reduced thickness of said carrier means.

5,008,552

DATA RECORDING AND REPRODUCING APPARATUS FOR AN OPTICAL CARD

Wataru Kuramochi, Kawagoe; Yoshiaki Tsuruoka, Funabashi; Norikazu Saitou, Fuchu; Akira Shibuya, Ageo, and Shuichi Yamashita, Shinjuku, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

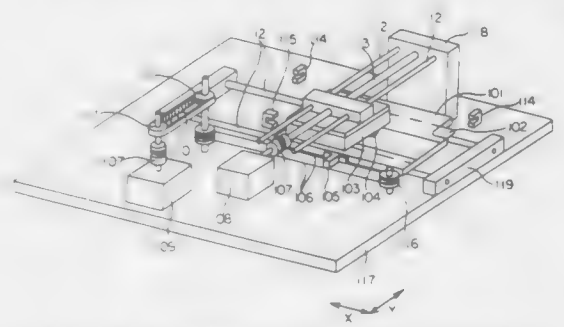
PCT No. PCT/JP88/00142, § 371 Date Oct. 7, 1988, § 102(e) Date Oct. 7, 1988, PCT Pub. No. WO88/06335, PCT Pub. Date Aug. 25, 1988

PCT Filed Feb. 12, 1988, Ser. No. 274,994

Claims priority, application Japan, Feb. 12, 1987, 62-18978; Feb. 12, 1987, 62-30583; Feb. 12, 1987, 62-30586; Mar. 31, 1987, 62-78040; Jun. 11, 1987, 62-146086; Jun. 11, 1987, 62-146087

Int. Cl.[5] G06K *13/06, 13/24*

U.S. Cl. 235—483 **6 Claims**



1. A data recording apparatus for use in an optical card on which a plurality of tracks are arranged in parallel, said apparatus comprising:

card supporting means for supporting a lower surface of said optical card;

card pressing means for pressing down on an upper surface of said optical card;

positioning means formed on said supporting means to contact or be spaced away from a first side surface of said optical card;

pushing means for pushing a second side surface, which is opposite to said first side surface, of said optical card so as to make said first side surface contact said positioning means;

card drive means for reciprocating said card supporting means in a first direction;

an optical head for selectively providing access to respective tracks on said optical card to irradiate a light beam at a position above said optical card to conduct recording of data; and

head drive means for reciprocating said optical head in a second direction perpendicular to said first direction.

5,008,553

ELECTRON BEAM LITHOGRAPHY METHOD AND APPARATUS

Takayuki Abe, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 24, 1989, Ser. No. 341,977

Claims priority, application Japan, Apr. 22, 1988, 63-99505; Nov. 10, 1988, 63-284771

Int. Cl.[5] H01J *37/304*

U.S. Cl. 250—492.2 **19 Claims**



1. A method of writing a pattern involving various shapes on a sample with charged beams, by finding optimum charged beam emission quantities for respective positions (xj, yj) in each of the shapes and writing the shapes with charged beams of the optimum emission quantities, for each of the positions (xj, yj), the method comprising the steps of:

(a) extracting shapes Ti which exist at least partly within a distance "r" from the position for which the optimum charged beam emission quantity is to be found in question;

(b) finding emission correction quantities Qij related to the shapes Ti according to distances from the position in question to about the centers of the shapes Ti and the sizes of the shapes Ti to compensate backward scattering effects on the position in question caused by the shapes Ti;

(c) finding a total emission correction quantity Rj for the position in question by summing up the emission correction quantities Qij related to the shapes Ti; and

(d) determining an optimum emission quantity for the position in question by using the total emission correction quantity Rj and a predetermined emission quantity S.

5,008,554

MULTI-PLATE OPTICAL SIGNAL PROCESSING APPARATUS WITH INTER-PLATE OPTICAL COMMUNICATION

Toshifumi Asakawa, Yamato, and Haruo Nakayama, Kawanishi, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 29, 1989, Ser. No. 373,932

Claims priority, application Japan, Jul. 4, 1988, 63-166168

Int. Cl.[5] G02B *27/00*

U.S. Cl. 250—551 **10 Claims**

1. An optical signal processing apparatus comprising:

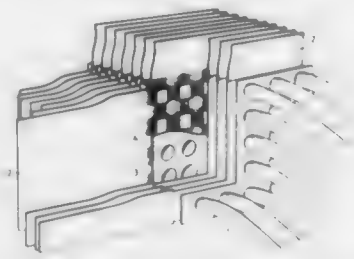
a plurality of plates disposed in parallel, spaced from each other;

light LSIs mounted on each of said plates;

lead wires electrically interconnecting said light LSIs to transfer signals among said light LSIs in directions along said plates; and

optical means extending in directions transverse to said

plates and utilizing light emitted and received by said light LSIs to transfer signals among light LSIs mounted on



different ones of said plates, in directions transverse to said plates.

5,008,555

OPTICAL PROBE WITH OVERLAPPING DETECTION FIELDS

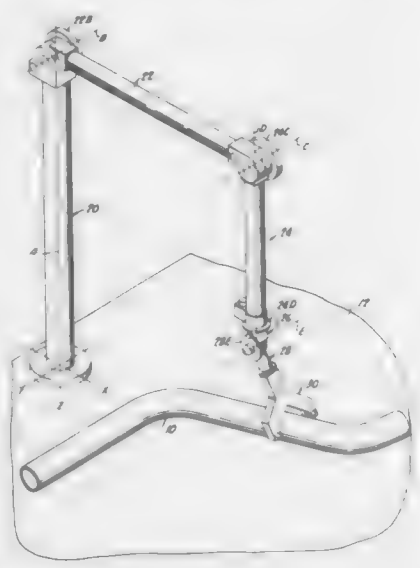
David J. Mundy, San Diego, Calif., assignor to Eaton Leonard Technologies, Inc., Carlsbad, Calif.

Continuation-in-part of Ser. No. 179,496, Apr. 8, 1988, Pat. No. 4,849,643, which is a continuation-in-part of Ser. No. 98,510, Sep. 18, 1987, abandoned. This application May 2, 1989, Ser. No. 346,123

The portion of the term of this patent subsequent to Jul. 18, 2006, has been disclaimed.

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—560 **37 Claims**



1. An optical probe comprising:

a working head,

first and second mutually spaced light sensors mounted to said working head,

first and second point light sources mutually spaced from each other and from said sensors mounted to said working head, said light sources configured and arranged to project first and second light beams toward said first and second sensors, respectively, though a sensitive region adjacent said sensors,

both said sensors having at least portions thereof occluded by presence in said sensitive region of an occluding object of which position is to be measured, and

means responsive to said sensors for generating a set of signals that collectively define position of an occluding object relative to said working head in a reference system fixedly related to the working head.

5,008,556

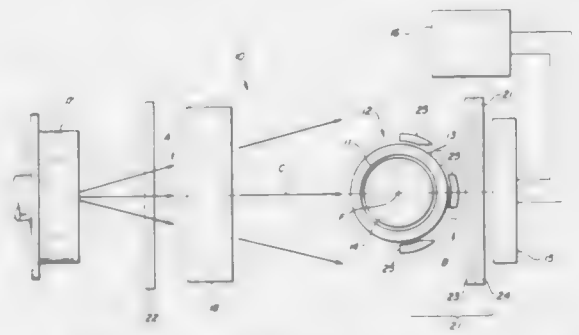
MEASURING A GAP BETWEEN A TUBE AND A FLOAT

Steven H. Mersch, Germantown, Ohio, assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jul. 24, 1989, Ser. No. 383,786

Int. Cl.[5] G01N *21/86;* **G01B** *11/00*

U.S. Cl. 250—560 **17 Claims**



1. An apparatus to determine the radial dimension of a gap including a material between a transparent or translucent tube and a cylindrical float located substantially concentrically within the tube comprising:

a monochromatic light source which provides an elliptically polarized light beam along an optical axis at the wavelength for which the materials of the tube and the gap are transparent or translucent and the index of refraction of the material of the tube is greater than the index of refraction of the material in the gap;

a light beam focusing means positioned in alignment with the optical axis to receive the polarized light beam for converting the light beam to a line of light in a plane;

means for translating and rotating an assembly of the tube and the cylindrical float through the plane with the line of light normal to a longitudinal axis of the assembly, the means for translating and rotating translates the assembly along the longitudinal axis while rotating the assembly about the longitudinal axis to produce an illumination with the line of light from at least a part of the assembly in the plane;

a light filtering means positioned along the optical axis beyond the assembly and arranged to, block light from the illumination reflected by the assembly and block light from the illumination refracted by the tube, the gap between the tube and the float and transmit light from the illumination refracted by the tube and the gap between tube and float;

light detection means positioned along the optical axis beyond the light filtering means to receive light transmitted by the light filtering means, the light detection means capable of generating signals responsive to the light received; and

signal processing means associated with said light detection means for processing signals therefrom.

5,008,557

POSITION DETECTOR FOR MOVING VEHICLE

Akio Noji; Kenji Kamimura, and Sadachika Tsuzuki, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 23, 1990, Ser. No. 484,041

Claims priority, application Japan, Mar. 1, 1989, 1-46408

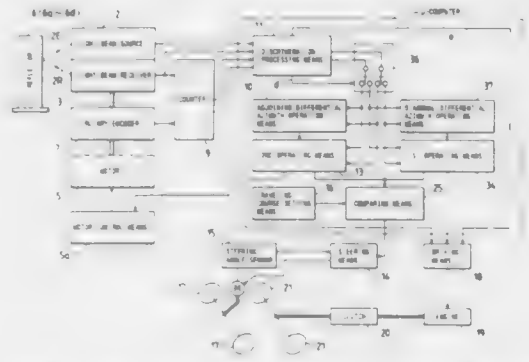
Int. Cl.[5] G01N *21/86;* **G01V** *9/04*

U.S. Cl. 250—561 **11 Claims**

1. A position-detecting system for a moving vehicle wherein the position of the moving vehicle is detected by scanning the light beam emitted from a light beam emitting means mounted on the moving vehicle in the circumferential direction centering around the moving body, and receiving the light beam reflected from light-reflecting means disposed at at least three positions by means of a light-receiving means mounted on the moving vehicle, comprising;

a light beam scanning means provided on the moving vehicle for scanning the light beam in the circumferential direction centering around the moving vehicle,

an azimuth detecting means for detecting the azimuthes of the respective light-reflecting means on the basis of the light-receiving intervals of the light-receiving means, differential azimuth operation means for operating the differential azimuthes between the reference points



viewed from the moving vehicle on the basis of the azimuthes,

a means for detecting the distance between the source of the reflected light received at the light-receiving means and the moving vehicle,

a means for calculating the position of the moving vehicle on the basis of the positional information and azimuthes of the reference points, and

a means for reducing the rotational speed of the light beam scanning means in response to the operation of the distance detecting means.

5,008,558

SYSTEM FOR DETECTING MINUTE PARTICLES ON OR ABOVE A SUBSTRATE

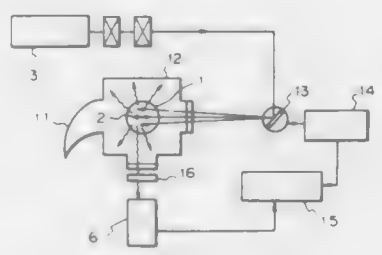
Masao Koshinaka; Minoru Akiyama; Hitoshi Tanaka, and Toshimasa Tomoda, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1989, Ser. No. 373,801

Claims priority, application Japan, Oct. 12, 1988, 63-257780

Int. Cl.[5] G01N *21/88*

U.S. Cl. 250—563 **7 Claims**



1. A fine-particle detecting apparatus for detecting fine particles disposed on the surface of a substrate for a semiconductor device and fine particles suspended in the space above the surface of said substrate by the use of scattering of a laser beam caused by these fine particles, comprising:

a laser beam scanning mechanism for irradiating a measuring space with a laser beam, said mechanism including means for relatively minutely modulating the angular position of the laser beam at a predetermined frequency;

a photodetector which receives light scattered by any of said fine particles and converts the received light into an electrical signal; and

a signal processor which extracts from the electrical signal output by said photodetector a signal component whose frequency is an integral multiple of said predetermined frequency for said minute scanning with the laser beam and which has a constant phase difference over time with respect to said predetermined frequency.

5,008,559

METHOD FOR OPERATING AN OPTICAL SMOKE DETECTOR AND OPTICAL SMOKE DETECTOR FOR THE METHOD

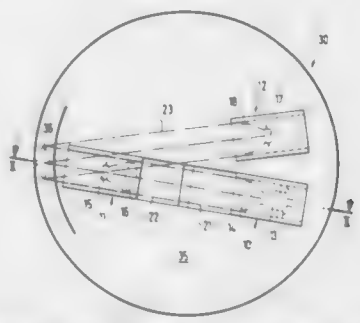
Hartwig Beyersdorf, Travemunder Allee 6a, 2400 Lubek, Fed. Rep. of Germany

Filed Sep. 6, 1989, Ser. No. 403,282

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1988, 3831654

Int. Cl.[5] G01N *15/06*

U.S. Cl. 250—575 **14 Claims**



1. An optical smoke detector, comprising a highly light-absorbing detector chamber (**36**), a light source (**10**) generating a light beam and a first and second light-sensitive receiver (**11, 12**) each co-operating with said detector chamber and having a limited field of view, wherein the field of view of said first light-sensitive receiver (**11**) intersects the radiation path of the light source (**10**) and the field of view of said second light-sensitive receiver (**12**) is exclusively directed onto a surface area of the detector chamber radiated by said light source, the detector further comprising an alarm circuit (**48**) generating an alarm signal when the output signal of the first light-sensitive receiver (**11**) reaches a predetermined value and a control circuit (**41**) connected to at least said second receiver generates a control signal when the output signal of said second light-sensitive receiver (**12**) reaches a predetermined value, and processing means processing the output signals of the first and the second receivers to provide an input signal for said alarm circuit and said control circuit, respectively, the processing means having two different modes, with one mode only the output signal of said first receiver and with the other mode only the output signal of said second receiver being processed.

5,008,560

LOAD TOTALIZING BLOCKED THROWOVER CONTROL

Roger Kieren, Grosse Pointe Woods; David A. Jamison, Livonia, and John J. Thomas, Rochester, all of Mich., assignors to The Detroit Edison Company, Detroit, Mich.

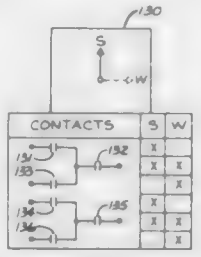
Filed Feb. 23, 1989, Ser. No. 314,049

Int. Cl.[5] H02J *3/04, 3/38*

U.S. Cl. 307—19 **10 Claims**

1. In an electric utility sub-station having two power systems each comprising a transformer which transmits electrical energy to customers over services lines, throwover means operative, when a failure occurs in either system, to switch the lines of the failed system to the transformer of the other system so that said transformer of said other system then carries the load of both systems, means responsive to a failure in one of said

systems to activate said throwover means, load sensing means for sensing the total demand load on both said transformers, and blocking means responsive to the sensing by said load



sensing means of total demand load in excess of a predetermined maximum allowable value for blocking the operation of said throwover means.

5,008,561

DEVICE DEPOWERING APPARATUS

David R. Madeley, Staffordshire, and Mark S. Binet, Gloucestershire, both of Great Britain, assignors to Lucas Industries, Birmingham, England

Filed Mar. 13, 1990, Ser. No. 492,773

Claims priority, application United Kingdom, Mar. 16, 1989, 8906066; Jun. 9, 1989, 8913289

Int. Cl.[5] **H02J** *1/00;* **G05B** *9/03*

U.S. Cl. 307—80 **14 Claims**



1. A device depowering apparatus for driving first and second loads, said apparatus comprising:

first and second channels for respectively driving the first and second loads, each of said first and second channels comprising

a device power supply line;

switch means, operatively connected with said device power supply line, for depowering one of the first and second loads corresponding thereto; and

control means for closing said switch means and supplying an other channel deselect signal in response to a channel select signal and for opening said switch means in response to an other channel deselect signal from said control means of an other of said first and second channels.

14. A method for depowering one of first and second channels respectively driving first and second loads via a power supply, said method comprising the steps of:

(a) receiving, at the first channel, input control data and a channel selection signal;

(b) generating, at the second channel, a channel deselect signal based on the input control data and the channel selection signal;

(c) generating, at the first channel, a de-energize signal based on the input control data; and

(d) depowering the first channel driving the first load based on one of the de-energize signal generated in step (c) and the channel deselect generated in step (b).

5,008,562

APPARATUS FOR GENERATING PULSE-LIKE CONSTANT CURRENT HAVING VARIABLE PULSE WIDTH

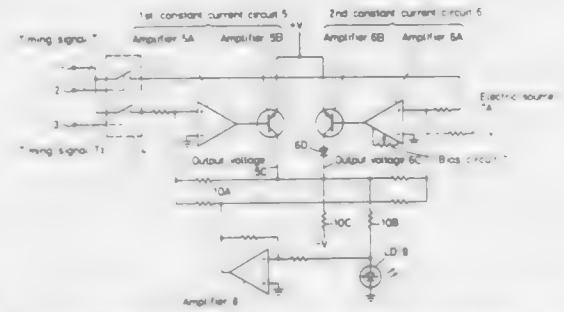
Takuya Hosoda; Mitsuhiro Morishita, and Takashi Tamura, all of Tokyo, Japan, assignors to Ando Electric Co., Ltd., Tokyo, Japan

Filed Aug. 1, 1989, Ser. No. 388,200

Claims priority, application Japan, Aug. 31, 1988, 63-218191

Int. Cl.[5] **H03K** *5/04, 5/05*

U.S. Cl. 307—265 **4 Claims**



1. An Apparatus for generating a pulse-like constant current with a variable pulse width, comprising:

a first constant current circuit constituted by a high-speed amplifier;

a second constant current circuit constituted by a low-speed amplifier and connected in parallel with said first constant current circuit;

each of said first and second constant current circuits providing an output current and an output voltage;

a bias circuit for setting the output voltage of said second constant current circuit higher than the output voltage of said first constant current circuit;

first switching means for turning on and off said first constant current circuit in response to a first timing signal;

second switching means for turning on and off said second constant circuit in response to a second timing signal;

first and second timing signal generating means for generating said first timing signal and said second timing signal, respectively, in such a manner that said first timing signal and said second timing signal are simultaneously turned on while said second timing signal is turned off after said first timing signal is turned off;

said first and second timing signal generator means including means for changing the on/off durations of the first and second timing signals so as to change the widths of the output current pulses.

5,008,563

ADJUSTABLE CLOCK GENERATOR CIRCUIT

Timothy J. Kenney, Pittsford, and Lionel J. D'Luna, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 5, 1989, Ser. No. 402,585

Int. Cl.[5] **H03K** *3/284, 5/13, 3/017*

U.S. Cl. 307—269 **4 Claims**

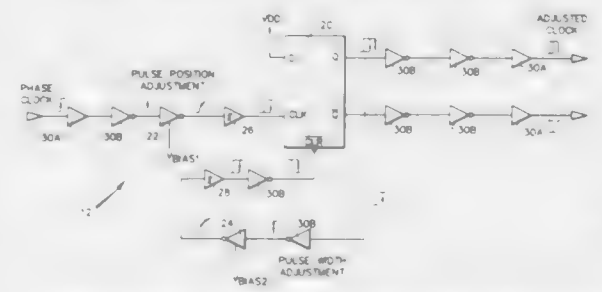
1. An adjustable clock generator circuit comprising:

flip-flop means having a clock input, a clear input, and complementary outputs comprising:

first adjustable rise time inverter means having a first input for receiving a phasing input signal, a second input for receiving a first bias voltage for controlling the rise time of its output signal, and an output for providing a first output signal;

first trigger means having an input connected to the output of said first adjustable rise time inverter and an output connected to the clock input of said flip-flop means and responsive to said first output signal for providing a pulse transition when said first output signal reaches a trigger voltage;

second adjustable rise time inverter means having a first input connected to one output of said flip-flop means and a second input connected to a second bias voltage and an



output for providing a second output signal having a rise time controlled by the second bias voltage;

second trigger means having an input connected to the output of said second adjustable rise time inverter means and an output connected to the clear input of said flip-flop means for providing a signal transition when said second output signal reaches a trigger voltage, thereby causing signals to appear on the complementary outputs of said flip-flop means with said signals having a pulse position controlled by the level of said first bias voltage and a width controlled by the level of said second bias voltage.

5,008,564

METHOD AND DEVICE FOR CONVERTING VOLTAGE TO FREQUENCY

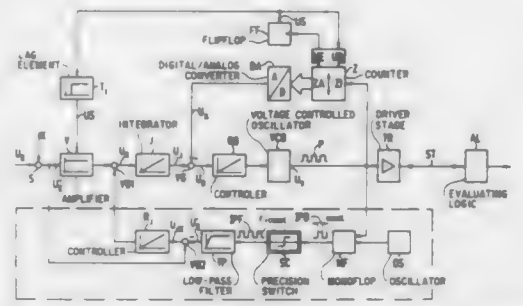
Hagen Hartwig, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich and Berlin, Fed. Rep. of Germany

Filed Mar. 16, 1990, Ser. No. 494,600

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1989, 3908848

Int. Cl.[5] **H03L** *7/00;* **H03M** *1/60*

U.S. Cl. 307—271 **6 Claims**



1. A method of converting voltage to frequency comprising:

(a) increasing an input voltage having an arbitrary value with respect to time, into the positive range by adding a constant voltage;

(b) integrating the raised input voltage;

(c) comparing said integrated raised input voltage with a reference voltage which varies in constant voltage steps;

(d) acting upon a voltage controlled oscillator which generates a sequence of pulses which are proportional to the output voltage of a controlling element, with the voltage differential between the integrated voltage and the reference voltage via the controlling element;

(e) increasing the reference voltage by one constant voltage step with each pulse so that the voltage differential approaches zero;

(f) repeating steps (a) to (e) until reaching a specified upper limiting value;

(g) upon reaching said limiting value, reversing the integration of the raised input voltage and lowering the reference voltage by one constant voltage step;

(h) repeating steps a) to e) until reaching a specified lower limiting value;

(i) and upon reaching said limiting value, reversing the integration of the raised input voltage, increasing the reference voltage by one constant voltage step;

counting the pulses generated by the voltage controlled oscillator within a predetermined time interval.

5,008,565

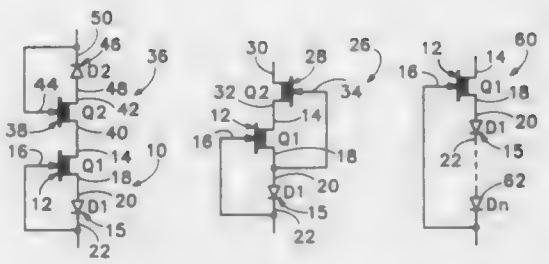
HIGH-IMPEDANCE FET CIRCUIT

Stewart S. Taylor, Beaverton, Oreg., assignor to TriQuint Semiconductor, Inc., Beaverton, Oreg.

Filed Jan. 23, 1990, Ser. No. 468,507

Int. Cl.[5] **H03K** *3/01, 3/353;* **G06G** *7/10*

U.S. Cl. 307—296.7 **31 Claims**



1. A high impedance integrated circuit element comprising:

an n-channel FET having a gate, a first side and a second side;

a diode having an anode and a cathode, said anode being electrically connected to said first side and said cathode being electrically connected to said gate, said diode biasing said FET to reduce FET conduction when said second side is at a positive potential relative to said diode cathode; and

a second FET having a gate, a first side and a second side and wherein the gate of said second FET is electrically connected to said anode and the first side of said second FET is electrically connected to the second side of said first FET.

5,008,566

POWER SUPPLY VOLTAGE DROP DETECTION CIRCUIT FOR USE IN EEPROM MEMORY

Kiyokazu Hashimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 30, 1989, Ser. No. 444,505

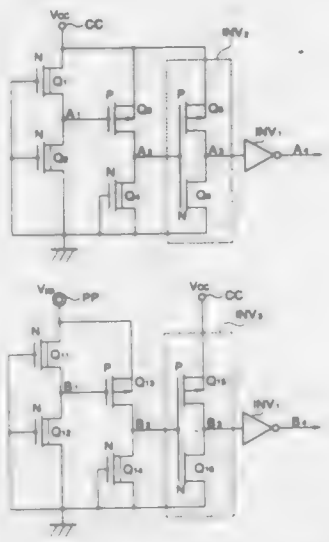
Claims priority, application Japan, Nov. 30, 1988, 63-303610

Int. Cl.[5] **H03K** *5/153, 3/01*

U.S. Cl. 307—296.8 **4 Claims**

1. A power supply voltage drop detection circuit comprising a first N-channel field-effect-transistor of a depletion type

having a drain connected to a power supply voltage line and a gate connected to ground, said first N-channel field-effect-transistor having a threshold whose absolute value has a positive temperature characteristic, a second N-channel field-effect-transistor having a drain connected to a source of the first N-channel field-effect-transistor and a source connected to the ground, a gate of the second N-channel field-effect-transistor being connected to receive a controlled gate voltage which ceaselessly maintains the second N-channel field-effect-transistor in a conducting condition, a P-channel field-effect-transistor of an enhancement type having a source connected to the power supply voltage line and a gate connected to a connection node between the first and second N-channel field-effect-transistors, said P-channel field-effect-transistor having



a threshold whose absolute value has a negative temperature characteristic, a third N-channel field-effect-transistor having a drain connected to a drain of the P-channel field-effect-transistor and a source connected to the ground, a gate of the third N-channel field-effect-transistor being connected to receive a controlled gate voltage whose ceaselessly maintains the third N-channel field-effect-transistor in a conducting condition, and an inverter having an input connected to a connection node between the P-channel field-effect-transistor and a third N-channel field-effect-transistor and having an output generating a signal which is a function of the sum of the absolute value of the threshold of the first N-channel field-effect-transistor and the absolute value of the threshold of the P-channel field-effect-transistor and indicative of a power supply voltage drop.

5,008,567

SIGNAL GENERATING CIRCUIT FREE FROM MALFUNCTION BASED ON NOISE

Kazuo Shibata, and Toshio Komuro, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

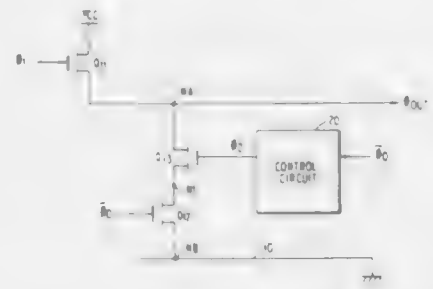
Filed Apr. 24, 1989, Ser. No. 342,066

Claims priority, application Japan, Apr. 25, 1988, 63-101809

Int. Cl.[5] H03K *17/16, 19/003, 19/017*

U.S. Cl. 307—443 **4 Claims**

1. A signal generating circuit comprising a first field effect transistor having a source-drain path connected between a first node and an output node, second and third field effect transistors having their source-drain paths connected in series between said output node and a second node, means for supplying said first node with a power voltage, means for supplying said second node with a reference voltage, means for supplying a gate of said first transistor with a first signal which assumes an active level to render said first transistor conductive in a first period and an inactive level to render said first transistor non-conductive in subsequent second and third periods following said first period, means for supplying a gate of said third transistor with a second signal which assumes an active level to render said third transistor conductive in said third period and an inactive level in said first and second periods, and means for supplying a gate of said second transistor with a third signal, different from said second signal, which assumes an active level to render said second transistor



non-conductive in said second period, wherein said output node is supplied with the power voltage through said first transistor in said first period and the power voltage at said output node is maintained in a dynamic manner throughout said second period and then discharged to the reference voltage through said second and third transistors in said third period.

5,008,568

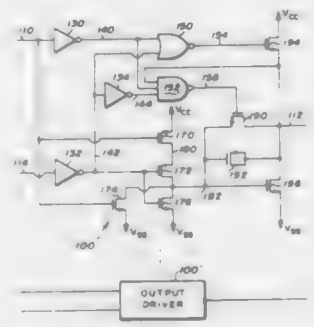
CMOS OUTPUT DRIVER

Wingyu Leung, Cupertino, and Chuen-Der Lien, Mountain View, both of Calif., assignors to Integrated Device Technology, Inc., Santa Clara, Calif.

Continuation of Ser. No. 300,915, Jan. 24, 1989, abandoned. This application Aug. 8, 1990, Ser. No. 565,169

Int. Cl.[5] H03K *19/003*

U.S. Cl. 307—451 **6 Claims**



1. An output driver (**100**) comprising in combination:

an input line (**110**) for connection to receive an input signal;

an output line (**112**);

pull-down means including a transistor (**196**) having a gate, drain means connected to said output line, and source means connected to receive a power supply potential;

capacitor means (**192**) connected between said pull-down means transistor drain means and said pull-down means transistor gate;

first means (**170, 172, 174, and 176**) including at least an input connected to said input line and an output connected to said pull-down means transistor gate, said first means being responsive to at least the state of said input signal and operative to develop a signal of inverted state on said pull-down means transistor gate, said first means presenting a finite resistance to said pull-down means transistor gate;

feedback means including a transistor (**190**) having a gate, source means connected to said pull-down means transistor gate, and drain means connected to said output line; and

second means (**130, 134, 150, and 152**) including an input connected to said input line and an output connected to said feedback means transistor gate, said second means being responsive to at least the state of said input signal and operative to develop a signal of similar state on said feedback means transistor gate.

5,008,569

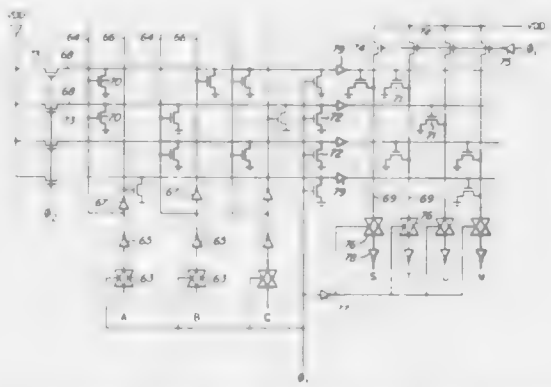
HIGH-SPEED DYNAMIC CMOS CIRCUIT AND PRECHARGE GENERATOR

Marc P. Roy, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 11, 1989, Ser. No. 406,294

Int. Cl.[5] H03K *19/177*

U.S. Cl. 307—465 **8 Claims**



1. A two-plane logic array circuit adapted to be operated from a single clock pulse train and having an input plane and an output plane, the input plane being defined by an array of rows and input columns, the output plane being defined by an array of the rows and at least one output column, a series of first transistors being selectively positioned in the input plane at the intersection of the rows with the input columns such that a charge on one of the input columns results in the discharge of any charge on those rows sharing first transistors with that column, a series of second transistors being selectively positioned in the output plane at the intersection of the rows with the at least one output column such that a charge on one of the rows results in the discharge of any charge on any output column that shares second transistors with that row, the circuit further comprising first, second, third, fourth and fifth gate means, the first gate means controlling the transmission of each of a first set of input signals to a respective one of the input columns, the second gate means controlling the discharge of charge from the rows, the third gate means and the state of the input columns controlling the charging of each of the rows with a respective one of a second set of input signals, the fourth gate means controlling a pre-charging of the at least one output column, and the fifth gate means controlling the transmission of the state of the at least one output column to the output of the logic array circuit, the first, second and fourth gate means opening and closing simultaneously, the fifth gate means closing as the first gate means opens and opening as the first gate means closes, the logic array circuit further comprising a subcircuit for deriving a third gate means pulse train from the single clock pulse train for controlling the opening and closing of the third gate means;

whereby during a first time period the first, second and fourth gate means are opened and then closed, and the fifth gate means is closed then opened, each of the first set of input signals being thereby transmitted to a respective one of the input columns, any charge on the first rows being discharged, and the at least one output column being pre-charged, the third gate means remaining closed during the first time period, and whereby during a second time period the third gate means is opened and then closed, the first, second and fourth gate means remaining closed and the fifth gate means remaining open during the second time period, the state of each row being thereby determined by the state of the respective second input signal and the state of the input columns, the state of the at least one output column then being determined by the resultant state of the rows, and the resultant state of the at least one output column then being transferred to the output of the logic array circuit, and whereby the aggregate length of the first and second time periods is equal to the period of the single clock pulse train.

5,008,570

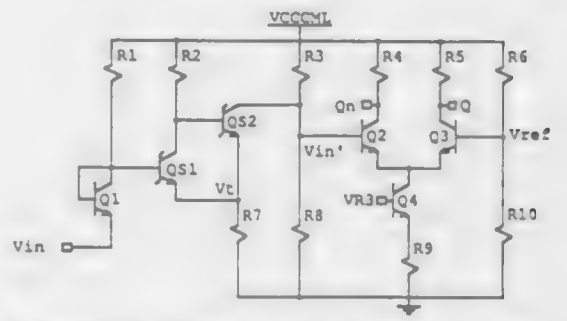
SCHMITT-TRIGGERED TTL TO CML INPUT BUFFER APPARATUS

John D. Coddington, Plymouth, Minn., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 30, 1990, Ser. No. 502,397

Int. Cl.[5] H03K *17/16, 3/354*

U.S. Cl. 307—475 **6 Claims**



1. An input buffer apparatus comprising in combination:

a CML gate having a first and second input, said first input receiving a voltage reference signal, said CML gate providing a first and second output signal, which are respectively complementary, and,

a hysteresis means operatively connected to said first input of said CML gate, said hysteresis means receiving a logic signal at its input, when said logic signal is low, said hysteresis means applies a trigger signal to said second input of said CML gate which is lower than said voltage reference signal and thus causes said first output signal to become a logical zero, when said logic signal is high, said hysteresis means applies a trigger signal to said second input of said CML gate which is higher than said voltage reference signal and thus causes said first signal to become a logical one, said hysteresis means comprises a Schmitt trigger.

5,008,571

METHOD AND APPARATUS FOR DIVIDING HIGH FREQUENCY ANALOG SIGNALS

Ronald M. Rudish, Commack, N.Y., assignor to AIL Systems, Inc., Deer Part, N.Y.

Filed Jun. 29, 1989, Ser. No. 373,894

Int. Cl.[5] G06G *7/00;* **H03B** *19/00*

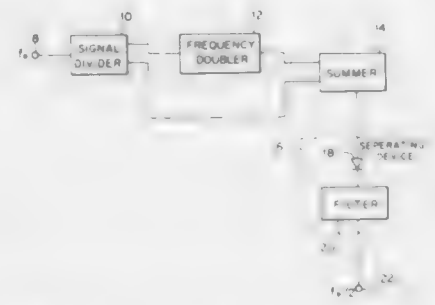
U.S. Cl. 307—529 **6 Claims**

1. A frequency divider, which comprises:

means responsive to a time varying input signal for dividing the input signal into at least first and second signals, the signal dividing means including outputs from which the first and second signals are provided;

means responsive to the first signal for doubling the frequency of the first signal, the frequency doubling means providing a third signal as an output signal having a frequency which is substantially twice the frequency of the first signal;

means responsive to the second and third signals for summing the second and third signals, the summing means providing a fourth signal as an output signal which corresponds to the sum of the second and third signals, the fourth signal having a low frequency component which is substantially equal to one-half the frequency of the input signal, and a high frequency component; and



means for separating the low frequency component of the fourth signal from the high frequency component, the separating means providing an output signal corresponding to the low frequency component of the fourth signal, which low frequency component is substantially equal to one-half the frequency of the input signal.

5,008,572

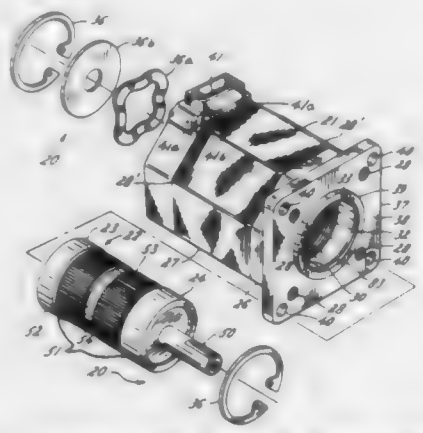
ENCAPSULATED MOTOR WITH PRECISION BEARING REGISTRATION

James W. Marshall, Towson, Md.; David Gotchy, Roscoe; Bradley L. Uffelman, Rockford, both of Ill.; Wendell B. Leimbach, Baltimore, and Albert A. Wilhelmi, Baldwin, both of Md., assignors to Pacific Scientific Company, Rockford, Ill.

Division of Ser. No. 323,507, Mar. 13, 1989, Pat. No. 4,922,604. This application Mar. 30, 1990, Ser. No. 491,814

Int. Cl.[5] **H02K** *5/15;* **F16C** *35/00*

U.S. Cl. 310—45 **10 Claims**



1. An encapsulated stator electrical motor comprising, in combination:

a rotor assembly having a plurality of rotor laminations fixed in a stack on a rotor shaft, rotor bearings on the rotor shaft at either end of the rotor lamination stack, the outer diameter of the bearings being slightly greater than the outer diameter of the rotor lamination stack;

a unitary potted stator assembly including a stator lamination stack with exterior exposed and stator end caps on either end of the stator lamination stack;

a continuous bore formed in the stator assembly through a first one of the end caps, through the stator lamination stack and through a second one of the stator end caps, the bore forming an internal cylindrical area for receipt of the rotor lamination stack and bearing surfaces in the end caps, the bore comprising a smoothly machined surface free of discontinuities capable of trapping machining debris formed during machining of the bore, the smoothly machined surface of the bore exposing portions of the end caps, the stator lamination stack and interposed potting material; and

the rotor assembly being carried within the bore formed in the stator assembly with the rotor bearings engaging the bearing surfaces in the end caps leaving an air gap between the rotor lamination stack and the stator lamination stack.

5,008,573

MAGNETIC DISK ENCLOSURE WITH DETACHABLE STATOR

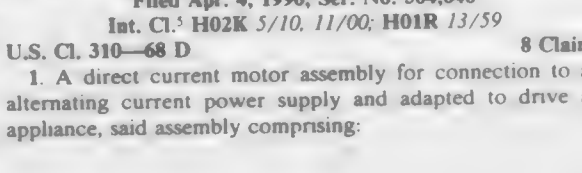
Osamu Beppu, Odawara; Toshihiro Moribe, Chigasaki; Youjiro Tezuka, Hiratuka, and Akira Chuma, Ashigarakami, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 21, 1990, Ser. No. 482,807

Claims priority, application Japan, Feb. 22, 1989, 1-40231

Int. Cl.[5] **H02K** *29/00, 21/22;* **G11B** *33/00*

U.S. Cl. 310—67 R **15 Claims**



1. A magnetic disk unit including at least one magnetic disk, comprising:

a hub;

means for supporting said hub in rotation, said magnetic disk being fixed to said hub;

a magnetic head for reading/writing information from and to said magnetic disk;

an actuator for positioning said magnetic head in predetermined positions on said magnetic disk;

enclosure means having an interior portion for storing said magnetic disk, said magnetic head and said actuator;

said means for supporting said hub in rotation including a shaft extending through said hub having bearings at its opposite ends for supporting said shaft in rotation with respect to said enclosure means;

a motor for rotating said hub including said motor having a rotor concentrically mounted to said shaft having a rotor housing in the shape of a cup with an opening facing away from the interior portion of said enclosure;

said rotor housing having a magnet fixed to the rotor housing and facing inwardly thereof;

a stator mounted concentrically inwardly of said rotor, and facing said rotor magnet;

one end of said shaft extending outside of said enclosure means and said rotor housing being fixed to said one end so that said rotor is positioned outside of said enclosure means; and

a supporting member for supporting said stator and being fixed to said enclosure means adjacent said rotor such that said one end of said shaft and said supporting member are not in contact with one another.

5,008,574

DIRECT CURRENT MOTOR ASSEMBLY WITH RECTIFIER MODULE

Roy S. Kitahata, Fullerton, Calif., assignor to The Chamberlain Group, Elmhurst, Ill.

Filed Apr. 4, 1990, Ser. No. 504,640

Int. Cl.[5] **H02K** *5/10, 11/00;* **H01R** *13/59*

U.S. Cl. 310—68 D **8 Claims**

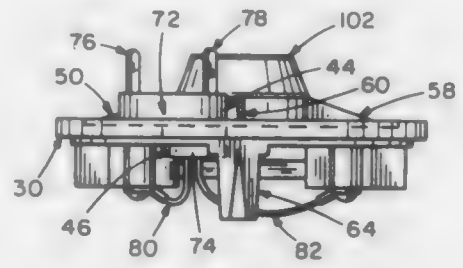
1. A direct current motor assembly for connection to an alternating current power supply and adapted to drive an appliance, said assembly comprising:

a tubular housing;

an armature having windings and disposed inside said housing;

a first end closure closing one end of said housing; and

a second end closure closing the other end of said housing, said first end closure comprising an end plate having an aperture, said first end closure further comprising a rectifier assembly including a body portion with a first end and a second end, a pair of input terminals extending from said



body portion first end, and a pair of output terminals extending from said body portion second end, said body portion being retained in said aperture with said input terminals being disposed in their entirety outside of said housing and said output terminals positioned in their entirety inside said housing whereby direct current may be provided to said armature without any discrete electrical conductors extending through said end closure or said housing.

5,008,575

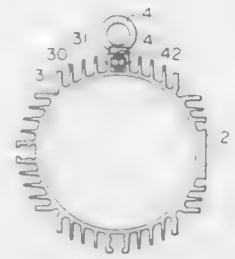
LIFTING STRUCTURE FOR DYNAMIC ELECTRIC MACHINE

Noriyuki Ishimoto, Aichi, and Hirofumi Iida, Obu, both of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Apr. 30, 1990, Ser. No. 516,994

Int. Cl.[5] **H02K** *5/26*

U.S. Cl. 310—89 **1 Claim**



1. A lifting structure for lifting a dynamic electric machine having a substantially cylindrical stator frame provided on an outer peripheral surface thereof with a plurality of heat radiating ribs extending in a longitudinal direction of said machine, said lifting structure comprising:

grooves formed in opposing walls of two adjacent heat radiating ribs so as to extend in the longitudinal direction of said machine;

outer and inner ridges radially provided on each said opposing wall to define therebetween each said groove; and

a lifting member provided at a lower portion with a sliding engaging portion having an expanded portion which is slidably received in said grooves.

5,008,576

MAGNETIZING TYPE INDUCTION MOTOR

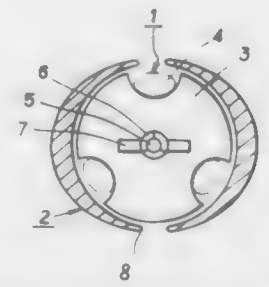
Jong-Seob Lee, InChon, Rep. of Korea, assignor to Jong-Sub Lee and Woo-Jin Kim, both of Seoul, Rep. of Korea

Filed Mar. 15, 1989, Ser. No. 324,217

Claims priority, application Rep. of Korea, Mar. 16, 1988, 2769/1988

Int. Cl.[5] **H02K** *17/12, 1/12*

U.S. Cl. 310—166 **11 Claims**



1. A magnetizing type induction motor having a coil-wound rotor and a commutator installed on a shaft comprising:

at least two stator pieces positioned about an exterior surface of the rotor, each said stator piece having a crescent-shaped cross section and being formed of a non-magnetized ferromagnetic material, the thickness of a center portion of each said stator piece being larger than the thickness of opposite longitudinal edges of said stator piece.

5,008,577

ASSEMBLED COMMUTATOR WITH HEAT-RESISTING RING

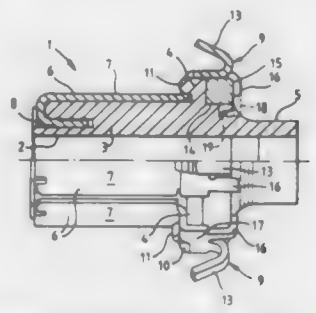
Patrick S. Wang, Repulse Bay, Hong Kong, assignor to Johnson Electric S.A., La Chaux de Fonds, Switzerland

Filed Oct. 10, 1989, Ser. No. 418,021

Claims priority, application United Kingdom, Oct. 13, 1988, 8823991; Oct. 13, 1988, 8823992

Int. Cl.[5] **H02K** *13/04;* **H01R** *39/16, 39/32*

U.S. Cl. 310—233 **4 Claims**



1. An assembled commutator comprising a cylindrical thermoplastic base having a first end and a second end, recesses formed in the first end, the base being formed with an integral outwardly projecting peripheral collar surrounding the base adjacent the second end, the base further having a supporting part extending between the first end and the collar, and the collar being formed with an annular shelf facing the second end of the base; an annular ring of high temperature non-softening material positioned on the shelf, the collar and the ring having adjacent peripheral surfaces; and a plurality of elongate commutator segments mounted on and around the base against the supporting part, each segment having a first finger at one end of the segment which fits into a respective one of the recesses and a tang and a second finger at an opposite end of the segment, the tang fitting over the peripheral surfaces of the collar and the ring, and the second finger extending over and

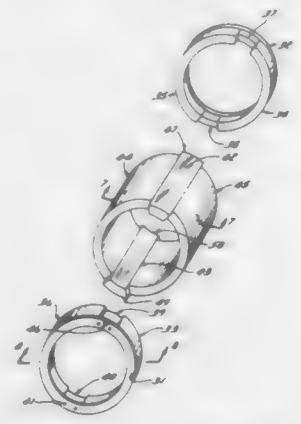
against a rear surface of the ring which faces the second end of the base to hold the ring in position and prevent axial movement of the segment along the base towards the second end.

5,008,578

PERMANENT MAGNET MOTOR HAVING DIVERTING MAGNETS

Sang H. L. Pace, 3802 Green Shadow, Pasadena, Tex. 77503

Filed Apr. 26, 1989, Ser. No. 343,923
Int. Cl.[5] H02K *1/12, 1/17, 21/26*
U.S. Cl. 310—256 **3 Claims**



1. In a dc electric motor having a rotor and a stator, and at least a pair of oppositely disposed main magnets associated with one of the rotor and stator, the improvement comprising:

an end diverting magnet positioned at each end of each main magnet, said end diverting magnets having a magnetic field perpendicular to the magnetic field of the main magnets, the magnet orientation of said end diverting magnets being positioned to increase the flux density of the main magnets with low magnetic leakage, wherein the main magnets and said end diverting magnets are arcuate segments of approximately 120°.

5,008,579

LIGHT EMITTING POLYMER ELECTRICAL ENERGY SOURCE

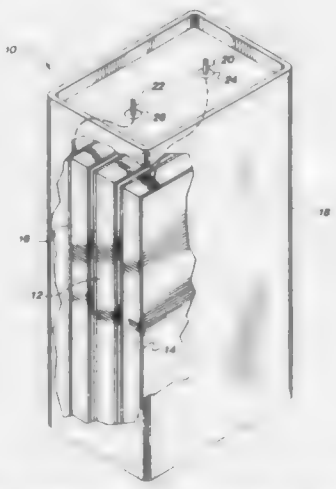
Jerry J. Conley, and Gary B. Mortensen, both of Waseca, Minn., assignors to E. F. Johnson Co., Waseca, Minn.

Filed Mar. 3, 1989, Ser. No. 318,743
Int. Cl.[5] G21H *1/12*
U.S. Cl. 310—303 **43 Claims**

1. An electrical energy source, comprising:

a light emitting polymer material having at least one light emitting surface emitting light energy in a specified frequency bandwidth, the light emitting polymer material comprising an organic polymer incorporating a radioisotope emitting beta particles to which an organic phosphor is bonded, wherein the radioisotope consists of a radioisotope selected from the group ^{3}H, ^{10}Be, ^{14}C, ^{32}Si and ^{32}P; and

a photovoltaic cell having a light collecting surface and a pair of electrical contacts, the light collecting surface of the photovoltaic cell being substantially intimately optically coupled to the light emitting surface of the light emitting polymer, such that an open-circuit voltage is generated between the pair of electrical contacts as a



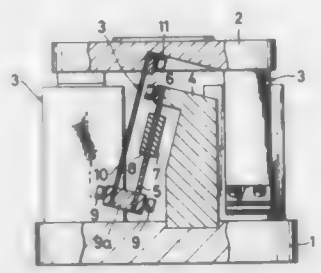
result of the photovoltaic cell's absorption of light energy emitted from the light emitting polymer.

5,008,580

PIEZOELECTRIC VIBRATION GENERATOR AND VIBRATORY PARTS FEEDER INCORPORATING THE SAME

Takeshi Masuda, Kurobe; Susumu Yagi, Toyama; Sakiichi Okabe, Ishikawa; Yoichi Kamishima, and Kazuo Kawagoe, both of Toyama, all of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Feb. 3, 1989, Ser. No. 305,919
Claims priority, application Japan, Feb. 3, 1988, 63-23299; Oct. 4, 1988, 63-250284
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—321 **52 Claims**



1. A piezoelectric vibration generator comprising:

(a) at least two resilient plate members joined together at their one ends, which are free-standing and disposed in a U-shaped configuration substantially folded about the joint therebetween, their opposite ends being directly upwardly and separately secured to supports; and

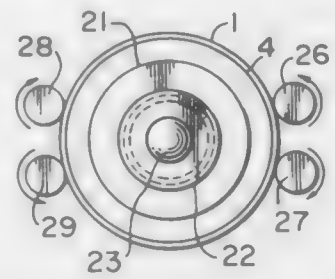
(b) a pair of piezoelectric elements attached respectively to front and back surfaces of one of said resilient plate members.

5,008,581

PIEZOELECTRIC REVOLVING RESONATOR AND SINGLE-PHASE ULTRASONIC MOTOR

Akio Kumada, Kokubunji; Takahiko Iochi, Koganei, and Minoru Okada, Kunitachi, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka and Demix Technology Inc., Tokyo, both of, Japan

Filed Apr. 10, 1989, Ser. No. 335,374
Claims priority, application Japan, Apr. 12, 1988, 63-88160
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—323 **6 Claims**



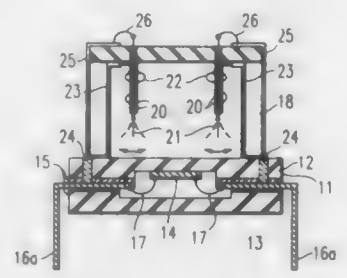
1. A piezoelectric revolving resonator comprising a piezoelectric ceramic element in the form of a disk, a cylinder or a pipe having only two areas of opposite polarization, said two areas being formed by dividing said disk, cylinder or pipe by its diameter, said piezoelectric ceramic element including a single electrode on each of opposite main surfaces thereof to form equipotential surfaces on said opposite main surfaces, such that a resonant condition, in which a center of mass of said piezoelectric element is revolved due to piezoelectric deformations thereof, can be excited by a single-phase alternating current voltage applied across said two single electrodes on said opposite main surfaces of said piezoelectric ceramic element.

5,008,582

ELECTRONIC DEVICE HAVING A COOLING ELEMENT

Chiaki Tanuma, Tokyo; Kazuhiro Itsumi, Kawasaki; Nobuo Iwase, Kamakura; Tomio Ono; Yuu Kondo, both of Yokohama, and Kazutaka Saito, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 150,294, Jan. 29, 1988, abandoned. This application Apr. 26, 1990, Ser. No. 515,668
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—332 **4 Claims**



1. An electronic device, comprising:

an insulating base member;

a semiconductor integrated circuit chip having electrodes thereon and being mounted on said base member;

an insulating cap member being provided on said base member and sealing said chip therebetween;

a lead frame member having plural leads and extending outside of said base and cap members;

wire connection members connected between said electrodes of said chip and said lead of said frame;

a supporting member provided directly on said base member,

piezoelectric cooling means provided on said supporting member for cooling said chip, including bimorph vibrator means and plural electric terminals connected to said bimorph vibrator means;

plural through holes being provided through said base member; and

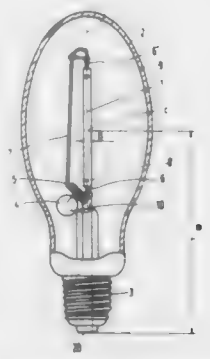
plural electric connecting members connecting said electric terminals of said cooling means to said leads of said lead frame through said through holes provided through said base member.

5,008,583

HIGH-PRESSURE DISCHARGE LAMP

Samuel A. Carleton, Bath, N.Y., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 12, 1989, Ser. No. 378,879
Claims priority, application Netherlands, Jul. 12, 1988, 8801756; Aug. 17, 1988, 8802034
Int. Cl.[5] H01J *1/02*
U.S. Cl. 313—25 **5 Claims**



3. A high pressure sodium discharge lamp, comprising:

a clear outer envelope defining a lamp axis and having a reentrant stem sealing said envelope in a gas-tight manner;

an elongate discharge vessel disposed within said outer envelope in which a discharge is maintained during lamp operation, said discharge vessel having a longitudinal axis aligned with said lamp axis, an outside diameter D, a first end proximate said stem and a second end remote from said stem;

first and second rigid current conductors extending from said stem into said envelope for supporting and energizing said discharge vessel, said first current conductor being connected to said first end of said discharge vessel and said second current conductor extending the length of said discharge vessel and being connected to said second end of said discharge vessel;

a starting circuit comprising a glow starter for initiating a discharge within said discharge vessel, said glow starter being mounted adjacent said stem and spaced a distance of at least D/2 from said longitudinal axis of said discharge vessel; and

shielding means for shielding a substantial portion of said glow starter from heat radiation.

5,008,584

SPARK PLUG HAVING A BUILT-IN RESISTOR FOR SUPPRESSING NOISE SIGNALS

Morihiro Atsumi, Okazaki, and Kiyoaki Tanaka, Obu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 6, 1989, Ser. No. 375,978
Claims priority, application Japan, Jul. 6, 1988, 63-168533
Int. Cl.[5] H01T *13/05*
U.S. Cl. 313—136 **23 Claims**

2. A spark plug comprising an insulator having a bore therein along an axis direction, a terminal electrode inserted from one opening of the bore of the insulator and fixed in the bore, a center electrode inserted from another opening of the

bore of the insulator and fixed in the bore, a resister placed between the terminal electrode and the center electrode in the bore of the insulator, and conducting glass seals placed between one end of the resister and the terminal electrode and between another end of the resistor and the center electrode,

said resistor being a sintered body made from a mixture of glass powders, electrical insulating ceramic powders and a carbon black powder in an amount of 0.1 to 2.5% by weight based on 100% by weight of a total of the glass powders and the ceramic powders,

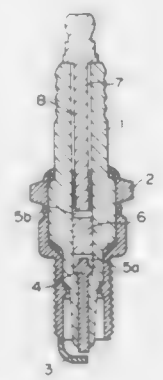
said glass powders comprising coarse glass particles of 177 μm to 840 μm in particle size and fine glass particles of 74 μm or less in particle size,

said ceramic powders comprising coarse ceramic particles of molten alumina of 177 μm to 840 μm in particle size and fine ceramic particles of 10 μm or less in particle size,

the amount of the glass powders in % by weight being in the range between the formulae (1) and (2):

$$65.7 - 7.5x + 0.5x^2 \quad (1)$$

$$82.2 - 6.1x + 0.4x^2 \quad (2)$$



wherein x is the density in g/cm³ of fine ceramic particles having a particle size of 10 μm or less,

the proportion of the coarse glass particles in the glass powders in weight ratio being in the range between the formulae (3) and (4):

$$0.53 + 0.03x - 0.0006x^2 \quad (3)$$

$$0.72 + 0.06x - 0.0030x^2 \quad (4)$$

wherein x is as defined above,

the proportion of the coarse ceramic particles of molten alumina in the ceramic powders in weight ratio being in the range between the formulae (5) and (6):

$$0.93 - 0.20x + 0.016x^2 \quad (5)$$

$$1.06 - 0.10x + 0.006x^2 \quad (6)$$

wherein x is as defined above.

5,008,585

VACUUM ARC SOURCES OF IONS

Henri Bernardet, Saint Michel sur Orge, and Jean-Claude Pauwels, Brunoy, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 21, 1988, Ser. No. 223,465

Claims priority, application France, Jul. 22, 1987, 87 10391

Int. Cl.[5] **H01J** *27/00, 27/26*

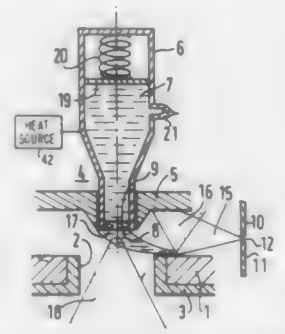
U.S. Cl. 313—231.31 **14 Claims**

1. Vacuum arc ion comprising

a cathode and an anode having a surface,

means for providing a layer of liquid metal over said anode surface, said means including a reservoir of said liquid metal,

a connection member disposed between said reservoir and said anode surface, and being permeable to said liquid metal, said connection member being a material having numerous pores to pass by capillary action said liquid metal from said reservoir to said anode surface;



trigger electrode means for forming a first plasma from said cathode to said anode surface, said anode surface being heated by said first plasma to form an emitted vapor of said liquid metal, and

means for ionizing said emitted vapor to form a second plasma of arc ions from said anode surface and extending past said cathode.

5,008,586

SOLID STATE CURRENT SENSING CIRCUIT AND PROTECTION CIRCUIT

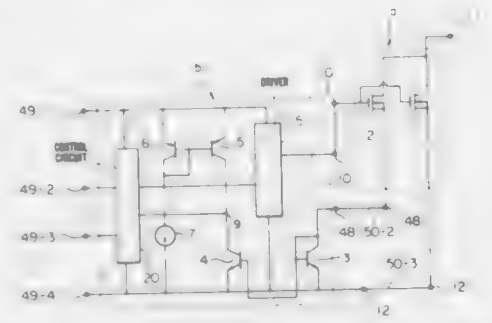
Hideki Miyazaki; Akihiko Kanouda; Kenichi Onda, and Yasuo Matsuda, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 27, 1989, Ser. No. 302,340

Claims priority, application Japan, Jan. 29, 1988, 63-16971

Int. Cl.[5] **G05F** *1/56, 3/26*

U.S. Cl. 323—315 **7 Claims**



1. A current sensing circuit for a semiconductor circuit having a first semiconductor element forming a series circuit including a first external power source and an external load, wherein said first semiconductor element includes means to control a flow and cut-off of a load current through said external load, and a second semiconductor element having a smaller size than the first semiconductor element and allowing a second current to flow which is smaller than the load current and which varies depending on the load current, said current sensing circuit comprising:

means for taking out a current which is connected to the second semiconductor element to take out the second current, said means including a first current mirror circuit having at least two transistors;

means including a second current mirror circuit having at least two transistors;

means for setting a reference current to allow a predetermined reference current to flow in said second current mirror circuit;

current comparison means including a series circuit of one of said transistors of the first current mirror circuit and one of said transistors of the second mirror circuit, and an output terminal provided therebetween from which a state signal showing a result of the comparison between the second current and the reference current is outputted;

means for connecting said current comparison means to a second external power source having a lower voltage than said first external power source; and

current sensing means for sensing a value of the load current flowing in said first semiconductor based on the output of said current comparison means.

5,008,587

ELECTRIC LAMP WITH IMPROVED LAMP CAP ASSEMBLY

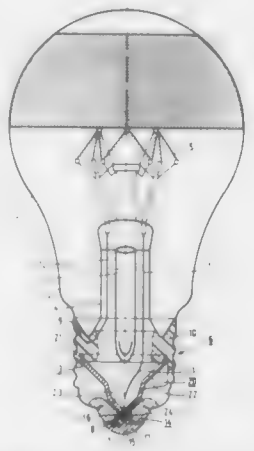
Livio Borgis, Torino, Italy, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 14, 1990, Ser. No. 567,413

Claims priority, application Netherlands, Aug. 28, 1989, 8902170

Int. Cl.[5] **H01J** *5/50;* **H01K** *1/46*

U.S. Cl. 313—318 **11 Claims**



1. An electric lamp comprising

a translucent lamp vessel (1) with an end portion (2) which comprises a sealed exhaust tube (3) and a stemtube (4),

a light source (5) inside the lamp vessel,

a lamp cap (6) having an axis (7) and contact members (8, 9), which cap is fastened to the end portion of the lamp vessel by means of an adhesive compound (10),

current supply conductors (11, 12) which extend from the light source to respective contact members (8, 9) at the lamp cap and are connected thereto,

the lamp cap (6) having a metal shell portion (13) and a base portion (14) of insulating material which carries at least one base contact member (8) provided with an opening (15) which issues into a channel (16) through the base portion, through which channel a current supply conductor (11) can pass to the exterior,

in the lamp cap, a hollow body (20) of synthetic material which extends from a first open end (21) near the lamp vessel (1) to the base portion (14) of the lamp cap (6) and insulates the current supply conductor (11) from the shell portion (13) of the lamp cap, characterized in that the body (20) of synthetic material has outward projections (22) which are distributed over its circumference and bear with clamping fit on the shell portion (13) of the lamp cap (6).

5,008,588

WEDGE-TYPE LAMP BULB ASSEMBLY

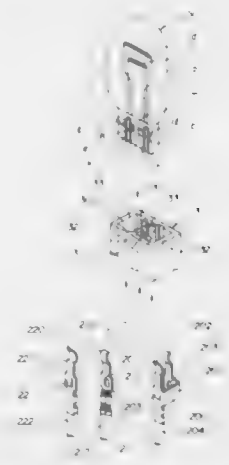
Toshiro Nakahara, Hiratsuka, Japan, assignor to Ichikoh Industries, Ltd., Tokyo, Japan

Filed Jun. 22, 1989, Ser. No. 369,233

Claims priority, application Japan, Jun. 22, 1988, 63-81675

Int. Cl.[5] **H01K** *1/46;* **H01R** *17/00*

U.S. Cl. 313—318 **3 Claims**



1. A wedge-type lamp bulb assembly having a wedge-type lamp bulb consisting of a bulb containing a filament and a wedge-shaped base extending from the bulb, a plurality of lead wires connected to the filament being led out of a part of the wedge-shaped base and folded along the surfaces of the wedge-shaped base, and a socket which removably holds the wedge-shaped base, wherein there is mounted inside said socket a plurality of terminals which are in resilient contact with said lead wires, respectively, and there is formed on either the inner wall of said socket or the surfaces of said base and in positions opposite to each other along the inserting/removing direction of said base at least a pair of protruding members which engages either the surfaces of said base or the inner wall of said socket.

5,008,589

ELECTRON GUN AND METHOD FOR MANUFACTURING THE SAME

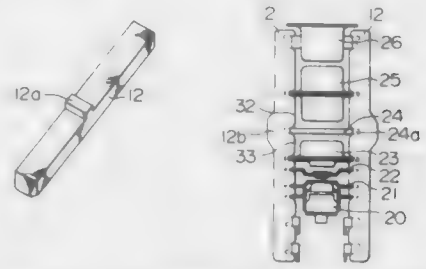
Hiroshi Takanobu, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 18, 1989, Ser. No. 451,805

Claims priority, application Japan, Dec. 26, 1988, 63-325832

Int. Cl.[5] **H01J** *29/48*

U.S. Cl. 313—456 **8 Claims**



1. A method for manufacturing an electron gun retaining a cathode and a plurality of electrodes with bead glasses, wherein each of said bead glasses are provided with a convex portion at a portion on its electrode side where at least one bead support for an electrode is buried, said bead glasses disposed on bead bases of a beading apparatus are heated and

softened, and bead supports for the cathode and the plurality of electrodes are buried and secured in the bead glasses.

5,008,590

DISPLAY ARRANGEMENT HAVING PIN DIODE SWITCHING ELEMENTS

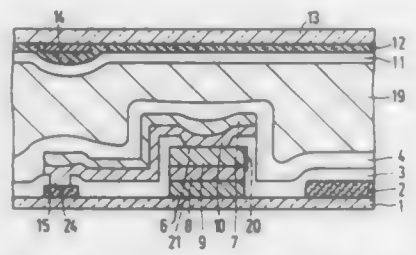
Frederikus R. J. Huisman; Gerrit Oversluizen, and Jan W. D. Martens, all of Eindhoven, Netherlands, assignors to U.S. Philips Corp., New York, N.Y.

Filed Sep. 25, 1989, Ser. No. 412,024

Claims priority, application Netherlands, Sep. 30, 1988, 8802409

Int. Cl.[5] H01L *29/06, 29/44*

U.S. Cl. 313—500 **8 Claims**



1. A display arrangement comprising an electro-optical display medium between two supporting plates, a system of picture elements arranged in rows and columns, each picture element comprising two picture electrodes provided on the surface of the supporting plates facing each other, a system of row and column electrodes for driving the picture elements, the row electrodes being provided on one supporting plate and the column electrodes being provided on the other supporting plate, and a system of switching elements, a switching element being included between at least one row electrode and one column electrode in series with each picture element, which switching element comprises at least one PIN diode having a mesa-shaped semiconductor body, which comprises in a sectional view transverse to a supporting plate in order of succession at least a first semi-conductor region of a first conductivity type having a comparatively high doping concentration, a second semiconductor region of one of the first and a second conductivity type having a comparatively low doping concentration, and a third semiconductor region of the second conductivity type having a comparatively high doping concentration, the first and third semiconductor regions being provided with a connection conductor, characterized in that a region within which the second semiconductor region and the third semiconductor region adjoin each other is located, viewed in projection, inset within the edge of the second semiconductor region.

5,008,591

X-RAY IMAGE INTENSIFIER TUBE COMPRISING A SELECTIVE FILTER

Johnny van der Velden; Theodorus F. van Bergen; August L. H. Simons; Johannes K. E. Colditz; Martinus A. C. Ligtenberg, and Franciscus M. Dreesen, all of Heerlen, Netherlands, assignors to U.S. Philips Corp., New York, N.Y.

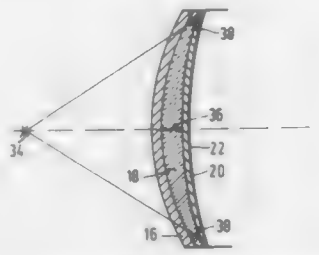
Filed Jan. 8, 1990, Ser. No. 461,885

Claims priority, application Netherlands, Jan. 9, 1989, 8900040

Int. Cl.[5] H01J *40/18;* **G01N** *21/64*

U.S. Cl. 313—524 **11 Claims**

1. An X-ray image intesifier tube, comprising an entrance screen, an exit screen and electron-optical means for projecting photo-electrons from the entrance screen onto the exit screen, the entrance screen successively comprising a luminescent layer, an intermediate layer and a photocathode, characterized in that the intermediate layer exhibits a selective absorption for



photon energy, so that comparitively high-energetic photons are absorbed more than comparatively low-energetic photons

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5,008,592

HALOGEN INCANDESCENT LAMP AND METHOD OF MANUFACTURING A HALOGEN INCANDESCENT LAMP

Henrikus J. H. Pragt, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 23, 1989, Ser. No. 425,894

Claims priority, application Netherlands, Nov. 15, 1988, 8802803

Int. Cl.[5] H01J *9/26;* **H01K** *3/20, 1/38*

U.S. Cl. 313—623 **5 Claims**



1. An incandescent lamp comprising a sealed, tubular, tiples envelope containing a halogen containing gas and having a central longitudinal axis along which is disposed a filament and first and second current supply conductors connected to respective first and second ends of the filament, characterized in that:

a. the first current supply conductor includes an intermediate widened portion having a width which is smaller than a first internal diameter of an adjacent first portion of the envelope which exists before sealing of the envelope, but is larger than a second internal diameter of the envelope for stopping entry of the widened portion into the envelope and facilitating axial positioning of the filament before sealing of the envelope, and having a thickness which is substantially smaller than said second internal diameter;

b. the second current supply conductor includes an intermediate widened portion having a width which is smaller than both the second internal diameter and the internal diameter of an adjacent second portion of the envelope which exists before sealing of the envelope; and

c. the envelope is sealed around the widened portions of the first and second current supply conductors, with distal ends of said conductors projecting from respective ends of said envelope.

3. A method of manufacturing a halogen incandescent lamp comprising a tipless glass lamp vessel sealed in a vacuum-tight manner and having an axis, this lamp vessel having on each side a first and a second seal, respectively, in which

a filament having an axis is connected to a first and a second current supply conductor having a first and a second foil-shaped part, respectively, and an external part connected thereto, which foil-shaped parts each have a width dimension transverse to the axis of the filament,

the filament is axially introduced into a glass tube having an axis through an open first end thereof, means being provided for holding the filament positioned in the axial direction of the tube,

the glass tube is heated at the area of the first foil-shaped part and a first seal is formed in the tube, in which the first foil-shaped part is accommodated;

the tube is filled with a halogen-containing gas,

the tube is sealed in a vacuum-tight manner by heating the tube at the area of the second foil-shaped part and forming a second seal in the tube in the axial direction at a certain distance from the seal, the second foil-shaped part being accommodated in this second seal, characterized in that the width dimension of the second foil-shaped part is larger than the width dimension of the first foil-shaped part and the glass tube has a constriction which allows the first current supply conductor and the filament to pass and stops the second foil-shaped part.

5,008,593

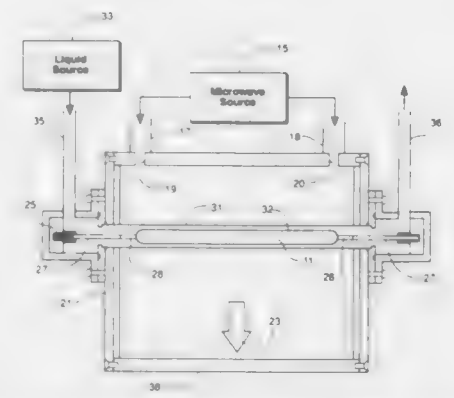
COAXIAL LIQUID COOLING OF HIGH POWER MICROWAVE EXCITED PLASMA UV LAMPS

LaVerne A. Schlie, and Robert D. Rathge, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 13, 1990, Ser. No. 553,929

Int. Cl.[5] H01J *7/46*

U.S. Cl. 315—39 **5 Claims**



1. In a high power microwave excited plasma system comprising:

(a) a source of microwave energy;

(b) a plasma tube operatively coupled to said source of microwave energy for generation of a plasma within said plasma tube in response to energy input thereinto from said source of microwave energy;

(c) a gaseous medium within said plasma tube for supporting a plasma therein;

(d) reflector means for focusing radiation emitted from said plasma tube; and

(e) means for cooling said plasma tube;

an improvement wherein said means for cooling said plasma tube comprises,

(f) a jacket surrounding said plasma tube and defining a passageway around said plasma tube within said jacket;

(g) a source of liquid dimethyl polysiloxane; and

(h) means for circulating said liquid dimethyl polysiloxane through said passageway in heat exchange relationship with said plasma tube for cooling said plasma tube.

5,008,594

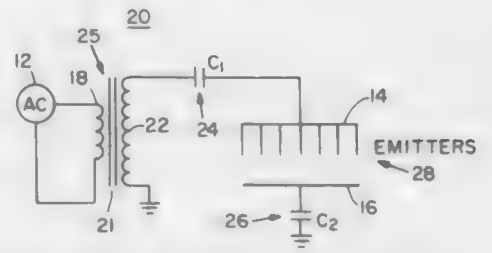
SELF-BALANCING CIRCUIT FOR CONVECTION AIR IONIZERS

Ralph W. Swanson, Brunswick; Daniel F. Gagnon, Westbrook, and Donald G. Parent, Windham, all of Me., assignors to Chapman Corporation, Portland, Me.

Filed Feb. 16, 1989, Ser. No. 311,711

Int. Cl.[5] H05F *3/06*

U.S. Cl. 315—111.81 **10 Claims**



1. A self-balancing air ionizer circuit with inherently passively balanced ion emission comprising:

at least one ion emitter point;

ion collector means adjacent to and spaced from said at least one emitter point;

means for providing an air flow past said emitter point;

means for providing voltage potential between said at least one emitter point and said collector means; and

means for isolating said at least one emitter point and said collector means from external charge sources and sinks, for maintaining charge balance in the positive and the negative ions emitted from said at least one emitter and collected by said collector for producing a charge balanced ionized airstream wherein said means for isolating and maintaining charge balance includes at least one capacitor means in series with the collector means and ground.

5,008,595

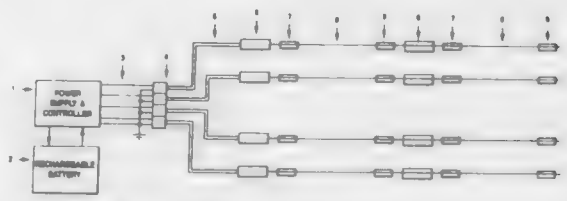
ORNAMENTAL LIGHT DISPLAY APPARATUS

Dennis M. Kazar, Austin, Tex., assignor to Laser Link, Inc., Austin, Tex. and William K. Wells, Jr., Reston, Va.

Continuation of Ser. No. 871,035, Sep. 8, 1986, Pat. No. 4,870,325, Continuation of Ser. No. 810,304, Dec. 18, 1985. This application Feb. 23, 1989, Ser. No. 315,450

Int. Cl.[5] H04B *37/02*

U.S. Cl. 315—178 **32 Claims**



1. A light display comprising:

electrically conductive primary source connector, a ground connector and a secondary source connector constituting a first electrically conducting string, a number of LEDs, means for connecting the LEDs in parallel across the ground connector and one of the primary and secondary source connectors; and

at least one of said LEDs including a set of bicolor diodes and means for controlling the color of said set by oscillating the current between portions of the diodes at preselected rates; and

said means for controlling the color including oscillating current between portions of said bicolor diodes at such a rate to produce a color different than that of either color of said bicolor diodes.

5,008,596

FLUORESCENT LAMP HIGH FREQUENCY OPERATING CIRCUIT

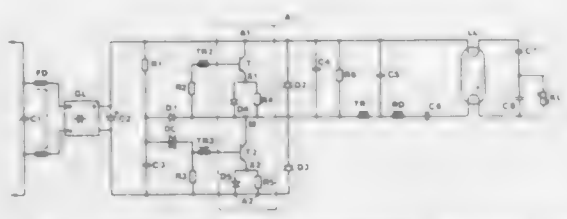
Roland Kastl, Unterhaching, and Ulrich Roll, Munich, both of Fed. Rep. of Germany, assignors to Patent Treuhand Gesellschaft fur elektrische Glühlampen m.b.H., Munich, Fed. Rep. of Germany

Filed Nov. 23, 1988, Ser. No. 276,223

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1987, 3740860; Oct. 14, 1988, 3835121

Int. Cl.[5] H05B *37/00, 39/04, 41/36;* H02M *7/5387*

U.S. Cl. 315—205 15 Claims



1. For combination with a low-pressure discharge lamp (LL),

an operating circuit for high-frequency operation of the lamp, said operating circuit comprising

a power network rectifier (GL) for providing d-c output electrical energy;

a self-excited half-bridge oscillating circuit comprising

an emitter current supply terminal (M; A2) for each of said transistors;

a toroidal core transformer (TR1, TR2, TR3),

said transistors being connected to the toroidal core transformer to form an inductively coupled oscillatory circuit and, in operation, causing said toroidal core transformer to operate in saturated condition;

base resistors (R2, R3) connected to the respective bases of the transistors and to the respective emitter current supply terminal (M, A2) of the respective transistor (T1, T2);

a trigger circuit (DC) for starting of the oscillating circuit; and

an emitter circuit connected to the respective emitters of the transistors (T1, T2) and to the respective current supply terminal of the respective transistor to provide current feedback therefor,

a circuit means generating enhanced ignition voltages for the lamp and to ensure reliable starting and subsequent stable continuous operation,

said circuit means consisting of a diode means (D6, D7) in the emitter circuits of each of said switching transistors,

said diode means being poled in current passing direction with respect to current flow through the emitter and connected between the emitter and the respective emitter current supply terminal of said at least one transistor to thereby enhance, during starting conditions of the lamp, resonance current flow through the oscillatory circuit including said toroidal core transformer operated in saturation level condition.

5,008,597

POWER NETWORK SUPPLIED HIGH-FREQUENCY LOW-PRESSURE DISCHARGE LAMP OPERATING CIRCUIT

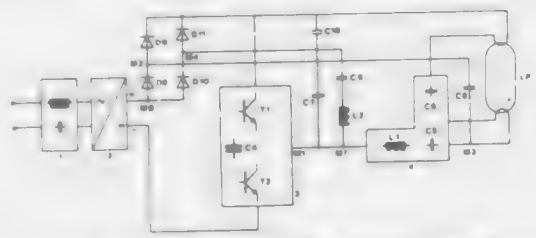
Anton Zuchtriegel, Taufkirchen, Fed. Rep. of Germany, assignor to Patent Treuhand Gesellschaft für elektrische Gluhlampen mbH, Munich, Fed. Rep. of Germany

Filed Nov. 22, 1989, Ser. No. 440,776

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1988, 3841227

Int. Cl.[5] H05B *37/02*

U.S. Cl. 315—209 R 11 Claims



1. Power network supplied high-frequency low pressure discharge lamp (LP) operating circuit having

a power rectifier (2) having output terminals (M8, M5),

a high-frequency oscillator circuit (3) including a push-pull transistor frequency generator having two alternately conducting transistors (T1, T2) connected to define a common junction (M1) between the transistors, a feedback circuit (RK1, RK2, RK3) coupled to the transistors, and a smoothing capacitor (C4) coupled across both transistors;

a series resonance circuit (4) having a series inductance (L1) and a series capacitor (C6) coupled to the lamp, to provide starting energy thereto;

a first circuit means connecting a first electrode (E1) of the lamp (LP) through the series inductance (L1) with said common junction (M1) between said transistors;

a second circuit means connecting the second electrode (E2) of the lamp with one of said output terminals (M8) of the power rectifier; and

an active harmonic filter including

two parallel series connected circuits, each of which series circuits is formed by a pair of serially connected diodes (D8, D9; D10, D11) coupled to the power rectifier and polarized in forward direction with respect to the output voltage from the power rectifier,

and comprising, in accordance with the invention, the combination of

a first capacitor (C7) connected to a first common diode junction (M2) between the diodes (D8, D9) of the first pair and to said common junction (M1) between said transistors;

a second capacitor (C8) connected also to the first common diode junction (M2) and to a junction (M3) between said inductance (L1) and the first electrode (E1) of the lamp (LP); and

a pumping inductance (L2) connected to a second common diode junction (M4) between the diodes (D10, D11) of the second diode pair, and further connected to said common junction (M1) between said transistors (T1, T2).

5,008,598

FLUORESCENT LIGHTING CONTROL CIRCUIT

James C. Cook, II, Marshall, Mich., assignor to Progressive Dynamics, Inc., Marshall, Mich.

Filed Jan. 5, 1990, Ser. No. 461,221

Int. Cl.[5] H05B *41/36*

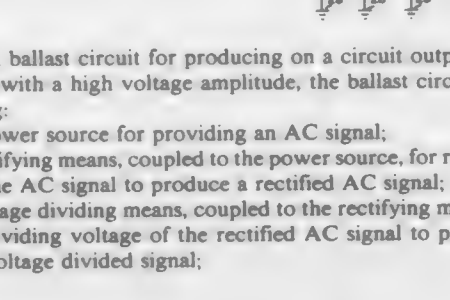
U.S. Cl. 315—225 8 Claims

1. A control circuit for a gas discharge lamp, said lamp having a gas filled chamber and at least one pair of discharge electrodes in said gas filled chamber, said control circuit comprising:

a transformer including a primary winding and a secondary winding,

a gated switch means having a gating terminal and selective conducting means responsive to a signal being applied to said gating terminal for applying a supply voltage to said primary winding;

control signal generating means for selectively applying a signal to said gating terminal when said control circuit is in a first state and for not applying a signal to said gating terminal when said control circuit is in a second state;



said secondary winding being adapted to attempting to establish a current between said discharge electrodes upon the occurrence of both a current not being conducted between said discharge electrodes and said control circuit being in said second state; and

protection means for applying a signal to said gating terminal upon the occurrence of both said control circuit being in said second state and failure of said secondary winding to establish a current between said discharge electrodes;

said secondary winding includes means for producing a high voltage in order to attempt to establish a current between said discharge electrodes and wherein said protection means includes means responsive to said high voltage exceeding a predetermined level.

5,008,599

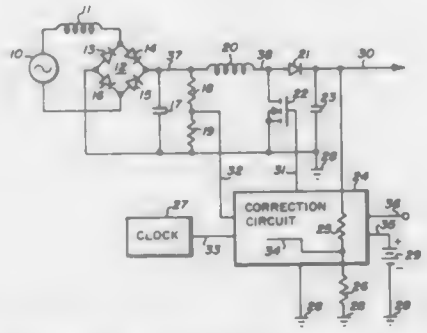
POWER FACTOR CORRECTION CIRCUIT

Richard C. Counts, Dallas, Tex., assignor to USI Lighting, Inc., San Leandro, Calif.

Filed Feb. 14, 1990, Ser. No. 479,650

Int. Cl.[5] H05B *37/02*

U.S. Cl. 315—247 9 Claims



1. A ballast circuit for producing on a circuit output a DC signal with a high voltage amplitude, the ballast circuit comprising:

a power source for providing an AC signal;

rectifying means, coupled to the power source, for rectifying the AC signal to produce a rectified AC signal;

voltage dividing means, coupled to the rectifying means, for dividing voltage of the rectified AC signal to produce a voltage divided signal;

capacitance means, coupled to the circuit output, for storing a charge;

inductance means, coupled to the rectifying means, for providing a current to charge the capacitance means;

diode means, coupled between the capacitance means and the inductance means, for allowing current to flow from the inductance means to the capacitance means to charge the capacitance means, and for not allowing current to flow from the capacitance means to the inductance means;

current gate means for draining current from the inductance means when the current gate means is turned on; and,

control circuitry, coupled to the current gate means and to the voltage dividing means, for turning the current gate means on and off, the control circuitry including

ramp generator means for generating a pulse modulation reference signal with a varying voltage amplitude, and

first comparator means, coupled to the ramp generator and to the voltage divider, for comparing the pulse modulation reference signal with the voltage divided signal to produce a first modulated signal.

5,008,600

DEFLECTION YOKE DEVICE

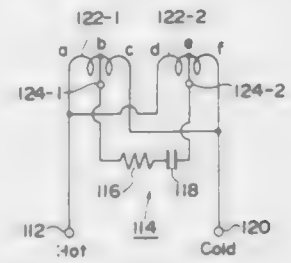
Akira Hashimoto, and Shunji Arai, both of Yokohama, Japan, assignors to Murata Mfg. Co., Ltd., Kyoto, Japan

Filed Aug. 13, 1990, Ser. No. 566,095

Claims priority, application Japan, Aug. 30, 1989, 1-101451[U]

Int. Cl.[5] H01J *29/56*

U.S. Cl. 315—370 10 Claims



1. A deflection yoke device including a first horizontal deflection coil wound into a saddle-type configuration and a second horizontal deflection coil wound into the saddle-type configuration and connected in parallel with said first horizontal deflection coil with one end of said second horizontal deflection coil connected thereto via a high voltage-side terminal and the other end of said second horizontal deflection coil connected thereto via a low voltage-side terminal, said deflection yoke device comprising:

a first intermediate terminal provided on said first horizontal deflection coil;

a second intermediate terminal provided on said second horizontal deflection coil; and

a damping circuit connected between said first intermediate terminal and said second intermediate terminal and adapted to eliminate electrical oscillations generated by said first and second horizontal deflection coils.

5,008,601

MULTIFUNCTION SWITCHING CONTROL SYSTEM

Takashi Nakamura; Haruhiko Tanaka; Touru Hyodo, and Yasuhiro Osanai, all of Tokyo, Japan, assignors to Janome Sewing Machine Company Limited, Tokyo, Japan

Filed Apr. 2, 1990, Ser. No. 503,324

Claims priority, application Japan, Mar. 31, 1989, 1-78056

Int. Cl.[5] H02P *7/00;* D05B *69/26*

U.S. Cl. 318—268 5 Claims

1. In a multifunction switching control system for a sewing machine, comprising:

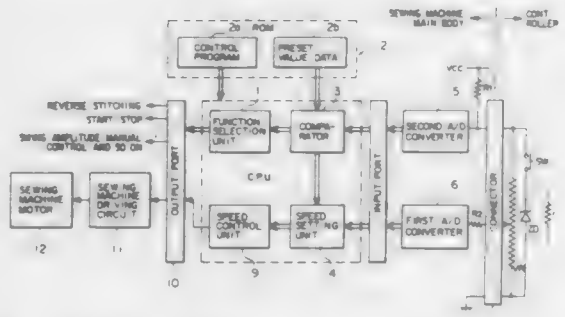
a sewing speed controller for controlling a sewing speed of a computerized sewing machine by setting a voltage value of a variable resistor incorporated in said sewing speed controller;

said variable resistor having a ground terminal, a variable terminal and a fixed terminal;

an invariable resistor;

a first A/D converter for converting the set voltage value of the variable resistor, at the variable terminal, from an analog signal to a digital signal; and

a second A/D converter for converting a voltage value, at the fixed terminal of the variable resistor, from an analog signal to a digital signal;



the improvement comprising:

(a) a switch circuit operated to connect one terminal of the variable resistor to the fixed terminal of said variable resistor; and

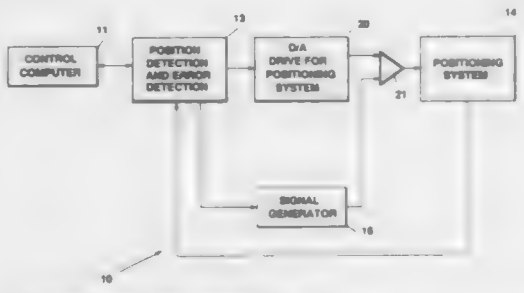
(b) a comparator having a reference value stored therein for detecting a connection of said switch circuit by comparing the converted digital signal of said second A/D converter with said stored reference value, said comparator causing said sewing speed controller to operate functional parts of said sewing machine other than said sewing speed control if said switch circuit is connected.

5,008,602

SIGNAL GENERATOR FOR USE IN INDUSTRIAL POSITIONING SYSTEMS

Eugene H. Stevens, Newbury Park, Calif., and Mark W. Utlaut, Scappoose, Oreg., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 19, 1989, Ser. No. 354,652
Int. Cl.[5] G05B *13/00*
U.S. Cl. 318—561 **9 Claims**



1. A signal generator comprising:

integrating means for integrating an input signal to provide an output signal;

limiting means, connected between the input and output of said integrating means for limiting the output thereof; and

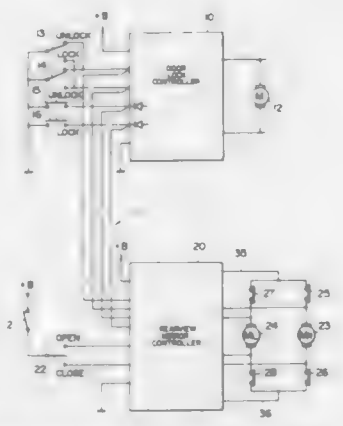
nulling means coupled to the output of said integrating means for nulling the output signal of said integrating means when the input to said integrating means drops below a first predetermined threshold.

5,008,603

ELECTRICALLY FOLDABLE REARVIEW MIRRORS INTERLOCKED WITH DOOR LOCKS

Kiyoshi Nakayama, Shizuoka, Japan, and Darbesio Luigi, Orbassano, Italy, assignors to Murakami Kaimeido Co., Ltd., Sizuoka, Japan and Fiat Auto SpA, Turin, Italy

Filed Mar. 14, 1990, Ser. No. 493,323
Claims priority, application Japan, Dec. 20, 1989, 1-328527
Int. Cl.[5] G05B *19/42*
U.S. Cl. 318—568.1 **4 Claims**



1. A system for controlling a position of foldable rearview mirrors on a motor vehicle comprising:

at least one rearview mirror foldably mounted on the vehicle for movement between a folded position when not in use and an extended position for use;

a door lock controller operatively connected to door locks of the vehicle for locking and unlocking doors of the vehicle;

at least one outer door lock switch and at least one inner door lock switch operatively connected to said door lock controller for operating said door locks between locking and unlocking positions;

reversible electric motor means operatively connected to said at least one rearview mirror for operating said at least one rearview mirror between said folded and extended positions when actuated;

a rearview mirror controller having an input side and an output side, said output side being operatively connected to said reversible electric motor means for actuating said motor means and said door lock controller and said at least one outer door lock switch and at least one inner door lock switch being operatively connected to said input side;

ignition switch means and operation switch means inside the vehicle connected in series between an electric power source and said input side of said rearview mirror controller, said ignition switch means and operation switch means having open and closed positions, said operation switch means comprising a manual-two circuit reversible motor operation switch;

a driving circuit in said rearview mirror controller operatively connected to said electric motor means for reversing the rotation of said electric motor means in response to said open and closed positions of said operation switch so that when said ignition switch means is in the closed position and said operation switch means is in said open position said driving circuit operates said electric motor means to move said at least one rearview mirror into said folded position and when said operation switch means is in said closed position said driving circuit operates said electric motor means into said extended position;

limit switch means mounted on said at least one rearview mirror for detecting said folded and extended positions of said at least one rearview mirror; and

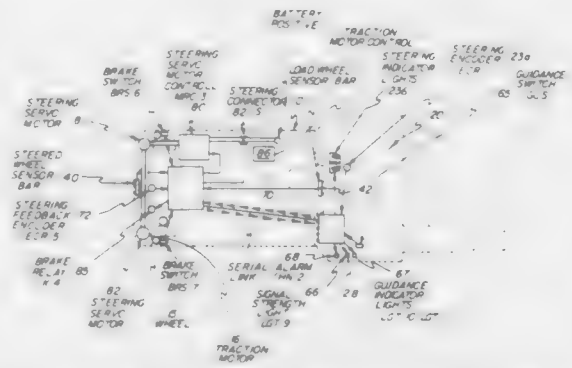
a micro computer operatively connected to said driving circuit for controlling said driving circuit by processing inputs from said switches.

5,008,604

DYNAMIC CLIPPER FOR USE IN A VEHICLE GUIDANCE SYSTEM

Ned E. Dammeyer, New Bremen, and Nick D. Thobe, Celina, both of Ohio, assignors to Crown Equipment Corporation, New Bremen, Ohio

Filed Dec. 5, 1989, Ser. No. 446,502
Int. Cl.[5] G05D *1/00*
U.S. Cl. 318—587 **11 Claims**



1. In a guided vehicle control system including at least one sensing coil for providing an output representative of the presence and location of a buried wire, circuit means responsive to the output of said sensing coil, and means responsive to the circuit means for controlling the direction of the vehicle,

the improvement characterized by the circuit means including noise limiting means for limiting the effect of noise and other spurious signals detected by the sensing coil, said noise limiting means including

voltage limiting means responsive to the output of the sensing coil for limiting the magnitude of the sensing coil voltage to a value determined by a reference voltage,

rectifier means for rectifying the output of said voltage limiting means, and

means for integrating the output of said rectifier means to generate said reference voltage, whereby the output of said rectifier means will be closely related to the strength of the signal induced into the sensing coil from the buried wire.

5,008,605

ELECTRIC DRIVING DEVICE CAPABLE OF ELIMINATING BACKLASH

Tsunemasa Ohara, Tokyo, and Tomoo Shibanai, Utsunomiya, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 11, 1988, Ser. No. 141,730
Claims priority, application Japan, Jan. 12, 1987, 62-4594
Int. Cl.[5] G05B *11/01*
U.S. Cl. 318—630 **16 Claims**

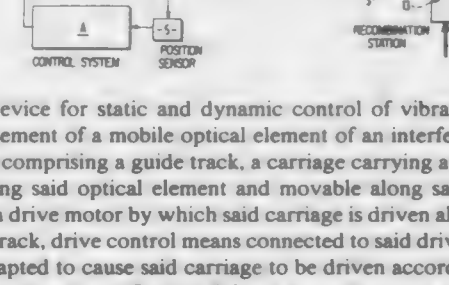
1. An electric driving device capable of eliminating backlash, comprising:

(a) electric drive means for generating a driving force;

(b) actuator means to be activated by the driving force of said electric drive means;

(c) gear means for transmitting the driving force of said electric drive means to said actuator means; and

(d) control means for supplying electric power to said electric drive means to eliminate backlash generated in said gear means, the electric power being supplied at a first power level during an initial period when said electric drive means is started and being supplied at a second power level lower than said first power level subsequent to said initial period, wherein both the first level and the second level are lower than the driving power level supplied to said electric drive means for actuating said actuator means.

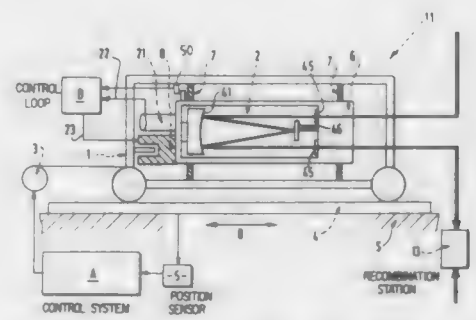


5,008,606

DEVICE FOR CONTROLLING VIBRATION-FREE MOVEMENT OF AN OPTICAL ELEMENT IN A STELLAR INTEFEROMETER AND STELLAR INTERFEROMETER COMPRISING SAME

Bertrand Koehler, Cannes; Emmanuel Manil, Le Cannet Rocheville, and Jacques Chapellier, Le Cannet, all of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Apr. 17, 1990, Ser. No. 509,821
Claims priority, application France, Apr. 17, 1989, 89 05060
Int. Cl.[5] B64C *17/06*
U.S. Cl. 318—649 **15 Claims**



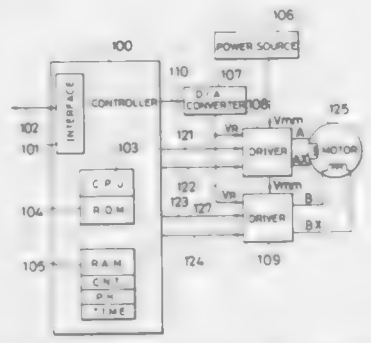
1. Device for static and dynamic control of vibration-free displacement of a mobile optical element of an interferometry device comprising a guide track, a carriage carrying a payload including said optical element and movable along said guide track, a drive motor by which said carriage is driven along said guide track, drive control means connected to said drive motor and adapted to cause said carriage to be driven according to a predetermined law, flexible linkage means between said payload and said carriage enabling relative movement between said payload and said carriage parallel to the direction of displacement of said optical element, a stabilization control loop independent of said drive control means, an accelerometer carried by said payload, responsive to acceleration of said payload parallel to said direction of displacement of said optical element and connected to said stabilization control loop, an actuator operative between said payload and said carriage under the control of said stabilization control loop, a filter means in said stabilization control loop for filtering signals from said accelerometer, a control loop in said drive control means and a position sensor connected to said control loop and adapted to sense the position of said carriage on said guide track.

5,008,607

DRIVING SYSTEM FOR STEPPING MOTOR

Takeshi Ono, Yokohama; Masahiro Sakamoto, Tokyo, and Tadashi Takano, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1989, Ser. No. 372,822
Claims priority, application Japan, Jul. 1, 1988, 63-162608
Int. Cl.[5] H02P *8/00*
U.S. Cl. 318—696 **5 Claims**



1. A driving system for a stepping motor wherein a stepping motor is rotatively driven by a predetermined number of steps for each driving trigger, comprising:

a stepping motor having a plurality of energization coils through each of which an energization current flows to drive said stepping motor;

a plurality of drivers for applying said energization current to the respective energization coils of said stepping motor;

a counting means for counting a time between two successive driving triggers; and

an energization controlling means controlling said energization current of said stepping motor in response to said time counted by said counting means.

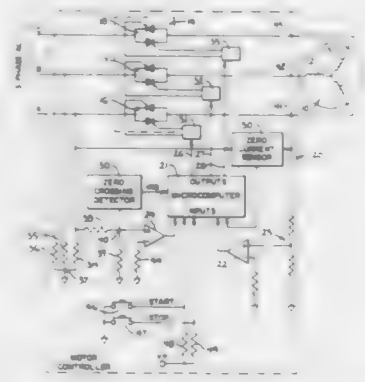
5,008,608

CONTROLLER FOR STARTING AND STOPPING ELECTRIC MOTORS

Peter J. Unsworth, Lewes, England; John C. Merrison, and Timothy M. Rowan, Wauwatosa, both of Wis., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Dec. 26, 1989, Ser. No. 456,910
Int. Cl.[5] H02P *5/40*
U.S. Cl. 318—729 **22 Claims**





14. A method for controlling the torque of an electric motor that is coupled by a switch means to a source of alternating voltage and current, the switch means being of a type which is conductive from when a trigger pulse is applied until the magnitude of alternating current therethrough goes to zero, said method comprising repeatedly executing the steps of:

(a) measuring a phase difference θ between the alternating voltage and current from the source;

(b) defining a reference value θ_{REF};

(c) calculating a control value θ according to the equation $\theta=\phi+K\gamma$, where K is a positive number and where γ corresponds to the length of a previous interval during which the switch means was non-conductive;

(d) producing an error signal representing the difference between the control value θ and the reference value θ_{RREF};

(e) altering the value of γ in response to the error signal; and

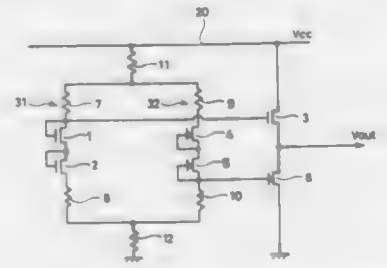
(f) applying a trigger pulse to the switch means at the end of an interval substantially equal to the altered value of γ from when the alternating current from the source has a zero magnitude.

5,008,609

VOLTAGE GENERATING CIRCUIT FOR SEMICONDUCTOR DEVICE

Takahiko Fukiage, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1990, Ser. No. 526,740
Claims priority, application Japan, Jun. 6, 1989, 1-144776
Int. Cl.[5] G05F *3/20*
U.S. Cl. 323—313 **3 Claims**



1. A voltage generating circuit for a semiconductor memory device, comprising:

a first serial connection circuit including first resistance means, one or more first conductive-type field effect transistors, and second resistance means which are connected in series to each other, and

a second serial connection circuit including third resistance means, one or more second conductive-type field effect transistors, and fourth resistance means which are connected in series to each other, said first and second serial connection circuits being connected in parallel, each of said first and second conductive-type field effect transistors having its gate connected to its first conductive electrode,

fifth resistance means interposed between a first reference potential source and said first and third resistance means,

sixth resistance means interposed between a second reference potential source and said second and fourth resistance means,

a first output terminal connected to a first conductive electrode of any of said first conductive-type field effect transistors, and

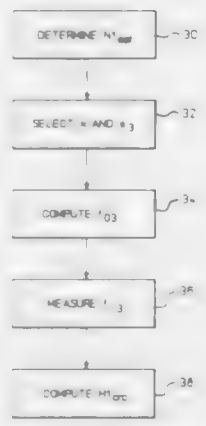
a second output terminal connected to a second conductive electrode of any of said second conductive-type field effect transistors.

5,008,610

METHOD FOR HARMONIC NUMBER DETERMINATION IN A MICROWAVE FREQUENCY COUNTER

Nancy W. Nelson, San Jose; Lee D. Cosart, III, Palo Alto; Luiz Peregrino, Cupertino, and Eric M. Ingman, Los Altos Hills, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 31, 1989, Ser. No. 388,208
Int. Cl.[5] G01R *25/02*
U.S. Cl. 324—84 **15 Claims**



1. In a harmonic heterodyne converter wherein the frequency of an input signal is determined from a local oscillator frequency, an intermediate frequency obtained by mixing the local oscillator frequency with the input signal, and a harmonic number, a method for determining a generalized harmonic number H, comprising the steps of:

computing an estimated generalized harmonic number $H1_{est}$ from closely-spaced first and second local oscillator frequencies f_{01} and f_{02} and first and second intermediate frequencies f_{i1} and f_{i2} obtained by successively mixing said first and second local oscillator frequencies with the input signal;

selecting a third local oscillator frequency f_{03} such that the corresponding generalized harmonic number H3 differs from the estimated harmonic number by a predetermined integer, k;

measuring a third intermediate frequency f_{i3} obtained by mixing the third local oscillator frequency with the input signal; and

computing a corrected generalized harmonic number $H1_{crc}$ from the first and third local oscillator frequencies and the first and third intermediate frequencies.

5,008,611

METHOD OF ELIMINATING THE EFFECTS OF BIREFRINGENCE FROM THE DETECTION OF ELECTRIC CURRENT USING FARADAY ROTATION

Edward A. Ulmer, Jr., Clearwater, Fla., assignor to Square D Company, Palatine, Ill.

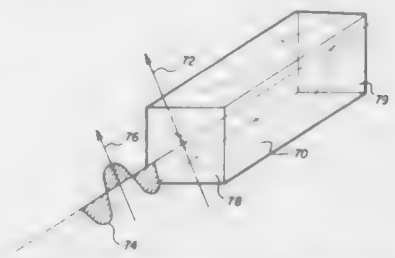
Filed Mar. 14, 1989, Ser. No. 323,599
Int. Cl.[5] G01R *15/00, 31/00*
U.S. Cl. 324—96 **29 Claims**

1. A method for minimizing the effect of stress birefringence within the optical apparatus of an optical current transducer providing an optical current signal proportional to a time-varying target current of electricity to be measured, said optical current transducer including at least one optical medium having a Faraday effect, said optical medium receiving a light beam of polarized light and transmitting the received light to produce an optical current signal, comprising the steps of:

geometrically selecting a geometric configuration of said optical medium to be placed within a magnetic field produced by said target current;

orientatedly selecting said optical medium to have an entrance surface, and an exit surface, said optical medium having fast and slow known characteristic directions in which if polarized light is oriented in the absence of a magnetic field the polarized light is transmitted without a change in polarization angle, a known Verdet constant, a known permeability, a known approximate birefringence comprising the difference between a fast index of refraction and a slow index of refractions, each index associated with an associated said characteristic direction and a known path length with respect to said received and transmitted light from said entrance surface to said exit surface from which said optical current signal exits;

mathematically determining the existence and identity of at



least one non-birefringent angle of polarization with respect to said characteristic direction of said optical medium at which a polarized beam of light may be received by and transmitted through said optical medium along said path length and produce said optical current signal with a time-varying component, said optical current signal having a current polarization angle proportional to and produced by the target current and proportional to the path, length, the root-mean-square average value of said time-varying component being proportional to the root-mean-square average value of said target current;

aligning said received light with said non-birefringent angle; and

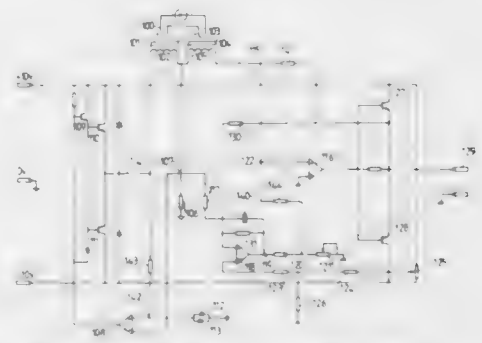
measuring said current polarization angle.

5,008,612

CURRENT SENSOR

Donald V. Otto, Auckland, New Zealand, assignor to Unisearch Systems Limited, Pakuranga, New Zealand

Filed Aug. 24, 1989, Ser. No. 399,837
Claims priority, application New Zealand, Aug. 24, 1988, 225931
Int. Cl.[5] G01R *33/00*
U.S. Cl. 324—117 R **8 Claims**



1. Apparatus for sensing currents comprising:

sensing means including first and second transformers each having a primary winding connected in series and defining a loop for carrying a current to be sensed and each having a secondary winding which is electrically isolated from the primary winding and a magnetic core for magnetically coupling the primary winding with the secondary winding;

means for feeding the secondary winding of said first transformer with a cyclic magnetization current to cyclically drive the magnetic core of said first transformer into saturation;

separating means for separating said cyclic magnetization current from a first sensed current component induced from said primary winding into the secondary winding of said first transformer;

processing means for processing said first sensed current component together with a second sensed current component induced from said primary winding into the secondary winding of said second transformer to provide an output signal substantially proportional to the current to be sensed.

5,008,613

VOLTAGE TESTER FOR GRADUATED OPTICAL DISPLAY OF A VOLTAGE AND METHOD FOR ITS MANUFACTURE

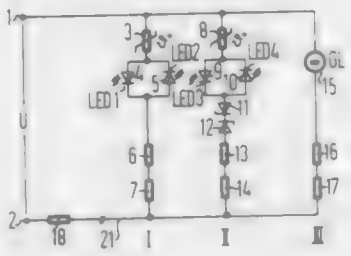
Heinrich-Wolfgang Steinel, Bad Woersihofen; Ulrich Armonier, Rheda-Wiedenbrueck, and D-F Schulze-Froehlich, Herzebrock-Clarholz, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 23, 1989, Ser. No. 397,530

Claims priority, application European Pat. Off., Aug. 26, 1988, 88113986.9

Int. Cl.[5] **G01R** *19/14, 31/00*

U.S. Cl. 324—133 **8 Claims**



1. A voltage tester for graduated optical display of voltages, comprising:

test tips to which a voltage is applied;

circuit arrangement of electrical components connected to said test tips, said circuit arrangement including:

a first series circuit connected across said test tips comprising a first PTC-resistor and a first pair of light emitting diodes connected antiparallel to one another and a first drop resistor, said first series circuit being balanced so that at least one of said two light emitting diodes lights up when a voltage exceeding a first value is applied to said test tips;

a second series circuit comprising a second PTC-resistor and a second pair of light emitting diodes connected antiparallel to one another and two Zener diodes connected in series polarized oppositely of one another and a second drop resistor, said second series circuit being connected parallel to said first series circuit across said test tips, said second series circuit being balanced so that at least one of said second pair of light emitting diodes lights up when a voltage exceeding a second value is applied to said test tips;

a third series circuit comprising a glow lamp and a third drop resistor, said third series circuit being connected parallel to said first series circuit and to said second series circuit across said test tips, said third series circuit being balanced so that said glow lamp lights up when a voltage exceeding a third value is applied to said test tips; and

a current-limiting resistor connected in series with said first, second and third series circuits.

5,008,614

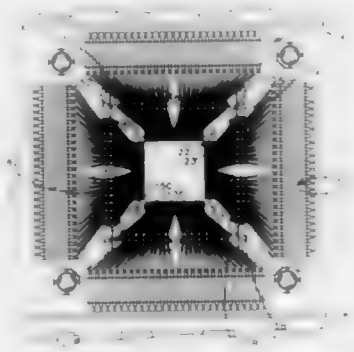
TAB FRAME AND PROCESS OF TESTING SAME

Robert W. Shreeve, and Melissa D. Boyd, both of Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 11, 1988, Ser. No. 255,230

Int. Cl.[4] **G01R** *31/28,* **H03F** *1/52;* **H01L** *23/50*

U.S. Cl. 324—158 F **8 Claims**



1. A tape automated bonding (TAB) process for testing TAB frames and dies, integrated chips or other similar components mounted thereon, comprising the steps of:

A. using a TAB frame having:

a. a relatively thin film of dielectric material;

b. a plurality of substantially adjacent inner lead bonds pads disposed on said film, in close proximity to the die, said inner lead pads surrounding the die in a desired predetermined pattern;

c. a plurality of substantially adjacent outer lead pads on the film, for providing input/output ports to the die, said outer lead pads being generally disposed in a predetermined pattern, at the outer periphery of the frame, to permit easy accessibility for soldering to a printed circuit board when the frame is excised from the dielectric film;

d. a plurality of substantially adjacent test probe pads disposed in a predetermined pattern on the film, intermediate said inner lead pads and the outer lead pads, for providing test points for the frame and the die thereon, said test probe pads being supported by the dielectric film for maintaining a substantially fixed spacing between two adjacent test probe pads; and

e. conducting means for electrically interconnecting said inner lead pads, said outer lead pads and said test probe pads, in a predetermined pattern, wherein portions of said conductive means interconnecting said inner lead pads and said test probe pads are generally supported by, and disposed onto the dielectric film, in order to minimize the bending and twisting of the frame and of the pattern of said test probe pads;

B. excising the die from the frame in the form of a coupon, said coupon including the die and all of said test probe pads, and wherein the excision outline of said coupon is selected intermediate said test probe pads and said outer lead pads so as to exclude said outer lead pads from being included in said coupon;

C. aligning the die; and

D. testing said coupon and the die.

5,008,615

MEANS AND METHOD FOR TESTING INTEGRATED CIRCUITS ATTACHED TO A LEADFRAME

Hugh W. Littlebury, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

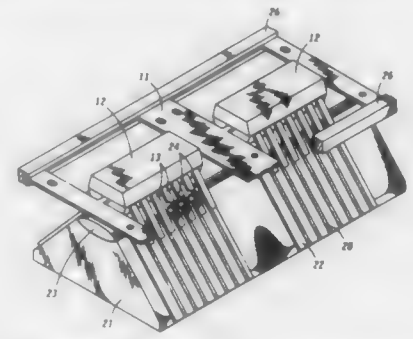
Filed Nov. 3, 1989, Ser. No. 431,346

Int. Cl.[5] **G01R** *1/06, 31/02*

U.S. Cl. 324—158 F **9 Claims**

4. A test fixture for testing a plurality of packaged integrated circuits which are attached to a leadframe, wherein each of the integrated circuits has a plurality of leads which are isolated from the leadframe, the test fixture comprising:

a membrane test head having a plurality of contacts thereon positioned underneath the plurality of leads;



a tester coupled to the test head;

a drive means for moving the test head towards and away from the plurality of leads, wherein the membrane test head couples to a plurality of packaged ICs at one time.

5,008,616

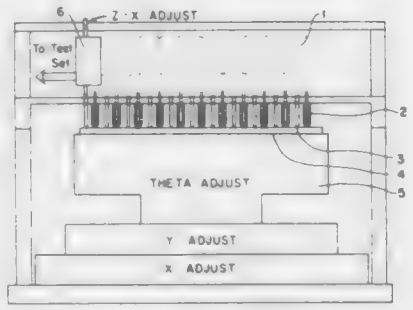
FLUIDICS HEAD FOR TESTING CHEMICAL AND IONIC SENSORS

Imants R. Lauks, Morrisville, Pa.; Henry J. Wieck, Plainsboro, and Gregory M. Bandru, Ewing, both of N.J., assignors to I-Stat Corporation, Princeton, N.J.

Filed Nov. 9, 1989, Ser. No. 434,660

Int. Cl.[5] **G01R** *31/02;* **G01N** *27/00;* **H01L** *29/66*

U.S. Cl. 324—158 F **8 Claims**



1. A fluidics head or a multiplicity of heads in an array thereof for automatically testing chemical and ionic sensing electronic circuit devices comprising:

a fluid confining cell having at least one open orifice to contain a known test fluid,

means for filling said test fluid into said open orifice and discharging said test fluid from said open orifice when said orifice is in leakproof engagement with said sensing electronic circuit device to be tested, and

means for providing electrical contacts to said sensing electronic circuit device so as to test said sensing electronic circuit device with said test fluid, wherein said open orifice has an internal shape such that fluid contamination in said fluid confining cell is minimized during discharge of said test fluid.

5,008,617

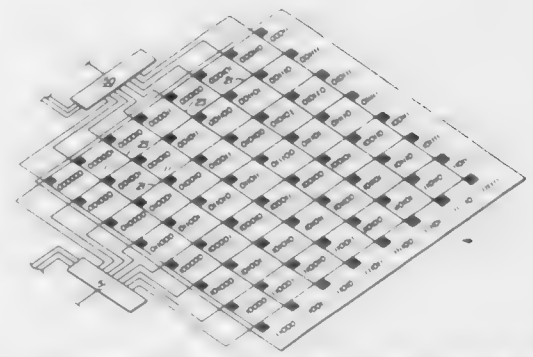
FUNCTIONAL TESTING OF ULTRA LARGE AREA, ULTRA LARGE SCALE INTEGRATED CIRCUITS

Wolodymyr Czubatyj, Warren, and Ronald Himmler, Sterling Heights, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Jun. 20, 1989, Ser. No. 369,784

Int. Cl.[5] **G01R** *31/00, 31/02*

U.S. Cl. 324—158 R **5 Claims**



1. A method of testing a large area active matrix liquid crystal display; said method including the steps of:

(a) providing a matrix array which includes a plurality of rows and columns of address lines; each pair of adjacent row address lines and column address lines defining a picture element; each picture element including switching means for discretely electrically interrogating said element; said switching means including a plurality of thin film layers of silicon alloy material;

(b) providing a chargeable dry powder;

(c) providing the matrix array of picture elements, including the layers of silicon alloy material of the switching means, in proximity to the chargeable powder;

(d) electrically activating the switching means of the matrix array; and

(e) applying an electrical potential between the switching means and the powder, said potential causing particles of the chargeable powder to adhere to the activated picture elements of the matrix array.

5,008,618

SCAN TEST APPARATUS FOR ASYNCHRONOUS CIRCUITRY

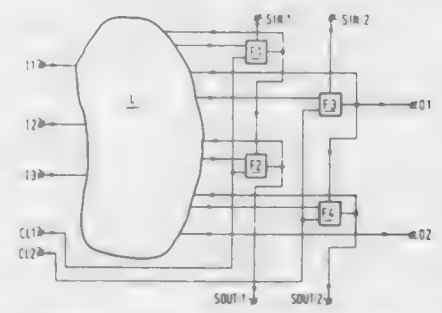
Max Van Der Star, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 23, 1990, Ser. No. 468,534

Claims priority, application Netherlands, Jan. 23, 1989, 8900151

Int. Cl.[5] **G01R** *31/00, 31/02*

U.S. Cl. 324—158 R **12 Claims**



1. In a digital signal processing circuit jointly controlled by first and second mutually asynchronous clock signals, the improvement for enabling scan testing of said circuit, compris-

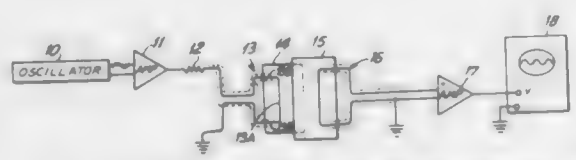
ing: first and second scan chains of cascaded bistable elements connected to data inputs and outputs of said circuit which first and second scan chains are respectively independently controlled by said first and second clock signals; first and second test data inputs respectively connected to said first and second scan chains; and first and second result data outputs respectively connected to said first and second scan chains.

5,008,619

MULTILEVEL CIRCUIT BOARD PRECISION POSITIONING

Raymond J. Keogh, Huntington; Ronald Morino, Shelter Island Heights, both of N.Y., and R. Page Burr, Matinicus, Me., assignors to AMP-AKZO Corporation, Melville, N.Y.

Filed Nov. 18, 1988, Ser. No. 272,929
Int. Cl.[5] G01B *7/14;* **H05K** *3/02, 3/10*
U.S. Cl. 324—207.16 **15 Claims**



1. An apparatus for determining the relative position of at least a first object with respect to a second object, the first object being a layer of a circuit board and the second object being a surface associated with a machine for making circuit boards or a second layer of a circuit board, the apparatus comprising:

a first geometric pattern of conductive material disposed on the first object;

a second geometric pattern of conductive material which is disposed on the second object in juxtaposition with the first, such that the perpendicular projection of said second geometric pattern on the first object is centered on about said first geometric pattern;

means for applying a predetermine value of alternating current to said first pattern to establish an electromagnetic field surrounding said first pattern;

means for detecting the magnitude of the voltage induced in said second pattern by the field established by said first pattern;

whereby the position of the first object relative to the second object is indicated by the magnitued of the detected voltage resulting from the said predetermined value of alternating current.

5,008,620

LEAKAGE FLUX FLAW DETECTION METHOD AND APPARATUS UTILIZING A LAYERED DETECTOR

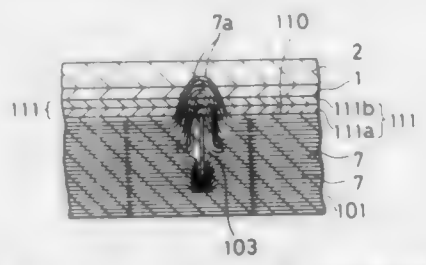
Katusnobu Nonaka, Tsuchiura, and Kazuyoshi Sekine, Yokohama, both of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Mar. 6, 1990, Ser. No. 489,235
Claims priority, application Japan, Mar. 10, 1989, 1-58478
Int. Cl.[5] G01N *27/82;* **G01R** *33/12*
U.S. Cl. 324—213 **13 Claims**

5. A leakage flux flaw detection apparatus comprising:

a magnetic recording material one surface of which is in contact with a test surface of a test material;

an auxiliary recording member with a ferromagnetic layer and a non-magnetic layer arranged one on the other so



that the non-magnetic layer is in contact with the magnetic recording layer;
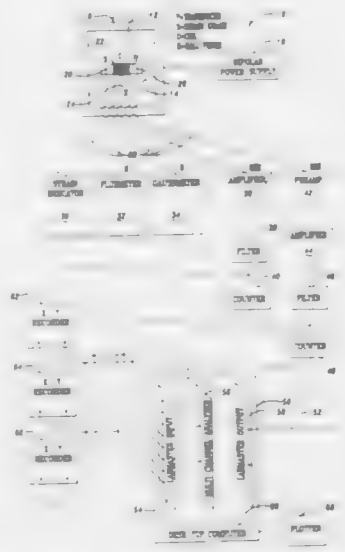
and a magnetizer for magnetizing the test material.

5,008,621

MULTIPARAMETER MAGNETIC INSPECTION SYSTEM WITH MAGNETIC FIELD CONTROL AND PLURAL MAGNETIC TRANSDUCERS

David C. Jiles, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Apr. 14, 1989, Ser. No. 338,966
Int. Cl.[5] G01R *33/12;* **G01N** *27/72*
U.S. Cl. 324—227 **21 Claims**



1. A multiparameter magnetic inspection system for deriving and displaying a plurality of related magnetic parameters of specimens, some of the parameters being measured in that they are obtained from transducer signals and others being derived from one or more of the measured parameters, the system comprising in combination:

housing means for holding a specimen to be inspected;

magnetic field means connectable to the housing means for applying magnetic fields of various properties and characteristics to the specimen;

a plurality of inspection transducers of different types mountable on or adjacent to the specimen in the housing means for inspecting the specimens and producing transducer signals related to and representing measures of different magnetic specimen parameters as a result of magnetic fields applied thereto;

measuring circuitry means for each inspection transducer to receive and convert the transducer signals into a plurality of measurement signals; the measurement signals being independent in that they result from transducer signals which are produced by the plurality of different inspection transducers but related in that they are produced

from the same specimen subjected to the same magnetic fields;

communication cable means for connecting the inspection transducers with the analytical circuit means; and

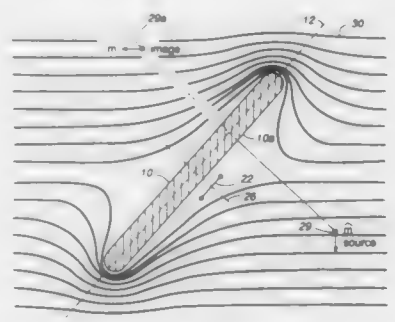
control means for instructing application of and changes in magnetic fields to the specimen; receiving the measurement signals resulting from the application of and changes in the magnetic field; and contemporaneously and rapidly from said measurement signals compiling the measured parameters, deriving the derived parameters from the measured parameters, and displaying the related measured and derived parameters for the inspected specimen.

5,008,622

SUPERCONDUCTIVE IMAGING SURFACE MAGNETOMETER

William C. Overton, Jr., Los Alamos; David B. van Hulsteyn, Santa Fe, and Edward R. Flynn, Los Alamos, all of N. Mex., assignors to United States Department of Energy, Washington, D.C.

Filed Dec. 21, 1989, Ser. No. 454,607
Int. Cl.[5] G01R *33/02, 33/035*
U.S. Cl. 324—248 **44 Claims**



1. Apparatus for detecting nearby magnetic sources by performing imaging SQUID magnetometry and gradiometry comprising:

one or more first superconducting coil means connected in series opposition to one or more second superconducting coil means for sensing nearby magnetic signals and electrically cancelling distant magnetic noise;

superconducting plate means interposed between and in close proximity to said one or more first and second superconducting coil means for imaging said nearby magnetic signals and deflecting said distant magnetic noise away from said first and second superconducting coil means;

wherein said one or more first and second superconducting coil means are connected to a SQUID.

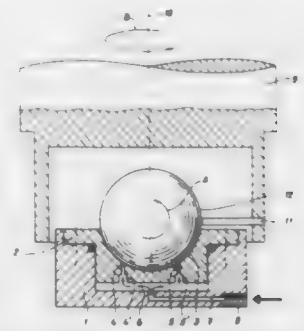
5,008,623

METHOD AND APPARATUS FOR TESTING BALLS WITH THE USE OF EDDY CURRENTS

Hendrik Dolfsma, Tull en 't Waal, and Hendrik van Engelenburg, Driebergen, both of Netherlands, assignors to SKF Industrial Trading and Development Company BV, DT Nieuwegein, Netherlands

Filed Mar. 19, 1990, Ser. No. 495,349
Claims priority, application Netherlands, Apr. 5, 1989, 8900848
Int. Cl.[5] G01R *33/00;* **G01N** *27/72*
U.S. Cl. 324—262 **6 Claims**

1. In a method employing eddy currents for checking damage on the surface of a round, e.g., ball-shaped, metal object, wherein the object is supported and made to rotate around at least one axis while an electronic contact-free scanner or sensor is aimed at the surface of the object, the improvement comprising placing the round object on a fixed support, and blowing a gaseous medium against the object to flow between the support and the object in a direction to form a gas layer



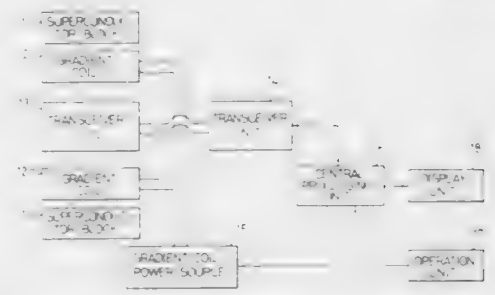
that supports the object, said step of blowing comprising blowing the gas to impart a rotational movement to the object.

5,008,624

NUCLEAR MAGNETIC RESONANCE IMAGING APPARATUS FOR ARBITRARY PATIENT POSTURE

Tadatoki Yoshida, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 30, 1989, Ser. No. 373,583
Claims priority, application Japan, Jul. 6, 1988, 63-166856
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—318 **18 Claims**



1. A nuclear magnetic resonance imaging apparatus, comprising;

a main magnet having two physically disconnected poles arranged in parallel for generating a static magnetic field in an open space between the two physically disconnected poles each of the two physically disconnected poles being made of a superconductor block capable of producing a magnetic field independently; and

carrier means for carrying an object to be examined into the static magnetic field, capable of supporting the object at arbitrary angles with respect to a floor.

5,008,625

METHOD AND APPARATUS FOR LOGGING AND DISPLAYING A TWO DIMENSIONAL IMAGE OF SPONTANEOUS POTENTIAL

Min-Yi Chen, West Redding, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Nov. 1, 1989, Ser. No. 430,214
Int. Cl.[5] G01V *3/26, 3/34*
U.S. Cl. 324—351 **16 Claims**

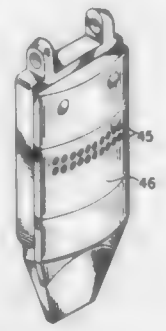
1. A system for producing indications of the spontaneous potentials existing along a longitudinally extending segment of an exposed wall of an earth formation, comprising:

an electrically insulating electrode support, an array of mutually-insulated SP electrodes supported thereon and recessed below a surface of said support, and means for moving said support along a predetermined logging direction with said surface in contact with said wall;

said array comprising a plurality of said electrodes differ-

ently positioned along a direction transverse to said direction of logging motion of said array;

potential measuring means as connected to each of said electrodes for producing respective SP signals indicative of the values of the spontaneous potentials at said electrodes; and



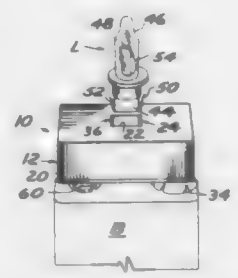
visual-image forming means supplied with said SP signals for forming a visually-observable twodimensional image corresponding to the pattern of SP values in the segment of said wall traverse by said array during said logging operation and extending substantially continuously transversely of said wall.

5,008,626

DIRECT CURRENT MINIATURE LAMP TESTER

William P. Boyd, Sr., 4624 N. William Ct., Stillwater, Okla. 74075

Filed May 17, 1990, Ser. No. 524,533
Int. Cl.[5] G01R *31/00*
U.S. Cl. 324—414 **2 Claims**



1. A direct current tester for a bayonet-type miniature electric lamp having an incandescent filament and a shunt circuit, comprising:

a dielectric rectangular translucent body having a top surface and having a bottom surface overlying a dielectric thin, when compared with the thickness of said body, planar base,

said body having a central upwardly open rectangular socket dimensioned for nesting in electrical circuit contacting relation the bayonet end portion of a miniature electric lamp;

a pair of upstanding strap metal L-shaped body socket terminals, each terminal of said pair of body socket terminals having a foot portion and a leg portion and having their respective foot portions flatly interposed between said base and said body and secured in spaced-apart relation to said base and having their respective leg portions coextensive with and flatly disposed, in confronting relation, on opposing surfaces of the walls defining the body socket;

a first pair of snap-tab type battery terminals,

one terminal of said first pair of battery terminals depending from said base and connected with the foot portion of one body socket terminal of said pair of body socket terminals,

the other battery terminal of said first pair of battery terminals depending from and connected with said base in longitudinally spaced relation with respect to the position of the foot portion of the other said body socket terminal on said base;

a dry cell direct current battery having a second pair of battery terminals cooperatively received in electrical conducting relation by said first pair of battery terminals; and,

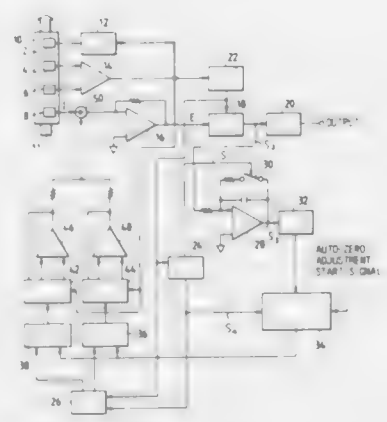
circuit means supported by the body and electrically connected with the said other battery terminal of said first pair of battery terminals and having an auxiliary miniature electric lamp having an incandescent filament circuit interposed between the other said foot portion of said other body socket terminal of said pair of body socket terminals and said other terminal of said first pair of battery terminals for indicating a closed circuit through the incandescent filament of a miniature lamp under test, by the battery potential exciting said auxiliary incandescent filament and the incandescent filament of a miniature lamp under test or a closed circuit through only the shunt circuit of a miniature lamp under test by the illuminating glow of said body from the battery potential excited incandescent filament of the auxiliary lamp.

5,008,627

CONDUCTIVITY DETECTOR

Koji Tsutsuta, and Kiwao Seki, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 12, 1989, Ser. No. 420,479
Claims priority, application Japan, Oct. 19, 1988, 63-261511
Int. Cl.[5] G01N *27/02*
U.S. Cl. 324—444 **3 Claims**



1. An apparatus comprising:

a cell for flowing an electrolyte;

a pair of first electrodes disposed in said cell and separated by a predetermined distance;

means for supplying said pair of first electrodes with a variable A.C. voltage signal;

a pair of second electrodes disposed between said pair of first electrodes in said cell and separated by a predetermined distance for detecting the voltage across said second electrodes;

means for controlling the output voltage of said variable A.C. voltage signal supplying means so as to maintain the voltage across said second electrodes at a predetermined value;

means for generating a variable A.C. reference signal with reverse phase to the A.C. voltage signal;

means for adding an output A.C. current flowing between said pair of first electrodes to the A.C. reference signal;

means for determining whether the output of said adding means reduces to zero or not; and

means for correcting the A.C. reference signal so as to reduce the output signal of said adding means to zero;

wherein said zero determining means includes;

a synchronous rectifying circuit for rectifying the output signal of said adding means;

an interval integral circuit for performing the interval integral of the output of said synchronous rectifying circuit, and

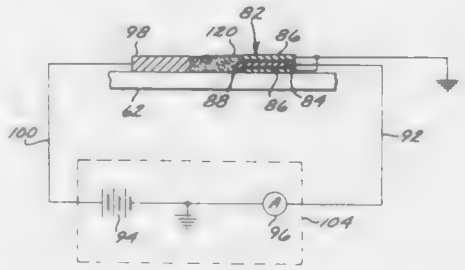
a comparator for determining whether the output of said interval integral circuit is zero or not, the interval integral circuit operating in synchronism with the output signal of said synchronous rectifying circuit and when the output of said interval integral circuit reduces to zero, said zero determining means determining the completion of the zero adjustment operation.

5,008,628

MEASUREMENT OF ELECTRICAL RESISTIVITY OF PARTICULATE ENTRAINED IN A GAS STREAM

Henry V. Krigmont, Seal Beach, and Everett L. Coe, Jr., Downey, both of Calif., assignors to Wahlco, Inc., Santa Ana, Calif.

Filed Jun. 5, 1989, Ser. No. 361,273
Int. Cl.[5] G01R *27/02*
U.S. Cl. 324—693 **16 Claims**



1. Particulate resistivity measurement apparatus, comprising:

a substrate having a first side and a second side;

two adjacently positioned electrodes supported on the first side of the substrate, including

a measurement electrode, and

a reference electrode;

means for applying a vacuum to the second side of the substrate to controllably draw gas through the substrate so that particulate matter carried by the gas is deposited on the first side of the substrate;

a measurement power supply that applies a measurement voltage between the reference electrode and the measurement electrode; and

a current measurement meter that measures the current flowing between the reference electrode and the measurement electrode due to the applied measurement voltage.

5,008,629

FREQUENCY SYNTHESIZER

Motoi Ohba, Yokohama; Hiroyuki Yabuki, Kawasaki, and Mitsuo Makimoto, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

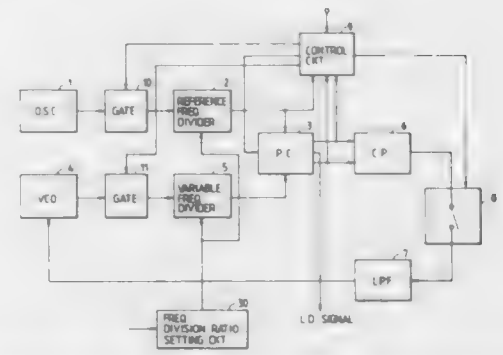
Filed Jun. 20, 1989, Ser. No. 369,408
Claims priority, application Japan, Jun. 20, 1988, 63-151619; Jul. 22, 1988, 63-184330
Int. Cl.[5] H03L *7/00*; H03B *19/00*
U.S. Cl. 328—14 **2 Claims**

1. A frequency synthesizer for use in a multichannel radio apparatus, said frequency synthesizer having a first oscillator for outputting a signal having a reference frequency, a first frequency divider for dividing the frequency of the signal outputted from said first oscillator, a second oscillator for outputting a signal having a desired frequency, a second frequency divider for dividing the frequency of the signal outputted by said second oscillator by a variable number, a phase comparator for comparing the phase of the signal outputted from said first frequency divider with that of the signal outputted from said second frequency divider, a charge pump for converting an output signal of said phase comparator and outputting the converted signal as an integrator drive signal and an integrator for integrating the output signal of said charge pump and controlling said second oscillator, the improvement comprising:

a first gate circuit provided between said first oscillator and said first frequency divider;

a second gate circuit provided between said second oscillator and said second frequency divider;

a third gate circuit between said charge pump and said integrator;



a control circuit responsive to an output signal from said first or second frequency divider, a frequency synthesizer controlling signal, and output signals from said phase comparator for producing first and second gate control signals respectively applied to said first and second gate circuits; and

a frequency division ratio setting circuit having a shift register, an N-bit data latch responsive to parallel outputs from said shift register, and means for controlling said data latch by logical product of a first signal inputted from a strobe input terminal and a second signal outputted from another data latch which holds a first or last one bit of said parallel outputs of said shift register thereby controlling frequency division ratio of said first and second frequency dividers by outputs of said N-bit data latch.

5,008,630

STATIONARY PROBABILITY INTEGRATOR SYSTEM

Paul F. Reimel, Quakertown, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

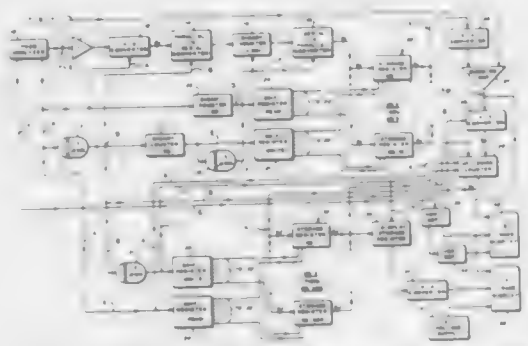
Filed Mar. 26, 1969, Ser. No. 811,695
Int. Cl.[5] H03K *5/00*; G01R *23/16*
U.S. Cl. 328—165 **7 Claims**

1. A system for suppressing noise in a spectrum analysis within a predetermined frequency range of a complex waveform sample, the analysis being an analog signal of predetermined duration composed of a plurality of discrete magnitudes in equal increments of time indicative of the energy levels of a corresponding plurality of frequency elements of predetermined bandwidths and of progressively increasing frequency, comprising, in combination:

timing means providing pulses at time intervals synchronous with equal multiples of said time increments;

averaging means receiving one of said analog signals and said timing means pulses and providing a signal of said predetermined duration composed of a plurality of discrete magnitudes in said time intervals indicative of the average energy levels of a corresponding plurality of

ensembles of the frequency elements of progressively increasing frequency; and



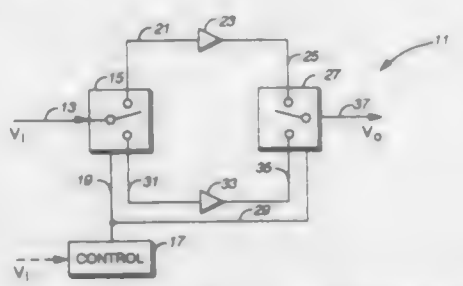
combining means concomittantly receiving the averaging means signal for said one analog signal and the next-consecutive analog signal and providing a signal indicative of the difference in energy levels.

5,008,631

PULSE ANALYZER WITH GAIN COMPRESSION

Dieter Scherer, Palo Alto, and William E. Strasser, Montara, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 16, 1989, Ser. No. 394,407
Int. Cl.[5] H03F *3/68*
U.S. Cl. 330—51 **5 Claims**



1. A method for reducing the dynamic range of an incoming electrical signal, the method comprising the steps of:

determining the magnitude of the incoming signal;

providing a control signal that has a first value if the incoming signal magnitude exceeds a predetermined value, and that has a second value if the incoming signal magnitude does not exceed a predetermined value;

providing a control override signal, having an active state and an inactive state, that, in its active state, overrides the control signal and sets the control signal value equal to the first value; and

passing the incoming electrical signal through an amplifier circuit that receives the control signal and control override signal, to multiply the incoming signal by a first amplification coefficient A_1 and to issue this amplified signal as an output signal if the control signal value received has the first value, and to multiply the incoming signal by a second amplification coefficient A_2 and to issue this amplified signal as an output signal if the control signal value received has the second value, where the magnitudes of the amplification coefficients satisfy $O < A_1 < A_2$,

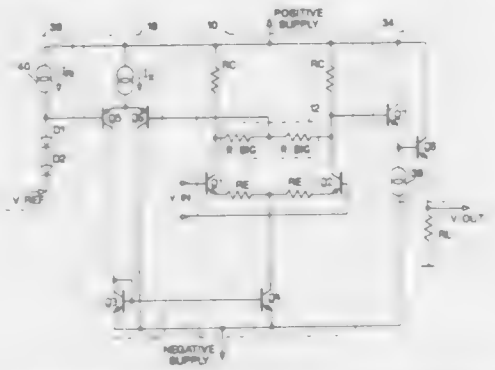
whereby the dynamic range of the collection of the first and second output signals is less than the dynamic range of the incoming signal.

5,008,632

TEMPERATURE COMPENSATED FEEDBACK CIRCUIT FOR SETTING AND STABILIZING AMPLIFIER DC BIAS POINTS

Philip H. Sutterlin, Durham, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1989, Ser. No. 429,665
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—256 **1 Claim**



1. An improved amplifier comprising:

a differential amplifier stage having differential input devices (Q_1, Q_2) with a pair of differential input terminals for receiving an input signal, a pair of output terminals, interconnected collector terminals, and interconnected emitter terminals;

a buffer stage, coupled to the pair of output terminals;

a first circuit means connected in the interconnected collector terminals, said first circuit means averaging signals in said interconnected collector terminals and generating a single-ended signal representative of a DC component in said signals;

a second circuit means for generating a reference signal (Vref);

a third circuit means to compensate for temperature and process variations caused by said buffer stage, coupled to the second circuit means;

an error amplifier coupled to the third circuit means for comparing Vref with the single-ended signal to generate a bias current signal which directly flows through (Q1, Q2) to set the DC operating point of said differential amplifier stage.

5,008,633

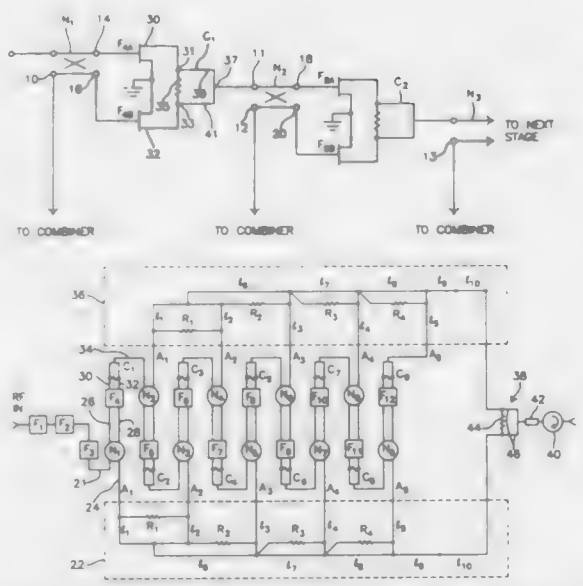
CROSS-FED FET POWER-CHIP

Harvey K. Y. Hom, Santa Monica, Calif., assignor to ITT Corporation, New York, N.Y.

Filed Mar. 29, 1990, Ser. No. 502,077
Int. Cl.[5] H03F *3/193, 3/68*
U.S. Cl. 330—277 **5 Claims**

1. A cross-fed FET power-chip amplifier in which a first stage consists of two FET devices, each having a gate, a source and a drain; a wide band four port directional coupler having an input terminal, an output terminal and two driver inputs; means for connecting an input signal to said input terminal, said directional coupler being designed to produce the majority of its output at said output terminal and a lesser output in each of said two driver inputs which have a 90° phase relationship; means connecting each of said driver inputs to a gate of one of said FET devices; a broadband 90°. coupler having two inputs and an output with a resistor across its inputs; means connecting the sources of said FET devices to common and the drains of said FET devices each to one input of the broadband 90° coupler to accommodate the 90° offset at the gates; at least one subsequent stage configured the same as said first stage; means coupling the output of the broadband coupler to the input terminal of the directional coupler of the subsequent

stage; at least one combiner; and means for coupling the output terminals of the directional couplers of each stage and the



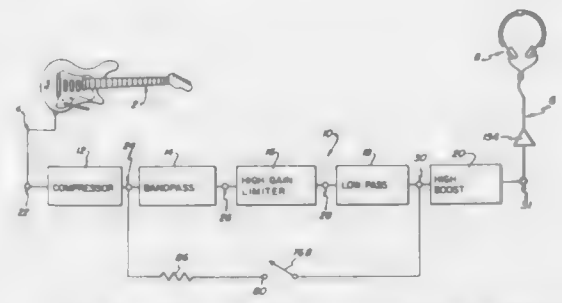
broadband coupler of the final stage to said at least one combiner to derive an output signal.

5,008,634

SYSTEM FOR CONTROLLING THE DYNAMIC RANGE OF ELECTRIC MUSICAL INSTRUMENTS

David E. Christian, Danbury, Conn., assignor to C. B. Labs, Inc., Bridgeport, Conn.

Continuation-in-part of Ser. No. 274,443, Nov. 18, 1988, Pat. No. 4,899,115. This application Oct. 4, 1989, Ser. No. 417,789
Int. Cl.[5] H03F *3/191*
U.S. Cl. 330—306 **17 Claims**



1. A circuit for controlling electrical signals from at least one transducer associated with an electrified musical instrument, said circuit having input and output terminals and comprising:

(a) bandpass filter circuit means operatively coupled to said transducer for receiving signals therefrom and passing therethrough a relatively narrow bandwidth of said signals;

(b) limiting circuit means operatively connected to said bandpass filter circuit means for limiting the signals received from said filter circuit means, said limiting circuit means including at least a pair of oppositely connected semiconductor diode paths for operating substantially in the linear region of said diode forward characteristics; and

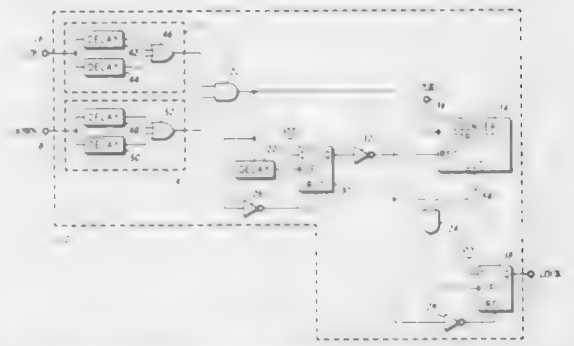
(c) low pass filter circuit means operatively coupled to said limiting circuit means to further condition signal.

5,008,635

PHASE-LOCK-LOOP LOCK INDICATOR CIRCUIT

Carl C. Hanke, Mesa; Carlos D. Obregon, Tempe, and Ahmad H. Atriss, Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 25, 1990, Ser. No. 542,542
Int. Cl.[5] H03L *7/06*
U.S. Cl. 331—1 A **13 Claims**



1. A circuit for indicating when a phase-lock-loop circuit is in lock comprising:

gate circuit means being coupled to the phase-lock-loop circuit for providing an output logic signal responsive to the phase lock loop circuit being in lock;

a counter circuit responsive to said output logic signal of said gate circuit means for providing an output logic signal when said counter circuit has reached a predetermined count;

circuit means for enabling said circuit when said output logic signal of said circuit means is in a first logic state and disabling said counter circuit when said output logic signal of said gate circuit means is in a second logic state; and

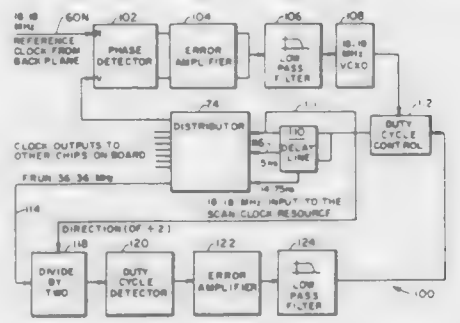
a latch circuit responsive to said output logic signal of said counter circuit for providing a lock signal at an output terminal of the latch circuit.

5,008,636

APPARATUS FOR LOW SKEW SYSTEM CLOCK DISTRIBUTION AND GENERATION OF 2X FREQUENCY CLOCKS

Scott Markinson, Goffstown, N.H.; Michael Schuster, Norwood, and Thomas Hogan, Worcester, both of Mass., assignors to Apollo Computer, Inc., Chelmsford, Mass.

Filed Oct. 28, 1988, Ser. No. 263,714
Int. Cl.[5] H03L *7/06, 7/07*
U.S. Cl. 331—2 **9 Claims**



1. Apparatus for generation of a plurality of synchronized clock signals on a computer system circuit board from a reference clock signal comprising:

means for receiving a reference clock signal;

means for providing a clock signal whose frequency may be varied in response to a control signal;

means, receiving said clock signal, for providing a plurality of clock output signals having a selected phase relationship therebetween and having a delay from said reference clock signal;

phase-locked loop means receiving said reference clock signal and a selected one of said plurality of clock output signals, for providing a control signal to said clock signal providing means, for varying the frequency of said plurality of clock output signals, to maintain a phase relationship between said plurality of clock output signals and said reference clock signal and to compensate for said delay;

frequency multiplier means, receiving said clock signal, for providing an output signal at a frequency being a multiple of said clock signal, and comprising plural clock pulses each having a specified duty cycle relative to said clock signal, and

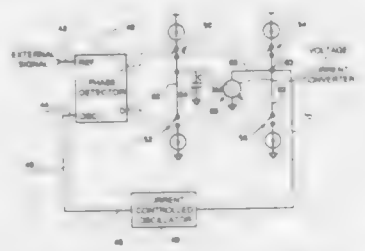
duty cycle control means for controlling the duty cycle of each of said plural clock pulses.

5,008,637

FULLY INTEGRATED CHARGE PUMP PHASE LOCKED LOOP

Daniel L. Ray, Fair Oaks, Calif., assignor to Level One Communications, Inc., Folsom, Calif.

Filed Nov. 15, 1989, Ser. No. 437,724
Int. Cl.[5] H03L *7/093*
U.S. Cl. 331—8 **10 Claims**



1. In a phase locked loop circuit including a phase detector having a first input lead for receiving a reference signal and a second input lead connected to the output lead of an oscillator, apparatus for varying the output signal on the output lead of the oscillator comprising:

normally non-conducting first and second switch means providing conductance therethrough in response to a lag signal from the phase detector;

normally non-conducting third and fourth switch means providing conductance therethrough in response to a lead signal from the phase detector;

a first conductor connecting the first and third switch means;

a second conductor connecting the second and fourth switch means;

a first current source means connected to the first switch means, such that closing of the first switch means provides connection between the first current source means and first conductor;

a first current sink means connected to the third switch means, such that closing of the third switch means provides connection between the first current sink means and the first conductor;

second current source means connected to the second switch means, such that closing of the second switch means provides connection between the second current source means and the second conductor;

second current sink means connected to the fourth switch means such that closing of the fourth switch means provides connection between the second current sink means and the second conductor;

a capacitor having a terminal connected to the first conductor;

a voltage to current converter operatively connected with the capacitor, the second conductor and the input lead of the oscillator so that upon the first switch means providing conductance in response to a lag signal, current flows into the capacitor from the first current source means and charge is built on the capacitor to increase the voltage thereacross to in turn vary the signal to the oscillator to in turn vary the output signal of the oscillator, with the oscillator output signal further being varied by the second switch means conducting current via the second current source means in response to a lag signal, and upon the third switch means conducting in response to a lead signal, charge flows from the capacitor via the first current sink means to decrease the voltage thereacross to in turn vary the signal to the oscillator to in turn vary the output signal of the oscillator, with the oscillator output signal further being varied by the fourth switch means providing conductance through the second current sink means in response to a lead signal.

5,008,638

INSTALLATION STRUCTURE OF A MICROWAVE OSCILLATION CIRCUIT UNIT

Makio Nakamura, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 7, 1989, Ser. No. 362,506
Claims priority, application Japan, Jun. 8, 1988, 63-76160[U]
Int. Cl.[4] H03B *1/00*
U.S. Cl. 331—68 **1 Claim**



1. In an installation structure for installing a microwave oscillation circuit unit on one surface of a chassis base having a circuit substrate on its other surface, said unit having at least two screws, a power supply terminal and an output terminal on its one surface confronting the chassis base when installed on the chassis base, the improvement comprising

a first nut to be threaded on one of the screws which is positioned adjacent to the power supply terminal and the output terminal so that torque caused by tightening said first nut to said one of the screws acts upon the chassis base and said first nut is clear from the circuit substrate, and

a second nut to be threaded on the other of the screws which is positioned apart from the power supply terminal and the output terminal so that torque caused by tightening said second nut to said the other of the screws acts upon both the chassis base and the circuit substrate.

5,008,639

COUPLER CIRCUIT

Anthony M. Pavio, 1813 Edgewater Dr., Plano, Tex. 75075

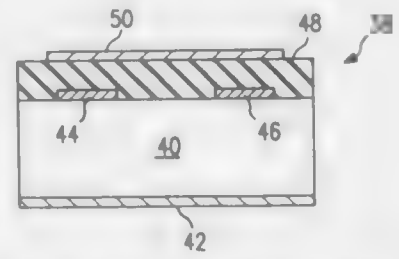
Filed Sep. 27, 1989, Ser. No. 413,558
Int. Cl.[5] H01P *5/18*
U.S. Cl. 333—116 **28 Claims**

1. A coupler circuit, comprising:

a first conductor adjacent and substantially parallel to a substrate;

a second conductor adjacent and substantially parallel to said substrate and coplanar with said first conductor; and

a conductive layer substantially parallel with said first and second conductors such that a current is induced in said second conductor responsive to a current generated in said first conductor and coupling of said second conductor to said first conductor by said conductive layer; and a dielectric layer between said conductive layer and said first and second conductors, wherein said dielectric layer is



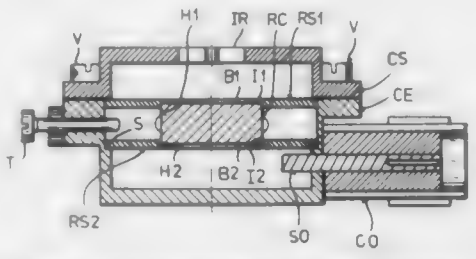
selected from the group consisting of nitride, polyamide and silicon-glass.

5,008,640

DIELECTRIC-LOADED CAVITY RESONATOR

Luciano Accaliño, Rosta, and Giorgio Bertin, Ltrouble, both of Italy, assignors to CSELT - Centro studi e Laboratori Telecomunicazioni S.P.A., Turin, Italy

Filed Jul. 17, 1989, Ser. No. 380,978
Claims priority, application Italy, Jul. 21, 1988, 67M7 A/88
Int. Cl.[5] H01P *7/06, 7/10*
U.S. Cl. 333—219.1 **3 Claims**



1. A dielectric-loaded cavity resonator, comprising:

a generally closed metallic housing defining a cylindrical cavity and formed with two spaced-apart steps on opposite sides of an increased-diameter portion of said cavity spaced from opposite ends of said housing; and

a dielectric assembly received in said housing and comprising:

a pair of dielectric plates each seated in one of said steps and formed with a centering indentation opening toward the other of said plates, and

a dielectric cylinder received between said plates and having opposite bases each received in a respective one of said indentations, whereby said assembly formed by said plates and said cylinder is held in a fixed position in said cavity and is spaced from said ends by said steps.

5,008,641

POLARIZED ARMATURE CONTACT RELAY

Helmut Schedele, Diessen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

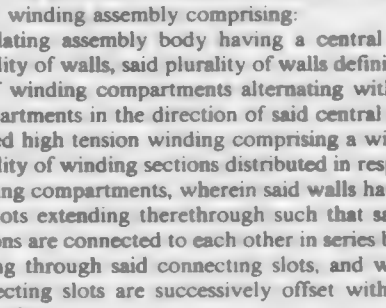
Filed May 31, 1990, Ser. No. 531,839
Claims priority, application Fed. Rep. of Germany, May 31, 1989, 8906678[U]
Int. Cl.[5] H01H *51/22*
U.S. Cl. 335—80 **6 Claims**

1. A polarized armature contact relay, comprising:

a hollow coil body having first and second end flanges; a winding about said coil body;

first and second tongue armatures extending within said hollow coil body in opposite directions and parallel to one another, said tongue armatures each having a terminal end mounted in a corresponding one of said first and second end flanges and a free end;

first and second pairs of pole pieces mounted on corresponding ones of said first and second end flanges adjacent said terminal ends of corresponding ones of said first and second tongue armatures, said pole pieces each having a front face and said pole pieces being mounted next to one another in pairs with said front faces facing each other to enclose said free ends of corresponding ones of said second and first tongue armatures;



first and second flat four-pole permanent magnets mounted on corresponding pairs of said first and second pairs of pole pieces, said permanent magnets having two opposite polarization directions parallel to the axis of said coil member, said permanent magnets each being mounted with oppositely magnetized poles coupled to respective ones of said pole pieces in each of said first and second pair of pole pieces; and

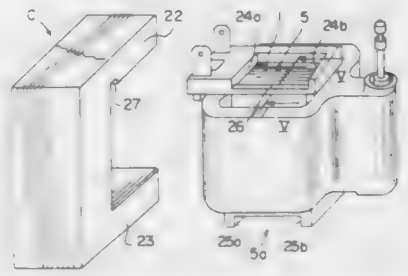
first and second flux plates coupled between outside poles of corresponding ones of said first and second magnets and said free ends of said second and first tongue armatures.

5,008,643

IGNITION COIL HAVING A DIVIDED HIGH TENSION WINDING, IN PARTICULAR FOR INTERNAL COMBUSTION ENGINES

Pierre Heritier-Best, Orbeil, France, assignor to Valeo Electronique, Issy-les-Moulineaux, France

Filed Dec. 21, 1989, Ser. No. 454,150
Claims priority, application France, Dec. 23, 1988, 88 17053
Int. Cl.[5] H01F *15/02, 27/30*
U.S. Cl. 336—96 **2 Claims**



1. An ignition coil having primary and secondary winding assemblies for automotive internal combustion engines, said secondary winding assembly comprising:

an insulating assembly body having a central axis and a plurality of walls, said plurality of walls defining a plurality of winding compartments alternating with insulating compartments in the direction of said central axis;

a divided high tension winding comprising a wire having a plurality of winding sections distributed in respective said winding compartments, wherein said walls have connecting slots extending therethrough such that said winding sections are connected to each other in series by said wire passing through said connecting slots, and wherein said connecting slots are successively offset with respect to each other;

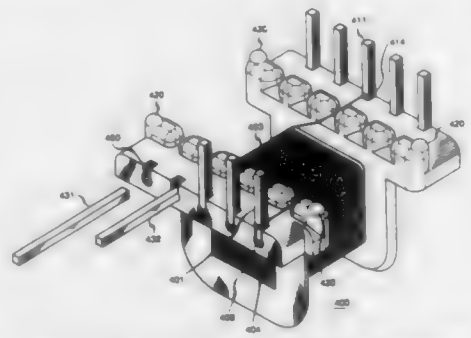
said secondary winding assembly having an adhesive varnish able to polymerize on itself after exposure to ultraviolet radiation impregnated therein, said adhesive varnish comprising a composition of epoxide resin and acrylic ester, and said secondary sub-assembly further being encapsulated with an insulating envelope of thermoplastic material.

5,008,644

TERMINAL ASSEMBLY FOR LINEAR MAGNETIC COMPONENT BOBBIN

Robert C. Cooper, Newton, N.H., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 31, 1989, Ser. No. 401,275
Int. Cl.[5] H01F *15/10, 27/30*
U.S. Cl. 336—192 **4 Claims**



1. An assembly for a magnetic component comprising:
a bobbin structure including:
mounting supports having a plurality of supporting standoffs for resting on a planar surface on which the bobbin structure is to be mounted
a winding wound about a portion of the bobbin structure with a winding axis parallel to the planar surface and having at least one wire termination lead connected to the winding,
at least a terminal integral to the bobbin being included in the mounting support of the bobbin structure having an L shape and included in a passageway in the mounting support of the bobbin structure and having a longitudinal axis parallel to the planar surface with a first leg of the L shaped terminal substantially parallel to the planar surface and a second leg of the L shaped terminal substantially perpendicular to the planar surface and the termination end of the winding wound about the second leg of the terminal,
the wire termination being passed between two adjacent standoffs to a wound portion of the winding on the bobbin structure, and
the standoffs having a sufficient dimension perpendicular to the planar surface to prevent contact between the termination end of the winding wound on the second leg and the planar surface.

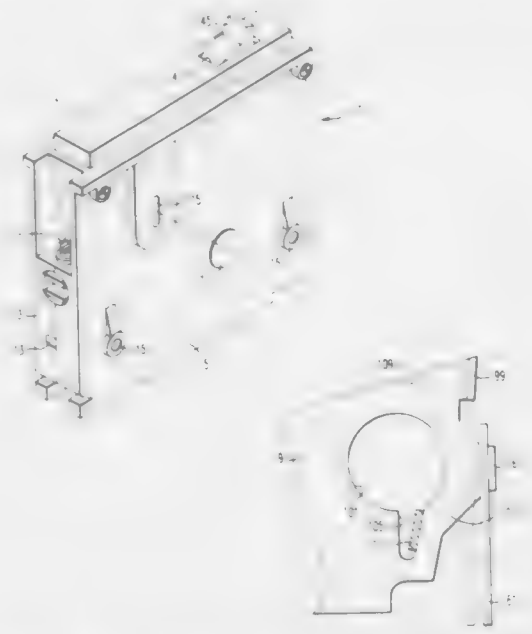
5,008,645

CIRCUIT BREAKER WITH TAMPER INDICATING CALIBRATION MEANS

Stephen A. Mrenna, Brighton Township, Beaver County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 30, 1990, Ser. No. 559,861
Int. Cl.[5] H01H *71/06, 75/10, 77/04*
U.S. Cl. 337—70 **10 Claims**

1. A circuit breaker comprising an electrically insulating housing including a base defining a cavity and a cover for enclosing said cavity, a circuit breaker assembly within the cavity in said housing and comprising electrical contacts movable between open and closed positions, an operating mechanism including a cradle latchable in a latched position and operative when unlatched to automatically move said electrical contacts to said open position, a trip mechanism including an elongated bimetal which latches said cradle in the latched position and which flexes to unlatch said cradle in response to predetermined persistent current overload conditions, and a calibration opening in said housing through which a tool is insertable to adjust the bimetal to calibrate said predetermined



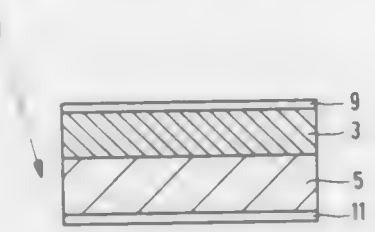
persistent current overload conditions at which said bimetal unlatches said cradle to move said electrical contacts to the open position after said circuit breaker assembly has been installed in said cavity and the cavity has been enclosed with said cover secured to said base, and tamper indicating seal means sealing said calibration opening in said housing from subsequent access.

5,008,646

NON-LINEAR VOLTAGE-DEPENDENT RESISTOR

Detlev Hennings, Aachen; Bernd F. W. Hoffmann, Rheinstetten, and Markus Nutto, Endingen, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 26, 1989, Ser. No. 371,866
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1988, 3823698
Int. Cl.[5] H01C *7/10*
U.S. Cl. 338—20 **19 Claims**



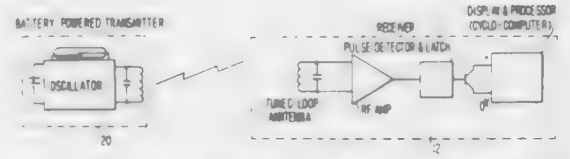
1. A non-linear voltage-dependent resistor comprising a ceramic sintered body of at least one laminated structure of a layer (3) of resistance material consisting essentially of zinc oxide doped with at least one alkaline earth metal, at least one rare earth metal and at least one metal of the iron group consisting of aluminum, gallium and indium provided on a carrier layer (5) consisting essentially of zinc oxide and having a higher electric conductivity than the layer (3) of resistance material

5,008,647

WIRELESS BICYCLE WHEEL MONITOR SYSTEM

Chris Brunt, Topanga, and Don C. Carner, Jr., Oxnard, both of Calif., assignors to Orleander S.A., Lugano-Cassarate, Switzerland

Continuation-in-part of Ser. No. 306,621, Feb. 6, 1989, abandoned. This application Oct. 25, 1989, Ser. No. 430,093
Int. Cl.[5] B62J *3/00;* **G01P** *3/66*
U.S. Cl. 340—432 **20 Claims**



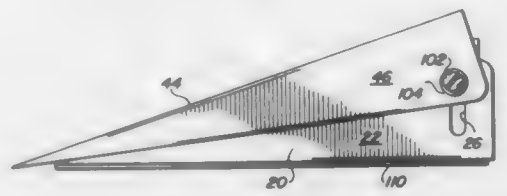
13. In a low-power wireless data display system for monitoring rotation of an object relative to a frame, said system having a transmitter unit including sensor means for monitoring rotation of the object and generating a corresponding signal, and a transmitter antenna for transmitting the signal, and a receiver unit remote from the transmitter unit including a receiver antenna for receiving the transmitted signal, processing means for processing the received signal into monitoring data, and display means for displaying the monitoring data,
the improvement wherein said transmitter and receiver units are mounted to the frame, and said transmitter and receiver antennas have a longitudinal axis of symmetry for signal propagation in a longitudinal direction, and means for orienting the axes of symmetry of said antennas in alignment with each other, said orienting means including at least one of said transmitter and receiver units having a mounting portion which is mounted to a part of the frame and provided with a pivotable part carrying the antenna for said unit for allowing it to be pivoted to a position in which its longitudinal axis is aimed in alignment with the longitudinal axis of the antenna of the other unit, whereby efficient transmission and reception of the signal is obtained and interference with or from an adjacent, similar system is avoided.

5,008,648

ELECTRONIC DOOR WEDGE ALARM

Timothy D. Conemac, 9533 Gierson Ave., Chatsworth, Calif. 91311

Filed Sep. 14, 1989, Ser. No. 407,502
Int. Cl.[5] G08B *13/08*
U.S. Cl. 340—546 **27 Claims**



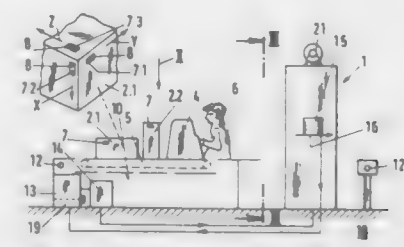
1. An alarm device for use with a hinged, inwardly-opening door, comprising:
a bottom chassis member comprising a first rectangular segment, said bottom chassis member having a front end including a first side of said first rectangular segment and a back end including a second side of said first rectangular segment, said second side of said first rectangular segment being opposite said first side of said first rectangular segment;
a top chassis member comprising a second rectangular segment, said top chassis member having a front end including a first side of said second rectangular segment and a back end including a second side of said second rectangular segment being opposite said first side of said second rectangular segment;
means for mounting said top chassis member on said bottom chassis member to form a wedge-shaped assembly with the thin edge of said wedge-shaped assembly defined by said first sides of said first and second rectangular segments and the thick edge of said wedge-shaped assembly being defined by said second sides of said first and second rectangular segments, said second sides of said rectangular segments being relatively moveable toward and away from each other;
means for biasing said second sides of said first and second rectangular segments away from each other;
switch means for triggering said alarm device when said second ends of said first and second rectangular segments move toward each other;
an audio transducer; and
an alarm circuit electrically connected to said switch means and to said audio transducer, said alarm circuit causing said audio transducer to emit an alarm signal whenever said switch means operates to trigger said alarm device.

5,008,649

MAGNETIC SECURITY SYSTEM AGAINST THEFT AND BURGLARY AND METALLIC SENSOR ELEMENT SUITABLE THEREFOR

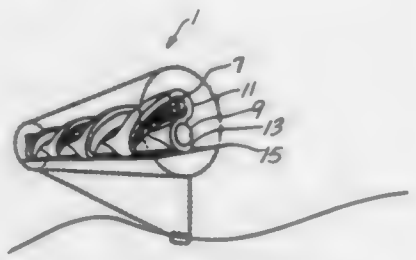
Erhard Klein, Butjadingen, Fed. Rep. of Germany, assignor to Karl Harms Handels-GmbH & Co. KG, Jever, Fed. Rep. of Germany

Continuation of Ser. No. 229,951, Aug. 9, 1988, abandoned, which is a continuation-in-part of Ser. No. 172,888, Mar. 25, 1988, abandoned. This application Feb. 9, 1989, Ser. No. 308,227
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1987, 3741780
Int. Cl.[5] G08B *13/14;* **G01R** *33/00*
U.S. Cl. 340—572 **43 Claims**



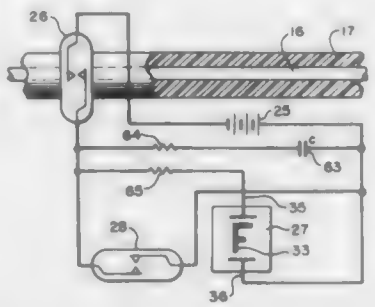
1. An apparatus for securing an object located in a room having at least one room outlet against theft, comprising:
at least one field coil surrounding each room outlet which generates a magnetic field, each of said at least one field coil having a horizontal axis, and a height and breadth which are suitable for a person to walk through the field coil in the direction of the horizontal axis;
at least one magnetically-activated sensor metal element fixed to the object which, when brought into an active state by a special treatment, generates a first signal when the sensor metal element is brought within a distance of one of said at least one field coil so as to exceed a field strength limit value
means for detecting the first signal from the sensor metal element;
an alarm which is triggered when said detecting means detects the first signal; and
said first signal being distinguishable by the detecting means from signals generated by other metallic objects when under magnetic excitation.

5,008,650
LEAK DAMAGE PREVENTION SYSTEM
Dane A. Holberg, 402 Fallingstar, Irvine, Calif. 92714
Filed Sep. 21, 1989, Ser. No. 410,641
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—604 3 Claims



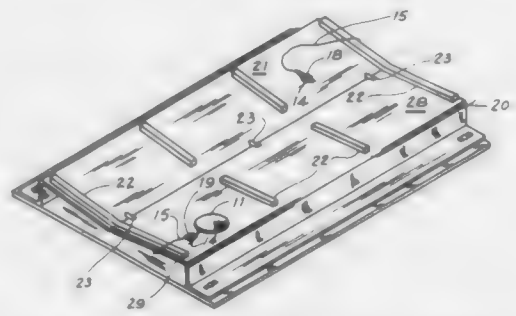
1. A liquid detection system comprising:
means for detecting the presence of a liquid on a normally dry surface area, the detecting means including a helically wound elongated sensor comprising at least two conductors each being partially surrounded by a body of electrically insulating material, so that an elongated exposed portion having a continuous extent along the length of the sensor is formed on each conductor and the exposed portions are exposed to the environment continuously in alternating fashion while remaining electrically isolated from each other by protruding ridges of insulation along the length of the sensor, whereby the presence of liquid on the surface area to which the conductors are exposed can bridge the exposed portions of a pair of conductors independent of orientation of the sensor; and
electrical circuit means operatively connected to the sensor for detecting electrical resistance changes in the sensor in response to the liquid bridging the exposed portions of the conductors of the sensor.

5,008,651
BATTERY-POWERED FAULT INDICATOR
Edmund O. Schweitzer, Jr., 2433 Center St., Northbrook, Ill. 60062
Continuation of Ser. No. 433,674, Nov. 8, 1989, abandoned. This application Jul. 9, 1990, Ser. No. 551,043
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—664 30 Claims



1. A fault indicator operable from a battery for indicating the occurrence of a fault current in a monitored electrical conductor, comprising:
a housing;
status indicating means within said housing comprising a high impedance display device having at least a pair of display electrodes disposed in operative association with a layer of voltage-responsive light controlling material, the display device providing on the exterior of said housing a first display condition in the absence of an actuating signal applied to said display electrodes, and a second display condition in the presence of an actuating signal applied to said display electrodes;
charge storage means;
switch means rendered conductive upon the occurrence of a fault current in the monitored conductor for momentarily connecting the battery to said charge storage means to develop a charge therein following the fault current; and
circuit means for connecting said charge storage means to said display electrodes whereby said high impedance display device is caused to display said second condition following the fault current.

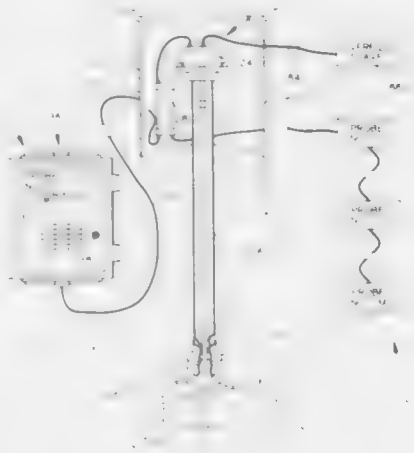
5,008,652
WATER LEAK DETECTION APPARATUS FOR USE IN SUSPENDED CEILINGS
Leonard T. Woloszyk, Greenfield, Wis., assignor to Electro-Consultants, Inc., Greenfield, Wis.
Filed May 30, 1990, Ser. No. 530,385
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—605 4 Claims



1. A device, on the top side of a suspended ceiling panel for detecting leakage of liquid on to and through a ceiling comprising:
at least one liquid concentrating tray having surfaces sloping to form a narrow trough;
electric conductor means for conducting electricity, sensor terminal; means in said troughs to be contacted by said liquid, warning means for warning of a leak in said ceiling, and current supply means in a circuit to actuate said warning means when said liquid contacts said sensor terminal means;
said sensor terminal means being connected in parallel by said electric conductor means to said current supply means and said warning means in said electric circuit.

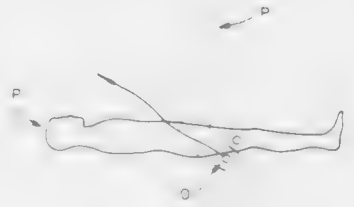
5,008,653
FLUID DETECTOR WITH OVERFILL PROBE
Roy E. Kidd, Clayton; Raymond J. Andrejasich, Carmel; Hilary Michel, Plainfield, and Laurence S. Slocum, Indianapolis, all of Ind., assignors to Emhart Industries, Inc., Towson, Md.
Filed Dec. 22, 1989, Ser. No. 455,577
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—620 8 Claims

1. An apparatus for detecting the presence of fluids comprising:
a plurality of probes for detecting the fluid state of their environment, said probes including an overfill probe for detecting the approach of the overfill condition in a tank of liquid;
monitor means for checking the status of said probes, said monitor means including: timing means for clocking a predetermined time period; and overfill checking means responsive to said timing means for checking said overfill probe at lest once during each predetermined time period, said predetermined time period being shorter than the time to check all of said probes; and



means for electrically connecting said monitor means and said probes.

5,008,654
PATIENT AMBULATION MOTION DETECTOR
James J. Callaway, 1577 Moran Rd., Franklin, Tenn. 37064
Filed Nov. 7, 1989, Ser. No. 432,867
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—686 4 Claims



1. A patient's ambulation motion detector comprising:
motion sensor means for sensing movement of a patient's body from a supine posture to a posture indicative of impending ambulation and for providing an electrical signal in accordance with said sensed movement;
attachment means for attaching the motion sensor means to a lateral and substantially vertical surface of a supine patient's body, and
detachment sensor means for sensing detachment of the detector from the patient's body and for providing an electrical signal in accordance with said sensed detachment;
wherein the detachment sensor means comprises:
a planar circuit board provided with respective first and second conductor lands thereon and having an aperture provided centrally therethrough;
a conductive spring contact member having a base end conductively mounted to said first conductor land on said circuit board, a medial bridge portion extending from the base end and spaced above and at a higher level relative the circuit board than the base end, and a free contact end opposite the base end and overlying said second conductor land on said circuit board and being elastically urged into conductive contact therewith; and
a plunger having a shaft portion passing through the aperture in the circuit board, one end of said shaft portion abutting an underside of the medial bridge portion of the conductive spring contact member, said plunger being movable against said conductive spring member for urging the free contact end of said conductive spring contact member out of electrical contact with said second conductor land on said circuit board.

5,008,655
VISUAL ALARM DEVICE INTERCONNECTABLE TO EXISTING MONITORING CIRCUITRY
Robert A. Schlesinger, 1618 Vinewood La., NE., Cedar Rapids, Iowa 52402; Kimuel L. Hill, Rte. 2 - Box 200, Clinton, Tenn. 37716; Hamid S. Ali, 4946 Kebbe Dr., Sterling Heights, Mich. 48077, and Mark E. Watson, 2209 Kline Ave., Nashville, Tenn. 37211
Filed Nov. 20, 1989, Ser. No. 438,083
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—691 6 Claims

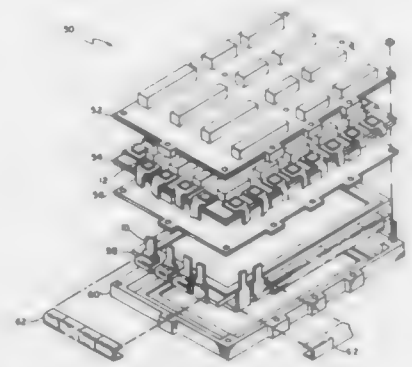


1. A visual alarm device readily interconnectable within a monitored circuit, said monitored circuit including
a motor operated device;
a motor control center for controlling said motor operated device; and
visual indicating devices for indicating the position of said motor operated device said visual alarm device comprising:
a condition-detecting circuit connected to said monitored circuit to detect a change of condition in said monitored circuit;
an oscillator responsive to said condition-detecting circuit, said oscillator providing a regular cyclic signal upon receiving a signal from said condition-detecting circuit; and
a controller disposed in series with said visual indicating devices within said monitored circuit and responsive to said oscillator, said controller allowing current to cyclically flow between pole terminals of said visual indicating devices upon receiving said regular cyclic signal from said oscillator;
said visual alarm device thereby giving a distinct visual indication upon a change of condition in said monitored circuit using existing wiring between said motor control and said visual indicating devices.

5,008,656
FLEXIBLE CABLE ASSEMBLY

Frank J. Cheriff, Holliston; Joseph J. Kirk; Arnold M. Pulver, both of Sudbury, and Walter N. Cox, Westboro, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 325,062, Mar. 14, 1989, abandoned, which is a continuation of Ser. No. 173,002, Mar. 30, 1988, abandoned, which is a continuation of Ser. No. 97,381, Sep. 16, 1987, abandoned, which is a continuation of Ser. No. 684,415, Dec. 20, 1984, abandoned. This application Feb. 20, 1990, Ser. No. 483,345
Int. Cl.[5] G09G *3/00*
U.S. Cl. 340—718 6 Claims



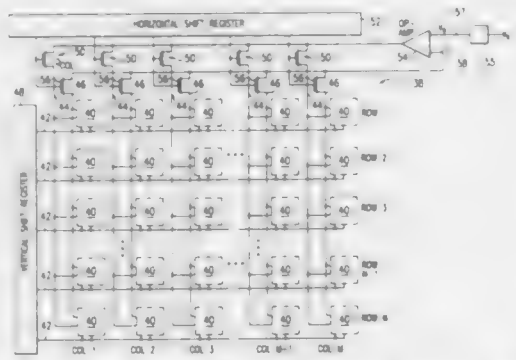
1. A display assembly comprising:
display element means for displaying a plurality of characters;
a plurality of chip carrier means having driver circuit means for selecting one or more of said plurality of characters;
a plurality of flexible cables having formed therein a plurality of insulated strip conductors, said flexible cables being readily connected and disconnected within said display assembly;
prearranged solder pad means disposed on a portion of a first side of each one of said flexible cables for attaching one of said plurality of chip carrier means, a portion of said solder pad means being coupled to a portion of said strip conductors;
means, disposed on a portion of a second side of each one of said flexible cables under said chip carrier means and attached to said flexible cables, having a coefficient of expansion approximately matched to a coefficient of expansion of said chip carrier means, for restraining said flexible cables during temperature variations to accommodate said chip carrier means expansion, said disposed means providing support to each one of said flexible cables, further restraining said flexible cables to prevent fatiguing at said solder pad means of said chip carrier means and removing heat from said chip carrier means; and
means on a first end and second end of each one of said flexible cables and coupled to portions of said strip conductors for attaching said first end within said display assembly and said second end to said display element, said attaching means facilitating disconnection of each one of said flexible cables for repair.

5,008,657
SELF ADJUSTING MATRIX DISPLAY

Charles M Hanson, Richardson, Tex., and Virginia N. MacDonald, Lansdale, Pa., assignors to Varo, Inc., Garland, Tex.

Filed Jan. 31, 1989, Ser. No. 304,166
Int. Cl.[5] G09G *3/20*
U.S. Cl. 340—766 18 Claims

15. A method of displaying a visual representation of a video signal on a plurality of individually addressable picture elements, comprising the steps of:
applying a voltage dependent upon the video signal to a selected picture element;
sensing the voltage at said selected picture element; and

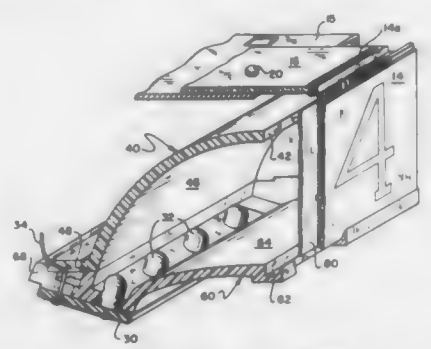


adjusting the voltage at said selected picture element towards a desired voltage having a predetermined relationship to the video signal.

5,008,658
DOMED LIGHT HOUSING FOR BACK-LIT LCD DISPLAY

Thomas Russay, Park Ridge, and Carl W. Stacy, Elmwood Park, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 9, 1986, Ser. No. 939,668
Int. Cl.[5] G09G *3/36*
U.S. Cl. 340—784 15 Claims

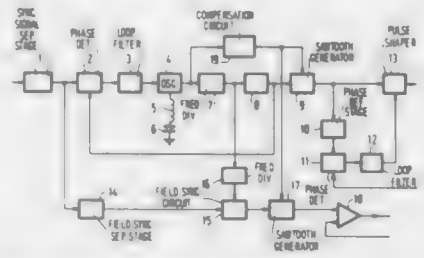


1. A video display arrangement comprising:
a generally planar LCD display having an aft surface, a forward viewed surface, and a plurality of peripheral edges;
at least one LED; and
a hollow housing having an empty aperture extending therethrough and including an open forward section whereon is positioned said LCD display, an aft section for receiving said at least one LED, and a curvilinear intermediate section coupling said forward section to said aft section, wherein said at least one LED is positioned aft of and beyond a peripheral edge of said LDC display in an off-set manner and in non-alignment therewith such that light emitted by said at least one LED is transmitted through said empty aperture and is reflected by the curvilinear intermediate section of said housing onto the aft surface of said LCD display in providing backlighting therefor, wherein said housing includes first and second facing lateral panels and facing concave and convex panels coupled at respective adjacent ends to said first and second facing lateral panels so as to define said empty aperture.

5,008,659
PICTURE DISPLAY DEVICE INCLUDING A WAVEFORM GENERATOR/AND A COMPENSATION CIRCUIT, AND INTEGRATED CIRCUIT INCORPORATING THE SAME

Paulus J. M. Hovens, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 24, 1989, Ser. No. 301,574
Claims priority, application Netherlands, Feb. 8, 1988, 8800286
Int. Cl.[5] G09G *3/00*
U.S. Cl. 340—812 8 Claims

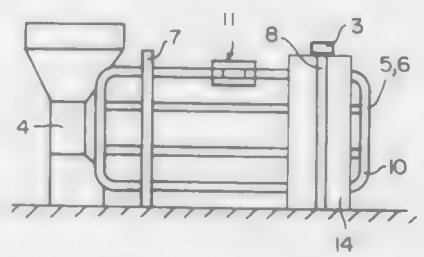


1. A picture display device including a first generator circuit for generating a first periodical waveform for addressing picture elements on a picture display screen, said circuit comprising a first time-determining network including a first capacitor, characterized in that the picture display device is provided with a compensation circuit for compensating for inaccuracies in the values of components in said first generator circuit, said compensation circuit including a second generator circuit for generating a second periodical waveform and a source for applying a compensation current to the first capacitor in dependence upon the second periodical waveform, the second generator circuit comprising a second time-determining network with a second capacitor, and the first and second capacitors being integrated in one semiconductor body.

5,008,660
ELECTROMAGNETIC DETECTION SYSTEM

Hendrik J. de Jong, Groenlo, Netherlands, assignor to N.V. Nederlandsche Apparatenfabriek Nedap, De Groenlo, Netherlands

Filed Mar. 3, 1989, Ser. No. 318,303
Claims priority, application Netherlands, Mar. 4, 1988, 8800546
Int. Cl.[5] H04B *5/00;* A01K *5/00*
U.S. Cl. 340—825.54 4 Claims

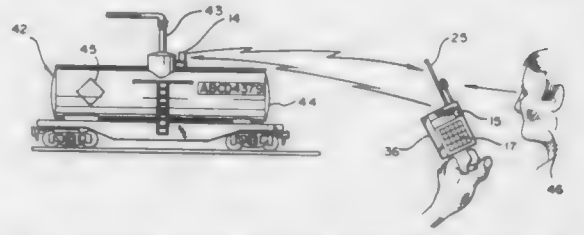


1. An electromagnetic detection system comprising a transmitter-receiver apparatus and at least one antenna element, said transmitter-receiver apparatus being coupled to said at least one antenna element to form an electromagnetic interrogation field in an interrogation zone, structural confining means for defining the range and area of said interrogation zone and for physically confining mobile entities to be interrogated in said interrogation zone, and a plurality of responders attached to each of said mobile entities and capable of generating a detectable signal under the influence of said interrogation field, said at least one antenna element being formed as an integral part of said structural confining means, said structural confining means comprising an automatic feeding station for animals comprising a food dispenser, two side railings, and two bows for reinforcing said side railings and extending over said railings and said interrogation zone, said at least one antenna element being integrally formed with at least one of said bows.

5,008,661
ELECTRONIC REMOTE CHEMICAL IDENTIFICATION SYSTEM

Phani K. Raj, 2 Kitson Park Dr., Lexington, Mass. 02173

Continuation-in-part of Ser. No. 780,938, Sep. 27, 1985, abandoned. This application Jan. 4, 1989, Ser. No. 293,505
Int. Cl.[5] H04Q *7/00, 3/00*
U.S. Cl. 340—825.54 11 Claims



1. An electronic remote chemical identification system consisting of a transponder unit for mounting on a container; memory and processor units associated with said transponder unit; said memory unit having both permanent and programmable sections, said permanent section containing a unique transponder identification number; and encoder unit for programming and reprogramming said programmable memory section in said transponder with information relating to the chemical being transported and other data; and an interrogator unit for interrogating said transponder unit to cause said processor units in said transponder to compare the information content of said interrogation with both said data in said permanent memory section and said chemical specific data in said programmable memory section of said transponder and to compile and encode a proper response to said interrogation only if said proper response is appropriate, and to transmit said response compiled from said data in said memories, said interrogator unit being capable of simultaneous communication with a plurality of transponders.

5,008,662
REMOTE SUPERVISORY AND CONTROLLING MACHINE

Toshiaki Tokizane; Yoshiharu Ito; Osamu Yamada; Toshiyuki Masuda, and Mitsunobu Kuroda, all of Osaka, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Continuation of Ser. No. 379,407, Jul. 13, 1989, abandoned, which is a division of Ser. No. 218,176, Jul. 13, 1988, abandoned. This application Aug. 21, 1990, Ser. No. 569,726
Claims priority, application Japan, Oct. 27, 1987, 62-271061; Nov. 26, 1987, 62-298738
Int. Cl.[5] G05B *23/02*
U.S. Cl. 340—825.06 5 Claims

1. A remote supervisory and controlling system comprising:
a central control unit;
a plurality of terminal units, said plurality of terminal units being connected to said central control unit through a two-wire signal line and said central control unit sends out a transmission signal including an address data signal for calling each of said terminal units, a control data signal for controlling a load associated with each of said terminal units, and a return wait signal for setting a period of returning a monitor data signal from each of said terminal units to perform time-divisional multiplex transmission of monitor data and control data between said central control unit and each of said terminal units, in which said

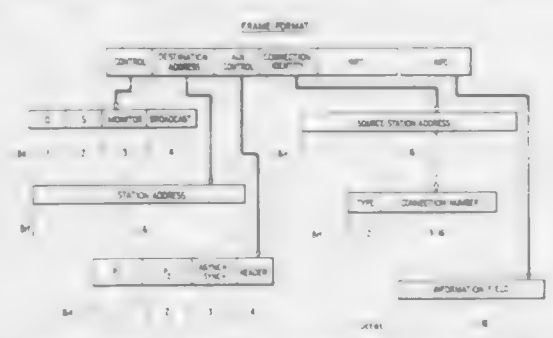
system further comprises a wireless relay terminal unit for returning data received through an optical wireless receiver from an optical wireless transmitter to said central control unit through time-divisional multiplex transmission, said wireless relay terminal unit being coupled to said central control unit through said two-wire signal line and said transmitters each having an address setting section for setting the address to which said data is to be transmitted, and wherein said receiver is coupled to said wireless relay terminal unit via an exclusive link, said wireless relay terminal unit responding to said signal received from said receiver only when a systematic operation is to be performed, and wherein said system further comprises an individual receiver having a load associated therewith, said individual receiver responding to said signal from said transmitter when an individual operation is to be performed.

5,008,663

COMMUNICATIONS SYSTEMS

John L. Adams, Leiston, England, assignor to British Telecommunications public company limited, London, England

Continuation-in-part of Ser. No. 753,993, Jul. 11, 1985, abandoned. This application Jul. 22, 1987, Ser. No. 76,276
Claims priority, application United Kingdom, Jul. 24, 1986, 8618118
Int. Cl.[5] H04Q *1/00*; H04J *3/02*
U.S. Cl. 340—825.5 **16 Claims**



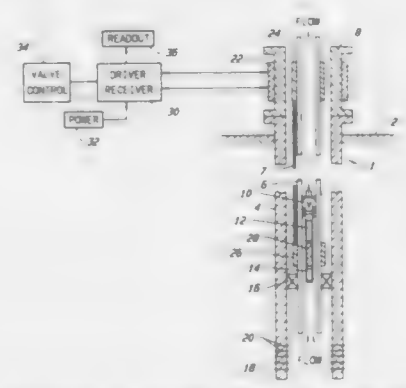
1. A method of controlling a communications network comprising a plurality of stations which can communicate via a closed communication loop; said method including:
- providing information in digital form for transmission from one station to another in message blocks which circulate around the loop, each message block being provided as a first group of control bits and a second group of data bits,
- controlling each of said plurality of stations having data to transmit to assume an active state in which it inserts digitally encoded information into empty message blocks for transmission to a destination station via the loop,
- causing any of said stations in an active state, if it has inserted information into d message blocks, where d is an integer greater than zero and is variable, to enter a state in which it cannot gain access to empty blocks for the transmission of information until it is reset,
- controlling any receiving station after receiving data from a message block to set the control bits of said message block to indicate a further allocation request;
- controlling the receiving station setting the control bits of said block to further modify said control bits upon the station recognizing that said block has traveled unmodified once around the loop, said control bits being modified to indicate a reset;
- said resets being issued to each of said stations so that no station is in a preferential position with regard to the rate of reception of resets.

5,008,664

APPARATUS FOR INDUCTIVELY COUPLING SIGNALS BETWEEN A DOWNHOLE SENSOR AND THE SURFACE

Henry S. More, Los Altos; Edward C. Fraser, Cupertino, and Lawrence R. Bulduc, Cottonwood, all of Calif., assignors to Quantum Solutions, Inc., Santa Clara, Calif.

Filed Jan. 23, 1990, Ser. No. 468,591
Int. Cl.[5] G01V *1/00*
U.S. Cl. 340—854 **33 Claims**



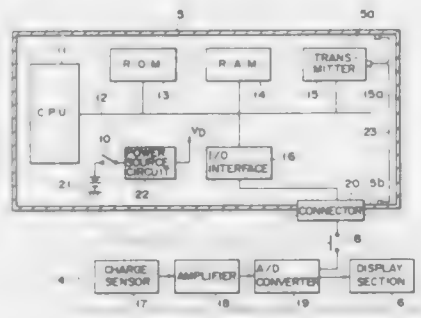
1. An apparatus for transmitting signals between surface equipment and downhole equipment, including:
- a set of inductive coupling coils, including a first downhole coil and a second downhole coil separated by a pressure barrier from the first downhole coil, for inductively coupling an AC drive signal from the surface equipment to the downhole equipment; wherein the downhole equipment includes:
- a sensor, for generating a data signal having a frequency indicative of a measured quantity;
- a rectifier for receiving the AC drive signal from the first downhole coil and generating a rectified signal from the received AC signal; and
- a modulator connected between the first downhole coil and the sensor, for receiving the data signal and impressing on the first downhole coil a modulation indicative of the data signal frequency.

5,008,665

MEASURING DEVICE HAVING TRANSMITTER

Yoshio Wakatsuki; Toshiharu Okuyama; Hajime Takeuchi; Misao Shimizu, and Giichiro Shimizu, all of Tokyo, Japan, assignors to Man Design Co. Ltd., Tokyo, Japan

PCT No. PCT/JP88/00377, § 371 Date Dec. 14, 1988, § 102(e) Date Dec. 14, 1988, PCT Pub. No. WO88/08184, PCT Pub. Date Oct. 20, 1988
Continuation of Ser. No. 290,414, Dec. 14, 1988, abandoned. This PCT application Apr. 15, 1988, Ser. No. 569,534
Claims priority, application Japan, Apr. 16, 1987, 62-56703
Int. Cl.[5] G08C *19/00*
U.S. Cl. 340—870.26 **2 Claims**



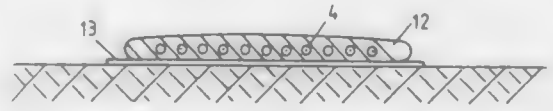
1. A measuring device having a transmitter, comprising:
a measuring device section, including a measurement data display section, for converting measurement data into a digital value and displaying the digital value;
- a data processing unit for arranging the measurement data output from said measuring device section in a data frame having a predetermined format and outputting the measurement data as a transmission data string; and
- a FSK transmitter for FSK modulating and transmitting the transmission data string, which is output from said data processing unit, by radio transmission, the improvement comprising:
- a casing arranged on said measuring device section back to back with said measurement data display section of said measuring device section, housing said data processing unit and said FSK transmitter; and
- a conductor portion adapted to be grasped by an operator, said portion provided on at least a predetermined area of an outer rear wall of said casing, for connecting the body of the operator to said FSK transmitter whereby the body serves as a transmitting antenna.

5,008,666

TRAFFIC MEASUREMENT EQUIPMENT

Franz J. Gebert; Johannes P. Theron; Ralf D. H. Gebert, and Rudiger H. Gebert, all of P.O. Box 14183, Lyttleton, Transvaal, South Africa

Continuation-in-part of Ser. No. 176,257, Mar. 31, 1988, abandoned. This application Oct. 12, 1989, Ser. No. 420,762
Claims priority, application South Africa, Apr. 2, 1987, 87/2386
Int. Cl.[5] G08G *1/02*
U.S. Cl. 340—936 **19 Claims**



1. In a traffic data acquisition method comprising laying an electrically conductive cable with at least two conductors separated by a material which has electrical properties selected from one or more of piezo-electric, tribo-electric, magneto-=and/or electro=strictive effects, connecting the conductors to an electronic processor comprising an amplifier, digitiser and micro-processor, detecting signals induced in the cable by passage of vehicle wheel(s) over the cable, and processing the signals, the improvements in that the processing of the signals comprises computing a total integrated spectral power of the signals, establishing an empirical relationship between speed and weight of other vehicle wheel(s) passing over the cable and the total spectral power for the cable, inputting the computed total spectral power and one of the speed or weight of the vehicle wheel(s) thereof into the empirical relationship and deriving the other one of the weight or speed of the latter vehicle wheel(s) from the empirical relationship.

5,008,667

SAFETY SYSTEM FOR BOATS IN DRY STORAGE

Larry R. Palmer, Rt. 2, P.O. Box 397-X1, Harriman, Tenn. 37748; Joseph M. Collins, Rt. 4, Box 561, Lenoir City, Tenn. 37771, and Gary M. Holloway, Rte. 2, Box 423A, Vonore, Tenn. 37885

Filed Mar. 26, 1990, Ser. No. 498,971
Int. Cl.[5] G08B *23/00*
U.S. Cl. 340—984 **11 Claims**

1. A safety system for use with boats stored within an enclosed building, which comprises:
- a transmitting unit for attachment to said boats, said transmitting unit interposed between a battery system and an electrical distribution system of said boats, said transmitting unit including a disconnect switch means for selectively interrupting connection between said battery system and said electrical distribution system and further including at least one signal transmitting unit to generate an output signal when said battery system is connected to said electrical distribution system by said disconnect switch means; and
- a receiving unit associated with said enclosed building, said receiving unit having at least one detector unit for receiving said output signal of said signal transmitting unit, said receiving unit further having a power supply means for said detector unit and an alarm means connected to said detector unit for generating an alarm signal whenever said detector unit detects said output signal from said signal transmitting unit.

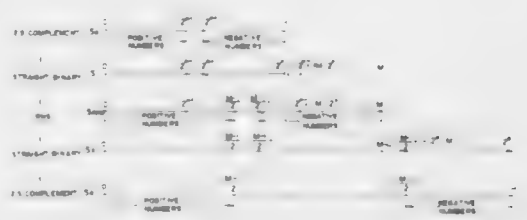


5,008,668

METHOD AND APPARATUS FOR ENCODING AND DECODING DATA IN RESIDUE NUMBER SYSTEM

Jun Takayama, Tokyo; Takeshi Ninomiya, Kanagawa; Tadao Fujita, Kanagawa, and Yoshiaki Inaba, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 12, 1988, Ser. No. 256,732
Claims priority, application Japan, Oct. 12, 1987, 62-257025; Oct. 15, 1987, 62-260991
Int. Cl.[5] H03M *7/18*
U.S. Cl. 341—83 **5 Claims**



1. An encoder circuit for converting input data composed of binary codes into RNS data, comprising:
dividing means using fixed bits of a predetermined length for dividing said input data having the value S into upper bit data S_U and lower bit data having the value S_L in the relation

$$S = S_U \times 2^q + S_L$$

in which 2^q is a weighted value;
- a first ROM table circuit for weighing each of said upper and lower bit data and converting said upper and lower bit data into residue data for respective fixed RNS moduli, said residue data having a value R_i represented by the equation $R_i = (R_{Ui} + R_{Li}) \text{ MOD } m_i$, wherein R_{Ui} is an upper bit residue data value R_{Li} is a lower bit residue data value of a modulus m_i;
- a second ROM table circuit for converting an addition value of said residue data for each of said moduli into residue data of respective moduli and said addition value has a

residue data value D_i composed of the added values of lower bit residue data D_L and upper bit residue data D_U; and

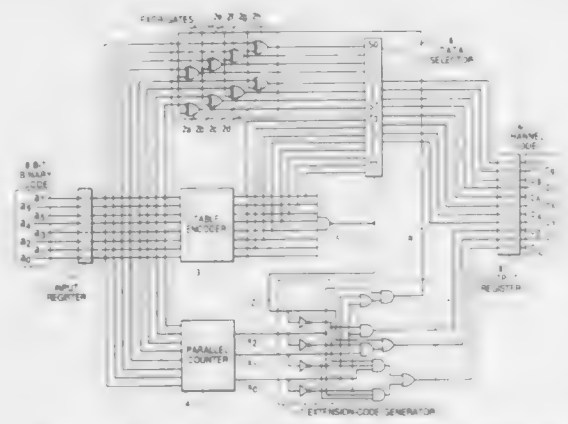
means for outputting said residue data obtained from said second ROM table circuit as said residue data composing said RNS data.

5,008,669

ENCODING/DECODING SYSTEM FOR OPTICAL RECORDING/READING

Hiromichi Ishibashi, Toyonaka, and Shinichi Tanaka, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 19, 1989, Ser. No. 383,153
Claims priority, application Japan, Jul. 22, 1988, 63-184308
Int. Cl.[5] H03M *7/20*
U.S. Cl. 341—102 **8 Claims**



1. An encoding system for converting an M-bit binary code composed of M bits each being a "1" or a "0" to an N-bit channel code composed of N bits each being a "1" or a "0", the number of "1"s in said N-bit channel code being a fixed number, i, said system comprising:

a count means for counting the number of "1"s, k, in an input M-bit binary code;

a logic gate means responsive to a count value, k, by said count means for passing said input M-bit binary code as is when k is equal to or smaller than i and inverting a logic state of said input M-bit binary code when k is larger than (M−i), said M-bit binary code passed as is or the logic inverted M-bit binary code being outputted as a first M-bit temporary code from said logic gate means;

an encoding means for encoding said input M-bit binary code into a specific M-bit binary code when said input M-bit binary code is one of a plurality of predetermined codes, said specific M-bit binary code being outputted as a second M-bit temporary code from said encoding means;

a selection means for selectively outputting said second M-bit temporary code when said input M-bit binary code is one of said plurality of predetermined codes and for otherwise outputting said first M-bit temporary code to obtain a selected M-bit temporary code;

an extension code producing means for producing an (N−M)-bit extension code according to said input M-bit binary code such that the total number of "1"s in said selected M-bit temporary code and said (N−M) bit extension code becomes equal to i; and

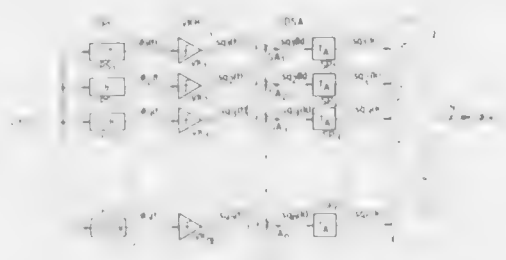
a means for combining said selected M-bit temporary code and said (N−M)-bit extension code to obtain said N-bit channel code.

5,008,670

PHASE/DIGITAL CONVERSION METHOD AND ARRANGEMENTS FOR IMPLEMENTING THE METHOD

Manfred Zimmer, Ulm, Fed. Rep. of Germany, assignor to Licentia Patent Verwaltungs-GmbH, Frankfurt, Fed. Rep. of Germany

Filed Mar. 31, 1989, Ser. No. 331,372
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1988, 3811018; Sep. 29, 1988, 3833005
Int. Cl.[5] H03M *1/48*
U.S. Cl. 341—113 **15 Claims**



1. In a method of converting an analog signal to a digital phase form in which an input signal $s(t)=x(t)+jy(t)$ present in the form of orthogonal signal components x(t) and y(t) is converted with the use of a combination network and a plurality of comparators into a digital phase signal at outputs of the comparators, the improvement comprising the steps of:

for digital phase resolution to 2^N identical phase increments $\Theta=2\pi\cdot2^{-N}$, forming from the signal components X(t) and y(t) signal phases

$$\phi i(t)=[di\cdot x(t)]ai\cdot xi(t)+bi\cdot y(t) \text{ (where } i=1, 2, 2^N-1)$$

which are shifted in phase by identical phase angles, wherein ai and bi are weighting coefficients with the relation

$$bi/ai=\tan \Theta i$$

where $\Theta i=(i-1)\Theta$; and

evaluating the signs of the signal phases with the comparators to obtain digital phase signals sqi(t), wherein sqi(t) $=sqn\phi i(t)$, for $i=1, 2, \ldots 2^N-1$.

5,008,671

HIGH-SPEED DIGITAL-TO-ANALOG CONVERTER WITH BIMOS CELL STRUCTURE

Michael G. Tuthill, Limerick, Ireland, assignor to Analog Devices, Incorporated, Norwood, Mass.

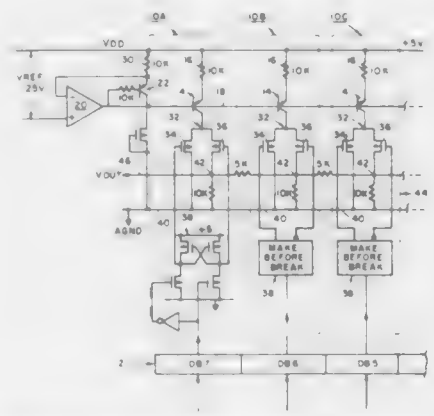
Filed Jun. 27, 1988, Ser. No. 211,707
Int. Cl.[5] H03M *1/78*
U.S. Cl. 341—136 **9 Claims**

1. A digital-to-analog converter (DAC) with means to receive a binary input code and including a plurality of identical high-speed DAC cells each developing a continuous current output for selective connection to a corresponding input node of an R/2R ladder network to produce on the ladder output line a composite analog signal corresponding to the input code; each of said identical DAC cells comprising:

(A) a bipolar transistor connected to first circuit means arranged so that said bipolar transistor serves as a current source;

(B) MOS switch means with an input terminal connected to the output of said bipolar transistor to receive said continuous output current, said MOS switch means having a channel polarity which is the same as the polarity of the collector/emitter of said bipolar transistor, said switch means further having first and second output terminals alternatively connectable to said switch means input terminal to carry said continuous output current, said first and second output terminals being connected respectively to (1) a common reference line and (2) a corresponding input node of said R/2R ladder; and

(C) second circuit means responsive to said input code for



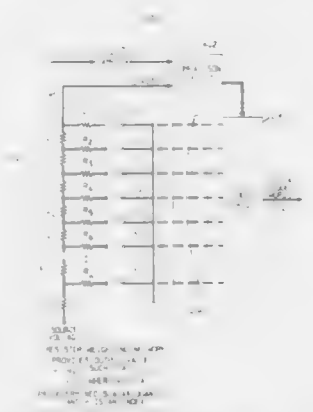
controlling the conditioning of the corresponding MOS switch means to activate a selected one of said output terminals to carry said continuous current of the corresponding bipolar current source either to said common reference line or to the corresponding ladder input node.

5,008,672

SIGNAL CONVERSION APPARATUS WHICH REDUCES QUANTIZATION ERRORS FOR TELECOMMUNICATIONS APPLICATIONS

Harold G. Leedy, Westminster, Colo., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 29, 1988, Ser. No. 291,728
Int. Cl.[5] H03M *1/06, 1/34, 1/00, 1/80*
U.S. Cl. 341—138 **17 Claims**



1. Signal conversion apparatus comprising

means for receiving input signals, each input signal having a value falling within one of a plurality of input signal ranges; and

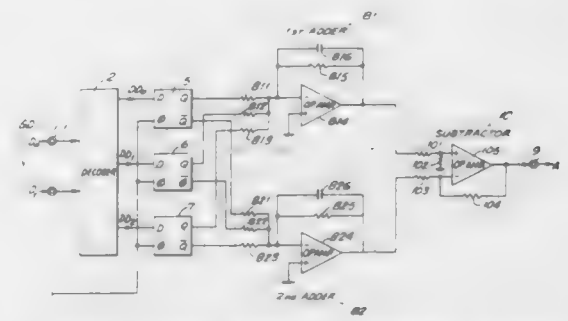
means for associating the range corresponding to each received input signal value with an output signal whose value is different for each of said plurality of ranges, all of the output signal values corresponding to said plurality of input signal ranges forming an ordered set, any one output signal value that follows a first output signal value in said set being equal to the immediately preceding output signal value multiplied by a predetermined factor, said factor having one value for at least three consecutive output signal values in said set.

5,008,673

DIGITAL TO ANALOG CONVERTER ENHANCING CONVERSION PRECISION

Eiichi Ishii, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 22, 1989, Ser. No. 314,148
Claims priority, application Japan, Feb. 26, 1988, 63-44995
Int. Cl.[5] H03M *1/66*
U.S. Cl. 341—144 **7 Claims**



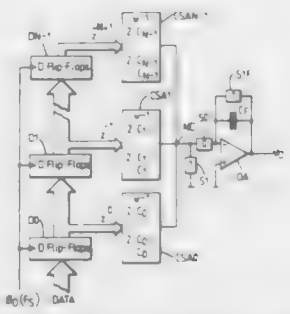
1. A digital-to-analog converter comprising a plurality of flip-flops, each of said flip-flops temporarily storing corresponding bit data of digital data to be converted and producing true and complementary outputs relative to the stored data, first means coupled to all of said flip-flops for adding the true outputs produced by all of said flip-flops to output a first signal, second means coupled to all of said flip-flops for adding the complementary outputs produced by all of said flip-flops to produce a second signal, and third means coupled to said first and second means for producing an output signal relative to a difference between said first and second signals.

5,008,674

DIGITAL-TO-ANALOG CONVERTER USING SWITCHED CAPACITOR AND TRANSVERSE FILTER

Jose D. A. E. Da Franca; Joao P. C. C. Vital, and Carlos M. D. A. D. A. Leme, all of Lisbon, Portugal, assignors to British Telecommunications, London, England

Filed Jun. 8, 1989, Ser. No. 362,981
Claims priority, application United Kingdom, Jun. 3, 1988, 8813162
Int. Cl.[5] H03M *1/82*
U.S. Cl. 341—150 **8 Claims**



1. An apparatus for producing a filtered analogue output signal from a digital signal, said digital signal being in the form of a sequence of digital signal samples each having a plurality of bits comprising:

(a) digital delay means receiving a first sequence of digital signal samples and producing further sequences of digital signal samples, each said further sequence being a replica of said first sequence delayed with respect thereto by a respective delay period, thereby making available a plurality of earlier samples simultaneously with each sample of said first sequence;

(b) conversion and weighting means comprising a plurality of switched capacitor arrangements, each for receiving a respective one of said sequences of digital signal samples; wherein each said switched capacitor arrangement has a plurality of capacitors with values weighted according to the significances of respective bits of said samples and switching means for supplying, in dependence on the states of bits of each received sample, charges to said capacitors, thereby forming a total charge dependent on the value represented by said sample, said total charges each being weighted by a respective one of a set of coefficients corresponding to a desired filter response; and

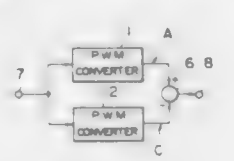
(c) common summing means for forming an analogue output sequence representing the sum of the charges from the individual switched capacitor arrangements.

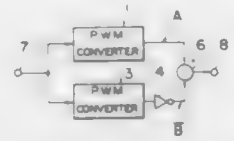
5,008,675

DIGITAL TO ANALOG CONVERTER USING PULSE WIDTH MODULATOR FOR INDEPENDENTLY SETTING EDGE POSITION

Kazuya Toyomaki, Zama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Sep. 29, 1989, Ser. No. 414,278
Claims priority, application Japan, Sep. 29, 1988, 63-245697
Int. Cl.[5] H03M *1/82*
U.S. Cl. 341—152 **2 Claims**





1. A PWM type D/A converter wherein digital input signals supplied to the converter at each predetermined input sample period are designated as odd and even numbered input signals alternately in the order of input, the reference timing point for outputting an odd numbered input signal is designated as an odd numbered reference timing point, and the reference timing point for outputting an even number is designated as an even numbered reference timing point, said PWM type D/A converter comprising:

a first PWM converter receiving said digital input signal for outputting an output signal (A) wherein the timing point when said output signal (A) rises from the low level to the high level is set at the earlier the timing, the larger the value of the odd numbered input signal relative to the odd numbered reference timing point, and the timing point when said output signal (A) falls from the high level to the low level is set at the later the timing, the larger the value of the even numbered input signal relative to the even numbered reference timing point, and wherein the pulse width from the rising point to the falling point of said output signal (A) is determined by the values of the odd numbered input signal and the next even numbered input signal;

a second PWM converter receiving said digital input signal for outputting an output signal (B) wherein the timing point when said output signal (B) falls from the high level to the low level is set at the later the timing, the larger the value of the odd numbered input signal relative to the odd numbered reference timing point, and the timing when said output signal (B) rises from the low level to the high level is set at the earlier the timing, the larger the value of the even numbered input signal relative to the even numbered reference timing point, and wherein the pulse width from the rising point to the falling point of said output signal (B) is determined by the values of the even numbered input signal and the next odd numbered input signal; and

an analog adder for adding together said output signal (A) from said first PWM converter and said output signal (B) from said second PWM converter to output a sum signal (A + B);

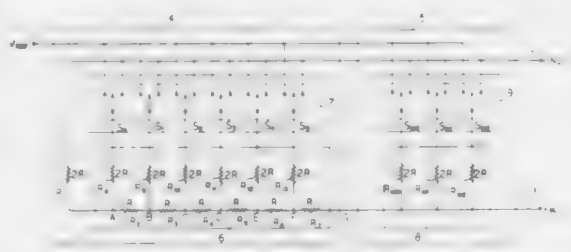
wherein an analog signal corresponding to said digital input signal is outputted from said analog adder.

5,008,676

DIGITAL/ANALOG CONVERTER

Kenji Kanoh, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 12, 1990, Ser. No. 551,994
Claims priority, application Japan, Feb. 15, 1990, 2-34677
Int. Cl.[5] H03M *1/78*
U.S. Cl. 341—154 **4 Claims**



1. A digital/analog converter which converts a digital signal of a binary number consisting of N_L low-order bits and N_U high-order bits into an analog signal, comprising:

a first input terminal to which first reference potential is applied;

a second input terminal to which second reference potential is applied;

an output terminal;

a first digital/analog converting circuit driven in accordance with a digital data of said low-order bits; and

a second digital/analog converting circuit driven in accordance with a digital data of said high-order bits;

said first digital/analog converting circuit including:

a first resistor of resistance value 2R having its one end connected to said second input terminal;

R-2R circuitry which includes N_L second resistors of resistance value R connected in series and N_L third resistors of resistance value 2R having their respective one ends connected to one ends of said second resistors; a junction of the one end of said second resistor and the one end of said third resistor disposed on one side being connected to the other end of said first resistor, and the other end of said second resistor disposed on the other side being connected to said output terminal; and

a first switch group which consists of N_L first changeover switches having their respective first and second changeover contact points and common contact points; in each of said first changeover switches, said first changeover contact point being connected to said first input terminal, said second changeover contact point being connected to said second input terminal and said common contact point being connected to the other end of said corresponding third resistor, and each of said first changeover switches changing its connection between said first and second changeover contact points in accordance with a state of each bit of said low-order bits;

said second digital/analog converting circuit including:

2R circuitry which consists of (2^N-1) fourth resistors of resistance value 2R having their respective one ends commonly connected and having said one ends connected to said output terminal; and

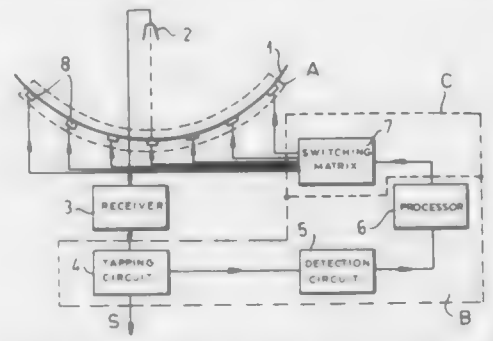
a second switch group which consists of (2^N-1) second changeover switches having their respective first and second changeover contact points and common contact points; in each of said second changeover switches, said first changeover contact point being connected to said first input terminal, said second changeover contact point being connected to said second input terminal and said common contact point being connected to the other end of said corresponding fourth resistor, and the number of said second changeover switches changing their respective connections to said first changeover contact points being determined in accordance with a state of said high-order bits.

5,008,677

ANTI-JAMMING DEVICE FOR A RADAR PROVIDED WITH A REFLECTOR ANTENNA

Roland Trigon; Serge Drabowitch, and Joseph Roger, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jul. 7, 1977, Ser. No. 816,280
Claims priority, application France, Jul. 13, 1976, 76 21400
Int. Cl.[5] G01S *7/36, 7/40*
U.S. Cl. 342—17 **12 Claims**



1. In a radar system subject to jamming, provided with an antenna including a primary radiator and a reflector juxtaposed therewith for directing incoming wave energy to said radiator, the latter having an output connection to a signal receiver,

the combination therewith of an anti-jamming device comprising:

phase-modifying means closely juxtaposed with said reflector for shifting the phases of signal waves reflected toward said radiator, said phase-modifying means being settable to a plurality of operational states introducing different phase shifts;

detector means connected to said receiver for generating test signals representative of incoming wave energy intercepted by the reflector; and

processing means for emitting switching commands to said phase-modifying means successively setting same in each of said operational states, said processing means being connected to said detector means for comparing the test signals generated in each of said operational states and for preserving a switching command found to result in a minimum of intercepted wave energy.

5,008,678

ELECTRONICALLY SCANNING VEHICLE RADAR SENSOR

Martin I. Herman, Torrance, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 2, 1990, Ser. No. 487,338
Int. Cl.[5] G01S *13/60*
U.S. Cl. 342—158 **10 Claims**

1. A scanning vehicle radar sensor, comprising:

support means;

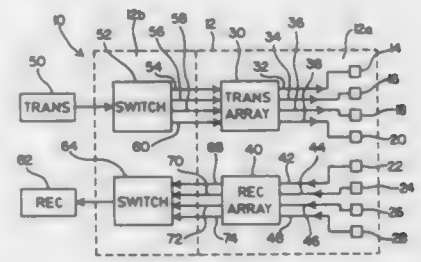
a plurality of transmitting elements formed on the support means in predetermined relation to each other for scanning a predetermined pattern relative to a vehicle on which the sensor is mounted;

a passive phased transmitting array means formed on the support means, having a plurality of inputs, and a plurality of outputs connected to the transmitting antenna elements respectively;

radar transmitter means;

electronic transmitting switch means for sequentially connecting an output of the transmitter means to the inputs of the transmitting array means, and thereby scanning the transmitting antenna elements respectively;

a plurality of receiving antenna elements formed on the support means in predetermined relation to each other and to the transmitting antenna elements respectively for scanning said predetermined pattern;



a passive phase receiving array means formed on the support means, having a plurality of inputs connected to the receiving antenna elements respectively, and a plurality of outputs;

radar receiving means; and

electronic receiving switch means for scanning the receiving antenna elements in synchronism with operation of the transmitting switch means by sequentially connecting an input of the receiver means to the outputs of the receiving array means respectively;

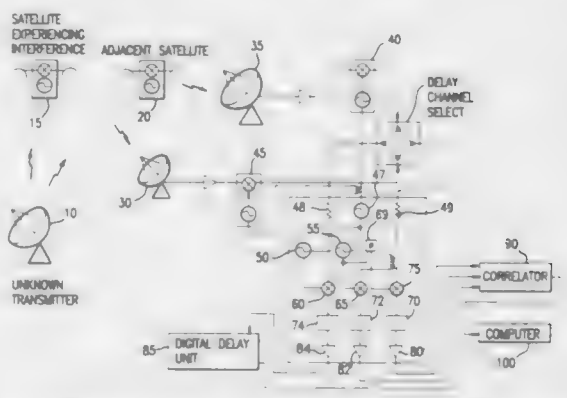
the support means comprising a flexible sheet having a surface on which the transmitting and receiving antenna elements are formed for facing away from the vehicle, the sheet being capable of flexure for conforming to a non-planar surface of the vehicle on which the sensor is to be mounted.

5,008,679

METHOD AND SYSTEM FOR LOCATING AN UNKNOWN TRANSMITTER

John E. Effland, Gaithersburg, Md.; John M. Gipson, Silver Spring, Md.; David B. Shaffer, Annapolis, Md., and John C. Webber, Herndon, Va., assignors to Interferometrics Incorporated, Vienna, Va.

Filed Jan. 31, 1990, Ser. No. 472,837
Int. Cl.[5] H04B *7/185;* **G01S** *5/02, 3/02, 1/24*
U.S. Cl. 342—353 **21 Claims**



1. A method of locating an unknown radio-frequency trans-

mitter by remote and passive observation, comprising the steps of:

(a) receiving a signal radiated from the transmitter into space, a plurality of receivers at different locations receiving the radiated signal;

(b) retransmitting, from each of the plurality of receivers, the signal radiated from the transmitter to a plurality of antennas, each at a known location, one of each of the antennas receiving the retransmtited signal from one of the receivers, each of the received retransmitted signals being delayed by a first path length equal to a distance between the transmitter and one of the receivers and by a second path length equal to a distance between one of the receivers and one of the antennas;

(c) receiving the retransmitted signals by the antennas;

(d) converting the received retransmitted signals to a plurality of digital signals;

(e) performing pre-detection cross-correlation on the plurality of digital signals to obtain a set of data from which a time difference of arrival calculation and a frequency difference of arrival calculation can be made;

(f) performing the time difference of arrival calculation which compensates for a relative delay value in the received retransmitted signals from the receivers, the relative delay value being a function of the first path lengths, the second path lengths, and a value equal to the speed of light;

(g) performing the frequency difference of arrival calculation which compensates for a relative frequency value in the received retransmitted signals from the receivers, the relative frequency value being related to a difference between a first relative velocity of one of the receivers with respect to the velocity of Earth and a second relative velocity of another of the receivers with respect to the velocity of Earth;

(h) repeating each of the prior steps a plurality of times; and

(i) determining the location of the transmitter by generating isodelay lines of position based on a plurality of the time difference of arrival calculations, by generating isodoppler lines of position based on a plurality of the frequency difference of arrival calculations, and locating the intersections of paired, generated isodelay and isodoppler lines of position, the intersections defining a region in which the transmitter is located.

5,008,680

PROGRAMMABLE BEAM TRANSFORM AND BEAM STEERING CONTROL SYSTEM FOR A PHASED ARRAY RADAR ANTENNA

Jefferson M. Willey, Columbia, Md.; James J. Alter, Fairfax Station, and Jules P. Letellier, Springfield, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 29, 1988, Ser. No. 187,804

Int. Cl.[5] H01Q *3/22, 3/24, 3/26*

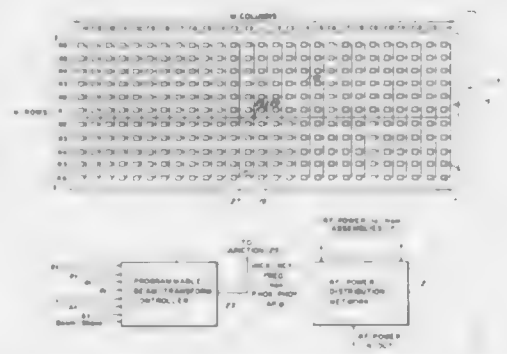
U.S. Cl. 342—372 **18 Claims**

1. A programmable beam transform system for a phased array antenna, said system comprising:

an array of assemblies contained in said antenna, each said assembly containing its own associated internally-stored data; and

a programmable beam transform controller responsive to a plurality of programmable input signals for selectively generating and applying a plurality of control signals to each of said assemblies to enable said assemblies to collectively perform both beam steering and beam-shaping operations;

each of said assemblies modifying said plurality of control signals applied thereto as a function of its associated internally-stored data to phase shift associated energy applied thereto in order to cause said assemblies to collectively



transmit and/or receive an energy beam at any desired beam position and with any desired beam pattern.

5,008,681

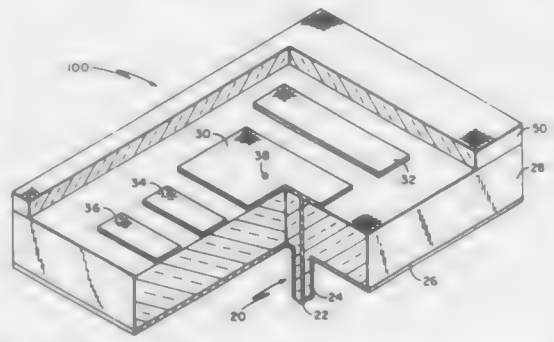
MICROSTRIP ANTENNA WITH PARASITIC ELEMENTS

Nunzio M. Cavallaro, Methuen; John F. Toth, Reading, and Cleo J. Alexander, Marlborough, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 332,145, Apr. 3, 1989, abandoned. This application Jun. 8, 1990, Ser. No. 536,043

Int. Cl.[5] H01Q *1/380, 13/080, 19/300*

U.S. Cl. 343—700 MS **6 Claims**



5. An antenna comprising:

a plurality of elements disposed along a first direction in an array, each one of the plurality of elements having a center, a width and a length, the length of each one of the plurality disposed in a direction along the first direction and the width of each one of the plurality of elements disposed in a direction orthogonal to the first direction, the plurality of elements comprising:

(a) a patch radiator element having a width approximately 0.380 of a wavelength of radio frequency (RF) energy propagating therein and a length approximately 0.494 of a wavelength of the RF energy;

(b) a reflector element having a width approximately 0.494 of a wavelength of the RF energy and a length approximately 0.304 of a wavelength of the RF energy, the center of the reflector element disposed approximately 0.570 of a wavelength of the RF energy from the center of the patch radiator element, and

(c) a director element having a width approximately 0.266 of a wavelength of the RF energy and a length of 0.114 of a wavelength of the RF energy, the center of the director element disposed approximately 0.456 of a wavelength of the RF energy from the center of the patch radiator element.

5,008,682

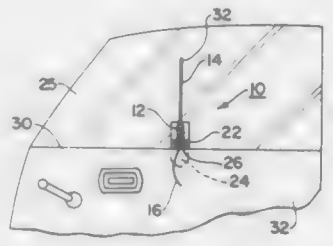
PORTABLE ANTENNA FOR MOUNTING ON INSIDE OF MOTOR VEHICLE

Herbert R. Blaese, 3314 Olcott Ave., Chicago, Ill. 60634

Continuation of Ser. No. 459,939, Jan. 2, 1990, Pat. No. 4,990,928. This application Sep. 17, 1990, Ser. No. 583,667

Int. Cl.[5] H01Q *1/100, 1/320, 9/000, 1/120*

U.S. Cl. 343—713 **7 Claims**



1. A portable antenna for mounting adjacent the lower window ledge of a motor vehicle which comprises:

a housing;

a radiator having a distal end and a proximal end, the proximal end being located within the housing and the distal end being located outside of the housing;

an electrical cable coupled to the housing;

a support member coupled to the housing, the support member extending generally in the opposite direction of the radiator and having a portion for insertion and retention between the side window and the lower window ledge of the door frame of a motor vehicle with the radiator being located on the inside of the vehicle; and

means connecting said housing to said support member.

5,008,683

THERMAL TRANSFER RECORDING METHOD

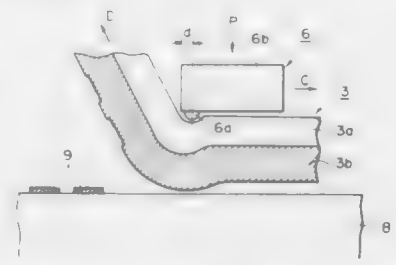
Takayuki Suzuki, Saitama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 16, 1989, Ser. No. 367,262

Claims priority, application Japan, Jun. 17, 1988, 63-148088

Int. Cl.[5] G01D *15/10*

U.S. Cl. 346—1.1 **5 Claims**



1. A thermal transfer recording method, comprising:

providing a thermal transfer material comprising a support and a heat-transferable ink layer which is capable of providing a melt viscosity such that said melt viscosity decreases in the direction of from the support side toward the surface side thereof, said thermal transfer material being housed in a cassette whereby said thermal transfer material can be reused by turning said cassette over;

superimposing the thermal transfer material on a recording medium so that the heat-transferable ink layer contacts the recording medium;

heating the thermal transfer material from the support side thereof by means of a recording head corresponding to an image signal; and

separating the thermal transfer material from the recording medium immediately after the heating;

reversing said thermal transfer material when said thermal transfer material is exhausted by turning said cassette over;

wherein said recording head comprises a substrate and a heat-generating member disposed thereon; and distance from the center of said heat-generating member to the trailing end of the substrate disposed downstream of the heat-generating member with respect to the movement of the thermal transfer material being 1 mm or shorter.

5,008,684

HEAD DRIVING APPARATUS FOR THERMAL PRINTER

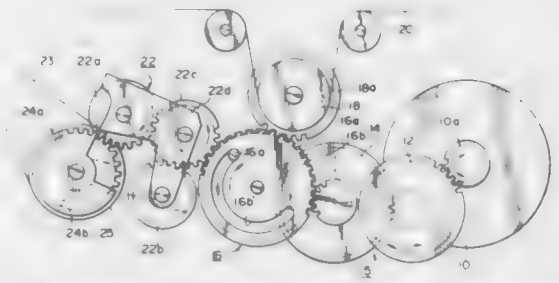
Hiroshi Kurafuji, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Apr. 9, 1990, Ser. No. 506,854

Claims priority, application Japan, Apr. 12, 1989, 1-92061

Int. Cl.[5] B41J *2/32*

U.S. Cl. 346—76 PH **4 Claims**



1. An apparatus for driving a thermal head in a thermal printer, comprising:

(a) a carriage for supporting the thermal head in confronting relation to a platen on which a print paper is to be supported, said carriage being movable in a forward direction along a longitudinal path parallel to the axis of the platen, with the thermal head pressed against the platen via an ink ribbon and the print paper, during forward movement for printing, and said carriage being movable in a backward direction along the longitudinal path to return to its original position, with the thermal head off the platen, during returning;

(b) a support shaft for supporting thereon said carriage in such a manner that said carriage is slidable along said support shaft longitudinally thereof;

(c) a carriage driving mechanism for driving said carriage to move on and along said support shaft in said forward and backward directions, said carriage driving mechanism including a drive motor rotatable forwardly and reversely corresponding to the forward and backward movements of said carriage, a reduction gear train operatively connected to a driving shaft of said drive motor, and a carriage feed wheel, said carriage feed wheel being composed of a lower gear having a engaging pawl and meshable with said reduction gear train for performing the forward and backward movements of said carriage, and an upper gear having a play groove engageable with said engaging pawl of said lower gear, said upper gear being pivotable coaxially of said lower gear, said upper gear being rotatable as a unit with said lower gear, with said engaging pawl being in engagement with one of opposite ends of said play groove during the forward movement and the returning of said carriage; and

(d) a head loading mechanism for bringing the thermal head into and out of the platen at respective ends of the forward and backward movements of said carriage, said head loading mechanism including a pulley operatively connected to said support shaft of said carriage driving mechanism by a belt, upper and lower sector wheels each having a tooth-free portion and a toothed portion and coaxially connected to said pulley, a carriage driving idle wheel normally meshing with said lower gear of said carriage feed wheel, and upper and lower idle gears locatable in

confronting relation to the respective tooth-free portions of said upper and lower sector wheels for idle rotation during the forward and backward movements of said carriage, said upper and lower idle gears being meshable with the respective toothed portions of said upper and lower sector wheels for angular movement through a predetermined angle while said engaging pawl of said lower gear slides in and along said play groove of said upper gear as said drive motor is rotated reversely when said carriage is switched over between the forward movement and the backward movement, whereby said support shaft of said carriage is angularly moved through said predetermined angle, in response to the angular movement of said upper and lower sector wheels, to bring the thermal head into and out of engagement with the print paper on said platen.

5,008,685

LASER GENERATOR FOR PRODUCING MODULATING DATA THEREFOR

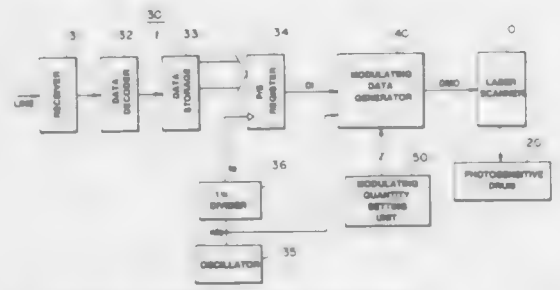
Seiji Arai, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 19, 1989, Ser. No. 299,185

Claims priority, application Japan, Jan. 22, 1988, 63-122841

Int. Cl.[5] G01D *15/14;* **B41J** *2/47*

U.S. Cl. 346—108 **10 Claims**



1. A laser generating apparatus comprising:

means for generating serial data corresponding to image information in accordance with an appropriate data transferring clock, the data transferring clock having a frequency;

means for generating a clock signal having a frequency which is n times that of the frequency of the data transferring clock where n is a natural number;

modulating data generating means for delaying the serial data by a desired quantity in accordance with the generated clock signal and for outputting modulating data indicative of the logical sum of the delayed serial data and the serial data; and

laser scanner for receiving the modulating data, for modulating a laser beam in accordance with the received modulating data, and for forming a latent image on a photosensitive body, the latent image corresponding to the image information, by irradiating and scanning the modulated beam onto and over the photosensitive body.

5,008,686

OPTICAL SCANNING DEVICE FOR SCANNING A PREDETERMINED SURFACE WITH A PLURALITY OF LIGHT BEAMS

Hiroshi Saito, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1989, Ser. No. 394,542

Claims priority, application Japan, Aug. 19, 1988, 63-206043

Int. Cl.[5] G01D *9/00*

U.S. Cl. 346—108 **8 Claims**

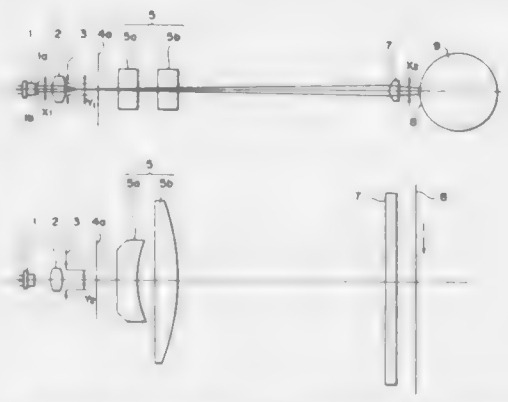
4. An optical scanning device comprising:

a light source having a plurality of light emitting portions arranged in a sub scanning direction;

first optical means for directing a plurality of light beams from said light source to a deflector;

a deflector for deflecting the plurality of light beams from said first optical means;

second optical means for directing the plurality of light beams from said deflector to a third optical means, said second optical means being afocal in the sub scanning



direction and having the f-θ characteristic in a main scanning direction; and

third optical means, provided commonly for the plurality of light beams, for directing the plurality of light beams from said second optical means onto a predetermined surface, said third optical means being anamorphic and having different imaging magnifications in the main scanning direction and the sub scanning direction.

5,008,687

DATA STORAGE MEDIUM

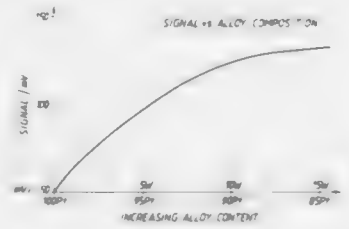
Robert J. Longman, Coton; Peter R. Helfet, and Michael J. Abrams, both of London, all of England, assignors to Plasmon Limited, Royston, England

Filed Feb. 9, 1989, Ser. No. 309,343

Claims priority, application United Kingdom, Feb. 9, 1988, 8802930

Int. Cl.[5] G01D *9/00;* **B32B** *3/24;* **G03C** *1/00;* **B05D** *3/00*

U.S. Cl. 346—135.1 **15 Claims**



1. A data storage medium which is responsive to incident electromagnetic radiation and the surface of a surface region of which includes a layer of heat sensitive plastics material which undergoes a large volume change upon degradation and which has a textured surface pattern in the from of a regular array of grooves or protuberances, the dimensions of the surface features which constitute said textured surface pattern being in the sub-micron range, and wherein said textured surface pattern is overcoated with a thin film of an alloy, said thin alloy film and the surface region of said plastics material in contact with said thin alloy film together constituting a recording layer which undergoes a change in response to said incident electromagnetic radiation whereby said thin alloy film is deformed from its original physical configuration without undergoing rupture, said alloy comprising (1) a first component which is at least one of ruthenium, rhodium, palladium, osmium, iridium and platinum; and (2) at least one metallic element from

Groups Va, VIa, VIIa, and Ib of the Periodic Table of elements according to Mendeleev; and said film conforming substantially to said textured surface pattern, and said thin film constituting means for absorbing said electromagnetic energy without impairing the continuity of said thin film and conducting energy from said incident electromagnetic radiation to cause degradation of said plastics material which undergoes a local volume change and correspondingly changes the surface configuration of said thin film for, the recordation of information.

5,008,688

INK JET RECORDING APPARATUS CAPABLE OF MOUNTING AN INK TANK AND INK TANK FOR USE IN SAME

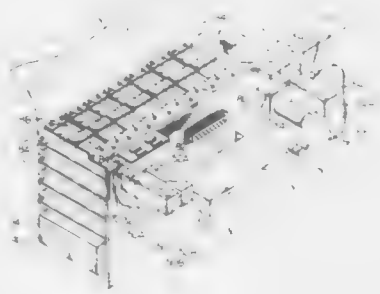
Ryuichi Ebinuma, Hiratsuka; Yoshifumi Hattori, Yamato, and Hiroo Ichihashi, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

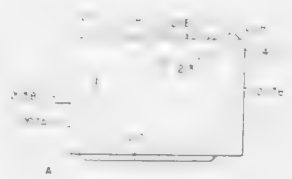
Continuation of Ser. No. 43,818, Apr. 29, 1987, abandoned, which is a division of Ser. No. 913,613, Sep. 29, 1986, Pat. No. 4,680,696, which is a continuation of Ser. No. 684,117, Dec. 20, 1984, abandoned. This application May 15, 1989, Ser. No. 352,614

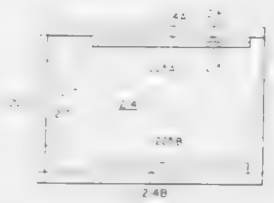
Claims priority, application Japan, Dec. 26, 1983, 58-244131; Dec. 26, 1983, 58-244132; Dec. 26, 1983, 58-244133; Dec. 26, 1983, 58-244134; Dec. 26, 1983, 58-244135; Dec. 26, 1983, 58-244136; Dec. 26, 1983, 58-244138

Int. Cl.[5] G01D *15/16*

U.S. Cl. 346—140 R **13 Claims**







11. An ink tank mountable to a storing portion of an ink jet recording apparatus body along a direction of mounting, said ink tank comprising:

a projection on a side thereof for engaging a displaceable member located on a side surface of the storing portion wherein said projection engages the displaceable member for mounting said ink tank to the storing portion;

a connecting portion located at an end of said ink tank, remote from the direction of mounting; and

a connecting member for supplying ink to said ink tank connectible to said connecting portion when said ink tank is mounted in the storing portion,

wherein the ink tank has a shape of a substantially rectangular parallelepiped, having a projection provided at a side thereof, said projection having a length sufficient to displace the displaceable member and to return the displaceable member after displacement with respect to a prior position of the displaceable member of the apparatus.

5,008,689

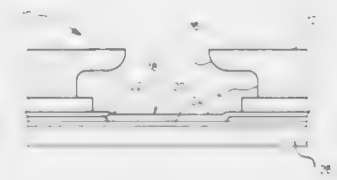
PLASTIC SUBSTRATE FOR THERMAL INK JET PRINTER

Alfred I-Tsung Pan, Sunnyvale; Eric G. Hanson, Burlingame; Christopher A. Schantz, Redwood City, and Winthrop D. Childers, San Diego, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 168,718, Mar. 16, 1988, Pat. No. 4,926,197. This application Mar. 9, 1990, Ser. No. 491,141

Int. Cl.[5] B41J *2/05*

U.S. Cl. 346—140 R **19 Claims**





1. A thermal ink jet printer print head, comprising:

a plastic base;

a metallization layer overlying the plastic base, the metallization layer having a thickness of from about 50 Angstroms to about 1000 Angstroms;

a dielectric structure overlying the metallization layer, the dielectric structure including

a metallic buffer layer overlying the metallization layer, the buffer layer having a thickness of greater than about 700 Angstroms, and

a layer of a dielectric material overlying the metallic buffer layer;

a resistor overlying the dielectric structure; and

an orifice plate with an orifice therein and an ink channel overlying the thin film resistor and dielectric structure.

5,008,690

IMAGE RECORDING APPARATUS FOR TRANSFERRING INK PATTERNS FORMED BY SELECTIVE APPLICATION OF ENERGY THROUGH ELECTRODES OF A RECORDING HEAD CONTROLLABLY BIASED AGAINST INK TRANSPORTED ON A ROLLER

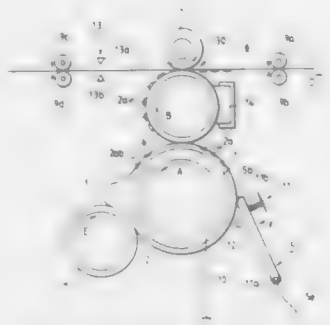
Norihiko Koizumi; Hiroshi Tanioka, both of Yokohama; Noboru Toyama; Kozo Arahara, both of Kawasaki, and Toshiya Yuasa, Mitaka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1988, Ser. No. 281,453

Claims priority, application Japan, Dec. 10, 1987, 62-311025; Jan. 12, 1988, 63-003117; Jan. 22, 1988, 63-010847; Jan. 22, 1988, 63-010849

Int. Cl.[5] B41J *2/33, 2/35, 2/40, 2/42;* **G01D** *15/16, 15/20*

U.S. Cl. 346—140 R **4 Claims**



1. An image recording apparatus for recording images on a recording medium, said apparatus comprising:

ink transport means for transporting fluid ink;

energy applying means for selectively applying energy to said ink transported by said ink transport means;

transfer means for transferring to the recording medium said ink whose transfer characteristic has been changed in conformity with the selective application of said energy, said transfer occurring at a location different from where said energy is applied;

coating means disposed upstream of said energy applying means with respect to the direction of transport of said ink by said ink transport means for applying said ink onto said ink transport means; and

biasing means for biasing said energy applying means against said ink transported by said ink transport means, said biasing means biasing said energy applying means such that at least a minimum gap is maintained between said energy applying means and said ink transport means.

5,008,691

MULTI-COLOR ELECTROPHOTOGRAPH APPARATUS

Takao Kumasaka, Takahagi, and Yuzuru Simazaki, Hitachi, both of Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan

Filed Sep. 15, 1989, Ser. No. 407,859

Claims priority, application Japan, Sep. 21, 1988, 63-234999

Int. Cl.[5] G01D *15/00*

U.S. Cl. 346—157 **24 Claims**

1. A multi-color electrophotograph apparatus comprising:

a photosensitive drum;

a first means for producing an image, disposed in proximity to said photosensitive drum, said first means comprising;

a first charging element;

a first exposure station; and

a first developer; and

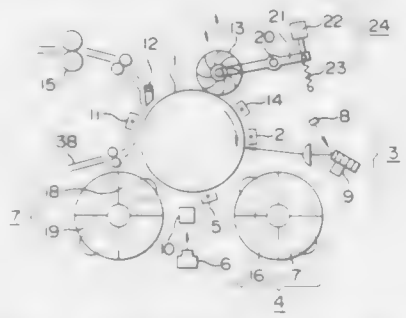
a second means for producing an image, disposed in proximity to said photosensitive drum, said second means comprising,

a second charging element;

a second exposure station, and

a second developer;

wherein at least one of said first and second developers has



a two-color change function, and a multi-color printing operation is carried out in at most two rotations of said photosensitive drum.

5,008,692

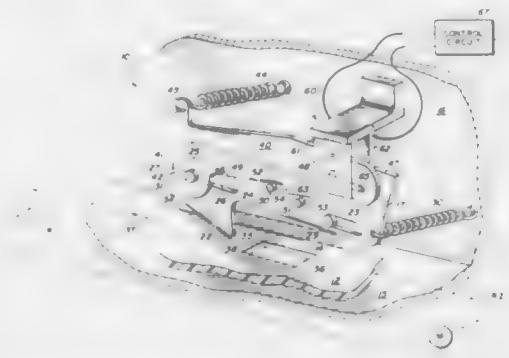
FILM METERING APPARATUS AND METHOD WITH DRIVE SPEED REDUCTION

Conrad Diehl, Rochester; David C. Smart, Fairport, and Wayne E. Stiehler, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 28, 1990, Ser. No. 486,488

Int. Cl.[5] G03B *1/12*

U.S. Cl. 354—173.1 **18 Claims**



1. In a camera having a housing, means defining an exposure plane within said housing, and means for advancing a strip of film in a frame-to-frame advance direction along said exposure plane, said film having a plurality of perforations located at predetermined frame metering intervals along said film, frame metering apparatus comprising:

first and second guide pins fixedly located on said housing;

an elongated pawl including a film perforation sensing tooth and first and second lift pins; said pawl being formed with an elongated slot and integral adjacent longitudinal and ramp surfaces; and said pawl being mounted for rotational and longitudinal movement relative to said housing, with said first guide pin engaging said slot and said second guide pin proximate said straight and ramp surfaces;

means biasing said pawl in a longitudinal direction, with said ramp surface being urged away from said second guide pin;

means biasing said pawl in a rotational direction about said first guide pin, with said tooth being urged toward said exposure plane and said longitudinal surface being urged toward said second guide pin;

an elongated blade disposed generally parallel to said pawl in engagement for rotation about said second guide pin; said blade being formed with a stepped surface having a first section proximate said first lift pin and having a second section proximate said second lift pin;

means biasing said blade in a rotational direction about said second guide pin, with said stepped surface being urged into contract with said first and second lift pins; and

means for detecting when said second section is in contact with said second lift pin;

said pawl, blade and biasing means being relatively dimensioned, configured and adapted so that said tooth is urged to engage in a perforation, with said longitudinal surface in contact with said second guide pin and said second section in contact with said second lift pin, when said film is moved in said advancement direction toward a position approaching registration of a next available exposure frame; so that said second section contact with said second lift pin is terminated and said first section is brought into contact with said first lift pin when said film reaches said position of registration; and so that said ramp surface is brought into engagement with said second guide pin against the bias of said longitudinal direction biasing means to disengage said tooth from said perforation in response to movement of said tooth with said film, when said film is moved beyond said registration position further in said advancement direction.

5,008,693

CAMERA

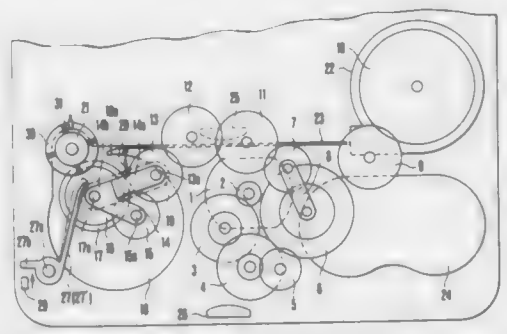
Michio Hirohata, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 19, 1989, Ser. No. 409,387

Claims priority, application Japan, Sep. 21, 1988, 63-237404; Sep. 26, 1988, 63-240189; Oct. 25, 1988, 63-269041; Dec. 1, 1988, 63-304420; Dec. 1, 1988, 63-304421; Dec. 1, 1988, 63-304422; Dec. 1, 1988, 63-304423; Dec. 28, 1988, 63-332176; Dec. 28, 1988, 63-332207

Int. Cl.[5] G03B *1/00*

U.S. Cl. 354—214 **41 Claims**



1. A camera of the kind arranged to wind a film onto a spool in a reverse winding direction, comprising:

(a) a spool for taking up the film in the reverse winding direction;

(b) a guide member; and

(c) position changing means for changing a position of said spool to cause the film to be inserted and pinched between said spool and said guide member so that the film is advanced by a driving force of said spool.

5,008,694

FILM PACKAGE AND DEVICE FOR LOADING FILMS

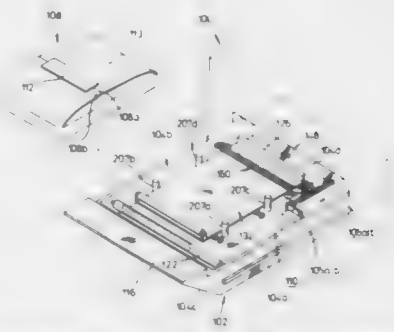
Kenji Tajima; Hiroshi Kushima, and Sadami Yamada, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 54,175, May 26, 1987, Pat. No. 4,860,042. This application Jun. 16, 1989, Ser. No. 366,976

Claims priority, application Japan, May 23, 1986, 61-119975; Jul. 15, 1986, 61-167364; Nov. 29, 1986, 61-284479

Int. Cl.[5] G03B *17/26*

U.S. Cl. 354—277 **18 Claims**



1. A device for loading a film package storing a stack of sheet film in a bright environment, comprising:

a holder or a magazine for placing the film package therein, said holder or magazine having a receiver for storing the film package, said receiver being movable in a first direction in which said film package can be pulled out,

a light-shielding member pressable against said film package, and

a cutting means for cutting off said film package at a prescribed portion thereof in order to allow the sheet films to be loaded from the film package, the arrangement being such that when cutting off an end of said film package, the light-shielding member is pressed against the end of the film package to prevent extraneous light from entering the film package through a cut-off portion, said receiver and said light-shielding member being relatively movable away from each other to prevent said light-shield member from interfering with the film package as it is pulled out.

5,008,695

RANGEFINDER FOR CAMERA

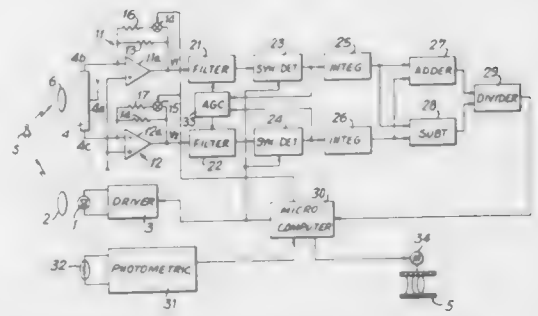
Shinji Nagaoka; Koji Sato, and Michio Kawai, all of Chiba, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1989, Ser. No. 369,794

Claims priority, application Japan, Jun. 30, 1988, 63-164461

Int. Cl.[5] G03B *3/00;* **G01C** *3/08*

U.S. Cl. 354—403 **14 Claims**



1. A rangefinder for use in a camera, comprising:

(a) light-emitting means for emitting light toward a subject to be photographed;

(b) spot light position detector means for producing an output current signal in response to said light reflected

from said subject, said spot light position detector means being disposed at a given distance from the light-emitting means;

(c) photometric means for measuring the brightness of said subject and incident extraneous light surrounding said subject, and for producing a brightness signal corresponding thereto; and

(d) circuit means for producing an output distance signal corresponding to the distance of the camera from said subject, in response to said output current signal, said circuit means having an amplification function and including:

(i) current-to-voltage converter means for converting the output current signal from the detector means into an output voltage signal;

(ii) arithmetic means for arithmetically treating the output voltage signal from the current-to-voltage converter means to produce said output distance signal; and

(iii) gain control means for varying the gain of said amplification function of said circuit means in accordance with said brightness signal.

5,008,696

PHASE DIFFERENCE DETECTING APPARATUS

Takashi Miida; Nozomu Ozaki; Shigenori Baba, and Kunimitsu Kousaka, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

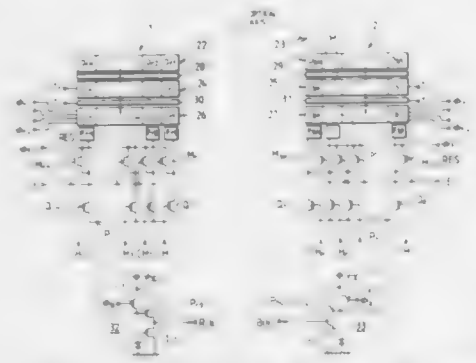
Filed Jul. 7, 1988, Ser. No. 216,354

Claims priority, application Japan, Jul. 7, 1987, 62-167906

The portion of the term of this patent subsequent to Jul. 31, 2007, has been disclaimed.

Int. Cl.[5] G03B *13/00*

U.S. Cl. 354—408 4 Claims



1. A phase difference detecting apparatus for detecting a relative distance between a pair of focused images obtained from subject luminous flux passed through an objective lens to thereby judge a focusing state of said objective lens, comprising:

a first signal generating means including,

a first light-receiving section constituted by picture elements arranged in a row so as to receive a first one of said focused images,

a first signal reading-out section for transferring, in a predetermined direction, signals generated in said respective picture elements of said first light-receiving section and at the same time outputting said signals in parallel, with respect to each other, through floating gates of a first CCD, and

means for converting said signals output in parallel from said floating gates of said first CCD into a first time series signal and outputting said first time series signal;

a second signal generating means including,

a second light-receiving section constituted by picture elements arranged in a row to receive a second one of said focused images,

a second signal reading-out section for transferring, in a predetermined direction, signals generated in said respective picture elements of said second light-receiving section and at the same time outputting said signals in parallel, with respect to each other, through floating gates of a second CCD, and

means for converting said signals output in parallel from said floating gates of said second CCD into a second time series signal which has a predetermined quantity of relative movement relative to said first time series signal and outputting said second time series signal;

switching-capacitor integrator means including a plurality of capacitive elements and switching elements for intermittently connecting said capacitive elements to each other, and for receiving said first and second time series signals; and

control means for comparing sizes of said first and second time series signals with each other to thereby generate a control signal corresponding to a relation of size between said first and second time series signals, and controlling said switching elements on the basis of said control signal to cause said switching-capacitor integrator means to generate an electric charge corresponding to an integrated value of an absolute value of a difference between said first and second time series signals and to cause said switching-capacitor integrator means to generate, as a correlation value, an integrated value on the basis of said first and second time series signals in predetermined numbers whenever said quantity of relative movement is changed in order to provide a signal indicative of a phase difference between said first and second time series signals.

5,008,697

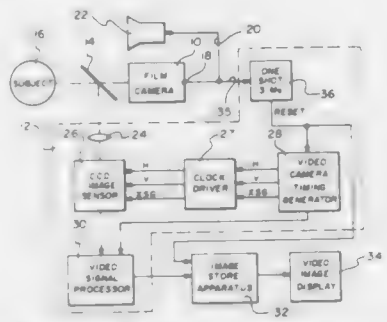
IMAGE RECORDING SYSTEM AND METHOD

Stephen A. Noble, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 31, 1990, Ser. No. 531,215

Int. Cl.[5] G03H *7/00, 15/05;* **H04N** *5/225, 3/14*

U.S. Cl. 354—413 10 Claims



1. An image recording system for simultaneously recording images of a subject in electronic and photosensitive media, comprising:

a photographic camera for recording a photographic image of said subject on said photosensitive medium, said photographic camera including means for supplying a flash request signal;

a video camera including a solid state image sensor for capturing an image of said subject on said image sensor, said video camera including video signal processing circuits for converting image information from said image sensor into a video signal and a video timing generator including image transfer clocking means for controlling transfer of the image information from said image sensor to said video processing circuits;

flash means responsive to said flash request signal for flash illuminating said subject to allow simultaneous image capture by said photographic and video cameras; and

reset means responsive to said flash request signal for interrupting operation of said clocking means at the beginning of a flash illumination and for restarting the clocking means following conclusion of the flash illumination to initiate, at the beginning of an image field, the transfer of image information from the imaging device to the video signal processing circuits.

5,008,698

CONTROL APPARATUS FOR IMAGE SENSOR

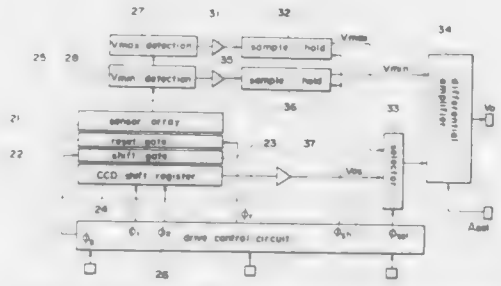
Sadao Muramatsu; Yukifumi Hashiba, and Yuuichi Ikeda, all of Tokyo, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Sep. 26, 1988, Ser. No. 248,983

Claims priority, application Japan, Sep. 28, 1987, 62-240878; Oct. 16, 1987, 62-259494; Dec. 29, 1987, 62-333729; Feb. 26, 1988, 63-42126; Mar. 28, 1988, 63-72004

Int. Cl.[5] G03B *13/36, 7/08*

U.S. Cl. 354—429 21 Claims



1. A control apparatus for an image sensor having an array of pixels, comprising

light detector means for deriving instantaneous maximum and minimum light detection signals from respective amounts of stored charge at pixels upon which the most intense and weakest components of the whole incident light upon said image sensor are respectively incident,

first stopping control means for stopping a charge accumulation of said image sensor based on a signal representing a difference between said instantaneous maximum and minimum light detection signals, and

second stopping control means responsive to said instantaneous maximum light detection signal increasing close to saturation for stopping further charge accumulation of said image sensor prior to said first stopping control means.

5,008,699

DEVICE FOR DRIVING SHUTTER

Shinji Tominaga, and Takeshi Hashimoto, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

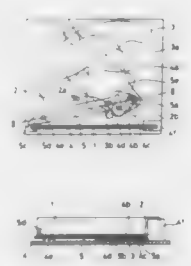
Division of Ser. No. 202,023, Jun. 3, 1988, Pat. No. 4,920,372.

This application Oct. 11, 1989, Ser. No. 419,967

Claims priority, application Japan, Jun. 4, 1987, 62-141073; Jun. 4, 1987, 62-141074; Jun. 4, 1987, 62-141075

Int. Cl.[5] G03B *7/08*

U.S. Cl. 354—457 9 Claims



1. A driving device used in a camera, comprising:

piezo-electric element;

driving means for driving said piezo-electric element by applying an electrical voltage to said piezo-electric element;

short-circuiting means connected in parallel to said piezo-electric element for short-circuiting said piezo-electric element; and

controlling means for controlling said driving means and said short-circuiting means so as to short-circuit said piezo-electric element except when said driving means is in an active state.

5,008,700

COLOR IMAGE RECORDING APPARATUS USING INTERMEDIATE IMAGE SHEET

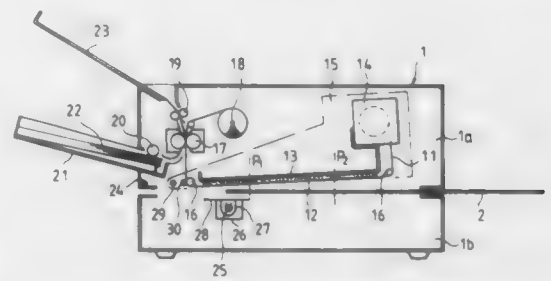
Tsugio Okamoto, Kani, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Japan

Filed Nov. 25, 1988, Ser. No. 276,016

Claims priority, application Japan, Nov. 27, 1987, 62-181514[U]

Int. Cl.[5] G03B *27/32*

U.S. Cl. 355—27 38 Claims



1. An image recording apparatus for recording an image of an original on a first sheet, said apparatus using a second sheet and a third sheet, said second sheet carrying thereon at least one monochromatic color image corresponding to a color component of the original image and a machine readable data including arrangement information and exposure information representative of a recording condition for recording the color image on said third sheet, said apparatus comprising:

means for reading said machine readable data and providing an instruction regarding the recording condition;

means for irradiating light onto said third sheet through said second sheet to record a latent image on said third sheet corresponding to the color image on said second sheet;

means for controlling said irradiating means in response to said instruction; and

means for developing the latent image and providing a visible image on said first sheet.

5,008,701

PHOTOGRAPHIC PRINTER

Kanji Tokuda, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 9, 1990, Ser. No. 564,516

Claims priority, application Japan, Aug. 18, 1989, 1-213704

Int. Cl.[5] G03B *27/72*

U.S. Cl. 355—35 12 Claims

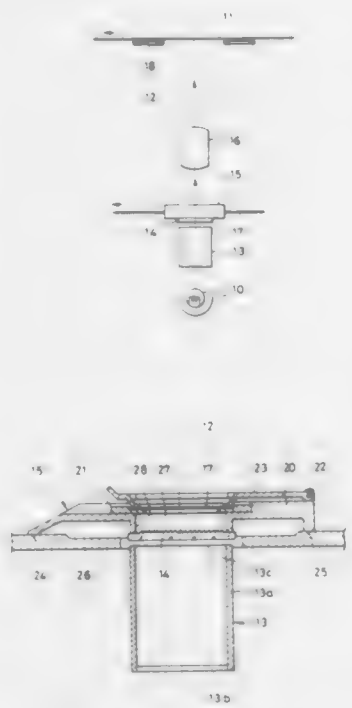
1. A photographic printer comprising:

a light source for emitting a printing light;

a film carrier for holding a photographic film to be printed; and

an anisotropic diffusion plate for diffusing light only in a

direction perpendicular to a lengthwise direction of said photographic film, said anisotropic diffusion plate being



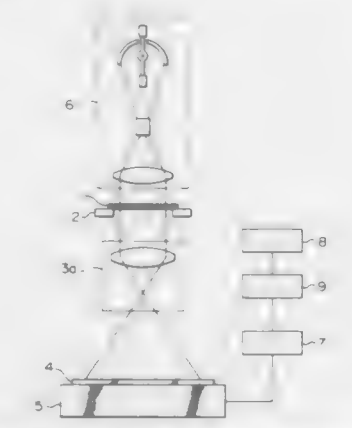
fixed to said film carrier between said photographic film and said light source.

5,008,702

EXPOSURE METHOD AND APPARATUS

Tsutomu Tanaka, Yokohama; Yoshitada Oshida, Fujisawa; Masataka Shiba, Yokohama; Naoto Nakashima, Kurita, and Ryuichi Funatsu, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 31, 1989, Ser. No. 401,619
Claims priority, application Japan, Sep. 7, 1988, 63-222355
Int. Cl.[5] G03B *27/68, 27/42*
U.S. Cl. 355—52 **46 Claims**



1. An enlargement projection type exposure method comprising the steps of:

a. projecting a circuit pattern of a mask through a lens system onto a substrate before exposure to form a pattern;

b. comparing the projected pattern on the substrate with design values therefor;

c. measuring an image distortion of the projected circuit pattern inherent in the lens system;

d. storing the measured image distortion in means for storing;

e. calculating control deviations of a surface level of the substrate to correct the measured image distortion stored in the storing means;

f. generating a fine displacement to elastically deform a shape of the substrate in accordance with the calculated control deviations; and

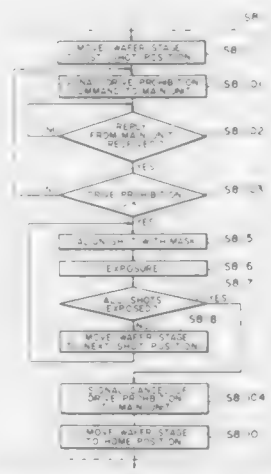
g. exposing the circuit pattern of the mask onto the substrate by projecting and enlarging the pattern through the lens system.

5,008,703

EXPOSURE APPARATUS AND CONTROL OF THE SAME

Eigo Kawakami, Ebina; Kunitaka Ozawa, Isehara; Koji Uda, Yokohama; Isamu Shimoda, Zama, and Shunichi Uzawa, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 6, 1989, Ser. No. 407,434
Claims priority, application Japan, Sep. 9, 1988, 63-224711
Int. Cl.[5] G03B *27/42*
U.S. Cl. 355—53 **9 Claims**



1. An exposure apparatus for printing, on a workpiece, a pattern formed on an original, said apparatus comprising:

exposure means for aligning the original and the workpiece, and/or for exposing the workpiece to the original with radiation energy;

driving means having no participation in the aligning operation and/or in the exposure operation of said exposure means; and

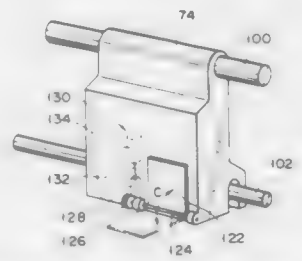
control means comprising means for determining whether the exposure means is performing the aligning and/or the exposure operation, said control means further comprising means for prohibiting the operation of said driving means on the basis of the determination when said exposure means performs the aligning operation and/or the exposure operation.

5,008,704

METHOD OF FORMING ORIGINAL IMAGE AND ADDITIONAL IMAGE, AND APPARATUS FOR PERFORMING SAME

Junji Watanabe, Yokohama, and Yuji Ishikawa, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 13, 1989, Ser. No. 337,738
Claims priority, application Japan, Apr. 15, 1988, 63-93106
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—202 **24 Claims**



1. An image forming apparatus for forming an image identical to an original image and an additional pattern image, both on a moving image carrier, having means for forming the image corresponding to the original image of the image carrier, and means for making visible the image and the additional pattern image which are formed on the image carrier, comprising:

means for entering data representing the specific pattern image;

means for generating pattern data corresponding to the data entered by said entering means; and

means for forming the pattern image corresponding to the pattern data generated by the pattern data generating means on the image carrier;

wherein said additional pattern image forming means is provided along a surface of the image carrier between an exposure section at which the image corresponding to the original image is formed on the image carrier and a developer at which both the image and the additional image are developed; and

said additional pattern image forming means is provided with shutter means for shutting off an incident light supplied to the exposure section, said shutter means having a width narrower than an illumination range of said additional pattern image forming means, measured in a direction normal to a direction in which the image carrier moves.

5,008,705

AUTOFOCUS SYSTEM FOR MICROLITHOGRAPHY

Glenn L. Sindledecker, Lexington, Mass., assignor to General Signal Corporation, Stamford, Conn.

Filed Apr. 23, 1990, Ser. No. 513,7[illegible]
Int. Cl.[5] G03B *27/52*
U.S. Cl. 355—43 **6 Claims**

1. In a microlithographic system, apparatus for relatively positioning a lens and an object which is to be exposed through the lens, said apparatus comprising:

means for illuminating, at a shallow angle, a spot on the surface of the object which is approximately on the lens axis, the position of the spot being thereby a function of the spacing between the lens and the object;

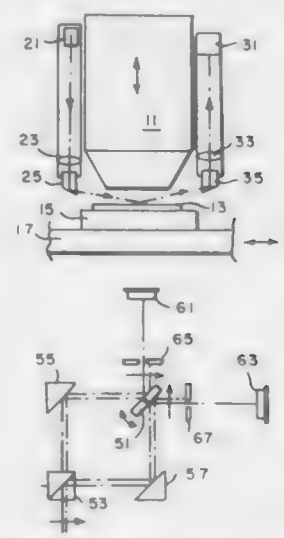
lens means for viewing said spot at a shallow angle and projecting a corresponding beam of light along a preselected path;

along said path of projection, a beam splitter for dividing said beam;

angularly oscillatable mirror means providing a pair of reflective surfaces in fixed relation to each other;

means for directing the split beams at respective ones of said reflective surfaces;

respective means for detecting each of the split beams after reflection from the respective reflective surfaces of said mirror means and generating respective pulse signals each



corresponding to the passing of the respective spot image past a predetermined position; and

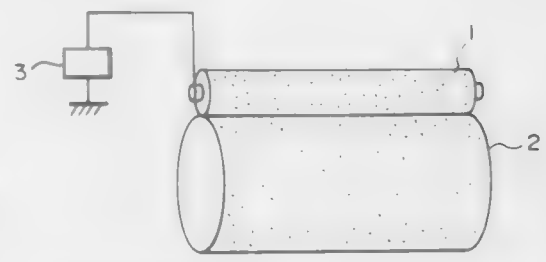
servo means responsive to the relative timing of the two pulse signals for adjusting the relative positions of the lens and the object.

5,008,706

ELECTROPHOTOGRAPHIC APPARATUS

Hiroyuki Ohmori, Tokyo; Hisami Tanaka, Yokohama, and Masami Okunuki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 25, 1989, Ser. No. 426,197
Claims priority, application Japan, Oct. 31, 1988, 63-276879; Nov. 24, 1988, 63-297511
Int. Cl.[5] G03G *21/00, 15/02*
U.S. Cl. 355—219 **11 Claims**

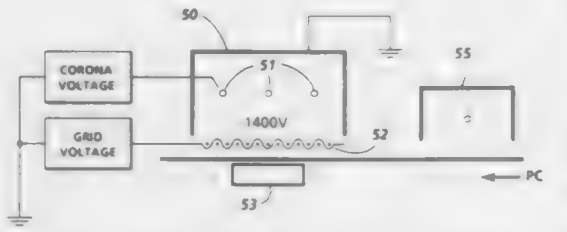


1. An electrophotographic apparatus comprising a photosensitive member and a charging member disposed in contact with the photosensitive member; said photosensitive member being capable of being charged by applying a voltage to the charging member;

wherein the ten-point mean surface roughness (Rz_1) of the photosensitive member and the ten-point mean surface roughness (Rz_2) of the charging member satisfy the following relationships.

$$0.1 \text{ micron} \leqq Rz_1 + Rz_2 \leqq 60 \text{ microns},$$
$$0.05 \text{ micron} \leqq Rz_1 \leqq 50 \text{ microns}, \text{ and}$$
$$0.05 \text{ micron} \leqq Rz_2 \leqq 50 \text{ microns}$$

5,008,707
SIMULTANEOUS CHARGING AND EXPOSURE FOR PICTORIAL QUALITY
Joan R. Ewing, Fairport, and Donald E. Wiedrich, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Sep. 5, 1989, Ser. No. 402,729
Int. Cl.[5] G03G *15/02, 15/04*
U.S. Cl. 355—220 **11 Claims**



1. Apparatus for forming an electrostatic latent image on an imaging member having a photoconductive insulating layer comprising a voltage sensitive corona charging device having a corona generating electrode abnd a control electrode positioned in charging relationship to said photoconductive insulating layer,

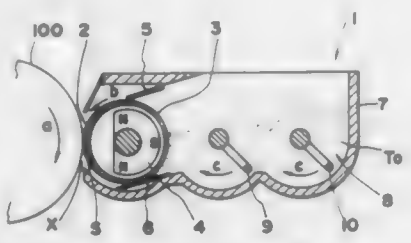
means to energize said charging device to charge said photoconductive insulating layer to a first level comprising means to apply a corona generating voltage to said corona generating electrode and to apply a control voltage of a first magnitude to said control electrode,

means to expose said photoconductive insulating layer to an image pattern simultaneously while said charging device is energized,

a second voltage sensitive corona discharge device having a corona generating electrode and a control electrode in charging relationship to said photoconductive insulating layer downstream of said first voltage sensitive corona charging device, and

means to energize said second voltage sensitive corona discharge device to apply a control voltage to said control electrode of a magnitude less than said first magnitude.

5,008,708
MONOCOMPONENT DEVELOPING DEVICE
Yuji Enoguchi; Toshiya Natsuhara, and Masashi Yamamoto, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 225,465, Jul. 28, 1988, Pat. No. 4,907,032. This application Jan. 22, 1990, Ser. No. 468,235
Claims priority, application Japan, Jul. 31, 1987, 62-193585; Jul. 31, 1987, 62-193586; Jul. 31, 1987, 62-193587; Jul. 31, 1987, 62-193588
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—259 **13 Claims**



1. A developing device for developing an electrostatic latent image formed on a photoreceptor, comprising:

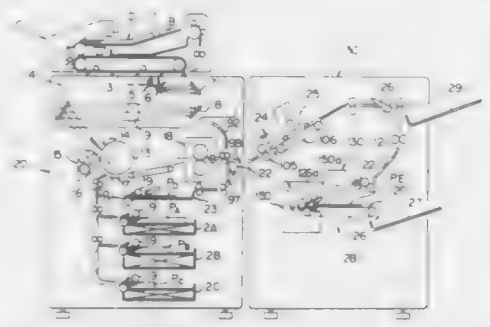
a cylindrical formed flexible member;

means for pressing said flexible member into contact with a surface portion of the photoreceptor using a magnetic force;

means for rotating said flexible member; and

means for providing toner to a surface of said flexible member.

5,008,709
DOCUMENT RECYCLING COPIER FOR COPYING DOCUMENTS OF VARYING SIZES
Masayuki Shinada, Yokohama; Masumi Ikesue; Mitsutoyo Kikuno, both of Tokyo, and Tatsuya Murai, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Jun. 7, 1989, Ser. No. 362,686
Claims priority, application Japan, Jun. 7, 1988, 63-138542; Jun. 30, 1988, 63-162948; Jul. 11, 1988, 63-173609; Jul. 11, 1988, 63-173610; Jul. 11, 1988, 63-173611; Jul. 11, 1988, 63-173612; Jul. 11, 1988, 63-173613
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—309 **16 Claims**



1. A copier in which documents are recycled, comprising:

a plurality of paper feeding means each for feeding paper sheets of a different size;

copying means for copying documents on paper sheets which individually match said documents in size;

a recycling automatic document feeding device loaded with a recycling stack of documents having a plurality of sizes for sequentially transporting said documents one by one to an image exposing station of said copying means;

a finisher for automatically binding copied paper sheets discharged from said copying means while regulating a stacking condition of said copied paper sheets;

document size sensing means for sensing the sizes of the documents being transported to the exposing station by said automatic document feeding device;

main control means for controlling said copying means and said automatic document feeding device such that a plurality of control operations are selectively performed;

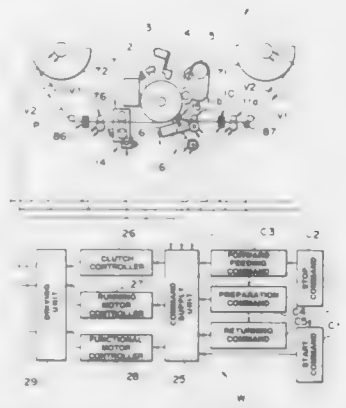
finisher control means for controlling said finisher such that the copied paper sheets produced by the control operations of said main control means are bound and discharged,

wherein said plurality of control operations comprises a control operation in which said automatic document feeding device circulates all of the documents once while causing said document size sensing means to sense the sizes of all of said documents;

only the documents of a same size are copied while said automatic document feeding device circulates all of the documents once, the documents of the largest size or the smallest size sensed by said document sensing means being first; and

the copying of the documents of a same size is repeated a number of times associated with a number of sizes of documents sensed by said document size sensing means

5,008,710
PAPER FEEDER OF A LABEL PRINTER
Hitoshi Kobayashi; Akira Takano; Naoharu Narusawa; Yukihiko Tsukada; Hiroshi Sakamoto; Masaki Hirano, and Masao Ando, all of Nagano, Japan, assignors to Nisshinbo Industries, Inc., Tokyo and Nagano Japan Radio Co., Ltd., Nagano, both of, Japan
Filed Apr. 30, 1990, Ser. No. 516,967
Claims priority, application Japan, May 26, 1989, 1-133100; Sep. 7, 1989, 1-232133
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—202 **9 Claims**



1. A paper feeder of a label printer using an electronic photographic system including a main charger for charging a photosensitive drum, a printing head for applying printing information, a developer for attaching toner, a transfer charger for transferring the toner on the photosensitive drum to label papers affixed on a continuous paper constituting a continuous printing paper and a fixing device for fixing the toner by causing the continuous printing paper to pass through the fixing device, and capable of making printing successively on the label papers, comprising a control device for moving back the continuous printing paper by a length obtained by adding a fixed length capable of continuously making the next printing subsequently to a final printing position of the printing paper upon resumption of the printing operation when the movement of the printing paper is stopped by completion of the printing operation to an adjustment length for settling a printing position.

5,008,711
IMAGE FORMING APPARATUS
Koji Sakamoto, Tokyo; Misao Tanzawa, Kawasaki; Nobuo Iwata, Sagamihara; Hisao Murayama, Kawasaki; Susumu Takahashi, and Kenya Komada, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Apr. 19, 1988, Ser. No. 183,707
Claims priority, application Japan, Apr. 23, 1987, 62-98613; May 20, 1987, 62-121191; Oct. 16, 1987, 62-259785
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—206 **9 Claims**

1. An image forming apparatus including a body, an image carrier removably mounted on said body for carrying an electrostatic latent image thereon, and a plurality of process means for developing the latent image provided on said image carrier to produce a visible image, transferring the visible image to a transfer material, and cleaning said image carrier after the visible image has been transferred, said apparatus comprising:

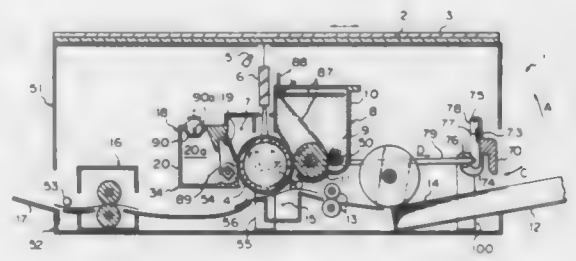
at least one image forming unit having at least one of said process means and removably mounted on said body;

first sensor means for sensing the end of the life of said image forming unit;

second sensor means for sensing the end of the life of said image carrier;

first display means for urging a person to replace said image forming unit when said first sensor means senses the end of the life of said image forming unit; and

second display means for urging a person to replace said



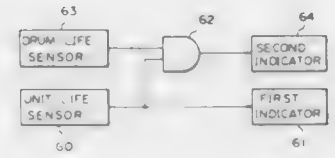


image forming unit and said image carrier when said first sensor means senses the end of the life of said image forming unit after said second sensor means has sensed the end of the life of image carrier.

5,008,712
VARIABLE MAGNIFICATION COPYING APPARATUS AND AUTOMATIC SHUTDOWN THEREFOR
Tsuneki Inuzuka; Katsuyoshi Maeshima, and Masahiro Tomosada, all of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 940,224, Dec. 8, 1986, abandoned, which is a continuation of Ser. No. 735,387, May 17, 1985, abandoned, which is a continuation of Ser. No. 311,865, Oct. 15, 1981, abandoned. This application Nov. 16, 1989, Ser. No. 436,974
Claims priority, application Japan, Oct. 17, 1980, 55-145268; Oct. 17, 1980, 55-145269; Dec. 27, 1980, 55-188402; Jan. 19, 1981, 56-6946; Jan. 21, 1981, 56-8489
Int. Cl.[5] G03G *15/04, 21/00*
U.S. Cl. 355—206 **20 Claims**

1. A copier with variable magnification capability, comprising:

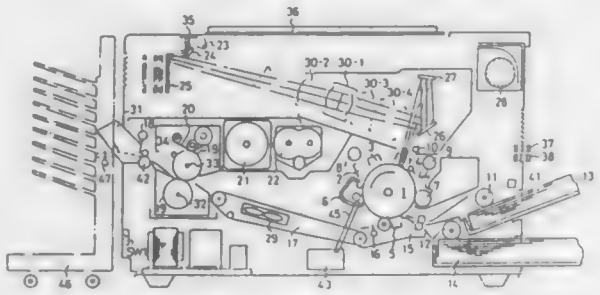
input means for setting a desired image magnification;

means for displacing an optical system to a determined position in accordance with said input means setting, wherein said position determines the size of a reproduced image;

said displacing means having means for detecting a reference position of said optical system and means for detecting the position of said optical system correspondingly to the magnification set by said input means; and

timer means to be started in synchronism with the start of displacement of said optical system or with the entry of a signal for said displacement; wherein an error signal is

generated, when said detection means does not detect the arrival of said optical system at the position corresponding



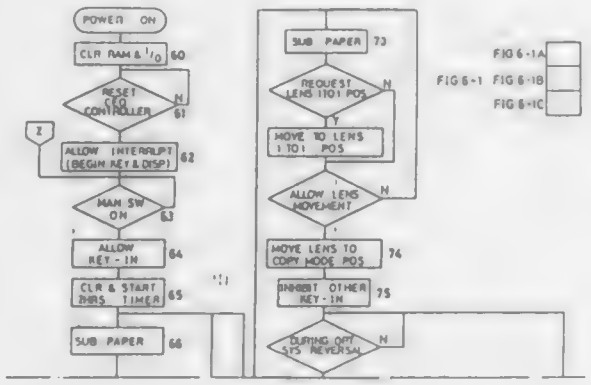
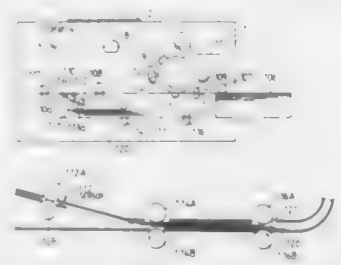


FIG 6-1A
FIG 6-1 FIG 6-1B
FIG 6-1C

feeding means for feeding the sheets one by one to said image forming means;

piling means for piling the sheets each having an image formed on one surface thereof by said image forming means with a predetermined amount of deviation in the direction of conveyance therebetween;

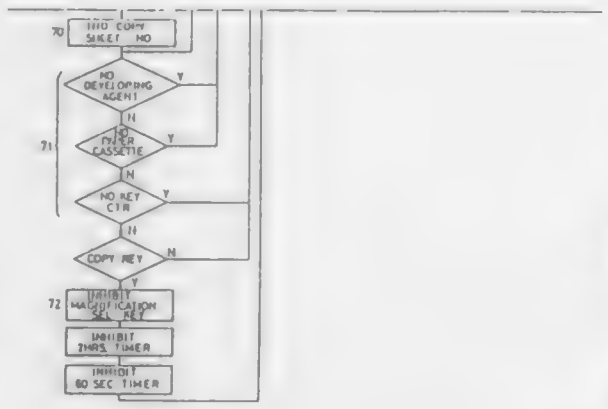
first conveying means for nipping the sheets piled with the predetermined amount of deviation therebetween and imparting a conveying force to the lead-off sheet;



second conveying means for nipping the sheets piled by said piling means between it and said first conveying means and conveying them in forward and reverse directions;

control means for controlling said second conveying means and conveying the sheets other than the lead-off sheet in the reverse direction after the lead-off sheet has been released from its nipped condition; and

a conveyance path for directing the sheet to which the conveying force is applied by said first conveying means to said image forming means.



to the set magnification even after the lapse of the time set by said timer means.

5,008,713

SHEET CONVEYING APPARATUS AND SHEET CONVEYING METHOD

Takashi Ozawa, Ichikawa, and Minoru Nada, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 230,355, Aug. 10, 1988, abandoned. This application Jun. 8, 1990, Ser. No. 535,284

Claims priority, application Japan, Aug. 12, 1987, 62-199960; Jul. 7, 1988, 63-170553

Int. Cl.[5] G03G *15/00*; B65H *3/06*

U.S. Cl. 355—319 **25 Claims**

23. An image forming apparatus having:

image forming means for forming an image on one surface of each of sheets;

5,008,714

IMAGE FORMING APPARATUS HAVING AN AUTOMATIC DOCUMENT FEED DEVICE FOR AUTOMATICALLY DISCHARGING A MANUALLY POSITIONED DOCUMENT

Kimihiko Higashio, and Yoichi Kawabuchi, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 7, 1988, Ser. No. 254,726

Claims priority, application Japan, Oct. 9, 1987, 62-255918

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—313 **4 Claims**

1. An image duplicating apparatus, comprising:

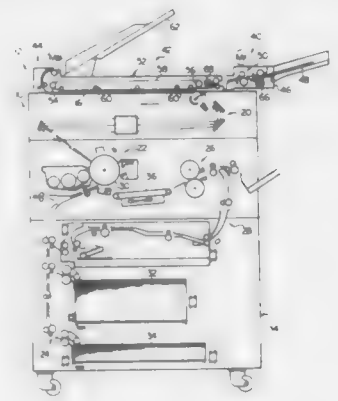
(a) a transparent document support table,

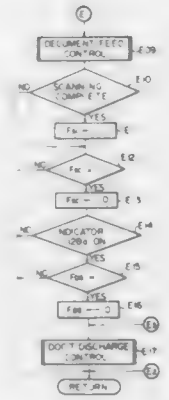
(b) an image forming device for copying images on an original document sheet placed on said document support table,

(c) an original document feeding device for conveying an original document sheet to a predetermined position on said document support table and discharging the original document sheet from said predetermined position, said original document feeding device being angularly movable from a closed position confronting said document support table to an angular position allowing manual access to said document support table,

(d) manual input means allowing manual entry of an automatic document discharge instruction for automatically discharging a manually placed original document sheet from said document support table,

(e) a control device responsive to said automatic document discharge instruction for activating said original document feeding device to automatically discharge the manually placed original document sheet from said document support table when said original document feeding device is in said closed position.





5,008,715

COPYING MACHINE ALLOWING MANUAL FEED OF COPYING PAPER

Masaru Imaizumi, and Yoshiaki Takano, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 10, 1988, Ser. No. 205,186

Claims priority, application Japan, Jun. 11, 1987, 62-145901; Jul. 20, 1987, 62-181712; Jul. 20, 1987, 62-181713; Jul. 20, 1987, 62-181714

Int. Cl.[5] G03G *21/00*

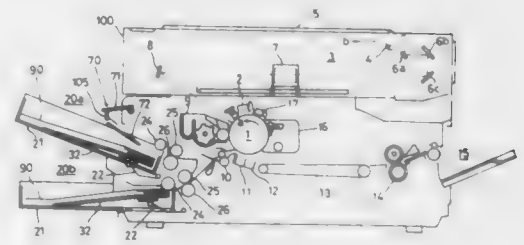
U.S. Cl. 355—313 **16 Claims**

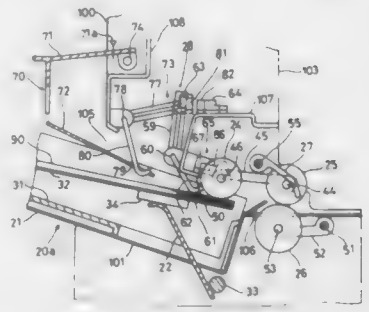
1. A copying machine allowing copying paper to be fed manually, comprising:

an automatic paper feeding section including support means for supporting copying paper to be fed automatically, feed means for feeding the copying paper, and switch means for selectively providing a state in which the copying paper is pressed between said support means and said feed means and a state in which the copying paper is released from a pressing force;

inlet means for receiving copying paper inserted manually and allowing the manually inserted copying paper to advance to a position between said support means and said feed means and to be pressed therebetween by action of said switch means;

means for forming images on the copying paper; and





control means for controlling feeding of the copying paper pressed between the support means and the feed means to the image forming means.

5,008,716

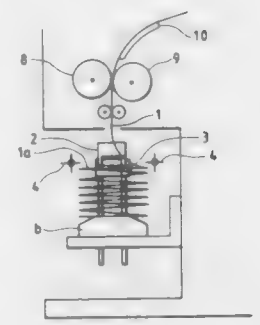
PAPER COOLING APPARATUS FOR AN ELECTROPHOTOGRAPHIC PRINTER

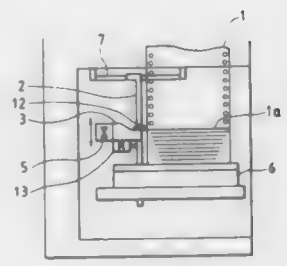
Tsukasa Onose; Yasuo Kikuchi; Toshitaka Ogawa, and Minoru Seino, all of Ibaraki, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1989, Ser. No. 417,621

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—322 **5 Claims**





5. A paper cooling apparatus for an electrophotographic printer in which toner is printed on extending surfaces and folded with the extending surfaces extending horizontally and

with adjacent surfaces in contact, and said printer having a horizontally slidable paper guide comprising:

means for directing cooling air to the folded paper so that the air passes between said adjacent surfaces to cool the paper and prevent toner stick, wherein said directing means includes a duct having a horizontally elongated rectangular opening adjacent the stack of folded papers and an inlet opening and a blower attached to said inlet opening for supplying cooling air thereto;

means for mounting said cooling apparatus to said electrophotographic printer, said mounting means including means for mounting to said guide of said printer; and

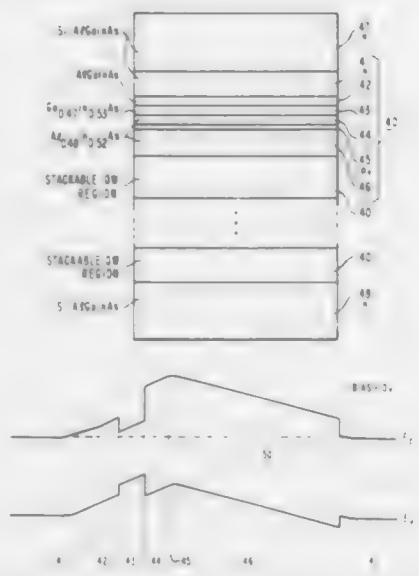
means for detecting the position of the top of the folded stack, and means for moving said duct and blower vertically along said slidable guide in response to the output of said sensor.

5,008,717

SEMICONDUCTOR DEVICE INCLUDING CASCADED MODULATION-DOPED QUANTUM WELL HETEROSTRUCTURES

Israel Bar-Joseph, Highlands; Tao-Yuan Chang, Lincroft, and Daniel S. Chemla, Rumson, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 3, 1989, Ser. No. 322,958
Int. Cl.[5] H01L *29/205, 29/68*
U.S. Cl. 357—16 **9 Claims**



1. A semiconductor device responsive to electrical signals for causing a change to a supplied optical signal comprising at least a first modulation-doped structure including epitaxial regions grown in sequence as follows: a first doped semiconductor region, a quantum well region, said first doped semiconductor region for providing charge carriers to said quantum well region, a barrier region for substantially inhibiting carrier flow from said quantum well region, and a second doped semiconductor region for substantially matching a boundary condition for the conduction and valence bands at an outer end of the second doped semiconductor region to a boundary condition for the conduction and valence bands at an outer end of the first doped semiconductor region, said first and second doped semiconductor layers having substantially similar conductivity types, and said quantum well region having first and second asymmetric barriers wherein the first asymmetric barrier disposed adjacent said first doped semiconductor region has a lower bandgap energy level than the second asymmetric barrier disposed adjacent said second doped semiconductor region, and wherein said barrier region is substantially intrinsic and further includes a third doped semiconductor layer having a conductivity type opposite to the conductivity type of said first and second doped semiconductor regions.

5,008,718

LIGHT-EMITTING DIODE WITH AN ELECTRICALLY CONDUCTIVE WINDOW

Robert M. Fletcher, 1520 Huddersfield Ct., San Jose, Calif. 95126; Chihping Kuo, 915 Erie Cir., Milpitas, Calif. 95035; Timothy D. Osentowski, 2920 Creek Point Dr., San Jose, Calif. 95133, and Virginia M. Robbins, 112 Grenada Ave., Mountain View, Calif. 94043

Filed Dec. 18, 1989, Ser. No. 452,800
Int. Cl.[4] H01L *33/00;* **H01S** *3/19*
U.S. Cl. 357—17 **14 Claims**



1. A light emitting diode comprising:

a semiconductor substrate;

an electrical contact to the substrate;

active p-n junction layers for AlGaInP over the substrate for emitting light;

a transparent window layer of semiconductor different from AlGaInP over the active layers and having a bandgap greater than the bandgap of the active layers and a resistivity lower than the active layers; and

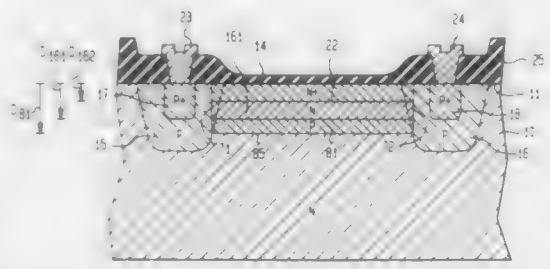
a metal electrical contact over a portion of the transparent layer.

5,008,719

DUAL LAYER SURFACE GATE JFET HAVING ENHANCED GATE-CHANNEL BREAKDOWN VOLTAGE

Gregory A. Schrantz, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Oct. 20, 1989, Ser. No. 424,917
Int. Cl.[5] H01L *29/80*
U.S. Cl. 357—22 **17 Claims**



1. A semiconductor device comprising:

a semiconductor substrate of a first conductivity type having a first surface;

first and second semiconductor regions of a second conductivity type, opposite to said first conductivity type, respectively disposed in first and second spaced-apart surface portions of said substrate;

a third, channel, semiconductor region of said second conductivity type, disposed beneath a third surface portion of said substrate and bridging said first and second semiconductor regions; and

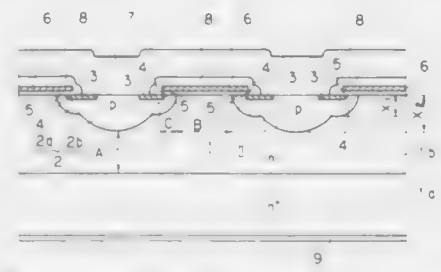
a fourth, gate, semiconductor region of said first conductivity type extending from said third surface portion of said substrate, bridging said first and second semiconductor regions and so as to be contiguous with said third semiconductor region, said fourth region containing a fifth semiconductor region of a first impurity concentration, extending from said third surface portion of said substrate to a sixth semiconductor region of a second impurity concentration, lower than said first impurity concentration, said sixth region being contiguous with said third region and being spaced apart from said third surface portion of said substrate.

5,008,720

SEMICONDUCTOR DEVICE WITH STEPED WELL

Akio Uenishi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 2, 1990, Ser. No. 460,007
Claims priority, application Japan, Apr. 21, 1989, 1-102702
Int. Cl.[4] H01L *29/10, 29/34*
U.S. Cl. 357—23.4 **6 Claims**



6. A semiconductor device comprising:

a first conductivity type first semiconductor layer having first and second major surface;

a second conductivity type well region selectively formed in said first major surface of said first semiconductor layer;

a first conductivity type semiconductor region selectively formed in a surface of said well region;

a second conductivity type second semiconductor layer formed on said second major surface of said first semiconductor layer;

an insulation layer formed on a portion of a surface of said well region between surfaces of said first semiconductor layer and said semiconductor region;

a control electrode formed on said insulation layer;

a first main electrode formed on said semiconductor region; and

a second main electrode formed on said second semiconductor layer,

said well region having a steped configuration composed of a peripheral portion of a first depth and a central portion of a second depth deeper than said first depth,

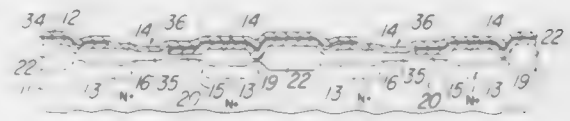
a ratio of said first depth to said second depth ranging from 0.85 to 0.95.

5,008,721

ELECTRICALLY-ERASABLE, ELECTRICALLY-PROGRAMMABLE READ-ONLY MEMORY CELL WITH SELF-ALIGNED TUNNEL

Manzur Gill, Rosharon; Sung-Wei Lin, Houston; C. Rinn Cleavelin, Lubbock, and David J. McElroy, Rosenberg, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 219,529, Jul. 15, 1988, abandoned. This application Mar. 15, 1990, Ser. No. 494,042
Int. Cl.[5] H01L *29/68, 29/34;* **G11C** *11/34*
U.S. Cl. 357—23.5 **22 Claims**



1. An electrically erasable and programmable memory cell formed at a face of a semiconductor layer of a first conductivity type, comprising:

a thick insulator region selectably grown at said face from said semiconductor layer, a lateral margin of said insulator region being sloped with respect to said face, said thick insulator region having a thickness;

first and second source/drain regions implanted into said face with a dopant to be of a second conductivity type opposite said first conductivity type;

an oxide region grown on said first source/drain region, a lateral margin of said oxide region being sloped with respect to said face, said oxide region having a thickness, a junction of said sloped lateral margin of said oxide region and said sloped lateral margin of said thick insulator region creating a thin insulator transition area, at least a portion of said thin transition area adjoining said first source/drain region;

insulator material within said thin insulator transition area etched back to expose said semiconductor layer, a thin tunnel insulator grown on said exposed semiconductor layer within said thin transition area, a width of said thin tunnel insulator between said thick insulator region and said oxide region being independent of said thicknesses of said thick insulator region and said oxide region;

a channel area of said semiconductor layer extending between said first and said second source/drain regions, a floating gate formed over said tunnel insulator and insulatively disposed over at least a portion of said channel area; and

a control gate insulatively disposed adjacent said floating gate.

5,008,722

NON-VOLATILE MEMORY

Agerico L. Esquivel, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 31,329, Mar. 27, 1987, abandoned, which is a division of Ser. No. 844,915, Mar. 27, 1986, abandoned. This application May 31, 1989, Ser. No. 363,366
Int. Cl.[5] H01L *29/68, 29/00, 27/02;* **G11C** *11/34*
U.S. Cl. 357—23.5 **34 Claims**

1. A non-volatile memory cell array comprising:

a semiconductor body;

a plurality of bitline diffusions;

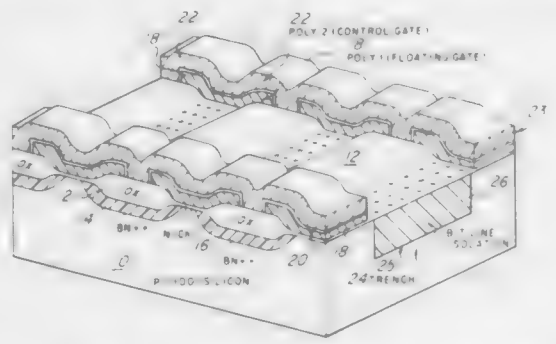
a plurality of wordlines which are not parallel to said bit line diffusions, said plural wordlines being respectively mutually parallel;

a plurality of floating gates underlying said wordlines at locations in between said bitline diffusions;

a plurality of transistor channel locations, each disposed substantially under a floating gate; and

a plurality of isolation trenches, each filled with a dielectric

material and extending into said semicondutor body, each of said trenches disposed between a pair of channel locations which are disposed between the same bitline diffusions and which are associated with adjacent wordlines, said trenches having edges aligned with said floating gates so that said floating gates do not overlap said trenches.

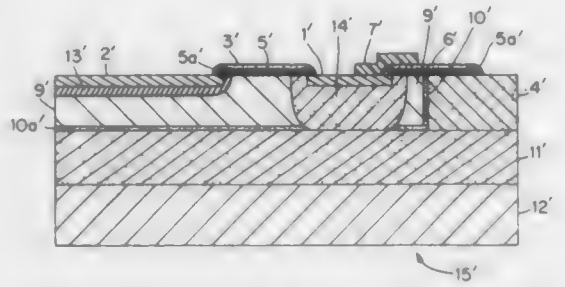


5,008,723

MOS THIN FILM TRANSISTOR

Leonard A. van der Have, Ames, Iowa, assignor to Kopin Corporation, Taunton, Mass.

Filed Dec. 29, 1989, Ser. No. 458,590
Int. Cl.[5] H01L 29/78, 49/02, 27/13
U.S. Cl. 357—23.7 12 Claims



1. In a metal-oxide semiconductor transistor having a drain region, and a source region formed in a crystalline semiconductor body layer provided over a planar surface of a semiconductor substrate wafer, and a gate electrode with a gate oxide beneath said gate electrode, the improvement comprising:

(a) a buried insulator layer formed on the semiconductor body between said crystalline semiconductor body layer and said substrate and covering said planar surface;

(b) said drain region comprising an upper drain region and a lower lightly doped region extending to said insulator layer and the dopant level of the lower region being less than that of the upper region and which is sufficient to cause conversion of the semiconductor body layer in the lower region; and

(c) said source region not extending to said insulator.

5,008,724

SEMICONDUCTOR DEVICE

Koji Shirai, Kawasaki, and Ken Kawamura, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 160,764, Feb. 26, 1988. This application Jul. 3, 1990, Ser. No. 547,361
Claims priority, application Japan, Feb. 27, 1987, 62-44252
Int. Cl.[5] H01L 27/01, 29/06
U.S. Cl. 357—23.13 4 Claims

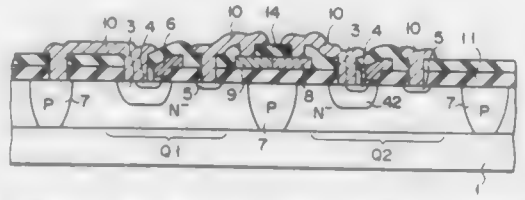
1. A semiconductor device comprising:

a semiconductor substrate of a first conductivity type;

an element isolation-layer of a second conductivity type, said element isolation-layer dividing said semiconductor substrate into first and second parts;

a first field effect transistor formed in the first part of said semiconductor substrate and having a source electrode, a drain electrode, and a gate electrode;

a second field effect transistor formed in the second part of the semiconductor substrate and having a source electrode, a drain electrode and a gate electrode;



an insulation film formed on said semiconductor substrate; and

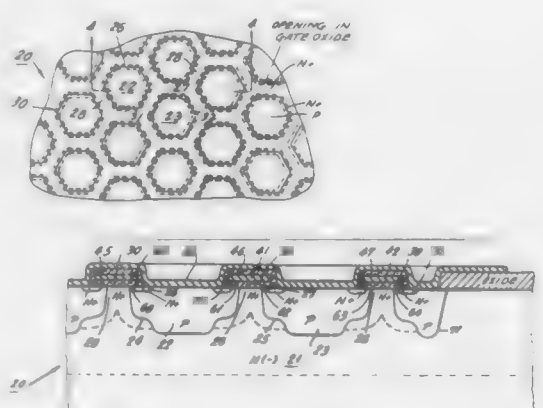
a diode formed on said insulation film and having an anode electrode and a cathode electrode, said anode electrode being connected to said source electrode of said first field effect transistor and said cathode electrode being connected to said drain electrode of said second field effect transistor.

5,008,725

PLURAL POLYGON SOURCE PATTERN FOR MOSFET

Alexander Lidow, Manhattan Beach; Thomas Herman, Redondo Beach, and Vladimir Rumennik, El Segundo, all of Calif., assignors to International Rectifier Corporation, El Segundo, Calif.

Continuation of Ser. No. 243,544, Mar. 13, 1981, abandoned, which is a continuation of Ser. No. 38,662, May 14, 1979, abandoned. This application Dec. 23, 1988, Ser. No. 291,423
Int. Cl.[5] H01L 29/100, 29/780, 29/060, 27/100
U.S. Cl. 357—23.4 14 Claims



1. A high power MOSFET device having more than 1000 parallel-connected individual FET devices closely packed into a relatively small area comprising:

a thin wafer of semiconductor material having first and second spaced, parallel planar surfaces; at least a first portion of the thickness of said wafer which extends from said first planar surface consisting of an epitaxially deposited region of a first conductivity type;

a plurality of symmetrically disposed laterally distributed hexagonal base regions each having a second conductivity type formed in said epitaxially deposited region and extending for a given depth beneath said first planar surface;

said hexagonal base regions spaced at said first surface from surrounding ones by a symmetric hexagonal lattice of semiconductor material of said first conductivity type;

each side of each of said hexagonal base regions being parallel to an adjacent side of another of said hexagonal base regions;

a hexagonal annular source region of said first conductivity type formed in an outer peripheral region of each of said hexagonal base regions and extending downwardly from said first planar surface to a depth less than the depth of said base regions;

an outer rim of each of said annular source regions being radially inwardly spaced from an outer periphery of its respective hexagonal base region to form an annular channel between each of said outer rims of said annular source regions and said symmetric hexagonal lattice of semiconductor material of said first portion of said wafer;

a common source electrode formed on said first planar surface and connected to a plurality of said annular source regions and to interiorly adjacent surface areas of their said respective hexagonal base regions;

a drain electrode connected to said second planar surface of said wafer;

an insulation layer means on said first planar surface and overlying at least said annular channels; and

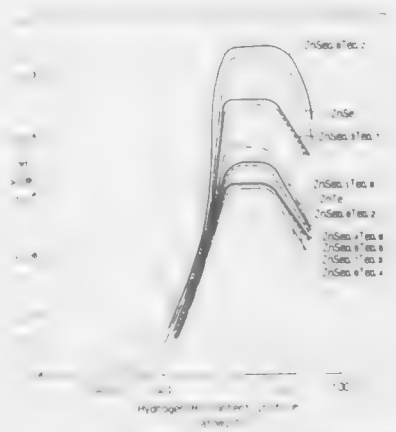
a polysilicon gate electrode atop said insulation layer means and operable to invert said annular channels.

5,008,726

PIN JUNCTION PHOTOVOLTAIC ELEMENT WITH P OR N-TYPE SEMICONDUCTOR LAYER COMPRISING NON-SINGLE CRYSTAL MATERIAL CONTAINING ZN, SE, TE, H IN AMOUNT OF 1 TO 4 ATOMIC % AND A DOPAND AND I-TYPE SEMICONDUCTOR LAYER COMPRISING NON-SINGLE CRYSTAL SI(H,F) MATERIAL

Katsumi Nakagawa, Nagahama; Shunichi Ishihara, Hikone; Masahiro Kanai, Tokyo; Tsutomu Murakami, Nagahama; Kozo Arao, Hikone; Yasushi Fujioka, and Akira Sakai, both of Nagahama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1988, Ser. No. 273,070
Claims priority, application Japan, Nov. 20, 1987, 62-291684
Int. Cl.[5] H01L 27/14, 31/00, 29/18, 29/161
U.S. Cl. 357—30 8 Claims



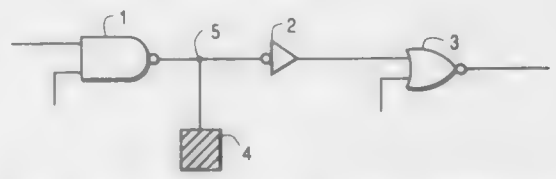
1. An improved pin junction photovoltaic element which comprises a p-type semiconductor layer, an i-type semiconductor layer and an n-type semiconductor layer being stacked, characterized in that at least one of said p-type semiconductor layer and said n-type semiconductor layer comprises a p-type or n-type film comprised of zinc atoms, selenium atoms, tellurium atoms and hydrogen atoms; the quantitative ratio of said selenium atoms to said tellurium atoms is in the range of from 1:9 to 3:7 in terms of atomic ratio in said film: the amount of said hydrogen atoms in said film is in the range of from 1 to 4 atomic %; said film contains crystal grain domains in a proportion of 65 to 85 vol % per unit volume: and said film contains a dopant of p-type or n-type; and said i-type semiconductor layer comprises a non-single crystal film containing silicon atoms and at least one kind of hydrogen atoms and fluorine atoms.

5,008,727

STANDARD CELL HAVING TEST PAD FOR PROBING AND SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE CONTAINING THE STANDARD CELLS

Joji Katsura, Nishinomiya; Yoshiyuki Takagi, Osaka, and Shigeru Watari, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 23, 1989, Ser. No. 299,686
Claims priority, application Japan, Jan. 22, 1988, 63-12924; May 16, 1988, 63-118522; Jun. 21, 1988, 63-153234; Oct. 14, 1988, 63-260045
Int. Cl.[5] H01L 27/02
U.S. Cl. 357—40 7 Claims



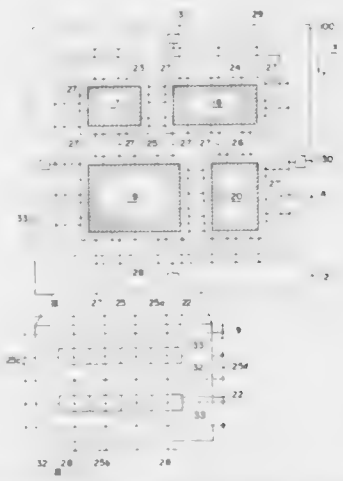
1. In a standard cell comprising a plurality of different types of standard cells, a circuit cell containing at least one test pad for probing comprising one of said plurality of standard cells.

5,008,728

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING AN IMPROVED ARRANGEMENT OF POWER SOURCE LINES

Takeshi Yamamura, Zama; Seiji Endo, Kawasaki; Kazuyuki Kawauchi, Yokohama, and Hiroki Korenaga, Ichikawa, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 14, 1989, Ser. No. 409,553
Claims priority, application Japan, Sep. 19, 1988, 63-234161
Int. Cl.[5] H01L 27/10
U.S. Cl. 357—45 19 Claims



1. A semiconductor integrated circuit device comprising:

a plurality of functional blocks each executing respective logic operations and arranged in an internal area on a semiconductor chip;

a first power source line arranged so as to surround said

internal area and said plurality of functional blocks, said first power source line being a closed-loop line;

second power source lines provided for each functional block of said plurality of functional blocks so as to surround each functional block on said chip, each of said second power source lines being a closed-loop line; and

third power source lines mutually connecting said second power source lines of said functional blocks and connecting said second power source lines and said first power source line, said third power source lines connecting said second power source lines with other second power source lines and said second power source lines with said first power source line at a plurality of portions on said first and second power source lines.

5,008,729

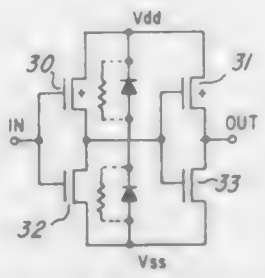
LASER PROGRAMMING OF SEMICONDUCTOR DEVICES USING DIODE MAKE-LINK STRUCTURE

Kendall S. Wills, and Paul A. Rodriguez, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 237,260, Aug. 26, 1988, abandoned, which is a division of Ser. No. 621,837, Jun. 18, 1984, abandoned. This application Sep. 28, 1989, Ser. No. 415,445

Int. Cl.[5] H01L *27/02*

U.S. Cl. 357—51 18 Claims



1. An integrated circuit with laser programmable links in a semiconductor body comprising:

(a) a first PN junction formed in a region of said body having a first conductivity type with a programming area within the PN junction for receiving a laser beam, said first PN junction being separate and distinct from other electrical components and normally presenting a high resistance to current flow in a certain direction;

(b) a second PN junction formed in a region of said body having a second conductivity type with a programming area within the PN junction for receiving a laser beam, said second PN junction being separate and distinct from other electrical components and normally presenting a high resistance to current flow in a particular direction;

(c) a circuit including said first and second PN junctions and having an input and an output, said output clamped at a first level if said first PN junction is make-link programmed to form a low resistance to current flow in said certain direction, and said output clamped at a second level if said second PN junction is make-link programmed to form a low resistance to current flow in said particular direction.

5,008,730

CONTACT STUD STRUCTURE FOR SEMICONDUCTOR DEVICES

Hung-Chang W. Huang, San Jose, Calif., and Paul A. Totta, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 252,836, Oct. 3, 1988, abandoned. This application Dec. 18, 1989, Ser. No. 455,790

Int. Cl.[5] H01L *23/48, 29/46, 29/64, 29/34*

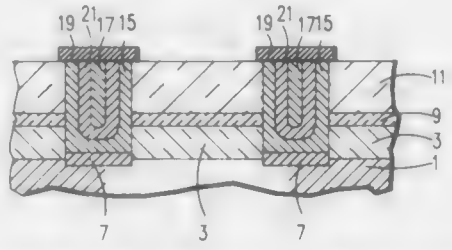
U.S. Cl. 357—68 20 Claims

1. A contact stud structure for the connection of semiconductor device components formed in a substrate to the wiring for interconnecting said device components to other device components comprising:

(a) an insulator layer having an etch-stop layer deposited on said substrate, said insulator layer having at least one opening at the location of one of the semiconductor device components formed in said substrate,

(b) a first metal layer deposited in said opening of said insulator layer and lining said opening in said insulator layer,

(c) a second metal layer deposited conformably onto said first metal layer, and



(d) a third metal layer deposited onto said second metal layer, said second and third metal layers being selected from the group of refractory metals with said third metal layer filling said opening in said insulator layer wherein said second and third metal layers are different from each other, and wherein said first metal layer makes a direct physical contact with the wiring for interconnecting said device components.

5,008,731

INTEGRATED SEMICONDUCTOR CIRCUIT WITH DECOUPLED D.C. WIRING

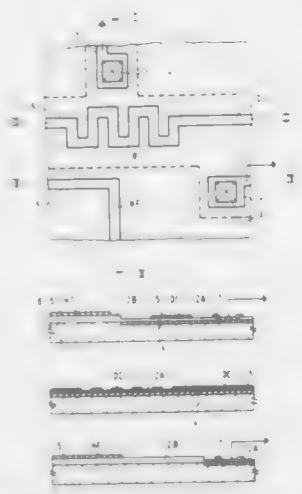
Robert E. J. Van De Grift; Martien Van Der Veen, and André J. Linssen, all of Eindhoven, Netherlands, assignors to U.S. Philip Corp., New York, N.Y.

Continuation of Ser. No. 235,250, Aug. 22, 1988, abandoned. This application Feb. 16, 1990, Ser. No. 483,290

Claims priority, application Netherlands, Aug. 26, 1987, 8701997

Int. Cl.[5] H01L *29/44*

U.S. Cl. 357—71 7 Claims



1. A monolithic integrated semiconductor circuit comprising a semiconductor body, a semiconductor region adjoining a surface of said semiconductor body and covered with an electrically insulating layer, the semiconductor region including a plurality of semiconductor circuit elements interconnected by conductor tracks disposed on the insulating layer and comprising the wiring of the circuit, said wiring including means for

carrying only D.C. information and comprising at least one first conductor track, and said wiring including means for carrying A.C. information and comprising at least one second conductor track, said insulating layer having a first layer portion under only said second conductor track and a second, substantially thinner adjacent layer portion under only said first conductor track and located alongside said first layer portion, said first and second conductor tracks being substantially on different levels, and a connection conductor connected to a part of the semiconductor surface, said second layer portion being located on said part of the semiconductor surface which is connected to said connection conductor.

5,008,732

THIN FILM TWO TERMINAL ELEMENT

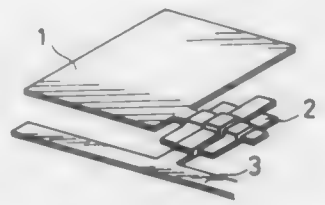
Hitoshi Kondō, Machida; Eiichi Ohta, and Yuji Kimura, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 28, 1989, Ser. No. 442,731

Claims priority, application Japan, Dec. 9, 1988, 63-311391

Int. Cl.[5] H01L *23/48, 23/54*

U.S. Cl. 357—71 4 Claims



1. A thin film two terminal element, comprising:

an insulating substrate;

a transparent electrode disposed on the insulating substrate;

a lower metallic electrode disposed on the insulating substrate so as to partially overlap the transparent electrode and formed by a metal having a standard electrode potential in an aqueous solution equal to or higher than that of the transparent electrode;

an insulating film disposed on the lower metallic electrode and formed by a hard carbon film including at least one of amorphous and microcrystal properties with carbon and hydrogen atoms as a main structure forming element; and

an upper metallic electrode disposed on the insulating film and formed by a metal having a standard free energy in the production of an oxide at a room temperature equal to or greater than that in the production of H_2O or CO_2.

5,008,733

SEMICONDUCTOR DEVICE

Katsutoshi Mine; Yoshitsugu Morita, and Satoshi Miyamae, all of Ichihara, Japan, assignors to Toray Silicone Company, Limited, Tokyo, Japan

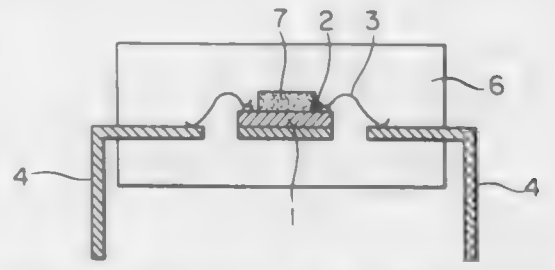
Continuation of Ser. No. 629,823, filed as PCT JP83/00405 on Oct. 11, 1983. This application Feb. 26, 1988, Ser. No. 161,164 Feb. 26, 1988, Ser. No. 161,164

Claims priority, application Japan, Oct. 11, 1982, 57-196928

Int. Cl.[5] H01L *23/28, 23/30*

U.S. Cl. 357—72 15 Claims

1. A process for forming a semiconductor device having a protective coating which comprises applying a heat-bondable, previously cured silicone to at least a major portion of the



surface of the semiconductor device and heat-bonding the silicone to said surface.

5,008,734

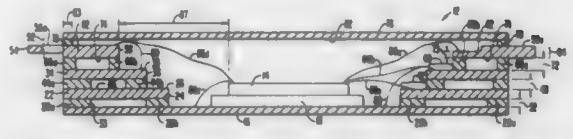
STADIUM-STEPPED PACKAGE FOR AN INTEGRATED CIRCUIT WITH AIR DIELECTRIC

Vivek B. Dutta, Cupertino; Jeffrey C. Demmin, Mt. View; Mark L. DiOrio, and Jon T. Ewanich, both of Cupertino, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 20, 1989, Ser. No. 454,802

Int. Cl.[5] H01L *23/12, 23/48*

U.S. Cl. 357—74 16 Claims



1. A package for an integrated circuit component, the component having a plurality of contact pads on its surface, the package comprising:

means for supporting said integrated circuit component;

a first layer, connected to said means for supporting, having at least a first electrically conductive portion;

a second layer with at least a first edge, said second layer having at least a first area which overlies and is spaced from said first layer, said second layer having at least a second electrically conductive portion;

means for providing electrical connection between at least one of said contact pads and at least one of said first electrically conductive portion and said second electrically conductive portion; and

at least a first dielectric material positioned between said first area and said at least part of said first layer, wherein said first dielectric material is a gaseous material.

5,008,735

PACKAGED DIODE FOR HIGH TEMPERATURE OPERATION

John A. Edmond, Apex; Douglas G. Waltz, Durham, both of N.C.; Muni M. Mitchell, Huntington, N.Y.; Mohammad Sedigh, New York, and Roman Hamerski, Smithtown, both of N.Y., assignors to General Instrument Corporation, N.Y. and Cree Research, Inc., N.C.

Filed Dec. 7, 1989, Ser. No. 447,213

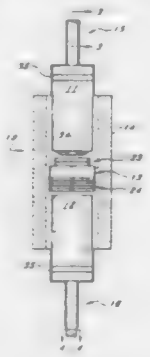
Int. Cl.[5] H01L *23/02*

U.S. Cl. 357—74 29 Claims

1. A packaged diode suitable for operation at temperatures about 200° C. and during temperature excursions between −65° C. and at least 350° C., the packaged diode comprising:

a diode formed of silicon carbide and having respective p and n portions with a p-n junction therebetween, and that is stable and that will exhibit satisfactory diode character-

istics at temperatures greater than 200° C. and over temperature excursions between −65° C. and 350° C.;
ohmic contacts to opposite sides of said junction diode for making electrical contact to the respective p and n portions of said junction diode, and formed of materials that can physically withstand temperature excursions between −65° C. and 350° C. while maintaining physical and electrical contact with said diode and while avoiding unfavorable physical, chemical and metallurgical reactions with adjacent materials at such temperatures and during such temperature excursions;
an electrode adjacent each of said ohmic contacts and in electrical contact therewith and formed of an electrically conductive material that has a coefficient of thermal expansion similar to the coefficient of thermal expansion of silicon carbide for providing structural support to said junction diode and electrical contact with said junction diode;
a lead to each of said electrodes and in contact therewith opposite each said electrode's contact with said diode,



each said lead being formed of an electrically conductive material and joined to said electrode by a brazing alloy that comprises an alloy of gold and nickel in which the amount of gold present by weight is greater than the amount of nickel present by weight by an amount sufficient for said alloy to remain malleable and maintain an integral joint between said electrodes and said leads when said electrodes and said leads have thermal coefficients of linear expansion that differ substantially from one another when said electrodes and leads are subjected to repeated thermal excursions between temperatures of about −65° C. to 350° C. or greater; and
a glass package surrounding said diode and at least portions of said electrodes for maintaining said electrodes in physical and electrical contact with said ohmic contacts, said package being formed of a glass that has a coefficient of expansion similar enough to the coefficient of expansion of said electrode material for the resulting packaged diode to remain integral when subjected to repeated thermal excursions between temperatures of about −65° C. to 350° C. or greater.

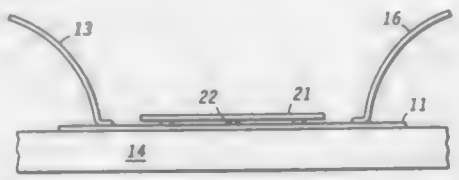
5,008,736

THERMAL PROTECTION METHOD FOR A POWER DEVICE

Robert B. Davies, and Robert B. Jarrett, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 20, 1989, Ser. No. 438,382
Int. Cl.[5] H01L *23/36*
U.S. Cl. 357—75 **11 Claims**

1. A thermally protected switch comprising:
a first chip having the switch formed thereon and having an electrode wherein the switch is on when a control signal is present on the electrode; and a second chip having control circuitry formed on a top side, the control circuitry further comprising a temperature sensitive portion, a means for shunting the control signal from the electrode when the temperature sensitive portion is a predetermined temperature, and a means for thermally coupling the first chip to the temperature sensitive portion of the control circuitry, wherein the means for thermally coupling is



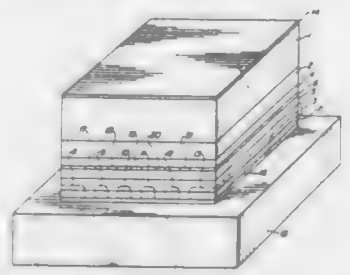
located over a primary heat generation point of the first chip and the second chip is mounted on the first chip so that active areas of the two chips face each other.

5,008,737

DIAMOND COMPOSITE HEAT SINK FOR USE WITH SEMICONDUCTOR DEVICES

Robert D. Burnham, Wheaton, and Ricardo S. Sussmann, Naperville, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Oct. 11, 1988, Ser. No. 255,259
Int. Cl.[5] H01L *23/36*
U.S. Cl. 357—81 **16 Claims**



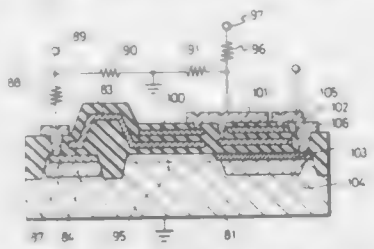
1. A structure comprising a semiconductor in thermal contact with a heat-conductive composite which is comprised of a metal matrix in which diamond particles have been thoroughly mixed and embedded wherein the proportions of said diamond particles and said metal are selected to form a composite having a coefficient of thermal expansion which is substantially the same as that of said semiconductor, and wherein said diamond particles have a largest dimension which is smaller than about 3 μm.

5,008,738

SEMICONDUCTOR VARIABLE CAPACITANCE ELEMENT

Yoshio Hattori, Tokyo, Japan, assignor to Seiko Instruments Inc., Japan

Filed Nov. 9, 1988, Ser. No. 269,435
Claims priority, application Japan, Nov. 11, 1987, 62-284862
Int. Cl.[5] H01L *29/78, 29/68, 29/92*
U.S. Cl. 357—23.6 **15 Claims**



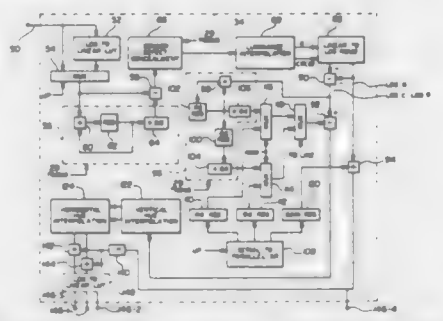
1. A semiconductor variable capacitance element electrically connectable to an external circuit, comprising:
a semiconductor substrate having a major surface and a capacitive region under the major surface of the semiconductor substrate;
an insulating film disposed on the major surface of the semiconductor substrate;
a floating electrode disposed on the insulating film and electrically insulated from the semiconductor substrate through the insulating film for storing electric charge to build up an electrical potential in the floating electrode according to the stored amount of electric charge to thereby determine the amount of capacitance of the capacitive region;
a charge control electrode formed in the semiconductor substrate for injecting electric charge into the floating electrode;
a first capacitance electrode electrically insulated from the semiconductor substrate through the insulating film and capacitively coupled to the floating electrode;
blocking means for blocking an application of a DC voltage from the external circuit between the first capacitance electrode and the capacitive region; and
bias means for applying a bias voltage between the capacitive region and the first capacitance electrode.

5,008,739

REAL-TIME DIGITAL PROCESSOR FOR PRODUCING FULL RESOLUTION COLOR SIGNALS FROM A MULTI-COLOR IMAGE SENSOR

Lionel J. D'Luna; Robert H. Hibbard, and Kenneth A. Parulski, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 13, 1989, Ser. No. 310,419
Int. Cl.[5] H04N *9/07, 9/04*
U.S. Cl. 358—21 R **9 Claims**



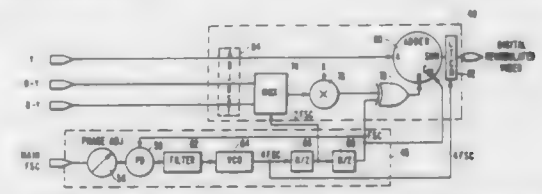
1. A digital circuit for generating a fully interpolated color signal from a single, multi-color image sensor having a two-dimensional pattern of photosites producing luminance and chrominance image signals corresponding to discrete, and respectively separate, pixel locations, said circuit comprising:
(a) a first digital processing section for operating upon signals that are linearly related to the sensor signal level; said first section including:
a black reference clamp for establishing a black reference value from the average black signal value of a predetermined number of pixels on the image sensor;
means for subtracting the black reference value from each image signal;
means for replacing image signals obtained from defective pixels with image signals from nearby pixels of the same color; and
means for interpolating additional luminance values for the pixel locations that produce chrominance signals, said interpolating means combining the signal values of nearby luminance pixels according to a predetermined algorithm, said interpolating means providing therefrom a fully interpolated stream of luminance signals and an uninterpolated stream of chrominance signals; and
(b) a second digital processing section for operating upon signals that are logarithmically related to the sensor signal level, said second section including:
means for generating logarithmic luminance and chrominance signals from the fully interpolated luminance image signals and from the uninterpolated chrominance image signals;
means for generating a log hue signal from the log chrominance and log luminance signals;
means operating upon the log hue signal for controlling white balance according to an offset value subtracted from the log hue signal;
means operating upon the log luminance image signal to modify signal gain according to a gain offset value input to the second processing section;
means for interpolating additional hue values for the pixel locations that produce luminance signals, said hue interpolating means combining the hue signal values of nearby chrominance pixel locations according to a predetermined algorithm; and
means for generating a fully interpolated color signal from said interpolated hue and luminance image signals.

5,008,740

APPARATUS AND METHOD FOR CREATING DIGITALLY REMODULATED VIDEO FROM DIGITLS COMPONENTS

Larry G. Phillips; Edwin R. Meyer, and David C. Greene, all of Knoxville, Tenn., assignors to North American Philips Corp., New York, N.Y.

Filed Apr. 14, 1989, Ser. No. 339,044
Int. Cl.[5] H04N *9/65*
U.S. Cl. 358—23 **18 Claims**



1. An encoder for remodulating digital video luminance (Y) and color difference components (R−Y, B−Y), comprising:
(a) converting means for converting said digital color difference components into two's complement format;
(b) means for conducting a digital quadrature modulation on said digital color difference to effectively provide quadrature modulated signals R−Y, B−Y, −(R−Y), and −(B−Y) in a desired repeating sequence;
(c) addition means for digitally adding said luminance signal to said digital quadrature modulated signals, the sum of said luminance and quadrature modulated color difference color difference signals providing a digital remodulated video signal suitable for conversion into an analog remodulated video signal; and
(d) said means for conducting a digital quadrature modulation comprising a first clock signal having high and low polarities, an exclusive OR gate means coupled to said two's complement format color difference components and to said first clock signal for passing said two's complement color difference component when said first clock signal is of low polarity, and for inverting the bits of said two's complement color difference component when said first color signal is of high polarity, and said means for conducting a digital quadrature modulation further comprising an adding means coupled to an output of said exclusive OR gate means and to said first clock signal for adding said first clock signal to the output of said exclusive OR gate means.

5,008,741

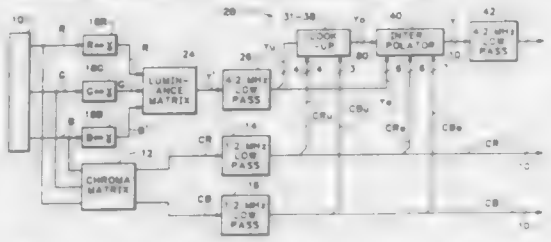
METHOD AND APPARATUS FOR PROCESSING COMPONENT SIGNALS TO PRESERVE HIGH FREQUENCY INTENSITY INFORMATION

David L. Knierim, Wilsonville, and Gary L. Brown, Lake Oswego, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 7, 1989, Ser. No. 334,829
Int. Cl.[5] H04N *9/64, 11/14*
U.S. Cl. 358—32 **26 Claims**

1. A method of processing a video signal in component form, comprising:

(a) generating two chroma component signals which have a selected bandwidth and are GAMMA corrected,
(b) generating a linear luminance component signal which has a greater bandwidth than the chroma component signals and is not GAMMA corrected, and



(c) GAMMA correcting the linear luminance component signal by combining the linear luminance component signal and the chroma component signals to provide a GAMMA-corrected luminance component signal having a greater bandwidth than the GAMMA-corrected chroma component signals.

5,008,742

DOT SIGNAL CONVERSION METHOD

Takao Shigaki, and Osamu Shimazaki, both of Kaisei, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 319,907, Mar. 6, 1989, abandoned, which is a continuation of Ser. No. 924,817, Oct. 30, 1986, abandoned. This application Nov. 9, 1989, Ser. No. 433,442
Claims priority, application Japan, Nov. 9, 1985, 60-251572
Int. Cl.[5] H04N 1/46
U.S. Cl. 358—79 5 Claims



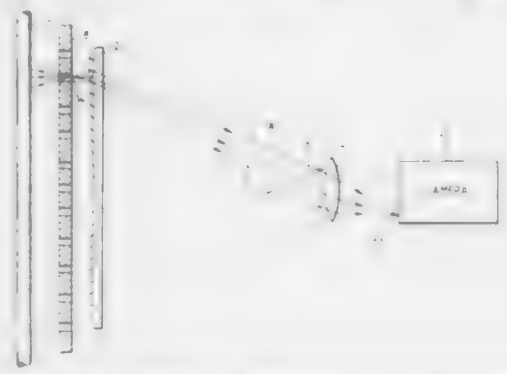
1. A dot signal conversion method comprising the steps of:
reading a color original for three color separation by an image input device to obtain density signals of respective colors;
converting the density signals of respective colors from the image input device into equivalent neutral density signals and then into dot signals, wherein said dot signals include dot percentages for color specimens, and wherein said neutral density signals are color-processed according to a predetermined formula and then converted to said dot signals by using dot signal generating tables, and
feeding the dot signals into an image output device, said image output device having been used to prepare Y, M, C, and black color specimens in accordance with input test dot signals, whereby said Y, M, and C color specimens generate gray when the input dot signals are input to said output device so as to make color separation films Y, M and C of which dot percentages are changed, and Y, M and C printing plates are made based upon said color separation films and printing is performed by overlapping said Y, M and C printing plates, wherein said dot signal generating tables are prepared for each color Y, M, C, and black from the relationship between the visual density and dot percentage of each Y, M, C and black color specimen prepared in accordance with the input test dot signals.

5,008,743

TELECENTRIC IMAGING SYSTEM OPTICAL INSPECTION MACHINE USING THE SAME AND METHOD FOR CORRECTING OPTICAL DISTORTION PRODUCED THEREBY

Yigal Katzir, Holon, and Joseph Kochba, Yavne, both of Israel, assignors to Orbot Systems Ltd., Yavne, Israel

Filed Mar. 17, 1989, Ser. No. 324,716
Claims priority, application Israel, Mar. 24, 1988, 85862
Int. Cl.[5] H04N 7/18
U.S. Cl. 358—101 10 Claims



4. An optical inspection machine of the line-scanning type employing a telecentric imaging system, comprising a column capable of translatory movement, an object stage capable of translatory movement in a direction substantially perpendicular to the translatory movement of said column, a transparent window on said object stage, means to mount said object on said window an extended source of light behind said window, a line-scanning camera mounted on the head of said column, an objective lens adapted to image said object on the sensor plane of said camera, a field lens, optically coaxial with said objective lens and located in proximity to said object to be imaged and an aperture stop for said field lens, wherein said field lens is a Fresnel lens, said aperture stop is located at the back focal point of said Fresnel lens and is constituted by the entrance pupil of said imaging objective, whereby the system objective/field lens is rendered telecentric.

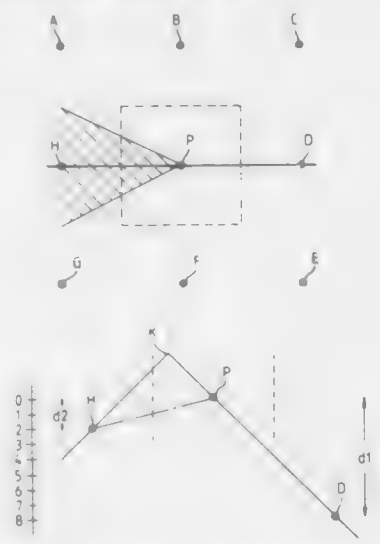
5,008,744

METHOD AND APPARATUS FOR PICTURE MOTION MEASUREMENT USING PICTURE CORRELATION AS A FUNCTION OF DISPLACEMENT

Gerard M. X. Fernando, Croydon, England, and Aldo Giardina, Geneva, Switzerland, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 2, 1989, Ser. No. 388,421
Claims priority, application United Kingdom, Sep. 5, 1988, 8820837
Int. Cl.[5] H04N 7/12
U.S. Cl. 358—105 5 Claims

1. A method of picture motion measurement comprising correlating two pictures to determine correlation as a function of displacement thereby to determine one or more peak correlation values corresponding to respective motion vectors, said method being characterized by the steps of:-
(i) locating a sample point of maximum correlation value in said correlation function associated with a peak correlation value,
(ii) determining from the sample points immediately surrounding said point of maximum value a second sample point which is associated with the steepest gradient between said surrounding and said maximum value sample points,
(iii) determining the difference (d1) in magnitude between that of said maximum sample point and that of said second sample point, or other quantity proportional thereto,
(iv) determining the difference (d2) in magnitude between that of said maximum sample point and that of a third of said surrounding sample points which is colinear with said maximum and said second sample point but remote from



said second sample point or other quantity proportional thereto, and
(v) comparing the results produced by steps (iii) and (iv) to determine the location of said peak correlation value associated with said sample point of maximum correlation value to an accuracy better than the interval between adjacent sample points.

5,008,745

CLOCK SYNCHRONIZED DIGITAL TV MOTION DETECTOR

Jon S. Willoughby, Oxford, Pa., assignor to Burle Technologies, Inc., Wilmington, Del.

Filed Dec. 21, 1989, Ser. No. 454,179
Int. Cl.[5] H04N 7/18
U.S. Cl. 358—105 4 Claims
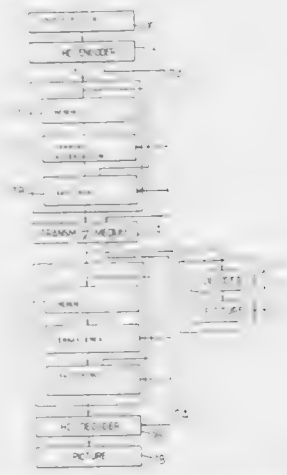


1. In a TV motion detector circuit of the type which includes an edge detector circuit receiving and processing a TV video signal, with an edge detector circuit output connected to and feeding an output signal to a digital edge memory which stores the edge detector circuit output signal for a selected number of TV sweep cycles before producing an output signal representing the edge detector circuit output signal on digital edge memory output, with the digital edge memory connected to and driven by an address counter, and with the address counter connected to and driven by a clock signal source, the improvement comprising:
an EXCLUSIVE OR circuit with two inputs and an output, with a first input interconnected with the output of the edge detector circuit and the second input interconnected with the output of the digital edge memory;
a shift register with a signal input, a clock input, and at least two outputs, the clock input interconnected with the clock signal source, and the signal input interconnected with the output of the EXCLUSIVE OR circuit; and
a multiple input circuit which produces an alarm output signal when all its inputs have the same input signal, with each of its inputs interconnected with an output of the shift register.

5,008,746

HIGH DEFINITION TELEVISION SIGNAL PROCESSING INCLUDING SUBSAMPLING AND MOTION COMPENSATION

Philippe Bernard, and Marie-Jean Colaitis, both of Cesson Sevigne Cedex, France, assignors to Centre National d'Etudes des Telecommunications, Paris, France

Filed Jun. 16, 1989, Ser. No. 366,884
Claims priority, application France, Jun. 16, 1988, 88 08096
Int. Cl.[5] A04N 7/12
U.S. Cl. 358—133 9 Claims



1. A method of broadcasting high definition television programs over a channel having a narrow bandwidth, comprising:
subjecting a signal resulting from analysis of a source picture to spatio-temporal subsampling and to non-linear movement compensation filtering, and transmitting the points representing a same picture frame as signals over at least two successive transmission fields (t1, t2); and transmitting, along with said signals, assistance data (DA) defining a field of motion vectors,
further comprising, for improving a compatible picture displayed by a receiver devoid of means for the assistance data, subjecting each of the transmission fields other than the first transmission field (t1) corresponding to a same analyzed source frame to a predetermined time attenuation in the direction of motion of picture areas having a high time activity so as to give rise to a modified transmission field (t'2), the degree of said attenuation being selected responsive to the respective motion vector and leading to assigning, to each point of said areas, a position intermediate between its position in the analyzed source frame and its position anticipated in the direction of motion.

5,008,747

SIGNAL CODING

Michael D. Carr, and Anthony R. Leaning, both of Ipswich, England, assignors to British Telecommunications public limited company, United Kingdom

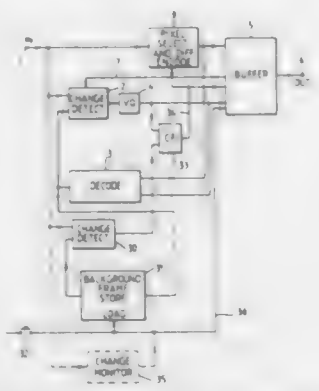
PCT No. PCT/GB88/00871, § 371 Date Jun. 2, 1989, § 102(e) Date Jun. 2, 1989, PCT Pub. No. WO89/04101, PCT Pub. Date May 5, 1989

PCT Filed Oct. 17, 1988, Ser. No. 364,442

Claims priority, application United Kingdom, Oct. 19, 1987, 8724789

Int. Cl.[5] H04N *7/13*

U.S. Cl. 358—136 **10 Claims**



1. A method of coding an image comprising, for each of a plurality of blocks of an image:

(i) comparing picture elements of the block with those of the corresponding block of a previously coded image to produce a matrix of values each indicating whether the corresponding element is, in accordance with a predetermined criterion, deemed to have changed between the two images;

(ii) matching the matrix to one of a predetermined set of such matrices each of which identifies a region of the block as being deemed to have changed, and generating a codeword identifying that one matrix of the set;

(iii) comparing picture elements of the block with those of the corresponding block of a reference image composed of blocks from at least one earlier frame to determine whether the block is, in accordance with a predetermined criterion, deemed to have changed between the two images;

(iv) coding for output those elements within the identified region, unless all the elements within the region are identified by comparison step (iii) as being unchanged relative to the reference image, whereupon a codeword indicating this is generated.

5,008,748

SIGNAL CODING

Michael D. Carr; Maurice G. Perini; John O'Donnell; Anthony B. Leaning, and Anthony R. Leaning, all of Ipswich, England, assignors to British Telecommunications public limited company, United Kingdom

PCT No. PCT/GB88/00709, § 371 Date Jun. 2, 1989, § 102(e) Date Jun. 2, 1989, PCT Pub. No. WO89/02206, PCT Pub. Date Mar. 9, 1989

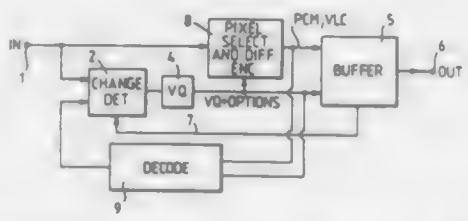
PCT Filed Aug. 26, 1988, Ser. No. 364,441

Claims priority, application United Kingdom, Aug. 28, 1987, 8720390; Oct. 19, 1987, 8724790

Int. Cl.[5] H04N *7/13*

U.S. Cl. 358—136 **12 Claims**

1. A method of coding an image comprising, for the image area or for each of a plurality of individual areas thereof, selecting that one of a plurality of possible sequences of the picture elements within the area which has the highest correlation between successive elements in the sequence, and supplying representations of those elements to an output; wherein some of the representations are the differences between values



of the relevant element and a prediction based on the value of at least the immediately preceding element in the selected sequence.

5,008,749

METHOD AND APPARATUS FOR GENERATING AN AUXILIARY TIMING SIGNAL IN THE HORIZONTAL BLANKING INTERVAL OF A VIDEO SIGNAL

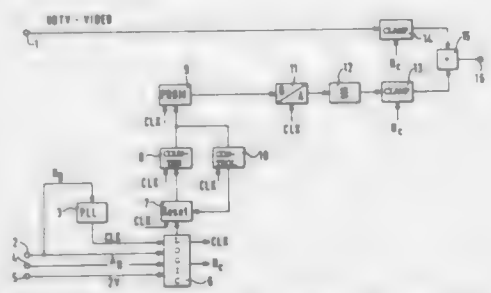
Holger Ruckert, Reinheim, Fed. Rep. of Germany, assignor to BTS Broadcast Television Systems GmbH, Darmstadt, Fed. Rep. of Germany

Filed Mar. 2, 1990, Ser. No. 487,533

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1989, 3909845; Mar. 25, 1989, 3909847

Int. Cl.[5] H04N *7/04, 5/06*

U.S. Cl. 358—147 **13 Claims**



10. Apparatus for inserting an auxiliary signal into the horizontal blanking intervals of an analog video signal, said auxiliary signal including reference oscillations at a frequency locked to a clock frequency itself locked to the horizontal scan frequency, comprising:

means (3) for deriving a signal (CLK) of said clock frequency from said horizontal scan frequency of said video signal;

means (6, 7, 8, 10) activated by said clock frequency signal (CLK) only during said blanking intervals, responsive to said clock frequency signal (CLK), a horizontal blanking interval signal (A_H) and a vertical synchronizing signal (2V) both derived from said video signal, for producing a sequence of address signals in each of said horizontal blanking intervals;

read only memory means (9) responsive to said address signals for generating a digital signal representative of said auxiliary signal;

means (11) for converting said digital signal representative of said auxiliary signal into an analog signal;

means (12) for low-pass filtering said analog signal to produce said auxiliary signal, and

means (15) for inserting said auxiliary signal into the horizontal blanking intervals of said analog video signal.

5,008,750

TELEVISION RECEIVER WITH TELETEXT RECEIVING FUNCTION AND METHOD OF SUPERIMPOSING TELETEXT PICTURE ON TELEVISION PICTURE

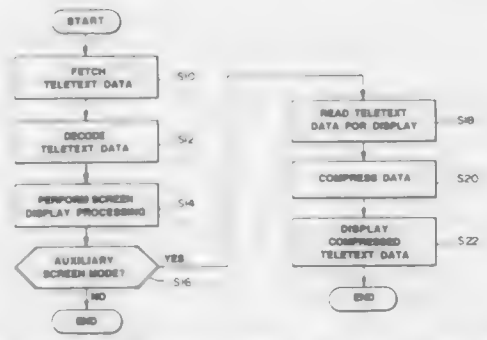
Takao Gomikawa, Saitama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 28, 1990, Ser. No. 486,232

Claims priority, application Japan, Feb. 28, 1989, 1-49037

Int. Cl.[5] H04N *7/087*

U.S. Cl. 358—147 **10 Claims**



10. A method for superimposing a teletext picture on a television picture, comprising the steps of:

receiving television broadcast signals including teletext data

detecting video signals from said received signals;

displaying the video signals detected by said detecting step;

extracting said teletext data from said

detected video signals;

temporarily storing said extracted teletext data;

dividing the stored teletext data for one picture into block data corresponding to picture blocks of a predetermined size and judging the densities of the respective blocks with the two blocks adjacent in the horizontal direction of each of said respective block as a unit;

selecting any one of a plurality of compressing means for compressing said block data by different rules; and

displaying as an auxiliary picture the teletext data compressed by the selected compressing means.

5,008,751

APPARATUS SYSTEM FOR DERIVING SYNCHRONIZING INFORMATION FROM A DIGITAL VIDEO SIGNAL

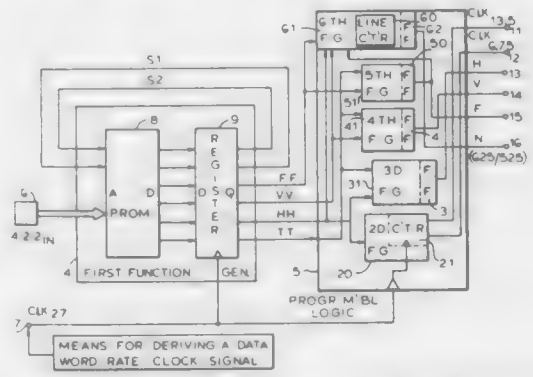
Gerhard Wischermann, Weiterstadt, Fed. Rep. of Germany, assignor to BTS Broadcast Television Systems GmbH, Darmstadt, Fed. Rep. of Germany

Filed Feb. 8, 1990, Ser. No. 477,293

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1989, 3905669

Int. Cl.[5] H04N *5/04*

U.S. Cl. 358—148 **18 Claims**



1. Apparatus system for deriving synchronizing information from a digital video signal containing said synchronizing information in sync words, the arrival of each of which is announced by a preceding data word preamble of predetermined content, said system comprising:

means for deriving a data word rate clock signal (CLK_{27}) from said video signal;

a clocked first function generator (4), having a clock input connected to said means for deriving said clock signal, for clocking of said function generator thereby, and having a video signal input and a multi-bit output;

means for supplying said video signal ($4{:}2{:}2_{IN}$) to said video signal input of said function generator,

said function generator having an internally stored program for producing at respective bit outputs of said multi-bit output, in response to said video signal, the contents of the bit places of said sync words of said video signal containing synchronizing information (FF, VV, HH) and an additional one-bit signal (TT) which designates when a sync word is present.

5,008,752

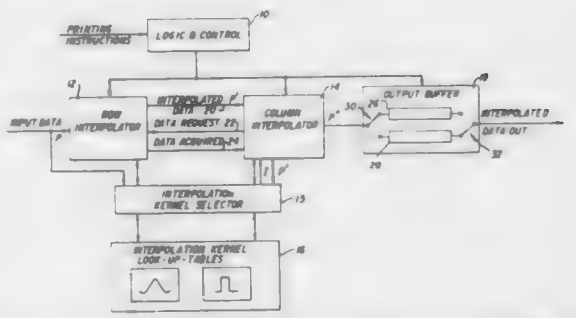
DIGITAL IMAGE INTERPOLATOR WITH MULTIPLE INTERPOLATION ALGORITHMS

Lance Van Nostrand, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 16, 1989, Ser. No. 368,458

Int. Cl.[5] H04N *5/14*

U.S. Cl. 358—160 **4 Claims**



1. Apparatus for performing interpolation on an input digital image signal having pixel values representing rows and columns of pixels, to produce an interpolated digital image that has more (magnified) or fewer (reduced) pixels, comprising:

a. an interpolation kernel lookup table containing first and second interpolation kernel coefficients;

b. row interpolator means for receiving the input digital image signal, and interpolating in row direction, by retrieving interpolation coefficient values from the interpolation kernel lookup table, and applying the coefficient values to a subset of pixel values in a row to produce interpolated pixel values;

c. column interpolator means for receiving rows of interpolated pixel values from the row interpolator means and preforming interpolation in a column direction by retrieving interpolation coefficient values from the interpolation lookup table, and applying the coefficient values to subsets of pixel values in a column; and

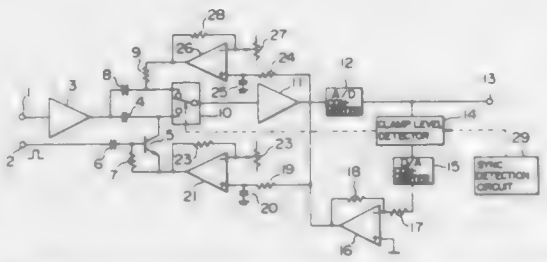
d. interpolation selection means for receiving the input digital image signal input to the row interpolator means, and in response thereto, for selecting said first or second interpolation kernel for row interpolation, and for receiving the interpolated signal values from the row interpolation means, and in response thereto, for selecting said first or second interpolation kernel for column interpolation.

5,008,753

CLAMP SYSTEM USED FOR TELEVISION SIGNAL

Hiromu Kitaura, Osakasayama; Mitsuo Isobe, Osaka; Isao Kawahara, Hirakata; Yoshio Hiraiwchi, Osaka; Yuichi Ninomiya; Yoshimichi Ohtsuka, both of Kawasaki, and Yoshinori Izumi, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Osaka and Nippon Hoso Kyokai, Tokyo, both of, Japan

Filed Feb. 23, 1989, Ser. No. 314,090
Int. Cl.[5] H04N *5/18*
U.S. Cl. 358—171 7 Claims



1. A television signal clamp system comprising: a first clamp means for clamping an input television signal once every N horizontal blanking periods by a clamp pulse to a an externally supplied clamp control voltage to provide a first clamped television signal output, N being a positive integer of one or more, a second clamp means for controlling a DC potential of said input television signal by adding an externally applied clamp control voltage to the input television signal to provide a second clamped television signal output, a switch means for selecting one of said first clamp means and said second clamp means, a clamp level detection means for detecting a DC potential of a reference potential signal period existing in one of said first clamped television signal output and said second clamped television signal output of said first clamp means and said second clamp means selected by said switch means and a control voltage production means, cooperating with said clamp level detection means, for producing said clamp control voltages for the first clamp means and said second clamp means, wherein said switch means selects the first clamp means at a time of throwing in power and switching channels when prompt clamp start is required, and said switch means selects the second clamp means under normal conditions.

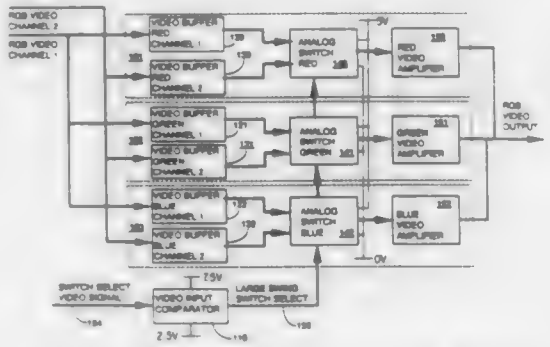
5,008,754

ANALOG CONTROLLED MIXER

Neil F. Trevett, Kingston upon Thames, and Malcolm E. Wilson, Bridport, both of England, assignors to Du Pont Pixel Systems, Limited, United Kingdom

Filed Mar. 22, 1989, Ser. No. 327,242
Claims priority, application United Kingdom, Mar. 23, 1988, 8806881
Int. Cl.[5] H04N *5/265, 5/272*
U.S. Cl. 358—183 20 Claims

1. A video signal mixer, comprising:
(a) first and second generator means for providing first and second analog video signals containing first and second video data, respectively;
(b) third generator means for providing a third analog video signal containing third video data which can vary, at video data rate, independently of said first and second video data; and
(c) analog switch means having:
(i) first and second inputs for receiving said first and second analog video signals, respectively;
(ii) a third switch select input for receiving said third analog video signal; and
(iii) an output providing an output signal, said output signal being selected from said first and second analog



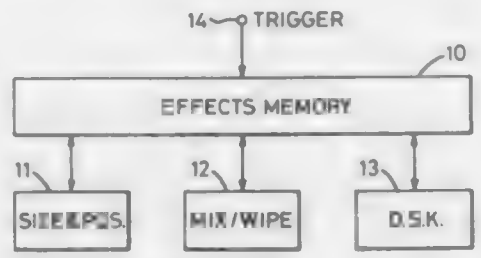
video signals in dependence upon said third analog video signal.

5,008,755

DIGITAL VIDEO SPECIAL EFFECT SYSTEM

Adrian R. Brain, Reading, England, assignor to Abekas Video Systems Ltd., United Kingdom

Filed Apr. 12, 1990, Ser. No. 508,263
Claims priority, application United Kingdom, Apr. 21, 1989, 8909079
Int. Cl.[5] H04N *5/262*
U.S. Cl. 358—183 2 Claims



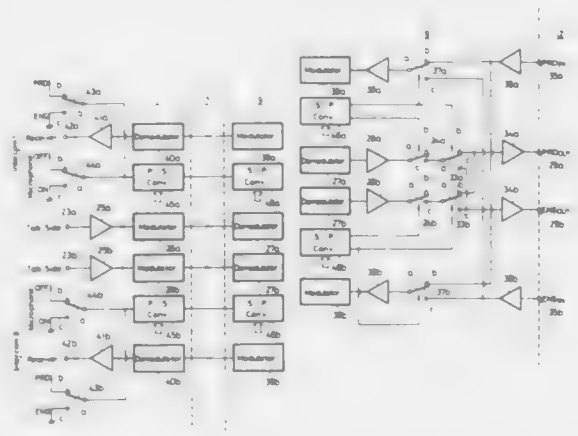
1. A digital special effect system, including:
(a) a first special effect means for receiving digital video information relating to a first picture sequence and for implementing transitions so as to provide video information representing a transitioned first picture sequence;
(b) a second special effedt means for receiving digital video information relating to a second picture sequence, for receiving the video information representing the transitioned first picture sequence, and for implementing transitions for merging or replacing the transitioned first picture sequence with a transitioned second picture sequence; and
(c) a common memory means for storing data relating to the video information representing the transitioned first picture sequence, data relating to the video information representing the transitioned second picture sequence, and commands for causing the first special effect means and the second special effect means to cooperate on a common time-line, wherein the system automatically adjusts durations of said picture sequences, in accordance with input data relating to said merging or replacing, to produce a required total effect.

5,008,756

VIDEO CAMERA SYSTEM WITH AUDIO SWITCHING CIRCUIT

Takashi Nakamura; Yoshimi Yasukochi; Tamotsu Munakata, and Masaharu Nakashima, all of c/o Sony Corporation, 7±, Kitashinagawa 6-chome, Shinagawa-Ku, Tokyo, Japan

Filed Apr. 17, 1990, Ser. No. 509,761
Claims priority, application Japan, Apr. 21, 1989, 1-P102091; Apr. 25, 1989, 1-P105076
Int. Cl.[5] H04N *5/30*
U.S. Cl. 358—210 5 Claims



1. A video camera system comprising:
a camera head unit having imager means for generating a video signal and a microphone for generating an audio signal;
a camera control unit for controlling said camera head unit;
connecting means for connecting said camera head unit and said camera control unit and for transmitting said video signal of said imager means and said audio signal of said microphone in said camera head unit to said camera control unit;
output means for outputting said audio signal from said camera control unit;
switching means provided within said camera control unit for selectively permitting said output means to output said audio signal transmitted from said microphone; and
control means provided within said camera head unit for controlling said switching means.

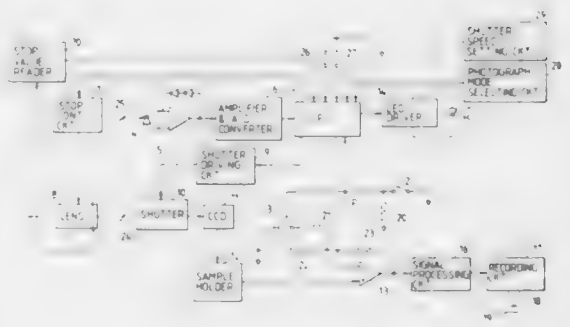
5,008,757

ELECTRONIC STILL CAMERA

Keita Kimura, Kawasaki, and Tetsuya Yamamoto, Hasuda, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Aug. 14, 1989, Ser. No. 393,131
Claims priority, application Japan, Aug. 24, 1988, 63-210072
Int. Cl.[5] H04N *3/14, 5/335, 5/238, 5/225*
U.S. Cl. 358—213.13 6 Claims

1. An electronic still camera, comprising:
photoelectric converter means for converting light from an object into an electrical signal;
amplifying-recording means for amplifying said electrical signal and for recording the amplified signal on a recording medium;
selecting means for selecting one of plural amplification gains so that said amplifying-recording means amplifies said electrical signal on the basis on the selected amplification gain;
calculating means for calculating an exposure time for said photoelectric converter means in accordance with the



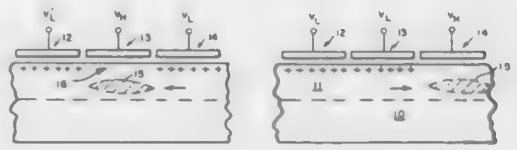
selected amplification gain and the luminance of an object to be photographed;
determining means for determining a longest permissible exposure time, irrespective of the luminance of an object to be photographed, in accordance with the selected amplification gain; and
alarm means for detecting that the calculated exposure time is longer than the longest permissible exposure time and generating an alarm signal.

5,008,758

SUPPRESSING DARK CURRENT IN CHARGE-COUPLED DEVICES

Barry E. Burke, Lexington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 24, 1989, Ser. No. 356,778
Int. Cl.[5] H04N *3/14*
U.S. Cl. 358—213.16 15 Claims



1. A method for suppressing dark current in a first region of an MIS device, said first region having a charge packet therein, further non-liberated charges of one polarity spontaneously arising in said first region, said method comprising the steps of
(1) transferring said charge packet from said first region to a second region of said device; and
(2) supplying charges of a polarity opposite to said one polarity to said first region, said opposite polarity charges combining with said further non-liberated charges to prevent the liberation thereof into said charge pocket so as

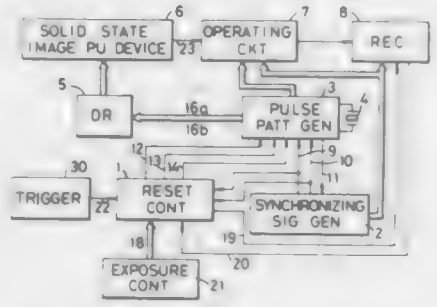
to prevent the generation of dark current in said first region.

5,008,759

STILL IMAGE RECORDING APPARATUS WITH SOLID STATE PICKUP DEVICE

Masahiro Juen, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jul. 18, 1988, Ser. No. 220,571
Claims priority, application Japan, Jul. 22, 1987, 62-182841
Int. Cl.[5] H04N *5/76*
U.S. Cl. 358—335 **3 Claims**



1. An apparatus having solid state image pickup means including a light-receiving unit for storing electric charges, gate means, and a transfer unit which is shielded from light, generating means for generating synchronizing signals periodically at a predetermined period, recording means for recording an output from said solid state image pickup means on a recording medium, and drive means for outputting first drive signals for causing said gate means to transfer stored electric charges from said light-receiving unit to said transfer unit and second drive signals for causing said transfer unit to output electric charges from said image pickup means to said recording means, and comprising:

start means for outputting a start signal to start a charge storage operation of said light-receiving unit of said image pickup means;

determining means for determining charge storage time of said light-receiving unit; and

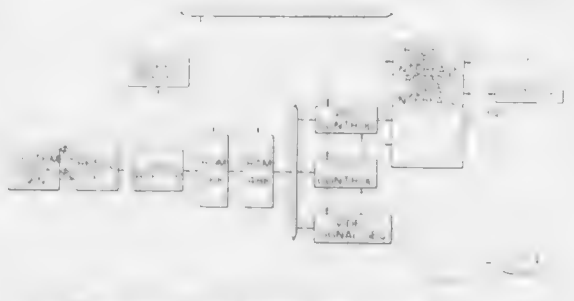
control means for causing said drive means to output a first drive signal independently of said synchronizing signals in response to said start signal, and for causing said drive means to output another first drive signal independently of said synchronizing signals in response to completion of the determined charge storage time, said control means inhibiting said drive means from outputting said second drive signals during an interval from completion of said determined charge storage time to a subsequent first generation of a synchronizing signal, and thereafter causing said drive means to output first and second drive signals in synchronism with said synchronizing signals.

5,008,760

IMAGE PROCESSING SYSTEM

Katsuichi Shimizu, Kunitachi; Takehiko Shibata, Kokubunji; Yoshikazu Yokomizo, Kawagoe; Akira Suzuki, Kawasaki; Koichi Murakami, Yokohama; Tadashi Yoshida, Tokyo; Masaharu Tsukada, Kawasaki; Nao Nagashima, and Ken Miyagi, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 884,677, Jul. 17, 1986, abandoned, which is a continuation of Ser. No. 647,414, Sep. 5, 1984, abandoned, which is a continuation of Ser. No. 311,864, Oct. 15, 1981, abandoned. This application Aug. 30, 1989, Ser. No. 401,482
Claims priority, application Japan, Oct. 17, 1980, 55-145293; Oct. 31, 1980, 55-154464; Dec. 16, 1980, 55-177677; Dec. 16, 1980, 55-177678; Dec. 16, 1980, 55-177679; Dec. 16, 1980, 55-177680; Dec. 16, 1980, 55-177681
Int. Cl.[5] H04N *1/00*
U.S. Cl. 358—451 **22 Claims**



1. An image processing system comprising:

means for reading an image of an original and generating an image signal representing the original image;

manual instruction means for providing an instruction necessary for execution of an image processing;

external operation means permitting manual entry of an image processing data set which defines a partial area of the original and an image processing for the partial area;

storage means adapted to store plural image processing data sets entered by said external operation means;

read out means operable to selectively read out from said storage means the image processing data set in accordance with the instruction from said instruction means; and

data processing means for processing an image signal corresponding to the partial area from among the image signals from said reading means, without necessity for operation of said external operation means, in accordance with the image processing data set read out from said storage means, and for outputting a processed image signal.

5,008,761

READOUT CIRCUIT IN MAGNETIC RECORDING DEVICE

Nobumasa Nishiyama, Hachioji; Makoto Saito, Tokyo; Yasuhide Ouchi, Koganei; Yasuhiro Katoh, Tokyo; Yoshihisa Kamo, Kokubunji; Makoto Koizumi, Hachioji; Hajime Aoi, Tachikawa; Naoki Sato, Hachioji, and Reijiro Tsuchiya, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 248,123, Sep. 23, 1988, Pat. No. 4,907,100. This application Mar. 5, 1990, Ser. No. 489,322
Claims priority, application Japan, Sep. 24, 1987, 62-237129; Dec. 21, 1987, 62-321210; Dec. 21, 1987, 62-321223
The portion of the term of this patent subsequent to Mar. 6, 2007, has been disclaimed.
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—45 **10 Claims**

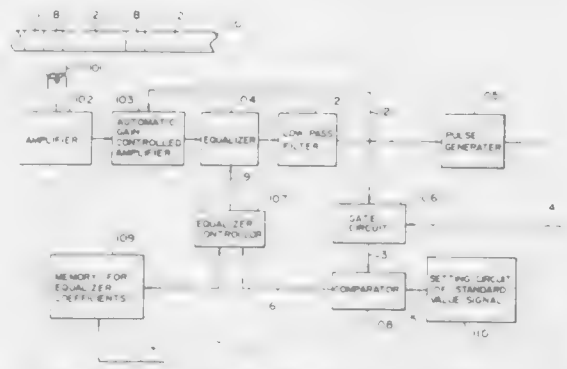
1. A readout circuit in a magnetic recording device comprising:

a magnetic head for reading a read out signal from a recording medium on which there are recorded test data, said test data having a read out signal which becomes an isolated waveform;

an equalizer for shaping said read out signal waveform;

detection means for detecting a distance between more than two level points in one waveform included in said read out signal waveform shaped by said equalizer;

a comparator means for comparing the distance between the level points in said waveform detected by said detection means with a reference value;



means for operating said detection means and said comparator means during at least a period when said magnetic head reads the test data;

an equalizer controller for controlling said equalizer so that the distance between the level points in the waveform detected by said detection means may be consistent with said reference value;

a pulse generator for forming a peak pulse from said read out signal shaped by said equalizer; and

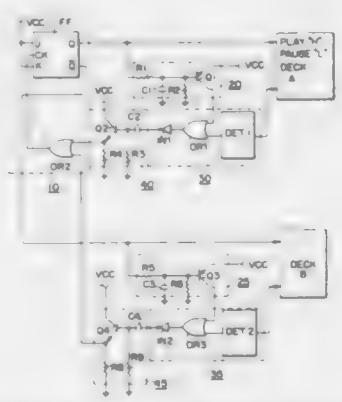
a data detection unit for forming a digital data signal from said peak formed by said pulse generator.

5,008,762

PARALLEL AND CONTINUOUS PLAYBACK CIRCUIT FOR AN AUDIO CASSETTE DECK OF THE DOUBLE-DECK TYPE

Song G. Sung, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyung Ki-Do, Rep. of Korea

Filed Jul. 10, 1989, Ser. No. 377,084
Int. Cl.[5] G11B *15/12, 15/18*
U.S. Cl. 360—61 **6 Claims**



1. A parallel and continuous playback circuit for an audio cassette deck of the double-deck type having a first and second deck with each deck having a playback head and a playback mode and a pause mode, comprising:

signal detection means for detecting the signal from the playback head of each of said first deck and said second deck and for detecting the playback of an unrecorded blank portion of a tape in the first deck and in the second deck;

pulse generator means operably connected with said signal detection means, for generating an arbitrary pulse signal in response to the detection by said signal detection means of the playback of an unrecorded blank portion of a tape in any one of the first deck and the second deck, said pulse signal identifying in which of said first and second decks said unrecorded blank tape portion is being played back; and

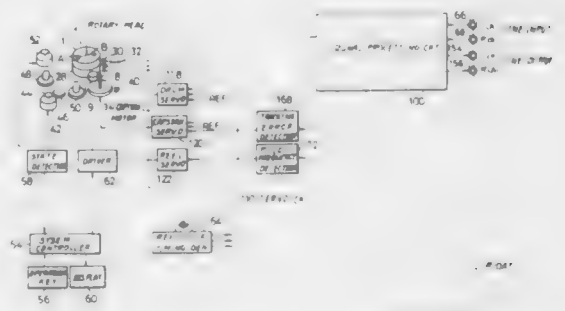
deck selector means operably connected with said pulse generator means and responsive to said pulse signal therefrom, for putting the one, of said first and second decks in which it is detected by said signal detection means that the unrecorded blank tape portion is being played back, into its said pause mode and for putting the other of said first and second decks into its said playback mode.

5,008,763

ROTATION CONTROL DEVICE FOR A ROTARY HEAD IN A MAGNETIC RECORDING AND REPRODUCING DEVICE

Mamoru Horino, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Jul. 14, 1988, Ser. No. 219,044
Claims priority, application Japan, Jul. 17, 1987, 62-178559
Int. Cl.[5] G11B *5/52*
U.S. Cl. 360—70 **5 Claims**



1. A rotation control device for a rotary head in a magnetic recording and reproducing device comprising:

a rotary head including frequency generating means for producing a frequency detection signal at a period determined by equally dividing one rotation of the drum and phase generating means for detecting a rotation reference position of the drum and providing a phase detection signal independent of the frequency detection signal;

means for generating a phase reference signal as a reference signal for the phase detection signal;

means for generating a frequency reference signal as a reference signal for the frequency detection signal; and

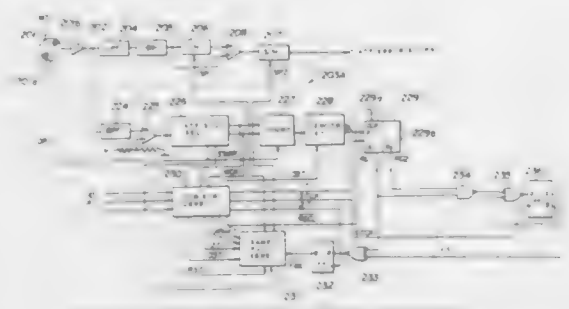
control means for controlling said rotary head by adjusting rotation phase of the drum to a predetermined state by the controlling rotation of the drum in accordance with a phase error between the phase detection signal and the phase reference signal and a phase error between the frequency detection signal and the frequency reference signal in such a manner that the phase detection signal is locked with the phase reference signal at a predetermined phase difference and the frequency detection signal is locked with the frequency reference signal at a predetermined phase difference.

5,008,764

ROTARY HEAD TYPE DIGITAL SIGNAL REPRODUCING APPARATUS WITH SLOW TAPE SPEED MODE AND IMPROVED TRACKING CONTROL

Shiro Yoshida, Machoshi; Yasuhiro Yamada, Yokosuka, and Shoji Ueno, Zama, all of Japan, assignors to Victor Company of Japan, Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 91,085, Aug. 31, 1987, Pat. No. 4,839,755. This application Mar. 16, 1988, Ser. No. 168,700
Claims priority, application Japan, Sep. 5, 1986, 61-209243; Oct. 2, 1986, 61-234961; Mar. 18, 1987, 62-63505
The portion of the term of this patent subsequent to Jun. 13, 2006, has been disclaimed.
Int. Cl.[5] G11B *5/584, 15/467*
U.S. Cl. 360—77.15 4 Claims



1. A rotary head type digital signal reproducing apparatus for playing a magnetic tape pre-recorded with a time division multiplexed signal in one of first and second modes, said time division multiplexed signal comprising pulse code modulated audio data which is obtained by subjecting an original audio signal to a pulse code modulation and a tracking reference signal, said tracking reference signal which amounts to a predetermined time period being time division multiplexed before and after said pulse code modulated audio data which amounts to a certain time period, said time division multiplexed signal being recorded on successive tracks formed obliquely to a longitudinal direction of the magnetic tape by two rotary magnetic heads, during the recording in said second mode, a data quantity per unit time, a frequency of said tracking reference signal, a rotational speed of the rotary magnetic heads and a tape transport speed of the magnetic tape being one-half those in said first mode, said rotary head type digital signal reproducing apparatus comprising:

reproducing means including two rotary magnetic heads for reproducing pre-recorded signals from the magnetic tape;

means for setting the tape transport speed to a speed identical to that in said second mode and for setting the rotational speed of the rotary magnetic heads to a speed identical to that in said first mode when playing the magnetic tape pre-recorded in said second mode; and

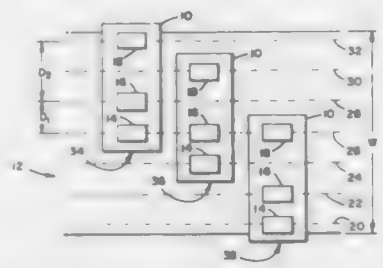
tracking control means for controlling tracking of the rotary magnetic heads based on reproduced tracking reference signals reproduced by said reproducing means, said reproduced tracking reference signals including out of reproduced signals obtained from said reproducing means during successive first through fourth scans made by the rotary magnetic heads with respect to two mutually adjacent tracks on the magnetic tape a reproduced tracking reference signal obtained in an end portion of said first scan and a reproduced tracking reference signal obtained in a beginning portion of said second scan immediately after said first scan, said first and second scans being successive scans in which a large reproduced output is obtainable by the rotary magnetic heads from said two mutually adjacent tracks compared to said third and fourth scans.

5,008,765

METHOD AND APPARATUS FOR READING OR WRITING ON TAPE USING A SERVO POSITIONED MULTIPLE CHANNEL HEAD

Robert J. Youngquist, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 17, 1989, Ser. No. 298,186
Int. Cl.[5] G11B *5/584, 5/29*
U.S. Cl. 360—77.12 21 Claims



1. A method of reading or writing data on tape, comprising:

providing a tape having a plurality of parallel, longitudinally extending sections along which tracks of data may be recorded and reproduced, and along one of which sections is located at least a first dedicated servo track containing prestored position information, all said sections being adjacent to each other and having the same predetermined width;

providing a multiple channel head having at least three channels, the center-to-center distance between at least two of the channels being equal to the center-to-center distance between adjacent sections, and the center-to-center distance between a third channel and the closest of the other channels being equal to twice the center-to-center distance between said adjacent sections, for accessing at each of a limited number of predetermined positions said dedicated servo track and at least one of said sections along which data may be recorded and reproduced each channel having at least one element for reading data from or writing data on the tape; and

using the position information on a dedicated servo track to controllably transversely position the head proximate to one of the predetermined positions, one of said channels thereby always being positioned to reproduce said prestored position information while the other channels access said additional sections along which data tracks may be located.

5,008,766

TAPE CASSETTE ATTACHMENT DEVICE WITH CLOSURE PLATE ACTUATED INSERTION SENSOR

Hiroyuki Chigasaki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 28, 1989, Ser. No. 372,451
Claims priority, application Japan, Jun. 28, 1988, 63-160286
Int. Cl.[5] G11B *15/675*
U.S. Cl. 360—96.5 3 Claims

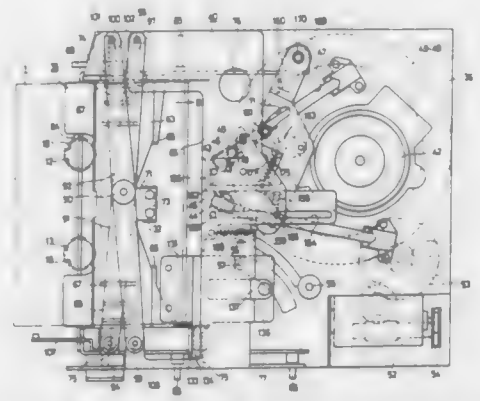
1. A tape cassette attachment device comprising a cassette holder into which a tape cassette rotatably accommodating a pair of tape reels carrying a magnetic tape wound thereon,

a slide guide frame supporting said cassette holder for vertical movement and supported for horizontal movement with respect to a chassis of a main body, said slide guide frame being reciprocating between a first position in which said tape cassette is enabled to be inserted into or detached from said cassette holder and a second position in which the tape reels of said tape cassette are in register with reel drive shafts of said chassis, and vertically shifting said cassette holder at said second position,

locking and holding means for locking and holding said slide guide frame at said first position with respect to said chassis for inhibiting the shifting of said slide guide frame, and

means for sensing the tape insertion, said means sensing that said tape cassette has been inserted to a prescribed position in said cassette holder and releasing locking of said locking and holding means

wherein a closure plate movable between a closed position of closing a pair of reel drive shaft insertion openings formed at least on the bottom surface of the cassette half and an open position of opening said reel drive shaft insertion openings is mounted to the outer bottom surface of the cassette half and a turnable lid is provided for opening or closing an aperture on the front side of the cassette half;



wherein the cassette holder includes control projection means on the bottom plate thereof, said control projection means controlling the movement of said closure plate in opposition to the inserting operation of said tape cassette and shifting said closure plate from said closure position to said opening position on the occasion of the shifting of said cassette half; and

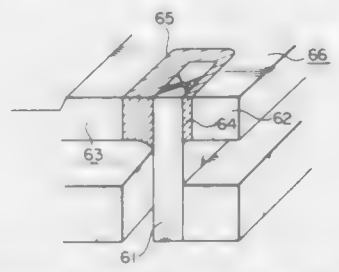
wherein said tape cassette insertion sensor means is at a position of being thrust and controlled by the cassette half only when the tape cassette is introduced into said cassette holder and said closure plate is shifted completely to said opening position by said control projection means, said sensor means being at a position of being not thrust and controlled by said cassette half when said closure plate is not shifted completely to said opening position.

5,008,767

FLYING-TYPE COMPOSITE MAGNETIC HEAD HAVING MAGNETIC CORE WITH IMPROVED FLATNESS OF AIR-BEARING SURFACE

Hitoshi Iwata, Kumagaya; Kazumi Noguchi, Kamikawa; Toshikazu Nishiyama, Fukaya, and Tadashi Shinohara, Chiyoda, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Jan. 23, 1989, Ser. No. 299,536
Claims priority, application Japan, Jan. 22, 1988, 63-12343
Int. Cl.[5] G11B *5/60*
U.S. Cl. 360—103 24 Claims



1. A flying-type composite magnetic head comprising: a slider made of a non-magnetic ceramic and having side rails extending longitudinally on both lateral sides of said head; a slit extending longitudinally in one of said side rails; and a magnetic core constituted by a pair of core pieces bonded to each other with a first glass and fixed in said slit with a second glass, wherein

(a) at least one opposing surfaces of said core pieces is formed with an Fe-Al-Si thin layer;

(b) said opposing surfaces constitute a magnetic gap of said magnetic core;

(c) said magnetic core and said slit are shaped such that there are sufficient gaps between said magnetic core and both inner surfaces of said slit at least in a region exposed to an air-bearing surface of said magnetic head, and that said magnetic core is in contact with one of the inner surfaces of said slit in a region distant from said air-bearing surface; and

(d) said gaps on both sides of said magnetic core in a region exposed to said air bearing surface are filled with said second glass, whereby said air-bearing surface including said magnetic core has improved flatness.

5,008,768

DISK HEAD ASSEMBLY FLEXURE WITH SLOPED RAMP SUPPORT STRUCTURE

Carl J. Carlson, Poway; Mourad Zarouri, San Diego, and Warren Coon, Poway, all of Calif., assignors to Computer & Communications Technology Corp., San Diego, Calif.

Filed Mar. 27, 1989, Ser. No. 328,869
Int. Cl.[5] G11B *5/48*
U.S. Cl. 360—104 17 Claims

1. A disk drive flexure comprising:

(a) a support structure having an attachment end for connection to a load beam of a disk drive and a pair of parallel spaced-apart outriggers, each outrigger being connected at one end to the attachment end of the support structure and having a distal end with a connection edge approximately perpendicular to the longitudinal axis of the outrigger;

(b) a tongue situated approximately parallel to and spaced apart from the support structure, the tongue having an elongated main body with lateral extensions on either side of the main body with lateral extensions on either side of the main body and at one end thereof, each lateral extension extending sideways from the main body of the tongue to at least the connection edge of the distal end of one of spaced apart outriggers, and each having a connection edge approximately parallel to and spaced apart from the connection edge of the distal end of said outrigger; and

(c) a pair of sloped connecting ramps, each coupled at one end to the connection edge of the distal end of an outrigger, and at the other end to the connection edge of a lateral extension of the tongue, such that the height of the ramps spaces the tongue apart from the support structure.

5,008,769

ROTARY HEAD TYPE MAGNETIC RECORDING/REPRODUCING DEVICE

Koji Kaneko, and Yasuyuki Sugino, both of Higashi-Hiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

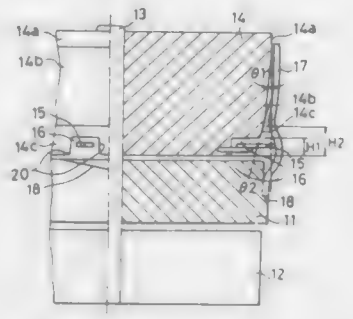
Filed Jan. 12, 1990, Ser. No. 464,222
Claims priority, application Japan, Jan. 12, 1989, 1-7028
Int. Cl.[5] G11B *15/60*
U.S. Cl. 360—130.24 4 Claims

1. A rotary head type magnetic recording/reproducing device comprising:

a stationary drum having at an outer surface thereof a spiral cut portion for guiding a magnetic tape;

a motor having a rotary shaft penetrating said stationary drum; and

a rotary drum disposed coaxially with said stationary drum and secured to said rotary shaft, said rotary drum comprising a cylindrical portion which is slightly greater in diameter than said stationary drum, a first truncated cone portion integrally connected to said cylindrical portion at



a bottom thereof and decreasing in diameter in a direction toward said stationary drum at a first taper angle, and a second truncated cone portion integrally connected to a top surface of said first truncated cone portion at a bottom thereof and decreasing in diameter in said direction toward said stationary drum at a second taper angle which is greater than said first taper angle, said rotary drum having an opening at a portion adjacent to a top end of said second truncated cone portion, said opening accommodating a magnetic head.

5,008,770

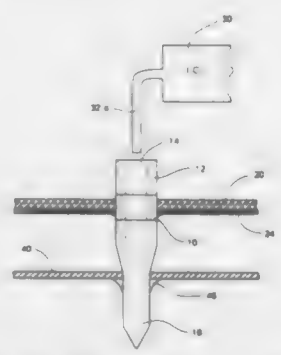
FILTER PIN INTEGRATED CIRCUIT SOCKET KIT

David H. Hilland, Albuquerque, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 20, 1990, Ser. No. 481,920

Int. Cl.[5] H02H *9/04*

U.S. Cl. 361—56 **3 Claims**



1. A transient protection assembly comprising a protection board which has a plurality of holes and a metal surface, a plurality of metal socket pins, a plurality of transient protection devices in the form of sleeves with each having an inner surface and an outer surface, each transient protection device being mounted on one of the socket pins with its inner surface in contact with the socket pin so that the combination of a socket pin and a transient protection device forms a filter pin socket device, each filter pin socket device being mounted in a hole of the protection board with the outer surface of the transient protection device contacting said metal surface, each said socket pin having a hole in a first end for receiving a lead of an integrated circuit, and each said socket pin having a second end for insertion into a circuit hole of a printed circuit board.

5,008,771

DIAGNOSTIC CIRCUIT FOR UNITS PROVIDING CURRENT CONTROL AND PROTECTION AGAINST EXCESSIVE HEAT DISSIPATION FOR SEMICONDUCTOR POWER DEVICES

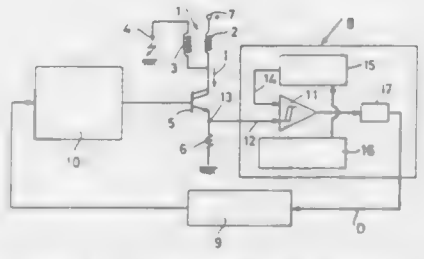
Sergio Palara, Acicastello, Italy, assignor to SGS-Thomson Microelectronics s.r.l., Agrate Brianza, Italy

Filed Dec. 6, 1989, Ser. No. 446,857

Claims priority, application Italy, Dec. 13, 1988, 22924 A/88

Int. Cl.[5] H02N *3/087*

U.S. Cl. 361—103 **11 Claims**



1. A diagnostic and control circuit for operating a semiconductor power device through periodic firing and quenching states comprising a comparator having a first input connected to the power device so as to be supplied with a voltage proportional to a current passing through the power device and a second input connected to a reference voltage generator, a signal generator connected to an output of said comparator so as to generate a diagnostic signal whenever the comparator output indicates the periodic growth of said proportional voltage beyond a reference voltage generated by said reference voltage generator, and means sensitive to the temperature of the power device which act on said reference voltage generator so as to reduce said reference voltage in response to a temperature increase beyond a preset limit.

5,008,772

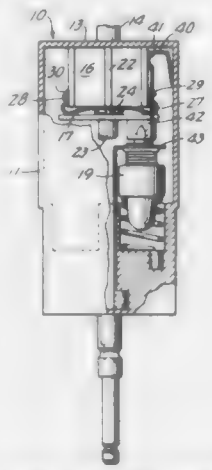
TELEPHONE CIRCUIT PROTECTOR MODULE HAVING PLURAL CIRCUIT GROUNDING MEANS

Helmuth Neuwirth, Garden City; Carl Meyerhoefer, Dix Hills; William V. Carney, Oyster Bay, and Peter L. Visconti, Baldwin, all of N.Y., assignors to Porta Systems Corp., Syosset, N.Y.

Filed Sep. 24, 1990, Ser. No. 587,072

Int. Cl.[5] H02H *3/22*

U.S. Cl. 361—119 **3 Claims**



1. In a subscriber circuit telephone protector module including a housing, excess voltage and current protector means disposed within said housing for grounding currents having voltage and current flow above predetermined levels, the improvement comprising: said excess voltage means including

a three-element gas tube having a central electrode and first and second end electrodes, a gas tube fail safe device including an elongated metallic clip contacting said center electrode and maintained in insulated relation relative to said end electrodes by fusible members; a ground assembly including an elongated ground pin extending outwardly of said housing and having an inner end terminal, a transversely extending ground plane member carried by said inner end; said center electrode having a laterally extending contact pin penetrating said ground plane member for electrical communication therewith, said elongated clip being carried by said contact pin; a pair of test point contacts each contacting a respective end electrode independently of said fusible means at a first end thereof, and having a transversely extending second end overlying said ground plane member cylindrical insulator means spacing said second end from said ground plane member; a pair of long contacts each having first and second ends, said first end contacting said second end of a respective test point contact wherein corresponding through orifices in each of said test point contact and said long contact are aligned; and a pair of thermally actuated heat coils, each carried by a respective long contact and having extensible point contact means penetrating said aligned orifices to contact said ground plane member upon heat coil actuation; whereby each of said three element gas tube and fail safe device are in constant contact with said ground plane member, and said heat coils are selectively in contact with said ground plane member; said gas tube serving to ground voltage surges in the range of 200 to 300 volts, said fail safe device serving to ground sustained current surges, and said heat coils becoming operative in the presence of sneak currents in the range of under one ampere.

5,008,773

SOLENOID VALVE CONTROL CIRCUIT

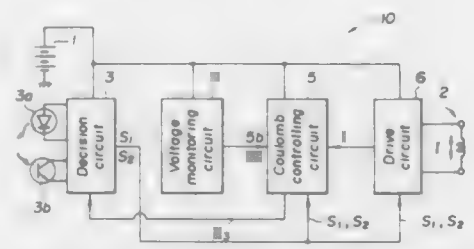
Takao Yoshida; Toshio Ikeda; Takhiro Douke, and Toshio Eki, all of Kanagawa, Japan, assignors to Toto, Ltd., Fukuoka, Japan

Filed Nov. 21, 1988, Ser. No. 273,835

Claims priority, application Japan, Nov. 20, 1987, 62-294800; Nov. 20, 1987, 62-294801

Int. Cl.[5] H01H *47/32*

U.S. Cl. 361—187 **48 Claims**



1. A solenoid valve control circuit for operatively connecting a battery to a solenoid to energize the solenoid to actuate a valve, said control circuit including coulomb controlling means for controllably supplying an electric quantity to the solenoid,

wherein said electric quantity if a required electric quantity corresponding to the voltage of said battery,

said coulomb controlling means comprising means for supplying said required electric quantity to said solenoid,

a decision circuit for producing an energizing signal indicating that said battery is to be connected to said solenoid under a prescribed condition; and

a solenoid valve drive circuit responsive to said energizing signal for operatively connecting said battery to said solenoid to energize said solenoid, and

wherein said coulomb controlling means comprises:

a power supply voltage monitoring circuit for monitoring the voltage of said battery and producing a signal corresponding to the battery voltage; and

a coulomb_controlling circuit for monitoring the electric quantity supplied from said battery to said solenoid and for producing a de-energizing signal based on the signal from said power supply voltage monitoring circuit when the electric quantity supplied to said solenoid is equal to said required electric quantity corresponding to said battery voltage.

5,008,774

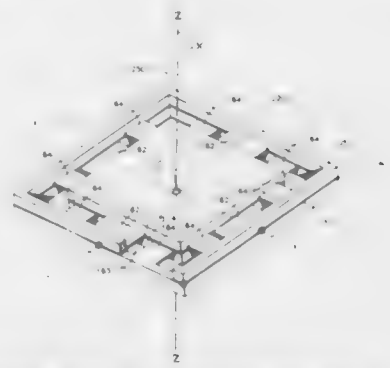
CAPACITIVE ACCELEROMETER WITH MID-PLANE PROOF MASS

Robert H. Bullis, Avon, and James L. Swindal, East Hampton, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 28, 1989, Ser. No. 317,258

Int. Cl.[5] G01P *15/02;* **H01G** *7/00*

U.S. Cl. 361—283 **7 Claims**



1. A solid-state silicon accelerometer comprising:

a three-plate capacitor including fixed top and bottom plates and a silicon movable sensing plate having a top surface separated from said top plate by a top gap and a bottom surface separated from said bottom plate by a bottom gap, defining a reference midplane and being connected to support members by flexible connections extending across a support gap between said silicon sensing plate and said support members to move between said top and bottom plates in response to acceleration along an acceleration axis perpendicular to said reference midplane, whereby acceleration along said acceleration axis displaces said silicon sensing plate from said reference midplane and alters the capacitance between said silicon sensing plate and said top and bottom plates, in which;

said top and bottom plates and said support members are bonded together to form a rigid structure;

said silicon sensing plate is connected to said support members by at least one pair of flexures extending a predetermined hinge width along opposite sides of said sensing plate and having a predetermined hinge length less than the length of said sensing plate, so that a communication path is established between a top chamber between said top and said silicon sensing plates and a bottom chamber between said bottom and said silicon sensing plates;

at least one chamber has motion stops disposed therein and grooves to facilitate squeeze-film damping in one of said silicon sensing plate and said fixed plate; and

electronic means for measuring the capacitance of at least one of said chambers, characterized in that:

said silicon sensing plate is formed from top and bottom silicon slabs bonded together at an interface region, each of said silicon slabs being boron doped on a flexure surface abutting said interface region, and is connected to said support members by flexures lying substantially in said flexure surfaces and being disposed about said support gap in a predetermined pattern, whereby said top and bottom silicon slabs combine to form a composite sensing plate connected to said support members by said at least one pair of flexures disposed symmetrically in said top and

bottom plates and substantially in said sensing plate midplane,

said top silicon slab, a corresponding top slab portion of said support members and a corresponding top slab flexure and said bottom silicon slab, a corresponding bottom slab portion of said support member and a corresponding bottom slab flexure being micromachined from a block of silicon.

5,008,775

SENSOR AND CONTROL MODULE WITH IMPROVED SENSOR ISOLATION

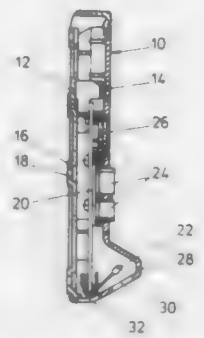
Juergen Schindler, Gross-Gerau-Wallerstaedten, and Hartwig Heinen, Bruchkoebel, both of Fed. Rep. of Germany, assignors to Honeywell Regelsysteme GmbH, Fed. Rep. of Germany

Filed Sep. 11, 1989, Ser. No. 405,481

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1988, 8811566[U]

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—383 **7 Claims**



1. A sensor and control module comprising a housing having air slots in the upper and lower portions, at least one sensing element located in the lower portion of said housing,

a control circuit board producing heat mounted in said upper portion and said lower portion of said housing and connected to said sensing element, at least one manually actuable control element located on an exterior surface of said housing and connected to said circuit board, whereby said housing provides a chimney effect as heat of said circuit board causes air to be drawn through said air slots of said lower portion past said sensing element and said circuit board to exit through said air slots in said upper portion.

5,008,776

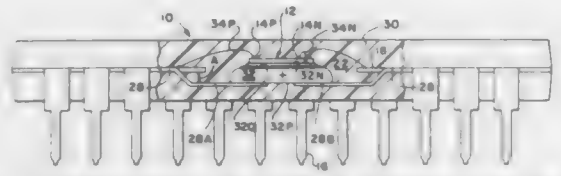
ZERO POWER IC MODULE

Daniel Queyssac, Dallas, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jun. 6, 1990, Ser. No. 531,150

Int. Cl.[5] H05K *7/00*

U.S. Cl. 361—392 **15 Claims**



1. A device package for providing electrical power to an electronic circuit device comprising, in combination:

a body of non-conductive material;

a finger lead assembly encapsulated within said body of non-conductive material, said finger lead assembly including a plurality of conductive finger leads, with one of said finger leads defining a power lead;

a battery having a positive polarity power terminal and a negative polarity power terminal, one of said battery power terminals being mounted onto said power lead; and,

an electronic circuit device encapuslated within said body of non-conductive material and coupled to one of said battery power terminals opposite of said battery terminal mounted onto said power lead.

5,008,777

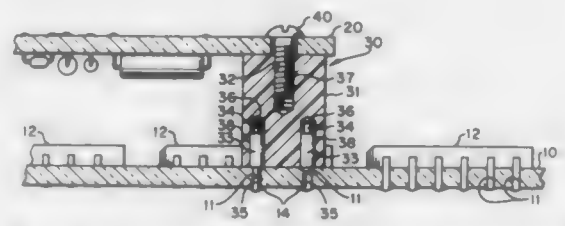
AUXILIARY BOARD SPACER ARRANGEMENT

William F. Burns, Plano, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 14, 1988, Ser. No. 257,654

Int. Cl.[5] H05K *1/14*

U.S. Cl. 361—412 **21 Claims**



17. An arrangement of connected first and second circuit boards comprising:

at least one first board, each first board comprising at least one mounting hole;

a second board, comprising a plurality of circuit component holes for mounting discrete components and integrated circuits; and

at least one spacer means, each spacer means for spatially attaching the at least one first board to the second board;

wherein each of the spacer means comprises:

at least one body having a means defining a hole at one end;

pin means protruding from the at least one body at an end opposite the one end, and inserted into the circuit component holes of the second board, and soldered to the second board for connecting the spacer means to the second board; and

a fastening device inserted through one of the mounting holes of one of the first boards and into the means defining a hole in the at least one body, for connecting the spacer means to a first board, wherein the pin means comprises two pins, wherein a protruding section of each of the two pins is of cylindrical shape, and wherein each of the two pins comprises a tapered top portion.

5,008,778

ACCOMMODATION DEVICE WITH SHIELDED CIRCUIT BOARDS

Gerhard Peyerl, Nuremberg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

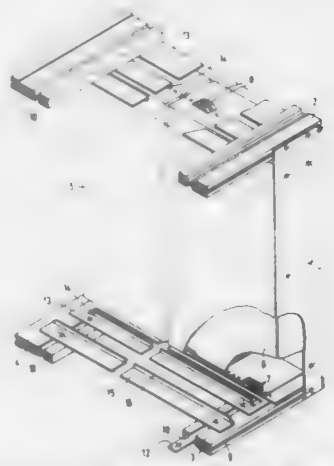
Filed Oct. 17, 1988, Ser. No. 258,405

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1987, 3735456

Int. Cl.[5] H05K *7/14, 7/18*

U.S. Cl. 361—415 **3 Claims**

1. A framework for mounting circuit boards of a predetermined size which are housed in shielded housings whose walls include grooves and said framework for also mounting circuit boards of said predetermined size which are outside shielded housings, said framework having ridges which serve as guide means for insertion into said grooves in said shielded housings, said framework having carriers with grooves which serve as support means for said circuit boards which are outside shielded housings.



5,008,779

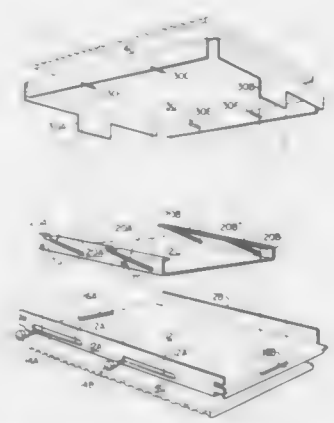
SHELF ASSEMBLY HAVING INFINITELY VERTICALLY ADJUSTABLE TOP SURFACE

Garland R. Salmon, Durham, N.C., assignor to Newton Instrument Company, Butner, N.C.

Filed Jun. 21, 1990, Ser. No. 542,250

Int. Cl.[5] H05K *7/14*

U.S. Cl. 361—415 **18 Claims**



1. A vertically adjustable shelf assembly for use in storage cabinets and the like comprising:

a shelf base adapted to be secured to a storage cabinet and having a bottom support surface, said base further having a front wall extending along at least a portion of the length of the front side thereof and defining at least one generally horizontally extending elongate opening therein;

vertical adjustment means positioned on said support surface of said base and adapted for lateral slidable movement therein, said adjustment means comprising a member having front and rear sides and front wall and a rear wall extending along at least a portion of the length of the front and rear sides thereof, respectively, and each defining at least one elongate guide surface extending generally laterally upwardly, said vertical adjustment means further comprising lateral movement means secured to said front wall thereof and extending through said at least one elongate opening in the front wall of said base so that lateral movement of said lateral movement mean will laterally translate said vertical adjustment means relative to said base; and

a shelf top movably secured relative to said shelf base so as to prevent lateral movement thereof while allowing vertical movement relative to said base, said top having front and rear sides and a front wall and rear wall extending along at least a portion of the length of the front and rear sides thereof, respectively, and guide surface engagement means extending inwardly from said front and rear walls and into operative engagement with said at least one laterally upwardly extending guide surface in each of said front and rear walls of said vertical adjustment means so that selective lateral movement of said vertical adjustment means in a direction to urge said guide surface engagement means upwardly along said guide surfaces therein serves to vertically raise said top, and lateral movement of said vertical adjustment means in a direction to urge said guide surface engagement means downwardly along said guide surfaces therein serves to vertically lower said top.

5,008,780

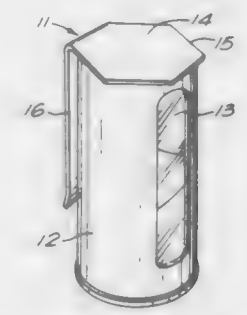
ILLUMINATING DEVICES

Patrick A. Pennington-Ridge, 19 Staple, West Quantoxhead, Williton, Taunton, Somerset TA4 4DQ, United Kingdom

Continuation of Ser. No. 311,468, Feb. 16, 1989, abandoned. This application Feb. 27, 1990, Ser. No. 485,535

Int. Cl.[5] F21K *2/00*

U.S. Cl. 362—34 **12 Claims**



1. An illuminating device comprising an outer tubular sleeve provided with a window, an inner tubular sleeve, rotatable coaxially within the outer sleeve, at least one aperture formed in the inner sleeve, and at least one self luminous light source of elongated form disposed within the inner sleeve and longitudinally thereof, the aperture formed in said inner sleeve having an axially elongate portion extending substantially parallel to the axis of rotation of the inner sleeve and another portion of the aperture having a tapered cross configuration and lesser axial length than said axially elongate portion and extending laterally thereof, whereby relative rotation of the inner and outer sleeves to reduce the axial length of the light that is illuminated through the window without reduction of the width thereof.

5,008,781

HEADLAMP UNIT

Naohi Nino, Shizuoka, Japan, assignor to Koito Manufacturing Co., Ltd., Shizuoka, Japan

Filed Nov. 8, 1989, Ser. No. 433,308

Claims priority, application Japan, Nov. 8, 1988, 63-281607

Int. Cl.[5] B60Q *1/00*

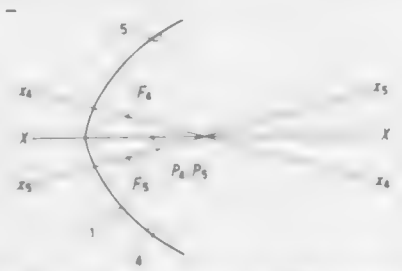
U.S. Cl. 362—61 **13 Claims**

1. A headlamp unit comprising:

a multi-surface concave reflector having a beam axis along which a light beam projects forward to produce a beam pattern, the reflector including:

upper and lower cancave light reflecting parts which are respectively located at upper and lower positions with respect to a given portion of the reflector, and

left and right concave light reflecting parts which are respectively located at left and right positions with respect to said given portion and have respective focuses on their respective optical axes, said optical axes being inclined with respect to the beam axis, each of the left and right concave light reflecting parts having respective curves of second degree when cut by vertical and horizontal planes; and



first and second filaments of an electric bulb which are located on said beam axis,

wherein the optical axes of said left and right concave light reflecting parts are inclined toward the left and right concave light reflecting parts with respect to said beam axis, respectively, and

wherein the focuses of said left and right concave light reflecting parts are located at generally right and left positions with respect to said first filament, respectively

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5,008,782

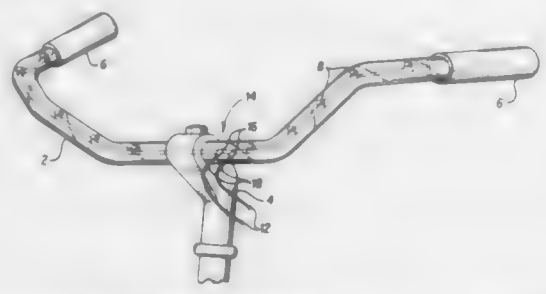
LIGHTED HANDLEBAR FOR BICYCLES

William D. Murray, P.O. Box 3137, Brewer, Me. 04412

Filed Aug. 24, 1990, Ser. No. 572,211

Int. Cl.[5] B62J *6/18*

U.S. Cl. 362—72 **17 Claims**



1. A bicycle handlebar including:

a plurality of electric lamps, each said lamp having a positive electric terminal and a negative electric terminal, said lamps so disposed along the length of said handlebar that light from said lamps may radiate away from said handlebar;

a positive voltage connector mounted upon the surface of said handlebar for electrically connecting said lamps to an external voltage source;

a negative voltage connector mounted upon the surface of said handlebar for electrically connecting said lamps to an external voltage source;

conductive wires internal to said handlebar, said wires electrically connecting all of the positive terminals with said positive connector and connecting all of the negative terminals with said negative connector; whereby

when external voltage is supplied to the connectors said lamps light.

5,008,783

NUMBER PLATE INCLUDING LUMINOUS CHARACTERS

Masaaki Mastuoka, Tokyo, Japan, assignor to World Auto Plate Ltd., Tokyo, Japan

Filed Apr. 14, 1989, Ser. No. 339,195

Claims priority, application Japan, Apr. 18, 1988, 63-50996[U]; Apr. 18, 1988, 63-50997[U]

Int. Cl.[5] B60Q *1/56*

U.S. Cl. 362—83.2 **10 Claims**



1. A number plate including luminous characters of the type comprising

a number plate having a plurality of character portions punched therefrom,

a plate molded of transparent or translucent synthetic resin adhesively secured to said number plate,

illuminating bulbs for illuminating said character portions disposed behind said number plate, and

a light scattering plate made from a transparent or translucent material and having a light scattering region with a number of quadrangular pyramid-shaped projections formed thereon, each of which has an apex angle which is about 140°, in an area only corresponding to positions where said illuminating bulbs are disposed, said light scattering plate being interposed between said number plate and said illuminating bulbs.

5,008,784

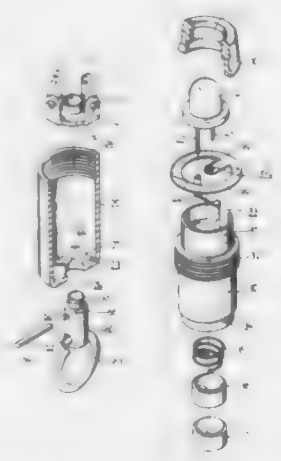
LIGHTING EQUIPMENT FOR A KEY RING

Howard Wang, No. 7, Alley 14, Lane 64, Ching Ping Rd., Chung Ho City, Taipei Hsien, Taiwan

Filed May 17, 1990, Ser. No. 524,573

Int. Cl.[5] F21V *33/00*

U.S. Cl. 362—116 **2 Claims**



1. A lighting equipment for a key ring comprising a cylindrical tube having a profile formed in a bottom thereof, said profile having a pair of lower grooves and a pair of higher grooves; a barrel being substantially received in said cylindrical tube with an upper end extending beyond said cylindrical tube, a notch being vertically formed in said upper end of said barrel; a ring element being provided around said upper end of said barrel and contacting an upper end of said cylindrical tube, a tongue being integrally formed on said ring element and extends toward a center thereof, said tongue extending through said notch toward a center of said barrel; a light bulb which has two prongs being received in said upper end of said barrel, one of said prongs being integrally fixed to said tongue so that said one prong is electrically connected to said tongue, a resilient leg being coupled to an other prong; a spring and at least one cell being received in a lower end of said barrel; a bracket being provided between said barrel and said cylindrical tube, said bracket and said cell being biased downward by said spring; a rod extending through a center of said bottom of said cylindrical tube and being coupled to said bracket; a pin being laterally provided on said rod; and said key ring being strung on a lower end of said rod; and said pin being actuated to follow said profile so that both ends of said pin are laid in either said upper grooves or said lower grooves and so that a center electrode of an uppermost cell is actuated either to contact or to be separated from said resilient leg in order to turn on or turn off said light bulb.

5,008,785

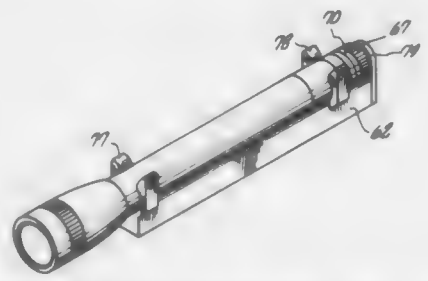
RECHARGEABLE MINIATURE FLASHLIGHT

Anthony Maglica, Ontario; Ralph E. Johnson, Los Alamitos, and Armis L. Lewis, Cucamonga, all of Calif., assignors to Mag Instrument, Inc., Ontario, Calif.

Continuation-in-part of Ser. No. 34,918, Apr. 6, 1987, abandoned, which is a continuation of Ser. No. 828,729, Feb. 11, 1986, Pat. No. 4,658,336, which is a continuation of Ser. No. 648,032, Sep. 6, 1984, Pat. No. 4,577,263. This application Oct. 23, 1987, Ser. No. 111,538

Int. Cl.[5] F21L *7/00*

U.S. Cl. 362—183 **30 Claims**



1. A miniature rechargeable flashlight system including a flashlight and a recharger,

the flashlight comprising:

battery retaining means;

a lamp bulb;

means for holding the lamp bulb;

a substantially parabolic reflector;

a substantially planar lens;

means for retaining the reflector and the lens at one end of said battery retaining means;

means for eletrically coupling first and second electrodes of said lamp bulb to battery electrodes;

a tail cap at said other end of said battery retaining means including a positive conductive means and a negative conductive means adapted to respectively contact separate electrical contacts of said recharger; and

means to cause one way current flow through said negative conductive means;

the recharger comprising:

a housing adapted to accommodate said flashlight;

a circuit for regulation of constant charging current provided to said flashlight;

and wherein the separate electrical contacts are positive and negative contacts for contacting with said positive conductive means and said negative conductive means of said flashlight.

5,008,786

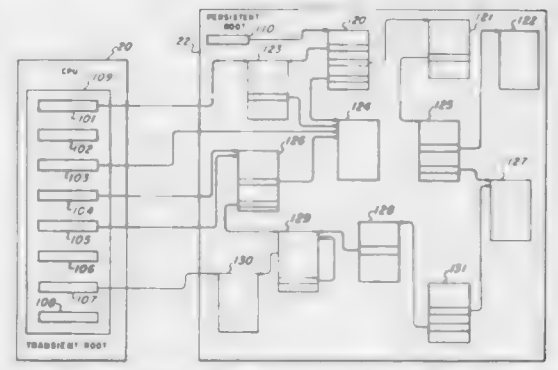
RECOVERABLE VIRTUAL MEMORY HAVING PERSISTANT OBJECTS

Satish M. Thatte, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 774,828, Sep. 11, 1985. This application Nov. 19, 1986, Ser. No. 932,813

Int. Cl.[5] G06F *11/00*

U.S. Cl. 364—200 **10 Claims**



1. A computer system having a recoverable virtual memory, comprising:

(a) a virtual memory having a random access memory and a backing store:

(b) a plurality of pages stored in the backing store, each of said pages corresponding to a virtual memory page;

(c) a plurality of memory objects allocated within said virtual memory, said memory objects interconnected by pointers;

(d) a persistent root having a pointer to a memory object, wherein all memory objects in the transitive closure of said persistent root define a set of long term objects not subject to reclamation by the system during garbage collection;

(e) means for taking checkpoints of the current state of said virtual memory at selected times, said means including means for materializing a sibling page corresponding to each of a plurality of said virtual memory pages, wherein the latest written version of a virtual memory page and its respective sibling page which was written before a current checkpoint state is used to define the checkpoint state; and

(f) a state indicator identified with each virtual memory page and each sibling page for indicating which of said virtual memory or sibling pages stored in the backing store comprise a most recent checkpoint.

5,008,787

SYSTEM FOR INSULATED SUPPORT OF NEON LIGHTS

Albert Sklar, and Barbara Sklar, both of 3513 Villa Ter., San Diego, Calif. 92104

Filed Jul. 2, 1990, Ser. No. 546,713

Int. Cl.[5] F21V *23/02*

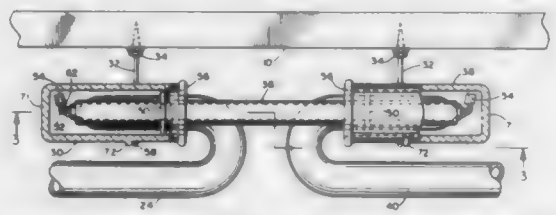
U.S. Cl. 362—221 **5 Claims**

1. In the installation and support of neon tubes having cylindrical glass encased high voltage wires electrically connected to the cylindrical ends of neon tubes, the improvement comprising:

a cylindrical glass cup having two aligned, intersecting and joined longitudinal bores;

the cylindrical end of the glass encased high voltage wire being slidably positionable in one bore and the cylindrical end of the neon tube being slidably positionable in the other bore;

a resilient O-ring for encircling the two adjacent ends of the respective glass sleeve and neon tube electrode,



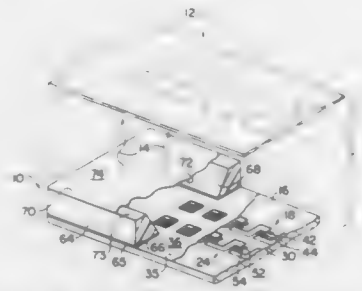
and said O-ring being resiliently compressible in the space between the inner surface of the glass cup and the outer surfaces of the electrode and glass sleeve, holding the electrode and glass sleeve in position in the glass cup.

5,008,788

MULTI-COLOR ILLUMINATION APPARATUS

John M. Palinkas, Harwinton, Conn., assignor to Electronic Research Associates, Inc., Winsted, Conn.

Filed Apr. 2, 1990, Ser. No. 502,977
Int. Cl.[5] F21V *9/00*
U.S. Cl. 362—231 **14 Claims**



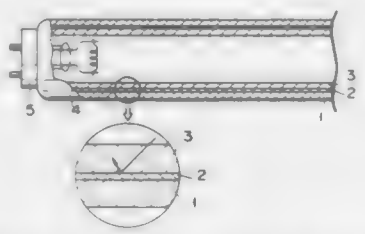
1. Multi-color illumination apparatus, comprising:
substrate means having a generally planar surface for carrying foil leaf means defining a plurality of electrical circuit paths;
at least one first light diode (LED) means for emitting light of a first color in response to a first excitation voltage signal applied to the LED;
at least one second light emitting diode (LED) means for emitting light of a second color in response to a second excitation voltage signal applied to the LED;
said first and second LED's defining an LED color pair;
reflective white masking means for covering said surface of said substrate means and having openings therethrough whereby the area of said substrate surface in registry with said openings in said white masking means is exposed;
one electrical circuit path of said plurality including a first plurality of foil leaf areas arranged in a spaced relation to one another and defining a first electrical circuit path for physically and electrically connecting the anode of said first or second LED of one LED color pair and the cathode of the other of said first or second LED of said one LED color pair to one another and to said first electrical circuit path;
a second electrical circuit path of said plurality including a second plurality of foil leaf areas, a first portion of said plurality of foil leaf areas arranged in a spaced relation to one another and one-for-one with said first plurality of foil leaf areas defining said first electrical circuit path, said first portion of said second plurality of foil leaf areas comprising said second electrical circuit path and being electrically connected to the cathode of said first or second LED of said one LED color pair and the anode of the other of said first or second LED of said one LED color pair;
said second plurality of foil leaf areas including a second portion of foil leaf areas disposed generally oppositely said first portion and substantially in registry with said first plurality of foil leaf areas, said second portion of foil leaf areas being arranged in a spaced relation to one another and physically and eclectically connecting the anode of said first or second LED of a second LED color pair and the cathode of the other of said first or second LED of said second LED color pair to one another and to said second electrical circuit path;
a third electrical circuit path of said plurality including a third plurality of foil leaf areas arranged in a spaced relation to one another and one-for-one with said second portion of foil leaf areas and substantially in registry with said first portion of foil leaf areas of said second plurality of foil leaf areas, said third plurality of foil leaf areas being electrically connected to the cathode of said first or second LED of said second LED color pair and the anode of the other of said first or second LED of said second LED color pair, and
said one and second LED color pairs being located substantially in registry with said openings in said white masking means.

5,008,789

FLUORESCENT LAMP HAVING ULTRAVIOLET REFLECTING LAYER

Kiyotaka Arai; Hirofumi Sumoto, and Keizi Ichinomiya, all of Anan, Japan, assignors to Nichia Kagaku Kogyo K.K., Tokushima, Japan

Filed Feb. 14, 1990, Ser. No. 479,967
Claims priority, application Japan, Feb. 22, 1989, 1-44488
Int. Cl.[5] F21M *3/14*
U.S. Cl. 362—255 **4 Claims**



1. A fluorescent lamp comprising a bulb, an ultraviolet reflecting layer consisting essentially of a nonemission material formed on an inner surface of the bulb, and a light-emitting layer formed on the ultraviolet reflecting layer and excited to emit light upon discharge, wherein the nonemission material consists essentially of α-alumina having an average grain size of 0.05 μm to 2 μm, and the coating amount of the ultraviolet reflecting layer on the inner surface of the bulb if 0.05 to 5 mg/cm^2.

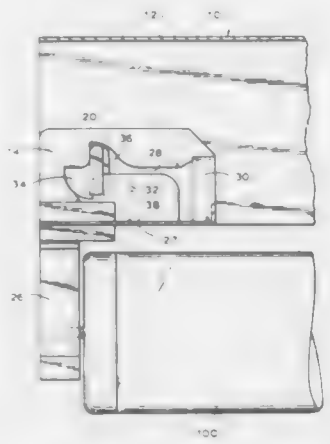
5,008,790

FLUORESCENT-TYPE FIXTURE HAVING REMOVABLE FOLD-OUT LAMP SOCKETS

William C. Fabbri, Billerica, Mass., assignor to Genlyte, Inc., Wilmington, Mass.

Filed Mar. 14, 1989, Ser. No. 323,285
Int. Cl.[5] F21S *3/00*
U.S. Cl. 362—220 **5 Claims**

1. A fluorescent light fixture comprising:
a housing including a guide means comprising a tab with an L-shaped cross section inwardly extending from said housing;
at least one socket assembly comprising at least one fluorescent light socket and a channel for engaging said guide means including an enlarged portion within said channel for rotating said socket assembly with respect to said housing from a first position wherein said light socket is positioned to engage a fluorescent light bulb and a second position wherein said light socket is protected within said housing;
wherein said enlarged portion is comprised of two quarter circles of a common center and a diameter substantially



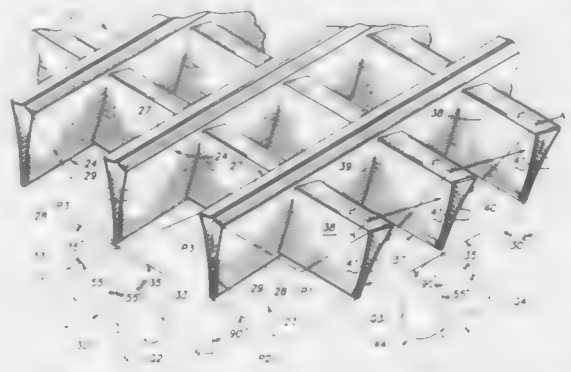
equal to a length of said tab, said quarter circles each having an edge in parallel to an unenlarged portion of said channel, and said quarter circles having 90 degrees therebetween; and
wherein said socket assembly can be removed from said housing by a straight-line movement from said second position.

5,008,791

LOW DIRECT GLARE AND WALL WASH PARABOLIC LIGHTING GRID

Ronald N. Caferro, 1520 Rockwood Blvd., Spokane, Wash. 99203

Filed Jul. 19, 1990, Ser. No. 555,250
Int. Cl.[5] F21V *11/06*
U.S. Cl. 362—290 **15 Claims**



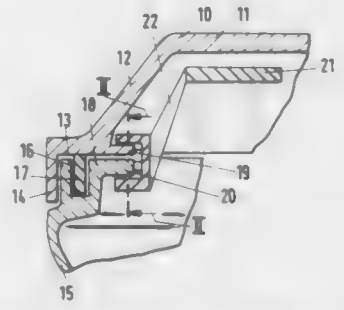
1. A lighting system for a room having a ceiling and a wall, the lighting system comprising:
a light;
a light grid;
a frame mounting the light grid to the ceiling below the light so light therefrom will pass through the grid;
wherein the light grid is comprised of intersecting first and second sets of parallel elongated parabolic louvers;
wherein the louvers of at least one of the first or second sets are angularly oriented to nadir and spaced apart to confine light passing downwardly therethrough to an asymmetrical candlepower distribution curve, including a wall washing quadrant on one side thereof and a low direct glare distribution quadrant including a cut off angle of approximately 45 to 70 degrees from nadir on an opposite side thereof; and
wherein the light and light grid are placed adjacent the wall such that the wall washing quadrant is oriented toward the wall to illuminate the wall to the ceiling.

5,008,792

DEVICE FOR LOCKING AN OPTICALLY TRANSPARENT TROUGH TO A HOUSING OF AN EXTENDED-FIELD LIGHT

Heinz Liedtke, Dortmund; Cornelius Ploeger, Fröndenberg-Frömern, and Wilmut Görner, Mudau, all of Fed. Rep. of Germany, assignors to ABB CEAG Licht- und Stromversorgungstechnik GmbH, Soest, Fed. Rep. of Germany

Filed Mar. 26, 1990, Ser. No. 499,027
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1989, 3909890
Int. Cl.[5] F21V *21/00*
U.S. Cl. 362—374 **6 Claims**



1. An apparatus comprising an optically transparent trough of an extended-field light, a housing, and a device for locking said trough to said housing, said trough and said housing each having a respective mutually adjacent edge disposed one above the other and at least one respective inwardly projecting mutually parallel projection disposed at said edge being oriented in the same direction and disposed one above the other in an assembled condition of said trough and said housing forming at least one pair of projections, and said locking device including a slider element being manually longitudinally displaceably guided in said housing between a releasing position and a locking position from outside said housing, and at least one grip each being coupled with said slider element for each pair of projections, said at least one grip having jaws receiving said pair of projections therebetween upon displacement of said slider element from said releasing position to said locking position.

5,008,793

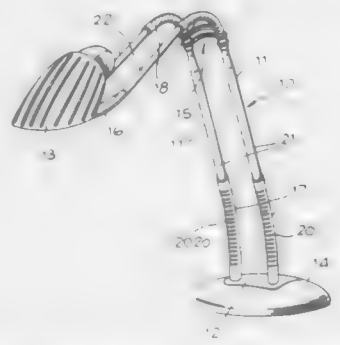
GUIDABLE ARM, PARTICULARLY FOR FREE-POSITIONING LAMPS

Stephan Copeland, New York, N.Y., assignor to FLOS S.p.A., Bovezzo, Italy

Filed May 7, 1990, Ser. No. 524,220
Int. Cl.[5] F21S *3/12;* **F21V** *21/32*
U.S. Cl. 362—413 **6 Claims**

1. Guidable arm particularly for free-positioning lamps of the type with a stand anchored to a base attached to a free end holding a lamp head, characterized by the fact that it is made up of two stems (11) equal to one another, separated in a parallel manner, rotating around their own axis, on and with respect to the fixed base, with these stems being interconnected by at least one flexible intermediate spacer (15) and being equipped at their free end with joints (16) holding the lamp head, by the fact that each of the said stems (11) comprises two goose-neck portions (17,18) separated from one another along the same stem and each made up of a flexible tube (19) and a sheath (20) of each goose-neck (17,18) has crosswise slits (20') on two diametrically opposed areas contained between two uninter-

rupted lateral strips (20″) parallel to the axis of the stem, in such a way as to permit the bending of the goose-neck in a



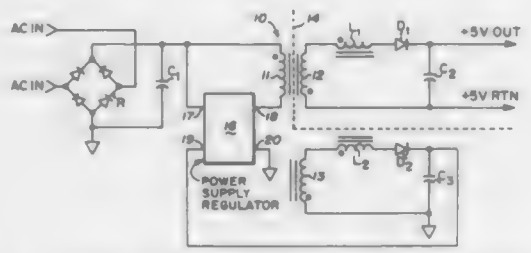
direction orthogonal to the slits and not laterally toward the uninterrupted strips.

5,008,794

REGULATED FLYBACK CONVERTER WITH SPIKE SUPPRESSING COUPLED INDUCTORS

Brooks R. Leman, Santa Clara, Calif., assignor to Power Integrations, Inc., Mountain View, Calif.

Filed Dec. 21, 1989, Ser. No. 455,601
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—21 **5 Claims**



1. In a flyback power supply that includes a transformer having a winding for power input, a first secondary winding for output, a first filter comprising a rectifier and a capacitor, a second secondary winding subject to voltage spikes caused by leakage inductance, and a second filter comprising a rectifier and a capacitor subject to peak charging to the leading edge of said voltage spikes, the improvement comprising:

a first inductor connected in series with the first secondary winding so that current flowing from the first secondary winding passes through the first inductor,

a second inductor connected in series with the second secondary winding so that current flowing from the second secondary winding passes through the second inductor, and

said first and second inductors being coupled inductors wound on the same core with a turns ratio and dot polarity connection set so that voltage developed across the second inductor is slightly higher than the leading edge voltage spike to which the second secondary winding is subject for blocking current flow during the interval of the leading edge of the voltage waveform to cause said second filter to properly peak charge to the plateau of said voltage waveform.

5,008,795

SWITCHED CAPACITOR INTERLEAVED FORWARD POWER CONVERTER

David W. Parsley, Draper, Utah, and Hubert C. Martin, Jr., Temecula, Calif., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Mar. 23, 1990, Ser. No. 498,863
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—20 **8 Claims**

1. A DC-to-DC interleaved timing forward converter for applying a first voltage from an input power source to an output load at a second voltage, comprising:

first and second electrical transformers having a predetermined turns ratio,

a capacitor sequentially coupled to both said first and second transformers for filtering said first and second voltages, and

switch means for selectively switching aid first and second transformers alternately and sequentially to said input power source, said capacitor, and said output load, so that said capacitor applies a first potential to said first transoformer during a first time interval when said first transformer is not connected to said input power source by said switch means, and also applies said first potential to said second transformer opposing said first voltage during said first time interval, and so that said capacitor applies a second potential to said second transformer during a second time interval when said second transformer is not connected to said input power source by said switch means and also applies said second potential to said first transformer opposing said first voltage during said second time interval,

said switch means being further arranged so that said first and second transformers are connected to said output load in time interleaved fashion,

said first electrical transformer compring a primary winding and a secondary winding,

said second electrical transformer comprising a primary winding and a secondary winding,

each of said transformers being connected with an opposing polarity sense between said primary winding and said secondary winding, and with the same polarity sense, respectively, with respect to said input power source and with respect to said load,

wherein said switch means further comprises:

first switch means for connecting said primary winding of said first electrical transformer to said input power source in a first position and to said capacitor in a second position, and second switch means for connecting said primary winding of said second electrical transformer to said input power source in a first position and to said capacitor in a second position,

said first and second switch means operatively engaged so as to apply said input power source to said primary winding of said first and second electrical transformers in time phase opposition so as to minimize current deviations of said input power source.

5,008,796

APPARATUS AND METHOD FOR IMPROVING LOAD REGULATION IN SWITCHING POWER SUPPLIES

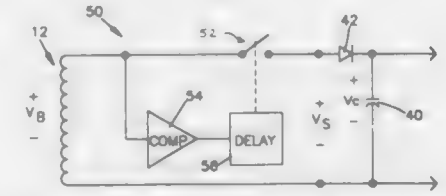
William M. Johnson, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 6, 1990, Ser. No. 533,973
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—21 **22 Claims**

1. A circuit for limiting the effects of overshoot in a transformer of the type having a primary winding and a secondary winding, the secondary winding being coupled to a load and the circuit having an output, the circuit comprising:

winding means operatively connected to the transformer for generating a winding voltage which varies in response to a change in voltage generated across the primary winding;

switching means for selectively communicating the winding voltage to the circuit output, the switching means having the capacity to be disposed in one of a first position and a second position, the winding voltage being communicated to the output of the circuit when the switching means is disposed in the first position; and



switch actuating means responsive to the winding means for disposing the switching means in the first position a predetermined time interval after the winding voltage has exceeded a predetermined reference voltage;

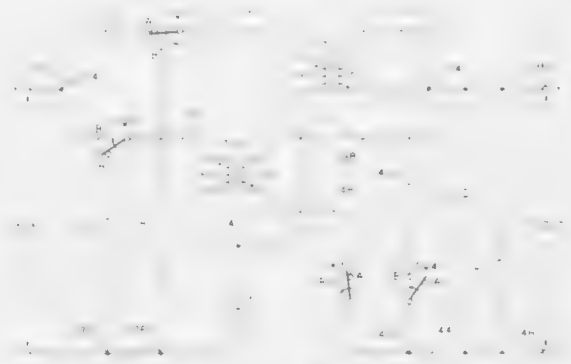
whereby the winding voltage is communicated to the output of the circuit and the effects of overshoot are eliminated in the output voltage of the circuit.

5,008,797

POWER CONVERTER UTILIZING LINE REPLACEABLE UNITS

Sunil Patel; Robert Ligon, and P. John Dhyanchand, all of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 20, 1989, Ser. No. 453,974
Int. Cl.[5] H02M *1/14*
U.S. Cl. 363—43 **13 Claims**



1. A modular line replaceable unit (LRU) connectable to and operable in conjunction with another substantially identical modular LRU to form a stepped-waveform inverter, comprising:

a power switch;

means coupled to the power switch for controlling same including a synchronization input which is responsive to a synchronization signal to synchronize the operation of the power switch to the other modular LRU when the modular LRU's are to be operated in conjunction with one another;

a transformer having a primary winding coupled to the power switch and a secondary winding;

means for packaging the power switch, the controlling means and the transformer as a unit; and

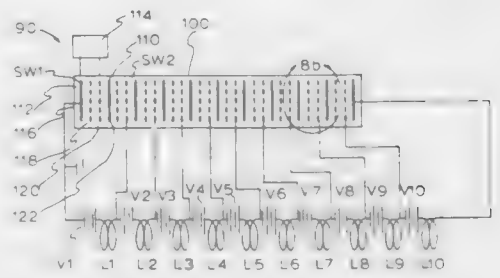
terminals accessible from outside the unit connected to the power switch and the transformer secondary winding including a terminal connected to the synchronization input.

5,008,798

COMPACT HIGH VOLTAGE POWER SUPPLY

Robin T. Harvey, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 21, 1989, Ser. No. 454,675
Int. Cl.[5] H02M *3/18*
U.S. Cl. 363—59 **23 Claims**



2. A high voltage power supply comprising;

energy storage means;

supply means for charging said energy storage means; and

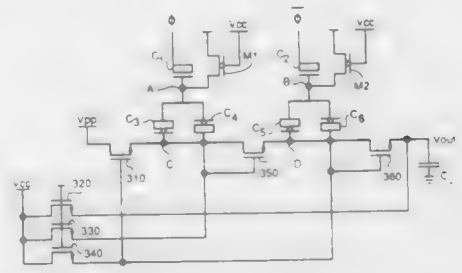
switching means for switching said energy storage means into electrical contact with a load, said switching means including at least one interruptible switch, wherein said interruptible switch is a cold cathode grid-controlled, crossed field plasma switch.

5,008,799

BACK-TO-BACK CAPACITOR CHARGE PUMPS

Antonio J. Montalvo, 850 Cole St., San Francisco, Calif. 94117

Filed Apr. 5, 1990, Ser. No. 505,292
Int. Cl.[5] H02M *3/18*
U.S. Cl. 363—60 **12 Claims**



1. A charge pump apparatus comprising:

first capacitor means for providing capacitance, said first capacitance means having first and second leads, and said first capacitor means being of the type having first and second mutually exclusive states, such that when the voltage on said first lead of said capacitor means exceeds the voltage on said second lead of said capacitor means by a threshold voltage, said capacitor means is in the first state, and said capacitor means is in the second state otherwise;

second capacitor means for providing capacitance, said second capacitor means also having first and second leads, and first and second states as in said first capacitor means, said second lead of said second capacitor means connected to said first lead of said first capacitor means forming a common input lead, said second lead of said first capacitor means and said first lead of said second capacitor means forming a common output lead;

charge pumping means having an input lead and an output lead, the voltage on said output lead increases in response to a signal received on said input lead, said output lead of

said charge pumping means connected to said common input lead of said first and second capacitor means;

diode means for transferring voltage unidirectionally, said diode means having first and second leads, said first lead of said diode connected to said common output lead of said first and second capacitor means, and said second lead of said diode means forming an output lead for said charge pump apparatus, such that current flows from said first lead of said diode means to said second lead of said diode means when the voltage on said first lead of said diode exceeds the voltage on said second lead of said diode; and

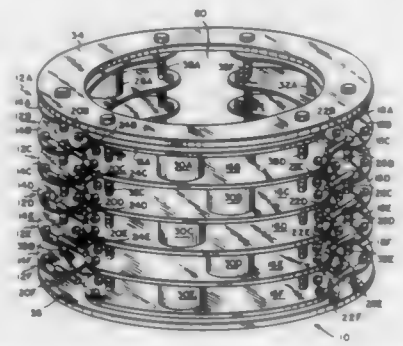
voltage clamp means connected to said output lead of said charge pumping means, for ensuring that voltage on said output lead of said charging means does not fall below predetermined voltage.

5,008,800

HIGH VOLTAGE POWER SUPPLY

Robert W. Klinkowstein, Winchester, Mass., assignor to Science Research Laboratory, Inc., Somerville, Mass.

Filed Mar. 2, 1990, Ser. No. 488,744
Int. Cl.[5] H02M *7/25*
U.S. Cl. 363—61 **30 Claims**



1. A high voltage multistage cascade rectifier power supply comprising:

equipotential conductor plate means on each side of each of said stages, each of said plate means including a DC potential plate means and an AC potential plate means;

capacitor means between the AC plate means and between the DC plate means defining each stage;

first rectifier means interconnecting selected DC plate means of one conductor plate means defining a given stage to selected AC plate means of the other conductor plate means defining the stage; and

second rectifier means for interconnecting selected DC and AC plate means of a given conductor plate means.

5,008,801

VSCF POWER CONVERSION SYSTEM USING AN OUTPUT AUTOTRANSFORMER

Timothy F. Glennon, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

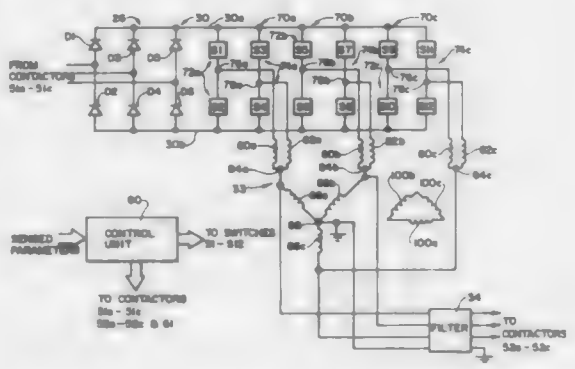
Filed Dec. 11, 1989, Ser. No. 448,311
Int. Cl.[5] H02M *7/521*
U.S. Cl. 363—132 **11 Claims**

1. A power converter for converting DC power supplied on a DC rail into AC power for an AC load, comprising:

an inverter including first and second switches coupled to the DC rail;

an autotransformer including first and second winding portions having first ends coupled to the first and second switches, respectively, and second ends connected together at a common junction, the autotransformer further including a third winding portion having first and second ends coupled to the common junction and a particular DC potential, respectively;

means for operating the inverter switches to convert the DC potential on the DC rail into AC power at the common junction; and



means coupled between the common junction and the AC load for supplying the AC power to the AC load.

5,008,802

DYNAMIC INPUT METHOD AND APPARATUS FOR PROGRAMMABLE CONTROLLER

Tatsuo Itoh; Hisayoshi Ito, and Kiyomi Murasaki, all of Aichi, Japan, assignors to Mitsubishi Denki K. K., Tokyo, Japan

Filed Jan. 10, 1989, Ser. No. 295,323
Claims priority, application Japan, Jan. 11, 1988, 63-3380
Int. Cl.[5] G05B *19/04*
U.S. Cl. 364—140 **2 Claims**



1. A dynamic input method for a programmable controller comprising the steps of:

applying a block pointer signal generated by a control section to an input circuit section and a signal delay circuit section;

loading input data into said input circuit section at the block specified by said block pointer signal;

delaying said block pointer signal applied to said signal delay circuit section for a period of time greater than the period corresponding to a delay of time from said application of said block pointer signal to said input circuit section to the output of said block pointer signal from said signal delay circuit section. to form a delayed block pointer signal;

transferring said delayed block pointer signal to said control section;

loading into said control section said input data which has been loaded to said input circuit section and specified by said block pointer signal when said delayed block pointer signal is applied to said control section; and

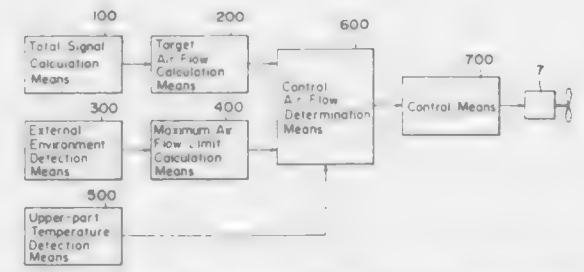
renewing said block pointer signal, by outputting another block pointer signal which points to a different block.

5,008,803

APPARATUS FOR CONTROLLING AN AIR FLOW OF AN AUTOMOBILE AIR-CONDITIONER

Katsumi Iida, Konan, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Apr. 11, 1989, Ser. No. 338,931
Claims priority, application Japan, May 16, 1988, 63-118882
Int. Cl.[5] F25B *29/00*; **G05B** *13/02*
U.S. Cl. 364—148 **3 Claims**



1. An apparatus for controlling air flow in an air-conditioner of a motor vehicle, said apparatus comprising:

(a) total signal calculation means for calculating a thermal load of the air-conditioner based on at least a desired temperature of the air inside a passenger compartment of the motor vehicle and on a temperature representative of that of the air inside the passenger compartment, and for issuing a total signal indicative of the calculated thermal load;

(b) target air flow calculation means operatively connected to said total signal calculation means for receiving said total signal and for calculating, based on said total signal, a target air flow to be supplied to the passenger compartment;

(c) external environment detection means for detecting an environmental condition outside the passenger compartment which exerts an influence upon an air-conditioning state of the passenger compartment;

(d) maximum air flow limit calculation means operatively connected to said external environment detection means for calculating a limit value for the maximum air flow to be supplied to the passenger compartment, according to the environmental condition detected by said external environment detection means;

(e) upper-part temperature detection means for detecting the temperature of air at an upper part of the passenger compartment;

(f) control air flow determination means operatively connected to said upper-part temperature detecting means for establishing a control mode in which the air flow in the air-conditioner is regulated to said target air flow until temperature of the air at the upper part of the passenger compartment, as detected by said upper-part temperature detecting means, becomes lower than a predetermined temperature, and operatively connected to said maximum air flow limit calculation means for substituting said target air flow with said limit value calculated by said maximum air flow limit calculation means to establish a control mode in which the air flow in the air-conditioner is regulated to said limit value once the temperature of the air at the upper portion of the passenger compartment, as detected by said upper-part temperature detection means, has become lower than the predetermined temperature; and

(g) control means for controlling the rotational speed of a blower of the air-conditioner according to the control mode established by said air flow determination means.

5,008,804

ROBOTIC TELEVISION-CAMERA DOLLY SYSTEM

Gary B. Gordon, Saratoga, Calif., and Robert R. Gonnelli, Valley Cottage, N.Y., assignors to Total Spectrum Manufacturing Inc., Valley Cottage, N.Y.

Continuation of Ser. No. 228,933, Jun. 23, 1988, Pat. No. 4,959,798. This application Aug. 30, 1990, Ser. No. 574,852
Int. Cl.[5] F16M *3/00*
U.S. Cl. 364—167.01 **17 Claims**



1. A positioning system for moving a dolly member along a substantially planar surface, said dolly member having a rotation axis normal to said planar surface and a translation axis parallel to said planar surface, said system comprising:

a target means for defining a reference point and a reference direction on said planar surface;

driving means for moving said dolly member on said planar surface;

detection means affixed to said dolly member for detecting said target means; and

processor means coupling said detection means to said driving means, said processor means

controlling said driving means to move said dolly member on said planar surface by dead reckoning to a vicinity of said target means; and

in response to an output of said detecting means, controlling said driving means to move said dolly member to bring the translation axis thereof parallel to the reference direction defined by said target means, and to bring the rotation axis of said dolly member into coincidence with the reference point defined by said target means.

5,008,805

REAL TIME, FAIL SAFE PROCESS CONTROL SYSTEM AND METHOD

Carolyn A. B. Fiebig, Burtonsville; Mike R. Fuqua, Frederick; Suresh K. Gursahaney, Gaithersburg; Gregg M. Margosian, Germantown, and Mark H. Weiss, Gaithersburg, all of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 3, 1989, Ser. No. 389,023
Int. Cl.[5] G06F *11/20*
U.S. Cl. 364—184 **15 Claims**

1. A fail safe data processing system for real time control of a plurality of devices, comprising:

a LAN having a plurality of devices coupled thereto, for communicating device control messages to said plurality of devices;

a system clock for generating a periodic time base for said system;

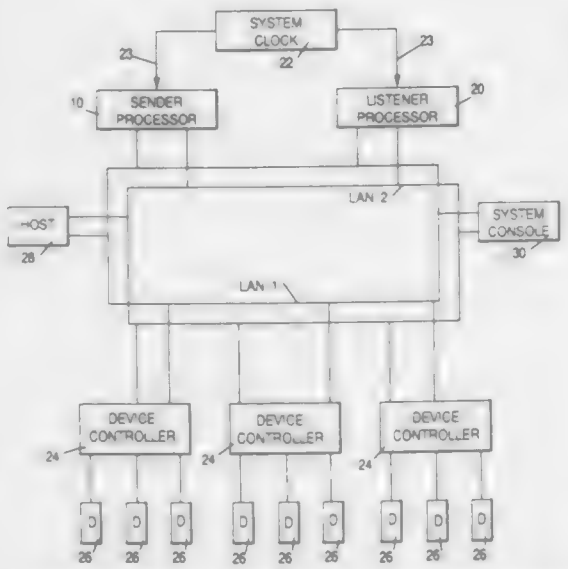
a first data processor operating in a sender mode, having a clock input coupled to said system clock, coupled to said LAN and having a memory storing a first control schedule table, a processor status table and a control program, for sequentially executing instruction steps in said control program for accessing data from said first control schedule table and generating a first sequence of device command messages, and outputting said messages to said LAN

for transmission to said plurality of devices and for updating a health status of said first processor in said processor status table;

a second data processor operating in a listener mode, having a clock input coupled to said system clock, coupled to said LAN and having a memory storing a second control schedule table and a control program, for sequentially executing instruction steps in said control program therein for accessing data from said second control schedule table and generating a second sequence of device command messages which are the same as said first sequence, and buffering said second sequence of device command messages in a listener data buffer;

said second data processor receiving said first sequence of command messages on said LAN and transferring said first sequence from said LAN to a receive data buffer in said second data processor;

a compare means in said second data processor coupled to said listener data buffer and to said receive data buffer, for comparing said first sequence of device command messages with said second sequence of device command messages;



a listener takeover means in said second data processor coupled to said compare means, for outputting a takeover request on said LAN to said first data processor when said first sequence of device command messages are not the same as said second sequence of device command messages, said listener takeover means further starting a takeover interval timer in said second data processor to expire at a predetermined timeout value;

a takeover response means in said first data processor coupled to said LAN, for receiving said takeover request and in response thereto, checking said processor status table to determine whether said first processor is able to continue operating in said sender mode;

said takeover response means outputting through said LAN to said second processor an agreement message if said processor status table indicates that said first processor is not able to continue said sender mode, said listener takeover means in said second data processor, in response thereto, changing said second processor to said sender mode, accessing said second sequence of device command messages in said listener data buffer and outputting over said LAN, device command messages to said plurality of devices.

5,008,806

METHOD OF CREATING NC DATA FOR MACHINING CURVED SURFACES

Masaki Seki; Koji Samukawa, and Osamu Hanaoka, all of Tokyo, Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

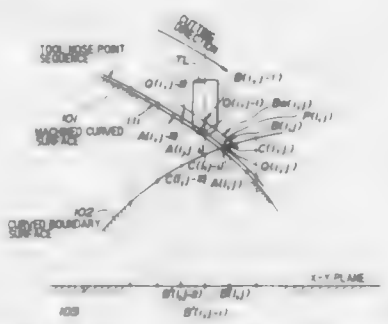
PCT No. PCT/JP88/00386, § 371 Date Dec. 12, 1988, § 102(e) Date Dec. 12, 1988, PCT Pub. No. WO88/08560, PCT Pub. Date Nov. 3, 1988

PCT Filed Apr. 20, 1988, Ser. No. 290,288

Claims priority, application Japan, Apr. 21, 1987, 62-98151

Int. Cl.[5] G05B *19/42*; G06F *15/46*

U.S. Cl. 364—191 **3 Claims**



1. A method of automatically creating NC data in an NC data creating apparatus and machining a curved surface, comprising:

a first step of inputting data specifying a first three-dimensional surface and data specifying a second three-dimensional surface that defines a cutting boundary in a depth direction of said first three-dimensional surface;

a second step of generating a first plurality of point-sequence paths defining said first three-dimensional surface and generating a second plurality of point-sequence paths that define said second three-dimensional surface;

a third step of determining a tool nose point sequence corresponding to a point sequence on said first curved surface based on said first plurality of point-sequence paths;

a fourth step of determining a projected point sequence obtained by projecting said tool nose point sequence onto a reference plane, and determining a projected point sequence on said second curved surface obtained by projecting said first-mentioned point sequence onto said second curved surface;

a fifth step of checking if a line segment connecting the tool nose point sequence and a line segment connecting the projected point sequence on said second curved surface intersect and if they do intersect, determining a point of intersection P(i,j);

a sixth step of creating NC data up to a point of said intersection P(i,j) if the line segments intersect; and

a seventh step of subsequently machining a curved surface by performing a pick-feed using the NC data.

5,008,807

DATA PROCESSING APPARATUS WITH ABBREVIATED JUMP FIELD

Steven D. Krueger, Dallas, and Michael J. Amundsen, Austin, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 628,071, Jul. 5, 1984, abandoned. This application Apr. 27, 1990, Ser. No. 517,979

Int. Cl.[5] G06F *9/32, 9/38, 9/26*

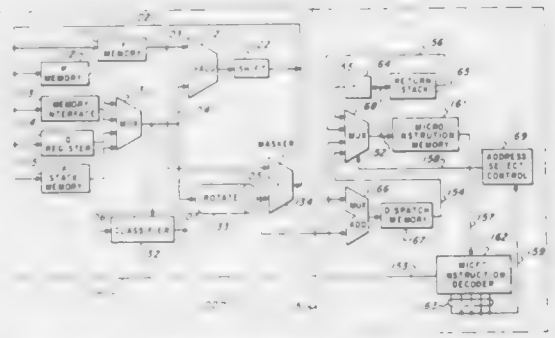
U.S. Cl. 364—200 **10 Claims**

1. A data processing apparatus comprising:

an instruction memory for storing therein a sequence of multiple instruction words, each instruction word specifying a data processing function, each of said instruction words having a limited control field for specifying preselected next possible instruction words, wherein said limited control fields is an instruction of said multiple instruction words;

a data processing unit for performing data processing functions on data words under control of recalled data instruction words;

an instruction control means for controlling the recall of instruction words from said instruction memory, said instruction control means determining the next sequential instruction to be recalled from said instruction memory



based upon the current instruction word in combination with control parameters for said data processing apparatus;

an instruction decode means connected to said data processing unit and to said instruction control means for decoding instruction words recalled from said instruction memory by said instruction control means, wherein said instruction decode means recalls the next instruction word based upon the value found in the limited control field of the current instruction.

5,008,808

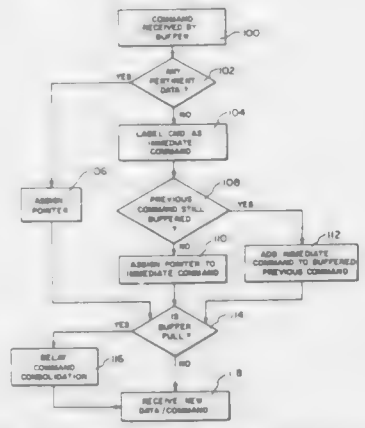
CONSOLIDATION OF COMMANDS IN A BUFFERED INPUT/OUTPUT DEVICE

William J. Fries, Merritt Island; Donald Kleinschnitz, and T. Craig Nelson, both of Melbourne, all of Fla., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Jun. 23, 1988, Ser. No. 210,719

Int. Cl.[5] G06F *9/318, 3/12*

U.S. Cl. 364—200 **7 Claims**



1. In a data processing system which includes a host computer, a channel coupling said host computer to a line printer, and a buffer within said line printer for buffering commands received across said channel from said host computer, wherein said received commands optionally include a data field containing data to be output by said line printer, a method of consolidating said commands in said line printer comprising the steps of:

checking each said command received by said buffer to determine whether it includes output data for said line printer;

assigning a pointer in said buffer to each said command not having output data associated therewith that is received prior to a command having output data associated therewith, each subsequent said command not having output data associated therewith that is received prior to said command having output data associated therewith being assigned a pointer lower in priority than the pointer assigned to an immediately previously buffered command not having output data associated therewith;

assigning a pointer in said buffer to a first of said received commands having output data associated therewith, said pointer assigned to said first received command being lower in priority than the pointer assigned to said immediately previously buffered command not having output data associated therewith;

combining each said check command not having output data with said first command;

printing said output data; and

executing said combined commands.

5,008,809

DATA PROCESSOR CAPABLE OF OUTPUTTING CODES REPRESENTING DISPLAYED PATTERNS

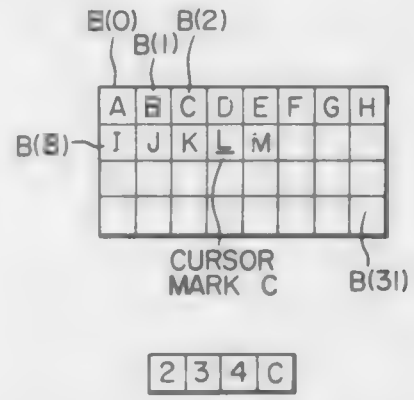
Katsumi Matsaki, Sagamihara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 719,030, Apr. 3, 1985, abandoned, which is a continuation of Ser. No. 351,457, Feb. 23, 1982, abandoned. This application Jan. 12, 1987, Ser. No. 4,849

Claims priority, application Japan, Mar. 2, 1981, 56-29542

Int. Cl.[5] G06F *3/14*

U.S. Cl. 364—200 **8 Claims**



1. An information processing apparatus comprising:

keyboard means for entering character information, said keyboard means having manual instruction means for recalling character information;

memory means for storing character information entered from said keyboard means, said memory means storing character information in the form of encoded signal information;

converting means connected to said memory means for converting character information stored in said memory means to corresponding character pattern information;

display means connected to said converting means for displaying the character pattern information converted from corresponding character information by said converting means; and

control means connected to said keyboard means for recalling encoded signal information corresponding to character pattern information being displayed by said display means and for displaying said character information in the form of encoded signal information on said display means when instructed by said manual instruction means, said

control means recalling said character information in the form of corresponding encoded signal information stored in said memory means after said character pattern information is displayed by said display means, said control means comprising cursor control means for specifying particular character pattern information being displayed by said display means for which the corresponding encoded signal information is to be displayed, said cursor control means specifying said particular character pattern with a cursor.

5,008,810

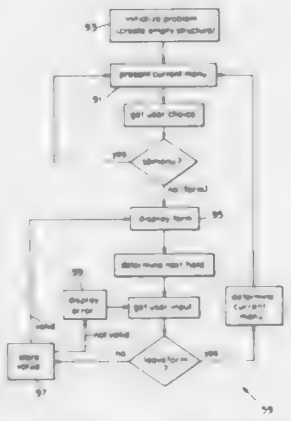
SYSTEM FOR DISPLAYING DIFFERENT SUBSETS OF SCREEN VIEWS, ENTERING DIFFERENT AMOUNT OF INFORMATION, AND DETERMINING CORRECTNESS OF INPUT DEPENDENT UPON CURRENT USER INPUT

William C. Kessel, Watertown; John L. Laclaire, Cambridge; Andrew L. Lui, West Newton; Michael H. Locke, Lakeville, and Herbert I. Britt, Cambridge, all of Mass., assignors to Process Modeling Investment Corp., Wilmington, Del.

Filed Sep. 29, 1988, Ser. No. 251,514

Int. Cl.[5] G06F *15/403, 15/46*

U.S. Cl. 364—200 **20 Claims**



19. A method of forming an input file for a computer controlled model process simulation device, comprising the steps of:

displaying on a video display, controlled by computer means, an ordered series of screen views to provide an arranged course for user entry of data for forming a complete input file, at least one screen view providing input fields for receiving data entered by the user through an input device coupled to the computer means;

providing to a user on each screen view a state of completeness and prompts directing the user through the arranged course;

determining correctness of data currently entered by the user for one input field according to data which was entered by the user for other input fields, and if correct, updating the state of completeness provided by each screen view, a complete state being established when a complete and error free input file is formable from the user entered data, amount of user entered data to form a complete input file being a function of content of data entered by the user along the arranged course;

forming a changeable subset of the ordered series of screen views in response to the updating of the state of completeness, the subset providing that portion of the arranged course for user entry of data necessary to enable a complete input file to be formed with data entered by the user thus far;

displaying the subset upon user command;

updating the state of completeness with each user entry of data in a screen view of the subset; and

changing the subset in response to each updating of the state of completeness.

5,008,811

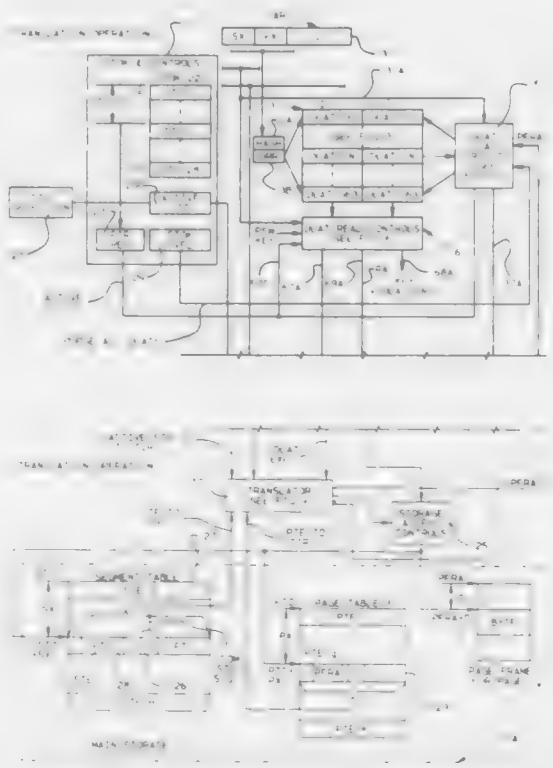
CONTROL MECHANISM FOR ZERO-ORIGIN DATA SPACES

Casper A. Scalzi, Poughkeepsie, and Richard J. Schmalz, Wappingers Falls, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Feb. 10, 1988, Ser. No. 154,688

Int. Cl.[5] G06F *12/00*

U.S. Cl. 364—200 **6 Claims**



1. In a central processing complex comprising a CPU, main storage, system resources connected to the CPU and to the main storage, and an operating system supporting a plurality of virtual address spaces containing instructions and data, each of said virtual address spaces comprising virtual addresses at least one range of said virtual addresses being termed a segment, said segment having an included range of virtual addresses termed a page, a mechanism for supporting two distinct virtual address space types,

a program address space type comprising one or more program address spaces in which at least one common range of virtual addresses represents virtual storage that is common to all such program address spaces, and

a data address space type comprising one or more data spaces in which said at least one common range of virtual addresses represents virtual storage unique to each data space,

said mechanism comprising:

(a) storage access control means for accessing main storage using a real address;

(b) translator means for translating any supplied virtual address, supplied by a supplying one of said virtual address spaces and associated with a first one of said virtual address spaces, into an associated real address for use by said storage access control in accessing main storage,

(c) segment table descriptor (STD) selector means, within said CPU, for associating an STD with said any supplied virtual address,

(d) tale means in main storage comprising a segment table, located by each STD, said segment table having segment table entries, each of said segment table entries locating a page table, said table means usable by said translator means in translating said any supplied virtual address,

(e) a dynamic lookaside table (DLAT) coupled to said storage access control and having DLAT entries comprising a DLAT virtual address associated with a particular virtual address space, a corresponding previously translated DLAT real address, and segment table origin ID having a plurality of possible values, one possible value being a common indicator indicating that the DLAT virtual address in the entry having the common indicator falls within said at least one common range, said DLAT entries usable by said storage access control for bypassing said translator means for translating any supplied virtual address,

(f) a data space indicator associated with said any supplied virtual address and identifying said any supplied virtual address as being associated with either any one of said one or more program address spaces (the being said to be "off") or any one of said one or more data spaces (then being said to be "on"), and

(g) DLAT read control means, coupled to said DLAT, and responsive to said data space indicator, for directly obtaining from the DLAT the associated real address for use by said storage access control means, thus permitting bypass of the translator means when said data space indicator is "off" if:

(1) said any supplied virtual address matches the DLAT virtual address of a first one of said DLAT entries, and said DLAT entry has the common indicator, so that said first one of said DLAT entries for said any supplied virtual address is shared by all of said program address spaces,

but directly obtaining from the DLAT the associated real address thus permitting bypass of the translator means when said data space indicator is "on" only if:

(1) said any supplied virtual address matches the DLAT virtual address of a second one of said DLAT entries, and

(2) the particular virtual address space associated with the DLAT virtual address of the second one of said DLAT entries is the data space containing said any supplied virtual address, so that the second one of said DLAT entries cannot be shared among said data spaces, even if it has the common indicator.

5,008,812

CONTEXT SWITCHING METHOD AND APPARATUS FOR USE IN A VECTOR PROCESSING SYSTEM

Dileep P. Bhandarkar, Shrewsbury, Mass.; Dave Cutler, Bellevue, Wash.; Wayne Cardoza, Merrimack, N.H.; Rich Witek, Littleton, Mass., and Dave Orbits, Redmond, Wash., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 18, 1988, Ser. No. 170,399

Int. Cl.[5] G06F *9/46, 15/16, 15/347*

U.S. Cl. 364—200 **13 Claims**

1. A multitasking data processing system for alternately executing portions of a plurality of processes, said processes consisting of sequences of instructions which can include vector instructions involving data processing operations on vector quantities and scalar instructions involving data processing operations on nonvector quantities, the one of said plurality of processes currently being executed by said data processing system being called a current process, and the data processing system comprising:

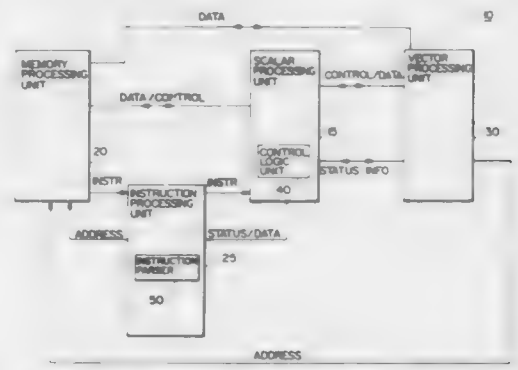
a memory having a plurality of portions, each of the portions corresponding to a different one of said processes;

scalar processing means for executing scalar instructions;

vector processing means for executing vector instructions in said processes, said vector processing means including vector state means for storing state information describing an execution state of said vector processing means;

instruction decoding means, coupled to said scalar processing means and said vector processing means, for identifying and routing the scalar instructions and vector instructions in the processes to said scalar processing means and said vector processing means, respectively;

vector instruction identifying means, coupled to said instruction decoding means, for recognizing when said current process is about to execute one of said vector instructions;



last user indicating means for identifying as a last vector user process the one of said processes for which said vector processing means most recently executed a vector instruction; and

saving means, coupled to said vector instruction identifying means and said last user indicating means, for causing said data processing system to store said vector state information in said memory at one of the locations corresponding to the last vector user process when said vector instruction identifying means recognizes both that said current process is about to execute a vector instruction and that said last vector user process is different from said current process.

5,008,813

MULTI-CACHE DATA STORAGE SYSTEM

David P. Crane; Terence M. Cole, both of Reading, and Geoffrey Poskitt, Camberley, all of England, assignors to International Computers Limited, London, England

Filed Oct. 21, 1988, Ser. No. 261,033

Claims priority, application United Kingdom, Dec. 5, 1987, 8728494

Int. Cl.[5] G06F *13/00*

U.S. Cl. 364—200 **2 Claims**

1. A cache unit comprising:

(A) means for receiving a virtual address comprising first, second and third portions,

(B) means for receiving an input physical address comprising first and second portions,

(C) a data cache RAM for holding a plurality of data items,

(D) first multiplexing means for selecting one of the following to address the data cache RAM:

(i) the first and second portions of the virtual address,

(ii) the first portion of the input physical address and a reconstructed second portion of the virtual address,

(E) a memory management unit for translating the virtual address to form an output physical address comprising first and second portions, the first portion of the output physical address being equal to the first portion of the virtual address, and the second portion of the output physical address being derived from the second and third portions of the virtual address,

(F) a plurality of tag RAMS, each of which holds a plurality of physical address tags, each tag RAM having address, data and write enable inputs, and having a HIT output

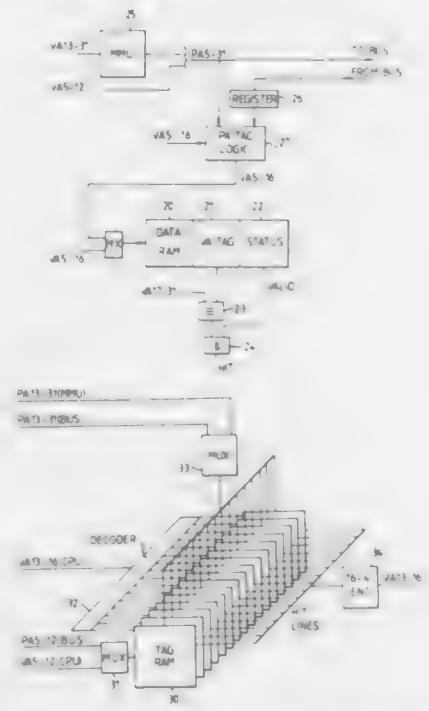
which indicates a match between data applied to the data input and a currently addressed tag in that tag RAM,

(G) second multiplexing means for selecting one of the following to be applied in parallel to the address inputs of all the tag RAMs:

(i) the first portion of the virtual address,

(ii) the first portion of the physical address,

(H) third multiplexing means for selecting one of the following to be applied in parallel to the data inputs of all the tag RAMs:



(i) the second portion of the output physical address,

(ii) the second portion of the input physical address,

(I) a decoder having an input connected to receive the second portion of the virtual address and having a plurality of outputs connected to the write enable inputs of the respective tag RAMs, and

(J) an encoder having a plurality of inputs connected to receive the HIT outputs of the respective tag RAMs, and having an output which supplies said reconstructed second portion of the virtual address.

5,008,814

METHOD AND APPARATUS FOR UPDATING SYSTEM SOFTWARE FOR A PLURALITY OF DATA PROCESSING UNITS IN A COMMUNICATION NETWORK

Ashish Mathur, Sunnyvale, Calif., assignor to Network Equipment Technologies, Inc., Redwood City, Calif.

Filed Aug. 15, 1988, Ser. No. 232,293

Int. Cl.[5] G06F *15/00, 11/00*

U.S. Cl. 364—200 **21 Claims**

12. In a communication network having a plurality of processing units distributed among multiple nodes linked by communication channels where each of the processing units is coupled to at least one memory unit and where each memory unit has a status identification, maintenance apparatus for updating system software among the processing units from a first version to a second version comprising:

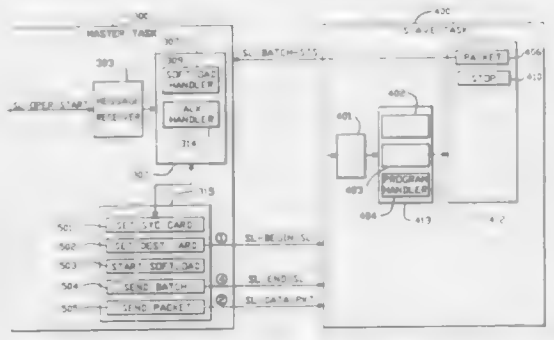
first means in a source node for receiving the second version;

second means coupled to the first means for transmitting the second version through the network to one or more specified memory units in one or more other nodes, including means for assigning a first status to the specified memory units, and means for changing the first status to a second status upon successfully communicating the second version thereto,

for at least one of said other nodes,

third means for initiating a trial use of the second version in a processing unit of the one of said other nodes, including means for changing the status of memory units containing the second version to a third status;

fourth means for detecting whether the second version operates successfully or fails to operate successfully during the trial use;



said fourth means including, in response to a detection that the second version fails to operate successfully during the trial use means, for restoring the one of said other nodes to the first version, including means for changing the memory units containing the second version to the second status; and

fifth means, in response to a detection that the second version operates successfully during the trial use, for designating the second version as a preferred version of system software, including means for changing the status of the memory units containing the second version to a fourth status.

5,008,815

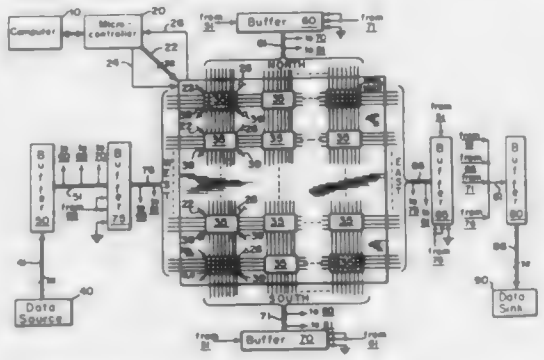
PARALLEL PROCESSOR

W. Daniel Hillis, Brookline, Mass., assignor to Thinking Machines Corporation, Cambridge, Mass.

Continuation of ser. No. 499,474, May 31, 1983, Pat. No. 4,814,973. This application Jun. 27, 1988, Ser. No. 184,739

Int. Cl.[5] G06F *15/16*

U.S. Cl. 364—200 **16 Claims**



1. Message switching apparatus comprising:

a plurality of message inputs on which messages are received;

a plurality of message outputs on which messages are transmitted;

storage means for storing said messages, said storage means having a plurality of inputs and an equal number of outputs;

an array of logic cells equal in number to a product of the number of message inputs and the number of storage means inputs, said array of logic cells being organized in two dimensions hereinafter referred to as rows and columns, the number of rows equaling the number of storage means inputs and the number of columns equaling the number of message inputs.

each logic cell except those at the edges of the array comprising:

(a) means for receiving a message from a cell in an adjacent row,

(b) means for receiving a message from a cell in an adjacent column,

(c) means for transmitting a message to a cell in an adjacent column,

(d) means for transmitting a message to a cell in an adjacent row,

(e) means for transmitting a message to one of said message outputs, and

(f) logic means for steering a message to an adjacent row, and adjacent column or a message output,

each logic cell in one of the rows at the edge of the array comprising:

(a) means for receiving a message from one of said plurality of message inputs,

(b) means for receiving a message from a cell in adjacent column,

(c) means for transmitting a message to a cell in an adjacent column,

(d) means for transmitting a message to a cell in an adjacent column,

(e) means for transmitting a message to one of said message outputs, and

(f) logic means for steering a message to an adjacent row, an adjacent column or a message output.

5,008,816

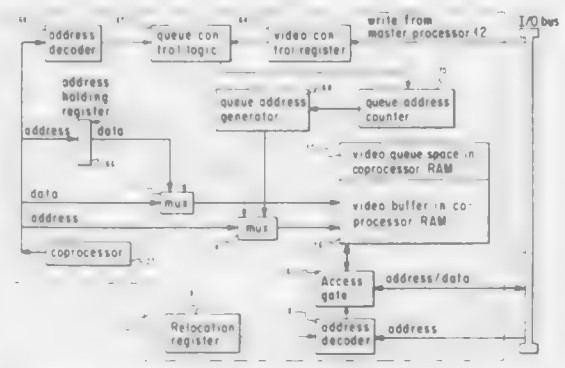
DATA PROCESSING SYSTEM WITH MULTI-ACCESS MEMORY

Richard G. Fogg, Jr., and John W. Irwin, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 6, 1987, Ser. No. 117,715

Int. Cl.[5] G06F *12/00, 15/16, 13/10*

U.S. Cl. 364—200 **8 Claims**



1. A memory system comprising:

a first plurality of memory locations for storing information in response to access commands having addresses within a first address range;

a second plurality of memory locations for storing information within a second address range; and

means for writing information in said first plurality of memory locations in response to write commands having addresses within said first address range and, within a same write cycle, writing each write command address in said second plurality of memory locations.

5,008,817

METHOD AND APPARATUS FOR TRANSFERRING ADDRESSES AND INFORMATION IN A BUFFER MEMORY AND A COMMON MAIN STORAGE DEVICE

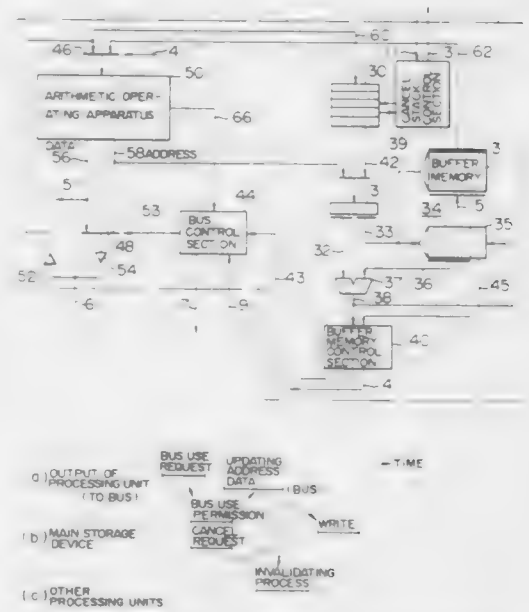
Masabumi Shibata; Akira Ishiyama, and Takeshi Takemoto, all of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 22, 1988, Ser. No. 222,841

Claims priority, application Japan, Jul. 24, 1987, 62-183721

Int. Cl.[5] G06F *9/00*

U.S. Cl. 364—200 **17 Claims**



1. An information processing apparatus comprising.

a bus;

a main storage device connected to said bus, said main storage device containing updatable information and addresses corresponding to said information,

a plurality of processing units connected to said bus such that said processing units continuously monitor the bus, each one of said processing units including a buffer memory having copies of selected portions of the updatable information and the corresponding addresses and means for updating the information; and,

a plurality of signal lines for said each one of said processing units, said signal lines connecting said processing units and said main storage for passing signals between said processing units and said main storage, without requiring access to said bus, said plurality of signal lines including:

a bus use request line, for sending a bus use request signal from a processing unit of said processing units to said main storage in order to pass updated information from said processing unit to said main storage over said bus;

a cancel request line for sending a cancel request signal from said main storage to each of said processing units other than said processing unit which sent said bus use request signal, in order to invalidate buffer memory information corresponding to the address of the updated information, wherein each of said processing units receiving said cancel request signal checks the buffer memory for an address corresponding to the address of the updated information and invalidates the information corresponding to that address, whereby invalidation of information in each of said processing units receiving said cancel request signal is obtained without the requirement of accessing the bus to send at least one of said bus use request signal and said cancel request signal.

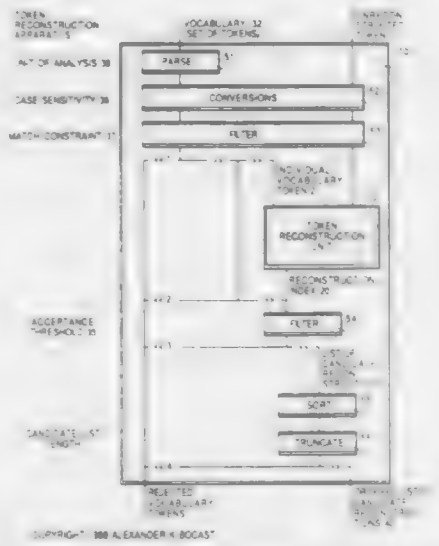
5,008,818

METHOD AND APPARATUS FOR RECONSTRUCTING A TOKEN FROM A TOKEN FRAGMENT

Alexander K. Bocast, 2206 S. Dinwiddie St., Arlington, Va. 22206, assignor to Alexander K. Bocast, Arlington, Va.

Filed Apr. 24, 1989, Ser. No. 342,085
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—200 **21 Claims**

MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 37 Pages)



1. In a data processing system wherein messages comprising tokens, or strings of characters, may be corrupted into fragments which must be reconstructed into the original tokens, a method of reconstructing an original token from an input string containing at least one unreconstructed token consisting of at least one character, a character being at least one symbol for a letter, a numeral, a punctuation element, or other element of a token, the unreconstructed token having a first end and second end, the method comprising the steps of iteratively calculating and recording at least two indices for the unreconstructed token and at least two indices for a comparison vocabulary string having at least one character, the vocabulary string having a first end and a second end, the iterative calculation involving comparisons of characters in the unreconstructed token with characters in the vocabulary string, at least one of the indices serving both to point to a character of the unreconstructed token for comparison with a character of the vocabulary string and to indicate a position within the unreconstructed token from either the first end or the second end of the unreconstructed token, the position being determined by a series of successful character comparisons, a successful character comparison occurring when a character in the unreconstructed token matches a character in the vocabulary string, the at least one index being revised upon each successful character comparison, whereby a measure of likelihood that the vocabulary string is a reconstruction of the original token is determined.

5,008,819

MEMORY SPACED ARRAY

George G. Gorbatenko, 924 Sierra La. NE., Rochester, Minn. 55904

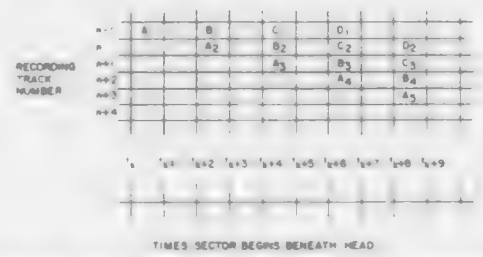
Continuation of Ser. No. 105,872, Oct. 7, 1987, abandoned. This application Jul. 19, 1989, Ser. No. 383,235
Int. Cl.[5] G06F *7/00, 13/00*
U.S. Cl. 364—200 **78 Claims**

1. A method for storing discrete information representations at, and retrieving such discrete information representations from, any of a plurality of storage locations in an alterable state material provided in a storage means with said plurality of storage locations including first and second sequential pluralities of said storage locations therein each of which has its said storage locations arranged in a sequential order, said storage means being capable of permitting access successively to said storage locations in each of said first and second sequential pluralities thereof only in its said sequential order for purposes of such storing and retrieving and, after permitting access to a selected said storage location in one of said first and second sequential pluralities thereof for such a purpose, being capable of permitting that next following access for such a purpose to a corresponding said storage location in that other said sequential plurality remaining which is first available for such a following access, said method comprising:

receiving at a first input in said storage means a first sequence of said discrete information representations;

storing said first sequence of discrete information representations in said first sequential plurality of storage locations in said alterable state material;

receiving at a second input in said storage means a second sequence of said discrete information representations



where each said discrete information representation in said first sequence thereof, if retrieved by said storage means and provided at a first output thereof, is to have either of a selected one of (i) its following said discrete information representation in said first sequence, if any, and (ii) a corresponding said discrete information representation in said second sequence, directly retrievable thereafter and provided at a second output of said storage means; and

storing each of said discrete information representations in said second sequence thereof in a said storage location selected from that portion of those said storage locations in said second sequential plurality thereof included in its sequential order onward from that said storage location therein corresponding, as aforesaid, to that said storage location in said first sequential plurality thereof in which is stored that discrete information representation in said first sequence thereof to which that said second sequence discrete information representation being stored corresponds.

5,008,820

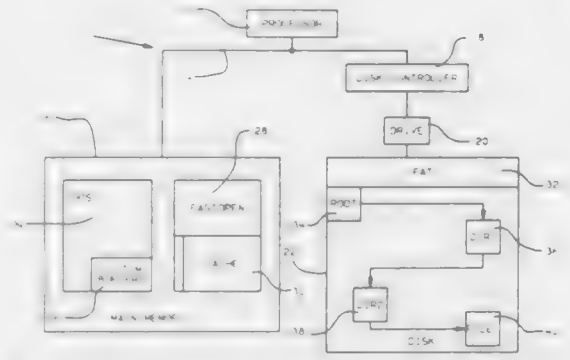
METHOD OF RAPIDLY OPENING DISK FILES IDENTIFIED BY PATH NAMES

Kenneth W. Christopher, Jr., Lighthouse Point; Barry A. Feigenbaum; Jin Kim, both of Boca Raton, and Douglas C. Love, Delray Beach, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1987, Ser. No. 32,210
Int. Cl.[5] G06F *12/02, 15/40*
U.S. Cl. 364—200 **10 Claims**

1. A method of operating a personal computer system having a first disk drive including a first disk in which is stored a tree structure of directories and files, said directories and said files being stored in different clusters on said disk, each directory containing a list of directory entries identifying files and directories stored therein, each directory entry for a directory containing information including a directory name and starting cluster where such directory is stored on said disk, each directory entry for a file containing information including a file name and starting cluster where such file is stored on said disk, said data processing system further comprising a main memory for storing data, said data stored in said memory being accessible at a rate substantially faster than the rate at which data stored on said disk can be accessed, said method comprising the steps of:

(a) creating in said main memory a first cache containing a predetermined number of cache entries for storing a history of paths to most recently used files in said disk drive, said cache entries including one cache entry for each file and one cache entry for each directory to such file, a cache entry for a directory containing the directory entry for such directory, a cache entry for a file containing the directory entry for such file;



(b) in response to an initial request to open a given file nested in a path of directories where such request identifies said given file by its file name and each of said directories in said path by their directory names, accessing said disk at least once for each directory and at least once for said given file and reading from said disk the directory entries corresponding to said given file and to each directory in said path to said given file;

(c) storing said directory entries read in step (b) in cache entries in said cache and forming a chain to create a history of said path to said given file;

(d) in response to a subsequent request to open said given file, searching through said cache entries in said chain to locate said directory entry therein for said given file; and

(e) opening said given file by using said directory entry located in step (d).

5,008,821

COMPUTERIZED PROCESS AND SYSTEM FOR ASSIGNING AND DELIVERING FEED TO ANIMALS IN A FEEDLOT

William C. Pratt, Canyon, and William D. McKillip, Amarillo, both of Tex., assignors to Micro Chemical, Inc., Amarillo, Tex.

Continuation-in-part of Ser. No. 85,073, Aug. 12, 1987. This application Jan. 26, 1988, Ser. No. 148,685
Int. Cl.[5] A01K *5/02*
U.S. Cl. 364—413.01 **23 Claims**

1. A system for assigning feed to feed bunks in a feedlot, comprising:

computer means programmed for receiving, storing, and displaying feed consumption data for each of a plurality of animal pens in the feedlot;

data entry means accessible at each of said animal pens for entering feed assignment data for the feed bunk associated with an animal pen and for communicating said assignment data to the computer means; and

display means accessible at each of said animal pens and communicating with the computer means for displaying the feed consumption data for the animal pen;

identification means associated with each animal pen for identifying the animal pen;

the data entry means including means for reading the identification means.

13. A process for assigning feed to feed bunks in a feedlot, comprising:

driving to an animal pen having an associated feed bunk for which feed is to be assigned;

entering pen identification data for the pen in a computer programmed to store data about each pen;

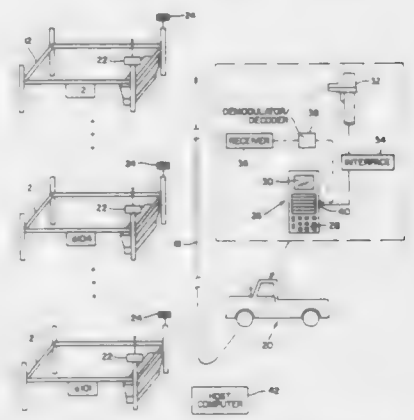
observing the condition of the feed bunk for making a feed assignment;

entering feed assignment data for the feed bunk into the computer for recording with the pen identification;

repeating the above steps until feed has been assigned to each feed bunk; and

gathering the entered data for determining the feed to be delivered to the animal pens;

the entering of pen identification data comprising reading the pen identification on the animal pen by machine.



17. A process for delivering feed rations to feed bunks in a feedlot, comprising:

storing in a computer for selective display feed delivery data for each of a plurality of animal pens in the feedlot, each pen having an associated feed bunk, said data including the type of feed ration for each pen;

loading a feed truck with a ration quantity for said delivery;

driving to one of the animal pens for delivering the ration quantity;

entering in the computer pen identification data;

checking via the computer the pen identification data against the type of ration to determine if the ration type is to be dispensed to the pen;

monitoring the ration quantity as it is being dispensed into the feed bunk associated with the pen;

repeating the above steps for each animal pen; and

recording for each pen the actual quantities dispensed;

the entering of pen identification data comprising reading the pen identification on the animal pen by machine.

5,008,822

COMBINED HIGH SPEED BACKPROJECTION AND FORWARD PROJECTION PROCESSOR FOR CT SYSTEMS

Carl J. Brunnett, Willoughby Hills; Allen B. Zachary, Cleveland, and Holly C. Heiple, Cleveland Hts., all of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio

Filed Nov. 25, 1988, Ser. No. 276,859
Int. Cl.[5] G06F *15/42*
U.S. Cl. 364—413.21 **18 Claims**

1. A diagnostic imaging system comprising:

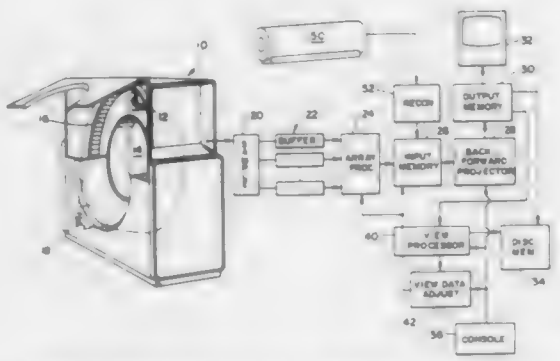
a CT scanner for generating CT views of radiation intensity data, each CT view including view data elements which correspond to an intensity of radiation along a corresponding ray through a scan circle;

an array processor means for processing a plurality of the CT views;

a non-invasive examination means for generating diagnostic data indicative in interior regions of a subject;

an image reconstruction means for reconstructing the diagnostic data into an image representation;

a combined backprojector and forward projector means for backprojecting views into an image representation and for



forward projecting data of the image representation into view representations;

an input memory which is connected with an input of the combined backprojector and forward projector means for selectively loading the image representation data into the combined backprojector and forward projector means to be forward projected into the view representations, the input memory being operatively connected with the image reconstruction means.

5,008,823

METHOD AND APPARATUS FOR DETERMINING FAILURE OF VEHICLE STEERING SENSING DEVICE

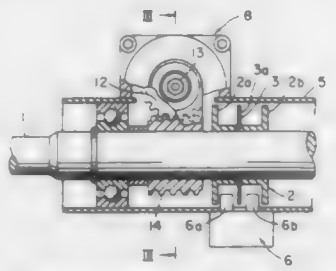
Akira Takahashi, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 9, 1990, Ser. No. 491,204

Claims priority, application Japan, Mar. 14, 1989, 1-61442

Int. Cl.[5] G01M *19/00;* **B62D** *1/00*

U.S. Cl. 364—424.03 **5 Claims**



1. A method of determining a failure of a steering sensing device of a steering shaft mounted on a motor vehicle, comprising the steps of:

detecting steering angle of the steering shaft from a neutral position by a steering angle sensor;

sensing a steering speed of the steering shaft by means of a steering speed sensor;

calculating a variation with time of the steering angle detected by the steering angle sensor;

comparing the variation with the steering speed; and

determining a failure of at least one of the steering angle sensor and the steering speed sensor when the difference or a ratio between the variation and the steering speed is outside a predetermined range.

5,008,824

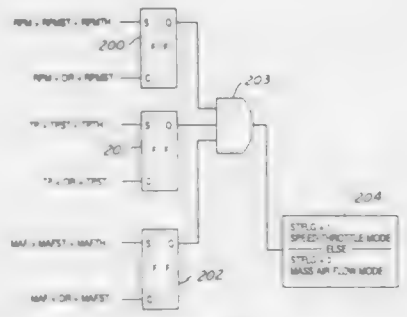
HYBRID AIR CHARGE CALCULATION SYSTEM

Walter F. Clark, Plymouth, and Bor-Dong Chen, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 19, 1989, Ser. No. 368,001

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—431.05 **6 Claims**



1 A method of determining air charge into an internal combustion engine including the steps of:

deciding between using either a mass airflow sensor mode determination or a speed throttle mode of calculation as a function of engine RPM, throttle position, and mass airflow;

using a mass airflow sensor reading to determine air charge if the mass airflow mode has been chosen;

using a speed throttle look-up table to obtain air charge if the speed throttle mode has been chosen;

providing a first Q output from a first flip-flop having a set input of one when engine RPM is greater than a first RPM constant and having a clear input of one when RPM is less than a second RMP constant wherein the first RPM constant is the sum of an engine speed threshold necessary to exit the mass airflow mode plus an engine speed hysteresis to enter the speed throttle mode and the second RPM constant is the engine speed threshold necessary to exit the mass airflow mode;

providing a second Q output from a second flip-flop having a set input which is one when throttle position is greater than a first throttle position constant and having a clear input of one when throttle position is less than or equal to a second throttle position constant;

providing a third Q output from a third flip-flop having a set input which is one when mass airflow is greater than a first mass airflow constant and a clear input which is one when mass airflow is less than or equal to a second mass airflow constant;

coupling the three Q outputs of said first, second and third flip-flops as inputs of an AND logic; and

choosing speed throttle mode when the output of the AND logic is one and choosing mass airflow mode when the output of the AND logic is zero.

5,008,825

APPARATUS AND METHODS FOR AUTOMATICALLY MAINTAINING AIRCRAFT TRACK ANGLE

Arun A. Nadkarni, 12836 NE. 135th St., Kirkland, Wash. 98034, and Mithra M. K. V. Sankrithi, 4554 143rd Ave., SE., Bellevue, Wash. 98006

Filed May 1, 1989, Ser. No. 346,432

Int. Cl.[5] B60C *13/18*

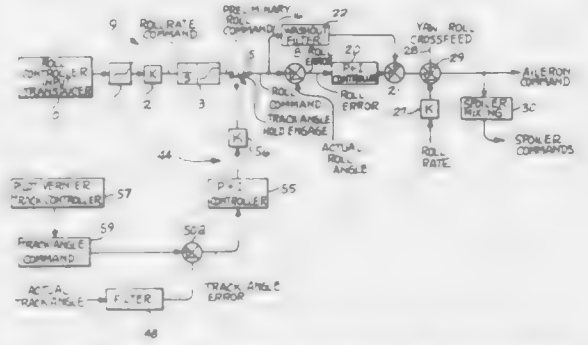
U.S. Cl. 364—434 **47 Claims**

1. A control system for an aircraft, the control system comprising:

a. roll input means, (i) which are movable by a pilot of the aircraft, for generating a first command signal which is a function of an input made by the pilot to the roll input means so as to control a roll angle of the aircraft and (ii) which are movable in a manner that when the roll input means are in a neutral position there is no rolling moment applied to the aircraft in response to the first command signal;

b. means for generating a second command signal, as a function of a selected navigation angle, for controlling a roll angle of the aircraft so as to maintain the selected navigation angle;

c. aircraft rolling means for generating a rolling moment on the aircraft; and



d. control means for causing the aircraft rolling means to respond to the first command signal from the roll input means, unless the roll input means is in the neutral position and the first command signal is within a calculated roll angle threshold value, in which case the aircraft rolling means is caused to respond to the second command signal so as to maintain the selected navigation angle.

5,008,826

METHOD AND APPARATUS FOR BALANCING A WHEEL OF A VEHICLE OR THE LIKE

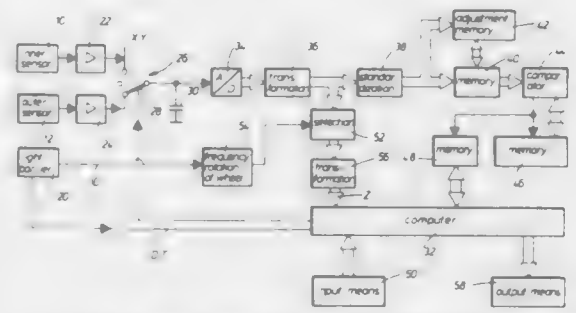
Alfons Staudinger, Munich, and Hermann Bux, Pöcking/Possenhofen, both of Fed. Rep. of Germany, assignors to A. Rohé GmbH, Schollkrippen, Fed. Rep. of Germany

Filed Feb. 2, 1989, Ser. No. 305,395

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1988, 3803325

Int. Cl.[5] G01M *1/22*

U.S. Cl. 364—463 **23 Claims**



10. Method for analyzing a wheel of a vehicle with a balancing machine comprising a shaft on which a wheel being mounted thereon is rotatable, electrical sensors being coupled to the shaft and issuing sensor output signals when forces are applied to the wheel, and a computer calculating and issuing unbalance values from the sensor output values in connection with specific wheel data being peculiar for the wheel to be balanced, wherein

the sensor output signals in case of a driven wheel are transformed into an unbalance frequency spectrum, and

the unbalance values are calculated from the unbalance frequency spectrum.

5,008,827

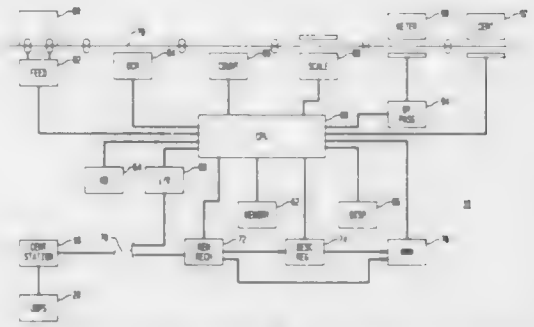
CENTRAL POSTAGE DATA COMMUNICATION NETWORK

Ronald P. Sansone, Weston; Karl H. Schumacher, Westport, both of Conn.; Raymond Kesting, Purdys, N.Y.; Joseph W. Wall, Monroe, and Uday W. Joshi, Wilton, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 16, 1988, Ser. No. 285,891

Int. Cl.[5] G07B *17/00*

U.S. Cl. 364—464.02 **68 Claims**



1. A communication system for processing information for distribution, comprising: a central data station, a plurality of user stations, each of said user stations including a plurality of components forming a path for the proper distribution of said information, a communication link interconnecting said user stations with said central data station, said central data station including means for periodically interrogating via said link a user station for determining the operational status of each of said components, said user station including as one of its components a certification means for certifying that all said components are operational, and means for applying a visual indication of said certification to said information when distributed.

5,008,828

TOOL LATHE PROVIDED WITH IMPROVED CONTROL MEANS

Jean C. Pinard, Chevagnes; Bernard Jacquard, Yzeure, and André Besancon, Moulins, all of France, assignors to Societe Somab S.A., Moulins, France

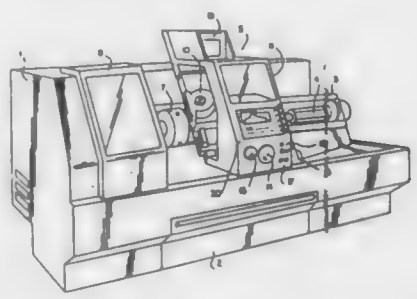
PCT No. PCT/FR88/00048, § 371 Date Oct. 3, 1988, § 102(e) Date Oct. 3, 1988, PCT Pub. No. WO88/05936, PCT Pub. Date Aug. 11, 1988

PCT Filed Jan. 28, 1988, Ser. No. 264,969

Claims priority, application France, Jan. 30, 1987, 87 01430

Int. Cl.[5] G06F *15/00*

U.S. Cl. 364—474.28 **9 Claims**



1. A center lathe type tool lathe, having a tool and a rotating chuck and capable of advancing the tool such that the advance of the tool is a function of the rotation (n) of the chuck, such lathe being capable of performing the operations of turning (displacement of the tool parallel to the axis of the rod), of facing (displacement of the tool perpendicularly to the axis of the rod), of linear threading interpolation (rapid displacement of the tool in proportion to the angle of rotation of the rod), of

taper joining (succession of a linear interpolation, of a partial circular interpolation and of a second linear interpolation), said lathe employing a means of calculation and digital control known and located in a computer/operator center, also called a processor or automaton, which center effects the displacement of the tool, it also being possible for said tool lathe to comprise a means for electronically machining a countour and copying said contour, which electronic contour and copying means comprises:

a first means for selecting at least one machining contour or tool path from a plurality of elementary paths comprising turning, facing, linear interpolation path and circular interpolation path and threading,

a second means which, when the tool has been manually brought by means of a pair of levers into an initial position (x_o, e_o) calls one or successively more parameters of this path of the group of parameters comprising a turning length, a final facing pass diameter, an angle of taper, a machining radius, a threading pitch (advance per turn), and in order to follow one parameter, introduces the digital value of this parameter,

a third means, whereby the type of machining contour selected is displayed, and the parameter or parameters are called and their digital values are introduced, and,

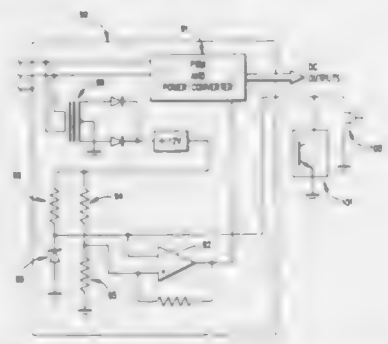
a handling means, whereby a machining contour having been selected and the tool being in the starting position, triggers the displacement of the tool on its path or, alternatively stops the tool at any point of its path.

5,008,829

PERSONAL COMPUTER POWER SUPPLY

Roger L. Cox, Plantation; Michael J. DeLoye, Boynton Beach, and Robert L. Myers, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1990, Ser. No. 536,751
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—480 **10 Claims**



8. A microcomputer comprising:

electrically powered data processing and storage components for processing and storing digital data, and

a pulse width modulation switching power supply for connection with an alternating current electrical main supply and for supplying direct current electrical power to said data processing and storage components for enabling operation thereof, said power supply comprising:

a controllable pulse width modulator for responding to the presence and absence of a low voltage direct current electrical signal by enabling and disabling the supply of electrical power to said data processing and storage components, and

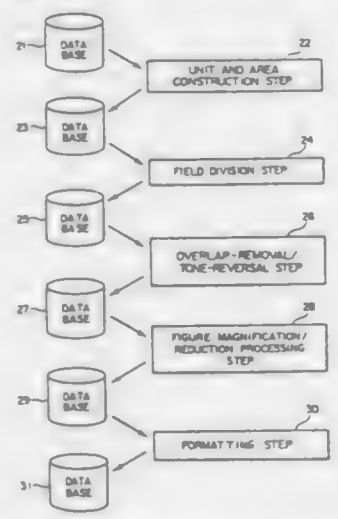
a signal generator circuit operatively connected with said controllable component and with an alternating current electrical main supply for controllably deriving from the main supply a low voltage direct current signal for delivery to said controllable component, said signal generator circuit comprising a comparator, a first signal circuit for supplying to the comparator a low voltage direct current reference signal, and a controllable second signal circuit for controllably supplying to the comparator a low voltage enable/disable signal varying between a first voltage and a second, higher voltage, said comparator when supplied with said reference signal and said enable/disable signal having said first voltage delivering to said controllable component said first mentioned signal, whereby a user of the microcomputer may control energization of the electrically powered data processing and storage components by controlling the application of said low voltage direct current signal from said signal generator circuit to said controllable component.

5,008,830

METHOD OF PREPARING DRAWING DATA FOR CHARGED BEAM EXPOSURE SYSTEM

Koichi Moriizumi, and Takeshi Fujino, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Dec. 1, 1988, Ser. No. 278,452
Claims priority, application Japan, Aug. 10, 1988, 63-198032
Int. Cl.[5] G06F *15/60, 15/20*
U.S. Cl. 364—490 **8 Claims**



1. A method of preparing drawing data for a charged beam exposure system comprising:

constructing from pattern data describing features representing elements in a semiconductor integrated circuit, a pattern having a total area, at least one reiterative unit, each reiterative unit representing a repeating sub-pattern of features, a plurality of identical reiterative units being disposed in a respective array, the respective reiterative units being contiguously disposed without any gaps therebetween in the respective arrays, each array representing a subarea within the total area;

converting the pattern data into first figure processing data including pattern data for the total area and for each of the sub-areas and corresponding reiterative units;

dividing the first figure processing data into a plurality of fields, each field chosen to accommodate characteristics of a charged beam exposure system and representing a portion of the total area, some of the fields representing areas including part or all of an array, each field including any part of an array including only a whole number of reiterative units of the respective array, to form second figure processing data;

performing figure modification processing of the second figure processing data for each field, separately processing second figure processing data representing areas in each field, if any, not including any reiterative units and representing areas in each field, if any, including reiterative units to form third figure processing data; and

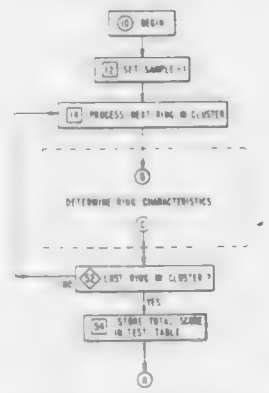
converting the third figure processing data into drawing data for the charged beam exposure system.

5,008,831

METHOD FOR PRODUCING HIGH QUALITY CHEMICAL STRUCTURE DIAGRAMS

Alfred P. Feldman, Columbia, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jan. 12, 1989, Ser. No. 296,019
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—496 **8 Claims**



1. A computer operated method for transforming a first chemical structure's appearance, comprising

storing within a computer information representative of a series of parameters applicable to chemical structures, and values corresponding to the parameters;

entering a first chemical structure into the computer as a first array;

establishing which of the stored parameters are present in the first chemical structure and operating on the values present therein to establish a first score; and

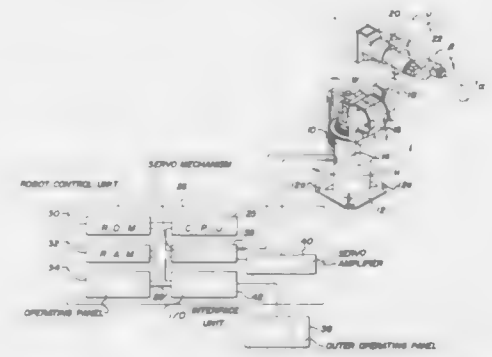
printing the structure corresponding to the first score.

5,008,832

INDUSTRIAL ROBOT ABLE TO SET MOTION CONDITIONS DEPENDING ON POSTURE OF INSTALLATION THEREOF

Nobutoshi Torii, Hachioji; Hitoshi Mizuno, and Katsuyuki Muraki, both of Yamanashi, all of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

PCT No. PCT/JP89/00016, § 371 Date Sep. 5, 1989, § 102(e) Date Sep. 5, 1989, PCT Pub. No. WO89/06180, PCT Pub. Date Jul. 13, 1989
PCT Filed Jan. 9, 1989, Ser. No. 415,209
Claims priority, application Japan, Jan. 9, 1988, 63-1810
Int. Cl.[5] G05B *19/18;* **B25J** *9/16, 13/00*
U.S. Cl. 364—513 **12 Claims**



1. An industrial robot able to automatically set operating conditions in accordance with an installation position of the industrial robot comprising:

a robot unit provided with at least movable elements each movable element movable about an articulatory axis, and a base element to be fixedly installed at a site at which the industrial robot is to be used;

a robot control unit provided with a first data storage unit for storing basic control data for robot operation, a second data storage unit for storing control data externally input, and a control function unit for controlling motion of said movable elements based on said control data stored in said first and second data storage units;

a predetermined storage region provided in said first data storage unit for storing (a) data about various installation positions of said robot unit with respect to a predetermined reference installation position of said robot unit, and (b) data about operating conditions for various installation positions of said robot unit;

an input unit for providing said control function unit of said robot control unit with data indicating an installation position of said robot unit during use of said robot unit; and

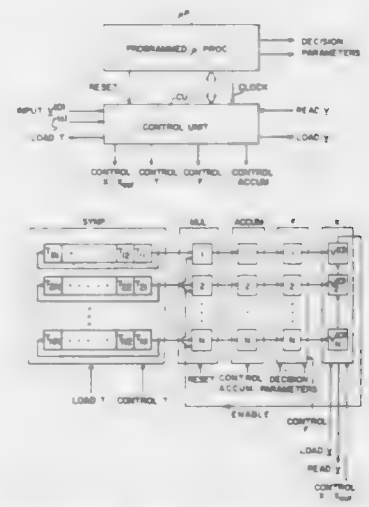
a setting unit for reading out the operation conditions, corresponding to the data indicating the installation position of the robot unit provided by said input unit, from said predetermined storage region of said first data storage unit and for automatically setting externally input operating conditions in said second data storage unit of said robot control unit.

5,008,833

PARALLEL OPTOELECTRONIC NEURAL NETWORK PROCESSORS

Aharon J. Agranat; Charles F. Neugebauer, both of Pasadena, and Amnon Yariv, San Marino, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 273,099, Nov. 18, 1988, abandoned, which is a continuation-in-part of Ser. No. 34,593, Apr. 6, 1987, abandoned. This application Mar. 19, 1990, Ser. No. 495,781
Int. Cl.[5] G06F *15/18*
U.S. Cl. 364—513 **10 Claims**



1. An optoelectronic neural network of N neurons connected to each other by synapses, in which the state of said neurons is given by a vector $\underline{V}=V_1, V_2, \ldots V_j \ldots V_N$, where V_j is the state of the j'th neuron, and the strength of the synaptic interaction between the neurons is defined by a matrix T, where T_{ij} is a value representing the strength of the interaction between neurons specified in the i'th row and j'th column of said matrix, said neural network being implemented by an electronic system comprising

means for storing said interaction matrix T, comprising a spatial light modulator for producing a pattern of light intensity corresponding to spatial distribution of said val-

ues T_{ij} of said matrix T, and an array of photodetectors spatially distributed to separately receive said values T_{ij},
means for storing said state vector $\underline{V}$, said vector storing means having a column of N registers, one for each vector element V_j constituting a neuron,
means for multiplying said matrix T with said state vector $\underline{V}$, and
means for summing the products of said multiplication for each row of said matrix to produce a current

$$I_i = \sum_j T_{ij} V_j,$$

where I_i is the current for the i'th row of said matrix corresponding to the j'th neuron of said state vector,
means responsive to said current sums I_i, for producing new values V_j for said state vector in accordance with predetermined decision parameters, and
means for storing said new values V_i of said state vector in said column of N registers.

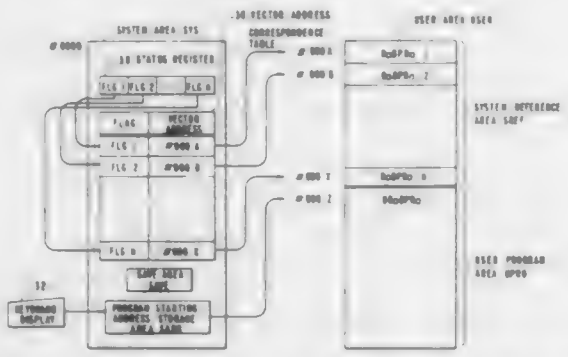
5,008,834

ROBOT CONTROL APPARATUS

Tohru Mizuno, Tama, and Takayuki Ito, Minamitsuru, both of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP88/00362, § 371 Date Oct. 28, 1988, § 102(e) Date Oct. 28, 1988, PCT Pub. No. WO88/07916, PCT Pub. Date Oct. 20, 1988
PCT Filed Apr. 9, 1988, Ser. No. 265,673
Claims priority, application Japan, Apr. 10, 1987, 62-088331
Int. Cl.[5] G05B *19/00;* **B25J** *9/16*
U.S. Cl. 364—513 **6 Claims**





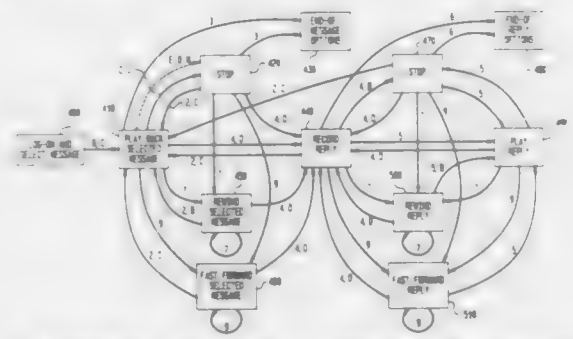
1. A robot control system for controlling the motion of a robot using a system program having first and second parts and a user program, said system comprising:
storage means for storing the system program and the user program, said storage means having a system area and a user area, the first part of the system program being stored in the system area and providing a plurality of flags indicating operating status of the robot, the second part of the system program being stored in the user area and including monitor programs corresponding to the flags, the system area of said storage means includes at least
register means for storing the flags; and
a correspondence table for providing the predetermined location of the monitor programs within the user area based upon the flags; and
processor means for continuously monitoring the operating status of the robot based on the system program and for processing the user program to generate motion commands for the robot, said processor means monitors the operating status of the robot by jumping from the first part of the system program to the second part.

5,008,835

METHOD AND APPARATUS FOR STORING AND FORWARDING VOICE SIGNALS AND GENERATING REPLIES

Emil F. Jachmann, 13 High St., Greenwich, Conn. 06830; Jeremy Saltzman, 24 Highbrook Rd., Norwalk, Conn. 06851; David B. Chamberlin, 11 Hunter Ridge, Monroe, Conn. 06468; Nicholas A. D'Agosto, 68 Sterling Rd., Trumbull, Conn. 06611; Mark Harris, 64 Roger White Dr., New Haven, Conn. 06511, and Jy-hong Su, 14 Hunters La., Norwalk, Conn. 06850

Filed Dec. 28, 1987, Ser. No. 138,417
Int. Cl.[5] G10L *5/00;* **G06F** *13/00*
U.S. Cl. 364—513.5 **19 Claims**



1. Apparatus for storing and forwarding voice signals, comprising:
(a) voice mail means for storage and retrieval of said voice signals, said voice mail means having a playback state for playback of selected voice signals and a record state for recording reply voice signals;
(b) station means for input and output of said voice signals;
(c) said station means further comprising signal input means for input of first and second control signals, said first control signal causing said voice mail means to exit said playback state and enter said record reply state, whereby a user of said apparatus may record reply voice signals to said selected voice signals at any point in said playback state, and said second control signal causing said voice mail means to exit said record reply mode and return to said playback mode.

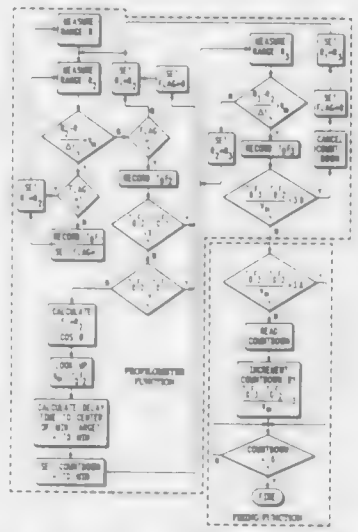
5,008,836

METHOD OF RECOGNIZING SELECTED OBJECTS

Robert W. Withers, Overgaard, and Robert H. Johnson, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 20, 1989, Ser. No. 382,359
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—516 **4 Claims**

1. A method of recognizig, during a fly-over, selected objects having a known height and width, comprising the steps of:
periodically measuring the range to the ground at a predetermined angle with the surface of the ground;
comparing adjacent measurements to determine changes in range;
measuring the rate of change of the range;
measuring the time from a first change in range, after an object is indicated, to a second subsequent change in range to determine the height of the object;



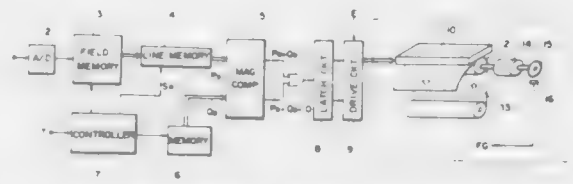
comparing the measured height to the known height to determine if the height of the object is an acceptable height for the selected object;
measuring the time from the second subsequent change in range to a third subsequent change in range to determine the width of the object; and
comparing the measured width of the object of the known width to determine if the object is the selected object.

5,008,837

GRAY SCALE GENERATING CIRCUIT FOR THERMAL PRINTER

Yasushi Hirumi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 15, 1989, Ser. No. 451,148
Claims priority, application Japan, Jan. 10, 1989, 1-001983
Int. Cl.[5] G06K *15/00*
U.S. Cl. 364—519 **15 Claims**



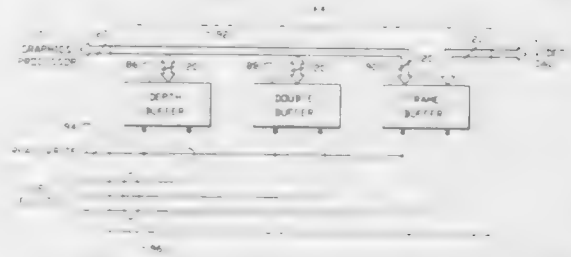
1. A gray scale signal generating circuit for a thermal printer, comprising:
memory means for storing image data to be printed;
means for generating PWM driving pulses of said image data stored in said memory means;
means for generating a zero level driving pulse; and
means for supplying said PWM driving pulses and said zero level driving pulse to a thermal head drive circuit so that a print image is obtained even when said image data is at a zero level.

5,008,838

METHOD FOR SIMULTANEOUS INITIALIZATION OF A DOUBLE BUFFER AND A FRAME BUFFER

Brian M. Kelleher, and Zahid Hussain, both of Palo Alto, Calif., assignors to Digital Corporation, Maynard, Mass.

Filed Nov. 17, 1989, Ser. No. 438,649
Int. Cl.[5] G06F *3/14*
U.S. Cl. 364—522 **10 Claims**



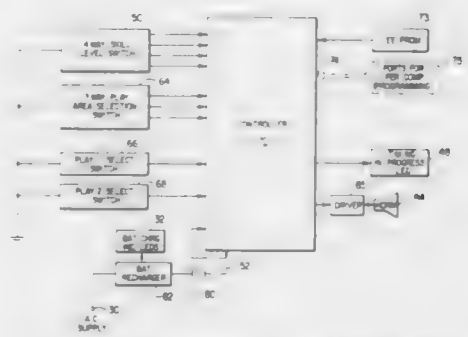
1. In a graphics image rendering system including a graphics processor, a graphics display screen, double buffer means for storing pixel color information and depth buffer means for storing pixel depth information, a method for initializing the depth buffer means and the double buffer means comprising the steps of:
writing to each pixel storage element of the double buffer means a binary value representing a background color to appear on the graphics display screen; and
writing to each pixel storage element of the depth buffer means the binary value representing the background color to appear on the graphics display screen.

5,008,839

SPORTS TRAINING APPARATUS

John D. Goodwin; Samuel D. Goodwin, both of 1605 Slattery Bldg., Shreveport, La. 71101; Wilford House, 506 Pineacres Dr., Shreveport, La. 71107, and James Farrar, 727 Unadella, Shreveport, La. 71106

Filed Feb. 16, 1989, Ser. No. 312,079
Int. Cl.[5] G06F *15/44;* **A63B** *69/00*
U.S. Cl. 364—550 **15 Claims**



1. A sports training apparatus for injecting actual game timing into team practice comprising:
an on/off means for powering on the apparatus; a skill level selector means for selecting a skill level from a group consisting of pre-high school, high school, college, and professional skill levels; an area selector means for selecting an area from a group consisting of infield, outfield and catcher areas for corresponding play practice; and a plurality of play selection and initiation means for producing a play selection and play initiation signal;
a signaling means for producing a signal indicating a time period for completing the selected play has expired; and
a control means having a memory means for storing information including a plurality of skill levels and time periods for each of the skill levels, a timing means connected to

the memory means for receiving time periods and outputting signals indicative of the expiration of the time periods, a plurality of sense circuits for connecting the controller to: the on/off means for sensing power on, the skill level selector means for sensing the skill level selection, the area selector means for sensing the area selection, and the plurality of play selection and initiation means for sensing a play selection; an information fetching means connected to the memory means and responsive to the outputs of the skill level selector means, area selector means, and play selection and initiation means sense circuits for fetching the corresponding time period for the timing means and initiating the timing means for timing the time period, said timing means including a signal producing means connected to the signaling means for outputting a signal to the signaling means whereby the signaling means is activated to signal the expiration of the time period for use in determining the timely completion of the play.

5,008,840

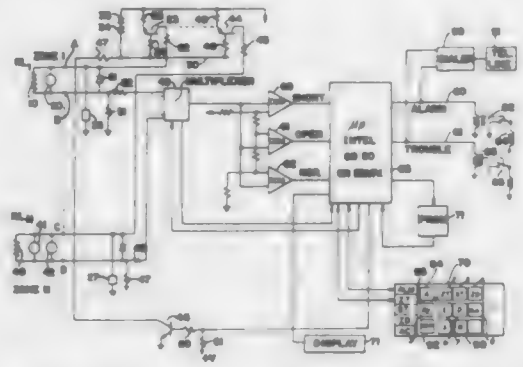
MULTI-ZONE MICROPROCESSOR FIRE CONTROL APPARATUS

Alfred V. DePierro, Woodbury, N.Y., assignor to Napco Security Systems, Inc., Amityville, N.Y.

Filed May 27, 1988, Ser. No. 199,772

Int. Cl.[5] G08B *17/00*

U.S. Cl. 364—550 **20 Claims**



1. A fire control system including a plurality of zones, each zone associated with a smoke detector and arranged in at least a two wire loop, with said smoke detector positioned across said two wires to provide a low impedance condition upon detection of smoke indicative of a fire in that zone and to provide a high impedance when smoke is not detected, comprising

biasing means for each loop to allow a current to flow in each loop indicative of a normal condition as distinguished from a low impedance condition across said loop as caused by said smoke detector;

multiplexer means having one input for each loop and having a control input to provide at an ouptut the condition of each loop in a selected sequence as controlled by a signal applied to said control input;

a microprocessor means having output means coupled to said multiplexer control input for controlling the same;

comparator means having inputs coupled to said multiplexer output and outputs coupled to said microprocessor means to enable said microprocessor to store the condition of each loop indicative of each zone and as to whether said loop is in a normal condition or a low impedance condition;

a keyboard coupled to said microprocessor means for causing said microprocessor to recognize selected key depressions indicative of a one man test mode, whereby when said mode is recognized said microprocessor means responds to low impedance conditions of selected loops as being intentionally implemented during a predetermined period to notify a user of said test mode in order to verify an intentional implemented low impedance condition of said loop as caused by an associated smoke detector with said microprocessor coupled to said biasing means to interrupt said current flow in said loop for a given period to allow said intentional condition to clear back to normal indicative of the completion of said one man test mode.

5,008,841

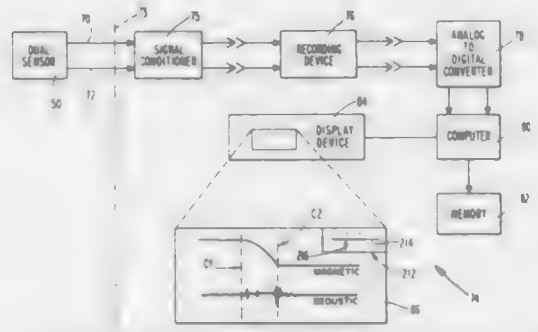
NON-INVASIVE SYSTEM AND METHOD FOR INSPECTION OF VALVES

John W. McElroy, Newtown Square, Pa., assignor to Liberty Technology Center, Inc., Conshohocken, Pa.

Filed Jul. 28, 1989, Ser. No. 387,223

Int. Cl.[5] G21C *17/00*; G08B *21/00*; G01D *7/00*

U.S. Cl. 364—551.01 **22 Claims**



1. A non-invasive monitoring system for a valve of the type including a housing and a movable element mounted in the housing for movement between an open position and a closed position and intermediate positions between the open and closed positions comprising:

(a) first means for both detecting acoustic energy produced by the valve during a monitoring interval and generating data representative of the detected acoustic energy;

(b) second means for both detecting signals indicative of the position of the movable element during the monitoring interval and generating data representative of the detected signals; and

(c) third means coupled to the first and second means for simultaneously receiving the data generated by the first and second means and providing data from which a condition of the valve can be determined by a user.

5,008,842

METHOD OF SEQUENTIAL MONITORING AND APPARATUS FOR PRACTICING THE SAME

Tetsuji Nagai; Katura Torii, and Yoshio Ohno, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 19, 1988, Ser. No. 260,012

Claims priority, application Japan, Oct. 19, 1987, 62-263236

Int. Cl.[5] G06F *15/46*

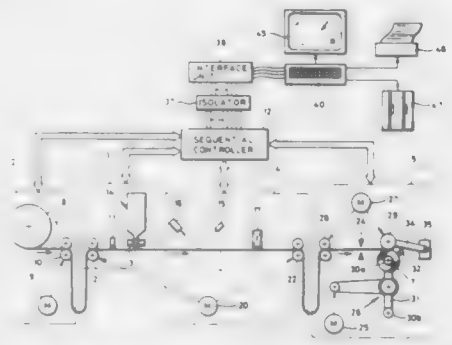
U.S. Cl. 364—551.01 **15 Claims**

1. A method of sequential monitoring for monitoring a production line which includes working groups whose work operations are controlled by a sequential controller, comprising the steps of:

receiving electrical signals from detectors, one of said detectors being provided in each of a plurality of working groups distributed along a said production line, each of said working groups performing a different plurality of work operations;

storing first data generated from said received signals and representative of the order of outputting and the time intervals of said electrical signals;

producing a sequence pattern based on said stored first data and representative of a sequence of work operations performed within at least one of said working groups as well as representative of a time interval within which each of said work operations has been performed a plurality of times; and



monitoring the working conditions of said plurality of working groups by comparing said sequence pattern with said electrical signals received after producing said sequence pattern.

5,008,843

SENSOR HAVING AN ANSWERBACK DEVICE

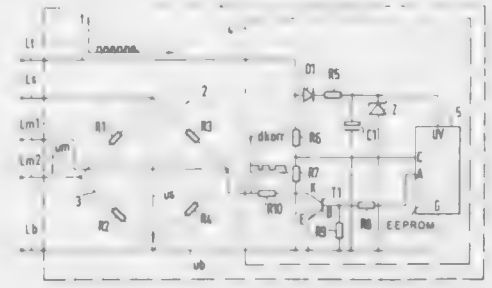
Wolf-Dieter Poelsler, and Bernd Baumann, both of Weissach, Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Dec. 23, 1988, Ser. No. 289,325

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1987, 3743846

Int. Cl.[5] G01L *25/00*

U.S. Cl. 364—571.02 **9 Claims**



2. An arrangement for the detection and evaluation of a physical magnitude, comprising:

a measuring sensor device having:

a physical-electrical transducer having an output and a measuring bridge containing only passive devices, said transducer converting physical magnitudes into equivalent analog electrical magnitudes; and

an answerback device coupled to the transducer and having a non-volatile memory which stores correction data of the measuring sensor device, said answerback device having an output at which is provided a data bit flow serially read out of the non-volatile memory, the answerback device also having a controllable switching element connected in parallel to a branch of the measuring bridge, said switching element in a first condition being high-ohmic with respect to said branch, and being controlled by the answerback device into a second condition to tune the measuring bridge so as to transmit correction data, said controllable switching element being switched on and off by the answerback device according to the data bit flow serially read out of said memory device; and

an evaluation circuit structurally separate from the measuring sensor device and connected to the output of the transducer by electrical lines over which measured values of the measuring sensor device are transmitted, said evaluation circuit detecting changes in said output of the measuring bridge to reconstruct said correction data, and said evaluation circuit using the correction data to correct the electrical magnitudes output by the transducer.

5,008,844

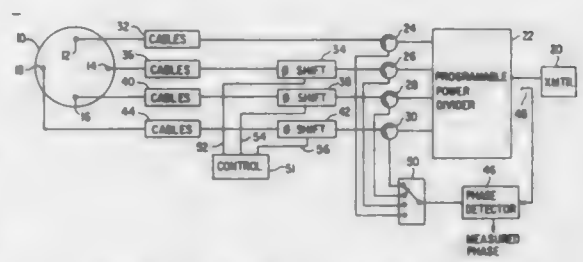
COLLISION AVOIDANCE TRANSMIT SYSTEM WITH AUTOCALIBRATION

Constantinos S. Kyriakos, Boca Raton, and Henri Baran, Coral Springs, both of Fla., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Jan. 10, 1990, Ser. No. 463,181

Int. Cl.[5] G01S *7/40, 3/02*

U.S. Cl. 364—571.05 **12 Claims**



1. A calibration method for a transmitter having a first, a second, a third and a fourth element circumferentially positioned with a 90 degree spacing in an antenna array such that the first and the third elements are oppositively positioned and the second and the fourth elements are oppositively positioned, the first, the second, the third and the fourth element being selectively connectable through a first, a second, a third and a fourth channel, respectively, of components to a transmitter or to a first input of a phase detector, the transmitter being connected to the second input of the phase detector, comprising the steps of:

determining the phase difference between a first and a third channel by transmitting a signal between the first element and a first element adjacent the first and third elements to obtain a first phase detector output, by transmitting the signal between the third element and the first element adjacent the first and third elements to obtain a second phase detector output and by inserting a first phase shift in the third channel such that the first and second phase detector outputs are equal;

determining the phase difference between a second and fourth channel by transmitting between the second element and a first element adjacent the second and fourth elements to obtain a third phase detector output, by transmitting between the fourth element and the element adjacent the second and fourth elements to obtain a fourth phase detector output and by inserting a second phase shift in the fourth channel such that the third and fourth phase detector outputs are equal;

transmitting between the first and third elements with the first phase shift inserted into the third channel to obtain a fifth phase detector output; and

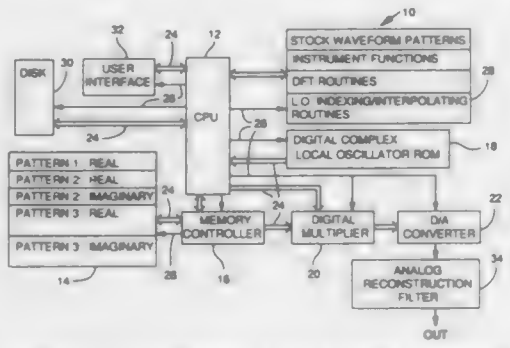
transmitting between the second and fourth elements with the second phase shift inserted into the fourth channel to obtain a sixth phase detector output and inserting a third phase shift in the second channel such that the fifth and sixth phase detector outputs are equal.

5,008,845

METHOD AND APPARATUS FOR GENERATING A CHIRP SIGNAL

James L. Adcock, Seattle, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 27, 1989, Ser. No. 344,777
Int. Cl.[5] G01V 1/36
U.S. Cl. 364—576 14 Claims



1. A method for generating a chirp signal comprising the steps:

generating a sequence of samples characterizing a flat chirp in the frequency domain according to the formula e^{jkw2};

performing a finite inverse Fourier transform on said sequence to find the time domain sequence corresponding thereto, said sequence exhibiting a sin(x)/x ripple therein;

storing digital data corresponding to said transformed sequence in a memory; and

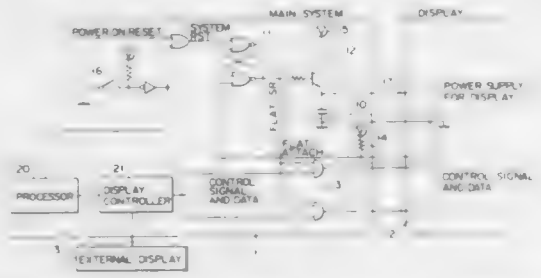
reading said digital data from memory to produce an output data stream corresponding to a digitized chirp that is flat in the frequency domain.

5,008,846

POWER AND SIGNAL SUPPLY CONTROL DEVICE

Akifumi Inoue, Fussa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 27, 1989, Ser. No. 441,757
Claims priority, application Japan, Nov. 30, 1988, 63-302469
Int. Cl.[5] G06F 1/00
U.S. Cl. 364—707 18 Claims



1. A device for controlling supply of power and signals from a main system comprising:

a display which is configured to be connected to and disconnected from said main system;

detecting means for detecting whether said display is connected to said main system or not;

supply instructing means responsive to said detecting means, and a reset signal applied thereto, for automatically generating an instruction signal for instructing the supply of power and signals to said display responsive to said reset signal and until said detecting means detects that said display is not connected to said system;

power control means responsive to the instruction signal for controlling the supply of power to said display to be supplied while said instruction signal instructs said supply of power and signals; and

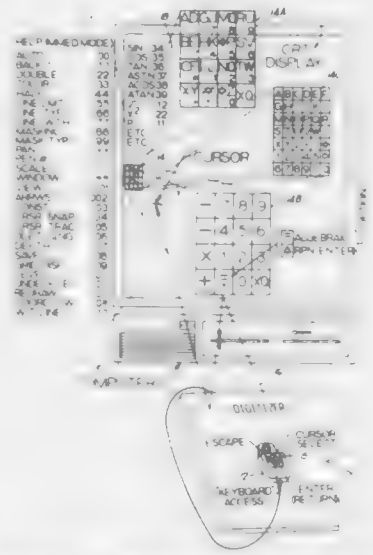
signal controlling means, responsive to the instruction signal, for controlling the supply of the signals to said display to be supplied while said instruction signal instructs said supply of power and signals.

5,008,847

CURSOR SELECTED KEYBOARD KEYS DISPLAYED ON THE COMPUTER SCREEN FOR ENTERING ALPHANUMERIC CHARACTERS AND INSTRUCTIONS, PARTICULARLY FOR CREATING COMPUTER AIDED DESIGN AND DRAFTING PATTERNS

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Continuation-in-part of Ser. No. 844,872, Mar. 27, 1986, abandoned, which is a continuation-in-part of Ser. No. 459,998, Jan. 21, 1983, Pat. No. 4,547,860. This application Jun. 10, 1987, Ser. No. 60,225
Int. Cl.[5] G06F 3/023
U.S. Cl. 364—709.16 4 Claims



1. In a computer system operable with selection control means for placing a cursor position on a visible display screen for displaying graphic patterns,

means for displaying on a portion of said screen a virtual keyborad array presenting a plurality of virtual keys at respective keyboard locaitons having thereat symbols identifying both a set of computer reproducible patterns and a set of computer command instructions to be selected by moving the cursor to identify the respective virtual keys,

manually positionable keystroking means responsive to the cursor position on said display screen for selecting a desired one of the virtual keys on said screen and initiating a computer command operation corresponding to a symbol identified at the selected virtual key loation displayed on the screen.

means for operating the computer in a mode requiring two keystrokes per entry thereby to reduce the number of virtual keys and corresponding display space required on the computer screen for selection of said sets of patterns and commands, and

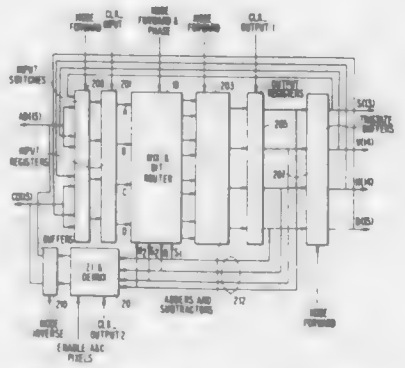
means for displaying one set of virual key configurations on the screen for the first keystroke showing the key function and activating the keys to operate to perform that function, and for replacing the key configuration with another set of virtual keys with displayed key functions on the screen for the second keystroke in response to the first keystroke.

5,008,848

CIRCUIT FOR PERFORMING S-TRANSFORM

Samuel O. Akiwumi-Assani, Beacon, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed May 30, 1989, Ser. No. 358,982
Int. Cl.[5] G06F 15/332
U.S. Cl. 364—725 10 Claims



1. Apparatus for calculating a data transformation which includes at least two successive arithmetic operations, the apparatus comprising:

(a) a first set of terminals for receiving a plurality of input data signals in parallel;

(b) a single stage comprising a plurality of means, disposed in parallel, for performing arithmetic operations;

(c) means for feeding results of a first set of arithmetic operations back to said single stage so that said single stage subsequently performs a second set of arithmetic operations on said results; and

(d) a second set of terminals for supplying a plurality of transformed data signals wherein

(e) the data transformation is the S-transform;

(f) the first set of terminals is for receiving signals representing four data points arranged in a 2×2 array;

(g) each means for performing comprises a respective adder/subtracter; and

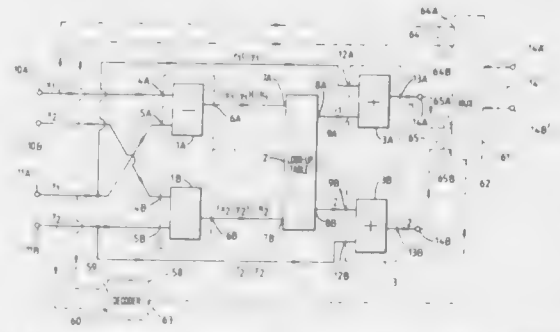
(h) the second set of terminals is for supplying signals representing four coefficients of the S-transform.

5,008,849

APPARATUS ADDING VALUES REPRESENTED AS RESIDUES IN MODULO ARITHMETIC

Ian A. Burgess, Horley; Andrew M. Dennis, Redhill, and Christopher B. Marshall, Lindfield, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 1, 1989, Ser. No. 345,391
Claims priority, application United Kingdom, Apr. 29, 1988, 8810167
Int. Cl.[5] G06F 7/72
U.S. Cl. 364—746 5 Claims



4. Apparatus for generating a residue representation modulo p−1 of the power index i to which a generator g has to be raised to give the value X+A·Y is modulo p arithmetic in response to the application to said apparatus of input residue representations modulo p−1 of x, where $g^x=X$, and y, where $g^y=Y$, wherein the residue representation of i, x, and y, each consist of a respective plurality of n residue components modulo a uniform set of respective intergers which are mutually prime and the product of which is equal to p+1, the apparatus comprising:

(a) for each said integer, a separate input subtractor for receiving the input residue representations with respect to that integer,

(b) a look-up table fed by the outputs of all subtractors for generating, upon reception of the subtraction results with respect to each pair or representations of x and y, a plurality of n residue components, each modulo a respective said integer and each at a respective look-up table output and together constituting a residue representation modulo p−1 of the power index j to which g has to be raised to give the value g^k+A, in response to the application to an input of the look-up table of a residue representation modulo p−1 of any member of a set of values of k, and

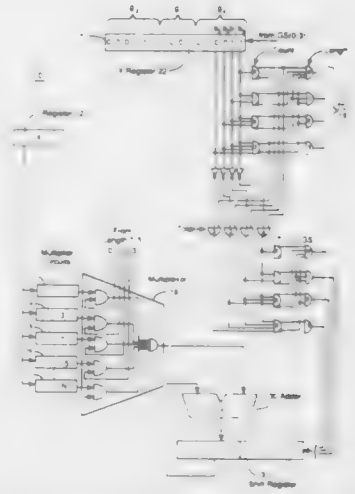
(c) for each said integer, a separate adder for on a first adder input receiving the residue representation with respect to that integer of one of the input residue representations and a second adder input receiving the look-up table output corresponding to that integer for by means of addition modulo that integer collectively generating a residue representation of the sum of values received modulo p−1, wherein allowable values for A are +1, −1.

5,008,850

CIRCUITRY FOR MULTIPLYING BINARY NUMBERS

Eric H. Jensen, Livermore, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed May 25, 1990, Ser. No. 528,937
Int. Cl.[5] G06F 7/52
U.S. Cl. 364—760 40 Claims



1. A circuit for multiplying a first and a second binary number, said first and second binary numbers comprising of one or more ordered groups of ordered bits, each of said bits having a value of one or zero, bits having a value of one being located contiguously in the lower order bits of said groups, and bits having a value of zero being located in the remaining higher order bits of said groups, said circuit comprising:

(a) a first and a second register means for holding said first and second binary numbers;

(b) generating means coupled to said first and second register means for generating a partial product for each of said ordered groups of said first binary number, each of said partial products being equal to said second binary number multiplied by one of said ordered groups; and

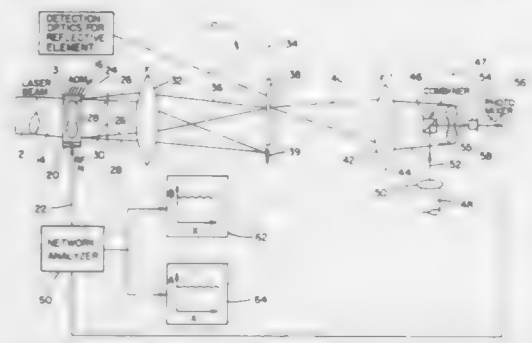
(c) accumulating means coupled to said generating means for accumulating each of said generated partial products, the product of the first and second binary numbers being equal to the accumulation of the partial products.

5,008,851

OPTICAL HETERODYNING SYSTEM AND METHOD FOR RAPID OPTICAL PHASE AND AMPLITUDE MEASUREMENTS

Robert W. Brandstetter, Levittown; Benjamin J. Pernick, Forest Hills; Nils J. Fonneland, Lake Ronkonkoma, and Stephen J. Caputi, Centerport, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Mar. 27, 1989, Ser. No. 328,637
Int. Cl.[5] G06G *7/00;* **G02F** *1/11;* **G01B** *9/02*
U.S. Cl. 364—807 **16 Claims**



1. A system for obtaining optical phase and amplitude measurements comprising:

means for modulating a coherent light beam with a multifrequency electrical input signal to form an image;

means for Fourier transforming said image to produce a scanning coherent light beam in the Fourier plane, said scanning coherent light beam interacts with an optical component located in the Fourier plane to form a modulated transformed image in the frequency plane;

means for inverse Fourier transforming said modulated transformed image for detecting an electrical output signal therefrom from which amplitude and phase measurements of said modulated transformed image is determined; and

analyzer means for determining said amplitude and phase measurements of said modulated transformed image from said electrical output signal and for storing said amplitude and phase measurements, said analyzer means compares said amplitude and phase measurements of said modulated transformed image to the amplitude and phase measurements of a reference transformed image to quantitatively measure the amplitude and phase of said optical component.

5,008,852

PARALLEL ACCESSIBLE MEMORY DEVICE

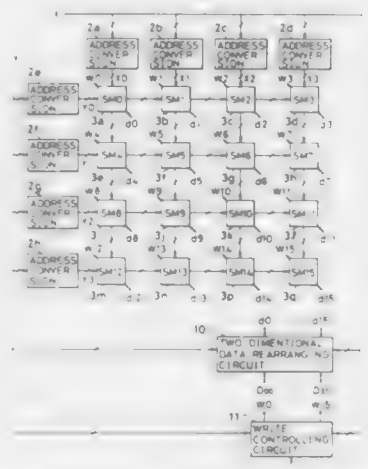
Hiroshi Mizoguchi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 30, 1988, Ser. No. 175,484
Claims priority, application Japan, Mar. 31, 1987, 62-076489
Int. Cl.[5] G06F *12/00, 12/06;* **G11C** *8/00*
U.S. Cl. 364—900 **8 Claims**

1. A parallel accessible M-dimensional memory device, comprising:

N_i column submemories for i-th dimension (i=1, . . . , M) where N_i is a positive integer, each one of the N_i column submemories having $1/N_1 \times N_2 \times \ldots \times N_n$ capacity of a total memory capacity of the device, each one of the N_i column submemories having addresses addressed by an integer submemory address S_j=0, 1, 2, . . . (j=0, 1, . . . , N_i-1) labeling rows within each column submemory, the addresses of the N_i column submemories being also addressed by an M-dimensional integer input address X_i=0, 1, 2, . . . (i=1, . . . , M) labeling the addresses of all of the N_i column submemories collectively, and where (j+1)-th one of the N_i column submemories stores (j+1+nN_i)-th data for i-th dimension, (n=0, 1, . . .):

address converting means for obtaining N_i submemory addresses S_j for N_i data to be parallel accessed, for the M-dimensional input addresses X_i supplied externally; and



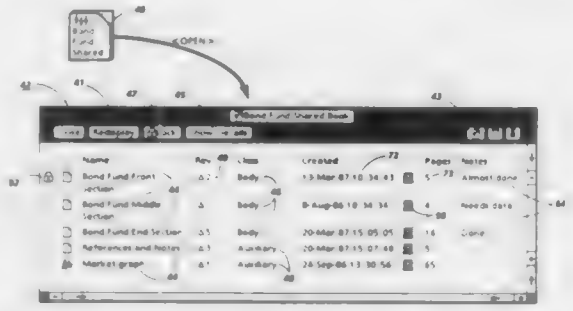
data rearranging means for rearranging the N_i data read out from the N_i submemory addresses S_j of the N_i submemories obtained by the address converting means, in accordance with the M-dimensional input address X_i, such that the N_i data are arranged in an order labeled by the M-dimensional input address X_i.

5,008,853

REPRESENTATION OF COLLABORATIVE MULTI-USER ACTIVITIES RELATIVE TO SHARED STRUCTURED DATA OBJECTS IN A NETWORKED WORKSTATION ENVIRONMENT

Sara A. Bly, Mountain View; A. Brady Farrand, Berkeley; Jeffery D. Hodges, Newark; Michael D. Kupfer, Mountain View; Brian T. Lewis, Palo Alto; William J. Maybury, Torrance; Michael L. Tallan, Mountain View, and Stephen B. Tom, San Francisco, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 2, 1987, Ser. No. 127,993
Int. Cl.[5] G06F *3/14*
U.S. Cl. 364—900 **20 Claims**



1. A method for operating a collaborative system that includes a plurality of workstations each having a respective display and a respective user input device, the collaborative system further including shared data, each of the workstations being connected for accessing the shared data, the shared data including a set of parts, the method comprising the steps of:

presenting on the respective display of a first one of the workstations a local representation of the shared data; the local representation of the shared data including, for each of the parts of the shared data, a respective small-scale representation occupying a small part of the first workstation's respective display;

presenting on the respective display of a second one of the workstations a full-scale representation of a first one of the parts of the shared data, the full-scale representation occupying a substantial part of the second workstation's respective display; and

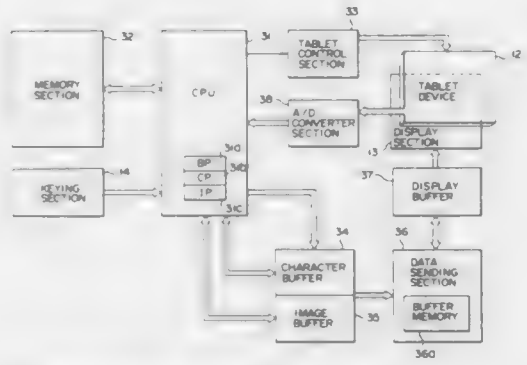
after receiving from the second workstation's respective user input device a signal requesting an operation affecting the first part of the shared data, including in the first part's respective small-scale representation an indication of the operation affecting the first part.

5,008,854

POCKET SIZE DATA STORAGE APPARATUS WITH TABLET DEVICE FOR INPUTTING IMAGE DATA

Junichi Maeda; Tsuguo Yanai; Kazuto Yamamoto; Yuji Kuriyama, and Haruo Yamamoto, all of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 235,709, Aug. 19, 1988, abandoned, which is a continuation of Ser. No. 946,712, Dec. 24, 1986, abandoned. This application Oct. 16, 1989, Ser. No. 423,604
Claims priority, application Japan, Jun. 19, 1986, 61-93502[U]
Int. Cl.[5] G06F *3/02*
U.S. Cl. 364—900 **18 Claims**



1. A data storage apparatus, comprising:

image-data-input means for inputting image data;

character-data-input means having a plurality of character keys, for inputting character data;

data-file-producing means for producing a data file one section of which includes image data input from said image-data-input means and another section of which includes character data input from said character-data-input means;

memory means for storing a plurality of the data files produced by said data-file-producing means, wherein for each data file a first area of the memory means stores the one section of the data file, and a second area of the memory means stores the other section of the data file;

display means for displaying image data and character data stored in said memory means;

character data detecting means for retrieving character data included in the other section of each of the plurality of data files stored in said memory means, and for supplying a plurality of said retrieved character data to said display means;

designating means for selecting one of the plurality of the retrieved character data displayed on said display means belonging to a particular data file; and

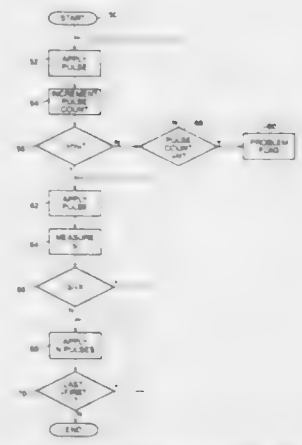
memory-data-input means for outputting image data to said display means from a first area of said memory means which stores image data from one section of the particular data file which includes in its other section the retrieved character data selected by said designating means.

5,008,855

METHOD OF PROGRAMMING ANTI-FUSE ELEMENT

Abelshafy A. Eltoukhy, San Jose, and David H. Gluss, Woodside, both of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Filed Jul. 18, 1989, Ser. No. 381,630
Int. Cl.[5] G11C *7/00, 11/21*
U.S. Cl. 365—96 **1 Claim**



1. A method of programming an anti-fuse including the steps of:

(1) Applying voltage pulses to said anti-fuse, said voltage pulses including a first portion having a first amplitude less than the voltage necessary to program said anti-fuse, and having a second portion having a second amplitude equal to the voltage necessary to program said anti-fuse,

(2) Measuring the current drawn by said anti-fuse from said second portion of said voltage pulse,

(3) Determining whether said current drawn by said anti-fuse exceeds a predetermined threshold,

(4) Repeating steps 1 through 3 if said current does exceed predetermined threshold,

(5) Applying a series of pulses to said anti-fuse if said current does exceed said predetermined threshold,

(6) Measuring the difference in current drawn by said anti-fuse between successive ones of the voltage pulses applied in step 5,

(7) Repeating step 5 if said difference in current exceeds a predetermined threshold,

(8) Applying a fixed number of pulses if said difference does not exceed said predetermined threshold,

(9) Measuring the current drawn by said anti-fuse at the first and last ones of said fixed number of pulses,

(10) Repeating step 9 if the difference between the current drawn during said first and last ones of said fixed number of rules exceeds a predetermined threshold.

5,008,856

ELECTRICALLY PROGRAMMABLE NONVOLATILE SEMICONDUCTOR MEMORY DEVICE WITH NAND CELL STRUCTURE

Hiroshi Iwahashi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

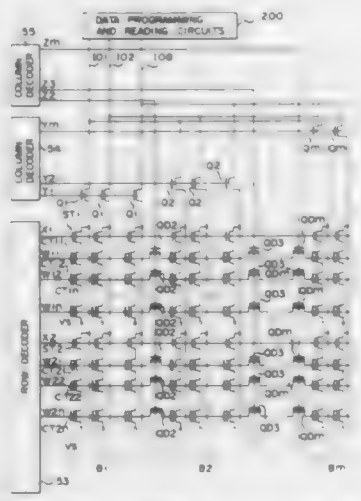
Filed Jun. 28, 1988, Ser. No. 212,649
Claims priority, application Japan, Jun. 29, 1987, 62-161625; Jun. 30, 1987, 62-163023; Dec. 23, 1987, 62-325686
Int. Cl.[5] G11C *11/40*
U.S. Cl. 360—185 **36 Claims**

1. A nonvolatile semiconductor memory device comprising:

a memory cell array having memory cells arranged in matrix form and each of said memory cells is formed by a plurality of serially connected cell transistors, each of said cell transistors, having a control gate, a floating gate, a source and a drain;

selection means for selecting one of said memory cells and one of said cell transistors of a selected memory cell; and

data programming means for programming a binary data to said cell transistor, connected to said memory cell, said data programming means applying a first potential to said control gate of said selected cell transistor and applying a second potential to said drain of said selected cell transistor when said binary data is a first logic level, said second potential being higher than said first potential, said first



and second applied potential tunneling electrons to said drain from said floating gate of said cell transistor, and said data program means applying a third potential to said drain of said selected cell transistor and applying a fourth potential to said control gate of said selected cell transistor when said binary data is a second logic level, said fourth potential being higher than said third potential, said third and fourth applied potential tunneling electrons to said floating gate from said drain of said cell transistor.

5,008,857

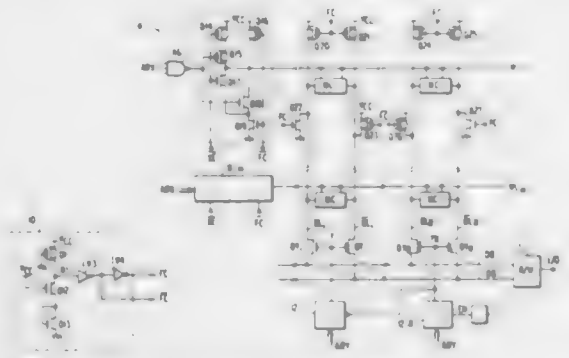
SEMICONDUCTOR MEMORY DEVICE PROVIDED WITH AN IMPROVED SYSTEM FOR DETECTING THE POSITIONS USING A REDUNDANT STRUCTURE

Akane Mizoguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 385,528, Jul. 27, 1989, abandoned. This application Aug. 8, 1990, Ser. No. 563,890

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—200 **5 Claims**



1. A semiconductor memory device comprising:

a plurality of normal memory cells;

at least one redundant memory cell;

means for receiving address information;

a selection circuit coupled to said normal memory cells and said redundant memory cell, said selection circuit operatively selecting one of said normal memory cells in accordance with said address information when said normal memory cell corresponding to said address information is operable and selecting said redundant memory cell when said normal memory cell corresponding to said address information is defective;

a read-write circuit coupled to said selection circuit for performing a read operation of the selected memory cell in a read mode and a write operation to the selected memory cell in a write operation;

a power voltage terminal for receiving a power voltage;

a detection circuit coupled to said power voltage terminal for generating a detection signal when said power voltage is initiated to be applied to said power voltage terminal;

a first initializing circuit for setting said normal memory cells at a first logic state in response to said detection signal; and

a second initializing circuit for setting said redundant memory cell at a second logic state different from said first logic state in response to said detection signal.

5,008,858

ASYNCHRONOUS SEMICONDUCTOR MEMORY HAVING ADDRESS TRANSITION DETECTOR

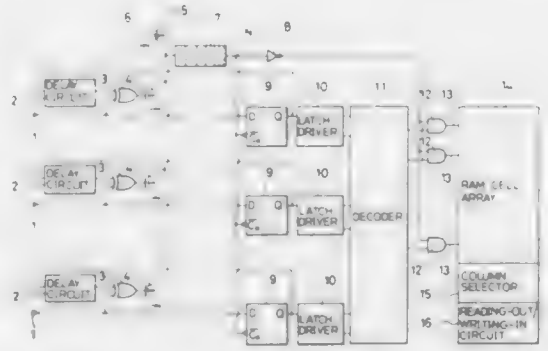
Setsuko Ikeda, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 24, 1989, Ser. No. 398,235

Claims priority, application Japan, Aug. 25, 1988, 63-212227

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—233.5 **4 Claims**



1. An asynchronous semiconductor memory comprising a memory cell array including a plurality of memory cells, means for receiving address signals , a detection circuit including a latch circuit, said detection circuit generating a detection signal when at least one of said address signals is changed;

a first transistor in said detecting circuit;

a second transistor opposite polarity of said first transistor having a source connected to a power source terminal;

an invertor; and

a programmable delay circuit including delay circuit elements having delay amounts corresponding to desired clock widths, said delay circuit elements being series-connected to constitute a multi-stage delay circuit having an input terminal connected to a drain of said second transistor and connected to a drain of said first transistor and having an output terminal connected to said invertor and to said latch circuit of said detecting circuit, a delay time of said programmable delay circuit being programmed to one of a plurality of predetermined values, means for applying said detection signal to the input terminal of said multi-stage delay circuit to generate a delay signal at the output terminal thereof, a decoder responsive to said address signals for operatively selecting at least one of said memory cells, and control means responsive to said delay signal for enabling said decoder.

5,008,859

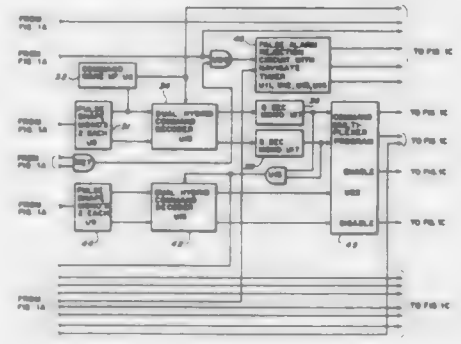
ACOUSTIC TRANSPONDER RECEIVER CIRCUIT

Reginald Cyr, Santa Barbara, Calif., assignor to United States of America, Washington, D.C.

Filed Dec. 7, 1988, Ser. No. 281,139

Int. Cl.[5] H04B *1/59*

U.S. Cl. 367—2 **4 Claims**



1. A transponder receiver circuit, comprising:

(a) Transducer means for receiving a first input signal and for receiving a second input signal;

(b) A detector means connected to the transducer means for initiating a first navigate signal in response to the first input signal and for initiating a first command signal in response to the second input signal;

(c) Means for supplying electrical power in response to the first command signal;

(d) Another detector means connected to the transducer means and activatable by said electrical power, for initiating a second navigate signal in response tot he second input signal and for initiating a second command signal in response to the second input signal; and

(e) Means for initiating a first response signal in response to the first navigate signal and for initiating a second response signal in response to both the first command signal and the second command signal.

5,008,860

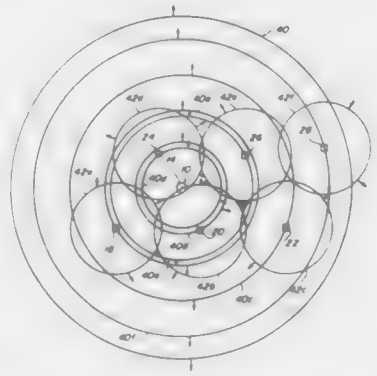
POSITION AND VELOCITY MEASURING SYSTEM

Thomas P. Riley, Westport, Mass.; Martin Buffman, Little Compton, R.I., and Reginald J. Cyr, Santa Barbara, Calif., assignors to United States of America, Washington, D.C.

Filed Mar. 16, 1989, Ser. No. 336,452

Int. Cl.[5] H04B *1/59*

U.S. Cl. 367—6 **1 Claim**



1. A position and velocity determining system for a vehicle in an ocean, comprising;

(a) first means located on a vehicle for transmitting either a first acoustic pulse or a second acoustic signal toward an area of an ocean floor;

(b) a plurality of two functioned receiver-transmitters substantially fixed in known locations of said area, each having a first function for receiving the first acoustic pulse and for immediately responding by transmitting an acoustic pulse at a unique frequency that is known to the vehicle, and each having a second function for receiving the second acoustic signal and for transmitting an acoustic signal of a unique fixed frequency that is known to the vehicle, the latter transmissions continuing for at least several seconds;

(c) third means located on the vehicle for receiving the acoustic pulses;

(d) fourth means located on the vehicle for determining the time difference between the transmission of the first acoustic pulse and the reception of the acoustic pulses from the receiver-transmitter;

(e) fifth means located on the vehicle for determining the positions of the vehicle relative to said known locations, based on said time differences;

(f) sixth means located on the vehicle for receiving the acoustic signals from the receiver-transmitters;

(g) seventh means located on the vehicle for determining the apparent frequencies of the acoustic signals received from the receiver-transmitters;

(h) eighth means located on the vehicle for determining any differences in frequency between the apparent frequencies and the unique fixed frequencies of the acoustic signals received from the receivers-transmitters; and

(i) ninth means located on the vehicle for determining the velocities of the vehicle relative to said locations, based on determined differences in frequency and said determined positions of the vehicle relative to said known locations.

5,008,861

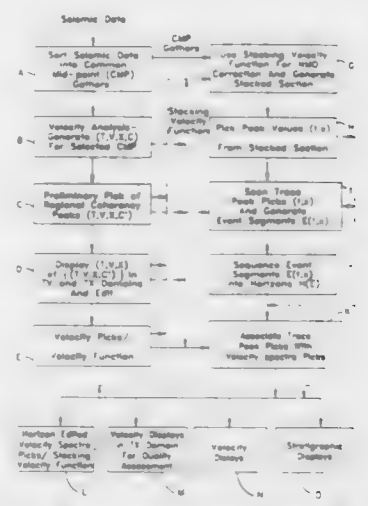
GEOPHYSICAL EXPLORATION BY AUTOMATICALLY PICKING AND ASSOCIATING STACKED SEISMIC SECTIONS WITH REGIONAL COHERENCY PEAKS OF VELOCITY SPECTRA

John N. Gallagher, Tulsa, Okla., assignor to Amoco Corporation, Chicago, Ill.

Filed Mar. 6, 1989, Ser. No. 319,609

Int. Cl.[5] G01V *1/36, 1/34*

U.S. Cl. 367—59 **52 Claims**



1. A method of processing seismic data for geophysical exploration comprising:

providing a first set of data points generated from seismic traces;

providing a second set of data points generated from seismic traces;

the second set of data points having a smaller number of data points therein than the first set of data points;

the first and second sets of data points having a common parameter represented by a variable in each of the first and second sets of data points; and

editing the first set by associating data points of the first set to data points of the second set according to the variable in each of the first and second sets of data points representing the common parameter and generating a set of one-to-one corresponding data points of the first and second sets, the set of one to one corresponding data points comprising a set of associated data points in which each data point of the second data set is associated with one and only one data point from the first data set.

5,008,862

OBJECT DETECTING SWITCH DEVICE

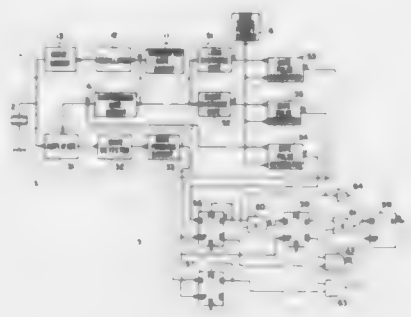
Hiroshi Shimamoto, Yokohama; Hideyuki Suzaki, Obtsu; Yukio Yamaguchi, Nagaokakyo, and Atsushi Kawano, Nagoya, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Continuation of Ser. No. 92,358, Sep. 2, 1987, abandoned. This application Jan. 18, 1990, Ser. No. 465,603

Claims priority, application Japan, Sep. 2, 1986, 61-207455

Int. Cl.[5] G01S *15/08*

U.S. Cl. 367—105 **9 Claims**



1. A switch device, comprising:

a transducer for emitting ultrasonic pulses to and receiving reflected ultrasonic pulses from an object;

a driving means for driving the transducer with at least one original drive signal;

a processor for processing a plurality of said reflected ultrasonic pulses from the transducer;

gate pulse generating means for generating a plurality of gate pulses allowing detection of at least two of first, second and third reflected ultrasonic pulses corresponding to each of said at least one original drive signals;

a pulse variation means for varying duration of any of said plurality of gate pulses; and

determination means for determining a distance from the transducer to said object utilizing said plurality of gate pulses and at least two of said first, second or third reflected ultrasonic pulses.

5,008,863

LOW NOISE SONAR SUPPORT SYSTEM

Frank S. Archibald, State College, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 4, 1979, Ser. No. 47,551

Int. Cl.[5] H04R *17/00*

U.S. Cl. 367—165 **2 Claims**

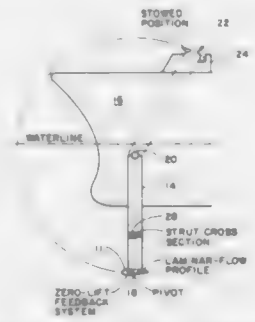
1. A sonar support system for deploying a sonar array remote from a vessel comprising:

a transversely extended hydrofoil-shaped member adapted for deployment beneath said vessel, said transverse member being pivotable in the streamed position and further including means for determining the position of zero lift therein at various vessel attitudes and means including a feedback system for pivoting said transverse member to a zero-lift position and maintaining said member at said position;

a sonar array positioned in said transverse member;

a pair of struts for supporting said transverse member, one at each end;

rotatable means connected to said struts and extending from said vessel for supporting and rotating said struts, said rotatable means further including coaxial rods which extend a distance from each side of said vessel's hull sufficient to allow clearance therefrom of said struts, said struts being joined at an outwardly extending angle to said rotatable means so as to extend substantially parallel to



said vessel's hull when in the vertically upward position, said struts being turned at an inwardly extending angle substantially at the vessel's gunwhale in the vertically upward position so as to converge and said transverse member connected to said converging struts at points sufficient to allow clearance of said vessel's underbody when in the vertically downward position;

a sonar system in said vessel and means connecting said sonar array to said sonar system;

means for rotating said rotatable means so as to pivot said transverse member between a position beneath said vessel, clear of the bow thereof, and a position on the deck of said vessel; and

means on the deck of said vessel for nesting said transverse member, whereby said sonar array may be deployed at selected depths beneath said vessel and readily removed for maintenance and when necessary to limit the draft of the vessel.

5,008,864

PORTABLE RADIO TELEPHONE DEVICE

Kunitoshi Yoshitake, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1990, Ser. No. 571,810

Claims priority, application Japan, Feb. 15, 1990, 2-34659

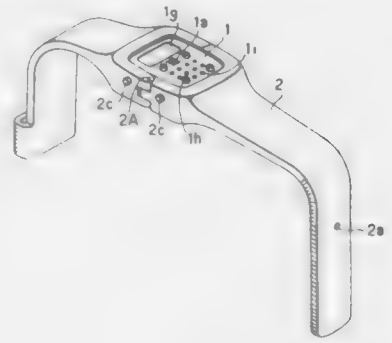
Int. Cl.[5] G04B *47/00;* **H04M** *1/05*

U.S. Cl. 368—10 **4 Claims**

1. A portable radiotelephone device in which a radio device body is carried in the form of a wristwatch with a carrying strap, said radiotelephone device comprising:

a power source portion and an antenna portion for said radio device body provided on said carrying strap; and

a voice transmission tube connected to a transmitter or a receiver of said radio device body, provided within said





carrying strap and terminating at a predetermined position of said carrying strap.

5,008,865

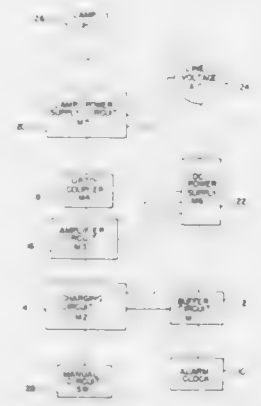
LIGHT SOURCE WITH GRADUALLY CHANGING INTENSITY

Blaine P. Shaffer, 12305 9th Ave., SW., Seattle, Wash. 98146, and William G. Haab, Bothell, Wash., assignors to Blaine P. Shaffer, Seattle, Wash.

Continuation-in-part of Ser. No. 221,716, Jul. 20, 1988, abandoned. This application May 17, 1990, Ser. No. 525,877

Int. Cl.[5] G06B *47/00;* **G04C** *21/16*

U.S. Cl. 368—10 **1 Claim**



1. An apparatus for varying the brightness of a light in a smooth and gradual manner, comprising:

an A.C. power supply source means for providing power to said light at a frequency and power generally available on a power distribution system, said A.C. power supply having zero crossings;

a zero crossing sensor means for sensing each zero crossing of said A.C. power supply and outputting a zero crossing signal at each of said zero crossings;

an oscillator circuit coupled to the output of said zero crossing sensor and receiving said zero crossing signals, said oscillator circuit outputting an oscillating frequency signal having a plurality of zero crossing points in between each zero of said A.C. power supply and at least one of said oscillator zero crossings occurring simultaneously with said A.C. power supply zero crossings;

a micro computer circuit having an internal timing clock controlled by said oscillator's zero crossings to ensure that said timing clock generates pulses whose occurrence is exactly positioned relative to said zero cross of said A.C. signal, said micro computer circuit including a trigger, a pulse output line, and an input signal line, said trigger pulse output line going high at a selected time after said A.C. signal zero crossing as measured by said internal timing clock, said selected time being variable from a first time after said zero crossing to a second time after said zero crossing, said second time occurring more closely after said A.C. zero crossing than said first time occurs after said A.C. zero crossing, said selected time gradually varying from said first time to said second time after said input signal goes high;

a gate circuit coupled to said trigger pulse output line, said gate circuit going high when said trigger pulse line goes high; and

a triac circuit having its gate coupled to said gate circuit for causing said triac circuit to turn on and provide power to said light from said trigger pulse output going high until said A.C. power supply passes through a subsequent zero crossing to thus control the intensity of said light based on said selected time of said trigger output line going high.

5,008,866

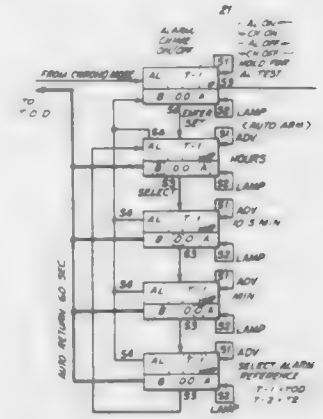
ALARM SETTING PROGRAM FOR ALARM TIMEPIECE WITH ALTERNATE TIME ZONE

Tom Thinesen, San Jose, Calif., assignor to Timex Corporation, Middlebury, Conn.

Filed Jan. 16, 1990, Ser. No. 466,101

Int. Cl.[5] G04B *19/22*

U.S. Cl. 368—21 **4 Claims**



1. In a multimode electronic timepiece having a display, an audible alarm device, a plurality of manually actuated switches, and an integrated circuit programmed to keep time and to provide a plurality of modes, including time-of-day, alternate time zone and alarm setting modes, said integrated circuit also being programmed to permit an operator to set time-of-day in response to actuation of selected switches, to set alternate time zone time in response to actuation of selected switches and to set alarm set time in an alarm setting mode in response to actuation of selected switches, said integrated circuit having a memory location for storing time-of-day and being programmed to selectively actuate said audible alarm device when said alarm set time corresponds to time-of-day in said memory location, the improvement comprising:

flag means selected in response to actuation of one of said switches while in said alarm setting mode adapted to

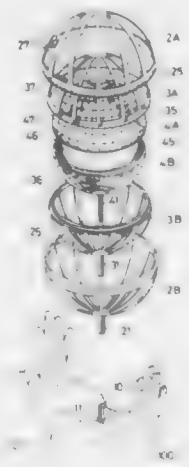
select either said alternate time zone time or time-of-day, whereby said audible alarm device may be actuated when the alarm set time corresponds either to time-of-day or to alternate time zone in response to setting of said flag means.

5,008,[illegible]7

ORNAMENTAL CLOCK WITH DECORATIVE TIME INDICATING DEVICE

Wei C. Ko, No. 36, Alley 53, Lane 514, Chung Cheng Rd., Hsin Chuang City, Taipei Hsien, Taiwan

Filed Jul. 23, 1990, Ser. No. 555,604
Int. Cl.[5] G04B *19/22*
U.S. Cl. 368—[illegible] 4 Claims



1. An ornamental clock with decorative time indicating device comprising:

a clock machanism **5**;

a clock base **100** for receiving said clock machanism **5** having a connector **10'** formed with outer thread extending upward from the clock base **100**;

an original hour, minute and second indicating connectors **20'**, **30'**, **40'** being co-axially provided within said connector **10'** and extending upward thereform with their respective height;

a thread sleeve member **10**, **10A**, **10B** formed with a lower inner thread hole **11**, **11A**, **11B** and an upper small diameter through hole **12**, **12A**, **12B**, said inner thread hole **11**, **11A**, **11B** being screwed on said outer thread of said connector **10'** of said clock base **100**;

a decorative hour indicator **2**;

an hour indicator rotating shaft **20**, **20A**, inner surface **22**, **22A** of lower end of which is tightly fitted to the upper end of said original hour indicating connector **20'**, and outer surface of upper end **23** of which is associated with said decorative hour indicator **2**;

a decorative minute indicator **3**;

a minute indicator rotating shaft **30**, **30A**, outer surface of lower end **31** of which closely rotatably contacts with inner surface **24** of upper end of said hour indicating rotating shaft **20**, **20A**, and inner surface of lower end **32** of which is tightly fitted to said original minute indicator connector **30'**, and the outer surface **33** of upper end of which is associated with said decorative minute indicator **3**;

a decorative second indicator **4**; and

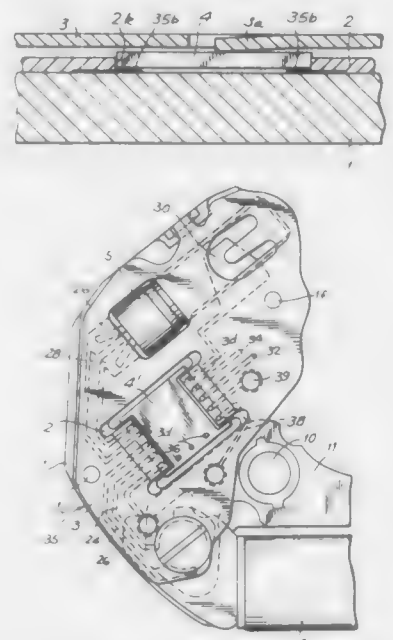
a second indicator rotating shaft **40**, **40A**, outer surface of lower end **41** of which closely rotatably contacts with inner surface **34** of upper end of said minute indicator rotating shaft **30**, **30A**, and inner surface of lower end **42** of which is tightly fitted to said original second indicator connector **40'**, and outer surface **43**, **43A** of upper end of which is associated with said decorative second indicator **4**.

5,008,868

STRUCTURE FOR MOUNTING AN INTEGRATED CIRCUIT

Toshimasa Ikegami, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Mar. 4, 1988, Ser. No. 164,299
Claims priority, application Japan, Mar. 5, 1987, 62-50584; Nov. 6, 1987, 62-280502; Nov. 6, 1987, 62-169704
Int. Cl.[5] G04C *23/00*; G04B *37/00*
U.S. Cl. 368—88 23 Claims



1. A structure for mounting an integrated circuit chip ("IC chip") having a plurality of chip terminals within a timepiece, comprising:

a timepiece frame;

an insulating circuit substrate supported on the frame and formed with a chip receiving opening for receiving and positioning the IC chip in the plane of the substrate;

a circuit pattern having circuit terminal portions formed as leaf springs selectively formed on the circuit substrate overhanging within said chip receiving opening, the circuit terminal portions being adapted to contact corresponding chip terminals when the IC chip is mounted on the circuit substrate; and

biasing means for biasing one of the IC chip or circuit terminal portions towards each other so that the chip terminal portions come into conductive contact with the circuit terminal portions for forming a circuit between the circuit pattern and the IC chip, whereby the IC chip is supported between the frame and the biasing means without the need for adhesives or additional containment structure.

5,008,869

TRANSPARENT DIAL FACE WATCH WITH REPLACEABLE VISUAL DISPLAY

Mark Dweck, Great Neck, N.Y., assignor to Colony Corporation, Scarsdale, N.Y.

Filed Apr. 11, 1990, Ser. No. 507,951
Int. Cl.[5] G04B *19/06*, *19/04*
U.S. Cl. 368—228 10 Claims

1. A watch comprising a transparent front member, visually-perceptive liquid crystal indicia of time contained in said transparent front member, rear watch stemless mechanism means for controlling the liquid crystal display of said visually-perceptive indicia of time in said transparent front member, and means in juxtaposed relation with said transparent front member for retaining within said watch a visual display observable through said transparent front member and liquid crystal indicia, said retaining means comprising unobstructed stem free compartment means arranged between said transparent front member and said rear watch mechanism means for freely receiving and retaining said visual display in juxtaposed relation to said visually-perceptive indicia of time, whereby said display can be observed through said transparent front member simultaneously with said visually-perceptive indicia of time.

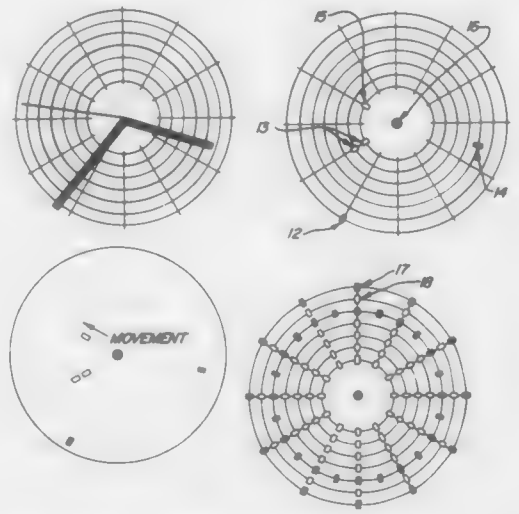


5,008,870

FIFO CLOCK

James R. Vessa, 8833 Bay Pointe Dr., Tampa, Fla. 33615

Filed Jun. 28, 1988, Ser. No. 212,471
Int. Cl.[5] G04C *17/00*
U.S. Cl. 368—242 16 Claims



1. An electronic timepiece comprising:

a display having a center position and twelve columns, each of said twelve columns having at least five display elements extending in a radial direction from said center position, respective display elements of each of said twelve columns further defining at least five concentric rows, one row of at least said five rows defining a five minute hand row an other row of said plurality of rows being an hour hand row, each of said display elements selectively operable to produce a visual signal when energized, and

means for selectively energizing display elements of said twelve columns, said means for energizing having a timebase and means for timekeeping, said means for timekeeping having means for sequentially radially energizing at least four display elements along a selected column of said twelve columns, whereby said at least four display elements are illuminated by said means for timekeeping such that the illumination of each display element denotes the passage of a unit of time being registered by said display.

5,008,871

DICTATE/TRANSCRIBE CONTROL FOR DIGITAL DICTATION SYSTEM

Joseph A. Howells, 10 Old Woods Rd., Brookfield Center, Conn. 06804; Emil F. Jachmann, 34 Harborview Pl., Stratford, Conn. 06497, and Robert L. Rubenstein, 46 Mohawk Dr., Norwalk, Conn. 06855

Filed Dec. 22, 1988, Ser. No. 289,555
Int. Cl.[5] G11B *27/031*
U.S. Cl. 369—28 14 Claims



1. A digital dictation system having a central store accessible concurrently by at least one dictator to record and/or receive messages at a changing dictator position in said store and by a transcriptionist to transcribe messages from a changing transcriptionist position in said store, said system comprising.

dictate review means for enabling a dictator to review a message then being transcribed by said transcriptionist;

record means operable by said dictator to record information including an edit in the message then being transcribed by said transcriptionist; and

transcribe playback means conditioned automatically to play back to said transcriptionist at least the edit in the message recorded by said dictator if said edit is made at a portion of the message which has been transcribed by said transcriptionist.

5,008,872

OPTICAL DISC REPRODUCTION APPARATUS WHICH DETECTS MAXIMUM AUDIO SIGNAL LEVEL RECORDED ON AN OPTICAL DISK

Haruhisa Tomoda, Neyagawa, and Yasuomi Shimada, Katano, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

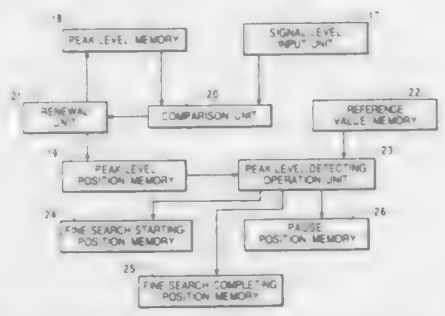
Filed Mar. 21, 1988, Ser. No. 171,471
Claims priority, application Japan, Mar. 20, 1987, 62-66431
Int. Cl.[5] G11B *21/10*, *21/12*
U.S. Cl. 369—32 14 Claims

1. An optical disc reproduction apparatus for audibly reproducing signals recorded on an optical disc and for detecting a peak audio level of signals recorded on the optical disc, the optical disc having on a surface thereof a plurality of generally concentric recording tracks, said optical disc reproduction apparatus comprising:

a reading means for reading the signals recorded on the optical disc and for outputting an audible signal in accordance with the thus read signals on the optical disc;

a signal level detecting means for detecting and outputting

an audio signal level of the signals recorded on the optical disc and read by said reading means;
a peak level memory means for storing a maximum value of the audio signal level detected by said signal level detecting means;
a peak level position memory means for storing a location on the optical disc of the signals having the value of the audio signal level stored in said peak level memory means;
a comparing means for comparing a value of the audio signal level stored in said peak level memory means and a value of the audio signal level output by said signal level detecting means;
a renewal means for resetting the value stored in said peak level memory means and the location stored in said peak level position memory means when the value of the audio signal level output by said signal level detecting means exceeds the value of the audio signal level stored in said peak level memory means;
a reference value memory means for storing a plurality of preselected reference values;



an operating means for effecting a first search of the optical disc by causing said reading means to sequentially read every N tracks of the optical disc, and for storing in said peak level position memory means a first location on the optical disc in which a maximum value of the audio signal level was detected during said first search, and for effecting a second search of the optical disc by calculating a start-search location and an end-search location based on the first location on the optical disc and reference values stored in said reference value memory means and by causing said reading means to sequentially read every M tracks on the optical disc from the start-search location to the end-search location, and for storing in said peak level position memory means a second location on the optical disc in which a maximum value of the audio signal level was detected during said second search, and for calculating a pause position on the optical disc in accordance with the second location on the optical disc and the reference values stored in said reference value memory means; and,
a means for storing said start-search location, said end-search location, and said pause position,
wherein N and M are integers and M is less than N.

5,008,873

TILT ADJUSTMENT MECHANISM FOR OBJECT LENS DRIVING DEVICE

Toshiyuki Tanaka, Osaka, and Etsuji Minami, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 4, 1989, Ser. No. 347,210
Claims priority, application Japan, May 7, 1988, 63-111286
Int. Cl.[5] G11B *7/08*
U.S. Cl. 369—44.14 **6 Claims**

1. A tilt adjustment mechanism for an object lens driving device, wherein the tilt of an object lens driving device (**4**) with respect to a housing (**3**) provided with an optical system is adjusted so that the central axis of an object lens (**6**) provided to said object lens driving device and adapted for forming a light spot on a recording medium (**1***a*) is substantially parallel to an optical axis (**7***a*) of a light beam of said optical system irradiated on said object lens, in which the information is optically written to or read from said recording medium (**1***a*), said tilt adjustment mechanism comprising
a base (**13**) holding the object lens driving device;
a housing (**3**) including a supporting point (**17**) supporting the base and two adjustment points (**20***a*, **20***b*; **20***c*; **20***d*), said supporting point and the adjustment points being so arranged that a straight line interconnecting said one supporting point and one of said adjustment points substantially make a right angle with a straight line interconnecting said one supporting point and the other of said adjustment points, said housing also including a concave portion (**17**) formed at said supporting point on the surface thereof facing to said base,



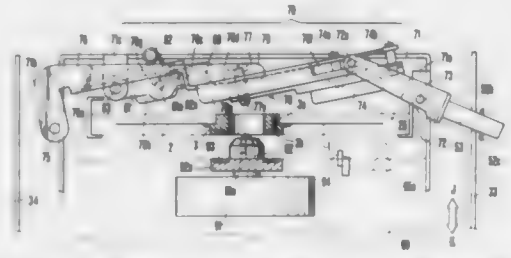
a spherical supporting member (**14**) fitted into said concave portion and interposed between said base and said housing to perform a point contact therewith; and
adjustment screws (**18***a*, **18***b*; **18***c*; **18***d*) provided at each of said two adjustment points for modifying the distance between said base and said housing;
wherein, at each of the two adjustment points, one of said base and said housing has a screw hole (**19***a*; **19***c*; **19***d*) and the other has holding means (**3***c*; **13***d*, **23***a*, **23***b*, **25***a*, **25***b*, **26***a*, **26***b*; **25***c*; **25***d*) for holding each of said adjustment screws for meshing with said screw hole.

5,008,874

RECORDING AND/OR REPRODUCING APPARATUS

Tsukasa Uehara, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 334,810, Apr. 6, 1989, abandoned, which is a continuation of Ser. No. 148,130, Jan. 26, 1988, abandoned, which is a continuation of Ser. No. 777,235, Sep. 18, 1985, abandoned. This application Mar. 22, 1990, Ser. No. 497,835
Claims priority, application Japan, Sep. 19, 1984, 59-196354
Int. Cl.[5] G11B *17/04*
U.S. Cl. 369—75.2 **19 Claims**



1. A loading apparatus, for loading a record bearing medium container having a positioning hole for positioning said container in a predetermined loaded position, comprising:

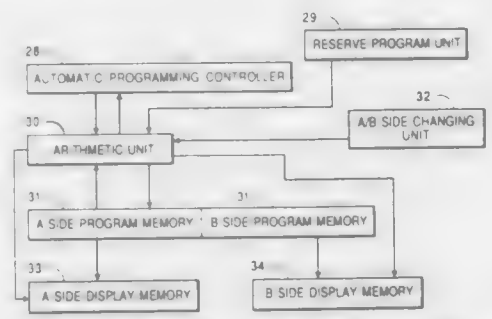
an engaging member arranged to engage with said positioning hole;
urging means for urging said engaging member to engage said positioning hole;
moving means for moving said engaging member, in a state in which said engaging member is engaged with said positioning hole, to load said container to said predetermined loaded position;
a disengaging member arranged to disengage said engaging member from said positioning hole in said loaded position; and
a positioning member for positioning said container at said loaded position by engaging with said positioning hole of said container.

5,008,875

OPTICAL DISC REPRODUCING APPARATUS HAVING DISPLAY INDICATING PROGRAM STATUS

Haruhisa Tomoda, Kashihara, and Yasuomi Shimada, Ikoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 7, 1988, Ser. No. 241,235
Claims priority, application Japan, Sep. 8, 1987, 62-224341
Int. Cl.[5] G11B *7/28, 27/02*
U.S. Cl. 369—85 **2 Claims**



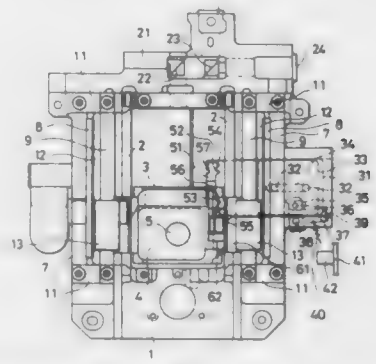
1. A programming device of an optical disc reproducing apparatus, the optical disc reproducing apparatus for reproducing recorded information recorded on an optical disc, the recorded information including a plurality of discrete audio selections and index numbers identifying each of the plurality of discrete audio selections and playing time information indicating the playing time of each of the plurality of discrete audio selections, the programming device for programming the playing sequence of the plurality of discrete audio selections for recording onto a magnetic recording medium having first and second recording sides, said programming device comprising:
signal detection means for detecting the recording information recorded on the optical disc;
recording time input means for inputting of a recording time of the magnetic recording medium;
recording the memory means, coupled to said recording time input means, for storing the recording time of the magnetic recording medium;
arithmetic means, coupled to said signal detecting means and said recording time memory means, for determining which of the discrete audio selections are to be recorded on each of the first and second recording sides of the magnetic tape in accordance with the recording time of the magnetic tape and the playing time information of the discrete audio selections, and for calculating respectively for each of the first and second recording sides of the magnetic tape first and second remainder times denoting a difference between the recording time of the first and second recording sides and a total of the playing times of the discrete audio selections to be recorded on the first and second recording sides;
a first side audio selection memory means, coupled to said arithmetic means, for storing the index numbers of the discrete audio selections determined by said arithmetic means to be recorded on the first side of the magnetic recording medium;
a second side audio selection memory means, coupled to said arithmetic means, for storing the index numbers of the discrete audio selections determined by said arithmetic means to be recorded on the second side of the magnetic medium;
a first side display memory means, coupled to said arithmetic means and said first audio selection memory means, for storing as first side display information at least one of the first remainder time calculated by said arithmetic means and the index numbers stored in said first side audio selection memory means;
a second side display memory means, coupled to said arithmetic means and said second audio selection memory means, for storing as second side display information at least one of the second remainder time calculated by said arithmetic means and the index numbers stored in said second side audio selection memory means; and,
a display means, having a first display region and a second display region and coupled to said first and second side display memory means, for displaying in said first display region the first side display information stored in said first side display memory means and for displaying in said second display region the second side display information stored in said second side display memory means.

5,008,876

CARRIAGE LOCK APPARATUS

Toshio Nakagishi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 8, 1989, Ser. No. 437,971
Claims priority, application Japan, Nov. 14, 1988, 63-287410
Int. Cl.[5] G11B *17/00, 17/30*
U.S. Cl. 369—244 **20 Claims**



1. A carriage lock apparatus, comprising:
a head for recording or playing back information on a rotating disk;
a carriage on which said head is mounted;
first means for moving said carriage in a radial direction on said disk;
first engaging means, said first engaging means having a first engaging portion with a first pitch that moves in association with a movement of said carriage in the radial direction of said disk;
second engaging means, said second engaging means having a second engaging portion with a second pitch that is different from said first pitch of said first engaging portion, said second engaging portion being located at a specific position so that said second engaging portion can engage said first engaging portion; and
means for engaging or disengaging said first and second engaging portions.

5,008,877

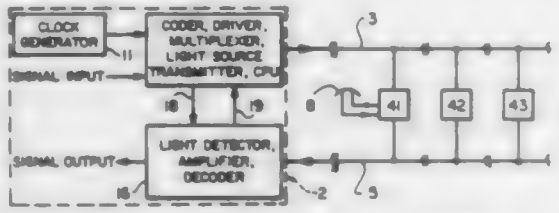
OPTICAL SIGNAL RECOVERY FOR DISTRIBUTION COMMUNICATION SYSTEM

Frank H. Levinson, Redwood City, Calif., assignor to Raychem Corp., Menlo Park, Calif.

Continuation-in-part of Ser. No. 935,458, Nov. 25, 1986. This application Nov. 12, 1987, Ser. No. 120,308

Int. Cl.[5] H04J *14/08*

U.S. Cl. 370—4 **16 Claims**



1. A distribution communication system, comprising:

a head end including a transmitter, a receiver, and a clock generator which generates a system clock frequency from which a packet transmission frequency can be derived;

a plurality of terminals remote from the head end;

first means for transmitting first information from the transmitter to the remote terminals and for transmitting second information from the remote terminals to the head end receiver, the first information being encoded so that the system clock frequency is derivable therefrom by the remote terminals, the terminals transmitting the second information onto a talk bus in an asynchronous time multiplexed packet format utilizing a plurality of packets which are out of phase with one another, the second information being transmitted at a transmission frequency;

second means for transmitting the system clock frequency within the head end from the clock generator to the head end receiver along a communication path different from that defined by the first means and which is located entirely within the head end.

5,008,878

HIGH-SPEED MODULAR SWITCHING APPARATUS FOR CIRCUIT AND PACKET SWITCHED TRAFFIC

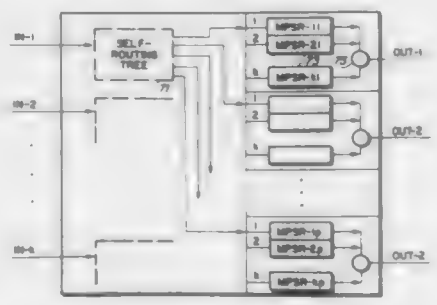
Hamid Ahmadi, Somers, N.Y.; Johannes G. Beha; Wolfgang E. Denzel, both of Waederswil, Switzerland; Antonius P. Engbersen, Richterswil; Ronald P. Luijten, Oberrieden, both of Switzerland; Charles A. Murphy, Raleigh, N.C., and Erich Port, Rueschlikon, Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 14, 1988, Ser. No. 257,656

Claims priority, application European Pat. Off., Nov. 30, 1987, 87115341

Int. Cl.[5] H04J *3/26*

U.S. Cl. 370—60 **8 Claims**



1. Apparatus for transferring packet switched or circuit switched information from a plurality of incoming transmission links connected to an input switch adapter means through a self-routing switching fabric means to an output switch adapter means to a plurality of output ports attached via an output switch adapter means to a plurality of outgoing transmission links employing a plurality of minipackets, comprising:

(a) input switch adapter means for receiving the packet switched or circuit switched information from the incoming transmission links and for forming a minipacket from the packet switched or circuit switched information including a local routing address;

(b) self-routing switching fabric means consisting of at least one set of parallel switching slices and having a plurality of input ports and output ports, the parallel switching slices having non-overlapping paths between input ports and output ports, the input ports receiving the minipackets from the input switch adapter means and sending the minipackets through the self routing switching fabric to an output port specified in the local routing address; and

(c) output switch adapter means for joining the output port of the self-routing switching fabric means to an outgoing transmission link and for converting the common information format to packet switched or circuit switched information to transmit on the outgoing transmission link.

5,008,879

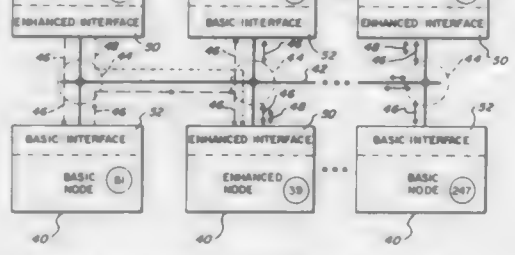
LAN WITH INTEROPERATIVE MULTIPLE OPERATIONAL CAPABILITIES

Michael A. Fischer; William M. Cox, and Floyd H. McDougall, all of San Antonio, Tex., assignors to Datapoint Corporation, San Antonio, Tex.

Filed Nov. 14, 1988, Ser. No. 270,641

Int. Cl.[5] H04J *3/02, 3/24*

U.S. Cl. 370—85.2 **115 Claims**



1. A local area network or LAN, comprising:

a plurality of at least three nodes which include a first group having at least two of said nodes therein and a second group having at least two of said nodes therein;

a communication medium connecting the nodes;

interface means associated with the first group of nodes and operative for supplying signals to the medium to establish network operational activity and for communicating information between selected nodes in predetermined signals applied at selected regularly occurring intervals in compliance with a first predetermined communication protocol;

interface means associated with the second group of nodes and operative for supplying signals to the medium to establish network operational activity and for communicating information between selected nodes in predetermined signals applied at selected regularly occurring intervals in compliance with a second predetermined communication protocol; and wherein:

the first and second protocols are different; and

the signals are applied in predetermined patterns to create network operational activity in both protocols while simultaneously communicating information in a selected one of the first or second protocols.

5,008,880

DATA TRANSMISSION APPARATUS

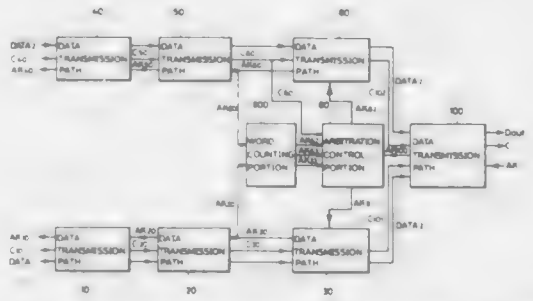
Daisuke Azuma, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 14, 1989, Ser. No. 323,021

Claims priority, application Japan, Mar. 14, 1988, 63-61587; Mar. 14, 1988, 63-61588

Int. Cl.[5] H04J *3/26*

U.S. Cl. 370—85.6 **20 Claims**



1. A data transmission apparatus for sending out to a succeeding stage in series a plurality of data applied from a preceding stage, comprising:

a plurality of single direction first data transmission paths receiving the plurality of data applied from said preceding stage, priorities being respectively given to the plurality of single direction first data transmission paths,

a second data transmission path selectively receiving data from any one of said plurality of first data transmission paths for outputting the data to said succeeding stage, and

control means for controlling the priority of data transmitted from said plurality of first transmission paths to said second data transmission path so that when each of said plurality of transmission paths simultaneously receive data for transmission to said second data transmission path the data from said plurality of transmission paths will be forwarded to said second transmission path in order of said priority.

5,008,881

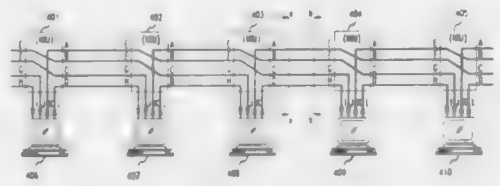
CHORDAL RING NETWORK

Mark J. Karol, Fair Haven, N.J., assignor to AT&T Bell Laboratories, Murry Hill, N.J.

Filed May 18, 1990, Ser. No. 526,097

Int. Cl.[5] H04R *3/00*

U.S. Cl. 370—85.150 **9 Claims**



1. A chordal network comprising:

a plurality of Network Interface Units (NIUs), each NIU including a plurality of inputs in a predetermined sequence, a plurality of outputs in a predetermined sequence, at least two user equipment ports, and a plurality of connections from predetermined inputs to predetermined outputs, at least one connection being cut within the NIU to form two ends, the ends each being routed to a separate user equipment port, at least two NIUs being substantially identical, and including a substantially identical sequence of inputs;

a multiple portion communications medium, each portion connecting two NIUs and comprising a plurality of channels, at least one portion connecting two identical NIUs, each channel in the portion connecting two identical NIUs connecting a separate output of a first NIU to a separate input of a second NIU, each output of the first NIU also being connected to a separate input of the first NIU, the input to the first NIU and to the second NIU differing in their respective positions in the sequence of inputs by a fixed number of positions for each channel in the portion.

5,008,882

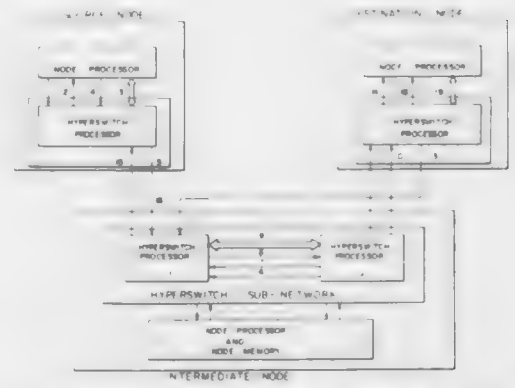
METHOD AND APPARATUS FOR ELIMINATING UNSUCCESSFUL TRIES IN A SEARCH TREE

John C. Peterson, Alta Loma; Edward Chow, San Dimas, and Herb S. Madan, Marina del Rey, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Aug. 17, 1987, Ser. No. 86,722

Int. Cl.[5] H04J *3/24*

U.S. Cl. 370—94.3 **51 Claims**



1. A method of searching for a best-first path from an originating computer ("node") through any number of intermediate node(s) to a destination node, when said nodes are connected in a cube-configured network having a plurality of path sections interconnecting the originating, intermediate and destination nodes, comprising the steps of:

trying individual path sections of the network in a preferred order of paths which lead from the originating to the destination node;

eliminating from the order of paths to be tried, those path sections terminating at a destination node and found busy; and

latching the first non-busy terminal path section of the preferred order which completes a path from the originating to said destination node.

5,008,883

COMMUNICATION SYSTEM

Alfons Eizenhöfer, Altdorf, and Georg Von Harten, Nürnberg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 14, 1989, Ser. No. 339,275

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1988, 3814355

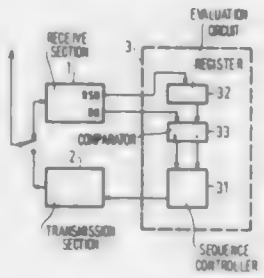
Int. Cl.[5] H04J *3/00*

U.S. Cl. 370—95.1 **15 Claims**

1. A communication system having at least one central arrangement and a plurality of mutually independent subscriber stations, in which a subscriber station, after transmission of a request for access, awaits an authorization for access to be granted by the central arrangement, characterized in that the subscriber station repeats its request for access, once it has established that another subscriber station, which transmitted its request for access at a later instant, has received an authorization for access,

wherein the subscriber station, when transmitting a request

for access, stores an identification code which indicates the time rank of its request for access in the order of the



requests for access, from further subscriber stations, occurring on a control channel.

5,008,884

PRIVATE AUTOMATIC BRANCH EXCHANGE SYSTEM WITH LINE ACCESSING NUMBER ADDING FEATURE

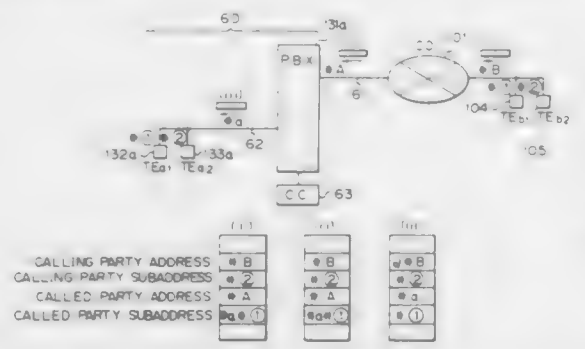
Shigehiko Yazawa; Toru Ogawa; Haruo Moritomo, all of Kawasaki; Yoshiaki Suya, Yokohama, and Mikio Nakayama, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 2, 1989, Ser. No. 346,544

Claims priority, application Japan, May 10, 1988, 63-111698; Sep. 12, 1988, 63-227904

Int. Cl.[5] H04J *3/02, 3/12, 3/08*

U.S. Cl. 370—110.1 **24 Claims**



1. A private automatic branch exchange system having an extension line connectable to an extension terminal and being operatively connected through a communication line and through a public network to a calling party terminal, comprising;

switching network means for switching between the communication line and the extension line;

control means, operatively connected to said switching network means, for controlling the switching operation of said switching network means, said control means comprising

line accessing number adding means for forming incoming information by adding a line accessing number to incoming call information so that the communication line is accessible by the extension terminal, and

means for transmitting said incoming information to the extension terminal; and

call back means cooperating with the extension terminal for performing a call back operation based on said line accessing number.

5,008,885

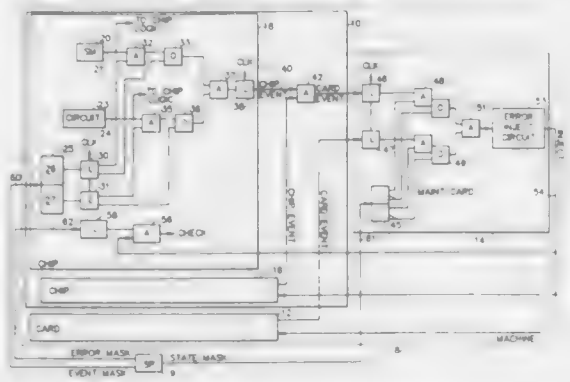
EVENT-CONTROLLED ERROR INJECTION SYSTEM

Kevin C. Huang, Endicott, N.Y.; Karl H. Kutz, Berlin; Timothy J. McNamara, Endicott, N.Y.; Victoria E. Seals, Alpharetta, Ga., and Gregory S. Still, Endwell, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1988, Ser. No. 291,544

Int. Cl.[5] G06F *11/00*

U.S. Cl. 371—3 **10 Claims**



1. In a processing machine in which a plurality of machine events occur over time, a system for injecting simulated errors into said machine for test and evaluation of machine processes, comprising:

a programmable mask means in said machine for providing a masking signal identifying a mask-defined machine event;

a machine event detector in said machine for providing an event signal indicating a machine event;

comparison means connected to said programmable mask means and to said machine event detector for indicating the occurrence of said mask-defined machine state in response to said masking signal and said event signal;

count means connected to said comparison means for counting occurrences of said mask-defined machine event; and

programmable error injection means, connected to said count means, for injecting an error into said machine upon said count means reaching a certain count.

5,008,886

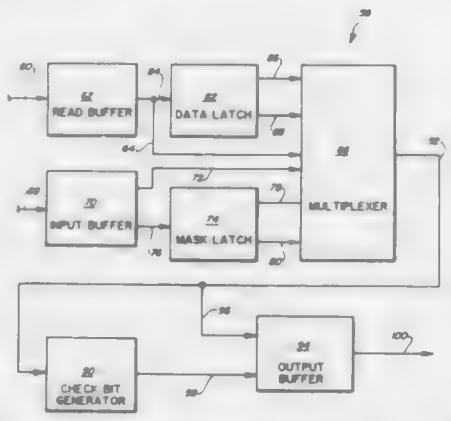
READ-MODIFY-WRITE OPERATION

Kumar Chinnaswamy, Milford; Michael A. Gagliardo, Shrewsbury; Paul M. Goodwin, Framingham; John J. Lynch, Wayland, and James E. Tessari, Arlington, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jan. 27, 1989, Ser. No. 303,621

Int. Cl.[5] G06F *11/10*

U.S. Cl. 371—40.2 **16 Claims**



1. A method of merging read data from a digital computer memory with new input data including mask field bits to modify said read data for rewriting into said memory, comprising the steps of:

latching a first selected number of data bits from said read data;

latching a second selected number of data bits from said new input data;

latching said mask field bits corresponding to said latched new input data bits;

multiplexing said latched read data bits with said latched new input data bits according to said latched mask field bits to form said first selected number of merged data bits;

generating a third selected number of check bits with said merged data bits according to an error correction code; and

combining said merged data bits with said check bits to form modified write data.

5,008,887

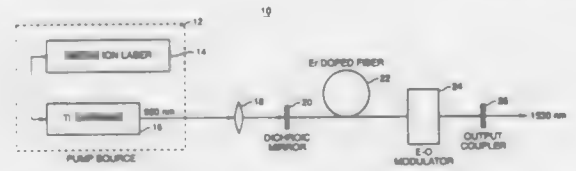
MODE-LOCKED FIBER LASER

James D. Kafka, 928 Wright Ave. #302, Mountain View, Calif. 94043, and Thomas M. Baer, 537 Drucilla Dr., Mountain View, Calif. 94040

Filed Apr. 19, 1989, Ser. No. 340,448

Int. Cl.[5] H01S *3/30*

U.S. Cl. 372—6 **41 Claims**



1. A mode-locked fiber laser, including:

a pump source,

a linear laser cavity including a single mode doped optical fiber, said cavity having a first end defined by an output coupler, said output coupler being partially transmissive at the laser output wavelength, and having a second end defined by a dichroic mirror having a high reflectivity at the laser output wavelength an a high transmissibility at the wavelength of radiation emitted from said pump source,

a broad bandwidth electro-optic modulator in said cavity,

means for coupling radiation from said pump source into said laser cavity, and

control means for operating said modulator such that its turn off and turn on times are shorter than 2 nanosecond and such that its repetition rate is Xc/2nL, where x is an integer from 1 to 1,000,000, C is the speed of light, n is the index of refraction of the fiber, and L is the total length of said optical fiber n is the index of fraction of the fiber, and L is the length of said optical fiber.

5,008,888

SEMICONDUCTOR LASER DRIVING APPARATUS

Tomiyuki Numata, Tenri; Takashi Iwaki, Nara; Kunio Kojima, Nara, and Toshihisa DeGuchi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 21, 1989, Ser. No. 384,213

Claims priority, application Japan, Jul. 22, 1988, 63-184088

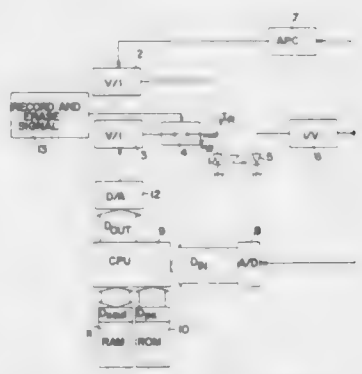
Int. Cl.[5] H01S *3/10*

U.S. Cl. 372—29 **5 Claims**

1. In a semiconductor laser driving apparatus for supplying a driving current to a semiconductor laser device of an optical disk recording and reproducing system, the level of which is changed to adjust the optical output of the semiconductor laser device to one of plural levels corresponding to positions of an optical disk which is irradiated by a laser beam emitted from said laser device, said apparatus comprises:

a current supplying means for sequentially supplying plural reference driving currents having a different level to said laser device;

a monitoring means for detecting the optical output level of said laser device when each of said reference driving currents is supplied to said laser device;



a setting means for setting several optimum values on the basis of the detected optical output levels; and

a selecting means for selecting one of said several optimum values, depending upon the irradiated position on the irradiated optical disk.

5,008,889

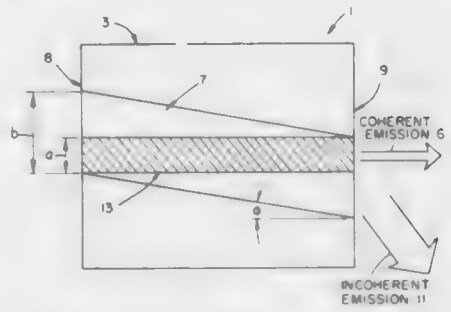
HIGH-ACCURACY WAVELENGTH STABILIZATION OF ANGLED-STRIPE SUPER LUMINESCENT LASER DIODE SOURCES

Keith E. Wilson, 1104 Hugh Reid Dr., Arcadia, Calif. 91007

Filed Nov. 6, 1989, Ser. No. 432,581

Int. Cl.[5] H01S *3/13*

U.S. Cl. 372—32 **26 Claims**



1. An optical device comprising:

a superluminescent diode including means for simultaneously emitting both coherent light and incoherent light;

means for exciting said superluminescent diode into simultaneously emitting a beam of coherent light and a beam of incoherent light which can be spatially separated;

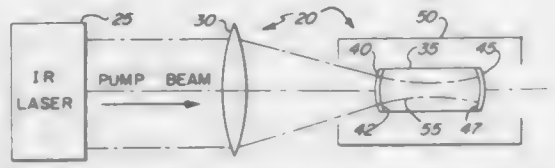
first means external to said diode for channeling light;

first means for coupling at least a portion of said beam of coherent light into said first means for channeling light;

second means external to said diode for channeling light; and

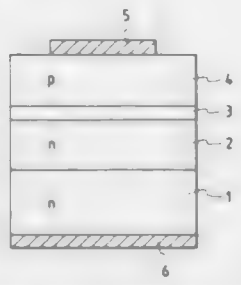
second means for coupling at least a portion of said beam of incoherent light into said second means for channeling light.

5,008,890
RED, GREEN, BLUE UPCONVERSION LASER PUMPED BY SINGLE WAVELENGTH INFRARED LASER SOURCE
Ross A. McFarlane, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed May 1, 1990, Ser. No. 517,085
Int. Cl.[5] H01S 3/16
U.S. Cl. 372—41 43 Claims



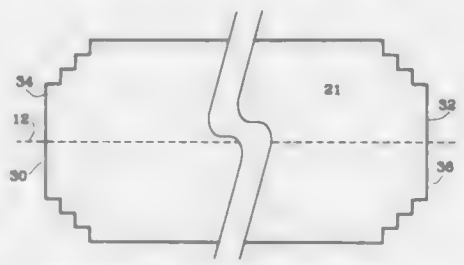
1. A red green blue upconversion laser system pumped by a single pump laser source, comprising:
a laser rod fabricated from a host material doped with a rare earth ion;
a pump laser source for generating a pump beam substantially at a single infrared pump wavelength;
a first upconversion laser mirror disposed adjacent a first end of the laser rod through which the pump beam passes into the laser rod, said first mirror characterized by high transmissivity at the pump beam wavelength and high reflectivity at the red, green and blue upconversion wavelengths; and
a second upconversion laser mirror mounted adjacent a second end of the laser rod and characterized by a transmissivity in the range of 1% to 10% at the red, green and blue upconversion wavelengths.

5,008,891
SEMICONDUCTOR LIGHT-EMITTING DEVICES
Yoshio Morita, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan
Filed Apr. 10, 1990, Ser. No. 507,273
Claims priority, application Japan, Apr. 11, 1989, 1-91325
Int. Cl.[5] H01S 3/19
U.S. Cl. 372—45 16 Claims



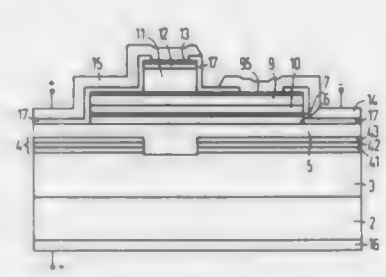
1. A semiconductor light-emitting device comprising a substrate and a combination of semiconductor laser layers disposed on said substrate in a double heterostructure laser configuration, said layers comprising:
a p-type semiconductor cladding layer formed of $Cu(Al_aGa_{1-a})(S_bSe_{1-b})_2$ where $0 \leqq a \leqq 1$ and $0 \leqq b \leqq 1$;
an n-type semiconductor cladding layer formed of $(Zn_cCd_{1-c})(S_dSe_{1-d})$, where $0 \leqq c \leqq 1$ and $0 \leqq d \leqq 1$; and
an activation layer disposed between said n-type cladding layer and p-type cladding layer and formed of $Cu(Al_aGa_{1-a})(S_bSe_{1-b})_2$;
each of said p-type cladding layer, n-type cladding layer and activation layer having an identical value of lattice constant to that of said substrate.

5,008,892
SEMICONDUCTOR LASER DIODES
Barbara T. Landesman, Placitas, N. Mex., assignor to Talandic Research Corporation, Azusa, Calif.
Filed Dec. 27, 1989, Ser. No. 457,251
Int. Cl.[5] H01S 3/19, 3/08
U.S. Cl. 372—45 5 Claims



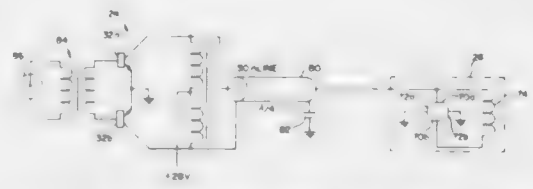
3. A semiconductor laser diode comprising:
a resonant semiconductor laser waveguide cavity: means for establishing lasing in the waveguide cavity; and
means for enhancing oblate-spheroidal lasing modes therein.

5,008,893
TUNABLE SEMICONDUCTOR LASER
Markus-Christian Amann, Munich; Gerhard Baumann, Ottobrunn; Jochen Heinen, Haar, and Wolfgang Thulke, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Feb. 15, 1990, Ser. No. 480,825
Claims priority, application European Pat. Off., Feb. 15, 1989, 89102596.7
Int. Cl.[5] H01S 3/19
U.S. Cl. 372—50 29 Claims



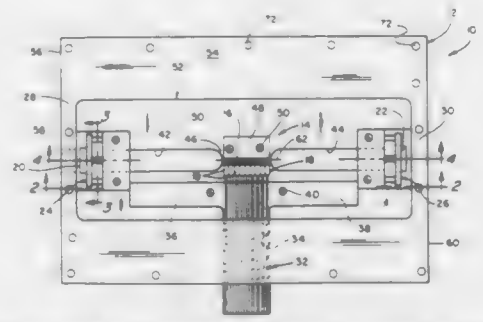
1. A tunable semiconductor laser comprising a substrate upon which are arranged an active layer in which a laser cavity is formed, a tuning layer, and a first contact, a second contact, and a third contact, said active layer (6) and said tuning layer (9, 90) formed as a sandwich, a central layer (10) of semiconductor material which is a current conductor is grown between said active layer (6) and said tuning layer (9, 90), said central layer (10) has such a thickness and so high a doping concentration as to provide the required minimum charge carrier density and electrical conductivity for said central layer (10), a barrier layer (4) which is interrupted by a stripe-shaped region is provided for a lateral limitation of the current conduction to this stripe-shaped region; said tuning layer (9, 90) is arranged on said barrier layer (4) which faces away from said substrate, a first contact layer (95, 950) is applied onto said tuning layer (9, 90) and said first contact (14) is applied onto said first contact layer, a ridge waveguide (11, 12, 13) formed according to MCRW principle above said strip-shaped region, said ridge waveguide formed by a strip-shaped cladding layer (11), a second contact layer (12) which is applied thereon and by a contact strip (13) of metal which is applied onto said second contact layer, said second contact (15) applied onto said contact strip (13), said third contact (16) is situated on that side of said barrier layer (4) which is opposite to said second contact (15), said cladding layer (11) and said second contact layer (12) doped for a first electrical conductivity type, and said tuning layer (9, 90), said first contact layer (95, 950), said central layer (10) and at least layered portions of said barrier layer (4) are doped for a second opposite electrical conductivity type.

5,008,894
DRIVE SYSTEM FOR RF-EXCITED GAS LASERS
Peter Laakmann, Seattle, Wash., assignor to Synrad, Incorporated, Bothell, Wash.
Filed Mar. 30, 1990, Ser. No. 502,231
Int. Cl.[5] H01S 3/0975
U.S. Cl. 372—38 19 Claims



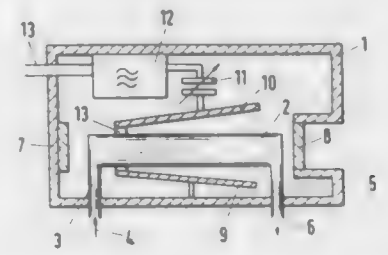
1. An RF excited gas laser system, comprising:
a plasma tube for producing laser energy upon ignition of a gas contained within, said plasma tube having an electrical input port, a discharge section, an optical resonator and means for outcoupling laser energy from said plasma tube, the input terminal having a real impedance at a predetermined operating frequency;
a voltage source of RF energy having a source impedance much lower than the plasma tube impedance at the operating frequency; and
a transmission line connected at an input end to the voltage source and at an output end to the plasma tube, the transmission line having an electrical length substantially equal to an odd number of quarter wavelengths at the operating frequency and having a characteristic impedance intermediate the impedance of said voltage source and the impedance of said plasma tube.

5,008,895
PACKAGING DEVICE FOR DIODE LASER PUMPED ASSEMBLY
Danny W. Martin, St. Charles, Mo., assignor to Laser Diode, Inc., Earth City, Mo.
Filed Feb. 5, 1990, Ser. No. 475,232
Int. Cl.[5] H01S 3/09
U.S. Cl. 372—69 17 Claims



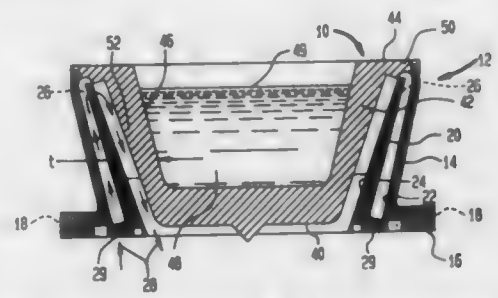
1. A package for a laser device, being arranged in a stack of similar packages and attached to a thermo-electric cooler comprising a base member of relatively planar heat conducting construction having an outer surface extending between spaced and opposed sides and end surfaces, an inner surface portion opposed to said outer surface and having a platform portion and a container extending therearound, said platform being formed thereon at a location intermediate the sides and end surfaces on which are positioned the elements of a laser including a laser medium and a laser pump source, laser mirrors including mountings therefor mounted on the base member and optically aligned with the laser medium, the laser medium including an elongated member mounted on said platform portion and having an optical axis intersecting the end surfaces at intermediate locations therealong, the pump source including an array of laser diodes positioned on the platform adjacent to one side of the laser medium, such that said diodes pump laser energy into the laser medium thereby causing said laser medium to lase, electrical connection means mounted in the base member including a strip line connector having a plurality of conductors for connection at corresponding ends to selected ones of said laser diodes in said array and to a source of energy for applying energy from said source to said laser diodes to cause them to lase, a closure member having a surface in abutting relation to said inner surface of the base member to enclose a space around the elements of the laser, and means for attaching said closure member to said base member thereby providing a compact, rugged heat conducting package.

5,008,896
GAS LASER HAVING A DISCHARGE TUBE THROUGH WHICH THE GAS FLOWS IN AN AXIAL DIRECTION
Hinrich Martinen, Quickborn; Karl-Heinz Knobbe, Ellerbek; Samuel S. Simonsson, Winsen-Bahlburg, and Peter Wirth, Winsen/Luhe, all of Fed. Rep. of Germany, assignors to Rofin-Sinar Laser GmbH, Hamburg, Fed. Rep. of Germany
Filed Apr. 10, 1987, Ser. No. 37,261
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1986, 8610693[U]
Int. Cl.[5] H01S 3/097
U.S. Cl. 372—83 8 Claims



1. Gas laser having a discharge tube, through which the gas flows in an axial direction and to which highfrequency electrodes are fitted externally, and having a high-frequency generator, characterized in that the power output stage (12) of the high-frequency generator is disposed in the housing (1) of the laser resonator (2, 7, 8) and is directly connected to the electrodes (9, 10) via impedance adaptation elements (11, 14 to 18).

5,008,897
WATER COOLED CRUCIBLE
Gary B. Crumley, Oakland, Calif., assignor to The BOC Group, Inc., Murray Hill, N.J.
Filed Mar. 23, 1990, Ser. No. 498,869
Int. Cl.[5] H01J 37/305
U.S. Cl. 373—11 5 Claims



1. In a water cooled crucible for use in an electron beam

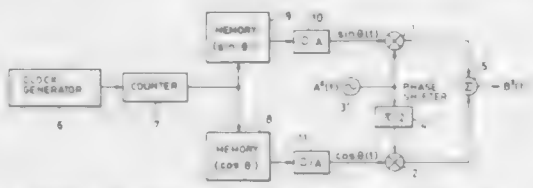
evaporation system to contain a material to be melted and evaporated, the water cooled crucible including: a base wall; a sidewall upstanding from the base wall; a rim formed at the top of the sidewall; and a pocket laterally defined by the sidewall and at the top and bottom by the rim and the base wall, respectively; the material contained within the pocket and having, a top surface spaced below the rim, a high thermal conductivity, and a capability of alloying with the sidewall when melted and evaporated; and the electron beam evaporation system including, means for generating an electron beam for melting and evaporating the material at the top surface of the material, the electron beam generating heat at the top surface of the material, conducted through the material to the sidewall, and a crucible support element to receive the crucible and having an inner surface surrounding the sidewall and outwardly spaced therefrom to form an annular passageway for receiving cooling water in a direction taken from the rim to the base wall for cooling the crucible by transferring the heat from the sidewall to the cooling water; the improvement comprising: the sidewall including a region extending from the rim to a location of the sidewall situated beneath the top surface of the material; the sidewall, within the region, having a thickness such that the sidewall contacts the inner surface of the crucible support element, and a plurality of circumferentially spaced grooves defined in the outer surface of the sidewall for allowing passage of the cooling water and configured to increase the heat transfer between the sidewall and the cooling water and thus, the cooling of the sidewall to prevent the material from alloying with the sidewall.

5,008,898

CARRIER MODULATING DEVICE FOR A SPREAD SPECTRUM COMMUNICATION DEVICE

Mashiro Hamatsu, and Mamoru Endo, both of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Mar. 20, 1990, Ser. No. 496,354
Claims priority, application Japan, Mar. 30, 1989, 1-76789
Int. Cl.[5] H04L *9/00*
U.S. Cl. 375—1 **7 Claims**



1. A spread spectrum modulating device comprising:
means for generating first and second carrier signals, which are orthogonal to each other;
first multiplying means for multiplying a first analog signal corresponding to a real component of a square phase sequence by said first carrier signal;
second multiplying means for multiplying a second analog signal corresponding to an imaginary component of the square phase sequence by said second carrier signal; and
means for adding the outputs of said first and said second multiplying means to each other.

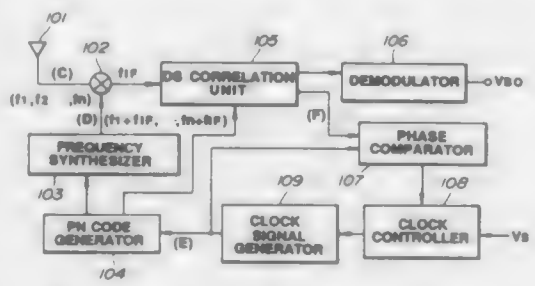
5,008,899

RECEIVER FOR SPECTRUM SPREAD COMMUNICATION

Michio Yamamoto, Mobara, Japan, assignor to Futaba Denshi Kogyo Kabushiki Kaisha, Mobara, Japan

Filed Jun. 29, 1990, Ser. No. 545,642
Int. Cl.[5] H04K *1/04*
U.S. Cl. 375—1 **2 Claims**

1. A receiver for spectrum spread communication comprising:
a PN code generating means for generating a PN code;
a frequency synthesizer means for changing over and outputting signals different in frequency in turn in response to said PN code;
a mixing means for carrying out multiplication between a signal received by the receiver and the signal form said frequency synthesizer means to generate its output signal;



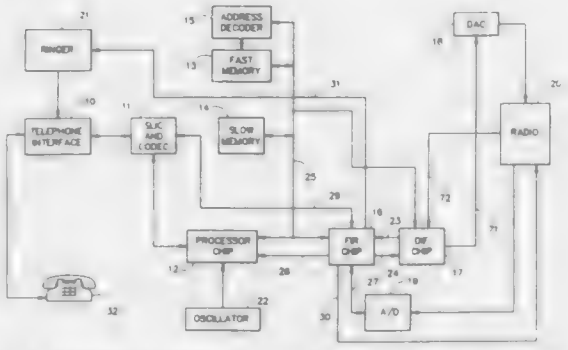
a correlation means for carrying out correlation between the output signal of said mixing means and said PN code to output a correlation signal; and
a control means for controlling the frequency of said PN code generating means in response to said correlation signal.

5,008,900

SUBSCRIBER UNIT FOR WIRELESS DIGITAL SUBSCRIBER COMMUNICATION SYSTEM

David N. Critchlow; Moshe Yehushua; Graham M. Avis, all of San Diego; Wade L. Heimbigner, Poway; Karle J. Johnson, Carlsbad, and George A. Wiley, San Diego, all of Calif., assignors to International Mobile Machines Corporation, King of Prussia, Pa.

Filed Aug. 14, 1989, Ser. No. 394,497
Int. Cl.[5] H04B *1/38*
U.S. Cl. 375—8 **8 Claims**



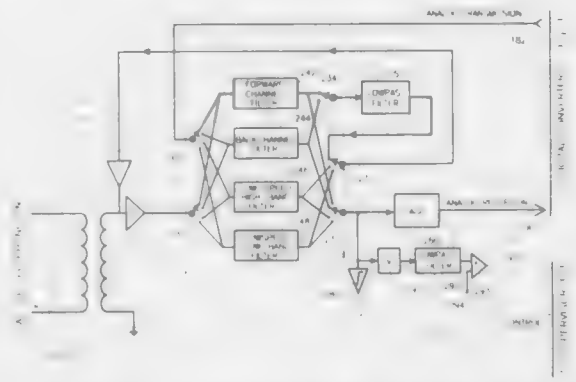
1. A subscriber unit for wireless communication with a base station in a wireless subscriber communication system, comprising:
means for transcoding a digital voice input signal to provide digital input symbols;
means for FIR filtering the digital input symbols;
means for modulating a digital intermediate frequency signal with the filtered input symbols to provide a modulated intermediate frequency input signal;
means for processing the modulated input signal for transmission to the base station;
means for demodulating an output signal received from the base station to provide digital output symbols; and
means for synthesizing a digital voice output signal from the digital output symbols;
wherein the subscriber unit includes
a FIR chip for performing said FIR filtering of the digital input symbols;
a DIF chip for digitally synthesizing said digital intermediate frequency signal and for performing said modulation of said digital intermediate frequency signal; and
a single processor chip for performing said transcoding of said digital voice input signal, for performing said demodulation of said output signal received from the base station, and for performing said synthesizing of the digital output symbols;
said DIF chip including means coupled to said processor chip for accumulating phase data provided by said processor chip to indicate a predetermined intermediate frequency and means for processing the accumulated phase data to generate said digital intermediate frequency signal at the predetermined intermediate frequency.

5,008,901

ASYMMETRICAL DUPLEX ERROR-CONTROLLED MODEM

Clifford H. Wallach, Lincolnshire; Robert C. Suffern, Chicago, and Dale M. Walsh, Burr Ridge, all of Ill., assignors to U.S. Robotics, Inc., Skokie, Ill.

Filed Oct. 29, 1987, Ser. No. 115,354
Int. Cl.[5] H04L *5/14*
U.S. Cl. 375—8 **5 Claims**



1. A modem for connecting digital data terminal equipment to an analog communication link comprising, in combination,
frequency division filtering means serially connected with said link for establishing a high speed channel having a bandwidth in a first range of frequencies and a low speed channel having a bandwidth in a second and more limited range of frequencies,
digital-to-analog conversion means connected between said equipment and said filtering means for translating digital signals from said equipment into analog signals for transmission over said link in a selected one of said high or low speed channels,
analog-to-digital conversion means connected between said equipment and said filtering means for producing digital signals supplied to said equipment from the analog signals received over the other one of said channels, and
means operative when said digital-to-analog conversion means is transmitting data over said low speed channel for sending a channel reversal command over said link whenever the amount of data awaiting transmission over said low speed channel exceeds a predetermined amount.

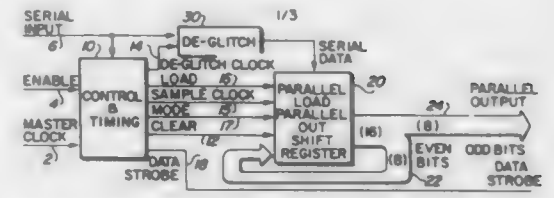
5,008,902

AUTOMATIC BAUD RATE DETECTION

Gary R. Key, Round Rock, and David C. Black, Austin, both of Tex., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jan. 25, 1989, Ser. No. 302,172
Int. Cl.[5] H04B *3/46*
U.S. Cl. 375—10 **6 Claims**

1. Method for automatically detecting transmission rate of a stream of data, comprising:
(a) sampling the data at a rate faster than the highest possible baud rate;
(b) storing the sampled data in a memory;
(c) comparing the sampled data to known data;
(d) determining if a match occurs;



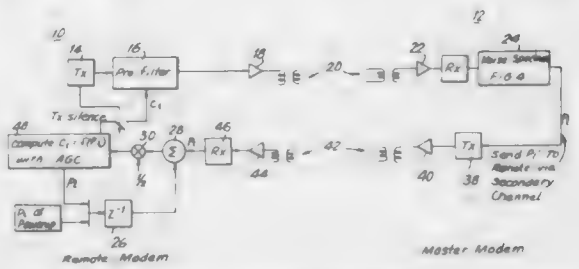
(e) selecting the matched baud rate if a match occurs;
(f) recirculating a portion of the sampled data if a match does not occur; and
(g) repeating steps (a) to (f) until a match occurs.

5,008,903

ADAPTIVE TRANSMIT PRE-EMPHASIS FOR DIGITAL MODEM COMPUTED FROM NOISE SPECTRUM

William L. Betts, St. Petersburg, and James J. DesRosiers, Tampa, both of Fla., assignors to A.T. & T. Paradyne, Largo, Fla.

Filed May 25, 1989, Ser. No. 357,056
Int. Cl.[5] H04L *7/00*
U.S. Cl. 375—60 **21 Claims**



1. An apparatus for calculating pre-emphasis coefficients for a transmitting modem in a communications system, including:
first transmitting means in the transmitting modem, including adjusting means responsive to the pre-emphasis coefficients for adjusting frequency-dependent characteristics of an output of said first transmitting means;
receiving means for receiving said output from said first transmitting means;
generating means for generating parameters responsive to a noise spectrum of said output including means for calculating said noise spectrum of said output;
second transmitting means for transmitting said parameters to the transmitting modem, and
computing means for computing the pre-emphasis coefficients from said parameters.

5,008,904

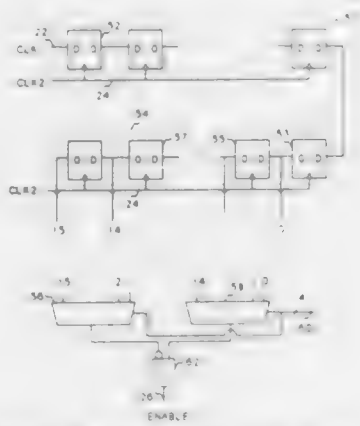
SYNCHRONIZER USING CLOCK PHASE EXTRAPOLATION

Steven T. Mangelsdorf, Fort Collins, Colo., and David V. James, Palo Alto, Calif., assignors to Hewlett-Packard Co., Palo Alto, Calif.

Filed Jul. 24, 1989, Ser. No. 384,588
Int. Cl.[5] H03M *9/00*
U.S. Cl. 375—107 **20 Claims**

19. A process for synchronizing data transfers between a first data bus having a first clock signal and a second data bus having a second clock signal comprising the steps of:
sampling said first clock signal with said second clock signal and providing a serial sampled output;

converting said serial sampled output to parallel signals, selecting at least two adjacent parallel signals; ANDing



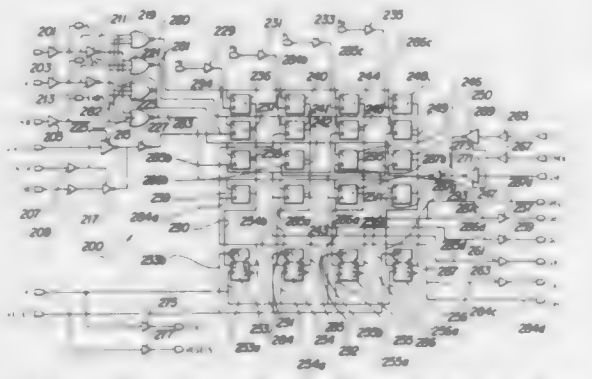
said selected signals to produce an enable signal; and enabling a bus driver circuit connecting said first data bus to said second data bus with said enable signal.

5,008,905

UNIVERSAL SHIFT REGISTER EMPLOYING A MATRIX OF TRANSMISSION GATES

Alfred Lee, Torrance, and Daniel T. Kain, Hermosa Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 20, 1988, Ser. No. 208,692
Int. Cl.[5] G11C *19/00;* **H03K** *21/02, 23/50*
U.S. Cl. 377—77 **9 Claims**



1. A universal shift register having a plurality M of selectable operating modes where M is an integer, the shift register comprising:

a plurality N of bistable storage devices where N is an integer, one for each stage of the shift register;

means for indicating any one of the M selectable operating modes for the shift register; and

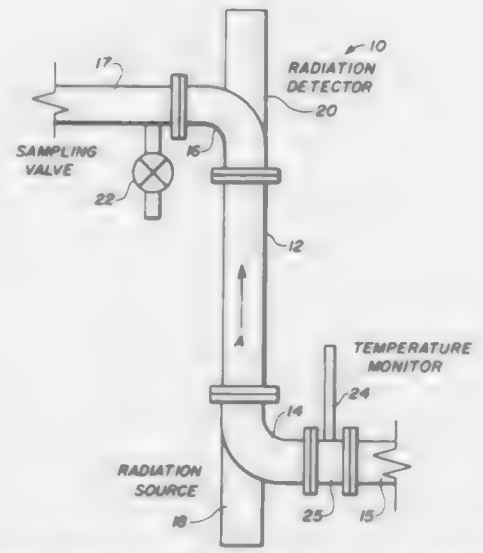
an N column-by-M row matrix of information transmission gates coupled to the indicating means and to the N bistable storage devices, each of the M rows of the matrix arranged to perform one of the selectable register operating modes upon each of the N register stages, whereby register stage data pass through only a single information transmission gate of the matrix while being manipulated between a shift register input and a predetermined shift register stage.

5,008,906

CONSISTENCY MEASURING DEVICE FOR A SLURRY CONTAINING DEFOAMER

David P. Reichwein, Hersbey, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 252,067, Oct. 3, 1988, abandoned. This application Sep. 8, 1989, Ser. No. 404,620
Int. Cl.[5] G01N *23/14*
U.S. Cl. 378—54 **3 Claims**



1. An apparatus for testing the consistency of slurry solutions comprising:

(a) a deaerating means which receives a slurry to be tested and removes entrapped gases from the slurry;

(b) a radiation test section interconnected with the deaerating means, receiving slurry from the deaerating means and providing a measurement of the consistency of the slurry by measuring the attenuation of radiation which occurs when radiation is passed through a prescribed path through a portion of the slurry;

(c) the radiation test section comprises:

(1) a straight section of pipe with the total amount of slurry flowing therethrough;

(2) a first pipe elbow attached to one end of the straight section of pipe;

(3) a radiation source attached to the first pipe elbow so that the radiation from the radiation source is essentially aligned with the axis of the straight section of pipe;

(4) a second pipe elbow attached to the second end of the straight section of pipe; and

(5) a radiation detector attached to the second pipe elbow so that the radiation detector is affected by the radiation from the radiation source, and the radiation received by the radiation detector is affected by the consistency of the slurry as measured in the total flow of the slurry and not a sample of the slurry;

(d) the deaerating means comprimises:

(1) a container into which the slurry is fed;

(2) supply means to furnish a controlled quantity of defoaming agent into the container; and

(3) mixing means which assures that the defoaming agent acts upon the slurry before the slurry is supplied to the radiation test section; and

(e) including control means interconnected with the radiation test section and the supply means and acting to determine the rate of supply of defoaming agent to the deaerating means based upon the consistency reading derived from the radiation test section.

5,008,907

THERAPY X-RAY SCANNER

Amos Norman, Woodland Hills, and Keisuke S. Iwamoto, Monterey Park, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed May 31, 1989, Ser. No. 359,159
Int. Cl.[5] A61N *5/10*
U.S. Cl. 378—65 **40 Claims**



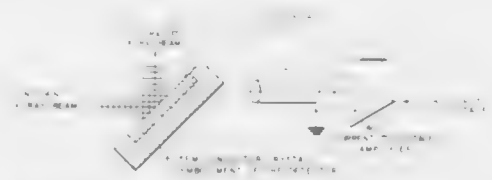
1. Apparatus for delivering a therapy dose of x-rays to a subject comprising means to move an orthovoltage range x-ray source mounted on a computed tomographic scanning unit including a source, detector, and data processing means for displaying a cross-sectional image of a selected portion of the subject in an arc about the subject such that an x-ray beam from the source is isocentered on a selected target in the subject, and means for directing the beam as a pencil beam to the isocenter in the subject to deliver therapy x-rays.

5,008,908

DIFFRACTION DEVICE WHICH DETECTS THE BRAGG CONDITION

Terrence J. Jach, Washington, D.C.; Jon C. Geist, Olney, Md.; Gary P. Carver, Ijamsville, Md., and Donald B. Novotny, Bethesda, Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Dec. 9, 1988, Ser. No. 282,243
Int. Cl.[5] G01N *23/20*
U.S. Cl. 378—70 **12 Claims**



1. A diffraction device comprising,

(a) a semiconductor crystal having a plurality of crystal planes for diffracting incident radiation at the Bragg angle,

(b) a semiconductor detector region, integrated into said crystal and having a depletion region located at a depth below a surface of said semiconductor crystal such that current in a said semiconductor detector region due to said incident radiation incident on said surface of the crystal decreases significantly when said crystal is oriented at the Bragg angle with respect to the incident radiation,

(c) said semiconductor detector region producing said current by collecting electron-hole pairs in said depletion region, but not significantly collecting electron-hole pairs in a region closer to said surface than depletion region,

(d) said depletion region located deeper in said crystal than the extinction length of the incident radiation at the Bragg angle, but less than the extinction length of the incident radiation at angles other than the Bragg angle, and

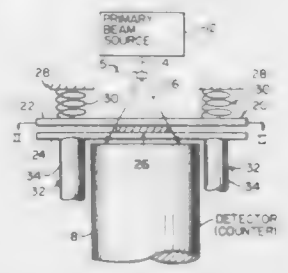
(e) electrodes connected to said semiconductor detector region, said electrodes providing an electrical signal indicative of diffraction at the Bragg angle.

5,008,909

DIFFRACTOMETER DATA COLLECTING METHOD AND APPARATUS

Peter A. Steinmeyer, Farmington, N. Mex., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Feb. 7, 1990, Ser. No. 476,184
Int. Cl.[5] G01N *23/20*
U.S. Cl. 378—71 **16 Claims**



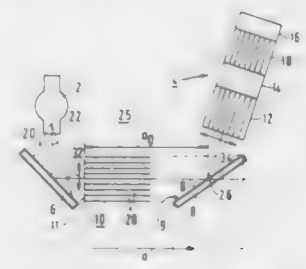
1. In a diffractometer comprising means for producing a primary beam, a sample holder for suspending a sample in the path of the primary beam, and a detector means for detecting a diffracted beam produced when the primary beam strikes the sample, the improvement comprising scanning means disposed at a fixed location between said holder and said detector means for varying the total amount of the cross sectional area of the diffracted team that is received by the detector means in a manner such that the diffracted beam is detected in an integrated form.

5,008,910

X-RAY ANALYSIS APPARATUS COMPRISING A SAGGITALLY CURVED ANALYSIS CRYSTAL

Walterus A. L. A. Van Egeraat, Almelo, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 158,446, Feb. 22, 1988, abandoned. This application Jan. 29, 1990, Ser. No. 474,320
Claims priority, application Netherlands, Feb. 27, 1987, 8700488
Int. Cl.[5] G01T *1/36;* **G21K** *23/201. 1/06;* **G01N** *23/223*
U.S. Cl. 378—84 **3 Claims**



1. An x-ray analysis apparatus comprising in order an x-ray source passing an x-ray beam; a sample reflecting said x-ray beam; at least a primary soller slit collimator collimating said x-ray beam from said sample; a curved analysis crystal receiving said x-ray beam from said collimator, said analysis crystal being substantially circular-cylindrical in a saggital direction transverse to a plane extending through an incident x-ray beam to said analysis crystal and a normal to said analysis crystal, and said analysis crystal producing a diffracted x-ray beam, said circular-cylindrical analysis crystal having a radius of curvature R substantially equivalent to a distance between an entrance side of said primary soller slit collimator and a point of incidence of said incident x-ray beam on a surface of said

analysis crystal divided by sin θ, where θ is an angle of incidence of said incident x-ray beam on said analysis crystal; and an x-ray detector receiving said diffracted x-ray beam and having at least one further collimator.

5,008,911

X-RAY QUANTA MEASURING DEVICE INCLUDING DIAPHRAGM FOR PRODUCING CONICAL RADIATION BEAM ON OBJECT BEING MEASURED

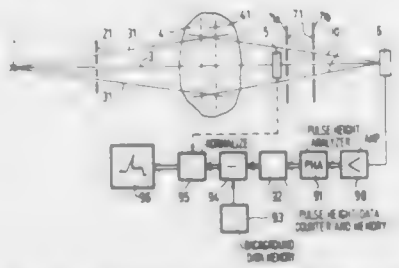
Geoffrey Harding, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 22, 1989, Ser. No. 411,357

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1988, 3842146; Mar. 21, 1989, 3909147

Int. Cl.[5] G01N *23/201*

U.S. Cl. 378—86 **17 Claims**



1. A device for measuring the pulse transfer spectrum of X-ray quanta which are elastically scattered in an examination zone of an X-ray system comprising a polychromatic x-ray source on one side of the examination zone, said measuring device comprising:

a detector on the other side of the zone for measuring the energy of the X-ray quanta; and

two apertured diaphragms which have a common symmetry axis and which transmit scattered radiation to the detector only within a given scattering angle range, a first diaphragm being between the examination zone and the X-ray source and a second diaphragm between the examination zone and the detector, the first diaphragm being constructed so that the X-rays transmitted therethrough form a conical envelope of a primary radiation cone, the second diaphragm being constructed so that scattered radiation produced in the examination zone is incident on the detector in an annular symmetrical fashion with respect to said axis of symmetry.

5,008,912

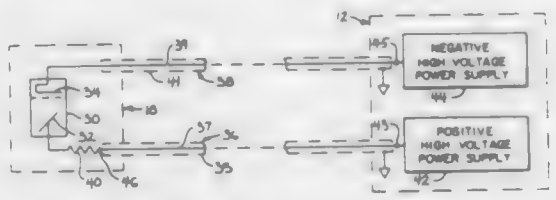
X-RAY TUBE HIGH VOLTAGE CABLE TRANSIENT SUPPRESSION

George A. Farrall, Rexford, N.Y., and Steven D. Hansen, Port Washington, Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Oct. 5, 1989, Ser. No. 417,353

Int. Cl.[5] H05G *1/08*

U.S. Cl. 378—91 **14 Claims**



1. An X-ray imaging system comprising:

a vacuum tube for emitting an X-ray beam and having an anode and a cathode;

means, having first and second terminals, for producing a DC potential across the terminals;

a cable means for applying the DC potential from said means for producing to said vacuum tube, said cable means having a characteristic impedance and storing electrical energy as a result of applying the DC potential; and

a resistive means, coupling said cable means to said vacuum tube, for depressing transient currents flowing through said vacuum tube under a breakdown condition.

5,008,913

MEASURING AND DAMPING RESISTOR ARRANGEMENT FOR A HIGH-VOLTAGE APPARATUS

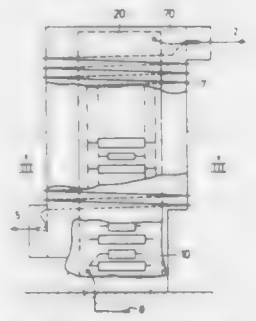
Hans Negle, Nahe, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 37,122, Apr. 9, 1987, abandoned, which is a continuation of Ser. No. 880,335, Jun. 24, 1986, abandoned, which is a continuation of Ser. No. 578,250, Feb. 7, 1984, abandoned. This application Oct. 7, 1987, Ser. No. 107,872

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1983, 3304316

Int. Cl.[5] H05G *1/10*

U.S. Cl. 378—105 **13 Claims**



1. A high-voltage apparatus, comprising

a voltage source having an output which is at a high voltage with respect to ground;

a terminal which is at a high voltage with respect to ground during normal operation of the apparatus;

a damping resistor connecting said source output to said terminal for conducting and limiting current to a load connected to said terminal; and

a measuring resistor arrangement connected to a point between the damping resistor and the terminal,

characterized in that the apparatus comprises an insulating body enclosing a part of the measuring resistor arrangement, said part having stray capacitance to ground,

said apparatus includes a capacitance neutralization element surrounding said body and said part, and extending in a direction of elongation, said element being a solid element having a surface with a voltage gradient along said surface of said element; in response to high frequency voltages at said terminal, said voltage gradient having a high frequency component in said direction of elongation for neutralizing effects of said stray capacitance, and

the damping resistor comprises a resistance wire wound around said body, said resistance wire being said solid element, arranged so as to surround at least a portion of said arrangement adjacent said point, and to shield at least part of the measuring resistor arrangement so as to reduce the effect of stray capacitances from said arrangement to ground.

5,008,914

QUANTITATIVE IMAGING EMPLOYING SCANNING EQUALIZATION RADIOGRAPHY

William E. Moore, Macedon, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

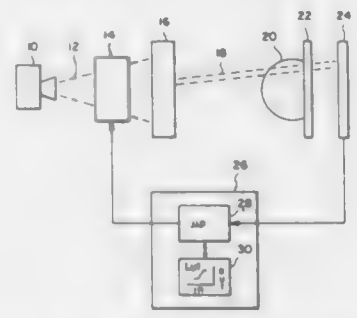
Filed May 30, 1989, Ser. No. 358,239

Int. Cl.[5] H05G *1/44*

U.S. Cl. 378—108 **10 Claims**

1. An improved scanning equalization radiography system of the type having a means for scanning a beam of radiation over an object to expose a sensor for forming an image of the object, the sensor having an exposure response function;

a detector for monitoring the intensity of the beam after passing through the object to produce a feedback signal; and



control means responsive to the feedback signal to control the exposure produced by the scanning beam according to a control function, wherein the improvement comprises;

the control function having the same general shapes and slopes as the exposure response function of the sensor.

5,008,915

METHODS FOR FORMING A RADIOGRAPH USING SLIT RADIOGRAPHY

Hugo Vlasbloem, Maasland, Netherlands, assignor to B.V. Optische Industrie "De Oude Delft", Delft, Netherlands

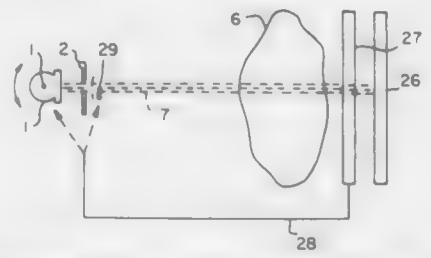
Continuation-in-part of Ser. No. 648,707, Sep. 7, 1984, Pat. No. 4,803,714. This application Feb. 3, 1989, Ser. No. 306,348

Claims priority, application Netherlands, Sep. 13, 1983, 8303156

The portion of the term of this patent subsequent to Dec. 22, 2004, has been disclaimed.

Int. Cl.[5] G01N *23/04*

U.S. Cl. 378—108 **4 Claims**



1. A method for forming a radiograph of an object, which comprises the steps of:

(a) energizing an X-ray source to a first level of radiation intensity, said X-ray source including a slit diaphragm;

(b) effecting a first scanning of said object by an X-ray beam from said X-ray source;

(c) generating output signals of radiation intensity from an elongated X-ray detector during said first scanning;

(d) measuring said output signals during at least a portion of said first scanning;

(e) energizing said X-ray beam to a higher level of radiation intensity as determined by step (d) for forming a radiograph of said object;

(f) effecting a second scanning of said object with an X-ray beam from said X-ray source at said higher level of radiation intensity;

(g) modulating said X-ray beam during said second scanning; and

(h) forming said radiograph during said second scanning.

5,008,916

SAFETY DEVICE FOR RADIOGENIC UNIT

Jacques Le Guen, Paris, France, assignor to General Electric CGR S.A., Issy Les Moulineaux, France

Filed May 10, 1990, Ser. No. 521,700

Claims priority, application France, May 10, 1989, 8906095

Int. Cl.[5] H05G *1/54*

U.S. Cl. 378—118 **6 Claims**



1. A safety device for a radiogenic unit of a radiology instrument comprising an X-ray tube enclosed in a casing filled with a cooling liquid, said tube having an anode and a cathode connected to a voltage generator, said cathode comprising at least one filament connected to an electrical power supply circuit, wherein it includes at least one temperature-sensitive or pressure-sensitive device which is placed within the casing and a switch, also placed within the casing, which is series connected in the power supply circuit of the cathode filament and controlled by said at least one temperature sensitive and pressure-sensitive device so that the supply of the electrical power to the filament is cut off when the temperature or the pressure goes beyond a pre-determined threshold.

5,008,917

X-RAY TUBE WITH AN ELECTRON SHIELDING RIDGE ON THE CATHODE

Rolf Behling, Norderstedt, and Wolfgang Köster, Hamburg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 6, 1989, Ser. No. 433,060

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1988, 3838539

Int. Cl.[5] H01J *35/06, 5/18*

U.S. Cl. 378—140 **5 Claims**

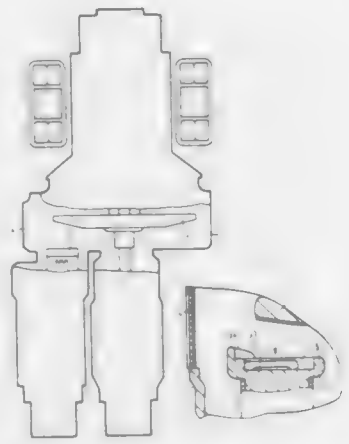
1. An X-ray tube construction comprising:

an evacuated metal envelope, said envelope including a radiation exit window; and

an anode and cathode in the envelope in spaced relation at respective positive and negative voltages for generating X-rays;

said cathode comprising a filament located in a recess in the cathode, said cathode having a rim defining the recess, said rim extending toward said anode in a given axial direction, said window being positioned transverse said axial direction adjacent to said cathode, said cathode emitting electrons toward said anode, said cathode including a ridge segment extending partially about said filament, said segment being on said rim at a region between

said filament and said window and extending in the axial direction an amount sufficient for shielding the window



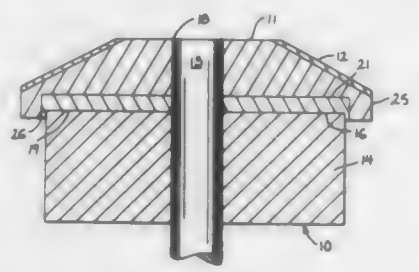
from direct incidence of electrons emitted by said cathode.

5,008,918

BONDING MATERIALS AND PROCESS FOR ANODE TARGET IN AN X-RAY TUBE

David S. Lee, Brookfield, and Thomas C. Tiearney, Jr., Waukesha, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Nov. 13, 1989, Ser. No. 434,159
Int. Cl.[5] H01J *35/10*; B23K *31/02*
U.S. Cl. 378—144 10 Claims



1. In a composite structure wherein a refractory metal portion is bonded to a graphite portion with a bonding layer the improvement wherein:

the bonding layer comprises platinum and a bonding agent selected from the group consisting of tungsten, nickel, molybdenum, vanadium, and titanium.

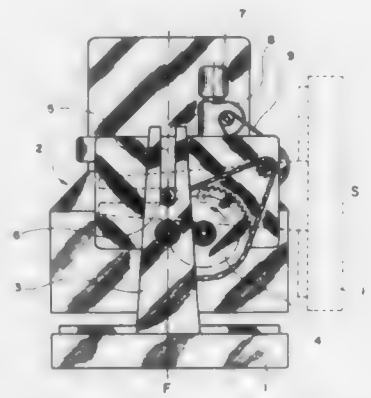
5,008,919

X-RAY FILM CHANGER POSITIONING DEVICE

Aldona A. Siczek, and Bernard W. Siczek, both of 1252 Chinook Way, Boulder, Colo. 80303

Continuation of Ser. No. 398,834, Aug. 25, 1989. This application May 29, 1990, Ser. No. 529,551
Int. Cl.[5] G03B *42/02*
U.S. Cl. 378—173 1 Claim

1. In an X-ray imaging apparatus which apparatus includes an image intensifier and a film changer, a film changer positioning device comprising at least one supporting member supporting said film changer and extending therefrom, said supporting member secured to said image intensifier by a rotary member in a pivoting relationship about an axis parallel to, and offset from, an axis of rotation of said rotary member and including a linear guide disposed at one extremity thereof opposite to said film changer, which linear guide is engaged by a stationary post, whereby rotation of said rotary member changes position of said film changer from one position offset from the axis of



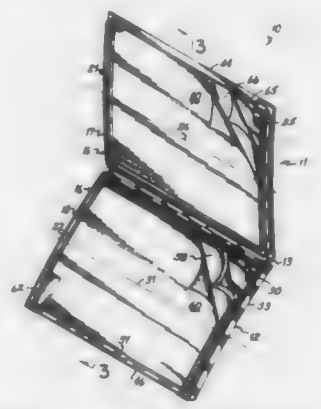
rotation of the rotary member to another position offset from said axis of rotation.

5,008,920

X-RAY FILM CASSETTE WITH FLEXIBLE GRID BONDED TO PRESTRESSED COVER

Ronald P. Gralak, Cincinnati, Ohio, assignor to Liebel-Flarsheim Company, Cincinnati, Ohio

Filed Nov. 27, 1989, Ser. No. 441,180
Int. Cl.[5] G03B *42/04*; G21K *1/00*
U.S. Cl. 378—185 22 Claims



1. A cassette for housing a sheet of x-ray film, said cassette comprising:

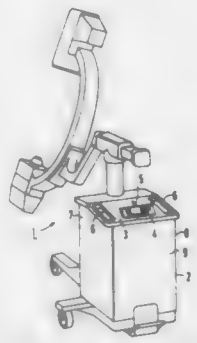
a front cover and a rear cover selectively matable with said front cover to close the cassette and separable therefrom to open the cassette, each of said covers including an exterior surface and an interior surface, the interior surfaces being mutually opposed one another when said cassette is closed, at least said front cover being prestressed to arch resiliently inwardly about a predetermined axis to a first limit of deflection when the cassette is open and to progressively resiliently flatten to a second limit of deflection when the cassette is fully closed; an anti-scatter grid bonded to said interior surface of said front cover to arch and flatten congruently therewith, said first and second limits of deflection of said cover lying in a range within which said grid can deflect without sustaining damage, the progressive flattening of said grid facilitating the purging of air pockets away from the surface of the film as the cassette is closed.

5,008,921

PORTABLE X-RAY DIAGNOSTICS APPARATUS WITH POSITION-ADJUSTABLE CONTROL PANEL

Karlheinz Kaul, and Hans-Christian Bock, both of Uttenreuth, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 25, 1989, Ser. No. 411,737
Claims priority, application European Pat. Off., Oct. 11, 1988, 88116873.6
Int. Cl.[5] H05G *1/02*
U.S. Cl. 378—198 5 Claims



1. A mobile x-ray diagnostics apparatus comprising:

an x-ray source and an x-ray detector and means for supporting said x-ray source and x-ray detector;

a freely moveable base having a front portion to which said means for supporting is attached, and having a rear and left and right sides and a top surface;

a control panel for operating said apparatus; and

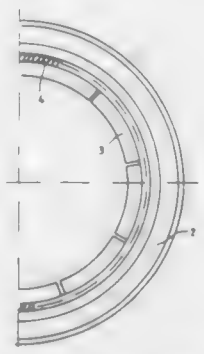
a plurality of mounting locations disposed on said upper surface of said base for releasably holding said control panel in place on said upper surface substantially parallel to a selected one of said right side, said left side or said rear of said base so that an operator can operate said apparatus via said control panel while standing adjacent said base.

5,008,922

SAMPLE CASSETTE

Herbert Beltrop, Hamm, Fed. Rep. of Germany, assignor to Krupp Polysius AG, Fed. Rep. of Germany

Filed Oct. 26, 1989, Ser. No. 427,295
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1988, 8813765[U]
Int. Cl.[5] H05G *1/00, 1/02*; G03B *42/02*
U.S. Cl. 378—208 11 Claims



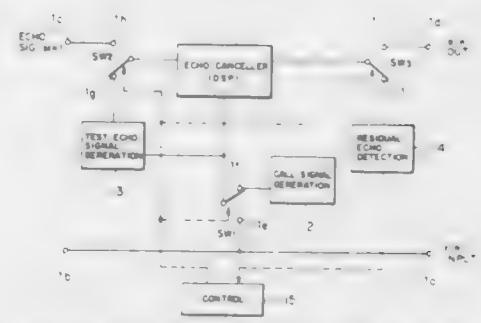
1. A cassette for a material sample, said cassette comprising a housing for supporting the sample; and retaining means fore retaining the sample in the cassette housing, said retaining means including a plurality of segments adapted to enclose the sample when the said sample is in said housing, said segments being movable relative to said housing toward clamping engagement with said sample, biasing means encircling said segments for biasing them in a direction toward engagment with the sample, and a cover supported by said cassette housing.

5,008,923

TESTABLE ECHO CANCELLING METHOD AND DEVICE

Youichi Kitamura, and Michiko Tajimi, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 17, 1990, Ser. No. 509,797
Claims priority, application Japan, Apr. 19, 1989, 1-097597
Int. Cl.[5] H04M *1/24, 9/08*
U.S. Cl. 379—3 13 Claims



1. A testable echo canceller comprising an input and an output terminals for a far-end talker signal, an input and an output terminals for near-end talker signal a memory for storing said input far-end talker signal, a tap coefficient memory for storing a tap coefficient of an echo estimator, the echo estimating means for generating a pseudo echo signal based on the contents of said far-end talker signal memory and said tap coefficient memory, a subtracter means for subtracting said psuedo echo signal from an echo signal passed through an echo path for producing a residual echo signal, a tap coefficient updating means for serially updating said tap coefficient based on said far-end talker signal and said residual echo signal, a test far-end talker signal generating means for generating a far-end talker signal used for the test, a test echo signal generating means for generating a test echo signal with a simulated echo path, a residual echo detector having an output terminal connected to said subtracter means and for detecting a residual echo signal, and a control means for controlling formation of a path for an input and output signal passed to the echo canceller and formation of a testing circuit for making sure of the function with the echo canceller itself.

5,008,924
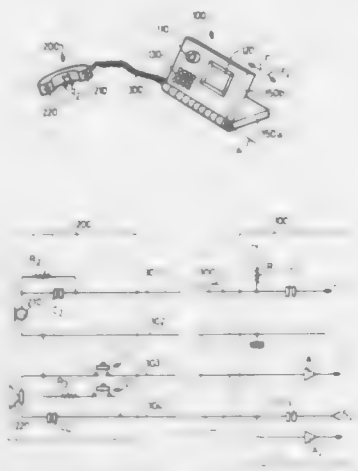
TELECOMMUNICATIONS TERMINAL WITH IMPROVED CONTROL FUNCTIONS

Jacques Guichard; Georges Buchner, both of Paris, and Jacques Labat, Chatillon, all of France, assignors to Etat Francais, Issy les Moulineaux, France

Filed Jul. 24, 1989, Ser. No. 384,495
Claims priority, application France, Jul. 25, 1988, 88 10003
Int. Cl.[5] H04N *7/12*; H04M *1/72*
U.S. Cl. 379—53 5 Claims

1. A telecommunications terminal of the video phone type comprising a central unit (100) and a handset (200) comprising a microphone (210) and a speaker (220) connected to said central unit via a cord (300) having a plurality of wires (301–304) for conveying output signals from said microphone and input signals to said speaker, said terminal further comprising a camera (110) and a display means (120), said terminal being characterized in that a switching means (1, 2, 230) housed in said handset (200) and in communication with said wires controls forward and reverse motion of a motor for driving a moving portion (150*b*) of said central unit, said mov-

ing portion carrying said camera, thereby enabling an image of the user to be framed, said switching means causing control



signals to be conveyed along said cord in the form of phantom D.C. voltages when said switching means are engaged.

5,008,925

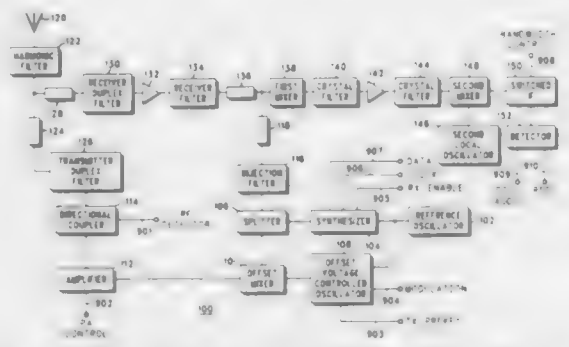
CELLULAR TELEPHONE RESPONSIVE TO SERVICE AVAILABILITY FOR OPERATING ON DIFFERENT CELLULAR TELEPHONE SYSTEMS

Ali Pireh, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 453,553, Dec. 20, 1989, which is a continuation of Ser. No. 370,675, Jun. 23, 1989, abandoned. This application Apr. 20, 1990, Ser. No. 511,882

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—60 **18 Claims**



1. A cellular telephone communicating cellular telephone calls on at least first and second cellular telephone systems each having different cellular radio channels, operation in said first cellular telephone system being preferred over operation in said second cellular telephone system, said cellular telephone comprising:

antenna means for receiving and transmitting cellular telephone call signals on said cellular radio channels,

dialing means for dialing digits of telephone numbers;

cellular transmitting means coupled to the antenna means for transmitting cellular telephone call signals on the cellular radio channels of the first and second cellular telephone systems;

cellular receiving means coupled to the antenna means for receiving cellular telephone call signals on the cellular radio channels of the first and second cellular telephone systems, said cellular receiving means further including intermediate frequency means having first filtering means having a first predetermined bandwidth, second filtering means having a second predetermined bandwidth that has a magnitude less than that of the first predetermined bandwidth, and switching means responsive to a bandwidth control signal having first and second states for switching between the first and second filtering means, respectively; and

control means including memory means for storing first and second control programs, said control means being coupled to the dialing means, cellular transmitting means, and cellular receiving means for automatically transmitting and receiving cellular telephone calls on the first cellular telephone system using the first control program and on the second cellular telephone system using the second control program, said control means generating the first state of the bandwidth control signal for cellular telephone calls on said first cellular telephone system and generating the second state of the bandwidth control signal for cellular telephone calls on said second cellular telephone system, said control means monitoring the cellular radio channels to detect the absence of cellular service and switching from the first cellular telephone system to the second cellular telephone system when cellular service has been absent for at least two non-contiguous second predetermined time intevals in said first cellular telephone system, switching from the second cellular telephone system to the first cellular telephone system when cellular service has been absent for a first predetermined time interval in said second cellular telephone system or when a third predetermined time interval has elapsed since switching to said second cellular telephone system.

5,008,926

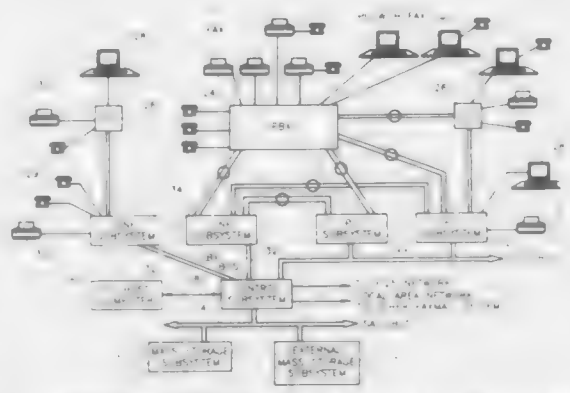
MESSAGE MANAGEMENT SYSTEM

Boaz Misholi, Ramat Hasharon, Israel, assignor to Efrat Future Technology Ltd., Israel

Filed Jul. 17, 1986, Ser. No. 887,793

Int. Cl.[5] H04M *3/50, 11/00;* **H04N** *1/32, 1/42*

U.S. Cl. 379—89 **13 Claims**



1. A message management system suitable for use with conventional telephones and conventional telefaxes comprising:

means for producing a combined multi-media message, including a facsimile portion and an aurally sensible portion;

single control means for transmitting the combined multi-media message to a selected subscriber;

apparatus for reading said facsimile portion; and

means for providing an aurally sensible output of said facsimile portion.

9. A message management system suitable for use with conventional telephones and conventional telefaxes comprising:

means for producing a combined multi-media message, including a facsimile portion and an aurally sensible portion;

single control means for transmitting the combined multi-media message to a selected subscriber;

apparatus for reading said facsimile portion; and

means for providing a visually sensible output of said facsimile portion on a computer display.

5,008,927

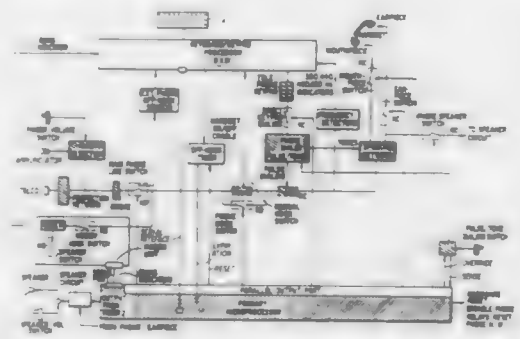
COMPUTER AND TELEPHONE APPARATUS WITH USER FRIENDLY COMPUTER INTERFACE INTEGRITY FEATURES

Lawrence D. Weiss, New York, N.Y.; Douglas W. Caruthers, Redondo Beach, Calif.; Charles T. Inatomi, Los Angeles, Calif.; Joseph C. Kawan, Hollywood, Calif.; Shan Lee, Rowland Heights, Calif.; Harvey Marks, Canoga Park, Calif.; Sarkis A. Meguerdijan, Glendale, Calif.; Dilip J. Parekh, Los Angeles, Calif.; Alfred S. Samulon, Malibu, Calif.; Melvin M. Takata, Hermosa Beach, Calif.; Morris L. Tucci, Van Nuys, Calif., and Jim R. Vollmer, Encino, Calif., assignors to Transaction Technology, Inc., Santa Monica, Calif.

Continuation-in-part of Ser. No. 190,440, May 5, 1988. This application Oct. 21, 1988, Ser. No. 260,832

Int. Cl.[5] H04M *11/00*

U.S. Cl. 379—98 **4 Claims**



1. A microcomputer with simplified user interface including a microprocessor computing unit and associated memory;

said microprocessor computing unit responsive to data inputs from an auxiliary processor and instructions maintained in said memory and received through a modem to perform computing and control functions, said microprocessor computing unit and said memory mounted in a housing configured as a conventional telephone unit,

said housing having a upper mounting structure and a base structure, a telephone handset mounted in a cradle on said upper mounting structure, a standard twelve-key telephone keypad mounted on said upper mounting structure and a keyboard input device mounted in concealed position within said base structure and movable to an open position for use by the operator of the microcomputer;

said housing also incorporating telephone electronics for standard telephone functioning, including a telephone dialer, speech network and a frequency and ring detectors, said telephone electronics capable of being powered from standard telephone line power;

switch means for providing telephone line power to said telephone electronics for standard telephone functioning in the absence of power to or input from the microprocessor computing unit and memory;

a lapse timer reset by output from said microprocessor computing unit, said lapse timer means providing an interrupt to said microprocessor computing unit unless reset by said microprocessor computing unit within a first predetermined time interval, said microprocessor computing unit being rebooted and removing power from said telephone electronics and said lapse timer means being disabled unless said lapse timer means is reset with a second predetermined time interval; and

off-hook detector means for detecting an off-hook condition of said telephone handset mounted on said upper mounting structure, off-hook timer means responsive to said off-hook detector means and said microprocessor computing unit to reboot said microprocessor computing unit and remove power from said telephone electronics unless said off-hook timer is not reset by said microprocessor computing unit within a third predetermined time interval.

5,008,928

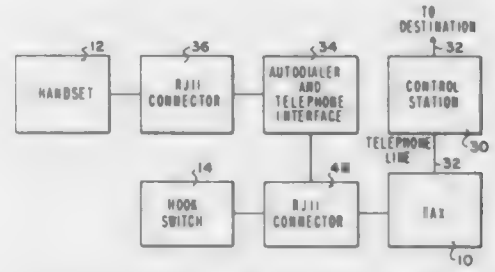
PUBLIC ACCESS FACSIMILE SYSTEM

Monica R. Cleghorn, Plano, Tex., assignor to Easyfax, Inc., Plano, Tex.

Filed Jan. 22, 1990, Ser. No. 468,219

Int. Cl.[5] H04M *17/00;* **H04N** *1/00*

U.S. Cl. 379—100 **16 Claims**



1. Apparatus for transmitting data from a first location to a second location via telecommunications link, comprising:

facsimile means for reading the data and for producing an electronic image thereof;

means for linking said facsimile means to an existing telecommunications system;

a control station linked to said facsimile means via said existing telecommunications system; and

means for automatically effecting a telephone connection between a user at said first location and a human operator at the control station, whereby the use can provide selected information, including the identity of the second location, to the control station, said control station for connecting said first and second locations via the existing telecommunications system to enable said image to be transmitted from said first location to said second location.

5,008,929

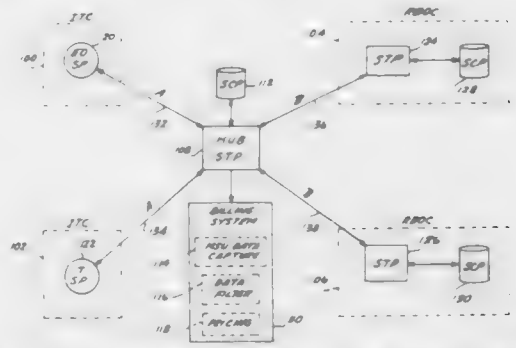
BILLING SYSTEM FOR TELEPHONE SIGNALING NETWORK

Steven A. Olsen, Tumwater; William J. Cronin; Ben L. Jarvis, both of Lacey, and Jeff G. McMillan, Olympia, all of Wash., assignors to U.S. Intelco Networks, Inc., Olympia, Wash.

Filed Jan. 18, 1990, Ser. No. 467,054

Int. Cl.[5] H04M *1/66, 15/04*

U.S. Cl. 379—112 **19 Claims**



1. In a telephone network having a plurality of offices through which telephone calls can be routed, each office being owned by a telephone company, each office including a signaling point (SP) that includes means for formulating a message signaling unit (MSU), the network further including a plurality of signal transfer points (STPs) for receiving and routing the MSUs, a plurality of digital data links connecting the SPs and

STPs to one another, and a plurality of service control points (SCPs), each SCP being linked to one of the STPs and comprising a database that includes call data provided by one or more telephone companies, the improvement comprising:

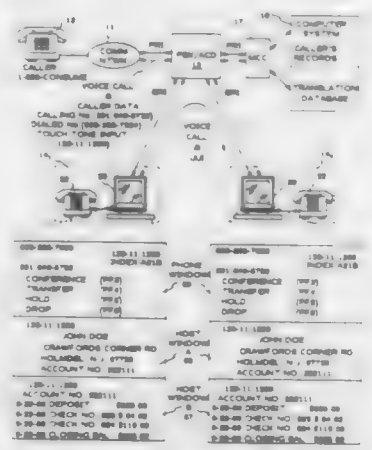
a billing system including means for capturing at least a portion of the MSUs received by said one STP and for processing such MSUs to produce usage data indicating service recipients and service providers for the MSUs, the service recipient for an MSU being the telephone company that owns the SP that formulated the MSU, and the service provider for an MSU being the telephone company that provided the call data for the MSU or that transported the MSU.

5,008,930

CUSTOMER DEFINABLE INTEGRATED VOICE/DATA CALL TRANSFER TECHNIQUE

George W. Gawrys, Bridgewater, N.J.; Richard A. Oberman, Park Ridge, Ill., and William T. Willcock, Rumson, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 24, 1989, Ser. No. 426,384
Int. Cl.[5] H04M *3/58*
U.S. Cl. 379—210 **11 Claims**



1. A method of transferring an integrated voice/data call signal including call-related data received from a communications system between a first and a second agent terminal, where each agent terminal is associated with at least one host application database computer system for storing information associated with each service or campaign that the first and second agent terminals is to handle, the method comprising the steps of:

(a) at the first agent terminal (i) directing the voice call from the communications system to an associated voice communication device, and (ii) displaying the call-related information received from the communications system in a first window of an associated multi-window visual display device, and (iii) accessing the at least one host application database computer system for retrieving and displaying predetermined host application database computer system information at the visual display device;

(b) transferring the voice call and associated predetermined data from the first agent terminal to the second agent terminal by transferring (1) the voice portion of the call to a voice communication device of the second agent terminal, and transmitting (2) predetermined data relating to a portion of the data currently displayed at the first agent terminal directly to the second agent terminal: and

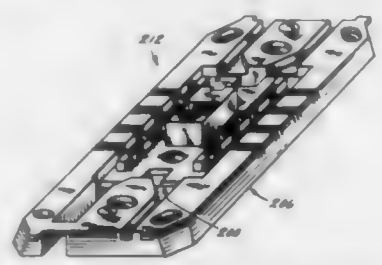
(c) at the second agent terminal, (1) receiving the voice call and predetermined data from the first agent terminal, and transmitting a certain portion of the received predetermined data to the associated at least one host application database computer system for retrieving and displaying the data associated with the call at a visual display device of the second agent terminal.

5,008,931

MULTI-PURPOSE MODULAR JACK CONNECTION BLOCK

Carl Siemon, Watertown, and Stephen M. Thomas, Torrington, both of Conn., assignors to The Siemon Company, Watertown, Conn.

Continuation of Ser. No. 99,423, Sep. 17, 1987, abandoned, which is a continuation-in-part of Ser. No. 706,971, Mar. 1, 1985, Pat. No. 4,712,234. This application Jan. 2, 1990, Ser. No. 462,341
Int. Cl.[5] H02B *1/10*
U.S. Cl. 379—399 **13 Claims**



1. A modular jack connecting device, consisting essentially of:

modular communication jack means for terminating wire leads and electrically connecting terminated wire leads with corresponding terminals on a modular communications plug;

first mounting means for removably securing said jack means within an auxilliary frame means for flush mounting the device on a planar surface of a substrate, on a bracket or on an electrical box; and

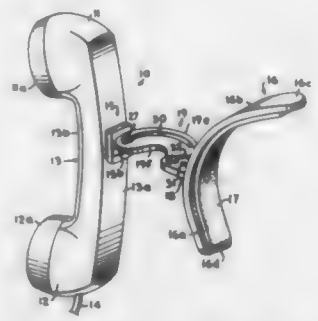
second mounting means for flush mounting said jack means on the planar surface of the substrate independent of said auxilliary frame.

5,008,932

ADJUSTABLE PHONE HANDSET SHOULDER SUPPORT

Earl M. Sieggen, 2000 W. 120th Ter., Leawood, Kans. 66209

Filed Feb. 3, 1989, Ser. No. 305,743
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—449 **7 Claims**



1. A device useable with a telephone handset of the type having an earpiece member and a mouthpiece member connected together by a handgrip member, said handgrip member having inner and outer sides with the inner side thereof corresponding to the speaking and listening portions of said earpiece and mouthpiece members, said device comprising:

(1) a first flange member removably mounted on the outer side of said telephone handset handgrip member intermediate the ear and mouthpiece members thereof and extending substantially normal thereto,

(2) an arcuate shoulder rest member of substantially rectangular form having an inner, concave, shoulder engagement side and an outer, convex side,

(3) a second flange member fixed to the outer convex side of said shoulder rest member intermediate the ends thereof and extending substantially normal thereto,

(4) said first and second flange members also extending, respectively, substantially at right angles to the longitudinal axis of said handset member and the longitudinal axis of said shoulder rest member and

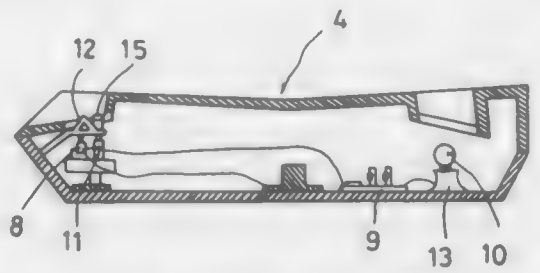
(5) an elongate, arcuate, flat connecting member so adjustably and removably connected to each of said first and second flanges at opposite ends thereof through first and second slotted openings in opposed regions of said connecting member, as to permit length and angle adjustment of the shoulder rest member with respect to the telephone handset.

5,008,933

AUTOMATIC STERILIZING DEVICE OF THE TELEPHONE

Chun-Hsien Kao, 4F., No. 11, Lane 223, Cheng-Kung Rd., Sec. 4, Nei-Hu Chu, Taipei, and Fu-Te Chen, 2F., No. 9, Hsi-Chang Rd., Taipei, both of Taiwan

Filed Sep. 16, 1988, Ser. No. 245,315
Int. Cl.[5] H04R *1/12*
U.S. Cl. 379—452 **1 Claim**



1. An automatic sterilizing device for a telephone having a mouthpiece and a receiver, said device comprising:

an ultraviolet bulb provided on a bulb seat under a mouthpiece seat for producing ultraviolet rays to pass through openings defined in the mouthpiece seat and radiate directly on the mouthpiece;

a microswitch disposed under a telephone cut-off press button which extends out from a receiver seat, said microswitch adapted to be contacted by a downward movement of the telephone cut-off press button to generate a signal when contacted by the press button;

an IC control circuit comprising a time delay circuit responsive to said signal for sending power to said ultraviolet bulb and for cutting off power to said ultraviolet bulb after a predetermined delay time from receipt of said signal by said delay circuit has occurred;

a contact button extending out from the receiver seat adapted to be depressed by insertion of the receiver into the receiver seat; and

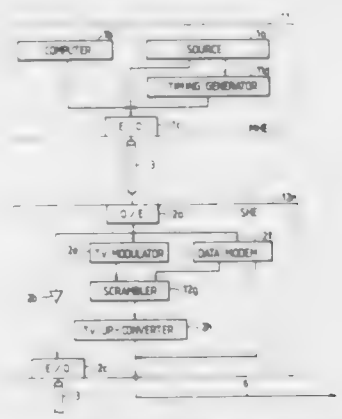
a safety switch installed under the receiver seat adapted to be contacted by depression of said contact button to turn off said ultraviolet bulb when said contact button is not depressed.

5,008,934

CATV TRANSMISSION SYSTEM USING SCRAMBLED SIGNALS

Fumio Endoh, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 8, 1989, Ser. No. 363,658
Claims priority, application Japan, Oct. 18, 1988, 63-260596
Int. Cl.[5] H04N *7/167*
U.S. Cl. 380—15 **7 Claims**



1. In a CATV system in which a main head end as a system center is connected to a plurality of subhead ends corresponding to respective terminal unit groups through optical fiber cables each having a narrow transmission band, and a baseband TV signal is transmitted through said optical fiber cables, the improvement comprising:

scrambling data generating means disposed in said main head end, for generating scrambling data and supplying said scrambling data to said optical fiber cables; and

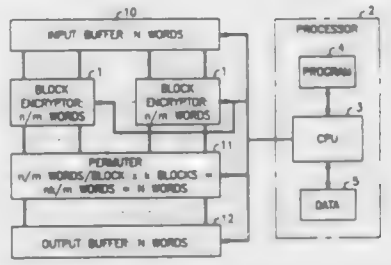
scrambling means disposed in each of said plurality of subhead ends, for performing a scrambling operation such that synchronization portions of said baseband TV signal are compressed on the basis of said scrambling data transmitted through said optical fiber cables.

5,008,935

EFFICIENT METHOD FOR ENCRYPTING SUPERBLOCKS OF DATA

Thomas J. Roberts, Batavia, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 30, 1989, Ser. No. 374,314
Int. Cl.[5] H04L *9/06*
U.S. Cl. 380—29 **13 Claims**



5. Apparatus for encrypting superblocks of data comprising:

means for encrypting each of a plurality of blocks of said superblocks of data, using a first key to form intermediate data, wherein each encrypted block and each unencrypted block comprises a plurality of segments, and each segment comprises a plurality of bits; and

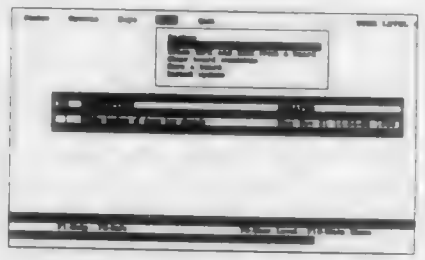
means for permuting segments of said intermediate data over the range of each of said superblocks using a second key to form encrypted superblocks of data.

5,008,936

BACKUP/RESTORE TECHNIQUE IN A MICROCOMPUTER-BASED ENCRYPTION SYSTEM

Scott B. Hamilton, Kirkland, and Michael J. Rosenow, Issaquah, both of Wash., assignors to The Exchange System Limited Partnership, Bellevue, Wash.

Filed Dec. 9, 1988, Ser. No. 282,791
Int. Cl.[5] H04L 9/08
U.S. Cl. 380—50 11 Claims



8. An improved method of updating key information in a multichannel data encryption device, said multichannel data encryption device including a plurality of data encryption devices coupled with a first data bus for communicating with a host control computer, said data encryption devices each including a discrete data bus interface for communicating with a device requiring encryption services, said method comprising the steps of:

sending encryption key tables to said data encryption devices from said host computer communicating through said first data bus;

encrypting said encryption key tables under a first predetermined encryption key;

storing said encrypted encryption key table in said data encryption devices;

outputting said encrypted key tables from said encryption devices through said first data bus to said host computer;

re-encrypting said encryption key tables under a second predetermined encryption key; and

storing said re-encrypted keys in a data storage device removable coupled to said host computer.

5,008,937

SCRAMBLED-COMMUNICATION SYSTEM USING ADAPTIVE TRANSVERSAL FILTERS FOR DESCRAMBLING RECEIVED SIGNALS

Yoshihiro Yamamura; Takashi Ogihara; Yoshinobu Nakanishi, and Tomohiro Nishizono, all of Tokyo, Japan, assignors to NEC Corporation

Filed Jun. 26, 1989, Ser. No. 371,209
Claims priority, application Japan, Jun. 25, 1988, 63-156012; Feb. 8, 1989, 1-30851
Int. Cl.[5] H04K 1/02
U.S. Cl. 380—50 10 Claims

1. A scrambled-communication system, comprising:

(a) a transmitting station including:

(i) source-noise generator means for generating a scrambling pseudorandom noise signal having a series of noise patterns; and

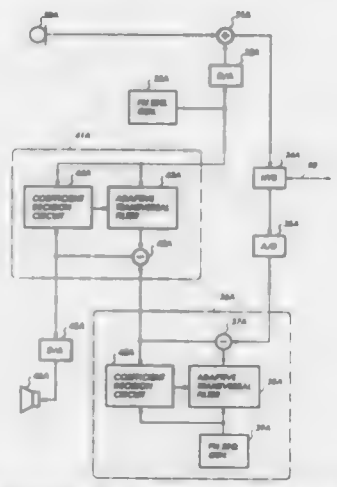
(ii) adder means for adding said scrambling noise signal to an information signal to produce a scrambled signal; and

(b) a receiving station including:

(i) subtractor means for receiving said scrambled signal and subtracting a noise-cancelling signal from the received signal to produce a subtractor output comprising a descrambled signal;

(ii) local-noise generator means for generating a descrambling pseudorandom noise signal having a series of noise patterns identical to that of said scrambling noise signal;

(iii) adaptive transversal filter means having a tapped-delay line connected to said local-noise generator means, a plurality of variable-tap weight multipliers connected respectively to taps of said tapped-delay line, and means for summing outputs of said tap weight multipliers and supplying summed outputs as said noise-cancelling signal to said subtractor means, said adaptive transversal filter having a tap length greater than an interval between successive series of said noise patterns of said descrambling noise signal; and



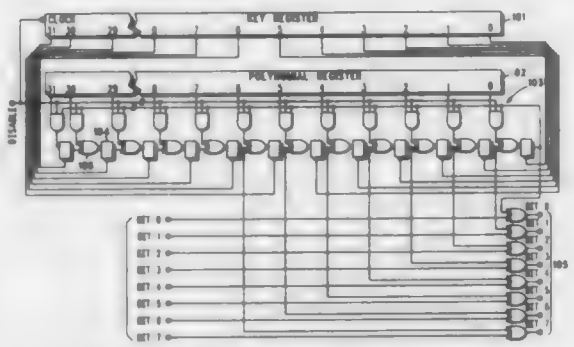
means for deriving tap coefficients from said descrambling noise signal and from the subtractor output and varying said tap weight multipliers of said adaptive transversal filter means with the derived tap coefficients so that said noise-cancelling signal substantially corresponds to said scrambling noise signal.

5,008,938

ENCRYPTION APPARATUS

Thomas A. Freeburg, Arlington Heights, and Richard E. White, Schaumburg, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 9, 1990, Ser. No. 490,900
Int. Cl.[5] H04L 9/00
U.S. Cl. 380—50 18 Claims



1. An apparatus for encrypting and decrypting an input signal from a signal source to produce an encrypted or decrypted output signal using a preselected key signal and a preselected polynomial signal, comprising:

(a) first storage means for storing the preselected key signal, the first storage means having at least one output;

(b) shift register means, having at least one stage, each stage having an output, and a load input, the load input of each stage coupled to one output of the first storage means;

(c) second storage means for storing the pre-selected polynomial signal, the second storage means having at least one output;

(d) first means for logically combining the at least one output of the second storage means and the at least one output of the shift register means, the first means for logically combining having at least one output coupled to the input of the at least one stage of the shift register means; and

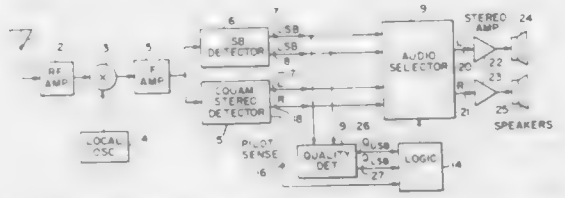
(e) second means for logically combining the at least one output of the shift register means and the input signal, an output of the second means for combining being the encrypted or decrypted output signal.

5,008,939

AM NOISE REDUCING

Amar G. Bose, Wayland, and William R. Short, Wellesley, both of Mass., assignors to Bose Corporation, Framingham, Mass.

Filed Jul. 28, 1989, Ser. No. 387,504
Int. Cl.[5] H04H 5/00
U.S. Cl. 381—15 31 Claims



1. A receiver for receiving an amplitude modulated signal with upper and lower sidebands carrying a modulating audio signal, said receiver comprising,

independent sideband circuitry for providing at least one of upper and lower sideband signals,

at least one quality detector for providing a quality signal representative of undesired noise in the upper sideband signal relative to that in the lower sideband signal,

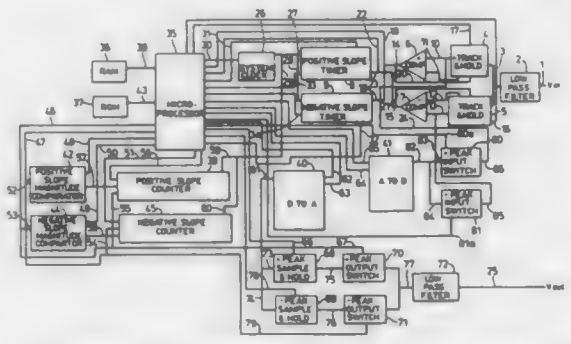
and at least one selector responsive to said quality signal for processing that one designated by said quality signal as preferred from the standpoint of faithful reproduction with low audible noise of only said upper sideband signal only said lower sideband signal and both said upper and lower sideband signals to provide an audio output signal with reduced noise that is a substantially faithful reproduction of said modulating audio signal.

5,008,940

METHOD AND APPARATUS FOR ANALYZING AND RECONSTRUCTING AN ANALOG SIGNAL

Dieter W. Blum, Vancouver, Canada, assignor to Integrated Circuit Technologies Ltd., Bridgetown, Barbados

Filed Feb. 15, 1989, Ser. No. 311,241
Claims priority, application Canada, Feb. 16, 1988, 558977
Int. Cl.[5] G10L 5/00
U.S. Cl. 381—31 34 Claims



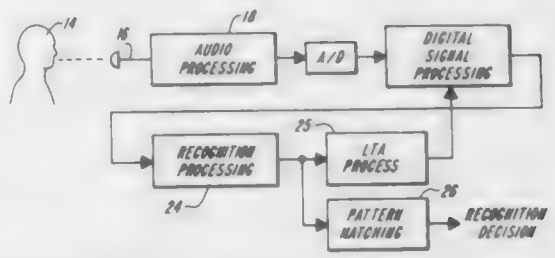
1. A method of analyzing an original analog signal, the method comprising; detecting each maximum and minimum point of the signal; recording the time between each adjacent pair of maximum and minimum points; and sampling and recording the magnitude of the signal at each maximum and minimum point.

5,008,941

METHOD AND APPARATUS FOR AUTOMATICALLY UPDATING ESTIMATES OF UNDESIRABLE COMPONENTS OF THE SPEECH SIGNAL IN A SPEECH RECOGNITION SYSTEM

Vladimir Sejnoha, Cambridge, Mass., assignor to Kurzweil Applied Intelligence, Inc., Waltham, Mass.

Filed Mar. 31, 1989, Ser. No. 332,571
Int. Cl.[5] G10L 5/00
U.S. Cl. 381—43 24 Claims



1. In a speech recognition apparatus for recognizing elements of a speech input, apparatus for updating an error compensation signal representing a system transfer function between a speaker and the recognition apparatus, said updating apparatus comprising:

A. signal generating means for initially generating said compensation signal,

B. means for generating, from said speech input, a succession of input frames representing said speech input modified by a said compensation signal, each input frame including, as a distorting value, an error signal corresponding to the difference between a current compensation signal and the instantaneous value of a system transfer function,

C. means for associating each speech representing input frame with one of a plurality of speech representing standard frames,

D. means for accumulating the differences between successive speech representing input frames and the respective associated speech representing standard frames,

E. means for periodically determining an average update signal over a plurality of input words representative of a selected number of said accumulated differences, and

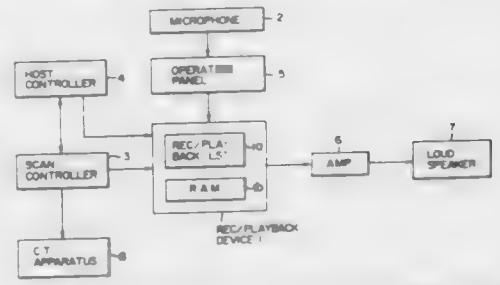
F. means for updating said compensation signal in accordance with said average update signal.

5,008,942

DIAGNOSTIC VOICE INSTRUCTING APPARATUS

Hiromi Kikuchi, Utsunomiya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 30, 1988, Ser. No. 277,865
Claims priority, application Japan, Dec. 4, 1987, 62-307015
Int. Cl.[5] G10L 5/02; A61B 5/00; G11B 31/00; G09B 5/00
U.S. Cl. 381—51 10 Claims



1. A voice instruction-generating apparatus for use with a

medical diagnostic apparatus, the voice instruction-generating apparatus comprising:

recording means for recording plural types of voice instructions to a patient to be diagnosed, the plural types of one voice instruction having a same meaning in different types of expressions;

designating means for specifying a series of said recorded voice instructions, each instruction of the series being one of the same types of expressions; and

playback means for reproducing the series of voice instructions in synchronism with an operation of said medical diagnostic apparatus.

5,008,943

MODULAR HEARING AID WITH LID HINGED TO FACEPLATE

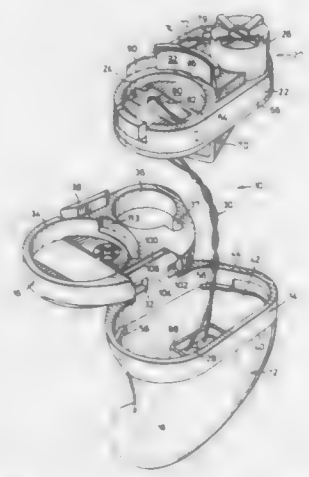
Horst Arndt, and Edward S. Kroetsch, both of Kitchener, Canada, assignors to Unitron Industries Ltd., Kitchener, Canada

Division of Ser. No. 7,032, Jan. 27, 1987, abandoned. This application Nov. 15, 1989, Ser. No. 437,046

Claims priority, application Canada, Oct. 7, 1986, 520021

Int. Cl.[5] H04R *25/02*

U.S. Cl. 381—68.6 **3 Claims**



1. In combination, an in-the-ear hearing aid having a shell, a faceplate, and an electronic module; and a gauge for use in fitting said faceplate to said shell; said shell having an open end and being shaped to fit into a user's ear with said open end facing outwardly in said ear, said faceplate being shaped to be fitted on and attached to said open end of said shell and having an opening therein to receive said module, said module having a microphone, an amplifier and a battery compartment, said module having an upper portion shaped to be snugly received within said opening of said faceplate and a lower portion which projects below said opening of said faceplate into said shell, said gauge also having an upper portion shaped to fit snugly within said opening of said faceplate and having a lower portion shaped to simulate the shape of said lower portion of said module, whereby said gauge can be inserted into said opening of said faceplate before said faceplate is attached to said shell, in order to ensure the proper positioning of said faceplate on said shell.

5,008,944

LOUDSPEAKER SYSTEM FOR MOTOR VEHICLES

Michael O. Sels, 8524 N. 23nd Dr., Phoenix, 85051, and Bryan D. Combs, 1001 N. 32nd St., Apt. C-21, Phoenix, Ariz. 85008

Filed Feb. 6, 1990, Ser. No. 475,812

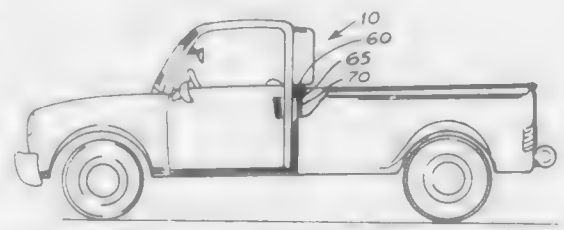
Int. Cl.[5] H04B *1/00*

U.S. Cl. 381—86 **10 Claims**

1. A motor vehicle loudspeaker system, comprising:

(a) a sound box of shape and size suitable for mechanical installation in the rear windshield space of, and mounted in, the rear window of said motor vehicle;

(b) loudspeakers contained in said sound box and facing an interior of said motor vehicle; and



(c) means for electrically connecting said loudspeakers to an audio amplifier in said motor vehicle.

5,008,945

WATER-PROOF SPEAKER UNIT

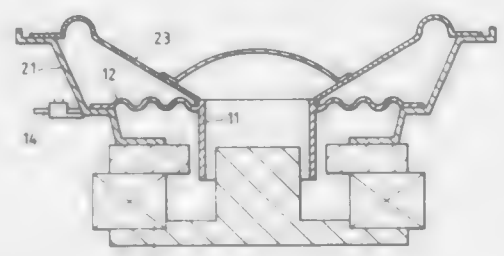
Fumio Murayama, and Tomiaki Ando, both of Yamagata, Japan, assignors to Pioneer Electronic Corp., Tokyo, Japan

Filed Dec. 6, 1988, Ser. No. 280,413

Claims priority, application Japan, May 23, 1988, 63-117388; May 24, 1988, 63-127662

Int. Cl.[5] H04R *25/00*

U.S. Cl. 381—194 **3 Claims**



1. A speaker unit, comprising:

a voice coil bobbin for carrying a voice coil; and

a damper extending radially outwardly from the periphery of said voice coil bobbin, said voice coil bobbin and damper being integrally molded of plastic, wherein said voice coil is molded into said voice coil bobbin, and further comprising at least one lead wire extending from said voice coil through said voice coil bobbin, said at least one lead wire being molded into said damper.

5,008,946

SYSTEM FOR RECOGNIZING IMAGE

Mitsuhiro Ando, Tokyo, Japan, assignor to Aisin Seiki K.K., Tokyo, Japan

Filed Sep. 9, 1988, Ser. No. 242,441

Claims priority, application Japan, Sep. 9, 1987, 62-225862

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—2 **1 Claim**

1. A system for recognizing an image of a vehicle driver's face, comprising:

camera means which converts optical information obtained from a first facial image into an electrical signal;

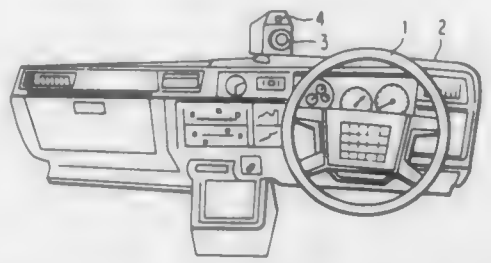
position-detecting means for detecting three or more elements of the first facial image and their positions according to the electrical signal;

distance-detecting means for detecting the distances between the detected elements;

normalizing means for normalizing data about the detected distances with the distance between given two of the detected elements;

storage means which hold reference values previously assigned to the elements of the first facial image, said reference values being standard values previously determined from a plurality of facial images similar to said first facial image;

similarity degree-calculating means which compares the normalized data about the distances with the reference values of similarity to the elements and produces data about the degrees of a reference image by employing a weighting system; and



determining means which determines whether the facial image has been successfully detected, from the data about the degrees of similarity of the detected elements, wherein, after the determining means determines that the first facial image has been successfully detected, a second facial image is read, and changes in conditions of the second facial image are detected by comparison to the first facial image, and that electrical devices are controlled based on the detected changes in conditions.

5,008,947

METHOD AND APPARATUS FOR CORRECTING EXTENSION RATES OF IMAGES

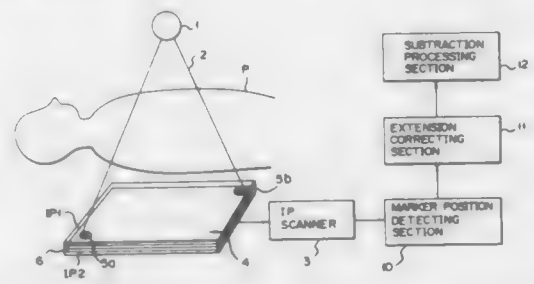
Naoki Yamada, Nishinasunomachi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 10, 1989, Ser. No. 419,114

Claims priority, application Japan, Oct. 13, 1988, 63-257692

Int. Cl.[5] G06K *9/00, 9/32;* **H05G** *1/28*

U.S. Cl. 382—6 **10 Claims**



1. A method for reducing and expanding images, the method comprising the steps of:

acquiring a plurality of images, each image including a plurality of marker images;

detecting positions of the marker images on each image;

calculating marker image intervals from the detected marker image positions;

selecting one of the plurality of images as a standard image;

fitting a position of a remaining image to that of the standard image by a rotation and shift process, the remaining image being one of the plurality of images other than the standard image;

obtaining an extension rate from the calculated marker image intervals of the marker image positions of the selected standard image and the remaining image; and

reducing or expanding the remaining image in accordance with the obtained extension images in a predetermined interval.

5,008,948

SYSTEM FOR RECOGNIZING HANDWRITTEN LETTERS

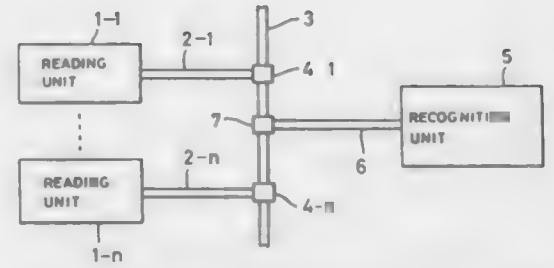
Tomohiro Tsukawaki, Iwatsuki, Japan, assignor to Fuji Xerox Co., Ltd., Saitama, Japan

Filed Mar. 25, 1988, Ser. No. 173,617

Claims priority, application Japan, Jun. 15, 1987, 62-148651

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—13 **8 Claims**



1. A system for recognizing handwritten letters comprising:

a central recognition means;

a plurality of terminal units, each including a transmission request section for making a transmission request for handwritten letter information, a first compressing/expanding means for expanding compressed information received and for compressing information for transmitting, and a first interface means for transmitting and receiving information; each of said terminal units being separate from said recognition means;

a plurality of reading means each including a reading section for reading the handwritten letter and converting said handwritten letter to computer readable data, a second compressing/expanding means for compressing the read-out handwritten letter data and for expanding the information when compressed information is received and a second interface means for transmitting information including the handwritten letter data; said reading means being separate from said recognition means and each of said terminal units;

said central recognition means including a third compressing/expanding means for expanding the compressed handwritten letter data when the compressed handwritten letter data is transmitted from said reading means and for compressing the data when the data is received, said recognition means recognizing information from the expanded handwritten letter data, and a third interface means for compressing and transmitting said recognized information in accordance with said transmission request from said terminal unit; and

a transmission path for connecting said terminal units, said reading means, and said recognition means;

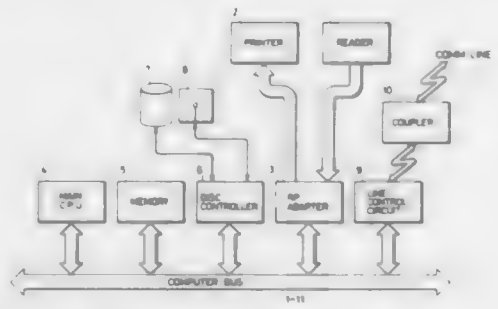
whereby said computer readable handwritten letter data is compressed by said second compressing/expanding means and transmitted to said recognition unit where it is expanded by said third compressing/expanding means and then recognized by said recognition means and compressed by said third compressing/expanding means in response to a transmission request from a selected one of said terminal units; said compressed data being transmitted to said selected terminal unit where it is expanded by said first expanding/compressing means and viewed.

5,008,949

IMAGE PROCESSING SYSTEM

Shinobu Arimoto, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 14,077, Feb. 3, 1987, abandoned, which is a continuation of Ser. No. 645,166, Aug. 28, 1984, abandoned. This application May 21, 1990, Ser. No. 527,707
Claims priority, application Japan, Aug. 30, 1983, 58-158452; Aug. 30, 1983, 58-158454; Aug. 30, 1983, 58-158456
Int. Cl.[5] G06K 9/00
U.S. Cl. 382—41 11 Claims



1. An image processing system comprising:
a computer bus line;
supplying means, connected to said computer bus line, for supplying compressed image data to said computer bus line;
storing means, connected to said computer bus line, for storing the compressed image data transmitted through said computer bus line from said supplying means;
expanding means, connected to said storing means without using said computer bus line, for expanding the compressed image data read out from said storing means into image data;
reproducing means, connected to said expanding means without using said computer bus line, for reproducing an image in accordance with the image data from said expanding means; and
means for enabling transfer of the compressed image data through said computer bus line from said supplying means to said storing means whenever a predetermined amount of compressed image data stored in said storing means is expanded by said expanding means.

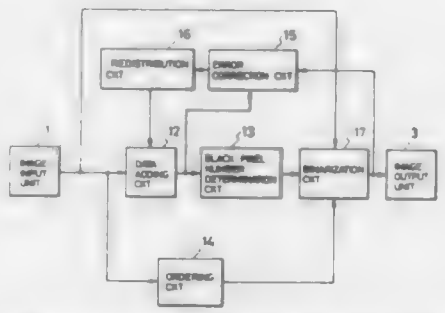
5,008,950

IMAGE PROCESSING METHOD AND APPARATUS FOR ERROR-DISPERSION DIGITIZATION WITHOUT MOIRE OR SPURIOUS STRIPE FORMATION

Akihiro Katayama, Kawasaki, and Hidefumi Ohsawa, Urawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 19, 1988, Ser. No. 145,593
Claims priority, application Japan, Jan. 22, 1987, 62-013688; May 21, 1987, 62-122613; May 21, 1987, 62-122614
Int. Cl.[5] G06K 9/40
U.S. Cl. 382—50 11 Claims

1. An image processing apparatus comprising:
first calculation means for calculating a sum of density data of plural pixels existing in a first area composed of plural pixels;
second calculation means for calculation, from the sum of density data, a number of black pixels to be arranged in the first area and a difference between the sum of density data and a sum of densities of the black pixels;
conversion means for converting density data of all pixels existing in the first area into binary data, based on the number of black pixels obtained by said second calculation means;
process means for dispersing data corresponding to said difference obtained by said second calculation means into a second area which is composed of plural pixels and adjacent to the first area; and



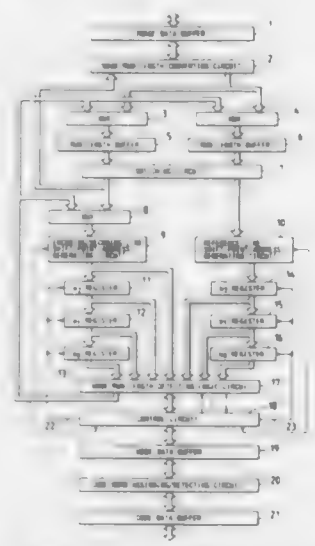
control means for controlling said first calculation means, said second calculation means and said conversion means such that the conversion of the density data into the binary data by said conversion means is executed for each area.

5,008,951

IMAGE INFORMATION ENCODING/DECODING DEVICE

Yutaka Koshi, Kanagawa, Japan, assignor to Fuji Xerox, Tokyo, Japan

Filed Aug. 29, 1989, Ser. No. 399,932
Claims priority, application Japan, Sep. 2, 1988, 63-221181
Int. Cl.[5] G06K 9/36
U.S. Cl. 382—56 5 Claims



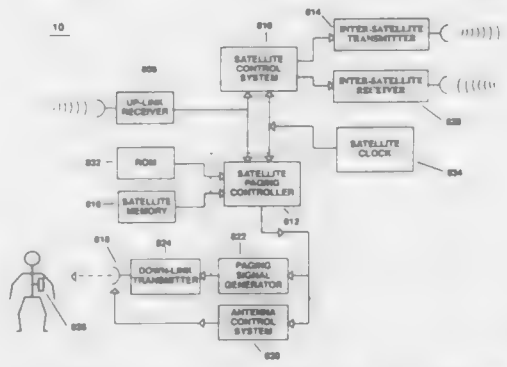
1. An image information encoding/decoding device for carrying out two-dimensional encoding and decoding processings, comprising:
(a) an image data buffer memory for receiving an image data in an encoding operation and outputting an image data in a decoding operation;
(b) an image/run-length converting circuit for converting the image data received by said image data buffer to a run-length data in the encoding operation, and converting a run-length data to the image data in the decoding operation;
(c) two run-length buffers each for storing one line portion of the run-length data, arranged such that while a run-length data of an encoding line or a decoding line is stored in one of said run-length buffers, a run-length data of a reference line is stored in the other;
(d) an encoding/decoding line shift-point address generating circuit for generating encoding line shift-point addresses by sequentially adding the run-length data of the encoding line in the encoding operation, and generating decoding line shift-point addresses by sequentially adding decoded run-length data in the decoding operation;
(e) a reference line shift-point address generating circuit for generating reference line shift-point addresses by sequentially adding the run-length data of the reference line;
(f) pipeline-connected a_2, a_1 and a_0 registers for sequentially storing the encoding line shift-point addresses or the decoding line shift-point addresses that are generated in said encoding/decoding line shift-point address generating circuit;
(g) pipeline-connected b_2, b_1 and b_0 registers for sequentially storing the reference line shift-point addresses that are generated in said reference line shift-point address generating circuit;
(h) a mode/run-length detecting logic circuit for detecting a current operation mode based on the encoding line shift-point addresses and the reference line shift-point addresses and outputting a mode data in the encoding operation, and generating the run-length data based on an input mode data in the decoding operation;
(i) a control circuit for switching a control mode and data paths between the encoding and decoding operations, and controlling the encoding operation or the decoding operation; and
(j) a code word assigning/detecting circuit for assigning and outputting a code word that corresponds to the mode data in the encoding operation, and converting a received code word to the mode data in the decoding operation.

5,008,952

GLOBAL SATELLITE COMMUNICATION SYSTEM WITH GEOGRAPHIC PROTOCOL CONVERSION

Walter L. Davis, Coral Springs, and Philip P. Macnak, West Palm Beach, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 3, 1989, Ser. No. 431,105
Int. Cl.[5] H04B 7/185
U.S. Cl. 455—12 48 Claims



1. A satellite paging system providing geographic protocol conversion for data packet delivery to a plurality of geographic areas, said satellite based communication system comprising:
transmission means, for transmitting data packets to the communication satellite, the data packets being transmitted in a first predetermined data format;
a satellite having,
satellite receiving means, for receiving the transmitted data packets transmitted in the first predetermined data format;
programmable encoding means, coupled to said receiving means, for encoding the received data packets transmitted in the first predetermined data format into encoded data packets in a second predetermined data format corresponding to the signaling requirements of each geographic delivery area;
satellite transmitting means, coupled to said encoding means, for transmitting the encoded data packets in the second predetermined data format; and
a portable communication receiver, operable in the second predetermined data format in the geographic delivery area, for receiving the encoded data packets transmitted in the second predetermined data format,
whereby data packets transmitted to said satellite in the first predetermined data format are converted within said satellite to the second predetermined data format conforming to the signaling requirements for transmission to said portable communication receiver in the geographic delivery area.

5,008,953

MOBILE STATION LINK SUPERVISION UTILIZING DIGITAL VOICE COLOR CODES

Steinar J. E. A. Dahlin, Sollentuna, and Walter Ghisler, Upplands Väsby, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Continuation-in-part of Ser. No. 371,126, Jun. 26, 1989. This application Jan. 10, 1990, Ser. No. 463,305
Int. Cl.[5] H04Q 7/04
U.S. Cl. 455—33 27 Claims



8. A mobile station for use in a mobile radio communication system of the type in which digitally encoded information is transmitted between a base station and the mobile station in bursts over a digital communication channel, with at least some of the bursts of information containing digital voice color codes, said mobile station comprising:
a memory for storing a digital voice color code;
means for initiating a timer for counting a predetermined period of time;
a receiver for receiving bursts of information transmitted from said base station to said mobile station during a connection between said stations on a designated digital communication channel;
a decoder for detecting any digital voice color codes contained in bursts of information received over said designated channel during a connection;
means for determining whether a first predetermined number of digital voice color codes which match the digital voice color code stored in said memory are received during the predetermined time counted by said timer; and
means for terminating said connection if said first predetermined number of codes are not received during said period of time.

5,008,954

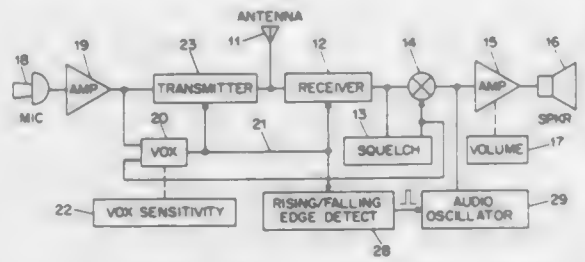
VOICE-ACTIVATED RADIO TRANSCEIVER

Carl Oppendahl, 27 W. 44th St., #28, New York, N.Y. 10035-6645

Continuation of Ser. No. 334,190, Apr. 6, 1989. This application Sep. 24, 1990, Ser. No. 587,602

Int. Cl.[5] H04B *1/44*

U.S. Cl. 455—79 8 Claims



1. In a transceiver of the type having a transmit mode, a receive mode, and a squelched mode, and wherein the transceiver enters receive mode upon receipt of a signal having a strength greater than a predetermined squelch threshold, and wherein the transceiver enters transmit mode by voice activation of a voice activation means having a triggering time, and wherein the audio signal received by the receiver portion of the transceiver is conveyed to the user by speaker means, the improvement wherein is provided:

sound pulse generation means responsive to the voice activation for generating a momentary alerting sound audible to the user and conveyed to the user by the speaker means, said sound pulse generation means generating the momentary alerting sound at about the time when the transceiver enters transmit mode, the duration of said momentary alerting sound being less than the triggering time of the voice activation means,

whereby the user is alerted that the transceiver has entered transmit mode, and whereby the user will be made aware of loss of power or of spurious continuous transmission.

5,008,955

RECEIVERS WITH MICROCOMPUTER CONTROLLED TUNING

Kazuhiro Sato, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

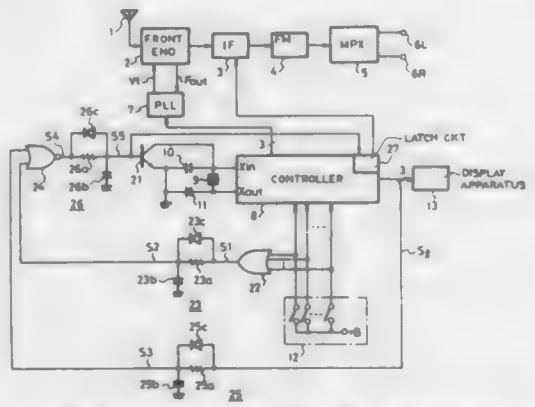
PCT No. PCT/JP88/00197, § 371 Date Oct. 25, 1988, § 102(e) Date Oct. 25, 1988, PCT Pub. No. WO88/06820, PCT Pub. Date Sep. 7, 1988

PCT Filed Feb. 25, 1988, Ser. No. 269,143

Claims priority, application Japan, Feb. 26, 1987, 62-43433

Int. Cl.[5] H04B *1/10*

U.S. Cl. 455—181 6 Claims



1. A receiver having an IF stage and characterized by a microcomputer for generating station selecting data and a clock signal, said microcomputer having a latch means for storing data supplied to said IF stage for controlling the bandwidth theses, tuning means supplied with said station selecting data in synchronism with said clock signal and which is tuned to a desired broadcasting frequency, said IF stage being connected to said tuning means to receive the output of said tuning means and connected to said latch means to receive data from said microcomputer, a detecting circuit for detecting whether said tuning means is selecting a station or not and a switching circuit which automatically stops the generation of said clock signal from said microcomputer based on the output from said detecting circuit when the station selecting operation of said tuning means is finished, and means responsive to operation of said detecting circuit and connected to said latch means to prevent the data in said latch means for changing during the period in which generation of said clock signal is stopped.

5,008,956

INTERDIGITAL LOCAL OSCILLATOR FILTER APPARATUS

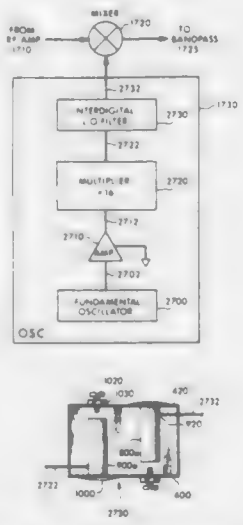
Dale L. Hemmie, Burlington, Iowa, assignor to Conifer Corporation, Burlington, Iowa

Continuation-in-part of Ser. No. 261,557, Oct. 24, 1988, which is a continuation of Ser. No. 102,726, Sep. 30, 1987, Pat. No. 4,791,717. This application May 23, 1989, Ser. No. 355,992

The portion of the term of this patent subsequent to Dec. 20, 2005, has been disclaimed.

Int. Cl.[5] H04B *1/26;* H01P *1/205;* H05K *7/02*

U.S. Cl. 455—318 2 Claims



2. An integrated local oscillator apparatus receptive of a microwave signal for producing an electrical output signal in a predetermined band corresponding to said microwave signal, said apparatus comprising:

a printed circuit board,

a fundamental oscillator for generating a signal at a fixed frequency,

an amplifier connected to said fundamental oscillator for amplifying the signals from said fundamental oscillator;

means connected to said amplifier for producing multiples of said frequency,

an interdigital filter located on said printed circuit board having an input connected to said producing means and an output for said electrical output signal, said interdigital filter comprising:

(a) a ground plane conductive surface formed on said printed circuit board,

(b) a conductive rectangular housing having an interior and an open bottom, said housing having said open bottom soldered to said conductive surface in order to fully enclose the interior of said housing in a conductive envelope, and

(c) a plurality of conductive elements spatially located in said housing for filtering a predetermined multiple of said frequency from said multiples of said frequency for delivery as said output signal, one of said elements connected to said producing means and another one of said elements connected to said output.

5,008,957

MULTILEVEL OPTICAL SIGNAL TRANSMITTER

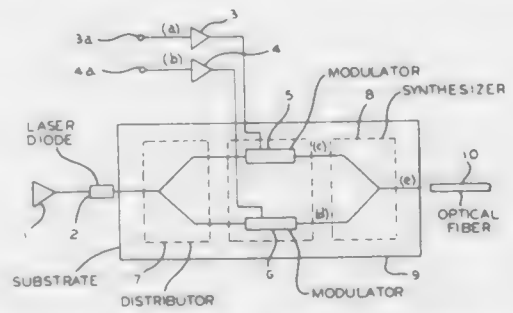
Mikio Kiyono, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 3, 1989, Ser. No. 318,710

Claims priority, application Japan, Mar. 3, 1988, 63-48613

Int. Cl.[5] H04B *10/00*

U.S. Cl. 455—618 4 Claims



1. A multilevel optical signal transmitter comprising a substrate, a laser diode positioned to direct light into said substrate, distributor means on said substrate for directing said light into two separate paths, modulating means in each of said separate paths for controlling the intensity of light passing through the respective paths to be at either of two intensity levels, drive means associated with said modulating means for selectively switching said modulator to pass said light at a given one of said two intensity levels, and means for combining the switched light in said two paths for providing an optical output signal having instantaneous intensities which are sums of the instantaneous intensities of the light in said two paths, thereby providing a three level optical output signal.

5,008,958

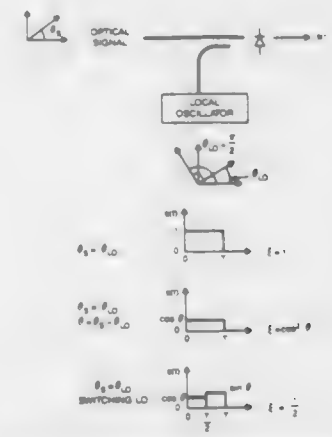
POLARIZATION-INSENSITIVE TECHNIQUE FOR COHERENT OPTICAL COMMUNICATION

Leonard J. Cimini, Jr., Howell, and Isam M. I. Habbab, Old Bridge, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 145,446, Jan. 19, 1988, abandoned, and a continuation-in-part of Ser. No. 145,358, Jan. 19, 1988, abandoned. This application Feb. 8, 1989, Ser. No. 308,697

Int. Cl.[5] H04B *10/06*

U.S. Cl. 455—619 6 Claims



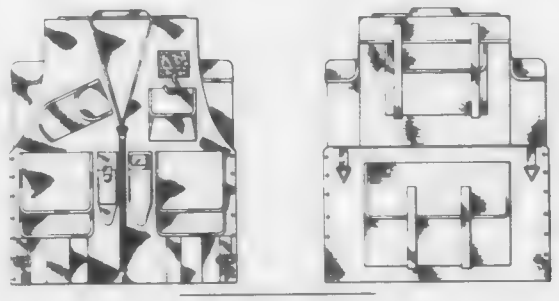
1. A method of polarization insensitive coherent detection of an optical signal comprising,

mixing two optical signals,

at least one of which comprises a bit stream representative of intelligence which is transmitted at a given bit rate, the polarization of at least one of the signals varying independently of the polarization of the other signal at a rate slower than the given bit rate,

the invention characterized in that the polarization of the other of the two signals is caused to vary at a rate greater than or equal to the bit rate.

316,172
COMBINED VEST AND BACKPACK
James M. Hanson, Quinhagak, Ak., assignor to Wallace G. Miller, Olympia, Wash.
Filed Apr. 22, 1988, Ser. No. 184,708
Term of patent 14 years
U.S. Cl. D2—184



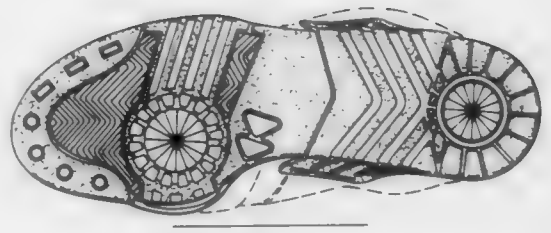
316,173
VISOR
George A. Morris, Jr., 720 Fair Oaks Manor, Atlanta, Ga. 30327
Filed Jan. 4, 1988, Ser. No. 140,420
Term of patent 14 years
U.S. Cl. D2—247



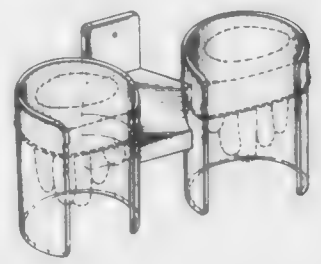
316,174
BACK TAB OF A SHOE
Tinker L. Hatfield, Portland, Oreg., assignor to Nike, Inc. and Nike International Ltd., both of Beaverton, Oreg.
Filed Jun. 15, 1990, Ser. No. 538,493
Term of patent 14 years
U.S. Cl. D2—314



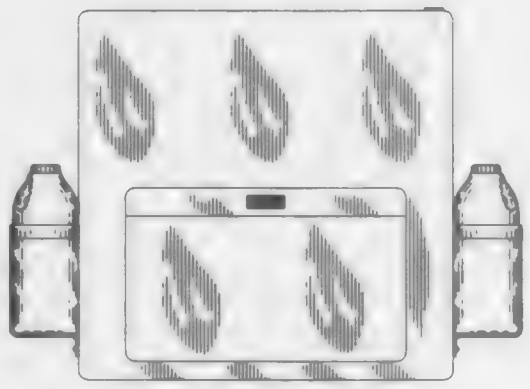
316,175
SHOE SOLE
Frank Legacki; James L. Grau, both of San Antonio, Tex.; Rory W. Fuerst, Menlo Park, Calif., and James E. Granville, San Antonio, Tex., assignors to Kaepa, Inc., San Antonio, Tex.
Filed Feb. 9, 1988, Ser. No. 308,855
Term of patent 14 years
U.S. Cl. D2—320

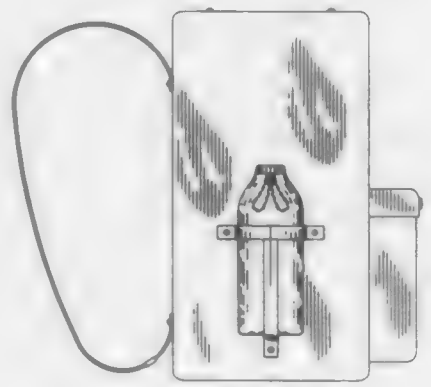


316,176
GLOVE DONNING AID
Dan E. Fischer, Sandy, Utah, assignor to Ultradent Products Inc., Salt Lake City, Utah
Filed Oct. 9, 1987, Ser. No. 107,035
Term of patent 14 years
U.S. Cl. D2—641

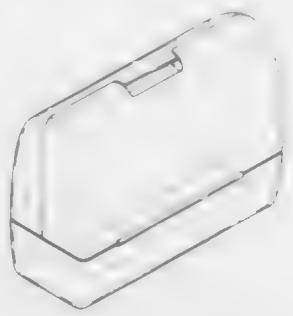


316,177
BACKPACK
Kelly J. Strimpfel, 6032-3 New Forest Ct., Waldorf, Md. 20603
Filed Mar. 29, 1990, Ser. No. 500,841
Term of patent 14 years
U.S. Cl. D3—32





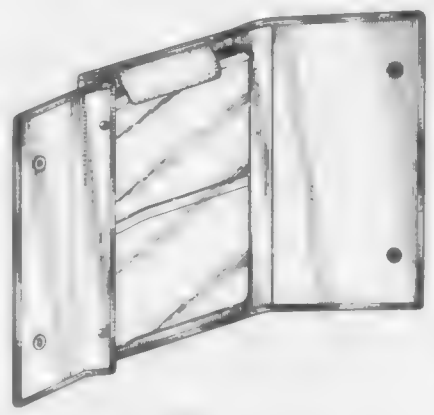
316,178
CASE FOR MAGNETIC TAPE CASSETTES
Noboru Uemura, Odawara, Japan, assignor to TDK Corporation, Tokyo, Japan
Filed Aug. 27, 1987, Ser. No. [illegible],850
Term of patent 14 years
U.S. Cl. D3—35



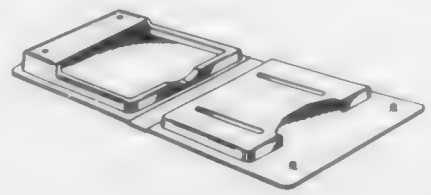
316,179
ATTACHE CASE FOR DISKS
Makio Hasuike, Milan, Italy, assignor to Seima Italiana SpA, Tolmezzo, Italy
Filed Jan. 15, 1988, Ser. No. 144,855
Claims priority, application Italy, Jul. 21, 1987, 60408/87[U]
Term of patent 14 years
U.S. Cl. D3—35



316,180
PORTFOLIO FOR A COMPUTER DISC, A COMPACT DISC OR THE LIKE
Ross M. Hines, P.O. Box 9341, Hampton, Va. 23670-0341
Filed Mar. 21, 1990, Ser. No. 496,831
Term of patent 14 years
U.S. Cl. D3—35



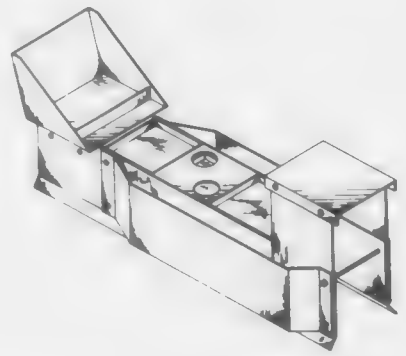
316,181
DISKETTE MAILER
J. T. Clifton, Elginburg, Canada, assignor to Pacware Systems, a Div of 166117 Canada, Inc., Ottawa, Canada
Filed Apr. 26, 1990, Ser. No. 514,565
Claims priority, application Canada, Mar. 14, 1990, 14-03-90-2
Term of patent 14 years
U.S. Cl. D3—35



316,182
GOLF CLUB CARRIER
Eugene S. Witchger, 210 W. 77th St., Indianapolis, Ind. 46260
Filed Aug. 29, 1988, Ser. No. [illegible]7,457
Term of patent 14 years
U.S. Cl. D3—37



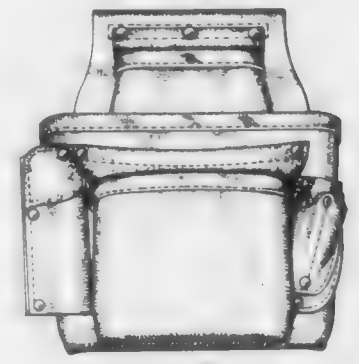
316,183
CONSOLE FOR AN EMERGENCY VEHICLE
James H. Pax, 702 Eleanor, Houston, Tex. 77009
Filed Jun. 3, 1987, Ser. No. 56,974
Term of patent 14 years
U.S. Cl. D3—40



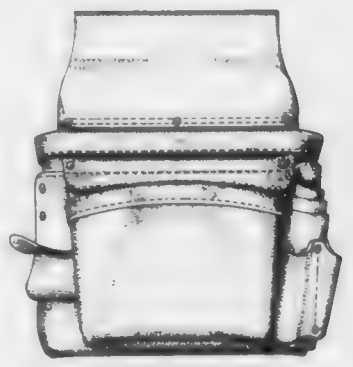
316,184
TETHERED HOLDER FOR CYLINDRICAL ARTICLES
John P. Mikkelsen, Santa Monica, Calif., assignor to Dermalabs Research, Inc., Minneapolis, Minn.
Filed Nov. 7, 1988, Ser. No. 267,781
Term of patent 14 years
U.S. Cl. D3—100



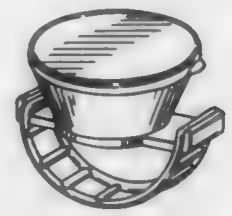
316,185
TOOL CADDY
Brett P. Seber, Laguna Niguel, Calif., assignor to McGuire-Nicholas Company, Inc., City of Commerce, Calif.
Filed Mar. 14, 1988, Ser. No. 167,461
The portion of the term of this patent subsequent to Apr. 16, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D3—105



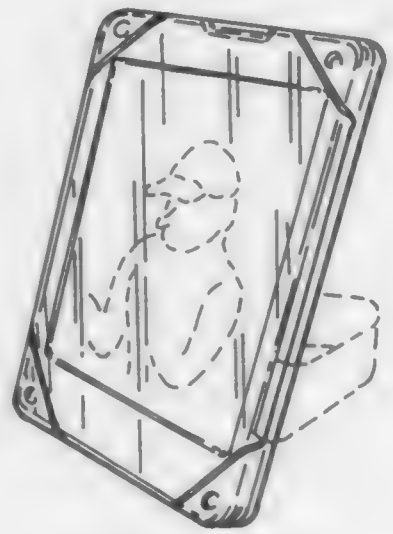
316,186
LEATHER TOOL CADDY
Brett P. Seber, Laguna Niguel, Calif., assignor to McGuire-Nicholas Company, Inc., City of Commerce, Calif.
Filed Mar. 14, 1988, Ser. No. 167,462
The portion of the term of this patent subsequent to Apr. 16, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D3—105



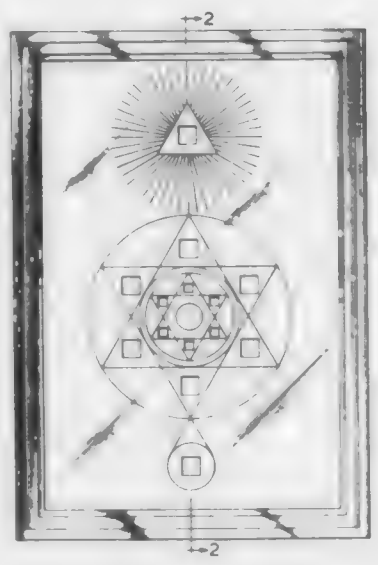
316,187
ATTACHABLE TOTE
Michael C. Rodgers, Lomita, Calif., assignor to Zinka Inc., Long Beach, Calif.
Filed Jun. 22, 1987, Ser. No. 65,004
Term of patent 14 years
U.S. Cl. D3—106



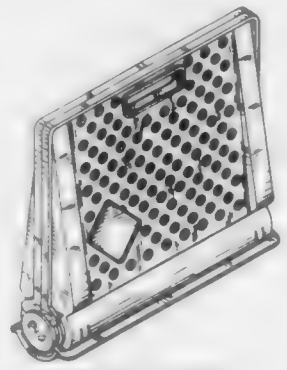
316,188
DISPLAY UNIT OR THE LIKE
John K. Connor; Charles M. Connor, Jr., and H. B. Stroup, Jr., all of Asheville, N.C., assignors to Collector's Products Corporations, Asheville, N.C.
Filed Jul. 7, 1989, Ser. No. 377,009
Term of patent 14 years
U.S. Cl. D6—300



316,189
DISPLAY DEVICE OR SIMILAR ARTICLE
Elton Watkins, P.O. Box 12, Hampton, Va. 23669
Filed Sep. 29, 1988, Ser. No. 250,489
Term of patent 14 years
U.S. Cl. D6—301



316,190
COMBINED PORTABLE SEAT AND CARRYING CASE
Yiftah Sadan, Beit Zera, Israel, assignor to Ar-Kal Plastics Products Beit Zera (1973), Israel
Filed Sep. 18, 1987, Ser. No. 98,512
Claims priority, application Israel, Mar. 22, 1987, 12393
Term of patent 14 years
U.S. Cl. D6—335



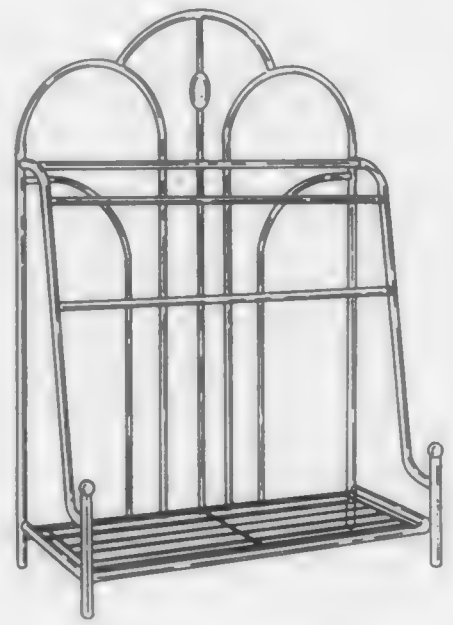
316,191
CHAIR
Robert L. Wilson, Memphis, Tenn., and John R. Stafford, Greensboro, N.C., assignors to Chromcraft Furniture Corp., Senatobia, Miss.
Filed Jun. 4, 1990, Ser. No. 532,498
Term of patent 14 years
U.S. Cl. D6—366



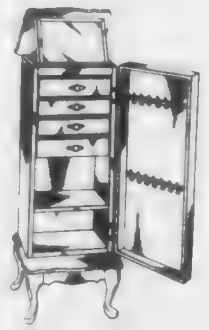
316,192
CHAIR
Edsel E. Murry, Coldwater, Miss., and John R. Stafford, Greensboro, N.C., assignors to Chromcraft Furniture Corp., Senatobia, Miss.
Filed Jun. 4, 1990, Ser. No. 533,062
Term of patent 14 years
U.S. Cl. D6—366



316,193
BLANKET RACK
Peter M. Y. Kee, Happy Valley, Hong Kong, assignor to Rosalco, Inc., Louisville, Ky.
Division of Ser. No. 295,566, Jan. 10, 1989. This application Nov. 20, 1989, Ser. No. 428,652
Term of patent 14 years
U.S. Cl. D6—413



316,194
CHEST
Larry Powell, Los Angeles, Calif., assignor to L. Powell Co., Culver City, Calif.
Continuation-in-part of Ser. No. 247,011, Sep. 20, 1988. This application May 24, 1989, Ser. No. 356,835
The portion of the term of this patent subsequent to Feb. 5, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—440



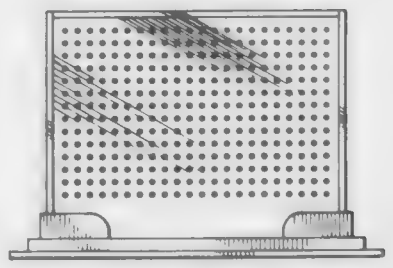
316,195
DOUBLE HELIX BOOKCASE
David S. Mark, San Francisco, Calif., assignor to Space Age Design Furniture, San Francisco, Calif.
Filed Dec. 23, 1987, Ser. No. 137,380
Term of patent 14 years
U.S. Cl. D6—461



316,196
CORNER SHELF UNIT
Peter M. Y. Kee, Happy Valley, Hong Kong, assignor to Rosalco, Inc., Louisville, Ky.
Division of Ser. No. 295,566, Jan. 10, 1989. This application Oct. 30, 1989, Ser. No. 429,191
The portion of the term of this patent subsequent to Mar. 29, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—465



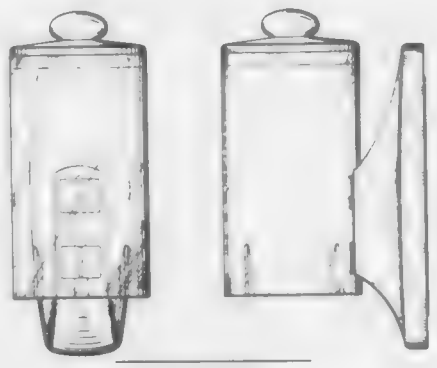
316,197
PIN DISPLAY OR SIMILAR ARTICLE
Jerry Baker, 2716 Laurel Ct., Woodridge, Ill. 60517
Filed Jul. 23, 1987, Ser. No. 76,936
Term of patent 14 years
U.S. Cl. D6—469



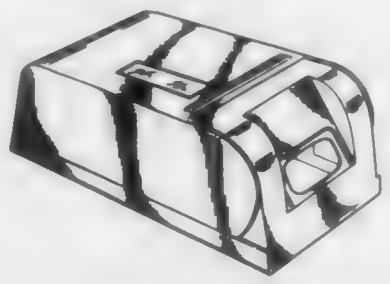
316,198
SHELF UNIT
Peter M. Y. Kee, Happy Valley, Hong Kong, assignor to Rosalco, Inc., Louisville, Ky.
Division of Ser. No. 295,566, Jan. 10, 1989. This application Oct. 30, 1989, Ser. No. 428,653
The portion of the term of this patent subsequent to Jun. 26, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—479



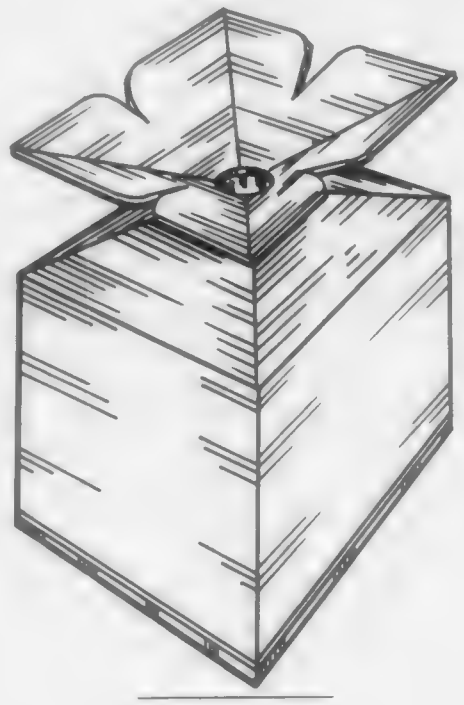
316,199
WALL-MOUNTED CUP DISPENSER
Jerry A. Brown, Greenwood, Ind., assignor to James River Corp. of Virginia, Norwalk, Conn.
Filed Apr. 22, 1988, Ser. No. 184,847
Term of patent 14 years
U.S. Cl. D6—516



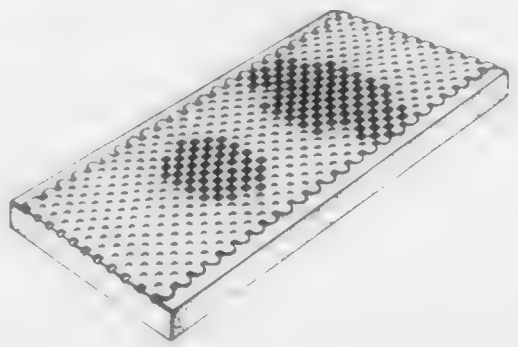
316,200
TISSUE OR TOWEL DISPENSER
Chris R. Dawson, Hassocks, England, assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Mar. 22, 1989, Ser. No. 326,843
Term of patent 14 years
U.S. Cl. D6—518



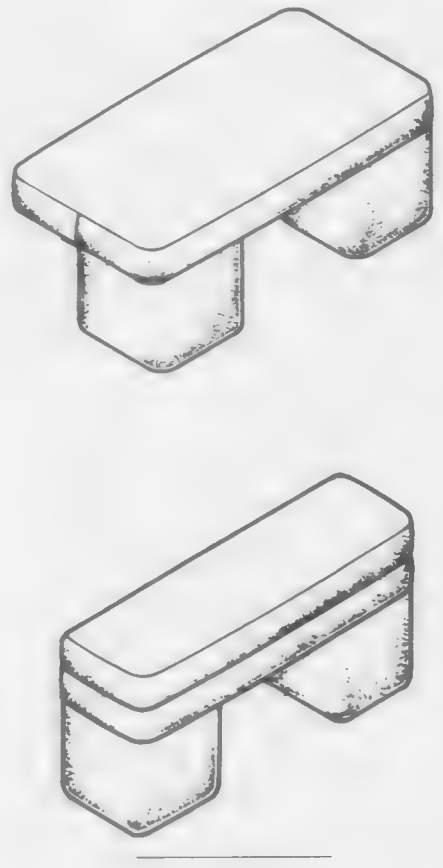
316,201
TOILET TISSUE DISPENSER
Alan Shimasaki, 8035 Shadow Hill Dr., La Mesa, Calif. 92041
Filed May 8, 1989, Ser. No. 348,647
Term of patent 14 years
U.S. Cl. D6—518



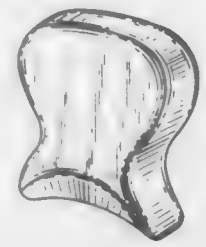
316,202
FOAM PAD
David L. Farley, 18672 Evergreen Ave., Yorba Linda, Calif. 92686
Filed Dec. 14, 1988, Ser. No. 284,447
Term of patent 14 years
U.S. Cl. D6—596



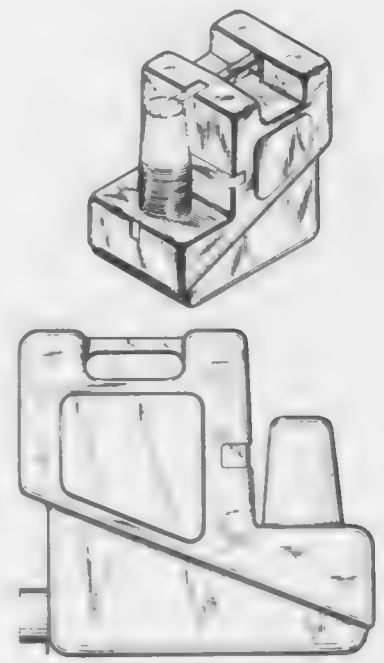
316,203
INFLATABLE CUSHION FOR USE IN THE REAR PASSENGER AREA OF AN AUTOMOBILE
Hsun W. Chao, 11 Fl., No. 703, Chung Cheng rd., Shih Lin, Taipei, Taiwan
Filed Feb. 17, 1989, Ser. No. 312,918
Term of patent 14 years
U.S. Cl. D6—601



316,204
PILLOW
Carolyn Goodale, 335 Oak St., Westwood, Mass. 02090
Filed May 18, 1989, Ser. No. 354,422
Term of patent 14 years
U.S. Cl. D6—601



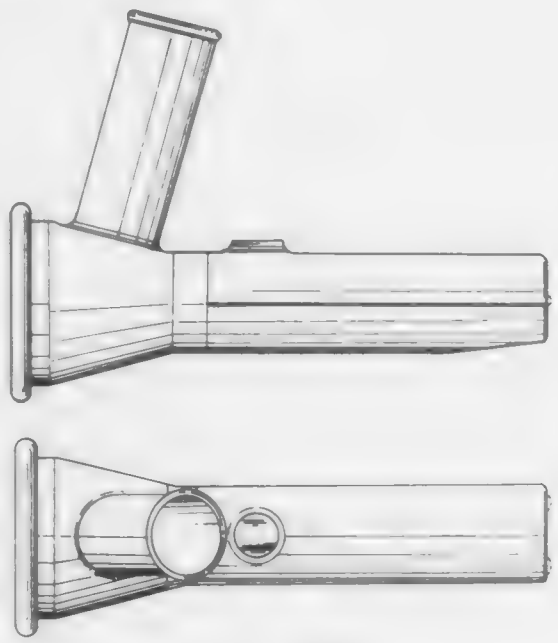
316,205
COMBINED BEVERAGE CONTAINER, DISPENSER AND CUP HOLDER
George R. Conrad, Dunwoody, Ga., assignor to General Electric Company, Mt. Vernon, Ind.
Filed Jun. 8, 1988, Ser. No. 204,489
Term of patent 14 years
U.S. Cl. D7—305



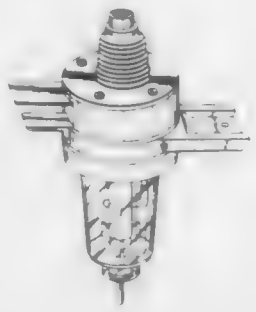
316,206
PITCHER OR THE LIKE
Robert H. C. M. Daenen, Erembodegem, and Pieter J. K. De-Coster, Aalst, both of Belgium, assignors to Dart Industries Inc., Deerfield, Ill.
Filed Feb. 26, 1988, Ser. No. 162,375
Term of patent 14 years
U.S. Cl. D7—317



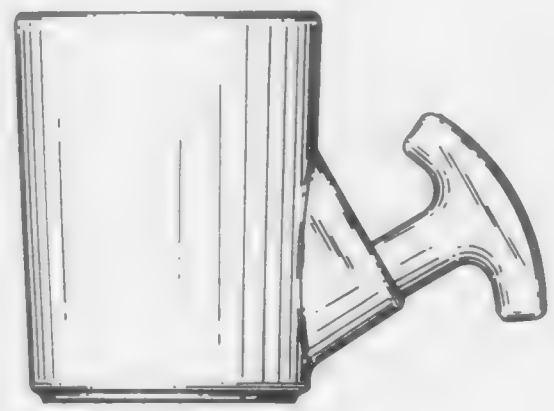
316,207
HAND-HOLDABLE FOOD PROCESSOR
Ira Gaber, West Norwalk, Conn., and Cooper C. Woodring, Plandome, N.Y., assignors to Better Mousetraps Inc., Plandome, N.Y.
Filed Apr. 29, 1988, Ser. No. 187,879
Term of patent 14 years
U.S. Cl. D7—384



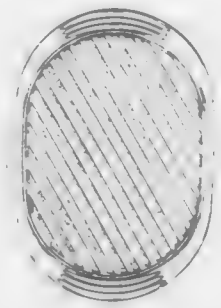
316,208
LIQUID MEASURING-DISPENSER TAP FOR A BEVERAGE BOTTLE OR SIMILAR ARTICLE
Ronald S. Griffiths, Rochester, and John E. Searles, Aylesford, both of England, assignors to R. and A. Bailey & Co. Limited, Dublin, Northern Ireland
Filed Jul. 20, 1987, Ser. No. 75,076
Claims priority, application United Kingdom, Jan. 20, 1987, 1039342
Term of patent 14 years
U.S. Cl. D7—398



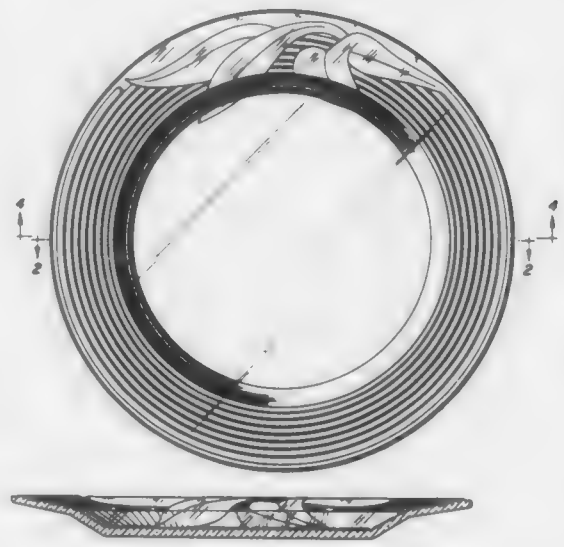
316,209
CUP
Milan S. Lackovic, Port Washington, Wis., assignor to K-Promotions, Inc., Milwaukee, Wis.
Filed Jan. 23, 1989, Ser. No. 299,251
Term of patent 14 years
U.S. Cl. D7—533



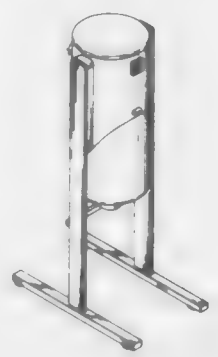
316,210
SERVING TRAY
Giorgetto Giugiaro, Turin, Italy, assignor to Fratelli Guzzini, S.p.A., Recanati, Italy
Filed Jan. 17, 1989, Ser. No. 297,747
Claims priority, application Italy, Aug. 18, 1988, 21751B/88
Term of patent 14 years
U.S. Cl. D7—545



316,211
PLATTER OR SIMILAR ARTICLE
Jean-Jacques Durand, LaBute, 62510 Arques, France
Filed Sep. 25, 1986, Ser. No. 911,204
Term of patent 14 years
U.S. Cl. D7—588



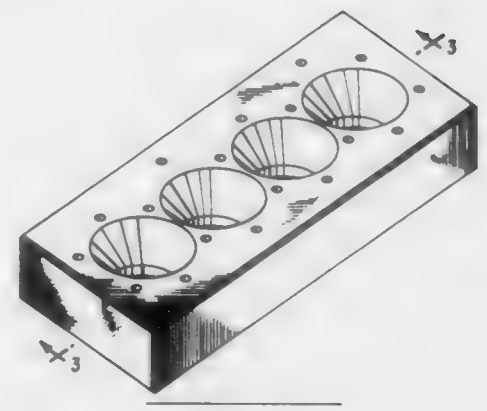
316,212
JUICE EXTRACTOR
John S. Seal, Jr., 208 Llanfair Rd., Ardmore, Pa. 18929
Filed Sep. 22, 1988, Ser. No. 247,579
Term of patent 14 years
U.S. Cl. D7—665



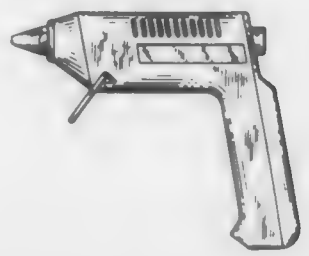
316,213
SPATULA
Robert Skerker, Buffalo, N.Y., and William Prindle, Santa Barbara, Calif., assignors to Robinson Knife Manufacturing Co., Inc., Springville, N.Y.
Filed Dec. 19, 1988, Ser. No. 286,498
Term of patent 14 years
U.S. Cl. D7—696



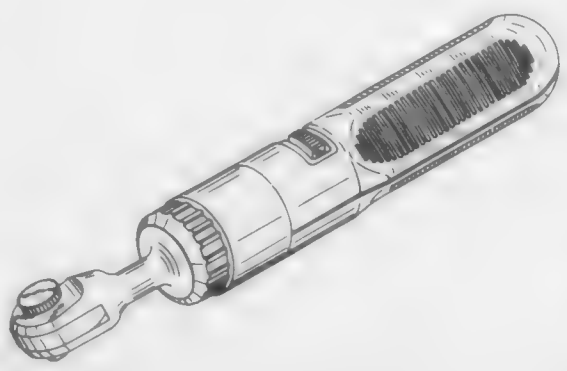
316,214
PISTON RING COMPRESSOR
Patrick J. O'Donnell, 3040 Connor St., Salt Lake City, Utah 84109
Filed May 13, 1987, Ser. No. 49,[illegible]1
Term of patent 14 years
U.S. Cl. D8—14



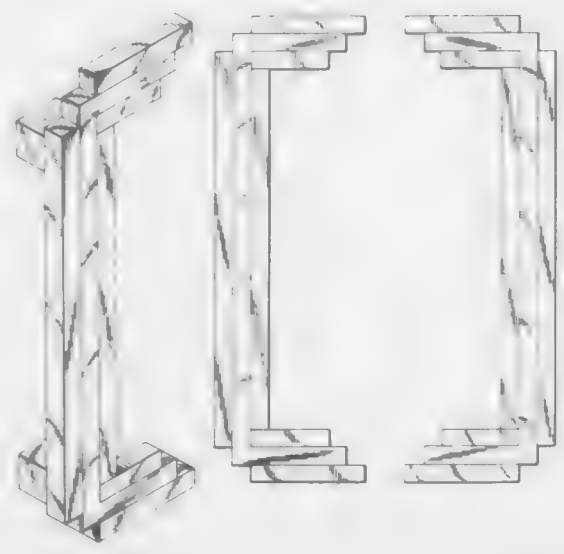
316,215
THUMB FEED GLUE GUN
Richard A. Belanger, Kensington, N.H., assignor to The Stanley Works, New Britain, Conn.
Filed Feb. 29, 1988, Ser. No. 162,365
Term of patent 14 years
U.S. Cl. D8—30



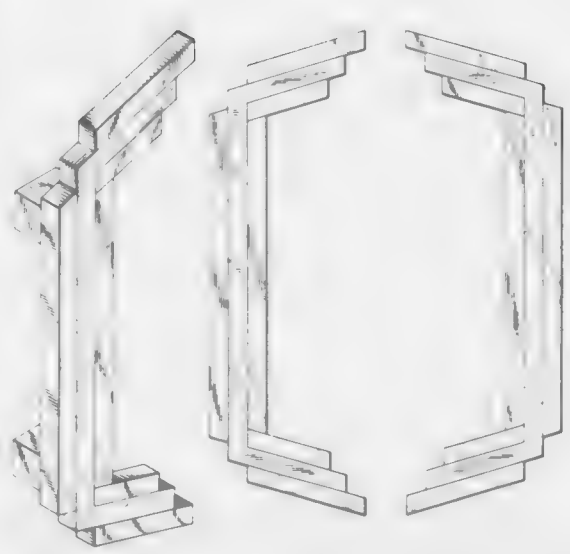
316,216
BATTERY-OPERATED RATCHET WRENCH
Martin P. Gierke, Baltimore, and Robert I. Somers, Reisterstown, both of Md., assignors to Black & Decker Inc., Newark, Del.
Continuation-in-part of Ser. No. 907,720, Sep. 12, 1986, Pat. No. D. 304,543. This application Feb. 17, 1988, Ser. No. 157,437
Term of patent 14 years
U.S. Cl. D8—61



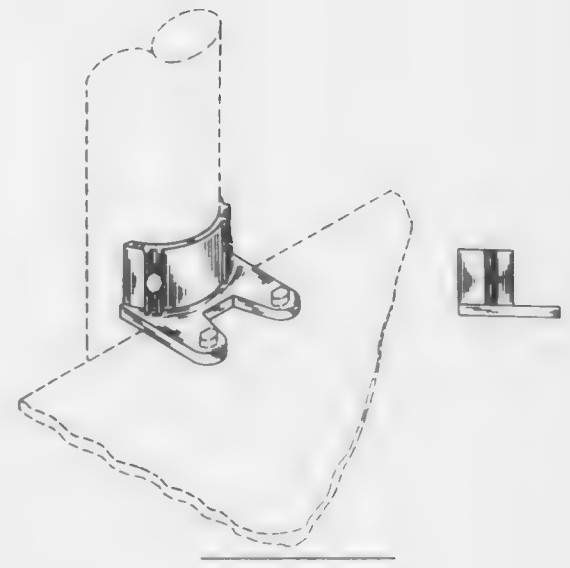
316,217
DOOR HARDWARE
Michael J. Tremonti, Hawthorne, N.J., assignor to Hardware Designs Inc., Fairfield, N.J.
Filed Nov. 22, 1988, Ser. No. 275,032
The portion of the term of this patent subsequent to Apr. 16, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—319



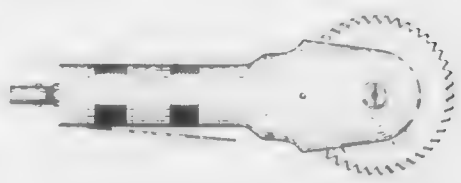
316,218
DOOR HARDWARE
Michael J. Tremonti, Hawthorne, N.J., assignor to Hardware Designs Inc., Fairfield, N.J.
Filed Nov. 22, 1988, Ser. No. 275,033
The portion of the term of this patent subsequent to Apr. 16, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—319



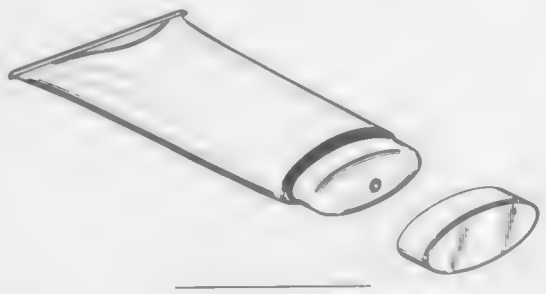
316,219
SUPPORT BRACKET FOR A VERTICAL ARTICLE
Ulrich K. Boehnke, Fort Myers, Fla., assignor to Diemold Machine Company, Inc., Fort Myers, Fla.
Filed Sep. 14, 1988, Ser. No. 245,014
Term of patent 14 years
U.S. Cl. D8—373



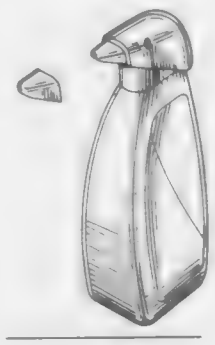
316,220
DEHIDING DEVICE
Harrison A. Alley, Jr., Knox County, Tenn.; Lester H. Sirois, Strafford County, N.H., and Lawrence D. Boody, Anderson County, Tenn., assignors to Acraloc Corporation, Oak Ridge, Tenn.
Continuation-in-part of Ser. No. 74,868, Jul. 17, 1987, abandoned. This application Apr. 22, 1988, Ser. No. 184,720
Term of patent 14 years
U.S. Cl. D8—66



316,221
COMBINED COLLAPSIBLE TUBE AND CAP THEREFOR
Edward Dombroski, Sea Girt, N.J., assignor to Peerless Tube Company, Bloomfield, N.J.
Filed Jun. 3, 1986, Ser. No. 870,334
Term of patent 14 years
U.S. Cl. D9—302



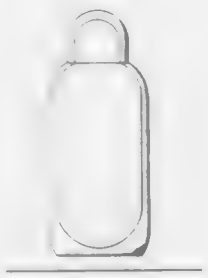
316,222
BOTTLE
Johannes van der Heijden, Hilversum, Netherlands, assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Sep. 22, 1988, Ser. No. 248,407
Claims priority, application United Kingdom, Mar. 24, 1988, 1049461
Term of patent 14 years
U.S. Cl. D9—317



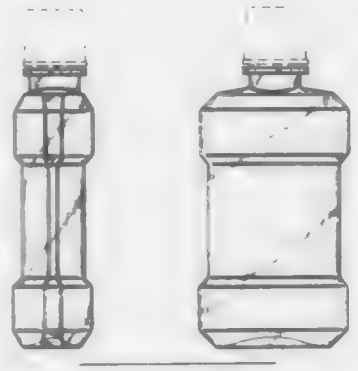
316,223
PERFUME BOTTLE
Pierre Dinand, Levallois-Perret, France, assignor to Lacambra y Espoy, S.A., Barcelona, Spain
Filed Jun. 29, 1987, Ser. No. 67,044
Claims priority, application France, Dec. 30, 1986, 86 6902; Spain, Feb. 9, 1987, 112261
Term of patent 14 years
U.S. Cl. D9—384



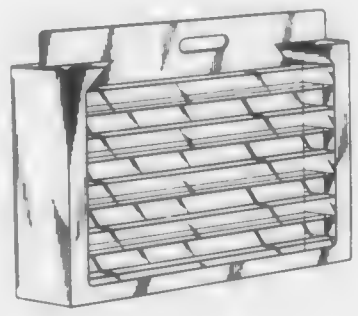
316,224
COMBINED BOTTLE AND CAP
Ian Gray, Northumberland; Russell T. Watts, London, and William R. Stewart, Bromley, all of England, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Mar. 7, 1988, Ser. No. 165,672
Claims priority, application United Kingdom, Sep. 7, 1987, 1044643
Term of patent 14 years
U.S. Cl. D9—403



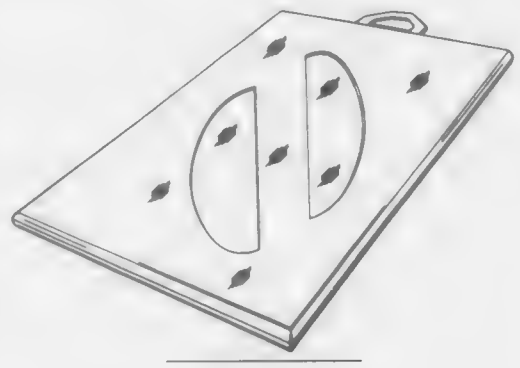
316,225
BOTTLE
Richard C. Edstrom, New York, N.Y.; Richard N. Hirst, Teaneck; Richard B. Gerstman, Tenafly, both of N.J., and David O. Pressler, Fairfield, Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed Mar. 22, 1989, Ser. No. 326,959
Term of patent 14 years
U.S. Cl. D9—404



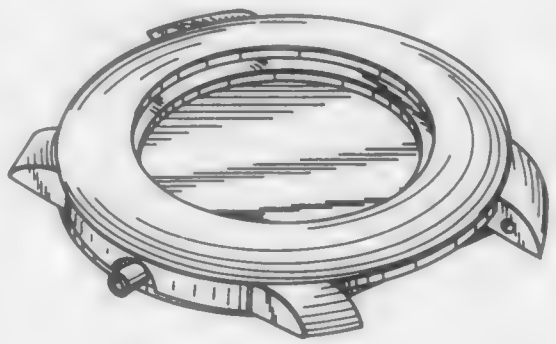
316,226
PACKAGE FOR TOYS
Ngan Y. Ching, Shatin, Hong Kong, assignor to May Chung Toy Products Fty. Ltd., Kowloon, Hong Kong
Filed Sep. 27, 1988, Ser. No. 250,122
Term of patent 14 years
U.S. Cl. D9—415



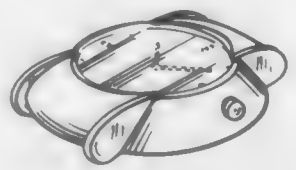
316,227
PACKAGE
James J. Gentes, Soquel, and Steven K. Sasaki, Santa Cruz, both of Calif., assignors to Giro Sport Design, Inc., Soquel, Calif.
Filed Oct. 14, 1988, Ser. No. 258,254
Term of patent 14 years
U.S. Cl. D9—415



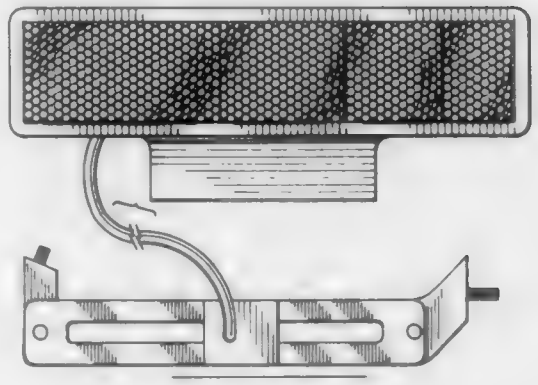
316,228
WATCH CASE
Christian Frommherz, Kowloon, Hong Kong, assignor to Eco Swiss China Time Ltd., Hong Kong, Hong Kong
Filed Mar. 24, 1987, Ser. No. 29,592
Term of patent 14 years
U.S. Cl. D10—30



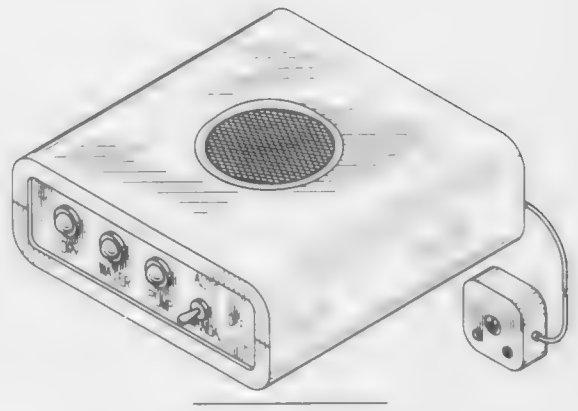
316,229
WRIST-WATCH
Pino Rabolini, Milan, Italy, assignor to Pomellato S.p.A., Milan, Italy
Filed Apr. 19, 1988, Ser. No. 185,770
Claims priority, application Italy, Oct. 23, 1987, 22603/87[U]
Term of patent 14 years
U.S. Cl. D10—30



316,230
AUXILIARY AUTOMOBILE BRAKE LIGHT
Antonio J. Munoz, 103 1st St. E, Unit 310, Tiera Verde, St. Petersburg, Fla. 33715
Filed Jul. 7, 1988, Ser. No. 216,261
Term of patent 14 years
U.S. Cl. D10—114



316,231
LIQUID LEVEL DETECTOR CONTROL UNIT
Salvatore M. Inglima, R.D. 1 Box 211A, Chester, N.Y. 10918
Filed Sep. 2, 1988, Ser. No. 240,106
Term of patent 14 years
U.S. Cl. D10—106



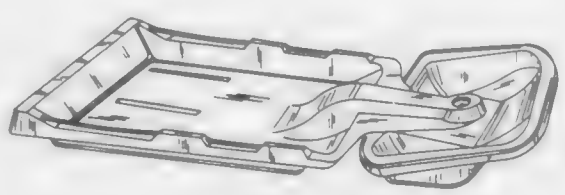
316,232
HOLIDAY STOCKING
Louis T. D'Agosta, 60 Fairfax St., Somerville, Mass. 02144
Filed Oct. 17, 1988, Ser. No. 258,434
Term of patent 14 years
U.S. Cl. D11—126



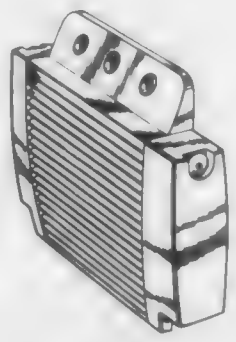
316,233
BELT BUCKLE
Bobby S. Dupree, and Helen K. Dupree, both of 720 Keppel Dr., Newport News, Va. 23602
Filed Apr. 25, 1988, Ser. No. 185,947
Term of patent 14 years
U.S. Cl. D11—241



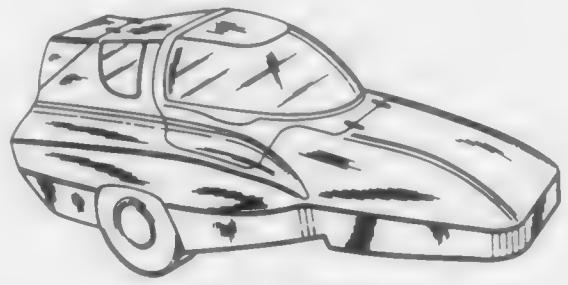
316,234
SLED
Kurt E. P. Mirisch, Sr., P.O. Box 278, Chesterland, Ohio 44026
Filed Dec. 2, 1987, Ser. No. 127,871
Term of patent 14 years
U.S. Cl. D12—11



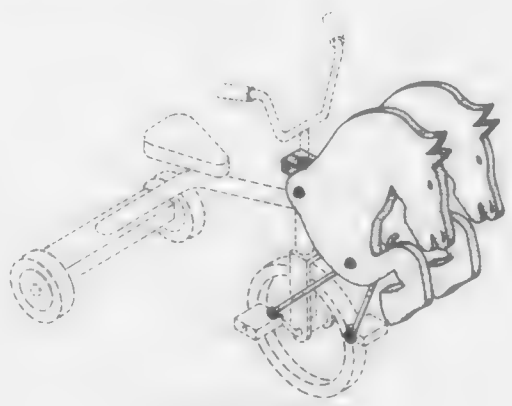
316,235
MOTORCYCLE OIL COOLER
James M. Preisler, 3128 Priest La., Mound, Minn. 55364, and Alwin J. Stahel, 1244 Imperial La., St. Paul, Minn. 55112
Filed Feb. 29, 1988, Ser. No. 162,363
Term of patent 14 years
U.S. Cl. D12—114



316,236
MOTORCYCLE SIDECAR
David E. Hannigan, 2329 Ontario Street, Oakville, Ontario, Canada L6L 1A5
Filed Sep. 30, 1987, Ser. No. 103,161
Claims priority, application Canada, Aug. 21, 1987, 21/08/ET
Term of patent 14 years
U.S. Cl. D12—116



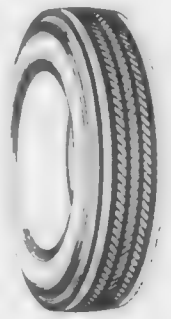
316,237
ANIMATED HORSE FIGURE FOR USE WITH CHILD'S TRICYCLE
James A. Snow, Rte. 3, Gadsden, Ala. 35901
Filed Oct. 5, 1988, Ser. No. 253,728
Term of patent 14 years
U.S. Cl. D12—117



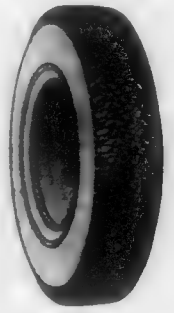
316,238
STROLLER TRAY
Harry J. Giambrone, Kettering, Ohio, assignor to Spalding & Evenflo Companies, Inc., Tampa, Fla.
Filed Oct. 20, 1988, Ser. No. 260,334
Term of patent 14 years
U.S. Cl. D12—133



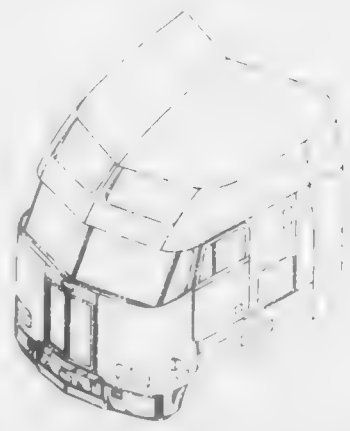
316,239
AUTOMOBILE TIRE
Toru Tsuda, and Hidenori Masuda, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Dec. 27, 1988, Ser. No. 291,072
Claims priority, application Japan, Aug. 31, 1988, 63-34113
Term of patent 14 years
U.S. Cl. D12—145



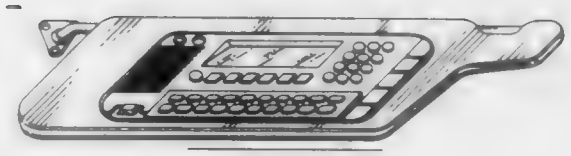
316,240
AUTOMOBILE TIRE
Toru Tsuda, and Yasufumi Ichiki, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Jun. 27, 1989, Ser. No. 371,968
Claims priority, application Japan, Dec. 27, 1988, 63-50562
Term of patent 14 years
U.S. Cl. D12—146



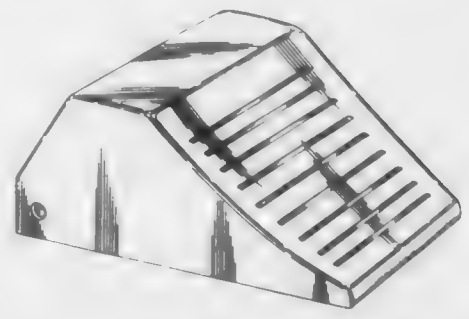
316,241
TRUCK CAB BUMPER UNIT EXTERIOR SURFACE
Bob Ray, Fremont, Calif., assignor to PACCAR Inc., Bellevue, Wash.
Filed Sep. 15, 1988, Ser. No. 245,[illegible]
Term of patent 14 years
U.S. Cl. D12—1[illegible]



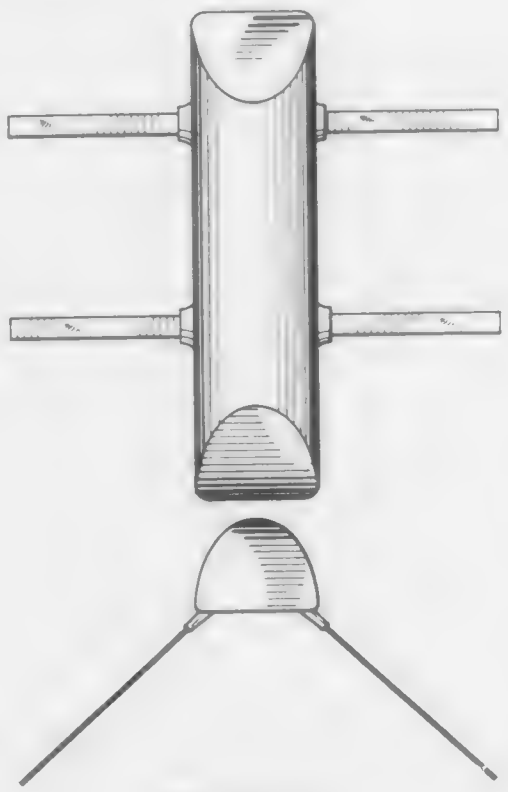
316,242
COMBINED VEHICLE SUN VISOR AND CELLULAR TELEPHONE UNIT
Joe Lewo, P.O. Box N8913, Nassau, The Bahamas
Filed Apr. 29, 1988, Ser. No. 188,009
Term of patent 14 years
U.S. Cl. D12—191



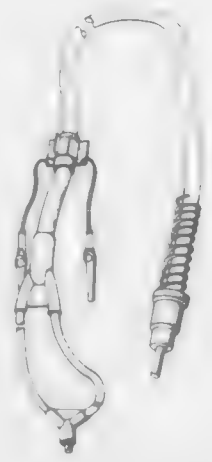
316,243
WHEEL CHOCK
Stephen K. Henry, 3815 Northbrook Dr., #C-21, Boulder, Colo. 80302
Filed Jul. 7[illegible], 1988, Ser. No. 224,135
Term of patent 14 years
U.S. Cl. D12—217



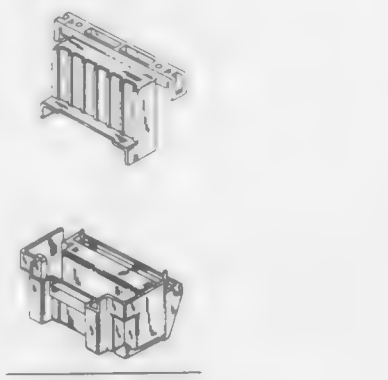
316,244
DOCK POST BUMPER
Kevin D. Kruckenberg, 28681 N. Harrison Ave., Wauconda, Ill. 60084
Filed Dec. 9, 1988, Ser. No. 282,295
Term of patent 14 years
U.S. Cl. D12—168



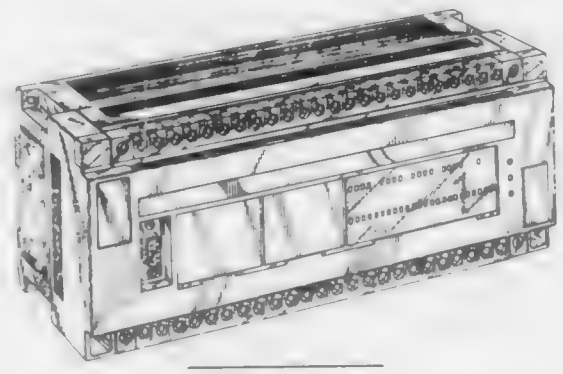
316,245
OPTICAL CABLE ASSEMBLY FOR ATTACHMENT TO A HEADLIGHT UNIT WORN BY A SURGEON
Richard E. Feinbloom, New York, N.Y., assignor to Designs for Vision, Inc., Ronkonkoma, N.Y.
Filed Nov. 21, 1988, Ser. No. 273,505
Term of patent 14 years
U.S. Cl. D13—133



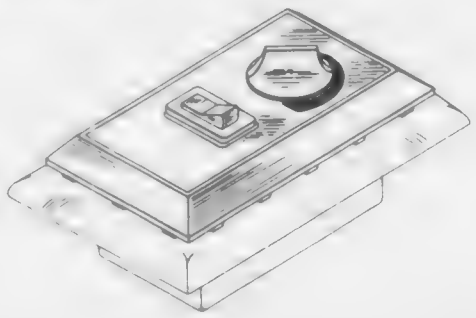
316,246
ELECTRICAL CONNECTOR ASSEMBLY
Yasuharu Moriai, and Osamu Ito, both of Suzuka, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan
Filed Dec. 21, 1988, Ser. No. 288,003
Claims priority, application Japan, Jun. 21, 1988, 63-24589
Term of patent 14 years
U.S. Cl. D13—133



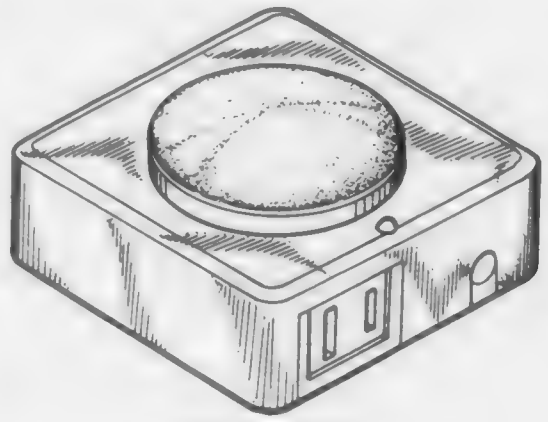
316,247
PROGRAMMABLE MICRO-CONTROLLER
Raymond Llabres, Saint Laurent du Var, and Guy Boucher, Paris, both of France, assignors to La Telemecanique Electrique, France
Filed Jun. 29, 1987, Ser. No. 67,174
Claims priority, application France, Dec. 30, 1986, 86 6896
Term of patent 14 years
U.S. Cl. D13—162



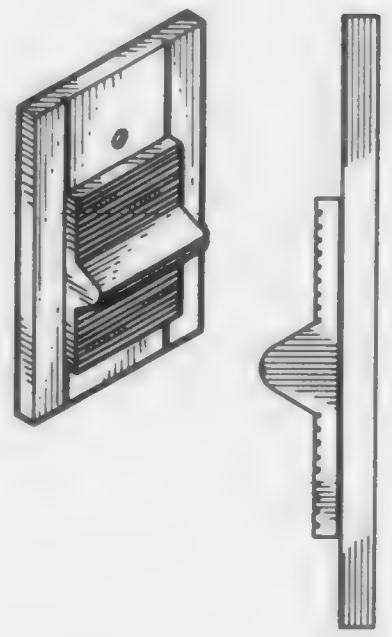
316,248
SINGLE SWITCH ELECTRIC FAN CONTROL
Allan M. Dob, Clifton, N.J., assignor to SSMC Inc., Edison, N.J.
Filed Mar. 24, 1989, Ser. No. 328,356
Term of patent 14 years
U.S. Cl. D13—162



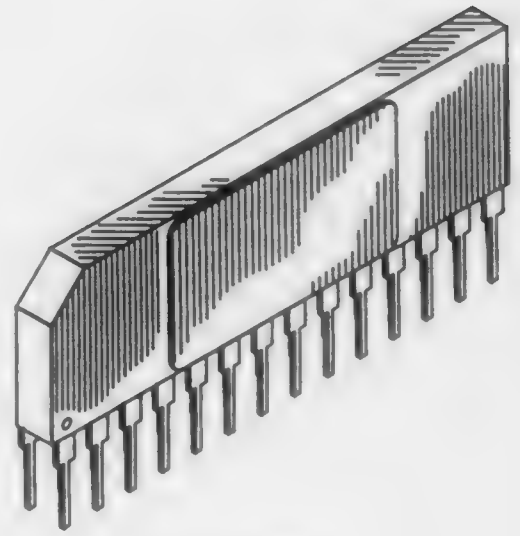
316,249
FOOT OPERATED DIMMER SWITCH
Lee King-Pei, No. 12, Shi Rd., Yow Sh Industy District, Pu Shin, Yang Mei, Teau Euan Shian, Taiwan
Filed Mar. 22, 1989, Ser. No. 327,154
Term of patent 14 years
U.S. Cl. D13—167



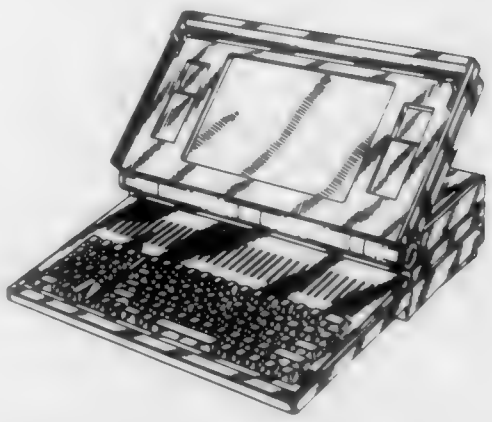
316,250
COMBINED WALL PLATE AND SWITCH
Francois Mongeau, Ile Bizard, Canada, assignor to Nicolet Plastique Ltd., Nicolet, Canada
Filed May 18, 1988, Ser. No. 195,575
Claims priority, application Canada, Mar. 28, 1988, 28-03-88-5
The portion of the term of this patent subsequent to Jan. 29, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D13—170



316,251
IN-LINE SEMICONDUCTOR PACKAGE
David Y. Armstrong, San Diego, Calif., assignor to Mosaic Semiconductor, Inc., San Diego, Calif.
Filed Dec. 19, 1988, Ser. No. 287,982
Term of patent 14 years
U.S. Cl. D13—182



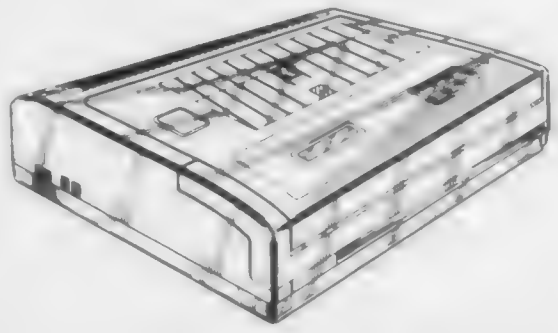
316,252
PORTABLE COMPUTER OR SIMILAR ARTICLE
Hartmut H. Esslinger, Los Gatos; Eric I. Gruenberg, Soquel, and James R. Stewart, San Jose, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Jan. 23, 1989, Ser. No. 299,717
Term of patent 14 years
U.S. Cl. D14—106



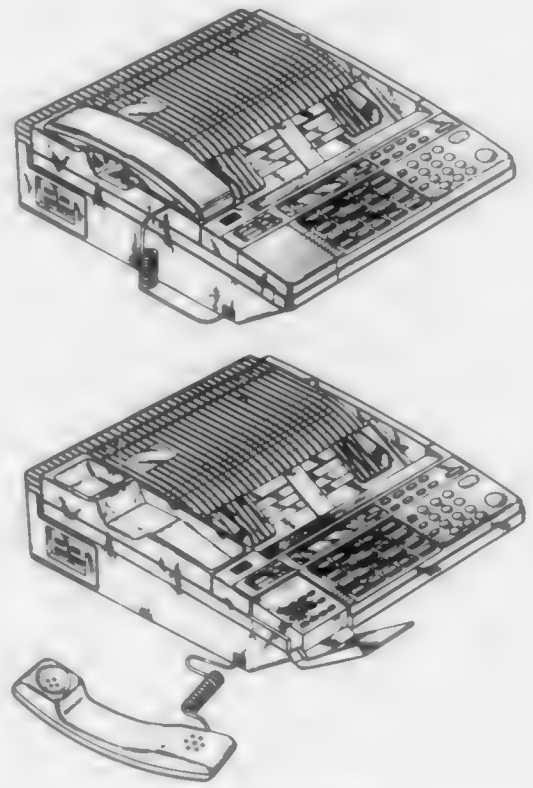
316,253
ELECTRONIC SENSOR PEN
Martin P. Riddiford, Stephen O. Frazer, Seamus A. Sharky, all of London, England, assignors to Price, Stern, Sloan, Inc., Los Angeles, Calif.
Filed Jun. 22, 1988, Ser. No. 210,107
Claims priority, application United Kingdom, Dec. 12, 1987, 1047293
Term of patent 14 years
U.S. Cl. D14—114



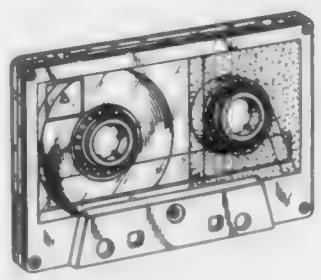
316,254
FACSIMILE
Kazuo Sato, Causeway Bay, Hong Kong, assignor to Ensilver International Trade Holding Corporation Ltd., Central, Hong Kong
Filed May 23, 1989, Ser. No. 355,382
Claims priority, application United Kingdom, Nov. 24, 1988, 1055194
Term of patent 14 years
U.S. Cl. D14—118



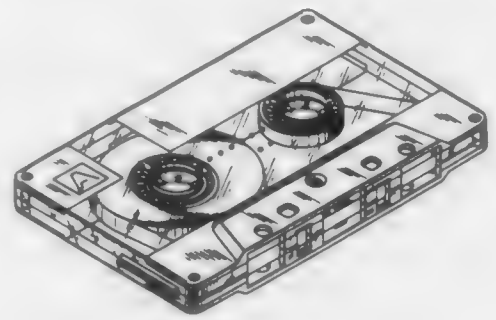
316,255
FACSIMILE TRANSCEIVER
Masaru Yokoyama, Kokubunji; Masahiro Saegusa, Mitaka; Yuuji Kawano, Yokohama; Taichirou Yamashita, Chigasaki, and Hiroshi Endo, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 10, 1989, Ser. No. 392,149
Term of patent 14 years
U.S. Cl. D14—118



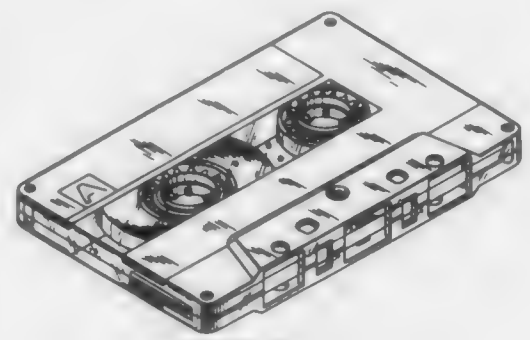
316,256
AUDIO CASSETTE
Fuyuki Yonehara, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 29, 1988, Ser. No. 291,873
Claims priority, application Japan, Jul. 6, 1988, 63-26894
Term of patent 14 years
U.S. Cl. D14—121



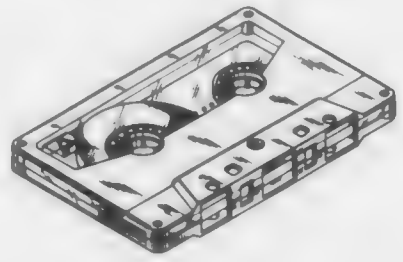
316,257
AUDIO CASSETTE
Fuyuki Yonehara, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 29, 1988, Ser. No. 291,874
Claims priority, application Japan, Jun. 29, 1988, 63-25959
Term of patent 14 years
U.S. Cl. D14—121



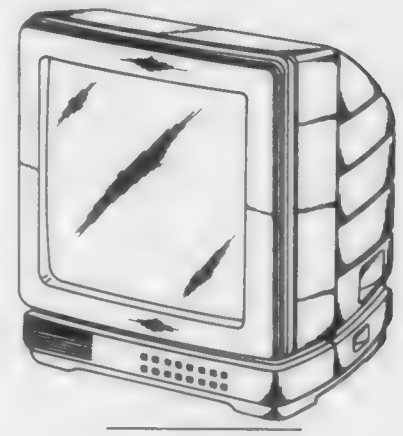
316,258
AUDIO CASSETTE
Fuyuki Yonehara, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 29, 1988, Ser. No. 291,875
Claims priority, application Japan, Jun. 29, 1988, 63-25958
Term of patent 14 years
U.S. Cl. D14—121



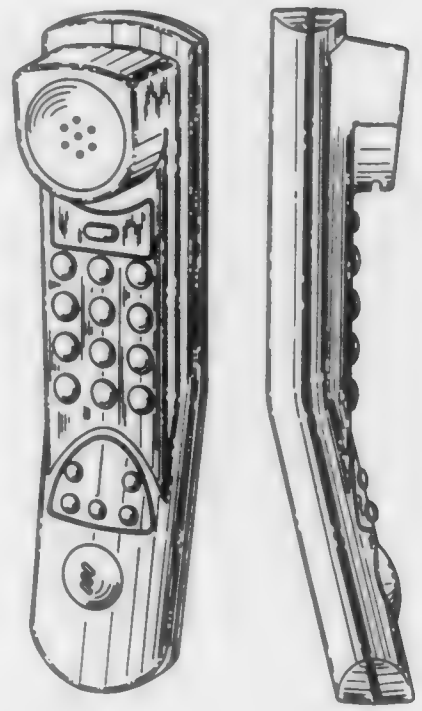
316,259
AUDIO CASSETTE
Fuyuki Yonehara, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 29, 1988, Ser. No. 291,876
Claims priority, application Japan, Jun. 29, 1988, 63-25957
Term of patent 14 years
U.S. Cl. D14—121



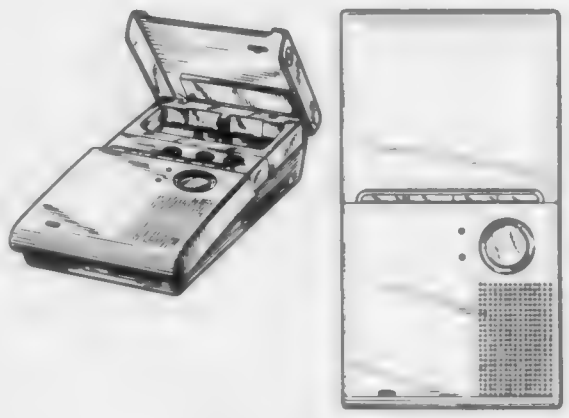
316,260
TELEVISION RECEIVER
Thomas E. Renk, Jr., Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.
Filed Aug. 14, 1989, Ser. No. 393,326
Term of patent 14 years
U.S. Cl. D14—126



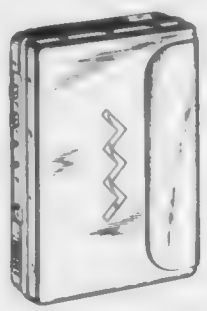
316,261
HANDSET TELEPHONE
Michael G. Langlois, Kanata, Canada, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 27, 1989, Ser. No. 441,923
Claims priority, application United Kingdom, Jun. 16, 1989, 1060239
Term of patent 14 years
U.S. Cl. D14—138



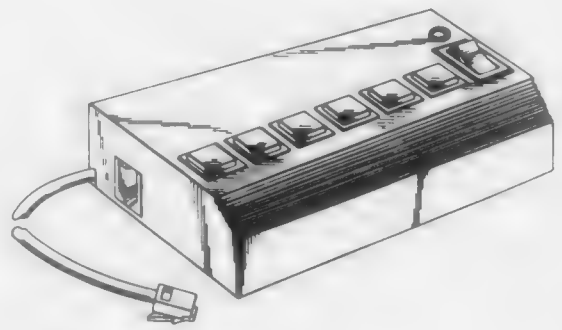
316,262
AUTOMATIC ANSWERING RECORDER FOR TELEPHONE
Fumitaka Kikutani, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 19, 1989, Ser. No. 452,319
Claims priority, application Japan, Jul. 6, 1989, 1-25111
Term of patent 14 years
U.S. Cl. D14—141



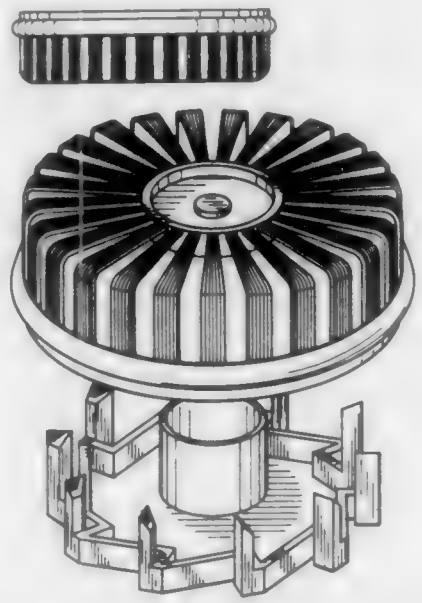
316,263
TAPE PLAYER
Takashi Sogabe, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 21, 1988, Ser. No. 273,878
Claims priority, application Japan, May 23, 1988, 63-[illegible]205
Term of patent 14 years
U.S. Cl. D14—165



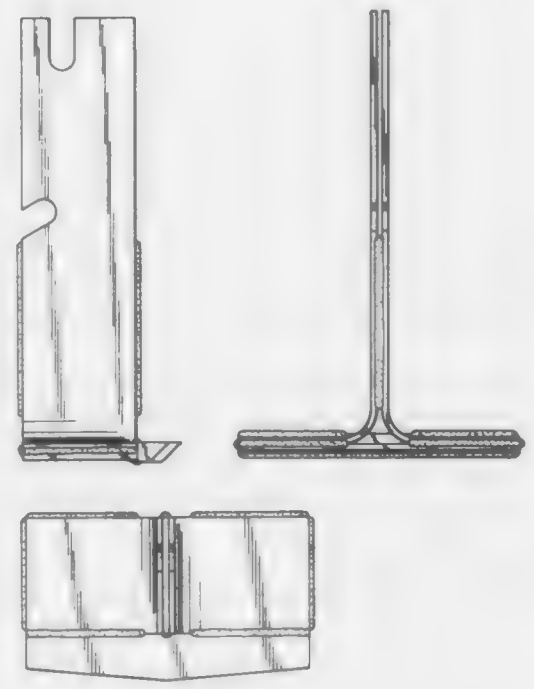
316,264
TELEPHONE SPECIAL EFFECTS UNIT OR SIMILAR ARTICLE
Richard C. Levy, P.O. Box 34828, Bethesda, Md. 20817
Filed Jul. 31, 1989, Ser. No. 387,642
Term of patent 14 years
U.S. Cl. D14—245



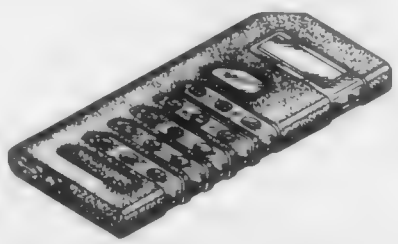
316,265
LAWN MOWER BLADE AND BLADE COVER
Ronald Mihatsch, Rte. 3 Box 330D, Temple, Tex. 76501
Filed Feb. 8, 1988, Ser. No. 153,801
Term of patent 14 years
U.S. Cl. D15—17



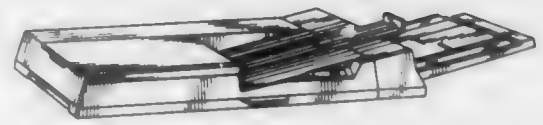
316,266
SOIL STABILIZER TINE
Delmar D. Edmisson, Guymon, Okla., assignor to Adams Hard-Facing Company, Inc., Guymon, Okla.
Filed Feb. 16, 1988, Ser. No. 156,096
Term of patent 14 years
U.S. Cl. D15—28



316,267
CALIBRATION CALCULATOR
Frederick A. Miller, Elburn, and Richard A. Valiga, Bartlett, both of Ill., assignors to Spraying Systems Co., Wheaton, Ill.
Filed Jun. 7, 1988, Ser. No. 203,273
Term of patent 14 years
U.S. Cl. D18—7



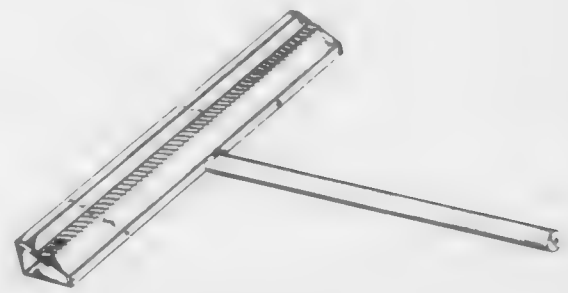
316,268
AUTOMATIC DOCUMENT FEEDER
Kyushichi Miyajima, deceased, late of Osaka, Japan by Kazu Miyajima, legal representative , and Kiyoshi Hayashi, Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan
Filed Jun. 22, 1987, Ser. No. 67,903
Claims priority, application Japan, Dec. 26, 1986, 61-51884
Term of patent 14 years
U.S. Cl. D18—42



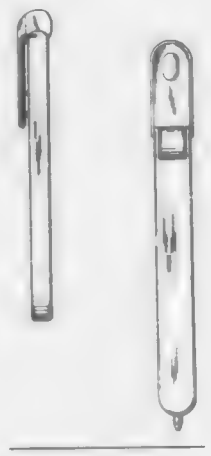
316,269
COMPUTERIZED CHECKBOOK REGISTER
Charles H. Woods, Jr., 2928 W. 135th Pl., Gardena, Calif. 90249
Filed Nov. 17, 1988, Ser. No. 272,297
Term of patent 14 years
U.S. Cl. D19—26



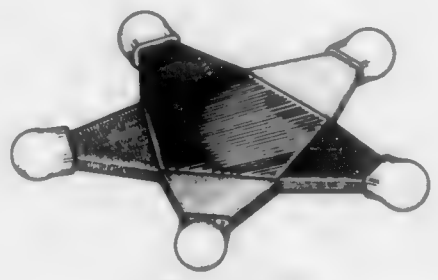
316,270
HAND-HELD FABRIC STRETCHER
William H. Mason, III, St. Paul, Minn., assignor to Uncommon Conglomerates, Inc., Minn.
Filed Feb. 29, 1988, Ser. No. 161,[illegible]
Term of patent 14 years
U.S. Cl. D19—35



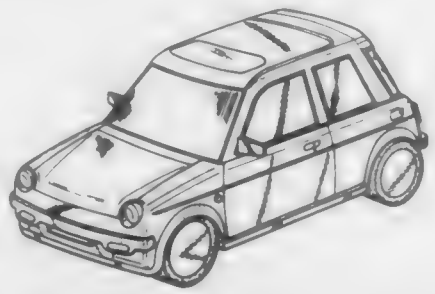
316,271
WRITING INSTRUMENT
Pietro Larizza, Limbiate, Italy, assignor to New Deal S.A.S. di Iliana Ciotti E C., Milan, Italy
Filed Dec. 23, 1987, Ser. No. 137,016
Claims priority, application Italy, Jun. 24, 1987, 21870/87[U]
Term of patent 14 years
U.S. Cl. D19—41



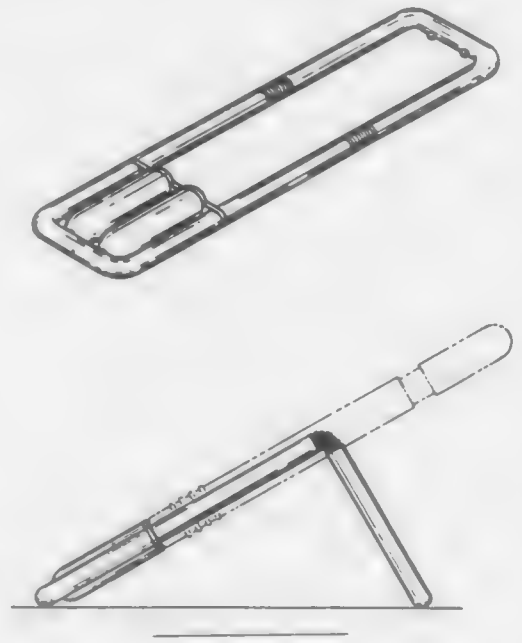
316,272
CRAYON
Genius Lee, No. 25, Lane 380, Sec. 2, Chung-Shan Road, Chung-Ho City, Taipei Hsien, Taiwan
Filed Apr. 14, 1988, Ser. No. 183,531
Term of patent 14 years
U.S. Cl. D19—42



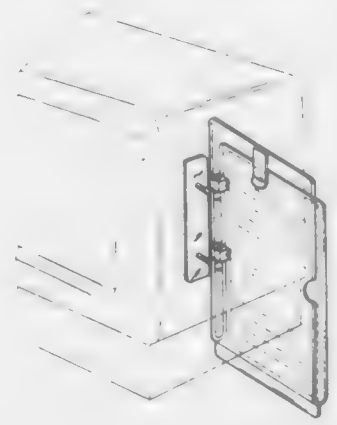
316,273
COMBINED DESK SET AND HOLDER THEREFOR
Shintaro Tsuji, Tokyo, Japan, assignor to Sanrio Company, Ltd., Tokyo, Japan
Filed Apr. 16, 1987, Ser. No. 39,597
Claims priority, application Japan, Oct. 18, 1986, 61-41132
Term of patent 14 years
U.S. Cl. D19—75



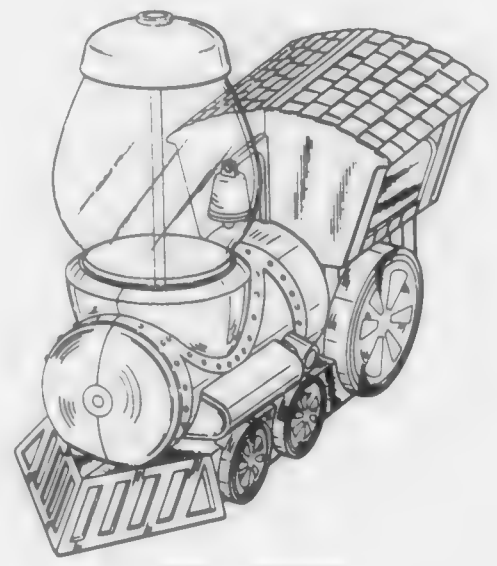
316,274
WRITING INSTRUMENT HOLDER
Kaoru Suzuki, Tokyo, Japan, assignor to Plus Corporation, Tokyo, Japan
Filed Apr. 25, 1988, Ser. No. 185,829
Claims priority, application Japan, Nov. 26, 1987, 62-48359
Term of patent 14 years
U.S. Cl. D19—85



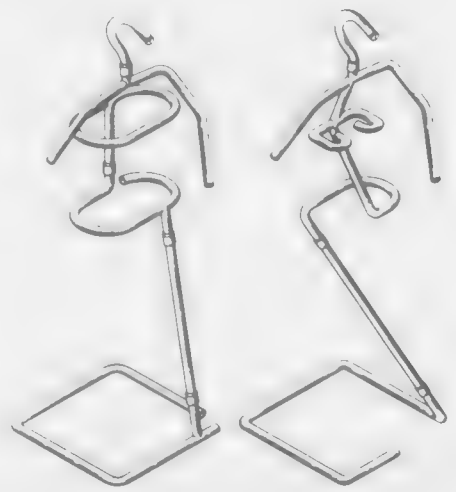
316,275
DOCUMENT HOLDER FOR ATTACHMENT TO A COMPUTER MONITOR
Dale G. Davis, Warren, Mich., and Shane E. Davis, 8228 Paige, Warren, Mich. 48089, assignors to Shane E. Davis, Warren, Mich.
Filed Mar. 18, 1988, Ser. No. 169,775
Term of patent 14 years
U.S. Cl. D19—91



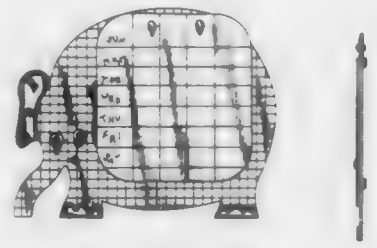
316,276
GUM BALL MACHINE
Bruce A. Weiner, Toronto, Canada, assignor to 493207 Ontario Ltd., Ontario, Canada
Filed Feb. 1, 1989, Ser. No. 305,357
Claims priority, application Canada, Aug. 3, 1988, 0308885
Term of patent 14 years
U.S. Cl. D20—3



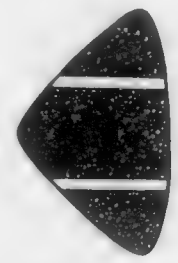
316,277
MANNEQUIN FOR DISPLAYING CLOTHES
Gary B. Pollard, 2826 N. Dayna, Santa Ana, Calif. 92701
Filed Jan. 10, 1989, Ser. No. 295,567
Term of patent 14 years
U.S. Cl. D20—31



316,278
WALL MOUNTED DISPLAY BOARD FOR CHILDREN'S TOILET TRAINING
Judith A. Cohen, Pittsburgh, Pa., assignor to Michael Cohen, Monroeville, Pa.
Division of Ser. No. 49,415, May 14, 1987, Pat. No. Des. 308,989. This application Feb. 27, 1990, Ser. No. 485,741
Term of patent 14 years
U.S. Cl. D20—39



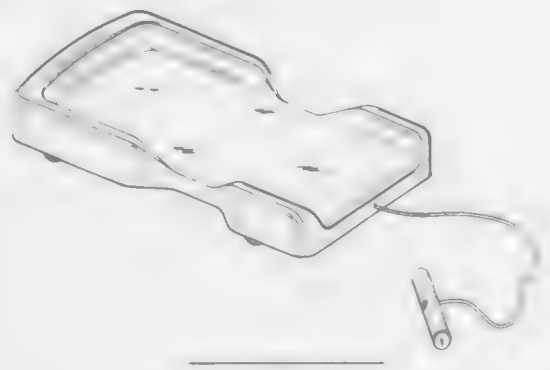
316,279
PROJECTILE GAME PIECE
Jerry A. Reynolds, 1074 N. Ohio St., Arlington, Va. 22205
Filed Jun. 27, 1988, Ser. No. 211,669
Term of patent 14 years
U.S. Cl. D21—2



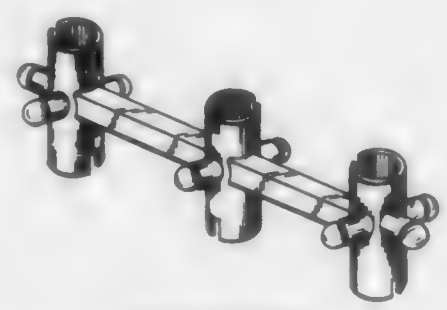
316,280
POGO STICK
James D. White, Covina, Calif., assignor to Sport Fun, Inc., Los Angeles, Calif.
Filed Oct. 28, 1988, Ser. No. 264,167
Term of patent 14 years
U.S. Cl. D21—67



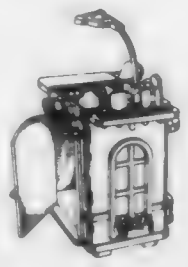
316,281
THERAPEUTIC FOOT EXERCISER
Kurt E. P. Mirisch, Sr., 11279 Caves Rd., Box 278, Chesterland, Ohio 44026
Filed Aug. 28, 1989, Ser. No. 399,284
Term of patent 14 years
U.S. Cl. D21—71



316,282
CONSTRUCTION TOY
Emanuel A. Winston, 1448 Old Skokie Rd., Highland Park, Ill. 60035
Filed Jul. 17, 1989, Ser. No. 380,277
Term of patent 14 years
U.S. Cl. D21—108



316,283
COMBINED TOY BABY CARE CART AND TOOLS THEREFOR
John V. Zaruba, Chicago, Ill.; Peter A. Broadbent, Stockport, Great Britain, and Howard J. Morrison, Riverwoods, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Jan. 29, 1988, Ser. No. 149,890
Term of patent 14 years
U.S. Cl. D21—121



316,284
WHEEL FOR A TOY CAR
Jens N. Knudsen, Billund, Denmark, assignor to Interlego A.G., Switzerland
Filed Nov. 29, 1988, Ser. No. 278,145
Term of patent 14 years
U.S. Cl. D21—141



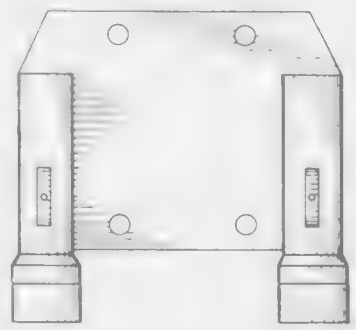
316,285
GRANDPARENT DOLL HEAD
Pauline Adkins, Box 146; Joe M. Brashear, R.R. 1, Box 72, both of Viper, Ky. 41774; John K. Gorley, P.O. Box 1; Ester R. Frazier, P.O. Box 236, both of Jeff, Ky. 41751, and Sondra L. Combs, HC 75, Box 145, Hindman, Ky. 41822
Filed Jan. 25, 1988, Ser. No. 148,226
Term of patent 14 years
U.S. Cl. D21—190



316,286
GOLF TEE
Larry K. Johnson, Rte. 1, Box 1300, Palestine, Tex. 75801
Filed Nov. 15, 1988, Ser. No. 271,764
Term of patent 14 years
U.S. Cl. D21—208



316,287
SKATEBOARD LIGHT
Zoltan D. Incze, 6075 Porter Rd., North Olmsted, Ohio 44070, and Kenneth G. Orwick, 14503 Bayes Ave., Lakewood, Ohio 44107
Filed Oct. 27, 1988, Ser. No. 263,330
Term of patent 14 years
U.S. Cl. D21—224

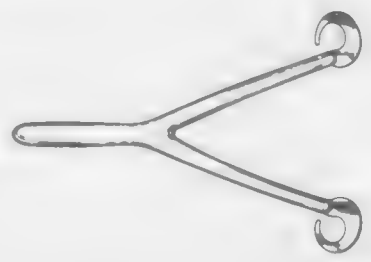




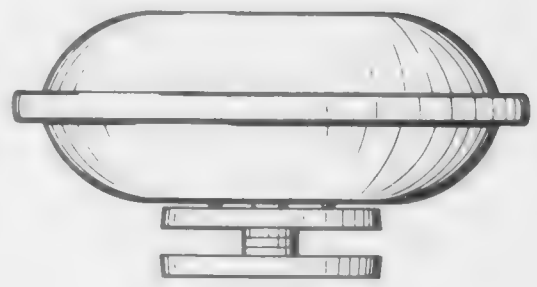
316,288
CANOPY COVER
James P. Lynch, 13 S. Field, Lakewood, Colo. 80226
Filed Oct. 11, 1988, Ser. No. 255,536
Term of patent 14 years
U.S. Cl. D21—253



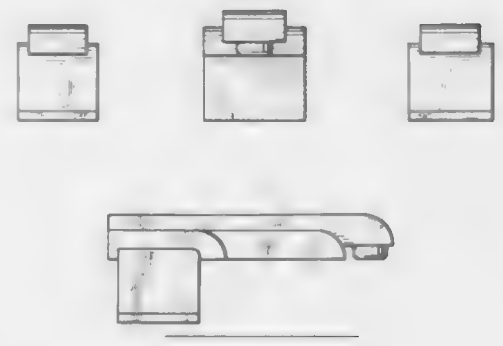
316,289
FISHING LURE
Jimmy E. Smith, R.R. 32, Box 614, Terre Haute, Ind. 47803
Filed Feb. 16, 1988, Ser. No. 156,225
Term of patent 14 years
U.S. Cl. D22—127



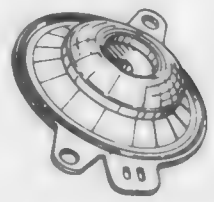
316,290
FLOATING WATER PURIFIER
Lawrence M. Judd, Jr., deceased, late of Honolulu, Hi.; by Martin E. Hsia, administrator. P.O. Box 939, Honolulu, Hi. 96808
Filed May 23, 1990, Ser. No. 528,692
Term of patent 14 years
U.S. Cl. D23—209



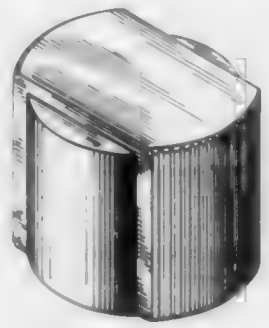
316,291
FAUCET SET
Regina Razumov, San Diego, Calif., assignor to Harden Industries, Inc., Los Angeles, Calif.
Filed Jan. 22, 1988, Ser. No. 145,805
Term of patent 14 years
U.S. Cl. D23—242



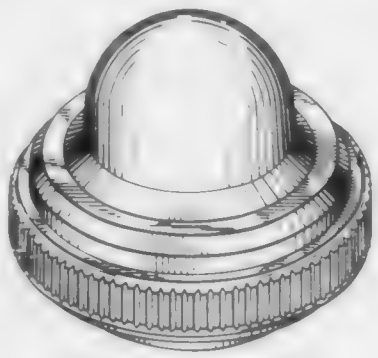
316,292
REPLACEMENT DIAPHRAGM FOR AN IRRIGATION SYSTEM VALVE
John M. Baker, 2918 Cape Dr., Corona, Calif. 91720
Filed Nov. 21, 1988, Ser. No. 273,498
Term of patent 14 years
U.S. Cl. D23—249



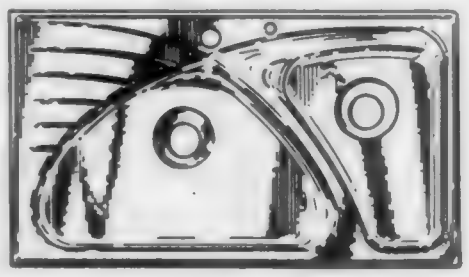
316,293
FAUCET HANDLE OR THE LIKE
Christian Ragonot, Paris, France, assignor to Jacob Delafon, Paris, France
Filed Nov. 30, 1988, Ser. No. 278,312
Claims priority, application France, Sep. 5, 1988, 885475
Term of patent 14 years
U.S. Cl. D23—250



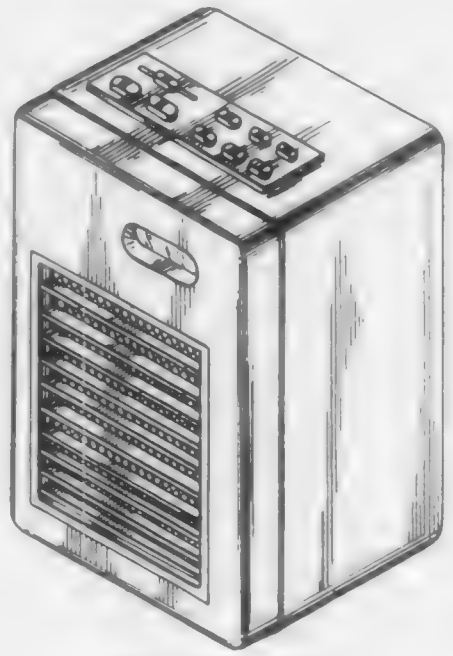
316,294
FAUCET HANDLE OR THE LIKE
Christian Ragonot, Paris, France, assignor to Jacob Delafon, Paris, France
Filed Nov. 30, 1988, Ser. No. 278,314
Claims priority, application France, Sep. 5, 1988, 885472
Term of patent 14 years
U.S. Cl. D23—250



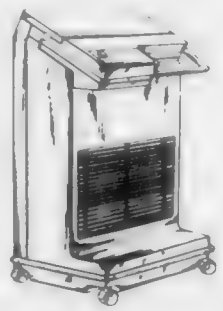
316,295
SINK
Luigi Colani, Fuechtor, Fed. Rep. of Germany, assignor to Niro-Plan AG, Zug, Switzerland
Filed Jun. 5, 1987, Ser. No. 59,673
Term of patent 14 years
U.S. Cl. D23—287



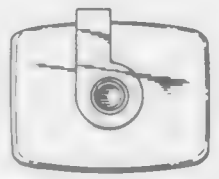
316,296
ELECTRIC HEATER
Wen T. Lee, Tainan, Taiwan, assignor to Chao-Yang Electric Mfg. Co., Ltd., Tainan, Taiwan
Filed Apr. 14, 1989, Ser. No. 337,542
Term of patent 14 years
U.S. Cl. D23—335

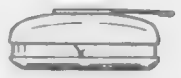


316,297
LASER THERAPY UNIT
Alexander Neumeister, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Fed. Rep. of Germany
Division of Ser. No. 46,416, May 4, 1987. This application Feb. 2, 1990, Ser. No. 479,577
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1986, MR 16978
Term of patent 14 years
U.S. Cl. D24—8

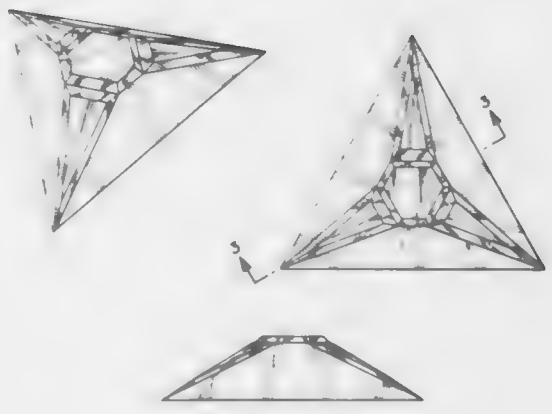


316,298
IMMUNOASSAY TEST KIT OR THE LIKE
James D. Morrow, Oak Park, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.
Filed Nov. 24, 1986, Ser. No. 934,083
The portion of the term of this patent subsequent to Feb. 7, 2003, has been disclaimed.
Term of patent 14 years
U.S. Cl. D24—17

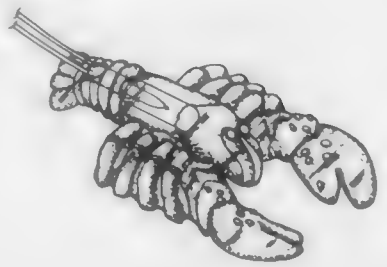




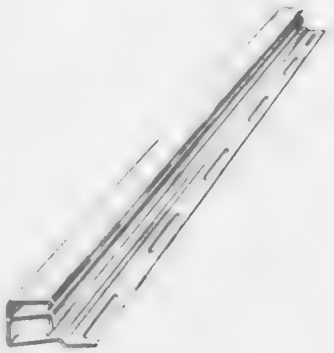
316,299
DESIGN FOR A TRIM EXTRUSION FOR SIDING UNDERSILL AND SOFFIT
George T. Hurlburt, McPherson, Kans., assignor to CertainTeed Corporation, Valley Forge, Pa.
Filed Jul. 17, 1989, Ser. No. 381,001
Term of patent 14 years
U.S. Cl. D25—119



316,300
CHRISTMAS TREE LIGHT
Mary J. Hedges, 9947 E. Coronado, Baton Rouge, La. 70815
Filed Nov. 4, 1988, Ser. No. 267,005
Term of patent 14 years
U.S. Cl. D26—4



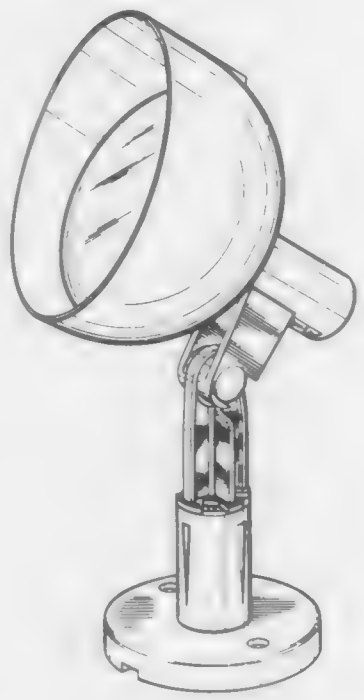
316,301
ELECTROLUMINESCENT LAMP OR SIMILAR ARTICLE
Anthony J. Michael, 812 Virginia Park, Centerline, Mich. 48015
Filed Nov. 25, 1988, Ser. No. 276,339
Term of patent 14 years
U.S. Cl. D26—24



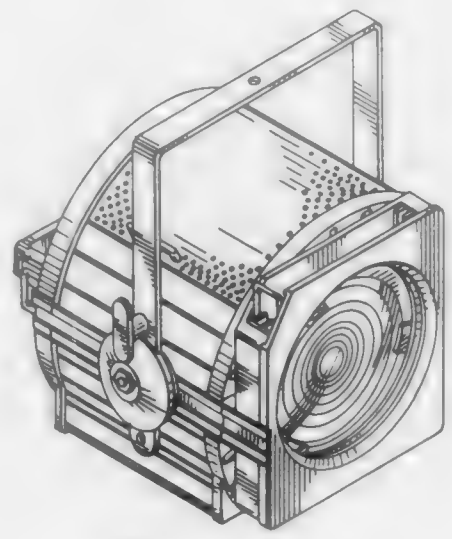
316,302
FISHING POLE LIGHT
George E. Douthitt, 2009 W. Main St., Louisville, Ky. 40203
Filed Aug. 13, 1987, Ser. No. 84,736
Term of patent 14 years
U.S. Cl. D26—46



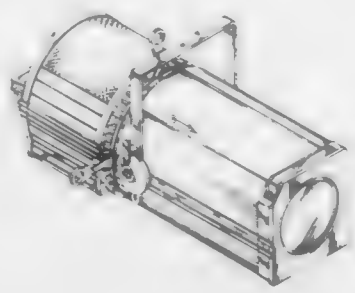
316,303
FLOODLAMP
Clifford J. Layne, Toronto, Canada, assignor to Noma Inc., Scarborough, Canada
Filed Aug. 23, 1988, Ser. No. 235,242
Term of patent 14 years
U.S. Cl. D26—63



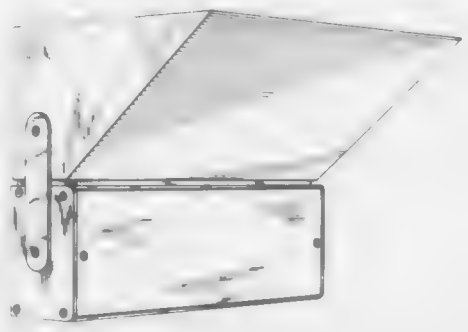
316,305
SPOTLIGHT
Tim Court, London, Great Britain, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed May 11, 1988, Ser. No. 192,823
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1987, BD.10NR.17535
Term of patent 14 years
U.S. Cl. D26—63



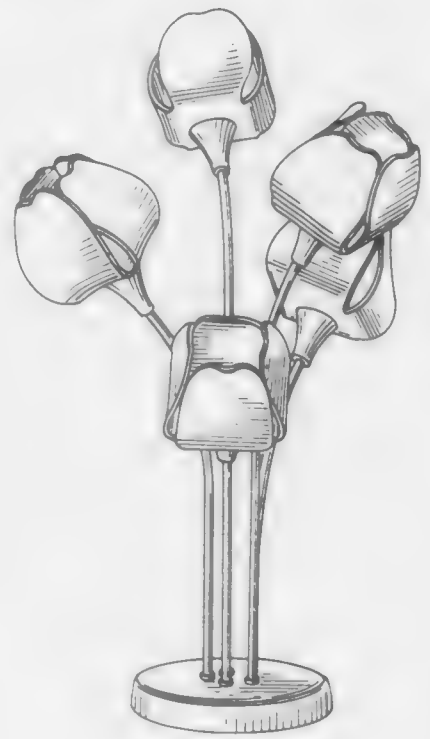
316,304
SPOTLIGHT
Tim Court, London, Great Britain, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed May 11, 1988, Ser. No. 192,821
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1987, BD.10NR.17535
Term of patent 14 years
U.S. Cl. D26—63



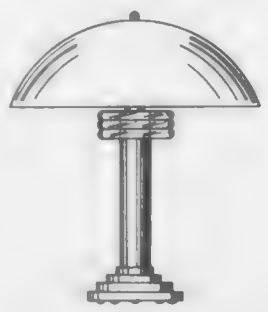
316,306
WALL MOUNTED INDIRECT LIGHTING FIXTURE
Sylvan R. Shemitz, Woodbridge, Conn., assignor to Sylvan R. Shemitz Associates, Inc., West Haven, Conn.
Filed Apr. 9, 1987, Ser. No. 36,844
The portion of the term of this patent subsequent to May 29, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D26—85



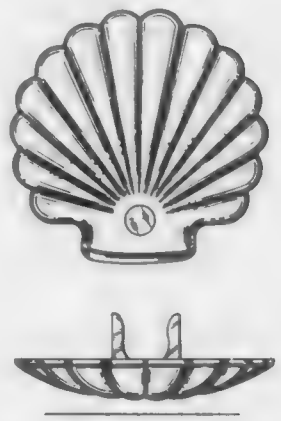
316,307
DECORATIVE TABLE LAMP
Ronald Harris, 2827 Woodmene, Northbrook, Ill. 60062, and William Albarran, 10945 S. Kenton, Oaklawn, Ill. 60453
Filed Dec. 31, 1987, Ser. No. 139,934
Term of patent 14 years
U.S. Cl. D26—101



316,308
TABLE LAMP
Jean Clyde-Mason, Hollywood, Calif., assignor to Casablanca Fan Company, Inc., City of Industry, Calif.
Filed Feb. 17, 1987, Ser. No. 15,721
Term of patent 14 years
U.S. Cl. D26—110



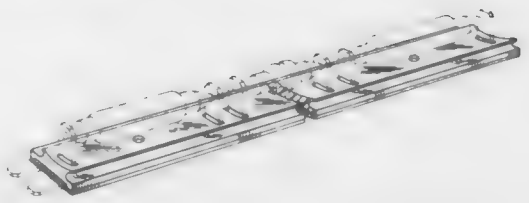
316,309
NIGHT LIGHT COVER
Janet Plymale, New York, N.Y., assignor to Hygiene Industries, New York, N.Y.
Filed Oct. 21, 1988, Ser. No. 261,285
Term of patent 14 years
U.S. Cl. D26—118



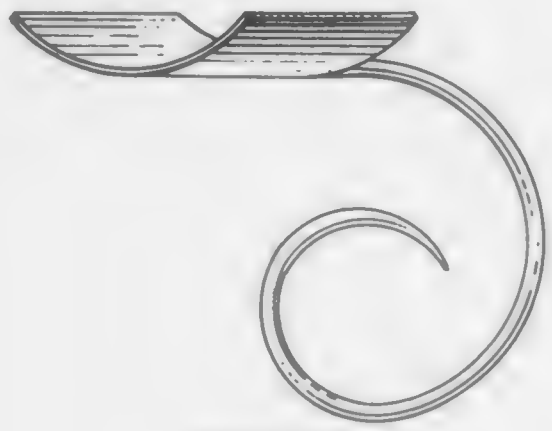
316,310
LAMP REFLECTOR
John Stromberg, Wilton, Conn., assignor to Ledu Corporation, Trumbull, Conn.
Filed Feb. 24, 1989, Ser. No. 316,105
Term of patent 14 years
U.S. Cl. D26—131



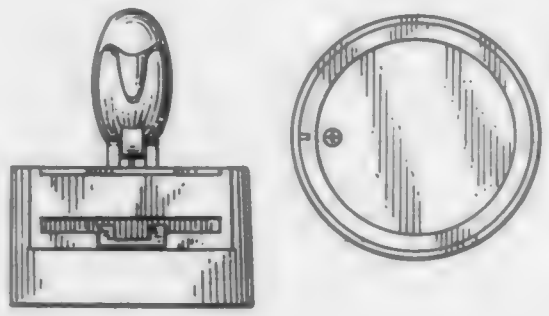
316,311
SUPPORT TRACK FOR A LIGHT STRIP
Herbert D. Freed, Miami Beach, Fla., assignor to Emmanel Corporation, San Antonio, Tex.
Filed Apr. 18, 1989, Ser. No. 340,575
Term of patent 14 years
U.S. Cl. D26—140



316,312
MASCARA SHIELD
Orlando Córdova, #69 Beadel St., Apt. 4, Brooklyn, N.Y. 11222
Filed Aug. 11, 1989, Ser. No. 392,387
Term of patent 14 years
U.S. Cl. D28—7



316,313
TOOTHPICK DISPENSER
Hsu C. Pan, 2 Lane 56 TA-Tung St., Tan-TZE 42717, Taiwan
Filed Jul. 5, 1989, Ser. No. 375,619
Term of patent 14 years
U.S. Cl. D28—64



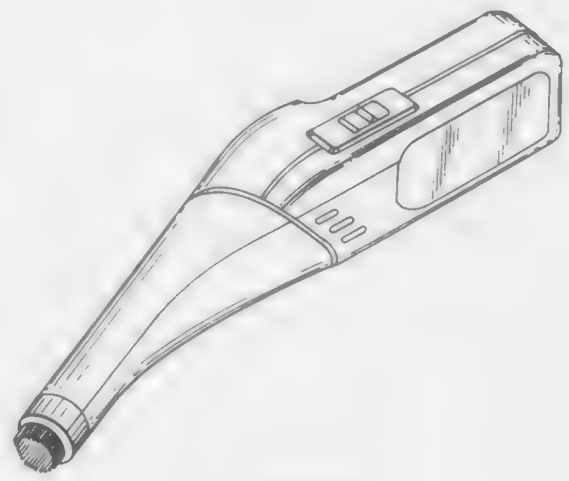
316,314
PET COLLAR OR SIMILAR ARTICLE
Marylee A. Skwirz, 3024 Dyer St., Dallas, Tex. 75205
Division of Ser. No. 161,606, Feb. 29, 1988, Pat. No. Des. 312,712. This application Aug. 22, 1990, Ser. No. 571,421
Term of patent 14 years
U.S. Cl. D30—152



316,315
ANIMAL WASTE SCOOP
Elliott Elrod, 1461 Brandywyn, Buffalo Grove, Ill. 60089
Continuation-in-part of Ser. No. 872,413, Jun. 9, 1986, Pat. No. D. 304,248. This application Mar. 24, 1989, Ser. No. 328,556
Term of patent 14 years
U.S. Cl. D30—162



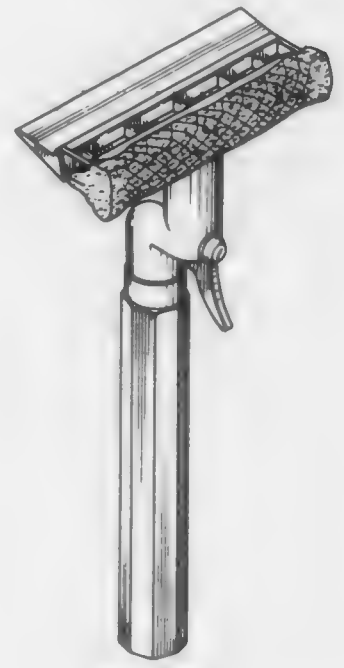
316,316
BATTERY OPERATED VACUUM CLEANER
John S. Yuen, Kowloon, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Apr. 26, 1990, Ser. No. 514,567
Claims priority, application United Kingdom, Oct. 27, 1989, 2001992
Term of patent 14 years
U.S. Cl. D32—18



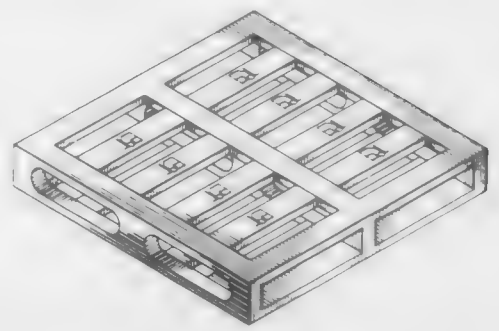
316,317
COMBINED LIQUID DISPENSING ATTACHMENT AND WAND FOR A CARPET CLEANER
Robert C. Berfield, Jersey Shore, Pa., assignor to Shop-Vac Corporation, Williamsport, N.J.
Continuation-in-part of Ser. No. 282,289, Dec. 9, 1988, abandoned. This application Dec. 14, 1988, Ser. No. 284,449
Term of patent 14 years
U.S. Cl. D32—32



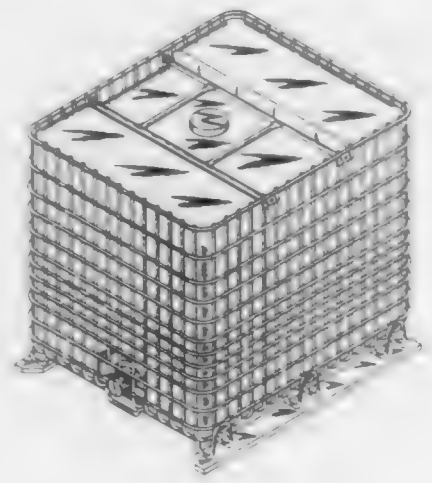
316,318
COMBINED WINDOW WASHER AND FLUID DISPENSING CONTAINER THEREFOR
Chee Keat Cheang, Kowloon, Hong Kong, assignor to ACE Accessories Limited, Kwun Tong, Hong Kong
Filed Mar. 10, 1988, Ser. No. 166,163
Claims priority, application United Kingdom, Sep. 11, 1987, 1044762
Term of patent 14 years
U.S. Cl. D32—42



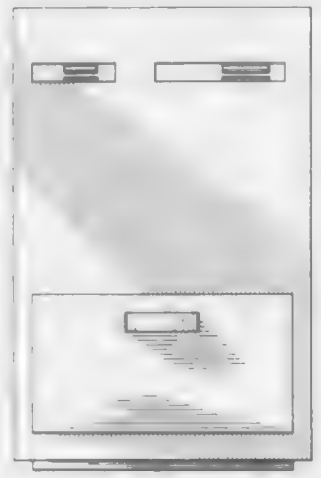
316,319
PALLET
Melvin W. Bathon, R.R. #2, Box 194, Pinckneyville, Ill. 62274
Filed Dec. 5, 1988, Ser. No. 280,286
Term of patent 14 years
U.S. Cl. D34—38



316,320
COMBINED CONTAINER AND PALLET
Georges Roser, Wingen s/Moder, France, assignor to Sotralents S.A., Drulingen, France
Filed Mar. 15, 1989, Ser. No. 324,371
Term of patent 14 years
U.S. Cl. D34—42



316,321
MAIL COLLECTION PROCESSOR
Michael J. Lutz, 6750 Willison Rd., Jackson, Mich. 49201, and Gloria Edmonson, 2345 Ala Wai Blvd. #2708, Honolulu, Hi. 96815.
Filed Sep. 14, 1987, Ser. No. 96,329
Term of patent 14 years
U.S. Cl. D99—33



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TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF APRIL, 1991

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A Nattermann & Cie. GmbH *See*—
Gunther, Bernd-Rainer, Losch, Rainer, and Steiner, Klaus, 5,008,394, Cl. 548-121.000

A R M I N E S *See*—
Thuez, Jean-Luc; and Dehausse, Robert, 5,007,251, Cl 62-476.000

A Rohe GmbH *See*—
Staudinger, Alfons, and Bux, Hermann, 5,008,826, Cl. 364-463.000

A Schwarz & Co *See*—
Schwarz, Anton, 5,007,583, Cl. 237-66.000

A T & T Paradyne *See*—
Betts, William L., and DesRosiers, James J., 5,008,903, Cl 375-60.000

Aalvik Thune, Halldis Supporting device for use in first aid to persons injured in accidents or the like, 5,007,413, Cl. 128-78.000

Aardvark Clear Mine Limited of Shevock Farm: *See*—
MacWatt, David M., 5,007,325, Cl 89-1.130.

ABB Atom AB *See*—
Fredell, Jan, 5,008,069, Cl 376-299.000

ABB CEAG Licht- und Stromversorgungstechnik GmbH *See*—
Liedtke, Heinz, Ploeger, Cornelius, and Gorner, Wilmut, 5,008,792, Cl. 362-374.000

ABB Power T & D Company, Inc *See*—
Petronio, Carlo F., 5,008,525, Cl 250-214.00C

Abbott Laboratories: *See*—
Brown, William E., III; Safford, Sarah E., and Clemens, John M., 5,008,080, Cl. 422-56.000
Caudill, Vance E., 5,007,232, Cl 53-426.000

Abe, Tadashi, Aoki, Masahiro, Takahashi, Tsunenori, and Awata, Takeshi, to Mitsubishi Yuka Badische Co., Ltd. Process for producing aqueous copolymer dispersion from a vinyl monomer mixture 5,008,329, Cl 524-798.000

Abe, Takafumi, Uchiyama, Seiji; Ojima, Takahiro, and Kida, Koichi, to Mitsubishi Gas Chemical Company, Inc. Process for production of 2,6-dimethylnaphthalene 5,008,479, Cl. 585-320.000

Abe, Takayuki, to Kabushiki Kaisha Toshiba. Electron beam lithography method and apparatus 5,008,553, Cl 250-492.200

Abekas Video Systems Ltd *See*—
Brain, Adrian R., 5,008,755, Cl. 358-183.000

Abendroth, Paul, Brandes, Harry, and Raab, Rudolf, to MAN Roland Druckmaschinen AG. Air cushion drum or sheet-fed printing presses 5,007,342, Cl 101-420.000

Abou-Issa, Hussein M *See*—
Minton, John P., Webb, Thomas E., and Abou-Issa, Hussein M., 5,008,291, Cl 514-578.000.

Abraham, Joseph; Hamonet, Michael, Gracie, Phillip, and Hood, Warwick J. Mast, 5,007,360, Cl 114-90.000

Abramczyk, William M., Hull, Edward I., and Feustel, James R., to Ford Motor Company. Air bag relief valve 5,007,662, Cl 280-739.000

Abrams, Michael J.: *See*—
Longman, Robert J., Helfet, Peter R., and Abrams, Michael J., 5,008,687, Cl 346-135.100.

Abu Garcia Produktion AB: *See*—
Carlsson, Karl L., 5,007,602, Cl 242-246.000

Accatino, Luciano; and Bertin, Giorgio, to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A. Dielectric-loaded cavity resonator 5,008,640, Cl 333-219.100.

Accumulatorenwerke Hoppecke Carl Zoeliner & Sohn GmbH & Co. KG: *See*—
Schmode, Hans-Peter, 5,008,165, Cl. 429-94.000.

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Nelles, Josef, 5,007,467, Cl. 141-1.100

Ach, William D., Anderson, Edmund J.; Behrends, Lynn B.; Desrude, Wayne P., and Klos, Gene J., to Honeywell Inc. Pallet having a sidewall comprising an arcuate surface 5,007,527, Cl. 198-803.010

Ackeret, Peter, to Licinvest AG. Sleeve for a photoprint cassette 5,007,537, Cl. 206-455.000

Actel Corporation *See*—
Eltoukhy, Abelshafy A., and Gluss, David H., 5,008,855, Cl 365-96.000

Acushnet Company: *See*—
Brown, Robert A., 5,007,594, Cl 242-3.000

Adair, Paul C. *See*—
Liang, Rong-Chang, Kintz, Karl A., O'Connor, Joseph G., and Adair, Paul C., 5,008,237, Cl 503-212.000

Adams, Bruce C.: *See*—
Orman, Charles R., Johnson, Paul E., and Adams, Bruce C., 5,007,335, Cl. 99-487.000.

Adams, John L., to British Telecommunications public company limited Communications systems 5,008,863, Cl 340-825.500

Adams, Mark B. Shock absorbing boot and cushioning material 5,007,111, Cl. 2-22.000

Adams, Sally E *See*—
Kingsman, Alan J.; Kingsman, Susan M., Adams, Sally E., Mellor, Elizabeth J. C., and Malim, Michael H., 5,008,373, Cl 530-350.000

Adcock, James L., to Hewlett-Packard Company Method and apparatus for generating a chirp signal, 5,008,845, Cl 364-576.000

Adcock, Marty E. *See*—
Daly, John K.; Kreinberg, Earl R., Puerner, Dean A., and Adcock, Marty E., 5,007,858, Cl. 439-498.000

Adelmann, John T. *See*—
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Adkins, Kelvin P., to Imperial Chemical Industries PLC Electroconductive coating composition, 5,008,134, Cl 427-386.000

Advance Combustion Engineering Institute Co., Ltd *See*—
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Doyle, A. Thomas; Tremulis, William S., and McQueen, Colleen L., 5,007,434, Cl. 128-772.000

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Advanced Surgical Intervention, Inc.: *See*—
Rosenbluth, Robert F., Lenker, Jay A., and Greene, George R., 5,007,898, Cl. 604-54.000.

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Pender, Don P., 5,007,445, Cl 134-122.00R.

Aerospatiale Societe Nationale Industrielle *See*—
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Nonaka, Katusnobu, and Sekine, Kazuyoshi, 5,008,620, Cl 324-213.000
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Van Thillo, Etienne A., and Van Gossum, Lucien J., 5,008,178, Cl 430-527.000.

Agha, Bushra J. *See*—
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Aghajanian, Michael K *See*—
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Ahmadi, Hamid, Beha, Johannes G.; Denzel, Wolfgang E., Engbersen, Antonius P., Luijten, Ronald P.; Murphy, Charles A., and Port, Erich, to International Business Machines Corporation High-speed modular switching apparatus for circuit and packet switched traffic 5,008,878, Cl 370-60.000

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Brandström, Arne E., Lindberg, Per I., and Sunden, Gunnel E., 5,008,278, Cl. 514-338.000

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Diamantoglou, Michael, 5,008,385, Cl. 536-56.000
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Alexander, Joseph H.; Radcliffe, Stanley L.; Robertson, Martin N.; Bator, Eugene A., and Anderson, John E., to General Tire, Inc. Automatic sidewall servicer. 5,007,315, Cl. 83-72.000

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Algra, Gerben P.: *See*—
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Schlesinger, Robert A.; Hill, Kimuel L.; Ali, Hamid S.; and Watson, Mark F., 5,008,655, Cl. 340-691.000

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ALIMAK AB: *See*—
Granskog, Roland, 5,007,683, Cl. 299-10.000

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Allied Colloids Limited: *See*—
Moody, Gillian M.; and Rushforth, Christine A., 5,008,089, Cl. 423-121.000

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Joy, George C., III; Lester, George R., and Marinangeli, Richard E., 5,008,090, Cl. 423-212.000
Kyriakos, Constantinos S., and Baran, Henri, 5,008,844, Cl. 364-571.050.
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Manchak, Frank, Jr.; Manchak, Frank E., II; Manchak, Michael E., and Manchak, Peter J., 5,008,045, Cl. 252-633.000

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Koseki, Ryoji, 5,008,510, Cl. 219-121.700

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Cochran, Kirby, 5,007,838, Cl. 434-178.000

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Kameswaran, Venkataraman, 5,008,403, Cl. 548-561.000

American Maize-Products Company: *See*—
Ammeraal, Robert N., 5,007,967, Cl. 127-46.100
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Bathe, Oscar M., 5,008,366, Cl. 528-272.000
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Crowe, Christopher, Cordell, Ralph L., and Kahng, Seun K., 5,007,292, Cl. 73-654.000
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Riddick, Wayne T., and Smith, Vincent F., Jr., 5,008,338, Cl. 525-177.000

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Bakermans, Johannes C. W., 5,007,282, Cl. 72-481.000
Daly, John K.; Kreinberg, Earl R.; Puerner, Dean A., and Adcock, Marty E., 5,007,858, Cl. 439-498.000
Deak, Frederick R., and Wrisley, David B., Jr., 5,007,842, Cl. 439-66.000
Defibaugh, George R.; Myers, Earl C., Jr.; and Smith, Steven G., 5,007,862, Cl. 439-607.000.
Gouttiere, Alain, 5,007,888, Cl. 439-189.000
Grabbe, Dimitry G., 5,007,845, Cl. 439-73.000
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Krueger, Steven D., and Amundsen, Michael J., 5,008,807, Cl. 364-200.000.

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Ach, William D.; Anderson, Edmund J.; Behrends, Lynn B.; Desrude, Wayne P., and Klos, Gene J., 5,007,527, Cl. 198-803.010.

Anderson, Edward M. Dough dispenser. 5,007,819, Cl. 425-184.000

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Anderson, Larry; Batts, Gregory N.; Purbrick, Malcolm D.; Scriven, Clare E., and Jones, Stephen A., to Eastman Kodak Company. Polymer compositions. 5,008,358, Cl. 526-292.300

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Clough, John M.; Godfrey, Christopher R. A.; Heaney, Stephen P., and Anderton, Kenneth, 5,008,276, Cl. 514-335.000

Ando Electric Co., Ltd.: *See*—
Hosoda, Takuya, Morishita, Mitsuhiro, and Tamura, Takashi, 5,008,562, Cl. 307-265.000

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Kobayashi, Hitoshi, Takano, Akira, Narusawa, Naoharu; Tsukada, Yukihiko; Sakamoto, Hiroshi, Hirano, Masaki, and Ando, Masao, 5,008,710, Cl. 355-202.000

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Kidd, Roy E., Andrejasich, Raymond J.; Michel, Hilary; and Slocum, Laurence S., 5,008,653, Cl. 340-620.000

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Purohit, Ahnal A., 5,007,533, Cl. 206-208.000

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Kanai, Masahiro, Aoike, Tatsuyuki, Matsuda, Koichi, and Kawakami, Soichiro, 5,007,971, Cl. 136-258.000.

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Aoki, Masahiro: *See*—
Abe, Tadashi; Aoki, Masahiro, Takahashi, Tsunenori, and Awata, Takeshi, 5,008,329, Cl. 524-798.000

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Arahara, Kozo: *See*—
Koizumi, Norihiko; Tanioka, Hiroshi; Toyama, Noboru; Arahara, Kozo; and Yuasa, Toshiya, 5,008,690, Cl. 346-140.00R

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Arao, Masachika. Four valve per cylinder engine head. 5,007,387, Cl. 123-90.022

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Araujo, Roger J., to Corning Incorporated. Essentially colorless silver-containing glasses through ion exchange. 5,007,948, Cl. 65-30.130

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Jackson, Douglas M.; and Arbie, John A., Sr., 5,007,181, Cl. 34-57.00R

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Brownell, George L.; Hays, Mary K., and Sivak, Andrew J., 5,008,421, Cl. 556-406.000

Armanini, Louis, to Mearl Corporation, The. Decorative objects with multi-color effects. 5,008,143, Cl. 428-207.000

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Steinel, Heinrich-Wolfgang; Armonier, Ulrich, and Schulze-Froehlich, D-F, 5,008,613, Cl. 324-133.000

Armstrong, Rosa: *See*—
Bentz, Hanne; Ellingsworth, Larry; and Armstrong, Rosa, 5,008,240, Cl. 514-2.000.

Armstrong World Industries, Inc.: *See*—
Reichwein, David P., 5,008,906, Cl. 378-54.000

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Arndts, Dietrich: *See*—
Schnorrenberg, Gerd; Roos, Otto, Losel, Walter, Wiedemann, Ingrid; Gaida, Wolfram; Hoefke, Wolfgang, Arndts, Dietrich, and Streller, Ilse, 5,008,273, Cl. 514-301.000

Arney, Rodney L.: *See*—
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Artzt, Peter; and Mueller, Heinz, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Process for the production of a yarn from fiber material. 5,007,136, Cl. 19-65.00A

Arzoian, John: *See*—
Lemon, Robert W., and Arzoian, John, 5,007,309, Cl. 74-869.000

Asada, Toshiyuki, to Toyota Jidosha Kabushiki Kaisha. Planetary gear transmission for motor vehicle. 5,007,887, Cl. 45-284.000

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Nakagishi, Toshio, 5,008,876, Cl. 369-244.000
Takahashi, Nagashige, and Ouchi, Teruo, 5,007,406, Cl. 128-4.000

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Asai, Yasuo: *See*—
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Asakura, Hiroyuki: *See*—
Iida, Masanori, Hagiwara, Kiyokazu, Asakura, Hiroyuki, Nishioka, Minoru; and Murase, Koichi, 5,007,709, Cl. 350-162.220.

Asami, Tadao: *See*—
Kume, Toyohiko; Goto, Toshio, Kamochi, Atsumi; Yanagi, Akihiko; Miyauchi, Hiroshi, and Asami, Tadao, 5,007,952, Cl. 71-73.000

Asano, Takanobu, Yamaga, Kenichi, and Ohkase, Wataru, to Tel Sagami Limited. Pitch changing device for changing pitches of plate-like objects and method of changing pitches. 5,007,788, Cl. 414-417.000

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Gustafsson, Par, Sobel, Jarl, and Ornholmer, Lars, 5,007,295, Cl. 73-862.690

Asher, David J. Touch controller. 5,008,497, Cl. 178-18.000.

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Ibe, Hiromitu; Akutagawa, Ichiro, and Matsuzaki, Kunimitsu, 5,008,309, Cl. 523-442.000

Asmussen, Jes, and Fritz, Ronald E., to Board of Trustees operating Michigan State University Radiofrequency wave treatment of a material using a selected sequence of modes, 5,008,506, Cl. 219-10.55M

Astier, Marc *See*—
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Bar-Joseph, Israel; Chang, Tao-Yuan, and Chemla, Daniel S., 5,008,717, Cl. 357-16.000
Burns, William F., 5,008,777, Cl. 361-412.000
Carver, Gary E., Koos, Gregory L., and Michalski, John D., 5,007,741, Cl. 356-448.000
Case, Christopher J.; Cheung, Kin P., Liu, Ruichen, Schutz, Ronald J., and Wagner, Richard S., 5,008,217, Cl. 437-195.000
Cimini, Leonard J., Jr., and Habbab, Isam M. I., 5,008,958, Cl. 455-619.000
Cooper, Robert C., 5,008,644, Cl. 336-192.000
Gawrys, George W.; Oberman, Richard A., and Willcock, William T., 5,008,930, Cl. 379-210.000
Harris, Dawn E., and Orr, William H., 5,007,520, Cl. 194-317.000
Karol, Mark J., 5,008,881, Cl. 370-85.150
Leedy, Harold G., 5,008,672, Cl. 341-138.000
Roberts, Thomas J., 5,008,935, Cl. 380-29.000

Atlas Copco Construction and Mining Holding AB *See*—
Forsyth, Allen P., 5,007,599, Cl. 242-86.510

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Fosbol, Peder; Ullum, Henrik, and Korremann, Birgitte, 5,008,375, Cl. 530-357.000

Atlas Powder Company. *See*—
Trapp, Richard E., Hansen, Gary L., Clay, Robert B., Dubetsky, Lawrence J.; and Olney, Robert S., 5,007,973, Cl. 149-109.600

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Hanke, Carl C., Obregon, Carlos D., and Atriss, Ahmad H., 5,008,635, Cl. 331-1.00A

Atsumi, Morihiro; and Tanaka, Kiyoaki, to Nippondenso Co., Ltd Spark plug having a built-in resistor for suppressing noise signals 5,008,584, Cl. 313-136.000

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Pesheck, Peter S., Atwell, William A., Krawiecki, Madonna M., and Anderson, George R., 5,008,507, Cl. 219-10.55E

Audaire, Luc, Peuzin, Jean C., and Schaub, Bernard, to Commissariat a l'Energie Atomique. Monolithic detection or infrared imaging structure and its production process. 5,008,541, Cl. 250-338.300

Aumueller, Alexander, Neumann, Peter and Trauth, Hubert, to BASF Aktiengesellschaft 2,6-polyalkylpiperidine-substituted bislactams and their use for the stabilization of organic material, in particular of plastics, and materials stabilized therewith 5,008,312, Cl. 524-92.000

Automated Fire Control, Incorporated; *See*—
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Brychta, Jaroslav, Lutisan, Eduard and Jirkovsky, Vladimir, 5,007,394, Cl. 123-279.000

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Avis, Graham M *See*—
Critchlow, David N.; Yehushua, Moshe, Avis, Graham M Heimbigner, Wade L.; Johnson, Karle J., and Wiley, George A., 5,008,900, Cl. 375-8.000

Avot, Jean-Pierre, to Sonabat-Chantal Container 5,007,550, Cl. 220-8.000

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Azuma, Daisuke, to Sharp Kabushiki Kaisha Data transmission apparatus 5,008,880, Cl. 370-85.600

B Braun Melsungen AG: *See*—
Witt, Hans-Hinrich, 5,007,902, Cl. 604-117.000

B F. Goodrich Company, The *See*—
Kinson, Philip L. and Faber, Edward M., 5,008,145, Cl. 428-288.000
Magistro, Angelo J., 5,008,225, Cl. 502-73.000
Orndorff, Roy L., Jr., and Bono, Mark J., 5,007,660, Cl. 280-715.000.

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Babb, Franklyn P. and Babb, Matthew T., 5,007,450, Cl. 137-315.000

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Ishida, Tetsuyoshi, Kawano, Shigeyoshi, Kohtaka, Ikuo, Yamada, Kojiro Kaku, Hiroyuki, and Narita, Tsuneo, 5,007,240, Cl. 60-673.000

Baber, James A., and Cibere, Joseph J Golf putting practice device 5,007,646, Cl. 273-183.00E

Babini, Ezio, to Fittings for Industry S r l Grating and dust-filter unit for closing the ventilating hole of electronic equipment, with protective device against electromagnetic and electrostatic interference 5,007,946, Cl. 55-501.000

Babitzka, Rudolf, to Robert Bosch GmbH Hydraulic control device for fuel injection systems of internal combustion engines 5,007,400, Cl. 123-506.000

Bacchetti, Mario *See*—
Corain, Luciano, Maitan, Gianni, Perlini, Renato, and Bacchetti Mario, 5,007,463, Cl. 139-448.000

Bach, Hanswilhelm: *See*—
Breitkopf, Norbert, Dambkes, Georg, and Bach, Hanswilhelm 5,008,473, Cl. 568-868.000

Bacus, James W., to Cell Analysis Systems, Inc. Methods and apparatus for the quantitation of nuclear proteins 5,008,185, Cl. 435-7.230

Badesha, Santokh S.: *See*—
Yu, Robert C. U., and Badesha, Santokh S., 5,008,169, Cl. 430-59.000

Badia, Antonio R., and Tarazaga, JoseF., to Tecnica e Innovationes Ganaderas, S. A. Fowl feeder 5,007,380, Cl. 119-53.000

Badylak, Stephen F., Geddes, Leslie A., and Wessale, Jerry L., to Purdue Research Foundation Muscle-powered cardiac assist device 5,007,927, Cl. 623-3.000

Baer, Thomas M *See*—
Kafka, James D. and Baer, Thomas M., 5,008,887, Cl. 372-6.000

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Bain, Richard L., and Larson, John R., to Resource Technology Associates. Apparatus for thermal treatment of a hydrocarbon stream 5,008,085, Cl. 422-109.000

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Baird, Thomas E *See*—
Lackner, John R., Grzywna, Stanley E., Weber, Ralph A., and Baird, Thomas E., 5,007,133, Cl. 15-351.000

Baird, William F *See*—
Gaylord, Thomas K., Glytsis, Elias N., Moharam, M Gamal, and Baird, William E., 5,007,708, Cl. 350-162.200

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Enright, Dorothy P., Dye, William M., Smith, F Martin, and Perricone, Alphonse C., 5,007,489, Cl. 175-65.000

Baker, John W Drill head assembly for cranial perforators 5,007,911 Cl. 606-80.000.

Baker, Timothy J., and Woods, John H., to Petrolite Corporation Overprint aqueous varnish 5,008,144, Cl. 428-211.000

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Bakhshi, Shiv K., to Owens-Corning Fiberglas Corporation Method and apparatus for impregnating a porous substrate with foam 5,008,131, Cl. 427-209.000

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Crumley, Gary B., 5,008,897, Cl. 373-11.000.
Ramachandran, Ramakrishnan; MacLean, Donald L., and Satchell, Donald P., Jr., 5,008,412, Cl. 549-523.000.
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Bodor, Nicholas, to Schering Corporation. Physiological means of enhancing transdermal delivery of drugs 5,008,111, Cl. 424-449.000.

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Schnorrenberg, Gerd, Roos, Otto, Losel, Walter, Wiedemann, Ingrid; Gaida, Wolfram, Hoefke, Wolfgang, Arndts, Dietrich, and Streller, Ilse, 5,008,273, Cl. 514-301.000.

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Smith, Todd S., 5,007,931, Cl. 623-23.000.

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Doscher, Patrisha A., 5,007,969, Cl. 134-38.000.
Pinson, George T., 5,007,348, Cl. 102-501.000.

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Boling, Norman L., Mayer, Thomas, and Rancourt, James D., to Unisys Corp. Methods of fabricating optical records with overcoating 5,008,129, Cl. 427-160.000.

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Allen, Joyce, and Bonner, Kathy M., 5,007,558, Cl. 221-48.000.

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Orndorff, Roy L., Jr. and Bono, Mark J., 5,007,660, Cl. 280-715.000.

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Strauss, Richard F., Fiacco, Richard A., Bordbar, Hosrow T., Chen, Caesar C., and Quiroz, David, 5,008,490, Cl. 174-36.000.

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Cole, Edward H., Jr.; and Bilynsky, John D., 5,007,883, Cl. 474-242.000.
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Bottomley, Robin C., to Express Foods Group Limited. Process for obtaining concentrates having a high α-lactalbumin content from whey 5,008,376, Cl. 530-366.000.

Bouadjadja, Robert Clothing, especially of the pullover type 5,007,113, Cl. 2-115.000.

Boucher, Robert J. Fuel reactor 5,007,804, Cl. 417-209.000.

Boughton, T. Trafford, to T. T. Boughton & Sons Ltd. ISO container handling system 5,007,791, Cl. 414-494.000.

Boutin, Jean, to Rhone-Poulenc Chimie. Clear and colorless basic aluminum chlorosulfates 5,008,095, Cl. 423-467.000.

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Bowman, Timothy S., to Butler Manufacturing Company. Floor box for access floors 5,008,491, Cl. 174-48.000.

Bowman, Wayne A. *See*—
Chari, Krishnan, Bowman, Wayne A., and Thomas, Brian, 5,008,179, Cl. 430-546.000.

Boyd, Jerry L. *See*—
McClusky, Stanley, and Boyd, Jerry L., 5,007,227, Cl. 53-243.000.

Boyd, Melissa D.: *See*—
Shreeve, Robert W., and Boyd, Melissa D., 5,008,614, Cl. 324-158.00F.

Boyd, William P., Sr. Direct current miniature lamp tester 5,008,626, Cl. 324-414.000.

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Mormann, Werner, Brahm, Barbara, and Brahm, Martin, 5,008,447, Cl. 560-355.000.

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Brain, Adrian R., to Abekas Video Systems Ltd. Digital video special effect system 5,008,755, Cl. 358-183.000.

Bralich, Andrew Sump protection system 5,007,451, Cl. 137-362.000.

Brand, Siegbert *See*—
Schuetz, Franz; Brand, Siegbert, Wenderoth, Bernd, Sauter, Hubert, Ammermann, Eberhard, and Lorenz, Cisela, 5,008,438, Cl. 560-55.000.

Brandes, Harry *See*—
Abendroth, Paul; Brandes, Harry, and Raab, Rudolf, 5,007,342, Cl. 101-420.000.

Brandon, Malcolm R., *See*—
Patroni, Joseph J., and Brandon, Malcolm R., 5,008,377, Cl. 530-416.000.

Brandstetter, Robert W., Pernick, Benjamin J., Fonneland, Nils J., and Caputi, Stephen J., to Grumman Aerospace Corporation. Optical heterodyning system and method for rapid optical phase and amplitude measurements. 5,008,851, Cl. 364-807.000.

Brandstrom, Arne E.; Lindberg, Per L.; and Sunden, Gunnel E., to Aktiebolaget Hassle. Therapeutically active compound and a process for its preparation. 5,008,278, Cl. 514-338.000.

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Messinger, Werner, Trolltsch, Karl, and Tewes, Bernd, 5,007,168, Cl. 30-43.000.

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Breckenfeld, Paul W. *See*—
Broughton, George L., Breckenfeld, Paul W., Mate, David W., Nettles, James A., and Rogers, Duane E., 5,007,393, Cl. 123-195.00R.

Bredovskis, Atis. Tire retainer for dock 5,007,609, Cl. 248-303.000.

Breitkopf, Norbert, Dambkes, Georg, and Bach, Hanswilhelm, to Ruhrchemie Aktiengeselischaft. Process for purifying propanediol-1,3. 5,008,473, Cl. 568-868.000.

Brekkestran, Kevin I., and Batcheller, Barry D., to Environwear, Inc. Electrically heated form-fitting fabric assembly 5,008,517, Cl. 219-211.000.

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Brennan, Leanne M. Food metering dish. 5,007,743, Cl. 374-141.000.

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Maruyama, Akihiro, Kato, Munehiko, Ishiwaka, Takumi, Seki, Katsuto, and Ohashi, Takashi, 5,008,297, Cl. 521-136.000.

Briggs & Stratton Corporation *See*—
Seilenbinder, Richard W., 5,007,388, Cl. 123-90.550.
Uuskallio, Arvo F., 5,007,573, Cl. 227-139.000.

Bright, Jeffrey D. *See—*
Kuo, Shih-Yee; Cho, Hyun-Sam; and Bright, Jeffrey D., 5,008,132, Cl. 427-217.000

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Bewley, David R.; Brimelow, Christopher J. B.; and Wright, Kenneth W., 5,008,123, Cl. 426-509.000

Brink, James E. *See—*
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Brink, Joyce; and Brink, James E. Collapsible clothes hanger. 5,007,562, Cl. 223-89.000

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Stafford, Trevor G., 5,007,767, Cl. 405-154.000.

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Ballantine, James A.; Gregory, Reginald; Purnell, John H.; Thomas, John M.; and Westlake, David J., 5,008,465, Cl. 568-697.000
Chadha, Rajan, 5,007,697, Cl. 350-96.150
Dean, Alan J.; and Hopper, Hans P., 5,007,852, Cl. 439-201.000)
Forsyth, Donald G. W.; Marshall, Robert W.; and Thompson, Alan M., 5,007,482, Cl. 166-345.000

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Teasdale, James A., 5,007,225, Cl. 52-799.000

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Da Franca, Jose D. A. E.; Vital, Joao P. C. C.; and Leme, Carlos M. D. A. D. A., 5,[illegible]8,674, Cl. 341-150.000

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Adams, John L., 5,008,663, Cl. 340-825.500.

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Carr, Michael D.; and Leaning, Anthony R., 5,008,747, Cl. 358-136.000
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Britt, Herbert I. *See—*
Kessel, William C.; Laclaire, John L.; Lui, Andrew L.; Locke, Michael H.; and Britt, Herbert I., 5,008,810, Cl. 364-200.000)

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Margiaria, Giorgio; and Brizio, Giuseppe, 5,008,063, Cl. 264-297.200

Brookey, Charles D. Snap-on fastener. 5,007,140, Cl. 24-129.00R

Broom, Henry T., to Naleo Chemical Company. Fluidization of heavy slurries. 5,008,035, Cl. 252-312.000

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Aoshima, Syozo; Hirota, Kunio; Sakakibara, Hiroshi; Sawai, Naoyuki; and Sato, Takeaki, 5,007,281, Cl. 72-406.000
Okamoto, Tsugio, 5,008,700, Cl. 355-27.000.
Shinoda, Akira, 5,007,849, Cl. 439-165.000
Yamakawa, Kiyoshi, 5,007,751, Cl. 400-322.000

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Brown, Alan J.; James, Roger; and Glasson, Nigel P., to ECC International Limited. Biological support. 5,008,220, Cl. 501-81.000

Brown, Alan W. Surgical staple. 5,007,921, Cl. 606-221.000.

Brown, Gary L. *See—*
Knierim, David L.; and Brown, Gary L., 5,008,741, Cl. 358-32.000

Brown, Kenneth; and Riley, Richard E., to Hamilton Standard Controls, Inc. Method of manufacturing an electrical component, e.g. a digital connecting encoder. 5,007,159, Cl. 29-622.000

Brown, Raymond L.; and Shock, Clifford L., Jr., to Hughes Aircraft Company. High current feedthrough package. 5,008,492, Cl. 174-52.400

Brown, Richard W., to ICI Americas Inc. Preparation of 2-(chloro, bromo or nitro)-4-(alkyl-sulfonyl)benzoic acids and intermediates. 5,008,448, Cl. 562-429.000

Brown, Robert A., to Acushnet Company. Preparation of wound golf ball cores. 5,007,594, Cl. 242-3.000

Brown, William E., III; Safford, Sarah E.; and Clemens, John M., to Abbott Laboratories. Solid-phase analytical device and method for using same. 5,008,080, Cl. 422-56.000

Brownell, George L.; Hays, Mary K.; and Sivak, Andrew J., to Aristech Chemical Corporation. Silyl derivatives of 2,6-dimethyl-4-allyl phenol. 5,008,421, Cl. 556-406.000

Brubaker, Bryce D.: *See—*
Myers, Robert I.; Brubaker, Bryce D.; and Overall, Robert E., 5,007,236, Cl. 60-256.000

Bruck, Martin: *See—*
Gerdau, Thomas; Kleiner, Hans-Jerg; Peuckert, Marcellus; Bruck, Martin; and Aldinger, Fritz, 5,008,423, Cl. 556-412.000

Bruckner, Raimund: *See—*
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Brunner, Hans-Georg: *See—*
Pissiotas, Georg; Moser, Hans; and Brunner, Hans-Georg, 5,007,951, Cl. 71-72.000

Brunnett, Carl J.; Zachary, Allen B.; and Heiple, Holly C., to Picker International, Inc. Combined high speed backprojection and forward projection processor for CT systems. 5,008,822, Cl. 364-413.210

Brunt, Chris; and Carner, Don C., Jr., to Orleander S.A. Wireless bicycle wheel monitor system. 5,008,647, Cl. 340-432.000

Bryan, Philip S.; Lambert, Patrick M.; Towers, Christine M.; and Jarrold, Gregory S., to Eastman Kodak Company. Titanium activated hafnia and/or zirconia host phosphor containing neodymium. 5,008,034, Cl. 252-301.40F

Bryant, David R. *See—*
Wegman, Richard W.; and Bryant, David R., 5,008,235, Cl. 502-342.000

Brychta, Jaroslav; Lutisan, Eduard; and Jirkovsky, Vladimir, to AVIA koncern. Combustion chamber for compression ignition internal combustion engine. 5,007,394, Cl. 123-279.000.

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Ruckert, Holger, 5,008,749, Cl. 358-147.000.
Wischermann, Gerhard, 5,008,751, Cl. 358-148.000)

Bucher, Michel B.: *See—*
Bertrand, Michel P.; Bucher, Michel B.; and Delclaux, Andre R., 5,008,543, Cl. 250-342.000

Buchert, Hermann: *See—*
Ittemann, Peter; Simon, Georg N.; Heinz, Gerhard; Zeiner, Hartmut; Buchert, Hermann; and Seibring, Joachim, 5,008,364, Cl. 528-172.000

Buchheim, Julie A. *See—*
Ranch, Jerome P.; and Buchheim, Julie A., 5,008,200, Cl. 435-240.490

Buchner, Georges. *See—*
Guichard, Jacques; Buchner, Georges; and Labat, Jacques, 5,008,924, Cl. 379-53.000.

Buckle, Brian L., to Buoyco (M.M.) Limited. Gas control valves and apparatus for controlling buoyancy in water. 5,007,364, Cl. 114-331.000

Buckwalter, Kendrick. Seal for art display frames of wood. 5,007,189, Cl. 40-152.000

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Bakos, Jozsef; Heil, Balint; Toth, Imre; Edes, Bela; Gebhardt, Tstvan; Bihari, Ferenc; Durko nee Ponaez, Anna; Effert, Gyula; Kiraly, Jeno; Konok nee Horvath, Eva; Lukacs, Laszlo; Meszaros nee Szekrenyesi, Agnes; Radvany, Bela; and Sarosi, Lajos, 5,008,440, Cl. 560-65.000

Bueschl, Rainer; and Klaerner, Peter, to BASF Aktiengesellschaft. Transparent thermoplastic blends. 5,008,341, Cl. 525-216.000)

Buffman, Martin. *See—*
Riley, Thomas P.; Buffman, Martin; and Cyr, Reginald J., 5,008,860, Cl. 367-6.000

Buhr, Gerhard. *See—*
Wilharm, Peter; Buhr, Gerhard; and Fuchs, Juergen, 5,008,362, Cl. 528-28.000

Bulduc, Lawrence R. *See—*
More, Henry S.; Fraser, Edward C.; and Bulduc, Lawrence R., 5,008,664, Cl. 340-854.000.

Bulgrien, Garth H., to Ford New Holland, Inc. Method of overriding ratio matching feature in power shift transmissions. 5,007,299, Cl. 74-335.000

Bullis, Robert H.; and Swindal, James L., to United Technologies Corporation. Capacitive accelerometer with mid-plane proof mass. 5,008,774, Cl. 361-283.000

Bullock, John D.; Sutherland, James K.; and Donnelly, Michael J., to 31 Research Exploitation Limited. Surface-active agents. 5,008,383, Cl. 536-4.100.

Bunge (Australia) Pty. Ltd. *See—*
Patroni, Joseph J.; and Brandon, Malcolm R., 5,008,377, Cl. 530-416.000

Buoyco (M.M.) Limited. *See—*
Buckle, Brian L., 5,007,364, Cl. 114-331.000

Burg, Karlheinz. *See—*
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Burgess, Ian A.; Dennis, Andrew M.; and Marshall, Christopher B., to U.S. Philips Corporation. Apparatus adding values represented as residues in modulo arithmetic. 5,008,849, Cl. 364-746.000.

Burgett, William B. Traffic barriers with built-in carriers. 5,007,763, Cl. 404-6.000

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Kruck, Richard W.; Cur, Omer N.; Leclear, Douglas D.; Kuehl, Steven J.; and Burin, Ralph R., 5,007,246, Cl. 62-131.000

Burk, Mark J., to Du Pont de Nemours, E. I., and Company. Chiral phospholane transition metal catalysts. 5,008,457, Cl. 568-12.000

Burke, Barry E., to Massachusetts Institute of Technology. Suppressing dark current in charge-coupled devices. 5,008,758, Cl. 358-213.160.

Burkins, Matthew S. *See—*
Gooch, William A., Jr.; Burkins, Matthew S.; Mills, Leo F.; Ogilvy, James W.; and Ricchiazzi, Antonio J., 5,007,326, Cl. 89-36.020

Burle Technologies, Inc. *See—*
Willoughby, Jon S., 5,008,745, Cl. 358-105.000

Burnett, George S. Wound packing instrument. 5,007,895, Cl. 604-11.000

Burnham, Robert D.; and Sussmann, Ricardo S., to Amoco Corporation. Diamond composite heat sink for use with semiconductor devices. 5,008,737, Cl. 357-81.000

Burnier, Julia S. *See—*
Bard, John K.; and Burnier, Julia S., 5,008,360, Cl. 528-25.000

Burns, Gary: *See—*
Burns, Paul W.; and Burns, Gary, 5,007,416, Cl. 128-80.00H

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Burns, William F., to AT&T Bell Laboratories. Auxiliary board spacer arrangement. 5,008,777, Cl. 361-412.000

Burr, R. Page. *See—*
Keogh, Raymond J.; Morino, Ronald; and Burr, R. Page, 5,008,619, Cl. 324-207.160

Burroughs Wellcome Co. *See—*
Bair, Kenneth W., 5,008,286, Cl. 514-468.000

Busenhart, Peter; Schneeberger, Ruedi; Holbein, Erwin; Wirz, Armin; Flueli, Adolf; and Maier, Hansueli, to Rieter Machine Works, Ltd. Chuck structure. 5,007,595, Cl. 242-46.400.

Bush, Harold G. *See—*
Bluck, Raymond M.; Bush, Harold G.; and Johnson, Robert R., 5,008,061, Cl. 264-257.000

Bush, Timothy P. Emergency ski altering device and method. 5,007,368, Cl. 116-211.000

Butefisch, Karl-Aloys, to Deutsche Forschungsanstalt fur Luft- und Ramfahrt. Doppler fluid flow velocity measuring apparatus and method utilizing imaging of scattered light. 5,007,731, Cl. 356-28.500

Butler Manufacturing Company. *See—*
Bowman, Timothy S., 5,008,491, Cl. 174-48.000.

Butts, Nelson L. *See—*
Hall, Robert E.; Spolek, Graig A.; Wasser, John H.; and Butts, Nelson L., 5,007,404, Cl. 126-77.000

Bux, Hermann. *See—*
Staudinger, Alfons; and Bux, Hermann, 5,008,826, Cl. 364-463.000

B.V. Optische Industrie "De Oude Delft". *See—*
Vlasbloem, Hugo, 5,008,915, Cl. 378-108.000

Byrd, Gary D. *See—*
Kubacak, Johnny L.; and Byrd, Gary D., 5,007,585, Cl. 239-176.000

Bywater, Robert J.; and Dupe, Robert J., to Beecham Group p.l.c. Veterinary compositions for the treatment of scours and dehydration. 5,008,248, Cl. 514-23.000

C. B. Labs, Inc.: *See—*
Christian, David E., 5,008,634, Cl. 330-306.000.

C & L Development Inc.. *See—*
Kyfes, Vincent, 5,007,666, Cl. 285-373.000.

Caferro, Ronald N. Low direct glare and wall wash parabolic lighting grid. 5,008,791, Cl. 362-290.000

Cahn, Frederick. Immunostimulatory microsphere. 5,008,116, Cl. 424-491.000

Cain, John H., Jr.: *See—*
Iqbal, Tahir; Cain, John H., Jr.; and Slosky, Jack J., 5,008,418, Cl. 556-112.000

Calanchi, Massimo, Gentilini, Leonardo; and Marconi, Marco, to Eurand Italia S.p.A. Formulation for preparing extemporaneous homogeneous microcapsule suspension. 5,008,117, Cl. 424-494.000.

Calderone, Nicholas. *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Calderone, Nicholas; and Fenn, Ronald S., 5,008,437, Cl. 560-35.000.

Cale, Kenneth W.; Imura, Naoto; Jasovsky, George A.; and Katz, Saul N., to Kraft General Foods, Inc. Soluble coffee with aroma recovered from the thermal hydrolysis of spent grounds. 5,008,125, Cl. 426-594.000

California Institute of Technology. *See—*
Agranat, Aharon J.; Neugebauer, Charles F.; and Yariv, Amnon, 5,008,833, Cl. 364-513.000.
Anson, Fred C.; and Montgomery, Donald D., 5,008,339, Cl. 525-181.000.
Peterson, John C.; Chow, Edward; and Madan, Herb S., 5,008,882, Cl. 370-94.300.

Calkoen, Guido M., to Design Count Pty. Ltd. Pallet construction. 5,007,352, Cl. 108-56.100.

Callaway, James J. Patient ambulation motion detector. 5,008,654, Cl. 340-686.000.

Calvani, Riccardo; and Caponi, Renato, to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A. Method of characterizing bistable semiconductor lasers. 5,007,735, Cl. 356-128.000.

Cameron, James. *See—*
Genov, Genco; and Cameron, James, 5,007,784, Cl. 414-225.000.

Cameron, Randy E.; and Clement, Sandra K., to Lockheed Corporation. Preparation of conductive polyaniline having controlled molecular weight. 5,008,041, Cl. 252-500.000.

Campagna, Anthony J.. *See—*
Bartizal, Dennis C.; and Campagna, Anthony J., 5,007,418, Cl. 128-90.000.

Canada, Her Majesty the Queen in the right of, as represented by the Minister of Energy Mines and Resources. *See—*
Ozin, Geoffrey A.; Huber, Helmut X.; Prokopowicz, Richard A.; and Godber, John, 5,008,234, Cl. 502-326.000.

Canon Kabushiki Kaisha. *See—*
Arimoto, Shinobu, 5,008,949, Cl. 382-41.000
Ebinuma, Ryuichi; Hattori, Yoshifumi; and Ichihashi, Hiroo, 5,008,688, Cl. 346-140.00R
Hanyu, Yukio; and Uchimi, Toshiharu, 5,007,716, Cl. 350-336.000.
Hirohata, Michio, 5,008,693, Cl. 354-214.000.
Inuzuka, Tsuneki; Maeshima, Katsuyoshi; and Tomosada, Masahiro, 5,008,712, Cl. 355-206.000.
Kanai, Masahiro; Aoike, Tatsuyuki; Matsuda, Koichi; and Kawakami, Soichiro, 5,007,971, Cl. 136-258.000
Katayama, Akihiro; and Ohsawa, Hidefumi, 5,008,950, Cl. 382-50.000.
Kawakami, Eigo; Ozawa, Kunitaka; Uda, Koji; Shimoda, Isamu; and Uzawa, Shunichi, 5,008,703, Cl. 355-53.000.
Koizumi, Norihiko, Tanioka, Hiroshi; Toyama, Noboru; Arahara, Kozo; and Yuasa, Toshiya, 5,008,690, Cl. 346-140.00R.
Matsaki, Katsumi, 5,008,809, Cl. 364-200.000.
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Nakagawa, Katsumi; Ishihara, Shunichi; Kanai, Masahiro, Murakami, Tsutomu, Arao, Kozo; Fujioka, Yasushi, and Sakai, Akira, 5,008,726, Cl. 357-30.000
Nakagawa, Masaru, Sumino, Fumio, Hiro, Masaaki, Kashimura, Noboru, and Nagahara, Shin, 5,008,168, Cl. 430-56.000.
Nishimura, Yukuo, Haruta, Masahiro, Munakata, Hirohide, Kuwae, Yoko, Miyazaki, Toshihiko, and Yuasa, Satoshi, 5,007,714, Cl. 350-353.000
Ohara, Tsunemasa; and Shibanai, Tomoo, 5,008,605, Cl. 318-630.000.
Ohmori, Hiroyuki; Tanaka, Hisami, and Okunuki, Masami, 5,008,706, Cl. 355-219.000
Okamura, Moriyuki, Nakajima, Ikuo, and Nishiguchi, Toshiji, 5,007,928, Cl. 623-6.000.
Ono, Takeshi, Sakamoto, Masahiro, and Takano, Tadashi, 5,008,607, Cl. 318-696.000
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Reed, Keith; and Coleman, Keith, 5,007,650, Cl. 273-249.000.
Colgate-Palmolive Co.. *See*—
Cook, William J.; Wisniewski, Karen L.; Dixit, Nagaraj S.; and Rao, Nandakumar S., 5,008,030, Cl. 252-106.000.
Paciullo, Francis P., 5,007,375, Cl. 119-170.000.
Collagen Corporation. *See*—
Bentz, Hanne; Ellingsworth, Larry; and Armstrong, Rosa, 5,008,240, Cl. 514-2.000.

Collins, Joseph M. *See—*
Palmer, Larry R., Collins, Joseph M., and Holloway, Gary M., 5,008,667, Cl. 340-984.000.

Colony Corporation: *See—*
Dweck, Mark, 5,008,869, Cl. 368-228.000

Columbus, Richard L., to Eastman Kodak Company. Phase separation container with fixed means preventing remixing. 5,007,892, Cl. 494-17.000.

Combs, Bryan D.: *See—*
Sels, Michael O.; and Combs, Bryan D., 5,008,944, Cl. 381-86.000

Comfortex, Inc. *See—*
Salyards, Donald M., 5,007,123, Cl. 5-448.000.

Commissariat a l'Energie Atomique. *See—*
Audaire, Luc; Peuzin, Jean C.; and Schaub, Bernard, 5,008,541, Cl. 250-338.300
Nicolas, Pierre; and Pantigny, Philippe, 5,008,544, Cl. 250-349.000

Computer & Communications Technology Corp. *See—*
Carlson, Carl J., Zarouri, Mourad, and Coon, Warren, 5,008,768, Cl. 360-104.000.

Conducta Gesellschaft fur Meb- und Regeltechnik mbH & Co.: *See—*
Ambos, Stefan, 5,007,283, Cl. 73-1.00G.

Conemac, Timothy D. Electronic door wedge alarm. 5,008,648, Cl. 340-546.000.

Congleton, Helen; Slaton, Carol L.; Koudounaris, Angelo; Smith, Gerald B.; and Soto, Vicente, to Hughes Aircraft Company. Testable ribbon bonding method and wedge bonding tool for microcircuit device fabrication. 5,007,576, Cl. 228-103.000.

Conifer Corporation: *See—*
Hemmie, Dale L., 5,008,956, Cl. 455-318.000.

Conlan, John T., and Whitekettle, Wilson K., to Betz Laboratories, Inc. Biocidal compositions and use thereof containing a synergistic mixture of glutaraldehyde and 2-(decylthio) enthanamine. 5,008,023, Cl. 210-764.000.

Conley, Jerry J., and Mortensen, Gary B., to E. F. Johnson Co. Light emitting polymer electrical energy source. 5,008,579, Cl. 310-303.000

Conner, Jesse R., and Rieber, Roy S., to enviroGuard, Inc. In-situ formation of soluble silicates from biogenetic silica in chemical fixation/solidification treatment of wastes. 5,008,021, Cl. 210-751.000

Connolly, Daniel T., and Feder, Joseph, to Monsanto Company. Stimulation of endothelial cell growth. 5,008,196, Cl. 435-240.200

Coody, Archibald S., to Fred Arbogast Company, Inc. Artificial fishing lures. 5,007,194, Cl. 43-42.290

Cook, James C., II, to Progressive Dynamics, Inc. Fluorescent lighting control circuit. 5,008,598, Cl. 315-225.000

Cook, Robert J. Topographic measuring device. 5,007,174, Cl. 33-1.0SD.

Cook, William J.; Wisniewski, Karen L.; Dixit, Nagaraj S.; and Rao, Nandakumar S., to Colgate-Palmolive Co. Acidic disinfectant all-purpose liquid cleaning composition. 5,008,030, Cl. 252-106.000

Cooke, Mack A. Crane apparatus. 5,007,543, Cl. 212-160.000

Coolidge, Robert B.; and Nguyen, David M., to Dresser Industries, Inc. Drill bit having improved cutting element retention system. 5,007,493, Cl. 175-329.000

Coon, Warren. *See—*
Carlson, Carl J., Zarouri, Mourad, and Coon, Warren, 5,008,768, Cl. 360-104.000

Cooper, Kelvin, and Fray, Michael J., to Pfizer Inc. Diazepine antiallergy agents. 5,008,263, Cl. 514-220.000

Cooper, Michael D. *See—*
King, David L., Cooper, Michael D., and Faber, Michael A., 5,008,468, Cl. 568-697.000

Cooper, Robert C., to AT&T Bell Laboratories. Terminal assembly for linear magnetic component bobbin. 5,008,644, Cl. 336-192.000

Copeland, Stephan, to FI.OS S.p.A. Guidable arm, particularly for free-positioning lamps. 5,008,793, Cl. 362-413.000

Corain, Luciano; Maitan, Gianni; Perlini, Renato; and Bacchetti, Mario, to Nuovopignone-Industrie Meccaniche e Fonderia, S.p.A. Weft clamping system for inserter rapier. 5,007,463, Cl. 139-448.000

Corbett, Seguard. Multi-port container. 5,007,547, Cl. 220-476.000

Cordell, Ralph L. *See—*
Crowe, Christopher; Cordell, Ralph L.; and Kahng, Seun K., 5,007,292, Cl. 73-654.000

Corley, Larry S., to Shell Oil Company. Gas cylinder safety device. 5,007,548, Cl. 220-3.000

Cornell Research Foundation, Inc. *See—*
Wellner, Daniel, 5,008,372, Cl. 530-345.000

Cornerstone Products Inc. *See—*
Van Druff, Albert, Jr., 5,007,249, Cl. 62-255.000

Corning Incorporated. *See—*
Araujo, Roger J., 5,007,948, Cl. 65-30.130
Ketcham, Thomas D., 5,008,221, Cl. 501-103.000

Cosart, Lee D., III. *See—*
Nelson, Nancy W.; Cosart, Lee D., III; Peregrino, Luiz; and Ingman, Eric M., 5,008,610, Cl. 324-84.000

Counts, David E. *See—*
Wellenkotter, Carl A.; and Counts, David E., 5,007,396, Cl. 123-339.000

Counts, Richard C., to USI Lighting, Inc. Power factor correction circuit. 5,008,599, Cl. 315-247.000

Cox, Laurence C.; Dugan, Raymond; Evans, Daniel D.; Griffith, Robert; Handley, Terry L.; and Leeper, Jeffrey J., to National Steel Corporation. Metal strip edge trimming apparatus. 5,007,318, Cl. 83-425.200

Cox, Roger L.; DeLoye, Michael J.; and Myers, Robert L., to International Business Machines Corporation. Personal computer power supply. 5,008,829, Cl. 364-480.000

Cox, Walter N. *See—*
Cheriff, Frank J.; Kirk, Joseph J.; Pulver, Arnold M.; and Cox, Walter N., 5,008,656, Cl. 340-718.000

Cox, William M. *See—*
Fischer, Michael A.; Cox, William M.; and McDougall, Floyd H., 5,008,879, Cl. 370-85.200.

Craig, Franklin J. *See—*
Weder, Donald E.; Straeter, William F.; Straeter, Joseph G.; Craig, Franklin J.; Donnelly, Wilma M.; and Redditt, Jack W., 5,007,229, Cl. 53-397.000

Craig, Stuart; and Helland, Earl, to Inventive Ideas Incorporated. Compass. 5,007,320, Cl. 83-745.000

Crane, David P.; Cole, Terence M.; and Poskitt, Geoffrey, to International Computers Limited. Multi-cache data storage system. 5,008,813, Cl. 364-200.000

Crater, Arthur H. *See—*
Mullen, Charles E.; and Crater, Arthur H., 5,007,760, Cl. 403-13.000

Crawshay, Richard, to Inco Limited. Belt and chain flight conveyor. 5,007,525, Cl. 198-690.200

Creative Packaging Corp. *See—*
Beck, James M., 5,007,555, Cl. 220-339.000

Cree Research, Inc. *See—*
Edmond, John A.; Waltz, Douglas G.; Mitchell, Muni M.; Sedigh, Mohammad; and Hamerski, Roman, 5,008,735, Cl. 357-74.000

Crespiatico, Giampietro, and Mondori, Luciano. Locking device for connectors of printed circuit boards. 5,007,854, Cl. 439-367.000

Crestmoore Ltd. *See—*
Nussbaum, Avraham, 5,007,915, Cl. 606-133.000

Crewe, Albert V., to Orchid One Corporation. High performance, vacuum compatible electromagnetic lens coil. 5,008,549, Cl. 250-396.0ML

Crinos Industria Farmacobiologica S.p.A. *See—*
Casu, Benito; Torri, Giangiacomo; Naggi, Annamaria; Mantovani, Marisa; Pescador, Rodolfo; Porta, Roberto; and Prino, Giuseppe, 5,008,253, Cl. 514-54.000

Critchlow, David N.; Yehushua, Moshe; Avis, Graham M.; Heimbigner, Wade L.; Johnson, Karle J.; and Wiley, George A., to International Mobile Machines Corporation. Subscriber unit for wireless digital subscriber communication system. 5,008,900, Cl. 375-8.000

Crivello, Sam. *See—*
Crooks, Theodore J.; Zentz, Terry L.; and Morris, Matthew G., 5,007,518, Cl. 194-212.000

Crompton, Charles E.; Kazi, Abdulla M. Z.; and Soni, Inderjit S., to Laurel Industries, Inc. Colloidal sols of antimony pentoxide in an aqueous medium and their preparation. 5,008,036, Cl. 252-313.100

Cronin, William J. *See—*
Olsen, Steven A.; Cronin, William J.; Jarvis, Ben L.; and McMillan, Jeff G., 5,008,929, Cl. 379-112.000

Crooks, Theodore J.; Zentz, Terry L.; and Morris, Matthew G., to Crivello, Sam. Apparatus for renting articles. 5,007,518, Cl. 194-212.000

Crossman, Janet L. *See—*
Erickson, Phillip J.; Crossman, Janet L.; Heacock, Gregory L.; and Mainster, Martin A., 5,007,729, Cl. 351-219.000

Crowe, Christopher; Cordell, Ralph L.; and Kahng, Seun K., to Amoco Corporation. Multicomponent transducer. 5,007,292, Cl. 73-654.000

Crown Equipment Corporation. *See—*
Dammeyer, Ned E.; and Thobe, Nick D., 5,008,604, Cl. 318-587.000

Crum, Spencer E. *See—*
Bernhardt, Douglas H.; Matheu, Guillermo R.; Crum, Spencer E.; and Adelmann, John T., 5,007,336, Cl. 99-487.000

Crumley, Gary B., to BOC Group, Inc., The. Water cooled crucible. 5,008,897, Cl. 373-11.000

CSELT - Centro Studi e Laboratori Telecommunicazioni S.p.A. *See—*
Accatino, Luciano; and Bertin, Giorgio, 5,008,640, Cl. 333-219.100
Calvani, Riccardo; and Caponi, Renato, 5,007,735, Cl. 356-128.000

Csonka, James M. *See—*
Naro, Rodney L.; Csonka, James M.; and Merritt, Michael A., 5,008,074, Cl. 420-578.000

Cullis, Pieter R.; Hope, Michael J.; and Bally, Marcel B., to Liposome Company, Inc., The. Extrusion technique for producing unilamellar vesicles. 5,008,050, Cl. 264-4.300.

Cunningham, Timothy J. *See—*
Linsky, Cary B.; and Cunningham, Timothy J., 5,007,916, Cl. 606-151.000

Cunningham, William R.; Amareno, Carmelo S.; and Kayan, Helmut. Foolproof coupon redemption system. 5,008,519, Cl. 235-383.000

Cur, Omer N. *See—*
Kruck, Richard W.; Cur, Omer N.; Leclear, Douglas D.; Kuehl, Steven J.; and Burin, Ralph R., 5,007,246, Cl. 62-131.000

Curtis, Jeff. *See—*
Nyberg, Eric D.; Klingman, Ken A.; Curtis, Jeff; and Stewart, Ray F., 5,007,989, Cl. 204-1.110

Curtis, Lee J. Container for a paint brush. 5,007,553, Cl. 220-90.000

Cutler, Dave. *See—*
Bhandarkar, Dileep P.; Cutler, Dave; Cardoza, Wayne; Witek, Rich; and Orbits, Dave, 5,008,812, Cl. 364-200.000

Cutolo, Antonello; Solimeno, Salvatore; and Madey, John M. J. Real time analyzer for pulsed laser systems. 5,007,717, Cl. 350-353.000

Cyr, Reginald, to United States of America, America. Acoustic transponder receiver circuit. 5,008,859, Cl. 367-2.000

Cyr, Reginald J. *See—*
Riley, Thomas P.; Buffman, Martin; and Cyr, Reginald J., 5,008,860, Cl. 367-6.000

Czirr, John B. Method of downhole neutron monitoring. 5,008,067, Cl. 376-159.000

Czubatyj, Wolodymyr; and Himmler, Ronald, to Energy Conversion Devices, Inc. Functional testing of ultra large area, ultra large scale integrated circuits. 5,008,617, Cl. 324-158.00R

Da Costa, Caio N. F. N., to Empresa Brasileira de Compressores S/A - Embraco. Rotary rolling piston compressor with fixed vane having a relieved incline section. 5,007,813, Cl. 418-63.000

Da Franca, Jose D. A. E.; Vital, Joao P. C. C.; and Leme, Carlos M. D. A. D. A., to British Telecommunications. Digital-to-analog converter using switched capacitor and transverse filter. 5,008,674, Cl. 341-150.000.

Daghighian, Farhad. *See—*
Mazziotta, John C.; Daghighian, Farhad; and Hoffman, Edward J., 5,008,546, Cl. 250-366.000

D'Agosto, Nicholas A. *See—*
Jachmann, Emil F.; Saltzman, Jeremy; Chamberlin, David B.; D'Agosto, Nicholas A.; Harris, Mark; and Su, Jy-hong, 5,008,835, Cl. 364-513.500.

Dahle, Olof; and Fischbach, Manfred, to Bergwerksverband GmbH, and Hebben & Fischbach GmbH. Method and apparatus for making drill holes under spatially restricted conditions. 5,007,487, Cl. 175-57.000

Dahlen, John M.; Chhabra, Narender K.; Araujo, Richard K.; Scholten, James R.; Reid, Robert W.; and Soikkeli, Matti, to Charles Stark Draper Laboratory, The. Low cost drifter. 5,007,285, Cl. 73-170.00A

Dahlin, Steinar J. E. A.; and Ghisler, Walter, to Telefonaktiebolaget L M Ericsson. Mobile station link supervision utilizing digital voice color codes. 5,008,953, Cl. 455-33.000

Dai-Ichi Kogyo Seiyaku Co., Ltd. *See—*
Matsumoto, Shusaku; Hatakawa, Yoshio; and Nakajima, Akihiko, 5,008,387, Cl. 536-119.000
Taniuchi, Akira; Kataoka, Hironori; and Ito, Etsuo, 5,007,955, Cl. 71-103.000

Dai Nippon Insatsu Kabushiki Kaisha. *See—*
Kuramochi, Wataru; Tsuruoka, Yoshiaki; Saitou, Norikazu; Shibuya, Akira; and Yamashita, Shuichi, 5,008,552, Cl. 235-483.000

Daiichi Denso Buhin Co., Ltd. *See—*
Takano, Tsunesuke; and Shinzawa, Kouichi, 5,008,505, Cl. 200-531.000

Daikin Industries Ltd. *See—*
Honda, Norimasa; and Sano, Masahiro, 5,008,042, Cl. 252-518.000
Shirai, Shinji; Negishi, Hiroyuki; Tomihashi, Nobuyuki; and Yamane, Masayuki, 5,008,327, Cl. 524-544.000

Daimler-Benz: *See—*
Wulff, Dietrich; Jager, Hans-Ludwig; and Weisse, Joachim, 5,007,761, Cl. 403-287.000

Daimler-Benz AG. *See—*
Grohn, Michael; Murwald, Mario; Thoma, Frank; and Hoffmann, Karlheinz, 5,007,401, Cl. 123-509.000
Scherenberg, Dieter, 5,007,402, Cl. 123-549.000

Daly, John K.; Kreinberg, Earl R.; Puerner, Dean A.; and Adcock, Marty E., to AMP Incorporated. Electrical connector for flat power cable. 5,007,858, Cl. 439-498.000

Dambkes, Georg: *See—*
Breitkopf, Norbert; Dambkes, Georg; and Bach, Hanswilhelm, 5,008,473, Cl. 568-868.000

Damin, Bernard: *See—*
Laurent, Dominque; Fortunato, Gerard; Damin, Bernard; and Napoleon, Marcel, 5,007,733, Cl. 356-70.000

Dammeyer, Ned E.; and Thobe, Nick D., to Crown Equipment Corporation. Dynamic clipper for use in a vehicle guidance system. 5,008,604, Cl. 318-587.000

Dana Corporation: *See—*
Flotow, Richard A., 5,007,517, Cl. 192-106.100.
Ostrander, Robert J., 5,007,511, Cl. 192-8.00R.

Dandreaux, Gary; Login, Robert B.; Merianos, John J.; Garelick, Paul; Plochocka, Krystyna; Negrin, Max; and Shih, Jenn S., to GAF Chemicals Corporation. Poly(pyrrolidonyl) oxazoline). 5,008,367, Cl. 528-326.000

Danfoss A/S. *See—*
Danig, Per, 5,007,247, Cl. 62-174.000

Dang, Thuy D. *See—*
Evers, Robert C.; Dang, Thuy D.; and Moore, D. Roger, 5,008,346, Cl. 525-426.000

Daniel, Jean-Pierre; and Fauchard, Jean-Pierre, to Thomson-CSF. System for target designation by laser. 5,007,736, Cl. 356-152.000

Daniels, Thomas E., Jr. Ice shaver apparatus. 5,007,591, Cl. 241-37.500

Danig, Per, to Danfoss A/S. Refrigeration or heat pump installation. 5,007,247, Cl. 62-174.000

Dannatt, Hugh St. L. Mailing machine tape module and tape take-up and moistening system thereof. 5,007,370, Cl. 118-246.000

Dardik, Irving I. Rhythmic biofeedback technique. 5,007,430, Cl. 128-696.000

Daroca, Allen P. Combined fence and irrigation system. 5,007,587, Cl. 239-289.000

Dasa, Madhava. Multiple configuration model aircraft. 5,007,875, Cl. 446-66.000

Da Silva, Ivan P. *See—*
Hull, Harry F.; and Da Silva, Ivan P., 5,007,993, Cl. 204-228.000

Datapoint Corporation. *See—*
Fischer, Michael A.; Cox, William M.; and McDougall, Floyd H., 5,008,879, Cl. 370-85.200

Daughdrill, Annette S. Head restraint. 5,007,122, Cl. 5-434.000

Da Vault, Jimmy C. Truck sidewall mounted chain saw carrier. 5,007,568, Cl. 224-42.45R

Davenport, Kenneth G. *See—*
Elango, Varadaraj; and Davenport, Kenneth G., 5,008,439, Cl. 560-61.000

Davies, Ben, deceased. *See—*
Kernion, Mark C.; and Davies, Ben, deceased, 5,007,615, Cl. 251-368.000

Davies, Evelyn, executrix. *See—*
Kernion, Mark C.; and Davies, Ben, deceased, 5,007,615, Cl. 251-368.000

Davies, Jenkin E. *See—*
Dijk, Jan V.; and Davies, Jenkin E., 5,008,452, Cl. 564-256.000

Davies, Paul M.; and Smith, Raymond A., to Albright & Wilson Limited. Purification of phosphorus compounds. 5,008,015, Cl. 210-634.000

Davies, Robert B. *See—*
Jarrett, Robert B.; and Davies, Robert B., 5,008,736, Cl. 357-75.000

Davis, Harold: *See—*
Gunn, Charles L.; Davis, Harold; Spahni, Milton D., Jr.; and Wanless, Ronald H., 5,007,541, Cl. 206-611.000

Davis, Jackie L. *See—*
Tucker, Richard B.; Davis, Jackie L.; and Lewis, Fielding H., Jr., 5,007,652, Cl. 273-326.000

Davis, Larry, to Hoechst-Roussel Pharmaceuticals Inc. N-substituted-5,6-dimethoxy-1,2-benzisoxazole-3-propanamine and related compounds as analgesic and hypotensive agents. 5,008,264, Cl. 514-253.000.

Davis, Rex M.; and Greiner, Mark E., to Cincinnati Electronics Corporation. Current measuring circuit with means for nullifying the effects of current source and lead resistance. 5,008,523, Cl. 250-214.00A

Davis, Scott W.: *See—*
Musto, Mario S.; and Davis, Scott W., 5,007,675, Cl. 297-195.000

Davis, Walter L.; and Macnak, Philip P., to Motorola, Inc. Global satellite communication system with geographic protocol conversion. 5,008,952, Cl. 455-12.000

Day, Roger W.; and Hani, Rahim, to Olin Corporation. Process for the preparation of nitramine-containing homopolymers and co-polymers. 5,008,443, Cl. 560-169.000

Dayco Products, Inc. *See—*
Holden, Homer N.; and Loyer, Philip K., 5,007,839, Cl. 439-191.000

De La Rue Giori S.A. *See—*
Germann, Albrecht J., 5,007,339, Cl. 101-177.000

De La Rue Systems, Ltd.: *See—*
Skinner, John A., 5,007,628, Cl. 271-263.000

Deak, Frederick R.; and Wrisley, David B., Jr., to AMP Incorporated. Flexible area array connector. 5,007,842, Cl. 439-66.000

Dean, Alan J.; and Hopper, Hans P., to British Petroleum Company p.l.c., The. Electrical cable assembly. 5,007,852, Cl. 439-201.000

DeCecca, Michael L.; Kowalczyk, Michael S.; Gray, Thomas W.; and Partridge, Paul W., to Eastman Kodak Company. Corona charger apparatus of simplified construction. 5,008,538, Cl. 250-324.000

DeCoursey, Robert T.; and Messick, Mikel J. Vacuum sizing tank with electronically controlled vacuum pressure. 5,008,051, Cl. 264-40.300

Defenbaugh, John F.; and Markunas, Albert L., to Sundstrand Corporation. Vapor cycle system with multiple evaporator load control and superheat control. 5,007,245, Cl. 62-117.000

Defibaugh, George R.; Myers, Earl C., Jr.; and Smith, Steven G., to AMP Incorporated. Shielded connector having a multiply orientable housing. 5,007,862, Cl. 439-607.000

Degenhardt, Peter. Device for producing cone-shaped bodies of glass, particularly tiffany-style lampshades. 5,007,575, Cl. 228-44.300

Deguchi, Takashi: *See—*
Tsukisaka, Ryogo; Kondo, Satoshi; Kaneguchi, Toshio; and Deguchi, Takashi, 5,007,964, Cl. 106-464.000

DeGuchi, Toshihisa. *See—*
Numata, Tomiyuki; Iwaki, Takashi; Kouma, Kunio; and DeGuchi, Toshihisa, 5,008,888, Cl. 372-29.000

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Neidermeyer, Uwe; Kragl, Udo; Kula, Maria R.; Wandrey, Christian; Makrylaleas, Kyriakos; and Drauz, Karlheinz, 5,008,192, Cl. 435-128.000
Speer, Dietrich; Kiss, Akos; Kleinschmit, Peter; and Hanich, Juergen, 5,008,223, Cl. 106-450.000

Dehausse, Robert. *See—*
Thuez, Jean-Luc; and Dehausse, Robert, 5,007,251, Cl. 62-476.000

Deinhammer, Wolfgang. *See—*
Meier, Josef; Deinhammer, Wolfgang; and Krageloh, Konrad, 5,008,392, Cl. 546-250.000

de Jong, Hendrik J., to N.V. Nederlandsche Apparatenfabriek Nedap. Electromagnetic detection system. 5,008,660, Cl. 340-825.540

DeKraker, Larry, to Steelcase Inc. Chair back height adjustment mechanism. 5,007,678, Cl. 297-353.000

de Laforcade, Vincent, to L'Oreal. Dispensing head for an additive product for mounting on a receptacle and a receptacle equipped with such a head. 5,007,563, Cl. 222-145.000

DeLaney, Sabrena R. Vibrating mattress. 5,007,410, Cl. 128-33.000

Delaware Capital Formation, Inc. *See—*
Ball, James H.; and Gardner, Willis W., 5,007,745, Cl. 384-307.000

Delclaux, Andre R. *See—*
Bertrand, Michel P.; Bucher, Michel B.; and Delclaux, Andre R., 5,008,543, Cl. 250-342.000

Delcommune, Luc; and Ghyselinck, Philippe, to Solvay & Cie (Societe Anonyme). Article made of lactic-acid polymer capable of being employed particularly as a biodegradable prosthesis and process for its manufacture. 5,007,939, Cl. 623-66.000

DeLoye, Michael J *See—*
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De Martino, Ronald N *See—*
Thackara, John I., Lipscomb, George F., Yoon, Hyun-Nam, and De Martino, Ronald N., 5,007,696, Cl. 350-96.140.
Demassey, Jacques, Demoute, Jean-Pierre; and Tessier, Jean, to Roussel Uclaf, Novel pyrethrinoids, 5,008,281, Cl. 514-376.000
DeMichele, Glenn Special effects control for portable musical instrument, 5,007,324, Cl. 84-741.000
Demix Technology Inc.: *See—*
Kumada, Akio, Iochi, Takahiko, and Okada, Minoru, 5,008,581, Cl. 310-323.000
Demmin, Jeffrey C *See—*
Dutta, Vivek B., Demmin, Jeffrey C., DiOrio, Mark L., and Ewanich, Jon T., 5,008,734, Cl. 357-74.000
Demoute, Jean-Pierre: *See—*
Demassey, Jacques; Demoute, Jean-Pierre, and Tessier, Jean, 5,008,281, Cl. 514-376.000
Dempsey, John C., to Rad Elec Inc Electret gamma/X-ray low level dosimeter, 5,008,540, Cl. 250-336.100
Denbow, Nancy A., and Bertino, Anne M Adjustable head and neck garment, 5,007,115, Cl. 2-208.000
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Schon, Istvan; Nyeki, Olga, Kisfaludy, Lajos, deceased, Denes, Laszlo, Hajos, Gyorgy, and Szporny, Laszlo, 5,008,246, Cl. 514-18.000
Denning, William K. *See—*
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Dennis, Andrew M.: *See—*
Burgess, Ian A.; Dennis, Andrew M., and Marshall, Christopher B., 5,008,849, Cl. 364-746.000
Dennis, William E.; and VanWert, Bernard, to Dow Corning Corporation, Ultraviolet curing conformal coating with dual shadow cure, 5,008,301, Cl. 522-13.000.
Densmore, Larry L.; and Lindner, Thomas A., to Coeur Laboratories, Inc. Plunger for power injector angiographic syringe, and syringe comprising same, 5,007,904, Cl. 604-228.000
Denzel, Wolfgang E.: *See—*
Ahmadi, Hamid; Beha, Johannes G., Denzel, Wolfgang E., Engbersen, Antonius P., Luijten, Ronald P., Murphy, Charles A., and Port, Erich, 5,008,878, Cl. 370-60.000
Denzinger, Walter: *See—*
Diessel, Paul; Perner, Johannes, Denzinger, Walter; Hartmann, Heinrich, and Raubenheimer, Hans-Juergen, 5,008,032, Cl. 252-174.240
Hartmann, Heinrich; Denzinger, Walter, Kroener, Michael, Sendhoff, Norbert, and Freudenberg, Enrique, 5,008,321, Cl. 524-378.000
DePierro, Alfred V., to Napco Security Systems, Inc. Multi-zone microprocessor fire control apparatus, 5,008,840, Cl. 364-550.000
DepoMed Systems, Inc *See—*
Shell, John W., 5,007,790, Cl. 424-451.000
DePrince, Randolph B., and Viswanathan, Ravi, to International Minerals & Chem Corporation, Device for the extended delivery of diffusible agents, 5,008,112, Cl. 424-468.000
Derbyshire, Garrett, to University of Pennsylvania, The Trustees of the Expandable transluminally implantable tubular prosthesis, 5,007,926, Cl. 623-1.000.
Design Count Pty Ltd *See—*
Calkoen, Guido M., 5,007,352, Cl. 108-56.100
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Eisele, Thomas A. *See—*
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Heckel, Armin, Nickl, Josef, Muller, Erich, Narr, Berthold, Weisenberger, Johannes, Eisert, Wolfgang, and Muller, Thomas, 5,008,290, Cl. 514-544.000
Eizenhofer, Alfons, and Von Harten, Georg, to U.S. Philips Corporation. Communication system. 5,008,883, Cl. 370-95.100
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Mayotte, Leo G., and Eleazer, Prince B., 5,007,823, Cl. 432-14.000
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Palinkas, John M., 5,008,788, Cl. 362-231.000.
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Legris, Bernard; Oppedal, Magne; and Traonmilin, Eric, 5,007,769, Cl. 405-195.000.
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Laurent, Dominque; Fortunato, Gerard, Damin, Bernard, and Napoleon, Marcel, 5,007,733, Cl. 356-70.000
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Elizabeth Arden Co., Division of Conopco, Inc. *See—*
Zecchino, Julius R., Krishnaswamy, Natrajan, Clement, Pamela A., and Vargas, Anthony, 5,008,100, Cl. 424-59.000
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Anderssen, Sverre, 5,007,480, Cl. 166-292.000
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Eltoukhy, Abelshafy A., and Gluss, David H., to Actel Corporation. Method of programming anti-fuse element. 5,008,855, Cl. 365-96.000.
Emhart Industries, Inc. *See—*
Kidd, Roy E., Andrejasich, Raymond J.; Michel, Hilary, and Slocum, Laurence S., 5,008,653, Cl. 340-620.000.
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Emmett, Robert C., Jr., and O'Connor, Lawrence T., to Envirotech Corporation. Apparatus for biological processing of metal-containing ores. 5,007,620, Cl. 266-168.000
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Emulsion Technology, Inc. *See—*
Weete, John D., and Griffith, George L., 5,008,037, Cl. 252-314.000.
Emura, Masaharu; and Kobayashi, Takehiro, to Ryobi Ltd. Water depth measuring device for a fishing reel. 5,007,601, Cl. 242-223.000.
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Endoh, Fumio, to Pioneer Electronic Corporation. CATV transmission system using scrambled signals. 5,008,934, Cl. 380-15.000.
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Czubatyj, Wolodymyr, and Himmler, Ronald, 5,008,617, Cl. 324-158.00R
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Ahmadi, Hamid; Beha, Johannes G., Denzel, Wolfgang E.; Engbersen, Antonius P., Luijten, Ronald P., Murphy, Charles A.; and Port, Erich, 5,008,878, Cl. 370-60.000
Engel, Dieter, Mondt, Josef; and Zimmerschied, Klaus, to Hoechst Aktiengesellschaft. Aqueous dispersions for the preparation of cross-linkable coatings. 5,008,155, Cl. 428-463.000.
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Taylor, Dennis R.; and Ungermann, Charles B., 5,008,226, Cl. 502-81.000
Taylor, Dennis R.; and Ungermann, Charles B., 5,008,227, Cl. 502-83.000
England, Raymond B., Jr. Window cleaning apparatus with rotatable head. 5,007,753, Cl. 401-139.000
Englert, Heiner; and Martin, Bernhard, to Michael Weinig Aktiengesellschaft. Pressing apparatus for a processing machine. 5,007,469, Cl. 144-252.00R
Englund, Richard L.; and Schwartz, Thomas W., to Minnesota Mining and Manufacturing Company. Compounding, glazing or polishing pad. 5,007,128, Cl. 15-230.160.
Engstrand, Per O.; Hammar, Lars-Ake; Htun, Myat T.; and Pettersson, Rune L., to STFI. Method of reducing the energy consumption at the refining of cellulose containing material. 5,007,985, Cl. 162-26.000.
Enhorning, Goran. Female incontinence device. 5,007,894, Cl. 600-29.000.
Enoguchi, Yuji; Natsuhara, Toshiya, and Yamamoto, Masashi, to Minolta Camera Kabushiki Kaisha. Monocomponent developing device. 5,008,708, Cl. 355-259.000
Enright, Dorothy P.; Dye, William M.; Smith, F. Martin, and Perricone, Alphonse C., to Baker Hughes Incorporated. Drilling fluid methods and composition. 5,007,489, Cl. 175-65.000.
enviroGuard, Inc.: *See—*
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Erana, Agustin A. Air impact sand-box moulding machine. 5,007,477, Cl. 164-169.000.
Erb, Gary H. Method of decreasing air/fuel leakage in a carburetor. 5,007,166, Cl. 29-888.011.
Erickson, Phillip J.; Crossman, Janet L.; Heacock, Gregory L.; and Mainster, Martin A., to Ocular Instruments, Inc. Wide angle ophthalmic lens. 5,007,729, Cl. 351-219.000.
Erion, Mark D.: *See—*
Secrist, John A., III; Montgomery, John A.; Ealick, Steve E.; Erion, Mark D.; and Guida, Wayne C., 5,008,265, Cl. 514-258.000
Secrist, John A., III, Montgomery, John A., Ealick, Steve E.; Erion, Mark D.; and Guida, Wayne C., 5,008,270, Cl. 514-258.000.
Erkens, Leonardus J. H.; Algra, Gerben P.; Geurts, Herman J. J. M.; and Gielkens, Hubertus P. A., to Ciba-Geigy Corporation. Novel process for the preparation of lead molybdate pigments and novel lead molybdate pigments. 5,007,963, Cl. 106-433.000.
Ermanco Incorporated. *See—*
Fazzina, Francis P.; and Hollister, Guy G., 5,007,526, Cl. 198-787.000.
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ESPE Stiftung & Co. Produktions- und Vertriebs KG. *See—*
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Esquivel, Agerico L., to Texas Instruments Incorporated. Non-volatile memory. 5,008,722, Cl. 357-23.500
Etat Francais: *See—*
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Bezwada, Rao S.; Newman, Hugh D., Jr.; and Shalaby, Shalaby W., 5,007,923, Cl. 606-231.000
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Evans, Daniel D.: *See—*
Cox, Laurence C.; Dugan, Raymond; Evans, Daniel D., Griffith, Robert; Handley, Terry L.; and Leeper, Jeffrey J., 5,007,318, Cl. 83-425.200.
Evans, Dennis E.; and Liddell, Keith S., to Metprotech Limited. Process for simultaneously leaching and fine milling a subdivided source material. 5,007,589, Cl. 241-21.000.
Evans, James A., to Stryker Corporation. Single blade cutter for arthroscopic surgery. 5,007,917, Cl. 606-170.000.
Evans, Samuel. *See—*
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Evensen, David P., to Nimlock Company. Portable partition system. 5,007,473, Cl. 160-135.000.
Everest Medical Corporation: *See—*
Rydell, Mark A., 5,007,908, Cl. 606-47.000.
Evers, Robert C., Dang, Thuy D., and Moore, D. Roger, to United States of America, Air Force. Graft copolymers of poly(p-phenylene benzbisimidazole). 5,008,346, Cl. 525-426.000.
Ewanich, Jon T.: *See—*
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Ewing, Joan R.; and Wiedrich, Donald E., to Xerox Corporation. Simultaneous charging and exposure for pictorial quality. 5,008,707, Cl. 355-220.000.
Excel Industries, Inc.: *See—*
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Exion Technology, Inc.: *See—*
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Exxon Chemical Patents Inc.: *See—*
Chang, Main, 5,008,228, Cl. 502-111.000
Goguelin, Michel, 5,008,306, Cl. 523-220.000
Stehling, Ferdinand C., 5,008,204, Cl. 436-85.000.
Williams, Dennis A.; Horton, Roger L.; Newlove, John C., and Chumley, Robert E., 5,007,481, Cl. 166-300.000.
Fabbri, William C., to Genlyte, Inc. Fluorescent-type fixture having removable fold-out lamp sockets. 5,008,790, Cl. 362-220.000.
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Falconieri, Remo; and Uggetti, Sergio, to Ing. C. Olivetti & C., S.p.A. Cartridge including tension means for a typewriter correction ribbon. 5,007,749, Cl. 400-208.000
Fang, Que-Tsang; and Wei-Berk, Caroline, to Aluminum Company of America. Production of metal matrix composites reinforced with polymer fibers. 5,008,158, Cl. 428-614.000.
Fanuc Ltd.: *See—*
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Farmerie, Joseph G., to Milwaukee Electric Tool Corporation. Tensioner release and mechanism for belt sanders. 5,007,205, Cl. 51-170.0EB.
Farnam Companies, Inc.: *See—*
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Farrall, George A.; and Hansen, Steven D., to General Electric Company. X-ray tube high voltage cable transient suppression. 5,008,912, Cl. 378-91.000.
Farrand, A. Brady: *See—*
Bly, Sara A.; Farrand, A. Brady, Hodges, Jeffery D., Kupfer, Michael D.; Lewis, Brian T., Maybury, William J.; Tallan, Michael L.; and Tom, Stephen B., 5,008,853, Cl. 364-900.000.

Farrar, James: *See—*
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Farrell, Frank C. Dental articulator apparatus. 5,007,829, Cl. 433-61.000.
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Favre, Eric; Masek, Petr; and Truchement, Bernard, to Nestec S.A. Filter for use in a cartridge for the preparation of a beverage. 5,008,013, Cl. 210-482.000.
Favstritsky, Nicolai A.; and Nulph, Robert J., to Great Lakes Chemical Corporation. Flame retardant PVC resin compositions. 5,008,323, Cl. 524-469.000.
Fazzina, Francis P.; and Hollister, Guy G., to Ermanco Incorporated. Conveyor curve and live roller, line shaft conveyor system incorporating same. 5,007,526, Cl. 198-787.000.
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Feigenbaum, Barry A.: *See—*
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Feist, Harold E. Framing system and component parts thereof. 5,007,188, Cl. 40-152.000.
Feldman, Alfred P., to United States of America, Health and Human Services. Method for producing high quality chemical structure diagrams. 5,008,831, Cl. 364-496.000.
Feldman, Michael: *See—*
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Fenn, Ronald S.: *See—*
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Fernando, Gerard M. X.; and Giardina, Aldo, to U.S. Philips Corporation. Method and apparatus for picture motion measurement using picture correlation as a function of displacement. 5,008,744, Cl. 358-105.000.
Fersht, Samuel N.: *See—*
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Fick, Larry D., to New Visions Corporation. Water bottle insulator. 5,007,566, Cl. 224-32.00R.
Fiebig, Carolyn A. B.; Fuqua, Mike R.; Gursahaney, Suresh K.; Margosian, Gregg M.; and Weiss, Mark H., to International Business Machines Corporation. Real time, fail safe process control system and method. 5,008,805, Cl. 364-184.000.
Fields, John G.: *See—*
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Fiorelli, Frank: *See—*
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Fischer, Michael A.; Cox, William M.; and McDougall, Floyd H., to Datapoint Corporation. LAN with interoperative multiple operational capabilities. 5,008,879, Cl. 370-85.200.
Fischer, Rolf; Frank, Juergen; Merger, Franz; and Weyer, Hans-Juergen, to BASF Aktiengesellschaft. Preparation of 1,4-butanediol and tetrahydrofuran. 5,008,408, Cl. 549-429.000.
Fisher, Michael H.; Wyvratt, Matthew J.; and Mrozik, Helmut, to Merck & Co., Inc. Avermectins with a cleaved furan ring and an 8a hydroxy group. 5,008,250, Cl. 514-30.000.
Fishman, Sam; and Marchese, Michael J. Body dryer. 5,007,182, Cl. 34-90.000.
Fishman, Sidney; and Lembeck, William, to New York University Medical Center. Structure for enhanced retention of artificial limbs and method of fabrication. 5,007,937, Cl. 623-34.000.
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Fletcher, Robert M.; Kuo, Chihping; Osentowski, Timothy D.; and Robbins, Virginia M. Light-emitting diode with an electrically conductive window. 5,008,718, Cl. 357-17.000.
Flexsteel Industries, Inc.: *See—*
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Busenhart, Peter; Schneeberger, Ruedi; Holbein, Erwin; Wirz, Armin; Flueli, Adolf; and Maier, Hansueli, 5,007,595, Cl. 242-46.400.
Flynn, Edward R.: *See—*
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FMC Corporation: *See—*
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Focke & Co., (GmbH & Co.): *See—*
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Focke, Heinz; and Balmer, Oskar, to Focke & Co., (GmbH & Co.). Apparatus for transporting packaging material to a packaging machine. 5,007,522, Cl. 198-468.800.
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Ford Motor Company: *See—*
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Schnader, Llewellyn R., 5,007,787, Cl. 414-412.000.
Ford, William G. F.: *See—*
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Forsyth, Allen P., to Atlas Copco Construction and Mining Holding AB. Hydraulically-actuated controller for reel drive. 5,007,599, Cl. 242-86.510.
Forsyth, Donald G. W.; Marshall, Robert W.; and Thompson, Alan M., to British Petroleum Co. p.l.c. Offshore oil production system. 5,007,482, Cl. 166-345.000.
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Fosbol, Peder; Ullum, Henrik; and Korremann, Birgitte, to Atlas Industries A/S. Method for a continuous hydrolyzing of keratinaceous materials. 5,008,375, Cl. 530-357.000.
Foster, Jeffrey P. Support rack for bicycles and the like. 5,007,567, Cl. 224-42.130.
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Franc, John. Infant shade apparatus. 5,007,674, Cl. 297-184.000.
Franckowiak, Gerhard; Stoltefuss, Jurgen; Bechem, Martin; Gross, Rainer; Kayser, Michael; Hebisch, Siegbert; and Schramm, Matthias, to Bayer Aktiengesellschaft. Circulation-active fluoromethoxyphenyl dihydropyridine compounds. 5,008,279, Cl. 514-354.000.
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Theurer, Josef, 5,007,350, Cl. 104-12.000.
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Fraser, Howard H., Jr.; and Weldon, Mark P., to Carrier Corporation. Slotted rotor lubrication system. 5,007,808, Cl. 417-368.000.
Fraser, Howard H., Jr.; and Barito, Thomas R., to Carrier Corporation. Scroll compressor with unitary crankshaft, upper bearing and counterweight. 5,007,810, Cl. 417-410.000.
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Fredell, Jan, to ABB Atom AB. Device for cooling a heat-generating member. 5,008,069, Cl. 376-299.000.
Freeburg, Thomas A.; and White, Richard E., to Motorola, Inc. Encryption apparatus. 5,008,938, Cl. 380-50.000.
Freed, W. Wayne; and Smith, Robert M., to Synthetic Industries, Inc. Shaped barrier for erosion control and sediment collection. 5,007,766, Cl. 405-24.000.
Freeman, Carol A. Purse with reminder device. 5,007,470, Cl. 150-114.000.
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Fremuth, Dietmar R. A.; Rogers, Alan E.; and Zahner, John C., to Mobil Oil Corporation. Methanol-gas saturator for catalytic conversion system. 5,008,088, Cl. 422-234.000.
Frenzel, Robert A.: *See—*
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Freudenberg, Enrique: *See—*
Hartmann, Heinrich; Denzinger, Walter; Kroener, Michael; Sendhoff, Norbert; and Freudenberg, Enrique, 5,008,321, Cl. 524-378.000.
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Fujino, Takeshi: *See—*
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Chaudhuri, Ratan K.; Tracy, David J.; and Login, Robert B., 5,008,104, Cl. 424-70.000.
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Garfield, Theodore F. Anchor for rotary sanding drum 5,007,208, Cl 51-281.00R.

Garrity, George M.: *See—*
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Gaskell, Martin. Operations processor. 5,007,840, Cl. 434-206.000

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Geist, Jon C: *See—*
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Allen, Richard B.; Gibbs, William E.; and Hans, Lynn M., 5,008,298, Cl. 521-139.000.
Barancik, Martin B.; and Teutsch, Erich O., 5,007,818, Cl 425-144.000.
Farrall, George A.; and Hansen, Steven D., 5,008,912, Cl 378-91.000.
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Ketcham, Stephen O., Ortiz, Paul W., Jarvis, Jamie S.; and McCray, Clyde S., 5,007,316, Cl. 83-167.000.
Lee, David S.; and Tiearney, Thomas C., Jr., 5,008,918, Cl 378-144.000.
Lee, Gim F., Jr., 5,008,314, Cl. 524-143.000.
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Raleigh, William J.; Thimineur, Raymond J.; and Zotto, Anthony A., 5,008,103, Cl 424-66.000.
Rose, James W.; and Sitnik, Theresa A., 5,008,049, Cl. 264-4.000
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GEZE Sport International GmbH *See—*
Bogner, Martin, Harsanyi, Otto, and Peyre, Henri, 5,007,657, Cl 280-626.000

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Girault, Eric, and Arnulf, Paul, to Salomon S.A. Cross-country ski binding with automatic closure. 5,007,656, Cl. 280-615.000

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Glennon, Timothy F., to Sundstrand Corporation. VSCF power conversion system using an output autotransformer. 5,008,801, Cl 363-132.000

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Glover, Michael; and Reichert, Gerhard, to Lauren Manufacturing Company. Multiple pane sealed glazing unit. 5,007,217, Cl 52-172.000

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Gluss, David H *See—*
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Maathuis, Antonnis G.; Spielmann, Jurgen; Beer, Klaus; and Oare, Thomas R., 5,007,974, Cl. 156-117.000

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Lee, Chi-Long, and Gornowicz, Gerald A., 5,008,115, Cl 424-486.000

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Marshall, James W.; Gotchy, David; Uffelman, Bradley L.; Leimbach, Wendell B.; and Wilhelmi, Albert A., 5,008,572, Cl 310-45.000

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Bassi, Pawan K.; Eastwell, Kenneth C.; Goudey, James S.; and Spencer, Mary E., 5,008,091, Cl. 423-245.100

Goutiere, Alain, to AMP Incorporated. Electrical interconnection assembly. 5,007,888, Cl. 439-189.000

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Wolfe, Robert E.; and Goyette, Ronald A., 5,007,254, Cl. 68-17.00R

Grabbe, Dimitry G., to AMP Incorporated. Low height chip carrier socket. 5,007,845, Cl. 439-73.000

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Abraham, Joseph, Hamonet, Michael, Gracie, Phillip, and Hood, Warwick J., 5,007,360, Cl. 114-90.000

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Graute, Horst, to Hergeth Hollingsworth GmbH. Carding apparatus. 5,007,137, Cl. 19-296.000

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Gray, Dennis J.; and Elmstrom, Gary W., to University of Florida. Process for the accelerated production of triploid seeds for seedless watermelon cultivars. 5,007,198, Cl. 47-58.000

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DeCecca, Michael L.; Kowalczyk, Michael S.; Gray, Thomas W.; and Partridge, Paul W., 5,008,538, Cl. 250-324.000

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Greco, Carl C.; and Triplett, Kelly B., to Akzo N.V. Novel spinel precursors. 5,008,420, Cl. 556-182.000

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Greene, George R. *See—*
Rosenbluth, Robert F.; Lenker, Jay A.; and Greene, George R., 5,007,898, Cl. 604-54.000

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Ballantine, James A.; Gregory, Reginald; Purnell, John H.; Thomas, John M.; and Westlake, David J., 5,008,465, Cl 568-697.000

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Davis, Rex M., and Greiner, Mark E., 5,008,523, Cl. 250-214.00A.

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Lovernch, Gary F., and Griffin, Barry A., 5,007,376, Cl. 119-3.000.

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Weete, John D., and Griffith, George L., 5,008,037, Cl. 252-314.000.

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Bernacchi, Donald B., Loewe, Robert J., and Immel, Donna L., 5,008,121, Cl. 426-89.000.

Griffith, Robert. *See*—
Cox, Laurence C., Dugan, Raymond, Evans, Daniel D., Griffith, Robert, Handley, Terry L., and Leeper, Jeffrey J., 5,007,318, Cl. 83-425.200.

Grohn, Michael, Murwald, Mario, Thoma, Frank, and Hoffmann, Karlheinz, to Daimler-Benz AG. Magnetic valve controlled injection device. 5,007,401, Cl. 123-509.000.

Grollier, Jean F., and Dubief, Claude, to L'Oreal. Composition and process for treating keratinic substances with at least one anionic polymer and at least one quaternized protein. 5,008,105, Cl. 424-70.000.

Gross, Rainer. *See*—
Franckowiak, Gerhard, Stoltefuss, Jurgen, Bechem, Martin, Gross, Rainer; Kayser, Michael, Hebisch, Siegbert, and Schramm, Matthias, 5,008,279, Cl. 514-354.000.

Groswith, Charles T., III, Phipps, Richard D., Lathrop, Robert L., Jr., Stewart, John F., and Kaufmann, Rick J., to Taurus Tetraconcepts, Inc. Combined paper punch and binding apparatus. 5,007,782, Cl. 412-40.000.

Grove, Lee A., to Remote Controls, Inc. Temperature actuated flow control device. 5,007,446, Cl. 137-72.000.

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Gruber, Harry E., to University of California, The Regents of the. Method of treating autism. 5,008,251, Cl. 514-43.000.

Gruia, Adrian J., to UOP. Process for refractory compound conversion in a hydrocracker recycle liquid. 5,007,998, Cl. 208-59.000.

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Brandstetter, Robert W., Pernick, Benjamin J., Fonneland, Nils J., and Caputi, Stephen J., 5,008,851, Cl. 364-807.000.

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Nakanishi, Koji, Oltz, Eugene M., and Grunberger, Dezider, 5,008,441, Cl. 560-75.000.

Grunzinger, Raymond E. *See*—
Wilson, Bruce B., and Grunzinger, Raymond E., 5,008,142, Cl. 428-203.000.

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Lackner, John R., Grzywna, Stanley E., Weber, Ralph A., and Baird, Thomas E., 5,007,133, Cl. 15-351.000.

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Jackson, Douglas M., and Arbie, John A., Sr., 5,007,181, Cl. 34-57.00R.
Penkunas, Joseph J., and Smith, Theodore E., Jr., 5,007,957, Cl. 75-252.000.
Spencer, James R., and Mullendore, James A., 5,008,071, Cl. 419-28.000.

Gueremy, Claude; Jimonet, Patrick, and Mignani, Serge, to Rhone-Poulenc Sante. 2-iminobenzothiazoline derivatives, their preparation and pharmaceutical compositions containing them. 5,008,280, Cl. 514-367.000.

Guerra, Robert, and Soni, Pravin, to Raychem Corporation. Curable adhesives. 5,008,340, Cl. 525-193.000.

Gueth, Thomas F. *See*—
Georgiou, John, Gueth, Thomas F., and Ramsey, James S., 5,008,520, Cl. 235-462.000.

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Guichard, Jacques, Buchner, Georges, and Labat, Jacques, to Etat Francais. Telecommunications terminal with improved control functions. 5,008,924, Cl. 379-53.000.

Guida, Wayne C. *See*—
Secrist, John A., III, Montgomery, John A., Ealick, Steve E., Enion, Mark D., and Guida, Wayne C., 5,008,265, Cl. 514-258.000.
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Guillon, Henri, to Hutchinson. Sealing slideway for a moving sheet, and in particular for a motor vehicle window. 5,007,202, Cl. 49-441.000.

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Gunn, Charles L., Davis, Harold, Spahni, Milton D., Jr., and Wanless, Ronald H., to Procter & Gamble Company, The. Carton for granular materials. 5,007,541, Cl. 206-611.000.

Gunther, Bernd-Rainer; Losch, Rainer, and Steiner, Klaus, to A. Nattermann & Cie, GmbH. Process for producing ebselen in highly pure form. 5,008,394, Cl. 548-121.000.

Gursahaney, Suresh K. *See*—
Fiebig, Carolyn A. B., Fuqua, Mike R., Gursahaney, Suresh K., Margosian, Gregg M., and Weiss, Mark H., 5,008,805, Cl. 364-184.000.

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Gutsche, Bernhard. *See*—
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Guy, Yoram, to Monroe Auto Equipment Company. Internal damping force sensor. 5,007,659, Cl. 280-707.000.

H R Black Company. *See*—
Anderson, Raymond L., 5,008,007, Cl. 210-111.000.

Haab, William G. *See*—
Shaffer, Blaine P., and Haab, William G., 5,008,865, Cl. 368-10.000.

Haack, Johannes, to Feintool International Holding. Method and apparatus for the bending of workpieces. 5,007,264, Cl. 72-10.000.

Haag, Werner O., and Lago, Rudolph M., to Mobil Oil Corp. Direct production of styrenes by reaction of aromatics with aldehydes. 5,008,482, Cl. 585-437.000.

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Cimini, Leonard J., Jr., and Habbab, Isam M. I., 5,008,958, Cl. 455-619.000.

Haberstock, Rolf. Die device. 5,007,278, Cl. 72-383.000.

Hacault, Michel G. P., Heurtel, Bertrand J. J. M., and Serre, Jacques R., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A." Rotor blade fixing for turbomachine rotors. 5,007,800, Cl. 416-220.00R.

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Hafla, Dietmar F., and Sommer, Guenther, to Index-Werke Komm.-Ges. Hahn & Tessky. Lathe. 5,007,314, Cl. 82-120.000.

Hagihara, Takeaki, and Aoki, Satoshi, to Asahi Medical Co., Ltd. Compact plasma separator and an apparatus containing the same. 5,008,012, Cl. 210-321.800.

Hagiwara, Kiyokazu. *See*—
Iida, Masanori, Hagiwara, Kiyokazu, Asakura, Hiroyuki, Nishioka, Minoru, and Murase, Koichi, 5,007,709, Cl. 350-162.220.

Hain, Johann. *See*—
Bierbaum, Thomas, and Hain, Johann, 5,007,831, Cl. 433-114.000.

Hainey, Melvin F. Golfer's cleaning tool. 5,007,129, Cl. 15-236.080.

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Schon, Istvan, Nyeki, Olga, Kisfaludy, Lajos, deceased, Denes, Laszlo, Hajos, Gyorgy, and Szporny, Laszlo, 5,008,246, Cl. 514-18.000.

Hale, Peter G., and Russell, John N., to STC plc. Method of making optical fibre cables. 5,007,703, Cl. 350-96.230.

Hall, Robert E., Spolek, Graig A., Wasser, John H., and Butts, Nelson L., to United States of America, U.S. Environmental Protection Agency. Woodstove for heated air forced into a secondary combustion chamber and method of operating same. 5,007,404, Cl. 126-77.000.

Hallbach, Raymond L., to Cincinnati Milacron Inc. Lubrication apparatus and method. 5,007,504, Cl. 184-8.000.

Halliburton Company. *See*—
Gardner, Tommy R., Dill, Walter R., Ford, William G. F., and King, Karen L., 5,008,026, Cl. 252-8.553.

Halloran, Daniel J., Kasprzak, Kenneth A., Savastano, Stefano G., and Swihart, Terence J., to Dow Corning Corporation. Water-sheeting zwitterionomeric aminofunctional siloxanes. 5,008,424, Cl. 556-419.000.

Haluska, Loren A., Michael, Keith W., and Tarhay, Leo, to Dow Corning Corporation. Platinum or rhodium catalyzed multilayer ceramic coatings from hydrogen silsesquioxane resin and metal oxides. 5,008,320, Cl. 524-361.000.

Hamada, Tadao. *See*—
Okumura, Kin-ichi, Chono, Koji; Ozeki, Hiroshi; and Hamada, Tadao, 5,008,065, Cl. 264-328.600.

Hamanishi, Yoshinari, to Nikon Corporation. Lens system enabling close distance photographing. 5,007,720, Cl. 350-463.000.

Hamatsu, Mashiro, and Endo, Mamoru, to Clarion Co., Ltd. Carrier modulating device for a spread spectrum communication device. 5,008,898, Cl. 375-1.000.

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Edmond, John A., Waltz, Douglas G.; Mitchell, Muni M., Sedigh, Mohammad, and Hamerski, Roman, 5,008,735, Cl. 357-74.000.

Hamilton, Scott B., and Rosenow, Michael J., to Exchange System Limited Partnership, The. Backup/restore technique in a microcomputer-based encryption system. 5,008,936, Cl. 380-50.000.

Hamilton Standard Controls, Inc. *See*—
Brown, Kenneth, and Riley, Richard E., 5,007,159, Cl. 29-622.000.

Hamilton, T. A., to Unisys Corporation. Document feeder window closed detection assembly. 5,008,500, Cl. 200-61.700.

Hammar, Lars-Ake. *See*—
Engstrand, Per O., Hammar, Lars-Ake, Htun, Myat T., and Pettersson, Rune L., 5,007,985, Cl. 162-26.000.

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Meseke, Curt T., Winkler, Winfried, and Hilbig, Renate, 5,007,535, Cl. 206-366.000.

Hamonet, Michael. *See*—
Abraham, Joseph, Hamonet, Michael, Gracie, Phillip, and Hood, Warwick J., 5,007,360, Cl. 114-90.000.

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Ditrich, Klaus, Hamprecht, Gerhard, Wuerzer, Bruno, Meyer, Norbert, Westphalen, Karl-Otto, and Laatsch, Hartmut, 5,007,954, Cl. 71-90.000.

Han, Wesley W. *See*—
Edwards, John G.; Han, Wesley W., and Ali, Yusuf, 5,008,255, Cl. 514-155.000.

Hanagan, Mary A., to Du Pont de Nemours, E. I., and Company. Herbicidal pyridine sulfonamides. 5,008,393, Cl. 546-261.000.

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Seki, Masaki, Samukawa, Koji, and Hanaoka, Osamu, 5,008,806, Cl. 364-191.000.

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Klausener, Alexander, Kleefeld, Gerd, Berg, Dieter, Dutzmann, Stefan, and Hanbler, Gerd, 5,008,275, Cl. 514-334.000.

Handler, Rudolf, to Veitscher Magnesitwerke-Actien-Gesellschaft. Refractory gas permeable bubbling plug. 5,007,366, Cl. 116-208.000.

Handley, Terry L. *See*—
Cox, Laurence C.; Dugan, Raymond, Evans, Daniel D., Griffith, Robert, Handley, Terry L., and Leeper, Jeffrey J., 5,007,318, Cl. 83-425.200.

Hani, Rahim. *See*—
Day, Roger W., and Hani, Rahim, 5,008,443, Cl. 560-169.000.

Hanich, Juergen. *See*—
Speer, Dietrich; Kiss, Akos; Kleinschmit, Peter; and Hanich, Juergen, 5,008,223, Cl. 106-450.000.

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Hanna, Mark. Variable speed lever propelled wheelchair. 5,007,655, Cl. 280-250.100.

Hannon, Charles, and Vallender, Leonard J., to Hannon, Charles. Container lift tab. 5,007,554, Cl. 220-269.000.

Hans, Lynn M. *See*—
Allen, Richard B., Gibbs, William E., and Hans, Lynn M., 5,008,298, Cl. 521-139.000.

Hansen, Gary L. *See*—
Trapp, Richard E., Hansen, Gary L., Clay, Robert B., Dubetsky, Lawrence J., and Olney, Robert S., 5,007,973, Cl. 149-109.600.

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Farrall, George A., and Hansen, Steven D., 5,008,912, Cl. 378-91.000.

Hanson, Charles M. and MacDonald, Virginia N., to Varo, Inc. Self adjusting matrix display. 5,008,657, Cl. 340-766.000.

Hanson, Eric G. *See*—
Pan, Alfred I-Tsung; Hanson, Eric G.; Schantz, Christopher A., and Childers, Winthrop D., 5,008,689, Cl. 346-140.00R.

Hanson, Richard A. *See*—
Egley, Bert, and Hanson, Richard A., 5,007,290, Cl. 73-517.00R.

Hanulik, Jozef, to Recytec SA. Process for decontaminating radioactively contaminated metal or cement-containing materials. 5,008,044, Cl. 252-628.000.

Hanyu, Yukio, and Uchimi, Toshiharu, to Canon Kabushiki Kaisha. Liquid crystal device. 5,007,716, Cl. 350-336.000.

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Hara, Koichi A., to Hoya Corporation. Process for producing glass. 5,008,219, Cl. 501-12.000.

Harada, Susumu, to Toshiba Machine Co., Ltd. Mold clamping pressure control method for injection compression molding and injection compression molding machine. 5,008,052, Cl. 264-40.500.

Harding, Geoffrey, to U.S. Philips Corporation. X-ray quanta measuring device including diaphragm for producing conical radiation beam on object being measured. 5,008,911, Cl. 378-86.000.

Hardt, Norbert. *See*—
Schulte, Burkart; Sterner, Hakan, Wetzka, Gerhard, and Hardt, Norbert, 5,007,213, Cl. 52-29.000.

Harman, Phillip R. *See*—
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Schrantz, Gregory A., 5,008,719, Cl. 357-22.000.

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Jachmann, Emil F., Saltzman, Jeremy, Chamberlin, David B., D'Agosto, Nicholas A., Harris, Mark; and Su, Jy-hong, 5,008,835, Cl. 364-513.500.

Harris, Paul J., and Wojcik, Ronald T., to BASF Corporation. Resins of epoxy/aromatic diol copolymer and block copolymer of epoxy/aromatic diol copolymer and a epoxy-capped polybutadiene (co)polymer. 5,008,334, Cl. 525-109.000.

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Bogner, Martin, Harsanyi, Otto, and Peyre, Henri, 5,007,657, Cl. 280-626.000.

Hart, Ronald L. *See*—
Herbel, Albert J., Hart, Ronald L., and Work, Dale E., 5,008,133, Cl. 427-333.000.

Hartmann, Heinrich, Denzinger, Walter, Kroener, Michael, Sendhoff, Norbert, and Freudenberg, Enrique, to BASF Aktiengesellschaft. Preparation of stable water-in-oil emulsions of hydrolyzed polymers of N-vinylamides and their use. 5,008,321, Cl. 524-378.000.

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Diessel, Paul, Perner, Johannes; Denzinger, Walter, Hartmann, Heinrich, and Raubenheimer, Hans-Juergen, 5,008,032, Cl. 252-174.240.

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Hashimoto, Kiyokazu, to NEC Corporation. Power supply voltage drop detection circuit for use in EEPROM memory. 5,008,566, Cl. 307-296.800.

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Isakozawa, Shigeto, and Hashimoto, Takahito, 5,008,536, Cl. 250-307.000.

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Tominaga, Shinji; and Hashimoto, Takeshi, 5,008,699, Cl. 354-457.000.

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Nakachi, Takeshi; Hata, Akio, and Watanabe, Yoshihisa, 5,008,357, Cl. 526-292.200.

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Brownell, George L., Hays, Mary K., and Sivak, Andrew J., 5,008,421, Cl. 556-406.000.

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Franckowiak, Gerhard; Stoltefuss, Jurgen; Bechem, Martin, Gross, Rainer; Kayser, Michael, Hebisch, Siegbert; and Schramm, Matthias, 5,008,279, Cl. 514-354.000

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Amann, Markus-Christian, Baumann, Gerhard, Heinen, Jochen, and Thulke, Wolfgang, 5,008,893, Cl. 372-50.000

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Brunnett, Carl J.; Zachary, Allen B., and Heiple, Holly C., 5,008,822, Cl. 364-413.210.

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Longman, Robert J., Helfet, Peter R., and Abrams, Michael J., 5,008,687, Cl. 346-135.100

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Craig, Stuart, and Helland, Earl, 5,007,320, Cl. 83-745.000

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Hendy, Brian N., to Imperial Chemical Industries PLC. Substituted aromatic polymers. 5,008,352, Cl. 525-534.000

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Bremus, Norbert, Gutsche, Bernhard; Jeromin, Lutz; Peukert, Eberhard, and Schleper, Bernard, 5,008,046, Cl. 260-410.600.
Schulz, Paul; and Schwadtke, Karl, 5,008,031, Cl. 252-168.000

Henneberger, Hans; and Basel, Rainer, to Siemens Aktiengesellschaft. Method for manufacturing an otoplastic or an ear adaptor member. 5,008,058, Cl. 264-134.000.

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Hennings, Detlev, Hoffmann, Bernd F. W., and Nutto, Markus, to U.S. Philips Corporation. Non-linear voltage-dependent resistor. 5,008,646, Cl. 338-20.000.

Henry, Mark; and Saenz, Hillary. Comparator. 5,007,642, Cl. 273-148.00R.

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Antoon, Mitchell K., Jr., and Hill, David J., 5,008,296, Cl. 521-91.000.
Bard, John K.; and Burnier, Julia S., 5,008,360, Cl. 528-25.000.
Marks, John D., 5,007,343, Cl. 102-290.000.

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Graute, Horst, 5,007,137, Cl. 19-296.000.

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Herman, Martin L., to Hughes Aircraft Company. Electronically scanning vehicle radar sensor. 5,008,678, Cl. 342-158.000.

Herman, Thomas: *See*—
Lidow, Alexander; Herman, Thomas, and Rumennik, Vladimir, 5,008,725, Cl. 357-23.400.

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Klein, Rolf M., Poprawe, Reinhart; and Herziger, Gerd W., 5,007,686, Cl. 300-21.000

Herzog, Kenneth. Adjustable bottle gripper belt. 5,007,228, Cl. 53-282.000.

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Heurtel, Bertrand J. J. M.: *See*—
Hacault, Michel G. P.; Heurtel, Bertrand J. J. M., and Serre, Jacques R., 5,007,800, Cl. 416-220.00R.

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Adcock, James L., 5,008,845, Cl. 364-576.000.
Chiang, Shang-yi; Huang, Wen-Ling M., Drowley, Clifford I.; and Voorde, Paul V., 5,008,210, Cl. 437-33.000.
Horn, Marcus J., 5,008,205, Cl. 436-89.000
Mangelsdorf, Steven T., and James, David V., 5,008,904, Cl. 375-107.000
Mason, Scott C.; and Slutz, Robert A., 5,007,844, Cl. 439-68.000
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Pan, Alfred I-Tsung; Hanson, Eric G., Schantz, Christopher A., and Childers, Winthrop D., 5,008,689, Cl. 346-140.00R
Scherer, Dieter; and Strasser, William E., 5,008,631, Cl. 330-51.000.
Shreeve, Robert W.; and Boyd, Melissa D., 5,008,614, Cl. 324-158.00F

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Sager, Peter, 5,007,333, Cl. 99-286.000.

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Berkowitz, Yehuda; Hi, Gavriel M.; and Mizrahi, Yehuda, 5,007,453, Cl. 137-458.000.

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Hibbard, Robert H.: *See*—
D'Luna, Lionel J., Hibbard, Robert H.; and Parulski, Kenneth A., 5,008,739, Cl. 358-21.00R.

Hickmann, Eckhard. *See*—
Naeumann, Fritz; and Hickmann, Eckhard, 5,008,461, Cl. 568-322.000.

Hideharu, Nagahama, to Yoko Co., Ltd. Belt conveyor supporting arrangement. 5,007,528, Cl. 198-823.000.

Higashio, Kimihiko; and Kawabuchi, Yoichi, to Minolta Camera Kabushiki Kaisha. Image forming apparatus having an automatic document feed device for automatically discharging a manually positioned document. 5,008,714, Cl. 355-313.000.

Higgins, Ian; and Baxendale, Andrew, to United Kingdom Atomic Energy Authority. Method of producing silicon carbide-based bodies. 5,008,159, Cl. 428-614.000.

Highland Supply Corporation: *See*—
Weder, Donald E.; Straeter, William F.; Straeter, Joseph G.; Craig, Franklin J.; Donnelly, Wilma M.; and Redditt, Jack W., 5,007,229, Cl. 53-397.000.

Highsmith, Ronald E.; and Larson, Eric H., to Polypure, Inc. Homogeneous mixtures of solid organic acids and solid cationic ester-based polymer flocculants. 5,008,319, Cl. 524-321.000.

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Hill, Jamie R. Blade modification tool and process. 5,007,167, Cl. 29-889.100

Hill, Kimuel L. *See*—
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Hilland, David H., to United States of America, Air Force. Filter pin integrated circuit socket kit. 5,008,770, Cl. 361-56.000

Hillestad, Mark W. *See*—
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Hillis, W. Daniel, to Thinking Machines Corporation. Parallel processor. 5,008,815, Cl. 364-200.000

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Himmel, Francis, to Chrysler Corporation. Luggage rack for a vehicle. 5,007,570, Cl. 224-321.000

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Hiratsuka, Katsuo; Odaka, Yoshiyuki, and Yoshida, Takeshi, to SSMC Inc. Cutter actuator of a button perforating sewing machine. 5,007,356, Cl. 112-68.000

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Hirleman, Edwin D., Jr., to United States of America, Air Force. Programmable detector configuration for Fraunhofer diffraction particle sizing instruments. 5,007,737, Cl. 356-336.000

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Hoechst Aktiengesellschaft: *See*—
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Hoechst-Roussel Pharmaceuticals Inc: *See*—
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Integrated Device Technology, Inc *See*—
Leung, Wingyu, and Lien, Chuen-Der, 5,008,568, Cl 307-451.000

Interferometrics Incorporated: *See*—
Effland, John E., Gipson, John M.; Shaffer, David B., and Webber, John C., 5,008,679, Cl 342-353.000

International Business Machines Corporation *See*—
Ahmadi, Hamid, Beha, Johannes G., Denzel, Wolfgang E., Engbersen, Antonius P., Luijten, Ronald P., Murphy, Charles A., and Port, Erich, 5,008,878, Cl. 370-60.000

Blouse, Jeffrey L., Fulton, Inge G., Lange, Russell C., Meyerson, Bernard S., Nummy, Karen A., Revitz, Martin, and Rosenberg, Robert, 5,008,207, Cl. 437-31.000

Christopher, Kenneth W., Jr., Feigenbaum, Barry A., Kim, Jin, and Love, Douglas C., 5,008,820, Cl 364-200.000

Cox, Roger L., DeLoye, Michael J.; and Myers, Robert I., 5,008,829, Cl 364-480.000

Fiebig, Carolyn A. B., Fuqua, Mike R.; Gursahaney, Suresh K., Margosian, Gregg M., and Weiss, Mark H., 5,008,805, Cl 364-184.000

Fogg, Richard G., Jr.; and Irwin, John W., 5,008,816, Cl 364-200.000

Huang, Hung-Chang W., and Totta, Paul A., 5,008,216, Cl 437-192.000

Huang, Hung-Chang W., and Totta, Paul A., 5,008,730, Cl 357-68.000

Huang, Kevin C., Kutz, Karl H., McNamara, Timothy J., Seals, Victoria F.; and Still, Gregory S., 5,008,885, Cl 371-3.000

Johnson, William M., 5,008,796, Cl 363-21.000

Key, Gary R.; and Black, David C., 5,008,902, Cl 375-10.000

Lee, Ho C., O'Toole, John R., Shalkey, Alex T., and Zable, Jack L., 5,007,748, Cl. 400-103.000

Pope, Keith R. and Schrottke, Gustav, 5,007,163, Cl 29-840.000

Scalzi, Casper A., and Schmalz, Richard J., 5,008,811, Cl 364-200.000

Sutterlin, Philip H., 5,008,632, Cl 330-256.000

International Computers Limited *See*—
Crane, David P.; Cole, Terence M., and Poskitt, Geoffrey, 5,008,813, Cl 364-200.000

International Flavors & Fragrances Inc *See*—
Mookherjee, Braja D., Trenkle, Robert W., Calderone, Nicholas and Fenn, Ronald S., 5,008,437, Cl 560-35.000

International Minerals & Chem. Corporation: *See*—
DePrince, Randolph B., and Viswanathan, Ravi, 5,008,112, Cl 424-468.000

International Mobile Machines Corporation: *See*—
Critchlow, David N., Yehushua, Moshe, Avis, Graham M., Heimbigner, Wade L., Johnson, Karle J., and Wiley, George A., 5,008,900, Cl 375-8.000

International Rectifier Corporation *See*—
Lidow, Alexander, Herman, Thomas; and Rumennik, Vladimir, 5,008,725, Cl 357-23.400

interTechno AG *See*—
Naf, Werner, 5,007,461, Cl 138-97.000

Inushima, Takashi *See*—
Yamazaki, Shunpei, Imatou, Shinji, Tsuchiya, Mitsunori, Itoh, Kenji; Inushima, Takashi, and Kawano, Atsushi, 5,007,374, Cl. 118-723.000

Inuzuka, Tsuneki, Maeshima, Katsuyoshi, and Tomosada, Masahiro, to Canon Kabushiki Kaisha Variable magnification copying apparatus and automatic shutdown therefor 5,008,712, Cl 355-206.000

Inventive Ideas Incorporated *See*—
Craig, Stuart, and Helland, Earl, 5,007,320, Cl 83-745.000

Inverness Corporation *See*—
Mann, Samuel J., 5,007,918, Cl 606-188.000

Iochi, Takahiko *See*—
Kumada, Akio, Iochi, Takahiko, and Okada, Minoru, 5,008,581, Cl 310-323.000

Ionic Atlanta, Inc., *See*—
Legg, Keith O. and Tzeng, Yonhua, 5,007,373, Cl 118-723.000

Iowa State University Research Foundation, Inc *See*—
Jiles, David C., 5,008,621, Cl 324-227.000

IPOS GmbH & Co. KG: *See*—
Prahl, Gregor M., 5,007,938, Cl 623-55.000

Iqbal, Tahir, Cain, John H., Jr., and Slosky, Jack J., to Du Pont de Nemours, E. I., and Company Tris(isonitrile)copper(I) adducts for preparing radionuclide complexes 5,008,418, Cl. 556-112.000

Irinoda, Kazuhiko *See*—
Yokoi, Koichi, Irinoda, Kazuhiko, Kohya, Hidehiko, Sato, Susumu, and Katori, Tatsuhiko, 5,008,419, Cl 556-137.000

Irvin, John M. Bulk containers and apparatus for loading bulk containers onto a truck 5,007,793, Cl 414-502.000

Irwin, John W.: *See*—
Fogg, Richard G., Jr., and Irwin, John W., 5,008,816, Cl 364-200.000

Isaacs, Blake L., *See*—
Taussig, Andrew P., and Isaacs, Blake L., 5,008,518, Cl 235-383.000

Isakozawa, Shigeto, and Hashimoto, Takahito, to Hitachi, Ltd Electron microscope having electrical and mechanical position controls for specimen and positioning method 5,008,536, Cl 250-307.000

ISB Generalunternehmen fur Industriespezialbau *See*—
Klanne, Harald, 5,007,500, Cl 182-38.000

ISG/AG *See*—
Larsson, Karl O. A. H., 5,007,899, Cl 604-74.000

Ishibashi, Hiromichi; and Tanaka, Shinichi, to Matsushita Electric Industrial Co., Ltd Encoding/decoding system for optical recording/reading 5,008,669, Cl. 341-102.000

Ishida, Masahiko, Yamakawa, Nobuaki, and Shiida, Masahiro, to Yazaki Corporation. Apparatus for press-installing wires 5,007,160, Cl 29-753.000

Ishida, Tetsuyoshi, Kawano, Shigeyoshi, Kohtaka, Ikuo, Yamada, Kojiro, Kaku, Hiroyuki, and Narita, Tsuneo, to Babcock Hitachi Kabushiki Kaisha Hybrid Rankine cycle system 5,007,240, Cl 60-673.000

Ishihara, Heigo *See*—
Kudo, Takanori, and Ishihara, Heigo, 5,008,128, Cl 427-130.000.

Ishihara, Kousou *See*—
Ino, Kazuo, Shimizu, Yoshiaki, Okuda, Hiroyuki; Ishihara, Kousou, and Ogura, Takashi, 5,007,158, Cl 29-603.000.

Ishihara, Shunichi: *See*—
Nakagawa, Katsumi, Ishihara, Shunichi; Kanai, Masahiro, Murakami, Tsutomu, Arao, Kozo, Fujioka, Yasushi, and Sakai, Akira, 5,008,726, Cl 357-30.000.

Ishii, Eiichi, to NEC Corporation Digital to analog converter enhancing conversion precision 5,008,673, Cl 341-144.000

Ishii, Keizou, Kuwajima, Teruaki, Miwa, Hiroshi; Kashihara, Akio, and Ishikura, Shinichi, to Nippon Paint Co., Ltd. Novel composite film and preparation thereof 5,008,318, Cl. 524-284.000

Ishii, Kiyoshi *See*—
Nakai, Satoru, Kaneta, Mayumi, Kikumoto, Yoshikazu, Hong, Yeong-Man, Kawai, Kazuyoshi, Takegata, Setsuko; Ishii, Kiyoshi, Yanagihara, Yasuo; and Hirai, Yoshikatsu, 5,008,374, Cl. 530-351.000

Ishii, Koji, to Ryobi Ltd Image position adjusting device in printing machine 5,007,338, Cl 101-142.000

Ishii, Masaaki *See*—
Katakami, Tsutomu, Yokoyama, Tatsuro, Miyamoto, Michihiko, Mori, Haruki Kawauchi, Nobuya, Nobori, Tadahito, Sannohe, Kunio, Kamiya, Joji; Ishii, Masaaki, and Yoshihara, Kanji, 5,008,267, Cl 514-269.000

Ishii, Susumu *See*—
Terada, Yasuharu, and Ishii, Susumu, 5,007,144, Cl. 24-415.000.

Ishikawa, Yuji: *See*—
Watanabe, Junji; and Ishikawa, Yuji, 5,008,704, Cl. 355-202.000

Ishikawajima-Harima Heavy Industries Co., Ltd *See*—
Yamaguchi, Toru, Inazuki, Yukio, and Nakazawa, Hideo, 5,007,243, Cl. 62-51.100

Ishikura, Shinichi *See*—
Ishii, Keizou, Kuwajima, Teruaki, Miwa, Hiroshi, Kashihara, Akio, and Ishikura, Shinichi, 5,008,318, Cl. 524-284.000

Ishimaru, Naoshi, Tsutsui, Toshiyuki, Toyota, Akinori, and Kashiwa, Norio, to Mitsui Petrochemical Industries, Ltd Cyclo-olefinic random copolymer, olefinic random copolymer, and process for producing cyclo-olefinic random copolymers 5,008,356, Cl 526-281.000

Ishimoto, Noriyuki, and Iida, Hirofumi, to Sumitomo Heavy Industries, Ltd Lifting structure for dynamic electric machine 5,008,575, Cl 310-89.000.

Ishitani, Akira *See*—
Hattori, Shintarou, Takahagi, Takayuki, and Ishitani, Akira, 5,007,372, Cl. 118-715.000

Ishiwaka, Takumi *See*—
Maruyama, Akihiro, Kato, Munehiko Ishiwaka, Takumi, Seki, Katsuto, and Ohashi, Takashi, 5,008,297, Cl. 521-136.000

Ishiyama, Akira *See*—
Shibata, Masabumi; Ishiyama, Akira, and Takemoto, Takeshi, 5,008,817, Cl. 364-200.000.

Ishizuka, Makoto, and Wakasugi, Takashi, to Kureha Chemical Industry Co., Ltd Method for preparing monochloroacetaldehyde trimer 5,008,462, Cl 568-466.000

Isobe, Mitsuo *See*—
Kitaura, Hiromu, Isobe, Mitsuo, Kawahara, Isao, Hirauchi, Yoshio, Ninomiya, Yuichi, Ohtsuka, Yoshimichi, and Izumi, Yoshinori, 5,008,753, Cl. 358-171.000

Isozaki, Osamu *See*—
Nakai, Noboru; and Isozaki, Osamu, 5,008,328, Cl 524-759.000

Israel Aircraft Industries Ltd *See*—
Wilk, Shalom, 5,008,527, Cl 250-216.000

Isuzu Motors Limited: *See*—
Kawamura, Hideo, 5,007,382, Cl. 123-21.000
Koizumi, Yoshihisa, 5,007,509, Cl 188-271.000

Itami, Takashi, Yuri, Tadao; and Aoyagi, Toru, to Ohbayashi Corporation Openable dome-shaped roof structure 5,007,214, Cl. 52-66.000

Itex Enterprises, Inc.: *See*—
Taylor, Patrick D., 5,007,590, Cl 241-25.000

Ito, Etsuo *See*—
Taniuchi, Akira; Kataoka, Hironori, and Ito, Etsuo, 5,007,955, Cl. 71-103.000

Ito, Hisayoshi *See*—
Itoh, Tatsuo, Ito, Hisayoshi, and Murasaki, Kiyomi, 5,008,802, Cl 364-140.000

Ito, Masatsugu *See*—
Iwanami, Koichi, and Ito, Masatsugu, 5,008,118, Cl 424-498.000

Ito, Ryoichi, Iwai, Koji; and Nishida, Tsuyoshi, to Kubota Limited Water-cooling system for a water-cooled horizontal cylinder engine 5,007,383, Cl 123-41.490.

Ito, Takayuki: *See*—
Mizuno, Tohru, and Ito, Takayuki, 5,008,834, Cl 364-513.000

Ito, Toshiyasu *See*—
Minoura, Jun, Takahahi, Shigeyuki; Kato, Hisaki, Ito, Toshiyasu, Mori, Takaaki; Kato, Mamoru, Shimada, Junichi; and Okabayashi, Katsuaki, 5,007,718, Cl. 350-357.000

Ito, Yoshiharu *See*—
Tokizane, Toshiaki; Ito, Yoshiharu, Yamada, Osamu, Masuda, Toshiyuki, and Kuroda, Mitsunobu, 5,008,662, Cl. 340-825.060

Ito, Yukio *See*—
Souketani, Koichi, Ito, Yukio; Sasaki, Yoshio; Kurita, Teiji, and Tamiya, Jun, 5,007,773, Cl 407-27.000

Itoh, Kenji. *See*—
Yamazaki, Shunpei; Imatou, Shinji; Tsuchiya, Mitsunori, Itoh, Kenji, Inushima, Takashi, and Kawano, Atsushi, 5,007,374, Cl 118-723.000

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Itoh, Zen: *See*—
Omura, Satoshi; and Itoh, Zen, 5,008,249, Cl 514-29.000

Itokazu, Noboru. Hole saw. 5,007,777, Cl 408-67.000

Itsumi, Kazuhiro: *See*—
Tanuma, Chiaki; Itsumi, Kazuhiro, Iwase, Nobuo; Ono, Tomio, Kondo, Yuu; and Saito, Kazutaka, 5,008,582, Cl. 310-332.000

ITT Corporation: *See*—
Hom, Harvey K. Y., 5,008,633, Cl. 330-277.000

Ittemann, Peter; Simon, Georg N., Heinz, Gerhard; Zeiner, Hartmut, Buchert, Hermann, and Seibring, Joachim, to BASF Aktiengesellschaft. Thermoplastic molding materials which are stable at high temperatures and have improved melt stability 5,008,364, Cl 528-172.000.

Iwado, Seigo: *See*—
Okazaki, Takao; Takahashi, Shuji, Iwado, Seigo; Tanaka, Keiji, Yanai, Toshiaki; and Kajino, Hisaki, 5,008,191, Cl 435-124.000

Iwahashi, Hiroshi, to Kabushiki Kaisha Toshiba Electrically programmable nonvolatile semiconductor memory device with NAND cell structure 5,008,856, Cl 360-185.000

Iwahashi, Yuji, to Sony Corporation Tape cassette reel having an upper reel molded by dichromatic molding process 5,007,596, Cl 242-71.800

Iwai, Koji *See*—
Ito, Ryoichi, Iwai, Koji, and Nishida, Tsuyoshi, 5,007,383, Cl 123-41.490

Iwaki, Takashi *See*—
Numata, Tomiyuki, Iwaki, Takashi, Kojima, Kunio, and DeGuchi, Toshihisa, 5,008,888, Cl. 372-29.000

Iwamoto, Hiroshi *See*—
Totta, Hiroshi, Tamura, Hifumi, Tobita, Isseі, and Iwamoto, Hiroshi, 5,008,537, Cl. 250-309.000

Iwamoto, Keisuke S.: *See*—
Norman, Amos; and Iwamoto, Keisuke S., 5,008,907, Cl. 378-65.000

Iwanami, Koichi; and Ito, Masatsugu, to Nippon Oil and Fats Method for producing organic agent coated with powders of coating agent 5,008,118, Cl 424-498.000

Iwasaki, Akiko. *See*—
Takahashi, Yoshiyuki; Toyofuku, Kunitaka, and Iwasaki, Akiko, 5,008,236, Cl 503-209.000

Iwasaki, Ryozo: *See*—
Nishino, Hoyoku, Iwasaki, Ryozo, Okabe, Akio, and Yogo, Yuki, 5,008,295, Cl 514-766.000

Iwase, Minoru: *See*—
Hashimoto, Ryusuke; Iwata, Mitsuru, Sugihara, Junichi, and Iwase, Minoru, 5,008,053, Cl. 264-60.000

Iwase, Nobuo: *See*—
Tanuma, Chiaki; Itsumi, Kazuhiro; Iwase, Nobuo, Ono, Tomio, Kondo, Yuu, and Saito, Kazutaka, 5,008,582, Cl. 310-332.000

Iwata, Hitoshi, Noguchi, Kazumi; Nishiyama, Toshikazu; and Shinohara, Tadashi, to Hitachi Metals, Ltd Flying-type composite magnetic head having magnetic core with improved flatness of air-bearing surface. 5,008,767, Cl. 360-103.000

Iwata, Mitsuru *See*—
Hashimoto, Ryusuke; Iwata, Mitsuru, Sugihara, Junichi, and Iwase, Minoru, 5,008,053, Cl. 264-60.000.

Iwata, Nobuo *See*—
Sakamoto, Koji, Tanzawa, Misao; Iwata, Nobuo, Murayama, Hisao; Takahashi, Susumu, and Komada, Kenya, 5,008,711, Cl 355-206.000

Izumi, Yoshinori *See*—
Kitaura, Hiromu; Isobe, Mitsuo, Kawahara, Isao, Hirauchi, Yoshio, Ninomiya, Yuichi, Ohtsuka, Yoshimichi, and Izumi, Yoshinori, 5,008,753, Cl. 358-171.000.

Jach, Terrence J., Geist, Jon C., Carver, Gary P., and Novotny, Donald B., to United States of America, Commerce Diffraction device which detects the Bragg condition 5,008,908, Cl. 378-70.000

Jachmann, Emil F., Saltzman, Jeremy; Chamberlin, David B., D'Agosto, Nicholas A., Harris, Mark, and Su, Jy-hong Method and apparatus for storing and forwarding voice signals and generating replies 5,008,835, Cl. 364-513.500

Jachmann, Emil F. *See*—
Howells, Joseph A., Jachmann, Emil F., and Rubenstein, Robert L., 5,008,871, Cl. 369-28.000

Jackson, Douglas M.; and Arbie, John A., Sr., to GTE Products Corporation. Deagglomerating direct-fired flash dryer for drying stir-in phosphors and method of using same 5,007,181, Cl 34-57.00R

Jacoby, John J. Wiper cleaning system 5,007,130, Cl 15-250.00R.

Jacquard, Bernard: *See*—
Pinard, Jean C.; Jacquard, Bernard, and Besancon, Andre, 5,008,828, Cl. 364-474.280.

Jaeb, Jonathan P.. *See*—
Branstetter, Ronald L.; Jaeb, Jonathan P.; and Gabelmann, Jeffrey M., 5,007,423, Cl 128-633.000

Jager, Hans-Ludwig: *See*—
Wulff, Dietrich, Jager, Hans-Ludwig, and Weisse, Joachim, 5,007,761, Cl. 403-287.000

Jakobeit, Erich D., to AMP Incorporated Electrical receptacle terminal 5,007,865, Cl. 439-839.000

James, David V *See—*
Mangelsdorf, Steven T., and James, David V., 5,008,904, Cl 375-107.000.
James, Roger *See—*
Brown, Alan J., James, Roger, and Glasson, Nigel P., 5,008,220, Cl 501-81.000.
James, Roy Gunnel saver dock and mooring fender 5,007,363, Cl 114-219.000.
James, Steven *See—*
Carlomagno, Michael; Poostpasand, Hamid, and James, Steven, 5,007,574, Cl 228-20.000.
Jamison, David A. *See—*
Kieren, Roger, Jamison, David A., and Thomas, John J., 5,008,560, Cl 307-19.000.
Janome Sewing Machine Company Limited *See—*
Nakamura, Takashi, Tanaka, Haruhiko, Hyodo, Touru, and Osanai, Yasuhiro, 5,008,601, Cl 318-268.000.
Takenoya, Hideaki; and Ebata, Yoshikazu, 5,007,357, Cl 112-103.000.
Janoski, Ronald J., to Tremco Incorporated Substantially solvent free asphaltic and method relating thereto 5,008,311, Cl 524-59.000.
Janson, David A. *See—*
Holmquist, Ralph E.; and Janson, David A., 5,007,886, Cl 475-231.000.
Janssen Pharmaceutica N V *See—*
Janssens, Frans E., Kennis, Ludo E. J., Sommen, Francois M., and Dierckx, Ann C. J., 5,008,268, Cl 514-272.000.
Janssens, Frans E., Kennis, Ludo E. J., Sommen, Francois M., and Dierckx, Ann C. J., to Janssen Pharmaceutica N V 2-aminopyrimidinone derivatives 5,008,268, Cl 514-272.000.
Japan Air Lines Co., Ltd *See—*
Numano, Yasuhiko, 5,007,114, Cl 2-206.000.
Japan Electronic Control Systems Co., Ltd. *See—*
Kashiwabara, Masuo, 5,007,398, Cl 123-479.000.
Nakaniwa, Shinpei, 5,007,399, Cl 123-489.000.
Japan Electronics Industry, Limited *See—*
Miyazaki, Nagao, 5,007,516, Cl 192-0.072.
Japan Synthetic Rubber Co., Ltd *See—*
Kawashima, Kouzo, Morikawa, Takao, Aoyama, Teruo, and Kamiya, Akira, 5,008,331, Cl 525-84.000.
Jarrett, Robert B., and Davies, Robert B., to Motorola, Inc Thermal protection method for a power device 5,008,736, Cl 357-75.000.
Jarrold, Gregory S. *See—*
Bryan, Philip S., Lambert, Patrick M., Towers, Christine M., and Jarrold, Gregory S., 5,008,034, Cl 252-301.40F.
Jarvis, Ben L. *See—*
Olsen, Steven A., Cronin, William J., Jarvis, Ben L., and McMillan, Jeff G., 5,008,929, Cl. 379-112.000.
Jarvis, Jamie S. *See—*
Ketcham, Stephen O.; Ortiz, Paul W., Jarvis, Jamie S., and McCray, Clyde S., 5,007,316, Cl 83-167.000.
Jasovsky, George A. *See—*
Cale, Kenneth W., Imura, Naoto, Jasovsky, George A., and Katz, Saul N., 5,008,125, Cl 426-594.000.
Jeannotte, Anthony C., and Gilby, Anthony C., to Foxboro Company, The. Optical probe for fluid light transmission properties 5,007,740, Cl 356-436.000.
Jehle, Hermann. *See—*
Anapliotis, Emmanuel; Regener, Gernot, Ahrens, Uwe, and Jehle, Hermann, 5,007,910, Cl 606-65.000.
Jekel, Tina M. Luminescent pacifier 5,007,924, Cl 606-234.000.
Jenkin, William C. Method of securing adherent coatings by CVD from metal carbonyls, and articles thus obtained. 5,008,160, Cl 428-656.000.
Jenkner, Erwin. Apparatus for the program controlled longitudinal and transverse cutting of workpiece plates. 5,007,317, Cl. 83-256.000.
Jensen, Eric H., to Sun Microsystems, Inc Circuitry for multiplying binary numbers. 5,008,850, Cl. 364-760.000.
Jensen, Jack E.; and Parekh, Ebrahim, to General Dynamics Corporation, Convair Division. Tapered split-bushing fastener 5,007,781, Cl 411-337.000.
Jeromin, Lutz: *See—*
Bremus, Norbert; Gutsche, Bernhard; Jeromin, Lutz, Peukert, Eberhard, and Schleper, Bernard, 5,008,046, Cl 260-410.600.
Jeromson, James R., Jr.; and Anderson, J. Edward C., to Milbar Corporation Pliers. 5,007,313, Cl. 81-486.000.
Jidosha Denki Kogyo K K. *See—*
Nagai, Kazuhiko, 5,007,287, Cl 73-290.00B.
Jiles, David C., to Iowa State University Research Foundation, Inc. Multiparameter magnetic inspection system with magnetic field control and plural magnetic transducers. 5,008,621, Cl. 324-227.000.
Jimonet, Patrick: *See—*
Gueremy, Claude; Jimonet, Patrick; and Mignani, Serge, 5,008,280, Cl. 514-367.000.
Jirkovsky, Vladimir: *See—*
Brychta, Jaroslav; Lutisan, Eduard; and Jirkovsky, Vladimir, 5,007,394, Cl. 123-279.000.
Jobbins, Richard M. *See—*
Chiang, William G., Jobbins, Richard M.; and Popule, Michael P., 5,008,444, Cl. 560-222.000.
Jodal, Ildiko. *See—*
Szabo, Tibor; Institoris, Laszlo; Szejtli, Jozsef; Szente, Lajos; and Jodal, Ildiko, 5,008,386, Cl. 536-103.000.
Joffe, Eugene. Device for determining the occlusal plane. 5,007,830, Cl 433-68.000.
Johanson, Greg N. Method and apparatus for changing cultivator plow blades. 5,007,484 Cl. 172-1.000.
Johansson, Goran, and Olanders, Par, to Roby Teknik Aktiebolag Method and an arrangement for the pretreatment of a moving material web 5,008,076, Cl. 422-28.000.
Johnson Electric S A *See—*
Wang, Patrick S., 5,008,577, Cl. 310-233.000.
Johnson, Ivy D., Chu, Pochen, and Kresge, Charles T., to Mobil Oil Corporation Aromatization process utilizing a pillared layered silicate plus a base metal or noble metal 5,008,481, Cl. 585-418.000.
Johnson, James L. *See—*
Oroskar, Anil R., and Johnson, James L., 5,008,189, Cl 435-105.000.
Johnson & Johnson Medical, Inc *See—*
Linsky, Cary B., and Cunningham, Timothy J., 5,007,916, Cl 606-151.000.
Johnson, Karle J *See—*
Critchlow, David N., Yehushua, Moshe, Avis, Graham M., Heimbigner, Wade L., Johnson, Karle J., and Wiley, George A., 5,008,900, Cl. 375-8.000.
Johnson, Paul E. *See—*
Orman, Charles R., Johnson, Paul E., and Adams, Bruce C., 5,007,335, Cl 99-487.000.
Johnson, Ralph E *See—*
Maglica, Anthony, Johnson, Ralph E., and Lewis, Armis I., 5,008,785, Cl. 362-183.000.
Johnson, Robert D *See—*
Blechschmidt, James L., Johnson, Robert D., and Powell, Robert F., 5,007,658, Cl 280-661.000.
Johnson, Robert H *See—*
Withers, Robert W., and Johnson, Robert H., 5,008,836, Cl 364-516.000.
Johnson, Robert R. *See—*
Bluck, Raymond M., Bush, Harold G., and Johnson, Robert R., 5,008,061, Cl 264-257.000.
Johnson, William M., to International Business Machines Corporation Apparatus and method for improving load regulation in switching power supplies 5,008,796, Cl 363-21.000.
Johnston, Lowell E Battery assembly 5,008,161, Cl 429-7.000.
Jolley, Scott T., and Grava, Arturs, to Lubrizol Corporation, The Liquid compositions containing carboxylic esters. 5,008,028, Cl 252-68.000.
Jonas, Friedrich *See—*
Heywang, Gerhard, and Jonas, Friedrich, 5,008,430, Cl 558-396.000.
Jones, Arthur A Method and apparatus for restraining the legs and pelvis for exercising and/or testing the lower trunk of the human body 5,007,634, Cl 272-134.000.
Jones, Johnnie L Automatic dispenser for elongated flexible coiled elements 5,007,597, Cl 242-82.000.
Jones, Norman S., to Instruments and Movements Limited Pneumatic oscillators 5,007,457, Cl 137-624.140.
Jones, Stephen A. *See—*
Anderson, Larry, Batts, Gregory N., Purbrick, Malcolm D., Scriven, Clare E., and Jones, Stephen A., 5,008,358, Cl 526-292.300.
Jordan, John J., to United States of America, Navy Latch pin installation apparatus and method 5,007,155, Cl 29-434.000.
Joshi, Uday W *See—*
Sansone, Ronald P., Schumacher, Karl H., Keating, Raymond, Wall, Joseph W., and Joshi, Uday W., 5,008,827, Cl 364-464.020.
Joslyn Corporation *See—*
Tonkiss, David W., 5,007,465, Cl 140-150.000.
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Scarberry, Paul W., Kazemba, Rodney L., and Hestekin, Ralph A., 5,007,744, Cl. 383-37.000.

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Crompton, Charles F., Kazi, Abdulla M. Z., and Soni, Inderjit S., 5,008,036, Cl. 252-313.100.

KD Group: *See—*
Blau, David A., Meadows, John, Sherlock, Thomas M., Stengel, Fred, Studholme, Robert M., Wada, Kenneth R., and Kepner, Christopher J., 5,008,081, Cl. 422-64.000.

Keane, Brian, to Vaqua Limited. Centrifugal pump. 5,007,798, Cl. 415-88.000.

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Sansone, Ronald P., Schumacher, Karl H.; Keating, Raymond, Wall, Joseph W., and Joshi, Uday W., 5,008,827, Cl. 364-464.020.

Keijsper, Johannes J.; Mackay, Munro, and Post, Martin F. M., to Shell Oil Company. Crystalline (metallo)silicates and process for preparing such (metallo)silicates. 5,008,094, Cl. 423-328.000.

Kelleher, Brian M., and Hussain, Zahid, to Digital Corporation. Method for simultaneous initialization of a double buffer and a frame buffer. 5,008,838, Cl. 364-522.000.

Keller, Hans J.; and Kuster, Walter A., to Eltec Instruments, Inc. Radiation detection method and apparatus. 5,007,432, Cl. 128-736.000.

Kelley, Arnold F.: *See—*
Block, Michael J., Kelley, Arnold E., and Skripek, Milan, 5,007,987, Cl. 201-17.000.

Kelley, Louis E., to Instruments for Research and Industry I^2R, Inc. Insulated container for biological samples. 5,008,084, Cl. 422-102.000.

Kelley, Michael P., to Zebco Corporation. Weed ring for trolling motor. 5,007,867, Cl. 440-71.000.

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Christiansen, Ned, and Kellogg, David, 5,007,610, Cl. 248-311.200.

Kelly, Christopher J., and Lewis, Keith L., to Barr & Stroud; and United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Infra-red transmitting optical components and optical coatings therefor. 5,007,689, Cl. 350-1.600.

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Dye, John F., 5,007,411, Cl. 128-64.000.

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Beach, Wayne H., and Shirk, Steven D., 5,007,685, Cl. 299-91.000.
Greenfield, Mark S., 5,008,073, Cl. 420-121.000.

Kennan, Linda D.; Knapp, Theodore L.; Monroe, Carl M.; and Skoglins, Olgerts, to Dow Corning Corporation. Treated silica for reinforcing silicone elastomer. 5,008,305, Cl. 523-212.000.

Kennedy, Christopher R., and Aghajanian, Michael K., to Lanxide Technology Company, LP. Method for forming metal matrix composite bodies containing three-dimensionally interconnected comatrices and produets produced thereby. 5,007,475, Cl. 164-97.000.

Kenney, Timothy J., and D'Luna, Lionel J., to Eastman Kodak Company. Adjustable clock generator circuit. 5,008,563, Cl. 307-269.000.

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Keohan, Francis L., to Cape Cod Research, Inc. Zinc-carbon antifouling coating. 5,008,146, Cl. 428-328.000.

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Kernforschungsanlage Juelich GmbH: *See—*
Neidermeyer, Uwe, Kragl, Udo; Kula, Maria R., Wandrey, Christian; Makrylaleas, Kyriakos; and Drauz, Karlheinz, 5,008,192, Cl. 435-128.000.

Kernion, Mark C., and Davies, Ben, deceased (by Davies, Evelyn, executrix), to Dresser Industries, Inc. Refractory slide gate assembly and method. 5,007,615, Cl. 251-368.000.

Kesner, Leo: *See—*
Stracher, Alfred; and Kesner, Leo, 5,008,288, Cl. 514-535.000.

Kessel, William C., Laclaire, John L.; Lui, Andrew L., Locke, Michael H., and Britt, Herbert I., to Process Modeling Investment Corp. System for displaying different subsets of screen views, entering different amount of information, and determining correctness of input dependent upon current user input. 5,008,810, Cl. 364-200.000.

Kesterman, James E.: *See—*
Wilder, Paul R.; and Kesterman, James E., 5,007,468, Cl. 141-209.000.

Ketcham, Stephen O.; Ortiz, Paul W., Jarvis, Jamie S., and McCray, Clyde S., to General Electric Company. Apparatus for cutting sheet materials. 5,007,316, Cl. 83-167.000.

Ketcham, Thomas D., to Corning Incorporated. High toughness ceramic alloys. 5,008,221, Cl. 501-103.000.

Keutgen, Peter: *See—*
Rothfuss, Hans, Bruckner, Raimund, Keutgen, Peter, Seeger, Josef, Winkelmann, Manfred, and Metzger, Herbert, 5,007,621, Cl. 266-220.000.

Key, Gary R.; and Black, David C., to International Business Machines Corp. Automatic baud rate detection. 5,008,902, Cl. 375-10.000.

Keystone Environmental Resources, Inc.: *See—*
Fu, Jaw K.; Merritt, Arch J., deceased, and Smith, John R., 5,007,771, Cl. 405-258.000.

Keystone International Holdings Corp.: *See—*
Scobie, William B., and Frenzel, Robert A., 5,007,330, Cl. 92-120.000.

Kezuka, Hiroaki: *See—*
Shimizu, Nobuaki, and Kezuka, Hiroaki, 5,008,445, Cl. 560-243.000.

Kheiri, Mohammad A., to Miles Inc. Easy handling reagent strip. 5,008,077, Cl. 422-56.000.

Kida, Koichi: *See—*
Abe, Takafumi, Uchiyama, Seiji, Ojima, Takahiro, and Kida, Koichi, 5,008,479, Cl. 585-320.000.

Kidd, Roy E., Andrejasich, Raymond J., Michel, Hilary, and Slocum, Laurence S., to Emhart Industries, Inc. Fluid detector with overfill probe. 5,008,653, Cl. 340-620.000.

Kiehl, Gary G.; and Surash, Robert G., to Eastman Kodak Company. Method for recovering metals from waste liquors. 5,008,017, Cl. 210-710.000.

Kiehl, Gary G.: *See—*
Surash, Robert G., and Kiehl, Gary G., 5,008,020, Cl. 210-751.000.

Kieren, Roger; Jamison, David A., and Thomas, John J., to Detroit Edison Company, The. Load totalizing blocked throwover control. 5,008,560, Cl. 307-19.000.

Kikuchi, Hiromi, to Kabushiki Kaisha Toshiba. Diagnostic voice instructing apparatus. 5,008,942, Cl. 381-51.000.

Kikuchi, Ikuya, and Sato, Ryo, to Pioneer Electronic Corporation. Optical pick-up unit. 5,007,712, Cl. 350-255.000.

Kikuchi, Katsuya, to Kabushiki Kaisha Toshiba. Endoscope having picture image freeze device. 5,007,407, Cl. 128-6.000.

Kikuchi, Yasuo: *See—*
Onose, Tsukasa; Kikuchi, Yasuo; Ogawa, Toshitaka, and Seino, Minoru, 5,008,716, Cl. 355-322.000.

Kikumoto, Yoshikazu: *See—*
Nakai, Satoru, Kaneta, Mayumi, Kikumoto, Yoshikazu; Hong, Yeong-Man, Kawai, Kazuyoshi, Takegata, Setsuko, Ishii, Kiyoshi, Yanagihara, Yasuo, and Hirai, Yoshikatsu, 5,008,374, Cl. 530-351.000.

Kikuno, Mitsutoyo: *See—*
Shinada, Masayuki; Ikesue, Masumi, Kikuno, Mitsutoyo; and Murai, Tatsuya, 5,008,709, Cl. 355-309.000.

Killgoar, Paul C., Jr.; Samus, Marsha A.; Koller, Robert D., Sr., and Hemenway, Carl P., to Rohm and Haas Company. Novel damping compositions. 5,008,324, Cl. 524-504.000.

Killmeyer, Richard P.: *See—*
Dickie, William, Cavallaro, Joseph A., and Killmeyer, Richard P., 5,008,083, Cl. 422-101.000.

Kim, Jin: *See—*
Christopher, Kenneth W., Jr., Feigenbaum, Barry A., Kim, Jin, and Love, Douglas C., 5,008,820, Cl. 364-200.000.

Kim Manufacturing Company: *See—*
Carroll, Joseph W., Jr., 5,007,608, Cl. 248-297.200.

Kim, Sam H. End-locking device for slide fasteners. 5,007,145, Cl. 24-433.000.

Kim, Tae Y., to SamSung Electronics Co., Ltd. Support unit for home appliances. 5,007,607, Cl. 248-188.900.

Kim, Woo-Jin: *See—*
Lee, Jong-Seob, 5,008,576, Cl. 310-166.000.

Kimura, Keita; and Yamamoto, Tetsuya, to Nikon Corporation. Electronic still camera. 5,008,757, Cl. 358-213.130.

Kimura, Tadashi; Matsugi, Tetsuzo, and Suzuki, Yasuyuki, to Mitsubishi Denki Kabushiki Kaisha. Scroll compressor with dividing chamber for suction fluid. 5,007,809, Cl. 417-371.000.

Kimura, Yuji: *See—*
Kondo, Hitoshi, Ohta, Eiichi, and Kimura, Yuji, 5,008,732, Cl. 357-71.000.

King, Bruce A.: *See—*
Thill, Bruce P.; and King, Bruce A., 5,008,347, Cl. 525-433.000.

King, David L., Cooper, Michael D., and Faber, Michael A., to Catalytica, Inc. Acid catalyzed process. 5,008,468, Cl. 568-697.000.

King Imports, Inc.: *See—*
Zierhut, Clarence D., 5,007,754, Cl. 401-174.000.

King, Karen L.: *See—*
Gardner, Tommy R.; Dill, Walter R., Ford, William G. F., and King, Karen L., 5,008,026, Cl. 252-8.553.

Kingsman, Alan J.; Kingsman, Susan M., Adams, Sally E., Mellor, Elizabeth J. C., and Malim, Michael H., to Oxford Gene Systems Limited. Fusion proteins and particles. 5,008,373, Cl. 530-350.000.

Kingsman, Susan M.: *See—*
Kingsman, Alan J., Kingsman, Susan M., Adams, Sally E., Mellor, Elizabeth J. C.; and Malim, Michael H., 5,008,373, Cl. 530-350.000.

Kinne, Daniel J.: *See—*
Benecke, Arnold G., Kinne, Daniel J.; and Wnuk, Andrew J., 5,008,110, Cl. 424-448.000.

Kinsen, Kazuhisa: *See—*
Ochi, Katsura; Oonishi, Yasuaki, and Kinsen, Kazuhisa, 5,008,139, Cl. 428-40.000.

Kinson, Philip L., and Faber, Edward M., to B. F. Goodrich Company, The. Glass-fiber-reinforced poly(vinyl chloride) blend with improved heat distortion and tensile strength. 5,008,145, Cl. 428-288.000

Kintz, Karl A. *See*—
Liang, Rong-Chang, Kintz, Karl A., O'Connor, Joseph G. and Adair, Paul C., 5,008,237, Cl. 503-212.000

Kipfelsberger, Christian *See*—
Kaeufer, Helmut, Kipfelsberger, Christian, and Leyrer, Karl-Heinz, 5,008,059, Cl. 264-230.000

Kiraly, Jeno *See*—
Bakos, Jozsef, Heil, Balint, Toth, Imre, Edes, Bela, Gebhardt, Tstvan, Bihari, Ferenc, Durko nee Ponacz, Anna, Eifert, Gyula, Kiraly, Jeno, Konok nee Horvath, Eva, Lukacs, Laszlo, Meszaros nee Szekrenyesi, Agnes, Radvany, Bela, and Sarosi, Lajos, 5,008,440, Cl. 560-65.000

Kirby, John A., to United States of America, Energy, Process and apparatus for detecting presence of plant substances. 5,008,539, Cl. 250-336.100

Kircher, Dieter, and Schwarzer, Paul, to Alfred Teves GmbH. Anti-skid-controlled hydraulic brake system. 5,007,687, Cl. 303-113.000

Kirk, Joseph J. *See*—
Cheriff, Frank J., Kirk, Joseph J., Pulver, Arnold M. and Cox, Walter N., 5,008,656, Cl. 340-718.000

Kirkland, James L., to United States of America, Navy. Device for detecting and/or sweeping electrically controlled mines. 5,007,346, Cl. 102-402.000

Kirschner, Craig A., to Automated Fire Control, Incorporated. Adjustable load bolt adapter bracket assembly. 5,007,603, Cl. 248-59.000

Kisfaludy, Lajos, deceased *See*—
Schon, Istvan, Nyeki, Olga, Kisfaludy, Lajos, deceased, Denes, Laszlo, Hajos, Gyorgy, and Szporny, Laszlo, 5,008,246, Cl. 514-18.000

Kisfaludy, Maria, Marta Kisfaludy, Andras Kisfaludy, legal heirs *See*—
Schon, Istvan, Nyeki, Olga, Kisfaludy, Lajos, deceased, Denes, Laszlo, Hajos, Gyorgy, and Szporny, Laszlo, 5,008,246, Cl. 514-18.000

Kishida, Kazuo, Kitai, Kiyokazu, and Mohri, Masaaki, to Mitsubishi Rayon Company, Ltd. Impact modifier for thermoplastic resin having good heat discoloration resistance and heat deterioration resistance, and thermoplastic resin composition comprising this impact modifier. 5,008,313, Cl. 524-120.000

Kishita, Hirofumi *See*—
Suzuki, Akio, Kishita, Hirofumi, Sonegawa, Shigehisa, Matumura, Masaaki, and Hoashimoto, Takeshi, 5,007,726, Cl. 351-41.000

Kiss, Akos *See*—
Speer, Dietrich, Kiss, Akos, Kleinschmit, Peter, and Hanich, Juergen, 5,008,223, Cl. 106-450.000

Kitagawa, Hiroji, to Kitagawa Industries Co., Ltd. Conductive seal. 5,008,485, Cl. 174-35.0GC

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Kitagawa, Hiroji, 5,008,485, Cl. 174-35.0GC
Nakagawa, Asaharu, 5,008,488, Cl. 174-36.000

Kitaguchi, Hiromasa. Crankless engine. 5,007,385, Cl. 123-48.00B

Kitahata, Roy S., to Chamberlain Group, The. Direct current motor assembly with rectifier module. 5,008,574, Cl. 310-68.00D

Kitai, Kiyokazu *See*—
Kishida, Kazuo, Kitai, Kiyokazu, and Mohri, Masaaki, 5,008,313, Cl. 524-120.000

Kitamura, Toru, Ohashi, Yoshio, Sekino, Masami, and Murakawa, Kenichi, to Research Association for Petroleum Alternatives Development. Process for hydrogenation of heavy oil. 5,008,001, Cl. 208-143.000

Kitamura, Youichi, and Tajimi, Michiko, to Hitachi, Ltd. Testable echo cancelling methed and device. 5,008,923, Cl. 379-3.000

Kitasato Kenkyusho *See*—
Omura, Satoshi, and Itoh, Zen, 5,008,249, Cl. 514-29.000

Kitaura, Hiromu, Isobe, Mitsuo, Kawahara, Isao, Hirauchi, Yoshio, Ninomiya, Yuichi, Ohtsuka, Yoshimichi, and Izumi, Yoshinori, to Matsushita Electric Industrial Co., and Nippon Hoso Kyokai. Clamp system used for television signal. 5,008,753, Cl. 358-171.000

Kiyono, Mikio, to NEC Corporation. Multilevel optical signal transmitter. 5,008,957, Cl. 455-618.000

Klaerner, Peter *See*—
Bueschl, Rainer, and Klaerner, Peter, 5,008,341, Cl. 525-216.000

Klanne, Harald, to ISB Generalunternehmen fur Industriespezialbau. Device for the maintenance of large-capacity containers. 5,007,500, Cl. 182-38.000

Klausener, Alexander, Kleefeld, Gerd, Berg, Dieter, Dutzmann, Stefan, and Hanbler, Gerd, to Bayer Aktiengesellschaft. Pesticidal pyridyl-substituted acrylic ester compounds. 5,008,275, Cl. 514-334.000

Kleefeld, Gerd *See*—
Klausener, Alexander, Kleefeld, Gerd, Berg, Dieter, Dutzmann, Stefan, and Hanbler, Gerd, 5,008,275, Cl. 514-334.000

Klein, Erhard, to Karl Harms Handels-GmbH & Co. KG. Magnetic security system against theft and burglary and metallic sensor element suitable therefor. 5,008,649, Cl. 340-572.000

Klein, Gerald B. Business card and card stock with lift-out panel and bonded edges. 5,007,191, Cl. 40-638.000

Klein, Rolf M., Poprawe, Reinhart, and Herziger, Gerd W., to Blendax GmbH. Process for rounding bristle tips on brushes. 5,007,686, Cl. 300-21.000

Kleinberg, Larry K., to Storz Instrument Company. Documentation illumination module for a microscope system. 5,007,723, Cl. 350-508.000

Kleiner, Hans-Jerg, Gersdorf, Joachim, and Bastian, Udo, to Hoechst Aktiengesellschaft. Novel 6-acyl-(6H)-dibenz[c,e][1,2]oxaphosphorin-6-oxides, their preparation and their use as photoinitiators. 5,008,426, Cl. 558-82.000

Kleiner, Hans-Jerg *See*—
Gerdau, Thomas, Kleiner, Hans-Jerg, Peuckert, Marcellus, Bruck, Martin, and Aldinger, Fritz, 5,008,423, Cl. 556-412.000

Kleinschmit, Peter *See*—
Speer, Dietrich, Kiss, Akos, Kleinschmit, Peter, and Hanich, Juergen, 5,008,223, Cl. 106-450.000

Kleinschnitz, Donald *See*—
Fries, William J., Kleinschnitz, Donald, and Nelson, I. Craig, 5,008,808, Cl. 364-200.000

Klemann, Lawrence P., Finley, John W., and Scimone, Anthony, to Nabisco Brands, Inc. Long chain diol diesters as low calorie fat mimetics. 5,008,126, Cl. 426-611.000

Klimisch, Helen M., and Malezewski, Regina M., to Dow Corning Corporation. Sunscreen formulation containing a phenyl functional organosilicon compound. 5,008,101, Cl. 424-59.000

Klingert, Bernd *See*—
Husler, Rinaldo, Klingert, Bernd, Rembold, Manfred, and Steiner, Eginhard, 5,008,302, Cl. 522-14.000

Klingman, Ken A. *See*—
Nyberg, Eric D., Klingman, Ken A., Curtis, Jeff, and Stewart, Ray F., 5,007,989, Cl. 204-1.110

Klinkowstein, Robert W., to Science Research Laboratory, Inc. High voltage power supply. 5,008,800, Cl. 363-61.000

Klitsner, Daniel B., to Discovery Toys, Inc. Banked hairpin marble race toy. 5,007,876, Cl. 446-168.000

Klopping, Peter A. Process for calibration of standardization of natural intestines. 5,007,878, Cl. 452-198.000

Klos, Gene J. *See*—
Ach, William D., Anderson, Edmund J., Behrends, Lynn B., Desrude, Wayne P., and Klos, Gene J., 5,007,527, Cl. 198-803.010

Kmenti, Bradley A. Orthodontic appliance adhesive. 5,008,304, Cl. 523-118.000

Knapp, Gordon G. *See*—
Nalepa, Christopher J., Presswood, J. Kenneth, and Knapp, Gordon G., 5,008,453, Cl. 564-271.000

Knapp, Theodore L. *See*—
Kennan, Linda D., Knapp, Theodore L., Monroe, Carl M., and Skostins, Olgerts, 5,008,305, Cl. 523-212.000

Knierim, David L., and Brown, Gary L., to Tektronix, Inc. Method and apparatus for processing component signals to preserve high frequency intensity information. 5,008,741, Cl. 358-32.000

Knobbe, Karl-Heinz *See*—
Martinen, Hinrich, Knobbe, Karl-Heinz, Simonsson, Samuel S., and Wirth, Peter, 5,008,896, Cl. 372-83.000

Knoll, Jozsef *See*—
Ecsery, Zoltan, Knoll, Jozsef, Somfai, Eva, Torok, Zoltan, Szinyei, Eva, and Mozsolits, Karoly, 5,008,292, Cl. 514-654.000

Ko, Wei C. Ornamental clock with decorative time indicating device. 5,008,867, Cl. 368-23.000

Kobayashi, Atsuhito *See*—
Ono, Shoichi, and Kobayashi, Atsuhito, 5,008,531, Cl. 250-222.100
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Kobayashi, Eiji *See*—
Kanda, Yutaka, Yasuzawa, Tohru, Saito, Hiromitsu, Sano, Hiroshi, Kobayashi, Eiji, and Morimoto, Makoto, 5,008,271, Cl. 514-292.000

Kobayashi, Hitoshi, Takano, Akira, Narusawa, Naoharu, Tsukada, Yukihiko, Sakamoto, Hiroshi, Hirano, Masaki, and Ando, Masao, to Nisshinbo Industries, Inc., and Nagano Japan Radio Co., Ltd. Paper feeder of a label printer. 5,008,710, Cl. 355-202.000

Kobayashi, Nobutoshi, and Murakami, Tetsuo, to Nippon Scientific Co., Ltd., and Kusumoto Chemicals Co., Ltd. Vacuum drier apparatus. 5,007,183, Cl. 34-92.000

Kobayashi, Ryuji *See*—
Murata, Shizuo, Nakayama, Minoru, Furukawa, Kenji, and Kobayashi, Ryuji, 5,008,456, Cl. 564-322.000

Kobayashi, Shoei *See*—
Ohki, Hiroshi, Kobayashi, Shoei, and Wada, Takuya, 5,008,521, Cl. 235-454.000

Kobayashi, Takehiro *See*—
Emura, Masaharu, and Kobayashi, Takehiro, 5,007,601, Cl. 242-223.000

Kobes, Gerald W., and Eisele, Thomas A., to Tree Top, Inc. Apparatus for making enzyme inactivated viscous fruit pulp and products therefrom. 5,007,334, Cl. 99-483.000

Koch, Ralph E., to Ralph E. Koch Trucking, Inc. Cover system for flat bed vehicles. 5,007,672, Cl. 296-100.000

Kochba, Joseph *See*—
Katzir, Yigal, and Kochba, Joseph, 5,008,743, Cl. 358-101.000

Koehler Bertrand, Manil, Emmanuel, and Chapellier, Jacques, to Societe Nationale Industrielle et Aerospatiale. Device for controlling vibration-free movement of an optical element in a stellar inteferometer and stellar interferometer comprising same. 5,008,606, Cl. 318-649.000

Koehler, Hermann, Ebel, Klaus, Karn, Helmut, and Taubitz, Christof, to BASF Aktiengesellschaft. Preparation of p-nitrophenylimidazoles. 5,008,398, Cl. 548-342.000

Koflach Sport Gesellschaft mbH & Co. KG *See*—
Bischof, Horst, and Skerbinjek, Wolfgang, 5,007,186, Cl. 36-121.000

Koga, Yasuo *See*—
Nishi, Takao, Uno, Tetsuyuki, Koga, Yasuo, and Chu, Gil-Namg, 5,008,274, Cl. 514-312.000

Kogita, Hidekazu *See*—
Mori, Keiji, and Kogita, Hidekazu, 5,007,722, Cl. 350-382.000

Kohler, Hans-Dieter *See*—
Schleppinghoff, Bernhard, Kohler, Hans-Dieter, Gabel, Christian, and Scheef, Hans-Volker, 5,008,466, Cl. 568-697.000

Kohno, Mitsuru *See*—
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Kohtaka, Ikuo *See*—
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Kohya, Hidehiko *See*—
Yokoi, Kouichi, Irinoda, Kazuhiko, Kohya, Hidehiko, Sato, Susumu; and Katori, Tatsuhiko, 5,008,419, Cl. 556-137.000

Koito Manufacturing Co., Ltd.: *See*—
Nino, Naoki, 5,008,781, Cl. 362-61.000

Koizumi, Makoto *See*—
Nishiyama, Nobumasa, Saito, Makoto, Ouchi, Yasuhide, Katoh, Yasuhiro, Kamo, Yoshihisa, Koizumi, Makoto, Aoi, Hajime, Sato, Naoki, and Tsuchiya, Reijiro, 5,008,761, Cl. 360-45.000

Koizumi, Norihiko; Taniока, Hiroshi, Toyama, Noboru, Arahara, Kozo, and Yuasa, Toshiya, to Canon Kabushiki Kaisha. Image recording apparatus for transferring ink patterns formed by selective application of energy through electrodes of a recording head controllably biased against ink transported on a roller. 5,008,690, Cl. 346-140.00R

Koizumi, Satoru, to Sharp Kabushiki Kaisha. Two stage reel mechanism for tape recorder. 5,007,600, Cl. 242-194.000

Koizumi, Yoshihisa, to Isuzu Motors Limited. Brake system. 5,007,509, Cl. 188-271.000

Kojima, Kunio *See*—
Numata, Tomiyuki, Iwaki, Takashi; Kojima, Kunio, and DeGuchi, Toshihisa, 5,008,888, Cl. 372-29.000

Kojima, Narihito *See*—
Rokutanzono, Takashi, Ide, Yukio; Nagame, Hiroshi, Ohshima, Kohichi, Kojima, Narihito, and Nousho, Shinji, 5,008,172, Cl. 430-67.000

Kokubo, Hiroyasu; Sekigawa, Fujio, Chiba, Tohru, and Onda, Yoshiro, to Shin-Etsu Chemical Co., Ltd. Method for preparing film coated pharmaceutical preparations and method for improving properties thereof. 5,008,113, Cl. 424-480.000.

Kolesar, Edward S., Jr., to United States of America, Air Force. Hybrid wafer scale microcircuit integration. 5,008,213, Cl. 437-51.000

Koller, Robert D., Sr.: *See*—
Killgoar, Paul C., Jr., Samus, Marsha A., Koller, Robert D., Sr., and Hemenway, Carl P., 5,008,324, Cl. 524-504.000

Komada, Kenya *See*—
Sakamoto, Koji; Tanzawa, Misao, Iwata, Nobuo, Murayama, Hisao, Takahashi, Susumu, and Komada, Kenya, 5,008,711, Cl. 355-206.000

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Komase, Hiroshi *See*—
Saito, Kazuharu, Matsukura, Hiroyasu, Komase, Hiroshi, Tsuneda, Haruhiro, Watanabe, Junji; Saito, Tadao, Doy, Toshiroh, and Matsunaga, Kazuo, 5,007,209, Cl. 51-283.00R

Komatsu Zenoah Company *See*—
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Komori, Yumiko *See*—
Karakida, Kenichi, Yagi, Shigeru; Fukuda, Yuzuru, Nishikawa, Masayuki, Roh, Te N; Takahashi, Noriyoshi, Ono, Masato, Yokoi, Masaki, and Komori, Yumiko, 5,008,170, Cl. 430-65.000

Komuro, Toshio *See*—
Shibata, Kazuo, and Komuro, Toshio, 5,008,567, Cl. 307-443.000

Kondo, Hirosato, Taguchi, Masahiro, Inoue, Yoshimasa; and Sakamoto, Fumio, to Kanebo, Ltd. Quinolinecarboxylic acid derivatives. 5,008,389, Cl. 544-343.000

Kondo, Hitoshi, Ohta, Eiichi, and Kimura, Yuji, to Ricoh Company, Ltd. Thin film two terminal element. 5,008,732, Cl. 357-71.000

Kondo, Kazuo: *See*—
Bekki, Katsutoshi, Kondo, Kazuo, Shibata, Yoshimasa; and Niwa, Shigeo, 5,007,932, Cl. 623-18.000

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Tsukisaka, Ryogo, Kondo, Satoshi, Kaneguchi, Toshio, and Deguchi, Takashi, 5,007,964, Cl. 106-464.000

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Kondo, Yuu: *See*—
Tanuma, Chiaki; Itsumi, Kazuhiro, Iwase, Nobuo; Ono, Tomio, Kondo, Yuu; and Saito, Kazutaka, 5,008,582, Cl. 310-332.000

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Kawachi, Genshiro; Mimura, Akio, Konishi, Nobutake; Ono, Kikuo, and Suzuki, Takashi, 5,008,218, Cl. 437-201.000.

Konok nee Horvath, Eva *See*—
Bakos, Jozsef; Heil, Balint; Toth, Imre; Edes, Bela; Gebhardt, Tstvan; Bihari, Ferenc, Durko nee Ponacz, Anna, Eifert, Gyula; Kiraly, Jeno; Konok nee Horvath, Eva, Lukacs, Laszlo; Meszaros nee Szekrenyesi, Agnes; Radvany, Bela; and Sarosi, Lajos, 5,008,440, Cl. 560-65.000

Koos, Gregory L: *See*—
Carver, Gary E.; Koos, Gregory L., and Michalski, John D., 5,007,741, Cl. 356-448.000

Kopin Corporation: *See*—
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Yamamura, Takeshi, Endo, Seiji; Kawauchi, Kazuyuki, and Korenaga, Hiroki, 5,008,728, Cl. 357-45.000

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Korte, Reinhard *See*—
Hermsdorffer, Joachim, Galfe, Gunther, Lautenbacher, Stefan, Korte, Reinhard; Krause, Hans-Joachim, Krull, Frans; May, Arno; Oberdorfer, Dietmar, and Pluquett, Ulrich, 5,007,433, Cl. 128-742.000

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Koster, Wolfgang *See*—
Behling, Rolf, and Koster, Wolfgang, 5,008,917, Cl. 378-140.000

Kotobuki Seiyaku Co. Ltd. *See*—
Tomiyama, Tsuyoshi, Tomiyama, Akira, Shirai, Tadashi, Wakabayashi, Shuuichi, Kawai, Tomoyuki, Ueyama, Naoto, and Sonegawa, Motoharu, 5,008,282, Cl. 514-393.000.

Koudounaris, Angelo *See*—
Congleton, Helen, Slaton, Carol L., Koudounaris, Angelo, Smith, Gerald B., and Soto, Vicente, 5,007,576, Cl. 228-103.000

Kousaka, Kunimitsu *See*—
Miida, Takashi, Ozaki, Nozomu, Baba, Shigenori, and Kousaka, Kunimitsu, 5,008,696, Cl. 354-408.000

Kovesh, Yair *See*—
Maier, Eliahu, Kovesh, Yair, and Zorea, Abraham, 5,007,248, Cl. 62-244.000

Kowalczyk, Michael S *See*—
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Koyo Seiko Co., Ltd *See*—
Hattori, Tsuneichi, and Iga, Kazuo, 5,007,514, Cl. 192-45.000
Takeuchi, Masamichi, and Asai, Yasuo, 5,007,747, Cl. 384-450.000

Kozlowski, Walter A. *See*—
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Kraft General Foods, Inc *See*—
Cale, Kenneth W., Imura, Naoto, Jasovsky, George A., and Katz, Saul N., 5,008,125, Cl. 426-594.000

Krageloh, Konrad *See*—
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Kragl, Udo *See*—
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Kratky, Zdenek; and Tandy, John S., to Nestec S.A. Selective cleavage of naringin. 5,008,381, Cl. 536-8.000

Krause, Frank *See*—
Reutter, Jorg, and Krause, Frank, 5,008,524, Cl. 250-214.00A

Krause, Hans-Joachim *See*—
Hermsdorffer, Joachim; Galfe, Gunther; Lautenbacher, Stefan, Korte, Reinhard, Krause, Hans-Joachim, Krull, Frans, May, Arno, Oberdorfer, Dietmar, and Pluquett, Ulrich, 5,007,433, Cl. 128-742.000

Krauss, Richard C., to DowElanco. Process for the preparation of 5-amino-3-chlorosulfonyl-1,2,4-triazole. 5,008,396, Cl. 548-263.800

Krawiecki, Madonna M.: *See*—
Pesheck, Peter S.; Atwell, William A.; Krawiecki, Madonna M., and Anderson, George R., 5,008,507, Cl. 219-10.55E

Kreinberg, Earl R *See*—
Daly, John K., Kreinberg, Earl R., Puerner, Dean A., and Adcock, Marty E., 5,007,858, Cl. 439-498.000

Kremers, Henry T., and Rabb, Khalid M., to Xerox Corporation. Selectable sheet offsetting. 5,007,625, Cl. 270-53.000.

Kresge, Charles T. *See*—
Johnson, Ivy D., Chu, Pochen, and Kresge, Charles T., 5,008,481, Cl. 585-418.000.

Krigmont, Henry V.; and Coe, Everett L., Jr., to Wahleo, Inc. Measurement of electrical resistivity of particulate entrained in a gas stream. 5,008,628, Cl. 324-693.000

Krishnaswamy, Natrajan: *See*—
Zecchino, Julius R., Krishnaswamy, Natrajan, Clement, Pamela A., and Vargas, Anthony, 5,008,100, Cl. 424-59.000

Krock, Friedrich W *See*—
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Kroener, Michael: *See—*
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Kroetsch, Edward S.: *See—*
Arndt, Horst; and Kroetsch, Edward S., 5,008,943, Cl 381-68.600

Kromer, Roland, to Maag Gear-Wheel & Machine Company Limited Cutting or drawing tool. 5,007,774, Cl 407-94.000

Kruck, Richard W., Cur, Omer N., Leclear, Douglas D., Kuehl, Steven J., and Burin, Ralph R., to Whirlpool Corporation Modular mechanical refrigeration unit. 5,007,246, Cl 62-131.000.

Krueger, Steven D., and Amundsen, Michael J., to Texas Instruments Incorporated. Data processing apparatus with abbreviated jump field 5,008,807, Cl 364-200.000

Kruger, Bernd-Wieland, Sasse, Klaus; Hoever, Franz-Peter; Nentwig, Gunther; and Behrenz, Wolfgang, to Bayer Aktiengesellschaft Agents for repelling insects and mites 5,008,261, Cl 514-212.000

Krull, Frans: *See—*
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Krupp Polysius AG: *See—*
Beltrop, Herbert, 5,008,922, Cl 378-208.000

Krushinski, Bert K., Lawhon, Robert A., Radecki, Francis A., and Schwenninger, Ronald L., to PPG Industries, Inc Compressed, wedged float glass bottom structure 5,007,950, Cl 65-182.500

Kubacak, Johnny L., and Byrd, Gary D Roadside spray apparatus 5,007,585, Cl 239-176.000.

Kubo, Masashige: *See—*
Eguchi, Hisao; Kubo, Masashige; Kunimoto, Koji; Shimizu, Sadami; Sato, Masakatsu; and Tamabayashi, Hanzo, 5,008,469, Cl 568-722.000

Kubodera, Seiiti: *See—*
Tanaka, Mitsugu; and Kubodera, Seiiti, 5,008,232, Cl 503-227.000

Kubota Limited: *See—*
Ito, Ryoichi; Iwai, Koji; and Nishida, Tsuyoshi, 5,007,383, Cl 123-41.490

Kucera, Eugenia H: *See—*
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Kuchiki, Kiyotsuna: *See—*
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Kudo, Takanori, and Ishihara, Heigo, to Hitachi, Ltd Process for producing information recording medium 5,008,128, Cl 427-130.000

Kuehl, Steven J: *See—*
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Kula, Maria R: *See—*
Neidermeyer, Uwe; Kragl, Udo; Kula, Maria R; Wandrey, Christian; Makrylaleas, Kyriakos; and Drauz, Karlheinz, 5,008,192, Cl 435-128.000

Kumada, Akio, Iochi, Takahiko; and Okada, Minoru, to Hitachi Maxell, Ltd., and Demix Technology Inc Piezoelectric revolving resonator and single-phase ultrasonic motor 5,008,581, Cl 310-323.000

Kumar, Kaplesh, and Newborn, Herbert A., to Charles Stark Draper Laboratory, Inc., The Samarium-transition metal magnet formation 5,007,972, Cl 148-102.000

Kumasaka, Takao, and Simazaki, Yuzuru, to Hitachi, Ltd., and Hitachi Koki Co., Ltd Multi-color electrophotograph apparatus 5,008,691, Cl 346-157.000

Kume, Toyohiko, Goto, Toshio, Kamochi, Atsumi, Yanagi, Akihiko, Miyauchi, Hiroshi, and Asami, Tadao, to Nihon Tokushu Noyaku Seizo K K Herbicidal novel benzothiazolonyl pyrroles 5,007,952, Cl 71-73.000

Kumita, Norio, Yamamoto, Takaaki, Narita, Seiichi, and Ori, Takaaki, to Nippondenso Co., Ltd Collision detecting device for motor vehicles 5,008,501, Cl 200-61.45R

Kummerhoff, Gerhard, to Sundwiger Eisenhutte Maschinenfabrik Grah & Co Four-high roll or six-high roll stand having laterally supported working rolls. 5,007,273, Cl 72-242.200

Kundig, Hans: *See—*
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Kunimoto, Koji: *See—*
Eguchi, Hisao; Kubo, Masashige; Kunimoto, Koji; Shimizu, Sadami; Sato, Masakatsu; and Tamabayashi, Hanzo, 5,008,469, Cl 568-722.000

Kuo, Chihping: *See—*
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Kuo, Cho-chou: *See—*
Grayston, J Thomas; Kuo, Cho-chou; and Wang, San-pin, 5,008,186, Cl 435-7.360

Kuo, Shih-Yee; Cho, Hyun-Sam; and Bright, Jeffrey D., to Norton Company Process for preparing titanium nitride coated silicon carbide materials 5,008,132, Cl 427-217.000

Kupfer, Michael D: *See—*
Bly, Sara A.; Farrand, A Brady; Hodges, Jeffery D.; Kupfer, Michael D.; Lewis, Brian T.; Maybury, William J.; Tallan, Michael L.; and Tom, Stephen B., 5,008,853, Cl 364-900.000

Kurafuji, Hiroshi, to Citizen Watch Co., Ltd Head driving apparatus for thermal printer 5,008,684, Cl 346-76.0PH

Kuramochi, Wataru; Tsuruoka, Yoshiaki; Saitou, Norikazu; Shibuya, Akira; and Yamashita, Shuichi, to Dai Nippon Insatsu Kabushiki Kaisha, Data recording and reproducing apparatus for an optical card 5,008,552, Cl 235-483.000.

Kureha Chemical Industry Co., Ltd: *See—*
Ishizuka, Makoto; and Wakasugi, Takashi, 5,008,462, Cl 568-466.000

Kureha Kagaku Kogyo K.K.: *See—*
Kashiwadate, Ken; Satake, Yoshikatsu; Kaneko, Takashi; Tada, Masahiro; and Katto, Takayuki, 5,008,370, Cl 528-481.000

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Ikuzawa, Masanori; Oguchi, Yoshiharu; Matsunaga, Kenichi; Toyoda, Noriyuki; Furusho, Takao; Fujii, Takayoshi; and Yoshikumi, Chikao, 5,008,243, Cl. 514-8.000

Kurihara, Tooru: *See—*
Mizuniwa, Seiji; Hattori, Akio; Kurihara, Tooru; Aoyama, Seigi; and Nakamura, Konichi, 5,007,979, Cl 156-605.000

Kurita, Teiji: *See—*
Souketani, Koichi; Ito, Yukio; Sasaki, Yoshio; Kurita, Teiji; and Tamiya, Jun, 5,007,773, Cl 407-27.000.

Kuriyama, Mitsuo: *See—*
Siga, Masao; Fukui, Yutaka; Kuriyama, Mitsuo; Kurosawa, Soichi; Iijima, Katsumi; Iizuka, Nobuyuki; Maeno, Yosimi; Takahashi, Shintaro; Watanabe, Yasuo; and Hiraga, Ryo, 5,008,072, Cl 420-69.000

Kuriyama, Yuji: *See—*
Maeda, Junichi; Yanai, Tsuguo; Yamamoto, Kazuto; Kuriyama, Yuji; and Yamamoto, Haruo, 5,008,854, Cl 364-900.000

Kuroda, Mitsunobu: *See—*
Tokizane, Toshiaki; Ito, Yoshiharu; Yamada, Osamu; Masuda, Toshiyuki; and Kuroda, Mitsunobu, 5,008,662, Cl 340-825.060

Kurono, Masayasu; Kondo, Yasuaki; Mitani, Takahiko; Baba, Yutaka; and Sawai, Kiichi, to Sanwa Kagaku Kenkyusho Co., Ltd Organogermanium compound, process for the preparation of same as well as use thereof 5,008,416, Cl. 556-89.000

Kurosawa, Soichi: *See—*
Siga, Masao; Fukui, Yutaka; Kuriyama, Mitsuo; Kurosawa, Soichi; Iijima, Katsumi; Iizuka, Nobuyuki; Maeno, Yosimi; Takahashi, Shintaro; Watanabe, Yasuo; and Hiraga, Ryo, 5,008,072, Cl 420-69.000

Kurtz, Stuart J., and Szaniszlo, Steve R., to Union Carbide Chemicals and Plastics Technology Corporation Reduction in die drool in filled resins and product improvement 5,008,056, Cl 264-130.000

Kurzweil Applied Intelligence, Inc: *See—*
Sejnoha, Vladimir, 5,008,941, Cl 381-43.000

Kusakabe, Wataru: *See—*
Terakawa, Takashige; and Kusakabe, Wataru, 5,008,486, Cl 174-35.0MS

Kusakata, Shigeru: *See—*
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Kushima, Hiroshi: *See—*
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Kuster, Walter A: *See—*
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Kusumoto Chemicals Co., Ltd: *See—*
Kobayashi, Nobutoshi; and Murakami, Tetsuo, 5,007,183, Cl 34-92.000

Kutz, Karl H: *See—*
Huang, Kevin C.; Kutz, Karl H.; McNamara, Timothy J.; Seals, Victoria E.; and Still, Gregory S., 5,008,885, Cl 371-3.000

Kuwabara, Isao; Watanabe, Yoshio; Yoshimura, Susumu; and Maruyama, Hidekazu, to Ikeda Bussan Co., Ltd Vehicular seat assembly 5,007,682, Cl 297-452.000

Kuwae, Yoko: *See—*
Nishimura, Yukuo; Haruta, Masahiro; Munakata, Hirohide; Kuwae, Yoko; Miyazaki, Toshihiko; and Yuasa, Satoshi, 5,007,714, Cl 350-353.000.

Kuwajima, Teruaki: *See—*
Ishii, Keizou; Kuwajima, Teruaki; Miwa, Hiroshi; Kashihara, Akio; and Ishikura, Shinichi, 5,008,318, Cl 524-284.000

Kuze, Tetsuya; Yamashita, Takashi; and Suzuki, Toshihiko, to Yokohama Rubber Co., Ltd., The Pneumatic radial tire with improved bead structure 5,007,472, Cl 152-546.000

Kwak, Key S: *See—*
Simmons, Robert J., and Kwak, Key S., 5,007,770, Cl 405-240.000

Kwasniewski, Andrew: *See—*
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Kwok, Shirley Y: *See—*
Sminsky, John J.; Kwok, Shirley Y.; and Mack, David H., 5,008,182, Cl 435-5.000

Kyfes, Vincent, to C & L Development Inc., and Chill Tech, Inc., part interest to each Tongue and groove snap-fit pipe coupling 5,007,666, Cl 285-373.000

Kyocera Corporation: *See—*
Muramatsu, Sadao; Hashiba, Yukifumi; and Ikeda, Yuuichi, 5,008,698, Cl 354-429.000

Kyowa Hakko Kogyo Co., Ltd: *See—*
Kanda, Yutaka; Yasuzawa, Tohru; Saito, Hiromitsu; Sano, Hiroshi; Kobayashi, Eiji; and Morimoto, Makoto, 5,008,271, Cl 514-292.000

Kyriakis, John, to Beta Instrument Company Limited Method and apparatus for heating a metallic elongated product 5,008,514, Cl 219-155.000

Kyriakos, Constantinos S., and Baran, Henri, to Allied-Signal Inc. Collision avoidance transmit system with autocalibration. 5,008,844, Cl 364-571.050

L.K. Goodwin Co., Inc.: *See—*
Ouellet, Wilfred P., 5,007,211, Cl 52-2.120

Laakmann, Peter, to Synrad, Incorporated Drive system for RF-excited gas lasers 5,008,894, Cl 372-38.000.

Laatsch, Hartmut: *See—*
Ditrich, Klaus; Hamprecht, Gerhard; Wuerzer, Bruno; Meyer, Norbert; Westphalen, Karl-Otto; and Laatsch, Hartmut, 5,007,954, Cl. 71-90.000.

Labat, Jacques: *See—*
Guichard, Jacques; Buchner, Georges; and Labat, Jacques, 5,008,924, Cl 379-53.000

Laberge, Raymond; and Beauregard, Robert, to Sport Maska Inc. Chest protector 5,007,108, Cl. 2-2.000

Lackner, John R., Grzywna, Stanley E., Weber, Ralph A., and Baird, Thomas E., to Scott Fetzer Company, The Convertible vacuum cleaner 5,007,133, Cl 15-351.000

Lackner, Karl H., to Salmet Gesellschaft mit beschrankter Haftung & Co., Kommanditgesellschaft Air circulating system for poultry housing 5,007,379, Cl 119-17.000

Laclaire, John L: *See—*
Kessel, William C.; Laclaire, John L.; Lui, Andrew L.; Locke, Michael H.; and Britt, Herbert I., 5,008,810, Cl 364-200.000

Lacombe, Alain, to Societe Europeenne de Propulsion Friction system using refractory composite materials. 5,007,508, Cl. 188-251.00A.

Lago, Rudolph M: *See—*
Haag, Werner O.; and Lago, Rudolph M., 5,008,482, Cl 585-437.000.

Laine, Richard M.: *See—*
Blum, Yigal D.; and Laine, Richard M., 5,008,422, Cl 556-412.000

Laitram Corporation, The: *See—*
Lapeyre, James M., 5,008,847, Cl 364-709.160

Lalvani, Haresh Non-periodic and periodic layered space frames having prismatic nodes 5,007,220, Cl 52-311.000

Lambert, Patrick M.: *See—*
Bryan, Philip S.; Lambert, Patrick M.; Towers, Christine M.; and Jarrold, Gregory S., 5,008,034, Cl 252-301.40F

Lambert, Susan L., to UOP Novel crystalline silicon enhanced aluminas 5,008,233, Cl. 502-231.000

Lammers, Uve H. W.: *See—*
Morris, John B.; Lammers, Uve H. W.; and Marr, Richard A., 5,007,721, Cl 350-486.000

Landesman, Barbara T., to Talandic Research Corporation. Semiconductor laser diodes 5,008,892, Cl 372-45.000

Lange, Russell C: *See—*
Blouse, Jeffrey L.; Fulton, Inge G.; Lange, Russell C.; Meyerson, Bernard S.; Nummy, Karen A.; Revitz, Martin; and Rosenberg, Robert, 5,008,207, Cl 437-31.000

Langensiepen, Ralph A., Aghajanian, Michael K., and Wiener, Robert J., to Lanxide Technology Company, LP Method of providing a gating means, and products produced thereby 5,007,474, Cl 164-97.000

Langkjaer, Liselotte: *See—*
Markussen, Jan; Norris, Kjeld; and Langkjaer, Liselotte, 5,008,241, Cl 514-3.000

Langner, Herbert G J Rotating cylindrical screen with fine mesh modular panels 5,008,010, Cl 210-232.000

Lantos, Ivan: *See—*
Bender, Paul E.; Lantos, Ivan; McGuire, Michael A.; Pridgen, Lendon N.; and Winicov, Herbert B., 5,008,390, Cl 546-199.000.

Lanxide Technology Company, LP: *See—*
Kennedy, Christopher R.; and Aghajanian, Michael K., 5,007,475, Cl 164-97.000.
Langensiepen, Ralph A.; Aghajanian, Michael K.; and Wiener, Robert J., 5,007,474, Cl 164-97.000
Newkirk, Marc S.; and Aghajanian, Michael K., 5,007,476, Cl 164-97.000

Lapeyre, James M., to Laitram Corporation, The Cursor selected keyboard keys displayed on the computer screen for entering alphanumeric characters and instructions, particularly for creating computer-aided design and drafting patterns 5,008,847, Cl. 364-709.160.

Lapporte, Seymour J., and Toland, William G., to Chevron Research Company Methylene and oxymethylene bis-ester production 5,008,451, Cl 562-891.000

Larmco Security, Inc: *See—*
Dunagan, John E., and Bernath, Stanley, 5,007,199, Cl 49-13.000.

Larson, Eric H: *See—*
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Larson, John R: *See—*
Bain, Richard L.; and Larson, John R., 5,008,085, Cl 422-109.000

Larson, Reed A., to Hi-Life Rubber Inc. Milking machine teat cup assembly 5,007,378, Cl 119-14.470

Larsson, Karl O. A. H., to ISG/AG. Drive unit adapted for use with manual piston pump. 5,007,899, Cl 604-74.000

Laser Diode, Inc: *See—*
Martin, Danny W., 5,008,895, Cl. 372-69.000.

Laser Link, Inc: *See—*
Kazar, Dennis M., 5,008,595, Cl 315-178.000

Lathrop, Robert L., Jr.: *See—*
Groswith, Charles T., III; Phipps, Richard D.; Lathrop, Robert L., Jr.; Stewart, John F.; and Kaufmann, Rick J., 5,007,782, Cl 412-40.000

Laughner, Michael K., to Dow Chemical Company, The Molding compositions with acrylonitrile-EPDM-styrene copolymers. 5,008,330, Cl. 525-67.000.

Lauks, Imants R.; Wieck, Henry J.; and Bandru, Gregory M., to I-Stat Corporation. Fluidics head for testing chemical and ionic sensors. 5,008,616, Cl. 324-158.00F.

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Crompton, Charles E.; Kazi, Abdulla M Z; and Soni, Inderjit S., 5,008,036, Cl. 252-313.100.

Lauren Manufacturing Company: *See—*
Glover, Michael; and Reichert, Gerhard, 5,007,217, Cl. 52-172.000

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Madeley, David R., and Binet, Mark S., to Lucas Industries, Device depowering apparatus, 5,008,561, Cl. 307-80.000.

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storage apparatus with tablet device for inputting image data 5,008,854, Cl 364-900.000
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Siga, Masao, Fukui, Yutaka, Kuriyama, Mitsuo, Kurosawa, Soichi, Iijima, Katsumi, Iizuka, Nobuyuki, Maeno, Yosimi, Takahashi, Shintaro, Watanabe, Yasuo, and Hiraga, Ryo, 5,008,072, Cl 420-69.000
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Magistro, Angelo J., to B. F. Goodrich Company, The Catalytic dehydrohalogenation catalyst 5,008,225, Cl. 502-73.000
Maglica, Anthony; Johnson, Ralph E. and Lewis, Armis I. to Mag Instrument, Inc. Rechargeable miniature flashlight 5,008,785, Cl 362-183.000
Magonen, Robert M. Detachable two-piece temple 5,007,728, Cl 351-118.000
Mahaney, John C., to Olson Manufacturing Co. Box lock assembly 5,007,258, Cl. 70-159.000.
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Mahoney, Murray W., and Ghosh, Amit K., to Rockwell International. Optical monitor for superplastic forming 5,007,265, Cl. 72-37.000
Maier, Eliahu, Kovesh, Yair; and Zorea, Abraham, to Lordan & Co. Beverage cooling system 5,007,248, Cl. 62-244.000
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Busenhart, Peter, Schneeberger, Ruedi, Holbein, Erwin, Wirz, Armin, Flueli, Adolf; and Maier, Hansueli, 5,007,595, Cl 242-46.400
Maier, William H., and Bentham, Martin F., to UOP. Aromatics extraction process having improved water stripper 5,008,004, Cl 208-321.000
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Maiocchi, Luigi, to Pirelli Coordinamento Pneumatici S.p.A. Beads of pneumatic tires for vehicle wheels 5,007,471, Cl. 152-540.000
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Corain, Luciano, Maitan, Gianni, Perlini, Renato, and Bacchetti, Mario, 5,007,463, Cl. 139-448.000
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Makino, Takayuki, Mukai, Nobuhiro, and Ige, Hitoshi, to Mitsubishi Rayon Company Ltd. Visible light ray-curable monomeric composition for fastening loose teeth 5,008,300, Cl. 522-8.000
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Mallory, Inc. *See*—
Bellis, Peter D., and Nesselrode, Frederick, 5,007,806, Cl 417-360.000
Man Design Co. Ltd. *See*—
Wakatsuki, Yoshio, Okuyama, Toshiharu; Takeuchi, Hajime, Shimizu, Misao; and Shimizu, Giichiro, 5,008,665, Cl. 340-870.260
MAN Roland Druckmaschinen AG: *See*—
Abendroth, Paul; Brandes, Harry, and Raab, Rudolf, 5,007,342, Cl 101-420.000.
Manchak, Frank, Jr.; Manchak, Frank E., II; Manchak, Michael E., and Manchak, Peter J., to Alternative Technologies for Waste, Inc. Method and apparatus for centrifugally casting hazardous waste 5,008,045, Cl. 252-633.000
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Manfre, Robert A. Rail mate 5,007,612, Cl. 248-558.000
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Mann, Samuel J., to Inverness Corporation. Ear piercing cartridge assembly, 5,007,918, Cl. 606-188.000
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Manzer, Leo E. and Rao, V. N. Mallikarjuna, to Du Pont de Nemours, E. I., and Company. Gas-phase fluorination process 5,008,475, Cl 570-168.000
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Marcilly, Christian, Deves, Jean-Marie, and Raatz, Francis, to Institut Francais du Petrole. Cracking catalyst for hydrocarbon charges comprising an offretite, a zeolite and a matrix 5,008,000, Cl 208-120.000
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Margiaria, Giorgio, and Brizio, Giuseppe, to Fiat Auto S.p.A. Method for press molding plastics articles, in particular thermoplastic, thermosetting and polyurethane polymeric articles 5,008,063, Cl 264-297.200
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Palmer, James T., 5,008,433, Cl. 560-17.000
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Markinson, Scott, Schuster, Michael; and Hogan, Thomas, to Apollo Computer, Inc. Apparatus for low skew system clock distribution and generation of 2X frequency clocks 5,008,636, Cl. 331-2.000
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Martin, Danny W., to Laser Diode, Inc. Packaging device for diode laser pumped assembly 5,008,895, Cl. 372-69.000.
Martin, Hubert C., Jr. *See*—
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Martin, Lawrence L.; and Setescak, Linda L., to Hoechst-Roussel Pharmaceuticals, Inc. (6,11-dihydro-11-oxodibenz[b,e]oxepin-yl)pentanoic acids and derivatives thereof. 5,008,285, Cl. 514-450.000.
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Maruyama, Akihiro, Kato, Munehiko, Ishiwaka, Takumi, Seki, Katsuto; and Ohashi, Takashi, to Bridgestone Corporation. Method for producing phenol resin foams and method of making foamed laminates. 5,008,297, Cl 521-136.000.
Maruyama, Hidekazu: *See*—
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Mason, Stanley I., Jr., Fuller, Elizabeth L., and Doty, Roy E. Kit for board games. 5,007,651, Cl 273-256.000
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Rha, ChoKyun, Pradipasena, Pasawadee; Nakamura, TetsuHisa, Easson, Donald D., Jr., and Sinskey, Anthony J., 5,008,108, Cl 424-401.000
Masse, Joseph H. Wire bending device 5,007,269, Cl. 72-173.000
Mastroni, Frederick J., Jr. Power operated string vibrating device for selectively vibrating a string of a stringed musical instrument. 5,007,321, Cl 84-325.000
Mastuoka, Masaaki, to World Auto Plate Ltd. Number plate including luminous characters 5,008,783, Cl 362-83.200
Masuda, Takashi, Hashimoto, Kengiro, Takagi, Shinichi; and Tanaka, Masayuki, to Mitsuboshi Belting Ltd. Belt for high load transmission. 5,007,884, Cl 474-242.000
Masuda, Takeshi, Yagi, Susumu, Okabe, Sakiichi, Kamishima, Yoichi, and Kawagoe, Kazuo, to Yoshida Kogyo K. K. Piezoelectric vibration generator and vibratory parts feeder incorporating the same 5,008,580, Cl 310-321.000
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Mathivat, Denis; and Petitcollin, Jean-Marc, to Saint-Gobain Vitrage International. Support frame for a glass sheet 5,007,949, Cl 65-160.000
Mathur, Ashish, to Network Equipment Technologies, Inc. Method and apparatus for updating system software for a plurality of data processing units in a communication network. 5,008,814, Cl 364-200.000
Matjasic, Klaus, to Mauve, Karl-Eberhard. Process and device for measuring the tension of racket strings 5,007,294, Cl 73-862.410.
Matsaki, Katsumi, to Canon Kabushiki Kaisha. Data processor capable of outputting codes representing displayed patterns 5,008,809, Cl 364-200.000
Matsubara, Junko. Method of using manganese to protect an animal from radiation damage 5,008,119, Cl 424-639.000
Matsuda, Koichi *See*—
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Matsumoto, Koji, to Hosiden Corporation. Power socket 5,007,851, Cl. 439-188.000.
Matsumoto, Shusaku; Hatakawa, Yoshio, and Nakajima, Akihiko, to Dai-Ichi Kogyo Seiyaku Co., Ltd. Process for purifying sucrose fatty acid esters. 5,008,387, Cl 536-119.000
Matsunaga, Douglas S.; Slabowski, Jan W., and Marecki, Tadeusz, to Braner, Inc. Tension roller. 5,007,272, Cl 72-226.000
Matsunaga, Kazuo: *See*—
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Matsuo, Sei, to Alps Electric Co., Ltd. Positioning apparatus for an automatic carrier system. 5,007,783, Cl 414-222.000.
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Ishibashi, Hiromichi, and Tanaka, Shinichi, 5,008,669, Cl 341-102.000
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Matteucci, Lawrence A., Rager, Shirley J., and Maher, Ambrose P. Inflatable balloon distress signal device 5,007,367, Cl 116-210.000
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Matzelle, Albert J.; and Scheerer, William E., to Federal-Mogul Corporation. Thrust bearing with resilient retention tang 5,007,746, Cl 384-420.000
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Mazda Motor Corporation. *See*—
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McAffer, Ian G. C. *See—*
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McCormack, William C. Body temperature responsive transport warming blanket. 5,008,515, Cl. 219-212.000.

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McDougall, Floyd H. *See—*
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McEathron, Robert J. Hydraulic lift for bathtubs 5,007,121, Cl. 4-566.000

McElroy, David J. *See—*
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McElroy, John W., to Liberty Technology Center, Inc. Non-invasive system and method for inspection of valves 5,008,841, Cl. 364-551.010

McEwen, William D. Support stand for food pouches 5,007,606, Cl. 248-152.000

McFarlane, Ross A., to Hughes Aircraft Company. Red, green, blue upconversion laser pumped by single wavelength infrared laser source 5,008,890, Cl. 372-41.000

McGill Manufacturing Company, Inc. *See—*
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McGuire, Douglas K. Hoof-buffing tool kit for farriers 5,007,483, Cl. 168-48.100

McGuire, Michael A. *See—*
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McKenna, Frank J., Horst, Richard K., Horst, James F. and Arney, Rodney L. Fruit harvesting machine. 5,007,772, Cl. 406-39.000

McKillip, William D. *See—*
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McMahon, Robert W. *See—*
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McMillan, Jeff G. *See—*
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McNamara, Timothy J. *See—*
Huang, Kevin C., Kutz, Karl H., McNamara, Timothy J., Seals, Victoria E., and Still, Gregory S., 5,008,885, Cl. 371-3.000

McNulty, Donald E. *See—*
Sidebotham, Christopher G., McNulty, Donald E., and Lombardo, Alan M., 5,007,933, Cl. 623-20.000.

McQueen, Colleen L. *See—*
Doyle, A. Thomas, Tremulis, William S., and McQueen, Colleen L., 5,007,434, Cl. 128-772.000

Mead Corporation, The *See—*
Liang, Rong-Chang, Kintz, Karl A., O'Connor, Joseph G., and Adair, Paul C., 5,008,237, Cl. 503-212.000.

Meadows, John *See—*
Blau, David A., Meadows, John, Sherlock, Thomas M., Stengel, Fred, Studholme, Robert M., Wada, Kenneth R., and Kepner, Christopher J., 5,008,081, Cl. 422-64.000.

Mearl Corporation, The *See—*
Armanini, Louis, 5,008,143, Cl. 428-207.000

Meat Processing Service Corporation *See—*
Bernhardt, Douglas H., Matheu, Guillermo R., Crum, Spencer E., and Adelmann, John T., 5,007,336, Cl. 99-487.000

Meddaugh, Michael D., to Dow Corning Corporation Composition and method for priming and coating silicone substrates 5,008,154, Cl. 428-447.000

Medical Products Development, Inc *See—*
Quaid, Joel, 5,007,929, Cl. 623-8.000

Medtronic, Inc. *See—*
Doan, Phong D., Upton, James E., Hess, Douglas N., Bass, Wayne R., and Ufford, Keith A., 5,007,435, Cl. 128-784.000
Smits, Karel F. A. A., 5,007,436, Cl. 128-786.000

Meguerdijan, Sarkis A. *See—*
Weiss, Lawrence D., Caruthers, Douglas W., Inatomi, Charles T., Kawan, Joseph C., Lee, Shan, Marks, Harvey, Meguerdijan, Sarkis A., Parekh, Dilip J., Samulon, Alfred S., Takata, Melvin M., Tucci, Morris L., and Vollmer, Jim R., 5,008,927, Cl. 379-98.000.

Meguro, Haruo. *See—*
Nishiuchi, Shohachi, Ohta, Shigeo, Imai, Hitoshi, and Meguro, Haruo, 5,007,266, Cl. 72-44.000

Mehler, Klaus-Dieter *See—*
Lehmkuhl, Herbert, and Mehler, Klaus-Dieter, 5,007,991, Cl. 204-58.500

Meidan, Daniel Plastic profile fastener 5,007,146, Cl. 24-683.000

Meier, Hans R., Evans, Samuel, and Dubs, Paul, to Ciba-Geigy Corporation Substituted phenols as stabilizers. 5,008,459, Cl. 568-46.000

Meier, Josef, Deinhammer, Wolfgang, and Krageloh, Konrad, to Wacker-Chemie GmbH Process for the preparation of pyridine-2,3-dicarboxylic acid esters 5,008,392, Cl. 546-250.000

Meier, Louis M.; and Berning, Lloyd G., to Flexsteel Industries, Inc Fluid-resistant, upholstered furniture seat adapted to aid housekeeping 5,007,681, Cl. 297-440.000.

Meiji Seika Kaisha, Ltd *See—*
Tachibana, Shunro, and Shibata, Uichi, 5,007,438, Cl. 128-798.000

Meinetsberger, Eike, to Luitpold-Werk Chemisch-pharmazeutische Fabrik GmbH & Co Polysulfuric acid esters of bis-aldonamides and their derivatives, process for their preparation and medicaments 5,008,247, Cl. 514-23.000

Mellard, David Automobile anti-theft device 5,007,259, Cl. 70-209.000

Meller, Moshe, and Feldman, Michael, to MTI Precision Products, Inc Disposable right angle dental handpiece 5,007,832, Cl. 433-126.000

Mellor, Elizabeth J. C. *See—*
Kingsman, Alan J., Kingsman, Susan M., Adams, Sally E., Mellor, Elizabeth J. C., and Malim, Michael H., 5,008,373, Cl. 530-350.000

Meltz, Gerald *See—*
Morey, William W., Leonberger, Fred J., Glenn, William H., and Meltz, Gerald, 5,007,705, Cl. 350-96.290

Menicon Co., Ltd *See—*
Yamamoto, Yasuyoshi, Kaga, Yuzo, Yoshikawa, Toshiharu, and Moribe, Akira, 5,007,975, Cl. 156-154.000

Merck & Co., Inc *See—*
Chaiet, Louis, Zimmerman, Sheldon B., Monaghan, Richard L., and Garrity, George M., 5,008,187, Cl. 435-72.000
Fisher, Michael H., Wyvratt, Matthew J., and Mrozik, Helmut, 5,008,250, Cl. 514-30.000

Mercurio, Leonard, to Set-O-Matic Sales Corp. Coin drop construction 5,007,519, Cl. 194-230.000

Merger, Franz *See—*
Fischer, Rolf, Frank, Juergen, Merger, Franz, and Weyer, Hans-Juergen, 5,008,408, Cl. 549-429.000

Merianos, John J., and Login, Robert B., to GAF Chemicals Corporation Solubilization of lactam and chlorhexidine in water 5,008,038, Cl. 252-363.500.

Merianos, John J., to GAF Chemicals Corporation Anhydrous complexes of PVP and hydrogen peroxide 5,008,093, Cl. 423-272.000

Merianos, John J., Lieberman, Herbert A., and Login, Robert B., to GAF Chemicals Corporation Method for reducing the microbial content of surfaces with a microbiocidal, anhydrous complex of PVP-H_2O_2 5,008,106, Cl. 424-80.000

Merianos, John J *See—*
Dandreaux, Gary, Login, Robert B., Merianos, John J., Garelick, Paul, Plochocka, Krystyna, Negrin, Max, and Shih, Jenn S., 5,008,367, Cl. 528-326.000

Merkel, Paul B. and Hoke, David, to Eastman Kodak Company Photographic recording material containing a cyan dye-forming coupler 5,008,180, Cl. 430-552.000

Merrison, John C *See—*
Unsworth, Peter J., Merrison, John C., and Rowan, Timothy M., 5,008,608, Cl. 318-729.000

Merritt, Arch J., deceased *See—*
Fu, Jaw K., Merritt, Arch J., deceased, and Smith, John R., 5,007,771, Cl. 405-258.000

Merritt, Helene, executrix *See—*
Fu, Jaw K., Merritt, Arch J., deceased, and Smith, John R., 5,007,771, Cl. 405-258.000

Merritt, Michael A. *See—*
Naro, Rodney L., Csonka, James M., and Merritt, Michael A., 5,008,074, Cl. 420-578.000

Merry, Richard P., to Minnesota Mining and Manufacturing Company Erosion resistant mounting composite for catalytic converter 5,008,086, Cl. 422-180.000

Mersch, Steven H., to Becton, Dickinson and Company Measuring a gap between a tube and a float 5,008,556, Cl. 250-560.000.

Mery, Bernard *See—*
Penitot, Gerard; Cartigny, Marcel, Roynard, Joel, Valdenaire, Bruno, Astier, Marc, Mery, Bernard, and Wendling, Michael, 5,007,447, Cl. 137-102.000

Meseke, Curt T., Winkler, Winfried, and Hilbig, Renate, to Hammerlit GmbH Syringe tray 5,007,535, Cl. 206-366.000

Messick, Mikel J *See—*
DeCoursey, Robert T., and Messick, Mikel J., 5,008,051, Cl. 264-40.300.

Messinger, Werner, Trollitsch, Karl, and Tewes, Bernd, to Braun Aktiengesellschaft Electric dry shaving apparatus with a movable shaving head arrangement 5,007,168, Cl. 30-43.000

Meszaros nee Szekrenyesi, Agnes *See—*
Bakos, Jozsef, Heil, Balint, Toth, Imre, Edes, Bela, Gebhardt, Tstvan, Bihari Ferenc, Durko nee Ponacz, Anna, Eifert, Gyula, Kiraly, Jeno, Konok nee Horvath, Eva, Lukacs, Laszlo, Meszaros nee Szekrenyesi, Agnes, Radvany, Bela, and Sarosi, Lajos, 5,008,440, Cl. 560-65.000

Metcal, Inc. *See—*
Carlomagno, Michael, Poostpasand, Hamid, and James, Steven, 5,007,574, Cl. 228-20.000.

Metprotech Limited. *See—*
Evans, Dennis E., and Liddell, Keith S., 5,007,589, Cl. 241-21.000.

Metz, Josef *See—*
Kaufhold, Manfred; and Metz, Josef, 5,008,429, Cl. 558-374.000

Metzger, Herbert *See—*
Rothfuss, Hans, Bruckner, Raimund, Keutgen, Peter; Seeger, Josef; Winkelmann, Manfred, and Metzger, Herbert, 5,007,621, Cl. 266-220.000.

Meul, Thomas, to Lonza Ltd Process for production of 5-alkyl tetramic acids 5,008,402, Cl. 548-544.000

Meyer, Edwin R. *See—*
Phillips, Larry G., Meyer, Edwin R., and Greene, David C., 5,008,740, Cl. 358-23.000

Meyer, Louis W.; Vanderhider, J. Alan; and Carswell, Robert, to Dow Chemical Company, The Internal mold release compositions 5,008,033, Cl. 252-182.130.

Meyer, Norbert *See—*
Ditrich, Klaus, Hamprecht, Gerhard, Wuerzer, Bruno; Meyer, Norbert; Westphalen, Karl-Otto, and Laatsch, Hartmut, 5,007,954, Cl. 71-90.000.

Meyerhoefer, Carl *See—*
Neuwirth, Helmuth, Meyerhoefer, Carl; Carney, William V.; and Visconti, Peter, 5,008,772, Cl. 361-119.000

Meyers, Paul A. *See—*
Dorman, Linneaus C., and Meyers, Paul A., 5,007,930, Cl. 623-16.000

Meyerson, Bernard S. *See—*
Blouse, Jeffrey L., Fulton, Inge G., Lange, Russell C.; Meyerson, Bernard S.; Nummy, Karen A., Revitz, Martin, and Rosenberg, Robert, 5,008,207, Cl. 437-31.000

Miall, Derek L. Cylinder head straightener 5,007,279, Cl. 72-394.000

Michael, Keith W. *See—*
Haluska, Loren A., Michael, Keith W., and Tarhay, Leo, 5,008,320, Cl. 524-361.000.

Michael Weinig Aktiengesellschaft *See—*
Englert, Heiner; and Martin, Bernhard, 5,007,469, Cl. 144-252.00R.

Michalski, John D. *See—*
Carver, Gary E.; Koos, Gregory L.; and Michalski, John D., 5,007,741, Cl. 356-448.000

Michaluk, Peter G *See—*
Lloyd, David D.; and Michaluk, Peter G., 5,008,014, Cl. 210-512.100

Michel, Hilary *See—*
Kidd, Roy E., Andrejasich, Raymond J.; Michel, Hilary; and Slocum, Laurence S., 5,008,653, Cl. 340-620.000.

Micro Chemical, Inc *See—*
Pratt, William C., and McKillip, William D., 5,008,821, Cl. 364-413.010.

Microelectronics and Computer Technology Corporation *See—*
Spletter, Philip J.; and MacKay, Colin A., 5,008,512, Cl. 219-121.640.

Mier, Millard G. *See—*
Look, David C., Sewell, James S., Mier, Millard G.; Sizelove, John R.; Walters, Dennis C.; and Dudley, Scott C., 5,008,542, Cl. 250-341.000

Mig Vac Inc. *See—*
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Mignani, Serge *See—*
Gueremy, Claude, Jimonet, Patrick; and Mignani, Serge, 5,008,280, Cl. 514-367.000.

Miida, Takashi; Ozaki, Nozomu; Baba, Shigenori, and Kousaka, Kunimitsu, to Fuji Photo Film Co., Ltd Phase difference detecting apparatus 5,008,696, Cl. 354-408.000

Mikamo, Hisanobu; Odani, Noboru, and Shimizu, Akio, to Hitachi Maxell Ltd Ink composition for thermal transfer printing and film for thermal transfer printing 5,008,152, Cl. 428-423.100

Mikesell, James R. *See—*
Treatch, James E., and Mikesell, James R., 5,007,429, Cl. 128-677.000.

Mikros U.S.A., Inc. *See—*
Bender, Kelly M., 5,007,417, Cl. 128-80.00H.

Milani, Francesco. *See—*
Bayerlein, Jorg, Hecker, Eric; Hoeck, Peter; and Milani, Francesco, 5,007,688, Cl. 312-7.200.

Milbar Corporation. *See—*
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Miles Inc.: *See—*
Kheiri, Mohammad A., 5,008,077, Cl. 422-56.000.

Miller, Jan D., and Ye, Yi. Chemical conditioning of fine coal for improved flotation and pyrite rejection 5,008,006, Cl. 209-167.000.

Miller, Lindy F., and Thomford, Peter J., to Pitman-Moore, Inc. Method for increasing fertility in animals. 5,008,244, Cl. 514-12.000.

Miller, Richard D *See—*
Carmello, Robert; and Miller, Richard D., 5,008,029, Cl. 252-91.000.

Miller, Warren K. *See—*
Quay, Steven C.; Rocklage, Scott M., and Miller, Warren K., 5,008,099, Cl. 424-1.100.

Mills, Leo F. *See—*
Gooch, William A., Jr.; Burkins, Matthew S.; Mills, Leo F.; Ogilvy, James W.; and Ricchiazzi, Antonio J., 5,007,326, Cl. 89-36.020

Milwaukee Electric Tool Corporation *See—*
Farmerie, Joseph G., 5,007,205, Cl. 51-170.0EB
Palm, Bernhard, 5,007,172, Cl. 30-377.000

Mimura, Akio: *See—*
Kawachi, Genshiro; Mimura, Akio, Konishi, Nobutake; Ono, Kikuo; and Suzuki, Takashi, 5,008,218, Cl. 437-201.000.

Mimura, Yoshikazu, Takano, Kenichi, deceased (by Takano, Isao, legal representative); and Gotou, Tomohisa, to NEC Corporation Phthalocyanine crystal, process for manufacture thereof and its use for electrophotographic photosensitive material. 5,008,173, Cl. 430-78.000.

Minami, Etsuji *See—*
Tanaka, Toshiyuki; and Minami, Etsuji, 5,008,873, Cl. 369-44.140

Mine, Katsutoshi, Morita, Yoshitsugu, and Miyamae, Satoshi, to Toray Silicone Company, Limited. Semiconductor device 5,008,733, Cl. 357-72.000

Ministry of Internatinoal Trade and Industry. *See—*
Nonaka, Katusnobu; and Sekine, Kazuyoshi, 5,008,620, Cl. 324-213.000.

Ministry of International Trade and Industry *See—*
Watanabe, Eiji; Horio, Nasakazu, and Suzuki, Kenzi, 5,008,224, Cl. 502-63.000.

Mink, Ronald: *See—*
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Minnesota Mining and Manufacturing Company. *See—*
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Englund, Richard L.; and Schwartz, Thomas W., 5,007,128, Cl. 15-230.160.
Merry, Richard P., 5,008,086, Cl. 422-180.000.
Wilson, Bruce B.; and Grunzinger, Raymond E., 5,008,142, Cl. 428-203.000
Youngquist, Robert J., 5,008,765, Cl. 360-77.120

Minnovation Limited: *See—*
Parrott, George A., 5,007,684, Cl. 299-81.000

Minolta Camera Kabushiki Kaisha: *See—*
Enoguchi, Yuji, Natsuhara, Toshiya; and Yamamoto, Masashi, 5,008,708, Cl. 355-259.000
Higashio, Kimihiko; and Kawabuchi, Yoichi, 5,008,714, Cl. 355-313.000.
Imaizumi, Masaru; and Takano, Yoshiaki, 5,008,715, Cl. 355-313.000
Matsuura, Kazuo, 5,007,692, Cl. 350-6.800.
Tominaga, Shinji; and Hashimoto, Takeshi, 5,008,699, Cl. 354-457.000.

Minoura, Jun; Takahahi, Shigeyuki; Kato, Hisaki; Ito, Toshiyasu; Mori, Takaaki; Kato, Mamoru, Shimada, Junichi; and Okabayashi, Katsuaki, to Kabushiki Kaisha Toyota Chuo Kenkyusho, and Toyoda Gosei Co., Ltd Electrochromic elements and methods of manufacturing and driving the same. 5,007,718, Cl. 350-357.000.

Minowa, Kenji *See—*
Tamaki, Kuniaki; Sakai, Norio, and Minowa, Kenji, 5,007,534, Cl. 206-329.000.

Minter, Mearl, to Rolscreen Company Sunroom. 5,007,215, Cl. 52-90.000.

Minton, John P.; Webb, Thomas E., and Abou-Issa, Hussein M., to Ohio State University Research Foundation Method and composition for achieving chemotherapeutic activity. 5,008,291, Cl. 514-578.000.

Misholi, Boaz, to Efrat Future Technology Ltd. Message management system. 5,008,926, Cl. 379-89.000.

Mitani, Takahiko: *See—*
Kurono, Masayasu; Kondo, Yasuaki, Mitani, Takahiko; Baba, Yutaka; and Sawai, Kiichi, 5,008,416, Cl. 556-89.000.

Mitchell, Muni M.. *See—*
Edmond, John A.; Waltz, Douglas G; Mitchell, Muni M.; Sedigh, Mohammad; and Hamerski, Roman, 5,008,735, Cl. 357-74.000

Mitsubishi Denki K.K.. *See—*
Akasu, Masahira, 5,007,397, Cl. 123-422.000.
Itoh, Tatsuo, Ito, Hisayoshi; and Murasaki, Kiyomi, 5,008,802, Cl. 364-140.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Fukiage, Takahiko, 5,008,609, Cl. 323-313.000
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Kimura, Tadashi; Matsugi, Tetsuzo; and Suzuki, Yasuyuki, 5,007,809, Cl. 417-371.000
Koshinaka, Masao; Akiyama, Minoru; Tanaka, Hitoshi; and Tomoda, Toshimasa, 5,008,558, Cl. 250-563.000
Moritzumi, Koichi and Fujino, Takeshi, 5,008,830, Cl. 364-490.000
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Tsutsumi, Michinari; Endo, Atsushi; and Yada, Toshio, 5,007,984, Cl. 156-656.000.
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Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
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Mitsubishi Paper Mills Limited: *See—*
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Mitsubishi Petrochemical Co., Ltd.. *See—*
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Mitsubishi Rayon Company, Ltd.: *See*—
Kishida, Kazuo, Kitai, Kiyokazu, and Mohri, Masaaki, 5,008,313, Cl. 524-120.000
Makino, Takayuki; Mukai, Nobuhiro, and Ige, Hitoshi, 5,008,300, Cl. 522-8.000
Mitsubishi Yuka Badische Co., Ltd.: *See*—
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Mitsuboshi Belting Ltd.: *See*—
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Yamamoto, Ryoichi, and Suzuki, Hiroshi, 5,008,450, Cl. 562-485.000
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Miwa, Hiroshi: *See*—
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Miyagi, Ken: *See*—
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Miyauchi, Fumio, and Mizuno, Shyuzi, to **Ikeda Bussan Co., Ltd** Vehicular seat with seatback inclining mechanism 5,007,680, Cl 297-379.000
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Miyazaki, Hideki; Kanouda, Akihiko, Onda, Kenichi, and Matsuda, Yasuo, to Hitachi, Ltd Solid state current sensing circuit and protection circuit, 5,008,586, Cl. 323-315.000
Miyazaki, Masamitu: *See*—
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Miyazaki, Nagao, to Japan Electronics Industry, Limited Motor vehicle braking apparatus using accelerator pedal 5,007,516, Cl 192-0.072
Miyazaki, Toshihiko: *See*—
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Mizelle, Ned W Reclining chair 5,007,679, Cl 297-374.000
Mizoguchi, Akane, to NEC Corporation Semiconductor memory device provided with an improved system for detecting the positions using a redundant structure, 5,008,857, Cl. 365-200.000
Mizoguchi, Hiroshi, to Kabushiki Kaisha Toshiba Parallel accessible memory device 5,008,852, Cl. 364-900.000.
Mizrahi, Yehuda: *See*—
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Mizumoto, Takeshi; and Murakami, Yoshiaki, to Kabushiki Kaisha Kobe Seiko Sho Belt transmission for very small size shovel car 5,007,882, Cl 474-84.000.
Mizuniwa, Seiji; Hattori, Akio; Kurihara, Tooru, Aoyama, Seigi, and Nakamura, Konichi, to Hitachi Cable Limited. Method of fabricating GaAs single crystal, 5,007,979, Cl. 156-605.000
Mizuno, Hitoshi: *See*—
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Mizuno, Shyuzi: *See*—
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MMTC, Inc.: *See*—
Sterzer, Fred, 5,007,437, Cl 428-786.000.
Mobil Oil Corp: *See*—
Chin, Arthur A., 5,007,999, Cl 208-113.000
Fremuth, Dietmar R. A.; Rogers, Alan E., and Zahner, John C., 5,008,088, Cl. 422-234.000.
Garwood, William E., Le, Quang N.; Shim, Joosup; and Wong, Stephen S., 5,008,460, Cl 585-11.000
Haag, Werner O., and Lago, Rudolph M., 5,008,482, Cl 585-437.000
Hen, John, 5,008,025, Cl. 252-8.510
Herrington, Fox J., 5,007,142, Cl. 24-400.000
Herrington, Fox J., 5,007,143, Cl. 24-400.000
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Mohri, Masaaki: *See*—
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Monarch Marking Systems, Inc.: *See*—
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Mondt, Josef: *See*—
Engel, Dieter, Mondt, Josef, and Zimmerschied, Klaus, 5,008,155, Cl 428-463.000.
Monroe Auto Equipment Company: *See*—
Guy, Yoram, 5,007,659, Cl 280-707.000
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Connolly, Daniel T., and Feder, Joseph, 5,008,196, Cl. 435-240.200
Patel, Raman, 5,008,337, Cl. 525-130.000
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Monti, Sergio, to Onco-Pharm Development AG Pharmaceutical compositions having antineoplastic activity 5,008,287, Cl 514-492.000
Moody, Gillian M., and Rushforth, Christine A., to Allied Colloids Limited Recovery of alumina from bauxite 5,008,089, Cl. 423-121.000
Mookherjee, Braja D Trenkle, Robert W., Calderone, Nicholas, and Fenn, Ronald S., to International Flavors & Fragrances Inc. Schiff base reaction product of ethyl vanillin and methyl anthranilate and organoleptic uses thereof 5,008,437, Cl. 560-35.000
Moore, Boyd B., to Shell Oil Company. Method for forming precision liquid/vapor separated bristle assembly 5,007,277, Cl 72-379.200.
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Evers, Robert C., Dang, Thuy D., and Moore, D Roger, 5,008,346, Cl 525-426.000
Moore, William E., to Eastman Kodak Company. Quantitative imaging employing scanning equalization radiography 5,008,914, Cl 378-108.000
Moran, John Apparatus for producing address labels, 5,007,663, Cl 283-81.000.
More, Henry S., Fraser, Edward C., and Bulduc, Lawrence R., to Quantum Solutions, Inc Apparatus for inductively coupling signals between a downhole sensor and the surface 5,008,664, Cl 340-854.000.
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Minoura, Jun; Takahashi, Shigeyuki, Kato, Hisaki; Ito, Toshiyasu, Mori, Takaaki, Kato, Mamoru, Shimada, Junichi; and Okabayashi, Katsuaki, 5,007,718, Cl 350-357.000
Mori, Takashi: *See*—
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Moribe, Akira: *See*—
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Morii, Takayuki; and Yumoto, Hideaki, to TLV Company, Limited. Reduced pressure steam heat treating device. 5,007,582, Cl. 236-40.000.
Moriizumi, Koichi; and Fujino, Takeshi, to Mitsubishi Denki Kabushiki Kaisha Method of preparing drawing data for charged beam exposure system 5,008,830, Cl. 364-490.000
Morikawa, Takao: *See*—
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Morimoto, Makoto: *See*—
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Morino, Ronald: *See*—
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Morishita, Mitsuhiro: *See*—
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Morita, Yoshio, to Matsushita Electric Industrial Co., Ltd Semiconductor light-emitting devices 5,008,891, Cl. 372-45.000
Morita, Yoshitsugu: *See*—
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Moritomo, Haruo: *See*—
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Morlotti, Norberto: *See*—
Bovisio, Cipriano, Foglieni, Carlo, Fumagalli, Fulgenzio; Morlotti, Norberto, and Palladini, Mario, 5,007,665, Cl 285-334.000
Mormann, Werner, Brahm, Barbara; and Brahm, Martin, to Bayer Aktiengesellschaft. Process for the preparation of polyurethanes with liquid-crystal properties and diisocyanates suitable for carrying out the process 5,008,447, Cl. 560-355.000
Morrell, Marie J: *See*—
Allenza, Paul, Clifft, Christy G., and Morrell, Marie J., 5,008,195, Cl 435-193.000
Morris, Farrell Percussion implement handle 5,007,322, Cl 84-453.000
Morris, Gilbert V., to Teledyne Industries, Inc Apparatus for solder coating printed circuit panels, 5,007,369, Cl 118-56.000
Morris, John B., Lammers, Uve H W., and Marr, Richard A., to United States of America, Air Force Mechanically rotated Doppler frequency shifter 5,007,721, Cl. 350-486.000.
Morris, Matthew G: *See*—
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Mortensen, Gary B: *See*—
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Morton Thiokol, Inc.: *See*—
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Moser, Hans: *See*—
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Mosley Machinery Co., Inc.: *See*—
Newsom, Horace R., 5,007,337, Cl 100-188.00R.
Moss, Robert J Earth crust breaker 5,007,485, Cl. 172-500.000
Motorola, Inc: *See*—
Davis, Walter L., and Macnak, Philip P., 5,008,952, Cl. 455-12.000
Freeburg, Thomas A., and White, Richard E., 5,008,938, Cl 380-50.000
Goronkin, Herbert; and Kane, Robert C., 5,007,873, Cl. 445-49.000
Hanke, Carl C.; Obregon, Carlos D., and Atriss, Ahmad H., 5,008,635, Cl 331-1.00A
Jarrett, Robert B.; and Davies, Robert B., 5,008,736, Cl 357-75.000
Littlebury, Hugh W., 5,008,615, Cl. 324-158.00F
Pireh, Ali, 5,008,925, Cl 379-60.000
Withers, Robert W., and Johnson, Robert H., 5,008,836, Cl. 364-516.000
Motta, Vincent C, to Warner-Lambert Company Vibrating razor, 5,007,169, Cl 30-45.000.
Mouille, Rene L., and Suzzi, Robert J., to Societe Nationale Industrielle et Aerospatiale Flapping restrainer device for rotorcraft rotor blades, and rotor head comprising said device, 5,007,799, Cl. 416-104.000
Mozsolits, Karoly: *See*—
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MP-AKZO Corporation: *See*—
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Mrozik, Helmut: *See*—
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Mucan Diagnostics Pty Ltd: *See*—
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Muck, Karl-Friedrich: *See*—
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Mudgett, Donald, to Lestox, Inc. Electric cable with burn resistant characteristics and method of manufacture 5,008,495, Cl. 174-121.00R.
Mueller, Bruce M., to Seaquist Closures Container with a unitary closure and method for making same 5,008,066, Cl. 264-537.000
Mueller, Heinz: *See*—
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Mueller, Martin: *See*—
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Mueller, Martin J.; Mueller, Martin, and Weingandt, Michael A., to Osgood Industries, Inc Method and apparatus for filling ice cream containers 5,007,466, Cl. 141-1.000
Muench, August A., Jr Apparatus and method for marine habitat development, 5,007,377, Cl 119-4.000
Mukai, Nobuhiro: *See*—
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Mullen, Charles E., and Crater, Arthur H., to Eastman Kodak Company Device for aligning and mounting a copier or printer subsystem 5,007,760, Cl. 403-13.000
Mullendore, James A.: *See*—
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Muller, Eckart, to Volkswagen A.G Diesel internal combustion engine with temperature-dependent adjustment of start of fuel injection 5,007,237, Cl. 60-285.000.
Muller, Erich: *See*—
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Muller, Michael, Podszun, Wolfgang; and Winkel, Jens, to Bayer Aktiengesellschaft. Urea-containing (meth) acrylic acid derivatives of trisocyanates 5,008,436, Cl 560-26.000.
Muller, Thomas: *See*—
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Munakata, Hirohide: *See*—
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Mundy, David J., to Eaton Leonard Technologies, Inc Optical probe with overlapping detection fields 5,008,555, Cl. 250-560.000
Munting, Evrard: *See*—
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Munz, Rolf, to Eastman Kodak Company Hold-back device for selectively separating sheets fed seriatem to a stack 5,007,797, Cl. 414-790.800
Murai, Tatsuya: *See*—
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Murakami Kaimeido Co., Ltd.: *See*—
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Murakami, Koichi: *See*—
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Murakawa, Kenichi. *See*—
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Muramatsu, Sadao, Hashiba, Yukifumi, and Ikeda, Yuuichi, to Kyocera Corporation. Control apparatus for image sensor. 5,008,698, Cl. 354-429.000

Murasaki, Kiyomi *See*—
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Murase, Koichi *See*—
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Tamaki, Kuniaki, Sakai, Norio, and Minowa, Kenji, 5,007,534, Cl. 206-329.000.

Murata, Shizuo; Nakayama, Minoru; Furukawa, Kenji, and Kobayashi, Ryuji, to Chisso Corporation. Diamino compounds, dinitro compounds, diol compounds and a process for preparing the diamino compounds. 5,008,456, Cl. 564-322.000

Murayama, Fumio, and Ando, Tomiaki, to Pioneer Electronic Corp. Water-proof speaker unit. 5,008,945, Cl. 381-194.000

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Murray, William D. Lighted handlebar for bicycles. 5,008,782, Cl. 362-72.000

Murtiashaw, Charles W., to Pfizer Inc. Process for the production of O2,2'-anhydro-1-(β-D-arabinofuranosyl)thymine. 5,008,384, Cl. 536-23.000

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Mushinski, Roger J., Lewis, Charles E. and Casey, Lawrence J., to Appleton Papers Inc. Interleaved spiral wrapping of foam product and stretch film for packaging carbonless paper rolls. 5,007,538, Cl. 206-523.000

Musielak, Ronald L., to R V R Enterprises, Ltd. Insulated cooling container for canned liquids. 5,007,250, Cl. 62-372.000

Musto, Mario S., and Davis, Scott W. Fore-and-aft adjuster for bicycle seat. 5,007,675, Cl. 297-195.000

Muth, James C., to Spacesaver Corporation. Mobile carriage with center drive. 5,007,351, Cl. 105-101.000

Myers, Darren J. *See*—
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Myers, Earl C., Jr. *See*—
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Myers, Robert I., Brubaker, Bryce D. and Overall, Robert E., to Morton Thiokol, Inc. Removable rocket motor igniter. 5,007,236, Cl. 60-256.000

Myers, Robert L. *See*—
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Nabisco Brands, Inc. *See*—
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Rosnack, Ellen M., Pray, Larry A., Marable, Alger C., and Zekert, Gerry C., 5,008,122, Cl. 426-417.000
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Nadkarni, Arun A., and Sankrithi, Mithra M. K. V. Apparatus and methods for automatically maintaining aircraft track angle. 5,008,825, Cl. 364-434.000

Naeumann, Fritz, and Hickmann, Eckhard, to BASF Aktiengesellschaft. Preparation of benzyl ketones. 5,008,461, Cl. 568-322.000

Naf, Werner, to interTechno AG. Method for the cleaning of the interior of installed conduits. 5,007,461, Cl. 138-97.000

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Nagai, Tetsuji, Torii, Katura, and Ohno, Yoshio, to Fuji Photo Film Co., Ltd. Method of sequential monitoring and apparatus for practicing the same. 5,008,842, Cl. 364-551.010

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Nagaoka, Shinji, Sato, Koji, and Kawai, Michio, to Seikosha Co., Ltd. Rangefinder for camera. 5,008,695, Cl. 354-403.000

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Nakagawa, Asaharu, to Kitagawa Industries Co., Ltd. Strip cable. 5,008,488, Cl. 174-36.000

Nakagawa, Katsumi, Ishihara, Shunichi, Kanai, Masahiro; Murakami, Tsutomu, Arao, Kozo, Fujioka, Yasushi and Sakai, Akira, to Canon Kabushiki Kaisha. PIN junction photovoltaic element containing Zn, Se, Te, H in an amount of 1 to 4 atomic %. 5,008,726, Cl. 357-30.000

Nakagawa, Masaru, Sumino, Fumio, Hiro, Masaaki, Kashimura, Noboru, and Nagahara, Shin, to Canon Kabushiki Kaisha. Photosensitive member for electrophotography. 5,008,168, Cl. 430-56.000

Nakagishi, Toshio, to Asahi Kogaku Kogyo Kabushiki Kaisha. Carriage lock apparatus. 5,008,876, Cl. 369-244.000

Nakahara, Toshiro, to Ichikoh Industries, Ltd. Wedge-type lamp bulb assembly. 5,008,588, Cl. 313-318.000

Nakai, Hatsuo, to Clover Co., Ltd. Dial lock. 5,007,262, Cl. 70-312.000

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Nakai, Satoru, Kaneta, Mayumi, Kikumoto, Yoshikazu, Hong, Yeong-Man, Kawai, Kazuyoshi, Takegata, Setsuko Ishii, Kiyoshi Yanagihara, Yasuo and Hirai, Yoshikatsu, to Otsuka Pharmaceutical Co., Ltd. IL-1α derivatives and drugs. 5,008,374, Cl. 530-351.000

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Nakamura, Arata, to Omron Tateisi Electronics Co. Photoelectric switching apparatus of reflection type projecting red and infrared light. 5,008,529, Cl. 250-221.000

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Nakamura, Takashi, Tanaka, Haruhiko, Hyodo, Touru, and Osanai, Yasuhiro, to Janome Sewing Machine Company Limited. Multifunction switching control system. 5,008,601, Cl. 318-268.000

Nakamura, Takashi, Yasukochi, Yoshimi, Munakata, Tamotsu and Nakashima, Masaharu. Video camera system with audio switching circuit. 5,008,756, Cl. 358-210.000

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Nakashima, Naoto *See*—
Tanaka, Tsutomu, Oshida, Yoshitada, Shiba, Masataka, Nakashima, Naoto, and Funatsu, Ryuichi, 5,008,702, Cl. 355-52.000

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Yazawa, Shigehiko, Ogawa, Toru, Moritomo, Haruo Suya, Yoshiaki; and Nakayama, Mikio, 5,008,884, Cl. 370-110.100

Nakayama, Minoru: *See*—
Murata, Shizuo, Nakayama, Minoru, Furukawa, Kenji, and Kobayashi, Ryuji, 5,008,456, Cl. 564-322.000

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Yamaguchi, Toru, Inazuki, Yukio and Nakazawa, Hideo, 5,007,243, Cl. 62-51.100.

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Broom, Henry T., 5,008,035, Cl. 252-312.000

Nalepa, Christopher J.; Presswood, J. Kenneth; and Knapp, Gordon G., to Ethyl Corporation. Aromatic dimines. 5,008,453, Cl. 564-271.000

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Laurent, Dominque, Fortunato, Gerard, Damin, Bernard, and Napoleon, Marcel, 5,007,733, Cl. 356-70.000

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Kumita, Norio; Yamamoto, Takaaki, Narita, Seiichi, and Ori, Takaaki, 5,008,501, Cl. 200-61.45R.

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Ishida, Tetsuyoshi, Kawano, Shigeyoshi; Kohtaka, Ikuo Yamada, Kojiro, Kaku, Hiroyuki, and Narita, Tsuneo, 5,007,240, Cl. 60-673.000.

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Naro, Rodney L., Csonka, James M., and Merritt, Michael A., to American Alloys, Inc. Inoculant for gray cast iron. 5,008,074, Cl. 420-578.000

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Heckel, Armin, Nickl, Josef, Muller, Erich, Narr, Berthold; Weisenberger, Johannes; Eisert, Wolfgang; and Muller, Thomas, 5,008,290, Cl. 514-544.000

Narusawa, Naoharu: *See*—
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Smegal, John A., Ryan, Robert C., and Nash, Richard M., 5,008,003, Cl. 208-254.00H.

Nathan, Anthony *See*—
Pless, Benjamin, Sweeney, Michael; Winkle, Roger, and Nathan, Anthony, 5,007,422, Cl. 28-419.0PG.

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Dutta, Vivek B., Demmin, Jeffrey C., DiOrio, Mark L., and Ewanich, Jon T., 5,008,734, Cl. 357-74.000.

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Cox, Laurence C., Dugan, Raymond; Evans, Daniel D., Griffith, Robert, Handley, Terry L., and Leeper, Jeffrey J., 5,007,318, Cl. 83-425.200.

Natori, Shunji, to Sanwa Kagaku Kenkyusho Co., Ltd. Biologically active polypeptide and use thereof. 5,008,371, Cl. 530-324.000

Natsuhara, Toshiya *See*—
Enoguchi, Yuji; Natsuhara, Toshiya, and Yamamoto, Masashi, 5,008,708, Cl. 355-259.000

NEC Corporation *See*—
Hashimoto, Kiyokazu, 5,008,566, Cl. 307-296.800
Ikeda, Setsuko, 5,008,858, Cl. 365-233.500

Ishii, Eiichi, 5,008,673, Cl. 341-144.000
Kiyono, Mikio, 5,008,957, Cl. 455-618.000
Mimura, Yoshikazu, Takano, Keiichi, deceased, and Gotou, Tomohisa, 5,008,173, Cl. 430-78.000
Mizoguchi, Akane, 5,008,857, Cl. 365-200.000
Shibata, Kazuo; and Komuro, Toshio, 5,008,567, Cl. 307-443.000.
Yamamura, Yoshihiro, Ogihara, Takashi, Nakanishi, Yoshinobu and Nishizono, Tomohiro, 5,008,937, Cl. 380-50.000
Yamazaki, Shuntaro, Ono, Takashi, and Shimizu, Haruhito, 5,007,693, Cl. 350-96.130

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Negishi, Hiroyuki *See*—
Shirai, Shinji, Negishi, Hiroyuki, Tomihashi, Nobuyuki and Yamane, Masayuki, 5,008,327, Cl. 524-544.000

Negle, Hans, to U.S. Philips Corporation. Measuring and damping resistor arrangement for a high-voltage apparatus. 5,008,913, Cl. 378-105.000

Negrin, Max *See*—
Dandreaux, Gary; Login, Robert B., Merianos, John J., Garehek, Paul, Plochocka, Krystyna, Negrin, Max, and Shih, Jenn S., 5,008,367, Cl. 528-326.000

Neidermeyer, Uwe, Kragl, Udo, Kula, Maria R., Wandrey, Christian, Makrylaleas, Kyriakos, and Drauz, Karlheinz, to Kernforschungsanlage Juelich GmbH; and Degussa Aktiengesellschaft. Enzymatic process for the preparation of optically active cyanohydrins. 5,008,192, Cl. 435-128.000

Neiss, Edward S.; and Allen, Larry M., to Chemex Pharmaceuticals, Inc. Methods of treating tumors with compositions of catecholic butanes. 5,008,294, Cl. 514-731.000

Nelles, Josef, to Accumulatorenwerke Hoppecke Carl Zoellner & Sohn GmbH & Co. KG. Method and apparatus for producing cathodes for dry-cell batteries, especially lithium batteries. 5,007,467, Cl. 141-1.100

Nelson, Linda H., to General Electric Company. Composition. 5,008,315, Cl. 524-180.000

Nelson, Nancy W., Cosart, Lee D., III, Peregrino, Luiz, and Ingman, Eric M., to Hewlett-Packard Company. Method for harmonic number determination in a microwave frequency counter. 5,008,610, Cl. 324-84.000.

Nelson, T. Craig *See*—
Fries, William J., Kleinschnitz, Donald, and Nelson, T. Craig, 5,008,808, Cl. 364-200.000

Nelson, Thomas E., to Soltech, Inc. Insulated refrigerator door construction. 5,007,226, Cl. 52-809.000

Nentwig, Gunther: *See*—
Kruger, Bernd-Wieland, Sasse, Klaus, Hoever, Franz-Peter, Nentwig, Gunther; and Behrenz, Wolfgang, 5,008,261, Cl. 514-212.000

Nesheiwat, Afif M., to Phillips Petroleum Company. Preparation of poly(arylene sulfide/sulfone) polymer with addition of water after polymerization is initiated. 5,008,368, Cl. 528-388.000

Nesselrode, Frederick *See*—
Bellis, Peter D., and Nesselrode, Frederick, 5,007,806, Cl. 417-360.000

Nestaas, Eirik *See*—
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Nestec S.A.: *See*—
Bewley, David R., Brimelow, Christopher J. B. and Wright, Kenneth W., 5,008,123, Cl. 426-509.000.
Favre, Eric, Masek, Petr; and Truchement, Bernard, 5,008,013, Cl. 210-482.000.
Kratky, Zdenek; and Tandy, John S., 5,008,381, Cl. 536-8.000

Nettles, James A. *See*—
Broughton, George L., Breckenfeld, Paul W., Mate, David W. Nettles, James A., and Rogers, Duane E., 5,007,393, Cl. 123-195.00R

Network Equipment Technologies, Inc.: *See*—
Mathur, Ashish, 5,008,814, Cl. 364-200.000

Neugebauer, Charles F.. *See*—
Agranat, Aharon J.; Neugebauer, Charles F., and Yaniv, Amnon, 5,008,833, Cl. 364-513.000

Neumann, Peter: *See*—
Aumueller, Alexander, Neumann, Peter, and Trauth, Hubert, 5,008,312, Cl. 524-92.000
Spang, Peter; Neumann, Peter; Wagenblast, Gerhard, and Trauth, Hubert, 5,008,397, Cl. 548-331.000

Neuwirth, Helmuth, Meyerhoefer, Carl, Carney, William V., and Visconti, Peter, to Porta Systems Corp. Telephone circuit protector module having plural circuit grounding means. 5,008,772, Cl. 361-119.000

Neville, Donald G. *See*—
Ebbing, Charles E., and Neville, Donald G., 5,007,499, Cl. 181-258.000

New SD, Inc. *See*—
Egley, Bert, and Hanson, Richard A., 5,007,290, Cl. 73-517.00R

New Visions Corporation. *See*—
Fick, Larry D., 5,007,566, Cl. 224-32.00R

New York University Medical Center. *See*—
Fishman, Sidney, and Lembeck, William, 5,007,937, Cl. 623-34.000

Newborn, Herbert A. *See*—
Kumar, Kaplesh, and Newborn, Herbert A., 5,007,972, Cl. 148-102.000

Newkirk, Marc S., and Aghajanian, Michael K., to Lanxide Technology Company, LP Method of forming metal matrix composite bodies by utilizing a crushed polycrystalline oxidation reaction product as a filler, and products produced thereby 5,007,476, Cl 164-97.000

Newlove, John C *See—*
Williams, Dennis A., Horton, Roger L., Newlove, John C., and Chumley, Robert E., 5,007,481, Cl 166-300.000

Newman, Hugh D., Jr *See—*
Bezwada, Rao S., Newman, Hugh D., Jr., and Shalaby, Shalaby W., 5,007,923, Cl. 606-231.000

Newsom, Horace R., to Mosley Machinery Co., Inc Oversize bale release mechanism for waste material baler 5,007,337, Cl 100-188.00R

Newton Instrument Company *See—*
Salmon, Garland R., 5,008,779, Cl 361-415.000

NGK Insulators, Ltd *See—*
Hattori, Isao, and Futamura, Shoji, 5,008,509, Cl. 219-69.150
Kato, Shigeki, and Inoue, Katsuhiro, 5,008,054, Cl 264-63.000

NGK Spark Plug Co., Ltd *See—*
Bekki, Katsutoshi, Kondo, Kazuo, Shibata, Yoshimasa, and Niwa, Shigeo, 5,007,932, Cl 623-18.000

Nguyen, David M *See—*
Coolidge, Robert B., and Nguyen, David M., 5,007,493, Cl 175-329.000

Nichia Kagaku Kogyo K K *See—*
Arai, Kiyotaka, Sumoto, Hirofumi, and Ichinomiya, Keizi, 5,008,789, Cl 362-255.000

Nichols, Carl S., to Hoechst Celanese Corporation Catalyst for preparing high clarity, colorless polyethylene terephthalate 5,008,230, Cl 502-170.000

Nickel, Dwight E., O'Halloran, Michael L., and Case, Cecil L., to Hay & Forage Industries Tine tube bearing assembly for a harvesting reel 5,007,235, Cl 56-12.400

Nickl, Josef *See—*
Heckel, Armin, Nickl, Josef, Muller, Erich, Narr, Berthold, Weisenberger, Johannes, Ersert, Wolfgang, and Muller, Thomas, 5,008,290, Cl 514-544.000

Nicolas, Pierre, and Pantigny, Philippe, to Commissariat a l'Energie Atomique System for the detection of information in the form of electromagnetic radiation and reading the detected information 5,008,544, Cl. 250-349.000

Niederst, Ken W *See—*
Nugent, Richard M., Jr., Niederst, Ken W., and Seiner, Jerome A., 5,008,137, Cl 428-35.400

Nihon Tokushu Noyaku Seizo K K *See—*
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Nimura, Toshinobu *See—*
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Nizato, Tomonori, Noguchi, Katsumi, and Tsukimura, Kiyoshi, to Honda Giken Kogyo Kabushiki Kaisha Cylinder head structure for multiple cylinder engines, 5,007,392, Cl 123-193.00H

Nikon Corporation *See—*
Hamanishi, Yoshinari, 5,007,720, Cl 350-463.000
Juen, Masahiro, 5,008,759, Cl 358-335.000
Kimura, Keita, and Yamamoto, Tetsuya, 5,008,757, Cl 358-213.130

Nimlock Company *See—*
Evensen, David P., 5,007,473, Cl 160-135.000

Nino, Naohi, to Koito Manufacturing Co., Ltd Headlamp unit 5,008,781, Cl 362-61.000

Ninomiya, Takeshi *See—*
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Ninomiya, Yuichi *See—*
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Nippon Carbide Kogyo Kabushiki Kaisha *See—*
Ochi, Katsura, Oonishi, Yasuaki, and Kinsen, Kazuhisa, 5,008,139, Cl 428-40.000

Nippon Colin Company Ltd *See—*
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Nippon Hoso Kyokai *See—*
Kitaura, Hiromu, Isobe, Mitsuo, Kawahara, Isao, Hirauchi, Yoshio, Ninomiya, Yuichi, Ohtsuka, Yoshimichi, and Izumi, Yoshinori, 5,008,753, Cl 358-171.000

Nippon Oil and Fats *See—*
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Nippon Oil and Fats Co., Ltd *See—*
Komai, Takeshi, Matsuyama, Kazuo, and Honma, Isao, 5,008,353, Cl. 526-230.500

Nippon Paint Co., Ltd *See—*
Ishii, Keizou, Kuwajima, Teruaki, Miwa, Hiroshi, Kashihara, Akio, and Ishikura, Shinichi, 5,008,318, Cl 524-284.000

Nippon Piston Ring Co., Ltd *See—*
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Nippon Scientific Co., Ltd *See—*
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Nippon Seiko Kabushiki Kaisha *See—*
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Nippon Soda Co., Ltd *See—*
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Nippon Soken Inc *See—*
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Nippon T&T Corp *See—*
Saito, Kazuharu, Matsukura, Hiroyasu, Komase, Hiroshi, Tsuneda, Haruhiro, Watanabe, Junji, Saito, Tadao, Doy, Toshiroh, and Matsunaga, Kazuo, 5,007,209, Cl 51-283.00R

Nippon Zeon Co., Ltd *See—*
Okumura, Kin-ichi, Chono, Koji, Ozeki, Hiroshi, and Hamada, Tadao, 5,008,065, Cl 264-328.600
Yamada, Hideaki, Tani, Yoshiki, Shimizu, Sakayu, and Shiozaki, Shozo, 5,008,148, Cl 435-88.000

Nippondenso Co., Ltd *See—*
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Nishi, Takao, Uno, Tetsuyuki, Koga, Yasuo, and Chu, Gil-Namg, to Otsuka Pharmaceutical Co., Ltd Carbostyril derivatives and salts thereof and pharmaceutical composition for inhibiting adhesion of thrombocytes 5,008,274, Cl 514-312.000

Nishida, Tsuyoshi *See—*
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Nishigaki, Shinichi, and Bito, Shiro, to Olympus Optical Co., Ltd Resectoscope apparatus 5,007,907, Cl 606-46.000

Nishiguchi, Toshiji *See—*
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Nishimoto, Tatsuo *See—*
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Nishimura, Yosaku, and Smith, Glenn S., to Vital Kogyo Kabushiki Kaisha Hand-operated chain block 5,007,617, Cl 254-372.000

Nishimura, Yukuo, Haruta, Masahiro, Munakata, Hirohide, Kuwae, Yoko, Miyazaki, Toshihiko, and Yuasa, Satoshi, to Canon Kabushiki Kaisha Optical device 5,007,714, Cl 350-353.000

Nishino, Hoyoku, Iwasaki, Ryozo, Okabe, Akio, and Yogo, Yuki, to Lion Corporation Method inhibiting the growth of cancer cells 5,008,295, Cl 514-766.000

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Nishiuchi, Shohachi, Ohta, Shigeo, Imai, Hitoshi, and Meguro, Haruo to Honda Giken Kogyo Kabushiki Kaisha Successive cold working process 5,007,266, Cl 72-44.000

Nishiyama, Nobumasa, Saito, Makoto, Ouchi, Yasuhide, Katoh, Yasuhiro, Kamo, Yoshihisa, Koizumi, Makoto, Aoi, Hajime, Sato, Naoki, and Tsuchiya, Reijiro, to Hitachi, Ltd Readout circuit in magnetic recording device 5,008,761, Cl 360-45.000

Nishiyama, Souji *See—*
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Nissan Motor Company, Ltd *See—*
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Okuzumi, Hiroshi, 5,007,303, Cl 74-573.00F
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Nissan Shatai Company, Limited *See—*
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Nisshin Flour Milling Co., Ltd *See—*
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Nitto Denko Corporation *See—*
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Niwa, Shigeo *See—*
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Noble, Stephen A., to Eastman Kodak Company Image recording system and method, 5,008,697, Cl. 354-413.000

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Nogami, Mitsuzo *See—*
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Noji, Akio, Kamimura, Kenji, and Tsuzuki, Sadachika, to Honda Giken Kogyo Kabushiki Kaisha Position detector for moving vehicle 5,008,557, Cl 250-561.000

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Nomoto, Shigeki, to Komatsu Zenoah Company Engine start facilitating valve, 5,007,391, Cl. 123-182.000.

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Nomura, Masashi *See—*
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Nonaka, Katusnobu, and Sekine, Kazuyoshi, to Agency of Industrial Science and Technology, and Ministry of Internatinoal Trade and Industry Leakage flux flaw detection method and apparatus utilizing a layered detector 5,008,620, Cl 324-213.000

Noranda Inc *See—*
Reist, Marc, Persson, Hans, and Poggi, Daniel, 5,007,959, Cl. 75-645.000

Nordsiek, Karl-Heinz *See—*
Hellermann, Walter, Herrmann, Christoph, Fuchs, Hans-Bernd, Nordsiek, Karl-Heinz, and Wolpers, Jurgen, 5,008,343, Cl 525-316.000

Nor'Eastern Trawl Systems, Inc *See—*
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Norman, Amos, and Iwamoto, Keisuke S., to University of California, The Regents of the Therapy x-ray scanner 5,008,907, Cl 378-65.000

Norman, John A T., to Air Products and Chemicals, Inc Volatile fluorinated β-ketoimines and associated metal complexes 5,008,415, Cl. 556-32.000

Norris, Kjeld *See—*
Markussen, Jan, Norris, Kjeld, and Langkjaer, Liselotte, 5,008,241, Cl 514-3.000

Norsolor (Orkem Group) *See—*
Druet, Bernard; and Rochet, Gerald, 5,008,365, Cl 528-230.000

North American Philips Corporation *See—*
Akiwumi-Assani, Samuel O., 5,008,848, Cl 364-725.000
Phillips, Larry G., Meyer, Edwin R., and Greene, David C., 5,008,740, Cl 358-23.000
Tsou, Len-Yan, 5,007,982, Cl 156-643.000

North, Peter C *See—*
Coates, Ian H; Oxford, Alexander W., and North, Peter C., 5,008,272, Cl 514-292.000

Northern Elevator Limited *See—*
Lindegger, Robert, 5,007,505, Cl 187-89.000

Northern Telecom Limited *See—*
Roy, Marc P., 5,008,569, Cl 307-465.000

Norton Company *See—*
Kelly, Robert G., Loughlin, Bernard T., and McCutcheon, William F., 5,007,943, Cl 51-295.000
Kuo, Shih-Yee; Cho, Hyun-Sam, and Bright, Jeffrey D., 5,008,132, Cl. 427-217.000.

Nousho, Shinji *See—*
Rokutanzono, Takashi, Ide, Yukio, Nagame, Hiroshi, Ohshima, Kohichi, Kojima, Narihito, and Nousho, Shinji, 5,008,172, Cl 430-67.000

Novo Nordisk A/S *See—*
Markussen, Jan, Norris, Kjeld, and Langkjaer, Liselotte, 5,008,241, Cl 514-3.000

Novotny, Donald B *See—*
Jach, Terrence J., Geist, Jon C., Carver, Gary P., and Novotny, Donald B, 5,008,908, Cl 378-70.000

Nozawa, Toshiyuki *See—*
Utsunomiya, Masayuki, Fujita, Shigeo; Nozawa, Toshiyuki; and Kamiyama, Morihiro, 5,008,401, Cl. 548-455.000.

Nozoe, Satosi *See—*
Yonezawa, Tatsushi; and Nozoe, Satosi, 5,008,534, Cl 250-229.000.

NT Incorporated. *See—*
Mayama, Tatsushige, 5,007,170, Cl 30-232.000.

Nuclear Energy Services, Inc. *See—*
Zezza, Louis J.; and Fiorelli, Frank, 5,007,460, Cl 138-89.000

Nugent, Richard M., Jr., Niederst, Ken W., and Seiner, Jerome A., to PPG Industries, Inc. Barrier coatings, 5,008,137, Cl 428-35.400.

Nukada, Katsumi: *See—*
Akasaki, Yutaka, Nukada, Katsumi, and Sato, Katsuhiro, 5,008,431, Cl 558-402.000.

Nulph, Robert J.: *See—*
Favstritsky, Nicolai A., and Nulph, Robert J., 5,008,323, Cl. 524-469.000

Numano, Yasuhiko, to Japan Air Lines Co., Ltd Humidity-retaining mask, 5,007,114, Cl. 2-206.000

Numata, Tomiyuki; Iwaki, Takashi; Kojima, Kunio, and DeGuchi, Toshihisa, to Sharp Kabushiki Kaisha Semiconductor laser driving apparatus 5,008,888, Cl. 372-29.000

Nummy, Karen A.: *See—*
Blouse, Jeffrey L., Fulton, Inge G., Lange, Russell C.; Meyerson, Bernard S., Nummy, Karen A., Revitz, Martin, and Rosenberg, Robert, 5,008,207, Cl 437-31.000

Nuovopignone-Industrie Meccaniche e Fonderia, S.p.A *See—*
Corain, Luciano; Maitan, Gianni, Perlini, Renato; and Bacchetti, Mario, 5,007,463, Cl. 139-448.000

Nurmi, Tom *See—*
Unkuri, Matti; and Nurmi, Tom, 5,007,623, Cl 270-39.000

Nussbaum, Avraham, to Crestmoore Ltd Depilatory device 5,007,915, Cl 606-133.000

Nutto, Markus *See—*
Hennings, Detlev; Hoffmann, Bernd F W., and Nutto, Markus, 5,008,646, Cl 338-20.000

N V. Nederlandsche Apparatenfabriek Nedap *See—*
de Jong, Hendrik J., 5,008,660, Cl 340-825.540

Nyberg, Eric D., Klingman, Ken A., Curtis, Jeff, and Stewart, Ray F., to Raychem Corporation Method and articles employing ion exchange material, 5,007,989, Cl. 204-1.110

Nyeki, Olga *See—*
Schon, Istvan, Nyeki, Olga, Kisfaludy, Lajos, deceased; Denes, Laszlo, Hajos, Gyorgy, and Szporny, Laszlo, 5,008,2-6, Cl 514-18.000.

O. Ames Co: *See—*
Spear, Kenneth J., and Fowler, Ronald R., 5,007,598, Cl 242-86.200

Oare, Thomas R. *See—*
Maathuis, Antonnis G., Spielmann, Jurgen, Beer, Klaus, and Oare, Thomas R., 5,007,974, Cl 156-117.000

Oberdorfer, Dietmar *See—*
Hermsdorffer, Joachim, Galfe, Gunther, Lautenbacher, Stefan, Korte, Reinhard, Krause, Hans-Joachim, Krull, Frans, May, Arno, Oberdorfer, Dietmar; and Pluquett, Ulrich, 5,007,433, Cl 128-742.000.

Oberman, Richard A.: *See—*
Gawrys, George W., Oberman, Richard A., and Willcock, William T., 5,008,930, Cl 379-210.000

Obregon, Carlos D. *See—*
Hanke, Carl C.; Obregon, Carlos D., and Atriss, Ahmad H., 5,008,635, Cl 331-1.00A.

O'Brien, Steven T., and Kakuk, Jay J., to Toro Company, The Cable connector, 5,007,855, Cl 439-411.000

Occidental Chemical Corporation *See—*
Lee, Chung J., 5,008,361, Cl 528-26.000

Ochi, Katsura, Oonishi, Yasuaki, and Kinsen, Kazuhisa, to Nippon Carbide Kogyo Kabushiki Kaisha Pressure-sensitive adhesive layer 5,008,139, Cl 428-40.000

O'Connor, Joseph G *See—*
Liang, Rong-Chang, Kintz, Karl A., O'Connor, Joseph G., and Adair, Paul C., 5,008,237, Cl 503-212.000

O'Connor, Lawrence T *See—*
Emmett, Robert C., Jr.; and O'Connor, Lawrence T., 5,007,620, Cl 266-168.000

Ocular Instruments, Inc *See—*
Erickson, Phillip J; Crossman, Janet L., Heacock, Gregory L., and Mainster, Martin A., 5,007,729, Cl 351-219.000

Odaka, Yoshiyuki *See—*
Hiratsuka, Katsuo; Odaka, Yoshiyuki, and Yoshida, Takeshi, 5,007,356, Cl. 112-68.000

Odani, Noboru *See—*
Mikamo, Hisanobu; Odani, Noboru, and Shimizu, Akio, 5,008,152, Cl 428-423.100.

O'Dea, Kevin J., Bergman, Norman J., Digiulio, Peter C., Dolan, Donald T.; and Vanderpool, James L., to Pitney Bowes Inc Control system for moistener 5,007,371, Cl. 118-680.000.

O'Donnell, John *See—*
Carr, Michael D; Perini, Maurice G., O'Donnell, John, Leaning, Anthony B.; and Leaning, Anthony R., 5,008,748, Cl 358-136.000.

Oeda, Yoshitaka *See—*
Yoshizawa, Katsuaki, and Oeda, Yoshitaka, 5,008,231, Cl 503-207.000.

O'Garr, Phil Method and apparatus for charging waterlogged boreholes with explosives, 5,007,345, Cl 102-313.000

Ogawa, Kazufumi, to Matsushita Electric Industrial Co., Ltd. Process for the production of a highly-orientated ultralong conjugated polymer. 5,008,127, Cl. 427-36.000

Ogawa, Toru. *See*—
Yazawa, Shigehiko, Ogawa, Toru, Moritomo, Haruo, Suya, Yoshiaki, and Nakayama, Mikio, 5,008,884, Cl. 370-110.100

Ogawa, Toshitaka. *See*—
Onose, Tsukasa, Kikuchi, Yasuo, Ogawa, Toshitaka, and Seino, Minoru, 5,008,716, Cl. 355-322.000

Ogihara, Takashi. *See*—
Yamamura, Yoshihiro, Ogihara, Takashi, Nakanishi, Yoshinobu, and Nishizono, Tomohiro, 5,008,937, Cl. 380-50.000

Ogilvy, James W. *See*—
Gooch, William A., Jr., Burkins, Matthew S., Mills, Leo F., Ogilvy, James W., and Ricchiazzi, Antonio J., 5,007,326, Cl. 89-36.020

Oguchi, Yoshiharu. *See*—
Ikuzawa, Masanori, Oguchi, Yoshiharu, Matsunaga, Kenichi, Toyoda, Noriyuki, Furusho, Takao, Fujii, Takayoshi and Yoshikumi, Chikao, 5,008,243, Cl. 514-8.000

Ogura, Takashi. *See*—
Ino, Kazuo, Shimizu, Yoshiaki, Okuda, Hiroyuki, Ishihara, Kousou, and Ogura, Takashi, 5,007,158, Cl. 29-603.000

O'Halloran, Michael L. *See*—
Nickel, Dwight E., O'Halloran, Michael L., and Case, Cecil L., 5,007,235, Cl. 56-12.400.

Ohara, Tsunemasa, and Shibanai, Tomoo, to Canon Kabushiki Kaisha. Electric driving device capable of eliminating backlash. 5,008,605, Cl. 318-630.000.

Ohashi, Takashi. *See*—
Maruyama, Akihiro, Kato, Munehiko, Ishiwaka, Takumi, Seki, Katsuto, and Ohashi, Takashi, 5,008,297, Cl. 521-136.000

Ohashi, Yoshio. *See*—
Kitamura, Toru, Ohashi, Yoshio, Sekino, Masami, and Murakawa, Kenichi, 5,008,001, Cl. 208-143.000

Ohba, Motoi, Yabuki, Hiroyuki, and Makimoto, Mitsuo, to Matsushita Electric Industrial Co., Ltd. Frequency synthesizer. 5,008,629, Cl. 328-14.000

Ohbayashi Corporation. *See*—
Itami, Takashi, Yun, Tadao, and Aoyagi, Toru, 5,007,214, Cl. 52-66.000

Ohio State University Research Foundation. *See*—
Minton, John P., Webb, Thomas E. and Abou-Issa, Hussein M., 5,008,291, Cl. 514-578.000

Ohkase, Wataru. *See*—
Asano, Takanobu, Yamaga, Kenichi, and Ohkase, Wataru, 5,007,788, Cl. 414-417.000

Ohki, Hiroshi, Kamohara, Hideaki, and Miyake, Ryo, to Hitachi, Ltd. Flow-cell device. 5,007,732, Cl. 356-73.000

Ohki, Hiroshi, Kobayashi, Shoei and Wada, Takuya, to Sony Corporation. Reproducing apparatus for an optical recording medium. 5,008,521, Cl. 235-454.000

Ohmori, Hiroyuki, Tanaka, Hisami and Okunuki, Masami, to Canon Kabushiki Kaisha. Electrophotographic apparatus. 5,008,706, Cl. 355-219.000

Ohmura, Hiroshi, Tanabe, Satoru, Yoshioka, Junji, and Kanazawa, Hirotaka, to Mazda Motor Corporation. Rear wheel turning system. 5,007,494, Cl. 180-79.100

Ohno, Kenyu. *See*—
Sano, Hironari, and Ohno, Kenyu, 5,008,332, Cl. 525-92.000

Ohno, Shigeru. *See*—
Goda, Kensuke, and Ohno, Shigeru, 5,008,177, Cl. 430-522.000

Ohno, Yoshio. *See*—
Nagai, Tetsuji, Torii, Katura, and Ohno, Yoshio, 5,008,842, Cl. 364-551.010

Ohsawa, Hidefumi. *See*—
Katayama, Akihiro, and Ohsawa, Hidefumi, 5,008,950, Cl. 382-50.000

Ohshima, Kohichi. *See*—
Rokutanzono, Takashi, Ide, Yukio, Nagame, Hiroshi, Ohshima, Kohichi, Kojima, Narihito, and Nousho, Shinji, 5,008,172, Cl. 430-67.000

Ohta, Eiichi. *See*—
Kondo, Hitoshi, Ohta, Eiichi, and Kimura, Yuji, 5,008,732, Cl. 357-71.000

Ohta, Shigeo. *See*—
Nishiuchi, Shohachi, Ohta, Shigeo, Imai, Hitoshi, and Meguro, Haruo, 5,007,266, Cl. 72-44.000

Ohtaka, Mitsumasa. *See*—
Washizu, Katsushi, and Ohtaka, Mitsumasa, 5,007,267, Cl. 72-59.000

Ohtani, Mitsuaki. *See*—
Narisada, Masayuki, Ohtani, Mitsuaki, Watanabe, Fumihiko, and Kawata, Kyozo, 5,008,409, Cl. 549-463.000

Ohtsuka, Yoshimichi. *See*—
Kitaura, Hiromu, Isobe, Mitsuo, Kawahara, Isao, Hirauchi, Yoshio, Ninomiya, Yuichi, Ohtsuka, Yoshimichi, and Izumi, Yoshinori, 5,008,753, Cl. 358-171.000

Oi, Satoru. *See*—
Hatanaka, Chitoshi, and Oi, Satoru, 5,008,405, Cl. 549-315.000

Oji Paper Co., Ltd. *See*—
Takahashi, Yoshiyuki, Toyofuku, Kunitaka, and Iwasaki, Akiko, 5,008,236, Cl. 503-209.000

Ojima, Takahiro. *See*—
Abe, Takafumi, Uchiyama, Seiji, Ojima, Takahiro, and Kida, Koichi, 5,008,479, Cl. 585-320.000

Okabayashi, Katsuaki. *See*—
Minoura, Jun, Takahahi, Shigeyuki, Kato, Hisaki, Ito, Toshiyasu, Mori, Takaaki, Kato, Mamoru, Shimada, Junichi, and Okabayashi, Katsuaki, 5,007,718, Cl. 350-357.000

Okabe, Akio. *See*—
Nishino, Hoyoku, Iwasaki, Ryozo, Okabe, Akio, and Yogo, Yuki, 5,008,295, Cl. 514-766.000

Okabe, Sakiichi. *See*—
Masuda, Takeshi, Yagi, Susumu, Okabe, Sakiichi, Kamishima, Yoichi, and Kawagoe, Kazuo, 5,008,580, Cl. 310-321.000

Okada, Minoru. *See*—
Kumada, Akio, Iochi, Takahiko, and Okada, Minoru, 5,008,581, Cl. 310-323.000

Okamoto, Tsugio, to Brother Kogyo Kabushiki Kaisha. Color image recording apparatus using intermediate image sheet. 5,008,700, Cl. 355-27.000

Okamura, Moriyuki, Nakajima, Ikuo, and Nishiguchi, Toshiji, to Canon Kabushiki Kaisha. Intraocular implant having coating layer. 5,007,928, Cl. 623.6.000

Okazaki, Masaki. *See*—
Ikegawa, Akihiko, Okazaki, Masaki, and Sugimoto, Tadao, 5,008,181, Cl. 430-572.000

Okazaki, Takao, Takahashi, Shuji, Iwado, Seigo, Tanaka, Keiji, Yanai, Toshiaki and Kajino, Hisaki, to Sankyo Company Limited. Macrolide compounds, their preparation and their use. 5,008,191, Cl. 435-124.000

Okita, Ryozo, to Sanshin Industries Co., Ltd. Trimming/tilting system for marine propulsion unit. 5,007,866, Cl. 440-61.000

Okubo, Susumu, and Sasaki, Yutaka, to Suzuki Jidosha Kogyo Kabushiki Kaisha. Jet propulsion craft provided with exhaust noise eliminating apparatus. 5,007,870, Cl. 440-89.000

Okuda, Hiroyuki. *See*—
Ino, Kazuo, Shimizu, Yoshiaki, Okuda, Hiroyuki, Ishihara, Kousou, and Ogura, Takashi, 5,007,158, Cl. 29-603.000

Okumoto, Takaharu, Nishimoto, Tatsuo, and Wakaki, Hideaki, to Yokohama Rubber Co., Ltd. The. Golf club head. 5,007,643, Cl. 273-167.00R

Okumura, Kin-ichi, Chono, Koji, Ozeki, Hiroshi, and Hamada, Tadao, to Nippon Zeon Co., Ltd. Reaction injection molding method. 5,008,065, Cl. 264-328.600

Okunuki, Masami. *See*—
Ohmori, Hiroyuki, Tanaka, Hisami, and Okunuki, Masami, 5,008,706, Cl. 355-219.000

Okuyama, Toshiharu. *See*—
Wakatsuki, Yoshio, Okuyama, Toshiharu, Takeuchi, Hajime, Shimizu, Misao, and Shimizu, Giichiro, 5,008,665, Cl. 340-870.260

Okuzumi, Hiroshi, to Nissan Motor Co., Ltd. Variable inertial mass flywheel. 5,007,303, Cl. 74-573.00F

Olanders, Par. *See*—
Johansson, Goran, and Olanders, Par, 5,008,076, Cl. 422-28.000

Oldemeyer, Wilhelm. *See*—
Ristius, Harald, and Oldemeyer, Wilhelm, 5,008,057, Cl. 264-134.000

Oldfelt, Sven, and Stahl, Gary L., to Oy Wartsila AB. Vacuum toilet system with simultaneous rinse and discharge. 5,007,117, Cl. 4-432.000

Olin Corporation. *See*—
Day, Roger W., and Hani, Rahim, 5,008,443, Cl. 560-169.000

Olinger, Harvey A., to Advanced Commercial Products, Inc. Filling device for liquid filled tires. 5,007,448, Cl. 137-223.000

Olney, Robert S. *See*—
Trapp, Richard E., Hansen, Gary L., Clay, Robert B., Dubetsky, Lawrence J., and Olney, Robert S., 5,007,973, Cl. 149-109.600

Olsen, Axel. Casing system for the laying of electrical supply conductors. 5,007,853, Cl. 439-211.000

Olsen, Steven A., Cronin, William J., Jarvis, Ben L., and McMillan, Jeff G., to U.S. Intelco Networks, Inc. Billing system for telephone signaling network. 5,008,929, Cl. 379-112.000

Olson Manufacturing Co. *See*—
Mahaney, John C., 5,007,258, Cl. 70-159.000

Oltz, Eugene M. *See*—
Nakanishi, Koji, Oltz, Eugene M., and Grunberger, Dezider, 5,008,441, Cl. 560-75.000

Olympus Optical Co., Ltd. *See*—
Hasegawa, Akira, 5,007,719, Cl. 350-425.000
Ieoka, Shouichi, 5,007,408, Cl. 128-6.000
Nishigaki, Shinichi, and Bito, Shiro, 5,007,907, Cl. 606-46.000
Takahashi, Yasuo, Suzuki, Kazuo, Nimura, Toshinobu, and Kano Tokio, 5,007,395, Cl. 204-299.00R

Omron Tateisi Electronics Co. *See*—
Nakamura, Arata, 5,008,529, Cl. 250-221.000
Shimamoto, Hiroshi, Suzaki, Hideyuki, Yamaguchi, Yukio, and Kawano, Atsushi, 5,008,862, Cl. 367-105.000
Yonezawa, Tatsushi, and Nozoe, Satosi, 5,008,534, Cl. 250-229.000

Omura, Satoshi, and Itoh, Zen, to Kitasato Kenkyusho. Therapeutic method of stimulating digestive tract contractile motion in mammals. 5,008,249, Cl. 514-29.000

Onco-Pharm Development AG. *See*—
Monti, Sergio, 5,008,287, Cl. 514-492.000

Onda, Kenichi. *See*—
Miyazaki, Hideki, Kanouda, Akihiko, Onda, Kenichi, and Matsuda, Yasuo, 5,008,586, Cl. 323-315.000

Onda, Yoshiro. *See*—
Kokubo, Hiroyasu, Sekigawa, Fujio, Chiba, Tohru, and Onda, Yoshiro, 5,008,113, Cl. 424-480.000

Ono, Kikuo. *See*—
Kawachi, Genshiro; Mimura, Akio; Konishi, Nobutake; Ono, Kikuo; and Suzuki, Takashi, 5,008,218, Cl. 437-201.000

Ono, Masato: *See*—
Karakida, Kenichi; Yagi, Shigeru; Fukuda, Yuzuru; Nishikawa, Masayuki; Roh, Te N., Takahashi, Noriyoshi, Ono, Masato; Yokoi, Masaki; and Komori, Yumiko, 5,008,170, Cl. 430-65.000

Ono, Shoichi; and Kobayashi, Atsuhito, to Chinon Kabushiki Kaisha. Pulsed light identifying system. 5,008,531, Cl. 250-222.100.

Ono, Shoichi; and Kobayashi, Atsuhito, to Chinon Kabushiki Kaisha. Light reception signal circuit for photoelectric switch. 5,008,532, Cl. 250-222.100.

Ono, Takashi: *See*—
Yamazaki, Shuntaro, Ono, Takashi, and Shimizu, Haruhito, 5,007,693, Cl. 350-96.130.

Ono, Takeshi; Sakamoto, Masahiro; and Takano, Tadashi, to Canon Kabushiki Kaisha. Driving system for stepping motor. 5,008,607, Cl. 318-696.000.

Ono, Tomio. *See*—
Tanuma, Chiaki, Itsumi, Kazuhiro, Iwa[illegible], Nobuo, Ono, Tomio; Kondo, Yuu; and Saito, Kazutaka, 5,008,582, Cl. 310-332.000

Onose, Tsukasa; Kikuchi, Yasuo; Ogawa, Toshitaka, and Seino, Minoru, to Hitachi Koki Co., Ltd. Paper cooling apparatus for an electrophotographic printer. 5,008,716, Cl. 355-322.000.

Oonishi, Yasuaki. *See*—
Ochi, Katsura, Oonishi, Yasuaki, and Kinsen, Kazuhisa, 5,008,139, Cl. 428-40.000

Oppedal, Magne. *See*—
Legris, Bernard, Oppedal, Magne, and Traonmilin, Eric, 5,007,769, Cl. 405-195.000

Oppendahl, Carl. Voice-activated radio transceiver. 5,008,954, Cl. 455-79.000

Oprea, John C., to Durakon Industries, Inc. Under the rail liner with tabs. 5,007,671, Cl. 296-39.200.

Orbits, Dave. *See*—
Bhandarkar, Dileep P., Cutler, Dave; Cardoza, Wayne; Witek, Rich, and Orbits, Dave, 5,008,812, Cl. 364-200.000

Orbot Systems Ltd.: *See*—
Katzir, Yigal, and Kochba, Joseph, 5,008,743, Cl. 358-101.000

Orchid One Corporation: *See*—
Crewe, Albert V., 5,008,549, Cl. 250-396.0ML

Ori, Takaaki: *See*—
Kumita, Norio; Yamamoto, Takaaki; Narita, Seiichi; and Ori, Takaaki, 5,008,501, Cl. 200-61.45R.

Originations Limited. *See*—
Kelly, Nigel B., 5,007,268, Cl. 72-76.000.

Orleander S.A.: *See*—
Brunt, Chris, and Carner, Don C., Jr., 5,008,647, Cl. 340-432.000.

Orman, Charles R., Johnson, Paul E., and Adams, Bruce C., to Sunkist Growers, Inc. Apparatus for treating fresh fruit and the like to prevent and retard the growth off fungus. 5,007,335, Cl. 99-487.000.

Orndorff, Roy L., Jr.; and Bono, Mark J., to B. F. Goodrich Company, The. Suspension system. 5,007,660, Cl. 280-715.000.

Ornholmer, Lars. *See*—
Gustafsson, Par; Sobel, Jarl, and Ornholmer, Lars, 5,007,295, Cl. 73-862.690.

Oroskar, Anil R., and Johnson, James L., to UOP. Enhanced membrane separation of monosaccharides utilizing concentration polarization. 5,008,189, Cl. 435-105.000.

Orr, William H. *See*—
Harris, Dawn E., and Orr, William H., 5,007,520, Cl. 194-317.000.

Ortiz, Paul W. *See*—
Ketcham, Stephen O., Ortiz, Paul W., Jarvis, Jamie S., and McCray, Clyde S., 5,007,316, Cl. 83-167.000.

Osanai, Yasuhiro. *See*—
Nakamura, Takashi, Tanaka, Haruhiko, Hyodo, Touru, and Osanai, Yasuhiro, 5,008,601, Cl. 318-268.000

Osborn, Thomas W., III; and Schmitz, Deborah C., to Procter & Gamble Company, The. Decoupled sanitary napkin. 5,007,906, Cl. 604-385.100.

Osborne, Timothy W., to Union Carbide Corporation. Boron nitride coatings. 5,007,962, Cl. 106-38.220

Osentowski, Timothy D.: *See*—
Fletcher, Robert M.; Kuo, Chihping, Osentowski, Timothy D., and Robbins, Virginia M., 5,008,718, Cl. 357-17.000.

Osgood Industries, Inc. *See*—
Mueller, Martin J., Mueller, Martin, and Weingandt, Michael A., 5,007,466, Cl. 141-1.000.

Oshida, Yoshitada: *See*—
Tanaka, Tsutomu, Oshida, Yoshitada, Shiba, Masataka, Nakashima, Naoto; and Funatsu, Ryuichi, 5,008,702, Cl. 355-52.000

Osteonics Corp. *See*—
Sidebotham, Christopher G., McNulty, Donald E., and Lombardo, Alan M., 5,007,933, Cl. 623-20.000

Osther, Kurt B., to Bio-Research Laboratories, Inc. Assay system for detecting antibody and a method of producing non-human immune antibody. 5,008,183, Cl. 435-5.000

Ostrander, Robert J., to Dana Corporation. Bi-directional back stopping clutch. 5,007,511, Cl. 192-8.00R

Otis Engineering Corporation. *See*—
Pleasants, Charles W., and Scott, Keith W., 5,007,479, Cl. 166-178.000.

O'Toole, John R.: *See*—
Lee, Ho C., O'Toole, John R., Shalkey, Alex T., and Zable, Jack L., 5,007,748, Cl. 400-103.000

Otsuka Pharmaceutical Co., Ltd.: *See*—
Nakai, Satoru; Kaneta, Mayumi, Kikumoto, Yoshikazu, Hong, Yeong-Man; Kawai, Kazuyoshi, Takegata, Setsuko, Ishii, Kiyoshi, Yanagihara, Yasuo, and Hirai, Yoshikatsu, 5,008,374, Cl. 530-351.000.
Nishi, Takao, Uno, Tetsuyuki; Koga, Yasuo, and Chu, Gil-Namg, 5,008,274, Cl. 514-312.000.

Otteman, John H. Linear actuator. 5,007,328, Cl. 92-63.000.

Otto, Donald V., to Unisearch Systems Limited. Current sensor. 5,008,612, Cl. 324-117.00R.

Ouchi, Teruo: *See*—
Takahashi, Nagashige; and Ouchi, Teruo, 5,007,406, Cl. 128-4.000.

Ouchi, Yasuhide: *See*—
Nishiyama, Nobumasa; Saito, Makoto, Ouchi, Yasuhide; Katoh, Yasuhiro, Kamo, Yoshihisa, Koizumi, Makoto, Aoi, Hajime, Sato, Naoki, and Tsuchiya, Reijiro, 5,008,761, Cl. 360-45.000

Ouellet, Wilfred P., to L.K. Goodwin Co., Inc. Inflatable dock seal. 5,007,211, Cl. 52-2.120.

Outboard Marine Corporation. *See*—
Broughton, George L., Breckenfeld, Paul W., Mate, David W., Nettles, James A.; and Rogers, Duane E., 5,007,393, Cl. 123-195.00R.

Overall, Robert E.: *See*—
Myers, Robert I.; Brubaker, Bryce D., and Overall, Robert E., 5,007,236, Cl. 60-256.000.

Oversluizen, Gerrit. *See*—
Huisman, Frederikus R. J.; Oversluizen, Gerrit, and Martens, Jan W. D., 5,008,590, Cl. 313-500.000

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Owenby, Daniel B., to Beacon Manufacturing Company. Blanket having improved thermal characteristics in the portion covering the feet. 5,007,125, Cl. 5-486.000

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Bakhshi, Shiv K., 5,008,131, Cl. 427-209.000

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Coates, Ian H.; Oxford, Alexander W., and North, Peter C., 5,008,272, Cl. 514-292.000

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Oy Partek AB. *See*—
Unkuri, Matti, and Nurmi, Tom, 5,007,623, Cl. 270-39.000

Oy Santasalo-Sohlberg AB. *See*—
Wutzler, Peter; Mucke, Horst, and Santasalo, Lauri, 5,008,079, Cl. 422-28.000

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Uppstu, Erik, 5,007,354, Cl. 110-238.000

Oy Wartsila AB. *See*—
Oldfelt, Sven, and Stahl, Gary L., 5,007,117, Cl. 4-432.000

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Miida, Takashi, Ozaki, Nozomu, Baba, Shigenori, and Kousaka, Kunimitsu, 5,008,696, Cl. 354-408.000

Ozaki, Seishiro; Asahi, Nobuo, and Ebisawa, Tsuneo, to Fuji Electric Co., Ltd. Switching mechanism in circuit breaker. 5,008,504, Cl. 200-401.000

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Kamata, Yoshiharu, Nagatsuma, Nobuyoshi, Ozawa, Mituharu, and Yoshioka, Hiroshi, 5,007,154, Cl. 29-430.000

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Ozin, Geoffrey A.; Huber, Helmut X., Prokopowicz, Richard A., and Godber, John, to Canada, Her Majesty the Queen in the right of, as represented by the Minister of Energy Mines and Resources. Process for the preparation of catalytic metal clusters. 5,008,234, Cl. 502-326.000.

Paar, Willibald, to Vianova Kunstharz, A G. Reacting epoxy resin and substituted urea or biuret with blocked isocyanate group dicarboxylic anhydride compound product. 5,008,351, Cl. 525-528.000

Pace, Sang H. L. Permanent magnet motor having diverting magnets. 5,008,578, Cl. 310-256.000.

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Sommer, Holger T., 5,007,297, Cl. 73-865.500

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Pagani, David A. Game apparatus. 5,007,636, Cl. 273-448.000

Painter, Michael A. Vehicle wheel mounting apparatus. 5,007,789, Cl. 414-427.000.

Palara, Sergio, to SGS-Thomson Microelectronics S r l. Diagnostic circuit for units providing current control and protection against excessive heat dissipation for semiconductor power devices. 5,008,771, Cl. 361-103.000.

Palinkas, John M., to Electronic Research Associates, Inc. Multi-color illumination apparatus. 5,008,788, Cl. 362-231.000.

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Palladino, Gaetano, MacDonald, Peter, and Bigatti, Ettore, to Sicor Societa 'Italiana Corticosteroidi S p A. Process for the conversion of daunorubicin into doxorubicin. 5,008,380, Cl. 536-6.400

Palm, Bernhard, to Milwaukee Electric Tool Corporation. Quick change guide shoe. 5,007,172, Cl. 30-377.000.

Palmer, James T., to Marion Laboratories, Inc. 2-hydroxy-3-(4-methoxyphenyl)-3-(2-aminophenylthio)propionic acid, 8'-phenylmenthyl ester, especially for diltiazem. 5,008,433, Cl. 560-17.000.

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Quinn, Robert L., and Pansari, Frank, Jr., 5,007,280, Cl. 72-402.000.

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Nicolas, Pierre, and Pantigny, Philippe, 5,008,544, Cl. 250-349.000.

Pantzar, Glenn G. E., to Sandvik AB. Cutting insert for chip removing machining. 5,007,775, Cl. 407-113.000.

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Shinozuka, Tokihito, 5,008,141, Cl. 428-182.000.

Parekh, Dilip J. *See*—
Weiss, Lawrence D., Caruthers, Douglas W., Inatomi, Charles T., Kawan, Joseph C., Lee, Shan, Marks, Harvey, Meguerdijan, Sarkis A., Parekh, Dilip J., Samulon, Alfred S., Takata, Melvin M., Tucci, Morris L., and Vollmer, Jim R., 5,008,927, Cl. 379-98.000.

Parekh, Ebrahim. *See*—
Jensen, Jack E., and Parekh, Ebrahim, 5,007,781, Cl. 411-337.000.

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Swanson, Ralph W., Gagnon, Daniel F., and Parent, Donald G., 5,008,594, Cl. 315-111.810.

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Lee, Sae Bae; Won, Chan H., Park, Chung, and Lim, Bun S., 5,008,190, Cl. 435-108.000.

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Marcus, Jerald J., and Berninger, John F., 5,007,458, Cl. 137-625.500.

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Parsley, David W., and Martin, Hubert C., Jr., to Unisys Corporation. Switched capacitor interleaved forward power converter. 5,008,795, Cl. 363-20.000.

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D'Luna, Lionel J.; Hibbard, Robert H., and Parulski, Kenneth A., 5,008,739, Cl. 358-21.00R.

Patel, Raman, to Monsanto Company. Method of crosslinking rubber. 5,008,337, Cl. 525-130.000.

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Kastl, Roland, and Roll, Ulrich, 5,008,596, Cl. 315-205.000.
Zuchtriegel, Anton, 5,008,597, Cl. 315-209.00R.

Paterson, Patrick J. Dustless drywall sander. 5,007,206, Cl. 51-170.00R.

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Sage, Daniel E., and Patrick, James C., Jr., 5,007,552, Cl. 220-23.830.

Patroni, Joseph J., and Brandon, Malcolm R., to Bunge (Australia) Pty Ltd. Production of proteins in active forms. 5,008,377, Cl. 530-416.000.

Patterson, James A. Weedless fishing hook and lure. 5,007,195, Cl. 43-42.430.

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Bernardet, Henri; and Pauwels, Jean-Claude, 5,008,585, Cl. 313-231.310.

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Huebner, Dietmar; Nagel, Peter; Hirschberg, Ekkehard, Schoettle, Klaus, and Pavelka, Bozidar, 5,007,536, Cl. 206-394.000.

Pavio, Anthony M. Coupler circuit. 5,008,639, Cl. 333-116.000.

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Zones, Stacy I., Santilli, Donald S., Ziemer, James, Holtermann, Dennis L., Pecoraro, Theresa A., and Innes, Robert A., 5,007,997, Cl. 208-46.000.

Peffley, Richard D. *See*—
Soto, Jorge, Anand, Joginder N., and Peffley, Richard D., 5,008,325, Cl. 524-504.000.

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Wenteler, George L., Pegel, Karl H., Drews, Siegfried, and Kundig, Hans, 5,008,471, Cl. 568-729.000.

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Coffman, Frederick E., and Pelton, Charles H., 5,007,968, Cl. 134-25.400.

Pender, Don P., to Advanced Systems Incorporated. Dynamic flood conveyor with weir. 5,007,445, Cl. 134-122.00R.

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Nelson, Nancy W.; Cosart, Lee D. III; Peregrino, Luiz, and Ingman, Eric M., 5,008,610, Cl. 324-84.000.

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Parker, Theodore L., and Perettie, Donald J., 5,007,706, Cl. 350-76.340.

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Nasby, James S., and Rood, Michael J., 5,007,571, Cl. 225-106.000.

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Carr, Michael D.; Perini, Maurice G.; O'Donnell, John; Leaning, Anthony B., and Leaning, Anthony R., 5,008,748, Cl. 358-136.000.

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Corain, Luciano, Mattan, Gianni, Perlini, Renato, and Bacchetti, Mario, 5,007,463, Cl. 139-448.000.

Perner, Johannes. *See*—
Diessel, Paul, Perner, Johannes, Denzinger, Walter, Hartmann, Heinrich, and Raubenheimer, Hans-Juergen, 5,008,032, Cl. 252-174.240.

Pernick, Benjamin J.: *See*—
Brandstetter, Robert W., Pernick, Benjamin J., Fonneland, Nils J., and Caputi, Stephen J., 5,008,851, Cl. 364-807.000.

Perricone, Alphonse C.: *See*—
Enright, Dorothy P.; Dye, William M., Smith, F. Martin, and Perricone, Alphonse C., 5,007,489, Cl. 175-65.000.

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Reist, Marc; Persson, Hans, and Poggi, Daniel, 5,007,959, Cl. 75-645.000.

Pescador, Rodolfo. *See*—
Casu, Benito, Torri, Giangiacomo; Naggi, Annamaria, Mantovani, Marisa, Pescador, Rodolfo, Porta, Roberto, and Prino, Giuseppe, 5,008,253, Cl. 514-54.000.

Pesheck, Peter S., Atwell, William A.; Krawiecki, Madonna M., and Anderson, George R., to Pillsbury Company, The. Microwave food products and method of their manufacture. 5,008,507, Cl. 219-10.55E.

Peterson, John C., Chow, Edward; and Madan, Herb S., to California Institute of Technology. Method and apparatus for eliminating unsuccessful tries in a search tree. 5,008,882, Cl. 370-94.300.

Petigara, Ramesh B., and Sharp, Douglas N., to Rohm and Haas Company. Purification of isothiazolones. 5,008,395, Cl. 548-213.000.

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Mathivat, Denis; and Petitcollin, Jean-Marc, 5,007,949, Cl. 65-160.000.

Petrolite Corporation: *See*—
Baker, Timothy J., and Woods, John H., 5,008,144, Cl. 428-211.000.

Petronio, Carlo F., to ABB Power T & D Company, Inc. Current monitoring circuit error compensation. 5,008,525, Cl. 250-214.00C.

Pettersson, Rune L.: *See*—
Engstrand, Per O., Hammar, Lars-Ake, Htun, Myat T., and Pettersson, Rune L., 5,007,985, Cl. 162-26.000.

Pettit, Paul H., Jr., to PPG Industries, Inc. Powder coating compositions of polyepoxides, acrylic copolymers and aliphatic or polyester dibasic acids. 5,008,335, Cl. 525-111.000.

Petzold, Werner P., to Borg-Warner Automotive, Inc. Technique for clutch control in continuously variable transmission systems. 5,007,512, Cl. 192-3.510.

Peuckert, Marcellus. *See*—
Gerdau, Thomas, Kleiner, Hans-Jerg, Peuckert, Marcellus; Bruck, Martin, and Aldinger, Fritz, 5,008,423, Cl. 556-412.000.

Peukert, Eberhard. *See*—
Bremus, Norbert; Gutsche, Bernhard; Jeromin, Lutz; Peukert, Eberhard; and Schleper, Bernard, 5,008,046, Cl. 260-410.600.

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Audaire, Luc, Peuzin, Jean C.; and Schaub, Bernard, 5,008,541, Cl. 250-338.300.

Peyerl, Gerhard, to U.S. Philips Corporation. Accommodation device with shielded circuit boards. 5,008,778, Cl. 361-415.000.

Peyre, Henri. *See*—
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Kadis, Paul M., and Pfaff, Susan E., 5,007,276, Cl. 72-351.000.

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Blackburn, Warren D., Jr., and Loose, Leland D., 5,008,283, Cl. 514-414.000.
Cooper, Kelvin, and Fray, Michael J., 5,008,263, Cl. 514-220.000.
Murtiashaw, Charles W., 5,008,384, Cl. 536-23.000.

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Greiner, Peter; and Pfluger, Hubert, 5,007,331, Cl. 92-165.00R.

Phaal, Cornelius. Abrasive product. 5,007,207, Cl. 51-204.000.

Phadke, Shrikant V. Epoxy containing impact modifiers for thermoplastic resins. 5,008,342, Cl. 525-263.000.

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Nesheiwat, Afif M., 5,008,368, Cl. 528-388.000.
Roberts, John S., 5,008,432, Cl. 558-436.000.

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Groswith, Charles T., III, Phipps, Richard D.; Lathrop, Robert L., Jr., Stewart, John F., and Kaufmann, Rick J., 5,007,782, Cl. 412-40.000.

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Hermsdorffer, Joachim, Galfe, Gunther; Lautenbacher, Stefan; Korte, Reinhard; Krause, Hans-Joachim; Krull, Frans; May, Arno, Oberdorfer, Dietmar, and Pluquett, Ulrich, 5,007,433, Cl. 128-742.000.

Picha, George J.; and Secrest, Dean J., to Applied Medical Technology, Inc. Percutaneous endoscopic gastrostomy device. 5,007,900, Cl. 604-106.000.

Picker International, Inc. *See*—
Brunnett, Carl J., Zachary, Allen B., and Heiple, Holly C., 5,008,822, Cl. 364-413.210.
Vanek, Denis W., and Holland, G. Neil, 5,007,425, Cl. 128-653.00A.

Piehler, Martin. *See*—
Schuster, Johann; Piehler, Martin, Muller, Horst; and Schneider, Otto, 5,008,229, Cl. 502-167.000.

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Pesheck, Peter S., Atwell, William A., Krawiecki, Madonna M.; and Anderson, George R., 5,008,507, Cl. 219-10.55E.

Pinard, Jean C., Jacquard, Bernard, and Besancon, Andre, to Societe Somab S.A. Tool lathe provided with improved control means. 5,008,828, Cl. 364-474.280.

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Pinson, George T., to Boeing Company, The. Spherical projectile for electromagnetic acceleration. 5,007,348, Cl. 102-501.000.

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Endoh, Fumio, 5,008,934, Cl. 380-15.000.
Kikuchi, Ikuya; and Sato, Ryo, 5,007,712, Cl. 350-255.000.
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Miller, Lindy F., and Thomford, Peter J., 5,008,244, Cl. 514-12.000.

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O'Dea, Kevin J., Bergman, Norman J.; Digiulio, Peter C., Dolan, Donald T.; and Vanderpool, James L., 5,007,371, Cl. 118-680.000.
Sansone, Ronald P.; Schumacher, Karl H., Keating, Raymond; Wall, Joseph W.; and Joshi, Uday W., 5,008,827, Cl. 364-464.020.

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Longman, Robert J.; Helfet, Peter R., and Abrams, Michael J., 5,008,687, Cl. 346-135.100.

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Cohen, Amir, 5,007,586, Cl. 239-222.170.

Platzer, Stephan J. W., to Hoechst Celanese Corporation. Color proofing system having a graduated layer of resins with different solubilities. 5,008,174, Cl. 430-143.000.

Pleasants, Charles W.; and Scott, Keith W., to Otis Engineering Corporation. Hydraulic up-down well jar and method of operating same. 5,007,479, Cl. 166-178.000.

Pless, Benjamin; Sweeney, Michael, Winkle, Roger; and Nathan, Anthony, to Ventritex, Inc. Method for combiner cardiac pacing and defibrillation. 5,007,422, Cl. 28-419.0PG.

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Ingemann, Ole, 5,007,231, Cl. 53-412.000.

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Dandreaux, Gary, Login, Robert B.; Merianos, John J.; Garelick, Paul, Plochocka, Krystyna, Negrin, Max; and Shih, Jenn S., 5,008,367, Cl. 528-326.000.
Tazi, Mohammed; and Plochocka, Krystyna, 5,008,355, Cl. 526-271.000.

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Muller, Michael; Podszun, Wolfgang, and Winkel, Jens, 5,008,436, Cl. 560-26.000.

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Poggi, Daniel. *See*—
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Polan, Alvin F. Game apparatus. 5,007,648, Cl. 273-236.000.

Polypure, Inc.. *See*—
Chiang, William G.; Jobbins, Richard M., and Populc, Michael P., 5,008,444, Cl. 560-222.000.
Highsmith, Ronald E.; and Larson, Eric H., 5,008,319, Cl. 524-321.000.

Pomerleau, Kevin L. Leveraged security door lock. 5,007,669, Cl. 292-262.000.

Poncy, George W. Disposable peppermill. 5,007,592, Cl. 241-169.100.

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Sage, Daniel E.; and Patrick, James C., Jr., 5,007,552, Cl. 220-23.830.

Pontynen, Esko. Insulated trafficked surface. 5,007,764, Cl. 404-70.000.

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Carlomagno, Michael, Poostpasand, Hamid, and James, Steven, 5,007,574, Cl. 228-20.000.

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Pope, Susan G. Medical speculum blade sheath. 5,007,409, Cl. 128-17.000.

Poprawe, Reinhart: *See*—
Klein, Rolf M.; Poprawe, Reinhart, and Herziger, Gerd W., 5,007,686, Cl. 300-21.000.

Populc, Michael P.: *See*—
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Ahmadi, Hamid; Beha, Johannes G., Denzel, Wolfgang E.; Engbersen, Antonius P.; Luijten, Ronald P.; Murphy, Charles A.; and Port, Erich, 5,008,878, Cl. 370-60.000.

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Casu, Benito; Torri, Giangiacomo; Naggi, Annamaria; Mantovani, Marisa; Pescador, Rodolfo, Porta, Roberto, and Prino, Giuseppe, 5,008,253, Cl. 514-54.000.

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Neuwirth, Helmuth, Meyerhoefer, Carl; Carney, William V.; and Visconti, Peter, 5,008,772, Cl. 361-119.000.

Poskitt, Geoffrey. *See*—
Crane, David P., Cole, Terence M., and Poskitt, Geoffrey, 5,008,813, Cl. 364-200.000.

Post, Martin F. M.: *See*—
Keijsper, Johannes J.; Mackay, Munro; and Post, Martin F. M., 5,008,094, Cl. 423-328.000.

Powell, Joseph B.; and Uzelmeier, Christopher W., to Shell Oil Company. Process for preparing a bisphenol. 5,008,470, Cl. 568-727.000.

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Powell, Robert F.. *See*—
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Power Integrations, Inc.. *See*—
Leman, Brooks R., 5,008,794, Cl. 363-21.000.

PPG Industries, Inc.: *See*—
Hayes, Deborah E., 5,008,153, Cl. 428-429.000.
Krushinski, Bert K.; Lawhon, Robert A.; Radecki, Francis A.; and Schwenninger, Ronald L., 5,007,950, Cl. 65-182.500.
Nugent, Richard M., Jr.; Niederst, Ken W.; and Seiner, Jerome A., 5,008,137, Cl. 428-35.400.
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Pray, Larry A.: *See—*
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Precor Incorporated: *See—*
Real, Kenneth G., and Bang, Gary M., 5,007,630, Cl. 272-69.000.
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Blumberg, Murray B., 5,007,758, Cl. 402-75.000.
Presswood, J. Kenneth: *See—*
Nalepa, Christopher J.; Presswood, J. Kenneth; and Knapp, Gordon G., 5,008,453, Cl. 564-271.000.
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Presti, Frederick J., 5,007,978, Cl. 156-394.100.
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Bender, Paul E.; Lantos, Ivan; McGuire, Michael A.; Pridgen, Lendon N.; and Winicov, Herbert B., 5,008,390, Cl. 546-199.000
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Sorensen, Jens O., 5,008,064, Cl. 264-308.000.
Prince Corporation: *See—*
Binish, Patrick W., 5,007,532, Cl. 296-97.100.
Prindle, William: *See—*
Skerker, Robert B.; and Prindle, William, 5,008,508, Cl. 219-10.55E.
Prino, Giuseppe: *See—*
Casu, Benito; Torri, Giangiacomo; Naggi, Annamaria; Mantovani, Marisa, Pescador, Rodolfo; Porta, Roberto; and Prino, Giuseppe, 5,008,253, Cl. 514-54.000.
Pritchard, David A.; and Donnelly, Michael J. Device for strapping cables, pipes or other similar items, together or to supports. 5,007,138, Cl. 24-23.00B.
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Satterfield, Marshall G.; Steinke, David M., and Blankenship, Michael, 5,007,976, Cl. 156-222.000.
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Kessel, William C.; Laclaire, John L.; Lui, Andrew L., Locke, Michael H.; and Britt, Herbert I., 5,008,810, Cl. 364-200.000.
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Benecke, Arnold G., Kinne, Daniel J.; and Wnuk, Andrew J., 5,008,110, Cl. 424-448.000.
Bjorkquist, David W., 5,008,344, Cl. 525-328.200
Gunn, Charles L.; Davis, Harold; Spahni, Milton D., Jr.; and Wanless, Ronald H., 5,007,541, Cl. 206-611.000.
Osborn, Thomas W., III; and Schmitz, Deborah C., 5,007,906, Cl. 604-385.100.
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Cook, James C., II, 5,008,598, Cl. 315-225.000
Progressive Fastening, Inc.: *See—*
Richards, Peter S., 5,007,604, Cl. 248-62.000
Prokopowicz, Richard A.: *See—*
Ozin, Geoffrey A.; Huber, Helmut X.; Prokopowicz, Richard A.; and Godber, John, 5,008,234, Cl. 502-326.000.
Prometron Technics Corporation: *See—*
Uno, Ken; Fujino, Takuo; and Nakamori, Hideki, 5,008,002, Cl. 204-192.310.
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Puerner, Dean A., to AMP Incorporated. Housing for an electrical connection. 5,007,856, Cl. 439-452.000.
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Daly, John K.; Kreinberg, Earl R.; Puerner, Dean A.; and Adcock, Marty E., 5,007,858, Cl. 439-498.000.
PulseTrend, Inc.: *See—*
Treatch, James E.; and Mikesell, James R., 5,007,429, Cl. 128-677.000.
Pulver, Arnold M.: *See—*
Cheriff, Frank J.; Kirk, Joseph J.; Pulver, Arnold M.; and Cox, Walter N., 5,008,656, Cl. 340-718.000.
Purbrick, Malcolm D.: *See—*
Anderson, Larry; Batts, Gregory N.; Purbrick, Malcolm D.; Scriven, Clare E.; and Jones, Stephen A., 5,008,358, Cl. 526-292.300.
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Ballantine, James A.; Gregory, Reginald; Purnell, John H.; Thomas, John M.; and Westlake, David J., 5,008,465, Cl. 568-697.000.
Purohit, Ahnal A., to Anshal, Inc. Wet blade razor storage apparatus. 5,007,533, Cl. 206-208.000.
Quaid, Joel, to Medical Products Development, Inc. Open-cell, silicone-elastomer medical implant. 5,007,929, Cl. 623-8.000.
Quantum Solutions, Inc.: *See—*
More, Henry S.; Fraser, Edward C.; and Bulduc, Lawrence R., 5,008,664, Cl. 340-854.000.
Quantz, Norman G. Electrically actuated lock mechanism with electrical failure protection. 5,007,261, Cl. 70-240.000.
Quay, Steven C., Rocklage, Scott M.; and Miller, Warren K., to Salutar, Inc. Amyloidosis and Alzheimer's disease diagnostic assay and reagents therefor. 5,008,099, Cl. 424-1.100.
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Blair, Gordon P., 5,007,384, Cl. 123-48.00A.
Queyssac, Daniel, to SGS-Thomson Microelectronics, Inc. Zero power IC module. 5,008,776, Cl. 361-392.000.
Quiet S.A.: *See—*
Penitot, Gerard; Cartigny, Marcel; Roynard, Joel; Valdenaire, Bruno; Astier, Marc, Mery, Bernard, and Wendling, Michael, 5,007,447, Cl. 137-102.000
Quinn, Robert L.; and Pansari, Frank, Jr., to Molex Incorporated. Tool head for use in crimping electrical connectors. 5,007,280, Cl. 72-402.000.
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Robinson, Amy L.; and Banerjee, Chandra K., 5,007,440, Cl. 131-369.000.
R.V.R. Enterprises, Ltd.: *See—*
Musielak, Ronald L., 5,007,250, Cl. 62-372.000.
R X S Schrumpftechnik-Garnituren GmbH: *See—*
Kaeufer, Helmut; Kipfelsberger, Christian; and Leyrer, Karl-Heinz, 5,008,059, Cl. 264-230.000.
Raab, Rudolf: *See—*
Abendroth, Paul; Brandes, Harry; and Raab, Rudolf, 5,007,342, Cl. 101-420.000.
Raatz, Francis: *See—*
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Rabb, Khalid M.: *See—*
Kremers, Henry T., and Rabb, Khalid M., 5,007,625, Cl. 270-53.000.
Raburn, Richard W.; and Schaefer, Daniel J., to Span-America Medical Systems, Inc. Support pad with uniform patterned surface. 5,007,124, Cl. 5-481.000.
Rad Elec Inc.: *See—*
Dempsey, John C., 5,008,540, Cl. 250-336.100.
Radcliffe, Stanley L.: *See—*
Alexander, Joseph H.; Radcliffe, Stanley L.; Robertson, Martin N.; Bator, Eugene A.; and Anderson, John E., 5,007,315, Cl. 83-72.000.
Radecki, Francis A.: *See—*
Krushinski, Bert K.; Lawhon, Robert A.; Radecki, Francis A.; and Schwenninger, Ronald L., 5,007,950, Cl. 65-182.500.
Radvany, Bela: *See—*
Bakos, Jozsef, Heil, Balint; Toth, Imre; Edes, Bela; Gebhardt, Tstvan, Bihari, Ferenc, Durko nee Ponacz, Anna; Eifert, Gyula, Kiraly, Jeno; Konok nee Horvath, Eva; Lukacs, Laszlo; Meszaros nee Szekrenyesi, Agnes; Radvany, Bela; and Sarosi, Lajos, 5,008,440, Cl. 560-65.000.
Rager, Shirley J.: *See—*
Matteucci, Lawrence A.; Rager, Shirley J.; and Maher, Ambrose P., 5,007,367, Cl. 116-210.000
Rahner, Thomas Portable lace clipping and shearing apparatus for synchronous operation with a lace-knitting machine. 5,007,253, Cl. 66-149.00R.
Raible, Karl, to Stabifix Brauerei-Technik GmbH & Co. OHG. Process for the reduction in size of the pores of a filter medium for beverages. 5,008,018, Cl. 210-717.000.
Raj, Phani K. Electronic remote chemical identification system 5,008,661, Cl. 340-825.540.
Raleigh, William J., Thimineur, Raymond J.; and Zotto, Anthony A., to General Electric Company. Silicone surfactants. 5,008,103, Cl. 424-66.000.
Ralph E. Koch Trucking, Inc.: *See—*
Koch, Ralph E., 5,007,672, Cl. 296-100.000.
Ram, Michael J.: *See—*
Kalb, Irvin M.; and Ram, Michael J., 5,007,897, Cl. 604-43.000.
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Ramachandran, Ramakrishnan; MacLean, Donald L.; Satchell, Donald P., Jr.; and Malik, Virginia A., to BOC Group, Inc., The. Process for the production of oxides. 5,008,414, Cl. 549-538.000.
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Georgiou, John; Gueth, Thomas F.; and Ramsey, James S 5,008,520, Cl. 235-462.000.
Ranch, Jerome P.; and Buchheim, Julie A., to United AgriSeeds, Inc. Propagating multiple whole fertile plants from immature leguminous. 5,008,200, Cl. 435-240.490.
Rancourt, James D.: *See—*
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Randolph, Timothy T. Phosphorescent luminous door knobs cover. 5,008,551, Cl. 250-462.100.
Rao, Nandakumar S.: *See—*
Cook, William J.; Wisniewski, Karen L.; Dixit, Nagaraj S.; and Rao, Nandakumar S., 5,008,030, Cl. 252-106.000.
Rao, V. N. Mallikarjuna: *See—*
Manzer, Leo E.; and Rao, V. N. Mallikarjuna, 5,008,475, Cl 570-168.000.
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Rapoport, Judith L.: *See—*
Swedo, Susan E.; Rapoport, Judith L.; and Leonard, Henrietta L., 5,008,262, Cl. 514-217.000.
Rastetter, William H.: *See—*
Anderson, Stephen; Light, David R.; Marks, Cara; and Rastetter, William H., 5,008,193, Cl. 435-138.000.

Rathge, Robert D.: *See—*
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Rathmann, Dietrich: *See—*
Thurm, Siegfried, Holm, Reimer, Leuschke, Christian, Rathmann, Dietrich, and Schrader, Lutz, 5,008,148, Cl. 428-336.000.
Raubenheimer, Hans-Juergen: *See—*
Diessel, Paul; Perner, Johannes, Denzinger, Walter; Hartmann, Heinrich; and Raubenheimer, Hans-Juergen, 5,008,032, Cl. 252-174.240.
Rauchmaul, Siegfried: *See—*
Schmidt, Hans-Fr., Rauchmaul, Siegfried; and Bednarz, Juergen, 5,008,496, Cl. 174-254.000
Ravid, Gonen. Specialized frame for retaining an edge connector on a printed circuit board. 5,007,846, Cl. 439-79.000.
Ray, Daniel L., to Level One Communications, Inc. Fully integrated charge pump phase locked loop. 5,008,637, Cl. 331-8.000.
Raychem Corporation. *See—*
Guerra, Robert, and Soni, Pravin, 5,008,340, Cl. 525-193.000
Levinson, Frank H., 5,008,877, Cl. 370-4.000
Nyberg, Eric D., Klingman, Ken A.; Curtis, Jeff; and Stewart, Ray F., 5,007,989, Cl. 204-1.110.
Raymond, Guy: *See—*
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Raymond, Harry W. Foamed building panel including an internally mounted stud 5,007,222, Cl. 35-586.000
Raytheon Company *See—*
Cavallaro, Nunzio M.; Toth, John F., and Alexander, Cleo J., 5,008,681, Cl. 343-700.0MS
Cheriff, Frank J., Kirk, Joseph J.; Pulver, Arnold M., and Cox, Walter N., 5,008,656, Cl. 340-718.000
Wolfe, Robert E., and Goyette, Ronald A., 5,007,254, Cl. 68-17.00R
Real, Kenneth G., and Bang, Gary M., to Precor Incorporated Exercise treadmill. 5,007,630, Cl. 272-69.000.
Real World Design & Development Company *See—*
Ellard, Terence R., 5,007,903, Cl. 604-195.000.
Recytec SA: *See—*
Hanulik, Jozef, 5,008,044, Cl. 252-628.000
Redditt, Jack W.: *See—*
Weder, Donald E., Straeter, William F.; Straeter, Joseph G.; Craig, Franklin J., Donnelly, Wilma M., and Redditt, Jack W., 5,007,229, Cl. 53-397.000
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Redwine, Donald J., to Texas Instruments Incorporated. Method of making cre ;point dynamic RAM cell array with overlapping wordlines and folded bitlines. 5,008,214, Cl. 437-52.000.
Reed, Kevin, and Coleman, Keith Method of playing a board game of college social life 5,007,650, Cl. 273-249.000
Reese, Robert T.; and Stanley, Harold A., to Scripps Clinic and Research Foundation. Merozoite surface glycoproteins 5,008,198, Cl 435-240.270.
ReGen Corporation: *See—*
Stone, Kevin R., 5,007,934, Cl. 623-20.000.
Regener, Gernot: *See—*
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Reichert, Gerhard: *See—*
Glover, Michael, and Reichert, Gerhard, 5,007,217, Cl. 52-172.000.
Reichwein, David P. to Armstrong World Industries, Inc Consistency measuring device for a slurry containing defoamer. 5,008,906, Cl. 378-54.000
Reid, Robert A.; and Goodnow, Ronald F., to Thermo-Electron Web Systems, Inc. Hydraulic drive for pull through doctor blade transfer system. 5,007,132, Cl. 15-256.530
Reid, Robert W. *See—*
Dahlen, John M., Chhabra, Narender K.; Araujo, Richard K.; Scholten, James R., Reid, Robert W.; and Soikkeli, Matti, 5,007,285, Cl. 73-170.00A
Reimel, Paul F., to United States of America, Navy. Stationary probability integrator system 5,008,630, Cl. 328-165.000.
Reist, Marc, Persson, Hans, and Poggi, Daniel, to Noranda Inc Process for converting of solid high-grade copper matte. 5,007,959, Cl. 75-645.000.
Rembold, Manfred: *See—*
Husler, Rinaldo, Klingert, Bernd; Rembold, Manfred; and Steiner, Eginhard, 5,008,302, Cl. 522-14.000
Remote Controls, Inc.: *See—*
Grove, Lee A., 5,007,446, Cl. 137-72.000.
Research Association for Petroleum Alternatives Development: *See—*
Kitamura, Toru; Ohashi, Yoshio; Sekino, Masami; and Murakawa, Kenichi, 5,008,001, Cl. 208-143.000.
Research Development Corporation: *See—*
Hattori, Shintarou; Takahagi, Takayuki; and Ishitani, Akira, 5,007,372, Cl. 118-715.000
Resource Technology Associates: *See—*
Bain, Richard L.; and Larson, John R., 5,008,085, Cl 422-109.000.
Reutter, Jorg, and Krause, Frank, to Alcatel N.V. Optical receiver with extended dynamic range. 5,008,524, Cl. 250-214.00A.
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Rha, ChoKyun, Pradipasena, Pasawadee, Nakamura, TetsuHisa, Easson, Donald D., Jr., and Sinskey, Anthony J., to Massachusetts Institute of Technology Compositions utilizing an exocellular polysaccharide isolated from *Zoogloea ramigera*. 5,008,108, Cl 424-401.000.
Rhone-Poulenc Chimie: *See—*
Altorfer, Alfred, Wohler, Ernst, and Wynn, Nicholas P., 5,008,016, Cl. 210-634.000.
Boutin, Jean, 5,008,095, Cl. 423-467.000
Samdi, Azzdddine; Paris, Rene, and Roubin, Marc, 5,008,092, Cl 423-263.000
Rhone-Poulenc Sante: *See—*
Gueremy, Claude; Jimonet, Patrick, and Mignani, Serge, 5,008,280, Cl. 514-367.000.
Ricchiazzi, Antonio J.: *See—*
Gooch, William A., Jr.; Burkins, Matthew S.; Mills, Leo F., Ogilvy, James W., and Ricchiazzi, Antonio J., 5,007,326, Cl. 89-36.020
Rice, Kenner C., to United States of America, Health and Human Services. Method of synthesis of hydroxy-substituted-4-alkoxyphenylacetic acids. 5,008,449, Cl 562-478.000.
Richards, Peter S., to Progressive Fastening, Inc Side load type pipe hanger with single bolt closure 5,007,604, Cl 248-62.000
Richardson, John, to Selectro-Vision, Ltd Gaming system with system base station and gaming boards. 5,007,649, Cl 273-237.000
Richardson, Thomas W.: *See—*
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Richey, Forrest A., Jr.; and Hoy, Kenneth L., to Union Carbide Chemicals And Plastics Technology Corporation High solids coating compositions. 5,008,336, Cl. 525-124.000
Richter Gedeon Vegyeszeti Gyar R. T. *See—*
Schon, Istvan; Nyeki, Olga, Kisfaludy, Lajos, deceased, Denes, Laszlo, Hajos, Gyorgy, and Szporny, Laszlo, 5,008,246, Cl 514-18.000.
Richter, Simon J., and Hohmann, Frank G., to Coca-Cola Company, The. Integral vent tube. 5,007,565, Cl 222-481.000
Ricles, Thomas D., and Ward, Richard M., to Dresser Industries, Inc Dual firing system for a perforating gun 5,007,344, Cl 102-31.200
Ricles, Thomas D., to Dresser Industries, Inc Perforating gun assembly and universal perforating charge clip apparatus 5,007,486, Cl 175-4.600
Ricoh Company, Ltd.: *See—*
Asakawa, Toshifumi, and Nakayama, Haruo, 5,008,554, Cl 250-551.000
Gotoh, Hiroshi, Kusakata, Shigeru; and Shiojima, Isao, 5,008,238, Cl 503-217.000
Kondo, Hitoshi; Ohta, Eiichi, and Kimura, Yuji, 5,008,732, Cl 357-71.000.
Rokutanzono, Takashi, Ide, Yukio, Nagame, Hiroshi, Ohshima, Kohichi, Kojima, Narihito, and Nousho, Shinji, 5,008,172, Cl 430-67.000.
Sakamoto, Koji; Tanzawa, Misao, Iwata, Nobuo, Murayama, Hisao, Takahashi, Susumu, and Komada, Kenya, 5,008,711, Cl. 355-206.000.
Shinada, Masayuki; Ikesue, Masumi, Kikuno, Mitsutoyo, and Murai, Tatsuya, 5,008,709, Cl 355-309.000
Riddick, Wayne T., and Smith, Vincent F., Jr., to Amoco Corporation Hydroxyethers of epoxidized polybutenes 5,008,338, Cl 525-177.000
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Rieder, Heinz, and Schwaiger, Max, to RSF-Elektronik Gesellschaft m.b.H. Incremental measuring system. 5,007,177, Cl 33-706.000
Rieter Machine Works, Ltd. *See—*
Busenhart, Peter, Schneeberger, Ruedi, Holbein, Erwin, Wirz, Armin, Flueli, Adolf, and Maier, Hansueli, 5,007,595, Cl 242-46.400
Rigsby, Robert. Plant growing receptacle 5,007,135, Cl. 47-73.000
Riley, Richard E. *See—*
Brown, Kenneth; and Riley, Richard E., 5,007,159, Cl 29-622.000
Riley, Thomas P., Buffman, Martin, and Cyr, Reginald J., to United States of America, America Position and velocity measuring system 5,008,860, Cl. 367-6.000
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Risius, Harald, and Oldemeyer, Wilhelm, to Glunz Aktiengesellschaft Method of producing a structure, more particularly a wooden structure, in the surface of a hardened fibreboard. 5,008,057, Cl 264-134.000
Robbins, Virginia M.: *See—*
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Robello, Douglas R., Ulman, Abraham, Urankar, Edward J.; and Willand, Craig S., to Eastman Kodak Company Optical article exhibiting a high level of second order polarization susceptibility 5,008,043, Cl 252-582.000.
Robello, Douglas R.; and Ulman, Abraham, to Eastman Kodak Company Preparation of polysulfones. 5,008,369, Cl. 528-391.000
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Babitzka, Rudolf, 5,007,400, Cl 123-506.000
Rossignol, Francois, 5,007,584, Cl 239-88.000.
Roberts, Gene, to Windsor Communications, Inc. Splice closure apparatus. 5,007,701, Cl. 350-96.200
Roberts, John S., to Phillips Petroleum Company Production of mercapto compounds. 5,008,432, Cl. 558-436.000

Roberts, Thomas J., to AT&T Bell Laboratories. Efficient method for encrypting superblocks of data. 5,008,935, Cl. 380-29.000.

Robertshaw Controls Company: *See*—
Wellenkotter, Carl A.; and Counts, David E., 5,007,396, Cl. 123-339.000.

Robertson, Martin N.: *See*—
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Robinson, Amy L.; and Banerjee, Chandra K., to R. J. Reynolds Tobacco Company. Process for providing smokable material 5,007,440, Cl. 131-369.000.

Robinson Knife Manufacturing Co., Inc.: *See*—
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Robinson, Scott T.; Denning, William K.; Redfield, John M., and Garthwaite, John H., to Leviton Manufacturing Co., Inc. Modular higher density communications coupling system. 5,007,860, Cl. 439-540.000.

Roby Teknik Aktiebolag: *See*—
Johansson, Goran; and Olanders, Par, 5,008,076, Cl. 422-28.000.

Roccaforte, Harry I. Recloseable carton with pouring spout 5,007,542, Cl. 206-621.600.

Rochet, Gerald: *See*—
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Rocklage, Scott M.: *See*—
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Rockwell International: *See*—
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Rockwell International Corporation: *See*—
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Rodgers, Joel E., Sr., Schmitz, Ambrose J., and Romig, Alton D., to Allied-Signal Inc. Cold air lock vapor seal for process solvent vapor recovery and control 5,007,179, Cl. 34-22.000.

Rodriguez, Paul A.: *See*—
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Rofin-Sinar Laser GmbH: *See*—
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Roger, Joseph: *See*—
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Rogers, Alan E.: *See*—
Fremuth, Dietmar R. A., Rogers, Alan E.; and Zahner, John C., 5,008,088, Cl. 422-234.000.

Rogers, Duane E.: *See*—
Broughton, George L., Breckenfeld, Paul W., Mate, David W., Nettles, James A.; and Rogers, Duane E., 5,007,393, Cl. 123-195.00R.

Rogozinski, Chaim. Apparatus for internally fixing the spine 5,007,909, Cl. 606-61.000.

Roh, Te N.: *See*—
Karakida, Kenichi, Yagi, Shigeru, Fukuda, Yuzuru, Nishikawa, Masayuki, Roh, Te N., Takahashi, Noriyoshi, Ono, Masato, Yokoi, Masaki, and Komori, Yumiko, 5,008,170, Cl. 430-65.000.

Rohm and Haas Company: *See*—
Killgoar, Paul C., Jr., Samus, Marsha A.; Koller, Robert D., Sr., and Hemenway, Carl P., 5,008,324, Cl. 524-504.000.
Petigara, Ramesh B.; and Sharp, Douglas N., 5,008,395, Cl. 548-213.000.

Rokutanzono, Takashi, Ide, Yukio; Nagame, Hiroshi, Ohshima, Kohichi, Kojima, Narihito, and Nousho, Shinji, to Ricoh Company, Ltd. Electrophotographic photoconductor 5,008,172, Cl. 430-67.000.

Rolfe, Barry G., Shine, John, Scott, Kieran F., and Hennecke, Hauke, to Lubrizol Genetics, Inc. nifH promoters of Bradyrhizobium. 5,008,194, Cl. 435-172.300.

Roll, Ulrich: *See*—
Kastl, Roland, and Roll, Ulrich, 5,008,596, Cl. 315-205.000.

Rolls Royce plc: *See*—
Chamberlain, John R., 5,008,136, Cl. 427-388.100.

Rolscreen Company: *See*—
Minter, Mearl, 5,007,215, Cl. 52-90.000.

Romig, Alton D: *See*—
Rodgers, Joel E., Sr., Schmitz, Ambrose J., and Romig, Alton D., 5,007,179, Cl. 34-22.000.

Rood, Michael J.: *See*—
Nasby, James S., and Rood, Michael J., 5,007,571, Cl. 225-106.000.

Rooperol (N A.): *See*—
Wenteler, George L., Pegel, Karl H., Drews, Siegfried, and Kundig, Hans, 5,008,471, Cl. 568-729.000.

Roos, Otto: *See*—
Schnorrenberg, Gerd, Roos, Otto; Losel, Walter, Wiedemann, Ingrid, Gaida, Wolfram, Hoefke, Wolfgang, Arndts, Dietrich, and Streller, Ilse, 5,008,273, Cl. 514-301.000.

Rose, Howard, and McAffer, Ian G. C., to Waverley Pharmaceuticals Limited Bottle caps. 5,007,546, Cl. 215-32.000.

Rose, James W., and Sitnik, Theresa A., to General Electric Company Method for sealing an electronic device containing a fluid material 5,008,049, Cl. 264-4.000.

Rosenberg, Farel. Molar controlling and positioning orthodontic appliance with simplified orientation, pressure and adjustment mechanisms. 5,007,828, Cl. 433-18.000.

Rosenberg, Robert: *See*—
Blouse, Jeffrey L., Fulton, Inge G.; Lange, Russell C., Meyerson, Bernard S., Nummy, Karen A., Revitz, Martin; and Rosenberg, Robert, 5,008,207, Cl. 437-31.000.

Rosenbluth, Robert F.; Lenker, Jay A.; and Greene, George R., to Advanced Surgical Intervention, Inc. Balloon dilatation catheter 5,007,898, Cl. 604-54.000.

Rosenow, Barry L.: *See*—
Anderson, Duwayne R.; McMahon, Robert W., and Rosenow, Barry L., 5,008,545, Cl. 250-358.100.

Rosenow, Michael J.: *See*—
Hamilton, Scott B.; and Rosenow, Michael J., 5,008,936, Cl. 380-50.000.

Rosnack, Ellen M., Pray, Larry A.; Marable, Alger C.; and Zekert, Gerry C., to Nabisco Brands, Inc. Process and apparatus for continuously removing contaminates from edible cooking oil. 5,008,122, Cl. 426-417.000.

Ross, Douglas A., to University of British Columbia, The. Plasma torch with axial reactant feed 5,008,511, Cl. 219-121.480.

Rossey, Guy, Ugolini, Antonio, Chekroun, Isaac, Vartanian, Abkar, and Wick, Alexander, to Synthelabo. Process for the preparation of methyl (+)-(2S,3S)-3-[(2-aminophenyl)thio]-2-hydroxy-3-(4-methoxyphenyl)-propionates 5,008,434, Cl. 560-17.000.

Rossignol, Francois, to Robert Bosch GmbH. Fuel injection device 5,007,584, Cl. 239-88.000.

Rothfuss, Hans, Bruckner, Raimund; Keutgen, Peter, Seeger, Josef, Winkelmann, Manfred, and Metzger, Herbert, to Didier-Werke AG Apparatus for mounting a gas washing sink in a centered manner in perforated brick 5,007,621, Cl. 266-220.000.

Roubin, Marc: *See*—
Samdi, Azzdddine; Paris, Rene, and Roubin, Marc, 5,008,092, Cl. 423-263.000.

Roussel Uclaf: *See*—
Demassey, Jacques, Demoute, Jean-Pierre, and Tessier, Jean, 5,008,281, Cl. 514-376.000.

Row, Roderick J. Combination anti-g and pressure suit 5,007,893, Cl. 600-20.000.

Rowan, Timothy M.: *See*—
Unsworth, Peter J., Merrison, John C., and Rowan, Timothy M., 5,008,608, Cl. 318-729.000.

Roy, Marc P., to Northern Telecom Limited. High-speed dynamic CMOS circuit and precharge generator. 5,008,569, Cl. 307-465.000.

Roynard, Joel: *See*—
Penitot, Gerard, Cartigny, Marcel, Roynard, Joel, Valdenaire, Bruno, Astier, Marc, Mery, Bernard, and Wendling, Michael, 5,007,447, Cl. 137-102.000.

RSF-Elektronik Gesellschaft m.b.H.: *See*—
Rieder, Heinz, and Schwaiger, Max, 5,007,177, Cl. 33-706.000.

Rubenstein, Robert L.: *See*—
Howells, Joseph A., Jachmann, Emil F., and Rubenstein, Robert L., 5,008,871, Cl. 369-28.000.

Rubinstein, Sergio, and Hoshi, Masayuki Manufacture and installation of a dental prosthesis. 5,007,834, Cl. 433-173.000.

Ruckert, Holger, to BTS Broadcast Television Systems GmbH Method and apparatus for generating an auxiliary timing signal in the horizontal blanking interval of a video signal 5,008,749, Cl. 358-147.000.

Rudish, Ronald M., to AIL Systems, Inc. Method and apparatus for dividing high frequency analog signals 5,008,571, Cl. 307-529.000.

Rufolo, Paul G. Preventative maintenance system for underwater pipes 5,008,075, Cl. 422-6.000.

Ruhrchemie Aktiengesellschaft: *See*—
Breitkopf, Norbert, Dambkes, Georg, and Bach, Hanswilhelm, 5,008,473, Cl. 568-868.000.

Rumennik, Vladimir: *See*—
Lidow, Alexander, Herman, Thomas, and Rumennik, Vladimir, 5,008,725, Cl. 357-23.400.

Rush, Robert E. Gasoline engine powered hand-held circular saw 5,007,173, Cl. 30-391.000.

Rushforth, Christine A.: *See*—
Moody, Gillian M.; and Rushforth, Christine A., 5,008,089, Cl. 423-121.000.

Russay, Thomas, and Stacy, Carl W., to Zenith Electronics Corporation Domed light housing for back-lit LCD display 5,008,658, Cl. 340-784.000.

Russell, John N.: *See*—
Hale, Peter G., and Russell, John N., 5,007,703, Cl. 350-96.230.

Ruter, Hans-Werner, to U.S. Philips Corporation Package and packing body for small components. 5,007,539, Cl. 206-524.000.

Rutschle, Eugen: *See*—
Winkler, Hans-Henning; and Rutschle, Eugen, 5,007,157, Cl. 29-568.000.

Ryan, Robert C.: *See*—
Smegal, John A., Ryan, Robert C.; and Nash, Richard M., 5,008,003, Cl. 208-254.00H.

Ryan, Wayne L., to Streck Laboratories, Inc. Simulated human platelets from red blood cells. 5,008,201, Cl. 436-10.000.

Rydell, Mark A., to Everest Medical Corporation Electrosurgical instrument having needle cutting electrode and spot-coag electrode 5,007,908, Cl. 606-47.000.

Ryder, Steven L. Position insensitive aspirator 5,008,048, Cl. 261-78.200.

Ryobi Ltd.: *See*—
Emura, Masaharu; and Kobayashi, Takehiro, 5,007,601, Cl. 242-223.000.
Ishii, Koji, 5,007,338, Cl. 101-142.000.

Ryoke, Katsumi, Takahashi, Masatoshi; Hashimoto, Akihiro; and Hasumi, Kazuo, to Fuji Photo Film Co., Ltd. Magnetic recording medium 5,008,147, Cl. 428-323.000.

Ryomei Engineering Co., Ltd.: *See*—
Nakano, Takafumi, Seo, Akikazu, Soeda, Hiromitsu, and Sueoka, Kazufumi, 5,007,341, Cl. 101-349.000.

S. A. Manufacture Belge de Gembloux: *See*—
Vincent, Andre, and Munting, Evrard, 5,007,935, Cl. 623-22.000.

S&C Electric Company: *See*—
Scherer, Henry W., 5,007,759, Cl. 403-13.000.

Saab Missiles Aktiebolag: *See*—
Lundin, Jan-Erik, 5,008,522, Cl. 250-203.600.

Saenz, Hillary: *See*—
Henry, Mark, and Saenz, Hillary, 5,007,642, Cl. 273-148.00R.

Safford, Sarah E.: *See*—
Brown, William E., III, Safford, Sarah E., and Clemens, John M., 5,008,080, Cl. 422-56.000.

Sage, Daniel E., and Patrick, James C., Jr., to Ponderosa Corporation Serving bar and container for food 5,007,552, Cl. 220-23.830.

Sager, Peter, to HGZ Maschinenbau AG Automatic coffee machine. 5,007,333, Cl. 99-286.000.

Saint-Gobain Vitrage International: *See*—
Mathivat, Denis, and Petitcollin, Jean-Marc, 5,007,949, Cl. 65-160.000.

Saito, Hiromitsu: *See*—
Kanda, Yutaka, Yasuzawa, Tohru, Saito, Hiromitsu; Sano, Hiroshi, Kobayashi, Eiji, and Morimoto, Makoto, 5,008,271, Cl. 514-292.000.

Saito, Hiroshi, to Canon Kabushiki Kaisha Optical scanning device for scanning a predetermined surface with a plurality of light beams 5,008,686, Cl. 346-108.000.

Saito, Isao: *See*—
Yamauchi, Hiroshi, Sugiyama, Isao, Saito, Isao, Nomoto, Seiichiro, Kamiya, Takashi, Machida, Yoshimasa; and Negi, Shigeto, 5,008,260, Cl. 514-202.000.

Saito, Kazuharu; Matsukura, Hiroyasu; Komase, Hiroshi, Tsuneda, Haruhiro, Watanabe, Junji, Saito, Tadao, Doy, Toshiroh, and Matsunaga, Kazuo, to K K. Sankyo Seiki Seisakusho, and Nippon T&T Corp. Optical fiber connector polishing apparatus and method 5,007,209, Cl. 51-283.00R.

Saito, Kazutaka: *See*—
Tanuma, Chiaki, Itsumi, Kazuhiro, Iwase, Nobuo, Ono, Tomio, Kondo, Yuu, and Saito, Kazutaka, 5,008,582, Cl. 310-332.000.

Saito, Makoto: *See*—
Nishiyama, Nobumasa; Saito, Makoto; Ouchi, Yasuhide; Katoh, Yasuhiro; Kamo, Yoshihisa, Koizumi, Makoto, Aoi, Hajime; Sato, Naoki, and Tsuchiya, Reijiro, 5,008,761, Cl. 360-45.000.

Saito, Noriaki; Kanagawa, Shuichi, and Sakamoto, Hideshi, to Sumitomo Chemical Company, Limited Glycidyl ethers of phenolic compounds and process for producing the same. 5,008,350, Cl. 525-507.000.

Saito, Tadao: *See*—
Saito, Kazuharu, Matsukura, Hiroyasu; Komase, Hiroshi; Tsuneda, Haruhiro, Watanabe, Junji, Saito, Tadao, Doy, Toshiroh, and Matsunaga, Kazuo, 5,007,209, Cl. 51-283.00R.

Saitou, Norikazu: *See*—
Kuramochi, Wataru, Tsuruoka, Yoshiaki; Saitou, Norikazu, Shibuya, Akira, and Yamashita, Shuichi, 5,008,552, Cl. 235-483.000.

Saitou, Yutaka. Kinetic energy recovery device of liquid and gas. 5,007,241, Cl. 60-698.000.

Sakai, Akira: *See*—
Nakagawa, Katsumi, Ishihara, Shunichi; Kanai, Masahiro, Murakami, Tsutomu, Arao, Kozo, Fujioka, Yasushi; and Sakai, Akira, 5,008,726, Cl. 357-30.000.

Sakai, Norio: *See*—
Tamaki, Kuniaki; Sakai, Norio, and Minowa, Kenji, 5,007,534, Cl. 206-329.000.

Sakai, Toshifumi: *See*—
Yamamoto, Masaji; Tanooka, Shigeo, and Sakai, Toshifumi, 5,007,885, Cl. 475-231.000.

Sakakibara, Hiroshi: *See*—
Aoshima, Syozo, Hirota, Kunio; Sakakibara, Hiroshi; Sawai, Naoyuki, and Sato, Takeaki, 5,007,281, Cl. 72-406.000.

Sakamoto, Fumio: *See*—
Kondo, Hirosato; Taguchi, Masahiro; Inoue, Yoshimasa; and Sakamoto, Fumio, 5,008,389, Cl. 544-343.000.

Sakamoto, Hideshi: *See*—
Saito, Noriaki; Kanagawa, Shuichi, and Sakamoto, Hideshi, 5,008,350, Cl. 525-507.000.

Sakamoto, Hiroshi: *See*—
Kobayashi, Hitoshi; Takano, Akira, Narusawa, Naoharu; Tsukada, Yukihiko; Sakamoto, Hiroshi, Hirano, Masaki, and Ando, Masao, 5,008,710, Cl. 355-202.000.

Sakamoto, Koji, Tanzawa, Misao; Iwata, Nobuo; Murayama, Hisao, Takahashi, Susumu, and Komada, Kenya, to Ricoh Company, Ltd. Image forming apparatus. 5,008,711, Cl. 355-206.000.

Sakamoto, Masahiro: *See*—
Ono, Takeshi, Sakamoto, Masahiro; and Takano, Tadashi, 5,008,607, Cl. 318-696.000.

Sakuramoto, Takahumi: *See*—
Tominaga, Takashi; Nishiyama, Souji; Sakuramoto, Takahumi; and Honda, Makoto, 5,008,151, Cl. 428-343.000.

Salmet Gesellschaft mit beschrankter Haftung & Co., Kommanditgesellschaft: *See*—
Lackner, Karl H., 5,007,379, Cl. 119-17.000.

Salmon, Garland R., to Newton Instrument Company Shelf assembly having infinitely vertically adjustable top surface 5,008,779, Cl. 361-415.000.

Salomon S.A.: *See*—
Girault, Eric; and Arnulf, Paul, 5,007,656, Cl. 280-615.000.

Saltzman, Jeremy: *See*—
Jachmann, Emil F.; Saltzman, Jeremy, Chamberlin, David B., D'Agosto, Nicholas A., Harris, Mark, and Su, Jy-hong, 5,008,835, Cl. 364-513.500.

Salutar, Inc.: *See*—
Quay, Steven C., Rocklage, Scott M., and Miller, Warren K., 5,008,099, Cl. 424-1.100.

Salyards, Donald M., to Comfortex, Inc. Flexible covering for reducing moisture/vapor/bacteria transmission 5,007,123, Cl. 5-448.000.

Samdi, Azzdddine; Paris, Rene, and Roubin, Marc, to Rhone-Poulenc Chimie Homogeneous powders of yttrium-stabilized quadratic zirconia. 5,008,092, Cl. 423-263.000.

SamSung Electronics Co., Ltd.: *See*—
Kim, Tae Y., 5,007,607, Cl. 248-188.900.
Sung, Song G., 5,008,762, Cl. 360-61.000.

Samukawa, Koji: *See*—
Seki, Masaki; Samukawa, Koji, and Hanaoka, Osamu, 5,008,806, Cl. 364-191.000.

Samulon, Alfred S.: *See*—
Weiss, Lawrence D.; Caruthers, Douglas W., Inatomi, Charles T., Kawan, Joseph C., Lee, Shan, Marks, Harvey, Meguerdijan, Sarkis A.; Parekh, Dilip J., Samulon, Alfred S., Takata, Melvin M., Tucci, Morris L., and Vollmer, Jim R., 5,008,927, Cl. 379-98.000.

Samus, Marsha A.: *See*—
Killgoar, Paul C., Jr., Samus, Marsha A.; Koller, Robert D., Sr., and Hemenway, Carl P., 5,008,324, Cl. 524-504.000.

Sanders, Mildred P. Zipper stitching guide. 5,007,359, Cl. 112-265.200.

Sandoz Ltd.: *See*—
Holliger, Herbert, 5,008,379, Cl. 534-684.000.

Sandvik AB: *See*—
Pantzar, Glenn G. E., 5,007,775, Cl. 407-113.000.

Sangregory, Jude A., and DiRisio, Anthony, to Eastman Kodak Company Battery-containing apparatus 5,007,859, Cl. 439-500.000.

Sankrithi, Mithra M. K. V.: *See*—
Nadkarni, Arun A.; and Sankrithi, Mithra M. K. V., 5,008,825, Cl. 364-434.000.

Sankyo Company Limited: *See*—
Okazaki, Takao; Takahashi, Shuji, Iwado, Seigo, Tanaka, Keiji, Yanai, Toshiaki; and Kajino, Hisaki, 5,008,191, Cl. 435-124.000.

Sannohe, Kunio: *See*—
Katakami, Tsutomu; Yokoyama, Tatsuro, Miyamoto, Michihiko, Mori, Haruki; Kawauchi, Nobuya, Nobori, Tadahito, Sannohe, Kunio, Kamiya, Joji, Ishii, Masaaki, and Yoshihara, Kanji, 5,008,267, Cl. 514-269.000.

Sano, Atuhiro: *See*—
Shimano, Masami, and Sano, Atuhiro, 5,007,739, Cl. 356-383.000.

Sano, Hironari, and Ohno, Kenyu, to Mitsubishi Petrochemical Co., Ltd. Thermoplastic resin composition 5,008,332, Cl. 525-92.000.

Sano, Hiroshi: *See*—
Kanda, Yutaka; Yasuzawa, Tohru; Saito, Hiromitsu; Sano, Hiroshi, Kobayashi, Eiji; and Morimoto, Makoto, 5,008,271, Cl. 514-292.000.

Sano, Masahiro: *See*—
Honda, Norimasa; and Sano, Masahiro, 5,008,042, Cl. 252-518.000.

Sanshin Industries Co., Ltd.: *See*—
Okita, Ryozo, 5,007,866, Cl. 440-61.000.

Sanshin Kogyo Kabushiki Kaisha: *See*—
Tanaka, Seiichi; and Suzuki, Tamotsu, 5,007,390, Cl. 123-180.00T.

Sansone, Ronald P.; Schumacher, Karl H.; Keating, Raymond, Wall, Joseph W., and Joshi, Uday W., to Pitney Bowes Inc. Central postage data communication network. 5,008,827, Cl. 364-464.020.

Santasalo, Lauri: *See*—
Wutzler, Peter; Mucke, Horst, and Santasalo, Lauri, 5,008,079, Cl. 422-28.000.

Santilli, Donald S.: *See*—
Zones, Stacy I.; Santilli, Donald S., Ziemer, James; Holtermann, Dennis L., Pecoraro, Theresa A., and Innes, Robert A., 5,007,997, Cl. 208-46.000.

Sanwa Kagaku Kenkyusho Co., Ltd.: *See*—
Kurono, Masayasu; Kondo, Yasuaki, Mitani, Takahiko; Baba, Yutaka, and Sawai, Kiichi, 5,008,416, Cl. 556-89.000.
Natori, Shunji, 5,008,371, Cl. 530-324.000.

Sanyo Electric Co., Ltd.: *See*—
Furukawa, Nobuhiro; Inoue, Kenji, Nogami, Mitsuzo; Kameoka, Seiji; and Tadokoro, Motoo, 5,008,164, Cl. 429-59.000.
Ino, Kazuo; Shimizu, Yoshiaki; Okuda, Hiroyuki; Ishihara, Kousou; and Ogura, Takashi, 5,007,158, Cl. 29-603.000.

Saotome, Yoshimi; Kuchiki, Kiyotsuna, and Hayashi, Norihiko, to Kabushiki Kaisha Kobe Seiko Sho Mechanism for suppressing displacement of travelling crane. 5,007,544, Cl. 212-265.000.

Sarosi, Lajos: *See*—
Bakos, Jozsef; Heil, Balint; Toth, Imre; Edes, Bela, Gebhardt, Tstvan, Bihari, Ferenc; Durko nee Ponacz, Anna, Eifert, Gyula, Kiraly, Jeno; Konok nee Horvath, Eva, Lukacs, Laszlo, Meszaros nee Szekrenyesi, Agnes, Radvany, Bela, and Sarosi, Lajos, 5,008,440, Cl. 560-65.000.

Sasae, Taiichio, and Taguchi, Yoshio, to Kansai Engineering Co., Ltd. Material for treating heavy metals and metal ions 5,007,965, Cl. 106-800.000.

Sasaki, Kazuya; Yoshizawa, Sakae; Inagaki, Shinya, and Takeda, Keiko, to Fujitsu Limited. Optical fiber amplifier/multiplexer. 5,007,698, Cl. 350-96.150.

Sasaki, Kazuyuki; and Kataoka, Ichiro, to Yazaki Corporation. Heat-radiation type level sensor. 5,007,288, Cl. 73-295.000.

Sasaki, Yoshio. *See*—
Souketani, Koichi, Ito, Yukio; Sasaki, Yoshio; Kurita, Teiji, and Tamiya, Jun, 5,007,773, Cl. 407-27.000.

Sasaki, Yutaka. *See*—
Okubo, Susumu; and Sasaki, Yutaka, 5,007,870, Cl. 440-89.000.

Sassak, John J. Beer dispensing and monitoring method and apparatus. 5,007,560, Cl. 222-1.000.

Sasse, Klaus. *See*—
Kruger, Bernd-Wieland; Sasse, Klaus; Hoever, Franz-Peter, Nentwig, Gunther; and Behrenz, Wolfgang, 5,008,261, Cl. 514-212.000.

Sat(Societe Anonyme de Telecommunications. *See*—
Bertrand, Michel P., Bucher, Michel B., and Delclaux, Andre R., 5,008,543, Cl. 250-342.000.

Satake, Yoshikatsu. *See*—
Kashiwadate, Ken, Satake, Yoshikatsu, Kaneko, Takashi, Tada, Masahiro, and Katto, Takayuki, 5,008,370, Cl. 528-481.000.

Satchell, Donald P., Jr. *See*—
Ramachandran, Ramakrishnan; MacLean, Donald L.; and Satchell, Donald P., Jr., 5,008,412, Cl. 549-523.000.
Ramachandran, Ramakrishnan, MacLean, Donald L., Satchell, Donald P., Jr., and Malik, Virginia A., 5,008,414, Cl. 549-538.000.

Sato, Hiroshi. *See*—
Yasumi, Yoshiyuki; and Sato, Hiroshi, 5,007,752, Cl. 400-636.000.

Sato, Katsuhiro. *See*—
Akasaki, Yutaka, Nukada, Katsumi; and Sato, Katsuhiro, 5,008,431, Cl. 558-402.000.

Sato, Kazuhiro, to Sony Corporation. Receivers with microcomputer controlled tuning. 5,008,955, Cl. 455-181.000.

Sato, Koji. *See*—
Nagaoka, Shinji; Sato, Koji; and Kawai, Michio, 5,008,695, Cl. 354-403.000.

Sato, Masakatsu. *See*—
Eguchi, Hisao; Kubo, Masashige, Kunimoto, Koji; Shimizu, Sadami, Sato, Masakatsu, and Tamabayashi, Hanzo, 5,008,469, Cl. 568-722.000.

Sato, Naoki. *See*—
Nishiyama, Nobumasa; Saito, Makoto; Ouchi, Yasuhide, Katoh, Yasuhiro; Kamo, Yoshihisa, Koizumi, Makoto, Aoi, Hajime, Sato, Naoki; and Tsuchiya, Reijiro, 5,008,761, Cl. 360-45.000.

Sato, Ryo. *See*—
Kikuchi, Ikuya; and Sato, Ryo, 5,007,712, Cl. 350-255.000.

Sato, Shuichi. *See*—
Kawakubo, Kiyoshi; and Sato, Shuichi, 5,007,358, Cl. 112-235.000.

Sato, Susumu. *See*—
Yokoi, Koichi; Irinoda, Kazuhiko; Kohya, Hidehiko; Sato, Susumu; and Katori, Tatsuhiko, 5,008,419, Cl. 556-137.000.

Sato, Takeaki. *See*—
Aoshima, Syozo; Hirota, Kunio; Sakakibara, Hiroshi, Sawai, Naoyuki; and Sato, Takeaki, 5,007,281, Cl. 72-406.000.

Sato, Yoshiaki. *See*—
Kawasaki, Yoshinao; Kawahara, Hironobu; Sato, Yoshiaki; Fukuyama, Ryooji; Nojiri, Kazuo; and Torii, Yoshimi, 5,007,981, Cl. 156-643.000.

Satoru Yagi. *See*—
Mochizuki, Shigetoshi, 5,007,252, Cl. 63-3.000.

Satterfield, Marshall G., Steinke, David M., and Blankenship, Michael, to Process Bonding, Inc. Method of making a headliner. 5,007,976, Cl. 156-222.000.

Sauber, Charles J. Truck step. 5,007,654, Cl. 280-166.000.

Saunders, Anne L.; and Fields, John G. Insect guard system and method of use. 5,007,196, Cl. 43-112.000.

Saunders, Raymond L., and Forrestal, Joseph M. Device for separating and closing a split mold having two halves. 5,007,814, Cl. 425-3.000.

Sauter, Hubert. *See*—
Schuetz, Franz; Brand, Siegbert; Wenderoth, Bernd; Sauter, Hubert, Ammermann, Eberhard; and Lorenz, Cisela, 5,008,438, Cl. 560-55.000.
Schulz, Guenter; and Sauter, Hubert, 5,008,446, Cl. 560-254.000.

Savastano, Stefano G. *See*—
Halloran, Daniel J., Kasprzak, Kenneth A.; Savastano, Stefano G.; and Swihart, Terence J., 5,008,424, Cl. 556-419.000.

Sawai, Kuchi. *See*—
Kurono, Masayasu; Kondo, Yasuaki; Mitani, Takahiko; Baba, Yutaka; and Sawai, Kuchi, 5,008,416, Cl. 556-89.000.

Sawai, Naoyuki. *See*—
Aoshima, Syozo; Hirota, Kunio; Sakakibara, Hiroshi; Sawai, Naoyuki; and Sato, Takeaki, 5,007,281, Cl. 72-406.000.

Sawaki, Mikio. *See*—
Nakajima, Masashi; Tomita, Nobuo; Suzaki, Kenji; Kaneko, Akira; and Sawaki, Mikio, 5,008,455, Cl. 564-300.000.

Sawamoto, Takeyuki; Nomura, Masashi; and Tarumi, Niro, to Hoya Corporation. Contact lens. 5,008,354, Cl. 526-246.000.

Sayer, Bertram, to 501 Thermal Profiles, Inc. Round top window. 5,007,219, Cl. 52-204.000.

Scalzi, Casper A.; and Schmalz, Richard J., to International Business Machines Corp. Control mechanism for zero-origin data spaces. 5,008,811, Cl. 364-200.000.

Scan Systems, Inc.: *See*—
Walters, William T.; and Thompson, Carroll R., 5,007,291, Cl. 73-640.000.

Scarberry, Paul W.; Kazemba, Rodney L., and Hestekin, Ralph A., to Sharp Packaging, Inc. Strips of interconnected pre-opened reclosable bags. 5,007,744, Cl. 383-37.000.

Scarpino, Kelvin M. Carpet stretching tool. 5,007,616, Cl. 254-212.000.

Schade, Nicholas. *See*—
Dixon, David S.; and Schade, Nicholas, 5,007,847, Cl. 439-100.000.

Schaefer, Daniel J. *See*—
Raburn, Richard W.; and Schaefer, Daniel J., 5,007,124, Cl. 5-481.000.

Schantz, Christopher A. *See*—
Pan, Alfred I-Tsung, Hanson, Eric G.; Schantz, Christopher A., and Childers, Winthrop D., 5,008,689, Cl. 346-140.00R.

Schaub, Bernard. *See*—
Audaire, Luc, Peuzin, Jean C.; and Schaub, Bernard, 5,008,541, Cl. 250-338.300.

Schedele, Helmut, to Siemens Aktiengesellschaft. Polarized armature contact relay. 5,008,641, Cl. 335-80.000.

Scheef, Hans-Volker. *See*—
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Steinel, Heinrich-Wolfgang; Armonier, Ulrich; and Schulze-Froehlich, D-F, 5,008,613, Cl. 324-133.000.

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Klinkowstein, Robert W., 5,008,800, Cl. 363-61.000.

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Rolfe, Barry G.; Shine, John; Scott, Kieran F.; and Hennecke, Hauke, 5,008,194, Cl. 435-172.300.

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Imbery, Leo R., Jr., 5,007,545, Cl. 215-14.000.
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Dewire, Robert J.; and Kozlowski, Walter A., 5,007,178, Cl. 33-767.000.

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Rothfuss, Hans; Bruckner, Raimund; Keutgen, Peter; Seeger, Josef; Winkelmann, Manfred; and Metzger, Herbert, 5,007,621, Cl. 266-220.000.

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Onose, Tsukasa; Kikuchi, Yasuo; Ogawa, Toshitaka; and Seino, Minoru, 5,008,716, Cl. 355-322.000.

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Seko, Hideo, to Aisin Seiki Kabushiki Kaisha Apparatus for evaporating condensed liquid 5,007,238, Cl 60-309.000

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Yamazaki, Shunpei; Imatou, Shinji, Tsuchiya, Mitsunori, Itoh, Kenji, Inushima, Takashi, and Kawano, Atsushi, 5,007,374, Cl 118-723.000
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Look, David C, Sewell, James S., Mier, Millard G., Sizelove, John R., Walters, Dennis C., and Dudley, Scott C., 5,008,542, Cl 250-341.000

Sexton, Charles D Spine stretcher and aligner 5,007,414, Cl 128-78.000

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Queyssac, Daniel, 5,008,776, Cl 361-392.000

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Shapiro, Alan F., to Shapiro, Alan F., and Edwardson, David Self-leveling saw horse 5,007,502, Cl. 182-155.000

Sharp, Douglas N. *See—*
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Sharp, Harry Bicycle locking system 5,007,260, Cl 70-233.000

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Azuma, Daisuke, 5,008,880, Cl 370-85.600
Kaneko, Koji; and Sugino, Yasuyuki, 5,008,769, Cl 360-130.240
Koizumi, Satoru, 5,007,600, Cl 242-194.000
Nakamura, Makio, 5,008,638, Cl. 331-68.000
Numata, Tomiyuki, Iwaki, Takashi, Kojima, Kunio, and DeGuchi, Toshihisa, 5,008,888, Cl. 372-29.000
Tanaka, Toshiyuki; and Minami, Etsuji, 5,008,873, Cl 369-44.140
Yamamoto, Osamu; and Yoshida, Toshihiko, 5,007,694, Cl 350-96.140
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Shaw, James D., to Eastman Kodak Company Analyzers using linear sample trays with random access 5,008,082, Cl 422-65.000

Shea, Robert H *See—*
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Corley, Larry S., 5,007,548, Cl 220-3.000
Keijsper, Johannes J., Mackay, Munro, and Post, Martin F M., 5,008,094, Cl 423-328.000
Moore, Boyd B., 5,007,277, Cl 72-379.200
Powell, Joseph B., and Uzelmeier, Christopher W., 5,008,470, Cl 568-727.000
Slaugh, Lynn H., 5,008,480, Cl 585-323.000
Smegal, John A., Ryan, Robert C., and Nash, Richard M., 5,008,003, Cl 208-254.00H

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Shibata, Masabumi Ishiyama, Akira, and Takemoto, Takeshi, to Hitachi, Ltd Method and apparatus for transferring addresses and information in a buffer memory and a common main storage device 5,008,817, Cl 364-200.000.

Shibata, Takehiko *See—*
Shimizu, Katsuichi, Shibata, Takehiko, Yokomizo, Yoshikazu, Suzuki, Akira, Murakami, Koichi, Yoshida, Tadashi, Tsukada, Masaharu, Nagashima, Nao, and Miyagi, Ken, 5,008,760, Cl 358-451.000

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Shields, Jack W Intravenous catheter insertion device 5,007,901, Cl 604-110.000

Shigaki, Takao, and Shimazaki, Osamu, to Fuji Photo Film Co., Ltd Dot signal conversion method 5,008,742, Cl 358-79.000

Shih, Jenn S *See—*
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Tomoda, Haruhisa; and Shimada, Yasuomi, 5,008,875, Cl 369-85.000

Shimamoto, Hiroshi, Suzaki, Hideyuki; Yamaguchi, Yukio; and Kawano, Atsushi, to Omron Tateisi Electronics Co. Object detecting switch device 5,008,862, Cl 367-105.000

Shimano, Masami, and Sano, Atuhiro, to Fuji Photo Film Co., Ltd. Length measuring apparatus 5,007,739, Cl. 356-383.000.

Shimazaki, Osamu *See—*
Shigaki, Takao, and Shimazaki, Osamu, 5,008,742, Cl 358-79.000

Shimco, Inc *See—*
Blechschmidt, James L; Johnson, Robert D; and Powell, Robert F, 5,007,658, Cl 280-661.000

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Mikamo, Hisanobu; Odani, Noboru, and Shimizu, Akio, 5,008,152, Cl. 428-423.100

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Wakatsuki, Yoshio, Okuyama, Toshiharu, Takeuchi, Hajime; Shimizu, Misao, and Shimizu, Giichiro, 5,008,665, Cl. 340-870.260.

Shimizu, Haruhito *See—*
Yamazaki, Shuntaro, Ono, Takashi; and Shimizu, Haruhito, 5,007,693, Cl 350-96.130

Shimizu, Katsuichi, Shibata, Takehiko; Yokomizo, Yoshikazu; Suzuki, Akira; Murakami, Koichi, Yoshida, Tadashi; Tsukada, Masaharu; Nagashima, Nao, and Miyagi, Ken, to Canon Kabushiki Kaisha. Image processing system 5,008,760, Cl. 358-451.000

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Yamada, Hideaki, Tani, Yoshiki, Shimizu, Sakayu; and Shiozaki, Shozo, 5,008,188, Cl. 435-88.000.

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Kawakami, Eigo; Ozawa, Kunitaka; Uda, Koji, Shimoda, Isamu; and Uzawa, Shunichi, 5,008,703, Cl. 355-53.000.

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Shin-Etsu Chemical Co., Ltd. *See—*
Inomata, Hiroshi, 5,008,307, Cl. 523-220.000
Kokubo, Hiroyasu; Sekigawa, Fujio, Chiba, Tohru; and Onda, Yoshiro, 5,008,113, Cl 424-480.000
Suzuki, Akio; Kishita, Hirofumi, Sonegawa, Shigehisa; Matumura, Masaaki; and Hoashimoto, Takeshi, 5,007,726, Cl. 351-41.000.
Takeda, Yoshihumi, Takamizawa, Minoru; and Hayashida, Akira, 5,008,348, Cl 525-474.000

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Ibe, Hiroyuki; and Mori, Takashi, 5,007,204, Cl. 51-165.770.

Shinada, Masayuki, Ikesue, Masumi, Kikuno, Mitsutoyo; and Murai, Tatsuya, to Ricoh Company, Ltd Document recycling copier for copying documents of varying sizes. 5,008,709, Cl. 355-309.000.

Shine, John *See—*
Rolfe, Barry G; Shine, John; Scott, Kieran F., and Hennecke, Hauke, 5,008,194, Cl 435-172.300.

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Shinohara, Mahito; and Yonehara, Takao, to Canon Kabushiki Kaisha. Method for making a photoelectric conversion device using an amorphous nucleation site 5,008,206, Cl 437-3.000.

Shinohara, Tadashi *See—*
Iwata, Hitoshi, Noguchi, Kazumi; Nishiyama, Toshikazu, and Shinohara, Tadashi, 5,008,767, Cl. 360-103.000

Shinozuka, Tokihito, to Paramount Bed Co., Ltd Cushioning material for mattresses. 5,008,141, Cl. 428-182.000.

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Shiojima, Isao: *See—*
Gotoh, Hiroshi, Kusakata, Shigeru, and Shiojima, Isao, 5,008,238, Cl. 503-217.000

Shionogi & Co., Ltd.: *See—*
Narisada, Masayuki, Ohtani, Mitsuaki; Watanabe, Fumihiko; and Kawata, Kyozo, 5,008,409, Cl. 549-463.000.

Shiozaki, Shozo. *See—*
Yamada, Hideaki; Tani, Yoshiki, Shimizu, Sakayu, and Shiozaki, Shozo, 5,008,188, Cl. 435-88.000.

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Bladon, John J., 5,007,990, Cl. 204-15.000.

Shirai, Koji, and Kawamura, Ken, to Kabushiki Kaisha Toshiba. Semiconductor device 5,008,724, Cl. 357-23.130.

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Tomiyama, Tsuyoshi; Tomiyama, Akira; Shirai, Tadashi; Wakabayashi, Shuuichi, Kawai, Tomoyuki, Ueyama, Naoto; and Sonegawa, Motoharu, 5,008,282, Cl. 514-393.000.

Shiraishi Central Laboratories Co., Ltd.: *See—*
Tsukisaka, Ryogo, Kondo, Satoshi, Kaneguchi, Toshio; and Deguchi, Takashi, 5,007,964, Cl 106-464.000

Shirakawa, Tomohiro *See—*
Yamaguchi, Sumiko, 5,007,119, Cl. 4-523.000.

Shirk, James E.: *See—*
Baturay, Omar; Shirk, James E., and Sigerson, Adam L., 5,007,960, Cl. 75-743.000

Shirk, Steven D: *See—*
Beach, Wayne H., and Shirk, Steven D., 5,007,685, Cl. 299-91.000.

Shock, Clifford L., Jr.: *See—*
Brown, Raymond L.; and Shock, Clifford L., Jr., 5,008,492, Cl. 174-52.400.

Shoji, Makoto, to Ikeda Bussan Co., Ltd. Mold assembly for producing skin-covered foamed plastic article. 5,007,815, Cl 425-117.000

Shoji, Michihiro, to Nitto Kohki Co., Ltd. Controller for boring apparatus 5,007,776, Cl. 408-6.000.

Short, William R.: *See—*
Bose, Amar G.; and Short, William R., 5,008,939, Cl. 381-15.000

Shreeve, Robert W; and Boyd, Melissa D, to Hewlett-Packard Company. TAB frame and process of testing same 5,008,614, Cl. 324-158.00F.

Shurman, Darlene M.; Shurman, Gerald L., and Shurman, Louis W Automatic self-guiding lawn mower and mowing method 5,007,234, Cl. 56-10.200

Shurman, Gerald L *See—*
Shurman, Darlene M., Shurman, Gerald L., and Shurman, Louis W., 5,007,234, Cl. 56-10.200

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Shyu, Chih-Yes. Solar house-number indicating device 5,007,190, Cl. 40-564.000.

Sibeni, Aldo. Chain link fence. 5,007,619, Cl 256-34.000

Sicor Societa 'Italiana Corticosteroidi S.p.A. *See—*
Palladino, Gaetano, MacDonald, Peter; and Bigatti, Ettore, 5,008,380, Cl 536-6.400

Siczek, Aldona A; and Siczek, Bernard W X-ray film changer positioning device. 5,008,919, Cl 378-173.000

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Siczek, Aldona A., and Siczek, Bernard W., 5,008,919, Cl 378-173.000

Sidebotham, Christopher G.; McNulty, Donald E., and Lombardo, Alan M., to Osteonics Corp Modular knee prosthesis system 5,007,933, Cl 623-20.000

Sidwell, Clarence W. Skid mark erasure system 5,007,824, Cl 432-20.000

Sieggen, Earl M. Adjustable phone handset shoulder support 5,008,932, Cl. 379-449.000.

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Amann, Markus-Christian, Baumann, Gerhard, Heinen, Jochen, and Thulke, Wolfgang, 5,008,893, Cl 372-50.000
Bierbaum, Thomas; and Hain, Johann, 5,007,831, Cl 433-114.000
Hartwig, Hagen, 5,008,564, Cl. 307-271.000
Henneberger, Hans, and Basel, Rainer, 5,008,058, Cl 264-134.000
Kaul, Karlheinz, and Bock, Hans-Christian, 5,008,921, Cl 378-198.000.
Schedele, Helmut, 5,008,641, Cl 335-80.000.
Schmidt, Hans-Fr.; Pauchmaul, Siegfried; and Bednarz, Juergen, 5,008,496, Cl 174-254.000
Schnabel, Werner, 5,007,149, Cl. 29-25.030
Steinel, Heinrich-Wolfgang, Armonier, Ulrich, and Schulze-Froehlich, D-F, 5,008,613, Cl 324-133.000

Siemens-Pacesetter, Inc.: *See—*
Stutz, William H., Jr., 5,007,864, Cl. 439-651.000

Siemens Solar Industries, L.P.. *See—*
Anderson, A Jerome, and Beze, Norman L., 5,008,062, Cl 264-272.150

Siemon, Carl; and Thomas, Stephen M., to Siemon Company, The Multi-purpose modular jack connection block. 5,008,931, Cl 379-399.000.

Siemon Company, The: *See—*
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Siga, Masao; Fukui, Yutaka, Kuriyama, Mitsuo, Kurosawa, Soichi, Iijima, Katsumi, Iizuka, Nobuyuki, Maeno, Yosimi, Takahashi, Shintaro; Watanabe, Yasuo, and Hiraga, Ryo, to Hitachi, Ltd Heat resistant steel and gas turbine components composed of the same 5,008,072, Cl. 420-69.000.

Sigerson, Adam L. *See—*
Baturay, Omar; Shirk, James E., and Sigerson, Adam L., 5,007,960, Cl. 75-743.000

Silja, Karl T. I.: *See—*
Gustavsson, Tord G., Lyxell, Frans O S., and Silja, Karl T I., 5,007,986, Cl 162-281.000

Silva, Fidel H.; and Westenskow, Dwayne R Method and apparatus for patient protection against vessel rupture from balloon-tipped catheters. 5,007,919, Cl. 606-194.000.

Simazaki, Yuzuru: *See—*
Kumasaka, Takao; and Simazaki, Yuzuru, 5,008,691, Cl 346-157.000

Simmons, Robert J; and Kwak, Key S Method and apparatus for constructing a subsurface retaining wall 5,007,770, Cl 405-240.000

Simon, Georg N.: *See—*
Ittemann, Peter, Simon, Georg N., Heinz, Gerhard; Zeiner, Hartmut, Buchert, Hermann, and Seibring, Joachim, 5,008,364, Cl 528-172.000

Simone, Ronald A. Wrap-around body with promotional flap extension 5,007,578, Cl. 229-1.50B.

Simons, August L. H.: *See—*
van der Velden, Johnny; van Bergen, Theodorus F.; Simons, August L. H.; Colditz, Johannes K. E.; Ligtenberg, Martinus A. C.; and Dreesen, Franciscus M., 5,008,591, Cl. 313-524.000.

Simonsson, Samuel S.: *See—*
Martinen, Hinrich; Knobbe, Karl-Heinz; Simonsson, Samuel S.; and Wirth, Peter, 5,008,896, Cl. 372-83.000

Sindledecker, Glenn L., to General Signal Corporation. Autofocus system for microlithography. 5,008,705, Cl. 355-43.000

Sinskey, Anthony J.: *See—*
Rha, ChoKyun; Pradipasena, Pasawadee; Nakamura, TetsuHisa; Easson, Donald D., Jr.; and Sinskey, Anthony J., 5,008,108, Cl 424-401.000.

Siret, Patrice J.; Jung, Frederick H.; and Bell, William, to Imperial Chemical Industries PLC, and I.C.I.-Pharma. Cephalosporin compounds. 5,008,259, Cl. 514-202.000.

Sitnik, Theresa A.: *See—*
Rose, James W.; and Sitnik, Theresa A., 5,008,049, Cl 264-4.000

Siva, Kumar V., to United Kingdom Atomic Energy Authority. Multi-axis hand controller. 5,007,300, Cl 74-471.0XY

Sivak, Andrew J. *See—*
Brownell, George L.; Hays, Mary K.; and Sivak, Andrew J., 5,008,421, Cl. 556-406.000.

Sizelove, John R. *See—*
Look, David C.; Sewell, James S.; Mier, Millard G.; Sizelove, John R.; Walters, Dennis C.; and Dudley, Scott C., 5,008,542, Cl 250-341.000

Skerbinjek, Wolfgang. *See—*
Bischof, Horst, and Skerbinjek, Wolfgang, 5,007,186, Cl. 36-121.000

Skerker, Robert B., and Prindle, William, to Robinson Knife Manufacturing Co., Inc. Cooking apparatus for suspending a food product. 5,008,508, Cl. 219-10.55E.

SKF Industrial Trading and Development Company BV *See—*
Dolfsma, Hendrik; and van Engelenburg, Hendrik, 5,008,623, Cl 324-262.000.

Skinner, John A., to De La Rue Systems, Ltd. Apparatus for sensing sheets. 5,007,628, Cl. 271-263.000

Sklar, Albert; and Sklar, Barbara. System for insulated support of neon lights. 5,008,787, Cl. 362-221.000

Sklar, Barbara. *See—*
Sklar, Albert, and Sklar, Barbara, 5,008,787, Cl 362-221.000

Skostins, Olgerts: *See—*
Kennan, Linda D.; Knapp, Theodore L.; Monroe, Carl M.; and Skostins, Olgerts, 5,008,305, Cl 523-212.000

Skripek, Milan *See—*
Block, Michael J.; Kelley, Arnold E.; and Skripek, Milan, 5,007,987, Cl 201-17.000.

Slabowski, Jan W.: *See—*
Matsunaga, Douglas S.; Slabowski, Jan W.; and Marecki, Tadeusz, 5,007,272, Cl. 72-226.000.

Slaton, Carol L. *See—*
Congleton, Helen; Slaton, Carol L.; Koudounaris, Angelo; Smith, Gerald B.; and Soto, Vicente, 5,007,576, Cl 228-103.000

Slaugh, Lynn H., to Shell Oil Company. Process for converting toluene and butadiene to styrene and 1-pentene. 5,008,480, Cl 585-323.000

Sleve, Jerry F. *See—*
Giannetti, John; Sleve, Jerry F.; and Shea, Robert H., 5,007,627, Cl 271-35.000

Slocum, Laurence S.: *See—*
Kidd, Roy E.; Andrejasich, Raymond J.; Michel, Hilary; and Slocum, Laurence S., 5,008,653, Cl 340-620.000

Slone, Ralph J. Piston ring and liner wear simulator and method of using same. 5,007,284, Cl. 73-120.000

Slosky, Jack J. *See—*
Iqbal, Tahir; Cain, John H., Jr.; and Slosky, Jack J., 5,008,418, Cl 556-112.000.

Slutz, Robert A. *See—*
Mason, Scott C.; and Slutz, Robert A., 5,007,844, Cl 439-68.000

Smart, David C. *See—*
Diehl, Conrad; Smart, David C.; and Stiehler, Wayne E., 5,008,692, Cl. 354-173.100.

Smegal, John A.; Ryan, Robert C.; and Nash, Richard M., to Shell Oil Company. Start-up of a hydrorefining process. 5,008,003, Cl 208-254.00H

Smierciak, Richard C. *See—*
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Smith, Bernard *See—*
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Smith, F. Martin *See—*
Enright, Dorothy P.; Dye, William M.; Smith, F. Martin; and Perricone, Alphonse C., 5,007,489, Cl. 175-65.000.

Smith, Gerald B. *See—*
Congleton, Helen; Slaton, Carol L.; Koudounaris, Angelo; Smith, Gerald B.; and Soto, Vicente, 5,007,576, Cl 228-103.000

Smith, Glenn S. *See—*
Nishimura, Yosaku; and Smith, Glenn S., 5,007,617, Cl 254-372.000.

Smith, James L.; and Kucera, Eugenia H., to United States of America, Energy. Conductive ceramic composition and method of preparation. 5,008,163, Cl 429-40.000

Smith, John R.: *See—*
Fu, Jaw K.; Merritt, Arch J., deceased; and Smith, John R., 5,007,771, Cl. 405-258.000

Smith, Mark L. *See—*
D'Hoore, Terence P.; and Smith, Mark L., 5,007,201, Cl 49-348.000

Smith, Raymond A *See—*
Davies, Paul M.; and Smith, Raymond A., 5,008,015, Cl 210-634.000

Smith, Robert M *See—*
Freed, W. Wayne; and Smith, Robert M., 5,007,766, Cl 405-24.000

Smith, Ronald T *See—*
Chern, Mao-Jin; Smith, Ronald T.; and Frogget, Brent C., 5,007,690, Cl 350-3.680

Smith, Steven G *See—*
Defibaugh, George R.; Myers, Earl C., Jr.; and Smith, Steven G., 5,007,862, Cl 439-607.000.

Smith, Theodore E., Jr *See—*
Penkunas, Joseph J.; and Smith, Theodore E., Jr., 5,007,957, Cl 75-252.000

Smith, Todd S., to Boehringer Mannheim Corporation. Porous coated prosthesis. 5,007,931, Cl 623-23.000

Smith, Vincent F., Jr *See—*
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SmithKline Beckman Corporation *See—*
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Smits, Karel F. A. A., to Medtronic, Inc. Cardioversion and defibrillation lead system. 5,007,436, Cl 128-786.000

Smolley, Robert, to TRW Inc. Integrated-circuit chip interconnection system. 5,007,841, Cl 439-66.000

Smolley, Robert, to TRW Inc. High-density contact area electrical connectors. 5,007,843, Cl 439-66.000

Snake River Chemicals, Inc *See—*
Chollet, Charles C., 5,007,953, Cl 71-77.000

Snee, Thomas M. Water purification system. 5,007,994, Cl 204-240.000

Sninsky, John J.; Kwok, Shirley Y.; and Mack, David H., to Cetus Corporation. Detection of AIDS associated virus by polymerase chain reaction. 5,008,182, Cl 435-5.000

Snow Brand Milk Products Co., Ltd. *See—*
Nakayama, Hitoshi, 5,007,242, Cl 62-3.200
Tanaka, Maki; Tojima, Tenichi; Dousako, Shun-ichi; and Tatsumi, Kiyoshi, 5,008,120, Cl 426-74.000

Sobel, Jarl *See—*
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Societe Europeenne de Propulsion *See—*
Lacombe, Alain, 5,007,508, Cl 188-251.00A

Societe Manzoni Bouchot *See—*
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Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A." *See—*
Hacault, Michel G. P.; Heurtel, Bertrand J. J. M.; and Serre, Jacques R., 5,007,800, Cl 416-220.00R

Societe Nationale Industrielle et Aerospatiale *See—*
Koehler, Bertrand; Manil, Emmanuel; and Chapellier, Jacques, 5,008,606, Cl 318-649.000
Mouille, Rene L.; and Suzzi, Robert J., 5,007,799, Cl 416-104.000

Societe Somab S.A. *See—*
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Soeda, Hiromitsu *See—*
Nakano, Takafumi; Seo, Akikazu; Soeda, Hiromitsu; and Sueoka, Kazufumi, 5,007,341, Cl 101-349.000

Soikkeli, Matti *See—*
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Solimeno, Salvatore *See—*
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Solvay & Cie (Societe Anonyme) *See—*
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Somar Corporation *See—*
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Somfai, Eva *See—*
Ecsery, Zoltan; Knoll, Jozsef; Somfai, Eva; Torok, Zoltan; Szinyei, Eva; and Mozsolits, Karoly, 5,008,292, Cl 514-654.000

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Sommer, Guenther *See—*
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Sommer, Holger T., to Pacific Scientific Company. Particle size measuring system with automatic dilution of sample. 5,007,297, Cl 73-865.500

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Avot, Jean-Pierre, 5,007,550, Cl 220-8.000

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Sonegawa, Shigehisa *See—*
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Soni, Inderjit S. *See—*
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Soni, Pravin *See—*
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Sony Corporation *See—*
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Hirumi, Yasushi, 5,008,837, Cl 364-519.000.
Iwahashi, Yuji, 5,007,596, Cl 242-71.800
Ohki, Hiroshi, Kobayashi, Shoei, and Wada, Takuya, 5,008,521, Cl 235-454.000
Sato, Kazuhiro, 5,008,955, Cl 455-181.000
Takayama, Jun; Ninomiya, Takeshi; Fujita, Tadao; and Inaba, Yoshiaki, 5,008,668, Cl 341-83.000.

Sorensen, Jens O., to Primtec. Injection-molding dimension-control and clamp-reduction. 5,008,064, Cl. 264-308.000.

Soto, Jorge, Anand, Joginder N., and Peffley, Richard D., to Dow Chemical Company. The Polyurethane-urea resins with incorporated hydrophobic microparticle fillers. 5,008,325, Cl. 524-504.000.

Soto, Vicente *See—*
Congleton, Helen; Slaton, Carol L.; Koudounaris, Angelo; Smith, Gerald B.; and Soto, Vicente, 5,007,576, Cl 228-103.000.

Souketani, Koichi, Ito, Yukio, Sasaki, Yoshio; Kurita, Teiji, and Tamiya, Jun, to Nachi-Fujikoshi Corporation. Shaving cutter. 5,007,773, Cl 407-27.000.

Spacesaver Corporation *See—*
Muth, James C., 5,007,351, Cl. 105-101.000

Spahni, Milton D., Jr. *See—*
Gunn, Charles L.; Davis, Harold; Spahni, Milton D., Jr.; and Wanless, Ronald H., 5,007,541, Cl 206-611.000.

Span-America Medical Systems, Inc *See—*
Raburn, Richard W.; and Schaefer, Daniel J., 5,007,124, Cl 5-481.000.

Spang, Peter, Neumann, Peter; Wagenblast, Gerhard, and Trauth, Hubert, to BASF Aktiengesellschaft. N-substituted benzimidazole-2-carboxanilides. 5,008,397, Cl 548-331.000

Spear, Kenneth J.; and Fowler, Ronald R., to O. Ames Co. Hose reel assembly. 5,007,598, Cl 242-86.200

Spector, Donald. Microwave-heatable air-freshener package. 5,007,529, Cl 206-0.500

Spectra-Physics, Inc *See—*
Bobba, Mohan L.; and Nojiri, Howard H., 5,007,691, Cl 350-6.700
Taussig, Andrew P.; and Isaacs, Blake L., 5,008,518, Cl 235-383.000

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Laberge, Raymond; and Beauregard, Robert, 5,007,108, Cl 2-2.000.

Sports Glow, Inc.: *See—*
Gulick, James D., 5,007,647, Cl. 273-213.000.

Square D Company *See—*
Ulmer, Edward A., Jr., 5,008,611, Cl. 324-96.000.

SRI International *See—*
Blum, Yigal D.; and Laine, Richard M., 5,008,422, Cl. 556-412.000.

SS Pharmaceutical Co., Ltd *See—*
Yokoi, Koichi; Innoda, Kazuhiko; Kohya, Hidehiko; Sato, Susumu; and Katori, Tatsuhiko, 5,008,419, Cl. 556-137.000.

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Hiratsuka, Katsuo; Odaka, Yoshiyuki; and Yoshida, Takeshi, 5,007,356, Cl. 112-68.000.
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van der Schoot, Jelle, 5,007,785, Cl 414-331.000

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Raible, Karl, 5,008,018, Cl. 210-717.000.

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Brazdil, James F., Jr.; Toft, Mark A.; and Glaeser, Linda C., 5,008,427, Cl. 558-319.000
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Eberle, Jurg; and Stauber, Hans-Ulrich, 5,007,629, Cl 271-277.000

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Hale, Peter G.; and Russell, John N., 5,007,703, Cl 350-96.230

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DeKraker, Larry, 5,007,678, Cl. 297-353.000.

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Gunther, Bernd-Rainer; Losch, Rainer, and Steiner, Klaus, 5,008,394, Cl 548-121.000

Steinke, David M *See—*
Satterfield, Marshall G.; Steinke, David M.; and Blankenship, Michael, 5,007,976, Cl 156-222.000

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Sterner, Hakan *See—*
Schulte, Burkart, Sterner, Hakan, Wetzka, Gerhard, and Hardt, Norbert, 5,007,213, Cl 52-29.000

Sterzer, Fred, to MMTC, Inc. Catheters for treating prostate disease. 5,007,437, Cl. 428-786.000.

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Wadhwa, Lachhman; and Steurer, Andrew M., 5,008,316, Cl. 524-230.000.

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Stewart, Charles L. Billet pre-piercer apparatus and method. 5,007,274, Cl. 72-254.000.

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Groswith, Charles T., III, Phipps, Richard D.; Lathrop, Robert L., Jr.; Stewart, John F.; and Kaufmann, Rick J., 5,007,782, Cl 412-40.000

Stewart, John S. S. Breathing apparatus. 5,007,421, Cl. 128-204.180

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Nyberg, Eric D.; Klingman, Ken A.; Curtis, Jeff; and Stewart, Ray F., 5,007,989, Cl. 204-1.110

Stewart, Robert E.; and Fersht, Samuel N., to Litton Systems, Inc. Three axis inertial measurement unit with counterbalanced, low inertia mechanical oscillator. 5,007,289, Cl. 73-510.000

STFI *See—*
Engstrand, Per O.; Hammar, Lars-Ake; Htun, Myat T.; and Pettersson, Rune L., 5,007,985, Cl 162-26.000

Stucht, Walter. Handling system for workpieces. 5,007,796, Cl 414-751.000.

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Diehl, Conrad; Smart, David C.; and Stiehler, Wayne E., 5,008,692, Cl. 354-173.100.

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Huang, Kevin C.; Kutz, Karl H.; McNamara, Timothy J.; Seals, Victoria E.; and Still, Gregory S., 5,008,885, Cl. 371-3.000.

Stirling, Albert, to Stirling Connectors Inc. Crimpless coaxial cable connector with pull back cable engagement. 5,007,861, Cl. 439-578.000.

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von Erichsen, Volker, 5,007,456, Cl. 137-601.000.

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Franckowiak, Gerhard; Stoltefuss, Jurgen; Bechem, Martin; Gross, Rainer; Kayser, Michael; Hebisch, Siegbert; and Schramm, Matthias, 5,008,279, Cl. 514-354.000.

Stone, Kevin R., to ReGen Corporation Prosthetic meniscus. 5,007,934, Cl. 623-20.000.

Storage Technology Corporation: *See*—
Fries, William J.; Kleinschnitz, Donald; and Nelson, T. Craig, 5,008,808, Cl. 364-200.000.

Storz Instrument Company *See*—
Kleinberg, Larry K., 5,007,723, Cl. 350-508.000.

Stout, James C., to Honeywell Inc. Fiber optic reflective tree architecture. 5,007,699, Cl. 350-96.160.

Stracher, Alfred; and Kesner, Leo Carnitine directed pharmaceutical agents. 5,008,288, Cl. 514-535.000.

Straeter, Joseph G *See*—
Weder, Donald E.; Straeter, William F.; Straeter, Joseph G.; Craig, Franklin J.; Donnelly, Wilma M.; and Redditt, Jack W., 5,007,229, Cl. 53-397.000.

Straeter, William F *See*—
Weder, Donald E.; Straeter, William F.; Straeter, Joseph G.; Craig, Franklin J.; Donnelly, Wilma M.; and Redditt, Jack W., 5,007,229, Cl. 53-397.000.

Strasser, William E. *See*—
Scherer, Dieter; and Strasser, William E., 5,008,631, Cl. 330-51.000.

Straub, Hermann, to Sulzer Brothers Limited Plant comprising a nuclear reactor, more particularly a control rod system for nuclear reactor plant. 5,008,068, Cl. 376-230.000.

Strauss, Richard F.; Fiacco, Richard A.; Bordbar, Hosrow T.; Chen, Caesar C.; and Quiroz, David, to Thomas & Betts Corporation. Strippable electrically shielded cable. 5,008,490, Cl. 174-36.000.

Streck Laboratories, Inc. *See*—
Ryan, Wayne L., 5,008,201, Cl. 436-10.000.

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Martinelli, Bruno; Ghezzi, Markus; and Streicher, Gunter, 5,007,941, Cl. 8-436.000.

Streller, Ilse *See*—
Schnorrenberg, Gerd; Roos, Otto; Losel, Walter; Wiedemann, Ingrid; Gaida, Wolfram; Hoefke, Wolfgang; Arndts, Dietrich; and Streller, Ilse, 5,008,273, Cl. 514-301.000.

Stryker Corporation *See*—
Evans, James A., 5,007,917, Cl. 606-170.000.

Stuart Jacobson Associates, Inc *See*—
Beasley, John C.; and Dinand, Pierre F., 5,007,540, Cl. 206-581.000.

Studholme, Robert M *See*—
Blau, David A.; Meadows, John; Sherlock, Thomas M.; Stengel, Fred; Studholme, Robert M.; Wada, Kenneth R.; and Kepner, Christopher J., 5,008,081, Cl. 422-64.000.

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Lehmkuhl, Herbert; and Mehler, Klaus-Dieter, 5,007,991, Cl. 204-58.500.

Stuhlmacher, John A., to McGill Manufacturing Company, Inc Switch with colored indicator cap 5,008,503, Cl. 200-308.000.

Sturdivant, Linda D. *See*—
Wang, Dou-Mei; Sturdivant, Linda D.; Biemer, Thomas A.; and Mink, Ronald, 5,008,199, Cl. 435-240.270.

Sturm, Walter Ladder levelling device with locking means 5,007,503, Cl. 182-202.000.

Stutz, William H., Jr., to Siemens-Pacesetter, Inc. Device for adapting a pacemaker lead to a pacemaker 5,007,864, Cl. 439-651.000.

Su, Jow-Lih *See*—
Sherwin, Martin B.; and Su, Jow-Lih, 5,008,428, Cl. 558-346.000.

Su, Jy-hong *See*—
Jachmann, Emil F.; Saltzman, Jeremy; Chamberlin, David B.; D'Agosto, Nicholas A.; Harris, Mark; and Su, Jy-hong, 5,008,835, Cl. 364-513.500.

Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG *See*—
Christ, Michael; and Teichmann, Wolfgang, 5,007,180, Cl. 34-32.000.

Sueoka, Kazufumi *See*—
Nakano, Takafumi; Seo, Akikazu; Soeda, Hiromitsu; and Sueoka, Kazufumi, 5,007,341, Cl. 101-349.000.

Suffern, Robert C. *See*—
Wallach, Clifford H.; Suffern, Robert C.; and Walsh, Dale M., 5,008,901, Cl. 375-8.000.

Sugihara, Junichi *See*—
Hashimoto, Ryusuke; Iwata, Mitsuru; Sugihara, Junichi; and Iwase, Minoru, 5,008,053, Cl. 264-60.000.

Sugimoto, Kazuaki; Nishijima, Tomio; Inoue, Teruhisa; Sugimoto, Yoshihiko; Suzuki, Masashi; and Matsushita, Izumi, to Tokyo Electric Co., Ltd. Printer with sheet feeding apparatus. 5,007,340, Cl. 101-227.000.

Sugimoto, Tadao *See*—
Ikegawa, Akihiko; Okazaki, Masaki; and Sugimoto, Tadao, 5,008,181, Cl. 430-572.000.

Sugimoto, Yoshihiko *See*—
Sugimoto, Kazuaki; Nishijima, Tomio; Inoue, Teruhisa; Sugimoto, Yoshihiko; Suzuki, Masashi; and Matsushita, Izumi, 5,007,340, Cl. 101-227.000.

Sugino, Yasuyuki *See*—
Kaneko, Koji; and Sugino, Yasuyuki, 5,008,769, Cl. 360-130.240.

Sugiyama, Isao *See*—
Yamauchi, Hiroshi; Sugiyama, Isao; Saito, Isao; Nomoto, Seiichiro; Kamiya, Takashi; Machida, Yoshimasa; and Negi, Shigeto, 5,008,260, Cl. 514-202.000.

Suk, Eugene J. Electrical outlet boxes and covers therefor. 5,007,549, Cl. 220-3.800.

Sulzer Brothers Limited: *See*—
Gorris, Joannes J. H. M., 5,007,464, Cl. 139-455.000.
Straub, Hermann, 5,008,068, Cl. 376-230.000.

Sumino, Fumio *See*—
Nakagawa, Masaru; Sumino, Fumio; Hiro, Masaaki; Kashimura, Noboru; and Nagahara, Shin, 5,008,168, Cl. 430-56.000.

Sumitomo Chemical Company, Limited *See*—
Saito, Noriaki; Kanagawa, Shuichi; and Sakamoto, Hideshi, 5,008,350, Cl. 525-507.000.
Tashiro, Kazuo; and Tanaka, Kunihiko, 5,008,410, Cl. 549-497.000.

Sumitomo Heavy Industries, Ltd *See*—
Hara, Hitoshi, and Inoue, Katsutoshi, 5,007,822, Cl. 425-575.000.
Ishimoto, Noriyuki; and Iida, Hirofumi, 5,008,575, Cl. 310-89.000.

Sumitomo Metal Industries Ltd. *See*—
Nakasuji, Kazuyuki; Hayashi, Chihiro; and Suzushima, Yoshiyuki, 5,007,577, Cl. 228-265.000.
Tomizawa, Atsushi; Inoue, Susumu; and Masui, Takeshi, 5,007,152, Cl. 29-116.200.

Sumitomo Special Metals Co., Ltd *See*—
Nakasuji, Kazuyuki; Hayashi, Chihiro; and Suzushima, Yoshiyuki, 5,007,577, Cl. 228-265.000.

Sumoto, Hirofumi *See*—
Arai, Kiyotaka; Sumoto, Hirofumi, and Ichinomiya, Keizi, 5,008,789, Cl. 362-255.000.

Sun Microsystems, Inc. *See*—
Jensen, Eric H., 5,008,850, Cl. 364-760.000.

Sunbelt Automated Systems, Inc *See*—
Bingman, John W., 5,007,786, Cl. 414-409.000.

Sunden, Gunnel E *See*—
Brandstrom, Arne E.; Lindberg, Per L.; and Sunden, Gunnel E., 5,008,278, Cl. 514-338.000.

Sundholm, Goran Apparatus for flushing small-diameter hydraulic pipe systems and the like 5,007,444, Cl. 134-102.000.

Sundstrand Corporation. *See*—
Defenbaugh, John F., and Markunas, Albert L., 5,007,245, Cl. 62-117.000.
Glennon, Timothy F., 5,008,801, Cl. 363-132.000.
Patel, Sunil; Ligon, Robert; and Dhyanchand, P. John, 5,008,797, Cl. 363-43.000.

Sundwiger Eisenhutte Maschinenfabrik Grah & Co. *See*—
Kummerhoff, Gerhard, 5,007,273, Cl. 72-242.200.

Sung, Song G., to SamSung Electronics Co., Ltd Parallel and continuous playback circuit for an audio cassette deck of the double-deck type 5,008,762, Cl. 360-61.000.

Sunkist Growers, Inc *See*—
Orman, Charles R.; Johnson, Paul E.; and Adams, Bruce C., 5,007,335, Cl. 99-487.000.

Superlite Builders Supply, Inc *See*—
Bengtson, Fred G.; and LoPiccolo, Donald V., 5,007,218, Cl. 52-204.000.

Surash, Robert G and Kiehl, Gary G., to Eastman Kodak Company Treatment of domestic and industrial waste waters 5,008,020, Cl. 210-751.000.

Surash, Robert G *See*—
Kiehl, Gary G.; and Surash, Robert G., 5,008,017, Cl. 210-710.000.

Surgical Systems & Instruments, Inc *See*—
Shiber, Samuel, 5,007,896, Cl. 604-22.000.

Surnamer, Andrew D *See*—
Tien, Chao-Fong; and Surnamer, Andrew D., 5,007,945, Cl. 55-16.000.

Sussmann, Ricardo S *See*—
Burnham, Robert D.; and Sussmann, Ricardo S., 5,008,737, Cl. 357-81.000.

Sutherland, James K. *See*—
Bullock, John D.; Sutherland, James K.; and Donnelly, Michael J., 5,008,383, Cl. 536-4.100.

Sutterlin, Philip H., to International Business Machines Corporation Temperature compensated feedback circuit for setting and stabilizing amplifier DC bias points. 5,008,632, Cl. 330-256.000.

Suya, Yoshiaki *See*—
Yazawa, Shigehiko; Ogawa, Toru; Moritomo, Haruo; Suya, Yoshiaki; and Nakayama, Mikio, 5,008,884, Cl. 370-110.100.

Suzaki, Hideyuki *See*—
Shimamoto, Hiroshi; Suzaki, Hideyuki; Yamaguchi, Yukio; and Kawano, Atsushi, 5,008,862, Cl. 367-105.000.

Suzaki, Kenji *See*—
Nakajima, Masashi; Tomita, Nobuo; Suzaki, Kenji; Kaneko, Akira; and Sawaki, Mikio, 5,008,455, Cl. 564-300.000.

Suzuki, Akio; Kishita, Hirofumi; Sonegawa, Shigehisa; Matumura, Masaaki; and Hoashimoto, Takeshi, to Shin-Etsu Chemical Co., Ltd Coated eyeglasses frame member 5,007,726, Cl. 351-41.000.

Suzuki, Akira *See*—
Shimizu, Katsuichi, Shibata, Takehiko, Yokomizo, Yoshikazu; Suzuki, Akira; Murakami, Koichi; Yoshida, Tadashi; Tsukada, Masaharu; Nagashima, Nao; and Miyagi, Ken, 5,008,760, Cl. 358-451.000.

Suzuki, Arata; Tyberg, William T.; Banks, George; and Suzuki, Marcia, to Capintec, Inc Ambulatory physiological evaluation system including cardiac monitoring. 5,007,427, Cl. 128-659.000.

Suzuki, Hiroshi *See*—
Yamamoto, Ryoichi; and Suzuki, Hiroshi, 5,008,450, Cl. 562-485.000.

Suzuki Jidosha Kogyo Kabushiki Kaisha *See*—
Okubo, Susumu; and Sasaki, Yutaka, 5,007,870, Cl. 440-89.000.

Suzuki, Kazuo *See*—
Takahashi, Yasuo; Suzuki, Kazuo; Niimura, Toshinobu; and Kano, Tokio, 5,007,995, Cl. 204-299.00R.

Suzuki, Kenzi *See*—
Watanabe, Eiji; Horio, Nasakazu; and Suzuki, Kenzi, 5,008,224, Cl. 502-63.000.

Suzuki, Marcia *See*—
Suzuki, Arata; Tyberg, William T.; Banks, George; and Suzuki, Marcia, 5,007,427, Cl. 128-659.000.

Suzuki, Masashi *See*—
Sugimoto, Kazuaki; Nishijima, Tomio; Inoue, Teruhisa; Sugimoto, Yoshihiko; Suzuki, Masashi; and Matsushita, Izumi, 5,007,340, Cl. 101-227.000.

Suzuki, Shigehiko; and Tachino, Kenzo, to Mitsubishi Denki Kabushiki Kaisha. Elevator remote-control method. 5,007,506, Cl. 187-101.000.

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Kawachi, Genshiro; Mimura, Akio; Konishi, Nobutake; Ono, Kikuo; and Suzuki, Takashi, 5,008,218, Cl. 437-201.000.

Suzuki, Takayuki, to Canon Kabushiki Kaisha. Thermal transfer recording method 5,008,683, Cl. 346-1.100.

Suzuki, Tamotsu *See*—
Tanaka, Seiichi; and Suzuki, Tamotsu, 5,007,390, Cl. 123-180.00T.

Suzuki, Toshihiko *See*—
Kuze, Tetsuya; Yamashita, Takashi; and Suzuki, Toshihiko, 5,007,472, Cl. 152-546.000.

Suzuki, Yasuyuki *See*—
Kimura, Tadashi; Matsugi, Tetsuzo; and Suzuki, Yasuyuki, 5,007,809, Cl. 417-371.000.

Suzuki, Yoshikuni *See*—
Takahashi, Toshihiro; Horaguchi, Tatsuo, Nakamaru, Koichi; and Suzuki, Yoshikuni, 5,008,266, Cl. 514-259.000.

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Nakasuji, Kazuyuki; Hayashi, Chihiro; and Suzushima, Yoshiyuki, 5,007,577, Cl. 228-265.000.

Suzzi, Robert J. *See*—
Mouille, Rene L.; and Suzzi, Robert J., 5,007,799, Cl. 416-104.000.

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Kahaney, Alan; and Sved, Robert, 5,007,727, Cl. 351-47.000.

Swanson, Ralph W., Gagnon, Daniel F., and Parent, Donald G., to Chapman Corporation Self-balancing circuit for convection air ionizers. 5,008,594, Cl. 315-111.810.

Swanstrom, Thomas M. Boom-mast coupler for windsurfer. 5,007,361, Cl. 114-98.000.

Swedo, Susan E.; Rapoport, Judith L.; and Leonard, Henrietta L., to United States of America, Health and Human Services Method of treating trichotillomania and onchyphagia. 5,008,262, Cl. 514-217.000.

Sweeney, Michael *See*—
Pless, Benjamin, Sweeney, Michael; Winkle, Roger; and Nathan, Anthony, 5,007,422, Cl. 28-419.0PG.

Swiggard, Edward M., to SFA, Inc Liquid encapsulated zone melting crystal growth method and apparatus. 5,007,980, Cl. 156-620.700.

Swihart, Terence J. *See*—
Halloran, Daniel J.; Kasprzak, Kenneth A.; Savastano, Stefano G.; and Swihart, Terence J., 5,008,424, Cl. 556-419.000.
Kosal, Jeffrey A.; and Swihart, Terence J., 5,008,349, Cl. 525-477.000.

Swindal, James L. *See*—
Bullis, Robert H.; and Swindal, James L., 5,008,774, Cl. 361-283.000.

Swinford, Carson B. *See*—
Lewis, Milton A., Jr.; Mason, Jeffrey S.; Swinford, Carson B.; and Wiseman, Timothy R., Sr., 5,007,112, Cl. 2-79.000.

Synrad, Incorporated *See*—
Laakmann, Peter, 5,008,894, Cl. 372-38.000.

Synthelabo: *See*—
Rossey, Guy; Ugolini, Antonio; Chekroun, Isaac; Vartanian, Abkar; and Wick, Alexander, 5,008,434, Cl. 560-17.000.

Synthetic Industries, Inc. *See*—
Freed, W. Wayne; and Smith, Robert M., 5,007,766, Cl. 405-24.000.

Szabo, Tibor; Institoris, Laszlo; Szejtli, Jozsef, Szente, Lajos; and Jodal, Ildiko, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara R.T. Methylated cyclodextrin type compounds and process for preparing same. 5,008,386, Cl. 536-103.000.

Szaniszlo, Steve R. *See*—
Kurtz, Stuart J.; and Szaniszlo, Steve R., 5,008,056, Cl. 264-130.000.

Szejtli, Jozsef *See*—
Szabo, Tibor; Institoris, Laszlo; Szejtli, Jozsef; Szente, Lajos; and Jodal, Ildiko, 5,008,386, Cl. 536-103.000.

Szente, Lajos *See*—
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Szinnyei, Eva *See*—
Ecsery, Zoltan; Knoll, Jozsef; Somfai, Eva; Torok, Zoltan; Szinnyei, Eva, and Mozsolits, Karoly, 5,008,292, Cl. 514-654.000.

Szporny, Laszlo *See*—
Schon, Istvan; Nyeki, Olga; Kisfaludy, Lajos, deceased; Denes, Laszlo; Hajos, Gyorgy, and Szporny, Laszlo, 5,008,246, Cl. 514-18.000.

T. G. & Watson, Inc.: *See*—
Watson, Dean R.; and Gallagher, Thomas E., IV, 5,007,639, Cl. 273-60.00R.

T. T. Boughton & Sons Ltd.. *See*—
Boughton, T. Trafford, 5,007,791, Cl. 414-494.000.

Tachi-S Co. Ltd.: *See*—
Kanai, Shigeru, 5,007,611, Cl. 248-422.000.

Tachibana, Shunro; and Shibata, Uichi, to Tachibana, Shunro; and Meiji Seika Kaisha, Ltd. Endermic application kits for external medicines. 5,007,438, Cl. 128-798.000.

Tachino, Kenzo *See*—
Suzuki, Shigehiko; and Tachino, Kenzo, 5,007,506, Cl. 187-101.000.

Tada, Masahiro: *See*—
Kashiwadate, Ken; Satake, Yoshikatsu; Kaneko, Takashi; Tada, Masahiro; and Katto, Takayuki, 5,008,370, Cl. 528-481.000.

Tadokoro, Motoo: *See*—
Furukawa, Nobuhiro; Inoue, Kenji; Nogami, Mitsuzo; Kameoka, Seiji; and Tadokoro, Motoo, 5,008,164, Cl. 429-59.000.

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Taguchi, Masahiro: *See*—
Kondo, Hirosato; Taguchi, Masahiro; Inoue, Yoshimasa; and Sakamoto, Fumio, 5,008,389, Cl. 544-343.000.

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Kamimura, Toshio; and Takagi, Shigeyuki, 5,007,327, Cl. 91-422.000.

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Katsura, Joji; Takagi, Yoshiyuki; and Watari, Shigeru, 5,008,727, Cl. 357-40.000.

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Minoura, Jun; Takahahi, Shigeyuki; Kato, Hisaki; Ito, Toshiyasu, Mori, Takaaki; Kato, Mamoru; Shimada, Junichi; and Okabayashi, Katsuaki, 5,007,718, Cl. 350-357.000.

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Siga, Masao; Fukui, Yutaka; Kuriyama, Mitsuo; Kurosawa, Soichi; Iijima, Katsumi; Iizuka, Nobuyuki, Maeno, Yosimi, Takahashi, Shintaro; Watanabe, Yasuo; and Hiraga, Ryo, 5,008,072, Cl. 420-69.000.

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Okazaki, Takao; Takahashi, Shuji, Iwado, Seigo, Tanaka, Keiji; Yanai, Toshiaki; and Kajino, Hisaki, 5,008,191, Cl. 435-124.000.

Takahashi, Susumu: *See*—
Sakamoto, Koji; Tanzawa, Misao; Iwata, Nobuo; Murayama, Hisao; Takahashi, Susumu; and Komada, Kenya, 5,008,711, Cl. 355-206.000.

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Takeda, Yoshihumi, Takamizawa, Minoru; and Hayashida, Akira, 5,008,348, Cl. 525-474.000.

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Mimura, Yoshikazu; Takano, Keiichi, deceased; and Gotou, Tomohisa, 5,008,173, Cl. 430-78.000.

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Takano, Yoshiaki *See—*
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Takanobu, Hiroshi, to Hitachi, Ltd. Electron gun and method for manufacturing the same. 5,008,589, Cl 313-456.000.

Takata, Melvin M. *See—*
Weiss, Lawrence D.; Caruthers, Douglas W.; Inatomi, Charles T.; Kawan, Joseph C., Lee, Shan, Marks, Harvey, Meguerdijan, Sarkis A.; Parekh, Dilip J., Samulon, Alfred S., Takata, Melvin M., Tucci, Morris L., and Vollmer, Jim R., 5,008,927, Cl. 379-98.000.

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Seidman, Charles B., 5,007,641, Cl. 273-138.00A.

Takeda Chemical Industries, Ltd *See—*
Hatanaka, Chitoshi; and Oi, Satoru, 5,008,405, Cl. 549-315.000
Inoue, Keizo; Nomura, Hiroaki, and Tasaka, Akihiro, 5,008,454, Cl 564-294.000.

Takeda, Keiko. *See—*
Sasaki, Kazuya, Yoshizawa, Sakae, Inagaki, Shinya, and Takeda, Keiko, 5,007,698, Cl 350-96.150

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Nakai, Satoru; Kaneta, Mayumi; Kikumoto, Yoshikazu, Hong, Yeong-Man; Kawai, Kazuyoshi, Takegata, Setsuko, Ishii, Kiyoshi, Yanagihara, Yasuo; and Hirai, Yoshikatsu, 5,008,374, Cl 530-351.000

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Takemoto, Takeshi *See—*
Shibata, Masabumi, Ishiyama, Akira; and Takemoto, Takeshi, 5,008,817, Cl. 364-200.000

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Takeuchi, Hajime: *See—*
Wakatsuki, Yoshio, Okuyama, Toshiharu, Takeuchi, Hajime; Shimizu, Misao, and Shimizu, Giichiro, 5,008,665, Cl. 340-870.260.

Takeuchi, Masamichi; and Asai, Yasuo, to Koyo Seiko Co., Ltd. Radial roller bearing. 5,007,747, Cl. 384-450.000.

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Landesman, Barbara T., 5,008,892, Cl. 372-45.000.

Tallan, Michael L. *See—*
Bly, Sara A.; Farrand, A. Brady; Hodges, Jeffery D., Kupfer, Michael D.; Lewis, Brian T., Maybury, William J., Tallan, Michael L., and Tom, Stephen B., 5,008,853, Cl. 364-900.000.

Tamabayashi, Hanzo. *See—*
Eguchi, Hisao; Kubo, Masashige; Kunimoto, Koji; Shimizu, Sadami, Sato, Masakatsu; and Tamabayashi, Hanzo, 5,008,469, Cl. 568-722.000.

Tamaki, Kuniaki; Sakai, Norio; and Minowa, Kenji, to Murata Manufacturing Co., Ltd. Retainer for chip-type electronic parts. 5,007,534, Cl. 206-329.000

Tamazawa, Tsuyoshi; and Hayashi, Yoshimasa, to Nissan Motor Co., Ltd. Power plant for vehicles. 5,007,307, Cl. 74-606.00R

Tamiya, Jun. *See—*
Souketani, Koichi; Ito, Yukio; Sasaki, Yoshio; Kurita, Teiji; and Tamiya, Jun, 5,007,773, Cl. 407-27.000.

Tamura, Hifumi *See—*
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Tamura, Takashi: *See—*
Hosoda, Takuya; Morishita, Mitsuhiro; and Tamura, Takashi, 5,008,562, Cl. 307-265.000.

Tanabe, Satoru. *See—*
Ohmura, Hiroshi; Tanabe, Satoru; Yoshioka, Junji, and Kanazawa, Hirotaka, 5,007,494, Cl. 180-79.100.

Tanaka, Haruhiko· *See—*
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Tanaka, Hisami: *See—*
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Tanaka, Hitoshi· *See—*
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Tanaka, Keiji *See—*
Okazaki, Takao, Takahashi, Shuji; Iwado, Seigo; Tanaka, Keiji, Yanai, Toshiaki; and Kajino, Hisaki, 5,008,191, Cl. 435-124.000

Tanaka, Kiyoaki *See—*
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Tanaka, Kunihiko *See—*
Tashiro, Kazuo; and Tanaka, Kunihiko, 5,008,410, Cl. 549-497.000

Tanaka, Maki, Tojima, Teiichi, Dousako, Shun-ichi, and Tatsumi, Kiyoshi, to Snow Brand Milk Products Co., Ltd. Method of preparing iron-fortified beverage. 5,008,120, Cl. 426-74.000

Tanaka, Masayuki *See—*
Masuda, Takashi, Hashimoto, Kengiro; Takagi, Shinichi; and Tanaka, Masayuki, 5,007,884, Cl 474-242.000

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Tanaka, Tsutomu; Oshida, Yoshitada; Shiba, Masataka; Nakashima, Naoto; and Funatsu, Ryuichi, to Hitachi, Ltd. Exposure method and apparatus. 5,008,702, Cl. 355-52.000.

Tandy, John S *See—*
Kratky, Zdenek, and Tandy, John S., 5,008,381, Cl 536-8.000.

Tang, Sang T., to Babcock Display Products, Inc. Screened interconnect system. 5,007,872, Cl. 445-25.000.

Tani, Yoshiki *See—*
Yamada, Hideaki, Tani, Yoshiki; Shimizu, Sakayu, and Shiozaki, Shozo, 5,008,188, Cl. 435-88.000.

Tanioka, Hiroshi *See—*
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Taniuchi, Akira, Kataoka, Hironori, and Ito, Etsuo, to Dai-Ichi Kogyo Seiyaku Co., Ltd. Cationic herbicides. 5,007,955, Cl. 71-103.000

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Yamamoto, Masaji; Tanooka, Shigeo; and Sakai, Toshifumi, 5,007,885, Cl 475-231.000

Tanuma, Chiaki, Itsumi, Kazuhiro; Iwase, Nobuo, Ono, Tomio; Kondo, Yuu, and Saito, Kazutaka, to Kabushiki Kaisha Toshiba. Electronic device having a cooling element. 5,008,582, Cl. 310-332.000.

Tanzawa, Misao: *See—*
Sakamoto, Koji; Tanzawa, Misao; Iwata, Nobuo; Murayama, Hisao, Takahashi, Susumu, and Komada, Kenya, 5,008,711, Cl 355-206.000

Tarazaga, JoseF *See—*
Badia, Antonio R.; and Tarazaga, JoseF., 5,007,380, Cl. 119-53.000

Tarhay, Leo *See—*
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Tarumi, Niro *See—*
Sawamoto, Takeyuki, Nomura, Masashi, and Tarumi, Niro, 5,008,354, Cl 526-246.000.

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Inoue, Keizo, Nomura, Hiroaki, and Tasaka, Akihiro, 5,008,454, Cl 564-294.000

Tashiro, Kazuo, and Tanaka, Kunihiko, to Sumitomo Chemical Company, Limited. Method for producing furfuryl alcohols. 5,008,410, Cl. 549-497.000.

Tatsumi, Kiyoshi: *See—*
Tanaka, Maki, Tojima, Teiichi, Dousako, Shun-ichi, and Tatsumi, Kiyoshi, 5,008,120, Cl. 426-74.000.

Taubitz, Christof *See—*
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Taurus Tetraconcepts, Inc.: *See—*
Groswith, Charles T., III; Phipps, Richard D., Lathrop, Robert L., Jr., Stewart, John F.; and Kaufmann, Rick J., 5,007,782, Cl. 412-40.000.

Taussig, Andrew P.; and Isaacs, Blake L., to Spectra-Physics, Inc. Data gathering system interface. 5,008,518, Cl. 235-383.000.

Taylor, Arthur· *See—*
Chen, Chao; and Taylor, Arthur, 5,007,922, Cl. 606-228.000.

Taylor, Bryan V. Security device. 5,007,263, Cl 70-416.000.

Taylor, Dennis R., and Ungermann, Charles B., to Engelhard Corporation. Process for making acid activated bleaching earth using high susceptibility source clay and novel bleaching earth product. 5,008,226, Cl 502-81.000.

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Taylor, Patrick D., to Itex Enterprises, Inc. Apparatus and method for mixing solid or semi-solid wastes with additives. 5,007,590, Cl 241-25.000

Taylor, Stewart S., to TriQuint Semiconductor, Inc. High-impedance FET circuit. 5,008,565, Cl. 307-296.700

Taylor, Tim C., and McAllister, John A. Method and apparatus for measuring vision blockage resulting from glare. 5,007,730, Cl 351-243.000

Tazi, Mohammed; and Plochocka, Krystyna, to GAF Chemicals Corporation. Slurry polymerization of maleic anhydride and acrylic acid in a cosolvent system of ethyl acetate and cyclohexane. 5,008,355, Cl 526-271.000.

Teasdale, James A., to British Shipbuilders. Construction of large sandwich structures. 5,007,225, Cl 52-799.000

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Badia, Antonio R., and Tarazaga, JoseF., 5,007,380, Cl 119-53.000.

Tecumseh Products Company *See—*
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Teetz, Volker *See—*
Urbach, Hansjorg; Henning, Rainer, Teetz, Volker, Geiger, Rolf, Becker, Reinhard, and Gaul, Holger, 5,008,400, Cl 548-452.000

Teichmann, Wolfgang *See—*
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Teijin Seiki Company Limited *See—*
Kamimura, Toshio, and Takagi, Shigeyuki, 5,007,327, Cl 91-422.000

Tektronix, Inc *See—*
Anderson, Duwayne R., McMahon, Robert W., and Rosenow, Barry L., 5,008,545, Cl 250-358.100
Knierim, David L., and Brown, Gary L., 5,008,741, Cl. 358-32.000.

Tel Sagami Limited *See—*
Asano, Takanobu, Yamaga, Kenichi, and Ohkase, Wataru, 5,007,788, Cl 414-417.000

Teledyne Industries, Inc *See—*
Kadis, Paul M., and Pfaff, Susan E., 5,007,276, Cl. 72-351.000
Morris, Gilbert V., 5,007,369, Cl 118-56.000

Telefonaktiebolaget L M Ericsson *See—*
Dahlin, Steinar J E. A., and Ghisler, Walter, 5,008,953, Cl 455-33.000

Telschow, Jeffrey E., to Akzo N V. Process for purifying crude tetrabromobisphenol sulfone by extraction. 5,008,458, Cl. 568-28.000.

Tenbarge, Frank *See—*
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Terada, Yasuharu; and Ishii, Susumu, to Yoshida Kogyo K K. Slide fastener slider. 5,007,144, Cl 24-415.000

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Tessari, James E *See—*
Chinnaswamy, Kumar, Gagliardo, Michael A., Goodwin, Paul M., Lynch, John J., and Tessari, James E., 5,008,886, Cl 371-40.200

Tessier, Jean· *See—*
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Testa, Joseph E *See—*
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Teutsch, Erich O *See—*
Barancik, Martin B., and Teutsch, Erich O., 5,007,818, Cl 425-144.000

Tewes, Bernd *See—*
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Texas Instruments Incorporated *See—*
Esquivel, Agerico L., 5,008,722, Cl 357-23.500
Gill, Manzur; Lin, Sung-Wei, Cleavelin, C Rinn; and McElroy, David J., 5,008,721, Cl 357-23.500.
Krueger, Steven D; and Amundsen, Michael J., 5,008,807, Cl 364-200.000
Redwine, Donald J., 5,008,214, Cl 437-52.000
Thatte, Satish M., 5,008,786, Cl 364-200.000.
Wills, Kendall S.; and Rodriguez, Paul A., 5,008,729, Cl 357-51.000

Tezuka, Youjiro· *See—*
Beppu, Osamu, Moribe, Toshihiro, Tezuka, Youjiro; and Chuma, Akira, 5,008,573, Cl 310-67.00R

Thackara, John I., Lipscomb, George F.; Yoon, Hyun-Nam; and De Martino, Ronald N., to Lockheed Missiles & Space Company, Inc. Electro-optic channel waveguide. 5,007,696, Cl. 350-96.140.

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Reid, Robert A., and Goodnow, Ronald F., 5,007,132, Cl. 15-256.530.

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Gebert, Franz J.; Theron, Johannes P.; Gebert, Ralf D. H.; and Gebert, Rudiger H., 5,008,666, Cl 340-936.000.

Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile track leveling, lining and tamping machine. 5,007,349, Cl. 104-12.000

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Thimineur, Raymond J *See—*
Raleigh, William J., Thimineur, Raymond J., and Zotto, Anthony A., 5,008,103, Cl. 424-66.000.

Thinesen, Tom, to Timex Corporation. Alarm setting program for alarm timepiece with alternate time zone. 5,008,866, Cl 368-21.000.

Thinking Machines Corporation *See—*
Hillis, W. Daniel, 5,008,815, Cl 364-200.000

Thobe, Nick D. *See—*
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Thoma, Frank *See—*
Grohn, Michael, Murwald, Mario; Thoma, Frank, and Hoffmann, Karlheinz, 5,007,401, Cl 123-509.000

Thomas & Betts Corporation *See—*
Strauss, Richard F., Fiacco, Richard A., Bordbar, Hosrow T., Chen, Caesar C., and Quiroz, David, 5,008,490, Cl 174-36.000

Thomas, Brian *See—*
Chari, Krishnan, Bowman, Wayne A., and Thomas, Brian, 5,008,179, Cl. 430-546.000

Thomas, Henry H., Jr. Fiberboard cylindrical container with spirally wound tubular body and closure therefor. 5,007,579, Cl 229-5.500.

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Kieren, Roger, Jamison, David A., and Thomas, John J., 5,008,560, Cl 307-19.000.

Thomas, John M *See—*
Ballantine, James A., Gregory, Reginald, Purnell, John H., Thomas, John M., and Westlake, David J., 5,008,465, Cl 568-697.000

Thomas, Mark A.: *See—*
Wood, Robert S., and Thomas, Mark A., 5,007,711, Cl 350-174.000.

Thomas, Stephen M. *See—*
Siemon, Carl; and Thomas, Stephen M., 5,008,931, Cl 379-399.000

Thomason, Paul L *See—*
Alieri, Rodiero; and Thomason, Paul L., 5,007,150, Cl 29-33.003

Thomford, Peter J.: *See—*
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Thompson, Alan M *See—*
Forsyth, Donald G W., Marshall, Robert W., and Thompson, Alan M., 5,007,482, Cl. 166-345.000

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Walters, William T., and Thompson, Carroll R., 5,007,291, Cl 73-640.000

Thompson, Charles E Safety shield for double-lock handcuffs. 5,007,257, Cl 70-16.000

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Daniel, Jean-Pierre, and Fauchard, Jean-Pierre, 5,007,736, Cl 356-152.000
Trigon, Roland, Drabowitch, Serge, and Roger, Joseph, 5,008,677, Cl 342-17.000.

Thuez, Jean-Luc, and Dehausse, Robert, to A R M I N E S Installation for air-conditioning by absorption. 5,007,251, Cl 62-476.000

Thulke, Wolfgang *See—*
Amann, Markus-Christian; Baumann, Gerhard, Heinen, Jochen, and Thulke, Wolfgang, 5,008,893, Cl 372-50.000

Thurm, Siegfried; Holm, Reimer, Leuschke, Christian; Rathmann, Dietrich, and Schrader, Lutz, to Bayer Aktiengesellschaft. Process for the production of plastic moulded articles with improved weathering resistance. 5,008,148, Cl 428-336.000

Tiearney, Thomas C., Jr *See—*
Lee, David S.; and Tiearney, Thomas C., Jr., 5,008,918, Cl 378-144.000

Tien, Chao-Fong; and Surnamer, Andrew D., to Air Products and Chemicals, Inc. Membranes formed from aromatic polyarylates. 5,007,945, Cl. 55-16.000.

Tiller, Ralph. Exercise device. 5,007,635, Cl 272-117.000

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Tin, George W., to Vestar, Inc. Vesicle stabilization. 5,008,109, Cl 424-422.000.

TLV Company, Limited. *See—*
Mori, Takayuki; and Yumoto, Hideaki, 5,007,582, Cl 236-40.000

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Toita, Hiroshi; Tamura, Hifumi; Tobita, Issei; and Iwamoto, Hiroshi, 5,008,537, Cl. 250-309.000

Tochigifujisangyo Kabushiki Kaisha *See—*
Shimizu, Minoru, 5,007,515, Cl 192-58.00A

Toepperwien, Bernd, to Alfred Teves GmbH. Working piston, in particular for a brake booster. 5,007,329, Cl. 92-98.00D.

Toerner, Ludger *See—*
Beth, Matthias; Binz, Hansgeorg; and Toerner, Ludger, 5,007,564, Cl. 222-217.000.

Toft, Mark A.: *See—*
Brazdil, James F., Jr., Toft, Mark A., and Glaeser, Linda C., 5,008,427, Cl. 558-319.000.

Toita, Hiroshi; Tamura, Hifumi; Tobita, Issei; and Iwamoto, Hiroshi, to Hitachi, Ltd.; and Hitachi Instrument Engineering Co., Ltd Composite apparatus with secondary ion mass spectrometry instrument and scanning electron microscope. 5,008,537, Cl 250-309.000.

Tojima, Teiichi: *See—*
Tanaka, Maki, Tojima, Teiichi, Dousako, Shun-ichi, and Tatsumi, Kiyoshi, 5,008,120, Cl 426-74.000.

Tokizane, Toshiaki; Ito, Yoshiharu, Yamada, Osamu; Masuda, Toshiyuki; and Kuroda, Mitsunobu, to Matsushita Electric Works, Ltd

Remote supervisory and controlling machine 5,008,662, Cl. 340-825.060.

Tokola, Reino O.: *See—*
Ingberg, Grels D., Penttila, Ritva L. A., Tokola, Reino O.; and Tenhunen, Raimo, 5,008,388, Cl. 540-145.000

Tokuda, Kanji, to Fuji Photo Film Co., Ltd. Photographic printer. 5,008,701, Cl. 355-35.000.

Tokyo Electric Co., Ltd.: *See—*
Sugimoto, Kazuaki; Nishijima, Tomio; Inoue, Teruhisa, Sugimoto, Yoshihiko, Suzuki, Masashi; and Matsushita, Izumi, 5,007,340, Cl. 101-227.000

Tokyo Keiki Co., Ltd: *See—*
Terakawa, Takashige; and Kusakabe, Wataru, 5,008,486, Cl. 174-35.0MS.

Toland, William G.: *See—*
Lapporte, Seymour J.; and Toland, William G., 5,008,451, Cl. 562-891.000.

Tom, Stephen B.: *See—*
Bly, Sara A.; Farrand, A. Brady, Hodges, Jeffery D.; Kupfer, Michael D.; Lewis, Brian T., Maybury, William J., Tallan, Michael L.; and Tom, Stephen B., 5,008,853, Cl. 364-900.000

Tomantschger, Klaus; and Soltys, Josef. Test cell structure. 5,008,162, Cl. 429-34.000

Tomihashi, Nobuyuki: *See—*
Shirai, Shinji, Negishi, Hiroyuki; Tomihashi, Nobuyuki; and Yamane, Masayuki, 5,008,327, Cl. 524-544.000

Tominaga, Shinji, and Hashimoto, Takeshi, to Minolta Camera Kabushiki Kaisha. Device for driving shutter. 5,008,699, Cl. 354-457.000

Tominaga, Takashi, Nishiyama, Souji, Sakuramoto, Takahumi, and Honda, Makoto, to Nitto Denko Corporation. Glass powder adhesive sheet. 5,008,151, Cl. 428-343.000.

Tomita, Nobuo: *See—*
Nakajima, Masashi; Tomita, Nobuo, Suzaki, Kenji; Kaneko, Akira; and Sawaki, Mikio, 5,008,455, Cl. 564-300.000.

Tomiyama, Akira: *See—*
Tomiyama, Tsuyoshi; Tomiyama, Akira, Shirai, Tadashi, Wakabayashi, Shuuichi; Kawai, Tomoyuki; Ueyama, Naoto, and Sonegawa, Motoharu, 5,008,282, Cl. 514-393.000

Tomiyama, Tsuyoshi, Tomiyama, Akira, Shirai, Tadashi, Wakabayashi, Shuuichi, Kawai, Tomoyuki; Ueyama, Naoto; and Sonegawa, Motoharu, to Kotobuki Seiyaku Co. Ltd. Cyclic guanidine derivatives, anti-ulceratives and methods of manufacturing the same. 5,008,282, Cl. 514-393.000.

Tomizawa, Atsushi; Inoue, Susumu; and Masui, Takeshi, to Sumitomo Metal Industries, Ltd. Variable-crown roll. 5,007,152, Cl. 29-116.200

Tomoda, Haruhisa, and Shimada, Yasuomi, to Matsushita Electric Industrial Co., Ltd. Optical disc reproduction apparatus which detects maximum audio signal level recorded on an optical disk. 5,008,872, Cl. 369-32.000.

Tomoda, Haruhisa; and Shimada, Yasuomi, to Matsushita Electric Industrial Co., Ltd. Optical disc reproducing apparatus having display indicating program status. 5,008,875, Cl. 369-85.000.

Tomoda, Toshimasa: *See—*
Koshinaka, Masao; Akiyama, Minoru, Tanaka, Hitoshi, and Tomoda, Toshimasa, 5,008,558, Cl. 250-563.000.

Tomosada, Masahiro: *See—*
Inuzuka, Tsuneki; Maeshima, Katsuyoshi; and Tomosada, Masahiro, 5,008,712, Cl. 355-206.000.

Tonkiss, David W., to Joslyn Corporation. Hand operated band bending tool. 5,007,465, Cl. 140-150.000.

Toray Silicone Company, Limited *See—*
Mine, Katsutoshi, Morita, Yoshitsugu, and Miyamae, Satoshi, 5,008,733, Cl. 357-72.000.

Torii, Katura: *See—*
Nagai, Tetsuji; Torii, Katura; and Ohno, Yoshio, 5,008,842, Cl. 364-551.010.

Torii, Nobutoshi, Mizuno, Hitoshi, and Muraki, Katsuyuki, to Fanuc Ltd. Industrial robot able to set motion conditions depending on posture of installation thereof. 5,008,832, Cl. 364-513.000.

Torii, Yoshimi: *See—*
Kawasaki, Yoshinao; Kawahara, Hironobu; Sato, Yoshiaki; Fukuyama, Ryooji; Nojiri, Kazuo; and Torii, Yoshimi, 5,007,981, Cl. 156-643.000

Toro Company, The: *See—*
O'Brien, Steven T.; and Kakuk, Jay J., 5,007,855, Cl. 439-411.000.

Torok, Zoltan: *See—*
Ecsery, Zoltan; Knoll, Jozsef; Somfai, Eva, Torok, Zoltan, Szinyei, Eva, and Mozsolits, Karoly, 5,008,292, Cl. 514-654.000

Torre, Randall J. Tendon sectioning support clamp. 5,007,920, Cl. 606-207.000.

Torri, Giangiacomo: *See—*
Casu, Benito; Torri, Giangiacomo; Naggi, Annamaria; Mantovani, Marisa; Pescador, Rodolfo, Porta, Roberto, and Prino, Giuseppe, 5,008,253, Cl. 514-54.000.

Toshiba Machine Co., Ltd: *See—*
Harada, Susumu, 5,008,052, Cl. 264-40.500.

Tosoh Corporation. *See—*
Eguchi, Hisao; Kubo, Masashige; Kunimoto, Koji, Shimizu, Sadami; Sato, Masakatsu; and Tamabayashi, Hanzo, 5,008,469, Cl. 568-722.000.

Total Spectrum Manufacturing Inc *See—*
Gordon, Gary B.; and Gonnelli, Robert R., 5,008,804, Cl. 364-167.010.

Toth, Imre: *See—*
Bakos, Jozsef, Heil, Balint; Toth, Imre; Edes, Bela; Gebhardt, Tstvan; Bihari, Ferenc; Durko nee Ponacz, Anna, Eifert, Gyula; Kiraly, Jeno, Konok nee Horvath, Eva; Lukacs, Laszlo; Meszaros nee Szekrenyesi, Agnes; Radvany, Bela; and Sarosi, Lajos, 5,008,440, Cl. 560-65.000.

Toth, John F.: *See—*
Cavallaro, Nunzio M.; Toth, John F., and Alexander, Cleo J., 5,008,681, Cl. 343-700.0MS.

Toto, Ltd.: *See—*
Yoshida, Takao; Ikeda, Toshio; Douke, Takhiro, and Eki, Toshio, 5,008,773, Cl. 361-187.000.

Totta, Paul A.: *See—*
Huang, Hung-Chang W., and Totta, Paul A., 5,008,216, Cl. 437-192.000
Huang, Hung-Chang W., and Totta, Paul A., 5,008,730, Cl. 357-68.000

Touton, Charles P.: *See—*
Matthews, Thomas E., and Touton, Charles P., 5,007,221, Cl. 52-464.000.

Towers, Christine M.: *See—*
Bryan, Philip S., Lambert, Patrick M., Towers, Christine M., and Jarrold, Gregory S., 5,008,034, Cl. 252-301.40F

Toyama, Noboru: *See—*
Koizumi, Norihiko, Tanioka, Hiroshi, Toyama, Noboru, Arahara, Kozo, and Yuasa, Toshiya, 5,008,690, Cl. 346-140.00R.

Toyoda Gosei Co., Ltd. *See—*
Minoura, Jun, Takahahi, Shigeyuki, Kato, Hisaki, Ito, Toshiyasu, Mori, Takaaki; Kato, Mamoru; Shimada, Junichi, and Okabayashi, Katsuaki, 5,007,718, Cl. 350-357.000.

Toyoda Koki Kabushiki Kaisha *See—*
Yamamoto, Masaji; Tanooka, Shigeo; and Sakai, Toshifumi, 5,007,885, Cl. 475-231.000.

Toyoda, Noriyuki: *See—*
Ikuzawa, Masanori; Oguchi, Yoshiharu; Matsunaga, Kenichi, Toyoda, Noriyuki; Furusho, Takao, Fujii, Takayoshi; and Yoshikumi, Chikao, 5,008,243, Cl. 514-8.000.

Toyofuku, Kunitaka: *See—*
Takahashi, Yoshiyuki; Toyofuku, Kunitaka; and Iwasaki, Akiko, 5,008,236, Cl. 503-209.000.

Toyomaki, Kazuya, to Victor Company of Japan, Ltd. Digital to analog converter using pulse width modulator for independently setting edge position 5,008,675, Cl. 341-152.000.

Toyota, Akinori: *See—*
Ishimaru, Naoshi; Tsutsui, Toshiyuki; Toyota, Akinori, and Kashiwa, Norio, 5,008,356, Cl. 526-281.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Asada, Toshiyuki, 5,007,887, Cl. 45-284.000.

Tracy, David J.: *See—*
Chaudhuri, Ratan K.; Tracy, David J.; and Login, Robert B., 5,008,104, Cl. 424-70.000.

Transaction Technology, Inc.: *See—*
Weiss, Lawrence D., Caruthers, Douglas W.; Inatomi, Charles T., Kawan, Joseph C., Lee, Shan, Marks, Harvey; Meguerdijan, Sarkis A.; Parekh, Dilip J.; Samulon, Alfred S.; Takata, Melvin M., Tucci, Morris L.; and Vollmer, Jim R., 5,008,927, Cl. 379-98.000

Traonmilin, Eric *See—*
Legris, Bernard, Oppedal, Magne; and Traonmilin, Eric, 5,007,769, Cl. 405-195.000

Trapp, Richard E.; Hansen, Gary L.; Clay, Robert B., Dubetsky, Lawrence J.; and Olney, Robert S., to Atlas Powder Company. Multicomponent explosives. 5,007,973, Cl. 149-109.600

Trauth, Hubert. *See—*
Aumueller, Alexander; Neumann, Peter, and Trauth, Hubert, 5,008,312, Cl. 524-92.000
Spang, Peter; Neumann, Peter; Wagenblast, Gerhard; and Trauth, Hubert, 5,008,397, Cl. 548-331.000

Treatch, James E.; and Mikesell, James R., to PulseTrend, Inc. Interface using 12-digit keypad for programming parameters in ambulatory blood pressure monitor. 5,007,429, Cl. 128-677.000.

Tredegar Molded Products Company: *See—*
Alieri, Rodiero; and Thomason, Paul L., 5,007,150, Cl. 29-33.00J

Tree Top, Inc *See—*
Kobes, Gerald W.; and Eisele, Thomas A., 5,007,334, Cl. 99-483.000.

Trema, Daniel, to Elf France. Arm support device for a rotating element. 5,007,497, Cl. 180-219.000.

Tremco Incorporated *See—*
Janoski, Ronald J., 5,008,311, Cl. 524-59.000.

Tremulis, William S.: *See—*
Doyle, A. Thomas, Tremulis, William S.; and McQueen, Colleen L., 5,007,434, Cl. 128-772.000.

Trenkle, Robert W: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Calderone, Nicholas, and Fenn, Ronald S., 5,008,437, Cl. 560-35.000.

Trevett, Neil F.; and Wilson, Malcolm E., to Du Pont Pixel Systems, Limited. Analog controlled mixer 5,008,754, Cl. 358-183.000.

Tridan Tool & Machine, Inc.: *See—*
Voss, Harlan F., 5,007,275, Cl. 72-335.000.

Trigon, Roland; Drabowitch, Serge; and Roger, Joseph, to Thomson-CSF. Anti-jamming device for a radar provided with a reflector antenna. 5,008,677, Cl. 342-17.000.

Triplett, Kelly B.: *See—*
Greco, Carl C.; and Triplett, Kelly B., 5,008,420, Cl. 556-182.000

TriQuint Semiconductor, Inc *See—*
Taylor, Stewart S., 5,008,565, Cl. 307-296.700.

Trolltsch, Karl: *See—*
Messinger, Werner; Trolltsch, Karl; and Tewes, Bernd, 5,007,168, Cl. 30-43.000

Trosi, Paul B., to Waste-Tech Services, Inc. Decontamination of earth formations 5,008,019, Cl. 210-747.000.

Truchement, Bernard *See—*
Favre, Eric, Masek, Petr; and Truchement, Bernard, 5,008,013, Cl. 210-482.000.

Trustee of Columbia University in the City of New York, The: *See—*
Nakanishi, Koji; Oltz, Eugene M., and Grunberger, Dezider, 5,008,441, Cl. 560-75.000

TRW Inc.: *See—*
Smolley, Robert, 5,007,841, Cl. 439-66.000
Smolley, Robert, 5,007,843, Cl. 439-66.000.

TRW Vehicle Safety Systems Inc *See—*
Lenzen, Reiner, 5,007,661, Cl. 280-735.000.

Tsilibary, Effie C.; and Furcht, Leo T., to University of Minnesota, Regents of the. Prosthetic devices coated with polypeptides with type IV collagen activity. 5,007,925, Cl. 623-1.000.

Tsou, Len-Yan, to North American Philips Corporation. Reactive ion etching of silicon with hydrogen bromide. 5,007,982, Cl. 156-643.000.

Tsuchiya, Mitsunori *See—*
Yamazaki, Shunpei; Imatou, Shinji; Tsuchiya, Mitsunori; Itoh, Kenji; Inushima, Takashi, and Kawano, Atsushi, 5,007,374, Cl. 118-723.000

Tsuchiya, Reijiro: *See—*
Nishiyama, Nobumasa, Saito, Makoto; Ouchi, Yasuhide, Katoh, Yasuhiro, Kamo, Yoshihisa; Koizumi, Makoto; Aoi, Hajime, Sato, Naoki, and Tsuchiya, Reijiro, 5,008,761, Cl. 360-45.000.

Tsukada, Masaharu *See—*
Shimizu, Katsuichi, Shibata, Takehiko; Yokomizo, Yoshikazu, Suzuki, Akira, Murakami, Koichi, Yoshida, Tadashi, Tsukada, Masaharu; Nagashima, Nao; and Miyagi, Ken, 5,008,760, Cl. 358-451.000.

Tsukada, Yukihiko: *See—*
Kobayashi, Hitoshi, Takano, Akira, Narusawa, Naoharu; Tsukada, Yukihiko; Sakamoto, Hiroshi; Hirano, Masaki, and Ando, Masao, 5,008,710, Cl. 355-202.000

Tsukamoto, Jun; and Takahashi, Akio, to Director-General of Agency of Industrial Science and Technology. Process for preparation of polyacetylene film 5,008,040, Cl. 252-500.000.

Tsukawaki, Tomohiro, to Fuji Xerox Co., Ltd. System for recognizing handwritten letters 5,008,948, Cl. 382-13.000.

Tsukimura, Kiyoshi *See—*
Niizato, Tomonori; Noguchi, Katsumi; and Tsukimura, Kiyoshi, 5,007,392, Cl. 123-193.00H.

Tsukisaka, Ryogo; Kondo, Satoshi; Kaneguchi, Toshio; and Deguchi, Takashi, to Shiraishi Central Laboratories Co., Ltd. Calcium carbonate, calcium carbonate pigment, process for preparing same, coating composition for information recording paper and information recording paper 5,007,964, Cl. 106-464.000.

Tsuneda, Haruhiro *See—*
Saito, Kazuharu, Matsukura, Hiroyasu, Komase, Hiroshi, Tsuneda, Haruhiro; Watanabe, Junji, Saito, Tadao; Doy, Toshiroh; and Matsunaga, Kazuo, 5,007,209, Cl. 51-283.00R.

Tsuruoka, Yoshiaki *See—*
Kuramochi, Wataru, Tsuruoka, Yoshiaki; Saitou, Norikazu; Shibuya, Akira, and Yamashita, Shuichi, 5,008,552, Cl. 235-483.000.

Tsutsui, Toshiyuki *See—*
Ishimaru, Naoshi, Tsutsui, Toshiyuki; Toyota, Akinori; and Kashiwa, Norio, 5,008,356, Cl. 526-281.000.

Tsutsumi, Michinari, Endo, Atsushi, and Yada, Toshio, to Mitsubishi Denki Kabushiki Kaisha. Method for etching chromium film formed on substrate. 5,007,984, Cl. 156-656.000.

Tsutsuta, Koji, and Seki, Kiwao, to Hitachi, Ltd. Conductivity detector. 5,008,627, Cl. 324-444.000.

Tsuzuki, Sadachika: *See—*
Noji, Akio, Kamimura, Kenji, and Tsuzuki, Sadachika, 5,008,557, Cl. 250-561.000

Tucci, Morris L.: *See—*
Weiss, Lawrence D., Caruthers, Douglas W.; Inatomi, Charles T.; Kawan, Joseph C., Lee, Shan; Marks, Harvey, Meguerdijan, Sarkis A., Parekh, Dilip J., Samulon, Alfred S., Takata, Melvin M., Tucci, Morris L.; and Vollmer, Jim R., 5,008,927, Cl. 379-98.000.

Tucker, Benjamin W.; and Bhattacharjee, Debkumar, to Dow Chemical Company, The. Rigid polyurethane foams with low thermal conductivities. 5,008,299, Cl. 521-159.000.

Tucker, Richard B. C.; Davis, Jackie L.; and Lewis, Fielding H., Jr., to Wm. T. Burnett & Co., Inc. Lacrosse stick. 5,007,652, Cl. 273-326.000.

Tuthill, Michael G., to Analog Devices, Incorporated. High-speed digital-to-analog converter with BiMOS cell structure. 5,008,671, Cl. 341-136.000.

Tyberg, William T. *See—*
Suzuki, Arata; Tyberg, William T., Banks, George; and Suzuki, Marcia, 5,007,427, Cl. 128-659.000.

Tzeng, Yonhua: *See—*
Legg, Keith O., and Tzeng, Yonhua, 5,007,373, Cl. 118-723.000.

Uchikawa, Sadao: *See—*
Aoyama, Motoo, Koyama, Junichi, Uchikawa, Sadao; Bessho, Yasunori, Ozawa, Michihiro; Nakamura, Mitsunari, Nakajima, Akinobu, and Maruyama, Hiromi, 5,008,070, Cl. 376-419.000

Uchimi, Toshiharu: *See—*
Hanyu, Yukio; and Uchimi, Toshiharu, 5,007,716, Cl. 350-336.000

Uchiyama, Seiji *See—*
Abe, Takafumi, Uchiyama, Seiji, Ojima, Takahiro, and Kida, Koichi, 5,008,479, Cl. 585-320.000

Uda, Koji: *See—*
Kawakami, Eigo; Ozawa, Kunitaka; Uda, Koji, Shimoda, Isamu; and Uzawa, Shunichi, 5,008,703, Cl. 355-53.000

Uehara, Tsukasa, to Canon Kabushiki Kaisha. Recording and/or reproducing apparatus. 5,008,874, Cl. 369-75.200.

Uenishi, Akio, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device with stepped well. 5,008,720, Cl. 357-23.400

Ueno, Shoji: *See—*
Yoshida, Shiro; Yamada, Yasuhiro; and Ueno, Shoji, 5,008,764, Cl. 360-77.150

Ueyama, Naoto: *See—*
Tomiyama, Tsuyoshi; Tomiyama, Akira; Shirai, Tadashi, Wakabayashi, Shuuichi, Kawai, Tomoyuki; Ueyama, Naoto; and Sonegawa, Motoharu, 5,008,282, Cl. 514-393.000.

Uffelman, Bradley L.: *See—*
Marshall, James W., Gotchy, David; Uffelman, Bradley L.; Leimbach, Wendell B., and Wilhelmi, Albert A., 5,008,572, Cl. 310-45.000.

Ufford, Keith A.: *See—*
Doan, Phong D.; Upton, James E., Hess, Douglas N.; Bass, Wayne R.; and Ufford, Keith A., 5,007,435, Cl. 128-784.000.

Uggetti, Sergio *See—*
Falconieri, Remo; and Uggetti, Sergio, 5,007,749, Cl. 400-208.000

Ugolini, Antonio: *See—*
Rossey, Guy; Ugolini, Antonio; Chekroun, Isaac; Vartanian, Abkar; and Wick, Alexander, 5,008,434, Cl. 560-17.000.

Uhrig, Heinz; Ehl, Klaus, and Deubel, Reinhold, to Hoechst Aktiengesellschaft. Surface-active compounds on the basis of arylated fatty substances and their use. 5,008,442, Cl. 560-149.000.

Ullum, Henrik: *See—*
Fosbol, Peder, Ullum, Henrik, and Korremann, Birgitte, 5,008,375, Cl. 530-357.000.

Ulman, Abraham. *See—*
Robello, Douglas R., Ulman, Abraham, Urankar, Edward J., and Willand, Craig S., 5,008,043, Cl. 252-582.000
Robello, Douglas R.; and Ulman, Abraham, 5,008,369, Cl. 528-391.000.

Ulmer, Edward A., Jr., to Square D Company. Method of eliminating the effects of birefringence from the detection of electric current using Faraday rotation. 5,008,611, Cl. 324-96.000.

Underwood, David T. Shower dechlorinator using granulated copper alloy filter material. 5,008,011, Cl. 210-232.000.

Unewisse, Heinz, and Foering, Herbert, to Mannesmann AG. Crimped sleeve to tube joint. 5,007,667, Cl. 285-382.200.

Ungermann, Charles B.: *See—*
Taylor, Dennis R.; and Ungermann, Charles B., 5,008,226, Cl. 502-81.000
Taylor, Dennis R.; and Ungermann, Charles B., 5,008,227, Cl. 502-83.000.

Union Camp Corporation. *See—*
Bose, Ajit K., 5,007,233, Cl. 53-449.000

Union Carbide Chemicals And Plastics Technology Corporation *See—*
Richey, Forrest A., Jr., and Hoy, Kenneth L., 5,008,336, Cl. 525-124.000.

Union Carbide Chemicals and Plastics Technology Corporation: *See—*
Kurtz, Stuart J.; and Szaniszlo, Steve R., 5,008,056, Cl. 264-130.000.
Leder, Jonathan, 5,008,022, Cl. 210-755.000
Mallon, Charles B. and Chu, Howard, 5,008,363, Cl. 528-49.000.
Wegman, Richard W., and Bryant, David R., 5,008,235, Cl. 502-342.000.

Union Carbide Corporation: *See—*
Osborne, Timothy W., 5,007,962, Cl. 106-38.220

Union Oil Company of California. *See—*
Block, Michael J., Kelley, Arnold E., and Skripek, Milan, 5,007,987, Cl. 201-17.000.
Stack, Dennis P., 5,008,326, Cl. 524-519.000.

Uniroyal Textilcord, S.A. *See—*
Lenards, Gerhard F., 5,008,130, Cl. 427-206.000

Unisearch Systems Limited *See—*
Otto, Donald V., 5,008,612, Cl. 324-117.00R.

Unisys Corp.: *See—*
Boling, Norman L.; Mayer, Thomas, and Rancourt, James D., 5,008,129, Cl. 427-160.000.
Hamilton, T. A., 5,008,500, Cl. 200-61.700
Parsley, David W.; and Martin, Hubert C., Jr., 5,008,795, Cl. 363-20.000

United AgriSeeds, Inc.: *See—*
Ranch, Jerome P.; and Buchheim, Julie A., 5,008,200, Cl. 435-240.490.

United Kingdom Atomic Energy Authority: *See—*
Higgins, Ian; and Baxendale, Andrew, 5,008,159, Cl. 428-614.000
Siva, Kumar V., 5,007,300, Cl. 74-471.0XY.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the *See—*
Kelly, Christopher J.; and Lewis, Keith L., 5,007,689, Cl. 350-1.600.

U.S. Inteleo Networks, Inc *See—*
Olsen, Steven A., Cronin, William J., Jarvis, Ben L.; and McMillan, Jeff G., 5,008,929, Cl. 379-112.000

United States of America
Agriculture: *See—*
Bartelt, Robert J., and Dowd, Patrick F., 5,008,478, Cl. 585-16.000
Air Force: *See—*
Coddington, John D., 5,008,570, Cl. 307-475.000

Evers, Robert C.; Dang, Thuy D., and Moore, D Roger, 5,008,346, Cl. 525-426.000.
Hilland, David H., 5,008,770, Cl. 361-56.000.
Hirleman, Edwin D., Jr., 5,007,737, Cl. 356-336.000.
Kolesar, Edward S., Jr., 5,008,213, Cl. 437-51.000.
Look, David C., Sewell, James S., Mier, Millard G., Sizelove, John R.; Walters, Dennis C., and Dudley, Scott C., 5,008,542, Cl. 250-341.000.
Morris, John B., Lammers, Uve H. W.; and Marr, Richard A., 5,007,721, Cl. 350-486.000.
Schlie, LaVerne A.; and Rathge, Robert D., 5,008,593, Cl. 315-39.000.

America: *See—*
Cyr, Reginald, 5,008,859, Cl. 367-2.000.
Riley, Thomas P., Buffman, Martin, and Cyr, Reginald J., 5,008,860, Cl. 367-6.000.

Army: *See—*
Branovich, Louis E.; Eckart, Donald W., Smith, Bernard; and Freeman, Gerard, 5,007,874, Cl. 445-50.000
Gooch, William A., Jr., Burkins, Matthew S.; Mills, Leo F., Ogilvy, James W.; and Ricchiazzi, Antonio J., 5,007,326, Cl. 89-36.020.

Commerce: *See—*
Jach, Terrence J.; Geist, Jon C., Carver, Gary P.; and Novotny, Donald B., 5,008,908, Cl. 378-70.000.

Energy: *See—*
Dickie, William; Cavallaro, Joseph A.; and Killmeyer, Richard P., 5,008,083, Cl. 422-101.000.
Kirby, John A., 5,008,539, Cl. 250-336.100.
Overton, William C., Jr.; van Hulsteyn, David B.; and Flynn, Edward R., 5,008,622, Cl. 324-248.000.
Shang, Jer Y., 5,008,005, Cl. 208-407.000.
Smith, James L.; and Kucera, Eugenia H., 5,008,163, Cl. 429-40.000.
Steinmeyer, Peter A., 5,008,909, Cl. 378-71.000.

Health and Human Services: *See—*
Feldman, Alfred P., 5,008,831, Cl. 364-496.000.
Rice, Kenner C., 5,008,449, Cl. 562-478.000.
Swedo, Susan E.; Rapoport, Judith L., and Leonard, Henrietta L., 5,008,262, Cl. 514-217.000.

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Bluck, Raymond M.; Bush, Harold G., and Johnson, Robert R., 5,008,061, Cl. 264-257.000.
Lerner, Narcinda R.; and Wydeven, Theodore J., Jr., 5,007,983, Cl. 156-643.000.

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Albares, Donald J., 5,007,700, Cl. 350-96.170.
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Hall, Robert E., Spolek, Graig A., Wasser, John H., and Butts, Nelson L., 5,007,404, Cl. 126-77.000.

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Appels, Johannes A.; and Maas, Henricus G. R., 5,008,209, Cl. 437-31.000.
Behling, Rolf; and Koster, Wolfgang, 5,008,917, Cl. 378-140.000.
Bernardet, Henri; and Pauwels, Jean-Claude, 5,008,585, Cl. 313-231.310.
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Carleton, Samuel A., 5,008,583, Cl. 313-25.000.
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Fernando, Gerard M. X.; and Giardina, Aldo, 5,008,744, Cl. 358-105.000.
Harding, Geoffrey, 5,008,911, Cl. 378-86.000.
Hennings, Detlev; Hoffmann, Bernd F. W.; and Nutto, Markus, 5,008,646, Cl. 338-20.000.
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Molteni, Roberto; and Zanmarchi, Giulio, 5,008,547, Cl. 250-368.000.
Negle, Hans, 5,008,913, Cl. 378-105.000.
Peyerl, Gerhard, 5,008,778, Cl. 361-415.000.
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Ruter, Hans-Werner, 5,007,539, Cl. 206-524.000.
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Van Egeraat, Walterus A. L. A., 5,008,910, Cl. 378-84.000.
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Verhulst, Antonius G. H., 5,007,715, Cl. 350-334.000.
Weeber, Adrianus A. R., 5,007,162, Cl. 29-839.000.

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Wallach, Clifford H., Suffern, Robert C.; and Walsh, Dale M., 5,008,901, Cl. 375-8.000.

United Technologies Corporation: *See—*
Bullis, Robert H., and Swindal, James L., 5,008,774, Cl. 361-283.000.
Morey, William W.; Leonberger, Fred J.; Glenn, William H.; and Meltz, Gerald, 5,007,705, Cl. 350-96.290.

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Watmough, David J., 5,007,428, Cl. 128-660.040.

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Bassi, Pawan K., Eastwell, Kenneth C.; Goudey, James S., and Spencer, Mary E., 5,008,091, Cl. 423-245.100.

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Ross, Douglas A., 5,008,511, Cl. 219-121.480.

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Gruber, Harry E., 5,008,251, Cl. 514-43.000.
Mazziotta, John C., Daghighian, Farhad; and Hoffman, Edward J., 5,008,546, Cl. 250-366.000.
Norman, Amos, and Iwamoto, Keisuke S., 5,008,907, Cl. 378-65.000.

University of Florida: *See—*
Bodor, Nicholas S., 5,008,257, Cl. 514-192.000.
Gray, Dennis J., and Elmstrom, Gary W., 5,007,198, Cl. 47-58.000.

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Digenis, George A.; and Agha, Bushra J., 5,008,245, Cl. 514-18.000.

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Sengupta, Subrata, 5,007,478, Cl. 165-10.000.

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Tsilibary, Effie C., and Furcht, Leo T., 5,007,925, Cl. 623-1.000.

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Cheng, Yung-chi; and Bobek, Miroslav, 5,008,252, Cl. 514-50.000.

University of Pennsylvania, The Trustees of the: *See—*
Derbyshire, Garrett, 5,007,926, Cl. 623-1.000.

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Uno, Ken, Fujino, Takuo, and Nakamori, Hideki, to Hoya Corporation, and Prometron Technics Corporation. Process for producing mold used for obtaining press molded glass article. 5,008,002, Cl. 204-192.310.

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Unsworth, Peter J., Merrison, John C.; and Rowan, Timothy M., to Allen-Bradley Company, Inc. Controller for starting and stopping electric motors. 5,008,608, Cl. 318-729.000.

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Allenza, Paul; Cliff, Christy G.; and Morrell, Marie J., 5,008,195, Cl. 435-193.000.
Gruia, Adrian J., 5,007,998, Cl. 208-59.000.
Lambert, Susan L., 5,008,233, Cl. 502-231.000.
Maier, William H., and Bentham, Martin F., 5,008,004, Cl. 208-321.000.
Oroskar, Anil R.; and Johnson, James L., 5,008,189, Cl. 435-105.000.
Vora, Bipin V.; and Scott, Norman H., 5,008,467, Cl. 568-697.000.

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Upton, James E.: *See—*
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Urakami, Fukashi. Device capable of suction-adhering to a wall surface and moving therealong. 5,007,210, Cl. 51-429.000.

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Urbach, Hansjorg, Henning, Rainer; Teetz, Volker; Geiger, Rolf; Becker, Reinhard; and Gaul, Holger, to Hoechst Aktiengesellschaft. Bicyclic aminoacids as intermediates. 5,008,400, Cl. 548-452.000.

Usami, Ryuji, to Casio Computer Co., Ltd. Polyphonic electronic musical instrument. 5,007,323, Cl. 84-607.000.

USI Lighting, Inc. *See—*
Counts, Richard C., 5,008,599, Cl. 315-247.000.

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Usui, Masayoshi; and Kanesaka, Hiroshi, 5,007,742, Cl. 374-136.000.
Washizu, Katsushi; and Ohtaka, Mitsumasa, 5,007,267, Cl. 72-59.000.

Usui, Masayoshi; and Kanesaka, Hiroshi, to Usui Kokusai Sangyo Kaisha Limited. Temperature-sensing member. 5,007,742, Cl. 374-136.000.

Utlaut, Mark W.: *See—*
Stevens, Eugene H.; and Utlaut, Mark W., 5,008,602, Cl. 318-561.000.

Utsunomiya, Masayuki; Fujita, Shigeo; Nozawa, Toshiyuki; and Kamiyama, Morihiro, to Asahi Chemical Co., Ltd. Cyanine compounds. 5,008,401, Cl. 548-455.000.

Uuskallio, Arvo F., to Briggs & Stratton Corporation. Staple gun support assembly. 5,007,573, Cl. 227-139.000.

Uzawa, Shunichi *See—*
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Uzelmeier, Christopher W. *See—*
Powell, Joseph B.; and Uzelmeier, Christopher W., 5,008,470, Cl. 568-727.000.

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Chevalier, Jean-Claude, and Raymond, Guy, 5,007,131, Cl. 15-250.190.

Vallender, Leonard J. *See—*
Hannon, Charles; and Vallender, Leonard J., 5,007,554, Cl. 220-269.000.

Valmet Paper Machinery, Inc. *See—*
Gustavsson, Tord G., Lyxell, Frans O. S., and Silja, Karl T. I., 5,007,986, Cl. 162-281.000.

van Bergen, Theodorus F. *See—*
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Van De Grift, Robert E. J.; Van Der Veen, Martien; and Linssen, Andre J., to U.S. Philips Corp. Integrated semiconductor circuit with decoupled D.C. wiring. 5,008,731, Cl. 357-71.000.

van der Have, Leonard A., to Kopin Corporation. MOS thin film transistor. 5,008,723, Cl. 357-23.700.

Vanderhider, J. Alan *See—*
Meyer, Louis W., Vanderhider, J. Alan; and Carswell, Robert, 5,008,033, Cl. 252-182.130.

Vanderpool, James L. *See—*
O'Dea, Kevin J., Bergman, Norman J., Digiulio, Peter C., Dolan, Donald T.; and Vanderpool, James L., 5,007,371, Cl. 118-680.000.

van der Schoot, Jelle, to Staalkat B. V. Method and apparatus for unloading stacks of trays. 5,007,785, Cl. 414-331.000.

Van Der Star, Max, to U.S. Philips Corporation. Scan test apparatus for asynchronous circuitry. 5,008,618, Cl. 324-158.00R.

Van Der Veen, Martien. *See—*
Van De Grift, Robert E. J., Van Der Veen, Martien, and Linssen, Andre J., 5,008,731, Cl. 357-71.000.

van der Velden, Johnny; van Bergen, Theodorus F.; Simons, August L. H., Colditz, Johannes K. E., Ligtenberg, Martinus A. C.; and Dreesen, Franciscus M., to U.S. Philips Corp. X-ray image intensifier tube comprising a selective filter. 5,008,591, Cl. 313-524.000.

van der Werff, Adriaan, to Hadewe B.V. Method of, and a device for, controlling the rotation of an element about an axis of means of a wrap spring. 5,007,507, Cl. 188-77.00W.

Van Druff, Albert, Jr., to Cornerstone Products Inc. In store keep-a-cooler. 5,007,249, Cl. 62-255.000.

Van Egeraat, Walterus A. L. A., to U.S. Philips Corporation. X-ray analysis apparatus comprising a saggitally curved analysis crystal. 5,008,910, Cl. 378-84.000.

Vanek, Denis W., and Holland, G. Neil, to Picker International, Inc. Patient and coil support structure for magnetic resonance imagers. 5,007,425, Cl. 128-653.00A.

van Engelenburg, Hendrik *See—*
Dolfsma, Hendrik; and van Engelenburg, Hendrik, 5,008,623, Cl. 324-262.000.

Van Gorkom, Gerardus G. P., to U.S. Philips Corporation. Energy analyzer and spectrometer for low-energy electrons. 5,008,535, Cl. 250-305.000.

Van Gossum, Lucien J. *See—*
Van Thillo, Etienne A.; and Van Gossum, Lucien J., 5,008,178, Cl. 430-527.000.

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Overton, William C., Jr., van Hulsteyn, David B., and Flynn, Edward R., 5,008,622, Cl. 324-248.000.

Vanlerberghe, Guy, Zysman, Alexandre, and Sebag, Henri, to L'Oreal. Hemiacetal compounds and the applications thereof. 5,008,406, Cl. 549-378.000.

Van Nostrand, Lance, to Eastman Kodak Company. Digital image interpolator with multiple interpolation algorithms. 5,008,752, Cl. 358-160.000.

Van Thillo, Etienne A.; and Van Gossum, Lucien J., to Agfa-Gevaert, N.V. Sheet or web carrying an antistatic layer. 5,008,178, Cl. 430-527.000.

VanWert, Bernard. *See—*
Dennis, William E.; and VanWert, Bernard, 5,008,301, Cl. 522-13.000.

Vanua Limited *See—*
Keane, Brian, 5,007,798, Cl. 415-88.000.

Vargas, Anthony: *See—*
Zecchino, Julius R., Krishnaswamy, Natrajan; Clement, Pamila A., and Vargas, Anthony, 5,008,100, Cl. 424-59.000.

Varo, Inc. *See—*
Hanson, Charles M., and MacDonald, Virginia N., 5,008,657, Cl. 340-766.000.

Vartanian, Abkar *See—*
Rossey, Guy; Ugolini, Antonio; Chekroun, Isaac; Vartanian, Abkar; and Wick, Alexander, 5,008,434, Cl. 560-17.000.

Vasta, Joseph A., deceased; and by Vasta, Rita, executrix. Hydrophobic polymer products. 5,008,322, Cl. 524-398.000.

Vasta, Rita, executrix: *See—*
Vasta, Joseph A., deceased, and Vasta, Rita, executrix, 5,008,322, Cl. 524-398.000.

Vectorpharma International S.p.A. *See—*
Lovreech, Mara L., 5,008,114, Cl. 424-484.000.

Veitscher Magnesitwerke-Actien-Gesellschaft *See—*
Handler, Rudolf, 5,007,366, Cl. 116-208.000.

Ventritex, Inc. *See—*
Pless, Benjamin; Sweeney, Michael, Winkle, Roger; and Nathan, Anthony, 5,007,422, Cl. 28-419.0PG.

Veraart, Pierre. *See—*
Whitten, Brian T., Veraart, Pierre; Kwasniewski, Andrew, and Vollenwyder, Kurt, 5,007,496, Cl. 180-131.000.

Verhulst, Antonius G. H., to U.S. Philips Corporation. Display and pick-up device for stereoscopic picture display. 5,007,715, Cl. 350-334.000.

Vessa, James R. FIFO clock. 5,008,870, Cl. 368-242.000.

Vestar, Inc. *See—*
Tin, George W., 5,008,109, Cl. 424-422.000.

Vianova Kunstharz, A.G. *See—*
Paar, Willibald, 5,008,351, Cl. 525-528.000.

Vibra Screw, Incoporated *See—*
Wahl, Richard C., and Winters, Ralph J., 5,007,561, Cl. 222-55.000.

Victor Company of Japan, Ltd. *See—*
Kondo, Tetsuya, and Kawai, Noboru, 5,008,176, Cl. 430-272.000.
Toyomaki, Kazuya, 5,008,675, Cl. 341-152.000.
Yoshida, Shiro; Yamada, Yasuhiro, and Ueno, Shoji, 5,008,764, Cl. 360-77.150.

Vincent, Andre, and Munting, Evrard, to S.A. Manufacture Belge de Gembloux. Joint member for a hip prosthesis. 5,007,935, Cl. 623-22.000.

Viscodrive GmbH *See—*
Wiese, Helmut; and Schonenbrecher, Paul-Erich, 5,007,498, Cl. 280-248.000.

Visconti, Peter. *See—*
Neuwirth, Helmuth, Meyerhoefer, Carl, Carney, William V., and Visconti, Peter, 5,008,772, Cl. 361-119.000.

Viswanathan, Ravi. *See—*
DePrince, Randolph B., and Viswanathan, Ravi, 5,008,112, Cl. 424-468.000.

Vital, Joao P. C. C.: *See—*
Da Franca, Jose D. A. E.; Vital, Joao P. C. C., and Leme, Carlos M. D. A. D. A., 5,008,674, Cl. 341-150.000.

Vital Kogyo Kabushiki Kaisha *See—*
Nishimura, Yosaku; and Smith, Glenn S., 5,007,617, Cl. 254-372.000.

Vlasbloem, Hugo, to B.V. Optische Industrie "De Oude Delft" Methods for forming a radiograph using slit radiography. 5,008,915, Cl. 378-108.000.

Volkswagen A.G.: *See—*
Muller, Eckart, 5,007,237, Cl. 60-285.000.

Vollenwyder, Kurt: *See—*
Whitten, Brian T., Veraart, Pierre; Kwasniewski, Andrew; and Vollenwyder, Kurt, 5,007,496, Cl. 180-131.000.

Vollmer, Jim R. *See—*
Weiss, Lawrence D., Caruthers, Douglas W.; Inatomi, Charles T., Kawan, Joseph C., Lee, Shan, Marks, Harvey, Meguerdijan, Sarkis A., Parekh, Dilip J., Samulon, Alfred S.; Takata, Melvin M., Tucci, Morris L., and Vollmer, Jim R., 5,008,927, Cl. 379-98.000.

von Erichsen, Volker, to Stober & Morlock Warmekraft Gesellschaft mbH. Closing arrangement for ducts having large cross-sectional areas, particularly flue gas ducts. 5,007,456, Cl. 137-601.000.

Von Harten, Georg. *See—*
Eizenhofer, Alfons; and Von Harten, Georg, 5,008,883, Cl. 370-95.100.

von Hein, Eduard, to Maschinenfabrik Wifag. Device for producing an additional fold in folding devices of rotary printing presses. 5,007,891, Cl. 493-444.000.

Voorde, Paul V. *See—*
Chiang, Shang-yi; Huang, Wen-Ling M., Drowley, Clifford I., and Voorde, Paul V., 5,008,210, Cl. 437-33.000.

Vora, Bipin V.; and Scott, Norman H., to UOP. Process for direct etherification of a dehydrogenated effluent. 5,008,467, Cl. 568-697.000.

Voss, Harlan F., to Tridan Tool & Machine, Inc. Progressive die for drawless fin. 5,007,275, Cl. 72-335.000.

W. R. Grace & Co.-Conn. *See—*
Sherwin, Martin B., and Su, Jow-Lih, 5,008,428, Cl. 558-346.000.

Wachter, Allan: *See—*
Lezdey, John; and Wachter, Allan, 5,008,242, Cl. 514-8.000.

Wacker-Chemie GmbH. *See—*
Meier, Josef; Deinhammer, Wolfgang; and Krageloh, Konrad, 5,008,392, Cl. 546-250.000.
Schuster, Johann; Piehler, Martin; Muller, Horst; and Schneider, Otto, 5,008,229, Cl. 502-167.000.
Wolfer, Dietrich; and Marsch, Wilhelm, 5,008,317, Cl. 524-262.000.

Wada, Kenneth R. *See—*
Blau, David A., Meadows, John, Sherlock, Thomas M.; Stengel, Fred; Studholme, Robert M., Wada, Kenneth R., and Kepner, Christopher J., 5,008,081, Cl. 422-64.000.

Wada, Takuya *See—*
Ohki, Hiroshi, Kobayashi, Shoei; and Wada, Takuya, 5,008,521, Cl. 235-454.000.

Wadhwa, Lachhman; and Steurer, Andrew M., to Hoechst Celanese Corporation. Internal lubricant for glass reinforced polyarylene sulfide. 5,008,316, Cl. 524-230.000.

Wagenblast, Gerhard: *See—*
Spang, Peter; Neumann, Peter; Wagenblast, Gerhard; and Trauth, Hubert, 5,008,397, Cl. 548-331.000

Wagener, Hans. Holders with busbars for a busbar system. 5,008,483, Cl. 174-68.200.

Wagener, Hans. Assembly kit for a busbar system. 5,008,484, Cl. 174-68.200.

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Wagenseil, Ludwig, to Hydromatik GmbH. Piston for piston machines. 5,007,332, Cl. 92-181.00R.

Wagner, Richard S.: *See—*
Case, Christopher J., Cheung, Kin P., Liu, Ruichen; Schutz, Ronald J., and Wagner, Richard S., 5,008,217, Cl. 437-195.000

Wahl, Richard C., and Winters, Ralph J., to Vibra Screw, Incoporated. Non-flooding set rate feeder. 5,007,561, Cl. 222-55.000.

Wahlco, Inc.: *See—*
Krigmont, Henry V.; and Coe, Everett L., Jr., 5,008,628, Cl. 324-693.000.

Wairaevens, Rene ; Franklin, James, and Yernaux, Jean-Marie, to Solvay & Cie. Process for the manufacture of 1-chloro-1,1-difluoroethane. 5,008,474, Cl. 570-168.000

Wakabayashi, Shigeru; Shimokawa, Masao; and Takahashi, Masaki, to Shikoku Kakoki Co., Ltd. Apparatus for feeding container blanks to container bottom forming mandrel. 5,007,889, Cl. 493-316.000.

Wakabayashi, Shuuichi *See—*
Tomiyama, Tsuyoshi; Tomiyama, Akira; Shirai, Tadashi; Wakabayashi, Shuuichi; Kawai, Tomoyuki, Ueyama, Naoto, and Sonegawa, Motoharu, 5,008,282, Cl. 514-393.000.

Wakaki, Hideaki: *See—*
Okumoto, Takaharu; Nishimoto, Tatsuo, and Wakaki, Hideaki, 5,007,643, Cl. 273-167.00R.

Wakasugi, Takashi *See—*
Ishizuka, Makoto; and Wakasugi, Takashi, 5,008,462, Cl. 568-466.000

Wakatsuki, Yoshio; Okuyama, Toshiharu; Takeuchi, Hajime; Shimizu, Misao; and Shimizu, Giichiro, to Man Design Co. Ltd. Measuring device having transmitter. 5,008,665, Cl. 340-870.260.

Wakeling, Robert, to Ford Motor Company. Throttle valve for an internal combustion engine. 5,007,395, Cl. 123-337.000

Walker, Stanley L. Bevel splined articulated joint. 5,007,880, Cl. 464-159.000.

Wall, Joseph W. *See—*
Sansone, Ronald P.; Schumacher, Karl H.; Keating, Raymond, Wall, Joseph W.; and Joshi, Uday W., 5,008,827, Cl. 364-464.020.

Wallach, Clifford H., Suffern, Robert C., and Walsh, Dale M., to U.S. Robotics, Inc. Asymmetrical duplex error-controlled modem. 5,008,901, Cl. 375-8.000

Waller, George W. Anchoring structure for underground pipes. 5,007,768, Cl. 405-154.000

Wallis, Bernard J. Web handling apparatus for metal ribbon stock. 5,007,270, Cl. 72-187.000.

Wallis, Bernard J. Press with die cushion gas monitor. 5,007,817, Cl. 425-136.000.

Walsh, Dale M.: *See—*
Wallach, Clifford H., Suffern, Robert C., and Walsh, Dale M., 5,008,901, Cl. 375-8.000.

Walters, Dennis C.: *See—*
Look, David C., Sewell, James S., Mier, Millard G.; Sizelove, John R., Walters, Dennis C.; and Dudley, Scott C., 5,008,542, Cl. 250-341.000.

Walters, William T., and Thompson, Carroll R., to Scan Systems, Inc. Ultrasonic inspection apparatus with centering means for tubular members. 5,007,291, Cl. 73-640.000.

Waltz, Douglas G: *See—*
Edmond, John A.; Waltz, Douglas G., Mitchell, Muni M., Sedigh, Mohammad; and Hamerski, Roman, 5,008,735, Cl. 357-74.000.

Wandrey, Christian *See—*
Neidermeyer, Uwe; Kragl, Udo; Kula, Maria R.; Wandrey, Christian, Makrylaleas, Kyriakos, and Drauz, Karlheinz, 5,008,192, Cl. 435-128.000.

Wang, Dou-Mei; Sturdivant, Linda D., Biemer, Thomas A., and Mink, Ronald, to Warner-Lambert Company. Hybridoma cell line and monoclonal antibodies to *Treponema denticola* ATCC 33520. 5,008,199, Cl. 435-240.270.

Wang, Howard. Lighting equipment for a key ring. 5,008,784, Cl. 362-116.000.

Wang, Leao. Structure of climbing exerciser with a counter-weight freewheel mechanism. 5,007,631, Cl. 272-70.000

Wang, Patrick S., to Johnson Electric S.A. Assembled commutator with heat-resisting ring. 5,008,577, Cl. 310-233.000

Wang, San-pin. *See—*
Grayston, J. Thomas; Kuo, Cho-chou, and Wang, San-pin, 5,008,186, Cl. 435-7.360.

Wanless, Ronald H. *See—*
Gunn, Charles L., Davis, Harold, Spahni, Milton D., Jr., and Wanless, Ronald H., 5,007,541, Cl. 206-611.000.

Ward, Richard M. *See—*
Ricles, Thomas D.; and Ward, Richard M., 5,007,344, Cl. 102-31.200.

Warner-Lambert Company: *See—*
Motta, Vincent C., 5,007,169, Cl. 30-45.000
Wang, Dou-Mei; Sturdivant, Linda D., Biemer, Thomas A.; and Mink, Ronald, 5,008,199, Cl. 435-240.270.

Warner, William B., to Farnam Companies, Inc. Attractant composition for synanthropic flies. 5,008,107, Cl. 424-84.000.

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Siga, Masao; Fukui, Yutaka, Kuriyama, Mitsuo; Kurosawa, Soichi, Iijima, Katsumi, Iizuka, Nobuyuki, Maeno, Yosimi, Takahashi, Shintaro; Watanabe, Yasuo; and Hiraga, Ryo, 5,008,072, Cl. 420-69.000.

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Kuwabara, Isao, Watanabe, Yoshio; Yoshimura, Susumu, and Maruyama, Hidekazu, 5,007,682, Cl. 297-452.000.

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Katsura, Joji, Takagi, Yoshiyuki; and Watari, Shigeru, 5,008,727, Cl. 357-40.000.

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Rose, Howard, and McAffer, Ian G. C., 5,007,546, Cl. 215-32.000

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Minton, John P., Webb, Thomas E.; and Abou-Issa, Hussein M., 5,008,291, Cl. 514-578.000.

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Weingandt, Michael A.: *See—*
Mueller, Martin J., Mueller, Martin; and Weingandt, Michael A., 5,007,466, Cl. 141-1.000

Weinstein, Allan, and Weinstein, Robert. Inhaler device. 5,007,419, Cl. 128-200.230

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Heckel, Armin, Nickl, Josef; Muller, Erich; Narr, Berthold; Weisenberger, Johannes, Eisert, Wolfgang; and Muller, Thomas, 5,008,290, Cl. 514-544.000

Weismantel, Donald. Single piece disposable cat litter box. 5,007,530, Cl. 206-45.210

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Fiebig, Carolyn A. B.; Fuqua, Mike R.; Gursahaney, Suresh K.; Margosian, Gregg M., and Weiss, Mark H., 5,008,805, Cl. 364-184.000

Weisse, Joachim *See—*
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Weldon, Mark P. *See—*
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Wellenkotter, Carl A.; and Counts, David E., to Robertshaw Controls Company. Throttle valve adjustment construction, throttle valve adjustment unit therefor and methods of making the same. 5,007,396, Cl. 123-339.000.

Wellner, Daniel, to Cornell Research Foundation, Inc. Deblocking amino terminal N-acetyl serine and N-acetyl threonine residues in peptides and proteins to allow sequencing. 5,008,372, Cl. 530-345.000.

Wells, William K., Jr. *See—*
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Schuetz, Franz, Brand, Siegbert, Wenderoth, Bernd, Sauter, Hubert, Ammermann, Eberhard; and Lorenz, Cisela, 5,008,438, Cl. 560-55.000

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Wennberg, Stig. *See—*
Albrektsson, Bjorn; and Wennberg, Stig, 5,007,912, Cl. 606-87.000.

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Goade, James C., and Werner, Claude H., 5,007,805, Cl. 417-216.000.

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Schwab, Wilhelm, and Muller, Gerhard, 5,007,820, Cl. 425-333.000.

Wernicke & Co. GmbH *See—*
Gottschald, Lutz, 5,007,977, Cl. 156-353.000.

Wessale, Jerry L. *See—*
Badylak, Stephen F.; Geddes, Leslie A.; and Wessale, Jerry L., 5,007,927, Cl. 623-3.000.

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Silva, Fidel H.; and Westenskow, Dwayne R., 5,007,919, Cl. 606-194.000

Westinghouse Electric Corp. *See—*
Archer, David H.; and Ahmed, Mohammed M., 5,007,988, Cl. 204-153.180
Mrenna, Stephen A., 5,008,645, Cl. 337-70.000.

Westlake, David J. *See—*
Ballantine, James A.; Gregory, Reginald; Purnell, John H.; Thomas, John M., and Westlake, David J., 5,008,465, Cl. 568-697.000.

Westphalen, Karl-Otto: *See—*
Ditrich, Klaus; Hamprecht, Gerhard; Wuerzer, Bruno; Meyer, Norbert; Westphalen, Karl-Otto; and Laatsch, Hartmut, 5,007,954, Cl. 71-90.000.

Westvaco Corporation *See—*
Dimitri, Mitchell S., 5,008,378, Cl. 530-501.000.
Schilling, Peter; and Schreuders, Hans G., 5,008,382, Cl. 536-11.000
Woodward, Fred E., and Hudson, Alice P., 5,008,039, Cl. 252-392.000

Wetzka, Gerhard *See—*
Schulte, Burkart, Sterner, Hakan; Wetzka, Gerhard; and Hardt, Norbert, 5,007,213, Cl. 52-29.000

Wey, Remo C. Ballpoint pen with condom. 5,007,756, Cl. 401-195.000.

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Fischer, Rolf, Frank, Juergen; Merger, Franz; and Weyer, Hans-Juergen, 5,008,408, Cl. 549-429.000

Weyerhaeuser Company: *See—*
Hunter, Frank R., 5,008,359, Cl. 527-103.000.

Wheeler, Robert L. Head gear having protective lens. 5,007,109, Cl. 2-10.000.

Whirlpool Corporation *See—*
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Kruck, Richard W.; Cur, Omer N., Leclear, Douglas D.; Kuehl, Steven J.; and Burin, Ralph R., 5,007,246, Cl. 62-131.000.

White, Richard E.: *See—*
Freeburg, Thomas A.; and White, Richard E., 5,008,938, Cl. 380-50.000.

Whitekettle, Wilson K.: *See—*
Conlan, John T.; and Whitekettle, Wilson K., 5,008,023, Cl. 210-764.000.

Whitten, Brian T.; Veraart, Pierre; Kwasniewski, Andrew, and Vollenwyder, Kurt, to Inco Limited. Automated underground haulage truck. 5,007,496, Cl. 180-131.000.

Wick, Alexander: *See—*
Rossey, Guy; Ugolini, Antonio; Chekroun, Isaac, Vartanian, Abkar; and Wick, Alexander, 5,008,434, Cl. 560-17.000.

Wieck, Henry J.: *See—*
Lauks, Imants R.; Wieck, Henry J., and Bandru, Gregory M., 5,008,616, Cl. 324-158.00F.

Wiedeck, Hans; and Chiesura, Michel. Vehicle-mounted load hoisting device. 5,007,792, Cl. 414-500.000.

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Schnorrenberg, Gerd; Roos, Otto; Losel, Walter; Wiedemann, Ingrid; Gaida, Wolfram, Hoefke, Wolfgang; Arndts, Dietrich; and Streller, Ilse, 5,008,273, Cl. 514-301.000.

Wiedrich, Donald E.: *See—*
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Wiener, Robert J.: *See—*
Langensiepen, Ralph A.; Aghajanian, Michael K.; and Wiener, Robert J., 5,007,474, Cl. 164-97.000

Wiese, Helmut; and Schonenbrecher, Paul-Erich, to Viscodrive GmbH. Driving assembly. 5,007,498, Cl. 280-248.000.

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Beck, Horst-Philipp; Emig, Gerhard; Wiesgickl, Gunther; Burg, Karlheinz; and Muck, Karl-Friedrich, 5,008,463, Cl. 568-487.000.

Wilder, Paul R.; and Kesterman, James E., to Dover Corporation. Fluid dispensing nozzle construction having a diaphragm subassembly therein and methods of making the same. 5,007,468, Cl. 141-209.000.

Wiley, George A.: *See—*
Critchlow, David N.; Yehushua, Moshe; Avis, Graham M.; Heimbigner, Wade L.; Johnson, Karle J.; and Wiley, George A., 5,008,900, Cl. 375-8.000.

Wilharm, Peter; Buhr, Gerhard; and Fuchs, Juergen, to Hoechst Aktiengesellschaft. Binders soluble in aqueous alkali and containing silanyl groups in the side chain, process for preparing same and also photosensitive mixture containing these compounds. 5,008,362, Cl. 528-28.000.

Wilhelmi, Albert A.: *See—*
Marshall, James W.; Gotchy, David; Uffelman, Bradley L.; Leimbach, Wendell B.; and Wilhelmi, Albert A., 5,008,572, Cl. 310-45.000.

Wilk, Shalom, to Israel Aircraft Industries Ltd. Optical system employing a transmitting solid corner cube. 5,008,527, Cl. 250-216.000

Wilkinson, William T. Combination sit-up, rowing, arm, leg and foot exercise device. 5,007,632, Cl. 272-72.000.

Willand, Craig S.: *See—*
Robello, Douglas R.; Ulman, Abraham, Urankar, Edward J.; and Willand, Craig S., 5,008,043, Cl. 252-582.000.

Willcock, William T.: *See—*
Gawrys, George W., Oberman, Richard A.; and Willcock, William T., 5,008,930, Cl. 379-210.000.

Willey, Jefferson M.; Alter, James J.; and Letellier, Jules P., to United States of America, Navy. Programmable beam transform and beam steering control system for a phased array radar antenna. 5,008,680, Cl. 342-372.000.

Wm. T. Burnett & Co., Inc.: *See—*
Tucker, Richard B. C.; Davis, Jackie L.; and Lewis, Fielding H., Jr., 5,007,652, Cl. 273-326.000.

Williams, Dennis A.; Horton, Roger L.; Newlove, John C.; and Chumley, Robert E., to Exxon Chemical Patents, Inc. Method of treating subterranean formations using a non-damaging fracturing fluid. 5,007,481, Cl. 166-300.000.

Williams, Robert M. Heat reclamation apparatus. 5,007,825, Cl. 432-99.000.

Willoughby, Jon S., to Burle Technologies, Inc. Clock synchronized digital TV motion detector. 5,008,745, Cl. 358-105.000

Wills, Kendall S.; and Rodriguez, Paul A., to Texas Instruments Incorporated. Laser programming of semiconductor devices using diode make-link structure. 5,008,729, Cl. 357-51.000.

Wilms, Karl-Heinz. Apparatus for measuring the refraction characteristics of ophthamological lenses. 5,007,734, Cl. 356-124.000

Wilson, Bruce B.; and Grunzinger, Raymond E., to Minnesota Mining and Manufacturing Company. Embedded lens retroreflective sheeting with flexible, dimensionally stable coating. 5,008,142, Cl. 428-203.000.

Wilson, Keith E. High-accuracy wavelength stabilization of angled-stripe super luminescent laser diode sources. 5,008,889, Cl. 372-32.000.

Wilson, Malcolm E.: *See—*
Trevett, Neil F.; and Wilson, Malcolm E., 5,008,754, Cl. 358-183.000.

Wilson, Mildred N., to Nabisco Brands, Inc. Dry mix for preparation of in-situ sauce for foodstuffs. 5,008,124, Cl. 426-589.000.

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Wind, Jan. *See*—
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Windsor Communications, Inc. *See*—
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Winkel, Jens: *See*—
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Winkelmann, Manfred: *See*—
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Winkle, Roger: *See*—
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Winkler, Hans-Henning; and Rutschle, Eugen, to Chiron-Werke GmbH & Co. KG. Machine tool. 5,007,157, Cl. 29-568.000.

Winkler, Winfried: *See*—
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Wirth, Peter: *See*—
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Wirz, Armin: *See*—
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Wischermann, Gerhard, to BTS Broadcast Television Systems GmbH. Apparatus system for deriving synchronizing information from a digtial video signal. 5,008,751, Cl. 358-148.000.

Wise, Ronald D. Removable and adjustable fittable vehicle bed liner assembly. 5,007,670, Cl. 296-39.100.

Wiseman, Timothy R., Sr.: *See*—
Lewis, Milton A., Jr., Mason, Jeffrey S.; Swinford, Carson B.; and Wiseman, Timothy R., Sr., 5,007,112, Cl. 2-79.000.

Wisniewski, Karen L.: *See*—
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Witek, Rich: *See*—
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Withers, Robert W.; and Johnson, Robert H., to Motorola, Inc. Method of recognizing selected objects. 5,008,836, Cl. 364-516.000

Witt, Hans-Hinrich, to B. Braun Melsungen AG. Catheter set for plexus anesthesia. 5,007,902, Cl. 604-117.000.

Wnuk, Andrew J.: *See*—
Benecke, Arnold G.; Kinne, Daniel J.; and Wnuk, Andrew J., 5,008,110, Cl. 424-448.000.

Wohler, Ernst: *See*—
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Wojcik, Ronald T.: *See*—
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Wolf, Fred R., to Zeon Chemical USA, Inc. No-post-cure method of curing polyacrylate polymers. 5,008,345, Cl. 525-340.000.

Wolfe, Robert E.; and Goyette, Ronald A., to Raytheon Company. Additive fluid viewing. 5,007,254, Cl. 68-17.00R.

Wolfer, Dietrich; and Marsch, Wilhelm, to Wacker-Chemie GmbH. Compositions which can be crosslinked to form flame retardant and/or tracking resistant and arc resistant organopolysiloxane elastomers. 5,008,317, Cl. 524-262.000.

Woloszyk, Leonard T., to Electro-Consultants, Inc. Water leak detection apparatus for use in suspended ceilings. 5,008,652, Cl. 340-605.000.

Wolpers, Jurgen: *See*—
Hellermann, Walter; Herrmann, Christoph; Fuchs, Hans-Bernd; Nordsiek, Karl-Heinz; and Wolpers, Jurgen, 5,008,343, Cl. 525-316.000.

Won, Chan H.: *See*—
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Wong, Stephen S.: *See*—
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Wood, Robert S.; and Thomas, Mark A., to Flight Dynamics, Inc. Compact arrangement for head-up display components. 5,007,711, Cl. 350-174.000.

Woods, John H.: *See*—
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Woodward, Fred E.; and Hudson, Alice P., to Westvaco Corporation. Low foaming rust inhibiting composition. 5,008,039, Cl. 252-392.000.

Woolson, Steven T., to Cemax, Inc. Surgical method for hip joint replacement. 5,007,936, Cl. 623-23.000.

Work, Dale E.: *See*—
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World Auto Plate Ltd.: *See*—
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WPC Machinery Corporation. *See*—
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Wright, Duane E. Electrical receptacle with power indicator light 5,007,857, Cl. 439-490.000.

Wright, Kenneth W. *See*—
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Wrisley, David B., Jr. *See*—
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Wuerzer, Bruno. *See*—
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Wulff, Dietrich; Jager, Hans-Ludwig; and Weisse, Joachim, to Daimler-Benz. Seal arrangement for connecting seals. 5,007,761, Cl 403-287.000.

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Wutzler, Peter; Mucke, Horst, and Santasalo, Lauri, to Oy Santasalo-Sohlberg AB. Apparatus and method for sterilizing or disinfecting objects. 5,008,079, Cl. 422-28.000.

Wydeven, Theodore J., Jr.: *See*—
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Wynn, Nicholas P.: *See*—
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Ewing, Joan R.; and Wiedrich, Donald E., 5,008,707, Cl. 355-220.000.
Kremers, Henry T.; and Rabb, Khalid M., 5,007,625, Cl. 270-53.000.
Yu, Robert C. U., 5,008,167, Cl. 430-56.000.
Yu, Robert C. U.; and Badesha, Santokh S., 5,008,169, Cl. 430-59.000.

Xuan, Jialuo. Module-type multi-function electrical power adapter for automobiles and the like. 5,007,863, Cl. 439-639.000.

Yabuki, Hiroyuki: *See*—
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Yada, Toshio: *See*—
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Yagi, Shigeru: *See*—
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Yaginuma, Nakatsugu, and Arai, Takaki, to Fuji Photo Film Co., Ltd. Integral multi-layer analysis element. 5,008,078, Cl. 422-56.000.

Yajima Kogyo, Inc.: *See*—
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Yamada, Hideaki; Tani, Yoshiki; Shimizu, Sakayu; and Shiozaki, Shozo, to Nippon Zeon Co., Ltd. Process for producing S-adenosyl-L-homocysteine. 5,008,188, Cl. 435-88.000.

Yamada, Kojiro: *See*—
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Yamada, Naoki, to Kabushiki Kaisha Toshiba. Method and apparatus for correcting extension rates of images. 5,008,947, Cl. 382-6.000.

Yamada, Osamu: *See*—
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Yamada, Sadami: *See*—
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31 Research Exploitation Limited *See*—
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LIST OF REISSUE PATENTEES

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NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice)

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Edmisson, Delmar D., 316,266, Cl. D15-28.000
Adkins, Pauline, Brashear, Joe M., Gorley, John K., Frazier, Ester R., and Combs, Sondra L. Grandparent doll head. 316,285, 4-16-91, Cl. D21-190.000.
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Bathon, Melvin W. Pallet. 316,319, 4-16-91, Cl. D34-38.000.
Belanger, Richard A., to Stanley Works, The. Thumb feed glue gun. 316,215, 4-16-91, Cl. D8-30.000
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Seber, Brett P., to McGuire-Nicholas Company, Inc Leather tool caddy 316,186, 4-16-91, Cl. D3-105.000
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Shemitz, Sylvan R., to Sylvan R Shemitz Associates, Inc Wall mounted indirect lighting fixture 316,306, 4-16-91, Cl D26-85.000
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Skwirz, Marylee A Pet collar or similar article 316,314, 4-16-91, Cl D30-152.000
Smith, Benny E. Fishing lure 316,289, 4-16-91, Cl D22-127.000
Snow, James A Animated horse figure for use with child's tricycle 316,237, 4-16-91, Cl D12-117.000
Sogabe, Takashi, to Sony Corporation Tape player 316,263, 4-16-91, Cl D14-165.000
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Renk, Thomas E., Jr., 316,260, Cl D14-126.000
Tremonti, Michael J., to Hardware Designs Inc Door hardware 316,217, 4-16-91, Cl D8-319.000
Tremonti, Michael J., to Hardware Designs Inc Door hardware 316,218, 4-16-91, Cl D8-319.000
Tsuda, Toru, and Masuda, Hidenori, to Bridgestone Corporation Automobile tire 316,239, 4-16-91, Cl D12-145.000
Tsuda, Toru, and Ichiki, Yasufumi, to Bridgestone Corporation Automobile tire 316,240, 4-16-91, Cl D12-146.000.
Tsuji, Shintaro, to Sanrio Company, Ltd Combined desk set and holder therefor 316,273, 4-16-91, Cl D19-75.000
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Wilson, Robert L., and Stafford, John R., to Chromcraft Furniture Corp Chair 316,191, 4-16-91, Cl D6-366.000
Winston, Emanuel A Construction toy 316,282, 4-16-91, Cl D21-108.000
Witehger, Eugene S Golf club carrier 316,182, 4-16-91, Cl D3-37.000
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Yonehara, Fuyuki, to Fuji Photo Film Co., Ltd. Audio cassette 316,256, 4-16-91, Cl D14-121.000
Yonehara, Fuyuki, to Fuji Photo Film Co., Ltd Audio cassette 316,257, 4-16-91, Cl. D14-121.000.
Yonehara, Fuyuki, to Fuji Photo Film Co., Ltd Audio cassette 316,258, 4-16-91, Cl D14-121.000.
Yonehara, Fuyuki, to Fuji Photo Film Co., Ltd Audio cassette 316,259, 4-16-91, Cl D14-121.000
Yuen, John S., to John Manufacturing Limited Battery operated vacuum cleaner 316,316, 4-16-91, Cl. D32-18.000.
Zaruba, John V., Broadbent, Peter A.; and Morrison, Howard J., to Marvin Glass & Associates Combined toy baby care cart and tools therefor 316,283, 4-16-91, Cl. D21-121.000.
Zinka Inc *See*—
Rodgers, Michael C., 316,187, Cl. D3-106.000.
493207 Ontario Ltd *See*—
Weiner, Bruce A., 316,276, Cl. D20-3.000.

LIST OF PLANT PATENTEES

Bennett, Cecilia D., deceased (by O'Brien, Susan, executrix), to O'Brien, Susan, special administrator Miniature rose plant named 'Luis Desamero' 7,496, 4-16-91, Cl 8.000
Bonds, Irwin H., to Cruz, Ruben A Almond tree, Cruz. 7,497, 4-16-91, Cl 30.000
Brown, B Frank, to Hartman Plant Laboratories, Inc. Aglaonema plant named Superba. 7,501, 4-16-91, Cl 88.000.
Cruz, Ruben A *See*—
Bonds, Irwin H., 7,497, Cl 30.000
Florfis AG *See*—
Schumann, Ingeborg, 7,499, Cl 68.000
Hartman Plant Laboratories, Inc. *See*—
Brown, B. Frank, 7,501, Cl 88.000
Imazio, Bruno L. Heather plant named Erica 'Augustina' 7,498, 4-16-91, Cl. 54.000.
O'Brien, Susan, executrix: *See*—
Bennett, Cecilia D., deceased, 7,496, Cl. 8.000.
O'Brien, Susan, special administrator *See*—
Bennett, Cecilia D., deceased, 7,496, Cl. 8.000.
Schumann, Ingeborg, to Florfis AG. Geranium plant named Fispol. 7,499, 4-16-91, Cl. 68.000.
VandenBerg, Cornelis P., to Yoder Brothers, Inc Chrysanthemum plant named Desiree. 7,500, 4-16-91, Cl 74.000
Yoder Brothers, Inc *See*—
VandenBerg, Cornelis P., 7,500, Cl. 74.000.

CLASSIFICATION OF PATENTS

ISSUED APRIL 16, 1991

NOTE —First number, class; second number, subclass; third number, patent number

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	5,007,151
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434	5,007,155
568	5,007,157
596	5,007,156
603	5,007,158
622	5,007,159
753	5,007,160
769	5,007,161
839	5,007,162
840	5,007,163
854	5,007,164
888.011	5,007,166
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232	5,007,170
294	5,007,171
377	5,007,172
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377	5,007,176
706	5,007,177
767	5,007,178

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32	5,007,180
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90	5,007,182
92	5,007,183

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141	5,007,200
348	5,007,201
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281 R	5,007,208
283 R	5,007,209
295	5,007,943
429	5,007,210

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29	5,007,213
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90	5,007,215
94	5,007,216
172	5,007,217
204	5,007,218
	5,007,219
311	5,007,220
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	5,007,224
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809	5,007,226

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397	5,007,229
	5,007,230
412	5,007,231
426	5,007,232
449	5,007,233

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	5,007,945
501	5,007,946

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12.4	5,007,235

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256	5,007,236
285	5,007,237
309	5,007,238
562	5,007,239
673	5,007,240
698	5,007,241

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51.1	5,007,243
53.1	5,007,244
117	5,007,245
131	5,007,246
174	5,007,247
244	5,007,248
255	5,007,249
372	5,007,250
476	5,007,251

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30.13	5,007,948
160	5,007,949
182.5	5,007,950

CLASS 66

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CLASS 68

17 R	5,007,254
210	5,007,255

CLASS 70

14	5,007,256
16	5,007,257
159	5,007,258
209	5,007,259
233	5,007,260
240	5,007,261
312	5,007,262
416	5,007,263

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73	5,007,952
77	5,007,953
90	5,007,954
103	5,007,955

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37	5,007,265
44	5,007,266
52	B1 4,732,026
59	5,007,267
76	5,007,268
173	5,007,269
187	5,007,270
196	5,007,271
226	5,007,272
242.2	5,007,273
254	5,007,274
335	5,007,275
351	5,007,276
379.2	5,007,277
383	5,007,278
394	5,007,279
402	5,007,280
406	5,007,281
481	5,007,282

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1 G	5,007,283
120	5,007,284
170 A	5,007,285
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295	5,007,288
510	5,007,289
517 R	5,007,290
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654	5,007,292
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862.41	5,007,294
862.69	5,007,295
864.87	5,007,296
865.5	5,007,297

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335	5,007,299
471 XY	5,007,300
557	5,007,301
568 R	5,007,302
573 F	5,007,303
	5,007,304
573 R	5,007,305
595	5,007,306
606 R	5,007,307
866	5,007,147
	5,007,308
869	5,007,309

CLASS 75

238	5,007,956
252	5,007,957
330	5,007,958
645	5,007,959
743	5,007,960

CLASS 81

3.45	5,007,310
61	5,007,311
426.5	5,007,312
486	5,007,313

CLASS 82

120	5,007,314

CLASS 83

72	5,007,315
167	5,007,316
256	5,007,317
425.2	5,007,318
488	5,007,319
745	5,007,320

CLASS 84

325	5,007,321
453	5,007,322
607	5,007,323
741	5,007,324

CLASS 89

1.13	5,007,325
36.02	5,007,326

CLASS 91

422	5,007,327

CLASS 92

63	5,007,328
98 D	5,007,329
120	5,007,330
165 R	5,007,331
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CLASS 99

286	5,007,333
483	5,007,334
487	5,007,335
	5,007,336

CLASS 100

188 R	5,007,337

CLASS 101

142	5,007,338
177	5,007,339
227	5,007,340
349	5,007,341
420	5,007,342

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31.2	5,007,344
290	5,007,343
313	5,007,345
402	5,007,346
473	5,007,347
501	5,007,348

CLASS 104

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	5,007,350

CLASS 105

101	5,007,351

CLASS 106

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38.22	5,007,962
433	5,007,963
450	5,008,223
464	5,007,964
800	5,007,965

CLASS 108

56.1	5,007,352

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238	5,007,354

CLASS 112

54	5,007,355
68	5,007,356
103	5,007,357
235	5,007,358
265.2	5,007,359

CLASS 114

90	5,007,360
98	5,007,361
123	5,007,362
219	5,007,363
331	5,007,364

CLASS 116

34 R	5,007,365
208	5,007,366
210	5,007,367
211	5,007,368

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246	5,007,370
680	5,007,371
715	5,007,372
723	5,007,373
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14.47	5,007,378
17	5,007,379
53	5,007,380
170	5,007,375

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48 B	5,007,385
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90 55	5,007,388
169 MG	5,007,389
180 T	5,007,390
182	5,007,391
193 H	5,007,392
195 R	5,007,393
279	5,007,394
337	5,007,395
339	5,007,396
422	5,007,397
479	5,007,398
489	5,007,399
506	5,007,400
509	5,007,401
549	5,007,402

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25 R	5,007,403
77	5,007,404
414	5,007,405

CLASS 127

34	5,007,966
46.1	5,007,967

CLASS 128

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6	5,007,407
	5,007,408
17	5,007,409
33	5,007,410
64	5,007,411
78	5,007,412
	5,007,413
	5,007,414
80 C	5,007,415
80 H	5,007,416
	5,007,417
90	5,007,418
200.14	5,007,420
200.23	5,007,419
204 180	5,007,421
633	5,007,423
635	5,007,424
653 A	5,007,425
653 OAF	5,007,426
659	5,007,427
660.04	5,007,428
677	5,007,429
696	5,007,430
	5,007,431
736	5,007,432
742	5,007,433
772	5,007,434
784	5,007,435
786	5,007,436
798	5,007,438

CLASS 131

331	5,007,439
369	5,007,440

CLASS 132

73.6	5,007,441
218	5,007,442
270	5,007,443

CLASS 134

25.4	5,007,968
38	5,007,969
42	5,007,970
102	5,007,444
122 R	5,007,445

CLASS 135

16	5,007,811

CLASS 136

258	5,007,971

CLASS 137

72	5,007,446
102	5,007,447
223	5,007,448
	5,007,449
315	5,007,450
362	5,007,451
441	5,007,452
458	5,007,453
508	5,007,454
596.16	5,007,455
601	5,007,456
624.14	5,007,457
625.5	5,007,458
625.65	5,007,459

CLASS 138

89	5,007,460
97	5,007,461
154	5,007,462

CLASS 139

448	5,007,463
455	5,007,464

CLASS 140

150	5,007,465

CLASS 141

1	5,007,466
1.1	5,007,467
209	5,007,468

CLASS 144

252 R	5,007,469

CLASS 148

102	5,007,972

CLASS 149

109.6	5,007,973

CLASS 150

114	5,007,470

CLASS 152

540	5,007,471
546	5,007,472

CLASS 156

117	5,007,974
154	5,007,975
222	5,007,976
353	5,007,977
394.1	5,007,978
605	5,007,979
620.7	5,007,980

643 5,007,981
5,007,982
5,007,983
656 5,007,984

CLASS 160

135 5,007,473

CLASS 162

26 5,007,985
281 5,007,986

CLASS 164

97 5,007,474
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CLASS 165

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CLASS 166

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292 5,007,480
300 5,007,481
345 5,007,482

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500 5,007,485

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329 5,007,493

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219 5,007,497

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212 5,007,518
230 5,007,519
317 5,007,520

CLASS 198

347 4 5,007,521
468 8 5,007,522

497 5,007,523
499 5,007,524
690 2 5,007,525
787 5,007,526
803.01 5,007,527
823 5,007,528

CLASS 200

11 R 5,008,498
50 C 5,008,499
61 45 R 5,008,501
61 7 5,008,500
248 5,008,502
308 5,008,503
401 5,008,504
531 5,008,505

CLASS 201

17 5,007,987

CLASS 204

1 11 5,007,989
15 5,007,990
58.5 5,007,991
59 R 5,007,992
153.18 5,007,988
192.31 5,008,002
228 5,007,993
240 5,007,994
299 R 5,007,995
409 5,007,996

CLASS 206

0 5 5,007,529
45.210 5,007,530
77.1 5,007,531
208 5,007,533
329 5,007,534
366 5,007,535
394 5,007,536
455 5,007,537
523 5,007,538
524 5,007,539
581 5,007,540
611 5,007,541
621.6 5,007,542

CLASS 208

46 5,007,997
59 5,007,998
113 5,007,999
120 5,008,000
143 5,008,001
254 H 5,008,003
321 5,008,004
407 5,008,005

CLASS 209

167 5,008,006

CLASS 210

111 5,008,007
169 5,008,008
193 5,008,009
232 5,008,010
5,008,011
321 8 5,008,012
482 5,008,013
512 1 5,008,014
634 5,008,015
5,008,016
710 5,008,017
717 5,008,018
747 5,008,019
751 5,008,020
5,008,021
755 5,008,022
764 5,008,023

CLASS 212

160 5,007,543
265 5,007,544

CLASS 215

14 5,007,545
32 5,007,546

CLASS 219

10 55 E 5,008,024
5,008,507
5,008,508
10 55 M 5,008,506
69 15 5,008,509
121 48 5,008,511
121 64 5,008,512
121 69 5,008,513
121 7 5,008,510
155 5,008,514
211 5,008 517
212 5,008,515
519 5,008,516

CLASS 220

3 5,007,548
3 8 5,007,549
8 5,007,550
23 4 5,007,551
23.83 5,007,552

90 5,007,553
269 5,007,554
339 5,007,555
476 5,007,547
571 5,007,557

CLASS 221

48 5,007,558

CLASS 222

1 5,007,559
5,007,560
55 5,007,561
145 5,007,563
217 5,007,564
386 5 5,007,556
481 5,007,565

CLASS 223

89 5,007,562

CLASS 224

32 R 5,007,566
42 13 5,007,567
42 45 R 5,007,568
275 5,007,569
321 5,007,570

CLASS 225

106 5,007,571

CLASS 227

7 5,007,572
139 5,007,573

CLASS 228

20 5,007,574
44 3 5,007,575
103 5,007,576
265 5,007,577

CLASS 229

1 5 B 5,007,578
5.5 5,007,579
69 Re 33,570
117.17 5,007,580

CLASS 232

43.2 5,007,581

CLASS 235

379 Re 33,571
383 5,008,518
5,008,519
454 5,008,521
462 5,008,520
483 5,008,552

CLASS 236

40 5,007,582

CLASS 237

66 5,007,583

CLASS 239

88 5,007,584
176 5,007,585
222.17 5,007,586
289 5,007,587
318 5,007,588

CLASS 241

21 5,007,589
25 5,007,590
37 5 5,007,591
169.1 5,007,592
264 5,007,593

CLASS 242

3 5,007,594
46 4 5,007,595
71 800 5,007,596
82 5,007,597
86 2 5,007,598
86 51 5,007,599
194 5,007,600
223 5,007,601
246 5,007,602

CLASS 248

59 5,007,603
62 5,007,604
5,007,605
152 5,007,606
188 9 5,007,607
297 2 5,007,608
303 5,007,609
311 2 5,007,610
422 5,007,611
558 5,007,612

CLASS 250

203.6 5,008,522
214 A 5,008,523
5,008,524
214 C 5,008,525
214 R 5,008,526
216 5,008,527

221 5,008,528
5,008,529
5,008,530
222.1 5,008,531
5,008,532
223 B 5,008,533
229 5,008,534
305 5,008,535
307 5,008,536
309 5,008,537
324 5,008,538
336.1 5,008,539
5,008,540
338 3 5,008,541
341 5,008,542
342 5,008,543
349 5,008,544
358 1 5,008,545
366 5,008,546
368 5,008,547
372 5,008,548
396 ML 5,008,549
453 1 5,008,550
462 1 5,008,551
492 2 5,008,553
504 R Re 33,572
551 5,008,554
560 5,008,555
5,008,556
561 5,008,557
563 5,008,558
575 5,008,559

CLASS 251

58 5,007,613
83 5,007,614
368 5,007,615

CLASS 252

8 51 5,008,025
8 553 5,008,026
68 5,008,028
91 5,008,029
106 5,008,030
168 5,008,031
174.24 5,008,032
182.13 5,008,033
301.40 F 5,008,034
312 5,008,035
313.1 5,008,036
314 5,008,037
363 5 5,008,038
392 5,008,039
500 5,008,040
5,008,041
518 5,008,042
582 5,008,043
628 5,008,044
633 5,008,045

CLASS 254

212 5,007,616
372 5,007,617

CLASS 256

1 5,007,618
34 5,007,619

CLASS 260

410 6 5,008,046
424 5,008,047

CLASS 261

78 2 5,008,048

CLASS 264

4 5,008,049
4 3 5,008,050
30 B1 4,489,022
40 3 5,008,051
40 5 5,008,052
60 5,008,053
63 5,008,054
117 5,008,055
130 5,008,056
134 5,008,057
5,008,058
230 5,008,059
255 5,008,060
257 5,008,061
272 15 5,008,062
297 2 5,008,063
308 5,008,064
328 6 5,008,065
537 5,008,066

CLASS 266

168 5,007,620
220 5,007,621

CLASS 267

158 5,007,622

CLASS 270

39 5,007,623
52 5,007,624
53 5,007,625

CLASS 271

33 5,007,626
35 5,007,627
263 5,007,628
277 5,007,629

CLASS 272

69 5,007,630
70 5,007,631
72 5,007,632
117 5,007,635
123 5,007,633
134 5,007,634

CLASS 273

1 5 R 5,007,637
26 A 5,007,638
60 R 5,007,639
63 A 5,007,640
138 A 5,007,641
148 R 5,007,642
167 R 5,007,643
178 B 5,007,644
181 F 5,007,645
183 E 5,007,646
213 5,007,647
236 5,007,648
237 5,007,649
249 5,007,650
256 5,007,651
326 5,007,652
448 5,007,636

CLASS 280

87 051 5,007,653
166 5,007,654
248 5,007,498
250 1 5,007,655
615 5,007,656
626 5,007,657
661 5,007,658
707 5,007,659
715 5,007,660
735 5,007,661
739 5,007,662

CLASS 283

81 5,007,663

CLASS 285

330 5,007,664
334 5,007,665
373 5,007,666
382 2 5,007,667

CLASS 292

216 5,007,668
262 5,007,669

CLASS 296

39 1 5,007,670
39 2 5,007,671
97 1 5,007,532
100 5,007,672

CLASS 297

159 5,007,673
184 5,007,674
195 5,007,675
218 5,007,676
284 5,007,677
353 5,007,678
374 5,007,679
379 5,007,680
440 5,007,681
452 5,007,682

CLASS 299

10 5,007,683
81 5,007,684
91 5,007,685

CLASS 300

21 5,007,686

CLASS 303

113 5,007,687

CLASS 307

19 5,008,560
80 5,008,561
265 5,008,562
269 5,008,563
271 5,008,564
296 7 5,008,565
296 8 5,008,566
443 5,008,567
451 5,008,568
465 5,008,569
475 5,008,570
529 5,008,571

CLASS 310

45 5,008,572
67 R 5,008,573
68 D 5,008,574
89 5,008,575
166 5,008,576

233 5,008,577
256 5,008,578
303 5,008,579
321 5,008,580
323 5,008,581
332 5,008,582

CLASS 312

7 2 5,007,688

CLASS 313

25 5,008,583
136 5,008,584
231 31 5,008,585
318 5,008,587
5,008,588
456 5,008,589
500 5,008,590
524 5,008,591
623 5,008,592

CLASS 315

39 5,008,593
111 81 5,008,594
178 5,008,595
205 5,008,596
209 R 5,008,597
225 5,008,598
247 5,008,599
290 B1 4,480,214
370 5,008,600

CLASS 318

268 5,008,601
561 5,008,602
568 1 5,008,603
587 5,008,604
630 5,008,605
649 5,008,606
696 5,008,607
729 5,008,608

CLASS 323

313 5,008,609
315 5,008,586

CLASS 324

84 5,008,610
96 5,008,611
117 R 5,008,612
133 5,008,613
158 F 5,008,614
5,008,615
5,008,616
158 R 5,008,617
5,008,618
207 16 5,008,619
213 5,008,620
227 5,008,621
248 5,008,622
262 5,008,623
318 5,008,624
351 5,008,625
414 5,008,626
444 5,008,627
693 5,008,628

CLASS 328

14 5,008,629
165 5,008,630

CLASS 330

51 5,008,631
256 5,008,632
277 5,008,633
306 5,008,634

CLASS 331

1 A 5,008,635
2 5,008,636
8 5,008,637
68 5,008,638

CLASS 333

116 5,008,639
219 1 5,008,640

CLASS 335

80 5,008,641

CLASS 336

96 5,008,643
192 5,008,644

CLASS 337

70 5,008,645

CLASS 338

20 5,008,646

CLASS 340

432 5,008,647
546 5,008,648
572 5,008,649
604 5,008,650
605 5,008,652
620 5,008,653

664 5,008,651
686 5,008,654
691 5,008,655
718 5,008,656
766 5,008,657
784 5,008,658
812 5,008,659
825.06 5,008,662
825.5 5,008,663
825.54 5,008,660
5,008,661
854 5,008,664
870.26 5,008,665
936 5,008,666
984 5,008,667

CLASS 341

83 5,008,668
102 5,008,669
113 5,008,670
136 5,008,671
138 5,008,672
144 5,008,673
150 5,008,674
152 5,008,675
154 5,008,676

CLASS 342

17 5,008,677
158 5,008,678
353 5,008,679
372 5,008,680

CLASS 343

700 MS 5,008,681
713 5,008,682

CLASS 346

1 1 5,008,683
76 PH 5,008,684
108 5,008,685
5,008,686
135 1 5,008,687
140 R 5,008,688
5,008,689
5,008,690
157 5,008,691

CLASS 350

1 6 5,007,689
3 68 5,007,690
6 7 5,007,691
6 8 5,007,692
76 34 5,007,706
96 13 5,007,693
96 14 5,007,694
5,007,695
5,007,696
96 15 5,007,697
5,007,698
96 16 5,007,699
96 17 5,007,700
96 20 5,007,701
5,007,702
96 21 5,007,704
96 23 5,007,703
96 29 5,007,705
118 5,007,707
162 2 5,007,708
162 22 5,007,709
166 5,007,710
174 5,007,711
255 5,007,712
286 5,007,713
334 5,007,715
336 5,007,716
353 5,007,714
5,007,717
357 5,007,718
382 5,007,722
425 5,007,719
463 5,007,720
486 5,007,721
508 5,007,723
604 5,007,724
633 5,007,725

CLASS 351

41 5,007,726
47 5,007,727
118 5,007,728
219 5,007,729
243 5,007,730

CLASS 354

173 1 5,008,692
214 5,008,693
277 5,006,694
403 5,008,695
408 5,008,696
413 5,008,697
429 5,008,698
457 5,008,699

CLASS 355

27 5,008,700
35 5,008,701
43 5,008,705

52 5,008,702
53 5,008,703
202 5,008,704
5,008,710
206 5,008,711
5,008,712
219 5,008,706
220 5,008,707
259 5,008,708
309 5,008,709
313 5,008,714
5,008,715
319 5,008,713
322 5,008,716

CLASS 356

28 5 5,007,731
70 5,007,733
73 5,007,732
124 5,007,734
128 5,007,735
152 5,007,736
336 5,007,737
347 5,007,738
383 5,007,739
436 5,007,740
448 5,007,741

CLASS 357

16 5,008,717
17 5,008,718
22 5,008,719
23 13 5,008,724
23 4 5,008,720
5,008,725
23 5 5,008,721
5,008,722
23.6 5,008,738
23.7 5,008,723
30 5,008,726
40 5,008,727
45 5,008,728
51 5,008,729
68 5,008,730
71 5,008,731
5,008,732
72 5,008,733
74 5,008,734
5,008,735
75 5,008,736
81 5,008,737

CLASS 358

21 R 5,008,739
23 5,008,740
32 5,008,741
79 5,008,742
101 5,008,743
105 5,008,744
5,008,745
133 5,008,746
136 5,008,747
5,008,748
147 5,008,749
5,008,750
148 5,008,751
160 5,008,752
171 5,008,753
183 5,008,754
5,008,755
210 5,008,756
213 13 5,008,757
213 16 5,008,758
335 5,008,759
451 5,008,760

CLASS 360

45 5,008,761
61 5,008,762
70 5,008,763
77 12 5,008,765
77 15 5,008,764
96 5 5,008,766
103 5,008,767
104 5,008,768
130 24 5,008,769
185 5,008,856

CLASS 361

56 5,008,770
103 5,008,771
119 5,008,772
187 5,008,773
283 5,008,774
383 5,008,775
392 5,008,776
412 5,008,777
415 5,008,778
5,008,779

CLASS 362

34 5,008,780
61 5,008,781
72 5,008,782
83 2 5,008,783
116 5,008,784
183 5,008,785

220 5,008,790
221 5,008,787
231 5,008,788
255 5,008,789
290 5,008,791
374 5,008,792
413 5,008,793

CLASS 363

20 5,008,795
21 5,008,794
5,008,796
43 5,008,797
59 5,008,798
60 5,008,799
61 5,008,800
132 5,008,801

CLASS 364

140 5,008,802
148 5,008,803
167 01 5,008,804
184 5,008,805
191 5,008,806
200 5,008,786
5,008,807
5,008,808
5,008,809
5,008,810
5,008,811
5,008,812
5,008,813
5,008,814
5,008,815
5,008,816
5,008,817
5,008,818
5,008,819
5,008,820
413.01 5,008,821
413.21 5,008,822
424.03 5,008,823
431.05 5,008,824
434 5,008,825
463 5,008,826
464.02 5,008,827
474.28 5,008,828
480 5,008,829
490 5,008,830
496 5,008,831
513 5,008,832
5,008,833
5,008,834
513 5 5,008,835
516 5,008,836
519 5,008,837
522 5,008,838
550 5,008,839
5,008,840
551 01 5,008,841
5,008,842
571 02 5,008,843
571 05 5,008,844
576 5,008,845
707 5,008,846
709 16 5,008,847
725 5,008,848
746 5,008,849
760 5,008,850
807 5,008,851
900 5,008,852
5,008,853
5,008,854

CLASS 365

96 5,008,855
200 5,008,857
233.5 5,008,858

CLASS 367

2 5,008,859
6 5,008,860
59 5,008,861
105 5,008,862
165 5,008,863

CLASS 368

10 5,008,864
5,008,865
21 5,008,866
23 5,008,867
88 5,008,868
228 5,008,869
242 5,008,870

CLASS [redacted]

28 5,008,871
32 5,008,872
44.14 5,008,873
75.2 5,008,874
85 5,008,875
244 5,008,876

CLASS 370

4 5,008,877
60 5,008,878
85 150 5,008,881

85.2 5,008,879
85 6 5,008,880
94.3 5,008,882
95 1 5,008,883
110 1 5,008,884

CLASS 371

3 5,008,885
40 2 5,008,886

CLASS 372

6 5,008,887
29 5,008,888
32 5,008,889
38 5,008,894
41 5,008,890
45 5,008,891
5,008,892
50 5,008,893
69 5,008,895
83 5,008,896

CLASS 373

11 5,008,897

CLASS 374

136 5,007,742
141 5,007,743

CLASS 375

1 5,008,898
5,008,899
8 5,008,900
5,008,901
10 5,008,902
60 5,008,903
107 5,008,904

CLASS 376

159 5,008,067
230 5,008,068
299 5,008,069
419 5,008,070

CLASS 377

77 5,008,905

CLASS 378

54 5,008,906
65 5,008,907
70 5,008,908
71 5,008,909
84 5,008,910
86 5,008,911
91 5,008,912
105 5,008,913
108 5,008,914
5,008,915
118 5,008,916
140 5,008,917
144 5,008,918
173 5,008,919
185 5,008,920
198 5,008,921
208 5,008,922

CLASS 379

3 5,008,923
53 5,008,924
60 5,008,925
89 5,008,926
98 5,008,927
100 5,008,928
112 5,008,929
210 5,008,930
399 5,008,931
449 5,008,932
452 5,008,933

CLASS 380

15 5,008,934
29 5,008,935
50 5,008,936
5,008,937
5,008,938

CLASS 381

15 5,008,939
31 5,008,940
43 5,008,941
51 5,008,942
68.6 5,008,943
86 5,008,944
194 5,008,945

CLASS 382

2 5,008,946
6 5,008,947
13 5,008,948
41 5,008,949
50 5,008,950
56 5,008,951

CLASS 383

37 5,007,744

CLASS 384

307 5,007,745

420 5,007,746
450 5,007,747

CLASS 400

103 5,007,748
208 5,007,749
249 5,007,750
322 5,007,751
636 5,007,752

CLASS 401

139 5,007,753
174 5,007,754
175 5,007,755
195 5,007,756
278 5,007,757

CLASS 402

75 5,007,758

CLASS 403

13 5,007,759
5,007,760
287 5,007,761
341 5,007,762

CLASS 404

6 5,007,763
70 5,007,764
74 5,007,765

CLASS 405

24 5,007,766
154 5,007,767
5,007,768
195 5,007,769
240 5,007,770
258 5,007,771

CLASS 406

39 5,007,772

CLASS 407

27 5,007,773
94 5,007,774
113 5,007,775

CLASS 408

6 5,007,776
67 5,007,777
125 5,007,778

CLASS 411

48 5,007,779
82 5,007,780
337 5,007,781

CLASS 412

40 5,007,782

CLASS 414

222 5,007,783
225 5,007,784
331 5,007,785
408 B1 4,773,812
409 5,007,786
412 5,007,787
417 5,007,788
427 5,007,789
494 5,007,791
500 5,007,792
502 5,007,793
542 5,007,794
737 5,007,795
751 5,007,796
790 8 5,007,797

CLASS 415

88 5,007,798

CLASS 416

104 5,007,799
220 00 R 5,007,800
223 R 5,007,801

CLASS 417

137 5,007,803
209 5,007,804
216 5,007,805
360 5,007,806
363 5,007,807
368 5,007,808
371 5,007,809
410 5,007,810
534 5,007,812

CLASS 418

63 5,007,813

CLASS 419

28 5,008,071

CLASS 420

69 5,008,072
121 5,008,073
578 5,008,074

CLASS 422

6 5,008,075

28 5,008,076
5,008,078
56 5,008,077
5,008,080
64 5,008,081
65 5,008,082
101 5,008,083
102 5,008,084
109 5,008,085
180 5,008,086
186.22 5,008,087
234 5,008,088

CLASS 423

121 5,008,089
212 5,008,090
245 1 5,008,091
263 5,008,092
272 5,008,093
328 5,008,094
467 5,008,095
477 5,008,096
493 5,008,097
659 5,008,098

CLASS 424

1 1 5,008,099
59 5,008,100
5,008,101
5,008,102
66 5,008,103
70 5,008,104
5,008,105
5,008,106
80 5,008,107
84 5,008,108
401 5,008,109
422 5,008,110
448 5,008,111
449 5,007,790
468 5,008,112
480 5,008,113
484 5,008,114
486 5,008,115
491 5,008,116
494 5,008,117
498 5,008,118
639 5,008,119

CLASS 425

3 5,007,814
117 5,007,815
135 5,007,816
136 5,007,817
144 5,007,818
184 5,007,819
333 5,007,820
548 5,007,821
575 5,007,822

CLASS 426

74 5,008,120
89 5,008,121
417 5,008,122
509 5,008,123
589 5,008,124
594 5,008,125
611 5,008,126

CLASS 427

36 5,008,127
130 5,008,128
160 5,008,129
206 5,008,130
209 5,008,131
217 5,008,132
333 5,008,133
386 5,008,134
5,008,135
388.1 5,008,136

CLASS 428

35 4 5,008,137
36 4 5,008,138
40 5,008,139
179 5,008,140
182 5,008,141
203 5,008,142
207 5,008,143
211 5,008,144
288 5,008,145
323 5,008,147
328 5,008,146
336 5,008,148
5,008,149
340 5,008,150
343 5,008,151
423 1 5,008,152
429 5,008,153
447 5,008,154
463 5,008,155
506 5,008,156
612 5,008,157
614 5,008,158
5,008,159
656 5,008,160

786 5,007,437

CLASS 429

7 5,008,161
34 5,008,162
40 5,008,163
59 5,008,164
94 5,008,165

CLASS 430

7 5,008,166
56 5,008,167
5,008,168
59 5,008,169
65 5,008,170
67 5,008,171
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78 5,008,173
143 5,008,174
155 5,008,175
272 5,008,176
522 5,008,177
527 5,008,178
546 5,008,179
552 5,008,180
572 5,008,181

CLASS 432

14 5,007,823
20 5,007,824
99 5,007,825
121 5,007,826

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4 5,007,827
18 5,007,828
61 5,007,829
68 5,007,830
114 5,007,831
126 5,007,832
172 5,007,833
173 5,007,834
174 5,007,835
181 5,007,836
226 5,007,837

CLASS 434

178 5,007,83.
206 5,00[illegible],840

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5 5,008,182
5,008,183
7 23 5,008,184
5,008,185
7 36 5,008,186
72 5,008,187
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108 5,008,190
124 5,008,191
128 5,008,192
138 5,008,193
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240 2 5,008,196
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240 27 5,008,198
5,008,199
240 49 5,008,200

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18 5,008,202
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31 5,008,207
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33 5,008,210
40 5,008,211
43 5,008,212
51 5,008,213
52 5,008,214
83 5,008,215
192 5,008,216
195 5,008,217
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66 5,007,841
5,007,842
5,007,843
68 5,007,844
73 5,007,845
79 5,007,846
100 5,007,847
101 5,007,848
165 5,007,849
182 5,007,850
188 5,007,851
189 5,007,888
191 5,007,839
201 5,007,852
211 5,007,853
367 5,007,854
411 5,007,855
452 5,007,856
490 5,007,857
498 5,007,858
500 5,007,859
540 5,007,860
578 5,007,861
607 5,007,862
639 5,007,863
651 5,007,864
839 5,007,865

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71 5,007,867
5,007,868
89 5,007,870
071 5,007,868

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CLASS 445

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50 5,007,874

CLASS 446

66 5,007,875
168 5,007,876
242 5,007,877

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79 5,008,954
181 5,008,955
318 5,008,956
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619 5,008,958

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159 5,007,880
171 5,007,881

CLASS 474

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242 5,007,883
5,007,884

CLASS 475

231 5,007,885
5,007,886

CLASS 493

151 Re 33,573
316 5,007,889
434 5,007,890
444 5,007,891

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17 5,007,892

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81 5,008,220
103 5,008,221
134 5,008,222

CLASS 502

63 5,008,224
73 5,008,225
81 5,008,226
83 5,008,227
111 5,008,228
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231 5,008,233
326 5,008,234
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209 5,008,236
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217 5,008,238
227 5,008,232
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	247	316,173		479	316,198		384	316,223			316,248		75	316,273		17	316,298
	314	316,174		516	316,199		403	316,224		167	316,249		85	316,274	D25—	119	316,299
	320	316,175		518	316,200		404	316,225		170	316,250		91	316,275	D26—	4	316,300
	641	316,176			316,201		415	316,226		182	316,251	D20—	3	316,276		24	316,301
D13—	32	316,177		596	316,202			316,227	D14—	106	316,252		31	316,277		46	316,302
	35	316,178		601	316,203	D10—	30	316,228		114	316,253		39	316,278		63	316,303
		316,179			316,204			316,229		118	316,254	D21—	2	316,279			316,304
		316,1	D7—	305	316,205		106	316,231			316,255		67	316,280			316,305
		316,181		317	316,206		114	316,230		121	316,256		71	316,281		85	316,306
	37	316,182		384	316,207	D11—	126	316,232			316,257		108	316,282		101	316,307
	40	316,183		398	316,208		241	316,233			316,258		121	316,283		110	316,308
	100	316,184		533	316,209	D12—	11	316,234			316,259		141	316,284		118	316,309
	105	316,185		545	316,210		114	316,235		126	316,260		190	316,285		131	316,310
		316,186		588	316,211		116	316,236		138	316,261		208	316,286		140	316,311
	106	316,187		665	316,212		117	316,237		141	316,262		224	316,287	D28—	7	316,312
D6—	300	316,188		696	316,213		133	316,238		165	316,263		253	316,288		64	316,313
	301	316,189	D8—	14	316,214		145	316,239		245	316,264	D22—	127	316,289	D30—	152	316,314
	335	316,1		30	316,215		146	316,240	D15—	17	316,265	D23—	209	316,290		162	316,315
	366	316,191		61	316,216		168	316,244		28	316,266		242	316,291	D32—	18	316,316
		316,192			316,220		169	316,241	D18—	7	316,267		249	316,292		32	316,317
	413	316,193		319	316,217		191	316,242	D19—	42	316,268		250	316,293		42	316,318
	440	316,194			316,218		217	316,243		26	316,269			316,294	D34—	38	316,319
	461	316,195		373	316,219	D13—	133	316,245		35	316,270		287	316,295		42	316,320
	465	316,196	D9—	302	316,221			316,246		41	316,271		335	316,296	D99—	33	316,321

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1120 O.G. 54 on Nov. 27, 1990.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987 and at 1091 O.G. 2 on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17,1990.

The search fee of the European Patent Office was changed due to a difference in the amount of the fee in German Marks and the exchange rate of the U.S. dollar in relation to the German Mark as of Jan. 3, 1991, and was announced in the *Official Gazette* at 1122 O.G. 564 on Jan 1, 1991.

International fees were changed on March 1, 1991 due to a difference in the exchange rate of the U.S. dollar in relation to the Swiss Franc and were announced in the *Official Gazette* at 1122 O.G. 629 on Jan. 22, 1991.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Apr. 17, 1989 and were announced in the *Official Gazette* at 1100 O.G. 24 on Mar. 7, 1989.

The current schedule of PCT fees (in U.S. dollars) is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	550.00
—Corresponding prior U.S. national application filed	380.00
—Supplemental search fee, per additional invention	150.00
European Patent Office as ISA	1492.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as ISA	400.00
—Additional examination fee, per additional invention	130.00
—ISA not the USPTO	600.00
—Additional examination fee, per additional invention	200.00
International fees	
Basic fee	559.00
Basic Supplemental fee (for each page over 30)	11.00
Designation fee per country or region for the first 10 national or regional offices	135.00
Designation fee for 11th and subsequent designations	No Charge
Handling fee	171.00

U.S. National Stage fees

	Small Entity	Regular
USPTO was IPEA	165.00	330.00
USPTO was ISA but not IPEA	185.00	370.00
USPTO was neither ISA nor IPEA	250.00	500.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	18.00	36.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	60.00	120.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	60.00	120.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	30.00	30.00

Dec. 21, 1990

HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Apr. 17, 1989. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on April 19, 1988 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,737,994 through 4,739,521
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on April 17, 1984 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,442,551 through 4,443,890
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months are set forth in 37 CFR 1.20(e), and (f), as amended Nov. 5, 1990, which are reproduced below:

37 CFR § 1.20 Post-issuance fees and surcharges

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant.....$245.00

"(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant.....$495.00"

"(h) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Aug. 27,1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)).....$415.00
By other than a small entity.....$850.00"

"(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f)).....$835.00
By other than a small entity.....$1670.00"

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(k), (l) and (m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27,1982.....$120.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity(§1.9(f)).....$60.00
By other than a small entity.....$120.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been unavoidable.....$550.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED FEBRUARY 10, 1991 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,371,983	06/221,914	2/08/83
4,371,992	06/299,598	2/08/83
4,371,998	06/221,876	2/08/83
4,372,019	06/230,478	2/08/83
4,372,024	06/270,770	2/08/83
4,372,041	06/245,252	2/08/83
4,372,045	06/233,425	2/08/83
4,372,049	06/278,174	2/08/83
4,372,071	06/301,548	2/08/83
4,372,075	06/245,866	2/08/83
4,372,079	06/227,184	2/08/83
4,372,083	06/278,589	2/08/83
4,372,107	06/217,570	2/08/83
4,372,131	06/284,482	2/08/86
4,372,157	06/251,907	2/08/83
4,372,158	06/274,705	2/08/83
4,372,159	06/274,706	2/08/83
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4,372,187	06/259,519	2/08/83
4,372,189	06/347,980	2/08/83
4,372,196	06/249,169	2/08/83
4,372,200	06/260,101	2/08/83
4,372,201	06/278,376	2/08/83
4,372,208	06/249,913	2/08/83
4,372,209	06/311,294	2/08/83
4,372,225	06/241,239	2/08/83
4,372,226	06/258,993	2/08/83
4,372,229	06/237,633	2/08/83
4,372,241	06/223,728	2/08/83
4,372,242	06/248,749	2/08/83
4,372,247	06/381,814	2/08/83
4,372,251	06/248,249	2/08/83
4,372,254	06/227,626	2/08/83
4,372,262	06/304,473	2/08/83
4,372,292	06/254,054	2/08/83
4,372,293	06/219,670	2/08/83
4,372,310	06/288,637	2/08/83
4,372,328	06/265,640	2/08/83
4,372,332	06/229,207	2/08/83
4,372,335	06/237,769	2/08/83
4,372,348	06/232,160	2/08/83
4,372,357	06/218,271	2/08/83
4,372,359	06/258,988	2/08/83
4,372,360	06/288,058	2/08/83
4,372,372	06/228,331	2/08/83
4,372,377	06/243,682	2/08/83
4,372,382	06/216,742	2/08/83
4,372,383	06/270,261	2/08/83
4,372,395	06/319,725	2/08/83
4,372,402	06/313,527	2/08/83
4,372,403	06/301,766	2/08/83
4,372,422	06/220,966	2/08/83
4,372,426	06/350,703	2/08/83
4,372,475	06/258,586	2/08/83
4,372,480	06/259,677	2/08/83
4,372,530	06/270,910	2/08/83
4,372,536	06/241,251	2/08/83
4,372,541	06/303,868	2/08/83
4,372,543	06/263,601	2/08/83
4,372,546	06/247,347	2/08/83
4,372,548	06/241,887	2/08/83
4,372,560	06/283,952	2/08/83
4,372,561	06/303,847	2/08/83
4,372,592	06/219,982	2/08/83
4,372,620	06/231,458	2/08/83
4,372,631	06/308,146	2/08/83
4,372,640	06/246,389	2/08/83
4,372,658	06/247,541	2/08/83
4,372,660	06/258,493	2/08/83
4,372,662	06/300,970	2/08/83
4,372,671	06/251,414	2/08/83
4,372,672	06/219,122	2/08/83
4,372,678	06/241,143	2/08/83
4,372,690	06/241,467	2/08/83
4,372,691	06/231,664	2/08/83
4,372,697	06/276,285	2/08/83
4,372,699	06/283,694	2/08/83
4,372,700	06/276,847	2/08/83
4,372,703	06/224,245	2/08/83
4,372,725	06/355,276	2/08/83
4,372,727	06/248,972	2/08/83
4,372,728	06/222,255	2/08/83
4,372,735	06/250,495	2/08/83

Patent Number	Serial Number	Issue Date
4,372,747	06/288,777	2/08/83
4,372,748	06/293,548	2/08/83
4,372,756	06/278,992	2/08/83
4,372,762	06/232,855	2/08/83
4,372,763	06/248,697	2/08/83
4,372,784	06/295,218	2/08/83
4,372,787	06/280,908	2/08/83
4,372,811	06/260,436	2/08/83
4,372,815	06/293,075	2/08/83
4,372,819	06/360,601	2/08/83
4,372,823	06/312,098	2/08/83
4,372,828	06/347,919	2/08/83
4,372,829	06/246,330	2/08/83
4,372,833	06/254,588	2/08/83
4,372,853	06/269,459	2/08/83
4,372,858	06/302,593	2/08/83
4,372,870	06/286,497	2/08/83
4,372,892	06/276,807	2/08/83
4,372,897	06/254,605	2/08/83
4,372,899	06/247,478	2/08/83
4,372,902	06/337,025	2/08/83
4,372,906	06/223,434	2/08/83
4,372,921	06/328,701	2/08/83
4,372,926	06/256,533	2/08/83
4,372,938	06/370,670	2/08/83
4,372,945	06/289,138	2/08/83
4,372,952	06/253,026	2/08/83
4,372,954	06/308,546	2/08/83
4,372,960	06/215,959	2/08/83
4,372,966	06/290,114	2/08/83
4,372,973	06/332,840	2/08/83
4,372,995	06/271,128	2/08/83
4,373,001	06/365,358	2/08/83
4,373,003	06/365,950	2/08/83
4,373,005	06/263,169	2/08/83
4,373,016	06/262,827	2/08/83
4,373,033	06/289,214	2/08/83
4,373,040	06/270,914	2/08/83
4,373,058	06/244,811	2/08/83
4,373,068	06/303,219	2/08/83
4,373,070	06/296,212	2/08/83
4,373,075	06/330,424	2/08/83
4,373,089	06/240,007	2/08/83
4,373,094	06/288,072	2/08/83
4,373,098	06/294,790	2/08/83
4,373,105	06/242,558	2/08/83
4,373,124	06/377,264	2/08/83
4,373,128	06/220,725	2/08/83
4,373,132	06/290,140	2/08/83
4,373,142	06/235,797	2/08/83
4,373,144	06/217,216	2/08/83
4,373,173	06/245,562	2/08/83
4,641,380	06/801,209	2/10/87
4,641,389	06/727,820	2/10/87
4,641,390	06/779,349	2/10/87
4,641,413	06/528,997	2/10/87
4,641,415	06/735,045	2/10/87
4,641,421	06/774,248	2/10/87
4,641,430	06/808,646	2/10/87
4,641,431	06/798,838	2/10/87
4,641,437	06/667,131	2/10/87
4,641,439	06/704,705	2/10/87
4,641,440	06/729,064	2/10/87
4,641,441	06/582,561	2/10/87
4,641,447	06/706,177	2/10/87
4,641,455	06/777,920	2/10/87
4,641,457	06/656,409	2/10/87
4,641,459	06/836,436	2/10/87
4,641,463	06/714,983	2/10/87
4,641,465	06/706,570	2/10/87
4,641,468	06/771,030	2/10/87
4,641,478	06/830,321	2/10/87
4,641,483	06/773,375	2/10/87
4,641,487	06/784,424	2/10/87
4,641,498	06/430,406	2/10/87
4,641,501	06/826,901	2/10/87
4,641,505	06/707,383	2/10/87
4,641,507	06/577,517	2/10/87
4,641,509	06/787,958	2/10/87
4,641,510	06/791,790	2/10/87
4,641,514	06/553,168	2/10/87
4,641,518	06/762,065	2/10/87
4,641,519	06/755,680	2/10/87
4,641,521	06/708,024	2/10/87
4,641,524	06/765,727	2/10/87
4,641,529	06/599,481	2/10/87
4,641,540	06/729,523	2/10/87
4,641,542	06/744,557	2/10/87
4,641,544	06/787,316	2/10/87
4,641,545	06/725,182	2/10/87
4,641,550	06/728,500	2/10/87
4,641,560	06/806,607	2/10/87
4,641,561	06/828,880	2/10/87
4,641,562	06/766,287	2/10/87
4,641,567	06/499,206	2/10/87
4,641,569	06/720,244	2/10/87
4,641,583	06/634,553	2/10/87
4,641,590	06/754,294	2/10/87
4,641,595	06/733,087	2/10/87
4,641,598	06/716,268	2/10/87
4,641,600	06/853,512	2/10/87
4,641,612	06/751,480	2/10/87
4,641,633	06/726,922	2/10/87
4,641,638	06/786,226	2/10/87
4,641,647	06/699,927	2/10/87
4,641,650	06/710,431	2/10/87
4,641,661	06/761,790	2/10/87
4,641,662	06/655,378	2/10/87
4,641,669	06/724,930	2/10/87
4,641,674	06/574,988	2/10/87
4,641,680	06/768,896	2/10/87
4,641,686	06/683,063	2/10/87
4,641,691	06/613,390	2/10/87
4,641,692	06/743,568	2/10/87
4,641,694	06/819,588	2/10/87
4,641,701	06/400,942	2/10/87
4,641,712	06/690,585	2/10/87
4,641,713	06/570,925	2/10/87
4,641,715	06/535,042	2/10/87
4,641,722	06/775,499	2/10/87
4,641,738	06/800,097	2/10/87
4,641,744	06/746,683	2/10/87
4,641,769	06/847,132	2/10/87
4,641,772	06/703,222	2/10/87
4,641,780	06/278,164	2/10/87
4,641,784	06/603,909	2/10/87
4,641,786	06/682,262	2/10/87
4,641,789	06/565,601	2/10/87
4,641,797	06/606,866	2/10/87
4,641,814	06/650,762	2/10/87
4,641,815	06/873,345	2/10/87
4,641,817	06/590,953	2/10/87
4,641,822	06/725,298	2/10/87
4,641,824	06/801,676	2/10/87
4,641,833	06/594,521	2/10/87
4,641,834	06/721,520	2/10/87
4,641,835	06/707,722	2/10/87
4,641,836	06/749,650	2/10/87
4,641,837	06/742,694	2/10/87
4,641,840	06/776,487	2/10/87
4,641,844	06/835,427	2/10/87
4,641,845	06/694,604	2/10/87
4,641,848	06/723,370	2/10/87
4,641,849	06/742,578	2/10/87
4,641,852	06/794,446	2/10/87
4,641,859	06/839,224	2/10/87
4,641,860	06/624,412	2/10/87
4,641,863	06/797,043	2/10/87
4,641,870	06/796,251	2/10/87
4,641,873	06/838,410	2/10/87
4,641,889	06/773,364	2/10/87
4,641,897	06/611,903	2/10/87
4,641,899	06/757,826	2/10/87
4,641,900	06/831,178	2/10/87
4,641,909	06/771,139	2/10/87
4,641,910	06/641,674	2/10/87
4,641,919	06/559,289	2/10/87
4,641,921	06/715,022	2/10/87

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4,641,923	06/624,119	2/10/87
4,641,925	06/841,988	2/10/87
4,641,966	06/761,449	2/10/87
4,641,974	06/715,197	2/10/87
4,641,984	06/782,069	2/10/87
4,641,989	06/828,907	2/10/87
4,641,993	06/787,083	2/10/87
4,641,994	06/694,586	2/10/87
4,641,996	06/652,265	2/10/87
4,641,997	06/702,501	2/10/87
4,642,001	06/547,469	2/10/87
4,642,004	06/773,293	2/10/87
4,642,014	06/716,168	2/10/87
4,642,017	06/430,746	2/10/87
4,642,041	06/824,678	2/10/87
4,642,050	06/720,178	2/10/87
4,642,052	06/782,876	2/10/87
4,642,056	06/738,398	2/10/87
4,642,062	06/751,437	2/10/87
4,642,064	06/715,117	2/10/87
4,642,066	06/739,154	2/10/87
4,642,072	06/563,578	2/10/87
4,642,074	06/771,723	2/10/87
4,642,083	06/754,622	2/10/87
4,642,086	06/759,879	2/10/87
4,642,090	06/708,137	2/10/87
4,642,095	06/757,746	2/10/87
4,642,100	06/772,766	2/10/87
4,642,101	06/734,509	2/10/87
4,642,108	06/799,279	2/10/87
4,642,109	06/735,056	2/10/87
4,642,110	06/751,483	2/10/87
4,642,128	06/774,693	2/10/87
4,642,132	06/685,211	2/10/87
4,642,135	06/766,635	2/10/87
4,642,142	06/770,821	2/10/87
4,642,143	06/771,357	2/10/87
4,642,153	06/677,433	2/10/87
4,642,159	06/666,308	2/10/87
4,642,166	06/827,891	2/10/87
4,642,167	06/709,415	2/10/87
4,642,175	06/713,376	2/10/87
4,642,176	06/690,083	2/10/87
4,642,180	06/738,234	2/10/87
4,642,205	06/776,145	2/10/87
4,642,209	06/766,439	2/10/87
4,642,212	06/720,777	2/10/87
4,642,220	06/723,750	2/10/87
4,642,221	06/510,502	2/10/87
4,642,225	06/681,223	2/10/87
4,642,229	06/600,408	2/10/87
4,642,239	06/721,776	2/10/87
4,642,251	06/826,238	2/10/87
4,642,254	06/835,890	2/10/87
4,642,262	06/588,058	2/10/87
4,642,284	06/503,705	2/10/87
4,642,290	06/447,171	2/10/87
4,642,300	06/626,477	2/10/87
4,642,306	06/611,516	2/10/87
4,642,307	06/476,857	2/10/87
4,642,312	06/801,452	2/10/87
4,642,333	06/622,496	2/10/87
4,642,337	06/715,176	2/10/87
4,642,339	06/788,501	2/10/87
4,642,344	06/690,445	2/10/87
4,642,353	06/833,412	2/10/87
4,642,354	06/776,112	2/10/87
4,642,367	06/755,063	2/10/87
4,642,370	06/713,910	2/10/87
4,642,378	06/722,046	2/10/87
4,642,393	06/708,655	2/10/87
4,642,401	06/631,420	2/10/87
4,642,407	06/796,679	2/10/87
4,642,418	06/759,880	2/10/87
4,642,427	06/757,838	2/10/87
4,642,447	06/731,973	2/10/87
4,642,452	06/781,367	2/10/87
4,642,454	06/644,768	2/10/87
4,642,465	06/660,692	2/10/87
4,642,479	06/720,124	2/10/87
4,642,488	06/772,223	2/10/87
4,642,502	06/855,344	2/10/87
4,642,505	06/585,967	2/10/87
4,642,511	06/846,175	2/10/87
4,642,526	06/650,809	2/10/87
4,642,533	06/716,814	2/10/87
4,642,534	06/754,974	2/10/87
4,642,535	06/566,518	2/10/87
4,642,538	06/825,608	2/10/87
4,642,540	06/547,966	2/10/87
4,642,545	06/775,811	2/10/87
4,642,546	06/671,906	2/10/87
4,642,557	06/639,474	2/10/87
4,642,558	06/481,389	2/10/87
4,642,565	06/666,192	2/10/87
4,642,566	06/632,473	2/10/87
4,642,574	06/790,211	2/10/87
4,642,592	06/727,947	2/10/87
4,642,603	06/630,313	2/10/87
4,642,609	06/685,953	2/10/87
4,642,610	06/624,746	2/10/87
4,642,611	06/542,053	2/10/87
4,642,622	06/481,937	2/10/87
4,642,624	06/569,784	2/10/87
4,642,633	06/520,790	2/10/87
4,642,650	06/679,373	2/10/87
4,642,651	06/653,645	2/10/87
4,642,653	06/857,395	2/10/87
4,642,660	06/813,380	2/10/87
4,642,665	06/683,729	2/10/87
4,642,667	06/661,819	2/10/87
4,642,669	06/679,359	2/10/87
4,642,671	06/518,106	2/10/87
4,642,690	06/644,400	2/10/87
4,642,717	06/712,664	2/10/87
4,642,719	06/467,287	2/10/87
4,642,721	06/677,197	2/10/87
4,642,729	06/868,793	2/10/87
4,642,738	06/819,871	2/10/87
4,642,752	06/676,525	2/10/87
4,642,766	06/709,234	2/10/87
4,642,776	06/627,622	2/10/87
4,642,780	06/667,644	2/10/87
4,642,787	06/635,960	2/10/87
4,642,800	06/769,129	2/10/87
4,642,807	06/682,867	2/10/87
4,642,809	06/707,042	2/10/87

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE
(35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below is considered as not having expired but is subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
Re. 32,404 (4,489,812)	06/714,166 (06/516,031)	4/21/87 (12/25/84)	3/20/85 (7/22/83)	3/14/91

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,498,277	06/533,921	2/12/85	9/20/83	3/15/91
4,509,525	06/422,174	4/09/85	9/23/82	3/14/91
4,537,261	06/585,240	8/27/85	3/01/84	3/14/91
4,598,940	06/681,286	7/08/86	12/13/84	3/18/91
4,615,509	06/790,608	10/07/86	10/23/85	3/14/91
4,630,421	06/803,134	12/23/86	11/29/85	3/12/91

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b).

4,771,012, Re. S. N. 07/581,781, Filed Sept. 13, 1990, Cl. 437/29, METHOD OF MAKING SYMMETRICALLY CONTROLLED IMPLANTED REGIONS USING ROTATIONAL ANGLE OF THE SUBSTRATE, Toshiki Yabu, et al., Owner of Record: *Matsushita Electric Industrial Co., Ltd., Osaka, Japan*, Attorney or Agent: V.M. Creedon, Ex. Gp.: 114

4,762,342, Re. S. N. 07/663,728, Filed Mar. 1, 1991, Cl. 282/9, MANIFOLD FORM ASSEMBLY, Gary J. Thompson, Owner of Record: *Inventor*, Attorney or Agent: Andrew S. McConnell, Ex. Gp.: 326

4,779,165, Re. S. N. 07/599,516, Filed Oct. 18, 1990, Cl. 360/97, DISK STORAGE DRIVE, Dieter Elsaesser, et al., Owner of Record: *Pabst-Motoren GmbH & Co. Kg., Black Forest, Germany*, Attorney or Agent: Wilford L. Wisner, Ex. Gp.: 233

4,779,455, Re. S. N. 07/603,008, Filed Oct. 25, 1990, Cl. 73/116, AIR-FUEL RATIO DETECTING SENSOR, Hiroshi Kuroiwa, et al., Owner of Record: *Hitachi, Ltd., Tokyo, Japan*, Attorney or Agent: John R. Mattingly, Ex. Gp.: 265

4,791,631, Re. S. N. 07/627,090, Filed Dec. 13, 1990, Cl. 372/22, WIDE TOLERENCE, MODULATED BLUE LASER SOURCE, Jean-Claude J. E. Baumert, et al., Owner of Record: *International Business Machines Corp., Armonk, N.Y.*, Attorney or Agent: Robert B. Martin, Ex. Gp.: 251

4,798,783, Re. S. N. 07/581,630, Filed Sept. 11, 1990, Cl. 430/372, METHOD OF PROCESSING SIBER HALIDE COLOR PHOTOGRAPHIC MATERIAL AND PHOTOGRAPHIC COLOR DEVELOPING COMPOSITION, Takatoshi Ishikawa, et al., Owner of Record: *Fuji Photo Film Co., Ltd., Kanagawa, Japan*, Attorney or Agent: Joseph J. Ruch, Ex. Gp.: 156

4,800,608, Re. S. N. 07/647,743, Filed Jan. 28, 1991, Cl. 15/167, TOOTHBRUSH, John R. Key, Owner of Record: *Inventor*, Attorney or Agent: Robert C. Shaddox, Ex. Gp.: 242

4,810,691, Re. S. N. 07/664,762, Filed Mar. 5, 1991, Cl. 514/2, POLYPEPTIDE CARTILAGE-INDUCING FACTORS FOUND IN BONE, Saeid Seyedin, et al., Owner of Record: *Celtrix Laboratories, Palo Alto, Calif.*, Attorney or Agent: Kenneth M. Goldman, Ex. Gp.: 189

4,843,063, Re. S. N. 07/664,766, Filed Mar. 5, 1991, Cl. 514/2, POLYPEPTIDE CARTILAGE-INDUCING FACTORS FOUND IN BONE, Saeid Seyedin, et al., Owner of Record: *Celtrix Laboratories, Palo Alto, Calif.*, Attorney or Agent: Kenneth M. Goldman, Ex. Gp.: 189

4,879,982, Re. S. N. 07/666,182, Filed Mar. 7, 1991, Cl. 123/339, METHOD OF AND APPARATUS FOR CONTROLLING ENGINE REVOLUTION SPEED, Tomiya Itakura, et al., Owner of Record: *Hitachi, Ltd. and Hitachi Automotive Engineering Co., Ltd., Tokyo and Katsuta-Shi, Japan*, Attorney or Agent: Donald R. Antonelli, Ex. Gp.: 342

4,896,334, Re. S. N. 07/666,728, Filed Mar. 8, 1991, Cl. 375/020, METHOD AND APPARATUS FOR TIMING RECOVERY, Babak Sayar, Owner of Record: *Northern Telecom Limited, Quebec, Canada*, Attorney or Agent: Arthur Schwartz, Ex. Gp.: 263

4,913,725, Re. S. N. 07/662,307, Filed Feb. 28, 1991, Cl. 71/92, GRANULAR FERTILIZER COMPOSITION, Akira Nishikawa, et al., Owner of Record: *Sumitomo Chemical Company, Ltd., Osaka, Japan*, Attorney or Agent: Marc J. Luddy, Ex. Gp.: 129

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

4,473,980, Reexam. No. 90/002,297, Requested Mar. 15, 1991, Cl. 052/202, THERMAL INSULATION STRUCTURE FOR WINDOWS, Kenneth J. Foster, Owner of Record: *Econ, Inc., Boston, Mass.*, Attorney or Agent: Paul J. Cook, Manchester, Mass., Ex. Gp.: 354, Requester: John Wilson James, Pravel, Gambrell, Hewitt, et al., Houston, Tex.

4,809,308, Reexam. No. 90/002,298, Requested Mar. 15, 1991, Cl. 378/099, METHOD AND APPARATUS FOR PERFORMING AUTOMATED CIRCUIT BOARD SOLDIER QUALITY INSPECTIONS, John Adams, et al., Owner of Record: *IRT Corp., San Diego, Calif.*, Attorney or Agent: Neil F. Martin, Brown, Martin, Haller & McClain, San Diego, Calif., Ex. Gp.: 256, Requester: Owner

4,893,422, Reexam. No. 90/002,299, Requested Mar. 15, 1991, Cl. 038/077.3, STEAM IRON WITH WATER SOFTENING FACILITY, Gotthard C. Mahlich, et al., Owner of Record: *Robert Krups, Stufting & Co. KG, Solingen, Fed'l. Republic of Germany*, Attorney or Agent: Peter K. Kontler, Stamford, Conn., Ex. Gp.: 247, Requester: Ralston, Ltd., Amsterdam, The Netherlands

Correction

On February 26, 1991, a notice appeared in the Official Gazette concerning In Vitro International Inc., an international depositary authority under the terms of the Budapest Treaty on International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure. 1123 O.G. 59. The notice quoted a letter from the United States to the World Intellectual Property Organization stating that "it can no longer assure that IVI is able to continue to comply with the requirements of Article 6(2) of the Budapest Treaty with respect to any new deposits." This sentence should have read "with respect to any original deposits." The date of that letter should be March 4, 1991.

March 4, 1991

HARRY F. MANBECK, Jr.
Assistant Secretary and Commisssioner of Patents and Trademarks

Errata

"All reference to Patent No. 5,002,947 to Masayuki, et al., of Tokyo, Japan, for `4-OXOQQUINOLINE-3-CARBOXYLIC ACID DERIVATIVES AND THEIR USE' appearing in the Offical Gazette of Mar. 26, 1991 should be deleted since no patent was granted."

"All reference to Patent No. 5,003,071 to Udo Mayer of Federal Republic of Germany for `QUINOLINE COMPOUNDS' appearing in the Official Gazette of Mar. 26, 1991 should be deleted since no patent was granted."

In the list of patents which expired on Dec. 16, 1990, due to failure to pay maintenance fees, in the O.G. of Feb. 26, 1991, the following patent should not have appeared:

Patent No.	Serial No.	Issue Date	Filing Date
4,628,942	06/659,823	12/16/86	10/11/84

In the list of patents which expired on Dec. 2, 1990, due to failure to pay maintenance fees, in the O.G. of Feb. 12, 1991, the following patent should not have appeared:

Patent No.	Serial No.	Issue Date	Filing Date
Re. 32,639 (D. 287,060)	07/032,726 (06/582,780)	4/12/88 (12/02/86)	4/12/87 (2/23/87)

In the list of patents which expired on Apr. 1, 1990, due to failure to pay maintenance fees, in the O.G. of June 12, 1990, the following patent should not have appeared:

Patent No.	Serial No.	Issue Date	Filing Date
Re. 32,662 (4,322,080)	06/580,447 (06/132,092)	5/03/88 (3/30/82)	2/15/84 (3/20/80)

In the list of Patents in the NOTIFICATION OF ACCEPTANCE OF MAINTENANCE FEE (35 U.S.C. 41(c); 37 CFR 1.378) in the O.G. of Nov. 27, 1990 the following correction should be made:

Patent No. "4,355,166" should be —4,335,166—.

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PATENT NOTICES

Certificates of Correction For Week of April 23, 1991

D. 306,776	4,829,641	4,883,914	4,904,659
PP. 6,802	4,832,692	4,884,138	4,904,738
Re. 33,520	4,834,921	4,884,978	4,905,191
4,476,111	4,836,267	4,886,471	4,905,344
4,669,694	4,836,869	4,886,737	4,906,764
4,688,324	4,837,623	4,887,224	4,906,857
4,708,205	4,837,786	4,887,986	4,906,970
4,735,282	4,837,802	4,888,223	4,906,978
4,752,877	4,839,750	4,888,379	4,907,199
4,755,208	4,842,015	4,889,599	4,907,251
4,756,186	4,842,063	4,889,893	4,907,525
4,758,563	4,843,563	4,890,650	4,909,564
4,770,179	4,843,975	4,891,736	4,909,688
4,773,414	4,844,297	4,892,094	4,909,936
4,775,973	4,844,372	4,892,834	4,909,963
4,776,608	4,844,777	4,894,543	4,910,416
4,783,529	4,846,102	4,894,555	4,910,584
4,789,073	4,847,796	4,894,679	4,910,594
4,795,411	4,851,009	4,895,531	4,912,525
4,800,882	4,853,443	4,895,584	4,913,527
4,801,142	4,853,972	4,895,996	4,914,779
4,808,729	4,855,681	4,896,029	4,916,768
4,809,291	4,855,935	4,896,794	4,917,320
4,810,198	4,856,348	4,897,277	4,918,077
4,814,861	4,856,541	4,897,732	4,918,125
4,815,491	4,858,131	4,897,819	4,920,882
4,816,380	4,858,733	4,898,182	4,923,897
4,816,491	4,860,526	4,900,076	4,927,948
4,817,586	4,865,599	4,900,114	4,936,834
4,818,773	4,865,922	4,900,612	4,944,560
4,822,722	4,866,532	4,902,346	4,960,983
4,823,951	4,872,455	4,902,434	4,967,209
4,824,881	4,873,360	4,902,818	4,972,427
4,825,406	4,874,048	4,902,988	4,972,530
4,825,514	4,876,601	4,903,521	4,979,845
4,825,596	4,881,484	4,903,923	4,990,373
4,826,984	4,882,653	4,904,168	
4,828,748	4,882,670	4,904,347	

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	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861

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STEPHEN G. KUNIN, Acting Deputy Assistant Commissioner

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ORGANIC CHEMISTRY GROUP 120—JOHN F. TERAPANE, JR., Director	308-1235
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP—130 BARRY S. RICHMAN, Director	308-0651
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GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350 A. L. SMITH, Director	308-0651

Expiration of patents The patents within the range of numbers indicated below expire during March 1991 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

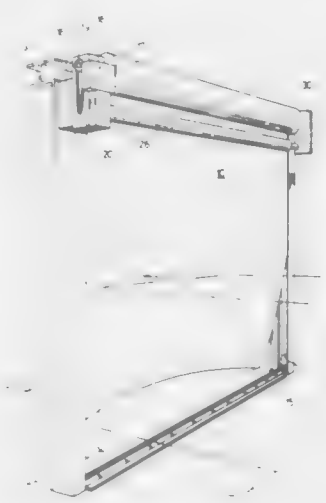
Patents ..... Numbers 3,795,014 to 3,800,328 inclusive
Plant Patents ..... 3,501 to 3,534 inclusive

REEXAMINATIONS

APRIL 23, 1991

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification, matter printed in italics indicates additions made by reexamination.

B1 4,478,268 (1452nd)
DOOR STRUCTURE
Glenn R. Palmer, Toronto, Canada, assignor to M & I Door Systems Limited
Reexamination Request No. 90/002,028, May 17, 1990.
Reexamination Certificate for Patent No. 4,478,268, issued Oct. 23, 1984, Ser. No. 481,277, Apr. 1, 1983.
Continuation of Ser. No. 220719, Dec. 29, 1980, abandoned
Int. Cl.[5] **E06B** *9/58*
U.S. Cl. 160—310



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–9** is confirmed.

Claims **10** and **11** are determined to be patentable as amended.

Claims **12–14**, dependent on an amended claim, are determined to be patentable.

New claims **15–18** are added and determined to be patentable.

1. A damage-minimizing door comprising:
a flexible curtain having an upper end and a lower end and side edges;
a curtain winding mechanism;
said upper end of said curtain being secured to said winding mechanism for moving said curtain upwards and downwards;
a pair of parallel spaced apart guide channels, said side edges of said curtain being movable in said guide channels, being sealingly engageable therewith under at least atmospheric pressure and being releasable therefrom at a predetermined impact force on said curtain; and,
a rigid bar secured adjacent the lower end of said curtain, said rigid bar being releasably secured to said curtain and releasing therefrom at said predetermined impact force.

B1 4,645,317 (1453rd)
EYEGLASS LENS MODULES AND METHOD
Philip M. Frieder, Miami, and Edward deRojas, Lauderhill, both of Fla., assignors to Optical Systems International, Inc., Hialeah, Fla.
Reexamination Request No. 90/001,579, Aug. 18, 1988.
Reexamination Certificate for Patent No. 4,645,317, issued Feb. 24, 1987, Ser. No. 468,700, Feb. 22, 1983.
Int. Cl.[5] **G02C** *7/06, 7/08, 7/10*
U.S. Cl. 351—164

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **7** is cancelled.

Claims **1**, **6** and **9** are determined to be patentable as amended.

Claims **2–5** and **8**, dependent on an amended claim, are determined to be patentable.

New Claim **10** is added and determined to be patentable.

1. A method for assembling an eyeglass lens having at least two corrections comprising the steps of:
selecting a first prescription lens component having a given [positive or negative diopter correction, and any cylinder correction prescription on the rear ocular surface and a preselected front surface without cylinder corrections,] *ocular side patient total prescription of both spherical and cylindrical power correction except for a presbyopia correction, said first prescription lens component having a front surface to be covered and laminated to a second lens component,*
selecting a second lens component being [essentially] optically plano [but having a performed prescription correction at a] *in the distance portion of the lens and having a preformed presbyopia prescription correction feature at the front* portion of the second lens component and having a preselected rear surface complementary with the front surface of the *first* presciption lens *component,*
and thereafter [optically] *physically* bonding the two lens components to each other, with the second lens component being the exterior portion of the lens, thereby positioning *only* the preformed *presbyopia* prescription correction feature on the *front portion of the* outer second lens component.

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue

Re. 33,574

SUBSTITUTED BIPHENYL DERIVATIVES

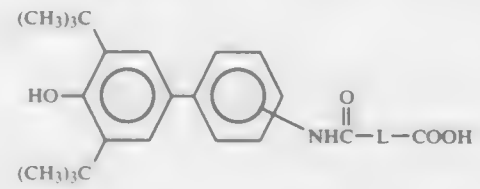
Alan R. Kirk, Cottage Grove, and Robert A. Scherrer, White Bear Lake, both of Minn., assignors to Riker Laboratories, Inc., St. Paul, Minn.

Original No. 4,710,515, dated Dec. 1, 1987, Ser. No. 26,877, Mar. 17, 1987. Application for reissue Jan. 24, 1990, Ser. No. 469,204

Int. Cl.[5] **A61K** *31/195*

U.S. Cl. 514—563 **13 Claims**

12. An antiallergic pharmaceutical composition comprising a compound of the formula



wherein L is divalent phenyl, straight-chained lower alkylene wherein the alkylene chain may optionally contain an ether or thioether linkage, or divalent cycloalkyl, with the proviso that when L is divalent cycloalkyl and the amide carbonyl and the carboxyl are on adjacent carbons, then the amide carbonyl and the carboxyl are cis to each other; or a carboxylate derivative thereof selected from a lower alkyl ester, a (lower)alkylamino(lower)alkyl ester, a pharmaceutically acceptable (lower)alkylamino(lower)alkyl ester acid addition salt and a pharmaceutically acceptable carboxylate salt,

in a dosage form selected from the group consisting of a tablet, a capsule, an aerosol, a controlled release patch, and a powder, said compound being present in an amount sufficient for providing an antiallergic response.

Re. 33,575

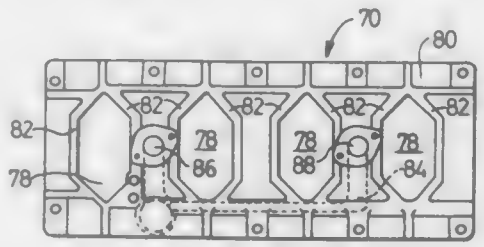
INTERNAL COMBUSTION ENGINE NOISE REDUCTION PLATE

Benny Ballheimer, and Michael K. Stratton, both of Peoria, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Original No. 4,771,747, dated Sep. 20, 1988, Ser. No. 134,421, Dec. 17, 1987. Application for reissue Apr. 30, 1990, Ser. No. 516,885

Int. Cl.[5] **F02B** *77/00;* **F02F** *7/08*

U.S. Cl. 123—198 E **20 Claims**



1. A cylinder block having a pair of elongate, spaced apart sidewalls each defining an outer mounting surface along a lower edge thereof, crankshaft mounting means integral with the block in elevationally upwardly spaced relation to the outer mounting surface and including removable bearing caps the sidewalls further defining inner mounting surfaces elevationally spaced below the bearing caps;

a crankshaft rotatably mounted in the crankshaft mounting means and retained therein by the bearing caps;

an oil pan sealingly and removably connected to the outer mounting surfaces of the sidewalls; and

rigidifying means removably connected to the inner mounting surface, said rigidifying means structurally interconnecting the pair of sidewalls, *said sidewalls having an inner mounting side being in frictional engagement with substantially the entire length of the inner mounting surface* and being free of connection with the bearing caps.

Re. 33,576

COUPLING ASSEMBLY AND FRICTION SHOE THEREFOR

James M. Latako, North Royalton, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Original No. 4,795,013, dated Jan. 3, 1989, Ser. No. 40,507, Apr. 20, 1987. Application for reissue Jul. 21, 1989, Ser. No. 384,146

Int. Cl.[5] **F16D** *25/04, 13/10, 69/04*

U.S. Cl. 192—88 B **14 Claims**

7. A friction shoe for use in a friction coupling which includes an input member, an output member and a fluid inflatable annular tube element having a portion thereof which moves radially to couple and decouple the input and output members, said friction shoe comprising a backing plate having an opening therein, a pad made of friction material secured to one side of said backing plate, a driving bar made of the friction material and disposed on a side of said backing plate opposite from said pad, said friction material extending through said opening in said backing plate and overlying the side of said backing plate opposite from said pad, said pad, driving bar and friction material extending through said opening in said backing plate being formed as one piece to join together said backing plate, pad and driving bar as a unitary structure, said friction shoe having means for use in attaching said friction shoe to the portion of the tube element which moves radially to enable said friction shoe to be attached to the tube element with said driving bar positioned to facilitate torque transfer between said friction shoe and the tube element.

Re. 33,577

ADVANCED PIEZOCERAMIC POWER SWITCHING DEVICES EMPLOYING PROTECTIVE GASTIGHT ENCLOSURE AND METHOD OF MANUFACTURE

John D. Harnden, Jr., Schenectady; William P. Kornrumpf, Albany, and George A. Farrall, Rexford, all of N.Y., assignors to General Electric Company, Fort Wayne, Ind.

Original No. 4,689,517, dated Aug. 25, 1987, Ser. No. 881,525, Jun. 30, 1986. Division of Ser. No. 685,108, Dec. 21, 1984, Pat. No. 4,714,847. Application for reissue Jul. 20, 1989, Ser. No. 383,315

Int. Cl.[5] **H01L** *41/08*

U.S. Cl. 310—332 **28 Claims**

25. Electrical switching apparatus comprising:

a gastight protective enclosure secured to a base member for supporting the enclosure,

means for sealing the interior of the enclosure in a gastight manner,

at least one piezoelectric bender member having

a bender portion formed by two juxtaposed piezoelectric planar plate elements secured together sandwich fashion, the bender portion having inner and outer conductive surfaces formed on the planar surfaces of the plate elements, and

a non-bending portion adjacent the bender portion, the non-bending portion being electrically isolated from the conductive surfaces,

first terminal means operatively connected to the conductive surfaces for applying electric potentials to the respective plate elements in the bender portion.

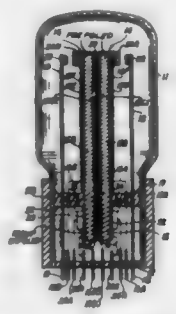
means for clamping the bender member within the enclosure by securing the non-bending portion so that the bender member is physically supported cantilever fashion with the bender portion being movable, the non-bending portion being clamped by the clamping means,

first electric switch contact means within the gastight enclosure mechanically connected to the movable end of the bender portion,

second electric switch contact means physically mounted within the gastight enclosure and selectively engageable by the first electric switch contact menas upon the selective application of an electric potential to a respective one of the piezoelectric plate elements for causing the bender member to bend and close the first and second electric switch contact means to allow electric current flow therethrough,

respective electrically conductive lead means connected to the first and second electric switch contact means and extending to respective second terminal means supported by the base member outside the protective gastight enclosure for selectively supplying electric load current to a load outside the enclosure via the first and second electric switch contact means, and

electric circuit components in the form of passive circuit elements and/or active semiconductor devices supported to said non-bending portion of the bender member and electrically connected in circuit relationship with the first terminal means.



PLANT PATENTS

GRANTED APRIL 23, 1991

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

7,502

CHERRY TREE (AARON GEE)

Norman G. Bradford, 11875 E. Savana Rd., and Lowell G. Bradford, 12439 E. Savana Rd., both of Le Grand, Calif. 95333

Filed Dec. 29, 1989, Ser. No. 459,256

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—37 **1 Claim**

1. A new and distinct variety of cherry tree, substantially as illustrated and described, that is similar to its grandparent, the Bing Cherry (unpatented), by being self-sterile and by producing dark red fruit that is crack resistant, but is distinguished therefrom and an improvement thereon by producing fruit that is larger in size, 3 days earlier in ripening, and less prone to doubling, and that is also similar to the Tulare Cherry (U.S. Plant Pat. No. 6,407) by producing fruit that is dark red in color, resistant to cracking and doubling, but is distinguished therefrom and an improvement thereon by being more vigorous, more productive, and producing fruit that is much larger in size, 5 days later in maturing, and that has a shorter stem.

7,503

PLUM TREE (PURPLE MAJESTY)

Norman G. Bradford, 11875 E. Savana Rd., and Lowell G. Bradford, 12439 E. Savana Rd., both of Le Grand, Calif. 95333

Filed Dec. 26, 1989, Ser. No. 457,183

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—38 **1 Claim**

1. A new and distinct variety of plum tree, substantially as illustrated and described, which matures at nearly the same time as Santa Rosa, unpatented, but is distinguished therefrom and an improvement thereon by producing fruit that is larger in size, much firmer in texture, darker in skin color at shipping ripeness, and axially compressed in shape.

7,504

PLUM TREE (BLACK NOBLE)

Norman G. Bradford, 11875 E. Savana Rd., and Lowell G. Bradford, 12439 E. Savana Rd., both of Le Grand, Calif. 95333

Filed Dec. 28, 1989, Ser. No. 458,408

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—38 **1 Claim**

1. A new and distinct variety of plum tree, substantially as illustrated and described, which is most similar to its selected seed parent, Red Beaut (U.S. Plant Pat. No. 2,539), by being self-sterile and by producing medium size fruit that is very attractive in shape, very shiny in surface appearance, and very firm in texture, but is distinguished therefrom and an improvement thereon by producing fruit that ripens seven days later, that is very dark reddish purple in skin color instead of red, that is red in flesh color instead of yellow, and that is much sweeter in flavor.

7,505

NECTARINE TREE, "LATE RED JIM II"

John W. Tos, Hanford, Calif., assignor to Tos Farms, Inc., Hanford, Calif.

Filed Dec. 26, 1989, Ser. No. 457,159

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree substantially as illustrated and described and which is somewhat remotely similar to the Red Jim nectarine tree (U.S. Plant Pat. No. 4,518) with which it is most closely similar but from which it is distinguished and characterized principally as to novelty by producing fruit which is mature for commercial harvest and shipment approximately August 30 through September 20 in the San Joaquin Valley of California and which further has noteworthy shipping and handling characteristics.

7,506

NECTARINE TREE (SUMMER FIRE)

Norman G. Bradford, 11875 E. Savana Rd., and Lowell G. Bradford, 12439 E. Savana Rd., both of Le Grand, Calif. 95333

Filed Dec. 26, 1989, Ser. No. 457,232

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of mid-seasonal ripening clingstone nectarine tree, substantially as illustrated and described, which most nearly resembles the Summer Bright (U.S. Plant Pat. No. 7,049) nectarine variety by producing fruit that is nearly full red in color, clingstone in type, and exceptionally firm in texture, but is distinguished from and an improvement on that variety by producing fruit that is somewhat larger in size and that ripens nine days later, thus extending those desirable qualities into a later harvesting and marketing season.

7,507

NECTARINE TREE (SPRING BRIGHT)

Norman G. Bradford, 11875 E. Savana Rd., and Lowell G. Bradford, 12439 E. Savana Rd., both of Le Grand, Calif. 95333

Filed Dec. 26, 1988, Ser. No. 457,236

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of clingstone nectarine tree, substantially as illustrated and described, whose fruit matures at nearly the same time as Spring Red (U.S. Plant Pat. No. 3,619), but is distinguished therefrom and an improvement thereon by producing fruit that is darker red in skin color, very much firmer in texture, much sweeter in flavor, and clingstone instead of freestone in type; whose fruit most nearly resembles the May Diamond (U.S. Plant Pat. No. 5,454), the seed parent, by being a full red colored nectarine with excellent firmness, but is distinguished therefrom and an improvement thereon by ripening sixteen days later, by being a clingstone instead of a freestone, and by having a sweeter flavor; and whose tree is distinguished from the May Diamond by producing a large instead of small blossom and by having globose instead of reniform glands.

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PATENTS

GRANTED APR. 23, 1991

ERRATA

For CLASS	See PATENT NO.
209-615	5,009,331
209-652	5,009,332
211-013	5,009,333
211-054	5,009,334
211-055	5,009,335
211-086	5,009,336
211-086	5,009,337
215-230	5,009,338
346-138	5,009,509
436-077	5,010,020
436-120	5,010,021
436-123	5,010,022
548-267	5,010,208
318-116	5,010,222
315-384	5,010,284
324-173	5,010,290
341-065	5,010,344
341-065	5,010,345
341-137	5,010,346
341-143	5,010,347
369-077	5,010,484

5,008,959

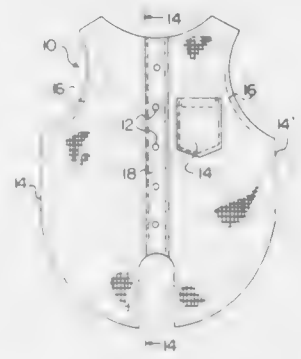
BULLETPROOF DRESS SHIRT

Edward A. Coppage, Jr., 3031 Borge St., Unit 109, Oakton, Va. 22124, and Richard W. Coppage, 14607 Batavia Dr., Centreville, Va. 22020

Filed Feb. 28, 1990, Ser. No. 486,374

Int. Cl.[5] F41H *1/00;* A41D *13/00, 1/04*

U.S. Cl. 2—2.5 16 Claims



1. A bulletproof shirt comprising: a front panel and a rear panel and connecting means releasably attaching said front panel to said rear panel;

said front panel including:

(a) an outer layer including means incorporated thereon causing said outer layer to resemble a shirt;

(b) a middle layer including a portion of said connecting means;

(c) an inner layer including a first opening bounded by first and second means releasably fastening said opening in a closed configuration;

(d) said outer layer being permanently fastened to said middle layer at one location and said middle layer being permanently fastened to said inner layer to form a front panel containment area between said inner and middle layers accessible through said first opening;

said rear panel including:

(a) an outer layer including a portion of said connecting means and further including third releasable fastening means;

(b) an inner layer including fourth releasable fastening means engageable by said third releasable fastening means;

(c) said inner and outer layers of said rear panel being permanently fastened together so that said third and fourth releasable fastening means engage one another and provide closable access to a rear panel containment area formed between said layers;

said inner layers of said front and rear panel comprising a bi-component fabric having hydrophobic and hydrophilic capabilities;

said shirt further including removable bulletproof pads,

a first said pad being removably inserted into said front panel containment area and a second said pad being removably inserted into said rear panel containment area; said pads each comprising a series of layers of woven and non-woven ultrahigh molecular weight extended chain polyethylene material, said woven layers comprising fibers of from 185 denier to 500 denier and said non-woven layers being unidirectional pads;

said front and rear panels being assembled to one another by engagement of said connecting means in said panels.

5,008,960

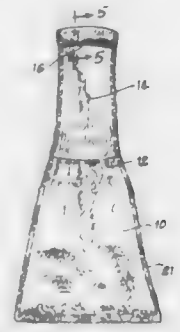
NURSING GARMENT

Valda K. Hemming, 13329 Canyon Back Lane, Poway, Calif. 92064

Filed Jun. 15, 1990, Ser. No. 538,553

Int. Cl.[5] A41D *1/20, 1/22*

U.S. Cl. 2—104 1 Claim



1. A nursing garment to cover the breast of a woman while nursing a baby, comprising:

(a) an absorbent upper portion for lying over the shoulder of a nursing woman;

(b) retaining means connected to the upper end of said absorbent portion for retaining same in place over the shoulder of the woman;

(c) an expanded lower portion connected to said upper portion to flair out to cover both the breast of the woman and at least a portion of the nursing baby;

(d) said upper portion and said lower portion being integrally knit, with said upper portion being close-knit and absorbent for burping the baby thereon and said lower portion expanding into a loose, open knit to provide adequate ventilation for the baby;

(e) said retaining means comprising weight means weighing on the order of two ounces sewn into the upper edge of said upper portion and being padded to provide a soft contact for the woman and baby.

5,008,961

SANITARY HEAD COVERING AND METHOD OF MANUFACTURE

Vance M. Hubbard, and Welton K. Brunson, both of Bedford, Tex., assignors to Tecnol, Inc., N. Richland Hills, Tex.

Filed Jul. 20, 1989, Ser. No. 382,259

Int. Cl.[5] A42B *1/02, 1/04*

U.S. Cl. 2—195 11 Claims

1. A method for forming a sanitary head covering, comprising the steps of:

adhering a first upper edge of an expandable crown portion to a second upper edge of an elongated flexible sheet;

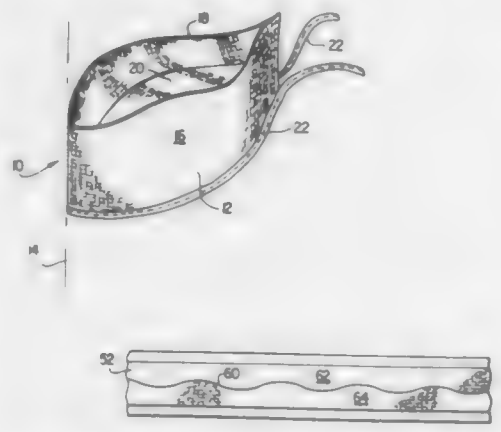
securing ties to said elongated sheet to enable attachment of the head covering to the head of a wearer;

folding said elongated sheet and said crown portion in half about a transverse axis to form a first and a second side portion;

adhering a first lower edge of said crown portion of said first side portion to a second lower edge of said crown portion of said second side portion; and

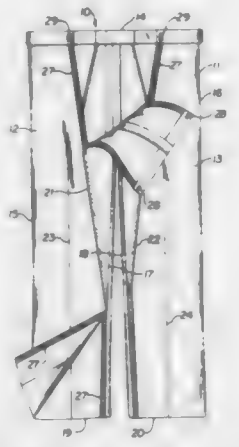
adhering a first corner on said upper edge of said elongated

sheet which is opposite said transverse axis on said first side portion to a second corner on said upper edge of said



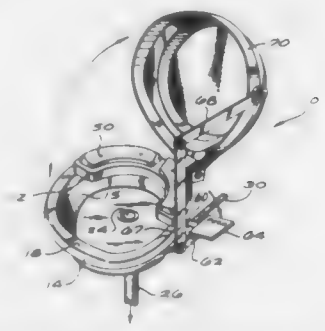
elongated sheet which is opposite said transverse axis on said second side portion to form the headcovering.

5,008,962
EASY TO FASTEN TROUSERS
Lynn U. Smith, 6939 Reynolds St., Pittsburgh, Pa. 15208, and Mario J. Merlino, Moscow, Pa., assignors to Lynn U. Smith, Pittsburgh, Pa.
Filed Feb. 8, 1990, Ser. No. 476,772
Int. Cl.[5] A41D *1/06*
U.S. Cl. 2—234 **9 Claims**



1. In trousers having an upper edge, a pelvic sheath, and two adjacent legs each having an outseam, an inseam and a hem edge, the improvement comprising two selectively openable seams, each of said selectively openable seams extending down the front portion of its own respective trouser leg from said upper edge to one of said hem edges, with each of said selectively openable seams being positioned at said upper edge at a horizontal position between the respective adjacent outseam and respective adjacent inseam of said trouser leg and tapering diagonally away from said outseam and into the area of said respective adjacent inseam.

5,008,963
EMERGENCY WASH STATION
Matthew I. Stein, Truckee, Calif., assignor to Haws Company, Sparks, Nev.
Filed Jul. 3, 1989, Ser. No. 375,121
Int. Cl.[5] A61H *33/00*
U.S. Cl. 4—620 **18 Claims**

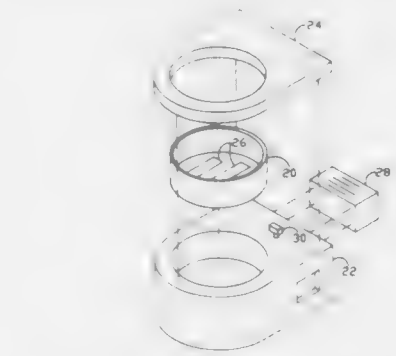


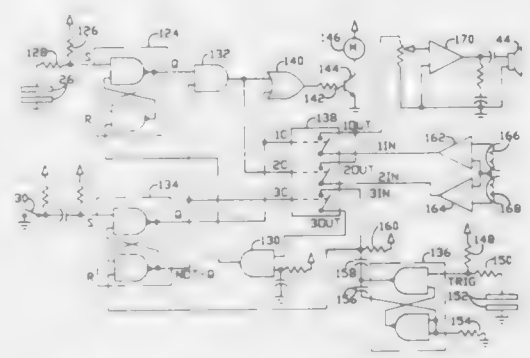
10. An emergency wash station, comprising:
a drain bowl having an upper rim projecting outwardly from a basin, said upper rim having a mounting port formed therein at a position located generally at a rear side of the drain bowl;
a spray manifold having a curved, generally C-shaped geometry and including upper and lower interfitting and generally shell-shaped manifold members cooperatively defining a manifold chamber extending generally in opposite directions from an inlet fitting adapted for passage of water into the manifold chamber, said upper manifold member of said spray manifold further defining a relatively large plurality of generally upwardly open spray ports for passage of water upwardly from said manifold chamber as a plurality of small water streams;
means for mounting said inlet fitting to said upper rim with said inlet fitting projecting through said mounting port and with said spray ports of said spray manifold each located a substantial distance above said upper rim, said spray manifold extending from said inlet fitting to laterally opposite sides of the drain bowl;
means for connecting a water supply pipe to said inlet fitting; and
valve means mounted in-line with said water supply pipe and normally closed to prevent water flow to said manifold chamber, said valve means being movable to an open position to permit water flow to said manifold chamber.

5,008,964
CHILD'S TOILET
Janet C. Dean, R.R. 3, Box 120, Spencer, Iowa 51301, and Terry B. Dean, Mountain View, Calif., assignors to Janet C. Dean, Spencer, Iowa
Filed Feb. 9, 1990, Ser. No. 477,465
Int. Cl.[5] A47K *11/04;* **A61G** *9/00*
U.S. Cl. 4—661 **6 Claims**

1. A music and speech generating potty chair with a removable waste receptor and a seat used to toilet train a child, comprising:
(a) a pressure sensitive switch between the seat and the chair adapted to close when the child sits on the seat;
(b) a waste moisture sensing circuit with a sensor mounted in the bottom of the receptor adapted to generate a detection signal upon sensing bodily waste introduced into the receptor;
(c) a timing and control circuit responsive to the switch being closed and the detection signal adapted to produce control signals and the clock pulses;
(d) a data storage circuit responsive to the control signals and the clock pulses containing musical sound data and speech message data;

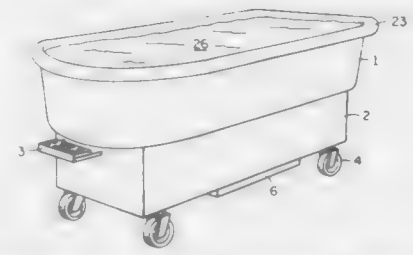
(e) a tune generating circuit responsive to the control signals and the clock pulses and being adapted to access the musical sound data from the data storage circuit and convert the musical sound data into musical sounds when the switch is closed by the child sitting on the chair to thereby require less parental supervision and entertain the child while on the chair;
(f) a speech generating circuit responsive to the control signals and clock pulses and being adapted to access the





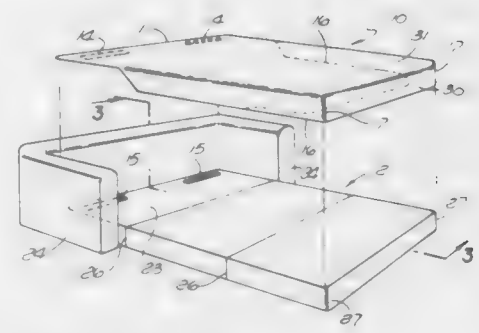
speech message data from the data storage circuit and convert the speech message data into speech sounds when the detection signal is generated by the child excreting bodily waste into the receptor to thereby congratulate the child when the child excretes bodily waste while on the chair; and
(g) an amplifier circuit with a loudspeaker coupled to the tune generating circuit to amplify and audibly produce the musical sounds and coupled to the speech generating circuit to amplify and audibly produce the speech sounds.

5,008,965
FLUIDIZED BEAD BED
John H. Vrzalik, San Antonio, Tex., assignor to Kinetic Concepts, Inc., San Antonio, Tex.
Filed Jul. 11, 1988, Ser. No. 217,685
Int. Cl.[5] A61G *7/00*
U.S. Cl. 5—61 **47 Claims**



47. A method of supporting a patient on a fluidized patient support apparatus of the type comprising a tank containing a mass of granular material covered by a sheet which serves to support a patient comprising the steps of:
alternately inflating opposed bladders in the granular material to turn the patient from side to side.

5,008,966
SHEET FOR FOAM SOFA BED
Joyce Lepow, 1321A E. Allen Rd., Tucson, Ariz. 85719
Filed Mar. 8, 1990, Ser. No. 490,379
Int. Cl.[5] A47G *9/04*
U.S. Cl. 5—496 **8 Claims**



1. A bed sheet comprising:
a first substantially rectangular piece of fabric said first piece of fabric having top and bottom edges and first and second side edges;
a second piece of fabric coupled to said first piece of fabric only along a portion of said first and second side edges and said bottom edge of said first piece of fabric, sao as to form a peripheral border, only partially surrounding the perimeter of said first piece of fabric;
an elastic member, said elastic member being coupled to an outside edge of said peripheral border;
attachment means coupled to a bottom side of said first piece of fabric and disposed substantially adjacent to said top edge of said first piece of fabric whereby the bed sheet at the area adjacent the top edge of said first sheet of fabric is substantially free of downwardly extending border elements, thereby facilitating the attachment of the attachment means on said first piece of fabric to matting attachment means on a foldable mattress that has one of its end portions and at least a part of its side edges surrounded by the back and arms of a sofa bed.

5,008,967
TRIANGULAR TRUSS WALKOUT CANTILEVER
Richard C. Barrios, and Philip A. Hayes, both of Louisville, Ky., assignors to Modern Industries, Inc., Louisville, Ky.
Filed Jul. 13, 1989, Ser. No. 379,551
Int. Cl.[5] B61L *5/12;* **E04C** *3/02;* **E04H** *12/10*
U.S. Cl. 14—7 **4 Claims**

1. In a railroad warning system, a walkout cantilever comprising:
a base adapted to overlie a supporting pad;
an upright mast having a bottom end fixed to said base;
a horizontally disposed truss arm secured to and extending from said mast and including three longitudinal truss members disposed substantially parallel to one another, said truss members comprising a first bottom truss member, a second bottom truss member and a top truss member presenting a cross sectional triangular pattern having a horizontal base and an upwardly projecting apex;
means interlocking said longitudinal truss members, including a plurality of spaced cross members disposed essentially in the plane of said first and second bottom truss members and joined thereto, a vertical brace attached to and extending from a corresponding cross member to said

top truss member, and two pairs of side braces spaced from said vertical brace in opposite longitudinal directions and extending to said top truss member from said first and second bottom truss members;

a signal light unit mounted on said vertical brace;



a catwalk extending along said truss arm substantially in the plane of said first and second bottom truss members; and

means securing said catwalk to one of said bottom truss members.

5,008,968

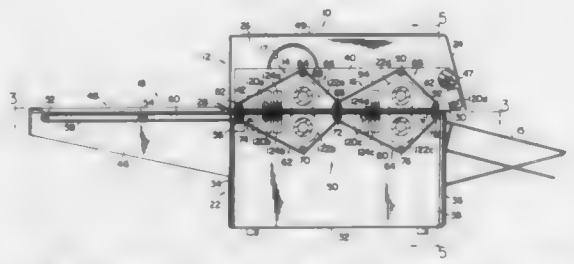
SHEET MATERIAL CLEANING MACHINE

Wallace Preston, West Springfield, Mass., assignor to Markel Industries, Inc., Enfield, Conn. and Julie Associates, Inc., North Billerica, Mass.

Filed Jul. 27, 1989, Ser. No. 386,429

Int. Cl.[5] B08B *6/00*

U.S. Cl. 15—1.51 **22 Claims**



1. Sheet material cleaning machine comprising cleaning means for removing particulate matter from at least one surface of a sheet to be cleaned and including first and second cleaning stations and cleaning apparatus at each of said cleaning stations, and conveying means for positively driving a sheet such as aforesaid along a predetermined generally longitudinally extending path through said cleaning stations, said conveying means occluding a portion of the one surface of the sheet as the sheet is advanced through said first cleaning station and exposing the previously occluded portion of the one surface of the sheet to said cleaning apparatus at said second cleaning station as the sheet is further advanced through said second cleaning station, said conveying means including a first conveyor section for driving the sheet through said first cleaning station and a second conveyor section generally continuous to said first conveyor section for driving the sheet through said second cleaning station, each of said conveyor sections having a plurality of transversely spaced apart sheet engaging elements including upper sheet engaging elements for engaging the upper surface of the sheet and lower sheet engaging elements for engaging the lower surface of the sheet, said sheet engaging elements of said second conveyor section being transversely offset relative to said sheet engaging elements of said first conveyor section.

5,008,969

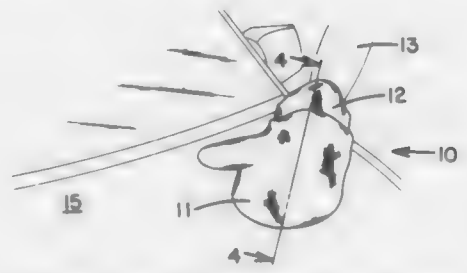
SEPARABLE MULTI-LAYERED WIPING MITTEN

Guy R. Jarrett, 2013 College Ave., Modesto, Calif. 95350

Filed Jul. 23, 1990, Ser. No. 556,355

Int. Cl.[5] A47L *13/18*

U.S. Cl. 15—227 **3 Claims**



1. A separable multi-layered mitten for wiping surfaces prior to painting, said mitten comprising:

A. at least two concentric fabric layers, the outer said layer removable when soiled from a successive inner layer then itself useable for contineous wiping of said surface;

B. a common center of said concentric fabric layers for insertion of the human hand.

5,008,970

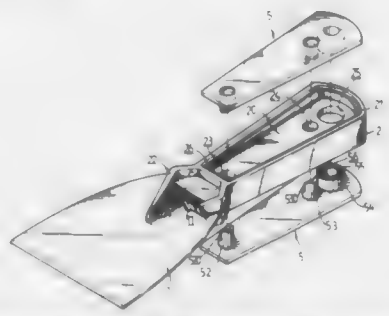
SCRAPER HAVING A HAND GRIP CONSTRUCTION

Su J. Tsai, No. 1, Lane 15-2, Yung Feng Rd., Tai Ping Hsiang, Taichung Hsien, Taiwan

Filed Jan. 22, 1990, Ser. No. 468,159

Int. Cl.[5] A47L *13/022;* **B26B** *3/00*

U.S. Cl. 15—236.01 **3 Claims**



1. A scraper comprising a blade being fixed in a front end of a handle; said handle substantially comprising a plate, an outer perimeter wall being respectively formed on an upper surface and a lower surface of said plate, at least one hole being formed in said plate; an upper cover and a lower cover having a shape corresponding to that of said handle and being respectively provided on an upper surface and a lower surface of said outer perimeter wall of said handle, at least one retainer being formed on one surface of each said cover and being arranged in accordance with said hole of said plate, a semi-circular portion being formed on a free end of each said retainer and being located on one side of a longitudinal axis of each said cover, a plurality of teeth being formed on an end surface of said semi-circular portion of each said retainer, and said semi-circular portion of each said retainer of said upper cover and a corresponding semi-circular portion of each said retainer of said lower cover being inserted into said at least one hole so that said teeth thereof are engaged with one another and so that said covers are clamped together in order to form a smooth outer surface for said handle.

5,008,971

WINDSHIELD WIPER ARM

Kenneth W. Stewart, Sr., Columbus, Miss., assignor to United Technologies Electro Systems, Inc., Columbus, Miss.

Filed Oct. 20, 1989, Ser. No. 424,487

Int. Cl.[5] B60S *1/34*

U.S. Cl. 15—250.2 **5 Claims**



1. A windshield wiper arm for attachment to a wiper arm drive shaft that rotates the arm on a windshield, characterized by:

a wiper arm carrier adapted to fit on the wiper arm drive shaft;

a rod which is rotatably mounted on the carrier and rotatable on the carrier between a first position for causing the wiper to strike the windshield and a second position a fixed distance from the windshield;

resilient means for rotatably holding the rod in tension on the windshield;

detent means on the carrier;

detent engagement means on the rod for engaging the detent means to hold the rod in the second position away from the windshield;

tensioning means engaging the carrier, the rod and the resilient means for adjusting the tension of the rod on the windshield, and

the resilient means forcing the detent engagement means into the detent.

5,008,972

CLEANING DEVICE FOR TEXTILE MACHINES DISPOSED IN A ROW

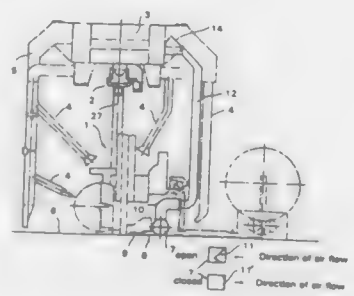
Ulrich Steinike, Augsburg, Fed. Rep. of Germany, assignor to Ernst Jacobi & Co. KG, Augsburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 215,382, Jul. 5, 1988, abandoned. This application Jun. 18, 1990, Ser. No. 539,556

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1987, 3731449

Int. Cl.[5] D01G *15/76*

U.S. Cl. 15—312.2 **22 Claims**



1. A cleaning device for textile machines disposed in a row, comprising a cleaning apparatus for movement back and forth above said machines including blow hoses provided with nozzles for blowing off loose fuzz and at least one suction hose for sucking up the blown off fuzz, at least one stationary blowing means disposed at a side of each machine opposite the suction hose, the blowing means having at least one blast nozzle for blowing air so as to cover the floor below the textile machine, the cleaning apparatus having a vertically extending, substantially rigid air blast duct for docking at the blowing means when the cleaning apparatus is aligned with the blowing means.

5,008,973

MULTI-PURPOSE SUCTION NOZZLE

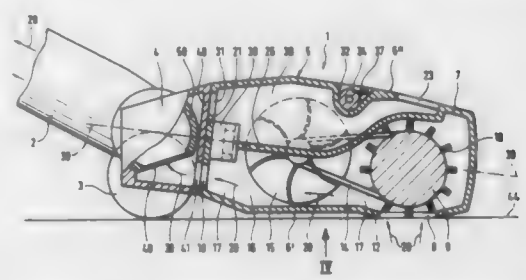
Peter Wörwag, Romanshorn, Switzerland, assignor to Düpro AG, Romanshorn, Switzerland

Filed Jan. 31, 1990, Ser. No. 473,283

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1989, 3902741; Jan. 9, 1990, 4000374

Int. Cl.[5] A47L *5/36*

U.S. Cl. 15—416 **12 Claims**



1. A multi-purpose suction nozzle, for a vacuum cleaner, for cleaning different types of surfaces, such as hard smooth surfaces, textile floor coverings, and upholstery, whereby said suction nozzle is detachably connected to a suction line of said vacuum cleaner via a pivotably mounted connector, said suction nozzle comprising:

a housing having a first suction opening that communicates with a first flow channel, and a second suction opening about which are provided planar slide surfaces and which communicates with a second flow channel, with said housing essentially comprising a rear nozzle portion that is connected to said connector, and a front nozzle portion that is provided with said first and second suction openings, and in which said housing essentially has a low design with two oppositely disposed sides, each of which is provided with one of said suction openings; a partition is disposed between said first and second flow channels, whereby for said selective use of one of said suction openings, said front nozzle portion is rotatable relative to said rear nozzle portion in such a way that one of said sides of said housing, along with the associated suction opening, comes to rest on the floor surface that is to be cleaned;

a brush that is rotatably mounted in said housing in such a way that bristles of said brush extend through said first suction opening; and

means for selectively connecting either said first flow channel or said second flow channel with said connector.

5,008,974

CARRYING HANDLE ASSEMBLY

Randall N. Ellert, Lake Stevens; Robert M. Neel, Woodinville; N. Thatcher Harvey; Wilbur R. Ames, IV, both of Lake Stevens, and Randall D. Lord, Everett, all of Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 28, 1989, Ser. No. 345,324

Int. Cl.[5] A47B *95/02*

U.S. Cl. 16—114 R **3 Claims**

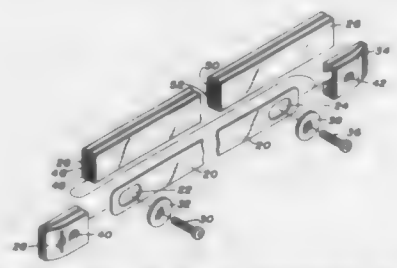
1. A removable carrying handle comprising:

a strap having a slot formed through each end thereof;

an attachment means associated with each end of the strap, each attachment means comprising

a headed fastener having a shaft;

a spacer member having a first part that retains the fastener head on one side of the strap, and a second part that protrudes through the slot to the other side of the strap, the spacer member being configured to engage the fastener with the fastener shaft extending through the slot; and



a housing configured for locking engagement with the second part of the spacer member on said other side of the strap to secure the housing, spacer member and fastener to the strap.

5,008,975

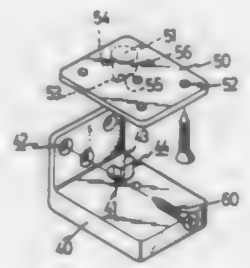
HINGE DEVICE

Rong W. Wang, and Johnson S. Chang, both of 9F-1, No. 197, Sec. 4, Nan King E. Rd., Taipei, Taiwan

Filed Jun. 8, 1990, Ser. No. 535,064

Int. Cl.[5] E05D *7/10*

U.S. Cl. 16—266 **2 Claims**



1. A hinge device for mounting a door to a door frame comprising:

(a) a first assembly including an upper door frame plate for attachment to a door frame and an upper door plate for attachment to a top surface of a door, the upper door frame plate having an axle hole formed in a corner thereof, the upper door plate having an axle extending outwardly from a top surface thereof, the axle being engageable within the axle hole to define an axis about which the upper door plate pivots relative to the upper door frame plate; and

(b) a second assembly including a lower door frame plate for attachment to the door frame and a lower door plate for attachment to a bottom surface of the door, the lower door plate having a protrusion axle extending outwardly from a bottom surface thereof, the protrusion axle being defined by a shaft, first and second recesses, a flange positioned between the recesses, and the first recess being deeper than the second recess, the lower door frame plate having a third recess formed therein, the third recess being defined by a notched blind hole, an alley extending from the blind hole, a wedge, and a convex protrusion extending outwardly from a bottom surface of the blind hole, the flange of the lower door plate being disposable within the alley and blind hole to position the shaft within the blind hole and define a pivot axis therewith, and the flange being disposable between the wedge and the convex protrusion for stabilizing the door in an open position.

5,008,976

DIGITAL APPARATUS HAVING A DISPLAY SECTION ADJUSTED BY A HINGE ASSEMBLY WITH ROLLING RESISTANCE

John P. Busch, Austin, Tex., assignor to Dell Corporate Services Corporation, Austin, Tex.

Filed Mar. 3, 1989, Ser. No. 318,575

Int. Cl.[5] E05D *11/04; E05C 17/64*

U.S. Cl. 16—276 **19 Claims**



1. A hinge assembly for rotation between a fully closed position and a fully opened position comprising:

(a) a first bracket having an opening therethrough;

(b) a second bracket having an opening therethrough, the opening of the first bracket and the opening of the second bracket being axially aligned;

(c) a shaft extending through the openings in the first and second brackets, respectively, the shaft and the opening in the second bracket being configured to prevent rotation therebetween; and

(d) an elastic roller mechanism surrounding the shaft and having means for engaging one of the first or second brackets to provide any desired fixed position between the first and second brackets when a rotational force is selectively impressed therebetween and selectively removed therefrom, the mechanism including:

a cylindrical retainer having an inner retaining surface and a central opening through which the shaft passes,

a plurality of cylindrical rollers, and

elastic means, retained between the shaft and the inner retaining surface, the plurality of rollers surrounding the shaft and positioned to press into the elastic means.

5,008,977

CABINET HINGE WITH CLOSING MECHANISM

Karl Lautenschläger, Reinheim, and Gerhard W. Lautenschläger, Brensbach, both of Fed. Rep. of Germany, assignors to Karl Lautenschläger GmbH & Co. KG, Reinheim, Fed. Rep. of Germany

Filed Apr. 4, 1990, Ser. No. 504,345

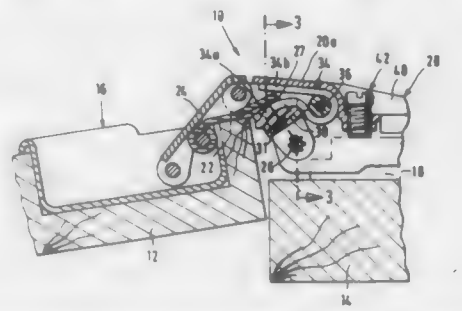
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1989, 3912630

The portion of the term of this patent subsequent to Jan. 23, 2007, has been disclaimed.

Int. Cl.[5] E05F *1/08*

U.S. Cl. 16—278 **9 Claims**

1. A hinge for a cabinet door, comprising: a door-related part configured as a cup to be set in the back of a cabinet door, and a carcass-related part configured as an elongated supporting arm of inverted U-shaped cross section and to be mounted on a cabinet; an inner and an outer hinge link articulating said two parts relative to one another, each link having a first end journaled in the cup and a second end journaled at the supporting arm, said inner hinge link being nearer the cabinet interior when the door has been articulated to the closed position; a closing mechanism having a cam element disposed in an end portion of said inner link adjacent said supporting arm, said cam element having a cam surface; a substantially U-shaped leaf spring having a first, flexible leg lying with bias on said cam surface, having a second leg supported in an interior portion of said supporting arm, and also having a bridging section connecting said two legs; said inner hinge link having



two parallel ears spaced apart from one another at said second end of said inner hinge link; said cam element being disposed between said ears for corotation with said inner hinge link.

5,008,978

APPARATUS FOR TREATING COTTON CONTAMINATED WITH HONEYDEW

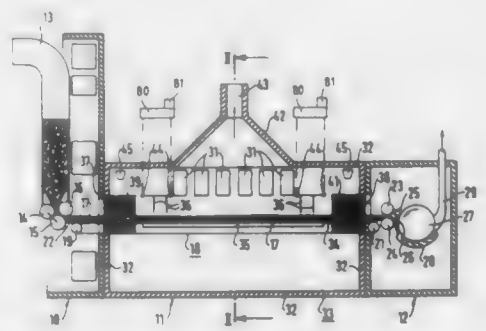
René Waeber; Fritz Knabenhans, and Othmar Bachmann, all of Winterthur, Switzerland, assignors to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Division of Ser. No. 359,495, May 31, 1989. This application Apr. 2, 1990, Ser. No. 503,524

Claims priority, application Switzerland, Jun. 3, 1988, 2121/88

Int. Cl.[5] D01G *9/00, 37/00*

U.S. Cl. 19—66 CC **18 Claims**



1. An apparatus for treating cotton flocks contaminated with honeydew, by the supply of heat, comprising:

a housing provided with a roof;

a substantially tunnel-shaped microwave oven arranged in said housing and provided with an inlet and an outlet;

a conveyor belt made of material absorbing at most relatively little energy and provided for conveying a compressed web of cotton flocks through said tunnel-shaped microwave oven in a predetermined direction;

two delivery rolls arranged at said inlet of said tunnel-shaped microwave oven for forming the cotton flocks into said compressed cotton flock web and two delivery rolls at said outlet of said tunnel-shaped microwave oven for supplying said web toward an opening unit;

said conveyor belt being guided around two deflection rolls, one at said inlet and one at said outlet of said tunnel-shaped microwave oven; and

said roof of said housing of said tunnel-shaped microwave oven being structured as an extraction hood.

5,008,979

TEXTILE-FIBER TREATING GROOVED ROLLER AND A WIRE WITH TEETH HAVING A FOOT PORTION INDENTED FOR FORCE-FITTING THE WIRE INTO THE GROOVE AND METHOD OF MAKING SAME

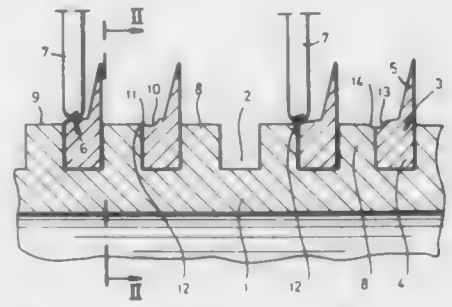
Gangolf Palm, Wegberg; Karl-Heinz Lehmann, and Hans-Joachim Heinemann, both of Mettmann, all of Fed. Rep. of Germany, assignors to Peter Wolters AG, Rendsburg, Fed. Rep. of Germany

Filed Apr. 13, 1989, Ser. No. 337,384

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1988, 3812247

Int. Cl.[5] D01G *15/18, 15/46;* **B21B** *27/02*

U.S. Cl. 19—97 **8 Claims**



1. A roller for the treatment of a textile-fiber mass, the roller comprising:

a steel roller body having a generally cylindrical periphery formed with at least one generally helical outwardly open groove of generally rectangular configuration and having a pair of opposing flanks and a bottom; and

a wire having

a foot portion received in and filling said groove and of generally rectangular cross section, and

a succession of teeth in a sawtooth configuration projecting outward from said foot portion and formed unitarily therewith over substantially the entire length of said wire, said foot portion being indented so as to be deformed to force fit the foot portion in said groove against said flanks.

5,008,980

CLOSURE CLIP, ESPECIALLY FOR THE CLOSURE OF BAGS AND A METHOD AND MACHINE FOR APPLYING THE SAME

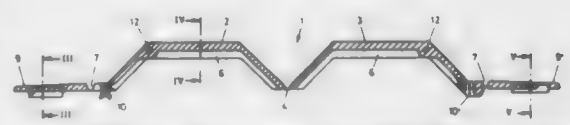
Arnold Zimmermann, 9, chemin des Chênes, 2072 St.-Blaise, Switzerland

Filed Aug. 24, 1989, Ser. No. 398,223

Claims priority, application Switzerland, Aug. 30, 1988, 3226/88

Int. Cl.[5] B65D *63/00*

U.S. Cl. 24—30.5 R **14 Claims**



1. A closure clip, especially for the closure of bags, comprising a base member with a first and a second leg of plastic material, each of said legs forming a rigid structure having a hinge end and a coupling end portion, said first and second legs being hingedly connected at their hinge ends and provided with first and second snap coupling means, respectively, at their coupling end portions, said coupling end portions with their first and second snap coupling means respectively being integral to said rigid structure of the respective leg whereas

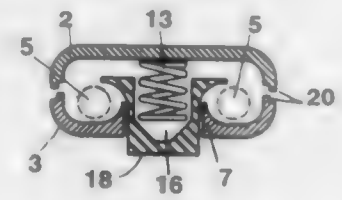
said first and second snap coupling means are manually engageable to each other and manually releasable from each other only by swivelling said legs about their hingedly connected ends, wherein each leg at its coupling end portion is provided with a tongue member extending from said coupling end portion into a direction substantially opposite to said hinge end of the respective leg, each of said tongue members being connected to the respective coupling end portion by means of a web forming a breaking point and wherein said tongue members in a closed state are undetachably connected to each other and are detachable together from said coupling end portions at said breaking point.

5,008,981

ENCLOSED YOKE CLASP FOR BOLA-STYLE NECKTIE

Joseph P. Smithson, 4020 Douglas St., Farmington, N. Mex. 87401

Filed Dec. 1, 1989, Ser. No. 444,758
Int. Cl.[5] A41D *25/04*
U.S. Cl. 24—49 R **4 Claims**



1. A clasp for holding two cords in generally side-by-side relationship comprising: a hollow shell, a portion of said shell having an integral raised structure defining inside of said raised structure an inner surface forming a central annular opening in said shell portion and having on the outside of said raised structure away from said opening a pair of smooth-surfaced concave channels on opposite sides of the opening, a clamp member having a hollow manually engageable actuating portion extending through said opening, said clamp member having exterior smooth-surfaced splayed cord gripping portions overlying the concave channels, means including a compression spring having one end extending into the hollow actuating portion of the clamp member for resiliently biasing said clamp member to urge said splayed portions toward said channels to grip a cord in each of the channels, and means including a second shell portion overlying said first shell portion for securing both shell portions, said clamp member and said biasing means in an assembled relationship when no cords are in said channels, said shell portions being secured together at their periphery to form a hollow shell, said shell having apertures at the periphery of the shell portions where the cords can enter and leave the clasp, said apertures being located to permit alignment of the cords with said channels, said spring being located between said second shell portion and said clamp member.

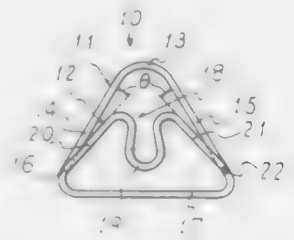
5,008,982

CLIP

Tatsusabu Tsukamoto, No.2570 Ohaza Mukaizima, Chiyodamachi, Kanazakigun Saga-Ken, 842, Japan

Continuation of Ser. No. 276,452, filed as PCT JP87/00025 on Jan. 16, 1987, published as WO88/05388 on Jul. 28, 1988, abandoned.
This application Sep. 18, 1990, Ser. No. 584,361
Int. Cl.[5] A44B *1/04*
U.S. Cl. 24—67.9 **20 Claims**

1. A clip comprising:
a first clamping member having a first leg and a second leg, the first leg and the second leg being connected at one end;
a second clamping member having a first leg and a second leg, the first leg and the second leg being connected at one end and diverging therefrom;
said first clamping member and said second clamping member being connected, said second clamping member superposed on said first clamping member to form a clip; and
at least one of the legs of said first clamping member overlapping the respective leg of said second clamping member, said at least one leg terminating short of a respective end of said respective leg of said second clamping member and defining an acute angle therewith for allowing facile superpositioning of the second clamping member on the first clamping member



5,008,983

PORTABLE CLEAT

Ralph C. Heins, 1313 E. Bayview Dr., Tempe, Ariz. 85[illegible]3

Filed Dec. 18, 1989, Ser. No. 451,801
Int. Cl.[5] A44B *1/04*
U.S. Cl. 24—131 C **6 Claims**



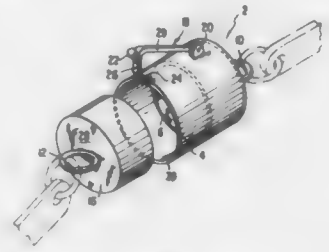
1. A portable cleat adapted for use in rigging and securing objects with a line, said portable cleat comprising in combination:
an elongate primary connector element having a principal axis and opposed ends;
a first secondary connector element rigidly attached to said primary connector element at one of said primary connector element ends at a predetermined location on said first secondary connector element and a second secondary connector element rigidly attached to said primary connector element at the other of said primary connector ends at a predetermined location on said second secondary connector element, said secondary connector elements each including arms extending in generally opposed directions away from the predetermined location thereof and each of said arms of each secondary connector element having a distal end spaced from the distal end of said other arm thereof, said arms being angularly disposed relative to said primary connector element principal axis whereby one of the arms of each secondary connector element defines an acute angle with said principal axis adjacent to said predetermined location and the other of the arms of each secondary connector element defines an obtuse angle with said principal axis adjacent to said predetermined location, one of said secondary connector elements being engageable by said line adjacent the predetermined location thereof and about the arm thereof defining an obtuse angle with said principal axis, said portable cleat and said line cooperable to exert a pulling force at the other of said secondary connector elements when said line is looped about the arm engaged thereby and pulled taut and away from said other secondary connector element, said secondary connector element arms being angularly disposed relative to said primary connector element principal axis with the defined acute angles both being on one side of the primary connector element principal axis and the defined obtuse angles being on an opposed side of the primary connector element principal axis whereby arms generally converge on said one side and generally diverge on said generally opposed side.

5,008,984

MAGNETIC JEWELRY CLOSURE WITH CLIP

Davida Levy, 1340 Biscaya Dr., Surfside, Fla. 33154

Filed Jun. 12, 1990, Ser. No. 536,777
Int. Cl.[5] A44B *11/25*
U.S. Cl. 24—303 **12 Claims**



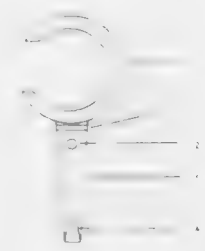
1. A jewelry closure comprising:
first and second closure members for engaging together wherein at least one of said closure members comprises a magnet;
casing means for supporting said first closure member and extending outwardly for supporting said second closure member; and
means located on said casing means for engaging adjacent an outer end surface of said second closure member when said second closure member is held by magnetic attraction to said first closure member, said engaging means comprising an elongated member having a first end hinged to said casing means and a second end which lies adjacent said outer end surface of said second closure member when said jewelry closure is in secured position, wherein said hinged means is engaged with a protrusion on said casing means when said jewelry closure is in secured position;
whereby said closure members cannot be separated from magnetic engagement with each other until after said engaging means is released from its position adjacent said second closure member.

5,008,985

ZIPPER SECURING DEVICE

Allister W. Thompson, #1105-1100 Harwood St., Vancouver, B.C., Canada V6E-1R7

Filed Dec. 15, 1987, Ser. No. 133,871
Int. Cl.[5] A44B *19/26, 13/00*
U.S. Cl. 24—370 **1 Claim**



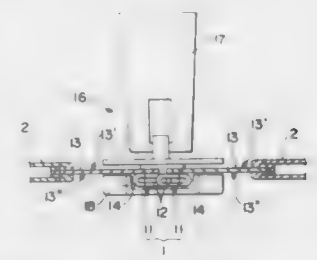
1. An integral one piece zipper pull tab securing device comprising; a circular clip 1 open at one end thereof which can be sprung around a button as a means of attaching said securing device to the material in which the zipper is fitted and a hook means connected to the other end thereof for engagement with the zipper pull tab for securing the zipper in the closed position, a tapered flat connecting member as a means for joining the circular clip 1 to the hook means, an eyelet means in said connecting member for connecting said member to the material in which the zipper is fitted by sewing and a transverse indentation means extending across the outer surface of said connecting member and located adjacent to the buttton engaging clip 1 providing a weakened area to allow a means of seperation between the circular clip 1 and the connecting member, said connecting member being of sufficient length so that said clip 1 can be engaged with said button when the zipper is in the closed position.

5,008,986

SLIDE FASTENER FOR CLOTHING AND SHOES

Jean-Luc Laudet, Poisy, and Pierre Rullier, Annecy, both of France, assignors to Salomon S.A., Annecy Cedex, France

PCT No. PCT/FR89/00302, § 371 Date Feb. 9, 1990, § 102(e) Date Feb. 9, 1990, PCT Pub. No. WO89/12408, PCT Pub. Date Dec. 28, 1989
PCT Filed Jun. 15, 1989, Ser. No. 460,971
Claims priority, application France, May 12, 1989, 89 06753; Jun. 17, 1989, 88 08405
Int. Cl.[5] A44B *19/32*
U.S. Cl. 24—289 **14 Claims**



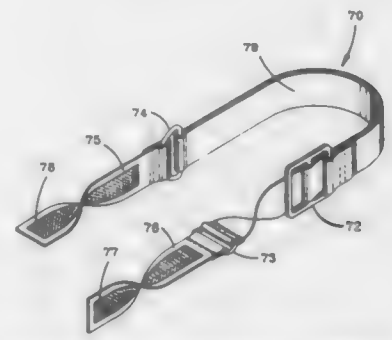
1. A slide fastener for uniting edges of two elements in a sealing relationship, each said element including an interior and exterior side, said slide fastener comprising:
(a) two support tapes, each support tape being on a respective element, each support tape having an interior and exterior side and a respective border;
(b) two chains of teeth, each chain of teeth being connected only to the interior side of a respective support tape; and
(c) a slide including a linkage tunnel and a tab, said linkage tunnel being positioned on the interior side of said support tapes, said pull tab extending from said linkage tunnel to the exterior side of said support tapes.

5,008,987

MULTI-PURPOSE FASTENING DEVICE

Thomas W. Armour, II, 645 Isle View Dr., Akron, Ohio 44319

Filed Jan. 12, 1990, Ser. No. 464,300
Int. Cl.[5] A44B *18/00*
U.S. Cl. 24—442 **2 Claims**



1. A multi-purpose fastening device comprising:
a first and second elongated carrier strip, each strip having a first end and a second end and a first and a second surface;

said first end of each carrier strip defines an aperture through its width and each strip further comprising a ring connected to said strip such that an arc of said ring passes through said aperture,

a web of material having two ends, each end being connected to the first end of one of said elongated carrier strips using a connecting means; and

a means for removably engaging said first elongated strip to said second elongated strip comprising at least a first hook and loop type engaging element affixed to at least one surface of said first carrier strip and at least a second hook and loop type engaging element affixed to at least one surface of said second carrier strip and opposing the surface of the first hook and loop type engaging element affixed to said first carrier strip so that said first and second strips lockably engage upon contact.

5,008,988

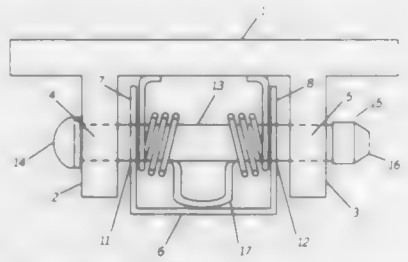
CLIP ASSEMBLY

Virgil F. Kuhl, Lauderhill, and Guenter Noll, Ft. Lauderdale, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 20, 1989, Ser. No. 409,857

Int. Cl.[5] A44B *21/00*

U.S. Cl. 24—510 **6 Claims**



1 A clip assesmbly comprising:

a clip, having at least two resiliently expandable holes therein;

a bracket, having at least two resiliently expandable holes for alignment with said holes in said clip;

a spring for biasing said clip towards said bracket;

a pin positioned through said holes for pivotally securing said bracket to said clip, said pin having a head that is passed through said holes, said head being intergrally connected to said pin and having a diameter that is greater than at least one of said holes for retaining the assembly, said pin having a second head integrally connected to said pin and having a diameter greater than the holes in the clip and bracket.

5,008,989

SAFETY BELT BUCKLE

Peter Wedler, Bütlingen, and Peter Eckmann, Hamburg, both of Fed. Rep. of Germany, assignors to Autoflug GmbH & Co. Fahrzeugtechnik, Rellingen, Fed. Rep. of Germany

Filed Sep. 29, 1989, Ser. No. 415,026

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1988, 3833483

Int. Cl.[5] A44B *11/26*

U.S. Cl. 24—641 **17 Claims**

1. A buckle for receiving and locking an insertable tongue of a safety belt, comprising:

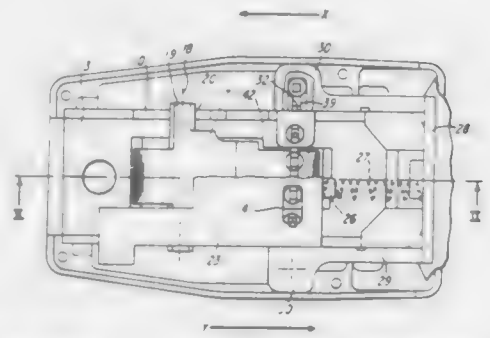
a housing in which is provided an insertion path for said insertable tongue;

a spring-loaded ejector;

a pivotably mounted locking element that, in a locked position, engages a recess of said tongue;

securing member means movably mounted in said housing and serving for securing said locking element in said locked position thereof; and

a slidable actuator that is guided in said housing transverse to a plane of movement of said locking element and serves to release same, with said locking element, to protect it from acceleration shocks, cooperating with counterweight means guided in said housing, whereby said counterweight means cooperates with said securing member means to prevent release of said locking element in response to acceleration forces that act on buckle parts.



said slidable actuator and said counterweight means being disposed in said housing in such a way that they are spaced from one another and act upon respective portions of said securing member means for urging the same in opposite directions, with said slidable actuator and said counterweight means each being coupled with said securing member means in an interlocking manner.

5,008,990

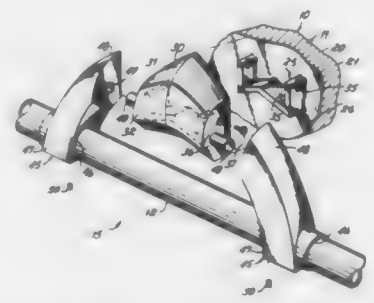
HARDWARE FOR MOUNTING A CASKET HANDLE BAR

William K. Craft, North Bend, Ohio, assignor to Batesville Casket Company, Inc., Batesville, Ind.

Filed Mar. 29, 1990, Ser. No. 501,015

Int. Cl.[5] A61G *17/00*

U.S. Cl. 27—2 **8 Claims**



1. In a casket having a metal shell, a hardware assembly comprising:

a block fixed to said shell,

a fixed handle bar mount mounted over said block, said bar mount having laterally, horizontally-projecting trunnions,

a horizontal bar, a pair of arms slidable on said bar, each said arm having a hole to receive a trunnion,

and means to fix each said arm on said bar after it receives said trunnion.

5,008,991

DEVICE AND PROCESS FOR INTERMINGLING A BUNDLE OF THREADS USING A TURBULENT AIR STREAM

Andreas Lachenmeier, Widnau, Switzerland, assignor to Viscosuisse S.A., Emmenbrucke, Switzerland

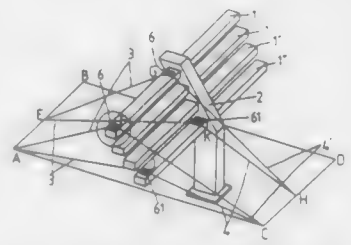
PCT No. PCT/CH88/00170, § 371 Date May 24, 1989, § 102(e) Date May 24, 1989, PCT Pub. No. WO89/02942, PCT Pub. Date Apr. 6, 1989

PCT Filed Sep. 23, 1988, Ser. No. 362,388

Claims priority, application Switzerland, Sep. 30, 1987, 3793/87

Int. Cl.[5] D02J *1/08;* **D02G** *1/16*

U.S. Cl. 28—271 **20 Claims**



1 Device for intermingling a wet bundle of threads composed of smooth multifilaments in a turbulent air stream, including a nozzle body with transverse U-shaped thread channels, each thread channel having an inlet part, an outlet part, and a turbulence part therebetween, said turbulence part having a length in the direction of thread movement and a diameter transverse thereto, said length being greater than said diameter, said turbulence part having a centered compressed air inlet, the diameter of the inlet part and the outlet part being smaller than the diameter of the turbulence part.

5,008,992

METHOD OF PRODUCING A BULKED COMPOSITE YARN

Bernd Gehrmann, Schwelm, and Heinz Treptow, Ennepetal-Milspe, both of Fed. Rep. of Germany, assignors to Barmag AG, Remscheid, Fed. Rep. of Germany

Filed Oct. 12, 1989, Ser. No. 420,571

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1988, 3835138; Dec. 10, 1988, 3841740

Int. Cl.[5] D02G *1/20*

U.S. Cl. 28—271 **26 Claims**



1. A method for combining a relatively elastic yarn component with a relatively inelastic yarn component composed of yarn filaments, and so as to produce a bulked composite yarn, and comprising the steps of,

advancing each of the yarn components along respective paths of travel, and including withdrawing the elastic yarn component from a supply package, while

spreading the filaments of the advancing inelastic yarn component, and then

guiding the advancing components through a jet of high velocity fluid so that the jet impinges on the two components and entangles the filaments and combines the two yarn components to form a composite yarn, and wherein the speed of the resulting composite yarn immediately following its being guided through said jet of high velocity fluid is substantially greater than the speed at which the elastic yarn component is withdrawn from its supply package.

5,008,993

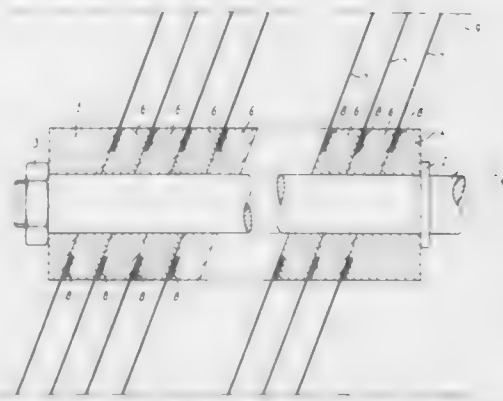
METHOD OF MAKING SURFACE FINISHING ROLLERS AS WELL AS A ROLLER MADE THEREBY

Bent Malherbe, Espergaerde, Denmark, assignor to Sony Corporation, Tokyo, Japan

Filed May 23, 1990, Ser. No. 527,386

Int. Cl.[5] B24B *9/02*

U.S. Cl. 29—125 **7 Claims**



1. A method of making surface finishing or polishing rollers comprising disk-shaped surface finishing elements mounted successively on a spindle rotating in operation, each of said surface finishing elements being formed of a slitted, preferably rectangular sheet which has a portion of material continuous in one direction with lamellae protruding perpendicularly therefrom, characterized in that the slitted sheet is shape-fixed with binder by arranging the portion of material continuous in one direction over an oval mandrel where the periphery of the protruding lamellae therein forms an ellipse, and that a plurality of surface finishing elements, each comprising an oval disk with lamellae, are mounted inclined on the shaft of the spindle so that the contour of the successively mounted surface finishing elements is cylindrical in the axial direction of the spindle.

5,008,994

APPARATUS AND METHOD FOR FITTING A PROTECTIVE BOOT PARTICULARLY FOR ARTICULATED JOINT ASSEMBLIES

Helmut Rettig; Karl Weiss, both of St. Augustin, and Erich Buss, Cologne, all of Fed. Rep. of Germany, assignors to Uni-Cardan Aktiengesellschaft

Division of Ser. No. 7,784, Jan. 28, 1987, Pat. No. 4,815,187. This application Nov. 18, 1988, Ser. No. 273,665

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1986, 3602867

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—235 **7 Claims**

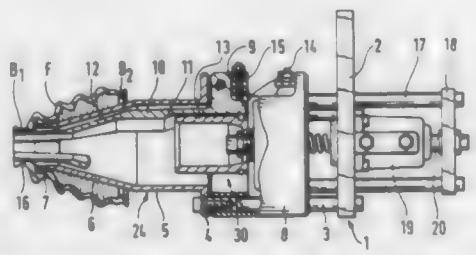
1. A device for fitting a protective boot to a shaft member particularly in a universal joint, said boot having a first collar for fitting to said shaft member, and a second collar, said device comprising in combination:

an expanding device for expanding said first collar of said

boot, said expanded device having a receiving region capable of being placed in a first untensioned position and in a second tensioned position, said receiving region, when in said first position, having a circular cross section with a diameter smaller than an inner diameter of said first collar and, when in said second tensioned position, having a circular cross section with a diameter which is larger than an outer diameter of said shaft member, said expanding device being provided with a plurality of levers having receiving regions formed by segments of a cylindrical member, said levers incorporating the receiving region forming a cylinder, a transition area in total forming a cone and a base area which is cylindrical and encloses an expanding member;

a stripping device axially movable relative to said expanding device and having an inner diameter corresponding to an outer diameter of said expanding device in said second tensioned position, said stripping device being movable to a first position at which it leaves said receiving region of said expanding device radially freely accessible and to a second position at which it surrounds at least partially circumferentially said receiving region along the entire length of the receiving region;

a holding device for said shaft member;



a feeding device which effects axial relative movement between said holding device and said expanding device and between said holding device and said stripping device, said feeding device being movable to a first position at which it provides an axial distance between said shaft member and said receiving region to permit mounting of said boot on said receiving region, and to a second position at which it holds said expanding device together with said first collar slipped onto said receiving region in an axial association relative to said shaft member; and

a slide frame connected to an axially movable part of said feeding device, said slide frame receiving said expanding device and said stripping device, said slide frame being provided with a base plate, several stay bolts as well as an annular disc on which the expanding device is firmly supported, wherein a bearing housing for the levers of the expanding device is guided by guiding rods in said base plate, an adjusted cylinder for the stripping device being arranged between a head plate of said guiding rods and said base plate, and said bearing housing for the levers of the expanding device receiving said expanding member for expanding said receiving region of the expanding device.

5,008,995

BRAKE SHOE RIVET PRESS

Bruce R. Johnson, Muskegon, Mich., assignor to Muskegon Automation Equipment, Inc., Muskegon Heights, Mich.

Filed Jul. 2, 1990, Ser. No. 547,829
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—252 **10 Claims**

1. A brake shoe rivet press for removing in a single operation rivets arranged in rows to hold a liner to the base of a brake shoe to thereby permit removal and later replacement of the liner thereon, comprising:

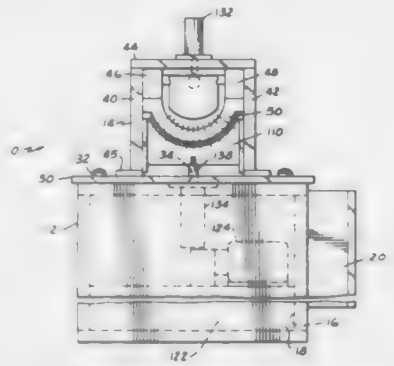
a frame;

a punch holder fixedly carried by said frame and having a plurality of movable punches arranged in rows;

upper and lower rams movably carried by said frame on opposite sides of said punch holder;

said lower ram having a support surface for positioning and supporting the brake shoe and further including a plurality of openings arranged in rows for receiving the spent rivets;

said upper ram having an operating surface, which, when the upper ram is actuated, engages the punches so as to



urge them against the rivets to remove them from the brake shoe in a single operation;

said upper ram includes one or more holes in said operation surface to receive and thereby permit the corresponding punch or punches not to be engaged when said upper ram is activated; and

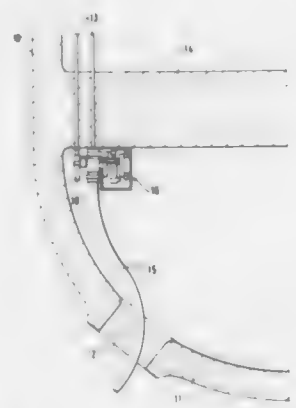
said upper ram includes a hydraulic cylinder for adjusting the horizontal position of said upper ram with respect to the punch holder to selectively align said holes with said punches.

5,008,996

MACHINE FOR REMOTELY LINING THE INSIDE OF A HEAT EXCHANGER TUBE END WITH A SLEEVE

Christian Bonnand, Bachy; Dominique Mascart, Toufflers, and Philippe Druelle, Gournay-sur-Marne, all of France, assignors to Stein Industrie, Velizy-Villacoublay and Electricte de France, Paris, both of, France

Filed Apr. 25, 1989, Ser. No. 342,826
Claims priority, application France, Apr. 25, 1988, 88 05448
Int. Cl.[5] B23P *15/26*
U.S. Cl. 29—727 **15 Claims**



1. A machine for remotely lining the inside of a heat exchanger tube end with a sleeve within a heat exchanger, said heat exchanger comprising a tube plate supporting a plurality of tubes, each tube having a tube end, each said tube end being mounted in said tube plate of said heat exchanger with a water box being disposed beneath the tube plate, the water box being

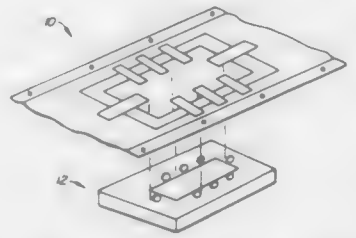
accessible from the outside via a manhole, the machine operating by a method including inserting a sleeve into each tube end, diametrically expanding the sleeve in a zone inside the tube plate and in a zone beyond the tube plate, then expanding the sleeve by rolling and then welding the sleeve in each of the expansion zones, said machine comprising a push-pull device outside the water box, with a flexible tube connecting the push-pull device to a motorized unit driving sleeve-fixing tools, a tool loader at a head of a cable driven by the push-pull device, and means for bringing an end of the flexible tube level with the tube end of each of said tubes in succession, and wherein the motorized unit for driving the tools comprises two superposed fluted hubs one hub being driven by a low speed electric motor and the other hub being driven by a pneumatic motor having a high speed of rotation.

5,008,997

GOLD/TIN EUTECTIC BONDING FOR TAPE AUTOMATED BONDING PROCESS

William S. Phy, Los Altos Hills, Calif., assignor to National Semiconductor, Santa Clara, Calif.

Continuation of Ser. No. 245,864, Sep. 16, 1988, abandoned. This application Nov. 28, 1989, Ser. No. 443,011
Int. Cl.[5] B23K *31/02*; **H01L** *23/48, 29/54*
U.S. Cl. 29—827 **14 Claims**



1. A tape automated bonding method of bonding copper beam leads of lead frame tape to gold die bumps formed on contract pads of a semiconductor device, wherein the tape includes a plurality of interconnected beam leads defined by at least one opening in the tape such that each beam lead has an inner end and an outer end, the method comprising:

depositing a gold layer on the copper beam leads;

masking a region of each beam lead from further deposition of material such that a predetermined portion of each beam lead is exposed for further deposition of material;

depositing by sputtering or vapor deposition a predetermined amount of tin layer on the gold layer on the exposed portion of each beam lead;

establishing contact between the tin layer on each beam lead and a gold die bump to which each beam lead is to be bonded after the tin layer has been deposited on said beam lead; and

applying to the contact between each lead and die bump a predetermined amount of pressure and heat, thereby forming a bond between each beam lead and the die bump to which the beam lead is to be bonded such that the bond formed includes a primary eutectic of the combination of tin and gold with substantially no pure tin in contact with the copper beam lead.

5,008,998

METHOD OF MOUNTING FLAT COIL

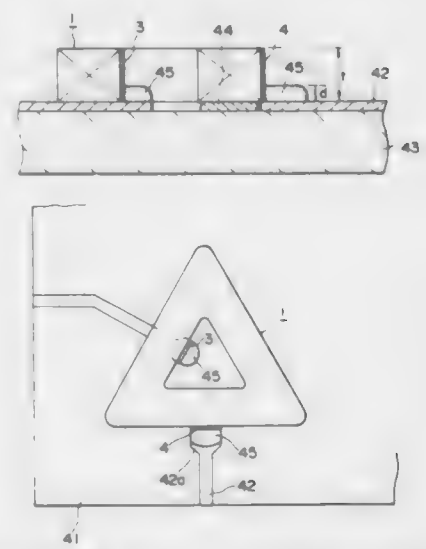
Shigetaka Higuchi; Isao Noguchi, and Tohru Odashima, all of Tochigi, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 22, 1989, Ser. No. 440,251
Claims priority, application Japan, Dec. 5, 1988, 63-307535
Int. Cl.[5] C23C *26/00*
U.S. Cl. 29—840 **5 Claims**

1. A method of mounting a flat coil, comprising the steps of: forming, at a first end portion and a last end portion of a flat coil which is formed by winding an insulator layer and a metal foil sheet in layers, a pair of terminal portions each composed of a layer of solder and extending over the full extent of an axial length of said flat coil;

preparing a circuit board which has formed thereon a conductor pattern which has connecting faces for connection to said terminal portions of said flat coil;

coating solder material on said connecting faces of said conductor pattern;



disposing said flat coil on said circuit board such that said terminal portions thereof are opposed in a perpendicular relationship to said connecting faces of said conductor pattern; and

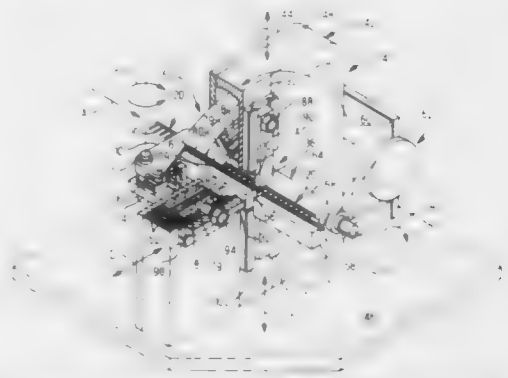
heat processing said solder material to cause said solder material to adhere to faces of said terminal portions over the entire extent of the axial length of said flat coil to interconnect said connecting faces of said conductor pattern and said terminal portions of said flat coil.

5,008,999

METHOD OF ASSEMBLING COMPONENTS TO ELECTRICAL TERMINALS

Robert S. Correll, Jr., Harrisburg, and David D. Wiltraut, Hershey, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 29, 1990, Ser. No. 502,082
Int. Cl.[5] H01R *43/04*
U.S. Cl. 29—882 **9 Claims**



1. A method of assembling components to electrical terminals connected together in side by side spaced relationship by means of a carrier strip, the method comprising the steps of:

(a) feeding the carrier strip lengthwise thereof through a

component assembly station along a feed path to position a first terminal of the carrier strip at the assembly station;
(b) advancing a shuttle having a first component located at a first position thereon, to align that component with said first terminal at the assembly station, whilst placing a second component on the shuttle at a second position spaced from said first position;
(c) transferring said first component from the shuttle onto said first terminal to assemble said first component thereto;
(d) feeding the carrier strip lengthwise thereof along said feed path by a second step to position a second terminal of the carrier strip at the assembly station.
(e) retracting the shuttle to align said second component with said second terminal, whilst placing a further component on the shuttle at said first position thereon;
(f) transferring said second component from the shuttle onto the second terminal to assemble the second component thereto; and
(g) repeating steps (a) to (c) in respect of the further component.

5,009,000

METHOD FOR MAKING SUCKER ROD OIL WELL PUMP

Thomas S. Wilmeth, Daingerfield; Steven L. Wilmeth, Longview, and Francis E. Foster, Daingerfield, all of Tex., assignors to Scot Industries, Inc., Lone Star, Tex.

Division of Ser. No. 167,911, Sep. 28, 1988, abandoned. This application Jul. 19, 1989, Ser. No. 383,019
Int. Cl.[5] C21D *1//10*
U.S. Cl. 29—888.02 **7 Claims**



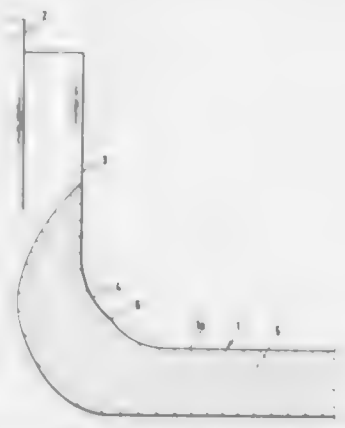
1. A method of constructing portions of a sucker rod pump for a well, comprising in combination:
providing a steel plunger with an exterior cylindrical wall;
forming a plurality of spaced apart circumferential grooves in the exterior cylindrical wall; then
forming a boronized case on the exterior cylindrical wall; then
passing the plunger through an induction heater coil to heat a selected depth of the exterior cylindrical wall for hardening; and
immediately quenching the exterior cylindrical wall by spraying with a liquid to harden a layer of the steel below the boronized case for supporting the boronized case;
providing a barrel with a cylindrical bore; and
forming a chromium case on the bore to a selected depth for receiving the plunger in sliding contact.

5,009,001

METHOD OF INCREASING THE FATIGUE STRENGTH OF CRANKSHAFTS

Gerhard Deachler, Nuremberg, Fed. Rep. of Germany, assignor to MAN Nutzfahrzeuge Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 18, 1990, Ser. No. 525,474
Claims priority, application Fed. Rep. of Germany, May 19, 1989, 3916421
Int. Cl.[5] F16C *3/10*
U.S. Cl. 29—888.08 **3 Claims**



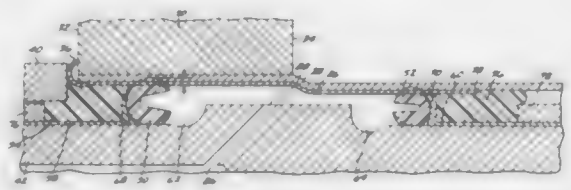
1. In a method of increasing the fatigue strength of crankshafts for reciprocating engines, especially internal combustion engines, including the step of subjecting the transition radii from a crankshaft pin to adjacent crank webs to a special treatment, the improvement comprising the steps of:
finishing the surface, starting from a blend edge, between a bearing point and transition radius, and proceeding to the end of a butting collar, to a peak-to-valley height of greater than 6.3 μm; and
effecting hardening in the region of said transition radii to a hardening zone depth of 2 to 3 mm.

5,009,002

METHOD FOR RADIALLY EXPANDING AND ANCHORING SLEEVES WITHIN TUBES

John W. Kelly, La Canada, Calif., assignor to Haskel, Inc., Burbank, Calif.

Filed Jan. 11, 1990, Ser. No. 463,367
Int. Cl.[5] B23D *15/26*
U.S. Cl. 29—890.031 **18 Claims**



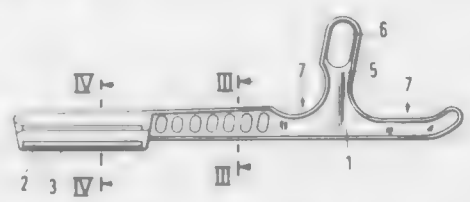
12. A method for radially expanding and anchoring a sleeve within a tube, which is contained within a bore in a surrounding structure having a primary side and a secondary side but extends axially beyond the secondary side of said structure, so as to repair a defective area of said tube and form a tight and substantially leakproof joint between said tube and sleeve, said method comprising the steps of:
inserting said sleeve within said tube from the primary side of said structure so that said sleeve extends axially beyond the secondary side of said structure;
inserting a hydraulic expanding mandrel having an elongated body with two axially separated seals within said sleeve so that said mandrel and said sleeve together define a substantially annular hydraulic pressure zone situated between said sleeve, said body and said seals with a certain portion of said pressure zone being situated beyond said secondary side, said mandrel having a passage for conveying pressurized fluid to said pressure zone;
causing a first pressurized fluid from a fluid source to be supplied to a hydraulic swaging control system, said fluid source further containing a second fluid, said control system including,
a first pump which is linked to said fluid source and to said passage and which pressurizes said second fluid upon being driven by said first fluid,
a second pump which is linked to said fluid source and to said passage and which pressurizes said second fluid upon being driven by said first fluid, and
fluid control means, linked to said fluid source and driven by said first fluid, for selectively activating said second pump and controlling the total volume of said second fluid pressurized by said second pump through application of fluid stroke signals to said second pump, said fluid control means further being responsive to the pressure at which said second fluid is pressurized by said first pump,
activating said first pump;
introducing a first supply of pressurized fluid, which is produced by said first pump, into said pressure zone through said passage until said first supply reaches a predetermined pressure which is above the radial yield point of said sleeve but below the aggregate radial yield point of said sleeve and said tube, whereby said sleeve pre-expands into said tube substantially radially throughout said pressure zone;
activating said second pump by means of said fluid control means when said predetermined pressure of said first supply is above said yield point but below said aggregate yield point; and
introducing a predetermined aggregate volume of a second supply of pressurized fluid, which is produced by said pump, into said pressure zone through said passage at a predetermined maximum pressure which is above said aggregate yield point, whereby said sleeve further expands substantially radially throughout the area of said pressure zone that is situated axially beyond said secondary side and said tube expands substantially radially along with said sleeve.

5,009,003

RAZOR

Kenneth Grange, London, England, assignor to Wilkinson Sword Gesellschaft mit beschränkter Haftung, Solingen, Fed. Rep. of Germany

Filed Aug. 31, 1989, Ser. No. 400,660
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1988, 8811140
Int. Cl.[5] B26B *19/00, 21/10*
U.S. Cl. 30—30 **7 Claims**



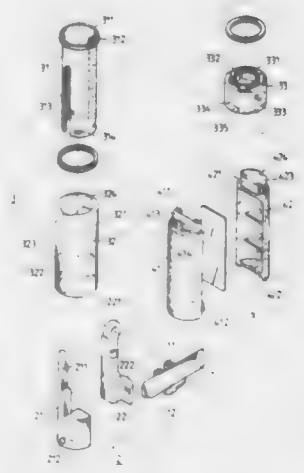
1. In a razor comprising an elongated handle which has a front end and a rear end, at said front end of which is disposed a razor blade having a cutting edge, and also comprising, on that side of said handle opposite said cutting edge of said razor blade, in the vicinity of but spaced from said rear end of said handle, a projecting handle extension, the improvement wherein:
said handle extension is embodied as a short stub extension that is fixedly disposed on said handle, with said stub extension being integral with said handle and being provided with an opening, whereby depression means that extend in the longitudinal direction of said elongated handle are disposed on at least one side of said stub extension; and
said handle has a double T profile.

5,009,004

FOLDABLE RAZOR ASSEMBLY

Lung-Wu Yen, No. 28, Ming Cheng Street, San Ming Area, Kao Hsiung City, Taiwan

Filed Aug. 2, 1990, Ser. No. 562,557
Int. Cl.[5] B26B *21/00, 21/14*
U.S. Cl. 30—47 **3 Claims**



1. A foldable razor assembly essentially comprising a blade support (1) substantially T-shaped having a horizontal plate for installing a blade, the rear surface thereof being provided with a protruding element (11) and a guide slot (12) for engagement;
a shaft means (2) consisting of a first mounting element (21) and a second mounting element (22) which are mounted to each other, a pimple (212) being provided at the top end of the first mounting element (21) for engagement with the guide slot (12) of said blade support (1), an aperture (221) being provided at the top end of the second mounting element (22) for the engagement with the protruded element (11) of the blade support (1), the bottom end of the shaft means (2) being circular and used for the engagement with a handle means (3), a pair of pimples (212) (222) being provided oppositely along the lower end of said shaft means (3);
said handle means (3) consisting of an inner cylinder (31), an outer cylinder (32) and a cylinder recess (33), said inner cylinder (31) having a hollow center which can be used to adapt said shaft means (2), the upper end thereof being provided with a round edge (311), along the surface of said inner cylinder (31), a low vertical slot (313) and a high vertical slot (312) in opposite position being provided, at the bottom end of said inner cylinder (31), a plurality of fixing holes (314) being provided for engagement, the outer cylinder (32) having a hollow center which is be used to adapt said inner cylinder (31), the interior wall of the external cylinder (32) being provided with a high spiral slot (321) and a low spiral slot (322), at the top end of said high spiral slot (321), a short horizontal slot (323) being provided and a long horizontal slot (324) being provided at the top end of said low spiral slot (322), the difference in distance between the two horizontal slots (324) (323) being equal to the tangent of the difference in distance between the height of the two spiral slots (321) (322),
the cylinder recess (33) being mounted at the bottom of said

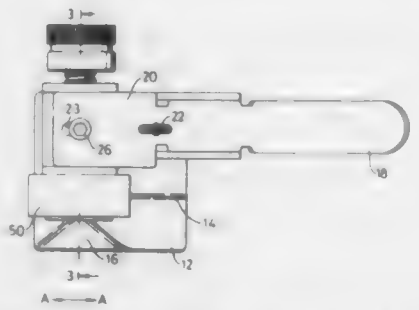
handle means (3) with arch shaped structure (331) mounted along the top section of said cylinder recess (33), a depression being formed by the arch shape structure (331) and the interior wall of said cylinder recess (33) for the insertion of said inner cylinder (31), the external wall of the arch-shaped structure being provided with a plurality of fixing protrusions (332) for engagement.

5,009,005

CABLE STRIPPER

Zdzislaw Bieganski, "Brushwood", Kinsbourne Green, Harpenden Hertfordshire, United Kingdom

Filed Dec. 14, 1989, Ser. No. 451,114
Int. Cl.[5] B26B *27/00*; B21F *13/00*; B23D *21/06*; H02G *1/12*
U.S. Cl. 30—90.6 8 Claims



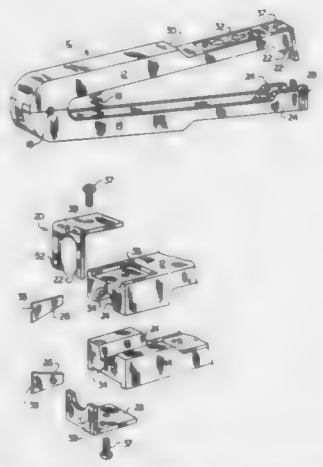
1 A cable stripping tool comprising a pair of jaws; means coupling said jaws for rocking movements about a pivot axis, one of said jaws having therein a cable-receiving groove having a longitudinal axis parallel to said pivot axis; a cutter having a cutting point; and means mounting said cutter on the other of said jaws for adjustment to a position in which said cutting point lies in a single plane coincident with said longitudinal axis and parallel to said pivot axis in any selected pivotally adjusted position of said jaws.

5,009,006

CABLE STRIPPING TOOL

Alan G. Sawyer, 6346 Beulah Church Rd., Liberty, N.C. 27298; Dale L. Hughes, 1505 McCuiston Dr., Burlington, N.C. 27215, and Edwyn H. Petree, Burlington, N.C., assignors to Alan G. Sawyer, Liberty and Dale L. Hughes, Burlington, both of, N.C.

Filed Aug. 28, 1989, Ser. No. 399,744
Int. Cl.[5] H02G *1/12*
U.S. Cl. 30—90.6 17 Claims



1. A hand tool for stripping insulation or sheathing from a cable having at least one conductor, comprising:

(a) a pair of jaws adapted to move from an open position to a closed position;

(b) a pair of oppositely mounted cutting blades, said blades being mounted to said jaws along the longitudinal axis of the cable and adjacent to the cable, said blades being adapted to make longitudinal cuts in the insulation or sheathing of the cable when said pair of jaws are in said closed position;

(c) a pair of opposed, substantially rigidly mounted cutting blades, said blades being mounted at a predetermined distance with respect to one another; and

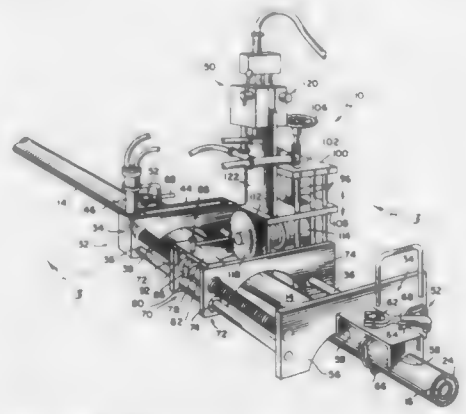
(d) means for moving said pair of opposed, substantially rigidly mounted cutting blades from an open position to a position where said blades are moved in a tangential path, contacting opposite sides of the cable, continuing through at least a portion thereof of the insulation or sheathing, and passing clear of the cable, thereby scoring the insulation or sheathing on opposite sides; whereby the insulation or sheathing can be removed from the cable.

5,009,007

WINDOW CUTTER FOR GAS SERVICE TIE OVERS

Luther W. Martin, 1221 Julie Dr., Champaign, Ill. 61821, and Richard L. Smith, R.R. 2 - Box 82A, Edwardsville, Ill. 62025

Filed Oct. 23, 1989, Ser. No. 425,101
Int. Cl.[5] B22B *5/00*
U.S. Cl. 30—92 10 Claims



1. A pipe slitter comprising a base for fixing the slitter to a pipe to be slit thereby, the base comprising a pair of end plates for mounting transversely of the pipe and a pair of connecting rods for coupling the end plates to each other, the connecting rods extending longitudinally of the pipe, a carriage for supporting a slitter blade, means for movably supporting the carriage on the base for movement longitudinally of the pipe, and means for movably supporting the slitter blade on the carriage for movement transversely of the pipe.

5,009,008

THUMB ACTUATOR FOR FOLDING KNIFE

Max Yablonovitch, Dollard-des-Ormeaux, Canada, assignor to Y.B. Technology, Canada

Filed Oct. 16, 1989, Ser. No. 421,647
Int. Cl.[5] B26B *3/06, 13/00, 1/00*
U.S. Cl. 30—158 11 Claims

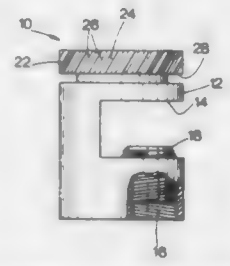
1. An attachment for a folding knife of the type comprising a blade pivotally mounted to a handle for movement between opened and closed positions, said attachment comprising:

a body;

a recess in said body for receiving therein an edge of said blade;

a screw threadedly engaged in said body capable of protruding in said recess for engaging said blade to lock said body to said blade; and

a curved finger engaging surface on said body allowing said blade to pivot from said closed position to said open position with one hand by exerting finger pressure on said finger engaging surface while holding said handle.

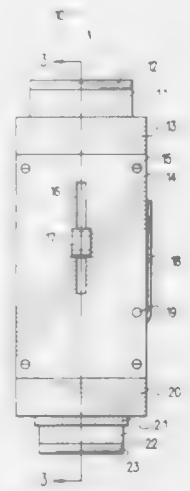


5,009,009

SCRAPING TOOL

Robert A. Stinson, Box 107 Greenbriar Acres, Wise, Va. 24293

Filed Jul. 19, 1989, Ser. No. 381,802
Int. Cl.[5] B26B *3/00*
U.S. Cl. 30—172 15 Claims



11. A scraping tool, comprising:

an elongated housing having first and second opposite ends;

a first scraping blade mounted for selective extension and retraction through said first housing end;

a second scraping blade mounted for selective extension and retraction through said second housing end;

locking means for securing said first and second blades in a selected adjusted position; and

a paint can opening bar mounted for pivotal movement between open and closed positions in an elongated recess formed in a side wall portion of said housing.

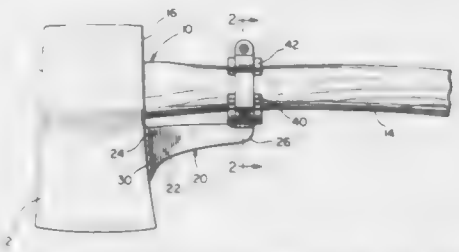
5,009,010

AXE HEAD MOUNTED HANDLE PROTECTOR

Gary L. Burlison, 31909 S.E. Green River Gorge Rd., Black Diamond, Wash. 98010-7529

Filed May 18, 1990, Ser. No. 524,987
Int. Cl.[5] B26B *23/00*; B25G *3/20*
U.S. Cl. 30—308.1 11 Claims

1. A wood splitting implement for splitting log sections into firewood, said implement including an elongated horizontal handle having front and rear ends, a downwardly facing splitting head mounted on said front end, said head including a rear side projecting above and below said handle, a rigid arm rigidly supported from said rear side of said head, at an elevation spaced below said handle, against upward displacement relative to said head and projecting rearwardly from said rear side beneath said handle in closely spaced relation relative thereto, and resilient spacing and bracing body means spaced rearward of said rear side and interposed between the rear end of said arm and the opposing underside portion of said handle.



5,009,011

ANNULAR SAW BLADE AND ANNULAR SAW WITH DRIVING MEANS FOR A SAW BLADE

Mats Johansson, Forshaga, Sweden, assignor to Diaglobe Aktiebolag, Forshaga, Sweden

Filed Jun. 4, 1990, Ser. No. 531,401
Claims priority, application Sweden, Jun. 2, 1989, 8902009
Int. Cl.[5] B27B *5/14*
U.S. Cl. 30—389 7 Claims



1. Annular saw blade comprising an outer periphery provided with cutting or tearing members (15), an inner periphery, and an annular web portion (16) between said inner and outer peripheries, characterized in that the saw blade (8) is provided with at least one annular drive surface of a flexible, polymeric, solid material (14), and that a rotatable drive member (30) can be pressed against said annular drive surface to effect rotation of the saw blade about its center of rotation.

5,009,012

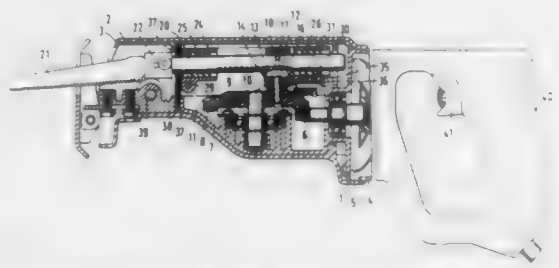
SABER SAW

David M. Martinez, New Bern, N.C., and Gordon C. Campbell, Exton, Pa., assignors to Robert Bosch Power Tool Corporation, New Bern, N.C.

Continuation of Ser. No. 238,037, Aug. 29, 1988, Pat. No. 4,884,344. This application Sep. 1, 1989, Ser. No. 402,333
The portion of the term of this patent subsequent to Dec. 5, 2006, has been disclaimed.
Int. Cl.[5] B23D *49/04*
U.S. Cl. 30—394 6 Claims

1. A saber saw, comprising an elongated displacing rod which supports a saw blade and is reciprocable in a displacement direction extending along its elongation and also swingable in a swinging direction which is transverse to said displacement direction; and means for moving said displacement rod in said swinging direction and including a driveable control element having a cam surface and a sensing element which is connected with said displacement rod and is controlled by said control element, said control element being rotatable

about an axis of rotation, said cam surface of said control element being formed as a symmetrical conical surface which



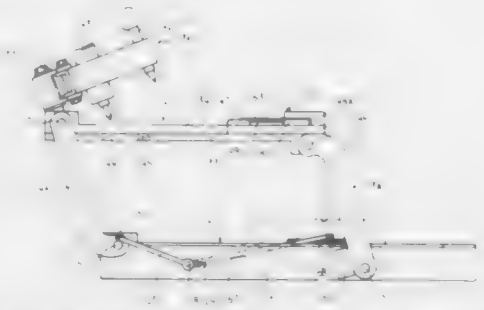
is eccentrical relative to said axis of rotation of said control element.

5,009,013

DEVICE IN MACHINES FOR THE MARKING OF WORKPIECES

Henry W. Wiklund, Backvagen 1,S-820 10, Arbra, Sweden

Filed Nov. 17, 1989, Ser. No. 438,676
Claims priority, application Sweden, Nov. 30, 1988, 8804333
Int. Cl.[5] B43L *13/10*
U.S. Cl. 33—25.1 **15 Claims**



1. A device for machines adapted for marking a workpiece with characters or other symbols during a marking operation, said machines being of the type comprising a marking tool which applies the symbols to the workpiece and means for the selection of symbols and control of the movements of the tool in order to obtain a predetermined shape and size of the symbols, said device characterized by a lower frame part (**1**) for receiving said workpiece (**7**), an upper frame part (**2**) arranged on said lower frame part and means (*3a, 3b, 4a, 4b*) for connecting said frame parts for raising and lowering said upper frame part relative to said lower frame part (**1**), said upper frame part supporting the marking tool (**43**) and the symbol selection and control devices (**36–42, 47–52, 69–74**) and being arranged, during the marking operation, to rest on the workpiece (7) and clamp said workpiece (7) against the lower frame part (**1**), said upper frame part (**2**) having an opening (**44**) through which the marking tool works on the workpiece (7).

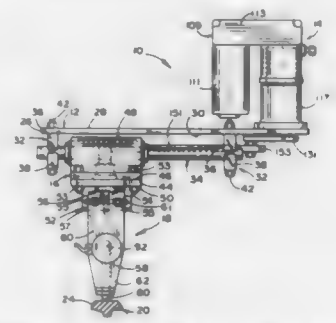
5,009,014

RAILROAD RAIL PROFILE MEASURING SYSTEM

David J. Leach, Ludington, Mich., assignor to Pandrol Jackson, Inc., Ludington, Mich.

Filed Feb. 7, 1989, Ser. No. 307,847
Int. Cl.[5] B61K *9/00*; **G01B** *5/20*
U.S. Cl. 33—287 **24 Claims**

1. A rail profile measuring apparatus for measuring the profile of a rail head, said apparatus comprising:
- carriage means for supporting said apparatus for longitudinal movement along the rail head;
- sensing means supported by said carriage means for sensing the position of a point on the rail head; and
- moving means for laterally translating said sensing means across the rail head while said carriage means moves said sensing means longitudinally along the rail head, whereby said sensing means moves both longitudinally and laterally



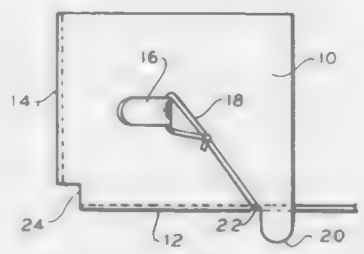
with respect to the rail head to acquire information at a plurality of spaced locations along longitudinal lines on the rail head.

5,009,015

BRICK LINE TOOL

Robert F. Redl, Midland Park, N.J., assignor to Louis J. Volpe, Jr., Wayne; Steven E. Wagner and Daniel L. Kurpick, both of Prospect Park, all of, N.J.

Filed Jun. 20, 1989, Ser. No. 369,080
Int. Cl.[5] E04G *21/18*
U.S. Cl. 33—409 **6 Claims**



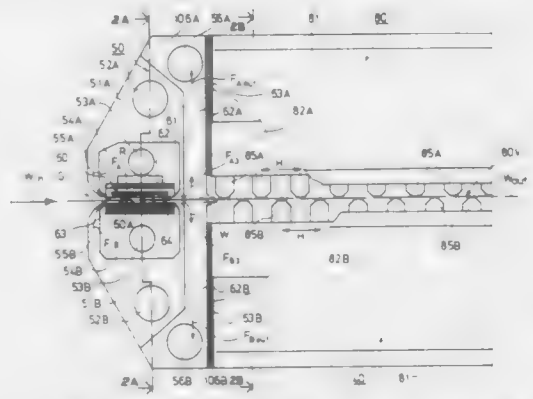
1. A tool for aligning bricks comprising:
- a first flat top plate having a front wall and a side wall extending downwardly at right angles from said plate for engaging the top face, the front face and one side face of a brick;
- a finger extending forwardly from a front edge at the inner corner of said top plate adjacent the inner end of said front wall and including a notch in said top plate front edge between said finger and adjacent end of said front wall for holding a guideline;
- a raised tab cut from a portion of said top plate and extending outwardly along said plate, said tab providing a narrow space above said top plate to receive and hold one end of said guideline therein; and
- the outer end of said front wall being spaced from said side wall and the front end of said side wall being spaced from said front wall including a cutout section in the outer corner of said top plate and in said front and side walls for receiving and exposing the outer corner of said brick, said tool being positionable over the outer corner of said brick so that said corner of said brick extends into said cutout section.

5,009,016

METHOD FOR ON-MACHINE COATING-DRYING OF A PAPER WEB OR THE LIKE

Matti LePisto, Turku; Reijo Ilmanen, Piikkio; Markku Karlsson, Parainen, and Sauli Laakso, Masku, all of Finland, assignors to Valmet Oy, Helsinki, Finland

PCT No. PCT/FI87/00159, § 371 Date Jul. 14, 1989, § 102(e) Date Jul. 14, 1989, PCT Pub. No. WO89/04890, PCT Pub. Date Jun. 1, 1989
PCT Filed Nov. 26, 1987, Ser. No. 381,674
Int. Cl.[5] F26B *3/32*
U.S. Cl. 34—41 **8 Claims**



1. A method of contact-free drying a paper or board web (W) wherein both infrared radiation (R) and drying air jets are used for drying, said drying air jets carrying said web (W) free of contact as said web moves through said dryer, and wherein after said infrared drying step said web is substantially immediately moved into an airborne web-dryer wherein said web is supported by and dried with air jets, the method comprising:
- passing said moving web into an infrared drying gap of an infrared dryer (**50**);
- directing a short duration drying energy pulse at said web, the power of said energy pulse being substantially higher than the average drying power of the dryer per unit of area;
- introducing an unheated air flow (F_{Ain}, F_{Bin}) into said infrared dryer (**50**);
- heating said air in said infrared dryer; and
- substantially immediately passing said heated air from said infrared dryer to said airborne web dryer (**80, 90**) for use as replacement air and/or drying air therein.

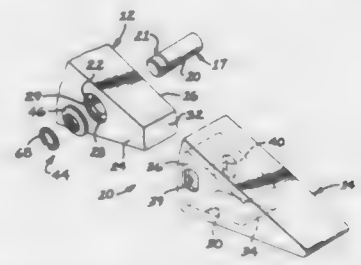
5,009,017

RETAINING PIN HAVING A POSITIVE KEEPER MEANS

Mark S. Diekevers, and Jerry D. Fidler, both of East Peoria, Ill., assignors to Caterpillar Inc., Peoria, Ill.

Division of Ser. No. 105,469, Sep. 30, 1987, Pat. No. 4,823,486, which is a continuation of Ser. No. 4,515, Jan. 20, 1987, abandoned. This application Dec. 8, 1988, Ser. No. 281,361
The portion of the term of this patent subsequent to Apr. 25, 2006, has been disclaimed.
Int. Cl.[5] E02F *9/28*
U.S. Cl. 37—142 A **14 Claims**

1. A retaining pin and a keeper means for use in an earth-working device, comprising:
- the retaining pin having an outer peripheral surface with an annular groove defined in the outer peripheral surface; and
- the keeper means including a metallic washer and a resilient retaining ring, the metallic washer having a frusto-conical side surface and an and an inside surface defining a bore with an annular groove opening in the bore, the pin being slidably disposed within the bore, and the resilient retaining ring having a cross-section with a predetermined radial thickness and when assembled is disposed in locking engagement within the groove on the pin and the groove in the washer, the depth and configuration of the grooves being sufficient to prevent camming of the resilient ring out of the grooves, the retaining ring, in use, is operative in conjunction with the grooves in the pin and the washer



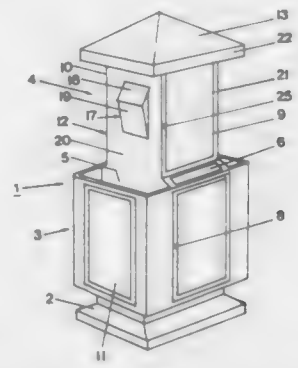
to prohibit disassembly of the pin from the washer without an external force being applied to the pin sufficient to shear the retaining ring or to fracture the washer, and the frusto-conical side surface of the washer is effective to concentrate the force close to the interface of the grooves.

5,009,018

CONTAINER WITH MULTIPLE FUNCTIONS

Alain F. Sebag, 1, rue d'Alesia, F-93000 Bobigny, France

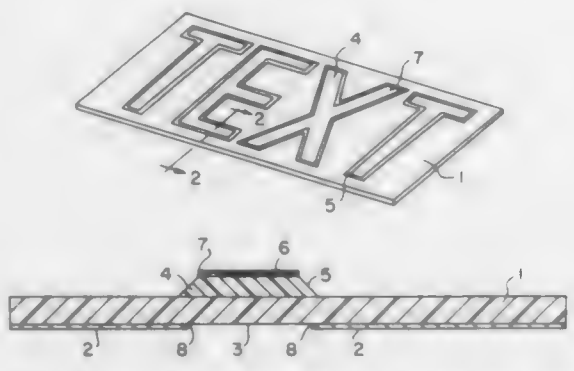
PCT No. PCT/FR86/00429, § 371 Date Sep. 18, 1987, § 102(e) Date Sep. 18, 1987, PCT Pub. No. WO87/03564, PCT Pub. Date Jun. 18, 1987
PCT Filed Dec. 9, 1986, Ser. No. 95,156
Claims priority, application France, Dec. 13, 1985, 85 18477; Dec. 20, 1985, 85 18908
Int. Cl.[5] G09F *3/00*
U.S. Cl. 40—306 **7 Claims**



1. A container with multiple functions, comprising
- dual bodies seated one atop the other with a main prism type body resting on a bearing base, said main prism type body having at least four lateral walls and a top surface, at least one receptacle situated within the main body, said top surface having at least one opening for introducing objects into said at least one receptacle, said receptacle being accessible through an access door provided in one of said lateral walls, an upper body of smaller dimension being located centrally on said main body, said upper body defined by at least two side faces extending substantially upwardly from said top surface and separated by a space, so that the opening of the top surface is situated within said space and between said two side faces of the upper body, a roof with at least two inclined surfaces extending between and being supported by said side faces of the upper body, a container being positioned within said upper body spaced between said roof and said top surface of the main body, at least one flower stand is situated at a place of junction between said main and upper bodies and extending from said top surface in the direction of said bearing base, peripheral walls of said flower stand being defined by at least three said lateral walls of the main

body, whereby objects can be placed in the container through said space separating said side faces.

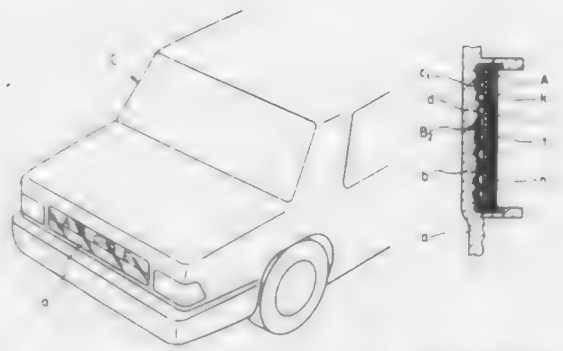
5,009,019
SIGN PLATE FOR ILLUMINATED SIGN
Gudni Eriendsson, Graves Strand, and Thorgeir D. Hjaltason, Copenhagen, both of Denmark, assignors to Rite Lite Partnership, Chicago, Ill.
Filed Dec. 21, 1989, Ser. No. 454,746
Claims priority, application Denmark, Dec. 21, 1988, 7136
Int. Cl.[5] G09F *13/00*
U.S. Cl. 40—541 **7 Claims**



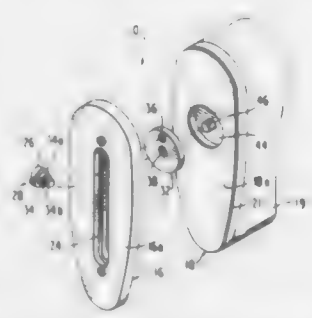
1. A sign plate for an illuminated sign having a light source and visual communication matter illuminated thereby, the sign plate comprising:
- a sheet of ultraviolet-transmitting material having a front face for attracting a viewer's eye and a rear face for receiving rays from the light source;
- an opaque reflective layer applied to one face of the sheet, the integrity of the layer being broken by zones forming a configuration that defines the matter to be communicated,
- a fluorescent material for activation by the light source, the fluorescent material having front and rear surfaces with edges joining these surfaces, the edges forming the outline of the configuration that defines the matter to be communicated, the rear surface of the fluorescent material being affixed to the front face of the sheet such that the fluorescent material is in register with and fully covering the zones forming the configuration in the opaque layer; and
- an opaque light reflective layer applied to the front surface of the fluorescent material without completely covering the zones, the light reflective layer (1) creating a core area in the midst of the outline, which, when subjected to the light source is unilluminated from the viewer's perspective by the light source and (2) causing an aura around the configuration when subjected to the light source resulting in an enhancement of the illuminated outline from the viewer's perspective.

5,009,020
LIGHT-PASSING DECORATIVE OBJECT
Toshiharu Watanabe, Minokamo, Japan, assignor to Sakae Riken Kogyo Co., Ltd., Japan
Filed Nov. 21, 1988, Ser. No. 273,607
Claims priority, application Japan, Nov. 25, 1987, 62-179158[U]
Int. Cl.[5] G09F *13/00*
U.S. Cl. 40—547 **8 Claims**

1. A light-passing decorative object comprising:
- a light-passing decorative member made of a light-passing synthetic resin, said decorative member including a notch-cut back side;
- a film piece having indicia which is viewable through the film piece, the film piece being bonded to the notch-cut back side of the decorative member; and a face brightening device which illuminates the film piece, the brightening device including (a) a plurality of optical fibers having a bundled end, (b) a coupler for coupling the bundled end of the optical fibers to a light source, and (c) an illuminating surface attached to the decorative member with the film piece between the illuminating surface and the back side of the decorative member, the illuminating surface being formed by the optical fibers which are arranged in parallel relation and provided with notched portions through which light conducted through the optical fiber passes and illuminates the film piece, the indicia being formed by openings in a no-light-passing layer applied on the film piece and wherein a light-passing metallic layer is attached to the film piece.

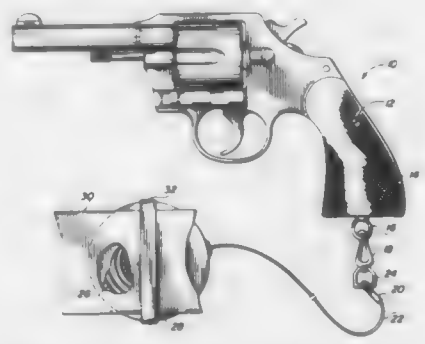


5,009,021
ADJUSTABLE GUN BUTT
Jerry T. Nelson, Rte. 2, Box 116, Cherokee, Ala. 35616
Filed Mar. 21, 1990, Ser. No. 496,713
Int. Cl.[5] F41A *23/20*
U.S. Cl. 42—73 **4 Claims**



1. An adjustable gun butt assembly comprising:
- first and second face abutting plates having respective front and rear faces, said first plate adaptable to be fixed via said front face to a rear face of a gun stock,
- a slot in said first face of said first plate adapted to receive and slidably retain the head of a shoulder bolt therein,
- a circular recess within said front face of said second plate,
- a rotatable cam disk of a diameter slightly smaller than said circular recess and positioned therein for rotation about coincident axes of the cam disk and circular recess,
- a first tapped hole within the center of said rotatable cam disk,
- a second tapped hole within said rotatable cam disk eccentric to said first tapped hole,
- a hole extending through said second plate coaxial with said circular recess,
- a resilient shoulder pad having a front face affixed to said rear face of said second plate, and having a hole passing from a rear face of said pad to said pad front face, therethrough parallel to and positionable in line with said hole extending through said second plate, and
- an adjusting set screw having a head and a threaded shank with said threaded shank sized to and threaded into said first tapped hole in said rotatable cam disk,
- said shoulder bolt having a threaded shank of predetermined length, and being threaded into said eccentric second tapped hole of said rotatable cam disk such that said shoulder bolt slides freely within said slot of said first plate when said set screw is loosened, and
- wherein the thickness of said rotatable cam disk is less than the depth of said circular recess receiving the same whereby, with said set screw threaded shank backed out of said first tapped hole, said second plate and said shoulder pad are free to move relative to said first plate and gun stock orthogonally by rotation of said shoulder bolt eccentrically about the axis of said rotatable cam disk as the disk rotates within said circular recess of said second plate and by movement said shoulder bolt independently over the length of said elongated slot, and
- wherein upon tightening down said set screw, said rotatable cam disk is pulled deeper into said circular recess, causing the shoulder bolt head to drive said first plate into frictional engagement with said second plate to lock said plates together.

5,009,022
GUN SAFETY ASSEMBLY
Fred McCoy, 7050 N. Hwy. 1247, Science Hill, Ky. 42553
Filed Mar. 9, 1990, Ser. No. 490,884
Int. Cl.[5] F41A *35/00*
U.S. Cl. 42—094 **8 Claims**



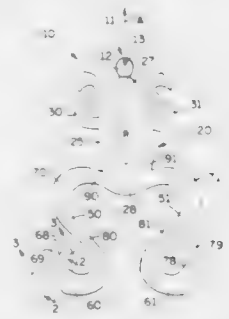
8. An improved method of providing a brace for a person using a gun to steady the gun, comprising:
- (a) providing a reel bearing an elongated cord and spring means biasing said cord towards said reel wherein the length of said cord is just sufficient to extend said gun at arms length from said casing when on said gun belt and wherein the bias of said spring on said cord and gun is sufficient so as to help brace and steady said gun to assist accurate shooting thereof;
- (b) providing means for releasably connecting said reel to a belt of the person; and,
- (c) interconnecting the weapon to said cord;
- (d) whereby said cord serves as a brace to steady the gun when being prepared for firing.

5,009,023
HIGH SPEED FISHING LURE
Donald A. Hoyt, Fulton, N.Y., assignor to Attacher Lures, Fulton, N.Y.
Filed Nov. 20, 1989, Ser. No. 438,864
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.5 **8 Claims**



1. A high-speed spoon-type fishing lure for use at high trolling or retrieval speeds up to at least about 7 knots comprising a rounded, elongated metal plate having a trailing end and a leading end and which is narrower at the leading end and broader at the trailing end, and wherein the metal plate is of tapered thickness from front to back such that the trailing end is substantially thicker than the leading end to concentrate the weight of the metal plate at the thicker, broader trailing end to inhibit rotation or spinning of the lure at said high trolling or retrieval speeds; a hook attached onto said metal plate; and means of said leading end for attaching to a fishing line.

5,009,024
ARTIFICIAL LURE SIMULATING FROG MOVEMENTS
Steven E. Parman, 223 Roy St., Kerrville, Tex. 78028
Filed Aug. 31, 1989, Ser. No. 401,051
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.3 **8 Claims**



7. A flexible lure member for use in an artificial lure to simulate the swimming motion of a frog comprising:
- a body which is adaptable to be connected to a fishing line for drawing said body through water in a direction of travel forward relative to said body;
- a pair of elastically flexible appendages attached to the rear of said body, each of said appendages having an S-shape and having a foot member at the distal end thereof, wherein:
- said foot member is biased transversely relative to said forward direction; and
- said foot member has a leading edge which is biased to face said forward direction of travel, the profile height of the leading edge being biased perpendicular to said forward direction of travel and said profile height of the leading edge is at least fifty percent greater than the average thickness of said foot member.

5,009,025

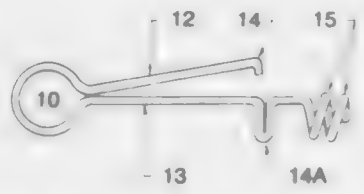
QUICK TIE DEVICE

Grover R. Austad, 101 Riverview C, Great Falls, Mont. 59404

Continuation-in-part of Ser. No. 190,345, May 5, 1988, abandoned. This application Aug. 21, 1989, Ser. No. 396,801

Int. Cl.[5] A01K *91/00*

U.S. Cl. 43—44.83 1 Claim



1. A quick tie link and fishing device for providing a knotless non-slip wrapping for a flexible line on said fishing device comprising,

an elongated form made from a single piece of wire material having a helix at one end of said elongate form connected to a closed "U" snubbing post that is formed at a substantially 90 degree angle to said elongate form; said snubbing post being located a distance from the helix approximately equal to the height of said snubbing post, the diameter of said helix being approximately equal to the height of said snubbing post; a first straight shank portion which extends from said snubbing post to a loop;

a second shank connected to said loop, said second shank being substantially parallel to said first shank portion and second shank extends from said loop to said snubbing post where said second shank terminates in a post which is perpendicular to said second shank.

5,009,026

FISH HOOK INCLUDING AN IMPROVED BAIT GUARD WITH A SLIDER

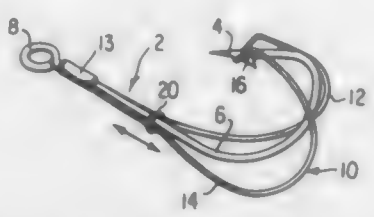
Newsome E. Corbitt, III., 3724 Beauclerc Rd., Jacksonville, Fla. 32217

Filed Oct. 10, 1989, Ser. No. 418,875

The portion of the term of this patent subsequent to Dec. 22, 2004, has been disclaimed.

Int. Cl.[5] A01K *83/06*

U.S. Cl. 43—44.8 17 Claims



1. A fish hook including a bait guard, said fish hook comprising a rearward eye portion, an intermediate shank portion, and a forward hook portion, said bait guard comprising means for keeping bait on the hook, comprising:

an elongated flexible member secured to the eye portion, extending forwardly along a side of the shank portion, following the curve of the hook portion and extending rearwardly to and in releasable engagement with a barbed point on the end of the hook portion, and

means for sliding encircling the flexible member and the shank portion of the fish hook movable along the hook between the eye portion and the hook portion,

whereby said sliding means is positioned adjacent bait held on the hook to secure said bait on the hook.

5,009,027

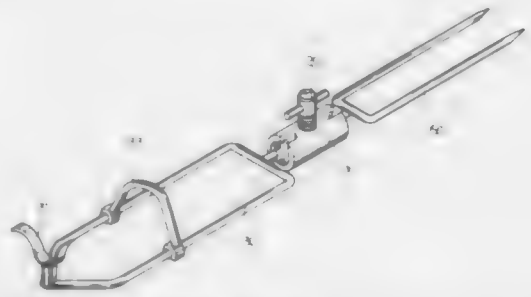
FISHING ROD HOLDER

Guo-Shin Lee, No. 26, Chien-Te Street, Taichung City, Taiwan

Filed Jan. 12, 1990, Ser. No. 464,376

Int. Cl.[5] A01K *87/00*

U.S. Cl. 43—21.2 2 Claims



1. A fishing rod holder comprising:

A pivot member including a cylindrical portion having an axially directed through opening and a bolt hole wherein a plurality of steel balls are positionally located within the cylindrical portion through opening, and a bolt threadedly fixed to the cylindrical portion within the bolt hole;

a holster member including a bracket, an adjustable support and a ball head,said ball head insertable within said pivot member through opening and pivoted to a first end of said pivot member with a first ball head holder and a first C-ring; and,

a stake member including a ball head formed on a first end thereof and a fork-like device at a second end thereof, said stake member ball head inserted and pivoted to a second end of said pivot member with a second ball head holder and a second C-ring.

5,009,028

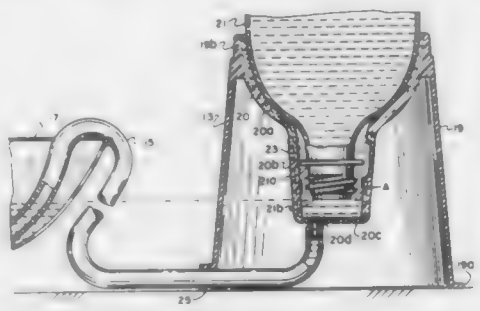
APPARATUS FOR SUPPLYING WATER CONTINUOUSLY TO TREE STAND

Moises B. Lorenzana, 601 Lake Hinsdale Dr., Willowbrook, Ill. 60559, and Vance A. Lorenzana, 698 Spring Hill Cir., Naperville, Ill. 60540

Filed Oct. 19, 1987, Ser. No. 109,860

Int. Cl.[5] A47G *33/12*; B67D *5/06*; A01K *7/00*

U.S. Cl. 47—40.5 1 Claim



1. A continuous watering apparatus for use with a tree stand which mounts a cut tree vertically with the severed trunk end immersed in water to prevent the tree from drying out comprising a reservoir having a base for supporting said reservoir on a horizontal surface adjacent said tree stand, said reservoir having walls defining an upwardly facing recess, means in said recess engaging and supporting in an upended position a water bottle, said bottle having a mouth which in said upended position is spaced above the bottom of said recess, an elongated flexible water supply tube connected to said reservoir at the bottom of said recess, said reservoir supporting the mouth of said bottle at a height equal to the desired water level in said tree stand whereby through a siphon action said reservoir will supply water continuously to said tree stand until the water is drained from said bottle, said recess having an upper portion of generally hemispherical shape and a lower portion which is generally cylindrical, terminating in said bottom of said recess, said upper and lower portions being sized to detachably receive said bottle, said bottle having a neck extending into said lower portion with the mouth of said bottle spaced above said bottom, a plurality of projections on said walls of said recess to space said bottle from said walls to permit air to enter said bottle as the water level drops below said bottle mouth in said lower portion of said recess, said projections comprise peripherally spaced ribs which extend from the top of said recess to the bottom.

5,009,029

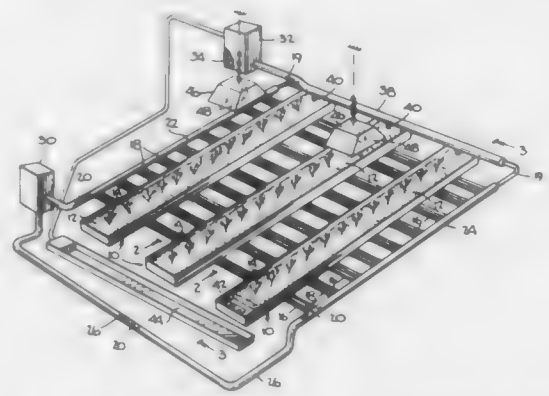
CONDUCTIVE TEMPERATURE CONTROL SYSTEM FOR PLANT CULTIVATION

Seymour I. Wittlin, 4951 Debs Way, Oceanside, Calif. 92056

Continuation of Ser. No. 69,831, Jul. 6, 1987, abandoned. This application Mar. 10, 1989, Ser. No. 323,038

Int. Cl.[5] A01G *31/00*

U.S. Cl. 47—62 8 Claims



1. A method for growing plants which comprises the steps of:

(a) placing a plant growing medium and plants in a metal growing tray;

(b) flowing in a closed metal piping system a liquid which will absorb heat;

(c) placing said metal growing tray in metal to metal contact with said metal piping system by means of metal supports and disposed so that said metal piping system is external to and structurally supports said metal growing tray;

(d) controlling the temperature of the flowing liquid in said piping system;

(e) flowing a liquid plant nutrient solution from outside the growing tray onto the plant growing medium; and

(f) controlling the temperature of said nutrient solution from outside said growing tray and prior to flowing said nutrient solution onto said plant growing medium by placing in conductive heat exchange relationship with the nutrient solution said metal piping system containing the temperature-controlled liquid.

5,009,030

SUBSTRATE FOR SOIL-FREE CULTURE HAVING A CONTROLLED WATER CONTENT OVER ITS THICKNESS

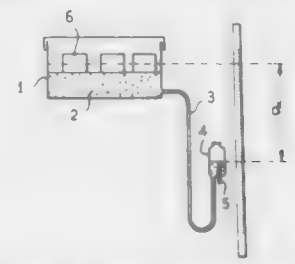
Bernard Kafka, Rantigny, and Michel Baufume, Barbery, both of France, assignors to Isover Saint-Gobain, Aubervilliers, France

Filed Oct. 3, 1988, Ser. No. 251,831

Int. Cl.[5] A01G *31/00*

U.S. Cl. 47—64 14 Claims

1. Substrate for soil-free cultivation formed from a felt of mineral fibres, suitable for the supply of water or an aqueous nutrient solution to plants, comprised of a porous, fibrous felt having opposed major first and second surfaces, said first surface being above said second surface when said felt is horizontally disposed as a substrate for soil-free cultivation, wherein said felt has a heterogeneous fibrous structure displaying a hydroretentivity gradient such that the hydroretentivity gradient decreases in the direction from said first surface to said second surface, such that said gradient is opposed to the direction of gravity when said substrate is horizontally disposed and employed as a substrate for soil-free cultivation.



5,009,031

GROW-MAT FOR CULTIVATING PLANTS AND A METHOD FOR MANUFACTURING SAME

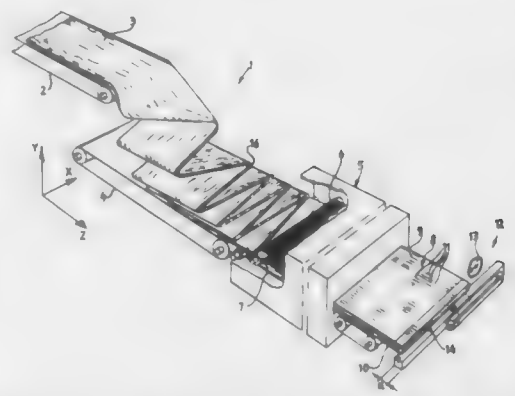
Albert W. Knop, Herkenbosch, and Robert J. H. M. van Banning, Munstergeleen, both of Netherlands, assignors to Rockwool Lapinus B.V., Netherlands

Continuation of Ser. No. 145,615, Jan. 19, 1988, abandoned. This application Oct. 17, 1989, Ser. No. 423,620

Claims priority, application Netherlands, Jan. 27, 1987, 8700196

Int. Cl.[5] A01G *31/02*

U.S. Cl. 47—64 13 Claims



1. Grow-mat for cultivating plants, comprising a layer of mineral fibres cross-linked to one another by cured binding agent and treated with hydrophilic wetting agent, characterized in that in said grow-mat the principal direction of said mineral fibres extending in said layer extends in the longest dimension of said mat and the subsidiary direction of said mineral fibres extending in said layer extends in the heightwise dimension of said mat.

5,009,032

PORTABLE AUTOMATIC WATER-RELEASING PLANT RECEPTACLE

Etheridge C. Hogue, 198 Pine Street, SW., Bessemer, Ala. 35020, assignor to Etheridge C. Hogue, Birmingham, Ala.

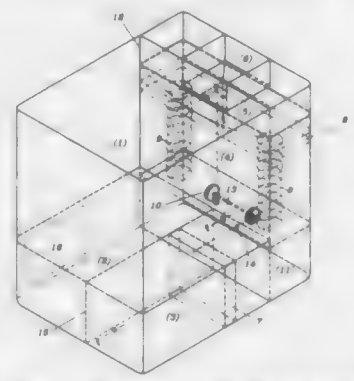
Filed Oct. 31, 1988, Ser. No. 264,994

Int. Cl.[5] A01G *25/00, 29/00*

U.S. Cl. 47—79 8 Claims

1. A portable automatic water-releasing plant receptacle comprising a receptacle housing integrally containing;

a liquid storage tank for holding water to be delivered to a planter portion integrally attached thereto;
an accumulation chamber having an inlet opening and a plurality of release openings and situated in the top portion of said storage tank to release water into said planter portion;
a dual chamber hydraulic system wherein a primary chamber of said hydraulic system integrally makes up the bottom portion of said storage tank and a secondary chamber is situated beside a storage compartment, separated by a common wall there-between, disposed beneath said planter portion;
a hollow base integrally supporting the bottom of said storage tank;
an elastic container attached to the inner walls of said storage tank to contain water as poured into said storage tank;
a water release apparatus contained within said accumulation chamber, and comprising a rigid float, fitted with a second buoyant flanged top-and-bottom float (embedded



with a first magnet to be attracted by a second magnet situated on the outside of said accumulation chamber) for the purpose of blocking and unblocking said release openings of said accumulation chamber as the result of a buoyant force applied to and removed from said second flanged float by said rigid float as the water level in said accumulation chamber rises and falls upon water accumulation and release;
a dual wheel-and-axle assembly and a plurality of springs contained within said primary hydraulic chamber to transfer energy between said primary and said secondary hydraulic chambers; and
hydraulic passages communicating between said primary chamber and said secondary chamber wherein said hydraulic passages comprise a first passage to allow fluid flow between said primary and secondary chambers therethrough and a second passage to allow movement of a secondary cable of said dual wheel-and-axle assembly therethrough.

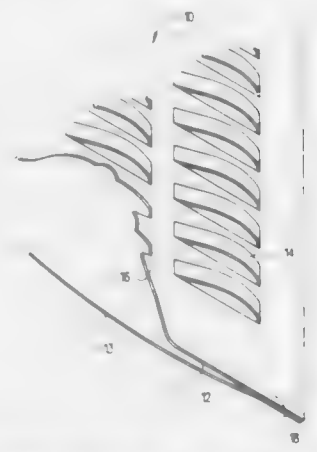
5,009,033

GROUND COVER SHEET

Leonard A. McCray, 20817 NE. 87 Ave., Battle Ground, Wash. 98604

Filed Nov. 16, 1987, Ser. No. 121,280
Int. Cl.[5] A01G *9/02*; **B32B** *3/10*
U.S. Cl. 47—80 **10 Claims**

1. A new and improved ground cover sheet for retaining bark dust and bark chips, comprising:
an elongated base sheet formed from a flexible plastic material;
an elongated cover sheet formed from a flexible plastic material and overlying said base sheet;
a plurality of spaced heat weld zones extending across the width of said cover sheet, securing said cover sheet to said base sheet;
a plurality of short slits in said cover sheet extending along a length of said cover sheet;
said slits arranged in rows of spaced slits across the width of said cover sheet; and



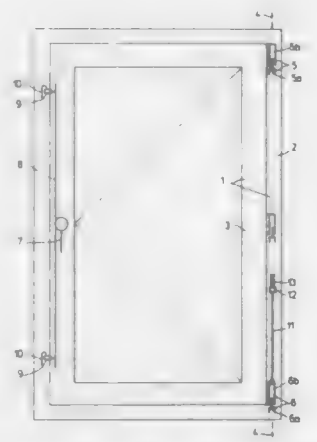
said slits forming a plurality of upwardly convex bows for engaging and retaining bark dust and bark chips.

5,009,034

CLOSURE SUPPORT

Alfred Schneider, Kreutzal; Horst Loos, and Karl H. Fischbach, both of Freudenberg, all of Fed. Rep. of Germany, assignors to Siegenia-Frank KG, Siegen, Fed. Rep. of Germany

Filed Jan. 23, 1990, Ser. No. 468,705
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1989, 3901944; Mar. 23, 1989, 8903678; Jun. 22, 1989, 3920360
Int. Cl.[5] E05D *15/52*
U.S. Cl. 49—192 **11 Claims**



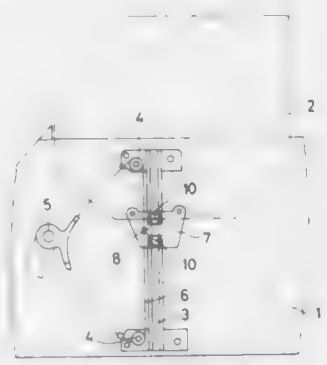
1. A window or door with a panel mounted on a fixed frame by hinge fittings near a vertical panel element, characterized by a brace engaged with the panel adjacent to the hinge fittings which comprise upper and lower corner hinges and anchored to the fixed frame against the force of gravity or direction of load of the panel wherein the window or door has a tilt panel and further characterized by the fact that the brace is located between the panel and the frame above, but near, the lower corner hinge.

5,009,035

WINDOW REGULATOR APPARATUS

Nobuyuki Kuki, Toyohashi; Yukio Isomura, Chiryu; Hirokazu Suzumura, Toyota; Yoshikazu Sakakibara, Anjo, and Hiroshi Ishihara, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Japan

Filed Mar. 28, 1990, Ser. No. 500,204
Claims priority, application Japan, Mar. 29, 1989, 1-35805[U]
Int. Cl.[5] E05F *11/48*
U.S. Cl. 49—352 **7 Claims**



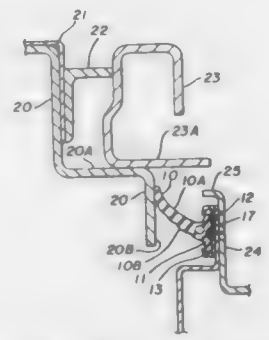
1. A window regulator apparatus, comprising:
a guide rail having inner vertical surfaces;
a window glass;
a bracket movably supported on said guide rail and having outer vertical surfaces, said window glass attached to said bracket;
driving means for moving said bracket and thereby said window glass along said guide rail in an upward and downward direction;
resilient means positioned between said inner vertical surfaces of said guide rail and said outer vertical surfaces of said bracket; and
shoes interposed between said resilient means and guide rail for compressing said resilient means in two directions to reduce rattling of the window.

5,009,036

BOX CAR DOOR SEAL

Walter S. Ryan, Mercer, Pa., assignor to Pennsylvania Rail Car Company, Mercer, Pa.

Continuation-in-part of Ser. No. 410,273, Sep. 21, 1989, abandoned. This application May 11, 1990, Ser. No. 522,214
Int. Cl.[5] E06B *7/23*
U.S. Cl. 49—485 **1 Claim**



1. In the combination of a box car construction having a door frame including a vertically disposed sealing surface, a box car door having a vertical flange spaced with respect to said vertically disposed sealing surface of said box car door frame, the box car construction having a normal condition in which the door frame vertically disposed sealing surface is spaced from the box car door by a preset distance and a sprung condition in which the door frame vertically disposed sealing surface is spaced from the box car door by a distance which differs from the preset distance, and an improved sealing device for sealing the space between the vertical sealing surface of said box car door frame and said flange of said box car door, the improvement comprising: an elongated deformable resilient sealing member, a bifurcated base section of a known width on one longitudinal edge of said elongated sealing member forming oppositely disposed extending flanges on said sealing member, a continuous elongated cavity in said base section partially separating said flanges, a longitudinally extending bore in said sealing member at the point of bifurcation partially separating said flanges, means mounting said sealing member on said flange of said box car door with said elongated deformable resilient sealing member in engagement with said vertical sealing surface of said door frame, said sealing member extending outwardly and upwardly from said bore in a shallow curve and having a convex surface which contacts said vertically disposed sealing surface and forms a fluid tight seal, a substantial portion of said sealing member convex surface engaging said vertical sealing surface of said door frame when said box car construction is in the normal condition, said sealing member having a concave surface which defines a trough for directing liquid away from said vertical flange of said door frame, said longitudinally extending bore being sized so that there is only enough material in said deformable resilient sealing member and base surrounding said bore to provide the sealing member with sufficient flexibility to maintain enough of the convex surface in contact with the vertical sealing surface to maintain said fluid tight seal with the vertically disposed flange when the box car construction is in the sprung condition as well as maintaining said convex surface in flush contact with the vertically disposed surface when the box car construction is in the normal condition.

5,009,037

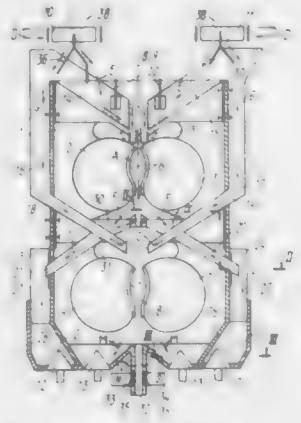
APPARATUS FOR DESCALING THE SURFACE OF A STRIP

Jury V. Lipukhin, ploschad Metallurgov, 5, kv. 15; Leonid I. Danilov, ulitsa Vereschagin, 51, kv. 8; Albert N. Ivoditov, ploschad Metallurgov, 5, kv. 13; Eduard A. Garber, ulitsa M. Gorkogo, 85, kv. 17; Anatoly N. Subbotin, prospekt Pobedy, 120, kv. 14; Valentin P. Pavlov, prospekt Pobedy, 57, kv. 30, all of Vologodskaya oblast, Cherepovets; Jury K. Zhukov, Serpukhovskoi val, 13, kv. 29, and Alexandr F. Pimenov, ulitsa Planernaya, 12, korpus 1, kv. 400, both of Moscow, all of U.S.S.R.

PCT No. PCT/SU88/00092, § 371 Date Dec. 21, 1988, § 102(e) Date Dec. 21, 1988, PCT Pub. No. WO88/08341, PCT Pub. Date Nov. 3, 1988
PCT Filed Apr. 20, 1988, Ser. No. 294,510
Claims priority, application U.S.S.R., Apr. 21, 1987, 4225033; Dec. 21, 1987, 4340096
Int. Cl.[5] B24B *19/00*
U.S. Cl. 51—7 **6 Claims**

1. An apparatus for descaling the surface of a strip comprising a chamber to be filled with an abrasive powder accomodating at least first and second pairs of mechanisms for compacting the powder arranged one above the other, working members of said first and second pairs of mechanisms for compacting facing a plane along which the strip is conveyed to define work spaces between the working members and the plane of the strip, means for charging the abrasive powder from above to the chamber, and first and second gates for discharging the powder from the chamber provided at the bottom portion thereof, characterized in that said apparatus for descaling includes first and second systems of conduits for separately delivering the abrasive powder from the charging means to the work spaces between the working members of the powder

compacting mechanisms and said plane of the strip, and a third system of conduits for separately evacuating the powder from



said work spaces to the first and second gates for discharging the powder from the chamber.

5,009,038

AUTOMATIC CHAMFERING MACHINE

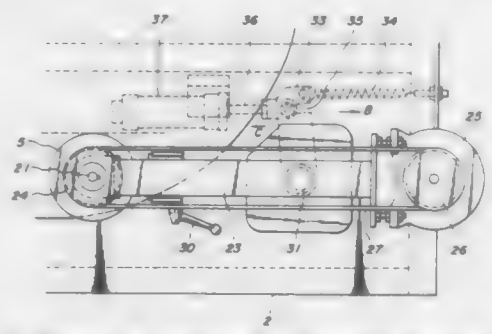
Akira Yoshikawa, Nagoya, and Setsuo Torikai, Konan, both of Japan, assignors to NKG Insulators, Ltd., Nagoya, Japan

Continuation of Ser. No. 318,420, Feb. 28, 1989, abandoned, which is a continuation of Ser. No. 88,519, Aug. 20, 1987, abandoned, which is a continuation of Ser. No. 837,262, Mar. 7, 1986, abandoned. This application Jul. 16, 1990, Ser. No. 552,836

Claims priority, application Japan, Mar. 20, 1985, 60-54169

Int. Cl.[5] **B24B** *9/00*

U.S. Cl. 51—126 **2 Claims**



1. A machine for chamfering workpieces which have a thinwalled ceramic honeycomb structural body with at least one end surface to be chamfered, comprising:

a machine frame;

a turntable supported by said machine frame so as to be rotatable about a vertical axis and having a horizontal upper surface which supports the workpieces in which a plurality of openings are provided, said turntable being driven intermittently to successively feed the workpieces to a predetermined position;

a clamping device connected to said machine frame and including a pair of vertically opposed discs for clamping each of the workpieces when at the predetermined position, such that there is a substantial radial overhang of each of the workpieces with respect to the discs, vertically deplacing each of the workpieces from said upper surface through the openings, and rotating each of the workpieces in one direction about an axis of rotation of each of the workpieces which extends substantially at a right angle to the end surface of each of the workpieces;

a grinder wheel for chamfering the end surface of each of the workpieces, said grinder wheel being detachably mounted on one end of a rotational shaft which is parallel to said axis of rotation and movable in a direction substantially perpendicular to said axis of rotation;

a tracer element for tracing the outer peripheral contour of each of the workpieces, said tracer element being smaller in radius than said grinder wheel and arranged coaxially therewith during chamfering so as to be movable in a direction substantially perpendicular to said axis of rotation, said tracer element being mounted on a bracket which is movable between an operative position in which said tracer element is located close to, and coaxially with, said grinder wheel and an inoperative position in which said tracer element is located remote from said grinder wheel permitting replacement of at least one of said grinder wheel and said tracer element;

biasing means including a lever loaded by a spring and a fluid cylinder device having a plunger which is connected to said lever, wherein said fluid cylinder moves said lever between an operative position, in which said lever is disengaged from said plunger to permit said spring to resiliently urge said grinder wheel and said tracer element toward each of the workpieces, and an inoperative position, in which said lever is engaged by said plunger to move said grinder wheel and said tracer element away from each of the workpieces, and

abutment means for limiting an amount by which said spring resiliently urges said grinder wheel and said tracer element toward each of the workpieces, said abutment means having a slit formed therein in which an end of said plunger is movably engaged, said slit having a least one closed end for preventing said lever from rotating beyond a position in which the end of said plunger abuts against the closed end of said slit;

wherein said grinder wheel and said tracer element are operatively associated with each other such that said tracer element, while tracing the outer peripheral contour of each of the workpieces, controls the movement of said grinder wheel toward and away from said axis of rotation of effect an autoprofiling chamfering of the end surface of each of the workpieces.

5,009,039

SKATE SHARPENING DEVICE

Kjell Lager, Österbybruk; Anders Tärnström, Storvreta; Olov Östlund, Uppsala, all of Sweden, and Joseph W. Driver, Hudson Heights, Canada, assignors to Svenska Skatebox AB, Uppsala, Sweden

PCT No. PCT/SE88/00379, § 371 Date Mar. 16, 1990, § 102(e) Date Mar. 16, 1990, PCT Pub. No. WO89/00443, PCT Pub. Date Jan. 26, 1989

PCT Filed Jul. 14, 1988, Ser. No. 458,624

Claims priority, application Sweden, Jul. 17, 1987, 8702909

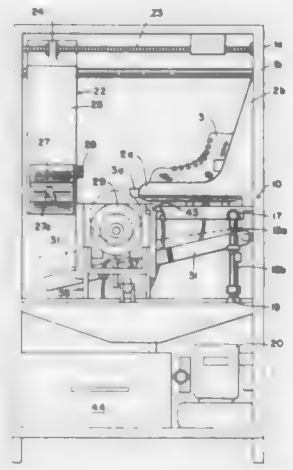
Int. Cl.[5] **B24B** *49/12, 3/00, 19/00*

U.S. Cl. 51—165.77 **10 Claims**

1. A skate sharpening device comprising an automatic skate sharpening mechanism located inside a protective cover, including a skate loading device (2), which is pivotally mounted in an opening (9) in said protective cover (1), so that it can be pivoted between a skate loading position outside said protective cover (1) and a starting position for sharpening inside said protective cover (1), said skate loading device comprising:

(a) gripping means (12, 15) for releasably gripping at least one skate (3) to be sharpened,

(b) first obturation means (11*a*) which substantially close said opening (9) in said skate loading position (FIG. 5), and



(c) second obturation means (11*b*) which substantially close said opening (9) in said starting position for sharpening (FIG. 6).

5,009,040

BLADE SHARPENER

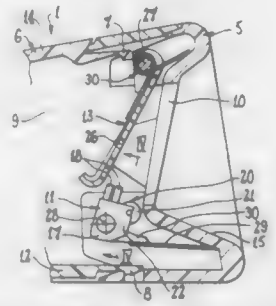
Cvetan Petroff, Kew, Australia, assignor to McPherson's Limited, Australia

Filed Aug. 17, 1990, Ser. No. 569,084

Claims priority, application Australia, Aug. 28, 1989, PJ6017; Feb. 1, 1990, PJ8419

Int. Cl.[5] **B24B** *33/00*

U.S. Cl. 51—214 **18 Claims**



1. A blade sharpener including, a sharpening mechanism which is operable to sharpen the cutting edge of a blade engaging that mechanism and being moved longitudinally relative thereto,

sharpening defeating means connected to a support for movement relative thereto between an operative condition and an inoperative condition,

said defeating means being arranged to adopt said operative condition in response to longitudinal movement of said blade through the sharpener in one direction, said defeating means being operative to apply a force against said blade acting counter to a force causing said blade to engage said mechanism when said defeating means is in said operative condition,

and said defeating means being arranged to adopt said inoperative condition in response to said longitudinal movement of the blade in a direction opposite to said one direction, said defeating means not being operative to apply said counter force to said blade when said defeating means is in said inoperative condition.

5,009,041

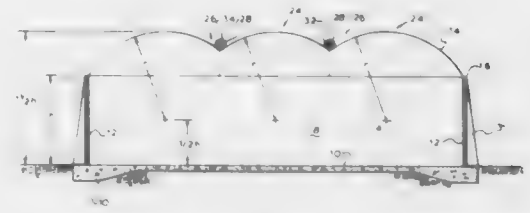
WEIGHTED MEMBRANE STRUCTURES

Anderson B. Fly, Amarillo, Tex., assignor to Fly Enterprises, Inc., Amarillo, Tex.

Filed Aug. 3, 1982, Ser. No. 404,879

Int. Cl.[5] **E04G** *11/04;* **E02D** *29/00*

U.S. Cl. 52—2.19 **6 Claims**



1. A membrane covered permanent structure built on ground having

a. a peripheral wall connected to

b. a foundation on the ground,

c. a flexible membrane having a periphery connected to the wall,

d. the foundation having floor area below the membrane and within said peripheral wall,

e. said membrane being supported at an approximate desired membrane height above the floor area by fluid exerting internal fluid pressure under the membrane greater than fluid exerting external fluid pressure above the membrane,

wherein the improved structure comprises in combination with the above:

f. at least one weight connected to the membrane within the periphery,

g. said internal fluid pressure also supporting said weight by the intervening support of the membrane,

h. said weight depressing the membrane such that a radius of curvature of the membrane between the periphery and weight is less than the radius of curvature of a fully inflated condition,

i. whereby the membrane and weights move up and down from the approximate desired membrane height solely responsive to the changing fluid pressures above and below the membrane,

j. said membrane having restraining connection to the peripheral wall only.

5,009,042

MODULAR DISPLAY SYSTEM

Bruno Sacco; Johann Tomforde, both of Sindelfingen; Thomas Abb, Klingenberg, and Bruno Stenemann, Beckum, all of Fed. Rep. of Germany, assignors to Daimler-Benz AG

Continuation of Ser. No. 241,267, Sep. 7, 1988, abandoned. This application Nov. 30, 1989, Ser. No. 443,040

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1987, 3729903

Int. Cl.[5] **E04B** *2/00;* **E04H** *1/00*

U.S. Cl. 52—36 **3 Claims**

1. A modular display comprising:

a wall element having vertical interior profiles arranged at lateral corner regions of the wall element and a horizontal elongated, profile extending between the vertical profiles;

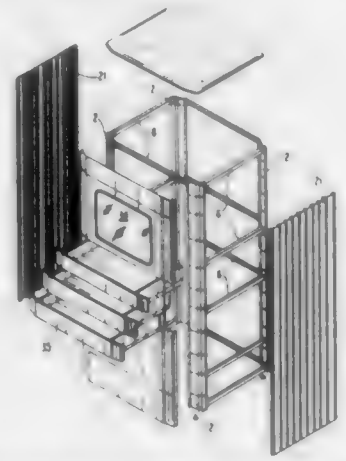
a first contact surface of each of the vertical profiles for contacting the horizontal profile, the first contact surface extending at a right angle to a longitudinal axis of the horizontal profile;

a second contact surface of each of the vertical profiles for contacting one of an additional horizontal profile and a mirror inverted vertical profile for forming a free standing wall, the second contact surface extending parallel to the longitudinal axis of the horizontal profile;

a housing channel of the vertical profiles facing outwardly

from the wall element and extending in a longitudinal direction of the vertical profiles; and

a rigid covering for attaching to the horizontal and vertical profiles to form an exterior of the wall element, wherein the rigid covering is formed by segments arranged superposed at a mutual interval, and wherein stirrups, which



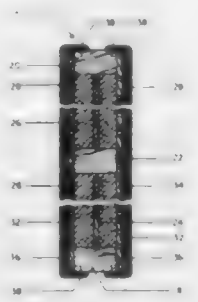
are respectively attachable to a mid-region of each of the vertical profiles positioned between the first and second contact surfaces of each of the verucal profiles, pass through a gap present between the segments and are slidable on shelves attached to the wall element which each have at least one interior guide channel for this purpose.

5,009,043

ACOUSTIC PANEL

Andrew J. Kurrasch, Saugatuck, Mich., assignor to Herman Miller, Inc., Zeeland, Mich.

Filed Jul. 12, 1990, Ser. No. 551,916
Int. Cl.[5] E04B *1/82, 1/84*
U.S. Cl. 52—145 22 Claims



1. In an acoustic wall panel comprising a peripheral frame having opposed sides and defining an opening, a septum mounted in said opening to restrict sound transmission therethrough, an inner sound-absorbing filling received within said opening, a rigid perforated facing secured to each side of said peripheral frame to permit sound to pass therethrough and to rigidify said frame, and an outer decorative fascia secured to said frame,

the improvement which comprises:

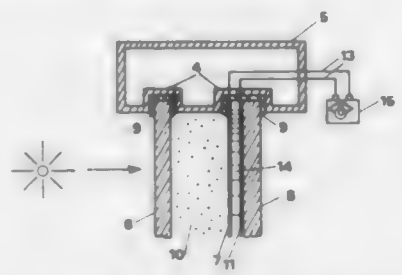
a sound-transmitting spacer layer overlying each facing and a thin gas impervious foil layer overlying said sound-transmitting spacer layer layer to provide fire retardancy to said panel.

5,009,044

DUAL-PANE THERMAL WINDOW WITH LIQUID CRYSTAL SHADE

Ray H. Baughman, Morris Plains; Ernest D. Buff, Far Hills; Helmut Eckhardt, Madison, and Gerhard H. Fuchs, Far Hills, all of N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Division of Ser. No. 425,263, Oct. 23, 1989, Pat. No. 4,964,251, which is a division of Ser. No. 398,599, Aug. 25, 1989, Pat. No. 4,899,503, which is a division of Ser. No. 350,808, May 12, 1989, Pat. No. 4,893,902, which is a division of Ser. No. 66,299, Jun. 25, 1987, Pat. No. 4,848,875. This application Apr. 26, 1990, Ser. No. 515,034
Int. Cl.[5] E04C *2/54;* G02F *1/133*
U.S. Cl. 52—171 1 Claim



1. A thermal-pane window unit resistant to radiative heat transfer as well as conductive heat transfer, comprising:

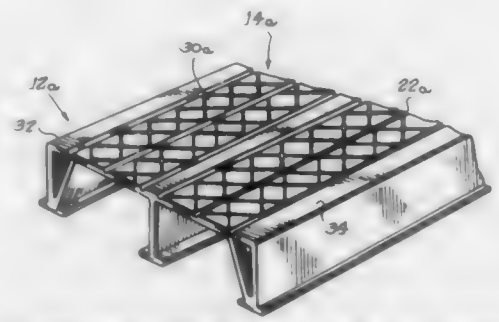
two substantially parallel, spaced window panes, mounted in a window frame, a first of said panes being composed of plastic, being adaptive to be electrically conductive and including, as a microdispersion within said plastic, an electro-optical liquid crystal material providing a selected light transmittance, and a second of said panes delimiting, said first of said panes, a space providing a thermal break.

5,009,045

PLANK STRUCTURE FOR BOAT DOCK AND THE LIKE

Dennis G. Yoder, Nappanee, Ind., assignor to CTB, Inc., Milford, Ind.

Filed Oct. 6, 1989, Ser. No. 417,827
Int. Cl.[5] E04F *11/16*
U.S. Cl. 52—177 13 Claims



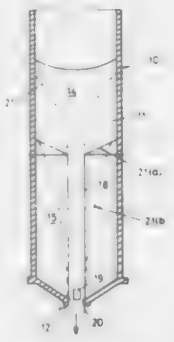
1. A plastic plank member for a deck or the like integrally formed of a plastic material having a coefficient of friction less than approximately 0.5, said plank member comprising: a top portion formed of a first material and tread means formed of a second material integral with said top portion, said tread means having a coefficient of friction generally greater than 0.5, fluid drainage means for draining fluid from said tread means and from said top portion of said plank.

5,009,046

REDUCING HOOP STRESS IN SILOS

Bruce L. Johinke, Kent Town, Australia, assignor to South Australian Co-Operative Bulk Handling Limited, Adelaide, Australia

Filed Apr. 23, 1985, Ser. No. 726,030
The portion of the term of this patent subsequent to Dec. 13, 2005, has been disclaimed.
Int. Cl.[5] B65G *63/34*
U.S. Cl. 52—197 9 Claims



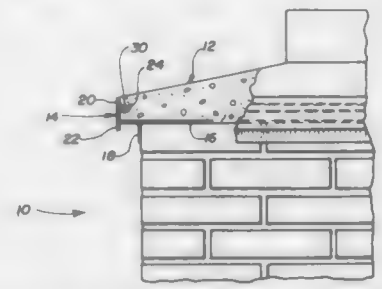
1. Means for reducing hoop stress in a silo of the type having cylindrical walls upstanding from a base and defining therewith a cell, comprising a grain tube located centrally within the silo and having a tube wall upstanding from the silo base and extending part way up the silo cell, the grain tube having an open upper end and an open lower end, apertures through the wall of the tube near said lower end and symmetrical about the central vertical axis of the tube, a restrictor beneath the apertures for restricting flow of grain through the tube, a gate valve at the lower end of the tube vertically below the restrictor, and support means supporting the upper end of the tube from said cylindrical silo walls.

5,009,047

CHIMNEY CROWN MOLD

Michael Olding, 4 Gilmore Ct., Fairfield, Ohio 45014

Continuation of Ser. No. 277,880, Nov. 30, 1988, abandoned.
This application May 14, 1990, Ser. No. 523,014
Int. Cl.[5] E04H *12/28;* F23L *17/12*
U.S. Cl. 52—218 7 Claims



1. A chimney crown mold for use in combination with a chimney which includes a chimney shell and a chimney crown disposed on top of said chimney shell, said chimney crown mold being adapted for installation between said chimney shell and said chimney crown so that said chimney crown overhangs said chimney shell, and wherein said chimney crown mold deflects water which infiltrates said chimney crown away from said chimney shell thus reducing or helping alleviate water infiltration into said chimney shell, said chimney crown mold comprising:

a base which contacts and covers a top surface of said chimney shell, and a band extending downwardly substantially perpendicular to said base for contacting an outer side surface of said chimney shell, said base having an inner end and an outer end, said band being located between said inner and outer ends but closer to said outer end than to said inner end;

an upper leg extending upwardly from said base adjacent the outer end thereof without forming any notches, grooves or recesses between said upper leg and said base, said upper leg cooperating with said base to contain said chimney crown; and

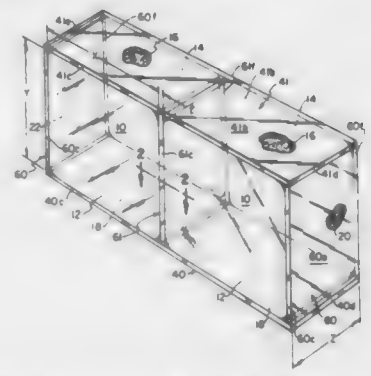
a lower leg extending downwardly from said base adjacent the outer end thereof to prevent water that runs off said chimney crown from dipping underneath said chimney crown mold.

5,009,048

GLASS BLOCK WALLS USING ACRYLIC OR GLASS FILTERS

Stanley Paul, Long Island City, N.Y., assignor to Acrymet Industries Inc., Long Island City, N.Y.

Filed Aug. 15, 1989, Ser. No. 394,353
Int. Cl.[5] E04G *21/18*
U.S. Cl. 52—308 7 Claims



1. An array of translucent blocks, comprising:

a plurality of translucent blocks arranged in horizontal rows and vertical columns;

horizontal and vertical transparent plastic filler pieces between adjacent blocks, said plastic filler pieces extending at least across the entire length or height of the adjacent blocks, the width of said filler pieces being substantially equal to the width of said translucent blocks, each said plastic filler piece including at least one edge that is visible as part of said array, the edges of said plastic filler pieces that are visible being sufficiently smooth so as to be transparent, whereby the material between said blocks that is visible appears to be transparent; and

adhesive means for securing each filler piece to the contiguous surfaces of adjacent one of said translucent blocks.

5,009,049

Patent Not Issued For This Number

5,009,050

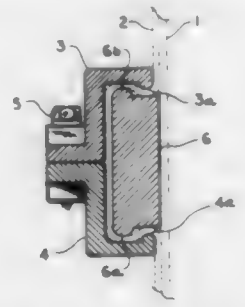
ROOFING CLAMP

Milan A. Gruber, Monaca, Pa., assignor to Ed. Shook, Jr., Pittsburgh, Pa.

Filed May 15, 1990, Ser. No. 511,753
Int. Cl.[5] E04D *5/14*
U.S. Cl. 52—408 3 Claims

1. In combination with an impervious flexible roofing sheet, a clamp for clamping said sheet to a roof in a rain-tight manner, comprising a pair of Z-like clamp halves, each having three legs att right angles to each other, one of the ends of each leg having an inward extending, substantially semicircular projection, a rectangular block attached to the roof and having a pair of outward extending, substantially semi-circular projections outwardly of said roof, machine screws for detachably fastening the other of said three legs in abutting relationship and in spaced surrounding relationship to said rectangular block

sufficiently to accommodate a portion of said flexible roofing sheet in surrounding relationship to the exposed surface of said rectangular block so that each of said block form an S-like path to said portion of said roof sheet, the spacing between the outer



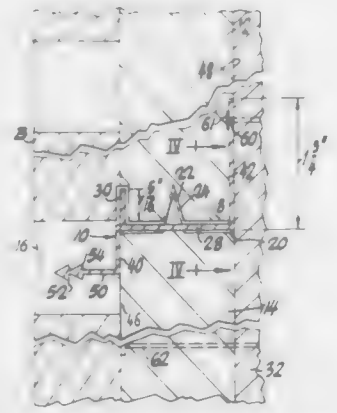
surface of said block and the inner surface of said clamp halves being substantially that of the thickness of said flexible roofing sheet throughout the entire inner surface of said clamp halves and the entire outer surface of said rectangular block.

5,009,051

CLIP CONSTRUCTION FOR ALIGNING SIDING SECTIONS

Ronald F. Trezza, P.O. Box 764, Melville, N.Y. 11747

Filed Oct. 20, 1989, Ser. No. 424,677
Int. Cl.[5] **E04B** *1/41*; **E04C** *5/18*
U.S. Cl. 52—410 **29 Claims**



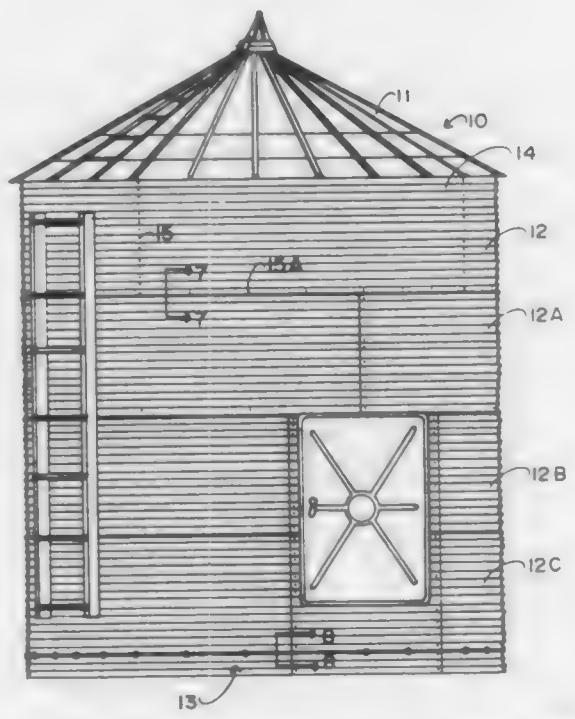
1. A wall construction comprising a wall, siding sections on said wall and in coplanar end-to-end relationship and including abutting ends with nesting tongue and groove means to resist relative transverse movement between said sections, said siding sections having inner and outer faces, said tongue defining a passage extending transversely thereacross, a clip including a central portion between said sections and extending through said passage in said tongue, said clip including first and second further portions extending in opposite directions from said central portion along opposite sides of respective of the siding sections, protruding means extending outwardly from the first further portion, a suitable material adjacent the siding sections and in which said protruding means is embedded, and hold-back and alignment means extending from said central portion in opposite direction from said first further portion of the clip for holding one of the siding sections against the wall, said holdback and alignment means engaging the outer face of said one siding section.

5,009,052

METHOD AND APPARATUS FOR CONSTRUCTION OF GRAIN BINS

Herbert T. Welch, Calgary, Canada, assignor to John P. Welch, Alberta, Canada

Filed Aug. 15, 1989, Ser. No. 394,121
Int. Cl.[5] **E04B** *1/00*
U.S. Cl. 52—742 **18 Claims**



1. A method of constructing grain bins comprising the steps of:

(a) securing together a plurality of base wall segments to form a circular base wall section on the ground, said base wall section having an out-turned horizontal annular flange around the upper edge thereof;

(b) engaging a centre pin with the ground and extending upwardly perpendicularly therefrom within the confines of said circular base wall section,

(c) engaging a plurality of said ground engaging pins perpendicularly through pin retaining and supporting brackets extending inwardly from said segments with the upper ends of said pins extending above said brackets but not penetrating the ground surface, said pins being situated substantially equidistantly around said base wall,

(d) extending a radius member between said centre pin and, successively, several of said pins extending perpendicularly through said brackets and then adjusting the position of said base wall section until it is substantially circular and the circumference is substantially equidistantly situated from said centre pin,

(e) engaging said pins in said brackets, with the ground to anchor said base wall section in position,

(f) horizontally levelling said out-turned flange of said base wall section by adjusting said base wall section vertically relative to each of said pins,

(g) securing said base wall section to said pins in said level,

(h) pouring gravel and then concrete into said base wall section and levelling the upper surface of the concrete by screeding same substantially level with said out-turned flange and,

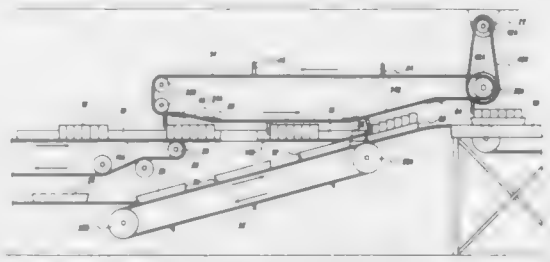
(i) then erecting the grain bin upon said base wall.

5,009,053

STORAGE AND TRANSPORT TRAY AND TRAY PACKING SYSTEM

Keith A. Langenbeck, 4005 University Blvd., Dallas, Tex. 75205, and Jesse P. Kensinger, Richardson, Tex., assignors to Keith A. Langenbeck, Dallas, Tex.

PCT No. PCT/US88/00290, § 371 Date Sep. 26, 1989, § 102(e) Date Sep. 26, 1989, PCT Pub. No. WO88/07478, PCT Pub. Date Oct. 6, 1988
PCT Filed Jan. 29, 1988, Ser. No. 435,540
Int. Cl.[5] **B65D** *6/34, 8/06*; **B65B** *5/10, 39/00*
U.S. Cl. 53—58 **57 Claims**



29. A system for pac king containers into corresponding trays, comprising:

first conveyor means for transporting said containers along a first track;

means for dividing said containers into selected groups, the number of containers in each group corresponding to the number of containers to be packed into each tray;

second conveyor means for transporting said trays along a second track, a portion of said second track being inclined with respect to said first track so that the first and second tracks converge at a predetermined location; and

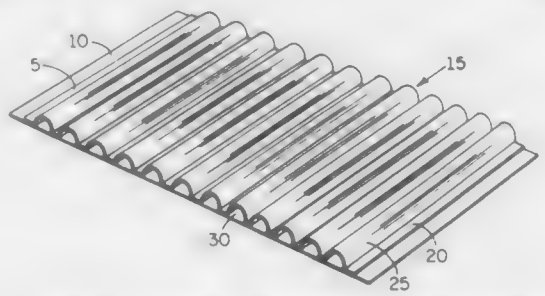
a support member disposed adjacent to said predetermined location for journally supporting said containers as said containers are being packed into the corresponding tray, said support member being reciprocally moveable along an upstream-downstream axis between a first position at which said support member is substantially fully extended for introducing a corresponding group of containers into the corresponding tray and a second position at which said support member is substantially fully retracted for allowing the trailing edge of the corresponding tray to clear said support member as said tray is moved along the inclined portion of the second track after all of the containers in the corresponding group have been packed into the tray.

5,009,054

METHOD OF STORING THREAD IN AN EMBROIDERY THREAD-HOLDER

Roena B. Jons, Kerrville, Tex., assignor to Anthony E. Braun, Kerrville, Tex., a part interest

Filed Sep. 8, 1989, Ser. No. 405,149
Int. Cl.[5] **B65B** *27/06, 27/12, 67/00, 15/04*
U.S. Cl. 53—397 **3 Claims**



1. A method for storage and retrieval of thread for an embroidery thread-holder, which comprises:

placing an elongated tool at a distal end of a cylindrical compartment of said embroidery thread holder;

protruding a hook of said elongated tool through said cylindrical compartment and from a proximate end of said cylindrical compartment;

attaching a coiled bundle of thread to said hook at said proximate end of said cylindrical compartment; and

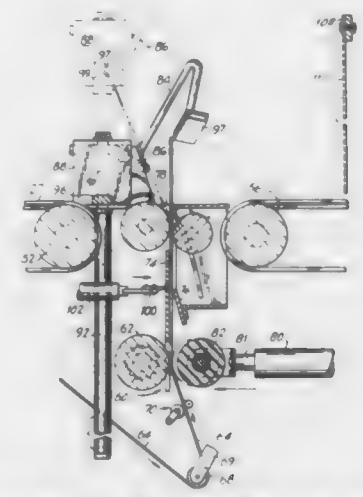
retracing said coiled bundle of thread to said hook at said proximate end of said cylindrical compartment such that semi-circular tips of said bundle of thread remain protruding from said proximate end and said distal end of said cylindrical compartment; cutting said semi-circular tips of said bundles of thread protruding from said proximate and distal ends of said cylindrical compartments to allow retrieval of said thread in lengths used for embroidery.

5,009,055

APPARATUS AND METHOD FOR WRAPPING BUNDLES OF NEWSPAPERS OR THE LIKE

Chris B. Simmons, 352 Meadow Rd., Kings Park, N.Y. 11754

Filed Apr. 11, 1990, Ser. No. 508,064
Int. Cl.[5] **B65B** *11/08*
U.S. Cl. 53—397 **27 Claims**



24. A method for wrapping at least three adjacent surface portions of a bundle of papers such as newspapers or the like prior to tying the bundle, which comprises:

(a) conveying the bundle in a predetermined direction toward tying means;

(b) dispensing wrapping material from a location below and in a direction generally transverse to the path of the bundle at a predetermined dispensing rate;

(c) gripping said material at an upper marginal position and guiding said wrapping material upwardly int to path of the bundle at substantially the same rate as said predetermined dispensing rate so as to permit the bundle to thereby become wrapped with said material over at least two adjacent surfaces; and

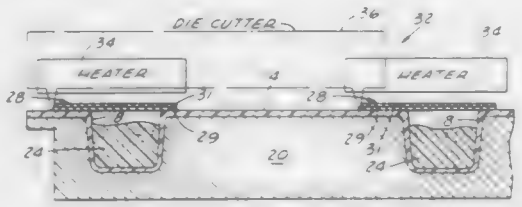
(d) controlling the speed of said wrapping material dispensing means and the conveying speed of the bundle so as to be comparable and respectively sequenced to permit predetermined surface portions of the bundle to become overwrapped with predetermined surface portions of overwrap material prior to tying the bundle.

5,009,056

METHOD FOR PREPARING FINGER MOUNTABLE DISPENSING CUPS

Don D. Porteous, 2794 Moraga Dr., Los Angeles, Calif. 90024

Continuation-in-part of Ser. No. 278,570, Dec. 1, 1988, abandoned, which is a continuation-in-part of Ser. No. 140,303, Dec. 31, 1987, Pat. No. 4,844,308, which is a continuation-in-part of Ser. No. 4,543, Jan. 16, 1987, Pat. No. 4,717,057. This application Dec. 27, 1989, Ser. No. 457,889
The portion of the term of this patent subsequent to Jul. 4, 2006, has been disclaimed.
Int. Cl.[5] B65B *47/02, 61/14, 61/18*
U.S. Cl. 53—412 **8 Claims**



1 A method for preparing a substantially fluid impervious, sealed, dental paste dispensing cup having an integrated finger mount, which comprises:

forming a portion of a substantially fluid impervious, yieldable, plastic sheet into a cup having an open end and a closed end;

adding dispensable, dental paste material to said cup through said open end,

placing a sealable closure over the open end of said cup and marginally beyond the periphery of said open end to provide an overlap area that includes a pre-determined, outwardly disposed, lateral rim section;

sealing said closure to the lateral rim section of said plastic sheet;

excising said lateral rim section, with its subtending cup, from said plastic sheet in a configuration that includes an elongated handle portion extending outwardly from the periphery of said rim; and

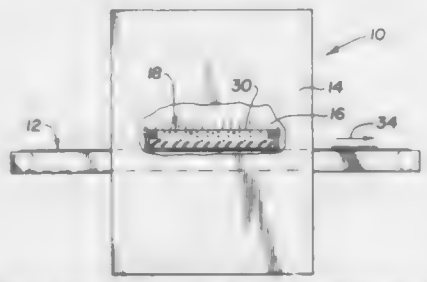
shaping said elongated handle portion into the form of an elastically yieldable finger mount to provide a slide-resistant grip on a support finger.

5,009,057

METHOD AND APPARATUS FOR SHRINK WRAPPING

Frank G. Wilkinson, 2276 Larson La., Dallas, Tex. 75229

Filed Nov. 2, 1987, Ser. No. 116,001
Int. Cl.[5] B65B *53/06*
U.S. Cl. 53—439 **12 Claims**



1. A shrink package system for shrink wrapping an article with shrink film, comprising in combination:

conveyer means for conveying the article covered by the shrink film;

means for blowing hot air on the shrink film while the article and shrink film are on the conveyer means;

a plurality of rollers; and

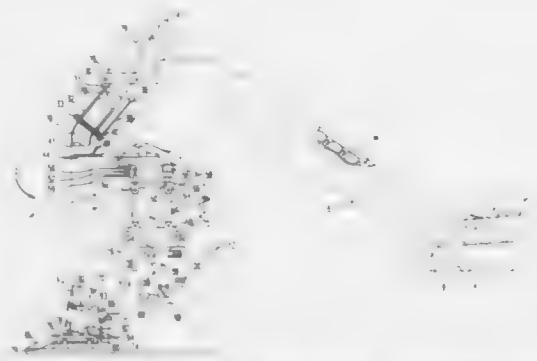
means for supporting the plurality of rollers above the conveyer means wherein the article travels beneath the plurality of rollers as it is conveyed and wherein the covered article is in contact with at least one of the rollers during a substantial portion of the time in which it is subjected to the means for blowing hot air.

5,009,058

AUTOMATIC BALING MACHINE

Lawrence Ptaschek, Roanoke; James Bowman, Salem, and H. William Ferguson, Jr., Buchanan, all of Va., assignors to NSW Corporation, Inc., Roanoke, Va.

Filed Jan. 29, 1990, Ser. No. 471,459
Int. Cl.[5] B65B *9/16, 39/06*
U.S. Cl. 53—469 **36 Claims**



24. A method for automatically baling a plurality of items into a bale formed from a tube of flexible material utilizing a device having conduit means for conducting said plurality of items from an inlet at one end of said conduit means to an outlet at the other end, said tube being coaxially mountable on an outer surface of said conduit means, dispenser control means having a locked and an unlocked position for selectively dispensing a length of said tube when in the unlocked position, and base means for holding said conduit means, comprises the steps of:

A. coaxially mounting said tube about the outer surface of said conduit means,

B. dispensing a selected length of said tube under the control of said dispenser control means such that a free end of said tube extends beyond said outlet end of said conduit means;

C. sealing said free end to form a sock-like item receptacle;

D. depositing a selected number of said items in said inlet;

E. capturing said items passing through said conduit means and out said outlet within said sock-like receptacle;

F. additionally sealing said tube at a position along the length of said tube proximate to said captured items and distal to said sealed free end to form said bale; and

G. cutting said tube immediately above said additional seal to free said bale from the remainder of said tube.

5,009,059

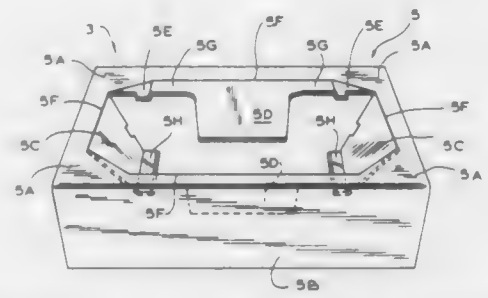
METHOD AND APPARATUS FOR PROTECTING THE FINISHED SURFACES OF SANITARY FIXTURES

Michael J. Cocciadiferro, West New York, and Robert J. De Serio, Bloomfield, both of N.J., assignors to American Standard Inc., New York, N.Y.

Division of Ser. No. 329,722, Mar. 14, 1989, Pat. No. 4,970,733.
This application Aug. 22, 1990, Ser. No. 570,747
Int. Cl.[5] B65B *11/00, 23/00*
U.S. Cl. 53—472 **3 Claims**

1. A method of protecting the finished surfaces of a sanitary fixture against damage, said sanitary fixture having a deck portion, an apron portion and a sump portion, said method comprising the sequence of steps:

(a) prior to delivering said sanitary fixture to an installation site, installing a first removable protective covering having planar deck and apron portions flexibly connected together over said deck portion and said apron portion of said finished surfaces of said sanitary fixture, said planar deck portion having a sump-defining opening formed therein surrounded by said deck, installing a second removably protective covering having a plurality of planar sump surface-covering portions flexibly connected together through said sump-defining opening and over said sump portion of said finished surfaces, said first and second protective coverings having a geometry which generally conforms to the surface geometry of said finished surface of said sanitary fixture, and having a construction sufficient to provide cushioning against and absorb impact of objects coming into mediated contact with a portion of said finished surface; and



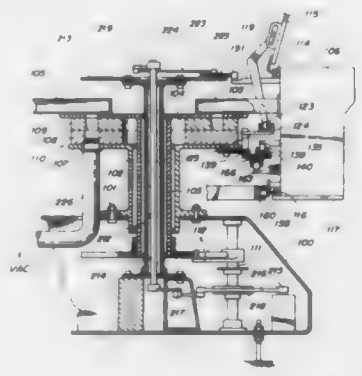
(b) delivering said sanitary fixture and said installed first and second protective coverings to an installation site at which said sanitary fixture is to be installed so that said sanitary fixture can be installed at said installation site with said installed first and second protective coverings protecting said finished surfaces of said sanitary fixture against damage sustainable during installation and construction at said installation site, and thereafter said first and second protective coverings can be removed from said sanitary fixture so as to provide said finished surfaces of said sanitary fixture undamaged after installation and construction at said installation site.

5,009,060

VACUUM PACKAGING APPARATUS

Takao Furukawa, Onomichi, Japan, assignor to ECS Corporation and Furukawa Mfg., Co., Ltd., both of, Japan

Filed Aug. 7, 1989, Ser. No. 390,416
Claims priority, application Japan, Mar. 31, 1989, 1-83096
Int. Cl.[5] B65B *31/02, 43/30*
U.S. Cl. 53—512 **13 Claims**



1. An apparatus for vacuum packaging objects into bags, comprising:

chambers rotatable along a circular endless track and into which said bags are to be supplied through an opening,

drive means disposed in the inside of the circular endless track,

a pair of support means disposed in each of said chambers and relatively movable toward and away from each other and which have opposed faces large enough to grasp therebetween a substantial part of one of the bags as the bag is supplied into the chamber,

means for mechanically engaging the support means to each other and relatively moving said support means toward and away from each other by means of the power delivered from the drive means,

a plurality of suction holes formed on said opposed faces of said pair of support means,

suction means for causing a vacuum force or suction to be applied through said suction holes in order to suck opposite sides of the bag when the support means are relatively moved toward each other and open the mouth of the bag when the support means sucking the bag are separated from each other,

means for loading the to-be-packaged object into the bag when the mouth thereof is opened,

means for closing said opening of said chamber when the bag is filled with said object,

means for vacuumizing the chamber when closed,

means for heat sealing the mouth of the bag under vacuum,

a bottom opening of the chamber and a bottom plate operable to open and close said bottom opening, and

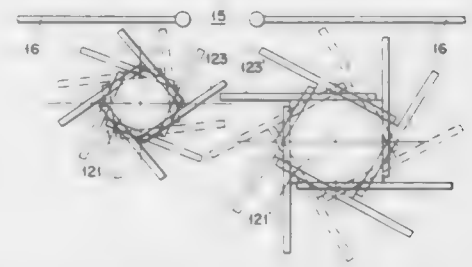
means for discharging a vacuum packaged product through the bottom opening from the chamber after the mouth of the bag has been heat sealed.

5,009,061

PROCESS AND APPARATUS FOR HARVESTING OF CROPS FROM STALKS AND CHOPPING THE STALKS

Ulrich S. Heuling, Tillmannstrasse 5, D-4410 Warendorf, Fed. Rep. of Germany

Filed Nov. 20, 1989, Ser. No. 438,042
Int. Cl.[5] A01D *45/02*
U.S. Cl. 56—104 **23 Claims**



1. In a process for harvesting crop clusters of tall plant stalks, wherein said stalks are introduced into a longitudinally extending intake path and are pulled through a gathering gap disposed in said intake path to strip said crop clusters from said stalks, the improvement comprising the steps of:

providing a pair of bladed rotary members having longitudinally extending axes disposed along opposing sides of said gathering gap,

rotating said members in opposite directions such that opposing blades of said members define a stalk contacting zone having an inlet situated proximate said gathering gap and an outlet situated remote from said gathering gap, said opposing blades having different tip speeds whereby stalks are fractured and severed by said opposing blades, said opposing blades radially overlapping during travel through said stalk contacting zone.

7. In a harvester attachment for gathering crop clusters of tall plant stalks including means defining a longitudinally extending stalk intake path in which stalks are received as said attachment is advanced, and means for pulling the stalks through a gathering gap disposed in said intake path to strip crop clusters from the stalks, the improvement comprising:

a pair of bladed rolls having longitudinally extending axes of rotation disposed along opposite sides of said gathering

gap, said rolls arranged such that opposing blades of said rolls define a stalk contacting zone having an inlet situated proximate said gathering gap and an outlet situated remote from said gathering gap, said opposing blades radially overlapping while traveling through said stalk contacting zone, and

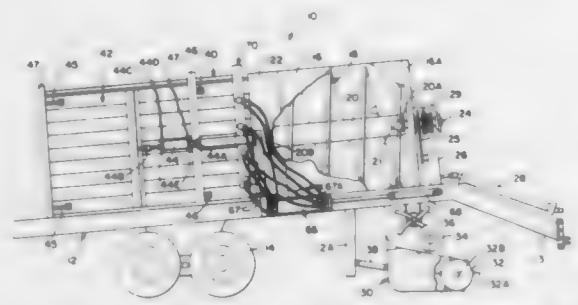
drive means for rotating said rolls in opposite directions and such that opposing blades have different tip speeds whereby stalks are fractured and severed by said opposing blades.

5,009,062

BALING APPARATUS

Oren D. Urich, Windsor, and Vernie G. Meyer, Fort Collins, both of Colo., assignors to Colorado National Manufacturers, Inc., Windsor, Colo.

Filed Feb. 7, 1989, Ser. No. 307,846
Int. Cl.[5] A01D *39/00*
U.S. Cl. 56—341 **18 Claims**



1. Apparatus for forming fibrous bulk material or the like into a baled unit and binding it, said apparatus including a wheeled frame and comprising:

(a) rotatable auger means having first and second ends;

(b) a tubular housing surrounding said auger means; wherein said housing has first and second ends; wherein said second end is open;

(c) feed means adjacent said housing for feeding said bulk material to said auger means;

(d) die means having first and second ends, wherein said first end communicates with said second end of said housing;

(e) a packing chamber communicating with said second end of said die means; wherein said chamber includes a top, a floor, and opposing side wall members; wherein said side wall members are adjustably movable inwardly and outwardly to adjust the packing tension on said bulk material in said chamber; and further comprising control means for moving said side wall members inwardly and outwardly in response to a predetermined tension value;

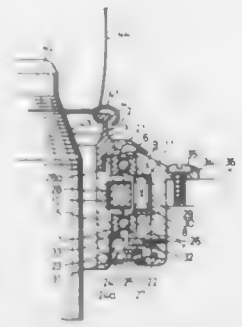
(f) binding means adjacent said packing chamber; wherein said auger means urges said bulk material through said housing and said die means and into said packing chamber; wherein said die means shapes said bulk material; wherein said binding means encircles said shaped bulk material with a flexible binding member and then secures said binding member so as to form said baled unit without cessation of rotation of said auger means; wherein said auger means is able to move axially with respect to said tubular housing, wherein said side wall members are connected to a hydraulic cylinder for movement inwardly and outwardly, wherein said control means comprises a switch operably connected to said hydraulic cylinder, and wherein said auger means activates said switch when said auger means moves axially.

5,009,063

ROTARY RING SPINNING DEVICE PROVIDED WITH A RING MOTOR

Hiroshi Yamaguchi, 9-7, Ooyamada 4-chome, Kuwana-shi, Mie, Japan, and Masashi Yamaguchi, 12-7, Shimizuoka 1-chome, Sumiyoshi-ku, Osaka-shi; Osaka, Japan, assignors to Hiroshi Yamaguchi, Japan; Niroshi Kimura, Japan and Masashi Yamaguchi, Japan

Filed Nov. 8, 1989, Ser. No. 433,342
Claims priority, application Japan, Nov. 8, 1988, 63-282854; Apr. 26, 1989, 1-107060
Int. Cl.[5] D01H *7/58*
U.S. Cl. 57—124 **10 Claims**



1. A rotary ring spinning device utilized for a ring and traveler spinning machine provided with a conventional ring rail lifting mechanism and spindle driving mechanism,

said rotary ring spinning device comprising,

a horizontal annular holder rigidly mounted on said ring rail,

a horizontal annular ring body rotatably mounted on said horizontal annular holder by way of a bearing,

a spindle arranged coaxially in an inside space of said horizontal annular rotary ring body, said spindle being driven by said driving mechanism,

an inner motor coaxially disposed between said rotary ring body and said holder with respect said spindle at a central position of a coaxial line of said rotary ring body and holder,

said inner motor comprising,

an annular rotor made of a permanent magnet material and rigidly and coaxially mounted on an outside peripheral surface of said rotary ring body at a central axial position thereof,

an annular armature rigidly and coaxially mounted on an inside peripheral surface of said holder at a central axial portion thereof, to provide a small annular space between said armature and an outside peripheral surface of said annular rotor,

said inner motor being driven by an external electrical power source input thereto.

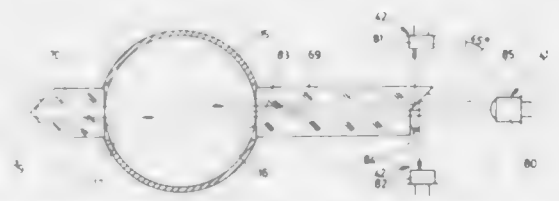
5,009,064

APPARATUS FOR MEASURING THE PARTICULATE MATTER IN THE FLUE GAS OR EXHAUST GAS FROM A COMBUSTION PROCESS

Ferdinand Grob, Besigheim; Dieter Kienzler, Stuttgart; Ernst Linder, Muehlacker; Roger Potschin, Marbach, and Heinz Stutzenberger, Vaihingen/Enz, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 254,623, Oct. 7, 1988, Pat. No. 4,922,714. This application Oct. 20, 1989, Ser. No. 424,463
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1987, 3739622; Nov. 22, 1988, 3839348
Int. Cl.[5] F01N *3/00*
U.S. Cl. 60—276 **21 Claims**

1. An apparatus for measuring a particulate matter in a flue gas or exhaust gas of a combustion process, having an optical transmitter containing a light source for emitting a beam of light to be transmitted to an optical receiver embodied as a photodetector, said beam of light passes through two diametrically opposed light slits in a wall of a tail pipe (15), each slit being closed off by a transparent body embodied as a first glass rod (69) and a second glass rod (70), the light emitted crosses



a flow of exhaust gas carried in the exhaust pipe between the opposed light slits, said first and second glass rods (69, 70) including faces which are acted upon by the exhaust gas, and includes means for heating said faces of said transparent bodies to a temperature above a soot burn-off temperature.

5,009,065

TUNED EXHAUST PROCESSOR ASSEMBLY

Michael G. Howe; James C. Arthur, and Robert T. Usleman, all of Columbus, Ind., assignors to Arvin Industries, Inc., Columbus, Ind.

Continuation-in-part of Ser. No. 319,069, Mar. 6, 1989, Pat. No. 4,961,314, which is a continuation-in-part of Ser. No. 232,023, Aug. 15, 1988, abandoned. This application Oct. 23, 1989, Ser. No. 425,308
Int. Cl.[5] F01N *3/02*
U.S. Cl. 60—288 **30 Claims**

1. An exhaust processor assembly comprising

a housing formed to include an inlet and an outlet,

partition means positioned within the housing for dividing an upstream portion of the housing into first and second flow passages,

a muffler situated in a downstream portion of the housing in close proximity to the outlet to attenuate noise generated by combustion product passing through one of the first and second flow passages toward the outlet,

a main filter substrate situated in the first flow passage to lie intermediate the inlet and the muffler and configured to collect particulate matter entrained in combustion product introduced into the first flow passage through the inlet, and

an auxiliary filter substrate situated in the second flow passage and configured to collect particulate matter entrained in the combustion product introduced into the second flow passage through the inlet.

5,009,066

AUTOMOTIVE POWER STEERING SYSTEM

David H. VanGorder, Saginaw, and Kenny R. Wilson, Fairgrove, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1989, Ser. No. 434,394
Int. Cl.[5] F16D *31/02*
U.S. Cl. 60—415 **4 Claims**

1. In an automotive power steering system including

a pump,

a servo-valve,

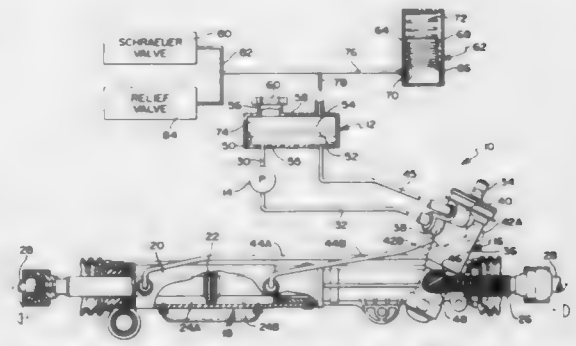
a steering assist fluid motor,

a reservoir having a reservoir chamber therein,

a plurality of fluid ducts interconnecting said reservoir and said pump and said servo-valve and said fluid motor, and

a volume of hydraulic oil in said power steering system establishing a fluid level in said reservoir chamber which varies between a minimum cold level when said working fluid is at a minimum operating temperature and a maximum hot level when said working fluid is at a maximum operating temperature and above which in said reservoir chamber is defined a gas chamber portion thereof, the improvement comprising:

means defining a fill port on said reservoir opening into said reservoir chamber at a location above said maximum hot level of said hydraulic oil,



a cover on said reservoir closing said fill port and defining a gas-tight seal between said reservoir and said cover to isolate said gas chamber portion from the atmosphere surrounding said reservoir,

means connected to said reservoir for introducing into said gas chamber portion a quantity of gas under pressure to establish an above-atmospheric pressure in variable volume gas chamber portion, and

a gas accumulator having an expansible chamber connected to said gas chamber portion,

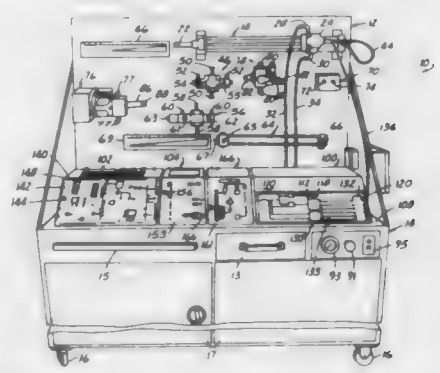
said expansible chamber expanding in response to decreases in the volume of said gas chamber portion resulting from thermal expansion of said hydraulic oil to thereby minimize the increase in gas pressure in said gas chamber portion.

5,009,067

POWER TRANSMISSION

Raymond J. Bonnell, Waterford, Mich., assignor to Vickers, Incorporated, Troy, Mich.

Filed Oct. 6, 1988, Ser. No. 254,402
Int. Cl.[5] G09B *25/02*
U.S. Cl. 60—484 **33 Claims**



1. Apparatus for training an operator in use of electrohydraulic systems comprising:

a plurality of differing electrohydraulic devices responsive to electronic control signals for performing hydraulic

operations, each said device having associated operating characteristics which differ from those of other of said devices,

electronic control means including means for selectively generating a plurality of differing electronic control signals, a plurality of preassembled electronic control assemblies, means enclosing said assemblies to form separate control modules, and means on said enclosing means for selectively electrically interconnecting components of said assemblies within each said module and connecting said modules to said devices,

said enclosing means including an operator panel and fixed indicia on said operator panel coordinated with said assemblies for indicating options to an operator for said selective interconnection of components within said modules and to said devices, said indicia comprising electrical schematic diagrams of said electronic control assemblies contained within each said module,

said selectively-connecting means comprising electrical connectors on said operator panel positioned within said indicia and electrically preconnected within said modules to corresponding locations in said assemblies to provide control inputs and outputs to and from said assemblies, and means for selectively interconnecting said connectors,

means for selectively feeding said plurality of control signals to said devices, and

means for generating a visually observable indication of operation at said devices, such that an operator can observe effects of said differing electronic control signals on said devices.

5,009,068

PNEUMATIC CYLINDER WITH POSITIONING, BRAKING, AND FEED RATE CONTROL

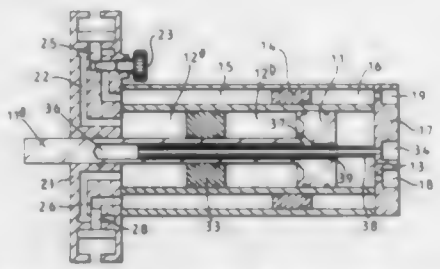
Douglas C. Clarke, 540 Marling Crescent, Paga hill, Great Britain

Filed Jun. 27, 1989, Ser. No. 372,054

Claims priority, application United Kingdom, Jun. 29, 1988, 8815449

Int. Cl.[5] F15B *7/00*

U.S. Cl. 60—583 **9 Claims**



1. A pneumatic piston/cylinder unit comprising primary and secondary pistons operable in first and second cylinder zones respectively, and each dividing its respective cylinder zone into two chambers, one of the chambers of the first cylinder zone being connected to one of the chambers of the second cylinder zone by a passageway which includes means for controlling the flow of hydraulic fluid therethrough, and a tertiary piston in said one chamber of the first cylinder zone and dividing said one chamber into two parts, one of which is between the primary and tertiary pistons, the arrangement being such that, in use, the passageway, said one chamber of the second cylinder zone and the other part of said one chamber of the first cylinder zone are filled with hydraulic fluid, and the application of pneumatic pressure to the other chamber of the first cylinder zone causes the primary piston to be freely displaced until it abuts the tertiary piston whereupon movement of the primary piston may be arrested or controlled.

5,009,069

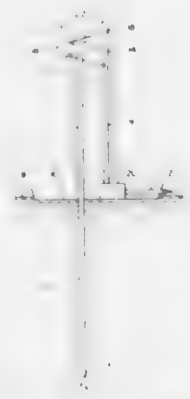
METHOD OF RECOVERING ENERGY FROM OCEAN WATER

Alberto E. Molini, P.O. Box 529, San German, P.R. 00753

Filed Aug. 24, 1990, Ser. No. 571,988

Int. Cl.[5] F03G *7/05*

U.S. Cl. 60—641.1 **14 Claims**



1 A method of creating an upward flow of water from cold deep ocean water having a bulk density and a pressure and containing gases dissolved therein, comprising the steps of positioning in said ocean water a conduit having open upper and lower ends with its upper end above a surface of the ocean and its lower end at a location where the pressure is substantially greater than atmospheric pressure, and drawing sufficient water from the upper end of the conduit to cause the gas containing cold deep ocean water to enter the lower end of the conduit and release dissolved gas thereby forming a foam which reduces bulk density of the foam which in turn causes the foam to move upward through the conduit as a result of water outside the conduit pushing the foam to higher heights in an effort to reach pressure equilibrium inside and outside the conduit at a level of incipient foaming.

5,009,070

COMBUSTION APPARATUS FOR GAS TURBINE

Nobuyuki Iizuka; Fumiyuki Hirose, both of Hitachi; Naotatsu Asahi, Katsuta, and Yoshitaka Kojima, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 946,775, Dec. 29, 1986, abandoned, which is a continuation of Ser. No. 690,190, Jan. 10, 1985, abandoned. This application Apr. 9, 1987, Ser. No. 36,181

Claims priority, application Japan, Jan. 13, 1984, 59-3474

Int. Cl.[5] F02G *3/00*

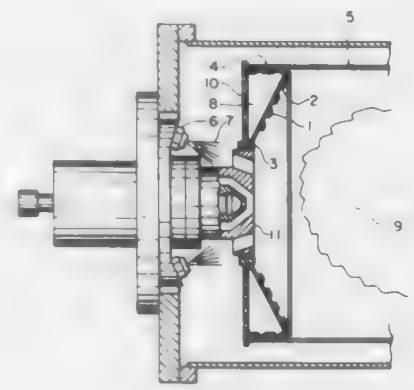
U.S. Cl. 60—753 **5 Claims**

1. A combustion apparatus comprising:

a liner cap means for closing an open end of a liner sleeve body of the combustion apparatus, the liner cap means including a first member having a plurality of cooling air holes therein and having formed on a first surface thereof, which is adapted to be subjected to flame radiation heat, a ceramic coating for thermally protecting said first member from flame radiation heat to which it is to be subjected, and having formed on a second surface thereof, opposite said first surface thereof, a corrosion resistant metal material, the heat conductivity of which is relatively high compared with said ceramic coating;

a fuel nozzle coupled with said liner cap means for supplying fuel through the combustion of which said liner cap means is subjected to flame radiation heat; and

wherein said liner cap means further comprises an outer sleeve surrounding said first member for defining an air



passage with said first member and an end plate of said liner cap means.

5,009,071

PROCESS FOR ADSORPTION COOLING/CONDITIONING BY MEANS OF LOW-TEMPERATURE HEAT

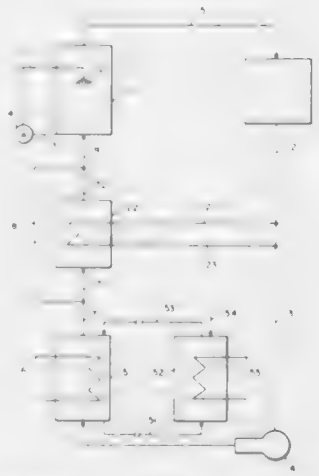
Norbert Schwetje, Hanover; Rudolf Sizmann, and Noureddine Khelifa, both of Munich, all of Fed. Rep. of Germany, assignors to Kali-Chemie AG, Hanover, Fed. Rep. of Germany

Filed Oct. 13, 1989, Ser. No. 421,051

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1988, 3835872

Int. Cl.[5] F25D *5/00*

U.S. Cl. 62—4 **10 Claims**



1. A process for adsorption cooling conditioning of rooms by adsorption/desorption of water by a working medium comprising a liquid hygroscopic salt solution, said process comprising the steps of

(a) producing a dry air stream by adsorption of water from a water-containing air stream into an initial working medium to produce a water-enriched working medium,

(b) conditioning via evaporative cooling with water absorption by said dry air stream, and

(c) regenerating the water-enriched working medium by desorption of water using low-temperature heat and ambient air;

wherein said initial working medium is a salt solution comprising:

40 to 43% by weight of calcium chloride,

15 to 25% by weight of calcium nitrate,

0.5 to 5% by weight of an organic polyhydroxy compound, and

water to make 100% by weight.

5,009,072

REFRIGERATOR

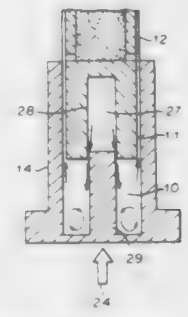
Masashi Nagao, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 31, 1990, Ser. No. 472,849

Claims priority, application Japan, May 26, 1989, 1-133224

Int. Cl.[5] F25B *9/00*

U.S. Cl. 62—6 **10 Claims**



1. A refrigerator which comprises:

a cold accumulator,

an expansion chamber which includes a convex portion and a recessed portion which surrounds said convex portion,

a movable member which is provided in the expansion chamber, and which can move to change the inside volume of the expansion chamber,

a compressed operating gas which is introduced into the expansion chamber through the cold accumulator, the gas being expanded under the action of the movable member to generate cold, and being exhausted from the expansion chamber through the cold accumulator,

a recessed auxiliary expansion chamber which communicates with the expansion chamber through a narrow flow passage formed between said recessed portion of auxiliary expansion chamber and said convex portion of said recessed expansion chamber, and

an auxiliary movable member which is associated with the movable member, and which can be provided in the auxiliary expansion chamber to change the inside volume of the auxiliary expansion chamber.

5,009,073

FAST CYCLE CRYOGENIC FLEX PROBE

Dale J. Missimer, San Anselmo; David T. Fyfe, Jr., Novato; Joseph J. Housman, Sebastapol, and Scott M. Forrest, Half Moon Bay, all of Calif., assignors to Marin Tek, Inc., San Rafael, Calif.

Filed May 1, 1990, Ser. No. 517,325

Int. Cl.[5] F25B *19/00*

U.S. Cl. 62—51.1 **14 Claims**

1. An elongated fast cycle cryopump probe device for use within a vacuum chamber having a wall section with a pass-through opening, said device comprising:

a rigid head end section adapted to be mounted on said wall section of said vacuum chamber while extending within a

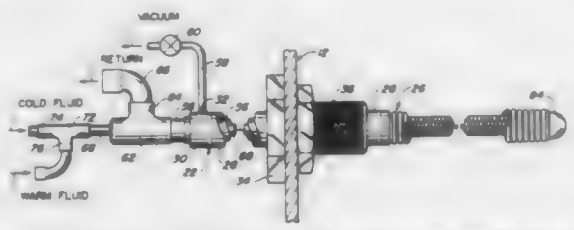
pass-through, said head end section having a feed tube and a return flow passage;

valve means connected to said feed tube means for selectively receiving either a relatively cold refrigerant or a relatively hot refrigerant during different phases of operation;

a flexible probe section connected to said rigid head end section which is capable of being shaped in different ways to assume a preselected or variable configuration within the vacuum chamber workspace, said probe section including a flexible feed tube connected to said feed tube means of said head end section for carrying said refrigerants passing through said head section outwardly to the end of said flexible probe section;

a flexible outer tubular member surrounding said flexible feed tube for providing a return passage for said refrigerants along said probe section and through said head section;

whereby when said cold refrigerant is flowing in said probe during a vacuum cycle within said chamber, water vapor is condensed on the outer surface of said flexible probe section and at the end of said cycle when said hot refrigerant is flowing in the probe, condensed water vapor is released from the flexible probe section to the surrounding atmosphere.

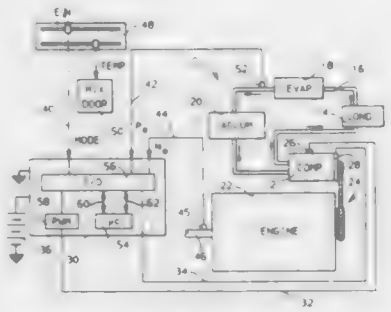


5,009,074

LOW REFRIGERANT CHARGE PROTECTION METHOD FOR A VARIABLE DISPLACEMENT COMPRESSOR

Ronald J. Goubeaux, Lockport, and Edward D. Pettitt, Burt, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 2, 1990, Ser. No. 562,100
Int. Cl.[5] F25B *49/02*
U.S. Cl. 62—115 **6 Claims**



1. In a vehicle air conditioning system including a refrigerant compressor, the displacement of which is controlled to maintain a measured refrigerant vapor pressure at a desired value, a control method for protecting said compressor from damage due to continued operation with insufficient refrigerant charge, comprising the steps of:

controlling the compressor to a minimum displacement once the vapor pressure of the refrigerant reaches the desired value, to thereby initiate a set-up period in which the measured vapor pressure is permitted to increase;

controlling the compressor to a maximum displacement once the measured vapor pressure reaches a first reference pressure, thereby to terminate said set-up period and define a pull-down period in which the measured vapor pressure is decreased by the compressor at a maximum rate;

measuring a pull-down time required for the measured vapor pressure to decrease from the first reference pressure to a second reference pressure lower than said first reference pressure; and

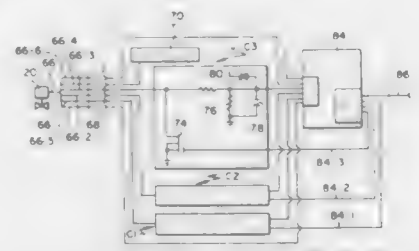
indicating the detection of an insufficient refrigerant condition if the pull-down time is shorter than a reference pull-down time characteristic of a sufficient refrigerant condition.

5,009,075

FAULT DETERMINATION TEST METHOD FOR SYSTEMS INCLUDING AN ELECTRONIC EXPANSION VALVE AND ELECTRONIC CONTROLLER

Ronald W. Okoren, Holmen, Wis., assignor to American Standard Inc., New York, N.Y.

Filed Apr. 20, 1990, Ser. No. 511,706
Int. Cl.[5] G01M *19/00*
U.S. Cl. 62—127 **9 Claims**



1. A method of testing in a refrigeration system an electronic, stepper motor driven expansion valve with an end-of-stroke indication and an electronic controller including a stepper motor drive circuit, said method comprised of:

setting said drive circuit to an "OFF" condition;

measuring a voltage V_C in said "OFF" condition;

comparing said voltage V_C to a predetermined voltage V_B;

indicating a test "FAIL" condition when said voltage V_C is less than said voltage V_B; and alternatively

setting said drive circuit to an "ON" condition;

measuring said voltage V_C in said "ON" condition;

comparing said voltage V_C to a predetermined voltage V_O;

indicating a test "FAIL" condition when said voltage V_C is greater than said voltage V_O and indicating a test "PASS" condition when said voltage V_C is greater than said voltage V_O.

5,009,076

REFRIGERANT LOSS MONITOR

James G. Winslow, Detroit, Mich., assignor to Temperature Engineering Corp., Sterling Heights, Mich.

Filed Mar. 8, 1990, Ser. No. 490,367
Int. Cl.[5] F25B *49/00*
U.S. Cl. 62—129 **2 Claims**

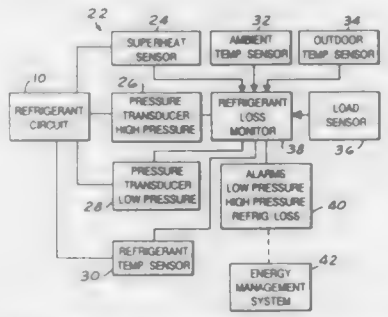
1. A method of monitoring the refrigerant within a refrigerant circuit, including the steps of:

(b 1) sensing an environmental condition;

(b 2) cyclically sensing a refrigerant condition;

(b 3) utilizing at least the sensed environmental condition to determine an expected refrigerant condition; and

(b 4) comparing the expected refrigerant condition to the actual refrigerant condition and actuating an alarm should the two differ by more than a preset amount and wherein steps 1-14 4 are cyclically repeated even when the refrigerant circuit is shut down.

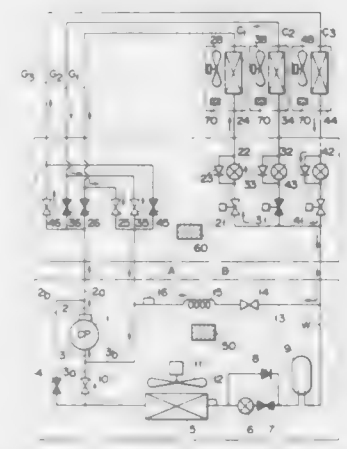


5,009,077

MULTI-SYSTEM AIR CONDITIONER

Seiji Okoshi, and Eiji Kuwahara, both of Fuji, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 26, 1990, Ser. No. 558,152
Claims priority, application Japan, Jul. 28, 1989, 1-195684
Int. Cl.[5] F25B *13/00*
U.S. Cl. 62—160 **9 Claims**



1. A multi-system air conditioner comprising:

an outdoor unit including a compressor for sucking, compressing and delivering a refrigerant and an outdoor heat exchanger for making an exchange between heat in an incoming refrigerant and heat in outdoor air;

a plurality of indoor units including an indoor heat exchanger, each, for allowing an exchange between the heat in the incoming refrigerant and the heat in the indoor air and requesting at least one of a cooling operation mode and cooling power level and heating operation mode and heating power level;

means for determining a cooling operation mode when a total of a cooling power level or levels requested from one or more indoor units is greater than a total of a heating power level or levels requested from one or more remaining indoor units;

means for enabling a refrigerant which is delivered from the compressor to pass through the outdoor heat exchanger, when a cooling operation mode is determined, and to be returned back to the compressor via one or more indoor units calling for a cooling operation mode;

means for enabling one stream of the refrigerant which is delivered from the compressor to pass through one or more indoor units calling for a heating operation mode and to meet a refrigerant flowing into one or more outdoor units calling for a cooling operation mode;

means for determining a heating operation mode when a total of a heating power level or levels requested from one or more indoor units is greater then a cooling power level or levels requested from one or more remaining indoor units;

means for enabling the refrigerant which is delivered from the compressor to pass through one or more indoor units calling for a heating operation mode, when the heating operation mode is determined, and to be returned back to the compressor via the outdoor heat exchanger;

means for enabling one stream of a refrigerant which passes through one or more indoor units calling for a heating operation mode to circulate through one or more indoor units calling for a cooling operation mode, when a heating operation mode is determined, and to be returned back to the compressor;

first detecting means for detecting a temperature in the outdoor heat exchanger;

means for determining a stop mode of the outdoor heat exchanger when a difference between a total of a heating power level or levels requested from one or more indoor units and that of a cooling power level or levels requested from one or more remaining indoor units falls within a predetermined range;

means for enabling a refrigerant which is delivered from the compressor to pass through one or more indoor units calling for a heating operation mode, when the stop mode of the outdoor heat exchanger is determind, and to be returned back to the compressor via one or more indoor units calling for a cooling operation mode;

second detecting means for detecting a saturation temperature prevalent in the refrigerant flowing through the indoor unit, when the stop mode of the outdoor heat exchanger is determined; and

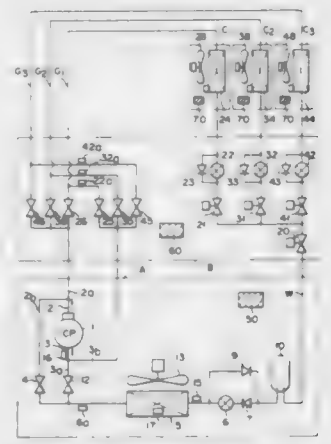
recovering means which, when the stop mode of the outdoor heat exchanger is determined, enables a refrigerant which is accumulated on the outdoor heat exchanger to be recovered back to the compressor if a result of detection by the second detecting means is higher than a result of detection by the first detecting means.

5,009,078

MULTI-SYSTEM AIR CONDITIONING MACHINE

Seizi Ohkoshi, and Eiji Kuwahara, both of Fuji, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 23, 1990, Ser. No. 483,654
Claims priority, application Japan, Feb. 27, 1989, 1-45738
Int. Cl.[5] F25B *13/00*
U.S. Cl. 62—160 **11 Claims**



1. A multi-system air conditioning machine comprising:

an outdoor unit including a compressor for drawing, compressing, and delivering a refrigerant, and an outdoor heat

exchanger for exchanging heat of the supplied refrigerant and heat of outer air;

a plurality of indoor units each including an indoor heat exchanger for exchanging the heat of the supplied refrigerant and heat of inner air, for requiring a cooling operation mode and a cooling capability or a heating operation mode and a heating capability;

means for supplying the refrigerant delivered from said compressor to said outdoor heat exchanger, supplying the refrigerant to one or said plurality of indoor units which request a cooling operation mode, and returning the refrigerant to said compressor when a total cooling capability requested from one or said plurality of indoor units is larger than a total heating capability requested from the remaining one or plurality of indoor units;

means for supplying a part of the refrigerant delivered from said compressor to one or said plurality of indoor units which request a heating operation mode to cause the part of refrigerant to join the flow of the refrigerant to one or said plurality of indoor units which request a cooling operation mode, when a total cooling capability requested from one or said plurality of indoor units is larger than a total heating capability requested from the remaining one or plurality of indoor units;

setting means for setting an amount of refrigerant supplied to said outdoor heat exchanger to be relative to an amount of refrigerant supplied to one or said plurality of indoor units which request the heating operation mode in accordance with the total heating capability requested from one or said plurality of indoor units when the total cooling capability requested from one or said plurality of indoor units is larger than the total heating capability requested from the remaining one or plurality of indoor units;

means for supplying the refrigerant delivered from said compressor to one or said plurality of indoor units which request a heating operation mode, supplying the refrigerant to said outdoor heat exchanger, and returning the refrigerant to said compressor, when a total heating capability requested from one or said plurality of indoor units is larger than a total cooling capability requested from the remaining one or plurality of indoor units;

means for supplying a part of the refrigerant supplied from one or said plurality of indoor units which request a heating operation mode to one or said plurality of indoor units which request a cooling operation mode, and returning the refrigerant to said compressor, when a total heating capability requested from one or said plurality of indoor units is larger than a total cooling capability requested from the remaining one or plurality of indoor units; and

setting means for setting an amount of refrigerant supplied to said outdoor heat exchanger to be relative to an amount of refrigerant supplied to one or said plurality of indoor units which request the cooling operation mode in accordance with the total cooling capability requested from one or said plurality of indoor units when the total heating capability requested from one or said plurality of indoor units is larger than the total cooling capability requested from the remaining one or plurality of indoor units.

5,009,079

REFRIGERANT FLOW CONTROL DEVICE

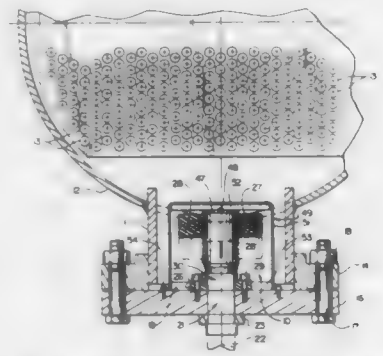
Thomas M. Zinsmeyer, Pennellville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 26, 1989, Ser. No. 457,228
Int. Cl.[5] F25B *41/04*
U.S. Cl. 62—218 **13 Claims**

1. An improved refrigerant flow control device of the type having a float which is responsive to the liquid level of refrigerant in a condenser sump to control the flow of refrigerant from the sump comprising:

a standpipe extending upwardly from a lower portion of the sump, said standpipe having its upper end closed and having near its lower end at least one opening formed to provide fluid communication from the lower portion of the sump to a refrigerant return line below; and

a float device slideably disposed on said standpipe in such a way that when the liquid level of refrigerant in the sump is below a predetermined level, said float device is caused to rest at a vertical height on said standpipe such that it covers said at least one opening, and when the liquid level



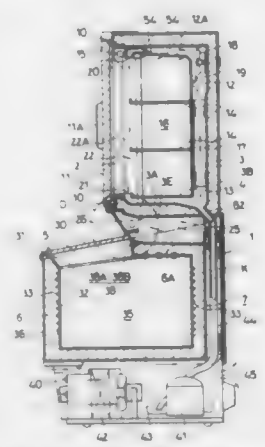
of refrigerant rises above said predetermined level, said float device is caused to slide upwardly to uncover said at least one opening and allow liquid refrigerant to flow from the sump; wherein said float device has an undercut portion surrounding said standpipe such that the amount of surface contact between said float device and said standpipe is reduced.

5,009,080

LOW-TEMPERATURE SHOW CASE

Hiroshi Naganuma; Kenji Sato; Masashi Yamamoto; Toshiaki Kubota; Hiroshige Hayashi, and Yoshirou Ishizaka, all of of Gunma, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Feb. 13, 1990, Ser. No. 479,390
Claims priority, application Japan, Feb. 16, 1989, 1-36551; Feb. 27, 1989, 1-47958; Mar. 9, 1989, 1-57341; Mar. 28, 1989, 1-76928
Int. Cl.[5] A47F *3/04*
U.S. Cl. 62—256 **10 Claims**



7. A low-temperature show case comprising:

a thermally insulated box having an opening on one side of the box;

a partition board lined along the inner surface of said thermally insulated box;

a first cold-air passage formed between said thermally insulated box and said partition board, and having

an outlet and an inlet of said first air passage, said outlet and inlet facing with each other at opposite ends of said opening, respectively, and

a refrigeration apparatus and a blower for circulating cold air in said first passage;

a goods-storing room surrounded by said partition board;

a cold-air curtain being formed across said opening when said refrigeration apparatus and blower operate, wherein the width of said outlet is greater than that of said opening; and

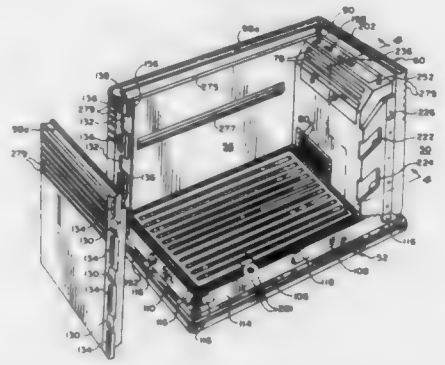
angular walls, which are at least partially transparent, formed on the front ends of the opposite side-walls of said thermally insulated box, said angular walls narrowing towards the opening and being in contact with opposite edges of the air curtain.

5,009,081

MODULAR MECHANICAL REFRIGERATION UNIT

Richard W. Kruck, Sodus Township, Berrien County; Omer N. Cur; Douglas D. Leclear, both of St. Joseph Township, Berrien County; Steven J. Kuehl, Royalton Township, Berrien County, all of Mich., and Ralph R. Burin, Milton Township, DuPage County, Ill., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Division of Ser. No. 218,233, Jul. 12, 1988, Pat. No. 4,907,419.
This application Mar. 12, 1990, Ser. No. 489,441
Int. Cl.[5] T25D *23/06*
U.S. Cl. 62—264 **3 Claims**



1. A mechanical refrigeration unit adapted to form a relatively thin wall portion of a refrigeration apparatus, comprising a molded plastic divider wall having a layer of insulating material on one side thereof, an evaporator mounted on said one side of said divider wall, a condenser mounted on the other side of said divider wall, first fan means mounted on said divider wall for moving air over said evaporator and into the space to be cooled, second fan means mounted on said divider wall for moving air from the exterior over said condenser, a light source mounted on said divider wall, means for energizing said light source during periods when said mechanical refrigeration unit is energized and means for directing light from said source through an opening in a wall of said refrigeration apparatus, thereby to provide a visual indication of said power-on periods.

5,009,082

SYSTEM FOR COOLING BEER FOR REMOTE DISPENSING

Martin J. Abraham, III, 857 Timber Bend St., Lacombe, La. 70445

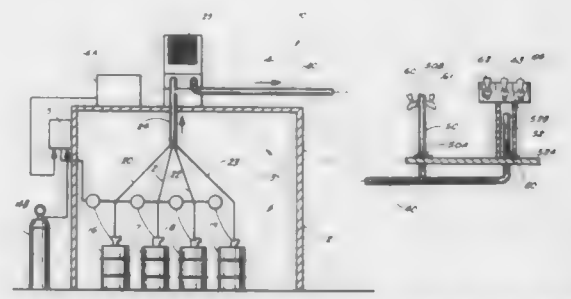
Filed Jul. 3, 1989, Ser. No. 379,480
Int. Cl.[5] B67D *5/62*
U.S. Cl. 62—390 **4 Claims**

1. A system for cooling beer to be dispensed from a container comprising:

(a) a cooled housing with an interior having a preliminarily air-cooled housing with an interior having a preliminarily air-cooled environment that is cooled to a first temperature below ambient temperature with a primary heat exchanger; p1 (b) a first flowline for dispensing beer from the container;

(c) an auxiliary heat exchanger having a glycol reservoir for receiving the first flowline, and the first flowline including multiple stacked coils of the first flowline within the reservoir in heat exchange relation therewith;

(d) a second flowline comprising at least a pair of internal bores including a first bore in fluid communication with the first flowline downstream of the glycol reservoir and a second bore carrying glycol from the reservoir in close



proximity and in heat exchange relation with beer in the first bore, the second flowline being extended in length so that beer and glycol can travel to remote positions away from the container;

(e) a spigot for dispensing beer at the remote position that has been transmitted thereto via the second flowline;

(f) means for returning the glycol to the reservoir; and

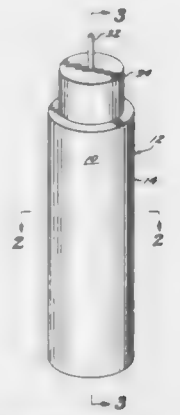
(g) the first flowline having one or more fittings forming connections between the container and the reservoir that produce substantially laminar flow between the container and the reservoir.

5,009,083

BEVERAGE COOLER

Frank T. Spinos, 3455 Lebon, #1631, San Diego, Calif. 92122, and Sharon M. Worley, 3549 Castle Glen Dr., #226, San Diego, Calif. 92123

Filed Dec. 6, 1989, Ser. No. 447,227
Int. Cl.[5] B67D *5/62*
U.S. Cl. 62—400 **8 Claims**



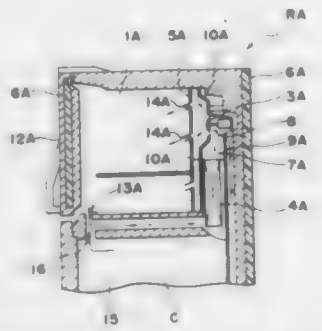
1. A beverage cooler comprising:

a first container having walls defining a chamber for receiving a beverage;

a second container disposed within the first container and having walls defining a tubular passageway having an open lower end, the walls of the second container further defining an interior compartment surrounding the passageway for receiving a heat transfer medium to effect heat transfer between the heat transfer medium and beverage passing through the tubular passageway; and

means fixing the second container against movement relative to the first container.

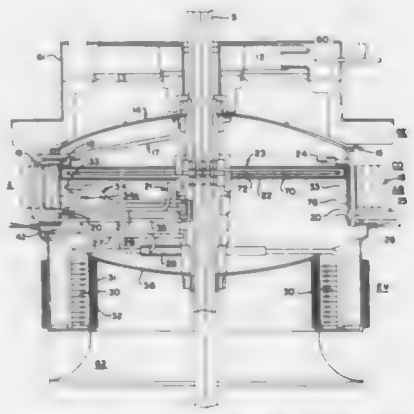
5,009,084
REFRIGERATOR
Syozo Tanaka, Nara; Akiro Takushima, Yamatotakada; Yoshiharu Shinobu, Kashiwara, and Masaki Eguchi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Apr. 10, 1990, Ser. No. 506,785
Claims priority, application Japan, Apr. 13, 1989, 1-44152
Int. Cl.[5] F25D *11/02*
U.S. Cl. 62—441 **6 Claims**



1. A refrigerator comprising a cooling chamber including a refrigerating chamber and a freezing chamber, a send-out means for circulating air within said cooling chamber including an axial flow fan fixed on a fan fixing plate provided at an inner rear side of said freezing chamber, a heat exchanger for cooling the air circulated by said send-out means, a suction side space so formed as to guide the air cooled by the heat exchanger from said heat exchanger to the send-out means, said suction side space being defined between said fan fixing plate and an inner wall surface of a rear panel within the refrigerator, a sound absorbing material for absorbing noises produced in said suction side space and said cooling chamber so as to substantially preclude transmission of noise to the outside of the refrigerator, said suction side space and said cooling chamber respectively having resonance dimensions for resonation at specific frequency regions, and a partition plate in said suction side space and extending from said fan fixing plate to said inner wall surface of said rear panel for reducing noises produced in said suction side space, said partition plate being located to alter the resonance frequency for said suction side space thereby to set said suction side space, in its resonance dimension, to the frequency region at which the sound absorbing material can efficiently absorb the sound.

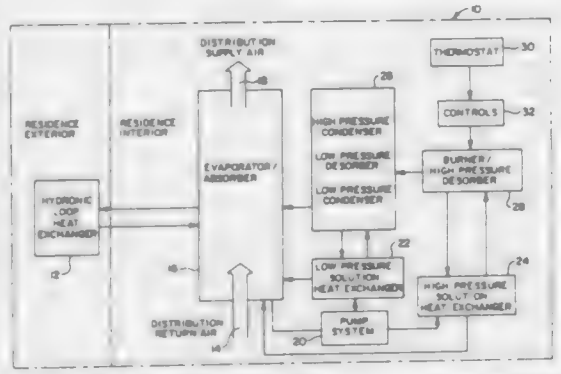
5,009,085
HEAT PUMPS
Colin Ramshaw, Kingsley, and Terence Winnington, Stroud, both of United Kingdom, assignors to Imperial Chemical Industries plc, London and Caradon Mira Ltd., Cheltenham, both of, England
Filed Jan. 27, 1989, Ser. No. 302,348
Claims priority, application United Kingdom, Feb. 2, 1988, 8802152
Int. Cl.[5] F25B *15/00*
U.S. Cl. 62—476 **30 Claims**

1. An absorption-cycle heat pump comprising a rotary assembly including a vapor generator, a condenser, an evaporator and an absorber so interconnected as to provide cyclic fluid flow paths for a volatile fluid component and an absorbent liquid therefor, a reservoir being provided for receiving from the condenser volatile fluid component condensed thereby in use, and means being provided for directing said component from the reservoir to heat exchange surface means of the evaporator so that said volatile component flows across the heat exchange surface means in a generally radially outward direction, the reservoir receiving from the heat exchange surface means of the evaporator such volatile component as remains unvaporize after flowing radially outward across said heat exchange surface means whereby part of the volatile compo-



nent fed to said heat exchange surface means from the reservoir is recirculated back to the reservoir by-passing the condenser.

5,009,086
PASSIVE REFRIGERATION FLUIDS CONDITION
William H. Wilkinson, Columbus, Ohio, assignor to Gas Research Institute, Chicago, Ill.
Filed Mar. 30, 1989, Ser. No. 334,671
Int. Cl.[5] F25D *15/00*
U.S. Cl. 62—476 **18 Claims**



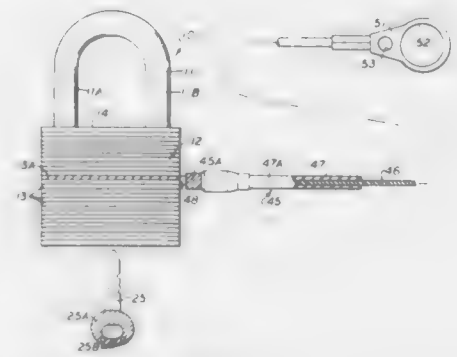
1. In a double-effect absorption refrigeration system (10), in combination, apparatus comprising:

(a.) a vertically-elongated, generally cylindrical, high-pressure condenser chamber means (38) receiving high-pressure refrigerant vapor from a high-pressure desorber chamber means (42) for condensing into high-pressure liquid refrigerant;

(b.) a vertically-elongated, generally cylindrical, low-pressure desorber chamber means (36) concentrically substantially enveloping said high-pressure condenser chamber means (38) in heat transfer relation and receiving relatively dilute refrigerant solution at its upper region for flowing over a chamber means heat transfer surface in heat-receiving relation to said high-pressure condenser chamber means (38) and conversion into high-pressure refrigerant vapor and high-pressure concentrated refrigerant solution; and

(c.) a vertically-elongated, generally cylindrical, low-pressure condenser chamber means (34) concentrically substantially enveloping said low-pressure desorber chamber means (36) in heat transfer relation and receiving low-pressure refrigerant vapor from said low-pressure desorber chamber means (36) for condensing into low-pressure liquid refrigerant fed to said low-pressure desorber chamber means (42) from said low-pressure condenser chamber means (38) and flowing radially inwardly across said heat exchange surface means whereby part of the low-pressure refrigerant vapor fed to said heat exchange surface means from said low-pressure condenser chamber means (38) is absorbed into said dilute refrigerant solution flowing over said heat exchange surface means to form said concentrated refrigerant solution, said heat exchange surface means being in heat-receiving relation to said high-pressure refrigerant vapor flowing across said heat exchange surface means from said high-pressure condenser chamber means (38) to said low-pressure desorber chamber means (36) whereby said high-pressure refrigerant vapor is condensed into said high-pressure liquid refrigerant.

5,009,087
LOCK DEVICE WITH RETAINING CABLE
Royal B. Long, P.O. Box 66, Houston, Tex. 77001
Filed Aug. 20, 1990, Ser. No. 569,841
Int. Cl.[5] E05B *67/06*
U.S. Cl. 70—49 **19 Claims**



1. A lock device comprising:

a lock case having side walls and top and bottom walls and apertured to receive the heel-piece and toe-piece of a shackle and one end of a retaining cable,

a shackle having a heel-piece at one end reciprocally and rotatably retained within one of said case apertures and a toe-piece at another end reciprocally received and retained in another one of said case apertures and being movable between locked and unlocked positions and a release position,

locking means within said lock case for engagement with said shackle to selectively lock said shackle heel-piece and toe-piece within said case,

a retaining cable having one end removably received in another said case aperture and engaged with said shackle to selectively lock said one end within said case and having another end adapted to be secured to objects for maintaining the lock device at a selected location,

said retaining cable one end being locked within said case with said shackle in its locked and unlocked position and selectively disengaged from said shackle and removed from said case upon manipulation of said shackle to its release position.

5,009,088
MODULAR LOCKBOX AND CARRYING CASE FOR PISTOLS
Daniel M. Cislo, 3413 Rambla Pacifico, Malibu, Calif. 90265
Continuation-in-part of Ser. No. 253,581, Oct. 5, 1988, Pat. No. 4,890,466, which is a continuation-in-part of Ser. No. 19,518, Feb. 26, 1987, Pat. No. 4,788,838. This application Dec. 4, 1989, Ser. No. 446,330
The portion of the term of this patent subsequent to Jan. 2, 2007, has been disclaimed.
Int. Cl.[5] E05B *65/52*
U.S. Cl. 70—63 **22 Claims**

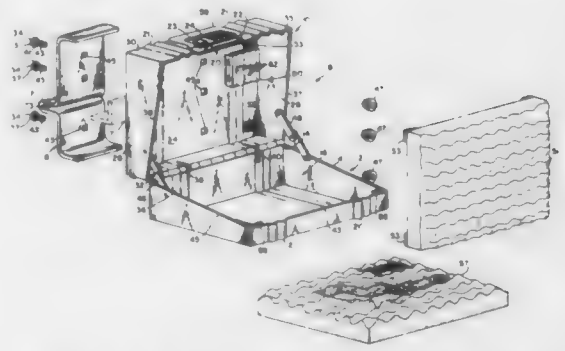
1. A handgun lockbox to prohibit unauthorized access to a handgun and lock the lockbox to a stationary object, the lockbox comprising:

(a) a coupling means;

(b) a pair of housings coupled together by said coupling means to form a chamber therebetween of sufficient size to hold the handgun and which can be secured together to prevent the unauthorized access to the handgun;

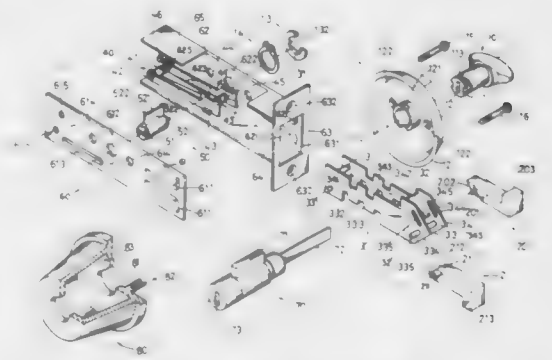
(c) a latch means for latching adjacent sides of said housings to lock the housings in alignment preventing unauthorized access to the chamber therebetween;

(d) a clip means for clipping one of said housings to the stationary object, wherein the clip means is of a length and geometric shape to engage the stationary object and



wherein said clip means fixedly attaches to one of said housings to hold the stationary object by said clip means to said one of said housings when in an installed condition.

5,009,089
DOUBLE HOOK-BOLT UNIT LOCK
Emily M. Y. Lin, No. 112, Sze Chuan Rd., Sec. 1, Panchiao City, Taipei Hsien, Taiwan
Filed Oct. 31, 1989, Ser. No. 429,610
Int. Cl.[5] E05B *63/14*
U.S. Cl. 70—114 **4 Claims**



1. A double hook-bolt unit lock, including:

a lock casing (60) having an upper L-shaped guideslot means (611) and a lower L-shaped guide slot means (611'), each guide slot means having horizontal slot portions and vertical slot portions;

a rotary cam wheel assembly (50) located within said lock casing for rotational movement around a horizontal axis, said wheel assembly comprising a swingable arm (52);

a stop frame assembly (40) that includes a vertically movable wall mechanism having a curved cam surface (44) slidably and camingly engaged with said swingable arm, whereby swinging motion of said arm around the aforementioned horizontal axis causes said wall mechanism to reciprocate vertically, said wall mechanism including a stop key means (43) located below said curved cam surface;

a brake frame assembly (30) slidably mounted within said lock casing for rectilinear horizontal motion at right angles to the cam wheel assembly rotational axis; said brake frame assembly comprising a vertically oriented plate means (33) having an upper cam slot (335) and a lower cam slot (335'), said cam slots being acutely angled to the horizontal midplane of the plate means in an arrow configuration; said brake frame assembly having two drive notches (332 and 342) registering with said swingable arm,

and three latching notches (at 333) in registry with said stop key means;

two L-shaped lock bolts (20, 21) slidably mounted within the lock casing for movement between retracted positions located entirely within the lock casing and extended positions projecting from the lock casing; each lock bolt having a horizontal leg and a vertical leg, the lock bolts being arranged one above the other, with the vertical legs thereof facing away from each other; each lock bolt having lock pin means (201 or 211) extending from the respective horizontal leg through the associated cam slot in the brake frame assembly and the associated guide slot means in the lock casing;

the drive notches and latching notches in the brake frame assembly being oriented so that when the cam wheel assembly is rotated the stop key means (43) is released from the associated latching notch before the swingable arm interacts with an associated drive notch to import motion to the brake frame assembly;

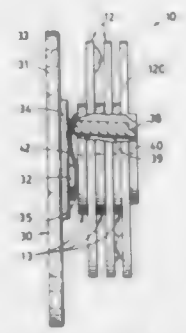
the lock pin means on the lock bolts being in simultaneous engagement with the L-shaped guide slot means in the lock casing and the angled slots in the brake frame, so that when the brake frame assembly is moved to a point where said lock pin means reached the vertical slot portions of the L-shaped guide slots, further motion of the brake frame assembly enables the angled slots to guide said lock pin means into and along the vertical slot portions, whereby the lock bolts are moved vertically away from each other.

5,009,090

COMBINATION LOCK ASSEMBLY

Patrick J. Beattie, West Henrietta; Andrew L. Oliveri, and Richard J. Sylvester, both of Rochester, all of N.Y., assignors to John D. Brush & Co., Inc., Rochester, N.Y.

Filed Jan. 2, 1990, Ser. No. 459,451
Int. Cl.[5] E05B *15/14*
U.S. Cl. 70—326 **15 Claims**



1. A combination lock assembly for installation in a safe or strong box, comprising:

an integrated resin structure with a mounting plate portion for receiving fasteners for installing the assembly and a bushing portion having a cylindrical bearing surface with an axial keyway and a step at its outer end;

a plurality of tumbler wheels, including a drive tumbler wheel, separated by a spacing washer between each, said drive tumbler wheel having a plurality of angularly spaced holes and all of said tumbler wheels and washers being supported on the bearing surface of said bushing portion;

a retaining cap fixed to the stepped end of said bushing portion;

a spring for biasing said tumbler wheels and washers away from said mounting plate portion so that said drive tumbler wheel is pressed against said retaining cap;

a lock spindle passageway through said mounting plate and bushing portions of said integrated structure;

a drive cam having a projecting drive stud; and

a rotatable spindle positioned in said passageway and fixed to said drive cam so that said drive stud is received into one of the angularly spaced holes in said drive tumbler wheel;

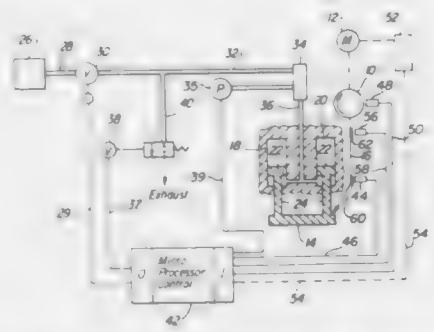
the bias of said spring being predetermined to allow said tumbler wheels and washers to be moved together as a unit away from said retaining cap and back toward said mounting plate so that the surfaces of said tumbler wheels and washers remain substantially parallel relative to each other when so moved.

5,009,091

PRESS COUNTERBALANCE SYSTEM

William H. Hinterman, G-5034 Fenton Rd., Flint, Mich. 48057, and Timothy W. Hinterman, 2104 Cadillac St., Flint, Mich. 48504

Continuation-in-part of Ser. No. 331,242, Mar. 31, 1989, Pat. No. 4,969,344. This application Sep. 5, 1990, Ser. No. 577,886
Int. Cl.[5] B21D *24/02*
U.S. Cl. 72—21 **7 Claims**



1. In a press which engages a flywheel to impart energy to reciprocate a ram through interconnected drive components, said press having air-operated cylinder means for automatically counterbalancing the downward working force of said ram, an improved system for adjusting the counterbalancing air pressure in said air cylinder means according to the energy level of the flywheel comprising:

sensor means for detecting the speed of said ram which is indicative of the energy level of said flywheel; and

control means for comparing the speed of said ram detected by said sensor means to a predetermined value and increasing or decreasing the air pressure in said air cylinder means according to said comparison to overcome under or over counterbalancing of said ram.

5,009,092

COILER ARRANGEMENT

Rudolf Buchegger, Florian, assignor to Voest-Alpine Industrieanlagenbau GmbH, Linz, Austria

Filed May 16, 1990, Ser. No. 525,161
Claims priority, application Austria, Jun. 8, 1989, 1413/89
Int. Cl.[5] B21C *47/04*
U.S. Cl. 72—148 **7 Claims**

1. In a coiler arrangement for coiling hot metal rolling stock comprising a coiler mandrel rotatably mounted within a housing having a peripheral opening through which rolling stock is guided for coiling around said mandrel,

said arrangement also including a roller table cooperatively disposed relative to said housing and formed of a plurality of table rollers defining a roller way upon which said rolling stock is transported to said coiler via said opening in said housing and guided to said mandrel by means of a pivot flap cooperatively associated with said roller table,

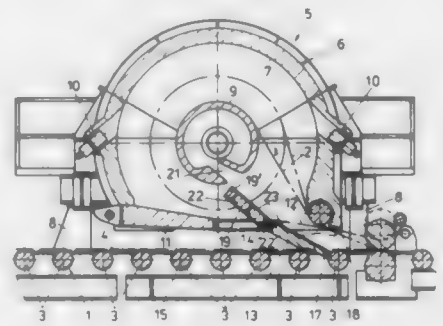
said pivot flap extending from said roller table to the vicinity of said mandrel,

said pivot flap being provided with means for actuating said flap into a position for guiding said rolling stock to said mandrel,

the improvement which comprises:

a pivot flap assembly pivotably mounted on said housing by axle means located adjacent the peripheral opening thereof,

said pivot flap assembly extending across said peripheral opening and having a first flap portion with its free end



extending forwardly of said axle means and a second flap portion extending rearwardly thereof,

said flap portions cooperating one with the other for closing off said opening and providing sufficient space to allow for passage of said rolling stock to said mandrel,

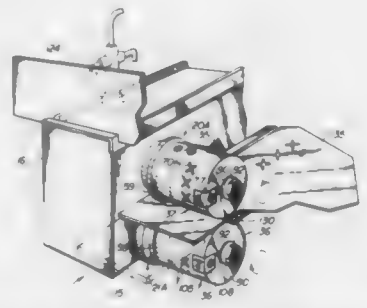
and pivot drive means cooperatively associated with said housing for actuating said pivot flap assembly from an open to a closed position and vice versa.

5,009,093

APPARATUS AND METHOD FOR ROLL FORMING AND MARKING SHEET METAL

F. Dillard Quinn, Jr., 775 Beech Valley Rd., and Anthony W. Quinn, 3611 Briar Dr., both of Lithia Springs, Ga. 30057

Continuation of Ser. No. 424,730, Oct. 20, 1989, abandoned. This application Nov. 5, 1990, Ser. No. 610,337
Int. Cl.[5] B21D *35/00*
U.S. Cl. 72—177 **3 Claims**



1. Apparatus for roll-forming sheet metal into air duct pipe having a predetermined part size, comprising:

a pair of opposing and substantially parallel roller support frames spaced from one another;

a plurality of first shafts rotatably mounted to and along each of the opposing roller support frames, the plurality of first shafts extending inwardly from each of the opposing roller support frames towards the opposite roller support frame;

a plurality of second shafts rotatably mounted to and along each of the opposing roller support frames, the plurality of second shafts extending inwardly from each of the opposing roller support frames towards the opposite roller support frame, each of the plurality of second shafts positioned juxtapositional to a corresponding first shaft;

a plurality of first forming rollers mounted on corresponding first shafts;

a plurality of second forming rollers mounted on corresponding second shafts, each first forming roller being positioned juxtapositional to a corresponding second forming roller so that there is a nip between each of the juxtaposed first and second forming rollers, the juxtaposed first and second forming rollers forming a pair of opposing roll forming lines;

a first embossing roller mounted on one of said first shafts and extending inwardly from the first forming roller mounted on the one of said first shafts to a substantially exposed forward end, the first embossing roller being separate from the first forming roller mounted on the one of said first shafts, the first embossing roller extending beyond each of the first forming rollers in the associated roll forming line towards the opposing roll forming line, the first embossing roller having an outer surface and a relief pattern extending outwardly therefrom, the relief pattern including an indication of the predetermined part size of the air duct pipe;

a second embossing roller mounted on the second shaft positioned juxtapositional to the one of said first shafts on which the first embossing roller is mounted, the second embossing roller extending inwardly from the second forming roller mounted on the associated second shaft to a substantially exposed forward end, the second embossing roller being separate from the second forming roller on the associated second shaft, the second embossing roller extending beyond each of the second forming rollers in the associated roll forming line towards the opposing roll forming line, the first and second embossing rollers juxtaposed so that there is a nip therebetween, the second embossing roller having an outer surface which has an engraved pattern for receiving the relief pattern, the engraved pattern being substantially identical to the relief pattern; and

means for rotating the first and second shafts so as to draw the sheet metal through the nips between the first and second forming rollers and the first and second embossing rollers,

whereby the sheet metal is simultaneously roll formed into air duct pipe by the first and second forming rollers and embossed with the identifying relief pattern by the first and second embossing rollers.

5,009,094

METHOD OF ROLLING H-SHAPED STEELS

Hiroyuki Hayashi, Chiba; Tsuneo Seto, Kurashiki; Hironori Miura, Kurashiki, and Yoji Fujimoto, Kurashiki, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Jun. 19, 1989, Ser. No. 367,947
Claims priority, application Japan, Jun. 27, 1988, 63-156828; Jun. 29, 1988, 63-159518; Sep. 20, 1988, 63-233393; Feb. 10, 1989, 1-29995
Int. Cl.[5] B21B *13/08, 41/06*
U.S. Cl. 72—225 **3 Claims**

1. A method of manufacturing H-shaped steels comprising the steps of:

subjecting a workpiece to break down rolling by passing the workpiece at least once through a break down rolling mill, the work piece after break down rolling composed of a web portion and a pair of flange portions;

subjecting the workpiece to rough universal rolling by passing the workpiece at least once through a rough universal rolling mill;

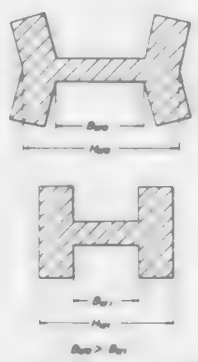
subjecting the workpiece to finish universal rolling by passing the workpiece at least once through a finish universal rolling mill;

subjecting said workpiece to web-reduction universal rolling in any position ranging from final pass of said rough universal rolling to said finish universal rolling, wherein the inner width of said web of said workpiece is decreased by

an amount within a range not exceeding $80 \times T_W^2/B_W$, wherein T_W is the thickness of said web portion of said workpiece and B_W is the inner width of said web portion of said workpiece;

wherein concurrently with said reduction of said web inner width, the thickness of said flange of said workpiece is reduced;

wherein said step of web-reduction universal rolling at any



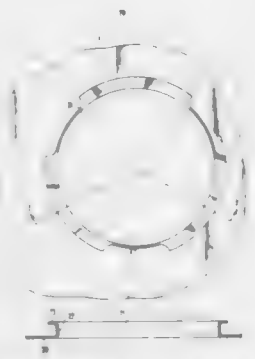
position ranging from final pass of said rough universal rolling to said finish universal rolling comprises the step of passing the workpiece at least once through a universal rolling mill, where the rolling mill comprises a pair of upper and lower width variable horizontal rolls and a pair of left and right vertical rolls, and wherein the roll width of each of said width variable horizontal rolls is set to a smaller length than said inner width of the web of said workpiece.

5,009,095

METHOD FOR FORMING A COLLARED HOLE IN SHEET MATERIAL

Harlan F. Voss, Punta Gorda, Fla., assignor to Tridan Tool & Machine, Inc., Danville, Ill.

Filed Jan. 9, 1990, Ser. No. 462,618
Int. Cl.[5] B21D *28/26*
U.S. Cl. 72—335 6 Claims



1. A method of producing a collard hole in a sheet of material comprising the steps of:

moving a sheet through a die;

sequentially stopping said sheet at multiple stations;

forming with a plurality of first punches a plurality of first holes in said sheet in a certain size and configuration for each collared hole to be formed in said sheet while leaving said first holes spaced apart so material of said sheet extends between said first holes;

removing with a main punch some of said material from between said first holes to transform said plurality of first holes into a single main hole having a center and with portions of material extending inwardly and terminating a distance from said center of said main hole;

extending a straightening punch through said single main hole after said removing step to draw said sheet around said main hole forming a collar of a predetermined height which extends perpendicularly from said sheet; and,

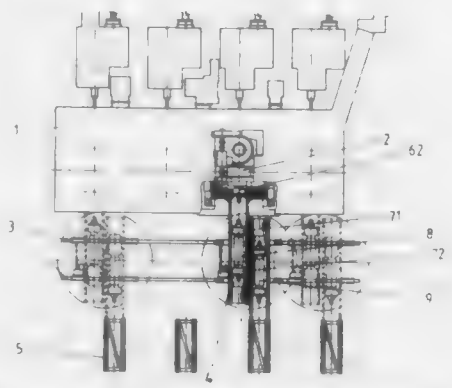
controlling and varying said predetermined height by keeping said certain size and configuration of said first holes fixed while selecting the radius of said main punch (1) to increase said distance with a large radius of said main punch providing a small height of said collar and (2) reduce said distance with a small radius of said main punch providing a large height of said collar.

5,009,096

METHOD AND APPARATUS FOR THE REPLACING OF WORKING ROLLS IN A ROLLING MILL

Matti Mäenpää; Teuvo Lehtoluoma; Kauko Henttinen; Pertti Jokipalo; Aimo Saren, and Seppo Pirinen, all of Hämeenlinna, Finland, assignors to Rautaruukki Oy, Oulu, Finland

Filed Dec. 21, 1989, Ser. No. 454,757
Claims priority, application Finland, Dec. 22, 1988, 885953
Int. Cl.[5] B21B *31/07*
U.S. Cl. 72—239 14 Claims



1. A method for replacing an installed working roll in a rolling mill having a roll stand receiving the installed working roll, a roll track, a car which runs parallel to the roll track and is alignable with the installed working roll, and a storage rack near the roll stand; the method comprising:

(a) providing a replacement working roll in the storage rack;

(b) providing guiding means, for guiding working rolls, rotatably mounted on the car;

(c) simultaneously transferring the installed working roll from the roll stand and the replacement working roll from the storage rack, to the guiding means;

(d) rotating the guiding means to interchange the positions of the installed and replacement working rolls; and

(e) simultaneously transferring the replacement working roll to the roll stand and the installed working roll to the storage rack, from the guiding means.

5,009,097

PLANT OR APPARATUS UTILIZING A UNIVERSAL STRAIGHTENING-BENDING MACHINE

Marcello Del Fabro, and Giorgio Del Fabro, both of Reana Del Rojale, Italy, assignors to M.E.P. Macchine Elettroniche Piegatrici S.p.A., Italy

Filed Nov. 17, 1989, Ser. No. 438,771
Claims priority, application Italy, Nov. 23, 1988, 83532 A/88
Int. Cl.[5] B21D *7/024*
U.S. Cl. 72—387 6 Claims

1. A straightening-bending apparatus for wire stock feed comprising in combination, a working table pivotable about a table horizontal axis including:

advancing and straightening means with opposed rolls to straighten and longitudinally advance the wire stock on said working table including guiding means for guiding the feed stock along the working table;

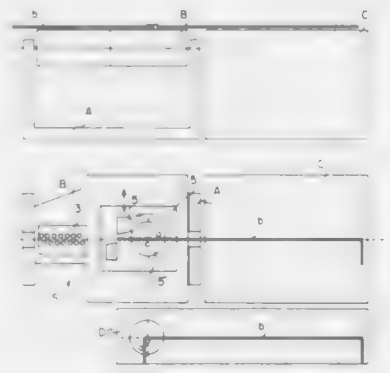
cutting means receiving the wire stock feed from said advancing and straightening means provided on said table for cutting said wire stock feed

bending means for bending said stock material receiving said wire stock feed from said cutting means

wherein the working table is pivotable at an angle β from a generally vertical orientation about said table horizontal axis:

from a first generally horizontal position ($\beta^\circ = 90^\circ$) where the table faces upwardly

to a second positive inclined position ($0^\circ < \beta^\circ < 90^\circ$) in which the working table faces forwardly and upwardly with respect to said longitudinal feed path;



to a third vertical position ($\beta^\circ = 0^\circ$) in which the working table faces forwardly with respect to said longitudinal feed path;

to a fourth negatively inclined position ($0^\circ < -\beta^\circ < 90^\circ$) in which the working table faces forwardly and downwardly with respect to said longitudinal feed path,

and wherein:

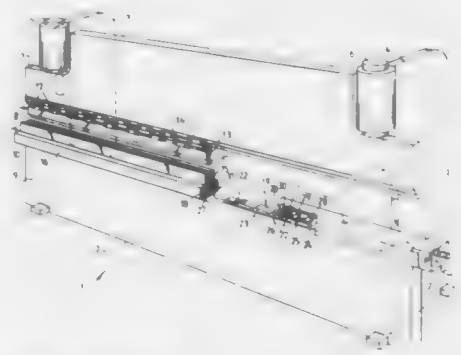
the respective working table is displaced downwardly with respect to the longitudinal feed path when the working table is moved to said third vertical position and said fourth negatively inclined position so that wire stock can free fall downwardly from said straightening means, cutting means and bending means.

5,009,098

PRESS AND CURVE-FORMING MEANS THEREFOR

Jacobus L. van Merksteijn, Stad Delden, Netherlands, assignor to Machinefabriek Wila B.V., Lochem, Netherlands

Filed Nov. 27, 1989, Ser. No. 441,106
Int. Cl.[5] B21D *5/02*; B21J *13/03*
U.S. Cl. 72—389 18 Claims



1. A press, comprising:

a frame which bears bending means, the bending means including an upper tool and a lower tool which can be moved in a mutually reciprocal matter;

curve forming means associated with the bending means for forming a curve on the bending means, the curve-forming means including curve-forming members slidable over each other in a lengthwise direction and in a transverse direction relative to the bending means and making contact with each other, the contact surfaces of the curve-forming members in the lengthwise direction and the transverse direction possess respective determined angles of slope α and β; and

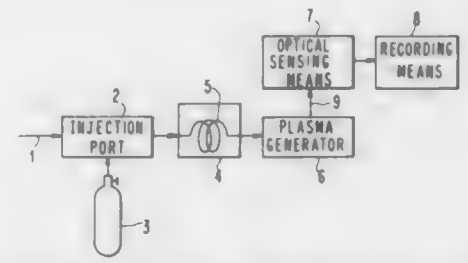
means for adjusting the curve-forming members in the lengthwise direction and the transverse direction.

5,009,099

BACKGROUND CORRECTION METHOD FOR USE IN GAS CHROMATOGRAPHY

Gregory J. Wells, Suisun, and Barbara A. Bolton, Albany, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed May 9, 1989, Ser. No. 349,201
Int. Cl.[5] G01D *18/00*; G01N *21/73*
U.S. Cl. 73—1 G 3 Claims



1. A method of correcting for changes in background radiation in a plasma emission detector comprising a plurality of sensors associated with specific emission frequencies including a sensor associated with at least one principal carbon emission frequency and another sensor associated with a frequency of emission of another element,

each time a new source of helium is connected to the system generating a calibration curve which correlates the response at the said other sensor in the absence of the other element of interest with the response at said carbon sensor,

storing said calibration curve in system memory,

thereafter, measuring the signal response at said carbon sensor,

simultaneously measuring the signal response at said other sensor,

subtracting from the signal from said other sensor an amount determined from the calibration curve stored in said system memory.

5,009,100

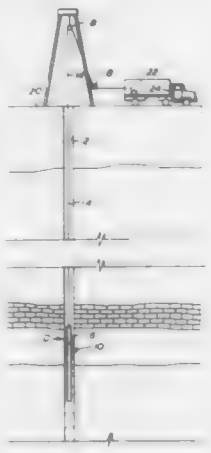
DOWN HOLE RESERVOIR FLUID SAMPLER

Norman G. Gruber, and Owen T. Krauss, both of Calgary, Canada, assignors to Western Atlas International, Inc., Houston, Tex.

Filed Nov. 16, 1989, Ser. No. 437,687
Claims priority, application Canada, Nov. 17, 1988, 583396
Int. Cl.[5] E21B *49/08*
U.S. Cl. 73—155 30 Claims

1. An apparatus, suspended in a bore hole from the surface of the earth, for taking a sample of a fluid from the bore hole, comprising in combination: a housing having at least one port and an interior volume, means for opening the port thereby placing the volume in fluid communication with the fluid in the bore hole, means within the volume for accepting the fluid from the bore hole at a predetermined rate so as not to alter the

fluid, means within the volume for agitating the bore hole fluid received therein, and means within the housing for closing the



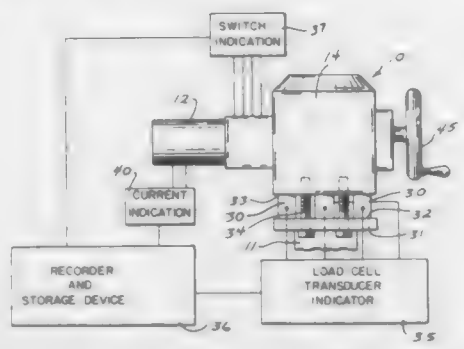
port, sealing the bore hole fluid within the volume once the volume is full.

5,009,101

METHOD AND APPARATUS FOR MONITORING AND MEASURING DYNAMIC LOADS IN THRUST INDUCING SYSTEMS

Timothy R. Branam, Manitowoc; Jeffrey J. Roberts, Michicot, and Jack O. Schoenberger, Two Rivers, all of Wis., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 144,949, Jan. 19, 1988, Pat. No. 4,856,327.
This application Jun. 8, 1989, Ser. No. 363,048
Int. Cl.[5] G01M *19/00*
U.S. Cl. 73—168 **5 Claims**



1. In a valve and valve operator assembly including a valve body, a valve plug within the body movable to and between the valve open position and a valve closed position, a valve stem attached to the valve plug, the valve operator assembly including a source of motive power, an operator housing attached to the valve body to provide an attachment interface therebetween, and power transmission means operatively connecting the power source and the valve stem and disposed to transmit an operating load from the power source to the stem for effecting movement of the valve plug, and limit switch and torque switch means operatively attached to the power transmission means and power source for terminating the output of the power source at the valve open position and the valve closed position, a method for monitoring and analyzing the operation of the valve and valve operator assembly comprising the steps of:

(a) attaching load sending means to the attachment interface for continuously measuring a directly proportional part of the actual valve stem operating loads as the valve plug is moved between its open and closed positions;

(b) converting the measured loads into the actual valve stem operating loads;

(c) generating an output indication of the actual valve stem operating loads as a function of valve plug position;

(d) concurrently with step (a), monitoring the operation of the limit switch and torque switch means;

(e) generating an output indication of the limit switch and torque switch means operation as a function of valve plug position;

(f) correlating the output of steps (c) and (e); and

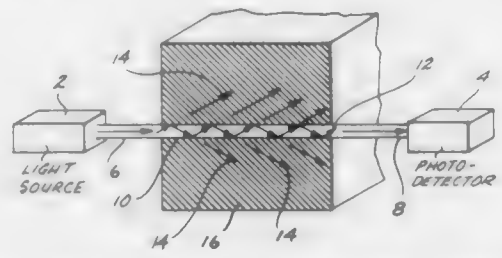
(g) utilizing the correlation from step (f) to analyze the operation of the assembly.

5,009,102

METHOD OF MONITORING SOLIDIFICATION OF A LIQUID COMPOSITION

Martin A. Afromowitz, Seattle, Wash., assignor to Board of Regents of the University of Washington, Seattle, Wash.

Division of Ser. No. 147,234, Jan. 22, 1988, Pat. No. 4,904,080.
This application Dec. 1, 1989, Ser. No. 444,754
Int. Cl.[5] G01N *29/20*
U.S. Cl. 73—596 **8 Claims**



1. A method of monitoring a process wherein a liquid composition passes from a liquid phase to a solid phase comprising the steps:

(a) dispersing particles having an acoustic impedance Z_1 in the liquid composition having an acoustic impedance Z_2, such that Z_1 and Z_2 are unequal, the solid phase of the liquid composition having an acoustic impedance Z_3 that is substantially equal to Z_1;

(b) providing a solidifying composition by subjecting the liquid composition containing the particles to conditions that cause the liquid composition to solidify;

(c) introducing acoustic waves into the solidifying composition containing the particles; and

(d) detecting the introduced acoustic waves scattered by the particles.

5,009,103

ULTRASONIC THICKNESS MEASURING METHOD AND APPARATUS

Izumi Sato, Yokosuka; Koji Saito, Kawasaki, and Takashi Inoue, Tokyo, all of Japan, assignors to Tokyo Keiki Co., Ltd., Tokyo, Japan

Filed Jan. 31, 1989, Ser. No. 304,445
Claims priority, application Japan, Feb. 1, 1988, 63-21681; Feb. 1, 1988, 63-21682; Feb. 4, 1988, 63-14063
Int. Cl.[5] G01N *9/24*
U.S. Cl. 73—597 **8 Claims**

1. An ultrasonic thickness measuring method in which an ultrasonic pulse is transmitted from a probe into a material having a thickness to be measured, and resulting multiple reflection pulses from the material are detected to obtain a time interval between the reflection pulses to derive the thickness of the material, said method comprising the steps of:

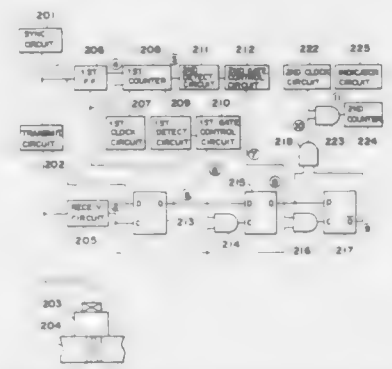
transmitting an ultrasonic pulse into a material whose thickness is to be measured;

detecting a first reflection pulse from a bottom surface of said material;

measuring a first time period from the transmission of the ultrasonic pulse to reception of said first reflection pulse;

detecting a second reflection pulse received within a preset period of time occurring after said first reflection pulse has been received, said preset period of time ending immediately prior to the end of a second time period corresponding in duration to said first time period, said second time period beginning immediately after detecting said first reflected pulse; and

measuring a third time period between the reception of the first reflection pulse and the reception of the second reflection pulse whereby said third time period corresponds to a measure of the thickness of the material.

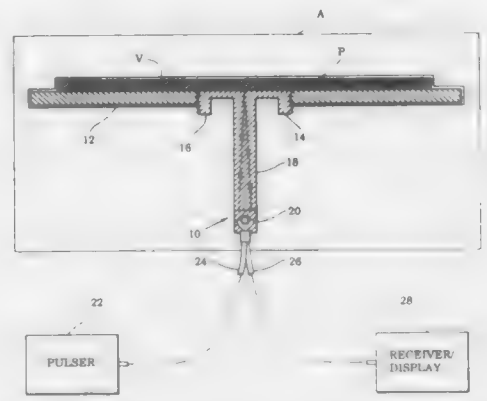


5,009,104

ULTRASONIC CURE MONITORING OF ADVANCED COMPOSITES

Delwin O. Johnson, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Filed Nov. 30, 1989, Ser. No. 443,637
Int. Cl.[5] G01N *29/16, 9/24*
U.S. Cl. 73—597 **15 Claims**



1. A non-destructive method for monitoring the time dependent curing of an advanced composite positioned within an autoclave where it is subjected to varying pressure and temperature over a predetermined period of time, which metnod comprises:

positioning an uncured advanced composite secured within a vacuum bag and carried by a tool within an autoclave;

varying the heat and pressure within the autoclave over a predetermined period of time to cure the composite;

coupling an acoustic waveguide to one side of the uncured advanced composite by extending said acoustic waveguide through an aperture provided in said tool so that the wave guide may be directly coupled to a surface of the composite;

directing a pulse of ultrasound energy through the waveguide to the side of the advanced composite; and

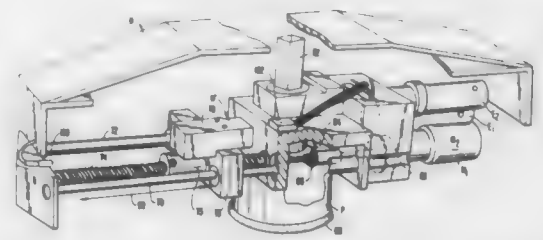
analyzing the ultrasound energy reflected from the side of the advanced composite to determine the modulus of the advanced composite at a particular point in its curing.

5,009,105

APPARATUS FOR ULTRASONIC EXAMINATION OF BWR SHROUD ACCESS COVER PLATE RETAINING WELDS

David L. Richardson, Los Gatos; Jack P. Clark; Balasubramanian S. Kowdley, both of San Jose; Peter M. Patterson, Livermore; Richard W. Perry, and Thurman D. Smith, both of San Jose, all of Calif., assignors to General Electric Company, San Jose, Calif.

Division of Ser. No. 293,158, Jan. 3, 1989, Pat. No. 4,966,746.
This application Feb. 7, 1990, Ser. No. 476,086
Int. Cl.[5] G01N *29/04*
U.S. Cl. 73—621 **1 Claim**



1. An apparatus for the submersed inspection of a cover plate welded over an access hatch in a remote submerged location in a nuclear reactor, said apparatus comprising:

an elongate housing having a top side, a bottom side, and two sides;

the top side of said housing having at either end thereof upwardly exposed support points for raising and lowering of said housing;

said housing at the bottom side having an attached protruding pedestal, said pedestal provided for resting rotative support of said housing thereon;

a first motor operably connected between said pedestal and housing for causing said housing to rotate relative to said pedestal;

said housing bottom defining between said pedestal and one end of said housing an elongate slot for permitting sound waves to pass therethrough;

a ultrasound mount mounted to said housing for reciprocal movement along said slot;

a focused ultrasound transducer mounted to said mount for acoustical interrogation through water of metal disposed below said housing;

a second motor operatively connected between said housing and mount for causing relative excursion of said mount and transducer along said elongate slot of said housing whereby said housing and rotate and acoustically interrogate metal disposed about the pedestal.

5,009,106

ACCELEROMETER WITH IMPROVED SHOCK RESISTANCE

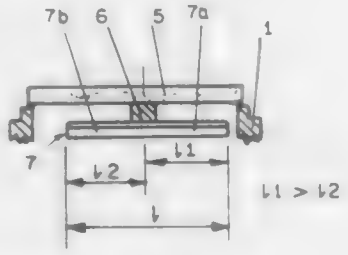
John M. Kubler, Amherst, and Michael D. Insalaco, Niagara Falls, both of N.Y., assignors to Kistler Instrumente AG, Winterthur, Switzerland

Filed Jul. 6, 1989, Ser. No. 376,010
Int. Cl.[5] G01P *15/09*
U.S. Cl. 73—651 **5 Claims**

1. Accelerometer for the measurement of an axial acceleration, with a sensor part comprising:

an electromechanical beam having two beam sections of unequal lengths;

a beam carrier;



a spacer connecting said beam and said beam carrier; and

said beam being glued to the spacer, at bevelled gluing surfaces.

5,009,107

OPTICAL PRESSURE SENSOR AND A METHOD AND APPARATUS FOR MAKING SUCH A SENSOR

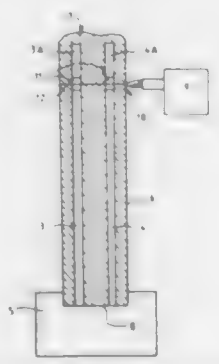
Francois Grasdepot, Paris, France, assignor to Schlumberger Industries, Montrouge, France

Filed Jan. 30, 1990, Ser. No. 472,537

Claims priority, application France, Feb. 2, 1989, 89 01361

Int. Cl.[5] G01L *7/04*

U.S. Cl. 73—705 **6 Claims**



1. An optical absolute pressure sensor constituted by a body made of a substance having photoelastic properties and provided with at least one internal duct extending parallel to the longitudinal direction of said body, the pressure inside said duct being substantially zero and the ends thereof being closed by sealing without addition of external material.

5,009,108

VIBRATING TYPE TRANSDUCER

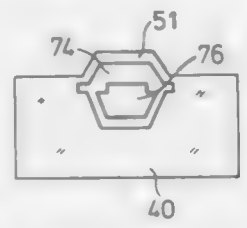
Kinji Harada; Kyoichi Ikeda; Hideki Kuwayama; Takashi Kobayashi; Tadashi Nishikawa; Tetsuya Watanabe, and Takashi Yoshida, all of Tokyo, Japan, assignors to Yokogawa Electric Corporation, Tokyo, Japan

Division of Ser. No. 245,681, Sep. 16, 1988. This application Oct. 18, 1989, Ser. No. 423,042

Int. Cl.[5] G01L *11/00*

U.S. Cl. 73—704 **1 Claim**

1. In a vibrating type transducer for measuring a physical quantity relating to strain applied to opposite ends of a beam like vibrator fixed on a silicon substrate through measuring a resonance frequency of the vibrator, the improvement comprising a vibrator to which a predetermined initial tension is



given by implanting another atom with a bond radius smaller than that of an atom constructing said vibrator

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5,009,109

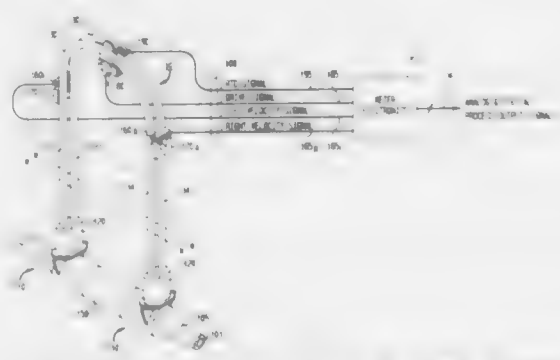
FLOW TUBE DRIVE CIRCUIT HAVING A BURSTY OUTPUT FOR USE IN A CORIOLIS METER

Paul Kalotay, Lafayette; Robert Bruck, Boulder; Arnold Emch, Estes Park, and Donald Martella, Louisville, all of Colo., assignors to Micro Motion, Inc., Boulder, Colo.

Filed Dec. 6, 1989, Ser. No. 446,614

Int. Cl.[5] G01F *1/84*

U.S. Cl. 73—861.38 **15 Claims**



1. A Coriolis meter having a drive circuit for supplying energy to a drive coil used within the meter and wherein the meter has at least one flow conduit, said meter comprising:

a drive mechanism, having a drive coil, affixed to a flow conduit for causing said conduit to move about a pre-defined bending axis; and

energy providing means, connected to said drive coil and responsive to a signal representing motion of the flow conduit, comprising:

means for measuring said signal so as to produce measured values thereof;

means, responsive to said measured values, for determining whether the signal has an amplitude value that is less than a limit value at a pre-defined point on said signal; and

applying means, responsive to said determining means, for providing a pre-defined burst of energy to said drive coil at a pre-defined point in a cycle of oscillatory movement of said flow conduit in the event said amplitude value is less than said limit value and for providing substantially no energy to said coil during said cycle other than when said burst occurs, wherein said applying means provides substantially no energy to said drive coil anytime during said cycle in the event said amplitude value equals or exceeds said limit value such that said flow conduit oscillates with a peak amplitude that remains substantially within a prescribed range.

5,009,110

TORQUE SENSOR, IN PARTICULAR FOR ELECTRIC STEERING MECHANISM

Armin Lang, Schwäbisch Gmünd, and Bernhard Schweizer, Böbingen/Rems, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

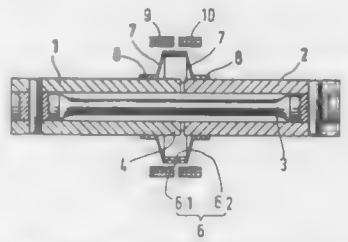
PCT No. PCT/EP88/00063, § 371 Date Jul. 12, 1989, § 102(e) Date Jul. 12, 1989, PCT Pub. No. WO88/05742, PCT Pub. Date Aug. 11, 1988

PCT Filed Jan. 29, 1988, Ser. No. 381,406

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1987, 3703102

Int. Cl.[5] G01L *3/10*

U.S. Cl. 73—862.33 **27 Claims**



1. A torque sensor particularly for electric steering mechanisms and which has a torque bar (3) with input means (1, 2) (21, 22) (31, 32) secured thereon; output means (6, 6.1, 6.2) (12, 13) (26); connecting means connecting each said input means to said output means and comprising a respective array of flexible elements secured to respective input means and the output means; the improvement comprising:

a lost motion connection between said input means; said flexible elements comprising a conical array of plastic spokes (7) carrying said output means; wherein spokes (7) on one side of respective the input means are circumferentially slanted in an opposite direction to the spokes on the other side whereby relative bi-directional rotation between said input means effects a respective axial opposite movement of said output means; and means responsive to said movement of said output means to effect torque measurement.

5,009,111

DIFFERENTIAL FORCE BALANCE APPARATUS

Paul West, Glendale; Mirik Hovsepian, and Ronald Thomas, both of Pasadena, all of Calif., assignors to Quanscan, Inc., Pasadena, Calif.

Filed Aug. 31, 1988, Ser. No. 239,365

Int. Cl.[4] G01L *1/08;* **G01P** *15/13*

U.S. Cl. 73—862.61 **20 Claims**



12. A force measurement apparatus which comprises:

a first element incorporating a first electrode;

a second electrode in a spaced-apart relationship to said first electrode;

means for causing a current to exist between said first and second electrodes by non-contact electron transfer mechanisms;

first distance maintenance means for maintaining the distance between said first and second electrodes at a constant value, said first maintenance means having a measurable electrical property when maintaining the distance at the constant value;

a second element incorporating a third electrode;

a fourth electrode in spaced apart relationship to said third electrode;

means for causing a current to exist between said third and fourth electrodes by non-contract electron transfer mechanisms;

second distance maintenance means for maintaining the distance between said third and fourth electrodes at a constant value, said second maintenance means having a measurable electrical property when maintaining the distance at the constant value; and

means for measuring the electric properties of said first and second distance maintenance means.

5,009,112

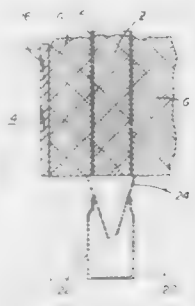
METHOD AND APPARATUS FOR CONDUCTING FIELD DISSIPATION AND LEACHING STUDIES

Lowell J. Lawrence, Lexington, Ky.; Luis O. Ruzo, Berkley, Calif., and Gene L. Olson, Lexington, Ky., assignors to Pharmacology & Toxicology Research Lab., Richmond, Ky.

Filed May 5, 1989, Ser. No. 351,916

Int. Cl.[5] G01N *1/00*

U.S. Cl. 73—866 **15 Claims**



1. A method for conducting field dissipation and leachate studies of a test substance utilizing boundary means to define a soil test zone and collecting means for collecting leachate from said soil test zone, comprising the steps of:

positioning said boundary means into the ground;

exposing, a bottom end of said boundary means which remains undisturbed in place in said ground substantially without disturbing said soil test zone;

collecting leachate from said soil test zone within said boundary means; and

analyzing said leachate.

9. An apparatus for conducting field dissipation and leachate studies of a test substance, comprising: p1 boundary means for positioning into the ground to define a soil test zone, said boundary means being a column that is driven into the ground substantially without disturbing or compacting soil in said soil test zone; and

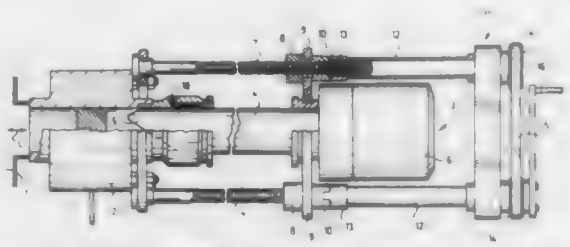
means for collecting leachate from a bottom end of said boundary means left undisturbed in place in said ground.

5,009,113

ARRANGEMENT FOR DISPLACING A MEASURING HEAD OF A MEASURING MEANS INTO AND FROM A PROCESS SPACE

Esko Kamrat, Vantaa, Finland, assignor to Janesko Oy, Helsinki, Finland

Filed Mar. 6, 1990, Ser. No. 489,000
Claims priority, application Finland, Apr. 20, 1989, 891894
Int. Cl.[5] G01N *17/00*
U.S. Cl. 73—866.5 4 Claims



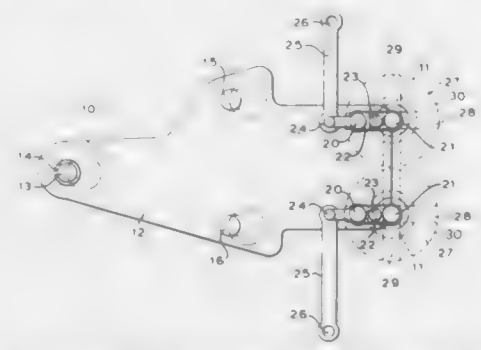
1. An arrangement for displacing a measuring head of a measuring means into and from a process space, which arrangement comprises a valve element to be fastened to a wall of the process space and a measuring means to be fastened to the valve element, which measuring means comprises an oblong tube, at one end of which is a measuring head, the measuring means being arranged to be moved through the valve element to a position in which the measuring head extends into the process space and back again to a position in which the measuring head is not in connection with the process space, said arrangement comprising at least two threaded bars parallel to the displacement direction of the measuring means and fastened directly to the valve element and at least two threaded stop elements in the form of bushings rotatably mounted on a flange located on the measuring means and arranged to directly cooperate with the threaded bars, the threaded stop elements being provided with joining elements for the fastening of a device for the rotation of the stop elements, and displacing motion of the measuring means being provided by relative motion between the threaded stop elements and the threaded bars.

5,009,114

MECHANISM FOR TRANSMITTING ROTATIONAL MOTION FROM ONE SHAFT TO ANOTHER

Bryan N. V. Parsons, Stoney Stanton, United Kingdom, assignor to Jaguar Cars Limited, England

Filed Nov. 21, 1989, Ser. No. 439,786
Claims priority, application United Kingdom, Nov. 24, 1988, 8827432
Int. Cl.[5] F16H *21/00;* F01L *1/00*
U.S. Cl. 74—15.63 10 Claims



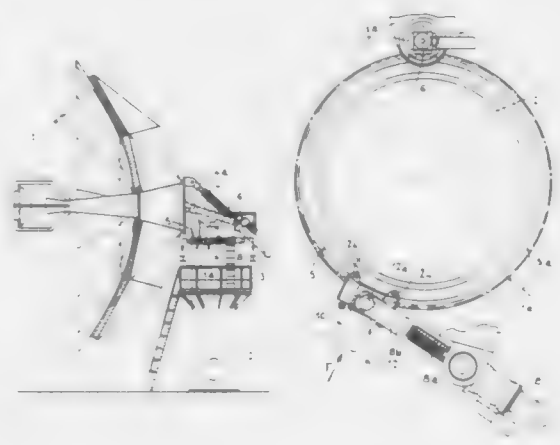
1. A mechanism for transmitting rotational motion from an input shaft to an output shaft comprising a link constrained to move in an orbital path, the input shaft being coupled to the link so that rotation of the input shaft will move the link in its orbital path; and the output shaft being parallel to the said input shaft and coupled to the link so that orbital motion of the link will rotate the output shaft; the coupling between at least one of the shafts and the link including interengaging components the relative positions of which vary as the link moves in its orbital path, one of said components being mounted on the said one of the shafts for rotation therewith and another of said components being mounted on the link for pivotal movement relative thereto, the component mounted on the link being positioned such that as the link moves in its orbital path, and axis of the pivotal movement will describe a circular path concentric with the axis of rotation of the said one of the shafts, a lever being pivotally connected at one end to the component mounted on the link and at its other end to a pivot which is isolated from the movement of the link.

5,009,115

DEVICE FOR DRIVING IN ROTATION A STRUCTURE OF LARGE DIAMETER PARTICULARLY AN ANTENNA

Patrice Ringot, Grenoble, and Parendel Marc, Moirans, both of France, assignors to Neyrpic Framatome Mecanique, Paris la Defense, France

Filed Mar. 9, 1990, Ser. No. 491,174
Claims priority, application France, Mar. 10, 1989, 89 03431
Int. Cl.[5] F16H *27/020, 57/020;* F16M *11/120;* H01Q *3/000*
U.S. Cl. 74—89.150 12 Claims



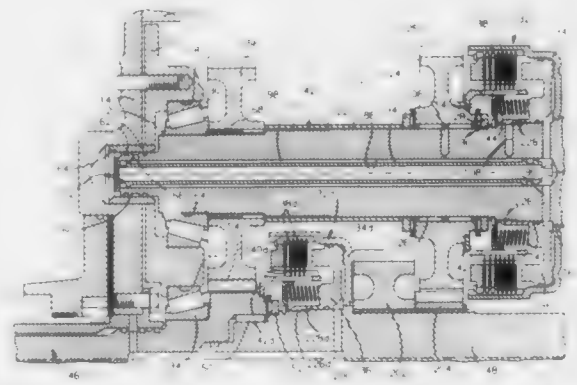
1. An apparatus for rotating a structure such as an antenna wherein the structure is mounted to a support pedestal having a ring gear mounted therebetween and wherein the ring gear includes a plurality of teeth comprising, a first adjustment means including a motor having a drive shaft, pinion means mounted to said drive shaft and engaging said teeth of said ring gear so as to rapidly rotate the structure about an axis taken through the ring gear when said motor is activated, a second adjustment means for enabling a slower exacting rotation of the structure about said axis, said second adjustment means including a jack means having an extensible member, a coupling member carried by said extensible member, said coupling member including shiftable engaging means for selectively engaging said teeth of said ring gear and for disengaging said coupling member from said ring gear in order to permit the rapid rotation of the structure by said first adjustment means.

5,009,116

POWER TRANSMISSION

James P. Ordo, Plainfield; James A. Raszkowski, Indianapolis, and Donald Klemen, Carmel, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 30, 1990, Ser. No. 502,195
Int. Cl.[5] F16H *3/08*
U.S. Cl. 74—331 3 Claims



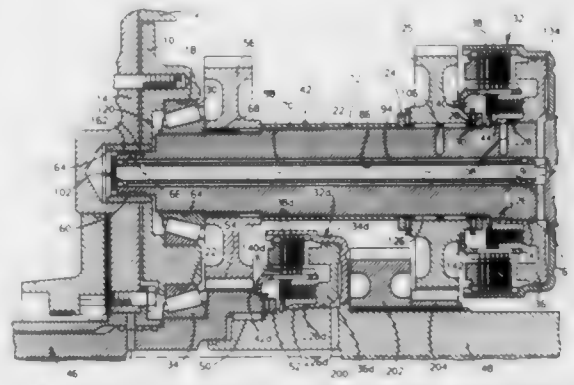
1. A transmission comprising: a housing having first and second end covers; an input shaft rotatably mounted in the first end cover; an output shaft rotatably supported on the input shaft and in said second end cover; first and second countershafts rotatably supported in said end covers for rotation on respective axis parallel with said input shaft and said output shaft; a first head gear continuously rotatable with said input shaft; second and third head gears meshing with said first head gear and continuously rotatable with the first and second countershafts respectively; a plurality of ratio gears rotatably supported on each of said countershafts including a first ratio gear on said first countershaft and a second ratio gear on said second countershaft; reverse gear means including a first member rotatable with said first ratio gear and a second member rotatably supported on said second countershaft; synchronizer clutch means selectively and alternatively connectible with said second ratio gear and said second member of said reverse gear means; output gear means drivingly connected with said output shaft and including a first ratio output gear meshing with said first ratio gear and a second ratio output gear meshing with said second ratio gear; first selectively engageable friction clutch means for connecting said first ratio gear with said first countershaft for completing a low forward drive ratio between said input and output shafts; and second selectively engageable friction clutch means for selectively connecting said synchronizer clutch means to said second countershaft and cooperating therewith to selectively alternatively complete a reverse drive ratio between said input shaft and said output shaft and another forward drive ratio between said input and output shafts, said reverse drive ratio being transmitted to said output shaft through said first ratio gear and said first ratio output gear.

5,009,117

COUNTERSHAFT POWER TRANSMISSION WITH DOWEL PIN AND SEAL RING STRUCTURE

James P. Ordo, Plainfield, and Harry E. Latshaw, Danville, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 30, 1990, Ser. No. 502,196
Int. Cl.[5] F16H *3/08*
U.S. Cl. 74—331 2 Claims



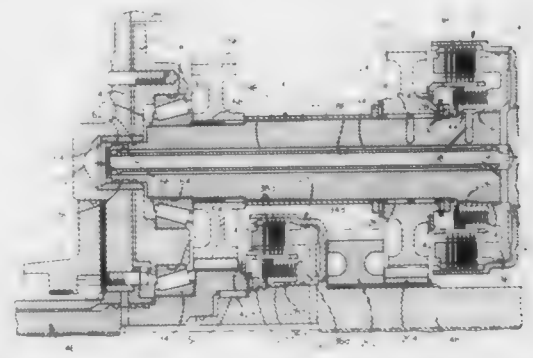
1. A multiple countershaft power transmission comprising: a casing including a bell housing, an outer housing, and an end cover; an assembly support plate having bearing locations for supporting bearings; an input shaft rotatably supported on one bearing in said support plate; a pair of countershafts rotatably supported on second and third bearings in said support plate, each of said countershafts having a centrally disposed clutch engagement passage and an annular clutch lubrication passage; a dowel and seal sleeve member secured in the bell housing for each countershaft including a surface for locating the support plate for positioning of said support plate during securement with said bell housing; a radial passage for communicating fluid with said annular lubrication passage; and an axial end opening for communicating fluid pressure with said central clutch engagement passage.

5,009,118

POWER TRANSMISSION WITH PARALLEL IDENTICAL COUNTERSHAFTS

James A. Raszkowski, Indianapolis, and Donald Klemen, Carmel, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 30, 1990, Ser. No. 502,198
Int. Cl.[5] F16H *3/08*
U.S. Cl. 74—331 2 Claims



1. An improvement in multiple countershaft transmissions including: a housing having a casing, a first end support and a second end support; an input shaft rotatably mounted in the first end support; an output shaft rotatably supported on the input shaft and in said casing; first and second countershafts

rotatably supported in one of said end supports and in said casing for rotation on respective axis parallel with said input shaft and said output shaft; a first head gear continuously rotatable with said input shaft; second and third head gears meshing with said first head gear and continuously rotatable with the first and second countershafts respectively; a plurality of ratio gears rotatably supported on each of said countershafts including a first ratio gear on said first countershaft and a second ratio gear on said second countershaft; reverse gear means including a first member rotatable with said first ratio gear and a second member rotatably supported on said second countershaft; synchronizer clutch means selectively and alternatively connectable with said second ratio gear and said second member of said reverse gear means; output gear means drivingly connected with said output shaft and including a first ratio output gear meshing with said first ratio gear and a second ratio output gear meshing with said second ratio gear; first selectively engageable friction clutch means for connecting said first ratio gear with said first countershaft for completing a low forward drive ratio between said input and output shafts, and second selectively engageable friction clutch means for selectively connecting said synchronizer clutch means to said second countershaft and cooperating therewith to selectively alternatively complete a reverse drive ratio between said input shaft and said output shaft and another forward drive ratio between said input and output shafts, and third and fourth selectively engageable clutch means for selectively establishing two additional forward drive ratios between said input and output shafts; wherein the improvement comprises: said countershafts having identical dimensions from end to end and having centrally disposed clutch mounting structure for mounting respective selectively engageable friction clutch means for selectively connecting said gear means with the respective countershafts.

5,009,119

BRAKE CONTROL APPARATUS FOR BICYCLE

Masashi Nagano, Izumi, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Oct. 4, 1989, Ser. No. 417,031

Claims priority, application Japan, Oct. 7, 1988, 63-132123[U]

Int. Cl.[5] **B62K** *23/06*; **B62L** *3/02*

U.S. Cl. 74—489 **7 Claims**



1. A brake control apparatus for a bicycle, comprising:

a bracket;

a brake lever pivoted to the bracket via a lever shaft; and

a lever spring for urging the brake lever to its home position relative to the bracket;

wherein said lever spring includes a pair of spring legs respectively coupled with said bracket and said brake lever and a coil portion disposed between said spring legs, at least one of said pair of spring legs being movable with respect to one of said bracket and said brake lever, said coil portion being arranged such that return movement of said brake lever to its home position relative to said bracket is realized by flexion of a radial center line of said coil portion of the lever spring.

5,009,120

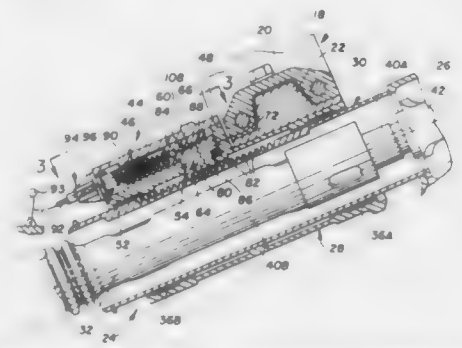
MANUAL CONTROL FOR ADJUSTABLE STEERING COLUMN

Stanley J. Iseler, Midland; Howard D. Beauch, Frankenmuth; Benjamin H. Everett, II, Saginaw, and John P. Sutorik, Frankenmuth, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 23, 1990, Ser. No. 483,617

Int. Cl.[5] **B62D** *1/18*

U.S. Cl. 74—493 **5 Claims**



1. In a steering column including an outer member and an inner tubular member movable relative to said outer member in the direction of a longitudinal centerline of said steering column so that said steering column is lengthwise adjustable,

a manual control comprising:

means defining a plurality of rack teeth on said inner member oriented at a predetermined angle to said longitudinal centerline.

a housing on said outer member,

a clutch element mounted on said housing for radial bodily shiftable movement relative to said longitudinal centerline between a lowered position and a raised position and for lateral bodily shiftable movement relative to said longitudinal centerline,

means defining a plurality of rack teeth on said clutch element oriented at said predetermined angle relative to said longitudinal centerline and meshing with said rack teeth on said inner member in said lowered position of said clutch element to immobilize said inner member relative to said outer member in the direction of said longitudinal axis and disengaged from said inner member rack teeth in said raised position of said clutch element,

means defining a first inclined ramp on said clutch element,

means defining a second inclined ramp and a third inclined ramp on said clutch element on opposite sides of said first inclined ramp,

a first spring means on said housing biasing said clutch element toward said raised position,

an actuator on said housing movable in the direction of said longitudinal centerline toward and away from said clutch element and engageable on said first inclined ramp when moving toward said clutch element to drive said clutch element from said raised to said lowered position,

a second spring means biasing said actuator toward said clutch element,

manual operating means connected to said actuator and operative to move said actuator away from said clutch element against said second spring means,

a first side bar on said housing movable in the direction of said longitudinal centerline toward and away from said clutch element and engageable on said second inclined ramp when moving toward said clutch element to drive said clutch element laterally in a first direction,

a third spring means biasing said first side bar toward said clutch element,

a second side bar on said housing movable in the direction of said longitudinal centerline toward and away from said clutch element and engageable on said third inclined ramp when moving toward said clutch element to drive said clutch element laterally in a second direction opposite said first direction,

a fourth spring means biasing said second side bar toward said clutch element,

means operative to move each of said first and said second side bars away from said clutch element as a unit with said actuator, and

blocking means on said clutch element operative to prevent engagement of each of said first and said second side bars on the corresponding ones of said second and said third inclined ramps until said clutch element achieves substantially said lowered position.

5,009,121

TELESCOPIC STEERING COLUMN DEVICE

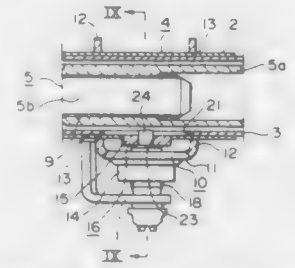
Sakae Matsumoto, Takasaki, and Mitsuo Ichikawa, Maebashi, both of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1990, Ser. No. 546,838

Claims priority, application Japan, Jul. 7, 1989, 1-174064; Jul. 7, 1989, 1-174065; Mar. 27, 1990, 2-30559[U]

Int. Cl.[5] **B62D** *1/18*

U.S. Cl. 74—493 **3 Claims**



1. A telescopic steering column device comprising:

a drive-side steering shaft an end portion of which is connected to a steering wheel;

a driven-side steering shaft connected to said drive-side steering shaft in such a manner that said drive-side steering shaft can be expanded/contracted and the rotation of said drive-side steering shaft can be transmitted;

a cylindrical inner column rotatably supporting said drive-side steering shaft and having an elongated hole elongated in the axial direction;

a cylindrical outer column having an opening in the side surface thereof corresponding said elongated hole in said inner column, fastened on the outer surface of said inner column so as to be telescopically combined with said inner column and positionally fixed in the axial direction with respect to said driven-side steering shaft;

a lock bracket having a thread hole at its portion corresponding said opening in said outer column and secured to said outer column;

a lock member having a through hole at the central portion thereof and the inner surface thereof which is brought into contact with the outer surface of said inner column, said lock member being arranged to be fitted within said opening in said outer column; and

a lock screw having the inner portion which is engaged with said lock member and a projection which is formed at the central portion of said inner portion, which is rotatably inserted into said through hole of said lock member and which is inserted into said elongated hole in said inner column so that the axial displacement of said inner column with respect to the position of said outer column is allowed while the rotation of said inner column with respect to said outer column is prevented, said lock screw being driven into said thread hole in said lock bracket, whereby

said inner column is secured to said outer column by abutting said inner surface of said lock member against the outer surface of said inner column by adjusting said lock screw and said inner column can be expanded/contracted with respect to said outer column by releasing said abutment.

5,009,122

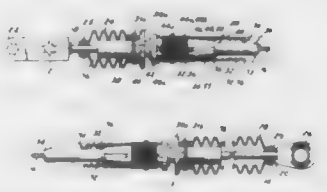
SEALED CABLE CONTROL SYSTEM

Adam W. Chaczyk, Sterling Heights, and John M. Baumgarten, West Bloomfield, both of Mich., assignors to Babcock Industries, Inc., Fairfield, Conn.

Filed Jan. 4, 1990, Ser. No. 461,032

Int. Cl.[5] **F16C** *1/10*; **F16J** *15/50*

U.S. Cl. 74—502.6 **6 Claims**



1. A cable control system including respective first and second sealed protective boots,

a sealed conduit connected therebetween,

a pair of air transfer fittings comprising a first fitting and a second fitting,

said fittings being sealingly connected to said respective boots and conduit and constructed and arranged to provide a passage from the interior of said boot and through said fitting and along a portion of the exterior of said fittings, and said portion adjacent the exterior of said conduit,

a tube encompassing said conduit and at least said portion of said fitting,

said tube providing a sealed chamber forming a passage around said conduit and at least said portion of said fitting,

said chamber being sealingly connected to each respective end of said tube to each respective one of said pair of air transfer fittings, and

said passage and said chamber being sealingly connected and constructed and arranged to provide a continuous passage from the interior of said first boot, through said first fitting and along said portion then through said chamber forming a passage, to said second fitting and along said portion of said second fitting and through said second fitting and then through said interior to said second boot,

each said air transfer fitting being in the shape of a cylinder adapted to be sealed at one end to said first boot and having another end which is tapered and is sealingly connected to said conduit,

a pair of ports in said cylinder, each of said ports extending from the surface of said cylinder and radially inwardly and through said cylinder to an interior channel within said cylinder constructed and arranged to form a passage between the interior of said boot and the exterior of said cylinder,

a pair of slots formed by grooves cut along a portion of the surface of said cylinder,

said slots extending generally axially along said portion of the exterior of said cylinder and disposed about 90° to said radially extending ports,

said slots being constructed and arranged with respect to said ports to form a passage from the interior of said boot to the exterior of said cylinder and axially along said portion of the exterior of said cylinder.

5,009,123

CAMSHAFT

Takeshi Hiraoka, Saitama; Shunsuke Takeguchi, Tochigi, and Satoshi Kawai, Kuki, all of Japan, assignors to Nippon Piston Ring Co. Ltd., Tokyo, Japan

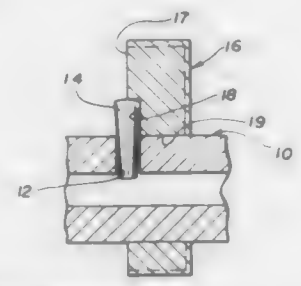
Filed May 4, 1989, Ser. No. 347,224

Claims priority, application Japan, May 23, 1988, 63-66898[U]

The portion of the term of this patent subsequent to Mar. 12, 2008, has been disclaimed.

Int. Cl.[5] F16H *53/00*; B25G *3/28*

U.S. Cl. 74—567 1 Claim



1. A camshaft comprising

a steel shaft,

at least one pin-receiving hole formed in the outer surface of said shaft and perpendicular to the axis of said shaft,

cam pieces made from a sintering alloy material and secured to said shaft by sintering,

a pin-receiving groove formed in the side surface of each of said cam pieces,

a positioning pin having a lower portion inserted into and tightly held by each of said holes and an upper portion fitted in said pin-receiving groove to define the axial and peripheral portions of said cam pieces on said shaft when said cam piece is sintered,

said positioning pin having a tapered configuration and said pin-receiving hole having a straight configuration.

5,009,124

WRIST PIN

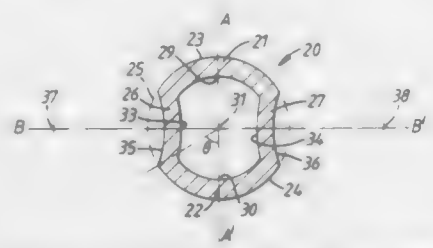
Olivier Beaurepaire, Annecy, France, and Frederick H. Thompson, Bradford, England, assignors to AE PLC, Rugby, England

Continuation of Ser. No. 325,048, Mar. 16, 1989, abandoned, which is a continuation of Ser. No. 9,897, Feb. 2, 1987, abandoned. This application Feb. 27, 1990, Ser. No. 485,885

Claims priority, application United Kingdom, Feb. 13, 1986, 8603582

Int. Cl.[5] F16C *3/04*

U.S. Cl. 74—595 11 Claims



1. A wrist pin comprising an elongate, substantially hollow member having two spaced-apart convex portions each having a substantially cylindrical outer form and which co-operate with corresponding surfaces in wrist pin bosses of an associated piston and in the small end of an associated connecting rod wherein said convex portions are connected by walls of greater radius of curvature than the radius of curvature of said convex portions.

5,009,125

SPEED CONTROL STRUCTURE

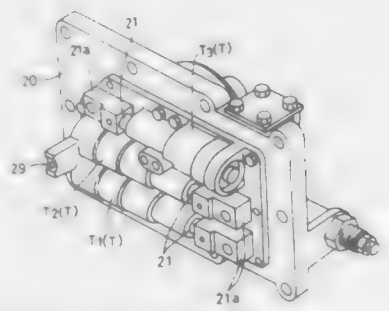
Satoshi Machida, and Akio Hattori, both of Osaka, Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Nov. 1, 1989, Ser. No. 431,019

Claims priority, application Japan, Jan. 26, 1989, 1-19309; Jan. 27, 1989, 1-18293; Feb. 3, 1989, 1-26278

Int. Cl.[5] F16H *57/02*, *5/12*

U.S. Cl. 74—606 R 3 Claims



1. A speed control structure comprising;

change speed means including a hydraulic clutch,

a transmission case for housing said change speed means having an opening to expose said hydraulic clutch,

a lid for closing said opening, and

hydraulic control means for controlling said hydraulic clutch, said hydraulic control means including;

hydraulic actuator means for effecting change speed,

a speed control valve for controlling said hydraulic actuator means,

a pilot operated switch valve mounted on an oil line extending to said hydraulic clutch and operatively connected to said hydraulic actuator means for disengaging said hydraulic clutch to start a change speed by said hydraulic actuator means, and engaging said hydraulic clutch upon completion of the change speed, and

a pilot control valve for controlling pilot pressure for the switch valve in response to the operation of said hydraulic actuator means,

wherein said lid carries said hydraulic actuator means mounted on an inside face thereof, said switch valve and said speed control valve mounted on an outside face thereof, and said pilot control valve mounted inside said transmission case.

5,009,126

HYDROSTATIC-MECHANICAL DRIVE SYSTEM

Erwin Meisinger, Hauzenberg, and Jürgen Zimmer, Passau, both of Fed. Rep. of Germany, assignors to Zahnfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

PCT No. PCT/EP88/00889, § 371 Date Apr. 5, 1990, § 102(e) Date Apr. 5, 1990, PCT Pub. No. WO89/03320, PCT Pub. Date Apr. 20, 1989

PCT Filed Oct. 5, 1988, Ser. No. 469,572

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1987, 3734622

Int. Cl.[5] F16H *47/06*

U.S. Cl. 74—733.1 3 Claims

1. A hydrostatic-mechanical drive system particularly for agricultural and construction vehicles, said system comprising:

an adjustable hydrostatic gearbox including a servohydraulic pump, said gearbox employing for control a hydraulic pressure medium operating in a hydrostatic cycle, said cycle including a high-pressure segment;

a mechanical two step gearbox subsequently serially connected to said adjustable hydrostatic gearbox, comprising:

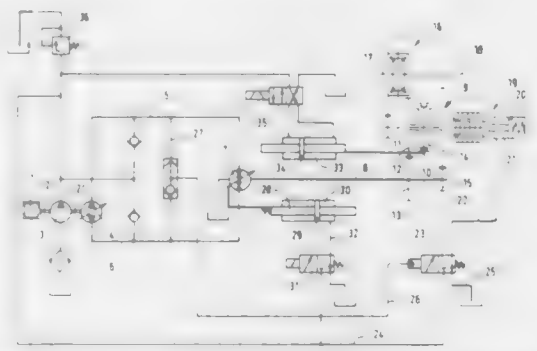
a driven shaft; and

a mechanical parking brake acting directly upon said driven shaft, said brake including a cylinder;

a pressure duct leading away from said adjustable hydrostatic gearbox;

a 3/2-way valve communicating with said pressure duct and said cylinder;

a pressure-free return duct communicating with said 3/2-way valve and said pressure duct; and



wherein said parking brake is actuated by a branching off of said pressure medium from said high-pressure segment of said hydrostatic cycle through said pressure duct to switch said 3/2-way valve either causing actuation of said cylinder of said parking brake with pressure from said servohydraulic pump or causing connection of said parking brake with said pressure-free return valve.

5,009,127

TRANSMISSION RATIO CONTROL SYSTEM FOR A CONTINUOUSLY VARIABLE TRANSMISSION

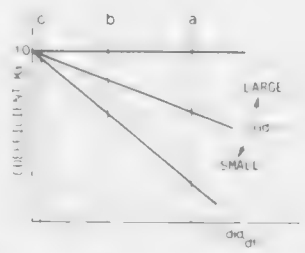
Yoshihiko Morimoto, Mitaka, and Tetsushi Kohno, Musashino, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1989, Ser. No. 418,188

Claims priority, application Japan, Oct. 14, 1988, 63-260185

Int. Cl.[5] B60K *41/14*

U.S. Cl. 74—866 3 Claims



1. A control system for a continuously variable transmission for transmitting power of an engine mounted on a motor vehicle, the engine having a throttle valve, the transmission comprising a drive pulley having a hydraulically shiftable disc and a hydraulic cylinder for operating the disc, a driven pulley having a hydraulically shiftable disc and a hydraulic cylinder for operating the disc of the driven pulley, a belt engaged with both pulleys, the control system comprising a first hydraulic circuit having a pump for supplying oil to both the hydraulic cylinders, a transmission ratio control valve for controlling the oil supplied to the cylinder of the drive pulley to change the transmission ratio of the transmission to a desired transmission ratio, the system comprising:

transmission ratio control means for operating the transmission ratio control valve;

a drive pulley speed sensor for producing a drive pulley speed signal;

a driven pulley speed sensor for producing a driven pulley speed signal;

a throttle position sensor for sensing an opening degree of the throttle valve and for producing a throttle opening degree signal;

first calculator means responsive to the drive pulley speed signal and the driven pulley speed signal for producing an actual transmission ratio signal;

means responsive to the throttle opening degree signal and to the actual transmission ratio signal for producing a desired transmission ratio signal;

second calculator means responsive to the desired transmission ratio signal for producing a desired transmission ratio changing speed signal;

third calculator means responsive to the actual transmission ratio signal and the desired transmission ratio signal for calculating a difference between both the ratio signals and for producing a ratio difference signal;

coefficient setting means responsive to the desired transmission ratio changing speed signal and to the ratio difference signal for producing a correcting coefficient;

correcting means responsive to said actual and desired transmission ratio signals for producing an actual transmission ratio changing speed signal using the correcting coefficient; and

driving means responsive to the actual transmission ratio changing speed signal for operating the transmission ratio control means for controlling the transmission ratio.

5,009,128

INDICATING SYSTEM FOR AN AUTOMATIC MOTOR VEHICLE TRANSMISSION

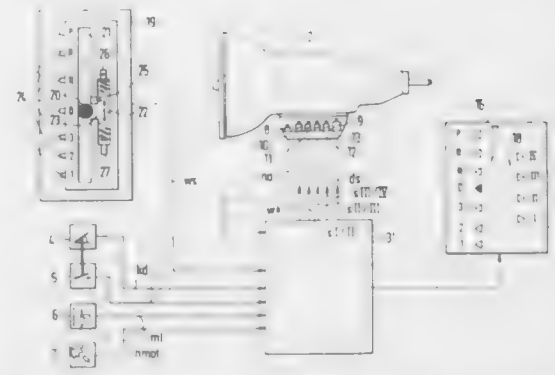
Willi Seidel, Eberdingen-Hochdorf; Roland Ehniss, Pforheim; Klaus Skabrond, Leonberg-Warmbronn; Ulrich Sauter, Tiefenbronn; Ulrich Maier, Freiberg, and Roland Ebner, Villingen-Schwenningen, all of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Sep. 28, 1989, Ser. No. 413,757

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1988, 3832971

Int. Cl.[5] F16H *59/00*; B60K *20/02*

U.S. Cl. 74—866 15 Claims



1. An indicating system of an electronically or electrohydraulically controlled motor vehicle multi-speed transmission, said transmission having a selector lever for the preselection of a driving position in which are engaged individual or several automatically shiftable driving gears in a fully automatic operating mode and a semi-automatic operating mode in which the driving gear may be selected manually, said indicating system including:

first displaying means for displaying the preselected driving position corresponding to the selector lever position by means of first indicating elements marked by alphanumerical symbols, and

second displaying means for displaying an indication of a driving gear that is currently engaged, said second displaying means including second indicating elements

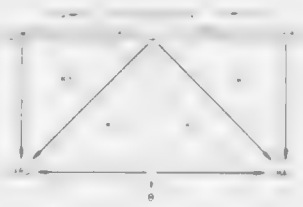
which are viewable separately from and simultaneously with the first indicating elements;
wherein the first and second indicating elements are spaced from one another; and
wherein the second indicating elements are controlled only during the semi-automatic operating mode with a manual selection of the driving gears.

5,009,129

TRANSMISSION RATIO CONTROL SYSTEM FOR A CONTINUOUSLY VARIABLE TRANSMISSION

Yoshihiko Morimoto, Mitaka, and Tetsushi Kohno, Musashino, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1989, Ser. No. 418,187
Claims priority, application Japan, Oct. 14, 1988, 63-260183; Oct. 14, 1988, 63-260184
Int. Cl.[5] B60K *41/14*
U.S. Cl. 74—866 **4 Claims**



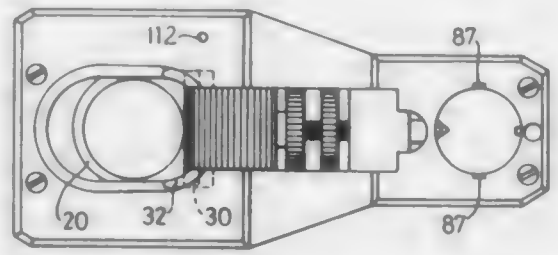
1. A control system for a continuously variable transmission for transmitting power of an engine mounted on a motor vehicle, the engine having a throttle valve, the transmission comprising a drive pulley having a hydraulically shiftable drive disc and a hydraulic cylinder for operating the drive disc, a driven pulley having a hydraulically shiftable driven disc and a hydraulic cylinder for operating the driven disc, a belt engaged with both of said pulleys, the control system comprising a first hydraulic circuit having a pump for supplying oil to both of the hydraulic cylinders, a transmission ratio control valve for controlling the oil supplied to the cylinder of the drive pulley to change a transmission ratio of the transmission to a desired transmission ratio, the system comprising:
transmission ratio control means for operating the transmission ratio control valve;
a drive pulley speed sensor for producing a drive pulley speed signal;
a driven pulley speed sensor for producing a driven pulley speed signal;
a throttle position sensor for sensing an opening degree of the throttle valve and for producing a throttle opening degree signal;
first calculator means responsive to the drive pulley speed signal and the driven pulley speed signal for producing an actual transmission ratio signal;
means responsive to the throttle opening degree signal and to the actual transmission ratio signal for producing a desired transmission ratio signal;
second calculator means responsive to the desired transmission ratio signal and to the actual transmission ratio signal for producing a transmission ratio changing speed signal;
third calculator means responsive to the throttle opening degree signal for producing a throttle opening degree changing speed signal;
coefficient setting means responsive to the driven pulley speed signal as a vehicle speed signal and to the throttle opening degree changing speed signal for producing a correcting coefficient, wherein the correcting coefficient represents an increasing function of the throttle opening degree changing speed signal and a decreasing function of the driven pulley speed signal as said vehicle speed signal in a low vehicle speed range lower than a predetermined vehicle speed;
said second calculator means comprising correcting means for correcting the transmission ratio changing speed signal with the correcting coefficient so as to provide a higher transmission ratio changing speed in a low vehicle speed range; and
driving means responsive to the transmission ratio changing speed signal corrected by the correcting means for operating the tranmission ratio control means, for controlling the transmission ratio.

5,009,130

COAXIAL CABLE STRIPPER

Zdzislaw Bieganski, "Brushwood", Kinsbourne Green, Harpenden, Hertfordshire, United Kingdom

Filed Dec. 13, 1989, Ser. No. 449,993
Claims priority, application United Kingdom, Dec. 22, 1988, 8829895
Int. Cl.[5] H02G *1/12*
U.S. Cl. 81—9.4 **14 Claims**



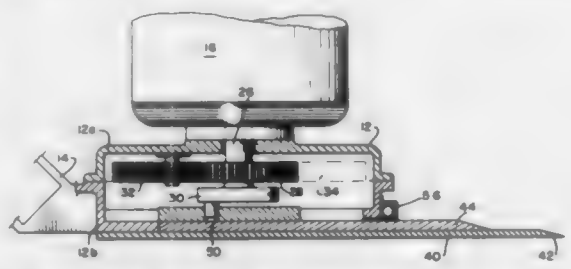
1. A tool for stripping a coaxial cable comprising a body having an opening therein; a blade carrier accommodated in said opening for sliding movements along a path relative to said body; a plurality of spaced apart, parallel blades supported by said blade carrier and projecting different distances beyond said carrier; means for supporting a coaxial cable in said body transverse to the path of sliding movement of said blade carrier and in a position to be engaged by said blades in response to movement of said blade carrier in one direction along said path; and ratchet and pawl means reacting between said body and said carrier for releasably latching said carrier in a selected position relative to said body.

5,009,131

ROOF SHINGLE STRIPPER APPARATUS

Brian J. Alto, 382 Morris Ave., A3, Summit, N.J. 07901, and Gregory F. Alto, 68 Runnymeade Rd., Berkeley Heights, N.J. 07922

Filed May 4, 1990, Ser. No. 519,406
Int. Cl.[5] E04D *15/00*
U.S. Cl. 81—45 **9 Claims**



1. Roof shingle stripper apparatus, comprising:
a housing having a longitudinal axis;
nail-cutting means slidably mounted in said housing for movement, relative to said housing, perpendicular to said axis; and

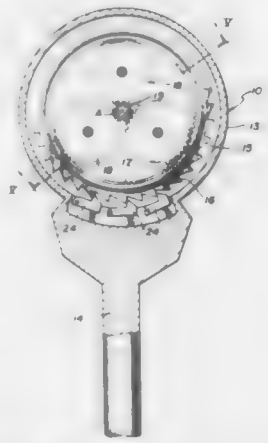
a prime mover, mounted to said housing and coupled to said means for moving said means in such perpendicular movement; further including
means immovably fastened to said housing for lifting portions of shingles; wherein
said nail-cutting means is slidably disposed upon said lifting means.

5,009,132

TORQUE DEVICE

Daniel G. Gilberto, Newington, Conn., assignor to Robert A. Grant; Douglas A. Bourque and Mildred T. Felt, all of Fitchburg, Mass., a part interest

Filed May 31, 1990, Ser. No. 531,114
Int. Cl.[5] B25B *17/00*
U.S. Cl. 81—57.3 **10 Claims**



1 Torque device, comprising:
(a) first and second outer housings located in spaced relationship,
(b) a third intermediate housing lying between and joining the first and second housings, the intermediate housing having means for rotating it about a main axis,
(c) a ring lying within the intermediate housing and rotatable therein about the said main axis, the ring being formed with ratchet teeth on its outer periphery and with gear teeth on its inner periphery,
(d) a cluster of planetary gears carried within the ring and engaging the gear teeth of the ring, and
(e) a sun gear located within the cluster for rotation about the main axis and extending axially into engagement with both the first and second housings,
wherein each of the first and second outer housings has an output element centered on the main axis and extending axially in the direction away from the intermediate housing.

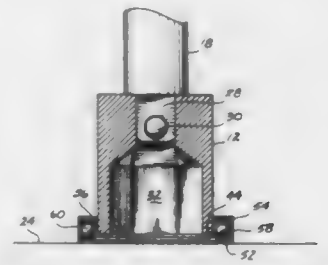
5,009,133

SURFACE PROTECTIVE FASTENER TOOL

David R. Carey, 17052 - 4th NE., Seattle, Wash. 98155

Continuation-in-part of Ser. No. 219,088, Jul. 14, 1988, abandoned. This application Jun. 7, 1989, Ser. No. 362,760
Int. Cl.[5] B25B *13/58*
U.S. Cl. 81—180.1 **48 Claims**

1. Apparatus for protecting an underlying surface from abrasion by contact with a tool used to rotate a threaded fastener, comprising:
a sleeve having a resilient cushion disposed at one end, said sleeve being sized to fit over the tool so that the resilient cushion is proximate a portion of the tool that is used to engage the threaded fastener and extends beyond a distal end of said tool, preventing it from contacting the underlying surface;
means for retaining the sleeve on the tool, including bearing means for supporting the tool to prevent it contacting the underlying surface and permitting the sleeve to remain stationary against the underlying surface as an operator turns the tool within the sleeve to rotate the threaded



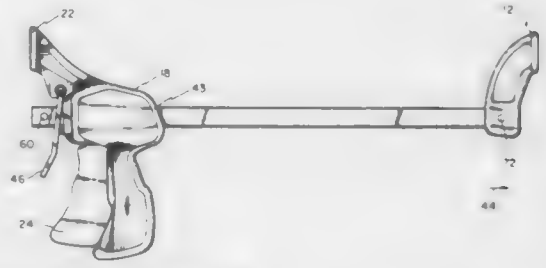
fastener, said resilient cushion carrying any force directed through the tool against the underlying surface during use of the tool, so that the underlying surface is protected from abrasion that would otherwise occur due to the tool contacting said surface.

5,009,134

QUICK-ACTION BAR CLAMP

Joseph A. Sorensen, and Dwight L. Gatzemeyer, both of Lincoln, Nebr., assignors to Petersen Manufacturing Co., Inc.

Continuation-in-part of Ser. No. 234,173, Aug. 19, 1988, Pat. No. 4,926,722. This application Feb. 15, 1990, Ser. No. 480,283
The portion of the term of this patent subsequent to May 22, 2007, has been disclaimed.
Int. Cl.[5] B25B *5/02*
U.S. Cl. 81—487 **8 Claims**



1. A hand tool comprising
a fixed jaw;
a movable jaw, said fixed jaw and movable jaw facing in opposite directions;
a slide bar, said movable jaw being mounted on one end of said slide bar, said slide bar being movable to bring said movable jaw toward and away from said fixed jaw;
support means for supporting said slide bar, said fixed jaw being connected to said support means;
one-way drive means for releasably engaging and, when engaged, for advancing said slide bar and attached movable jaw, said movable jaw being subject to advancement away from said fixed jaw when said one-way drive means is disengaged;
said one-way drive means having a driving lever, and a braking lever normally engaging said slide rod, said braking lever when engaging said slide bar preventing motion of said movable jaw toward said fixed jaw, said braking lever having an engaging portion extending outwardly from said support means,
a trigger handle pivotably mounted to said support means rearwardly of said breaking lever and contacting said driving lever,
said engaged driving lever moving said slide rod and said movable jaw away from said fixed jaw, said support means including a handgrip, a trigger-type relationship existing between said trigger handle and said handgrip, said bar clamp being holdable at said handgrip, said braking lever and the trigger handle being selectively operable

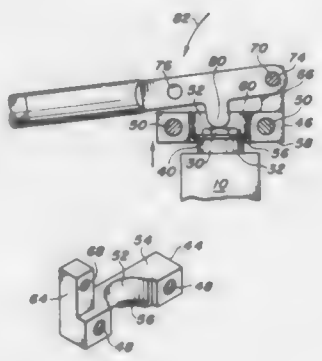
by the same hand in such a manner that one of the index and middle fingers is positioned on the engaging portion of the braking lever to actuate the braking lever, while the other fingers encircle and contain the trigger handle and the handgrip.

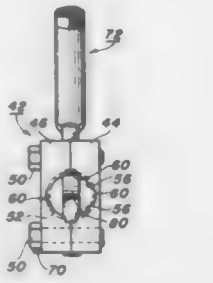
5,009,135

BRAKE ADJUSTMENT TOOL

Lawrence J. Arnold, Eagle Harbor, N.Y., assignor to Edward Arnold, Hilton, N.Y.

Filed Sep. 26, 1989, Ser. No. 412,515
Int. Cl.[5] B25B *9/00*
U.S. Cl. 81—488 **26 Claims**





1. A tool for restoring retracted locking collars for brake adjusting screws to their original positions comprising:

an adjustable clamp having jaw portions for gripping a peripheral surface of the locking collar;

each jaw portion forming a load bearing surface against an end rim of the locking collar;

means for adjusting spacing between said jaw portions for releasably securing said adjustable clamp to the locking collar;

a pivot support mounted on a top surface of said adjustable clamp defining a pivot axis;

a lever arm mounted about said pivot axis having a handle formed at one end and a cam extension located along said lever arm in a position that may be pivoted into contact with a head portion of the adjusting screw; and

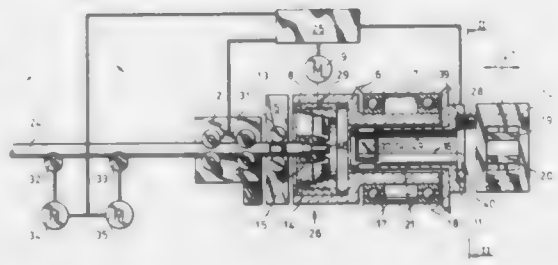
said load bearing surfaces being defined by projecting edges formed adjacent to a bottom surface of said adjustable clamp.

5,009,136

TURNING MACHINE

Reiner Glomb, Velbert; Peter Maresch, and Ralf Wagner, both of Solingen, all of Fed. Rep. of Germany, assignors to Th. Kieserling & Albrecht GmbH & Co., Werkzeugmaschinenfabrik, Solingen, Fed. Rep. of Germany

Filed Dec. 8, 1989, Ser. No. 447,742
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1988, 3843257
Int. Cl.[5] B23B *5/12*
U.S. Cl. 82—127 **3 Claims**



1. Turning machine having a frame for turning rods, pipes, or the like which comprises the following features:

(a) infeed means operatively mounted on the inlet side of the turning machine for infeeding a pre-cut rod into said inlet side;

(b) rotating cutter-head means operatively mounted in said turning machine downstream from said infeed means for turning off a peripheral layer of said rod;

(c) said rotating cutter-head means being mounted adjacent to the upstream end of a hollow shaft which is rotatably coaxially mounted in the frame of said machine;

(d) a rear guide mechanism for approximately centering the rods, pipes or the like operatively coaxially mounted in said machine downstream of said cutter-head means;

(e) the rear guide mechanism is operatively mounted on said machine frame and extends axially into said hollow shaft adjacent to said cutter-head means;

(f) withdrawal means for withdrawing the finished turned workpiece from said turning machine mounted downstream from said rear guide mechanism;

(g) said rear guide mechanism includes a plurality of individually spring biased guide elements operatively mounted therein which abut against said rod;

(h) said rear guide mechanism includes central adjustment means operatively mounted in said machine for simultaneously adjusting all of said guide elements;

(i) said central adjustment means includes spring biasing means whereby said spring biasing means selectively actuates said central adjustment means to simultaneously adjust all guide elements;

(j) for each of said individual guide elements there are arranged two stops on said adjusting means;

(k) a first stop of said two stops is rigidly mounted on said adjusting means, whereas the second stop of said two stops is spring biasedly mounted on said adjusting means whereby said rear guide mechanism may adjust to affect appropriate centering of the rod being turned;

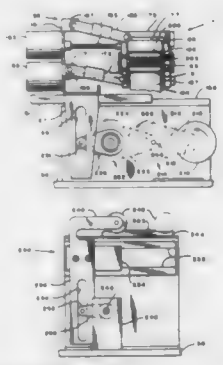
(l) the first rigid stop limits the spring deflection movement of each individual guide element which coacts with the second stop.

5,009,137

CUTTER MODULE FOR A MODULAR MAILING MACHINE

Hugh S. Dannatt, Bethel, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Continuation of Ser. No. 135,107, Dec. 18, 1987, abandoned.
This application Jan. 8, 1990, Ser. No. 463,882
The portion of the term of this patent subsequent to Dec. 12, 2006, has been disclaimed.
Int. Cl.[5] B26D *5/22*
U.S. Cl. 83—209 **3 Claims**



1. A combination comprising:

a mailing machine having a base and support walls extending therefrom; a tape module including a tape track, support means for supporting said tape track in a generally cantilevered manner, tape positioning means for selectively positioning said support means in a first position and in a second position laterally displaced from said first position, said tape positioning means having a track formed along one of said mailing machine support walls,

a rail slidable mounted on said track,

a first bracket fixably mounted to said rail, said support means being pivotally mounted to said first bracket,

a second bracket fixably mounted to said rail, said second bracket having an elongated slot formed therein

a motor fixably mounted to said base of said mailing machine,

a crank rotatably mounted in said mailing machine and having a pin slidably mounted in said slot of said second bracket such that rotation of said crank causes said second bracket to displace said rail along said track,

means communicating said motor to said crank such that actuation of said motor causes rotation of said crank,

tape feed means for selectively feeding imprinting tape to and through said tape track; and,

a cutter module having a cutter support member slidably mounted to one of a mailing machine support walls such that said cutter support member can be slidably displaced laterally with respect to said tape track, a rotary cutter blade rotatably mounted to said cutter support member, said means for communicating further having means for reciprocally displacing said cutter support member traverse to said tape track of said tape module, and means for providing a cutting surface coactive with said rotary cutter blade.

5,009,138

ROTARY CUTTER DEVICE

C. William Rettie, 306 Hickory Dr., Chapel Hill, N.C. 27514

Filed Apr. 6, 1990, Ser. No. 505,725
Int. Cl.[5] B27C *5/02*
U.S. Cl. 83—413 **17 Claims**

1. A rotary cutter apparatus, comprising:

(a) a base;

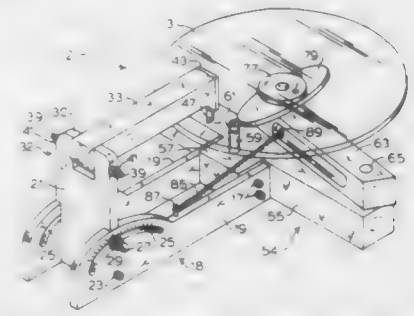
(b) an articulated cutter arm assembly, comprising:

(i) a main cutter arm; and

(ii) a support arm having first and second ends, with the first end being coupled to the base so as to allow pivotal movement of the first end, and with the second end being coupled to the main cutter arm so as to be pivotally movable with respect thereto, such that the main cutter arm is translatable along a longitudinal direction;

(c) an elongate swing arm having first and second ends, and coupled at its first end to the base so as to be pivotally swingable about a first axis;

(d) a rotatable table assembly, rotatable about a second axis parallel to said first axis, mounted on the second end of the swing arm and arranged to accommodate rotation of the table assembly concurrent with pivotal swinging of said swing arm about said first axis;



(e) a template cam coupleable to said table assembly and rotatable therewith about said second axis;

(f) a bearing member attached to said base; and

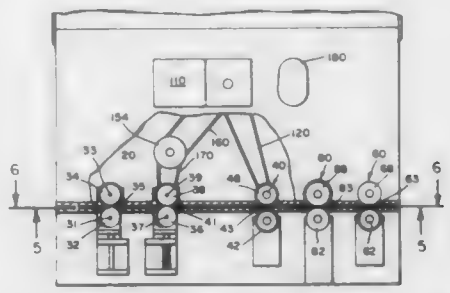
(g) biasing means interconnecting (i) a portion of the swing arm other than its first end, and (ii) the base, for maintaining said template cam in contact with the bearing member during rotation of said rotatable table assembly about said second axis, concurrently with pivotable swinging of said swing arm about said first axis to the extent required to maintain said contact.

5,009,139

CHECK DESTRIPPER

Yosi Nissim, 23509 Spires St., West Hills, Calif. 91304

Filed Mar. 31, 1989, Ser. No. 332,525
Int. Cl.[5] B26D *1/22, 5/22*
U.S. Cl. 83—419 **3 Claims**



1. An apparatus for separating a check which has attached to it a corroborating paper strip in a manner such that the corroborating paper strip is aligned along the bottom edge of the check and the two are attached together by means which creates a line of joinder between the lower edge of the check and the upper edge of the corroborating paper strip, comprising:

a. an opening in said apparatus through which said check and attached corroborating paper strip is inserted;

b. a horizontally aligned plate;

c. means for orienting the check and attached corroborating paper strip such that the bottom edge of the corroborating paper strip is adjacent said plate, and the check and corroborating paper strip are approximately perpendicular to said plate, further comprising,

(i) a first pair of wheels which are parallel to each other and touch each other at an adjoining point along their respective circumferences, the pair of wheels aligned at an angle relative to said plate, and caused to rotate such that one wheel rotates in the clockwise direction while the other wheel rotates in the counterclockwise direction,

(ii) a second pair of wheels which are parallel to each other and touch each other at an adjoining point along their respective circumferences, the pair of wheels aligned at an angle relative to said plate and separated from said first set of wheels by a horizontal gap, and caused to rotate such that one wheel rotates in the clockwise direction while the other wheel rotates in the counterclockwise direction;

d. means for separating said check and corroborating paper strip along said line of joinder and causing said separated check to be transported to a first location and causing said separated corroborating paper strip to be transported to a second location, further comprising,

(i) a first set of wheels including,

(a) a pair of upper wheels which are parallel to each other and touch each other at an adjoining point along their respective circumferences, the pair of wheels aligned parallel relative to said plate, and caused to rotate such that one wheel rotates in the clockwise direction while the other wheel rotates in the counterclockwise direction,

(b) a pair of lower wheels separated from said pair of upper wheels by a vertical gap, with a respective one wheel from said pair of upper wheels and one wheel from said pair of lower wheels being supported on the same shaft, the pair of lower wheels which also parallel to each other and touching each other at an adjoining point along their respective circumferences, the pair of wheels aligned parallel relative to said plate, and caused to rotate such that one wheel rotates in the clockwise direction while the other wheel rotates in the counterclockwise direction,

(ii) a second set of wheels separated from said first set of wheels by a horizontal gap, including,

(a) a pair of upper wheels which are parallel to each other and touch each other at an adjoining point along their respective circumferences, the pair of wheels aligned parallel relative to said plate, and caused to rotate such that one wheel rotates in the clockwise direction while the other wheel rotates in the counterclockwise direction,

(b) a pair of lower wheels separated from said pair of upper wheels by a vertical gap, one of the lower wheels having two sections and one of the lower wheels have one section, with an upper wheel and the lower wheel having two sections supported on one shaft while the other upper wheel and the lower wheel having one section are supported on two separate shafts, the pair of lower wheels also parallel to each other and touching each other at an adjoining point along their respective circumferences, the pair of wheels aligned parallel relative to said plate, and caused to rotate such that one wheel rotates in the clockwise direction while the other wheel rotates in the counterclockwise direction,

(c) the lower wheel having two sections including an upper section of smaller diameter than the lower section aligned relative to the other lower wheel having one section such that the upper surface of the lower section of the two section wheel comes in contact with the lower circumference of the other lower wheel having one section to thereby create a knife which can cut the check and attached corroborating paper strip at the location of the point of touching of the two wheels;

(b) a pair of lower wheels separated from said pair of upper wheels by a vertical gap, with a respective one wheel from said pair of upper wheels and one wheel from said pair of lower wheels being supported on the same shaft, the pair of lower wheels also parallel to each other and touching each other at an adjoining point along their respective circumferences, the pair of wheels aligned parallel relative to said plate, and caused to rotate such that one wheel rotates in the clockwise direction while the other wheel rotates in the counterclockwise direction,

(c) one of said pair of lower wheels having two sections, with an upper section of smaller diameter than the lower section and aligned relative to the other lower wheel such that the upper surface of the lower section comes in contact with the lower circumference of the other lower wheel to thereby create a knife which can cut the check and attached corroborating paper strip at the location of the point of joinder of the two wheels;

(iii) a third set of wheels separated from said first set of wheels by a horizontal gap, including,

(a) a pair of upper wheels which are parallel to each other and touch each other at an adjoining point along their respective circumferences, the pair of wheels aligned parallel relative to said plate, and caused to rotate such that one wheel rotates in the clockwise direction while the other wheel rotates in the counterclockwise direction,

(b) a pair of lower wheels separated from said pair of upper wheels by a vertical gap, with a respective one wheel from said pair of upper wheels and one wheel from said pair of lower wheels being supported on the same shaft, the pair of lower wheels also parallel to each other and touching each other at an adjoining point along their respective circumferences, the pair of wheels aligned parallel relative to said plate, and caused to rotate such that one wheel rotates in the clockwise direction while the other wheel rotates in the counterclockwise direction; and

d. the three sets of wheels in means for separating said check and corroborating paper strip aligned relative to said first and second pair of wheels of said means for orienting said check and attached paper strip such that each of the upper pair of wheels comes in contact with said check along the point of touching between each pair of upper wheels and each of the lower pair of wheels comes in contact with said corroborating paper strip along the point of touching between each pair of lower wheels;

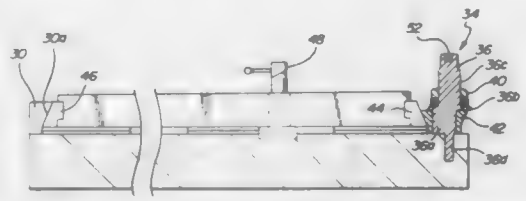
e. whereby when said combination check and attached corroborating paper strip is inserted into said apparatus through said opening, said first pair of wheels pulls said check and attached corroborating paper strip into said apparatus by causing said check and attached corroborating paper strip to be guided between said first pair of wheels along their point of joinder and pulled toward said plate with the leading edge of said corroborating paper strip being pulled toward said plate and said second pair of wheels continues the process of pulling said check and attached corroborating paper strip toward said plate to orient the lower edge of the attached paper strip along the surface of said plate and cause said check and attached paper strip to be aligned perpendicular to said plate, and when said check and attached corroborating paper strip leaves the second pair wheels of said means for orienting the check and attached corroborating paper strip, said first set of wheels pulls the check and attached corroborating paper strip horizontally between the pair of wheels and guides, it to the second pair of wheels, the upper pair of wheels of the second pair of wheels pulls the check and corroborating paper strip such that the lower pair wheels cuts the check and corroborating paper strip along their line of joinder, and the separated check and corroborating paper strip are guided to the third pair of wheels wherein the upper pair of wheels causes the separated check to be guided to one location outside the apparatus while the lower pair of wheels causes the separated corroborating paper strip to be guided to a second location outside the apparatus.

5,009,140

CLAMPING APPARATUS FOR CUT-OFF DIE SET

John H. Nolan, Mt. Clemens, and Dennis H. Skvarce, Wixom, both of Mich., assignors to Alpha Industries, Inc., Novi, Mich.

Continuation-in-part of Ser. No. 417,033, Oct. 14, 1989, abandoned. This application Dec. 12, 1989, Ser. No. 449,594
Int. Cl.[5] B26D *1/60*; B23D *21/00*
U.S. Cl. 83—698 **15 Claims**



7. A clamping apparatus for securing die components to the carriage of a cut-off press comprising:

a platen having two outwardly beveled opposite edges;

die components secured to the platen;

stop means fixed to said carriage having an inwardly beveled edge to coact with one of the outwardly beveled edges of the platen; and

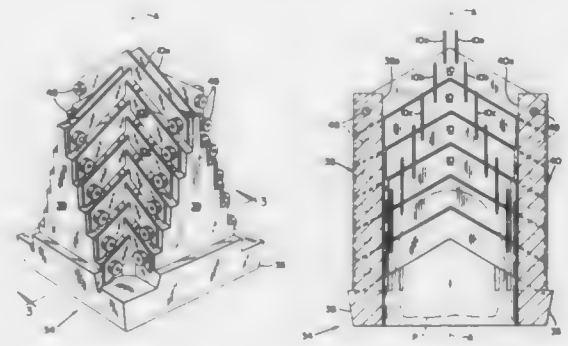
rotatable eccentric clamping means, including a bracket mounted to the carriage and an axial member, having an inwardly beveled eccentric portion, journaled at one end in the carriage and journaled at the opposite end in the bracket, located on the carriage to coact with the outwardly beveled edge opposite the stop means to wedge said platen between the stop means and the eccentric clamping means.

5,009,141

BLADE ASSEMBLY FOR SLICING FOOD PRODUCTS

John C. Julian, Tualatin, and David S. Phelps, Tigard, both of Oreg., assignors to Lamb-Weston, Inc., Tri-Cities, Wash.

Filed Sep. 23, 1985, Ser. No. 779,209
Int. Cl.[5] B26D *1/02*
U.S. Cl. 83—857 **11 Claims**



1. A food slicing apparatus for slicing vegetables into strips, comprising:

a first set of cutting elements, each having a first edge of chevron configuration and an apex, and a second sharpened edge of chevron configuration opposite said first edge;

a second set of cutting elements, each having a first edge of chevron configuration and an apex, and a second sharpened edge of chevron configuration opposite said first edge of said second set for slicing vegetables;

the cutting elements each having two angled blade segments with knife edges thereon meeting at a downstream knife edge convergence;

cutting element mounting means for mounting said first and second set of cutting elements in a substantially pyramidal configuration such that (1) said cutting elements of said first set are substantially parallel to one another, and (2) said cutting elements of said second set are substantially parallel to one another and substantially perpendicular to said first set of cutting elements, the pyramidal configuration having an apex at a downstream end thereof;

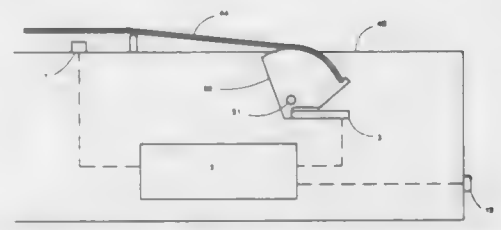
said cutting element mounting means further mounting both said cutting elements of said first and second sets in axially staggered, transversely spaced pairs such that each successive downstream pair of cutting elements is disposed incrementally closer to the axial centerline of the apparatus.

5,009,142

MEANS AND METHOD FOR AUTOMATIC RESONANCE TUNING

Noel T. Kurtz, 186 Besemer Hill Rd., Ithaca, N.Y. 14850

Filed Mar. 26, 1990, Ser. No. 498,728
Int. Cl.[5] G10G *7/02*
U.S. Cl. 84—454 **18 Claims**



1. An apparatus for adjustment of resonance frequency of a filament, comprising:

(a) a piezoelectric actuator that changes in length as an electric field is applied thereto and is connected to said filament either directly or through means for amplifying the movement of said piezoelectric actuator such that a change in the length of said piezoelectric actuator changes the tension of said filament,

(b) means for measuring frequency of said filament,

(c) means for controlling resonance frequency adjustment connected to said means for measuring resonance frequency and said piezoelectric actuator such that said means for controlling frequency adjustment adjusts the resonance frequency of said filament by varying said electric field applied to said piezoelectric actuator.

5,009,143

EIGENVECTOR SYNTHESIZER

John V. Knopp, 10407 SE. 174th Apt. 1207, Renton, Wash. 98055

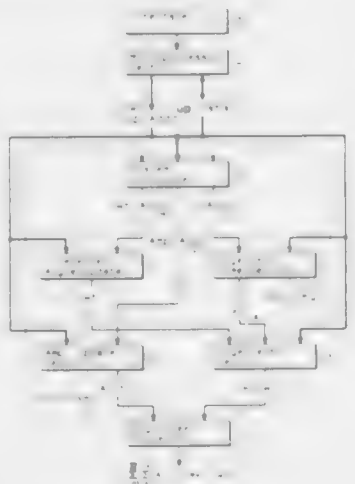
Continuation of Ser. No. 42,109, Apr. 22, 1987, abandoned. This application Dec. 26, 1989, Ser. No. 456,063
Int. Cl.[5] G10H *1/08, 7/02*
U.S. Cl. 84—604 **11 Claims**

1. An eigenvector synthesizer comprising:

(a) means for storing in digital representation multiple eigenvector waveshape sets in which each eigenvector waveshape set has been calculated from a covariance matrix which specifies the interaction among related waveshapes of musical instruments and/or sounds,

(b) means for selecting said eigenvector waveshape sets and

eigenvector waveshapes having a time dependent angle within one of said eigenvector waveshape sets,
(c) means for addressing a position on said eigenvector waveshapes with said time dependent angle and thereby obtaining eigenvector waveshape amplitudes,
(d) means for storing in digital representation said time dependent angle,
(e) means for updating said time dependent angle,
(f) means for scaling said eigenvector waveshape amplitudes by multiplying said eigenvector waveshape amplitudes by scalar multipliers and thereby obtaining scaled eigenvector waveshape amplitudes,



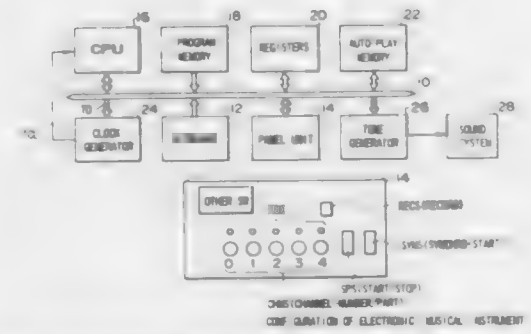
(g) means for storing in digital representation said scalar multipliers,
(h) means for selecting said scalar multipliers which are associated with said eigenvector waveshapes,
(i) means for updating said scalar multipliers,
(j) means for summing said scaled eigenvector waveshape amplitudes within one of said eigenvector waveshape sets and thereby producing a signal which can be used to generate a musical sound and,
(k) means for summing said signal with another signal and thereby producing a complex signal which can be used to generate multiple musical sounds.

5,009,145

AUTOMATIC PERFORMANCE APPARATUS HAVING AUTOMATIC SYNCHRONIZING FUNCTION

Takashi Ishida, and Masao Kondo, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Mar. 8, 1989, Ser. No. 321,228
Claims priority, application Japan, Mar. 8, 1988, 63-54556
Int. Cl.[5] G10H *1/38, 1/40, 7/00*
U.S. Cl. 84—612 **5 Claims**



5. An automatic performance apparatus comprising:
(a) memory means for storing performance information indicative of plural parts to be performed in parallel;
(b) designating means for designating one of said plural parts to be performed;
(c) timing adjusting means for adjusting a performance start timing of a first part to a bar corresponding to the timing of a second part within said plural parts; and
(d) tone generation means for simultaneously generating tones of said first part with tones of said second part in an overlapping manner under control of said timing adjusting means

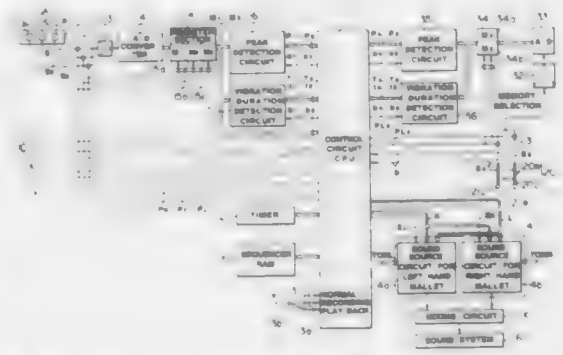
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5,009,146

ELECTRONIC PERCUSSION INSTRUMENT HAVING A MEMORY FUNCTION AND A MUSICAL TONE PARAMETER CONTROL FUNCTION

Hajime Manabe, Higashiyamato, and Yoshiyuki Murata, Tachikawa, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jun. 19, 1989, Ser. No. 368,249
Claims priority, application Japan, Jun. 23, 1988, 63-83265
Int. Cl.[5] G10H *1/053, 1/18*
U.S. Cl. 84—615 **34 Claims**



24. An electronic percussion instrument, comprising:
at least one striking member which can be used for a striking operation,
striking-state detection means provided on said striking member, for detecting a state of the striking operation of the striking member;
striking-data generating means for sequentially generating striking data corresponding to the states of striking operation detected by said striking-state detection means, every time the striking operation by said striking member is executed; and
memory means for sequentially storing the striking data generated by said striking-data generation means

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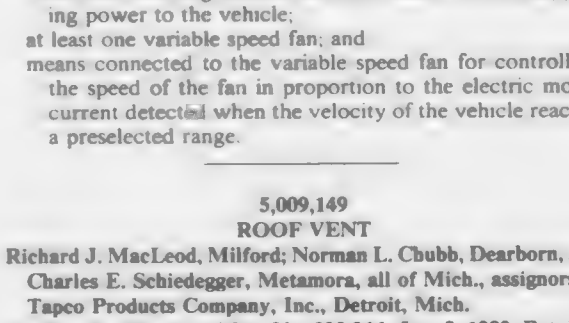
5,009,147

SOUND GENERATING UNIT SYSTEM FOR ELECTRONIC INSTRUMENTS

Takenori Yamamori, Hamamatsu, Japan, assignor to Roland Corporation, Osaka, Japan

Filed May 23, 1989, Ser. No. 356,308
Claims priority, application Japan, May 25, 1988, 63-127486; Jun. 23, 1988, 63-153652
Int. Cl.[5] G10H *1/057, 1/42, 1/46*
U.S. Cl. 84—618 **19 Claims**

1. A system of electronic musical sound generating units for an electronic musical instrument system that comprises at least one device for generating performance controlling messages,
said sound generating units each being responsive to performance controlling messages received from the performance message generating device, and
each of said sound generating units comprising
recording means for recording preferential orders that determine a sequential order by which each sound generating unit receives performance controlling messages;
selecting means for selecting performance controlling messages to be received by said sound generating unit in



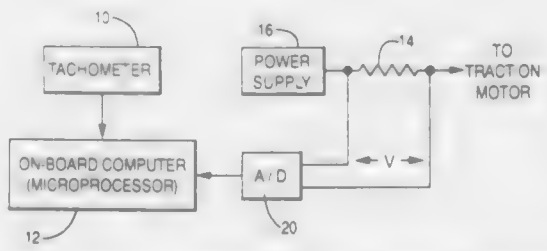
accordance with preferential orders recorded by the recording means; and
tone-generating means for generating musical tones based on performance controlling messages that have been selected by the selecting means.

5,009,148

VEHICLE AIR EXCHANGE ACCORDING TO PASSENGER LOAD

Kenneth A. Karg; Carl K. Hvozda; Robert N. Neddermeyer, and Alexander Feld, all of Pittsburgh, Pa., assignors to AEG Westinghouse Transportation Systems, Inc., Pittsburgh, Pa.

Filed Dec. 1, 1989, Ser. No. 444,787
Int. Cl.[5] B61D *27/00*
U.S. Cl. 98—10 **10 Claims**



1. In a ventilation system for a vehicle powered by an electric motor, the improvement comprising:
means for detecting the velocity of the vehicle;
means for detecting the current of the electric motor supplying power to the vehicle;
at least one variable speed fan; and
means connected to the variable speed fan for controlling the speed of the fan in proportion to the electric motor current detected when the velocity of the vehicle reaches a preselected range.

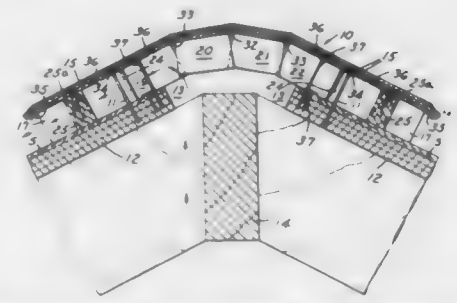
5,009,149

ROOF VENT

Richard J. MacLeod, Milford; Norman L. Chubb, Dearborn, and Charles E. Schiedegger, Metamora, all of Mich., assignors to Tapco Products Company, Inc., Detroit, Mich.

Continuation-in-part of Ser. No. 293,946, Jan. 5, 1989, Pat. No. 4,924,761. This application Dec. 18, 1989, Ser. No. 452,239
Int. Cl.[5] F24F *7/02*
U.S. Cl. 98—42.21 **11 Claims**

1. A roof vent comprising
a one-piece plastic body including a base wall having transversely spaced sets of rows of integral vanes extending from one surface thereof,
each vane having a free end adapted to engage the roof when the vent is in position on a roof,
the vanes in each row of vanes of each set of vanes being longitudinally spaced from one another, parallel to one another, and extending at an acute angle to the axis of the wall and the vanes of the other row of each set of rows being longitudinally spaced from one another, parallel to one another and extending at an oppositely directed acute angle to the longitudinal axis of the wall,
each outermost row of vanes being arranged such that the general plane of each vane intersects the general plane of an adjacent vane of an inner row,
each vane having an outer free edge and an inner free edge,
each vane having the inner free end thereof generally curved such that the free edge of said free end extends outwardly,
a layer of porous material positioned between adjacent rows of vanes,



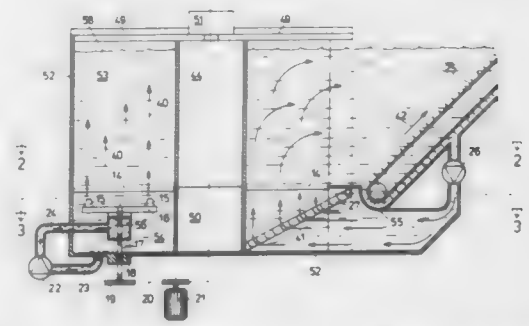
said layer having a height greater than the height of the vanes such that when the vent is positioned with the vanes engaging the roof and the base wall spaced from the roof, air is vented through sinuous paths defined by successive rows of vanes outwardly and water and snow are prevented from entry beneath the vent into the building by the vanes and the layer, and
tubular projections on each vane forming nail openings, said projections being formed with integral membranes closing the openings therein.

5,009,150

DEVICE FOR THE HEATING OR COOLING OF FOOD-STUFFS

Niels J. Andersen, Broby, Denmark, assignor to Cabinnovent ApS, Harby, Denmark

Filed Jan. 30, 1989, Ser. No. 303,858
Claims priority, application Denmark, Feb. 17, 1988, 825/88
Int. Cl.[5] A23L *3/00, 3/04, 3/18;* **A47J** *27/122*
U.S. Cl. 99—360 **12 Claims**



1. Apparatus for treatment of softly packaged food-stuff objects by immersion of said objects into a body of liquid, said apparatus comprising a vessel, said vessel comprising an essentially horizontal bottom wall and at least one essentially vertical side wall, said bottom wall and said at least one side wall being essentially fluid-tight and being joined in an essentially fluid-tight fashion in order that said vessel is adapted to hold a body of liquid, a floor for supporting said objects within said body of liquid at a level above said bottom wall, said floor comprising a grid or a grate with openings, jet means arranged below said bottom wall and above said floor, said jet means

being adapted to eject liquid from a level within said body of liquid and in a generally upward direction so as to agitate said body of liquid, and means to move said jet means while ejecting liquid in a generally oscillating or revolving pattern.

5,009,151

BARBECUING PROTECTIVE FOOD SUPPORT

Robert E. Hungerford, 116 Lake Desire Dr., N., Renton, Wash. 98058

Filed Apr. 14, 1989, Ser. No. 339,059
Int. Cl.[5] A47J *37/06*
U.S. Cl. 99—445 **13 Claims**



1. A protective food support comprising a plurality of substantially parallel troughs joined at spaced crests, said plurality of troughs having a first side and a second side, the first side of said plurality of troughs being a substantially inverted image of the second side of said troughs, said spaced crests on the first side being arranged to support food over said troughs and said spaced crests on the second side arranged to support the food support on a primary grill when the first side is the upper side, said plurality of troughs being invertible so that said spaced crests on the second side of said plurality of troughs are arranged to support food over said troughs and said spaced crests on the first side are arranged to support the food support on a primary grill when the second side is the upper side, wherein said plurality of troughs on the first side have integral first end dams to prevent food juices from flowing from one trough to another trough when the first side of said troughs is the upper side, said first end dams blocking less than substantially the entire ends of said troughs, and further wherein said plurality of troughs on the second side have integral second end dams to prevent food juices from flowing from one trough to another trough when the second side is the upper side, said second end dams blocking less than substantially the entire ends of said troughs.

5,009,152

REVERSE DIFFUSING BAFFLE FOR APPLYING SPROUT INHIBITOR TO STORED POTATOES

Charles R. Morgan, 4659 Enterprise St., Boise, Id. 83705

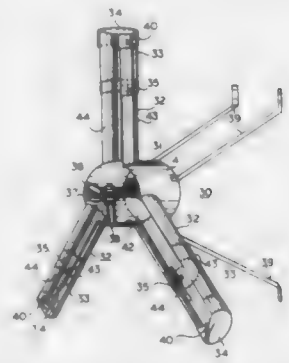
Continuation-in-part of Ser. No. 447,612, Dec. 28, 1989, Pat. No. 4,977,825. This application Sep. 5, 1990, Ser. No. 577,488
Int. Cl.[5] A23B *7/00*
U.S. Cl. 99—476 **4 Claims**

1. A diffusing baffle for use in applying sprout inhibiting chemicals to potatoes stored in a potato storage facility having an air supply plenum, a fan for discharging air into the air supply plenum, and a plurality of ventilation pipes open to the air supply plenum for delivering air to the stored potatoes, which comprises:

a central plenum receiving baffle having a convex outer surface and a concave inner surface;

means for introducing a sprout inhibiting chemical into said central plenum receiving baffle;

a plurality of elongated channel shaped radial arms having convex outer surfaces and concave inner surfaces attached to and extending radially out from said central plenum receiving baffle so as to form radially extending channels for the transport of sprout inhibiting chemical from the introduction means to the ends of said arms; and



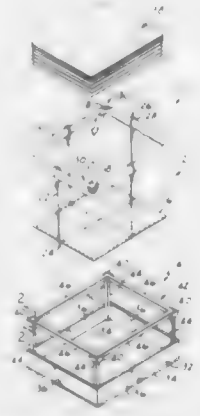
means for centrally positioning the central plenum receiving baffle and the radial arms in front of the discharge of the fan with the convex outer surfaces facing the fan.

5,009,153

DEVICE AND METHOD FOR BUNDLING

Joel T. Kaji, 27519 Gateway N., #204, Farmington Hills, Mich. 48018

Filed Feb. 20, 1990, Ser. No. 482,189
Int. Cl.[5] B65B *13/02*
U.S. Cl. 100—2 **16 Claims**



16. A method for binding a stack of items, such as newspapers, the method comprising the steps of:

providing a bundling device having a tie assembly including a seat member, a drawband forming a closed loop, and a plurality of ties, each tie having a base end attached to the seat member and a draw end forming a loop slidably encircling one thickness of the drawband, and having a receptacle including a tray having a horizontal bottom to support the seat member and further having sides extending upwardly from the bottom;

inserting the tie assembly into the receptacle so that the seat member of the tie assembly rests upon the bottom of the receptacle;

forming the drawband into a generally horizontal loop disposed above the bottom and outside the receptacle, the ties being draped over the sides, thereby supporting the drawband;

stacking the items to be bound upon the seat member;

pulling upwardly on the drawband at two points separated by the loop in the draw end of at least one tie, thereby simultaneously and equally tightening the ties about the stacked items and forming, of two respective portions of the drawband, elongated loops; and

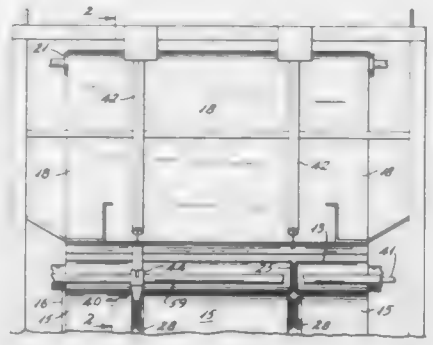
tying the two elongated loops together to secure the ties in their tightened positions.

5,009,154

TWINE FEEDING APPARATUS FOR ROUND HAY BALERS

Rudolph Boes, P.O. Box 112, Big Falls, Minn. 56627

Filed Feb. 7, 1990, Ser. No. 476,167
Int. Cl.[5] B65B *63/04;* **B30B** *5/06*
U.S. Cl. 100—5 **5 Claims**



1. In a baling machine for baling round bales of incoming hay wherein the machine includes a feed press roller mounted to a roller drive shaft so as to be in substantially parallel relationship to a main belt drive drum which is rotatably carried by a drum drive shaft and wherein a plurality of spaced hay rolling belts are drivingly engaged to the main belt drive drum in spaced relationship to one another and wherein the machine includes a source of twine from which twine is directed to a twine feed means so that the twine may be selectively urged between the hay feed roller and the main belt drive drum the improvement comprising, forming each of the hay feed press roller and main belt drive drum with at least two-spaced cylindrical segments which are aligned along their respective drive shafts, a first sheave means freely rotatably mounted about the roller drive shaft intermediate said segments of said hay feed press roller, second sheave means freely rotatably mounted to said drum drive shaft and intermediate said sections of the main belt drive drum, said first and second sheaves being aligned in space relationship with respect to one another, the twine feed means including a feed element adjacent said first and second sheaves, said feed element being engageable with the twine, means for urging said feed element toward said first and second sheave means so that an intermediate length of the twine is aligned between said first and second sheave means so as to be engageable by incoming hay, said intermediate portion of said twine being guided between said first and second sheaves so as to expand into a loop about the incoming hay ■ the hay is rolled, and a knotting and cutting means for knotting the twine to form a continuous loop about the rolled bale of hay and therafter to cut the twine whereby the rolled and tied bale may be discharged from the baling machine.

5,009,155

CAN CRUSHER FOR HOUSEHOLD USE

Konrad A. Christianson, 190 Cutler Dr., Durango, Colo. 81301

Filed Mar. 30, 1989, Ser. No. 331,642
Int. Cl.[5] B30B *7/00, 1/02*
U.S. Cl. 100—233 **7 Claims**

1. A device for crushing common cylindrical beverage cans comprising:

an elongated flat back plate having a front face and a center plane parallel to its front face,

lever means having one end pivotably attached to said back plate at said center plane near one end of the back plate and having a handle at the other end of the lever means,

a stationary compressor base plate fixedly mounted on said back plate near the longitudinal center thereof and perpendicular to said back plate, said compressor base plate being essentially flat and having two opposite sides,

one of said sides having a surface for engaging an end of a common cylindrical can,

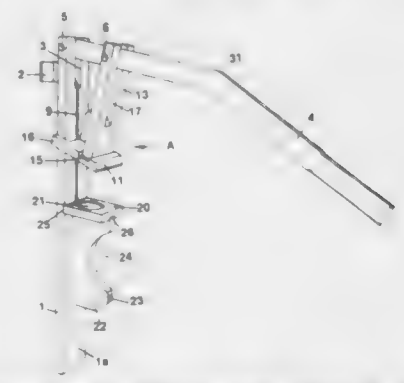
a movable ram assembly comprising an elongated drive member with a flat compressor drive plate rigidly connected to one end of the drive member, wherein a can is crushed between said base plate and the drive plate of said ram assembly,

the other end of the elongated drive member of said ram assembly being pivotably fastened to said handle at a single point therealong, said drive plate being slidably fastened to said back plate,

said back plate and said compressor drive plate further comprising longitudinal guide means to direct the sliding movement of said ram assembly with one portion of said drive plate sliding along a face of said back plate in a linear path and said ram assembly pivotably moving relative to said back plate,

the drive plate of said ram assembly having a substantially planar face to contact the other end of a can positioned against the stationary compressor base plate,

said ram assembly being movable, by manual operation of said lever means using a single stroke, between an open position for receiving a can to be crushed and a closed position in which the can is fully crushed,



the face of said ram assembly being parallel to and spaced from said stationary plate with the can crushed therebetween when in the closed position,

said ram assembly face being substantially inclined to said base plate when the ram assembly is moved into initial contact with the end of a can to cause initial collapse of the can at one side of the can,

said lever means comprising two straight lever arm portions angularly joined to each other at a bend which lies about midway along the length of the lever means, said bend being opposite the compressor drive plate in the closed position of the ram assembly, the handle of said lever means lying opposite the other end of the elongated back plate in the closed position of the ram assembly,

said compressor base plate being further supported relative to said back plate by a brace portion at said side of the compressor base plate opposite its can-engaging surface,

said brace portion being provided with a stop located substantially beyond the compressor base plate and engageable with said lever means at a point spaced from aid bend and near said handle to prevent movement of the handle beyond a position corresponding to a fully crushed can.

5,009,156

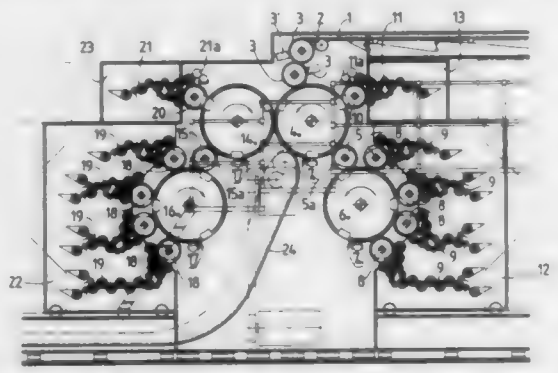
MULTI-COLOR ROTARY PRINTING MACHINE FOR SIMULTANEOUS RECTO-VERSO PRINTING

Albrecht J. Germann, Wurzburg, Fed. Rep. of Germany, assignor to De La Rue Giori S.A., Lausanne, Switzerland

Filed May 4, 1989, Ser. No. 347,402
Claims priority, application Switzerland, May 18, 1988, 1887/88
Int. Cl.[5] B41F *5/16, 5/22;* **B41L** *15/10*
U.S. Cl. 101—177 **7 Claims**

1. A multi-color rotary printing machine for simultaneous recto-verso printing, especially for printing the safety back-

ground on security papers, means for feeding paper through said printing machine, with two interacting blanket cylinders (4, 14), between which the paper (1) to be printed runs through, thereby being printed on both sides, two plate cylinders (5, 15), each of which carries a respective collect-printing plate (5a,15a) and is in contact with one of the two blanket cylinders (4, 14), several color selector cylinders (8, 18), two color-collecting cylinders (6, 16) which are arranged at a distance from one another and each of which is in contact on the one hand with one of the plate cylinders (5, 15) and on the other hand with a respective one of said several color selector cylinders (8, 18), each said color selector cylinder being inked by an associated inking unit (9, 19), each color-collecting cylinder transferring all the colors obtained from the color selector cylinders in contact with it onto the respective collect-printing plate, at least one additional printing unit having a plate cylinder, wherein at least one of the two blanket cylinders (4, 14) interacts with said at least one additional printing unit (10, 11, 11a; 20, 21 21a), the plate cylinder (10; 20) of which is in contact with the respective blanket cylinder (4; 14), the blanket cylinders (4, 14) and the color-collecting cylinders (6, 16) being of the same size and having a diameter which is an integral multiple of the diameter of the plate cylinders (5, 15, 10, 20) and of the color selector cylinders (8, 18), the two color-collecting cylinders (6, 16) being arranged symmetrically underneath the two interacting blanket cylinders (4, 14) and respectively offset obliquely outwards relative to these and being at a distance from one another which is at least as large as their diameter, the collect-printing plate cylinders (5, 15) being arranged on the top of the color-collecting cylinders (6, 16) and the underside of said color-collecting cylinders being freely accessible.



5,009,157

ROTARY PRESS COMPRISING AN ENDLESS BLOCK BELT

Dieter Rogge, and Wilfried Wallmann, both of Lengerich, Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Apr. 19, 1989, Ser. No. 340,204

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1988, 3813112

Int. Cl.[5] **B41F** *5/18, 13/00*

U.S. Cl. 101—178 **11 Claims**

1. A rotary press comprising:

at least one impression cylinder; and

a plurality of printing units around said impression cylinder, each printing unit comprising:

an inking unit,

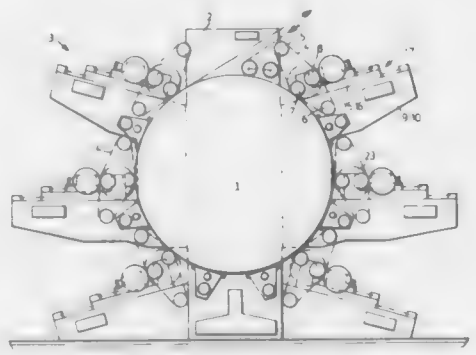
four printing unit cylinders disposed relative to each other substantially at corners of a parallelogram, said four cylinders being comprised of two diametrically opposite printing cylinders and two diametrically opposite tensioning cylinders,

an endless block belt extending around and in engagement with said four cylinders,

a first one of said printing cylinders being adjacent said at least one impression cylinder and the other of said printing cylinders being adjacent said inking unit,

track means,

means for mounting said tensioning cylinders in said track means for movement toward and away from each other; and



means for mounting each printing unit so that said first printing cylinder engages said block belt against said at least one impression cylinder and said other printing cylinder engages said block belt with said inking unit.

5,009,158

OFFSET PRINTING MACHINE SYSTEM

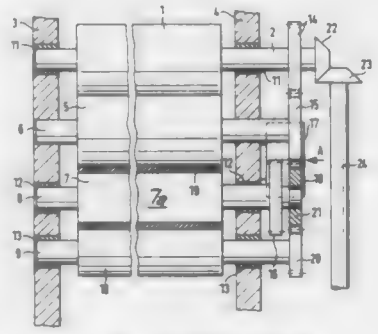
Thomas John, and Georg Bock, both of Augsburg, Fed. Rep. of Germany, assignors to MAN Roland Druckmaschinen AG, Offenbach am Main, Fed. Rep. of Germany

Filed Jun. 25, 1990, Ser. No. 542,879

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1989, 3922559

Int. Cl.[5] **B41F** *5/04*

U.S. Cl. 101—219 **13 Claims**



1. Offset printing machine system having

a rubber blanket cylinder (1, 30), having a blanket cylinder shaft (2, 34);

a plate cylinder (5, 31) having a plate cylinder shaft (6, 35);

an ink application cylinder (7, 32) having an ink cylinder shaft (8, 36);

a yielding surface covering (19, 48) on said ink application cylinder;

means (14, 15; 40, 44) for driving said blanket cylinder shaft and said plate cylinder shaft at the same speed, including plate cylinder gear means (15, 44) secured to the plate cylinder shaft (6, 35),

said cylinders being engaged against each other and rolling off against each other, and defining engagement regions at the respective nips between said cylinders,

wherein, in accordance with the invention,

the diameter of the ink application cylinder (7, 32) differs from the diameter of the plate cylinder (5, 31) when said cylinders are engaged against each other; and

wherein said drive means includes

means for driving the ink application cylinder (7, 32) at a circumferential speed corresponding to the speed of the plate cylinder (5, 31) to cause the engagement region of the ink application cylinder and of the plate cylinder to move at the same speed,

and wherein said ink application cylinder driving means compensate for differences in effective diameter at said engagement region between the ink application cylinder and the plate cylinder, while maintaining said corresponding circumferential speeds of the ink application cylinder (7, 32) and the plate cylinder (5, 31).

5,009,159

PRINTING UNIT

Jan N. Stenqvist, Mossbult 3580, S-260, 60 Kvidinge, Sweden

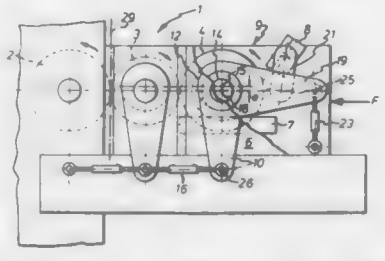
PCT No. PCT/SE88/00052, § 371 Date Aug. 10, 1989, § 102(e) Date Aug. 10, 1989, PCT Pub. No. WO88/06097, PCT Pub. Date Aug. 25, 1988

PCT Filed Feb. 12, 1988, Ser. No. 382,691

Claims priority, application Sweden, Feb. 13, 1987, 8700575

Int. Cl.[5] **B41F** *31/04, 31/34, 31/06;* **B41L** *27/36*

U.S. Cl. 101—351 **7 Claims**



1. A printing unit (1) comprising a rotary impression cylinder (3), an inking device (9), a rotary inking roller (4) in said inking device, said impression cylinder and inking device being mounted on a machine frame, said inking roller (4) having an axis of rotation (18) defining a shaft, means for adjusting said inking roller toward and away from said impression cylinder, said means including a first lever device (10, 11) which is pivotal about a pivot axis (15) and eccentrically mounted in relation to the axis of rotation (18) of said inking roller, said inking roller being mounted and rotatably supported by said first lever device, the printing unit (1) further having a doctor blade (8) movable into wipe-off engagement with the inking roller (4), a second pivotal lever device (19, 20) concentrically mounted in relation to the axis of rotation (8) of the inking roller (4) and eccentrically mounted for pivotal movement in relation to the pivot axis (15) of the first lever device (10, 11), said doctor blade (8) being mounted on and supported by said second lever device (19, 20), whereby the doctor blade (8) and the inking roller (4) will maintain their relative positions when adjusting the spacing between the inking roller (4) and the impression cylinder (3) by displacement of said first lever device (10, 11).

5,009,160

TRANSFER CYLINDER FOR PRINTING PRESS

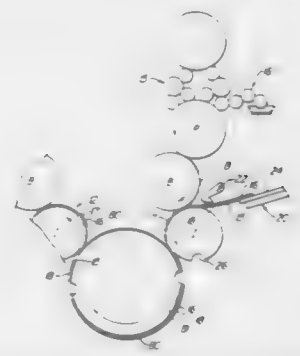
Eduardo Duarte, 528 Rawls Cir., Irving, Tex. 75061

Continuation-in-part of Ser. No. 191,322, May 9, 1989, Pat. No. 4,967,661, which is a continuation-in-part of Ser. No. 58,892, Jun. 5, 1987, Pat. No. 4,836,104. This application Aug. 30, 1989, Ser. No. 400,694

Int. Cl.[5] **B41F** *13/08*

U.S. Cl. 101—422 **16 Claims**

1. A transfer cylinder for a printing press comprising: a film of polycarbonate bonded to the surface of the transfer cylinder, said film having a roughened surface on one side and a matte finished surface on the other side, said roughened surface being bonded to the surface of said transfer cylinder; and a film



of silicone on the matte finished surface of said film forming an ink repellant surface.

5,009,161

DEVICE FOR CLEANING SHEET-TRANSFER CYLINDERS IN ROTARY PRINTING PRESSES

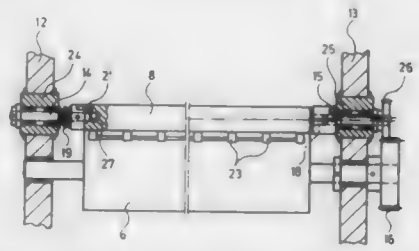
Arno Wirz, Bammental, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Apr. 17, 1989, Ser. No. 339,065

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1988, 3812678

Int. Cl.[5] **B41F** *35/00*

U.S. Cl. 101—425 **6 Claims**



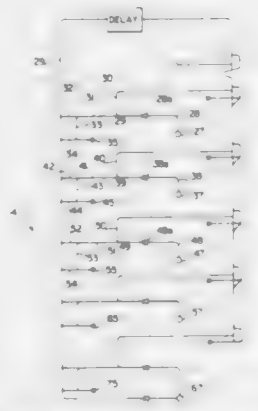
1. Device for keeping an outer cylindrical surface of a sheet-conveying cylindrical member clean for the purpose of conveying sheets with freshly printed surfaces in a sheet-fed rotary offset printing machine, comprising a roller having an outer cylindrical surface continuously in engagement with the outer cylindrical surface of the sheet-conveying cylindrical member at regions thereof free from engagement by the sheets, the outer cylindrical surface of the sheet-conveying cylindrical member being textured and having means for, respectively, transferring and repelling ink, said surface of said roller continuously in engagement with the outer cylindrical surface having means for removing and storing ink, and including means at least partly carried by said roller for replacing said roller when its means for removing and storing ink ceases to function, said replacing means include, at both ends respectively, of said roller, parts of quick-fitting couplings, and complementary parts of said couplings incorporated in bearings supported in side walls of the printing machine.

5,009,162

EXPLOSIVE LOGIC RESOLVER NETWORK

Denis A. Silvia, Aberdeen, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 28, 1981, Ser. No. 334,849
Int. Cl.[5] F42B *3/10, 15/00;* F42C *19/08*
U.S. Cl. 102—275.9 10 Claims



1. An explosive logic network for resolving a first detonation signal from a plurality of detonation signals, comprising:
detonation signal means;
explosive trail means propagating the detonation signals from the detonation signal means; and
resolution means extinguishing all detonation signals in the explosive trail means except for a first detonation signal.

5,009,163

NON-ELECTRIC SIGNAL TRANSMISSION DEVICE CONNECTION, METHOD AND APPARATUS THEREFOR

Kendall H. Robins, Bloomfield; Dennis K. Austin, and Richard W. Spraggs, both of Simsbury, all of Conn., assignors to The Ensign-Bickford Company, Simsbury, Conn.

Filed Apr. 19, 1990, Ser. No. 511,077
Int. Cl.[5] F42B *3/00;* C06C *5/04*
U.S. Cl. 102—301 14 Claims



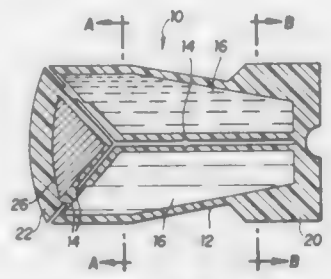
12. The method of detonating an explosive column with a consumable, low-residue producing blasting system having a detonator adjacent to the bottom of the explosive column, the method comprising the steps of:
providing a length of detonating cord between an initiating point of the system and the top of the explosive column;
providing a length of shock tube between the explosive column top and the detonator;
providing a length of heat-shrinkable tubing;
inserting said detonating cord through said tubing;
axially aligning an end of said shock tube and an end of said detonating cord at the explosive column top at a sufficiently close distance from one another for reliable signal propagation therebetween;
sliding said tubing over said aligned ends; and
heating said tubing, thereby shrinking said tubing for providing axial compressive and radial compressive forces on said ends.

5,009,164

NON-PENETRATING PROJECTILE AND MEANS THEREFOR

Oded Grinberg, Mazkeret Batya, Israel, assignor to MNY Holdings and Agencies Limited, Tel-Aviv, Israel

Filed Dec. 29, 1988, Ser. No. 291,502
Claims priority, application Israel, Jan. 11, 1988, 85079
Int. Cl.[5] F42B *5/145, 8/14, 12/40*
U.S. Cl. 102—502 14 Claims



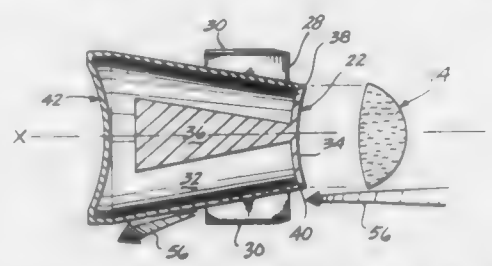
1. A projectile for impact upon a surface, comprising a housing defining at least two substantially sealed chambers wherein said housing comprises a plurality of walls of a first thickness which include a plurality of portions of a second thickness thinner than said first thickness, at least one of said walls being of a double leaf construction, said second thickness portions being located on said wall in order to provide points of stress which will fracture when the projectile impacts with a surface.

5,009,165

JACKETED PAINT PELLET

James K. Morris, 7004 S. 12th, #2106, Tacoma, Wash. 98465

Continuation-in-part of Ser. No. 273,850, Nov. 18, 1988, abandoned. This application Mar. 26, 1990, Ser. No. 499,556
Int. Cl.[5] F42B *12/40;* A63B *65/02*
U.S. Cl. 102—513 23 Claims



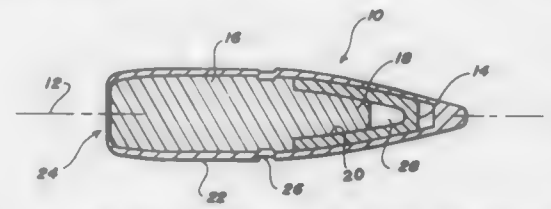
1. A jacket for holding and stabilizing a gelled pellet of paint as it travels through the bore of a gun barrel and in flight, the jacket comprising:
a body formed of lightweight nonmetallic material having a leading end and a trailing end, the leading end having a forward-facing substantially concave mounting surface
means connected to said body for supporting said body within the bore of the gun barrel and means connected to said body for guiding the body through the air in flight.

5,009,166

LOW COST PENETRATOR PROJECTILE

Stephen J. Bilsbury, Bethlehem, Pa.; William G. Dennis, Jr., Florissant, Mo., and Stephen K. Kernosky, Godfrey, Ill., assignors to Olin Corporation, Cheshire, Conn.

Filed Jul. 31, 1989, Ser. No. 388,178
Int. Cl.[5] F42B *12/06*
U.S. Cl. 102—516 7 Claims



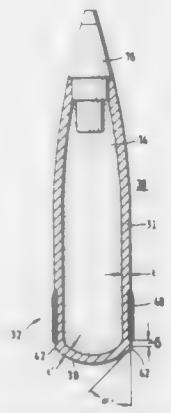
1. A small caliber hollow cone penetrator projectile comprising:
a hard strip metal carburized penetrator core having a generally hollow conical shape, said core being formed in a series of progressive dies from a strip of low carbon steel and then carburized to a uniform Rockwell hardness of at least C50;
a generally soft heavy metal slug body behind said core, said body having a portion extending centrally within said hollow core; and
a metal jacket over said body and said penetrator core enclosing said core and at least a portion of said body.

5,009,167

HIGH-EXPLOSIVE PROJECTILE

Achim Sippel; Heinz-Josef Kruse, both of Ratingen, and Wilfried Becker, Düsseldorf, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Jan. 12, 1989, Ser. No. 296,150
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1988, 3804351
Int. Cl.[5] F42B *12/20, 14/02*
U.S. Cl. 102—524 18 Claims



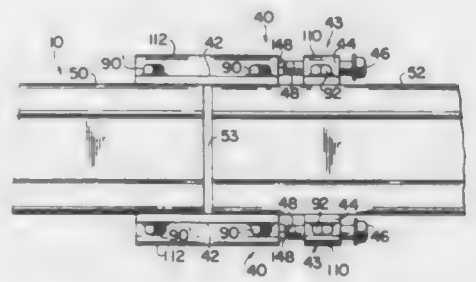
11. In a high-explosive projectile including a projectile body having a forward region and a tail region which transitions to a base, an explosive charge disposed within said body and detonated by a suitable fuse, and a driving band disposed on the outer circumferential surface of said projectile body in said tail region, the improvement wherein:
the wall thickness of said tail region of said projectile body is substantially the same as the wall thickness of said forward region of said projectile body;
said tail region of said projectile body has a cylindrical shape up to its transition to said base and forms a circumferential edge at said transition;
said projectile base has approximately the same wall thickness as said projectile body;
said driving band has a width of at least twice said wall thickness; and
the rearward, gas pressure receiving side of said driving band is located a distance from said circumferential edge which is no greater than twice said wall thickness.

5,009,168

TRACK EXPANDER AND METHOD OF USE

Richard Kuchta, Tolland, Conn., assignor to Gerber Garment Technology, Inc., Tolland, Conn.

Division of Ser. No. 429,205, Oct. 30, 1989, Pat. No. 4,967,669.
This application Jul. 19, 1990, Ser. No. 555,929
Int. Cl.[5] E01B *25/22;* B65G *23/44*
U.S. Cl. 104—172.1 3 Claims



1. A method of spreading apart adjacently disposed ends of two track sections to accomplish tensioning of an endless chain traveling through said track sections in a conveyorized transport system, said method comprising:
providing a splice capable of being separately connected with each of said adjacently disposed ends of said track sections;
mounting said splice to said adjacently disposed ends of said track sections;
providing an expander body and fixing it to one of said track sections adjacent said splice;
providing take-up means between said expander body and said splice;
securing said splice against movement at the other of said track sections such that the splice moves relative to said one track section;
manipulating said take-up means to move the expander body and the splice relative to one another to create a gap between said adjacently disposed ends of said track sections; and
securing said splice against movement at said one track section to maintain said gap achieved by said take-up means.

5,009,169

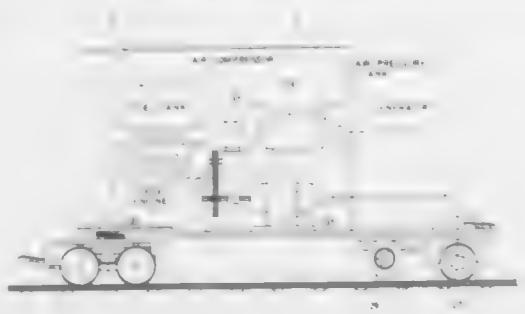
TWIN AXLE RAIL BOGIE FOR CONVERTIBLE RAIL-HIGHWAY VEHICLES

Jacques Viens, 1486 Bellemare, Roxton Pond, Quebec, Canada J0E 1Z0

Division of Ser. No. 333,053, Apr. 4, 1989, Pat. No. 4,938,151.
This application Apr. 20, 1990, Ser. No. 512,224
Int. Cl.[5] B61F *3/12*
U.S. Cl. 105—4.1 3 Claims

1. A motorized unit for driving a train on rails in which the train is made up of a plurality of standard convertible rail-highway semi-trailers carried by rail bogies and hooked thereto through a fifth-wheel means including a coupling king pin, said motorized unit comprising: a power semi-trailer of a convertible rail-highway type having a coupling king pin arrangement at one end for connection with a rail bogie of one of said standard semi-trailers; a rear bogie solid with the other end of said power semi-trailer and provided with a pair of railroad driving wheels operatively connected to said power semi-

trailer to be driven thereby, said rear bogie having an upper surface that projects rearwardly of said power semi-trailer and is provided with a fifth wheel, said rear bogie fifth wheel being



sized and positioned to receive and interlock with a coupling king pin of one of said standard semi-trailers to be driven, and wherein said rear bogie is further provided with a pair of retractable road wheels

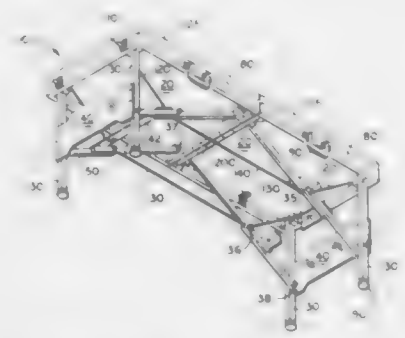
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5,009,170

PORTABLE BODY MASSAGE TABLE

Eli G. Spehar, Huntington Beach, Calif., assignor to Rodney B. Smith, Escondido and Ernest L. Ostic, Orange, both of, Calif.

Filed Feb. 10, 1989, Ser. No. 309,784
Int. Cl.[4] A47B *3/00*
U.S. Cl. 108—36 4 Claims



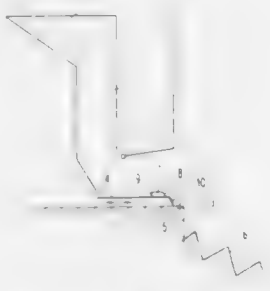
1. A portable, folding table comprising
a pair of rectangular table top sections,
a peripheral border flange depending from each of said sections,
hinge members interconnecting said flange bottom edges of adjacent sides of said sections to enable folding of said table top sections from a working configuration, wherein said table top sections are coplanar, to a portable configuration, wherein the bottom edges of said flanges are juxtaposed;
two pairs of support legs of rectangular cross section;
a first means hingably securing a first end of each said pair of legs to the underside of each said table top section to fold toward said hinge members within said border flange;
a first rigid cross brace secured between the legs of each pair thereof;
two pairs of support arms of rectangular cross section, each said arm comprising a first and a second section pivotally interconnected by a second pivot means securing facing sides of each to the other;
a third pivot means hingably securing a first end of each said pair of arms to the underside of each said table top section to fold toward said table top section within said border flange;
a fourth pivot means securing a second end of each said pair of arms to said pair of legs to fold toward said table top section into the receptacle formed by said border flange;
a second rigid cross brace secured between the arms of each pair thereof;
a pair of first flexible, non-stretchable cables, one of said cables being pivotally secured between each opposing pair of said second pivot means, each said cable being of length to be in tension when said table top sections are coplanar and when said legs are fully unfolded;
two pairs of flexible, non-stretchable second cables, each individual said second cable being pivotally secured between said first and said second pivot means, each said second cable being of length to be in tension when said table top sections are coplanar and when said legs are fully unfolded.

5,009,171

FEED DEVICE WITH FILLING HOPPER AND ADJOINING FEED CHUTE FOR FEEDING WASTE TO INCINERATION PLANTS

Johannes J. E. Martin, and Walter J. Martin, both of Munich, Fed. Rep. of Germany, assignors to Martin GmbH fur Umweld-und Energietechnik, Munich, Fed. Rep. of Germany

Filed Jul. 18, 1989, Ser. No. 381,540
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1988, 3825930
Int. Cl.[4] F23K *3/12, 3/16*
U.S. Cl. 110—109 18 Claims



1. A feed device comprising a filling hopper and adjoining feed chute, feeding pistons being provided at the lower end of the feed chute for conveying waste to an incineration plant, retaining and compression means being arranged on the upper side of at least one feeding piston for preventing waste fed into the filling hopper from sliding over the feed pistons in an uncontrolled manner and for compressing the waste

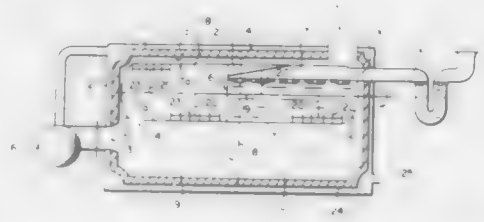
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5,009,172

METHOD FOR AND APPARATUS OF THERMAL TREATMENT OF HUMAN WASTE

Shigeyuki Koga, and Shigeki Sugiue, both of Takamatsu, Japan, assignors to Kabushiki Kaisha Toyoseiakusho, Japan

Filed Jul. 25, 1989, Ser. No. 384,345
Claims priority, application Japan, Jul. 29, 1988, 63-191532
Int. Cl.[4] F23G *5/00*
U.S. Cl. 110—242 4 Claims



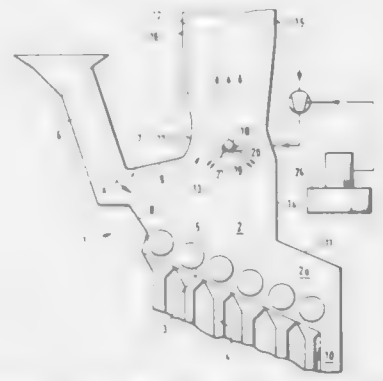
1. Apparatus for thermal treatment of human waste comprising: an inner barrel partitioned by a wall having a space in its upper part into a reservoir chamber for reserving human waste through an inlet and a flash chamber having an outlet for feeding said human waste from said space by a drawing water barrel to decompose said waste into a gaseous smelling water vapor component and a residue; an outer barrel in which said inner barrel is disposed in an upper part and partitioned by a wall penetrating said inner barrel in an upper part thereof provided with a through hole for intercommunicating in a lower part thereof into a smell removing chamber for removing said gaseous smelling component fed from said outlet; a discharge gaseous chamber having an outlet for discharging gas fed from said smell removing chamber through said through hole for intercommunicating after removal of said gaseous smelling component; and a heat intake port from a burner wherein said inlet is adjacent thereto for burning said gaseous smelling component and heating said flash chamber.

5,009,173

APPARATUS FOR INCINERATION OF REFUSE

Sedat Temelli, Erkrath, Fed. Rep. of Germany, assignor to Mullverbrennungsanlage Wuppertal GmbH, Fed. Rep. of Germany

Division of Ser. No. 172,085, Mar. 23, 1988, Pat. No. 4,940,006.
This application Jan. 16, 1990, Ser. No. 465,392
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1987, 3712039; May 14, 1987, 3716088
Int. Cl.[4] F23G *5/00*
U.S. Cl. 110—244 8 Claims



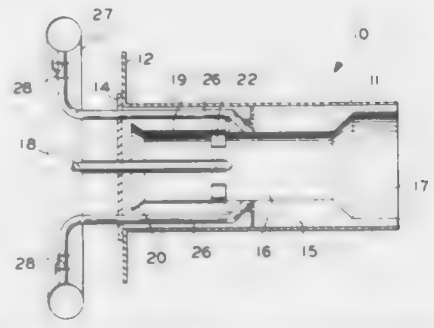
1. Combustion vessel for refuse incineration or the like, comprising:
a furnace space with a grate for receiving refuse to be burned;
a refuse feeder located above the grate;
the furnace space having an afterburning zone at an upper part above the grate for receiving the flue gases formed by combustion of the refuse, the afterburning zone having a throttled area facing in the direction of the oncoming flue gases to dam the flue gases before entering the afterburning zone so as to increase the retention time of the flue gases in a uniform temperature zone of the furnace space;
a flue gas exhaust located downstream from the throttled area;
the throttled area comprising a venturi symmetrical in cross section perpendicular to the longitudinal direction of the flue gas exhaust so as to accelerate the flow of flue gases in a venturi-like manner in the afterburning zone while creasing a laminar flow of the flue gases and then to decelerate the flow of flue gases in a venturi-like manner in the afterburning zone without increasing the turbulence of the flue gases; and;
a nozzle bar located across and immediately upstream from the throttled area and having plural nozzle openings operative to inject jets of secondary air forming a substantially continuous grid pattern across the entire cross section of the flow of flue gases before the flue gases enter the throttled area, and in a direction opposite to the flow of flue gases flowing toward the afterburning zone so that no stream of flue gas can penetrate into the throttled area without coming into intimate contact with the injected secondary air,
so as to further increase the retention time of the flue gases in the furnace space and thereby completely burn out the combustible constituents entrained in the flue gases before entering the afterburning zone, so as to reduce the unwanted gaseous components in the flue gases.

5,009,174

ACID GAS BURNER

Bob Polak, Toronto, Canada, assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 403,258, Dec. 2, 1985, abandoned. This application Nov. 17, 1986, Ser. No. 931,136
Int. Cl.[5] F23D *1/02*
U.S. Cl. 110—264 8 Claims



1. A burner for combusting a waste gas comprising:
a throat section;
a fire tube downstream from said throat section in communication therewith;
an air duct section upstream from said throat section in communication therewith;
a centrally located nozzle means for introduction of a fuel in said throat section in a downstream direction toward said fire tube;
means upstream from said throat section for forming a downstream directed swirling combustion air stream substantially in an annular ring along the sidewalls of the throat section;
means for introducing a waste gas stream into the throat section downstream of the nozzle means in a forwardly biased but swirling direction opposite to that of said swirling combustion air stream.

5,009,175

POTATO PLANTER

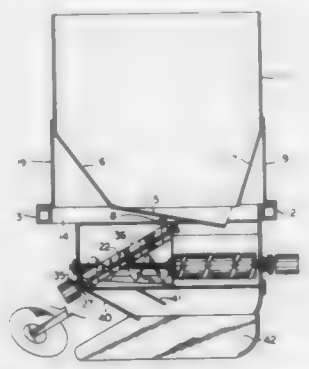
David A. Pember, P.O. Box 132, and James R. Schrader, P.O. Box 996, both of Glenns Ferry, Id. 83623

Filed Jan. 24, 1990, Ser. No. 469,228
Int. Cl.[5] A01C *5/06, 9/08*
U.S. Cl. 111—173 6 Claims

1. An improved potato planter having a perimeter frame supporting a seed hopper, a hopper drop chute, and shaker plate to prevent the bridging of seed potato pieces in the drop chute and axle and wheel means, wherein improvement comprises:
a generally horizontally oriented auger housing divided into a forward section and rear section by an attached transverse intermediate support plate, and with the forward section open at the top, and a downwardly opening discharge chute at the rearmost end, for receiving pieces of seed potato from the hopper drop chute through the open top of the front section;
a primary single blade auger disposed longitudinally within said auger housing for axial rotation within said auger housing;

a secondary filler blade auger disposed within the front section of said auger housing in interfitting parallel axial relationship with said primary auger so as to interfit the blade of the secondary auger between the reach of the blade of the primary auger on one side of the primary auger;

means for rotating both the primary and secondary augers in synchronized, but opposite directions so as to create traveling compartments for transporting pieces of seed potato



between the reaches of blade of the primary auger and the adjacent side of the auger housing;

means for returning pieces of seed potato ejected from the said traveling compartments from the rear section of the auger housing to the front section of the auger housing.

plow means for forming a seed furrow attached to the planter forward to the discharge chute; and

disking means for covering seed in the furrow attached to the planter behind the discharge chute.

5,009,176

SEWING DATA FORMING METHOD AND DEVICE FOR SEWING MACHINE

Katsunori Shigeta, and Haruyuki Nakamura, both of Aichi, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Filed Jan. 17, 1990, Ser. No. 466,182

Claims priority, application Japan, Jan. 24, 1989, 1-14809

Int. Cl.[5] D05B *21/00*

U.S. Cl. 112—121.12 **15 Claims**

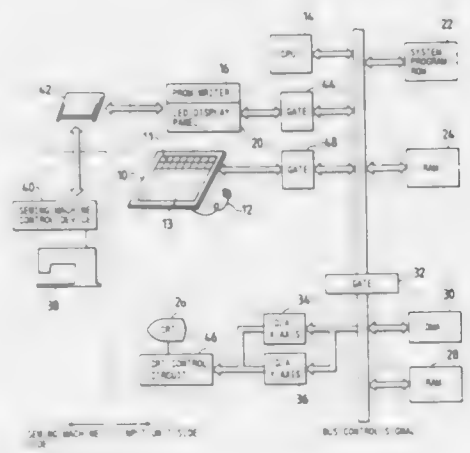
12. A device for forming sewing data for a sewing device, comprising:

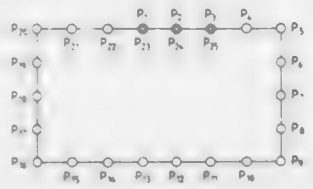
coordinates input means for inputting coordinate values of a needle position;

operation means for controlling the coordinate values successively inputted from said coordinates input means to obtain first needle position data for a sewing machine;

detection means for detecting whether said first needle position data input is within a predetermined range from second needle position data which has been already inputted and

conversion means for replacing said first needle position data by said second needle position data when it is detected by





said detection means that said first needle position data is within said predetermined range.

5,009,177

THREAD CUTTING UNIT HAVING A ROTATABLY DRIVEABLE CUTTING KNIFE AND LOOP SPREADING PLATE FOR A SEWING MACHINE

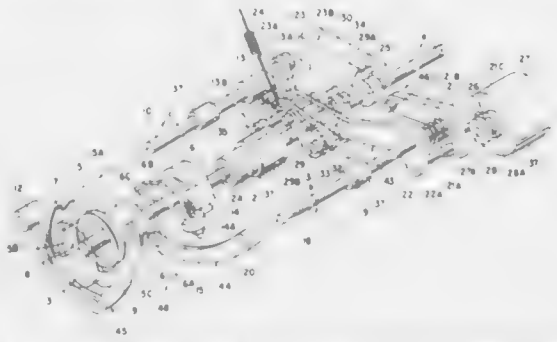
Shuichi Sato; Yoshimi Koguchi, and Yoshiharu Kobayashi, all of Tochigi, Japan, assignors to SSMC Inc., Edison, N.J.

Filed Sep. 22, 1989, Ser. No. 410,789

Claims priority, application Japan, Oct. 21, 1988, 63-137558[U]

Int. Cl.[5] D05B *65/02, 69/00, 65/00*

U.S. Cl. 112—292 **4 Claims**



1. A thread cutting unit in a sewing machine having a bed and comprising:

a lower shaft rotatably supported below the bed;

a needle movable vertically and held at a side of the bed;

a throat plate mounted on the bed;

a hook fixed to the lower shaft for cooperating with the needle, said neeille extends beyond the throat plate at the time of stitching operation;

a thread cutting knife and a loop spreading plate respectively rotatably supported on the lower shaft and positioned adjacent to the hook, the thread cutting knife and the loop spreading plate crossing each other in the space between the hook and the throat plate for cutting a sewing thread after completion of a series of stitching operations; and

a thread cutting driving unit for driving the thread cutting knife and the loop spreading plate;

wherein the thread cutting driving unit comprises:

a thread cutting knife driving shaft and a loop spreading plate driving shaft respectively rotatably supported below the bed of the sewing machine;

a rotational motion transmission device for respectively transmitting a rotational motion of the lower shaft to the thread cutting knife driving shaft and the loop spreading plate driving shaft;

a thread cutting supporting member having the thread cutting knife and rotatably supported below the bed;

a first turnable interlocking mechanism having interconnections at four different locations and having a driving body fixed to the thread cutting knife driving shaft and a driven body integrated with the thread cutting supporting member;

a loop spreading plate fixing member rotatably supported below the bed of the sewing machine and having a loop spreading plate; and

a second turnable interlocking mechanism having interconnections at four different locations and having a driving body fixed to the loop spreading plate driving shaft and a driven body intergrated with the loop spreading plate fixing member.

5,009,178

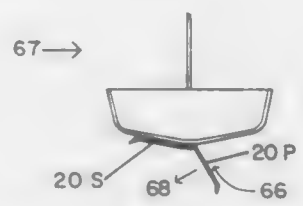
SELF ACTIVATING KEEL

Henry P. Geffken, RR1 Box 29-13, Hereford, Ariz. 85615

Filed Nov. 14, 1989, Ser. No. 437,454

Int. Cl.[5] B63B *41/00*

U.S. Cl. 114—143 **9 Claims**



1. A self activating stabilizer for a craft operating in a fluid medium, comprising:

(a) a fin means, which is pivotally mounted to the body of said craft such that said fin means swings on an axis that is approximately parallel to the intended direction of travel of said craft, and

(b) a limiting means such that the movement of said fin means relative to the body of said craft is restricted to a pivotal arc that is defined by said body and an acute angle to the direction of deviant fluid flow that is to be controlled by said fin means, and

(c) an activating means, shaped into said fin means, that offers a surface of the unacceptable angles of fluid flow across said body causing said fin means to swing away from said body to the acute angle defined by said limiting means thereby stabilizing said craft against undesireable angles of attack, and

(d) a deactivating means, shaped into said fin means, that offers a surface to the acceptable angles of fluid flow along said body causing said fin means to swing against said body thereby reducing the resistance to the foreward progress of said craft.

5,009,179

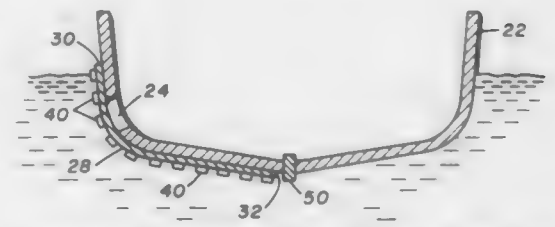
OIL SPILL CONTROL

Roscoe F. Johnson, 5650 N. Century Blvd., Century, Fla. 32535

Continuation-in-part of Ser. No. 380,881, Jul. 17, 1989, abandoned. This application Mar. 26, 1990, Ser. No. 498,920

Int. Cl.[5] B63B *43/16*

U.S. Cl. 114—229 **5 Claims**



1. Apparatus for stopping oil from leaking from a vessel having a hull, said hull having an outer surface and having a laden waterline, said hull having a rupture, said apparatus comprising:

A. an imperforate oil-impervious sheet-like flexible curtain having a top edge, a bottom edge, and first and second opposed lateral edges, said curtain having a length from said top edge to said bottom edge, said curtain having a width from said first to said second lateral edge;

B. said length being greater than the height of said rupture and said width being greater than the width of said rupture;

C. top sealing means for sealing said top edge to said outer surface of said hull above said rupture; and

D. lateral sealing means for sealing said lateral edges to said outer surface of said hull on opposite sides of said rupture from levels below said rupture upwardly to said top edge;

E. said bottom edge remaining mechanically unsealed to said hull, said curtain forming with said hull a downwardly-facing open pocket means for containing said oil and preventing further leakage after said pocket means is filled while permitting water to enter between said bottom edge and said hull.

5,009,180

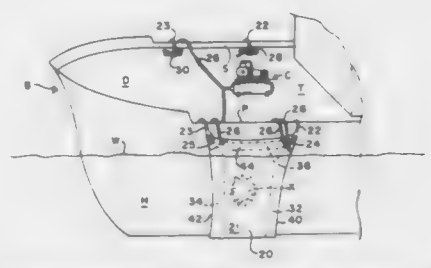
HULL HOLE CLOSURE FOR AN OIL TANKER

William T. Holt, 4610 Ellendale Rd., Memphis, Tenn. 38135

Filed Sep. 7, 1990, Ser. No. 579,365

Int. Cl.[5] B63H *43/16*

U.S. Cl. 114—229 **23 Claims**



13. A hull hole closure, for use with an oil tanker having a hull hole, said closure comprising:

a. a flexible, substantially waterproof sheet, shaped substantially similar to the bow of the tanker, for covering said hull hole and for extending under the keel and around the bow of the tanker from the port side to the starboard side of the tanker, said sheet comprising:

i. an aft edge, for location toward the stern of the tanker and passing under the keel of the tanker, said aft edge comprising a first end and a second end;

ii. an upper portion for location substantially above the water line of the tanker, said upper portion extending

substantially from the first end of the aft edge to the second end of the aft edge;

iii. an inner surface for placement substantially adjacent the hull of the tanker; and, iv. an outer surface for placement away from the hull of the tanker;

b. an aft belt, attached to the sheet substantially adjacent the aft edge of the sheet, said aft belt extending substantially from the first end of the aft edge to the second end of the aft edge, said aft belt comprising:

i. a longitudinal reinforcing strap attached to the sheet; and,

ii. a first longitudinal high pressure hose for inflation, located substantially parallel to the longitudinal reinforcing strap, and attached to the longitudinal reinforcing strap on the inner surface of the sheet;

c. an upper belt, attached to the upper portion of the sheet, comprising:

i. a transverse reinforcing strap attached to the sheet, and

ii. a transverse inflatable bladder attached to the upper belt on the inner surface of the sheet for inflation to substantially seal the upper portion of the sheet to the hull; and

d. means for securing the hull hole closure to the tanker.

5,009,181

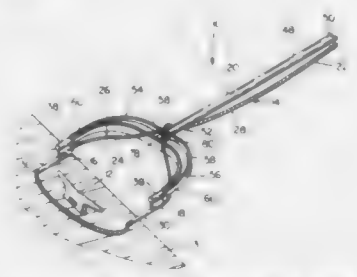
LINE HANDLING DEVICE

Paul E. Upchurch, P.O. Box 1529, Oak Harbor, Wash. 98277

Filed Jul. 12, 1990, Ser. No. 551,927

Int. Cl.[5] B63B *21/04*

U.S. Cl. 114—230 **42 Claims**



1. An apparatus to assist a user in tying a boat to an object, comprising:

a line having a first end portion attachable to the boat, a second end portion forming a loop positionable around the object, and a length of line extending between said first and second end portions;

first and second spreaders, each said spreader being disconnected from the other and having an aperture through which said second end portion of said line extends to independently, slidably mount said first and second spreaders thereon for selected movement of said first and second spreaders to opposite sides of said loop, each said spreader further having a connection recess; and

a handle having an elongated shaft with a proximal end portion for grasping by the user and a distal end portion, and further having a pair of spreader arms, each spreader arm having one end rigidly attached to said shaft distal end portion and a free end spaced apart from said free end of the other of said spreader arms by a predetermined distance, said free end of each of said spreader arms being releasably insertable into said recess of a different one of said first and second spreaders with said first and second spreaders positioned to opposite sides of said loop and spaced apart by about said predetermined distance to selectively hold said loop in an open position, said free ends of said spreader arms being releasable from said recesses of said first and second spreaders in response to the user pulling said handle in a direction away from the object with a predetermined separation force with said loop in place around the object to allow said loop to assume a closed position around the object uninhibited by said first and second spreaders or said spreader arms, whereby the user, while located at a distance from the object and holding said proximal end portion of said shaft, can easily place said loop around the object, and the user can selectively disconnect said first and second spreaders from said spreader arms by pulling on said handle so said loop can assume a closed position around the object for tying the boat to the object.

5,009,182

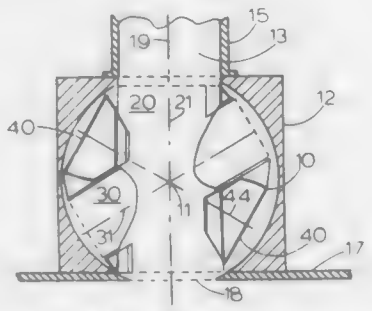
SUBMARINE TORPEDO TUBE SHUTTERWAY LAUNCH MODE ADAPTER

Paul E. Moody, Barrington, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 15, 1990, Ser. No. 568,304

Int. Cl.[5] B63G *8/00*

U.S. Cl. 114—238 **9 Claims**



1. A shutterway for a torpedo tube, said torpedo tube housing a torpedo of diameter d and having a centerline axis and an exit flow area, said shutterway comprising:

a means for creating a first passageway through said shutterway, said first passageway means having a flow area of diameter D and a line of axis passing through a center of said shutterway, wherein D>d when said first passageway line of axis is aligned with said torpedo tube center line axis;

a means for creating a second passageway through said shutterway, said second passageway means having a flow area of diameter d and a line of axis passing through said center of said shutterway, said second passageway line of axis oriented at an angle of 60° with respect to said first passageway line of axis, wherein said second passageway flow area of diameter d is equal to said torpedo tube diameter when said second passageway line of axis is aligned with said torpedo tube centerline axis; and

a means for closing off said torpedo tube exit flow area, said closing means having a line of axis passing through said center of said shutterway and oriented at an angle of 60° with respect to said first passageway line of axis and at an angle of 60° with respect to said second passageway line of axis, wherein said torpedo tube exit flow area is closed off when said closing means line of axis is aligned with said torpedo tube centerline axis.

5,009,183

TOWLINE AND RELEASE SYSTEM FOR WATER SPORTS ADJUNCT DEVICES

Frank R. Naypaver, 351 Florine Ave., Leavittsburg, Ohio 44430

Filed Dec. 14, 1989, Ser. No. 450,322

Int. Cl.[4] B63B *21/64*

U.S. Cl. 114—253 **11 Claims**

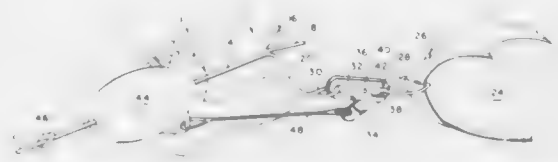
1. A towline and release system for water sports adjunct devices as inflated air tubes comprising:

a towline having a first portion thereof connected to a user handle and a second portion thereof adapted for connection to an adjunct device,

said second portion including releasable latch means for said adjunct device, and,

release means for said latch means, said release means being usable while said towline and adjunct device are under tow,

said release means including a manually actuated length of flexible lead extending from said latch means, with said flexible lead having means for slidable association with



said towline, and said means is slid with respect to said towline to release said latch,

wherein said slidable means is a bulbous member having a bore therethrough for reception of said towline therein whereby when mounted on said towline the bulbous member is carried thereby for engagement to release said latch means.

5,009,18[illegible]

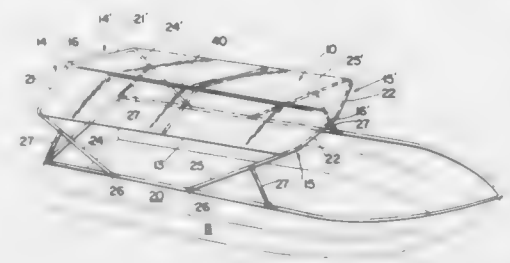
BOAT COVERS

Thomas Voldrich, 1014 Brookview, Parma, Ohio [illegible]134

Filed Dec. 6, 1989, Ser. No. 446,658

Int. Cl.[5] B63B *17/00*

U.S. Cl. 114—361 **5 Claims**



1. A canopy for an open boat comprising a frame, the frame consisting of a pair of reversely L-shaped fixed angled tubular supports mounted on either side of the boat said supports having substantially horizontal and substantially vertical portions, means for connecting the supports to opposite sides of the boat, which accommodates a swiveling action about the gunwale and about the transverse axis of the boat, a hinged connection connecting each pair of supports, a cover being disposed over the supports and functioning as a member of the frame for frame support, the said hinged connection providing peaking at the centerline of the cover to afford side to side drainage of water.

5,009,185

APPARATUS FOR APPLYING A CONTROLLED AMOUNT OF REAGENT TO A MICROSCOPE SLIDE OR THE LIKE

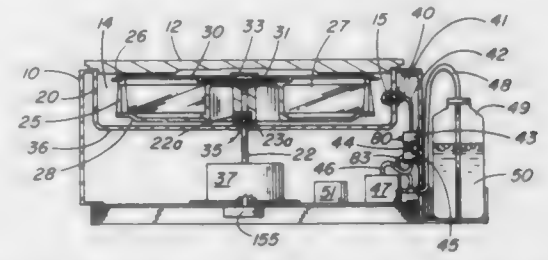
Barry O. Stokes, Logan; Gary D. Bradshaw, Wellsville, and Wayne K. Barlow, Providence, all of Utah, assignors to Wescor, Inc., Logan, Utah

Filed May 9, 1989, Ser. No. 350,106

Int. Cl.[5] B05C *11/02*

U.S. Cl. 118—52 **8 Claims**

1. Apparatus for applying a controlled amount of reagent to a microscope slide, comprising a spray chamber; carousel means for holding a plurality of slides to be sprayed and rotatably mounted in the spray chamber; nozzle means located in the spray chamber adjacent a portion of the carousel means for directing spray of reagent toward the slides held in the portion of the carousel means adjacent the nozzle means; means for rotating the carousel means at predetermined speeds in the spray chamber so as to move the slides mounted in the carousel means past the nozzles means; reagent reservoir means for storing a supply of reagent; pump means for pumping reagent from said reservoir means to said nozzle means; flow line means extending between said pump means and said nozzle means through which reagent can flow between said pump means and nozzle means; control valve means located in said flow line between said pump means and said nozzle means to control flow of reagent between said pump means and said nozzle means, the portion of said flow line extending between said valve means and said nozzle means being configured to eliminate pressure that would cause continued flow of reagent



from the flow line through the nozzle after closing of the control valve whereby spray of reagent into the spray chamber stops substantially immediately upon closing of the control valve; means to determine and monitor the angular position of the carousel means in the spray chamber; and control means responsive to the means to determine and monitor the angular position of the carousel means to coordinate operation of said pump means, valve means, and carousel means to accurately cause spray of reagent during predetermined known passage of the carousel means past the nozzle means whereby spray of reagent onto the slides is accurately controlled as the slides pass the nozzle means.

5,009,187

DEVELOPING DEVICE WITH SHUTTER

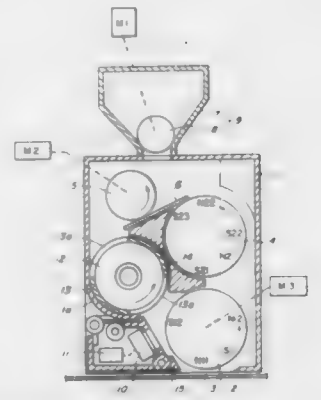
Masato Asanuma, and Masatoshi Kaneshige, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 4, 1988, Ser. No. 228,527

Claims priority, application Japan, Aug. 25, 1987, 62-129478[U]; Aug. 25, 1987, 62-129479[U]

Int. Cl.[5] G03G *15/09*

U.S. Cl. 118—658 **10 Claims**



1. A developing device comprising

a developing region where development takes place,

a toner receiving region,

a toner supplying means for supplying toner into said toner receiving region,

a toner supply route along which toner is delivered from said toner receiving region to said developing region,

a toner recycling route along which used toner is returned

from said developing region to said toner receiving region,

a shutter disposed in said toner supply route for selectably opening and closing said toner supply route,

a magnetic toner recycling roller disposed entirely in said toner recycling route for delivering used toner through said toner recycling route,

a partition member which is disposed between said shutter and said magnetic toner recycling roller and separates said toner supply route from said toner recycling route,

a sensor disposed along said toner supply route between said shutter and said developing region for detecting toner concentration, and

a timer circuit for effecting timing control on said toner supplying means such that a specified amount of toner is supplied into said toner receiving region after said shutter is closed if said sensor detects a specified toner concentration level.

5,009,188

WATER TANK APPARATUS

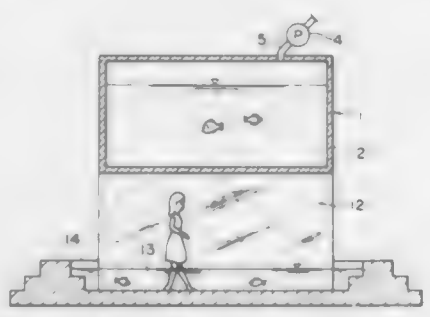
Mitsuo Yasui, Yokohama, Japan, assignor to Kabushikikaisha Kaichu Kyoju Kenkyu-sho, Tokyo, Japan

Filed Jul. 19, 1990, Ser. No. 555,568

Claims priority, application Japan, Oct. 3, 1989, 1-115891[U], Oct. 12, 1989, 1-118760[U]

Int. Cl.[5] A01K *63/00*

U.S. Cl. 119—3 **7 Claims**



1. A water tank apparatus comprising:

a gas-tight water tank body made of a transparent material, for raising fishes and shellfishes or the like, aquatic life or the like;

an attached water tank made of a transparent material and having an open upper end, said attached water tank being attached to a peripheral wall of a lower portion of said water tank body so that said attached water tank communicates with said water tank body; and

a decompression unit provided at an upper end portion of said water tank body, for decompressing a space within the water tank body.

5,009,189

AQUATIC CAGE AND METHOD

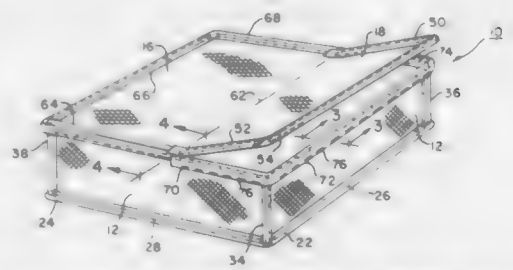
Gregor N. Neff, 85 Myrtle Ave., Dobbs Ferry, N.Y. 10522

Filed Jun. 25, 1990, Ser. No. 543,674

Int. Cl.[5] A01K *61/00*

U.S. Cl. 119—3 **13 Claims**

1. An aquatic animal cage, said cage comprising, in combination, an upwardly-extending side-wall made of a flexible netting material, a bottom-wall connected to said side-wall and forming, in combination with said side-wall, an aquatic animal enclosure, a plurality of upwardly-extending receptacle means secured to said side-wall and spaced apart from one another, each of said receptacle means being elongated and constructed to receive an elongated upwardlyextending support member which is stiff relative to said netting material of said side wall, and is adapted, when said receptacles contain such support members, to support said side wall above the ground when said



bottom-wall is on the ground, and to allow said side-wall to fold and collapse when said support members are removed.

5,009,190

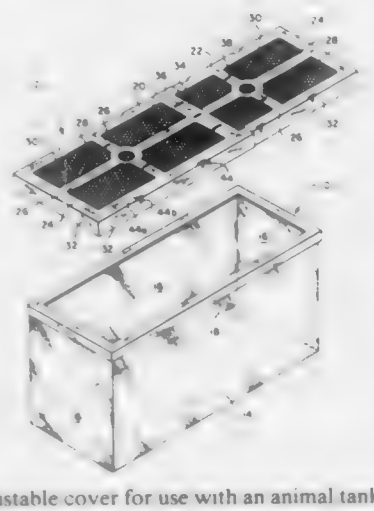
TANK COVER III

Richard A. Gordon, 95 W. 3rd St., Freeport, N.Y. 11520

Filed Aug. 14, 1989, Ser. No. 393,575

Int. Cl.[5] A01K *63/02, 1/03*

U.S. Cl. 119—5 **4 Claims**



1. An adjustable cover for use with an animal tank or the like of several sizes, each of said tanks having an open top provided with edge portions having an exterior lip, said cover comprising two telescoping rectilinear tray-like sections each having a screen peripherally surrounded by a unitary flat frame member and depending skirt formed along three of the sides of each of the frame members, each of said tray-like sections being identical with one of said trays being narrower in the transverse direction, each of said trays having a flat rib extending transversely between the longitudinally extending portions of the frame members said flat rib being spaced from the open side, each of said flat rib and the portion of the frame member along the open side, having a row of holes formed therein, each row extending transversely to the direction of telescoping of said trays, at least some of the holes in one row of each tray being aligned with some of the holes in a row in the other of said trays along a line parallel to the direction of telescoping of said trays, so that the holes in one of the trays register with the aligned holes in the other tray, said cover including fastening means for insertion into the registered holes for securing said trays together in a selected one of at least two predetermined telescoping positions, the cross section of said secured tray defining a horizontal wall adapted to rest upon the top of said tank and a continuous peripheral wall adapted to fit about the exterior lip wherein each of the frames comprises a rectangular border having transverse and longitudinal reinforcing ribs.

5,009,191

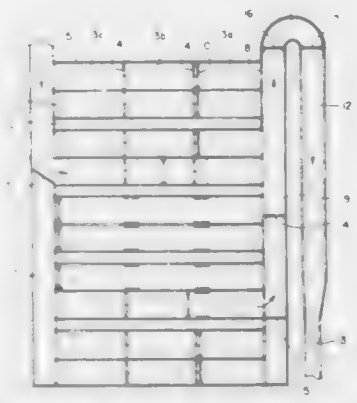
SYSTEM FOR THE STALLING OF ANIMALS

Tage W. Joergensen, Copenhagen, and Leif Christensen, Vaerlose, both of Denmark, assignors to Slagteriernes Forskningsinstitut, Denmark

Filed Sep. 27, 1989, Ser. No. 413,340

Int. Cl.[5] A01K *1/02*

U.S. Cl. 119—20 **7 Claims**



1. System for the stalling of animals, said system comprising: partition means for defining a driving-in passage, a driving-out passings, an elongate pen disposed between said passages, a pen entrance for communication between said pen and said driving-in passage, and a pen exit for communication between said pen and said driving-out passage; an entrance gate for opening and closing said pen entrance; an exit gate for opening and closing said pen exit; a driving gate movable longitudinally of said pen; and at least one stationary intermediate gate disposed in said pen at a predetermined distance from said entrance gate and said exit gate to divide said pen into a plurality of sections of predetermined size; said driving gate and said stationary intermediate gate extending transversely of said pen from one side of the pen to the opposite side.

5,009,192

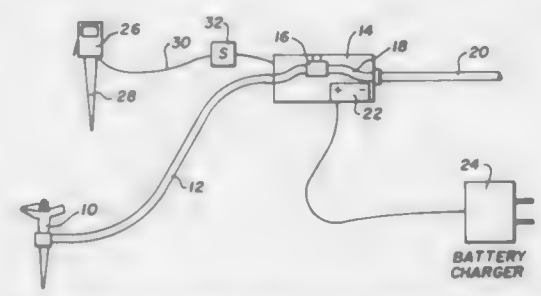
ANIMAL DETERRENT APPARATUS

Barry A. Burman, RR #6, 592 Cheryl Place, Victoria, B.C., Canada U8X 3X2

Filed Sep. 18, 1990, Ser. No. 584,237

Int. Cl.[5] A01K *15/00*

U.S. Cl. 119—29 **10 Claims**



1. An apparatus to deter animals comprising in combination:

a water sprinkler with connection line to a water supply,

a low voltage electrically operated shut-off valve in the connection line,

low voltage power supply means for the shut-off valve, and

infrared proximity sensor for sensing a presence, the sensor powered by the power supply means, adapted to open the shut-off valve in the connection line to the sprinkler when the sensor senses a presence.

5,009,193

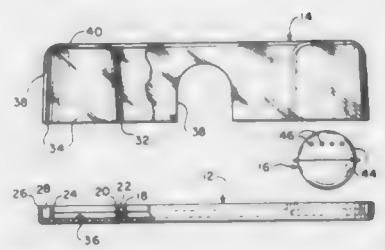
CIRCULAR CAT TOY

Richard A. Gordon, 95 W. 3rd St., Freeport, N.Y. 115[illegible]

Filed Sep. 27, 1989, Ser. No. 413,162

Int. Cl.[5] A01K *15/02;* **A63H** *33/00*

U.S. Cl. 119—29 **5 Claims**



1. An animal plaything comprising a torroidal housing defining an enclosed circular raceway and a hollow ball freely movable in said raceway, said housing having a bottom surface adapted to rest on a planar, substantially horizontal surface, an upper surface, and inner and outer side walls, the inner side wall being continuous, the upper surface being provided with a plurality of substantially oblong openings permitting entry of the animal's paw but preventing passage of the ball therethrough, said oblong opening being sufficiently elongated to permit the animal to manipulate the ball over an extended arc, said outer wall being provided with a plurality of circumferentially spaced portal openings, all but at least one permitting entry of the animal's paw but preventing passage of the ball, said at least one portal opening also permitting passage of said ball for its removal, said ball being porous and being filled with an attractive lure for the animal, said oblong openings and portal openings being arranged in uniformly-spaced, alternating position about the center of said torroidal housing to permit said animal to manipulate said ball from opening to opening and cause its removal from only said at least one portal opening through entry of its paw in a selected one of the adjacent oblong openings.

5,009,194

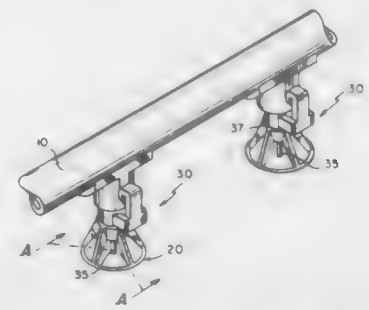
DRINKER SHIELD

Eldon Hostetler, Middlebury, Ind., assignor to Ziggity Systems, Inc., Middlebury, Ind.

Continuation of Ser. No. 149,404, Jan. [illegible], 1988, abandoned. This application Jan. 19, 1990, Ser. No. 469,735

Int. Cl.[5] A01K *7/00*

U.S. Cl. 119—72 **15 Claims**



1. A shield apparatus attached to a trigger drinker watering unit with a trigger pin and a base portion, comprising:

a partially open shield surrounding said trigger pin such that said trigger pin is protected from inadvertent lateral activation by an animal;

said partially open shield surrounding said trigger pin and extending radially outward from said base portion of said trigger drinker water unit;

said partially open shield having a top portion and a bottom portion;

said bottom portion of said partially open shield located below or level with a bottom portion of said trigger pin when said trigger pin is in a substantially open position; and

a connection means for attaching said shield apparatus to said trigger drinker watering unit.

5,009,195

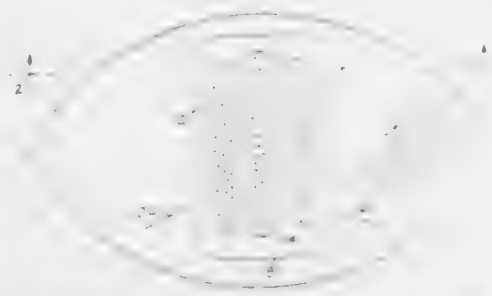
ANIMAL GROOMING DEVICE AND PROCESS

Hiltraut M. Damm, 42 Butler Rd., Scarsdale, N.Y. 10583

Filed Feb. 12, 1990, Ser. No. 478,463

Int. Cl.[5] A01K *13/00*

U.S. Cl. 119—86 **10 Claims**



1. A device for grooming the coat of fur-bearing animals which comprises a substrate sheet of pliable material having dimensions suitable for snugly enfolding the human hand, said substrate sheet having affixed thereto on at least one of its surfaces a plurality of bristles, the shafts of which are nominally perpendicular to said surface and at least some of said bristles having a hooked configuration, said bristles being positioned on said substrate in a manner such that they can be brought into contact with an animal's coat by pressing said substrate sheet against the animal using the palm or fingers of a hand enfolded therein, said substrate sheet having a fastening means to maintain it in snug enfoldment of a human hand, and containing at least one aperture through which the thumb of said human hand can protude while said hand is enfolded in said substrate sheet with the bristles covering the palm area.

5,009,196

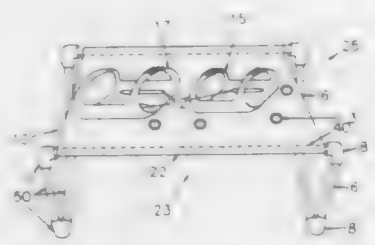
CAT RESTRAINER

Ruby Y. Young, P.O. Box 1094, Kerrville, Tex. 78029

Continuation-in-part of Ser. No. 238,493, Aug. 31, 1988, abandoned. This application Dec. 1, 1989, Ser. No. 449,505

Int. Cl.[5] A61D *3/00*

U.S. Cl. 119—101 **5 Claims**



1. A cat restraining apparatus comprising the combination of a harness apparatus and frame assembly for securing and supporting cats and other small domestic four legged pets for bathing, treating, breeding, transporting and surgical procedures, wherein the combination comprises:

a harness apparatus unit including a base member having four leg openings and supported horizontally on the frame assembly and, wherein the base member is composed of a durable, and flexible sheet of material with its longitudinal edge portions attached to longitudinal members of the frame assembly;

the harness apparatus wherein said base member is generally rectangular and of sufficient size to accommodate four leg openings for a cat or other small animal;

the harness apparatus wherein an upper and lower body harness member is fixedly secured to said base member and further includes a pair of openings that receive the legs of an animal;

the harness apparatus wherein said upper and lower body harness member has a lower body encircling element and has a fixedly secured fabric support panel member provided at the base of and between a plurality of interconnecting strap elements;

said upper and lower body harness member wherein said plurality of interconnecting strap elements are provided with cooperating securing means adapted to captively surround the torso of a cat;

a frame assembly associated with said harness apparatus including upper longitudinal side members approximately the length of said base member, lower transverse members approximately the width of said base member, and a plurality of elongated support members of equal length;

the plurality of elongated support members of equal length and means to detachably connect said elongated support members to said longitudinal side members and to said transverse members normally, or at right angles.

5,009,197

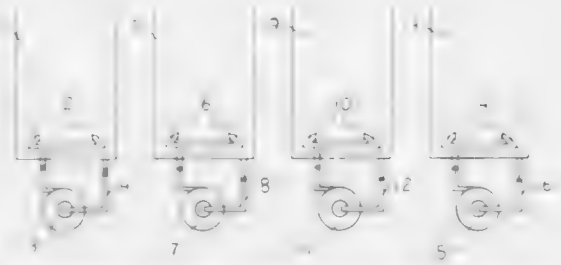
METHOD OF REMOVING OIL FROM BIRDS AND ANIMALS

Eric C. Cottell, Windermere, Private Dr., Bayville, N.Y. 11709

Filed Aug. 15, 1990, Ser. No. 567,629

Int. Cl.[5] A61D *11/00*; **A01K** *29/00*

U.S. Cl. 119—159 **3 Claims**



1. A method of cleaning a contaminated animal by adding a diluent of similar nature to the contaminant then either directly, or by stages, inverting the diluent so that it becomes the internal phase rather than the external phase of the emulsion, which can then be diluted with more of the external phase.

5,009,198

ROTARY VEE ENGINE

Robert W. Sullivan, Snyder; Tommie J. Holder, Mountain Park, and Max F. Buchanan, Roosevelt, all of Okla., assignors to Sullivan Engine Works, Inc., Snyder, Okla.

Division of Ser. No. 151,657, Feb. 3, 1988, Pat. No. 4,867,107. This application Jun. 28, 1989, Ser. No. 373,215

Int. Cl.[5] F02B *57/06*

U.S. Cl. 123—43 A **8 Claims**

1. In a rotary vee engine:

a housing having outer ends;

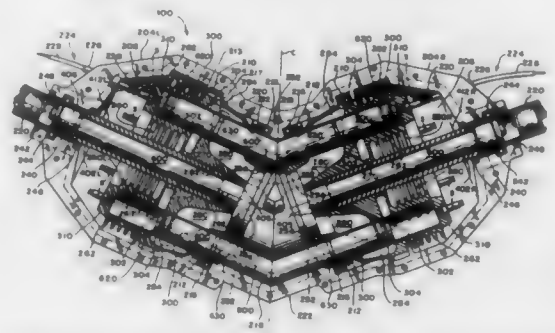
two cylinder blocks each having inner and outer ends and mounted in the housing for rotation of one cylinder block about a first rotational axis and rotation of the other cylinder block about a second rotational axis, said axes being angled to intersect adjacent the inner ends of said blocks at an included angle less than one hundred and eighty degrees;

each cylinder block having a plurality of cylinders formed therein to intersect the inner end of the cylinder block and to extend therefrom into the cylinder block parallel to the rotational axis of the cylinder block;

a plurality of angled pistons each having a portion disposed in a cylinder of one block and a portion disposed in a cylinder in the other block for orbital motion of the pistons coordinately with the rotation of the cylinder blocks;

a central bore formed through each of the cylinder blocks along the rotational axis for the respective cylinder block;

an angled support shaft extending through the central bores of each cylinder block, the support shaft having portions supported by the housing and including means for rotatably and axially supporting each of the cylinder blocks on the support shaft;



a generally bent axis cylindrical wedge shaped central cavity formed by the housing between the inner ends of the cylinder blocks for receiving air/fuel mixture during the operation of the engine;

an exhaust cavity formed by the housing axially outwardly from the central cavity adjacent each cylinder block for receiving and discharging the exhaust gases created during the operation of the engine;

a cooling air cavity formed by the housing adjacent the outer ends of each cylinder block including a torus shaped chamber expanding in volume radially outwardly from the rotational axis of the adjacent cylinder block and terminating in a cooling air discharge port; and

cooling air intake means defined in the outer ends of the housing in fluid communication with the adjacent cooling air cavity.

5,009,199

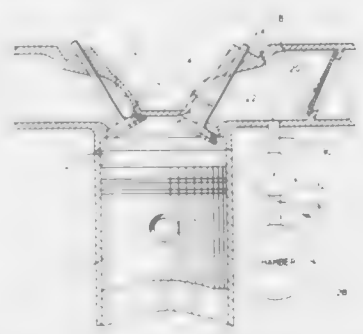
INTAKE RESERVOIR FOR AN ENGINE HAVING A CHECK VALVE

Glen R. MacFarlane, Clarkston, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 8, 1990, Ser. No. 535,000

Int. Cl.[5] F02M *35/10*

U.S. Cl. 123—52 MF **3 Claims**



1. An intake reservoir for an engine having an intake passage leading to a cylinder, a check valve in the intake passage to allow fluid flow toward the cylinder and obstruct fluid backflow in the reverse direction, an intake valve seated in the intake passage between the check valve and cylinder, and a bypass port located on the intake passage so that the bypass port communicates with a trapped volume defined by the portion of the intake passage between the check valve and intake valve, the intake reservoir comprising a reservoir cavity having a single cavity port, a port passage connected between said cavity port and the bypass port enabling fluid flow between the trapped volume and said reservoir cavity, and a control valve connected to said port passage enabling active adjustment of the flow area of said port passage throughout a range of engine operating conditions to regulate fluid flow between the trapped volume and said reservoir cavity.

5,009,200

INTAKE MANIFOLD ASSEMBLY FOR A MULTICYLINDER INTERNAL COMBUSTION ENGINE

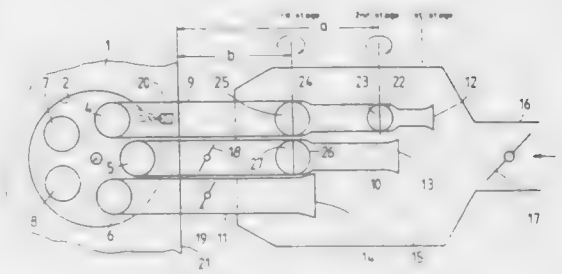
Richard van Basshuysen, Bad Wimpfen, and Armin Bauder, Neckarsulm, both of Fed. Rep. of Germany, assignors to Audi AG, Ingolstadt, Fed. Rep. of Germany

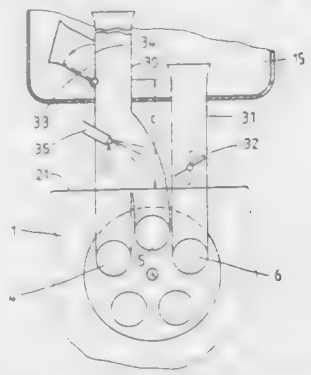
Filed Mar. 16, 1990, Ser. No. 495,287

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1989, 3909837

Int. Cl.[5] F02M *35/10*

U.S. Cl. 123—52 M **10 Claims**





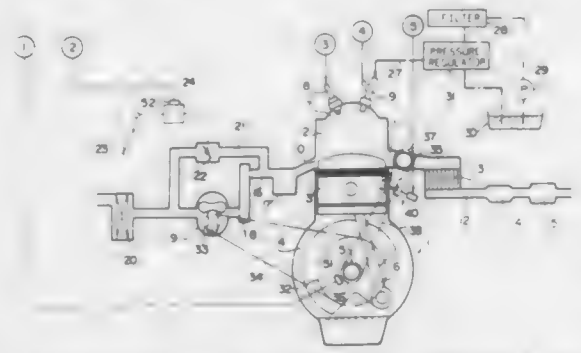
1. An intake manifold assembly for a multicylinder internal combustion engine having at least two inlet valves per cylinder, said assembly comprising longer and shorter length individual intake manifolds for each cylinder, each said manifold serving a respective inlet valve, each said shorter intake manifold having a control valve therein, said assembly characterized in that the effective length of each said longer individual intake manifold can be shortened to the length of the shorter individual intake manifold serving the same cylinder when the control valve is open allowing flow through the shorter intake manifold.

5,009,201

TWO-CYCLE ENGINE HAVING A DIRECT FUEL INJECTION SYSTEM

Koji Morikawa, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 3, 1990, Ser. No. 547,863
Claims priority, application Japan, Jul. 29, 1989, 1-199135
Int. Cl.[5] F02B *33/00*
U.S. Cl. 123—65 BA **3 Claims**



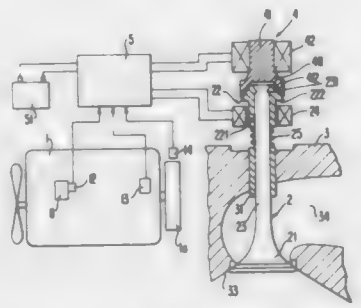
1. A two-cycle engine having at least one cylinder, a scavenge port, an exhaust port, an intake passage communicated with said scavenge port, an exhaust passage communicated with said exhaust port, a scavenge pump provided in said exhaust passage, a rotary exhaust valve provided in said exhaust passage, means for rotating said scavenge pump and said rotary exhaust valve respectively, and a fuel injector provided for injecting fuel directly in the cylinder, the engine comprising:
- valve phase control means for changing a phase of said rotary exhaust valve;
- detector means for detecting engine speed and load on the engine and for producing an operating condition signal;
- valve phase determining means responsive to said operating condition signal for determining the phase of said rotary exhaust valve and for producing a valve phase signal;
- an actuator responsive to said valve phase signal for actuating said valve phase control means whereby changing the phase of said rotary exhaust valve in accordance with engine operating conditions.

5,009,202

ELECTROMAGNETICALLY OPERATED VALVE ASSEMBLY FOR USE IN INTERNAL COMBUSTION ENGINE

Hideo Kawamura, Samukawa, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan

Filed Dec. 18, 1989, Ser. No. 452,041
Claims priority, application Japan, Dec. 22, 1988, 63-324301
Int. Cl.[5] F01L *9/04*
U.S. Cl. 123—90.11 **2 Claims**



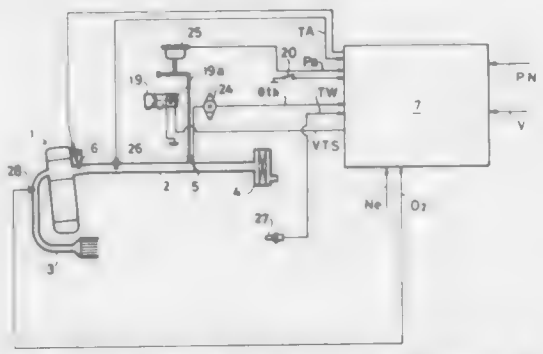
1. An electromagnetically operated valve assembly for selectively opening and closing a port communicating with a cylinder in an internal combustion engine, comprising:
- a valve made of a ceramic material, for selectively opening and closing the port, said valve including a stem;
- a movable member mounted on an end of said stem and having a frustoconical flange portion on an end thereof, said movable member being made of a magnetic material;
- a first coil disposed around said movable member;
- a fixed member disposed in confronting relation to said movable member and having a recessed portion complementary in shape to said frustoconical flange portion, said fixed member being made of a magnetic material; and
- a second coil disposed around said fixed member.

5,009,203

CONTROL METHOD FOR VALVE-TIMING CHANGEOVER IN ENGINE

Yasunari Seki, Tochigi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1989, Ser. No. 388,170
Claims priority, application Japan, Aug. 1, 1988, 63-192239; Aug. 1, 1988, 63-192241
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.16 **6 Claims**



1. A control method for valve-timing changeover in an engine in which the engine is an electronically controlled fuel injection type, valve timing for at least one of either the intake valves or the exhaust valves can be changed over between a low-speed valve timing suitable for a low-speed revolution range of the engine and a high-speed valve timing suitable for a high-speed revolution range of the engine, said method comprising the steps of:
- establishing two sets of fuel injection quantities for selected operating conditions of the engine, one set of which are first fuel injection quantities suitable for the low-speed valve timing and the other set of which are second fuel injection quantities suitable for the high-speed valve timing;
- detecting the selected operating conditions of the engine;
- obtaining a value of the first fuel injection quantity from the one set and a value of the second fuel injection quantity from the other set for the detected operating conditions of the engine; and
- comparing the obtained values for the first and second fuel injection quantities and outputting a signal for causing a changeover of the valve timing on the basis of the result of the comparison.

5,009,204

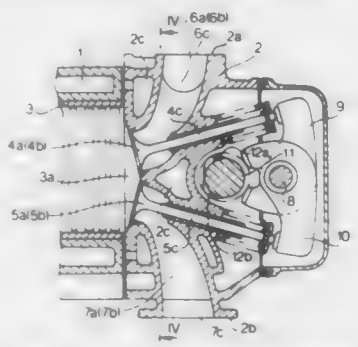
SPARK PLUG ARRANGEMENT IN AN OVERHEAD CAMSHAFT ENGINE

Norio Ishii, Mitaka, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 24, 1989, Ser. No. 441,077
Claims priority, application Japan, Nov. 30, 1988, 63-303381
Int. Cl.[5] F02F *1/32*
U.S. Cl. 123—193 H **1 Claim**

1. In a spark plug arrangement in a single overhead camshaft engine having a cylinder head, two intake valves partially in

two intake ports and two exhaust valves at each cylinder provided in the cylinder head and only one overhead camshaft rotatably mounted in the cylinder head intersecting an extension of a center axis of said cylinder and disposed in a space between the intake valves and the exhaust valves for actuating said intake and exhaust valves by rocker arms, the improvement in the arrangement comprising:
- a spark plug mounted in a plug hole in said cylinder head provided between said two intake valves and along and between said intake ports said spark plug defining an angle



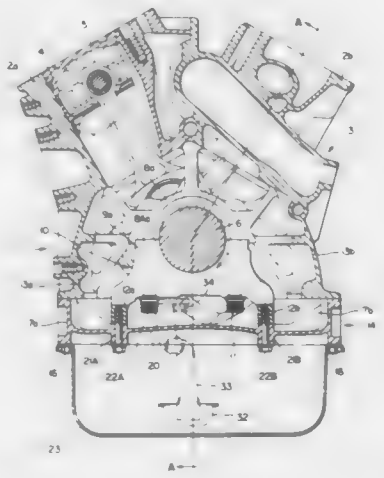
between said exhaust valves with said intake valves located in said angle between said spark plug and said exhaust valves, said intake valves defining substantial acute angles with said exhaust valves and with said spark plug, respectively, with the acute angle between said exhaust valves and said intake valves being larger than the acute angle between said spark plug and said intake valves, the spark plug and the plug hole being arranged so that a center electrode of the spark plug is positioned at said center axis with minimum inclination angle between said valves.

5,009,205

CRANKSHAFT SUPPORTING STRUCTURE FOR AN INTERNAL COMBUSTION ENGINE

Ryoji Abe, Hiroshima; Junichi Okita, Iwakuni; Katsunobu Miyagoshi, Miyagoshi, and Kouichi Hashiyama, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Nov. 8, 1989, Ser. No. 432,998
Claims priority, application Japan, Nov. 9, 1988, 63-282965
Int. Cl.[5] F02F *7/00*
U.S. Cl. 123—195 H **20 Claims**



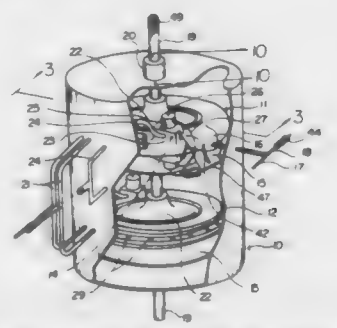
1. A crankshaft supporting structure for a multi-cylinder engine comprising:
- a plurality of bulkheads provided in a cylinder block of the engine to be arranged along an axis of a crankshaft disposed in a lower part of the cylinder block;
- a bearing cap member having a plurality of bearing cap portions each coupled with a lower end of one of the bulkheads so as to form a bearing portion for supporting the crankshaft in conjunction with the bulkhead, and a pair of beam, portions extending along the axis of the crankshaft to interconnect two adjacent bearing cap portions;
- a reinforcement member having a side wall portion coupled with a portion of the cylinder block;
- a plurality of bolt seats located underneath the beam portions of the bearing cap member;
- a plurality of ribs interconnecting one of the bolt seats and the side wall portions; and
- a plurality of bolts each fastening the beam portions and the bolt seats to the cylinder block.

5,009,206

ROTARY INTERNAL COMBUSTION ENGINE

Chong S. Yi, 40-15 79st #4D, Elmhurst, N.Y. 11373

Filed Nov. 16, 1989, Ser. No. 436,610
Int. Cl.[5] F02B *53/00*
U.S. Cl. 123—248 **17 Claims**



1. A rotary internal combustion engine comprising:
- a housing,
- an axle mounted to rotate in the center of said housing,
- a first toroidal casing having a first circular chamber disposed within said housing, said first toroidal casing containing a first rotor rotatably disposed therein, said first rotor being fixedly mounted to said axle,
- a first piston connected to said first rotor and slidably engaged within said first circular chamber for slidably moving along said first circular chamber and including a plurality of oil conduits,
- a second toroidal casing having a second circular chamber disposed in parallel with said first toroidal casing within said housing, said second toroidal casing containing a second rotor rotatably disposed therein, said second rotor being fixedly mounted to said axle,
- a second piston connected to said second rotor and slidably engaged within said second circular chamber for slidably moving along said second circular chamber and including a plurality of oil conduits,
- a first valve member and a second valve member disposed within said first and second toroidal casings, respectively, said first and second valve members including first and second valve doors with a pair of gas-exhausting apertures which are adapted to open or close so as to permit or prevent the piston from passing, respectively,
- a first valve plate fixedly mounted to said axle and disposed in parallel with said first toroidal casing within the housing, said first valve plate having a peripheral edge portion and an extended edge portion for operatively guiding the rotation of a first valve roller therealong, said first valve roller being connected to said first valve doors through a first connecting member,
- a pair of first magnetic members operatively associated with said first valve member and disposed in opposite side to

each other about the first valve member within the housing, said pair of first magnetic members having a first up and down rod with a first closure for operatively opening and closing said pair of gas-exhausting apertures, respectively,

a second valve plate fixedly mounted to said axle and disposed in parallel with said second toroidal casing within the housing, said second valve plate having a peripheral edge portion and an extended edge portion for operatively guiding the rotation of a second valve roller therealong, said second valve roller being connected to said second valve doors through a second connecting member,

a pair of second magnetic members operatively associated with said second valve member and disposed in opposite side to each other about the second valve member within the housing, said pair of second magnetic members having second up and down rod with a second closure for operatively opening and closing said pair of gas-exhausting apertrures, respectively,

a first auxiliary roller and a second auxiliary roller for operatively rotating along said first and second valve roller and connecting said first and second magnetic members through a electric wire, respectively so as to make the magnetic member activate and open and close the first and second valve doors,

refrigeration means are connected to said first and second toroidal casings through a wall of said housing for cooling the first and second chambers,

connecting means are connected to said first and said second toroidal casings through a wall of said housing for exhausting combustion gases from the first and second circular chambers,

first and second air and gas intakes are connected to said first and said second circular chambers, respectively for supplying a compressed air-fuel mixture to the first and second circular chambers, and

spark forming means associated with an ignition and explosion zone formed between said first and second pistons and said first and second valve members respectively, in said first and said second circular chambers, whereby the rotation of the rotor within the internal combustion engine is achieved by continuously transferring the compressed air-fuel mixture to the ignition and explosion zone in a closed valve door position, igniting and simultaneously exploding the mixture continuously, and continuously exhausting the gases of combustion in the closed valve door position and thereafter, the piston passes through the valve doors in an open valve door position and simultaneously, the gases of combustion do not exhaust, whereby rotation of the rotors together with the axle is achieved.

5,009,207

INTERNAL COMBUSTION ENGINE

Dan Merritt, 139 Baginton Road, Coventry, England

Filed May 5, 1989, Ser. No. 347,821

Claims priority, application United Kingdom, May 7, 1988, 8810871; Apr. 24, 1989, 8909185

Int. Cl.[5] **F02B** *19/00*

U.S. Cl. 123—261 **39 Claims**

1. An internal combustion engine comprising at least one pair of first and second cylinders, said first cylinder having a larger swept volume than said second cylinder;

a combustion chamber communicating with said cylinders;

first means for delivering a charge of substantially air into said first cylinder;

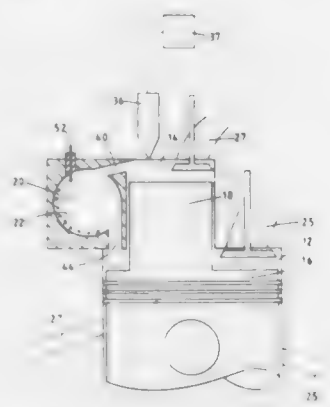
second means for delivering a charge of liquid fuel into said second cylinder;

respective first and second pistons movable in said cylinders;

continually operable ignition means in said combustion chamber;

control means for controlling said second means to commence delivery of said charge of fuel into said second cylinder during movement of said second piston between a first position wherein said piston is at the commencement of its induction stroke and a second position wherein said piston is not less than 10° angle of movement from the end of its compression stroke and to terminate delivery of said charge of fuel when said second piston reaches a third position no later than the inner dead centre position of the piston at the end of the compression stroke; and

means for inhibiting movement of fuel/air mixture from said second cylinder into said combustion chamber prior to



said second piston reaching a fourth position wherein said piston has completed at least substantially 80% of its compression stroke length and means for inducing a vortex motion in air delivered to said combustion chamber from said first cylinder for assisting rapid mixing in said combustion chamber of fuel/air mixture from said second cylinder and air from said first cylinder during combustion.

5,009,208

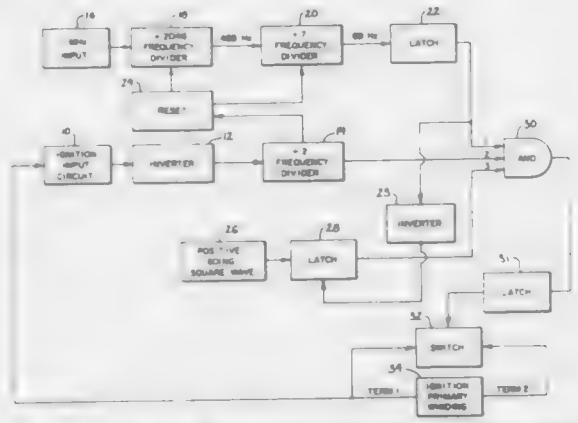
ENGINE SPEED LIMITER

John A. Fiorenza, II, Slinger, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Continuation of Ser. No. 482,006, Feb. 15, 1990, abandoned. This application Aug. 14, 1990, Ser. No. 568,654

Int. Cl.[5] **F02P** *5/15*

U.S. Cl. 123—335 **14 Claims**



7. A speed limiter for an internal combustion engine which has an ignition primary winding that outputs successive ignition pulses, comprising:

computing means for outputting a speed signal functionally related to the time between successive ignition pulses, including:

determining means for outputting a frequency signal functionally related to the frequency of ignition pulses;

first frequency divider means for frequency dividing said frequency signal and for outputting a divided frequency signal;

generating means for generating a reference signal functionally related to a maximum limit speed including:

input means for receiving a clock signal;

means for deriving said reference signal from said clock signal and for outputting said reference signal; and

comparison means for comparing said speed signal with said reference signal and for generating a limit signal if the result of said comparison indicates that the engine speed is about equal to or greater than said maximum limit speed.

5,009,209

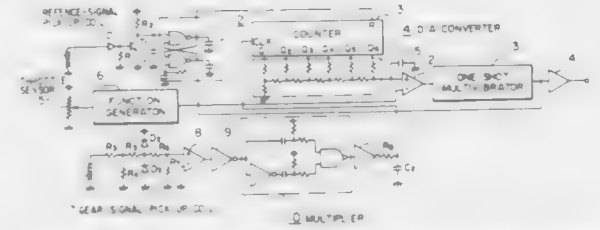
IGNITION TIMING CONTROL CIRCUIT FOR AN INTERNAL COMBUSTION ENGINE

Hiroshi Okuda, and Masayuki Ozawa, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 7, 1990, Ser. No. 476,231

Int. Cl.[5] **F02P** *5/155*

U.S. Cl. 123—415 **13 Claims**



1. An ignition timing control circuit for an internal combustion engine, comprising:

a load sensor (5,6) for sensing the load condition of said engine and generating an output signal representative of the sensed load condition;

reference-signal generating means (1,2) for generating a reference signal;

a clock pulse generator (7-11) for generating clock pulses in accordance with the rotation of the engine;

a counter (3) operable to start the counting of the clock pulses generated by clock pulse generator when said reference-signal generator generates a reference signal, said counter outputting a digitalized output representative of the number of the counter clock pulses;

a digital to analog converter (4) for converting the digitalized output of said counter into an analog voltage having a stepped waveform;

an integrator connector to said digital to analog converter for integrating and smoothing out the stepped output voltage of said digital to analog converter; and

a comparator (12) for comparing the output voltage of said integrator and the output voltage of said load sensor and generating an output signal for controlling the ignition timing of said engine in accordance with the result of comparison,

wherein said integrator comprises a capacitor (15) having a fixed time constant, and wherein said capacitor has one terminal coupled to the output terminal of said digital to analog converter and the other terminal grounded.

5,009,210

AIR/FUEL RATIO FEEDBACK CONTROL SYSTEM FOR LEAN COMBUSTION ENGINE

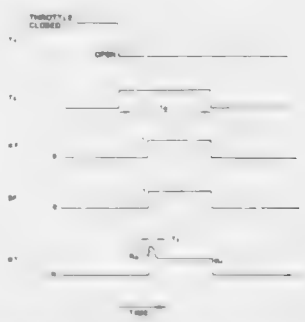
Toyoaki Nakagawa; Hiroshi Sanbuichi, both of Yokohama; Katsunori Terasaka, Yokosuka, and Makoto Saito, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Jan. 7, 1987, Ser. No. 1,328

Claims priority, application Japan, Jan. 10, 1986, 61-3199

Int. Cl.[5] **F02D** *41/14, 41/10*

U.S. Cl. 123—489 **9 Claims**



1. A control system for feedback control of the air/fuel ratio of an air-fuel mixture supplied to an internal combustion engine which uses a three-way catalyst for purifying the exhaust gas, the control system comprising:

air/fuel ratio detection means for detecting actual values of air/fuel ratio in the engine;

load detection means for detecting the load under which the engine is operating;

transient condition detection means for detecting any of predetermined transient operating conditions of the engine; and

control means for performing feedback control of the feed of fuel or air to the engine based on the detected actual values of air/fuel ratio, the control means comprising target value setting means for determining the target value of the air/fuel ratio according to information obtained by said load detection means and said transient condition detection means such that the target value becomes a first value which is higher than the stoichiometric air/fuel ratio at least during predetermined steady-state operation of the engine and shifts to a second value which is optimum for the activities of the three-way catalyst when any of said predetermined transient operating conditions is detected and modulation means for regulating the feed of fuel or air to the engine at the start of the shift of the target value such that the air/fuel ratio deviates from said second value in the direction reverse to the target value immediately before the shift only for a predetermined period of time.

5,009,211

FUEL INJECTION CONTROLLING DEVICE FOR TWO-CYCLE ENGINE

Kazumitsu Kushida, Tokyo; Osamu Kudou, Saitama; Sumitaka Ogawa, Saitama, and Hiroshi Uike, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 448,529, Dec. 11, 1989. This application Aug. 31, 1990, Ser. No. 575,616

Claims priority, application Japan, Feb. 23, 1989, 1-41825

Int. Cl.[5] **F02D** *41/06*

U.S. Cl. 123—491 **4 Claims**

1. A fuel injection control apparatus for a two-cycle engine including an electronic type fuel injection apparatus comprising:

a kick starter for actuating the electronic type fuel injection apparatus;

counter means for counting the number of times the kick starter is actuated; and

means for sequentially reducing fuel injection to the two-cy-



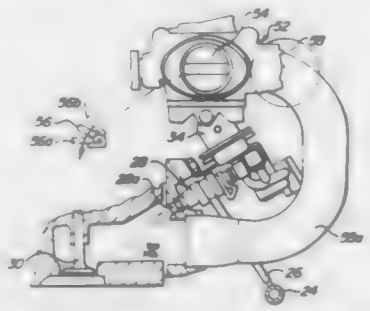
cle engine with every increase in a count value representing an increase in the counting of the number of times the kick starter is actuated for enhancing the possibility of firing of the two-cycle engine.

5,009,212

PORT FUEL INJECTION AND INDUCTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Macram N. Bishai, Windham, N.H., assignor to McCord Winn Textron Inc., Winchester, Mass.

Filed Jan. 17, 1990, Ser. No. 466,587
Int. Cl.[5] F02M *23/00*
U.S. Cl. 123—533 **10 Claims**



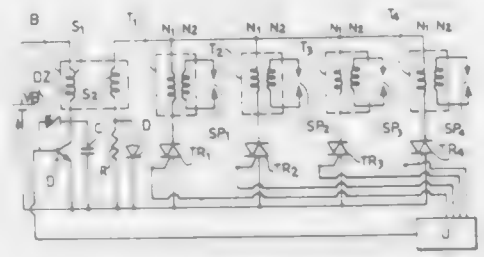
1. An engine having a valve cover with a PCV valve to vent a valve chamber so as to eliminate oil and gas fumes therefrom and an automotive fuel injection system having a port fuel injector connected to a fuel supply and to an air manifold for injecting an air/fuel mixture into the injector for producing a fuel spray pattern at the outlet of an air induction passage from a throttle body assembly and upstream of an inlet valve to the combustion chamber of an internal combustion engine characterized by an integral electric motor driven pump assembly means supplying the injection air to the air manifold; said motor pump assembly means having a pump inlet connected to said PVC valve for providing a lubrication mist to said pump during the operation thereof and said motor pump assembly means having a pump outlet connected to the inlet of said air manifold.

5,009,213

STATIC IGNITION DEVICE FOR INTERNAL COMBUSTION ENGINES

Vittorio Di Nunzio; Eraldo Giaccardi, both of Turin, and Sergio Saluzzo, San Pietro Val, all of Italy, assignors to Fiat Auto S.p.A., Turin, Italy

Filed Feb. 13, 1990, Ser. No. 479,806
Claims priority, application Italy, Feb. 13, 1989, 67084 A/89
Int. Cl.[5] F02P *3/04*
U.S. Cl. 123—620 **9 Claims**



1. In an ignition device for internal combustion engines, including:

mutual impedance means with a primary winding and a secondary winding with a given ratio of turns, the secondary winding being intended to supply at least one ignition branch circuit having at least one ignition spark plug.

excitation means for storing a given ignition energy in the primary winding and for the rhythmic transfer of the energy to the secondary winding, the improvement wherein

said given ratio of turns is selected substantially unitary,

the at least one ignition branch circuit includes a respective voltage step-up transformer which acts between the secondary winding and the at least one respective ignition spark plug with respective activation means which can selectively cause the transfer of the ignition energy to the voltage step-up transformer in order to carry out an ignition cycle, the arrangement being such that, for each ignition cycle, the induction in the voltage step-up transformer varies between an initial prepolarisation value and a final value, the initial value and the final value being approximately identical in value but opposite in sign, and

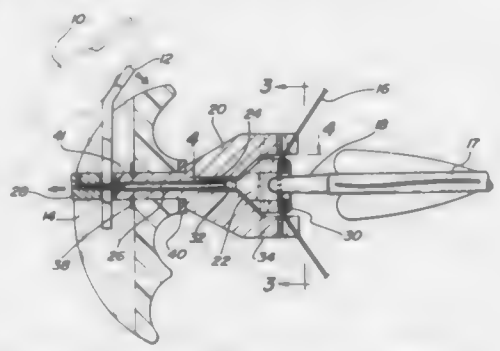
a resistor for limiting the prepolarisation current in the at least one voltage step-up transformer to its initial value is interposed between the secondary winding and the at least one ignition branch circuit.

5,009,214

HOLDING AND RELEASE MECHANISM

James Wilde, 2022 Stephens Rd., Prudenville, Mich. 48651

Filed Oct. 27, 1989, Ser. No. 427,555
Int. Cl.[5] F41B *5/00*; **A01K** *27/00*
U.S. Cl. 124—35.2 **5 Claims**



1. A holding and release mechanism comprising

A. dual yoke arms, said arms having slotted open ends to receive a flexible line or rigid rod;

B a swinging lever holding member attached between said yoke arms, said lever having dual rod-like extensions attached perpendicular to the plane of said lever and adapted to hold said line or rod within said slotted open ends of said yoke arms, said swinging lever holding member being attached to said yoke arms so as to allow said swinging lever to pivot between said yoke arms, and said swinging lever extending rearwardly so as to form a detent portion thereof;

C. a retaining rod slidably positioned in a bore formed in the closed ends of said yoke arms, said rod being urged forwardly by a coil spring engaging said rod on the circumference thereof, having a detent on the forward end thereof, and adapted to frictionally engage said detent portion of said holding member; and

D. a trigger acting upon said retaining rod so as to move said rod rearwardly and out of a detent position in which said swinging lever holding member is held in a detent position so as to retain said line or rod within said slotted portion of said yoke arms.

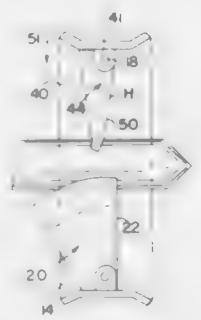
5. The article recited in claim 1 wherein said swinging holding member is adapted to receive a flexible line or rigid rod attached to an animal collar.

5,009,215

ARROW REST AND HOLDER APPARATUS

James E. Ludwig, 4063 Ensign Ave. North, Minneapolis, Minn. 55427

Filed Jul. 2, 1990, Ser. No. 552,796
Int. Cl.[5] F41B *5/00*
U.S. Cl. 124—44.5 **15 Claims**



1. Arrow rest apparatus mountable on an archery bow having a bow handle and a bow string extending rearwardly of the bow handle for supporting an arrow having a shaft, vanes on the shaft and an arrow point when the arrow is in a strung non-drawn position and the arrow is moved to a fully drawn shooting position, comprising a mounting bracket having a transversely extending, generally horizontal leg, a transverse pivot mounted on the horizontal leg above the leg and having a transverse pivot axis, and a generally frusto-sector shaped swing arm having a base edge, leading and trailing edges intersecting with the base edge in longitudinal spaced relationship to one another to diverge in a generally radially outward direction away from the pivot, the intersection of the base and leading edges defining a swing arm corner portion mounted by the pivot for limited pivotal movement between a datum position and an arrow shooting position, and a generally arcuately extending edge extending between and intersecting with the leading and trailing edges radially outwardly of the base edge to provide an arrow shaft supporting surface, the supporting surface having a leading surface portion and a trailing surface portion that extends more closely adjacent to the pivot axis than the minimum spacing of the leading surface portion from the pivot axis.

5,009,216

BOW DRAW STOP

Lawrence M. Ross, 8708 Hwy. V, Caldonia, Wis. 53108

Filed Aug. 13, 1990, Ser. No. 566,840
Int. Cl.[5] E41R *5/00*
U.S. Cl. 124—88 **2 Claims**



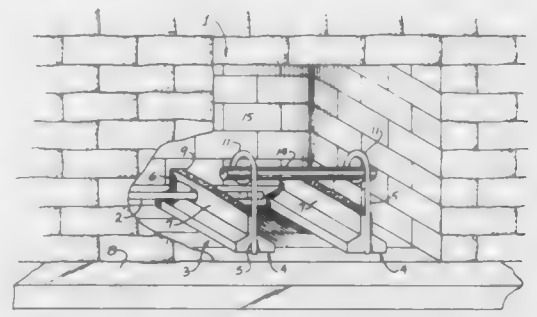
1. A draw stopping device for use with a bow having upper and lower limbs comprising a first strap which is removably attached to said upper limb of the bow on a first end a convenient distance from a central portion of the bow, a second strap which is removably attached to said lower limb of the bow on a first end a convenient distance from said central portion of the bow, a loop-shaped wrist strap which is removably attachable to an archer's wrist, and a third strap which is attached to the wrist strap on a first end, the first, second and third straps being joined on their second ends, the length of the first, second and third straps being such that a bow string may be drawn to a point which is approximately at the user's chin.

5,009,217

FIREPLACE LOG HOLDER AND ALARM

Hewitt M. Johnson, Rte. 2, Box 68, Lebo, Kans. 66856

Filed Apr. 9, 1990, Ser. No. 506,220
Int. Cl.[5] F23H *13/00*; **G08B** *3/02*; **G10K** *1/06*
U.S. Cl. 126—152 R **6 Claims**



1. A fireplace log holder and alarm comprising:

log support means adapted to extend from the front to the rear of a firebox;

a pair of laterally spaced uprights on a front portion of said log support means, and each having an upper end provided with an eye; and

a tubular member spanning the uprights and loosely received in said eyes of the uprights, whereby a falling log striking the uprights or the tubular member will cause the latter to strike the uprights within the eyes to generate a warning sound.

5,009,218

HEAT-INSULATING BUILDING AND/OR LIGHT ELEMENT

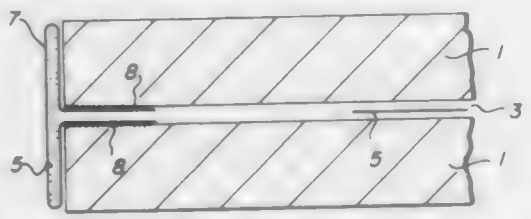
Emil Bächli, Marktgasse 7, CH-5304 Endigen, Switzerland

Division of Ser. No. 88,850, Jul. 22, 1987. This application Jun. 28, 1990, Ser. No. 545,038

Claims priority, application Switzerland, Nov. 29, 1985, 5091/85; Apr. 16, 1986, 1558/86; Sep. 18, 1986, 3737/86

Int. Cl.[5] F24J *2/00*

U.S. Cl. 126—452 9 Claims



1. A process for the production of a heat-insulating building and/or light element comprising the steps of positioning a plurality of flat support elements (2) between at least two substantially parallel wall elements (1) to space the wall elements a predetermined distance apart, applying a metallic foil seal to the edge areas of the spaced wall elements to form a tight bond therebetween so as to define an evacuable interspace (3) therebetween and to absorb any differences in expansion of the wall elements resulting from differences in the temperatures of the wall elements, evacuating the interspace to a vacuum between 1 and 10^{-2} mbar, the distance between the wall elements being smaller than the free path lengths of air molecules as determined for that vacuum such that the heat conductivity of the air molecules between the wall elements is substantially cancelled.

5,009,219

HEATING DEVICE

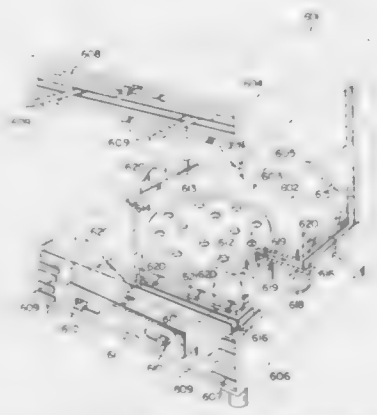
Fredericus Liet, HD Losser, Netherlands, assignor to Liets Agrarische Technieken B.V., HD Losser, Netherlands

Continuation-in-part of Ser. No. 273,046, Nov. 18, 1988, abandoned. This application Feb. 2, 1989, Ser. No. 473,107

Claims priority, application Netherlands, Nov. 20, 1987, 8702795; Dec. 3, 1987, 8072919; Jan. 15, 1988, 8800090; Jan. 15, 1988, 8800091; European Pat. Off., Jun. 17, 1988, 88.201.266.9

Int. Cl.[5] F24B *1/188*

U.S. Cl. 126—523 10 Claims



1. A heating device with a combustion space having at least one free side, said heating device comprising a substantially C-shaped heat exchanger open to the front for heating air, said heat exchanger being provided with a lower heat exchanger part on which solid fuel can be laid, said lower part connecting onto a standing heat exchanger part that in turn connects to an upper heat exchanger part such that said heat exchanger bounds said combustion space, characterized in that

the lower heat exchanger part further comprises a chamber in communication with outside air to be heated and having a wall adjoining the combustion space, through which chamber wall at least one substantially vertical channel extends connecting said combustion space with surrounding air for a supply of air, and

supporting means slidably carrying an ash pan having at least one aperture communicating with outside air, said supporting means comprising a compartment with an upper wall in communication with the at least one vertical channel whereby outside air is supplied via the at least one ash pan aperture to the combustion space, said compartment being positioned in the chamber of the lower heat exchanger part such that at least one passage is formed by the ash pan and a wall of the chamber whereby outside air communicating with the chamber is heated by the combustion space and flows at least partially around said compartment to the outside.

5,009,220

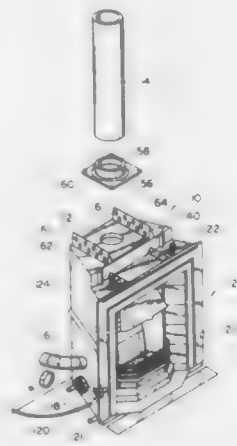
SAFETY ENCLOSURE FOR COAL, GAS OR WOOD-BURNING FIREPLACE

Peter B. Cornelison, Hiram, Ohio, assignor to Condar, Inc., Garrettsville, Ohio

Filed Nov. 22, 1989, Ser. No. 440,105

Int. Cl.[5] F24B *1/188*

U.S. Cl. 126—523 12 Claims



1. A reduced clearance system for a cast iron fireplace including a surround having a rectangular outer periphery, said system including a sheet metal box at least partially open at the front, having a trapezoidally shaped sheet metal base and sheet metal side walls vertically extending from each of the three shorter sides of the base, one of the side walls including near the bottom thereof an air inlet aperture, each of the three side walls having a generally horizontal outwardly projecting sheet metal spacer bar secured thereto for limiting the clearance of the system from adjacent building structure, the opposing side walls being stepped at the top to provide a recess in the top marginal edge, a first trapezoidally shaped top member for the higher step having an aperture therein adapted to accept a flue member, a pair of spaced spacer members secured to said first top member and extending in a direction normal to the front of said box, a second trapezoidally shaped top member for the lower step, a rectangularly shaped front member covering the riser portion of the step, the second trapezoidally shaped top member having at least a pair of spaced sheet metal spacer bars extending generally normal to the front member secured thereto, the front member also having spaced generally vertically extending sheet metal spacer bars secured thereto, and a pedestal supported in spaced relation to the sheet metal base for supporting the cast iron fireplace.

5,009,221

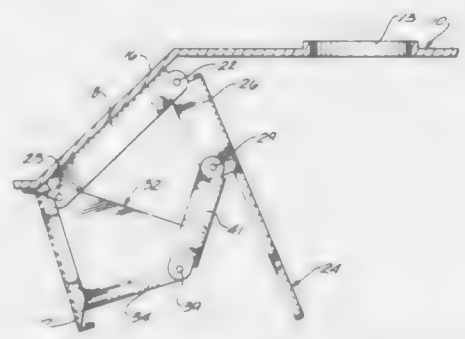
ADJUSTABLE LINTEL EXTENSION FOR A FIREPLACE

David O. Brazell, and J. Timothy French, both of Yorba Linda, Calif., assignors to Superior Fireplace Company, Fullerton, Calif.

Filed Jan. 19, 1990, Ser. No. 467,647

Int. Cl.[5] F24B *1/189*

U.S. Cl. 126—538 7 Claims



1. A pre-built fireplace comprising:

a frame having an outlet for combustion gases and an open front side for viewing the interior of the frame;

a damper movably secured to the frame between a first position allowing combustion gases to escape from the frame through the outlet and a second position substantially inhibiting the escape of gases through the outlet; and

a lintel extension movably secured to the frame and movably coupled to the damper such that movement of the damper to the first position simultaneously moves the lintel extension partially into the viewing area of the frame to inhibit the escape of combustion gases from the open front side and movement of the damper to the second position simultaneously moves the lintel extension to a position substantially out of the viewing area of the frame.

5,009,222

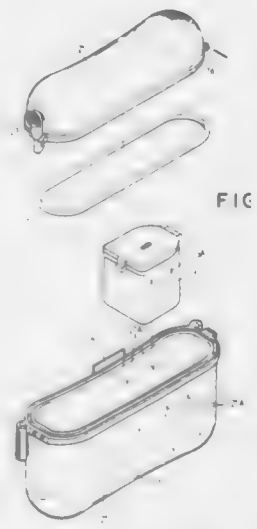
DIVING CASE MASSAGER

Ming-Long Her, No. 24, Alley 3, Lane 42, Sec. 2, Hsiang Shang Road, Taichung City, Taiwan

Filed Jul. 24, 1989, Ser. No. 383,591

Int. Cl.[5] A61H *1/00*

U.S. Cl. 128—36 2 Claims



1. A diving case massager, including a vibrator having a housing with an outer wall surface and a slideway therein and a top edge and grooves bilaterally made in said outer wall surface thereof, a casing having an upper cover pivoted thereto to define an inner chamber for setting therein of said vibrator and comprising an adjustable strip with both ends adjustably connected to said casing for binding said casing to the user, wherein said casing comprises internally and bilaterally a plurality of tenons for respective insertion into said grooves so as to firmly retain said vibrator therein, and wherein said vibrator is comprised of said housing, a cover plate having two swing plates, each swing plate having a stub tenon, and front snap means, an eccentric motor, a holder plate, a battery set and a resilient washer, said eccentric motor and said battery set being mounted on said holder plate respectively at both sides thereof, said holder plate being further set in the slide way of said housing, said housing having an axle seat on said top edge and comprising an axial hole for insertion therein from both ends of said two stub tenons of the two swing plates of said cover plate, so as to let said cover plate be pivoted to said housing, said housing also comprising a circular scoop channel at the top around its periphery and a projecting portion beneath said scoop channel, said scoop channel having said resilient washer set therein to provide a water-tight seal when said cover plate is connected to said housing and said front snap means are engaged with said projecting portion of said housing.

5,009,223

VARIABLE AXIS KNEE BRACE

Michael A. DeFonce, 12149 Mirror Lake, Creve Coeur, Mo. 63146

Filed Oct. 2, 1989, Ser. No. 415,623

Int. Cl.[5] A61F *5/00*

U.S. Cl. 128—80 C 13 Claims



1. A stabilizing mechanical hinge for use in a knee brace for simulating the functions of the articulating members in the human knee, said brace having leg grasping means for clasping the brace to wearer's leg and means defining a mechanical hinge at the lateral and medial sides of the human knee, said hinge comprising:

a femoral joint element including at least one femoral arcuate slot formed through said femor joint element with center of curvature located at the femoral attachment point of a cruciate ligament;

a tibial joint element including at least one tibial arcuate slot formed through said tibial joint element with center of curvature located at the tibial attachment point of a cruciate ligament;

at least one femoral pivot and bearing means carried by said femoral joint element, said femoral pivot and bearing means located at the center of curvature of said femoral arcuate slot and having a surface in bearing engagement with said tibial arcuate slot,

at least one tibial pivot and bearing means carried by said tibial joint element, said tibial pivot and bearing means located at the center of curvature of said tibial arcuate slot and having a surface in bearing engagement with said femoral arcuate slot;

thrust resisting means mounted to said femoral pivot and bearing means and confining said tibial joint element be-

tween said femoral joint element and said thrust resisting means; and

thrust resisting means mounted to said tibial pivot and bearing means and confining said femoral joint element between said tibial joint element and said thrust resisting means.

5,009,224

METHOD FOR ATTACHING A PRESSURE-SENSITIVE FILM ARTICLE HAVING HIGH MOISTURE VAPOR TRANSMISSION RATE

Susan M. Cole, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 266,201, Oct. 27, 1988, abandoned, which is a continuation of Ser. No. 913,688, Sep. 30, 1986, abandoned. This application Jul. 30, 1990, Ser. No. 561,247

Int. Cl.[5] A61F *13/00, 15/00;* **A61L** *15/00*

U.S. Cl. 128—156 **23 Claims**

2. A method of attaching a device or article to the skin comprising attaching said device or article to the skin with a pressure sensitive adhesive wherein said adhesive comprises a hydrophilic film which is continuous and liquid impermeable over its entire surface, said film having dispersed therein cellular voids containing a gaseous phase constituting at least 10 percent of the volume of said film, and a 0.76 mm thickness of said film having a moisture vapor transmission rate of at least about 400 g/m^2 per 24 hours at 40° C. and an 80 percent humidity differential.

5,009,225

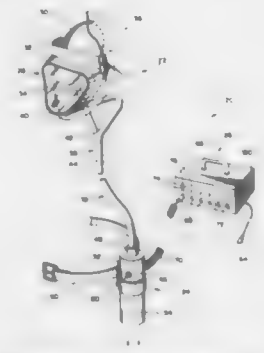
PERSONAL VENTILATING SYSTEM

William S. Vrabel, Warsaw, Ind., assignor to Boehringer Mannheim Corporation, Indianapolis, Ind.

Filed Nov. 30, 1989, Ser. No. 443,916

Int. Cl.[5] A62B *7/00*

U.S. Cl. 128—201.24 **4 Claims**



1. A personal ventilating system for use with a surgical hood enveloping at least the wearer's face and isolating from the surrounding atmosphere the breathing space proximate the wearer's nose and mouth, said system comprising:

inlet means for receiving air from the breathing space isolated by the surgical hood;

outlet means for exhausting to the surrounding atmosphere air flowing from said inlet means;

filter means intermediate said inlet means and said outlet means for removing impurities from the air drawn from the breathing space within the surgical hood;

adjustable flow inducing means including a fan and a variable speed d.c. motor for driving said fan operable for drawing air from the breathing space within the surgical hood and causing it to exhaust through said outlet means to the surrounding atmosphere; and

a first power source for operating said flow inducing means to achieve a desired flow rate including a d.c. power supply distant from the wearer and having a variable speed control for selectively varying the voltage being directed to said motor;

cord means selectively coupling said power supply and said motor;

a second power source for operating said flow inducing means including a battery; and

switch means for selectively energizing said motor either by said power supply or by said battery.

5,009,226

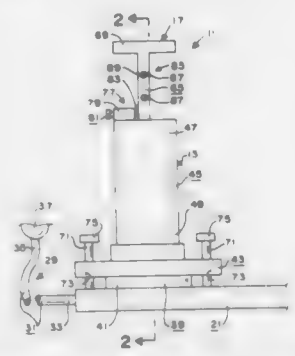
MECHANICAL RESUSCITATOR

William T. Holt, 4610 Ellendale Rd., Memphis, Tenn. 38135

Filed May 14, 1990, Ser. No. 523,897

Int. Cl.[5] A62B *7/00*

U.S. Cl. 128—205.18 **19 Claims**



1. A resuscitator for conveying gas to a patient's lungs, said resuscitator comprising:

(a) a pump having a cavity and including movable means movable between a first position and a second position for forcing gas from said cavity of said pump when moved from said first position to said second position and for drawing gas into said cavity of said pump when moved from said second position to said first position, said pump having an opening for allowing gas to be drawn into and forced out of said cavity thereof;

(b) a base member having a passageway for allowing gas to pass therethrough, said passageway having a first end and a second end;

(c) coupling means for allowing gas to pass from said passageway of said base member to said patient's lungs, said coupling means including a hollow tube for being connected to said second end of said passageway of said base member to allow gas to pass from said passageway of said base member therethrough; and

(d) seal means for forming a gas-tight seal between said opening of said pump and said first end of said passageway of said base member when said movable means of said pump is moved from said first position to said second position to allow gas to be forced from said cavity of said pump through said passageway of said base member and out said coupling means.

5,009,227

ENDOTRACHEAL TUBE HOLDER

Peter P. Nieuwstad, 12374 NE. 116th La., Kirkland, Wash. 98034

Filed Sep. 21, 1989, Ser. No. 410,429

Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—207.17 **9 Claims**

1. A medical tube holder including:

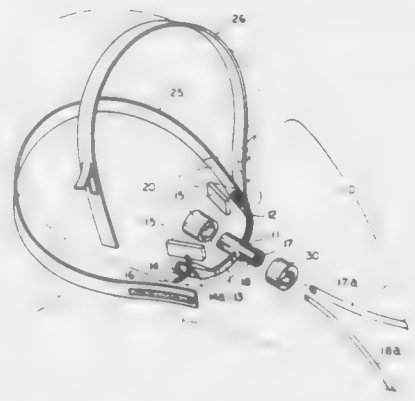
a tubular member having two separate parallel passageways, one of said passageways adapted to hold a first medical tube and the other of said passageways adapted to hold a second medical tube;

a removable sleeve collet disposed over said tubular member;

said sleeve collet having a partial inner annular ring member;

flanges disposed on opposite sides of said tubular member engageable with said inner annular ring member on said sleeve collet to prevent the removal of said sleeve collet;

said tubular member having a circumferential groove for mating with said inner annular ring member on said sleeve collet to tighten said tubular member against said first



medical tube and hold it in position relative to said passageway adapted to hold said first medical tube; and

two flexible elongated side members disposed on either side of and extending away from said tubular member and adapted to attach said medical tube holder to the face of a wearer.

5,009,228

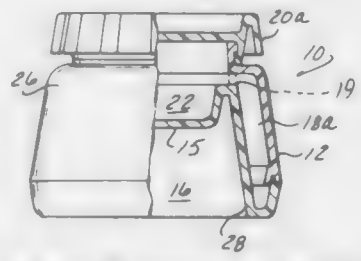
DEVICE FOR RELIEVING EAR PAIN

Frank L. Clark, 872 E. Napier, Benton Harbor, Mich. 49022

Continuation-in-part of Ser. No. 245,577, Sep. 19, 1988, abandoned, which is a continuation-in-part of Ser. No. 161,676, Feb. 29, 1988, abandoned. This application Jun. 26, 1989, Ser. No. 371,623

Int. Cl.[5] A61F *7/00*

U.S. Cl. 128—380 **14 Claims**



5. A device for use in conjunction with the outer ear and surrounding cranial base region of a patient for relieving inner ear pain, the device comprising:

a cup-shaped housing having an oval shape to conform to the shape of the outer ear for closely enclosing the outer ear, said cup-shaped housing defining a first ear enclosing interior chamber, said interior chamber having a first open end portion and a second base portion, said first open end portion configured to closely encompass the outer ear of the user, said cup-shaped housing further comprising inner and outer walls defining a second heat chamber therebetween, an opening formed in said outer wall at said second base portion, and an annular portion means, extending around the perimeter of said first open end portion, for tightly and comfortably contacting the side of a user's head;

a removable cap, engageable over, and in a water tight relationship with, said opening in said outer wall, and configured to provide a flat base for grasping when in use; and

a heat source within said second heat chamber for heating said first ear enclosing interior chamber and the inner ear of the user when said cup-shaped housing is placed over the outer ear.

5,009,229

STEROID ELUTING INTRAMUSCULAR LEAD

Pierre-Andre Grandjean, Bassenge, Belgium, and Philip H. J. Lee, Woodbury, Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Dec. 6, 1989, Ser. No. 446,594

Int. Cl.[5] A61N *1/05*

U.S. Cl. 128—419 P **6 Claims**



1. An apparatus for stimulating a skeletal muscle of a human patient surgically prepared to assist the heart of said human patient comprising:

a. implantable pulse generator means for generating pulses to stimulate said skeletal muscle in timed relation to said heart of said human patient;

b. a connector for electrically coupling said pulses from said implantable pulse generator;

c. at least one sealing ring coupled to said connector to seal said connector to said implantable pulse generator means;

d. an electrically conducting coil having a proximal end and a distal end wherein said proximal end is electrically coupled to said connector;

e. an insulating sheath disposed over substantially all of said electrically conducting coil except a portion at said distal end of said electrically conducting coil wherein said portion is sufficient to function as an electrode to couple said pulses to said skeletal muscle;

f. a length of suture material having a proximal end and a distal end wherein said proximal end is attached to said distal end of said electrically conducting coil;

g. a suture needle attached to said distal end of said length of suture material;

h. means coupled to said length of suture material for holding said electrode in contact with said skeletal muscle; and,

i. means releasably embedded within said length of suture material for lowering a stimulation threshold of said skeletal muscle.

5,009,230

PERSONAL GLUCOSE MONITOR

Donald P. Hutchinson, Knox County, Tenn., assignor to EOL, Inc., Oak Ridge, Tenn.

Continuation-in-part of Ser. No. 345,662, May 1, 1989, Pat. No. 4,901,728, which is a continuation-in-part of Ser. No. 200,130, May 31, 1988, abandoned. This application Feb. 12, 1990, Ser. No. 475,844

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—633 **14 Claims**

1. A device for the non-invasive determination of the concentration of blood glucose in a patient which comprises:

a first source of infrared light of a selected wavelength;

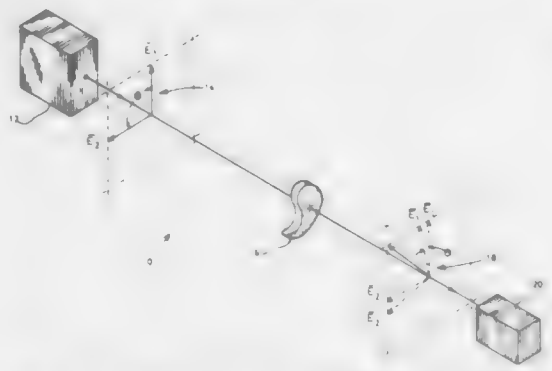
means for repetitively producing two alternating linearly-polarized orthogonal states of said infrared light, said two states being equal in amplitude;

means for directing said two states of said infrared light non-invasively through a selected tissue of said patient;

polarizing means for receiving said two states subsequent to

passage through said selected tissue of said patient, and for passage of portions of said two states in a direction of transmission of said polarizing means;

detector means for detecting the intensities of said portions of said two states passing through said polarizing means, said intensities being related to glucose concentration and absorption in said selected tissue;



means for producing a sum and a difference of said intensities of said states received by said detector means; and

means for providing a ratio of said sum and said difference of said intensities to provide a signal related only to said glucose concentration.

5,009,231

MICROPROCESSOR CONTROLLED APPARATUS FOR THE NONINVASIVE DETERMINATION OF PERIPHERAL OUTFLOW AND FLOW DISTURBANCES

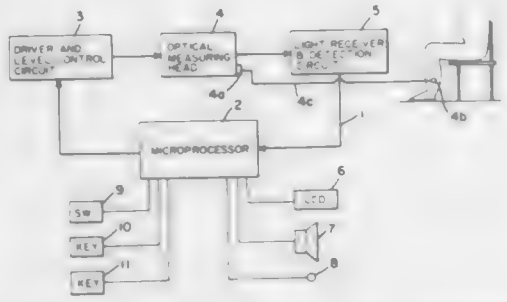
Hans J. Schmitt, and Vladimir Blazek, both of Aachen, Fed. Rep. of Germany, assignors to Fa. Nattermann Arzneimittel GmbH, Cologne, Fed. Rep. of Germany

Filed Mar. 17, 1987, Ser. No. 26,607

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1986, 3609075

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—633 **12 Claims**



1. A measurement apparatus for the noninvasive determination of peripheral blood outflow and flow disturbances in veins of human beings, said apparatus including at least one light transmitter and one light receiver for directing and receiving reflected light from an extremity of said being, an evaluation and read-out circuit to ascertain blood outflow and inflow in the veins by means of measuring the change in light reflection, said evaluation and read-out circuit including means to raise, prior to said measuring, the current flowing through the light transmitter until the signal-to-noise ratio of the receiver has attained a specific value.

5,009,232

EXTRACORPOREAL LITHOTRIPSY APPARATUS USING HIGH INTENSITY SHOCK WAVES FOR CALCULUS DISINTEGRATION AND LOW INTENSITY SHOCK WAVES FOR IMAGING

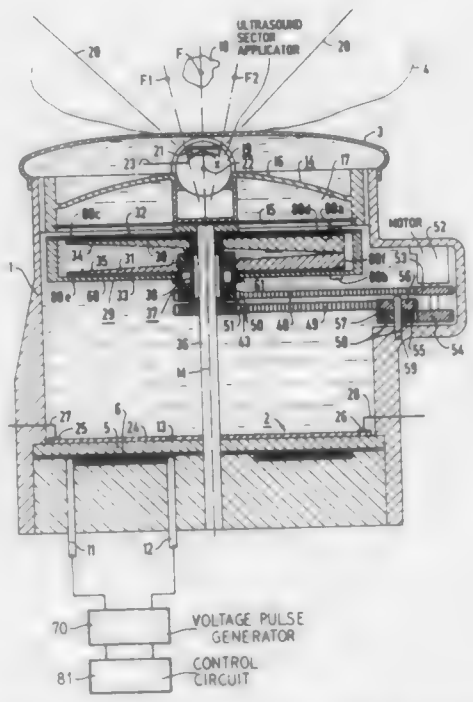
Dietrich Hassler, Uttenreuth, and Erhard Schmidt, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 11, 1989, Ser. No. 392,356

Claims priority, application European Pat. Off., Aug. 17, 1988, 88113375.5

Int. Cl.[5] A61B *17/22*

U.S. Cl. 128—660.03 **19 Claims**



1. An extracorporeal lithotripsy apparatus for treatment of a calculus in the body of a patient, comprising:

means for generating shock waves propagating in a propagation direction and converging in a focus zone;

means including a shock wave propagation medium for coupling shock waves generated by said means for generating shock waves into the body of said patient;

means for selectively driving said means for generating shock waves to generate high intensity shock waves converging in a focus zone of high intensity shock waves for disintegrating said calculus or for generating low-intensity shock waves for producing an image of said focus zone of high-intensity shock waves;

pressure sensor means disposed in said propagation medium for measuring echoes in the form of pressure fronts having a cross-section caused by reflection of said shock waves for generating electrical signals corresponding thereto, said pressure sensor means having a surface active for sensing pressure which is co-extensive with the cross-section of said echoes in the region of said surface;

acoustic means through which said flow intensity shock waves pass for deflecting said low-intensity shock waves, when generated, for conducting a sector scan which includes said focus zone of high-intensity shock waves; and

reception means connected to said pressure sensor means for generating said image of said focus zone of high-intensity shock waves from said electrical signals in the form of a B-image.

5,009,233

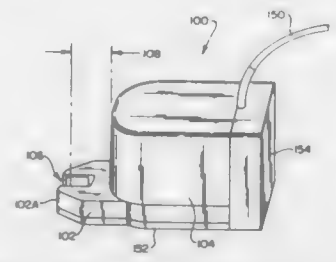
MINIATURIZED HAND-HELD LASER SCANNING MICROMETER

Harry G. Petrohilos, Yellow Springs, Ohio, assignor to Laser-Mike, Inc., Dayton, Ohio

Filed Jan. 10, 1989, Ser. No. 295,272

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—666 **8 Claims**



1. A miniaturized laser scanning micrometer for making precision hand-held measurements comprising:

compact housing means for enclosing said miniaturized laser scanning micrometer, said housing means comprising handle means for gripping said miniaturized laser scanning micrometer and scanning gap extension means projecting from said handle means for defining a scanning gap of said miniaturized laser scanning micrometer at a distance spaced from said handle means, said scanning gap extension means being substantially thinner than said handle means and tapering in width towards its distal end to facilitate insertion of said scanning gap extension means into limited spaces to permit taking measurements therewithin;

laser beam generating means housed within said handle means for generating a collimated laser beam;

photocell means housed within said handle means for detecting said collimated laser beam;

laser beam scanning means housed within said handle means for receiving said collimated laser beam from said laser beam generating means and repeatedly scanning said collimated laser beam through a defined optical space; and

optical means housed within said handle means and said scanning gap extension means for receiving said collimated laser beam from said laser beam scanning means and directing said collimated laser beam across said scanning gap through said scanning gap extension means to said photocell means.

5,009,234

FOR THE THERMODILUTION METHOD OF DETERMINING CARDIAC OUTPUT

Eckhard Alt, Eichendorffstrasse 52, 8012 Ottobrunn, Fed. Rep. of Germany

PCT No. PCT/DE88/00240, § 371 Date Dec. 22, 1988, § 102(e) Date Dec. 22, 1988, PCT Pub. No. WO88/08274, PCT Pub. Date Nov. 3, 1988

PCT Filed Apr. 27, 1988, Ser. No. 301,760

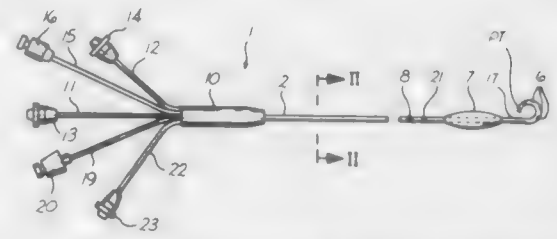
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1987, 3714027

Int. Cl.[5] A61B *5/02*

U.S. Cl. 128—672 **22 Claims**

1. Instrumentation for determining cardiac output by means of a single catheter introduced along an aorta to extend into the left heart by measurement of the change of temperature resulting from the injection, comprising in combination: distal cryogen discharge means positioned on the catheter for entering a cryogen impulse into the bloodstream of the left ventricle,

a temperature sensor disposed within the catheter toward a proximal position from the cryogen discharge position for positioning in the aorta having accompanying temperature processing means for sensing temperature changes at the temperature sensor position over a cooling-warming cycle generated by said cryogen impulse to establish temperature changes effected in the bloodstream of the aorta introduced by both flow of cryogen through the catheter



past the sensor before entering the bloodstream and flow of chilled blood toward the aorta past the single sensor in response to the injection of the cryogen impulse.

5,009,235

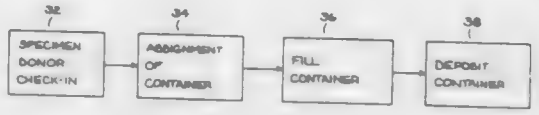
URINE SPECIMEN COLLECTING METHOD USING A VEHICLE

Ronald L. Messenheimer, 11909 Trailridge Dr., Potomac, Md. 20854

Filed Aug. 16, 1989, Ser. No. 394,719

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—760 **3 Claims**



1. A method of collecting, without observation and in a container, urine specimens that are to be analyzed for illegal drugs comprising:

providing a highway vehicle having at least two privacy rooms each having a receptacle for disposal of urine and free of access to substances that can be used for the purpose of altering laboratory test results from the results justified by the unadulterated urine specimen of the donor, a secure area for temporary storage for filled urine containers and a reception station for a collection site person;

transporting said vehicle to a predetermined location;

directing a urine donor to said predetermined location and to the reception area of said vehicle wherein each donor is given an empty urine collection container;

marking the empty container with a unique identification indicator;

carrying the empty container into a privacy room;

filling the container with the urine sample by the donor while the donor is in one of said privacy rooms and unobserved;

returning the urine filled container to the collection site person where the container is sealed in the presence of the donor and thereafter deposited in said secure area for temporary storage; and

removing the urine containers from said temporary storage to a testing location under the controlled custody.

5,009,236

URINE COLLECTION SYSTEM

William S. Brothers, 1815 N. 1400 East, Provo, Utah 84604

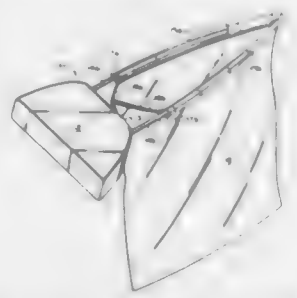
Filed Jan. 29, 1990, Ser. No. 471,609

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—761 **8 Claims**

1. A urine collection system comprising, a mount that includes a hand engaging means, from a front face of which mount co-planar rod means extend outwardly that are centrally bowed apart and slope towards one another to their

forward ends; a flexible bag means that includes an open top or mouth end with sleeves formed along opposite edges of said



flexible bag means mouth end; and means for closing said flexible bag means mouth end.

5,009,237

DEVICE FOR MAKING CIGARETTES

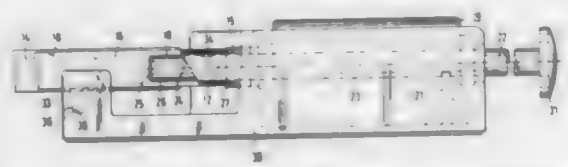
Ernst Schmidt, Stuhr; Heinz Stehmeier, Bremen; Heinrich W. Ruppert, Trossingen; Klaus G. Gatschmann, Bad Durrheim, and Gunter Schutze, Trossingen, all of Fed. Rep. of Germany, assignors to Martin Brinkmann AG, Fed. Rep. of Germany

Filed Sep. 19, 1984, Ser. No. 652,298

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1983, 8326921; Nov. 30, 1983, 3343407; Mar. 19, 1984, 3410038

Int. Cl.[5] **A24C** *5/00*

U.S. Cl. 131—70 **14 Claims**



1. A device for the do-it-yourself making of a cigarette by transferring a pre-portioned tobacco rod from a cylindrical wrapping into a cigarette tube comprising:

an axially moveable pusher member having an effective end for engaging the tobacco rod;

and axially moveable insertion nozzle being insertable into said cigarette paper tube in advance of said effective end of the pusher member;

said insertion nozzle being of hollow tubular configuration and having an insertion end of smaller diameter than the cigarette papertube.

5,009,238

APPARATUS FOR SUPPLYING FIBROUS MATERIAL TO MACHINES FOR SIMULTANEOUSLY PRODUCING A PLURALITY OF CIGARETTE RODS

Uwe Heitmann, Hamburg, Fed. Rep. of Germany, assignor to Körber AG, Hamburg, Fed. Rep. of Germany

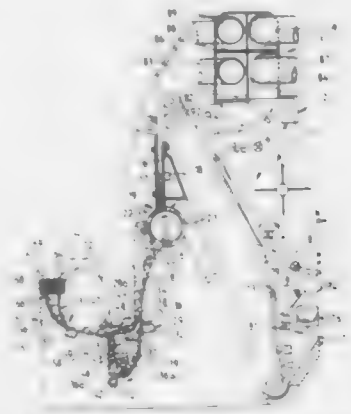
Filed Nov. 1, 1989, Ser. No. 431,473

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1988, 3839354

Int. Cl.[5] **A24B** *7/14*

U.S. Cl. 131—108 **10 Claims**

1. Apparatus for supplying fibrous material, such as tobacco, to a machine for simultaneously making a plurality of rods each of which is to be subdivided into rod-shaped articles of the tobacco processing industry, comprising a distributor; a plurality of gates each having an inlet for reception of fibrous material, said gates further having outlet means for admission of fibrous material into said distributor; means for conveying fibrous material from said distributor; and means for dividing



the conveyed fibrous material into a plurality of discrete streams

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5,009,239

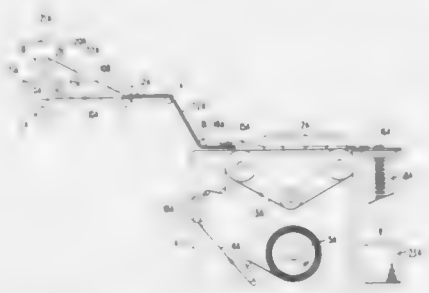
SELECTIVE DELIVERY AND RETENTION OF ALDEHYDE AND NICOTINE BY-PRODUCT FROM CIGARETTE SMOKE

Richmond R. Cohen, Hockessin, and Gary A. Luzio, Bear, both of Del., assignors to Hoechst Celanese Corporation, Bridgewater, N.J.

Filed Dec. 20, 1988, Ser. No. 286,687

Int. Cl.[5] **A24D** *3/06, 3/08, 3/14*

U.S. Cl. 131—342 **24 Claims**



1 A process for improving appearance plus selective aldehyde filter retention and selective nicotine pass through properties of a cigarette filter element comprising filter substrate in the form of at least one of synthetic thermoplastic fiber- and/or film-containing substrate material, comprising

(a) directly treating said filter substrate with an effective amount of a modifier composition comprising

(1) polyethyleneimine together with

(2) an organic acid selected from at least one of the group consisting of formic, propionic, butyric, lactic, benzoic, and acetic acid;

in an amount sufficient to obtain a buffered composition within a pH range of about pH 8 to about pH 9.5; and

(b) completing fabrication of the desired filter element;

whereby selective filter retention of aldehyde smoke components and selective filter pass through of nicotine smoke components are promoted in combination.

5,009,240

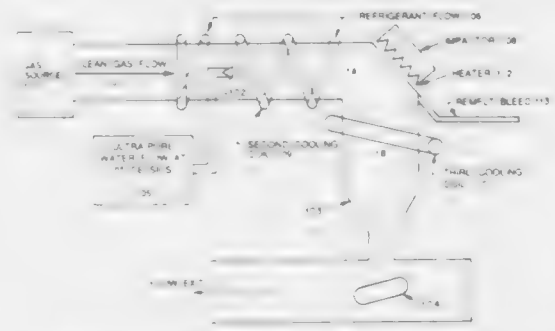
WAFER CLEANING METHOD

Mark W. Levi, Utica, N.Y., assignor to United States of America, Washington, D.C.

Filed Jul. 7, 1989, Ser. No. 377,020

Int. Cl.[5] **B08B** *7/00,* **F25D** *17/02*

U.S. Cl. 134—7 **6 Claims**



1. A semiconductor wafer cleaning system which cleans a semiconductor wafer by sandblasting the semiconductor wafer with ice particles such that when said semiconductor wafer has been cleaned, any residual ice particles may be evaporated from the semiconductor's surface without leaving any contamination on said semiconductor wafer, said semiconductor wafer cleaning system comprising:

a source of pressurized gas which emits a stream of gas with a flow rate that is adjustable;

a conduit which is fixed to said source of pressurized gas so that the conduit receives and conducts said stream of gas to said semiconductor wafer;

a source of pressurized water which emits to a stream of water,

a spray head which is connected to said source of pressurized water and which protrudes into said conduit so that the spray head receives and converts said stream of water into a spray of water which is conducted by said stream of gas through said conduit; and

a means for cooling said spray of water to temperatures which are below a point at which water freezes, said cooling means thereby converting said spray of water into said ice particles which sandblast and clean said semiconductor wafer as they are conducted to the semiconductor wafer by said stream of gas in said conduit.

5,009,241

APPARATUS FOR WASHING NARROW NECK BOTTLES

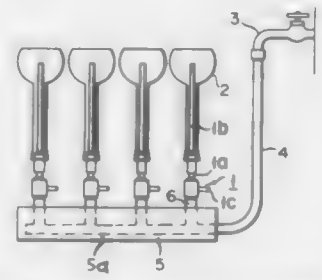
Hideyuki Nishizawa, 1-5-1 Nakazato, Kita-ku, Tokyo, Japan

Continuation of Ser. No. 139,348, Dec. 29, 1987, abandoned. This application May 22, 1990, Ser. No. 529,741

Claims priority, application Japan, Dec. 29, 1986, 61-312360

Int. Cl.[5] **B08B** *3/02, 9/08*

U.S. Cl. 134—102 **2 Claims**



1. Apparatus for washing narrow neck bottles comprising:

a base having a header with a plurality of vertical branches;

water supply hose means connected to said header to supply water to said vertical branches of said header;

a plurality of aspirator means each having an intake end and an outlet end, there being one of said aspirator means connected to each of said branches, its inlet end being so connnected; each said aspirator mean comprising a vertical discharge pipe with an air suction port entering into said vertical discharge pipe from atmosphere so as to provide air for entrainment into water flowing through said discharge pipe;

a vertical tube connected to the outlet end of each of said aspirator pipes;

whereby bottles can be mounted inverted one each of said vertical tubes and washed by water discharged through said aspirator, which water contains a substantial quantity of air bubbles entrained from said air suction port.

5,009,242

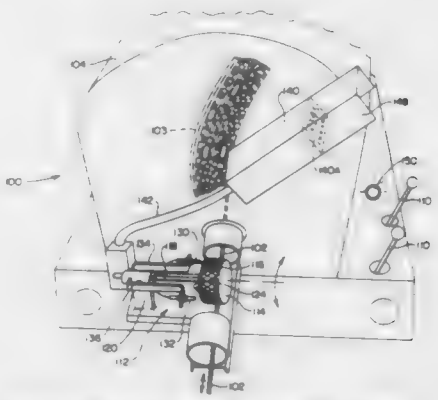
APPARATUS FOR MONITORING SEWER CLEANING TOOL EXTENSION

Charles J. Prange, Cridersville, Ohio, assignor to Sewer Rodding Equipment Company, Lima, Ohio

Filed Sep. 12, 1989, Ser. No. 405,988

Int. Cl.[5] **B08B** *9/04*

U.S. Cl. 134—113 **6 Claims**



1. A mobile sewer cleaning machine comprising:

an elongated sewer cleaning tool wound upon a reel mounted in a reel compartment of the machine;

motor means coupled to said reel for rotating said reel;

motor control means for operating said motor means in one direction to play out said tool into a sewer by unwinding it from said reel, and in the direction opposite to said one direction to retract said tool from said sewer by rewinding said tool onto said reel;

movement signaling means coupled to said tool for generating signals representative of play out of said tool in defined incremental lengths and retraction of said tool in defined incremental lengths, said movement signaling means comprising:

a rotatably mounted tool sensing drum which is frictionally engaged with and rotated by said tool and including a position indicator mounted thereto,

two proximity sensors positioned to sense said position indicator as said drum is rotated, and

switch means coupled to said motor control means for activating one of said proximity sensors upon rotation of said motor means in said one direction and the other of said proximity sensors upon rotation of said motor means in said opposite direction;

electronic counter means connected to said movement signaling means and responsive to said signals for displaying a count representative of the extent of said elongated sewer cleaning tool which has been unwound from said reel and/or rewound onto said reel, said electronic counter means including input means for selecting a de-

sired count and output means for indicating when a desired count has been reached; and

alarm means connected to the output means of said electronic counter means connected to the output means of said electronic counter means for generating an alarm signal upon reaching said desired count

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5,009,243

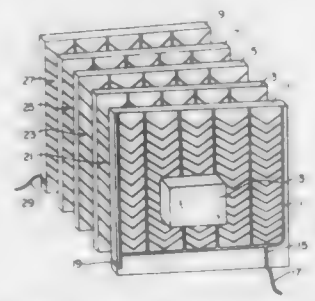
SOLAR HARNESS

Owen P. Barker, 455 W. State St. MD2, Trenton, N.J. 08618

Continuation-in-part of Ser. No. 889,167, Jul. 25, 1986, abandoned. This application May 21, 1990, Ser. No. 525,606

Int. Cl.[5] **H01L** *31/042, 31/048, 31/052*

U.S. Cl. 136—246 **50 Claims**



21. A solar harness system, which comprises:

(a) a parabolic reflector having a specific theoretical focal point and having a series of focal points for the different colored light rays contained in solar lights;

(b) means for supporting said parabolic reflector;

(c) a solar harness apparatus, including:

(i) a plurality of solar cells, each having an active surface, with said active surface of each solar cell being substantially parallel to one another and facing the same direction, and with said solar cells being stacked in line behind one another;

(ii) a plurality of magnets, with at least one magnet being located between each adjacent solar cell in said plurality of cells, each of said magnets being of adequate magnetic power to hold said plurality of solar cells in stacked arrangement therewith, without any other support and so as to create solderless contacts with each solar cell in series;

(iii) means connected to one end of said stacked arrangement of plurality of solar cells and magnets for drawing electric current therefrom;

(d) means for supporting said solar harness apparatus at the focal point of a color of the colored light rays in solar light other than the red color focal point.

5,009,244

FIRE FIGHTING FOAM MIXING SYSTEM

John R. Grindley, and Robert M. Grindley, both of Los Angeles, Calif., assignors to Grindley, Inc. and Robwen, Inc., both of Los Angeles, Calif.

Filed Aug. 17, 1989, Ser. No. 395,321

Int. Cl.[5] **G05D** *11/03*

U.S. Cl. 137—101.11 **8 Claims**

1. In a fire fighting system for proportioning the injection of foam into a fluid stream, having

a primary fluid delivery conduit having an inlet and an outlet;

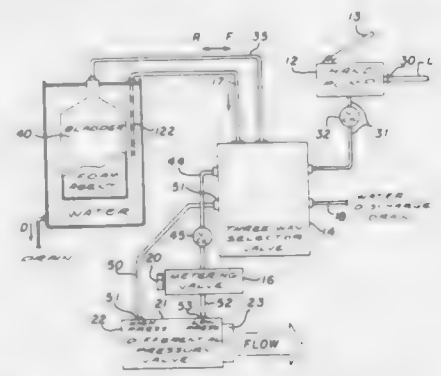
valve means in said conduit for maintaining the fluid pressure adjacent said inlet above the adjacent said outlet that;

a foaming agent reservoir;

means for conducting foaming agent from said reservoir to said fluid conduit adjacent the outlet thereof and;

means for pressurizing said reservoir to expel foaming agent therefrom through said foaming agent conducting means including;

a secondary fluid delivery conduit between said primary fluid conduit adjacent the inlet thereof and said reservoir;



the improvement comprising;

means automatically operable in response to movement of said valve means for varying the flow of fluid through said secondary fluid conduit.

5,009,245

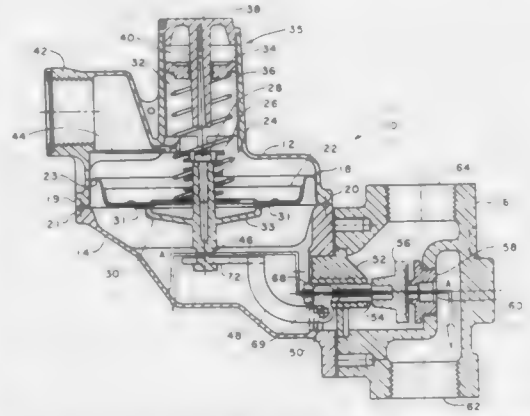
PRESSURE REGULATOR

John L. Esola, Falls Creek, and David L. Kessler, DuBois, both of Pa., assignors to M&FC Holding Company, Inc., Wilmington, Del.

Continuation of Ser. No. 354,499, May 19, 1989, abandoned. This application Sep. 20, 1990, Ser. No. 587,621

Int. Cl.[5] **G05D** *16/06*

U.S. Cl. 137—116.5 **11 Claims**



1. A pressure regulator for connection to a body having a gas inlet and a gas outlet, the gas inlet being in fluid communication with the gas outlet through an orifice restriction, said pressure regulator comprising:

a substantially concave lower case defining a throat area of the pressure regulator;

a cover assembly secured to the lower case to define an inner chamber;

a contoured, flexible diaphragm secured between the lower case and the cover assembly to separate the inner chamber into upper and lower sections, said lower section being in fluid communication with the orifice restriction through said throat area, said diaphragm being capable of deflecting into the upper section in proportion to the gas pressure in the lower section, and said diaphragm having an outer circumferential corrugation capable of deforming when said diaphragm deflects so that said diaphragm will not experience material deformation during deflection;

means for controlling the deflection of the diaphragm so that the deflection is predictable in relation to the gas pressure in said lower section;

a one piece, curved lever arm in mechanical communication with said diaphragm, said lever arm comprising an upper portion slidably connected to a coupling member fixed to said diaphragm, said upper portion being movable with said coupling member, a first portion of said lever arm extending from said upper portion of said lever arm and substantially normal thereto, a second portion of said lever arm disposed substantially normal to said first portion, said first and second portions being interconnected by a partial annulus portion of said lever arm, and a stem drive portion of said lever arm extending from an end of said lever arm remote from said coupling member and being substantially normal to said second portion and substantially normal to said upper portion;

a fulcrum pin positioned in the throat area of the pressure regulator at the junction of said lever arm second portion and said stem drive portion, said lever being adapted to rotate about said fulcrum pin so that linear deflection of the diaphragm results in rotational displacement of the lever arm, said lever arm and fulcrum pin arrangement providing a lever ratio greater than 3:1; and

a throat assembly comprising a stem member connected to said stem drive portion of said lever arm, a stem guide disposed in a wall of said lower case in said throat area, said fulcrum pin being mounted in said stem guide, said stem member being slidably disposed in said stem guide, a distal end of said stem drive portion being disposed in said stem member and a valve pad fixed to said stem member and movable therewith, whereby said valve pad is in mechanical communication with said lever arm so that increased pressure in the lower section, causing the diaphragm to deflect away from said lower section, causes rotational displacement of the lever arm which linearly displaces the valve pad toward said orifice restriction to restrict the flow of gas from the gas inlet to the gas outlet.

5,009,246

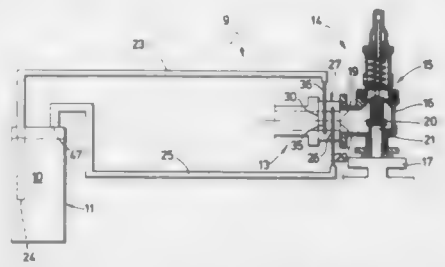
SYSTEM TO AVOID ICING IN THE DISCHARGE PIPING OF A PRESSURE RELIEF VALVE

Gary J. Giles, Pineville, La., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 4, 1988, Ser. No. 267,416

Int. Cl.[4] **B67D** *5/00*

U.S. Cl. 137—205.5 **17 Claims**



1. In combination, a safety relief valve for a pressurized system, said valve including a housing, a nozzle mounted within said housing and communicating with said pressurized system, an outlet from said housing in flow communication with said nozzle, a closure member normally urged into a shut position to prevent the discharge of pressure fluid from said nozzle to said outlet, discharge piping connected to said valve housing in fluid communication with said nozzle through said outlet thereby to define a discharge flow path to receive a high mass flow of gas discharged from said nozzle when fluid in said system becomes over pressurized and urges said closure member into an open position, a reservoir for an anti-solidifying agent, inlet and outlet lines communicating between said discharge flow path and said reservoir, a high pressure probe connected to said inlet line and extending into said discharge flow path, said high pressure probe including an inlet orifice positioned in said flow path and opening in a direction facing at least partially upstream relative to said flow path to communicate a volume of discharge gas at a first pressure greater than the static pressure of said discharge gas flow from said path to said reservoir, and an injection probe connected to said outlet line and extending into said discharge flow path, said injection probe including an outlet orifice positioned in said flow path and opening in a direction facing at least partially downstream relative to said flow path to communicate to said reservoir a second pressure no greater than the static pressure of said discharge gas flow so said anti-solidifying agent may be driven from said reservoir into said discharge gas flow by a driving pressure representative of the difference in said first and second pressures.

5,009,247

PIPE INTERRUPTER

Hans Oberdörfer, Stuttgart, Fed. Rep. of Germany, assignor to Hansa Metallwerke AG, Stuttgart, Fed. Rep. of Germany

Filed Oct. 24, 1989, Ser. No. 425,944

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1988, 3837032

Int. Cl.[5] **F16K** *24/02*

U.S. Cl. 137—218 **3 Claims**



1. Sanitary fitting comprising

(a) a fitting body (**1**) having a base part (**6**);

(b) an outlet mouthpiece (**3**) which can be pulled out and which is connected by way of a flexible hose (**4**) to an outlet pipe (**5**) fastened in said base part (**6**), said flexible hose being arranged in a loop which is guided partly inside said fitting body (**1**);

(c) control elements (**7**) inside said fitting body (**1**) for controlling the water flow through said fitting;

(d) a chamber (**10**) provided in said base part (**6**) and opening into said chamber an inlet pipe (**9**) for water coming from said control elements (**7**), said outlet pipe (**5**) and a ventilating passage (**14**);

(e) a hollow, cylindrical insert (**13**) inserted into said chamber (**1**) from the side and sealed against the wall of said chamber (**10**);

(f) a closing flap (**16**) mounted in said chamber (**1**) which, in the event of a reduced pressure in the inlet pipe (**9**), both closes the inlet pipe (**9**) and opens the ventilation passage (**14**), said closing flap (**16**) being formed from a single piece of resilient elastic material that includes

(1) an attachment section (**18**) that is secured by said insert (**13**) in a fixed position at the wall of said chamber (**10**);

(2) a single planar closing section (**19**) joined to and extending outwardly in a single plane from said attach-

ment section (18), which closing section is movable in the manner of a hinge through an angle extending between

a first position in which it bears against and by itself covers and closes off said ventilation passage (14) solely by virtue of its elastic resilient when there is no reduced pressure in said inlet pipe (9), and

a second position in which said elastic resiliency of the single planar closing section (19) that biases it against said ventilation passage (14) is overcome by reduced pressure in the inlet pipe (9) and the single planar closing section (19) moves through a single arc to a position where it by itself covers and closes off said inlet pipe (9).

5,009,248

FLOWMETER

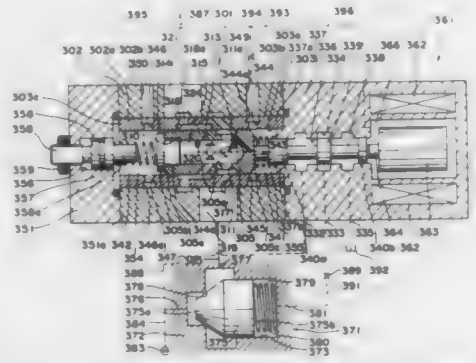
Kenji Masuda, Settsu, Japan, assignor to Daikin Industries, Ltd., Osaka, Japan

Division of Ser. No. 251,219, Aug. 8, 1988, Pat. No. 4,969,364. This application Jul. 27, 1990, Ser. No. 558,622

Claims priority, application Japan, Dec. 8, 1986, 61-291960; Dec. 23, 1986, 61-310415; Jan. 21, 1987, 62-12781; Feb. 6, 1987, 62-26539; Feb. 7, 1987, 62-26728

Int. Cl.[5] G05D *7/00*

U.S. Cl. 137—486 6 Claims



1. A flow control valve comprising a flow detective unit, a flow-regulating unit, and means for setting the flow rate,

said flow detective unit comprising a main body structure having an interior, generally cylindrical chamber, a detective core having a longitudinal axis and being slidably fitted in said chamber, a spool which is connected to said detective core and which controls passageways between a plurality of ports in the manner of shifting, inflow passageways formed in said main body structure for leading a flowing fluid into said detective core, and outflow passageways formed in said detective core for leading the fluid drawn in by said inflow passageways into said main body structure, at least either said inflow passageways or said outflow passageways being inclined with respect to the axis of the detective core;

said flow-regulating unit comprising a valve element for opening and shutting the supply passageway leading to said inflow passageway and a chamber opened to one end of said valve element and connected to one of said plurality of ports which is used for pressure control; and

said means for setting the flow rate applies a prescribed force to said detective core and actuates said spool by balancing force produced by changes in momentum of a flowing fluid and acting on said detective core.

5,009,249

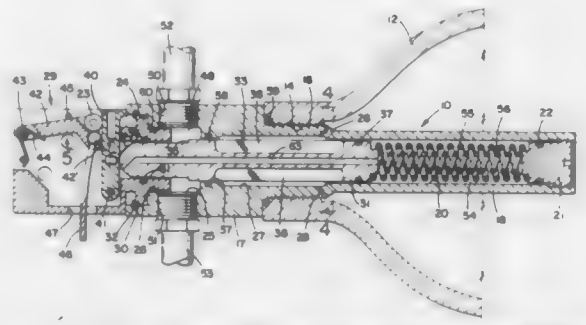
VALVE FOR FLUID CONTAINER

John M. Fisher, Cuyahoga Falls, Ohio, and David R. Young, Snohomish, Wash., assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Apr. 16, 1990, Ser. No. 509,692

Int. Cl.[5] F16K *31/143*

U.S. Cl. 137—495 9 Claims



1. A pressure regulator for regulating the transfer of pressurized fluids at a controlled rate to an inflatable member comprising: a fluid pressurized storage means, a housing means mounted on said storage means, said housing means having a first chamber with an outlet means for connection to said inflatable member, said first chamber defining a low pressure chamber, a central bore in said housing means interconnecting said first chamber with said storage means, a regulator spool valve mounted in said central bore, said central bore cooperative with said spool valve to define a high pressure chamber, said spool valve in an inoperative condition to seal the flow of fluids from said storage means to said outlet means, said spool valve in an operative condition to communicate said storage means with said outlet means via said high pressure chamber, a trigger release means operatively connected to said spool valve, said trigger release means operative upon actuation to place said spool valve from said inoperative condition to said operative condition, a first spring in said bore operative solely upon actuation of said trigger means to assist said first spring and to bias said spool valve to interconnect said outlet means to said fluid storage means, and said spool valve having annular shoulder disposed in said low pressure chamber that is operative when said spool valve is in said operative condition to variably position said spool valve in opposition to said second spring to throttle the flow of fluids from said storage means to said outlet means in response to a change in fluid pressure at said outlet means.

5,009,250

CONTROL MODULE HAVING MULTIPLE SOLENOID ACTUATED VALVES
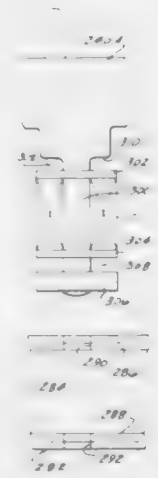
Loren H. Kline, Oregon, Ohio; Harry A. Sherwin, and Robert J. Telep, both of Warren, Mich., assignors to Coltec Industries Inc., New York, N.Y.

Continuation-in-part of Ser. No. 324,766, Mar. 17, 1989, Pat. No. 4,913,189. This application Apr. 2, 1990, Ser. No. 503,396

Int. Cl.[5] F16K *31/02*

U.S. Cl. 137—596.17 5 Claims

1. A multiple solenoid valve assembly comprising a manifold and a plurality of like generally cylindrical solenoid valve assemblies mounted upon said manifold to project rearwardly from said manifold with the axes of said valve assemblies in spaced parallel relationship to each other, each of said valve assemblies comprising a hollow tubular stem connected at its forward end to said manifold and slidably receiving a magnetically shiftable valve member within its forward end portion and fixedly sealingly receiving a pole piece within its rearward end portion, a first radially projecting flange integral with said stem at a location adjacent the forward end of said stem, a second radially projecting flange integral with said stem at a location adjacent the rearward end of said stem, a solenoid coil mounted on said stem between said first and second flanges, a connector block mounted on said stem at the rearward end of said stem in rearwardly spaced relationship to said second flange, and a metal mounting bracket including a base portion and front and rear webs projecting upwardly from said base portion in spaced parallel relationship to each other, each of said front and rear webs having a plurality of upwardly opening stem receiving U-shaped recesses extending downwardly



from the upper edge of the web of a width equal to the outer diameter of said stem, the recesses in said front and rear webs being aligned with each other and said front and rear webs being spaced from each other to accommodate the insertion of a stem of a valve assembly into aligned recesses in said front and rear webs with the rearward side of said front web in face to face engagement with the forward side of the first flange on the stem and the forward side of said rear web in face to face engagement with the rearward side of the second flange on said web.

5,009,251

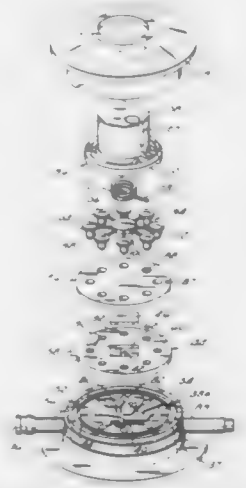
FLUID FLOW CONTROL

Kelly A. Pike, Laguna Hills, and Stephen R. Hessel, Fountain Valley, both of Calif., assignors to Baxter International, Inc., Deerfield, Ill.

Filed Nov. 15, 1988, Ser. No. 271,730

Int. Cl.[5] F16K *11/16*

U.S. Cl. 137—601 17 Claims



1. A flow controller for regulating the rate of flow from a source of fluid under pressure, comprising:

(a) a housing having an influent, effluent port, and fluid flow path therebetween;

(b) a flow restriction channel in the flow path, for regulating the rate of flow, said restriction channel having an influent end and at least two effluent apertures along its length;

(c) a valve in the housing associated with each of the apertures along the flow path; and

(d) a single control for selectively opening any one of the valves and maintaining each additional valve closed;

wherein the opening of any one of the valves places in the influent port in fluid communication with effluent port by way of the a unique length of flow restriction channels associated with the open valve.

5,009,252

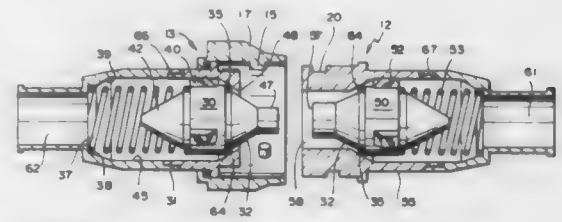
AIR DISTRIBUTION CONNECTOR VALVE

Jim A. Faughn, Bel Air, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 3, 1990, Ser. No. 519,518

Int. Cl.[5] F16L *29/00*

U.S. Cl. 137—614.04 1 Claim



1. An air distribution connector valve comprising:

first and second mating connectors;

each connector including a self-closing, one way valve arranged and adapted to interfere with the valve of the other connector when the two connectors are mated together, whereby to open the two valves for unrestricted passage of air therethrough;

each connector includes engagement means for separably coupling the two connectors together to produce the interference between said valves;

each valve includes a valve body, and a compression spring associated and aligned therewith;

each connector further includes a valve housing having an axis of symmetry; the valve body of each connector being retained and slidable axially within the valve housing against the force exerted by the associated compression spring, and the valve body being normally urged by the associated compression spring against an end wall of the housing having a circular opening therein, so that the valve body is normally seated against the end wall to block said opening;

said valve body is cylindrical and includes spacing means on its cylindrical surface for separating the valve body from the inner surface of the associated valve housing,

said spacing means have holes therein to allow passage of air therethrough from the opening in said end wall to the other end of the associated valve housing when the valve body is unseated from said end wall;

each said valve body includes an end portion axially projecting through said opening when the valve body is normally seated against the end wall of the associated valve housing, said end portion having an end surface arranged and adapted to confront and abut against the end surface of the valve body of the other connector and to interfere with one another as the two connectors are being coupled together, so that both valve bodies are unseated from the end wall of their associated valve housings when the two connectors are fully coupled together and are reseated when the two connectors are fully uncoupled, whereby an air distribution passageway is formed through the entirety

of the coupled connectors and is automatically closed at each half of the uncoupled connectors;

said engagement means of one of said connectors includes a captive, rotatable ring having a plurality of spaced teeth on the inner surface of said ring;

said engagement means of the other connector includes a plurality of helical grooves equal in number to the number of said teeth, and arranged and adapted to receive and accept the teeth, and, when accepted and the ring is rotated, the teeth ride within the helical grooves to fully couple or uncouple the connectors depending on the direction of rotation of the ring;

said engagement means of the other connector further includes pin means for locking the teeth in position at the end of each of the associated helical grooves, said teeth and said pin means being releasable by exertion of pressure on the ring in the direction opposite that in which the teeth were fully engaged in the helical grooves.

5,009,253

DEVICE FOR REMOVING A THREAD, WITH ROTATABLE RING AND ROTATABLE BOOM FOR CLAMPING AN END OF THE THREAD

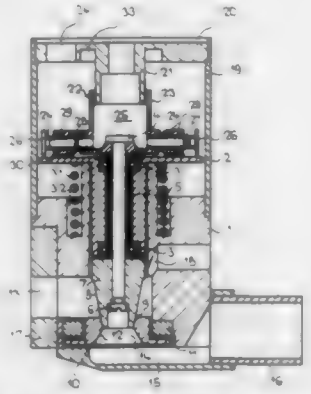
Jan Pajgrt, Brno; Vincenc Smetak, Lelekovice; Jaroslav Kalina; Michal Zemek, both of Brno; Milan Pus, Ubersky Brod, and Pavel Bucek, Brno, all of Czechoslovakia, assignors to ZVS Vyzkumnevyvojovy ustav, Czechoslovakia

Filed May 2, 1989, Ser. No. 346,398

Claims priority, application Czechoslovakia, May 3, 1988, 2966-88; May 24, 1988, 3510-88

Int. Cl.[5] **D03D** *47/30*

U.S. Cl. 139—116.2 **11 Claims**



1. A device for removing a thread, said device comprising:

(A) a rotatable ring with an inner conical surface;

(B) a rotatable boom with an outer conical surface, said rotatable boom being axially displaceable toward said rotatable ring to clamp an end of the thread between said inner conical surface of said rotatable ring and said outer conical surface of said rotatable boom; and

(C) driving means for (1) displacing said rotatable boom toward said rotatable ring to clamp the end of the thread between said inner conical surface of said rotatable ring and said outer conical surface of said rotatable boom and (2) rotating said rotatable boom while the end of the thread is clamped between said inner conical surface of said rotatable ring and said outer conical surface of said rotatable boom;

wherein said driving means is directly operatively connected to said rotatable boom;

wherein said ring, said boom and said driving means are coaxial with each other;

wherein said driving means includes (1) displacing means for axially displacing said boom and (2) a pneumatically reactive driving unit operable for rotating said boom, said displacing means and said reactive driving unit having means permitting them to be driven by a common source of pressurized air

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5,009,254

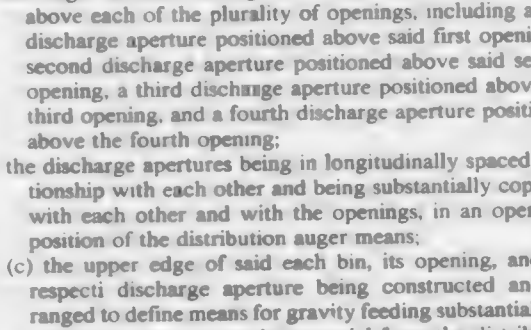
APPARATUS TO FILL SEED/FERTILIZER DRILLS

Gerald Brunner, Box 15, Conrad, Mont. 59425

Filed Nov. 20, 1989, Ser. No. 439,635

Int. Cl.[5] **B65G** *67/06*

U.S. Cl. 141—35 **2 Claims**



1. A seed drill including retractable towing wheels, disks and means for attachment to a tractor for pulling of the seed drill by a tractor, for receiving and distributing granular material such as seeds from a mobile source such as a truck, the seed drill being longitudinally elongated and being longitudinally symmetrical about a centerline, and further comprising, in combination:

(a) a plurality of bins for holding said granular material, including at least a first bin, a second bin, a third bin and a fourth bin, the bins being spaced longitudinally, the first and second bins being alongside the centerline and the third and fourth bins being across the centerline from the first and second bins;

each of the plurality of bins having an upper edge defining opening, the first bin having an upper edge defining a first opening, the second bin having an upper edge defining a second opening, the third bin having an upper edge defining a third opening, and the fourth bin having an upper edge defining a fourth opening;

the upper edges and openings of the plurality of bins, including the upper edges and the first, second, third and fourth openings of the first through fourth bins, being in longitudinally spaced relationship with each other and being substantially coplanar;

(b) transfer auger means and distribution auger means for distributing the granular material from the source to the plurality of bins;

the distribution auger means including a substantially enclosed auger channel extending longitudinally across the bins and further including a distribution auger for drivably conveying granular material within the auger channel from the transfer auger means to all the bins;

the auger channel having a discharge aperture positioned above each of the plurality of openings, including a first discharge aperture positioned above said first opening, a second discharge aperture positioned above said second opening, a third discharge aperture positioned above the third opening, and a fourth discharge aperture positioned above the fourth opening;

the discharge apertures being in longitudinally spaced relationship with each other and being substantially coplanar with each other and with the openings, in an operative position of the distribution auger means;

(c) the upper edge of said each bin, its opening, and the respecti discharge aperture being constructed and arranged to define means for gravity feeding substantially all of said conveyed granular material from the distribution auger means into the bin through said discharge aperture and said opening until said granular material reaches the height of said discharge aperture for substantially stopping all the flow of said granular material through said discharge aperture to said bin while said bin stores substantially all of said conveyed granular material gravity fed therein;

the upper edge of each bin, its opening and the respective discharge aperture being further constructed and arranged to define means for gravity feeding substantially all of said conveyed granular material from said distribution auger means into said bin through said discharge aperture and said opening, after the flow of said granular material to others of said bins has been stopped;

(d) the transfer auger means having a transverse extent and including a transfer auger channel extending transversely to the discharge auger channel and further including a transfer auger for drivably conveying granular material within the transfer auger channel from the source to the distribution auger means.

5,009,255

VERSATILE STRUCTURE FOR ALL MACHINING WORK MAINLY ON SOFT MATERIALS

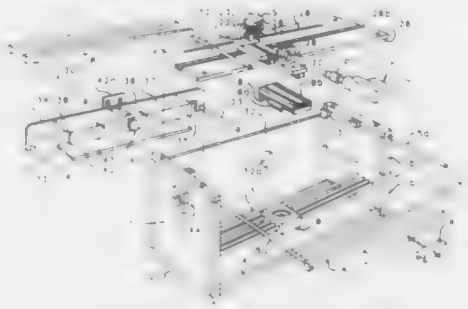
Paul Fournel, 12 Allee des Chênes, 42580 L'Etrat, France

Filed Jul. 24, 1989, Ser. No. 383,451

Claims priority, application France, Jul. 25, 1988, 88 10342; Jul. 11, 1989, 89 09661

Int. Cl.[5] **B27C** *9/00*

U.S. Cl. 144—1 R **7 Claims**



1. A multi-purpose motorized tool holding structure for machining operations comprising a generally parallelepipedic stand means (B), said stand including two separated parallel frame means (1, 2), said frame means having bottom portions, two fixed transverses (3, 4), said frame means being connected at said bottom portion by said two fixed traverses, said frame means having parallel guide slide means (8) affixed therebetween substantially centrally of said frame means, a saddle means (9–19) slidably mounted on said guide means, a changeable tool carrier (23–47) and a rotary tool driving motor mounted on said saddle means (P) said tool driving motor operatively connected to rotatably drive said changeable tool carrier, whereby said changeable tool carrier may be used for different machining operations on various materials.

5,009,256

CORD-TYPE TIRE TRACTION DEVICE

Franklin G. Smith, Portland, Oreg., assignor to Manufacturer's Consultants, Inc., Portland, Oreg.

Filed Dec. 21, 1988, Ser. No. 288,619

Int. Cl.[5] **B60C** *27/06;* **B65H** *69/04;* **A44B** *1/04, 11/25*

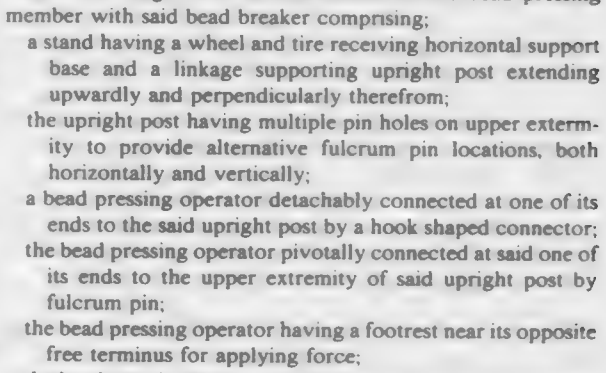
U.S. Cl. 152—221 **35 Claims**

1. A tire traction device for vehicle tires having treads, comprising:

a pair of longitudinal side cord members for extending circumferentially of a tire along opposite sidewalls thereof, opposite ends of each said side cord member being interconnectable; and

multiple cross cord members spaced along the length of said side cord members and extending between and joining said pair of side cord members for extending across said tire treads, said cross cord members being joined to said side cord members at knotted connections;

each knotted connection including at least one knot on the



connected side cord member and adjacent means on the connected cross cord member cooperable with the knot to at least limit relative lateral displacement of the connected side and cross cord members at the knotted connection.

5,009,257

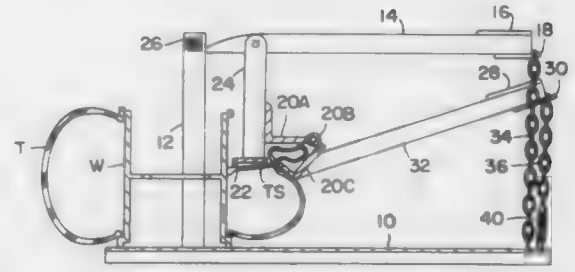
TIRE BREAKER APPARATUS FOR ALL-TERRAIN VEHICLE TIRES

Richard R. Reeves, HC 66 Box 36A, Kinder, La. 70648

Filed May 15, 1990, Ser. No. 525,401

Int. Cl.[5] **B60C** *25/02*

U.S. Cl. 157—1.26 **1 Claim**



1. A bead breaker for displacing the bead of a deflated ATV tire from the flange of a wheel upon which said tire is mounted by uniquely clamping the tire sidewall in a fixed position relative to the bead pressing member, so as to insure breaking of the bead during downward movement of the bead pressing member with said bead breaker comprising;

a stand having a wheel and tire receiving horizontal support base and a linkage supporting upright post extending upwardly and perpendicularly therefrom;

the upright post having multiple pin holes on upper extermity to provide alternative fulcrum pin locations, both horizontally and vertically;

a bead pressing operator detachably connected at one of its ends to the said upright post by a hook shaped connector;

the bead pressing operator pivotally connected at said one of its ends to the upper extremity of said upright post by fulcrum pin;

the bead pressing operator having a footrest near its opposite free terminus for applying force;

the bead pressing operator having a fastening means interactive between said bead pressing operator's free terminus and a point below on the support base to releasibly immobilize said bead pressing operator in a deployed position;

a bead press support column pivotally connected at its upper terminus to said bead pressing operator and with a bead press shoe fixed to its lower terminus;

a first jaw fixed perpendicular to said press support comumn

and disposed in a position to lie immediately above tire sidewall;

a second jaw pivotally connected to said first jaw so as to allow said second jaw to close against said first jaw,

a tire sidewall clamping device operator rigidly connected to said second jaw at such an angle to render said operator in a nearly horizontal position when said second jaw is closed against said first jaw;

the tire sidewall clamping device operator rigidly connected to said second jaw at such an offset measured along its pivotal axis to allow clearance between the working plane of said tire sidewall clamping device operator and other parts;

the tire sidewall clamping device operator having a footrest near its free terminus for applying force;

the tire sidewall clamping device operator having a fastening means interactive between said tire sidewall clamping device operator's free terminus and a point below on the support base to releasibly immobilize said tire sidewall clamping device operator in a fixed position relative to the bead press shoe;

said tire sidewall clamping device operator fastening means to include a chain with spring to allow for movement of said tire sidewall clamping device operator with respect to support base.

5,009,258

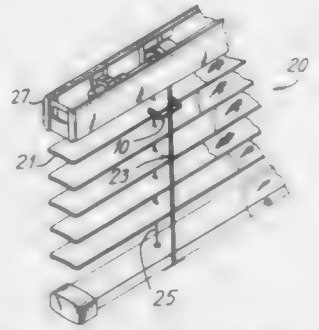
METHOD AND CLIP FOR SECURING A SLAT OF A VENETIAN BLIND

Donald E. Fraser, Ramsey, N.J., assignor to Hunter Douglas Inc., Upper Saddle River, N.J.

Filed Dec. 8, 1988, Ser. No. 281,561

Int. Cl.[5] E06B *9/36*

U.S. Cl. 160—168.1 **4 Claims**



1. A Venetian blind and clip for securing a slat of said blind, comprising in combination:

a ladder cord having vertically extending side legs connected by cross rungs;

at least one slat supported by said cross rungs of said ladder cord;

a raising/lowering cord extending vertically and running through an aperture defined in said slat; and

a press-on clip securable on a single edge of the slat for securing the slat to its supporting rung, said clip comprising

a first generally planar prong, and second and third prongs formed integrally with and opposed to said first prong, said second and third prongs being spaced from said first prong in order to receive a slat therebetween, said second and third prongs being spaced from one another on either side of said first prong,

whereby when said fastener is urged over a slat resting on a cross rung of a ladder of a Venetian blind said second and third prongs cause said first prong to urge the cross rung into frictional engagement with the under side of the slat.

5,009,259

ROLLER BLIND SUPPORT

Ludwig Miloslaus, Trittau, Fed. Rep. of Germany, assignor to Aerolux Produktions- und Handelsgesellschaft mbH, Norderstedt, Fed. Rep. of Germany

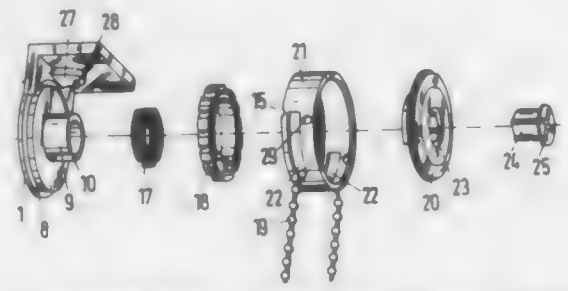
PCT No. PCT/EP88/00139, § 371 Date Aug. 24, 1989, § 102(e) Date Aug. 24, 1989, PCT Pub. No. WO88/06672, PCT Pub. Date Sep. 7, 1988

PCT Filed Feb. 25, 1988, Ser. No. 399,494

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1987, 8703112[U]

Int. Cl.[5] E06B *9/17*

U.S. Cl. 160—323.1 **12 Claims**



1 A system for supporting a roller blind having a rotation axis passing through a projecting support pin (**38**) and a projecting drive pin (**39**), on room structure such as a wall, ceiling or the like, comprising:

first and second substantially identical fixture parts (**1**) for attachment to the room structure in opposed, spaced apart relation before the roller blind is installed, each fixture part having a fixed collar (**9**) projecting toward the fixed collar of the other fixture part so as to be coaxially centered about the axis after said attachment, each collar having a passage aperture (**10**) extending radially therethrough;

a first bearing part (**2**) rotatably disposed on the first fixture part and including means for selectively securing the bearing part in a particular rotational position so as to prevent accidental rotation, the bearing part further including a fixed bearing shell (**13**) in coaxial, overlapped relation to the collar for rotatably receiving the support pin (**38**), the bearing part further having an insertion aperture (**14**) which extends radially through the shell, whereby

when the bearing part is in a rotationally open position relative to the collar such that the insertion aperture (**14**) is aligned with the passage aperture (**10**) in the collar, the support pin (**38**) can be displaced radially along the insertion aperture between an initial position outside the bearing part to a final position on the axis in the shell; and

when the bearing part (**2**) is selectively rotated to said particular position, the passage aperture is closed and the pin (**38**) is trapped on the axis within the shell (**13**) and collar; and

a second bearing part disposed on the second fixture part and including

drive pin support means (**24,25**) for non-rotatably engaging the drive pin (**39**), and

drive means (**17–23**) including a drag spring (**17**) for selectively rotating the drive pin support means, said drag spring being positioned coaxially around the collar (**9**) of the second fixture part.

5,009,260

VACUUM LIFT FOAM FILLED CASTING SYSTEM

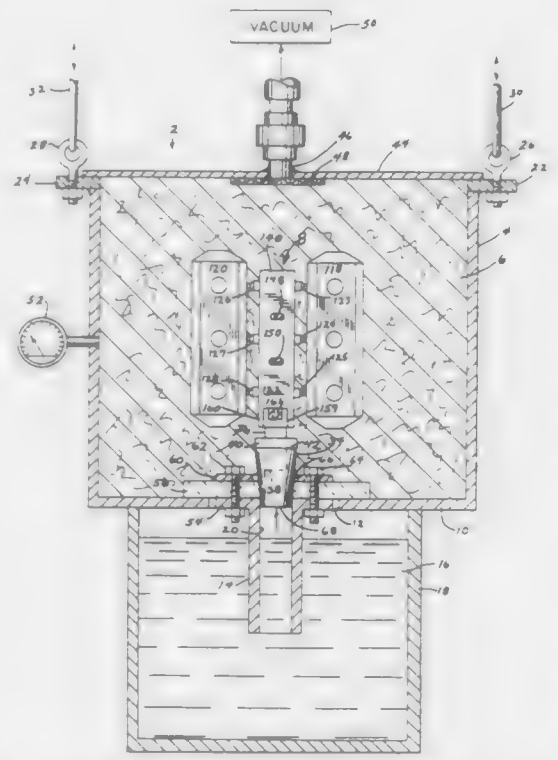
Terrance M. Cleary, Allenton; Raymond J. Donahue, Fond due Lac; William G. Hesterberg, Rosendale, and Lawrence I. Toriello, Fond du Lac, all of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Continuation-in-part of Ser. No. 160,729, Feb. 26, 1988, Pat. No. 4,830,085, which is a continuation of Ser. No. 946,812, Dec. 29, 1986, Pat. No. 4,787,434. This application Jul. 20, 1989, Ser. No. 351,599

The portion of the term of this patent subsequent to Nov. 29, 2005, has been disclaimed.

Int. Cl.[5] B22D *18/06*

U.S. Cl. 164—255 **6 Claims**



1. A lost foam casting apparatus comprising, a flask for holding unbonded particulate material, a source of molten metal external of said flask, a pattern assembly composed of an evaporable foam material disposed in said flask and surrounded by said particulate material, fill means having a fill passage providing communication between said flask and said source of molten metal, means for applying a vacuum to said flask and to said particulate material, and an annular gas permeable member disposed in said flask and having a central opening providing communication between said pattern assembly material and said fill passage, at least a portion of the periphery of said member being exposed to said particulate material, said member being composed of randomly oriented ceramic fibers permeable to the flow of gas and impermeable to the flow of molten metal, application of a vacuum to said flask drawing gas from said fill passage through said member and into said particulate material, said vacuum being of sufficient magnitude to cause molten metal to be drawn through said fill passage from said source of molten metal and through the opening in said member and into contact with said foam material to vaporize said foam material with the vapor being entrapped within the interstices in said particular material and said molten metal filling the void created by vaporization of said foam material.

5,009,261

DEVICE FOR PROVIDING COMMUNICATION BETWEEN WATER TANKS OF HEAT ACCUMULATION TANK SYSTEM

Takashi Kuhara, 20-16, Kamiyama-cho, Shibuya-ku, Tokyo 150, Japan

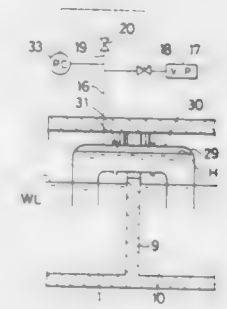
Continuation of Ser. No. 208,416, Jun. 1, 1988, Pat. No. 4,887,667. This application Oct. 26, 1989, Ser. No. 426,718

Claims priority, application Japan, Oct. 1, 1986, 61-233735; Sep. 1, 1987, 62-218865

The portion of the term of this patent subsequent to Dec. 19, 2006, has been disclaimed.

Int. Cl.[5] F24D *11/00*; **F04F** *10/00*

U.S. Cl. 165—96 **3 Claims**



1. In a heat accumulation tank system having a plurality of water tanks separated by partition walls, a communication control device for controlling the state of communication between two adjacent water tanks in said system, comprising: an inverse U-shaped passage disposed between said two adjacent water tanks such that one end of said inverse U-shaped passage opens downwardly in one of said two adjacent water tanks while the other end opens downwardly in the other of said two adjacent water tanks; pressurized air introduction means for introducing pressurized air to the space in an upper portion of said inverse U-shaped passage; and valve means for controlling the introduction of pressurized air.

5,009,262

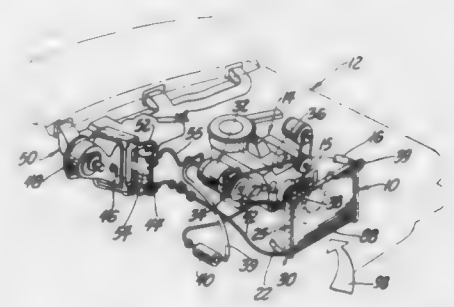
COMBINATION RADIATOR AND CONDENSER APPARATUS FOR MOTOR VEHICLE

Gary A. Halstead, Lockport, and Ronald C. Treloar, Williamsville, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 19, 1990, Ser. No. 540,015

Int. Cl.[5] F28D *7/16*

U.S. Cl. 165—140 **39 Claims**



1. A combination radiator and condenser apparatus for a motor vehicle having a plurality of parallel tube passes for cooling high pressure refrigerant vapor in an air conditioning system for the motor vehicle and for cooling engine coolant having air centers bonded thereto for cooling fluid flow through said parallel tube passes comprising:

said parallel tube passes each including a flow tube with

aligned segments forming a refrigerant passage and a separate coolant passage;

a pair of unitary tank and header units; each of said unitary tanks and header units including a coolant space communicating with said coolant passages for flow of coolant therethrough;

each of said unitary tank and header units including a high pressure refrigerant space for communicating said refrigerant passages with a mechanical refrigerant system for directing refrigerant vapor through said refrigerant passages for condensation therein;

an internal partition in each of said unitary tank and header units extending the length thereof to separate said coolant space from said high pressure refrigerant space; and

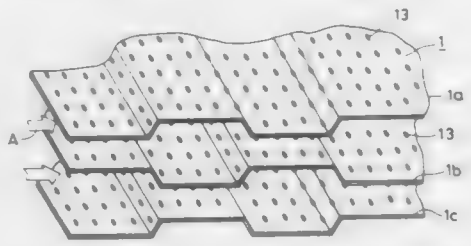
air center means connected to each of said aligned flow tube segments for conductively transferring heat from said coolant and said refrigerant vapor.

5,009,263

HEAT-EXCHANGER UTILIZING PRESSURE DIFFERENTIAL

Yuu Seshimo, and Masao Fujii, both of Hyogo, Japan, assignors to Mitsubishi Denki K. K., Tokyo, Japan

Filed Dec. 11, 1985, Ser. No. 807,911
Claims priority, application Japan, Dec. 14, 1984, 59-264087
Int. Cl.[5] F28D *1/04*
U.S. Cl. 165—151 **28 Claims**



1. A heat exchanger apparatus comprising: a heat transmission member having a plurality of through-holes, said heat transmission member extending in a direction of fluid flow and being corrugated in the direction of fluid flow in the form of alternating trapezoids to produce a pressure difference between opposite surfaces of each of plural portions of said heat transmitting member; and main flow guide means for guiding a main portion of said fluid flow such that it does not pass through said through-holes but flows along said heat transmitting member.

5,009,264

WELL PRODUCTION APPARATUS INCLUDING PUMP MEANS AND THERMAL ABSORPTION MEANS

Kris M. Sliger, Denver, Colo.; Randolph C. Moeller, Casper, Wyo., and Scott E. Williamson, Castle Rock, Colo., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed May 23, 1990, Ser. No. 527,748
Int. Cl.[5] E21B *33/128*
U.S. Cl. 166—106 **6 Claims**

1. A well production apparatus, comprising:

(1) a tubular production conduit extending from the top of the well to a production zone and disposed within casing in said well;

(2) an electric submersible pump on said conduit, said pump having a production fluid flow passageway extending therethrough and communication between the exterior of said conduit immediate said pump and the interior of said casing;

(3) a packer assembly in communication with said production conduit below said pump and positionable into sealing engagement with said casing to isolate said production zone from a portion of the well thereabove; and

(4) thermal absorption means on said production conduit between upper and lower production conduit members secured thereto whereby, subsequent to positioning of said packer assembly into sealing engagement with said casing, thermal expansion or contraction of said conduit above said packer assembly is absorbed by said thermal absorption means without transmission of said thermal expansion or contraction of said conduit to said pump

the thermal absorption means comprising first and second housing members, said first housing member being secured to said upper production conduit member and



said second housing member being secured to said lower production conduit member, one of said housing members defining a slot therethrough for receipt of lug means carried on the other housing member, said lug means and said slot when in a first position relative to one another preventing axial rotation between said upper and lower production conduit members and being movable by manipulation of said tubular production conduit to another position whereby said upper and lower production conduit members are movable longitudinally in telescopic relationship.

5,009,265

PACKER FOR WELLHEAD REPAIR UNIT

Thomas F. Bailey, Houston; Charles E. Lancaster, Iola, and Richard Lee, The Woodlands, all of Tex., assignors to Drilex Systems, Inc., Houston, Tex.

Filed Sep. 7, 1989, Ser. No. 404,159
Int. Cl.[5] E21B *23/06, 33/12*
U.S. Cl. 166—118 **24 Claims**

1. A well packer mechanically settable and retrievable within a well bore using a running tool to selectively isolate the wellhead, said packer comprising:

an inner mandrel;

a sleeve assembly movably mounted to said inner mandrel, said sleeve assembly selectively adjustable along said mandrel for longitudinal movement of said mandrel in a first direction relative to said sleeve assembly to set said packer; and

locking ratchet means for selectively preventing longitudinal movement of said mandrel in a second direction relative to said sleeve assembly thereby preventing release of said packer, said locking ratchet means including a first ratchet nut movable to a preset position as said packer is run into the well bore and a second ratchet nut said ratchet means being selectively disengageable to allow longitudinal movement of said mandrel in said second direction relative to said sleeve assembly to unset said packer for retrieval thereof;



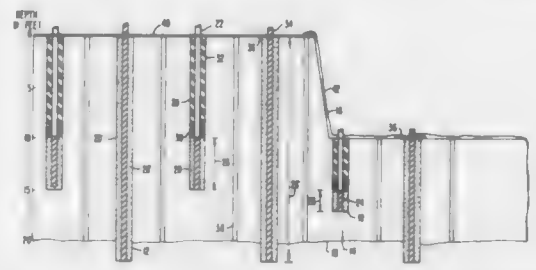
said sleeve assembly including at least one packing element selectively compressible into sealing engagement with the well bore and at least one slip selectively engageable with the well bore to set said packer within the well bore.

5,009,266

METHOD FOR IN SITU CONTAMINANT EXTRACTION FROM SOIL

Douglas K. Dieter, San Ramon, Calif., assignor to Solvent Services, Inc.,, San Jose and Amit Nagpal, Monte Sereno, both of, Calif., part interest to each

Filed Aug. 15, 1989, Ser. No. 394,391
Int. Cl.[5] E21B *43/24, 43/30, 43/34*
U.S. Cl. 166—245 **27 Claims**



1. A method for recovering mobilizable contaminants from a zone comprised primarily of porous layers of soil, said method comprising the steps of:

(a) pulsatilely injecting heated pressurized steam into a first location in the zone so as to uniformly heat targeted soil in the zone to steam temperature forming a steam condensation front encircling the zone of soil in the first location, and

(b) withdrawing the contaminants under subatmospheric pressure from the soil at a second location in the zone below the first location.

5,009,267

METHOD FOR TEMPORARILY REDUCING PERMEABILITY OF SUBTERRANEAN FORMATIONS

Charles D. Williamson, Houston; Stephan J. Allenson, Richmond, and Robert K. Gabel, Houston, all of Tex., assignors to Nalco Chemical Company, Naperville, Ill.

Division of Ser. No. 272,237, Nov. 14, 1988. This application Sep. 7, 1990, Ser. No. 578,883
Int. Cl.[5] E21B *43/27*
U.S. Cl. 166—271 **14 Claims**

1. An improved method for hydraulic fracturing of subterranean formations penetrated by a wellbore comprising

dispersing in a fracturing media a fluid loss additive to form an improved fracturing media, said fluid loss additive comprising a blend of two or more modified starches; and

pumping the improved fracturing media into a wellbore at a pressure sufficient to lift the overburden and fracture the formation,

whereby a filter cake with low permeability will be rapidly formed, said filter cake being readily degraded after completion of the fracturing process.

5,009,268

METHOD OF USING A COMBINATION LIGNOSULFONATE/POLYALKYLENE GLYCOL SYSTEM AS A SACRIFICIAL AGENT FOR SURFACTANT FLOODING

George Kalfoglou, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jan. 2, 1990, Ser. No. 459,611
Int. Cl.[5] E21B *43/22*
U.S. Cl. 166—274 **8 Claims**

1. A method of recovering hydrocarbons from a subterranean hydrocarbon formation which is penetrated by at least one injection well and at least one production well wherein a surfactant system is injected into the formation to sweep oil through the formation to at least one production well, which comprises:

injecting into the formation a surfactant solution containing about 0.11% to about 10% by weight of a mixture of at least two sacrificial agents designed to prevent the loss to the formation of injected chemicals of a surfactant solution,

said mixture of at least two sacrificial agents comprised of about 0.1% to about 5% by weight of a lignosulfonate and about 0.01% to about 5% by weight of a polyalkylene glycol having a molecular weight less than about 2000.

5,009,269

WELL CEMENT FLUID LOSS ADDITIVE AND METHOD

Larry K. Moran, and Thomas R. Murray, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Jul. 31, 1990, Ser. No. 560,533
Int. Cl.[5] E21B *33/14*
U.S. Cl. 166—293 **4 Claims**

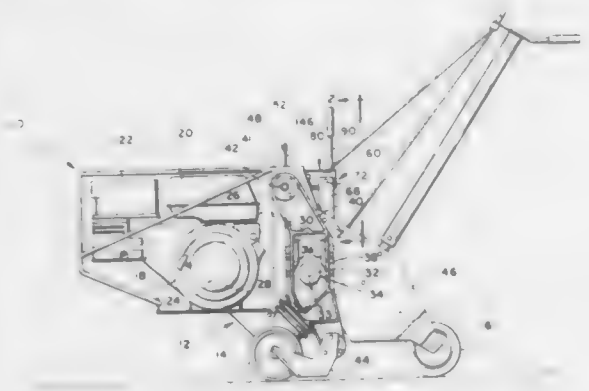
1. A method of cementing a casing in a wellbore comprising pumping a cement slurry into the annulus between said casing and said wellbore, said cement slurry containing from 0.2 to 2.0 percent by weight, based on the weight of cement solids in said slurry, of an additive consisting essentially of from 30 to 80 percent by weight of partially hydrolyzed high molecular weight vinyl acetate polymer, calcium sulfate in an amount equivalent to from 10 to 60 percent by weight of calcium sulfate hemihydrate, up to 5 percent by weight of a cross-linking compound for said polyvinyl acetate, and from 0 to 5 percent by weight of defoamer.

5,009,270

EARTHWORKING MACHINE WITH SINGLE HANDLE FOR ADJUSTING AND LOCKING BLADE DEPTH

Kip S. Vangsgard, White Bear Lake, Minn., assignor to Turfco Manufacturing, Incorporated, Minneapolis, Minn.

Filed Feb. 15, 1990, Ser. No. 480,587
Int. Cl.[5] A01B *45/04, 63/26*
U.S. Cl. 172—42 14 Claims



1. An earthworking machine comprising blade means mounted for oscillatory and vertical movement, power means for oscillating said blade means, movably mounted first gear means including a plurality of teeth fixedly mounted second gear means including a plurality of teeth and means including a single handle movable in first and second generally opposite directions for vertically adjusting said blade means and said movably mounted first gear means, and in third and fourth generally opposite directions for locking and unlocking said blade means in a vertically adjusted position, said third and fourth opposite directions being generally transverse to said first and second opposite directions, and said third generally opposite direction causing engagement of said first gear means with said second gear means to lock said blade means in a vertically adjusted position and said fourth generally opposite direction causing disengagement of said first gear means from said second gear means to unlock said blade means from a vertically adjusted position.

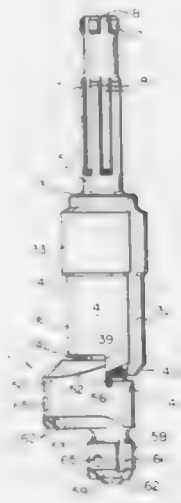
5,009,271

DRILL ASSEMBLY

Milan Maric, Box 1, Site 32, R.R. #4, Calgary, Alberta, Canada T2M 4H4 , and John I. Kulas, 2620 Signal Hill Drive S.W., Calgary, Alberta, Canada T3H 2T7

Filed Jul. 16, 1990, Ser. No. 552,921
Int. Cl.[5] E21D *1/00*
U.S. Cl. 175—53 10 Claims

1. A drill assembly comprising mandrel means for rotatable mounting in a casing shoe at the bottom end of a drill string, bit means for rotatable mounting in said mandrel means beneath the bottom end of the drill string, said bit means and mandrel means normally rotating together in one direction with said bit means eccentric with respect to said mandrel means, whereby the bit means can bore a hole larger in diameter than the casing shoe; head means on said bit means for engaging a formation to stop rotation of said bit means; shoulder means on said bit means and said mandrel means for retaining said bit means in the eccentric drilling position; and cam means on said bit means for engaging said casing shoe when the bit means is moved upwardly against the casing shoe to cause said bit means to rotate in the other direction to a release position in



which said bit means is aligned with the casing shoe for movement therethrough

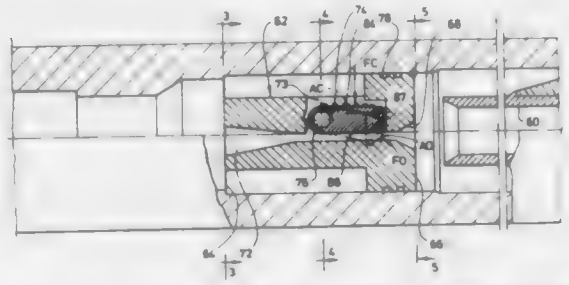
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5,009,272

FLOW PULSING METHOD AND APPARATUS FOR DRILL STRING

Bruno H. Walter, Edmonton, Canada, assignor to Intech International, Inc., Edmonton, Canada

Filed Nov. 15, 1989, Ser. No. 436,603
Claims priority, application Canada, Nov. 25, 1988, 584145; Jun. 22, 1989, 603594
Int. Cl.[5] E21B *7/18, 7/24, 4/14, 31/113*
U.S. Cl. 175—56 24 Claims



1. A flow pulsing apparatus including a housing having means providing a passage for a flow of fluid and means for periodically interrupting the flow through said passage to create a cyclical water-hammer effect to vibrate the housing and provide pulsations in the flow during use, said means for periodically interrupting the flow including a constriction means in the passage to accelerate the flow to a higher velocity and a first passage region through which the accelerated higher velocity fluid flows followed by an enlarged downstream passage region adapted to provide for a reduced fluid velocity and a control means having a pair of generally opposed faces, said control means being associated with said first passage region and being movable between a substantially open full-flow position and a substantially closed flow interrupting position, said control means, in use, having one of said faces at least partially exposed to the higher velocity fluid flow provided by said first passage region such that (a) when the control means is in the open position the higher velocity fluid flow tends to reduce the pressure force acting on at least a portion of said one face and (b) when the control means is in the closed position the flow interruption creates a fluid pressure force increase acting on at least a portion of said one face while the other of said faces of the control means is, in use, at least partially exposed to the fluid pressures existing in said downstream passage region with said control means thus tending to be moved rapidly or to vibrate between the substantially open and substantially closed positions under the influence of the alternating differential pressure forces acting on said opposed faces of the control means during use.

18. A flow pulsing method including flowing a fluid through a passage while periodically interrupting the flow to create pulsations in the flow and a cyclical water-hammer effect, characterized by passing the fluid through a constriction means in the passage to accelerate the flow to a higher velocity and thence into a first passage region through which the accelerated higher velocity fluid flows and thereafter passing the fluid through a downstream passage region arranged to reduce the fluid velocity, there being a control means having generally opposed faces, which control means is associated with said first passage region and is movable between a generally open full-flow position and a closed generally flow interrupting position, and exposing one face of said control means to the higher velocity fluid flow in said first passage region while the opposing face thereof is exposed to the fluid pressure existing in said downstream passage region of lower fluid velocity so that said control means tends to be moved rapidly or to vibrate between the generally open and closed positions by virtue of alternating differential pressure forces arising from Bernoulli and water-hammer effects acting on said generally opposed faces of the control member.

5,009,273

DEFLECTION APPARATUS

Piotr Grabinski, Calgary, Canada, assignor to Foothills Diamond Coring (1980) Ltd., Calgary, Canada

Filed Jan. 9, 1989, Ser. No. 295,144
Int. Cl.[5] E21B *7/04*
U.S. Cl. 175—61 20 Claims



1. A deflection apparatus for use in directional drilling comprising:

a housing which is adapted to be disposed about a drill string and to be rotatable relative to said drill string and to be moveable longitudinally of said drill string;

a deflection member pivotally connected to said housing and moveable between a first equilibrium position in which said member is in a retracted position adjacent said housing and a second position in which said member is biased toward an extended position outwardly of said housing;

means for maintaining said member in said first equilibrium position;

means responsive to an externally-imposed force for releasing said member from said equilibrium position; and

means, independent of the externally-imposed force, for biasing said deflection member into said extended position;

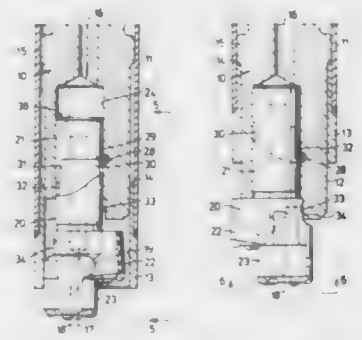
and wherein said means for biasing is responsive to said release of said deflection member from said first equilibrium position to move said deflection member toward said second position.

5,009,274

LATERALLY ADJUSTABLE DRILLING TOOL

Stig U. Löf, Sunne, Sweden, assignor to Uniroc Aktiebolag, Fagersta, Sweden

Filed Apr. 3, 1990, Ser. No. 503,724
Claims priority, application Sweden, Apr. 5, 1989, 8901198
Int. Cl.[5] E21B *10/66*
U.S. Cl. 175—260 10 Claims



1. A drilling tool for drilling in earth and in rock covered by overburden concurrently with a casing tube (**11**) following the drilling tool downhole, said tool incorporating a guide member (**10**) rotatably centered in said casing tube (**11**) at the mouth thereof, a drill bit (**20**) having a shaft (**21**) integral with an intermediate laterally projecting eccentric bit (**22**) and an axially protruding frontal pilot bit (**23**), said shaft (**21**) being journalled in an eccentrically disposed bore (**24**) in said guide member (**10**) to move relative thereto pivotally and axially between, on the one hand, a drilling position wherein the pilot bit (**23**) is coaxial with the guide member (**10**) and the eccentric bit (**22**) projects laterally beyond the casing tube (**11**) so as to drill a hole larger than said casing tube (**11**), and, on the other hand, a retracted position in which the drill bit (**20**) can be retracted and lowered through the casing tube (**11**), said drilling tool being c h a r a c t e r i s e d b y cooperating cam and follower means (**30,31,32;28**) between said shaft (**21**) and said guide member (**10**) wherein:

(a) the drill bit (**20**) is maintained in the drilling position thereof form-bound adjacent to the guide member (**10**) so as to be movable in axial direction in unison therewith,

(b) the guide member (**10**) by a form-restricted angular displacement relative to the drill bit (**20**) away from said drilling position is freed to perform a form-restricted axial movement backward and forward relative to the drill bit (**20**), and

(c) the guide member (**10**) in said backward position thereof by a form-restricted continued angular displacement relative to the drill bit (**20**) away from said drilling position is again maintained form-bound to the drill bit (**20**) for axial movement in unison therewith with the drill bit (**20**) in retracted position spaced in front of the guide member (**10**).

5,009,275

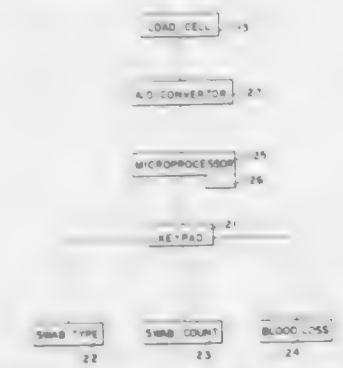
MEDICAL SWAB WEIGHING APPARATUS

James Sheehan, The Hermitage, Blackrock, County Dublin, Ireland

Filed Nov. 22, 1989, Ser. No. 440,972
Claims priority, application Ireland, Nov. 24, 1988, 3527/88
Int. Cl.[5] G01G *19/42, 19/52*
U.S. Cl. 177—25.13 8 Claims

1. A medical swab weighing apparatus, comprising a container into which used swabs may be deposited during the course of an operation, and a weighing means on which the container is removably support and which provides an electri-

cal output signal whose value is dependent upon the instantaneous total weight of the container and contents, the weighing means having means for storing the weight of a dry swab and program means responsive to the stored weight of a dry swab



and the electrical output signal for calculating and displaying, each time a swab is deposited in the container, the total weight of blood absorbed in used swabs deposited in the container and the total number of swabs deposited in the container

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5,009,276

ELECTRONIC POSTAL SCALE WITH MULTILINGUAL OPERATOR PROMPTS AND REPORT HEADINGS

Terry E. Raikes, Santa Rosa; William L. Kramer, Windsor; John B. Howard, Forestville, all of Calif.; Wayne D. Moore, North York, Canada; Louis Jackson, Milford, Conn., and Jeffrey D. Kotecki, Newtown, Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jan. 16, 1990, Ser. No. 466,120
Int. Cl.[5] G01G *19/40*; G06F *15/20*
U.S. Cl. 177—25.15 16 Claims



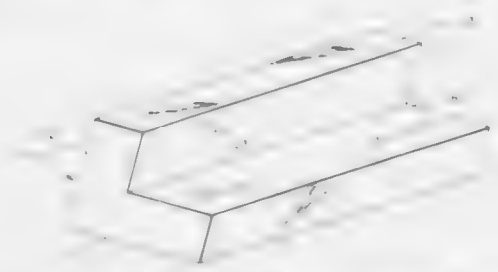
1. A postal scale comprising:
(a) weight sensing means for generating a weight signal;
(b) input means for generating a language select signal;
(c) output means for outputting texts;
(d) a memory for storing texts, said texts comprising a plurality of sets of texts, each of said sets being in a different language; and
(e) a microprocessor programmed to:
(i) receive and process said weight signal;
(ii) receive said language select signal;
(iii) select one of said sets of texts in accordance with said language select signal; and
(iv) cause said output means to output texts from said selected set.

5,009,277

METHOD AND APPARATUS FOR POSITION DETERMINATION

Seymour J. Sindeband, Pound Ridge, N.Y., and Robert Butler, Milford, Conn., assignors to Science Accessories Corp., Stratford, Conn.

Filed Mar. 19, 1990, Ser. No. 495,330
Int. Cl.[5] G08C *21/00*
U.S. Cl. 178—18 16 Claims



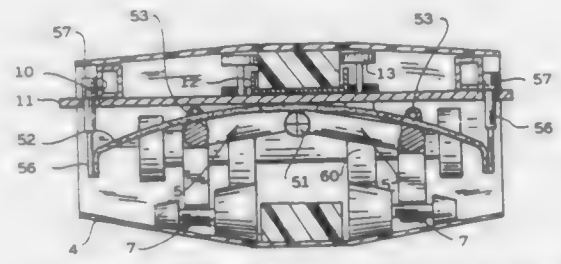
5. Apparatus for obtaining and outputting the position of a moveable element in a data space, comprising
an acoustic digitizer subsystem for determining the position of said movable element by measuring the transit time of acoustic wave energy traveling, in either direction, between said movable element and a plurality of known locations,
means for outputting said position measurement values;
means for computing the distance between determined time sequential positions of the movable element; and
means for disabling the outputting of said position measurement values when said computed distance is outside a predetermined range.

5,009,278

METHOD AND A SUPPORT ARRANGEMENT IN A ROLLER VEHICLE TO BE STEERED BY A ROLLER MAT

Timo Laakso, Tuusula, Finland, assignor to 3TL Trading Co., Hyrylä , Finland

PCT No. PCT/FI88/00114, § 371 Date Mar. 26, 1990, § 102(e) Date Mar. 26, 1990, PCT Pub. No. WO89/01893, PCT Pub. Date Mar. 9, 1989
PCT Filed Jul. 8, 1988, Ser. No. 466,422
Claims priority, application Finland, Sep. 2, 1987, 873816
Int. Cl.[5] B62D *55/07*
U.S. Cl. 180—9.44 16 Claims



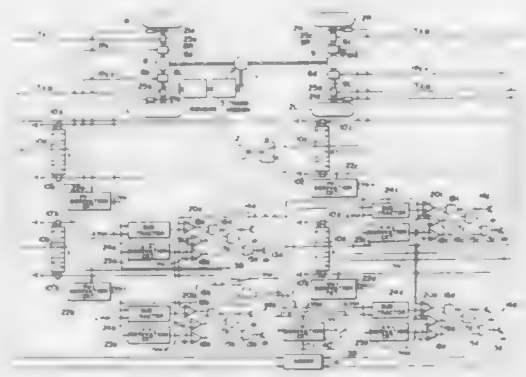
1. A support arrangement in a roller vehicle for steering thereof, including
a turnover roller mat **4**;
a rigid body part **1** for supporting a power engine **2** and transmission means **3** for transmitting a driving force directly to an outer periphery of said roller mat **4** movable around a turnable wheel assembly **6**, **7** under said rigid body part **1**;
a support arrangement **5** extending the whole length of said body part **1** and suspended therefrom, said support arrangement including a separate, twistable auxiliary body **5**, **5'** supported by said body part **1** at two points on a center line of said vehicle;
said roller wheel assembly **6**, **7** being suspended by said auxiliary body **5**, **5'**;
said auxiliary body being provided with means **8**, **9** connected to steering means for said vehicle for twisting said auxiliary body **5**, **5'** for steering said vehicle;
said auxiliary body including two flexible, telescopically lengthening rod means, the length of said rod means being at a minimum extent when said auxiliary body is in a unfolded balance state;
said auxiliary body **5**, **5'** being connected to said body part **1** by several parallel and spaced downwardly directed support rods **52** transverse to a longitudinal axis of said vehicle passing through a center of gravity of said vehicle defining a longitudinal center line thereof, each of said rods being supported to maintain the transverse position thereof at three points to the body part **1**;
said auxiliary body **5**, **5'** being suspended to each support rod **52** by at least two thrust bearings **53**, so that when said auxiliary body **5'** is twisted it can move on said thrust bearings **53** along said transverse support rods **52**, whereby on one side of said roller mat **4**, the distance between said roller wheels **6**, **7** and said body part **1** is shorter and on the other side of said roller mat **4** the distance between the roller wheels **6**, **7** and the body part **1** becomes correspondingly longer, so that the roller mat **4** is displaced from a direct driving position to a curved driving position, at the same time when the center of gravity of the vehicle transfers from a side towards which said vehicle tilts on one side of the longitudinal center line of the vehicle to a side on the other side of the longitudinal center line of said vehicle, whereat said roller mat **4** is closer to said body part **1**.

5,009,279

METHOD AND SYSTEM FOR DETECTING WHEEL SLIPPAGE

Toshiro Matsuda, Sagamihara, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 14, 1986, Ser. No. 918,125
Claims priority, application Japan, Oct. 11, 1985, 60-224936
Int. Cl.[5] B60K *28/16*
U.S. Cl. 180—197 14 Claims



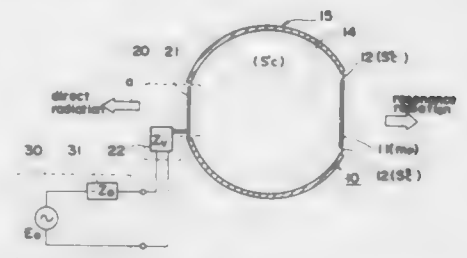
1. A system for detecting wheel slippage comprising:
a first sensor for monitoring wheel rotation and producing a first sensor signal indicative of the wheel speed;
a second sensor for monitoring a parameter reflecting road surface friction and producing a second sensor signal indicative thereof;
a reference signal generator for sampling said first sensor signal having at a given timing and generating a reference signal having a value reflecting a projected vehicle speed based on the sampled first sensor signal value; and
an arithmetic means for modifying said reference signal value based on said second sensor signal value and comparing said first sensor signal value with the modified reference signal value so as to detect occurrences of wheel slippage.

5,009,280

ACOUSTIC APPARATUS

Kenji Yokoyama, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Mar. 24, 1989, Ser. No. 328,473
Claims priority, application Japan, Apr. 1, 1988, 63-81032; Apr. 1, 1988, 63-81033
Int. Cl.[5] H04R *1/28*, *3/04*
U.S. Cl. 181—160 8 Claims



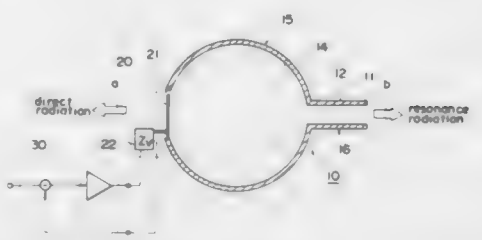
1. An acoustic apparatus, comprising:
a body portion having an internal cavity therein defining a resonator and a passive diaphragm operatively coupled to said body portion, wherein said passive diaphragm functions as a resonance radiation unit for radiating an acoustic wave caused by resonance;
a vibrator disposed in the body portion and having an active diaphragm including a direct radiation portion for directly radiating can acoustic wave and a resonator driver portion for driving said resonator; and
vibrator drive means for driving said vibrator, said vibrator drive means being coupled to said vibrator and comprising drive control means for controlling a drive condition of said vibrator, wherein an atmospheric counteraction of said resonator is substantially cancelled at a time of driving of said resonator by said vibrator.

5,009,281

ACOUSTIC APPARATUS

Kenji Yokoyama, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Mar. 1, 1989, Ser. No. 317,952
Claims priority, application Japan, Mar. 10, 1988, 63-56905; Mar. 10, 1988, 63-56906
Int. Cl.[5] H04R *7/00*
U.S. Cl. 181—160 9 Claims



1. An acoustic apparatus comprising:
a body portion having an internal cavity therein defining a resonator and having a port therein forming a resonance radiation unit for radiating an acoustic wave by resonance;
a vibrator disposed in the body portion and having a diaphragm, including a direct radiation portion for directly radiating an acoustic wave outwards from the resonator and a resonator driver portion for driving said resonator, the driving of the resonator tending to produce counter-

acting air movement from the cavity of the body portion upon the diaphragm; and

a vibrator drive means having a motional feedback means responsive to movement of said diaphragm for producing a motional signal corresponding to movement of said diaphragm and negatively feeding back the motional signal to the vibrator drive means, said vibrator drive means responding to the negatively fed back motional signal from the motional feedback means to effect motional feedback driving of said vibrator in a manner which substantially cancels counteracting air movement from the cavity of the body portion upon the diaphragm.

5,009,282

FOLDING STEPS

Philip Willsher, 21, Afan Terrace, Cwmavon, Port Talbot, United Kingdom

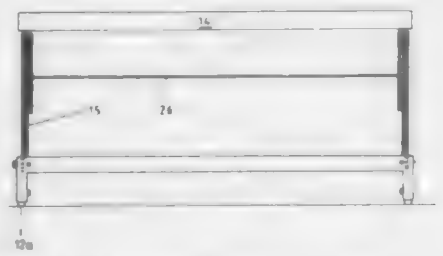
PCT No. PCT/GB88/01085, § 371 Date Oct. 10, 1989, § 102(e) Date Oct. 10, 1989, PCT Pub. No. WO89/05390, PCT Pub. Date Jun. 15, 1989

PCT Filed Dec. 12, 1988, Ser. No. 424,218

Claims priority, application United Kingdom, Dec. 10, 1987, 8728893

Int. Cl.[5] **E06C** *1/387*

U.S. Cl. 182—88 **9 Claims**



1. A folding step structure, which comprises:

(a) an elongate base member adapted to be laid on or parallel to a ground surface;

(b) a frame structure connected to said base member;

(c) a step member connected to said frame structure such that said frame structure and said step member are together pivotal, about pivot points towards one end of said base member, between a first limit position in which said step member is disposed substantially parallel to, and closely spaced from, said ground surface at a location towards the other end of said base member, in which limit positions said frame structure is in close juxtaposition to said base member, and a second limit position in which said step member is supported substantially parallel to said ground surface and substantially spaced above said base member; and

(d) securing means for securing said step member and said frame structure in said second limit position.

5,009,283

HUNTING STAND SYSTEM

Leonard W. Prejean, P.O. Box 529, Ville Platte, La. 70586

Filed Feb. 23, 1990, Ser. No. 484,220

Int. Cl.[5] **A45F** *3/26*; **A47C** *9/10*

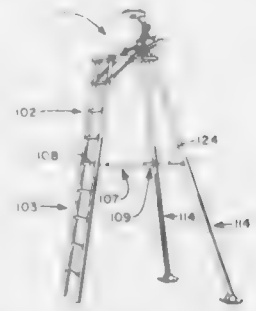
U.S. Cl. 182—116 **39 Claims**

1. A stand for supporting a hunter in a tree, comprising:

a platform having a front end and a back end, said back end having means for traction on said tree;

a climbing bar assembly having a first end and second end connected to said platform, said climbing bar assembly forming a loop extending past said back end of said platform and positioned to engage said tree at a height above said platform;

a seat assembly having a post pivotally connected at one end to said platform, a seat connected to an opposite end of said post, said seat assembly being adjustable from an upright position to a collapsed position relative to said platform, and



means connected to said seat assembly for engaging said hunter's feet when said seat assembly is in a collapsed position

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5,009,284

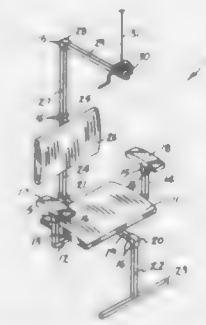
CHAIR LIFT APPARATUS

Sherrill A. Authement, Sr., P.O. Box 77, Cameron, La. 70631

Filed Jul. 9, 1990, Ser. No. 550,057

Int. Cl.[5] **A45F** *3/26*; **A47C** *9/10*; **A01M** *31/02*

U.S. Cl. 182—142 **6 Claims**



1. A chair lift apparatus comprising, in combination,

a seat platform, the seat platform including a bottom surface and a top surface, the bottom surface including a lateral seat support bar extending beyond opposed sides of the seat platform,

and

a longitudinal seat support bar orthogonally oriented relative to the lateral seat support bar mounted to the bottom surface, wherein the lateral and longitudinal so at support bars are integrally mounted to the bottom surface of the seat platform,

and

a right arm post integrally and orthogonally mounted to a right terminal end of the lateral seat support bar, and a left arm post integrally and orthogonally mounted to a left terminal end of the lateral seat support bar, wherein the right and left arm posts are arranged parallel relative to one another,

and

a right arm rest platform mounted to an upper terminal end of the right arm post, and a left arm rest platform mounted to an upper terminal end of the left arm post, wherein the right and left arm rest platforms are pivotally mounted to the respective right and left arm posts,

and

the longitudinal seat support bar including a forward "L" shaped yoke mounted at a forward terminal end of the longitudinal seat support bar,

and

a rear "L" shaped yoke mounted to a rear terminal end of the longitudinal seat support bar,

and

a forward leg post mounted to the forward "L" shaped yoke and orthogonally oriented relative to the longitudinal seat support bar in a first position and arranged to overlie in inter-folded relationship the longitudinal seat support bar in a second position, wherein the forward "L" shaped yoke permits selective pivotment of the forward leg post relative to the longitudinal seat support bar,

and

a forward leg post support bar integrally and orthogonally mounted to the forward leg post,

and

a lower spine link mounted to the rear "L" shaped yoke, wherein the rear "L" shaped yoke permits pivotment of the lower spine link from a first position orthogonally oriented relative to the longitudinal seat support bar to a second position to overlie the upper surface of the seat platform in a second position of the lower spine link,

and

a back support plate mounted integrally and orthogonally to a forward surface of the lower spine link,

and

an upper spine link including an upper spine link lower yoke pivotally mounting the upper spine link relative to the lower spine link from a longitudinally aligned first position of the upper spine link to the lower spine link to an overlying orientation of the upper spine link relative to the lower spine link in an upper spine link second position,

and

an upper spine link "L" shaped yoke orthogonally mounting an overhead link in a first position, wherein the overhead link is arranged parallel to the longitudinal seat support bar in the first position,

and

a winch mounted to a forward terminal end of the overhead link, wherein the winch includes an elongate cable mounted thereto for securement to a structural support member permitting elevational repositioning of the apparatus upon selective extension or retraction of the cable.

5,009,285

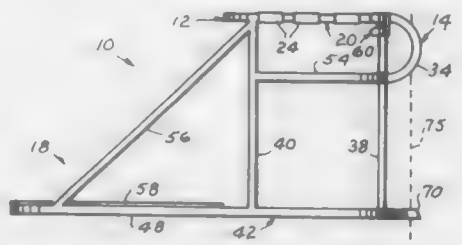
COMBINATION BACKPACK AND TREE STAND

E. Don Ramsey, Rte. 1, Box 247, Konawa, Okla. 74849

Filed May 21, 1990, Ser. No. 525,824

Int. Cl.[5] **A01M** *31/02*

U.S. Cl. 182—187 **3 Claims**



1. A backpack and tree stand, comprising:

an endless seat frame having a seat thereon and having a rearward end rail;

a chain connected at its respective end portions with respective end portions of said rearward seat end rail for transversely surrounding an intermediate portion of an upright support for securing said seat frame to the latter;

chain stop means including a planar member having outer and inward surfaces and having a forwardly open normally horizontal slot therein secured to opposite sides of said seat frame for receiving a selected intermediate link of said chain and securing respective end portions of said chain against longitudinal movement relative to the seat frame;

a chain link stop on the inward surface of said planar member adjacent the slot for preventing removal of a chain link from the slot while the chain is under tension;

a transverse horizontal frame member spaced downwardly with respect to said seat frame rearward end rail;

a pair of semicircular cams projecting rearwardly from said seat rearward end rail,

each said cam of said pair of cams secured in laterally spaced-apart parallel relation to the central portion of said seat frame rearward end rail and said transverse frame member and having a rearwardly projecting arcuate portion normally disposed downwardly with respect to the normally horizontal plane of the seat for forming a fulcrum and a binding action of said pair of cams against said upright support and supporting said seat in a substantially horizontal plane when said seat is biased downward by the mass of a hunter thereon; and,

elongated prong means secured to the seat frame and said transverse frame member and projecting rearwardly and downwardly coextensive with the seat frame and rearward extent of the cam means for contacting said support and stabilizing said seat frame against lateral movement relative to said support.

5,009,286

LUBRICATING OIL SUPPLYING MECHANISM IN SWASH PLATE TYPE COMPRESSOR

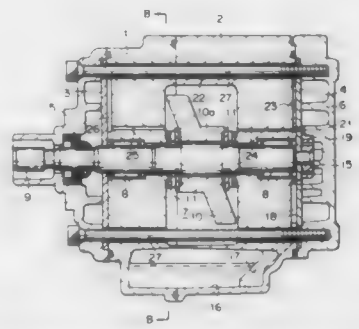
Hayato Ikeda; Masahiro Sawada; Norihiko Nakamura, and Naoya Yokomachi, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakushi, Aichi, Japan

Filed Dec. 4, 1989, Ser. No. 445,409

Claims priority, application Japan, Dec. 2, 1988, 63-306370

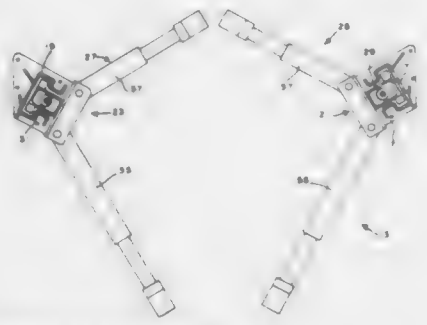
Int. Cl.[5] **F01M** *1/00*

U.S. Cl. 184—6.17 **6 Claims**



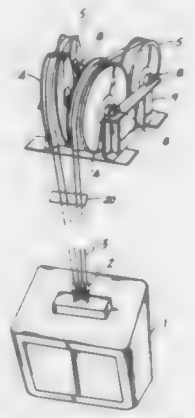
1. Lubricating oil supplying mechanism in a swash plate type compressor having a drive shaft set in a substantially horizontal plane, a swash plate fixed to the drive shaft, a cylinder block provided with a swash plate chamber receiving the swash plate, front and rear housings closing both ends of the cylinder block, a plurality of bolts arranged in through holes in the cylinder block for fastening the front and rear housings and the cylinder block, radial bearings rotatably journaling the drive shaft, trust bearings mounted between ends of a boss portion of the swash plate and the cylinder block, an oil reservoir holding the lubricating oil, and a pump unit for supplying the lubricating oil to movable elements, the pump unit being positioned at one end of the drive shaft, characterized in that at least one through hole of said cylinder block in which one of said plurality of bolts is arranged, which through hole is positioned above the horizontal plane on which the drive shaft lies is connected with a channel formed in said cylinder block from said pump unit to said through hole and with an outlet portions of a passage of said lubricating oil, the outlet portion opening into said swash plate chamber for discharging said lubricating oil to lubricate said movable elements, the outlet portion being positioned above the horizontal plane on which said drive shaft lies.

5,009,287
VEHICLE LIFT
George N. Starr, Memphis, Tenn., assignor to Delaware Capital Formation, Inc., Wilmington, Del.
Filed Sep. 19, 1989, Ser. No. 409,438
Int. Cl.[5] B60S *13/00*
U.S. Cl. 187—8.41 11 Claims



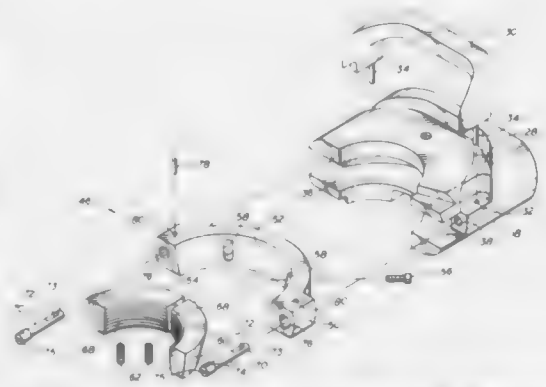
1. A vehicle lift comprising:
(a) support means for engaging a vehicle to be lifted, said support means including at least one carriage means and lift arm means, said carriage means including follower means;
(b) power means engaging said support means for lifting, supporting and lowering said support means to lift, support and lower a vehicle engaged by said support means; and
(c) at least one vertically extending column means for supporting and guiding said support means during said lifting, supporting and lowering thereof; said column means including a pair of first channel means opening inwardly towards said carriage and a pair of second channel means respectively joined to said first channel means and respectively opening outwardly in the opposite direction from said pair of first channel means, and said pair of first channel means movably receiving said follower means.

5,009,288
SHEAVE ARRAY ARRANGEMENT FOR ELEVATOR
Kelichiro Nakai, Tokyo, and Yoshinori Nakanishi, Shibayama, both of Japan, assignors to Otis Elevator Company, Farmington, Conn.
Filed Nov. 14, 1989, Ser. No. 436,269
Claims priority, application Japan, Dec. 9, 1988, 63-311541
Int. Cl.[5] B66B *11/04*
U.S. Cl. 187—20 3 Claims



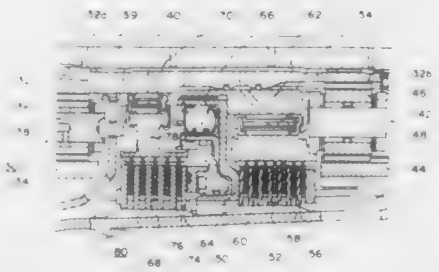
1. A sheave array for use in an elevator system for guiding counterweight and car ropes, said array comprising: a first sheave pair having parallel axes of rotation, one sheave of said first sheave pair guiding ropes attached to a first side portion of the counterweight, and the other sheave of said first sheave pair guiding ropes attached to said car in the vicinity of a vertical line passing through the center of gravity of the car; and a second sheave pair having parallel axes of rotation, the axes of rotation of said second sheave pair being skew to the axes of rotation of said first sheave pair, one sheave of said second sheave pair guiding ropes attached to a side portion of the counterweight opposite said first side portion, and the other sheave of said second sheave pair guiding ropes attached to the car in the vicinity of said vertical line.

5,009,289
BLOWOUT PREVENTER STRING SUPPORT
James G. Nance, Spring, Tex., assignor to Cooper Industries, Inc., Houston, Tex.
Filed Mar. 23, 1987, Ser. No. 28,743
Int. Cl.[5] E21B *33/06*
U.S. Cl. 188—67 12 Claims



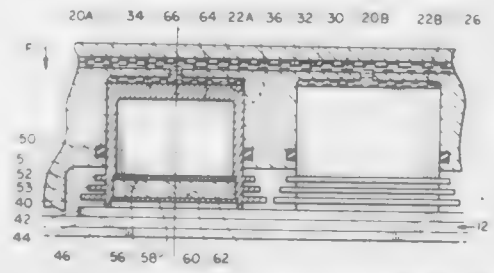
1. An apparatus for supporting a tubular string within a well bore, comprising
a body having means for connecting to a wellhead structure, a central bore therethrough an opposed, aligned guideways extending outward from the central bore,
a ram positioned in each of said guideways,
fluid pressure responsive means for moving each of said rams axially in their respective guideways,
each of said rams including
a ram body with a packer slot substantially of C-shape extending horizontally in a concave pattern across the face of the ram body, said packer slot being defined by both an upper and a lower outwardly extending horizontally positioned flange-like portion of said ram body, and
a pipe gripping assembly including
a bowl body shaped to be received in said packer slot with the interior of said bowl body facing said central bore and having an arcuate surface which tapers downwardly and inwardly,
fastening means for fixedly securing said bowl body within said packer slot,
a plurality of gripping members with each of said gripping members having a [illegible] surface tapered to mate with said arcuate tapered surface of said bowl body, and
means for slidably mounting said gripping members within said bowl body for movement along said tapered bowl surface in a vertical direction,
each of said gripping members having a plurality of gripping teeth on the face thereof.

5,009,290
MULTI-DISK BRAKE FOR AUTOMATIC TRANSMISSION
Kyouji Harada; Eiji Kato; Yoshikazu Sakaguchi; Kazuaki Watanabe, and Akira Hoshino, all of Aichi, Japan, assignors to Aisin-AW Kabushiki Kaisha and Toyota Jidosha Kabushiki Kaisha, both of, Japan
Filed Aug. 4, 1989, Ser. No. 389,590
Claims priority, application Japan, Aug. 6, 1988, 63-195307
Int. Cl.[4] F16H *5/00*
U.S. Cl. 188—71.5 19 Claims



1. A multi-disc brake for an automatic transmission, comprising:
(a) a cylindrical case having a splined inner peripheral surface and a central axis,
(b) a plurality of annular outer lamellae having a first diameter and concentrically arranged along the axis of said cylindrical case and splined to said inner peripheral surface with an annular gap therebetween;
(c) a plurality of annular inner lamellae having a second diameter smaller than said first diameter and concentrically arranged along the axis of said cylindrical case, said outer and inner lamellae being alternatively interleaved;
(d) an engagement/disengagement mechanism capable of pressing said outer and inner lamellae together into frictional engagement and capable of disengaging and releasing said outer and inner lamellae from each other; and
(e) spring means, inserted into the lowermost portion of said annular gap beneath said outer lamellae, for applying a spring loading on said outer lamellae to bias said outer lamellae upward in said case

5,009,291
BRAKE PISTON ASSEMBLY
Thomas P. Castellano, Malibu, Calif., assignor to Industrial Material Technology, Inc., Andover, Mass.
Filed Jun. 14, 1988, Ser. No. 206,600
Int. Cl.[4] F16D *65/84*
U.S. Cl. 188—71.6 7 Claims



1. An actuator apparatus for use in a brake system having a first disc element which is to be pressed against another disc element, comprising
walls forming a cylinder;
a piston slideably mounted in said cylinder to move in a predetermined forward direction toward said disc element and in an opposite rearward direction;
means for applying pressured hydraulic fluid to said cylinder to push said piston in said forward direction;
a seal between said piston and cylinder for preventing the leakage of said hydraulic fluid;
said piston having a rear wall against which said hydraulic fluid presses, a substantially cylindrical side wall which seals against said seal, and a forward end that presses toward said disc element;
said piston also having first and second forward internal walls forming a sealed chamber between them within said cylindrical side wall at a location forward of said seal, and a quantity of a coolant material which is generally a liquid under temperatures reached in braking, lying in said chamber wherein said coolant material has a specific heat at least half that of sodium

5,009,292
MECHANISM AND METHOD OF POSITIVE ARCUATE ORIENTATION OF A FIRST MEMBER AND A SECOND MEMBER, PARTICULARLY FOR BRAKE ADJUSTED ORIENTATION OF A DRIVE MEMBER AND A DRIVEN MEMBER IN A DISC BRAKE ASSEMBLY HAVING PARKING BRAKE MECHANISM
Charles T. Hoffman, Jr., Springboro; Ralph A. Gordon, Centerville, both of Ohio; Thomas P. Houmer, Concord, and Robert M. Lucas, Melrose, both of Mass., assignors to General Motors Corporation, Detroit, Mich.
Filed May 19, 1989, Ser. No. 355,012
Int. Cl.[4] F16D *65/38*
U.S. Cl. 188—71.7 2 Claims



1 In a disc brake assembly having a caliper housing with a parking brake lever stop defining a released position for a parking brake lever, a piston, and a parking brake actuator including a parking brake lever adapted to have parking brake cable means connected therewith for moving the parking brake actuator to move the piston mechanically to actuate the disc brake assembly as a parking brake:
mechanism for establishing a positive disc brake piston position with the parking brake lever positioned at its housing stop during the parking brake release mode and the piston is a desired axially proper adjusted position, said mechanism comprising:
a threaded shaft axially fixed with respect to said caliper housing forming a part of the piston brake actuator, said shaft being mounted for driving rotational movement in the caliper housing and having one end positioned within the caliper housing and threaded and receiving cooperating driven threaded means thereon to act on the piston to mechanically apply the brake assembly in the parking brake mode and to be positioned in the brake release mode to provide an axially adjusted position of said driven threaded means and therefore of the piston, said shaft having on its other end outward of the caliper housing a multi-equal sided non-circular cross section first portion having at least six sides, and said shaft having a second portion, and a threaded end in axial series alignment;
and a parking brake actuating lever assembly forming another part of the parking brake actuator including a first lever portion defined by an intermediate lever assembly portion and a second lever portion defined by the parking brake lever;

said first lever portion having a multi-equal sided non-circular cross section opening receiving said shaft first portion therethrough in any one of a plurality of arcuate positions relative to and in arcuately rotatable driving relation with said shaft and said first lever having at least three equally spaced holes radially aligned relative to said threaded shaft;

said second lever portion being spring biased to a released position and said second lever having an opening receiving said shaft second portion with said second lever portion upon such receipt being in translationally fixed but arcuately relatively movable relation to said shaft, and said second lever having at least three sets of equally spaced holes on concentric arcs for registration with said first lever holes, none of said holes on said second lever being radially aligned relative to said threaded shaft,

connector means joining said first and second lever portions in any one of a series of arcuately relative substantially equi-spaced positions by registration through aligned holes in said first and second levers and thereby establishing a selected fixed arcuate position of said second lever portion in relation to said shaft and a rotatably fixed driving relation between said second lever portion and said shaft through which said shaft may be operatively arcuately rotated by arcuate rotational movement of said second lever portion, the arcuate range of arcuately relative positions available between said shaft and said second lever portion being sufficient to incrementally orient said second lever portion arcuately on said shaft with the brake in the fully adjusted and released position and with said second lever portion engaging the second lever portion stop on said caliper housing and therefore placing said parking brake actuator and actuating lever in the properly adjusted position with said piston in its desired axially proper adjusted position.

5,009,293

DISC BRAKE APPARATUS

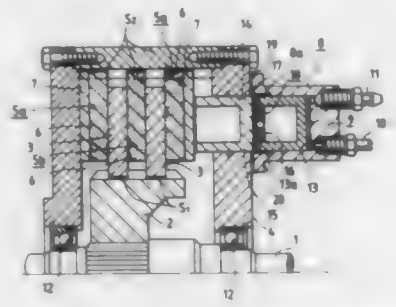
Nobuyuki Takahashi, Saitama, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo and Akebono Research and Development Centre Ltd., Hanyu, both of, Japan

Filed Dec. 12, 1989, Ser. No. 448,847

Claims priority, application Japan, Dec. 21, 1988, 63-164472

Int. Cl.[5] F16D *55/18*

U.S. Cl. 188—72.4 **5 Claims**



1. A disc brake apparatus for a vehicle having a vehicle wheel, the apparatus comprising:

at least one rotor rotating with the vehicle wheel;

a housing provided on an unrotatable portion of the vehicle;

at least two pads supported by said housing, said pads being located at both sides of said rotor;

a cylinder comprising a flange having a plurality of apertures, and cylinder secured to said housing by a plurality of threaded fasteners passing through said apertures to engage said flange;

a piston means engaging said cylinder for urging said pads against said rotor, said piston means comprising a main part fitted sealably in said cylinder and a sub-part slidably mounted in a circular aperture in the housing, said sub-part being provided between said main part and said pads, and a first heat-resistant member provided between said main part and said sub-part to prevent the transfer of heat from the sub-part to the main part, said main part, said first part and said sub-part to prevent the transfer of heat from the sub-part to the main part, said main part, said first heat-resistant member and said sub-part being arranged in series, said first heat resistant member completely separating said sub-part from said main part; and

a second heat-resistant member provided between said cylinder and flange and said housing to prevent the transfer of heat from the housing to the cylinder.

5,009,294

VEHICLE TRACTION CONTROL SYSTEM

Youssef A. Ghoneim, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 19, 1990, Ser. No. 467,436

Int. Cl.[5] B60K *41/20*

U.S. Cl. 192—1.22 **4 Claims**



1. A traction control method for a vehicle having an engine for applying a driving torque to a driven wheel and having a brake for braking the driven wheel, the method comprising the steps of:

determining a wheel slip condition of the driven wheel;

controlling the driving torque applied to the driven wheel by the engine, when the determined wheel slip condition represents an excessive acceleration wheel slip condition, in direction to limit wheel slip to a desired slip value λ^*;

determining a condition where using only the step of controlling the driving torque would be incapable of preventing a trajectory of wheel slip from exceeding a predetermined maximum allowable slip value λ_x; and

controlling the brake for braking the driven wheel when it is determined that the step of controlling the driving torque would be incapable of preventing the trajectory of wheel slip from exceeding the predetermined maximum value λ_x.

5,009,295

TRANSMISSION SHIFTER TO OPERATOR CONTROLLED MECHANISM INTERLOCK

Charles E. Kinkade, Dryden; Harold L. Sharp, Union Lake, and Robert F. Vrbensky, Utica, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 8, 1989, Ser. No. 447,778

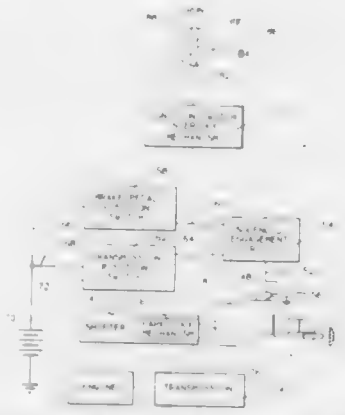
Int. Cl.[5] B60K *41/26*

U.S. Cl. 192—4 A **1 Claim**

1. A shift control in an automatic transmission on a vehicle having at least one operator controlled mechanism to be manipulated prior to the transmission being shifted from a Park range comprising:

position selector means movable to control setting of said transmission and having Park/Lock means for mechanically blocking the movement of said position selector means from said Park range until said Park/Lock means is released including

selectively energizable electromagnetic solenoid means for holding stationary said Park/Lock means and said position selector means when said transmission is in said Park range prior to manipulation of said operator controlled mechanism; and



said solenoid means providing travel stop means for said Park/Lock means when said position selector means is placed in said Park range and having an armature and a pole piece which are separated sufficiently to reduce the magnetic attraction therebetween to an ineffective level when the position selector means is moved from the Park range and the operator controlled mechanism is in the unmanipulated condition.

5,009,296

POWER TRANSMITTING APPARATUS FOR USE IN VEHICLE

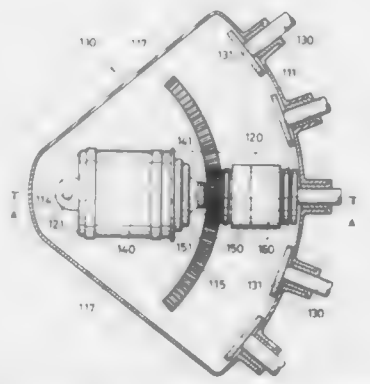
Osamu Ohkawa, Sakato; Tetsuya Tamahoko, Koganei, and Eisuke Imanaga, Tokyo, all of Japan, assignors to Tokyo Seat Co., Ltd., Asaka, Japan

Continuation-in-part of Ser. No. 135,948, Dec. 21, 1987, abandoned. This application Jun. 8, 1989, Ser. No. 366,195

Claims priority, application Japan, Dec. 24, 1986, 61-313567; Dec. 24, 1986, 61-313568; Dec. 24, 1986, 61-313569; Dec. 24, 1986, 61-313570; Dec. 24, 1986, 61-313571; Dec. 24, 1986, 61-313572

Int. Cl.[5] B60N *1/06;* **F16H** *19/04;* **F16D** *27/12*

U.S. Cl. 192—20 **6 Claims**



1. A power transmitting apparatus for use in a vehicle, comprising:

a motor having at least one output shaft to which a traveling electromagnetic clutch and at least one power-transmitting electromagnetic clutch are attached;

a plurality of clutch plates capable of being connected to said power-transmitting electromagnetic clutch while being aligned therewith; and

operating shafts fixed to said clutch plates;

wherein said power-transmitting electromagnetic clutch is moved by the operation of said traveling electromagnetic clutch and the rotation of said motor to a position at which said power-transmitting clutch can be connected to a desired one of said clutch plates.

5,009,297

ELECTROMAGNETIC CLUTCH HAVING A STRUCTURE FOR REDUCING IMPACT NOISE

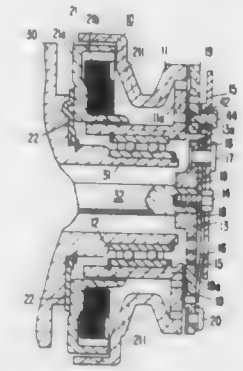
Hideyuki Gonda, Isesaki, Japan, assignor to Sanden Corporation, Isesaki, Japan

Filed Mar. 15, 1989, Ser. No. 323,961

Claims priority, application Japan, Mar. 15, 1988, 63-33099[U]

Int. Cl.[5] F16D *27/112, 27/14*

U.S. Cl. 192—84 C **18 Claims**



10 An electromagnetic clutch comprising:

a first rotatable member rotatably supported on a first bearing and having an axial magnetic end plate;

a second rotatable member which is rotatably supported;

an annular magnetic member connected to said second rotatable member through a plurality of leaf springs so as to be capable of axial movement, said annular magnetic member facing said axial magnetic end plate of said first rotatable member with an axial gap therebetween;

a third rotatable member connected to said second rotatable member to limit the axial movement of said annular magnetic member;

electromagnetic means associated with said first rotatable member for attracting said annular magnetic member to said axial magnetic end plate, said leaf springs being arranged to absorb rotational force when said second rotatable member is rotated with said first rotatable member;

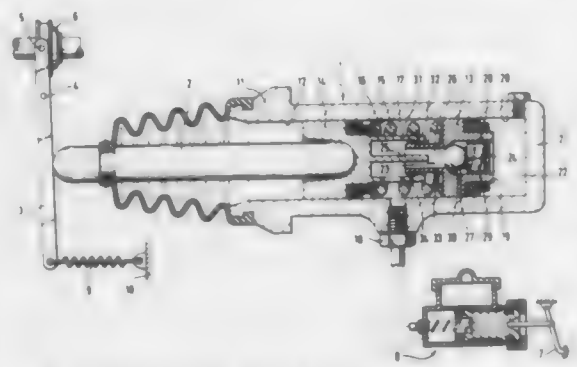
coupling means for coupling said annular magnetic member to said third rotatable member; and

elastic means sandwiched between said coupling means and an outer end surface of said third rotatable member for reducing vibration and impact noise when said annular magnetic member is attracted to said axial magnetic end plate, said elastic means receiving substantially compression forces when said annular magnetic member is attracted to said axial magnetic end plate.

5,009,298

Patent Not Issued For This Number

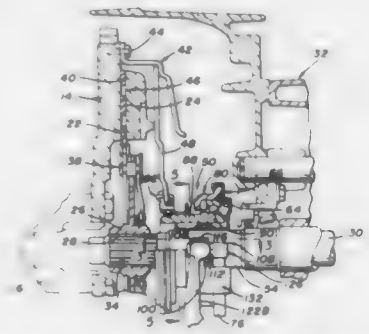
5,009,299
CLUTCH ACTUATING DEVICE
Hanns Seegers, Herzogenaurach, Fed. Rep. of Germany, assignor to INA Walzlager Schaeffler KG, Fed. Rep. of Germany
Filed Jan. 31, 1990, Ser. No. 472,721
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1989, 3907341
Int. Cl.[5] F16D *25/02, 25/06*
U.S. Cl. 192—85 C 5 Claims



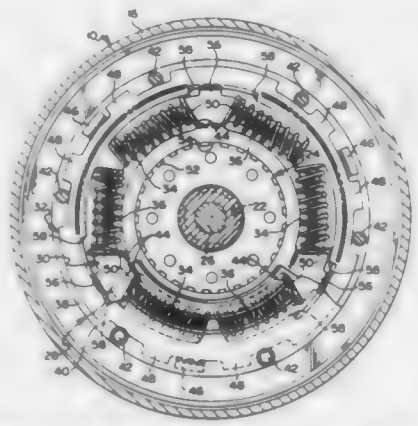
1. A clutch actuating device in which an actuating piston coupled via actuating members with a clutch release bearing and, at an axial distance to the actuating piston, a compensating piston are longitudinally displaceably guided in a hollow cylindrical housing with a bottom, which pistons are held at a distance by a pressure spring and together with a section of a cylinder wall of the housing delimit an actuating oil chamber connected to an external oil reservoir, the pressure spring being arranged between actuating piston and compensating piston and pre-tensioning the actuating piston in the direction of clutch actuation, characterized in that the compensating piston with its side opposed to the actuating piston delimits a compensating oil chamber formed by an inner wall of the hollow housing and the bottom of the housing, the actuating oil chamber and the compensating oil chamber being connected by an oil passage which is regulated both as a function of the distance between the pistons and of an operation of the clutch actuating device so that the length of the pressure spring does not change, or changes only slightly throughout the life of the clutch, the actuating oil chamber being connected with a pressure oil source and the actuating piston and the compensating piston being additionally coupled with each other in axial direction by connecting means which transfer only tensile forces.

5,009,300
ANTI-ROTATION DEVICE FOR THE RELEASE BEARING OF A MANUALLY OPERATED CLUTCH
Kenneth L. Romig, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 21, 1990, Ser. No. 496,721
Int. Cl.[5] F16D *23/14*
U.S. Cl. 192—98 4 Claims

1. A device adapted to establish a cooperative interface between at least one finger of a clutch throw fork and the mounting portion of a release bearing in a clutch assembly, one or more of the devices being mounted at selected locations along the circumference of a flange means extending radially outwardly from the mounting portion of the clutch release bearing, said device comprising: a substantially planar body portion having lateral edges with a transverse edge extending therebetween; first and second side flanges extending substantially perpendicularly outwardly from the lateral edges of said body portion to define a reaction cavity therebetween; at least one finger of a throw fork being cooperatively received within said reaction cavity; fastening clip means secured to at least one of said side flanges to embrace the flange means extending outwardly from the mounting portion of the clutch release bearing; and, a blocking paddle portion extending outwardly from, and in coplanar relation with, said body portion to engage the finger means on the throw fork and thereby serve to preclude rotation of the mounting portion on the release bearing even when the throw fork has been displaced from within said reaction cavity.

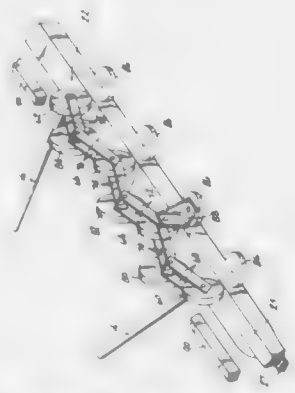


5,009,301
CLUTCH DAMPER ASSEMBLY
Wayne L. Spitler, Ludlow Falls, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Jun. 1, 1990, Ser. No. 531,612
Int. Cl.[5] F16D *3/14*
U.S. Cl. 192—106.2 2 Claims



1. A clutch and damper comprising: a clutch input member having spring seating means and an input stop member; an intermediate member having spaced first and second spring seating means and first and second stop surfaces with one of said stop surfaces being radially and axially aligned with said input stop member; a clutch output member having spring seating means and an output stop member radially and axially aligned with the other of said first and second stop surfaces; first spring means disposed between said clutch input member spring seating means and the first spring seating means for permitting relative angular movement between said clutch input member and said intermediate member; and second spring means disposed between said clutch output member spring seating means and the second spring seating means for permitting relative angular movement between said intermediate member and said clutch output member, said input stop member and said one stop surface cooperating to limit the relative angular movement between said clutch input member and said intermediate member and said output stop member and said other stop member cooperating to limit the relative angular movement between said intermediate member and said clutch output member.

5,009,302
CURVED ESCALATOR WITH FIXED CENTER CONSTANT RADIUS PATH OF TRAVEL
Frank M. Sansevero, West Hartford, Conn., assignor to Otis Elevator Company, Farmington, Conn.
Division of Ser. No. 328,926, Mar. 27, 1989, Pat. No. 4,930,622.
This application Mar. 9, 1990, Ser. No. 490,885
Int. Cl.[5] B66B *21/02*
U.S. Cl. 198—328 6 Claims



1. An escalator assembly having an arcuate path of travel defined by a constant radius derived from a fixed center as viewed in plan, the escalator including horizontal entry and exit landing zones, an intermediate constant slope zone, and entry and exit transition zones of continuously varying slope interconnecting the constant slope zone with the entry and exit landing zones respectively, said escalator having turnaround sprockets at each of said landing zones for reversing the direction of travel of the moving escalator components, and said escalator assembly including:

(a) track means extending between said landing zone and through said transition and constant slope zones for supporting movement of steps along the path of travel of the escalator;

(b) a plurality of steps, each having: an upper tread portion which remains substantially horizontal throughout a people transporting portion of the path of travel of the escalator; a step axle at radially inner and outer sides of each step; radially inner and outer step axle rollers rotatably mounted on said step axles, said step axle rollers being operable to travel over radially inner and outer portions of said track means;

(c) a radially outer step chain forming a continuous connection between said stub axles whereby all of said steps are connected together at their radially outer sides throughout the entire path of travel of the escalator;

(d) means for continuously changing the effective length of said outer step chain, without changing the actual length of said outer step chain as the steps move through each of said transition zones by shortening the effective length of said outer step chain by forming kinks therein in said entry transition zone, and means for straightening the kinks in said exit transition zone whereby the effective length of said outer step chain separates the step axles of adjacent steps at a first predetermined greater distance in both of said landing zones, and separates the step axles of adjacent steps a second predetermined shorter distance, in said constant slope zone, so as to move the outer ends of the step axles of adjacent steps toward and away from each other in said transition zones while concurrently pivoting each step about a point corresponding substantially to its radially inner leading corner as the steps move through the transition zones, whereby the steps are continuously guided and properly positioned along said arcuate path of travel; and

(e) said outer step chain having an effective length which equals its actual length when engaging said turn around sprockets.

5,009,303
AUTOMATIC CASE ACCUMULATOR
Wayne Lutzke, Plymouth, Wis., assignor to Nigrelli Systems, Inc., Kiel, Wis.
Filed Feb. 6, 1989, Ser. No. 306,557
Int. Cl.[5] B65G *1/00*
U.S. Cl. 198—347.3 8 Claims



1. An automatic case accumulator for selectively accumulating and discharging cases transported in a downstream direction by a conveyor comprising:

a. a frame;

b. a plurality of generally horizontal vertically spaced shelves extending generally parallel to the conveyor;

c. drive means connected to the frame for moving the shelves in a generally vertical plane located adjacent and parallel to the conveyor; and

d. finger means mounted to the shelves for being struck and pivoted within the vertical plane by the cases being transported in the downstream direction by the conveyor between consecutively spaced shelves to insert the finger means inside the cases and for cooperating with selected shelves to lift the cases from the conveyor without the cases tipping off the selected shelves.

5,009,304
MULTI-DIRECTIONAL DRIVE FOR ROLLER CONVEYORS OR SIMILAR
Ekkehard Schmalzl, Am Schlierbach 5, D-7860 Schoptheim, Fed. Rep. of Germany
Filed Mar. 13, 1990, Ser. No. 492,678
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1989, 3908856
Int. Cl.[4] B65G *37/00*
U.S. Cl. 198—372 3 Claims

1. Multi-directional drive for roller conveyors comprising a plurality of rolling elements **4, 6** which are consecutively mounted on at least one powered shaft, the elements can rotate selectively in each of the longitudinal direction of the shaft or perpendicular thereto, characterized therein that

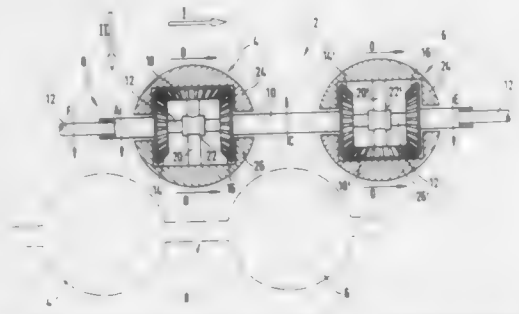
the shaft is formed as a hollow quill **(10)** and is intended to encompass coaxially an inner rotating shaft **(12)**;

the quill **(10)** is discontinuous in the region of the rolling elements **(4, 6)**, forming two free, opposed faces there;

gearwheels **(14, 16)** which are drivingly coupled together by means of an idle wheel **(18)** perpendicular to them, are mounted on the free faces of the quill such that they cannot rotate freely, where the rotational axis of the idle

wheel (18) intersects the longitudinal axis of the rotating shaft (12);

the rotary motion of each idle wheel (18) is transmitted to a plane of rotation which is axially symmetrical to the rotating shaft (12) relative to the plane of rotation of the idle wheel (18); and



that the rolling elements consist of two sub-elements (24, 26) which are located in both rotational planes, and the quill (10) can selectively rotate relative to the stationary rotating shaft (12).

5,009,305

ARTICLE ORIENTATORS

John W. Auld; Brian F. Stringer, both of St. Albans, England, and Brian F. Stringer, both of St. Albans, England, assignors to Noshe Engineering Limited, England

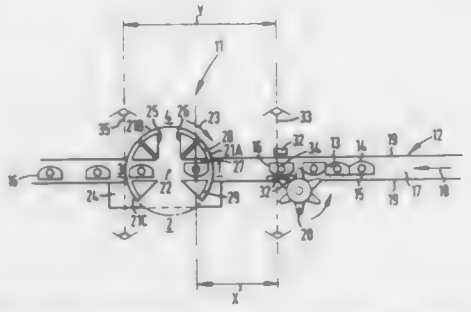
PCT No. PCT/GB88/00173, § 371 Date Sep. 12, 1989, § 102(e) Date Sep. 12, 1989, PCT Pub. No. WO88/07016, PCT Pub. Date Sep. 22, 1988

PCT Filed Mar. 8, 1988, Ser. No. 401,442

Claims priority, application United Kingdom, Mar. 12, 1987, 8705846

Int. Cl.[5] B65G *47/24*

U.S. Cl. 198—395 14 Claims



1. An article orientator for disposition above a conveyor for transporting articles, said orientator comprising a plurality of article holders independently supported to enable each holder to be moved into and out of the path of the conveyor and being operative to divert an article received by it out of the conveyor path and then back into it again with a changed orientation, the article holders being disposed to move around a common endless track in incremental movements, and the number of article holders disposed around said endless track being such as to leave a free track space around the track equal to at least one said incremental movement.

5,009,306

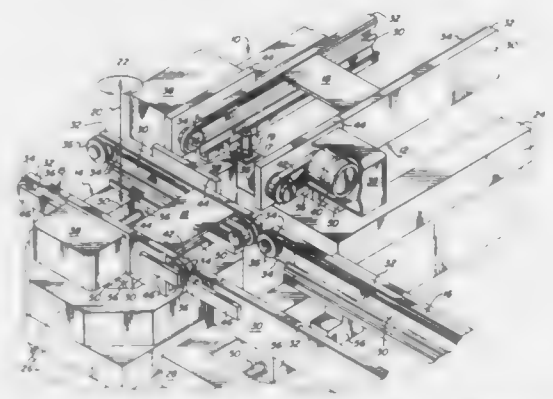
PRINTED CIRCUIT BOARD CONVEYOR AND METHOD

Zackary A. Roderick, Santa Cruz, and Leon A. Rode, Merced, both of Calif., assignors to Simplimatic Engineering Company, Lynchburg, Va.

Filed Jun. 19, 1989, Ser. No. 367,758

Int. Cl.[5] B65G *29/00*

U.S. Cl. 198—414 57 Claims



1. A conveyor support for conveyors having endless ropes which frictionally transport articles, the conveyor support comprising:

an elongated substantially vertical body having a top portion and a bottom portion;

a first platform depending substantially horizontally from a side of the body along its length at its top portion, the first platform having a top surface and a bottom surface;

a concavely shaped channel formed in the top surface of and running the length of the first platform, the channel to slidably support the endless rope from below to frictionally transport articles;

a second platform depending substantially horizontally from a side of the body along its length beneath the first platform, the second platform having a top surface and a bottom surface; and

a concavely shaped passage running the length of the second platform and bounded by the top surface of the second platform which is formed upward toward the bottom surface of the first platform and around toward the body to slidably support the returning rope from below.

5,009,307

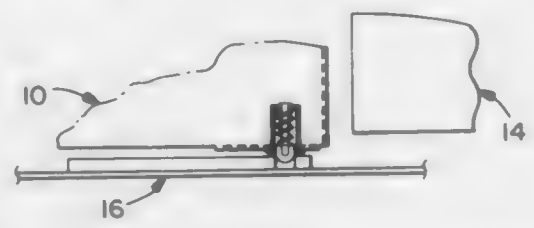
SAFETY DEVICE FOR CONVEYOR SYSTEMS

Lynn C. Chance, Woodstock, and John A. Low, Maurertown, both of Va., assignors to Agri-Tech Incorporated

Filed Jul. 14, 1989, Ser. No. 379,890

Int. Cl.[5] B65G *47/44*

U.S. Cl. 198—538 10 Claims



1. A conveyor system comprising:

(A) a conveying mechanism which moves in a direction of conveyance;

(B) first and second components of said conveyor system spaced adjacent to said conveying mechanism; and

(C) a spring biased fastener which directs a fastening force perpendicular to the direction of conveyance thereby to detachably connect said first component to said second component, wherein said fastener is adapted to release to disconnect said first component from said second component under the pressure of an object lodged between said conveying mechanism and said first component in order to prevent damage to said object.

5,009,308

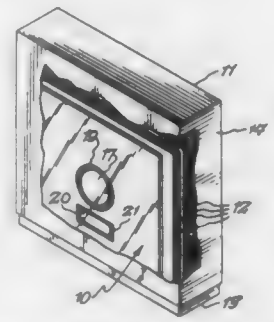
CONTROLLED RATE ADSORBENT UNIT AND METHOD OF FABRICATION THEREOF

John S. Cullen, Buffalo; Samuel A. Incorvia, Tonawanda; Christopher S. Nigon, Orchard Park, and Nicholas E. Vaylen, Grand Island, all of N.Y., assignors to Multiform Desiccants, Inc., Buffalo, N.Y.

Filed Aug. 9, 1989, Ser. No. 391,775

Int. Cl.[5] B65D *81/26*

U.S. Cl. 206—204 8 Claims



7. In combination a package, recording disc means in said package, and a controlled rate adsorbent unit in said package for adsorbing water vapor in said package at a controlled rate for maintaining the quality of said recording disc means, said controlled rate adsorbent unit being in the shape of a recording disc, said adsorbent unit including paper impregnated with a moisture adsorbent and completely encased and sealed within a plastic casing having a predetermined vapor transmission rate.

5,009,309

DOUBLE CHAMBER RECEPTACLE

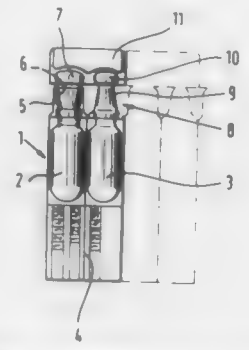
Bernd Hansen, Heerstrasse 16, 7166 Sulbach-Laufen 2, Fed. Rep. of Germany

Filed Aug. 22, 1989, Ser. No. 396,929

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1988, 3833036

Int. Cl.[5] B65D *3/04*

U.S. Cl. 206—219 12 Claims



1. A double chamber receptacle, particularly a double chamber ampoule, comprising:

first and second containers arranged side-by-side, adjacent to and generally parallel to each other and detachably coupled together by a frangible partition zone before opening and mixing contents thereof, said first and second containers having first and second chambers, respectively;

first and second stoppers closing said first and second containers, respectively;

a first neck on said first container having a filling-removing opening and a conical outer surface tapering toward an open end of said first neck; and

a second neck on said second container having a filling-removing opening and having a conical inner surface configured to mate with said conical outer surface and tapering toward an inside of said second container;

whereby the contents can be mixed by detaching said containers, removing said stoppers and inserting said first neck into said second neck.

5,009,310

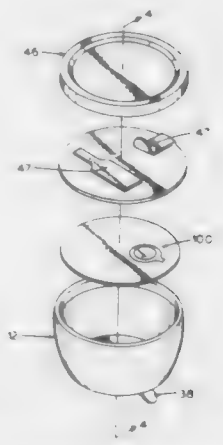
DISPOSABLE CONTAINER FOR STORING AND DISPENSING PET FOOD

Patrick D. Finney, P.O. Box 658, Horsham, Pa. 19044

Filed Apr. 4, 1990, Ser. No. 503,907

Int. Cl.[5] B65D *69/00, 85/72*

U.S. Cl. 206—229 2 Claims



1. A disposable container for storing and dispensing pet food comprising:

(A) a monolithic circular outer shell having

(1) a base which has an outer dimension,

(2) a hollow tubular sidewall connected to said base and having an inner surface and an outer surface and a top rim spaced from said base, said top rim having an outer dimension that is greater than said base outer dimension so that said sidewall diverges from said base to form a bowl shape,

(3) said sidewall being folded over itself at said top rim and having a sidewall portion of said sidewall outer surface in contact with said sidewall inner surface, said sidewall portion extending from said top rim toward said base and having a terminal end located inside said outer shell, and

(4) said sidewall having an end edge at said terminal end which extends from said outer surface to said inner surface and slopes downwardly from said outer surface toward said base, said terminal end extending completely around said sidewall and defining a ledge, said ledge being triangular in shape with said terminal edge defining a hypotenuse, said ledge having a thickness as measured along the height dimension of said triangular shape;

(B) adhesive material on said base, said adhesive material having a thickness measured from said base and an outer dimension that is slightly smaller than said base outer dimension, said adhesive material releasably affixing said base to a support upon contact with such support;

(C) a protective covering having an inner surface releasably

attached to said adhesive material and covering said adhesive material, said protective covering having an outer surface and a thickness measured between said protective covering inner surface and said protective covering outer surface, and an outer dimension that exceeds the outer dimension of said adhesive material and is smaller than the outer dimension of said base, said protective covering further including a pull tab mounted on said protective covering outer surface;

(D) a sealing cover releasably affixed to said outer shell top rim, said sealing cover including

(1) a top surface,

(2) a bottom surface,

(3) said sealing cover having an outer dimension which exceeds the outer dimension of said outer shell adjacent to said top rim,

(4) adhesive means releasably affixing said sealing cover to said outer shell top rim,

(5) said sealing cover forming a flexible overhang which is outwardly circumjacent to said outer shell adjacent to said top rim,

(6) a pull tab mounted on said sealing covering top surface,

(7) a food stirring element releasably mounted on said sealing cover top surface;

(E) a monolithic shell cover releasably mounted on said outer shell sidewall in covering relation thereto, said shell cover including

(1) an inner surface which is located adjacent to said outer shell inner surface when said shell cover is mounted on said shell,

(2) a base having an inner surface with an inner dimension and an outer surface,

(3) said shell cover base inner surface inner dimension being slightly smaller than the outer dimension of said outer shell adjacent to said outer shell top rim,

(4) a flexible tubular sidewall connected to said shell cover base and including

(a) a first section connected to said shell cover base,

(b) a connecting section connected to said first section and having an inner dimension that is smaller than said outer shell outer dimension adjacent to said outer shell top rim,

(c) a third section connected to said connecting section,

(d) said connecting section being located to engage said outer shell adjacent to said outer shell top rim when said shell cover is mounted on said outer shell and flexing outwardly to accommodate said outer shell, and

(e) said shell cover tubular sidewall second section curving away from said shell sidewall and having an outer rim which is spaced from said outer shell sidewall when said shell cover is mounted on said outer shell, and

(5) an annular ridge on said shell cover base outer surface, said annular ridge including

(a) a planar top surface spaced from said shell cover base outer surface,

(b) a sloping wall extending from said planar top surface to said shell cover base outer surface and circumscribing an area therewithin on said shell cover base outer surface, said area having a dimension that is slightly greater than the outer dimension of said protective covering,

(c) said annular ridge having a height measured between said planar top surface and said cover base outer surface, and

(d) said annular ridge height exceeding the combined thickness of said adhesive and said protective covering; and

(F) a sealing plate which includes

(1) an upper surface having an outer dimension,

(2) a lower surface having an outer dimension, with said lower surface outer dimension exceeding said upper surface outer dimension,

(3) an edge connecting said upper surface to said lower surface, said edge being triangular in shape and being received in said outer shell ledge when said sealing plate is mounted on said outer shell,

(4) a pull ring element mounted on said sealing plate upper surface,

(5) said sealing plate lower surface outer dimension being less than the dimension of said outer shell adjacent to said ledge, and

(6) said sealing plate having a thickness measured between said sealing plate upper surface and said sealing plate lower surface, with said sealing plate thickness being equal to said ledge thickness.

5,009,311

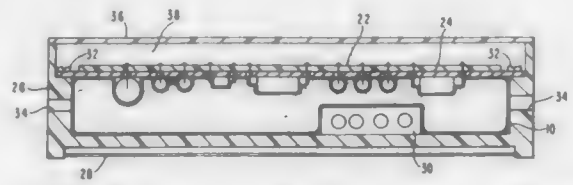
REMOVABLE RIGID SUPPORT STRUCTURE FOR CIRCUIT CARDS

Robert J. Schenk, 28 Valley View Ter., Wayne, N.J. 07470

Filed Jun. 11, 1990, Ser. No. 536,324

Int. Cl.[5] B65D *81/06*

U.S. Cl. 206—332 **5 Claims**



1. A method for adding structural rigidity during usage to a circuit card, comprising the steps of:

providing a walled housing in which said circuit card is to be mounted;

providing a sealable compliant bag;

filling said bag with resin and catalyst which when mixed together form a foam which expands and becomes rigid upon curing;

sealing said bag;

fixedly mounting said circuit card to said housing;

mixing said resin and catalyst in said bag;

placing said bag in said housing between a side of said circuit card and a wall of said housing; and

allowing the mixed resin and catalyst in said bag to cure.

4. An arrangement for rigidly supporting a circuit card within a housing during usage comprising

means for fixedly mounting said circuit card to said housing;

a sealed compliant bag; and

a quantity of resin and catalyst within said bag, said resin and catalyst being of the types that when mixed together form a foam which expands and becomes rigid upon curing;

wherein said bag is supported within said housing between a side of said circuit card and a wall of said housing, the placement of said bag within said housing being effected after the resin and catalyst are mixed but before the resulting foam is cured.

5,009,312

CONTAINER AND IMPROVED METHOD FOR CARRYING AND TRANSPORTING COMPUTER TAPE CARTRIDGES

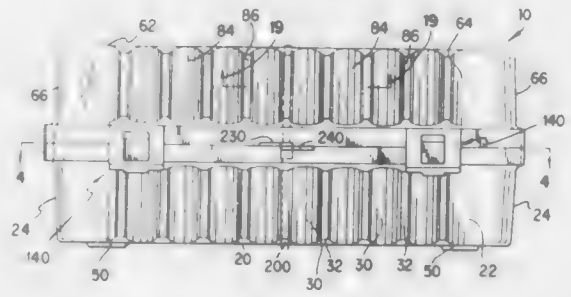
David G. Leben, 105 S. Broadway, Suite 640, Wichita, Kans. 67202

Continuation-in-part of Ser. No. 392,210, Aug. 10, 1989, which is a division of Ser. No. 287,739, Dec. 21, 1988, Pat. No. 4,874,088. This application Oct. 10, 1989, Ser. No. 419,397

The portion of the term of this patent subsequent to Oct. 17, 2006, has been disclaimed.

Int. Cl.[5] B65D *25/18, 85/67*

U.S. Cl. 206—387 **16 Claims**



1. A container for carrying and transporting computer tape cartridges comprising

a container base having a base bottom, a pair of base hollow upright side walls integrally secured to said base bottom, and a pair of base end walls integrally secured to said base bottom and to said base side walls, each of said base hollow upright side walls having a base outside wall and a base inside wall with said base outside wall having a structure defining a plurality of hollow dome-shaped protrusions spaced by an abridging outside wall member and with said base inside wall having a structure defining a plurality of hollow dome-shaped ribs spaced by an abridging inside wall member, and said base bottom having a base outside wall and a base inside wall having a structure defining a plurality of hollow dome-shaped ridges spaced by an abridging base inside wall member, said dome-shaped ribs integrally connected to said dome-shaped ridges; and

a container lid pivotally secured to said container base.

5,009,313

BATHROOM TISSUE DISPENSER (SPINDLE RELEASE)

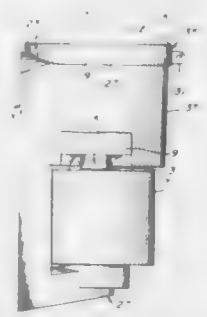
Michel Morand, Montreal, Canada, assignor to Wyant & Company Limited, Lachine, Canada

Filed Feb. 15, 1990, Ser. No. 480,590

Claims priority, application United Kingdom, Aug. 16, 1989, 8918667

Int. Cl.[5] B65D *85/62*

U.S. Cl. 206—391 **11 Claims**



1. A two-roll toilet paper dispenser having a base with a bottom support arm and an upper enclosure; a spindle extending up from the bottom support arm into the enclosure; movable stop means provided on the spindle and positioned thereon to have space for a first toilet paper roll, consisting of a coil of paper wrapped on a core, rotatably mounted on the spindle and resting on the support arm beneath the stop means in a lower operative position, the stop means also positioned on the spindle to provide space for a second toilet paper roll, consisting of a coil of paper wrapped on a core, rotatably mounted on the spindle and resting on the stop means substantially enclosed by the enclosure in an upper storage position, and actuating means on the dispenser to move the stop means to permit the second roll to drop on the spindle from the storage position to the operating position when the paper coil of the first roll has been used up and its core removed

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5,009,314

BOTTLE CARRIER ASSEMBLY

Raymond C. Arthurs, Scarborough, Canada, assignor to Saepter Manufacturing Company Limited, Don Mills, Canada

Filed Jun. 30, 1989, Ser. No. 374,648

Int. Cl.[5] B65D *21/02, 1/24, 85/00*

U.S. Cl. 206—427 **7 Claims**



1. An assembly of adjacent bottle carriers, each formed of resilient plastic material and each of generally rectangular plan having a base, side walls, end walls and upstanding internal walls forming a plurality of bottle accommodating cells, and each carrier having a socket through the base extending upwardly between cells, and a tongue extending downwardly within the socket between the bottle carrying cells; and an assembly plate extending under said carriers and having upstanding prongs, a prong fitting into a corresponding socket of each carrier adjacent the tongue whereby, on peripheral pressure on the assembly the prong bears against the tongue to hold the plate against falling.

5,009,315

CONTAINER CARRIER

Douglas F. F. Robare, P.O. Box 172, Middlefield, Mass. 01243

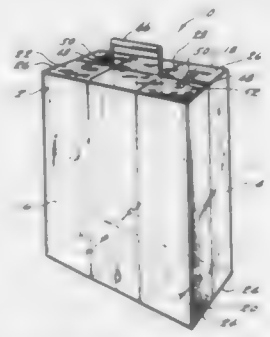
Filed Jun. 29, 1990, Ser. No. 545,820

Int. Cl.[5] B65D *33/02, 30/22, 5/46*

U.S. Cl. 206—427 **5 Claims**

1. A container carrier for storing and transporting beverage cans and the like, said container comprising a box having a front wall, a back wall, two end walls, an openable bottom, an openable top, latch means associated with said top and with said bottom for holding said top and said bottom in a closed position, an insert disposed within said container for dividing the volume thereof into substantially equal portions and a handle for carrying said container disposed on said insert and extending from within said container to a point outside of said container, said openable top and openable bottom comprising a pair of flaps, one of said pair of flaps being hingedly connected

to said front wall and the other of said pair of flaps being hingedly connected to said back wall, said box being made of



a flexible, clear plastic material, said insert being made of a rigid plastic material.

5,009,316

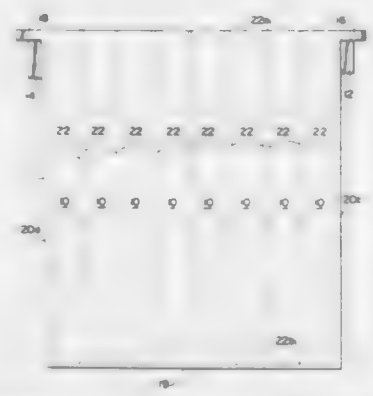
TEST TUBE CASSETTE SYSTEM AND CASSETTES FOR USE THEREIN

David C. Klein, 20 Redding Ridge Dr., Gaithersburg, Md. 20878

Division of Ser. No. 174,855, Mar. 29, 1988. This application May 12, 1989, Ser. No. 350,843

Int. Cl.[5] B65D *85/20*

U.S. Cl. 206—443 **16 Claims**



1. An asymmetrical test tube cassette for use in a cassette system, the cassette comprising:

a pair of spaced parallel exterior side walls having straight top, bottom and side edges;

a pair of parallel exterior end walls having straight top, bottom and end edges, the end walls being integrally connected to the side walls along the respective side edges of the end walls and side walls;

a planar exterior bottom wall extending between the bottom edges of the side walls and end walls, the side walls, end walls and bottom walls together defining a fluid-tight cassette chamber with an opening defined by the straight top edges of the side walls and end walls;

a plurality of dividing walls, the dividing walls being integrally formed with the side walls and bottom walls and extending within the chamber between the side walls so as to divide the chamber into a plurality of fluid-tight test tubes, each test tube defined by two planar end walls and two planar side walls, each test tube side wall being a portion of the cassette side wall and each test tube having a substantially rectangular cross-section; and

a planar rear extension extending from one end of the cassette and a planar front extension extending from the other end of the cassette, the front and rear extensions having different shapes such that the cassette is asymmetric so as to aid in proper placement of the cassette in the cassette system.

5,009,317

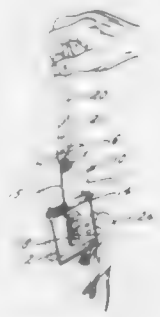
ANIMAL TRAP WITH SANITARY HANDLING MEANS

William J. Kist, 337 Roberts Rd., Barrington, Ill. 60010

Filed Sep. 19, 1990, Ser. No. 585,250

Int. Cl.[5] B65D *73/00*

U.S. Cl. 206—466 **12 Claims**



1. An animal trap comprising

a base,

a "U"-shaped bail,

means mounting said bail on said base for pivotable movement between a latched position and a sprung position,

means biasing said bail toward said sprung position,

a trigger,

latch mounted on said base for releasable engagement with said trigger for maintaining said bail in said latched position, and

a flexible handle normally extending in upright relation to said base so as not to impede access to said trigger by a mouse nor movement of said bail from said latched to said sprung positions, said handle being bendable so as to permit handling and transport of said trap by grasping an upper end of said handle with said base and a mouse trapped thereon suspended in depending relation from a lower end of said handle.

5,009,318

METHOD, DEVICE AND PADDED PRODUCT FOR MAINTAINING AN OBJECT

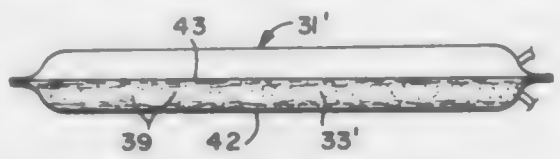
Dominique Lepinoy, Dijon, France, assignor to Lepinoy Industrie, Dijon, France

Continuation of Ser. No. 139,254, filed as PCT FR87/00115 on Apr. 8, 1987, published as WO87/06209 on Oct. 22, 1987, abandoned. This application Mar. 9, 1990, Ser. No. 492,251

Claims priority, application France, Apr. 9, 1986, 86 05317; Aug. 26, 1986, 86 12091

Int. Cl.[5] B65D *81/20*

U.S. Cl. 206—524.8 **11 Claims**



1. A device for cushioning an object comprising:

(a) a quantity of granular material;

(b) a retaining element defining a plurality of closed chambers, each closed chamber enclosing a portion of the granular material such that the entire quantity of granular material is enclosed by the retaining element the retaining element made of material that is permeable to gas and impermeable to the granular material;

(c) a sealed housing defining an enclosed inner volume and enclosing the retaining element within the enclosed inner volume, the sealed housing being made of a supple material impermeable to gas; and

(d) means to depressurize the enclosed inner volume of the sealed housing, the retaining element preventing any excessive accumulation of the granular material in a particular part of the enclosed inner volume before depressurization.

5,009,319

SHAPE GIVING SYSTEM FOR SOFT PURSES

Ellen E. Jantzen, 1226F Woodchase La., St. Louis, Mo. 63017

Filed Oct. 2, 1987, Ser. No. 104,822

Int. Cl.[4] A45C *1/00, 3/08, 11/20, 13/02*

U.S. Cl. 206—544 **21 Claims**



1. A handbag comprising a fabric body, the body having a bottom, sides and an openable mouth, and a liner in the body, the liner being formed to fit snugly against at least two sides of the body, first quick-connect means on the inside of the at least two sides of the body and second quick-connect means on the liner for cooperating with the first quick connect means for releasably holding the liner, a third quick-connect means on the outside of at least one of said two sides of the body, flap means for covering the mouth of the body, and fourth quick-connect means for cooperating with the third quick connect means for releasably holding the flap means to the body, the handbag further including a flexible, resilient sheet shaped to pull the body taut to define a shaped handbag, the body of the handbag comprising pockets on the inside of the two sides of the body adjacent the mouth, the pockets holding the ends of the resilient sheet, the first quick-connect means being provided on the pockets.

5,009,320

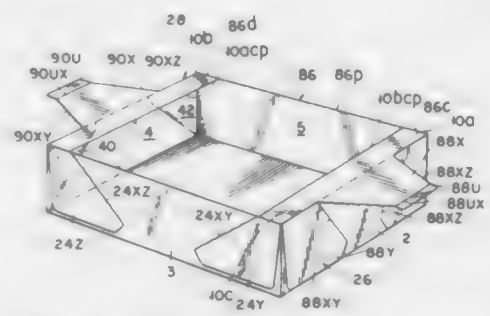
PACKAGING CARTON

William I. Kramer, 103 Briarcliff Dr., Ossining, N.Y. 10562

Filed Oct. 31, 1990, Ser. No. 607,242

Int. Cl.[4] B65D *5/54*

U.S. Cl. 206—607 **20 Claims**



1 A carton for containing food suitable for microwaving, comprising:

a pair of spaced end walls coupled with a base;

a top closure wall including coupled thereto a side wall for each said end wall of said pair of end walls adapted to fit over said pair of end walls;

perforation means on each of said side walls for dividing said side walls into first and second portions; and

sealing means for sealing said side walls to said end walls and leaving said second portions partially free of sealing engagement with said end walls;

said perforation means enabling said second portions to be separated from said first portions to form handles for supporting said carton.

5,009,321

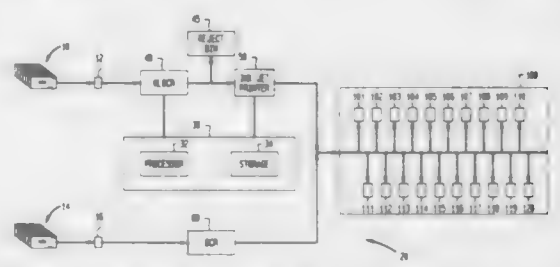
SORTING SYSTEM FOR ORGANIZING RANDOMLY ORDERED ROUTE GROUPED MAIL IN DELIVERY ORDER SEQUENCE

Laurence J. Keough, Fairfield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 13, 1989, Ser. No. 434,734

Int. Cl.[5] B07C *5/02*

U.S. Cl. 209—3.1 **10 Claims**



1. A system for sorting mail pieces for delivery by a mail carrier in a sequence corresponding to the mail carrier's route comprising:

a. means for storing a database containing a delivery sequence for each address on the carrier's route;

b. means for feeding the mail pieces to be delivered by the carrier;

c. means coupled to the feeding means for reading an address on each of said fed mail pieces;

d. means, operatively connected to said reading means and said storing means, for determining a sorting sequence representative of said delivery sequence for each of the mail pieces;

e. means for printing on each of the mail pieces a sequence code corresponding to said sorting sequence;

f. sort means operatively connected to said determining means for depositing the mail pieces into sorting bins inn accordance with said sorting sequence wherein number of passes through said sort means and number of sorting bins needed to complete the sorting of the mailpieces always depends on the formula $X = Y^n$, where X equals a maximum number of stops on the letter carrier's route, Y equals the number of said sorting bins in the sorting system and n equals number of passes through the sorting system to complete the sort, the formula holding true for any number of stops.

5,009,322

PROCESS AND APPARATUS FOR CHECKING/SEPARATING OUT CIGARETTES

Heinz Focke, Verden, and Jürgen Süssenguth, Lilienthal, both of Fed. Rep. of Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed Apr. 5, 1988, Ser. No. 177,737

Int. Cl.[4] B07C *5/12*

U.S. Cl. 209—536 **6 Claims**

1. Process for checking, in a contactless manner, cigarettes filled with tobacco, comprising the steps of:

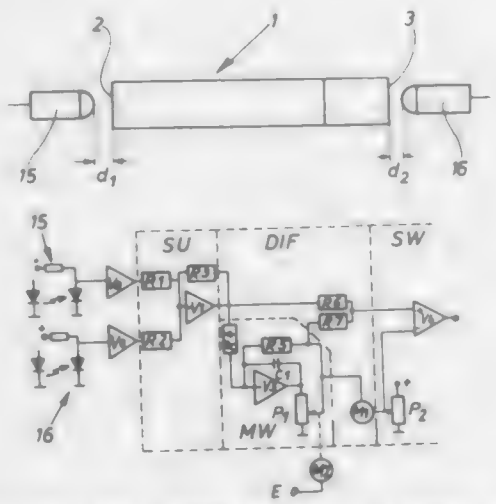
measuring two distance values between two axial end faces of an individual cigarette and two respective reference points and producing two corresponding measuring signals;

obtaining a current sum value of said two distance values;

averaging a plurality of sum values of previous measurements for obtaining a sum average value'

obtaining a difference value between said sum average value and said current sum value;

determining a threshold value in accordance with the color of said tobacco;



comparing said difference value with the threshold value, and

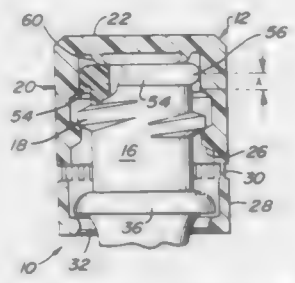
generating an error signal for use in separating said individual cigarette from said cigarettes when said difference value is above the threshold value.

5,009,323

TAMPER INDICATING CLOSURE HAVING A ROTARY SEAL

Gary V. Montgomery, and Terry E. Beck, both of Evansville, Ind., assignors to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Nov. 13, 1989, Ser. No. 435,261
Int. Cl.[5] B65D *41/34*
U.S. Cl. 215—252 **10 Claims**



1. A threaded tamper indicating closure for use on a container having a threaded neck and stop means below its threads, said closure comprising:

a cap having a top and an annular skirt depending from said top with internal threads complementary to said container threads;

a tamper indicating band spaced from the bottom of said cylindrical skirt and connected thereto by a plurality of circumferentially spaced axially extending frangible webs;

engagement means on said band which permits rotation of said band with said cap as said cap is being threaded onto said container by allowing said engagement means to pass over said container stop means to the point where said closure is fully threaded onto said container neck where said engagement means is spaced from said container stop means, said engagement means contacting said stop means as said cap is being unthreaded, and said webs are stretched to their fracture point by retention of said engagement means by said container stop means; and

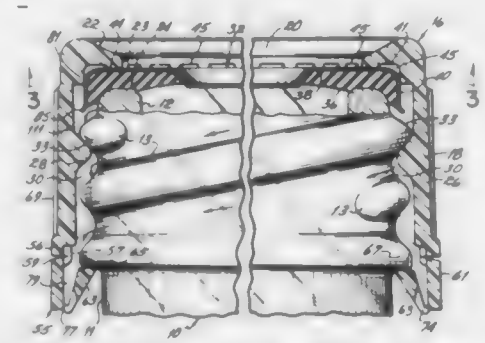
a rotary sealing member on said cap in the form of a cylindrical surface on said annular cap skirt which maintains sealing contact with an outwardly extending bead on said container neck until after said cap has been unthreaded to the point where said webs fracture.

5,009,324

CLOSURE HAVING THERMALLY RESPONSIVE WATER WASHING SLOTS

Charles S. Ochs, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Continuation-in-part of Ser. No. 402,211, Sep. 1, 1989. This application Jun. 8, 1990, Ser. No. 535,400
Int. Cl.[5] B65D *51/16*
U.S. Cl. 215—276 **10 Claims**



1. A closure having a top, a skirt depending from said top, cooperating securing means on an inside surface of said skirt and on a container to secure the closure on said container, passages in said closure for conducting wash water from said top downwardly to a space between the securing means of the closure and container so that said securing means can be washed while said closure is secured on a container, and

temperature responsive passage blocking means in said passages, said blocking means normally closing said passages to the ingress of foreign particles from the top of said closure toward said securing means,

said blocking means being responsive by thermal expansion to open during hot water washing, so that wash water can flow past said blocking means to wash said securing means.

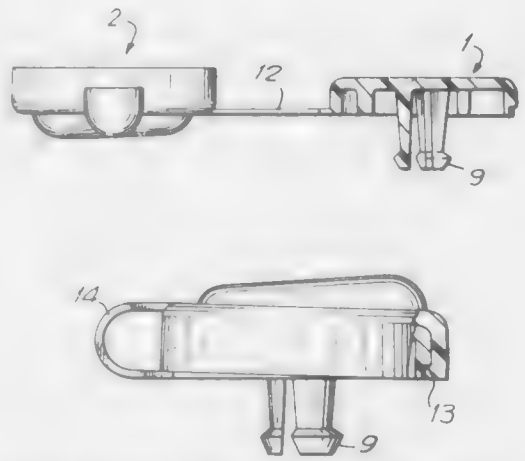
5,009,325

CAP OF VENT NOZZLE

Walter K. Weber, Grand Rapids, Mich., assignor to KB Lighting, Inc., Kentwood, Mich.

Filed Feb. 9, 1990, Ser. No. 478,262
Int. Cl.[5] B65D *51/16*
U.S. Cl. 220—374 **5 Claims**

1. A cap for vent nozzles, comprising a main cap part turnably mountable on a lower nozzle member to adjust a passage through the vent nozzle, said main cap part having an inlet opening formed to communicate with an ambient atmosphere and allow air to come into the lower nozzle member and then into an interior of a device to be vented; an auxiliary cap part connected with said main cap part and provided with a passage and an outlet opening communicating with said passage, said auxiliary part being formed so that it is fittable on said main cap part so that in a fitted condition said passage communicates with said inlet opening of said main cap part and said outlet opening of said auxiliary cap apart faces toward an interior of the vent nozzle in a direction opposite to said inlet opening of said main cap part; a flexible element connecting said main cap part and said auxiliary part with one another permitting said auxiliary part to be turned and fitted on said main cap part.



5,009,326

INSULATED CONTAINER SYSTEM FOR SHIPPING PERISHABLE PRODUCTS

Thomas A. Reaves, and John S. Sherritt, both of Anchorage, Ak., assignors to Premier Industries, Inc., Tacoma, Wash.

Continuation of Ser. No. 325,677, Mar. 17, 1989, abandoned. This application Jul. 18, 1990, Ser. No. 554,183
Int. Cl.[5] B65D *77/00*
U.S. Cl. 220—441 **17 Claims**



1. An insulated container system for shipping perishable products comprising:

(a) an outer container having a top and a bottom, each of said top and said bottom comprising a rectangular sheet of container material, said rectangular sheets of container material folded such that said top has a substantially rectangular ceiling and said bottom has a substantially rectangular floor, such that said ceiling and said floor are encompassed by side walls and end walls and such that said top and said bottom have regions composed of a single layer of said container material, said top and said bottom having corners formed by inwardly folded sections of said rectangular sheets, said inwardly folded sections being fastened to single layered portions of said top and said bottom thereby forming multilayered regions;

(b) a one-piece insulating liner formed of an unbacked, separate single sheet of foam insulating material for covering said single layered regions of said bottom of said outer container when said one-piece insulating liner is inserted into said bottom but not said multilayered regions, said one-piece insulating liner comprising:

(i) a rectangular floor region;

(ii) two side wall regions; and,

(iii) two end wall regions, said two side wall regions and said two end wall regions being unitarily joined together with said floor region such that said two side wall regions and said two end wall regions form an integral structure with said floor region, said one-piece insulating liner including compression creases where said two side wall regions and said two end wall regions join said floor region; and,

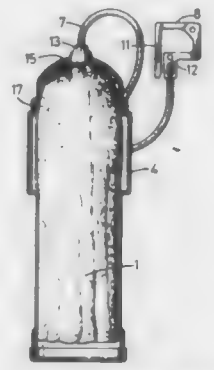
(c) an insulating lid formed of a single sheet of foam insulating material for covering said ceiling of said top of said outer container when said insulating lid is inserted into said top.

5,009,327

TOWEL OR CLOTH CONTAINER

Barrie Levison, 39 Beaumont Ave., St. Albans, Herts AL1 4TW, England

Filed May 3, 1990, Ser. No. 518,187
Claims priority, application United Kingdom, Dec. 5, 1989, 8927452
Int. Cl.[5] A45C *11/00*
U.S. Cl. 220—890 **3 Claims**



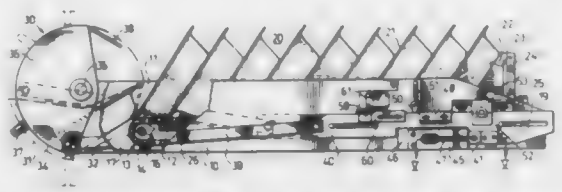
1. A container for a towel, cloth and the like, comprising a tubular enclosure having one closed end and the other end defining an access opening, an elongate flexible member which slidably extends through an aperture in the wall of the enclosure at said closed end, means for attaching the flexible member at its inner end to the towel, stop means at the outer end of the flexible member whereby the towel can be readily deployed for use from a stowed condition within the container by a distance limited by the stop means on the flexible member, the towel has a substantially circular periphery and is attached to the flexible member substantially at its center so that when retracted into the enclosure it collapses through said access opening of the enclosure into said stowed condition somewhat like the material covering of an umbrella; a tapered collar provided at the inner end of the flexible member for sealing the enclosure aperture when the towel is in said stowed condition, and a flange and cooperating washer plate provided on said collar between which surrounding material of the towel can be sandwiched for its ready attachment and release.

5,009,328

ARTICLE CASSETTE FOR A VENDING MACHINE

Curt A. Bergstén, Bärnstensgatan 14, Helsingborg, Sweden S-253 68

PCT No. PCT/SE87/00555, § 371 Date Jul. 20, 1989, § 102(e) Date Jul. 20, 1989, PCT Pub. No. WO88/04086, PCT Pub. Date Jun. 2, 1988
PCT Filed Nov. 24, 1987, Ser. No. 359,659
Claims priority, application Sweden, Nov. 24, 1986, 86 05013-5
Int. Cl.[5] B65G *59/00*
U.S. Cl. 221—152 10 Claims



1. An article cassette for a vending machine, said cassette being of the kind comprising an elongate approximately horizontal conveyor (13) which is arranged to support a plurality of articles (21) in a row, one after the other, in a storage space (20) located behind a stationary outfeed station (32), and to feed said articles (21) step by step towards said outfeed station (32) while successively transferring the foremost article (21) in said row from the storage space (20) to the outfeed station (32) through a transfer passage between the conveyor and the outfeed station, an access opening defining a front end of the outfeed station,(31) a cover (30) for the access opening mounted for manual rotation around a transverse horizontal axis (36) and movable between, on the one hand a closed position, in which the cover closes said opening, and, on the other hand an open position, in which the cover uncovers the access opening (31) and provides access to the outfeed station (32) enabling an article located in the outfeed station to be removed through said access opening, screen means (38) being provided for keeping the storage space (20) screened off from the outfeed station (32) and preventing access to said spaced from the access opening (31) via the outfeed station (32) when said opening (31) is uncovered, characterized in that said screen means comprise a screen member (38) rigidly connected to the cover (30) and arranged to be inserted into the transfer passage when the cover (30) is rotated in a direction towards its open position and to be withdrawn from the transfer passage when the cover (30) is rotated in the opposite direction.

5,009,329

DISPENSING APPARATUS

Anselmo N. Farrentine, 1368 Pyramid Dr., Las Vegas, Nev. 89108

Filed Oct. 18, 1989, Ser. No. 423,022
Int. Cl.[5] B65G *59/00*
U.S. Cl. 221—175 16 Claims

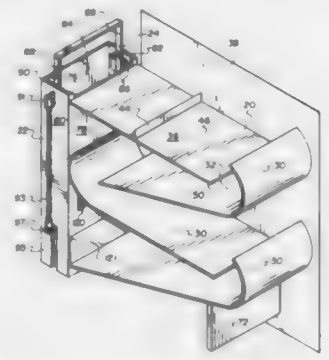
1. An apparatus adapted for dispensing articles, said apparatus comprising:

a storage means for storing articles to be dispensed, said storage means defining an inlet, an outlet and a pathway between said inlet and said outlet;

a channel means mounted on said storage means proximate said outlet and defining a vertically disposed passageway; said channel means being adapted for receiving an article exiting said outlet;

a displacement means mounted within said channel means for elevating said article upward through said passageway;

a retaining means associated with said channel means for engaging said article displaced upwardly through said passageway, said retaining means including a finger member pivotally mounted on said channel means and extending into said passageway, said finger member being adapted to preclude a downward displacement of said article through said passageway after said article has been displaced upwardly past said finger member;



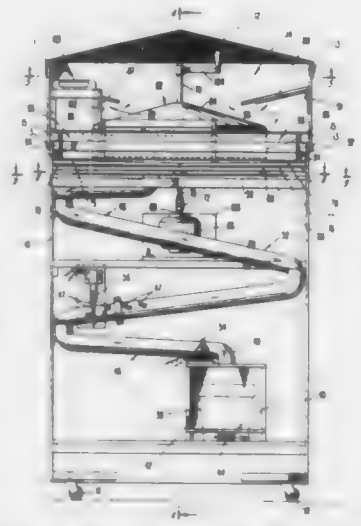
wherein said retaining means is adapted to permit said displacement means to be displaced upwardly and downwardly through said passageway, past said retaining means without obstruction.

5,009,330

GOLF BALL VENDING MACHINE

Donald R. Young, and Ruth L. Young, both of 12859 Honeybrook Dr., Hudson, Fla. 34669

Filed Jan. 8, 1990, Ser. No. 462,171
Int. Cl.[5] G07F *11/00*
U.S. Cl. 221—196 46 Claims



1. A machine for vending golf balls, comprising:

a hopper for holding a large plurality of golf balls;

an escape aperture formed in a floor of said hopper;

delivery means for sequentially delivering golf balls, one at a time, to said escape aperture;

said delivery means including a rotatable mounted turntable having a plurality of ball-receiving apertures formed therein and rotating means for rotating said turntable, said turntable and said apertures formed therein being specifically positioned within said hopper so that said apertures sequentially pass over said escape aperture as said turntable rotates;

a pipe having an upper end in an open communication with said escape aperture so that a golf ball received within a turntable aperture falls under the influence of gravity into said pipe upper end when said turntable aperture passes over said escape aperture;

a bucket chamber disposed below said hopper;

said pipe having a lower end in open communication with said bucket chamber;

a first gate operative to close said pipe to travel of golf balls therethrough when said gate is closed and operative to open said pipe to travel of said golf balls therethrough when said gate is open;

said first gate positioned near a lower end of said pipe;

a second gate positioned about mid-way between the upper end of the pipe and the lower end of the pipe;

said pipe following a generally spiral downward path of travel; and

control means for selectively opening and closing said first and second gates in a predetermined sequence.

5,009,331

APPARATUS FOR SEPARATING ELONGATED CONTAMINANTS FROM A STREAM OF MATERIAL

Sanford N. Smith, Spartanburg, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 173,509, Mar. 25, 1988, Pat. No. 4,900,498.
This application Oct. 10, 1989, Ser. No. 419,299
Int. Cl.[5] B07B *13/00*
U.S. Cl. 209—615 17 Claims



1. An apparatus for separating elongated contaminants from a stream of material containing pellets and said contaminants, said apparatus comprising:

a separation means having wall means defining an entrance, an exit, and an enclosure, said enclosure located between said entrance and exit, each of said entrance and exit having centers defining an axis;

support means comprising rod means within said enclosure;

at least one outwardly extending projection affixed to said rod means to snag said contaminants as said pellets continuously flow in substantially parallel relation to said axis through said enclosure.

5,009,332

OUTPUT HOPPER APPARATUS

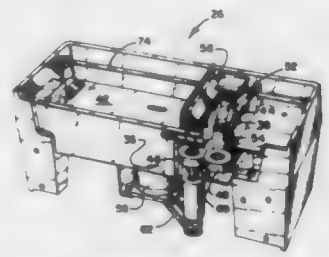
Benjamin H. Sannel, St. Louis Park; Steven A. Miller, Mahtomedi, and Robert A. Sells, Minneapolis, all of Minn., assignors to Datacard Corporation, Minnetonka, Minn.

Filed Nov. 23, 1988, Ser. No. 276,236
Int. Cl.[5] B07C *9/00*; B65H *29/44*
U.S. Cl. 209—652 18 Claims

1. An output hopper apparatus for receiving cards passed through card processing stations, the card processing stations having card sensing means determining a status of each card as acceptable or rejected comprising:

(a) card deflecting means in communication with the card sensing means for deflecting the cards toward one of two or more card stacks and driving the cards onto the card stack, wherein the card deflecting means comprises a rotatable deflector arm including a roller at its tip;

(b) card feed means for advancing the cards to the card deflecting means;



(c) card retention means for preventing cards in the card stacks from obstructing a path swept by the card deflecting means, so that the cards are maintained in the card stacks in sequence; and

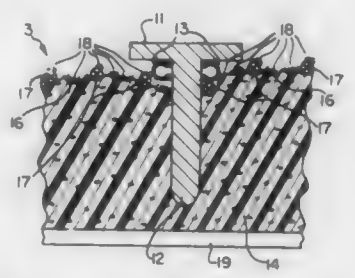
(d) card stack tensioning means pressing each card against adjacent cards in the card stacks.

5,009,333

JEWELRY HOLDER KIT

Karen Souders, 449 Colgate Ave., Elyria, Ohio 44035

Continuation-in-part of Ser. No. 255,489, Oct. 8, 1988, Pat. No. 4,907,704. This application Sep. 25, 1989, Ser. No. 411,664
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—13 20 Claims



1. A kit for making a holder for an object such as jewelry or the like which has a pin-like penetrating part and a shorter protrusion on one side, the kit comprising:

a stock pad consisting essentially of resilient foamed polymer, the pad having a self-healing working surface that exposes a multitude of open cells and has an at least partial facing of discontinuous paint on said working surface, said open cells and discontinuous paint being for the purpose of assisting to obliterate puncture marks from service, the pad having sufficient depth for gripping and retaining the penetrating part of the object to be held, the working surface being readily penetrable by the penetrating part and depressible by the shorter protrusion for the purpose of accepting said penetrating part that is to be gripped and retained by the foamed polymer; and

at least one pattern of configuration adapted to the confines of the pad for decorating and/or shaping it.

5,009,334

ANTI-PILFERAGE FIXTURE

Stanley H. Bodkins, Sharon, Mass., assignor to The Gillette Company, Boston, Mass.

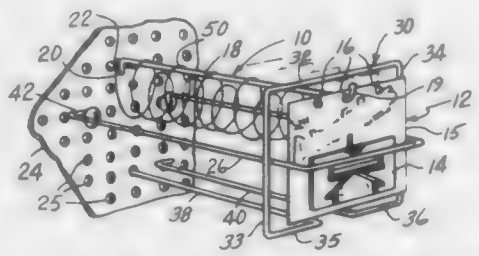
Filed Sep. 19, 1989, Ser. No. 409,252
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—54.1 11 Claims

1. An anti-pilferage fixture to be employed with at least one rod extending outwardly from a wall surface and terminating in a free end spaced from the wall surface for supporting a

plurality of items disposed in a row on the rod for movement therealong, said fixture comprising:

means disposed along the length of the rod for inhibiting lateral movement of an item supported on the rod including a pair of elongated side members, one disposed on either side of the plurality of items, each said side member extending from the wall surface and being attached thereto; and

means spaced from the rod free end for inhibiting movement of no more than a predetermined number of items out-



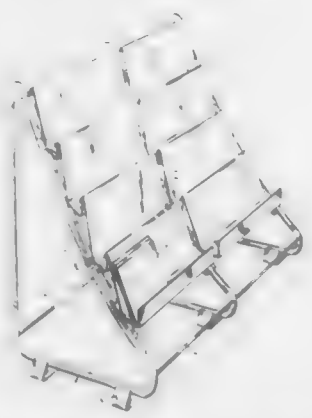
wardly from the rod free end including a front member disposed substantially parallel to the wall surface and connecting the outer ends of said side members, and a substantially rectangular frame attached to said side members, said front member being located a predetermined distance outwardly from the rod free end and said frame being located between the wall surface and the rod free end whereby items are removed from the rod free end within the predetermined distance between the rod free end and said front member.

5,009,335

DISPLAY DEVICE FOR FLAT ARTICLES

Robert G. C. Jonker, Toernooiveld 24, 4902 PH Oosterhout, Netherlands

Filed Nov. 1, 1989, Ser. No. 430,019
Int. Cl.[5] B42F *7/00*
U.S. Cl. 211—55 **12 Claims**



1. A device for displaying flat articles comprising:

a frame;

at least one substantially horizontal suspension member supported by the frame;

a plurality of carrier elements for holding said flat articles, each carrier element including a body portion comprising a first substantially planar surface having a front edge and a rear edge; lower engagement means comprising a second substantially planar surface extending upwardly from said front edge of said first substantially planar surface; a back portion comprising a third substantially planar surface extending upwardly from said rear edge of said first substantially planar surface, wherein said third substantially planar surface of the back portion extends further upwardly from the body portion than said second planar surface of the lower engagement means, and upper engagement means for overhanging said suspension member or the lower engagement means of another carrier element, said upper engagement means comprising a hook-like suspension strip along an upper edge of the third substantially planar surface of said back portion, wherein said hook-like suspension strip extends backwardly and downwardly from the upper edge of the third substantially planar surface, wherein the upper engagement means of a first carrier element overhangs the substantially horizontal suspension member, and the upper engagement means of a second carrier element overhangs the lower engagement means of said first carrier element, and

at least one support means for supporting said first and second carrier elements in the vicinity of the rear edge of the body portions thereof, wherein said support means has the form of a strip which is releasably connected to the frame and extends downwardly from adjacent the suspension member.

5,009,336

STRUCTURE OF A MULTIPURPOSE, HAND-HELD SWIVEL TYPE STATIONERY CASE

Peter Liaw, 25 Lane 60, Alley 164 Fu Lin Street, Taipei, Taiwan

Filed May 3, 1990, Ser. No. 518,372
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—69.1 **1 Claim**



1. A multipurpose, hand held rotary type stationery case comprising:

a disk shaped base having a ball bearing mounted in the center of the upper surface thereof;

a casing having a depression in the bottom surface, rotatably mounted on said base with the ball bearing received in the depression, a plurality of vertically disposed upwardly opening hollow cones mutually spaced around the periphery of said casing and a plurality of pockets, one disposed between each pair of cones mounted on said casing in the lower portion thereof, and said casing defining a plurality of horizontally extending grooves between each pair of cones in the upper portion thereof;

a trapezoidal pen rack comprising a recessed top flat board having a plurality of holes therein for holding pens, and a center hold with a plurality of projection strips on the bottom internal surface of said center hold, a plurality of step sideboards extending downwardly and outwardly from said recessed top flat board at all each side except one, said stepped sideboards having a purality of holes on each step, a suspension rod extending outwardly from the open side of said recessed top flat board, and a plurality of projecting portions on the inner surface of said vertical wall of said step sideboards, each projection portion extending into a groove in said casing for mounting said rack thereon; and

a handle having an expanded bottom end releasably fastened in the center hole of said rack, said expanded bottom end having a plurality of projecting strips thereon for engaging the

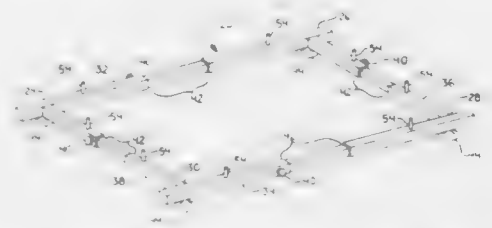
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5,009,337

AUTOMOTIVE PARTS SUPPORT RACK

Domenico Bimbi, 2494 Highmoore Rd., Highland Park, Ill. 60035

Filed May 1, 1989, Ser. No. 345,771
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—86 **8 Claims**



1. An automotive parts support rack for holding objects such as automotive parts, the rack being temporarily located on a substantially horizontal surface of a vehicle, comprising:

a frame having a substantially rectangular configuration with four corners and having first and second longitudinally adjustable side sections connected respectively by first and second longitudinally adjustable end sections, each of said first and second side sections and said first and second end sections having a means for holding the respective side and end sections at a desired length, each of the first and second side sections and each of said first and second end sections being a substantially straight rod having a telescoping portion, said means for holding releasably engaging said telescoping portion to permit said rod to be adjustable;

at least four means for temporarily supporting the frame on the surface of the vehicle attached to an underside of said frame at least substantially in the vicinity of said four corners, that is each of said corners having attached in a vicinity thereof at least one of said means for temporarily supporting the frame on the substantially horizontal surface of the vehicle; and

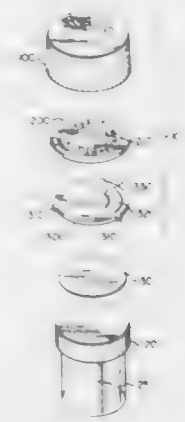
means for supporting the objects having a predetermined rigid configuration, said means for supporting retained on an upper side of said frame, said means for supporting the objects being retained on the upper side of said frame by at least one upward projecting leg on the upper side of said frame which engages a corresponding opening in a bottom area of said means for supporting the objects, at least one of said first and second side sections and said first and second end sections of said rack having said upward projecting leg for engaging said corresponding opening in said bottom of said means for supporting objects, said opening being a slot oriented parallel to the end or side section having the corresponding upward projecting leg, thereby allowing the rectangular size of the frame to be changed without removing the means for supporting the objects.

5,009,338

INDICATOR CAP FOR A MEDICINE BOTTLE

Allan Barker, Boulder, Colo., assignor to Senetics Corporation, Boulder, Colo.

Filed Feb. 3, 1989, Ser. No. 306,485
Int. Cl.[5] B65D *51/24*
U.S. Cl. 215—230 **10 Claims**



1. An indicator cap for attachment to a sealing cap of a container, said sealing cap being a pre-existing container cap that forms a seal on said container, and for indicating the number of times said container has been opened comprising:

(a) an outer cover comprising a top piece, an indicator window located in said top piece, and a skirt attached to an outer circumference of said top piece and extending away from said top piece;

(b) a snap cover lacking means for directing securing said indicator cap to said container and having means for attaching said snap cover to an inner surface of said skirt that allows said skirt to rotate a predetermined number of degrees in each direction without causing rotation of said snap cover while rotation of said skirt beyond said predetermined number of degrees will cause said snap cover to rotate;

(c) an indicator wheel disposed between said snap cover and said top piece having indicating means on a surface facing said indicator window;

(d) rotation means connecting said indicator wheel and said outer cover for causing movement of said indicator wheel only when said outer cover is rotated in a first direction; and

(e) antirotation means connecting said snap cover and said indicator wheel for preventing movement of said indicator wheel when said snap cover is rotated in a second direction opposite said first direction;

(f) means for attaching said snap cover to said sealing cap of said container.

5,009,339

METHOD OF AND AN APPARATUS FOR VENTING A FILLING PLANT

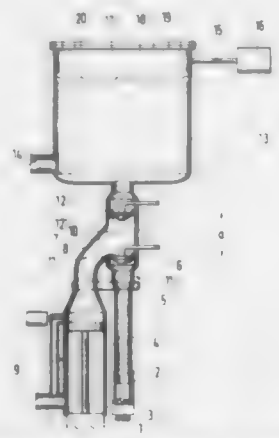
Goran Hanerus, Malmo, and Tommy Ljungstrom, Hoor, both of Sweden, assignors to Tetra Pak Holdings & Finance S.A., Switzerland

Filed Oct. 17, 1989, Ser. No. 422,683
Int. Cl.[5] B67C *3/22*; **B65B** *31/00*
U.S. Cl. 222—1 **8 Claims**

2. A method of venting a plant for filling containers by means of a dispensing pump with an apportioned quantity of liquid without the inclusion of air, the liquid being supplied via a buffer container through serially connected bottom and upper control valves to a filler pipe connected to the dispensing pump, the bottom control valve disposed at the intake of the filler pipe, the filler pipe being provided at its outlet end

with a filler nozzle, comprising the steps of (1) maintaining the bottom and upper control valves open, (2) creating a vacuum within the buffer container, (3) allow air to bubble out upwardly, (4) close the upper control valve, (5) after a delay, close the bottom control valve, (6) open the upper control valve, (7) after a delay, close the upper control valve

5. An apparatus for venting a plant for filling containers with an apportioned quantity of liquid without any air inclusion,



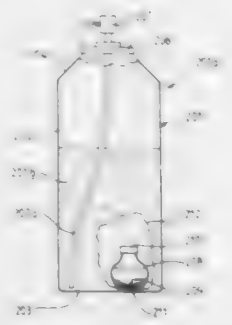
comprising in combination a dispensing pump, a buffer container connected to a feed line and a vacuum pump, a filler pipe adapted to have its outlet closed by a filler nozzle, a control valve housing with an upper externally and separately positively controlled control valve which connects to the buffer container and a bottom externally and separately positively controlled control valve which occludes the intake end of the filler pipe.

5,009,340

PACKAGING CONTAINER USING A SYSTEM OF FERMENTATION TO PRODUCE A PROPULSIVE GAS

Bruno Morane, Neuilly, France, assignor to L'Oreal, Paris, France

Filed Oct. 27, 1988, Ser. No. 263,358
Claims priority, application France, Oct. 30, 1987, 87 15050
Int. Cl.[5] B65D *35/22*
U.S. Cl. 222—94 **3 Claims**



1. A container for packing under pressure a liquid or pasty fluid, provided with a distribution valve, with said fluid to be distributed being placed under pressure by means of propulsive gas composed of carbon gas obtained by anaerobic fermentation of a fermentation system containing sugars, using yeasts, with a components of said fermentations system being selected qualitatively and quantitatively so that the carbon gas produced creates a pressure inside the packing container which is capable of ensuring the distribution of the fluid by said valve, wherein the fermentation system is contained in a chamber provided inside said container, said chamber comprising a small rigid reservoir which is normally closed by a valve, said valve being calibrated to open only when the pressure in said reservoir exceeds by a given value the pressure prevailing in the interior space of the container, said reservoir being ballasted so that the liquid phase of the fermentation system is located vertically beneath said valve, whatever the position of said container

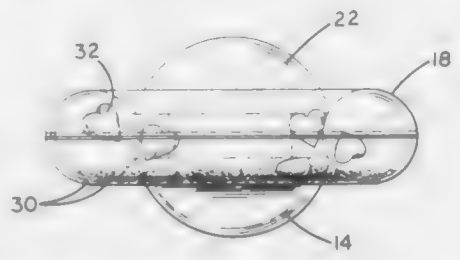
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5,009,341

DECORATIVE CONDIMENT SHAKERS

Peter A. Broxton, Uppingham, England, assignor to Loncraine Broxton & Partners Limited, England

Filed Aug. 28, 1989, Ser. No. 398,900
Int. Cl.[5] A47G *19/24*
U.S. Cl. 222—130 **7 Claims**



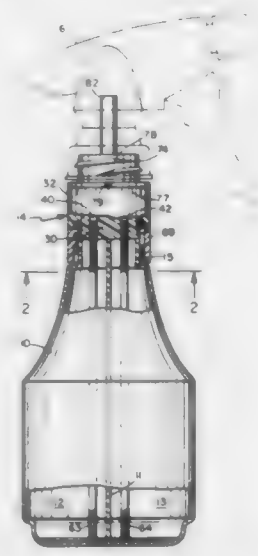
1. A decorative condiment shaker, comprising
a body member including a base and a condiment container,
a removable top for sealing said condiment container;
a hollow and transparent decorative ring mounted about said condiment container and held in position by engagement with said body member and said removable top; and
means received within said decorative ring for ornamenting said decorative ring.

5,009,342

DUAL LIQUID SPRAYING ASSEMBLY

Ronald L. Lawrence, San Diego, Calif., and Mark R. Miller, 680 Brotherton, Escondido, Calif. 92025, assignors to Mark R. Miller and Steven J. Berling, both of Escondido, Calif.

Filed Aug. 14, 1989, Ser. No. 393,292
Int. Cl.[5] B61D *5/00*
U.S. Cl. 222—136 **19 Claims**



1. A liquid spraying assembly for selectively dispensing at least two different liquids, comprising:
an outer container containing at least two separate compartments for containing two different liquids, the container having an outlet;

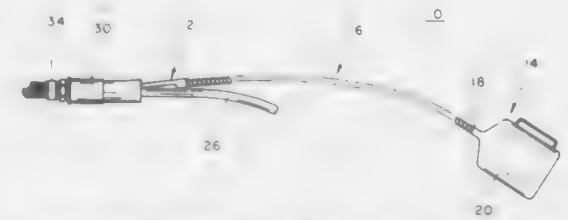
a spray pump assembly mounted on the container for dispensing liquids from the compartments; and
a valve assembly connected between the compartments and the spray pump assembly for controlling the dispensing of the two different liquids, the valve assembly comprising an inner valve member having a outlet passageway for connection to the spray pump assembly, a first inlet passageway for connection to one of the liquid compartments, and a second inlet passageway for connection to the other liquid compartment, and an outer control sleeve rotatably mounted on the inner valve member, the outer control sleeve including connecting means for controlling connection of the inlet passageways to the outlet passageway, the outer control sleeve being rotatable between at least two different connects at least one of the respective inlet passageways to the outlet passageway.

5,009,343

AUTOMOTIVE TOOL

Benjamin E. Pugatch, 68 Pond St., North Easton, Mass. 02356

Filed Feb. 12, 1990, Ser. No. 478,936
Int. Cl.[4] B67D *1/07*
U.S. Cl. 222—192 **1 Claim**



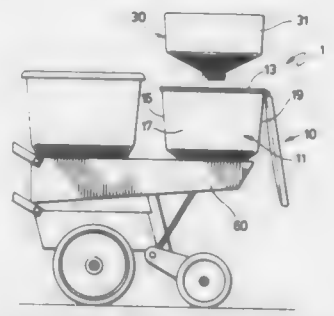
1. The combination of a tool, a spark plug wire and a spark plug, the tool comprising a head portion, a container and a flexible hose connection, the container having a nozzle and a pump to pump fluid contents therefrom, the flexible hose connection connecting the nozzle to the head portion, the head portion having a longitudinally extended, arced blade portion, the spark plug wire having a plug wire terminal positioned within a nipple, the nipple having a rear aperture, the spark plug wire passed through the rear aperture, the spark plug including a top cap, the top cap positioned within the nipple and electrically engaging the plug wire terminal whereby after positioning the blade portion at the rear aperture and within the nipple, action of the pump forces said fluid in the container through flexible hose connection onto the blade portion and onto the connection between the plug wire terminal and the top cap.

5,009,344

BULK MATERIAL HANDLING APPARATUS

Edwin L. Cooley, 201 Houser St., Monon, Ind. 47959

Filed Oct. 16, 1989, Ser. No. 422,330
Int. Cl.[5] B65D *88/54*
U.S. Cl. 222—325 **5 Claims**



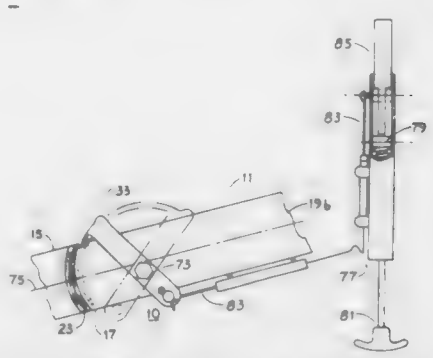
1. A rigid bulk container having a shoulder and a threaded neck at the top thereof, said neck being adapted to receive a cap screwed thereon, and having a mouth at the top of the said neck and a tape seal adapted to close the said mouth and a tether attached at one end to the said seal and attached at the other end to a handle which handle is adapted to be pulled for removal of the said seal from the mouth of the said container, said container having provided in the bottom thereof a handle adapted for grasping by a person and said container having sides that are tapered towards the top and a threaded cap adapted to be screwed onto the neck of the said container and adapted to seal the said container, wherein the said cap is provided with a storage compartment adapted for storage of the said tether and tether handle and an external handle adapted for carrying the container.

5,009,345

CHUTE CLOSURE APPARATUS

Michael A. McSweeney, Lemont, and John F. Stufflebeam, Romeoville, both of Ill., assignors to J. I. Case Company, Racine, Wis.

Filed Oct. 10, 1989, Ser. No. 419,461
Int. Cl.[5] B65D *47/00*
U.S. Cl. 222—556 **10 Claims**



1. An apparatus for controllably closing a seed-dispensing chute connected to a seed hopper, such chute having a pair of side walls, each such side wall having a longitudinal center line, the apparatus including:
a chute;
a gate assembly movable between an open position and a closed position, such gate assembly thereby controllably opening and closing the chute, such gate assembly including a first arm and a second arm depending from a bridge member, each such arm having two ends including a proximal end and a distal end, such distal ends being connected by a linkage pin, each such arm being mounted on the chute for pivoting movement with respect thereto, such mounting being by a pivot mount attached to each arm at a point between such ends and closer to such distal ends, such pivot mounts defining a pivot axis located near to but non-coincident with the longitudinal center lines of the side walls of the chute, such mounting providing a reduced distance of travel of such linkage pin as the gate assembly is moved between open and closed positions.

5,009,346

SLING MOUNTABLE POUCH FOR FIREARMS

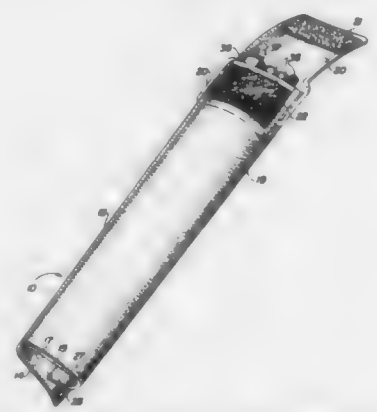
Ronnie T. Butler, Lakeland, Fla., assignor to Peace River Arms & Accessories, Inc., Lakeland, Fla.

Filed Nov. 21, 1988, Ser. No. 273,863
Int. Cl.[5] A45C *13/30*
U.S. Cl. 224—205 **9 Claims**

1. In combination with a firearm carrying sling having a strap portion, a gun cleaning kit mounted on the strap portion, the kit comprising:
at least one firearm cleaning rod section having a length;
a tubular container having a length generally equal to the

length of the cleaning rod section; the container containing a cleaning tool handle and a plurality of other gun care and maintenance accessory elements therein, and further having a replaceable top thereon for providing access to the contents of the container;

a pouch comprising a generally rectangular pocket member having a top with an opening, a closed bottom, and left and right sides having lengths generally equal to the length of the cleaning rod section; opposing left and right elongated retaining flaps respectively joined substantially along the full lengths of the left and right sides of the pocket member and having lengths generally equal to the



lengths of the pocket member sides; closure means releasably closing the pocket member; and means joining the respective retaining flaps to each other substantially along their lengths to form a tubular opening axially aligned in parallel with the pocket member and receiving the strap portion snugly therethrough to readily removably retain the pouch on the sling in coaxial alignment with the strap portion;

the cleaning rod section and the tubular container being received in side-by-side arrangement substantially within the pocket for removal therefrom through the pocket opening.

5,009,347

WRIST HOLSTER

Bill E. Phelps, Box 2595, Jackson, Wyo. 83001

Continuation of Ser. No. 266,396, Nov. 12, 1988, abandoned.
This application Jan. 29, 1990, Ser. No. 474,629
Int. Cl.[5] A45C *11/00*
U.S. Cl. 224—219 **4 Claims**



1. In combination, a canister shaped in a cylinder of preselected length containing gas of the type used to repel intruders and assailants, and a holster therefor, said holster comprising a wristband formed of a single piece of fabric having an inner and an outer surface, said wristband comprising a central portion, a first band of substantially lesser width than said central portion extending in a first direction from said central portion and having a first outer terminus, a second band of substantially lesser width than said central portion extending therefrom in a direction opposite said first band and having a second outer terminus, said central portion having top and bottom parallel edges tapering inward to merge with the lesser width of said first and second bands, a buckle on said outer surface, first means fixing said buckle in place vicinal said first outer terminus, second means vicinal said second outer terminus engageable with said buckle to tighten said holster around the wrist of the wearer in a variety of positions, a pouch fixed to said outer surface on said central portion shaped complementary to said cylinder and of a length less than said preselected length to retain a substantial portion but not all of said canister with said canister extending transversely relative to said first and second bands, one end of said pouch being open and an end of said canister extending out of said pouch for easy gripping by the wearer, and third means on said central portion detachably retaining said canister in said pouch, said third means being quickly releasable, said third means comprising a closure strap fixed to a margin of said central portion adjacent said open end of said pouch and extending outwardly therefrom, said closure strap being substantially narrower than said central portion, said closure strap being foldable to extend over the outside of said pouch, said closure strap being capable of being inserted inside said pouch whereby said closure strap may be folded back to close off said open end to retain said canister in said pouch, said pouch having an outer pouch surface, said third means being located on said outer surface of said wristband and one surface of said closure strap, said pouch comprising a piece of fabric of pre-selected width having opposite side edges and one end fixed to said central portion, the width of said piece of fabric between said side edges being sufficient so that said canister can fit between said piece of fabric and said central portion.

5,009,348

KNIFE SHEATH OF TOUGH FLEXIBLE MATERIAL

Keith Derkatz, P.O. Box 1118, Stn. "A", Kelowna, B.C., Canada V1Y 7P8

Filed Jan. 10, 1990, Ser. No. 462,802
Int. Cl.[5] B26B *29/02*
U.S. Cl. 224—232 **6 Claims**



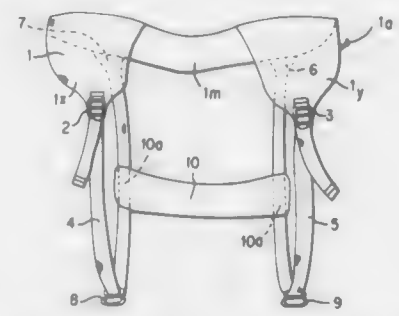
1. A knife sheath of tough flexible material, comprising a back wall, a front wall attached at its periphery to said back wall to form a knife-receiving pouch, and a pair of laterally spaced slits in said front wall of said knife-receiving pouch for receiving a wearer's belt that passes through said pouch between the front and back walls thereof, said slits being offset in the longitudinal direction, whereby when the wearer's belt is passed through said offset slits, said pouch sits at a forward angle on the wearer's belt, snugly located on the wearer's hip and tucked in the belt.

5,009,349

LIFTING AND CARRYING DEVICE

Geir O. Eide, Olav Bismos gate 9, N-2670 Otta, and Dag I. Eide, Maelan 12, N-7460 Roros, both of Norway

Filed Jul. 6, 1989, Ser. No. 376,853
Claims priority, application Norway, Jul. 8, 1988, 883058
Int. Cl.[5] A45F *3/04*
U.S. Cl. 224—260 **10 Claims**



1. Lifting and carrying device (**1***a*) adapted for support on a user's body, said device constituting an auxiliary means for the user to lift and carry articles of various size, shape and weight, said device (**1***a*) comprising in combination:

an elongated and relatively soft shoulder and neck yoke (**1**) having end portions,

a tie loop (**4, 5**) depending from the area of each end portion (**1***x*, **1***y*)) of said yoke (**1**) and,

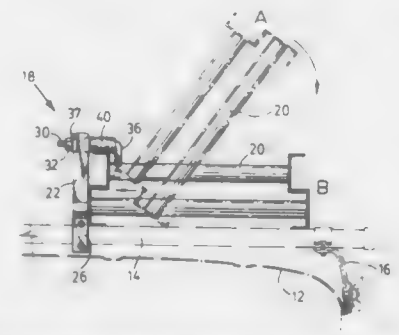
a supporting element (**10**) adjustably attached to said tie means (**4, 5**), and extending between said tie loops (**4, 5**) , and selectively movable from a back portion of the user's body to the hip area of the user's body.

5,009,350

RETAINER ASSEMBLIES FOR ELONGATED OBJECTS

John M. Schill, 208 Samuel Street, Kitchener, Ontario, Canada N2H 1R6 , and William C. Schill, 18 Windy Ridge, Kitchener, Ontario, Canada N2P 1N3

Filed Sep. 8, 1989, Ser. No. 404,379
Int. Cl.[5] B60R *9/048*
U.S. Cl. 224—324 **13 Claims**



1. A retainer assembly for use in combination with a support member to retain on the support member an elongated object having two transversely spaced longitudinal sides and having a predetermined height when in a horizontal position thereon, the assembly comprising;

a body member having an one end attachment means for its attachment to the support member and adapted when so attached to extend generally vertically therefrom;

a transverse member extending from the body member to be generally parallel to the support member and to be spaced from the support member to provide between them a respective vertically-extending gap of height just greater than said predetermined height of the elongated member, into which gap one side of the elongated object is inserted generally horizontally, said one side being so inserted with the other side elevated above the support member and the other side then being rotated downward onto the support member until the elongated member is in said horizontal position for its retention by the assembly;

means connected between said transverse member and said body member for preventing said transverse member from movement in any direction on said body member and relative to the support member;

the transverse member having a retainer portion extending generally parallel to the body member to provide a respective horizontally-extending gap of smaller height than said vertically-extending gap and adapted to receive said one side of the elongated object when inserted therethrough, the retainer portion being adapted to engage the elongated object in its horizontal position and retaining it against transverse movement out of the vertically-extending gap; and

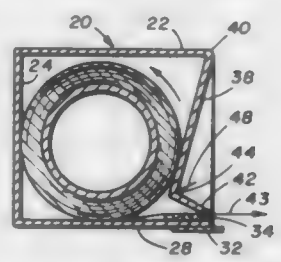
a compressible resilient member on the transverse member between the body member and the retainer portion, the uncompressed resilient member reducing the height of the vertically-extending gap to less than said predetermined height of the elongated object and being adapted to be compressed generally vertically by said one side of the elongated object upon said insertion thereof into the vertically-extending gap and the subsequent downward rotation of the other side into engagement with the support member, so that the compressed resilient member will apply vertical pressure to the elongated object and hold it in retaining engagement with the support member against movement in any direction thereon.

5,009,351

SHEET-MATERIAL DISPENSING BOX

Vivian M. Handler, 1727 David St., Pensacola, Fla. 32514

Filed Aug. 24, 1988, Ser. No. 235,623
Int. Cl.[5] B26F *3/02*
U.S. Cl. 225—52 **8 Claims**



1. A container for holding and dispensing a roll of flexible sheet material, said container comprising:

a. a box for containing said roll, said box comprising bottom, top, rear and end walls, said top wall having a top forward edge and said bottom wall terminating in a lower forward edge;

b. a cutting edge mounted on said lower forward edge, whereby a portion of said sheet material may be severed from the remainder of said sheet material,

c. an abrasive material mounted rearwardly of said cutting edge in the interior of said box and on said bottom wall, whereby said sheet material passes over and in contact with said abrasive material on the way to said cutting edge; and

d. biasing means for resiliently biasing said sheet material into light frictional contact with said abrasive material, whereby a portion of said sheet material may be pulled past said abrasive material in preparation for dispensing a portion of said sheet material, said frictional contact being sufficiently great that the new free end of said sheet material created when a portion of said sheet material is severed by said cutting edge is restrained from re-entering said box, said biasing means comprising a front wall, said front wall comprising:

(1) a first portion sloping downwardly and inwardly from said top forward edge to a horizontal fold line; and

(2) a second portion sloping downwardly and outwardly from said fold line, said second portion terminating in an edge pressing said sheet material into said frictional contact; and

(e) detaining means for retaining said second portion in position, said retaining means comprising a tab extending inwardly from one of said end walls and engaging said front wall.

5,009,352

APPARATUS FOR CONVEYING DIELECTRIC SHEETS

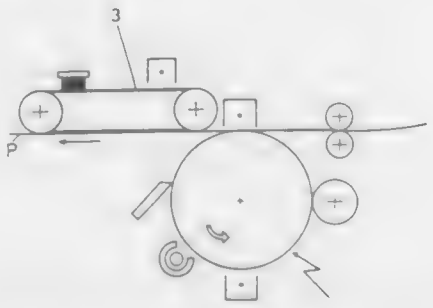
Masashi Yasuda, Kobe; Yoshihiro Uchimoto, Habikino, and Yasunori Mikata, Hyogo, all of Japan, assignors to Bando Chemical Industries, Ltd., Hyogo and Unico Co., Ltd., Osaka, both of, Japan

Filed Jun. 30, 1989, Ser. No. 374,541

Claims priority, application Japan, Jul. 1, 1988, 63-165740

Int. Cl.[5] B65H *20/00;* **G03G** *15/02*

U.S. Cl. 226—94 **7 Claims**



1. An apparatus for conveying dielectric sheets in which said sheets to be conveyed consist of a dielectric material which are held by electrostatic adhesion on an adhesion surface of a conveying means of said apparatus when said adhesion surface is charged by a charging means and conveyed by causing said conveying means to move, said apparatus being characterized in that said adhesion surface consists of a dielectric material and electrode parts which consist of a conductive material provided adjacent to each other on said adhesion surface of said conveying means and said dielectric material and said electrode parts are both electrostatically charged by said charging means to different polarities whereby a strong and stable electrostatic field is created between said dielectric material and said electrode parts of said conveying means for electrostatically adhering said dielectric sheets to said conveying means.

5,009,353

CABLE TENSIONING DEVICE

John W. Alquist, Quinnesec, Mich., assignor to Lake Shore, Inc., Kingsford, Mich.

Filed Feb. 1, 1990, Ser. No. 473,617

Int. Cl.[5] B65H *77/00;* **B66D** *1/00*

U.S. Cl. 226—172 **8 Claims**

1. A cable tensioner comprising,

a base,

a pair of generally horizontal elongated platforms mounted side-by-side on said base,

a drive pulley at one end of each platform,

a driven pulley at the other end of each platform,

a multiplicity of idler pulleys mounted in a line along the edge of each platform adjacent the other platform,

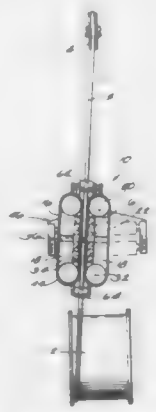
an endless belt having a grooved exterior and gear teeth on its interior and encircling the drive, driven and idler pulleys of each platform whereby the belts on said platforms have a generally horizontal long straight run between them to receive a cable therebetween in the grooved exterior,

a motor connected to each said drive pulley,

a brake connected to each said driven pulley,

a means for adjusting the spacing between said platforms to adjust the force with which said belts grip a cable in said straight run,

means enabling said platforms to tilt as a unit about a generally horizontal axis transverse said elongated platforms,



means enabling said platforms to pivot in a generally horizontal plane as a unit about a generally vertical axis,

means enabling said platforms to rise or fall as a unit relative to said base, and

slide means between said base and said platforms permitting said platforms to move laterally of said platforms in a generally horizontal plane,

said motors and said brakes being energized as required to provide desired tension on the cable leading either direction from the tensioner.

5,009,354

AUTOMATIC RIVETING MACHINE

Anthony D'Aquila, Trumbull; Charles F. Smart, and Raymond H. Varian, both of Danbury, all of Conn., assignors to Emhart Inc., Towson, Md.

Filed Dec. 1, 1989, Ser. No. 445,079

Int. Cl.[5] B21J *15/10*

U.S. Cl. 227—2 **6 Claims**



1. A rivet setting machine comprising

a rivet tool for setting rivets,

a loading device for loading individual rivets into said rivet tool, said loading device including rivet receiving means

means for delivering a rivet to said rivet receiving means including

means for presenting a rivet at a transfer position,

means for verifying that a rivet is at said transfer position,

feed tube means,

pressurized air means for transferring a rivet presented at the transfer position through said feed tube means to said rivet receiving means,

means for actuating said pressurized air means,

means for determining that a rivet has transferred from said transfer position to said rivet receiving means,

means for generating a fault signal in the event said determining means fails to determine that a rivet has transferred from said presenting means to said rivet receiving means to indicate that the rivet is between said receiving means and said transfer position,

means for again operating said pressurized air means in the event said fault signal is generated, and

means for again operating said presenting means in the event a rivet is not received by said rivet receiving means and operating said pressurized air means for the third time when the next rivet is located at said transfer position.

5,009,355

ELECTRIC STAPLER

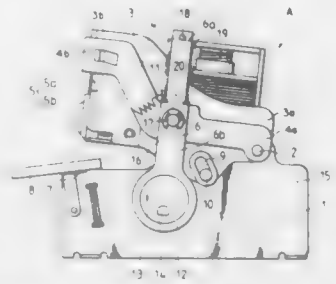
Nobuyuki Akizawa; Yasunori Kudo; Toshiyuki Kanai; Yasuo Kamei; Nobuaki Oyama, and Akihito Negishi, all of Tokyo, Japan, assignors to Max Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 291,221, Dec. 28, 1988, abandoned. This application Apr. 2, 1990, Ser. No. 504,032

Claims priority, application Japan, Dec. 28, 1987, 62-198839[U]; Jan. 26, 1988, 63-8544[U]; Apr. 21, 1988, 63-54047[U]; Apr. 21, 1988, 63-54049[U]

Int. Cl.[5] B27F *7/17*

U.S. Cl. 227—114 **7 Claims**



1. An electric stapler comprising:

a base;

a magazine pivotally mounted on said base for movement in a vertical plane, said magazine including:

a cartridge mounting portion for mounting a staple cartridge having an accommodating portion for containing a stack of staple sheets;

means defining a staple feed path extending from said accommodating portion to a staple supply portion including an endless belt disposed below said cartridge and having an outer friction surface disposed to engage a staple sheet within said accommodating portion so as to feed it from said accommodating portion to said staple supply portion so that a leading staple in said sheet is in a staple supply position;

means defining a staple driver guide path generally perpendicular to said staple feed path means and passing through said staple supply position;

a staple driver for reciprocal movement along said driver guide path means from an initial position to a stapling position so as to drive a staple fed to said staple supply position, through an article to be stapled;

an actuating link having a first end operatively engaged with said magazine and said staple driver for moving said magazine and said staple driver in a vertical plane, and a second end pivotally mounted on said base;

a drive shaft mounted on said base and operable by a motor for rotation about its axis;

a disc-shaped cam member fixedly mounted on said drive shaft in eccentric relation thereto for rotation therewith;

a connecting rod having at one end an annular portion in which said cam member is rotatably fitted so that rotation of said cam moves said connecting rod in a vertical plane, said connecting rod having a central portion which is connected to a vertically central portion of said actuating link whereby said actuating link is pivotally moved when said rod moves vertically; and

clinching means for folding legs of the staple extending through the article against the article.

5,009,356

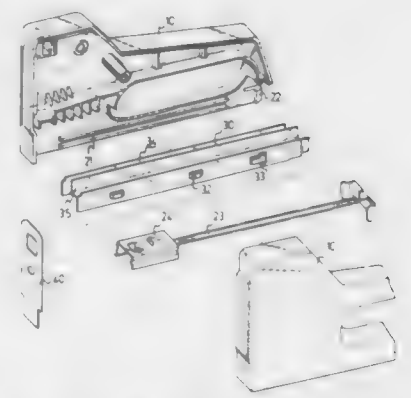
REMOVABLE MAGAZINE FOR STAPLE GUNS

Ted Chang, No. 204-2, Chiung Lin Rd., Hsin Chuang City, Taipei Hsien, Taiwan

Filed Jan. 8, 1990, Ser. No. 461,679

Int. Cl.[5] B27C *5/02;* **B25C** *5/02*

U.S. Cl. 227—120 **3 Claims**



1. A staple gun comprising a housing which is constituted by two side plates, a striker, a striking mechanism including a handle, and a magazine together with a spring-biased staple pusher and characterized in that said magazine is an elongated substantially "U" sectioned member having two limbs each with a plurality of protrusions formed on an outside surface thereof to co-operate with a groove formed on an inside surface of each said side plate, said grooves being so disposed that said magazine is slidable therealong with said protrusions inserted thereinto, each of said side plates further having a retainer disposed at the rear end of said magazine so as to retain said magazine within said housing, said magazine further having a stop formed on the outside surface of each of the limbs thereof to prevent said magazine from being further pushed forwards by abutting the rear ends of said grooves.

5,009,357

JOINING OF CERAMIC COMPONENTS TO METAL COMPONENTS

Derrick J. Baker, Chieveley; Walter G. Bugden, and Peter R. Smith, both of Nottingham, all of England, assignors to Lilliwyte Societe Anonyme, Luxembourg

Filed Jul. 25, 1989, Ser. No. 385,323

Claims priority, application United Kingdom, Jul. 28, 1988, 8818050

Int. Cl.[5] B23K *101/36, 103/16*

U.S. Cl. 228—122 **17 Claims**

1. A method of joining together a ceramic component and a metal component for use in the construction of a high temperature electrochemical cell, which method comprises the steps of:

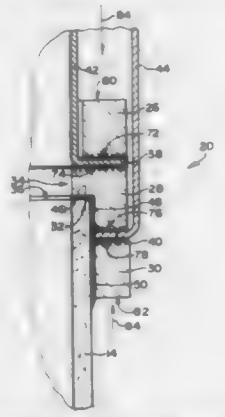
metallizing a surface of the ceramic component with a metallizing metal to form a metallized layer thereon; and

thermocompression bonding the metal component to the metallized layer,

the ceramic component comprising alpha-alumina, the metal of the metallized layer comprising at least one metal selected from the group consisting of tantalum, titanium,

vanadium, tungsten and molybdenum, and the metal component comprising at least one metal selected from the group consisting of iron, nickel, cobalt, chromium, manganese and copper, and

the metallizing of the surface of the ceramic component



comprising forming a metal matrix on said surface, the matrix having a continuous glass phase dispersed therein, the metallizing step including applying the metallizing metal to said surface and then heating the ceramic component to a temperature of above 800° C. under a reducing atmosphere in the presence of glass-forming constituents.

5,009,358

Patent Not Issued For This Number

5,009,359

PROCESS FOR JOINING WORKPIECES OF METAL OR CERAMIC BY BOUNDARY SURFACE DIFFUSION

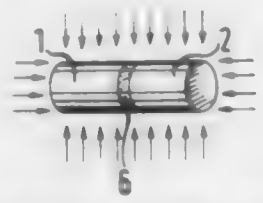
Detlev Stover, Niederzier; Hans-Peter Buchkremer, Heinsberg, and Rudolf Hecker, Jülich, all of Fed. Rep. of Germany, assignors to Forschungszentrum Julich GmbH, Jülich, Fed. Rep. of Germany

Filed May 9, 1990, Ser. No. 521,091

Claims priority, application Fed. Rep. of Germany, May 13, 1989, 3915702

Int. Cl.[5] B23K *20/00, 20/24*

U.S. Cl. 228—175 **1 Claim**



1. A process for joining workpieces, both of metal or of ceramic or one of metal and one of ceramic, to each other by hot isostatic pressing and boundary surface diffusion between the materials of the respective workpieces at this location of joining, in which process junction surfaces of the respective workpieces are put together and fixed in juxtaposition, and are then subjected to hot isostatic pressing, said process comprising the steps of:

completing the fixation of the juction surfaces of the workpieces in juxtaposition to each other by plasma jet coating of the outer edge of the location of joining with a layer compatible with the materials of the workpieces;

after plasma jet coating and before hot isostatic pressing, sintering at low pressure said layer produced by plasma jet coating;

applying mechanically stable pressing force until hot isostatic pressing is performed; and

sealing gas-tight the location of joining and hot pressing isostatically the fixated workpieces while the location of joining is sealed gas-tight.

5,009,360

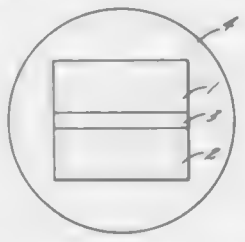
METAL-TO-METAL BONDING METHOD AND RESULTING STRUCTURE

Arnold Reisman, Raleigh, N.C.; Deepak Nayak, Los Angeles, Calif., and Iwona Turlik, Raleigh, N.C., assignors to MCNC, Research Triangle Park, N.C.

Continuation of Ser. No. 277,620, Nov. 29, 1988, abandoned. This application Feb. 27, 1990, Ser. No. 486,064

Int. Cl.[5] B23K *31/00, 103/14*

U.S. Cl. 228—198 **11 Claims**



1. A method for bonding flat metal surfaces comprising the steps of:

placing said flat metal surfaces in contact with one another; and

forming an oxide bond between said flat metal surfaces in contact with one another by heating said flat metal surfaces in an oxidizing ambient atmosphere to a temperature substantially below the melting point of said flat metal surfaces and below the eutectic melting point of said metal and said oxide, said oxide itself bonding said flat metal surfaces to one another through the formation of chemical bonds between oxygen from the oxidizing ambient atmosphere and metal from each of the flat metal surfaces, as the oxide is formed.

5,009,361

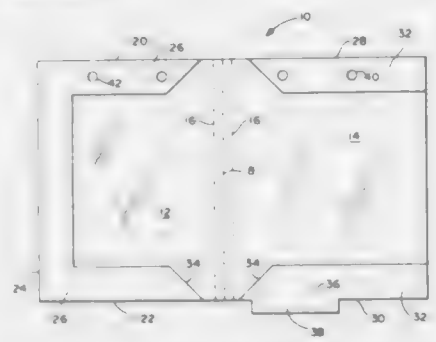
PROTECTIVE COVER FOR A FILE FOLDER

Zhenia J. Chariton, 630 Arlington, Novato, Calif. 94947, and Barbara J. Teixeira, 2618 Las Gallinas Ave., San Rafael, Calif. 94903

Filed Dec. 18, 1989, Ser. No. 451,989

Int. Cl.[5] B65D *27/00*

U.S. Cl. 229—1.5 R **10 Claims**



1. A protective cover for a file folder having left and right panels separated by at least one fold line, each said panel having top and bottom edges and a side edge and one of said panels having a label tab depending from the bottom edge thereof; said protective cover comprising:

a pair of cover panels, each of a size and shape to cover completely one of said file folder right and left panels, said cover panels being separated by at least one score line;

top and bottom flaps on said cover panels to receive said top and bottom edges of said left and right panels;

means forming a slot in the bottom flap of one of said cover panels to receive and interlock with said label tab.

5,009,362

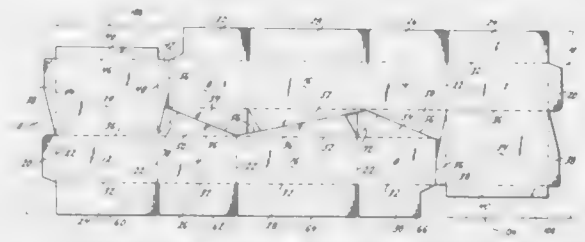
QUICK-ASSEMBLED FOLDING CARTON WITH REINFORCED BOTTOM THAT LOCKS IN POSITION

Edward J. Brangle, Jr., 11885 Lackland Rd., Ste. 26, St. Louis, Mo. 63146

Continuation-in-part of Ser. No. 328,066, Mar. 23, 1989, abandoned. This application Sep. 17, 1990, Ser. No. 583,577

Int. Cl.[5] B65D *5/36*

U.S. Cl. 229—117 **27 Claims**



1. A folding carton formed from a blank sheet of carton material, the carton comprising:

first, second, third and fourth carton wall sections connected together end-to-end along fold lines scored between adjacent wall sections, the wall sections being arranged to be formed into a rectangular configuration;

a carton bottom section bound by four fold lines arranged in a rectangular configuration, the bottom section being connected to the first wall section along the first fold line and the bottom section being enclosed by first, second and third strengthening flanges connected respectively along the second, third and fourth fold lines of the bottom section in their entirety; and

carton bottom locking means formed unitarily with the second, third and fourth carton wall sections and arranged to engage the first, second and third strengthening flanges respectively, to maintain the carton bottom section in a desired position relative to the four carton wall sections when the carton wall sections are formed into a rectangular configuration.

5,009,363

BRIDGE SEPARATED TRAY AND BLANK FOR FORMING IT

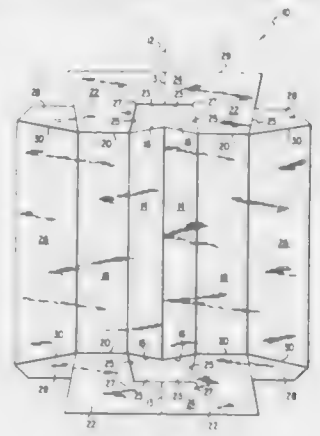
James F. Zavatone, 109 N. Mid America Mall, Apt. 1511, Memphis, Tenn. 38103

Filed Mar. 15, 1990, Ser. No. 493,652

Int. Cl.[5] B65D *5/48*

U.S. Cl. 229—120.17 **11 Claims**

1. A unitary paperboard blank for making a tray having at least a pair of parallel troughs, the blank including a series of elongated, parallel panels each having parallel, elongated edges and joined by fold lines in series to each other along their elongated respective edges, each panel of at least one adjacent pair of said panels being trapezoidal and having shorter edges, termed free edges, not foldably connected to any of said panels, said pair of trapezoidal panels adapted to form an arch partition between an adjacent pair of parallel troughs, said parallel panels including a pair of generally rectangular, trough bottom forming panels each joined to one of said elongated respective edges of a respective said trapezoidal panel, said trough bottom forming panels having an angled tray end forming flap attached along a fold axis to each shorter edge of the former, one leg of each end wall forming flap being oppositely spaced from one of said free edges of a respective said trapezoidal panel, the free edge of each trapezoidal panel slanting away from the fold axis which joins a trough bottom forming panel to the latter's angled flap, the length of the fold line joining said trapezoidal panels being longer than the length of the fold lines



joining any of said trapezoidal panels to its next adjacent said trough bottom forming panel.

5,009,364

EASY-OPEN PACKAGE FOR FLUENT MATERIAL

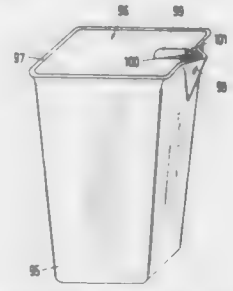
Georg Bolte, Vechelde, Fed. Rep. of Germany, assignor to Schmalbach-Lubeca AG, Braunschweig, Fed. Rep. of Germany

Filed Jan. 11, 1990, Ser. No. 463,371

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1989, 3901517

Int. Cl.[5] B65D *5/70*

U.S. Cl. 229—123.2 **5 Claims**



1. An easy-open package for a fluent material, the package comprising:

an upwardly open base vessel having an annular rim;

a foil having an outer periphery engaging the rim and formed inward of the periphery with an annular tear line defining a tearout portion;

an open tab engaging the portion within the tear line and having one leg lying on the foil and another leg joined at a fold to the one leg and projecting from the foil;

an annular bond securing the foil at the periphery of the foil to the rim;

a bond securing the one leg of the tab to the foil adjacent the tearout portion; and

a bond securing the one leg of the tab to the portion within the tear line.

5,009,365

REMOVABLE COIN STORAGE RECEPTACLE FOR SLOT MACHINES

Dominique Holtzer, 7,rue Moncey, 25000 Besancon, France

Filed Nov. 29, 1988, Ser. No. 277,173

Claims priority, application France, Dec. 8, 1987, 87 17040

Int. Cl.[5] G07B *15/00*

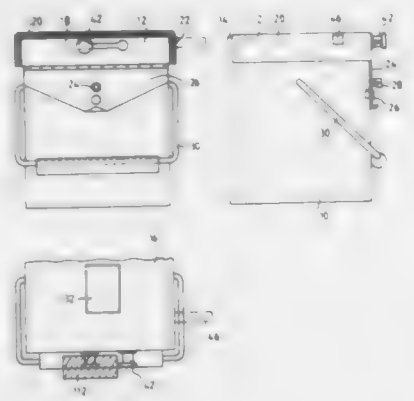
U.S. Cl. 232—16 **6 Claims**

1. A removable coin storage receptacle for slot machines, the receptacle comprising:

a housing provided with a slot in one of its faces for receiving coins;

means mounted inside said receptacle and capable of moving in translation, said means including a bolt having a locking end and a flap fixed to said bolt and suitable for closing said slot;

operating means projecting from said receptacle and constrained to move in translation with said bolt in order to move said moving means into a first position in which said slot is left open and said locking end of the bolt projects out from said housing in order to enable said receptacle to be locked to said slot machine, or into a second position in



which said flap closes said slot and in which said locking end is retracted so as not to project out from said housing; and

a latching mechanism distinct from said operating means and co-operating with said moving means for enabling said moving means to be moved initially from said second position to said first position; and subsequently enabling said moving means to be moved back from said first position to said second position; said moving assembly then being prevented by said latching mechanism from returning to said first position until after said latching mechanism has been acted upon by using controlled access means.

5,009,366

MAILBOX INSERT

Albert van Druff, Jr., Lawrenceville, and David A. Fussell, Lilburn, both of Ga., assignors to Cornerstone Products Inc., Norcross, Ga.

Filed Feb. 16, 1990, Ser. No. 480,951
Int. Cl.[5] V65D *91/00*
U.S. Cl. 232—17 **3 Claims**

1. A tray-type insert for use with a mailbox in delivering and removing mail from the box, said insert being movable between a retracted position within the box and a protracted position partially removed from the box comprising:

a rectangular shaped bottom panel;

side panels generally rectangular in shape and foldably attached to longitudinal edges of said bottom panel; said side panels including locking tab openings at one end thereof;

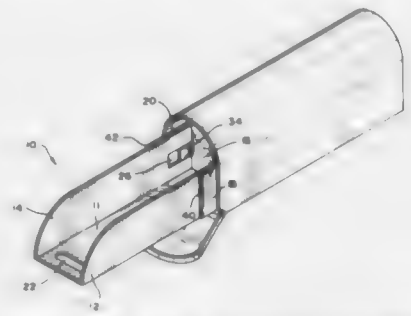
an end panel foldably attached to an end of said bottom panel;

said bottom panel, side panels and end panel forming a mail receiving chamber;

locking panels having hinge means for attachment to said end panel, said locking panels being positioned on said side panels outwardly of said mail receiving chamber;

locking tab detents formed at a juncture of said end panel and each of said side panels;

locking tabs integrally formed on said locking panels an positioned; opposite said side panel openings, said locking tabs being folded through said side panel openings and lockingly positioned in said locking tab detents tab detents securing said side panels to said end panel; and



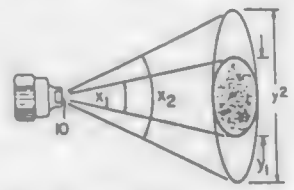
said locking panels further including an abutment surface formed by an edge of said locking panels to abut a cooperating edge of the mailbox door opening preventing total removal of said insert from the interior of said mailbox when the insert is in the protracted position.

5,009,367

METHODS AND APPARATUS FOR OBTAINING WIDER SPRAYS WHEN SPRAYING LIQUIDS BY AIRLESS TECHNIQUES

Kenneth A. Nielsen, Charleston, W. Va., assignor to Union Carbide Chemicals and Plastics Technology Corporation, Danbury, Conn.

Filed Mar. 22, 1989, Ser. No. 327,275
Int. Cl.[5] B05D *1/02, 1/04*
U.S. Cl. 239—3 **44 Claims**



1. In a method for the airless spraying of a coating composition which comprises passing the composition under pressure through an orifice to produce a spray pattern having a maximum first width, the said composition comprising (i) a solids fraction containing at least one component capable of forming a coating on a substrate; and (ii) a solvent fraction which is at least partially miscible with the solids fraction, the improvement which comprises forming a liquid mixture in a closed system, which liquid mixture contains the said (i) and (ii), and also contains (iii) at least one supercritical fluid in at least an amount which when added to (i) and (ii) and sprayed is sufficient to produce a spray pattern having a second width which is greater than the first width.

5,009,368

CONSTANT-PRESSURE, VARIABLE-VOLUME IRRIGATION SPRINKLERS

Donald A. Streck, Ojai, and Jerry R. Iggulden, Santa Clarita, both of Calif., assignors to Light Ideas Incorporated, Woodland Hills, Calif.

Filed Jun. 21, 1989, Ser. No. 369,659
Int. Cl.[5] B05B *3/04, 1/08*
U.S. Cl. 239—70 **16 Claims**

1. A control device for controlling the flow of irrigation water between an inlet and an outlet thereof comprising:

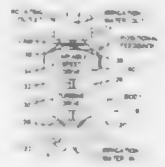
(a) a hollow body having an inlet thereto and an outlet therefrom, said outlet being contained in an outlet member mounted to said body for rotation;

(b) a rotating drive positioned within said body, said rotating drive being a turbine drive including a turbine wheel

positioned within said body to be rotated by a flow of water between said inlet and said outlet; and,

(c) flow control means disposed within said body between said inlet and said outlet and driven by said rotating drive for varying the volume of water discharged through said outlet to areas watered by a sprinkler head connected to said outlet without changing the pressure of said water, said flow control means comprising means for rotating said outlet member at different rates as a function of the radial position of said outlet member.

14. In an irrigation controller which opens a supply valve to input a supply of irrigation water under pressure to at least one sprinkler head for a pre-established irrigation period at pre-set times and days, the improvement to permit high-precipitation irrigation sprinkler heads to achieve average low-precipitation operation over the irrigation period comprising:



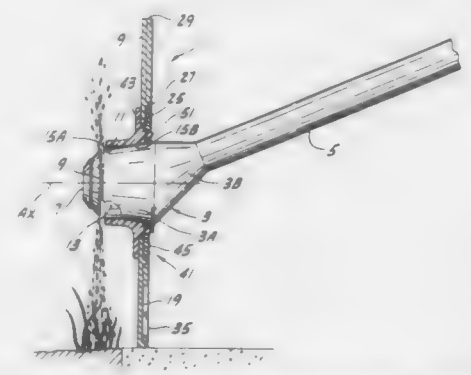
a secondary timer connected in series with the controller to control the opening and closing of the supply valve to, when the irrigation period begins, initially connect the supply of irrigation water to the sprinkler head, allow irrigation water to flow to and through the sprinkler head for a period of time less than that required to produce run-off of the water from an area being watered by the sprinkler head, break the connection between the supply of irrigation water and the sprinkler head, delay for a period of time sufficient to allow previously broadcast water time to soak into the area being watered by the sprinkler head, and repeating a cycle of connecting and breaking the connection between the supply of irrigation water and the sprinkler head until the irrigation period is completed.

5,009,369

SPRAY SHIELD UNIT

Carlos Iwaszkowiec, St. Peters, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Feb. 16, 1990, Ser. No. 481,099
Int. Cl.[5] B05B *15/04, 1/28*
U.S. Cl. 239—223 **14 Claims**



1. A spray shield unit adapted to be mounted on the head of a sprayer, said head having a spinner thereon rotatable about an axis for spraying liquid generally radially outwardly with respect to said axis, said spray shield unit comprising:

a hub having an opening therein for receiving the head of the sprayer, said hub opening having a central axis; and

a generally planer circular shield member mounted on the hub generally coaxial with the hub and projecting radially outwardly from the hub for shielding spray emitted by the spinner from the wind;

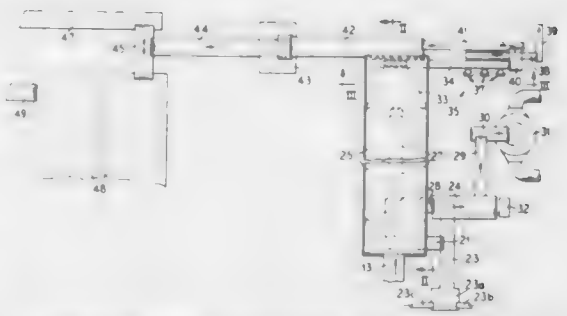
said shield member being rotatable on the hub generally on the central axis of the hub opening whereby when the spray shield unit is mounted on the head of the sprayer and when the sprayer is held with the spinner axis generally horizontal, the shield member may be rolled on the ground to maintain the head of the sprayer in the hub opening a fixed vertical distance from the ground to provide a uniform distribution of spray onto the ground.

5,009,370

MUNICIPAL SOLID WASTE MATERIAL SORTING TROMMEL SYSTEM

Harold B. Mackenzie, Wheaton, Ill., assignor to New Life Foundation, Wheaton, Ill.

Filed May 11, 1989, Ser. No. 350,339
Int. Cl.[5] B02C *23/14;* **B07B** *9/00*
U.S. Cl. 241—24 **18 Claims**



1. A municipal solid waste material sorting system comprising:

a multi-stage trommel having an intake at one end and being downwardly tilted toward an opposite discharge end;

said trommel having a first stage relatively short length upper end section with relatively small size holes, followed by a second stage substantially longer intermediate section provided with substantially larger size holes and then a third stage lowest end relatively short section with largest size holes;

means for delivering heterogenous solid municipal waste into said intake end;

means for receiving for transporting to a selected site waste materials which drop through said small size holes of said first stage

means for further classifying at said selected site said materials which drop through said small size holes of said first stage section;

a further size screening device;

means for directing to said further size screening device materials which drop through said larger size holes of said second stage section;

means for classifying of materials screened by said further size screening device;

sorting conveyor means for receiving materials which drop through said largest size holes of said third stage section;

a manual sorting station through which said sorting conveyor means travels;

take-away means for receiving objects manually sorted from said sorting conveyor means;

means for transporting to a shredder unsorted material received from said sorting conveyor means; and

said transporting means for transporting to said shredder also being arranged for receiving and transporting to said shredder largest size materials not passing through said

largest size holes and discharged from said trommel discharge end.

5,009,371

ROTARY DISINTEGRATING DEVICE

Klaus-Dietrich Nickel, Frankfurt am Main, Fed. Rep. of Germany, assignor to Citadel Investments Limited, St. Helier Jersey, Channel Islands

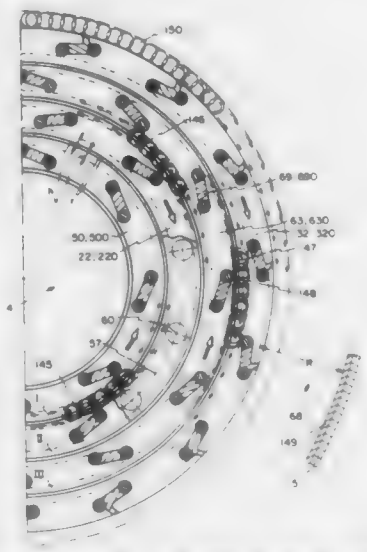
PCT No. PCT/DE89/00040, § 371 Date Sep. 27, 1989, § 102(e) Date Sep. 27, 1989, PCT Pub. No. WO89/07012, PCT Pub. Date Aug. 10, 1989

PCT Filed Jan. 25, 1989, Ser. No. 423,439

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1988, 3802260

Int. Cl.[5] B02C *13/20*

U.S. Cl. 241—187 41 Claims



1. A rotary disintegration apparatus comprising a housing with a central material input and a material outlet open underneath, an inner rotor fixed to a fist shaft and an outer rotor fixed to a second shaft on the same axis that rotates in the opposite direction, and blade rings that follow each other in alternation, said blade rings having blades which are inclined relative to the direction of rotation, the blades having front and rear edges of hard wear-resistant material, and which sit on one side on retaining rings and on the other side on assembly rings forming replaceable components of annular assembly ring carriers that are connected to the shafts, si blades being so arranged at a distance from the edges of the assembly and retaining rings of their blade rings that the front edges of the blades of a blade ring and the rear edges of the blades of the following blade ring which rotates in the opposite direction define annular chambers within a disintegration chamber, within which, within a nominal speed range of the rotors, vortex zones of the gas-solids mixture are formed.

5,009,372

ROLL CASSETTE WITH SPACERS FOR HEIGHT ADJUSTMENT

Erhard Loewe, Waldesch, Fed. Rep. of Germany, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

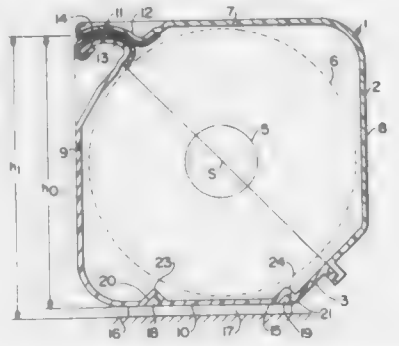
Filed May 1, 1989, Ser. No. 347,388

Claims priority, application Fed. Rep. of Germany, May 11, 1988, 8806260[U]

Int. Cl.[5] B65H *75/00*

U.S. Cl. 242—71.1 15 Claims

1. A light-tight cassette for a roll of web material and adapted for use in at least two exposure devices having cassette support surfaces at different heights from points for receiving the material from the cassette comprising a housing defining an outlet slit oriented parallel to a rotational axis of the roll and positioned above a bottom surface of the cassette housing, characterized in that the bottom surface has means for detachably mounting to at least one spacer such that when no spacer



is mounted to the bottom surface the cassette is adapted for use in one of the exposure devices and when one of the spacers is mounted to the bottom surface the cassette is adapted for use in a different one of the exposure devices.

5,009,373

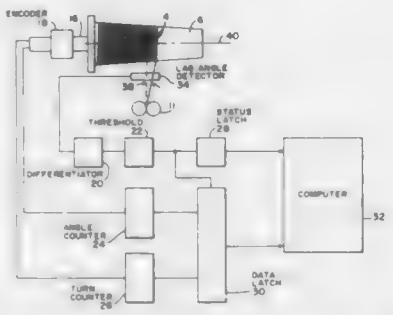
DEVICE AND METHOD FOR DETECTING AND DISPLAYING CROSSOVER PATTERN IN PRECISION WINDING

Troy I. Hester, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 16, 1990, Ser. No. 509,112

Int. Cl.[5] B65H *54/28, 54/00*

U.S. Cl. 242—158 R 6 Claims



1. In a system for winding fiber onto a bobbin, wherein the bobbin is mounted for rotation on a mandrel and a fiber, to be wound, is coupled to said bobbin, a device for detecting and displaying crossover patterns during the winding, comprising: a crossover occurrence detection means suitably positioned to monitor the lag angle of the winding fiber and provide an output signal when a predetermined threshold of lag angle is detected, thereby indicating a crossover occurrence, an encoder coupled to said mandrel to measure the rotation angle of said mandrel and provide output signals proportional to the rotation angles, counting means coupled to receive output signals from said encoder and provide an output absolute mandrel angle and output number of complete revolutions of the mandrel at any time, and displaying means suitably positioned to receive output from said detection means and counting means and display the output.

5,009,374

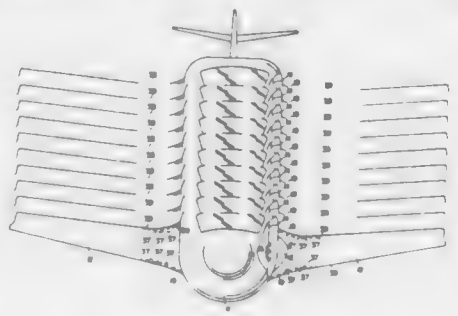
AIRCRAFT WITH RELEASABLE WINGS

Carl Manfredi, 5 Virginia Rd., Bellerose Village, N.Y. 11001; Antonina Manfredi, 45-38 48 St., Woodside, Queens, N.Y.; Dario P. Manfredi, 16 Stubbe Dr., Stony Point, N.Y. 10980, and Savia Giarraffa, 70 Sanford Dr., Randolph, N.J. 07869

Filed Apr. 26, 1988, Ser. No. 186,151

Int. Cl.[5] B64C *1/32*

U.S. Cl. 244—1 R 9 Claims



1. An aircraft comprising

a fuselage having a frame and an outer skin;

a pair of wings extending from said fuselage, each said wing having a beam extending from said frame and an outer skin disposed in overlapping relation with said fuselage skin;

a plurality of explodable bolts securing each beam to said fuselage frame;

a plurality of circumferential rows of rivets securing each wing skin to said fuselage skin;

a pair of burnable tapes, each said burnable tape being secured to an inner circumferential periphery of a respective wing skin between two of said rows of rivets and adjacent said fuselage; and

means for exploding said bolts and igniting said tapes simultaneously to disconnect said wings from said fuselage.

5,009,375

Patent Not Issued For This Number

5,009,376

SEIZURE-FIXING DEVICE OF PIPE BY CLAMP MEMBER

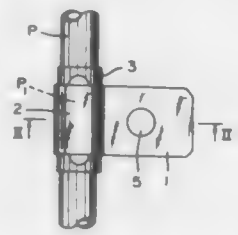
Masayoshi Usui, Numazu, Japan, assignor to Usui Kokusai Sangyo Kaisha Ltd., Japan

Filed Apr. 24, 1990, Ser. No. 513,871

Claims priority, application Japan, Apr. 26, 1989, 1-48981[U]; Apr. 26, 1989, 1-48982[U]; Apr. 26, 1989, 1-48984[U]

Int. Cl.[5] F16L *3/08*

U.S. Cl. 248—74.1 14 Claims



1. A seizure-fixing device of a pipe by a clamp member, comprising:

a pipe;

an elongated clamp member including a seizure wall wrapping around the pipe and a mounting wall leastwise at one longitudinal end of the clamp member;

a resinous bush having a thermal contractility, the bush being interposed between the pipe and the clamp member and bonded via a bonding layer to an outer peripheral surface of the pipe; and

a fixing means for resiliently fixing the seizure wall of the clamp member to the bush, the fixing means comprising a fitting wall so formed on the pipe as to assume a non-circular shape in section, the non-circular shape including at least one flat outer peripheral surface on the pipe, and a seizure wall formed in a shape similar to the sectional shape of the fitting wall.

5,009,377

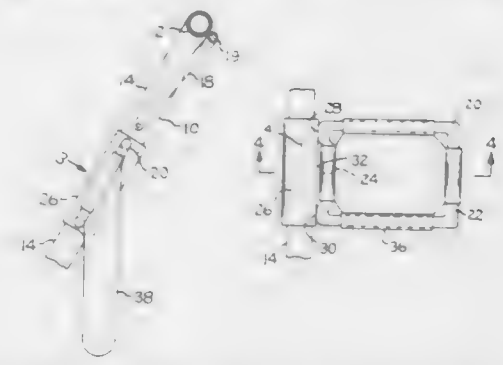
DEBRIS COLLECTION FOR A LAWNMOWER

Joseph N. Mangeruga, 168 South Odessa Ave., Egg Harbor, N.J. 08215

Filed Feb. 6, 1990, Ser. No. 475,879

Int. Cl.[5] B65B *67/04*

U.S. Cl. 248—99 1 Claim



1. A debris collection device attachable to an inclined circular cross-sectioned handle element of a lawnmower: said collection device comprising an endless annular frame consisting of a rod bent into a rectangular configuration to form four rod sections connected at right angles to each other; a flexible bag having four flap portions (36) looped over and around the four rod sections whereby the bag is suspended from the annular frame; one of said rod sections having an intermediate portion thereof offset from the corners at the ends of said one rod section; a resilient clip means attached to said annular frame for partial encirclement around an inclined handle element of a lawnmower; said resilient clip means comprising a single circularly curved metal sheet extending along said one rod section in the plane of the annular frame; said curved metal sheet being welded to the corners at the ends of said one rod section whereby a slot (32) is formed between said curved metal sheet and the intermediate portion of said one rod section; one of said flap portions extending over the intermediate portion of said one rod section and through said slot; and an elastomeric lining on the interior surface of the resilient curved metal sheet, whereby said elastomeric lining is enabled to frictionally grip the circular cross-sectioned surface of an inclined handle element of a lawnmower.

5,009,378

RAKE MATE AND METHODS OF CONSTRUCTING AND UTILIZING SAME

John C. Linsmeyer, and Greg Linsmeyer, both of P.O. Box 195, Quinnesec, Mich. 49876

Filed Jan. 4, 1990, Ser. No. 460,731

Int. Cl.[5] B65B *67/04*

U.S. Cl. 248—99 12 Claims

1. An apparatus for removably securing a bag mouth in an open position, comprising:

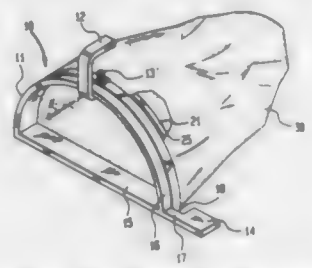
a frame member including a base adapted to support said apparatus, said frame having a rolled rim which secures a strap to said frame and cooperates with said strap to secure a bag to said apparatus;

a semi-circular portion of said frame contiguous with said base;

a handle attached to said semi-circular portion;

bag attachment means comprising a strap extending along a rear portion of the bottom of said base upwardly such that the ends of said strap meet adjacent said handle; and

a foot pad extension extending from said base outward from said semi-circular portion, said boot pad accommodating a user's foot securely hold said apparatus while inserting



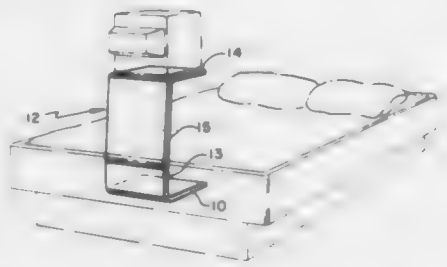
material through said apparatus into said bag, said foot pad extension includes a cut-out portion to accommodate the passage of said strap about said frame.

5,009,379

BED MOUNTED TELEVISION STAND

Thomas E. Sadler, 1250 First St., NW., Cedar Rapids, Iowa 52405

Filed Jun. 21, 1990, Ser. No. 541,371
Int. Cl.[5] A47B *23/00*
U.S. Cl. 248—174 6 Claims



1. A stand for supporting a television receiver or the like on a bed having a mattress separable from and supported on a suitable support means forming part of the bed, said stand comprising a lower horizontally extending base having an inner end and an outer end, the outer end of the base being insertable between the mattress and its support means so as to position the base therebetween, an upright member extending upwardly from the inner end of the base, and an upper ledge for supporting a television receiver and having an inner end jointed to the upper end of the upright member, the upper ledge being of a sufficient width to accommodate a television receiver and extending substantially horizontally outwardly toward an outer edge spaced from the inner edge a sufficient distance for the ledge to support a television receiver, the upright member being at an acute angle from the vertical toward the outer edge of the ledge so as to create a force that biases the lower base downwardly toward the support means of the bed when a television receiver is supported on the upper ledge.

5,009,380

RAIL MOUNTED RACK FOR BOWL-SHAPED OR KETTLE-SHAPED CONTAINERS SUCH AS OUTDOOR GRILLS AND THE LIKE

Thomas G. Fee, 984 Stratford Rd., Mendota Heights, Minn. 55118

Continuation of Ser. No. 305,108, Feb. 2, 1989, abandoned. This application Jun. 5, 1990, Ser. No. 534,298
Int. Cl.[5] A47B *96/00*
U.S. Cl. 248—214 20 Claims

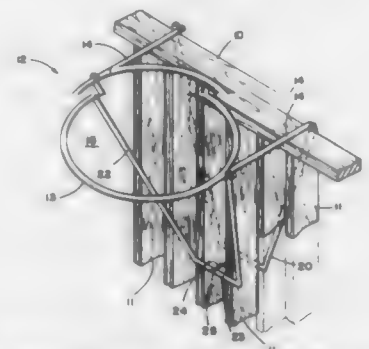
1. A combination comprising:

(a) a railing arrangement having an upper surface and first and second opposite sides; and, said railing arrangement including a horizontal railing supported by a plurality of spaced support members having first and second, opposite, sides corresponding to said first and second sides of sail railing arrangement; and,

(b) a rack for a bowl-shaped grill; said rack being mounted on said railing arrangement; said rack including: a generally planar frame portion; a depending bracing member; and, means for securing said bracing member to said support members of said railing arrangement;

(i) said planar frame portion including a support arm arrangement extending across said upper surface of said railing arrangement and between said first and second sides of said railing arrangement; said support arm arrangement including a pair of substantially horizontal arm members;

(ii) said planar frame portion including an arcuate frame member constructed and arranged for supportive receipt therein of a circular bowl-shaped grill; said arcuate frame member being supported by said support arm



arrangement in extension outwardly from said first side of said railing arrangement;

(iii) said depending bracing member comprising a substantially U-shaped member depending downwardly from said pair of substantially horizontal arm members along said second side of said railing arrangement;

(iv) said means for securing said bracing member to said railing arrangement including: a cross-brace member and an anchoring extension; said cross-brace member being positioned on said first side of said railing arrangement; and, said anchoring extension extending between at least two of said support members, of said railing arrangement, and in securing relation between said cross-brace member and a portion of said depending bracing member; at least one of said support members of said railing arrangement being securely clamped between said depending bracing member and said cross-brace member.

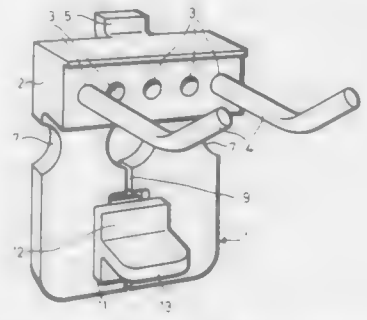
5,009,381

TOOL HOLDER FOR TOOLS ON A PERFORATED BOARD

Fredrik Hermansson, Flugeby, Sweden, assignor to Bengt Henningson, Sweden

PCT No. PCT/SE88/00471, § 371 Date Mar. 13, 1990, § 102(e) Date Mar. 13, 1990, PCT Pub. No. WO89/02347, PCT Pub. Date Mar. 23, 1989
PCT Filed Sep. 13, 1988, Ser. No. 469,526
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1987, 8712428; Mar. 14, 1988, 8803408
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—221.1 12 Claims

1. A holder, for supporting a tool on a perforated board, with a bifurcated generally plate-like base (1) for receiving a tool carrier (4), the bifurcation commencing approximately at the center of said base and extending toward a bottom edge thereof, said base having a front surface and a rear surface with the rear surface of said base being provided with claw means (15) for cooperation with a hole of the perforated board, characterized in that the bifurcation is achieved by a slot (9) which extends through a cut-out portion (10), into which is inserted a twistable locking member (11) having said claw means (15),



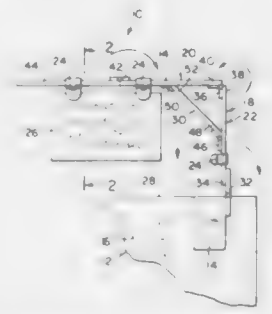
and the locking member (11) is guided in at least one of the cut-out portion (10) and the slot (9) by means of a guiding part (14), shaped to be movable therein, with said claw means projecting from the rear surface of the said base.

5,009,382

INSTRUCTION CLIP FOR SEWING MACHINE

Almyria Huffaker, 2548 McHenry Rd., Goshen, Ohio 45122, and George Spector, 233 Broadway, #3815, New York, N.Y. 10007

Filed Dec. 8, 1989, Ser. No. 447,837
Int. Cl.[5] A47B *97/00*
U.S. Cl. 248—284 1 Claim



1. An instruction holder for a sewing machine cabinet which comprises:

(a) a mounting block affixed to rear surface of the sewing machine cabinet;

(b) an inverted L-shaped stanchion having a horizontal arm and a vertical arm having center lines defining a vertical plane said vertical arm is affixed to said mounting block;

(c) at least one clip for suspending an instruction sheet from a pattern envelope on said horizontal arm which extends over top surface of the sewing machine cabinet, so that hands of a person are free while sewing;

(d) an angular brace support extending between said horizontal arm and said vertical arm to keep said horizontal arm in a secured position over the top surface of the sewing machine cabinet;

(e) a first hinge disposed between bottom end of said vertical arm and said mounting block, having means for pivoting said vertical arm rearward aligned with said vertical plane;

(f) a second hinge disposes between top end of said vertical arm and an end of said horizontal arm; adapted to pivot inwardly along said vertical plane

(g) a third hinge disposed on an upper surface between two segmented portions of said horizontal arm;

(h) a fourth hinge disposed between lower end of said angular brace support and said vertical arm; between the first and second said hinges;

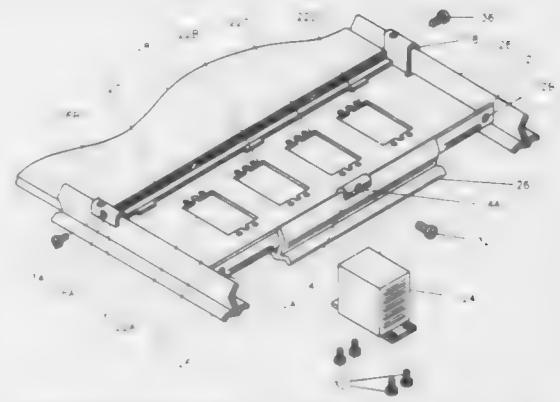
(i) a stop member disposed on the underside of said angular brace support between the second and third said hinges so that said inverted L-shaped stanchion can be collapsed and folded upon itself in a stored position behind the rear surface of the sewing machine cabinet.

5,009,383

SUSPENDED CEILING ELECTRICAL BRACKET

James A. Chapman, Wakefield, Mass., assignor to Daniel J. Chapman, Salem, N.H.

Filed Apr. 30, 1990, Ser. No. 516,966
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—343 6 Claims



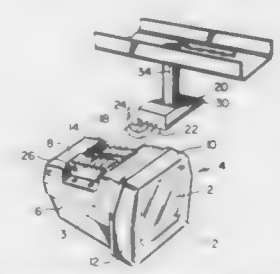
1. A bracket structure for mounting electrical junction boxes in a grid type suspended ceiling, comprising: ceiling tiles supported by spaced and adjoining, inverted, t-shaped grid elements; a sheet of rigid material which replaces a portion of said ceiling tile, so as to overlap the inside edges of said grid elements; said sheet of rigid material of sufficient size to allow one or more cutouts, with said cutouts of sufficient size to allow the insertion of said junction boxes, and with means adapted for securing said junction boxes to said sheet of rigid material; a plurality of support members formed out of or attached to said sheet of rigid material with means adapted for rigidly securing said support members to said grid elements; whereby said bracket structure can rigidly support said junction boxes in said suspended ceiling.

5,009,384

OVERHEAD SUPPORT SYSTEM FOR TV MONITORS

David B. Gerke, and Michael MacDonald, both of Calgary, Canada, assignors to Inter-Link Communciations Inc., Calgary, Canada

Filed Jun. 29, 1990, Ser. No. 545,602
Int. Cl.[5] B42F *13/00*
U.S. Cl. 248—343 11 Claims



1. An overhead support system for TV monitors for use on buses and the like comprising:

(a) a shoe carrying cable means for the TV monitor, the cable means electrically associated with an electrical contact means exposed on an outer surface of the shoe, the shoe having sides provided with guide and support means positioned to mateably slide in cooperating guide and

support means in the upper part of a TV monitor housing, into seated position with the shoe electrical contact means electrically engaging corresponding electrical contact means on the TV monitor housing;

(b) support means in the form of a pipe secured at one end to and upwardly extending from the shoe, the shoe cable means extending through the pipe, the pipe to extend through an aperture in an overhead support frame;

(c) shock absorbing means to be supported on the overhead support frame and having an aperture through which the pipe is to extend; and

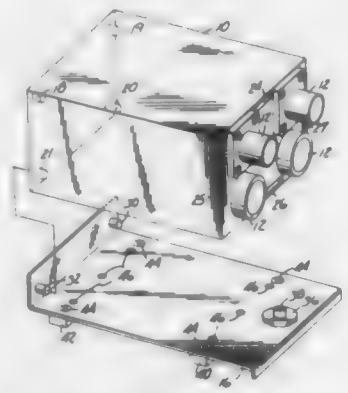
(d) anchor means to sit on the shock absorbing means and releasably engage the other end of the pipe to hold the shoe firmly in position on the overhead support frame.

5,009,385

MOUNTING ARRANGEMENT FOR AVIONICS EQUIPMENT

Larry L. Burgener, and Larry L. Durbin, both of Phoenix, Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 5, 1989, Ser. No. 446,107
Int. Cl.[5] G01D *11/30*
U.S. Cl. 248—346 **14 Claims**



13. Equipment mounting apparatus comprising:

a housing for holding the equipment;

first and second apertures on the housing spaced a first distance apart;

a first elongated slot on the housing remote from the first and second apertures;

a third aperture on the housing spaced a second distance from the second aperture;

a second elongated slot on the housing remote from the second and third apertures;

first and second mounting members each having a first flat portion with first and second ends, the first end being at substantially right angles to the flat portion;

first and second guide pins on the first end of the first mounting member spaced apart by the first distance and extending from the second end over the flat portion;

a first rotatable eccentric cam on the second end of the first mounting member, the first and second guide pins fitting within the first and second apertures of the housing and the first cam rotating into the first elongated slot to wedge the housing in a first orientation with respect to the mounting member;

third and fourth guide pins on the first end of the second mounting member spaced apart by the second distance and extending over the flat portion; and

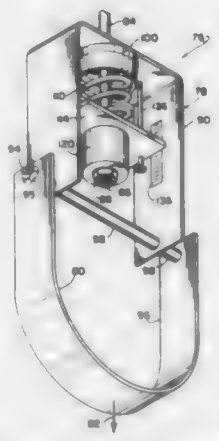
a second rotatable eccentric cam on the second end of the second mounting member, the third and fourth guide pins fitting within the second and third apertures of the housing and the second cam rotating into the second elongated slot to wedge the housing in a second orientation with respect to the mounting member.

5,009,386

PIPE HANGER AND SUPPORT

Richard C. Berger, Off Split Rock Rd., Syosset, N.Y. 11791, and Paul L. Berger, 28 Moss La., Jericho, N.Y. 11753

Filed Jun. 1, 1989, Ser. No. 360,072
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—613 **3 Claims**



1. A hanger for horizontally supporting a pipe at spaced locations therealong comprising at said locations an inverted U-shaped frame connected to support the pipe at the lower end thereof, a vertically oriented support rod disposed centrally of said frame, a helical spring disposed about said support rod within said frame, the first end of said spring resting in an elastomeric dampening member mounted to said frame and passing said mounting rod therethrough, a horizontally oriented spring-compressing member disposed in said frame in supporting relation beneath said spring and with a depending end of said support rod in projected relation therebelow, the depending end of said support rod passing through a second elastomeric dampening member, a first nut engaging said plate through said second elastomeric dampening member, a first removable spring-compressing means in the form of cooperating nuts and bolts on opposite sides of said spring operatively arranged upon threaded adjustment of said nuts to cause ascending movement in said spring-compressing member to correspondingly cause a prestressing of said spring, and a second spring compressing means formed by said first nut being in threaded engagement on said support rod depending end so as to cause additional ascending movement in said spring-compressing member without movement of said frame to additionally prestress said spring, whereby the partaking of said spring-compressing member of said ascending movements is not accompanied by any vertical movements of said supported pipe.

5,009,387

OBJECT RETAINER FOR UPRIGHT CONCRETE CONSTRUCTION FORMS

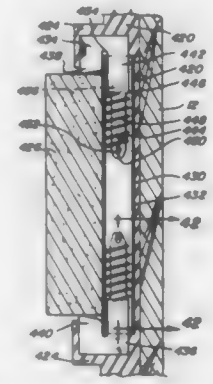
Samuel C. Scott, 2519 Walnut St., Denver, Colo. 80209, and William C. Scott, III, 4575 Joliet St., Denver, Colo. 80239

Filed Feb. 6, 1989, Ser. No. 306,168
Int. Cl.[5] E04G *9/10*
U.S. Cl. 249—96 **15 Claims**

1. A retainer device for holding an object in a substantially upright concrete form while concrete is poured into and sets within the form, a surface of the retained object is intended to be exposed in an outer surface of the finished concrete structure, said retainer device comprising in combination:

a flexible liner having a recess sized to closely fit an object to be exposed in the outer surface of the finished concrete structure, said recess having a ridge formed around its perimeter to surround the edges of the object; and

a retainer means attached to said flexible liner through said liner recess ridge to hold said object within the liner recess so that it will be properly positioned and not dislodged when the concrete is poured into the form, said retainer means being arranged to release from said object when the form is removed from the finished concrete structure.

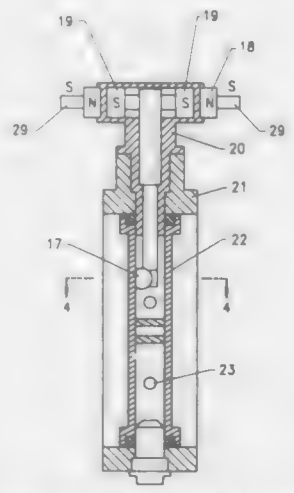


5,009,388

MAGNETIC-CONTROLLED VALVE FOR FLUID PIPELINES

Mao Pei-gi, Porder Metallurgy Factory Nan-Ning; Gan Jing, Block 28, Room 207, Nan-Ning, Jiang Nan Road, both of Guangxi Zhuang Autonomous Region, China, and Que Binghuang, 2/f, Flat A, Kum On BLdg., No. 3, Station Lane, Hung Hom, Kowloon, Hong Kong

Filed Nov. 7, 1989, Ser. No. 432,482
Claims priority, application China, Jan. 6, 1989, 89 103861
Int. Cl.[5] F16K *31/08, 5/00*
U.S. Cl. 251—65 **3 Claims**



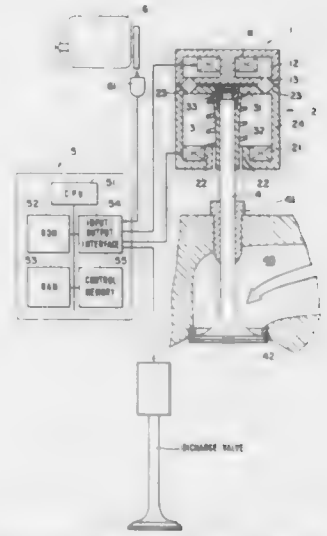
1. A magnet-controlled valve for fluid pipelines comprising: a sealed disk-like guide bushing accommodating an external magnet ring rotatable along the outer wall surface thereof and an internal magnet ring rotatable therein, said internal magnet ring being connected with a connecting rod provided with a stopper element rotatable therewith, and a valve body accommodating a hollow valve plate provided with pressure relief aperture, back pressure aperture and a through hole, said valve plate provided with a peripheral groove for accommodating an expandable packing ring, said connecting rod being inserted into the interior cavity of said valve plate and arranged with its stopper element to be in registry with and engaged with said pressure relief aperture and said back pressure aperture on the two side walls of said valve plate, said through hole provided on the peripheral wall of the valve plate establishing fluid communication between a back pressure area in the interior cavity of said valve plate and the peripheral groove, an expandable packing ring being provided therein.

5,009,389

ELECTROMAGNETIC FORCE VALVE DRIVING APPARATUS

Hideo Kawamura, Samukawa, Japan, assignor to Isuzu Ceramics Research Institute, Co., Ltd., Fujisawa, Japan

Filed Feb. 15, 1990, Ser. No. 480,578
Claims priority, application Japan, Feb. 20, 1989, 1-038429
Int. Cl.[5] F16K *31/06*
U.S. Cl. 251—129.1 **5 Claims**



1. An electromagnetic force valve driving apparatus for opening and closing a suction/exhaust valve of an engine, comprising:

a freely reciprocatable movable magnetic pole member connected to the suction/exhaust valve;

a upper fixed magnetic pole opposing he one end of said movable magnetic pole member;

a first electromagnet comprising a yoke member magnetically communicating with said upper fixed magnetic pole and having a lower magnetic pole opposing the other end of said movable magnetic pole member;

a second electromagnet having a first magnetic pole opposing said upper fixed magnetic pole and a second magnetic pole opposing the one end of said movable magnetic pole member;

a spring for subjecting said movable magnetic pole member to a force which moves said movable magnetic pole member in the direction of the one end thereof; and

energizing control means for energizing said first and second electromagnets when the suction/exhaust valve is released and immediately before it is seated, thereby causing a repulsive force to act between the one end of said movable magnetic pole member and said second magnetic pole.

5,009,390

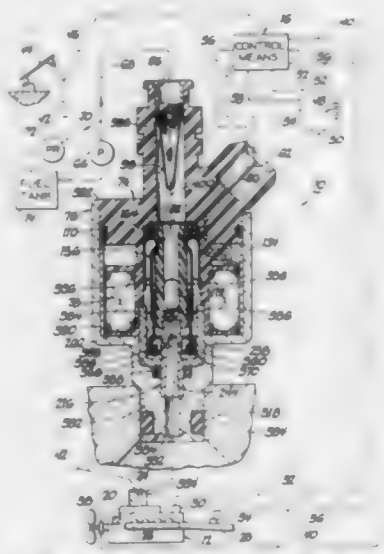
ELECTROMAGNET AND REED-TYPE VALVE ASSEMBLY

Lawrence McAuliffe, Jr., Ann Arbor, and Sidney D. Hardy, Sterling Heights, both of Mich., assignors to Coltec Industries Inc., New York, N.Y.

Filed Mar. 1, 1990, Ser. No. 486,991
Int. Cl.[5] F16K *31/06*
U.S. Cl. 251—129.2 **28 Claims**

1. A valving assembly for variably restricting fluid flow, comprising housing means, electrical field coil means for creat-

ing a magnetic field flux, wherein said field coil means comprises a cross-sectional longitudinal axis, pole piece means, a valve seat, fluid flow passage means formed through said valve seat, a movable valve, armature means, and resilient means normally operatively resiliently urging said valve toward operative seating engagement with said valve seat as to thereby terminate flow of said fluid through said fluid flow passage means, wherein said electrical field coil means upon being



energized is effective to create said magnetic field flux and cause said armature means to move said valve in a direction away from said valve seat to thereby permit flow of said fluid through said fluid flow passage means, wherein as said valve moves in said direction away from said valve seat said valve is moving in a direction generally transverse to said cross-sectional longitudinal axis, and wherein said movable valve also serves as an armature member in addition to said armature means.

5,009,391

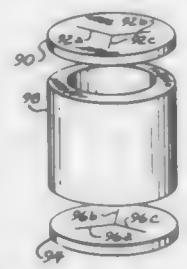
VALVE ASSEMBLY

Carl J. Steigerwald, Fox Lake, Ill., assignor to The Kendall Company, Mansfield, Mass.

Continuation of Ser. No. 453,522, Dec. 20, 1989, abandoned, which is a division of Ser. No. 189,097, May 2, 1988, Pat. No. 4,895,346. This application Oct. 31, 1990, Ser. No. 611,804

Int. Cl.[5] F16L *37/28*

U.S. Cl. 251—149.1 **24 Claims**



1. A valve assembly for receiving an elongated element such as a catheter, comprising:

a hollow body member having a cavity;

a compression member received on one end of the body member and having an annular flange aligned with the cavity;

an elastic duckbill valve having a slit adjacent the distal end of the cavity;

an elastic disc received in the cavity and having a central opening intermediate the valve and the annular flange;

a cylindrical elastic sleeve received in the cavity and having a bore circumferentially surrounded by inner and outer surfaces of the sleeve, the sleeve thickness dimension between the inner and outer surfaces of the sleeve being less than the length dimension of the sleeve;

said slit, opening and sleeve bore being adapted to receive said elongated element and to seal against the outer surface of said element; and

means for adjusting the compression member relative to the body member into a plurality of axially spaced apart positions for exerting different axial forces on the sleeve for inwardly bulging the sleeve, so that the sleeve permits passage of the elongated element axially through the bore of the sleeve in a sleeve open position, immobilizes and holds the element in the bore of the sleeve in a sleeve gripping position, and after removal of the element from the bore of the sleeve, inhibits flow of fluid, such as air or blood, through the bore of the sleeve in a sleeve bulged inwardly position.

5,009,392

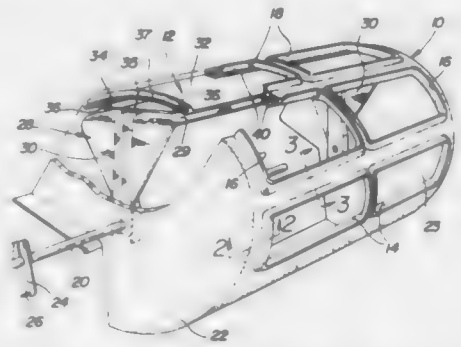
ROTARY AIR VALVE

James C. Ostrand, Armada, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 11, 1990, Ser. No. 521,874

Int. Cl.[5] F16K *5/04*

U.S. Cl. 251—180 **4 Claims**



1. A rotary air valve for a motor vehicle heating, air conditioning and ventilation system comprising a generally cylindrical case having an opening through which air may flow, rotary air valve means mounted in the case for rotatable movement about an axis so as to cover and uncover said opening, said rotary air valve means comprising a valve frame rotatable about said axis, floating valve means mounted on said valve frame, spring means for urging said floating valve means radially outward against said case, cooperating annularly extending rib and groove means on said floating valve means and said case for sealing said valve means with respect to said case at one of two pairs of opposite sides of said openings, and axially extending compliant seal means on said case for sealingly contacting said valve means at the other pair of said sides of said opening whereby said rib and groove means and said seal means cooperatively seal said valve means about the perimeter of said opening when said valve means is rotated to cover same.

5,009,393

LINEAR FLOW TURN DOWN VALVE

Dale A. Massey, Orland Park, Ill., assignor to Harper-Wyman Company, Lisle, Ill.

Filed Jun. 13, 1990, Ser. No. 537,367

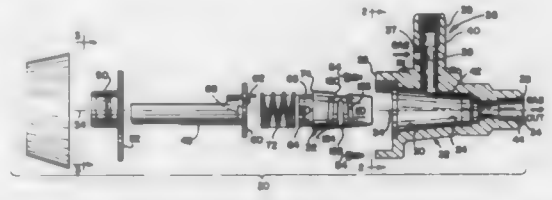
Int. Cl.[5] F16K *5/10*

U.S. Cl. 251—207 **22 Claims**

1. A linear flow control valve for gaseous fuel, comprising:

a valve body having a chamber for receiving a valve plug and including an inlet on one side and an outlet at one end; and

a tubular valve plug rotatably mounted in said chamber about a central axis aligned with said outlet, said plug having an outlet at one end adjacent said chamber outlet and an annular side wall defining a central bore extending longitudinally between opposite ends along said axis of rotation, said side wall closing said chamber inlet when said plug is in an off position in said body and having an inlet port movable into alignment with said chamber inlet providing direct communication between said chamber inlet and said bore when said plug is rotated to a maximum flow, on, position in said body;



said side wall further including a pair of spaced apart divergent/convergent flow slots, extending generally transversely of said axis and penetrating from an outside surface of said plug to said central bore spaced from said inlet port, said divergent/convergent flow slots providing an effective flow cross-section formed by areas of overlap between said chamber inlet and both of said flow slots as said plug is rotated through an intermediate range of angularly spaced, variable flow positions for continuously changing the gas flow rate through said plug.

5,009,394

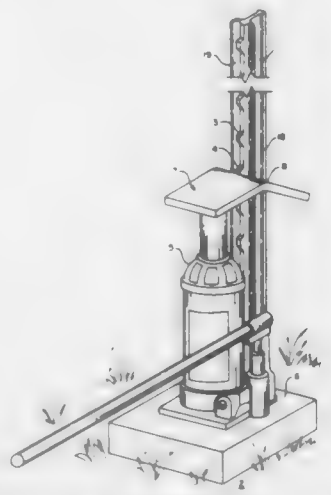
METAL FENCE POST EXTRACTOR

Rick A. Marshall, 14902 - 168th NE., Woodinville, Wash. 98072

Filed Apr. 16, 1990, Ser. No. 509,881

Int. Cl.[5] B66F *3/00*

U.S. Cl. 254—30 **20 Claims**



1. An extractor device for dislodging from the ground metal fence posts of the type having a substantially T-shaped cross section and longitudinally spaced lugs, comprising:

a unitary metal plate having a length greater than width so as to define a longitudinal axis and being bent at an obtuse angle about a lateral bend line generally mid-length so as to divide the plate into a post gripping portion and a jacking portion;

a T-shaped aperture is formed in said post gripping portion substantially normal to the plane of the plate with the stem of the T aperture generally aligned with the longitudinal axis of the plate and terminating adjacent one longitudinal end of said plate, and the cross of the T aperture disposed crosswise of the plate adjacent said jacking portion and proximate said bend line so as to present an edge of said cross engageable with a post lug, said plate portions including said T-shaped aperture being sized so that in one orientation of the plate relative to the post, said T-shaped aperture slips along the length of the post, clearing post lugs, and in another orientation the edges of the T-shaped aperture and adjacent margins o the plate engage the post and one lug to grip the post and to exert a jacking force applied between ground and the jacking portion of the plate on the lug side of the post to extract the post.

5,009,395

METHOD AND APPARATUS FOR SELECTIVELY HEATING A WORKPIECE SUBJECTED TO LOW TEMPERATURE THERMOMECHANICAL PROCESSING

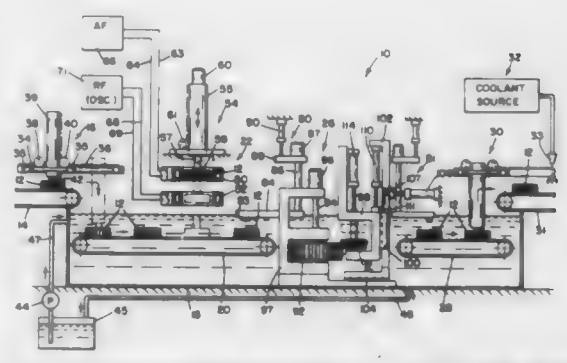
George D. Pfaffmann, Farmington, Mich., assignor to Tocco, Inc., Boaz, Ala.

Division of Ser. No. 6,142, Jan. 23, 1987, Pat. No. 4,744,836, which is a continuation-in-part of Ser. No. 899,323, Aug. 28, 1986, Pat. No. 4,715,707, which is a division of Ser. No. 752,550, Jul. 8, 1985, Pat. No. 4,637,844. This application Mar. 9, 1988, Ser. No. 166,103

The portion of the term of this patent subsequent to Jan. 20, 2004, has been disclaimed.

Int. Cl.[5] C21D *9/68, 11/00*

U.S. Cl. 266—92 **10 Claims**



1. An improved system for isoforming an iron carbide workpiece comprising:

(a) preheating means for heating a first band portion of said workpiece adjacent to the contour of said workpieces to a temperature approximately equal to the M_s temperature of said workpiece while the remaining core portion of said workpiece remains below said M_s temperatures;

(b) final heating means for heating a second band portion of said workpiece encompassing the contour of said workpiece to a temperature at least equal to the austenitic temperature of said workpiece, said second portion smaller than and contained within said first portion of said workpiece;

(c) die forming means for forming the second heated portion of said workpiece to a finished shape while said second portion of said workpiece is in a plastic state at a temperature not less than said M_s temperature and supported by said first portion while the remaining core portion of said workpiece remains below said M_s temperature;

(d) means for controlling movement of said workpiece into said die forming means to insure that said second portion achieves a critical cooling rate and the temperature thereof becomes less than said austenitic temperature; and

(e) means for cooling said workpiece below said M_s temperature after it has been shaped.

5,009,396

METHOD AND APPARATUS FOR THE MANUFACTURE OF FORMABLE STEEL STRIP

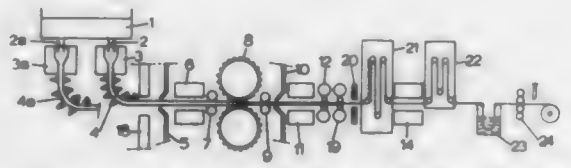
Hulbert den Hartog, Noordwijkerhout, and Erik B. van Perlstein, Beverwijk, both of Netherlands, assignors to Hoogovens Groep B.V., Ijmuiden, Netherlands

Division of Ser. No. 235,152, Aug. 23, 1988. This application Sep. 28, 1989, Ser. No. 414,024

Claims priority, application Netherlands, Sep. 1, 1987, 8702050

Int. Cl.[5] C21D *1/64*

U.S. Cl. 266—115 3 Claims



1. Apparatus for the manufacture of formable steel strip having a thickness between 0.5 and 1.5 mm , having the following items arranged in sequence:

(i) at least one continuous casting machine for forming liquid steel into slabs having a thickness of 30 to 100 mm,

(ii) a homogenizing furnace for the slab from (i),

(iii) a planetary mill followed by a planishing mill stand for hot rolling of the slab from (ii) into strip,

(iv) means for cooling the strip from (iii) to a temperature in the range 300° to 850° C. and homogenizing the strip at that temperature,

(v) at least one four-high mill stand for rolling the strip from (iv),

(vi) a furnace for recrystallization-annealing of the strip from (v) at a temperature of at least 620° C.,

(vii) cooling means for cooling the strip from (vi), and

(viii) at least one strip coiler.

5,009,397

PLANT TO BE USED FOR METALLURGICAL TREATMENTS OF METAL COMPOUNDS AND/OR METAL ALLOYS OR FOR PRODUCING CALCIUM CARBIDE

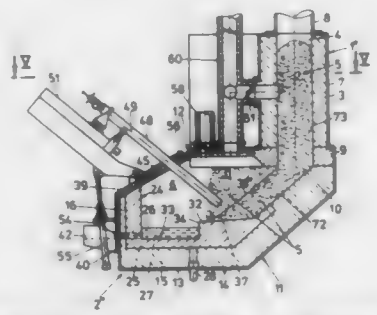
Gerhard Glöckler, Ohlsdorf; Heinz Müller, Neuhofen; Leopold W. Kepplinger; Panajiotis Matzawrakos, both of Linz; Erwin Koch, Leonding, and Heinrich Anberger, Linz, all of Austria, assignors to Voest-Alpine Industrieanlagenbau GmbH, Linz, Austria

Filed Mar. 30, 1990, Ser. No. 502,336

Claims priority, application Australia, Apr. 13, 1989, A877/89

Int. Cl.[5] C21B *7/08*

U.S. Cl. 266—197 7 Claims



1. In a plant comprising a furnace for producing a product melt from a metallurgical burden in which the furnace has a laterally disposed melt collecting chamber at one end and an upwardly disposed burden-receiving shaft comprising an upper portion and a lower portion at the other end of said furnace, and at least one burner means entering said furnace above said melt chamber directed towards burden flowing downwardly of said shaft through the lower portion thereof into said furnace, the improvement which comprises:

a combustion chamber disposed above said melt chamber which communicates said melt chamber with the lower portion of said shaft, and

a shelf disposed below the lower portion of said shaft serving as the bottom of said combustion chamber, said shelf extending to and above said melt chamber and terminating into an overflow edge over which melt produced from said burden enters said melt chamber,

said shelf also providing support for said burden flowing down said shaft for metallurgical treatment by said burner means and adapted via its overflow edge to separate the melt from the burden,

said burden means comprising a plasma burner.

5,009,398

DEVICE FOR REDUCING THE STRESSES ON A SEALING SHUTTER

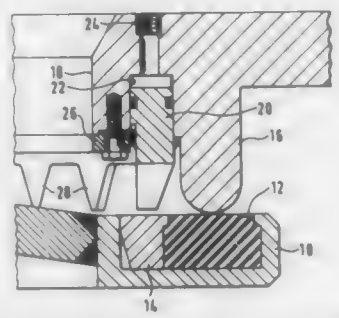
Emile Lonardi, Bascharage, Luxembourg, assignor to Paul Wurth S.A., Luxembourg, Luxembourg

Filed Dec. 8, 1989, Ser. No. 448,002

Claims priority, application Luxembourg, Dec. 30, 1988, 87420

Int. Cl.[5] C21B *7/00*

U.S. Cl. 266—199 9 Claims



1. An apparatus for sealing an orifice of a blast furnace, said orifice being defined by a wall, said wall having a first side and an opposed second side, said orifice extending through the wall in a first direction from the first side of the wall to the second side of the wall, comprising:

an annular seat disposed on the first side of the wall and surrounding the orifice;

a shutter for sealing the orifice, comprising:

a shutter body having opposed first and second sides,

a gasket secured to the second side of the shutter body,

said shutter being movable between a closed position, wherein the gasket is disposed in contact with the annular seat to seal the orifice, and an open position, where in the gasket is set apart from the annular seat; and

pressure compensating means for reducing stresses on the gasket while the shutter is maintained in the closed position by urging the shutter in a second direction when the shutter is in the closed position, said second direction being opposite the first direction.

5,009,399

DEVICE FOR TRANSFER OF MOLTEN METAL

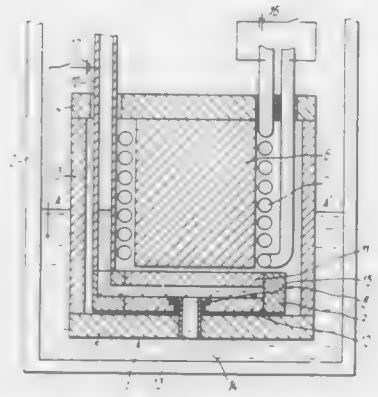
David G. Bykhovsky, ulitsa Esenina, 32, korpus 2, kv. 95, and Alexandr N. Panov, naberezhnaya reki Fontanki, 26, kv. 3, both of Leningrad, U.S.S.R.

PCT No. PCT/SU88/00215, § 371 Date Jun. 1, 1990, § 102(e) Date Jun. 1, 1990, PCT Pub. No. WO90/04878, PCT Pub. Date May 3, 1990

PCT Filed Oct. 28, 1988, Ser. No. 499,331

Int. Cl.[5] H02K *44/02*

U.S. Cl. 266—237 5 Claims



1. A device for transfer of molten metal wherein a centrifugal conduction MHD pump (1) comprises a metal housing (3) provided with a cover (4) and incorporating a working chamber (8) which has a pipe (12) for discharge of molten metal and communicates with a molten metal bath (2), and a magnetic circuit producing a magnetic field within the molten metal contained in the working chamber (8), and wherein the inside surface of the cover (4) of the metal housing (3) is connected to one end of a metal rod (6) which is enclosed on its side surface by a solenoid (7), while the working chamber (8) aligned axially with respect to the metal rod (6) is arranged between the other end of the metal rod (6) and a bottom (5) of the metal housing (3) in such a way as to be dielectrically insulated from them, so that the metal housing (3) with its cover (4) and the bottom (5), the metal rod (6), the solenoid (7) and the working chamber (8) form a magnetic circuit, whereas the bottom (5) of the metal housing (3) and the bottom portion of the working chamber (8) are provided with openings forming a duct (13) hermetically connecting the working chamber (8) with the molten metal bath (2).

5,009,400

ACTIVE SPRING-AND-DAMPER SYSTEM

Gerhard Ott, Herrenberg, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Nov. 30, 1989, Ser. No. 443,316

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1988, 3842338

Int. Cl.[5] B60G *17/00*

U.S. Cl. 267—64.11 9 Claims

1. An active spring-and-damper system for placement between a vehicle body and a wheel suspension member, the system comprising:

a piston cylinder unit which has a pressure chamber for static load support and two additional pressure chambers for dynamic load control;

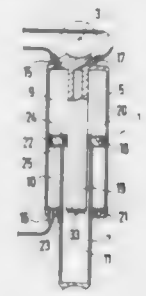
all the three pressure chambers are arranged in a cylindrical housing and are equipped with connections for hydraulic lines;

a first and a second pressure chamber of the three pressure chambers are located in a cylindrical housing on opposite sides of a piston;

the piston is connected with a hollow piston rod defining the third pressure chamber of the three pressure chambers;

all the pressure chambers are sealed off with respect to one another by means of at least three sealing devices;

a guide rod is coaxially arranged within and connected with the cylindrical housing;



the guide rod extends into the third pressure chamber which is located inside the hollow piston rod; and

the hollow piston rod is sealed by one of the three sealing devices to a housing floor of the cylindrical housing.

5,009,401

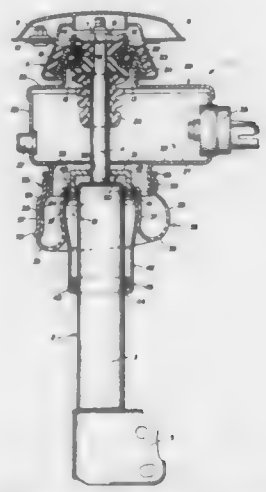
AIR SPRING SUSPENSION SYSTEM WITH DUAL PATH ISOLATION

David A. Weitzenhof, Akron, Ohio, assignor to Bridgestone/-Firestone, Inc., Akron, Ohio

Continuation-in-part of Ser. No. 885,124, Jul. 14, 1986, Pat. No. 4,712,776. This application Dec. 4, 1987, Ser. No. 128,958

Int. Cl.[5] F16F *3/08*

U.S. Cl. 267—64.21 20 Claims



1. An improved suspension system for vehicles including:

(a) a fluid shock absorber strut having a cylinder and a reciprocal piston rod;

(b) a first elastomeric member telescopically mounted on an upper end of the piston rod in a sealing relationship therewith to provide damping when the strut becomes active;

(c) a fluid pressure chamber comprising a rigid annular member sealingly engaged with an outer surface of the first elastomeric member, and a flexible sleeve sealingly connected to and extending between said rigid member and the cylinder for containing a supply of pressurized fluid with said piston rod extending through the pressure chamber;

(d) bracket means for securing an upper end of the fluid pressure chamber to a vehicle support structure;

(e) bearing means located generally radially outwardly from the rigid annular member of the fluid pressure chamber

and located between the bracket means and said rigid annular member for providing movement between the bracket means and fluid pressure chamber; and

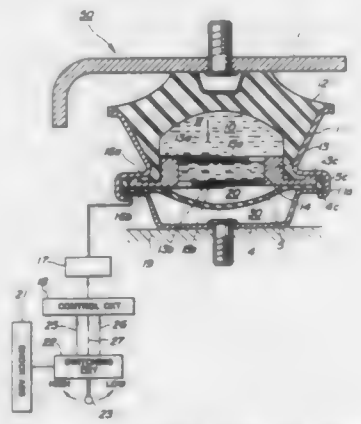
(f) a second elastomeric member located between and secured to the bracket means and to the bearing means to provide the primary load support for the vehicle when in a static state, said second elastomeric member being less elastic deformable than the first elastomeric member.

5,009,402

VEHICLE ENGINE AND SUSPENSION VIBRATION CONTROL ARRANGEMENT

Shigeki Sato, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Jun. 19, 1989, Ser. No. 367,682
Claims priority, application Japan, Jun. 21, 1988, 63-152655
Int. Cl.[5] F16F *5/00*
U.S. Cl. 267—140.1 **5 Claims**



1. A suspension arrangement for use in a vehicle having a chassis and an engine, comprising:

a vehicle suspension comprising a shock absorber including damping control means for selectively varying the damping characteristics of the shock absorber between a plurality of different damping levels to produce a plurality of different suspension hardnesses;

an engine mount which supports the engine on said chassis, said engine mount including a variable-volume main chamber, an orifice passage, an auxiliary chamber which is fluidly connected with the main chamber by said orifice passage, an electrorheopetic fluid filling said main chamber and said auxiliary chamber, and electrodes disposed in said orifice passage such that changes in a voltage impressed upon said electrodes changes the viscosity of the electrorheopetic fluid and the damping characteristics of the mount;

a source of voltage electrically connected with said electrodes for selectively applying one of a plurality of different voltages to said electrodes;

a manually operable switch having a plurality of settings and operatively connected with said damping control means of said shock absorber for switching the damping characteristics of said shock absorber; and

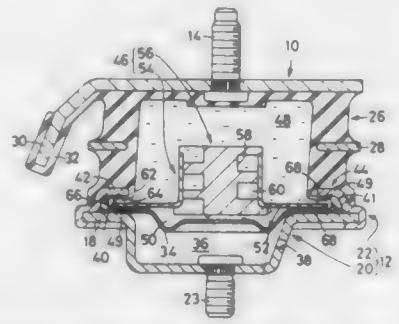
a controller responsive to said switch for controlling the voltage applied to said electrodes by said source of voltage so that when said switch is set to a setting which induces said shock absorber to produce a given damping level, a voltage is applied to said electrodes by said source of voltage such that the damping characteristics of the engine mount are induced to match those produced by the shock absorber for the instant switch setting.

5,009,403

FLUID-FILLED ELASTIC MOUNT

Rentaro Kato, Kasugai, and Tatsuya Suzuki, Inuyama, both of Japan, assignors to Tokai Rubber Industries, Ltd., Aichi, Japan

Filed Jun. 26, 1989, Ser. No. 371,089
Claims priority, application Japan, Jul. 2, 1988, 63-88082
The portion of the term of this patent subsequent to Apr. 23, 2008, has been disclaimed.
Int. Cl.[5] F16M *5/00*
U.S. Cl. 267—140.1 **16 Claims**



1. A fluid-filled elastic mount comprising:

a first and second support member which are spaced apart from each other in a load-receiving direction in which a vibrational load is applied to the elastic mount;

an elastic body for elastically connecting said first and support members;

means for defining a pressure-receiving chamber between said first and second support members, said pressurereceiving chamber being filled with a non-compressible fluid and receiving said vibrational load applied to the elastic mount;

means for defining an equilibrium chamber between said first and second support members, said equilibrium chamber being filled with said non-compressible fluid, at least partially defined by a flexible diaphragm, and having a variable volume;

means for defining a restricted passage for fluid communication between said pressure-receiving chamber and said equilibrium chamber;

a movable member disposed between said pressurereceiving chamber and said equilibrium chamber such that said movable member is movable by a predetermined distance in said loadreceiving direction so as to absorb a fluid-pressure difference between the pressure-receiving chamber and the equilibrium chamber, said movable member being formed of a rigid material and supporting said means for defining said restricted passage;

holding means fixedly supported by said second support member, for holding an outer peripheral portion of said movable member such that the movements of said movable member in said load-receiving direction are limited by butting contacts of said outer peripheral portion of the movable member with a pair of contact surfaces of said holding means; and

a pair of cushioning members secured to said pair of contact surfaces of said holding means, respectively, said outer peripheral portion of said movable member being subjected to shockabsorbing butting contacts with said pair of contact surfaces of said holding means via said pair of cushioning members,

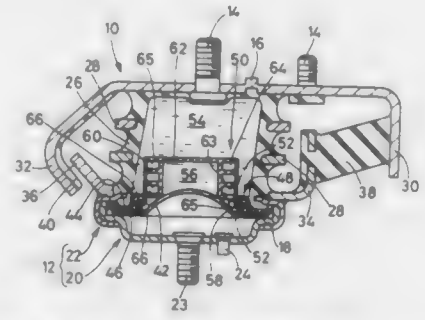
wherein said movable member comprises a first generally cylindrical member having said outer peripheral portion, while said means for defining said restricted passage comprises a second generally cylindrical member having a helical groove formed in an outer circumferential surface thereof, said second cylindrical member being fitted in said first cylindrical member so that said restricted passage is provided by said helical groove closed by an inner circumferential surface of said first cylindrical member.

5,009,404

FLUID-FILLED ELASTIC MOUNT

Nobuhiro Hirazawa, Inuyama, Japan, assignor to Tokai Rubber Industries, Ltd., Aichi, Japan

Filed Jun. 26, 1989, Ser. No. 371,090
Claims priority, application Japan, Jul. 2, 1988, 63-88081[U]
Int. Cl.[5] F16M *5/00*
U.S. Cl. 267—140.1 **9 Claims**



1. A fluid-filled elastic mount comprising:

a first and second support member which are spaced apart from each other in a load-receiving direction in which a vibrational load is applied to the elastic mount;

an elastic body for elastically connecting said first and second support members;

means for defining a pressure-receiving chamber between said first and second support members, said pressure-receiving chamber being filled with a non-compressible fluid and receiving said vibrational load applied to the elastic mount;

means for defining an equilibrium chamber between said first and second support members, said equilibrium chamber being filled with said non-compressible fluid, at least partially defined by a flexible diaphragm, and having a variable volume;

means for defining a restricted passage for fluid communication between said pressure-receiving chamber and said equilibrium chamber;

a movable member disposed between said pressure-receiving chamber and said equilibrium chamber such that said movable member is movable by a predetermined distance in said load-receiving direction so as to absorb a fluid-pressure difference between the pressure-receiving chamber and the equilibrium chamber, said movable member being formed of a rigid material and supporting said means for defining said restricted passage;

holding means fixedly supported by said second support member for holding an outer peripheral portion of said movable member such that the movements of said movable member in said load-receiving direction are limited by butting contacts of said outer peripheral portion of said movable member with said holding means; and

cushioning means disposed between holding means and said outer peripheral portion of said movable member, said outer peripheral portion being subjected to the contacts with said holding means via said cushioning members,

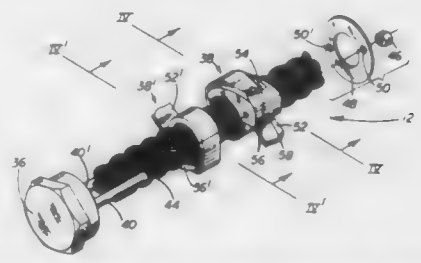
wherein said movable member comprises a first generally cylindrical member having said outer peripheral portion, while said means for defining said restricted passage comprises a second generally cylindrical member having a helical groove formed in an outer circumferential surface thereof, said second cylindrical member being fitted in said first cylindrical member so that said restricted passage is provided by said helical groove closed by an inner circumferential surface of said first cylindrical member.

5,009,405

STRAP WRENCH END ATTACHMENT ASSEMBLY FOR A TWISTED ROPE TORSION BAR

Jack E. Smith, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 19, 1989, Ser. No. 423,930
Int. Cl.[5] B60G *11/18*
U.S. Cl. 267—273 **2 Claims**



1. A strap wrench end attachment assembly in combination with a twisted rope torsion bar, comprising:

an anchor nut connecting to a mounting means for a sprung mass;

means for attaching said anchor nut to said twisted rope torsion bar, including a plurality of tie rods;

a plurality of strap wrenches operated by said tie rods;

said strap wrenches gripping said twisted rope torsion bar, and being adapted to compress said twisted rope torsion bar when torque is applied;

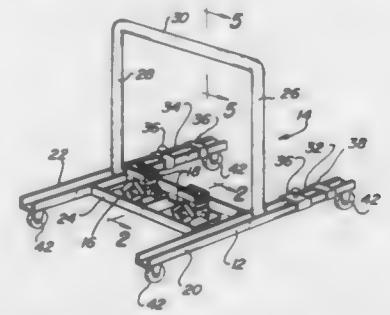
whereby secure and firm compressive engagement is continuously maintained between said end attachment and said twisted rope torsion bar to transmit torque for shock absorption and reduce the stress concentration at the attachment interface.

5,009,406

VEHICLE DOOR REMOVAL APPARATUS

Gregory J. McDermott, 4725 Clippert, Dearborn Heights, Mich. 48125

Filed Jan. 5, 1990, Ser. No. 461,319
Int. Cl.[5] B23Q *3/00*
U.S. Cl. 269—17 **15 Claims**



1. A vehicle door removal and replacement apparatus for allowing removal of a door by a single individual operator comprising:

a base portion, said base portion comprising a pair of channel members connected by a central cross member;

an adjustable support connected to said base portion, said adjustable support for engaging a lower edge of an opened vehicle door for vertically supporting the door;

a vertically extending frame member extending from said base portion, said frame member comprising means to adjust said frame member along said base portion for accommodating different widths of vehicle doors; and

a means to secure the vehicle door to said frame member, such that the means to secure and the adjustable support hold the door in a fixed position whereby the door may be

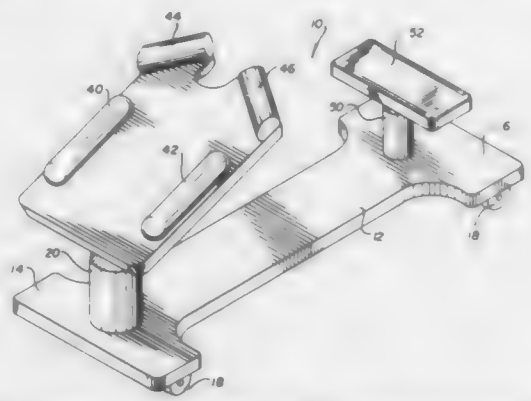
removed from the vehicle, serviced and replaced in substantially the same orientation as when it was removed.

5,009,407

SURGICAL TABLE FOR MICROSCOPIC LUMBAR LAMINECTOMY SURGERY

Robert S. Watanabe, 11645 Wilshire Blvd., Ste. 701, Los Angeles, Calif. 90025

Filed May 15, 1989, Ser. No. 352,058
Int. Cl.[5] A61G *13/00*
U.S. Cl. 269—322 **4 Claims**



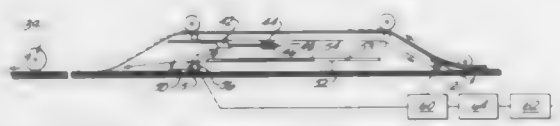
1. A surgical table for microscopic lumbar laminectomy, and spine surgical procedures, comprising: an elongated base having a first end and a second end; a first post mounted at the first end of said base and extending vertically upwardly from a horizontal plane of said base; a table top having a first end and a second end mounted on the upper end of said first post as a cantilever and supported at its first end by said post in an upwardly displaced position with respect to said base, said table top being angularly adjustable about a vertical ax of said first post and angularly displaceable relative to a second post mounted at the other end of said base and extending upwardly from the plane of said base; and a horizontal elongated leg support for the patient mounted on the upper end of said second post, longitudinally displaced from the second end of said table top and extending transversely with respect to the base said leg support being angularly adjustable about a vertical axis of said second post.

5,009,408

CONTINUOUS FEED BOARD INSERTER

Nicholas R. Pulskamp, 1616 Bushnell Ave., South Pasadena, Calif. 91030

Filed Mar. 16, 1989, Ser. No. 324,584
Int. Cl.[5] B65H *5/30*
U.S. Cl. 270—57 **20 Claims**



1. An apparatus for injecting paper boards and like material into a continuous stream of interleaved paper sheets moving in a forward direction along a primary conveyance means, comprising:

means for lifting the paper stream from the primary conveyance means, the means for lifting providing continued forward movement and subsequently allowing the papers in the stream to fall back onto the primary conveyance means;

retaining means extendible into the path of the falling paper sheets to momentarily detain the trailing edges of the sheets from downward movement;

path clearing means for moving the trailing edges of the falling sheets not detained by the restraining means toward the primary conveyance means;

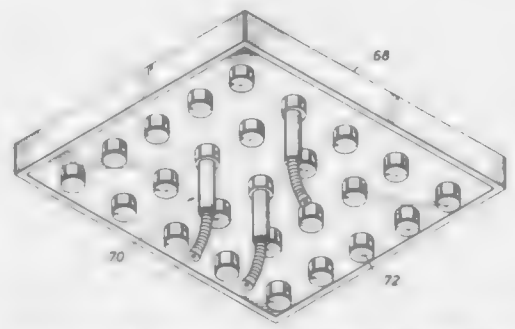
ejection means for feeding a paper board or like material into the space cleared in the falling sheets by the retaining means and the path clearing means and thus into the moving stream of papers.

5,009,409

METHOD AND APPARATUS FOR MANIPULATION OF FABRIC

Nazim S. Nathoo, Houston, Tex., and Fanis Giannopoulos, Scotch Plains, N.J., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 231,923, Aug. 15, 1988, abandoned. This application Nov. 17, 1989, Ser. No. 437,316
Int. Cl.[5] B65H *3/08*
U.S. Cl. 271—90 **1 Claim**



1. An apparatus for separating at least one curvilinear non-planar layer of porous fabric having a known periphery from a curvilinear non-planar stack of porous fabrics, said apparatus comprising:

a plurality of flow orientation adjustment means, each adjustment means having a first end and a second end, said first end having mount means operatively engaged to a flow locator, said second end having an end effector with a fluid opening defined therethrough, said mount means and said end effector flexibly connected to each other in a fluid tight manner by a moveable manually rebendable flexible tube having constant wall thickness, said tube manually rebendable to fixedly aim said end effector fluid opening into anticipated orthogonal contact with said curvilinear non-planar stack of porous fabrics, said fluid opening in fluid communication with a flow opening defined in a bottom surface of said flow locator, said end effector manually aimable to a desired orientation independent of any other end effector,

fluid movement means cable of moving fluid upward through said fluid opening and said flow opening, and

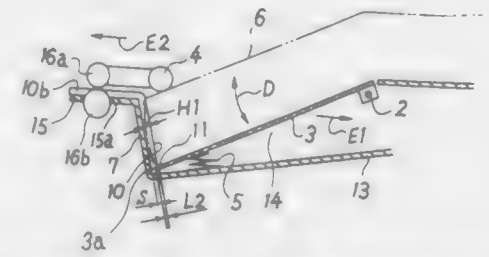
means for moving in unison said plurality of flow orientation adjustment means so as to fluid-couple each of said adjustment means to said at least one non-planar curvilinear layer, and to thereafter move said flow orientation adjustment means and said at least one non-planar curvilinear layer from said stack.

5,009,410

PAPER FEEDING SYSTEM FOR A SHREDDER

Yoshihalu Fujii, Sakurai, and Yukitoshi Fujita, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 371,655, Jun. 20, 1989, abandoned, which is a continuation of Ser. No. 103,214, Oct. 1, 1987, abandoned. This application Aug. 7, 1990, Ser. No. 563,948
Claims priority, application Japan, Oct. 3, 1986, 61-152797[U]; Jan. 13, 1987, 62-3755[U]
Int. Cl.[5] B65H *3/06*
U.S. Cl. 271—127 **8 Claims**



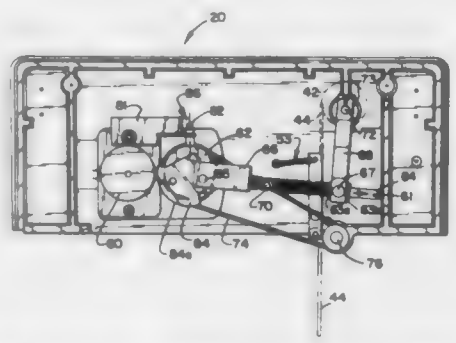
1. A paper feeding system for a paper shredder comprising: a paper rest rotatably provided around a support shaft of a main body for supporting paper to be shredded; a paper feed roller located above said paper rest; a baffle plate provided on said main body at a position juxtapositioned to a leading end face of said paper rest for preventing paper from shifting forward, there being provided a clearance between said end face and said baffle plate to allow said paper rest to rotate freely around said support shaft; paper stop ribs projecting from the surface of said baffle plate, running in the direction of rotation of said paper rest; and notches formed in said leading end of said paper rest with respect to the paper feeding direction of said paper rest corresponding to each of said paper stop ribs on said baffle plate, permitting said ribs to interlock with said notches when said paper rest is rotated.

5,009,411

INPUT HOPPER APPARATUS

Donald J. Manderfeld, Richfield, and Robert A. Sells, Sells, both of Minn., assignors to DataCard Corporation, Minneapolis, Minn.

Filed Aug. 26, 1988, Ser. No. 237,214
Int. Cl.[5] B65H *1/08*
U.S. Cl. 271—129 **2 Claims**



1. An input hopper apparatus used with card members, the apparatus comprising:

(a) stacking means having a front end and a rear end for storing the card members in stacked configuration, the card members each having opposing facing major surfaces and a top, bottom, first, and second side edge, the card members resting on their bottom edges in the stacking means;

(b) biasing means for biasing the card members toward the front end of the stacking means;

(c) card picker means for separation of a lead card member proximate the front end of the stacking means, wherein a roller assembly proximate the first side edge of the lead card provides frictional force to the lead card member, thus propelling the card member from the input hopper, and wherein the roller assembly comprises a drive roller, a pinch roller and an index roller, the drive roller providing frictional shear force to the lead card member;

(d) a motor;

(e) drive linkage means intermounting the motor to the card picker means, wherein the drive linkage includes a drive pulley connecting to an elongated shaft, the elongated shaft being slidably intermounted to an extension arm of the drive linkage; and,

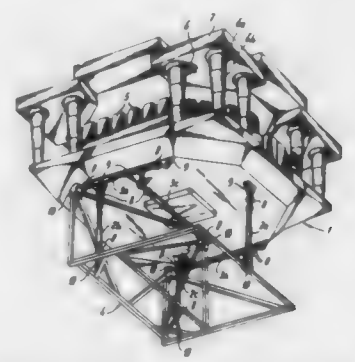
(f) shear force override means comprising a compressed spring positioned about the elongated shaft between the drive pulley and the extension arm, wherein the spring is continually compressed to drive the extension arm during a drive stroke.

5,009,412

EATHQUAKE SIMULATOR FOR A THEME PARK

Joop Roodenburg, Delft, and Hendrik F. Roodenburg, Krimpen A/D Ijssel, both of Netherlands, assignors to Itrec B.V., Rotterdam, Netherlands

Filed Nov. 16, 1989, Ser. No. 438,267
Claims priority, application Netherlands, Nov. 16, 1988, 8802827
Int. Cl.[5] A63G *31/00*
U.S. Cl. 272—2 **9 Claims**



1. An earthquake simulator for a theme park which comprises:

a platform having a plurality of chairs securely attached thereto, said chairs provided with safety straps, and ears affixed to the platform;

an underframe spaced from the platform having ears affixed thereto;

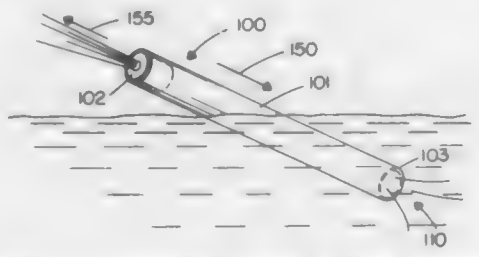
at least three substantially vertical hydraulic cylinders having opposed ends, arranged in a triangle with one end of each cylinder affixed to the ears of the platform and with the opposed end affixed to the ears of the underframe;

means for movably attaching each hydraulic cylinder between an ear on said platform and an ear on said underframe; and

means for providing pressurized oil to said hydraulic cylinders,

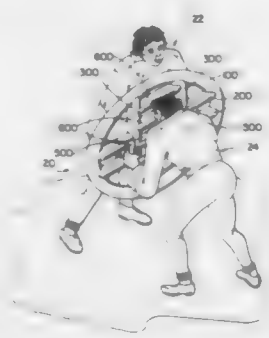
wherein the platform is movable with at least three independently driven degrees of freedom.

5,009,413
AQUATIC AMUSEMENT DEVICE
Tate C. Allen, 314 Cedar St., New Canaan, Conn. 06840
Filed Nov. 29, 1989, Ser. No. 443,711
Int. Cl.[5] E04H *3/16*
U.S. Cl. 272—1 B **20 Claims**



1. Apparatus for producing a spray of water, comprising.
(a) a tube; and
(b) a restriction device combined with said tube, to form an internal restriction at one end of said tube, wherein a spray of water is produced when the unrestricted end of said tube is forcibly thrust into a body of water.

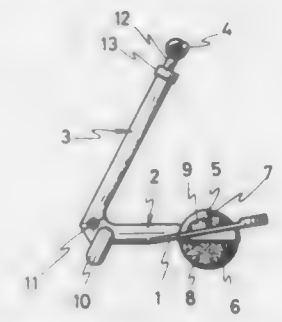
5,009,414
EXERCISE SHIELD DEVICE, DIAGNOSTIC TOOL
Eric Bass, 10 Walton Ave., Doylestown, Pa. 18901
Filed Apr. 19, 1990, Ser. No. 510,922
Int. Cl.[5] A63B *69/34, 69/00*
U.S. Cl. 272—76 **11 Claims**



1. An exercise shield device to be used by at least one person comprising a barrier wall means having a pair of opposed gripping means, said barrier wall means comprising a peripheral member and interconnected spaced-apart members, said interconnected spaced-apart members comprising a first support means, a second support means, and a plurality of spaced-apart body engagement ribs, said first and second support means having ends, said peripheral member being fixedly secured to said ends of said first and said second support means, said gripping means being supported by said first support means, and said plurality of body engagement ribs supported by said second support means, all of which are somewhat cushioned.

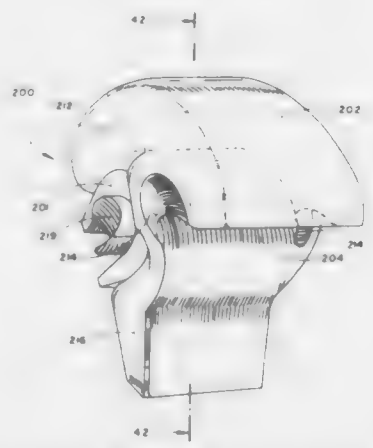
5,009,415
RECREATIONAL GYMNASTIC APPARATUS
Juan M. Perez Blanco, Sevill, Spain, assignor to Internacional de Technicas y diseno, S.A., Sevill, Spain
Filed Sep. 13, 1989, Ser. No. 406,731
Claims priority, application Spain, Sep. 16, 1988, 8802751; Sep. 30, 1988, 8802896; Jan. 5, 1989, 8900023
Int. Cl.[5] A63B *25/08*
U.S. Cl. 272—114 **4 Claims**

1. A recreational gymnastic apparatus of the type in which a user makes successive jumps generated by his body's impulses against and so as to cause the deformation of elastic means which, in their subsequent recovery, cause the combined effect of jumping and advancing of the apparatus, said apparatus, comprising:
a support body having an upright top section and a generally horizontal bottom section joined together to form an acute angle;
a support platform for the user mounted on the bottom section rearwardly of the top section;
the platform having one of an inlay and a housing with a generally hemispherical shape, a mouth facing downward and a window at the rear;



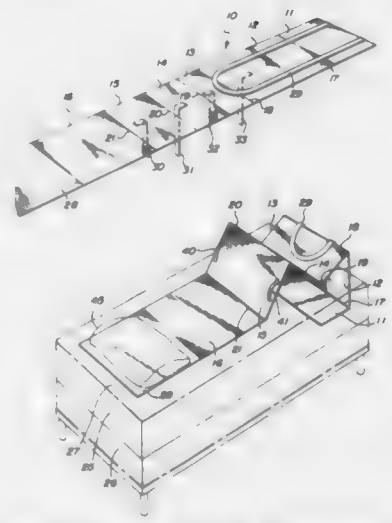
an elastic element including a rubber ball received in said mouth, which fits right in said housing through its mouth;
the window being formed in such a way that the ball rests only on the front half of the hemispherical shape; and
fastening means for the user's feet comprising hook means open on one side for receiving the front of a user's foot and a recess in the platform corresponding to the hook means for receiving the heel of the foot;
handle means for being grouped by the user formed at the top of said top section.

5,009,416
GRIP FACILITATING HANDLE
Scott Caruthers, Glen Burnie, Md., assignor to DAR Products Corporation, Baltimore, Md.
Continuation-in-part of Ser. No. 241,297, Sep. 9, 1988, Pat. No. 4,896,880, which is a continuation-in-part of Ser. No. 94,794, Sep. 14, 1987, Pat. No. 4,813,669. This application Mar. 20, 1989, Ser. No. 325,915
Int. Cl.[5] A63B *21/00*
U.S. Cl. 272—143 **18 Claims**



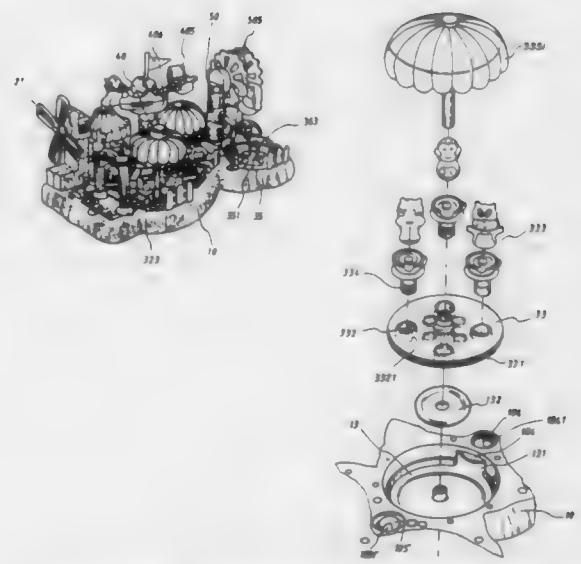
1. In combination with an apparatus having an existing handle, an auxiliary handle for the apparatus and means to detachably attach the auxiliary handle to the existing handle of the apparatus; such that when attached, the auxiliary handle is rigidly secured to the existing handle and is disposed radially outwardly of the existing handle, wherein a forceful grip is not required for the manipulation or control of the apparatus, the auxiliary handle being substantially unitary and rigid and having respective inner and outer walls defining a chamber therebetween, the auxiliary handle having an opening formed therein and communicating with the chamber for providing access for the user's hand, the chamber being closed internally of the auxiliary handle and limiting the degree of insertion of the user's hand through the opening and into the chamber, such that the user's hand is disposed in the chamber between the inner and outer walls of the auxiliary handle, the inner wall having a substantially convex inner surface, and the outer wall having a substantially concave inner surface, such that the palm of the user's hand substantially rests on the convex inner surface of the inner wall, and such that the back of the user's hand substantially confronts the concave inner surface of the wall, so that the user's hand is substantially in a curved natural at rest position rather than being tightly closed, thereby substantially reducing the human effort and energy required to manipulate or control the apparatus, and thereby substantially reducing the fatigue normally associated therewith and the existing handle of the apparatus being disposed radially inwardly of the inner wall of the auxiliary handle and being nested therein, such that the weight concentration of the existing handle is aligned radially with respect to the auxiliary handle and the user's hand therein.

5,009,417
ABDOMINAL EXERCISE DEVICE
Jeff Sarkozi, 1117 N. Avila Pl., Orange, Calif. 92669
Filed Jul. 31, 1990, Ser. No. 561,337
Int. Cl.[5] A63B *23/02*
U.S. Cl. 272—145 **10 Claims**



1. A portable exercise device for strengthening abdominal muscles and the like of a user, for use on a mattress and box-spring comprising: a plurality of sheet elements serially attached along fold liens having a first end and a second end; said second end comprising at least a plurality of sections one of which is sufficiently long enough to support the thigh portion of the leg and a second attached sheet which is sufficiently long enough to support the lower legs; said second end further comprising a foot securement means located and attached within the plurality of sheets designated as the second end, said first end comprising a body sheet serially attached along a fold line to the second end of the device; whereby, the exercise device is adapted for unfolding along the fold lines and assembly with the mattress and box-spring; for use in a sit-up exercise mode; for removal of the device from the mattress and box-spring; for folding up; and, for carrying or storage.

5,009,418
TOY INCLUDING FISHING GAME AND PASSIVE GAME ELEMENTS
Chuang Chuan-Tien, No. 40, Lane 174, Ta Hsin Street, Taipan, Taiwan
Filed May 25, 1989, Ser. No. 356,534
Int. Cl.[5] A63F *9/00*
U.S. Cl. 273—448 **13 Claims**



1. A toy having a participant-interactive game portion for active participation by game participants, and a noninteractive portion for visually entertaining said game participants, said toy including:
a supportive housing having a plurality of cavities;
of least one participant-interactive game pan having a plurality of vertically extending sockets and supported for rotation in a cavity of the plurality of cavities, said at least one participant-interactive game pan including a plurality of game targets positioned in individual sockets of the plurality of vertically extending sockets for access thereto by said game participants;
at least one noninteractive pan having a plurality of vertically extending sockets and supported for rotation in a cavity of the plurality of cavities for visually entertaining said game participants, each of said at least one noninteractive pan including a plurality of passive game pieces positioned for support in individual sockets thereof, a first one of said at least one noninteractive pan being operably connected to a sun gear positioned therebeneath whereby rotation of said first one of said at least one noninteractive pan causes rotation of said sun gear, and each of said plurality of passive game pieces positioned for support in said first one of said at least one noninteractive pan has a cylindrical gear formed on a bottom portion thereof for meshingly engaging with the sun gear such that rotation

of the sun gear causes rotation of each of the plurality of passive game pieces; and

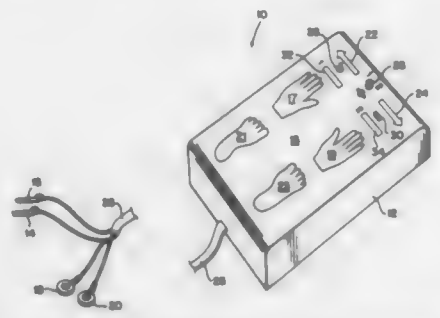
drive means including a motor and gear means for simultaneously rotating said at least one participant-interactive game pan and said at least one noninteractive pan.

5,009,419

MICROCOMPUTER CONTROLLED ROTATION GAME

Willie L. Streeter, 3318 Mount Pleasant St., NW., Washington, D.C. 20010

Filed Sep. 6, 1989, Ser. No. 404,951
Int. Cl.[5] A63F *9/24*
U.S. Cl. 273—454 2 Claims



1. A game device for development of coordination of the hands and feet of a game participant, comprising:

a housing;

indicia representing a pair of hands and a pair of feet located on the surface of said housing;

means for generating a sensorially perceptible time sequence of events in the form of light or sound or a combination of light and sound, said sequence generating means including means for generating a plurality of distinct sensorially perceptible events in a predetermined time sequence and at a predetermined time rate;

means for communicating said sensorially perceptible time sequence of events to a game participant, wherein each event of the sequence is associated with one of the indicia representing hands and feet;

means actuable by a participant for responding to said time sequence of events, said participant actuable means including a plurality of manually operable controls, each associated with a single one of said distinct sensorially perceptible events and actuable by the participant in response to one of said distinct events, said participant actuable means including at least four separate controls wherein each of said controls requires actuation by a different one of said participant's hands and feet in response to a stimulus by the sensorially perceptible event and the indicia representing the hands and feet, whereby coordination is developed in the use of the hands and feet of the participant;

means coupled to said time sequence generating means and to said participant actuable means for determining the correctness of the participant's response, said correctness determining means including means for storing a representation of the generated sequence of events and means for comparing the stored sequences with the participant's response, said comparing means including means for providing an indication of the correctness or incorrectness of the response; and

means responsive to said indication of incorrectness for generating an error signal;

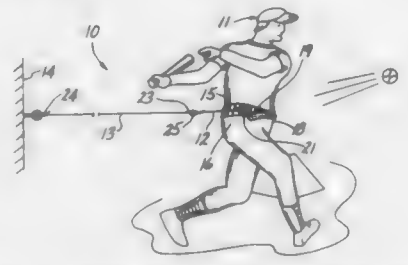
wherein said indicia are mounted so that said pair of hands and pair of feet define a generally circular pattern and wherein said sequence of sensorially perceptible events is selectively actuable so as to generate either a random pattern of said hands and feet indicia or a pattern of said hands and feet indicia which is clockwise or counter clockwise.

5,009,420

BATTING PRACTICE METHOD

Joseph M. Martelli, 4242 W. Oak, Fullerton, Calif. 92633

Filed Dec. 23, 1988, Ser. No. 290,147
Int. Cl.[5] A63B *69/40*
U.S. Cl. 273—26 R 5 Claims



1. A batting practice method wherein a batter is to execute a batting stroke as though a ball were moving along a path from one location in a first direction and with the batter located along said path intermediate said one location and a fixed location, said method comprising:

positively restraining the hips of the batter with a device which is coupled to the batter and to said fixed location against significant movement toward said one location while allowing the hips to pivot as the batter executes the batting stroke.

5,009,421

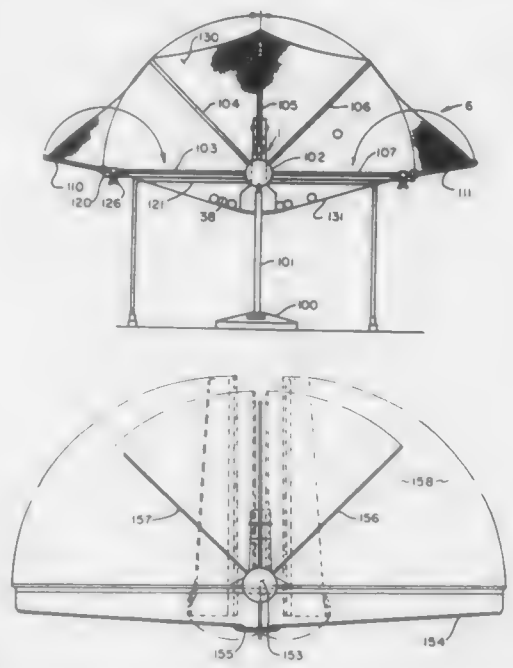
TABLE TENNIS BALL SERVING DEVICE

Gary Gatchel, Rockford, Ill.; Joseph E. Newgarden, 10931 Griffing Blvd., Biscayne Park, Fla. 33161, and Gordon E. Lyun, Carol City, Fla., assignors to Joseph E. Newgarden, Gallatin, Tenn.

Continuation of Ser. No. 143,565, Jan. 13, 1988, Pat. No. 4,917,380, which is a continuation of Ser. No. 719,872, Apr. 3, 1985, Pat. No. 4,844,458. This application Nov. 13, 1989, Ser. No. 425,053
Int. Cl.[5] A63B *39/00*
U.S. Cl. 273—30 5 Claims

1. In a robot serving assembly, the improvement comprising net means, said net means including a central portion having a plurality of pivoting arms attached at one end to said central portion in close proximity to one another and extending radially outwardly from said central portion in different angular positions so as to be foldable into a collapsed positions immediately adjacent one another, said arms also being pivotally movable from collapsed to predetermined extended angular positions relative to said central portion, netting attached to and extending between said arms enabling said netting to be maintained in an open and extended position when said arms are moved to their predetermined extended angular positions, said netting also being attached to a trough device for receiving balls, said trough device being pivotally attached to said central portion and also being folded immediately adjacent said arms when collapsed to facilitate joint storage and carrying of

said folded trough device and collapsed arms, and a robot server operatively mounted relative to the trough device in



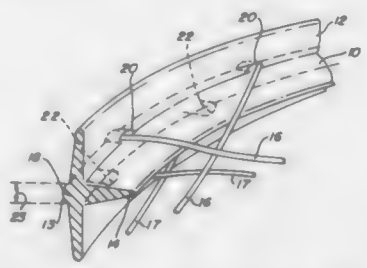
order to feed balls to said robot server when said trough device is in a opened, unfolded and extended position.

5,009,422

SPORTS RACKET

Tsai C. Soong, 1839 Jackson Rd., Penfield, N.Y. 14625

Filed Nov. 20, 1989, Ser. No. 438,862
Int. Cl.[5] A63B *49/02*
U.S. Cl. 273—73 D 9 Claims



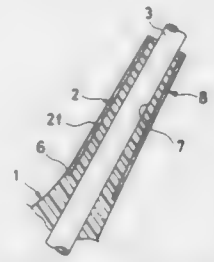
1. In a sports racket having a hand grip joined to a frame supporting a string network extending throughout a ball-hitting region spaced from the grip, the frame having a shank region projecting from the grip and flaring outward in a throat region and surrounding a generally oval ball-hitting region spanned by the string network composed of interconnecting strings, the improvement wherein the frame has a cross section including a first member in the plane of the said string network and a second member arranged approximately perpendicular to the said horizontal member, and whereas the majority of the strings of the string network enter and leave the frame at different levels of elevation away from the said plane of the string network, said strings wrapping said first member for support.

5,009,423

WOOD GOLF CLUB AND ITS PRODUCTION METHOD

Takaharu Okumoto, Chigasaki; Tadashi Hayashida, Hiratsuka; Kazuo Kawada, Hiratsuka, and Tetsuo Hayashi, Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Apr. 9, 1990, Ser. No. 506,214
Claims priority, application Japan, Apr. 10, 1989, 1-40963; Dec. 12, 1989, 1-320447
Int. Cl.[5] A63B *52/10*
U.S. Cl. 273—80.2 11 Claims



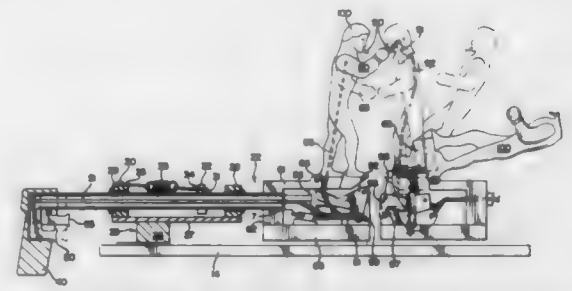
1. A wood golf club consisting essentially of a club head having a ball hitting face and a club shaft connected to said club head through a neck portion, wherein the main body of said club head and said neck portion are molded integrally from a fiber-reinforced resin as a principal material; said neck portion has an outer peripheral surface recessed from the outer surface of said club head main body through a step; a long-fiber-reinforced resin layer consisting of resin-impregnated long fibers wound so as to cross the axial direction of said neck portion is fitted over said outer peripheral surface; and the outer surface of said long-fiber-reinforced resin layer and the outer surface of said club head main body are substantially at the same level.

5,009,424

GAMEBOARD AMUSEMENT DEVICE

Arthur Harth, 4150 W. Barry, Chicago, Ill. 60641; Adrian T. Dowbrowski, R.R. 1 Box 251A, Remington, Ind. 47977, and Bernard O. Williams, 239 E. Northead Ave., Elmhurst, Ill. 60126

Filed Sep. 20, 1989, Ser. No. 409,804
Int. Cl.[5] A63F *9/14, 13/06*
U.S. Cl. 273—85 D 20 Claims



1. A mechanically operated gameboard amusement device, comprising; in combination:

gameboard having a top playing surface with an accessible underside with a center play area defined by at least one opening in said surface;

a plurality of independent hollow cylinders, each having a pedestal end and a trigger end and extending continuously therebetween with each of said cylinders movably mounted under said gameboard;

pivot means for movably pivoting and slide mounting each of said cylinders under said gameboard;

operator means for grasping said trigger end of each of said cylinders;

actuator means for delivering mechanical force from said operator means to said pedestal end;

at least two contact figures pivotably mounted upright upon each of said pedestal ends through said opening, each of said contact figures having a contact figure pivot pedestal removably recessed within a fixed pedestal when said contact figure is positioned upright, and each having a plurality of movable arms cooperatively associated with said actuator means to deliver contact force to an opposing contact figure, said contact figures further defined by having release means for releasing said contact figures from said upright position to a position other than said upright position upon contact from an opposing contact figure, whereby each operator participating in play of said amusement device grasps said operator means and manipulates same in combination with said pivot means and said actuator means to attempt contact between said movable arms and said release means of an opposing contact figure.

5,009,425

GOLF CLUB HEAD

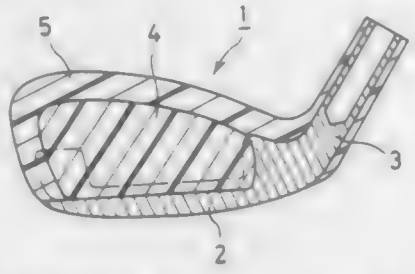
Takaharu Okumoto, Chigasaki; Toshio Ninomiya, Isehara, and Tetsuya Hayashi, Hiratsuka, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1989, Ser. No. 427,539

Claims priority, application Japan, Oct. 27, 1988, 63-269494; Aug. 28, 1989, 1-218519

Int. Cl.[5] A63B *53/04*

U.S. Cl. 273—167 R **4 Claims**



1. A wood-type golf club head comprising an outer shell consisting of a fiber reinforced thermosetting resin having the shape of a wooden golf club, a metal sole provided on a lower surface of said outer shell, and a core placed on an upper surface of said sole so as to be buried in the interior of said outer shell, said core being molded from a mixture of a thermoplastic resin selected from the group consisting of polyamide, polybutylene terephthalate, polypropylene, ABS and hard vinyl chloride and a metal powder having a high specific gravity selected from the group consisting of zinc, lead and tungsten.

5,009,426

GOLF CLUB GUIDE MEANS

Robert W. Cox, 33 Chapel Hill Road, Chapel Hill, Queensland 4069, Australia

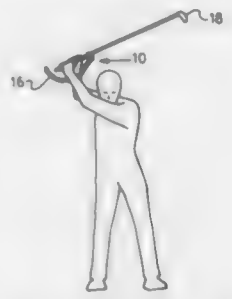
Continuation-in-part of Ser. No. 347,886, Apr. 25, 1989, abandoned. This application Feb. 7, 1990, Ser. No. 480,531

Claims priority, application Australia, Oct. 27, 1986, PH8710 Oct. 27, 1987 [AU] Australia PCT/AU87/00363

Int. Cl.[5] A63B *69/36*

U.S. Cl. 273—186 A **13 Claims**

1. A golf club and guide bar assembly including a golf club and attached thereto a guide bar having mounting means at one end thereof rigidly and releasably attached to the shaft of said golf club, said guide bar having a forearm contact guide portion which slides over and is maintained in contact with the user's trailing forearm throughout a golf stroke and including contact at the backswing position and contact at the ball-striking position to provide an indication of the alignment of the golf club head relative to the user's trailing forearm, said forearm contact guide portion extending from a first position spaced from the golf club handle whereby the user's trailing forearm will contact the forearm contact guide portion at said first position when the golf club is held in the backswing position, to a second position adjacent the upper end of the golf



club handle, and said forearm contact guide portion having a terminal end extending in a direction back toward said golf club handle, whereby the user's trailing forearm will contact the forearm contact guide portion at said second position when the golf club is held in the ball-striking position.

5,009,427

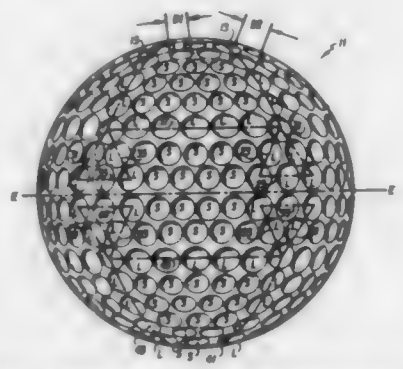
GOLF BALL

Joseph F. Stiefel, Shrewsbury, Mass.; Terence Melvin, Somers, Conn., and R. Dennis Nesbitt, Westfield, Mass., assignors to Spalding & Evenflo Companies, Inc., Tampa, Fla.

Filed Jun. 6, 1990, Ser. No. 534,087

Int. Cl.[5] A63B *37/14*

U.S. Cl. 273—232 **6 Claims**



1. A golf ball having two poles and an equator and having a preselected number of dimples covering the surface of the ball and arranged in a geometrical lattice configuration based upon a modified icosahedral lattice, said lattice and dimples comprising

a first set of five adjacent triangles on either side of the equator of the ball, with one of the vertices of each of said triangles being located at each pole of said ball and the sides opposite said polar vertices being spaced a predetermined distance from the equator of said ball;

a second set of five triangles smaller than said first set of triangles equally spaced about said ball between said first set of triangles and said equator of said ball, each of said second set of triangles having a vertex common with the lower vertices of two adjacent ones of said first plurality of triangles, with the leg opposite said common vertex being parallel to but spaced from said equator;

a first plurality of dimples having a diameter D1 lying along the lattice forming said first and second set of triangles;

a second plurality of dimples having a diameter D2 lying within the lattice of said first set of triangles and between the lattice of said second set of triangles;

diameter D1 being greater than the diameter D2; and a dimple-free line about said equator.

5,009,428

GOLF BALL

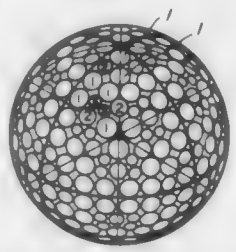
Hisashi Yamagishi; Shinichi Kakiuchi, both of Yokohama, and Seisuke Tomita, Tokorozawa, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 435,207, Nov. 4, 1989. This application May 2, 1990, Ser. No. 517,730

Claims priority, application Japan, Dec. 2, 1988, 63-305561

Int. Cl.[5] A63B *37/12*

U.S. Cl. 273—232 **4 Claims**



1. A golf ball having at least three types of dimples on the surface thereof, wherein

provided that the ball has a phantom spherical surface, three phantom orthogonal great circles are drawn on the spherical surface to define eight spherical regular triangles, and phantom perpendiculars are extended from the three apexes of each said spherical regular triangle to the opposite sides to divide the spherical regular triangle into six equal spherical right triangles, thereby dividing the entire spherical ball surface into 48 equal spherical right triangles,

dimples are arranged on every two adjoining spherical right triangles such that the dimples are in axial symmetry with respect to the common side of the two adjoining spherical right triangles and the dimples do not intersect the great circles.

5,009,429

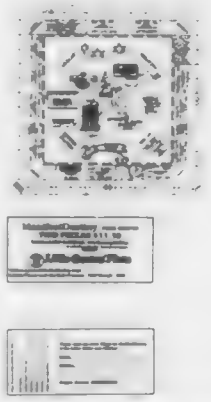
INVESTMENT GAME AND METHOD OF ADVERTISEMENT

David Auxier, 3148 Hewitt Ave., Apt. #155, Silver Spring, Md. 20906

Filed Jul. 5, 1990, Ser. No. 548,364

Int. Cl.[5] A63F *3/00*; **G09F** *23/14*

U.S. Cl. 273—240 **25 Claims**



10. A board game including a playing surface comprised of spaces to which player's tokens are moved according to chance selection during play, comprising:

reward means for players including at least one prize coupon with a redemption value comprised of an item selected from the group of real products and actual services;

said prize coupon including indicia which identifies businesses which have purchased the right to be included as part of the game as a means for advertisement, said purchases being the means for preselecting said prize coupons as integral to the game through normal, nonfantasy business practices involving the transfer of real value;

means for altering chance selected spaces during play of the game to dynamically alter said play; and a plurality of preselected cards including indicia on selected ones of said cards and said prize coupons representing business entities acquired by the players during the course of the game, acquisition of said spaces, said prize coupons, and said cards being achieved through a fantasy barter system by the players.

5,009,430

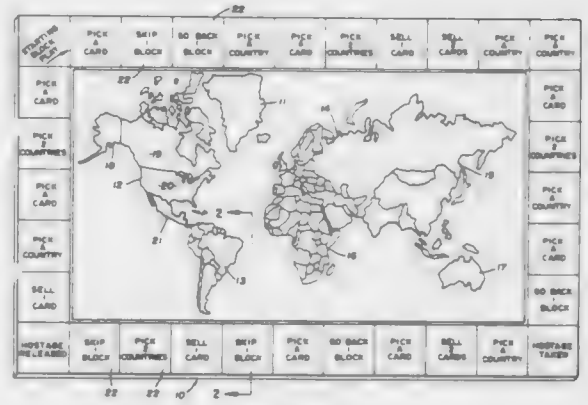
METHOD OF PLAYING A GEOGRAPHICAL MAP GAME

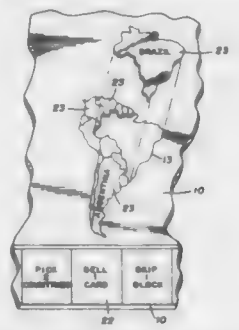
Donald E. Yuhasz, 802 S. Lucius Ave., Youngstown, Ohio 44502

Filed Sep. 10, 1990, Ser. No. 579,948

Int. Cl.[5] A63F *3/04, 9/10*; **G09B** *25/06*

U.S. Cl. 273—255 **4 Claims**

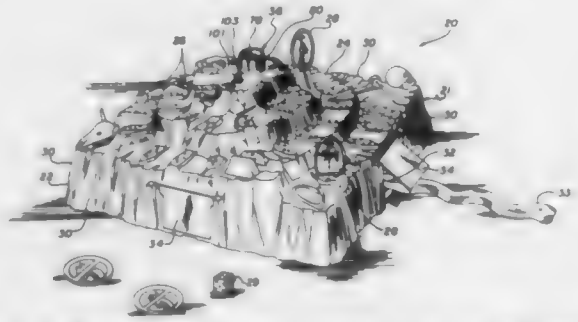




4. The method of playing a board game with at least one die having a number on each of its faces by a plurality of players comprising the following steps: providing a plurality of game board pieces representing countries, providing a plurality of game markers for said players' use, providing a plurality of playing cards bearing titles of military meanings and different point values, providing a game board having a plurality of playing regions representing continents, each of said playing regions further comprising a plurality of countries matching said game board pieces, providing a plurality of blocks on said game board bearing instructions, rolling said die and observing the number rolled, placing a game marker on one of said blocks on said game board as determined by said observed number, starting a timing device which times out when a predetermined length of time has elapsed, randomly selecting and placing a game board piece on said game board on the matching country in said playing region if the instructions on said block so state, picking a playing card from said plurality of playing cards if the instructions on said block so state, determining a total based

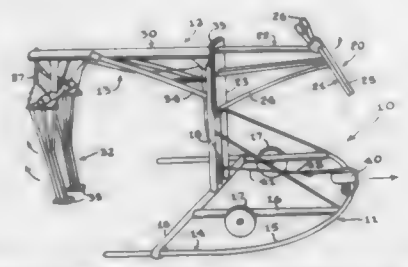
on the number of game board pieces placed correctly on matching countries on said game board before said predetermined length of time has elapsed and the total number of point values of the playing cards picked up and crediting said total to a player.

5,009,431
SURPRISE ACTION GAME
Adolph E. Goldfarb, 1432 S. Eastwind Cir., Westlake Village, Calif. 91361, and Martin I. Goldfarb, Santa Monica, Calif., assignors to Adolph E. Goldfarb, Westlake Village, Calif.
Filed Feb. 9, 1990, Ser. No. 477,637
Int. Cl.[5] A63F 3/00
U.S. Cl. 273—258 16 Claims



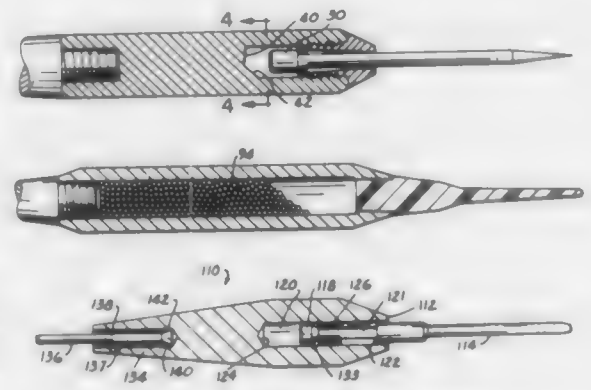
1. A multiple-station surprise action game apparatus comprising:
a base;
a plurality of player stations spaced from each other around the base;
an object-projecting mechanism on the base and capable of projecting an object at any one of said player stations;
means, operatively associated with the object-projecting mechanism, for setting said mechanism on a random or apparently random basis so that the mechanism will project, when the mechanism is activated, an object at only one of said player stations, the identity of said only one player station being concealed from the players;
means, operatively associated with said mechanism, for activating said mechanism to project said object at said only one player station;
indicating means; and
means for activating the indicating means after a random or apparently random period of time.

5,009,432
ROPING PRACTICE APPARATUS
David L. Richard, Rte. 5, Box 3675, Choupique Rd., Sulphur, La. 70663
Filed Oct. 1, 1990, Ser. No. 590,724
Int. Cl.[5] A63B 69/00
U.S. Cl. 273—339 5 Claims



1. A roping practice apparatus for teaching team roping to heelers and headers wherein, the apparatus comprises:
a wheeled support unit having at least one vertically disposed support column;
a rear torso member fixedly secured to said at least one support column; wherein said rear torso member is further provided with at least one pivoted leg element;
a quick release unit comprising a conventional quick release member disposed on said wheeled support unit and further provided with a main cable actuator member which extends from said quick release member to said at least one pivoted leg element.

5,009,433
DART FOR AIMING AT A GAME BOARD
Alexander D. Reid, 2378 Eaton Gate, Lake Orion, Mich. 48035
Filed Dec. 1, 1989, Ser. No. 444,674
Int. Cl.[5] A63B 65/02
U.S. Cl. 273—419 12 Claims

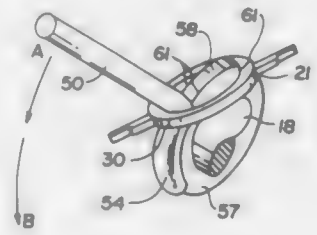


1. A dart for aiming at a game board comprising:
a body portion having a tail portion and spaced therefrom a point portion;
the point portion being movable on a line with the horizontal longitudinal axis of the body portion and on a line with the vertical axis of the body so that the point can stick to the board and avoid obstructions on the board;
wherein the body has a cavity in which the point portion moves as the point engages the target;
a ramp situated at the rear of the cavity causes the point portion to move on a line with the vertical axis of the body when the dart strikes the target; and
the point portion having a needle portion and a head portion wherein the head portion is retained in place by an elastomeric compressible engaging means which is in direct contact with the point portion.

5,009,434
STRETCHABLE OIL SEAL AND METHOD OF INSTALLATION
Stephen E. Nash, Lakeland, and Gerald P. Pichler, Dearborn, both of Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.
Division of Ser. No. 372,208, Jun. 26, 1989, which is a continuation of Ser. No. 149,466, Jan. 28, 1988, abandoned. This application Feb. 20, 1990, Ser. No. 481,280
Int. Cl.[5] F16J 15/00
U.S. Cl. 277—1 3 Claims

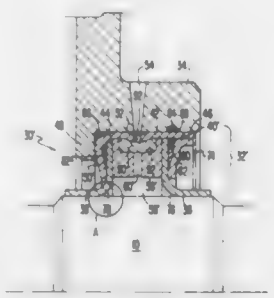
1. A method for applying an annular elastomeric seal over a shaft flange and onto a shaft sealing surface using an installation tool, said flange extending radially outwardly and around a shaft, said tool having an outer peripheral arcuate surface and an inner peripheral grooved portion, said method comprising:
engaging said grooved portion of said tool with said flange for guiding the movement of said tool about said flange;

engaging said seal with said arcuate surface of said tool and with a peripheral portion of said flange; and



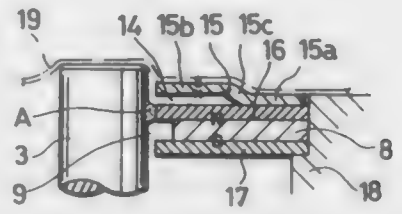
stretching said seal over said flange by pivoting said tool such that said seal is elongated at least about 100% of its unstretched length.

5,009,435
UNITARY SEALING SYSTEM WITH INTERNAL VENTING
Tibor J. Villanyi, Hanahan, S.C., and Kevin W. Westerson, Nashville, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.
Filed Aug. 15, 1989, Ser. No. 393,881
Int. Cl.[5] F16J 15/32
U.S. Cl. 277—23 17 Claims



1. A unitary seal device having a dual seal system for sealing around a rotatable shaft between the rotatable shaft and its cover to separate a region of higher pressure along the shaft on one side of the cover from a region of lower pressure along the shaft on the other side of the cover, said sealing system comprising:
an annular outer housing which forms an outer periphery of said unitary seal device, said annular outer housing having a radial through bore formed therein which divides said annular outer housing into an axially inner portion and an axially outer portion, said through bore operating to permit venting through said unitary seal device in the event of a sealing failure;
first and second seal elements each including a radially extending portion and an axially extending portion, each of said radially extending portions being spaced apart from the other to form a central channel and each of said axially extending portions including a shaft engaging surface adapted to sealingly engage the rotatable shaft around to entire circumference of the rotatable shaft;
filter means disposed in said central channel adjacent said through bore for preventing external contamination of said first and second seal elements; and
securing means for securing said first and second seal elements in position within said annular outer housing.

5,009,436
MAGNETIC FLUID SEAL ASSEMBLY
Mineyo Endo; Kiyoyoshi Takegami, both of Oumihachiman; Noriaki Hishida, Kyoto, and Itsuo Miyaji, Youkaichi, all of Japan, assignors to Nippon Densan Corporation, Kyoto, Japan
Filed Dec. 15, 1988, Ser. No. 284,736
Claims priority, application Japan, Jul. 11, 1988, 63-91670
Int. Cl.[5] F16J 15/40; F16C 33/82
U.S. Cl. 277—80 9 Claims

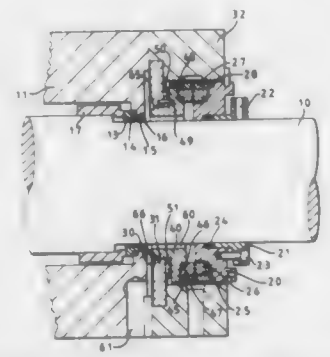


1. A magnetic fluid seal assembly which is arranged between a stationary central shaft and a rotor rotatable about said central shaft, said seal assembly comprising:
an annular sealing clearance formed around said central shaft;
annular magnetizing means mounted on said rotor and surrounding said sealing clearance for forming a magnetic field in said sealing clearance;
ferromagnetic fluid retained in said clearance by said magnetic field; and
an annular cover provided separately from and arranged axially outwardly of said magnetizing means, said cover forming a second annular clearance surrounding said central shaft at a position axially outwardly of said sealing clearance, said cover further forming an annular pocket located between said sealing and second clearances to open toward said central shaft;
wherein said cover and magnetizing means have adjacent, opposed faces, and wherein said cover is permanently magnetized in a manner such that said adjacent, opposed faces of said cover and said magnetizing means are identical in magnetic polarity;
wherein said second clearance is arranged substantially in axial alignment with said sealing clearance, and
wherein said second clearance is normally substantially free of ferromagnetic fluid.

5,009,437
MECHANICAL FACE SEAL INCLUDING TWO DIAPHRAGMS SURROUNDING A GLAND PLATE
Anthony C. Back, Slough, United Kingdom, assignor to John Crane U.K. Limited, United Kingdom
Filed Apr. 25, 1990, Ser. No. 514,182
Claims priority, application United Kingdom, May 3, 1989, 8910106
Int. Cl.[5] F16J 15/36, 15/54
U.S. Cl. 277—88 9 Claims

1. A seal for providing a fluid tight seal between a shaft and housing comprising a first seal face member mounted for rotation with the shaft, a second seal face member mounted on a carrier ring in axially opposed relationship to the first seal face member, a first annular radially extending diaphragm being secured at its outer periphery to a housing and at its inner periphery to the carrier ring, said first diaphragm providing a fluid tight seal between the housing and the carrier ring and being disposed on the high pressure side of the seal face members, a second resilient annular radially extending diaphragm being secured at its outer periphery to the housing, its inner periphery acting against the carrier ring to urge the second seal face member into sealing engagement with the first seal face member, said second diaphragm being disposed on the low pressure side of the first diaphragm, the first and second dia-

phragms being clamped to the housing with a gland plate therebetween, the gland plate extending radially inwardly in



juxtaposed relationship to the first and second diaphragms, the surface of the gland plate adjacent the first diaphragm limiting deflection of the first diaphragm.

5,009,438

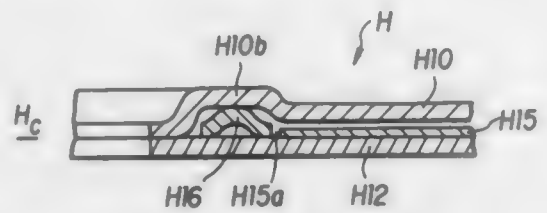
STEEL LAMINATE GASKET WITH ASSOCIATED BEADS

Tsunekazu Udagawa, Ichikawa, Japan, assignor to Ishikawa Gasket Co., Ltd., Tokyo, Japan

Division of Ser. No. 194,376, May 16, 1988. This application Oct. 10, 1989, Ser. No. 419,328

Int. Cl.[5] F16J *15/08*

U.S. Cl. 277—235 B **5 Claims**



1. A steel laminate gasket for an internal combustion engine having at least one hole therein, comprising:

a first plate having at least one first hole corresponding to the hole of the engine, at least one first bead situated around the first hole and having a flat top portion, and a main portion situated outside the first bead and extending substantially throughout the entire area of the engine, said first bead further having height between an outer surface of the main portion and an outer surface of the flat top portion and width between an outwardly extending portion adjacent the first hole and an outwardly extending portion adjacent the main portion, said width being greater than said height thereof,

a second plate situated under the first plate and having at least one second hole surrounding the hole of the engine,

support means in the form of an annular shape and including at least one second bead, said second bead being situated above the second plate and beneath the first bead so that when the gasket is tightened, the second bead of the support means abuts against a part of the flat top portion of the first bead and partly supports the first bead to thereby provide wide, strong and even sealing pressure by means of the first and second beads, and

a third plate having at least one third hole with a diameter which is substantially the same as an outer configuration of the first bead surrounding the first hole, said third plate being situated between the first and second plates, said second bead of the support means being situated between the first bead and the second plate within the third hole of the third plate.

5,009,439

CHUCK FOR TOOLS

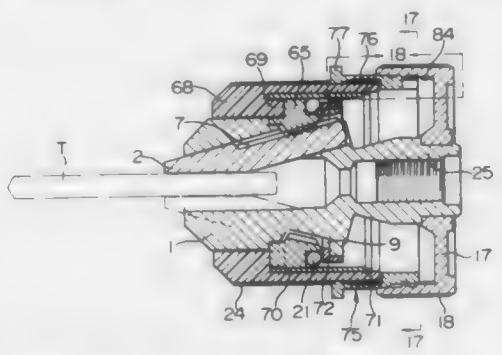
Iwao Sakamaki, Ojiya, Japan, assignor to Sakamaki Mfg. Co., Ltd., Ojiya, Japan

Filed Jul. 8, 1988, Ser. No. 216,754

Claims priority, application Japan, Jul. 21, 1987, 62-181563; Feb. 29, 1988, 63-47315

Int. Cl.[5] B23B *31/12*

U.S. Cl. 279—62 **2 Claims**



1. A chuck for tools comprising,

a main body with an axially extending hole through said main body defining a longitudinal axis of the chuck,

a plurality of oblique slots in the main body converging on said longitudinal axis to act as guides for jaw members,

a plurality of jaws slidably received in said oblique slots, each of said jaws provided with an outer surface and a male thread portion,

a rotary member having a female thread portion in meshing engagement with each of said male thread portions of said jaws and rotatably mounted on said main body,

a first grip integrally connected to said main body,

ball bearing mass interposed between said rotary member and said main body for minimizing friction between the two,

a second grip rotatably coupled to the rotary member for applying a rotative torque to the rotary member,

a buffer stop cylinder longitudinally movable relative to said first and second grips between first and second position,

releasable locking means on the stop cylinder and said first and second grips for locking the first and second grips together when said buffer stop cylinder is positioned in said first position and releasing the first and second grips from each other when said buffer stop cylinder is positioned in said second position.

5,009,440

TOOL CHUCK FOR TOOL BITS

Erwin Manschitz, Germering, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft

Filed May 24, 1988, Ser. No. 198,046

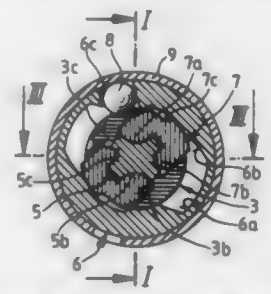
Claims priority, application Fed. Rep. of Germany, May 25, 1987, 3717614

Int. Cl.[5] B23B *31/10*

U.S. Cl. 279—71 **7 Claims**

1. A tool chuck for holding a tool with an axially extending shank end having at least one axially extending groove thereon, said at least one axially extending groove having closed opposite ends, said tool chuck comprising an axially extending guide tube having an inside surface and an outside surface, an adapter sleeve enclosing at least an axially extending part of said guide tube and being rotatable relative to said guide tube about the axis thereof, and locking elements and entrainment strips mounted for rotation with the guide tube and for selective displacement radially inwardly by said adapter sleeve into at least one groove of the tool, wherein the improvement comprises a holding segment with one said locking element and one said entrainment strip thereon spaced apart in the circumferential direction of said adapter sleeve and

the mounting of said holding segment with said one locking element and said one entrainment strip comprising a through opening extending between the inside surface and the outside surface of said guide tube, said holding segment being radially



displaceable through said through opening by said adapter sleeve and said adapter sleeve arranged and adapted for selective radially inward displacement of said locking element or both of said locking element and entrainment strip of said holding segment.

5,009,441

SKI BOARD BINDING

Lonnie P. Toft, 345 Arcade Dr., Ventura, Calif. 93003

Filed May 21, 1990, Ser. No. 525,615

Int. Cl.[5] A63C *9/083, 5/03;* **B63B** *35/79, 35/81*

U.S. Cl. 280—14.2 **8 Claims**



1. A releasable binding for mounting a foot of a human being onto a structure designed for movement on the surface of the earth, said binding comprising:

a binding assembly composed of a heel strap assembly and an instep strap assembly, said heel strap assembly adapted to be located across the heel of a human foot, said instep strap assembly having a first end and a second end and adapted to be located across the instep of the human foot, said heel strap assembly including an elastic cord, said elastic cord having a first terminal fixedly connected to said first end and a free end adapted to be manually grasped and longitudinally movable from an at-rest position to a stretched position, said elastic cord being mounted in a tube of fixed cross-section and fixedly secured to said second end of said instep strap assembly, with said free end in said at-rest position said elastic cord being of a thickness tightly frictionally engaging with said tube effectively securing together said tube and said elastic cord, with said free end in said stretched position the thickness of said elastic cord is decreased which permits longitudinal sliding movement between said elastic cord and said tube so that said heel strap assembly is to be snugly secured against the heel of the human foot, upon manual release of said free end said heel strap assembly maintains said binding against the heel.

5,009,442

TRANSPORTATION OF HOSPITAL PATIENTS

Karl D. Schneider, 608 Hickory Clr., Canonsburg, Pa. 15317

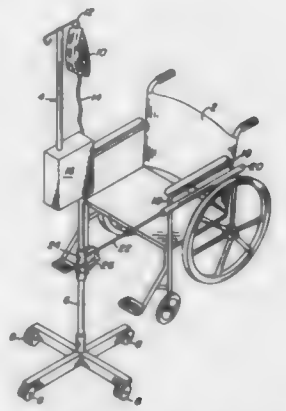
Continuation-in-part of Ser. No. 223,266, Jul. 12, 1988, Pat. No. 4,840,391, which is a continuation-in-part of Ser. No. 40,989, Apr. 20, 1987, abandoned. This application Jun. 16, 1989, Ser. No. 367,379

Claims priority, application Japan, Nov. 4, 1987, 277,492/87

The portion of the term of this patent subsequent to Jun. 20, 2006, has been disclaimed.

Int. Cl.[5] A47C *7/62*

U.S. Cl. 280—304.1 **9 Claims**



7. Apparatus for joining a wheelchair to an IV unit of the kind having an upstanding pole or standard mounted for free-wheeling movement, said apparatus comprising an elongated means having at a first end thereof a means for latchingly engaging said pole or standard and extending along a length of pole for guided longitudinal movement by the pole said elongated means including two arcuate segments which are connected by a hinge and releasably held in a tubular form by latch means, means supported by one of said arcuate segments for squashing against said pole thereby passing the opposite side of said pole against the other arcuate segments to restrain said pole against rotary movement with respect to said (hemicylindrical pieces) arcuate segments.

5,009,443

BALL-TIP STUD AND ALIGNMENT TOOL AND METHOD OF USE

George F. Howatt, Chapin Rd., Holden, Mass. 01520

Filed Dec. 28, 1989, Ser. No. 458,221

Int. Cl.[5] B60D *1/36;* **A01B** *51/00*

U.S. Cl. 280—477 **16 Claims**

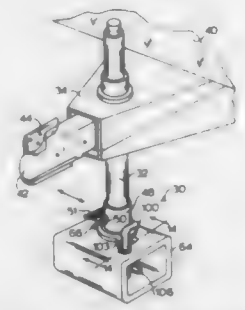


1. An assembly to facilitate coupling of an implement to a hitch assembly tractor draw bar of a multi-point hitch, said assembly comprising:

a stud forming a part of said multi-point hitch and having an elongate cylindrical body and a spherical tip member

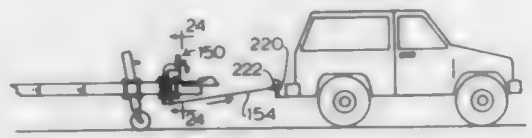
attached at a first end thereof, said stud being mechanically coupled at a second end thereof to said implement;
an alignment tool having an elongate cylindrical body and a cavity extending longitudinally through a portion of said tool body at a first end thereof, said cavity having a shape adapted to received said spherical tip member so as to releasably and pivotally couple said stud and said alignment tool.

5,009,444
SLIDEABLE JACK STAND
Thomas M. Williams, Jr., 2310 Old Oxford Hwy., Durham, N.C. 27704
Filed Sep. 21, 1989, Ser. No. 410,370
Int. Cl.[5] B60D *1/00*
U.S. Cl. 280—477 **8 Claims**



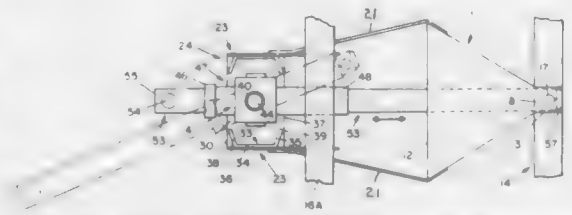
1. A trailer hitch alignment device comprising:
(a) a ground support structure providing an elevated flat horizontal wall;
(b) a socket member opening upwardly of said wall and having a base portion dimensioned to receive a lower end of a conventional trailer jack shaft;
(c) means for supporting said socket member on said wall and providing a substantially low friction sliding support; and
(d) means for guiding and limiting travel of said socket member on said wall to permit limited lateral and longitudinal sliding movement of said jack shaft when mounted in said socket member comprising:
(i) an elongated guide slot formed in said wall and providing a vertical passage therethrough bounded by a continuous flat, vertical edge, said edge being shaped so as to make a middle of the passage relatively narrow and ends of the passage relatively wide; and
(ii) a guide member secured to said socket member base portion and passing through said low friction sliding support and said passage, said guide member being operative by contacting said edge to permit both limited lateral and longitudinal sliding of said socket member and said jack shaft mounted therein on said wall as required to facilitate trailer hitch alignment.

5,009,445
TRAILER HITCH CABLE PULLER
Thomas M. Williams, Jr., 2310 Old Oxford Hwy., Durham, N.C. 27704
Filed Oct. 3, 1989, Ser. No. 416,720
Int. Cl.[5] B60D *1/38*
U.S. Cl. 280—477 **3 Claims**



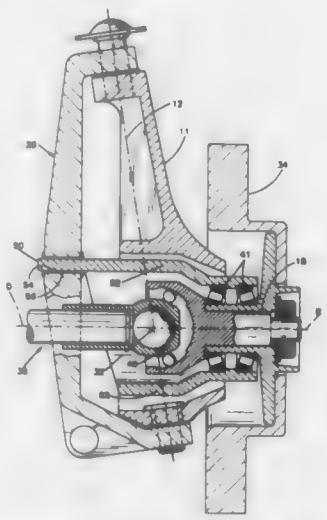
1. A clamp-on trailer alignment device mountable on a tongue of a trailer having a ball socket, the tongue being formed of a hollow channel of rectangular cross section, comprising:
(a) a winding cable having an outer end fitted with means for engaging a ball mount on a towing vehicle;
(b) a winching mechanism comprising:
(i) a base plate secured to a top surface of the trailer tongue by fasteners positioned on opposite sides of the tongue and secured to a clamp plate on a bottom surface of the tongue and including a side portion extending outwardly from one side of said tongue and having an aperture;
(ii) a drum assembly including a cable drum fixedly mounted on one driven end of a shaft and supported on and positioned above said base plate side portion, said shaft being rotatably supported on and above said base plate and having an opposite drive end extending outwardly from an opposite side of said tongue with a handle mounted on said opposite shaft drive end;
(c) a pulley assembly including a vertical tubular housing secured at an upper end to a bottom surface of said base plate side portion below said aperture and extending downwardly from said base plate to a lower end and a cable pulley mounted in said lower end of said tubular housing; and
(d) said cable extending from said drum through said aperture downwardly through a cavity formed by said tubular housing, over said pulley and from the pulley to the ball mount enabling a run of cable between said pulley and the ball mount to extend at an upward angle to thereby give a lifting effect to the front of said tongue.

5,009,446
SELF ALIGNING COUPLING APPARATUS
Darrel B. Davis, 170 Macleay Rd., Sequim, Wash. 98382
Continuation of Ser. No. 318,764, Mar. 3, 1989, Pat. No. 4,893,829. This application Jan. 12, 1990, Ser. No. 464,176
Int. Cl.[5] B60D *1/00*
U.S. Cl. 280—479.2 **3 Claims**



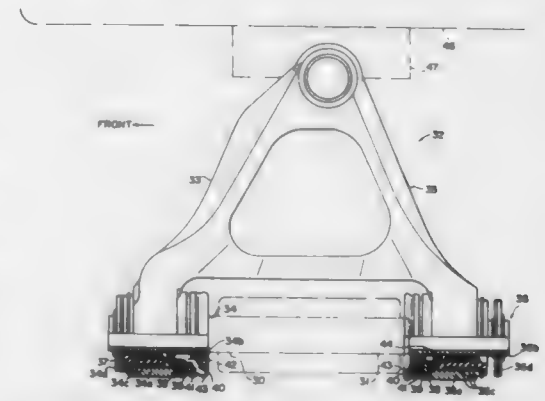
1. A self-aligning coupling apparatus for mounting on a vehicle comprising:
a first housing arranged to be secured to the underside of the vehicle,
a dual gimbal housing supported in said first housing for rotatable adjustment in horizontal and vertical directions,
an elongated coupler member having front and rearward ends,
said coupler member being slidably supported in said dual gimbal housing for rotatable and longitudinal adjustable movement with said gimbal housing for connection to a randomly located mating coupler member,
a funnel-shaped guide arranged to be secured to the underside of the vehicle,
said funnel-shaped guide having a large open front end facing said first housing and a smaller rearward end,
said funnel-shaped guide being arranged to slidably receive the rearward end of said coupler member in its rotatably adjusted position and slidably guide the rearward end into the smaller end of the funnel-shaped guide for aligning the elongated coupler member longitudinally with the vehicle,
said first housing including guide means therein that direct said coupler member slidably into said open front end of said funnel-shaped guide,
and latch means associated with the smaller end of said funnel-shaped guide for securing the elongated coupler member in a coupled and aligned position.

5,009,447
ZERO CAMBER STEERING SUSPENSION
Dewitt Gabel, 11018 Blodgett Creek Trail, Strongsville, Ohio 44136
Filed Jul. 5, 1989, Ser. No. 375,711
Int. Cl.[5] B62D *17/00*
U.S. Cl. 280—661 **6 Claims**



1. In a dirigible wheel axle assembly for supporting a wheel of a vehicle, said wheel, when supported on said axle assembly, having a rotation axis, a caster angle, and a camber angle, said axle assembly comprising:
(a) a suspension spindle rotatably mounted to rotate about an inclined but substantially vertical steering axis;
(b) an axle housing attached to said spindle;
(c) a stub axle for supporting said wheel for rotation about said rotation axis of said wheel;
(d) means for rotatably securing said stub axle to said axle housing;
and wherein said axle assembly may also include drive means including a universal joint, said drive means comprising a connection to a drive shaft that is connected to a source of motive power to rotate said shaft about an axis thereof and thereby to rotate said wheel;
wherein the improvement comprises of attaching said axle housing to said spindle by means that allow rotation of said axle housing on a substantially horizontal camber pivot axis that intersects at substantially the same point the said steering axis and the said rotation axis of said wheel and, when a drive means is present, also said axis of said drive shaft;
and wherein the improvement further comprises providing control means to restrict and control the rotation of said axle housing on said camber pivot axis, thereby providing control of said camber angle independent of any steering axis inclination and caster angle.

5,009,448
VEHICLE SUSPENSION SYSTEM
Takao Kijima; Takeshi Edahiro; Toshihide Koyama, and Haruyuki Tanigachi, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Apr. 27, 1989, Ser. No. 343,820
Claims priority, application Japan, Apr. 30, 1988, 63-108765
Int. Cl.[5] B60G *7/02*
U.S. Cl. 280—673 **21 Claims**

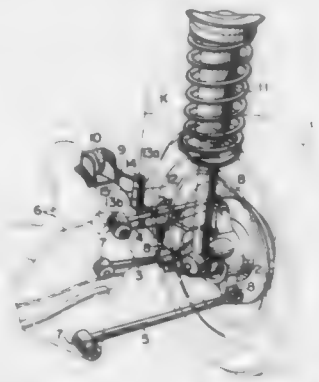


1. A suspension system for a vehicle comprising a suspension arm having an outer end portion which is connected to a wheel support for rotatably supporting a wheel and an inner end portion which is bifurcated and comprises first and second branch arms spaced from each other in the longitudinal direction of the vehicle body, a pair of slide members which respectively support the inner end portions of the first and second branch arms so that the inner end portions are slidable relative to the vehicle body in the longitudinal direction of the same, a coil spring which is provided for at least one of the first and second branch arms and urges forward the suspension arm so that said inner end portions of the first and second branch arms can slide rearward in opposition to the coil spring in response to rearward loading input through the wheel which acts on the inner end portion of the suspension arm, and a stopper means which defines the forewardmost position of the suspension arm which is urged forward by said coil spring, wherein said coil spring applies a forward bias force toward and against said stopper, thereby improving the driving comfort when a vehicle passes a gap and rearward loading acts on the inner end of the suspension arm.

5,009,449
VEHICLE REAR SUSPENSION SYSTEM
Takeshi Edahiro, Higashihiroshima, and Seita Kanai, Hiroshima, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Jul. 24, 1989, Ser. No. 383,656
Claims priority, application Japan, Jul. 27, 1988, 63-187492; Jul. 27, 1988, 63-187493; Jul. 29, 1988, 63-188362
Int. Cl.[5] B60G *3/00*
U.S. Cl. 280—690 **17 Claims**

1. A vehicle rear suspension system comprising:
wheel carrying means for rotatably carrying a wheel of a vehicle,
a plurality of lateral member means, each of said lateral member means extending in a transverse direction of the vehicle and connected to a vehicle body at its inner end and to the wheel carrying means at its outer end, and
longitudinal member means extending in a longitudinal direction and connected to the vehicle body at its front end for pivotal movement and to the wheel carrying means at its rear end through joint means, the joint means being located in one of first and second positions, said first position being located on a substantially straight line extending through both a front connecting point between

the longitudinal member means and the vehicle body and a wheel center, said second position being located outward of the substantially straight line in the transverse



direction, said joint means allowing a relative angular displacement between the wheel carrying means and the longitudinal member means in a substantially horizontal plane.

5,009,450

VIBRATION-ABSORBER SENSOR FOR A SEMI-ACTIVELY CONTROLLED CHASIS WITH A RELATIVE-VELOCITY SENSOR AND WITH ELECTRONICS FOR PROCESSING THEIR OUTPUTS

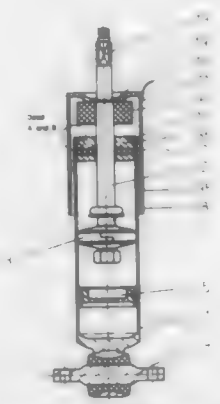
Gerhard Herberg, Menden; Hans-Jürgen Hoffmann, Wuppertal; Ludger Geesmann, Dortmund; Zhen Huang, Wuppertal, and Reinhard Höecher, Salzkotten, all of Fed. Rep. of Germany, assignors to August Bilstein GmbH & Co. KG, Ennepetal, Fed. Rep. of Germany

Filed Mar. 5, 1990, Ser. No. 488,703

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1989, 3909190

Int. Cl.[5] B60G *11/26*

U.S. Cl. 280—707 6 Claims



1. A vibration-absorber sensor for measuring relative velocity between a motor vehicle body and axle, comprising: a wheel suspension; a variable or controllable hydraulic vibration absorber having an absorber cylinder at one end connected to said wheel suspension, said hydraulic vibration absorber having a moving piston rod at another end connected to said body and traveling in and out of said cylinder; a stationary housing open at one end and matching the shape of said cylinder and forced over said cylinder, said housing secured to said piston rod; an absorption valve and a processing circuit connected to said valve for varying or controlling said valve; said housing being made of anti-magnetic material and accommodating a sensor winding with leads extending outward; a magnet positioned at an untensioned end of said cylinder and on the surface of a cap of said cylinder; velocities of said piston including a distance-dependent and direction-dependent voltage signal in said sensor winding; said processing circuit supplying a signal for varying or controlling the absorption valve in accordance with the particular relative velocity of the piston.

5,009,451

SHOCK ABSORBER FOR USE IN A VEHICLE

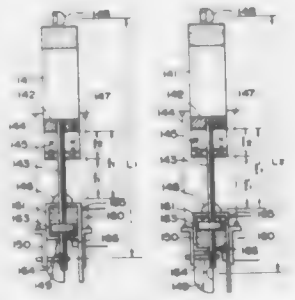
Yasuyuki Hayashi, Fukuroi, and Shigenobu Abe, Hamamatsu, both of Japan, assignors to Kabushiki Kaisha Showa Seisakusho, Tokyo, Japan

Filed Jul. 7, 1989, Ser. No. 376,879

Claims priority, application Japan, Jul. 19, 1988, 63-178131; Aug. 19, 1988, 63-108291[U]; Sep. 14, 1988, 63-119876[U]

Int. Cl.[5] B60G *11/14*

U.S. Cl. 280—724 3 Claims



1. A hydraulic shock absorber for a vehicle comprising:
a damper cylinder;
a piston slidably fitted in said damper cylinder, said piston having a compression stroke and a rebound stroke;
a piston rod extending from said piston through an end portion of said cylinder;
a first mounting member for mounting a cylinder end of said shock absorber to one of a body portion and an axle of said vehicle;
a second mounting member for mounting an end of said shock absorber opposite said cylinder end to the other of said body portion and axle of said vehicle;
a first spring bearing secured to said damper cylinder;
a second spring bearing secured to said piston rod;
a suspension spring interposed between said first and second spring bearings; and,
height adjusting means for changing the spacing between said first and second mounting means by changing the compression stroke of said piston with neither the rebound stroke of said piston nor the spacing between said first and second spring bearings changing.

5,009,452

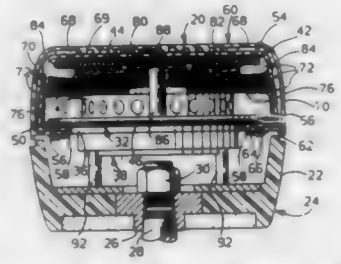
OCCUPANT RESTRAINT SYSTEM

Gregory A. Miller, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 19, 1990, Ser. No. 511,363

Int. Cl.[5] B60R *21/22*

U.S. Cl. 280—730 12 Claims



1. An occupant restraint system comprising, support means,

an occupant restraint cushion mounted to the support means and including an upper wall portion, a lower wall portion, and spaced side wall portions intermediate the upper and lower wall portions, each side wall portion having a number of folds, planar reaction means mounted on the support means and located between the upper wall portion and the folds of the side wall portions immediately adjacent thereto, and means releasably securing such immediately adjacent folds to the reaction means during initial inflation of the cushion from a source of pressure fluid to restrict such initial deployment laterally of the occupant by unfolding of the folds of the side wall portions, other than the secured folds, while maintaining the upper wall portion generally stationary.

5,009,453

WEBBING GUIDING STRUCTURE FOR AUTOMOBILE SEAT BELT SYSTEM

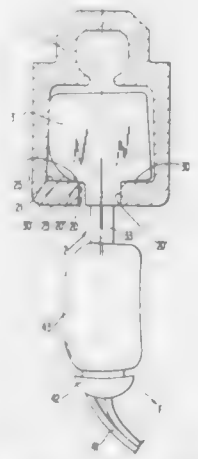
Katsuyasu Ono, Chigasaki, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Japan

Continuation-in-part of Ser. No. 196,065, May 17, 1988, Pat. No. 4,871,191. This application Jul. 24, 1989, Ser. No. 383,657

Claims priority, application Japan, May 20, 1987, 62-75483[U]

Int. Cl.[5] B60R *22/06*

U.S. Cl. 280—804 7 Claims



4. In a webbing guiding structure for an automobile seat belt system, said structure including a slide rail, a movable runner displaceable along the slide rail and a webbing fastened to the movable runner, the improvement wherein the slide rail defines a slide surface for allowing the movable runner to run on the slide surface, the movable runner is provided with a slidable shoe having a contact surface which is brought into contact with the slide surface of the slide rail, the slidable shoe is received within the slide rail, the movable runner extends outwardly at a part thereof through a slot formed in the rail, the webbing is connected to the outwardly-extending part of the movable runner, and the slide surface of the slide rail and the associated contact surface of the slidable shoe are formed in such a way that when the movable runner is brought into contact with one of the edges of the slot upon receipt of a pulling force from the webbing the interval between the slide surface extending from said one edge of the slot on the same side as the side, on which the pulling force has been applied from the webbing, and the associated contact surface are in contact with each other at said one edge but the interval therebetween increases as the distance from the edge becomes greater.

5,009,454

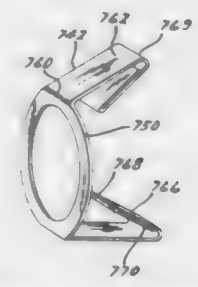
SWIVELABLE QUICK CONNECTOR ASSEMBLY

Donald D. Bartholomew, Marine City, Mich., assignor to Proprietary Technology, Inc., Southfield, Mich.

Division of Ser. No. 99,654, Sep. 21, 1987, abandoned, which is a continuation of Ser. No. 776,642, Sep. 16, 1985, abandoned, and a continuation-in-part of Ser. No. 360,201, Mar. 22, 1982, Pat. No. 4,601,497, which is a continuation-in-part of Ser. No. 201,711, Oct. 29, 1980, Pat. No. 4,423,892. This application Jan. 12, 1989, Ser. No. 296,232

Int. Cl.[5] F16L *35/00*

U.S. Cl. 285—24 7 Claims



1. A retainer element for securing a conduit in a connector having at least one window for enabling visual inspection of the conduit through the window, the retainer element comprising:
a collar means, said collar means having an aperture therethrough for passage of the conduit;
at least one deflectable leg means projecting from said collar means, said leg means being bent to form at least one integral means for securing the conduit in said retainer element and in the connector;
said leg means having a first portion projecting from said collar means, a first bend and first retaining portion for securing said retainer element in the connector, and a second bend and second retaining portion for securing the conduit in said retainer element; and
means on said collar means for rotationally orientating said leg means with respect to the window.

5,009,455

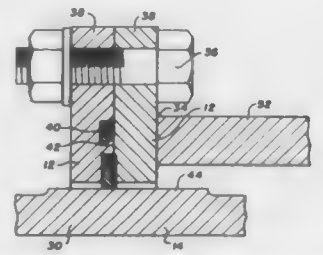
SEAL

Bruce W. Irvine, 856 Andover Crescent, West Vancouver, British Columbia, Canada V7S 1Y5 , and Bruce G. R. Irvine, 2908 Dickerson Place, Victoria, British Columbia, Canada V9B 2G7

Filed Dec. 5, 1989, Ser. No. 446,507

Int. Cl.[5] F16L *17/00*

U.S. Cl. 285—106 9 Claims



1. A sealed joint between two relatively movable surfaces comprising:
a recess in a first surface;
a sealing member received in the recess with a clearance, the sealing member having a modulus of elasticity such that it does not substantially deform under a predetermined external pressure;
the sealing member extending to contact the second surface;

a sealing ring received in the recess to provide an additional seal for the joint;

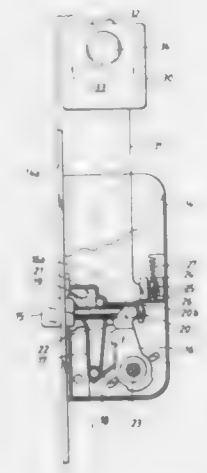
whereby pressure applied to one side of the joint can act on that side of the sealing member remote from the second surface to force the sealing member against the second surface, the end of the sealing member being of reduced area where it contacts the second surface to reduce the area of contact with the second surface.

5,009,456

DOOR LOCK APPARATUS

Berth Eck, Bollebygd, Sweden, assignor to Lasinvast Svenska AB, Sweden

Filed Jan. 30, 1990, Ser. No. 472,202
Claims priority, application Sweden, Feb. 10, 1989, 8900450
Int. Cl.[5] E05C *1/16*
U.S. Cl. 292—173 **13 Claims**



1. A door lock apparatus comprising,

a latch bolt,

first spring means for biasing said latch bolt into a latching position,

a door handle driver for retracting said latch bolt from said latching position to a retracted position,

catch means displaceable between a catch position for retaining said latch bolt in said retracted position and an inoperable position,

second spring means for biasing said catch means into said catch position,

an actuator for displacing said catch means from said catch position to said inoperable position,

an alarm detector remotely placed from said lock apparatus for detecting a state of alarm,

a signal transmitter connected to said alarm detector and adapted to transmit a signal when said alarm detector detects said state of alarm, and

a signal receiver connected to said actuator and adapted to receive said signal, whereby upon receipt of said signal by said signal receiver said actuator displaces said catch means from said catch position to said inoperable position.

5,009,457

LOAD BEARING COVER AND RACK FOR A PICK-UP TRUCK

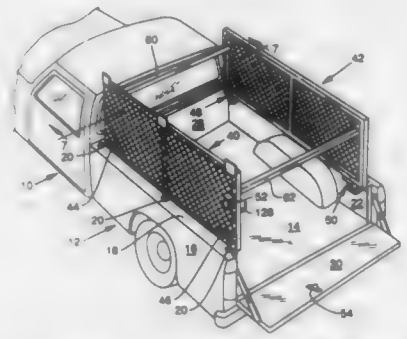
David E. Hall, 2085 S. Sylvan, West Linn, Oreg. 97068

Filed Jan. 16, 1990, Ser. No. 465,762
Int. Cl.[5] B60P *3/00, 7/00*
U.S. Cl. 296—3 **10 Claims**

1. A cover for a pick-up truck bed, said cover convertible into a rack, said pick-up truck bed having a fixed floor, a movable tailgate, a pair of fixed spaced apart vertical side walls attached to said floor, each of said side walls having an inside and a top, and a front wall interconnecting said floor and said side walls, said convertible cover comprising:

a pair of panels;

attachment means to pivotally attach said pair of panels one to each side of the inside of the side walls of the pick-up bed, said attachment means allowing said panels to pivot from a closed position with a top surface of each of said panels being flush with the top of the side walls to form



said cover for the pick-up bed, to a vertical open position parallel with said side walls to form said rack; and

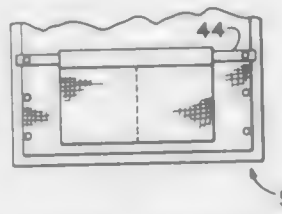
a pair of transverse load support means selectively moveable from a first position in engagement with said attachment means to underlay said panels when said panels are in the closed position, to a second position in engagement with said panels when said panels are in an open position, to restrain said panels in said open position.

5,009,458

POUCH FOR MOUNTING TO A VEHICLE DOOR

Thomas A. Shute, 5055 Meeker Drive, Kalama, Wash. 98625

Filed Apr. 24, 1989, Ser. No. 342,739
Int. Cl.[5] B60R *7/04*
U.S. Cl. 296—37.13 **6 Claims**



1. A method of mounting a pouch on a vehicle door comprising a frame, an inside panel, and screws securing the inside panel to the frame by engagement with respective screw holes in the frame, said method comprising:

(a) selecting two screws at opposite respective edges of the panel,

(b) providing an elongate mounting bracket having two opposite ends and having a hole adjacent each end, the distance between the holes in the bracket being substantially equal to the distance between the selected screws, and the bracket being coupled to the pouch,

(c) removing the selected screws from their respective screw holes in the frame,

(d) placing the bracket against the door panel with the holes in the bracket aligned with the screw holes in the door frame, and

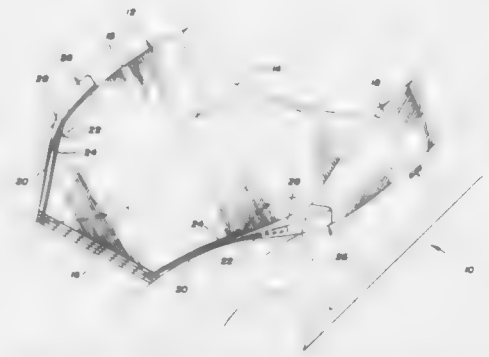
(e) inserting the screws into the door frame through the respective holes in the mounting bracket.

5,009,459

WIPER SYSTEM FOR RAKED WINDSHIELD

Harlan W. Charles, Southfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 22, 1990, Ser. No. 497,172
Int. Cl.[5] B60S *1/28*
U.S. Cl. 296—84.1 **1 Claim**



1. A wiper system in a vehicle of the type having a windshield with a lower edge, an upper edge, and a pair of side edges, each of which side edges is defined partially by a body door pillar line and partially by a hood line, said windshield also having a length measured from said lower to upper edge that is relatively large compared to its width measured between said side edges, a wiper system, comprising,

a pair of wiper arms, each oscillatable about a respective pivot point located at the juncture of a respective door pillar line and hood line and over a wipe pattern having an upper limit parallel to a respective door pillar line and a lower limit parallel to a respective hood line,

a wiper blade mounted to each of said arms of a length sufficient to reach close to both said upper and lower edges as said wiper arms move in said wipe pattern, and,

a pair of slotted side mirror housings, each located over a wiper arm pivot point and extending partially along a respective hood line,

whereby, as said wiper arms oscillate, they move through said slotted wiper housings as substantially the entire surface of said windshield is wiped by said blades, and when said wiper arms are stopped at said lower limit, they are partially covered by said side mirror housings.

5,009,460

WINDOW MOLDING MEMBER FOR AUTOMOBILES

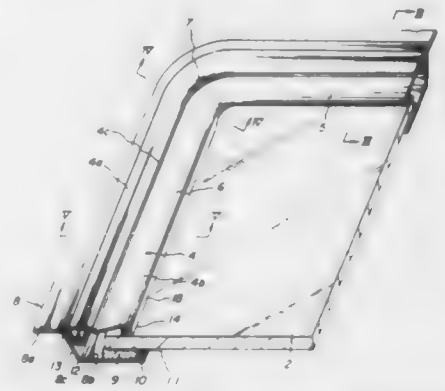
Takao Iwata, and Tetsuo Hotta, both of Yokohama, Japan, assignors to Hashimoto Forming Industry Co., Ltd., Japan

Filed Oct. 26, 1989, Ser. No. 426,779
Claims priority, application Japan, Oct. 31, 1988, 63-142492[U]
Int. Cl.[5] B60J *10/02, 1/20*
U.S. Cl. 296—93 **5 Claims**

1. A window molding member for automobiles including a body panel having an outer surface, a flange which is recessed from said outer surface, and a shoulder portion connecting said flange with said outer surface, and a window plate mounted on said flange of the body panel, said window plate having a peripheral edge opposing said shoulder portion of the body panel leaving a gap therebetween, said molding member comprising at least one upper segment to extend at least partly along an upper edge of the window plate, at least one side segment to extend along at least one side edge of the window plate, at least one corner segment integrally and continuously connecting said upper and side segments with each other in a longitudinal direction of said molding member,

a main body comprising a sheet material and adapted to cover said gap, said main body including first and second sections which are integrally connected with each other and to be engaged with the outer surfaces of said body panel and said window plate, respectively, said second section having a width which varies in the longitudinal direction of said molding member, and

an elongate cushion element comprising a resilient material integrally connected to said second section of the main body to extend along an entire length of the molding



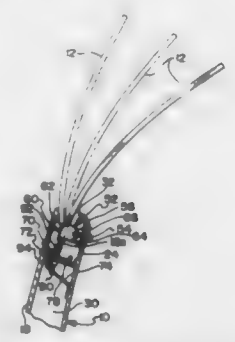
member such that the cushion element contacts said outer surface of the window plate, said cushion element cooperating with said second section of the main body to form a weir along said side segment for preventing water on the window plate from flowing across said side segment and guiding the water to flow along said side segment.

5,009,461

VEHICLE DOOR PIVOTED SIDE GLASS

Garry R. Smith-Horn, Utica, and Robert J. Wendt, Keego Harbor, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

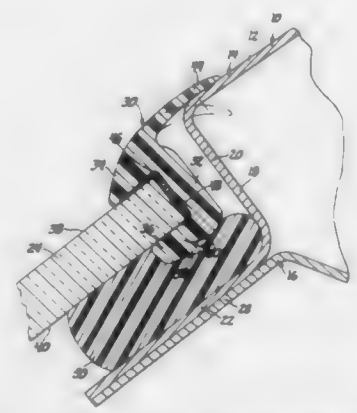
Filed May 31, 1988, Ser. No. 200,225
Int. Cl.[5] B60J *1/14, 5/04*
U.S. Cl. 296—146 **5 Claims**



1. In an automotive vehicle having body structure defining a door opening, a door assembly which is hingedly connected with said body structure via a hinge means for movement between a closed position in which the door assembly closes said opening and is aligned with said vehicle and an open position in which the door assembly extends transversely of said vehicle to permit entry into and exit from said vehicle, the improvement being that said door assembly includes a window which is pivotally supported by a pivot means for movement about a generally horizontal axis between inner and outer positions, said axis being fixed in position relative to a lower part of said door assembly during said movement, and an operating mechanism including a movable member operatively connected with said window and with said body structure for automatically effecting pivotal movement of said window from its inner position towards its outer position in response to movement of the door assembly from its closed position towards its open position so that said window is disposed out of the way to permit ease of entry into the vehicle when the door

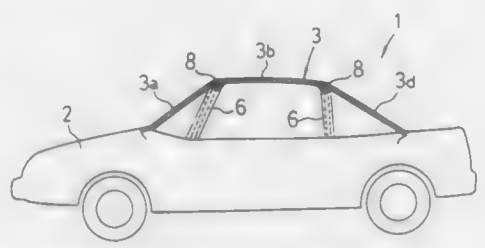
assembly is open and for automatically effecting pivotal movement of said window from its outer position towards its inner position in response to movement of the door assembly from its open position towards its closed position so that the window closes off said opening when the door assembly is closed.

5,009,462
WINDOW REVEAL MOLDING
Ricky V. Katcherian, Farmington Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Sep. 1, 1989, Ser. No. 401,721
Int. Cl.[5] B60J *1/00*
U.S. Cl. 296—201 1 Claim



1. A motor vehicle window molding installation having a molding concealing a space between an inwardly extending wall of a flanged vehicle body panel and an edge of a window panel, with the edge of the window panel overlying a parallel extended wall intersecting the inwardly extending wall of the flanged vehicle body panel and mounted on the parallel extended wall of the flanged vehicle body panel by a curable adhesive, the molding comprising:
a C-shaped channel member of plastic material fitted onto the edge of the window panel and having spaced apart outer and inner legs which forcibly grip the opposed outer and inner faces of the window panel, said channel member being adapted to receive a bead of adhesive by which the channel member is adhesively mounted onto the window panel, a continuous flexible lip extruded integral with the channel member and adapted upon mounting of the window panel upon the body panel flange by the curable adhesive to bridge across the space between the window panel and the body panel thereby flexing and overlying the body panel and bearing upon the body panel exerting a spring-like influence tending to rotate the molding, and the inner leg having a continuous foot extruded integral therewith, and defined by a crevasse formed in the inner leg underlying the inner face of the window panel and extending angularly away from the intersection of the inwardly extending wall and the parallel extended wall of the body panel flange and towards the inner face of the window panel and terminating within a perimeter of the window panel, wherein the continuous foot is adapted to seat within the curable adhesive so that the adhesive surrounds the foot and enters the crevasse and thereby mechanically retains the lower leg of the molding onto the window panel and the body panel independently of the bead of adhesive within the channel member to thereby further anchor the molding against being dislodged from the vehicle body by the rotary force exerted thereon by the continuous flexible lip.

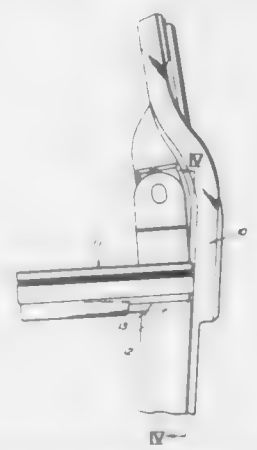
5,009,463
REINFORCED PLASTIC AUTOMOBILE BODY STRUCTURE
Masahiro Saitoh; Suguru Yoshida; Keiichi Obata, and Yoshinobu Ono, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 200,030, May 27, 1988, abandoned. This application May 1, 1990, Ser. No. 517,381
Claims priority, application Japan, May 27, 1987, 62-80218[U]
Int. Cl.[5] B62D *25/06;* B60J *1/02, 1/18*
U.S. Cl. 296—210 5 Claims



1. An automobile body structure comprising:
a body shell;
a canopy of molded plastic material carried by said body shell including a front windshield section, a top section, and a rear window section integrally formed of undivided, one-piece construction, said canopy having a primary thickness between interior and exterior surfaces thereof that is substantially uniform;
said interior surface of said canopy extending inwardly to form at least one continuous projection of a thickness greater than said primary thickness which extends laterally across said canopy; and
an arch-shaped rigid support member separate from, but embedded in, said projection and being substantially coextensive therewith.

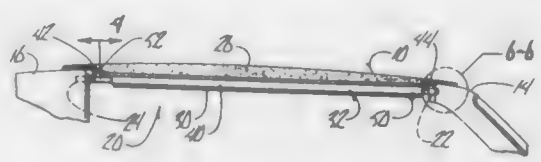
5,009,464
STRUCTURE FOR DRAINING LIQUID FOR A VEHICLE AND METHOD FOR FORMING THE STRUCTURE
Minekazu Hasegawa; Keiichi Ikeda, and Junichi Fujihira, all of Chiba, Japan, assignors to Kinugawa Rubber Industrial Co., Ltd., Chiba, Japan
Continuation of Ser. No. 77,370, Jul. 24, 1987, abandoned. This application Jan. 11, 1990, Ser. No. 463,887
Claims priority, application Japan, Jul. 25, 1986, 61-175092; Aug. 11, 1986, 61-188171; Aug. 12, 1986, 61-189180; Jan. 14, 1987, 62-7149
Int. Cl.[5] B60J *7/11*
U.S. Cl. 296—213 5 Claims

1. A structure for draining fluid from a vehicle, comprising:
a vehicle roof having a roof opening, said roof opening defined by front, rear and first peripheral side portions of said roof and a top edge of a door glass;
a first weatherstrip disposed along said front, rear and first peripheral side portions of said roof, said first weatherstrip including an intermediate portion having a V-shaped cross-section defining a groove recessed in a sidewall of said first weatherstrip, said sidewall being substantially parallel to a longitudinal axis of said first weatherstrip;
an easily removable roof panel disposed in said roof opening and having front, rear, first and second peripheral sides corresponding to said front, rear and first peripheral side portions and to said top edge of said door glass, respectively;
a second weatherstrip disposed along said second peripheral side of said roof panel, said second weatherstrip including an end portion adjacent said first weatherstrip and having a wedge-shaped cross-section portion inserted into said groove of said first weatherstrip in a tongue and groove



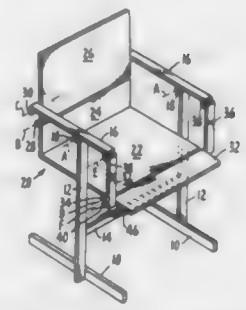
type connection when said roof panel is inserted into said roof opening.

5,009,465
ROLL-UP ROOF COVERING FOR AUTOMOBILES WITH REMOVABLE ROOF PANELS
Michael L. Induni, 5873 Dogwood La., Johnston, Iowa 50131
Filed Aug. 14, 1987, Ser. No. 85,372
Int. Cl.[5] B60J *7/10*
U.S. Cl. 296—219 4 Claims



1. A vehicle having a roll-up roof covering with the vehicle body having U-shaped roof openings on opposite sides of a longitudinal center line roof member extending between the windshield and rear of the roof, said body having opposite side windows and said roof on opposite sides adjacent said side windows including front and rear body openings for at times securing roof panels in place, and at other times for securing a roll up roof covering, said roll-up roof covering comprising:
a cover sheet of flexible material having opposite ends extending over said vehicle covering said U-shaped roof openings,
a locking assembly on opposite ends of said cover sheet engaging said front and rear body openings to secure said cover sheet in a covering position over said U-shaped roof openings, and
each of said locking assemblies including a pair of opposed rod means having outer ends respectively received in said front and rear openings in the vehicle body, and one of said rod means being longitudinally moveable relative to the other rod means for engagement and disengagement with the associated body opening.

5,009,466
RECLINING CHAIR
Charles O. Perry, 20 Shorehaven Rd., East Norwalk, Conn. 06855
PCT No. PCT/US89/01704, § 371 Date May 2, 1989, § 102(e) Date May 2, 1989
Continuation-in-part of Ser. No. 185,707, Apr. 25, 1988, abandoned. This PCT application Apr. 24, 1989, Ser. No. 381,151
Int. Cl.[5] A47C *1/02*
U.S. Cl. 297—323 3 Claims

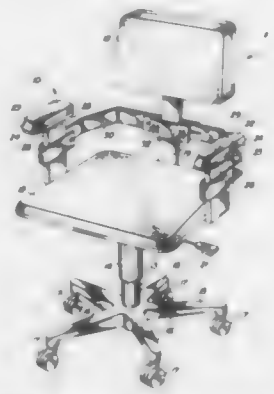


1. A reclining chair comprising
a seat having a front and a back, a support plane adapted to support a user and a seat back portion extending approximately six inches above the support plane generally perpendicular thereto,
a frame for supporting the chair on a floor,
an arm pivotally supported on the frame above the seat and pivotally coupled to the front and back of the seat to suspend the seat from the frame for reclining,
a back panel adapted to engage the user's back and forming a first control lever which comprises the coupling between the arm and the back of the seat with the first lever pivoted near its lower end to the seat back portion approximately six inches above the support plane and pivoted to the arm intermediate of its ends for moving the seat horizontally with respect to the arm and supporting the user's low-back responsive to pressure on the first lever by the user's back, and
a thigh support adapted to engage the user's upper legs and forming a second control lever which comprises the coupling between the arm and the front of the seat with the second lever pivoted near one end to the seat and pivotally coupled intermediate to its ends to the seat and pivotally coupled intermediate to its ends to the arm for moving the seat vertically with respect to the arm responsive to pressure on the second lever by the user's legs,
the coupling between the arm and the seat including at least four pivot axes.

5,009,467
ADJUSTABLE ARMREST FOR CHAIR
David C. McCoy, 1903 Brooks La., Oviedo, Fla. 32765
Filed May 30, 1989, Ser. No. 358,814
Int. Cl.[5] A47C *7/54*
U.S. Cl. 297—411 6 Claims

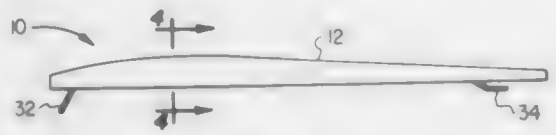
1. An adjustable armrest attachment for providing elbow support to a secretarial chair, or the like, said chair having a generally horizontal seat supported in elevated position on a base and a generally vertical backrest supported above said seat, said attachment comprising:
left and right, oppositely laterally extending bracket members having inner and outer ends;
means attaching said inner ends of said bracket member in adjacent positions at a point of attachment to said chair;
left and right elbow rests;
means respectively attaching said elbow rests to said outer ends in opposing, left and right, laterally spaced positions elevated above said seat;
means located at said inner end point of attachment for

moving said inner ends laterally, opposite to each other and relative to said point of attachment, for selectively varying the lateral spacing of said elbow rests;
means releasably locking said inner ends against said opposite lateral movement; and
means located at said outer ends for selectively varying the elevation of said elbow rests relative to said seat;



wherein said means for varying the lateral spacing further comprises said inner ends being placed in superposed relationship at said point of attachment and each having a laterally extending elongated slot, and said means attaching said inner ends to said chair comprises fastening means extending through said slots.

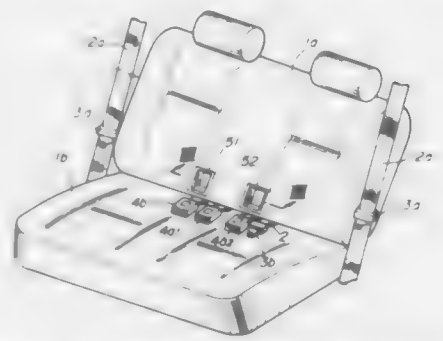
5,009,468
RESILIENT ARM REST
K. A. Fomby, P.O. Box 636, Gainesville, Tex. 76240
Filed Aug. 29, 1986, Ser. No. 902,474
Int. Cl.[5] A47C *7/54*
U.S. Cl. 297—412 **9 Claims**



1. An arm rest cap comprising:
a lower rigid base member for securing said cap to a passenger seat;
an upper resilient member positionable over said base;
a pair of angled strips having a vertical portion and horizontal portion wherein said vertical portion and the upper surface of said horizontal portion are embedded within said upper resilient member and the lower surface of said horizontal portion engages said lower rigid base member.

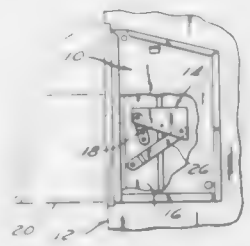
5,009,469
VEHICLE SEAT WITH SEATBELT BUCKLER RECEIVER
Takayuki Mouri, Kanagawa, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase, Japan
Continuation of Ser. No. 345,183, May 1, 1989, abandoned. This application Mar. 22, 1990, Ser. No. 499,208
Claims priority, application Japan, Sep. 21, 1988, 63-123886[U]
Int. Cl.[5] B60R *21/00*
U.S. Cl. 297—468 **11 Claims**

1. A vehicle seat comprising:
at least two seatbelt assemblies each including a belt, a tongue member and a buckle member;
a seat portion;
a seatback portion including a front surface having a recess therein;
one receptacle member for each seatbelt assembly tightly received in said recess and having an opening which faces forward, said receptacle member having a depth which is substantially twice the thickness of each buckle member



and being adapted to receive therein said buckle members in a vertically overlapped condition and parallel to said front surface of said seatback portion.

5,009,470
LATERAL FILE DRAWER POSITIONLOCK
Timothy J. Roller, Ashville, N.Y., and Robert E. Thiele, Wexford, Pa., assignors to Adanlock, Jamestown, N.Y.
Filed May 22, 1989, Ser. No. 354,742
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—325 **2 Claims**

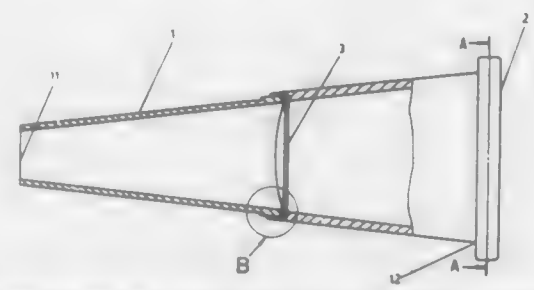


1. A mounting for a front opening drawer rotatable from a closed position to an open position comprising:
a cabinet side;
a drawer mounting saddle rotatably connected to a first linkage arm and a second linkage arm; said first linkage arm and said second linkage arm rotatably mounted to said cabinet side such that the first linkage arm and the second linkage arm are in continuous non-parallel orientation during rotation from the open position to the closed position, and said first linkage arm and said second linkage arms intersect in the closed position;
an engagement member on the first linkage arm; and
a reception aperture on the second linkage arm to receive the engagement member when the drawer is in the closed position.

5,009,471
IMPROVED KALEIDOSCOPE STRUCTURE
Vincent K. W. Lee, No. 44, Lane 458, Sheh Chung St., Taipei, Taiwan
Filed Dec. 21, 1989, Ser. No. 454,689
Int. Cl.[5] G02B *23/00*
U.S. Cl. 350—4.1 **9 Claims**

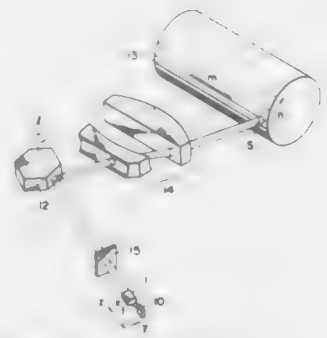
1. A structure for a kaleidoscope, comprising:
a hollow tubular housing having a viewing end and an end opposite said viewing end;
a disk-shaped pattern creating device for producing changing patterns at least in the center portion thereof, said pattern creating device located at said opposite end of said housing; and

a multi-angled prism positioned between said viewing end and said pattern creating device;



thereby creating, at said viewing end, a multi-imaged view of the patterns created by said pattern creating device.

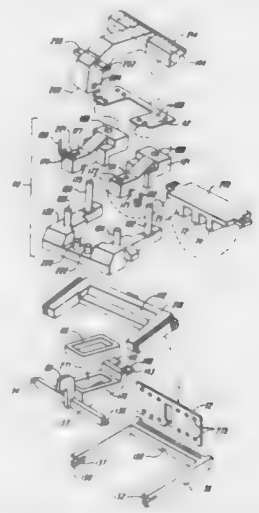
5,009,472
LIGHT SCANNING DEVICE WITH POLARIZING DEVICE TO MAKE LIGHT TRANSMISSION MORE UNIFORM
Akira Morimoto, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 31, 1987, Ser. No. 140,166
Claims priority, application Japan, Jan. 8, 1987, 62-1100; Jan. 16, 1987, 62-4583
Int. Cl.[5] G02B *26/10, 26/02*
U.S. Cl. 350—6.5 **25 Claims**



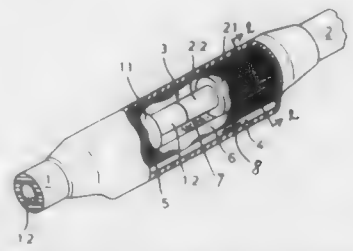
1. A light scanning device comprising:
a light source equipped with a semiconductor laser;
deflecting means for deflecting a light beam emitted by said light source, said light beam being deflected in a scanning direction within a plane which is perpendicular to the plane of the P-N junction of said semi-conductor laser;
a scanning lens for imaging a light beam deflected by said deflecting means on a subject to be scanned; and
a polarizing device for changing the polarized state of said light beam to include polarized light which contains at least a p-polarized component with respect to an incident plane including an optical axis of the scanning lens and an incident direction of the light beam, said light beam passing through said polarization device only once.

5,009,473
LOW VIBRATION RESONANT SCANNING UNIT FOR MINIATURE OPTICAL DISPLAY APPARATUS
Gregory H. Hunter, Westwood; Benjamin A. Wells, Newton, and Michael A. Feldstein, Sudbury, all of Mass., assignors to Reflection Technology, Inc., Waltham, Mass.
Continuation-in-part of Ser. No. 200,645, May 31, 1988, Pat. No. 4,902,083. This application Nov. 13, 1989, Ser. No. 434,351
Int. Cl.[5] G02B *26/10*
U.S. Cl. 350—6.6 **24 Claims**

1. In a resonant electromechanical scanning unit having a base, a mirror, a mirror frame attached to said mirror, a first spring connecting said mirror frame to said base to allow said mirror and said mirror frame to oscillate relative to said base, a counterbalance mass, a second spring connecting said counterbalance mass to said base to allow said counterbalance mass to oscillate relative to said base and a drive motor for causing said mirror and said counterbalance mass to oscillate, the improvement wherein at least a portion of said mirror frame and said base are comprised of a moldable material and are fabricated by a molding process and said first spring is inserted into said base and into said portion of said mirror frame during said molding process to form an integral mirror mount unit.

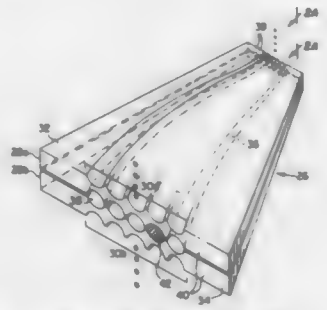


5,009,474
PROTECTION DEVICE FOR A FIBER LIGHT CONDUCTOR JUNCTION
Ulrich Wurmser, Rottach-Egern, and Josef Meyer, Grossbelfendorf, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany
Filed Nov. 8, 1989, Ser. No. 434,407
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1988, 3838075
Int. Cl.[5] G02B *6/38*
U.S. Cl. 350—96.2 **5 Claims**



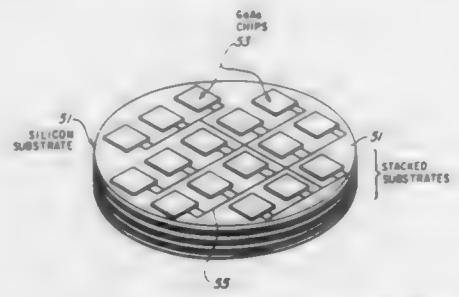
1. A protection device for a junction between two ends of fiber light conductors facing each other, comprising a protection jacket on each of said fiber light conductors, a sleeve envelope (4) of shrinkable material bridging said junction, a shrink fit between each end of said sleeve envelope and the respective protection jacket for securing said sleeve envelope to said protection jackets through said shrink fits, a fiber material filling in said sleeve envelope, said fiber material filling comprising uninterrupted tension resistant filler fibers bridging said junction inside said sleeve envelope, said filler fibers having such a length that each fiber end reaches into a respective shrink fit where said fiber ends are compressed directly between said sleeve envelope and said protection jacket by said shrink fit of said sleeve envelope on said protection jacket for transmitting tension loads substantially only through said tension resistant filler fibers.

5,009,475
IMAGE TRANSFER DEVICE AND METHOD OF MANUFACTURE
Steven B. Kmetzon, Golden, Colo., assignor to Advance Display Technologies, Inc., Golden, Colo.
Filed Dec. 27, 1989, Ser. No. 457,269
Int. Cl.[5] G02B 6/00
U.S. Cl. 350—96.10 8 Claims



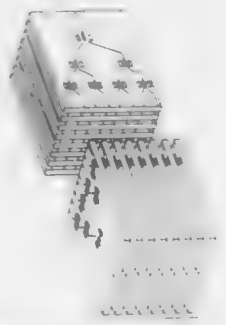
1. An image transfer device, comprising:
at least first and second pre-molded spacers each having first and second opposed longitudinal surfaces and first and second opposed end surfaces, with at least one of the opposed longitudinal surfaces of each spacer provided with a plurality of elongated grooves etched therein with the grooves being in substantially abutting relation along the first end surface and laterally displaced from one another and terminating along the second end surface, and wherein the second end surface of each spacer has a predetermined thickness greater than the thickness of the first end surface;
means for interconnecting the first and second spacers in back-to-back confronting relationship such that the etched grooves of the first and second spacers cooperate to form a set of closed channels through the interconnected first and second pre-molded spacers; and
means located within each of the closed channels for conducting elemental image portions of an image through the closed channels between the first and second end surfaces, wherein the means for conducting includes a conducting material along an inner peripheral surface of each of the closed channels.

5,009,476
SEMICONDUCTOR LAYER WITH OPTICAL COMMUNICATION BETWEEN CHIPS DISPOSED THEREIN
Lee R. Reid, Plano, and Han-Tzong Yuan, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jan. 16, 1984, Ser. No. 571,044
Int. Cl.[5] G02B 6/12; H01L 31/12
U.S. Cl. 350—96.11 33 Claims



1. An optical communication system which comprises:
(a) support means of semiconductor material having a surface;
(b) optical frequency signal transmission means disposed within and forming a part of said support means and extending to said surface;
(c) a first semiconductor element having an optical frequency signal transmitter disposed at the surface of said support and optically coupled to said transmission means; and
(d) a second semiconductor element having an optical frequency signal receiver disposed at the surface of said support and optically coupled to said transmission means.

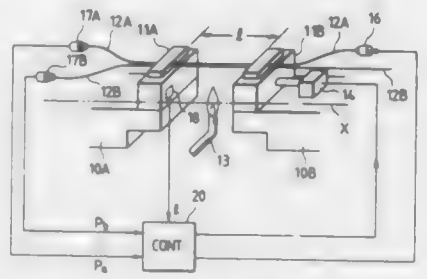
5,009,477
OPTICAL INTERCONNECT ARRANGEMENT
Rodney C. Alferness, Holmdel, N.J.; Zigmantas L. Budrikis, Dalkeith, Australia; David W. Hagelbarger, Nederland, Colo.; Herwig W. Kogelnik, Rumson, and Arun N. Netravali, Westfield, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed May 12, 1989, Ser. No. 350,962
Int. Cl.[5] G02B 6/28, 6/26
U.S. Cl. 350—96.15 19 Claims



1. An arrangement comprising:
An M plurality of output plates each having N output ports delivering optical energy substantially along a line, said output plates being substantially parallel to each other, thereby forming an array of output energy ports;
an N plurality of input plates, each having M input ports for receiving optical energy substantially along a line, said input plates being substantially parallel to each other;
and means for coupling the optical energy of output j of plate i in said M plurality of output plates to input i of input plate j in said N plurality of input plates, where i is an integer in the range 1 to M and j is an integer in the range 1 to N.

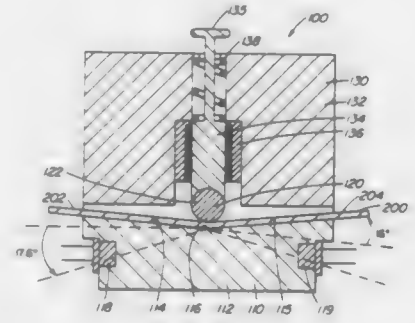
5,009,478
METHOD FOR THE MANUFACTURE OF AN OPTICAL FIBER COUPLER
Hiroyuki Sasaki, Hachiouji; Masato Shimamura, Sagamihara; Juichi Noda, Mito; Hiroaki Hanafusa, Mito, and Yoshiaki Takeuchi, Mito, all of Japan, assignors to Japan Aviation Electronics Industry Limited and Nippon Telegraph and Telephone Corporation, both of Tokyo, Japan
Filed Nov. 7, 1989, Ser. No. 432,935
Claims priority, application Japan, Nov. 18, 1988, 63-292139
Int. Cl.[5] G02B 6/26; C03B 23/20
U.S. Cl. 350—96.15 5 Claims

1. A method for the manufacture of an optical fiber coupler by fusion welding at least two optical fibers, comprising the steps of:
fusion welding at least two optical fibers to form coupled optical fibers;
heat elongating said coupled optical fibers;
measuring a performance of said coupled optical fibers at a desired elongation length;
repeating said heat elongating step and said measuring step at least twice for different elongation lengths;
determining a functional equation representing a relationship between said elongation length and said performance of said coupled optical fibers, through approximate calculation based on measured values of the performance;
calculating from said functional equation an elongation



length which provides an intended performance of said coupled optical fibers; and
heat elongating said coupled optical fibers to said calculated elongation length to obtain said optical fiber coupler.

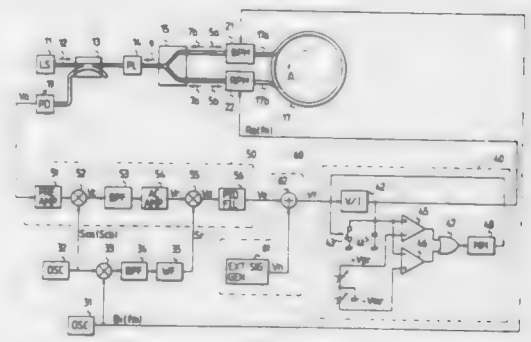
5,009,479
OPTICAL FIBER COUPLING DEVICE AND METHOD FOR ITS USE
Shawn J. Morrison, Saskatoon, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Oct. 5, 1989, Ser. No. 417,624
Claims priority, application Canada, Sep. 27, 1989, 613,580
Int. Cl.[5] G02B 6/26; H01J 5/16
U.S. Cl. 350—96.15 13 Claims



1. An optical coupler, comprising:
a rigid coupling element having a concave surface defining a desired bend profile for an optical fiber, the coupling element comprising a rigid body having the concave surface and an optoelectronic device carried by the rigid body at a position and orientation for optical coupling between the optoelectronic device and an optical fiber held against the concave surface so as to conform to the desired bend profile;
a resiliently deformable bending element having a convex surface which is complementary to the concave surface of the coupling element; and
means for urging the bending element toward the coupling element so as to conform an optical fiber placed between the concave surface of the coupling element and the convex surface of the bending element to the desired bend profile

13. A method for coupling an optical signal between an optical fiber and an optoelectronic device, the method comprising:
providing a rigid coupling element having a concave surface defining a desired bend profile for an optical fiber, the coupling element comprising a rigid body which includes the concave surface and an optoelectronic device which is carried by the rigid body at a position and orientation for optical coupling between the optoelectronic device and the fiber conforming to the desired bend profile against the concave surface;
providing a resiliently deformable bending element having a convex surface which is complementary to the concave surface of the coupling element;
placing an optical fiber between the convex surface of the bending element and the concave surface of the coupling element; and
urging the bending element toward the coupling element so as to conform the optical fiber to the desired bend profile.

5,009,480
FIBER OPTIC GYRO
Kenichi Okada; Masashi Nishino, and Shu Tanigawa, all of Tokyo, Japan, assignors to Japan Aviation Electronics Industry Limited, Tokyo, Japan
Filed Aug. 3, 1990, Ser. No. 562,605
Claims priority, application Japan, Aug. 11, 1989, 1-208860; Oct. 13, 1989, 1-267582
Int. Cl.[5] G02B 6/26; G01B 9/02
U.S. Cl. 350—96.15 7 Claims



1. A fiber optic gyro comprising:
a light source;
an optical fiber coil;
an optical coupler whereby light from said light source is split into two for input into said optical fiber coil at one end and at the other end thereof, respectively, and two rays of light having propagated through said optical fiber coil in opposite directions and output therefrom are caused to interfere with each other;
a photodetector for detecting said interference light available from said optical coupler;
a biasing phase modulator disposed between said optical coupler and one end of said optical fiber coil;
a biasing voltage generator for generating a phase modulating biasing voltage of a predetermined frequency which is applied to said biasing phase modulator;
a ramp phase modulator disposed between said optical coupler and the other end of said optical fiber coil;
a ramp voltage generator for generating a phase modulating ramp voltage which is applied to said ramp phase modulator;
a phase difference detect/control section whereby a phase difference between said two rays of light interfering with each other in said optical coupler is detected from the output of said photodetector and said ramp voltage generator is controlled by said detected output so that said phase difference may be of a predetermined value;
external signal generating means for generating a varying external signal; and
external signal adding means whereby external signal is added to the output of said phase difference detect/control section and said added output is applied to said ramp voltage generator to thereby fluctuate the frequency of said ramp voltage.

5,009,481

OPTICAL MODULE AND METHOD OF MANUFACTURING SAME

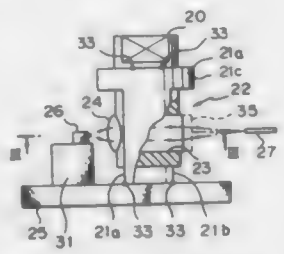
Kitoshi Kinoshita, Inagi, and Hiroatsu Aoki, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 23, 1989, Ser. No. 398,825

Claims priority, application Japan, Aug. 23, 1988, 63-207391; Aug. 11, 1989, 1-207005

Int. Cl.[5] G02B *6/32*

U.S. Cl. 350—96.18 **17 Claims**



1. An optical module having a substrate, an optical lens defining an optical axis, a light emitting element and an optical fiber, and in which light emitted from the light emitting element, secured to the substrate, is made incident on the optical fiber by, and along the optical axis of the optical lens, comprising a lens holder having a cylindrical shape and defining a corresponding cylindrical axis of said lens holder, said lens holder including a lens insertion hole which extends in a direction perpendicular to the cylindrical axis of the lens holder, and in which the optical lens is immovably mounted with the optical axis thereof perpendicular to the cylindrical axis of the lens holder, and a lens holder holding member having a cylindrical shape, said lens holder holding member being fixed to the substrate to support said lens holder and having a sidewall defining an interior recess configured for coaxially receiving the lens holder therein and for exposing the optical lens in the direction along the optical axis thereof, said interior recess corresponding to and telescopingly receiving therein the lens holder.

5,009,482

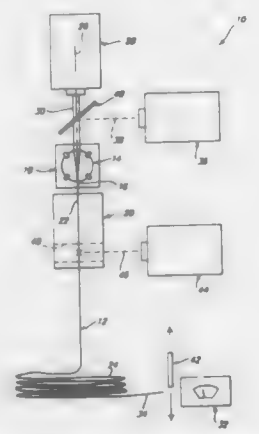
METHOD AND APPARATUS FOR FABRICATING A PIGTAILED LENS ASSEMBLY

Thomas C. Lincoln, South Pasadena, Calif., assignor to Microdot Inc., Chicago, Ill.

Filed Sep. 25, 1989, Ser. No. 411,919

Int. Cl.[5] G02B *6/32*

U.S. Cl. 350—96.18 **12 Claims**



1. An apparatus for joining an optical fiber to a spherical lens comprising

means for retaining said spherical lens so as to allow a light beam to pass through said lens along a first axis thereof;

means for directing a low intensity light beam through said lens along said first axis thereof;

means for micropositioning an end of said optical fiber in contiguity with said lens and colinear with said first axis thereof, whereby said low intensity beam is directed into said optical fiber by said lens;

means optically coupled with said fiber for detecting the amount of said low intensity beam directed into said fiber by said lens; and

means for directing a high intensity light beam through said lens along said first axis thereof, the intensity of said high intensity beam as focused by said lens being sufficient to fuse said fiber to said lens.

5,009,483

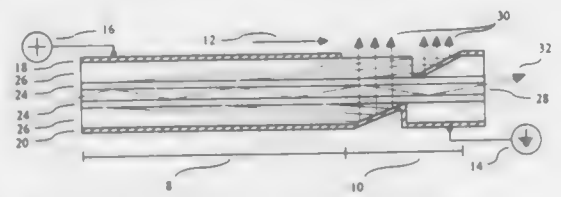
OPTICAL WAVEGUIDE DISPLAY SYSTEM

Marshall A. Rockwell, III, 303 Grenola St., Pacific Palisades, Calif. 90272

Continuation-in-part of Ser. No. 337,141, Apr. 12, 1989. This application Jul. 25, 1989, Ser. No. 385,910

Int. Cl.[5] G02B *6/04*

U.S. Cl. 350—96.24 **23 Claims**



1. A visual optical switching element comprising:

a first elongated transparent optical material,

a second elongated optical material,

said first and said second optical materials arranged alongside each other,

a light source positioned in a light coupling relationship to said first elongated optical material,

a means for causing some of the light traveling through said first optical material from said light source to exit selectively into said second optical material so light can be observed by a viewer,

a means of altering the path taken by light traveling through said second optical material,

said path altering means consisting of a plurality of abrupt discontinuities formed in said second optical material.

5,009,484

DIFFRACTION GRATINGS HAVING HIGH EFFICIENCIES

Hendrik J. Gerritsen, Providence, R.I., assignor to Advanced Environmental Research Group, Woolwich, Me.

Filed May 3, 1989, Ser. No. 346,726

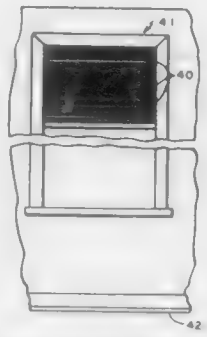
Int. Cl.[5] G02B *5/18*

U.S. Cl. 350—162.11 **16 Claims**

1. A diffraction grating structure comprising

a substrate having a grating portion at an input surface thereof and an adjacent solid portion at an output surface thereof;

a plurality of diffracting elements formed in said grating portion, each of said diffracting elements including grooves having a selected depth which depends on a selected design wavelength λ of incoming radiation impinging thereon, the diffracting elements being formed at a selected slant angle ϕ with reference to a direction



orthogonal to the plane of the input surface of said grating portion

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5,009,485

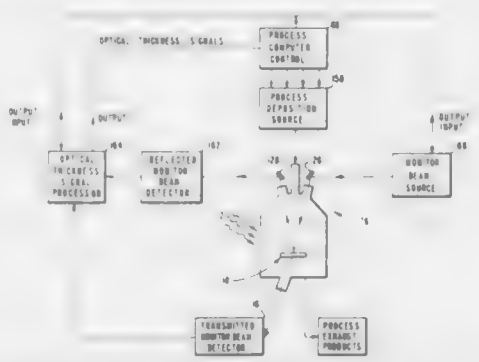
MULTIPLE-NOTCH RUGATE FILTERS AND A CONTROLLED METHOD OF MANUFACTURE THEREOF

James T. Hall, Torrance, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 17, 1989, Ser. No. 394,909

Int. Cl.[4] G02B *27/00;* **B05D** *5/12;* **C23C** *14/54*

U.S. Cl. 350—163 **9 Claims**



1. A method for forming a multiple-notch rugate filter comprising a substrate having formed thereon a layer of an optical material having a refractive index that varies according to a continuous predetermined pattern as a function of the thickness of said layer, comprising the steps of:

(a) providing said substrate;

(b) providing rectants which interact physically or chemically to form said optical material as a layer on said substrate;

(c) providing an ideal target profile of refractive index versus thickness of said layer, said profile having a multiple-notch composite pattern formed from superpositioned single-notch patterns, and determining from said target profile ideal values of optical thickness at successive points in time corresponding to points along said profile;

(d) providing target process conditions as a function of time for said reactants operative to form said layer having said ideal target profile;

(e) initiating said process conditions to form a layer having a depositing profile;

(f) performing continuous optical monitoring of said layer as deposited to provide an optical signal;

(g) determining from said optical signal the measured increments of optical thickness of said layer as deposited and continuously monitoring said increments of optical thickness;

(h) determining whether said optical thickness value is measured at the predetermined time relative to said target process conditions that produce said ideal target profile;

(i) based on the results of (h), determining the multiple sinusoidal phase-angle adjustments required to be made to the depositing profile of refractive index versus thickness of said layer in order to follow accurately said ideal target profile, wherein said determining comprises applying the following equation:

$$n(z, \phi_i) = \bar{n}^{*} - \frac{1}{2}\sum_{i=1}^{m} \Delta n_i^{*} \sin\left(\frac{4\pi \bar{n}^{*} z^{*}}{\lambda_i} + \phi_i\right)$$

where

n = refractive index of optical material

$\bar{n}$ = average index of refraction over one period in film thickness space (z)

m = total number of rugate transmittance notches

z = design position of layer

i = component integer

Δn_i = i^{th} peak-to-trough index modulation

λ_i = i^{th} notch wavelength

ϕ_i = i^{th} sinusoidal phase angle adjustment, continually updated by algorithm to insure Bragg reflection at λ_i

* = parameters that can have local errors, which are compensated for by ϕ_i

(j) altering said process conditions over time to provide said adjustments to said actual profile;

(k) repeating steps "f" through "j" the number of times required to form said multiple-notch rugate filter.

5,009,486

FORM DEPICTING, OPTICAL INTERFERENCE AUTHENTICATING DEVICE

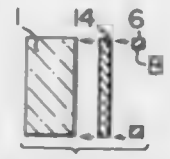
Jerzy A. Dobrowolski, Ottawa; Fang C. Ho, Gloucester, and Allan J. Waldorf, Kemptville, all of Canada, assignors to Canadian Patents and Development Limited/Societe Canadienne des Brevets et D'Exploitation Limitee, Ottawa, Canada

Continuation-in-part of Ser. No. 741,562, Jun. 5, 1985. This application Mar. 23, 1989, Ser. No. 327,542

Claims priority, application Canada, Jun. 8, 1984, 456146

Int. Cl.[5] G02B *1/10, 27/00;* **B42D** *15/00*

U.S. Cl. 350—164 **13 Claims**



1. An authenticating device for a document for confirming the authentication of the document, comprising:

(a) a substrate attachable to or forming part of the document;

(b) at least one form depicting coating carried on a first side of the substrate, said depicting coating having at least one, at least partially translucent, optical interference layer with the material and thickness thereof such as to provide first particular and known spectral reflectance and spectral transmission characteristics to the form depicting coating, said depicting coating being in a predetermined planar configuration such as to provide a design form to said depicting coating;

(c) at least one contrast coating carried on said first side of the substrate and in interfacial contact with the depicting coating, said contrast coating where coextensive with the depicting coating having at least one, at least partially translucent, optical interference layer with the material and thickness thereof such as to provide second particular and known spectral reflectance and spectral transmission characteristics to the contrast coating, said contrast coat-

ing having a planar area greater than the planar area of the depicting coating so that only a portion of the contrast coating is in interfacial contact with the depicting coating; and

wherein the difference in the said first and second characteristics is sufficient that when the coatings are viewed from a particular angle, the design form of the depicting coating is visible by light reflected or transmitted at lest in part by optical interference at said interfacial contact of the coatings as a different color from hat of the contrast coating which is not in interfacial contact with the depicting coating.

5,009,487

PRISM SYSTEM FOR A STEREOSCOPIC MICROSCOPE

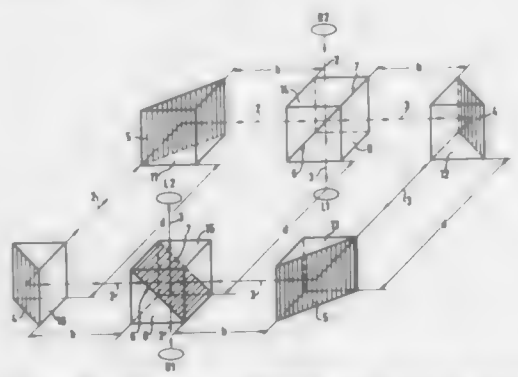
Josef Reiner, Cologne, Fed. Rep. of Germany, assignor to Oculus Optikgeraete GmbH, Wetzlar, Fed. Rep. of Germany

Filed Jul. 28, 1989, Ser. No. 386,735

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1988, 3826069

Int. Cl.[5] G02B *5/04, 21/22*

U.S. Cl. 350—286 **13 Claims**



1. In a prism system for a stereoscopic microscope having a plurality of reflecting surfaces each deflecting one of a right and left beam path by 90°, the improvement comprising wherein four of said reflecting surfaces are provided in each beam path, wherein two of said surfaces in each beam path are reflection surfaces arranged in planes parallel with respect to an optic longitudinal axis of the microscope, and wherein the two other surfaces in each beam path are respectively inlet and outlet surfaces and are inclined at 45° with respect to the optic longitudinal axis and at 90° with respect to one another.

5,009,488

FILTER ACCESSORY FOR AN IMAGING MICROSPECTROFLUORIMETER

Fredric S. Fay; Kevin E. Fogarty, both of Worcester, and Cyril Rodgers, Paxton, all of Mass., assignors to University of Massachusetts Medical Center, Worcester, Mass.

Continuation of Ser. No. 365,320, Jun. 13, 1989, Pat. No. 4,943,142, which is a continuation of Ser. No. 204,931, May 31, 1988, Pat. No. 4,859,063, which is a continuation of Ser. No. 34,777, Apr. 3, 1987, abandoned, which is a continuation-in-part of Ser. No. 900,407, Aug. 26, 1986, Pat. No. 4,744,677, which is a continuation-in-part of Ser. No. 828,766, Feb. 11, 1986, abandoned. This application Jun. 14, 1990, Ser. No. 538,116

The portion of the term of this patent subsequent to May 17, 2005, has been disclaimed.

Int. Cl.[5] G02B *5/20*

U.S. Cl. 350—315 **7 Claims**

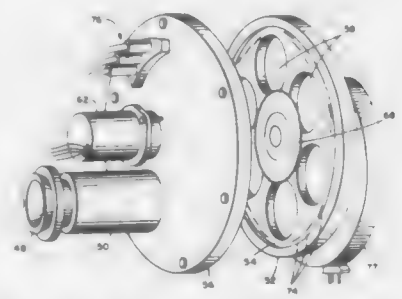
1. A filter accessory comprising:

an optical conduit between a light inlet and a light outlet;

an inlet connector at the inlet end of the optical conduit for coupling the conduit into a microscope system;

an outlet connector complementary to the inlet connector at the outlet end of the optical conduit for coupling the conduit into a microscope system;

a filter assembly eccentrically mounted relative to the optical conduit, the assembly including a filter housing and a



filter disc within the filter housing, the filter disc having a plurality of removable filter elements circumferentially spaced about a filter axis offset from the optical conduit; and

a filter drive for rotating the filter discs about the filter axis.

5,009,489

LIQUID CRYSTAL DEVICE

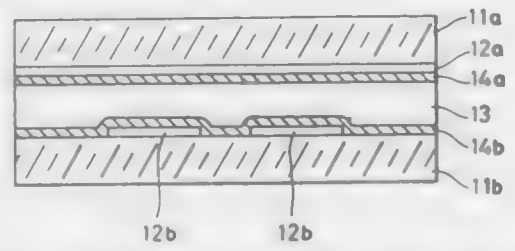
Ken Eguchi; Haruki Kawada; Kunihiro Sakai; Yoshinori Tomida; Hiroshi Matsuda; Akira Tsuboyama; Kiyoshi Takimoto, and Osamu Takamatsu, all c/o Canon Kabushiki Kaisha: 30-2, 3-chome, Shimomaruko, Ohta-ku, Tokyo, Japan

Continuation of Ser. No. 33,191, Apr. 2, 1987, abandoned. This application Jul. 7, 1989, Ser. No. 376,940

Claims priority, application Japan, Apr. 4, 1986, 61-76704; Apr. 8, 1986, 61-80808; Jun. 11, 1986, 61-133776; Jun. 11, 1986, 61-133777; Jun. 11, 1986, 61-133778; Jun. 11, 1986, 61-133779

Int. Cl.[5] G02F *1/13*

U.S. Cl. 350—341 **11 Claims**



1. A ferroelectric liquid crystal device comprising a pair of substrates, a ferroelectric liquid crystal arranged therebetween and an alignment-controlling film arranged on tehliquid crystal side surface of at least one of hte substates, said alignment-controlling film being a polyimide monomolecular film or a monomolecular-built-up film thereof obtained by dehydrating ring closure of a monomolecular or monomolecular-built-up film of a polyamic acid.

5,009,490

PHOTO-CONDUCTIVE LIQUID CRYSTAL LIGHT VALVE

Tomomitsu Kouno; Hideki Hatano; Takashi Yamaji; Sakashi Ootaki, and Masami Nishida, all of Saitama, Japan, assignors to Pioneer Electronic Corp., Tokyo, Japan

Filed Jun. 9, 1989, Ser. No. 363,825

Claims priority, application Japan, Nov. 11, 1988, 63-284970

Int. Cl.[5] G02F *1/13; G04B 19/30*

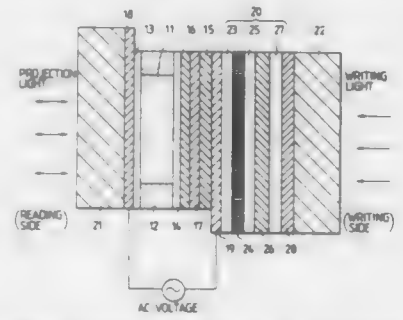
U.S. Cl. 350—342 **2 Claims**

1. A photo-conductive liquid crystal light valve comprising:

a lamination of a photo-conductive layer and a liquid crystal layer;

a pair of transparent electrodes, one electrode of said pair of electrodes being disposed on the outside of said photo-conductive layer and another electrode of said pair of electrodes being disposed on the outside of said liquid crystal layer respectively; and

an electroluminescence element disposed on the outside of



one of said electrodes of said pair of electrodes, said one electrode being on a writing side, said electroluminescence element includes a first transparent insulation layer, a transparent electrode, a second transparent insulation layer, a zinc sulfide layer, a third transparent insulation layer, and a metal electrode which are laminated in the stated order.

5,009,491

COMPACT ZOOM LENS SYSTEM

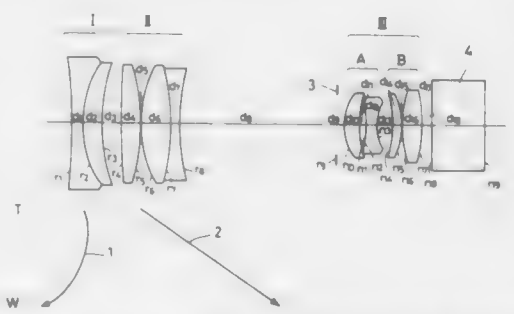
Kazuyoshi Hata, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 8, 1988, Ser. No. 230,173

Claims priority, application Japan, Aug. 7, 1987, 62-198369; Aug. 17, 1987, 62-204933; Aug. 17, 1987, 62-204934; Aug. 22, 1987, 62-208508

Int. Cl.[5] G02B *15/14*

U.S. Cl. 350—427 **29 Claims**



1. A compact zoom lens system comprising from the object side to the image side:

a first lens unit of a negative refractive power having a cemented lens component consisting of a negative lens element and a positive lens element cemented with each other, said first lens unit being shiftable along an optical axis of the lens system in a zooming operation;

a second lens unit of a positive refractive power having two positive lens components, at least one of which consists of a positive lens element and a negative lens element cemented with each other, said second lens unit being shiftable along the optical axis of the lens system in the zooming operation; and

a third lens unit of a positive refractive power having, from the object side, a front lens component of a negative refractive power and a rear lens component of a positive refractive power, said third lens unit being stationary along the optical axis of the lens system in the zooming operation.

5,009,492

ZOOM LENS

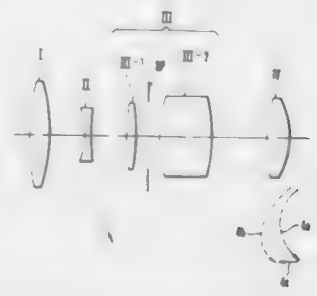
Hiroyuki Hamano, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1989, Ser. No. 387,826

Claims priority, application Japan, Aug. 10, 1988, 63-199581; Aug. 10, 1988, 63-199582

Int. Cl.[5] G02B *15/14*

U.S. Cl. 350—427 **9 Claims**



1. A zoom lens, when counted from the object side, comprising:

a first lens group having a positive refractive power;

a second lens group having a negative refractive power;

a third lens group having a positive refractive power; and

a fourth lens group having a positive refractive power, wherein

said third lens group includes a front lens unit having a positive refractive power, an aperture stop and a rear lens unit, whereby variation of magnification is performed by moving said second lens group and said fourth lens group, and focusing is performed by moving said fourth lens group, said zoom lens satisfying the following conditional expressions, wherein focal lengths of said second, third, fourth lens groups and said front lens unit respectively are f2, f3, f4, and f3-1, the focal length of the entire lens system at the wide-angle end is fv, the zoom ratio is z, and the imaging magnification at a telephoto end of said second lens group is $\beta 2T$:

$$0.9 < |f2/f\omega| < 1.3$$

$$0.9 < |\beta 2T/\sqrt{z}| < 1.4$$

$$1.8 < f4/f\omega < 2.4$$

$$2.8 < f3/f\omega < 3.7$$

$$1.6 < f3 - 1/f3 < 2.6$$

5,009,493

MIRROR ARRANGEMENT FOR A BEAM PATH IN A MULTIPLE-REFLECTION MEASURING CELL

Edmund Koch, and Dieter Pruss, both of Lübeck, Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany

Filed Aug. 30, 1989, Ser. No. 400,698

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1988, 3830906

Int. Cl.[5] G02B *5/08; G01N 21/00*

U.S. Cl. 350—619 **3 Claims**

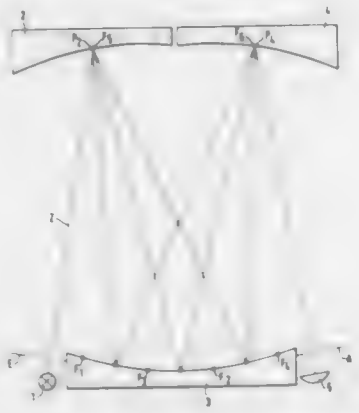
1. A mirror arrangement for defining a beam path in a multiple-reflection cell for measuring the absorption of light in a measuring gas, the cell having an entrance aperture and an exit aperture separated from each other by a predetermined distance, the mirror arrangement comprising:

an entrance aperture mirror and an exit aperture mirror

having respective reflective surfaces approximating respective ellipsoids;

said entrance aperture mirror defining first and second focal points (F_1, F_2) and said exit aperture mirror defining third and fourth focal points (F_3, F_4);

a field mirror disposed opposite of and at a confocal distance from each of said aperture mirrors so as to define a beam path for a beam which permits said entrance aperture to be imaged into said exit aperture via said aperture mirrors and said field mirror;



said entrance aperture and said exit aperture being disposed at opposite ends of said field mirror;

said first and second focal points (F_1, F_2) being separated by a first focal point spacing (F_1- F_2) and said third and fourth focal points (F_3, F_4) being separated by a second focal point spacing (F_3- F_4); and,

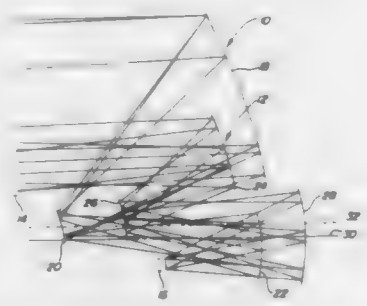
said first and second focal point spacings (F_1- F_2 and F_3- F_4) having a sum which is approximately equal to said predetermined distance.

5,009,494

WIDE FIELD ALL-REFLECTIVE MULTIPLE FIELD OF VIEW TELESCOPE

Daryl R. Iossi, Torrance; Lacy G. Cook, El Segundo, and Alfred Koppensteiner, Torrance, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 21, 1990, Ser. No. 525,801
Int. Cl.[5] G02B *17/06, 7/18, 26/10, 15/00*
U.S. Cl. 350—620 20 Claims



1. An all reflective multiple field of view optical system comprising:

an entrance pupil region;

first reflecting means for reflecting light from a viewed object passing through said entrance pupil region to a plane for viewing; and

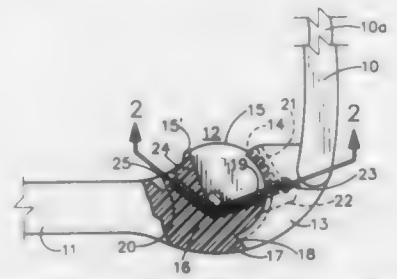
second reflecting means for reflecting light from a viewed object passing through said entrance pupil region to said plane for viewing, said first or second reflecting means being an afocal three mirror anastigmat, said first and second reflecting means being movably positioned with respect to one another such that in a first position said first reflecting means or said second reflecting means is reflecting light passing through said entrance pupil region to said plane for viewing and in a second position the other of said first or second reflecting means is reflecting light to said plane for viewing wherein fields of view and afocal magnification of said first and second reflecting means are different.

5,009,495

HINGE FOR EYEGLASSES

Robert D. Williams, 5374 S. Datura St., Littleton, Colo. 80120

Filed May 26, 1989, Ser. No. 358,699
Int. Cl.[5] G02C *5/14, 5/22*
U.S. Cl. 351—153 9 Claims



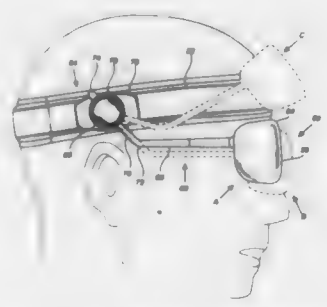
1. An improved eyeglass mounting assembly including supporting means for the lenses and a pair of temples together with means for pivotally mounting each of said temples on said supporting means adjacent respective ones of the lenses for movement about its respective pivotal axis between a folded position and an open use position, each of said means for pivotally mounting said temples comprising a bearing member having complementary bearing surfaces one on a respective one of said supporting means and the other on the respective temple, and means for maintaining said complementary bearing surfaces in face engagement with one another, aid maintaining means including a respective elongated elastic member secured under tension between the respective one of said supporting means and the respective temple for urging said complementary surfaces into face engagement and retaining said temples in position on said supporting means, each said elastic member being attached to a respective temple at one end and to a respective lens supporting means at the other.

5,009,496

EYEGLASSES AND HEADGEAR COMBINATION

Ramer B. Holtan, Jr., 5003 E. Mercer Way, Mercer Island, Wash. 98040; Kevin L. Falk, Mercer Island, Wash.; James F. Bergman, Snohomish, Wash.; James R. Smith, Kirkland, Wash., and Kenneth E. Nelson, Redmond, Wash., assignors to Ramer B. Holtan, Jr., Mercer Island, Wash.

Filed Mar. 15, 1989, Ser. No. 324,202
Int. Cl.[5] B02C *3/00*
U.S. Cl. 351—156 34 Claims



1. An eyeglasses and headgear combination comprising:

headgear attachable to the head of a user;

eyeglasses attachable to said headgear, said eyeglasses including a front member, a lens, and temple members coupled to said front member, each of said temple members having a tip portion and a body portion, said tip portion being alternatively positionable extending downward or upward, the tip portion extending upward when said eyeglasses are attached to said headgear and said tip portion extending downward when said eyeglasses are attached behind said user's ear; and

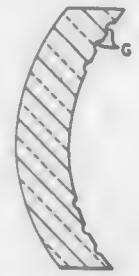
a coupling member means for attaching said tip portion of said eyeglasses to said headgear, said coupling member providing a coupling to said headgear which permits said front member to be pivoted upward, with said lenses out of the line of sight of said user.

5,009,497

CONTACT LENSES UTILIZING KEEL ORIENTATION

Allen L. Cohen, 10010 Walsham Ct., Richmond, Va. 23233

Continuation-in-part of Ser. No. 120,263, Nov. 12, 1987, abandoned. This application Apr. 22, 1988, Ser. No. 185,217
Int. Cl.[5] G02C *7/04*
U.S. Cl. 351—161 5 Claims



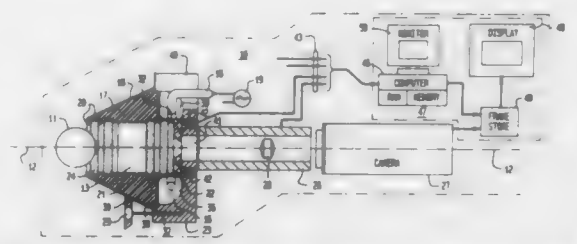
1. An ophthalmic contact lens of (i) soft toric contact lens design such as those which are prism ballasted and (ii) aspheric rigid or soft contact lens possessing enhanced stability to translational slippage thereby facilitating rotational orientation comprising an arrangement of one or more circular or near-circular profiled grooves cut into the anterior, posterior or both lens surfaces.

5,009,498

INTERCHANGEABLE KERATOSCOPE DEVICE

Martin Gersten, Brooklyn; Lars Tibbling, New York, and Roy Maus, Brooklyn, all of N.Y., assignors to Computed Anatomy Inc., New York, N.Y.

Filed Mar. 20, 1990, Ser. No. 496,016
Int. Cl.[5] A61B *3/10*
U.S. Cl. 351—212 7 Claims



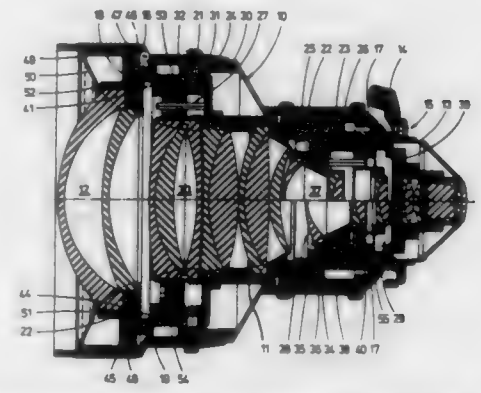
1. A keratoscope image processing system comprising a light box and a conical body of translucent material having a cylindrical bore defining a series of light transmitting rings, the improvement wherein said conical body includes a plurality of light-pervious machine readable spots disposed to receive a portion of said light from said light box, said machine readable spots being arranged in a binary pattern indicative of the optical characteristics of said conical body, means for storing image processing initializing data including signal values representing predetermined types of illuminated ring light ring devices, and means responsive to said binary pattern and said signal values for modifying said processing of said keratoscope image.

5,009,499

SOUND INSULATED INTERCHANGEABLE LENS

Otto Blaschek, Anwanderweg 16, D-8011 Aschheim, Fed. Rep. of Germany

Filed Dec. 22, 1989, Ser. No. 455,166
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1988, 3843838
Int. Cl.[5] G03B *31/00*
U.S. Cl. 352—35 16 Claims



1. An interchangeable lens that can be removably mounted to a motion picture camera housing, comprising

mount structure for removable attachement to said camera housing, external casing structure, said external casing structure comprising adjusting elements of said interchangeable lens, lens casing structure connecting said mount structure and said external casing structure;

first sound-absorbing buffer ring structure located on the object side of said interchangeable lens and connecting said external casing structure to said lens casing structure,

second sound-absorbing buffer ring structure located on the camera side of said interchangeable lens, said first and second buffer ring structures serving to radially support and center said external casing structure at end zones thereof on said lens casing structure,

third sound-absorbing buffer ring structure, and

a forward lens system in the forward zone of said lens casing structure and connected to said lens casing structure, said forward lens system being both centrally borne in relation to said lens casing structure and being connected to said external casing structure by means of said third sound-absorbing buffer ring structure.

5,009,500

REMOTE METHOD OF MEASURING SUBSURFACE WATER TEMPERATURES

Donald A. Leonard, Cupertino, and Harold E. Sweeney, Menlo Park, both of Calif., assignors to GTE Government Systems Corporation, Stamford, Conn.

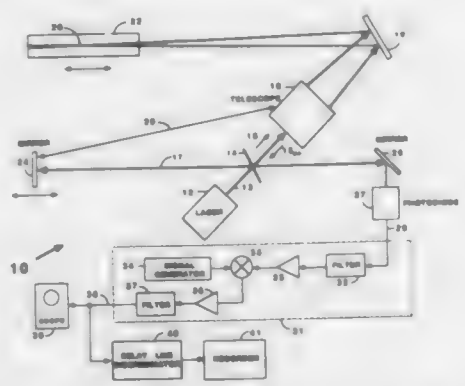
Filed Jul. 28, 1989, Ser. No. 386,382
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—43 4 Claims

1. An optical method for remotely measuring an unknown temperature T_s of a transparent medium, consisting of the steps of:

directing into said medium a pulsed laser beam comprising a plurality of pulses each having an intensity sufficient to cause stimulated Brillouin scattering in said medium and thereby causing a phase-conjugate beam to emanate from said medium;

adjustably focussing said pulsed laser beam to a plurality of focal points at different depths within said medium;

adjusting the range of a portion of said pulsed laser beam and said phase-conjugate beam to enable mixing of the pulses of each beam at the same time;



mixing said phase-conjugate beam with said portion of said pulsed laser beam and thereby producing a difference frequency proportional to temperature T_x and

converting said difference frequency to a value of temperature corresponding to T_x.

5,009,501

A REMOTELY CONTROLLABLE POSITION INDICATOR SYSTEM

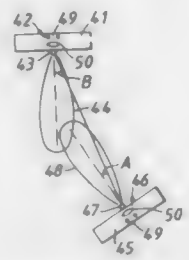
David F. Feaner, 2 Bishops Green, Barnston Great Dunmow Essex, and John S. Menown, Stoke House, Roxwell Road, Writtle Essex, both of United Kingdom

PCT No. PCT/GB87/00844, § 371 Date Jul. 27, 1989, § 102(e) Date Jul. 27, 1989, PCT Pub. No. WO88/04060, PCT Pub. Date Jun. 2, 1988

PCT Filed Nov. 26, 1987, Ser. No. 365,164

Int. Cl.[5] G01C *3/10, 1/00*

U.S. Cl. 356—152 17 Claims



1. A remotely controllable position indicator system, comprising a movable remote control device controllable to transmit command radiation signals, and a fixed reference station adapted to execute commands represented by said command radiation signals, said remote control device further comprising two transmitters forming one directional transmitter and said fixed reference station further comprising a receiver, means for monitoring intensity of radiation received by said receiver, means for distinguishing between radiation from one of said two transmitters and radiation from the other of said two transmitters and computer means programmed to determine the direction of said reference station from said remote control device using a comparison of monitored intensity of radiation received by said receiver from each of said two transmitters of said directional transmitter to give the direction of said receiver from said directional transmitter, in which one or more of said two transmitters is controllable to transmit radiation command signals and said receiver is arranged to receive said command signals, including switching means for said one or more of said two transmitters to initiate radiation command signals to enable an operator to selectively point at a target and then issue a command radiation signal for execution by said reference station.

5,009,502

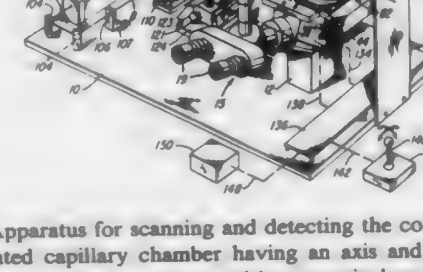
SYSTEM OF HOLOGRAPHIC OPTICAL ELEMENTS FOR TESTING LASER RANGE FINDERS

I-Fu Shih, Los Alamitos; David B. Chang, Tustin; James A. Arns, Los Angeles; Gaylord E. Moss, Marina Del Rey, and Ronald T. Smith, Redondo Beach, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 20, 1989, Ser. No. 341,010

Int. Cl.[5] G02B *5/32*; G01C *3/08*

U.S. Cl. 356—152 10 Claims



2. Apparatus for testing alignment of a first optical path with a second optical path, said apparatus comprising:

a detector responsive to incident energy of a first wavelength or wavelength range;

a test object for reflecting visible wavelength energy; and

holographic optical means for:

(a) receiving said visible wavelength energy from said test object, collimating said energy and directing said energy along a first optical path; and

(b) receiving energy of said first wavelength or wavelength range from along a second optical path;

said test object and said detector being cooperatively placed such that if said second optical path is properly aligned with said first optical path said holographic optical means will focus and direct said energy of said first wavelength or wavelength range onto said detector.

5,009,503

AUTOMATED CAPILLARY SCANNING SYSTEM

Martin J. Murphy, Jr., Dayton; Jack B. Stubbs, Waynesville, and Thomas A. Leonard, Dayton, all of Ohio, assignors to Hipple Cancer Research Corporation, Dayton, Ohio

Continuation of Ser. No. 205,725, Jun. 13, 1988, Pat. No. 4,902,132. This application Feb. 14, 1990, Ser. No. 479,959

The portion of the term of this patent subsequent to Feb. 20, 2007, has been disclaimed.

Int. Cl.[5] G01N *21/51*; C12M *1/34*

U.S. Cl. 356—339 23 Claims

1. Apparatus for scanning and detecting the contents of an elongated capillary chamber having an axis and defined by light transmitting means, comprising an optical sensor having a predetermined optical axis, means for supporting said light transmitting means to position said capillary chamber with its axis substantially intersecting said optical axis, means for producing relative movement between said optical sensor and said supporting means to move said capillary chamber axially across said optical axis, means for generating a precision light beam, means for directing the light beam towards said capillary chamber at a substantial angle relative to a plane perpendicular to the axis of said chamber for illuminating the contents of said capillary chamber without producing significant reflection and refraction of light by said light transmitting means to said optical sensor, and said optical sensor including means for detecting differences in the light reflected by the illuminated contents of said capillary chamber along the length of said chamber.

5,009,504

MONOMODE OPTICAL FIBER RING INTERFEROMETRIC DEVICE WITH SEMICONDUCTOR DIODE AS LIGHT ENERGY EMISSION-RECEPTION/AMPLIFICATION MEANS

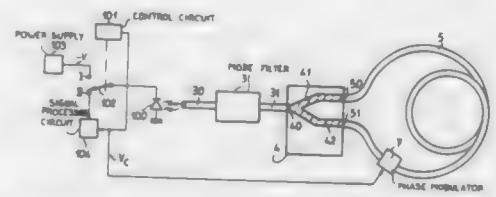
Hervé Arditty, Marly Le Roi, and Hevré Lefevre, Paris, both of France, assignors to Thomson-CSF, Paris, France

Continuation of Ser. No. 300,902, Jan. 24, 1989, abandoned, which is a continuation of Ser. No. 867,097, May 27, 1986, Pat. No. 4,842,409. This application Jun. 4, 1990, Ser. No. 532,367

Claims priority, application France, May 30, 1985, 85 08163

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—350 2 Claims



1. A ring interferometer device comprising:

a monomode optical fiber forming a ring;

coherent light energy emission-reception means;

means for separating and mixing the radiation for directing, simultaneously and in equal parts, the emitted coherent light energy to the two ends of the monomode optical fiber and for recombining the radiation emerging from both ends of the monomode optical fiber;

a mode filter disposed between the separation and mixing means and the light energy emission-reception means;

wherein said light energy emission-reception means are formed by a semiconductor diode which, polarized in the forward direction, emits light of a given wave length and which, polarized in the reverse direction, detects light of the same wave length; and further comprising

means for biasing said diode in the forward direction for controlling the light emission thereof;

electric signal processing means for obtaining a measurement of non-reciprocal effects from any phase shift indicated by an interference signal; and

switching means and means for controlling said switching means, so as to establish alternately an electric connection between said semiconductor diode and respectively, the forward direction biasing means and the electric processing means, the switching means being switched from the emission mode to the detection mode at a period equal to double the transit time of the light in the ring interferometer.

5,009,505

OPTICAL SENSOR FOR DETERMINING CHANGES IN A DIMENSION AND/OR A TEMPERATURE OF AN OBJECT

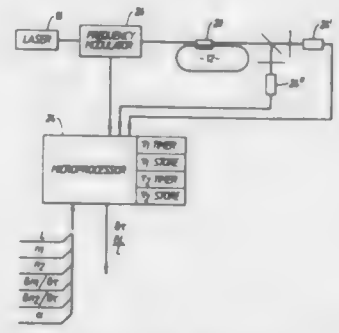
Alan R. Malvern, Bracknell, United Kingdom, assignor to British Aerospace Public Limited Company, London, England

Filed Jun. 28, 1989, Ser. No. 372,626

Claims priority, application United Kingdom, Jun. 30, 1988, 8815558

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—352 13 Claims



1. A sensor for determining changes in at least one of a physical dimension and the temperature of an object, said sensor comprising:

means defining a first optical path having a first refractive index;

means defining a second optical path having a second refractive index different from said first refractive index, said second path being adjacent or substantially coincident with said first path;

means for introducing light into each of said paths;

frequency modulation means for applying a repeating ramp frequency modulation to the light introduced into each of said paths;

detector means for detecting resonances of the light in said first path and said second path; and

processing means responsive to a timing of the appearance of said resonances to output data representative of at least one of said physical dimension and temperature based thereon.

5,009,506

PHOTOELECTRIC POSITION-MEASURING ARRANGEMENT HAVING A PLURALITY OF SHIFTABLE GRIDS

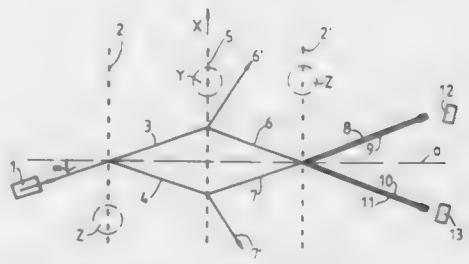
Alfons Spies, Seebruck, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traureut, Fed. Rep. of Germany

Filed Mar. 22, 1989, Ser. No. 327,300

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1988, 3810165

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—356 9 Claims



1. A photoelectric position-measuring arrangement for mea-

suring length or angles which includes first, second and third grids which are shiftable with respect to one another, which grids diffract the light eminating from a light source into partial-beams and bring the diffracted partial-beams into interference wherein the intensity modulations arising from the interference from the partial-beams are transduced by photodetectors into electrical signals which are phase shifted with respect to one another, wherein the improvement comprises:

a first grid, a second grid, and a third grid, the first grid disposed such that light from the light source impinges the first grid at an angle α relative to the grid normal (0) and is diffracted by the first grid, the second grid disposed to receive the partial-beams diffracted by the first grid, the third grid disposed to receive partial-beams diffracted by the second grid;

the first grid being configured such that only the partial-beam of the zero diffraction order and the partial-beam of the first diffraction order lying closest to the grid normal (0) are diffracted at the second grid, whereby only these two beams contribute to the signal formation, and the first grid being further configured such that the partial-beams obtain a constant phase displacement of an amount θ;

the second grid being configured such the partial-beams incident thereon are resolved only into partial-beams of their first diffraction orders, the second grid being further configured such that the partial-beams lying closest to the grid normal (0) are brought into interference by diffraction on the third grid;

the third grid being identically configured to the first grid; and

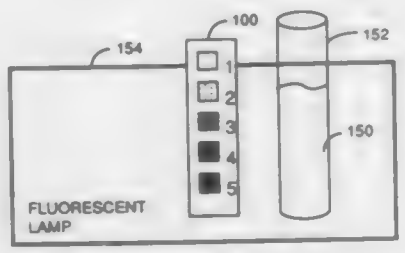
the photodetectors being disposed such that the interfering partial-beams from the third grid impinge thereon.

5,009,507

METHOD OF EVALUATING MECONIUM CONTENT OF AMNIOTIC FLUID

Michael Katz, 3848 California Ave., San Francisco, Calif. 94118

Filed Mar. 21, 1990, Ser. No. 496,684
Int. Cl.[5] G01J *3/52*
U.S. Cl. 356—421 **6 Claims**



1. A method of evaluating meconium content of an amniotic fluid sample, the steps of the method comprising:

placing a sample of amniotic fluid in a transparent medium;

providing a color chart depicting fluid colors which correspond to various levels of meconium content in amniotic fluid, said color chart including at least one meconium concentration indicia corresponding to a predefined color in said color chart; and

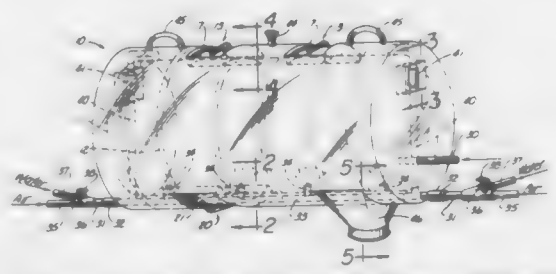
comparing said amniotic fluid sample with said color chart and determining the meconium concentration level of said amniotic fluid sample relative to said meconium concentration indicia.

5,009,508

APPARATUS FOR MIXING CONCRETE

Henry K. Wojdylo, 3816 Diamond Head Rd., Honolulu, Hi. 96816-4434

Filed Mar. 26, 1990, Ser. No. 498,716
Int. Cl.[5] B28C *5/06;* **B01F** *13/02, 15/02*
U.S. Cl. 366—10 **3 Claims**



1. An apparatus for mixing concrete at the point of use at a building site having sources of compressed air and water even at elevated locations wherein the apparatus comprises:

a tank, said tank having a top, a bottom, a first and second side and a first and a second end, said tank having a chamber disposed therein which is generally elliptical in cross sectional shape; and, wherein said tank has at least a substantially translucent vertical height portion which permits both the level and the viscosity of the cement contained therein to be monitored;

reinforcing rods associated with said tank to impart rigidly thereto and means associated with the top of said tank and operatively connected to said reinforcing rods for permitting said tank to be lifted to said elevated locations at the building site;

inlet means disposed in the top of said tank for permitting concrete ingredients to be introduced therethrough;

means for selectively sealing said inlet means to that said chamber can be pressurized;

outlet means disposed in the bottom of said tank for permitting mixed concrete to be withdrawn from said chamber;

means attached to said tank for introducing air under pressure to a lower portion of the chamber in said tank;

conduit means connected to said tank for introducing water into said tank;

nozzle means disposed in a lower portion of said chamber for selectively introducing air and water into said chamber,

means for connecting a supply of water under pressure to said nozzle means; and,

means for connecting a supply of air under pressure to said nozzle means; including conduit means connecting a top portion of said chamber with said air supply means for permitting air to pass from the top of said chamber to said air supply means; and, further including a one-way valve means for permitting air to flow through said conduit means from the top of the chamber to the air supply means but preventing air from flowing from said air supply means directly to the top of the chamber through said conduit means; wherein, air flowing from the top of said chamber is mixed directly with air entering said chamber from said air supply means; and, wherein mixing takes place within said chamber.

5,009,509

CLAMPING APPARATUS FOR THERMAL TRANSFER PRINTER

Robert J. Matoushek; Terrence L. Fisher, both of Rochester, and James A. Whritenor, Spencerport, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

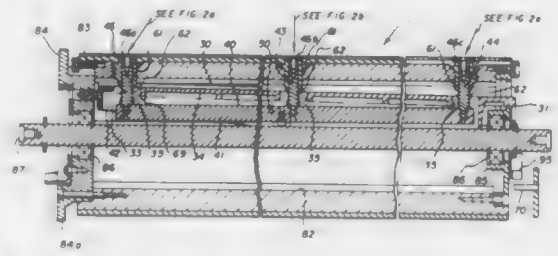
Filed Dec. 26, 1989, Ser. No. 457,039
Int. Cl.[5] G01D *15/28;* **B65H** *5/02*
U.S. Cl. 346—138 **2 Claims**

1. In a thermal transfer printer of the kind having a rotatably mounted print drum for supporting receiver sheets for movement past a thermal print station, improved apparatus for clamping such receiver sheets comprising:

(a) actuator means mounted on one end of said drum for movement between clamping and unclamping positions;

(b) lever means pivotally mounted at the other end of said drum and having a longitudinal body extending axially within said drum interior to a follower end in actuatable relation to said actuator means;

(c) clamping means having:



(i) an elongated portion extending axially within said drum in generally opposing relation to said longitudinal body of said lever means;

(ii) a plurality of axially spaced arms extending radially from said body to said drum periphery; and

(iii) a clamp member coupled to said arms and extending axially over a longitudinal section of said drum periphery; and

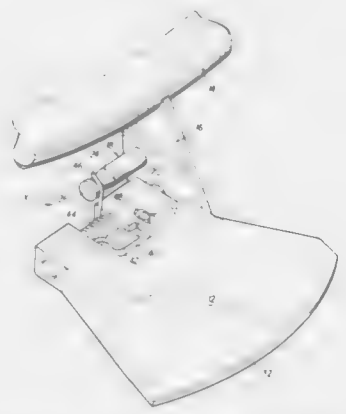
(d) means for pivotally coupling said elongated portion of said clamping means to a region of said lever means that is between said drum ends.

5,009,510

SCRAPER MOUNTING ARRANGEMENT FOR FOOD PROCESS AGITATORS

Valentino Gabriele, Baltimore, Md., assignor to J. C. Pardo and Sons, Baltimore, Md.

Filed Sep. 27, 1990, Ser. No. 588,855
Int. Cl.[5] B01F *11/00*
U.S. Cl. 366—311 **18 Claims**



1. In combination with an agitator mounted for rotation within a container within which materials are being mixed, apparatus mounted on the agitator for scraping walls of the container, comprising:

scraper means positioned in scraping relation with at least portions of the walls of the container for preventing adhesion of the materials to said walls, the scraper means having aligned bores formed in one end and a cutout portion disposed between the aligned bores, the scraper means having an aperture formed therein;

mounting means carried by the agitator and being received within the aligned bores of the scraper means for mounting the scraper means for pivotal motion relative to the agitator;

adjusting means carried by the agitator for constantly adjusting the position of the scraper means to accommodate surface contours of the walls and to accommodate surface wear of at least portions of the scraper means in order to maintain the scraper means in scraping relation with said walls on rotation of the agitator, the adjusting means comprising spring loading pin means spaced from the mounting means and carried by the agitator for providing a surface against which a force can be directed, the adjusting means further comprising a coiled spring having a substantially cylindrical body portion, a first end and a second end, the body portion of the coiled spring being disposed within the cutout portion of the scraper means, the mounting means being received through the coil body portion, the first end of the coiled spring biasing against the scraper means and the second end of the coiled spring biasing against the spring loading pin means, the coiled spring thereby exerting a bias against the scraper means to force the scraper means into scraping relation with the walls of the container and to hold the scraper means under tension; and,

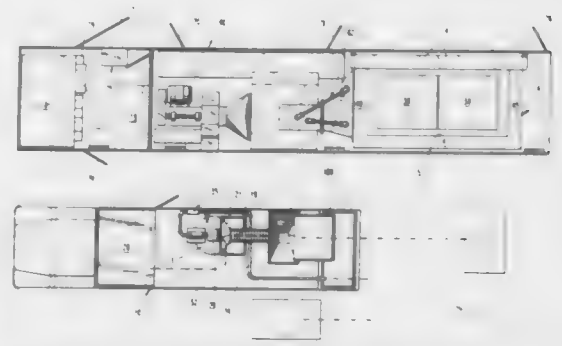
stop means carried by the agitator for limiting the pivotal motion of the scraper means on the mounting means to a predetermined arcuate angle, the stop means comprising an L-shaped pin having a proximal leg mounted to the agitator and a distal leg receivable within the aperture formed in the scraper means on pivoting of the scraper means toward the stop means, portions of the scraper means contacting the proximal leg to prevent further pivoting motion of the scraper means, the scraper means being formed with a recess communicating with the aperture in the scraper means, the proximal leg of the stop means being received into the recess on pivoting of the scraper means toward the stop means, the bottom wall of the recess contacting the proximal leg of the stop means to prevent further pivoting motion of the scraper means.

5,009,511

INORGANIC RECYCLING PROCESS

Leonard S. Sarko, Dublin, and Richard S. Lyon, Galion, both of Ohio, assignors to Inorganic Recycling Incorporated, Columbus, Ohio

Continuation of Ser. No. 110,447, Oct. 20, 1987, abandoned. This application Jan. 26, 1990, Ser. No. 471,042
Int. Cl.[5] B01F *7/08*
U.S. Cl. 366—348 **9 Claims**



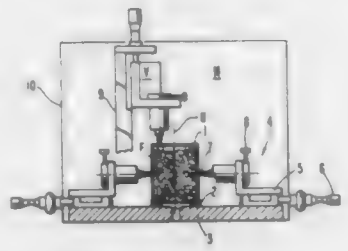
4. A method of recycling inorganic hazardous waste material into useful products by chemically fixing inorganic constituent materials of said inorganic hazardous waste into a silicate matrix comprising the steps of:

(a) loading an inorganic hazardous waste material into a mixing chamber;

(b) mixing said material in said chamber with chemicals selected from the group consisting of inorganic alkaline

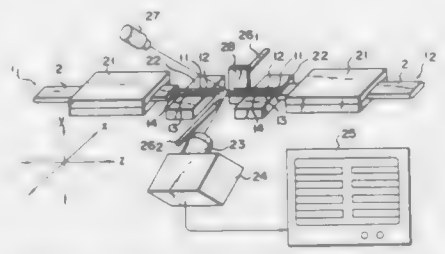
materials, acid materials, water and a combination of two or more thereof;
(c) causing an oxidation-reduction reaction to occur;
(d) mixing said oxidation-reduction reaction product with further chemicals comprising adding bonding clay to said oxidation-reduction reaction product and blending for 3–30 minutes, and thereafter adding silica sand thereto and blending for 3 to 30 minutes;
(e) conveying said mixed material to a heating chamber;
(f) heating said mixed material at 1800°–2250° F. for 60–120 minutes to cause vitrification to occur and to chemically fix said inorganic constituents of said inorganic hazardous waste into a silicate matrix to produce a vitrified, silicate-based, inert material;
(g) removing from said material particulate laden gas formed during said heating step, said particulate laden gas including solid and liquid particulates and gaseous contaminants; and
(h) scrubbing said gas with a scrub liquid to remove particulates therefrom and adjusting the pH of said scrub liquid to transfer contaminants from the gas phase to the liquid phase.

5,009,512
DEVICE AND METHOD FOR MEASURING THE DEFORMATIONS OF A SAMPLE
Jacques Lesai, Maule; Philippe Perreau; Daniel Bary, both of Rueil Malmaison, and Guy Grard, Argenteuil, all of France, assignors to Institute Francais du Petrole, Cedex, France
Continuation of Ser. No. 213,138, Jun. 29, 1988, abandoned. This application May 9, 1990, Ser. No. 521,012
Claims priority, application France, Jun. 30, 1987, 87 09263
Int. Cl.[5] G01N *25/00;* **G01B** *7/02, 21/02*
U.S. Cl. 374—6 **24 Claims**



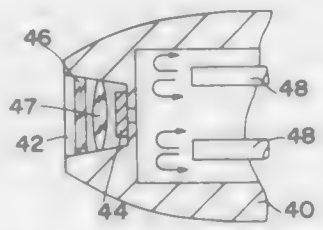
1. A device for measuring deformations of a sample, said deformations particularly resulting from relaxation of stresses to which the sample was previously subjected, the device comprising a cell inside which the sample is placed, said cell contains a fluid thermal mass whose heat capacity and thermal conductibility are appreciably greater than those of air under normal temperature and pressure conditions, and sensor means cooperable with said sample for sensing displacements of the sample so as to enable a measurement of deformations thereof, wherein the sample is a solid impregnated by at least one fluid, the fluid thermal mass is chosen so that said impregnation fluid concentration in the sample is not substantially modified during measurement of the deformations and wherein said fluid thermal mass is chosen so as not to be introduced into the sample.

5,009,513
METHOD OF MEASURING QUANTITY OF HEAT APPLIED TO OPTICAL FIBER
Tsutomu Onodera, and Takeshi Yamada, both of Sakura, Japan, assignors to Fujikura Ltd., Tokyo, Japan
Continuation of Ser. No. 283,228, Dec. 12, 1988, abandoned. This application Aug. 23, 1990, Ser. No. 572,343
Claims priority, application Japan, Dec. 16, 1987, 62-318435
Int. Cl.[5] B65H *69/08;* **G01K** *17/00;* **G02B** *6/255*
U.S. Cl. 374—31 **9 Claims**



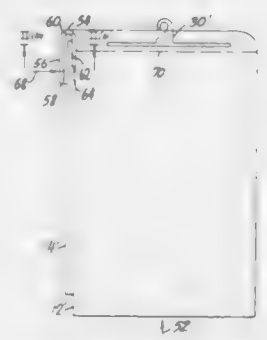
1. A method of measuring a quantity of heat applied to an end of each of exposed fiber portions of a ribbon optical fiber, comprising the steps of:
measuring a distance between an end of each of the exposed fiber portions of a ribbon optical fiber before heating and the end of each of the exposed fiber portions after heating, which comprises the steps of,
picking up a first position of said end, before heating, of each exposed fiber portion of said optical fiber;
picking up a second position of said end, after heating, of each exposed fiber portion of said optical fiber; and
determining said distance by subtracting said second position from said first position; and
determining a quantity of heat applied to the end of each of said exposed fiber portions based on said measured distance, by using a heat characteristic of the ribbon optical fiber, said heat characteristic indicating a relationship between a quantity of heat applied to the end of each of the exposed fiber portions and an amount of retraction of the end of each of the exposed fiber portions.

5,009,514
METHOD AND APPARATUS FOR PROTECTION AGAINST HEAT
Ardon Gador, POB 570, 55105, Kiryat Ono, Israel
Filed Nov. 14, 1988, Ser. No. 270,793
Claims priority, application Israel, Nov. 26, 1987, 84611
Int. Cl.[5] G01J *05/04,* **G01K** *01/14, 13/02*
U.S. Cl. 374—138 **10 Claims**



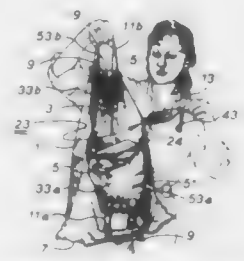
1. A method for slowing the convective heat transfer rate from a high total enthalpy fluid flow to an area of an object with a heat sensitive element mounted thereat, facing the fluid flow and located at the stagnation zone of the object, comprising the step of,
recessing said heat sensitive element into said object at said stagnation zone to provide a substantially unvented recess facing said fluid flow, the depth of said heat sensitive element in said object having a ratio to the diameter of said recess at the surface of said object for a recess of circular cross section, or to the recess dimension at the surface of said object substantially perpendicular both to the direction of said flow and to the stagnation line of the stagnation zone for a recess of other than a circular cross section, to reduce the radial velocity of flow parallel to the area of said heat sensitive element within said recess, thereby slowing the heat transfer to said heat sensitive element.

5,009,515
PLASTIC FILM BAG WITH A MULTI-LAYERED BIGHT THROUGH WHICH A HANGER EXTENDS AND RELATED METHODS
Ronald Bennett, Bay Shore, N.Y., assignor to Ultra Creative Corp., Brooklyn, N.Y.
Filed Jun. 27, 1989, Ser. No. 373,154
Int. Cl.[5] B65D *33/14*
U.S. Cl. 383—23 **8 Claims**



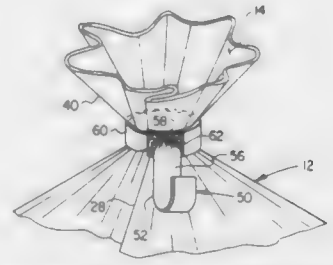
1. A bag comprising facing first and second sheets of plastic film having upper and lower extremities, at least one of said sheets at the upper extremity thereof constituting a multi-layered U-shaped bight, including a multi-layered curved section and multi-layer legs extending from said curved section, a heat seal extending completely through said bight so that the bight and bag are welded closed, the other sheet extending fully into said bight and at least closely adjacent said curved section, and a hanger generally within said bight but including a portion extending through and outwardly of said bight.

5,009,516
SHOPPING CONTAINER DEVICE
Carol A. Geeck, 827 Plumosa, Vista, Calif. 92083
Filed Aug. 27, 1990, Ser. No. 572,680
Int. Cl.[5] B65D *30/10*
U.S. Cl. 383—37 **9 Claims**



1. A shopping container device, comprising:
(a) a first, storage bag-size, collapsible bag, having an open top and a closed bottom;
(b) a flexible, non-stretchable handle attached about said open top for carrying said bag when full;
(c) a second, smaller collapsible bag having a closed bottom and an openable top, said top biased normally closed;
(d) flexible means joining said open top of said first-bag to the inside of said second-bag a short distance below its biased-closed top;
(e) said bottom of said second-bag folded flat to form a short flap;
(f) said flap folded about one portion of a small ring and attached to itself to form a ring-holding closed loop; and,
(g) a normally closed, openable snap anchored to said ring for attachment to a user's vehicle ignition keys;
(h) said smaller second-bag of an overall size sufficient to completely contain said first-bag collapsed therein, and of a length sufficient to contain the ignition keys when said first-bag is removed therefrom.

5,009,517
PLASTIC FILM BAG WITH INTEGRAL PLASTIC FILM TIE ELEMENT, AND ASSOCIATED FABRICATION METHODS
Gary L. Rutledge, Dallas, Tex., assignor to John C. Marrelli, Tustin, Calif.
Continuation of Ser. No. 321,719, Mar. 10, 1989, Pat. No. 4,948,268, which is a division of Ser. No. 117,209, Nov. 4, 1987, Pat. No. 4,854,735. This application Feb. 2, 1990, Ser. No. 474,170
Int. Cl.[5] B65D *33/28*
U.S. Cl. 383—72 **4 Claims**



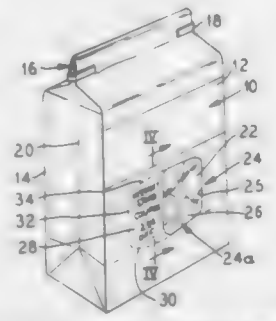
1. A plastic film bag having integral closure tie apparatus, comprising:
a plastic film bag having:
an open upper end,
a closed lower end,
a pair of opposite side edge portions, and
a pair of opposite side walls interconnecting said side edge portions and said lower end; and
tie means fixedly secured to said plastic film bag and usable to close said open upper end thereof, said tie means including:
an elongated closure tie element formed from a relatively limp material and having an inner end portion, an outer end portion, and a longitudinally intermediate portion extending between said inner and outer end portion,
means for firmly securing said inner end portion of said tie element to an attachment area of one of said side edge portions of said bag adjacent said upper end of said bag, and
an aperture formed through said attachment area and said inner end portion of said tie element secured thereto,
said tie element being configured and positioned to permit its use in closing the bag by wrapping said longitudinally intermediate portion of said tie element around said upper end of said bag to form a loop therearound, passing said outer end portion of said tie element through said aperture, and pulling on said outer end portion to cause said loop to constrict around, frictionally engage, and close said upper end of said bag.

5,009,518

WINDOW-STYLE BAG WITH INTEGRAL COUPON

Mark Faltynek, Chicago, Ill., assignor to Bagcraft Corporation of America, Chicago, Ill.

Filed Aug. 8, 1989, Ser. No. 390,826
Int. Cl.[5] B65D *33/04*
U.S. Cl. 383—106 6 Claims



1. An open-topped bag for carrying goods on the inside thereof, which comprises bottom, side, back and front walls, said front wall having a window defined by an aperture area and a transparent film secured to said front wall on the inside thereof and overlying said aperture area:

wherein the improvement comprises said front wall including a coupon defining section having a perimeter and separably connected to but integral with said front wall in said aperture area, said section being connected to the front wall along less than the section's entire perimeter and constructed to overlie at least a portion of said transparent film;

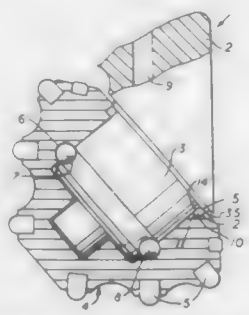
whereby said coupon section can be removed from the bag without adversely affecting the integrity of the bag and exposing previously unexposed transparent film so as to provide for greater viewing of the contents after separation than before separation of the coupon section from the bag.

5,009,519

SEALING ASSEMBLY FOR RELATIVELY MOVABLE MEMBERS

David M. Tatum, 9251 Burdine, No. 386, Houston, Tex. 77096

Continuation-in-part of Ser. No. 55,126, May 28, 1987, Pat. No. 4,762,189. This application Aug. 3, 1988, Ser. No. 227,624
The portion of the term of this patent subsequent to Aug. 9, 2005, has been disclaimed.
Int. Cl.[5] F16C *33/76*; F16J *15/26, 15/28, 15/38*
U.S. Cl. 384—94 35 Claims



1. A sealing assembly for a plurality of surfaces defining an annular space having a longitudinal axis, for sealing relatively movable members at temperatures up to about 1000° F., comprising

first and second annular shaped members of a hard, but elastically deformable material,

each annular shaped member being generally of an L-shape configuration and substantially of identical shape and being assembled to be in opposed mirror relation so that substantially identical surfaces of the annular shaped members face in opposite directions, one annular shaped member having a first outer radially facing annular surface for being in substantially surface-to-surface contact with one of the relatively movable members and the other annular shaped member having a first inner radially facing annular surface for being in substantially surface-to-surface contact with the other relatively movable member, said one annular member having a second inner radially facing annular surface for being in substantially surface-to-surface contact with said other relatively movable member, said other annular shaped member having a second outer radially facing annular surface for being in substantially surface-to-surface contact with said one relatively movable member, said first outer radially facing annular surface and said first inner radially facing surface being substantially identical, said second inner facing radially annular surface and said second outer facing annular surface being substantially identical, said radially facing annular surfaces of each respective annular shaped member being joined by an axially facing annular surface for engaging in substantially surface-to-surface contacting relationship an adjacent surface to which each respective annular shaped member is axially positioned, said axially facing annular surfaces facing in opposite directions away from each other,

said annular members having surfaces facing inwardly toward each other in being assembled and shaped to form an annular cavity and a small spacing between adjacent opposed edges of said annular members defining radially and axially offset gaps therebetween, and

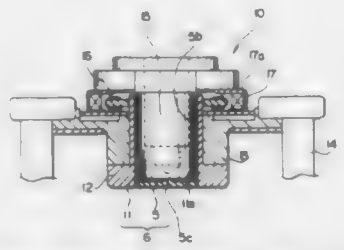
annular elastic spring means positioned in said annular cavity between and substantially surrounded on all sides thereof by said annular members except at said offset gaps and spaced from all surfaces of said annular space and said relatively movable members biasing said annular members apart in directions both radially and axially of said longitudinally axis when installed with said annular members under compression toward each other.

5,009,520

DYNAMIC PRESSURE TYPE BEARING AND SPINDLE UNIT

Toshimi Takajo, Fujisawa; Hiromitsu Asai, Samukawa, and Kiyoshi Haginuma, Fujisawa, all of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1990, Ser. No. 510,619
Claims priority, application Japan, Apr. 26, 1989, 1-106866
Int. Cl.[5] F16C *32/06, 33/22*
U.S. Cl. 384—100 7 Claims



1. A dynamic pressure type bearing comprising:

a hollow outer cylinder made of a metal; and

a hollow inner cylinder made of a synthetic resin and having an outer cylindrical surface fastened to an inner cylindrical surface of said outer cylinder and having an inner cylindrical surface fitting a rotatable shaft;

at least one of the outer cylindrical surface of the rotatable shaft and the inner cylindrical surface of said inner cylinder defining a dynamic pressure producing groove therein; and

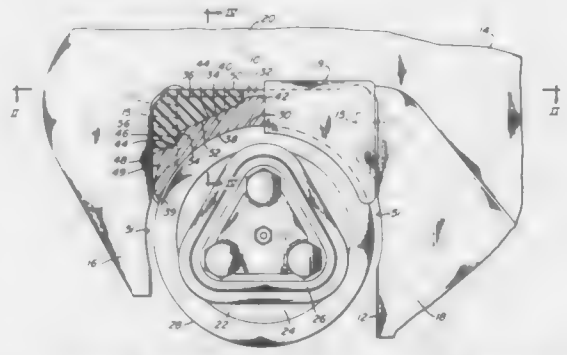
said inner cylinder being made of a thermosetting resin containing a 5 wt % to 75 wt % heat treated phenol resin powder and a 5 wt % to 75 wt % silicon dioxide, the total content of the heat treated phenol resin powder and the silicon dioxide being 50 wt % to 80 wt %.

5,009,521

RAILWAY TRUCK AND BEARING ADAPTER THEREFOR, AND METHOD FOR CONTROLLING RELATIVE MOTION BETWEEN TRUCK COMPONENTS

Donald Wiebe, Sewickley, Pa., assignor to A. Stucki Company Division of Hansen, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 379,934, Jul. 14, 1989, abandoned. This application May 11, 1990, Ser. No. 522,472
Int. Cl.[5] F16C *23/04*
U.S. Cl. 384—191.1 27 Claims



1. A bearing adapter assembly adapted for engagement within a pedestal opening of a railway truck side frame for supporting such a railway truck side frame with respect to a railway truck wheelset bearing comprising:

a rigid adapter means adapted to be supported with respect to such a wheelset bearing in a manner to accommodate axial rotation of such a wheelset with respect to said rigid adapter means;

said rigid adapter means being further adapted to be received within such a pedestal opening with outer surface portions thereof disposed in spaced relationship with respect to given inner surface portions of such a pedestal opening;

resiliently deformable elastomeric means engageable with said outer surface portions and adapted to engage such given inner surface portions for support of such a side frame with respect to said rigid adapter means; and

said elastomeric means being resiliently deformable under loads borne thereby while supporting such a side frame in a manner to exert between said rigid adapter means such a side frame both laterally and longitudinally directed confining forces of sufficient magnitude to restrain lateral and longitudinal movement of said rigid adapter means with respect to such a pedestal opening in operation; and

said elastomeric means being further resiliently deformable in a manner to permit said rigid adapter means to rotate with respect to such a pedestal opening about an axis of rotation extending generally axially of such a wheelset.

5,009,522

REDUCED FLOW BEARING

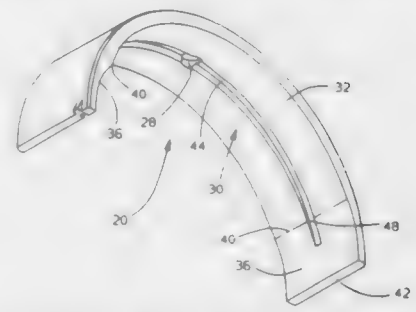
Charles J. Hahn, assignor to General Motors Corporation, Detroit, Michigan, Mt. Clemens, Mich.

Filed Apr. 2, 1990, Ser. No. 502,723
Int. Cl.[5] F16C *33/10*
U.S. Cl. 384—288 6 Claims

1. A journal bearing for internal combustion engines wherein a rotatable journal is received within a cylindrical opening defined jointly by a pair of detachably secured members, said bearing comprising:

a semi-cylindrical bearing shell adapted to be opposedly received within said opening to define a generally semi-cylindrical, inwardly facing bearing surface adapted to surround a portion of said journal in close fitting bearing relationship with clearance for formation therebetween of a load carrying lubricating oil film;

said inwardly facing bearing surface divided circumferentially into a concentric central portion and a pair of eccentric end portions, said portions each extending axially the full width of said surface, said concentric central portion being equidistant at all points from said central axis and extending circumferentially a predetermined angular dimension, said eccentric end portions extending outwardly from the opposite ends of said central portion and of progressively increasing distance from said central axis toward the ends of said bearing shell of said shell;



said inwardly facing bearing surface further having an eccentric lubricant supply groove extending circumferentially a predetermined angular dimension larger than said concentric central portion, said groove tapering from a point of maximum depth within said concentric central portion to terminate within each of said eccentric end portions thereby forming lubricant metering orifices at the interface of said concentric central portion, said eccentric end portions and said eccentric lubricant supply groove to meter the flow of lubricant from said groove to said eccentric end portions; and

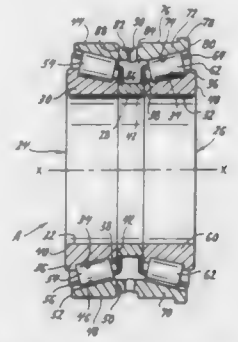
a lubricant supply opening extending through said bearing shell to intersect said supply groove for supplying lubricant from an external source to said bearing.

5,009,523

DOUBLE ROW BEARING ASSEMBLY

Russell F. Folger, and Gerald P. Fox, both of Stark County, Ohio, assignors to The Timken Company, Canton, Ohio

Filed Jul. 20, 1989, Ser. No. 382,994
Int. Cl.[5] F16C *19/38, 33/66*
U.S. Cl. 384—475 22 Claims



1. In combination with a housing having a bore and a shaft which extends through the housing and has a pair of radially directed abutments and a bearing seat between the abutments, an improved bearing assembly for supporting the shaft between the abutments so that the shaft will rotate about an axis of rotation, said bearing assembly comprising: first and second bearings, each including an outer race having an inwardly

presented raceway, an inner race having an outwardly presented raceway which faces the raceway of the outer race, and rolling elements arranged in a single row between the raceways of the outer and inner races, the raceways and rolling elements of each bearing being configured and oriented such that the bearing will transmit an axial load in one direction as well as a radial load, the outer races of the two bearings being in the bore of the housing, the inner races of the two bearings being on the bearing seat of the shaft, the bearings being oriented in opposition so that one transmits axial loads in one direction and the other transmits axial loads in the other direction, the outer race of the second bearing being captured in the housing so that it cannot shift axially with respect to the housing, the outer race of the second bearing further having an extension formed integral therewith and projected axially toward the outer race of the first bearing, the extension being against the outer race of the first bearing so as to position the outer race of the first bearing in a predetermined axial position with respect to the outer race of the second bearing, the extension on the outer race for the second bearing having an outer diameter that is less than the outer diameter of the remainder of the outer race for the second bearing and also less than the outer diameter for the outer race of the first bearing so as to provide an annular cavity between the two outer races, the extension having ports extended radially through it for enabling a fluent lubricant to pass from the annular cavity into the region between the inwardly and outwardly presented raceways of the two bearings.

5,009,524

DOUBLE ROW, SELF ALIGNING ROLLER BEARING

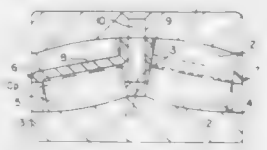
Thomas Dittenhoefer, Dittelbrunn, Fed. Rep. of Germany, assignor to SKF GmbH, Schweinfurt, Fed. Rep. of Germany

Filed May 10, 1990, Ser. No. 521,821

Claims priority, application Fed. Rep. of Germany, May 20, 1989, 3916552

Int. Cl.[5] F16C *33/66*

U.S. Cl. 384—475 **5 Claims**



1. Two-row, self-aligning roller bearing comprising an outer ring with a spherical bore defining an outer raceway, an inner ring having raceways, and rollers between the rings rolling on said inner and outer raceways, these rollers having a convex lateral surface, a cage for guiding the rollers, said cage being split into two halves, each half holding one row of rollers and each half of the cage being guided in a sliding manner in the bore of the outer ring, a loose guide ring on the inner ring between the rows of rollers, a lubricant supply hole in said outer ring, the cage halves (6, 7) being located at a distance (A) from each other which is equal to or greater than the diameter of the oil supply hole (10).

5,009,525

ROLLER SEATING

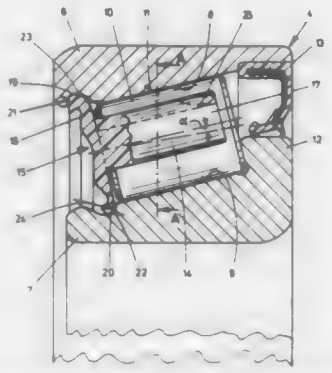
Uwe Brockmüller, Oberwerrn, and Hans-Gerd Weber, Poppenhausen, both of Fed. Rep. of Germany, assignors to SKF GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Nov. 22, 1989, Ser. No. 440,091

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1988, 3841629

Int. Cl.[5] F16C *33/49*

U.S. Cl. 384—576 **11 Claims**



1. A bearing seating arrangement comprising an outer ring, an inner ring, a bendable elastic cage and rolling elements between said inner and outer rings and positioned to roll in a circumferential direction, each rolling element being installed between essentially axially extending spacers of said cage, the spacers having holding surfaces partially surrounding the rolling surfaces of the rolling elements, at least one of the two ends of the spacers being solidly attached to at least one radially inward and/or radially outward extending projection of the cage, said projection(s) facing a respective revolving shoulder surface(s) of the inner or outer ring, said projection(s) being mounted to be pushed with a directed pre-tensioning force against the circumference of the respective shoulder surface of one of said inner ring or the outer ring, said pre-tensioning force being in a direction to elastically radially dislocate said holding surfaces against said rolling elements.

5,009,526

METHOD OF ADJUSTING A PRINTING GAP IN A PRINTER

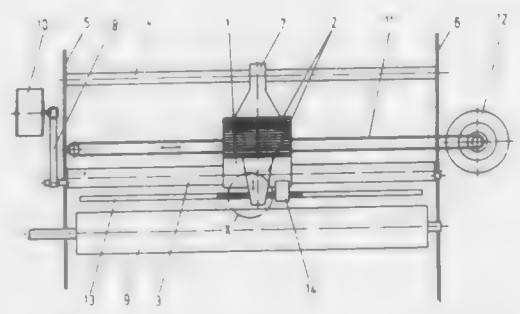
Rolf Kirchhof, Freusburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 10, 1990, Ser. No. 508,034

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1989, 3913073

Int. Cl.[5] H1J *25/28*

U.S. Cl. 400—56 **15 Claims**



1. A method of adjusting a printing gap in a printer between a printing head and a printing support comprising:

(a) moving the printing head to and fro in first reciprocating directions between direction switching pints and then simultaneously moving the head forwards in a second direction toward the printing support to contact the support,

(b) determining the variation of a parameter characteristic value of the reciprocating to and fro movement caused by contact of the printing head with the printing support,

(c) said variation results, when a given characteristic value is reached, in stopping the forward movement, and

(d) moving the printing head, starting from this stopped forward movement position, in which the printing gap is at "zero", backwards a desired value of the printing gap.

5,009,527

THERMAL TRANSFER COLOR PRINTER WITH SHEET RETAINING AND GUIDING STRUCTURE ADJACENT PLATEN

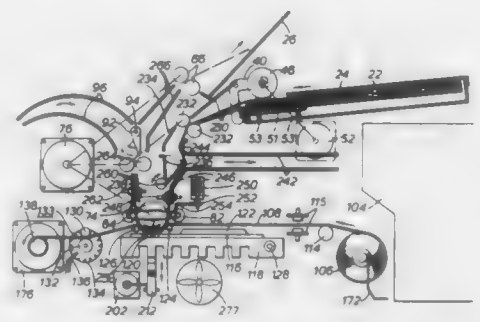
Masasumi Yana; Hitoshi Nagato, both of Yokohama; Kiyoshi Yamada, Tokyo; Shyoji Ueno, and Kunihiro Shibuya, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Continuation of Ser. No. 742,850, Jun. 10, 1985, abandoned, which is a continuation of Ser. No. 554,319, Nov. 22, 1983, abandoned. This application Mar. 3, 1986, Ser. No. 834,650

Claims priority, application Japan, Nov. 24, 1982, 57-204526

Int. Cl.[5] B41J *2/325, 35/16, 13/036*

U.S. Cl. 400—120 **3 Claims**



1. A thermal transfer color printer for printing a color image on individual separate sheets of a recording media having front and rear end portions comprising:

feed means for feeding separate sheets of a recording media one by one into said thermal transfer color printer;

a reversible platen roller to transport a single sheet of recording media received from said feed means;

retention means adjacent said reversible platen roller for retaining and guiding the sheet of recording media along the surface of said platen roller as the sheet of recording media moves in both a first and reverse direction during printing of a color image;

a multicolored ink ribbon supported to move across said platen roller with one face of said ink ribbon in heat transfer relationship with the sheet of recording media, said ink ribbon having a plurality of color segments successively arranged along its length;

a thermal printhead having thermal elements which are selectively energized by color component electrical signals representing the color image to be printed on the sheet of recording media, said printhead being positioned with said thermal elements facing the surface of said platen roller in heat transfer relatioship with said multicolored ink ribbons;

printhead moving means for selectively moving said thermal printhead up and down so that in the up state said printhead presses said ink ribbon and said sheet of recording media onto the surface of said reversible platen roller for thermally transferring colored ink from said ink ribbon onto said sheet of recording media when said thermal elements are energized and in the down state said printhead is disengaged from said reversible platen roller;

ink ribbon drive means for transporting said multicolored ink ribbon in said first direction;

platen roller drive means for driving said reversible platen roller to transport the sheet of recording media in said first direction without disengaging said retention means from the rear end portion of the sheet of recording media, said platen roller drive means transporting the sheet of recording media at substantially the same rate as said ink ribbon, said platen roller drive means also including reverse drive means for driving said reversible platen roller in said reverse direction to transport the sheet of recording media in a second direction opposite said first direction without disengaging said retention means from the front end portion of the sheet of recording media, wherein said platen roller drive means includes means to prevent said sheet of recording media from exiting said printer during printing of said color image on said recording media; and

electrical circuit means connected to said thermal printhead for supplying the color component electrical signals to said thermal elements while the sheet of recording media is transported in the first direction.

5,009,528

DOT PRINT HEAD

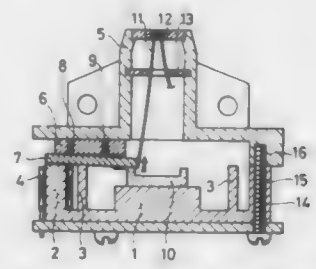
Masami Horii; Shigeo Komakine; Kuniaki Ochiai, and Takashi Kondoh, all of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed May 26, 1989, Ser. No. 357,901

Claims priority, application Japan, May 27, 1988, 63-130001; Nov. 4, 1988, 63-279093; Apr. 7, 1989, 1-89122

Int. Cl.[5] B41J *2/235*

U.S. Cl. 400—124 **2 Claims**



1. A dot print head comprising: a yoke having a peripheral portion; a plurality of cores having end surfaces formed integrally with the yoke and arranged in a circumferential ring on the peripheral portion of the yoke; solenoid coils wound respectively around the cores; an armature support having end surfaces formed integrally with the yoke along and inside the circumferential ring of cores; armatures having front, middle, and rear portions each fixedly provided with a stylus at the front portion thereof and supported at the middle portion thereof for swinging motion on the armature support, said armatures being biased so that the respective rear portions thereof are separated from the end surfaces of the corresponding cores while the solenoids coils are not energized; and an armature holding member disposed opposite to the yoke with a predetermined gap therebetween and holding the armatures for swinging motion on the armature support; a plurality of joining parts having contact surfaces located on the circumferential ring of the yoke and a second plurality of joining parts also having contact surfaces located on the armature holding member at positions corresponding respectively to the joining parts located on the yoke and means located on said circumferential ring and passing through said contact surfaces to hold the contact surfaces of said yoke against the contact surfaces of said armature holding member.

5,009,529

MATRIX PRINT HEAD OF HINGED-CLAPPER-ARMATURE CONSTRUCTION

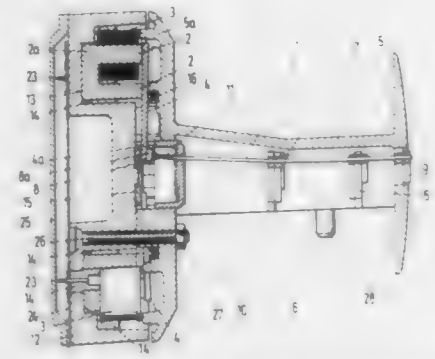
Bernd Gugel, Ulm-Einsingen; Clemens Kaufmann, Ulm; Herbert Kitzberger, Oberstotzingen, and Kurt Röhrer, Niederstotzingen, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Nov. 30, 1989, Ser. No. 443,754

Claims priority, application European Pat. Off., Dec. 1, 1988, 88730266.9

Int. Cl.[5] **B41J** *2/235*

U.S. Cl. 400—124 **21 Claims**



1. A matrix pin print head of the hinged clapper armature construction with several pin systems comprising

a magnetic yoke limb pair for each pin system including an individual outer magnetic yoke limb;

an electromagnetic coil;

a hinged clapper armature having opposed notches;

a print pin having at an end a pin connection point,

a circumferentially closed ring;

an electromagnetic coil support forming with the magnetic yoke limb pairs a single circular piece component and wherein the outer individual magnet yoke limb and wherein, in each case, the magnet yoke limb pairs are disposed on a radial line passing through the pin connection point, and wherein each radially inner magnet yoke limb is formed to be part of the circumferentially closed ring;

a shell;

guide means attached to and projecting from the shell and

receiving means disposed in the closed ring, said opposed notches being aligned with said receiving means, said guide means being received in said opposed notches and said receiving means to confine the pivoting motion of the hinged clapper armatures.

5,009,530

APPARATUS FOR REVERSE RECORDING IMAGE AND COVERING BY PROTECTIVE MEDIUM

Susumu Kuzuya, Gifu; Seiji Shimizu; Mikio Kato, both of Nagoya; Yujiro Ishikawa, Toyota; Takashi Sakai, Nagoya, and Eiji Yuki, Owariasahi, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Oct. 24, 1988, Ser. No. 261,318

Claims priority, application Japan, Oct. 31, 1987, 62-167673[U]; Dec. 21, 1987, 62-323429

Int. Cl.[5] **B41J** *2/325*

U.S. Cl. 400—188 **11 Claims**

1. A recording apparatus, comprising:

an apparatus body having a front section on the side of an operator of the apparatus and a rear section remote from the operator's side;

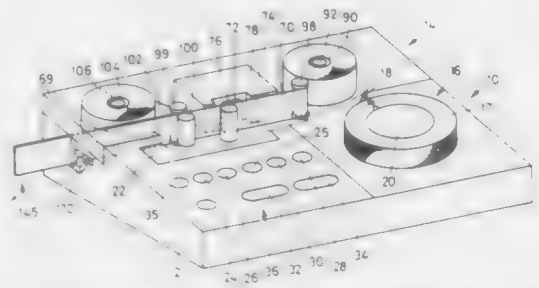
medium feeding means supported by said apparatus body, for feeding a substantially transparent recording tape along a predetermined feed path defining a boundary between said front and rear sections, such that one of opposite surfaces of the tape faces the operators side;

ribbon feeding means disposed in said rear section of said apparatus body, for feeding an ink ribbon along a portion of said predetermined feed path;

recording means including a stationary thermal head disposed in said rear section of said apparatus body, for recording an image on the other of said opposite surfaces of said tape, via said ink ribbon fed between said tape and said thermal head;

a platen disposed in said front section of said apparatus body, in facing relation with said thermal head, for supporting said tape in contact with one surface of the tape;

control means for controlling said recording means, said medium feeding means and said ribbon feeding means, such that said image is laterally reversed as viewed in a first direction from said recording means toward said



other surface of the medium, with respect to a nominal desired image as viewed in a second direction from said front section toward said one surface of the tape, whereby the laterally reversed image is seen as said nominal desired image when view in said second direction;

a backing tape comprising a substrate, two adhesive layers formed on opposite surfaces of said substrate, and a release layer provided on one of said two adhesive layers; and

means disposed at a position along said predetermined feed path downstream of said recording means, for superposing said backing tape on a recorded portion of said recording tape such that said backing tape is bonded at the other of said two adhesive layers thereof to said other surface of said recording tape.

5,009,531

COLOR INK RIBBON AND PRINTER USING THIS RIBBON

Seiji Koike, Shizuoka, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Jan. 16, 1990, Ser. No. 464,949

Claims priority, application Japan, Jan. 20, 1989, 1-11634

Int. Cl.[5] **B41J** *31/09*

U.S. Cl. 400—240.3 **16 Claims**

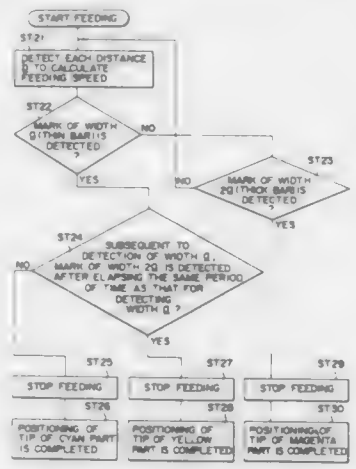
1. A printer system comprising:

an ink ribbon body on which a plurality of kinds of ink portions are arranged, said ink portions being arranged along a feed direction of said ink ribbon body;

means for discriminating the kinds of said ink portions and for providing ink kind information, said discriminating means being arranged on said ink ribbon body in correspondence with each of said ink portions;

means for detecting a feeding speed of said ink ribbon body and for providing ribbon speed information, said detecting means being arranged on said ink ribbon body; and

means for determining the kind of ink portion which is subsequent to a current ink portion to be used by the



printer system, according to said ink kind information and said ribbon speed information.

5,009,532

PAPER FEEDING APPARATUS FOR ACCOMMODATING DIFFERENT LENGTHS OF RECORDING MEDIA FOR USE WITH A PRINTER

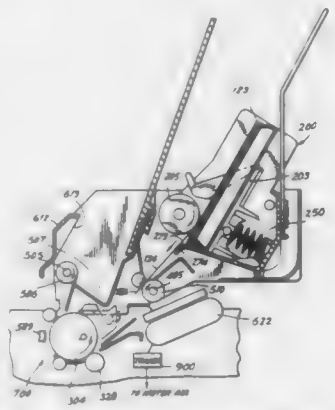
Hiroyuki Akazawa, Suwa, and Toshihiro Imae, Hino, both of Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed May 16, 1988, Ser. No. 194,667

Claims priority, application Japan, May 18, 1987, 62-120717

Int. Cl.[5] **B41J** *13/03*

U.S. Cl. 400—636.2 **30 Claims**



1. A paper feeding apparatus associated with a printer having a platen, comprising:

driving means for rotating the platen in first and second directions;

storage means for holding a plurality of individual recording media and including separating means for controlling the release of individual recording media from the storage means;

roller means for removing individual recording media from the storage means;

auxiliary roller means disposed along a path travelled by the individual recording media and between the roller means and platen for advancing the individual recording media towards the platen; and

transmission means for rotating said roller means to remove individual recording media from the storage means in response to rotation of said platen in the first direction and for rotating said auxiliary roller means to advance the recording media in response to rotation of said platen in the first and second directions;

wherein said auxiliary roller means rotates in only one direction in response to rotation of said platen in first and second directions.

5,009,533

PROPELLING PENCIL WITH CUSHION SLEEVE

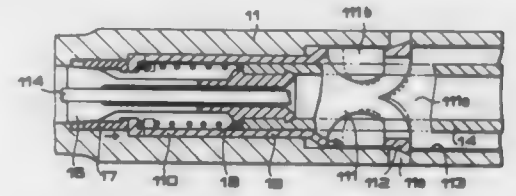
Hidehei Kageyama, Kawagoe, Japan, assignor to Kotobuki & Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 346,344, Apr. 28, 1989, abandoned, which is a continuation of Ser. No. 695,755, Jan. 29, 1985, abandoned, which is a continuation of Ser. No. 410,963, Aug. 24, 1982, abandoned. This application Aug. 9, 1990, Ser. No. 565,214

Claims priority, application Japan, May 10, 1982, 57-67850

Int. Cl.[5] **B43K** *21/00, 21/22*

U.S. Cl. 401—65 **5 Claims**



1. A pencil comprising:

(a) an outer cylinder;

(b) a lead pipe accommodated in said outer cylinder and having a lead chuck at a distal end thereof;

(c) a chuck tightening pipe mounted in said outer cylinder and, in assembly, tightening said lead chick;

(d) an axially slidable cushion sleeve mounted in said outer cylinder and including:

(i) a first elongated portion, having a first outer diameter, adapted to engage said chuck tightening pipe,

(ii) a second elongated cushioning portion, having a second outer diameter, connected to said first elongated portion, said second elongated cushioning portion having a rear end remote from said first elongated portion,

(iii) an engaging projection extending radially outward of said second portion at said rear end,

(iv) a diametric slit formed in said rear end of said second portion and extending substantially transverse to said radially extending engaging projection, said diametric slit permitting radial resilient deflection of said rear end of said second portion in a direction substantially transverse to said diametric slit, and

(v) a circumferential hole formed in said second portion in front of said engaging projection, said circumferential hole permitting axial resilient deflection of said second portion, said slit, said hole and said second portion cooperating to form a resilient elastically deformable spring;

(e) said outer cylinder including engagement means for engaging said projection for limiting the axial movement of said cushion sleeve;

(f) said outer cylinder including guide means for guiding said at least one projection into engagement with said engagement means during assembly; and

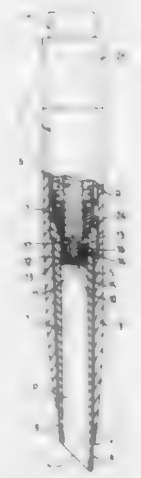
(g) spring biasing means interposed between said lead pipe and said first portion.

5,009,534

PISTON DISPENSER FOR PASTE OR SOLID PRODUCTS

Jean-Louis Gueret, Paris, France, assignor to L'Oreal, Paris, France

Filed Feb. 2, 1990, Ser. No. 474,525
Claims priority, application France, Feb. 7, 1989, 89 01545
Int. Cl.[5] B05C *17/00*; B45D *40/06*
U.S. Cl. 401—75 14 Claims



1. A dispenser for a product to be spread and including a reservoir for the product, a drive means for dispensing the product from said reservoir, said reservoir comprising a tube having a cylindrical interior and a dispensing opening at one end thereof, a piston movably disposed in said interior of said tube, said drive means including a rod having one end engageable with said piston, said piston having opposite faces and a passage extending therethrough from the one of said faces facing said reservoir to the other of said faces facing said rod, said passage being located in said piston so as to be in axial alignment with said rod and said rod having a head for engaging said other of said faces of said piston on which said passage opens, said rod being movable toward said piston to bring said head into engagement therewith to effect the dispensing and away from said piston thereby allowing separation of said rod from said piston.

5,009,535

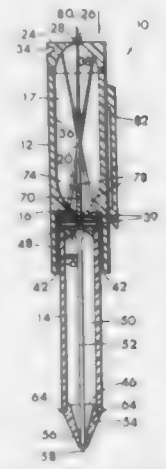
COMBINATION WRITING IMPLEMENT AND TOOTHPICK DISPENSER

Clayton D. Oilar, P.O. Box 64, Cedarville, Calif. 96104

Filed Aug. 10, 1990, Ser. No. 565,456
Int. Cl.[5] B43K *29/00*; B65D *83/02*
U.S. Cl. 401—195 1 Claim

1. A toothpick dispenser and writing implement combination, comprising:

an elongated tubular housing sized for hand held usage by a human, said tubular housing having a first end and an oppositely disposed second end, said first end having a plurality of toothpicks within a storage chamber of said tubular housing, said first end having means for dispensing a toothpick of said plurality of toothpicks, said means for dispensing a toothpick having means actuatable by pressing on a top of said first end whereby a single toothpick is dispensed from within said storage chamber through an aperture in said top of said first end, said tubular housing having spring biased means affixed thereto for temporarily retaining said tubular housing in a shirt pocket, said second end of said tubular housing having a writing tip, and means for temporarily covering said writing tip.



5,009,536

WATER BASE PIGMENT INK COMPOSITIONS FOR USE IN MARKING PENS

Hiroshi Inoue; Wataru Yokono, and Yasuji Okuda, all of Osaka, Japan, assignors to Sakura Color Products Corp., Osaka, Japan

Division of Ser. No. 434,945, Nov. 9, 1989, Pat. No. 4,942,185.
This application Jun. 8, 1990, Ser. No. 535,328
Claims priority, application Japan, Nov. 15, 1988, 63-288237
Int. Cl.[5] B43K *5/02*
U.S. Cl. 401—198 8 Claims

1. A marking pen which contains an absorbent ink reservoir impregnated with an ink composition and a pen tip connected thereto, the ink composition comprising:

(a) water in amounts of not less than 50% by weight;

(b) an aqueous emulsion of hollow resin particles in amounts of 0.5–40% by weight as solids;

(c) a white pigment in amounts of 1–40% by weight; and

(d) a water-solubilized alpha-methylstyrene/styrene/acrylic acid copolymer which has a weight average molecular weight of 1000–10,000 and a distribution of molecular weight of 0.5-3.3, but which contains substantially no components having a weight average molecular weight of not more than 500, in amounts of 0.1–30% by weight, based on the ink compositions, respectively.

5,009,537

BOOKLET BINDING SYSTEM

Philip B. Stengel, Cambridge, Minn., assignor to Creative Binding Systems, Inc., Cambridge, Minn.

Filed Dec. 27, 1988, Ser. No. 290,563
Int. Cl.[5] B42F *13/04*
U.S. Cl. 402—21 3 Claims

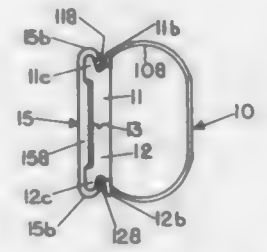
1. A booklet binding system for use with a wire loop binder of the type having a pair of opposed spaced apart rows of loop segments, wherein one of the segments forms narrow tine elements adapted to be received through the holes of prepunched sheets and the other segment being connecting loops to provide a continuous wire loop binder,

a closure removably mounted in the space between the two opposed loop segments to capture the sheets mounted on the tine elements of the wire loop binder,

said closure including a pair of spaced apart loop receiving grooves for respectively receiving the spaced apart ends of the two rows of loop segments,

means for retaining the closure in binding position between the ends of the loop segments, and wherein

the loop receiving grooves are orientated to alone slope inwardly to maintain the closure in interlocked binding



position between the two rows of loop segments, and wherein

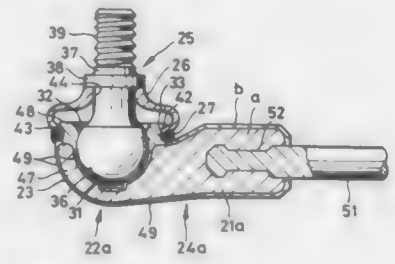
the closure comprises a pair of elongated sections hingedly connected longitudinally thereof to facilitate insertion of the loop segments into the grooves defined therein.

5,009,538

BALL JOINT

Tadayoshi Shirai, and Masahito Hioki, both of Hamamatsu, Japan, assignors to Ishikawa Tekko Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 12, 1990, Ser. No. 551,912
Claims priority, application Japan, Aug. 3, 1989, 1-201849
Int. Cl.[5] F16C *11/00*
U.S. Cl. 403—134 5 Claims



1. A ball joint comprising:

a housing portion;

said housing portion including an inner layer and an outer layer;

said inner layer including a fiber-reinforced plastic resin;

said outer layer substantially covering said inner layer;

said outer layer being a self-lubricating plastic resin substantially without fiber reinforcement;

a spherical inner chamber in said outer layer;

a hemi-spherical inner chamber in said inner layer;

an opening in said spherical inner chamber;

a ball stud;

a ball portion of said ball stud slidably mounted in said spherical inner chamber; and

a stud portion of said ball stud protruding from said opening.

5,009,539

CLAMPING SET WITH SCREW SLEEVE

Ralph Muellenberg, Im Wiesengrund 6, D-4048 Grevenbroich 12, Fed. Rep. of Germany

Filed Aug. 4, 1989, Ser. No. 389,890
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1988, 3826849
Int. Cl.[5] B25G *3/20*
U.S. Cl. 403—370 31 Claims

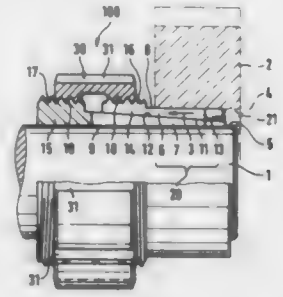
1. A clamping set for the transmission of torques between at least one inner shaft component having a cylindrical outer peripheral face and at least one outer hub component having a recess in which the inner component engages concentrically, and also having a cylindrical inner peripheral face, said clamping set comprising:

an outer taper bushing having a cylindrical outer peripheral face disposed to rest against the inner peripheral face of the outer component and an inner taper face coaxial with the outer peripheral face and having a taper angle lying in the self-locking region;

an inner taper bushing having a cylindrical inner peripheral face disposed to rest against the outer peripheral face of the inner component and an outer taper face coaxial with the inner peripheral face and having a taper angle equal to that of the inner taper face;

a screw sleeve which surrounds the inner taper bushing and is screwed with a first internal thread on an externally threaded extension of the inner taper bushing thereby connecting axially to a clamping region of the outer taper face; and

a longitudinal stop on the outer component engaging with the end of the inner taper bushing;



said screw sleeve being arranged axially outside a side portion of the outer component thereby drawing the taper bushings towards each other and pressing away from each other axially while gliding over the taper faces;

said outer taper bushing having an externally threaded extension connecting axially to the clamping region of the inner taper face, said outer taper bushing being arranged axially outside the side portion of the outer component;

said screw sleeve having a second internal thread of different pitch axially adjacent to the first internal thread;

the second internal thread of the screw sleeve engaging with the external thread of the outer taper bushing;

the externally threaded extension of the outer taper busing being disposed on a thin-walled end of the outer taper bushing and the threaded extension of the inner taper bushing being disposed on a thick-walled end of the inner taper bushing.

5,009,540

FASTENING MEANS

Vernon E. L. Nolan, 16 Goose Road, Padbury, Western Australia, Australia

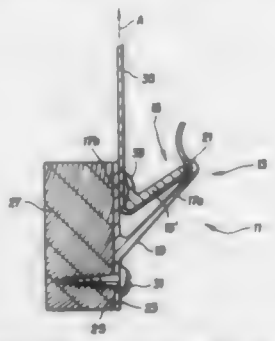
PCT No. PCT/AU87/00358, § 371 Date Apr. 25, 1989, § 102(e) Date Apr. 25, 1989, PCT Pub. No. WO88/03231, PCT Pub. Date May 5, 1988
PCT Filed Oct. 23, 1987, Ser. No. 348,669
Claims priority, application Australia, Oct. 27, 1986, PH8699
Int. Cl.[5] B25G *3/00*; A47H *13/00*
U.S. Cl. 403—405.1 11 Claims

1. A fastening means for fastening sheet material to a fixture wherein the sheet material is subject to a varying tensile force, comprising:

a fork member for mounting to the fixture, said fork member including a pair of outwardly diverging arms joined at a common junction, one of said arms including a hook means thereon spaced from said junction; and

means for fastening the sheet material within said fork member such that the fastening force applied to the sheet material is proportional to the tensile force in the sheet material, said means for fastening within said fork member

including a keeper member having a substantially planar body, said substantially planar body having two ends, one end for holding the sheet material against said hook means and an other end for holding the sheet material against the inner side of the other of said arms such that a fastening force is applied to the sheet material by said other end of said body in proportion to the tensile force in the sheet



material, a distance between said ends of said body being greater than a maximal spacing between said arms, and being less than a distance between said hook means and said common junction, so that said keeper may adopt a locking position wherein said keeper is pulled in the same direction as the tensile force in the sheet material, thereby causing said ends of said body to apply the fastening force.

5,009,541

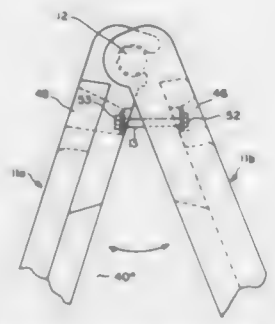
PLASTIC BARRICADE WITH LIMITING BOLT

Kurt W. Thurston, 475 Hill St., Reno, Nev. 89501

Continuation-in-part of Ser. No. 326,615, Mar. 21, 1989, abandoned, and a continuation of Ser. No. 383,298, Jul. 20, 1989. This application Jan. 25, 1990, Ser. No. 470,394

Int. Cl.[5] E01F *13/00, 15/00*

U.S. Cl. 404—6 **3 Claims**



1. A plastic barricade constructed from two substantially similar frame units each having a planar outside face and which are one piece, hollow, and integrally molded, such unit being hinged together to pivot around a common axis of rotation, each of said frame units having left and right edges when an outside face of said hinged barricade is directly viewed by an observer in front of the face of a freestanding barricade, the improvement comprising:

hinge means at the top of each of said frame units including near said left edge a cylindrical male boss and near said right edge a C-shaped female socket for snapping onto said male boss and freely pivoting thereon said hinge means normally allowing said two frame units to pivot open or unfold to an angle substantially greater than a predetermined angle used when placing said barricade in a freestanding position;

means for maintaining said barricade at said predetermined angle of said unfolded freestanding position, including for each frame unit a pair of recesses in said planar outside face near each one of said edges and below said hinge means each said recess having an aperture for accepting an elongated fastener having limiting means on both ends for abutting against said recesses when said barricade is unfolded to its predetermined angle said fastener having a length less than the distance between the planar outside faces of a folded barricade;

each of said frame units including at least one pair of interlocking means located on said outside face of each of said frame units proximate to said left and right edges of said frame unit, one of said pair of interlocking means being an indentation in and the other a protrusion from said outside face, said indentation and protrusion being dimensioned and shaped to closely mate together, said protrusion for each of said two frame units of said barricade always being located on a predetermined one of said left and right edges, whereby assuming the same lengthwise orientation of a barricade, one folded barricade may be stacked on another with the said interlocking means automatically mating with said planar faces of said frame units abutting each other, and without obstruction or interference by said fasteners.

5,009,542

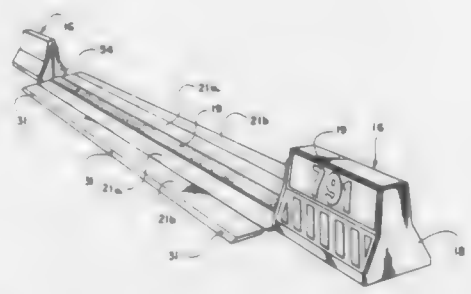
TRAFFIC BARRIER GATE

Paul W. Hardin, Jr., 3086 Parklane, Snellville, Ga. 30278, and Wayne Taylor, 5202 Vivid Dr., Stone Mountain, Ga. 30083

Filed Mar. 6, 1990, Ser. No. 489,346

Int. Cl.[5] E01F *13/00, 15/00*

U.S. Cl. 404—6 **11 Claims**



1. A traffic barrier for controlling the flow of vehicles comprising:

end walls flanking a vertically disposed and horizontally elongated movable gate, said gate being selectively movable vertically from an upright, closed position to an open substantially ground level position,

said gate having a first side and a second side, said sides being connected by a top member,

the first and second sides being pivotally connected to said top member,

a reinforcing longitudinal support beam extending from one end wall to the other end wall, said beam supporting the top member,

retractable support means extending from the support beam to ground level,

lifting means to effect vertical movement of said gate upon command,

said first and second sides of said gate being adapted to move about said pivotal connection at the top member as the gate is moved to its lowered open position wherein said first and second sides collapse to substantially ground level to provide a ramp surface.

5,009,543

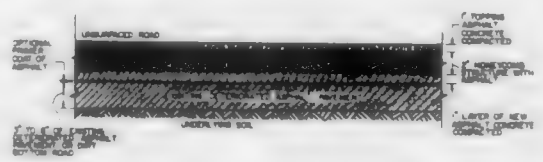
REINFORCED ASPHALT CONCRETE AND STRUCTURE FOR PRODUCING SAME

Jameel Ahmad, Forest Hills, and Joseph P. Valenza, Middle Village, both of N.Y., assignors to High Technologies, Inc., Forest Hills, N.Y.

Filed Jul. 25, 1989, Ser. No. 385,247

Int. Cl.[5] E01C *11/18*

U.S. Cl. 404—70 **5 Claims**



1. A pavement comprising a suitable base and a compacted asphalt concrete layer laid on said base to provide the surface of said pavement and a reinforcement structure positioned and embedded within said asphalt concrete layer below the top surface thereof, said reinforcement structure comprising a stiff, self-supporting reinforcement structure which compresses to about 83% of its original height, to the extent equivalent to that of unreinforced asphalt concrete, upon being compacted during road resurfacing when embedded in asphalt concrete laid on a road surface to reinforce the resulting compacted asphalt concrete, said reinforcement structure comprising open mesh wire strips configured and disposed relative to each other such that said strips are in side-by-side contact with each other and fixed together at locations of contact, the fixed contacting wire strips defining a plurality of cells or a honeycomb-like structure between said strips making up said reinforcement structure.

5,009,544

METHOD AND MACHINE FOR WORKING AN AREA OF GROUND, IN PARTICULAR FOR SURFACING A ROAD

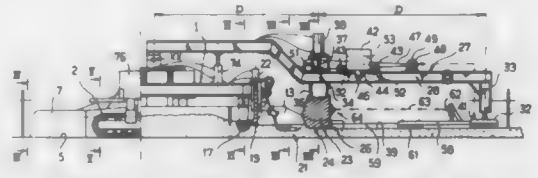
Alain Chaize, 3 rue Greneta, 75003 Paris, France

Filed Aug. 14, 1989, Ser. No. 394,414

Claims priority, application France, Aug. 18, 1988, 88 10998

Int. Cl.[5] E01C *19/22*

U.S. Cl. 404—72 **24 Claims**



1. A method for working an area of ground, in which a machine carrying a tool (23) which is in contact with said area is displaced along the area to be worked while means (3, 38) at least indirectly supporting the tool (23) are adjusted in respect of height so that said tool follows a path which is substantially independent of the unevenness of a nonworked region (5) of the ground over which there progress means (2) for supporting said machine on rough ground located forwardly of a rear transverse end (26) of the tool (23), the tool being supported, during working, under a bridge frame, one front end of which is supported by the means (2) for supporting said machine on rough ground via an articulation (31) with an axis (X—X) transverse to the median longitudinal plane (P) of the machine, wherein a rear end of the bridge frame (27) is caused to rest on the worked area (39) under a pressure which is sufficiently low to avoid any significant deterioration of the worked surface (37), and wherein said pressure is adjusted by displacing a ballast (42) along the bridge frame (27).

7. A method for working an area of ground, in which a machine carrying a tool (23) which is in contact with said area is displaced along the area to be worked while means (3, 38) at least indirectly supporting the tool (23) are adjusted in respect of height so that said tool follows a path which is substantially independent of the unevenness of a nonworked region (5) of the ground over which there progress means (2) for supporting the machine on rough ground which are located forwardly of a rear transverse end (26) of the tool (23), the tool being supported, during working, under a bridge frame one front end of which is supported by the means (2) for supporting the machine on rough ground via an articulation (31) with an axis (X—X) transverse to the median longitudinal plane (P) of the machine, wherein a rear end of the bridge frame (27) is caused to rest on the worked area (39) under a pressure which is sufficiently low to avoid any significant deterioration of the worked surface (39), and wherein said pressure is continuously detected and adjusted to maintain said pressure substantially constant.

5,009,545

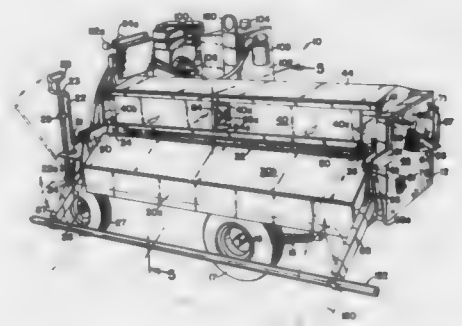
WIRE MESH STRAIGHTENING METHOD AND APPARATUS

Darold D. Coleman, Rice Lake, and Raymond P. Nesseth, Barron, both of Wis., assignors to NTH, Inc., Barron, Wis.

Continuation of Ser. No. 316,155, Feb. 27, 1989, abandoned. This application Jul. 20, 1990, Ser. No. 555,652

Int. Cl.[5] E01C *11/16, 24/04*

U.S. Cl. 404—100 **29 Claims**



1. Wire mesh straightening apparatus for automatically straightening rolled wire mesh at a construction site, comprising:

(a) a chassis sized and configured for ease of mobility to and at a construction site;

(b) a pair of generally parallel rollers mounted to said chassis and cooperatively aligned generally parallel to each other and forming a nip between those respective surface portions of said rollers that lie closest to one another at any point in time, said rollers having a length at least equal to the width of the wire mesh to be straightened;

(c) means for advancing the wire mesh to be straightened through said nip formed by said rollers including hydraulic drive means operatively connected to drive at least one of said rollers about its axis;

(d) reaction means connected to said chassis arranged and configured to intercept the wire mesh passing through said nip for continuously bending said mesh in a direction opposed to the preexisting curvature of said wire mesh as it leaves said nip; whereby said wire mesh is uniformly straightened as it leaves said reaction means; and

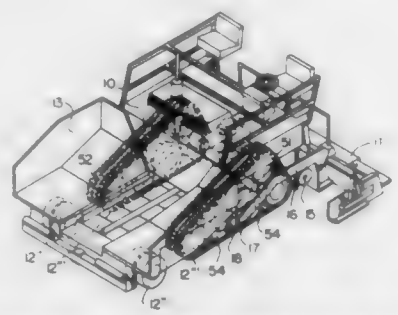
(e) self-releasing starting means connected to said chassis for retainably engaging the wire mesh to be straightened and for guiding the mesh toward said nip.

5,009,546

ROAD PAVER-FINISHER WITH A COMBINATION OF AXLES WITH STEERING WHEELS AND CRAWLER UNITS

Domenico Domenighetti, Via Calli, 8, CH-6900, Switzerland, and Jack Layton, 4725 Turner Rd., SE., Salem, Oreg. 97301

PCT No. PCT/EP87/00197, § 371 Date Feb. 8, 1989, § 102(e) Date Feb. 8, 1989, PCT Pub. No. WO88/08054, PCT Pub. Date Oct. 20, 1988
PCT Filed Apr. 10, 1987, Ser. No. 299,826
Int. Cl.[5] E01C *19/18*
U.S. Cl. 404—110 **7 Claims**



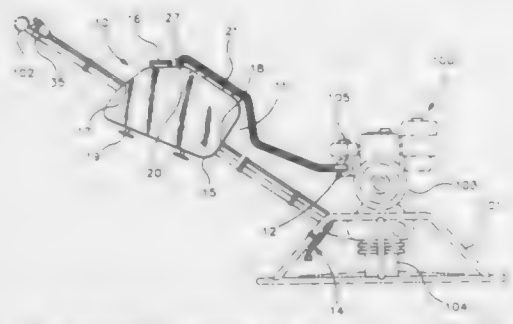
1. A road paver-finisher comprising a tractor unit, a screed unit mounted for vertical movement on and relative to the tractor unit, the tractor unit having a hopper for road material, and conveyor means for unloading the road material from the hopper in front of the screed to be leveled by the screed, crawler belts mounted on the tractor unit forwardly of the screed for advancing the tractor unit, ground engaging steering wheels mounted on the tractor unit forwardly of the crawler belts, and power means for moving said steering wheels and crawler belts vertically relative to each other thereby to control tilting of the tractor unit and hence of the screed.

5,009,547

WATER SPRAY FOR CEMENT FINISHER

Jeff A. Clark, 225 W. El Norte #206, Escondido, Calif. 92026

Filed Jan. 11, 1990, Ser. No. 463,521
Int. Cl.[5] E01C *19/22*
U.S. Cl. 404—112 **5 Claims**



1. An improved apparatus for treating cement and other flooring surfaces having a frame, a handle on the frame, an internal combustion engine on the frame and a rotary finishing means to smooth the flooring surface on the frame powered by the engine, wherein the improvement comprises:

a. a fluid tank;

b. a filler cap on the fluid tank;

c. a control means connected to the fluid tank to control the flow of fluid from the fluid tank;

wherein the control means further comprises:

at least two control valves;

a linkage means attached to each control valve to open and close the control valve; and

an actuation means attached to each linkage means to move the linkage means;

d. at least two first inlet ports in the fluid tank through which the control means enters the fluid tank;

e. at least two outlet ports in the fluid tank through which the control means exits the fluid tank;

f. an first attachment means on the fluid tank to attach the fluid tank to the handle on the frame;

g. at least two nozzles to direct the flow of the fluid;

h. at least two fluid conduits to transmit the fluid from the fluid tank to the nozzles;

i. an second inlet port in the fluid tank;

j. a pressure conduit to transmit pressure to the fluid tank;

k. a first pressure connection means to connect the pressure conduit to an exhaust apparatus of the engine;

l. a second pressure connection means to connect the pressure conduit to the fluid tank through the second inlet port; and

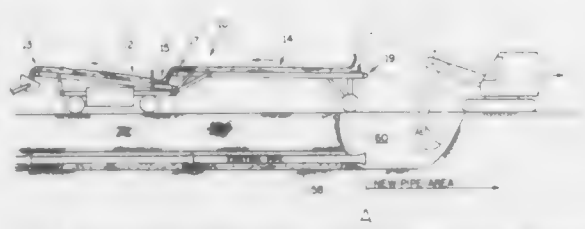
m. a pressurization regulation valve connected to the pressure conduit.

5,009,548

APPARATUS FOR AND A METHOD OF FACILITATING THE EXCAVATING AND REFILLING OF A TRENCH

G. P. "Sonny" Falbo, Rte. 3, Box 525 C, San Antonio, Tex. 78218, and Jesse W. Harris, 3006 Mayfair, San Antonio, Tex. 78217

Filed Jan. 26, 1990, Ser. No. 470,949
Int. Cl.[5] B65G *21/10*
U.S. Cl. 405—179 **3 Claims**



1. A method for aiding the excavation and filling of trenches in laterally confined spaces using an apparatus comprising;

a first longitudinal conveyer section and a second longitudinal conveyer section, each of said sections having a first end and a second end;

a first and a second endless conveyer belt located on said first and second conveyer section;

belt drive means for energizing said conveyor belts, said belt drive means capable of reversing direction;

link means for attaching the second end of said first section with the first end of said section second section, said link means further comprising pivot means for selectively allowing a straight or angled relationship between the longitudinal axis of said sections;

means for selectively positioning the linked ends of said sections, one above the other; and

truck means for steerably supporting said first and said second conveyer sections, said truck means having wheels and spaced sufficiently wide to straddle the trench:

the method comprising:

(a) removing virgin overburden for dumping at an off-site location by depositing overburden on the first end of the first conveyor unit for transportation to the second end of the second conveyor unit;

(b) removing overburden for depositing on the first end of the first conveyor unit which overburden will be dropped off the second end of the first conveyor unit into previously excavated trench which contains bedding and pipe, wherein steps (a) and (b) remove sufficient overburden to lay a section of pipe;

(c) adding bedding material by depositing it on the second end of the second unit for dropping into the trench ultimately off the first end of the second unit and the first end of the first unit until sufficient bedding has been laid;

(d) laying a section of pipe;

(e) adding overburden from step (b) above in an amount sufficient to refill the trench;

wherein steps (a) through (e) are completed sequentially as the apparatus moves longitudinally in the direction of excavation until such a time as the excavation is complete.

5,009,549

EXPANSION ASSEMBLY FOR MINE ROOF BOLTS

John C. Stankus, Canonsburg, Pa., assignor to Jennmar Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 275,205, Nov. 22, 1988, Pat. No. 4,861,198. This application May 22, 1989, Ser. No. 363,274
The portion of the term of this patent subsequent to Aug. 29, 2006, has been disclaimed.
Int. Cl.[5] E21D *20/02*
U.S. Cl. 405—261 **10 Claims**



1. An expansion assembly for a mine roof bolt having a threaded portion at one end and a bolt head at the other end comprising;

a tapered plug having a body portion with a threaded internal bore adapted to be threaded onto said bolt threaded end portion, said tapered plug having two legs depending from said body portion that straddle said bolt and extend toward said bolt head when said plug is threaded onto said bolt threaded portion, said body portion and said depending legs forming continuous tapered surfaces that each form an angle of at least 8° to the axis of said bolt when said plug is threaded onto said bolt;

said tapered plug body portion having the surface positioned closer to said bolt threaded end formed with a relieved edge having a frusto-conical configuration to facilitate penetration of resin by said expansion assembly,

a pair of expansion leaves each having a serrated outer surface, a smooth inner surface and tapering edge surfaces joining said inner and outer surfaces, said expansion leaves each surrounding said bolt at a radially spaced distance from said bolt when said expansion assembly is positioned on said roof bolt, each of said leaf tapering edge surfaces being in abutting contact with said tapered plug tapered surfaces whereby said leaves are forced apart when said tapered plug is threaded axially onto said roof bolt and said leaves are restrained from axial movement relative to said roof bolt,

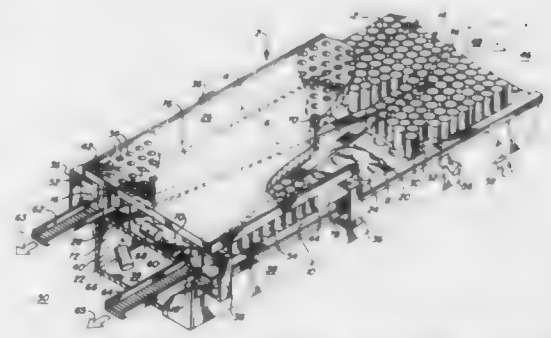
a metal bail connected to each of said expansion leaves and extending over the end of said roof bolt to prevent axial movement of said leaves relative to said bolt when said tapered plug is threaded onto said bolt threaded portion to force said leaves apart.

5,009,550

ARTICLE HANDLING DEVICE WITH LOW PROFILE SIDE GUIDES

Brian K. Hilbish, Beford; David W. Leonard, Sr., Lynchburg; Arnold C. Burgess, Madison Heights, and David R. Burns, Forest, all of Va., assignors to Simplimatic Engineering Company, Lynchburg, Va.

Filed Aug. 30, 1989, Ser. No. 400,523
Int. Cl.[5] B65G *47/256, 51/03*
U.S. Cl. 406—87 **26 Claims**



20. An improved can combiner for separating a stream of randomly oriented articles moving along an air conveyor path from an upstream to a downstream position into either right or left lanes, said articles having a generally uniform article height measured along a longitudinal axis of said articles and upstanding on said path with said longitudinal axis generally perpendicular to said path, said combiner comprising:

(a) an air conveyor deckplate having opposite lateral edges open to opposing sides of said deckplate with said conveyor path therebetween, said deckplate having a plurality of air jet orifices extending through said deckplate, said jets being oriented to propel said articles on said deckplate in a generally downstream direction, the number of said jets being at a predetermined value per unit area of deckplate;

(b) a plenum in pneumatic communication with said deckplate for being connected to a source of air under pressure to supply said air to said jets;

(c) a perforated cover mounted parallel to said deckplate above said deckplate at a vertical distance slightly greater than said article height, said cover restraining said articles against tipping over about said longitudinal axis;

(d) a first pair of elongated raised border members for establishing outer right and left boundaries for said path, said stops being mounted to said deckplate and extending longitudinally along the opposite lateral edges thereof in alignment with the direction of article flow;

(e) a second pair of right and left elongated raised divider members mounted to said deckplate between said border members, said divider members meeting at a point and extending in a downstream direction from said point at an acute angle to each other along at least a portion of said divider member lengths in the region of said point, the right divider member being spaced from said right border member to form said right lane therebetween and said left divider member being spaced from said left border member to form said left lane therebetween, whereby said articles encountering said point tend to separate into either the left or the right lane,

said border and divider members having a top wall portion spaced a preselected vertical distance from said deckplate that is high enough to deflect a majority of said articles to either side of said point and retain said articles within said lanes, but is low enough to permit some of aid articles to fall across said members to be thereby expelled out of said air conveyor.

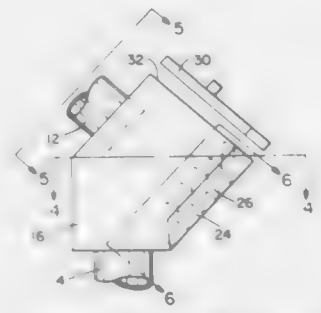
5,009,551
MATERIAL HANDLING SYSTEM AND CONTROL VALVE THEREFOR
Roy Swartz, Muncy, Pa., assignor to Delaware Investments Corp., Wilmington, Del.
Division of Ser. No. 192,916, May 12, 1988, abandoned. This application Jun. 26, 1989, Ser. No. 371,979
Int. Cl.[5] B65G *53/46*
U.S. Cl. 406—128 14 Claims



1. A system for handling particulate material comprising
means for holding a supply of said particulate material,
means for receiving said particulate material,
means for pneumatically conveying said particulate material from said holding means to said receiving means,
means operatively connected to said pneumatic conveying means for inducing fluid flow therein;
a rotary valve operatively interconnected between said material holding means and said pneumatic conveying means for gravity feeding said material from said material holding means to said pneumatic conveying means, said rotary valve comprising a housing having a rotor chamber, a rotor journaled in said housing having a plurality of circumferentially spaced pockets for receiving said material, means for rotating said rotor, said rotor chamber having an inlet communicating with said material holding means and an outlet communicating with said pneumatic conveying means whereby material in said holding means will gravity flow through said inlet into said rotary pockets, to be carried through said rotor chamber and discharged through said outlet into said pneumatic conveying means, a slide valve disposed in said inlet for controlling the flow of material therethrough, and means for electrically operating said slide valve;
means for sensing operating conditions of said system; and
remote control means connected and responsive to said sensing means and electrically connected to said slide valve operating means for automatic operation of said slide valve in response to sensed conditions.

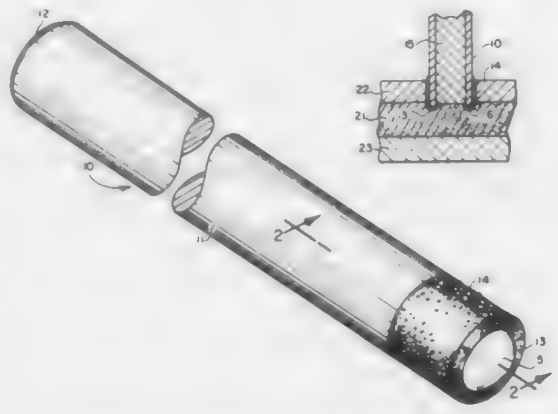
5,009,552
WEAR RESISTANT GRAIN FLOW CONTROL ELBOW
James G. Talcott, P. O. Box 2493, Great Falls, Mont. 59403
Filed Mar. 12, 1990, Ser. No. 493,492
Int. Cl.[5] B65G *53/52*
U.S. Cl. 406—193 2 Claims

1. A flow control elbow for changing direction of particulate matter flowing in a stream, the flow control elbow comprising:
an entrance spout through which the stream of particulate matter may flow;
a discharge spout through which the stream of particulate matter may flow;
a chamber having a first opening in fluid communication with the entrance spout and a second opening in fluid communication with the discharge spout; the chamber further providing a path for the particulate matter to travel from the entrance spout to the discharge spout;
the entrance spout being positioned above the discharge spout and being further positioned with the direction of stream flow through the entrance spout at an angle 90° or greater with the direction of stream flow through the discharge spout;
a baffle-support plate provided within the chamber in the path of the particulate matter through the chamber, the baffle-support plate being positioned to provide an inclined surface extending from one side of the second opening upwardly and generally perpendicular to the stream flow through the entrance spout;



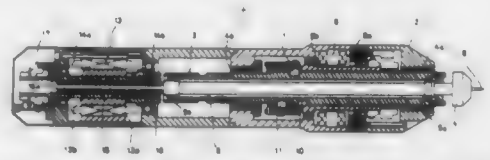
a baffle secured to the baffle-support plate, the baffle extending upwardly from the baffle plate and sized to provide clearance between the top of the baffle and an opposing wall of the chamber;
the baffle including two members formed in a "V"-shaped pattern with the apex of the "V"-shaped pattern positioned closer the second opening than the free ends of the "V"-shaped pattern;
the baffle further having the apex broken away to permit grain flow from above the baffle to the discharge spout

5,009,553
METHOD AND APPARATUS FOR DRILLING HARDPLATE
William G. Nowman, P.O. Box 2082, Camp Verde, Ariz. 86322
Continuation-in-part of Ser. No. 75,515, Jul. 20, 1987, abandoned. This application Jun. 9, 1989, Ser. No. 364,2[illegible]
Int. Cl.[5] B23B *27/10*
U.S. Cl. 408—1 R 2 Claims



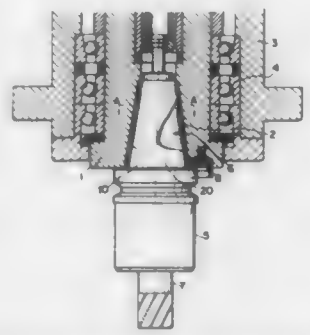
2. In a method for drilling a hole in the hardplate of a burglar-resistant safe, the step of rotating a diamond-tipped drill bit in said hardplate with a composition consisting essentially of beeswax in the drilling interface.

5,009,554
MACHINE TOOL
Fumio Kameyama, Nagoya, and Chikamasa Hattori, Ichinomiya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Sep. 4, 1990, Ser. No. 577,125
Claims priority, application Japan, Sep. 9, 1989, 1-234032
Int. Cl.[5] B23C *1/06*; B23B *47/06*
U.S. Cl. 409—231 19 Claims



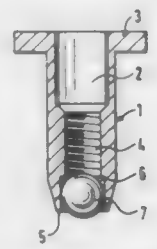
1. A machine tool for machining a work piece, comprising:
a housing;
a spindle having a first end supported within the housing such that the spindle rotates about an axis of the spindle and reciprocates along the spindle axis;
a tool attached to a second end of the spindle;
a feed motor installed in the housing for reciprocating the spindle along the spindle axis;
a variable reluctance motor installed in the housing for rotating the spindle about the spindle axis; and
synchronous control means for controlling the feed motor and variable reluctance motor.

5,009,555
TOOL HOLDER FOR MACHINE TOOL
Koichiro Kitamura, Toyama, Japan, assignor to Kitamura Machinery Co., Ltd., Toyama, Japan
Filed Mar. 13, 1989, Ser. No. 322,125
Claims priority, application Japan, Mar. 25, 1988, 63-69256
Int. Cl.[5] B23B *31/04*
U.S. Cl. 409—232 10 Claims



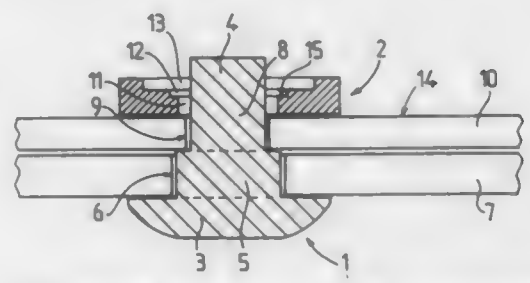
1. A machine tool comprising a machine tool body, a spindle rotatably supported by the machine tool body, the spindle having a supporting portion, a tool holder having an inserting portion to be attached to the supporting portion, a protecting layer fixed to the supporting portion for covering the supporting portion, said tool holder having a coating layer formed on the inserting portion thereof, the coating layer being made of a titanium compound selected from the group consisting of TiN, TiC and TiCN, the protecting layer being made of a ceramic material.

5,009,556
BLIND RIVETING NUT
Herbert Schruff, Reischelplatz 7, 5559 Föhren, Fed. Rep. of Germany
Filed May 15, 1989, Ser. No. 351,960
Int. Cl.[5] F16B *13/04*
U.S. Cl. 411—15 4 Claims



1. A blind riveting nut comprising a hollow shank portion having first and second ends, a setting head at the first end, an internal screwthread at least adjacent the second end, for receiving the pulling mandrel of a blind rivet setting tool and a closure element disposed at the second end of the shank portion, said closure element comprising a closure ball which is press fitted into said second end of the shank portion, said closure ball being separate from and completely removable from its closure portion of closing the shank portion at said second end thereof.

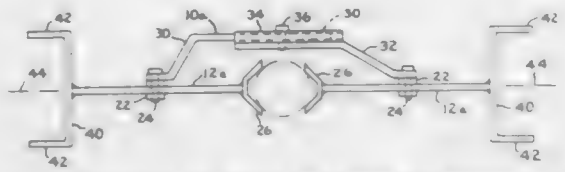
5,009,557
ASSEMBLY DEVICE AND PROCESSES OF USING SAID DEVICE
Charles Desirier, Bouclans, France, assignor to Bost S.A., Laissey, France
Filed Mar. 20, 1990, Ser. No. 496,022
Claims priority, application France, Mar. 20, 1989, 89 03957
Int. Cl.[5] F16B *19/06*
U.S. Cl. 411—504 5 Claims



1. An assembly device for permanently joining at least two parts, comprising:
a rivet element having a head and a rod formed of a material which is deformable by compression; and
a washer having an opening through which said rod extends when said rivet element is assembled to the parts to be joined with said head abutting a first one of the parts and said rod extending through the parts to be joined,
wherein a volume of said opening is at least equal to a volume of said rod projecting from the parts to be joined when said rivet element is assembled to the parts to be joined with said head abutting the first of the parts,
wherein the walls of said washer defining said opening have a lateral shoulder, and
wherein said opening comprises three coaxial cylindrical bores having progressively increasing diameters in a direction away from the rivet head when the rivet element is assembled to the parts to be joined, and wherein the volume of the two bores closest to the rivet head is substantially equal to the volume of said rod projecting from

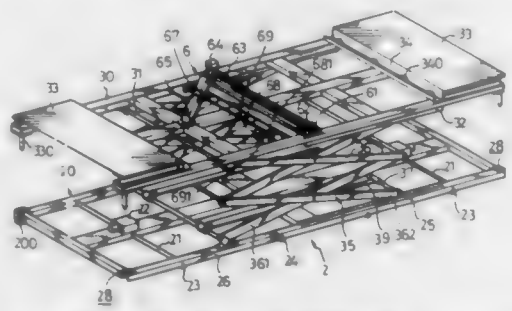
the parts to be joined when said rivet element is assembled to the parts to be joined.

5,009,558
TREE LIFTER
Emilio Savedra, Jr., 426 Charleston NE., Albuquerque, N. Mex. 87108
Filed Nov. 16, 1989, Ser. No. 437,113
Int. Cl.[5] A01G *23/02*; B66F *11/00*
U.S. Cl. 414—23 4 Claims



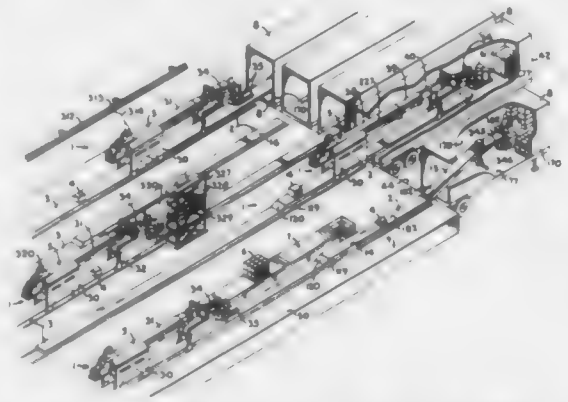
1. A mechanism for lifting and manually transporting an upstanding tree, comprising a horizontally elongated support frame adapted for horizontal disposition alongside a tree to be lifted, said frame having a longitudinal axis and a transverse axis; two similarly-constructed elongated handles, each having a manually-grippable end and a free end; the free ends of the handles being relatively close together, and the manually-grippable ends of the handles being spaced relatively far apart; a transverse horizontal-axis pivot means connecting each elongated handle to the support frame, whereby each elongated handle can be manually swung in a vertical plane paralleling the frame longitudinal axis; each pivot means being located at approximately the longitudinal midpoint of the associated handle, said pivot means being spaced apart along the longitudinal axis of the support frame such that the handles have their free ends in confronting relation to a standing tree; and a tree-engageable saddle carried on the free end of each handle, whereby the weight of the engaged tree exerts wedge forces on the portions of the handles between the saddles and the respective pivot means.

5,009,559
ELEVATOR TYPE PARKING LOT
Chyi J. Tsay, No. 5-1, Tung Ping Lane, Chen Ping Li, Pei Tun Chu, Taichung City, Taiwan
Filed Oct. 30, 1989, Ser. No. 428,872
Int. Cl.[5] E04H *6/00*
U.S. Cl. 414—259 12 Claims



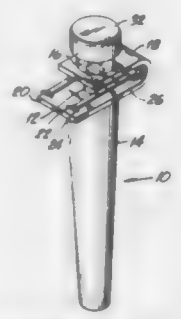
1. An elevator type parking lot comprising:
a plurality of layers of main frames, each layer including a passage longitudinally provided on a center of a bottom surface thereof, at least one layer of holding units being provided along each side of said passage, each holding unit including a pair of upper tracks and a pair of lower tracks;
an elevator slidable vertically to align with each layer of said main frames;
a sliding conveyer being raised and carried by said elevator, said sliding conveyer being slidable on a bottom surface of said elevator and slidable along said passage of each layer of said main frames so as to align with each holding unit, said sliding conveyer including a lower frame and an upper frame connected together by a lifting mechanism, said lifting mechanism being extendible vertically so as to raise said upper frame, and a cross slide feed mechanism being provided upon said upper frame; and
a sliding carrier being comprised of substantially a plate and being carried on said upper frame of said sliding conveyer, said sliding carrier being raised by said lifting mechanism to align with either said pair of upper tracks or said pair of lower tracks of each said holding unit, said sliding carrier being actuated to move laterally by said cross slide feed mechanism to either said pair of upper tracks or said pair of lower tracks, said sliding carrier being held on said pair of upper tracks of each said holding unit when carrying a motor vehicle and being held on said pair of lower tracks when carrying no vehicle.

5,009,560
MIXED FREIGHT HANDLING SYSTEM
Carl J. Ruder; Ronald J. Haney, both of Overland Park, Kans.; Richard J. Chutorash, Portland; Wayne W. Bostad, Forest Grove, both of Oreg.; Arnold A. Zweig, Olympia, Wash., and Lyle B. Payne, Stilwell, Kans., assignors to Yellow Freight System, Inc., Overland Park, Kans.
Filed Dec. 6, 1988, Ser. No. 280,720
Int. Cl.[5] B65G *1/06*, *67/02*
U.S. Cl. 414—392 27 Claims



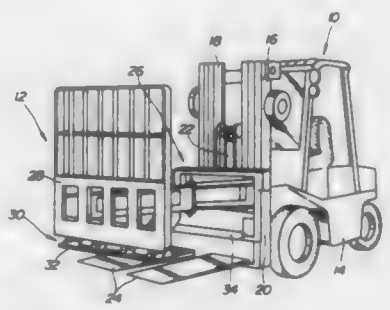
1. An article handling system for transferring articles between spaced apart first and second locations, said second location being within the article receiving, elongated, open end interior of an article transporting vehicle and said first location being external of said interior, said system comprising:
(a) an elongated article conveyor including means forming a support surface capable of simultaneously supporting a moving succession of articles, said conveyor being positioned at said first location and extendible from a retracted condition substantially at said first location to an extended condition wherein a portion of said conveyor invades said second location through said open end and a portion of said conveyor remains at said first location; and
(b) an article manipulator having a manipulating portion, a chassis portion spaced apart horizontally from said manipulating portion and a boom member structurally connecting said manipulating and chassis portions, said manipulator being extendible independently of said conveyor from a retracted condition substantially at said first location and an extended condition wherein said manipulating portion invades said second location through said open end and said chassis portion remains at said first location but connected to said manipulating portion by said boom member, said manipulator being at least in part spaced from said conveyor such that an article moving on said conveyor is tranferable on said conveyor between said locations past said manipulator, said manipulator and said conveyor being both adapted to simultaneously extend generally horizontally from said first location a substantially equal extent through said open end into said second location when in said respective extended conditions.

5,009,561
REAGENT TABLET DISPENSER
Paul A. Lombardino, Warren; Ronald L. Saxon, Stephensburg, and Dennis W. Supchak, Bloomfield, all of N.J., assignors to Pharmacia Diagnostics Inc., Fairfield, N.J.
Filed Aug. 18, 1989, Ser. No. 395,608
Int. Cl.[5] B65D *83/04*
U.S. Cl. 414—412 27 Claims



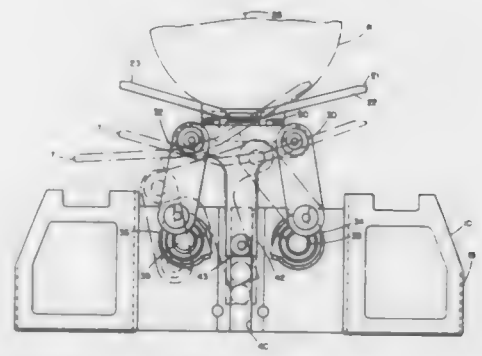
1. A tablet dispenser which dispenses a tablet from a package which has two layers of packaging material which comprises
(a) a top shaft;
(b) a thumb piece in which an anular hollow inclined blade having a retracted portion is engaged, said thumb piece being slidably mounted on said shaft, and said blade being adapted to penetrate a generally flat package placed below the blade and to release a tablet from said package while said retracted portion leaves an incompletely cut out hole in both sides of said package;
(c) a plate having a hole adapted to allow the blade to pass therethrough, said plate being connected to the top shaft by a support member;
(d) a bottom shaft extending underneath the hole and in line with the cutting blade and top shaft, said bottom shaft being connected to the plate; and
(e) means for holding a package containing a tablet on top of the plate so that the package can be positioned in order to align the tablet over the hole and in the path of the blade.

5,009,562
CONTROL FOR LOAD CARRIER OF LIFT TRUCK
Takashi Hosotani, Kawasaki, and Kiyoshi Inoue, Tokyo, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Dec. 23, 1987, Ser. No. 137,292
Claims priority, application Japan, Dec. 23, 1986, 61-306800; Apr. 20, 1987, 62-96930; Apr. 20, 1987, 62-96931; Apr. 20, 1987, 62-96932; Apr. 24, 1987, 62-101629
Int. Cl.[5] B60P *1/00*
U.S. Cl. 414—440 13 Claims



1. A lift vehicle comprising:

5,009,563
MOBILE VEHICLE AND METHOD FOR HANDLING PAPER ROLLS
Marvin L. Case, Aberdeen; Robert E. Sturm, Hoquiam, and David P. Herigstad, Aberdeen, all of Wash., assignors to Haines & Emerson, Inc., Hoquiam, Wash.
Filed Jun. 14, 1989, Ser. No. 366,880
Int. Cl.[5] B60P *3/00*
U.S. Cl. 414—470 6 Claims

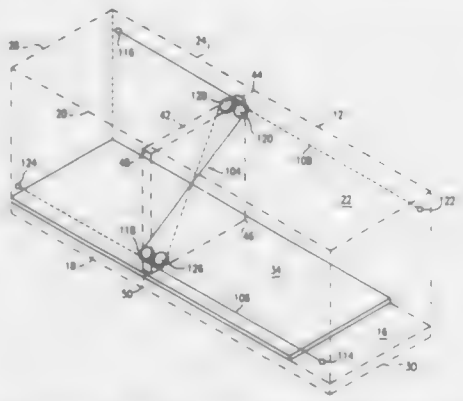


1. A mobile vehicle for handling large cylindrical paper rolls, comprising:
a roll support cradle on a main frame, said cradle having a central recess formed by upwardly and outwardly diverging opposite elongated leaves for supporting and guiding a cylindrical roll to roll along the leaves and center itself in the central recess of the cradle when lying on the cradle with the roll's central longitudinal axis horizontal;
said main frame having a central cradle support track for pivotally supporting said cradle and limiting the cradle's movement with respect to the track to vertical and pivotal movement;
means for manipulating the cradle so that the leaves can be raised or lowered; and
wherein each of said leaves can be raised or lowered in different directions relative to each other and on opposite sides of said central support track for tilting the cradle and thereby rolling a paper roll onto or cut of the cradle central recess from either lateral direction relative to said central support track, and the leaves of the cradle can be moved laterally with respect to the central support track by the pivoting of the cradle about a horizontal axis.

5,009,564
CARGO CARRYING VEHICLE HAVING A MOVABLE BULKHEAD LOCATED THEREIN
David E. Lutz, and David W. Lutz, both of P.O. Box 810, Carlisle, Pa. 17013
Filed Oct. 2, 1989, Ser. No. 415,719
Int. Cl.[5] B60P *1/00*
U.S. Cl. 414—510 31 Claims

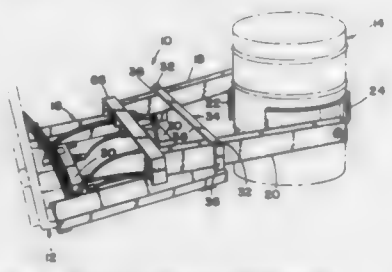
20. A cargo carrying vehicle comprising:
(a) a body having an interior, an internal floor, a left internal sidewall, a right internal sidewall, a longitudinal axis, a front end, and a rear end;
(b) at least one movable support surface mounted on said

internal floor for movement relative thereto, said movable support surface having a front end and a rear end;
(c) first means for moving said movable support surface back and forth between a first position and a second position spaced longitudinally from said first position towards said rear end of said body;
(d) a movable bulkhead mounted in said interior above said movable support surface for movement relative to said internal floor;
(e) second means for moving said movable bulkhead back and forth between a first position and a second position spaced longitudinally from said first position towards said rear end of said body; and



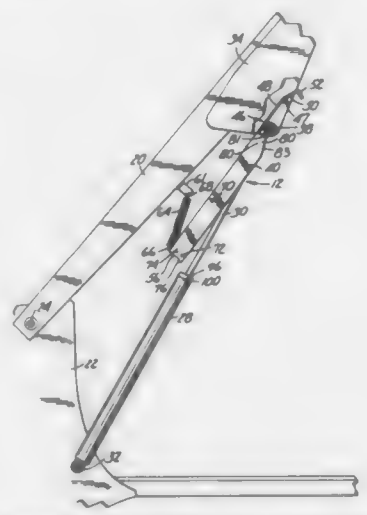
(f) third means for stabilizing said movable bulkhead against pivotal movement relative to said internal sidewalls, said third means comprising at last two inextensible cables each of which:
(i) has a first end mounted on said body adjacent said rear end of said body;
(ii) has a second end mounted on said body adjacent said front end of said body;
(iii) passes through said movable bulkhead but is not attached to said movable bulkhead; and
(iv) prevents pivotal movement of said movable bulkhead about one axis.

5,009,565
FORK LIFT ATTACHMENT
LaVerne Esau, Hillsboro, Kans., assignor to Liberty Diversified Industries, Inc., Minneapolis, Minn.
Filed Nov. 20, 1989, Ser. No. 439,551
Int. Cl.[5] B65G *65/34*
U.S. Cl. 414—607 **4 Claims**



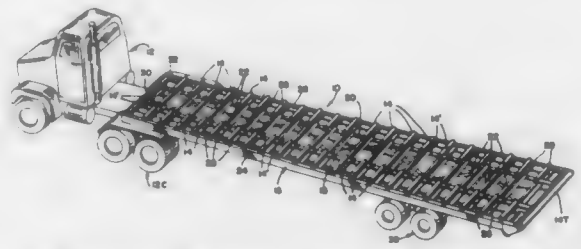
1. An attachment for a fork lift comprising:
a frame having attachment means for attaching said frame to the forks of a fork lift;
first and second pivot arms, each of said pivot arms extending from a proximal end to a distal end;
means for pivotally connecting said pivot arms to said frame for said distal ends to move toward and away from one another in first predetermined plane;
first and second clamp means carried on said distal ends of said first and second pivot arms, respectively;
means for rotatably connecting said clamp means to said distal ends for said clamp means to rotate in a second predetermined plane generally perpendicular to said first predetermined plane;
arm motion control means for selectively urging said distal ends toward and away from one another, and for said arms to pivot between first and second positions with said arms in said first position spaced apart for said clamps to receive a drum of predetermined dimensions, and with said arms in said second positions disposed for said clamps to be urged against said drum;
clamp motion control means for selectively rotating said clamps in any one of at least two rotational directions, said clamp motion control means including first and second fluid pressure actuators associated with said first and second clamp means, respectively; each of said fluid pressure actuators having a cylinder and a piston head disposed within said cylinder for reciprocating motion, master control means for selectively admitting a fluid under pressure to said cylinders on opposite sides of said piston heads to selectively urge said piston heads to reciprocate within said cylinder, first and second sets of first and second piston rods connected to said piston heads of said first and second actuators, respectively, for movement therewith, said first piston rods extending in response to movement of said piston heads in a first direction and said second piston rods extending in response to movement of said piston heads in a second direction, said master control means including a master fluid pressure actuator for simultaneously urging piston heads of said first and second actuators; and
linkage means for linking said first and second sets of first and second piston rods to said first and second clamp means, respectively for said clamp means to rotate in a first direction when said first piston rods extend, and to rotate in a second direction when said second piston rods extend.

5,009,566
RETRACTABLE BOOM STOP
James E. Asche, Milnor, N. Dak., assignor to Clark Equipment Company, Milnor, N. Dak.
Filed Oct. 20, 1989, Ser. No. 425,648
Int. Cl.[5] B66C *23/00;* **E02F** *3/80*
U.S. Cl. 414—722 **20 Claims**



1. A retractable stop assembly for use with a boom arm of the type configured to be raised and lowered by a lift cylinder having a body and an extensible rod, comprising:
a stop member;
a mounting assembly for attaching the stop member to the boom arm for movement between an inoperative position adjacent the boom arm and an operative position in which the stop member is engaged between a segment of the boom arm and a forward end of the lift cylinder body for preventing retraction of the lift cylinder; and,
a biasing mechanism releasably securable between the boom arm and stop member for moving the stop member from the operative position to the inoperative position in response to an extension of the lift cylinder.

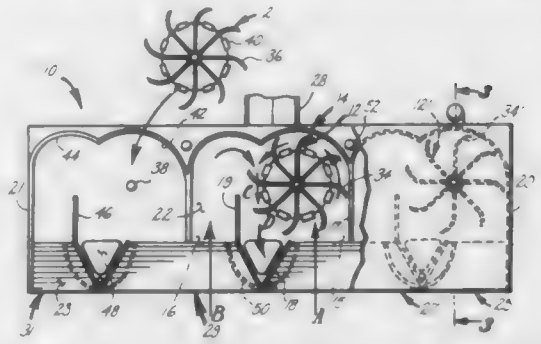
5,009,567
TRAILER AND TRAILER UNLOADING SYSTEM
E. Dale Fenton, 1325 Smiley La., Columbia, Mo. 65202
Division of Ser. No. 908,821, Sep. 18, 1986, Pat. No. 4,806,061.
This application Feb. 2, 1989, Ser. No. 305,062
Int. Cl.[5] B60P *1/04*
U.S. Cl. 414—786 **6 Claims**



1. A method for unloading a large load from a long bed trailer onto a flat area of ground using a prime mover as its sole source of power, wherein the trailer's bed is connected to the prime mover at one end by a connection which allows it to pivot downward at the connection from a position with its tail end is well off of the ground and maintains the bed at the connection to the prime mover, a substantially fixed height above the ground as the prime mover moves over the ground to a position wherein the tail end is just off of the ground, and said trailer bed has a wheeled carriage having brakes separately controlled from the prime mover which is mounted at its bottom so as to move longitudinally from a position wherein it supports the trailer with its tail end well off of the ground to a position wherein the tail end is just off of the ground, comprising the steps of
(a) lowering the tail end of the bed by applying the brakes to the wheeled carriage and moving the prime mover and the trailer bed relative thereto and without the use of any other powered devices and without articulating the trailer bed between the connection to the prime mover and the carriage;
(b) removing any securing devices from between the load and the trailer;
(c) advancing the trailer and the bed, with the tail end down out from under the load, so that it falls to the ground off of the tail of the bed; and
(d) raising the tail end of the bed by reapplying the brakes to the wheeled carriage while moving the prime mover and the bed relative thereto and without the use of any other powered devices and without articulating the trailer bed between the connection to the prime mover and the carriage.

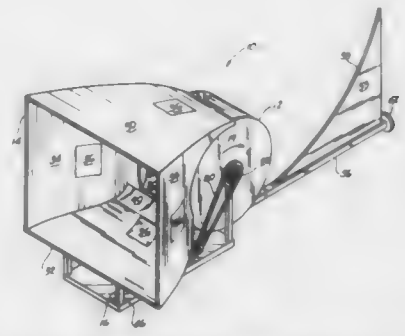
5,009,568
WAVE ACTUATED POWER GENERATING APPARATUS
George S. Bell, 1365 Kingswood Ct., Ft. Myers, Fla. 33919
Filed Jul. 11, 1990, Ser. No. 551,144
Int. Cl.[5] F03B *13/12*
U.S. Cl. 415—3.1 **8 Claims**

1. A wave-actuated power generating apparatus comprising:
an impulse-type water turbine having a plurality of blades each with a facing and a following surface and operably mounted for rotation within a housing onto an upright output shaft about a hub for use;
said housing having a back panel, opposing sides and opposing lower and upper panels, said lower and upper panels in close proximity to the upper and lower edges of said water turbine;
said sides and lower and upper panels extending to form an inlet nozzle which faces oncoming waves;
a wave splitter positioned centrally within said inlet nozzle forming a first and second inlet nozzle portion structured to separate each oncoming wave so that a first and second portion of each wave passes through said first and second inlet nozzle portions, respectively and into said housing;
said first wave portion passing through said first water nozzle portion striking said facing surfaces of said water turbine blades before contacting said housing back panel



while being reversed in direction through about 180 degrees toward the center of said housing;
said second wave portion passing through said second water nozzle portion striking said housing back panel and being reversed in direction through about 180 degrees toward the center of said housing before striking said facing surfaces of said water turbine blades;
a water outlet positioned centrally in said housing lower panel behind said wave splitter for downwardly discharging water entering said inlet nozzle after rotationally acting upon said water turbine;
said housing lower surface positioned generally at mean water level.

5,009,569
WIND ENERGY COLLECTION SYSTEM
Francis N. Hector, Sr., and Francis N. Hector, Jr., both of P.O. Box 81024, Las Vegas, Nev. 89180
Filed Jul. 21, 1989, Ser. No. 382,908
Int. Cl.[5] F03B *15/06*
U.S. Cl. 415—4.1 **7 Claims**



1. A wind-driven apparatus for generating rotational mechanical energy from a wind flow stream comprising:
(a) a closed rotatable cylinder journeled to a supporting member and having a first axis of rotation;
(b) a plurality of closed elongated vanes positioned about the entire circumference of and secured to said cylinder and oriented parallel to said first axis of rotation, each of said vanes curving outwardly away from said cylinder and

meeting at adjacent ends thereof, thereby forming concave adjacent wind impingement areas circumferentially about said cylinder, thereby preventing the flow of said wind stream past said cylinder;

(c) an intake funnel secured to said supporting means and configured to converge on said closed rotatable cylinder to collect and direct said wind flow stream towards said vanes, said funnel having top, bottom and side walls and being open at the front, said walls of said funnel converging irregularly to direct said wind flow stream to said wind impingement areas, said top wall of said intake funnel terminating downstream of said horizontal axis of rotation and said bottom wall terminating upstream of said horizontal axis of rotation;

(d) a plurality of blow-through panels forming a part of said funnel and biased to begin opening at a pre-selected wind flow stream pressure;

(e) said supporting member being secured to a base member and being pivotal about a second axis of rotation, said second axis being generally perpendicular to said first axis of rotation;

(f) an open exhaust area immediately downstream of said first axis of rotation, said exhaust area being free of any immediate obstruction and other means for channeling of said funnelled wind flow stream; and,

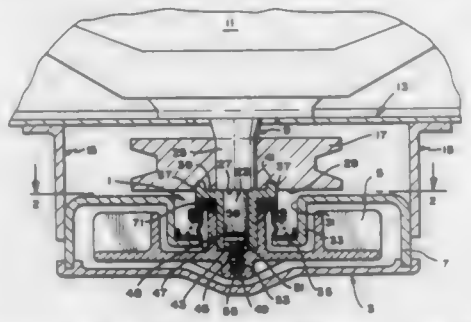
(g) means for aligning said open front of said funnel generally parallel to the direction of said wind flow stream, said alignment means including an elongated member connected to said supporting member at its first proximate end and elongated in the direction of said wind flow stream to a second distal end having means for allowing the pivoting of said supporting member about said second axis of rotation, said means for allowing pivoting comprising a wheel member mounted at said distal end of said elongated member and confined to motion along a pre-determined arcuate track; and, a second vane member mounted to and depending vertically upwardly from said elongated member, said second vane member increasing in vertical extent from said proximate end to said distal end of said elongated member.

5,009,570

MOUNTING ASSEMBLY FOR THE IMPELLER OF A FLUID PUMP

Curtis G. Richardson, Energy, Ill., assignor to Maytag Corporation, Newton, Iowa

Filed May 2, 1989, Ser. No. 346,584
Int. Cl.[5] F04D *29/10*
U.S. Cl. 415—174.2 **16 Claims**



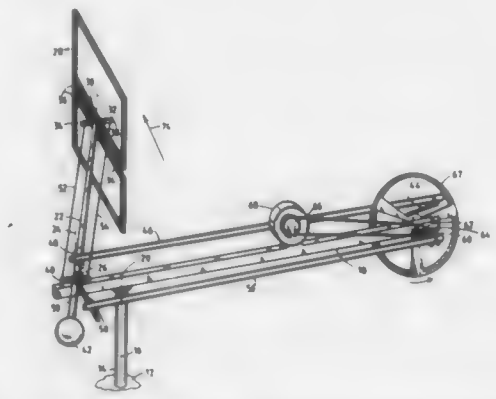
1. An assembly for mounting the impeller of a fluid pump to the drive shaft of an electric motor, the pump being of the type including an impeller disposed for rotation within a stationary housing for pressurizing fluid through an inlet and an outlet of the housing and a resilient seal assembly for preventing fluid leakage from the housing, the improvement comprising the resilient seal assembly being disposed to urge the impeller in a direction towards the drive shaft of the motor for providing end thrust force to axially locate and maintain the impeller on the drive shaft, a sleeve slidably secured on the end of the drive shaft, the impeller being attached to the sleeve and the seal assembly being disposed between the sleeve and the housing.

5,009,571

WIND MOTOR

Raoul D. Smith, Lompoc, Calif., assignor to Aeolian Partnership, Camarillo, Calif.

PCT No. PCT/US89/00326, § 371 Date Dec. 28, 1989, § 102(e) Date Dec. 28, 1989
PCT Filed Jan. 26, 1989, Ser. No. 460,832
Int. Cl.[5] F03D *5/06*
U.S. Cl. 416—79 **13 Claims**



1. Apparatus for use in a wind motor, comprising in combination:

a base;

an arm oriented at an angle θ with respect to said base;

means for mounting said arm to said base for pivotal motion with respect to said base about a first axis that is perpendicular to said arm;

a sail having a center of pressure and oriented at an angle α with respect to said base;

means for mounting said sail to said arm for pivotal motion with respect to said arm about a second axis parallel to but displaced from the first axis, said second axis passing through the center of pressure of said sail; and

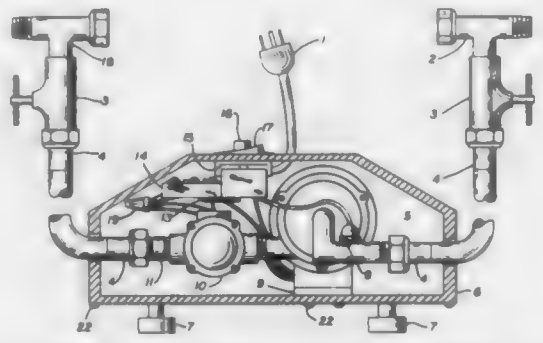
coupling means interconnected between said base and said sail for producing a reciprocating motion of said arm with respect to said base by continuously altering the angle α of said sail with respect to said base.

5,009,572

WATER CONSERVATION DEVICE

Ray Imhoff, 1824 Arlington Ave., El Cerrito, Calif. 94530, and Sadraddin Seif, 933 Lorna St., Corona, Calif. 91720

Filed Oct. 16, 1989, Ser. No. 422,247
Int. Cl.[5] F04B *49/00*
U.S. Cl. 417—32 **5 Claims**



1. An improved water conservation device which may be installed in conjunction with existing and non-existing plumbing systems and fixtures having a source of pressurized water, a hot water supply line, a cold water supply line, a hot water heater, and outlet fixtures coupled to the hot and cold water supply lines, said device comprising:

a first tee fitting adapted for coupling to said hot water supply line;

a second tee fitting adapted for coupling to said cold water supply line;

a hot water supply line shut-off valve adapted for coupling to said first tee fitting;

a cold water supply line shut-off valve adapted for coupling to said second tee fitting;

an electrically controlled pump having an outlet port and an inlet port;

a first water line adapted for coupling to said hot water supply line shut-off valve and to said inlet port of said pump;

a solenoid valve having an input port connected to said outlet port of said pump for allowing mixture of hot and cold water while said pump is operating, and for preventing the mixture of hot and cold water when said pump is not operating;

a nipple fitting having one end adapted for coupling to the output end of said solenoid valve;

a second water line adapted for coupling to remaining open end of said nipple and to said cold water supply line shut-off valve;

an adjustable thermostat temperature selector for detecting the hot water temperature of said inlet of said pump;

a thermostat switch for energizing said solenoid valve and said pump;

a removable housing structure; and

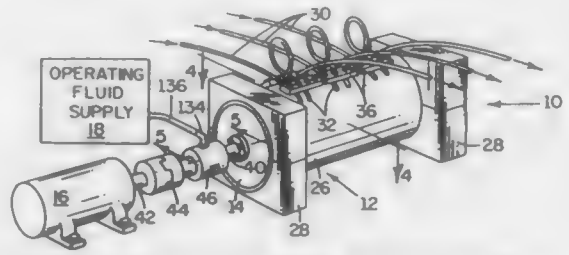
an indicator light for informing the user that the selected water temperature has been achieved.

5,009,573

VARIABLE OCCLUSION PERISTALTIC APPARATUS AND METHOD

Gregg Ring, Sr., Houston, and Daniel C. Soper, Buda, both of Tex., assignors to Randolph Austin Company, Inc., Manchaca, Tex.

Filed Aug. 18, 1989, Ser. No. 395,940
Int. Cl.[5] F04B *43/12*
U.S. Cl. 417—53 **18 Claims**



1. A variable occlusion peristaltic apparatus comprising:

A. a housing;

B. an occlusion track being defined in the housing and including a generally arcuate reactive surface, the occlusion track being adapted to receive a loop of tubing extending into the housing through a tubing inlet and exiting the housing through a tubing outlet;

C. a rotor rotatably mounted within the housing and adapted for rotation about a device rotational axis;

D. a rotating machine having a drive shaft connected to the rotor for rotation therewith;

E. a plurality of carriage passageways positioned in the rotor and extending outwardly from the device rotational axis at different angular orientations therefrom toward the arcuate reactive surface of the occlusion track;

F. an occluding member carriage positioned in each carriage passageway having an occluding member mounted thereon, the carriage being adapted for movement through the carriage passageway between a fully retraced position in which the occluding member is positioned generally out of the occlusion track and away from the reactive surface and the tubing in the occlusion track, and an extended position in which the occluding member is positioned so as to bear against and completely collapse the flexible tubing in the occlusion track against the reactive surface; and

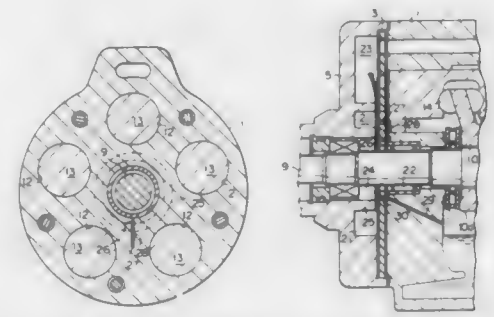
G. operating fluid distribution means for providing an operating fluid at a desired operating pressure from a remote operating fluid supply to each carriage passageway to control the occlusion force provided by each occluding member against the tubing received in the occlusion track and to control the position of each carriage between the fully retracted and fully extended positions.

5,009,574

THRUST BEARING AND SHOE LUBRICATOR FOR A SWASH PLATE TYPE COMPRESSOR

Hayato Ikeda; Masahiro Sawada, and Norihiko Nakamura, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Dec. 4, 1989, Ser. No. 445,289
Claims priority, application Japan, Dec. 2, 1988, 63-306369
Int. Cl.[5] F04B *1/16*
U.S. Cl. 417—222 **5 Claims**



1. A swash plate type refrigerant gas compressor incorporated in an air-conditioning circuit for a vehicle and having a pair of axially combined front and rear cylinder blocks having a plurality of cylinder bores formed therein, an axially extended bore for rotatably receiving a drive shaft via radial bearings seated in said axial bore, a swash plate chamber, and an oil chamber for storing a lubricating oil, said swash plate chamber and said oil chamber being interconnected with one another to permit the lubricating oil to enter said swash plate chamber;

a swash plate received in said swash plate chamber and keyed on said drive shaft and capable of rotating with said drive shaft and stirring the lubricating oil in said swash plate chamber;

a front housing arranged at one axial end of the combined cylinder blocks via a front valve plate, and having therein a central shaft sealing chan ber through which said drive shaft extends, a front suction chamber for a refrigerant gas before compression, and a front discharge chamber for the refrigerant gas after compression, said shaft sealing chamber being fluidly interconnected with said swash plate chamber via gaps in said radial bearings in said axial bore of said combined cylinder block;

a rear housing arranged at the other axial end of the combined cylinder blocks via a rear valve plate, and having therein a rear suction chamber for the refrigerant gas before compression, and a discharge chamber for the refrigerant gas after compression, said rear suction chamber being fluidly interconnected to said front suction

chamber, and said rear discharge chamber being fluidly interconnected to said front discharge chamber,

a plurality of reciprocatory double-headed pistons slidably fitted in said cylinder bores and operatively engaged with said swash plate via shoes for carrying out a suction and compression of the refrigerant gas in said cylinder bores, and a discharge of the compressed refrigerant gas from said cylinder bores to said discharge chambers of said front and rear housings, said pistons sliding across said swash plate chamber to thereby cause a leakage of a part of the compressed refrigerant gas from said cylinder bores into said swash plate chamber while said drive shaft and swash plate are rotating, said leakage of a part of the compressed refrigerant gas generating a high pressure condition in said swash plate chamber;

a pair of thrust bearings mounted on said drive shaft for axially supporting said swash plate against a thrust force acting on said swash plate;

a suction refrigerant circuit for permitting the refrigerant gas before compression to flow toward said cylinder bores when said refrigerant gas before compression is returned from the air-conditioning circuit, said suction refrigerant gas circuit including at least said front and rear suction chambers, said cylinder bores, and a passageway interconnecting said front and rear suction chambers;

lubricating means for limiting an evacuation of the lubricating oil from said swash plate ad oil chambers to said suction refrigerant circuit during said high pressure condition in said swash plate chamber, to thereby promote a lubrication of movable elements including at least said thrust bearings, said shoes, and said swash plate by the lubricating oil stored in said swash plate and oil chambers when said swash plate rotates and disperses said lubricating oil toward said movable elements, said lubricating means including:

a partition wall formed in said front housing for structurally separating said shaft sealing chamber from said suction chamber of said front housing; and

a fluid passageway means arranged between said shaft sealing chamber and said suction chamber of said front housing for flow of said gas from said swash plate chamber to said suction chamber of said front housing through said shaft sealing chamber while said drive shaft and said swash plate were rotating, to thereby define a pressure in said shaft sealing chamber, intermediate between the pressure in the swash plate chamber and the pressure in the suction chamber, during the operation of the swash plate type compressor, said intermediate pressure in said shaft sealing chamber permitting separation of the lubricating oil from the gas when said lubricating oil is carried by said flow of the gas from the swash plate chamber to the suction chamber to thereby limit the loss of the lubricating oil from said swash plate chamber.

5,009,575

VAPOR LOCK PREVENTING MECHANISM IN MOTOR-DRIVEN FUEL PUMP

Kazumichi Hanai; Koichi Mine, and Hikaru Kikuta, all of Obu, Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Obu, Japan

Filed Oct. 31, 1989, Ser. No. 428,886

Claims priority, application Japan, Nov. 7, 1988, 63-145311[U]

Int. Cl.[5] F04D *9/00*

U.S. Cl. 417—244 8 Claims

6. A two-stage fuel pump comprising:

(a) a first impeller;

(b) a first wall for surrounding said first impeller;

(b-1) a first pump chamber being defined between an inner surface of said first wall and an outer circumference of said first impeller;

(b-2) said first wall being formed with a fuel inlet communicating with said first pump chamber to suck fuel into said first pump chamber;

(b-3) said first wall being formed with a vapor jet communicating with said first pump chamber to discharge a vapor of said fuel from said first pump chamber;

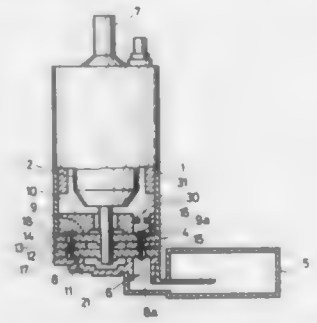
(c) a second impeller having a size and a shape identical with those of said first impeller; and

(d) a second wall for surrounding said second impeller;

(d-1) a second pump chamber being defined between an inner surface of said second wall and an outer circumference of said second impeller;

(d-2) said second pump chamber having a sectional shape substantially the same as that of said first pump chamber;

(d-3) said second wall being formed with a fuel outlet communicating with said second pump chamber to discharge said fuel;



(d-4) a part of said second wall partitioning said first pump chamber from said second pump chamber, said part being formed with a communication hole for communicating said first pump chamber with said second pump chamber;

(e) wherein a ratio of (a sectional area of said fuel outlet)/(a sectional area of said second pump chamber) is equal to or less than 1.4, and said vapor jet is formed at a position where a fuel pressure is boosted to a value greater than a half of a set pressure of a pressure regulator for regulating a pressure of said fuel to be discharged from said fuel outlet;

(f) whereby a boosting rate in said first pump chamber can be made larger than that in said second pump chamber to efficiently discharge said vapor.

5,009,576

COMPRESSOR UNLOADER CONTROLLER

Thomas R. Gagnet, Moseta, Va., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jan. 8, 1990, Ser. No. 462,164

Int. Cl.[5] F04B *49/00*

U.S. Cl. 417—295 7 Claims

1. An apparatus comprising:

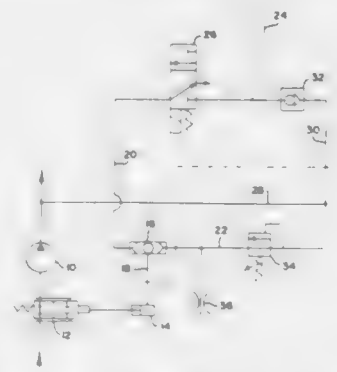
a compressor having an inlet and an outlet;

compressor inlet valve means, movable between a normally open and a closed position, for regulating fluid flow to the compressor inlet;

a pressure reservoir containing pressure sufficient to bias the compressor inlet valve means into the closed position;

means for separating the pressure in the reservoir from the pressure in the outlet of the compressor; and

starter valve means for applying pressure from the pressure reservoir to the inlet valve means, which is normally



closed when the compressor is not operating and is opened during the starting of the compressor.

5,009,577

ROTARY COMPRESSOR OF VARIABLE DISPLACEMENT TYPE

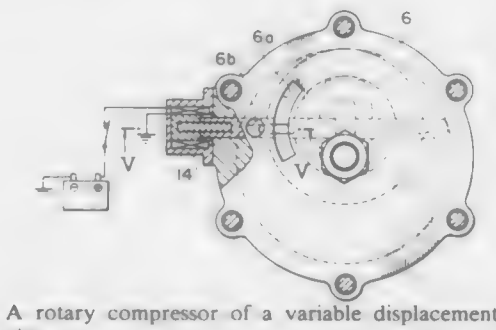
Isao Hayase, Katsuta, and Kunisuke Tejima, Mito, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 20, 1989, Ser. No. 425,128

Claims priority, application Japan, Oct. 28, 1988, 63-272659

Int. Cl.[5] F04B *49/02, 21/02;* F01C *21/00*

U.S. Cl. 417—295 6 Claims



1. A rotary compressor of a variable displacement type comprising:

a cylinder having an inner peripheral surface and both axial ends;

a rotor means including a rotor accommodated in said cylinder in an eccentric relationship therewith and at least one vane incorporated in said rotor through an outer periphery of the latter, said vane being movable relative to said rotor reciprocatably in a longitudinal direction of said vane;

two side plates for closing said cylinder at both ends of the latter;

said vane dividing a working space defined by said rotor, said cylinder and said side plates into a plurality of spaces;

suction port means formed in at least one of said side plates and being opened at a surface of the side plate making sliding contact with said rotor;

opening means formed in a rear side portion of the vane as viewed in a direction of said rotor and being opened at a surface of the vane making sliding contact with the rotor, said opening means being adapted to be repeatedly communicated with and interrupted from said working space according to the reciprocative movement of the vane relative to the rotor; and

suction passage means formed in said rotor means for establishing a communication between said suction port means and said opening means in a predetermined range of rotation of said rotor means, wherein said suction passage means including a passage formed in said vane and having a depth smaller than a thickness of said vane, said passage having one end opened at a surface of said vane making sliding contact with the side plate and the other end communicated with said opening means.

5,009,578

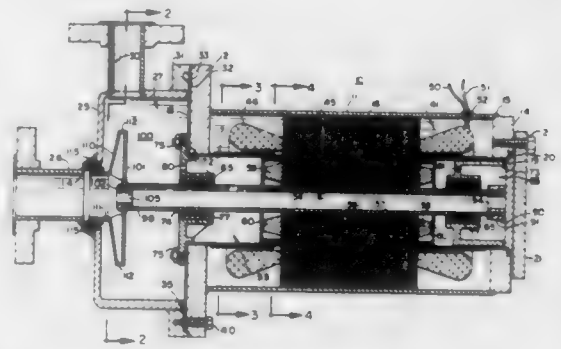
MOTOR DRIVEN PUMPS

George J. Hyland, Norristown, Pa., assignor to Crane Co., New York, N.Y.

Filed Oct. 27, 1987, Ser. No. 114,403

Int. Cl.[5] F04B *35/04*

U.S. Cl. 417—365 6 Claims



1. A motor driven pump which includes

an impeller housing having inlet and delivery connections and having an impeller chamber with an impeller therein, an outer cylindrical casing connected to said impeller housing and closed off by first and second end plates, a cylindrical sleeve extending between said end plates and providing therewith and with said outer casing an isolated motor stator chamber, a motor stator in said stator chamber, the interior of said sleeve providing a motor rotor chamber, the improvement which comprises

first and second adaptors fixedly mounted within said sleeve at opposite ends thereof,

said first adaptor being mounted adjacent said impeller and said second adaptor being mounted at the end opposite thereto,

said first adaptor having at least one fixed orifice of selected size therealong connecting the interior of said sleeve with said impeller chamber permitting controlled fluid flow therebetween,

an end liner plate between said second adaptor and said second end plate,

said second adaptor having at least one fixed orifice therealong of larger diameter than said first orifice and connecting the interior of said sleeve with a chamber formed between said second adaptor and the end plate at the end of said sleeve opposite said impeller for controlled fluid flow therebetween,

a hollow shaft having sleeve bearings secured thereto, carried in said first and second adaptors, and extending into said impeller chamber, said impeller being mounted to said shaft in said impeller chamber,

a motor rotor on said shaft between said bearings in said motor rotor chamber,

said first and second adaptors have sleeves therein engaged with said bearings carried by said shaft,

automatic thrust balancing means for balancing the axial forces on said shaft which includes

an impeller flow limitor to limit fluid flow from said impeller chamber into said hollow shaft adjacent said end of said impeller, such that axial movement permits fluid flow therein to balance the shaft axial forces,

snubber means carried on said shaft in said chamber at the shaft end opposite to said impeller,

said snubber means having an end surface,

said end liner plate adjacent said snubber means having a surface facing said snubber means end surface, such that axial movement of said shaft permits fluid flow between said end liner plate and said snubber and through said orifice in said second adaptor into said second adaptor chamber in controlled modulated amounts and therefrom into said shaft upon axial movement of said shaft for thrust balancing.

5,009,579

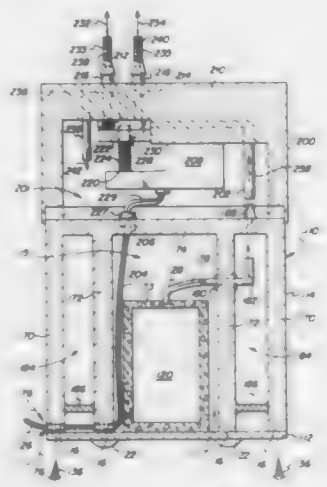
FLUID PUMP ENCASEMENT

Benton H. Grant, Stamford, Conn., assignor to Grant Airmass Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 230,462, Aug. 15, 1988, Pat. No. 4,834,625. This application Apr. 27, 1989, Ser. No. 345,030

Int. Cl.[5] F04B *21/00*

U.S. Cl. 417—413 **25 Claims**



1. A fluid pump encasement having improved acoustic characteristics comprising:

a base;

a pump housing of a substantially ceramic material forming a chamber open to one side;

a lip depending from the periphery of the open side for mating with the base; and

means for clamping the base to the lip to provide relatively quick assembly and disassembly enabling replacement of the hollow sphere for decorative reasons.

5,009,580

MULTIPLE RECIPROCATING PUMP

Shingo Maru, Chiba, Japan, assignor to Maruyama Mfg. Co., Ltd., Tokyo, Japan

Filed Aug. 24, 1990, Ser. No. 572,224

Claims priority, application Japan, Dec. 28, 1989, 1-338358

Int. Cl.[5] F04B *23/06*

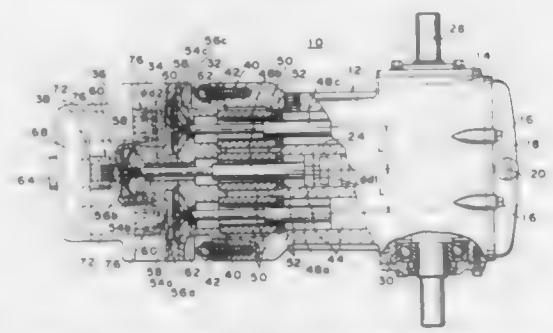
U.S. Cl. 417—533 **8 Claims**

1. A multiple reciprocating pump, comprising:

a drive shaft;

a plurality of reciprocating members having parallel axes and a length in the direction of the axes, being disposed to one side of the drive shaft, and being operably connected to the drive shaft to reciprocate along said axes, wherein the length of each reciprocating member is different from the length of a nearest adjacent member; and

a pump chamber corresponding to each reciprocating member, each chamber having a volume and wall member operably connected to reciprocate with the corresponding reciprocating member, wherein the volume of the pump chamber increases and decreases as the wall member reciprocates to take in and discharge fluid from the pump



chamber, and wherein each chamber is displaced from a nearest adjacent chamber in the direction of the axes of the reciprocating members.

5,009,581

FLUID ACCUMULATOR FOR ANTI-SKID BRAKES

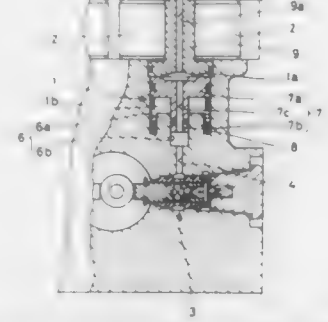
Takashi Kushiyama, and Yoshiyasu Kurihara, both of Higashimatsuyama, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Dec. 20, 1989, Ser. No. 453,513

Claims priority, application Japan, Dec. 27, 1988, 63-330225

Int. Cl.[5] F04B *11/00*

U.S. Cl. 417—540 **4 Claims**



1. A fluid control unit including a body means having an operating fluid passage formed therein of a predetermined diameter, said fluid passage including a first passage portion of greater diameter than said predetermined diameter and a second passage portion of greater diameter than said first passage portion, piston means including a first piston portion having a diameter and being slidably and liquid-tightly disposed within said first passage portion, said piston means including a second piston portion having a diameter greater than the diameter of said first piston portion and being slidable and liquid-tightly disposed in said second passage portion, said second piston portion defining with said body means an air chamber in communication with atmospheric air, biasing means urging said piston means in a first direction away from said first said passage portion, said second piston portion having an outer face remote from said first piston portion, said outer face defining a movable side of a fluid accommodating chamber for receiving fluid when said piston means moves in a second direction opposite to said first direction, said piston means having an axial passage passing completely therethrough and being in communication with said operating fluid passage.

5,009,582

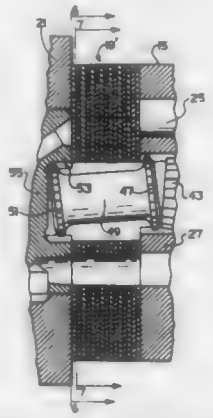
ROTARY FLUID PRESSURE DEVICE AND IMPROVED STATIONARY VALVE PLATE THEREFOR

Marvin L. Bernstrom, Eden Prairie, Minn., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 9, 1989, Ser. No. 391,803

Int. Cl.[5] F01C *1/10, 19/08*

U.S. Cl. 418—61.3 **10 Claims**



1. A rotary fluid pressure device of the type including housing means defining a fluid inlet port and a fluid outlet port; a rotary fluid displacement mechanism including a ring member having a plurality N+1 of internal teeth, and a star member having a plurality N of external teeth, said star member being eccentrically disposed within said ring member, the teeth of said ring member and said star member interengaging to define expanding and contracting fluid volume chambers during relative movement therebetween, one of said ring member and said star member having rotational movement about its own axis, and one of said members having orbital movement about the axis of the other of said members; a stationary valve member operatively associated with said housing means and defining a stationary valve surface oriented generally transversely relative to said axes of rotation, said stationary valve member further defining a plurality N+1 of first fluid passages, each of said first fluid passages being in fluid communication with one of said fluid volume chambers, and having passage openings in said stationary valve surface, arranged circumferentially relative to said axis of one of said ring member and said star member; a rotary valve member, movable in synchronism with said rotational movement of said one of said ring member and said star member, said rotary valve member including a valve surface disposed in sliding, sealing engagement with said stationary valve surface, and defining a plurality 2N of valve ports having openings in said valve surface arranged circumferentially relative to the axis of said rotary valve member, said plurality 2N of valve ports including a first group of valve ports having constant fluid communication with said fluid inlet port, and a second group of valve ports having constant fluid communication with said fluid outlet port; at least a portion of said plurality 2N of valve port openings being in fluid communication with at least a portion of said first fluid passage openings during said relative orbital and rotational movement to direct fluid from said inlet port to said expanding volume chambers, characterized by:

(a) said stationary valve member further defining a plurality N+1 of second fluid passages, each of said second fluid passages having passage openings in said stationary valve surface, said second fluid passage openings being arranged circumferentially relative to said axis of said one of said ring members and said star member, each of said second fluid passages being approximately diametrically disposed from one of said first fluid passages;

(b) said stationary valve member further defining a plurality N+1 of third fluid passages, each of said third fluid passages providing fluid communication between only one of said first fluid passages and only said one of said second fluid passages diametrically disposed therefrom; and

(c) said fluid pressure device including means for blocking direct fluid communication from said second fluid passages to said fluid volume chambers.

5,009,583

SHAFT SEAL AND BEARING MEMBERS FOR A ROTARY SCREW COMPRESSOR

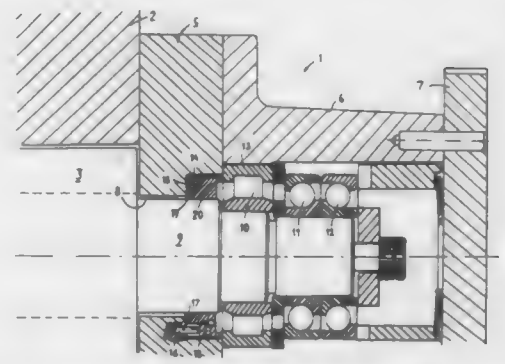
Anders Carlsson, Ingarö ; Lars Johansson, Stavsnäs, and Frits Söderlund, Saltsjöbaden, all of Sweden, assignors to Svenska Rotor Maskiner AB, Stockholm, Sweden

Continuation of Ser. No. 399,513, Aug. 28, 1989, abandoned. This application Oct. 9, 1990, Ser. No. 595,675

Claims priority, application Sweden, Mar. 19, 1987, 8701123

Int. Cl.[5] F04C *18/16, 27/00*

U.S. Cl. 418—104 **3 Claims**



1. In a screw rotor machine for a working fluid, comprising:

a pair of intermeshing rotors (3) having helical lands and intervening grooves; and

a casing with a working space generally comprised of two intersecting bores, each enclosing one of the rotors (3), said casing having a low pressure end section (4), a high pressure end section (1) carrying bearings (10, 11, 12) for the rotors (3) and an intermediate barrel section (2), said intermediate barrel section (2) being connected to at least one of said end sections (1, 4) by means of a detachable joint, and said high pressure end section (1) being provided with a bearing chamber separated from the working space by an end wall (5) provided with a plurality of holes (8), each hole freely surrounding a cylindrical projection (9) of a rotor (3),

the improvement comprising:

a separate annular element (15) axially fixed with respect to said end section and surrounding each one of the respective rotor projections (9), the annular elements (15) each having a radial inner surface (20) which forms a sealing surface with a running clearance, said sealing surface cooperating with the respective rotor projection (9) by a very slight radial contact sealing force;

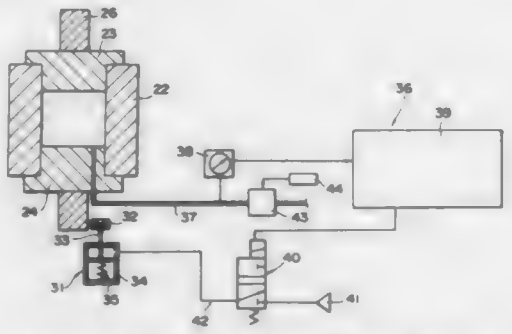
the end section having a recess within which said annular element is free to move to a certain distance in the radial direction; and

the annular elements (15) each being radially movable substantially without friction in the casing, always to maintain position alignment with the axis of the rotor projection, and being in axial sealing contact with the casing, the annular elements (15) each being non-rotatably fixed to the casing.

5,009,584
INTERLOCK SYSTEM FOR ISOSTATIC FORMING PRESS

Katsuhiro Uehara; Masanori Kurita, and Masakazu Murakami, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Mar. 2, 1990, Ser. No. 487,444
Claims priority, application Japan, Mar. 2, 1989, 1-51695
Int. Cl.[5] B29C *43/10*; B22F *3/04*
U.S. Cl. 425—135 4 Claims

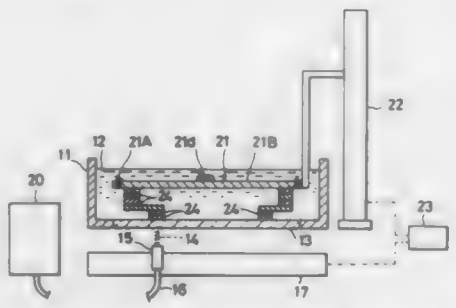


1. An interlock system for an isostatic press machine of the type including a high pressure container having upper and lower closure plugs releasably received in upper and lower openings to be used for loading and unloading work therethrough, and a holder frame for supporting the axial force of the container in an isostatic pressing phase of the press operation, the holder frame being pivotally supported at one side thereof for swinging movements about a vertical axis into and out of a holding position in engagement with the high pressure container, wherein said interlock system comprises:
- a lock mechanism constantly urged to lock said holder frame in said holding position; and
- a control means adapted to control said lock mechanism to maintain said holder frame in said holding postion when the internal pressure of said high pressure container is higher than a predetermined level and to release the lock mechanism when the internal pressure of said high pressure container is lower than said predetermined level.

5,009,585
OPTICAL MOLDING APPARATUS AND MOVABLE BASE DEVICE THEREFOR

Yoshinao Hirano; Katsuno Sato; Shigeru Nagamori; Katsuhide Murata, all of Chiba; Kazuhito Horikiri, and Junji Shirai, both of Okayama, all of Japan, assignors to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1989, Ser. No. 451,760
Int. Cl.[5] B29C *35/08*; B05D *3/06*
U.S. Cl. 425—174.4 3 Claims

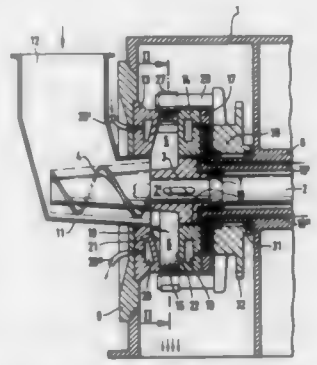


1. An optical molding apparatus used for an optical molding method including the steps of radiating light onto a photocurable resin so as to cure the resin at an irradiated portion and laminating the cured portions to form an object, said apparatus comprising:
- a container having an aperture in one of a bottom portion and a side portion thereof, and a light transmitting plate with an inner surface situated in said aperture;
- a base which is movable away from the inner surface of said light transmitting plate, said base being composed of a square frame;
- a light radiation apparatus for radiating light into said container through said light transmitting plate; and
- a cured object holding plate which is mounted to and dismounted from above said base, said cured object holding plate being inserted into said frame.

5,009,586
AGGLOMERATING APPARATUS FOR THE CONTINUOUS REGRANULATION OF THERMOPLASTIC WASTES

Wilhelm Pallmann, Zweibruecken, Fed. Rep. of Germany, assignor to Pallmann Maschinenfabrik GmbH & Co. KG, Zweibruecken, Fed. Rep. of Germany

Filed Dec. 12, 1989, Ser. No. 448,842
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1988, 3842072
Int. Cl.[5] B29C *47/52*
U.S. Cl. 425—311 4 Claims



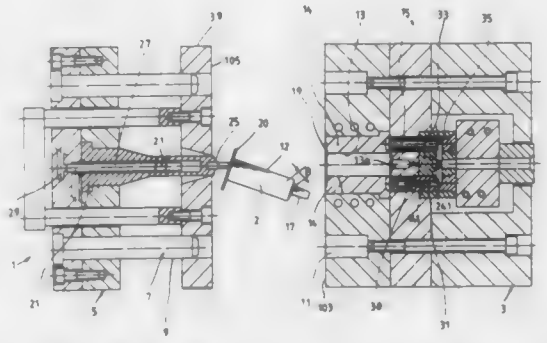
1. Agglomerating apparatus for the continuous, regranulation of thermoplastic wastes comprising films, fibers, filaments, cords, fabrics, carpet backings, foam materials, and mixtures of these materials, the apparatus comprising:
- (a) stationary, axially spaced annular walls having radially inner and outer ends, and opposite inside surfaces
- (b) an annular die interposed between and connected to said annular walls at the radially outer ends thereof, said die containing perforations over at least part of its annular surface, said annular walls and said die defining therewithin a plasticizing chamber,
- (c) a feed inlet communicating with said plasticizing chamber,
- (d) shaft means including a rotor hub mounted in said apparatus generally centrally with respect to said plasticizing chamber, and means for rotating said shaft and hub,
- (e) at least one pressing blade nonrotatably mounted on said hub for rotation in said plasticizing chamber, said at least one blade having a leading flank and being constructed such that when combined with the inside surface of said die, said plasticizing chamber steadily narrows in a direction opposite to the direction of rotation of said at least one blade,
- (f) knife means mounted for rotation outwardly of said annular die for contacting the radial outer surface of said die and cutting agglomerated material passing through said die perforations, and

wherein the spacing of said annular walls and the pressing blade at their radially outer portions is less than the spacing at their radially inner portions thereby to define a radially outward narrowing of said plasticizing chamber, such narrowing permitting throughput capacity to be increased without thermal damage to the material.

5,009,587
INJECTION MOLDING MACHINE FOR MAKING TUBULAR WORKPIECES FROM PLASTIC MATERIAL

Romeo Corvaglia, Ramsen, and Martin Schöttli, Schaffhausen, both of Switzerland, assignors to Schottli AG, Diessenhofen, Switzerland

Continuation of Ser. No. 259,327, Oct. 18, 1988, abandoned.
This application Dec. 28, 1989, Ser. No. 455,767
Claims priority, application Switzerland, Oct. 31, 1987, 4257/87
Int. Cl.[5] B29C *45/22*
U.S. Cl. 425—549 18 Claims



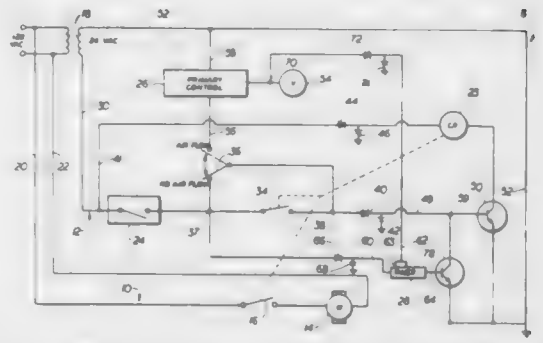
1. An injection molding machine comprising a first mold section and a second mold section, said first and second mold sections respectively having confronting first and second surfaces and at least one of said sections being movable between operative and retracted positions in which said surfaces respectively abut and are spaced apart from each other, said first section having at least one substantially cylindrical recess with an open end at the first surface and a second end remote from the first surface, and an end wall at said second end; at least one core having a circumference and provided on and extending from the surface of said second section and being received in said recess with play in the operative position of said one section so that said at least one core and said first surface then define an elongated mold cavity; and means for supplying plasticized material into said cavity, said means for supplying said plasticized material including at least two nozzles carried by said first section adjacent said end wall in line with said recess, each nozzle being substantially coaxial with said recess and having a plurality of orifices for admission of said plasticized material into said cavity at said end wall, said orifices being spaced apart from each other along the circumference of the at least one core in said recess each orifice having a discharge end adjacent the second end of said recess so that the supplied plasticized material flows from said end wall toward said first surface to expel air from the mold cavity at the first surface of said first mold section and to center the at least one core in said recess.

5,009,588
TIME-DELAY CIRCUIT FOR AUTOMATIC SHUTDOWN OF FURNACE SYSTEMS

Roger W. Williams, Jr., Springfield, Mass., assignor to R. E. Phelon Company, Inc., East Longmeadow, Mass.

Filed Jun. 26, 1990, Ser. No. 544,192
Int. Cl.[5] F23N *5/00*
U.S. Cl. 431—31 5 Claims

1. In a time-delay circuit for automatic shutdown of furnace systems having a power source connected to an induced draft blower motor, a primary burner control adapted to energize a fuel valve of the furnace, a relay controller adapted to control the operation of the induced draft blower motor and the primary burner control, a thermostat connected to supply energy selectively to the primary burner control and to a first electronic switching means connected, when conductive, to energize said relay controller, a second electronic switching means is connected, when conductive to turn "off" the first electronic switching means, the improvement comprising a timer including connections for at least a first and a second input and one output, the first input of said timer being connected to receive energy from the thermostat, the second input being connected in circuit with the primary burner control and the fuel valve so

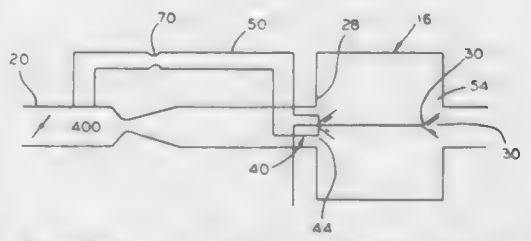


that when the primary control energizes said fuel valve, the timer is also energized, the output of said timer being connected to said second electronic switching means so that when said timer generates an output signal, the second electronic switching means will be turned "on", said second electronic switching means being adapted to divert energy from and turn "off" said first electronic switching means to de-energize the relay controller and thus cut "off" both the primary burner control and the induced draft blower.

5,009,589
STORED ENERGY COMBUSTOR FUEL INJECTION SYSTEM

Jack R. Shekleton, San Diego, and Robert W. Smith, Lakeside, both of Calif., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 8, 1989, Ser. No. 447,599
Int. Cl.[5] F23M *9/00*
U.S. Cl. 431—183 13 Claims



1. A fuel injection system for a combustor having an upstream portion and a downstream portion comprising:
- a fuel injector associated with said upstream portion of said combustor, said fuel injector having a fuel flow passage in communication with a source of fuel, said fuel flow passage terminating in said upstream portion of said combustor and including means for swirling fuel injected into said upstream portion of said combustor;
- primary oxidant delivery means associated with said upstream portion of said combustor, said primary oxidant delivery means including a primary oxidant flow passage in communication with a source of oxidant for delivering a major portion of said oxidant in said combustor, said primary oxidant flow passage terminating in said upstream portion of said combustor;
- secondary oxidant delivery means associated with said upstream portion of said combustor, said secondary oxidant delivery means including a secondary oxidant flow pas-

sage for delivering a minor portion of said oxidant to said combustor, said secondary oxidant flow passage terminating in said upstream portion of said combustor;

oxidant diverter means for diverting said minor portion of said oxidant from said primary oxidant flow passage to said secondary oxidant flow passage;

oxidant accelerating means for accelerating oxidant in said secondary oxidant flow passage to a higher velocity substantially independent of the velocity of oxidant in said primary oxidant flow passage and substantially independent of pressure in said combustor; and

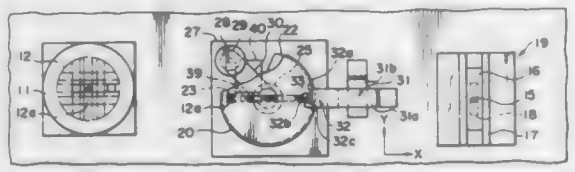
oxidant swirling means in said second oxidant flow passage downstream of said oxidant acceleration means for swirling oxidant delivered to said upstream portion of said combustor.

5,009,590

METHOD AND APPARATUS FOR PREHEATING SEMICONDUCTOR CHIPS

Tadashi Mitarai, and Makoto Kanda, both of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jan. 18, 1990, Ser. No. 466,866
Claims priority, application Japan, Jul. 24, 1989, 1-191977
Int. Cl.[5] F27D *3/00, 13/00*
U.S. Cl. 432—121 **8 Claims**



1. A method for preheating semiconductor chips comprising:

sequentially mounting a plurality of semiconductor chips on a rotatable table;

heating the semiconductor chips on the rotatable table, while the rotatable table is stationary, for a predetermined time; and

sequentially ejecting the heated semiconductor chips from the rotatable table.

5,009,591

PYROLYZER FOR GAS CHROMATOGRAPHY

Chuichi Watanabe, Gotemba, Japan, assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 30, 1990, Ser. No. 472,532
Claims priority, application Japan, Jan. 30, 1989, 1-17443
Int. Cl.[5] F27B *9/02*
U.S. Cl. 432—128 **3 Claims**

1. A gas chromatography pyrolyzer apparatus comprising:

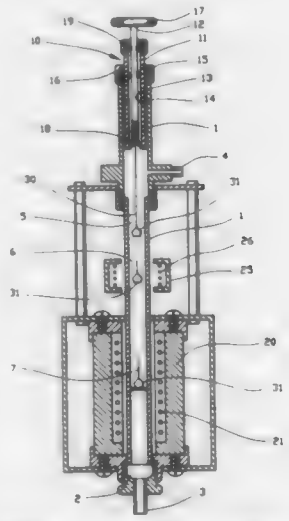
(a) a body defining a cavity therein, the cavity having at least a first portion, a second portion and a third portion, the body also defining a carrier gas inlet port therethrough in fluid communication with the cavity, the body further defining a carrier gas outlet port therethrough in fluid communication with the cavity so that a carrier gas can be flowed into the cavity through the carrier gas inlet port and then out of the cavity through the carrier gas outlet port to sweep any pyrolysis products generated in the cavity out of the carrier gas outlet port so that any pyrolysis products generated in the cavity can be analyzed by gas chromatography;

(b) a movable sample vessel positioned within the cavity for containing a sample to be pyrolyzed;

(c) a subsidiary heater for heating the second portion of the cavity;

(d) a subsidiary heater for heating the third portion of the cavity;

(e) means for selectively positioning the sample vessel at the first, second or third portions of the cavity so that a sample contained in the sample vessel is essentially not heated when the sample vessel is positioned at the first portion of the cavity, can be heated to a temperature below its pyrolysis temperature when the sample vessel is position at the second portion of the cavity and can be heated to its pyrolysis temperature when the sample vessel is position at the third portion of the cavity.

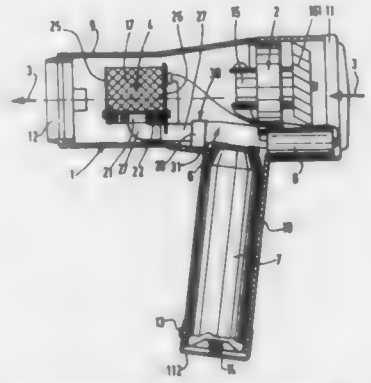


5,009,592

HOT AIR GENERATING DEVICE WITH A CATALYTIC BURNER

Antoine Roldan, Mions, and Daniel Demilliere-Vergnais, Francheville, both of France, assignors to Application Des Gaz, Paris, France

Filed Oct. 27, 1989, Ser. No. 427,496
Claims priority, application France, Oct. 28, 1988, 88 15370
Int. Cl.[5] F24H *1/00*
U.S. Cl. 432—222 **10 Claims**



1. A hot air-generating device, comprising:

a body which forms a conduit for the circulation of an air flow, extending from an inlet for fresh air to an outlet for hot air

a ventilation means arranged inside the body for generating the flow of air from the inlet towards the outlet of said conduit

a catalytic gas burner, which is disposed inside the conduit, which is connected with a source of pressurized fuel gas, and combustion fumes of which are mixed with the air flow to produce the hot air discharged through the conduit outlet, said burner being of the induced air type and comprising a means for mixing primary air in the fuel gas, an inlet outside said conduit to draw said primary air independently and separately relative to the air flow circulating in said conduit, a chamber for distributing the fuel gas mixed with the air downstream of the mixing means, and a catalytic structure, the inlet face of which faces the distribution chamber, and the outlet face of which is in faces the conduit for the air flow.

5,009,593

METHOD AND APPARATUS FOR SECURING A DENTAL RESTORATION

Henry J. Vogelstein, New York, N.Y., assignor to Coltene/-Whaledent, Inc., New York, N.Y.

Filed Feb. 5, 1990, Ser. No. 475,649
Int. Cl.[5] A61C *5/08*
U.S. Cl. 433—221 **30 Claims**



1. A method for restoring a tooth, comprising the steps of:

(a) preparing the tooth to accept a dental prosthesis;

(b) applying a polyacrylic acid solution to the prepared area;

(c) rinsing the prepared area until the area is clear from the polyacrylic acid solution;

(d) applying a drying agent to the prepared area; and

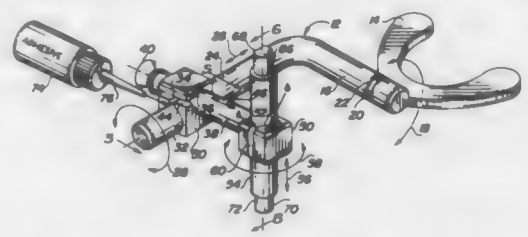
(e) securing a dental prosthesis to the prepared area through the use of a dental cement.

5,009,594

DISPOSABLE TRANSFER JIG ASSEMBLY

Weldon D. West, Mission Viejo, Calif., assignor to Denar Corporation, Anaheim, Calif.

Filed Jul. 18, 1989, Ser. No. 381,466
Int. Cl.[5] A61C *19/04*
U.S. Cl. 433—73 **8 Claims**



1. An adhesive fixatable disposable transfer jig apparatus for using in preparing a dental prosthetic, said apparatus comprising in combination:

(a) a bitefork having an arm extending therefrom;

(b) a first support rod;

(c) a first clamp block for interconnecting said arm with said first support rod and for fixating said arm with said first support rod, said first clamp block including a first cylindrical passageway for receiving said arm, a first slot extending from said first cylindrical passageway for accommodating a flow of adhesive intermediate said arm and said first cylindrical passageway, a second cylindrical passageway for receiving said first support rod, a second slot extending from said second cylindrical passageway for accommodating a flow of adhesive intermediate said first support rod and said second cylindrical passageway;

(d) a second support rod;

(e) a second clamp block for interconnecting said first support rod with said second support rod, said second clamp block being formed as an integral part of said second support rod and inseparable therefrom; said second clamp block including a third cylindrical passageway for receiving said second support rod, a third slot extending from said third cylindrical passageway for accommodating a flow of adhesive intermediate said third support rod and said third cylindrical passageway; and

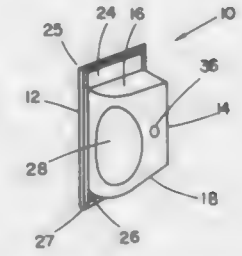
(f) said first and second slots being interconnected with one another to accommodate flow of adhesive into each of said first and second passageways upon a single application of adhesive into one of said first and second slots.

5,009,595

DENTAL MOUTH PROP

Carl F. Osborn, 106 Stuyvesant Rd., Asheville, N.C. 28803

Filed Jul. 28, 1989, Ser. No. 386,157
Int. Cl.[5] A61C *5/00*
U.S. Cl. 433—140 **10 Claims**



1. A mouth prop for dental patients comprising:

a block; said block being of a substantially unitary construction; said block being somewhat tapered in shape wherein said block has a long end and a short end; said block having a substantially straight and continuous top sloping surface and a substantially straight continuous bottom sloping surface for providing resting areas for certain teeth; a portion of said block near said long end being thinner than other portions of said block, thereby enhancing access to the patient's mouth.

5,009,596

DEVICE FOR FIXING A DENTAL PROTHESIS

Per O. Soderberg, Stockholm, Sweden, assignor to Astra Meditec Aktiebolag, Molndal, Sweden

Continuation of Ser. No. 183,849, Apr. 20, 1988, abandoned.
This application Jan. 22, 1990, Ser. No. 469,798
Claims priority, application Sweden, Apr. 22, 1987, 8701655
Int. Cl.[5] A61C *8/00*
U.S. Cl. 433—173 **2 Claims**



1. A device for fixing a dental prosthesis, which device as parts thereof comprises a spacing element adapted for anchoring into the jaw-bone of a patient and a socket adapted for fixing into a dental prosthetic part, wherein the socket rests on the spacing element via an outer conical supporting surface

provided on one of said parts, which supporting surface bears against an inner conical supporting surface provided in the other of said parts, characterized in that a shoulder is provided on the part having the outer conical supporting surface, which shoulder has a planer surface oriented radially around the periphery of the supporting surface, and that an end surface is provided on the part having the inner conical supporting surface, the end surface being oriented radially around the periphery of said supporting surface, and wherein the planar surface and the end surface have such an axial position on the respective part that an externally visible fine gap of uniform and predetermined thickness is formed between them on bearing of the supporting surfaces properly against each other, whereby an improperly formed gap provides a visible indication that the parts do not properly bear against one another.

5,009,597

COMPOSITE DENTAL PROSTHESIS ELEMENT FORMED OF FILLED ACRYLATE/METHACRYLATE POLYMERS

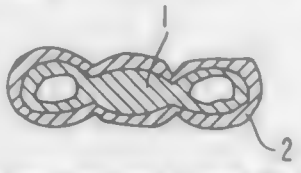
Roland Schaefer, Friedrichsdorf, Fed. Rep. of Germany, assignor to Kulzer & Co. GmbH, Wehrheim, Fed. Rep. of Germany

Continuation of Ser. No. 162,098, Feb. 29, 1988, abandoned. This application May 25, 1989, Ser. No. 358,456

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1987, 3708618

Int. Cl.[5] A61C *5/09, 8/00, 13/00*

U.S. Cl. 433—212.1 **25 Claims**



1. A plastic dental prosthesis element for crowns, bridges and inlays comprising a core formed of a plastic material comprising an 70-10% by weight of an acrylate or methacrylate or mixture thereof based polymer containing 30–90% by weight of an inorganic filler, said inorganic filler being comprised of 60–100% of an inorganic dental filler material selected from the group consisting of silicon dioxide, lithium aluminum silicate glass, strontium aluminum silicate glass and a mixture thereof, and having a particle size of from 0.7–5 micrometers, and 0–40% by weight of microdispersed silicon dioxide having a particle size from 0.01 to 0.04 micrometers, and

a jacket disposed over said core and being formed of a plastic material comprising 90-10% by weight of an acrylate, methacrylate or mixture thereof based polymer containing 10-90% by weight of microdispersed silicon dioxide having a particle size of 0.01 to 0.4 micrometers as the sole filler,

said core having a mechanical strength greater than the mechanical strength of the jacket, whereby thin-walled shapes and slender embodiment of the prosthesis element are enabled, said core having a flexural strength of 160 to 183 MPa and having a bending modulus of 17,800 to 19,000 MPa and said jacket having a flexural strength of 65 to 90 MPa having a bending modulus of 3500 to 3900 MPa.

5,009,598

FLIGHT SIMULATOR APPARATUS USING AN INOPERATIVE AIRCRAFT

Thomas E. Bennington, Box 2392, Palm Beach, Fla. 33480

Filed Nov. 23, 1988, Ser. No. 274,838

Int. Cl.[5] G09B *9/08*

U.S. Cl. 434—30 **13 Claims**

1. A flight simulator apparatus removably installable in and using an actual aircraft not in flight and having movable control members comprising;

an actual aircraft and aircraft instrument panel, said aircraft being currently non-operative and grounded,

an aircraft instrument panel overlay containing a plurality of simulated instruments, said simulated instruments capable of mimicking and duplicating the movements and responses of actual aircraft instruments,

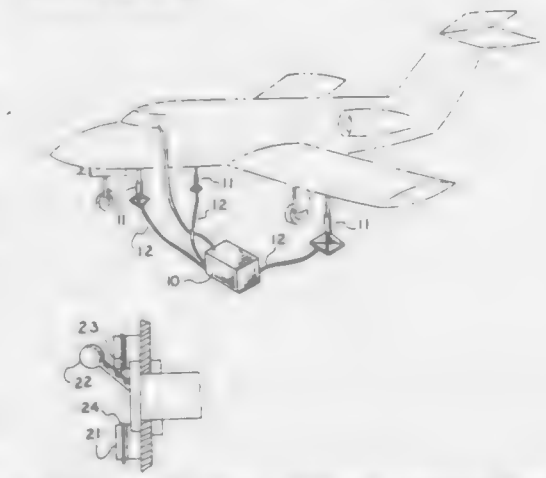
a central computer,

said simulated instruments of said aircraft instrument panel overlay mountable over the existing actual individual instruments of said actual aircraft instrument panel and receiving output from said central computer,

said central computer adapted to provided simulated displays of the operating instruments of an actual operating aircraft by means of said instrument panel overlay,

a plurality of position sensing means mounted to and adjacent said control members of said actual aircraft and electrically connected to said computer, said position sensing means moving with said control members,

said position sensing means for providing output to said central computer relating to the position of said actual control members,



an indicator light overlay comprising individual indicator lights positioned over actual indicator lights of said aircraft and electrically connected to said computer,

said indicator light overlay receiving signals from said central computer to simulate the appropriate activation of indicator lights in an actual operating aircraft, and

an aircraft switch overlay mounted adjacent existing switches in said actual aircraft and including secondary switches, which open or close upon movement of said existing switches in said actual aircraft, providing positions information of the existing switches to said central computer.

5,009,599

SCULPTURE APPARATUS

Timothy T. Mueller, 96 Eagle Point, Irvine, Calif. 92714

Filed Dec. 18, 1989, Ser. No. 451,601

Int. Cl.[5] G09B *11/00*

U.S. Cl. 434—81 **7 Claims**

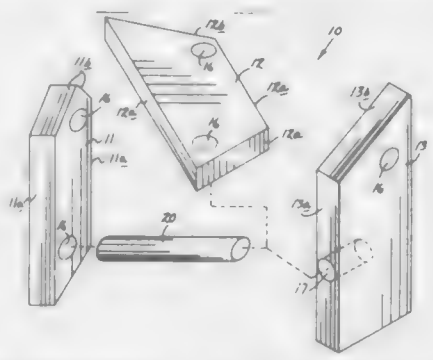
1. An educational sculpture apparatus comprising, in combination,

a plurality of plate members, each plate member including a planar top surface overlying and coextensive with a planar bottom surface, and further including at least two parallel sides and two non-parallel sides,

a plurality of rods including end portions, and each plate member including a plurality of bores for receiving the rod end portions for forming an erected educational sculpture, and

wherein each of the plate members is of a varying geometric configuration relative to other plate members, and each plate member is of an equal predetermined thickness, and

the plate members include a predetermined plurality of plate members, including bores in a parallel and non-parallel relationship relative to each other, wherein the plurality of bores includes bores oriented orthogonally relative to the top and bottom surfaces, and the plurality of bores include blind bores positioned in a non-through-extending



relationship relative to the plate member, and the plurality of bores include angular bores oriented at a non-orthogonal inclination relative to the top and bottom planar surfaces of an associated plate member.

5,009,600

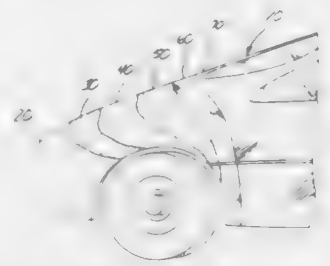
METHOD OF PAINTING CLAY BODIES

Robert L. DeLaRosa, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 28, 1990, Ser. No. 486,624

Int. Cl.[5] G09B *11/00;* **B05D** *1/36*

U.S. Cl. 434—82 **4 Claims**



1. A method of painting a clay body and maintaining a durable decorative surface finish by providing a barrier film layer between the paint coat layer and the clay body such that the oily substance contained in the clay body being blocked from permeating through said barrier film to adversely affect said paint coat layer comprising the steps of:

providing a body of clay ready to be decorated,

coating said body of clay with a strippable coating layer,

coating said body of clay with a diluted shellac layer over said strippable coating layer,

coating said body of clay with a primer coat layer over said shellac layer, and

coating said body of clay with a color coat layer of a desirable color over said primer coat layer.

5,009,601

METHOD FOR TEACHING GARMENT BUTTONING

Richard W. Mechling, 830 Vedado Way NE., Atlanta, Ga. 30308

Filed Aug. 19, 1988, Ser. No. 234,198

Int. Cl.[5] G09B *19/00*

U.S. Cl. 434—260 **2 Claims**

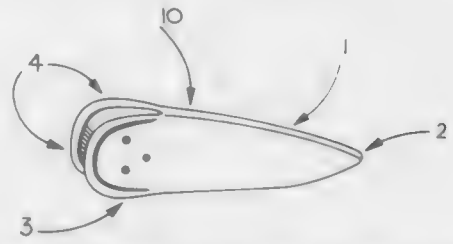
1. A method of teaching the skill of garment buttoning to a subject, comprising the steps of:

(a) providing a button with an elongated and pointed side to allow increased sensation to the thumb and index finger of the subject;

(b) providing said button with raised and flaired edges on a side opposite said elongated and pointed side to allow increased sensation to the thumb and index finger of the subject;

(c) selecting an initial predetermined length of said elongated and pointed side of said button according to the subject's level of buttoning skill;

(d) allowing the subject to attempt to perform the buttoning task using said button which has said initial predetermined length to said elongated and pointed side;



(e) decreasing the length of said initial predetermined length to said elongated and pointed side for a subject demonstrating improved or progressive buttoning skills.

5,009,602

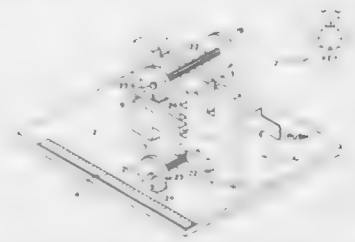
ROTATIONAL MOVEMENT TRAINING APPARATUS

Clifton B. Chandler, 227 Brookwood Way, Mansfield, Ohio 44906

Filed Mar. 28, 1990, Ser. No. 500,582

Int. Cl.[5] G09B *23/02, 23/04*

U.S. Cl. 434—300 **11 Claims**



1. An improved rotational movement training device comprises:

(a) mounting board means comprising at least one mounting board, said mounting board comprising:

(i) a top portion having a plurality of slots therein;

(ii) middle portion having a plurality of slots therein; and

(iii) a bottom portion having a plurality of slots therein; and

(b) a plurality of rotational means engageable in at least two of said slots for demonstrating a rotational movement;

(c) whereby movement of said mounting board means results in movement of said rotational means thereby facilitating derivation of a scientific and mathematical concept.

5,009,603

ELECTRONIC EDUCATIONAL VIDEO SYSTEM APPARATUS

Chi-Ming Fong, New Territories; Wai-Kwok Chew, Tai Po, N.T., and Garry C. Law, Kowloon, all of Hong Kong, assignors to Video Technology Industries, Inc., Wheeling, Ill.

Filed Aug. 19, 1988, Ser. No. 234,257

Claims priority, application United Kingdom, Oct. 28, 1987, 8725204

Int. Cl.[5] G09B *7/04, 15/00*

U.S. Cl. 434—323 **14 Claims**

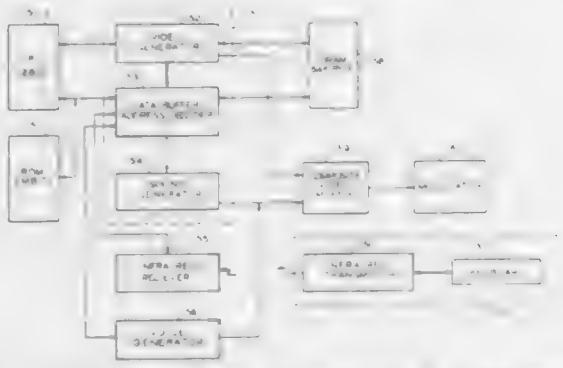
1. An electronic educational video system apparatus for connection to a standard television receiver for teaching basic skills to a child through the use of animated pictorial displays which serve to motivate said child to utilize said apparatus and enhance said child's learning, said electronic educational video system apparatus comprising:

memory means for storing digital data corresponding to a

plurality of pictorial representations, digital data corresponding to requests associated with said pictorial representations directing said child to provide a proposed correct response, said requests being both aural and textual, and digital data corresponding to the correct response to said requests associated with said pictorial representations,

display generation means electrically connected to said memory means for combining said data into said plurality of combinations and digitally generating video signals representative of said plurality of pictorial representations towards the generation of a single display incorporating said pictorial representations and said textural representations;

interface means electrically connected to said display generation means for providing said video signal to said television receiver towards displaying said pictorial representations and said associated requests thereon,



processor means electrically connected to said memory means and said display generation means,

said processor means for selecting one of said pictorial representations stored in said memory means and causing said selected pictorial representation to be displayed upon said television receiver and for causing said associated request to be presented to said child;

a plurality of interchangeable input means for permitting said child to provide a proposed correct response to said request;

means for comparing said child's proposed correct response with said correct response stored in said memory means;

means for animating said displayed pictorial representation associated with said request for proposed correct responses presented to said child so as to provide said child with an indication of the correctness of said child's proposed correct response.

5,009,604

ELECTRICAL CONNECTOR ASSEMBLY FOR VEHICULAR STEERING WHEEL

Edward J. Plocek, Lisle; Stephen Z. Weiss, Highland Park, and Maciej Pike-Biegunski, Warrenville, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Continuation-in-part of Ser. No. 252,308, Oct. 3, 1988, Pat. No. 4,904,190. This application Dec. 4, 1989, Ser. No. 445,514

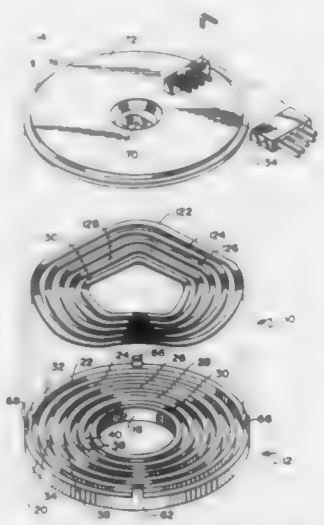
Int. Cl.[5] H01R *39/02, 39/06*

U.S. Cl. 439—15 **15 Claims**

1. An electrical connector assembly for achieving electrical connection between first and second members at least one of which is rotatable relative to the other, said assembly comprising:

a first housing mountable to said first member and comprising a nonconductive portion having a mating face and at least one annular conductive portion fixedly disposed on said mating face;

a second housing mountable to said second member and comprising a nonconductive portion having a mating face disposed in generally opposed relationship to the mating face of said first housing, said second housing having at least one resilient annular conductive portion nonrotatably disposed on the mating face thereof generally in register with the annular conductive portion on the mating face of said first housing, the resilient annular conductive portions of said second housing including resilient undulations therein, said undulations being in direct electrical and direct mechanical contact with the annular conductive portions of the first housing in register therewith, each said resilient annular conductive portion including a



contact tab for electrical connection to an electrical connector nonrotatably mounted to the second housing; and

wherein the mating face of at least one of said first and second housings comprises at least one annular recess, with at least part of the resilient annular conductive portion of said second housing being disposed in said annular recess, whereby said annular recess retains the resilient annular conductive portion at a radial position for electrically contacting the annular conductive portions in the first housing.

5,009,605

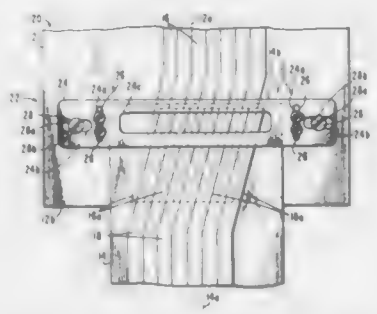
FLAT ELECTRICAL CONNECTOR ASSEMBLY WITH PRECISELY ALIGNED SOLDERING TRACES

William R. Crumly, Anaheim; Blake F. Woith, La Verne, and James R. Walen, Mission Viejo, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 13, 1990, Ser. No. 493,050

Int. Cl.[5] H01R *9/09*

U.S. Cl. 439—67 **10 Claims**



1. An electrical connector assembly, comprising:

a first member having a first longitudinal axis;

a plurality of electrically conductive first traces carried by the first member, including first generally parallel connector portions which are oriented at a predetermined acute angle to the first longitudinal axis;

a second member having a second longitudinal axis;

a plurality of electrically conductive second traces carried by the second member, including second generally parallel connector portions which are oriented at a like predetermined angle to the second longitudinal axis:

the first and second members being mateable such that the first and second longitudinal axes are substantially aligned, and relatively movable parallel to the first and second longitudinal axes to a position in which the first and second connector portions are respectively aligned.

5,009,606

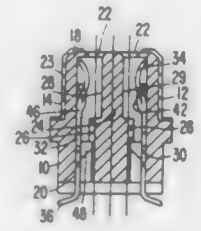
SEPARABLE ELECTRICAL CONNECTOR

Marc G. Villeneuve, and William P. Buckley, both of Toronto, Canada, assignors to Burndy Corporation, Norwalk, Conn.

Filed Dec. 18, 1989, Ser. No. 451,796

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—59 **19 Claims**



1. An electrical connector for electrical mating with a plug member having a plurality of male contact members and for electrical mounting on a printed circuit board, said electrical connector comprising a receptacle body, said body being defined by front and rear walls, a pair of end walls, a bottom wall and a top wall, a plurality of spaced passageways formed in said body and extending through said body from said top wall to said bottom wall, a single contact member received within each of said passageways, each of said contact members having a contact surface provided within its respective passageway, a depending gas tight contact portion provided on each of said contact members, said gas tight contact portions extending through said bottom wall of each passageway of said receptacle body and depending therefrom, said receptacle being adapted for electrical mating with said plug member by insertion of each of said male contact members into a respective one of said passageways, such that said contact surface electrically contacts said male contact member, said receptacle being adapted to be separably mounted on a printed circuit board by said contact portions contacting a conductive strip on said printed circuit board.

5,009,607

FLEXIBLE CIRCUIT CONNECTOR

Herman B. Gordon, Phoenix, Ariz.; Mark J. Owens, Vernon, Conn.; Leon Rubinstein, Natick, Mass., and Scott Simpson, Woodstock, Conn., assignors to Rogers Corporation, Rogers, Conn.

Filed Jul. 24, 1989, Ser. No. 384,269

Int. Cl.[5] H05K *1/00*

U.S. Cl. 439—67 **37 Claims**

1. An electrical connector for connecting a flexible circuit to another circuit device comprising:

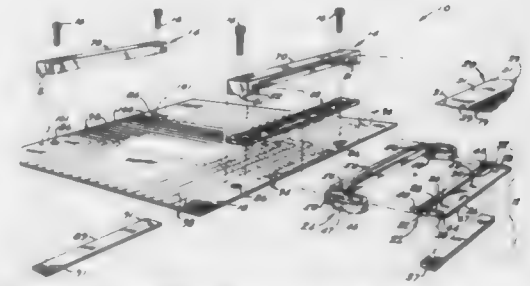
(1) male plug means, said male plug means including;

(a) block means having opposed upper and lower surfaces, said block means also having alignment means for aligning a flexible circuit which has been wrapped about said upper and lower surfaces of said block means;

(b) cover means attachable to said block means wherein a flexible circuit which has been wrapped about said block means will be sandwiched between said upper surface of said block means and said cover means, said cover means covering at least a portion of said upper surface of said block means with said lower surface of said block means being free of any coverage by said cover means; and

(c) pressure applicator means associated with said lower surface of said block means wherein said pressure applicator means will be sandwiched between said block means and a flexible circuit which has been wrapped about said block means;

(2) female adapter means attachable to another electronic device, said female adapter means including a hood having a hood opening therethrough, said hood opening having a predetermined size to receive at least a portion of said male plug means therein; and



(3) detachable engagement means for effecting detachable engagement between said male plug means and said hood opening in said female adapter means;

and further including;

at least a pair of spaced tabs extending outwardly from a front edge of said block means;

at least a pair of spaced apertures through said cover means and in registration with said tabs, said apertures receiving said tabs when said cover means is attached to said block means; and

snap-lock engagement means for snap-locking said cover means to said block means when said tabs are received in said apertures.

5,009,608

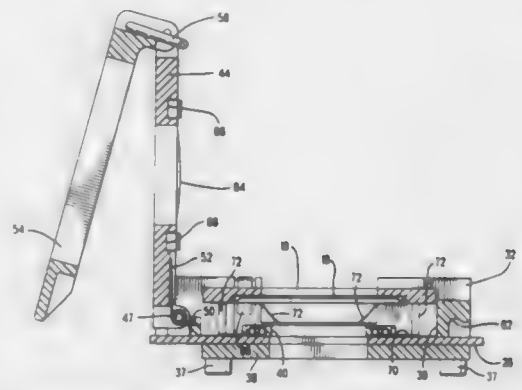
SEPARABLE CONNECTOR ASSEMBLY FOR AN IC CHIP CARRIER

Joanne E. Shipe, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 12, 1990, Ser. No. 553,217

Int. Cl.[5] H01R *13/62, 9/09;* **H05K** *1/00*

U.S. Cl. 439—331 **13 Claims**



1. A connector assembly for providing separable electrical connections between contact pads (28) on a surface of a first substrate (26) and respective contact pads (14) on a surface of a second substrate (12), comprising:

a frame (32) mounted on said surface of said first substrate (26), said frame (32) including a central opening (38) exposing said first substrate contact pads (28);

a connector housing assembly (40) supported on said first substrate (26) surface in said frame central opening (38), said connector housing assembly (40) including a plurality of contact members (42), each of said plurality of contact members having a first contact portion in contact with a respective one of said first substrate contact pads (28) and a second contact portion exposed through a planar surface of said connector housing assembly (40), said connector housing assembly (40) planar surface being parallel to said first substrate (26) surface and being spaced therefrom;

means (16, 18) for supporting said second substrate in said frame central opening above said connector housing assembly with said second substrate pads (14) in contact with respective ones of said exposed second contact portions of said plurality of contact members;

a lid member (44) hingedly mounted (46) to said frame (32) for movement between a closed position parallel to said first substrate (26) surface and an open position transverse to said first substrate surface;

means (64) mounted on said lid member (44) for applying a force to said second substrate (12) within said frame central opening (38) when said lid member (44) is in said closed position, said force being sufficient to establish electrical contact between said first substrate contact pads (28) and said second substrate contact pads (14) through said contact members (42);

means (58, 62) for locking said lid member (44) in said closed position; and

a handle member (54) hingedly mounted to said lid member (44), the hinged mounting (56) of the handle member (54) to the lid member (44) being parallel to and on the opposite end of the lid member (44) from the hinged mounting (46) of the lid member (44) to the frame (32);

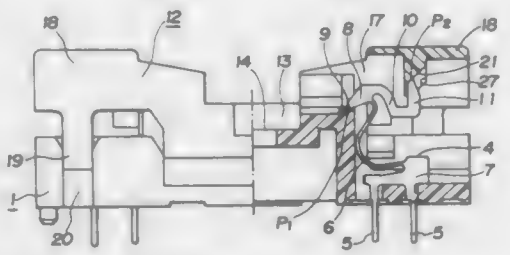
said locking means including a hook member (62) on said frame at the end opposite where the lid member (44) is hingedly mounted and a latch member (58) hingedly mounted on said handle member (54) in the general vicinity of the hinged mounting (56) to the lid member (44), the latch member (58) cooperating with the hook member (62) to retain the lid member (44) in said closed position when the handle member (54) is moved to a position parallel relative the lid member (44).

5,009,609

CONTACT SHUTTER DEVICE IN IC SOCKET

Noriyuki Matsuoka, and Junji Ishida, both of Tokyo, Japan, assignors to Yamaichi Electric Mfg. Co., Ltd., Tokyo, Japan

Filed Sep. 27, 1989, Ser. No. 413,389
Claims priority, application Japan, Sep. 30, 1988, 63-248614
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—73 **5 Claims**



1. An IC socket, comprising:

a socket body having an IC package accommodating portion;

a plurality of contacts disposed in said socket body for contacting terminal members of an IC package; and

a contact shutter member vertically movably mounted on said socket body for pushing said contacts such that said contacts move upward and backward from the terminal members of an IC package upon movement of said contact shutter member toward said socket body;

wherein each said contact comprises a fixing portion for fixing the contact in said socket body, a contact portion for contacting a terminal member, and means for causing said contact portion of said contact to move upward and backward from a first terminal member contact position to a second terminal member non-contact position in response to vertical movement of said contact shutter member toward said socket body, said means comprising a curved spring extending forward toward said IC package accommodating portion from said fixing portion to said contact portion, said curved spring having a double curve with a first concave portion adjacent said fixing portion facing away from said contact portion and a second concave portion adjacent and facing toward said contact portion, and a cantilever arm extending backward from said contact portion, said cantilever arm having a free end, said free end comprising a pressing force receiving portion for being pressed by said contact shutter member; and

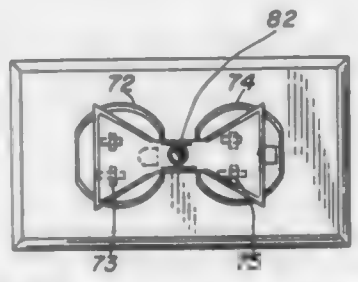
wherein each said contact portion of said contacts has a forward end projecting forward in the direction of said IC package accommodating portion and said curved spring has a forwardmost portion at said first concave portion extending forward in the direction of said IC package accommodating portion, said forward end of said contact portion extending further forward than said forwardmost portion of said curved spring in said first terminal member contact position.

5,009,610

LIGHT SWITCH AND OUTLET GUARD

Robert Woskow, 16801 Severo Pl., Encino, Calif. 91436

Continuation-in-part of Ser. No. 204,217, Jun. 8, 1988, Pat. No. 4,876,425. This application Oct. 16, 1989, Ser. No. 422,147
Int. Cl.[5] H01R *13/44*
U.S. Cl. 439—142 **12 Claims**



1. In a wall plug outlet comprising a mounting plate having at least one mounting hole, at least one female plug outlet, and a mounting screw for said mounting hole, the improvement comprising:

a protective guard for said at least one female plug outlet, said guard comprising a main elongated portion comprising a first female plug-outlet cover portion for selectively closing off access to said at least one female plug outlet, and a second mounting portion connected to said first portion, said second portion having a through-opening formed therein for receiving therethrough said mounting screw, said guard being pivotally mounted to said wall plate via said mounting screw for a selected degree of difficulty of rotation thereof accomplished via the degree of tightening of said mounting screw in said mounting hole of said wall plate, whereby said guard may alternatively close off access to said female plug outlet and allow access thereto;

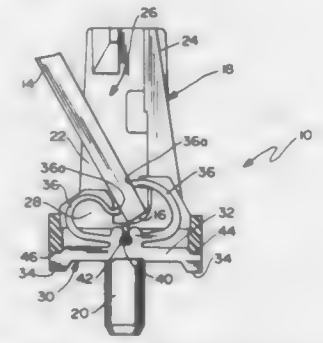
said second portion comprising a rearwardly projecting bead defining a hollow interior in direct alignment with said through-opening, said bead projecting from the rear surface face of said second portion, whereby said bead may project into said mounting hole of said wall plate, said mounting screw passing through said through-opening and said bead, said bead adding structural integrity to said main elongated portion and providing a seat during the rotation thereof; said bead comprising an outer frusto-conical circumferential surface, said outer surface capable of mating with the interior circumferential surface of said mounting hole of said mounting plate.

5,009,611

HIGH DENSITY ELECTRICAL CONNECTOR FOR PRINTED CIRCUIT BOARDS

Kent Regnier, Lombard, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed May 23, 1990, Ser. No. 527,464
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—326 **13 Claims**



1. A connector assembly for electrically connecting closely-spaced circuit elements disposed on two printed circuit boards one of which has a mating edge and a surface with a linear array of contact pads adjacent said edge, comprising:

an elongate dielectric housing having a cavity along its length for receiving the mating edge of said one printed circuit board;

means for mounting the housing to the other of the printed circuit boards;

a plurality of thin contact members mounted on the housing to form a closely-spaced linear terminal array, each contact member being adapted to engage a contact pad when the one printed circuit board is inserted into the cavity, and each contact member having a mounting socket; and

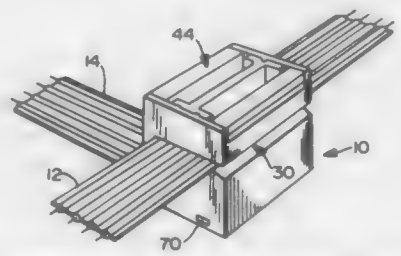
said housing having a mounting post positionable in the mounting socket of each contact member to seat the contact members on the housing.

5,009,612

MULTI-CONDUCTOR ELECTRICAL CABLE CONNECTOR

Paul L. Rishworth, Richmond; Denis L. Rishworth, Knysna Heights, both of South Africa, and Daniel A. Dixon, Naperville, Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Feb. 7, 1990, Ser. No. 479,302
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—403 **8 Claims**



1. An electrical conductor cable connector comprising:

a housing of an electrical insulating material, the housing having side walls and a lower portion defining an first open ended compartment,

a plurality of conductor engaging elements mounted in the lower portion and extending into the first compartment, each element having a portion located in the lower portion of the housing for electrically connecting an electrical conductor located in the lower portion of the housing to the conductor engaging element, the connector housing having a slot which extends from one side of the housing through the walls of the first compartment above the conductor engaging elements, the slot adapted to receive a first ribbon tape cable having a plurality of insulation covered electrical conductors,

a first press member of an electrical insulating material slidably mounted in the first compartment for pressing the first cable against the conductor engaging elements located in the first compartment,

means for locking the first press member in a first position in the first compartment such that the first member is located above the slot, the first cable adapted to be introduced into the slot and terminated to the conductor engaging elements without removal of the first press member,

means for clamping the first cable to the housing, and

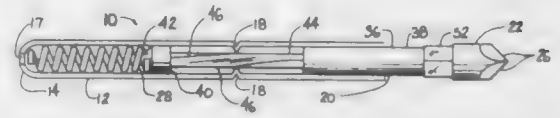
means for locking the first press member in a second position in the first compartment to maintain the first cable clamped to the housing.

5,009,613

SPRING CONTACT TWISTER PROBE FOR TESTING ELECTRICAL PRINTED CIRCUIT BOARDS

Ulf R. Langgard, Overland Park, Kans., and William E. Thurston, Gladstone, Mo., assignors to Interconnect Devices, Inc., Kansas City, Kans.

Filed May 1, 1990, Ser. No. 517,239
Int. Cl.[5] H01R *11/18*
U.S. Cl. 439—482 **12 Claims**



1. A twisting electrical contact spring probe comprising:

(a) a substantially cylindrical barrel having a spring seating end and an open end, and four spaced crimps equally spaced about the circumference of said barrel at a location between said spring seating end and said open end said crimps forming portions of the sides of a square when said barrel is viewed in cross section;

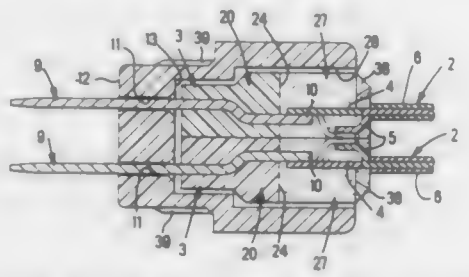
(b) a compression spring seated in said spring seating end of said barrel;

(c) a probe seated within said barrel and retained within said barrel by said crimps, said plunger further comprising a tail section, a shank section, and a twister section between said tail section and said shank section, and four parallel equal spaced helical crests along said twister section, each said crimp engaging one said helical crest and urging rotation of said plunger as said plunger reciprocates relative to said barrel;

(d) means for alternatively admitting and expelling air from said cylinder as said plunger reciprocates in said barrel; and

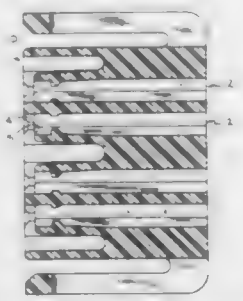
(e) tip means on said plunger for rotating with said plunger and providing a scraping action.

5,009,614
SHIELDED CABLE ASSEMBLY WITH FLOATING GROUND
Michael W. Fogg, Harrisburg; Keith S. Koegel, Linglestown; John R. Shuey, Mechanicsburg; William E. Zelko, Dauphin, and Robert E. Beamenderfer, Palmyra, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed May 31, 1990, Ser. No. 531,203
Int. Cl.[5] H01R 9/07
U.S. Cl. 439—497 8 Claims



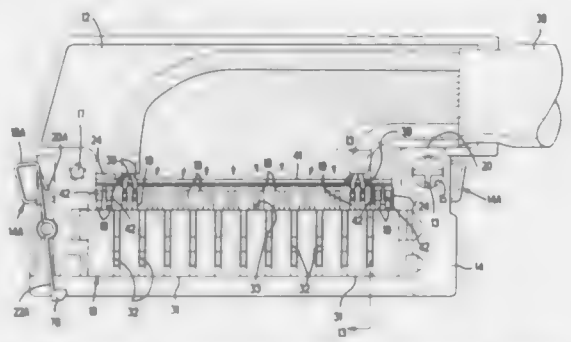
1. A cable assembly for at least one electrical cable comprising: an insulative housing block, conductive electrical contacts in the housing block connected to corresponding signal wires of the cable, a conductive ground bus connected to corresponding ground wires of the cable, plastics material at a rear of the housing block imbedding the electrical contacts and the ground bus and a portion of the cable, an insulative housing having a rear facing cavity receiving the housing block and the contacts and the plastics material, the housing having contact receiving cavities receiving corresponding contacts, a conductive shell enclosing the housing and connected to chassis ground potential, the ground bus being enclosed by the conductive shell and being isolated electrically from the shell by the plastics material in the housing, and the ground wires extending into the shell and being isolated electrically from the shell by the plastics material in the housing.

5,009,615
TERMINAL ASSEMBLY WITH FIXED AND FLEXIBLE TAB RECEPTACLE RETAINERS
Dewey F. Mobley, Lake Orion; Robert G. Peterson, Sr., Canton, and James E. LaCava, Novi, all of Mich., assignors to Interlock Corporation, Westland, Mich.
Continuation of Ser. No. 248,591, Sep. 26, 1988, abandoned. This application Jun. 27, 1990, Ser. No. 544,414
Int. Cl.[5] H01R 13/40, 13/422
U.S. Cl. 439—595 1 Claim



1. An electrical terminal assembly comprising:
a stationary first wall member having a first shoulder extending therefrom;
a stop shoulder having first and second ends thereon and being connected to said first wall member at said first end;
a second wall member having a plurality of slots formed therein defining a flexible finger having a second shoulder protruding therefrom, said second wall member being connected to said stop shoulder at said second end thereof, said second wall member cooperating with said first wall member and said stop shoulder to define a terminal receiving cavity, said finger being biased in a direction inwardly of said cavity and cooperating with said cavity to allow a terminal to be received thereinto, said first shoulder of said stationary first wall and said second shoulder of said biased finger being positioned inward of said cavity and coacting with the terminal to secure the terminal therein, said stop shoulder preventing further insertion of the terminal, said finger being deflectable in a direction outwardly of said cavity permitting removable of the terminal from said assembly.

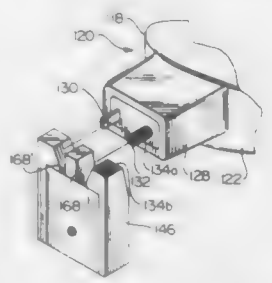
5,009,616
CONNECTOR ASSEMBLY WITH BACK SHELL HAVING VANES
Michael W. Fogg, Harrisburg, and Leroy J. Morningstar, Middletown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Dec. 14, 1989, Ser. No. 450,784
Int. Cl.[5] H01R 13/648
U.S. Cl. 439—608 6 Claims



1. A shielded connector assembly comprises, a terminal block containing electrical contacts, a conductive back shell, at least one multiconductor cable extending through a cable receiving opening of the back shell with corresponding conductors of the cable connected to corresponding contacts, and a strain relief for the cable contained in the back shell, the improvement comprising:
the back shell separates and shields selected contacts from other contacts in the terminal block, the back shell is bipartite, and conductive vanes on both parts of the back shell extend part way through the terminal block and engage opposing vanes to provide shielding continuously through the terminal block.

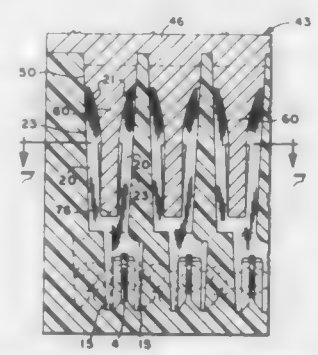
5,009,617
ASSEMBLY FOR A D.C. HID LAMP
Brian J. Thomas, Phoenix, N.Y., assignor to Welch Allyn, Inc., Skaneateles Falls, N.Y.
Filed Feb. 6, 1990, Ser. No. 475,933
Int. Cl.[5] H01R 13/64
U.S. Cl. 439—679 4 Claims

1. A combination socket and lamp assembly that includes a lamp having a first rectangular shaped blade conductor and a second circular shaped cylindrical conductor, the width of the blade conductor being different from the diameter of the cylindrical conductor, a socket means having a top wall and a front wall, a pair of parallel slotted receptacles formed in said front wall that open upwardly through the top wall, a first receptacle being configured and dimensioned to mate with said first blade conductor and a second receptacle being configured and dimensioned to mate with said second cylindrical conductor so that the lamp connectors can be slidably inserted downwardly into the slots, and electrical contact means contained within



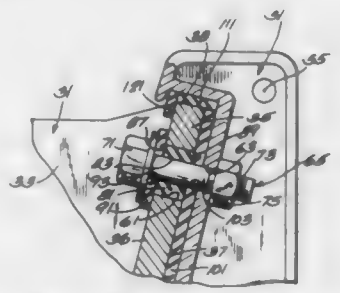
the receptacles for transmitting electrical current through the connectors to the lamp.

5,009,618
METHOD AND APPAPATUS FOR MAKING ELECTRICAL CONNECTING DEVICE
Robert H. Black, Jacksonville, Fla., and John T. Venaleck, Madison, Ohio, assignors to Ohio Associated Enterprises, Inc., Painesville, Ohio
Division of Ser. No. 920,273, Oct. 17, 1986, Pat. No. 4,863,402. This application May 10, 1989, Ser. No. 349,754
Int. Cl.[5] H01R 13/405
U.S. Cl. 439—736 16 Claims



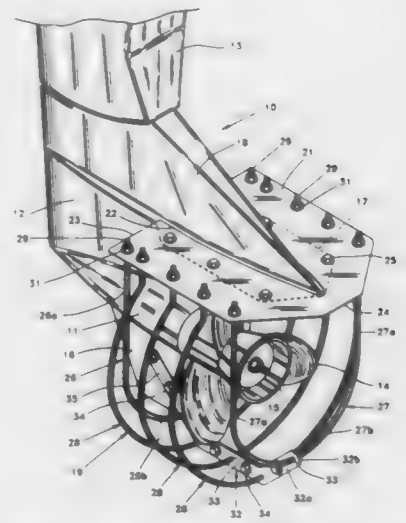
1. An electrical connecting device, comprising an electrical contact and housing means for containing at least part of said contact, said housing means having opening means for receiving therein one member for contacting said contact, said contact including a base and extending from said base at least two separate resilient contacting means for contacting at inner surfaces thereof said one member inserted between said contacting means, both said contacting means being capable of outward deformation to undergo substantially independent movement during inserting of said one member therebetween, said housing means including a body molded while said contacting means are outwardly deformed to form an integral structure about and to at least part of said contact and around at least part of said two contacting means to form said opening means in said housing means between said two contacting means and open spaces formed by said contacting means when outwardly deformed and defined by spaces created when said contacting means resiliently return inwardly to an undeformed position, said open spaces being adjacent respective ones of said two contacting means to permit such outward deformation of both said contacting means for insertion of the one member between said two contacting means.

5,009,619
CORROSION PROTECTION SYSTEM
Peter W. Meier, Stuart, Fla., assignor to Outboard Marine Corporation, Waukegan, Ill.
Filed Sep. 5, 1989, Ser. No. 402,521
Int. Cl.[5] B63H 5/12
U.S. Cl. 440—53 13 Claims



1. A marine installation including a transom fabricated on a first metal and including a forward surface, a rearward surface, and a mounting opening extending between said surfaces, and a marine propulsion device including a transom bracket fabricated of a second metal less noble than said first metal, and means for detachably mounting said transom bracket on said transom and for simultaneously electrically insulating said transom bracket from said transom, said means including a sleeve fabricated of electrically insulating material and engaged in said mounting opening and having therein a bore, a sheet fabricated of electrically insulating material and engaged with said rearward surface and with said sleeve and having therein an opening in registry with said bore, a washer fabricated of electrically insulating material and engaged with said forward surface and with said sleeve and having therein an aperture in registry with said bore, and a bolt having a heat engaging said washer, extending through said aperture, through said bore, through said opening in said sheet, and connected to said transom bracket to locate said transom bracket in engagement with said sheet and in rigid assembly with and in electrical isolation from said transom.

5,009,620
PROPELLER GUARD
Louis Feranda, Sr., 4251 W. Oquendo, Las Vegas, Nev. 89118
Filed May 24, 1990, Ser. No. 529,188
Int. Cl.[5] B63B 5/16
U.S. Cl. 440—72 11 Claims



1. A propeller guard for a propeller mounted on a propeller shaft extending rearwardly from a propeller shaft housing of a

marine propulsion unit having a cavitation plate above the propeller, comprising:

(a) an elongate support plate adapted to be secured to the cavitation plate,

(b) a plurality of ribs independently suspended from the support plate,

the ribs being formed of rod members having integrally formed end portions projecting through apertures in the support plate and having curved sections extending transversely beneath the support plate,

the projecting rod end portions receiving removable fasteners securing the ribs to the support plate,

the removable fasteners permitting individual damaged ribs to be removed and replaced,

(c) the ribs forming a substantially cylindrical cage open at both ends adapted to encompass, the propeller, and

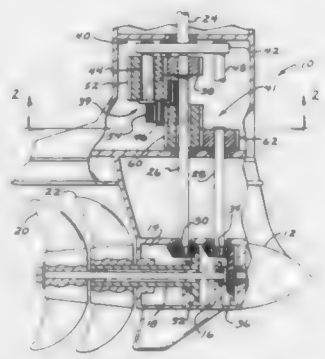
(d) elongate bar means coacting with a bight on each of the curved sections of the ribs for maintaining the latter in a parallel relationship to each other.

5,009,621

TORQUE SPLITTING DRIVE TRAIN MECHANISM FOR A DUAL COUNTERROTATING PROPELLER MARINE DRIVE SYSTEM

Herbert A. Bankstahl, Fond du Lac; Lyle M. Forsgren, Oshkosh; Neil A. Newman, Omro; Wayne T. Beck, and John M. Griffiths, both of Fond du Lac, all of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Mar. 20, 1989, Ser. No. 326,024
Int. Cl.[5] B63H *23/28*
U.S. Cl. 440—75 22 Claims



1. In a marine drive for a boat, said marine drive including an engine having a rotatable output shaft, a drive unit for driving said boat in response to rotation of said output shaft, comprising:

a drive unit housing;

a first propeller shaft rotatably mounted in the lower portion of said drive unit housing;

a second propeller shaft rotatably mounted in the lower portion of said drive unit housing;

a first propeller driving by interconnected with said first propeller shaft;

a second propeller drivingly interconnected with said seond propeller shaft; and

drive means disposed between said output shaft and said first and second propeller shafts for driving said first and second propeller shafts, and thereby said first and second propellers, said drive means comprising a pair of drive shafts mounted in said drive unit housing, and counterrotation drive means for driving said pair of drive shafts in opposite rotational directions in response to rotation of said output shaft, each said drive shaft being drivingly engaged with one of said propeller shafts for rotating said propeller shafts, and thereby said propellers, in opposite rotational directions, said drive means further including means for increasing or decreasing the rotational speed of one of said propellers in response to varying operating conditions, with a resulting decrease or increase in the rotational speed of the other of said propellers, so that the torque fraction supplied to each propeller is substantially constant under a range of operating conditions.

5,009,622

COOLING SYSTEMS FOR MARINE MOTORS

Frank A. R. Dudney, P.O. Box 413, Paarden Eiland, Cape Town, Cape Province, South Africa

Filed Mar. 12, 1990, Ser. No. 491,867
Claims priority, application South Africa, Mar. 15, 1989, 89/1964
Int. Cl.[5] B63H *21/10*
U.S. Cl. 440—88 8 Claims



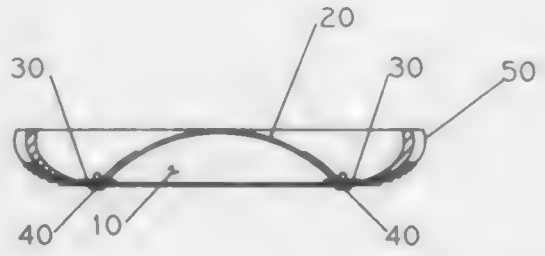
1. A cooling system for an outboard marine motor having motor and drive housing with a lower gear box and a cavitation plate above said gear box, and an internal coolant path for conveying a liquid coolant through hot zones of the motor, the internal coolant path having an inlet and an outlet, the cooling system comprising a coolant path which is external to the motor housing and connectable across the inlet and the outlet to form with the internal coolant path, a closed coolant circuit, the external coolant path including a heat exchanged located between said cavitation plate and said gearbox so as to be under water in which the motor moves during use of the system, the external coolant path being adjacent the drive housing, and the cooling system being free of operative contact with said gear box external to the motor housing whereby the cooling system primarily cools the motor.

5,009,623

SURFING SAUCER

Jeffrey D. Lueschen, 2335 #23 Caringa Way, Carlsbad, Calif. 92009

Filed Feb. 20, 1990, Ser. No. 481,590
Int. Cl.[5] A63B *31/10*
U.S. Cl. 441—56 1 Claim



1. A marine propulsion device comprising:

(a) a saucer having a substantially flat circular area circumscribed by a rim with a surface of convex curvature connecting said central circular area to said rim to form concave and convex saucer sides;

(b) a hand strap bisecting said central circular area of said saucer which is firmly connected at both ends to the concave side of the saucer;

(c) the saucer having hydraulic flow spoiling means located on the convex surface of curvature; and,

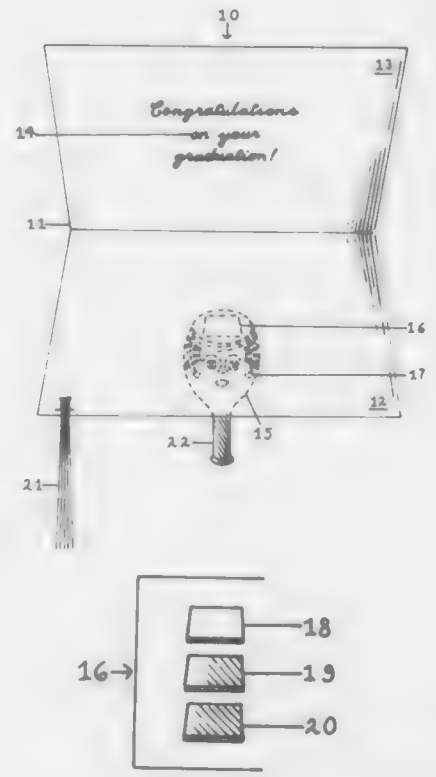
(d) said hydraulic spoiling means being further defined as comprising a plurality of evenly spaced circular ridges concentric to the center of the saucer.

5,009,624

MAILABLE THREE-DIMENSIONAL GREETING DEVICE

Mailiis Estam-Goggin, 26000-L Brigadier Pl., Damascus, Md. 20872, assignor to Maillis Estam-Goggin, Damascus, Md.

Filed Mar. 1, 1990, Ser. No. 486,890
Int. Cl.[5] A63H *33/00*; G09F *1/00*
U.S. Cl. 446—71 20 Claims



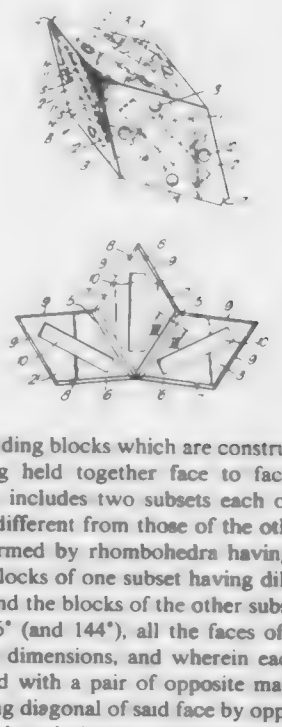
1. The combination of a flat piece of card stock, a flat, inflatable balloon and a triple-layered strip of sticky tapes, said strip of triple-layered sticky tapes permanently uniting said flat piece of card stock and said inflatable balloon both while said balloon is uninflated and also upon inflation of said balloon, into one physically intergrated greeting device unit.

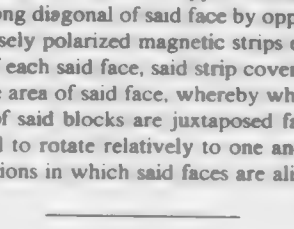
5,009,625

BUILDING BLOCKS

Michael S. Longuet-Higgins, 1 Branch Road, Comberton, Cambridge CB3 7DH, England

PCT No. PCT/GB88/00017, § 371 Date Aug. 1, 1989, § 102(e) Date Aug. 1, 1989, PCT Pub. No. WO88/05329, PCT Pub. Date Jul. 28, 1988
PCT Filed Jan. 12, 1988, Ser. No. 382,799
Claims priority, application United Kingdom, Jan. 13, 1987, 8700706
Int. Cl.[5] A63H *33/04*
U.S. Cl. 446—92 13 Claims





1. A set of building blocks which are constructed so as to be capable of being held together face to face magnetically; wherein said set includes two subsets each of blocks of the same shape but different from those of the other subset, both subsets being formed by rhombohedra having a plurality of faces, with the blocks of one subset having dihedral angles of 72° (and 108°), and the blocks of the other subset having dihedral angles of 36° (and 144°), all the faces of all said blocks having the same dimensions, and wherein each face of each block is provided with a pair of opposite magnetic poles on each side of a long diagonal of said face by opposite edges of a pair of transversely polarized magnetic strips extending along said diagonal of each said face, said strip covering an area less than the surface area of said face, whereby when two faces of different ones of said blocks are juxtaposed face to face said blocks will tend to rotate relatively to one another to one of two stable positions in which said faces are aligned.

5,009,626

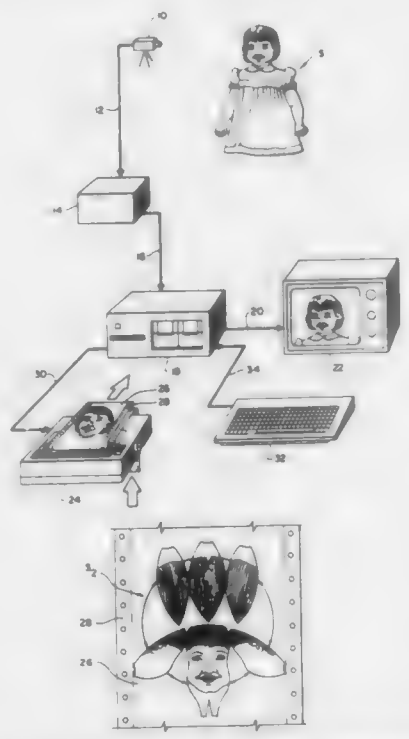
HUMAN LIFELIKE DOLLS, MANNEQUINS AND HUMANOIDS AND PET ANIMAL DOLLS AND METHODS OF INDIVIDUALIZING AND PERSONALIZING SAME

Marcella M. Katz, 10573 Le Conte Ave., Los Angeles, Calif. 90024

Continuation of Ser. No. 848,389, Apr. 4, 1986, abandoned. This application Jul. 25, 1988, Ser. No. 223,808
Int. Cl.[5] A63H *3/36*
U.S. Cl. 446—391 5 Claims

1. A three-dimensional lifelike representation of the head portion of a real life subject comprising: flexible sheet fabric material bearing on one side thereof an imprint of the head portion of a real life subject in the form of a computer-generated printed representation of the head of said subject consisting of an azimuthal-type group of connected sector photographic projections, said sheet material being of a type capable of conforming to a substrate structure; and a computer-selected substrate structure having a three-dimensional configuration and contour of head features matched to those of said subject and of a size matched to the computer-generated

printed representation of the head of said subject on said sheet material, said imprinted sheet material covering and con-



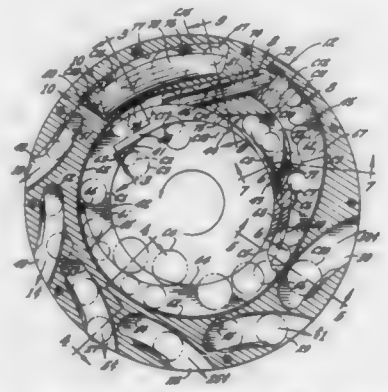
formed to said substrate structure and affixed thereto to form said lifelike representation of the head portion of said subject.

5,009,627

COIN SORTING MECHANISM

James M. Rasmussen, Chicago, Ill., assignor to Cummins-Allison Corp., Mt. Prospect, Ill.

Filed Mar. 14, 1989, Ser. No. 323,271
Int. Cl.[5] G07D *3/06*
U.S. Cl. 453—10 **14 Claims**



1. A coin sorter for sorting coins in terms of their denomination comprising:

a rotatably mounted coin-carrying disc having a resilient surface onto which coins may be fed;

means for rotating said disc;

a guide plate having a central opening and a configured surface positioned closely adjacent to said disc and covering said resilient surface, and wherein said configured surface includes an inner recess within which coins move radially, and said inner recess extends outwardly from said central opening, said guide plate forming a referencing means for receiving coins of all denominations and providing a single-file stream of the coins of all denominations positioned at a common radial location,

sorting means disposed around the outer periphery of said guide plate for receiving said single-file stream of coins and sorting the coins in said stream according to their respective denominations, and

means formed in said guide plate for breaking up stacked coins moving from said central opening toward said referencing means,

wherein said means for breaking up stacked coins includes first means for recirculating coins including coins from the stacked coins broken up by said means or breaking up stacked coins, and

wherein said referencing means includes a second means for recirculating coins including excess coins forming a stream of coins not adjacent to said referencing means, but moving to said referencing means in greater numbers than can be accommodated in said single-file stream of coins adjacent to referencing means, and

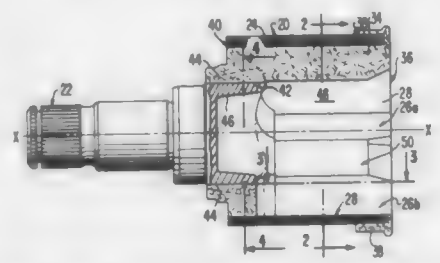
wherein said first means for recirculating coins directs coins away from the coins travelling in the said second means for recirculating coins.

5,009,628

BODY HAVING A COMPOSITE STRUCTURE FOR A TRANSMISSION JOINT AND ITS METHOD OF PRODUCTION

Michel Rouillot, Lorraine, France, assignor to Glaenzer-Spicer, Poissy, France

Filed Mar. 28, 1989, Ser. No. 329,634
Claims priority, application France, Mar. 28, 1988, 88 04045
Int. Cl.[5] F16C *3/00*; F16D *3/26*
U.S. Cl. 464—111 **17 Claims**



1. A body of an articulated transmission joint comprising:

a case having an inner peripheral surface extending about an axis of rotation of the body, said case being formed of a composite material including continuous reinforcing fibers;

connecting element means forming an integral part of the body for connecting the body to a part of a power transmission system;

at least one metal insert disposed within said case and defining a plurality of passageways, each constituted by a pair of confronting raceways, for receiving an element of the transmission joint which is to be articulated to the body,

said passageways being spaced from one another at angular intervals about said axis of rotation;

said at least one metal insert including wall portions having, on one side thereof, said confronting raceways and, on the other side thereof, confronting surfaces defining an inner space with the inner peripheral surface of said case; and

a matrix material occupying said inner space and integrating said at least one metal insert with said case,

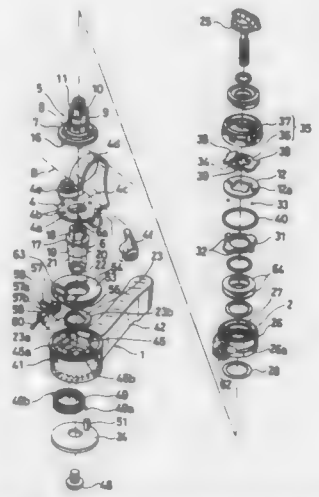
said matrix material comprising one of a thermoplastic and thermosetting resin, and reinforcing means consisting of one of short fibers and particles for reinforcing the resin.

5,009,629

SHIFT LEVER ASSEMBLY FOR BICYCLE

Koichi Tagawa, Kawachinagano, Japan, assignor to Maeda Industries, Ltd., Osaka, Japan

Filed Apr. 3, 1990, Ser. No. 503,854
Claims priority, application Japan, Apr. 5, 1989, 1-86148
Int. Cl.[5] B62M *25/00*
U.S. Cl. 474—80 **10 Claims**



1. A bicycle shift lever assembly for operating a derailleur by winding up or paying out a wire which connects the lever assembly to the derailleur, the lever assembly comprising:

pivot means fixedly mountable to a bicycle handlebar, the pivot means including a first pivot and a second pivot removably connected coaxially to the first pivot,

a shift lever having a boss portion rotatably fitted around the first pivot, the shift lever further having an arm portion extending from the boss portion, the shift lever being spring-biased to return to a neutral position from which the shift lever is rotatable in two opposite directions,

wire winding means provided separately from the shift lever and rotatably fitted around the second pivot,

a lever-coupled member provided between the lever boss portion and the wire winding means for rotation with the wire winding means, and

a clutch mechanism for causing the shift lever to rotate with the lever-coupled member away from the neutral position while allowing the shift lever to return to the neutral position without simultaneous rotation of the lever-coupled member.

5,009,630

CHAIN FORMED BY LINK ELEMENTS OF IDENTICAL SHAPE

Makoto Kanehira; Takerou Nakagawa; Yasumasa Tsubakimoto; Kouji Tanaka; Toshio Takahashi, and Masaaki Ikeda, all of Osaka, Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan

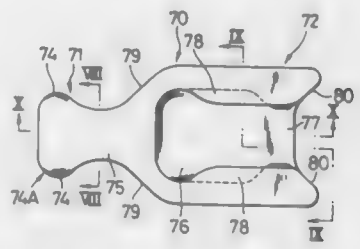
Filed Sep. 22, 1989, Ser. No. 411,555
Claims priority, application Japan, Oct. 21, 1988, 63-264199
Int. Cl.[5] F16G *13/02*
U.S. Cl. 474—211 **9 Claims**

1. A chain comprising a plurality of ceramic link elements, each of which includes a main body part and a connecting part integrally formed with each other, said connecting part projecting from said body part and having a curved surface head portion and a reduced neck portion;

the main body part having, at its point of connection to the neck portion, inclined end surfaces which converge inwardly toward one another for connection to the neck portion;

said main body part including (1) a recess for receiving said curved surface head portion of an adjacent said link element and (2) a narrowed slot portion for receiving said neck portion of the adjacent link element, said narrowed slot portion being contiguous with said recess at an end of said recess opposite said connecting part;

said main body part also including confining sections covering a portion of said recess, said confining sections projecting from both sides of said recess adjacent said narrowed slot portion in the form of overhanging eaves, whereby the connecting part of the adjacent link element is inserted in a first direction into said recess of a first said link element so that the head portion is brought beneath the confining sections, and then said neck portion of the



adjacent link element is received by said narrowed slot portion of the first link element as the adjacent link element is pivoted about its connecting part to extend in a second direction wherein the joined link elements are substantially aligned; and

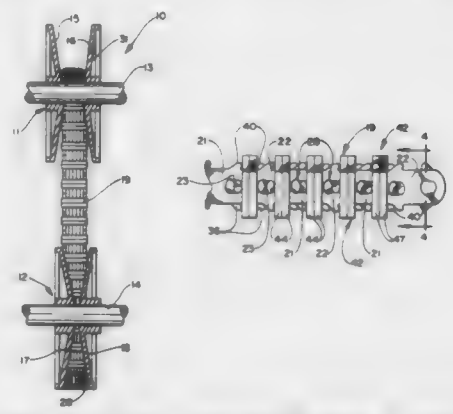
said main body part adjacent the outer end of said narrowed slot portion having inwardly converging end surfaces which are inclined substantially the same as and complimentary to the first-mentioned end surfaces, the first-mentioned inclined end surfaces of said adjacent link element abutting against the second-mentioned inclined end surfaces of said first link element when the chain is subjected to a pushing force.

5,009,631

CVT CHAIN-BELT

John S. Ivey, Ithaca; Paul M. Bateman, Freeville; Julius A. Clauss; Edward H. Cole, Jr., both of Ithaca, and Philip J. Mott, Dryden, all of N.Y., assignors to Borg-Warner Automotive, Inc., Troy, Mich.

Division of Ser. No. 356,617, May 23, 1989, which is a continuation of Ser. No. 114,335, Oct. 28, 1987, abandoned. This application Oct. 3, 1989, Ser. No. 416,704
Int. Cl.[5] F16G *13/02*
U.S. Cl. 474—213 **3 Claims**



1. A link for a power transmission chain comprising an elongated body having a pair of longitudinally spaced apertures adjacent the opposite ends thereof, each aperture having a generally hour-glass shape with enlarged rounded ends joined by an intermediate neck portion,

an angularly inclined upper surface extending from a first

end and terminating in a first outwardly extending tab adjacent said first end of the link and generally laterally aligned with the aperture at said first end,

an inwardly curved lower surface extending from said first end and terminating in a second outwardly extending tab adjacent said first end of the link and generally laterally aligned with the aperture at said first end, said first and second tabs being oppositely disposed,

each tab having a rounded end surface, a flattened rear surface and an undercut corner substantially aligned with an edge of said first aperture.

5,009,632

METHOD AND DEVICE FOR JOINING FOIL HOSES

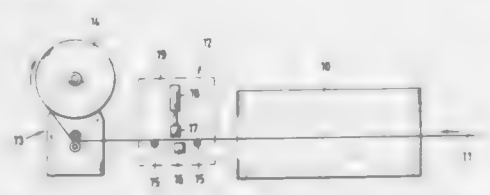
Bernhard Kruessel, Halle, Fed. Rep. of Germany, assignor to Karl H. Sengewald KG, Halle, Fed. Rep. of Germany

Filed Mar. 16, 1989, Ser. No. 324,316

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1988, 3809125

Int. Cl.[5] B31B *23/74*

U.S. Cl. 493—189 7 Claims



1. A method for joining a first tubular web and a second tubular web, each tubular web defining a plurality of bag portions having a predetermined pitch substantially defining a bag length and each tubular web having an end portion including at least one transverse weld, the method comprising the steps of:

superimposing the transverse weld at the end portion of the first tubular web and the transverse weld at the end portion of the second tubular web, and

joining the superimposed transverse welds by a joining weld, the joining weld being substantially coincident with the superimposed transverse welds,

whereby the first tubular web and the second tubular web are joined to produce a joined tubular web having bag portions of substantially uninterrupted pitch.

5,009,633

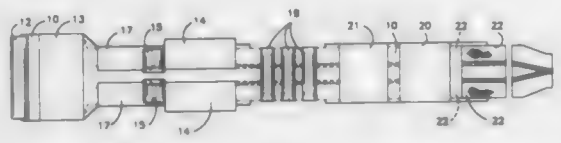
METHOD OF MANUFACTURING AN OUTER VACUUM CLEANER BAG FOR AN UPRIGHT CLEANER

Oral M. Smaling, Bloomington, Ill., assignor to White Consolidated Industires, Inc., Cleveland, Ohio

Filed Sep. 5, 1989, Ser. No. 402,647

Int. Cl.[5] B31B *23/68, 23/90*

U.S. Cl. 493—214 7 Claims



1. A method of manufacturing an outer vacuum cleaner bag for a vacuum cleaner, comprising the steps of:

drawing out vacuum cleaner bag material cut to a specified width from a roll, the bag material having left and right sides, each having a side edge;

folding the side edges of the bag material;

providing zipper halves on the right and left sides of the bag material;

feeding the bag material into a double-headed sewing machine with each of the heads on the sewing machine engaging one of the sides of the bag material;

feeding each of the zipper halves into the respective head of the sewing machine and sewing the zipper halves on the right and left hand side edges of the bag material to form a bag assembly; and

feeding the bag assembly into a cutting press using an automatic incremental feed apparatus whereby the bag material is cut into panels.

5,009,634

METABOLIC CATHETER

Marc D. Feldman; Thomas C. Skalak, both of Charlottesville, Va., and Luiz Belardinelli, Gainesville, Fla., assignors to The University of Virginia Alumni Patents Foundation, Charlottesville, Va.

Filed Jan. 11, 1989, Ser. No. 295,517

Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—27 17 Claims



1. A metabolic catheter comprising:

(a) a withdrawal catheter having proximal and distal ends;

(b) an infusion catheter having proximal and distal ends, wherein the infusion catheter is inserted within the withdrawal catheter and positioned so that the distal end of the infusion catheter is near the distal end of the withdrawal catheter and provides a space between distal ends of the withdrawal and infusion catheters;

(c) first and second syringes, wherein the first syringe is attached to the proximal end of the withdrawal catheter and the second syringe is attached to the proximal end of the infusion catheter, wherein plungers of the first and second syringes are fastened together end-to-end and are mounted; and

(d) a first stop solution which is placed into the second syringe attached to the infusion catheter, wherein the metabolic catheter further comprises a second stop solution which is placed into the first syringe attached to the withdrawal catheter.

5,009,635

PUMP APPARATUS

Eugene N. Scarberry, Trafford, Pa., assignor to Respironics Inc., Murrysville, Pa.

Filed Nov. 6, 1989, Ser. No. 432,159

Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—27 13 Claims

1. A stomach pump or the like comprising:

a resiliently flexible bulb means enclosing an interior space and having an outlet and an inlet communicating between said interior space and the exterior of said bulb means;

first one-way flow check valve means disposed in fluid flow communication with said inlet and operable to preclude material movement from said interior space via said inlet;

first connector means disposed adjacent said outlet;

a remote reservoir means for receiving material therewithin and including a second connector means disposed in fluid flow communication therewith to permit movement of material into said reservoir means;

selectively releasable means connecting said first and second connector means to permit material to move from said



interior space of said bulb means into said remote reservoir means; and

said reservoir means including second one-way flow check valve means disposed in fluid flow communication with said second connector means and operable to preclude movement of material from within said reservoir means via said second connector means.

5,009,636

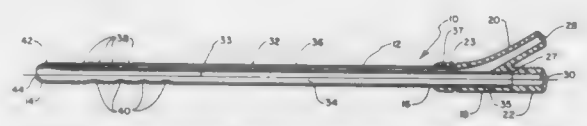
DUAL-LUMEN CATHETER APPARATUS AND METHOD

Ronald W. Wortley, and David C. Beattie, both of Salt Lake City, Utah, assignors to The Kendall Company, Boston, Mass.

Filed Dec. 6, 1989, Ser. No. 446,971

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—43 11 Claims



1. An extracorporeal oxygenation catheter apparatus designed for simultaneous withdrawal of blood to be oxygenated by means of gravity drainage and pressurized return of blood that has been oxygenated, comprising:

an elongated catheter body having a distal end and a proximal end, and comprising a septum means for forming a first and a second lumen through the interior of said catheter body, said first lumen comprising a cross-sectional area sized so that a sufficient volumetric flow rate for purposes of oxygenation of said blood will occur in said first lumen as a result of gravity drainage of blood through the first lumen, and said second lumen comprising a cross-sectional area which is smaller in relation to said cross-sectional area of the first lumen but which is also sized so that a substantially equal volumetric flow rate of said oxygenated blood is returned under pressure through said second lumen, each said lumen comprising an opening means for passage of blood therethrough at said stated volumetric flow rate; and

connector means joined to said proximal end for attaching said catheter body to tubing, said connector means comprising means forming a first passageway for connection to tubing through which said blood to be oxygenated is withdrawn from said first lumen, and means forming a second passageway for connection to other tubing through which said oxygenated blood is returned to said second lumen.

5,009,637

APPARATUS FOR HYPODERMIC INJECTION OF LIQUIDS

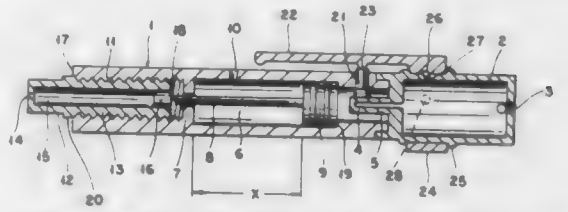
Jack Newman, Queenscliff, and James A. Monroe, Turramurra, both of Australia, assignors to Sy-Quest International Limited, Woolahra, Australia

Filed Nov. 16, 1988, Ser. No. 272,121

Claims priority, application Australia, Nov. 16, 1987, PI5441

Int. Cl.[5] A61M *5/30*

U.S. Cl. 604—68 9 Claims



1. A device for introducing a liquid into a patient, including:

a capsule for containing the liquid, the capsule including a hollow body with a nozzle end through which the liquid exits from within the capsule, and a capsule piston movably mounted within the body and operable to push the liquid out through said nozzle end;

a body providing a reservoir for receiving a quantity of gas under pressure from a gas source;

an interacting actuator piston and cylinder assembly, within the body, providing a variable volume space behind the actuator piston;

a neck, having a closed end, extending from said reservoir to said space behind the actuator piston;

means operable by a user to open said closed end to permit said quantity of gas to pass from said reservoir to said space behind the actuator piston to cause movement of said actuator piston within said cylinder;

a piston rod extending from said actuator piston towards an anterior end of the body and engageable with the said capsule piston to cause movement thereof upon said quantity of gas under pressure being delivered to said space behind the actuator piston;

a casule mounting means, at the anterior end of the body, to connect the capsule to the body while allowing the capsule to be axially moveable along the anterior end so that the distance between the capsule piston and a front end of the piston rod can be varied so that the amount of penetration of the piston rod into the capsule, upon movement of the actuator piston, may be adjusted to vary the amount of liquid expelled from the capsule.

5,009,638

BREAST PUMP

Robert Riedweg, Eich, and Klaus Schlensog, Hünenberg, both of Switzerland, assignors to Ameda AG, Switzerland

Filed Feb. 28, 1990, Ser. No. 486,418

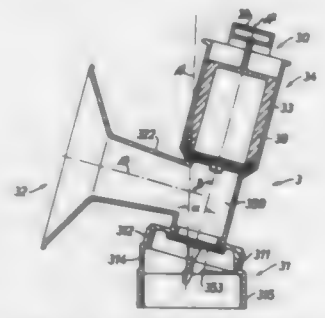
Claims priority, application Switzerland, Mar. 1, 1989, 751/89

Int. Cl.[5] A61M *1/06*

U.S. Cl. 604—74 10 Claims

1. A breast pump comprising a milk reservoir and a closure member for connection with said reservoir; said closure member comprising a suction bell and a suction pump suitable for single-handed manual operation and including: (a) a cylinder integrally connected with said closure member; (b) a piston means for reciprocating motion within said cylinder between a first or lower position and a second or upper position, and (c) a spring-loaded actuator for interaction with said piston means; wherein said actuator is formed by a yoke means comprising an elongated spring member having a first or normal position and being reversibly deformable into a second or elastically bent position, said spring member having two ends and being connected with said piston means substantially intermediate between said two ends, and said yoke further comprising a pair of

elongated lateral legs each having a lower end and an upper end, each of said lower ends being connected with an anchoring member on said closure member, each of said upper ends of said elongated lateral legs being connected with said spring member near one of said two ends thereof, said yoke means being dimensioned for single-handed manual compression of



said lateral legs and for elastically deforming said spring member by said compression so as to upwardly displace said piston means within said cylinder upon said manual compression and permitting said spring member to revert into its first or normal position when said lateral legs are released from said manual compression for returning said piston means into said first or lower position.

5,009,639

GASTRIC/DUODENAL/JEJUNAL CATHETER FOR PERCUTANEOUS ENTERNAL FEEDING

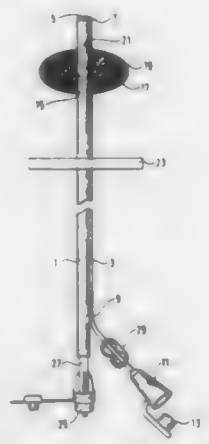
Michael Keymling, Bad Hersfeld, Fed. Rep. of Germany, assignor to Fresenius, AG, Bad Homburg, Fed. Rep. of Germany

Filed Apr. 22, 1988, Ser. No. 184,628

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1987, 8705894[U]

Int. Cl.[5] A61M *25/00*

U.S. Cl. 604—96 **4 Claims**



1. In a gastral/duodenal/jejunal catheter for percutaneous enteral feeding comprising:

a first catheter hose having a first channel for the delivery of a feeding solution,

a second hose having a channel for the provision of a filling medium, both said hoses having proximal inflow and distal outflow ends,

a balloon through which said first and second hose pass, wherein the junction between said balloon and said hoses is sealed to be impervious to gas and liquid, said balloon being located close to the distal end of said first hose and the distal end of said second hose being sealed but having an opening into the inside of said balloon,

the improvement comprising

(a) providing said balloon, when inflated, to be substantially ellipsoid in shape a short axis of said ellipsoid substantially coaxial with the longitudinal axis of said first catheter hose, said balloon being filled with an elastic, compressible, substantially ellipsoidal foam filling, said foam filling being substantially collapsible upon the extraction of air from the balloon,

(b) further comprising a slidable disc, surrounding and slidable on said first and said second hoses locatable between said balloon and said proximal ends.

5,009,640

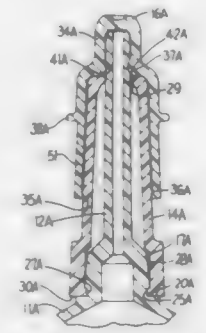
SLIP CAP FOR CANNULA USE

Thomas W. Pyret, Portage, and James L. Gallagher, Oshtemo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 19, 1989, Ser. No. 300,278

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—117 **18 Claims**



16. An applicator for administering a mastitis treatment medication to a cow, comprising: a syringe having an axially elongated, blunt-tipped cannula extending therefrom, said cannula having an axially inner portion and an axially outer portion; a two-part, tubular, cap system releasably connected to and covering said cannula, said cap system comprising an axially inner base cap and an axially outer tip cap, said base cap having an axially elongated sidewall covering the axially inner portion of said cannula, a snap-lock fitting at an axially inner end of said base cap for releasably securing said base cap with respect to said cannula, said base cap having an outer end with an opening therethrough, the axially outer portion of said cannula extending through said opening and projecting outwardly beyond said outer end of said base cap, said tip cap comprising an axially inner, relatively wide, first sleeve portion having an axially inner end and an axially outer end, a cylindrical skirt extending axially inwardly from the axially inner end of said first sleeve portion and surrounding said base cap for a portion of the length thereof, said skirt constituting an axial extension of said first sleeve portion, an axially outer, relatively narrow, second sleeve portion covering the axially outer portion of said cannula and a laterally extending shoulder extending between adjacent ends of said first and second sleeve portions and abutting against the outer end of said base cap, said second sleeve portion having an internal sealing ring projecting laterally inwardly from an internal wall of said second sleeve portion, said sealing ring being pressed into an exterior sidewall of said outer portion of said cannula and resiliently deforming the exterior sidewall of said outer portion of said cannula to form a complementary groove therein so that said sealing ring is in releasable sealing engagement with said groove in said exterior sidewall of said outer portion of said cannula in order to prevent leakage of fluid therebetween; a laterally outwardly projecting, manually engageable, annular flange at the juncture of said skirt and said first sleeve portion, said skirt and said first sleeve portion having internal walls laterally outwardly spaced from an external wall of said base cap to provide an annular clearance space therebetween extending from adjacent to an axially inner end of said skirt to said shoulder, said flange being engageable by a finger or thumb of a user of the applicator so that said tip cap can be displaced from said base cap to expose said outer portion of said cannula, said cylindrical skirt covering said portion of the length of said base cap so that the user's finger or thumb does not contact said base cap or said outer portion of said cannula while said tip cap is being removed whereby to reduce the possibility of contamination of said outer portion of said cannula; and a releasable snap lock connection between the axially inner end of said skirt and an opposing portion of said base cap.

5,009,641

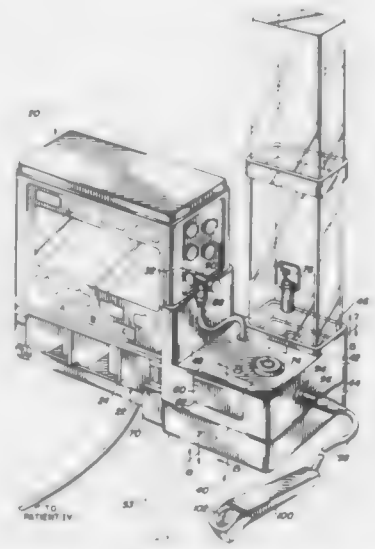
PATIENT-CONTROLLED ANALGESIA SECURITY ATTACHMENT FOR A MEDICATION INFUSION SYSTEM

Lanny A. Gorton, Sunland, Calif., assignor to Pacesetter Infusion, Ltd., Sylmar, Calif.

Filed Dec. 2, 1988, Ser. No. 279,466

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—131 **24 Claims**



1. An instrument for securely storing fluid medication for use in an infusion pump having a housing and using a replaceable cassette having a fluid inlet and a fluid outlet, comprising:

a first housing member;

means for attaching said first housing member to said infusion pump housing;

a second housing member, said first and second housing members defining a space therebetween, said second housing member being moveable between a first position allowing access to said space defined by said first and second housing members and a second position preventing access to said space defined by said first and second housing members;

means for receiving a container in which said fluid medication is stored, said receiving means being mounted on said first housing member;

first locking means for preventing said first housing member from being removed from said infusion pump;

second locking means for preventing said receiving means from being removed from said first housing member; and

third locking means mounted on said second housing member for preventing a cassette from being removed from said infusion pump when said second housing member is in said second position.

5,009,642

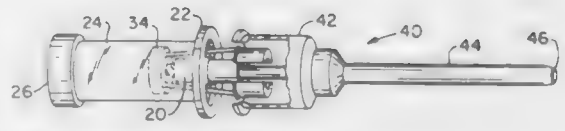
SELF-BLUNTING NEEDLE ASSEMBLY FOR USE WITH A CATHETER, AND CATHETER ASSEMBLY USING THE SAME

Carl R. Sahi, Coventry, Conn., assignor to Bio-Plexus, Inc., Tolland, Conn.

Continuation-in-part of Ser. No. 101,610, Sep. 28, 1987, Pat. No. 4,828,547. This application May 8, 1989, Ser. No. 348,711

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—158 **12 Claims**



1. A catheter assembly comprising:

(a) a catheter having a hub within which is formed a hub chamber, and a catheter tube extending from the hub and terminating in a tube tip, the tube having a tube bore extending therethrough;

(b) a needle assembly carried by the catheter and comprising a needle member in which is mounted a blunting member,

(i) the needle member comprising a needle shaft having a needle bore extending therethrough, the needle shaft terminating at one end in a puncture tip and having an opposite, proximal end on which is carried a connector means,

(ii) the blunting member comprising an elongate probe having a retainer means carried thereon, the probe being slidably mounted within the needle bore with the retainer means carried exteriorly of the needle bore and the connector means and in engagement with the connector means,

(iii) the needle member being axially movable relative to the blunting member, from a retracted condition of the blunting member, in which the probe is short of the puncture tip of the needle member, to an extended condition of the blunting member, in which the probe protrudes outwardly of, and thereby blunts, the puncture tip;

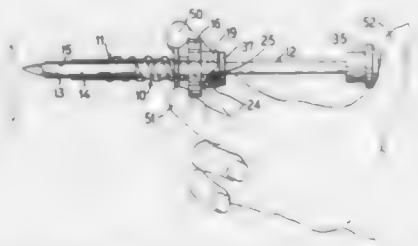
the retainer means being force-fit within the hub chamber to hold the needle assembly in place within the catheter and so positioned that (1) the needle shaft is disposed within the tube bore with the puncture tip thereof extending outwardly of the tube tip, and (2) the needle member is accessible from exteriorly of the catheter at the hub; the retainer means and the connector means being dimensioned and configured to provide a lost motion connection between the needle member and the blunting member, whereby an initial stage of withdrawal of the needle member from the catheter moves the needle member relative to the blunting member to change the blunting member from its retracted condition to its extended condition, thereby blunting the puncture tip, and continued withdrawal of the needle member beyond the initial stage overcomes the force-fit between the retainer means and the hub chamber and extracts the needle assembly from the catheter, wherein the connector means comprises a ferrule slide and the retaining means comprises a clamping member which imposes a pressure grip on the ferrule slide, whereby the lost motion is attained by overcoming the pressure grip to slide the ferrule slide through the clamping member.

5,009,643

SELF-RETAINING ELECTRICALLY INSULATIVE TROCAR SLEEVE AND TROCAR

Harry Reich, Kingston, Pa., and Peter Koch, Schiller Park, Ill., assignors to Richard Wolf Medical Instruments Corp., Rosemont, Ill.

Filed Aug. 9, 1989, Ser. No. 391,413
Int. Cl.[5] A61M 5/178
U.S. Cl. 604—165 9 Claims



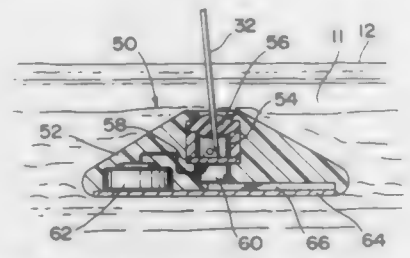
1. A device comprising a combination of a trocar sleeve and a trocar received in the sleeve, said trocar sleeve having a distal end and a proximal end, said trocar sleeve including an insulative sleeve with an inner diameter extending through the trocar sleeve to insulate a metal portion of the trocar sleeve from an instrument being inserted through the trocar sleeve, said trocar sleeve, adjacent the proximal end, having an enlarged annular flange of a first diameter and a small annular stop with a second diameter less than the first diameter being spaced toward the distal end from said annular flange, said trocar sleeve having means to prevent the removal of the sleeve from a patient being disposed on an exterior surface of the sleeve to extend from said stop toward the distal end, said means comprising a helical thread extending from the stop toward the distal end and terminating prior to reaching said distal end so that a portion of the trocar sleeve at the distal end is free of said helical thread; said trocar having a distal end with a cutting edge and a proximal end with a knob, said trocar having a stop disposed between said ends and, at a distance from said distal end, which distance is slightly greater than the length of the sleeve so that with the trocar inserted in the sleeve with the stop of the trocar engaging the proximal end of the sleeve, the cutting edge of the trocar extends out of the distal end of the trocar sleeve.

5,009,644

NEEDLE PLACEMENT VERIFIER

Ray S. McDonald, St. Paul, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Jul. 25, 1989, Ser. No. 385,132
Int. Cl.[5] A61M 5/32
U.S. Cl. 604—175 5 Claims



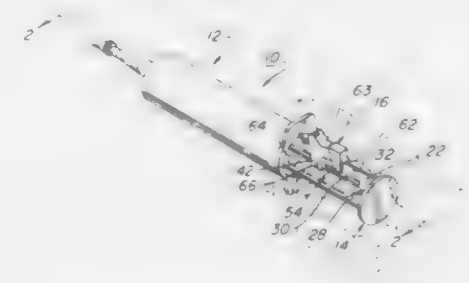
1. An implantable medical device comprising:
contact means for sensing contact with a percutaneous medical instrument including conductive contact means for contacting the medical instrument;
means for providing power which is electrically connected to the contact means;
means for generating an audible signal which is electrically connected to the contact means; and
a conductive plate mounted on the device in contact with the patient's body and electrically connected to the contact means so that an electrical circuit includes a path from the plate through the body, through the medical instrument and back to the contact means.

5,009,645

SYRINGE FOR DISPENSING MEASURED QUANTITIES OF A MATERIAL

Jules Silver, 7 Ridgewood Rd., Niantic, Conn. 06357, and Richard A. Tarozzi, 8 Oakwood Dr., Gales Ferry, Conn. 06335

Filed Jun. 12, 1989, Ser. No. 365,285
Int. Cl.[5] A61M 5/00
U.S. Cl. 604—207 19 Claims



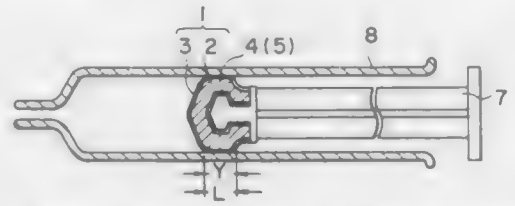
1. A syringe for dispensing a predetermined dosage of material, said syringe comprising a hollow syringe barrel having a discharge end for the material to be dispensed and an open, opposite end, a plunger rod slidably received in said syringe barrel through said open, opposite end, said plunger rod having a first end portion located within said syringe barrel and a rail section having at least a portion thereof located outside of said syringe body, said plunger rod being movable in a downstream direction into said syringe barrel for dispensing a material through the discharge end of said syringe barrel, a stop member attached to the rail section in a region outside of said syringe barrel and being axially movable along the length of the rail section to set the length of travel of the plunger rod in said downstream direction for controlling the volume of material to be dispensed, characterized in that the stop member includes a knife edge for embedding into the rail section to lock the stop member in any one of an infinite number of desired positions on said rail section.

5,009,646

SLIDING STOPPER FOR A SYRINGE

Masamichi Sudo, and Tamotsu Okuda, both of Tokyo, Japan, assignors to Daikyo Gomu Seiko Ltd., Tokyo, Japan

Filed Mar. 14, 1989, Ser. No. 324,037
Claims priority, application Japan, Mar. 16, 1988, 63-33730
Int. Cl.[5] A61M 5/315
U.S. Cl. 604—230 4 Claims



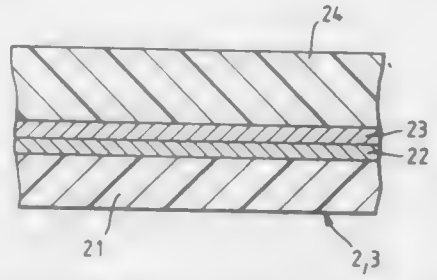
1. A sliding stopper for a syringe, consisting of a rubber elastic body having a part to be contacted with a liquid medicament and a part slidable on the inner wall of a barrel fully laminated with a resin film having a small friction coefficient, the ratio of the length (Y) of the surface of the outer circumferential part of the sliding stopper contacting the inner wall of the barrel to the length (L) of the slidable part of the sliding stopper, Y/L being in the range of 0.8 to 1, and the ratio of the length (L) of the slidable part of the outer diameter (D) of the sliding stopper L/D being in the range of 0.25 to 1.

5,009,647

WATER CLOSET DISPOSABLE OSTOMY BAGS AND MATERIALS

David E. Cross, Rustington; Kenneth J. Brooks, Lancing, and Neil A. Whiteside, Worthing, all of England, assignors to Smiths Industries Public Limited Company, London, United Kingdom

Continuation of Ser. No. 147,425, Jan. 25, 1988, abandoned. This application Feb. 6, 1990, Ser. No. 474,664
Claims priority, application United Kingdom, Feb. 19, 1987, 8703874
Int. Cl.[5] A61F 5/44
U.S. Cl. 604—332 4 Claims



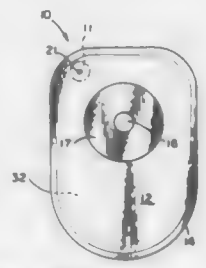
1. An ostomy bag that is disposable in a w.c. by addition of an alkali to the bag or w.c., the bag comprising a flexible wall having an opening therein through which body waste material, in use, enters the bag and is contained thereby; said flexible wall comprising an inner layer disposed on an inner side of the bag, said inner layer being undamaged by the contents of the bag, and an outer layer disposed on an outer side of the bag, both of said inner and outer layers being of material that is broken up on contact with alkali, said material including carboxylated acrylic acid; at least two separately vapor diposited layers of aluminum intermediate said inner and outer layers, the thickness of each aluminum layer by itself being insufficient to prevent odor transmission but said layers in combination being effective substantially to prevent odor transmission through said wall to an extent greater than would be produced by a single aluminum layer equal in thickness to the total thickness of the two aluminum layers, and the two layers of aluminum being exposed to attack by said alkali through said wall after break up of said inner or outer layer and being soluble in said alkali.

5,009,648

STARCH CONTAINING FILM OSTOMY POUCHES

Marvin S. Aronoff, New York; Denis E. Keyes, Staten Island, both of N.Y., and Robert C. Hahn, Sr., East Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 22, 1989, Ser. No. 327,469
Int. Cl.[5] A61F 5/44
U.S. Cl. 604—332 15 Claims



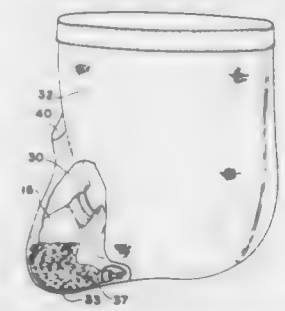
1. An ostomy pouch comprising a first front panel and a second rear panel sealed together along at least a portion of their periphery to form said pouch, said first front panel having an aperture providing access to the pouch interior for the stoma of the user, both said first front panel and said second rear panel formed of a composite film comprising a starch containing blended polymeric film coated on one surface with a barrier of polyvinylidene chloride and a ply of water absorbent or waterproof tissue paper laminated to the other surface of said starch containing blended polymeric films, said tissue paper plies constituting the exterior surface of said pouch, an adhesive label affixed to the tissue paper ply of said first front panel around said stomal aperture, and wherein said starch blended polymeric films comprise from about 15% to about 25% by weight of hydrophobic starch, ethylene vinyl acetate wherein each starch blended polymeric film contains from about 15% to about 20% by weight of vinyl acetate, up to 35% by weight of low density polyethylene, and from about 2% to about 6% by weight of an unsaturated vegetable oil.

5,009,649

EXPANDABLE BANDED MALE URINARY INCONTINENCE CONDOM AND SUPPORTING UNDERGARMENT

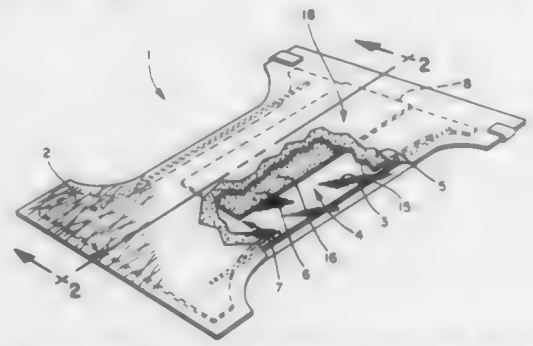
Victor Goulter, and Barbara Goulter, both of 485 Molimo Dr., San Francisco, Calif. 94127

Filed Jul. 13, 1989, Ser. No. 379,105
Int. Cl.[5] A61F 5/44
U.S. Cl. 604—351 8 Claims



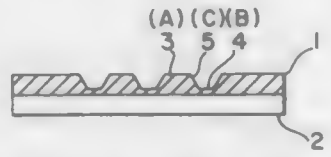
1. A method for enabling a urine-incontinent male to carry voided urine conveniently until he can dispose of same, comprising:
fitting a condom having a closed distal end and an open proximal end over at least the distal end of the penis of a wearer, at least the distal end portion of said condom being sufficiently flexible, stretchable, and expandable that when said condom is fitted over said penis and affixed to said penis above said distal end portion of said penis and urine is introduced between said closed distal end portion of said condom and the distal end of said penis, said urine will force said closed distal end portion of said condom to stretch and expand to a larger diameter and away from said distal end of said penis so as to be able to retain at least 100 grams of urine in said closed distal end portion of said condom,
securing said condom to said penis above said distal end of said penis so that said condom will remain on said penis even when said urine fills and forces said distal end portion to stretch and expand, and said condom has no support other than said securing means, and
providing an undergarment containing a pouch in a symmetrical location with respect to said wearer's legs for supporting said condom when it is filled with urine.

5,009,650
ABSORBENT STRUCTURE DESIGNED FOR ABSORBING BODY FLUIDS
Leo J. Bernardin, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Continuation of Ser. No. 886,780, Jul. 17, 1986, Pat. No. 4,699,619, which is a continuation-in-part of Ser. No. 656,384, Aug. 31, 1984, abandoned, which is a continuation-in-part of Ser. No. 599,882, Apr. 13, 1984, abandoned. This application Aug. 6, 1987, Ser. No. 83,475
Int. Cl.[5] A61F *13/16*
U.S. Cl. 604—378 **28 Claims**



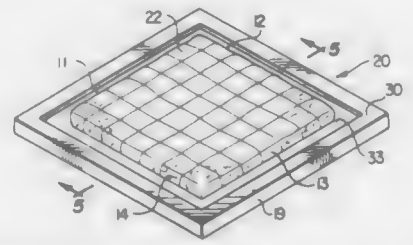
1. A disposable, absorbent structure suitable for use in an absorbent article, said absorbent structure having end edges at the opposite ends of the length of the absorbent structure, said absorbent structure comprising:
(A) an upper layer having a density in the range of about 0.03 to about 0.4 gram per cubic centimeter and consisting essentially of fiber material, which in batt form has a capacity for absorbing fluids; and
(B) a lower layer in direct fluid communication with the upper layer and having a density in the range of about 0.14 to about 0.3 gram per cubic centimeter and comprising preponderantly a mixture of fiber material, which in batt form has a capacity for absorbing fluids, and superabsorbent material;
said lower layer further being positioned relative to said upper layer in a manner such that superabsorbent material in said lower layer is located more towards one of said end edges than the other.

5,009,651
SURFACE MATERIAL FOR SANITARY ARTICLES AND ITS PREPARING METHOD
Nobuyuki Kamishioiri; Manabu Kaneda; Toshiyasu Tanaami, and Miho Maeda, all of Tochigi, Japan, assignors to Kao Corporation, Tokyo, Japan
Filed Aug. 18, 1989, Ser. No. 395,579
Claims priority, application Japan, Sep. 6, 1988, 63-223282
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—378 **11 Claims**



1. A surface material for sanitary articles which has the characteristic of being composed of Layer 1, which is located on the surface adapted to be in contact with the skin, and Layer 2, which is formed into a single unit with Layer 1 on the surface opposite of that which is adapted to be in contact with the skin with its entire surface being essentially covered by Layer 1, and with Layer 1 comprising 50 to 100% of hydrophobic fibers and Layers 2 comprising 50 to 100% of hydrophilic fibers, and moreover, in which at least the portion of Layer 1 covering Layer 2 has an embossed structure and possesses a first section having a given fiber density, a second section of which the fiber density is higher than said given fiber density, and a third section which is located at a boundary between said first and second sections, where the area of the third section occupies 2-50% of the area of the entire surface material.

5,009,652
MEDICAL SPONGES AND WIPES WITH A BARRIER IMPERMEABLE TO INFECTIOUS AGENTS
Cheryle I. Morgan, 6562 Patrick Dr., Dallas, Tex. 75214, and Millard M. Judy, 5740 Palo Pinto Dr., Dallas, Tex. 75206
Filed Oct. 16, 1987, Ser. No. 109,571
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—385.1 **5 Claims**

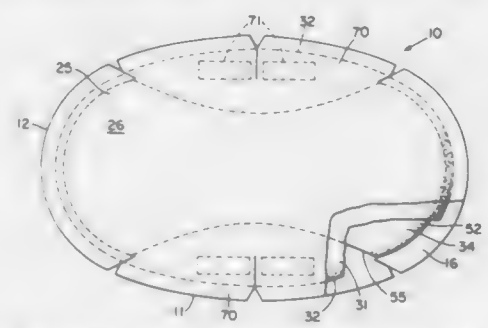


1. A laminated medical sponge, comprising:
a thin and flexible sheet, having a top side and a bottom side, impermeable to infectious agents;
an integral peripheral ridge means on at least one side of said sheet and surrounding the entire peripheral edges of said sheet;
a first layer of absorbent material, having a top surface and a bottom surface and being of a smaller area than said sheet, one said surface of is secured on one side, the wiping side, of said sheet, and having the entire peripheral edges of said first layer spaced inwardly away from the entire said peripheral ridge of said sheet providing a surrounding moat of said sheet alone so that any liquid on said first layer of absorbent material cannot travel through said surrounding moat or wick around said peripheral ridge to reach the opposite side of said sheet adapted to be grasped by being gripped between one's fingers around the central region of said sheet; and
a second layer of absorbent material, having a top surface and a bottom surface and being of a smaller area than said sheet, one said surface of is secured on the opposite side, the grasping side, of said sheet, and having the entire peripheral edges of said second layer spaced inwardly away from the entire said peripheral edges of said sheet providing a surrounding area of said sheet alone.

5,009,653
THIN, FLEXIBLE SANITARY NAPKIN
Thomas W. Osborn, III, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Continuation of Ser. No. 293,606, Jan. 4, 1989, Pat. No. 4,950,264, which is a continuation-in-part of Ser. No. 175,559, Mar. 31, 1988, abandoned. This application Aug. 20, 1990, Ser. No. 570,231
Int. Cl.[5] A61F *13/16*
U.S. Cl. 604—385.1 **12 Claims**

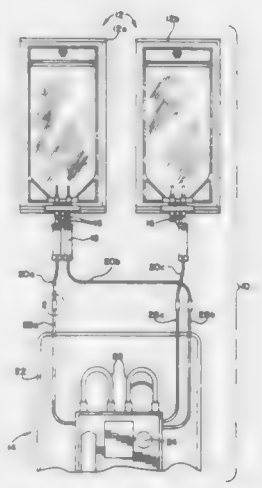
1. A sanitary napkin comprising:
a liquid permeable topsheet;
a liquid impermeable barrier sheet;
an absorbent core intermediate said topsheet and said barrier sheet;

said sanitary napkin having a test capacity of at least about 8.0 grams, a total capacity of at least about 14.0 grams, and



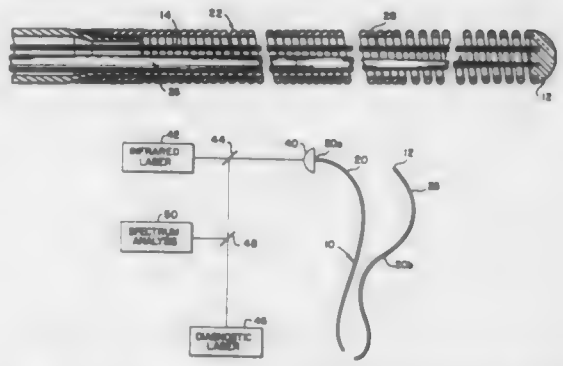
an absorbent portion with a flexure resistance less than about 300 grams.

5,009,654
STERILE PRODUCT AND METHOD FOR STERILIZING AND ASSEMBLING SUCH PRODUCT
Billy W. Minshall, Mission Viejo, Calif.; Kailash Purohit, Winnetka; John E. Nygard, Skokie, both of Ill.; Kwame Sintim-Damoa, Vernon Hills, Ill.; Richard Giesler, Deerfield, Ill., and Archie Woodworth, Barrington, Ill., assignors to Baxter International Inc., Deerfield, Ill.
Filed Mar. 10, 1989, Ser. No. 321,698
Int. Cl.[5] A61B *19/00*
U.S. Cl. 604—410 **20 Claims**



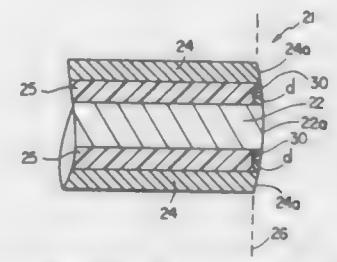
1. A method for assembling a sterile product having at least two parts, comprising;
sterilizing the first part of said product;
isolating a selected portion from the remainder of said first part;
attaching a second part of said product to said selected portion;
exposing said selected portion to an electron beam sufficient to effect sterilization of said portion; and
shielding the remainder of said first part from the radiation of said electron beam.

5,009,655
HOT TIP DEVICE WITH OPTICAL DIAGNOSTIC CAPABILITY
Kenneth J. Daignault, Jr., Jefferson; Edward I. McNamara, Chelmsford, and Edward L. Sinofsky, Peabody, all of Mass., assignors to C. R. Bard, Inc., Murray Hill, N.J.
Filed May 24, 1989, Ser. No. 356,437
Int. Cl.[5] A61B *5/06*
U.S. Cl. 606—007 **27 Claims**



1. A medical device for applying heat to a selected site in a lumen, comprising:
an elongated, flexible member having a proximal end and a distal end;
a heating element attached to the distal end of said flexible member, said heating element comprising optical filter means for absorbing a first range of wavelengths and for passing a second range of wavelengths; and
optical fiber means for transmitting both said first and said second ranges of wavelengths extending through said flexible member, said optical fiber means having a distal end optically coupled to said heating element and having a proximal end adapted for receiving laser energy in said first range of wavelengths for heating said optical filter means and adapted for receiving laser energy in said second range of wavelengths for irradiating said lumen through said optical filter means.

5,009,656
BIPOLAR ELECTROSURGICAL INSTRUMENT
Harry G. Reimels, Braintree, Mass., assignor to Mentor O&O Inc., Norwell, Mass.
Filed Aug. 17, 1989, Ser. No. 395,264
Int. Cl.[5] A61B *17/39*
U.S. Cl. 606—48 **30 Claims**



1. A surgical instrument of the kind which is adapted to operate using bipolar energizing potential comprising
a probe having a smooth operation tip, said probe including a pair of adjacently disposed, elongated electrodes adapted to receive said bipolar energizing potential, an electrically insulating means for spacing apart and generally separating said electrodes, each said electrode also

terminating at a distal end at said tip of said probe, said distal ends being generally in the same plane so that they form part of a smooth surface of said tip and so that neither distal end projects above or from said tip,

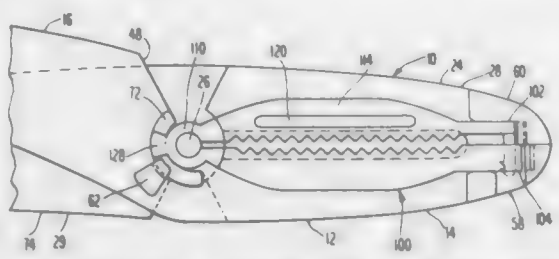
said electrically insulating means terminating proximally of said tip of said probe and of said distal ends of said electrodes to provide a cavity between said distal ends of said electrodes across which, when said instrument is in use, sparking between said distal ends of said electrodes occurs.

5,009,657

UMBILICAL CORD CUTTING AND CLAMPING DEVICE

John Cotey, Haddonfield, N.J., and Mohammed S. Jahanger, 500 Egg Harbor Rd., Turnersville, N.J. 08012, assignors to Mohammed S. Jahanger, Turnersville, N.J.

Filed Dec. 14, 1989, Ser. No. 450,743
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—120 4 Claims



1. In combination, an umbilical cord cutting and clamping device for severing an umbilical cord to form a maternal cord end and fetal cord end, and for clamping the fetal cord end, and a fetal cord end clip which is detachable from the device:

the clip comprising: a pair of elongated arms extending radially from a central section having an opening formed therein, each arm having teeth formed thereon and lock means formed proximate the end thereof for locking together the arms when the clip is closed, at least one arm having an elongated aperture formed therein for cushioning the force exerted on an umbilical cord when the clip is closed on the cord end, the central section including a clip positioning means for retaining the clip in the device until the cord end has been clamped;

the device comprising:

an integral first jaw-and-handle means, the first jaw-and-handle means including a first clamping means for clamping the maternal cord end, first severing means for severing the umbilical cord, and first support means for supporting and positioning a first end of the clip until the cord end has been clamped by the clip, and a rear retention means for supporting and positioning the central section of the clip until the cord end has been clamped by the clip, and

an integral second jaw-and-handle means, the second jaw-and-handle means including a second clamping means for clamping the maternal jaw end, second severing means for severing the umbilical cord, second support means for supporting and positioning a second end of the clip until the cord end has been clamped by the clip;

the first jaw-and-handle means being rotatably affixed by pivot means to the second jaw-and-handle means, the pivot means extending outwardly from and generally perpendicular to the second jaw-and-handle means, the pivot means being adapted for being received by the opening of the central section of the clip, the first jaw-and-handle means being rotatable around the pivot means from an open position to a closed position;

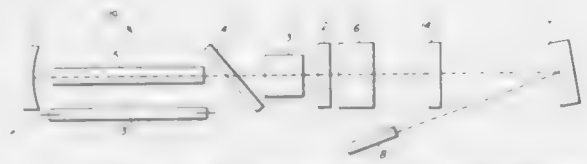
the rear retention means of the device retaining the clip positioning means of the clip to retain the central section of the clip in the device when the clip is installed in the device and the device is in the open position, the clip positioning means rotating with respect to the rear retention means to release the clip from the device after the fetal cord end has been clamped and the clip arms have been locked.

5,009,658

DUAL FREQUENCY LASER LITHOTRIPTER

Karsten Damgaard-Iversen, Marietta, Ga.; Robert C. Morris, Morris County, N.J.; Timothy C. Chin, Hunterdon County, N.J., and Jerry W. Kuper, Somerset County, N.J., assignors to Karl Storz Endoscopy-America, Inc., Culver City, Calif. and Allied-Signal, Inc., Morris Township, Morris County, N.J.

Filed Apr. 14, 1989, Ser. No. 337,919
Int. Cl.[5] A61B *17/22*
U.S. Cl. 606—128 38 Claims



1. A laser lithotripter system comprising, in combination:

a source of pulsed coherent radiation having a wavelength in the range of from about 300 to about 450 nm, at an energy level of from about 2 to about 30 mJ;

a source of pulsed coherent radiation having a wavelength from about 600 to about 900 nm, at an energy level of from about 15 to about 100 mJ,

said pulses of coherent radiation achieving temporal overlap; an endoscopic delivery system; and

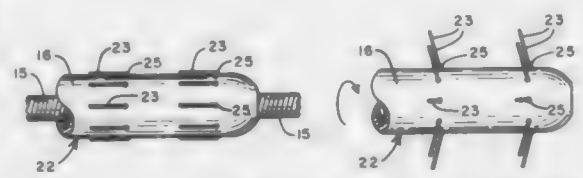
mirror means for focusing said temporally overlapping pulses of coherent radiation in spatially overlapped relationship into said endoscopic delivery system for delivery to calcified matter located within a mammalian body.

5,009,659

FIBER TIP ATHERECTOMY CATHETER

Robert N. Hamlin, Stillwater; Rick L. Shockey, Eagan, and Robert A. V. Tassel, Excelsior, all of Minn., assignors to Schneider (USA) Inc., Minneapolis, Minn.

Filed Oct. 30, 1989, Ser. No. 428,885
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—159 5 Claims



1. An atherectomy catheter for removing atheromas from a blood vessel wall comprising:

(a) an elongated flexible tubular shaft having a proximal end and a distal end, said shaft including a plurality of fibers of a predetermined length with only one end of each constrained by attachment to the outer surface of said shaft and normally extending parallel thereto proximate a portion of said distal end; and

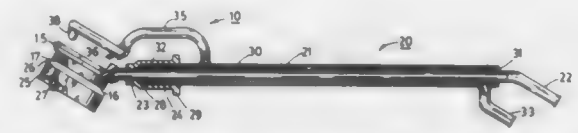
(b) means for rotating said shaft at a sufficiently high speed to cause said fibers to project radially outward of said shaft due to centrifugal force for flailing said atheroma and disintegrating same.

5,009,660

GAS PURGING, EYE FIXATION HAND PIECE

Terrance N. Clapham, Saratoga, Calif., assignor to VISX, Incorporated, Sunnyvale, Calif.

Filed Sep. 15, 1989, Ser. No. 407,566
Int. Cl.[5] A61F *9/00*
U.S. Cl. 606—166 25 Claims



1. In an eye fixation hand piece having a handle extending from a vacuum ring evacuated by a suction line and sized to encircle a cornea of an eye engaged by a proximal side of said vacuum ring so that by steadying the handle, a surgeon can hold the eye in a reference position for surgery, the improvement comprising:

a. a gas purging nozzle mounted on said hand piece and aimed for directing a purging gas jet into the space within said vacuum ring and toward said proximal side of said vacuum ring; and

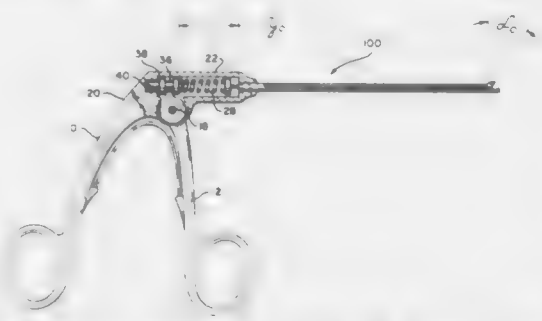
b. a line separate from said suction line arranged on said hand piece for delivering purging gas under pressure to said nozzle to form said purging gas jet.

5,009,661

PROTECTIVE MECHANISM FOR SURGICAL RONGEURS

Gary K. Michelson, 438 Sherman Canal, Venice, Calif. 90291

Filed Apr. 24, 1990, Ser. No. 341,849
Int. Cl.[5] A61B *17/16*
U.S. Cl. 606—170 12 Claims



1. A rongeur comprising a drive shaft having a cutting means proximate one end of said drive shaft, said cutting means responsive to movement of said drive shaft, said drive shaft movable responsive to a drive means for driving said drive shaft, a resilient member, said resilient member interposed between said drive means and said cutting means whereby force applied to said resilient member is transmitted to said drive shaft.

5,009,662

MEDICAL PRESSURE SENSING AND DISPLAY SYSTEM

William D. Wallace, 5038 Memory La., Salt Lake City, Utah 84117; Christopher A. Cutler, 130 N. 600 East, Centerville, Utah 84014, and Scott D. Gentry, 9067 S. Wagner Cir., Sandy, Utah 84093

Continuation-in-part of Ser. No. 230,783, Aug. 10, 1988. This application Mar. 23, 1989, Ser. No. 328,119
Int. Cl.[5] A61M *29/02*
U.S. Cl. 606—192 2 Claims

1. A system for measuring fluid pressure in a balloon of a catheter, said balloon being adapted for inflation inside a human body, said catheter having an inflation lumen providing a fluid path between the interior of the balloon and an external source of fluid for inflating the balloon, the improvement comprising:

a pressure transducer means in fluid communication with the interior of the balloon for providing an electrical signal output which is a function of the pressure in the interior of the balloon, a blood pressure readout transducer the output of said pressure transducer means being communicated with said blood pressure readout transducer generally used for monitoring a person's blood pressure; and



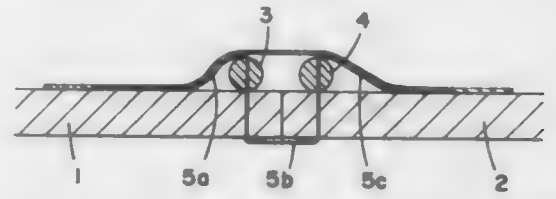
electronic digital display means calibrated to indicate blood pressure in mm Hg operatively associated with said blood pressure readout transducer and responsive to said electrical signal output from said pressure transducer for displaying a numerical value of said balloon pressure measured by said pressure transducer, which numerical value will correspond to the balloon pressure in psi units.

5,009,663

METHOD FOR PERFORMING A SURGICAL CLOSURE OF A SKIN INCISION OR WOUND AND MEANS FOR CARRYING OUT THE METHOD

Albert Broomé, Helsingborg, Sweden, assignor to Brava Patient Och Invent AB, Trollhattan, Sweden

Filed Mar. 22, 1990, Ser. No. 497,418
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—232 10 Claims



1. A method for performing a surgical closure of a open skin incision or wound presenting two opposite skin edge portions to be held together, comprising the steps of

sewing at least one suture thread through each one of said two skin edge portions and through each one of two separate elastic members associated with a respective one of said skin edge portions and arranged at the outside thereof, said elastic members being made of such a material that, when said suture thread is sewn therethrough frictional forces are established between said members and said suture thread, bringing together said two skin edge

portions using said suture thread, so that frictional forces alone prevent movement of the thread within the members without the need to knot the thread, said elastic members being positioned in such a relation to said suture thread that after completion of said closure, each of said elastic members is being held in contact against the respective skin edge portion by a tensioned portion of said suture thread and said skin edge portions are being held together by said tensioned portion of said suture thread.

5,009,664

MARROW NAIL FOR THE TREATMENT OF BONE FRACTURES

Uve Sievers, Ludwigshafen, Fed. Rep. of Germany, assignor to Mecron Medizinische Produkte GmbH, Berlin, Fed. Rep. of Germany

Filed Oct. 6, 1988, Ser. No. 254,086

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1987, 3734108

Int. Cl.[5] A61F 2/28, 5/04

U.S. Cl. 623—16 12 Claims



1. A marrow nail for use in a marrow cavity nailing procedure for the treatment of bone fractures, comprising:

a tubular, carbon fiber reinforced plastic nail body having a tip, said tip having a distal end, said tip having a hollow circular cross-section and a conically taperred outer surface which tapers in a direction toward said distal end forming a sharp annular cutting edge.

5,009,665

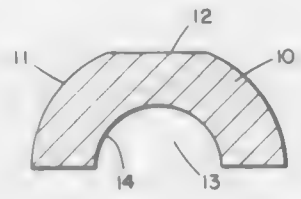
ACETABULAR CUP

Jon C. Serbousek, and John A. Engelhardt, both of Warsaw, Ind., assignors to Boehringer Mannheim Corp., Indianapolis, Ind.

Filed Feb. 8, 1989, Ser. No. 308,112

Int. Cl.[5] A61F 2/34

U.S. Cl. 623—22 16 Claims



1. An improved acetabular cup prosthesis for use in cement fixation to bone, said cup comprising a hemispherical member having an internal recess which forms a bearing surface suitable for receiving a natural or prosthetic femoral head and a generally hemispherical outer surface on which there is at least one substantially flat area displaced from the apex of the cup and within the cross-sectional profile of the hemispherical surface.

5,009,666

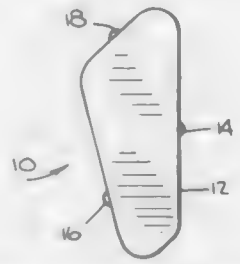
PLUG AND METHOD OF USE

Peter B. Van Syckle, and Glen A. Kashuba, both of Pfizer Inc., 235 E. 42nd St., New York, N.Y. 10017-5755

Continuation of Ser. No. 252,231, Sep. 30, 1988, abandoned. This application Dec. 21, 1989, Ser. No. 462,302

Int. Cl.[5] A61F 2/32, 2/28, 5/04

U.S. Cl. 623—23 6 Claims



1. A biocompatible insert for use in filling a fenestration that extends through an implant member wherein the fenestration is of a predetermined shape and depth, said insert comprising at least two discs made of a relatively flexible material, each of said discs having a predetermined thickness and an outer perimeter defining a shape substantially identical to the predetermined shape of said fenestration, each of said discs having a plurality of ribs integrally formed about said outer perimeter thereof and interlocking means for interlocking said discs together to form said insert so that when said insert is press-fitted within said fenestration, the combined thickness of the discs is substantially equal to said predetermined depth of the fenestration in said implant, thereby completely filling the fenestration.

5,009,667

COMPOSITION AND METHOD FOR PROVIDING STAIN RESISTANCE TO POLYAMIDE FIBERS USING CARBONATED SOLUTIONS

Boyd R. Beck, Spring City, Utah, and Robert D. Harris, Cameron Park, Calif., assignors to Harris Research Inc., Cameron Park, Calif.

Filed Jan. 31, 1989, Ser. No. 304,727

Int. Cl.[5] D06M 11/00

U.S. Cl. 8—115.56 32 Claims

1. An aqueous carbonated composition for treating polyamide fibers to impart stain resistance to said fibers consisting essentially of (a) between about 0.0015 to 1.5% w. of a dye-resist agent consisting of a condensation product of formaldehyde and a member selected from the group consisting of a sulfonated phenol or a sulfonated naphthol; (b) 0 to 6.0% w. of a fluorochemical; and (c) 0 to 5% w. of a detergent suitable for cleaning polyamide fibers with the remainder being made up of an inert aqueous carrier; said aqueous composition being maintained at a pH of between about 2.5 and 7.0 be means of said carbonation.

5,009,668

MIXTURE OF ASSISTANTS AND ITS USE IN THE DYEING OF SYNTHETIC FIBRE MATERIALS: ACID ESTER OF OXYALKYLATED PHENDL, NONIONIC SURFACTANT AND DYE CARRIER

Hans-Ulrich Berendt, Allschwil, and Rosemarie Töpfl, Dornach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 8, 1990, Ser. No. 476,997

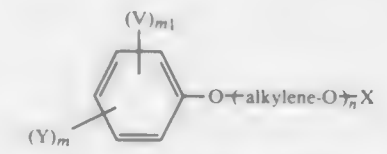
Claims priority, application Switzerland, Feb. 8, 1989, 430/89

Int. Cl.[5] D06P 1/61, 3/54

U.S. Cl. 8—557 19 Claims

1. A mixture of dyeing assistants which comprises

(A) an acid ester, or salts thereof, of an alkylene oxide adduct of the formula



(1)

in which V is hydrogen or methyl, X is the acid radical of an inorganic acid containing oxygen, or the radical of an organic acid and Y is C_1–C_{12}alkyl, aryl or aralkyl, "alkylene" is the ethylene or propylene radical and m is 1 to 3, m_1 is 1 or 2 and n is 4 to 50,

(B) a nonionic surfactant containing polyglycol ether groups, and

(C) an aliphatic or aromatic carboxylic acid ester, an alkylbenzene, tetralin or a mixture of these substances;

with the proviso that the mixture is substantially free of non-aromatic, water-immiscible solvents.

5,009,669

AQUEOUS DISPENSIONS OF 2-(2'-HYDROXYPHENYL)BENZOTRIAZOLES

Martin Jöllenbeck, Freiburg, Fed. Rep. of Germany; Hans-Ulrich Berendt, Allschwil, and Werner Fringeli, Laufen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 30, 1989, Ser. No. 358,910

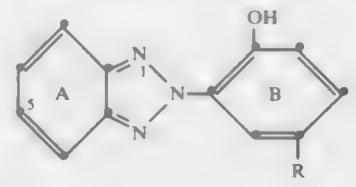
Claims priority, application Switzerland, May 31, 1988, 2056/88; Aug. 5, 1988, 2981/88

Int. Cl.[5] C09B 67/00, 67/46

U.S. Cl. 8—573 25 Claims

1. An aqueous dispersion of a 2-(2'-hydroxyphenyl)benzotriazole compound, comprising

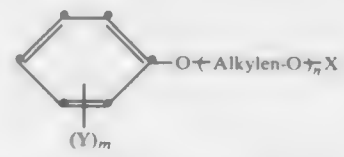
(a) 15 to 50 per cent by weight of a benzotriazole compound of the formula



(1)

where R is halogen, C_1–C_{12}alkyl, lower alkoxy, lower alkoxycarbonyl, cycloalkyl, aryl, C_1–C_{12}alkylaryl or aralkyl, and the rings A and B are independently of one another unsubstituted or substituted by halogen, hydroxyl, lower alkyl, lower alkoxy or lower alkoxycarbonyl, and

(b) 2 to 20 per cent by weight of an acid ester, or a salt thereof, of an alkylene oxide adduct of the formula



(2)

where X is the acid radical of an inorganic oxygen-containing acid, or the radical of an organic acid and Y is C_1–C_{12}alkyl, aryl or aralkyl, "Alkylen" is the ethylene radical or propylene radical, m is from 1 to 4 and n from 4 to 50.

5,009,670

FUELS FOR GASOLINE ENGINES

Franz-Dieter Martischius, Neustadt; Hans-Henning Vogel, Frankenthal; Norbert Greif, Bobenheim; Knut Oppenlaender, Ludwigshafen; Walter Denzinger, Speyer, and Heinrich Hartmann, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 16, 1989, Ser. No. 352,418

Claims priority, application Fed. Rep. of Germany, May 19, 1988, 3817000

Int. Cl.[5] C10L 1/14

U.S. Cl. 44—[illegible]5 3 Claims

1. A fuel for gasoline engines, containing small amounts of copolymers of alkyl (meth)acrylates where the alkyl radical is of 8 to 40 carbon atoms and/or vinyl esters of carboxylic acids of 8 to 40 carbon atoms and monoethylenically unsaturated mono- and/or dicarboxylic acids of 3 to 12 carbon atoms, having a total molecular weight of from 500 to 20,000 g per mole, some or all of the carboxyl groups of the copolymers having been reacted with an alkali with formation of the alkali metal salts and the remainder of the carboxyl groups having been reacted with ammonia and/or amines of not more than 50 carbon atoms to give the corresponding amide groups and/or ammonium salts, with the proviso that the fuel contains from 10 to 2,000 ppm by weight of the alkali metal salts of the copolymers.

5,009,671

PROCESS FOR PRODUCING A SOLID, FINELY DIVIDED FUEL BASED ON COAL

Friedrich H. Franke, Rieperting 3, 8201 Schonstett, and Michael J. Paersch, Rönkrei 6, 2000 Hamburg 65, both of Fed. Rep. of Germany

Filed Jun. 9, 1989, Ser. No. 364,358

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1988, 3821950

Int. Cl.[5] C10L 5/14, 5/28

U.S. Cl. 44—598 6 Claims

1. A process for producing a substantially water resistant coal briquettes comprising:

(a) heating a green molded coal briquette comprising a mixture of finely divided coal, a first binder containing starch in an amount of 0.5 to 3 wt% and a second binder comprising molasses and water in an amount of 1 to 4 wt% to a first temperature between 80° C. to 150° C. for a time sufficient to convert said starchy binder to a paste, and

(b) heating said green molded coal briquette to a second temperature between 200° C. to 300° C. for a time sufficient to convert said green molded coal briquette into a substantially water resistant coal briquette.

5,009,672

PROCESS FOR RECYCLING AND REUTILIZING WASTE, IN PARTICULAR SOLID URBAN WASTE

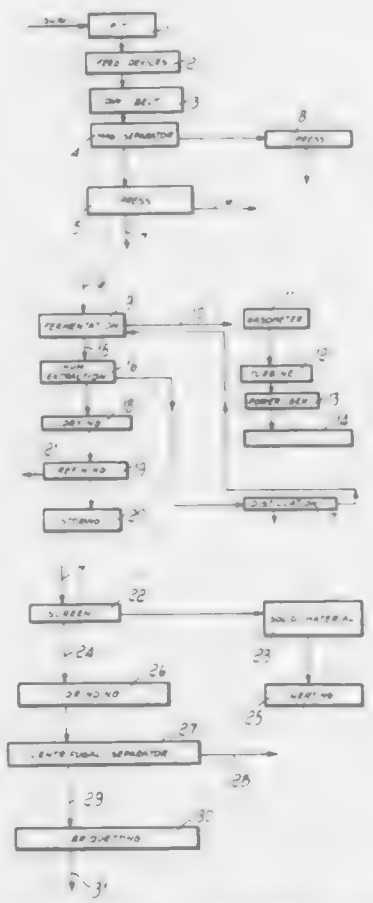
Giorgio Ruffo, Milan, and Luciano Vezzani, Ovada, both of Italy, assignors to Vezzani S.p.A., Ovada, Italy

Filed Sep. 13, 1989, Ser. No. 406,645

Claims priority, application Italy, Sep. 15, 1988, 21956 A/88

Int. Cl.[5] C10L *5/06*

U.S. Cl. 44—593 **8 Claims**



8. Process for the recycling and complete recovery of solid urban waste and similar waste, comprising the steps of:

subjecting the solid urban waste (SUW) to high-pressure compression so as to separate putrescible organic material in a finely divided form from dry material of the solid urban waste,

subjecting said organic material to a process of anaerobic fermentation in a sealed reactor in order to extract biogas and obtain soft humus thus produced by the fermentation,

subjecting the humus obtained from the fermentation process to a refining and a screening process to recover light materials therefrom, said light materials subsequently being combined with said dry material obtained in said high-pressure compression step,

subjecting said dry material with said light materials to a screening process to separate combustible material, such as paper, fabrics, wood, plastics, leather, and rubber, from inert material, such as glass, powders, and non-ferrous metals, and

subjecting the combustible material to a grinding process and subsequently to a selection process by means of a separator for separating heavy parts, such as chlorinated heavy plastics, rubber, leather, and aluminum, from light parts, such as plastics in film, paper, and textiles,

subjecting said light parts obtained from said screening process to a briquetting operation to obtain a solid fuel.

5,009,673

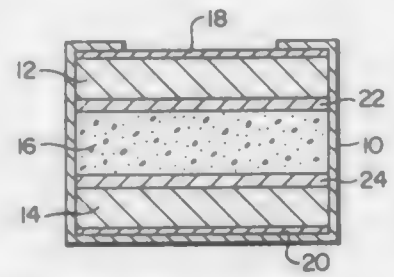
METHOD FOR MAKING POLYCRYSTALLINE SANDWICH COMPACTS

Hyun S. Cho, Sandy, Utah, assignor to The General Electric Company, Worthington, Ohio

Filed Nov. 30, 1988, Ser. No. 277,875

Int. Cl.[5] B24D *18/00*

U.S. Cl. 51—293 **13 Claims**



1. A method for manufacturing a polycrystalline sandwich compact comprising a polycrystalline diamond or CBN core interposed between outer support layers, which comprises:

(a) providing an assembly comprising a mass of diamond or CBN particles, a pair of compression disks; two metal layers, one each of which is interposed between said mass and each of said compression disks; and when said mass comprises diamond particles, a source of sintering aid/-catalyst for diamond sintering;

(b) subjecting said assembly to HP/HT sintering for forming a sintered polycrystalline diamond or CBN core having two metal-derived support layers adherently bound thereto.

5,009,674

ABRASIVES

Reiner Kunz, Konigsbergerstrasse 33, D-7890 Waldshut-Tiengen; Albert Babl, Lindenstrasse 4, D-7891 Dogern; Ales Zahradnicek, Sonnhalde 33, D-7892 Albbruck, all of Fed. Rep. of Germany, and Rainer Dietrich, Thiersteinerrain 65, CH-4059 Basel, Switzerland

Continuation of Ser. No. 215,542, Jul. 6, 1988, abandoned. This application Nov. 2, 1989, Ser. No. 430,298

Claims priority, application Switzerland, Jul. 24, 1987, 2830/87; Aug. 31, 1987, 3334/87

Int. Cl.[5] B24B *1/00*

U.S. Cl. 51—295 **5 Claims**

1. Abrasive grain having an aluminum oxide base, comprising the aluminum oxide base with a hygroscopic salt coated on its surface, the amount of said hygroscopic salt being 0.001 to 5.0 percent by weight relative to the amount of the abrasive grain, the specific resistance of the treated abrasive grain, measured in grain beds, being smaller than 3.5×10^{10} ohms×cm, and the hygroscopic salt is a carbonate, hydrogen carbonate, sulfate, nitrate, phosphate, fluoride or chloride of a metal of the first, second or third main group or of the first or second series of the transition metals of the periodic table.

5,009,675

COATED SILICON CARBIDE ABRASIVE GRAIN

Reiner Kunz, Waldshut-Tiengen, Fed. Rep. of Germany, and Rainer Dietrich, Basel, Switzerland, assignors to Lonza LTD, Switzerland

Filed Jun. 8, 1989, Ser. No. 363,059

Claims priority, application Switzerland, Jun. 17, 1988, 2356/88

Int. Cl.[5] B24B *1/00*

U.S. Cl. 51—295 **16 Claims**

1. Abrasive grain comprising at least one silicon carbide particle and a binder-free unmelted coating of 0.01 to 5 percent, relative to the weight of the abrasive grain, of highly dispersed hydrophilic metal oxide particles having a particle size of primary particles of about 1-500 nm in the d_{50} value and a specific surface of 5-500 m^2/g according to BET from the group of silicon dioxide, aluminum oxide, titanium dioxide and mixtures thereof, on the at least one silicon carbide particle.

5,009,676

SINTERED SOL GEL ALUMINA ABRASIVE FILAMENTS

Charles V. Rue, Petersham, Mass.; Ronald H. van de Merwe, Niagara Falls, Canada; Ralph Bauer, Niagara Falls, Canada; Scott W. Pellow, Niagara Falls, Canada; Thomas E. Cottringer, Niagara Falls, Canada, and Richard J. Klok, Niagara Falls, Canada, assignors to Norton Company, Worchester, Mass.

Filed Apr. 28, 1989, Ser. No. 345,139

Int. Cl.[5] C09C *1/68*

U.S. Cl. 51—309 **14 Claims**

1. A sintered sol gel filament shaped alumina based abrasive comprised of sintered alpha alumina crystals, said filament shaped alumina based abrasive having an average aspect ratio of at least ob 1 and a hardness of at least 16 GPa, said alpha alumina crystals having a size no greater than 1 micron.

5,009,677

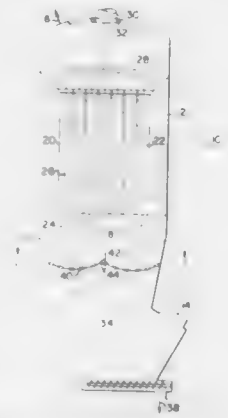
PROCESS FOR SEPARATING PARTICULATES IN AN ELECTROSTATIC PRECIPITATOR

Steven D. Wolf, Pocatello, Id.; James L. Manganaro, Princeton, N.J., and Ronald H. Miller, Pocatello, Id., assignors to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 401,904, Sep. 1, 1989, Pat. No. 4,968,330. This application Jul. 2, 1990, Ser. No. 545,958

Int. Cl.[5] B03C *3/00*

U.S. Cl. 55—12 **2 Claims**



1. A process for cleaning particle-laden gas flowing through an electrostatic precipitator zone comprising:

(a) passing a particle-laden gas into the inlet of an electrostatic precipitator zone having a gas inlet and gas outlet,

(b) passing said gas upwardly through a low pressure drop gas distributor in the form of a nonfouling chain screen wherein individual movable chain segments whose ends are affixed to support members make up said chain screen, and more evenly distributing said gas flow throughout said electrostatic precipitator zone,

(c) passing said gas into a plurality of collector electrode zones made up of substantially vertical hollow members suspended within said electrostatic precipitator zone,

(d) passing said gas through said collector electrode zones in proximity to a plurality of discharge electrode wires suspended within said collector electrode zones,

(e) ionizing said dust particles in said gas by means of said discharge electrode wires,

(f) collecting ionized dust particles on the inside surfaces of said collector electrode zones,

(g) removing collected dust particles from the inside surfaces of said collector electrode zones and dropping them onto and passing them through the movable segments of said chain screen gas distributor concurrent to said upward flowing gas, and into a hopper zone, and

(h) removing gas, substantially reduced in dust, from said perpendicular zone through said gas outlet

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5,009,678

PROCESS FOR RECOVERY OF AMMONIA FROM AN AMMONIA-CONTAINING GAS MIXTURE

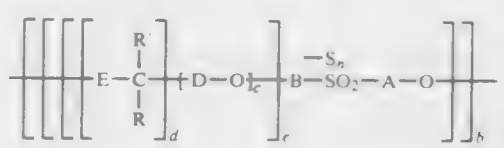
Benjamin Bikson, Brookline; Joyce K. Nelson, Lexington, and Jerry E. Perrin, Dorchester, all of Mass., assignors to Union Carbide Industrial Gases Technology Corporation, Danbury, Conn.

Filed Oct. 31, 1989, Ser. No. 429,817

Int. Cl.[5] B01D *53/22, 71/68*

U.S. Cl. 55—16 **24 Claims**

1. A process for separating ammonia from a gaseous mixture thereof with other gaseous components which comprises contacting said gaseous mixture with one side of a gas separation composite membrane comprising a porous support coated with a thin layer of a cation exchange type polymer containing the sulfonic acid ion exchange group in the polymer molecule represented by the general formula:



(I)

wherein A, B, D and E are unsubstituted or substituted arylene groups with at least one A, B, D, E groups in the polymer chain repeat unit substituted by a free sulfonic acid group or its salified form: R and R′ can be the same or different and represent an alkyl group or a halogenated alkyl group having from 1 to 4 carbon atoms; b represents the polymer average molecular weight, generally above about 10,000; c, d and e are integers having a value of from zero to about 6; and the degree of sulfonation $-S_n$ is from about 0.2 to about 2; and recovering the permeate and retentate components, said polymer providing enhanced selectivity and permeability characteristics for the selective permeation and separation of ammonia as the permeate component from the other components of the gaseous mixture comprising retentate components.

5,009,679

MEMBRANES FORMED FROM RIGID AROMATIC POLYIMIDE POLYMERS

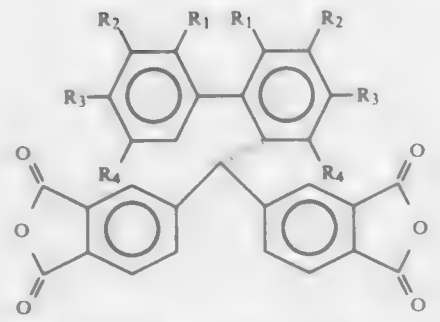
Richard O. Angus, and Kahlil Yacoub, both of Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 25, 1990, Ser. No. 529,078

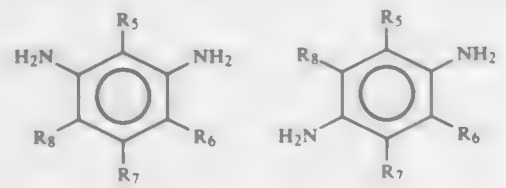
Int. Cl.[5] B01D *53/22, 71/64*

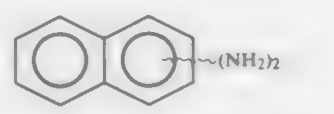
U.S. Cl. 55—16 **24 Claims**

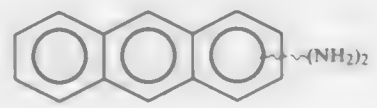
1. A semi-permeable membrane formed from a polyimide obtained by the reaction of a 9,9-bis-(3,4-dicarboxyphenyl)-fluorene represented by the formula:

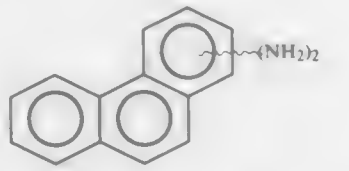


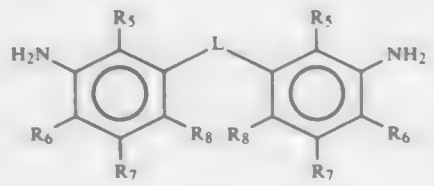
wherein R_1 through R_4, inclusive, are independently selected from a hydrogen atom, a linear or branched alkyl, alkenyl or alkoxy group having form 1 to about 8 carbon atoms, cyano or R_1 and $R_{1'}$, R_1 and R_2, R_2 and R_3, and R_3 and R_4 may together form part of cyclohydrocarbyl ring; and an aromatic diamine represented by the formulae:

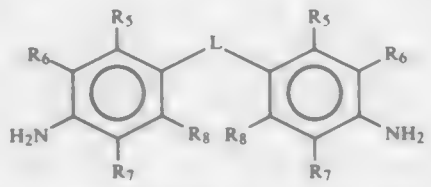












wherein R_5 through R_8, inclusive, are independently selected from a hydrogen atom or a linear or branched alkyl, alkenyl or alkoxy group having from 1 to about 8 carbon atoms, each of which can optionally be partially or fully fluorinated; and

L is a linear or branched alkylene, alkenylene, phenylene or alkylphenylene group having from 1 to about 8 carbon atoms, each of which can optionally be partially or fully fluorinated.

16. A process for separating a component of a gas mixture containing at least one other component, said process comprising: bringing said gas mixture into contact with the membrane of claim 1 whereby one component selectively permeates through said membrane.

5,009,680

METHOD AND A SYSTEM FOR SEPARATING AND TRANSPORTING GAS AND LIQUID

Kristian Brekke, Oslo, Norway, assignor to Aker Engineering a.s., Oslo, Norway

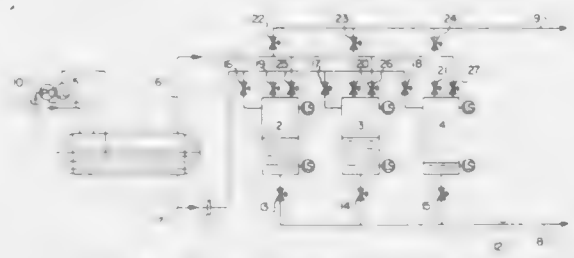
PCT No. PCT/NO89/00123, § 371 Date Jun. 11, 1990, § 102(e) Date Jun. 11, 1990, PCT Pub. No. WO90/06472, PCT Pub. Date Jun. 14, 1990

PCT Filed Nov. 28, 1989, Ser. No. 488,061

Claims priority, application Norway, Nov. 28, 1988, 885302; Mar. 17, 1989, 891194

Int. Cl.[5] B01D *19/00*

U.S. Cl. 55—40 **6 Claims**



1. A process for the transportation of gas and liquid or solid media and the separation of gas from liquid or solid media in a manner so that the pressure in the gas separated off in one separator stage is used for the transportation of separated fluids from a subsequent separator stage, comprises the steps of:

(a) separating gas off at high pressure in one separator stage or adding it from another gas source and

(b) directing said separated or added gas into a separator containing fluid from which gas has been separated at a lower pressure;

(c) said high pressure gas forcing out already separated fluid present in the separator receiving said high pressure gas.

5,009,681

AIR INLET CHAMBER FOR A MIXTURE FORMER OF A MOTOR VEHICLE

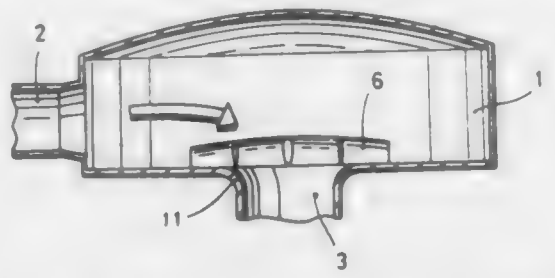
Gunter Jochum, Eschborn, Fed. Rep. of Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 18, 1989, Ser. No. 450,870

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1988, 3843019

Int. Cl.[5] F02M *35/10*

U.S. Cl. 55—416 **8 Claims**



1. An air inlet chamber for a mixture former of a fuel injection system of a motor vehicle, which comprises a lateral air inlet for connection to a hose coming from an air filter of the vehicle and an axial air outlet for introducing the air into the mixture former, in which in the air inlet chamber on the air outlet is disposed a star-shaped insert which divides the airflow into individual sectors, as a flow rectifier.

5,009,682

APPARATUS FOR DEGASSING FLUIDS

Ulrich Hagelauer, Bottighofen, Fed. Rep. of Germany, assignor to Storz Medical AG, Kreuzlingen, Switzerland

Filed Dec. 22, 1989, Ser. No. 454,857

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1988, 3844460

Int. Cl.[5] B01D *19/00*

U.S. Cl. 55—159 **12 Claims**



1 An apparatus for degassing fluids comprising,

a pressure-resistant container for storing a fluid to be degassed;

a low pressure producing means for producing a low pressure in the pressure-resistant container for carrying out a degassing of fluids;

a supply vessel for supplying the fluid to be degassed to the pressure-resistant container, the supply vessel surrounding the pressure-resistant container;

a valve for connecting the pressure-resistant container to the supply vessel at a valve opening, the valve having open and closed positions; and

a piston/cylinder unit having a working piston for moving the valve between the opened and closed positions due to a pressure differential across the working piston resulting from the low pressure in the pressure-resistant container so that fluid to be degassed flows into the pressure-resistant container from the surrounding supply vessel and separated gas escapes through the valve opening.

5,009,683

PURIFYING AIR CONDITIONER

Shin-Ching Sun, 3F., No. 32, Lane 132, Hu-Lin St., Taipei, Taiwan

Filed Jul. 24, 1989, Ser. No. 383,481

Int. Cl.[5] B03C *3/00*

U.S. Cl. 55—131 **1 Claim**

1. An improved air conditioner for purifying air by removing dust particles therefrom, comprising: a negative ion-filtering device disposed behind an air blow direction regulating grill of a front upper face of said air conditioner, said negative ion-filtering device comprising high voltage leads connecting a PC board to high voltage electric sheets in order to cause production of negative ions and a positive charge providing dust collecting mesh disposed between said high voltage electric sheets to cause floating dust particles in air passing after temperature adjustment to carry negative charges so that negative charged floating dust particles are sucked in attachment to said positive charged dust mesh, charged and any dust particles passing said positive charged dust mesh are negatively charged and allowed to fall in attachment to positive ground charges as the air exits the air blow regulating grill.

5,009,684

MULTIPLE CYCLONE SEPARATOR

Ernst Johansson, 6, Björnåkersgatan, S-937 00 Burträsk, Sweden

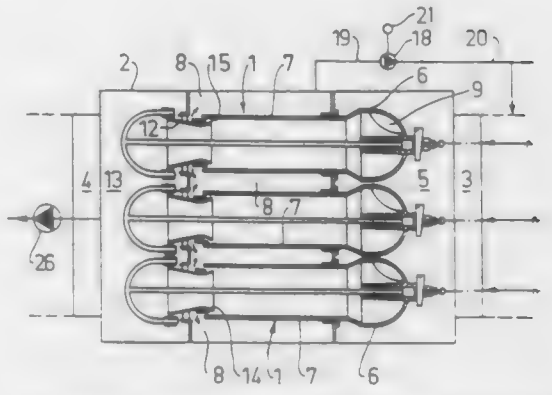
PCT No. PCT/SE87/00627, § 371 Date Jun. 26, 1989, § 102(e) Date Jun. 26, 1989, PCT Pub. No. WO88/04953, PCT Pub. Date Jul. 14, 1988

PCT Filed Dec. 22, 1987, Ser. No. 378,184

Claims priority, application Sweden, Dec. 22, 1986, 8605590

Int. Cl.[5] B01D *45/12*

U.S. Cl. 55—340 **7 Claims**



1. A purification unit for separating solid particles from a gas stream, comprising:

wall means defining a common chamber having an inlet for a gas stream to be purified, and an outlet for a purified gas stream;

wall means defining a common chamber having an inlet for a gas stream to be purified, and an outlet for a purified gas stream;

at least one flow cylinder unit disposed in said common chamber;

each flow cylinder unit comprising a plurality of flow cylinders having mutually parallel longitudinal axes;

each flow cylinder having an inlet end provided with a stationary head provided with opening means configured to accept a portion of the gas stream entering the common chamber through said inlet to said common chamber and set such portion into rotary motion relative to the longitudinal axis of the respective flow cylinder;

each flow cylinder further having an outlet end having a tubular outlet diffuser having an inlet end telescopically coaxially received therein with spacing therebetween defining an annular gap out through which solid particles separated from the gas stream portion in the respective said flow cylinder may flow into common chamber;

each said outlet diffuser further having an outlet end, out through which the respective gas stream portion, cleansed of said solid particles, flows out of the respective flow cylinder and out of said outlet of said common chamber;

said wall means defining said common chamber further including wall means isolating said inlet end of each flow cylinder and said outlet end of each flow cylinder, from said annular gap of each flow cylinder and thereby defining within said common chamber a closed dust collection chamber;

a steplessly adjustable blower having a suction side and a pressure side; and

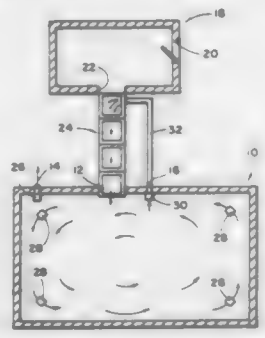
suction conduit means operatively connecting the suction side of said blower with said dust collection chamber for maintaining a negative pressure within said dust collection chamber for enhancing separation of said solid particles from said gas stream

5,009,685

SYSTEM FOR IMPROVING THE WORK ENVIRONMENT IN A CONTAMINATED ROOM

Cary L. Wilson, 5408 E. 11th St., Ste. B, Tulsa, Okla. 74112, and John A. Graham, 4606 E. 67th St., Ste. 403-7, Tulsa, Okla. 74136

Filed Feb. 15, 1990, Ser. No. 480,275
Int. Cl.[5] B01D *46/42*
U.S. Cl. 55—385.2 5 Claims



1. A system for improving the work environment in a contaminated room while contaminated material is being removed therefrom, the contaminated room having a door therein through which workmen enter or exit and having a first and a second air discharge opening therein, comprising:

a dressing room adjacent said contaminated room providing an area in which workmen can prepare for work in the contaminated room or prepare for leaving work after working in the contaminated room, the dressing room having a door therein;

a decontamination unit connecting said dressing room door with said contaminated room door through which workmen pass when entering or exiting the contaminated room;

at least one filtered air pump means passing filtered air from within said contaminated room through said first air discharge opening to the exterior of said contaminated room to maintain negative air pressure within said contaminated room;

a conduit connecting said contaminated room second air discharge opening with said decontamination unit; and

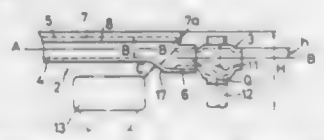
a filter air pump means for passing filtered air through said conduit into said decontamination unit to maintain positive air pressure within said decontamination unit whereby air flow is maintained from said decontamination unit into said contaminated room.

5,009,686

AIR CLEANER OF ENGINE FOR VEHICLE

Toshifumi Yuunaga, Wakabayashi, Japan, assignor to Suzuki Jidosha Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed May 22, 1989, Ser. No. 354,763
Claims priority, application Japan, May 24, 1988, 63-126797
Int. Cl.[5] B01D *46/00*
U.S. Cl. 55—419 1 Claim



1. An air cleaner of an engine of a vehicle, comprising:

an upper case;

a lower substantially cylindrical case fitted to said upper case;

an air valve; and

an air intake on said lower case having a cylindrical part extending horizontally and joining said air valve;

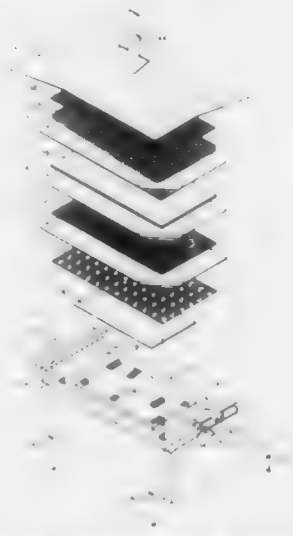
said air intake including an inclined portion, said inclined portion extending from the lower edge of said lower case and the upper edge of said lower case, so that a central point of an opening formed in said cylindrical part is positioned lower than a horizontal plane passing through the center of said lower case, the cross sectional area of said inclined portion being substantially the same as the cross sectional area of said cylindrical part adjacent said inclined portion to facilitate air flow through said air intake.

5,009,687

METHOD OF MOLDING A COMPOSITE ARTICLE USING SOFTENED GLASS AS A PRESSURE TRANSMITTING MEDIUM

Robert V. Kromrey, Campbell, Calif., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 2, 1989, Ser. No. 416,212
Int. Cl.[5] B29C *43/10*
U.S. Cl. 65—18.1 9 Claims



1. A method for molding a high temperature composite comprising:

(a) providing a compliant layer of softened material selected from the group consisting of glass, ceramic and mixtures thereof;

(b) applying heat to a composite precursor; and

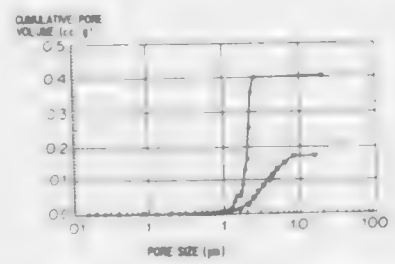
(c) causing said layer of softened material to apply pressure substantially uniformly to said composite precursor.

5,009,688

PROCESS FOR PRODUCING POROUS GLASS

Kazuki Nakanishi, Hirakata, Japan, assignor to Asahi Glass Company, Ltd., Tokyo and Naohiro Soga, Kobe, both of, Japan

Filed Sep. 18, 1989, Ser. No. 408,299
Claims priority, application Japan, Sep. 28, 1988, 63-245532; Mar. 8, 1989, 1-56886
Int. Cl.[5] C03B *19/09, 20/00*
U.S. Cl. 65—18.3 9 Claims



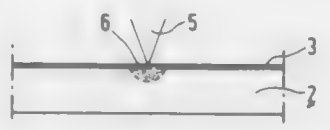
1. A process for producing porous glass, which comprises preparing a reaction solution containing a metal alkoxide or partially polymerized metal alkoxide and an organic polymer, hydrolyzing and polymerizing the metal alkoxide or partially polymerized metal alkoxide in said solution to obtain a gel, and calcining the gel to obtain porous glass, wherein said organic polymer is uniformly soluble with the solution of the metal alkoxide or partially polymerized metal alkoxide, undergoes continuous interlocking phase separation during the hydrolysis-polymerizing step and is substantially free from formation of precipitates, wherein the organic polymer is selected from the group consisting of sodium polystyrene sulfonate, polyacrylic acid, polyallylamine, polyethylene-imine, polyethylene oxide and polyvinyl pyrrolidone.

5,009,689

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

Jan Haisma; Cornelis L. Alting, and Theodorus M. Michielsen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 27, 1987, Ser. No. 7,153
Claims priority, application Netherlands, Jan. 30, 1986, 8600216
Int. Cl.[5] H01L *21/00*; C03B *29/00*
U.S. Cl. 65—33 8 Claims



1. A method of manufacturing a semiconductor device comprising the steps of

providing each of a support body and a monocrystalline semiconductor body with an optically smooth surface by a step of bulk-reducing polishing, said monocrystalline semiconductor body consisting of a material having sufficient oxygen diffusion,

providing an oxide layer at the optically smooth surface of at least said semiconductor body,

subjecting at least said oxide layer to a bonding-activating operation,

then mechanically contacting said support body and said oxide layer on said semiconductor body at said optically smooth surface of each to provide a contact surface, said contacting step being carried out in a dust-free atmosphere, and said contacting step being carried out after cleaning said surface of each,

focussing laser radiation on at least a part of said contact surface through said support body, said support body being transparent to said laser radiation,

locally melting at least point portions, each portion being over a region of about 5 μm of said semiconductor body, at said contact surface by said laser radiation, and

forming locally fused connections between said support body and said semiconductor body by diffusing oxygen from said oxide layer into said semiconductor body and by then solidifying said melted portions.

5,009,690

METHOD OF BONDING SINGLE CRYSTAL QUARTZ BY FIELD-ASSISTED BONDING

Richard M. Curlee, Tijeras; Clinton D. Tuthill, Edgewood, and Randall D. Watkins, Albuquerque, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 9, 1990, Ser. No. 490,895
Int. Cl.[5] C03C *27/00*
U.S. Cl. 65—40 16 Claims

1. A method of producing a hermetically stable structural bond between quartz crystals, comprising the steps of:

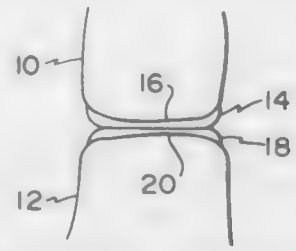
(a) providing first and second quartz crystals;

(b) depositing a thin film of borosilicate glass on a portion of said first crystal, the borosilicate glass film having a thickness in the range of about 3,000 to about 13,000 angstroms;

(c) depositing a thin film of silicon on a portion of said second crystal, the silicon film having a thickness in the range of about 3,000 to about 13,000 angstroms;

(d) juxtaposing said portions of said first and second crystals in a surface contact relationship to thereby provide surface contact between said thin films;

(e) heating said first and second crystals to a temperature for a period sufficient to cause said glass and silicon films on respective crystals to become electrically conductive; and



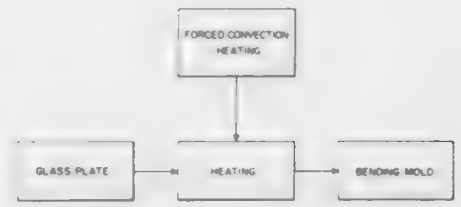
(f) applying an electrical potential across said first and second crystals for creating an electrostatic field between the adjoining surfaces of the first and second crystals and causing the juxtaposed portions to be attracted into an intimate contact and form a bond for joining the adjoining surfaces.

5,009,691

METHOD OF BENDING GLASS PLATE

Shin-ichi Aratani, Taki, Japan, assignor to Central Glass Company, Limited, Ube, Japan

Filed Mar. 23, 1990, Ser. No. 497,853
Claims priority, application Japan, Mar. 24, 1989, 1-73339; Mar. 31, 1989, 1-80537
Int. Cl.[5] C03B *23/023*
U.S. Cl. 65—106 13 Claims



2. A method of bending a glass plate thinner than 6 mm into a predetermined shape having a radius of curvature not larger than 2000 mm, the method having the steps of heating the glass plate in its entirety of a temperature sufficient for bending and bringing the heated glass plate into engagement with at least one bending mold,

characterized in that during the heating step at least one end region of the glass plate is additionally heated by forced convection such that the heat transfer coefficient on at least one major surface of the glass plate in said at least one end region becomes greater than in the remaining region by an amount in the range from 5 to 50 kcal/m^2·h·°C.

5,009,692

METHOD OF MAKING FIBER OPTIC COUPLER

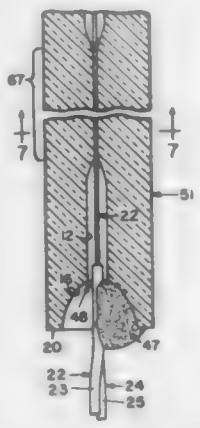
William J. Miller, and Carlton M. Truesdale, both of Corning, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Division of Ser. No. 223,423, Jul. 25, 1988, Pat. No. 4,902,324.
This application Feb. 9, 1990, Ser. No. 477,494
Int. Cl.[5] C03C *25/02*
U.S. Cl. 65—3.11 8 Claims

1. A method of making a fiber coupler comprising the steps of

providing a glass tube having first and second opposite end

portions and a midregion, a longitudinal aperture extending from a first end of said tube to a second end thereof,
disposing at least two glass optical fibers, each having a core and cladding, within said longitudinal aperture, said at least two fibers extending beyond said first and second ends of said tube,
heating said midregion of said tube to collapse said midregion around said fibers,
drawing at least a portion of said midregion, the end portions



of said aperture remaining open, wherein said heating to collapse said midregion and said drawing position said fibers to provide optical coupling from one of said fibers to another of said fibers, thereafter,
heating said tube at the uncollapsed portions of said aperture, and
applying glue to the ends of said tube aperture so that said glue is drawn into said aperture and onto said fibers as said tube cools,
cooling said tube

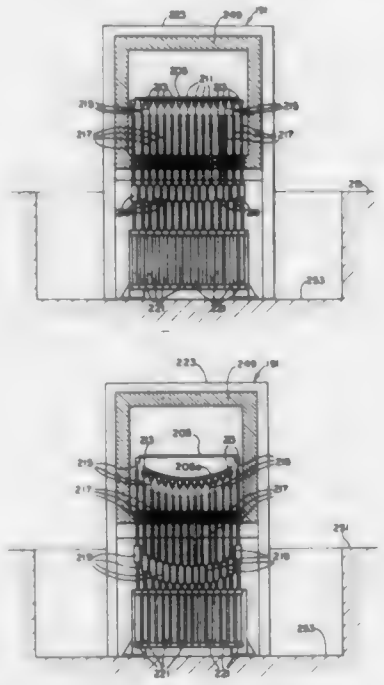
5,009,693

METHOD AND APPARATUS FOR BENDING GLASS

Kenneth Freidel, Cherry Hill; L. Arthur Littleton, Merchantville, and William G. Freund, Burlington, all of N.J., assignors to Muirfield Holdings L.P., Pennsauken, N.J.

Filed Oct. 4, 1989, Ser. No. 417,090
Int. Cl.[5] C03B *23/033*
U.S. Cl. 65—107 **16 Claims**

1. Apparatus for bending glass sheets, comprising
an oven for receiving a glass sheet and for heating the glass sheet to a hot, softened condition,
conveyor means in the oven for moving the glass sheet through the oven,
said conveyor means including longitudinal rows of oven mini-rollers for supporting glass sheets in the oven,
power means connected to the oven mini-rollers for rotating them,
support means in the oven for supporting each longitudinal row of mini-rollers,
means connected to each longitudinal row of oven mini-rollers for changing the vertical position of each longitudinal row of mini-rollers to a glass bending position where the vertical position of each longitudinal row of oven mini-rollers across the width of the oven forms the contour of a desired bend for bending the hot, softened glass sheet as



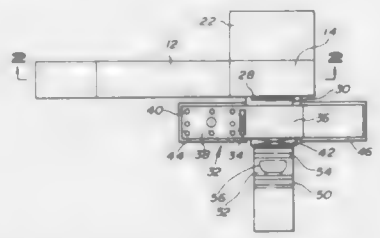
the hot, softened glass sheet conforms to the bend formed by the oven mini-rollers to form a bent glass sheet, and
means for quenching the bent glass sheet.

5,009,694

METHOD FOR HEAT TREATMENT OF GLASS PLATE TO STRENGTHEN ITS PERIPHERAL REGION

Masami Nishitani, Mie Pref., and Joji Suetomi, Matsusaka, both of Japan, assignors to Central Glass Company, Ltd., Ube, Japan

Filed May 24, 1990, Ser. No. 527,875
Claims priority, application Japan, May 31, 1989, 1-138074
Int. Cl.[5] C03B *25/00, 27/00*
U.S. Cl. 65—115 **15 Claims**



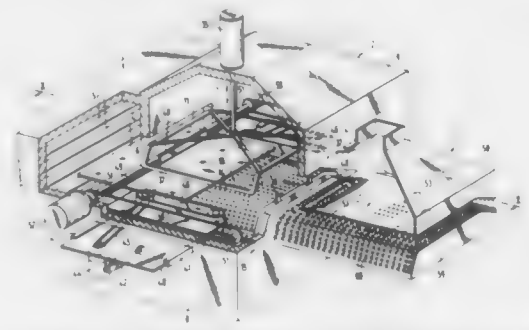
1. A heat treatment method for strengthening a glass plate in a peripheral region thereof, comprising the steps of:
(a) heating the glass plate to a first temperature in the range from 550° to 650° C.;
(b) placing the heated glass plate on a ring-like holder, which is maintained at a second temperature lower than said first temperature by 100° to 600° C., such that a peripheral region of the glass plate contiguous to the peripheral edge of the glass plate makes contact with an upper surface of the ring-like holder;
(c) keeping the ring-like holder together with the glass plate placed thereon in an annealing furnace maintained at a third temperature which is in the range from 50° to 500° C. and is not higher than said second temperature until the temperature of the glass plate lowers nearly to said third temperature; and
(d) after step (c) allowing the glass plate to cool down to room temperature.

5,009,695

APPARATUS FOR PRODUCING TWO DIMENSIONALLY BENT GLASS

Hans-Werner Kuster, Aachen, Fed. Rep. of Germany, and Luc Vanaschen, Eupen, Belgium, assignors to Saint-Gobain Vitrage, Courbevoie, France

Filed Jun. 6, 1989, Ser. No. 362,346
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1988, 3819503
Int. Cl.[5] C03B *23/03*
U.S. Cl. 65—182.2 **14 Claims**



1. An apparatus for producing two-dimensionally bent glass plates, comprising:
a roller oven having horizontally extending conveying rollers, for heating a horizontally positioned glass sheet to a bending temperature;
a pressing and bending unit positioned downstream of said roller oven in a glass sheet conveying direction, comprising:
(a) a lower full surface male bending mold having a perforate top surface lying in a plane defined by said conveying rollers,
(b) means for supplying pressurized hot gasses to the perforations of said lower bending mold, whereby a hot gas cushion may be formed between said lower bending mold and a glass sheet in said pressing and bending unit,
(c) a female mold positioned over said lower bending mold, and
(d) means for vertically moving said female mold towards said lower bending mold for pressing and bending a glass sheet resting thereon; a cooling device positioned downstream from said
pressing and bending unit for cooling a bent glass sheet; and
means for conveying a glass sheet from said roller oven to said pressing and bending unit and means for transferring a bent glass sheet from said pressing and bending unit to said cooling device.

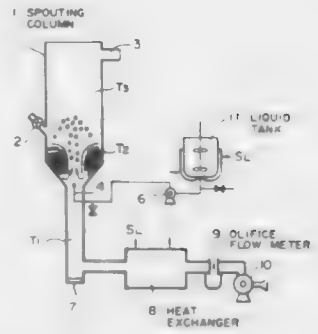
5,009,696

FERTILIZER WITH A DEGRADATIVE COATING

Toshio Fujita; Yoshisato Yamashita; Shigemitsu Yoshida, and Katsutoshi Yamahira, all of Minamatashi, Japan, assignors to Chisso Corporation, Osaka, Japan

Continuation of Ser. No. 64,577, Jun. 22, 1987, abandoned. This application Dec. 16, 1988, Ser. No. 285,617
Claims priority, application Japan, Jul. 7, 1986, 61-159149; Aug. 7, 1986, 61-160126
Int. Cl.[5] C05G *3/00, 3/10*
U.S. Cl. 71—64.07 **20 Claims**

1. A granular chemical fertilizer with a degradative coating comprising as its combination of active ingredients
(a) a polyolefin resin and
(b) an ethylene-vinyl acetate-carbon monoxide copolymer,
said polyolefin resin being selected from the group consisting of:
(1) polyethylene,
(2) polypropylene,



(3) polybutene-1, and
(4) copolymers of at least two members selected from the group consisting of ethylene, propylene and butene-1,
the ratio by weight of said ethylene-vinyl acetate-carbon monoxide copolymer to said polyolefin resin being in the range of 0.1 to 1.8.

5,009,697

LIQUID ORGANIC PEAT FERTILIZER AND PROCESS OF PREPARING SAME

Antonio M. Martin, and Peter J. Scott, both of Newfoundland, Canada, assignors to Memorial University of Newfoundland, Canada

Filed Dec. 1, 1987, Ser. No. 127,161
Int. Cl.[5] C05F *11/02, 11/04*
U.S. Cl. 71—24 **21 Claims**

1. A process for the preparation of both a liquid peat extract substantially-free from biologically-undesirable concentrations of metal elements and compounds, and a solid peat residue substantially-free from biologically-undesirable concentration of metal elements and compounds, which process comprises:
subjecting particles of high-moor, low-decomposed sphagnum-type peat which has a lower proportion of humic acids, a higher concentration of hydrolyzable nitrogen compounds, and a higher proportion of weakly-bound biologically-active substances than low-moor peat, more than about 50% of said particles having a diameter of about 250 μm or less, to a relatively mild acid hydrolyzation reaction under sterile controlled conditions at superatmospheric pressure at a temperature above the boiling point of water to a maximum elevated temperature of about 130° C. for a time of from about 1 to about 2 hours in an inert container, to provide a reacted medium comprising an aqueous liquid peat extract phase and a solid hydrolyzed peat phase dispersed therethrough;
adjusting the pH of the reaction medium to about neutral;
removing said neutralized reaction medium from said inert container;
pressing and filtering said removed, neutralized reacted medium in inert equipment; and
recovering both said liquid peat extract, and said solid hydrolyzed peat residue.

5,009,698

METHOD FOR STIMULATING PLANT GROWTH USING SYNTHETICALLY PRODUCED 9-BETA-1(+) ADENOSINE

Stanley K. Ries; Violet F. Wert, and Muraleedharan G. Nair, all of East Lansing, Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Filed Apr. 28, 1989, Ser. No. 345,217
Int. Cl.[5] A01N *43/08, 43/713, 43/90*
U.S. Cl. 71—92 **7 Claims**

1. A method for stimulating the growth of a plant which comprises: applying an effective amount of synthetically prepared 9-beta-L,(+) adenosine to the plant in order to stimulate growth of the plant.

5,009,699

1-{[O-(CYCLOPROPYLCARBONYL)PHENYL]SULFAMOYL}-3-(4,6-DIMETHOXY-2-PYRIMIDINYL)UREA HERBICIDAL COMPOSITION AND USE

Thomas E. Brady, Whitehouse Station; Michael E. Condon, Lawrenceville, and Pierre A. Marc, Willingboro, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 22, 1990, Ser. No. 542,564
Int. Cl.[5] A01N *43/54;* **C07D** *239/69*
U.S. Cl. 71—92 **8 Claims**

1. 1-{[O-(cyclopropylcarbonyl)phenyl]sulfamoyl}-3-(4,6-dimethoxy-2-pyrimidinyl)urea.

5,009,700

USE OF PYRITHIONE FOR THE CONTROL OF MOSS

Eugene F. Rothgery, North Branford, Conn., assignor to Olin Corporation, Cheshire, Conn.

Filed Jul. 26, 1990, Ser. No. 558,279
Int. Cl.[5] A01N *43/40, 55/02, 31/08*
U.S. Cl. 71—94 **5 Claims**

1. A process for ridding moss from an unwanted location which comprises contacting the moss with a mossicidal effective amount of sodium pyrithione, zinc pyrithione, or a combination thereof.

5,009,701

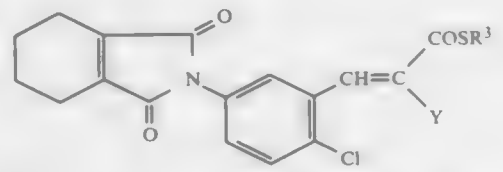
5-(N-3,4,5,6-TETRAHYDROPHTHALIMIDO)CINNAMIC ACID DERIVATIVES

Peter Plath, Frankenthal; Karl Eicken, Wachenheim; Lothar Rueb, Speyer; Barbara Schwalge, Ludwigshafen; Karl-Otto Westphalen, Speyer, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 6, 1989, Ser. No. 403,382
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1988, 3830733
Int. Cl.[5] A01N *43/38;* **C07D** *209/48*
U.S. Cl. 71—96 **12 Claims**

1. A 5-(N-3,4,5,6-tetrahydrophthalimido)cinnamic acid compound of the formula Ib

Ib



where the substituents have the following meanings:

Y is chlorine, bromine or C_1–C_4-alkyl, and

R^3 is C_1–C_6-alkyl, or C_2–C_6-alkyl mono- to tri-substituted by C_1–C_4-alkoxy, C_1–C_4-alkylthio and/or hydroxyl.

2. A herbicidal composition which comprises: an effective amount of a 5-(N-3,4,5,6-tetrahydrophthalimido)-cinnamic acid compound of the formula Ib as set forth in claim 1, and herbicidally acceptable carrier.

5,009,702

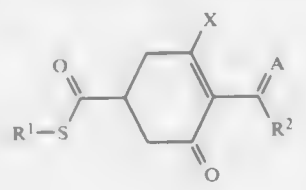
CYCLOHEXENONE COMPOUNDS AND USE AS HERBICIDES OR AS PLANT GROWTH REGULATORS

Michael Keil, Freinsheim; Ulrich Schirmer, Heidelberg; Juergen Kast, Boehl-Iggelheim; Dieter Kolassa, Ludwigshafen; Bruno Wuerzer, Otterstadt; Norbert Meyer, Ladenburg; Wilhelm Rademacher; Johann Jung, both of Limburgerhof, all of Fed. Rep. of Germany, and Dale R. Carlson, Durham, N.C., assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 240,465, Sep. 2, 1988, abandoned, which is a continuation-in-part of Ser. No. 201,891, Jun. 3, 1988, abandoned. This application Mar. 22, 1989, Ser. No. 327,352
Int. Cl.[5] A01N *37/00;* **C07C** *327/00*
U.S. Cl. 71—100 **5 Claims**

1. A cyclohexenone compound of the formula I

(I)



where

R^1 is hydrogen; C_1–C_6-alkyl which is unsubstitued or substituted by C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-dialkylamino, hydroxyl or halogen; C_1–C_6-alkenyl; C_3–C_6-cycloalkyl; or phenyl or benzyl which is unsubstituted or substituted by halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy or nitro,

R^2 is C_1–C_4-alkyl or cyclopropyl,

A is oxygen; a radical NOR^3, where R^3 is C_1–C_4-alkyl, C_3- or C_4-alkenyl, C_3- or C_4-alkynyl, C_2–C_4-haloalkyl, C_3- or C_4-haloalkenyl or C_2–C_4-alkoxyalkyl; or a radical NR^4, where R^4 is hydrogen, C_1–C_6-alkyl, C_1–C_4-hydroxyalkyl, C_1–C_4-alkoxyalkyl, benzyl or phenyl, and X is hydroxyl; chlorine; C_1–C_6-alkylthio which is unsubstituted or substituted by C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-dialkylamino, hydroxyl or halogen; C_1–C_6-alkenylthio; C_3–C_6-cycloalkylthio; or phenylthio or benzylthio which is unsubstituted or substituted by halogen, C_1–C_4-alkoxy or nitro.

5. A method of controlling undesirable plants, wherein the plants and/or the area to be kept free of the plants are treated with a herbicidally effective amount of a cyclohexenone compound of the formula I as claimed in claim 1, where A is a radical NOR^3.

5,009,703

SILICON SMELTING PROCESS IN DIRECT CURRENT FURNACE

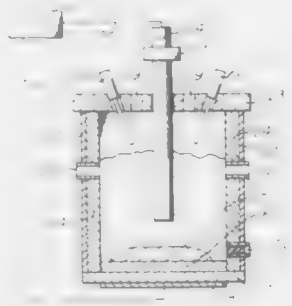
Arvid N. Arvidson; Vishu D. Dosaj, and James B. May, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, N.J.

Filed Aug. 13, 1990, Ser. No. 566,911
Int. Cl.[5] C22B *4/00*
U.S. Cl. 75—10.36 **15 Claims**

1. A process for preparation of elemental silicon, the process comprising:

(A) adding a feed mixture comprising a source of silicon dioxide and a source of carbon to a substantially closed furnace:

(B) heating the substantially closed furnace with a direct current, submerged-arc; and



(C) tapping elemental silicon from the substantially closed furnace

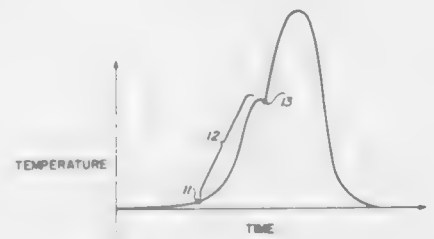
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5,009,704

PROCESSING NICKEL-BASE SUPERALLOY POWDERS FOR IMPROVED THERMOMECHANICAL WORKING

Anthony Banik, Mesa, Ariz., assignor to Allied-Signal Inc., Morristownship, N.J.

Filed Jun. 28, 1989, Ser. No. 373,354
Int. Cl.[5] C22C *29/04*
U.S. Cl. 75—238 **8 Claims**



1. A process for preparing a consolidated nickel-based superalloy compact which may be forged at high strain rates comprising the steps of:

introducing said superalloy powder of known composition into a container;

evacuating and sealing the container containing the powder under a vacuum;

hot isostatically pressing the container to form a consolidated compact at a first temperature, time and pressure, said first temperature being above the incipient melting temperature of the powder to solutionize complex boride and carbide compounds but below the temperature necessary to solutionize the stable metal carbide phase during said time and pressure;

heating the compact to a second temperature below the incipient melting temperature;

holding the compact at said second temperature for a second period of time to homogenize the compact; and

cooling the compact to room temperature.

5,009,705

MICRODRILL BIT

Hironori Yoshimura, and Inada Shyogo, both of Tokyo, Japan, assignors to Mitsubishi Metal Corporation, Tokyo, Japan

Filed Dec. 28, 1989, Ser. No. 458,099
Int. Cl.[5] C22C *29/08*
U.S. Cl. 75—240 **3 Claims**

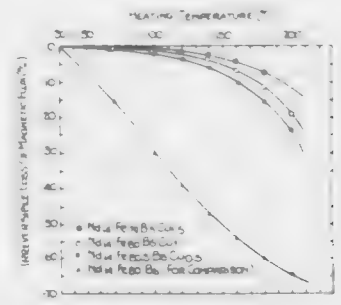
1. A miorodrill bit made of a tungsten carbide based cemented carbide which contains a binder phase of 6% by weight to 14% by weight of a cobalt alloy and a hard dispersed phase of balance tungsten carbide, said cobalt alloy being comprised of cobalt, chromium, vanadium and tungsten, and having weight ratios so as to satisfy the relationships of $0.04 \leqq (c+d)/(a+b+c+d) \leqq 0.10$ and $0.50 \leqq c/(c+d)$ 0.95, where a, b, c and d denote weight ratios of tungsten, cobalt, chromium and vanadium, respectively; said cemented carbide having a Rockwell A scale hardness of 92.0 to 94.0.

5,009,706

RARE-EARTH ANTISOTROPIC POWDERS AND MAGNETS AND THEIR MANUFACTURING PROCESSES

Hiroaki Sakamoto; Masahiro Fujikura, and Toshio Mukai, all of Kawasaki, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 475,460, Feb. 6, 1990, abandoned. This application Jul. 18, 1990, Ser. No. 554,109
Claims priority, application Japan, Aug. 4, 1989, 1-202675
Int. Cl.[5] C22C *29/14*
U.S. Cl. 75—244 **18 Claims**



1. A rare-earth alloy anisotropic powder consisting essentially of, in atomic percent, over 12 percent and not more than 20 percent of R (R is at least one of neodymium and praseodymium or at least one of them and one or more rare-earth elements), not less than 4 percent and not more than 10 percent of boron, not less than 0.05 percent and not more than 5 percent of copper and the rest that consists essentially of iron and unavoidable impurities,

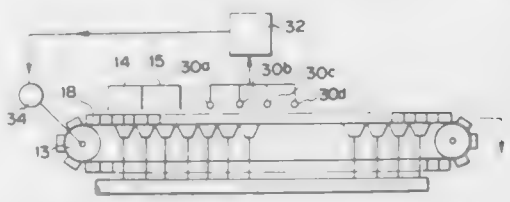
the alloy powder being made up of flat crystal grains having mean thickness h (the shortest measure), d not smaller than 0.01 μm and not larger than 0.5 μm and ratio d/h not smaller than 2, d being the mean measure of the grains taken at right angles to the widthwise direction thereof, and the alloy powder being magnetically anisotropic.

5,009,707

METHOD FOR MANUFACTURING AGGLOMERATES OF SINTERED PELLETS

Hidetoshi Noda; Makoto Gocho; Masayasu Shimizu; Osamu Komatsu, and Hideaki Inoue, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Dec. 29, 1989, Ser. No. 456,800
Claims priority, application Japan, Feb. 13, 1989, 1-33428; Feb. 13, 1989, 1-33429; Feb. 20, 1989, 1-39709
Int. Cl.[4] C22B *1/20*
U.S. Cl. 75—375 **14 Claims**



1. A method for manufacturing agglomerates of sintered pellets comprising the steps of:

mixing and pelletizing fine iron ore, flux, binder and return fines;

coating pelletized materials obtained in said step of the mixing and pelletizing with powdery solid fuel, thereby producing green pellets coated with powdery solid fuel;
charging said green pellets into a sintering machine;
drying said green pellets in a dry furnace on said sintering machine and igniting said green pellets in an ignition furnace;
sintering said green pellets on said sintering machine;
measuring a noise level by the use of a noise sensor placed at the ignition furnace, said noise level being indicated by means of a bursting sound produced by said green pellets when said green pellets are burst at the time of the ignition of said green pellets, and permeability of a sintering bed of the sintering machine being worsened when said noise level becomes high; and
taking operation control action in response to said noise level, said operation control action improving the permeability of the sintering bed.

5,009,708

PRINTING PASTE AND METHOD OF APPLYING SAID PASTE

Werner Grünwald, Gerlingen; Gerhard Holfelder, Weissach; Claudio De La Prieta, Stuttgart, and Kurt Schmid, Ditzingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 270,395, Nov. 10, 1988, abandoned, which is a continuation of Ser. No. 133,157, Dec. 11, 1987, abandoned, which is a continuation of Ser. No. 919,626, Oct. 15, 1986, abandoned, which is a continuation of Ser. No. 802,077, Nov. 26, 1985, abandoned, which is a continuation of Ser. No. 613,567, May 24, 1984, abandoned, which is a continuation-in-part of Ser. No. 427,601, Sep. 29, 1982, abandoned. This application Aug. 31, 1989, Ser. No. 403,040
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1981, 3145583
Int. Cl.[5] C09D *5/10;* **C23C** *20/04*
U.S. Cl. 106—105 **19 Claims**

1. A printing paste suitable for application on a non-planar substrate, said paste being a thixotropic paste having a viscosity between about 6 and 8.5 pascal-seconds and consisting essentially of
a solid component in powder form, and
an organic carrier consisting essentially of between 4 and 9% by weight ethyl cellulose, between 74 and 82% alpha-terpineol, and between 8 and 17% benzyl alcohol, and
the relative proportions, by weight, between said solid component and said organic carrier being between 6:4 and 8:2.

5,009,709

STRONG DENTAL PORCELAIN AND METHOD FOR ITS MANUFACTURE

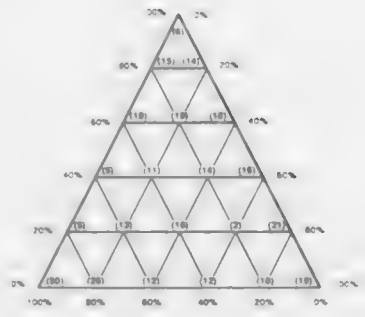
Robert L. Ibsen; Thomas C. Chadwick, and Sally A. Pritchard, all of Santa Maria, Calif., assignors to Den-Mat Corporation, Santa Maria, Calif.

Continuation of Ser. No. 244,853, Sep. 15, 1988, abandoned. This application Jul. 3, 1990, Ser. No. 548,294
Int. Cl.[5] A61C *13/00, 13/083;* **C01K** *3/00*
U.S. Cl. 106—35 **13 Claims**

1. A base frit for dental porcelain, including in combination a portion of feldspar comprising:

Ingredient	Weight by Percent
SiO_2	67.1%
Al_2O_3	18.5%
Na_2O	3.0%
K_2O	10.5%, and
CaO	0.9%

mixed with a Glass 1, comprising:



Ingredient	Weight by Percent
SiO_2	55.4%
Al_2O_3	7.19%
Na_2O	6.68%
K_2O	20.2%
MgO	1.92%
CaO	8.32%
SrO	0.05%
BaO	0.22%
TiO_2	0.02%

and then mixed with a Glass 2, comprising:

Ingredient	Weight by Percent
SiO_2	46.0%
Al_2O_3	0.74%
Na_2O	20.0%
K_2O	0.06%
CaO	3.8%
SrO	3.5%
BaO	12.5%
TiO_2	5.6%
B_2O_3	7.8%.

and then mixed with lithium carbonate.

5,009,710

ALGINATE COMPOSITION FOR APPLICATION TO A SOIL OR PLANT LOCUS

John A. Bewsey, Transvaal, South Africa, assignor to Harvest Chemicals (Proprietary) Limited, South Africa

Continuation of Ser. No. 196,627, May 19, 1988, abandoned. This application Oct. 30, 1989, Ser. No. 428,432
Int. Cl.[5] C05B *37/04, 17/00, 3/00*
U.S. Cl. 106—208 **6 Claims**

1. A thixotropic composition for application to a plant locus, comprising
a gel comprising water, an alkaline earth metal alginate gel matrix uniformly dispersed throughout the water, bentonite, and at least about 0.05 percent by weight of insolubles having a particle size less than about 70 microns, wherein the weight ratio of the alginate gel to the bentonite is about 1:1 to 1:10, the water is present in an amount of at least about 90 wt % of the gel and the alginate gel matrix is present in an amount of up to about 5 wt % by weight of the gel.

5,009,711

GOLDEN COLOR LUSTER PIGMENTS

Ralf Emmert, Bayonne, N.J., and Manfred Weigand, Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Sep. 12, 1988, Ser. No. 243,540
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1987, 3730505
Int. Cl.[5] C04B *14/20*
U.S. Cl. 106—415 **20 Claims**

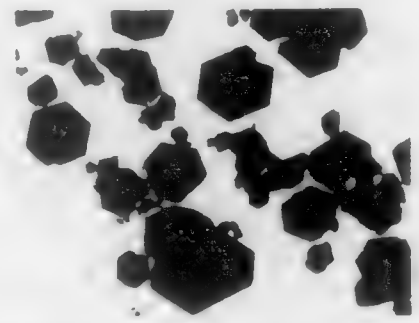
1. A lustrous, colored pigment, comprising a lamellar substrate coated with a topmost metal oxide layer containing both titanium and iron wherein said metal oxide layer consists essentially of pseudobrookite.

5,009,712

NON-MAGNETIC PIGMENTS

Kousaku Tamari, and Tsutomu Katamoto, both of Hiroshima, Japan, assignors to Toda Kogyo Corp., Hiroshima, Japan

Filed Dec. 14, 1989, Ser. No. 448,196
Claims priority, application Japan, Dec. 23, 1988, 63-326420; Nov. 7, 1989, 1-290783; Nov. 7, 1989, 1-290784
Int. Cl.[5] C09C *1/22*
U.S. Cl. 106—456 **18 Claims**



1. A non-magnetic pigment comprising plate-like potassium ferrite particles having and average diameter of 0.03–30.0 μm.

5,009,713

CEMENT COMPOSITION AND A PROCESS FOR PREPARATION THEREOF

Masaharu Sakuta, Tokyo; Toshiharu Urano, Nagoya; Kyoichi Tanaka; Masashi Sugiyama, both of Ibaraki; Shyuzo Endoh, Tokyo, and Keisuke Fujioka, Kawasaki, all of Japan, assignors to Fujisawa Pharmaceutical Company, Ltd.; Takenaka Komuten Company, Ltd., both of Osaka and Nippon Nyukazai Company, Ltd., Tokyo, all of, Japan

Filed Feb. 13, 1987, Ser. No. 14,593
Claims priority, application Japan, Feb. 25, 1986, 61-038277
Int. Cl.[5] C04B *7/00*
U.S. Cl. 106—727 **9 Claims**

1. A hydraulic cement composition comprising, as a carbonation inhibitor of the cement composition, at least one compound of the formula (I):

$$A\text{-}(Y_n\text{-}H)_l \qquad (I)$$

wherein A is a polyamine residue containing 2–10 carbon atoms,

Y is $-C_3H_6O-$,

l is a number equal to 1–8,
n is a number equal to 1–4,
the product $n \times l$ is equal to 13–20,
the active hydrogen(s) involved in the amino groups in the polyamine residue being partly or wholly substituted with the residue(s) of propylene oxide.

5,009,714

PROCESS FOR REMOVING COPPER AND COPPER OXIDE DEPOSITS FROM SURFACES

Stephen T. Arrington, and Gary W. Bradley, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Aug. 25, 1989, Ser. No. 398,687
Int. Cl.[5] C03C *23/00*
U.S. Cl. 134—2 **18 Claims**

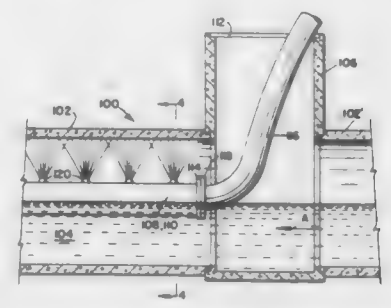
1. A process for removing copper from a surface comprising:
contacting the copper with sufficient quantities of gaseous oxygen such that copper oxide is formed; and contacting the copper oxide with a solution
comprising said gaseous oxygen and sufficient amounts of ammonia and an inorganic ammonium salt to dissolve at least a substantial portion of the copper oxide.

5,009,715

METHOD FOR PREVENTING DETERIORATION OF CONCRETE PIPE

R. E. Wilson, 678 Alderwood Dr., Newport Beach, Calif. 92660

Division of Ser. No. 44,405, Apr. 30, 1987, Pat. No. 4,899,770. This application Nov. 20, 1989, Ser. No. 438,310
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—22.11 **23 Claims**



1. A method of cleansing away concrete deteriorating acid from interior wall surfaces of concrete sewer conduit, in a sewerage system, normally unwashed by a flow of sewerage therethrough, comprising: introducing a plurality of spray-forming nozzle means into and spaced-apart along said concrete sewer conduit; orienting said nozzle means within said sewer conduit such that spray formed by cleansing fluid passing from said nozzle means will contact and wash said normally unwashed interior wall surfaces of said concrete conduit; connecting said nozzle means via tubular means to a pressurized source of cleansing fluid; and thereby causing said cleansing fluid to flow to said nozzle means; leaving said nozzle means within said concrete sewer conduit a sufficient period of time to enable a spraying operation of cleansing fluid from said nozzles, which can be a continuous operation, during the course of utilization of said concrete sewer conduit in the sewerage system; whereby a spray of said cleansing fluid formed by said nozzle means will wash from said interior wall surfaces concrete deteriorating acid introduced by any means including acid forming bacteria thereby prolonging the useful life of said concrete sewer conduit.

5,009,716

BLANKET AND ROLLER WASH FOR PRINTING APPARATUS

David Gerson, Woodbridge, N.J., assignor to Printers' Service, Inc., Newark, N.J.

Filed May 16, 1989, Ser. No. 352,466
Int. Cl.[5] B08B *3/08*
U.S. Cl. 134—40 **6 Claims**

1. A method for removing paste ink from printing rollers and blankets, comprising:
(a) applying a blanket and roller wash to an inked surface of

a printing roller or blanket, wherein said wash consists essentially of at least 1% by volume of a nonionic surfactant having a hydrophilic/lipophilic balance of 8.5 to 17.5, 7–97.25% by volume of a monobasic fatty acid having 12 to 20 carbon atoms, and 0–92% by volume of a mineral oil selected from the group of saturated hydrocarbon oils that have a viscosity no higher than 165 SSU at 100° F. and a vapor pressure no higher than 0.1 mm Hg at 20° C.;

(b) allowing said wash to coat said surface and penetrate the ink thereon;

(c) removing material from said surface;

(d) applying additional portions of said wash to said surface until the material that is removed from said surface is substantially clear; and

(e) applying water to said surface until said surface is free of any oily residue.

5,009,717

THERMOELECTRIC ELEMENT AND METHOD OF MANUFACTURING SAME

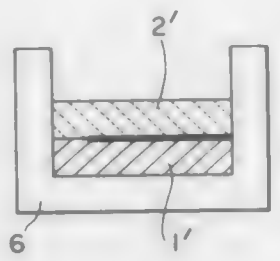
Masashi Komabayashi; Kunio Kuramochi, and Kenichi Hijikata, all of Ohmiya, Japan, assignors to Mitsubishi Metal Corporation, Tokyo, Japan

Filed Jul. 11, 1990, Ser. No. 550,879

Claims priority, application Japan, Jul. 18, 1989, 1-185767; Apr. 11, 1990, 2-95868; Apr. 25, 1990, 2-109802

Int. Cl.[5] H01L *35/34, 35/12*

U.S. Cl. 136—[illegible]1 7 Claims



1. In a thermoelectric element comprising a first layer of a p-type iron silicide, a second layer of an n-type iron silicide, said first and second layers being joined together to form a pn junction therebetween, and an insulating layer of an oxide interposed between said first and second layers portions thereof other than said pn junction, the improvement wherein said oxide forming said insulating layer consists essentially of:

SiO_2: 38.0–50 % by weight;

B_2O_3: 0.1–10.0 % by weight; and

MgO and inevitable impurities: the balance.

5,009,718

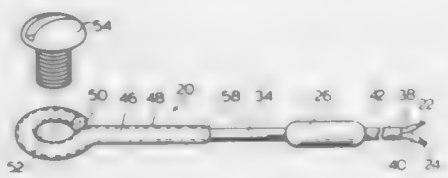
THERMOCOUPLE CONSTRUCTION

Harald H. Schmidt, Georgetown, Canada, assignor to Mold-Masters Limited, Georgetown, Canada

Filed Dec. 22, 1988, Ser. No. 288,441

Int. Cl.[5] H01L *35/02*

U.S. Cl. 136—232 6 Claims



1. In a thermocouple assembly for measuring temperature adjacent the forward end thereof, the thermocouple assembly having a pair of wires formed of dissimilar metals extending through electrical insulating material in a thin metal sheath to a junction adjacent the forward end of the assembly, the improvement wherein:

a forward portion of the sheath is retainably received in a casing having a closed forward end, the casing and the enclosed portion of the sheath being bent to a shape suitable to receive connecting means therethrough in order to accurately secure the forward end of the thermocouple assembly within said bent portion and in a desired position during use.

5,009,719

TANDEM SOLAR CELL

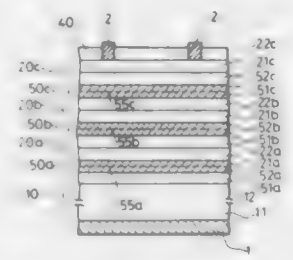
Susumu Yoshida, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Nov. 8, 1989, Ser. No. 433,278

Claims priority, application Japan, Feb. 17, 1989, 1-38691

Int. Cl.[5] H01L *31/068*

U.S. Cl. 136—249 9 Claims



1 A tandem solar cell including:

an upper solar cell for converting relatively short wavelength incident light into electricity, comprising a first crystalline semiconductor having a first lattice constant and first energy band gap;

an intermediate solar cell for converting relatively long wavelength incident light that has passed through said upper solar cell into electricity, comprising a second crystalline semiconductor having a second energy band gap smaller than the first energy band gap;

a lower solar cell for converting relatively long wavelength incident light that has passed through said intermediate solar cell into electricity, comprising a third crystalline semiconductor having a third energy band gap smaller than the second energy band gap; and

crystalline semiconductor buffer layers respectively disposed between said upper and intermediate solar cells and between said intermediate and lower solar cells, each buffer layer having an energy band gap larger than the first energy band gap and a lattice constant approximately the same as the first lattice constant and including a tunneling junction within each of said buffer layers.

5,009,720

SOLAR CELL

Shigeru Hokuyo; Takao Oda, and Hideo Matsumoto, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Nov. 9, 1989, Ser. No. 437,981

Claims priority, application Japan, Nov. 16, 1988, 63-290990; Aug. 19, 1989, 1-213628

Int. Cl.[5] H01L *31/06, 31/18*

U.S. Cl. 136—255 15 Claims

1. A solar cell comprising:

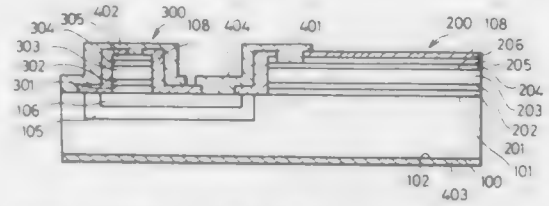
a semiconductor substrate of a first conductivity type having opposed first and second major surfaces;

a first region of a second conductivity type extending from a portion of said first major surface into said substrate;

a second region of the first conductivity type disposed within said first region and including said first major surface;

a photovoltaic section disposed on said first major surface and spaced from said first region including a first compound semiconductor layer of the first conductivity type and a second compound semiconductor layer of the second conductivity type disposed on said first compound semiconductor layer;

a diode section disposed within said second region of first conductivity type and including diode regions of first and second conductivity type;



a first electrode connecting said second compound semiconductor layer in reverse polarity to said diode section through said second region of first conductivity type; and

a second electrode disposed on said first major surface of said substrate whereby said diode region of second conductivity type is electrically connected to said first conductivity type substrate.

5,009,721

SOLAR CELL

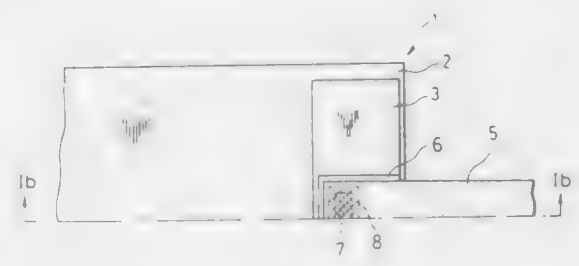
Hideo Matsumoto, Kobe, and Shigeru Hokuyo, Itami, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Aug. 2, 1989, Ser. No. 388,381

Claims priority, application Japan, Aug. 26, 1988, 63-212905

Int. Cl.[5] H01L *31/05*

U.S. Cl. 136—256 7 Claims



1. A solar cell for use in a device in which a plurality of solar cell elements are interconnected, comprising:

a solar cell element for converting light into electricity, including a photoresponsive junction in a semiconductor body and first and second electrodes disposed on said body, an interconnector for interconnecting said solar cell elements to another solar cell element, joined to said first electrode, and a metal film disposed between and welded to said first electrode and said interconnector, wherein the welded area between said metal film and said first electrode is about three times the welded area between said metal film and said interconnector.

5,009,722

PROCESS FOR PRODUCING BASE MATERIAL FOR AN ALUMINUM OFFSET PRINTING PLATE

Gerhard Sprintschnik, Taunusstein; Walter Niederstaetter, Eltville; Kurt Reiss, Wiesbaden; Wolfgang von Asten, Pulheim; Gunther Scharf, Boon, and Barbara Grzembra, Bonn, all of Fed. Rep. of Germany, assignors to Hoechst AG, Frankfurt am Main and Vereinigte-Aluminum Werke A.G., Bonn, both of, Fed. Rep. of Germany

Division of Ser. No. 186,152, Apr. 26, 1988, Pat. No. 4,945,004. This application May 23, 1990, Ser. No. 527,567

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1987, 3714059

Int. Cl.[5] C22F *1/04*

U.S. Cl. 148—2 10 Claims

1. A process for producing a base material for aluminum offset printing sheets which base material comprises an aluminum alloy consisting of from about 0.2 to about 0.6% by weight of iron, less than about 0.25% by weight silicon and copper combined, from about 0.1 to about 0.3% by weight manganese and the remainder being aluminum and trace production impurities, said base material further characterized as containing secondary precipitates in the form of phases of Al Mn Si: Al Fe: Al Mn which bear a ratio to one another of from about 1:1:2 to about 1:1:3, the mean particle size of said phases being from about 0.05 to about 0.10 micron with a maximum particle size of less than about 0.3 micron and further containing a precipitation structure with a degree of dispersion of less than about 50 phases per cubic micron, said process comprising:

(a) casting an ingot of the aluminum alloy;

(b) homogenizing said ingot at a metal temperature within the range of about 550° to about 600° C. for a soaking period of at least about 4 hours;

(c) hot rolling said ingot at a metal temperature of from about 460° to about 550° C. to form a sheet;

(d) hot strip rolling said sheet at a temperature of from about 300° to about 330° C. until the sheet thickness ranges from about 2.5 to about 3.5 mm;

(e) cooling said sheet to below about 30° C.; and

(f) subjecting said sheet to a cold rolling process until a final sheet thickness ranging from about 0.5 to about 1.0 mm is obtained.

5,009,723

METHOD FOR MANUFACTURING HIGH STRENGTH NON-MAGNETIC STAINLESS STEEL

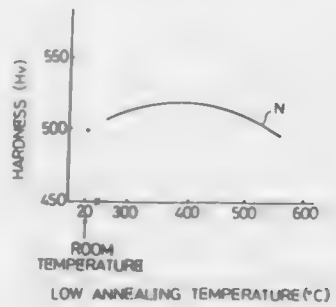
Yoshinobu Honkura, Kounan; Toru Matsuo, and Kouji Murata, both of Tokai, all of Japan, assignors to Aichi Steel Works, Ltd, Aichi, Japan

Division of Ser. No. 222,382, Jul. 19, 1988, abandoned, which is a continuation of Ser. No. 6,241, Jan. 20, 1987, abandoned, which is a continuation of Ser. No. 714,044, Mar. 18, 1985, abandoned. This application Jul. 5, 1989, Ser. No. 375,460

Claims priority, application Japan, Mar. 20, 1984, 59-53695

Int. Cl.[5] C21D *8/00*

U.S. Cl. 148—12 E 7 Claims



1. A method for manufacturing a high strength non-magnetic stainless steel comprising the steps of preparing a steel

composed of, by weight, not more than 0.20% carbon, not more than 1.00% silicon, 14–16% manganese, not more than 0.003% sulfur, 0.2–1.0% nickel, 15–19% chromium, 0.30–0.40% nitrogen, the remainder being iron together with impurities said carbon and said nitrogen constituting 0.40–0.55% and the manganese equivalent being 30–33 and drawing said steel at a reduction of area in a range of 50–70%.

5,009,724

SOLDERING FLUX AND METHOD OF ITS USE IN FABRICATING AND ASSEMBLING CIRCUIT BOARDS

Courtney V. Dodd, Oklahoma City, Okla., and Gregory C. Munie, Naperville, Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 2, 1990, Ser. No. 546,646
Int. Cl.[5] B23K *35/34*
U.S. Cl. 148—23 18 Claims

1. A water-soluble soldering flux, which, when applied to a circuit board, does not degrade the surface insulation resistance of the board following the soldering and subsequent cleaning thereof, comprising:

a water-soluble vehicle;

an activator; and

a hydrophobic surfactant which is preferentially adsorbed by the surface of the circuit board over the vehicle and the activator to render the surface substantially hydrophobic.

5,009,725

FLUXING AGENTS COMPRISING β-DIKETONE AND β-KETOIMINE LIGANDS AND A PROCESS FOR USING THE SAME

Thomas L. Ellison, San Jose; David A. Roberts, Carlsbad, both of Calif.; John C. Ivankovits, Northampton, and John A. T. Norman, Whitehall, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Mar. 30, 1990, Ser. No. 502,209
Int. Cl.[5] B23K *35/34*
U.S. Cl. 148—23 20 Claims

1. A process for fluxing an article having at least a portion of a surface coated with a metal species comprising contacting the portion of the article to be fluxed with an effective amount of a β-diketone or β-ketoimine ligand at at temperature sufficient to form a metal-ligand complex on the surface of the article to be fluxed and removing the resultant metal-ligand complex from the surface of the article by sublimation rendering the surface of the article substantially free of the surface coating.

5,009,726

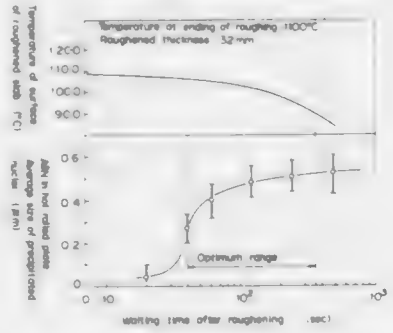
METHOD OF MAKING NON-ORIENTED SILICON STEEL SHEETS HAVING EXCELLENT MAGNETIC PROPERTIES

Akihiko Nishimoto; Yoshihiro Hosoya; Kunikazu Tomita; Toshiaki Urabe, and Masaharu Jitsukawa, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

PCT No. PCT/JP89/00232, § 371 Date Oct. 12, 1989, § 102(e) Date Oct. 12, 1989, PCT Pub. No. WO89/08151, PCT Pub. Date Sep. 8, 1989
PCT Filed Mar. 3, 1989, Ser. No. 427,128
Claims priority, application Japan, Mar. 4, 1988, 63-49576
Int. Cl.[5] H01F *1/047*
U.S. Cl. 148—111 3 Claims

1. A method of making non-oriented silicon steel sheets having excellent magnetic properties, comprising roughing a slab so as to form a bar immediately after continuously casting thereof to thickness of more than 20 mm at reduction rate of more than 10% without maintaining the heat or heating at specified temperature range, said slab containing C: not more than 0.005 wt %, Si: 1.0 to 4.0 wt %, Mn: 0.1 to 1.0 wt %, P: not more than 0.1 wt %, S: not more than 0.005 wt %, Al: 0.1 to 2.0 wt %, balance being Fe and inavoidable impurities; having a time interval of more than 40 sec at temperature range where the surface temperature of the roughed bar is more than 900° C till a following finish rolling; performing a final rolling and coiling so as to form a coiled plate at temperature of not more than 650° C., annealing the hot rolled plate by soaking it at the temperature of 800° to 950° C. for a time satisfying

$$\exp(-0.022T + 21.6) \leqq t \leqq \exp(-0.030T + 31.0)$$



wherein,

T: soaking temperature (° C.)

T: soaking time (min), carrying out a cold rolling of once or old rollings of more than twice interposing an intermediate annealing and a final continuous annealing at range of temperature between 850° and 1100° C.

5,009,728

CASTABLE, INSENSITIVE ENERGETIC COMPOSITIONS

May L. Chan, and Alan D. Turner, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 12, 1990, Ser. No. 464,076
Int. Cl.[5] C06B *45/10*
U.S. Cl. 149—19.1 16 Claims

1. A castable, insensitive energetic composition consisting essentially of a homogenous solution of 65 to 85% by weight of energetic oxidizer solids of a polynitroalkyl substituted compound in which each poltnitroalkyl contains from 1–5 carbon atoms in a plasticized thermoplastic elastomer, the said plasticizer thereof being a C_1 to C_{10} alkyl ester of an organic acid, said thermoplastic elastomer being a block copolymer containing both oleophilic hydrocarbon polymer segments and polar, oxygen containing polymer segments.

5,009,729

MATCH HEAD COMPOSITION AND METHOD OF MAKING SAME

Stanley J. Radkowski, 7 Katie Dr., Wilbraham, Mass. 01095

Filed Oct. 22, 1990, Ser. No. 600,742
Int. Cl.[5] D03D *23/00*
U.S. Cl. 149—109.4 14 Claims

1. A match head composition comprising a pyrotechnic mixture of an igniting agent, combustibles, oxidizers, fillers and an animal glue or colored gelatin binder, the improvement which comprises the addition of sodium dithionite and a cross-linking agent selected from the group consisting of dichromates, dialdehydes or a mixture of both to said mixture.

5,009,730

SYSTEM OF RESTORING ROUGH TOOL HANDLES

Michel C. Tozier, P.O. Box 858, Durham, Calif. 95938

Continuation-in-part of Ser. No. 279,970, Dec. 5, 1988, abandoned. This application Oct. 2, 1989, Ser. No. 416,036
Int. Cl.[5] B32B *31/26*
U.S. Cl. 156—85 8 Claims

1. A system of restoring a smoother, splinter free gripping surface to a wooden tool handle having become roughened with defects, wherein the defects are utilized to create a textured, non-slip said gripping surface on the tool handle, said system comprising in combination:

utilizing a heat shrinkable tubing of a thin walled nature and having a recovery temperature range between about 180 and 240 degrees fahrenheit;

said heat shrinkable tubing further having a generally larger expanded internal diameter than the external diameter of the tool handle to allow slipping of said tubing over the tool handle;

said heat shrinkable tubing further having a shrinkage ratio and expanded internal diameter allowing a recovered internal diameter of said tubing to less than the external diameter of the tool handle;

said heat shrinkable tubing further being of sufficient length to cover at least a hand placement area of the tool handle;

said heat shrinkable tubing further being of sufficient strength to generally resist puncture by the defects on the tool handle;

said heat shrinkable tubing further being of a sufficient said thin walled nature and of sufficient pliability during heating thereof to conform to the tool handle and the defects thereof;

said heat shrinkable tubing further being of a sufficient rigidity after heating to fixedly adhere to the tool handle;



said system further including inserting the tool handle into said heat shrinkable tubing, placing said heat shrinkable tubing over the hand placement area of the tool handle, heating said heat shrinkable tubing with heat;

said heat being supplied from a common household handheld hair dryer having a universally fitting auxiliary air concentration nozzle removably attached thereto, said air concentration nozzle being conically shaped having a larger end thereof fitted over an air discharge barrel of said hair dryer, a narrow end of said air concentration nozzle being smaller in diameter than said barrel of said hair dryer, said narrow end of said air concentration nozzle having means to concentrate heat ejected from said barrel of said hair dryer to cause recovery of said heat shrinkable tubing onto the handle;

application of said heat from said hair dryer with attached said air concentration nozzle for a sufficient period of time to reduce said internal diameter of said heat shrinkable tubing to said recovered diameter;

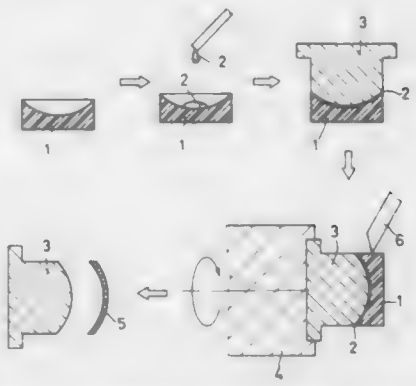
said thin walled nature and pliability providing means to allow said heat shrinkable tubing to conform to the tool handle during said heating as to allow the defects of the tool handle to extend into said heat shrinkable tubing creating said textured non-slip gripping surface on the tool handle in the area of the heat shrinkable tubing.

5,009,731

ULTRAVIOLET-HARDENABLE ADHESIVE AND BONDING METHOD EMPLOYING SAME

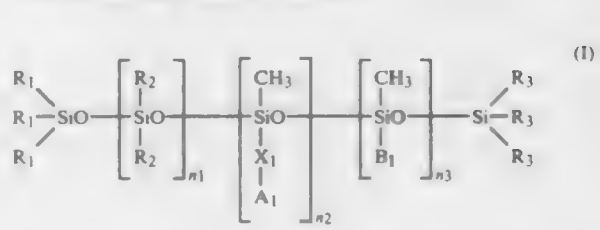
Toshiharu Yoshikawa, Nagoya, and Shozou Sagiura, Toyoake, both of Japan, assignors to Menicon Co., Ltd., Aichi, Japan

Filed Oct. 25, 1989, Ser. No. 426,199
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—154 14 Claims



1. A method of bonding a water-swellable, ophthalmic-lens blank to a support member so as to subject the ophthalmic-lens blank to working and/or treatment, in producing a water-swellable ophthalmic lens, comprising the steps of:

preparing an ultraviolet-hardenable adhesive comprising at least one photo-hardenable silicone oil and at least one photoinitiator, said at least one silicone oil being selected from the group consisting of polysiloxanes represented by the following general formula (I):



(I)

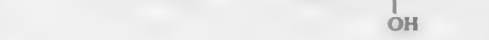
, wherein each of R_1 to R_3 is methyl or ethyl; n_1, n_2 and n_3 are positive integers, respectively, which satisfy the following formulas:

$$40 \leqq n_1 + n_2 + n_3 \leqq 1500$$

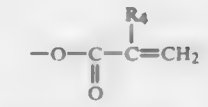
$$0.04 \leqq \frac{n_2}{n_1 + n_2 + n_3} \leqq 0.6$$

$$0.002 \leqq \frac{n_3}{n_1 + n_2 + n_3} \leqq 0.2,$$

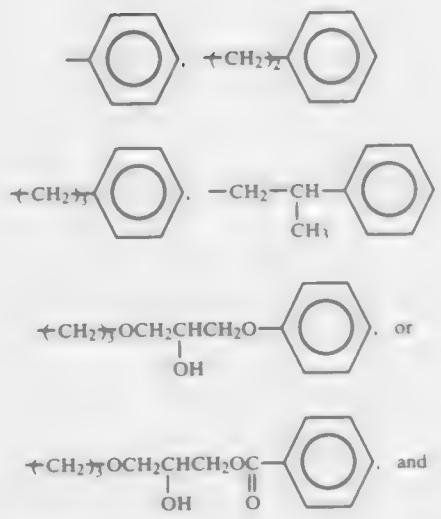
X_1 is



A_1 is



, wherein R_4 is hydrogen or methyl; and B_1 is



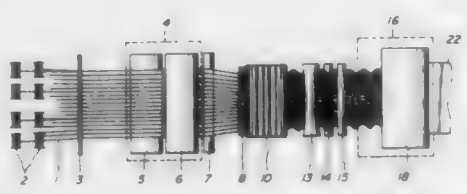
bonding said ophthalmic-lens blank to said support member with said ultraviolet-hardenable adhesive.

5,009,732

METHOD OF MANUFACTURING MEMBER FOR USE IN TIRE INCLUDING ENGAGING WIRES BETWEEN GEARS

Kazunari Ikeda, and Koichi Sanada, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Apr. 28, 1989, Ser. No. 344,647
Int. Cl.[5] B29C *65/00*
U.S. Cl. 156—177 **10 Claims**



1. A method of manufacturing a member for use in a tire, comprising steps of arranging wires in a predetermined spaced relationship one to the others by means of a guide plate, extending the wires about rolls of a winding brake unit, aligning the wires by passing them through a comb roll, engaging the wires between a pair of gears arranged immediately downstream of the comb roll and driven at equal speeds to set said wires in wave-shapes, arranging the wires in a belt-shape in an appropriate width as a whole by passing the wires about a concaved roll, extending the wires about flat rolls such that the wave-shapes of the wires fall onto a common plane and do not touch each other, and then coating the wires with rubber.

5,009,733

PROCESS FOR FABRICATING A CIRCULAR FRAME

Mieko Sakai, 12-8, Shinbashi 6-chome, Minato-ku, Tokyo, Japan

Filed Jun. 28, 1989, Ser. No. 373,307
Claims priority, application Japan, Jul. 11, 1988, 63-173423
Int. Cl.[5] B27H *1/00*
U.S. Cl. 156—184 **2 Claims**

1. A process for bending and pressing a multi-layer circular frame from flat strips of wooden boards using a machine which includes:

a cylindrical forming shell removably mounted to a support rotation about an axis of the cylindrical shell;

a plurality of pressing rolls disposed opposite said forming shell and spaced circumferentially around said forming shell, said pressing rolls being movable between a position spaced radially outward of said forming shell to a position adjacent said forming shell;

a first free roller movable radially toward and away from said cylindrical shell and located between a first pressing roll and an adjacent second pressing roll;

a second free roller located between said second pressing roll and a next adjacent third pressing roll, said second free roller being movable radially toward and away from said cylindrical shell;

an elongate feeder having one end disposed for delivering one end of a flat strip of wooden board toward said first free roller, said one end of said elongate feeder having a first reed fixed thereto and being movable toward and away from said cylindrical shell, and

a second reed movable toward and away from a circumferential portion of said cylindrical shell between a last one of said pressing rolls and said one end of said elongate feeder.

comprising the steps of:

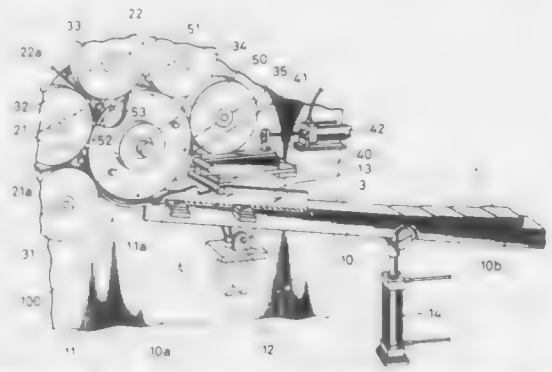
mounting a cylindrical forming shell to said support;

moving said first reed, said first and second free rollers and said plurality of pressing rolls to positions spaced radially outward from said cylindrical shell while moving said second reed toward said cylindrical shell;

providing a single flat strip of wooden board free of adhesive material to said elongate feeder;

moving said one end of said elongate feeder away from said cylindrical shell;

moving a forward end of said flat strip over said first reed and beyond said first free roller;



moving said first and second free rollers toward said cylindrical shell to clamp said forward end of said flat strip between said first free roller and said cylindrical shell;

moving said one end of said elongate feeder toward said cylindrical shell to press a portion of said flat strip to said cylindrical shell with said first reed;

moving said plurality of pressing rolls to their respective positions adjacent said forming shell;

rotating said cylindrical forming shell and said plurality of pressing rolls to wrap said flat strip of wooden board around said cylindrical forming shell;

providing a layered strip of wooden board to said elongate feeder, said layered strip of wooden board having adhesive applied thereto,

continuing rotation of said cylindrical forming shell and said plurality of pressing rolls and feeding the layered strip toward the first reed and then advancing the layered strip through contact with said first and second reeds, said first and second free rollers and said plurality of pressing rolls to wrap said layered around said wrapped wooden board;

moving said first and second reeds, said first and second free rollers and said plurality of pressing rolls to their respective positions spaced radially outward from said cylindrical forming shell; and

withdrawing said cylindrical forming shell and said wrapped, multi-layer wooden circular frame from said support.

2. Apparatus for bending and pressing a multi-layer circular frame from flat strips of wooden source material comprising:

a cylindrical forming shell removably mounted to a support for rotation about an axis of the cylindrical shell,

a plurality of pressing rolls disposed opposite said forming shell and circumferentially spaced around said forming shell, said pressing rolls being movable between a position spaced radially outward of said forming shell to a position adjacent said forming shell;

a first free roller movable radially toward and away from said cylindrical shell and located between a first pressing roll and an adjacent second pressing roll;

a second free roller located between said second pressing roll and a next adjacent third pressing roll, said second free roller being movable radially toward and away from said cylindrical shell;

an elongate feeder having one end disposed for delivering one end of a flat strip of wooden source material toward said first free roller, said one end of said elongate feeder having a first reed fixed thereto and being movable toward and away from said cylindrical forming shell; and,

a second reed located between a last one of said plurality of pressing rolls and said one end of said elongate feeder, said second reed being mounted for movement toward and away from a circumferential portion of said cylindrical forming shell;

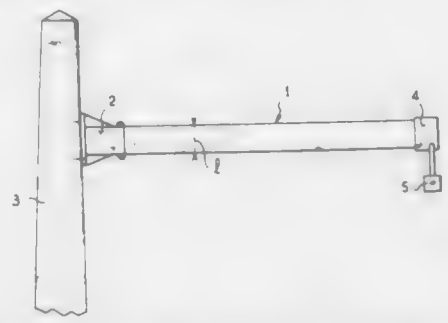
whereby one end of a strip of source material is fed between said first pressing roll and said cylindrical shell to contact said first free roller, said first free roller is moved to move said one end of said source material toward said cylindrical forming shell to initiate a bending and lapping movement of said one end of said source material on said cylindrical shell and second free roller, said pressing rolls and said second reed are moved to contact and press an outer surface of said strip of source material radially inward against said cylindrical forming shell as said strip of source material is wrapped around said cylindrical forming shell.

5,009,734

METHOD OF MAKING AN INSULATING SUPPORT ARM FOR AN ELECTRIC LINE POLE

Michel Thérond, Cahors, France, assignor to Manufacture d'Appareillage Electrique de Cahors, France

Division of Ser. No. 168,510, Mar. 15, 1988, Pat. No. 4,867,399.
This application Jun. 29, 1989, Ser. No. 373,162
Claims priority, application France, Mar. 20, 1987, 87 03885
Int. Cl.[5] B27N *3/00*
U.S. Cl. 156—184 **4 Claims**



1. A method for making an elongated insulating support arm having a preselected length dimension, a preselected constant width dimension, and a preselected maximum thickness dimension substantially less than the width dimension, for cantilevered mounted on an electric pole to support an electric line extending substantially parallel to the thickness dimension of the arm, the method comprising the steps of:

providing an at least two-ply sheet having a first dimension equal to the desired length of the support arm and a second dimension perpendicular to the first dimension, the sheet being composed of a first ply of continuous fibers extending parallel to the first dimension and a second ply of randomly-oriented short fibers impregnated with a polymerizable resin;

winding the sheet onto itself parallel to the first dimension to form a flattened roll having length, width, and thickness dimensions approximately equal to the respective preselected length, width, and thickness dimensions of the support arm;

preheating the wound roll to a temperature lower than the polymerization temperature of the impregnating resin; and

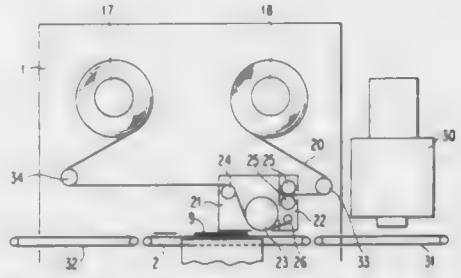
curing the preheated wound roll in a mold under pressure at a temperature above the polymerization temperature of the resin to obtain an elongated composite fiber-reinforced support arm having length, width, and thickness dimensions equal to said respective preselected length, width, and thickness dimensions, with a first end of the arm being adapted for cantilevered mounting on an electric pole with the width dimension of the arm vertical and a second end being adapted to support an electric line extending substantially parallel to the thickness dimension of the arm, the thickness dimension being made up of successive layers of the two-ply sheet bonded together by the cured resin, with the continuous fibers of the first plies extending parallel to the length dimension of the arm.

5,009,735

PROCESS FOR PEELING PROTECTIVE FILM OFF A WAFER

Minoru Ametani; Keigo Funakoshi; Akihiko Kira; Takao Matsushita, and Keizo Shirakura, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Filed Nov. 28, 1988, Ser. No. 276,587
Claims priority, application Japan, Nov. 28, 1987, 62-300621; Nov. 10, 1988, 63-285480
Int. Cl.[5] B32B *31/18*
U.S. Cl. 156—241 **7 Claims**



1. A process for peeling a protective film stuck to an upper side of a wafer, comprising feeding a wafer with a protective film stuck thereon to a table and holding the wafer in position on the table, adhering an adhesive tape to an upper side of a rear end of said protective film stuck on the wafer by means of a press roller, lifting the press roller, so that the press roller no longer presses against said protective film, and moving said press roller forward, moving a peeling unit forward to peel the adhesive tape together with the protective film stuck thereto, and then carrying away the wafer form the table.

5,009,736

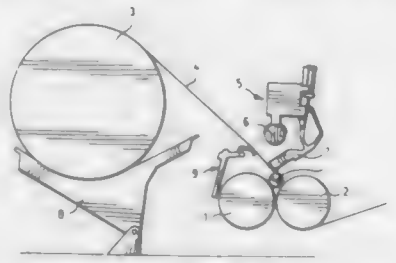
METHOD OF AND AN ARRANGEMENT FOR GLUING A WEB TO A CORE IN A REELING DEVICE

Jorma Lehto, Inkeroinen, Finland, assignor to Oy Tampella AB, Tampere, Finland

Filed Nov. 6, 1989, Ser. No. 431,789
Claims priority, application Finland, Nov. 18, 1988, 885355
Int. Cl.[5] B32B *31/18*
U.S. Cl. 156—250 **4 Claims**

1. A method of fastening a web (4) to a core (10) in a reeling device, comprising transferring a reeled web reel (3) from support rolls (1, 2) into a lowering bucket (8); transferring a

new core (10) in a core chute (9) on to the support rolls (1, 2) from between the lowering bucket (8) and the support rolls (1, 2) before the web (4) is cut off between the reeled web reel (3) and a new reel to be reeled, the web (4) between the reeled web reel (3) and the support rolls (1, 2) passing above the core (10); cutting off the web (4) between the core (10) and the reeled



web reel (3); and fastening the web to the core (10), characterized in that before the web is cut off, glue is spread between the core (10) and the web (4) from above the core (10), the web (4) being pressed against the core (10) so that it adheres to it and the web (4) being cut off only after it has adhered to the core (10).

5,009,737

METHOD OF JOINING PIPES AT THEIR ENDS TO FORM A PIPELINE

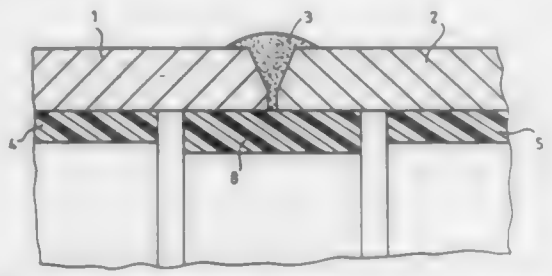
Pierre L. Lescant, Bernay, France, assignor to Atochem, Puteaux, France

Continuation of Ser. No. 182,215, Apr. 15, 1988, abandoned. This application Jun. 1, 1989, Ser. No. 360,155

Claims priority, application France, Apr. 16, 1987, 87 05446

Int. Cl.[5] **B29C** *63/30*

U.S. Cl. 156—264 **10 Claims**



1. A method of producing a pipeline arrangement, comprising the steps of:

positioning first and second metal pipe sections in end-to-end relationship, each having a radially inner wall and an axial end, said radially inner walls having heat-sensitive coverings of substantially equal diameter, at least one of said coverings terminating axially inwardly of said axial end of its respective pipe section to define an uncovered inner wall section situated between adjacent longitudinal ends of said coverings,

welding said ends together,

introducing a strip of fusible material radially inside of said uncovered inner wall section, said strip having a longitudinal width of 0.60 to 0.90 times that of said uncovered inner wall section and a radial thickness of 1.10 to 1.65 times that of said heat-sensitive coverings, and heating said strip while applying radially outwardly directed pressure to a radially inner surface of said strip to push said strip against said uncovered inner wall section for reducing said radial thickness and increasing said longitudinal width of said strip to cause said strip to contact said adjacent longitudinal ends of said coverings and completely cover said uncovered inner wall section.

5,009,738

APPARATUS FOR PLASMA ETCHING

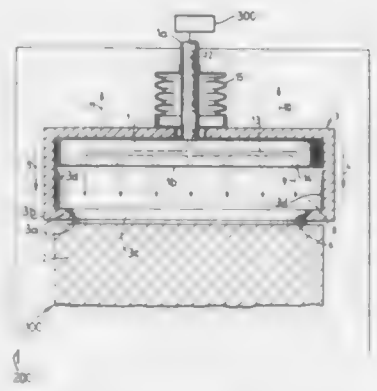
Heinrich Gruenwald, Gomaringen; Hans Ramisch, Frankfurt, and Anton Pawlakowitsch, Alzenau, all of Fed. Rep. of Germany, assignors to Leybold Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 1, 1989, Ser. No. 444,293

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1989, 3914065

Int. Cl.[5] **C23F** *1/02*

U.S. Cl. 156—345 **25 Claims**



1. An apparatus for plasma etching of a substrate comprising:

a process chamber wherein said substrate is etched, said process chamber having a gas conducting connection for receiving a process gas therein from an outside source, said process chamber comprising an enclosure having a bottom plate with a central etching window therethrough;

a first electrode, facing the interior of said chamber for facing a first face of said substrate;

a second electrode facing the interior of said chamber for facing a second face of said substrate, said second electrode maintained at an electric potential different from said first electrode, said second electrode in heat transfer with an external source, said second electrode positioned so as to support said substrate against said bottom plate, and provide a central etching area of said substrate exposed to an interior of said chamber through said central etching window of said bottom plate; and

the weight of said process chamber being such so as to press said bottom place down upon a continuous periphery of said substrate, and press said substrate against said second electrode.

5,009,739

HAND-HELD LABELER

Brent E. Goodwin, Middletown; Donald L. Karn, Springboro, and John D. Mistyurik, Tipp City, all of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

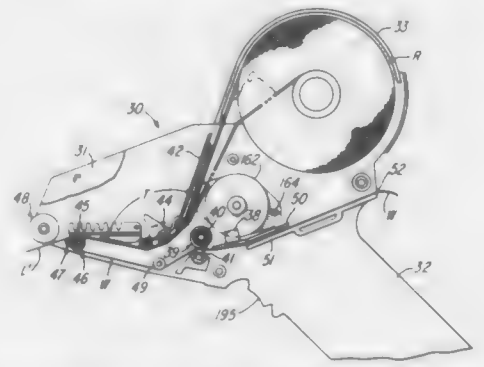
Continuation of Ser. No. 209,759, Jun. 22, 1988, Pat. No. 4,956,045. This application Apr. 10, 1990, Ser. No. 507,077

Int. Cl.[5] **B65C** *11/02*

U.S. Cl. 156—384 **9 Claims**

1. A hand-held labeler for printing and applying labels releasably secured to a carrier web of a composite label web, comprising: a housing having a handle, means on the housing for supporting a supply roll of a composite label web, a thermal print head, a platen roll cooperable with the print head for effecting printing on the labels, means for providing a path for the composite label web from the supply roll to between the print head and the platen roll, means for delaminating printed labels from the carrier web, means for applying printed labels, means for advancing the carrier web to effect delamination of a printed label and to advance the printed label into label applying relationship with the label applying means, means for

applying braking force to the platen roll to prevent movement of the carrier web except essentially when the carrier web is being advance by the advancing means, wherein the means for providing a path includes two rollers, the rollers being arranged to contact and guide the advancing composite label



web between the supply roll and the platen roll, and a wiper disposed in a space between the rollers and projecting through a flat plane between the peripheries of the rollers so that the labels wipe against the wiper during the advance of the composite label web.

5,009,740

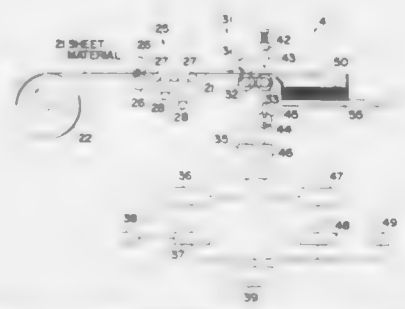
BAG MAKING MACHINE

Takeo Yanai, Koshiga Ya-C, Japan, assignor to Nippon Flute Co., Ltd., Irumagun, Japan

Filed Aug. 9, 1989, Ser. No. 391,259

Int. Cl.[5] **B32B** *31/00;* **B26D** *5/20*

U.S. Cl. 156—353 **8 Claims**



1. A bag making machine operable to produce thermoplastic resin film bags, said bag making machine comprising:

feed means for intermittently advancing a flat tubular web of thermoplastic resin film to be formed into a thermoplastic bag, said feed means including,

a feed roller positioned below and extending transversely across the tubular web of thermoplastic resin film such that rotation of said feed roller advances the tubular web,

a pressure roller positioned above said feed roller and mutually extending transversely across the tubular web of thermoplastic resin film so that when the tubular web lies therebetween, said pressure roller passively rotates with said feed roller to advance the tubular web;

sealing means for applying heat to and transversely sealing together two opposing layers of a tubular web of thermoplastic resin film, said sealing means including,

at least one lower surface positioned beneath and extending transversely across an intended path of travel of a tubular web of thermoplastic resin film,

at least one upper seal bar positioned above, mutually opposite to and in vertical alignment with said lower surface, wherein a tubular web of thermoplastic resin film may be operably fed between and subsequently come into contact with said at least one upper seal bar and said lower surface of said bag making machine,

means for heating said upper seal bar to thereby induce a sealing weld bead to be formed transversely across a tubular web of thermoplastic resin film when said upper seal bar is lowered into a posture juxtaposed to but spaced from said lower stationary surface with a tubular web of thermoplastic resin film therebetween;

slitting means including a cutting edge for transversely severing a tubular web of thermoplastic resin film adjacent to and substantially parallel with a weld bead thereby dividing the tubular web of thermoplastic resin film into two portions and forming a bag of a predetermined length with a transverse seal at one end;

first drive means for controllably driving said roller means so that the tubular web of thermoplastic resin film may be advanced to a positioned suitable for sealing and slitting, said first drive means comprising a first servo motor;

second drive means for driving said sealing means and said slitting means vertically toward and away from the tubular web of thermoplastic resin film so that sealing and severing may occur, said second drive means comprising a second servo motor;

control means for controlling the operation and interaction of the components of said bag making machine so that machine operation may be optimized, said control means including,

a first servo driver operable to control actuation of said first servo motor,

a second servo driver operable to control actuation of said second servo motor,

a first digital pack connected to said first servo driver which drives said first servo motor via said first servo driver,

a second digital pack connected to said second servo driver which drives said second servo motor via said second servo driver,

a sequencer connected to both said first digital pack and said second digital pack for controlling the operation of said first and said second servo motors so that when the tubular web of thermoplastic resin film is being advanced to a position suitable for the sealing and severing operation, said sealing and said cutting means are withdrawn from a position adjacent the web, and when the feed means ceases advancement of the tubular web of thermoplastic resin film, the sealing and severing operations commence,

digital dimension setting means connected to said first digital pack for operably permitting variable user control of a desired length of a bag made from the flat web of thermoplastic resin film by controlling the length of the web advanced by said feed means,

said timer being connected to both said second digital pack and said sequencer to control the amount of time said sealing means is engaged with said lower stationary surface, the time being a function of the thickness of the tubular web of thermoplastic resin film, so that a weld bead will be effected thereon and further the speed of web advance may be maintained,

a first proximity switch for detecting an upper stop position of said sealing means and producing a signal which actuates said second servo motor so that the tubular web of thermoplastic resin film may be advanced to a position suitable for sealing and slitting while said sealing means are vertically recessed from the tubular web of thermoplastic resin film, and

a second proximity switch for detecting a lower stop position of said sealing means and producing a start signal to said timer such that said sealing means will be juxtaposed with said tubular web of thermoplastic resin film the amount of time as controlled by said timer.

5,009,741

METHOD AND DEVICE FOR THE APPLICATION OF REVENUE STAMPS TO PACKS

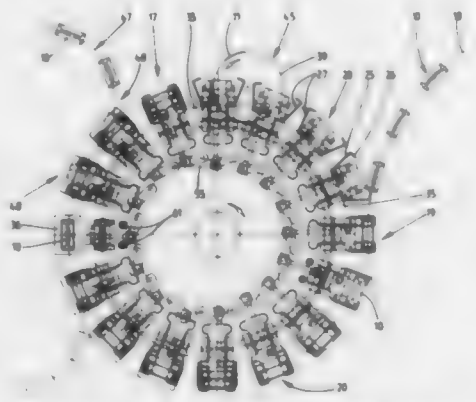
Heinz Focke, Verden, and Hans-Jürgen Bretthauer, Bremen, both of Fed. Rep. of Germany, assignors to Focke & Co. (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed Oct. 12, 1989, Ser. No. 420,489

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1988, 3835290

Int. Cl.[5] B65C *3/00*

U.S. Cl. 156—483 7 Claims



1. A mechanism for individually applying labels, such as revenue stamps, to faces of rectangularly shaped packs, said labels extending onto adjoining faces of the packs, comprising:

an endless label conveyor, provided with multiple pack transport sections, for continuously conveying said packs between processing stations of said mechanism, wherein said label conveyor has at least one axis around which the conveyor rotates, said axis being oriented perpendicular to a direction of rotation of said conveyor, each of said transport stations comprising:

a slide for moving each corresponding pack in a direction parallel to said axis, from a pack reception point to a pack transfer point, and

a label holder, with a mouth piece, said label holder arranged to hold the label against said mouth piece, and in a plane transverse to said axis,

said slide moving said pack through the mouth piece, and through the plane of said label, thereby causing said label to contact and stick to said pack,

wherein each label is adhered to each pack as said label conveyor rotates between processing stations.

5,009,742

METHOD AND APPARATUS FOR MAKING SEALING RINGS OF THE RADIAL TYPE WITH SEALING LIP OF FLUOROPLASTIC

Michel Saxod, Bourg, 52200 Langres, and Fabrice Fougerolle, Montlandon, 52600 Chalindrey, both of France

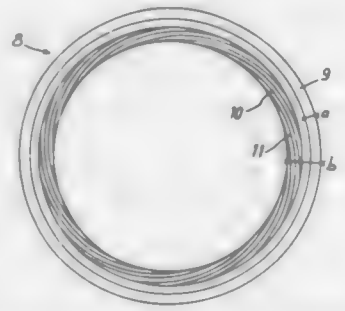
Division of Ser. No. 311,791, Feb. 17, 1989, abandoned. This application Feb. 6, 1990, Ser. No. 475,873

Claims priority, application France, Feb. 18, 1988, 88 01929

Int. Cl.[5] B44C *1/22*; B29C *37/00*; C03C *15/00, 25/06*

U.S. Cl. 156—633 4 Claims

1. A method of making a sealing ring of the radial type, having a reinforced elastomeric body and an annular sealing ring in the form of an annular fluoroplastic washer adhered to a mating surface on the elastomeric body, comprising steps of subjecting only an outer peripheral portion, corresponding in size to said mating surface, of the annular ring to chemical attack, while protecting an inner peripheral portion thereof from attack, to reduce the antiadhesive properties



of the washer only over said outer peripheral portion, and then

adhering said washer to the mating surface of said body.

5,009,743

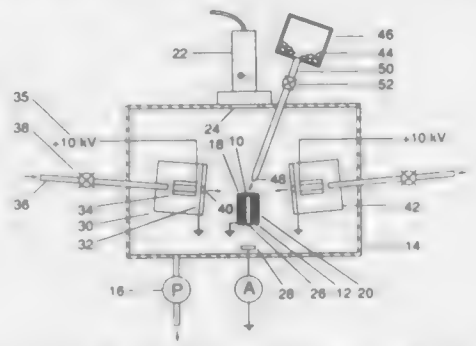
CHEMICALLY-ASSISTED ION BEAM MILLING SYSTEM FOR THE PREPARATION OF TRANSMISSION ELECTRON MICROSCOPE SPECIMENS

Peter R. Swann, Diablo, Calif., assignor to Gatan Incorporated, Pleasanton, Calif.

Filed Nov. 6, 1989, Ser. No. 431,401

Int. Cl.[5] H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—643 10 Claims



1. A method for the preparation of high quality specimens free from artefacts and suitable for high resolution transmission electron microscopy comprising the steps of:

(i) mounting a specimen in a vacuum chamber,

(ii) directing at the specimen an energetic, unfocused beam of ions neutrals, and

(iii) simultaneously directing at the specimen a separate, independent low energy molecular beam, said specimen being positioned such that the angle between the specimen surface and said energetic ion beam is between 0° and 10°, whereby said specimens may be thinned to electron transparency without the production of thinning artefacts.

5,009,744

METHOD OF MANUFACTURING LAMINATED CERAMIC ELECTRONIC COMPONENT

Harufumi Mandai; Yukio Tanaka; Shinichi Takakura, and Takuji Nakagawa, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Feb. 15, 1989, Ser. No. 311,097

Int. Cl.[5] C23F *1/00*

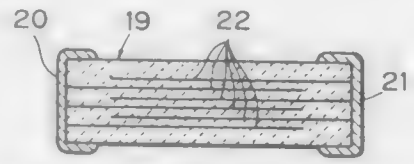
U.S. Cl. 156—656 4 Claims

1. A method of manufacturing a laminated ceramic electronic component having internal electrodes formed in a pattern, comprising the steps of:

forming a metal film on a back film by a thin film forming method;

removing part of said metal film from said back film to leave only specific parts of said metal film on said back film, said specific parts being arranged on said back film in an arrangement which corresponds to said internal electrode pattern to be formed on said ceramic green sheet; and

providing a ceramic green sheet for receiving said metal film;



transferring said metal film parts onto said ceramic green sheet from said back film to form said internal electrodes by contacting the green sheet with the back film/metal film component such that the metal film is transferred to the green sheet;

stacking a plurality of said ceramic green sheets on which respective said internal electrodes have been formed to thereby form said laminated ceramic electronic component having internal electrodes formed in a pattern.

5,009,745

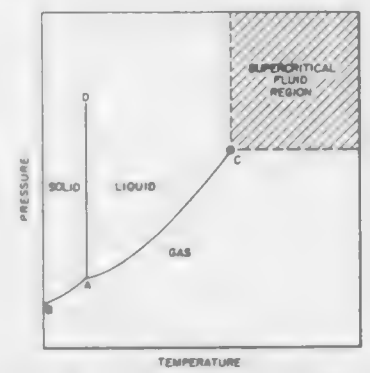
METHOD FOR REMOVING POLYCHLORINATED DIBENZODIOXINS AND POLYCHLORINATED DIBENZOFURANS FROM SECONDARY FIBERS USING SUPERCRITICAL CO_2 EXTRACTION

Shafi U. Hossain, Menasha, Wis., and Carol A. Blaney, Roswell, Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 12, 1990, Ser. No. 596,807

Int. Cl.[5] D21C *5/02*

U.S. Cl. 162—5 14 Claims



1. A method for treating cellulose-containing secondary fibers with a content of polychlorinated dibenzo-p-dioxin and-/or polychlorinated dibenzofuran comprising contacting the fibers with carbon dioxide under pressure and temperature conditions such that the carbon dioxide is a supercritical or near supercritical fluid and for a time sufficient to reduce the content of the polychlorinated dibenzo-p-dioxin and/or polychlorinated dibenzofuran.

5,009,746

METHOD FOR REMOVING STICKIES FROM SECONDARY FIBERS USING SUPERCRITICAL CO_2 SOLVENT EXTRACTION

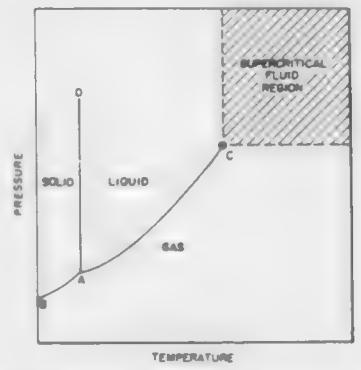
Shafi U. Hossain, Menasha, Wis., and Carol A. Blaney, Roswell, Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 12, 1990, Ser. No. 596,819

Int. Cl.[5] D21C *9/08, 5/02*

U.S. Cl. 162—5 15 Claims

1. A method for reducing the level of sticky contaminants in cellulose-containing secondary fibers containing sticky contaminants comprising contacting the fibers with carbon dioxide under pressure and temperature conditions such that the carbon dioxide is a supercritical or near supercritical fluid and for



a period of time sufficient to reduce the level of sticky contaminants associated with the fibers.

5,009,747

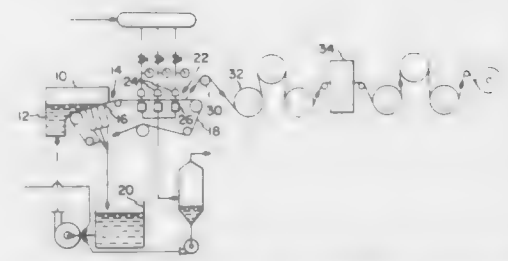
WATER ENTANGLEMENT PROCESS AND PRODUCT

Helen Viazmensky, South Windsor; Carl E. Richard, Enfield, and James E. Williamson, Suffield, all of Conn., assignors to The Dexter Corporation, Windsor Locks, Conn.

Filed Jun. 30, 1989, Ser. No. 374,482

Int. Cl.[5] D21H *27/02*

U.S. Cl. 162—115 16 Claims



1. A method of producing a fiber entangled nonwoven web material comprising the steps of forming a dilute homogeneous fiber furnish of papermaking fibers and more than about 30 percent by weight of long synthetic fibers suited for being dispersed in an aqueous media; depositing the fibers from the furnish on a paper forming wire at the wet end of a paper-making machine to provide a fluidized homogeneously dispersed fibrous base web material having a liquid content of about 75% by weight or more; subjecting the fibrous base web having said liquid content to direct impingement of a series of entangling liquid jets to provide a total energy input of up to about 0.2 hp-hr/lb web to very lightly entangle the fibers in said base web; drying the entangled web and treating the web with a binder in an amount sufficient to provide a binder pickup of less than about 20% by weight based on the weight of the treated material.

5,009,748

PROCESS AND SYSTEM FOR CONTROLLING THE BASIS WEIGHT OF A SHEET MATERIAL

Ramesh Balakrishnan, Stanford, and Mathew G. Boissevain, Los Altos, both of Calif., assignors to Measurex Corporation, Cupertino, Calif.

Filed May 23, 1988, Ser. No. 197,752

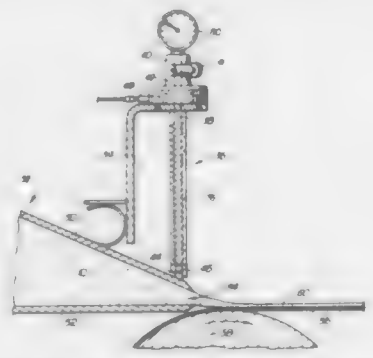
Int. Cl.[5] D21F *11/00*

U.S. Cl. 162—198 5 Claims

1. A process for controlling the shape of a slice lip of a paper making machine headbox used in the production of a paper sheet, comprising the steps of:

measuring the force of a plurality of slice rods against the slice lip at a plurality of locations along the span of the slice lip across the sheet;

computing the forces of the slice rods against the slice lip at



each location which are required to achieve a desired sheet basis weight profile;

adjusting the forces of the slice rods against the slice lip so that the measured forces substantially equal the computer forces.

5,009,749

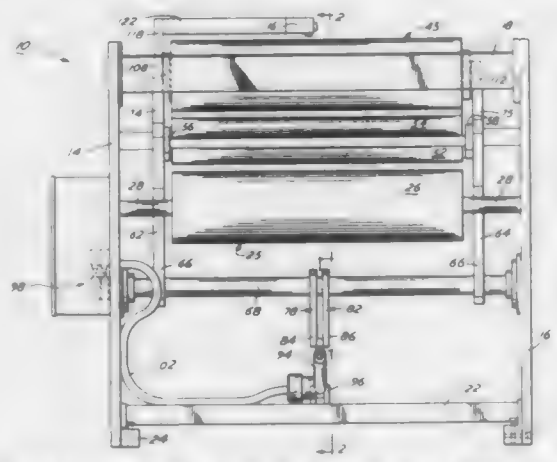
WEB DECURLER

Roger Cederholm, Roscoe, Ill., and Christopher J. Plude, Beloit, Wis., assignors to Martin Automatic, Inc., Rockford, Ill.

Filed Aug. 9, 1990, Ser. No. 564,855

Int. Cl.[5] B65H *23/34*

U.S. Cl. 162—271 **18 Claims**



1. An improved web decurler for selectively removing different degrees of curl from a running web, while maintaining web registration, as the running web passes along a web path that is defined in and through the web decurler, with the running web coming to the web decurler from a first webprocessing operation that is located upstream of the web decurler and proceeding from the web decurler to a second web-processing operation that is located downstream from the web decurler and that requires, for proper operation, web registration to exist between the second web processing operation and the running web upstream of the web decurler, the improved web decurler comprising:

a first roller assembly having a first, relatively large diameter, rotatable roller that has a central longitudinal axis and an outer peripheral surface, that is disposed adjacent to a first part of the web path in the web decurler so that the running web may wrap about a portion of its peripheral surface as the running web passes through the first part of the web path, and whose central longitudinal axis is fixed, relative to the web decurler;

a second roller assembly having a second, relatively large diameter, rotatable roller that has a central longitudinal axis and an outer peripheral surface, that is disposed adjacent to a second part of the web path in the web decurler so that the running web may wrap about a portion of its peripheral surface as the running web passes through the second part of the web path, and whose central longitudinal axis is fixed relative to the web decurler;

a third roller assembly having a third, relatively large diameter, rotatable roller that has a central longitudinal axis and an outer peripheral surface, that is disposed adjacent to a third part of the running web path in the web decurler so that the running web may wrap about a portion of its peripheral surface as the running web passes through the third part of the web path, that is disposed between the first and second rollers along the web path, and having means for maintaining the central longitudinal axis of said third roller a fixed predetermined distance from the central longitudinal axis of one of the first and second roller and means for moving said third roller about the central longitudinal axis of said one roller;

a fourth roller assembly having a fourth, relatively small diameter, rotatable roller that has a central longitudinal axis and an outer peripheral surface, that is disposed adjacent to a fourth part of the web path so that the running web may pass about a portion of its peripheral surface as the running web passes through the fourth part of the web path, that is disposed between the third roller and the other of the first and second rollers along the web path, and whose central longitudinal axis is spaced from and movable about a preselected axis which, in turn, is spaced from the central longitudinal axes of the first, second and third rollers;

means for supporting the first, second, third and fourth roller assemblies so that the first, second, third and fourth rollers may rotate about their respective central longitudinal axes; and

means for adjustably positioning the third roller and the fourth roller with respect to each other, to the web path, and to the first and second rollers which are structured and arranged so that the length of the web path of the running web in the web decurler remains constant regardless of the adjusted positions of the third roller and the fourth roller and so as to control the wrap of the running web about the outer peripheral surfaces of the first, second, third and fourth rollers and to thus control the degree of curl removed from the running web, whereby the running web, although processed as a web, will lie flat, when cut and delivered as free sheets, downstream of the second web processing operation.

5,009,750

PROCESS AND APPARATUS FOR THE MANUFACTURE OF A METAL FOIL

Emil Hula, Giesshübl, and Gerald Maresch, Mödling, both of Austria, assignors to Maschinenfabrik Andritz Actiengesellschaft, Graz-Andritz, Austria

Filed Nov. 15, 1989, Ser. No. 436,638

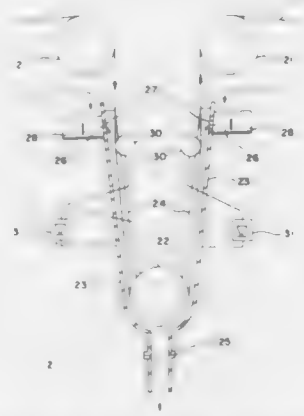
Claims priority, application Austria, Nov. 15, 1988, 2801/88; Sep. 28, 1989, 2263/89

Int. Cl.[5] C25D *1/04*

U.S. Cl. 204—13 **9 Claims**

1. A process for the manufacture of a metal foil by deposition of an electrolyte on an endless carrier belt, said process including the steps of: providing at least one vertically extending wall defining a vertically extending anode element, providing the belt with an upper deflecting roll adjacent an upper portion of said wall and a lower deflecting roll adjacent a lower portion of said wall, said rolls being positioned to provide a vertically extending run of the belt adjacent the anode element, said run of the belt and the anode element defining therebetween a vertically extending passage for electrolyte, providing lateral sealing elements to enclose said passage,

providing a flow becalming vessel for electrolyte adjacent an upper end of said wall, said vessel having an overflow leading into an upper end of said passage, providing an adjustable cross-section drainage aperture at a lower end of said wall for draining electrolyte from said passage, supplying electrolyte to



said passage from said vessel, adjusting the cross-sectional area of said drainage aperture to control the electrolyte flow through said passage, causing the belt to traverse said run, and providing electric current flow between the anode element and said run of the belt at a varying current density along the length of said run to deposit metal on the belt and form a foil.

5,009,751

PROCESS FOR SEPARATION OF HAFNIUM TETRACHLORIDE FROM ZIRCONIUM TETRACHLORIDE

Tomoo Kirihara; Ippei Nakagawa, both of Aichi; Yoshinobu Seki, Tokai; Yutaka Honda, Saraki, and Yasuo Ichihara, Saraki, all of Japan, assignors to Mitsubishi Nuclear Fuel Company, Ltd., Tokyo, Japan

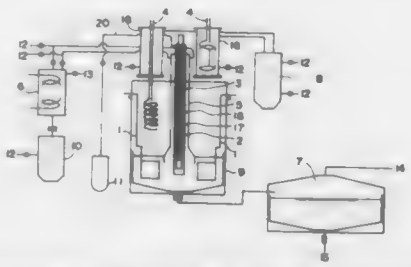
Filed Jan. 5, 1989, Ser. No. 293,791

Claims priority, application Japan, Jan. 12, 1988, 63-4416

The portion of the term of this patent subsequent to May 15, 2007, has been disclaimed.

Int. Cl.[5] C01G *25/04, 27/04;* C25B *1/00*

U.S. Cl. 204—61 **6 Claims**



1. A process for a separation of hafnium tetrachloride from zirconium tetrachloride comprising the following steps of:

(a) introducing zirconium tetrachloride containing about 2–4 wt % of hafnium tetrachloride into an electrolytic cell equipped with a pair of first and second cathodes, and a third electrode and filled with a molten salt;

(b) dissolving the zirconium tetrachloride of step (a) in the molten salt of step (a) to make an electrolytic bath;

(c) running a first phase electrolysis, i.e. electrolytic reduction of the dissolved zirconium tetrachloride under maintenance of an initial concentration of the zirconium tetrachloride by supplying zirconium tetrachloride of step (a) to the electrolytic bath;

(d) producing zirconium trichloride containing a lower hafnium content than that of the dissolved zirconium tetrachloride of steps (b) and (c) at a first cathode;

(e) running a second phase electrolysis using the pair of first and second cathodes, but switching the first cathode to become an anode, and using the second cathode;

(f) supplying the zirconium tetrachloride to the second cathode side of step (e);

(g) producing the zirconium trichloride of a lower hafnium content than that of the dissolved zirconium tetrachloride at the second cathode and evolving gaseous zirconium tetrachloride at the anode by electrolytic oxidation of the zirconium trichloride produced in the first phase electrolysis;

(h) recovering the evolved zirconium tetrachloride as zirconium tetrachloride with a lower hafnium content than that of the dissolved zirconium tetrachloride and the zirconium trichloride produced at the second cathode in step (g);

(i) subsequently continuing the second phase electrolysis as set forth in steps (e), (f), (g) and (h) by changing over polarities of the second cathode and the anode, when a concentration of zirconium trichloride at the anode decreases;

(j) ceasing the supply of zirconium tetrachloride of step (f) when the vapor pressure value of hafnium tetrachloride, which has become concentrated in the electrolytic bath reaches about 1/10 of that of the dissolved zirconium tetrachloride, and continuing the second phase electrolysis until most of the zirconium trichloride produced at the second cathode is oxidized and evolved;

(k) transferring the electrolytic bath to a separate vessel; and

(l) separating the concentrated hafnium tetrachloride from the molten salt by raising the temperature of the transferred electrolytic bath to about 850° C.

5,009,752

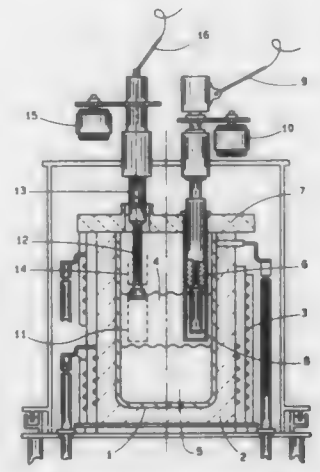
PROCESS AND APPARATUS FOR RECOVERY OF FISSIONABLE MATERIALS FROM SPENT REACTOR FUEL BY ANODIC DISSOLUTION

Zygmunt Tomczuk, Orland Park; William E. Miller, Naperville; Raymond D. Wolson, Lockport, and Eddie C. Gay, Park Forest, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 25, 1989, Ser. No. 398,578

Int. Cl.[5] C25C *3/00*

U.S. Cl. 204—64 R **15 Claims**



1. A process for separating uranium and plutonium from chopped spent metal-clad fuel pins comprising the steps of:

providing an electrolyte cell having a cadmium pool, an electrolyte pool, an improved anode basket assembly, cathode means, means for flushing said improved anode

basket assembly, and means for providing electrical power to said improved anode basket assembly and wherein said improved anode basket assembly comprises a metal shaft having a top end and a bottom end, said top end connected to means for rotation capable of imparting rotation to said shaft, a plurality of perforated metal boxes having means for attaching said plurality of perforated metal boxes around the periphery of the bottom end of said shaft and extending radially outward therefrom, means for lowering and raising said metal boxes into said electrolyte pool and means for carrying an electric current from said electrical power means to said plurality of perforated metal boxes;

loading chopped spent fuel pins having a metal cladding comprising an alloy of uranium and plutonium into said improved anode basket assembly until said chopped spent fuel pins form a tightly packet configuration;

lowering said improved anode basket assembly containing said chopped spent fuel pins to a first position in said electrolyte pool;

providing an electric current from said electrical power means to said improved anode basket assembly and said cathode means at a voltage sufficient to form uranium cations and plutonium cations, and by creating a flushing action of said electrolyte pool through said chopped spent fuel pins by using said means for flushing;

raising said improved anode basket assembly out of said electrolyte pool to a second position and creating a drying action to remove any of said electrolyte pool by using said means for flushing; and

recovering said metal cladding from said improved anode basket assembly.

5,009,753

PREPARATION OF DIHYDROXYDIONES

Dieter Hermeling, Neustadt; Rainer Becker, Bad Durkheim, and Walter Dobler, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

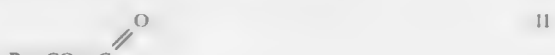
Filed Oct. 18, 1989, Ser. No. 423,224

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1988, 3837954

Int. Cl.[5] C25B *3/00*

U.S. Cl. 204—75 **8 Claims**

1. A process for the preparation of a dihydroxydione of the formula



R—CO—CH(OH)—CH(OH)—CO—R I

where R is alkyl, which comprises:

subjecting an aldehyde of the formula

II

where R has the abovementioned meaning, to electrolysis in a water-containing electrolyte which has a pH of about 4 to 5 while using a cathode selected from the group consisting of graphite, lead, iron, nickel and steel.

5,009,754

CONSUMPTION OF HYPOCHLORITE VALUES CONTAINED IN PERCHLORATE SOLUTIONS OF ELECTROLYSIS

Christian Pralus, Saint-Cyr-Au-Mont-d'Or, France, assignor to Atochem, Puteaux, France

Filed Feb. 22, 1990, Ser. No. 482,920

Claims priority, application France, Feb. 22, 1989, 89 02536

Int. Cl.[5] C25B *1/28*

U.S. Cl. 204—82 **6 Claims**

1. A process for the consumption of the hypochlorite values, ClO^- ions, contained in a solution of an alkali metal perchlorate produced by electrolysis of an aqueous solution of a chlorate of said alkali metal, without adversely affecting the valence state of hexavalent chromium values also contained therein, comprising intimately contacting such perchlorate solution with an effective amount of hydrogen peroxide such that the molar ratio of available hydrogen peroxide/hypochlorites is at least one.

5,009,755

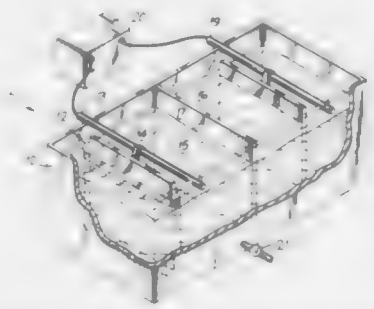
REFINING METHOD

Peter S. Shor, 230 East 15th St., New York, N.Y. 10003

Filed Jan. 22, 1990, Ser. No. 468,369

Int. Cl.[5] C25C *1/20, 7/00*

U.S. Cl. 204—111 **9 Claims**



1. In a halide-electrolyte for electrolyzing gold-containing anodes for gold recovery, wherein said electrolyte consists essentially of an aqueous halide-ion source containing initially an impregnating agent for modifying the electropotential of the metallic gold upon application of electrolysis current and forming a pregnant electrolyte for continuously electrolyzing and dissolving the gold, said impregnating agent being a nascent oxygen source present by volume in said electrolyte in an amount of at least one part per million; the improvement wherein said halide ion source as electrolyte is essentially an aqueous solution of ammonium chloride, to provide sufficient ammonium ions to complex with and to form electrolyte-soluble silver and copper ammonium complexes with any silver and/or copper in said anodes.

5,009,756

CHEMICAL METHOD OF AVOIDING A RAINBOW EFFECT CAUSED BY THE LAYER OF OXIDE PRODUCED UPON THE BRIGHTENING OF PARTS OF ALUMINUM OR ALUMINUM ALLOYS

Klaus-Dieter Bartkowski, Krefeld, and Peter Venn, Wuppertal, both of Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany

Filed May 23, 1990, Ser. No. 527,587

Claims priority, application Fed. Rep. of Germany, May 26, 1989, 3917186

Int. Cl.[5] C25D *11/24;* **C25F** *3/20*

U.S. Cl. 204—129.35 **3 Claims**

1. A method for avoiding a rainbow effect which is caused by the layer of oxide produced in the electrolytic-alkaline brightening of aluminum or aluminum alloy parts, comprising, after said brightening, subjecting said parts to a further treatment in which the parts are first washed in water and then exposed in a chromic acid solution and finally washed in a sodium hydrosulfite solution.

5,009,757

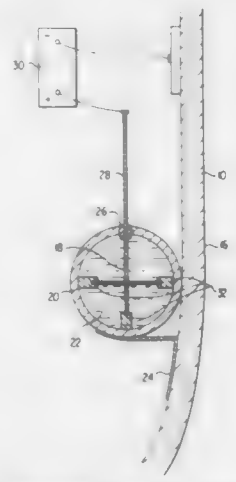
ELECTROCHEMICAL SYSTEM FOR THE PREVENTION OF FOULING ON STEEL STRUCTURES IN SEAWATER

William J. Riffe, and Jack D. Carter, Jr., both of Morehead City, N.C., assignors to Marine Environmental Research, Inc., Morehead City, N.C.

Continuation of Ser. No. 145,275, Jan. 19, 1988. This application Jul. 5, 1990, Ser. No. 548,214

Int. Cl.[5] C23F *13/00*

U.S. Cl. 204—147 **22 Claims**



1. A system for preventing fouling or corrosion of a surface or surfaces of a marine structure in contact with a water environment, said marine structure having an interior surface and an exterior surface, said system comprising:

(a) a conductive zinc coating in conductive contact with at least part of said exterior surface, wherein when said marine structure is in contact with said water environment, said conductive zinc coating forms an interfacial layer between said exterior surface and said water environment; and

(b) means for inducing and maintaining a negative capacitive charge on said conductive zinc coating sufficient to prevent fouling or corrosion of said exterior surface when said exterior surface is in contact with said water environment, said means comprising a power supply having a terminal of a first polarity conductively connected to said exterior surface and a terminal of opposite polarity capacitively connected to said exterior surface, said power supply and said capacitive connection means being both protected from contact by said water environment.

5,009,758

CLOSED NONCONTINUOUS ELECTRODEPOSITION PAINTING SYSTEM

Kenji Okada, Riverview, and Hiroshi Ueno, Grosse Ile, both of Mich., assignors to Mazda Motor Manufacturing (USA) Corp., Flat Rock, Mich.

Filed Aug. 16, 1988, Ser. No. 233,180

Int. Cl.[5] G25D *13/24;* **B05C** *11/10*

U.S. Cl. 204—180.8 **24 Claims**

18. A closed, noncontinuous process for separating and filtering paint into paint rich and solvent rich components by using paint holding means, solvent holding means and filtration means, said process comprising the steps of:

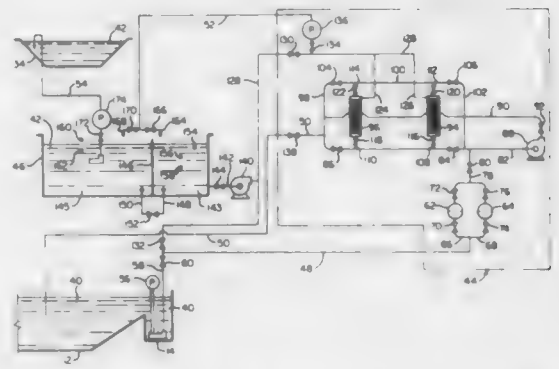
(a) sensing a first level of solvent in said solvent holding means and conveying paint from said paint holding means to said filtration means and filtering said paint to separate it into paint rich and solvent rich components;

(b) conveying said paint rich components to said paint holding means and conveying said solvent rich components to said solvent holding means;

(c) sensing a second level of solvent in said solvent holding means higher than said first level of solvent and stopping the flow of paint through said filtration means and conveying solvent from said solvent holding means to said filtration means, through said filtration mean sand to said paint holding means;

(d) sensing a third level of solvent in said solvent holding means lower than said second level of solvent and stopping the flow of solvent from said solvent holding means to said filtration means and from said filtration means to said paint holding means;

(e) sensing a fourth level of solvent in said solvent holding mean slower than said second level of solvent and higher than said third level of solvent and reversing the flow of



solvent through said filtration means and conveying said solvent through said filtration means and to said paint holding means; and

(f) sensing a fifth level of solvent in said solvent holding means lower than said fourth level of solvent and higher than said third level of solvent and stopping the flow of solvent from said filtration means to said paint holding means;

wherein steps (a)–(f) are performed in response to signals generated from sensors located in said solvent holding means which sense the level of solvent in said solvent holding means wherein steps (e) and (f) are performed prior to step (d).

5,009,759

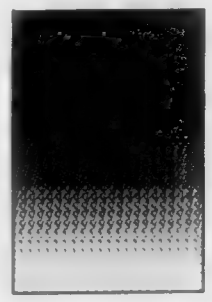
METHODS FOR PRODUCING AGAROSE GELS HAVING VARIABLE PORE SIZES

Phillip Serwer, and Gary A. Griess, both of San Antonio, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Sep. 22, 1989, Ser. No. 411,373

Int. Cl.[5] G01N *27/26;* **B01D** *57/02*

U.S. Cl. 204—182.8 **59 Claims**



1. A method for controlling the pore size of an agarose gel, the method including the steps of:

(a) preparing an aqueous solution of agarose; and

(b) adding said aqueous solution of agarose to a mold with a concentration gradient of at least one of a salt or buffer; and

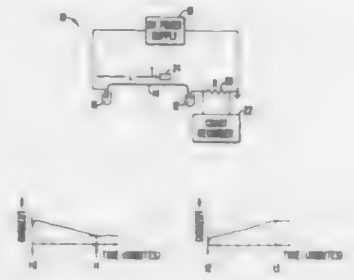
(c) gelling the agarose, said concentration gradient determining pore size of subsequently gelled agarose.

5,009,760

SYSTEM FOR MEASURING ELECTROKINETIC PROPERTIES AND FOR CHARACTERIZING ELECTROKINETIC SEPARATIONS BY MONITORING CURRENT IN ELECTROPHORESIS

Richard N. Zare, Stanford; Xiaohua Huang, Mountain View, and Jack I. Ohms, Palo Alto, all of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Continuation-in-part of Ser. No. 386,991, Jul. 28, 1989, abandoned. This application Dec. 29, 1989, Ser. No. 456,594
Int. Cl.[5] G01N *27/26*; B01D *57/02*
U.S. Cl. 204—183.3 13 Claims



1. A method for determining the electrokinetic properties of an electrolyte in an electrokinetic separation by means of an elongated capillary tube having an inlet end and an outlet end, said method comprising:

introducing a first electrolyte into the tube at its inlet end;

introducing a second electrolyte into the capillary tube at its inlet end, wherein said second electrolyte has an electrical resistivity which differs from that of the first electrolyte but substantially the same chemical properties as the first electrolyte;

applying a voltage to and current through the electrolyte to cause electroosmotic flow of the electrolytes towards the outlet end and to cause the second electrolyte to replace the first electrolyte continuously;

measuring the current through the electrolytes as a function of time; and

determining the electroosmotic velocity of the first or second electrolyte.

5,009,761

METHOD OF PRODUCING AN OPTICAL COMPONENT, AND COMPONENTS FORMED THEREBY

Dennis W. Robinson, Bradford on Avon, England, assignor to Spafax Holdings Plc., United Kingdom

Filed Sep. 24, 1984, Ser. No. 654,210
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—192.14 14 Claims

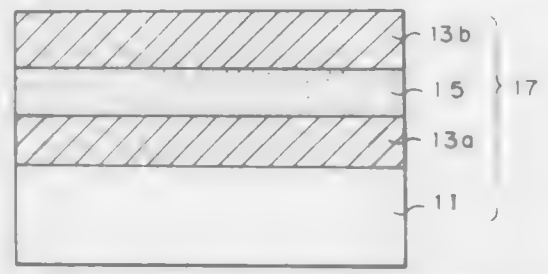
1. A method of making an optical component having an abrasion resistant specular reflective finish on a plastics material comprising subjecting the plastics material to a degreasing operation by vapor degreasing in a fluorocarbon solvent and then transferring the plastics material to an ultrasonically vibrated heated solution of the same solvent, performing a molecular cleaning operation on the plastics material, applying a layer to the plastics material, said layer comprising a material selected from the group consisting of glass and metal oxides of the metal to be used as the specular reflective material, said layer being applied in a vacuum vessel in an atmosphere of oxygen and argon, and being applied to a thickness of between about 0.5 and about 1.0 microns, and subsequently applying a coating of specular reflective material to the layer, said coating being between about 0.5 and about 5.0 microns thick thereby producing said abrasion resistant specular reflective finish on said plastics material.

5,009,762

MAGNETO-OPTICAL RECORDING MEDIUM HAVING PROTECTIVE FILM WITH INCREASED KERR EFFECT AND IMPROVED PROTECTION CHARACTERISTIC AND MANUFACTURING METHOD OF THE SAME

Yoshinori Maeno; Masanobu Kobayashi, and Kayoko Oishi, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 376,591, Jul. 7, 1989, Pat. No. 4,950,947. This application Jan. 18, 1990, Ser. No. 466,947
Claims priority, application Japan, Jul. 8, 1988, 63-170567; Mar. 2, 1989, 1-50467
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—192.16 5 Claims



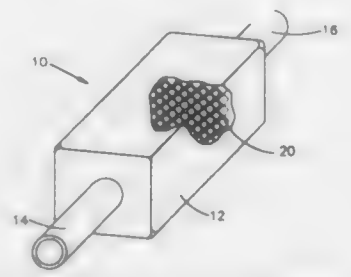
1. In a method of manufacturing a magneto-optical recording medium including at least one protective film and a magnetic film respectively formed on a substrate by depositing said films on said substrate, the improvement wherein said protective film is deposited by simultaneously sputtering onto said substrate a protective film formed from a film forming target including at least one compound selected from the group consisting of strontium titanate ($SrTiO_3$) or barium titanate ($BaTiO_3$) and a composition adjusting target constituted with titanium (Ti) or titanium oxide (TiO_y), where y is a positive number.

5,009,763

HONEYCOMB SOLID OXIDE ELECTROLYTIC CELL ASSEMBLY AND METHOD

Ralph E. Hise, Shaker Heights, Ohio, assignor to Advanced Technologies Management, Inc., Shaker Heights, Ohio

Filed Apr. 24, 1989, Ser. No. 341,869
Int. Cl.[5] C25B *9/00, 15/08, 11/03, 11/04*
U.S. Cl. 204—255 20 Claims



1. An apparatus for the reduction and oxidation of constituents of a fluid, said apparatus comprising:

an ion conducting ceramic structure;

a passage extending through said structure;

a first porous electrode at least partially lining the passage, and

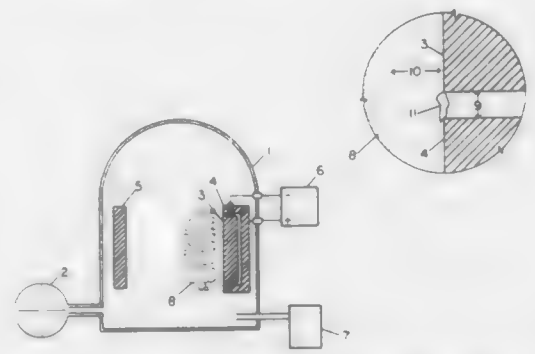
a second and a third porous electrode on the structure external to the passage, said second and third electrodes being oppositely disposed about the first electrode and being adapted for the application of an electrical potential difference between said second and third electrodes, whereby reduction and oxidation reactions may be made to occur concurrently about the first porous electrode.

5,009,764

APPARATUS FOR REMOVAL OF ELECTRICAL SHORTS IN A SPUTTERING SYSTEM

Jerry D. Siefkes, Fort Collins; John G. Harpold, Bellvue, and Douglas S. Schatz, Fort Collins, all of Colo., assignors to Advanced Energy Industries, Inc., Fort Collins, Colo.

Continuation of Ser. No. 297,707, Jan. 13, 1989. This application Mar. 16, 1990, Ser. No. 494,554
The portion of the term of this patent subsequent to Jun. 26, 2007, has been disclaimed.
Int. Cl.[5] C23C *14/54*
U.S. Cl. 204—298.08 20 Claims



1. An apparatus for removing an electrical short caused by a flake in a sputtering system having a power supply comprising:

a. a sensor for detecting the presence of an electrical short caused by a flake across said power supply; and

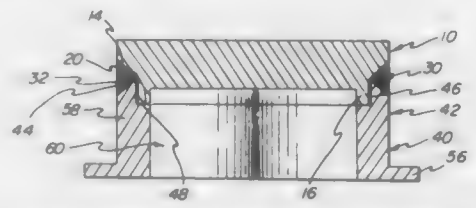
b. a means for automatically removing said flake by manipulating said power supply in a manner which melts said flake.

5,009,765

SPUTTER TARGET DESIGN

Sohail S. Qamar, Hilliard; Harry W. Conard, and Lowell E. Hamilton, both of Orient, all of Ohio, assignors to Tosoh SMD, Inc., Grove City, Ohio

Filed May 17, 1990, Ser. No. 525,361
Int. Cl.[5] C23C *14/34*
U.S. Cl. 204—298.12 20 Claims



1. A sputter target assembly of the type wherein a cooling medium is to be provided in heat exchange relation with said target, comprising:

a sputter target having an upper surface carrying the material to be sputtered, an outer, peripheral surface and a cooling surface;

backing means comprising an upper mounting section positioned adjacent to the sputter target and having an outer peripheral surface, wherein the backing means and the target cooling surface, together, define a chamber adapted for reception of the cooling medium with the peripheral surfaces of the target member and the backing means nested adjacent each other to define an interface,

recess means formed at the interface of the sputter target and the backing means along adjacent peripheral surfaces of the sputter target and the backing means, and

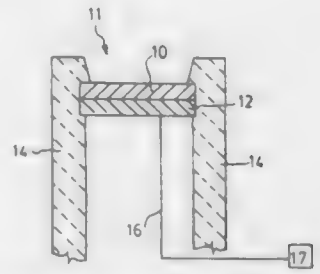
metal bonding means disposed in the recess means for fixedly retaining the backing means and the sputter target together.

5,009,766

METAL OXIDE ELECTRODES

Imants R. Lauks, Morrisville, Pa., assignor to I-Stat Corporation, Princeton, N.J.

Continuation of Ser. No. 153,189, Feb. 8, 1988, which is a continuation of Ser. No. 390,445, Aug. 2, 1988, which is a continuation of Ser. No. 489,851, Mar. 2, 1990. This application Oct. 30, 1990, Ser. No. 608,601
Int. Cl.[5] G01N *27/46*
U.S. Cl. 204—419 20 Claims



1. A metal oxide electrode sensitive to hydrogen ions comprising:

a mixture of at least one insulating material having a density of binding sites sufficiently large to be sensitive to hydrogen ions, and at least one conductive metal oxide selected from the Group VIIIB metal oxides,

wherein the size of the particles of conductive metal oxide in said mixture is sufficiently small as to not exhibit bulk conductive properties, thereby reducing the susceptibility of said mixture to redox interference, while the molar ratio of said conductive metal oxide to said insulating material is sufficiently large than the resistivity of said mixture is in the range of 10^{10} to 10^{14} ohm-cm, whereby the electrode, as a whole, has sufficient conductivity to operate in a Faradaic configuration.

5,009,767

RECYCLE OF OILY REFINERY WASTES

Mark P. Bartilucci, S. Melbourne, Australia; Grant G. Karsner, Voorhees Township, and William J. Tracy, III, Sewell, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 151,380, Feb. 2, 1988, Pat. No. 4,874,505. This application Sep. 21, 1989, Ser. No. 410,434
The portion of the term of this patent subsequent to Oct. 17, 2006, has been disclaimed.
Int. Cl.[5] C10G *55/04*
U.S. Cl. 208—85 24 Claims

1. A process for disposing of petroleum containing sludge comprising:

(i) segregating waste oil-containing sludges into a first sludge and a second sludge, the first sludge being of high oil content relative to the second sludge and the second sludge being of high water content relative to the first sludge;

(ii) dewatering the first, high oil content sludge;

(iii) introducing the dewatered sludge into a delayed coking drum under delayed coking conditions in the presence of a liquid coker hydrocarbon feedstock to form coke;

(iv) introducing the second, high water content sludge into a delayed coking drum to quench the coke formed in the coking drum.

5,009,768

HYDROCRACKING HIGH RESIDUAL CONTAINED IN VACUUM GAS OIL

Roberto Galiasso; Alfredo Morales, and Jose A. Salazar, all of Caracas, Venezuela, assignors to Intevep, S.A., Caracas, Venezuela

Filed Dec. 19, 1989, Ser. No. 452,389
Int. Cl.[5] C10G *69/04*
U.S. Cl. 208—89 20 Claims

1. A hydrocatalytic process for producing diesel and gasoline from high-residual vacuum gas oil, which comprises:

(a) contacting high-residual vacuum gas oil feedstock with a fixed bed hydrodemetallization (HDM) catalyst composed of elements selected from Groups VIb and VIII of the Periodic Table in the presence of hydrogen and under moderate operating conditions to achieve at least 80% by weight of metal removal;

(b) conveying product from step (a) together with light cycle oil (LCO), heavy cycle oil (HCO) or a mixture thereof from fluid catalytic cracking (FCC) to a second catalyst bed, which is composed of a combination of catalysts, consisting of elements selected from Groups VIb, VIII and Va of the Periodic Table, and wherein said catalysts are present in proportions ranging from 0 to 70% by volume at the top and from 30 to 100% by volume at the bottom of the second catalyst bed, and passing said product through said second catalyst bed in the presence of hydrogen and under operating conditions substantially the same as those in step (a);

(b') transmitting product from step (b) through a third catalyst bed consisting of an element selected from Groups VIb and VIII of the Periodic Table supported on a silica-alumina base, and where said catalysts are present in an amount which varies from 30 to 50% of total catalyst volume, and passing said product through the third catalyst bed in the presence of hydrogen and under substantially the same or different operating conditions from those of step (a); and

(c) separating diesel fuel and naphthas from the product from step (b) or from step (b'), recovering the diesel fuel and then subjecting the resulting product to catalytic cracking (FCC).

5,009,769

PROCESS FOR CATALYTIC CRACKING OF HYDROCARBONS

Alan R. Goelzer, Atkinson, N.H., assignor to Stone & Webster Engineering Corporation, Boston, Mass.

Continuation of Ser. No. 307,329, Feb. 6, 1989, abandoned. This application Mar. 19, 1990, Ser. No. 496,164
Int. Cl.[5] C10G *11/18, 51/06*
U.S. Cl. 208—113 5 Claims

1. In a fluidized catalytic cracking-regeneration process for cracking hydrocarbon feedstocks or the vapors thereof with a cracking catalyst consisting of separate first and second catalyst regeneration zones, wherein said catalyst is regenerated in said first and second regeneration zones, successively, by combusting hydrocarbonaceous deposits on the catalyst in the presence of an oxygen-containing gas under conditions effective to produce a first regeneration zone flue gas rich in carbons monoxide and a second regeneration zone flue gas rich in carbon dioxide, wherein temperatures in the first regeneration zone range from about 1100° F. to about 1300° F., and temperatures in the second regeneration zone range from about 1300° F. to about 1800° F., wherein the improvement consists of:

(a) cracking a first hydrocarbon feed comprising gas oil, residual oil boiling range material or mixtures thereof in a first elongated riser reactor in the presence of regenerated cracking catalyst supplied from the second catalyst regeneration zone at a temperature of at least 1300° F., a catalyst-to-oil ratio of from 5 to 10, and residence time of from 1 to 4 seconds and where coke is deposited on said catalyst in an amount less than 1.2 weight percent thereof, to obtain vaporous conversion products of the first hydrocarbon feed comprising a heavy naphtha fraction and materials lower boiling than said heavy naphtha fraction, a light cycle oil, a heavy cycle oil, and materials higher boiling than said heavy cycle oil, while simultaneously

(b) cracking a second hydrocarbon feed comprising virgin naphtha, intermediate and heavy cracked naphtha boiling range material or mixtures thereof, having a boiling point to about 450° F., in a second elongated riser reactor in the presence of regenerated cracking catalyst supplied from the second catalyst regeneration zone at a temperature of at least 1300° F., a catalyst-to-oil ratio of from 3 to 12, and residence time of from 1 to 5 seconds, and where coke is deposited on said catalyst in an amount less than 0.5 weight percent thereof, to obtain vaporous conversion products of the second hydrocarbon feed comprising gasoline boiling range material having a high aromatic content and octane number and lighter hydrocarbon material from a light cycle oil material, and

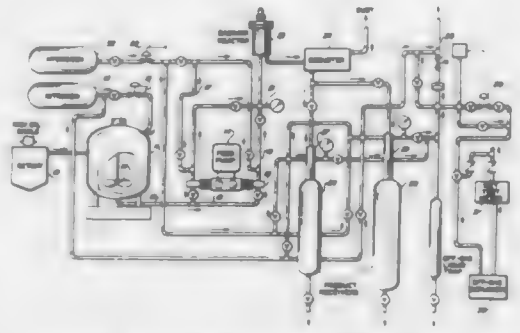
(c) combining the vaporous conversion products from the first and second elongated riser reactors in a common disengaging zone therein separating entrained catalyst particles from vaporous product material and passing the combined conversion products to a fractional distillation zone to recover at least a gasoline boiling range material fraction and lighter gaseous hydrocarbon material fraction, a light cycle oil boiling range material fraction and a heavy naphtha boiling range material fraction including slurry oil and higher boiling material fractions.

5,009,770

SIMULTANEOUS UPGRADING AND DEDUSTING OF LIQUID HYDROCARBON FEEDSTOCKS

Jeffrey T. Miller, Naperville, Ill., and Albert L. Hensley, Jr., Munster, Ind., assignors to Amoco Corporation, Chicago, Ill.

Filed Aug. 31, 1988, Ser. No. 238,929
Int. Cl.[5] C10G *13/02, 23/00*
U.S. Cl. 208—209 10 Claims



1. A process for simultaneously upgrading and dedusting liquid hydrocarbon feedstocks comprising the steps of:

(a) injecting dust particulate-containing raw retort effluent product stream from a feed line into a catalytic hydrotreater capable of agitating the product stream during hydrotreatment;

(b) agitating the product stream with a hydrotreating gas upstream of said hydrotreater to substantially prevent settling of particulate matter in the feed line;

(c) agglomerating said particulates to enhance solid-liquid separation and removing at least 90% of sulfur and nitrogen contaminants to produce synthetic crude oil by hydrotreating said product stream in the presence of a hydroprocessing catalyst at a temperature of from about 760° to about 825° F., under a hydroprocessing gas pressure of from about 1500 to about 2500 psi and at a space velocity of from about 0.1 to about 6.0 hr^{-1}; and

(d) substantially separating the agglomerated particulates from the hydrotreated oil.

5,009,771

HYDROCONVERSION PROCESS USING MIXED CATALYST SYSTEM

Frederick T. Clark, Wheaton, Ill.; Albert L. Hensley, Jr., Munster, Ind.; David Lyzinski, Wheaton, Ill., and Lawrence B. Peck, Houston, Tex., assignors to Amoco Corporation, Chicago, Ill.

Filed Mar. 30, 1990, Ser. No. 502,297
Int. Cl.[5] C10G *45/04*
U.S. Cl. 208—216 PP 16 Claims

1. A process for the hydrodemetallization, hydrodesulfurization, hydrodenitrogenation, and hydroconversion of a hydrocarbon feedstock containing asphaltenes, metals, and Shell hot filtration solids precursors which comprises contacting said feedstock with hydrogen under conversion conditions in the presence of a catalyst mixture comprising a first catalyst composition comprising a porous refractory inorganic oxide wherein said first catalyst composition possesses a pore volume of less than about 0.10 cc/g in pores having a diameter greater than about 200 Angstroms, a pore volume of less than about 0.02 cc/g in pores having a diameter greater than about 800 Angstroms, and a maximum average mesopore diameter of about 130 Angstroms; and a second catalyst composition comprising a porous refractory inorganic oxide wherein said second composition possesses a pore volume of greater than about 0.07 cc/g in pores having a diameter greater than about 800 Angstroms.

5,009,772

SOLVENT EXTRACTION PROCESS

Stephen R. Nelson, and Richard L. Hood, both of Edmond, Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Feb. 27, 1989, Ser. No. 315,489
Int. Cl.[5] C10C *3/08*
U.S. Cl. 208—309 8 Claims



1. A continuous solvent deasphalating process for separating a heavy hydrocarbon material feedstock containing both solvent soluble lower molecular weight hydrocarbon components and solvent insoluble higher molecular weight hydrocarbon components, Conradson carbon precursors and heavy metals comprising:

contacting said feedstock with an extraction solvent in an extraction zone, said zone containing a high pressure compartment, a pressure reduction compartment and a low pressure compartment and whereby said contact is initially effected in said high pressure compartment, to continuously form an extraction mixture comprised of said feedstock as a dispersed phase and said extraction solvent as a continuous phase, said contact being carried out in said high pressure compartment of said extraction zone in a countercurrent flow relationship at an elevated temperature ranging from about 5° C. to about 20° C. or more below said extraction solvent's critical temperature and under a superatmospheric pressure of about about the equilibrium vapor pressure of said extraction solvent at the elevated temperature employed;

maintaining said extraction mixture in said high pressure compartment of said extraction zone at said elevated temperature and under said superatmospheric pressure, whereby a first light extract phase rich in said solvent soluble lower molecular weight hydrocarbon components and a first heavy raffinate phase rich in said solvent insoluble higher molecular weight hydrocarbon components, Conradson carbon precursors and heavy metals form and separate individually from said extraction mixture within said high pressure compartment of said extraction zone;

maintaining said extraction mixture and said first heavy raffinate phase in such high pressure compartment of said extraction zone at said elevated temperature and under said superatmospheric pressures while withdrawing said first light extract phase from said high pressure compartment and introducing said first light extract phase into said pressure reduction compartment of said extraction zone;

reducing the pressure upon said first light extract phase within said pressure reduction compartment of said extraction zone, while maintaining said extract phase at said elevated temperature, by an amount sufficient to effect within said low pressure compartment of said extraction zone a separation of said first light extract phase into a second light extract phase enriched in said solvent soluble lower molecular weight hydrocarbon components and a second heavy raffinate phase rich in said solvent insoluble higher molecular weight hydrocarbon components, Conradson carbon precursors and heavy metals;

withdrawing said reduced pressure first light extract phase from said pressure reduction compartment of said extraction one and introducing said reduced pressure first light extract phase into said lower pressure compartment of said extraction zone wherein said separation is effected and recovering individually from said lower pressure compartment of said extraction zone said second light extract phase and said second heavy raffinate phase; and

repressurizing at least a portion of said second heavy raffinate phase recovered from said low pressures compartment of said extraction zone to said superatmospheric pressure being maintained upon said extraction mixture and said first light extract phase and said first heavy raffinate phase being formed within said high pressure compartment of said extraction zone and recycling said repressurized portion back to said high pressure compartment of said extraction zone to provide reflux for said first light extract phase and said extraction mixture contained therein.

5,009,773

MONITORING SURFACTANT CONTENT TO CONTROL HOT WATER PROCESS FOR TAR SAND

Laurier L. Schramm, and Russell G. Smith, both of Edmonton, Canada, assignors to Alberta Energy Company Ltd.; Canadian Occidental Petroleum Ltd.; Esso Resources Canada Limited, all of Alberta, part interest to each; Gulf Canada Limited, Ontario; Her Majesty the Queen in right of the Province of Alberta, Alberta; HBOG-Oil Sands Limited Partnership, Alberta; PanCanadian Petroleum Limited, Alberta and Petro-Canada Inc., Alberta, all of, Canada

Filed Jan. 7, 1987, Ser. No. 1,258
Int. Cl.[5] C10E *1/04*
U.S. Cl. 208—391 1 Claim

1. In the hot water process for extracting bitumen from tar sand of varying nature in an extraction circuit, said process comprising conditioning the tar sand by slurrying it with hot water and alkaline process aid and agitating it, diluting the conditioned slurry with additional hot water, and retaining the diluted slurry in a primary separation vessel to produce an underflow of solids and an overflow of primary bitumen froth, the improvement comprising:

(a) determining for the circuit involved a measure of the

critical equilibrium free carboxylate-type surfactant concentration ("C_{CS}^{o}"), in the process water, at which maximum primary froth recovery occurs;

(b) determining for the circuit involved a measure of the critical equilibrium free sulfonate-type surfactant concentration ("C_{SS}^{o}") in the process water, at which maximum primary froth recovery occurs;

(c) determining whether the diluted slurry undergoing processing is one from which recovery of primary froth is first predominantly influenced by the concentration in the process water of free carboxylate-type surfactants or free sulfonate-type surfactants;

(d) in the case where the carboxylate-type surfactants first dominate, adjusting process aid addition to the process to bring the equilibrium free carboxylate-type surfactant concentration in the process water toward C_{CS}^{o};

(e) in the case where the sulfonate-type surfactants first dominate, adjusting process aid addition to the process to bring the equilibrium free sulfonate-type surfactant concentration in the process water toward C_{SS}^{o};

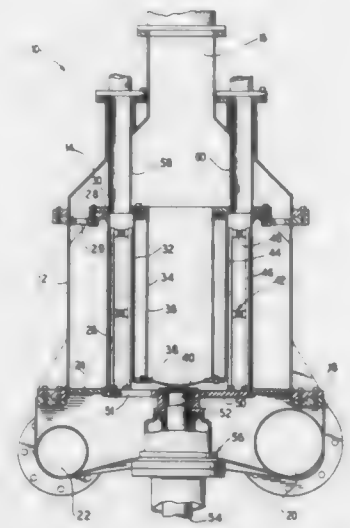
and repeating steps (c), (d) and (e) on an on-going basis to establish a control method for maximizing primary froth recovery.

5,009,774

PULSELESS SCREEN

Peter E. LeBlanc, Worthington, Mass., assignor to Beloit Corporation, Beloit, Wis.

Filed Oct. 30, 1989, Ser. No. 429,874
Int. Cl.[5] B07B *1/20*
U.S. Cl. 209—273 **22 Claims**



1. A screening apparatus for separating accepts and rejects of a slurry fed to the apparatus, said apparatus comprising:

a closed hollow housing including at least one side wall, first and second ends, and a slurry inlet at said first end, said housing having a longitudinal axis;

cylindrical screen means fixedly mounted in said housing, a first side of said screen means being in communication with said slurry inlet;

said screen means being disposed about said axis and extending generally axially in said housing from near said first end to near said second end;

a rotatable drive shaft extending into and journaled to said housing;

pulsing means connected to said drive shaft for rotation in a path of rotation adjacent said screen means on said first side of said screen means for inducing flow of slurry through said screen means;

a rejects outlet in flow communication with said first side of said screen means and in communication with the path of rotation of said pulsing means;

and an accepts outlet in flow communication with a second side of said screen means, said accepts outlet being located at one end of said screen means axially aligned with said screen means;

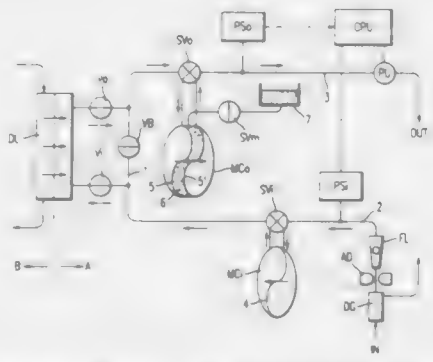
whereby the accepts are discharged axially from said housing generally along said axis of said housing of said screening apparatus.

5,009,775

METHOD OF CONTROLLING AMOUNT OF REMOVED WATER BY ULTRAFILTRATION AND CONTROL DEVICE FOR CONTROLLING AMOUNT OF REMOVED WATER BY ULTRAFILTRATION IN HEMODIALYSIS

Tsuyoshi Tsuji, Saitama; Masaaki Satoh, Tokyo, and Masayuki Yunoki, Saitama, all of Japan, assignors to Med-Tech Inc., Tokyo, Japan

Continuation of Ser. No. 180,952, Apr. 13, 1988. This application Jun. 1, 1990, Ser. No. 531,767
Int. Cl.[5] B01D *61/28, 61/34*
U.S. Cl. 210—85 **2 Claims**



1. A device for controlling the amount of removed water in a hemodialysis, comprising:

a dialyzer;

a supply circuit of dialysate and a drainage circuit of said dialysate, the supply circuit and the drainage circuit being respectively open circuit;

a plurality of electromagnetic valves for controlling flow of dialysate to said dialyzer;

means defining a first dialysate scaling chamber having a right and left partition separated by a diaphragm on the supply circuit of said dialyzer;

means defining a second dialysate scaling chamber including a right and left partition provided independently and sectioned by second diaphragm wherein said second scaling chamber is provided on the drainage circuit of said dialyzer;

first and second changeover valves respectively provided in association with said first and second scaling chambers wherein said right and left sectioned partitions of each of said chambers are changed alternately between an inlet side and an outlet side by said first and second changeover valves provided at each inlet and outlet;

a suction pump provided down stream of said second scaling chamber;

a bypass circuit provided by said plurality of electromagnetic valves to stop communication of dialysate to said dialyzer when said bypass circuit is formed;

a first and second pressure detector means provided at the supply circuit and the drainage circuit respectively of the dialyzer; and

a central control unit for changing over said changeover valves at the outlet and inlet of said respective scaling chambers by means of said central control unit on the basis of input information from said pressure detectors,

means for calculating a differential value of signals obtained from said pressure detectors,

means for operating the changeover valves when said differential value is in a fixed range,

means for calculating a difference of periods at the fluid supply side and the drainage side by detecting the period of each of said changeover valves,

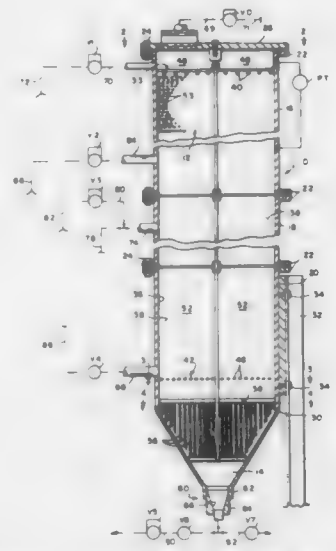
means for calculating an amount of removed water by the difference between the periods measured and means for controlling said suction pump so that a predetermined amount of water is maintained.

5,009,776

FILTER SYSTEM

James V. Banks, Brockton, Mass., assignor to Control Fluidics, Inc., Greenwich, Conn.

Continuation of Ser. No. 97,285, Sep. 11, 1987, abandoned, which is a continuation of Ser. No. 755,466, Jul. 16, 1985, abandoned. This application Aug. 14, 1989, Ser. No. 394,307
The portion of the term of this patent subsequent to Dec. 5, 2006, has been disclaimed.
Int. Cl.[5] B01D *24/46*
U.S. Cl. 210—108 **7 Claims**



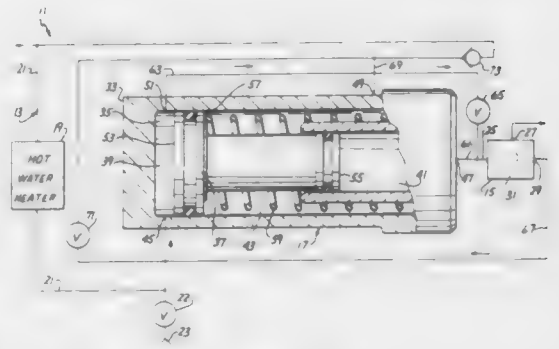
1. Apparatus for removing by filtering particulate solids from a liquid, comprising a vessel, means dividing the vessel into three vertically-disposed filter chambers closed at the top and open at the bottom, means for delivering the liquid containing the solids to be filtered therefrom into each filter chamber, a first grid disposed in each filter chamber adjacent but spaced downwardly from the top defining, in conjunction with the top, a fluid discharge chamber at the top of each filter chamber, said first grid comprising spaced, parallel bars of triangular cross section disposed with their apices facing upwardly, a second grid disposed at the lower end of each filter chamber above the lower end of the vessel such as to define in conjunction with the lower end of the vessel a solids discharge chamber below the second grids common to the lower ends of said filter chambers, said second grids comprising spaced, parallel bars of circular cross section, a fluid discharge conductor connected to each of said fluid discharge chambers at the top above the first grid, each of said fluid conductors containing a fluid discharge valve, a solids discharge conductor connected to the lower end of the vessel below the second grids containing a solids discharge valve, an inlet conductor connected to each filter chamber through which the liquid containing solids therein to be filtered can be introduced into each filter chamber, each inlet conductor containing an inlet valve, a bed of buoyant, particulate filter material disposed in each filter chamber between the grids, said buoyant particulate filter material being of a size such as to inhibit the passage of said buoyant particulate material between the bars of the grids, hence, to maintain the bed intact, pressure-sensitive means for sensing the pressure differential of the fluid in said filter chambers above and below the upper grid bars, first means operable when the pressure differential in any one of the filter chambers reaches a predetermined level to close said fluid discharge valve in the discharge conductor of that chamber, and second means for introducing air pressure into the top of that chamber to displace the bed of buoyant particulate filter material downwardly therein to thus disperse the particulate filter material and, hence, to cause the solids contained in the liquid to gravitate to the bottom for a period sufficient to clear the bed of solids, said second means being operable when the pressure differential is restored to disable the means for introducing air at the top and reopening the liquid discharge valve.

5,009,777

REVERSE OSMOSIS AND HOT WATER SYSTEM

Donald F. Solomon, 45640 Denizen Heights Rd., Hemet, Calif. 92344

Continuation-in-part of Ser. No. 350,521, May 11, 1989, which is a continuation-in-part of Ser. No. 111,697, Oct. 21, 1987, Pat. No. 4,836,924. This application Feb. 20, 1990, Ser. No. 481,515
Int. Cl.[5] B01D *61/10*
U.S. Cl. 210—134 **17 Claims**



1. A water system comprising:

a hot water system including a hot water heater and conduit means coupled to feedwater under pressure for conducting water to and from the hot water heater;

a reverse osmosis module having an inlet port, a product water port for filtered product water and a brine outlet port for brine;

an injector pump coupled to the feedwater under pressure and having a water port coupled to the inlet port of the reverse osmosis module and a brine port coupled to the brine outlet port of the reverse osmosis module and the conduit means; and

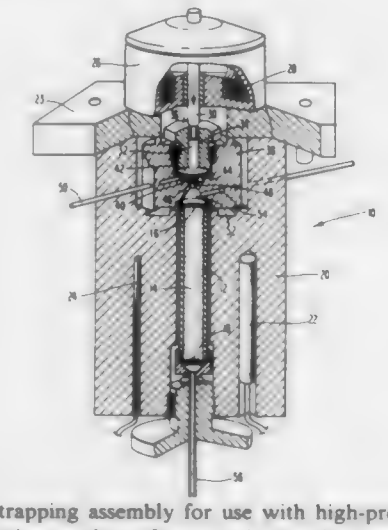
the injector pump including means for providing water to said water port of the injector pump for supplying to the inlet port of the reverse osmosis module and means for increasing the pressure of the brine at the brine port of the injector pump to greater than the pressure of the feedwater whereby the brine can be injected into said hot water system.

5,009,778

AXIALLY-DRIVEN VALVE CONTROLLED FLUID TRAPPING ASSEMBLY

Mark A. Nickerson; John S. Poole, and Lenore G. R. Frank, all of Landenberg, Pa., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 316,383, Feb. 27, 1989, abandoned. This application Aug. 31, 1989, Ser. No. 403,024
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—198.2 15 Claims



7. In a trapping assembly for use with high-pressure fluid systems having a column for removing a solute component of said fluid, said assembly comprising:

inlet means for introducing said fluid under high pressure into said assembly,

axially driven valve means for controlling the fluid through said inlet means,

an annular orifice expansion nozzle with a conical diverging section leading from said valve means directly into said column,

said valve means comprising: an axially-moving, solenoid-driven pin, a diaphragm for directing the flow of said fluid from said inlet means into said column, and a valve seat, said valve seat located at the narrow end of said orifice expansion nozzle, and axial movement of said pin being adapted to restrict the flow through and to close said orifice expansion nozzle.

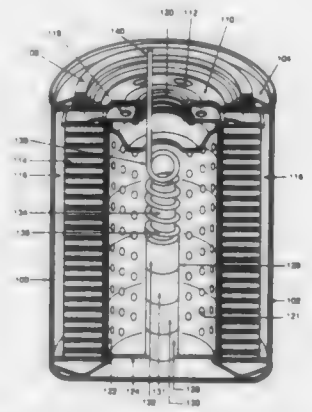
5,009,779

MAGNETIC ELEMENT WITH MAGNESIUM COIL FOR FILTER

Alfred M. Hebert, P.O. Box 706, Pleasant Valley, N.Y. 12569

Filed Dec. 11, 1989, Ser. No. 448,533
Int. Cl.[5] B01D *35/06*; B03C *1/30*
U.S. Cl. 210—223 2 Claims

1. An element for spin-on filters for removing metallic fines from a medium being filtered and for neutralizing sulphuric acids therein, comprising a base element having a lower recess therein for a magnet and an upper recess larger than said lower recess, extender elements stackable on said base element, an upper container within which are placed magnets spaced apart by flux spacer elements, said container nesting in the uppermost extender element, and a magnesium coil on the exterior of said container.

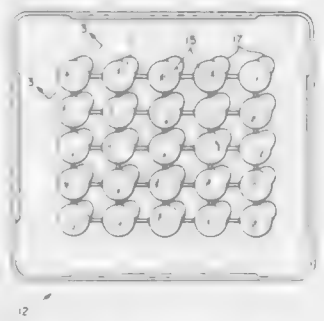


5,009,780

MULTI-WELL FILTRATION APPARATUS

Michael J. Sarrasin, Nashua, N.H., assignor to Millipore Corporation, Bedford, Mass.

Filed Jul. 20, 1989, Ser. No. 383,127
Int. Cl.[5] B01D *69/00*
U.S. Cl. 210—238 5 Claims



1. A filtration apparatus comprising:

a plate having at least one well, having a first open end for introducing liquid into said well, a second end and an outside peripheral surface about said second end,

a filter membrane having a center section and a tab section, said center section being bonded to said peripheral surface, said tab section being formed with said center section and extending away from said peripheral surface, said tab section and said center section forming an exposed planar surface, and said tab section having a size and shape which permits removing said membrane from said peripheral surface while avoiding rupture of said membrane.

5,009,781

CROSS-FLOW FILTRATION DEVICE WITH FILTRATE NETWORK AND METHOD OF FORMING SAME

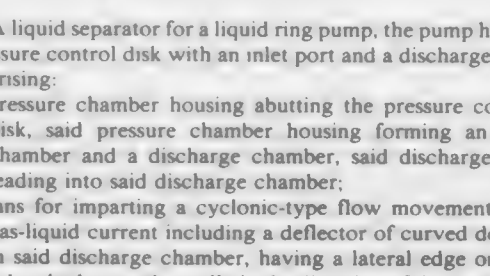
Robert L. Goldsmith, Belmont, Mass., assignor to CeraMem Corporation, Waltham, Mass.

Continuation-in-part of Ser. No. 33,572, Apr. 2, 1987, Pat. No. 4,781,831. This application Oct. 5, 1988, Ser. No. 254,280
Int. Cl.[5] B01D *61/08*
U.S. Cl. 210—247 24 Claims

1. A cross-flow filtration device for receiving a feed stock at a feed end face and for separating the feed stock into filtrate and retentate, comprising:

a monolith of porous material defining a plurality of passageways extending longitudinally from the feed end face to a retentate end face of the monolith through which the feed stock flows to pass retentate from the device, the surface area of the passageways being at least 100 square feet per cubic foot of monolith;

at least one filtrate network including a plurality of longitudinal filtrate chambers, at least one filtrate channel, and at least one filtrate duct, the filtrate channel transecting the filtrate chambers and communicating with the filtrate duct



to discharge filtrate from the filtrate chambers through the filtrate duct from at least one end face of the monolith; and

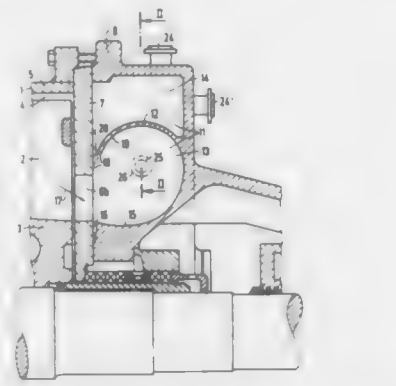
the filtrate chambers being isolated from both end faces of the monolith and being distributed among the passageways to provide low pressure drop flow paths for filtrate flow through the porous material from the passageways to nearby filtrate chambers.

5,009,782

LIQUID SEPARATOR INTEGRATED INTO A PRESSURE CHAMBER HOUSING ABUTTING A LIQUID RING PUMP

Peter Trimborn, Nuremberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 27, 1990, Ser. No. 500,085
Claims priority, application European Pat. Off., Apr. 11, 1989, 89106359.6
Int. Cl.[5] B01D *45/14*
U.S. Cl. 210—360.1 12 Claims



1. A liquid separator for a liquid ring pump, the pump having a pressure control disk with an inlet port and a discharge port, comprising:

a pressure chamber housing abutting the pressure control disk, said pressure chamber housing forming an inlet chamber and a discharge chamber, said discharge port leading into said discharge chamber;

means for imparting a cyclonic-type flow movement to a gas-liquid current including a deflector of curved design, in said discharge chamber, having a lateral edge on one side which extends axially in the direction of the gas-liquid current emerging from the discharge port, said deflector abutting the pressure control disk; and a liquid outlet and gas outlet on the abutting pressure chamber housing, with at least the gas outlet being disposed in the approximate center of the region defined by the curved deflector.

5,009,783

SEPARATION OF COMPOSITIONS CONTAINING WATER AND ORGANIC OXYGENATES

Craig R. Bartels, Wappinger Falls, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 456,619, Jan. 2, 1990. This application Jun. 4, 1990, Ser. No. 533,223
Int. Cl.[5] B01D *69/00*
U.S. Cl. 210—500.41 4 Claims

4. A composition comprising as a composite at least having properties for enabling pervaporation of a charge aqueous composition containing organic oxygenate selected from the group consisting of alcohols, glycols and weak acids, including:

(i) a polysulfone membrane as a porous support layer; and

(ii) mounted thereon, as a separating layer, a membrane of a blend of polyvinyl alcohol and polyacrylic acid;

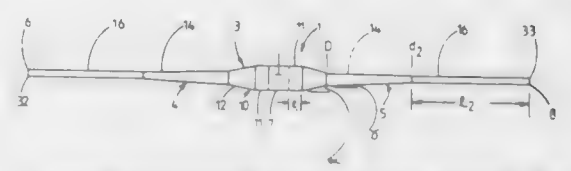
said blend being characterized by a weight ratio of polyvinyl alcohol to polyacrylic acid of 0.1-10 and having been cured at 125° C.-225° for 1-30 minutes.

5,009,784

CYCLONE SEPARATOR WITH OPPOSITELY DIRECTED SEPARATING CHAMBERS

Neville Clarke, Naree Warren, and Reimer Z. Hansen, Mount Eliza, both of Australia, assignors to Conoco Specialty Products Inc., Houston, Tex.

PCT No. PCT/AU87/00336, § 371 Date Jun. 1, 1989, § 102(e) Date Jun. 1, 1989, PCT Pub. No. WO88/02280, PCT Pub. Date Apr. 7, 1988
PCT Filed Oct. 2, 1987, Ser. No. 343,178
Claims priority, application Australia, Oct. 3, 1986, PH8333
Int. Cl.[5] B01D *17/038*
U.S. Cl. 210—512.1 9 Claims



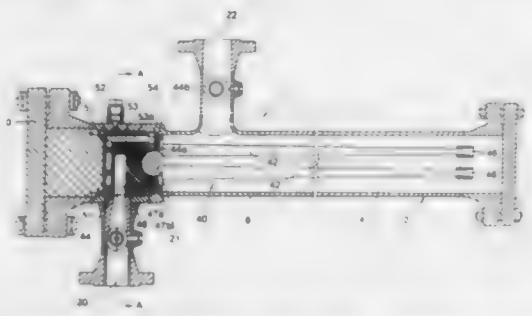
1. A cyclone separator comprising elements designed, sized and arranged for treating a mixture of liquids including oil and water phases, for separating at least in part a more dense liquid component of the mixture from a less dense liquid component thereof, the cyclone separator being characterized by a stationary separating chamber having a central axis of symmetry between opposite first and second ends, the separating chamber including two tapered parts and an intermediate portion which is intermediate said ends between said tapered parts, the intermediate portion being of greater cross sectional dimension than either of the opposed ends, each said part comprises a primary portion adjacent said intermediate portion a conical section a secondary portion of generally conical shape and of a smaller angle of conicity than said conical section and a tertiary portion of generally cylindrical shape, the separating chamber having first outlet means for discharging the more dense liquid component of the separated phases and second outlet means for discharging the less dense liquid component of the separated phases, the separator further including feed inlet means proximate to the intermediate portion.

5,009,785

SYSTEM AND APPARATUS FOR THE SEPARATION OF MULTI-PHASE MIXTURE

David A. Webb, Northcote, Australia, assignor to Conoco Specialty Products Inc., Houston, Tex.

Continuation-in-part of Ser. No. 6,558, Feb. 20, 1987, abandoned. This application Feb. 13, 1989, Ser. No. 310,279
Claims priority, applicaiton Australia, Apr. 23, 1985, PH0274; Apr. 23, 1988, PCT/AU86/00111
Int. Cl.[5] B04C 7/00
U.S. Cl. 210—512.2 16 Claims



1. Apparatus for separating multi-phase mixtures or at least partially separating a more dense component of a mixture from a less dense component thereof, the apparatus comprising, an outer casing defining a cavity therein, an intake port through which the mixture is fed to the apparatus, a first outlet port from which a more dense component can be discharged from the apparatus and a second outlet port from which a less dense component can be discharged from the apparatus, the apparatus further including a cyclone separating means locatable within said cavity and which comprises a plurality of longitudinal separating chambers, each chamber having a portion which has a greater cross-sectional dimension at one end than at its other end, each chamber further comprising inlet means and at least two outlets; a head portion integrally connected to each of said separating chambers and having a first outlet passage formed within the head portion and transverse to said longitudinal separating chambers in fluid communication with one outlet of each of said separating chambers and a second outlet passage within said head portion which is parallel with said longitudinal separating chambers; and means for communicating said first and second outlet passages with said second outlet port, the other of said outlets of each separating chamber being in communication with said first outlet port, at least a portion of one of said outlet passages being located at a position between said intake port and said first outlet port

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5,009,786

SELENATE REMOVAL FROM WASTE WATER

Ronald S. Oremland, San Francisco, Calif., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

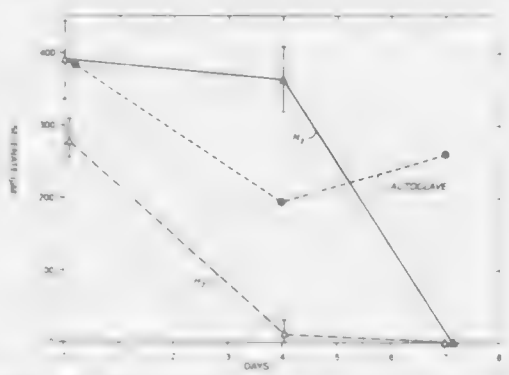
Filed Oct. 30, 1989, Ser. No. 428,699
Int. Cl.[5] C02F 3/30
U.S. Cl. 210—602 13 Claims

1. A method for the removal of selenium from agricultural waste waters wherein said agricultural waste waters comprise selenium and nitrate, comprising the steps of

providing a first treatment zone, said first treatment zone comprising biological organisms capable of removing said nitrate from said waste water and assimilating said nitrate into biomass,

treating said agricultural waste water in said first treatment zone under aerobic conditions until the concentration of nitrate in effluent from said first treatment zone is substantially reduced in a range about 1 to 0.1 mM.

providing a second treatment zone, said second treatment zone removed from said first treatment zone, said second treatment zone comprising substantially anoxic conditions and biological organisms enriched for biological organisms that respire selenate under substantially anoxic conditions



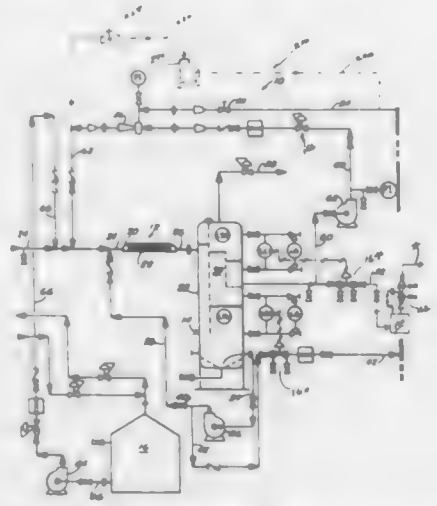
treating the effluent from said first treatment zone in said second treatment zone until the concentration of selenate in effluent from said second treatment zone is substantially reduced in a range about 0.01 to 0.001 mg/l.

5,009,787

LIQUID-TO-LIQUID OIL ABSORPTION METHOD

Paul C. Broussard, Sr., P.O. Box 32504, Lafayette, La. 70503

Continuation of Ser. No. 160,864, Feb. 26, 1988, Pat. No. 4,839,043, which is a continuation-in-part of Ser. No. 938,397, Dec. 5, 1986, Pat. No. 4,728,428. This application Dec. 19, 1988, Ser. No. 286,234
The portion of the term of this patent subsequent to Mar. 1, 2005, has been disclaimed.
Int. Cl.[5] B01D 12/00
U.S. Cl. 210—634 5 Claims



1. A method for degreasing water, which comprises contacting contaminated produced-water with a volatile non-water-soluble liquid fluorocarbon to dissolve both dissolved and suspended contaminants from said produced-water; separating the spent fluorocarbon from the degreased water; and, recycling separated spent fluorocarbon to the contacting step by means of an eductor jet pump driven by said degreased water.

5,009,788

METHOD FOR REMOVING ORGANIC AND TUNGSTEN FROM SODIUM SULFATE SOLUTION

Tai K. Kim, and Clarence D. Vanderpool, both of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 4, 1990, Ser. No. 504,478
Int. Cl.[5] B01D 11/04
U.S. Cl. 210—639 1 Claim

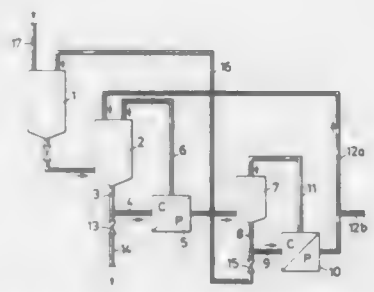
1. A method for removing organic and tungsten from sodium sulfate solutions to render said solutions suitable for ion membrane processing, said method comprising contacting said solution wherein the pH said solution is no greater than about 7, with activated carbon to remove essentially all of said organic and said tungsten therefrom and form a purified sodium sulfate solution, said solution being suitable for ion membrane processing.

5,009,789

METHOD AND PLANT FOR SEPARATION OF SYNTHETIC WATER SOLUBLE POLYMERS

Ulla K. E. Helmer, Sollentuna, and Karl-Erland M. Stensiö, Järfälla, both of Sweden, assignors to EKA Nobel, Surte, Sweden

PCT No. PCT/SE87/00637, § 371 Date Jun. 22, 1989, § 102(e) Date Jun. 22, 1989, PCT Pub. No. WO88/05444, PCT Pub. Date Jul. 28, 1988
PCT Filed Dec. 29, 1987, Ser. No. 375,015
Claims priority, application Sweden, Jan. 19, 1987, 8700187
Int. Cl.[5] B01D 61/20
U.S. Cl. 210—641 16 Claims



1. A method for the separation and reuse of synthetic water-soluble resins of different molecular weight produced in a polymerization zone, said water-soluble resins being selected from the group consisting of urea-formaldehyde resins, melamine-formaldehyde resins and polyamidoamine-epichlorohydrin resins, which method comprises

(1) charging an aqueous solution of said water-soluble synthetic resin to an ultrafiltration unit,

(2) in said ultrafiltration unit effecting separation of said solution into

(a) a concentrate solution which mainly comprises polymers of high molecular weight, and

(b) an aqueous permeate solution which mainly comprises polymers of low molecular weight, monomers and byproducts,

(3) the separation according to step (2) being carried out so that at least 5 percent by weight of the original dry resin content is separated off in said permeate solution, and

(4) recirculating said separated permeate solution to the polymerization zone for further polymerization.

5,009,790

METHOD FOR ABSORBING LIQUIDS USING DEALGINATE KELP

Michael R. Bustamante, Chula Vista; John J. Renaker, Jr., Valley Center, and Donald A. Magley, Chula Vista, all of Calif., assignors to Damcosur S.A. De C.V., Chula Vista, Calif.

Filed Aug. 20, 1990, Ser. No. 569,633
Int. Cl.[5] C02F 1/28; B01J 20/22
U.S. Cl. 210—689 12 Claims



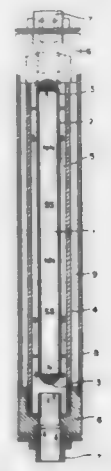
1. A method for the absorption of a liquid which comprises applying to a body of said liquid an absorbent composition which comprises dealginated, partially dewatered kelp residue.

5,009,791

MAGNETIC TREATMENT OF WATER USED FOR AGRICULTURAL PURPOSES

Israel J. Lin, Post Hof Hacarmel, Kerem Maharal, Israel 30840, and Jacob Yotvat, 31 Harisbonim Street, Kiriat Haim, Israel 26302

Filed Aug. 18, 1989, Ser. No. 395,897
Claims priority, application Israel, Jul. 17, 1989, 091014
Int. Cl.[5] C02F 1/48; B01D 35/02; A01K 7/02
U.S. Cl. 210—695 4 Claims



1. A method of magnetically treating water for watering of livestock, comprising the steps of:

(a) mechanically cleaning the water so as to remove ferromagnetic particles and other suspended matter therefrom;

(b) causing the water to pass through a magnetic field of alternating polarity wherein

said magnetic field is of an intensity of between 600 and 6500 gauss, and has a field gradient of between 0.2 and 6.0 kgauss/cm;

said water passing through said magnetic field flows in a

direction which is substantially perpendicular to the magnetic field vector of said magnetic field;

said water flow through said magnetic field is substantially laminar, at a velocity of between 0.5 and 2.4 m/s; and

said laminar water flow is at a velocity for causing each water molecule of said laminar water flow to pass through said magnetic field of alternating polarity at a frequency of not less than 2 and not more than 60 polarity changes per second; and

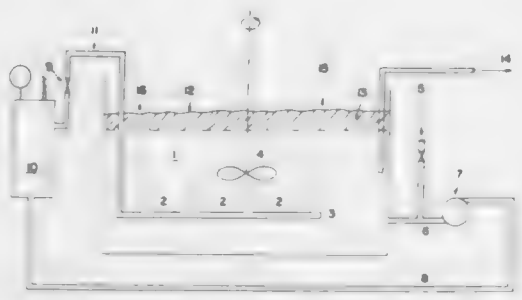
(c) recirculating water not consumed by said livestock by pumping the unconsumed water through said magnetic field at said velocity of between 0.5 and 2.4 m/s, to be magnetically retreated.

5,009,792

METHOD FOR CLARIFYING AQUEOUS SALT SOLUTIONS

Jarl M. Pettersen, Larvik; Arild Nilsson, Skien, both of Norway, and Robert M. Millaway, Hayward, Calif., assignors to Norsk Hydro a.s., Oslo, Norway

Filed Oct. 24, 1989, Ser. No. 425,977
Int. Cl.[5] B03D *1/02*
U.S. Cl. 210—705 4 Claims



1. A method of clarifying an aqueous salt solution containing inorganic insolubles, comprising:

providing a vessel for the aqueous salt solution;

providing a recirculating system for the aqueous salt solution in said vessel circulating aqueous salt solution therefrom and thereto;

introducing air into said recirculating system;

pressurizing said air in said recirculating system;

releasing said air into said aqueous salt solution such that said air forms microbubbles in said aqueous salt solution;

adding flocculants to said aqueous salt solution;

ensuring the presence of sufficient foam forming organic components in said aqueous salt solution to form a stable foamy sludge, wherein said air, said flocculants and said organic components form the stable foamy sludge on said aqueous salt solution, flotating said inorganic insolubles out of said aqueous salt solution;

interrupting the release of said air into said aqueous salt solution;

back-mixing a portion of said stable foamy sludge into said aqueous salt solution; and

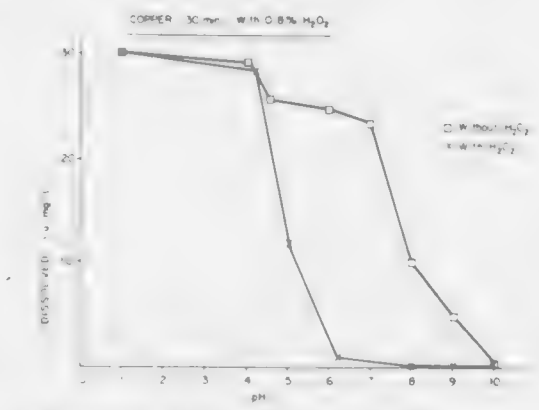
restarting the release of said air into said aqueous salt solution for the flotation of remaining said inorganic solubles to obtain a clarified aqueous salt solution.

5,009,793

PROCESS FOR THE SEPARATION OF HEAVY METALS FROM WASTE MATERIALS

German Muller, Bammental, Fed. Rep. of Germany, assignor to Industrie Automation Sondertechnik GmbH & Co., Heidelberg, Fed. Rep. of Germany

Filed Jan. 9, 1990, Ser. No. 462,580
Claims priority, application European Pat. Off., Jan. 13, 1989, 89100518.3
Int. Cl.[5] C02F *1/52, 1/72*
U.S. Cl. 210—710 21 Claims



1. A process for the removal of heavy-metals from a contaminated waste material including lead and having at least a first heavy-metal and a second heavy-metal comprising the steps of:

treating the waste material with an acid to dissolve the heavy metals as water-soluble salts;

treating the water-soluble salts with an oxidizing agent;

forming a hydroxide of at least the first heavy-metal;

precipitating at least a portion of the first heavy-metal as a hydroxide at a first pH of below about 5;

adjusting the pH to a second pH which is different from the first pH; and

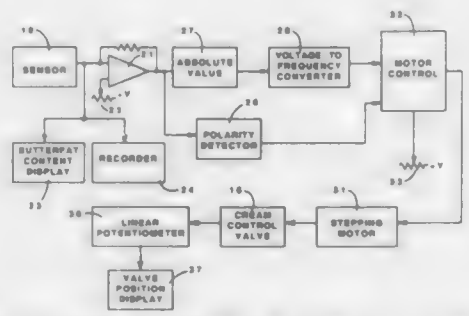
precipitating at least a portion of the second heavy-metal as a hydroxide at the second pH.

5,009,794

SYSTEM AND METHOD FOR CONTROLLING BUTTERFAT CONTENT IN STANDARDIZED MILK PRODUCT

William H. Wynn, San Carlos, Calif., assignor to Wedgewood Technology, Inc., San Carlos, Calif.

Filed May 16, 1989, Ser. No. 352,259
Int. Cl.[5] A23C *9/00*
U.S. Cl. 210—739 21 Claims



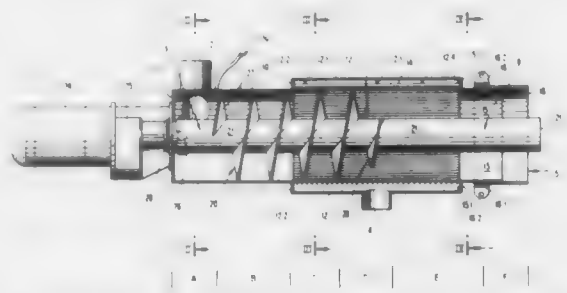
14. In a method of controlling fat content in a standardized milk product produced by combining high fat milk and low fat milk, the steps of: setting a desired fat content for the milk product and providing a reference signal corresponding thereto, continuously monitoring the milk product with an optical density sensor and providing a signal corresponding to the actual fat content in said product, monitoring the reference signal and the sensor signal to provide an error voltage having a magnitude which decreases as the difference between the actual fat content and the desired fat content decreases, applying the error signal to a voltage to frequency converter to produce a control signal containing pulses occurring at a rate which as the difference between the actual fat content and the desired fat content decreases, advancing a stepping motor by one step on response to each pulse in the control signal, and driving a control valve with the stepping motor to adjust the relative amounts of high fat milk and low fat milk which are combined to produce the standardized product at a rate which decreases as the actual fat content approaches the desired fat content.

5,009,795

PROCESS FOR THE DEWATERING OF SOLIDS SUSPENDED IN WATER AND SCREW PRESS SEPARATOR THEREFOR

Dietrich Eichler, Groskarolinenfeld, Fed. Rep. of Germany, assignor to Fan Engineering GmbH, Sunninghausen, Fed. Rep. of Germany

Filed Nov. 3, 1989, Ser. No. 431,073
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1988, 3837331; Mar. 4, 1989, 3907046; Sep. 1, 1989, 3929090
Int. Cl.[5] C02F *1/00*
U.S. Cl. 210—744 28 Claims



1. A process for separating and dewatering solids contained in waste water in a concentration therein of less than about ten percent, comprising the steps of:

introducing said waste water into a space defined by a housing, a cylindrical strainer basket aligned with an outlet end of said housing, and cylindrical tube means aligned with an outlet end of said strainer basket, said strainer basket being apertured for the passage of waste, said tube means defining a solids discharge opening at a terminal end thereof, said tube means comprising a cylindrical mouthpiece and a cylindrical mouthpiece extension telescopingly adjustably connected to said mouthpiece, said waste water being introduced into a portion of said space defined by said housing,

rotating a screw disposed in said space and having a discharge end terminating short of said outlet end of said strainer basket, to advance said waste water into said strainer basket whereby water separated from said solids passes laterally through said strainer basket, and a solid slug is formed which extends from said discharge end of said screw to said solids discharge laterally against an inner surface of said cylindrical strainer basket while being advanced therethrough, and

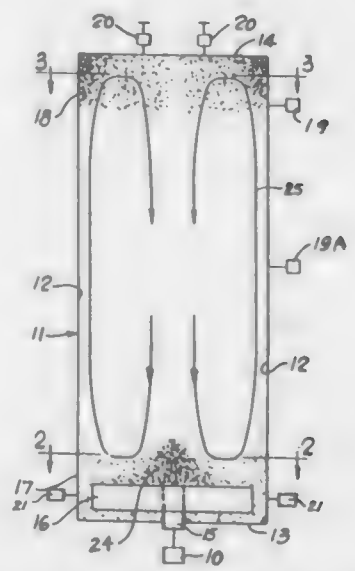
adjusting said mouthpiece extension relative to said mouthpiece to vary the length of said tube means for varying the resistance to travel of said slug, said mouthpiece extension being adjusted such that from five to thirty percent of said slug is disposed in said tube means.

5,009,796

METHODS AND APPARATUS FOR TREATING A MIXTURE OF PARTICLES AND FLUIDS

Michael A. Petrik, Highland Heights, Ohio; Robert J. Adler, 3068 Van Aken Blvd., Cleveland, Ohio 44120, and Jonathan D. Wineland, Madison, Ind., assignors to Robert Adler, Cleveland, Ohio

Filed Mar. 24, 1986, Ser. No. 843,055
Int. Cl.[5] B04C *7/00*
U.S. Cl. 210—787 28 Claims



1. Apparatus for the treatment of particles, comprising

a container having an axis and a sidewall surrounding said axis;

impeller means located in said container at a first position along said axis and rotatable upon said axis; and

barrier means located in said container at a second position along said axis, to interrupt flow parallel to said axis of fluids flowing within said container;

said sidewall having generally circular cross-section at first and second positions, and all intermediate positions, along said axis and with said axis at the circular center, and said sidewall cross-section surrounding said axis at said second position having a diameter no less than one-quarter of the diameter of said sidewall cross-section surrounding said axis at said first position; and

said container lacking baffle means, and said impeller means and barrier means being sufficiently separated with respect to each other, that rotation of said impeller generates in said fluid a circulating current, said current having a positive component of rotational flow about said axis everywhere oriented in the direction of said rotation of said impeller, and having a positive component of axial flow toward said impeller in the vicinity of said axis and a positive component of axial flow away from said impeller in the vicinity of said sidewall, and that for at least one combination of a particle, fluid and impeller speed, when said particle and said fluid are put in said container and said impeller means is rotated at said impeller speed, said current will carry said particle to the vicinity of said barrier means, where said particle will separate from said current and remain in said vicinity of said barrier means; and further comprising

first port means for the introduction into said container of fluids and particles, and second port means for the a withdrawal from said container of fluids and particles, said second port means being located upon said sidewall.

5,009,797

METHOD OF SUPPORTING FRACTURES IN GEOLOGIC FORMATIONS AND HYDRAULIC FLUID COMPOSITION FOR SAME

Glenn S. Penny, Duncan, Okla.; Robert S. Stephens, Auburn, and Alan R. Winslow, Tacoma, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Dec. 13, 1989, Ser. No. 450,360
Int. Cl.[5] E21B *43/26*
U.S. Cl. 252—8.551 19 Claims

1. A method of preparing a hydraulic fracturing fluid composition which comprises:

providing an aqueous transport medium;

increasing the viscosity of the medium by dispersing sufficient amounts of a gellant and a bacterial cellulose in said medium, said bacterial cellulose being produced by a cellulose generating strain of the genus Acetobacter grown in an agitated culture; and then

suspending a sufficient amount of proppant particles in said medium whereby said bacterial cellulose decreases the settling rate of the proppant particles prior to and during transport into a drill hole and fractured geologic formation.

10. A hydraulic fracturing fluid composition comprising:

an aqueous transport medium;

a gellant and a bacterial cellulose dispersed in said medium to raise the viscosity thereof, said bacterial cellulose being produced by a cellulose generating strain of the genus Acetobacter in an agitated culture; and

a sufficient amount of proppant particles suspended in said medium whereby said bacterial cellulose decreases the settling rate of the proppant particles prior to and during transport into a drill hole and fractured geologic formation.

5,009,798

LOW FLUID LOSS HEAVY BRINES CONTAINING HYDROXYETHYL CELLULOSE

Roy F. House, Houston, and Lonnie D. Hoover, Chappell Hill, both of Tex., assignors to Baroid Technology, Inc., Houston, Tex.

Continuation of Ser. No. 80,203, Jul. 29, 1987, abandoned, which is a continuation of Ser. No. 357,308, Mar. 11, 1982, abandoned, which is a continuation-in-part of Ser. No. 161,444, Jun. 20, 1980, Pat. No. 4,420,406. This application Apr. 10, 1989, Ser. No. 336,592
The portion of the term of this patent subsequent to Dec. 13, 2000, has been disclaimed.
Int. Cl.[5] E21B *43/00*
U.S. Cl. 252—8.551 8 Claims

1. A method of decreasing the fluid loss of heavy brines containing zinc bromide and at least one soluble salt selected from the group consisting of calcium chloride and calcium bromide, which comprises sequentially carrying out the steps of adjusting the concentration of zinc bromide in said brine to the range from about 16% to about 20% by weight, and mixing with said brine a fluid loss reducing amount of hydroxyethyl cellulose which has been activated by admixing said hydroxyethyl cellulose with an aqueous liquid having a pH of greater than 7 and a water-soluble polar organic liquid which when uniformly mixed with hydroxyethyl cellulose in a weight ratio of hydroxyethyl cellulose to polar organic liquid of 1:2 produces a mixture with free liquid present after remaining quiescent for one week at ambient temperature in a sealed container, said hydroxyethyl cellulose being incompletely solubilized in said brine whereby a portion of said hydroxyethyl cellulose acts as a bridging agent.

5,009,799

INORGANIC ACID SOLUTION VISCOSIFIER AND CORROSION INHIBITOR AND METHOD

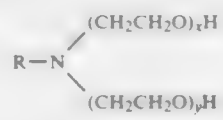
Allen R. Syrinek, Richmond; Ralph N. Buggs, Missouri City, and Robert K. Gabel, Houston, all of Tex., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Feb. 16, 1988, Ser. No. 155,861
Int. Cl.[5] E21B *43/27*
U.S. Cl. 252—8.553 16 Claims

1. A viscosifier for aqueous inorganic acid solutions comprising:

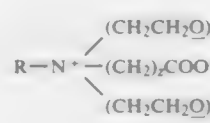
a mixture of ethoxylated fatty amines and betaine inner salts of said ethoxylated fatty amines,

wherein said ethoxylated fatty amines are of the formula



wherein R is selected from saturated and unsaturated alkyl groups having from 8 to 24 carbon atoms and mixtures thereof, and x and y separately are integers and together have an average value of from 1.00 to 2.5,

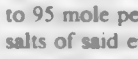
wherein said betaine inner salts of said ethoxylated fatty amines are of the formula



wherein R, x, and y are as defined above and z in an integer of from 1 to 3 and mixtures thereof,

and wherein said ethoxylated fatty amines comprise from 70 to 95 mole percent of said mixture and said betaine inner salts of said ethoxylated fatty amines comprise from 5 to 30 mole percent of said mixture;

further including an organic alcohol of the formula



wherein R' is an unsaturated alkyne group having from 3 to 10 carbon atoms, wherein said organic alcohol is present in said viscosifier in the amount of at least 0.5 weight percent based on total mixture of said ethoxylated fatty amines and said betaine inner salts of said ethoxylated fatty amines; and

an alkyl pyridine quaternary ammonium salt, wherein the alkyl substituents on pyridine are selected from saturated and unsaturated alkyl groups having separately from 1 to 8 carbon atoms and together on a single pyridine moiety have no more than 10 carbon atoms, and mixtures thereof, wherein said alkyl pyridine quaternary ammonium salt is present in said viscosifier in the amount of at least 0.5 weight percent based on total mixture of said ethoxylated fatty amines and said betaine inner salts of ethoxylated fatty amines.

7. A viscosified inorganic acid solution comprising:

an inorganic acid;

water; and

an effective amount of a viscosifier as defined in claim 1.

12. In a method of treating hydrocarbon-producing rock formations with acid by introducing an acid fluid into contact with the formation, the improvement comprising the use of an acid fluid comprising:

an inorganic acid;

water; and

an effective amount of a viscosifier as defined in claim 1.

5,009,800

FABRIC SOFTENING ADDITIVE FOR DETERGENT COMPOSITIONS: CELLULOSE ETHER AND ORGANIC FABRIC SOFTENER

Francis G. Foster, Wirral, England, assignor to Lever Brothers Company, Division of Conopco Inc., New York, N.Y.

Continuation of Ser. No. 278,696, Dec. 1, 1988, abandoned. This application Jun. 13, 1990, Ser. No. 537,225
Claims priority, application United Kingdom, Dec. 1, 1987, 8728958
Int. Cl.[5] C11D *1/62, 3/22*
U.S. Cl. 252—8.9 7 Claims

1. A particulate fabric softening additive for detergent compositions, comprising as the sole or major component, an intimate mixture of a water-soluble nonionic cellulose ether and an organic fabric softening agent selected from the group consisting of quaternary ammonium compounds, imidazolinium derivatives, fatty amines, soaps, organo-modified clays and mixtures thereof in the weight ratio of from 1:1 to 0.06:1, the cellulose ether being an alkyl hydroxyalkyl cellulose in which the alkyl group is selected from methyl and ethyl and the hydroxyalkyl group is selected from hydroxyethyl and hydroxypropyl, the cellulose ether having a degree of substitution of from 1.9 to 3 and from 0.9 to 2.0 alkyl groups and from 0.1 to 2. 0 hydroxyethyl groups per anhydroglucose ring and having an HLB of between 3.3 and 3.8, and a gel point of 33° C. to 56° C.

5,009,801

COMPOSITIONS FOR PREVENTING STRESS CRACKS IN POLY(ALKYLENE TEREPHTHALATE) ARTICLES AND METHODS OF USE THEREFOR

Michael Wider, Pleasant Ridge; Charles Rossio, Carleton, and Christian Remus, Detroit, all of Mich., assignors to Diversey Corporation, Mississauga, Ontario, Canada

Continuation-in-part of Ser. No. 218,893, Jul. 14, 1988, Pat. No. 4,929,375. This application Aug. 25, 1989, Ser. No. 398,542
Int. Cl.[5] C10M *173/02*
U.S. Cl. 252—033.2 14 Claims

1. A method of inhibiting stress cracking in a poly(alkylene terephthalate) article of manufacture, comprising:

applying a lubricant to an exterior surface of the poly(alkylene terephthalate) article of manufacture, the lubricant comprising a stress crack inhibitor which comprises a hydrophilic-substituted aromatic hydrocarbon having either an alkyl or an aryl side chain.

5,009,802

PHENOLIC ANTIOXIDANT COMPOSITION

William Y. Lam, Ballwin, and Gregory P. Liesen, St. Louis, both of Mo., assignors to Ethyl Corporation, Richmond, Va.

Filed Nov. 29, 1989, Ser. No. 442,657
Int. Cl.[5] C10M *135/02*
U.S. Cl. 252—48.2 19 Claims

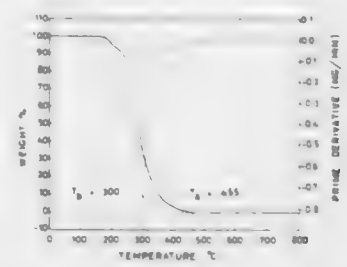
1. A liquid, partially sulfurized, hindered phenol product prepared by the process comprising reacting a liquid mixture of phenols, at least about 50 weight percent of said mixture consisting of one or more reactive, hindered phenols, with sulfur monochloride in proportions to provide from about 0.3 to 0.7 gram atoms of sulfur per mole of reactive, hindered phenol, so as to produce a liquid product.

5,009,803

LUBRICANT FLUID FOR THE COLD-ROLLING OF STEEL

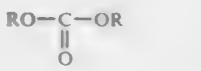
Ernesto Brandolese, Graffignana, Italy, assignor to Agip Petroli S.p.A., Rome, Italy

Filed Apr. 10, 1990, Ser. No. 506,816
Claims priority, application Italy, Apr. 18, 1989, 20191 A/89
Int. Cl.[5] C10M *173/00*
U.S. Cl. 252—49.5 8 Claims



1. An emulsion of oil in water, comprising:

(a) an oil phase, comprising one or more organic carbonates of the general formula (I)



(I)

wherein R and R', which may be the same or different, represent a C_6–C_{30} linear or branched alkyl, cycloalkyl, or cycloalkyl-alkyl group; and at least one emulsifier selected from the group consisting of non-ionic and anionic surfactants; and

(b) water;

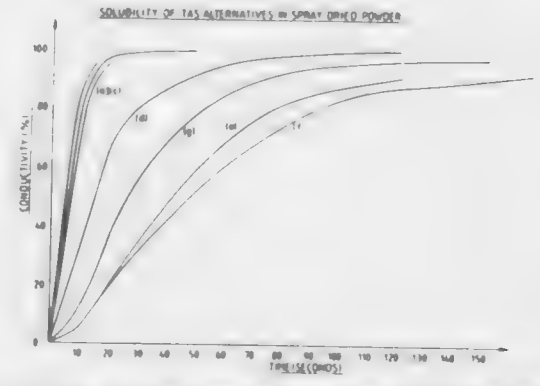
wherein said oil phase is present in an amount of between 1 and 5 wt. %.

5,009,804

GRANULAR LAUNDRY COMPOSITIONS CONTAINING MULTI INGREDIENT COMPONENTS HAVING DISPARATE RATES OF SOLUBILITY

Simon N. Clayton, West Jesmond; Peter M. Lambert, Cleckheaton, both of England, and Jean Wevers, Grimbergen, Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 15, 1989, Ser. No. 351,972
Claims priority, application United Kingdom, May 13, 1988, 8811447
Int. Cl.[5] C11D *17/06, 1/12*
U.S. Cl. 252—90 11 Claims



1. A solid detergent composition, wherein said composition is composed of at least two particulate multi ingredient components, a first one of said components consisting essentially of, by weight, a spray dried particulate incorporating an anionic surfactant selected from the group consisting of C_{16}–C_{22} alkyl

sulfate salts, C_{16}–C_{24} alkyl carboxylate salts, and mixtures thereof, and being substantially free of other anionic surfactants, in an amount of from about 0.75% to about 30% and one or more inorganic and/or organic salts in an amount of from about 99.25% to about 70%, said composition optionally including additional dry mixed detergent ingredients wherein;

(a) said first component comprises from about 30% to about 99% by weight of the composition and has a T_{95} value of from about 40 to about 180, T_{95} being the time in seconds to achieve 95% solution of a 1% weight mixture of the component in distilled water at 20° C.;

(b) a second component constituting from about 1% to about 70% by weight of the composition consisting essentially of a particulate containing a water soluble surfactant selected from the group consisting of C_{11}–C_{15} alkyl benzene sulfonates, C_{11}–C_{15} alkyl sulphates, C_{12}–C_{16} olefin sulfonates, C_{11}–C_{16} paraffin sulphonates, and mixtures thereof; and at least one organic or inorganic salt;

the amounts of (a), (b), and any optional ingredients totalling 100% by weight of the composition, the total composition having a Residue Index of not more than about 30%.

5,009,805

LIQUID DETERGENT WITH COPOLYMER ADDITIVE

Johannes Perner, Neustadt; Paul Diessel, Mutterstadt; Heinrich Hartmann, Limburgerhof; Walter Denzinger, Speyer; Alfred Oftring, Bad Duerkheim, and Willibald Schoenleben, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 19, 1989, Ser. No. 424,084

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1988, 3838093

Int. Cl.[5] C11D *3/37*

U.S. Cl. 252—174.24 **7 Claims**

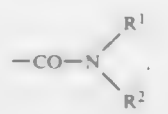
1. A liquid detergent formulation, containing as essential constituents

(1) one or more anionic surfactants, one or more non-ionic surfactants or a mixture thereof,

(2) 0.1-20% by weight of a copolymer containing as essential constituents

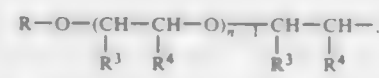
(a) 50–99 mol % of units of a monoethylenically unsaturated C_3–C_8-monocarboxylic acid, a monoethylenically unsaturated C_4–C_8-dicarboxylic acid, a half ester of a monoethylenically unsaturated C_4–C_8-dicarboxylic acid, an ester of a monoethylenically unsaturated C_3–C_8-monocarboxylic acid, a C_2–C_{30}-olefin, styrene, a C_1–C_3-alkylstyrene, a C_1–C_{28}-alkyl vinyl ether, a vinyl ester of a saturated C_1–C_8-monocarboxylic acid or a mixture thereof and

(b) 50–1 mol % of units of an amide of a monoethylenically unsaturated C_3–C_8-carboxylic acid where the amide groups have the structure



where

R^1 is



R^3 and R^4 are each H, CH_3 or C_2H_5,

R is C_1–C_{28}-alkyl,

n is from 2 to 100 and

R^2 is H or R^1.

as copolymerized units, and has a K value of from 8 to 200 (determined by the method of H. Fikentscher in aqueous solution at 25° C., pH 7.5 and a polymer concentration of 1% by weight), or a salt thereof and

(3) water.

5,009,806

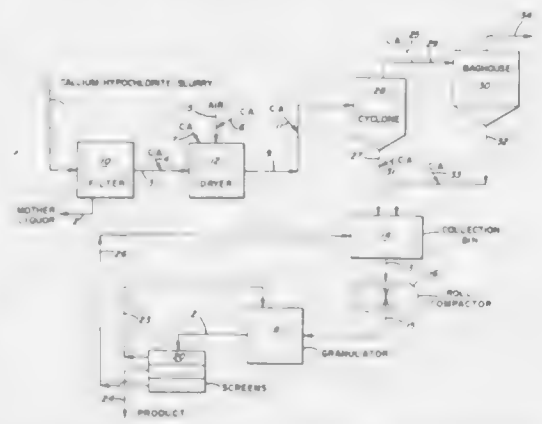
CALCIUM HYPOCHLORITE ARTICLE

Harlan B. Johnson, Rittman; Charles R. Wiedrich, Wadsworth; Ernie L. Allen, Barberton, all of Ohio, and Peter P. Howell, New Martinsville, W. Va., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 377,676, Jul. 10, 1989, Pat. No. 4,970,020, which is a division of Ser. No. 178,180, Apr. 6, 1988, Pat. No. 4,865,760. This application Jul. 17, 1990, Ser. No. 554,224

Int. Cl.[5] D06L *3/08;* **C01B** *11/06;* **C02F** *1/76*

U.S. Cl. 252—187.28 **12 Claims**



6. A solid formed article comprising a compressed article of a composition comprising a mixture of (a) from about 5 to about 20 parts of calcium hypochlorite powder having an average particle size of less than about 10 microns, (b) from about 95 to about 80 parts of particulate calcium hypochlorite, and (c) form about 0.001 to about 1.0 weight percent of unfibrillated polyfluorinated polymer.

5,009,807

NIOBIUM-ACTIVATED YTTRIUM TANTALATE X-RAY PHOSPHOR WITH IMPROVED BRIGHTNESS AND METHOD OF MAKING SAME

V. Butchi Reddy, Sayre, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 459,891, Jan. 2, 1990, Pat. No. 4,970,024. This application Aug. 6, 1990, Ser. No. 563,133

The portion of the term of this patent subsequent to Nov. 13, 2007, has been disclaimed.

Int. Cl.[5] C09K *11/78*

U.S. Cl. 252—301.4 H **5 Claims**

1. A niobium-activated yttrium tantalate x-ray phosphor containing rubidium halide or cesium halide, strontium halide or barium halide and, optionally, gallium oxide or aluminum oxide incorporated therein, made by forming a uniform mixture of the following ingredients in the following proportions:

one mole of yttrium oxide;

0.995 mole of tantalum oxide;

0.005 mole of niobium oxide;

from 0.001 mole to 0.01 mole of rubidium halide or cesium halide;

from 0.01 mole to 0.10 mole of strontium halide or barium halide;

and, optionally, from 0.01 mole to 0.04 mole of gallium oxide or aluminum oxide;

blending said mixture with a lithium chloride-lithium sulfate eutectic flux composition;

firing said mixture at about 1200°-1300° C. for about 10–12 hours to form said phosphor;

washing said phosphor in deionized water to remove said flux; and

filtering, drying and classifying said phosphor, said phosphor exhibiting a higher brightness than the phosphor prepared as above absent rubidium halide, cesium halide, strontium halide, barium halide, gallium oxide and aluminum oxide.

5,009,808

PROCESS FOR PRODUCING ELECTROLUMINESCENT YELLOW ZINC SULFIDE PHOSPHORS

Kenneth T. Reilly; Richard G. W. Gingerich, and Christopher S. Poss, all of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 289,882, Dec. 27, 1988, abandoned. This application Jan. 11, 1990, Ser. No. 462,922

Int. Cl.[4] C09K *11/56*

U.S. Cl. 252—301.60 S **1 Claim**

1. A process for producing an electroluminescent phosphor consisting essentially of:

(a) blending a chloride flux, a copper source, and zinc sulfide to form a relatively uniform admixture;

(b) heating the resulting admixture at a temperature of from about 1000° C. to about 1300° C. for about 2 to about 8 hours to convert at least a portion of the admixture to a crystalline material containing zinc sulfide of a hexagonal crystal structure, at least some chloride ions and copper ions;

(c) washing the resulting material with sufficient water to remove at least a major portion of the water soluble material from the crystalline material;

(d) drying the washed material to produce a relatively moisture-free material;

(e) subjecting the moisture-free material to low intensity milling for a sufficient time to change the crystallographic structure of at least a portion of the moisture-free material from a hexagonal to a cubic structure;

(f) blending the cooled material, which material is essentially nonelectroluminescent, with copper sulfate and zinc sulfate and sufficient manganese carbonate to achieve a manganese concentration of from about 2.0% to about 3.6% by weight of manganese based on the amount of zinc sulfide to form a second admixture;

(g) heating the second admixture at a temperature of from about 750° C. to about 850° C. for about 1.5 to about 3 hours to form an activated material containing from about 0.7% to about 1.3% by weight of manganese;

(h) washing the activated material with acetic acid, hydrochloric acid and potassium cyanide aqueous solutions to remove residual fluxes and excess activator materials; and

(i) drying the washed material to form an electroluminescent phosphor having increased brightness wherein the electroluminescent emission of the phosphor has an x color coordinate value of from about 0.522 to about 0.532 and a y color coordinate value of from about 0.460 to about 0.470 and the phosphor has an efficiency of greater than about 5.6 lumens per watt at 115 V/400 Hz and a particle size of from about 25 to about 30 micrometers.

5,009,809

HIGH TEMPERATURE ENDOTHERMIC BLOWING AGENTS COMPOSITIONS AND APPLICATIONS

John A. Kosin, Bel Air, Md.; Gerry Mooney, West Ajax, Canada; Michael A. Tarquini, Havre de Grace, Md., and Rod A. Garcia, Orange, Tex., assignors to J. M. Huber Corporation, Rumson, N.J.

Continuation-in-part of Ser. No. 352,307, May 16, 1989. This application Jan. 19, 1990, Ser. No. 467,584

Int. Cl.[5] C09K *3/00*

U.S. Cl. 252—350 **10 Claims**

1. A high temperature endothermic blowing agent which comprises a mixture of a polycarboxylic acid and a magnesium carbonate, wherein said polycarboxylic acid and said magnesium carbonate have been surface treated with a component selected from the group consisting of mono glycerides, stearic acid, silane coupling agents and mixtures thereof which prevents water from being absorbed by said polycarboxylic acid and said magnesium carbonate.

5,009,810

ENDOTHERMIC BLOWING AGENTS COMPOSITIONS AND APPLICATIONS

Satish K. Wason, Bel Air, Md.; Gerry Mooney, Ajax, Canada; Claude R. Andrews, Md.; Michael E. Tarquini, Havre de Grace, both of Md.; John A. Kosin, Bel Air, Md., and Rod A. Garcia, Orange, Tex., assignors to J. M. Huber Corporation, Rumson, N.J.

Filed May 16, 1989, Ser. No. 352,307

Int. Cl.[5] C08J *9/08, 9/224*

U.S. Cl. 252—350 **11 Claims**

1. An endothermic blowing agent which comprises a mixture of a polycarboxylic acid and an inorganic carbonate, wherein said polycarboxylic acid and said inorganic carbonate have been surface treated with a component selected from the group consisting of mono glycerides, stearic acid, silane coupling agents and mixtures thereof which prevents water from being absorbed by said polycarboxylic acid and said inorganic carbonate.

5,009,811

CONDUCTING VARNISH COMPOSITION

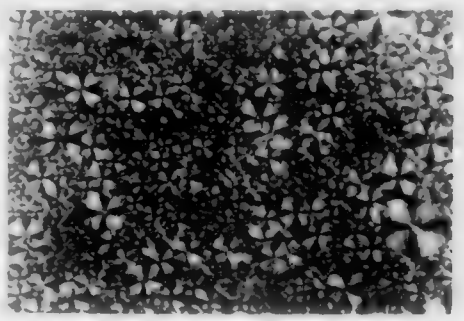
Tomio Nakamura, Ichikawa; Shigeru Shimizu, Yokohama, and Kikuko Takeuchi, Yokohama, all of Japan, assignors to Nitto Chemical Industry Company, Ltd., Tokyo, Japan

Filed Mar. 9, 1989, Ser. No. 321,284

Claims priority, application Japan, Mar. 16, 1988, 63-64399; Oct. 6, 1988, 63-250860

Int. Cl.[5] H01B *1/00*

U.S. Cl. 252—500 **17 Claims**



1. A conducting varnish composition consisting essentially of:

(a) 0.05–30% by weight of a tetracyanoquinodimethane complex salt;

(b) 0.05–100% by weight of a thermoplastic polymer or a monomer or oligomer which can polymerize into a polymer;

(c)

(i) 0.01–10% by weight of at least one member selected from the group consisting of acetals, orthoformic acid esters, orthoacetic acid esters, orthocarbonic acid esters, siloxanes, silyl ethers and orthosilicic acid esters; or

(ii) 0.001–20% by weight of a surfactant selected from the group consisting of anionic surfactants, cationic surfactants, amphoteric surfactants, nonionic surfactants, fluorine-containing surfactants and silicone oils; or

(iii) 0.01–11% by weight of a mixture of (i) and (ii), and

(d) a solvent wherein all percentages are based on the weight of the solvent.

5,009,812

ANTISTATIC AND ELECTRICALLY CONDUCTING POLYMERS AND MOULDING MATERIALS

Jürgen Finter, Freibrug/Br., Fed. Rep. of Germany; Bruno Hilti, Basel, Switzerland; Carl W. Mayer, Rieben, Switzerland; Ernst Minder, Basel, Switzerland, and Josef Pfeifer, Therwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 25, 1988, Ser. No. 172,880

Claims priority, application Switzerland, Apr. 3, 1987, 1284/87-0

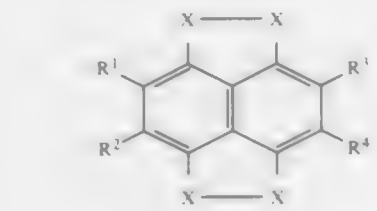
Int. Cl.[5] H01B *1/00*

U.S. Cl. 252—500 13 Claims

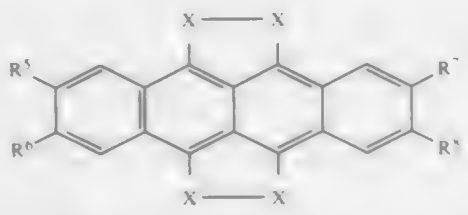
1. A composition containing

(a) a linear, branched or structurally crosslinked soluble polymer which is inert towards component (b) and

(b) a compound of the formula I or Ia or mixtures thereof

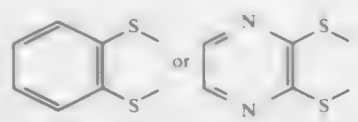


(I)



(Ia)

in which X is S, Se or Te, R^1, R^2, R^3 and R^4 independently of one another are a hydrogen atom or Cl or R^1 and R^2 and also R^3 and R^4 together are each



or R^1, R^2, R^3 and R^4 are each phenylthio, 4-methylphenylthio, 4-methoxyphenylthio or 4-pyridylthio, R^5, R^6, R^7 and R^8 independently of one another are H or F, R^5 is CH_3 and R^6, R^7 and R^8 are H, or R^5, R^6, R^7 and R^8 are CH_3, R^5 and R^6 are CH_3 or Cl, and R^7 and R^8 are H, or R^5 and R^6 are H, R^7 is —COR^9 and R^8 is H or —COR^9, or R^5 and R^6 are H and R^7 and R^8 together are —CO—O—CO or —CO—NR^{10}—CO— in which R^9 is halide, —OH, —NH_2 or the radical of an alcohol or a primary or secondary amine, or R^9 is OM in which M is a cation and R^{10} is H or the radical of a primary amine reduced by the NH_2 group, wherein the component (b) is present in an amount of 0.01 to 20% by weight, relative to the polymer.

10. A composition containing

(a) a linear, branched or structurally cross-linked soluble polymer and

(b) at least one charge-transfer complex (CT complex) which is composed of one compound of the formula I or Ia according to claim 1 and an electron acceptor, wherein the CT complex is present in an amount of 0.01 to 20% by weight, relative to the polymer and is in the form of a net-work of crystalline needles.

5,009,813

COMPOSITION FOR HAIR TREATMENT AGENT

Taichi Watanabe, Ichikawa; Hidekazu Ogino, Tokyo; Hajime Hirota, Tokyo; Tomohito Koshika, Tokyo; Naoko Moriya, Tokyo, and Toshio Nozaki, Sakura, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 122,454, Nov. 19, 1987, abandoned. This application Apr. 27, 1989, Ser. No. 344,443

Claims priority, application Japan, Nov. 28, 1986, 61-283745; Dec. 15, 1986, 61-297897; Dec. 16, 1986, 61-299673

Int. Cl.[5] C11D *1/02*

U.S. Cl. 252—545 3 Claims

1. A shampoo composition comprising as essential components:

(A) from 0.6 to 6% by weight of at least one chelating agent selected from the group consisting of α-aminoethane-α, α-diphosphonic acid, α-aminobenzyl-α, α-diphosphonic acid, amino-tri(methylene phosphonic acid), ethylene diamine tetra(methylene phosphonic acid), nitriloacetetic acid-di(methylene phosphonic acid), N,N-diacetic acid-N-methylene phosphonic acid, 1-hydroxyethane-1,1-diphosphonic acid, ethylenediamine tetraacetic acid, and nitrilo triacetic acid,

(B) from 0.1 to 5% be weight of at least one polymeric compound selected from the group consisting of cationic polymers containing quaternary nitrogen, and peptides of an average molecular weight of 400 to 10,000 or their derivatives, and

(C) from 5 to 30% by weight of at least one surface active agent selected from the group consisting of anionic and amphoteric active agents

5,009,814

USE OF N-POLYHYDROXYALKYL FATTY ACID AMIDES AS THICKENING AGENTS FOR LIQUID AQUEOUS SURFACTANT SYSTEMS

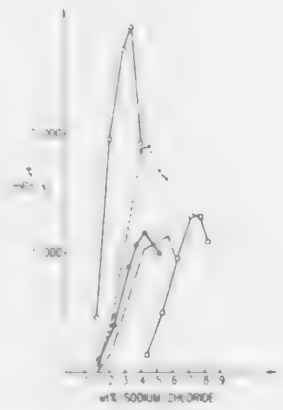
Heike Kelkenberg, Gladbeck; Wulf Ruback, Recklinghausen, and Klaus Engel, Duisburg, all of Fed. Rep. of Germany, assignors to Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Continuation of Ser. No. 149,479, Jan. 28, 1988, abandoned. This application Oct. 20, 1988, Ser. No. 262,257

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1987, 3711776

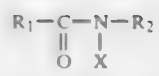
Int. Cl.[5] C11D *3/32, 17/00*

U.S. Cl. 252—548 9 Claims

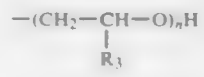


1. A method of shampooing which comprises:

(1) applying a mixture comprising at least one anionic or nonionic surfactant, water and 0.5–30 wt.% of an N-polyhydroxylalkyl fatty acid amide of formula



wherein R_1 is a branched or straight chain C_{1-17} alkyl group; R_2 is hydrogen or a branched or straight chain C_{1-18} alkyl group or a group



wherein n is 0 to 5, R_3 is hydrogen or methyl; and X is a C_{4-7} polyhydroxyalkyl group.

5,009,815

COMPOSITION OF NONLINEAR OPTICAL MATERIALS AND A METHOD FOR PREPARING THE SAME

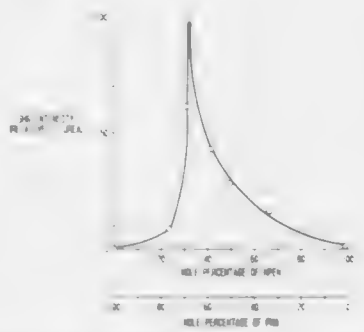
Katsuya Wakita, Moriguchi; Nobuo Sonoda, Settsu; Tokihiko Shimizu, Nara; Shu Hotta, Kawasaki, and Mamoru Soga, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 9, 1990, Ser. No. 478,230

Claims priority, application Japan, Feb. 22, 1989, 1-42389; Feb. 23, 1989, 1-43760; Mar. 30, 1989, 1-80359; May 16, 1989, 1-122187; May 16, 1989, 1-122188

Int. Cl.[5] F21V *9/00;* C09K *19/52;* G02B *5/23*

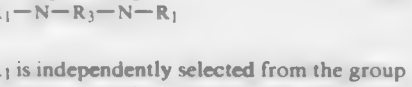
U.S. Cl. 252—582 7 Claims



1. A composition of nonlinear optical materials comprising:

a first organic compound with a π-electron conjugated system containing an electron-donative substituent group and an electron-attractive substituent group; and

a second organic compound of the general formula:



(I)

wherein each R_1 is independently selected from the group consisting of hydrogen, amino, substituted amino, hydroxy, alkoxy, linear or branched alkyl, nitro, cyano, halogen, sulfonyl, carbonyl, acyl, alkoxycarbonyl, and unsubstituted or substituted aromatic or heterocyclic rings, with the proviso that at least one R_1 is an unsubstituted or substituted aromatic or heterocyclic ring; each R_2 is independently selected from the group consisting of hydrogen, amino, substituted amino, hydroxy, alkoxy, linear or branched alkyl, nitro, cyano, halogen, sulfonyl, carbonyl, acyl, and alkoxycarbonyl; and R_3 is a linear or branched alkylene group.

5,009,816

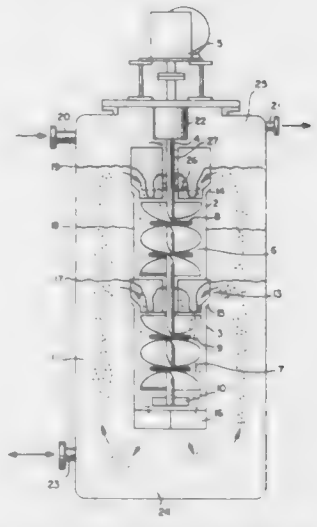
BROAD LIQUID LEVEL GAS-LIQUID MIXING OPERATIONS

Mark K. Weise, North Haledon, N.J.; Jeffery P. Kingsley, Newburgh, and Lawrence M. Litz, Pleasantville, both of N.Y., assignors to Union Carbide Industrial Gases Technology Corporation, Danbury, Conn.

Filed Apr. 26, 1990, Ser. No. 514,937

Int. Cl.[5] B01F *3/04*

U.S. Cl. 261—21 12 Claims



1. An improved process for mixing a gas and a liquid in a mixing vessel under circumstances in which the depth of said liquid changes over the course of the mixing operation comprising:

(a) introducing feed gas to the overhead gas space in a mixing vessel having two or more impeller-draft tube assemblies stacked vertically therein, each such assembly comprising a hollow draft tube with axial flow, down-pumping impeller means positioned therein for vortex development and the ingestion of gas from said overhead gas space into a body of liquid present in said mixing vessel, the lowest positioned impeller-draft tube assembly being positioned below the lowest liquid level encountered during the gas-liquid mixing operation, the highest positioned impeller-draft tube assembly being positioned below the highest liquid level encountered during said mixing operation, each next lower draft tube being positioned sufficiently below the draft tube above it so as to create a flow space between the draft tubes to allow the flow of liquid to said next lower impeller-draft tube assembly;

(b) rotating said impeller means to create a circulation of liquid downward in the lowest impeller-draft tube assembly, and in higher assemblies as the level of liquid rises in the mixing vessel, said liquid being discharged from the lowest assembly for passage upward in the annular space between said assemblies and the wall of the mixing vessel, thereby creating a vortex development and resulting ingestion of gas from the overhead gas space into the body of recirculating liquid; and

(c) controlling the flow of liquid to facilitate the passage of liquid from said annular space into the flow space between adjacent draft tubes and to preclude the radial expulsion of liquid being discharged from a higher draft tube away from the inlet to the next lower draft tube, the discharge flow from an upper draft tube thus serving as the feed to the next lower draft tube, whereby gas ingestion occurs by vortex entrainment at the inlet of the lowest draft tube when the liquid level is at its lowest point, with liquid pumping, gas dispersion and mixing being accomplished with the impeller means in said lowest draft tube, with said

stacked impeller-draft tube assemblies enabling said gas ingestion, gas dispersion, liquid pumping and mixing to be accomplished effectively as the liquid level changes during said gas-liquid operation.

5,009,817

URANIUM DIOXIDE PRODUCTION

Graham Hodgson, Blackpool, United Kingdom, assignor to British Nuclear Fuels plc, Warrington, England

Filed Jul. 11, 1989, Ser. No. 378,983

Claims priority, application United Kingdom, Sep. 9, 1988, 8821192

Int. Cl.[5] G21C *21/00;* **C01G** *43/02*

U.S. Cl. 264—0.5 **12 Claims**

1. A process for the production of a ceramic material comprising sinterable uranium dioxide, the process comprising initially oxidizing uranium metal in a flowing steam/inert gas environment at a temperature between 250° C. and 500° C. to produce substantially uranium dioxide, the proportions of the steam and the inert gas in said environment and the flow rate thereof being arranged so that the formation of U_3O_8 is inhibited, then further oxidizing the steam-oxidized metal in an oxygen-containing environment at a temperature not exceeding 700° C. to produce U_3O_8, and subsequently reducing the U_3O_8 in a reducing environment at a temperature not exceeding 600° C. to produce a ceramic material comprising sinterable uranium dioxide.

9. A process as claimed in claim 1 including subsequently sintering the uranium dioxide to produce nuclear fuel pellets.

5,009,818

METHOD OF MANUFACTURING AN OPTICAL INFORMATION RECORDED DISC

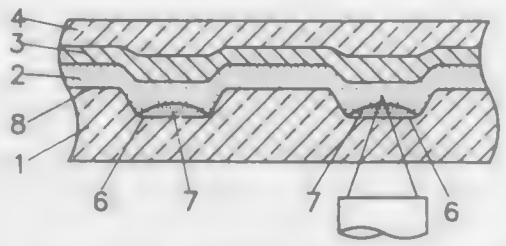
Yuji Arai; Yuaki Shin; Takashi Ishiguro, and Emiko Hamada, all of Tokyo, Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1989, Ser. No. 433,675

Claims priority, application Japan, Dec. 30, 1988, 63-335344

Int. Cl.[5] B29C *39/20, 45/16*

U.S. Cl. 264—1.003 **21 Claims**



16. A method for manufacturing an optical information recorded disc having an information stored therein and reproducible by an optical means, the method comprising the steps of:

(a) preparing a discoidal light-transmitting substrate having tracking guide means on one surface;

(b) forming a light-absorbing layer on the surface of the light-transmitting substrate, wherein an optical parameter represented by $\rho = n_{abs}d_{abs}\lambda$, where n_{abs} is the real part of the complex refractive index of the light-absorbing layer, d_{abs} is the thickness of the light-absorbing layer and λ is the wavelength of a reading laser beam, is $0.05 \geqq \rho \geqq 0.6$, and the imaginary k_{abs} of the complex refractive index of the light absorbing layer is at most 0.3;

(c) forming a light-reflecting layer on the light-absorbing layer;

(d) forming a protective layer on the light-reflecting layer; and

(e) irradiating the light-absorbing layer through the light-transmitting substrate and along the tracking guide means with a laser.

5,009,819

TASTE MODERATING COMPOSITION

Mircea C. Popescu, Plainsboro, and Edgar T. Mertz, Princeton, both of N.J., assignors to The Liposome Company, Inc., Princeton, N.J.

Filed Nov. 12, 1987, Ser. No. 119,667

Int. Cl.[5] B01J *13/02, 13/04*

U.S. Cl. 264—4.1 **1 Claim**

1. A method of making palatable an unpalatable hydrophobic therapeutic agent for oral administration which comprises:

forming liposomes in the presence of said hydrophobic agent, a solvent and a hydrophilic flavoring agent, to encapsulate a portion of said hydrophobic agent

separating said liposomes from unencapsulated agent and solvent by multiple washing and centrifuging steps that remove exogenous flavoring agent from said liposomes but do not reduce the stability of the liposomes and

adding a pharmaceutical carrier to said liposomes for oral administration.

5,009,820

PROCESS OF MAKING ACICULAR PARA-ARAMIDE PARTICLES

Don M. Coates, Midlothian, Va., and Patrick H. Young, Circleville, Ohio, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 5, 1990, Ser. No. 489,274

Int. Cl.[5] B29B *9/00;* **C08G** *69/32*

U.S. Cl. 264—13 **2 Claims**

1. A process for preparing para-aramide particles by the steps of:

forming a solution medium of about 5 to 10% by weight poly(paraphenylene terephthalamide), about 15 to 25% by weight carbon dioxide, and about 70 to 85% by weight water at a temperature in the range of about 275° to 325° C. and under a pressure of about 1,000 to 3,000 psi, and

passing the solution medium through an orifice into a region of lower temperature and much lower pressure to precipitate the particles.

5,009,821

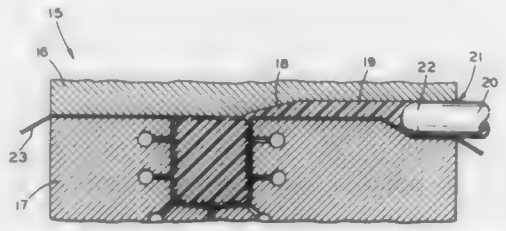
MOLDING METHOD FOR ELIMINATING FIBER READOUT

William R. Weaver, Toledo, Ohio, assignor to Libbey-Owens-Ford Co., Toledo, Ohio

Filed Feb. 23, 1989, Ser. No. 314,767

Int. Cl.[5] B29C *45/14*

U.S. Cl. 264—22 **22 Claims**



1. A process for preparing a fiber reinforced molded plastic article, comprising the steps of:

(A) providing a mold, including at least two cooperating mold sections, having a cavity therein for forming the fiber reinforced molded plastic article, wherein at least a portion of the mold cavity defines a mold cavity surface adjacent which a finished surface of the plastic article is to be molded;

(B) disposing a surface finishing film across the mold cavity surface;

(C) conforming the surface finishing film to substantially the configuration of the mold cavity surface;

(D) positioning a fiber preform into the mold cavity having the surface finishing film conformed to the surface thereof, the fiber preform having substantially the same configuration as the mold cavity;

(E) closing the mold;

(F) injecting polymeric precursor materials into the mold cavity behind the surface finishing film, wherein the polymeric precursor materials fill the mold cavity and simultaneously:

(i) impregnate the fiber preform to form a molded fiber preform; and

(ii) deform the surface finishing film into intimate contact with the mold cavity surface; and

(G) curing the polymeric materials inside the mold, thus allowing the surface finishing film to maintain intimate contact with the mold surface while bonding the surface finishing film of the molded fiber preform;

whereby the surface finishing film provides a finished surface, whose outside shape matches the inside of the mold surface, and is free from fiber readout, on the fiber reinforced molded plastic article.

5,009,822

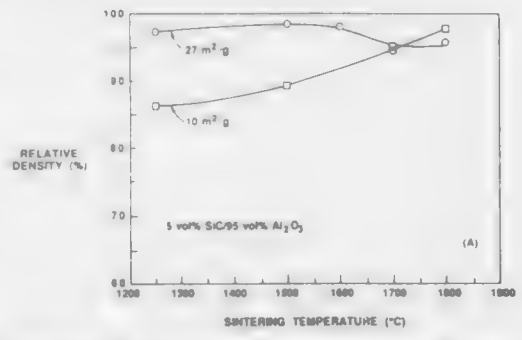
ALUMINA-OR ALUMINA/ZIRCONIA-SILICON CARBIDE WHISKER CERAMIC COMPOSITES AND METHODS OF MANUFACTURE

Michael D. Sacks, and Hae-Weon Lee, both of Gainesville, Fla., assignors to University of Florida, Gainesville, Fla.

Filed Jul. 17, 1989, Ser. No. 380,285

Int. Cl.[5] C04B *33/34*

U.S. Cl. 264—23 **17 Claims**



1. A method for fabricating a ceramic article comprising SiC whiskers uniformly dispersed in a matrix consisting of Al_2O_3 or a homogeneous mixture of Al_2O_3 and ZrO_2, said article containing from about 5 to 27 vol. % of SiC whiskers and having no less than about 93% of theoretical density, said method consisting of the steps:

(a) subjecting SiC whiskers to an acid- and/or base-washing step for a period of time sufficient to remove leachable impurities therefrom and to improve the dispersibility thereof in water, followed by washing with water to remove said acid and/or base therefrom,

(b) subjecting powdered Al_2O_3, or powdered Al_2O_3 and powdered ZrO_2, and SiC whiskers to fluid classification to remove coarse particles and agglomerates of said powdered Al_2O_3, or powdered Al_2O_3 and powdered ZrO_2i and SiC whiskers and provide powdered Al_2O_3 or powdered Al_2O_3 and powdered ZrO_2, having a specific surface area of at least about 8 m^2/g and having more than about 98% of the particles with equivalent Stokes diameters less than about 1.0 μm and SiC whiskers having a specific surface area of at least about 3 m^2/g and an average aspect ratio of from about 14 to about 21,

(c) forming a suspension of said powdered Al_2O_3, or powdered Al_2O_3 and powdered ZrO_2, and said SiC whiskers produced in step (b) in water at a pH of between about 3.5 and about 4.5 to provide zeta potentials therein of from about 40–70 mV and a solution conductivity from about 0.5–5 millimhos/cm employing a dispersing agent, said suspension having a solids concentration ≧ about 40 vol. %,

(d) consolidating said suspension produced in step (c) to form a green compact comprising a uniform dispersion of SiC whiskers in a homogenous microstructure comprising Al_2O_3 or a mixture of Al_2O_3 and ZrO_2, said green compact having a high relative packing density of from about 66 to about 71% and uniform pores and channels having median pore channel radii ≦about 50 nm,

(e) infiltrating said green compact produced in step (d) with an aluminum compound which is a precursor to Al_2O_3 and which forms α-Al_2O_3 under the conditions of sintering in step (f), and

(f) pressureless sintering said infiltrated green compact at a temperature in the range of from about 1250° to about 1800° C. in an inert atmosphere for a period of time sufficient to produce said ceramic article.

5,009,823

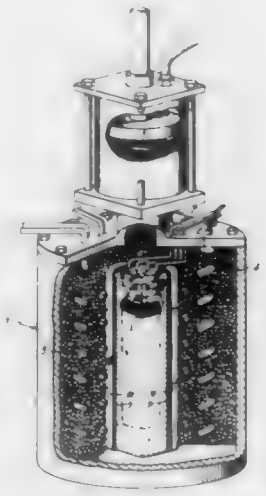
METHOD OF MOLDING A CARBON-CARBON COMPOSITE

Robert V. Kromrey, Campbell, Calif., assignor to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 907,942, Sep. 10, 1986, abandoned. This application Aug. 27, 1990, Ser. No. 574,554

Int. Cl.[5] B29C *43/10*

U.S. Cl. 264—29.7 **6 Claims**



1. A method for making a carbon-carbon composite comprising:

(a) disposing a resin impregnated carbon fiber reinforced prepreg in a pressure vessel;

(b) substantially filling said pressure vessel with a solid flowable particulate polymer;

(c) exposing said prepreg to temperatures and pressures sufficient to cure said prepreg to form a carbon-carbon precursor;

(d) exposing said carbon-carbon precursor to temperatures and pressures sufficient to post-cure said carbon-carbon precursor; and

(e) exposing said post-cured carbon-carbon precursor to temperatures and pressures sufficient to carbonize said post-cured carbon-carbon precursor to form a carbon-carbon composite;

wherein said curing, postcuring, and carbonization is a continuous process and said carbon-carbon composite has high strength.

5,009,824

PROCESS FOR PREPARING AN ASYMMETRICAL MACROPOROUS MEMBRANE POLYMER

Axel Walch, Frankfurt am Main; Juergen Wildhardt, Huenstetten, and Dieter Beissel, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 111,700, Oct. 23, 1987, abandoned, which is a division of Ser. No. 448,764, Dec. 10, 1982, Pat. No. 4,720,343. This application Oct. 23, 1989, Ser. No. 425,446

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1981, 3149976

Int. Cl.[5] B01D *71/68, 69/12*

U.S. Cl. 264—45.1 12 Claims

1. A process for preparing an asymmetrical macroporous membrane, comprising the steps of:

(A) forming a macroporous asymmetrical membrane from a polymer solution by action of a coagulating liquid, said polymer solution comprising as the dissolved fraction a polymeric mixture comprised of about 5-70% by weight of polyvinylpyrrolidone having a molecular weight of ≧100,000 Dalton and about 95-30% by weight of a polymer selected from the group consisting of a polysulfone, a polyether sulfone, and an aromatic or araliphatic polyamide, said weight being relative to the total weight of the dissolved polymeric fraction, wherein coagulation is effected under conditions such that skin formation, asymmetrical pore formation and retention of said polyvinylpyrrolidone are achieved and

(B) recovering the resultant asymmetrical macroporous membrane comprising said polymeric mixture.

5,009,825

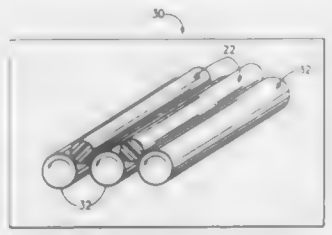
PRODUCTION OF EXTRUDED ROUND ROD

Mark Lurie, 3115 Embassy Dr., West Palm Beach, Fla. 33401

Filed Jun. 30, 1989, Ser. No. 375,149

Int. Cl.[5] B29C *47/90*

U.S. Cl. 264—148 16 Claims



1. In a method of producing a round rod formed of thermoplastic material by extrusion in a conventional extruder, the improvement which comprises the steps in sequence of:

A. cooling the extruded rod as it is expressed from the extruder;

B. cutting the extruded rod to a predetermined length;

C. heating the cut extruded rod from step B to a temperature above the glass transition temperature of the rod while rotating the rod fully supported on roller means; and

D. cooling the heated rod from step C at a controlled rate while rotating the rod fully supported on said roller means.

9. Apparatus for producing round rod formed of thermoplastic material, comprising an extruder for forming a round rod, and a post-extrusion heat treating means comprising an oven containing a plurality of rollers having axis parallel to one another for rotating and fully supporting said rod with the axis of the rod parallel to the axis of said rollers for a predetermined period of time.

5,009,826

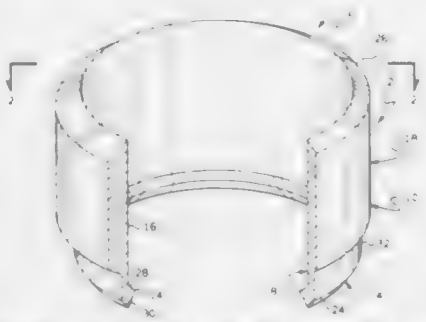
METHOD OF MOLDING A COMPOSITE DRILL COLLAR

John H. Walker, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 90,287, Aug. 28, 1987, Pat. No. 4,832,137, which is a division of Ser. No. 868,409, May 9, 1986, Pat. No. 4,708,203. This application May 1, 1989, Ser. No. 345,914

Int. Cl.[5] B29C *43/04*

U.S. Cl. 264—154 2 Claims



1. A method for molding a collar for use on a drill string which comprises:

heating a sheet of thermoplastic material, containing long fiber reinforcement, to the softening point;

rolling the reinforced thermoplastic sheet into a roll having a cylindrical shape;

placing the roll in an open cylindrical mold having a longitudinal axis so that the longitudinal axis of the roll is approximately coaxial with the longitudinal axis of the open cylindrical mold;

inserting a mold core having a longitudinal axis into the mold in alignment with the longitudinal axis of the open cylindrical mold to form a mold cavity wherein the core is inserted with force sufficient to close the mold and deform the material to fill the mold cavity defined between the mold core and the cylindrical mold when the mold is closed;

wherein the lower end of the mold core is beveled to form one surface of a generally radially inwardly extending rib, the rib being completed during the machining operation;

the mold cavity having a shape which at least partially determines the inner surface and outer surface of a collar precursor, and wherein the precursor is formed with an end closure;

cooling the thus formed collar precursor;

opening the mold;

removing the collar precursor from the mold; and

machining the end surfaces of the collar precursor in a machining operation to remove the end closure and form the collar which is suitable for use on a drill string.

5,009,827

PROCESS FOR FORMING AN ELASTOMERIC MEMBRANE

Ismat A. Abu-Isa, Rochester; Elio Eusebi, Troy; Craig B. Jaynes, Bloomfield Hills; Susan C. Moran, Ann Arbor, and Michael A. Roy, Troy, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 119,965, Nov. 13, 1987, Pat. No. 4,842,257. This application Nov. 14, 1988, Ser. No. 271,461

Int. Cl.[5] B29D *7/01*

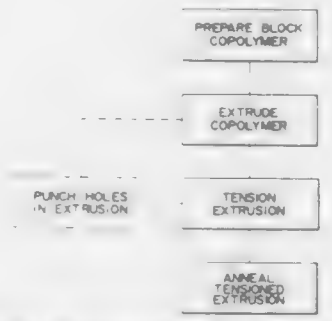
U.S. Cl. 264—156 4 Claims

1. A process for forming a vehicle seat suspension component comprising the steps of:

extruding a quantity of unoriented block copolymer material of polytetramethylene terephthalate polyester and polytetramethylene ether into a membrane;

tensioning said membrane to orient molecules therein with respect to the extrusion direction of the membrane;

annealing the membrane to set the orientation of the molecules so that the membrane has a first modulus of elasticity in a first range of elongation of the copolymer material



and a second modulus of elasticity greater than the first modulus in a second range of elongation which is greater than the first range of elongation.

5,009,828

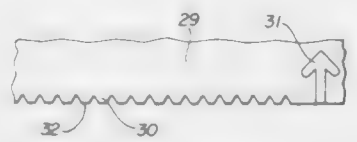
METHOD OF FORMING A RECLOSABLE CONTAINER WITH GRIP STRIP

John O. McCree, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 781,125, Sep. 26, 1985, abandoned. This application Oct. 11, 1989, Ser. No. 419,975

Int. Cl.[5] B29C *47/12*

U.S. Cl. 264—177.1 7 Claims



1. A method of forming a reclosable container with gripping ridges formed in a grip strip on opposed lips of the container, said method comprising the steps of

forming three or more cut-away sections on an extrusion die adapted to form ridges on film coextruded adjacent said ridges, said cut-away sections spaced a distance so that there are at least seven ridges per lineal inch in the width of said grip strip, said cut-away sections shaped so as to present a gripping edge on said ridges,

extruding said ridges through said extrusion die onto a plastic film to form said grip strip, and

drawing down said grip strip so as to maintain generally said gripping edge and said at least seven ridges per lineal inch of said grip strip.

5,009,829

PROCESS FOR MANUFACTURING YARNS BY MELTSPINNING POLYETHYLENE TEREPHTHALATE

Antonius Roos, Veenendaal, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

Continuation-in-part of Ser. No. 169,222, Mar. 16, 1988, abandoned. This application Jun. 29, 1989, Ser. No. 372,763

Claims priority, application Netherlands, Mar. 16, 1987, 8700617

Int. Cl.[5] D01F *6/62*

U.S. Cl. 264—210.6 8 Claims

1. A process for manufacturing industrial yarns by melt-spinning polyethylene terephthalate (PETP), comprising, in one operation, melting solid PETP, extruding the molten PETP through spinning orifices and solidifying the extruded PETP into a spun product which is drawn into a yarn, wherein:

(a) the solid PETP has a relative viscosity in the range of 1.8 to 2.1;

(b) before extruding, the PETP is mixed with 0.1-0.8% by weight of a bis-(ketenimine);

(c) the molten PETP is drawn off from the spinning orifices at a speed in the range of 1500 to 4000 m/min; and

(d) the spun product formed is drawn without intermediate winding at a draw ratio of 1.5 to 4.0, the draw ration being selected such that the final speed of the yarn is not higher than 6000 m/min;

thereby producing industrial yarn at a speed not higher than 6000 m/min having an elongation at break of from about 9% to about 18%.

5,009,830

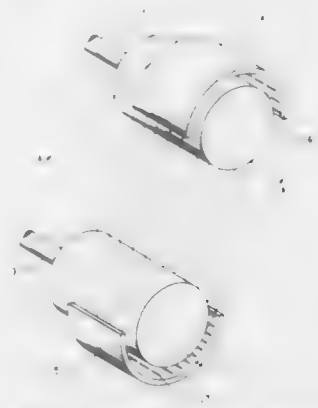
ON-LINE FIBER HEAT TREATMENT

Terry S. Chern, Richmond, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 20, 1989, Ser. No. 326,553

Int. Cl.[5] D01F *6/60;* D01D *10/02*

U.S. Cl. 264—290.5 9 Claims



1. A process for simultaneously drying and heat treating under tension wet spun fibers comprising:

(a) supplying continuously by means of a pair of fiber carrying rolls to a heated zone fibers of greater than 20 percent water based on weight of dry fiber material;

(b) conducting the fibers in the heated zone in multiple wraps around the pair of rolls;

(c) maintaining a tension of 0.2 to 6 grams per denier to the fibers at the beginning of the zone;

(d) directing turbulent gas at a temperature of 200 to 600° C. by means of gas jets extending around each of the rolls for about 45 to 180° against the fibers under tension in the zone until the residual moisture in the fibers is from 0.5 to 10 percent water based on weight of dry fiber material;

(e) removing continuously the fibers from the heated zone.

5,009,831

EXTRUSION COATED SUBSTRATES WITH SEPARABLE AND REMOVABLE LAYERS

Eran Turi, Springfield, Mass., assignor to Union Camp Corporation, Wayne, N.J.

Filed Jun. 9, 1989, Ser. No. 363,828

Int. Cl.[5] B29C *47/06*

U.S. Cl. 264—510 15 Claims

1. A process for extrusion coating a substrate with a thermoplastic layer which is separable from said substrate, comprising:

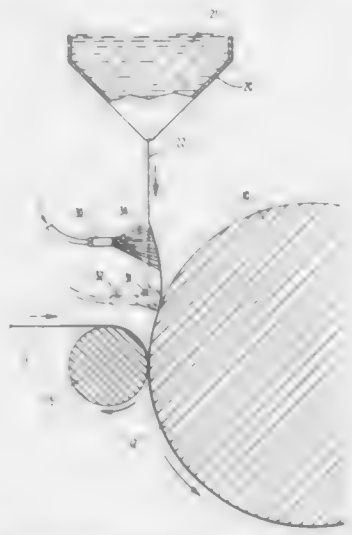
(a) directing said substrate between two pressure roll means, a first of said pressure roll means having a temperature of less than the melting point of said thermoplastic;

(b) providing a molten curtain of said thermoplastic;

(c) directing said molten curtain of said thermoplastic with a current of a fluid medium so as to cause at least a first

portion of said molten curtain to contact said first pressure roll means for a time sufficient to substantially solidify said first portion to form a thermoplastic sheet; and

(d) combining at least said thermoplastic sheet with said



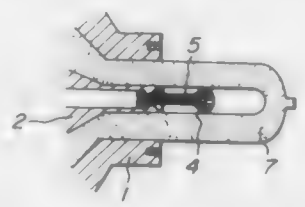
substrate between said two pressure roll means so as to form an extrusion coated substrate having a first thermoplastic layer portion which is separable from said substrate said first thermoplastic layer portion comprising said solidified first portion of said molten curtain.

5,009,832

CLOSED END SLEEVE PRODUCING METHOD AND CORE STRUCTURE USED IN THE METHOD

Shinji Oshima, Ama, and Hidenobu Misawa, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Aichi, Japan

Filed Feb. 8, 1989, Ser. No. 307,497
Claims priority, application Japan, Mar. 4, 1988, 63-51218
Int. Cl.[5] B29C *69/00*
U.S. Cl. 264—571 7 Claims



5. A method for producing a sleeve having a closed end by extruding a forming material from a mouthpiece, sequentially comprising the steps of:

arranging a core member at a position in said mouthpiece, said core member having at its outer end a tip die made of a porous body for forming an inner configuration of said closed end;

arranging an outer die made of a porous body at the outer end of said mouthpiece for forming an outer configuration of said closed end, thereby providing an annular space defined by the mouthpiece, the core member and the outer die;

supplying said forming material into the annular space and extruding the material therefrom, while simultaneously applying suction to said outer die made of the porous body from an outside portion thereof, thereby forming the closed end of said sleeve;

removing said outer die from the mouthpiece by blowing air through the outer die from its outside portion and against the formed closed end of said sleeve; and

supplying air through said tip die into a volume between the formed closed end of said sleeve and said tip die, while simultaneously further supplying said forming material into said annular space to extrude the material from said mouthpiece

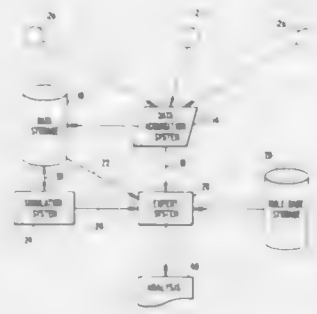
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5,009,833

EXPERT SYSTEM FOR SURVEILLANCE, DIAGNOSIS AND PROGNOSIS OF PLANT OPERATION

Kenji Takeuchi, Murrysville; Andre F. Gagnon, Monroeville; Augustine C. Cheung, Murrysville, and Philip E. Meyer, Penn Hills, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 11, 1989, Ser. No. 295,698
Int. Cl.[5] G21C *7/36*
U.S. Cl. 376—217 14 Claims



1. A method for analyzing operating conditions in a plant, comprising the steps of:

(a) obtaining plant condition data indicative of the operating conditions in the plant;

(b) evaluating the plant condition data using an expert system rule base to determine probabilities of existence of abnormal circumstances;

(c) predicting effects of the abnormal circumstances in dependence upon the plant condition data

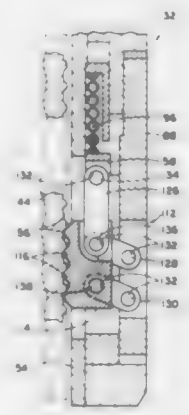
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5,009,834

CURVILINEAR TRANSLATING LATCH AND LINKAGE ARRANGEMENT IN A CONTROL ROD DRIVE MECHANISM OF A NUCLEAR REACTOR

John E. Tessaro, Manor Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 14, 1990, Ser. No. 567,026
Int. Cl.[5] G21C *7/12*
U.S. Cl. 376—232 10 Claims



1. A latch and linkage arrangement in a control rod drive mechanism of a nuclear reactor, said arrangement comprising:

(a) at least one latch including an elongated body having a pair of opposite ends and a pair of opposite side edges, and a plurality of latch teeth defined along one of said side edges of said body between said opposite ends thereof; and

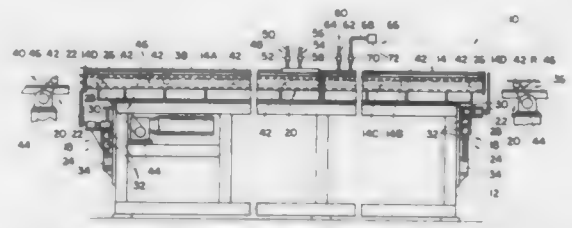
(b) a plurality of links, a first of said links pivotally connected to said latch body adjacent one of said ends thereof and pivotally connectable to a member for applying a motive force longitudinally of said body between said opposite ends thereof, second and third of said links pivotally connected to said latch body and connectable to a support member in parallel relation to one another so as to define a parallelogram therewith such that when the motive force is applied to said body via said first link said latch body and thereby said latch teeth undergo curvilinear movement toward and away from a latching position.

5,009,835

NUCLEAR FUEL ROD HELIUM LEAK INSPECTION APPARATUS AND METHOD

Hassan J. Ahmed, Irmo, S.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 25, 1989, Ser. No. 301,414
Int. Cl.[5] G21C *17/00*
U.S. Cl. 376—251 21 Claims



1. An inspection apparatus for testing nuclear fuel rods for helium leaks, comprising:

(a) a test chamber being openable and closable for receiving at least one nuclear fuel rod;

(b) means separate from the fuel rod for supplying helium and constantly leaking helium at a predetermined known positive value into said test chamber to constantly provide an atmosphere of helium at said predetermined known positive value in said test chamber; and

(c) means for sampling the atmosphere within said chamber and measuring the helium in the atmosphere such that a measured helium value (i) below a preset minimum helium value substantially equal to said predetermined known positive value of said atmosphere of helium being constantly provided in said test chamber indicates a malfunction in said inspection apparatus, (ii) above a preset maximum helium value greater than said predetermined known positive in said test chamber indicates the existence of a helium leak from the fuel rod, or (iii) between said preset minimum and maximum helium values indicates the absence of a helium leak from the fuel rod.

5,009,836

METHOD FOR TEMPORARY SHIELDING OF REACTOR VESSEL INTERNALS

Noel P. Grimm, Monroeville, and James Sejvar, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 19, 1989, Ser. No. 368,433
Int. Cl.[5] G21C *19/00, 11/00*
U.S. Cl. 376—260 6 Claims

3. A method for shielding stored internals for reactor vessel annealing, comprising the steps of:

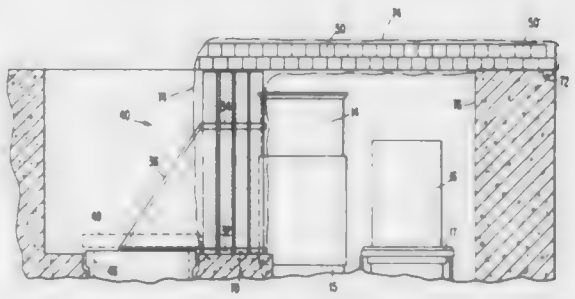
(a) removing nuclear fuel from the reactor vessel containment building;

(b) removing and storing upper and lower core internals under water in a refueling canal storage area;

(c) assembling a support structure in the refueling canal between the reactor vessel and the stored internals;

(d) introducing a plurality of vertical shielding tanks individually through a hatch in the containment building and positioning each into the support structure;

(e) introducing a plurality of horizontal shielding tanks individually through a hatch in the containment building and



positioning each above the stored internals and plurality of vertical tanks;

(f) draining water from the refueling canal to the level of a flange of the reactor vessel;

(g) placing an annealing apparatus in the reactor vessel;

(h) pumping the remaining water from the reactor vessel; and

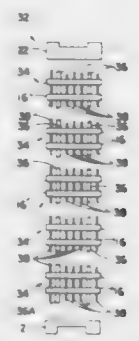
(i) annealing the reactor vessel.

5,009,837

AXIALLY MODULAR FUEL ASSEMBLY AND ROD FOR OPTIMAL FUEL UTILIZATION

Tho Q. Nguyen, Penn Township, Westmoreland County, and Alberto L. Casadei, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 3, 1989, Ser. No. 431,355
Int. Cl.[5] G21C *3/32*
U.S. Cl. 376—261 24 Claims



1. A modular fuel assembly, comprising:

(a) a plurality of axially stacked end-to-end adjacent subassemblies;

(b) each of said subassemblies including a plurality of elongated structural segments, a plurality of fuel rod segments and at least one support grid mounted to said structural segments and supporting said fuel rod segments; and

(c) means defined on opposite ends of said structural segments for releasably connecting together in axially aligned end-to-end relation said structural segments of said respective adjacent subassemblies to form a plurality of elongated structural support members for providing a structural skeleton of said modular fuel assembly with said support grids of said respective adjacent subassemblies disposed in axially spaced relation relative to one another along said structural support members and said fuel rod segments of said respective adjacent subassemblies dis-

posed in axially aligned end-to-end relation with each other.

5,009,838

INTERNAL PUMP FOR NUCLEAR REACTOR

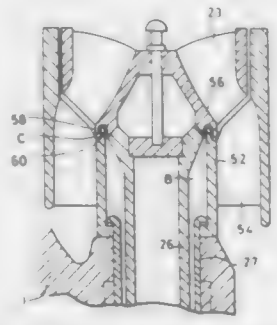
Tsutomu Shioyama, Yokohama; Ko Minakami, Kawasaki; Takao Fujii, Yokohama, and Koichi Ohtomi, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 18, 1989, Ser. No. 298,596

Claims priority, application Japan, Jan. 18, 1988, 63-6816; Feb. 29, 1988, 63-44267; Mar. 28, 1988, 63-72061; Mar. 29, 1988, 63-73320

Int. Cl.[5] G21C *19/42*

U.S. Cl. 376—310 **22 Claims**



1. A nuclear reactor internal pump comprising:
a pump shaft connected to a motor and rotatably passing through the bottom of a nuclear reactor pressure vessel;
an impeller fitted to a front end portion of the pump shaft;
a diffuser disposed on the downstream side of the impeller and having an inner cylinder fixed to the bottom of the reactor pressure vessel to surround the pump shaft;
a purge water passage defined between the pump shaft and the inner cylinder to communicate with the inside of the reactor pressure vessel;
a purge water supply means for supplying purge water to the reactor pressure vessel through the purge water passage; and
a clad dropping preventive means, located inside the reactor pressure vessel, for preventing clad from entering the pressure while allowing the purge water to pass through the passage.

5,009,839

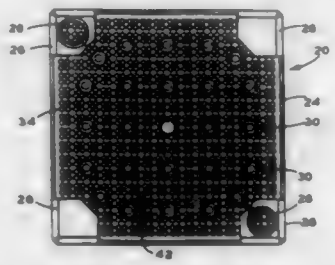
NUCLEAR FUEL ASSEMBLY BOTTOM NOZZLE PLATE

Raymond A. King, Lynchburg, Va., assignor to B&W Fuel Company, Lynchburg, Va.

Filed Sep. 4, 1990, Ser. No. 577,384

Int. Cl.[5] G21C *19/30, 3/30, 15/00*

U.S. Cl. 376—352 **4 Claims**



1. In a fuel assembly for a nuclear reactor, a bottom nozzle plate having legs adapted to be positioned on the lower core plate of the reactor for supporting the fuel assembly above coolant inlet openings in the core plate, said bottom nozzle plate comprising:
a. a rigid substantially square plate; and
b. said square plate having a plurality of first coolant flow holes therethrough where each of said first flow holes is circular in cross section and 0.180±0.005 inch in diameter with the majority of said first flow holes grouped in clusters of four to define a square pattern relative to the sides of said square plate such that the width of the sections of said square plate between said first flow holes in said square pattern is less than the width of the sections of said square plate between said clusters of four holes and said square plate having a plurality of second coolant flow holes therethrough positioned so as to be above the coolant inlet openings in the core plate when said bottom nozzle plate is installed in the reactor, with each of said second flow holes being of an irregular pattern to define a substantially clover leaf shape.

5,009,840

FUEL ASSEMBLY FOR NUCLEAR REACTOR

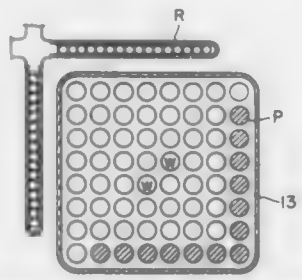
Makoto Ueda; Yoshihira Ando; Shungo Sakurai, and Ritsuo Yoshioka, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 19, 1989, Ser. No. 299,238

Claims priority, application Japan, Jan. 23, 1988, 63-11872; Mar. 22, 1988, 63-65735; Apr. 1, 1988, 63-78080

Int. Cl.[5] G71C *3/32*

U.S. Cl. 376—435 **11 Claims**



1. A fuel assembly for a nuclear reactor having a number of fuel rods arranged in a channel box surrounded by a water gap, comprising:
a plurality of first fuel rods arranged in a peripheral portion of said channel box which faces a water gap through which a control blade is not inserted or drawn out; and
a plurality of second fuel rods arranged in portions of the channel box other than said peripheral portion and each containing a fissionable material having an atomic number density larger than that of a fissionable material contained in each of said first fuel rods.

5,009,841

PROCESS FOR DEWAXING INJECTION MOLDED METAL PIECES AND FOR IMPROVING THE PROPERTIES THEREOF

Martin Bloemacher, Meckenheim; Reinhold Schlegel, Hassloch, and Dieter Weinand, St. Martin, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 12, 1990, Ser. No. 508,190

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1989, 3912298

Int. Cl.[5] B22F *100*

U.S. Cl. 419—23 **5 Claims**

1. A process for preparing injection molded metal pieces, which process comprises: mixing finely divided iron and from 2 to 30% by weight of a finely divided oxide of iron to produce a iron/iron oxide mixture; adding an organic binder with heating to the iron/iron oxide mixture to produce a iron/iron oxide binding mixture having a pasty consistency; cooling and granulating the iron/iron oxide/binder mixture to produce granules of the iron/iron oxide/binder; subjecting the granules to injection molding to form molded pieces of the iron/iron oxide/binder mixture; and heating the molded pieces under a reducing atmosphere to produce a molded piece containing iron free of iron oxide and free of binder.

5,009,842

METHOD OF MAKING HIGH STRENGTH ARTICLES FROM FORGED POWDER STEEL ALLOYS

Alfred A. Hendrickson, Lake Leelanau, and Darrell W. Smith, Chassell, both of Mich., assignors to Board of Control of Michigan Technological University, Houghton, Mich.

Filed Jun. 8, 1990, Ser. No. 535,379

Int. Cl.[5] B22F *3/24*

U.S. Cl. 419—28 **15 Claims**

1. A method for producing a high strength article from forged powder steel alloys comprising the steps of:
(a) compacting said powder into a coherent preform;
(b) heating said preform in a sintering means in a substantially dry, highly-reducing atmosphere and at a temperature of at least 1150° C. to sinter said preform and allowing said sintered preform to cool;
(c) preheating said sintered preform in a preheating means in the presence of a substantially dry, highly reducing atmosphere to a preheating temperature of at least 1000° C.; and
(d) transferring said preheated, sintered preform from the preheating means to an impact forging device and impacting said preform therein at a peak average forging pressure of at least about 1000 MPa to obtain a forged article, the time period between removing said preheated, sintered preform from the preheating means and the first forging impact being no more than about 8 seconds.

5,009,843

SPRING STEEL HAVING GOOD DURABILITY AND SAG-RESISTANCE

Atsushi Sugimoto; Osamu Nakano; Shigeru Yasuda; Chikatoshi Maeda; Toshio Ozone, and Makoto Kawagoe, all of Aichi, Japan, assignors to Aichi Steel Works, Ltd., Tokai; Toyota Jidosha Kabushiki Kaisha, Toyota and Chuo Hatsujo Kabushiki Kaisha, Nagoya, all of, Japan

Filed May 22, 1990, Ser. No. 526,893

Claims priority, application Japan, May 29, 1989, 1-135631

Int. Cl.[5] C22C *38/40*

U.S. Cl. 420—112 **4 Claims**

1. A spring steel having a good durability and a good sag-resistance consisting essentially of by weight 0.35–0.55% carbon, 1.80–3.00% silicon, 0.50–1.50% manganese, 0.50–3.00% nickel, 0.10–1.50% chromium, 0.01–0.05% aluminum and 0.010–0.025% nitrogen, the remainder being iron and inevitable impurities.

5,009,844

PROCESS FOR MANUFACTURING SPHEROIDAL HYPOEUTECTIC ALUMINUM ALLOY

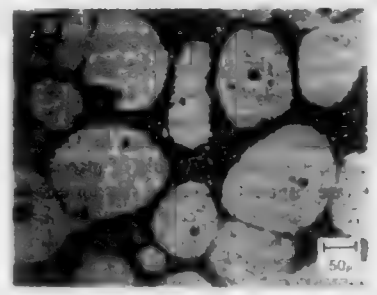
Venkatasubramanian Laxmanan, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 1, 1989, Ser. No. 444,652

Int. Cl.[5] C22C *1/00, 1/02*

U.S. Cl. 420—548 **4 Claims**

1. A semi-solid metal-forming process for producing an article of a hypoeutectic aluminum-silicon alloy comprising between about 5 and 12 weight percent silicon, said process comprising heating a body of hypoeutectic aluminum-silicon alloy to a temperature between the liquidus temperature and the solidus temperature to initiate partial melting of the alloy and thereby to form a semi-solid body composed of a spheroidal phase dispersed in a liquid phase, said heating being carried



out at a rate not greater than 30° C. per minute and effective to inhibit formation of free silicon particles within said alloy.

5,009,845

CHEMICAL AGENT DETECTORS FOR CHEMICAL NERVE AGENTS

Dominique Thoraval, Candiac, and John W. Bovenkamp, Kanata, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ontario, Canada

Continuation-in-part of Ser. No. 263,186, Oct. 27, 1988, abandoned. This application Dec. 5, 1989, Ser. No. 446,569

Claims priority, application Canada, Mar. 25, 1988, 562507

Int. Cl.[5] G01N *31/22*

U.S. Cl. 422—56 **18 Claims**

1. A chemical agent detector comprising a paper base including, impregnated in said base, a mixture of the dye 3',3'', 5',5''-tetrabromophenolphthalein ethyl ester (TBPE) and at least one dye selected from the group consisting of 4-[(phenylazo)phenyl)axo]-phenol (Disper Yellow 23) and p-ethoxyphenyl-azo-α-hydroxynaphthoic acid (PEN).

5,009,846

ONE-USE DEVICE FOR BIOLOGICAL TESTS

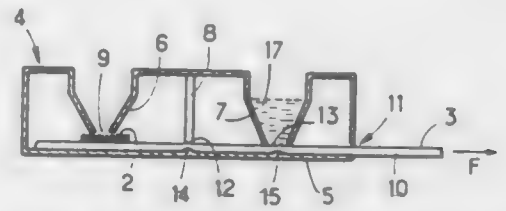
Louis Gavet, Lyon; Roger Chatelin, Lissieu Par; Michel Sotton, St Cyr Au Mont D'Or; Robert Guigal, Lyons, and Philippe Laurent, Oullins, all of France, assignors to Centre Technique Industriel dit: Institut Textile de France and Probiotec (SARL), both of, France

Filed Sep. 28, 1989, Ser. No. 413,857

Claims priority, application France, Oct. 11, 1988, 88 13668

Int. Cl.[5] G01N *21/00, 31/22*

U.S. Cl. 422—56 **13 Claims**



1. A unitary, one-use device for biological tests comprising:
(a) at least one element for immobilizing specific molecules contained in a liquid medium to be tested, wherein said immobilizing element is in the form of a hydrophilic material;
(b) a planar hydrophobic material on a surface of which is fixed said immobilizing element;
(c) a bottom plate supporting the planar hydrophobic material;
(d) at least one cavity for a liquid medium to be tested, said cavity having an outlet orifice situated above the planar hydrophobic material, and

(e) a scraping means situated above said planar hydrophobic material;

whereby said immobilizing element, said planar hydrophobic material, said bottom plate, said cavity for a liquid medium to be tested, and said scraping means are capable of interacting in the unitary device so that when liquid medium is introduced into the cavity, it exits the cavity through the outlet orifice to contact the hydrophilic material of the immobilizing element, and so that the planar hydrophobic material is capable of moving relative to the bottom plate support to cause the immobilizing element to pass from under the cavity and under the scraping means so that any liquid in or on the immobilizing element is extracted mechanically and moved over the surface of the planar hydrophobic material.

5,009,847

KIT FOR DETERMINING BLOOD PLATELET STRESS

Clive C. Solomons, 164 S. Fairfax, Denver, Colo. 80222

Division of Ser. No. 623,579, Jun. 22, 1984, Pat. No. 4,600,696. This application Mar. 27, 1986, Ser. No. 844,890

Int. Cl.[5] C12Q *1/56*; G01N *33/48*

U.S. Cl. 422—61 **10 Claims**

1. A kit for determining physical or chemical stress on blood platelets by measuring the relative concentration of adenosine tryphosphate, adenosine diphosphate, adenosine monophosphate and hypoxanthine in a sample of platelet-rich plasma containing an anticoagulant selected from the group consisting of heparin and a heparin salt which comprises:

at least one standard container containing known concentrations of at least one of adenosine triphosphate, adenosine diphosphate, adenosine monophosphate and hypoxanthine,

a second container containing a known concentration of an internal standard nucleotide and at least two sample containers coated with a composition that minimizes or prevents chemical or physical stress in blood platelets

a third container for a blood sample coated with an anticoagulant selected from the group consisting of heparin and a heparin salt, and nomogram shown in the Figure and defined by the algorithm

$$R = \frac{ATP + ADP}{AMP + HYPX}$$

5,009,848

ON BOARD AUTOMATIC DIESEL ENGINE COOLING WATER CHEMICAL TREATMENT DISPENSING SYSTEM

James M. Secretarski, 6910 Dorn Rd., Hartland, Wis. 53029, and Terry M. Crowell, W320 S8409 Bevilah Rd., Mukwonago, Wis. 53149

Filed May 2, 1988, Ser. No. 189,373

Int. Cl.[5] G01N *27/06*

U.S. Cl. 422—62 **13 Claims**

1. A vehicle, comprising:

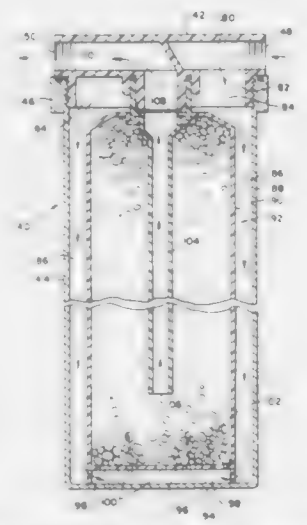
an engine having a cooling system circulating a coolant; and

an apparatus for maintaining a predetermined level of concentration of chemicals in the coolant, comprising:

sensing means for monitoring the level of concentration of chemicals in the coolant;

flow through chemical dispensing means interconnected with said cooling system; and

flow control means responsive to said sensing means for preventing the flow of coolant through said dispensing means when the level of concentration of chemicals is at or above said predetermined level, and for allowing coolant to circulate through said dispensing means and back into said cooling system when the level of concentration of chemicals in said system falls below said predetermined level, so as to raise the level of concentration of chemicals in said system to said predetermined level, whereafter said flow control means discontinues circulation of coolant through said dispensing means in response to detection of said predetermined level of concentration of chemicals by said sensing means.



5,009,849

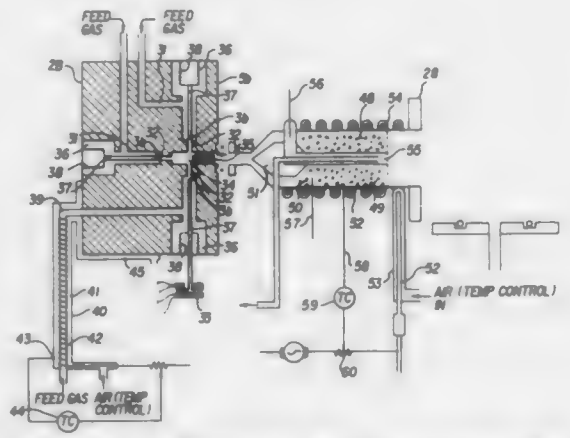
APPARATUS FOR CARRYING OUT CATALYZED CHEMICAL REACTIONS AND FOR STUDYING CATALYSIS

Jerry R. Ebner, and John T. Gleaves, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 923,890, Oct. 28, 1986, abandoned, which is a continuation-in-part of Ser. No. 682,028, Dec. 14, 1984, Pat. No. 4,626,412. This application Jun. 28, 1989, Ser. No. 372,095

Int. Cl.[5] G01N *1/22*

U.S. Cl. 422—83 **21 Claims**



1. An apparatus capable of use for Temporal Analysis of Products comprising a gas processing system including means which are capable of use for Temporal Analysis of Products and a manifold for introduction of a plurality of gas streams into said gas processing system, the manifold comprising a plurality of inlet channels through which gas may flow toward said system, and a mixing chamber having inlet means in communication with said plurality of channels and a chamber outlet in communication with said system, at least one of said channels having a rapidly operable gas feed valve at the terminus of the channel at which the channel communicates with said chamber inlet means, said mixing chamber having a void volume that is small relative to the working volume of the gas processing system so that the residence time of the process gases in said chamber is short compared to the residence time in said gas processing system.

5,009,850

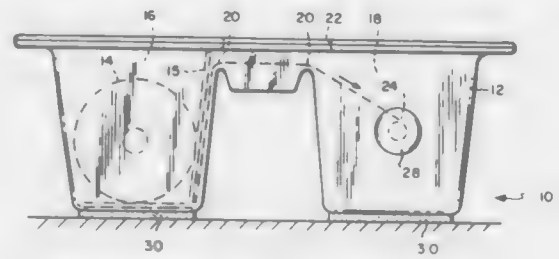
BLOOD CONTAINMENT DEVICE

Craig J. Bell, Winchester, N.H., assignor to Smiths Industries Medical Systems, Inc., Keene, N.H.

Continuation of Ser. No. 190,498, May 5, 1988, abandoned. This application May 4, 1990, Ser. No. 518,311

Int. Cl.[5] B01L *11/00*

U.S. Cl. 422—99 **6 Claims**



1. A blood containment device comprising:

a housing having means defining an opening;

a roll of absorbent material stored within said housing;

a tension plate, non-integral with said housing, located within said housing to help maintain said absorbent material taut beneath said opening; and

a take-up reel arranged within said housing so that said reel may be used to pull said absorbent material past the opening in said housing as said material is rolled onto said reel.

5,009,851

INTEGRATED CATALYTIC REACTOR SYSTEM WITH LIGHT OLEFIN UPGRADING

Amos A. Avidan, Yardley, and Sergei Yurchak, Media, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 200,109, May 31, 1988, Pat. No. 4,966,680. This application Feb. 21, 1989, Ser. No. 312,272

Int. Cl.[5] B01J *8/18*

U.S. Cl. 422—141 **2 Claims**



1. An improved reactor system for fluidized bed catalytic cracking comprising:

a primary vertical riser cracking reactor operatively connected to receive hot regenerated catalyst at a bottom riser portion for upward passage through said vertical riser;

regenerator means connected in a regeneration loop for receiving catalyst from said primary cracking reactor;

first conduit means for feeding liquid oil under pressure to the bottom riser portion of the primary reactor;

second conduit means for feeding lift gas to the primary reactor below said first conduit means;

mixing means adapted for receiving and combining catalyst form the regeneration loop with the liquid oil and the lift gas;

fractionation means for recovering liquid cracking products and olefinic light crackate gas form the primary reactor;

secondary catalytic reactor means for contacting at least a portion of the olefinic light crackage gas with olefin upgrading catalyst to produce gasoline range liquid product and byproduct light hydrocarbon gas; and

means for recovering and recycling at least a portion of the byproduct light gas to the primary reactor as lift gas.

5,009,852

COOLED FLUIDIZATION GRID

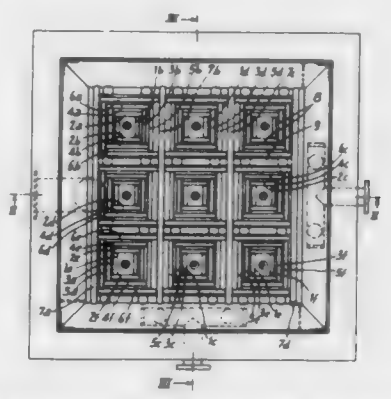
Jean-Claude Kita, Vermelles; Roger M. Puff, Lens; Alexandre Petrovic, Chatou, and Marcel Chretien, Morsang-sur-Orge, all of France, assignors to Charbonnages de France, Malmaison Cedex, France

Filed Dec. 8, 1988, Ser. No. 281,157

Claims priority, application France, Dec. 11, 1987, 87 17314

Int. Cl.[5] B01J *8/44*

U.S. Cl. 422—143 **6 Claims**



1. A grid for fluidizing a mass of finely divided material in a fluidized bed exothermal reactor, comprising:

a top face and a bottom face and a plurality of openings defined therethrough from said bottom face to said top face for admitting a gas for sustaining the material which is disposed over the top face of the grid,

said openings having walls diverging in the direction of the mass of material to be fluidized,

the walls of each opening being defined at least in part by tubular members for conveying a cooling fluid, and

superposed layers of parallel pairs of tubular members,

the tubular members in each layer crossing the tubular members of a next adjacent layer,

a spacing between pairs of tubular members in each layer increasing from said bottom face toward said top face,

the tubular members of each layer defining a portion of opposing walls of at least one said opening.

5,009,853

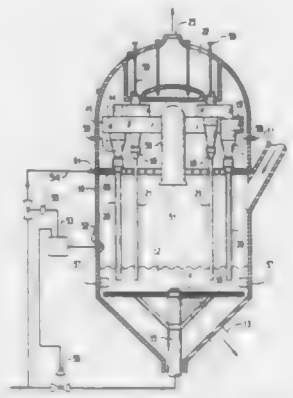
FLUID CATALYTIC CRACKING REGENERATION WITH REDUCTION OF NITROGEN OXIDE

Richard C. Kovacs, Mantua; Frederick J. Krambeck, Cherry Hill, and Michael S. Sarli, Haddonfield, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 285,574, Dec. 16, 1988, abandoned, which is a division of Ser. No. 71,247, Jul. 9, 1987, abandoned. This application Apr. 18, 1990, Ser. No. 512,637

Int. Cl.[5] F27B *15/12, 15/08*

U.S. Cl. 422—144 8 Claims



1. In a fluid catalytic cracking unit having a cracking zone including a reactor vessel and a regeneration zone including a catalyst regenerator wherein the improvement comprises:

(i) a regeneration vessel comprising a vessel having a side inlet connected to the reactor for admitting spent cracking catalyst from the reactor to a single dense, fluidized bed of catalyst in which regeneration of the catalyst takes place,

(ii) an outlet for regenerated catalyst at the bottom of the regeneration vessel for withdrawing regenerated catalyst from the dense, fluidized bed of catalyst,

(iii) a gas inlet for injecting oxygen-containing regeneration gas into the dense, fluidized bed of catalyst maintained in the lower portion of the regeneration vessel to regenerate the catalyst,

(iv) a plurality of cyclone separators inside the regeneration vessel for separating entrained catalyst from regeneration effluent gases and returning the separated catalyst to the dense bed in the regenerator, the cyclone separators having inlets above the spent catalyst inlet, disposed to collect regeneration effluent gases from the regeneration vessel at a common collection region so that mixing of the regeneration effluent gases from different points in the regeneration vessel takes place prior to the regeneration gases entering the cyclone separators,

(v) a cyclone separator inlet manifold having a central hub with at least one inlet at the common collection region, and

(vi) outwardly-extending conduits extending from the central hub to the inlets of the cyclone separators connecting the hub to the cyclone inlets.

5,009,854

AXIAL REACTOR WITH COAXIAL OIL INJECTION

William R. Jones, Jr., Monroe, La., assignor to Columbian Chemicals Company, Atlanta, Ga.

Filed Aug. 31, 1988, Ser. No. 238,588

Int. Cl.[5] C09C *1/00*

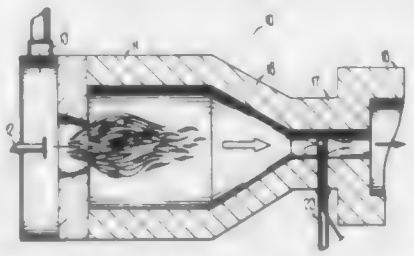
U.S. Cl. 422—150 9 Claims

1. Apparatus for producing carbon black, comprising:

a source of hot gas;

a reaction chamber having an inlet receiving a flow of the hot gas and having an outlet opening through which the hot gas flows to leave the reaction chamber; and

means for introducing a hydrocarbon spray into the reaction chamber in a direction substantially parallel and countercurrent to the flow of hot gas, thereby increasing the



dispersion speed of the hydrocarbon spray in the gas flow and narrowing the particle size distribution of the resulting carbon black particles produced.

5,009,855

GAS GENERATOR FOR INFLATING A SAFETY BAG

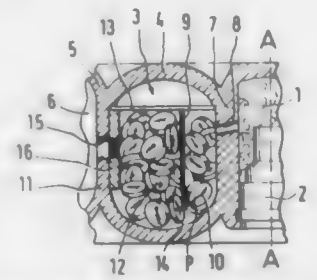
Karl E. Nilsson, Ottobrunn, Fed. Rep. of Germany, assignor to Bayern-Chemie Gesellschaft fuer flugchemische Antriebe mbH, Aschau, Fed. Rep. of Germany

Filed Oct. 17, 1989, Ser. No. 422,649

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1988, 3835356

Int. Cl.[5] B60R *21/26, 21/32*

U.S. Cl. 422—164 6 Claims



1. A gas generator for inflating a safety bag, comprising a combustion chamber, fuel in said combustion chamber, ignition means including at least one ignition opening between said ignition means and said combustion chamber, whereby said combustion chamber communicates with said ignition means through said at least one ignition opening for igniting said fuel, at least one gas exit opening communicating with said combustion chamber for permitting gas generated in said combustion chamber to exit from said combustion chamber, a sheet metal insert in said combustion chamber for separating said combustion chamber into a first smaller combustion chamber section communicating with said at least one ignition opening and a second larger combustion chamber section communicating with said exit opening and with said first combustion chamber section, said sheet metal insert being positioned in said combustion chamber for separating said fuel into two portions for a sequential combustion in said second combustion chamber section after combustion in said first combustion chamber section, said sheet metal insert being further positioned to provide a gas flow passage (14, 23, 36) between said first smaller and said second larger combustion chamber sections, said sheet metal insert being spaced from said at least one ignition opening thus providing a continuous flow communication between said first and second combustion chamber sections, wherein said second combustion chamber section holds a quantity of fuel larger than is held in said first combustion chamber section, wherein said quantity of fuel in said first combustion chamber section is ignited and combusted first and wherein said quantity of fuel in said second combustion chamber section is ignited by combusted gas flowing from said first combustion chamber section into said second combustion chamber section, whereby said sequential combustion is achieved by a single ignition of said ignition means for generating a gentle initial inflating pressure by the combustion of said quantity of fuel in said first combustion chamber section followed by a rapid pressure increase by the combustion of said quantity of fuel in said second combustion chamber section for a complete inflation of said safety bag.

5,009,856

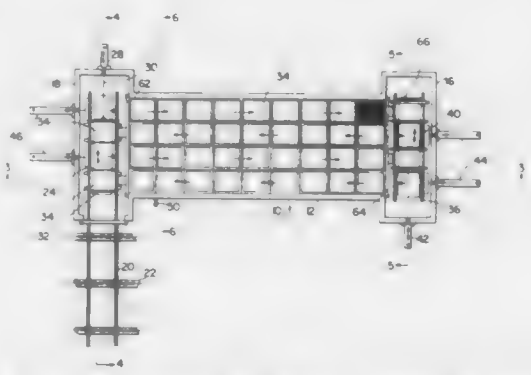
RECYCLING CATALYST BED FOR FLUE GAS TREATMENT

Michael L. Fenger, McMurray, and Francis R. Vargo, Munhall, both of Pa., assignors to Consolidation Coal Company, Pittsburgh, Pa.

Filed Dec. 5, 1988, Ser. No. 279,738

Int. Cl.[5] B01J *19/22*

U.S. Cl. 422—178 3 Claims



1. A recycling catalyst bed having a plurality of catalyst blocks adapted to be positioned in and transported through a flue duct for treating the flue gas and recycling the blocks comprising:

(a) a flue duct having an open interior surface;

(b) a support mechanism for positioning the blocks in the flue duct, said support mechanism having opposed ends adjacent said duct interior surface;

(c) block shifting enclosures exterior of the flue duct adjacent each end of said support mechanism, at least one of said block shifting enclosures having means for cleaning the blocks;

(d) means in each of said block shifting enclosures to support the blocks for shifting movement transverse to said support mechanism;

(e) block pusher mechanisms adjacent to each of said block shifting enclosures to transport the blocks through and into and out of said support mechanism; and,

(f) said support mechanism including an air manifold supplying air to the underside of the blocks to raise the blocks while being transported through said support mechanism to provide friction free movement of the blocks through said support mechanism.

5,009,857

FILTER FOR GASES

Hans A. Haerle, Bopfingen, Fed. Rep. of Germany, assignor to Schwaebische Huettenwerke GmbH, Fed. Rep. of Germany

Filed Feb. 10, 1989, Ser. No. 309,323

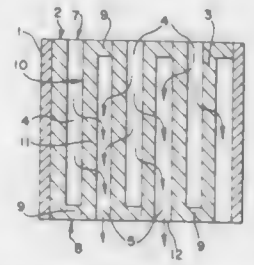
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1988, 3807917; May 30, 1988, 3818281

The portion of the term of this patent subsequent to Nov. 20, 2007, has been disclaimed.

Int. Cl.[5] B01D *53/36, 39/10*

U.S. Cl. 422—180 13 Claims

1. A gas filter, suitable for removing soot from a combustion exhaust gas stream, which comprises a plurality of identically sized and shaped gas-permeable formed metal plates, each plate having a front face and a back face, each front face containing a plurality of longitudinal channels positioned between longitudinal channel-separating pieces, each channel having an open end and a closed end provided by a transverse closing cross-piece, with adjacent plates of said plurality of plates being positioned with front faces against back faces and with



adjacent plates being rotated 180° with respect to each other to provide a head-to-toe arrangement of adjacent plates for providing rows of inlet channels alternating with rows of outlet channels within said gas filter.

5,009,858

DEVICE FOR GENERATING OZONE

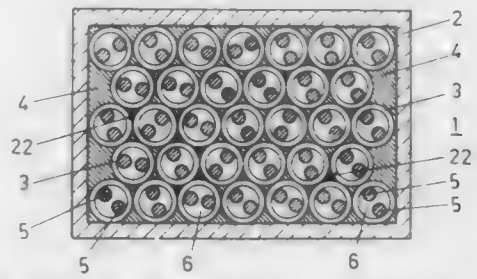
Günter Mechtersheimer, Nussbaumen, Switzerland, assignor to Asea Brown Boveri Limited, Baden, Switzerland

Filed Mar. 2, 1990, Ser. No. 487,439

Claims priority, application Switzerland, Mar. 7, 1989, 845/89

Int. Cl.[5] B01J *19/08*

U.S. Cl. 422—186.19 9 Claims



1. A device for generating ozone from oxygen or a gas containing oxygen by silent electric discharge in a discharge space through which the oxygen or gas flows, comprising:

a plurality of tubes made of a dielectric material arranged in a cluster and disposed within a housing;

internal electrodes respectively arranged inside each of said tubes and forming a nonhomogenous discharge gap; and p1 an external electrode surrounding each of said tubes formed by at least one of metalization of external surfaces of each of said tubes and surrounding each of said tubes with an electrically conductive material;

wherein said internal electrodes pass through the entire length of each of said tubes, have a cross section substantially smaller than a cross section of said tubes, and are electrically connected to each other at least at one end of one of said tubes.

5,009,859

EXTRACTION AND REACTOR SYSTEM

Mohsen N. Harandi, Lawrenceville, and Hartley Owen, Belle Mead, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 179,725, Apr. 11, 1988, Pat. No. 4,827,045. This application Feb. 9, 1989, Ser. No. 308,072

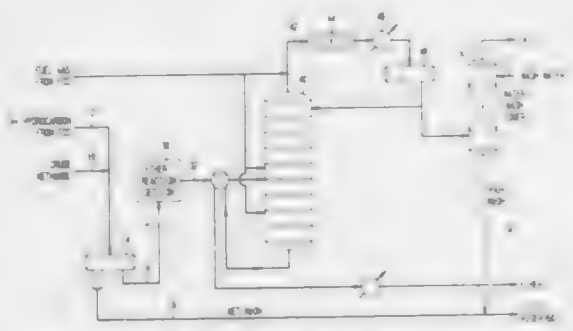
Int. Cl.[5] B01J *8/04*

U.S. Cl. 422—189 4 Claims

1. A continuous feedstock separation and etherification reactor system for converting crude methanol feedstock to methyl tert-alkyl ether comprising:

extractor means for contacting crude feedstock liquid containing a minor amount of water with a liquid hydrocarbon extraction stream under extraction conditions favorable to selective extraction of methanol, thereby providing an extract liquid stream rich in methanol and an aqueous raffinate stream lean in methanol;

first catalytic reactor means operatively connected for contacting the extract stream in a catalytic reaction zone with acid etherification catalyst in an etherification reaction



zone under process conditions to convert a major portion of methanol to ether;

second catalytic reactor means for contacting said raffinate stream with methanol conversion catalyst in the presence of hydrocarbon to produce a liquid hydrocarbon stream, and

means for charging at least a portion of said liquid hydrocarbon stream from said second reactor means to said extractor means as said extraction stream.

5,009,860

SEMICONDUCTOR ROD ZONE MELTING APPARATUS

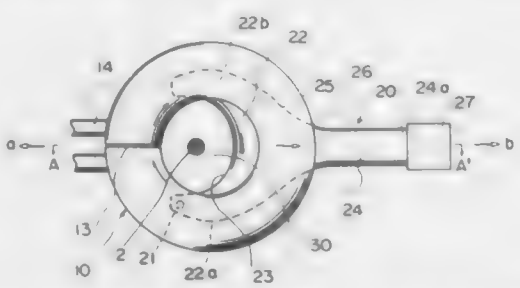
Yasuhiro Ikeda, Annaka, Japan, assignor to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1988, Ser. No. 184,419

Claims priority, application Japan, May 25, 1987, 62-125804

Int. Cl.[5] **C30B** *35/00, 13/30*

U.S. Cl. 422—250 **7 Claims**



1. A semiconductor rod zone melting apparatus comprising:

a main induction heating coil surrounding a floating molten zone of a semiconductor rod, said main coil being single-turn flat coil having an inner diameter defining a central opening;

a single flat metal plate member comprising a pair of arcuate arm members which define an open arcuate portion having a U-shaped inner edge on one side facing said central opening, said inner edge of said open arcuate portion of said metal member having an opening width at least equal to said inner diameter of said main coil;

an electrically insulating member mounted on said metal member between said metal member and said main coil;

said metal member being disposed in adjacent contact with an upper or lower surface of said main coil, whereby said insulating member contacts said main coil; and

said main coil and said metal member being relatively movable with respect to each other perpendicular to an axis defined by said central opening while maintaining contact between said metal member and said main coil, whereby said main coil and said metal member define an opening of variable width in which a concentrated magnetic field is formed upon energizing said main coil.

5,009,861

CRYSTALLIZATION APPARATUS

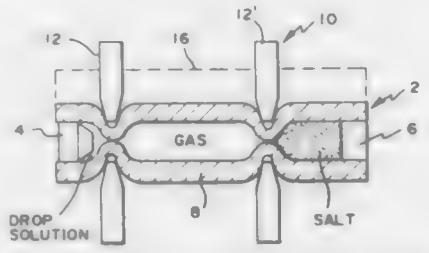
Andreas Plaas-Link, Hanover, Fed. Rep. of Germany, assignor to Intospace GmbH, Hanover, Fed. Rep. of Germany

Filed Aug. 9, 1988, Ser. No. 229,950

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1987, 3726765; Nov. 16, 1987, 3738840

Int. Cl.[5] **B01D** *9/00;* **G01N** *21/00;* **B01L** *11/00;* **C30B** *30/08*

U.S. Cl. 422—245 **31 Claims**



1 An apparatus for crystallizing proteins at zero gravity, comprising:

(a) a crystallization cell formed on an elastic tube having ends adapted to be sealed;

(b) said tube defining a cavity therein;

(c) clamp means having open and closed positions for reversibly dividing said cavity into a plurality of cells for receiving various solutions;

(d) said clamp means comprising a compression clamp;

(e) means for opening and closing said clamp means;

(f) first mechanical means for applying a first external pressure only to a peripheral portion of said tube;

(g) said first mechanical pressure applying means being positioned in tight engagement on a first external side portion thereof;

(h) second mechanical means for applying a second external pressure to another peripheral portion of said tube; and

(i) said second mechanical pressure applying means being positioned in tight engagement on a second external side portion of said tube lying generally opposite to said first external side portion thereof;

(j) wherein when said clamp means is switched from a closed to an open position for allowing intermixing of any solutions contained in said cells, said first external pressure applying means prevents formation of any partial vacuum in said tube to thereby prevent any gas losses.

5,009,862

APPARATUS AND PROCESS FOR GROWING CRYSTALS OF SEMICONDUCTOR MATERIALS

Michio Kida, Urawa; Yoshiaki Arai, Ohmiya, and Kensho Sahira, Yono, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 201,018, Jun. 1, 1988, Pat. No. 4,936,949. This application May 23, 1990, Ser. No. 527,887

Claims priority, application Japan, Jun. 1, 1987, 62-137985; Sep. 24, 1987, 62-239880

Int. Cl.[5] **C30B** *15/12*

U.S. Cl. 422—249 **13 Claims**

1. An apparatus for melting a semiconductor material and growing a semiconductor crystal from the melted material, comprising:

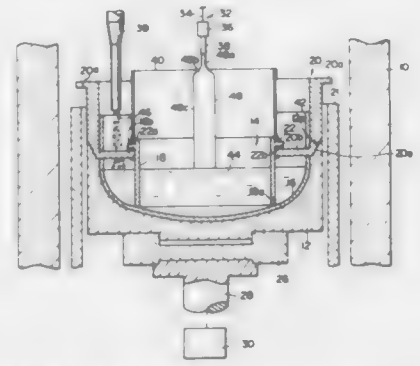
(a) a susceptor having a peripheral rim;

(b) a crucible assembly made of quartz for receiving the semiconductor material therein, said crucible assembly including an outer crucible housed in and supported by said susceptor and an inner crucible adapted to be so placed within said outer crucible as to define a multi-wall structure;

(c) fluid passage means for permitting the melted material to flow between said inner and outer crucibles when the multi-wall structure is defined by said inner and outer crucibles;

(d) holding means for holding said inner crucible;

(e) drive means operable to move at least one of said holding



means and said susceptor vertically between a coupled position where said holding means is supported by said susceptor in such a manner that said inner crucible is so placed within said outer crucible as to define the multi-wall structure and a released position where said holding means is disengaged from said susceptor in such a manner that said inner crucible is released from said outer crucible; and

(f) heating means disposed so as to surround said susceptor for heating the semiconductor material contained in said crucible assembly.

5,009,863

APPARATUS FOR MANUFACTURING SILICON SINGLE CRYSTALS

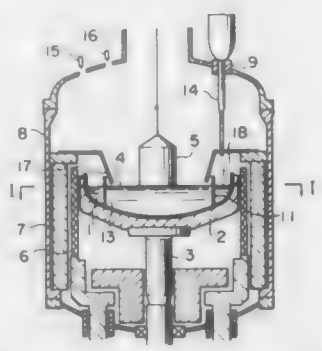
Yoshinobu Shima, Yokohama, and Hiroshi Kamio, Tokyo, both of Japan, assignors to NKK Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 433,596, Nov. 8, 1989. This application Jun. 19, 1990, Ser. No. 540,647

Claims priority, application Japan, Nov. 11, 1988, 63-284017

Int. Cl.[5] **C30B** *35/00, 15/12*

U.S. Cl. 422—249 **4 Claims**



1. In a silicon single crystal manufacturing apparatus comprising a rotation-type cellular quartz crucible containing molten silicon, an electric resistance heater for heating said quartz crucible from the side thereof, a quartz partition member arranged to divide said molten silicon into a single crystal growing section and a starting material melting section within said quartz crucible, said partition member being formed with at least one hole for passing molten silicon therethrough, a heat keeping cover arranged to cover an inner side of said partition member and above said starting material melting section, and starting material feeding means for continuously feeding starting material silicon to said starting material melting section whereby manufacturing silicon single crystals of not less than 12 cm and not greater than 30 cm in diameter, the improvement wherein said partition member is made from cellular silica glass having a cell content, in volume percent, ranging from 0.01% to 15%, and wherein the cell content of the quartz crucible is over 1.3 times greater than the cell content of the partition member, whereby the radiant heat dissipation through said partition member is reduced to a range from 5/1000 to 40/100 times the radiant heat dissipation of non-cellular silica glass.

5,009,864

RECHARGING DEVICE FOR CZOCHRALSKI METHOD

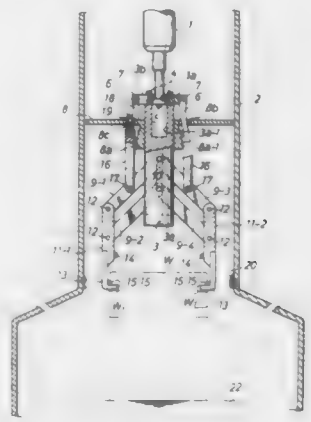
Hiroyuki Ibe, and Toshiharu Uesugi, both of Fukui, Japan, assignors to Shin-Etsu Handotai Company Limited, Tokyo, Japan

Filed Oct. 25, 1989, Ser. No. 426,293

Claims priority, application Japan, Oct. 27, 1988, 63-269576

Int. Cl.[5] **C30B** *35/00, 15/02;* **B66C** *1/66*

U.S. Cl. 422—249 **7 Claims**



1. A recharging apparatus suitable for use in forming monocrystal ingots by the Czochralski method, comprising:

a vertical conduit having disposed therein a recharging device comprising a shaft means capable of being vertically suspended from a pulling means of a Czochralski-type monocrystal ingot pulling apparatus for providing movable support therein;

slider means for providing support while freely sliding along the shaft means and slidably guided within said vertical conduit;

a pair of hook means pivotably connected to the shaft means below the slider means and capable of assuming hooking and unhooking positions for selectively supporting an element of a replenishment material;

a pair of rod means having respective upper ends flexibly connected to the slider means and having respective lower ends pivotably connected to the respective hook means such that when the slider means slides upward relative to the shaft means the hook means are caused to assume said unhooking position, and when the slider slides downward relative to the shaft means the hook means are caused to assume said hooking position; and

stopper means provided in said vertical conduit for stopping a downward movement of the slider means when the slider means makes contact with the stopper means.

5,009,865

BAR AND CRUCIBLE MAGNETIC SUSPENSION FOR A CRYSTAL-GROWING APPARATUS

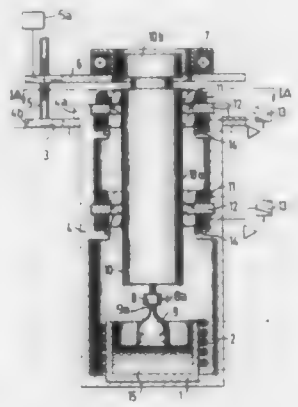
Karl Boden, Jülich; Harald Ibach, Aachen-Verlautenheide, and Udo Linke, Düen, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

Filed Sep. 4, 1985, Ser. No. 772,557

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1984, 3432467

Int. Cl.[5] C30B *35/00, 15/30*

U.S. Cl. 422—249 20 Claims



1. In an apparatus for growing a crystal member in the form of a bar along a crystal growth axis from molten material from a source member, the improvement which comprises in combination:

an elongated magnetizable core connected to one of said members and extending generally along said axis;

an axial stabilization magnet magnetically coupled to said core for effecting axial positioned of said core; and

at least one radial stabilizer for said core, said stabilizer comprising:

a plurality of electromagnets radially juxtaposed with said core, spaced therefrom and angularly spaced around said core,

an electric control unit connected to said electromagnets for automatically adjusting the fields of the electromagnets to precisely position the core with concentricity with respect to said electromagnets, and

position sensing means responsive to the radial spacing of said core from said electromagnets and connected to said electric control unit for inducing changes in said fields of said electromagnets to maintain said core radially in position during the crystal growing of said bar and independently of the operation of said axial stabilization magnet for effecting axial positioning of said core.

5,009,866

FUSED SALT PROCESS FOR PURIFYING ZIRCONIUM AND/OR HAFNIUM TETRACHLORIDES

Ernest D. Lee, Ogden, Utah, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 16, 1989, Ser. No. 437,152

Int. Cl.[5] C01G *25/04, 27/04*

U.S. Cl. 423—73 10 Claims

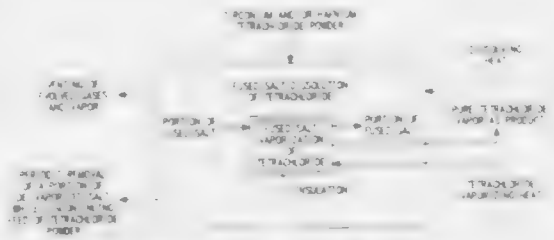
1. A fused salt process for continuously purifying zirconium and/or hafnium tetrachloride dissolved in a molten bath in a vessel, comprising the steps of:

maintaining a mass of a suitable mixture of salts, including zirconium and/or hafnium tetrachloride;

heating said mixture of salts to a temperature at or immediately below the vaporization temperature of the zirconium and/or hafnium tetrachloride at which temperature said mixture of salts is fused to form a molten, tetrachloride-dissolving bath;

continuously introducing into said dissolving bath a zirconium and/or hafnium tetrachloride powder;

heating a portion of said dissolving bath in situ to a temperature higher than the vaporization temperature of the zirconium and/or hafnium tetrachloride so as to vaporize the tetrachloride.



internally circulating said dissolving bath whereby the portion of said dissolving bath at the higher temperature circulates with the bath at the lower temperature;

venting gases and vapors evolved from said dissolving bath at the lower temperature; and

recovering the tetrachloride vapors vaporized at the higher temperature separately from the gases and the vapors evolved at the lower temperature.

5,009,867

C-GEL COMPOSITE PIZZA SNACK KIT

John F. Kratochvil, Oakbrook, Ill., assignor to Kraft General Foods, Inc., Glenview, Ill.

Division of Ser. No. 307,089, Feb. 6, 1989, which is a continuation-in-part of Ser. No. 658,618, Oct. 9, 1984, Pat. No. 4,684,533, which is a continuation-in-part of Ser. No. 81,115, Aug. 3, 1987, abandoned. This application Jan. 25, 1990, Ser. No. 470,153

Int. Cl.[5] A23L *1/04;* A23C *20/02*

U.S. Cl. 426—128 6 Claims

1. A pizza snack kit for preparation of a heated pizza snack, comprising:

at least one slice of a thermoreversible C-gel pizza sauce composite product which may be readily melted when heated, comprising a structurally firm, continuous phase gelatin-carrageenan matrix comprising at least about 0.5 weight percent kappa carrageenan, at least about 1.0 weight percent gelatin having a bloom strength of at least about 125, at least about 20 weight percent of pizza sauce components, and from about 30 to about 80 weight percent of water, based on total product weight, said carrageenan and said gelatin being present in a continuous carrageenangelatin phase which is structurally firm at refrigeration temperature and which is mobile at a temperature of 160° F., with said pizza sauce components being dispersed in said continuous carrageenan-gelatin phase,

a prepackaged cheese topping; and

at least one prepackaged baked pizza crust, such that a consumer may place said at least one structurally firm C-gel pizza sauce slice product on said baked pizza crust and said cheese topping on said structurally firm C-gel slice and heat the crust, slice and cheese topping in an oven to produce a heated pizza snack.

5,009,868

PROCESS FOR THE EXTENDED USE OF STRIP ACID EMPLOYED IN THE RECLAMATION OF BATTERY ACID FLUID FROM EXPANDED LEAD-ACID BATTERIES

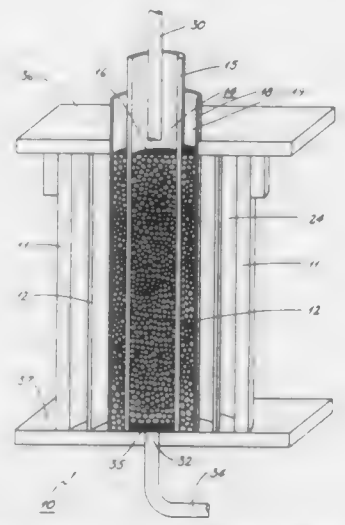
Robert A. Spitz, Holbrook, Mass., and Mark Bricker, Kutztown, Pa., assignors to East Penn Manufacturing Co., Inc., Lyon Station, Pa.

Continuation-in-part of Ser. No. 312,429, Feb. 2, 1989, Pat. No. 4,971,780, which is a continuation-in-part of Ser. No. 133,132, Dec. 14, 1987, abandoned. This application Dec. 21, 1989, Ser. No. 454,770

The portion of the term of this patent subsequent to Nov. 20, 2007, has been disclaimed.

Int. Cl.[5] C01B *17/90*

U.S. Cl. 423—139 9 Claims



1. In a method for recycling contaminated sulfuric acid from lead acid batteries to reclaimed sulfuric acid for reuse in said batteries by removing contaminating iron impurities, the steps which comprise:

(a) diluting the contaminated sulfuric acid to a concentration between 150 and 230 grams per liter;

(b) filtering the sulfuric acid through a first filter means to remove solid impurities;

(c) oxidizing the sulfuric acid to assure that the iron contaminants are substantially in a ferric form;

(d) removing the iron contaminants from the sulfuric acid through liquid-liquid extracting using an extraction agent comprising mixture of a mono- or di-alkyl phosphoric acid and a metal chelation collector selected from the group consisting of a 8-hydroxyquinoline substituted in the No. 7 position with a long chain aliphatic hydrocarbon radical and an oil-soluble 2-hydroxy benzophenoneoxime, a modifier which maintains solubility of the phosphoric acid and the metal chelation collector and enhances phase disengagement, and a water immiscible carrier, the molar ratio of the 8-hydroxyquinoline and the phosphoric acid being between 1:1::1:4, respectively; wherein the ratio of extraction agent to water immiscible carrier is greater than 10:90; said extraction performed at a volumetric ratio between said sulfuric acid and said extraction agent of between 4:1::1:4, and repeated until the contaminating iron impurities are substantially reduced;

(e) filtering the product of step (d) to remove residual extraction agent;

(f) adding concentrated sulfuric acid to return the sulfuric acid concentration of the product of step (e) to a sulfuric acid concentration for use in new lead acid batteries, the final concentration of iron in the sulfuric acid being no more than 20 parts per million; and

(g) removing the contaminating elements from the extraction agent by contacting said extraction agent with a strip acid with an acid concentration of between 30 and 50%, the improvement which comprises:

(h) reusing the extraction agent to perform further extractions of ferric iron from contaminated sulfuric acid solution;

(i) treating the strip acid with means to reduce a portion of the removed ferric iron to ferrous iron;

(j) reusing the strip acid product of step (i), containing reduced iron, in step (g) to remove contaminating ferric iron from extraction agent.

5,009,869

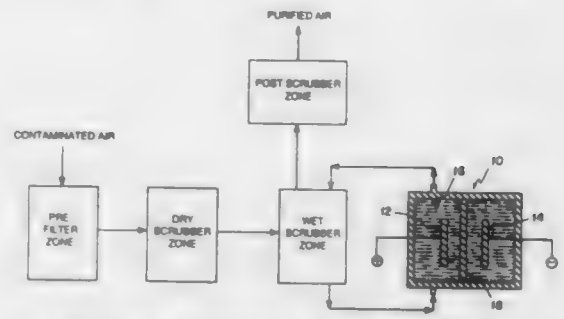
METHODS FOR PURIFICATION OF AIR

Norman L. Weinberg, Amherst; John D. Genders, Lancaster, and Alfred O. Minklei, Grand Island, all of N.Y., assignors to Electrocinerator Technologies, Inc., East Amherst, N.Y.

Filed Dec. 28, 1987, Ser. No. 138,441

Int. Cl.[5] B01D *47/00;* B01J *8/00;* C01B *17/16, 31/20*

U.S. Cl. 423—210 9 Claims



1. A method for purification of air and destruction of pollutants therein, which comprises the steps of cleaning polluted air in a scrubber zone by sorbing the pollutants with a scrubber liquid comprising an electrochemically regeneratable degradant comprising pollutant destruction rate potentiating combinations of redox couples selected from the group consisting of Cr^{+6}/Cr^{+3} and Ce^{+4}/Ce^{+3}; Cr^{+6}/Cr^{+3} and Br_2/Br^-; Ce^{+4}/Ce^{+3} and Br_2/Br^-; and Cr^{+6}/Cr^{+3}, Ce^{+4}/Ce^{+3} and Br_2/Br^-; converting the pollutants in said scrubber liquid to a substance of lesser toxicity or hazard; reactivating the spent degradant combination in said scrubber liquid to an active state while also degrading any residual pollutant by oxidizing in an electrolyzer zone, and returning said reactivated scrubber liquid to said scrubber zone for further cleaning of polluted air.

5,009,870

METHOD FOR REMOVING SULPHUR AND NITROGEN COMPOUNDS FROM GAS

Seppo O. Heimala; Olli V. J. Hyvärinen, both of Pori, and Maija-Leena Metsärinta, Ulvila, all of Finland, assignors to Outokumpu Oy, Helsinki, Finland

PCT No. PCT/FI89/00077, § 371 Date Dec. 12, 1989, § 102(e) Date Dec. 12, 1989, PCT Pub. No. WO89/10181, PCT Pub. Date Nov. 2, 1989

PCT Filed Apr. 26, 1989, Ser. No. 438,450

Int. Cl.[5] B01J *8/00;* C01B *17/00, 21/00*

U.S. Cl. 423—239 17 Claims

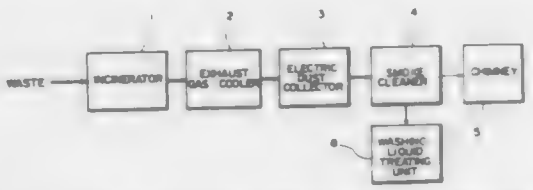
1. A method for removing sulphur and nitrogen compounds from gases, comprising reducing sulphur dioxide, hydrogen sulphide and nitric oxides from gases by contacting the gases with long-chained sulphur compounds selected from the group consisting of polysulphides and polythionates containing 3-20 sulphur atoms per molecule, at a pH within the range of 0-4, while using an electroconductive solid material as a carrier for said long-chained sulphur compounds.

5,009,871

METHOD OF REMOVING MERCURY IN EXHAUST GASES FROM A WASTER INCINERATOR

Nariyoshi Higuchi, Kanagawa; Miki Yamagishi, Tokyo, and Tsuneharu Miyachi, Kanagawa, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 832,410, Feb. 24, 1986, abandoned.
This application Jan. 13, 1988, Ser. No. 144,695
Claims priority, application Japan, Aug. 31, 1984, 59-180698
Int. Cl.[5] B01D *53/34;* C25B *11/04*
U.S. Cl. 423—240 3 Claims



1. A method of removing mercuric chloride contained in exhaust gases emitted from a waste incinerator comprising the steps of:

(a) providing smoke cleaning means for washing the exhaust gases emitted from said waste incinerator by contacting the same with a washing liquid which is an alkaline solution;

(b) measuring at least one of an oxidation-reduction potential, COD value, chlorine concentration, and oxidizing agent concentration of said washing liquid before said washing, or a chlorine concentration in said exhaust gases after said washing;

(c) adding an oxidizing agent to said washing liquid to such extent that mercuric chloride and mercury forming complex ions with chlorine dissolved into said washing liquid by the washing of said exhaust gases are no longer reduced by reducing substances contained in said washing liquid, said oxidizing agent being suitable for oxidizing reducing substances formed in the washing liquid by the washing of the exhaust gases, whereby mercury in the form of mercuric chloride and mercury forming complex ions with chlorine is prevented from being reduced;

(d) determining a value at which at least one of an oxidation-reduction potential, COD value, chlorine concentration, and oxidizing a sent concentration of said washing liquid, or a chlorine concentration in said exhaust gases, prevents said mercuric chloride and mercury forming complex ions with chlorine from being reduced; and

(e) washing said exhaust gases with said washing liquid in which an amount of said oxidizing agent is controlled in order to maintain the value determined in step (d) so that the mercuric chloride and mercury forming complex ions with chlorine in said washing liquid are prevented from being reduced and so that excessive amounts of the oxidizing agent are prevented from being added to said washing liquid, thus preventing the occurrence of any corrosion of the waste incinerator.

5,009,872

METHOD OF OXIDIZING GASEOUS SUBSTANCES

Karl T. Chuang, Edmonton, Canada; James B. McMonagle, Birdhill, Ireland; Robert J. Quaiattini, Calgary, Canada; William A. Seddon, Deep River, Canada, and David E. Clegg, Pembroke, Canada, assignors to Atomic Energy of Canada Ltd., Ontario, Canada

Continuation-in-part of Ser. No. 166,742, Mar. 2, 1988, abandoned, which is a continuation of Ser. No. 46,541, Jun. 5, 1987, abandoned. This application Nov. 23, 1988, Ser. No. 275,188
Claims priority, application Canada, May 12, 1986, 508959
Int. Cl.[5] B01D *53/36*
U.S. Cl. 423—245.3 15 Claims

1. A method of oxidizing a gaseous substance selected from the group consisting of carbon monoxide, ethanol, methanol, 2-propanone and formaldehyde in a feed gas, which process comprises passing such gaseous substance and oxygen at an input temperature of −50° to 150° C., in which the gaseous substance is present as less than 2% of the feed gas, and the balance of the feed gas is oxygen and gases which do not inhibit oxidation of the said gaseous substance under the reaction conditions; into contact with

(a) a hydrophobic, porous catalyst having a specific surface area of from 200 to 600 m^2/g support, formed of porous copolymerized styrene divinylbenzene, and

(b) a catalytically active metal on the support, the catalytically active metal being selected from the group consisting of chromium, molybdenum, tungsten, manganese, rhenium, iron, ruthenium, osmium, cobalt, rhodium, iridium, nickel, palladium, platinum, copper and silver, the amount of catalytically active metal being in the range of 0–1 to 22 wt % of the total weight of the support and catalytically active metal.

5,009,873

CRYSTAL MODIFICATION IN WET PROCESS PHOSPHORIC ACID PRODUCTION

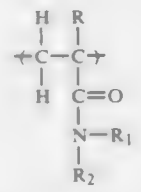
E. Michael Kerr, Naperville; Lawrence J. Connelly, Oak Lawn, both of Ill.; William J. Roe, Roswell, Ga., and Robert M. Vallowe, Brandon, Fla., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Jan. 29, 1990, Ser. No. 471,778
Int. Cl.[5] G01B *25/16;* C01F *11/46*
U.S. Cl. 423—320 19 Claims

1. A wet process phosphoric acid production process comprising the steps of digesting phosphate rock in a slurry containing sulfuric acid, whereby phosphoric acid is released and calcium sulfate crystals are formed, and then separating the phosphoric acid from the calcium sulfate crystals, the improvement comprising:

adding to said slurry, in an amount effective for calcium sulfate crystal formation improvement, a polymer containing monomer units of Formula I,

Formula I



wherein R is hydrogen or methyl and R_1 and R_2 are independently hydrogen, alkyl or sulfoalkyl substituents;

wherein said polymer is comprised of monomer units of said Formula I wherein both of R_1 and R_2 are hydrogen and monomer units of said Formula I wherein one of said R_1 and R_2 is a sulfoalkyl substituents;

wherein said polymer is present at the calcium sulfate crystal nucleation phase of said digestion step; and

wherein said polymer is added in a water-soluble salt form.

5,009,874

HYDROPHOBIC PRECIPITATED SILICA GRANULES

Francois Parmentier, Lyons, and Jacques Persello, Montluel, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Apr. 13, 1988, Ser. No. 181,312
Claims priority, application France, Apr. 13, 1987, 87 05199
Int. Cl.[5] C01B *33/14*
U.S. Cl. 423—335 9 Claims

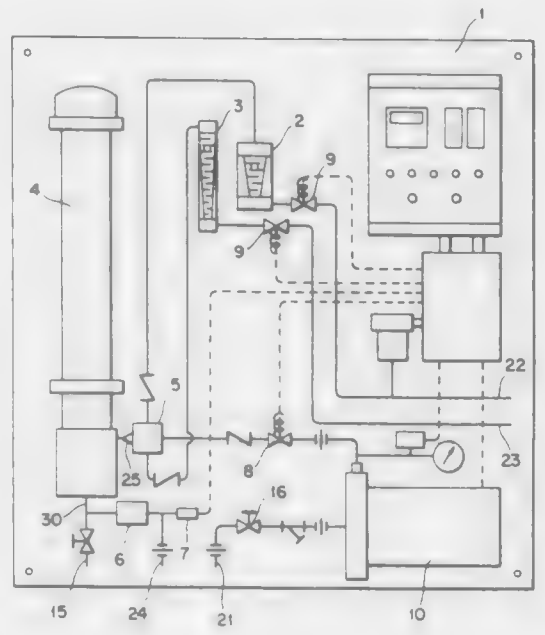
1. Hydrophobic, essentially spheroidal precipitated silica granules having a median particle size of at least 0.08 mm, a density of at least 0.15, a water wettability of at least 20%, and a maximum water uptake of 5%.

5,009,875

PROCESS OF PREPARING CLORINE DIOXIDE AND APPARATUS THEREFOR

Joseph M. Kelley, Westfield, N.J.; Donald C. Kucher, Quakertown, Pa., and George Mayurnik, Franklin Lakes, N.J., assignors to International Dioxcide, Inc., Clark, N.J.

Filed Aug. 3, 1988, Ser. No. 227,634
Int. Cl.[5] C01B *11/02;* G05D *7/00*
U.S. Cl. 423—477 11 Claims



1. A system for the generation of chlorine dioxide which comprises

(a) supply means for a water stream and means for delivering the water stream to a reaction zone;

(b) supply means for reactant compounds, which when reacted together yield chlorine dioxide, and feed lines for separately feeding the reactant compounds to the water stream for reaction in the reaction zone;

(c) mixing means for insuring complete mixing of the compounds after feeding the reacting compounds to the water stream;

(d) means for transferring the reaction product from the reaction zone;

(e) shutoff valves in the feed lines of the reactant compounds;

(f) a monitoring system for monitoring the supply of water and reactant compounds through the feed lines, with the monitoring system being in cooperation with the shutoff valves such that the shutoff vales are closed to restrict any further flow through the feed lines of the reactant compounds when the monitoring system detects a loss in the supply of the reactant compounds or water, whereby the activation of the shutoff valves in the feed lines results in a continued flow of the water stream to purge the feed lines of any reactant compounds or chlorine dioxide; and

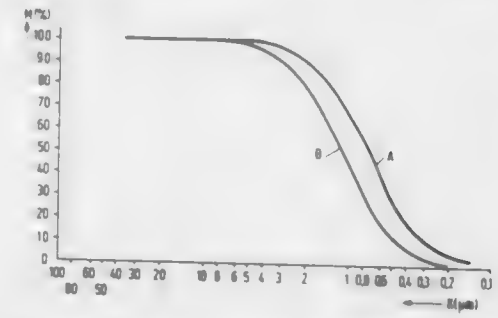
(g) a pH meter downstream of the reaction zone, with the pH meter monitoring the pH of the chlorine dioxide reaction product solution being transferred from the reaction zone, and the pH meter being in cooperation with the shutoff valves in the feed lines such that the shutoff valves are closed to restrict any further flow through the feed lines when a pH outside the range of from about 2.7 to about 3.5 is detected.

5,009,876

METHOD OF MANUFACTURING BARIUM TITANATE $BATIO_3$

Detlev F. K. Hennings, and Herbert J. Schreinemacher, both of Aachen, Fed. Rep. of Germany, assignors to U.S. Philips Corp., New York, N.Y.

Continuation of Ser. No. 105,066, Oct. 5, 1987, abandoned. This application Feb. 10, 1989, Ser. No. 309,467
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1986, 3635532
Int. Cl.[5] C01G *23/00*
U.S. Cl. 423—598 13 Claims



1. A method of manufacturing barium titanate by pyrolysis of barium titanyl oxalate which consists essentially of adding an aqueous solution of barium chloride to an aqueous solution comprising a mixture of oxalic acid and titanium oxychloride at a temperature in the range from 20° C. to 60° C., with agitation, to produce a precipitate of barium titanyl oxalate having a barium to titanium ratio in the range of 1:1.015 to 1:1.025; and calcining the resultant precipitate at a temperature in the range of 900° to 1300° C. for a time period effective to form barium titanate, said barium titanate having improved grindability, increased sinterability and comprising primary particles having a smaller grain size when compared to barium titanate obtained when aqueous solutions of barium chloride, titanium chloride and oxalic acid are reacted and the barium to titanium ratio is not within said 1:1.015 to 1:1.025 range.

5,009,877

STABILIZATION OF ACICULAR FERROMAGNETIC CHROMIUM DIOXIDE

Werner Steck; Laszlo Marosi, both of Ludwigshafen; Herbert Haberkorn, Gruenstadt; Rainer Feser, Hessheim; Werner Huebner, and Helmut Jakusch, both of Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 917,611, Oct. 10, 1986, abandoned. This application Feb. 20, 1990, Ser. No. 481,777
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1985, 3536116
Int. Cl.[5] C01G *37/02*
U.S. Cl. 423—607 3 Claims

1. A process for stabilizing acicular ferromagnetic chromium dioxide which consists essentially of heating the chromium dioxide in an aqueous suspension which contains sufficient alkali metal hydroxide to adjust the pH of the suspension to greater than 9 and at from 35° C. to the boiling point of the suspension for not less than 20 minutes to form chromium dioxide particles consisting of a CrO_2 core and at least a partial nonmagnetic Cr OOH— containing shell wherein the chromium dioxide possesses orthorhombic Cr OOH at least on part of its surface.

5,009,878

ZIRCONIUM DIOXIDE POWDER, PROCESSES FOR ITS PREPARATION AND ITS USE FOR THE PRODUCTION OF SINTERED ARTICLES

Helmut Scharf, Aurich, Fed. Rep. of Germany, assignor to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed May 31, 1990, Ser. No. 531,412

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1989, 3918013

Int. Cl.[5] **C01G** *25/00*

U.S. Cl. 423—608 **11 Claims**

1. A process for the preparation of zirconium dioxide powder, comprising melting zirconyl chloride in the presence of a diol of the formula HO-Z-OH, wherein X is a saturated hydrocarbon radical of 2–5 carbon atoms, and recovering the product.

5,009,879

TITANIUM DIOXIDE, A PROCESS FOR ITS PRODUCTION AND ITS USE

René De Cleyn, Brasschaat, Belgium; Peter Thometzek, and Jakob Rademachers, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 20, 1989, Ser. No. 438,315

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1988, 3840196

Int. Cl.[5] **C01G** *23/047*

U.S. Cl. 423—610 **4 Claims**

1. A titanium dioxide composition comprising TiO_2 predominantly in the form of isometric primary particles from 0.5 to 5.0 μm in size, which are aggregated by calcination to predominantly spherical particles 1 to 100 μm in diameter, with a BET surface area of 1 to 4.5 m^2/g and an apparent density of 0.2 to 1.3 kg/l.

5,009,880

COMPOSITION AND PROCESS FOR THE TREATMENT OF KERATIN MATERIALS WITH POLYMERS

Jean-Francois Grollier, Paris; Claire Fiquet, Paris; Chantal Fourcadier, Paris; Claude Dubief, Versailles, and Daniele Cauwet, Crosne, all of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 749,440, Jun. 27, 1985, Pat. No. 4,719,099, which is a continuation of Ser. No. 587,008, Mar. 7, 1984, abandoned, which is a continuation of Ser. No. 180,443, Aug. 22, 1980, Pat. No. 4,445,521, which is a continuation of Ser. No. 886,554, Mar. 14, 1978, Pat. No. 4,240,450. This application Nov. 4, 1987, Ser. No. 116,667

Claims priority, application Luxembourg, Mar. 15, 1977, 76955

The portion of the term of this patent subsequent to Dec. 23, 1997, has been disclaimed.

Int. Cl.[5] **A61K** *7/06, 7/08, 9/12*

U.S. Cl. 424—047 **14 Claims**

1. A composition for the cosmetic treatment of hair, skin or nails comprising an anionic polymer possessing sulfonic acid grouping having a molecular weight of 500 to 5 million and a cationic polymer containing primary, secondary, tertiary or quaternary amino groups, having a molecular weight of 500 to 5 million, said cationic polymer being characterized by a low substantivity in a solvent medium, said anionic and cationic polymers being present each in an amount from about 0.01 to 10% by weight.

5,009,881

ORAL HYGIENE GELS

Ira D. Hill, Clay Ct., Locust, N.J. 07760, and Robert D. White, 65 Glen Grey Rd., Oakland, N.J. 07436

Continuation-in-part of Ser. No. 927,752, Nov. 6, 1986, and Ser. No. 927,805, Nov. 6, 1986, Pat. No. 4,950,479. This application Jun. 8, 1990, Ser. No. 535,499

Int. Cl.[5] **A61K** *7/16*

U.S. Cl. 424—49 **11 Claims**

1. An oral hygiene method for cleaning, massaging and conditioning gums of edentulous persons and babies and infants prior to teething, and up through the time the child itself can effectively control plaque formation, by regular brushing, comprising the steps of removing and disrupting plaque-like films on said gums with a gel suitable for cleaning, massaging and conditioning gums of babies and endentulous persons, wherein:

A. said gel is free from:
1. abrasive,
2. analgesic, and
3. substances that alter the microflora balance of the oral cavity;

B. said gel comprises.
1. a nonionic surfactant,
2. a coating substance insoluble in said surfactant, wherein the weight ratio of said nonionic surfactant to said coating substance is from between about 50:1 and about 1:1 and;
3. a viscosifier; and

C. said gel is characterized as being:
1. stable,
2. ingestible,
3. non-foaming,
4. substantive to the gums of babies and endentulous persons,
5. disruptive towards the formation of plaque-like films on the gums of babies and endentulous persons, and having a
6. pH of from between about 3.0 and about 8.5.

5,009,882

USE OF A CARBOXY STARCH POLYMER TO INHIBIT PLAQUE WITHOUT TOOTH STAINING

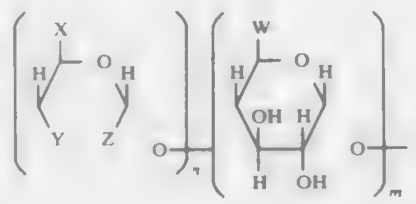
Charles R. Degenhardt, and Barbara A. Kozikowski, both of Cincinnati, Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Filed May 21, 1990, Ser. No. 526,930

Int. Cl.[5] **A61K** *7/16, 7/18, 9/68*

U.S. Cl. 424—52 **26 Claims**

1. An oral composition comprising: (a) a safe and effective amount of a plaque-inhibiting starch polymer comprising the formula



wherein W and X are independently selected from CH_2OH, CHO and CO_2H, or the neutralized carboxylic acid salts thereof, Y and Z are independently selected from CHO and CO_2H, or the neutralized carboxylic acid salts thereof, n is in the range of from about 5 to about 2500, m is in the range of from 0 to about 2500, provided that the sum of n and m ranges from about 5 to about 2500, and the degree of carboxylation of said polymer ranges from about 1 to about 3; and (b) a pharmaceutically acceptable carrier.

5,009,883

AQUEOUS STANNOUS FLUORIDE NON-ABRASIVE HOME TREATMENT GEL COMPOSITIONS

Christopher H. Suhonen, San Jose, Calif., assignor to Gillette Canada Inc., Montreal, Canada

Division of Ser. No. 437,467, Nov. 15, 1989, Pat. No. 4,960,586. This application Jul. 25, 1990, Ser. No. 557,882

Int. Cl.[5] **A61K** *7/18, 33/16*

U.S. Cl. 424—52 **3 Claims**

1. An aqueous non-abrasive home treatment gel composition consisting essentially of water-unstable stannous fluoride and a lower alkyl vinyl ether and maleic anhydride copolymer as the essential stannous ion chelate forming stabilizer in an amount sufficient to effectively stabilize the stannous fluoride concentration against stannous oxide precipitation by providing oxidation protection to the stannous ion, the composition being substantially free from soluble pyrophosphates, silica containing compounds, and aldehyde containing flavoring agents.

5,009,884

STABILIZED AQUEOUS STANNOUS FLUORIDE MOUTHWASH

Christopher H. Suhonen, San Jose, Calif., assignor to Gillette Canada Inc., Montreal, Canada

Division of Ser. No. 437,469, Nov. 15, 1989, Pat. No. 4,970,065. This application Jul. 25, 1990, Ser. No. 557,881

Int. Cl.[5] **A61K** *7/18, 33/16*

U.S. Cl. 424—52 **3 Claims**

1. An aqueous mouthwash composition consisting essentially of water-unstable stannous fluoride and a lower alkyl vinyl ether and maleic anhydride copolymer as the essential stannous ion chelate forming stabilizer in an amount sufficient to effectively stabilize the stannous fluoride concentration against stannous oxide precipitation by providing oxidation protection to the stannous ion, the composition being substantially free from soluble pyrophosphates and aldehyde containing flavoring agents.

5,009,885

METHOD OF PROTECTING THE MUCOUS MEMBRANES OF THE MOUTH WHILE TREATING TEETH

David K. Yarborough, 3705 Northcote Dr., Birmingham, Ala. 35223

Division of Ser. No. 406,418, Sep. 11, 1989, Pat. No. 4,983,380. This application Nov. 19, 1990, Ser. No. 600,683

Int. Cl.[5] **A61K** *7/18, 7/20, 33/40*

U.S. Cl. 424—53 **3 Claims**

1. A method of protecting the mucous membranes of the mouth while using a hydrogen peroxide solution to whiten the teeth comprising the steps of:

(a) forming a reusable mold of the teeth and adjacent gingival area of a patient's mouth;

(b) combining an aqueous hydrogen peroxide solution with a gelatinous mucoprotectant water soluble sodium stearate gel to form an emulsion;

(c) placing said emulsion in said mold in a quantity sufficient to coat the teeth when placed thereabout; and

(d) positioning said teeth in said mold for a predetermined period of time.

5,009,886

DENTIFRICE

Mohammad R. Ahmad, Glenview, and Oscar A. Barke, Skokie, both of Ill., assignors to Floss Products Corporation, Morton Grove, Ill.

Filed Oct. 2, 1989, Ser. No. 416,101

Int. Cl.[5] **A61K** *7/26, 35/78*

U.S. Cl. 424—58 **2 Claims**

1. In a gel dentifrice for caring for one's teeth and gums, the combination of 20–60 mesh or less natural form micro-sized particles or microfibers of the branches or roots of trees botanically known as the azadirachta or salvadora persica, the micro-sized particles or microfibers being formed by mechanically grinding and/or chopping the branches or roots of the trees to very fine particles, dry-filtering these particles through very fine screens, of the order of 20–60 mesh, to yield 20–60 mesh or less micro-sized particles or microfibers, the improvement consisting of the steps of mixing the yielded micro-sized particles or microfibers in a bath of deionized water and a minute quantity of methylparaben and heating the composite liquid to 70–95 degrees Centigrade for 10–40 minutes, and filtering the composite liquid with only minimal pressure differential through a very fine cloth bag filter of the order of 20–60 mesh to yield a filtered liquid having 20–60 mesh or less micro-sized particles or microfibers suspended therein; mixing artificial sugarless sweetener, a flavor enhancer, a vitamin supplement, a gum healer, and a gelling thickener, with the filtered liquid having the micro-sized particles or microfibers suspended therein, thereby providing in the gel dentifrice a natural astringent for acting on the gums and other soft tissue of the mouth and a soft nondamaging abrasive for cleaning and whitening the teeth and otherwise being void of any and all mineral abrasives commonly used in dentifrice; and the gel dentifrice by weight being comprised of 10–20% deionized water; 30–60% sorbitol; 5–15% extract liquid; 5–15% liquid vegetable glycerine solvent; 1–3% carrageenan; 0.1–2.0% titanium dioxide coloring; 0.1–0.5% sodium lauryl sulfate surfactant; and 0.5–2% mint flavor.

5,009,887

DEODORANT COMPOSITION IN THE FORM OF A GEL

Takashi Iwahashi, Sagamihara, Japan, assignor to Aikoh Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 256,561, Oct. 12, 1988, abandoned. This application Jul. 31, 1989, Ser. No. 388,023

Int. Cl.[5] **A61K** *31/78*

U.S. Cl. 424—76.1 **3 Claims**

1. A deodorant composition in the form of a gel, which comprises 2% to 30% by weight of sodium polyacrylate or ammonium polyacrylate having a molecular weight of from 40,000 to 300.000, 1% to 10% by weight of diglycidyl ether or polyglycidyl ether, 5% to 40% by weight of deodorizer containing as active ingredients ethanaminium N-(carboxymethyl)-2-hydroxy-N,N,bis(2-hydroxyethyl) chloride, diethanolamine, triethanolamine, glyoxal, sodium citrate and sodium dihydrogen phosphate, and the remainder of water.

5,009,888

THERAPEUTIC ENZYME-ANTIBODY COMPLEXES

Joseph T. Dunn, Holliston, Mass., assignor to Genzyme Corporation, Cambridge, Mass.

Filed Apr. 13, 1987, Ser. No. 37,862

Int. Cl.[5] **A61K** *37/54, 39/395;* **C12N** *9/96*

U.S. Cl. 424—94.3 **2 Claims**

1. A pharmaceutical composition comprising a suitable carrier and a complex of the enzyme human tissue plasminogen activator and a monoclonal antibody specific for said enzyme, said antibody being bound to said enzyme by immunoaffinity, the K_D of said antibody/enzyme complex being at least 10^{-11}M, said antibody being bound to said enzyme at a site on said enzyme which does not substantially interfere with the activity of said enzyme and which increases the in vivo half-life of said enzyme.

2. A pharmaceutical composition comprising a suitable carrier and a complex of the enzyme human tissue plasminogen activator and a monoclonal antibody specific for said protein, said antibody being covalently bonded to said enzyme at a site on said enzyme which does not substantially interfere with the activity of said enzyme and which increases the in vivo half-life of said enzyme.

5,009,889

TREATMENT OF DYSFUNCTIONAL VASCULAR ENDOTHELIUM USING ACTIVATED PROTEIN C

Fletcher B. Taylor, Jr., and Charles T. Esmon, both of Oklahoma City, Okla., assignors to Oklahoma Medical Research Foundation, Oklahoma City, Okla.

Filed Dec. 31, 1987, Ser. No. 139,922
Int. Cl.[5] A61K *37/547, 37/02*
U.S. Cl. 424—94.64 20 Claims

1. A pharmaceutical composition comprising:
an effective amount of a polypeptide characterized by activated protein C activity to inhibit inflammatory stimuli disrupting cell permeability and normal coagulation processes in a patient suffering from a dysfunction of endothelial cells; and
a pharmaceutically acceptable carrier.

5,009,890

BURN TREATMENT PRODUCT

Ascanio G. DiPippo, Middletown, R.I., assignor to Trilling Medical Technologies, Inc., Carlstadt, N.J.

Continuation of Ser. No. 83,395, Aug. 10, 1987, abandoned, which is a continuation-in-part of Ser. No. 32,268, Mar. 31, 1987, abandoned. This application Apr. 11, 1990, Ser. No. 512,621
Int. Cl.[5] A61K *35/78;* A61L *15/44*
U.S. Cl. 424—195.1 48 Claims

1. A burn treatment product in the form of a gel comprising:
an effective amount of water for permitting formation of a gel and for reducing the amount of heat in the burned are; between about 0.1 and 20% Tea Tree Blend; and
a gel forming amount of at least one gum.

5,009,891

ANTIOXIDANT COMPOSITION OF NATURAL PRODUCTS AND PRODUCING METHOD THEREOF

Kozo Niwa, 4-4, Asahi-machi, Toda-Shimizu, Kochi, and Shimesu Motoyama, Asaka, both of Japan, assignors to Kozo Niwa, Kochi, Japan

Filed Sep. 23, 1987, Ser. No. 100,166
Claims priority, application Japan, Sep. 25, 1986, 61-224791
Int. Cl.[5] A61K *35/78*
U.S. Cl. 424—195.100 13 Claims

1. An antioxidant composition, which comprises; the product obtained by steps consisting of
(a) heating a material selected from the group consisting of plant seeds, vegetable grains and germs thereof, or rice bran to a temperature within the range of from 50° to 150° C. for a period of time sufficient to release low-molecular weight antioxidant compounds from bonds or repeating sub-units of polymers binding the compounds to other components or each other;
(b) brewing the heated material; and
(c) adding to the brew, an oil, obtained from a plant heated to a temperature within the range of from 50° to 150° C. for a period of time sufficient to release low-molecular weight antioxidant compounds from bonds or repeating sub-units of polymers binding the compounds to other components or each other.

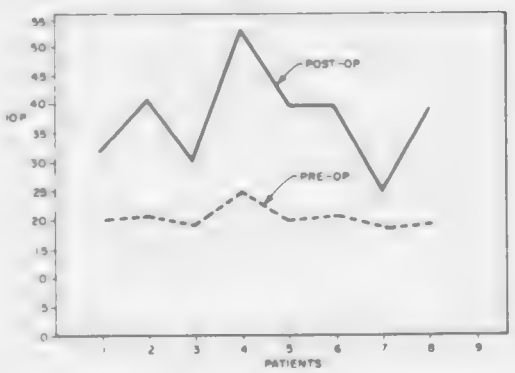
5,009,892

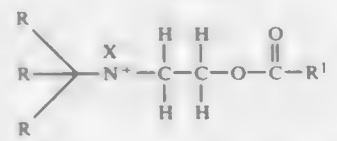
RAPID MIOSIS WITH CONTROL OF INTRAOCULAR PRESSURE

James W. McKinzie, 3124 Solimar Beach Dr., Ventura, Calif. 93001

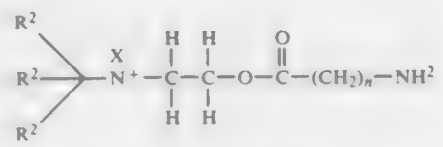
Filed Mar. 3, 1989, Ser. No. 318,753
Int. Cl.[5] A61K *9/00*
U.S. Cl. 424—422 22 Claims

1. A method of inducing quick miosis while controlling intraocular pressure in a mammal during ocular surgery comprising the steps of:
applying to the eye of the mammal during ocular surgery an aqueous solution containing from 0.1 to 5% by weight of a first miotic agent dissolved in a pharmacologically acceptable aqueous carrier, said first agent being selected from compounds of the formula:





where R and R^1 are lower alkyl groups containing 1 to 5 carbon atoms and X^- is an anion; and
applying to the eye during said surgery an aqueous saline solution containing 0.001 to 1.0 percent by weight of a second miotic agent dissolved in pharmacologically acceptable aqueous carrier selected from compounds of the formula:



where R^2 is a lower alkyl group of 1–5 carbon atoms, n is an integer from 0–3 and X^- is an anion.

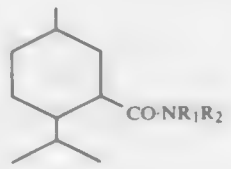
5,009,893

BREATH-FRESHENING EDIBLE COMPOSITIONS OF METHOL AND A CARBOXAMIDE

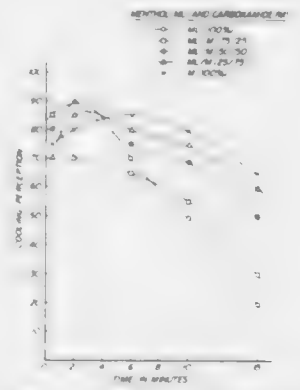
Subraman R. Cherukuri, Towaco; Krishna Raman, Randolph, both of N.J.; Gul Mansukhani, Staten Island, N.Y.; Ralph Cifrese, Wharton, N.J., and Lucy L. Wong, Jackson Heights, N.Y., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jul. 17, 1989, Ser. No. 381,218
Int. Cl.[5] A61K *7/16, 9/68*
U.S. Cl. 424—440 30 Claims

1. A chewing gum composition capable of providing long-lasting, breath freshening perception without bitterness comprising a gum base, a sweetener and a cooling composition comprising menthol and an N-substituted-p-menthane carboxamide of the formula:



wherein R_1, when taken separately, is selected from the group consisting of hydrogen, and an aliphatic radical containing up to 25 carbon atoms;
R_2, when taken separately is selected from the group consisting of a hydroxy radical, and an aliphatic radical containing up to 25 carbon atoms, with the proviso that when R_1 is hydrogen R_2 may also be an aryl radical of up to 10 carbon atoms and selected from substituted phenyl, phenalkyl, naphthyl and substituted naphthyl, and pridyl; and
R_1 and R_2 when taken together, represent a cyclic or heterocyclic group of up to 25 carbon atoms.

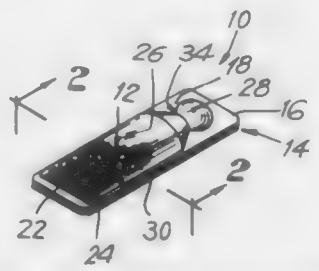


5,009,894

ARRANGEMENT FOR AND METHOD OF ADMINISTERING A PHARMACEUTICAL PREPARATION

Charles Hsiao, Copper City, Fla., assignor to Baker Cummins Pharmaceuticals, Inc., Miami, Fla.

PCT No. PCT/US88/00868, § 371 Date May 11, 1988, § 102(e) Date May 11, 1988
PCT Filed Mar. 7, 1988, Ser. No. 227,904
Int. Cl.[5] A61K *9/52*
U.S. Cl. 424—451 21 Claims



1. An arrangement for administering a pharmaceutical preparation, comprising:
a multitude of pellets containing a pharmaceutical preparation and having non-tacky coatings; and
a breakable packet including a backing sheet having opposite major planar surfaces, and a covering member overlying the backing sheet, and extending outwardly of, and having a flange portion sealed to one of said major surfaces, said covering member bounding with the backing sheet a compartment in which the pellets are contained, said covering member including a hollow main portion having a predetermined half-cylindrical cross-section and extending along a longitudinal direction, a neck portion having a half-frusto-conical cross-section less than said predetermined cross-section and tapered walls which converge toward each other along the longitudinal direction to a waist, and a head portion having a half-spherical cross-section and tapered walls which diverge apart along the longitudinal direction away from the waist, said covering member having its smallest dimension, as considered along a transverse direction generally perpendicular to the longitudinal direction, at the waist, said packet having across the waist a frangible zone which, when broken, forms the neck portion as a tapered pouring spout through which the pellets are poured from the compartment.

5,009,895

SUSTAINED RELEASE WITH HIGH AND LOW VISCOSITY HPMC

Chung Y. Lui, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 2, 1990, Ser. No. 473,801
Int. Cl.[5] A61K *9/20*
U.S. Cl. 424—465 11 Claims

1. A carrier base material combined with a therapeutically active medicament and shaped and compressed to a solid sustained release pharmaceutical dosage form having a zero order release profile upon administration, carrier base material comprising:
(a) a high viscosity HPMC; having a molecular weight of 60,000 or greater; and
(b) a low viscosity HPMC, having a molecular weight of 50,000 or less, wherein the high and low viscosity HPMC are in a ratio yielding a zero order release profile.

5,009,896

MULTI-FRACTIONABLE TABLET STRUCTURE

John W. Becker, Littleton, Colo., assignor to Akzo N.V., Arnhem, Netherlands

Filed Oct. 4, 1989, Ser. No. 416,902
Int. Cl.[5] A61K *9/44*
U.S. Cl. 424—467 7 Claims



1. A pharmaceutical tablet that is readily divisible into subdosage units of two or three equal parts, said tablet comprising (i) an equilateral or isosceles triangle shape, (ii) two opposite triangular planar surfaces each having scoremarkings thereon, (iii) the scoremarkings on one surface consisting of a first scoremarking extended perpendicularly from the midpoint of one edge of the triangle and a second scoremarking positioned perpendicular to the first scoremarking at its distal end, wherein the length of the first scoremarking is selected such that the two perpendicular scoremarkings divide the tablet into three equal parts and (iv) a single scoremarking on the second surface dividing the tablet into two equal parts, wherein the scoremarking on the second surface is located to extend from an angle adjacent to the edge from which the first scoremarking on the opposite side extended or located to extend from the midpoint of the same edge, from which the first scoremarking, on the opposite side extended to the midpoint of the opposite angle.

5,009,897

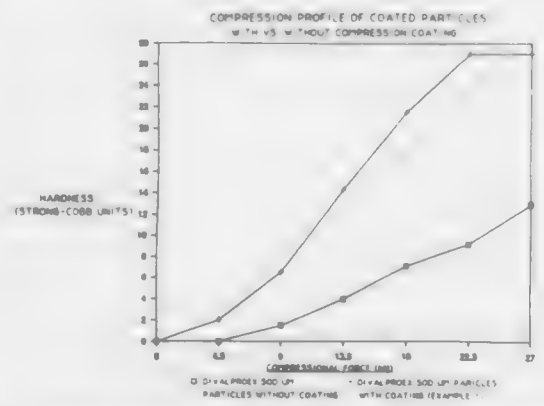
PHARMACEUTICAL GRANULES AND TABLETS MADE THEREFROM

Dale R. Brinker, Antioch, and Thomas L. Reiland, Gages Lake, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Continuation of Ser. No. 353,809, May 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 211,495, Jun. 24, 1988, abandoned. This application Jul. 12, 1990, Ser. No. 552,377

Int. Cl.[5] A61K *9/16, 9/26, 9/28*

U.S. Cl. 424—469 11 Claims



1. A granule for compression into tablets having a hardness sufficient to produce a cohesive tablet that will not fracture during tablet coating, comprising a core of active drug and a surface coating comprising a polymer selected from povidone, hydroxypropyl cellulose and hydroxypropyl methylcellulose and microcrystalline cellulose, the polymer:microcrystalline cellulose ratio being from about 1:15 to about 2:1 by weight.

5,009,898

ANTIMICROBIAL HYDROXYAPATITE POWDERS AND METHODS FOR PREPARING THEM

Shuji Sakuma; Kiminori Atsumi, and Keijiro Fujita, all of Tokyo, Japan, assignors to Kabushiki Kaisha Sangi, Tokyo, Japan

Filed Sep. 19, 1989, Ser. No. 409,076

Claims priority, application Japan, Sep. 29, 1988, 63-242389; Apr. 14, 1989, 1-92999; May 18, 1989, 63-122958

Int. Cl.[5] A61K *33/38, 33/30, 33/34*

U.S. Cl. 424—618 4 Claims

1. An antimicrobial hydroxyapatite powder comprising hydroxyapatite powder having absorbed therein silver ions.

5,009,899

WHEY PERMEATE-DERIVED SWEETENER

Bill L. Miller, Fort Dodge; H. Bruce Perry, Webster City, and Robert DeGregorio, Fort Dodge, all of Iowa, assignors to Land O'Lakes, Inc., Arden Hills, Minn.

Continuation-in-part of Ser. No. 116,978, Nov. 5, 1987, abandoned. This application May 10, 1989, Ser. No. 350,121

Int. Cl.[5] A23K *1/08*

U.S. Cl. 426—2 16 Claims

1. A method of feeding animals comprising:

providing a whey permeate sweetener including fibrous carrier and a condensed whey permeate in an amount sufficient to coat the fibrous carrier the whey permeate having at least 10% caramelized lactose and having a protein level of less than approximately 8% and a lactose level of at least approximately 79%, on a dry matter basis by weight applied to the fibrous carrier; and

feeding the sweetener to animals.

5,009,900

GLASSY MATRICES CONTAINING VOLATILE AND/OR LABILE COMPONENTS, AND PROCESSES FOR PREPARATION AND USE THEREOF

Harry Levine; Louise Slade, both of Morris Plains; Bernhard Van Lengerich, Ringwood, and John G. Pickup, Randolph, all of N.J., assignors to Nabisco Brands, Inc., East Hanover, N.J.

Filed Oct. 2, 1989, Ser. No. 415,867

Int. Cl.[5] A23L *1/22*

U.S. Cl. 426—96 54 Claims

1. A process for encapsulation of a composition containing at least one volatile and/or labile component, which process comprises forming a mixture of said composition with:

(a) from about 40 to 80 percent by weight of a water-soluble, chemically-modified starch having a dextrose equivalent not greater than about 2;

(b) from about 10 to 40 percent by weight of a maltodextrin having a dextrose equivalent in the range of from about 5 to about 15;

(c) from about 5 to about 20 percent by weight of corn syrup solids or a polydextrose having a dextrose equivalent in the range of from about 21 to about 42; and

(d) from about 5 to about 20 percent by weight of a mono- or disaccharide,

all of said percentages being based upon the total weight of said components (a), (b), (c) and (d);

and extruding the mixture to form a glassy matrix having a glass transition temperature of at least 40° C. wherein the composition containing at least one volatile and/or labile component is encapsulated.

25. A glassy matrix produced by a process according to claim 1.

5,009,901

METHOD OF PACKAGING A BEVERAGE AND A BEVERAGE PACKAGE

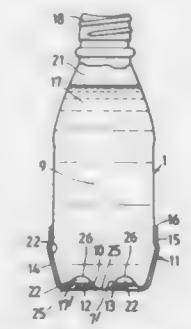
William J. Byrne, Mount Merrion, Ireland, assignor to Arthur Guinness Son & Company (Dublin) Limited, Dublin, Ireland

Filed Apr. 28, 1989, Ser. No. 345,639

Claims priority, application United Kingdom, Sep. 12, 1988, 8821265

Int. Cl.[5] B65D *85/72;* B65B *31/00, 81/20*

U.S. Cl. 426—112 12 Claims



1. A beverage package comprising a container body having an operable top that communicates with a sealed primary chamber in the container body which is charged with beverage containing gas in solution to provide a primary headspace therein, said headspace having a pressure greater than atmospheric; a bottom wall portion of the container body which has a restricted orifice therein; a closure wall sealed to the exterior of the container body to form therewith a sealed secondary chamber that is in constant communication with the primary chamber through said restricted orifice; said secondary chamber being charged with beverage derived from the primary chamber by way of the restricted orifice to provide a secondary headspace in the secondary chamber which secondary headspace has a pressure greater than atmospheric when the contents of the package are at equilibrium so that when the beverage package is opened at said openable top, the primary headspace reduces to atmospheric pressure and pressure in the secondary chamber to be ejected by way of the restricted orifice into the beverage in the primary chamber for forming a head of froth on said beverage in the primary chamber.

5,009,902

CONICAL TACO SHELL

Carlos A. Mercenari, Toltecas 39 0900, Mexico

Continuation-in-part of Ser. No. 840,518, Mar. 17, 1986. This application Jul. 7, 1988, Ser. No. 216,345

Int. Cl.[5] A21D *13/00*

U.S. Cl. 426—138 6 Claims

1. Process of manufacturing cone-taco-shells which comprises the steps of rolling cooked heart shaped tortilla to form a cylinder placing said cylinder in a cone shaped sheet metal envelope; inserting a solid and heavy metallic cone into the sheet metal envelope containing the tortilla to hold the tortilla between said outside metal sheet and the solid metal cone; submerging the whole assembly in which cooking oil preheated to a temperature effective to fry the tortilla in a few seconds and removing the assembly from the oil and allowing it to cool.

5,009,903

METHOD OF MAKING FRIED PIE

Mario P. deFigueiredo, Chesterfield, Mo., and Richard L. Brady, Belleville, Ill., assignors to DCA Food Industries, Inc., New York, N.Y.

Filed Feb. 2, 1988, Ser. No. 151,405

Int. Cl.[5] A21D *8/00*

U.S. Cl. 426—243 14 Claims

1. A process for preparing a fried pie in the nature of a microwavable, pre-fried, batter-coated dough-enrobed foodstuff comprising the steps of:

(a) providing a foodstuff enrobed with uncooked dough and providing an aqueous batter slurry formed by mixing an effective amount of water with a farinaceous-based batter mix comprising a farinaceous material selected from the group consisting of starch, flour, and mixtures thereof;

(b) applying said batter slurry to the uncooked dough of the dough-enrobed foodstuff to coat the same; and

(c) partially cooking the batter-coated dough-enrobed foodstuff in hot fat or cooking oil to pre-fry the same;

said pre-fried batter-coated dough-enrobed foodstuff being characterized by an acceptable level of crispness after being subjected to microwave cooking.

5,009,904

METHOD FOR FRYING COMESTIBLES IN A MICROWAVE OVEN

Irving M. Saslaw, Woodcliff Lake, N.J.; Harry H. Topalian, Weston, Conn., and Joseph M. Rispoli, Massapequa Park, N.Y., assignors to Saslaw & Topalian Associates, Inc., Port Chester, N.Y.

Division of Ser. No. 440,800, Nov. 24, 1989. This application Oct. 1, 1990, Ser. No. 590,963

Int. Cl.[5] A23L *1/00*

U.S. Cl. 426—243 28 Claims

1. A method for frying comestibles in a microwave oven comprising the steps of:

(a) contacting said comestible with a microwave cooking composition comprising from about 30 to 95 percent by weight of a frying oil or fat, up to about 30 percent by weight of a water- or oil-soluble food gum, and from about 0.05 to 2.5 percent by weight of an emulsifier; and

(b) applying microwave energy to said comestible while in contact with said cooking composition,

with the proviso that said food gum is present in said cooking composition in an amount sufficient to enhance the formation of a foam during the application of said microwave energy while stabilizing the thus-formed foam, whereby a fried comestible is obtained.

5,009,905

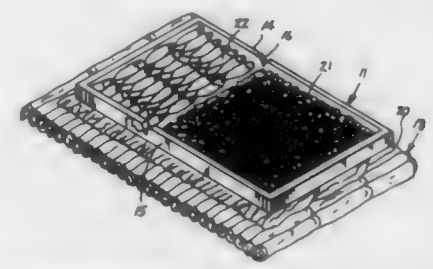
SUSHI FORMING METHOD

Takeo Ikeda, 1687-A Kalawi Dr., Wailuku, Hi. 96793

Filed Feb. 28, 1990, Ser. No. 486,290

Int. Cl.[5] A23L *1/00*

U.S. Cl. 426—297 2 Claims



1. A method of gauging and forming sushi comprising the steps of:

a. providing a bamboo mat defined by a predetermined upper surface and positioning the mat on a support surface, and

b. placing a flexible seaweed sheet on said bamboo mat, said flexible seaweed sheet defined by a further surface less than that of the predetermined surface of the bamboo mat, and

c. providing a frame member and positioning the frame member onto an upper surface of the seaweed sheet, and

d. forming a layer of rice within the frame member, and

e. forming a layer of seafood overlying the layer of rice to completely fill the frame member, and

f. removing the frame member, and

g. rolling the bamboo mat, the seaweed sheet, rice and seafood in unison to form a sushi roll.

5,009,906

METHOD AND COMPOSITION FOR FILTERING BEER, ALE OR MALT LIQUOR TO REDUCE MULTIVALENT METAL CATIONS

Timothy R. Smith, Santa Barbara, Calif., assignor to Manville Corporation, Denver, Colo.

Filed Jun. 19, 1990, Ser. No. 540,097

Int. Cl.[5] C12H *1/04*

U.S. Cl. 426—330.4 13 Claims

1. A method of reducing multivalent metal cations from beer, ale or malt liquor comprising the steps of:

providing an alkali metal silicate-treated finely divided diatomaceous earth (DTE), and

contacting the beer, ale or malt liquor with the silicate-treated DTE by filtering the beer through the silicate-treated DTE thereby reducing the multivalent metal cation content of the beer, ale or malt liquor.

5,009,907

METHOD FOR TREATING FOOD TO CONTROL THE GROWTH OF YEASTS

Masahiro Fujii, Tokyo; Masakazu Hatakeyama, Minamatashi, and Jun Hiraki, Yokohamashi, all of Japan, assignors to Chisso Corporation, Japan

Filed Jun. 26, 1989, Ser. No. 371,008

Claims priority, application Japan, Jul. 7, 1988, 63-169233

Int. Cl.[5] A23L *3/3463*

U.S. Cl. 426—335 12 Claims

1. A method of treating food to control the growth of yeasts comprising adding ethanol preparations to food, wherein the ethanol preparations comprise a solution of ε-polylsine in etha-

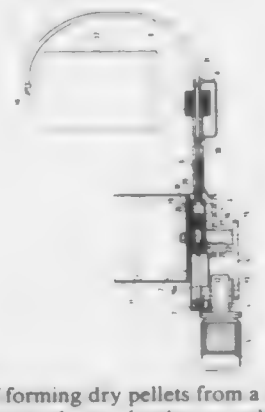
nol having an ethanol concentration of 30% by weight or higher.

5,009,908

METHOD OF PELLETING DRY PELLETS FROM A MIXTURE CONTAINING THERMO-HARDENED INGREDIENTS, PARTICULARLY FOR USE AS FISH FEED, AND THE MACHINE FOR CARRYING OUT THE PROCESS

Ole Molaug, Bryne, and Steinar Risa, Undheim, both of Norway, assignors to Akva A/S, Bryne, Norway

Filed Nov. 2, 1989, Ser. No. 431,553
Claims priority, application Norway, Nov. 7, 1988, 884953
Int. Cl.[5] A23B *4/03*
U.S. Cl. 426—454 **24 Claims**



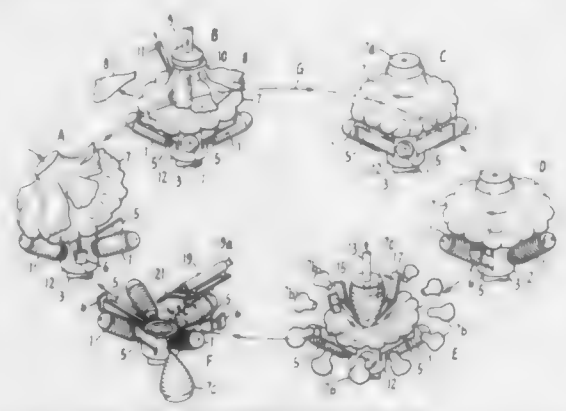
1. A method of forming dry pellets from a mass, including a dry mass, containing thermo-hardening substances, particularly for use as fish feed, comprising the steps of:
first compressing the mass;
next heating the compressed mass to a thermo-hardening temperature;
draining off the by-product of heating, such as fat, other liquids and gas before performing said cooling step;
finally cooling the thermo-hardened mass and bringing the drained by-products into contact with the thermo-hardened mass after the latter has been cooled off in said cooling step.

5,009,909

CORING METHOD

Thomas W. Hirtle, San Ramon; Frederick J. Cimperman, Castro Valley, and Klaus Silbermann, Sunol, all of Calif., assignors to Ashlock Company, San Leandro, Calif.

Filed Aug. 5, 1988, Ser. No. 229,160
Int. Cl.[5] A23N *3/00*
U.S. Cl. 426—481 **11 Claims**



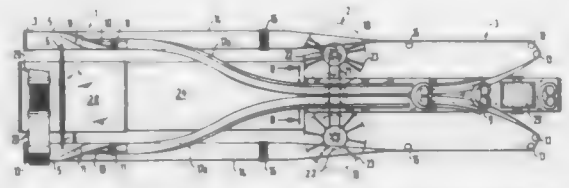
1. A coring method, including the steps of:
(a) loading an article onto a holder at a loading station;
(b) translating the holder, with the article thereon, along a process path from the loading station to a coring station; and
(c) at the coring station, translating a pivot arm assembly, and a coring knife attached to the pivot arm assembly, along a first axis to translate the coring knife into engagement with the article, while rotating the pivot arm assembly about the first axis and pivoting the pivot arm assembly about a second axis, to translate the coring knife along a generally helical coring path with varying radius as the coring knife penetrates the article, thereby severing fragments of the article from a one-piece core of the article.

5,009,910

METHOD OF FORMING PRETZELS FROM STRANDS OF DOUGH

Horst Zwicker, Grabenstrasse 22, 7320 Göppingen, Fed. Rep. of Germany

Filed Feb. 7, 1990, Ser. No. 477,344
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1989, 3903701
Int. Cl.[5] A21D *3/08*
U.S. Cl. 426—499 **7 Claims**



1. A method of forming pretzels from strands of dough, comprising the steps of:
grasping an oncoming dough strand in a receiving station at its ends;
moving the ends of each dough strand toward each other during transport of the dough strand from the receiving station to a knot forming station, whereby the remaining portion between the ends is lowered below the ends to define a bow-shaped loop with a central portion and opposing side portions;
turning the bow-shaped loop in the knot forming station about a vertical axis relative to the ends by 360° to form a knot;
upwardly folding the bow-shaped loop about a horizontal axis below the knot into a horizontal position below the ends during transport of the dough strand from the knot forming a station to a release station; and
releasing the ends of the dough strand in the release station to allow the ends to sink onto the side portions by virtue of their own weight,
wherein the dough strands are continuously advanced in conveying direction at arbitrary distance from each other between the receiving station, the knot forming station and the release station, without stoppage during said turning step in the knot forming station.

5,009,911

FOODSTUFF CONTAINING AEWX STARCH

David J. Mauro, Dolton, Ill.; Susan L. Furcsik, Lake Station; Frances R. Katz, Crown Point, both of Ind.; Eugene J. Faron, II, Valpargiso, Ind.; David J. Gottneid, Griffith, Ind., and Frank J. Pustek, Munster, Ind., assignors to American Maize-Products Company, Hammond, Ind.

Filed Aug. 18, 1989, Ser. No. 395,761
Int. Cl.[5] A23L *1/0522*
U.S. Cl. 426—578 **19 Claims**

1. A thickened acid foodstuff comprising a foodstuff, water, and a starch extracted from a starch-bearing plant having an amylose extender waxy genotype, said acid foodstuff having a pH of about 5.0 and below, said amylose extender waxy starch being present in an amount effective to provide thickening characteristics to said acid foodstuff after said acid foodstuff is retorted, and wherein said thickened acid foodstuff exhibits substantially similar viscosity characteristics as a thickened foodstuff made using an effective amount of a crosslinked waxy starch extracted from the same type of starch-bearing plant from which said amylose extender waxy starch is extracted, said crosslinked waxy starch also being present in an amount effective to provide thickening characteristics to a thickened acid foodstuff made with the crosslinked starch, and said viscosity being measured by a Brabender amylogram.

5,009,912

METHOD OF MAKING A MILK FORMULATION

Floyd K. Nixon, 516 Ellis Dr., Paris, Tenn. 38242

Continuation-in-part of Ser. No. 369,628, Jun. 20, 1989, abandoned. This application May 21, 1990, Ser. No. 525,695
Int. Cl.[5] A23C *9/137*
U.S. Cl. 426—580 **2 Claims**

2. A milk composition that approaches the taste, mouth-feel and appearance of whole milk which consists essentially of a mixture of skim milk or low fat milk and
(A) 0.18–0.80% by weight base on the weight of the milk of a colloidal grade of microcrystalline cellulose or peptized microcrystalline cellulose which consists of a mixture of
(a) 88–89% by weight of microcrystalline cellulose and
(b) 11–12% by weight of carboxy-methyl cellulose and
(B) 0.1–1.0% by weight based on the weight of the milk of gum arabic.

5,009,913

CHEESE-LIKE SPREAD COMPOSITION AND METHOD OF MAKING

Salah H. Ahmed, Elk Grove Village, and Anthony J. Luksas, Downers Grove, both of Ill., assignors to Dairy Research, Inc., Rosemont, Ill.

Filed Aug. 30, 1989, Ser. No. 400,391
The portion of the term of this patent subsequent to Sep. 6, 2005, has been disclaimed.
Int. Cl.[5] A23C *19/09, 15/06*
U.S. Cl. 426—581 **17 Claims**

1. A cheese-like spread composition which has the taste, texture and mouth feel of a cheese food composition, comprising a homogenized concentrated mixture of (a) at least one water-in-oil emulsion of a liquid dairy product, (b) at least one oil-in-water emulsion of a liquid dairy product, and (c) at least one cheese composition, wherein the ratio of (a) to (b) is at least 6:4 but is less than 9:1, the ratio of (a) and (b) to (c) is between 9:1 and 1:4, and the total fat content of the composition is at least 40% and wherein the starting liquid dairy product is primarily an oil-in-water emulsion in the natural state.

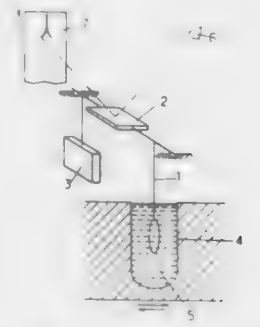
5,009,914

PROCESS FOR CONFERRING CHEESE MAKING PROPERTIES ON OVERHEATED MILKS FOR THE MANUFACTURE OF RENNETED CHEESES

Michel Serpelloni, Beuvry les Bethune, France, assignor to Roquette Freres, Lestrem, France

Filed Jun. 14, 1989, Ser. No. 365,571
Claims priority, application France, Jun. 14, 1988, 88 07932
Int. Cl.[5] A23C *19/04*
U.S. Cl. 426—582 **5 Claims**

1. In a process for making cheese from milk, wherein curd is formed under the action of rennet on the milk, the said process comprising heat treating the milk at a temperature from 78°to 110° C., the improvement comprising incorporating into the milk an amount of from 0.03 to 5 g per liter of milk of an acidogenic agent selected from the group consisting of



gluconolactones and glucoheptonolactones whereby cheese making properties are conferred on the milk.

5,009,915

METHOD FOR PREPARING KONJAK CHIP

Ikuzo Ogawa, Kanagawa, Japan, assignor to Kabushiki Kaisha Maruzen Shokuhin, Kanagawa, Japan

Filed May 25, 1989, Ser. No. 356,987
Claims priority, application Japan, Mar. 6, 1989, 1-052119
Int. Cl.[5] A23L *1/00*
U.S. Cl. 426—615 **1 Claim**

1. A process for making a konjak chip comprising the steps of:
(a) pulverizing konjak between vertically oriented revolving whetstones to about 1–50 mm in length and 0.5–3 mm in width;
(b) deodorizing the pulverized konjak by steaming or boiling; and
(c) dehydrating the deodorized konjak to about 10–60 % of its original weight.

5,009,916

PSYLLIUM MUCILLOID FIBER FOOD PRODUCTS

John A. Colliopoulos, Evanston, Ill., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 677,623, Dec. 3, 1984, abandoned, which is a continuation-in-part of Ser. No. 542,450, Oct. 17, 1983, abandoned, which is a continuation-in-part of Ser. No. 560,720, Dec. 12, 1983, abandoned. This application Aug. 7, 1985, Ser. No. 763,118
Int. Cl.[5] A23L *1/526, 1/308;* A23P *1/14*
U.S. Cl. 426—615 **10 Claims**

1. An expanded high fiber bar or puff made by aqueous extrusion comprising about 5 to 80 weight percent of psyllium mucilloid, water, about 0 to 30 weight percent expander, and a total dietary fiber of from about 4 to 80 weight percent wherein the psyllium mucilloid may be a part of the dietary fiber, and wherein further said high fiber bar or puff comprises one or more dietary fibers selected from cereal brans.

5,009,917

METHOD FOR PRODUCING DEEP RED AND BLACK COCOA

Matthew J. Wiant, Dover; William R. Lynch, Milford, both of Del., and Robert C. LeFreniere, Bethel, Conn., assignors to Kraft General Foods, Inc., Glenview, Ill.

Filed Dec. 18, 1989, Ser. No. 452,188
Int. Cl.[5] A23L *1/272, 2/38*
U.S. Cl. 426—631 **22 Claims**

1. A method for producing a colored, powdered-dutched cocoa comprising the steps of:
(a) subdividing cocoa press cake to obtain particles which will pass through a No. 4 U.S. Standard Sieve;
(b) adding the subdivided cocoa and an aqueous alkali solu-

tion to a reactor, said solution being present in an amount effective to provide an initial moisture content within the reactor of from 5 to 60% by weight and a level of alkali, selected from the group consisting of carbonate, bicarbonate, hydroxide and combinations thereof, of from 1 to 12% based upon the weight of cocoa;

(c) mixing the contents of the reactor for between about 5 and 180 minutes while maintaining the reactor contents at a temperature between about 150° and 300° F. and at a pressure between about 10 and 200 p.s.i., said pressure being effected by means of an oxygen-containing gas;

(d) venting the reactor and feeding oxygen-containing gas to the reactor during the reaction period in order to effect headspace changes in the reactor at the rate of at least 3 per hour; thereafter,

(e) releasing the pressure within the reactor; and then,

(f) drying the colored, dutched cocoa.

5,009,918

REFORMED FISH PRODUCTS

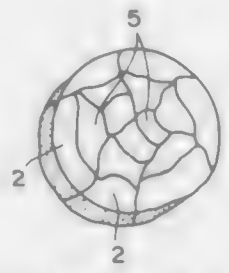
Noël Clairouin, Coudette; Alain Gueroult, Lamartine, both of France, and Remi Lemoyne, Vevey, Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Division of Ser. No. 399,817, Aug. 29, 1989, Pat. No. 4,948,620. This application Apr. 27, 1990, Ser. No. 516,052

Claims priority, application European Pat. Off., Sep. 14, 1988, 88114994.2

Int. Cl.[5] A23L *1/325*

U.S. Cl. 426—643 **6 Claims**



1. A frozen reformed fish product in the form of a sausage comprising a plurality of compressed raw boneless fish fillets with skin which encompass a plurality of raw boneless fish fillets without skin such that the skin of the fillets with skin forms substantially all of the exterior surface of the product.

5,009,919

FINGER-PRINTING SYSTEMS & METHOD

Anthony E. Vassiliades, 8738 Tanager Woods Dr., Cincinnati, Ohio 45249

Continuation of Ser. No. 938,260, Dec. 5, 1986. This application Mar. 8, 1989, Ser. No. 320,808

Int. Cl.[5] A61B *5/117*

U.S. Cl. 427—1 **10 Claims**

1. A fingerprinting system comprising means capable of releasably retaining a liquid and a liquid composition releasably retained in said means, said liquid composition consisting essentially of a leuco chromogenic compound and an oleophilic solvent therefor, a substrate for receiving fingerprints associated therewith, said substrate being coated on at least a portion of one surface thereof with a color-developing substance capable of reacting with said chromogenic compound to produce a colored reaction product; and polyvalent metallic ions in said liquid composition or on said substrate with said color-developing substance.

6. The method of fingerprinting comprising applying to a member to be fingerprinted a liquid composition consisting essentially of a leuco chromogenic compound and an oleophilic solvent therefor and applying the member to be fingerprinted to a substrate coated at least in the portion thereof to which the member is applied with a color-developing substance capable of reacting with said leuco chromogenic compound to produce a colored reaction product which is a print of the member; and polyvalent metallic ions in said liquid composition or on said substrate with said color-developing substance.

5,009,920

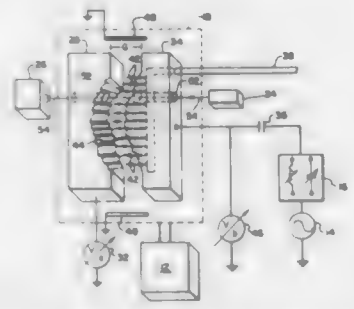
METHOD FOR APPLYING OPTICAL INTERFERENCE COATING

James C. Lee, Plymouth, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 30, 1990, Ser. No. 502,348

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—9 **13 Claims**



1. A method for applying high performance multilayer optical interference coatings to a substrate of complex curved topography comprising:

positioning a substrate to be coated in a reaction zone located between first and second electrodes which are shaped to match the contour of said substrate, said reaction zone and said electrodes being within a chamber;

pumping gas components out of said chamber; applying power to said first and second electrodes, resulting in an electromagnetic field between said first and second electrodes;

maintaining a particular pressure within said chamber; and

feeding a substance into said reaction zone through a plurality of orifices in said second electrode, said substance reacting into a plasma of said substance, which in turn results in a plasma enhanced chemical vapor deposition in the form of a thin film upon said substrate.

5,009,921

PROCESS FOR FINISHING LEATHER

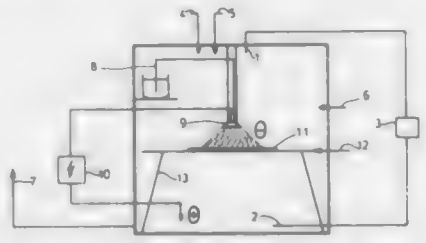
Harro Träubel; Heinrich Strenger, both of Leverkusen; Karl A. Weber, Betzweiler; Hans-Werner Müller, Cologne; Horst Zäpfel, Karlsruhe, and Axel Hummel, Neuffen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 12, 1989, Ser. No. 405,911

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1988, 3833384

Int. Cl.[5] B05D *1/04, 3/04, 3/10*

U.S. Cl. 427—31 **3 Claims**



1. A process for finishing leather comprising spraying onto leather in an electrostatic field a finishing liquor having a viscosity at the operating temperature of 500–5,000 cP, the finishing liquor being a spray dispersed from the start in a solvent atmosphere which contains an organic solvent and optionally water and which has a solvent content of 15–90% of the saturation concentration and which has a residual oxygen content of less than 10% by volume.

5,009,922

METHOD OF FORMING A TRANSPARENT CONDUCTIVE FILM

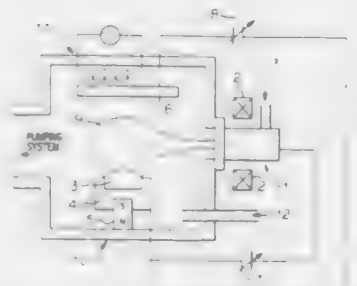
Takeshi Harano; Satoru Takaki; Yuzo Shigesato; Koichi Suzuki; Naoki Hashimoto, all of Yokohama; Hiroyasu Kojima, Ebina, and Takuji Oyama, Yokohama, all of Japan, assignors to Ashahi Glass Company, Ltd., Tokyo, Japan

Filed Mar. 1, 1990, Ser. No. 486,841

Claims priority, application Japan, Mar. 2, 1989, 1-48571; Mar. 14, 1989, 1-59573; Mar. 28, 1989, 1-73955

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—37 **9 Claims**



1. A method of forming a transparent conductive film characterized in that an arc discharge type plasma produced by arc discharging is generated in an atmosphere wherein the pressure of an atmospheric gas is 3.0×10^{-4} Torr or higher; the plasma is converged onto a vapor deposition material for forming a transparent conductive film to thereby evaporate the vapor deposition material, whereby said transparent conductive film is formed on a substrate located above said vapor deposition material.

5,009,923

METHOD OF FORMING DIAMOND FILM

Kiyoshi Ogata; Yasunori Ando, and Eiji Kamijo, all of Kyoto, Japan, assignors to Nissin Electric Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 274,690, Nov. 22, 1988, abandoned, which is a continuation of Ser. No. 43,517, Apr. 28, 1987, abandoned. This application Jun. 27, 1990, Ser. No. 544,800

Claims priority, application Japan, Apr. 28, 1986, 61-98888; Feb. 19, 1987, 62-37576; Apr. 8, 1987, 62-87624

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—38 **8 Claims**



1. A method of forming a diamond film on a substrate, comprising the steps of:

depositing carbon from an evaporation source onto said substrate in vacuum by vapor deposition to provide a carbon film on the substrate; and

irradiating accelerated ions having an energy of less than 40 KeV onto said substrate, said ions being obtained by ionizing a gas composed of at least one of a hydrogen gas, inert gases, and silicon base gases.

5,009,924

PROCESS TO PERMIT IMPROVEMENT OF FUNCTIONAL PROPERTIES OF POLYOLEFIN ARTICLES BY ELECTRON-BEAM INITIATED POLYMERIZATION

John E. Wyman, Westford, Mass., assignor to Energy Sciences Inc., Wilmington, a part interest and Marjorie T. Wyman, Westford, both of, Mass.

Division of Ser. No. 254,817, Oct. 7, 1988, abandoned, which is a division of Ser. No. 110,472, Oct. 19, 1987, Pat. No. 4,803,126. This application Oct. 27, 1989, Ser. No. 427,372

Int. Cl.[5] B05D *3/06, 3/00*

U.S. Cl. 427—44 **1 Claim**

1. A process for modifying the surface of a polyolefin film that comprises, hydrolyzing an organofunctional silane; coating the surface of a polyolefin film with the hydrolyzed silane and drying the same; and electron-beam irradiating the coated surface to initiate the further polymerization of the silane-to-silane structure in the hydrolyzed silane layer and also to graft the same to the polyolefin surface.

5,009,925

PROCESS FOR THE PRODUCTION OF MAGNETIC RECORDING CARRIERS

Ernst Grigat, Leverkusen; Walter Meckel, Neuss-Uedesheim, and Burkhard Nippe, Munich, all of Fed. Rep. of Germany, assignors to Agfa Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

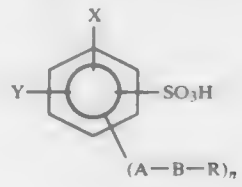
Continuation of Ser. No. 86,851, Aug. 19, 1987, abandoned. This application Oct. 5, 1988, Ser. No. 256,131

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1986, 3629606

Int. Cl.[5] B05D *3/00;* **G11B** *23/00*

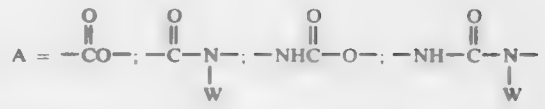
U.S. Cl. 427—48 **5 Claims**

1. A process for the production of magnetic recording carriers by the preparation of a dispersion consisting essentially of finely divided magnetic pigments, a dispersing agent and a solution of a polymeric binder in an organic solvent and an isocyanate-compound as cross-linking agent for the polymeric binder and application of the dispersion to a non-magnetizable layer support followed by orientation of the magnetic pigment by means of a magnetic field and drying of the applied layer, wherein the dispersing agent used consists of at least one compound containing one reactive group which produces a firm bond to the magnetic pigment and at least one other group reactive to the NCO-groups of a difunctional or higher functional isocyanate consisting of a compound corresponding to the general formula



4

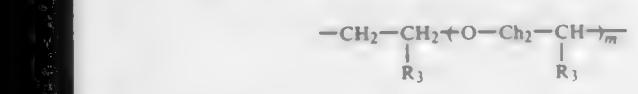
wherein



n = 1 or 2

W=H or an optionally branched alkyl group having 1 to 30 carbon atoms,

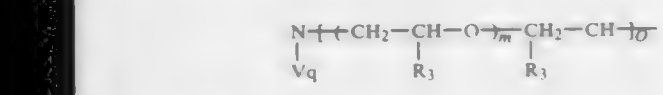
B=a straight chained, optionally branched alkyl group optionally containing hetero atoms, a cycloaliphatic group, or a cycloaliphatic-aromatic group,



wherein

m=1-20,

R_3=H, or CH_3, or



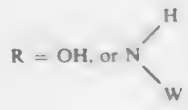
wherein

V=alkyl with 1-30 carbon atoms,

O=1, 2, or 3,

q=0 or 1

O+q=3



X, Y=H, C_1-C_{30}-alkyl or C_1-C_{30}-O-alkyl and X=Y or X≠Y.

5,009,926

METHOD OF FORMING AN INSULATING FILM

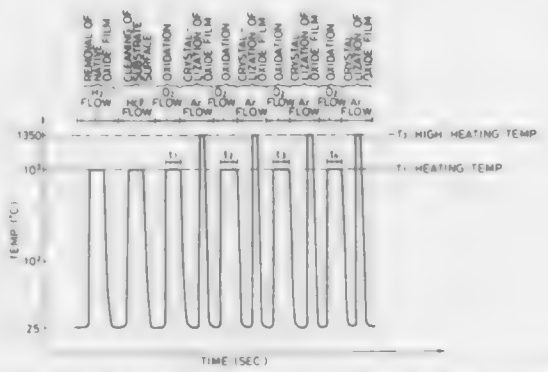
Hisashi Fukuda, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed May 11, 1990, Ser. No. 522,126

Claims priority, application Japan, May 18, 1989, 1-125420

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—55 **22 Claims**



1. A method of forming an insulating film on a substrate wherein a substrate is cleaned by heating it in an atmosphere of a reducing gas, and heating it in an oxidizing gas, and then heating it in an atmosphere of a gas used to form the film in the same reaction chamber,

characterized by repeating a cycle comprising a heat treatment to grow the insulating film on the substrate, a process wherein the substrate is subsequently cooled to room temperature, and a high temperature heat treament wherein it is then heated to a higher temperature than that used when growing the film in order to crystallize said insulating film, in the same reaction chamber.

5,009,927

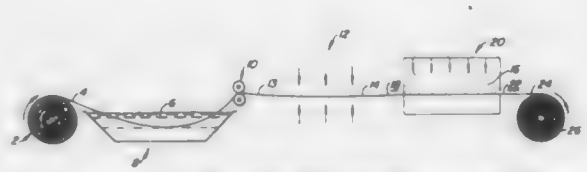
METHOD FOR COATING FABRIC SURFACE WITH ELECTRICALLY CONDUCTIVE FILM

Willard C. Cloyd, Fountain Hills, and Robert M. Nelson, Phoenix, both of Ariz., assignors to Hexcel Corporation, Dublin, Calif.

Filed Nov. 29, 1988, Ser. No. 277,105

Int. Cl.[5] B05D *5/12, 3/00;* **C23C** *14/34*

U.S. Cl. 427—121 **5 Claims**



1. A method for coating the outer surface of a fabric with an electrically conductive film, the fabric of the type having fibers at its outer surface, comprising the following steps:

selecting a polymer solution compatible with the fabric;

coating the fabric with the polymer solution thereby creating a substantially continuous polymer surface;

selecting an electrically conductive material compatible with the polymer surface;

placing the electrically conductive material into a vapor form;

depositing a continuous film of the vapor form of the electrically conductive material onto the polymer surface to create an electrically conductive fabric;

controlling the selecting steps, the coating step and the depositing step to keep the fabric in a flexible condition.

5,009,928

METHOD FOR FORMING A TRANSPARENT CONDUCTIVE METAL OXIDE FILM

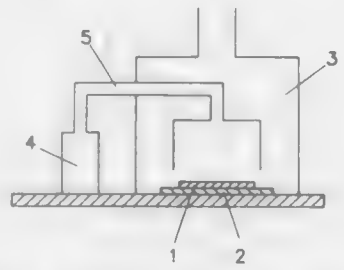
Yutaka Hayashi, Ibaraki; Atuo Itoh, Tokyo; Mizuho Imai, Tokyo, and Hideyo Iida, Tokyo, all of Japan, assignors to Japan as represented by general director of Agency of Industrial Science and Technology; Taiyo Yuden Co., Ltd. and Research Development Corporation of Japan, all of Tokyo, Japan

Filed Mar. 23, 1990, Ser. No. 498,038

Claims priority, application Japan, Mar. 31, 1989, 1-80956

Int. Cl.[5] B05D *5/12;* **C03C** *17/23*

U.S. Cl. 427—126.3 **11 Claims**



1. A method of forming a transparent conductive metal oxide film with a textured surface on a substrate comprising the steps of contacting a heated substrate at a first temperature with an atomized or gasified metal-containing coating composition to form a coated substrate with a first metal oxide film deposited thereon; heating said coated substrate to a second temperature higher than said first temperature so that a second metal oxide film having a degree of crystal orientation in conformity with that of the first metal oxide film can be formed thereon; and contacting said coated substrate with the atomized or gasified metal-containing coating composition to deposit the second metal oxide film thereon, said second metal oxide film being of the same composition as said first metal oxide film.

5,009,929

PROCESS FOR THE PREPARATION OF MAGNETIC RECORDING MEDIUM

Shinobu Iida; Masaaki Fujiyama, and Keisuke Yamada, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 181,937, Apr. 15, 1988, abandoned. This application Mar. 26, 1990, Ser. No. 533,991

Claims priority, application Japan, Apr. 16, 1987, 62-94740

Int. Cl.[5] B05D *5/12*

U.S. Cl. 427—130 **7 Claims**



1. A process for the preparation of a magnetic recording medium which comprises the steps of first supercalendering a magnetic recording layer coated on a non-magnetic support, said magnetic recording layer comprising a ferromagnetic powder dispersed in a binder, next abrading the treated surface of said magnetic recording layer by means of an abrasive tape containing an abrasive selected from the group consisting of α-Al_2O_3, SiO_2, Cr_2O_3, α-Fe_2O_3, diamond, ZnO_2, TiO_2, and then wiping the abraded surface of the magnetic recording layer using a nonwoven fabric.

5,009,930

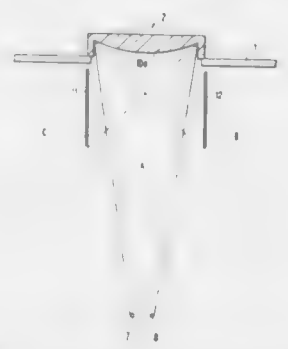
METHOD FOR FORMING A DEPOSITED LAYER ON A SKIRTED SUBSTRATE

Matthew S. Brennesholtz, Waterloo, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed Dec. 8, 1989, Ser. No. 448,033

Int. Cl.[5] B05D *7/22;* **C23C** *16/04*

U.S. Cl. 427—236 **8 Claims**



1. A method for reducing the shadowing effect of the skirt of a skirted substrate on the thickness uniformity of a deposited layer on the substrate, said skirt extending in the direction of a primary source of deposited material, the method comprising:

providing at least one shield between the primary source of the deposited material and the substrate to at least partially shield the substrate from secondary indirect sources of deposited material located outside the area of direct flux of the particles from the primary source to the substrate, during deposition.

5,009,931

COATING METHOD

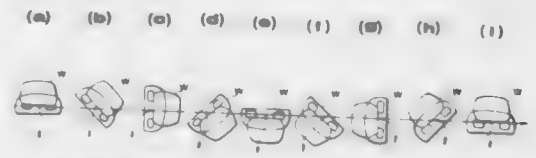
Takakazu Yamane; Yoshio Tanimoto, and Tadamitsu Nakahama, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Aug. 8, 1989, Ser. No. 390,546

Claims priority, application Japan, Aug. 9, 1988, 63-197038

Int. Cl.[5] B05D *3/12*

U.S. Cl. 427—195 **68 Claims**



1. A coating method in a coating line for coating a substrate with a paint in a film thickness thicker than a thickness at which the paint sags to form a highly reflective surface coating on the substrate, comprising:

a spraying step in which the paint is sprayed to form a coat in a film thickness thicker than a thickness at which the paint sags on a surface extending at least upwardly and downwardly; and

a drying step in which the substrate is rotated about its horizontal axis until the paint sprayed thereon achieves a substantially sagless state, the rotation of the substrate being carried out at a speed which is high enough to rotate the substrate from a vertical position to a horizontal position before the paint coated thereon substantially sags due to gravity yet which is low enough so as to cause no sagging as a result of centrifugal force;

wherein a surface at an edge portion of the substrate to be coated is lower than another portion thereof before the paint is sprayed in the spraying step in a film thickness thicker than the thickness at which the paint sags.

5,009,932

METHOD AND APPARATUS FOR IMPREGNATING A POROUS SUBSTRATE WITH FOAM

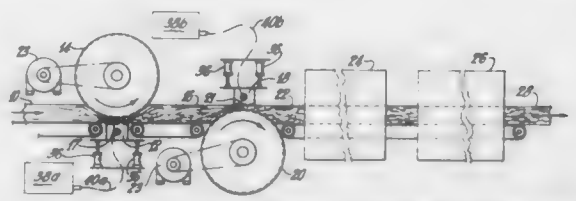
Paul A. Klett, Newark; Shiv K. Bakhshi, Columbus, and Steven B. Stahl, Granville, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jun. 14, 1982, Ser. No. 388,284

The portion of the term of this patent subsequent to Apr. 16, 2008, has been disclaimed.

Int. Cl.[5] B05D *1/26, 3/06;* **B05C** *3/00, 3/18*

U.S. Cl. 427—243 **10 Claims**



1. Apparatus for impregnating a porous substrate with a foam comprising a foam discharge head having a surface plate adapted with one or more discharge openings for the discharge of foam therethrough, a foraminous surface positioned opposite said discharge openings to define a nip region, said foraminous surface being adapted t transport the porous substrate through said nip region, means for supplying foam to said foam discharge head with pressure sufficient to discharge foam through said dischharge openings to impregnate the porous

substrate, and means for urging said foam discharge head toward said foraminous surface to apply a force to the porous substrate to urge the porous substrate into sealed relation with said surface plate so that foam is substantially prevented from accumulating at the interface of said foam discharge head and the porous substrate as the porous substrate is transported through said nip region, said foam discharge head being mounted to a hinged plate to enable the urging of said foam dischharge head toward said foraminous surface.

7. A method for impregnating a porous substrate with a foam comprising transporting the porous substrate through a nip region defined by a foraminous surface and a foam discharge head, said foam dischharge head comprising a surface plate adapted with one or more dischharge openings, where the transport of the porous substrate through said nip region causes the porous substrate to be compressed as it passes said discharge openings, said foam discharge head being mounted to a hinged plate to enable urging of said foam discharge head toward said foraminous surface, supplying foam to said discharge head with pressure sufficient to discharge foam though said discharge openings to impregnate the porous substrate, and urging said foam discharge head toward said foraminous surface to apply a force to the porous substrate to urge the porous substrate into sealed relation with said surface plate to substantially prevent foam from accumulating at the interface between said foam discharge head and the porous substrate as the porous substrate is transported through said nip region.

5,009,933

METHOD AND APPARATUS FOR COATING THIN LIQUID FILM ON PLATE SURFACE

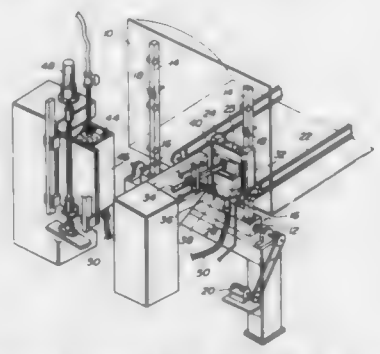
Naohiko Matsuda, Matsusaka, and Kensuke Makita, Mie, both of Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Aug. 23, 1989, Ser. No. 397,672

Claims priority, application Japan, Aug. 26, 1988, 63-211677; Aug. 29, 1988, 63-214068

Int. Cl.[5] B05D *5/00, 1/26;* **B05C** *3/18*

U.S. Cl. 427—287 **16 Claims**



1. A method of coating a thin liquid film on a surface of a substrate over a predetermined area of the surface, comprising the steps of:

(a) bringing the substrate and an incomplete tank, which has an opening of a shape similar to the shape of said surface of the substrate on one side thereof, into tight contact with each other such that said opening is closed by said surface of the substrate thereby completing the tank;

(b) introducing a coating liquid into said tank until the liquid level in the tank reaches a predetermined level which corresponds to the upper boundary of said area of the substrate surface; and

(c) while keeping both said tank and the substrate stationary, extracting the coating liquid from said tank through a flow streamlining channel so as to lower the liquid level in the tank at a predetermined rate without producing a turbulent flow of the coating liquid to thereby leave a film of the coating liquid on said surface of the substrate, said streamlining channel communicating with a lower section of said tank by an aperture in a wall of said tank and extending downward from the level of said aperture.

8. An apparatus for coating a thin liquid film on a surface of a substrate over a predetermined area of the surface, the apparatus comprising:

means for holding the substrate;

an incomplete liquid tank having an opening of a shape similar to the shape of said surface of the substrate on one side thereof;

means for defining a flow streamlining channel which communicates with said tank by an aperture formed in a lower section of said tank and extends downward from the level of said aperture;

means for bringing the substrate and said incomplete tank into tight contact with each other such that said opening of said tank is closed by the substrate thereby completing the tank and keeping the tank and the substrate stationary in the tightly contacting state;

means for introducing a coating liquid into said tank kept stationary and in contact with the substrate; and

means for extracting the coating liquid from said tank kept stationary and in contact with the substrate at a predetermined rate through said streamlining channel without producing a turbulent flow of the coating liquid to thereby leave a film of the coating liquid on the substrate surface.

5,009,934

PROCESS FOR PREPARING POLY-(IMIDESILOXANES)

Guido Wenski, Munich; Ludwig Maier, Eggenfelden, and Franz-Heinrich Kreuzer, Martinsried, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 6, 1990, Ser. No. 549,586

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1989, 3925099

Int. Cl.[5] B05D *3/02*

U.S. Cl. 427—387 **13 Claims**

1. A process for preparing poly-(imidesiloxanes) which comprises reacting an N,N'-dialkenyldiimide with an organosilicon compound containing two Si-bonded hydrogen atoms in the presence of a catalyst which promotes the addition of Si-bonded hydrogen to an aliphatic multiple bond.

5,009,935

PROTECTING METALLIC LAYERS ON SUBSTRATES

Keith J. Waddington, Essex, and Peter W. Johnson, Chingford, both of England, assignors to MacPherson plc, Suffolk, England

Filed Sep. 12, 1989, Ser. No. 406,076

Claims priority, application United Kingdom, Sep. 14, 1988, 8821503

Int. Cl.[5] C23C *26/00*

U.S. Cl. 428—457 **10 Claims**

1. A method of producing an article comprising applying a non-ferrous metal layer on a substrate and protecting the metal layer by applying thereto a compound having a nitrogen atom which is linked to the remainder of the compound by three single bonds and which has an accessible electron lone pair, such that the electron lone pair bonds to the metal to form a complex which is insoluble or substantially insoluble in water and which protects the metal layer.

10. An article made according to the method of claim 1.

5,009,936

METHOD FOR FORMING TRANSPARENT MULTILAYERS

Masahiko Yamanaka, Kanagawa; Motoyoshi Hasaoka; Hiroaki Konse, both of Tokyo; Haruhisa Shigeno, Saitama, all of Japan, and Masakatsu Kinoshita, Rocky River, Ohio, assignors to Nissan Motor Co., Ltd., Kanagawa and Nippon Paint Co. Ltd., Osaka, both of, Japan

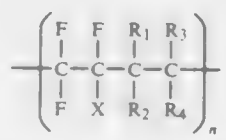
Filed Sep. 5, 1989, Ser. No. 402,718

Claims priority, application Japan, Sep. 2, 1988, 63-219668

Int. Cl.[5] B05D *1/36, 7/00*

U.S. Cl. 427—407.1 **8 Claims**

1. A method for forming a transparent multilayer wherein first a transparent paint A comprising a film forming amount of an acrylic copolymer, wherein monomers incorporated to form the acrylic copolymer have an average molecular weight of from 5,000 to 30,000, a hydroxyl value per gram of solid content of from 30 to 100, and an acid value of from 5 to 20, and then a film forming amount of a transparent paint B, which is dissolved in organic solvent, of fluorine containing polymer comprising the formula



wherein X represents a fluorine or chlorine atom, and R_1, R_2, R_3, and R_4 each represents a hydrogen atom, hydroxyalkyl group, or carboxyalkyl group,

are applied on a conventional finish coating with a wet-on-wet process.

5,009,937

SAPSTAIN CONTROL COMPOSITION AND METHOD

Michael H. West, Senatobia, Miss., and Gregg Overman, Memphis, Tenn., assignors to Chapman Chemical Company, Memphis, Tenn.

Filed Sep. 7, 1989, Ser. No. 403,924

Int. Cl.[5] B05D *7/06*

U.S. Cl. 427—440 **6 Claims**

1. A method for controlling sapstain and mold on wood having 20% or more of moisture which consists of contacting wood with an aqueous solution containing (a) at least 0.05% by weight of chlorothalonil and (b) borax in a quantity between 3 and 9 times greater than the weight of the chlorothalonil.

5,009,938

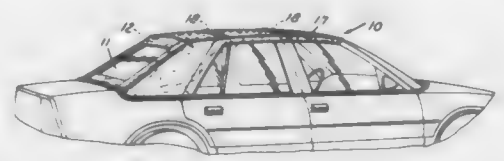
CUSTOMIZED AUTOMOBILE

Joseph T. Raj, Riverview, Mich., assignor to Evans Automotive, Division of Evans Industries, Inc., Wayne, Mich.

Filed Feb. 5, 1990, Ser. No. 475,356

Int. Cl.[5] B62D *25/06*

U.S. Cl. 428—31 **4 Claims**



1. For use in customizing an automobile having a front window, a rear window and a top,

a plastic cap including a rear window portion and a top portion adapted to overlie the rear window portion and the top of the automobile respectively,

at least one separate section adapted to be provided in partially overlapping relation to the top portion of the cap,

said plastic cap and said at least one separate section having forward and rearward transverse free edges,

said rearward transverse free edge of said at least one separate section being in overlying relation to said forward transverse free edge of said plastic cap, and

wherein said at least one separate section extends in a longitudinal direction away from said read window toward said front window increasing the length of said top portion to further cover said top.

5,009,939

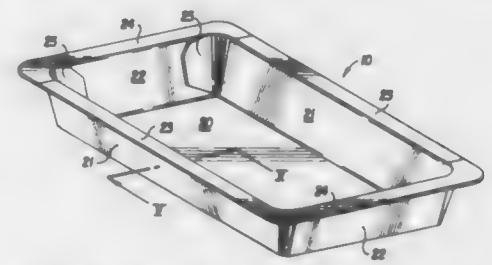
COMPOSITE PAPERBOARD AND POLYMER PACKAGE

Barry A. Goldberg, Highland Park, Ill., assignor to Westvaco Corporation, New York, N.Y.

Filed Sep. 22, 1989, Ser. No. 411,038

Int. Cl.[5] B65D *5/56*

U.S. Cl. 428—34.2 **12 Claims**



1. A blow molded composite material fluid container comprising a paperboard exterior substrate having a thickness of 0.007 to 0.035 inches formed to a fluid containment configuration having an interior vessel surface area, said formed paperboard substrate having a seamless, creaseless and unlapped fluid barrier coating of blow molded polymer integrally bonded to substantially the entire vessel surface area thereof, said barrier coating having an average thickness about half of said paperboard thickness.

5,009,940

CUP FOR DYEING EGGS

James E. McShane, Memphis, Tenn., assignor to Plough, Inc., Memphis, Tenn.

Division of Ser. No. 97,038, Sep. 16, 1987, Pat. No. 4,853,240. This application May 24, 1989, Ser. No. 356,811

Int. Cl.[5] B65D *25/14;* **A23L** *1/275*

U.S. Cl. 428—35.7 **7 Claims**

1. A cup having formed on the inside surface thereof a water-soluble dyeing composition comprising a water-soluble dye carrier, a water-soluble dye and a water-soluble dye plasticizer in the ratio of about 10–20 parts by weight of said carrier to about 4–15 parts by weight of water-soluble dye to about 0.5–7 parts by weight of said plasticizer.

5,009,941

TUBE OR PIPE FORMED A THERMOPLASTIC POWDER IMPREGNATED FIBERGLASS ROVING

Jean-Claude Pollet, Granville; Gary L. Williams; Gordon P. Armstrong, both of Newark, and David G. Miller, Pataskala, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 24,949, Mar. 12, 1987, abandoned. This application Nov. 9, 1988, Ser. No. 269,029

Int. Cl.[5] B32B *1/08;* **B29D** *22/00*

U.S. Cl. 428—36.3 **4 Claims**

1. A pipe or tube formed from a yarn or strand consisting essentially of a plurality of glass filaments, at least a portion of the filaments' surfaces coated with a coating formed from the residue produced by evaporating water from an aqueous composition for the glass filaments comprising, in weight percent, an organosilane coupling agent in the range of about 0.05 to

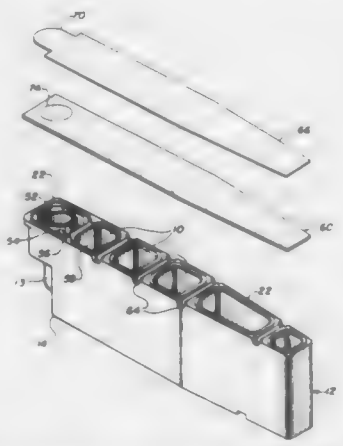
about 5.0%, by weight, a polyethylene oxide binder or film former material in the range of about 0.5 to about 5.0%, by weight, and a polypropylene thermoplastic polymer resin powder in the range of about 30–50%, by weight, and having an average particle size between about 5 to about 50 microns, the balance being water.

5,009,942

VORTEXING LIQUID CONTAINER

Joshua Benin, Newark, Del.; William G. Di Maio, Brookhaven, Pa.; Carl F. Morin, Brandywood, Del., and James A. Lawler, Rio Piedras, P.R., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 26, 1988, Ser. No. 237,589
Int. Cl.[5] B01C *3/00*
U.S. Cl. 428—36.6 **9 Claims**



1. A housing encasing an elongated vessel, said vessel having a bottom, a side wall and a longitudinal axis, the vessel being plastic and having a peripheral mounting surface, the housing comprising:

a flexible, fingerlike hinge connecting the housing to a side wall of the vessel and integral with both the housing and vessel, whereby the vessel bottom is capable of nutational movement about the axis, and

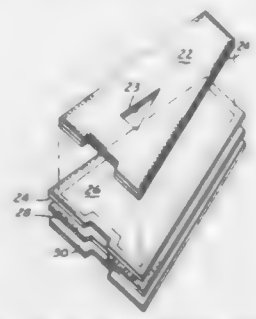
a laminate, providing a gas and vapor seal, connected to the mounting surface.

5,009,943

PRE-SEWN LETTER AND METHOD

Ted Stahl, Mt. Clemens, Mich., assignor to Stahls' Inc., St. Clair Shores, Mich.

PCT No. PCT/US88/03700, § 371 Date Jan. 18, 1990, § 102(e) Date Jan. 18, 1990
PCT Filed Oct. 21, 1988, Ser. No. 459,727
Int. Cl.[5] B32B *31/00*
U.S. Cl. 428—40 **8 Claims**



1. A method for producing a laminated embroidered emblem which may be bonded to a fabric comprising the steps of providing a first woven material blank, providing a barrier layer of a thermoplastic material, laminating with the application of heat and pressure the barrier layer onto one side of the first material blank, cutting the material blank with barrier layer to the configuration of the emblem to be produced, sewing a thread about the periphery of the cut first material blank and barrier layer to produce an embroidered appearance, providing a second woven material blank having a different color than the first material blank, providing a similar barrier layer of a thermoplastic material, laminating with the application of heat and pressure the barrier layer onto one side of the second material blank, cutting the second material blank and barrier layer to a configuration complimentary with the cut first material blank, yet larger in proportion to supply a background, sewing a thread about the periphery of the cut second material blank to produce an embroidered appearance, positioning the cut first material blank over the second material blank and heat sealing both cut material blanks together to form a two color fabric laminate having a foreground and background color, and applying an adhesive layer of an uncured linear saturated polyester in combination with a heat activated curing agent, having a paper carrier, to the exposed barrier layer, the adhesive layer having a lower melting temperature than the exposed barrier layer whereby the adhesive layer being unable to pass through the barrier layer, the adhesive layer allowing, after the paper carrier is removed, the emblem to be heat sealed to difficult to adhere to materials from the group consisting of siliconized nylon, Gortex, polypropylene, tri-acetate and Lycra yet appear as if the emblem is embroidered onto the material.

8. A laminated embroidered emblem for bonding to a fabric comprising.

a first woven material layer of preselected design;

a first barrier layer of a thermoplastic material overlying one face of the first woven material layer;

embroidery stitching about the periphery of the first woven material layer and extending through the first barrier layer;

a second woven material layer larger than the first woven material layer and of a contrasting color and complementary shape;

a second barrier layer of a thermoplastic material overlying one but not the opposite face of the second woven material layer;

embroidery stitching about the periphery of the second woven material layer and extending through the second barrier layer;

said first and second woven material layers being heat sealed together with the first barrier layer fused to the opposite face of the second woven material layer opposite; and

an adhesive layer of an uncured linear saturated polyester in combination with a heat activated curing agent and having a lower melting temperature than the second barrier layer and lightly adhered to the second barrier layer on the second woven material layer and adapted for heat sealing and cross linking application to difficult-to-adhere-to materials from the group consisting of siliconized nylon, Gortex, polypropolene, tri-acetate and Lycra.

5,009,944

LIGHTSAFE MASKING FILM

Hiroshi Maruyama, Misato; Naohiko Kiryu, Urawa; Etsuko Minezaki, Misato; Susumu Tagashira, Koshigaya, and Hisashi Shimokawahara, Chiba, all of Japan, assignors to Somar Corporation, Japan

Filed Jul. 18, 1989, Ser. No. 381,181
Claims priority, application Japan, Jul. 20, 1988, 63-182464; Jan. 31, 1989, 1-21911
Int. Cl.[5] B32B *7/06, 7/12*
U.S. Cl. 428—40 **18 Claims**

1. A lightsafe masking film, comprising a substrate, a pressure sensitive adhesive layer formed on said substrate, and a lightsafe, peelable layer formed on said adhesive layer and including a dialkyl phthalate, nitrocellulose, and a lightsafe colorant, said dialkyl phthalate being 10–50% of the total weight of said dialkyl phthalate and said nitrocellulose.

5,009,945

TRANSPARENT FILM AND COLOR IMAGE FORMING METHOD

Tatsuo Takeuchi, Kawasaki, and Koji Amemiya, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1989, Ser. No. 369,851
Claims priority, application Japan, Jun. 29, 1988, 63-163107; Dec. 23, 1988, 63-326521; Jun. 15, 1989, 1-154193
Int. Cl.[5] B32B *3/02*
U.S. Cl. 428—76 **33 Claims**



1. A transparent laminate film adapted to receive a color toner image from a toner comprising at least a binder resin and a chromatic colorant and useful in an overhead projector, comprising: at least a first transparent resin layer comprising a heat-resistant first transparent resin, and a second transparent resin layer disposed thereon comprising a second transparent resin; said second transparent resin of the second transparent resin layer being compatible with said binder resin of said toner to be fixed thereon, and having a larger elasticity than that of the binder resin of the toner at a fixing temperature of the toner;

wherein (i) said first transparent resin of said first transparent resin layer has a heat distortion temperature of a minimum of 145° C.; and

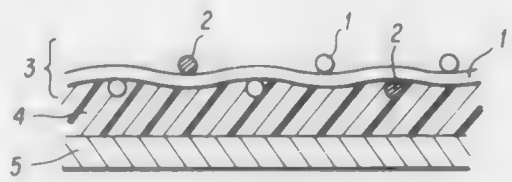
(ii) said second transparent resin of said second transparent resin layer has a storage elasticity modulus of 100–10,000 dyne/cm^2 at 160° C.

5,009,946

COMPOSITE SHEET FOR AUTOMOTIVE USE

Isamu Hatomoto, Nishinomiya, and Yoshiteru Matsuo, Kurashiki, both of Japan, assignors to Kuraray Company Limited, Kurashiki and Honda Giken Kogyo Kabushiki Kaisha, Tokyo, both of, Japan

Continuation-in-part of Ser. No. 161,103, Feb. 26, 1988, abandoned. This application Dec. 15, 1989, Ser. No. 449,419
Claims priority, application Japan, Mar. 3, 1987, 62-49862
Int. Cl.[5] B32B *5/24, 5/30, 7/02, 33/00*
U.S. Cl. 428—87 **3 Claims**



1. A composite automotive upholstery sheet having antistatic and static-eliminating properties which comprises a textile layer containing an electrically conductive fiber with an electric resistance of 10^5 to 10^9 ohms/cm and a backing semiconductive layer with a surface resistivity of 10^7 to 10^{10} ohms integral and in contact with said textile layer;

said textile layer being:

a woven or knitted fabric originally having substantially no vertical hair on the surface thereof, comprising as part of its constituting yarns a chenille yarn containing said conductive fiber as at least part of the effect yarn of said chenille yarn, said chenille yarn being present on said fabric at spaced intervals not exceeding 30 mm; or

a woven or knitted fabric having vertical hair, comprising said conductive fiber as groups of 4 to 18 pieces of vertical conductive filaments distributed on the fabric surface in spots, at least one such spot being present in any hypothetical circular area having a diameter of 30 mm drawn on the fabric surface; and

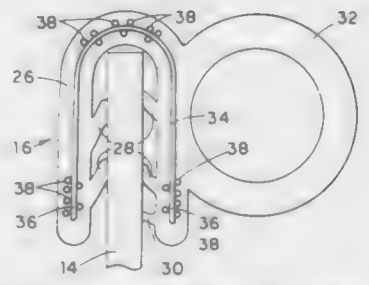
said conductive fiber being a sheath-core composite fiber comprising as the core component a resin composition which comprises a resin and a conductive powder comprising titanium dioxide particles coated on the surface thereof with a conductive metal oxide and as the sheath component a polyester.

5,009,947

ELASTOMERIC STRIP AND METHOD OF MANUFACTURE

Michael J. McManus; David H. Berry, and Harold P. Dover, all of Maryville, Tenn., assignors to Schlegel Corporation, Rochester, N.Y.

Filed Apr. 28, 1989, Ser. No. 345,612
Int. Cl.[5] E06B *7/16*
U.S. Cl. 428—122 **5 Claims**



1. An elastomeric strip of substantially U-shaped cross section of a finite length and a finite width for mounting on a flange having longitudinally-spaced curved sections, comprising:

a support frame having longitudinally displaceable frame portions;

longitudinally extending degradable reinforcing materials secured to the frame portions for reinforcing the frame portions to inhibit longitudinal displacement of the frame portions during the coating operation;

a coating of elastomeric material on at least one surface of a reinforced support frame; and

a plurality of longitudinally-spaced degraded regions of the degradable reinforcing material of the strip in which all of the reinforcing material is degraded, such that the degraded regions of the strip are substantially unrestricted longitudinally by the reinforcing material and correspond to the longitudinally-spaced curve sections of the flange, whereby the degraded regions more faithfully follow the curved sections of the flange when the elastomeric strip is mounted thereon.

5,009,948

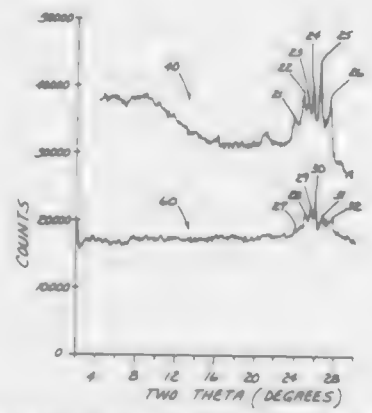
LOW GRAVITY ENHANCED GROWTH OF PHTHALOCYANINE POLYMORPH FILMS

Mark K. Debe, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 218,817, Jul. 13, 1988, abandoned. This application Mar. 23, 1989, Ser. No. 327,898
Int. Cl.[5] B32B *5/16, 9/00;* **B05D** *3/00*
U.S. Cl. 428—141 **11 Claims**

1. A film of a phthalocyanine comprising at least 50 weight percent of a single polymorph, said film having been prepared in a low gravity environment of at most 0.1 G which is free of buoyancy driven convection, said film having a surface rough-

ness factor in a range greater than 1.000000 and less than 1.000010 and a density at least 50 percent greater than any



polymorph of the same molecules produced in unit gravity, and in which at least 50 weight percent of the molecules of said film have a common uniaxial orientation.

5,009,949

RESIN COMPOSITION AND ELECTRICAL LAMINATE OBTAINED THEREFROM

Kazuyuki Tanaka; Etsuji Iwami; Jun Matsuzawa; Yoshiyuki Mukoyama; Norihiko Shibata, all of Hitachi; Akinori Hanawa, Shimotsuma, and Mitsuo Yokota, Yuki, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed May 17, 1988, Ser. No. 194,918

Claims priority, application Japan, May 21, 1987, 62-124950; Dec. 22, 1987, 62-324571; Dec. 29, 1987, 62-334220; Apr. 1, 1988, 63-82072

Int. Cl.[5] B32B *7/00*

U.S. Cl. 428—260 **12 Claims**

1. A laminate for electrical use obtained by impregnating one or more substrates with a resin composition comprising

(A) 80 to 20 parts by weight of a copolymer having carbon-carbon unsaturated bonds in its side chains and obtained by reacting (i) a copolymer obtained by copolymerizing 0 to 50% by mole of an alkyl acrylate or alkyl methacrylate, 10 to 50% by mole of a hydroxyalkyl acrylate or a hydroxyalkyl methacrylate, and 0 to 90% by mole of an ethylenically unsaturated monomer, a total being 100% by mole, with (ii) an unsaturated carboxylic acid or an anhydride thereof, and

(B) 20 to 80 parts by weight of a monomer copolymerizable with (A), a total of (A) and (B) being 100 parts by weight, and

curing the resin impregnated substrates.

5,009,950

COMPOSITE STRUCTURES

Joachim Wagner, Cologne; Karl Peltzer, Leichlingen, and Werner Rasshofer, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Mar. 14, 1989, Ser. No. 323,454

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1988, 3809524

Int. Cl.[5] C08G *18/00;* **B32B** *5/02, 5/26, 5/28*

U.S. Cl. 428—290 **8 Claims**

1. A composite structure comprising at least two different flat, thermoplastically formable plastic materials which is prepared by a process which comprises placing said materials in layers one above the other and thermoplastically molding said materials under sufficient conditions of temperature and pressure that molding is accompanied by intimate union of individual layers of the structure, wherein at least one of said materials is based on a polyisocyanate polyaddition product containing at least one group selected from the group consisting of urea and urethane groups, having a density of at least 0.8 g/cm^3 and prepared by reacting at an isocyanate index of about 60 to 140

(a) an aromatic polyisocyanate with

(b) a compound having a molecular weight of about 1800 to 12,000 and containing an average of at least 2.5 isocyanate reactive groups and

(c) at least 5% by weight, based on the weight of component (b), of a member selected from the group consisting of diamines having a molecular weight of 108 to 400 and containing two primary aromatically bound amino groups, diamines having a molecular weight of 108 to 400 and containing two secondary aromatically bound amino groups, diamines having a molecular weight of 108 to 400 and containing one primary aromatically bound amino group and one secondary aromatically bound amino group,

aliphatic polyols having a molecular weight of 60 to 1799, cycloaliphatic polyols having a molecular weight of 60 to 1799, aliphatic polyamines having a molecular weight of 60 to 1799 and cycloaliphatic polyamines having a molecular weight of 60 to 1799.

5,009,951

CONJUGATE FIBERS AND NONWOVEN MOLDING THEREOF

Tadayuki Ohmae; Tadashi Sakurai, and Kouichiro Asao, all of Chiba, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

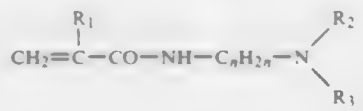
Division of Ser. No. 189,439, May 2, 1988, Pat. No. 4,840,847. This application Apr. 13, 1989, Ser. No. 337,602

Claims priority, application Japan, Feb. 4, 1988, 63-25466

Int. Cl.[5] B32B *27/02, 27/32;* **D02G** *3/02*

U.S. Cl. 428—294 **4 Claims**

1. A nonwoven molding obtained by melt spinning (A) a crystalline poly-α-olefin and (B) an ethylene copolymer containing from 40 to 95% by weight of an ethylene unit and from 5 to 60% by weight of at least one dialkylaminoalkylacrylamide comonomer unit represented by formula (I):



(I)

wherein R_1 represents a hydrogen atom or methyl group; R_2 and R_3 each represents an alkyl group having from 1 to 4 carbon atoms; and n represents an integer of from 2 to 5, said ethylene copolymer having a melt index of from 10 to 1000 g/10 min as measured according to JIS K-6760, either by aligning the components (A) and (B) in parallel or by aligning the component (A) as a core and the component (B) as a sheath to prepare conjugate fibers, and then thermally adhering the resulting conjugate fibers at a temperature no lower than the melting point of the component (B) and no higher than the melting point of the component (A).

5,009,952

INSULATING WALL FOR REFRIGERATOR DEVICES

Wilhelm Klepsch, and Dietmar Plöbst, both of Kaprun, Austria, assignors to Senoplast Klepsch & Co., Kaprun, Austria

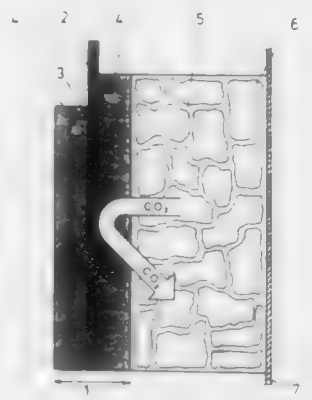
Filed Aug. 23, 1990, Ser. No. 572,056

Int. Cl.[5] F25D *23/08;* **B32B** *5/20, 7/04*

U.S. Cl. 428—319.1 **2 Claims**

1. An insulating wall for refrigerator devices, wherein a polyurethane is foamed between an exterior metal sheet and a deep-drawn plastics material plate selected from a member of the group of polystyrole or acrylonitrile-butadiene-styrene, characterized in that the cell-gas of the polyurethane foam is carbon dioxide and that the plastics material plate comprises

in its interior a blocking layer of 0.03–0.6 mm thickness formed of a copolymer of polyethylene and vinyl alcohol where the



molar percent of polyethylene in the copolymer is in the range of 32–44.

5,009,953

NON-DUSTING WINDOW ENVELOPE FILM UTILIZING A PARTICULATE ANTI-FLECKING AGENT

Stephen I. Foster, Bexley; Jeffrey J. Stimler, Newark, and Gail S. Nonnemacher, Reynoldsburg, all of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 220,296, Jul. 18, 1988, abandoned, and Ser. No. 393,057, Aug. 10, 1989, abandoned. This application Oct. 17, 1989, Ser. No. 422,846

Int. Cl.[5] B32B *5/16;* **B29C** *51/02*

U.S. Cl. 428—327 **25 Claims**

1. A window envelope having a non-opaque plastic window patch formed of a film comprising polystyrene and from about 0.1 to about 3.0 percent by weight of one or more particulate anti-flecking agents having from about a 0.1 to about 10.0 micron number average particle size, the one or more particulate anti-flecking agents each having a melting point greater than the polystyrene of the window envelope film and being substantially non-compatibilized and chemically inert with and substantially insoluble in the window envelope film.

5,009,954

SHEATH CORE FIBER AND ITS METHOD OF MANUFACTURE

John R. Collier, and Billie J. Collier, both of Athens, Ohio, assignors to Ohio University, Athens, Ohio

Continuation of Ser. No. 161,293, Feb. 29, 1988, abandoned, which is a continuation-in-part of Ser. No. 754,327, Jul. 12, 1985, abandoned. This application Apr. 4, 1990, Ser. No. 506,495

Int. Cl.[5] D02G *3/00*

U.S. Cl. 428—400 **5 Claims**



1. A sheath core fiber comprising an inner continuous core of an oriented thermoplastic material completely surrounded by a continuous adherent organic polymeric sheath which is formed from a polymer sheath forming material in liquid form, is not readily removable from said core, is retained on said core during ultimate usage of said fiber, and is made of a nonthermoplastic material, said sheath having minimal orientation and characterized by microscopic surface dimpling resulting in an enhanced surface area for higher sorptivity and greater dyeability.

5,009,955

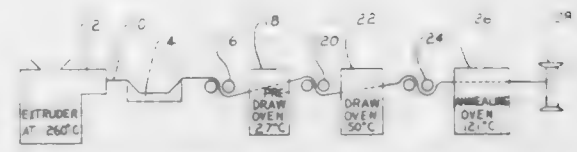
DUAL MODULUS ORIENTED ELASTOMERIC FILAMENTS

Ismat A. Abu-Isa, Rochester Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 6, 1989, Ser. No. 318,998

Int. Cl.[5] D02G *3/00*

U.S. Cl. 428—401 **2 Claims**



1. An oriented elastomeric filament spun from a thermoplastic elastomeric material selected from the group consisting of a block copolymer of polybutylene terephthalate and polytetramethylene glycol, a block copolymer of polybutylene terephthalate/polybutylene isophthalate and polyethylene glycol/-polypropylene glycol, a block copolymer of polybutylene terephthalate/polyhexene terephthalate and polytetramethylene glycol, and a block copolymer of polyurethane and polytetramethylene glycol, the mole fraction of said polybutylene terephthalate, polybutylene terephthalate/polybutylene isophthalate and polybutylene terephthalate/polyhexane terephthalate in said block copolymers being less than 0.5, said elastomeric filament being further oriented after said spinning by stretching at temperatures between 20° C. to 120° C. to a draw ratio between 500 percent to 700 percent elongation such that said oriented filament having a diameter between 0.33 to 0.51 millimeters and exhibits an ultimate strain no larger than 140 percent when tested in accordance with ASTM D-638 tensile test.

5,009,956

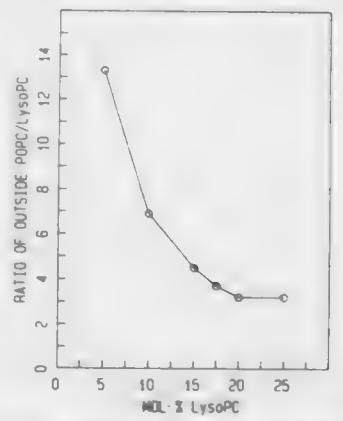
PHOSPHOLIPASE A_2-RESISTANT LIPOSOMES

Wolfgang J. Baumann, Austin, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation of Ser. No. 17,369, Feb. 24, 1987, abandoned. This application Mar. 31, 1989, Ser. No. 333,829

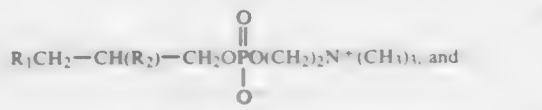
Int. Cl.[5] A61K *9/133, 37/22;* **B01J** *131/04*

U.S. Cl. 428—402.2 **11 Claims**

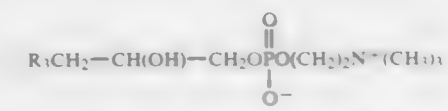


1. A method of stabilizing a liposome membrane comprising forming a unilamellar liposome having a single bilayer membrane having an outer layer and an inner layer including:

(a) between about 70–80 mol-% of a phospholipid (PL) of the formula:



(b) between about 20–30 mol-% of lysophospholipid (LPL) of the formula:



wherein R_1, R_2, and R_3 are individually (C_{10}–C_{30})alkanoyloxy groups including from about 0–4 double bonds, and wherein at least one of R_1, R_2, and R_3 include at least one double bond, by combining (a) and (b) so that the ratio of LPL to PL in the outer layer is about 0.275–0.35:1.0.

5. A stable liposome made by the process of claim 1.

5,009,957

MICROENCAPSULATED PLATINUM-GROUP METALS AND COMPOUNDS THEREOF

Chi-Long Lee, and Robin L. Willis, Jr., both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 75,789, Jul. 20, 1987, Pat. No. 4,874,667. This application Mar. 23, 1989, Ser. No. 327,652

Int. Cl.[5] B32B *27/00, 9/04, 25/00*

U.S. Cl. 428—402.22 **8 Claims**

1. A microencapsulated platinum-group metal or a compound thereof, in the form of a free flowing powder consisting essentially of microcapsules that, in turn, comprise said metal or compound as finely divided particles or droplets that are completely enveloped within one or an inner layer and an outer layer formed from thermoplastic organic polymers, the average diameter of said microcapsules is less than 500 microns, said thermoplastic organic polymers constitute at least 50 percent of the weight of said microcapsules, and said catalyst composition comprises a metal from the platinum group of the periodic table or a compound thereof.

5,009,958

FUNCTIONAL DEVICES COMPRISING A CHARGE TRANSFER COMPLEX LAYER

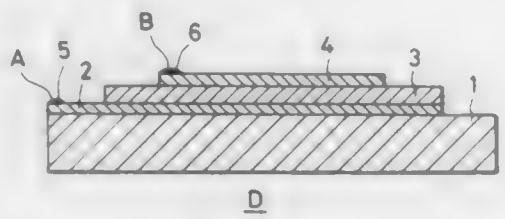
Akio Yamashita, Kanagawa; Susumu Yoshimura, Yokohama, and Sohji Tsuchiya, Kanagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Mar. 4, 1988, Ser. No. 170,025

Claims priority, application Japan, Mar. 6, 1987, 62-52537; Mar. 6, 1987, 62-52538; May 14, 1987, 62-117353

Int. Cl.[5] B32B *9/04*

U.S. Cl. 428—411.1 **12 Claims**



1. A functional device which comprises a substrate, an electrode layer formed on one side of the substrate, at least one layer of a charge transfer complex formed on the electrode layer and capable of undergoing a neutral-ionic phase transition and a variation in charge transferability by application of external energy, and another electrode layer formed on the complex layer, said charge transfer complex consisting essentially of an electron donor and an electron acceptor, at least one of which is an organic compound with a long-chain alkyl substituent having from 10 to 22 carbon atoms

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5,009,959

FLUORINE RESIN COATED ARTICLE

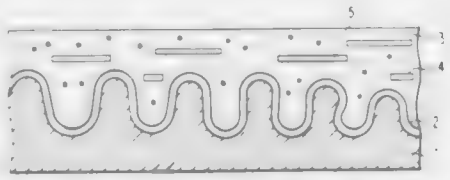
Nobutaka Matsushita; Hiroshi Okazaki; Shosuke Yamanouchi; Yoshitaka Osawa, and Isao Tsujigaito, all of Osaka, Japan, assignors to Sumitomo Electric Industries Ltd., Osaka, Japan

Filed May 22, 1989, Ser. No. 354,563

Claims priority, application Japan, May 20, 1988, 63-124466

Int. Cl.[5] B32B *17/06, 15/08*

U.S. Cl. 428—419 **10 Claims**



1. A fluorine resin coated article comprising a metal substrate coated with a composition comprising a fluorine resing containing (a) a polyamideimide resin, a polyimide resin, a polyphenylene sulfide resin, a polyethersulfone resin or a mixture thereof in an amount of from 0.5 to 10 wt % based on the amount of said fluorine resin, and mica in an amount of from 0.5 to 10 wt % based on the amount of said fluorine resin.

5,009,960

MAGNETIC RECORDING MEDIUM PREPARED WITH POLYURETHANE RESIN MODIFIED IIY A BICYCLIC AMIDE ACETAL

Takeshi Yatsuka; Hiroshi Murata; Yutaka Mizumura, and Nobukazu Kotera, all of Ohtsu, Japan, assignors to Ashland Oil, Inc., Russell, Ky.

Filed Nov. 6, 1989, Ser. No. 432,555

Claims priority, application Japan, Nov. 8, 1988, 63-282269

Int. Cl.[5] G11B *23/00*

U.S. Cl. 428—423.1 **4 Claims**

1. A magnetic recording medium comprising a non-magnetic support and a magnetic coating layer formed thereon, said magnetic coating layer being formed by applying a magnetic coating composition comprising a resinous binder and magnetic particles dispersed therein, wherein said coating composition contains, as a resinous binder, a modified polyurethane resin obtained by reacting a polyurethane resin (A) with a bicyclic amide acetal (B), said polyurethane resin (A) having carboxyl groups in an amount of 50 to 2,000 equivalents 10^6 g and the equivalent ratio of said bicyclic amide acetal (B) to the carboxyl groups of the polyurethane resin (A) being within the range of 0.5 to 2.0.

5,009,961

PRECERAMIC COMPOSITIONS AND CERAMIC PRODUCTS

Leonard M. Niebylski, Birmingham, Mich., assignor to Ethyl Corporation, Richmood, Va.

Filed Jun. 30, 1989, Ser. No. 374,063

Int. Cl.[5] B32B *9/04*

U.S. Cl. 428—446 **13 Claims**

1. A dispersion of about 0.25–2.0 parts by weight of silicon metal, about 0.25–2.0 parts weight of silicon tetraboride, about 0.25–2.0 parts by weight of silicon hexaboride, and about 0.2 parts by weight of silicon carbide in the product obtained by intimately dispersing about 0.1–1.0 part by weight of a Group IVA compound selected from salts and organometallic compounds of Group IVA metals in an organic solvent solution containing one part by weight of a polysilazane.

5,009,962

SURFACE TREATMENT CHEMICAL AND BATH FOR FORMING HYDROPHILIC COATINGS AND METHOD OF SURFACE-TREATING ALUMINUM MEMBERS

Katsuyoshi Yamasoe, Yotsukaidou, Japan, assignor to Nippon Paint Co., Ltd., Osaka, Japan

Division of Ser. No. 293,290, Jan. 4, 1989, Pat. No. 4,973,359. This application Jun. 15, 1990, Ser. No. 538,807

Int. Cl.[5] B32B *15/04;* **C23C** *22/00*

U.S. Cl. 428—470 **4 Claims**

1. An aluminum member provided with a hydrophilic coating comprising, on a solid basis, 5–25 parts by weight of a sodium salt and/or a potassium salt of a carboxymethylcellulose, 25–50 parts by weight of an ammonium salt of carboxymethylcellulose, and 25–70 parts by weight of N-methylol acrylamide.

5,009,963

METAL MATERIAL WITH FILM PASSIVATED BY FLUORINATION AND APPARATUS COMPOSED OF THE METAL MATERIAL

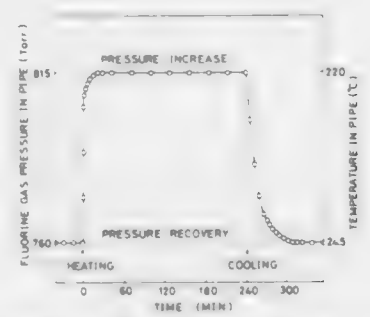
Tadahiro Ohmi, 2-1-17-302, Komegafukuro, Sendai-shi, Miyagiken; Masahiro Miki, 23-14-521, Tezukayama 1-Chome, Abeno-ku, Osaka; Hirohisa Kikuyama, 7-13, 3-Cho, Ayameike Kita, Nara-shi, Nara-ken, and Matagoro Maeno, 2-42-6, Komyodai, Izumi-shi, Osaka, all of Japan

Filed Jul. 19, 1989, Ser. No. 381,914

Claims priority, application Japan, Jul. 20, 1988, 63-181225; Jan. 13, 1989, 1-6892

Int. Cl.[5] C23F *20/06*

U.S. Cl. 428—472.2 **6 Claims**



1. A metal material comprising a metal substrate, and a passivated film formed on at least a portion of the surface of the metal substrate by fluorination of the metal substrate, said film being composed mainly of a metal fluoride in which the proportion of metal to fluorine is substantially in stoichiometric relationship, wherein said metal substrate is baked prior to fluorination in an inert atmosphere and said fluorinated metal substrate is heat-treated to form said stoichiometric relationship.

5,009,964

COMPOSITION AND PROCESS FOR IMPARTING FIRE RETARDANT PROPERTIES AND IMPROVED THERMAL STABILITY TO CELLULOSIC MATERIALS

Robert M. Leach, Grand Island, and Michael J. Richards, Williamsville, both of N.Y., assignors to Osmose Wood Preserving, Inc., Buffalo, N.Y.

Filed Jul. 11, 1989, Ser. No. 378,408

Int. Cl.[5] B32B *27/42*

U.S. Cl. 428—526 **22 Claims**

1. A process for forming a fire retardant composition useful for treating cellulosic materials to impart both fire retardant properties and improved thermal stability under high temperature and humidity conditions which comprises:

(a) reacting a solution of water, an oxy acid of phosphorus and a nitrogen containing compound selected from the group consisting of urea, melamine, mono, di and trimethylamine, mono, di, and triethylamine, dicyandiamide, hexamethylenetetramine and other equivalent nitrogen containing compounds in a weight ratio of about 0.1 to about 15 oxy acid per part nitrogen compound for a time of about 15 minutes to about 3 hours at a temperature from about 25° C. to about 90° C.;

(b) adjusting the pH of said solution from about 6.0 to about 9.0 with a water soluble alkaline compound selected from the group consisting of ammonia, ammonium hydroxide, mono, di and trimethylamine, mono, di and triethylamine and ethanolamine or other equivalent nitrogen containing alkaline compounds;

(c) reacting said solution with an aldehyde compound selected from the group consisting of formaldehyde, acetaldehyde, and glyoxal in a weight ratio of about 1.0 to about 56 total initial oxy acid per part aldehyde compound for a time of about 5 minutes to about 1.5 hours at a temperature from about 25° C. to about 90° C.; and

(d) adjusting the final pH of said solution from about 7.0 to about 8.5 with a water soluble alkaline compound selected from the group consisting of ammonia, ammonium hydroxide, mono, di and trimethylamine, mono, di and triethylamine and ethanolamine or other equivalent nitrogen containing alkaline compounds.

20. A cellulosic material impregnated with a fire retardant amount of the fire retardant composition made in accordance with the process of claim 1.

5,009,965

COLLOIDAL COMPOSITIONS FOR ELECTROLESS DEPOSITION

Nathan Feldstein, 63 Hemlock Cir., Princeton, N.J. 08540

Continuation of Ser. No. 171,333, Mar. 21, 1988, abandoned, which is a continuation of Ser. No. 948,089, Dec. 31, 1986, abandoned, which is a continuation of Ser. No. 878,865, Jun. 26, 1986, abandoned, which is a continuation-in-part of Ser. No. 264,214, May 15, 1981, abandoned, which is a division of Ser. No. 137,447, Apr. 4, 1980, abandoned, which is a division of Ser. No. 938,890, Aug. 31, 1978, Pat. No. 4,265,942. This application Sep. 26, 1988, Ser. No. 251,024

Int. Cl.[5] C23C *3/02*

U.S. Cl. 428—546 **2 Claims**

1. A colloidal composition useful in the metallization of an electrically non-conductive substrate wherein said colloidal composition is the reaction product resulting from the admixture in a liquid medium comprising at least one primary metal and at least one secondary metal, said metals being in positive oxidation states, and wherein said primary metal is selected from the group consisting of copper, nickel, iron, and cobalt and mixtures thereof and wherein said secondary metal is selected from the group consisting of aluminum, gallium, indium, germanium, lead, antimony, bismuth, chromium, tin, thallium, and mixtures thereof, and further wherein said primary metal and said secondary metal in said resultant colloidal

composition are in a reduced oxidation state derived through the chemical reduction in the admixture of both the primary and secondary metals both metals having been initially introduced in a higher oxidation state than their oxidation states in the resultant colloidal composition.

5,009,966

HARD OUTER COATINGS DEPOSITED ON TITANIUM OR TITANIUM ALLOYS

Diwakar Garg, 2815 Whitemarsh Pl., Macungie, Pa. 18062; Carl F. Mueller, 1221 Tatamy Rd., Easton, Pa. 18042; Leslie E. Schaffer, 244 W. Chestnut St., Macungie, Pa. 18062, and Paul N. Dyer, 3920 Pleasant Ave., Allentown, Pa. 18103

Division of Ser. No. 139,891, Dec. 31, 1987, Pat. No. 4,902,535. This application Sep. 19, 1989, Ser. No. 409,541
Int. Cl.[5] B32B *15/04*
U.S. Cl. 428—627 14 Claims

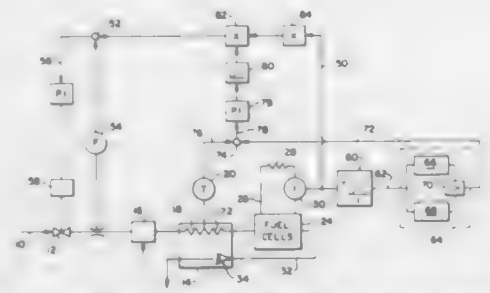
1. A coated substrate product comprised of
(1) a substrate selected from the group consisting of titanium and titanium alloy, which substrate has been treated with a mild abrasive to remove oxides from its surface,
(2) a thin, non-reactive noble metal interlayer deposited by an electroless plating technique after the treatment with said mild abrasive, said noble metal coated substrate is then subjected to a heat treatment by heating the substrate and the noble metal interlayer to a temperature in the range of about 200° to about 300° C. in the presence of air or a temperature in the range of about 200° to about 475° C. in the presence of an inert gas selected from the group consisting of argon, helium and mixtures thereof, and
(3) a hard outer coating selected from the group consisting of a ceramic, a hard metal, a hard metal compound and a carbon having a hardness of greater than 1,000 Vickers.

5,009,967

FUEL CELL POWER PLANT FUEL CONTROL

Glenn W. Scheffler, Tolland, Conn., assignor to International Fuel Cells Corporation, South Windsor, Conn.

Filed Oct. 24, 1989, Ser. No. 427,223
Int. Cl.[5] H01M *8/04*
U.S. Cl. 429—23 4 Claims



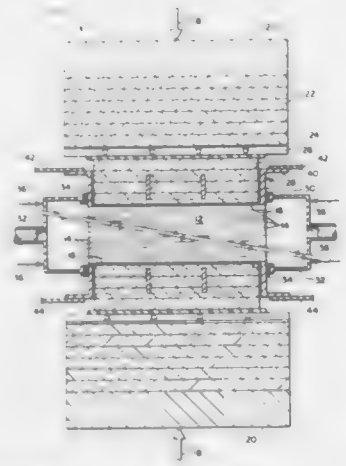
1. In a fuel cell power plant having, fuel supply means for supplying a flow of fuel, a reformer receiving and reforming said flow of fuel, a fuel stack receiving fuel from said reformer, a conduit for conveying fuel cell exhaust containing excess hydrogen to said reformer, a burner for burning said exhaust and said reformer in heat exchange relationship with the fuel supply passing through said reformer; a control system comprising:
a current sensor for sensing the electrical load on said fuel cell stack and establishing a current sensed signal;
a fuel flow summation point;
means for conducting said current sensed signal to said fuel flow summation point as a nominal desired fuel flow signal;
a temperature sensor for sensing the temperature of the reformed fuel at said reformer and establishing a temperature sensed signal;
a first function generator for setting a nominal desired reformer fuel temperature set point representing the steady state desired temperature as a function of the sensed current;
a dynamic compensator for modifying said desired reformer fuel temperature set point to obtain a transient temperature set point comprising, a first lead/lag compensator, a second lead/lag, compensator, one of said lead/lag compensators generating a predominantly lead characteristic signal and the other generating a predominantly lag characteristic signal, and a high select component for selecting and passing the higher signal of said lead characteristic signal and said lag characteristic signal;
error means for comparing said higher signal with said sensed temperature signal and establishing a temperature error signal;
means for modifying said nominal desired fuel flow signal as a function of by said temperature error signal and establishing a transient desired fuel flow set point signal to said fuel flow summation point;
fuel flow sensing means for establishing a fuel flow sensed signal;
means for conveying said fuel flow sensed signal to said fuel flow summation point and establishing a fuel flow error signal; and
fuel flow control means responsive to said fuel flow error signal for controlling said fuel flow.

5,009,968

FUEL CELL END PLATE STRUCTURE

Robin J. Guthrie, East Hartford; Murray Katz, Newington, and Craig R. Schroll, Glastonbury, all of Conn., assignors to International Fuel Cells Corporation, South Windsor, Conn.

Filed Sep. 8, 1989, Ser. No. 405,251
Int. Cl.[5] H01M *8/02, 8/24*
U.S. Cl. 429—26 14 Claims



1. A fuel cell assembly comprising:
a fuel cell stack formed of a large number of fuel cells having electrodes and stacked in electrical series relationship;
an electrically conducting flexible membrane at each end of said stack, each membrane in electrical contact with an electrode at multiple spaced locations in a plane parallel to the planes of said fuel cells;
a pressure pad at each end of said fuel cell stack including a substantially planar surface in contact with the respective membrane;
compression means for exerting a compressive force on said pressure pads towards said fuel cell stack;
said membranes being sufficiently thin, that the compressive force maintains the membranes in intimate electrical contact with said electrodes at multiple locations;
each membrane integral with a box-like wall structure of a thickness greater than that of said membrane, and extending axially of said fuel cell stack at the outer periphery of said membrane; and
an electric power bus bar connected to said box-like wall structure.

5,009,969

DUAL ACTION SUNSCREEN COMPOSITION

Gary A. Miller, Monroe, N.Y., assignor to Hi-Tek Polymers, Inc., Jeffersontown, Ky.

Filed May 26, 1989, Ser. No. 357,985
Int. Cl.[5] A61K *7/40, 7/42, 7/44, 7/46*
U.S. Cl. 424—59 8 Claims

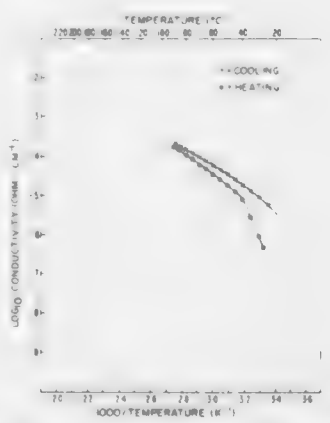
1. A dual action sunscreen composition comprising:
(A) about 0.2 to about 2 weight percent of hydroxypropyltrimethyl ammonium chloride guar having a DS of about 0.1 to about 0.2 and a viscosity of 1000–2000 cps as measured at 25° C. at 2 percent concentration in water,
(B) about 0.1 to about 2 weight percent of poly(methacrylamidopropyl trimethyl ammonium chloride) having a viscosity at 33 percent solids in water of about 2,000 to about 14,000 cps at 25° C.; and
(C) an ultraviolet absorbing sunscreen agent in the amount of about 0.1 to about 2 weight percent, wherein A, B and C are dispersed or dissolved in a cosmetically and dermatologically acceptable carrier which contains about 70 to about 85 weight percent water wherein said weight percents are based on the weight of the composition, wherein said composition when applied to the human skin provides sunburn protection and moisturizing effect.

5,009,970

POLYMER ELECTROLYTES

Esam Kronfli; Keith V. Lovell, both of Swindon; Alan Hooper, Faringdon, and Robin J. Neat, Marston, all of United Kingdom, assignors to United Kingdom Atomic Energy Authority, London, United Kingdom

Filed Jul. 25, 1988, Ser. No. 223,648
Claims priority, application United Kingdom, Jul. 28, 1987, 8717799
Int. Cl.[5] C08J *3/28;* C08K *3/24;* C08L *71/02;* H01M *6/18*
U.S. Cl. 429—192 2 Claims



1. A method of making a solid polymer electrolyte suitable for use as the electrolyte of a solid-state electrochemical cell, comprising the steps of irradiating with gamma radiation or an electron beam an aqueous solution of a polymer electrolyte comprising a complex of a polymer and an alkali metal salt, the polymer comprising poly(ethene oxide), which polymer is capable of forming donor-acceptor type bonds with alkali metal ions, the conditions of irradiation being such as to cause the said polymer itself to cross-link and to form a hydrogel thereby to inhibit transformation of the polymer from an amorphous form to a crystalline form, and drying the hydrogel to form a solid polymer electrolyte with adequate electrical conductivity for use as the electrolyte of a solid-state electrochemical cell.

5,009,971

GAS RECOMBINANT SEPARATOR

Harlan B. Johnson, Rittman; Samuel B. Laferty, Akron; Melvin P. Wagner, Wadsworth, and Shantilal M. Mohnot, Copley, all of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 240,851, Sep. 2, 1988, abandoned, which is a continuation-in-part of Ser. No. 25,540, Mar. 13, 1987, abandoned. This application Aug. 9, 1989, Ser. No. 391,067
Int. Cl.[5] H01M *2/16*
U.S. Cl. 429—252 50 Claims

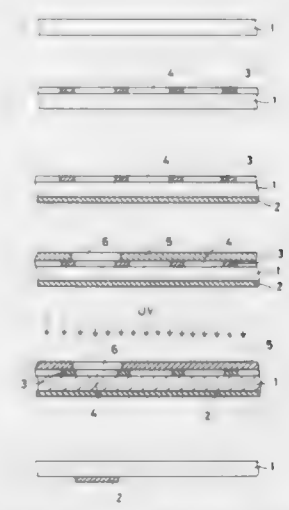
30. A separator for an electrolyte gas recombinant battery comprising a non-woven, porous flexible sheet consisting essentially of a substantially homogeneous mixture of from about 93 to about 99.5 weight percent synthetic amorphous silica and from about 0.5 to about 7 weight percent of fibrillated, unsintered polymeric material, said synthetic amorphous silica comprising precipitated silica and from 0 to about 25 weight percent of pyrogenic silica, silica gel or mixtures of pyrogenic silica and silica gel, said sheet having a tensile strength of less than 75 pounds per square inch.

5,009,972

BLANK PLATES FOR FORMING MULTI-COLOR FLUORESCENT PLANES AND METHODS FOR FORMING MULTI-COLOR FLUORESCENT PLANES

Naoshige Higuchi, Tokyo, and Toru Miyake, Funabashi, both of Japan, assignors to Dai Nippon Printing Co., Ltd., Tokyo, Japan

Filed Mar. 28, 1989, Ser. No. 330,842
Claims priority, application Japan, Mar. 29, 1988, 63-75255; Mar. 29, 1988, 63-75256; Mar. 29, 1988, 63-75257
Int. Cl.[5] G03F *9/00*
U.S. Cl. 430—7 11 Claims



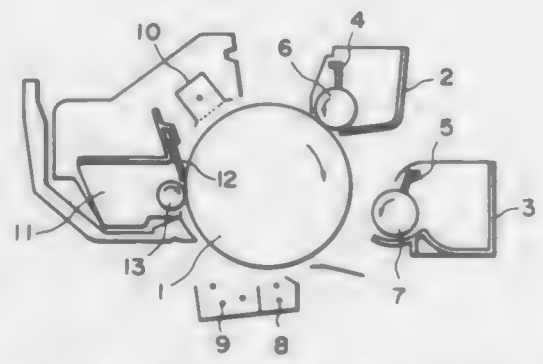
1. A method for forming multi-color fluorescent planes comprising the steps of:
repeating the steps of coating a fluorophore-containing photosensitive layer on one side of a transparent substrate and, thereafter, exposing said photosensitive layer to light from the other side of said transparent substrate, followed by developing, wherein
said photosensitive layer is exposed to light with a combination of a full-color mask including light-transmitting segments to coincidence with every color pattern and a single-color mask including light-transmitting segments corresponding to each color pattern.

5,009,973

IMAGE FORMING METHOD AND IMAGE FORMING APPARATUS

Satoshi Yoshida, Kawasaki; Toshiaki Nakahara, Tokyo; Hirohide Tanikawa, Yokohama, and Kiichiro Sakashita, Inagi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 28, 1989, Ser. No. 317,182
Claims priority, application Japan, Feb. 29, 1988, 63-46890
Int. Cl.[5] G03G *13/01, 13/09, 15/01, 15/09*
U.S. Cl. 430—45 99 Claims



34. An image forming method, comprising:

developing an electrostatic latent image on an electrostatic image-bearing member with a developer comprising a non-magnetic color tonerr having a volume-average particle size of 4 to 15 microns to form a non-magnetic color toner image;

transferring the non-magnetic color toner image on the electrostatic image-bearing member to a transfer-receiving material;

cleaning the electrostatic image-bearing member after the transfer with a cleaning blade;

forming an electrostatic image on the electrostatic image-bearing member after the cleaning;

developing the electrostatic latent image on the electrostatic image-bearing member with a developer comprising a magnetic toner to form a magnetic toner image, wherein the magnetic toner contains 17 to 60% by number of magnetic toner particles having a particle size of 5 microns or smaller, 1–23% by number of magnetic toner particles having a particle size of 8.0–12.7 microns and 2.0% by volume or less of magnetic toner particles having a size of 16 microns or larger, wherein the magnetic toner has a volume-average particle size of 4–9 microns and a degree of aggregation of 50–95%; and wherein the magnetic toner has a particle size distribution satisfying the following formula:

$$N/V = -0.04N + k,$$

where N denotes the value of % by number of magnetic particles having a size of 5 microns or smaller, namely a positive number of 17 to 60, V denotes the value of % by volume of magnetic particles having a size of 5 microns or smaller, and k is a positive number of from 4.5 to 6.5;

transferring the magnetic toner image on the electrostatic image-bearing member to the transfer-receiving material; and

cleaning the electrostatic image-bearing member after the transfer with a cleaning blade.

5,009,974

SURFACE-TREATED METAL BODY, PROCESS FOR PRODUCING THE SAME, PHOTOCONDUCTIVE MEMBER USING THE SAME AND RIGID BALL FOR TREATING METAL BODY SURFACE

Mitsuru Honda, Kashiwa; Atsushi Koike, Chiba; Tomohiro Kimura, Ueno; Kyosuke Ogawa, Nabari, and Keiichi Murai, Kashiwa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 294,995, Jan. 9, 1989, which is a continuation of Ser. No. 894,958, Aug. 8, 1986, abandoned. This application Apr. 27, 1990, Ser. No. 515,229
Claims priority, application Japan, Aug. 10, 1985, 60-176172
Int. Cl.[5] G03G *5/14*
U.S. Cl. 430—69 7 Claims

1. An electrophotographic process comprising:

(a) charging a photoconductive member comprising a photoconductive layer on a support, the support being a surface-treated metal body having irregularities formed through a plurality of spherical indent recesses on the surface and having fine irregularities formed in the spherical indent recesses, wherein the ratio of the radius of curvature R and the width r of the spherical indent recesses are in a range of $0.035 \leqq r/R \leqq 0.5$ and wherein the radius of curvature R of the spherical indent recesses is in a range of $0.1\ mm \leqq R \leqq 2.0\ mm$; and

(b) imagewise exposing said photoconductive member with an information-bearing laser beam to thereby form an electrostatic image.

5,009,975

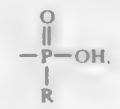
ELECTROPHOTOGRAPHIC PHOTORECEPTOR

Eiichi Kato, and Kazuo Ishii, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 4, 1989, Ser. No. 417,105
Claims priority, application Japan, Oct. 4, 1988, 63-248949; Nov. 17, 1988, 63-288972
Int. Cl.[5] G03G *5/08*
U.S. Cl. 430—96 9 Claims

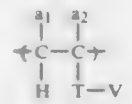
1. An electrophotographic photoreceptor comprising a support having thereon at least one photoconductive layer containing at least an inorganic photoconductive material and a binder resin, wherein the binder resin contains

(A) at least one resin having a weight average molecular weight of from 1×10^3 to 3×10^4 with at least one substituent selected from the group consisting of $-PO_3H_2$, $-SO_3H$, $-COOH$,



wherein R represents a hydrocarbon group having from 1 to 10 carbon atoms or $-OR'$, wherein R' represents a hydrocarbon group having from 1 to 10 carbon atoms, and a cyclic acid anhydride-containing group, being bonded to one of the terminals of the polymer main chain thereof, and

(B) at least one resin having a weight average molecular weight of 5×10^4 or more and containing, as a polymerization component, at least a repeating unit represented by formula (b-i):



(b-i)

wherein T represents $-COO-$, $-OCO-$, $-CH_2OCO-$, $-CH_2COO-$, $-O-$ or $-SO_2-$; V represents a hydrocarbon group having from 1 to 22 carbon atoms; and a_1 and a_2, which may the same or different, each represents a hydrogen atom, a halogen atom, a cyano group, a hydrocarbon group having from 1 to 8 carbon atoms, —COO—Z, or —COO—Z bonded via a hydrocarbon group having from 1 to 8 carbon atoms, wherein Z represents a hydrocarbon group having from 1 to 18 carbon atoms; and wherein said Resin (B) is partially crosslinked.

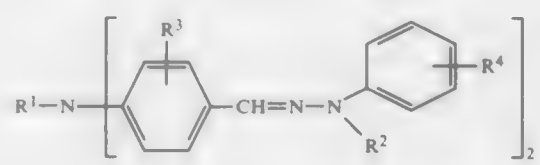
5,009,976

ELECTROPHOTOGRAPHIC PHOTORECEPTOR

Akira Itoh, and Kozo Haino, both of Tsukuba, Japan, assignors to Mitsubishi Paper Mills Limited, Tokyo, Japan

Filed Feb. 26, 1990, Ser. No. 484,836
Claims priority, application Japan, Feb. 27, 1989, 1-048298
Int. Cl.[5] G03G *5/14*
U.S. Cl. 430—59 6 Claims

1. An electrophotographic photoreceptor which comprises an electroconductive support and, provided thereon, a photosensitive layer which comprises a carrier generation layer containing a carrier generation material and a carrier transport layer containing at least one hydrazone compound as a carrier transport material represented by the following formula (I):



(I)

wherein R^1 and R^2 each represent an alkyl, alkenyl, aralkyl, aryl or heterocyclic group which may be substituted, and at least one of R^1 and R^2 is an alkenyl group and R^3 and R^4 each represents a hydrogen atom, an alkyl group, an alkoxy group or a halogen atom.

5,009,977

PHOTOSENSITIVE MEMBER FOR ELECTROPHOTOGRAPHY HAVING AMORPHOUS SILICON

Takashi Hayakawa, Nara; Shiro Narikawa, Kashihara; Kunio Ohashi, Nara, and Yoshiharu Tsujimoto, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 21, 1989, Ser. No. 369,473
Claims priority, application Japan, Jun. 28, 1988, 63-161978; Jun. 29, 1988, 63-161209; Jun. 29, 1988, 63-161210
Int. Cl.[5] G03G *5/085*
U.S. Cl. 430—84 18 Claims

1. A photosensitive member for electrophotography comprising a conductive substrate and a photoconductive layer comprising an amorphous silicon containing 40–60 atomic % of a member selected from the group consisting of hydrogen, halogen and mixtures thereof, and at least one chemical modifier selected from the group consisting of carbon at 5–40 atomic %, nitrogen at 0.01–28 atomic %, and oxygen at 5–25 atomic %, each based on silicon, with said amorphous silicon being deposited utilizing an electron resonance method.

5,009,978

PREPARATION PROCESS FOR TONER POLYMER

Keiji Yoshida; Ryo Funato; Syuji Takahiro, all of Nagoya; Shinji Kubo, Toyohashi, and Notoshi Inagaki, Nogoya, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1989, Ser. No. 447,854
Claims priority, application Japan, Dec. 12, 1988, 311989
Int. Cl.[5] G03G *9/00, 5/00*
U.S. Cl. 430—109 7 Claims

1. A process for the preparation of a toner polymer comprising the steps of: carrying out suspension polymerization of a monomer having a polymerizable vinyl group in the presence of polyvinyl alcohol as a dispersant; and conducting oxidative decomposition of said polyvinyl alcohol anchored to polymer particles obtained by said suspension polymerization.

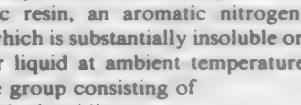
5,009,979

ELECTROSTATOGRAPHIC PARTICULATE TONER AND DEVELOPER COMPOSITIONS

Galina P. Buxton, Tenafly, N.J., and Kuo-Chang Tang, Cheshire, Conn., assignors to Olin Hunt Specialty Products Inc., West Paterson, N.J.

Filed Oct. 23, 1989, Ser. No. 425,546
Int. Cl.[5] G03G *9/00, 5/00*
U.S. Cl. 430—110 18 Claims

1. A toner composition comprised of resin particles, colorant material and an effective charge controlling amount of at least one charge enhancing additive of the formula:



wherein R_1 and R_2 are lower alkyl groups having 1 to 4 carbon atoms; R_3 is a straight-chain alkylene group having from 1 to about 8 carbon atoms; and R_4 is an alkyl group having from about 7 to about 24 carbon atoms.

5,009,980

AROMATIC NITROGEN-CONTAINING COMPOUNDS AS ADJUVANTS FOR ELECTROSTATIC LIQUID DEVELOPERS

Lyla M. El-Sayed, West Chester, Pa., and Torence J. Trout, Yorklyn, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 30, 1988, Ser. No. 292,192
Int. Cl.[5] G03G *9/12*
U.S. Cl. 430—114 54 Claims

1. An improved electrostatic liquid developer having improved charging characteristics consisting essentially of

(A) a nonpolar liquid having a Kauri-butanol value of less than 30, present in a major amount,

(B) thermoplastic resin particles having an average by area particle size of less than 10 μm having dispersed therein an aromatic nitrogen-containing compound which is substantially insoluble or immiscible in the nonpolar liquid at ambient temperatures and is selected from the group consisting of

(1) polyvinylpyridines,

(2) polyaminostyrenes,

(3) copolymers of vinyl pyridine, and

(4) compounds of the general formula:

wherein Y is pyridine, substituted pyridine, bipyridine, aniline, or substituted aniline; R is alkyl of 1 to 30 carbon atoms, substituted alkyl of 1 to 30 carbon atoms, aryl of 6 to 30 carbon atoms, substituted aryl of 6 to 30 carbon atoms, or NH; Z is one of Y; n is 0 or 1; and fused ring compounds can be formed when R is aryl or substituted aryl of n is 0, and

(C) a nonpolar liquid soluble ionic or zwitterionic charge director compound.

27. A process for preparing a liquid electrostatic developer for electrostatic imaging comprising

(A) dispersing at an elevated temperature in a vessel a thermoplastic resin, an aromatic nitrogen-containing compound which is substantially insoluble or immiscible in the nonpolar liquid at ambient temperatures and is selected from the group consisting of

(1) polyvinylpyridines,

(2) polyaminostyrenes,

(3) copolymers of vinyl pyridine, and

(4) compounds of the general formula:

$$Y-(R)_n-Z$$

wherein Y is pyridine, substituted pyridine, bipyridine, aniline, or substituted aniline; R is alkyl of 1 to 30 carbon atoms, substituted alkyl of 1 to 30 carbon atoms, aryl of 6 to 30 carbon atoms, substituted aryl of 6 to 30 carbon atoms, or NH; Z is one of Y; n is 0 to 1; and fused ring compounds can be formed when R is aryl or substituted aryl or n is 0, and a dispersant nonpolar liquid having a Kauri-butanol value of less than 30, while maintaining the temperature in the vessel at a temperature sufficient to plasticize and liquify the resin and below that at which the dispersant nonpolar liquid degrades and the resin decomposes,

(B) cooling the dispersion, either

(1) without stirring to form a gel or solid mass, followed by shredding the gel or solid mass and grinding by means of particulate media with or without the presence of additional liquid;

(2) with stirring to form a viscous mixture and grinding by means of particulate with or without the presence of additional liquid; or

(3) while grinding by means of particulate media to prevent the formation of a gel or solid mass with or without the presence of additional liquid;

(C) separating the dispersion of thermoplastic toner particles having an average by area particle size of less than 10 μm from the particulate media, and

(D) adding to the dispersion during or subsequent to Step (A) a nonpolar liquid soluble ionic or zwitterionic charge director compound.

5,009,981

PHOTOSENSITIVE COMPOSITION

Shinichi Matsubara; Masafumi Uehara, both of Tokyo; Shinichi Bunya, and Eriko Katahashi, both of Yokohama, all of Japan, assignors to Konica Corporation and Mitsubishi Kasei Corporation, both of Tokyo, Japan

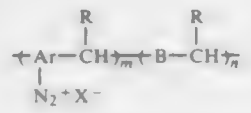
Continuation-in-part of Ser. No. 376,517, Jul. 7, 1989, abandoned. This application Sep. 20, 1990, Ser. No. 585,048

Claims priority, application Japan, Jul. 11, 1988, 63-172240; Jul. 11, 1988, 63-172241; Jul. 11, 1988, 63-172242

Int. Cl.[5] G03C *1/52*

U.S. Cl. 430—175 **9 Claims**

1. A photosensitive composition comprising in admixture a photosensitive diazo compound, having a structure represented by the Formula I:



(I)

wherein ArN_2X is an aromatic having diazonium salt, B is an aromatic having a polymerizable unsaturated bond and R is a hydrogen atom, methyl group or phenyl group, $m = 1 \sim 20$, and $n = 1 \sim 20$,

a polymeric binder and a photopolymerization initiator.

5,009,982

RESIST INK COMPOSITION

Yuichi Kamayachi, Wako, and Syoji Inagaki, Sakado, both of Japan, assignors to Taiyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 850,220, Apr. 10, 1986, abandoned. This application Jun. 6, 1988, Ser. No. 204,927

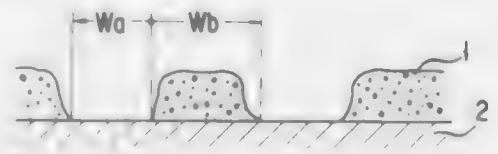
Claims priority, application Japan, Apr. 19, 1985, 60-084987

Int. Cl.[5] G03F *7/031, 7/032;* **C08L** *63/10;* **C08G** *59/02*

U.S. Cl. 430—280 **15 Claims**

1. A photosetting and thermosetting liquid resist ink composition developable with a dilute alkaline aqueous solution, which comprises in combination: a photosetting resin composition comprising

(A) a resin curable with an activated energy ray, which has an acid value in the range of 50 to 165 mg KOH/g and is obtained by the reaction of (a) a saturated or unsaturated polybasic acid anhydride with (b) a reaction product of a novolak epoxy compound and an unsaturated monocarboxylic acid in a proportion of 0.95 to 1.05 equivalent weight of said unsaturated monocarboxylic acid to 1 equivalent weight of said novolak epoxy compound,



(B) a photopolymerization initiator, and

(C) a diluent and an epoxy compound containing at least two epoxy groups in one molecule thereof as a thermosetting component.

5,009,983

METHOD FOR PROCESSING SILVER HALIDE PHOTOSENSITIVE MATERIALS

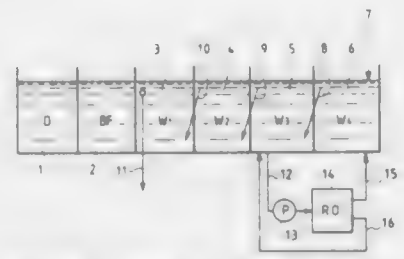
Akira Abe, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 12, 1990, Ser. No. 551,822

Claims priority, application Japan, Jul. 14, 1989, 1-180591

Int. Cl.[5] G03C *7/40*

U.S. Cl. 430—372 **20 Claims**



1. A method for processing silver halide photosensitive materials comprising processing an imagewise-exposed silver halide photosensitive material in a bath which has a fixing ability and then at least one of washing and stabilizing the photosensitive material in a multi-stage counter-flow system, wherein liquid from at least one of a water washing tank and a stabilizing tank is treated using a reverse osmosis membrane and the treated liquid is recycled to at least one of the water washing tank and stabilizing tank, and at least a tank at the stage at which the liquid is removed for the reverse osmosis membrane treatment has an open fraction of not more than 0.03.

5,009,984

METHOD FOR PROCESSING A PHOTOGRAPHIC SILVER HALIDE EMULSION MATERIAL

Gino L. De Rycke, Mortsel; Antonius A. Rutges, Boechout, and Jozef P. De Prijcker, Hamme, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Jun. 29, 1989, Ser. No. 372,856

Claims priority, application Belgium, Aug. 9, 1988, 88201706.4

Int. Cl.[5] G03C *5/26, 5/38*

U.S. Cl. 430—404 **11 Claims**

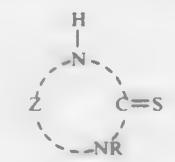
1. A method of processing an imagewise exposed photographic silver halide emulsion material which method comprises the steps of:

(A) developing an image-wise exposed silver halide emulsion layer by means of at least one diffusible developing agent in at least the substantial absence of a silver halide complexing agent, the development taking place with an aqueous alkaline liquid,

(B) bringing the thus developed photographic material while being still wet with the liquid from step (A) with its silver halide emulsion layer side in intimate contact with a water-absorbing layer of a receptor element that contains in an organic hydrophilic colloid binder a silver halide complexing agent and in dispersed colloidal form a metal sulphide capable of a conversion reaction with complexed silver halide to form silver sulphide,

(C) maintaining said photographic material and receptor element in contact to allow the transfer of dissolved complexed silver compound into said receptor element and conversion into silver sulphide until the undeveloped silver halide in the exposed silver halide emulsion layer is substantially completely so transferred and converted, and

(D) separating the photographic material from the receptor element, wherein said water-absorbing layer of said receptor element contains (i) said silver complexing agent at a coverage per m2 of silver halide in the unexposed photographic material, (ii) said metal sulphide at a sulphide ion coverage per m2 at least stoichiometrically equivalent with the silver ion coverage present in the photographic material in unexposed and undeveloped state, and (iii) a diffusible silver image stabilizing agent at a coverage of at least 0.01 g/m2, said stabilizing agent is a cyclic thiourea compound corresponding to the following formula or a tautomeric form thereof:



wherein:

R represent hydrogen or a hydrocarbon group including said group in substituted form, and

Z represents a bivalent saturated hydrocarbon group including said group in substituted form to complete a 5- or 6-membered heterocyclic ring.

5,009,985

IRON COMPLEXES AND BLEACHING BATHS CONTAINING SAME

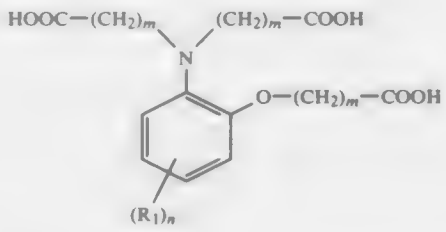
Friedrich-Wilhelm Kunitz, Leverkusen, and Ralf Wichmann, Cologne, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 22, 1990, Ser. No. 571,504

Int. Cl.[5] G03C *5/44*

U.S. Cl. 430—430 **7 Claims**

1. Iron(III)-complexes of compounds of the formula



wherein

R_1 denotes a substituent,

m denotes 1 or 2 and

n denotes 0, 1 or 2.

5,009,986

NAPHTHALOCYANINE BASED COMPOUND AND OPTICAL RECORDING MEDIUM CONTAINING THE SAME

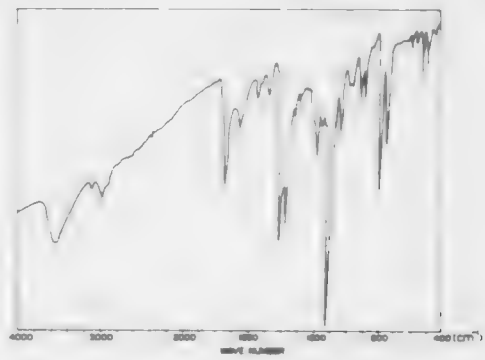
Takayuki Kawaguchi, Hachioji; Takashi Shiro, Hino; Kaoru Iwata, Hachioji, and Takahiro Daido, Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jan. 17, 1990, Ser. No. 466,545

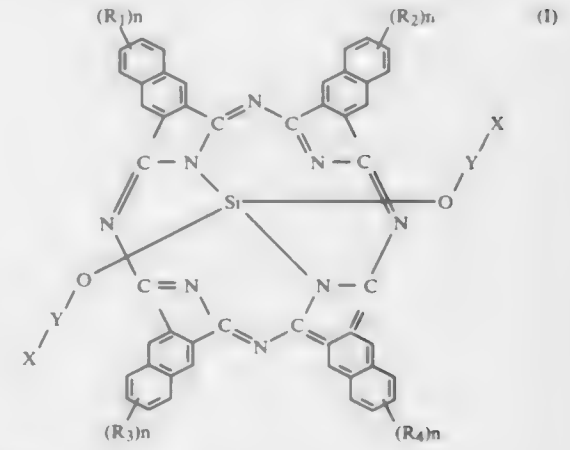
Claims priority, application Japan, Jan. 17, 1989, 1-5888; Feb. 22, 1989, 1-40325

Int. Cl.[5] G03C *1/00, 1/492;* **C09B** *47/04*

U.S. Cl. 430—495 **12 Claims**



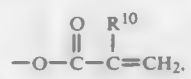
1. A naphthalocyanine based compound expressed by the following formula (I)



(I)

wherein

X represents a group selected from a group consisting of



—CN, and —CH=CH_2; in which R^{10} represents hydrogen atom or methyl group;

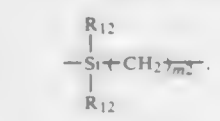
Y groups, which may be the same or different, each represent a divalent group selected from the group consisting of

(1) a saturated aliphatic hydrocarbon group having 2–20 carbon atoms, saturated alicyclic hydrocarbon group having 5–6 carbon atoms, aromatic hydrocarbon group having 6–10 carbon atoms and hydrocarbon group formed by binding the above mentioned groups with each other and having 2–20 total carbon atoms, each optionally substituted with a Group selected from a halogen atom and lower alkyloxy group; which may be substituted with 1 or 2 substituents of X;

(2) a group expressed by the formula $-R_{11}-O-R_{1\text{-}1}-_{m1}-$ or the group $-R_{11}-O-R_{11}-_{m1}-$ which is

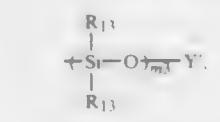
further bound with the saturated alicyclic hydrocarbon group or the aromatic hydrocarbon group defined in above (1); in which R_{11} represents straight chain or branched alkylene group having 2–4 carbon atoms and m1 is an integer of 1–20;

(3) a group expressed by the formula



in which R_{12} represents hydrocarbon group having 1–6 carbon atoms; m2 represents an integer of 1–20; and

(4) a group expressed by the formula



in which R_{13} represents the same as defined for R_{12}, m3 represents the same as defined for m_1; Y' represents a group selected from a group consisting of (1), (2) and (3) defined above for Y; provided that Y represents phenylene group when X represents $-CH=CH_2$;

R_1, R_2, R_3 and R_4 are identical or different and represent hydrogen atom, each straight chain or branched alkyl group, alkoxy group or alkylsilyl group; each having 1–18 carbon atoms; and n represent an integer of 1–4.

5,009,987

OPTICAL RECORDING MEDIUM CONTAINING IR-RAY ABSORPTIVE COMPOUND

Chieko Mihara, Tokyo; Tsuyoshi Santoh, Yokohama; Hiroyuki Sugata, Yamato, and Tetsuro Fukui, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 14, 1989, Ser. No. 436,041

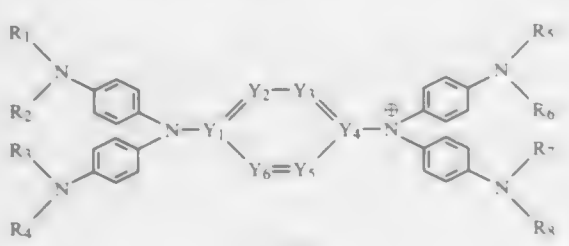
Claims priority, application Japan, Nov. 16, 1988, 63-287611; Nov. 16, 1988, 63-287612

Int. Cl.[5] G03C *1/00, 1/492;* **B32B** *3/02;* **G01D** *9/00*

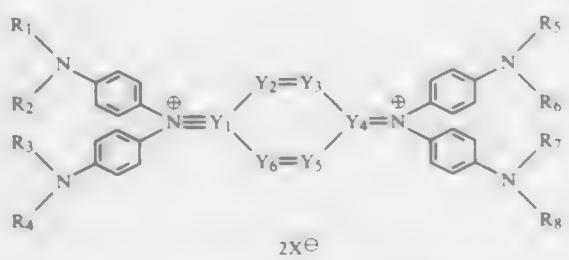
U.S. Cl. 430—495 **5 Claims**

1. An optical recording medium, comprising a recording layer containing at least one IR-ray absorptive compounds represented by formulae (I) or (II).

(I)



(II)



where Y_1, Y_2, Y_3, Y_4, Y_5, and Y_6 form a substituted or unsubstituted heterocycle which has at least one nitrogen atom; R_1 to R_8 are hydrogen, halogen, or a univalent organic radical, or at least one of the combinations of the atomic groups of R_1 and R_2, R_3 and R_4, R_5 and R_6, and R_7 and R_8 are the same or different; and X^- is an anion.

5,009,988

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Toshihiko Yagi, Shiroyama, and Yoshitaka Yamada, Hino, both of Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 168,444, Mar. 15, 1988, abandoned. This application Aug. 24, 1990, Ser. No. 571,834

Claims priority, application Japan, Mar. 17, 1987, 62-61669

Int. Cl.[5] G03C *1/46*

U.S. Cl. 430—505 **17 Claims**

1. A silver halide color photographic light-sensitive material comprising

(i) a support

(ii) photographic component layers having a total dry thickness of from about 5 μm to 15.1 μm and comprising a red light-sensitive silver halide emulsion layer containing a cyan coupler, a green light-sensitive halide emulsion layer containing a magenta coupler and a blue light sensitive silver halide emulsion layer containing a yellow coupler; and

(iii) a colloidal layer containing substantially non light sensitive fine-grain silver halide grains having an average grain size of not larger than about 0.3 μm, said colloidal layer being positioned farther from said support than said photographic component layers,

wherein at least one of said silver halide emulsion layers contains a diffusible DIR compound and the total silver halide content of said silver halide emulsion layers is from 3.0 g/m^2 to 6.0 g/m^2 of silver.

5,009,989

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Kozo Aoki, and Osamu Takahashi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 19, 1988, Ser. No. 246,585

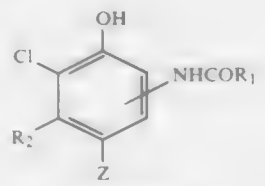
Claims priority, application Japan, Sep. 17, 1987, 62-233565

Int. Cl.[5] G03C *1/84, 7/34*

U.S. Cl. 430—512 **8 Claims**

1. A silver halide photographic material which contains, on a support, at least one cyan dye-forming coupler represented by the following formula (I), and at least one compound selected from among those represented by the following formulae (II) and (III):

(I)





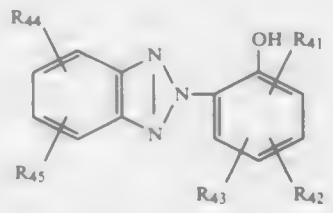
(II)

(III)

wherein R_1 represents an aliphatic group, an aromatic group or a heterocyclic group; R_2 represents an ethyl group, Z represents a hydrogen atom, or a group or an atom capable of splitting off upon coupling with a developing agent; L_1 and L_2 each represents a divalent aliphatic group; R_3 and R_4 each represents an aliphatic group; n and m each represents an integer of 2, and the n R_3's and m R_4's, respectively, may be the same of different, L_2 excludes cyclohexylene group; wherein the total number of carbon atoms in the compound represented by formula (II) is from 12 to 60 and the total number of carbon atoms in the compound represented by formula (III) is from 12 to 60, and wherein said compound represented by formula (I) and said at least one compound represented by formula (II) or (III) are present in the same layer.

7. A silver halide photographic material as in claim 1, further comprising an ultraviolet absorbent represented by formula (XI):

(XI)



wherein R_{41}, R_{42}, R_{43}, R_{44} and R_{45}, which may be the same or different, each being a hydrogen atom or a substituent group; R_{44} and R_{45} may combine with each other to complete a 5- or 6-membered aromatic a carbon ring and these groups and this aromatic ring may further be substituted by a substituent group.

5,009,990

PHOTOGRAPHIC RECORDING MATERIAL

Rainer Scheerer, Cologne, and Franz Moll, Leverkusen, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 156,582, Feb. 16, 1988, abandoned. This application Nov. 20, 1989, Ser. No. 440,463

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1987, 3706199

Int. Cl.[5] G03C *1/30, 1/34*

U.S. Cl. 430—539 **4 Claims**

1. Photographic black and white negative film having on a layer support at least one silver halide emulsion layer containing gelatine, at least one protective layer and at least one hardening layer, in which the protective layer is further removed from the layer support than any silver halide emulsion layer and the hardening layer is further removed from the layer support than any other layer and contains an effective quantity of at least one instant hardener, characterized in that the protective layer contains an effective quantity of 4-hydroxy-6-methyl-1,3,3a,7-tetraazaindene.

5,009,991

SILVER HALIDE EMULSIONS CONTAINING TWINNED SILVER HALIDE CRYSTALS

Clive W. Mowforth, Kingshill; James F. Bullock, Macclesfield; Trevor J. Maternaghan, Knutsford, and Karen N. Harvey, Warrington, all of United Kingdom, assignors to Ilford Limited, Cheshire, United Kingdom

Filed Aug. 31, 1989, Ser. No. 400,659

Int. Cl.[5] G03C *1/02*

U.S. Cl. 430—567 **22 Claims**

1. A method of preparing a silver halide emulsion wherein the silver halide crystals are of the twinned type which comprises the steps of

(a) providing in a colloid dispersing medium silver halide seed crystals containing at least 90% iodide and at least 80% of which are of hexagonal lattice structure with each displaying predominantly a single basal face,

(b) mixing in the dispersing medium containing the said silver halide seed crystals an aqueous solution of an alkali metal or ammonium bromide or chloride (or mixtures thereof) so forming twinned silver halide crystals containing iodide and the halide or halides being added, and

(c) continuing the addition of said silver halide until dissolution of said seed crystals is substantially complete.

5,009,992

PHOTOGRAPHIC SILVER HALIDE EMULSION

Wolfgang Friedrich, Rödermark, and Alfred Wörsching, Rodgau-Jügesheim, both of Fed. Rep. of Germany, assignors to E. I. DuPont de Nemours and Company, Wilmington, Del.

Filed Dec. 20, 1989, Ser. No. 453,833

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1989, 3901268

Int. Cl.[5] G03C *1/02*

U.S. Cl. 430—573 **10 Claims**

1. Photographic silver halide emulsion consisting essentially of said emulsion containing therein a dye present in a sensitizing amount to sensitize the emulsion for the infrared spectral region, and an aromatic thiosulfonic acid or a salt of the acid in amount of from 0.1 to 5 millimoles per mole of silver halide.

5,009,993

DIRECT POSITIVE PHOTOGRAPHIC MATERIAL

Noriyuki Inoue, and Tatsuo Heki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 101,693, Sep. 28, 1987, Pat. No. 4,880,727. This application Oct. 16, 1989, Ser. No. 422,268

Claims priority, application Japan, Sep. 26, 1986, 61-226292; Sep. 26, 1986, 61-226295

Int. Cl.[5] G03C *1/09*

U.S. Cl. 430—605 **5 Claims**

1. A direct positive photographic material comprising a support having provided thereon one or more hydrophillic colloid containing layers, wherein at least oen of said hydrophillic colloid containing layers is an internal latent image type silver halide emulsion which has not been previously fogged and at least one of said emulsion layer or other hydrophillic colloid containing layer contains a colloidal metal selected from the group consisting of mercury, iron, lead, zinc, nickel, cadmium, tin, chromium, copper, cobalt, gold, platinum and palladium or a colloidal water-insoluble metallic sulfide, selenide or telluride selected from the group consising of sulfides, selenides, or tellurides of mercury, iron, lead, zinc, nickel, cadmium, tin, chromium, copper, cobalt, gold, platinum, palladium, alluminum, silver, antimony, bismuth, cerium or magnesium.

5,009,994

PARTICLES CONTAINING MANNITOL SUITABLE FOR TABLETTING INTO DIAGNOSTIC REAGENTS

John K. McGeehan, Woodbury, N.J., assignor to EM Diagnostic Systems, Inc., Gibbstown, N.J.

Division of Ser. No. 842,968, Mar. 24, 1986, Pat. No. 4,820,627. This application Jan. 12, 1989, Ser. No. 296,178

Int. Cl.[5] C12Q *1/00*

U.S. Cl. 435—4 **54 Claims**

1. A mass of particles suitable for the production of a diagnostic reagent, said particles consisting essentially of an inert, completely water-soluble, solid, particulate bulking agent comprising mannitol, said particulate bulking agent having a coating thereon, at lest in part, of a labile biochemical, said labile biochemical being useful as a diagnostic reagent, wherein said labile biochemical is substantially uniformly distributed on said mass of particles and said mass of particles is substantially free of non-easily breakable agglomerates.

5,009,995

MONOCLONAL ANTIBODIES TO MELANOMA CELLS

Anthony Albino, New York; Kenneth Lloyd, Bronx, both of N.Y.; Hisami Ikeda, Asahikawa, Japan, and Lloyd Old, New York, N.Y., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Continuation of Ser. No. 924,144, Oct. 27, 1986, which is a continuation of Ser. No. 481,378, Apr. 1, 1983, abandoned. This application Mar. 11, 1988, Ser. No. 166,660

Int. Cl.[5] **G01N** *33/535;* **C07K** *15/28;* **C12N** *5/18;* **A61K** *39/00*

U.S. Cl. 435—7.23 **7 Claims**

1. Monoclonal antibodies which specifically bind to the gp130 glycoprotein cell surface antigen of human melanoma cells, wherein said monoclonal antibodies are selected from the group consisting of monoclonal antibodies 829 and 986 produced by the hybridomas having the A.T.C.C. accesion numbers HB 8289 and HB 9721, respectively.

5,009,996

TWO SITE CROSS-REACTION IMMUNOMETRIC SANDWICH ASSAY METHOD

Vipin D. Shah, Saratoga, Calif.; Padmaker V. Kulkarni, Dallas, Tex., and Quirinus R. Miranda, San Jose, Calif., assignors to International Immunoassay Laboratories, Inc., Santa Clara, Calif.

Continuation of Ser. No. 165,001, Jun. 30, 1980, abandoned. This application Sep. 30, 1983, Ser. No. 537,947

The portion of the term of this patent subsequent to Apr. 23, 2008, has been disclaimed.

Int. Cl.[5] **G01N** *33/53;* **C12Q** *1/50*

U.S. Cl. 435—7 **11 Claims**

1. A two-site immunometric sandwich assay method for the detection and measurement of an analyte of interest in a test sample, said analyte of interest having at least two immunochemically differing binding sites, comprising:

(a) combining a first antibody, raised against a material other than said analyte of interest and capable of cross-reacting with one of said at least two binding sites of said analyte of interest, with a test sample suspected of containing said analyte of interest and a solid material capable of specifically binding to said first antibody, to form a first reaction medium, and simultaneously reacting the components of said first reaction medium to form a bound complex of said solid material to said first antibody, which first antibody is further bound with any other reactants in said test sample which are capable of immunochemically binding to said first antibody;

(b) separating the solid phase from the liquid phase of the reaction medium;

(c) reacting said solid phase, in a second reaction medium, with a second antibody, said second antibody having been raised against a material other than said analyte of interest and being capable of cross-reacting with another of said at least two binding sites of said analyte of interest, and said second antibody being tagged with a means for making said tagged antibody detectable;

(d) separating the solid phase portion of said second reaction medium from the liquid phase portion thereof; and

(e) testing said solid portion to detect the quantity of said second antibody therein as an indication of the presence of said analyte of interest,

wherein said analyte of interest and said materials other than said analyte of interest against which said first and second antibodies have been raised are three different but related molecules, wherein said other materials may be representationally depicted as AA and CC, wherein A and C are binding sites on the materials, and said analyte of interest is a hybrid AC of the other two materials, and wherein the molecular structure of the A binding sites in AA and AC, and the C binding sites in CC and AC are sufficiently similar to permit cross-reaction therebetween by antibodies raised against either material, said first and second antibodies being selected such that they will not both cross-react with any analyte in the test sample other than said analyte of interest.

5,009,997

TWO SITE CROSS-REACTION IMMUNOMETRIC SANDWICH ASSAY METHOD

Vipin D. Shah, 13568 Debbie La., Saratoga, Calif. 95070; Padmakar v. Kulkarni, 6914 Mill Falls Dr., Dallas, Tex. 75248, and Quirinus R. Miranda, 2097 Jonathan Ave., San Jose, Calif. 95125

Continuation of Ser. No. 165,001, Jun. 30, 1980, abandoned. This application Jan. 30, 1985, Ser. No. 896,353

The portion of the term of this patent subsequent to Apr. 23, 2008, has been disclaimed.

Int. Cl.[5] **G01N** *33/573*

U.S. Cl. 435—7.4 **13 Claims**

1. In a two-site immunometric sandwich assay method for the detection and measurement of an analyte of interest in a test sample, said analyte of interest having at least two immunochemically differing binding sites, comprising (a) immobilizing a first antibody capable of binding to one said at least two binding sites of said analyte of interest, by binding said first antibody to a solid material, (b) reacting said bound first antibody with a test sample suspected of containing said analyte of interest, to form a reaction medium comprising a liquid phase and a solid phase which medium includes a bound complex of said solid material to said first antibody and said first antibody to any reactants in said test sample which immunochemically bind thereto, (c) separating the solid phase from the liquid phase of the reaction medium, (d) reacting said solid phase, in a second reaction medium, with a second antibody capable of binding to another of said at least two binding sites of said analyte of interest, said second antibody being tagged with a means for making said tagged antibody detectable, (e) separating the solid phase portion of said second reaction medium from the liquid phase portion thereof, and (f) testing said solid portion to detect the quantity of said second antibody therein as an indication of the presence of said analyte of interest, the improvement wherein

each of said first and second antibodies have been raised against a material other than said analyte of interest and each is capable of cross-reacting with one of said binding sites of said analyte of interest, and

said analyte of interest and said materials other than said analyte of interest against which said first and second antibodies have been raised are three different but related molecules, wherein said other materials may be representationally depicted as AA and CC, where A and C are binding site on the materials, and said analyte of interest is a hybrid AC of the other two materials, and wherein the molecular structure of the A binding sites in AA and AC, and the C binding sites in CC and AC are sufficiently similar to permit cross reaction therebetween by antibodies raised against either material, said first and second antibodies being selected such that they will not both cross-react with any analyte in the test sample other than said analyte of interest.

5,009,998

METHOD FOR PERFORMING HETEROGENEOUS IMMUNOASSAY

Allan T. Chow, Wilmington, Del., and Michael A. G. Luddy, West Chester, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 66,583, Jun. 26, 1987, abandoned. This application Nov. 3, 1987, Ser. No. 115,506

The portion of the term of this patent subsequent to Nov. 20, 2007, has been disclaimed.

Int. Cl.[5] **G01N** *33/53, 33/543, 33/545;* **C12N** *11/00*

U.S. Cl. 435—7.92 **3 Claims**

1. A method of performing a heterogeneous immunoassay on a sample for the determination of a biological analyte, using a solid support defining a container capable of the reversible immobilization of binding partners of the analyte, comprising the steps of:

coating substantially all of the interior of the support with a binding partner of the analyte,

introducing the sample and an anti-analyte-label conjugate into the support,

capping the support,

agitating the support end-over-end in a controlled temperature environment for a controlled time to subject substantially all of the interior of the support to a thin layer of the sample and conjugate to form a labelled complex bound to such coating, thereby to reduce the diffusion time required for all portions of the sample and anti-analyte-label conjugate to come in contact with the support, separating non-reacted components of the sample and anti-analyte-label conjugate from the support,

releasing the label complex from the coating using salts or organic bases, and

measuring the activity of the label.

5,009,999

METHOD FOR BIODEGRADING PCBS

Lawrence H. Bopp, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 866,501, May 23, 1986, Pat. No. 4,843,009. This application Mar. 20, 1989, Ser. No. 325,739

Int. Cl.[5] **C12Q** *1/02;* **C10G** *17/00, 45/00*

U.S. Cl. 435—29 **9 Claims**

1. An enrichment procedure for isolating microorganisms capable of biodegrading PCB cogeners which comprises,

(1) cogeners selected from the class of cogeners free of vicinal hydrogen atoms, cogeners having unchlorinated 2,3 positions, cogeners having unchlorinated 3,4 positions, and cogeners unchlorinated in both 2,3 and 3,4 positions,

(2) agitating under aerobic conditions for a period of at least 24 hours and at a temperature of from about 15° C. to 37° C. a mixture comprising

(a) a PCB contaminated environmental sample

(b) mineral salts medium,

(c) biphenyl, and

(d) a monochlorobiphenyl-containing PCB mixture having at least 15% by weight chlorine,

(3) making several serial dilutions of the mixture of (2) at concentrations of 10^{-2} to 10^{-6},

(4) plating aliquots of the dilutions on solid medium containing biphenyl as sole carbon and energy source, and

(5) selecting clones.

5,010,000

METHOD FOR THE PREPARATION OF A SELECTED PROTEIN OR A PART THEREOF IN BACILLUS STRAIN BACTERIA

Ilkka Palva, Helsinki, Finland, assignor to Genesit Oy and Oy Alko AB, both of Helsinki, Finland

Continuation of Ser. No. 520,036, Aug. 3, 1983, abandoned, which is a continuation-in-part of Ser. No. 336,405, Dec. 31, 1981, abandoned. This application Nov. 30, 1987, Ser. No. 129,356

Claims priority, application Finland, Dec. 31, 1980, 804081

Int. Cl.[5] **C12P** *21/00;* **C12N** *15/00, 1/20, 9/86*

U.S. Cl. 435—69.1 **8 Claims**

1. A method for the preparation of a selected protein or polypeptide in Bacillus strain bacteria by joining DNA coding for the selected protein or polypeptide to a bacterium gene, comprising the successive steps of:

(1) cleaving the *Bacillus amyloliquefaciens* gene for α-amylase at a location to the 3′ side of the excretion signal downstream from the regulation signal of the α-amylase gene or at a location downstream from a portion of the DNA sequence essential with respect to excretion of the α-amylase protein;

(2) joining the cleaved gene to a plasmid present in Bacillus strain bacteria;

(3) joining the DNA sequence coding for the selected protein or polypeptide to the cleavage site;

(4) transforming the Bacillus strain host bacteria with the recombinant DNA molecules so obtained; and

(5) cultivating the transformed host bacteria for producing the selected protein or polypeptide.

5,010,001

PREPARATION OF NATURAL OR MODIFIED INSECT TOXINS

Thomas J. Pollock, San Diego, Calif., assignor to Syntro Corporation, Lenexa, Kans.

Continuation-in-part of Ser. No. 573,535, Jan. 25, 1984, abandoned, which is a continuation-in-part of Ser. No. 466,744, Feb. 13, 1983, abandoned. This application Mar. 28, 1985, Ser. No. 717,043

Int. Cl.[5] **C12N** *1/21, 15/00, 15/32*

U.S. Cl. 435—69.1 **7 Claims**

1. A method for producing *B. thuringiensis* delta-endotoxin in enhanced amounts which comprises:

growing transformed *E. coli* in an appropriate nutrient medium, wherein said *E. coli* are transformed with an expression vector containing the intact structural gene encoding said delta-endotoxin and 3′ and 5′ flanking regions which do not extend beyond the proximal HincII sites; and

isolating the expressed delta-endotoxin.

5,010,002

HUMAN T-PA PRODUCTION USING VECTORS CODING DHFR PROTEIN

Arthur Levinson, Burlingame; Christian Simonsen, and Elizabeth M. Yelverton, both of San Jose, all of Calif., assignors to Genentech, Inc., San Francisco, Calif.

Continuation of Ser. No. 149,990, Jan. 27, 1988, abandoned, which is a continuation of Ser. No. 459,153, Jan. 19, 1983, abandoned. This application Mar. 22, 1990, Ser. No. 499,209

Int. Cl.[5] **C12N** *15/00, 5/16;* **C12P** *21/02*

U.S. Cl. 435—69.2 **11 Claims**

1. An expression vector which comprises:

a first DNA sequence encoding a DHFR protein; and

a second DNA sequence encoding human tPA;

wherein each of said first and second sequences is operably linked to a DNA sequence capable of effecting its expression.

5,010,003

USE OF YEAST HOMOLOGOUS SIGNALS TO SECRETE HETEROLOGOUS PROTEINS

Chung N. Chang, San Mateo; Ronald A. Hitzeman, Pacifica, and Mark D. Matteucci, San Francisco, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 488,387, Apr. 25, 1983, abandoned. This application Jun. 20, 1990, Ser. No. 541,186

Int. Cl.[5] **C12P** *21/00, 21/02;* **C12N** *15/00*

U.S. Cl. 435—69.9 **11 Claims**

1. A yeast expression vehicle comprising the DNA sequence of a yeast promoter operably linked to a DNA sequence encoding a homologous yeast signal peptide, the final codon of the signal peptide being connected in translation reading frame to a DNA sequence encoding a protein heterologous to the yeast organism, provided that said homologous yeast signal peptide is sufficient, upon expression of a fusion protein containing said signal peptide and heterologous protein, to result in the processing and export of mature heterologous protein into the culture medium of yeast organisms transformed with said vehicle, said heterologous protein being completely processed to the mature form.

5,010,004

METHOD FOR CONTINUOUS REACTION WITH FLUIDIZED IMMOBILIZED LIPASE

Yoshitsuga Kosugi; Hideoki Tanaka, both of Tsukuba; Hideo Suzuki, Tokyo, and Masaru Shiraki, Tsukuba, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Oct. 11, 1988, Ser. No. 255,599
Claims priority, application Japan, Oct. 9, 1987, 62-255057
Int. Cl.[5] C12P *7/64;* C12N *11/08, 9/20;* C12M *1/40*
U.S. Cl. 435—134 13 Claims

1. A method for continuous reaction of a water-soluble substrate and an oily substrate in the presence of fluidized immobilized lipase, which comprises:

(a) providing a reaction vessel having (i) vertically maintained apart upper and lower conically-shaped separation regions, respectively, for separation of a water-soluble product and an oily product, (ii) a plurality of lipase reaction zones each containing immobilized lipase capable of being fluidized and containing therein agitating means and (iii) a plurality of intermediate separation zones for separation of an oily substance and a water-soluble substance, said lipase reaction zones and said intermediate separation zones being disposed alternately between said upper and lower conically-shaped separation regions, and boundaries between said lipase reaction zones and intermediate separation zones being pervious to liquid but impervious to said immobilized lipase;

(b) feeding said water-soluble substrate into a lower part of the upper conically-shaped separation region and said oily substrate into an upper part of the lower conically-shaped separation region;

(c) passing said water-soluble substrate and said oily substrate in counterflow contact through said lipase reaction zones and said intermediate separation zones whereby said immobilized lipase in a fluidized contact with said oily substrate and said water-soluble substrate state comes into mutual; and

(d) recovering oily product-containing liquid from an upper part of said upper conically-shaped separation region and water-soluble product-containing liquid from a lower part of said lower conically-shaped separation region.

5,010,005

BIO-OXIDATION OF HIGH ALCOHOLS IN NON-AQUEOUS REACTION MEDIA

Sheldon J. B. Duff, 35 Merritt Ave., Ottawa, Ontario, Canada K1S 0J5 , and William D. Murray, 868 Champman Blvd., Ottawa, Ontario, Canada K1G 1V2

Filed Apr. 24, 1990, Ser. No. 513,765
Claims priority, application Canada, Apr. 28, 1989, 599191
Int. Cl.[5] C12R *1/84;* C12P *7/24*
U.S. Cl. 435—147 18 Claims

1. A method of oxidizing poorly water soluble aliphatic alcohols and aromatic alcohols to their corresponding aldehydes comprising contacting the alcohol with methanol-induced methylotrophic yeast alcohol oxidase in a biphasic reaction medium which comprises an organic phase component and an aqueous phase component such that the alcohol is partitioned between the phases and the aldehyde is partitioned in the organic phase, the volume of aqueous phase being small relative to the volume of organic phase.

5,010,006

LIPASE IMMDOILIZED BY CROSS-LINKING WITH INERT PROTEIN FOR GLYCERIDE SYNTHESIS

Francoise Ergan; Michael Trani, both of Montreal, and Gérald Andre, Ile Bizard, all of Canada, assignors to Her Majesty the Queen in Right of Canada as represented by the National Research Council of Canada, Ottawa, Canada

Filed Aug. 11, 1988, Ser. No. 231,221
Int. Cl.[5] C12N *11/02, 11/00;* C12P *7/64*
U.S. Cl. 435—177 16 Claims

1. A dry porous macromolecular matrix comprising a cross-linked mixture of 69.9 to 86.6% by weight of an inert protein and 0.4 to 10.2% by weight of a lipase enzyme and a cross-linking agent, the amount of cross-linking agent being about 11.7 to 23% by weight, said matrix being obtained by a process comprising:

(i) adding to a buffer solution about 50 to 440 μl lipase enzyme, about 5% inert protein and about 0.75 to 1.5% bifunctional cross-linking agent and allowing the resultant mixture to react;

(ii) freezing the resulting reacted mixture at a temperature ranging between −20° C. and −195° C.;

(iii) allowing the frozen mixture to thaw to a temperature ranging from 4° to 25° C.; and

(iv) rinsing and drying the resulting product at room temperature to produce said dry porous macromolecular matrix.

5,010,007

COMPOSITION FOR REMOVING OXYGEN IN FOODSTUFF AND DRINKS

Jean-Paul Prieels; Charles Maschelein, and Marc Heilporn, all of Brussels, Belgium, assignors to Synfina-Oleofina, Brussels, Belgium

Division of Ser. No. 863,269, May 14, 1986, Pat. No. 4,957,749. This application Mar. 12, 1990, Ser. No. 492,031
Int. Cl.[5] C12N *9/04, 9/08*
U.S. Cl. 435—190 3 Claims

1. An enzyme composition for removing molecular and free-radical oxygen from oxidizable foodstuff materials, comprising:

(a) from about 0.1 to about 1 ppm/l of medium of an oxidase,

(b) from about 0.05 to about 2%, based on the medium, of a substrate corresponding to the oxidase,

(c) from about 2,000 to about 20,000 units/l of medium of catalase, and

(d) from about 0.3 to about 1.5 ppm of superoxide dismutase.

5,010,008

STABLE LIQUID ENZYME CONCENTRATE AND PROCESS FOR ITS PRODUCTION

Phillip J. Brumm, Lake Zurich, Ill., assignor to Enzyme Bio-Systems Ltd., Englewood Cliffs, N.J.

Filed Dec. 12, 1988, Ser. No. 282,644
Int. Cl.[5] C12N *9/28*
U.S. Cl. 435—202 12 Claims

1. A process for producing a stable liquid enzyme concentrate containing the alpha-amylase from *Bacillus stearothermophilus* which consists essentially of the steps of:

(a) mixing an aqueous solution of *Bacillus stearothermophilus* alpha-amylase enzyme with granular starch to adsorb the alpha-amylase enzyme;

(b) separating the starch, containing adsorbed alpha-amylase enzyme, from the aqueous solution;

(c) washing the starch containing adsorbed alpha-amylase enzyme;

(d) forming a slurry of the starch containing adsorbed alpha-amylase enzyme in a buffer solution containing calcium ion;

(e) heating the slurry of Step (d) above the gelatinization temperature of the starch to form a solution of the alpha-amylase enzyme and starch hydrolyzate;

(f) separating the solution formed in Step (e) from any insoluble solid; and

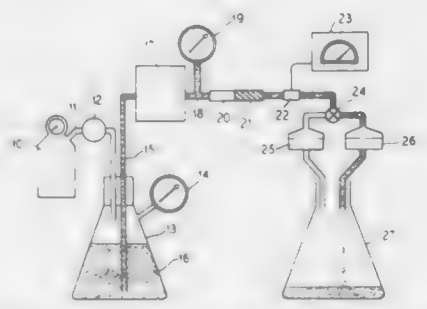
(g) concentrating the solution obtained in Step (f).

5,010,009

MATERIAL FOR CELL ATTACHMENT AND GROWTH

John Steele, North Rocks; Oddvar Johansen, Mulgrave; Graham Johnson, Peakhurst, and Johnathon Hodgkin, Burwood, all of Australia, assignors to Commonwealth Scientific & Industrial Research Organisation & Telectronics Pty. Limited, Australia

PCT No. PCT/AU89/00356, § 371 Date May 9, 1990, § 102(e) Date May 9, 1990, PCT Pub. No. WO90/02145, PCT Pub. Date Mar. 8, 1990
PCT Filed Aug. 22, 1989, Ser. No. 477,884
Claims priority, application Australia, Aug. 22, 1988, PJ0020
Int. Cl.[5] C12N *5/02;* A61K *47/00*
U.S. Cl. 435—240.243 17 Claims



15. A method of promoting cell attachment and growth on a surface, said method comprising the steps of:

(a) preparing a surface by:

(i) grafting polyacrylic acid chains to a fluorocarbon polymer substrate so that the weight of the fluorocarbon polymer substrate increases by between 0.1% and 20%,

(ii) treating the fluorocarbon polymer surface produced by step (i) with concentrated sulphuric acid at a sufficiently high temperature and for a sufficient time to separately decarboxylate, aromatize and sulphonate an effective proportion of the grafted polyacrylic acid chains,

(iii) drying the surface produced by step (ii),

(iv) soaking the surface produced by step (iii) in a concentrated acid,

(v) neutralizing the surface produced by step (iv); and

(b) exposing said surface to cells.

5,010,010

PRODUCTION OF HUMAN PARATHYROID HORMONE FROM MICROORGANISMS

Kaare M. Gautvik, Oslo; Peter Alestrom, Sollihogda; Tordis B. Oven, and Odd S. Gabrielsen, both of Oslo, all of Norway, assignors to Selmer-Sande, A.S., Norway

Continuation of Ser. No. 921,684, Oct. 22, 1986, abandoned. This application Aug. 14, 1989, Ser. No. 393,851
Int. Cl.[5] C12P *21/00, 21/02;* C12N *1/20, 5/00*
U.S. Cl. 435—252.3 38 Claims

1. A DNA sequence encoding Saccharomyces mating factor alpha 1 operably linked to human parathyroid hormone wherein said DNA sequence can stably transform a yeast cell to express and secrete an intact human parathyroid hormone.

5,010,011

BOVINE PLACENTAL LACTOGEN GENE

Linda A. Schuler, Madison; Jack Gorski, Middleton, both of Wis.; Walter L. Hurley, Urbana, Ill.; Robert D. Bremel, Madison, Wis., and Fritz M. Rottman, Pepper Pike, Ohio, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation-in-part of Ser. No. 717,078, Mar. 28, 1985, Pat. No. 4,767,711. This application Apr. 21, 1988, Ser. No. 184,901
The portion of the term of this patent subsequent to Aug. 30, 2005, has been disclaimed.
Int. Cl.[5] C12N *15/00, 15/16, 15/63*
U.S. Cl. 435—252.3 3 Claims

1. A recombinant vector, comprising:

a vector; and

a foreign cDNA sequence coding for bovine placental lactogen which has been inserted into said vector; wherein the bovine placental lactogen is one coded for by a bovine gene portion of pbPL1078.

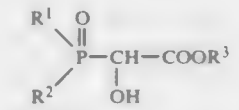
5,010,012

PROCESS FOR THE ENZYMATIC PREPARATION OF OPTICALLY ACTIVE PHOSPHORUS CONTAINING FUNCTIONAL ACETIC ACID DERIVATIVES

Dieter Wullbrandt, Hofheim am Taunus; Reinhold Keller, Bad Soden am Taunus; Merten Schlingmann, Königstein/Taunus; Wolfgang Holla, Hofheim am Taunus, and Manfred Schneider, Wuppertal, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 12, 1988, Ser. No. 231,290
Int. Cl.[5] C12P *7/00*
U.S. Cl. 435—280 7 Claims

1. A process for resolving the racemate of a compound of the formula I



I

in which R^1 and R^2 are C_1 to C_4 alkyl, and

R^3 is C_1 to C_{18} alkyl,

which comprises incubation of the said compound in aqueous or aqueous-organic medium with an esterase, lipase or esterase and lipase.

5,010,013

ROLLER BOTTLE FOR TISSUE CULTURE GROWTH

Jonathan M. Serkes, Oak View, and William L. Foschaar, Camarillo, all of Calif., assignors to In Vitro Scientific Products, Inc., Ventura, Calif.

Continuation-in-part of Ser. No. 130,740, Dec. 9, 1987, Pat. No. 4,824,787. This application Jun. 2, 1988, Ser. No. 201,429
The portion of the term of this patent subsequent to Apr. 25, 2006, has been disclaimed.
Int. Cl.[5] C12M *3/04*
U.S. Cl. 435—285 25 Claims

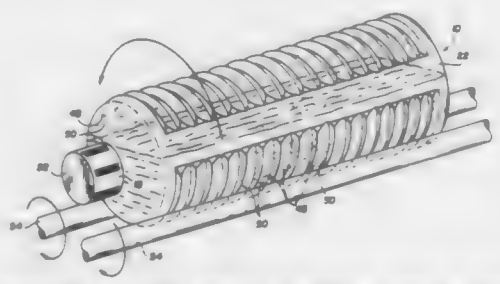
1. A roller bottle for tissue culture growth comprising in combination:

a substantially cylindrical wall section having a central axis and containing a pleated segment having an upper edge and a lower edge;

the pleated segment including at least one unpleated, axial panel for forming a drain channel for emptying the contents of the bottle, a plurality of unpleated, axial support ribs, each rib being narrower than said panel and a plurality of pleats disposed crosswise to the axis of the bottle, each of the pleats containing an outer rim disposed in a common cylindrical plane and forming a trough on the inside surface of the segment;

each of the panels being connected to said troughs, being disposed no nearer to said central axis than said common cylindrical plane and extending substantially from the upper edge to the lower edge of the cylindrical segment said panels and support ribs forming at least 5% of the circumference of cylindrical wall section;

said roller bottle having an inner surface area at least 110% the surface area of a roller bottle having an unpleated



cylindrical segment having the same external diameter said roller bottle having an interior surface that has been radiation treated to be wettable for cell attachment and growth;

a top section of the bottle having a neck connected to the cylindrical wall section; and

a bottom section of the bottle connected to the cylindrical wall section.

5,010,014

PERIFUSION APPARATUS FOR CULTURING LIVING CELLS AND PERIFUSION CULTURING PROCESS

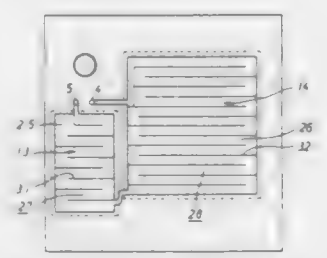
Rolf Gebhardt, Dornäckerweg 13,, 7400 Tübingen 7, Fed. Rep. of Germany

Continuation of Ser. No. 886, Jan. 6, 1987, abandoned. This application Nov. 21, 1989, Ser. No. 441,338

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1986, 3600487

Int. Cl.[5] **C12M** *1/14*

U.S. Cl. 435—310 **5 Claims**



1. A perifusion culture apparatus comprising:

a horizontal assembly for vertical culturing modules each of flat rectangular configuration having opposite broad faces and comprising between said faces:

an oxygenation chamber subdivided by a gas permeable wall parallel to said faces into an oxygen compartment and a liquid culture medium compartment provided internally with means defining an upwardly extending meandering gas path and a downwardly extending meandering liquid path in counterflow to said gas path, respectively,

a culture chamber adjacent and coplanar with said oxygenation chamber and subdivided by a gas permeable wall parallel to said faces into a gas compartment and a culturing compartment, respectively,

a culture support removably received in said culturing compartment lying parallel to said faces and removable from said module with a culture thereon,

an inlet passage for an oxygen containing gas communicating with an upper part of said gas compartment, said gas compartment communicating at a bottom thereof with said oxygen compartment of said oxygenation chamber,

an outlet passage connected to an upper portion of said oxygen compartment of said oxygenation chamber,

a pump on said module connected to said liquid culture medium compartment of said oxygenation chamber for delivering a liquid culture medium to be oxygenated to said liquid culture medium compartment at an upper part thereof,

means in said module for connecting a lower portion of said liquid culture medium compartment with said culturing compartment and for distributing an oxygenated culture medium all across a bottom of said culturing compartment, whereby said oxygenated medium passes upwardly therein and completely fills said culturing compartment,

means for removing said culture medium communicating with said culturing compartment at a top thereof, and

passages for a thermal fluid formed in said module;

a respective thermal control device connected with said passages for said thermal fluid coextensive with each of said modules and lying along and in surface contact with one of said faces, thereby controlling temperature in said chambers of the respective module;

means including plug connections for detachably interconnecting said pumps of the stacked modules and the passages thereof for jointly feeding said modules with oxygen containing gas and with said thermal fluid and for removing gas and said thermal fluid from the stack, whereby individual modules of said stack are removable therefrom and replaceable thereon; and

a motor mounted on said stack for driving said pumps through the plug connections interconnecting said pumps.

5,010,015

RECOMBINANT DNA-MOLECULES AND METHOD FOR PROTEIN PRODUCTION

Ilkka Palva, Helsinki, Finland, assignor to Genesit Oy and Oy Alko AB, both of Helsinki, Finland

Continuation of Ser. No. 939,244, Dec. 5, 1986, abandoned, which is a continuation of Ser. No. 336,405, Dec. 31, 1981, abandoned. This application Nov. 30, 1987, Ser. No. 129,357

Claims priority, application France, Dec. 31, 1980, 804081

Int. Cl.[5] **C12P** *21/00;* **C12N** *15/00, 1/20, 9/86*

U.S. Cl. 435—320 **6 Claims**

1. A recombinant DNA molecule comprising a plasmid which is capable of multiplying in Bacillus strain bacteria, the regulation and secretion signal sequences of the α-amylase gene of *B. amyloliquefaciens*, and the DNA sequence encoding the amino acids of a desired protein or polypeptide, said DNA sequence being downstream of said secretion signal sequence, with the proviso that said desired protein is not α-amylase of *B. amyloliquefaciens*.

5,010,016

METHOD AND TEST KIT FOR THE DETERMINATION OF FETAL PULMONARY MATURITY STATUS

Anthony J. Sbarra, 54 Cypress Rd., Milton, Mass. 02186

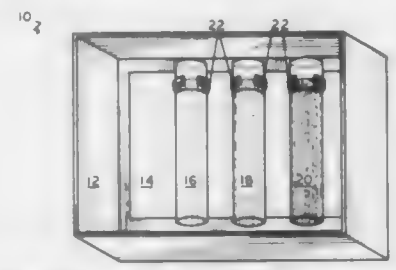
Filed Aug. 9, 1989, Ser. No. 391,411

Int. Cl.[5] **B01L** *3/14;* **G01N** *21/76, 33/48, 33/92*

U.S. Cl. 436—63 **12 Claims**

1. A method for the determination of fetal pulmonary maturity from an amniotic fluid test sample, which method comprises:

visually comparing a pigment-free amniotic fluid test sample from a patient to a positive control sample which mimics an optical density (OD) of about 0.80 at 650 nm which indicates fetal pulmonary maturity and a negative control sample which mimics an optical density (OD) of about 0.50 at 650 nm which indicates fetal pulmonary immatu-



rity and from said comparing providing an indication of the fetal pulmonary status of the fetus.

5,010,017

PROCESS FOR THE IMMUNOLOGICAL QUANTITATIVE DETERMINATION OF T_3 AND/OR T_4 THYROID HORMONES, USING THYROGLOBULIN

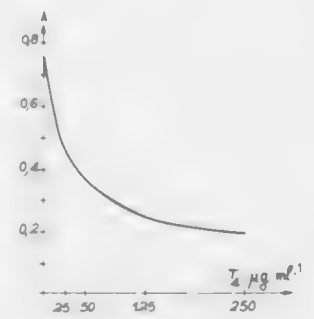
Bernard Ferrua, Nice, and Claude Moulin, Bagnols sur Ceze, both of France, assignors to Compagnie Oris Industrie S.A., France

Division of Ser. No. 48,060, May 11, 1989, Pat. No. 4,966,838. This application Aug. 17, 1990, Ser. No. 569,396

Claims priority, application France, May 12, 1986, 86 06763

Int. Cl.[5] **G01N** *33/53;* **C12Q** *1/00*

U.S. Cl. 436—500 **5 Claims**



1. A kit for the quantitative determination of T_4 thyroxine, which comprises:

a series of tubes each comprising a solid phase coated under the same conditions with thyroglobulin, wherein thyroglobulin is first fixed on a solid support,

a series of flasks containing standard samples of thyroxine, and

a flask containing a labelled anti-T_4 antibody.

5,010,018

METHOD FOR FORMING SCHOTTKY PHOTODIODES

Kenneth J. Polasko, Latham, and Ivan L. Wemple, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 369,405, Jun. 21, 1989, Pat. No. 4,982,246. This application Sep. 24, 1990, Ser. No. 586,920

Int. Cl.[5] **H01L** *31/376*

U.S. Cl. 437—3 **11 Claims**

1. A method for fabricating a Schottky photodiode, comprising the steps of:

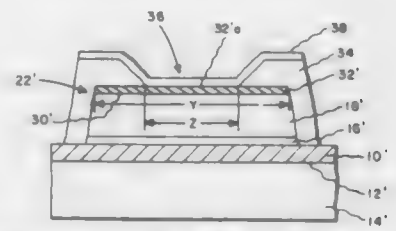
(a) depositing a first layer of conductive material on a principal substrate surface to form a base electrode;

(b) depositing a first layer of semiconductor material having a selected conductivity on the base electrode;

(c) depositing at leest a second layer of semiconductor material on the first semiconductor layer;

(d) depositing at least a second layer of conductive material on the second semiconductor layer;

(e) selectively patterning the second conductive layer and the first and second semiconductor layers with the same mask to form each of at least one Schottky photodiode island; and



(f) providing another electrode contacting the second conductive layer.

5,010,019

METHOD OF MAKING A SEMICONDUCTOR DEVICE OPERATING IN HIGH FREQUENCY RANGE

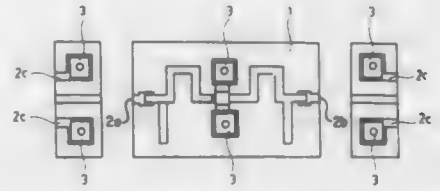
Takayuki Katoh, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 426,926, Oct. 26, 1989, which is a division of Ser. No. 81,709, Aug. 3, 1987, Pat. No. 4,926,234. This application Apr. 24, 1990, Ser. No. 513,642

Claims priority, application Japan, Aug. 6, 1986, 61-185715

Int. Cl.[5] **H01L** *21/60, 21/66*

U.S. Cl. 437—8 **8 Claims**



1. A method of manufacturing a semiconductor device operating in a high frequency range, said method comprising:

a step of preparing a semiconductor substrate (1) having a major surface and including integrated circuits;

a step of forming an input electrode pad (2*a*) on said major surface of said semiconductor substrate (1) to be connected with said integrated circuits;

a step of forming an output electrode pad (2*b*) on said major surface of said semiconductor substrate (1) to be connected with said integrated circuits;

a step of forming grounding electrode pads (2*c*) on said major surface of said semiconductor substrate (1) for grounding said semiconductor substrate (1) in a high frequency characteristic test; and

a step of removing parts of said semiconductor substrate (1) including parts of said input electrode pad (2*a*) and said output electrode pad (2*b*) and said grounding electrode pads (2*c*) after said high frequency characteristic test.

5,010,020

QUICK COLOR TEST TO DETECT LEAD RELEASE FROM GLAZE AND ENAMEL COATINGS

John H. Gould, Silver Spring, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 264,041, Oct. 28, 1988, Pat. No. 4,873,197. This application Oct. 6, 1989, Ser. No. 418,283

Int. Cl.[5] **G01N** *31/22*

U.S. Cl. 436—77 **22 Claims**

1. A kit for detecting the presence of excessive lead in a glaze or enamel coating, the kit comprising:

precut pieces of an absorbent paper;

an aqueous solution of a suitable acid;

distilled or deionized water; and

a chromogen which visibly changes colors when excessive lead is present in said coating.

7. A method for determining the presence of excessive amounts of lead in a surface, which comprises:

extracting lead from said surface by contacting said surface with an absorbent material containing a solution of a material selected from the group consisting of formic acid, citric acid, and mixtures thereof;

spotting said absorbent material with a chromogen; and

detecting a change in colors of said absorbent material.

5,010,021

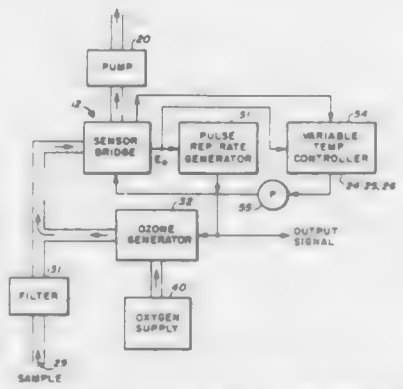
METHOD FOR RESTORING THE SENSING CAPACITY OF AN ELECTRICAL SENSOR

William E. Bell, and John J. McNerney, both of Jerome, Ariz., assignors to Arizona Instrument Corp., Tempe, Ariz.

Division of Ser. No. 735,484, May 20, 1985, Pat. No. 4,724,008, which is a continuation-in-part of Ser. No. 529,578, Sep. 6, 1983, abandoned. This application Jan. 21, 1988, Ser. No. 146,419

Int. Cl.[5] G01N *27/08*

U.S. Cl. 436—120 **4 Claims**



1. A method of detecting the presence of a reduced sulfur compound component in a fluid mixture which comprises selectively adsorbing the reduced sulfur compound from the mixture onto a thin layer of a metal having a chemical affinity for the sulfur component;

detecting the resistance of the layer consequent to the adsorption for detecting the presence of the selected sulfur component; and

oxidizing and evolving the sulfur component from the metal having the chemical affinity for the sulfur component in the presence of ozone to maintain the sensitivity of the metal to the adsorbed component.

5,010,022

METHOD FOR DETERMINING SULFUR LOADING IN ORGANIC POLYSULFIDES

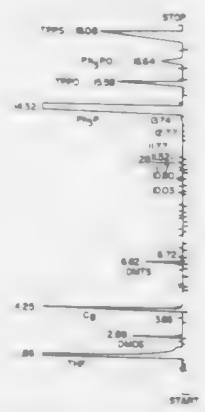
Michael J. Lindstrom, Downingtown, Pa., assignor to Atochem North America, Inc., Philadelphia, Pa.

Filed Nov. 2, 1989, Ser. No. 430,757

Int. Cl.[5] C01N *30/00*

U.S. Cl. 436—123 **16 Claims**

14. A method for determining the amount of sulfur contained in a dimethylpolysulfide composition having more than 5 sulfur atoms, comprising combining the dimethylpolysulfide composition with a treating solution comprising triphenylphosphine, tetrahydrofuran, octane and triphenylphosphate; allowing the combination to stand for a period of time sufficient to allow the dimethypolysulfide and the triphenylphosphine to react; and analyzing the combination by gas chromatography.



5,010,023

METHOD FOR FABRICATING A RECTIFYING SEMICONDUCTOR JUNCTION HAVING IMPROVED BREAKDOWN VOLTAGE CHARACTERISTICS

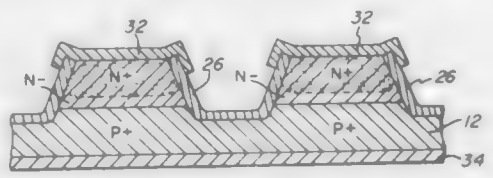
Willem G. Einthoven, Belle Mead, N.J., and Muni M. Mitchell, Huntington, N.Y., assignors to General Instrument Corporation, New York, N.Y.

Division of Ser. No. 142,737, Nov. 11, 1988, Pat. No. 4,891,685, which is a division of Ser. No. 784,451, Oct. 4, 1985, Pat. No. 4,740,477. This application Sep. 27, 1989, Ser. No. 404,604

The portion of the term of this patent subsequent to Apr. 26, 2005, has been disclaimed.

Int. Cl.[5] H01L *21/66, 21/22*

U.S. Cl. 437—8 **12 Claims**



1. A method for fabricating a rectifying semiconductor junction having improved breakdown voltage characteristics comprising the steps of:

forming a mesa shape in at least one layer of a rectifying semiconductor junction with the top of the mesa at the top surface of said layer and the side wall of the mesa sloping outwardly from the top of the mesa toward said junction,

forming a high concentration semiconductor region in the top surface of said layer, said region having the same conductivity type as said layer and covering an area sufficient to extend entirely across the top of said mesa to intersect the mesa side wall; and

driving said high concentration region from the top of said mesa deeper into said layer but not beyond the base of said mesa, relying on the outward slope of the mesa geometry to cause the high concentration region to take on a generally concave shape as it penetrates into the mesa, with the distance between the high concentration region and the junction being greater at the intersection of said region with the sloping walls of the mesa than in the central portion of said mesa.

5,010,024

PASSIVATION FOR INTEGRATED CIRCUIT STRUCTURES

Bert L. Allen, Los Altos; Peter S. Gwozdz, Cupertino, both of Calif., and Thomas R. Bowers, Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Division of Ser. No. 21,828, Mar. 4, 1987, abandoned. This application May 15, 1989, Ser. No. 353,169

Int. Cl.[5] H01L *21/425, 21/441*

U.S. Cl. 437—24 **30 Claims**

1. A method for producing an integrated circuit structure encapsulated in a layer of silicon nitride to provide resistance to penetration by moisture and ion contaminants and further characterized by a substantial absence of observable voids in an underlying metal layer which comprises a portion of said integrated circuit structure, said method comprising the step of: stress relieving the underlying metal layer from stresses induced by the compressive stress of said silicon nitride encapsulating layer by implanting the metal surface of said metal layer, before encapsulating said structure with said silicon nitride layer, with ions to change the grain structure adjacent the surface of said metal layer.

5,010,025

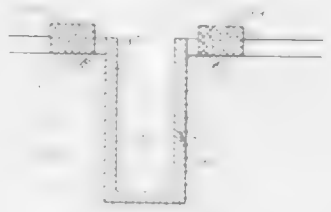
METHOD OF MAKING TRENCH JFET INTEGRATED CIRCUIT ELEMENTS

Allen L. Solomon, Fullerton, Calif., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Apr. 3, 1989, Ser. No. 331,952

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—29 **14 Claims**



1. A method of forming a trench gate JFET comprising:

forming a first trench in a semiconductor substrate of a first conductivity type;

forming a region of a semiconductor material of a second conductivity type within the substrate adjacent to the first trench;

forming a layer of semiconductor material of a first conductivity type within the first trench upon the surface of said semiconductor material of the second conductivity type, said layer of semiconductor material of the first conductivity type interfacing with said region of semiconductor material of the second conductivity type to form a p-n junction; and

forming source and drain regions within said substrate adjacent to said first trench, said gate and source regions being in contact with said region of semiconductor material of a second conductivity type.

5,010,026

PROCESS FOR MAKING BIPOLAR TRANSISTOR

Takayuki Gomi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 10, 1989, Ser. No. 391,880

Claims priority, application Japan, Aug. 12, 1988, 63-201360

Int. Cl.[5] H01L *21/331*

U.S. Cl. 437—31 **3 Claims**

1. A process for fabricating a bipolar transistor comprising;

providing a semiconductor substrate of a first conductivity type,

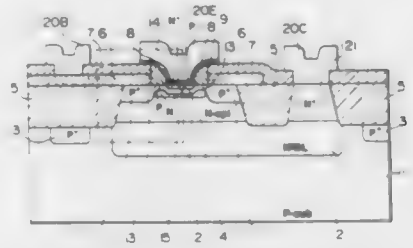
forming an epitaxial layer on the surface said semiconductor substrate,

selectively oxidizing said epitaxial layer to form a field oxide layer surrounding a device forming region two-dimensionally,

forming a device forming region surrounded two-dimensionally by said field oxide film,

forming a base contact electrode layer confronted by said device forming region, said base contact electrode layer containing impurities and covered by an insulating layer,

opening said base contact electrode layer covered by said



insulating film to form an opening in said device forming region,

introducing impurities forming a linking base region and a diffusion suppressing region into said device forming region via said opening to a predetermined depth,

diffusing impurities from said base contact electrode layer by heat treatment to form a graft base region,

forming sidewall spacers on the side walls of said opening in said base contact electrode layer,

forming an intrinsic base region in contact with said linking base region and to a deeper diffusion depth than the diffusion depth of said linking base region, using said sidewall spacers as the mask, and

forming an emitter region in said intrinsic base region.

5,010,027

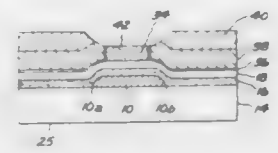
METHOD FOR FABRICATING A SELF-ALIGNED THIN-FILM TRANSISTOR UTILIZING PLANARIZATION AND BACK-SIDE PHOTORESIST EXPOSURE

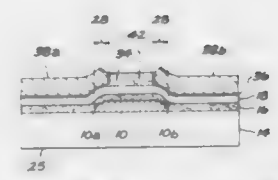
George E. Possin, and Wei Ching-Yeu, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 21, 1990, Ser. No. 499,733

Int. Cl.[5] H01L *29/78, 21/00*

U.S. Cl. 437—41 **23 Claims**





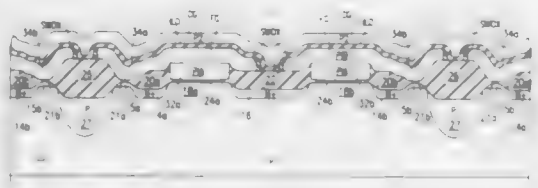
1. A method for fabricating a thin-film transistor, comprising the steps of:

(a) forming an opaque gate electrode on a principal surface of a transparent substrate;
(b) depositing a first layer of insulation material on the principal substrate surface over the gate electrode;
(c) depositing a layer of semiconductor material on the first insulation layer;
(d) depositing a second layer of insulation material on the semiconductor layer;
(e) selectively etching the second insulation layer to leave a remaining second insulation segment and to expose a portion of the semiconductor layer not covered by the remaining second insulation segment, the remaining second insulation segment being aligned with the gate electrode and being narrower than the gate electrode by a selected overlap distance on each side thereof;
(f) depositing a layer of doped semiconductor material on the exposed semiconductor portion and over the remaining second insulation segment;
(g) depositing a layer of conductive material on the doped semiconductor material; and
(h) selectively etching a portion of the conductive layer and a portion of the doped semiconductor layer to expose at least a top surface of the remaining second insulation segment and to form self-registered source and drain electrodes from the etched conductive layer which each overlap the gate electrode the selected overlap distance, said source and drain electrodes each terminating at said second insulation segment without overlap thereof.

5,010,028
METHOD OF MAKING HOT ELECTRON PROGRAMMABLE, TUNNEL ELECTRON ERASABLE CONTACTLESS EEPROM

Manzur Gill, Rosharon, and Sung-Wei Lin, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 29, 1989, Ser. No. 458,936
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—43 **10 Claims**

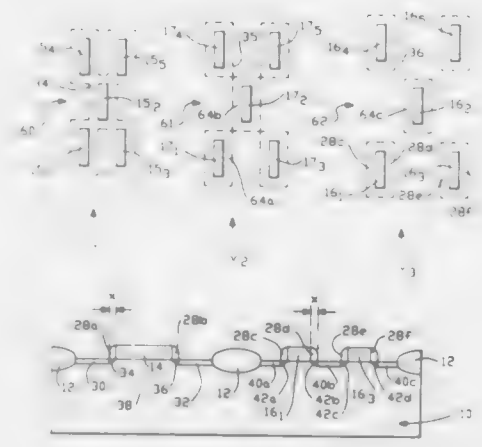


1. A method of fabricating an electrically erasable, electrically programmable read-only memory cell at the face of a semiconductor substrate of a first conductivity type, comprising the steps:
forming a first conductive layer and an underlying channel insulator layer over the face of the substrate;
selectively etching said first conductive layer and said channel insulator layer to define a plurality of parallel channel section columns;
using the channel section columns as an implant mask, selectively implanting a dopant of a second conductivity type opposite the first type to create a source and a drain bitline along respective sides of each channel section column, with respective source/drain bitline junctions substantially aligned with corresponding edges of a channel section column said source bitlines including tunnel window areas opposite said aligned source junction;
forming a thick insulator layer over said source and drain bitlines;
forming a thin tunnel window insulator layer over each tunnel window area;
forming a second conductive layer over the substrate face;
selectively etching said second conductive layer to define a plurality of parallel floating gate columns extending over said channel section column, said source bitline thick insulator layer and said tunnel window insulator layer, thereby defining floating gate conductors in the wordline row direction;
forming a thin interlevel insulator layer and a third conductive layer over the face of the substrate; and
stack etching said second and third conductive layers, and said interlevel insulator layer, to define parallel wordline rows, with each wordline row defining a row of memory cells;
such that each memory cell in a wordline row includes a control gate conductor formed by a corresponding portion of said third conductive layer, source and drain regions formed by corresponding portions of said source and drain bitlines underlying said control gate conductor, a tunnel window subregion formed by a corresponding portion of said tunnel window area underlying said control gate conductor, a floating gate conductor with a channel section formed by a corresponding portion of said channel section column and a tunnel window section formed by a corresponding portion of said second conductive layer overlying said tunnel window subregion.

5,010,029
METHOD OF DETECTING THE WIDTH OF SPACERS AND LIGHTLY DOPED DRAIN REGIONS

Yow-Juang (Bill) Liu, San Jose, and Zahra Hadjizadeh-Amini, Cupertino, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 22, 1989, Ser. No. 313,984
Int. Cl.[5] H01L *21/66*
U.S. Cl. 437—44 **11 Claims**

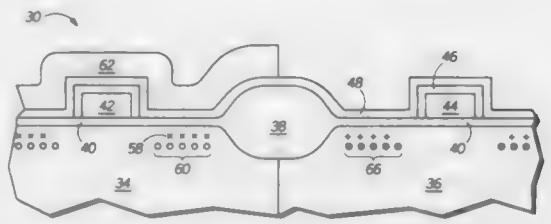


1. A process of fabricating, in a substrate, a field effect transistor having lightly-doped drain regions of a selected width, comprises the steps of:
(a) forming reference structures, separated by a known distance, overlying the substrate and forming a gate structure overlying the substrate;
(b) forming lightly-doped drain regions self-aligned with the ends of the gate structure in the substrate;
(c) forming a layer of spacer material overlying the substrate, the reference structures and the gate structure;
(d) etching the layer of spacer material to form spacers extending laterally from the ends of the gate structure and from the reference structures;
(e) determining when the spacers have the selected width by detecting when the spacer extending from each reference structure has a width approximately equal to approximately one-half of the distance between the reference structures; and
(f) forming source and drain regions self-aligned with the spacers in selected portions of the lightly-doped drain regions.

5,010,030
SEMICONDUCTOR PROCESS USING SELECTIVE DEPOSITION

James R. Pfiester, and James D. Hayden, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 30, 1989, Ser. No. 428,721
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—192 **3 Claims**

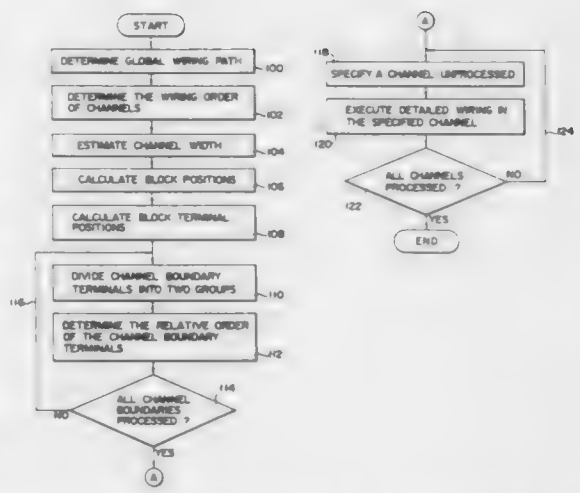


1. A process for fabricating semiconductor devices comprising the steps of:
providing a semiconductor substrate having first and second surface areas of first and second conductivity type and having an insulator layer formed thereover;
forming first and second gate electrodes overlaying said first and second surface areas, respectively, and separated therefrom by said insulator layer;
forming a second insulator layer overlaying said first and second gate electrodes;
depositing a silicon layer overlaying said second insulator layer;
forming sidewall spacers at the edges of said first and second gate electrodes and overlaying said silicon surface;
forming a third insulator layer overlaying exposed portions of said silicon layer;
forming a mask overlaying said second surface region and exposing a portion of said third insulator overlaying said first surface region;
implanting ions of said second conductivity type into said first surface region using said first gate electrode, sidewall spacers, and mask as an implantation mask;
removing said sidewall spacers and said third insulator layer overlaying said first region;
implanting additional ions of said second conductivity type into said first surface region using said first gate electrode and said mask as an implantation mask;
removing said mask;
depositing a second masking material by selective deposition onto portions of said silicon layer not overlaid by said third insulator layer;
implanting ions of said first conductivity type into said second surface region using said sidewall spacers, said second gate electrode and said second masking material as implantation masks;
removing said third insulator and said sidewall spacers;
implanting additional ions of said second conductivity type into said second surface region using said second gate electrode and said second masking material as an etch mask; removing said masking material; and
removing said silicon layer.

5,010,031
AUTOMATIC WIRING METHOD FOR SEMICONDUCTOR INTEGRATED CIRCUIT DEVICES

Fumihiro Minami, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 29, 1989, Ser. No. 372,907
Claims priority, application Japan, Jun. 30, 1988, 63-160782
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—51 **9 Claims**



1. An automatic wiring method for a semiconductor integrated circuit device wherein function blocks selected to provide a desired logical function are arranged on a substrate, and channels are defined as a wiring region around the function blocks, said method comprising the steps of:
(a) providing tentative wirings between said function blocks in accordance with a connection requirement in said channels;
(b) detecting crossing points of corresponding wirings in each of boundary lines of said channels, the detected crossing points being defined as channel boundary terminals;
(c) specifying from said channels a certain pair of two neighboring channels which are coupled with each other so as to form a T-shaped crossing region, said two neighboring channels consisting of a first channel which is positioned between at least two corresponding function blocks and a second channel which is in contact at a boundary line with said first channel substantially at right angle thereby to form said T-shaped crossing region, said second channel extending in parallel with said channel boundary line;
(d) selecting channel boundary terminals belonging to first and second terminal groups from said channel boundary terminals defined on said boundary line, said first terminal group including terminals connected with wirings which tend to run along a first direction in said second channel, said second terminal group including terminals connected with wirings which tend to run along a second direction opposite to said first direction in said second channel;

(e) sequentially selecting channel boundary terminals from said first and second groups, respectively, to obtain a pair of channel boundary terminals; and

(f) assigning tracks to wirings associated with pairs of selected channel boundary terminals in said second channel in such a manner that each of said tracks is basically occupied with two wirings running thereon in the opposite directions to each other.

5,010,032

PROCESS FOR MAKING CMOS DEVICE WITH BOTH P+ AND N+ GATES INCLUDING REFRACTORY METAL SILICIDE AND NITRIDE INTERCONNECTS

Thomas E. Tang, Dallas; Che-Chia Wei, Plano; Roger A. Haken, Richardson, and Richard A. Chapman, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 214,912, Jun. 29, 1988, Pat. No. 4,890,141, which is a continuation of Ser. No. 83,933, Aug. 5, 1987, abandoned, which is a continuation of Ser. No. 837,431, Mar. 7, 1986, abandoned, which is a continuation of Ser. No. 729,318, May 1, 1985, Pat. No. 4,821,085. This application Oct. 5, 1989, Ser. No. 417,386

Int. Cl.[5] H01L *21/336*

U.S. Cl. 437—57 **22 Claims**

source and drain regions in said second moat region of said first conductivity type;

depositing a refractory metal over said moat region and said device isolation structure;

heating said body and said refractory metal in a nitrogen-bearing atmosphere, so that first regions of said refractory metal react with silicon of said gate electrodes to form refractory metal silicide thereat, and so that a second region of said refractory metal reacts to form a diffusion resistant refractory metal nitride; and

removing selected portions of the refractory metal nitride so that a remaining portion thereof provides an interconnection overlapping said device isolation structure, and in contact with said silicide at said first and second gate electrodes.

5,010,033

PROCESS FOR PRODUCING COMPOUND SEMICONDUCTOR USING AN AMORPHOUS NUCLEATION SITE

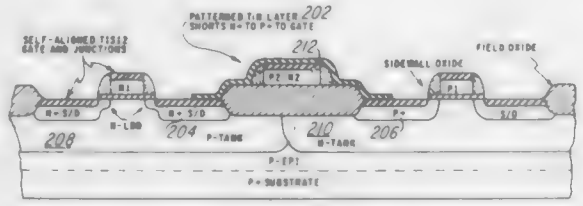
Hiroyuki Tokunaga, Kawasaki; Kenji Yamagata, and Takao Yonehara, both of Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

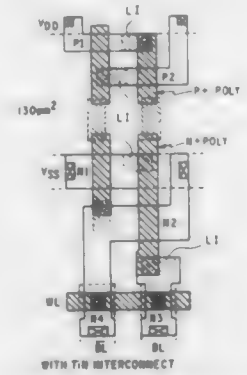
Continuation of Ser. No. 174,511, Mar. 28, 1988, abandoned. This application Apr. 30, 1990, Ser. No. 515,351

Claims priority, application Japan, Mar. 27, 1987, 62-73522; Mar. 27, 1987, 62-73523

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—83 **15 Claims**



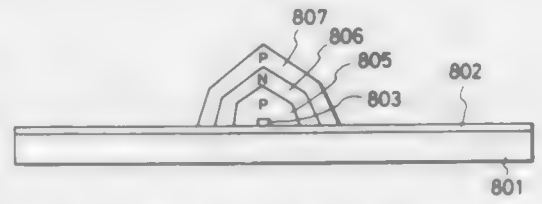


11. A method for fabricating an integrated circuit at a silicon surface of a semiconductor body, comprising the steps of:

forming a device isolation structure at said surface to define first and second moat regions at said surface adjacent to said device isolation structure, said first moat region of a first conductivity type and said second moat region of a second conductivity type;

forming a first gate electrode comprising silicon doped to said second conductivity type overlying said first moat region, and a second gate electrode comprising silicon doped to said first conductivity type over said second moat region;

forming source and drain regions at the surface of said first and second moat regions adjacent said first and second gate electrodes, said source and drain regions in said first moat region of said second conductivity type, and said



1. A process for producing a compound semiconductor, which comprises applying a crystal forming treatment on a substrate having a free surface comprising a non-nucleation surface (S_{NDS}) with a smaller nucleation density and an amorphous nucleation surface (S_{NDL}) arranged adjacent thereto having a sufficiently small area so as to form a single nucleus from which a single crystal is grown and a larger nucleation density (ND_L) than the nucleation density (ND_S) of said non-nucleation surface (S_{NDS}) so as to form only a single nucleus from which a single crystal is grown, by exposing the substrate to either of the gas phases:

(a) gas phase (a) containing a starting material (II) for feeding the group II atoms of the periodic table and a starting material (VI) for feeding the group VI atoms of the periodic table; and

(b) gas phase (b) containing a starting material (III) for feeding the group III atoms of the periodic table and a starting material (V) for feeding the group V atoms of the periodic table, thereby forming a single nucleus on said nucleation surface (S_{NDL}) and permitting a monocrystal of the compound semiconductor to grow only from said single nucleus, characterized in that a semiconductor junction is formed in said monocrystal by feeding a starting material (Dn) for feeding a dopant for controlling to a first electroconduction type and a starting material (Dp) for feeding a dopant for controlling to a second electroconduction type opposite to said first electroconduction type with change-over to one another into said gas phase, during said crystal forming treatment.

5,010,034

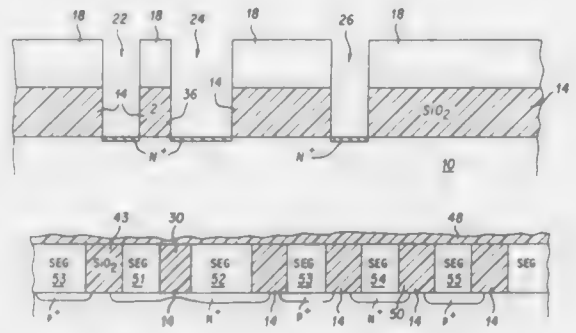
CMOS AND BIPOLAR FABRICATION PROCESS USING SELECTIVE EPITAXIAL GROWTH SCALABLE TO BELOW 0.5 MICRON

Juliana Manoliu, Palo Alto, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 7, 1989, Ser. No. 320,011

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—89 **30 Claims**



1. A method of constructing a semiconductor structure comprising the steps of:

growing a layer of silicon dioxide on a silicon substrate;

etching a first opening in the silicon dioxide layer, the first opening exposing a first region of the substrate;

etching a second opening in the silicon dioxide layer in close proximity to the first opening and separated therefrom by a first wall, the second opening exposing a second region of the substrate;

implanting a first conductivity type impurity into the first and second regions of the substrate;

growing an epitaxial layer over the first and second regions of the substrate for forming corresponding first and second epitaxial regions; and

heating the substrate for causing the first conductivity type impurity in the first and second regions of the substrate to join beneath the first wall.

5,010,035

WAFER BASE FOR SILICON CARBIDE SEMICONDUCTOR DEVICE

Rointan F. Bunshah, Playa Del Rey; James D. Parsons, Newbury Park, and Oscar M. Stafsudd, Los Angeles, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Division of Ser. No. 737,367, May 23, 1985, Pat. No. 4,767,666. This application May 13, 1988, Ser. No. 197,582

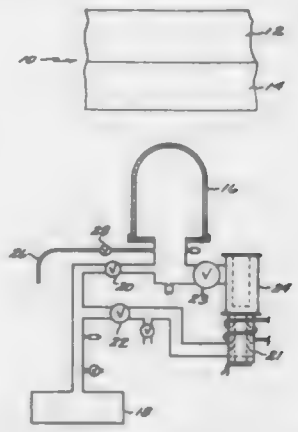
Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—100 **8 Claims**

1. A process for preparing a semiconductor device wafer base, comprising the steps of:

furnishing a single crystal titanium carbide substrate; and

depositing an overlay layer of beta silicon carbide onto said substrate, said overlay layer being a single crystal, epitaxially related to said substrate, unpolytyped, uncracked,



without twins, and of integrated circuit quality surface morphology.

5,010,036

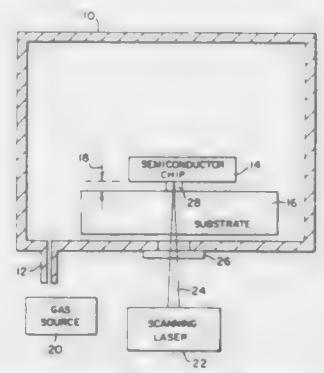
LOW TEMPERATURE SEMICONDUCTOR BONDING PROCESS WITH CHEMICAL VAPOR REACTION

Joseph A. Calviello, Kings Park, and Grayce A. Hickman, Hicksville, both of N.Y., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 20, 1990, Ser. No. 511,588

Int. Cl.[5] H01L *21/268, 21/58*

U.S. Cl. 437—173 **10 Claims**



1. A method for bonding a semiconductor chip to a substrate, comprising:

providing a semiconductor chip;

providing a substrate;

separating said chip and said substrate by a gap;

introducing a metal-bearing gas in said gap;

providing a thermal energy source having a focused energy beam;

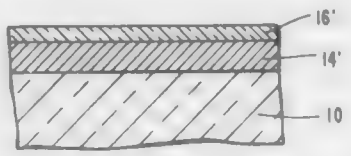
directing said beam into said gap to thermally decompose said gas by chemical vapor reaction to deposit and grow metal to provide a metallic molecular bond interface filling said gap and bonding said chip to said substrate.

5,010,037

PINHOLE-FREE GROWTH OF EPITAXIAL $COSI_2$ FILM ON SI(111)

True-Lon Lin, Cerritos; Robert W. Fathauer, Sunland, and Paula J. Grunthaner, Glendale, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Oct. 14, 1988, Ser. No. 257,758
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—200 14 Claims



1. A process for epitaxially growing substantially pinhole-free crystalline films of $CoSi_2$ on silicon substrates comprising:

(a) codepositing at ambient temperature silicon and cobalt atoms in substantially stoichiometric ratio on a major surface of said substrate to form an amorphous film of Co/Si in a 1:2 mixture;

(b) depositing at ambient temperature a layer of amorphous silicon on said amorphous film to form a composite structure; and

(c) annealing said composite structure at a temperature ranging from about 500° to 750° C. to form said crystalline film of $CoSi_2$ capped with crystalline silicon.

5,010,038

METHOD OF COOLING AND POWERING AN INTEGRATED CIRCUIT CHIP USING A COMPLIANT INTERPOSING PAD

Leslie R. Fox, Boxborough; Paul C. Wade, Shirley, and William L. Schmidt, Acton, all of Mass., assignors to Digital Equipment Corp., Maynard, Mass.

Division of Ser. No. 373,960, Jun. 29, 1989, Pat. No. 4,954,878.
This application Jul. 9, 1990, Ser. No. 549,611
Int. Cl.[5] H01L *21/60, 21/54, 21/58*
U.S. Cl. 437—215 10 Claims

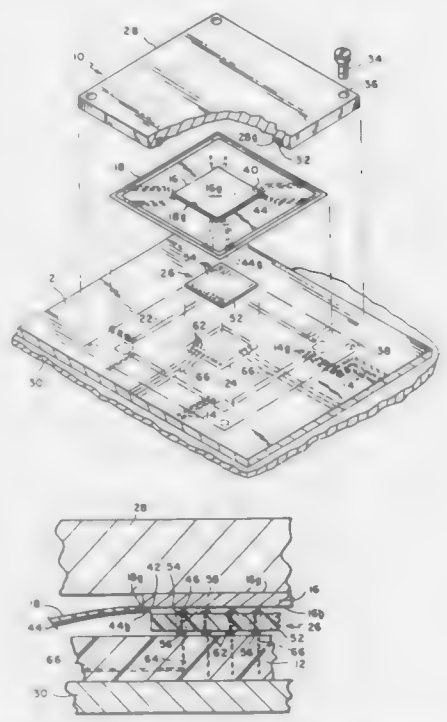
1. The method of connecting and cooling an IC chip comprising the steps of:

forming a compliant pad with an array of electrical conductors embedded in said pad with the opposite ends of the conductors being exposed at opposite faces of the pad;

sandwiching the compliant pad between a chip and a substrate so that the exposed ends of the pad conductors engage exposed contacts on opposing faces of the chip and substrate, respectivelv;

engaging the opposite face of the chip with a thermal transfer member; and

bringing the thermal transfer member and substrate together so as to compress the pad thereby simultaneously establishing relatively low inductance electrical connections between the contacts on the chip and the contacts on the



substrate and good thermal contact between the chip and the thermal transfer member.

5,010,039

METHOD OF FORMING CONTACTS TO A SEMICONDUCTOR DEVICE

San-Mei Ku, 3 Carnelli Ct., Poughkeepsie, N.Y. 12603, and Kathleen A. Perry, 22120 Viscanio Rd., Woodland Hills, Calif. 91364

Filed May 15, 1989, Ser. No. 351,993
Int. Cl.[5] H01L *21/47*
U.S. Cl. 437—228 8 Claims

1. A method of forming electrical connections to a base contact, an emitter contact, and a subcollector reachthrough region of a bipolar transistor, comprising the steps of:

forming a layer of etch stop material having a first etch characteristic over said base contact, emitter contact, and subcollector reachthrough region;

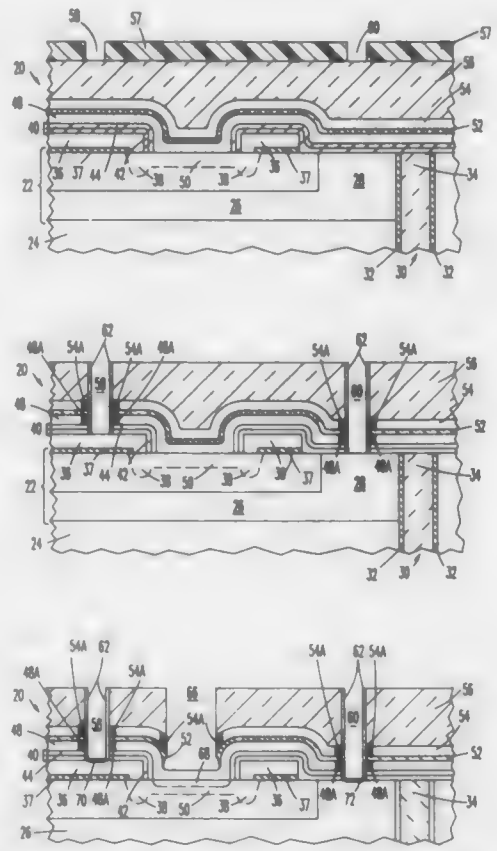
forming a layer of dielectric material having a second etch characteristic conformally over said layer of etch stop material;

simultaneously etching base contact and subcollector reachthrough vias through said layer of dielectric material using an etchant selective to said dielectric material so as to stop on said layer of etch stop material over said base contact and said subcollector reachthrough region;

extending said base contact and subcollector reachthrough vias through said layer of etch sto material so as to expose the surfaces of said base contact and said subcollector reachthrough region;

forming a mask over said base contact and subcollector reachthrough vias;

etching an emitter contact via through said layer of dielectric material using an etchant selective to said dielectric material so as to stop on said layer of etch stop material over said emitter contact;



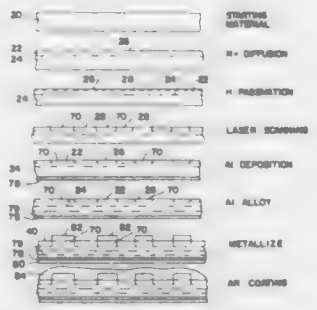
extending said emitter contact via through said layer of etch stop material to the surface of said emitter contact; and removing said mask.

5,010,040

METHOD OF FABRICATING SOLAR CELLS

Zinovy Y. Vayman, Brookline, Mass., assignor to Mobil Solar Energy Corporation, Billerica, Mass.

Filed Dec. 30, 1988, Ser. No. 292,492
Int. Cl.[5] H01L *21/02*
U.S. Cl. 437—230 14 Claims



1. A method of forming metallization patterns on a silicon substrate that is to be used to form a photovoltaic cell comprising in sequence the steps of:

(a) exposing a first surface of said substrate to a hydrogen ion beam of an intensity and for a duration sufficient to hydrogen passivate the substrate and form a damaged surface layer to which metals deposited by immersion plating will only poorly adhere; and

(b) scanning selected portions of said first surface with a laser beam of an intensity and for a duration sufficient to anneal selected portions of said damaged layer so as to create a metallization pattern consisting of non-passivated areas of said first surface to which selected metals will securely adhere, said metallization pattern being created in an environment substantially free of chemical etching substances.

5,010,041

COLORED LOW-EXPANSION TRANSPARENT GLASS CERAMIC

Akihiro Koyama; Keiji Kitamura, and Nobuyuki Yamamoto, all of Osaka, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Aug. 8, 1989, Ser. No. 390,771
Claims priority, application Japan, Aug. 17, 1988, 63-204164
Int. Cl.[5] C03C *10/12, 10/14, 3/11*
U.S. Cl. 501—4 10 Claims

1. A colored low-expansion transparent glass ceramic comprising 100 parts by weight of a base glass (a) formed of following weight% of components, following part by weight of coloring components (b) and 0.0002 to 0.7 part by weight of following auxiliary coloring components (c) mixed thereto, said glass ceramic having a β-quartz solid solution as the principal crystalline phase, coefficient of linear expansion of -10×10^{-7} to 10×10^{-7} (K^{-1}) in a temperature range of 100° to 800° C. and excitation purity between 1.3 and 11.3%:

(a) Base glass

	([part by] weight %)
Li_2O	3.5 to 5.5
Na_2O	0 to 4.0
K_2O	0 to 4.0
$Na_2O + K_2O$	0.5 to 4.0
MgO	0.1 to 3.0
Al_2O_3	20.5 to 23.0
SiO_2	60.0 to 68.5
TiO_2	1.0 to 7.0
ZrO_2	0 to 3.5
$TiO_2 + ZrO_2$	3.5 to 7.0
P_2O_5	0 to 4.0

(b) Coloring components

	(part by weight)
CoO	0 to 0.02
Cr_2O_3	0 to 0.05
MoO_3	0 to 0.04
NiO	0 to 0.075

(c) Auxiliary coloring components
at least one member selected from the group consisting of

	(part by weight)
Cl	0 to 0.6
Br	0 to 0.4, and
I	0 to 0.03

5,010,042

SINTERED GLASS BODY WITH OPAQUELY MOTTLED PATTERN AND METHOD OF PRODUCING SAME

Takayoshi Kandachi, Osaka, Japan, assignor to Central Glass Company, Limited, Ube, Japan

Filed Dec. 23, 1988, Ser. No. 288,965
Claims priority, application Japan, Dec. 26, 1987, 62-331335
Int. Cl.[5] C03C *1/06*
U.S. Cl. 501—32 7 Claims

1. A method of producing a substantially foamless sintered glass body with an opaquely mottled pattern, the method comprising the steps of:

(a) preparing a mixture of 100 parts by weight of a powder of a glass, selected from the group consisting essentially of alkali lime glass, boro-silicate glass and aluminosilicate glass; 0.2 to 10 parts by weight of a powder of at least one heat-resistant inorganic oxide, which is colorless or assumes a whitish color and has a refractive index different from the refractive index of said glass by at least 15%, selected from the group consisting of aluminum oxide, zirconium oxide, titanium oxide, stannic oxide, zinc oxide, zircon and spinel; and an inorganic pigment, selected from the group consisting of metals, metal oxides and other kinds of metal salts and which differs in color from the inorganic oxide;

(b) compressively granulating said mixture into granules not smaller than 1 mm in granule size;

(c) mixing said granules;

(d) firing the mixed granules at a temperature in the range from the softening point of said glass to the fluid point of said glass and applying a pressure to the fired material during or immediately after firing.

5,010,043

PRODUCTION OF DIAMOND COMPACTS CONSISTING ESSENTIALLY OF DIAMOND CRYSTALS BONDED BY SILICON CARBIDE

Alfred E. Ringwood, Redhill, Australia, assignor to The Australian National University, Australia

PCT No. PCT/AU88/00058, § 371 Date Nov. 15, 1988, § 102(e) Date Nov. 15, 1988, PCT Pub. No. WO88/07409, PCT Pub. Date Oct. 6, 1988
PCT Filed Mar. 2, 1988, Ser. No. 283,362
Claims priority, application Australia, Mar. 23, 1987, PI1024
Int. Cl.[5] C04B *35/56, 35/58;* B24D *3/00*
U.S. Cl. 501—90 19 Claims

1. A process for producing a diamond compact consisting essentially of diamond crystals bonded by silicon carbide, said process comprising the steps of:

(1) intimately mixing diamond crystals with silicon in the proportions of about 97 to 65 percent weight of diamond to about 3 to 35 percent by weight of silicon to produce an intimate mixture of the diamond crystals and silicon;

(2) confining said intimate mixture of diamond crystals and silicon in a pressure vessel together with one or more bodies of silicon in contact with or immediately adjacent to said intimate mixture within the pressure vessel; and

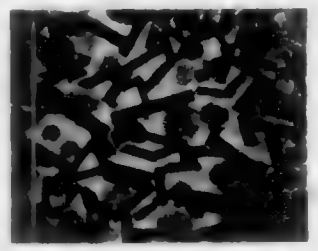
(3) subjecting said intimate mixture of diamond crystals and silicon and said one or more bodies of silicon within the pressure vessel to a temperature above the melting point of silicon in the range of about 1,100° to 1,800° C. and to pressure in the range of about 10 to 40 kilobars so as to cause melting of the silicon in said intimate mixture and melting of said one or more bodies of silicon and infiltration of silicon from said one or more bodies into the interstitial spaces between the diamond crystals and to cause most of the silicon between the diamond crystals to react with diamond to produce silicon carbide, said silicon carbide forming a bond between diamond crystals, the overall proportions of diamond and silicon being such as to produce a compact containing between about 50 and 85 volume percent of diamond with a density of at least 3.35 g/cm^3 and a compressive strength of at least 10 kilobars.

5,010,044

PROCESS FOR PREPARING SELF-SUPPORTING BODIES AND PRODUCTS PRODUCED THEREBY

Marc S. Newkirk, Newark, Del., assignor to Lanxide Technology Company, LP., Newark, Del.

Continuation of Ser. No. 296,773, Jan. 3, 1989, Pat. No. 4,885,131. This application Dec. 5, 1989, Ser. No. 446,321
The portion of the term of this patent subsequent to Dec. 5, 2006, has been disclaimed.
Int. Cl.[5] C04G *35/02*
U.S. Cl. 501—93 7 Claims



1. A method for producing a self-supporting body, comprising:

selecting a parent metal;

heating said parent metal in a substantially inert atmosphere to a temperature above its melting point to form a body of molten parent metal;

contacting said body of molten parent metal with a preform comprising a boron donor material and a carbon donor material;

maintaining said temperature for a time sufficient to permit infiltration of molten parent metal into said preform and to permit reaction of said molten parent metal with at least a portion of said preform; and

continuing said infiltration and reaction for a time sufficient to produce said self-supporting body.

5,010,045

LOW-LOSS BINDER FOR HOT PRESSING BORON NITRIDE

Leon Maya, Oak Ridge, Tenn., assignor to The United States of America as Represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 2, 1989, Ser. No. 360,561
Int. Cl.[5] C04B *35/58*
U.S. Cl. 501—96 15 Claims

3. A polymeric borazine derivative useful as a binder in the formation of boron nitride ceramics, consisting essentially of the product of a reaction mixture of bistrimethylsilylacetylene and a chloroborazine in the presence of a Lewis acid and sufficient heat to cause a reaction.

15. A process for making boron nitride ceramic comprising: mixing the polymeric borazine derivative of claim 3 and boron nitride powder;

pressing said mixture and heating to drive off the volatiles, resulting in a pure boron nitride ceramic composition.

5,010,046

CHROMIA-MAGNESIA REFRACTORY BODY

Anthony K. Butkus, Worcester, and Scott D. Martin, Paxton, both of Mass., assignors to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. No. 327,061, Mar. 22, 1989, abandoned. This application Mar. 5, 1990, Ser. No. 488,162
Int. Cl.[5] C04B *35/04, 35/10, 35/12*
U.S. Cl. 501—117 20 Claims

1. In a refractory product consisting essentially of grains of co-fused chromia and magnesia bonded with an in situ formed microcrystalline bond of chromia, the improvement consisting essentially of the substantial absence of said grains which can pass though a sieve opening of 150 microns.

5,010,047

RECOVERY OF DOUBLE METAL CYANIDE COMPLEX CATALYST FROM A POLYMER

Jonathan L. Schuchardt, Exton, Pa., assignor to Arco Chemical Technology, Inc., Wilmington, Del.

Filed Feb. 27, 1989, Ser. No. 315,662
Int. Cl.[5] B01J *27/32, 38/68;* C07C *41/03, 43/11*
U.S. Cl. 502—24 16 Claims

1. A process for recovering a double metal cyanide complex catalyst from a polymer product having a number average molecular weight of from about 500 to about 20,000 and selected from the group consisting of epoxide polymers, epoxide-/anhydride copolymers, and epoxide/carbon dioxide copolymers, in a form suitable for use as a polymerization catalyst which comprises the steps of:

(a) dissolving a double metal cyanide complex catalyst-containing polymer product in an amount of a non-polar solvent having a dielectric constant lower than the dielectric constant of the polymer product effective to precipitate the double metal cyanide complex catalyst; and

(b) filtering the resulting polymer solution in the presence of a filter aid which is suspended in the solution in an amount effective to accomplish separation of the precipitated double metal cyanide complex catalyst from the polymer product.

5,010,048

CATALYST OF THE GALLOSILICATE TYPE AND ITS UTILIZATION FOR THE AROMATIZATION OF LIGHT C_2-C_4 GASES

Laurent Petit, Paris; Jean-Paul Bournonville, Cergy Pontoise; Jean-Louis Guth, Mulhouse; Francis Raatz, Acheres, and Alain Seive, Mulhouse, all of France, assignors to Institut Francais Du Petrole, Rueil-Malmaison, France

Filed Jul. 12, 1989, Ser. No. 379,469
Claims priority, application France, Jul. 12, 1988, 88 09631
Int. Cl.[5] B01J *29/04, 27/12*
U.S. Cl. 502—61 8 Claims

1. A catalyst comprising by weight:

(a) 0.01 to 99.49% of a matrix chosen from the group consisting of alumina, silica, magnesia, and a clay; and

(b) 0.51 to 99.99% of a gallosilicate zeolite synthesized in a fluorine-containing medium having an MFI structure comprising:

a fluorine content of 0.02 to 1.5% by weight,

an Si^{IV}/Ga^{III} molar ratio at least equal to 8.6, and

an X-ray diffraction diagram chosen from the group consisting of the diagram in Table 1 having a monoclinical structure and the diagram in Table 2 having an orthorhombic structure.

5,010,049

MODIFIED MOLYBDENUM SULFIDE HYDRODESULFURIZATION/HYDRODENITROGENATION CATALYSTS

Maria A. Villa-Garcia, Oviedo, Spain, and Johannes Schwank, Ann Arbor, Mich., assignors to The Regents of the University of Michigan, Ann Arbor, Mich.

Filed Mar. 24, 1989, Ser. No. 328,338
Int. Cl.[5] B01J *27/04, 27/043, 27/047*
U.S. Cl. 502—60 24 Claims

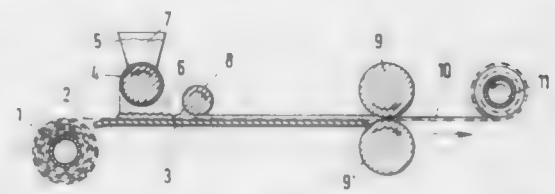
1. A composition comprising a support and a catalyst having an overall stoichiometry of $M_{2x}A_{1-x}S_2$ wherein $0.001 \leqq x \leqq 0.5$, and wherein M is at least one member selected from the group consisting of Co, Fe, Ni, Cu, Zn, Mn and Ru, and A is either Mo or W, wherein said catalyst is obtained by (i) mixing elemental M, elemental A and elemental S, in a relative amount of x moles of M and (1-x)/2 moles of A per mole of S, and (ii) heating the mixture, in the absence of oxygen, to a temperature of from 200° C. to 800° C.

5,010,050

PROCESS OF PRODUCING COMPOSITE MATERIAL CONSISTING OF SHEET METAL PLATES, METAL STRIPS AND FOILS HAVING A SKELETON SURFACE STRUCTURE AND USE OF THE COMPOSITE MATERIALS

Heinz Wüllenweber, Frankfurt am Main; Peter Kohl, Neuberg; Herbert Jung, Oberursel, all of Fed. Rep. of Germany; Jürgen Borchardt, Troistorrents, Switzerland; Wolfgang Bickle, Reilingen, and Jürgen Braus, Walldorf, both of Fed. Rep. of Germany, assignors to Metallgesellschaft AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 18, 1989, Ser. No. 339,746
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1988, 3813744
Int. Cl.[5] B01J *25/00*
U.S. Cl. 502—301 14 Claims



1. In a process of producing composite materials consisting of sheet metal plates, metal strips and foils having a thickness of ≦5 mm, and having a skeleton surface structure in a thickness of 1.0 to 400 μm containing catalyst material, comprises: applying a layer of a difficulty flowable material powder which is intended to constitute the skeleton structure and consists of irregular shaped particles in a size of 0.1 to 10 μm, to a surface-forming pretreated metallic carrier layer, continuously moving the carrier layer relative to the powder being dispensed, bonding said powder to the carrier layer by a cold roll cladding by which the carrier layer is simultaneously deformed by 20 to 60%, and sintering the metal powder in a reducing atmosphere at temperatures of 600° to 1000° C. with a holding time of 10 to 45 minutes, the improvement comprising uniformly distributing and applying the powder as regards its bulk volume by moving the powder layer under a distributing roller which rotates opposite to the main direction of movement of the carrier layer and directly contacting the powder on the carrier layer with the distributing roller without deforming to effect a uniform thickness of the powder on the carrier layer before the cold roll cladding.

13. An electrode for an electrolytic or fuel cell comprising the composite materials produced by the process claimed in claim 1.

5,010,051

STAGED THREE-WAY CONVERSION CATALYST AND METHOD OF USING THE SAME

Wayne M. Rudy, Morristown, N.J., assignor to Engelhard Corporation, Iselen, N.J.

Filed Nov. 8, 1989, Ser. No. 433,890
Int. Cl.[5] B01J *21/04, 23/10, 23/42*
U.S. Cl. 502—304 12 Claims

1. A catalyst composition for converting HC, CO and NO_x in a gaseous stream flowed therethrough, the composition comprising an upstream catalyst member comprising a first catalytic material and a downstream catalyst member comprising a second catalytic material, wherein: (a) the first catalytic material is characterized by having an ignition temperature for substantially simultaneous conversion of HC, CO and NO_x which is lower than that of the second catalytic material and (b) the second catalytic material is characterized by having a

higher conversion efficiency than the first catalytic material for substantially simultaneous conversion of HC, CO and NO_x at operating temperatures above the ignition temperature.

5,010,052

ZIRCONIUM DIOXIDE GAS DESULFURIZATION CATALYST

Eric Quemere, Corneilles/en/Parisis, France, assignor to Rhone-Poulenc Chimie, Courbevoie, France

Continuation of Ser. No. 44,337, Apr. 30, 1987, abandoned. This application Jun. 19, 1989, Ser. No. 368,087
Claims priority, application France, Apr. 30, 1986, 86 06261
Int. Cl.[5] B01J *21/06, 23/10*
U.S. Cl. 502—304 6 Claims

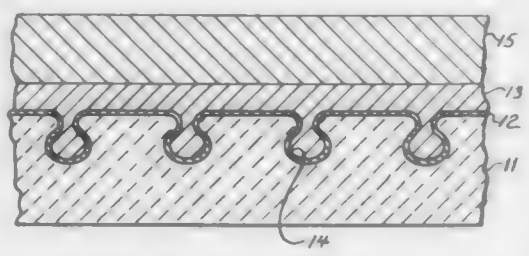
1. A catalyst adapted for the desulfurization of gases in a Claus process, comprising a solid shaped article including catalytically effective amounts of zirconium dioxide and cerium dioxide, a catalyst support including zirconium dioxide and a support phase including titanium dioxide.

5,010,0[illegible]

METHOD OF BONDING METALS TO CERAMICS

Victor A. Maroni, Naperville, Ill., assignor to Arch Development Corporation, Chicago, Ill.

Filed Dec. 19, 1988, Ser. No. 286,238
Int. Cl.[5] H01L *39/12; C22C 29/12*
U.S. Cl. 505—1 12 Claims



1. A composite of a ceramic having a layer of Ag or Au present at the surface thereof, a first metal selected from the group consisting of In and alloys thereof bonded to the layer of Ag or Au, and a second metal bonded to the first metal

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5,010,054

METHOD FOR THE PREPARATION OF SUPERCONDUCTING PRODUCTS

Keld Johansen, Frederikssund; Erik Pedersen, Hørsholm, and Haldor F. A. Topsøe, Vedbøk, all of Denmark, assignors to Haldor Topsoe A/S, Denmark

Filed Jul. 8, 1988, Ser. No. 216,895
Claims priority, application Denmark, Jul. 10, 1987, 3581/87
Int. Cl.[5] H01B *12/00;* H01L *39/00*
U.S. Cl. 505—1 10 Claims

1. In a method for the preparation of a superconducting product on the basis of superconducting compounds having the general formula $(Me^1)(Me^2)_qCu_3O_x$, where Me^1 is at least one metal selected from the group consisting of yttrium, scandium and the lanthanides, Me^2 is at least one of the metals barium and strontium, p is a number from 0.8 to 2.5, q is a number from 0.8 to 3 and x is a number from 6 to 8.5, in which process oxides of Me^1, Me^2 and Cu are reacted with each other at an elevated temperature,

wherein the improvement comprises

(i) employing an oxide of Me^2 at least partly as the Me^2 peroxide,

(ii) placing the oxides under an oxygen-free atmosphere in a reaction vessel having deformable walls,

(iii) closing the vessel hermetically and placing it with its contents in an autoclave suitable for hot isostatic pressing, gradually subjecting it to a pressure of 800 to 3000 bar, heating it to a temperature in the range of 800 to 1400° C. and then cooling it without opening it, and

(iv) shaping the vessel with its contents at any time from the beginning of the heating procedure to the end of the cooling in order to form a desired product having superconducting properties.

5,010,055

USE OF EGF TO REVERSE THE CONTRACEPTIVE ACTIVITY OF MI[illegible]

Patricia K. Donahoe, Weston, Mass., assignor to The General Hospital Corporation, Boston, Mass.

PCT No. PCT/US87/01514, § 371 Date Apr. 25, 1988, § 102(e) Date Apr. 25, 1988, PCT Pub. No. WO88/00054, PCT Pub. Date Jan. 14, 1988
Continuation-in-part of Ser. No. 877,735, Jun. 24, 1986, Pat. No. 4,753,794. This PCT application Jun. 24, 1987, Ser. No. 205,239
Int. Cl.[5] A61K *37/36, 37/38*
U.S. Cl. 514—8 4 Claims

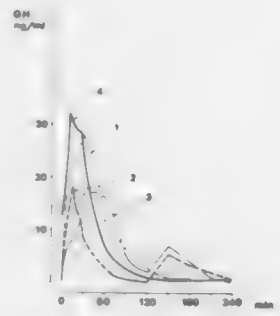
1. A method for reversing the contraceptive activity of Mullerian Inhibiting Substance which comprises providing to a female recipient of Mullerian Inhibiting Substance an Epidermal Growth Factor capable of reversing said contraceptive activity in an amount sufficient to achieve said reversal.

5,010,056

PHARMACEUTICAL COMPOSITION FOR INTRANASAL ADMINISTRATION, COMPRISING GH-RELEASING HORMONE, A CHOLINERGIC AGONIST AND OPTIONALLY A BILE SALT

Franklin M. Boghen, Gambolò ; Franco Camanni, Turin; Piero Del Soldato, Monza; Ezio Ghigo, Turin, and Eugenio Müller, Milan, all of Italy, assignors to Pierrel Spa, Italy

Filed Jul. 25, 1988, Ser. No. 223,378
Claims priority, application Italy, Jul. 30, 1987, 21513 A/87
Int. Cl.[5] A61K *37/02, 9/06, 9/12, 9/14*
U.S. Cl. 514—12 11 Claims



1. A pharmaceutical composition for intranasal administration suitable for the treatment of growth disorders and the diagnosis of hypophyseal functionality, comprising therapeutically effective quantities of GHRH, a cholinergic agonist and optionally a bile salt, together with pharmaceutically acceptable non-toxic excipients for intranasal administration.

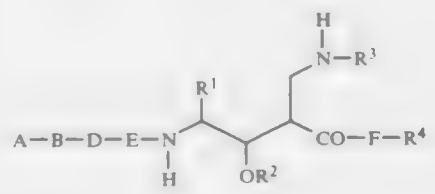
5,010,057

RENIN-INHIBITING PEPTIDES HAVING AN AMINOMETHYL SIDE CHAIN

Rolf Henning, Wuppertal; Günter Benz, Velbert; Johannes-Peter Stasch, Wuppertal; Andreas Knorr, Erkrath, and Wolfgang Bender, Wuppertal all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 17, 1989, Ser. No. 395,392
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1988, 3829086; Jan. 30, 1989, 3902615
Int. Cl.[5] A61K *37/02*
U.S. Cl. 514—018 11 Claims

1. An aminomethyl peptide of the formula



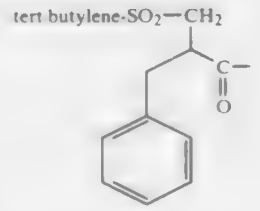
(I)

in which

A is selected from the group consisting of BOC, hydrogen and C_2H_5—O—CO—,

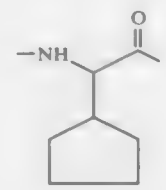
B is selected from the group consisting of Pro and a direct bond,

D is Phe or is



when A is hydrogen and B is a direct bond,

E is selected from the group consisting of His and



F is Ile,

R^1 is alkyl with 1 to 4 carbon atoms optionally substituted by cyclohexyl or phenyl,

R^2 and R^3 are each hydrogen and

R^4 is selected from the group consisting of lower alkoxy and NH-R^{11} wherein R^{11} represents lower alkyl optionally substituted by pyridyl.

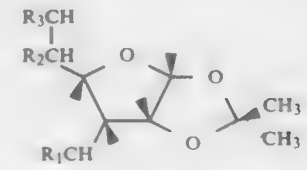
5,010,058

3,5,6-SUBSTITUTED DERIVATIVES OF 1,2-O-ISOPROPYLIDENE-α,D-GLUCOFURANOSE AND INTERMEDIATES FOR PREPARING THESE DERIVATIVES

Bruce Ronsen, River Forest; Sudershan K. Arora, Westchester, and Albert V. Thomas, Niles, all of Ill., assignors to 501 Greenwich Pharmaceuticals Incorporated, Ft. Washington, Pa.

Filed Jun. 22, 1989, Ser. No. 369,932
Int. Cl.[5] A61K *31/70*
U.S. Cl. 514—23 104 Claims

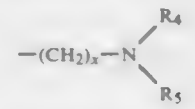
1. A monosaccharide compound of the formula I



I

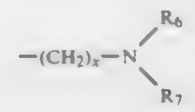
wherein

R_1 is a member selected from the group consisting of hydrogen, an alkoxyl radical containing from 4 to 11 carbon atoms, a hydroxyl residue, an aralkyl radical containing at least 7 carbon atoms, and a radical of the formula



in which x is a whole number up to 7 and R_4 and R_5 are each H, OH, or an alkoxy radical of up to 7 carbon atoms;

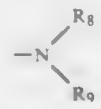
R_2 is a member selected from the group consisting of hydrogen, an alkoxy radical containing from 4 to 7 carbon atoms, a methylthio carbonyl, and a radical of the formula



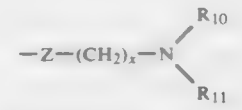
in which x is a whole number up to 7 and R_6 and R_7 are each H,OH, or an alkoxyl radical of up to 7 carbon atoms;

R_1 and R_2 together can form an isopropylidene radical;

R_3 is a member selected from the group consisting of hydrogen, a halogen, an alkylene radical, an aralkyl radical containing at least 7 carbon atoms, a radical of the formula



in which R_8 is hydrogen and R_9 is an alkyl radical containing up to eleven carbon atoms and a radical of the formula



in which Z is thio or amino, x is a whole number up to 7 and R_{10} r and R_{11} are each H, OH or an alkoxyl radical of up to 7 carbon atoms; and

R_2 and R_3 together can form an isopropylidene radical.

5,010,059

PHARMACEUTICAL PRODUCTS AND LACTOSYL COMPOUNDS

Richard R. Schmidt; Thomas Baer, both of Konstanz; Peter Zimmermann, Villingen, and Albrecht Wendel, Tübingen, all of Fed. Rep. of Germany, assignors to Solco Basel AG, Basel, Switzerland

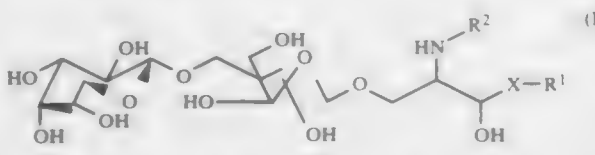
Filed Jun. 24, 1988, Ser. No. 210,838

Claims priority, application Switzerland, Jun. 26, 1987, 2407/87

Int. Cl.[5] A61K *31/70;* **C07H** *15/00*

U.S. Cl. 514—25 **10 Claims**

10. A method of treating organ ischemia caused by narrowing of vessels in a subject, which comprises administering to the subject a therapeutically effective amount of a lactosyl compound of the formula I



(I)

in which R^1 denotes an aliphatic radical which has 9 to 19 carbon atoms in a straight chain and which can have one or more double bonds, one or more branching methyl groups, or both one or more double bonds and one or more branching methyl groups, R^2 denotes an acyl radical of a saturated or singly or multiply unsaturated fatty acid having 14 to 24 carbon atoms, and X denotes a group of the formula $—CH_2—CH_2—$ or —CH=CH—.

5,010,060

METHOD OF TREATING HERPES SIMPLEX VIRAL INFECTION EMPLOYING PYRIMIDINE DERIVATIVES

Robert W. Lambert, Welwyn; Joseph A. Martin, Harpenden, and Gareth J. Thomas, Welwyn, all of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

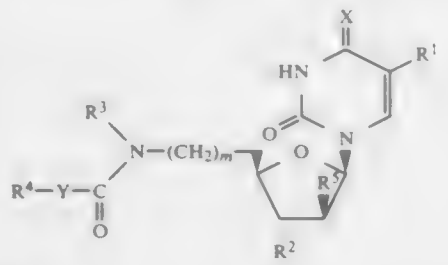
Division of Ser. No. 80,021, Jul. 31, 1987. This application Apr. 24, 1989, Ser. No. 342,277

Claims priority, application United Kingdom, Aug. 18, 1986, 8620070; May 14, 1987, 8711336

Int. Cl.[5] C07D *405/64;* **C07H** *19/06;* **A61K** *31/70*

U.S. Cl. 514—49 **11 Claims**

1. A method of treating herpes simplex viral infections which comprises administering an effective amount in the range of from about 1 mg to about 100 mg per day of a compound of the formula



wherein

R^1 is halogen, C_{1-4}-alkyl, halo-(C_{1-4}-alkyl) or C_{2-4}-alkanoyl,

R^2 is hydrogen, hydroxy, C_{1-4}-alkoxy, C_{1-4}-alkylthio or phenyl-(C_{1-4}-alkoxy) or, when X is O, also acyloxy,

R^3 is hydrogen or C_{1-4}-alkyl,

R^4 is a carbocyclic group or a heterocyclic group,

R^5 is hydrogen or fluorine,

m stands for zero, 1 or 2,

X is O or NH and Y is a direct bond, —CH=CH—, —C≡C— or a group of the formula of $(Z)_n$-A- (a) in which A is a C_{1-18}-alkylene group which is optionally substituted by one or two phenyl groups, Z is O, S, SO or SO_2 and n stands for zero or 1, with the proviso that R^1 is different from iodine, when R^2 is hydroxy or benzoyloxy, R^3 is hydrogen, R^4 is unsubstituted phenyl, R^5 is hydrogen, m stands for zero, X is O, and Y is a direct bond,

or a tautomer thereof.

5,010,061

GUAR FLOUR

Ulrich Speck, Benediktinerstrasse 50, D-1000 Berlin 28, and Panayiotis Roumeliotis, Frankfuter Strasse 12, D-6100 Darmstadt, both of Fed. Rep. of Germany

Continuation of Ser. No. 362,489, Jun. 7, 1989, abandoned, which is a continuation of Ser. No. 31,999, Mar. 27, 1987, abandoned. This application Aug. 6, 1990, Ser. No. 564,673

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1986, 3613219

Int. Cl.[5] A61K *31/715;* **C08B** *37/00*

U.S. Cl. 514—54 **26 Claims**

1. In a method of administering guar flour to a human desiring such administration comprising directly adding said guar flour to an aqueous medium and directly thereafter orally administering said guar flour, the improvement wherein said guar flour added to said aqueous medium to be orally administered is natural guar flour having a particle size distribution wherein 90 to 100% by weight of the guar flour particles have a diameter of 50 μm to 1500 μm and said natural guar flour having said distribution neither contains nor has been treated with additives which substantially affect the form or consistency of said guar flour particles or which substantially delay or reduce the swelling ability of said guar flour particles.

5,010,062

THERAPEUTIC AGENT AND METHOD OF INHIBITING VASCULARIZATION OF TUMORS

Carl G. Hellergvist, Brentwood, Tenn., assignor to Vanderbilt University, Nashville, Tenn.

Filed Sep. 25, 1989, Ser. No. 411,674

Int. Cl.[5] A61K *37/02, 39/085*

U.S. Cl. 514—54 **8 Claims**

1. The method of at least partially inhibiting vascularization of a developing solid tumor in a human patient, comprising parenterally administering to the patient the polysaccharide toxin produced by group B β-hemolytic Streptococcus bacteria known as GBS toxin, said GBS toxin being in a purified, toxin-active form and being administered in an amount effective for said inhibition.

5,010,063

HEPARIN DERIVATIVES AND PROCESS FOR THEIR PREPARATION

Silvano Piani, Bologna; Gianfranco Tamagnone, Casafecchio di Reno; Raul R. Alpino, Bologna; Maria R. Milani, Trebbo di Reno, and Marinella Fantuz, Bologna, both of Italy, assignors to Alfa Wasserman S.P.A., Alanno Scalo, Italy

Filed May 26, 1989, Ser. No. 357,548

Claims priority, application Italy, Jun. 10, 1988, 3504 A/88

Int. Cl.[5] A61K *31/725;* **C08B** *37/10*

U.S. Cl. 514—56 **14 Claims**

1. A heparin derivative which exhibits signals in the ^{13}C-NMR spectrum at about 53 and about 54 ppm, specific rotatory power $[\alpha]^{20}$ between about +50° and about +90° in aqueous solution, sulfur content between about 8% and about 11% and sulfate/carboxyl ratio between about 1.50 and about 2.20.

4. A process for the preparation of a heparin derivative which exhibits signals in the ^{13}C-NMR spectrum at about 53 and about 54 ppm, specific rotatory power between about +50° and about +90° in aqueous solution, sulfur content between about 8% and about 11% and sulfate/carboxyl ratio between about 1.50 and about 2.20 which comprises the steps of: (a) treating a heparinic material with an aqueous solution of a base which is an alkali or alkaline earth metal hydroxide of a concentration between about 0.01N and about 1N for a period of time between 0.5 and 24 hours at a temperature between about 35° C. and about 60° C. to obtain a reaction mixture; (b) purifying said reaction mixture by percolation through an ion exchange resin or by dialysis; and (c) precipitating said heparin derivative by adding from about 2 to about 4 volumes of an alcohol containing from 1 to 3 carbon atoms at about a neutral pH

5,010,064

INCLUSION COMPLEXES OF DIPYRIDAMOLE WITH CYCLODEXTRINS

Giancarlo Fregnan, Milan; Guido Vandoni, Correzzana, and Giangiacomo Torri, Milan, all of Italy, assignors to Edmond Pharma s.r.l., Milan, Italy

Filed Jun. 1, 1988, Ser. No. 201,038

Claims priority, application Italy, Jun. 17, 1987, 20925 A/87

Int. Cl.[5] A01N *43/40;* **A61K** *31/715;* **C08B** *37/16*

U.S. Cl. 514—58 **6 Claims**

1. A compound obtained by complexing dipyridamole with beta-cyclodextrin in the molar ratio dipyridamole: cyclodextrin between 1:1 and 1:12 respectively.

5,010,065

CYCLODEXTRIN CLATHRATES OF 5-CYANOPROSTACYCLIN DERIVATIVES AND THEIR USE AS PHARMACEUTICAL AGENTS

Werner Skuballa; Helmut Dahl; Helmut Vorbrueggen; Olaf Loge, and Karl-Heinz Thierauch, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

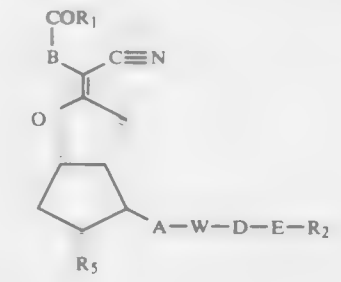
Filed Nov. 28, 1988, Ser. No. 276,754

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1987, 3740838

Int. Cl.[5] A61K *31/335;* **C07D** *307/93*

U.S. Cl. 514—58 **10 Claims**

1. A cyclodextrin clathrate of a 5-cyanoprostacyclin of the formula I



I

wherein

R_1 is OR_3 or NHR_4;

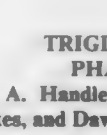
R_3 is hydrogen; C_{1-10}-alkyl; C_{1-10}-alkyl substituted by halo, C_{1-4}-alkoxy, C_{6-10}-aryl, C_{6-10} aryl substituted as defined below for R_2, mono- or di-(C_{1-4}-alkyl)-amino, or tri (C_{1-4}-alkyl)ammonium; C_{4-10}cycloalkyl; C_{4-10}-cycloalkyl substituted by C_{1-4}-alkyl; C_{6-10}-aryl; C_{6-10}-aryl substituted as defined for R_2 below; or an aromatic heterocycle of 5- or 6-members containing 1 or 2, O, S or N hetero atoms;

R_4 is an acyl group of a C_{1-15}-hydrocarbon carboxylic or sulfonic acid;

B is alkylene of 2-10 C atoms,

A is $—CH_2—CH_2—$, cis—CH=CH—, trans—CH=CH— or —C≡C;

W is RO-methylene or



the OR group being in the alpha or beta position;

R is H or C_{1-15}-acyl derived from a hydrocarbon carboxylic acid, or is tetrahydropyranyl, alpha-ethoxyethyl, tetrahydrofuranyl, trimethylsilyl, tribenzylsilyl, or dimethyl-tert-butylsilyl;

D and E together mean a direct bond; or

D is alkylene of 1-5 C atoms;

E is oxygen, sulfur or a direct bond;

R_2 is alkyl of 1-10 carbon atoms; alkenyl of 2-10 C-atoms; C_{1-10}-alkyl or C_{2-10}-alkenyl substituted by C_{6-10}-aryl or C_{6-10}-aryl substituted as defined for substituted C_{6-10}-aryl below; cycloalkyl of 4-10 carbon atoms; C_{4-10}-cycloalkyl substituted by C_{1-4}-alkyl; aryl of 6-10 carbon atoms; C_{6-10}-aryl substituted by 1-3 halogen atoms, a phenyl group, 1-3 alkyl groups each of 1-4 carbon atoms, or a chloromethyl, fluoromethyl, trifluoromethyl, carboxy, C_1-C_4-alkoxy or hydroxy group; or an aromatic heterocycle of 5- or 6-members containing 1 or 2 O, S, or N hetero atoms; and

R_5 is OR;

or when R_3 is hydrogen, a physiologically acceptable salt thereof with a base.

5,010,066

BIOCIDAL COMPOSITIONS AND USE THEREOF CONTAINING A SYNERGISTIC MIXTURE OF N-TRIBUTYL TETRADECYL PHOSPHONIUM CHLORIDE AND N-DODECYLGUANIDINE

Deborah K. Donofrio, The Woodlands, and Wilson K. Whitekettle, Conroe, both of Tex., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Aug. 13, 1990, Ser. No. 566,958

Int. Cl.[5] A01N *37/52, 57/00*

U.S. Cl. 514—75 **7 Claims**

1. A bacterial inhibiting composition comprising a synergistic mixture of (a) n-tributyl tetradecyl phosphonium chloride and (b) n-dodecylquanidine or a water soluble salt thereof wherein the weight ratio of (a):(b) is from about 28.5:1 to 2.85:1.

5,010,067

TRIGLYCERIDE-WATER EMULSION PHARMACEUTICAL VEHICLES

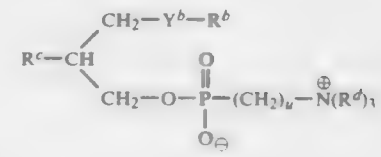
Dean A. Handley; William J. Houlihan, both of Mountain Lakes, and David B. Weinstein, Berkeley Heights, all of N.J., assignors to Sandoz Pharmaceuticals Corp., E. Hanover, N.J.

Filed Jul. 19, 1988, Ser. No. 221,054

Int. Cl.[5] A61K *31/66, 31/685, 31/445, 31/34*

U.S. Cl. 514—75 **25 Claims**

1. An injectable pharmaceutical composition useful in treating tumors and exhibiting reduced detergent effects at the injection site upon intravenous administration comprising: (1) an anti-tumor agent selected from a compound of formula IV:



IV

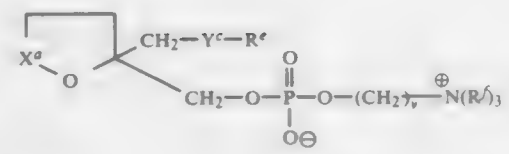
in which

R^b is C_{16-20} normal-alkyl;

R^c is o-methyl, o-ethyl, o-benzyl or CH_2OCH_3;

u is an integer of from 2 to 8;

R^d is methyl or ethyl; and
Y^b is -O- or -S- ,
a compound of formula V:

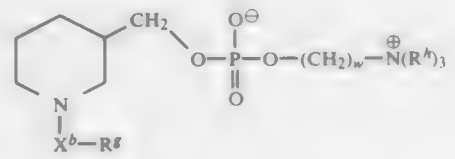


V

in which
X^a is $-CH_2-$ or

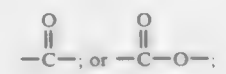


R^e is C_{16-20} normal-alkyl;
R^f is methyl or ethyl;
Y^c is $-CH_2-$ or -O- , and
v is an integer of from 2 to 8, and
a compound of formula VI:



VI

in which
X^b is



w is an integer of from 2 to 8;
R^g is C_{16-20} normal-alkyl; and
R^h is methyl or ethyl;
and (2) as a vehicle therefor, an emulsion comprising:
(a) about 5% to 25% fatty acid triglycerides;
(b) up to 1.2% egg phosphatides, purified;
(c) 2.5% of glycerine; and
the balance water, with sufficient sodium hydroxide added so that the pH of said emulsion is about 8.

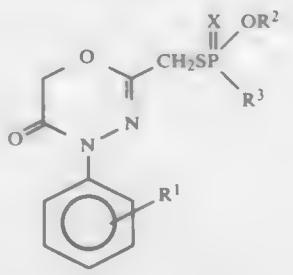
5,010,068

OXADIAZINYL ORGANOPHOSPHORUS PESTICIDES

Mark A. Dekeyser, Waterloo, Canada, and Richard C. Moore, Wallingford, Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn. and Uniroyal Chemical Ltd. Ltee., Don Mills, Canada

Filed Dec. 21, 1989, Ser. No. 454,668
Int. Cl.[5] C07D *273/04;* **A01N** *57/00*
U.S. Cl. 514—79 **25 Claims**

1. A compound having the formula:



wherein X is O or S;
R^1 is:
hydrogen,
C_1–C_{12} alkyl,
C_2–C_{13} alkoxy,
C_7–C_9 aralkyl,
C_1–C_4 alkylsulfonyl,
nitro,
phenyl or
trihalomethyl, wherein halo is fluorine, chlorine or bromine;
R^2 is C_1–C_4 alkyl; and
R^3 is C_1–C_4 alkyl
C_1–C_4 alkoxy, and
C_1–C_4 alkylthio.

15. An insecticidal, acaricidal or nematicidal method comprising applying a loci to be treated an effective amount of a compound according to claim **1**.

5,010,069

STABLE LIQUID FORM OF 5-AMINOSALICYLIC ACID

Carey B. Bottom, Overland Park, and Margaret N. Kwoka, Merriam, both of Kans., assignors to Marion Laboratories, Inc., Kansas City, Mo.

Filed May 15, 1989, Ser. No. 352,064
Int. Cl.[5] A61K *31/615, 31/34*
U.S. Cl. 514—166 **17 Claims**

1. A stabilized aqueous solution having a concentration of 0.1 to 10 g/100 ml of 5-aminosalicylic acid wherein a buffer consists essentially of an intrinsic, water soluble nontoxic alkali, alkali metal or alkaline earth metal salt of 5-aminosalicylic acid, said solution having a pH of 3 to 5.

5,010,070

GRADUATED ESTROGEN CONTRACEPTIVE

Roger M. Boissonneault, Long Valley, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 340,974, Apr. 20, 1989, Pat. No. 4,962,098, which is a continuation-in-part of Ser. No. 61,646, Jun. 15, 1987, abandoned, which is a continuation-in-part of Ser. No. 659,144, Oct. 9, 1984, abandoned. This application May 22, 1990, Ser. No. 526,934
Int. Cl.[5] A61K *31/56*
U.S. Cl. 514—171 **12 Claims**

4. A multiphase combination and contraceptive kit comprising a package containing:
(1) about 4 to 7 dosages of a Phase I composition containing about 0.5–1.5 mg norethindrone acetate and about 10–30 mcg ethinyl estradiol; (2) about 5 to 8 dosages of a Phase II composition containing about 0.5–1.5 mg norethindrone acetate and about 20–40 mcg ethinyl estradiol, and (3) about 7 to 12 dosages of a Phase III composition containing about 0.5–1.5 mg norethindrone acetate and about 30–50 mcg ethinyl estradiol, wherein the amount of ethinyl estradiol is increased stepwise over the three compositions.

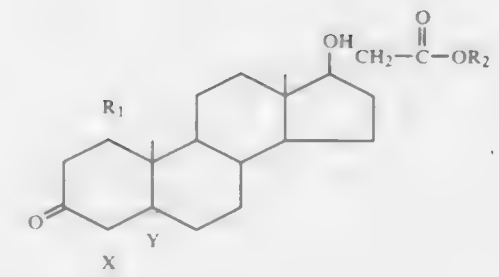
5,010,071

ANDROSTANE DERIVATIVES

Dieter Bittler; Henry Laurent; Petra Rach, and Michael Topert, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Jul. 13, 1989, Ser. No. 379,399
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1988, 3824247
Int. Cl.[5] A61K *31/56;* **C07J** *1/00*
U.S. Cl. 514—178 **17 Claims**

1. An androstane derivative of the formula



(I)

wherein
R_1 is hydrogen or methyl,
X and Y are each hydrogen and
R_2 is hydrogen or C_{1-6}-alkyl.

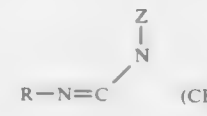
5,010,072

LACTAMIMIDES AS CALCIUM ANTAGONISTS

Michael G. Palfreyman; Norbert L. Wiech; Hsien C. Cheng, and John M. Kane, all of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed Jun. 28, 1988, Ser. No. 212,544
Int. Cl.[5] A61K *31/33, 31/44, 31/55, 31/445*
U.S. Cl. 514—183 **5 Claims**

1. A method of effecting calcium antagonism in a patient in need thereof which comprises administering to the patient a calcium antagonism effective amount of a compound of the formula



wherein
Z is hydrogen or lower alkyl of from 1 to 4 carbon atoms;
n is an integer of from 3 to 16; and
R is 1- or 2- adamantyl or 1- or 2- norbornyl
or a pharmaceutically acceptable acid addition salt thereof or an individual optical or geometric isomer.

5,010,073

USE OF LIPOSOMES AS CARRIERS FOR METALLOPORPHYRINS

Attallah Kappas and George S. Drummond, both of New York, N.Y., assignors to The Rockefeller University, New York, N.Y.

Continuation-in-part of Ser. No. 417,298, Oct. 5, 1989, abandoned. This application Feb. 26, 1990, Ser. No. 485,174
The portion of the term of this patent subsequent to Apr. 14, 2004, has been disclaimed.
Int. Cl.[5] A61K *31/40, 31/555, 9/127;* **C07D** *209/94*
U.S. Cl. 514—185 **20 Claims**

1. A pharmaceutical composition for improved inhibition of heme oxygenase activity in mammals comprising a liposomal metalloporphyrin, the metalloporphyrin component of which is a heme oxygenase inhibitor.

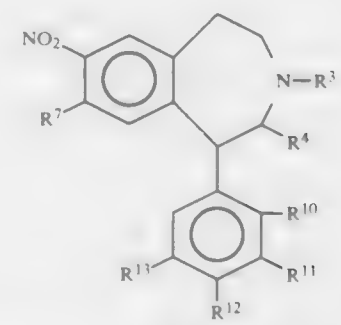
5,010,074

NOVEL BENZAZEPINE DERIVATIVES

Frederik Gronwald, Vedbaek; Peter H. Andersen, Vanlse; Peter Faarup, Vaerlose; Erling Guddal, Brondby; Kristian T. Hansen, Kobenhavn; Louis B. Hansen, and Erik B. Nielsen, both of Vaerlose, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Filed Jun. 12, 1989, Ser. No. 365,250
Claims priority, application Denmark, Jun. 15, 1988, 3251/88
Int. Cl.[5] C07D *223/14, 223/16;* **A61K** *31/55*
U.S. Cl. 514—213 **30 Claims**

1. A 2,3,4,5-tetrahydro-1H-3-benzazepine selected from those of the formula I



(I)

wherein R^3 represents C_{1-3}-alkyl or C_{3-7}-cycloalkyl; R^4 represents hydrogen; R^7 represents hydroxy or lower alkoxy; one of R^{10}, R^{11}, R^{12} and R^{13} represents trifluromethyl and the others independently represent hydrogen or R^{11} together with either R^{10} or R^{12} represents a bridge chosen from among —O—CH-2—CH—, —O—CH_2—CH_2—CH_2—, —O—CH=CH—, —CH_2—CH_2—CH_2—, —CH_2—CH=CH— and —CH-2—CH_2—CH_2—CH_2—, and the remainder of R^{10}, R^{11}, R^{12} and R^{13} each represents hydrogen, and pharmaceutically-acceptable acid additional salts thereof.

14. A pharmaceutical composition useful for treating CNS ailments containing an effective amount of a benzazepine of claim **1** or a pharmaceutically-acceptable acid addition salt thereof together with a pharmaceutically-acceptable carrier or diluent.

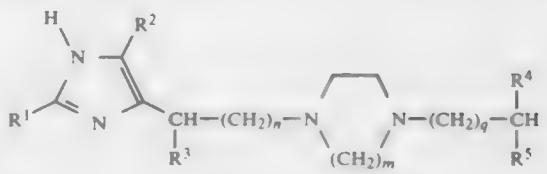
5,010,075

SUBSTITUTED IMIDAZOLYL-ALKYL-PIPERAZINE AND -DIAZEPINE DERIVATIVES

Jean C. Pascal, Cachan, France; Chi-Ho Lee, Palo Alto, Calif.; Brian J. Alps, Linlithgow, Scotland; Henri Pinhas, Paris, France, and Roger L. Whiting, Los Altos, Calif., assignors to Syntex Pharmaceuticals Ltd., Berkshire, England

Division of Ser. No. 313,656, Feb. 21, 1989, Pat. No. 4,935,417, which is a division of Ser. No. 42,181, Apr. 24, 1987, Pat. No. 4,829,065. This application Apr. 6, 1990, Ser. No. 505,379
Int. Cl.[5] C07D *243/08, 403/06;* **A61K** *31/55*
U.S. Cl. 514—218 **13 Claims**

1. A compound having the structure represented by the formula:



wherein:
R^1 is aryl, lower alkyl, cycloalkyl or hydrogen;
R^2 is aryl, lower alkyl or hydrogen;
R^3 is lower alkyl, hydroxy, or hydrogen;
R^4 is aryl or hydrogen;

R^5 is aryl or hydrogen;
m is three;
n is zero, one or two, provided that when R^3 is hydroxy, n is one or two; and
q is zero, one, two, or three;
or a pharmaceutically acceptable salts thereof

10. A pharmaceutical formulation comprising a compound of claim 1 and a pharmaceutically acceptable excipient.

5,010,076

1,7-FUSED 1H-INDOLE-2-CARBOXYLIC ACID-N-(1,4-BENZODIAZEPIN-3-YL)AMIDES

Harald Waldeck, Hanover; Werner Benson, Seelze; Horst Zeugner, Hanover; Klaus-Ullrich Wolf, Uetze; Peter-Colin Gregory, Hanover, all of Fed. Rep. of Germany; Derk Hamminga, Leusden, Netherlands, and Ineke van Wijngaarden, Oud-Turnhout, Belgium, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

Filed Mar. 7, 1990, Ser. No. 489,502

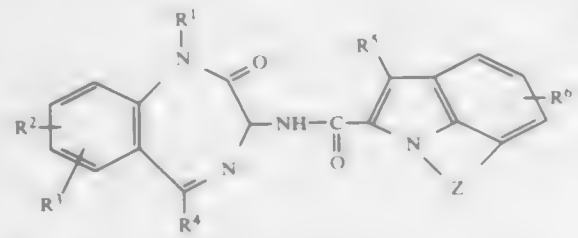
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1989, 3907389; Mar. 8, 1989, 3907390

Int. Cl.[5] **C07D** *521/00;* **A61K** *31/55*

U.S. Cl. 514—221 **10 Claims**

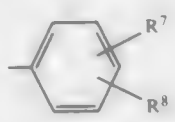
1. A compound corresponding to the formula I

(I)



wherein
R^1 represents hydrogen, lower alkyl or cycloalkylalkyl with 4–7 carbon atoms,
R^2 represents hydrogen, halogen, lower alkyl, lower alkoxy or trifluoromethyl, and
R^3 represents hydrogen, halogen, lower alkyl or lower alkoxy, or
R^2 and R^3 are bonded to two adjacent carbon atoms and together denote an alkylenedioxy group with 1–2 carbon atoms,
R^4 represents cycloalkyl with 5 to 6 carbon atoms, thiophene or an optionally substituted phenyl group a

(a)



in which
R^7 represents hydrogen, halogen, lower alkyl, lower alkoxy or trifluoromethyl, and
R^8 represents hydrogen, halogen, lower alkyl or lower alkoxy,
R^5 represents hydrogen or halogen,
R^6 represents hydrogen, halogen, lower alkyl, lower alkoxy or trifluoromethyl, and
Z represents an alkylene chain with 2–4 carbon atoms, which can optionally be mono- or disubstituted by lower alkyl, or onto which a 5–6-membered carbocyclic ring can optionally be fused, or represents a $—X—CH_2—CH_2—$-chain in which X is bonded to the phenyl ring of the indole structure and represents oxygen or sulfur,
and the pharmaceutically acceptable acid addition salts thereof.

10. A pharmaceutical composition comprising an effective CCK antagonizing amount of a compound according to claim 1, and at least one conventional pharmaceutical adjuvant or carrier.

5,010,077

β-CARBOLIN-3-CARBOXYLIC ACID DERIVATIVES USEFUL FOR TREATING ANXIETY AND RELATED DISORDERS

Claus T. Braestrup, Gentofte; Mogens C. Nielsen, Roskilde; Joergen A. Christensen, Virum; Mogens Engelstoft, Vaerloese; Henning Schou, Copenhagen, all of Denmark; Ulrich Eder, Berlin, Fed. Rep. of Germany; Günter Neef, Berlin, Fed. Rep. of Germany; Andreas Huth, Berlin, Fed. Rep. of Germany; Dieter Rahtz, Berlin, Fed. Rep. of Germany, and Ralph Schmiechen, Berlin, Fed. Rep. of Germany, assignors to A/S Ferrosan, Soeborg, Denmark and Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

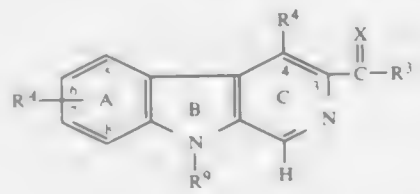
Continuation of Ser. No. 731,244, May 7, 1985, abandoned, which is a continuation of Ser. No. 433,308, Oct. 7, 1982, abandoned, which is a division of Ser. No. 182,244, Aug. 28, 1980, Pat. No. 4,731,536. This application Apr. 25, 1988, Ser. No. 188,145

Claims priority, application Denmark, Aug. 29, 1979, 3622/79; Feb. 29, 1980, 889/80; Fed. Rep. of Germany, Apr. 22, 1980, 3015816; Jun. 20, 1980, 3023567

Int. Cl.[5] **C07D** *471/04;* **A61K** *31/535*

U.S. Cl. 514—228.8 **15 Claims**

1. A β-carboline-3-carboxylic acid derivative of the formula



wherein:
X is oxygen, sulphur or NR^{10}, wherein R^{10} is hydrogen or alkyl;
R^3 is $NR^{11}R^{12}$, wherein R^{11} and R^{12} are the same or different and each is (i) hydrogen, (ii) hydroxy, (iii) C_{1-10}-alkyl, (iv) C_{3-7}-cycloalkyl, or each of groups (iii)–(iv) optionally substituted with hydroxy, carboxamido, or carboxy, or (v) amino optionally substituted with C_{1-10}-alkyl, or wherein R^{11} and R^{12} together with the connecting nitrogen atom form pyrrolidine, piperidine, 3-methoxycarbonyl-piperidine, 4-hydroxy-3-ethoxycarbonylpiperidine, or N-methyl-piperazine, with the proviso that R^{11} and R^{12} cannot both be hydroxy;
R^4 is hydrogen, C_{1-10}-alkyl, C_{3-7}-cycloalkyl, or phenyl;
$R^{4'}$ is R^{13}, F, Cl, Br, I, NO_2, $NR^{13}R^{14}$, $NHCOR^{13}$, CN, $COOR^{13}$, OR^{13}, SCH_3 or $SO_2NR^{11}R^{12}$, wherein R^{13} and R^{14} each is hydrogen or C_{1-6}-alkyl, and wherein there are 1–2 identical or different $R^{4'}$'s and wherein R^{11} and R^{12} can be the same or different and each is H or alkyl, or together R^{11} and R^{12} form a saturated heterocyclic group as defined for R^{11} and R^{12}; and
R^9 is H;
with the proviso that R^4 does not represent hydrogen when R^{11} and R^{12} are each hydrogen or C_{1-3} alkyl, when X is oxygen or sulfur and when R^4 is hydrogen, C_{1-5}-alkyl or phenyl.

6. A method of inducing a tranquilizing effect in a patient in need of such treatment which comprises administering to the patient an amount of a compound of claim 1 effective as a tranquilizer.

5,010,078

ARYL- AND HETEROARYL PIPERAZINYL CARBOXAMIDES HAVING CENTRAL NERVOUS SYSTEM ACTIVITY

Magid A. Abou-Gharbia, Glen Mills; John P. Yardley, Gulph Mills, and Wayne E. Childers, Jr., Yardley, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

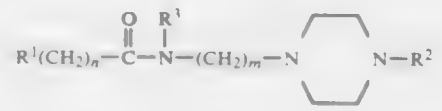
Continuation-in-part of Ser. No. 335,075, Apr. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 297,460, Jan. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 197,890, May 24, 1988, abandoned. This application Mar. 14, 1990, Ser. No. 493,179

Int. Cl.[5] **A61K** *31/505;* **C07D** *403/04, 403/14*

U.S. Cl. 514—252 **10 Claims**

1. A compound having the formula

(I)



wherein R^1 is 1-adamantyl, 3-methyl-1-adamantyl, 3-noradamantyl, unsubstituted or substituted-2-indolyl, 3-indolyl, 2-benzofuranyl or 3-benzofuranyl wherein the substituents are selected from lower alkyl, lower alkoxy and halo; R^2 is unsubstituted or substituted pyrimidinyl, wherein the substituents are selected from lower alkyl, lower alkoxy, trifluoromethyl and halo; R^3 is H or lower alkyl of 1 to 3 carbon atoms; n is the integer 0 or 1; and m is the integer from 2 to 5; or the pharmaceutically acceptable salts thereof.

5,010,079

INDOLONE DERIVATIVES, THEIR PREPARATION AND THEIR APPLICATION IN THERAPY

Philippe Manoury, Verrieres le Buisson; Jean Binet, Breuillet; Daniel Obitz, Fontenay aux Roses; Gerard Defosse, Paris; Elisabeth Dewitte, Saint-Gratien, and Corinne Veronique, Villejuif, all of France, assignors to Synthelabo, Paris, France

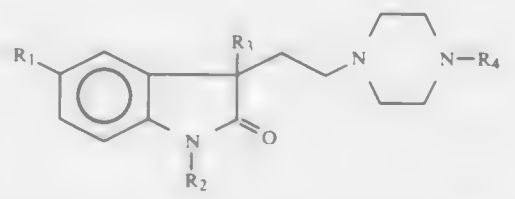
Filed Aug. 2, 1989, Ser. No. 388,373

Claims priority, application France, Aug. 3, 1988, 8810482

Int. Cl.[5] **C07D** *401/06, 403/06;* **A61K** *31/47, 31/495*

U.S. Cl. 514—253 **8 Claims**

1. An indolone derivative which is a compound of formula (I):



in which
R_1 is a hydrogen or halogen atom or a (C_{1-4})alkyl radical,
R_2 is a hydrogen atom or a (C_{1-4})alkyl radical,
R_3 is a hydrogen atom, a (C_{1-4})alkyl radical or an S-$(C_1$-4) alkyl radical; and
R_4 is a phenyl, chlorophenyl, naphthyl, 7-methoxy-1-naphthyl, 6-methoxy-1-indanyl, 2-methoxy-6-pyridyl, 3-methoxy-2-pyridyl, isoquinolyl, 7-methoxy-1-isoquinolyl, 7-methoxy-1,2,3,4-tetrahydro-1-naphthyl or 7-fluoro-1-naphthyl radical;
or a pharmaceutically acceptable acid addition salt thereof.

5,010,080

USE OF HETEROCYCLIC AMIDES TO INHIBIT TUMOR METASTASIS

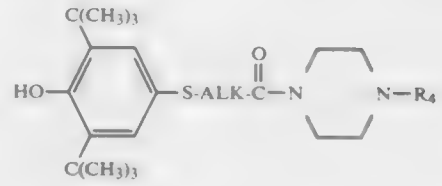
George C. Fuller, Gross Point, Mich.; George R. Martin, Bethesda, Md.; Richard A. Mueller, Glencoe, Ill., and Reuven Reich, Silver Spring, Md., assignors to G. D. Searle & Co., Chicago, Ill. and The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Dec. 2, 1988, Ser. No. 279,584

Int. Cl.[5] **A61L** *31/495*

U.S. Cl. 514—255 **6 Claims**

1. A method of inhibiting invasive activity and related metastasis of tumor cells in a mammal without treating the tumor cells comprising administering an amount of a compound of the formula



wherein Alk is straight or branched chain lower alkylene and R_4 is selected from the group consisting of hydrogen, lower alkyl, phenyl, or benzyl; or a pharmaceutically acceptable salt thereof, which is effective to inhibit tumor cell invasive activity and related metastasis to a mammal having tumor cells sensitive to said compound.

5,010,081

6-THIOXANTHINES

Peter Hofer, Liestal, Switzerland, assignor to Euroceltique, S.A., Luxembourg, Luxembourg

Continuation-in-part of Ser. No. 322,364, Mar. 13, 1989, abandoned, which is a continuation of Ser. No. 78,545, Jul. 28, 1987, Pat. No. 4,925,847, which is a continuation-in-part of Ser. No. 699,254, Feb. 7, 1985, Pat. No. 4,710,503. This application Oct. 2, 1989, Ser. No. 415,970

Claims priority, application United Kingdom, Aug. 2, 1986, 8618931

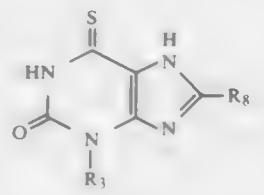
The portion of the term of this patent subsequent to Dec. 1, 2004, has been disclaimed.

Int. Cl.[5] **C07D** *473/38;* **A61K** *31/52*

U.S. Cl. 514—263 **13 Claims**

1. A 6-thioxanthine of formula I or a pharmaceutically acceptable salt thereof

I



wherein R_3 is selected from a group consisting of ethyl, n-propyl, isopropyl, isobutyl, secondary butyl, cyclopropylmethyl, n-pentyl, 2-methylbutyl, 3-methylbutyl and 2,2-dimethylpropyl, and R_8 is selected from a group consisting of ethyl, isopropyl, cyclopropyl, n-butyl, isobutyl, t-butyl, cyclobutyl and n-pentyl, provided that
when R_3 is ethyl, R_8 is selected from isopropyl, cyclopropyl, isobutyl, t-butyl, cyclobutyl and n-pentyl.
when R_3 is n-propyl, R_8 is selected from isopropyl, isobutyl and t-butyl
when R_3 is isobutyl, R_8 is selected from ethyl, isopropyl, cyclopropyl, isobutyl, t-butyl, cyclobutyl and n-pentyl,
when R_3 is n-pentyl, 2-methylbutyl, 3-methylbutyl, or 2,2-

dimethylpropyl R_8 is selected from isopropyl, cyclopropyl, n-butyl, isobutyl, t-butyl, cyclobutyl and n-pentyl.

5,010,082

PESTICIDAL 2-HYDRAZINOPYRAMIDINE COMPOUNDS

Peter Riebli, Buckten, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

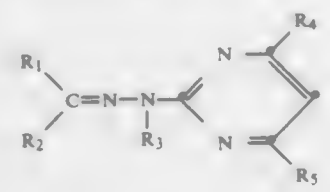
Filed Sep. 22, 1989, Ser. No. 411,337

Claims priority, application Switzerland, Sep. 28, 1988, 3595/88

Int. Cl.[5] **C07D** *239/46, 239/48;* **A01N** *43/54*

U.S. Cl. 514—272 **21 Claims**

1. A compound of formula I



(I)

wherein R_1 is phenyl, naphthyl, phenyl substituted from one to five times by R_6, or naphthyl substituted from one to five times by R_6; R_2 is C_1–C_6alkyl, C_1–C_6alkyl substituted at least once by halogen, C_1–C_3alkoxy or by C_3–C_6cycloalkyl, C_3–C_6cycloalkyl, C_1–C_4alkoxycarbonyl, phenyl, phenyl mono- to trisubstituted by halogen, C_1–C_3alkoxy by C_1–C_3alkyl, benzyl, or benzyl mono- to tri-substituted by halogen, C_1–C_3alkoxy or by C_1–C_3alkyl; R_3 is hydrogen, C_1–C_6alkyl or the radical CO-R_7; R_4 is C_3–C_6cycloalkyl or C_3–C_6cycloalkyl mono- to trisubstituted by halogen or by methyl; R_5 is hydrogen, C_1–C_6alkyl, C_1–C_6alkyl substituted at least once by halogen, hydroxy, cyano or by C_1–C_3alkoxy, R_5 is also C_3–C_5alkenyl, halogen, hydroxy, C_1–C_3alkoxy, C_1–C_3haloalkoxy, C_3–C_6cycloalkyl or C_1–C_3alkylthio; R_6, independently of any other, is C_1–C_6alkyl, C_1–C_3alkyl substituted by C_1–C_3alkoxy, or C_1–C_4alkoxy, C_1–C_3haloalkyl, C_1–C_3haloalkoxy, halogen, cyano, nitro, hydroxy or the radical $S(O)_n$-C_1–C_4alkyl; R_7 is C_1–C_6alkyl, or C_1–C_6alkyl substituted at least once by halogen or by C_1–C_3alkoxy; and n is 0, 1 or 2; including the acid addition compounds and the metal salt complexes thereof.

17. A method of controlling or preventing attacks on cultivated plants by phytopathogenic microorganisms, which method comprises applying to the plant, parts of the plant or the locus thereof, as active ingredient, a compound of formula I according to claim 1.

5,010,083

2,6-METHANO-1,3-BENZODIAZOCINE COMPOUNDS WHICH HAVE USEFUL PHARMACEUTICAL UTILITY

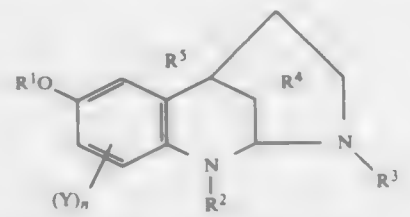
Richard C. Allen, Flemington; Marc N. Agnew, Bridgewater, both of N.J., and David M. Fink, Doylestown, Pa., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 174,274, Mar. 28, 1988, abandoned. This application Dec. 6, 1989, Ser. No. 446,743

Int. Cl.[5] **A61K** *31/44;* **C07D** *471/06*

U.S. Cl. 514—292 **32 Claims**

1. A compound of the formula:



wherein R^1 is selected from the group consisting of hydrogen, loweralkyl, loweralkylcarbonyl, loweralkylaminocarbonyl, cycloalkylaminocarbonyl, arylalkylaminocarbonyl, loweralkoxycarbonyl, aryloxycarbonyl, and arylaminocarbonyl; R^2 and R^3 are independently selected from the group consisting of hydrogen, loweralkyl, cycloalkylloweralkyl, aryllowerakyl, and loweralkenyl; R^4 and R^5 are independently hydrogen or loweralkyl; Y is halogen, loweralkyl, nitro, amino, loweralkylcarbonylamino, arylcarbonylamino, formyl or loweralkylaminocarbonyl; the term aryl signifying a phenyl group optionally substituted by up to 3 substituents each of which is independently loweralkyl, loweralkoxy, halogen, trifluoromethyl, nitro or cyano; the term cycloalkyl signifying a cyclic hydrocarbon radical of the formula $-C_xH_{2x-1}$, wherein X is an integer having a value of 3 to 7, inclusive; and n is an integer having a value of zero or 1; or a geometrical isomer, optical antipode or a pharmaceutically acceptable acid addition salt thereof.

32. A method of alleviating in a patient a memory dysfunction characterized by decreased cholinergic function which comprises administering to the patient an effective amount of a compound as defined in claim 1.

5,010,084

IMIDAZOQUINOLONE DERIVATIVES

Fumio Suzuki, Mishima; Takeshi Kuroda; Yoshisuke Nakasato, both of Shizuoka; Kenji Ohmori, Mishima, and Haruhiko Manabe, Shizuoka, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

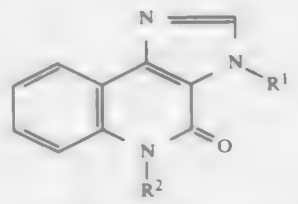
Filed Jul. 18, 1990, Ser. No. 553,551

Claims priority, application Japan, Jul. 18, 1989, 1-185087

Int. Cl.[5] **C07D** *471/02;* **A61K** *31/44*

U.S. Cl. 514—293 **4 Claims**

1. An imidazoquinolone compound represented by the formula



wherein R^1 represents lower alkyl or $-(CH_2)_mCO-R^3$ where R^3 represents hydrogen, lower alkyl, hydroxy or lower alkoxy; and m is an integer of 1 to 3; R^2 represents lower alkyl; or a pharmaceutically acceptable salt thereof.

5,010,085

BENZO-FUSED CYCLOALKANE AND OXA- AND THIA-CYCLOALKANE TRANS-1,2-DIAMINE DERIVATIVES

Penio Pennev, Chadds Ford, Pa.; Parthasarathi Rajagopalan, and Richard M. Scribner, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

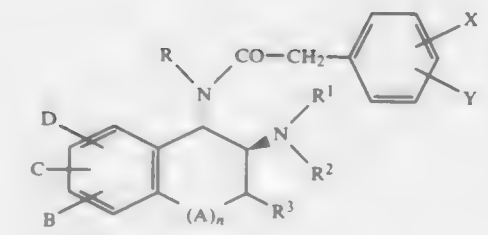
Division of Ser. No. 362,681, Jun. 7, 1989, Pat. No. 4,929,627, which is a division of Ser. No. 71,028, Jul. 16, 1987, Pat. No. 4,876,269, which is a continuation-in-part of Ser. No. 905543, Sep. 10, 1986, abandoned. This application Dec. 21, 1989, Ser. No. 455,882

The portion of the term of this patent subsequent to May 29, 2007, has been disclaimed.

Int. Cl.[5] **A31K** *31/40;* **C07D** *221/22, 401/04, 403/04*

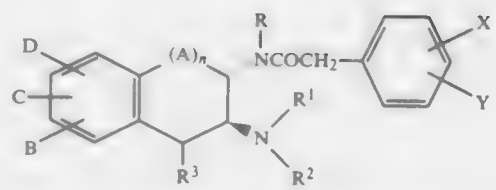
U.S. Cl. 514—299 **21 Claims**

1. A compound having the formula:



(I)

or



(II)

wherein for the enantiomers and racemic mixtures

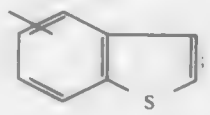
n is 1;

A is —O—, or —S—;

B, C and D independently selected from the group consisting of H, OH, $OCOR^5$, $OCH_2CH_2OR^5$, OR^6, R^6, CH_2OR^6, CH_2COR^7, Cl, F, Br, I, NH_2, NHR^8, NR^8R^9, SH, SR^6, CH_2SR^6 and $OC(S)N(CH_3)_2$;

X and Y independently are selected from the group consisting of H, OCH_3, Cl, F, Br, I, NO_2, CF_3, CN, SO_2R^{10}, and SO_2CF_3 or;

X and Y taken together with the benzene ring form



R is selected from the group consisting of H, and alkyl of 1 to 3 carbon atoms;

R^1 and R^2 are taken together with the nitrogen to which they are attached to be 1-pyrrolidinyl substituted at the 3-position by OH, alkyl of 1 to 3 atoms, alkoxy of 1 to 3 carbon atoms or alkanoyloxy of 1 to 3 carbon atoms; 2,5-dihydro-1H-pyrrol-1-pyrrol-1-yl; 3-azabicyclo[3.1.0-]hexan-3-yl; or 3 azabicyclo[3.2.0]heptan-3-yl;

R^3 is H;

R^5 is alkyl of 1 to 6 carbon atoms, phenyl, or mono-substituted phenyl;

R^6, R^8, R^9, R^{10} and R^{13} are independently an alkyl group of 1 to 3 carbon atoms; and

R^7 is selected from the group consisting of H, OH, OR^{13}, NHR^{13}, and NR_2^{13}; or

a stable N-oxide or a pharmaceutically acceptable salt thereof.

15. A method of treating pain in a mammal comprising administering to the mammal an analgesically effective amount of a compound of claim 1.

5,010,086

IMIDAZOPYRIDINES, COMPOSITIONS AND USE

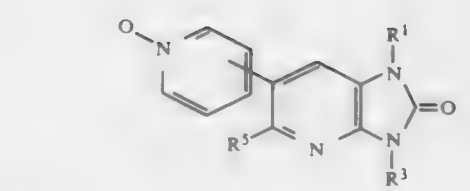
George Y. Lesher, deceased, late of Schodack by Louise E. Lesher, executrix ; Edward R. Bacon, East Greenbush; Baldev Singh, East Greenbush, and Gee-Hong Kuo, East Greenbush, all of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 486,637, Feb. 28, 1990, Pat. No. 4,963,561. This application Aug. 7, 1990, Ser. No. 564,011

Int. Cl.[5] **C07D** *471/04;* **A61K** *31/44*

U.S. Cl. 514—303 **5 Claims**

1. A compound of the formula



(I)

wherein

R_1 and R_3 are hydrogen or lower-alkyl;

R_5 is lower-alkyl or fluorinated lower-alkyl; and the pyridine-N-oxide is attached at the 4- or 3-position; or a pharmaceutically acceptable acid-addition salt thereof.

5,010,087

TRICYCLIC COMPOUNDS AND TXA_2 ANTAGONISTIC COMPOSITIONS THEREOF

Etsuo Oshima, Shizuoka; Hiroyuki Obase, Mishima; Akira Karasawa; Kazuhiro Kubo, both of Shizuoka; Ichiro Miki, Tokyo, and Akio Ishii, Shizuoka, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

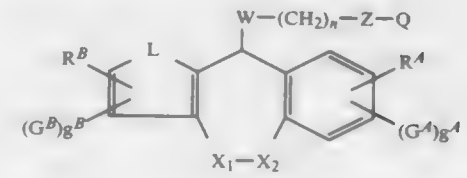
Division of Ser. No. 255,485, Oct. 11, 1988, Pat. No. 4,882,351. This application Jul. 18, 1989, Ser. No. 381,330

Claims priority, application Japan, Oct. 14, 1987, 62-259145

Int. Cl.[5] **A61K** *31/47, 31/44;* **C07D** *215/20, 217/26*

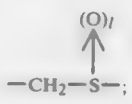
U.S. Cl. 514—307 **10 Claims**

1. A tricyclic compound of the formula:



wherein:

X_1—X_2 is selected from the group consisting of —CH_2—O— or



(wherein l represents 0, 1, or 2);

L is selected from the group consisting of —CH=CH— or —S—;

is a single or double bond;

W is selected from the group consisting of —S—, —O—, —NH—, —CH_2—, —NHCO— or =CH—, and the left side of each formula is bound to the tricyclic nucleus;

n is 0,1,2, or 3;

Z is selected from the group consisting of —NR^1CO—, —NR^1SO_2—, —NR^1CONH—, —NR^1CSNH—, —$NR^1NHCONH$—, —$NR^1NHCSNH$—, —NR^1COO— or —NR^1COS—, wherein R^1 is hydrogen or lower alkyl, and the right side of each formula is bound to Q;

Q is selected from the group consisting of optionally substituted, N-substituted or unsubstituted pyrrolyl, (wherein the N-substituent is lower alkyl, phenyl or benzyl), pyridyl, quinolyl or isoquinolyl wherein substitution means 1 to 3 substituents on the aromatic ring, independently selected from lower alkyl, phenyl, benzyl, halogen, triflouromethyl, nitro, OR^2 or SR^2, (wherein R^2 represents hydrogen, lower alkyl, phenyl or benzyl);

one of R^A and R^B is hydrogen and the other is —Y—M— wherein Y is selected from the group consisting of a single bond, $-CR^3R^4-(CH_2)_m-$ and $-CR^3{=}CR^4-(CH^2)_m-$ and each of R^3 and R^4 are independently hydrogen

or lower alkyl and m is 0, 1, 2, 3, or 4, wherein the left side of each formula is bound to the tricyclic nucleus; M is $-COOR^5$ and R^5 is hydrogen, lower alkyl or $-CONR^{5a}R^{5b}$ and each of R^{5a} and R^{5b} independently are hydrogen or lower alkyl; each of G^A and G^B are independently lower alkyl, halogen or OR^6 and R^6 represents hydrogen, lower alkyl, phenyl or benzyl;

each of g^A and g^B are independently 0, 1, 2 or 3; or a pharmaceutically acceptable salt thereof.

10. A pharmaceutical composition comprising a pharmaceutical carrier and, as an active ingredient, a therapeutically effective amount of a tricyclic compound defined in claim 1.

5,010,088

6-(4-HYDROXYPIPERIDINO) CARBOSLYRIL

Richard M. Welch, Raleigh; Alan R. Brown, Durham, and Arthur P. Phillips, Raleigh, all of N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

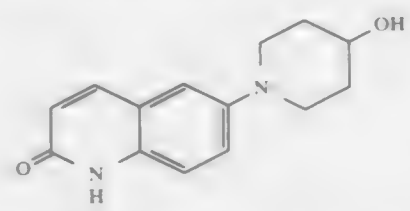
Filed Aug. 24, 1989, Ser. No. 398,219

Claims priority, application United Kingdom, Aug. 25, 1988, 8820174

Int. Cl.[5] **C07D** *401/04;* **A61K** *31/47*

U.S. Cl. 514—312 **11 Claims**

1. The compound of formula (I)



(I)

or an acid addition salt or physiologically acceptable ester thereof.

5,010,089

CCK ANTAGONISTS AND THEIR USE IN TREATING GASTROINTESTINAL DISORDERS

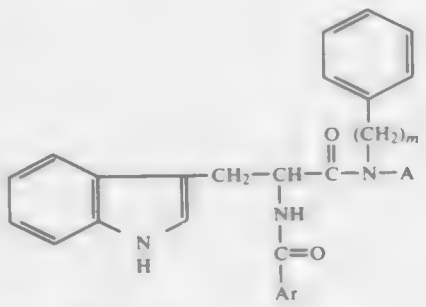
Sun H. Kim, Chestnut Hill, and Sylviane Moreau, Upton, both of Mass., assignors to Biomeasure, Inc., Hopkinton, Mass.

Continuation-in-part of Ser. No. 231,493, Aug. 12, 1988, abandoned, which is a continuation-in-part of Ser. No. 815,217, Dec. 31, 1985, Pat. No. 4,814,463. This application Aug. 21, 1989, Ser. No. 396,567

Int. Cl.[5] **C07D** *209/18, 403/12;* **A61K** *31/405, 31/47*

U.S. Cl. 514—314 **12 Claims**

1. A compound having the formula

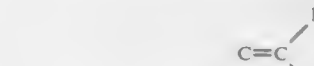


or pharmaceutically acceptable salt thereof,

wherein Ar is an indolyl, quinolyl or naphthyl;

m is an integer between 0 and 2, inclusive; and

A is either



wherein n is an integer between 1 and 5, inclusive, and R^2 is hydroxy, an alkoxy group having 1–5, inclusive, carbon atoms, or aralkoxy.

11. A method for preventing a patient having excessive cholecystokinin from developing a gastrointestinal disorder comprising administering to the patient an effective amount of the compound of any of claim 1–10.

12. The method of claim 11 wherein said gastrointestinal disorder is a gastric motility disorder or a colon motility disorder.

5,010,090

N-(BUTENYL SUBSTITUTED) AZAHETEROCYCLIC CARBOXYLIC ACIDS

Frederik C. Gronvald, Vedbaek, and Claus Braestrup, Roskilde, both of Denmark, assignors to Novo Nordisk A/S., Bagsvaerd, Denmark

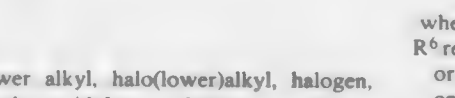
Continuation-in-part of Ser. No. 33,084, Feb. 24, 1987, abandoned. This application Oct. 7, 1988, Ser. No. 254,557

Claims priority, application Denmark, Jun. 26, 1985, 2883/85; Jun. 26, 1986 [DK] Denmark PCT/DK86/00076

Int. Cl.[5] **C07D** *401/14*

U.S. Cl. 514—326 **10 Claims**

1. A compound of formula I



I

wherein R^1 and R^2 are the same or different and each represents a substituted or unsubstituted, thien-2-yl, thien-3-yl, pyrrol-2-yl or pyrrol-3-yl wherein the substitution is with at least one of C_{1-7} alkyl, bromo, chloro, or fluoro and at least one of said R^1 and R^2 is thien-2-yl substituted at least at the 3-position or pyrrol-2-yl substituted at least at the 1-position with C_{1-7}-alkyl, chloro, bromo, or fluoro, and wherein R^3 represents 3-carboxypiperidin-1-yl, 3-carboxy-1,2,5,6-tetrahydropyridin-1-yl or 3-carboxymethylpyrrolidin-1-yl, and pharmaceutically acceptable salts thereof.

5,010,091

2,4-DIHALOGENO-6-PYRIDYLETHANOLPHENYLISOPROPYLAMINES FOR SHIFTING THE PROTEIN-FAT RATIO OF ANIMALS IN FAVOR OF PROTEIN

Hans Lindel, Leverkusen; Werner Hallenbach, Monheim; Friedrich Berschauer, Wuppertal; Heinrich Greife, Langenfeld, and Gernot Klotz, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

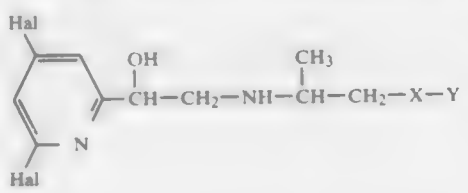
Filed Feb. 8, 1990, Ser. No. 477,272

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1989, 3905028

Int. Cl.[5] **C07D** *213/61, 213/89;* **A61K** *31/44*

U.S. Cl. 514—357 **8 Claims**

1. A 2,4-dihalogeno-6-pyridyl-ethanolamine of the formula



(I)

in which

Hal are identical or different and represent fluorine, chlorine or bromine.

X represents a direct bond of $—CH_2—$ and

Y represents phenyl which is substituted by OH, C_{1-4}-alkoxy, C_{1-4}-alkoxy-C_{1-4}-alkoxy, carboxyl, aminocarbonyl, C_{1-4}-alkoxycarbonyl, hydroxy-C_{1-4}-alkoxy, amino-C_{14}-alkoxy, C_{1-4}-alkoxycarbonyl-C_{1-4}-alkoxy or phenyl-C_1-C_4-alkoxy,

or a physiologically tolerated salt or N-oxide thereof.

8. A method for shifting the protein-fat ratio of animals in favor of protein and for treating adiposity in humans and animals, comprising administering to said animals or humans an amount effective therefor of a compound according to claim 1.

5,010,092

PROTECTION AGAINST CHEMICALLY-INDUCED KIDNEY DAMAGE BY METHIMAZOLE

Adnan A. Elfarra, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Dec. 22, 1989, Ser. No. 454,884

Int. Cl.[5] **A01N** *43/64, 43/82, 43/78, 43/50*

U.S. Cl. 514—359 **7 Claims**

1. A method for reducing nephrotoxicity of an effective amount of compound A that is being administered to a live mammal in need thereof, where compound A is an antibiotic, the method comprising:

administering to the live mammal the effective amount of the antibiotic and an effective amount of a compound B so as to reduce the nephrotoxicity of the antibiotic;

wherein compound B is selected from the group of methimazole and carbimazole.

5,010,093

NITRIC ESTER DERIVATIVE

Youichi Shiokawa, Ibaraki; Koichi Takimoto, Takarazuka, and Kohei Takenaka, Sakai, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

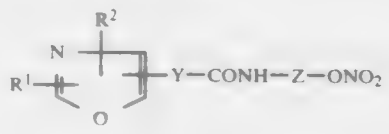
Division of Ser. No. 213,623, Jun. 30, 1988, Pat. No. 4,923,886. This application Mar. 16, 1990, Ser. No. 494,545

Claims priority, application United Kingdom, Jul. 20, 1987, 8717068

Int. Cl.[5] **C07D** *263/34, 263/32;* **A61K** *31/42*

U.S. Cl. 514—374 **7 Claims**

1. A compound of the formula:



wherein

R^1 is hydrogen, lower alkyl, halo(lower)alkyl, halogen, phenyl, nitrophenyl, pyridyl, morpholino, piperidino, amino, lower alkanoylamino, higher alkanoylamino, benzamido, lower alkoxycarbonylamino, N-lower alkylamino, N,N-di(lower)alkylamino, N-lower alkyl-N-lower alkanoylamino, 3-lower alkylureido or N,N-di(lower) alkylamino(lower)alkyl,

R^2 is hydrogen, lower alkyl or N-(nitroxy-(lower)alkyl) carbamoyl,

Y is a single bond, lower alkylene or lower alkenylene, and

Z is ethylene, trimethylene, tetramethylene, 1-methyl-nitroxymethylethylene, 1,1-bis(nitrooxymethyl)ethylene, 2-nitrooxytrimethylene or ethyleneoxyethylene, and pharmaceutically acceptable salts thereof.

5,010,094

IMIDAZOLYL COMPOUNDS AND THEIR USE AS FUNGICIDES

Gerold Schade, Cologne; Albrecht Marhold, Leverkusen, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

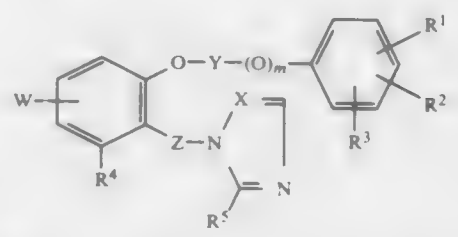
Filed Jan. 18, 1990, Ser. No. 466,805

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1989, 3901723

Int. Cl.[5] **C07D** *233/60;* **A01N** *43/50*

U.S. Cl. 514—399 **10 Claims**

1. An axolyl derivative of the formula



(I)

in which

R^1 represents halogenoalkyl having 1 to 4 carbon atoms and 1 to 5 identical or different halogen atoms, or represents halogenoalkylthio having 1 to 4 carbon atoms and 1 to 5 identical or different halogen atoms,

R^2 represents hydrogen, fluorine, chlorine, bromine, cyano, optionally halogen-substituted alkyl having 1 to 6 carbon atoms, optionally halogen-substituted alkenyl having 2 to 6 carbon atoms, alkoxy having 1 to 4 carbon atoms, alkylthio having 1 to 4 carbon atoms, aryl having 6 to 10 carbon atoms or aryloxy having 6 to 10 carbon atoms,

R^3 represents hydrogen, fluorine, chlorine, bromine, cyano, optionally halogen-substituted alkyl having 1 to 6 carbon atoms, optionally halogen-substituted alkenyl having 2 to 6 carbon atoms, alkoxy having 1 to 4 carbon atoms, alkylthio having 1 to 4 carbon atoms, aryl having 6 to 10 carbon atoms or aryloxy having 6 to 10 carbon atoms,

R^4 represents hydrogen,

R^5 represents hydrogen or alkyl having 1 to 4 carbon atoms,

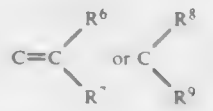
W represents hydrogen, fluorine, chlorine, or bromine,

X represents a CH group,

Y represents a straight-chain or branched alkylene chain having 1 to 6 carbon atoms,

m represents the number 0 or 1 and

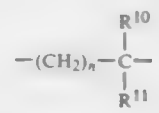
Z represents the grouping



wherein

R^6 represents hydrogen or alkyl having 1 to 4 carbon atoms, or represents phenyl which is optionally substituted by one to three identical or different substituents from the group comprising alkyl having 1 to 4 carbon atoms, halogen and/or halogenoalkyl having 1 or 2 carbon atoms and 1 to 5 halogen atoms, or

R^6, together with R^4, represent the grouping



R^7 represents hydrogen or alkyl having 1 to 4 carbon atoms,

R^8 represents hydrogen or alkyl having 1 to 4 carbon atoms,

R^9 represents hydrogen or alkyl having 1 to 4 carbon atoms,
R^{10} represents hydrogen or alkyl having 1 to 4 carbon atoms,
R^{11} represents hydrogen or alkyl having 1 to 4 carbon atoms and
n represents the number 0, 1, or 2.

9. A method of combating fungi which comprises applying to such fungi or to a fungus habitat a fungicidally effective amount of a compound or addition product thereof according to claim 1.

5,010,095

N-(W-SUBSTITUTED ALKYL)-N'-(IMIDAZOL-4-YL)ALKYL) GUANIDINE

Geert J. Sterk, RN Utrecht; Henk Timmerman, VM Voorschoten, and Henk van der Goot, GW Hoofddorp, all of Netherlands, assignors to Cedona Pharmaceuticals B.V., Haarlem, Netherlands

PCT No. PCT/NL87/00013, § 371 Date Nov. 23, 1988, § 102(e) Date Nov. 23, 1988, PCT Pub. No. WO87/07891, PCT Pub. Date Dec. 30, 1987

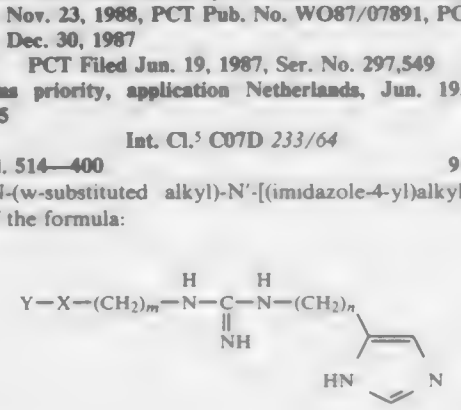
PCT Filed Jun. 19, 1987, Ser. No. 297,549

Claims priority, application Netherlands, Jun. 19, 1986, 8601585

Int. Cl.[5] C07D *233/64*

U.S. Cl. 514—400 **9 Claims**

1. N-(w-substituted alkyl)-N'-[(imidazole-4-yl)alkyl]guanidine of the formula:



wherein
m is 1,2 or 3;
n is 2 or 3;
X is
(a) CH_2, and Y is an R substituted diphenylmethyl group, or X is:
(b) =CH—, and Y is an R-substituted diphenylmethylidene group,
R is a member selected from the group consisting of alkyl, alkoxy, halogen and trihalogen methyl, and the dotted line represents an optional bond, and the acid addition salts thereof.

5,010,096

METHOD OF PROTECTING MAMMALS AGAINST NEURONAL DAMAGE RESULTING FROM CEREBRAL ISCHEMIA

Ann G. Hayes, Potters Bar, and Phillip J. Birch, Biggleswade, both of England, assignors to Glaxo Group Limited, London, England

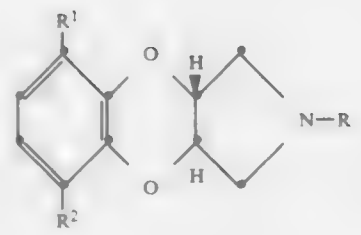
Filed Nov. 30, 1989, Ser. No. 443,189

Claims priority, application United Kingdom, Dec. 1, 1988, 8828032

Int. Cl.[5] A61K *31/40*

U.S. Cl. 514—411 **8 Claims**

1. A method of protecting against neuronal damage resulting from cerebral ischaemia in a mammal which comprises administering to a mammal in need of said protection an effective amount of a compound of formula (I) or a physiologically acceptable salt or hydrate thereof



(I)

wherein
R is a hydrogen atom or a group selected from C_1-C_6alkyl, C_1-C_6alkyl substituted by a C_3-C_7cycloalkyl), C_3-C_6alkenyl, C_3-C_6alkynyl, C_3-C_7cycloakyl aralkyl (in which the alkyl moiety contains 1 to 5 carbon atoms) and CHO;
R^1 is a halogen atom or a group selected from C_1-C_4alkyl, C_1-C_4alkoxy, hydroxyl, cyano, nitro and $—NR^3R^4$;
R^2 is a hydrogen atom, a halogen atom of a group selected from C_1-C_4alkyl C_1-C_4alkoxy, hydroxyl, cyano, nitro and $—NR^3R^4$;
R^3 is a hydrogen atom or a C_1-C_4alkyl group; and
R^4 is a hydrogen atom or a C_1-C_4alkyl group.

5,010,097

NOVEL COMPOUNDS

Roger E. Markwell; Stephen A. Smith; Ian Hughes, and Laramie M. Gaster, all of Harlow, England, assignors to Beecham Pharmaceuticals, Harlow, England

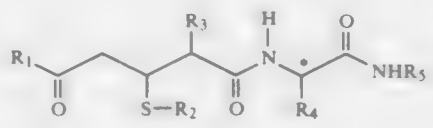
Filed Dec. 20, 1988, Ser. No. 287,453

Claims priority, application United Kingdom, Dec. 22, 1987, 8729804

Int. Cl.[5] A61K *31/16, 31/165;* **C07C** *323/41*

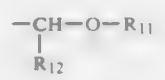
U.S. Cl. 514—419 **12 Claims**

1. A compound of formula (I) or a salt, solvate or hydrate thereof:



(I)

in which,
R_1 is hydrogen, alkyl, or optionally substituted aryl;
R_2 is hydrogen, or acyl;
R_3 is C_{3-6} alkyl;
R_4 is hydrogen, alkyl, $—CH_2$-R_{10} where R_{10} is optionally substituted phenyl or heteroaryl, or a group



where
R_1 is hydrogen, alkyl, or $—CH_2—$Ph where Ph is optionally substituted phenyl, and R_{12} is hydrogen or alkyl; and
R_5 is hydrogen, alkyl, or a group



where
R_{13} is hydrogen, or alkyl, and R_{14} is hydroxy, alkoxy, or $—NR_6R_7$, where each of R_6 and R_7 is hydrogen or alkyl, or R_6 and R_7 together with the nitrogen atom to which they are bonded form a 5-, 6- or 7-membered ring with an optional oxygen or sulphur atom in the ring or an optional further nitrogen atom optionally substituted by alkyl.

12. A method of treating collagenolytic conditions in mammals which comprises administering an effective amount of a compound of formula (I) as defined in claim 1, or a pharmaceutically acceptable salt, solvate or hydrate thereof to a sufferer.

5,010,098

ARYLPYRROLE INSECTICIDAL ACARICIDAL AND NEMATICIDAL AGENTS AND METHODS FOR THE PREPARATION THEREOF

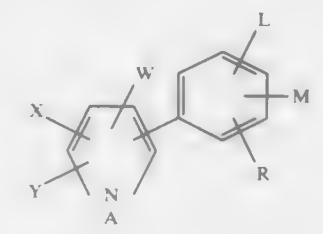
Dale G. Brown, Hunterdon; Jack K. Siddens, Princeton Junction; Robert E. Diehl, Lawrenceville, and Donald P. Wright, Jr., Pennington, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 79,545, Jul. 29, 1987, abandoned. This application Jun. 23, 1988, Ser. No. 208,841

Int. Cl.[5] A01N *43/36*

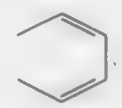
U.S. Cl. 514—426 **6 Claims**

1. A method for controlling insects, nematodes or acarina comprising: contacting said insects, nematodes or acarina, their infested breeding grounds, food supply or habitat with an insecticidally, nematicidally or acaricidally effective amount of a compound having the structure:



(I)

wherein X is H, F, Cl, Br, I, or CF_3; Y is F, Cl, Br, I, CF_3 or CN; W is CN or NO_2 and A is H; C_1-C_4 alkyl optionally substituted with from one to three halogen atoms, one hydroxy, one C_1-C_4 alkoxy, one C_1-C_4 alkylthio, one phenyl optionally substituted with C_1-C_3 alkyl, C_1-C_3 alkoxy or with one to three halogen atoms, one phenoxy optionally substituted with one to three halogen atoms or one benzyloxy optionally substituted with one halogen substituent; C_1-C_4 carbalkoxymethyl; C_3-C_4 alkenyl optionally substituted with from one to three halogen atoms; cyano; C_3-C_4 alkynyl optionally substituted with one halogen atom; di-(C_1-C_4 alkyl) aminocarbonyl; or C_4-C_6 cycloalkylaminocarbonyl; L is H, F, Cl or Br; and M and R are each independently H, C_1-C_3 alkyl, C_1-C_3 alkoxy, C_1-C_3 alkylthio, C_1-C_3 alkylsulfinyl, C_1-C_3 alkylsulfonyl, cyano, F, Cl, Br, I, nitro, CF_3, R_1CF_2Z, R_2CO or NR_3R_4, and when M and R are on adjacent positions and taken with the carbon atoms to which they are attached they may form a ring in which MR represents the structure:

$—OCH_2O—$, $—OCF_2O—$ or  .

Z is S(O)n or O; R_1 is H, F, CHF_2, CHFCl, or CF_3; R_2 is C_1-C_3 alkyl, C_1-C_3 alkoxy, or NR_3R_4; R_3 is H or C_1-C_3 alkyl; R_4 is H, C_1-C_3 alkyl, or R_5CO; R_5 is H or C_1-C_3 alkyl; and n is an integer of 0, 1 or 2.

5,010,099

DISCODERMOLIDE COMPOUNDS, COMPOSITIONS CONTAINING SAME AND METHOD OF PREPARATION AND USE

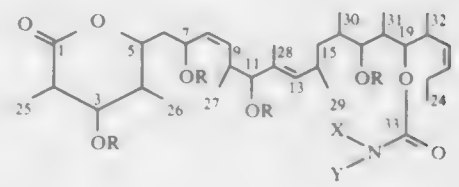
Malika Gunasekera; Sarath P. Gunasekera; Ross E. Longley, all of Vero Beach, Fla., and Neal S. Burres, Highland Park, Ill., assignors to Harbor Branch Oceanographic Institution, Inc., Fort Pierce, Fla.

Division of Ser. No. 392,468, Aug. 11, 1989, Pat. No. 4,939,168. This application May 7, 1990, Ser. No. 519,605

Int. Cl.[5] A61K *31/365*

U.S. Cl. 514—459 **3 Claims**

1. A method for treating cancerous cachexia caused by the presence of a tumor in a host comprising treating the host with an effective antitumor amount of a compound of the formula:



wherein:
R = —H, —A, $—CH_2—Q$, —COA, or —COZ,
A = lower alkyl,
Z = phenyl, p-tolyl, m-tolyl, p-bromophenyl, p-chlorophenyl, 3-ethyl-4-bromophenyl, 2,4-diethylphenyl, 2-methyl-3-hydroxyphenyl, 2,4-dimethyl-3-chlorohenyl, 2-bromo-3-amino-4-methylphenyl, and 2-iodo-3-ethyl-5-aminophenyl,
Q = phenyl, tolyl, or xylyl,
X = —H, —A, —Z, or $—CH_2—Z$, and
Y = —H, —A, —Z, $—CH_2—Z$, —COA, —COZ, and acid addition salts thereof.

5,010,100

CERTAIN 2,5-DIARYL TETRAHYDROFURANS AND ANALOGS THEREOF AS PAF ANTAGONISTS

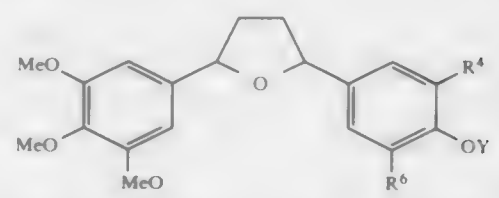
Tesfaye Biftu, Parlin; John C. Chabala, Westfield; Robert L. Bugianesi, Colonia; Mitree M. Ponpipom, Branchburg, and Soumya P. Sahoo, Edison, all of N.J., assignors to Merck & Co. Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 135,862, Dec. 21, 1987, abandoned, which is a continuation-in-part of Ser. No. 852,607, Apr. 16, 1986, abandoned, which is a continuation-in-part of Ser. No. 725,687, Apr. 22, 1985, abandoned, which is a continuation-in-part of Ser. No. 551,666, Nov. 11, 1983, Pat. No. 4,539,332. This application Jun. 8, 1989, Ser. No. 362,919

Int. Cl.[5] C07D *307/04;* **A61K** *31/34*

U.S. Cl. 514—461 **23 Claims**

2. A compound of the following structural formula:



(I)

or a pharmaceutically acceptable salt thereof wherein:
R^4 is $S(O)_nR^2$ in which n is 0, 1 or 2 and R^2 is selected from the group consisting of
(a) C_{1-6} alkyl,
(b) C_{2-6} alkenyl,
(c) C_{2-6} alkynyl,
(d) hydroxy-C_{1-6} alkyl,

(e) C_{1-6} alkoxy-C_{1-6} alkyl, and
(f) phenyl-C_{1-6} alkyl;
Y is selected from the group consisting of
(a) C_{1-12} alkyl,
(b) C_{2-6} (halo)$_x$alkyl in which x is 1, 2, 3, 4 or 5,
(c) hydroxy-C_{1-6} alkyl,
(d) C_{1-6} alkoxy-C_{1-6} alkyl,
(e) C_{2-6} alkenyl,
(f) C_{2-6} alkynyl,
(g) phenyl-C_{1-6} alkyl, and
(h) amino-C_{1-6} alkyl;
R^6 is selected from the group consisting of
(a) C_{1-6} alkoxy,
(b) C_{1-6} alkoxyaminocarbonyloxy, and
(c) di-(C_{1-3} alkyl)amino-C_{1-6} alkyl;
wherein the relationship of the substituents at positions 2 and 5 of the tetrahydrofuran includes all stereo isomers, with the proviso that when R^4 and R^6 are both simultaneously sterically hindering groups, Y is methyl, ethyl or n-propyl.

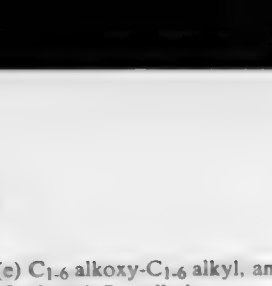
18. A method of antagonising the effects of PAF in a subject in need thereof which comprises administering to said subject a nontoxic therapeutically effective amount of a compound according to claim 2.

5,010,101
PESTICIDAL AMINOMETHYLHETEROCYCLIC COMPOUNDS

Wolfgang Krämer, Burscheid; Joachim Weissmüller, Monheim; Dieter Berg, Wuppertal; Wilhelm Brandes, Leichlingen, and Stefan Dutzmann, Duesseldorf, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

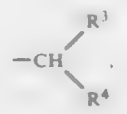
Filed Aug. 17, 1989, Ser. No. 395,391
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1988, 3828545
Int. Cl.[5] **A01N** *43/30*; **C07D** *317/72*
U.S. Cl. 514—462 **13 Claims**

1. An aminomethylheterocyclic compound of the formula



(I)

wherein
R represents cycloalkyl having 3 to 7 carbon atoms, or represents aryl which has 6 to 10 carbon atoms and is optionally substituted by one or more identical or different straight-chain or branched alkyl radicals having 1 to 12 carbon atoms, or represents the radical



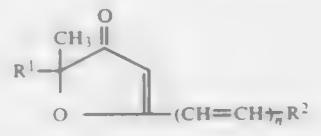
R^1 and R^2 independently of one another each represent hydrogen, or represent in each case straight-chain or branched alyyl having 1 to 12 carbon atoms, allkenyl having 3 to 8 carbon atoms, alkynyl having 3 to 8 carbon atoms, hydroxyalkyl having 2 to 6 carbon atoms, alkoxyalkyl or dialkoxyalky having in each case 1 to 6 carbon atoms or hydoxyalkoxyalkyl having 2 to 6 carbon atoms in the individual alkyl parts,or represent alkoxycarbonylalky having 1 to 6 carbon atoms per alkoxy and alkyl part, or represent in each case straight-chain or branched dioxolanylalkyl, dioxanylalkyl or oxolanylalkyl having in each case 1 to 4 carbon atoms int he alkyl part, or represent cycloalkyl or cycloalkylalkyl having in each case 3 to 7 carbon atoms in the cycloalkyl part and if appropriate 1 to 4 carbon atoms in the straight-chain or branched alkyl part and in each case optionally substituted in the cycloalkyl part by one or more identical or different substituents selected fromt eh group consisting of halogen and in each case straight-chain or branched alkyl, alkoxy, halogenoalkyl and halogenoalkoxy having in each case 1 to 4 carbon atoms and if appropriate 1 to 9 identical or different halogen atoms; or in additon represent arylalkyl, arylalkenyl or aryl having in each case 6 to 10 carbon atoms in the aryl part and if appropriate up to 6 carbon atoms in the straight-chain or branched alkyl or alkenyl part and in each case optionally substituted in the aryl part by one or more identical or differnt substituents selected from the group consisting of halogen, cyano, nitro and in each case straight-chain or branched alkyl, alkoxy, alkylthio, halogenoalkyl, halogenoalkoxy, halogenoalkylthio, alkoxycarbonyl and alkoximinoalkyl having in each case 1 to 4 carbon atoms in the individual alkyl parts and if approprite 1 to 9 identical or different halogen atoms
R^3 represents hydrogen, or represents straight-chain or branched alkyl having 1 to 12 carbon atoms, or represents aryl which has 6 to 10 carbon atoms and is optionally substitued by one or more identical or differnt straight-chain or branched alkyl radicals having 1 to 12 carbon atoms, and
R^4 represents straight-chain or branched alkyl having 1 to 12 carbon atoms, or represents cycloalkyl having 3 to 7 carbon atoms, or represents aryl which has 6 to 10 carbon atoms and is optionally substituted by one or more identical or different straight-chain or branched alkyl radicals having 1 to 12 carbon atoms,
but wherein R^3 and R^4 may not simultaneously represent methyl,
or an acid addition salt thereof.

5,010,102
ANTI-ULCER 5-(2-SUBSTITUTED ETHENYL)-3(2H)-FURANONES

Steven W. Felman, Langhorne, Pa.; Ivo L. Jirkovsky, Plainsboro, and Kevin A. Memoli, Cranbury, both of N.J., assignors to American Home Products Corp., New York, N.Y.

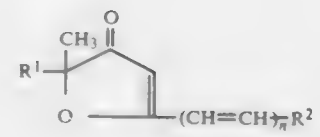
Division of Ser. No. 449,620, Dec. 12, 1989, Pat. No. 4,966,905.
This application Aug. 23, 1990, Ser. No. 572,533
Int. Cl.[5] **A61K** *31/34*; **C07D** *307/02*
U.S. Cl. 514—473 **23 Claims**

1. A compound of the formula:



in which
R^1 is alkyl of 1 to 6 carbon atoms, phenyl or halophenyl;
R^2 is substituted phenyl having from 1 to 3 substituents selected from halo, alkyl of 1 to 6 carbon atoms, alkylthio of 1 to 6 carbon atoms, alkylsulfonyl of 1 to 6 carbon atoms, cyano or trifluoromethyl; and
n is 1 or 2.

22. A method for preventing gastric ulcers which comprises administering, orally or parenterally, to a mammal in need thereof a cytoprotective amount of a compound of the formula:



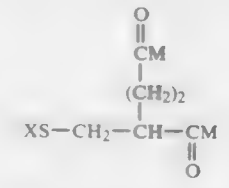
in which
R^1 is alkyl of 1 to 6 carbon atoms, phenyl or halophenyl;
R^2 is phenyl or substituted phenyl having from 1 to 3 substituents selected from halo, alkyl of 1 to 6 carbon atoms, alkylthio of 1 to 6 carbon atoms, alkylsulfonyl of 1 to 6 carbon atoms, cyano or trifluoromethyl; and
n is 1 or 2.

5,010,103
COMPOSITIONS AND METHODS COMPRISING 2-MERCAPTOMETHYLGLUTARIC ACID DERIVATIVES

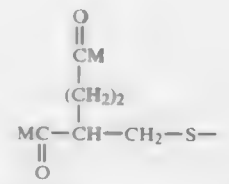
Thomas I. Kalman, East Amherst, N.Y., assignor to The Research Foundation of State University of N.Y., Albany, N.Y.

Division of Ser. No. 58,035, Jun. 4, 1987, Pat. No. 4,927,966.
This application Jan. 17, 1990, Ser. No. 466,211
Int. Cl.[5] **A61K** *31/28*; **C07C** *55/02*
U.S. Cl. 514—495 **15 Claims**

1. A method of complexing a cation selected from the group consisting of amino cation and metal cation comprising contacting said cation with a compound of the formula

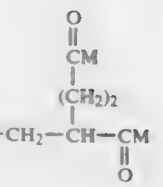


wherein X is selected from the group consisting of hydrogen, R′C— and R″—; R′ is selected from the group consisting of alkyl, alkenyl, alkynyl, substituted and unsubstituted aryl where the substituents are selected from the group consisting of alkyl, alkenyl, alkynyl and aryl; provided that R′ contains no more than 20 carbon atoms; R″ is selected from the group consisting of

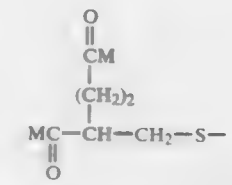


and R′S; M is selected from the group consisting of OR and secondary amine; and R is selected from the group consisting of hydrogen, alkyl, acyloxymethyl, substituted and unsubstituted aryl, amino cation and metal cation selected from the group consisting of alkaline metal, alkaline earth metal, transition metal, gold, platinum and mixtures thereof.

4. A method of inhibiting gamma-glutamyl hydrolases in a warm blooded animal comprising administering to said warm blooded animal an effective gamma-glutamyl hydrolase inhibiting amount of a compound of the formula



wherein X is selected from the group consisting of hydrogen, R′C— and R″—; R′ is selected from the group consisting of alkyl, alkenyl, alkynyl and unsubstituted and unsubstituted aryl where the substituents are selected from the group consisting of alkyl, alkenyl, alkynyl and aryl; provided that R′ contains no more than 20 carbon atoms; R″ is selected from the group consisting of



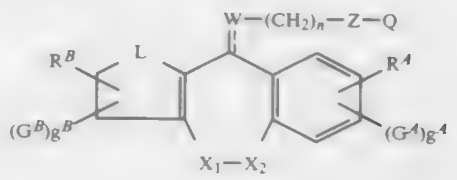
and R′S; M is selected from the group consisting of OR and secondary amine; and R is selected from the group consisting of hydrogen, alkyl, acyloxymethyl, substituted and unsubstituted aryl, amino cation and metal cation selected from the group consisting of alkaline metal, alkaline earth metal, transition metal, gold, platinum and mixtures thereof.

5,010,104
TRICYCLIC COMPOUNDS

Etsuo Oshima, Shizuoka; Hiroyuki Obase, Mishima; Akira Karasawa; Kazuhiro Kubo, both of Shizuoka; Ichiro Miki, Tokyo, and Akio Ishii, Shizuoka, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 255,485, Oct. 11, 1988, Pat. No. 4,882,351.
This application Jun. 29, 1989, Ser. No. 272,771
Claims priority, application Japan, Oct. 14, 1987, 62-259145
Int. Cl.[5] **A61K** *31/235, 31/1*; **C07C** *69/616*
U.S. Cl. 514—510 **11 Claims**

1. A tricyclic compound represented by the formula:



wherein:
X_1-X_2 is selected from the group consisting of —CH$_2$—CH$_2$— or —CH=CH—;
L is —CH=CH—;
——— is a single or double bond;
W is selected from the group consisting of —S—, —CH$_2$—, or =CH—, and the left side of each formula is bound to the tricyclic nucleus;
n is 0,1,2 or 3;
Z is selected from the group consisting of —NR^{1}CO—, —NR^{1}SO$_2$— —NR^{1}CONH—, —NR^{1}CSNH—, —NR^{1}NHCONH—, —NR^{1}NHCSNH—, —NR^{1}COO— or —NR^{1}COS—, wherein R^1 *is hydrogen or lower alkyl, and the right side of each formula is bound to Q*;
Q is selected from the group consisting of straight of branched alkyl having 1 to 18 carbon atoms, alicyclic alkyl having 3 to 6 carbon atoms, lower alkenyl having 2 to 6 carbon atoms and optionally substituted carbocyclic

aryl, optionally substituted aralkyl, aralkenyl, furyl, thienyl, or coumarinyl wherein substitution means 1 to 3 substituents on the aromatic ring, independently selected from lower alkyl, phenyl, benzyl, halogen, triflouromethyl, nitro, OR^2 and SR^2, wherein R^2 represents hydrogen, lower alkyl, phenyl or benzyl;

one of R^A and R^B is hydrogen and the other is —Y—M— wherein Y is selected from the group consisting of single bond, $—CR^3R^4—(CH_2)_m—$ and $—CR^3=CR^4—(CH^2)_m)—$ and each of R^3 and R^4 are independently hydrogen or lower alkyl and m is 0, 1, 2, 3, or 4, wherein the left side of each formula is bond to the tricyclic nucleus; M is $—COOR^5$ and R^5 is hydrogen or lower alkyl;

each of G^A and G^B are independently lower alkyl, halogen or OR^6 and R^6 represents hydrogen, lower alkyl, phenyl or benzyl;

each of g^A and g^B are independently 0, 1, 2 or 3; or a pharmaceutically acceptable salt thereof.

11. A compound according to claim 1 which is selected from the group consisting of:

5-[2-[(phenylsulfonyl)amino]ethyl]thio-10,11-dihydro-5H-dibenzo[a,d]cyclohepten-3-carboxylic acid;

5-[2-[(styrylsulfonyl)amino]ethyl]thio-10,11-dihydro-5H-dibenzo[a,d]cyclohepten-3-carboxylic acid;

5-[2-[(phenylsulfonyl)amino]ethyl]thio-5H-dibenzo[a,d]cyclohepten-3-carboxylic acid and

5-[2-[(styrylsulfonyl)amino]ethyl]thio-5H-dibenzo[a,d]cyclohepten-3-carboxylic acid.

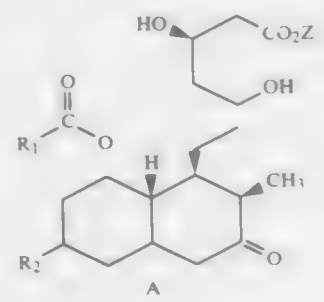
5,010,105

ANTIHYPERCHOLESTEROLEMIC COMPOUNDS

Ta J. Lee, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed May 9, 1990, Ser. No. 520,899
Continuation-in-part of Ser. No. 363,816, Jun. 9, 1989, Pat. No. 4,937,259
Int. Cl.[5] A61K *31/21*; C07C *67/02*
U.S. Cl. 514—510 **8 Claims**

1. A compound represented by the structural formulae (I) or (II):



(II)

A

wherein:

R_1 is:

(1) C_{1-10} alkyl;

(2) substituted C_{1-10} alkyl in which one or more substituent(s) is

(a) halogen,

(b) hydroxy,

(c) C_{1-10} alkoxy,

(d) C_{1-5} alkoxycarbonyl,

(e) C_{1-5} acyloxy,

(f) C_{3-8} cycloalkyl,

(g) phenyl,

(h) substituted phenyl in which the substituents are X and Y,

(i) C_{1-10} alkylS(O)$_n$,

(j) C_{3-8} cycloalkylS(O)$_n$,

(k) phenylS(O)$_n$,

(l) substituted phenylS(O)$_n$ in which the substituents are X and Y, and

(m) oxo;

(n) nitrile,

(o) NR_3R_4,

(p) $CONR_3R_4$;

(3) C_{1-10} alkoxy;

(4) C_{2-10} alkenyl;

(5) C_{3-8} cycloalkyl;

(6) substituted C_{3-8} cycloalkyl in which one substituent is

(a) C_{1-10} alkyl

(b) substituted C_{1-10} alkyl in which the substituent is

(i) halogen,

(ii) hydroxy,

(iii) C_{1-10} alkoxy,

(iv) C_{1-5} alkoxycarbonyl,

(v) C_{1-5} acyloxy,

(vi) phenyl,

(vii) substituted phenyl in which the substituents are X and Y

(viii) C_{1-10} alkylS(O)$_n$,

(ix) C_{3-8} cycloalkylS(O)$_n$,

(x) phenylS(O)$_n$,

(xi) substituted phenylS(O)$_n$ in which the substituents are X and Y, and

(xii) oxo,

(c) C_{1-10} alkylS(O)$_n$,

(d) C_{3-8} cycloalkylS(O)$_n$,

(e) phenylS(O)$_n$,

(f) substituted phenylS(O)$_n$ in which the substituents are X and Y,

(g) halogen,

(h) hydroxy,

(i) C_{1-10} alkoxy,

(j) C_{1-5} alkoxycarbonyl,

(k) C_{1-5} acyloxy,

(l) phenyl, and

(m) substituted phenyl in which the substituents are X and Y;

(7) phenyl;

(8) substituted phenyl in which the substituents are X and Y,

(9) amino;

(10) C_{1-5} alkylamino;

(11) di(C_{1-5} alkyl)amino;

(12) phenylamino;

(13) substituted phenylamino in which the substituents are X and Y;

(14) phenyl C_{1-10} alkylamino;

(15) substituted phenyl C_{1-10} alkylamino in which the substituents are X and Y;

(16) a member selected from the group consisting of:

(a) piperidinyl,

(b) pyrrolidinyl,

(c) piperazinyl,

R_2 is H or CH_3;

R_3 and R_4 are independently selected from:

(a) C_{1-5} alkyl;

(b) substituted phenyl in which the substituents are X and Y;

A is $—CH_2—$;

X and Y are independently selected from:

(a) OH,

(b) halogen,

(c) trifluoromethyl,

(d) C_{1-3}alkoxy,

(e) C_{1-3}alkylcarbonyloxy,

(f) phenylcarbonyloxy,

(g) C_{1-3}alkoxycarbonyl,

(h) phenyloxycarbonyl,

(i) hydrogen,

(j) C_{1-5}alkyl;

Z is selected from

(1) hydrogen;

(2) C_{1-5}alkyl;

(3) substituted C_{1-5} in which the substituent is selected from

(a) phenyl,

(b) dimethylamino, and

(c) acetylamino, and

(4) 2,3-dihydroxypropyl; halogen is Cl or F; n is 0, 1 or 2; or a pharmaceutically acceptable salt thereof.

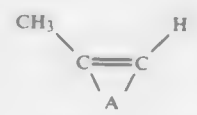
5,010,106

METHOD OF STERILIZING ANTHERS OF PLANTS

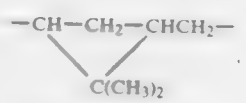
Marat A. Fedin, ulitsa Dm. Ulyanova, 24, kv. 158; Tatyana A. Kuznetsova, Khoroshevskoe shosse, 36b, kv. 62, both of Moscow; Viktor I. Lysenkov, ulitsa Yakubova, 30, kv. 366, Minsk; Svetlana A. Novikova, ulitsa Shirokaya, 19, korpus 2, kv. 176, Moscow; Valentin A. Savchuk, opytnaya stantsia VIR, Poltavskaya oblast, Globinsky raion, selo Ustimovka; Anatoly I. Sedelnikov, ulitsa Turgeneva, 24b, kv. 54, Gorky; Vera P. Shabunya, ulitsa M. Gorkogo, 50, kv. 24; Boris G. Udarov, ulitsa Yakuba Kolasa, 72, kv. 39, both of Minsk; Tatyana S. Tikhonova, ulitsa Aktjubinskaya, 3, kv. 5; Nina P. Polyakova, ploschad Svobody, 4, kv. 85, both of Gorky, and Sergei I. Paklin, ulitsa Malaya Filevskaya, 66, kv. 30, Moscow, all of U.S.S.R.

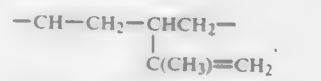
PCT No. PCT/SU88/00062, § 371 Date Nov. 1, 1989, § 102(e) Date Nov. 1, 1989, PCT Pub. No. WO89/08394, PCT Pub. Date Sep. 21, 1989
PCT Filed Mar. 17, 1988, Ser. No. 439,030
Int. Cl.[5] A01N *27/00, 31/00*
U.S. Cl. 514—546 **11 Claims**

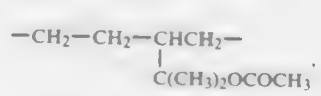
1. A method of sterilizing anthers of plants which comprises applying to said plants with a gametocidally effective amount of a sterilizing agent in combination with a diluent during the period of the fifth and/or sixth stage of organogenesis, said sterilizing agent being a terpenoid compound of the formula:

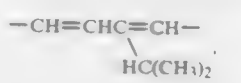


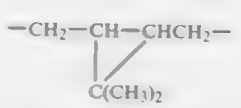
wherein A =

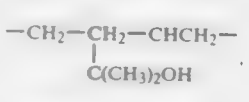


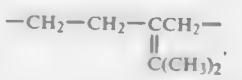












or mixtures thereof.

5,010,107

METHOD AND COMPOSITION FOR ACHIEVING ANTICARCINOGENIC ACTIVITY

John P. Minton; Thomas E. Webb, and Hussein M. Abou-Issa, all of Columbus, Ohio, assignors to Ohio State University Research Foundation, Columbus, Ohio

Continuation of Ser. No. 89,568, Aug. 26, 1987, abandoned. This application Nov. 13, 1989, Ser. No. 435,543
The portion of the term of this patent subsequent to Apr. 16, 2008, has been disclaimed.
Int. Cl.[5] A61K *31/185*
U.S. Cl. 514—578 **7 Claims**

1. A dietary supplement for inhibiting the formation of mammary cancer cells in humans or animals or for decreasing a patients risk of contracting cancer via steady and prolonged inhibition of β-glucuronidase such that less detoxified toxins are hydrolysed and thus more toxins are excreted and via elevation of the level of cellular cAMP (cyclic AMP) and of histone kinases, comprising approximately 0.01 to 0.02 parts by weight of calcium glucarate for inhibiting β-glucuronidase and approximately 0.0003 to 0.0006 parts by weight of N-(4-hydroxyphenyl) retinamide for elevating levels of cellular cAMP and of histone kinases.

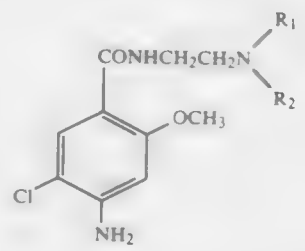
5,010,108

N-CYCLOALKYLAMINOETHYLBENZAMIDE DERIVATIVES, THEIR SYNTHESIS AND PHARMACEUTICAL PREPARATIONS

Stefano Poli; Germano Coppi, and Lucio Del Corona, all of Milan, Italy, assignors to Poli Industria Chimica S.p.A., Milan, Italy

Filed Mar. 15, 1989, Ser. No. 324,596
Claims priority, application Italy, Mar. 17, 1988, 19814 A/88
Int. Cl.[5] C07C *237/44*; A61K *31/165*
U.S. Cl. 514—619 **7 Claims**

1. A N-cycloalkylaminoethylbenzamide derivative having the formula I



(I)

wherein

R_1 is selected from the group consisting of H and C_1–C_4 alkyl groups and

R_2 is cyclopropyl, or a pharmaceutically acceptable salt thereof.

4. A pharmaceutical composition for the treatment of gastritis, gastric trouble, digestion-related headache, digestive problems to menstruation and pregnancy, psychosomatic disturbance in anxious subjects, nausea and vomiting related to slow gastric elimination comprising an effective amount of an N-cycloalkylaminoethylbenzamide derivative selected from the group consisting of -benzamide and 2-methoxy -4-amino-5-chloro-N-2-methoxy-4-amino-5-chloro-N-(2-(cyclopropylamino)- ethyl)-benzamide and 2-methoxy-4-amino-5-chloro-N-(2-(methylcyclopropylamino)-ethyl)-benzamide as the active ingredient in hard and soft gelatin capsules, tablets, drops syrups and vials.

5,010,109

ANTIMICROBIAL AGENT COMPOSITION

Takeshi Inoi, Yokohamashi, Japan, assignor to Chisso Corporation, Japan

Filed May 4, 1989, Ser. No. 347,227
Claims priority, application Japan, Jun. 30, 1988, 63-162983
Int. Cl.[5] A01N *31/00*
U.S. Cl. 514—714 20 Claims

1. An antimicrobial agent composition comprising a zeolite carrier and a saturated monoterpene hydroperoxide as an active ingredient.

5,010,110

WATER ACTIVATED SOLID EMOLIENT PRODUCT AND PREPARATION THEREOF

James M. Wilmott, Kinnelon; William H. Koelle, Morris Plains, both of N.J., and Alexander P. Znaiden, Sloatsburg, N.Y., assignors to Avon Products, Inc., New York, N.Y.

Continuation of Ser. No. 224,194, Jul. 21, 1988, abandoned, which is a continuation of Ser. No. 913,585, Sep. 30, 1986, abandoned, which is a continuation of Ser. No. 774,173, Sep. 9, 1985, abandoned, which is a continuation of Ser. No. 634,853, Jul. 26, 1985, abandoned. This application Apr. 27, 1990, Ser. No. 517,547
Int. Cl.[5] A61K *47/00, 7/025*
U.S. Cl. 514—758 2 Claims

1. The method of forming a stable, self supporting solid bar useful as a cosmetic comprising the steps of:

(a) blending together the following ingredients at a temperature of about 190° F. to form a uniform liquid mixture with all percent weights being based upon the weight of the mixture unless otherwise indicated: about 45 to 65 percent by weight stearyl alcohol, said stearyl alcohol having a C_{18} content of no less than about 97.5% by weight based upon the weight of the stearyl alcohol component, about 1–12 percent by weight sodium stearate, about 15–25 percent by weight emollient comprising one or more alkyl esters selected from the group consisting of isopropyl palmitate, ethyhexyl palmitate, isopropyl isostearate, myristyl myristate, and cetyl lactate, and a solubilizing agent of about 2–12 percent by weight, said solubilizing agent comprising a combination of about 2–6 percent by weight propylene glycol and about 2–6 percent by weight water,

(b) allowing the mixture of step (a) to cool to a temperature in the range of about 160°–165° F.,

(c) pouring the cooled mixture of step (b) into molds to form individual bars,

(d) placing the molds in a cooling chamber maintained at a temperature of about 40° F. or less for a sufficient period of time until the interior temperature of the bars falls below about 95° F. without forming surface blemishes and,

(e) curing the bars for at least 7 days at a temperature of 80° F. or less to form bars characterized by a homogeneous, single phase, crystal/gel structure throughout.

5,010,111

FLAME RESISTANT, EXPANDABLE STYRENE POLYMERS AND FOAMS, AND FLAME RETARDANTS

Klaus Hahn, Kirchheim; Uwe Guhr, Gruenstadt; Hans Hintz, Ludwigshafen; Dietmar Wittenberg, Mannheim, and Peter Gleich, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 10, 1990, Ser. No. 565,100
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1989, 3928284
Int. Cl.[5] C08J *9/20*
U.S. Cl. 521—56 4 Claims

1. A bead-form, flame-resistant, expandable styrene polymer containing

(a) polystyrene and/or a styrene copolymer containing 50% by weight or more of copolymerized styrene,

(b) from 0.4 to 6% by weight, based on (a), of hexabromocyclododecane having a mean particle size of from 1 to 50 μm, these particles being provided with a firm coating which has a thickness of from 1/100 to 1/10 of the particle diameter and is insoluble in water and in styrene,

(c) from 1 to 10% by weight, based on (a), of an aliphatic C_3- to C_6-hydrocarbon as blowing agent, and, if desired,

(d) customary additives in effective amounts.

5,010,112

METHOD AND APPARATUS FOR IMPROVING THE INSULATING PROPERTIES OF CLOSED CELL FOAM

Leon R. Glicksman, Lyanfield, and Arlene J. Lanciani, Sterling, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Dec. 1, 1989, Ser. No. 444,673
Int. Cl.[5] C08J *9/00, 9/32*
U.S. Cl. 521—76 7 Claims

1. The method of forming a closed cell, rigid foam comprising the steps of:

(a) forming a polymer foam;

(b) forming a non-opaque, non-metallic foam filler dispersed in said polymer foam;

(c) coating said filler with opaque material.

5,010,113

FLAME-RETARDANT POLYURETHANE PRODUCTS

David H. Blount, 6728 Del Cerro Blvd., San Diego, Calif. 92120

Filed Jun. 1, 1989, Ser. No. 360,152
Int. Cl.[5] C08G *18/14*
U.S. Cl. 521—107 21 Claims

1. A flame-retardant polyurethane product which is formed from a mixture comprising:

(A) an amino salt of phosphorus acid selected from the group of compounds produced by reacting a phosphorus acid compound with an amino compound selected from the group consisting of urea, urea-formaldehyde condensate, melamine, melamine-formaldehyde condensate, cyanamide, dicyandiamide, biuret, guanidine, dimethylol urea, ammonium carbamate, urea derivatives, aminoguanidine and mixtures thereof;

(B) a polyol, selected from the group consisting of polyether polyols prepared by the polymerization of epoxides selected from the group consisting of propylene oxide, butylene oxide, tetrahydrofurane oxide, styrene oxide or epichlorohydrin, each with itself or by addition of these or by addition of these epoxides with starting components selected from the group consisting of water, propylene-1,3- or -1,2-glycol, trimethyol propane, 4,4-dihydroxydiphenyl propane, aniline, ammonia, ethanolamine, ethylenediamine and sucrose, polythioether polyols, polyacetals polyols, polycarbonate polyols, polyester amide polyols, hexane polyols, octane polyols, neopentyl polyols, pentaerythritol, quinitol, mannitol, sorbitol, methylglycoside, polybutadiene polyols, and polypropylene polyols modified with vinyl polymers;

(C) a compound which contains at least two isocyanate radicals.

5,010,114

MICROSUSPENSION POLYMERIZATION

Rong-Chang Liang, Centerville; Emerson K. Colyer, Kettering; Jing-Den Chen, Spring Valley; Karl A. Kintz, Kettering, and Chih-Her Suen, Spring Valley, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Jan. 16, 1990, Ser. No. 465,299
Int. Cl.[5] C08G *18/14*
U.S. Cl. 521—109.1 17 Claims

1. A method for polymerizing a monomer suspended in water which comprises:

preparing a polymerization mixture of a water immiscible, liquid, ethylenically unsaturated monomer, a polyisocyanate and an oil soluble free radical initiator, dispersing said mixture in a solution of water and a surfactant, and effecting polymerization of said monomer.

5,010,115

SILICONE FOAMS

Bernard F. Grisoni, El Toro, Calif., assignor to Dow Corning France S. A., Valbonne, France

Filed Oct. 16, 1990, Ser. No. 598,526
Claims priority, application France, Oct. 23, 1989, 89 13820
Int. Cl.[5] C08J *9/02*
U.S. Cl. 521—154 10 Claims

1. A foamable silicone composition in two or more parts comprising (A) one or more polysiloxanes having not less than , three alkylhydrogensiloxane units per molecule, (B) one or more polysiloxanes having hydroxyl groups, and (C) a platinum catalyst for promoting reaction between the components (A) and (B) wherein at least a major proportion of the polysiloxanes (B) is a polydiorganosiloxane having at least two siloxane units of the formula

$$R_aQ_bSiO_{\frac{(4-(a+b))}{2}}$$

in which R represents a monovalent hydrocarbon group containing 1 to 20 carbon atoms, Q represents a hydroxyl bearing alkylene or oxyalkylene chain, a has the value 0, 1 or 2 and b has the value 1 or 2.

5,010,116

WATER BLOWN FOAM

Ralph Colafati, 46 Knollwood Dr., Branford, Conn. 06405

Filed Jan. 29, 1990, Ser. No. 471,857
Int. Cl.[5] C08G *18/00*
U.S. Cl. 521—155 30 Claims

1. A composition useful for producing foam which comprises an oxyalkylated glycerine having hydroxyl number of from about 56 to about 300, an oxypropylated aromatic based mannich condensate, an organic surfactant, an amine catalyst, a polyisocyanate catalyst, and a quaternary ammonium salt or a triazine.

5,010,117

FLEXIBLE POLYURETHANE FOAMS PREPARED USING LOW UNSATURATION POLYETHER POLYOLS

Ronald M. Herrington, Brazoria; Robert B. Turner, Lake Jackson, both of Tex., and Rosey J. Matijega, Midland, Mich., assignors to Dow Chemical Company, Midland, Mich.

Filed Jun. 16, 1989, Ser. No. 367,279
Int. Cl.[5] C08G *18/14*
U.S. Cl. 521—159 15 Claims

1. A flexible molded or high resiliency slabstock foam which is the reaction product of a reaction mixture comprising a polyisocyanate, an effective amount of a blowing agent and a poly(propylene oxide) polymer having an average nominal functionality from about 2 to about 6, an equivalent weight from about 1000 to about 2000 and a monol content of about 0.04 meq/g or less.

5,010,118

UV CURABLE NON-TOXIC EPOXYSILICONE RELEASE COATING COMPOSITIONS

James L. Desorcie, and Michael J. O'Brien, both of Clifton Park, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 22, 1989, Ser. No. 369,798
Int. Cl.[5] C08F *2/46;* C08G *59/22;* C08J *3/28*
U.S. Cl. 522—31 8 Claims

1. UV curable substantially uniform epoxysilicone compositions convertible to nontoxic release coatings comprising by weight,

(A) 100 parts of epoxysilicone having from 5 to 12 mole percent epoxysiloxy units, based on the total moles of condensed diorganosiloxy units in the epoxysilicone,

(B) 1 to 25 parts of a compatibilizer in the form of a mixture of

(i) 1 to 25 parts of a $C_{(8-20)}$ alkylphenol and

(ii) 0 to 15 parts of a $C_{(4-12)}$ alkanediol, and

(C) an effective amount of a polyarylonium hexafluorometal, or metalloid salt, substituted with at least one nuclear bound alkoxy radical having at least 8 carbon atoms selected from the class consisting of diaryliodonium salts and triarylsulfonium salts.

5,010,119

TERNARY ADHESIVE COMPOSITIONS

Kenneth O. McElrath, Jr., 19515 Suncove La., Humble, Tex. 77346; Martha H. Robertson, Rte. 2, Box 169, Zachary, La. 70791, and Wai Yan Chow, St. Hubertusdreef, 33, Overijse 1900, Belgium

Continuation-in-part of Ser. No. 137,391, Dec. 23, 1981, Pat. No. 4,839,422. This application Nov. 25, 1988, Ser. No. 274,210
Int. Cl.[5] C09J *151/04*
U.S. Cl. 523—205 28 Claims

1. A curable adhesive composition having enhanced strength and high temperature resistance, comprising:

(a) a thermoplastic elastomer polymer having grafted thereto a C_3–C_{10} unsaturated mono- or polycarboxylic acid, anhydride or derivative thereof;

(b) a tackifying resin selected from hydrocarbon resins, polyterpene resins, and cyclopentadiene resins; and

(c) a crosslinking agent selected from di- or polyamine hydrocarbyl compounds having from 2 to about 20 carbon atoms, wherein said crosslinking agent is encapsulated with polymer containing maleic anhydride groups.

27. An encapsulated di- or polyamine wherein the encapsulating material is a polymer containing maleic anhydride groups.

5,010,120

SOLID ADHESIVE COMPOSITION

Koji Sugiura, Ichinomiya, Japan, assignor to Sakura Color Products Corporation, Osaka, Japan

Filed Jul. 5, 1990, Ser. No. 548,264
Claims priority, application Japan, Jul. 5, 1989, 1-173715
Int. Cl.[5] C08J *9/32*
U.S. Cl. 523—219 7 Claims

1. A solid adhesive composition useful for temporary and repeated fixation of an article on a surface which comprises about 5.0 to about 45 weight percent of an acrylic resin having a glass transition point of −10° C. or below, about 0.1 to about 2.0 weight percent of a polyacrylic acid-based thickening agent, about 5.0 to about 30 weight percent of a fatty acid soap, about 0.1 to about 2.0 weight percent of an alkali hydroxide, about 0.1 to about 10 weight percent of microspheres with an average grain size of about 10 to about 200 μm and about 2.0 to about 60 weight percent of water.

5,010,121

PRODUCTION OF AQUEOUS-BASED FLUOROPOLYMER COMPOSITIONS

Steven G. Yeates, Macclesfield, and John C. Padget, Frodsham, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Dec. 7, 1988, Ser. No. 280,879
Claims priority, application United Kingdom, Dec. 10, 1987, 8728884
Int. Cl.[5] C08J *3/00*
U.S. Cl. 523—336 19 Claims

1. Process for the preparation of an aqueous-based composi-

tion comprising a fluoropolymer and a vinyl polymer which process comprises:

(1) preparing a non-aqueous solution of a fluoropolymer comprising repeat units A derived from at least one fluoroolefine and repeat units B bearing chain-pendant ionic and/or non-ionic disperser groups where such groups impart water-emulsifiability or water-solubility to the fluoropolymer;

(2) converting, by virtue of the effect of said emulsifying or solubilizing disperser groups, the non-aqueous solution of said fluoropolymer formed in step (1) into an aqueous-based emulsion or solution of said fluoropolymer, and

(3) polymerising at least one species of vinyl monomer to form a vinyl polymer in the presence of said aqueous-based emulsion of solution from step (2).

5,010,122

PLASTIC-RUBBER COMPOSITES

Greg Koski, Leominster, Mass., assignor to R.W. Technology, Inc., Cheshire, Conn.

Filed Nov. 2, 1987, Ser. No. 115,901

Int. Cl.[5] C08K *3/02, 5/23;* **C08L** *7/00, 9/00*

U.S. Cl. 524—80 **26 Claims**

1 A thermoplastic composition comprising a vulcanized rubber particulate having a particle size finer than about 10 mesh, a thermoplastic material and at least one coupling agent for adhering to and forming a covalent bond with at least one of said rubber particulate and said thermoplastic material, said rubber particulate and said thermoplastic material being present in a weight ratio in the range of from about 1:9 to about 9:1 and said at least one coupling agent being present in an amount effective to obtain coupling to said at least one of said rubber particulate and said thermoplastic material to about 3% by weight of said at least one of said rubber particulate and said thermoplastic material to be coupled to, and said rubber particulate comprising particulate formed from at least one of ground pneumatic tires, ground liners and ground tubes.

5,010,123

STABILIZER FOR CHLORINE-CONTAINING OLEFIN POLYMERS, A PROCESS FOR ITS PRODUCTION AND POLYMERS CONTAINING THE STABILIZER

Kurt Worschech, Loxstedt; Peter Wedl, Bremerhaven; Erwin Fleischer, Schiffdorf; Frido Loeffelholz, Bremerhaven-Surheide, and Manfred Jaeckel, Loxstedt, all of Fed. Rep. of Germany, assignors to Neynaber Chemie GmbH, Loxstedt, Fed. Rep. of Germany

Filed Apr. 4, 1989, Ser. No. 333,655

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1988, 3811493

Int. Cl.[5] C08K *5/524, 5/10*

U.S. Cl. 524—114 **30 Claims**

1. A stabilizer for chlorine-containing olefin polymers which comprises: a stabilizing effective amount of;

(a) at least one Ca complex of a 1,3-diketone of the formula:

$$[R^1CO{-}CH{=}C(R^2){-}O{-}]_x\,Ca(OH)_y$$

wherein R^1 and R^2 may be the same or different and represent radicals selected from the group consisting of C_1–C_4 alkyl, phenyl and phenyl substituted in the p-position, x has a value of 1 to 2 and y has a value of 1 to 0 with the proviso that $x+y=2$,

(b) at least one hydrocarbon wax; and

(c) at least one ester selected from the group consisting of full esters of saturated, straight-chain C_{12}–C_{34} monocarboxylic acids of polyols containing at least 2 carbon atoms and at least 2 hydroxy groups and partial esters of saturated, straight-chain C_{12}–C_{34} monocarboxylic acids of polyols containing at least 2 carbon atoms and at least 2 hydroxy groups which, as a number average, contain at least one free hydroxyl group.

5,010,124

FLOWABILITY IMPROVING AGENT, PROCESS FOR THE PRODUCTION THEREOF AND USE THEREOF

Lars-Inge R. Olsson, Helsingborg, and Kent F. Hamacek, Perstorp, both of Sweden, assignors to Perstorp AB, Perstorp, Sweden

Filed Jan. 30, 1989, Ser. No. 302,941

Claims priority, application Sweden, Jan. 29, 1988, 8800295

Int. Cl.[5] C08K *5/521;* **C08L** *73/00*

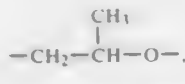
U.S. Cl. 524—141 **13 Claims**

1 A flowability improving agent, comprising a combination of (A) a member selected from the group consisting of a sulphonated melamine-formaldehyde resin, a sulphonated melamine-urea-formaldehyde resin and a sulphonated naphthalene-formaldehyde resin, and (B) a compound of the formula

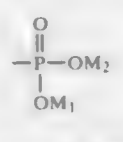
$$Ar\,O{-}[R_1]_n{-}R_2$$

where

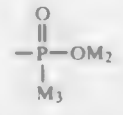
Ar is a benzene residue or naphthalene residue which may be substituted by a short chain alkyl, R_1 is oxyethylene; $-CH_2CH_2O-$ or oxypropylene;



an oxyethylene chain or an oxypropylene chain with up to fifteen oxyethylene groups or oxypropylene groups or a combination of oxyethylene groups and oxypropylene groups to a chain where the sum of these groups is at most fifteen, the mean value n for n is 1-15 and R_2 is hydrogen or a phosphonate group of the formula



where M_1 and M_2 are hydrogen or alkali metal or where R_2 is a group of the formula



where M_2 has the above meaning and M_3 is $-[R_1]_n-O$ Ar where R_1, n and Ar have the above meanings.

5,010,125

ROOM TEMPERATURE PLAIN PAPER INK

Jurgen M. Kruse, Clinton, and Donald B. Kimball, Jr., Guilford, both of Conn., assignors to XAAR Limited, Cambridge, England

Continuation-in-part of Ser. No. 379,595, Jul. 14, 1989. This application Sep. 20, 1989, Ser. No. 409,753

Int. Cl.[5] C08K *5/15*

U.S. Cl. 524—308 **18 Claims**

1. An ink jet ink composition comprising a colloidal suspension of:

(a) a non-aqueous solvent; and,

(b) dispersed particles which are suspendable in said solvent at room temperature, said dispersed particles comprising a dyestuff dissolved in or bound to a polymer or resin selected from the group consisting of synthetic polymers and natural resins, said polymer or resin being substantially insoluble in water but soluble in said solvent at room temperature, said dyestuff being soluble in or bindable to said polymer or resin at room temperature but substantially insoluble in said solvent at room temperature, and said polymer or resin being precipitable upon contact with the surface of plain paper, the respective proportions of said solvent, polymer or resin, and dyestuff being selected to provide a fluid ink composition at room temperature.

5,010,126

PROCESS FOR PRODUCING A PETROLEUM WAX COMPOSITION

Richard L. Jones, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Division of Ser. No. 278,911, Nov. 30, 1988, Pat. No. 4,965,305. This application Jun. 25, 1990, Ser. No. 543,608

Int. Cl.[5] C08L *91/08*

U.S. Cl. 524—349 **10 Claims**

1. A process for producing a wax composition which comprises:

(a) vacuum distilling a petroleum feed to prepare a 650 distillate heavy intermediate petroleum wax, having a melting point range of from about 155° F. to about 185° F.,

(b) subjecting the heavy intermediate petroleum wax from step (a) to furfural/duosol solvent extraction,

(c) dissolving and crystallizing the heavy intermediate petroleum wax from step (b) from a methyl ethyl ketone/toluene mixed solvent,

(d) dissolving and recrystallizing the heavy intermediate petroleum wax from step (c) from a methyl ethyl ketone/-toluene mixed solvent,

(e) percolating the recrystallized heavy intermediate petroleum wax from step (d) in the molten state through a clay bed; and

(f) blending the recrystallized heavy intermediate petroleum wax from step (e) at from about 50 weight percent to about 90 weight percent with from about 10 weight percent to about 30 weight percent of a polymeric compound selected from the group consisting of ethylene-vinyl acetate copolymer, ethylene-ethyl acrylate copolymer, polypropylene and mixtures there of and having a molecular weight of from about 2,000 to about 100,000 and a melt index of from about 1 to about 250° at 375° F.

5,010,127

ADDITIVE COMPOSITION FOR TREATING WATER USED TO FORM ICE AND METHODS

Michael J. Rzechula, Elizabethtown, Ill., assignor to Slcik Ice Limited, Elizabethtown, Ill.

Filed Sep. 27, 1989, Ser. No. 411,116

Int. Cl.[5] C08K *5/05*

U.S. Cl. 524—379 **17 Claims**

1. An additive for treating water used for forming ice comprising effective ice forming amounts of:

a polymer selected from the group consisting of water gelling starches and polymers of acrylic acid and sodium salt, commonly referred to as super absorbent polymers;

a primary alcohol; and

silicon dioxide.

5,010,128

COMPOSITES OF ETHERIC PHOSPHAZENE AND METAL OXIDES AND THE METHOD OF THEIR FORMATION

Bradley K. Coltrain; Wayne T. Ferrar, both of Fairport, and Christine J. Landry, Honeoye Falls, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 27, 1989, Ser. No. 329,216

Int. Cl.[5] C08G *79/02;* **C08J** *3/21;* **C08K** *3/22, 3/34*

U.S. Cl. 524—405 **13 Claims**

1 A process of forming a blended composite comprising combining etheric phosphazene and a metal oxide precursor in a solvent solution, said metal oxide precursor comprises a silicic acid heteropolycondensate prepared by polycondensation of at least one silicon-functional silane of the formula SiX_4 wherein X is hydrogen, halogen, alkoxy, aryloxy, carboxy, or an $-NR_2$ group in which R is hydrogen and/or alkyl and/or aryl with the proviso that not all X are hydrogen, mixing until the etheric phosphazene and metal oxide precursor are dissolved, casting the dissolved materials and curing to recover a blended composite of etheric phosphazene and metal oxide that is not covalently cross-linked between the etheric phosphazene and metal oxide.

5,010,129

PETROLEUM RESISTANT COATING AND METHOD OF PREPARING SAME

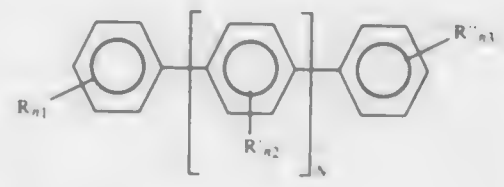
Samir F. Elias, and Daryl K. Morrison, both of Wichita, Kans., assignors to Koch Industries, Inc., Wichita, Kans.

Continuation-in-part of Ser. No. 115,332, Nov. 2, 1987, abandoned. This application Jul. 18, 1988, Ser. No. 221,035

Int. Cl.[5] C08L *31/04;* **C08K** *3/34*

U.S. Cl. 524—413 **11 Claims**

1. A protective coating comprising an oil-in-water slurry of: 40–60 weight percent water, 15–35 weight percent filler, 0.05 to 1 weight percent of a high molecular weight nonionic surfactant, 1–10 weight percent latex polymer, 10–50 weight percent room temperature solid polyphenyls of the formula.



where

R and R'' = H, CH_3 or C_2H_5

R' = H, CH_3, C_2H_5 or phenyl,

n_1 and n_3 = 1–5

n_2 = 1–4, and

N = 1–4

and 1–6 weight percent compatible plasticizer

5,010,130

HIGH MELT VISCOSITY FLUOROPOLYMER PROCESS AID

George R. Chapman, Jr., Media, Pa.; Lee A. Gorthey, and Donnan E. Priester, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 15, 1990, Ser. No. 524,260

Int. Cl.[5] C08K *3/36, 3/00;* **C08L** *23/02, 27/16, 27/18*

U.S. Cl. 524—445 **72 Claims**

1. Improved polymer blend composition having improved processibility and comprising:

(a) a major portion of a difficultly melt-processible polymer, and

(b) a minor portion of:

(1) at least an effective amount, to improve processibility, of a fluorocarbon copolymer which at the melt-processing temperature of (a) is either in a melted form if crystalline, or is above its glass transition temperature if amorphous, and

(2) at least an effective amount, to improve processibility, of at least one tetrafluoroethylene homopolymer or copolymer of tetrafluoroethylene and at least one monomer copolymerizable therewith, wherein the mole ratio of fluorine to hydrogen is at least 1:1, and which is solid at the melt processing temperature of

(a), said composition further characterized in that it contains an abrasive inorganic filler that retards the processibility of (a) in the presence of (b)(1) and (b)(2), the improvement consisting of minimizing the retarding effect of the inorganic filler by employing (b)(1) having an apparent viscosity at 200 C of at least about 400 Pa.s measured at an apparent shear stress of 360 KPa.

5,010,131
BARRIER COATING
Steven D. Wagner, Loveland, Ohio, assignor to Texo Corporation, Cincinnati, Ohio
Filed Oct. 20, 1989, Ser. No. 424,426
Int. Cl.[5] C08K 3/18
U.S. Cl. 524—457 12 Claims

1. An aqueous solution for forming a thermally releasable coating on spray booth surfaces and equipment located in paint spray booths, said coating being easily removable with heated water, said solution comprising,
from about 20%–50% water,
from about 10%–40% filler, said filler being a pigment,
from about 5%–15% film former selected from the group consisting of vinyl acetate copolymer emulsions, sugar, soap, organic salts and polyvinyl alcohol,
from about 1%–10% alkaline source, selected such that said aqueous solution has a pH of greater than 8.0, and
from about 10%–40% blowing agent, said blowing agent comprising citric acid and sodium bicarbonate

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5,010,132
WATER-BASE PAINT FOR COATING THE INSIDE SURFACE OF METALLIC CAN
Akio Morinaga, and Takeo Kigami, both of Ohtake, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan
Filed Oct. 24, 1989, Ser. No. 425,953
Claims priority, application Japan, Oct. 31, 1988, 63-275494
Int. Cl.[5] C08L 67/02
U.S. Cl. 524—601 10 Claims

1. A water-base paint for coating the inside surface of a metallic can, said paint comprising fine particles of a polyester resin dispersed in an aqueous medium in the presence of a surface-active agent and being prepared by mixing a solution of the polyester resin in an organic solvent selected from the group consisting of halogenated hydrocarbons and anisole with an aqueous medium containing a surface-active agent with stirring at a high speed to disperse the polyester resin and removing the organic solvent, wherein
(A) the polyester resin comprises units derived from a dicarboxylic acid and units derived from a diol, the units derived from dicarboxylic acid containing units derived from terephthalic acid and units derived from isophthalic acid in a mole ratio of from 10:90 to 80:20, and at least 30 mole % of the units derived from the diol being derived from ethylene glycol,
(B) the surface-active agent is composed of at least one compound selected from the group consisting of alkylaryl sulfonic acid salts, alkylsulfonic acid salts, dialkylsulfosuccinic acid salts, alkylphosphoric acid salts, polyoxyethylene alkylarylether sulfonic acid salts and polyoxyethylene alkylether sulfonic acid salts, and
(C) the fine particles of the polyester resin have an average particle diameter of not more than 3 microns

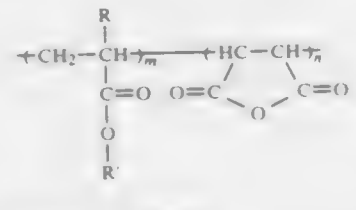
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5,010,133
POLYURETHANE MOLDING COMPOSITION, METHOD AND ARTICLE
Alan R. Seville, 6422 Watercrest Way, Indianapolis, Ind.
Filed Sep. 29, 1989, Ser. No. 415,499
Int. Cl.[5] C08L 75/04; C08K 3/36
U.S. Cl. 524—871 14 Claims

1. A polyurethane gum material produced by partially reacting a cross-linkable mixture of polyol, polyisocyanate, high activation temperature catalyst and a high surface area filler, the gum material being stable at low temperatures, hand-workable at room temperatures, and capable of being liquified and high pressure molded at elevated temperatures.

5,010,134
ACRYLATE/MALEIC ANHYDRIDE COPOLYMER GRAFTED POLYVINYL ALCOHOL GRAFT TERPOLYMERS
Wen-Yen Chiang, Taipei, and Chun-Min Hu, Keelung, both of Taiwan, assignors to National Science Council, Taipei, Taiwan
Continuation of Ser. No. 259,716, Oct. 19, 1988, abandoned.
This application Jul. 30, 1990, Ser. No. 559,094
Int. Cl.[5] C08G 81/02
U.S. Cl. 525—57 12 Claims

1. An acrylate/N-substituted maleimide co-polymer having polyvinyl alcohol units grafted thereto,
said acrylate/N-substituted maleimide co-polymer made by reacting an amine with a homogeneous random acrylate/-maleic anhydride co-polymer having polyvinyl alcohol units grafted to a portion of the maleic anhydride units to form an N-substituted maleamic acid intermediate and then converting the intermediate to form the acrylate/N-substituted maleimide co-polymer having polyvinyl alcohol units grafted thereto;
said acrylate/maleic anhydride co-polymer having polyvinyl alcohol units grafter thereto, comprising 70–30% by weight of polyvinyl alcohol and 30–70% by weight of substantially homogeneous random acrylate/maleic acid co-polymer;
said acrylate/maleic anhydride co-polymer having the following general structure



where R is hydrogen or methyl;
R′ is C_1–C_4 saturated alkyl group,
m is 30–90 mole percent; and
n is 70–10 mole percent,
said acrylate/maleic anhydride co-polymer having polyvinyl alcohol units grafter thereto, formed by grafting the acrylate/maleic acid co-polymer onto polyvinyl alcohol by a chain-opening esterification reaction between some of the anhydride groups of the maleic anhydride units and some of the hydroxyl groups of the polyvinyl alcohol,
whereby residual hydroxyl and maleic anhydride groups are present in an effective amount for subsequent cross-linking through the action of heat to form interchain ester chain linkages and residual maleic anhydride groups are present in an effective amount for subsequent reaction with the amine to form the acrylate/N-substituted maleimide co-polymer having polyvinyl alcohol units grafted thereto.

5,010,135
MOULDING COMPOUNDS OF AROMATIC POLYESTERS, VINYL COPOLYMERS AND GRAFTED SILICONE RUBBER
Thomas Eckel; Edgar Leitz, both of Dormagen; Dieter Wittmann, Krefeld; Karl-Heinz Ott; Horst Peters, both of Leverkusen, and Jochen Schoeps, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Continuation of Ser. No. 292,915, Jan. 3, 1989, abandoned. This application Jun. 29, 1990, Ser. No. 547,384
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1988, 3800603
Int. Cl.[5] C08G 63/48
U.S. Cl. 525—63 9 Claims

1. Thermoplastic moulding compositions comprising
A. from 5 to 98 parts by weight of fully aromatic polyester synthesized from aromatic C_8–C_{14} dicarboxylic acids and C_6–C_{30} diphenols or aromatic polyester carbonate synthesized from aromatic C_8–C_{14} dicarboxylic acids, C_6–C_{30} diphenols and phosgene,
B from 2 to 80 parts by weight of a thermoplastic vinyl polymer of
B 1 from 50 to 98 parts by weight of styrene, α-methylstyrene, vinyl toluene, 2,4-dimethyl styrene, methyl methacrylate or mixtures thereof and
B 2 from 50 to 2 parts by weight of acrylonitrile, methacrylonitrile, methyl methacrylate, maleic acid anhydride, N-substituted maleimide or mixtures thereof, and
C from 1 to 95 parts by weight of a graft polymer of
C 1 from 5 to 90 parts by weight of a monomer mixture of
C 1 1 from 50 to 98 parts by weight of styrene, α-methylstyrene, styrene substituted by halogen, vinyl toluene, 2,4-dimethyl styrene, methyl methacrylate or mixtures of these compounds and
C 1 2 from 2to 50 parts by weight of acrylonitrile, methacrylonitrile, methyl methacrylate, maleic acid anhydride, C_1–C_4-alkyl- or phenyl-N-substituted maleimide or mixtures of these compounds, grafted onto a substrate consisting of
C 2 from 10 to 95 parts by weight of silicone rubber having an average particle diameter of d_{50} of from 0.09 to 1 microns and a gel content of more than 50 percent by weight, based on C.2, derived from
(a) dihalogenated diorganosilane,
(b) from 0 to 10 mol-%, based on (a), of trihalogenated organosilane,
(c) from 0 to 3 mol-%, based on (a), of tetrahalogenated silane and
(d) from 0 to 0.5%, based on (a) of halogenated triorganosilane, in which the organyl groups of compounds (a), (b) and (d) is
(α) C_1–C_6-alkyl or cyclohexyl,
(β) C_6–C_{12}-aryl,
(γ) C_1–C_6-alkenyl and/or
(δ) mercapto-C_1–C_6-alkyl,
under the condition that the sum of (γ + δ) is from 2 to 10 mol-% based on all the organyl groups of compounds (a), (b) and (d), and the molar ration γ δ is from (3:1) to (1:3)

5,010,136
PROCESS FOR PRODUCING IMPACT-RESISTANT POLYAMIDE RESIN COMPOSITIONS
Tadayuki Ohmae, Chiba; Yoshiki Toyoshima, Ichihara; Kentaro Mashita, Ichihara; Noboru Yamaguchi, Ichihara, and Jinsho Nambu, Chiba, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
Filed Aug. 9, 1989, Ser. No. 391,168
Claims priority, application Japan, Aug. 23, 1988, 63-209676
Int. Cl.[5] C08L 77/00
U.S. Cl. 525—66 8 Claims

1 A process for producing an impactresistant polyamide resin which comprises
(1) preparing Mixture (I) by melt-kneading (A) 60 to 20 parts by weight of a polyamide resin with (B) 40 to 80 parts by weight of at least one modified olefin polymer having a glass transition temperature of −10° C. or lower selected from the group consisting of copolymer rubbers of ethylene and an α-olefin having 3 or more carbon atoms which rubbers have 0.01 to 9% by weight of an unsaturated dicarboxylic acid anhydride added thereto ethylene-ethylenically unsaturated ester copolymers having 0.01 to 9% by weight of an unsaturated dicarboxylic acid anhydride added thereto,
(2) preparing Mixture (II) by melt-kneading 100 parts by weight of Mixture (I) with (C) 0.01 to 20 parts by weight of a polyfunctional compound selected from the group consisting of aliphatic diamine carbamates, aliphatic polyamines, alicyclic polyamines and aromatic amines, and

(3) melt-kneading 100 parts by weight of Mixture (II) with (D) 50 to 1,000 parts by weight of a polyamide resin.

5,010,137
RUBBER COMPOSITION, AND OIL SEAL AND RUBBER HOSE OBTAINED THEREFROM
Itsuki Umeda, Tokyo; Masaaki Takashima, Tokyo; Yoshiaki Zama, Tokyo; Yasuhiko Takemura, Tokyo; Yuichi Funabashi, Gunma; Junichiro Watanabe, Gunma; Kiyoshi Takeda, Gunma, and Makoto Matsumoto, Gunma, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd. and Toshiba Silicone Co., Ltd., both of Tokyo, Japan
Filed Feb. 16, 1988, Ser. No. 156,118
Claims priority, application Japan, Feb. 16, 1987, 62-31401; Jul. 17, 1987, 62-177323
Int. Cl.[5] C08L 83/05
U.S. Cl. 525—104 8 Claims

1. A rubber composition obtained by compounding (B) from 0.005 to 50 parts by weight of an polyorgano-hydrogensiloxane and (C) from 0.00001 to 1 part by weight of a compound of a transition metal belonging to the group VIII with (A) 100 parts by weight of a rubber-forming polymer mainly comprising (I) from 3 to 70% by weight of a polyorganosiloxane represented by the formula

$$R_aSiO_{\frac{4-a}{2}}$$

wherein R represents a substituted or unsubstituted monovalent organic group, 0.02 to 10 mole % of which being a vinyl group, and a represents a number of from 1.900 to 2.004, and having a polymerization degree of from 500 to 10,000 and (II) from 30 to 97% by weight of organic rubber other than (I), and subjecting the resulting composition to hydrosilylation while effecting shear deformation, wherein said composition further comprises a different cross-linking agent for the organic rubber, in addition to component (B), subsequently added

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5,010,138
THERMOPLASTIC INTERPOLYMERS AND THEIR USE IN MIXTURES OF POLYAMIDE AND STYRENE COPOLYMERS AND/OR GRAFT POLYMERS
Uwe Westeppe, Mettmann; Karl-Erwin Piejko, Bergisch-Gladbach, and Christian Lindner, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany
Filed Aug. 7, 1989, Ser. No. 389,967
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1988, 3827669
Int. Cl.[5] C08L 77/00
U.S. Cl. 525—183 10 Claims

1. Interpolymers of
(A) from 40 to 80% by weight polyamides with or without partial crystallinity and
(B) from 20 to 60% by weight thermoplastic copolymers or mixtures of several thermoplastic copolymers of (B1) monomers comprising
(B1 1) at least 15% by weight based on (B) of at least one monomer selected from the group consisting of styrenes and α-methylstyrenes which are unsubstituted or substituted by at least one haloalkyl or halogen, and
(B1.2) from 0 to 50% by weight based on (B), of other monomers selected from the group consisting of vinyl acetate, acrylonitrile, methacrylonitrile, and acrylate or methacrylate esters of primary or secondary C_{1-10} alcohols, and
(B2) from 0.5 to 35% by weight based on (B) of at least one ester of acrylic or methacrylic acid with tertiary C_4–C_{10} alcohols
prepared by homogenization of components (A) and (B) in the melt in standard mixing and kneading units at temperatures

above the melting point of the higher-melting component until the interpolymers are formed.

5,010,139

COPOLYMERS OF ETHYLENE OXIDE AS ANTISTATIC ADDITIVES

Simon H. P. Yu, Westlake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation of Ser. No. 7,039,258, Apr. 17, 1987, abandoned. This application Jun. 14, 1989, Ser. No. 366,330
Int. Cl.[5] C08K 5/15; C08L 9/02, 13/00, 69/00
U.S. Cl. 525—187 6 Claims

1. An antistatic polymeric composition comprising:

(a) at least one antistatic additive of an ethylene oxide copolymer in the range of from about 3 to about 30% by weight, said antistatic ethylene oxide copolymer being a solid, nonionic material having a dilution solution viscosity of greater than 0.;25 grams per milliliter as determined on a solution made up with 0.25 grams of the polymer in 100 grams of toluene according to ASTM D2857, said copolymer excluding epihalohydrin; and

(b) a polymeric material, excluding olefins, selected from the class consisting of: copolymers of styrene and acrylonitrile; terpolymers of styrene, acrylonitrile and diene rubber; copolymers of styrene and acrylonitrile modified with acrylate elastomers; copolymers of styrene and acrylonitrile modified with ethylene propylene diene monomer rubber; polystyrene; rubber modified impact polystyrene; polycarbonates; thermoplastic polyesters; polyurethane; polyphenylene oxide; polyacetals; polymethyl methacrylate; and mixtures thereof in the range of from about 70 to about 97% by weight,

wherein said ethylene oxide copolymer comprises

(i) ethylene oxide in the range of from about 5 to about 95% by weight; and

(ii) at least one cyclic comonomer represented by the formula:



containing up to 25 carbon atoms, wherein R_1, R_2, R_3, and R_4 are selected from the group consisting of hydrogen, saturated aliphatic and cycloaliphatic, monoolefinic aliphatic and cycloaliphatic, diolefinic (conjugated and non-conjugated) aliphatic and cycloaliphatic, aromatic, aralkyl, and alkaryl groups, and wherein at least one of R_1, R_2, R_3, and R_4 is not hydrogen; said cyclic comonomer in the range of from about 95 to about 5% by weight of the total weight of said ethylene oxide copolymer, said ethylene oxide copolymer having a weight average molecular weight of from about 20,000 to about 5,000,000.

5,010,140

PROCESS FOR PREPARING STABILIZED POLYMER DISPERSION

Joseph A. Antonelli, Riverton, N.J.; Christopher Scopazzi, Wilmington, Del., and Mark M. Doherty, Utica, Mich., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 31, 1989, Ser. No. 363,272
Int. Cl.[5] C08F 2/14, 4/60, 265/06
U.S. Cl. 525—269 6 Claims

1. A process for preparing a stabilized polymer dispersion in an organic liquid in which the principal polymer comprises

(a) a plurality of stabilizer components which are polymers of one or more ethylenically unsaturated acrylic monomers, and

(b) a core component composed of acrylic polymers; substantially all of the stabilizer components being grafted to the core component at one of the stabilizer ends, the process comprising the following steps:

(a) preparing the stabilizer component by polymerizing one of more ethylenically unsaturated acrylic monomers at least one of said monomers containing a reactive functional group, using a catalytic chain transfer agent containing Co^{+2} to form a stabilizer component having an ethylenically unsaturated terminal group and at least one reactive functional group,

wherein the reactive functional group is selected from the group consisting of carboxyl, hydroxy, anhydride, isocyanate amine or silane, and then

(b) preparing the core component by polymerizing one or more acrylic monomers while they are in contact with stabilizer components,

steps (a) and (b) being conducted in an organic liquid which is a solvent for the stabilizer components but a non-solvent for the core component.

5,010,141

REACTIVE SILICONE AND/OR FLUORINE CONTAINING HYDROPHILIC PREPOLYMERS AND POLYMERS THEREOF

Karl F. Mueller, New York, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 427,266, Oct. 25, 1989, Pat. No. 4,463,471. This application Apr. 18, 1990, Ser. No. 510,504
Int. Cl.[5] C08F 259/00, 18/20
U.S. Cl. 525—276 17 Claims

1. A hydrophilic prepolymer containing silicon or fluorine or both silicon and fluorine as well as ethylenically unsaturated groups, which is the reaction product of the random copolymer of, the weight percent amounts of components (A), (B), (C), (D) and (E) being based on the total amount of said components,

(A) 20 to 79.5% by weight of a silicon or fluorine containing vinyl monomer or mixtures thereof,

(B) 79.5 to 20% by weight of N N-dimethyl acrylamide N-vinyl pyrrolidone or N-vinylacetamide or mixtures thereof,

(C) 0.5 to 25% by weight of a vinyl monomer containing an active hydrogen atom or mixtures thereof,

(D) 0 to 30% by weight of an ethylenically unsaturated monomer or mixtures thereof other than a monomer of component (A), (B) or (C),

(E) 0 to 10 mol %, based on the total moles of components (A), (B), (C), (D) and (E) of a chain transfer agent, with

(M_n) 0.2 to 10 mol %, based o the total moles of components (A), (B), (C), (D) and (E), of an ethylenically unsaturated isocyanate.

5,010,142

RUBBER COMPOSITIONS FOR TIRE INNER LINERS

Haruhiro Takano, Odawara, Japan, assignor to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 152,823, Feb. 5, 1988, abandoned. This application Oct. 3, 1989, Ser. No. 418,734
Claims priority, application Japan, Feb. 10, 1987, 62-27141
Int. Cl.[5] C08C 19/20
U.S. Cl. 525—332.4 2 Claims

1. A rubber composition for use as an inner lining in automotive tires which comprises a sulfur vulcanizable starting rubber consisting essentially of a halogenated butyl rubber and not including a silicone rubber, and from 0.2 to 2.0 parts by weight per 100 parts of the starting rubber of an accelerator comprising 2-(4'morpholinodithio)benzothiazole.

5,010,143

METHOD FOR PREPARING BLOCK POLYPHENYLENE ETHER-POLYCARBONATES

Thomas L. Evans, Clifton Park; Carol B. Wasserman, Hartsdale; Timothy J. Shea, Schenectady, and John R. Campbell, Clifton Park, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 23, 1987, Ser. No. 124,127
Int. Cl.[5] C08G 65/48, 69/00, 71/12
U.S. Cl. 525—394 18 Claims

1. A method for preparing a block polyphenylene ether-polycarbonate which comprises preparing a mixture comprising:

(A) at least one cyclic polycarbonate oligomer,

(B) at least one polyphenylene ether wherein all phenolic end groups are in the free phenol form, and

(C) a catalyst for conversion of cyclic polycarbonates to linear polycarbonates, said catalyst being other than a salt of a polyphenylene ether;

and heating said mixture at a temperature in the range of about 175°-350° C.

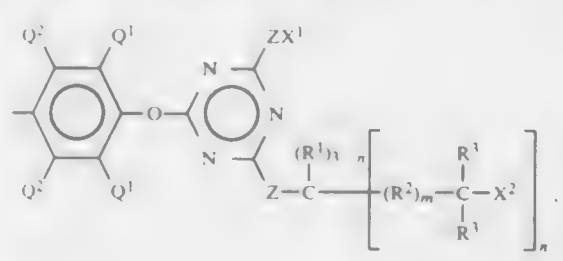
5,010,144

COPOLYMER-CONTAINING COMPOSITIONS FROM SUBSTITUTED TRIAZINE-CAPPED POLYPHENYLENE ETHERS

Ott Phanstiel, IV, Clifton Park, and Sterling B. Brown, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 7, 1990, Ser. No. 534,573
Int. Cl.[5] C08G 65/38; C08L 71/12, 67/00, 77/00
U.S. Cl. 525—397 21 Claims

1. A composition comprising copolymers prepared by the reaction of a polymer containing reactive groups with a substituted alkoxy- or alkylthio-triazine-capped polyphenylene ether having end groups of the formula



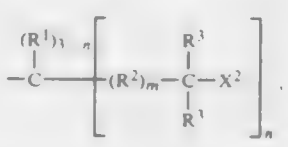
(I)

wherein:

each Q^1 is independently halogen, primary or secondary lower alkyl, phenyl, haloalkyl, aminoalkyl, hydrocarbonoxy, or halohydrocarbonoxy wherein at least two carbon atoms separate the halogen and oxygen atoms;

each Q^2 is independently hydrogen, halogen, primary or secondary lower alkyl, phenyl, haloalkyl, hydrocarbonoxy or halohydrocarbonoxy as defined for Q^1;

X^1 is an alkyl, cycloalkyl or aromatic radical or



(II)

X^2 is a group displaceable by nucleophilic aliphatic substitution;

each Z is independently oxygen or sulfur;

each R^1 is independently hydrogen, C_{1-4} primary or secondary alkyl or a non hydrocarbon substituent substantially inert to displacement by nucleophilic moieties;

R^2 is a C_{1-3} alkylene radical which is unsubstituted or is substituted with moieties selected from the group consisting of C_{1-4} primary or secondary alkyl radicals and non-hydrocarbon substituents as defined for R^1;

each R^3 is independently R^1 or X^2;

m is 0 or 1; and

n is 1 – 3.

5,010,145

POLYLACTIC ACID FIBER

Yoshito Ikada, and Shokyu Gen, both of Uji, Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Filed Apr. 15, 1988, Ser. No. 182,184
Claims priority, application Japan, Apr. 21, 1987, 62-98337
Int. Cl.[5] C08G 63/08; C08L 67/04
U.S. Cl. 525—415 11 Claims

1. A polyactic acid fiber consisting of a blend of from 99 to 1 percent by weight of poly-L-lactic acid and from 1 to 99 percent by weight of poly-D-lactic acid, said fiber being drawn at a temperature of from 100° to 220° C. and a draw ratio of 13 or greater to make the tensile strength of said fiber at least 70 kg/mm^2.

5,010,146

POLYESTER CARBONATE COPOLYMERS, PROCESSES FOR PREPARING SAME AND POLYESTER RESIN COMPOSITIONS CONTAINING SAID COPOLYMERS

Masaki Kohzaka; Izaburou Higashi; Yoshinori Akana; Mikio Hashimoto, and Tadao Yatsu, all of Yamaguchi, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jun. 14, 1989, Ser. No. 365,687
Claims priority, application Japan, Jun. 16, 1988, 63-149129
Int. Cl.[5] C08L 69/00, 67/02
U.S. Cl. 525—439 2 Claims

1. A polyester resin composition comprising (i) 50–10 parts by weight of polyalkylene terephthalate, (ii) 50–90 parts by weight of polycarbonate (provided (i)+(ii)=100 parts by weight) and (iii) 3–50 parts by weight, based on 100 parts by weight of the sum total of (i) and (ii), of a polyester carbonate copolymer, said polyester carbonate copolymer (iii) being a polyester carbonate copolymer obtained by polymerization of a mixture of 20–80% by weight of an alkylene terephthalate oligomer [I] containing ethylene terephthalate as main structural units and having an intrinsic viscosity [η], as measured at 25° C. in o-chlorophenol, of less than 0.6 dl/g and 20–80% by weight of a carbonate oligomer [II] containing 2,2-bis(4-hydroxyphenyl)propane as main structural units and having an intrinsic viscosity [η], as measured at 25° C. in o-chlorophenol, of less than 0.6 dl/g, and said copolymer having an intrinsic viscosity [η], as measured at 25° C. in o-chlorophenol, of 0.4–1.2 dl/g and a glass transition temperature (Tg) of 80°–140° C. with a single peak.

5,010,147

HIGH-STRENGTH POLYCARBONATE MIXTURES

Uwe Westeppe, Remscheid; Günther Weymans, Leverkusen; Ulrich Grigo, Kempen; Karsten-Josef Idel, and Dieter Freitag, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 26, 1990, Ser. No. 471,183
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1989, 3902916; Oct. 26, 1989, 3935639
Int. Cl.[5] C08L 69/00
U.S. Cl. 525—462 4 Claims

1. Mixtures containing

(a) 5 to 70% by weight polycarbonate based on 2-(4-hydroxyphenyl)-2-(3-hydroxyphenyl)-propane and

(b) 95 to 30% by weight polycarbonate based on bis-2,2-(4-hydroxy-3,5-dimethylphenyl)-propane,

the sum of the percentages by weight of components (a)+(b) being 100% by weight.

5,010,148

FLAME RETARDANT AROMATIC POLYCARBONATE COMPOSITIONS

Larry N. Lewis, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 28, 1989, Ser. No. 399,095
Int. Cl.[5] C08F *283/02*
U.S. Cl. 525—464 **4 Claims**

1. Flame retardant halogen-free aromatic polycarbonate composition comprising:

(A) an aromatic polycarbonate resin, and

(B) an amount of a silicate resin which is effective for imparting flame retardance to the halogen-free aromatic polycarbonate composition, where the silicate resin has from 1 to 2 moles of condensed triorganosiloxy units selected from the class consisting of trimethylsiloxy and dimethylphenylsiloxy units, and from 0.15 mole to 1 mole of condensed diorganosiloxy units selected from the class consisting of methylvinylsiloxy units divinylsiloxy units and dimethylsiloxy units, per mole of SiO_2 units.

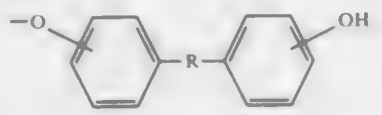
5,010,149

CAN INTERIOR COATING COMPOSITION

Kaoru Morita, and Atsushi Shioda, both of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Amagasaki, Japan

Filed Nov. 6, 1989, Ser. No. 448,326
Claims priority, application Japan, Nov. 11, 1988, 63-283773
Int. Cl.[5] C08F *283/00;* **C08G** *8/28;* **C08L** *61/00, 61/06*
U.S. Cl. 525—481 **4 Claims**

1. A can interior coating composition which contains (A) a modified bisphenol based epoxy resin formed by introducing at least one of a functional group represented by the following formula.



where R is a bivalent aliphatic hydrocarbon group having 1 to 4 carbon atoms, into a molecular terminal of a bisphenol based epoxy resin having an epoxy equivalent of 180 to 7,000 and a number average molecular weight of 350 to 10,000, and (B) a resol phenol resin obtained by reacting the modified bisphenol based epoxy resin (A) with at least one formaldehyde in the presence of a basic catalyst.

5,010,150

CONTROLLING THE PARTICLE SIZE IN THE PREPARATION OF POLYMER POWDERS

Karl Hennig, Hemsheim; Heinrich Hartmann, Limburgerhof, and Hans-Juergen Raubenheimer, Ketsch, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 13, 1989, Ser. No. 434,183
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1988, 3842184
Int. Cl.[5] C08F *2/34;* **C08J** *3/12*
U.S. Cl. 526—88 **1 Claim**

1. A method for controlling the particle size in the preparation of hydrophilic polymer powders by polymerization of water-soluble monoethylenically unsaturated monomers in a powder bed in the presence of a polymerization initiator and an inert auxiliary liquid while maintaining the powder state, removing the heat of polymerization by distilling off the auxiliary liquid and circulating the reaction material, which comprises dividing a solution of the monomers in the inert auxiliary liquid into fine drops with the aid of a multimaterial nozzle which dips into the powder bed, and an inert gas stream, and regulating the particle size of the resulting polymer powder by varying the amount of inert gas in the range from 10 to 100 l per l of monomer solution.

5,010,151

METHOD FOR PREPARING ETHYLENE POLYMERS

Norio Tomotsu, Ichihara, Japan, assignor to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 314,173, Feb. 23, 1989, abandoned, which is a continuation of Ser. No. 130,020, Dec. 8, 1987, abandoned. This application Sep. 11, 1990, Ser. No. 581,196
Claims priority, application Japan, Dec. 10, 1986, 61-292462
Int. Cl.[5] C08F *4/24, 10/02*
U.S. Cl. 526—105 **16 Claims**

1. A method for preparing an ethylene polymer which comprises polymerizing ethylene, or ethylene and at least one α-olefin other than ethylene, at a temperature in the range of from 40° to 150° C., and at a pressure in the range of 1 to 100 kg/cm^2G, in the presence of a composite catalyst, which catalyst consists essentially of:

(A) a solid composition prepared by depositing at least one chromium compound and at least one magnesium compound onto silica and then calcining the resulting solid, the at least one chromium compound deposited onto the silica being an amount corresponding to a chromium content of from 0.05 to 5% by weight of the total chromium atoms based on the sum of the weight of the silica and that of the total chromium compound, the magnesium compound being selected from the group consisting of a magnesium halide, magnesium hydroxide and magnesium acetate, and the molar ratio of the at least one magnesium compound to the at least one chromium compound being from 0.1 to 10; and

(B) a mixture of an alkylmagnesium and an alkylborane each of which is being represented by the following general formula:

$$MR^1_aR^2_bR^3_c$$

wherein M is magnesium or boron and the R^1, R^2 and R^3 moieties are each independently hydrogen, an alkyl or cycloalkyl radical of C_1–C_{14} or an alkoxy radical of C_1–C_{14} with the proviso that the case that all the moieties are each equally hydrogen is excluded and the case that none of the moieties is an alkyl or cycloalkyl group of C_1–C_{14} is excluded; and a, b and c are each independently a real number of not less than zero, with the proviso that the sum of the numbers a, b and c is equal to 2 or 3, the molar ratio of the alkylmagnesium to the alkylborane being from 0.1 to 20, and the molar ratio of the mixture of alkylmagnesium and the alkylborane to the at least one chromium compound being from 2 to 200.

5,010,152

POLYMERIZATION PROCESS UTILIZING CHROMIUM ON AN ACID AGGLOMERATED REFRACTORY GEL

Max P. McDaniel; Emory W. Pitzer, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 2,477, Jan. 8, 1987, abandoned, which is a division of Ser. No. 685,411, Dec. 24, 1984, Pat. No. 4,659,690, which is a continuation-in-part of Ser. No. 565,070, Dec. 23, 1983, abandoned. This application Oct. 12, 1989, Ser. No. 420,809
Int. Cl.[5] C08F *4/24, 10/00*
U.S. Cl. 526—106 **31 Claims**

1. A polymerization process comprising contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule with a catalyst produced by a method comprising:

(a) combining an acidic composition in a hydrophillic liquid polar organic compound with a precalcined, solid particulate refractory material to provide a workable mixture of liquid and solids, wherein said liquid polar organic compound is employed in an amount in the range of 0.1 to 2 times the total volume of the voids and pores in said refractory material;

(b) working said mixture until voids in the refractory material are reduced and agglomeration of the solid particles occurs; and

(c) drying the thus worked material,

the resulting material having a catalytic amount of a chromium compound incorporated therewith.

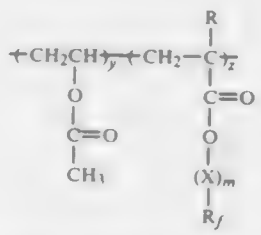
5,010,153

COPOLYMERS OF VINYL ACETATE AND FLUORINE-CONTAINING ACRYLATE MONOMERS

Amir F. Famili, Schnecksville; F. Lennart Marten, Macungie, both of Pa., and Dillip K. Mohanty, Mount Pleasant, Mich., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

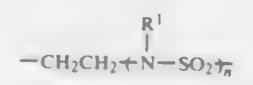
Continuation-in-part of Ser. No. 202,618, Jun. 3, 1988, abandoned, which is a continuation of Ser. No. 68,866, Jul. 1, 1987, abandoned. This application Apr. 25, 1990, Ser. No. 514,484
Int. Cl.[5] C08F *12/30, 20/22*
U.S. Cl. 526—243 **17 Claims**

1. A vinyl acetate copolymer comprising the following general structure:



wherein R is hydrogen or methyl;

X is



wherein R^1 is a C_1–C_4 alkyl group and n is 0 or 1;

R_f is a perfluoroalkyl or perfluoro poly(alkyleneoxy) group;

m is 0 or 1;

y is 50–99.999 mole %; and

z is 0.001–50 mole %.

5,010,154

STABILIZED METAL DRIER

Christopher J. Hardiman, Belchertown, Mass., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 88,915, Aug. 24, 1987, Pat. No. 4,839,325. This application Mar. 6, 1989, Ser. No. 318,992
Int. Cl.[5] C08F *4/26*
U.S. Cl. 526—135 **18 Claims**

1. A coating composition comprising

(a) a free-radical polymerizable compound and

(b) a fatty acid metal drier reversibly inhibited to catalyzing free radical polymerization by a compound selected from the group consisting of fluoro β-diketones and fluoro β-ketoesters.

5,010,155

VINYL-URETHANE SUBSTITUTED HYDROXYETHYL CELLULOSE

Karl F. Mueller, New York, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 250,199, Sep. 28, 1988, abandoned. This application Mar. 9, 1990, Ser. No. 491,146
Int. Cl.[5] B05D *3/02, 3/12;* **B32B** *27/00, 27/40*
U.S. Cl. 527—301 **5 Claims**

1. Vinyl functional hydroxyethyl cellulose, HEC-V, which comprises hydroxyethyl cellulose, HEC, of at least 10000 MW, in which 0.5–5% of the hydroxy groups have been reacted with a vinyl functional isocyanate, V

5,010,156

ORGANOSOLV LIGNIN-MODIFIED PHENOLIC RESINS AND METHOD FOR THEIR PREPARATION

Phillip M. Cook, Kingsport, and Steven L. Hess, Mount Carmel, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 197,783, May 23, 1988, abandoned. This application Mar. 12, 1990, Ser. No. 491,802
Int. Cl.[5] C08H *5/02*
U.S. Cl. 527—403 **14 Claims**

1. A method for forming an organosolv lignin-phenol-formaldehyde resin comprising:

(a) mixing particulate wood material, polar organic solvent, and an acid catalyst under heat and pressure to form a pulping liquor;

(b) reducing the concentration of the polar organic solvent in the pulping liquor so that an organosolv lignin precipitates from the pulping liquor and is recovered;

(c) reacting an aqueous alkaline solution of said organosolv lignin with either phenol or formaldehyde to form a reaction product of lignin and either phenol or formaldehyde; and

(d) then reacting the reaction product thus formed with either formaldehyde or phenol, whichever of these two was not used in reaction step (c), to form the organosolv lignin-phenol formaldehyde resin,

wherein the proportion of phenol to lignin in the reaction is from about 0.25:1 to about 3:1 by weight, and the proportion of the formaldehyde to phenol in the reaction is from about 0.25:1 to about 1.5:1 by weight.

5,010,157

PROCESS FOR PREPARING ORGANOSILAZANES

Mannarsamy Balasubramanian, and Pranab Choudhury, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Jun. 30, 1989, Ser. No. 374,665
Int. Cl.[5] C08G *77/06*
U.S. Cl. 528—14 **6 Claims**

1. A process which comprises heating at a temperature of at least about 40° C. in a dry atmosphere a composition consisting of an organosilazane solution which is the total reaction mixture resulting from the ammonolysis of an organohalosilane in an organic solvent, the heating being continued until the molecular weight of the organosilazane is increased.

5,010,158

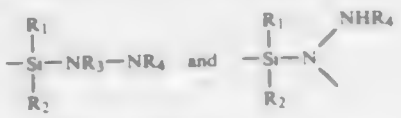
PROCESS FOR PREPARING POLYSILOXAZANE COMPOSITIONS AND THE PRODUCTS FORMED THEREBY

Christian Colombier, Lyon, and Jean-Pierre Cuer, Francheville le Haut, both of France, assignors to Atochem, Puteaux, France

Filed Dec. 23, 1988, Ser. No. 289,645
Claims priority, application France, Dec. 28, 1987, 87 18215
Int. Cl.[5] C08G *77/04*
U.S. Cl. 528—28 **21 Claims**

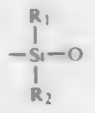
1. Polysiloxazane polymer compositions comprising:

(a) units selected from the group consisting of



(I)

and mixtures thereof, and
(b) units of formula



(II)

wherein R_1, R_2, R_3 and R_4, which may be identical or different is a radical selected from the group consisting of a hydrogen atom, a saturated aliphatic hydrocarbon radical, an alicyclic radical and mono- or polycyclic aryl, alkylaryl and arylalkyl radicals, wherein R_1 and R_2 do not simultaneously denote a hydrogen atom and wherein the molecular mass of said polysiloxazane is greater than 350.

5,010,159

PROCESS FOR THE SYNTHESIS OF SOLUBLE, CONDENSED HYDRIDOSILICON RESINS CONTAINING LOW LEVELS OF SILANOL

Howard M. Bank, Freeland; Martin E. Cifuentes, and Theresa E. Martin, both of Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Sep. 1, 1989, Ser. No. 401,726
Int. Cl.[5] C08G 77/06
U.S. Cl. 528—23 **38 Claims**

1. A method of hydrolyzing a silane of the formula H_aSiX_{4-a} where a is 1 or 2 and X is a hydrolyzable group, to produce polymers containing units of the formula $H_aSiO_{(4-a)/2}$, the method comprising:
forming a hydrolysis medium containing an arylsulfonic acid hydrate,
adding a the silane to the agitated hydrolysis medium,
facilitating hydrolysis of the silane in the hydrolysis medium to form the polymer,
settling the hydrolysis medium and polymer into immiscible layers comprising an acid layer and an organic layer where the organic layer contains the polymer,
separating the organic layer from the acid layer,
contacting the organic layer with a neutralizing agent sufficiently basic to neutralize the remaining acid species but insufficiently basic to catalyze rearrangement of the polymer or solvolysis of silicon hydrides, and
separating the organic layer from the neutralizing agent.

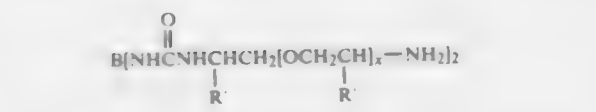
5,010,160

PROCESS FOR PREPARING NOVEL DIAMINES

George P. Speranza, Austin; Jiang-Jen Lin, Round Rock, and Michael Cascurida, Austin, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 78,309, Jul. 27, 1987, Pat. No. 4,906,774. This application Oct. 30, 1989, Ser. No. 430,686
Int. Cl.[5] C08G 18/80
U.S. Cl. 528—45 **2 Claims**

1. A flexible poly(urethane)(urea) coating prepared by reacting
(a) a urea-linked polyoxyalkylene diamine having the following general structure:



(I)

where B represents an alkyl nucleus structure from a diisocyanate from the group consisting of isophorone diisocyanate, 1-6-hexamethylene diisocyanate or tetramethylxylene diisocyanate, R' is hydrogen or methyl, and x is a number having an average value of about 1 to 60, with
(b) a blocked isocyanate prepolymer prepared from a polyol from the group consisting of trimethylolpropane, toluene diisocyanate and methyl ethyl ketone oxime, in the presence of an organic solvent and at an elevated temperature, the improvement comprising improved storage stability and compatibility of component (a) and (b).

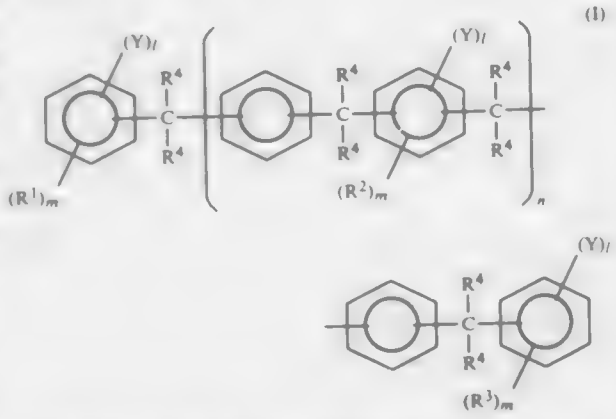
5,010,161

POLYALDIMINE DERIVATIVES

Masaaki Aoki, Zusi; Masayuki Kamiyama; Kiyotsugu Asai, both of Yokohama, and Akihiro Yamaguchi, Kamakura, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Dec. 19, 1989, Ser. No. 452,583
Claims priority, application Japan, Dec. 21, 1988, 63-320582; Dec. 21, 1988, 63-320584
Int. Cl.[5] C08G 18/10
U.S. Cl. 528—59 **25 Claims**

1. A poly(phenylenebisalkylene)poly(phenylaldimine) represented by the formula (I):



(I)

wherein R^1, R^2 and R^3 are a halogen atom, hydrogen atom, alkoxy group having 4 or less carbon atoms or an alkyl group having 5 or less carbon atoms, and may be the same or different; R^4 is a hydrogen atom or a methyl group; Y is —N=CH—C(R⁵)₃ or —N=CH—C(CH₃)₂—CH₂ —O—CO—R⁶ wherein R^5 is an alkyl group having 4 or less carbon atoms, R^6 is an alkyl group, anilino group, benzylamino group or an alkylamino group having 16 or less carbon atoms; and l is an integer of 1 or 2, m is an integer of 1 to 3, and n is an integer of 0 to 300.

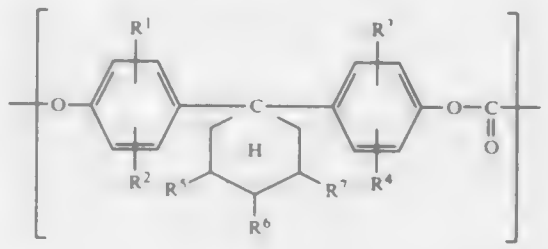
5,010,162

POLYCARBONATE OF ALKYL CYCLOHEXYLIDENE BISPHENOL

Volker Serini; Dieter Freitag, both of Krefeld; Uwe Westeppe, Mettmann; Karsten Idel, Krefeld; Ulrich Grigo, Kempen; Carl Casser, Cologne; Klaus-Christian Paetz, Burscheid, and Manfred Hajek, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 19, 1989, Ser. No. 452,874
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1988, 3843560; Aug. 12, 1989, 3926719
Int. Cl.[5] C08G 64/06
U.S. Cl. 528—196 **3 Claims**

1. A moulding composition comprising a thermoplastic aromatic polycarbonate resin having a weight average molecular weight of at least 10,000 comprising bifunctional carbonate structural units corresponding to



in which
R^1, R^2R^3 and R^4 independently of one another represent hydrogen, a C_1–C_{12} hydrocarbon radical, halogen and
R^5, R^6 and R^7 represent hydrogen, iso-C_3–C_5-alkyl, one of the substituents R^5, R^6 or R^7 being other than hydrogen, in quantities of from 100 to 1 mol-%, based on the total quantity of difunctional carbonate structural units in the polycarbonate.

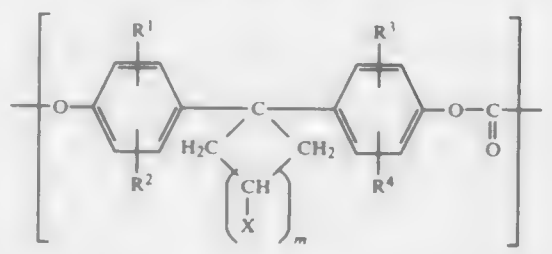
5,010,163

POLYCARBONATE OF CYCLOALKYLIDENE BISPHENOL

Volker Serini; Dieter Freitag, both of Krefeld; Uwe Westeppe, Mettmann; Karsten Idel, Krefeld; Ulrich Grigo, Kempen; Carl Casser, Cologne; Klaus-Christian Paetz, Burscheid-Hilgen, and Manfred Hajek, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Dec. 13, 1989, Ser. No. 450,604
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1988, 3842944; Aug. 12, 1989, 3926766
Int. Cl.[5] C08G 64/06
U.S. Cl. 528—196 **3 Claims**

1. A molding composition comprising a thermoplastic aromatic polycarbonate resin having a weight average molecular weight of at least 10,000 comprising bifunctional carbonate structural units corresponding to



in which
R^1, R^2, R^3, and R^4 independently of one another represent hydrogen, a C_1–C_{12} hydrocarbon radical, halogen,
m is 2 or 3 and
X is hydrogen or a C_6–C_{12} hydrocarbon radical, at least one substituent X being a C_6–C_{12} hydrocarbon radical,
in quantities of from 100 to 1 mol-%, based on the total quantity of difunctional carbonate structural units in the polycarbonate.

5,010,164

PROCESS FOR FORMING UREA-FORMALDEHYDE RESIN AND USE

Wolf D. Schollborn, Jakobstrasse 29, 6718 Grunstadt, Fed. Rep. of Germany

Continuation of Ser. No. 297,517, Dec. 5, 1988, abandoned. This application May 7, 1990, Ser. No. 519,751
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1987, 37414380
Int. Cl.[5] C08G 4/00
U.S. Cl. 528—243 **14 Claims**

1. A process for making strongly exothermally setting urea-formaldehyde resin, obtained by condensation of urea with formaldehyde under alkaline, comprising the steps of:
(a) condensing, in a first condensation step, 0.2 to 0.7 moles of urea with 1.2 to 3 moles of formaldehyde in the form of solid paraformaldehyde, under exclusively alkaline conditions, at a spontaneously establishing initial pH of 8 to 12, in the presence of one of (i) 1 to 10 mmoles of NaOH and 10 to 80 mmoles of NH_3, and (ii) 2.5 to 50 mmoles of guanidine base and 0 to 80 mmoles of NH_3, per 1 mole of formaldehyde at a condensation temperature of 90 to 110° C., for a condensation time of 10 to 100 minutes; and
(b) adding, in a second condensation step, 0.2 to 0.7 moles of urea, at a condensation temperature pb 100 to 120° C., for a further condensation time of 1.5 to 5 hours.

5,010,165

DIMENSIONALLY STABLE POLYESTER MELT BLOWN WEB

Wayne P. Pruett; Max F. Meyer, Jr., and Kenneth E. Breeding, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 2, 1989, Ser. No. 360,806
Int. Cl.[5] C08G 63/02
U.S. Cl. 528—272 **20 Claims**



1. A non-beat shrunk polyester melt blown web composition, comprising:
at least one polyester having an I.V. of about 0.4 to about 1.0 and comprising repeat units from
(a) at least one dibasic acid selected from terephthalic acid, isophthalic acid, aliphatic dicarboxylic acids having 3 to 20 carbon atoms and cycloaliphatic dicarboxylic acids having 8 to 10 carbon atoms,
(b) at least one glycol selected from aliphatic glycols having 2 to 10 carbon atoms and cycloaliphatic glycols having 6 to 10 carbon atoms, and
(c) wherein said web composition shrinks no more than 10% in both its longitudinal and cross dimensions upon exposure to a temperature up to its melting temperature.

5,010,166

PROCESS AND APPARATUS FOR PRODUCING POLYOL POLYMERS AND POLYOL POLYMERS SO PRODUCED

Kevin M. Scholsky, Citrus Heights, Calif.; Lisa M. Larsen, Little Lake, Mich., and Rodger C. Kruse, Racine, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Continuation-in-part of Ser. No. 356,647, May 19, 1989, Pat. No. 4,933,430, which is a continuation of Ser. No. 22,297, Mar. 5, 1987, abandoned. This application Feb. 16, 1990, Ser. No. 481,132

The portion of the term of this patent subsequent to Jun. 12, 2007, has been disclaimed.

Int. Cl.[5] **C08G** *69/14, 63/08, 67/02*

U.S. Cl. 528—323 **17 Claims**



1. A continuous polymerization process to produce a graft polymer having at least one main chain and a plurality of side chains attached thereto, the continuous polymerization process comprising the steps of:

combining in a reaction zone an (1) addition-polymerizable monomer that is also a free-radical initiator together with an (2) ethylenically-unsaturated monomer having a nucleophilic or an electrophilic moiety at a reaction temperature that is effective for initiating addition copolymerization of the addition-polymerizable monomer with the ethylenically-unsaturated monomer, wherein propagation by the addition-copolymerization reaction forms the main chain of the graft polymer;

while also combining in the reaction zone a polymerizable, carbonyl carbon-containing ringed molecule at a superatmospheric pressure effective, at the elevated temperature, to cause the ring portion of the ringed molecule to open in the vicinity of the carbonyl carbon thereof in response to the presence of the nucleophilic or the electrophilic moiety of the ethylenically-unsaturated monomer, for initiating ionic-copolymerization of the polymerizable ringed molecule with the nucleophilic-containing or electrophilic-containing moiety of the ethylenically-unsaturated monomer, wherein propagation by the ionic-copolymerization reaction forms the side chains of the graft polymer; and

terminating both of the addition-copolymerization and the ionic-copolymerization reactions when the thus-produced graft polymer attains a predetermined number-average and/or weight-average molecule weight, the polymerization process being characterized in that each of the main-chain and side-chain propagations occurs substantially simultaneously, relative to the other, and wherein the polymerization process is further characterized in that the ionic-copolymerization reaction occurs expressly excluding utilization of a catalyst for the carbonyl carbon-containing ringed molecule.

5,010,167

POLY(AMIDE-AND IMIDE-CO-ANHYDRIDE) FOR BIOLOGICAL APPLICATION

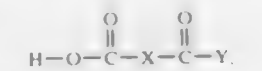
Eyal Ron, Lexington; Andrea Staubli, Belmont, and Robert S. Langer, Newton, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

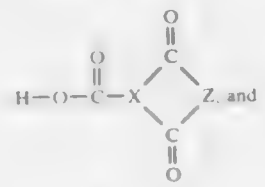
Filed Mar. 31, 1989, Ser. No. 331,432

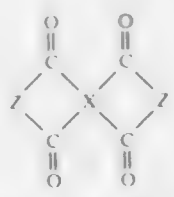
Int. Cl.[5] **C08G** *69/10*

U.S. Cl. 528—328 **4 Claims**

1. A biocompatible, biodegradable polymer produced from monomers selected from the group consisting of







wherein X is an aliphatic or aromatic group of C_1–C_{20}, Y is a C-terminus peptide or proline, and Z is a C-terminus peptide or amino acid, and having a weight average molecular weight of greater than 10,000.

5,010,168

ARAMID POLYMER FROM AROMATIC DICARBOXYLIC ACID MIXTURE AND AROMATIC DIAMINE MIXTURE

Doetze J. Sikkema, An Ellecom, Netherlands, assignor to Akzo nv, Arnhem, Netherlands

Division of Ser. No. 245,231, Sep. 16, 1988, Pat. No. 4,908,264. This application Dec. 8, 1989, Ser. No. 447,735

Claims priority, application Netherlands, Sep. 17, 1987, 8702221

Int. Cl.[5] **C08G** *69/32*

U.S. Cl. 528—338 **15 Claims**

1. A copolyamide, which expressed as the mole fraction of the total of amide bonds, comprises (1) 0.22–0.28 units derived from terephatalic acid; (2) 0.22–0.28 units derived from paraphenylene diamine; (3) 0.22–0.28 units derived from isophthalic acid; and (4) 0.22–0.28 units derived from a 3,3'- or a 4,4'-diamine of diphenyl methane, diphenylpropane-2,2, diphenyl cyclohexane-1,1, diphenyl ether, diphenyl sulfide, diphenyl sulphone, or benzophenone.

5,010,169

POLYARYLENE SULPHIDE CONTAINING PHOSPHINE GROUPS

Burkhard Köhler, and Rolf-Volker Meyer, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

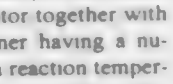
Division of Ser. No. 336,716, Apr. 12, 1989, abandoned. This application Nov. 13, 1989, Ser. No. 436,127

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1988, 3814533

Int. Cl.[5] **C08G** *75/16*

U.S. Cl. 528—388 **4 Claims**

1. Linear or branched phosphorous containing polyarylene sulphide prepared by the reaction of 0.1 to 10 mol-% of monomers corresponding to the following formula



(I)

wherein

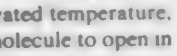
P denotes phosphorous,

Ar denotes a C_6-C_{14} aromatic group or a C_5–C_{14} heteroaromatic group containing 1 to 3 halogen atoms,

R^1 is identical to Ar or denotes a C_1–C_{22}-alkyl, C_6–C_{15}-aralkyl or C_6–C_{14} - aryl group,

R^2 is identical to Ar or R^1,

from 90 to 99.9 mol-% of monomers corresponding to the formula II



(II)

wherein

Ph represents a para- or metaphenylene group or a 4,4'-diphenylene group and

Hal represents halogen and the sum of all the halogen atoms is at least 2,

and 1 to 2 equivalents of an alkali metal sulfide

5,010,170

POLYMERIZATION OF CARBON MONOXIDE/OLEFIN WITH AT LEAST ONE TETRA ARYL DIPHOSPHINE LIGAND

Gerrit G. Rosenbrand, Amsterdam, Netherlands, and Pui K. Wong, Katy, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 20, 1989, Ser. No. 424,650

Claims priority, application Netherlands, Oct. 24, 1988, 8802611

Int. Cl.[5] **C08G** *67/02*

U.S. Cl. 528—392 **12 Claims**

1. In the process of producing a linear alternating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon by contacting the carbon monoxide and unsaturated hydrocarbon under polymerization conditions in the presence of a catalyst composition formed from a palladium compound, the anion of a non-hydrohalogenic acid having a pKa below about 4 and at least one tetraaryl diphosphine ligand, the improvement wherein the ligand comprises a mixture of tetraaryl disphosphines wherein one diphosphine contains an ortho alkoxy substituent on each aryl group and one diphosphine is free of ortho alkoxy substituents on aryl groups

5,010,171

CARBON MONOXIDE/OLEFIN POLYMERIZATION WITH CATALYST COMPRISING P, BIDENTATE LIGAND HAVING NON-HYDROCARBYL SUBSTITUENT

Johannes A. M. van Broekhoven, and Wiebren A. Miedema, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 15, 1989, Ser. No. 408,012

Claims priority, application Netherlands, Sep. 22, 1988, 8802347

Int. Cl.[5] **C08G** *67/02*

U.S. Cl. 528—392 **10 Claims**

1. In the process of producing linear alternating polymer by polymerizing carbon monoxide and at least one ethylenically unsaturated hydrocarbon in a series of polymerizations over time, each of the polymerizations being conducted under polymerization conditions in the presence of an alkanol reaction diluent and a catalyst composition, the improvement of employing in each polymerization a portion of a catalyst composition solution prepared by adding a bidentate ligand of phosphorus containing a non-hydrocarbyl substituent on at least one carbon atom and a palladium alkanoate to an aprotic, polar solvent and subsequently adding a halogenated aliphatic monocarboxylic acid having a pKa below 2, and recovering linear alternating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon of relatively uniform molecular weight from the series of polymerizations

5,010,172

POLYMERIZATION OF CARBON MONOXIDE/OLEFIN WITH TERTIARY MONOPHOSPHINE OR SECONDARY MONOPHOSPHINE OXIDE

Petrus W. N. M. Van Leeuwen, and Cornelis F. Roobeek, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 28, 1989, Ser. No. 458,251

Claims priority, application Netherlands, Jan. 20, 1989, 8900139

Int. Cl.[5] **C08G** *67/02*

U.S. Cl. 528—392 **16 Claims**

1. A process for the production of linear alternating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon by contacting the carbon monoxide and ethylenically unsaturated hydrocarbon under polymerization conditions in the liquid phase in the presence a catalytic quantity of a catalyst composition formed from (a) a palladium salt of an acid having a pKa less than 2; (b) a bidentate ligand of phosphorus, and (c) a tertiary monophosphine or secondary monophosphine oxide provided in a quantity of from about 0.25 mol to about 2 mol per mol of palladium salt

5,010,173

FREE RADICAL STABILIZED ALKOXYLATES

Anthony J. O'Lenick, Jr., Lilburn, Ga.; John C. Miller, Hawthorn Woods, Ill., and J. Michael Clumpner, Delavan, Wis., assignors to LCE Partnership, Lake Geneva, Wis.

Continuation-in-part of Ser. No. 418,630, Oct. 10, 1918. This application Jun. 4, 1990, Ser. No. 532,856

Int. Cl.[5] **C08G** *65/10;* **C08L** *71/02*

U.S. Cl. 528—408 **18 Claims**

1. A polyoxyalkylene composition which is prepared by the reaction of;

(a) a dihydroxy compound, selected from ethylene glycol, propylene glycol, diethylene oxide, and dipropylene glycol said dihydroxy compound containing an effective inhibitory amount of a stable free radical compound, and

(b) an alkylene oxide selected from ethylene oxide, propylene oxide, butylene oxide, and mixtures thereof.

5,010,174

NOVEL CALCITONIN DERIVATIVE AND SALT THEREOF

Sachio Hirose, Tokyo; Motomu Hane, and Masanobu Inagawa, both of Ibaraki, all of Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

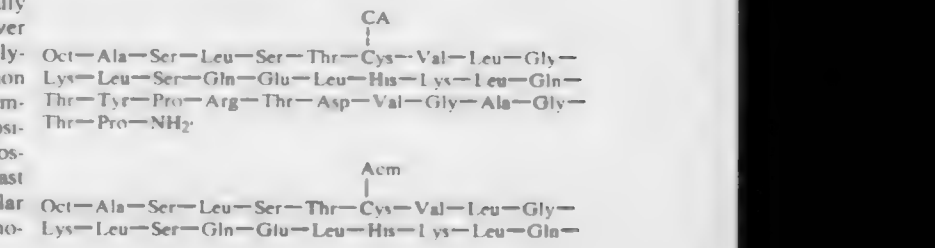
Continuation-in-part of Ser. No. 215,280, Jul. 5, 1988, abandoned. This application May 17, 1989, Ser. No. 353,336

Claims priority, application Japan, Jul. 8, 1987, 62-168583; Feb. 17, 1988, 63-32888; Nov. 24, 1988, 63-294761

Int. Cl.[5] **C07K** *7/36*

U.S. Cl. 530—307 **5 Claims**

1. A calcitonin derivative or a pharmaceutically acceptable salt thereof selected from the group consisting



-continued

Thr—Tyr—Pro—Arg—Thr—Asp—Val—Gly—Ala—Gly—Thr—Pro—NH_2

Acm

Oct—Ser—Asn—Leu—Ser—Thr—Cys—Val—Leu—Gly—Lys—Leu—Ser—Gln—Glu—Leu—His—Lys—Leu—Gln—Thr—Tyr—Pro—Arg—Thr—Asp—Val—Gly—Ala—Gly—Thr—Pro—NH_2

CA

Oct—Ala—Thr—Leu—Ser—Thr—Cys—Val—Leu—Gly—Lys—Leu—Ser—Gln—Glu—Leu—His—Lys—Leu—Gln—Thr—Tyr—Pro—Arg—Thr—Asp—Val—Gly—Ala—Gly—Thr—Pro—NH_2

CA

Oct—Ala—Ala—Leu—Ser—Thr—Cys—Val—Leu—Gly—Lys—Leu—Ser—Gln—Glu—Leu—His—Lys—Leu—Gln—Thr—Tyr—Pro—Arg—Thr—Asp—Val—Gly—Ala—Gly—Thr—Pro—NH_2

CA

pGlu—Ala—Ser—Leu—Ser—Thr—Cys—Val—Leu—Gly—Lys—Leu—Ser—Gln—Glu—Leu—His—Lys—Leu—Gln—Thr—Tyr—Pro—Arg—Thr—Asp—Val—Gly—Ala—Gly—Thr—Pro—NH_2

Acm

Oct—Ala—Thr—Leu—Ser—Thr—Cys—Val—Leu—Gly—Lys—Leu—Ser—Gln—Glu—Leu—His—Lys—Leu—Gln—Thr—Tyr—Pro—Arg—Thr—Asp—Val—Gly—Ala—Gly—Thr—Pro—NH_2

Acm

pGlu—Ala—Thr—Leu—Ser—Thr—Cys—Val—Leu—Gly—Lys—Leu—Ser—Gln—Glu—Leu—His—Lys—Leu—Gln—Thr—Tyr—Pro—Arg—Thr—Asp—Val—Gly—Ala—Gly—Thr—Pro—NH_2

CA

Kcp—Ala—Ser—Leu—Ser—Thr—Cys—Val—Leu—Gly—Lys—Leu—Ser—Gln—Glu—Leu—His—Lys—Leu—Gln—Thr—Tyr—Pro—Arg—Thr—Asp—Val—Gly—Ala—Gly—Thr—Pro—NH_2 and

Oct—Ala—Ser—Leu—Ser—Thr—Cys—Val—Leu—Gly—Lys—Leu—Ser—Gln—Glu—Leu—His—Lys—Leu—Gln—Thr—Tyr—Pro—Arg—Thr—Asp—Val—Gly—Ala—Gly—Thr—Pro—NH_2.

Kcp-Ala-Ser-Leu-Ser-Thr

wherein Ala represents alanine, Arg: arginine, Asn: asparagine, Asp: aspartic acid, Cys: cysteine, Gln: glutamine, Glu: glutamic acid, Gly: glycine, His: histidine, Ile: isoleucine, Leu: leucine, Lys: lysine, Met: methionine, Phe: phenylalanine, Pro: proline, Ser: serine, Thr: threonine, Trp: tryptophan, Try: tyrosine, Val: valine, Cys: cystine, Oct: 3-oxo-5-carboxyperhydro-1,4-thiazine, CA: carbamoylmethyl, Acm: acetamidomethyl, pGlu: pyroglutamic acid and Kpc: 2-keto-piperidine-6-carboxylic acid.

5,010,175

GENERAL METHOD FOR PRODUCING AND SELECTING PEPTIDES WITH SPECIFIC PROPERTIES

William J. Rutter, and Daniel V. Santi, both of San Francisco, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed May 2, 1988, Ser. No. 189,318

Int. Cl.[5] **C07K** *1/00, 1/04*

U.S. Cl. 530—334 **42 Claims**

1. A method of preparing in the same reaction vessel a mixture of peptides of distinct, unique and different sequences which mixture contains each peptide in retrievable and analyzable amounts and in substantially equal molar amounts, comprising:

combining and reacting activated amino acids with an acceptor amino acid or peptide wherein said activated amino acids are provided in concentrations relative to each other based on the relative coupling constants so that the mixture of the peptides resulting from the reaction contains each of the peptides in predictable and defined amounts sufficient for each of the peptides to be retrieved and analyzed.

5,010,176

ANTIBODY-DRUG CONJUGATES

Russell L. Barton, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 10, 1988, Ser. No. 269,815

Int. Cl.[5] **C07K** *15/28, 17/06*

U.S. Cl. 530—388 **20 Claims**

1. A modified antibody or antibody fragment of the formula

$$[R^4—CH=\underset{\displaystyle COR^1}{\underset{|}{C}}—CO—Y—(CH_2)_n—CO]_mAb \qquad III$$

wherein

R^1 is a carboxylic acid protecting group;

R^4 is C_1-C_4 alkoxy,

Y is —O—, —NH—, —NCH_3— or —NC_2H_5—,

n is an integer from 1 to about 8;

m is an integer from 1 to about 10; and

Ab is an antibody or antigen-recognizing fragment thereof, which recognizes an antigen associated with a cell to which delivery of the drug is desirable.

5,010,177

PROCESS FOR THE PREPARATION OF AN AZONITRILE DICARBOXYLIC ACID INITIATOR IN ACETONE HAVING A LOW SALT AND LOW WATER CONTENT

John T. Lai, Broadview Heights, and Deborah S. Filla, Northfield, both of Ohio, assignors to The BFGoodrich Company, Akron, Ohio

Filed Dec. 26, 1989, Ser. No. 457,057

Int. Cl.[5] **C07C** *245/04;* **C08F** *4/04*

U.S. Cl. 534—586 **26 Claims**

1. A process for the preparation of an azonitrile initiator in acetone having a low salt, low water content, comprising, forming

$$HOOCR_2C—N=N—CR_2COOH. \qquad I$$
(CN; CN)

by reacting a keto acid of the formula

$$R_1CR_2COOH$$
(O)

with $M(CN)_x$ to form a cyanohydrin metal carboxylate of the formula

$$(R_1CR_2COO^-)_xM$$
(OH; CN)

and reacting the metal carboxylate with a hydrazine source and hydrochloric acid to obtain a hydrazo intermediate of the formula

$$(OOCR_2C—N(R_1,H)—N(H,R_1)—CR_2COO^-)_x2M^{x+}.$$
(CN; CN)

reacting said hydrazo intermediate with chlorine gas in the presence of acetone to oxidize the hydrazo intermediate to form the azonitrile initiator in a liquid medium, forming at least two liquid layers, discarding the bottom aqueous layer and adding solid calcium chloride or an aqueous saturated solution of calcium chloride to the upper layer to further remove additional water and $M(Cl)_x$ from the acetone layer containing the azonitrile initiator, wherein R_1 is an alkyl containing from about 1 to about 12 carbon atoms, R_2 is a direct bond or an alkylene containing from 1 to about 12 carbon atoms, or a cycloalkylene or alkyl cycloalkylene containing from about 3 to about 12 carbon atoms, and M is a metal selected from the class consisting of lithium, sodium, potassium, magnesium, or calcium.

5,010,178

PROCESS FOR THE PREPARATION OF MIXED AZONITRILE CARBOXYLIC ACID INITIATORS

John T. Lai, Broadview Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Dec. 26, 1989, Ser. No. 456,886

Int. Cl.[5] **C07C** *245/04;* **C08F** *4/04*

U.S. Cl. 534—586 **23 Claims**

1. A process for the preparation of mixed azonitrile initiators, comprising, forming

$$HOOCR_2C—N=N—CR_2COOH. \qquad I$$
(R1; R1; CN; CN)

$$R_3C—N=N—CR_4 \quad \text{and} \qquad II$$
(R4; R4; CN; CN)

$$R_3C—N=N—CR_2COOH \qquad III$$
(R4; R1; CN; CN)

by reacting a keto acid of the formula

$$R_1CR_2COOH$$
(O)

with $M(CN)_x$ and a catalytic amount of hydrochloric acid to form a cyanohydrin metal carboxylate of the formula

$$(R_1CR_2COO)_xM.$$
(OH; CN)

adding to the cyanohydrin metal carboxylate a cyanohydrin of the formula

$$R_3CR_4 \quad \text{and.}$$
(OH; CN)

reacting the mixture with a hydrazine source to obtain a mixture of hydrazo intermediates of the formulae

$$(OOCR_2C—N(R_1,H)—N(H,R_1)—CR_2COO^-)_x2M^{x+} \qquad IV$$
(CN; CN)

$$R_3C—N(R_4,H)—N(H,R_4)—CR_3 \quad \text{and} \qquad V$$
(CN; CN)

$$(R_3C—N(R_4,H)—N(H,R_1)—CR_2COO^-)_xM^{x+} \qquad VI$$
(CN; CN)

and reacting said mixture of hydrazo intermediates with chlorine gas in the presence of acetone solvent to oxidize the mixture of hydrazo intermediates and form the mixed azonitrile initiators wherein R_1 is an alkyl containing from about 1 to about 12 carbon atoms, R_2 is a direct bond or an alkylene containing from 1 to about 12 carbon atoms, or a cycloalkylene or alkyl cycloalkylene containing from about 3 to about 12 carbon atoms, R_3 and R_4, independently, are alkyls containing from 1 to about 12 carbon atoms, or one of R_3 and R_4 is an alkoxy containing from 1 to about 4 carbon atoms, and M is a metal selected from the class consisting of lithium, sodium, potassium, magnesium, or calcium.

5,010,179

PROCESS FOR THE PREPARATION OF MIXED, SYMMETRICAL AZONITRILE DICARBOXYLIC DICYANO ACIDS AND INITIATORS

John T. Lai, Broadview Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Dec. 26, 1989, Ser. No. 457,058

Int. Cl.[5] **C07C** *245/04;* **C08F** *4/04*

U.S. Cl. 534—586 **23 Claims**

1. A process for the preparation of mixed, symmetrical azonitrile initiators, comprising,

forming

$$HOOCR_2C—N=N—CR_2COOH \qquad I$$
(R1; R1; CN; CN)

and

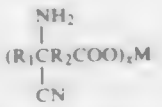
$$R_3C—N=N—CR_3 \qquad II$$
(R4; R4; CN; CN)

by reacting a keto acid of the formula

$$R_1CR_2COOH$$
(O)

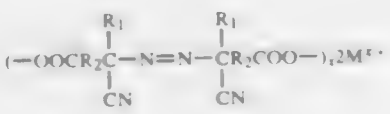
wherein R_1 is an alkyl containing from 1 to 12 carbon atoms and R_2 is a direct bond, or an alkylene containing from 1 to 12 carbon atoms or a cycloalkylene containing from about 3 to

about 12 carbon atoms, with from 1 to 2 equivalents of $M(CN)_x$ per mole of keto acid wherein M is a metal selected from the group consisting of lithium, sodium, potassium, magnesium, or calcium and x is the valence of M and an ammonia source in a molar ratio of keto acid: ammonia source of from about 1:1–4 in the presence of a solvent to form an aminonitrile metal carboxylate of the formula



removing excess ammonia source, removing methanol if used as a solvent,

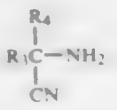
reacting said aminonitrile metal carboxylate with $M_1(OCl)_x$ in the presence of a surfactant wherein M_1 is a metal selected from the group consisting of sodium, potassium, or calcium and x is the valence of M to form an azonitrile metal carboxylate comprising



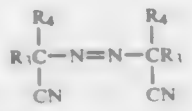
III

and also

reacting an aminonitrile of the formula



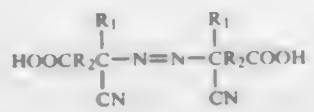
in the presence of a surfactant and $M_1(OCl)_x$ to form a symmetrical azonitrile initiator



II

wherein R_3 and R_4 are alkyl independently containing from 1 to about 12 carbon atoms or one of R_3 and R_4 is an alkoxy of from 1 to about 4 carbon atoms wherein the molar ratio of aminonitrile metal carboxylate:aminonitrile is from about 0.5–10:1, wherein the surfactant is from about 0.05 percent active to about 0.20 percent active by weight based on the total weight of aminonitrile metal carboxylate and aminonitrile, and wherein the equivalent weight ratio of the sum of the aminonitrile metal carboxylate and aminonitrile: $M_1(OCl)_x$ is from about 1:1.0–2.75, and

reducing excess $M_1(OCl)_x$ with a reducing agent and further neutralizing the metal azonitrile carboxylate to form



I

5,010,180

WATER-SOLUBLE AZO COMPOUNDS HAVING A N-(PHENETHYL)-AMIDO-CARBONYL-METHOXYPHENYL RADICAL, SUBSTITUTED BY A FIBER-REACTIVE GROUP OF THE VINYLSULFONE SERIES, SUITABLE AS FIBER-REACTIVE DYESTUFFS

Hartmut Springer, Königstein/Taunus, and Uwe Reiher, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

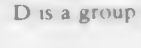
Filed Feb. 1, 1990, Ser. No. 473,620

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1989, 3903224

Int. Cl.[5] **C09B** *62/085, 62/51, 62/513;* **D06P** *1/384*

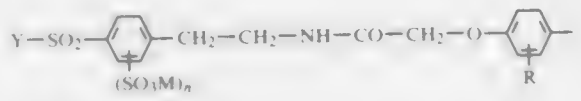
U.S. Cl. 534—638 **12 Claims**

1. A water-soluble azo compound corresponding to the formula



in which

D is a group of the formula



in which,

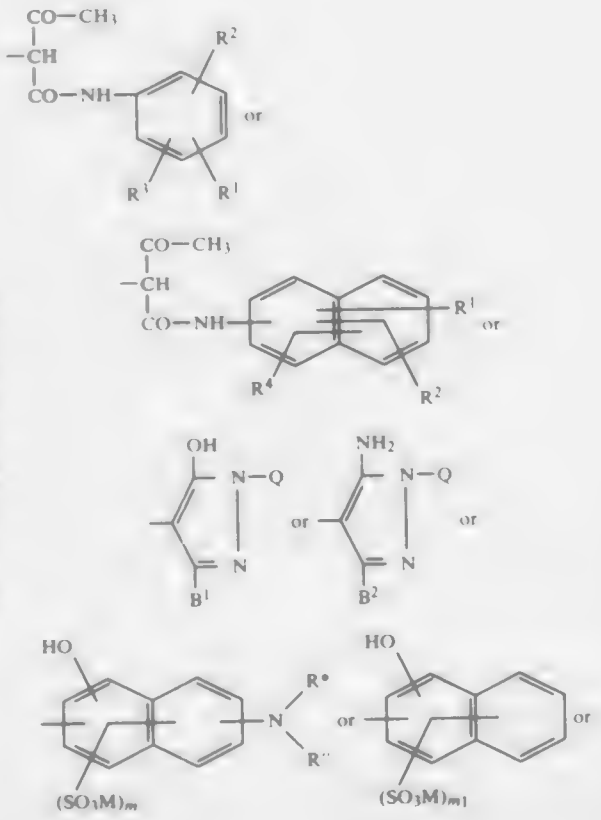
Y is vinyl or a group of the formula $-CH_2-CH_2-X$ in which X is a substituent which is eliminated by an alkali while forming the vinyl,

R is hydrogen, nitro, alkyl of 1 to 4 carbons, alkoxy of 1 to 4 carbons, carboxy, hydroxy or halogen,

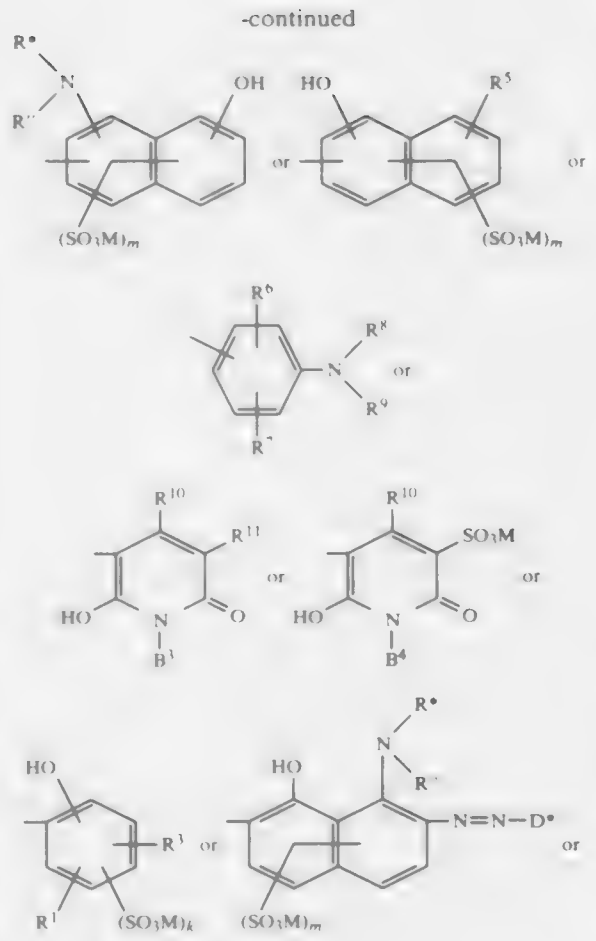
n is zero or 1, and

M is hydrogen or an alkali-metal, and

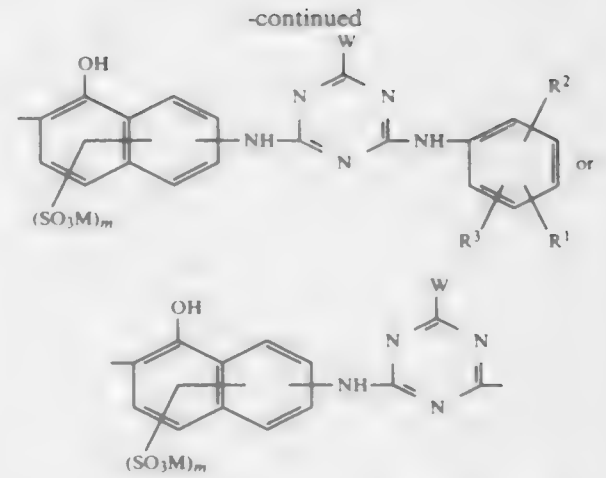
K is a group of the formula



-continued



-continued



in which

R^1 is hydrogen, carboxy, sulfo, or a group of the formula $-SO_2-Y$;

R^2 is hydrogen, alkyl of 1 to 4 carbons, alkoxy of 1 to 4 carbons, chlorine, bromine, carboxy, sulfo, or nitro;

R^3 is hydrogen, alkyl of 1 to 4 carbons, alkoxy of 1 to 4 carbons, chlorine, or bromine;

R^4 is hydrogen, sulfo, or carboxy;

B^1 is alkyl of 1 to 4 carbons, carboxy, carbalkoxy of 2 to 5 carbons, $-CONH_2$, or phenyl, which is unsubstituted or substituted by substituents selected from sulfo, carboxy, methyl, ethyl, methoxy, ethoxy, and chlorine;

B^2 is alkyl of 1 to 4 carbons, carboxy, carbalkoxy of 2 to 5 carbons, $-CONH_2$, or phenyl, which is unsubstituted or substituted by 1 or 2 substituents selected from alkyl of 1 to 4 carbons, alkoxy of 1 to 4 carbons, chlorine, bromine, or sulfo;

Q is phenyl, which is unsubstituted or substituted by one, two, or three substituents selected from chlorine, bromine, methyl, ethyl, methoxy, ethoxy, carboxy, sulfo, acetylamino, and a group of the formula $-SO_2-Y$, or is a naphthyl, which is unsubstituted or substituted by one, two, or three sulfos, or by an alkyl of 1 to 4 carbons, an alkoxy of 1 to 4 carbons, a chlorine, or an alkanoylamino of 2 to 5 carbons, or by a group of the formula $-SO_2-Y$, or is naphthyl substituted by one, two or three sulfos and by a group selected from alkyl of 1 to 4 carbons, alkoxy of 1 to 4 carbons, chlorine, alkanoylamino of 2 to 5 carbons and a group of the formula $-SO_2-Y$;

R^* is hydrogen, or alkyl or 1 to 4 carbons, which is unsubstituted or substituted by a phenyl which is further unsubstituted or substituted by sulfo, or by $-SO_2-Y$, or by sulfo and $-SO_2-Y$

R'' is hydrogen, or alkyl or 1 to 4 carbons which is unsubstituted or substituted by phenyl, or by a group of the formula $-SO_2-Y$, or is phenyl which is unsubstituted or substituted by one or two substituents selected from alkyl of 1 to 4 carbons, alkoxy of 1 to 4 carbons, chlorine, bromine, sulfo, and $-SO_2-Y$;

R^5 is phenylureido wherein the phenyl is unsubstituted or substituted by a group of the formula $-SO_2-Y$, or is alkanoylamino of 2 to 5 carbons which is unsubstituted or substituted in the alkyl moiety by a group of the formula $-SO_2-Y$, or is alkenoylamino of 3 to 5 carbons or is benzoylamino which is unsubstituted or substituted by substituents selected from chlorine, methyl, methoxy,

nitro, sulfo, carboxy, and a group of the formula $-SO_2-Y$,

R^6 is hydrogen, alkyl of 1 to 4 carbons, alkoxy of 1 to 4 carbons, sulfo, carboxy, carbalkoxy of 2 to 5 carbons, halogen or alkoxy of 1 to 4 carbons substituted by hydroxy, acetoxy, carboxy, $-CONH_2$, cyano, or halogen;

R^7 is hydrogen, alkyl of 1 to 4 carbons, alkoxy of 1 to 4 carbons, halogen, cyano, trifluoromethyl or alkoxy of 1 to 4 carbons substituted by hydroxy, acetoxy, carboxy, $-CONH_2$, cyano, halogen, or a group of the formula $-SO_2-Y$, or is alkanoylamino of 2 to 5 carbons which is unsubstituted or substituted by chlorine, bromine, alkoxy of 1 to 4 carbons, phenoxy, phenyl, hydroxy, carboxy, sulfo, or a group of the formula $-SO_2-Y$, or is alkenoylamino of 3 to 5 carbons, which is unsubstituted or substituted by chlorine, bromine, carboxy or sulfo, or is benzoylamino which is unsubstituted or substituted in the benzene ring by substituents selected from chlorine, methyl, sulfo, and a group of the formula $-SO_2-Y$, or is alkylsulfonyl of 1 to 4 carbons or is phenylsulfonyl which is unsubstituted or substituted in the phenyl by substituents selected from chlorine, methyl, sulfo, and a group of the formula $-SO_2-Y$, or is alkylsulfonylamino of 1 to 4 carbons, which is unsubstituted or substituted by hydroxy, sulfato, chlorine, bromine, alkoxy of 1 to 4 carbons or a group of the formula $-SO_2-Y$, or is phenylsulfonylamino, which is unsubstituted or substituted in the phenyl by substituents selected from chlorine, methyl, sulfo, and a group of the formula $-SO_2-Y$, or is $-CONH_2$, which is unsubstituted or mono- or disubstituted on the nitrogen by one or two substituents selected from the group: alkyl of 1 to 4 carbons; alkyl of 1 to 4 carbons substituted by hydroxy, sulfo, carboxy, sulfato, phenyl, or a group of the formula $-SO_2-Y$; cycloalkyl of 5 to 8 carbons, phenyl, which is unsubstituted or substituted by substituents selected from chlorine, sulfo, methyl, methoxy, carboxy, and a group of the formula $-SO_2-Y$, or is sulfamoyl, which is unsubstituted or mono- or disubstituted on the nitrogen by one or two substituents selected from the group consisting of: alkyl of 1 to 4 carbons; alkyl of 1 to 4 carbons substituted by hydroxy, sulfo, carboxy, sulfato, phenyl, or a group of the formula $-SO_2-Y$, cycloalkyl of 5 to 8 carbons; phenyl, which is unsubstituted or substituted by substituents selected from chlorine, sulfo, methyl, methoxy, carboxy, and a group of the formula $-SO_2-Y$, or is ureido, which is unsubstituted or mono- or disubstituted on the terminal nitrogen by one or two substituents from the group consisting of alkyl or 1 to 4 carbons, alkyl of 1 to 4 carbons substituted by substituents selected from hydroxy, sulfo, carboxy, sulfato, phenyl, or a group of the formula $-SO_2-Y$, cycloalkyl of 5 to 8 carbons, phenyl, which is unsubstituted or substituted by substituents selected from the group consisting of chlorine, sulfo, methyl, methoxy, carboxy, and a group of the formula $-SO_2-Y$,

R^8 is hydrogen, alkyl of 1 to 4 carbons, or alkyl or 1 to 4 carbons substituted by hydroxy, sulfo, carboxy, sulfato, a group of the formula $-SO_2-Y$, or by phenyl, or is alkenyl of 2 to 4 carbons which is unsubstituted or substituted by carboxy, sulfo, chlorine or bromine, or is cycloalkyl or 5 to 8 carbons,

R^9 is hydrogen, or alkyl of 1 to 4 carbons or alkyl or 1 to 4 carbons which is unsubstituted or substituted by hydroxy, sulfo, carboxy, sulfato, phenyl, or a group of the formula $-SO_2-Y$, or is alkenyl of 2 to 5 carbons which is unsubstituted or substituted by carboxy, sulfo, a group of the formula $-SO_2-Y$, chlorine, or bromine, or is cycloalkyl of 5 to 8 carbons or phenyl, which is unsubstituted or substituted by substituents selected from chlorine, sulfo, methyl, methoxy, carboxy, and a group of the formula $-SO_2-Y$, or

R^8 and R^9 represent together with the nitrogen piperidino, morpholino or piperazino;

R^{10} is hydrogen, or alkyl of 1 to 4 carbons which is unsubstituted or substituted by alkoxy of 1 to 4 carbons or by cyano,

R^{11} is hydrogen, sulfo, sulfoalkyl with an alkyl moiety or 2 to 5 carbons, cyano, or $-CONH_2$;

B^3 is hydrogen, or alkyl or 1 to 6 carbons which is unsubstituted or substituted by phenyl, sulfo, sulfophenyl, or a group of the formula $-SO_2-Y$;

B^4 is hydrogen, alkoxy of 1 to 4 carbons, alkyl or 1 to 4 carbons, which is unsubstituted or substituted by sulfo, carboxy, sulfato, acetylamino, benzoylamino, cyano, or a group of the formula SO_2-Y, or is alkenyl of 2 to 4 carbons, cyclohexyl, phenyl, which is unsubstituted or substituted by substituents selected from carboxy, sulfo, benzoylamino, acetylamino, a group of the formula $-SO2-Y$, and chlorine;

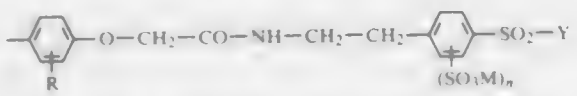
K is zero or 1 (and in the case where K is zero, this group is hydrogen);

m is 1 or 2,

m_1 is 1, 2 or 3;

W is sulfo, alkylsulfonyl or 1 to 4 carbons, phenylsulfonyl, bromine, fluorine or chlorine,

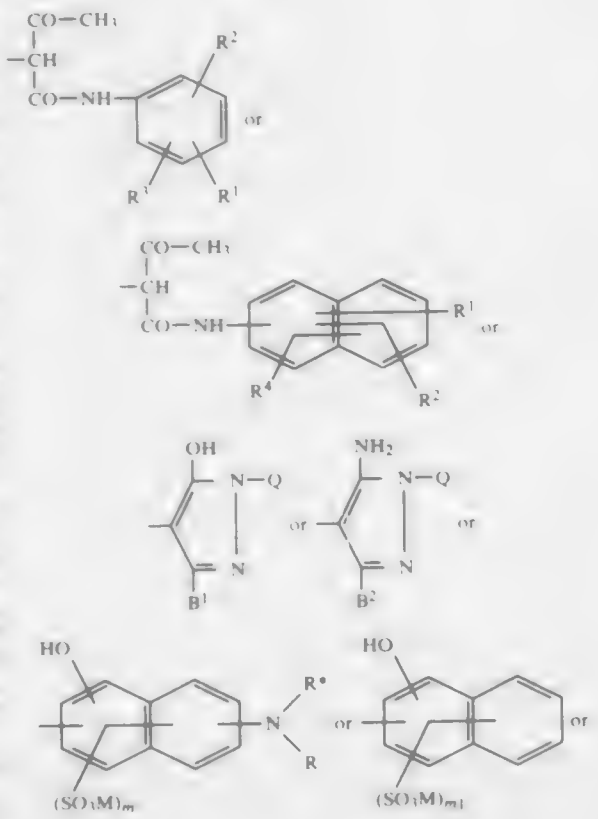
D^* is a group of the formula



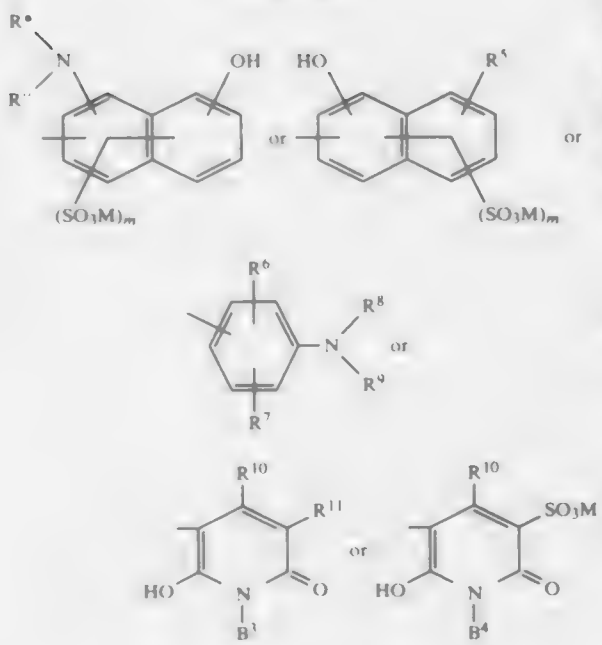
in which R, Y and M and n are as defined above, or

D^* is phenyl, which is unsubstituted or substituted by 1, 2, or 3 substituents selected from alkyl of 1 to 4 carbons, alkoxy of 1 to 4 carbons, chlorine, bromine, hydroxy, carboxy, sulfo, $-CONH_2$ and $-SO_2NH_2$, and alkanoylamino of 2 to 5 carbons, or a group of the formula $-SO_2-Y$, or by a combination of those substituents, or is naphthyl, which is unsubstituted or substituted by 1, 2 or 3 sulfos, or by 1 or 2 sulfos and 1 or 2 groups of the formula $-SO_2-Y$, or by one group $-SO_2-Y$,

K^* is a group of the formula



-continued



5,010,181

PARTIALLY TREATED SHELLFISH WASTE FOR REMOVAL OF HEAVY METALS FROM AQUEOUS SOLUTION

Robert W. Coughlin, The University of Connecticut, Dept. of Chemical Engineering, Box U-139, Room 204, 191 Auditorium Rd., Storrs, Conn. 06268

Filed Mar. 28, 1988, Ser. No. 174,357
Int. Cl.[4] C08B *37/08*
U.S. Cl. 536—20 **12 Claims**

1. A particle which removes heavy metal ions from aqueous solution, which comprises chitin having formed thereon a layer of chitosan, wherein said particle has a size of from 0.2 to 1.5 cm, and the chitosan layer on the surface thereof has a depth of from about 0.01 micrometers to about 10% of the particle diameter.

5,010,182

DNA CONSTRUCTS CONTAINING A KLUYVEROMYCES ALPHA FACTOR LEADER SEQUENCE FOR DIRECTING SECRETION OF HETEROLOGOUS POLYPEPTIDES

Anthony J. Brake, Berkeley, Calif., and Johan A. Van Den Berg, Ad Reeuwijk, Netherlands, assignors to Chiron Corporation, Emeryville, Calif. and Gist-Brocades NV, Delft, Netherlands

Filed Jul. 28, 1987, Ser. No. 78,551
Int. Cl.[5] C07H *15/12;* **C12P** *21/00;* **C12N** *15/00*
U.S. Cl. 536—27 **7 Claims**

1. A DNA construct encoding a protein having an amino acid sequence which comprises a secretion-directing Kluyveromyces α-factor leader sequence linked to a heterologous polypeptide sequence.

5,010,183

PROCESS FOR PURIFYING DNA AND RNA USING CATIONIC DETERGENTS

Donald E. Macfarlane, 943 Iowa Ave., Iowa City, Iowa 52240

Filed Jul. 7, 1989, Ser. No. 376,709
Int. Cl.[5] C07H *21/00, 21/02, 21/04*
U.S. Cl. 536—27 **24 Claims**

1. A process for the purification of DNA and RNA from a biological mixture consisting essentially of applying directly to said mixture without prior purification or extraction of the nucleic acids a selected quaternary amine cationic detergent capable of simultaneously solubilizing contaminants in said mixture and forming a hydrophobic complex with said DNA or RNA in said mixture.

3. A process for the purification of DNA and RNA from a biological mixture containing virus consisting essentially of applying directly to said mixture without prior purification or extraction of the nucleic acids of selected quaternary amine cationic detergent capable of simultaneously solubilizing contaminants in said mixture and forming a hydrophobic complex with said DNA or RNA in said mixture.

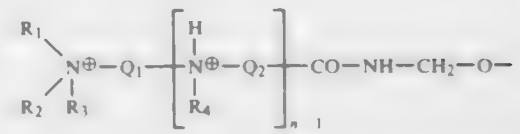
5,010,184

IONICALLY MODIFIED AGAROSE

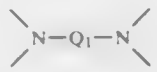
Jürg Merz, Biel-Benken, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 38,418, Apr. 10, 1987, abandoned, which is a continuation of Ser. No. 745,550, Jun. 17, 1985, abandoned. This application Jun. 21, 1989, Ser. No. 371,669
Claims priority, application Switzerland, Jul. 6, 1984, 3287/84
Int. Cl.[4] C07H *5/04*
U.S. Cl. 536—55.1 **7 Claims**

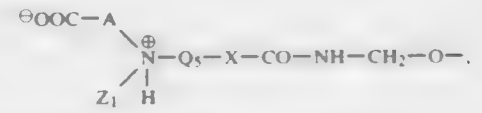
1. An uncrosslinked or crosslinked agarose which contains basic radicals of the formula



wherein n is 1 or 2, each of R_1, R_2, R_3 and R_4 independently is hydrogen, C_1-C_4alkyl which is unsubstituted or substituted by hydroxy, nitrile, halogen or C_1-C_4alkoxy, cyclopentyl or cyclohexyl or C_1-C_4alkyl-substituted cyclopentyl or cyclohexyl, benzyl or phenyl, each unsubstituted or substituted by nitro or halogen, or R_1 and R_2, together with the nitrogen atom to which they are attached form a 5- or 6-membered heterocyclic ring, or R_3 and R_3, together with the grouping



to which they are attached also form a 5- or 6-membered heterocyclic ring, and each of Q_1 and Q_2 independently is C_1-C_8alkylene, or zwitterionic radicals of the formula



wherein X is —O—, —S—,



or a direct bond, R_{11} is hydrogen or C_1-C_4alkyl, Q_5 is a C_1-C_8alkylene or phenylene radical, each of which is unsubstituted or substituted by C_1-C_4alkyl or phenyl, Z_1 is —B—$COO^{\ominus}$, C_1-C_4alkyl or hydrogen, and A and B are each independently of the other C_1-C_8alkylene which is unsubstituted or substituted by C_1-C_4alkyl, C_1-C_4alkoxy or phenyl, or acid radicals of the formula

$$\ominus Y_1-Q_5-CO-NH-CH_2-O-$$

wherein $Y_1^{\ominus}$ is $-COO^{\ominus}$, $-SO_3^{\ominus}$ or $-P(OR_{11})O_2^{\ominus}$, R_{11} is hydrogen and Q_5 is a C_1-C_8alkylene or phenylene radical, each of which is unsubstituted or substituted by C_1-C_4alkyl or phenyl, which radicals are attached to said agarose through the ether oxygen of the $-CO-NH-CH_2-O-$ group of said radicals.

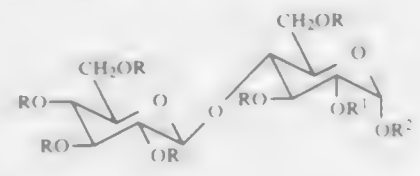
5,010,185

PROCESSES FOR TIGOGENIN BETA-CELLOBIOSIDE

Frank J. Urban, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

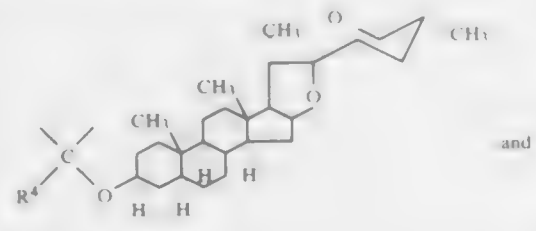
Filed Jun. 13, 1989, Ser. No. 365,588
Int. Cl.[5] C07J 53/00; C07H 15/24, 1/00
U.S. Cl. 536—6.1 14 Claims

1 A compound of the formula



(I)

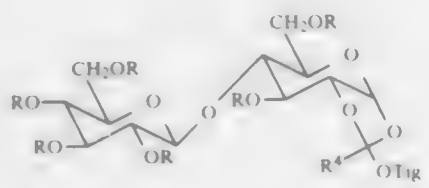
wherein
R is R^4CO,
R^1 and R^2 are taken together and are



and

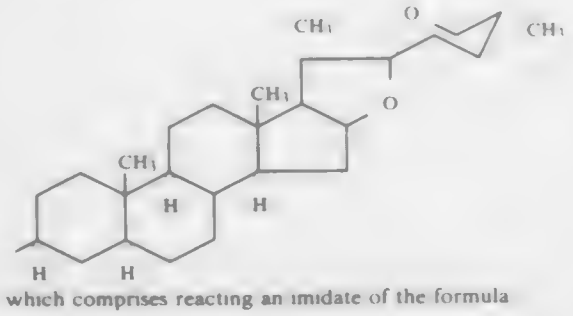
R^4 is C_1-C_4)alkyl

7 A process for the synthesis of an orthoester of the formula

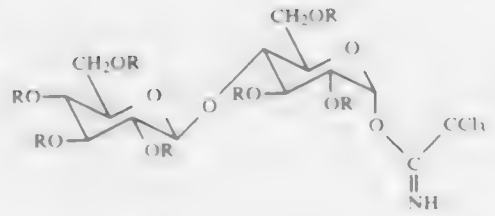


(IV)

wherein
R is R^4CO;
R^4 is (C_1-C_4)alkyl, and
Tig is



which comprises reacting an imidate of the formula



(III)

with tigogenin in the presence of zinc bromide or magnesium bromide etherate in a reaction-inert solvent at or about ambient temperature

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5,010,186

ACID/HEAT MODIFIED POLYSACCHARIDE BIOPOLYMERS

Patrick Cros, and Robert Pipon, both of Melle, France, assignors to Rhone-Poulenc Specialties Chimiques, Courbevoie, France

Division of Ser. No. 896,282, Aug. 14, 1986, Pat. No. 4,873,323.
This application Sep. 13, 1989, Ser. No. 372,819
Claims priority, application France, Aug. 14, 1985, 85 12382
Int. Cl.[5] C07G 17/001, C08B 37/00; E21B 43/22
U.S. Cl. 536—114 10 Claims

1 The product of the process for the preparation of a modified polysaccharide biopolymer, comprising (i) acidifying an aqueous composition of a polysaccharide with nitric acid to a pH from about 2 to 0.1, (ii) heat-treating said acidified composition at a temperature of from about 50° C. to 100° C. for from about 5 to 60 minutes, and (iii) cooling said heat-treated composition and adjusting the pH thereof to a value of from about 5 to 7

5,010,187

PRODUCTION OF POLYETHER POLYOLS WITH REDUCED UNSATURATION

Albert J. Heuvelsland, Heikant, Netherlands, assignor to Dow Chemical Company, Midland, Mich.

Filed Nov. 18, 1988, Ser. No. 273,375
Int. Cl.[5] C07H 1/00; C08B 37/00
U.S. Cl. 536—120 10 Claims

1 A process for preparing a polyester polyol having an equivalent weight of from about 200 to about 5000 by reacting a monoepoxy compound comprising propylene oxide with an initiator containing at least two active hydrogens in the presence of a catalyst, wherein said catalyst is a substance selected from the group consisting of barium, strontium and their oxide, hydroxides, hydrated hydroxides or monohydroxide salts, or mixtures thereof and characterized in that the resulting polyol has a total unsaturation level of less than 0.080 milliequivalents/gram polyol

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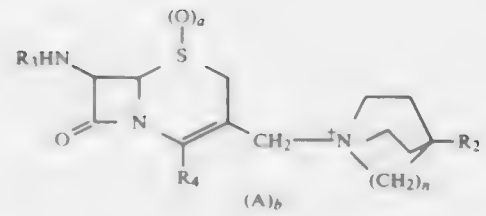
5,010,188

CEPHEM DERIVATIVES

Hiroshi Yamauchi; Isao Sugiyama; Isao Saito; Seiichiro Nomoto; Takashi Kamiya; Yoshimasa Machida, and Shigeto Negi, all of Ibaraki, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Division of Ser. No. 818,824, Jan. 14, 1986, Pat. No. 4,748,171.
This application Mar. 16, 1988, Ser. No. 167,152
Claims priority, application Japan, Jan. 14, 1985, 60-3181; Apr. 11, 1985, 60-75333; Aug. 9, 1985, 60-174326
Int. Cl.[5] C07D 501/38; A61K 31/545
U.S. Cl. 540—222 9 Claims

1. A compound represented by the formula



wherein n is 1 or 2, R_2 is hydroxyl, hydroxyl-substituted lower alkyl, or carbamoyl, a is 0 or 1, R_3 is hydrogen or a protective group for the amino group selected from the group consisting of formyl, acetyl, chloroacetyl, dichloroacetyl, propionyl, phenylacetyl, 2-thienylacetyl, 2-furylacetyl, phenoxyacetyl, benzyloxycarbonyl, t-butoxycarbonyl, p-nitrobenzyloxycarbonyl, trityl, p-methoxybenzyl, diphenylmethyl, trimethylsilyl and t-butyldimethylsilyl, A is an anion selected from the group consisting of halogen ions and inorganic acid ions, R_4 is $-COO^{\ominus}$ or a group $-COOR_5$, and b is 0 when R_4 is $-COO^{\ominus}$, or b is 1 when R_4 is a group $-COOR_5$, wherein R_5 is a protective group for the carboxyl group, or an acid salt thereof.

5,010,189

PROCESSES FOR THE PREPARATION OF 5-AMINO-4-HYDROXY-VALERIC ACID DERIVATIVES

Peter Herold, Basel, Switzerland, and Christof Angst, Summit, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 85,437, Aug. 13, 1987, Pat. No. 4,898,977.
This application Oct. 24, 1989, Ser. No. 426,927
Claims priority, application Switzerland, Aug. 13, 1986, 3248/86
Int. Cl.[5] C07C 57/03, 265/30
U.S. Cl. 544—174 2 Claims

1. Process for the preparation of compounds of the formula

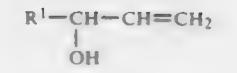
T.0720

in which

R^1 represents hydrogen, alkyl, hydroxyalkyl, etherified hydroxyalkyl, esterified hydroxyalkyl, haloalkyl, carboxyalkyl, esterified carboxyalkyl, amidated carboxyalkyl, cyanoalkyl, aminoalkyl, mono- or di-lower alkylaminoalkyl, pyrrolidinoalkyl, piperidinoalkyl, morpholinaoalkyl, oxoalkyl, cycloalkyl, cycloalkyl-lower alkyl, aryl, aryl-lower alkyl, 2- methylthioethyl, mercaptomethyl, 3-indolylmethyl, 4-imidazolylmethyl or 3-guanidinopropyl;

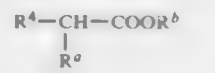
R^4 represents hydrogen, alkyl, hydroxyalkyl, etherified hydroxyalkyl, esterified hydroxyalkyl, haloalkyl, carboxyalkyl, esterified carboxyalkyl, amidated carboxyalkyl, cyanoalkyl, aminoalkyl, mono- or di-lower alkylaminoalkyl, pyrrolidinoalkyl, piperidinoalkyl, morpholinoalkyl, oxoalkyl, cycloalkyl, cycloalkyl-lower alkyl, aryl, aryl-lower alkyl, amino, mono- or di-lower alkylamino, aryl-lower alkylamino, lower alkyanoylamino, lower alkoxycarbonylamino, aryl-lower alkoxycarbonylamino, pyrrolidino, piperidino, morpholino, hydroxy, lower alkoxy, lower alkanoyloxy-lower alkoxy, lower alkoxycarbonyloxy-lower alkoxy, aryloxy, aryl-lower alkoxy, lower alkanoyloxy, cycloalkylcarbonyloxy, arylcarbonloxy, tri-lower alkylsilyloxy, mercapto, lower alkylthio, hydroxy-lower alkylthio, arylthio, aryl-lower alkylthio, lower alkanoylthio, lower alkylsulfinyl, hydroxy-lower alkylsulfinyl, arylsulfinyl, aryl-lower alkylsulfinyl, lower alkylsulfonyl, hydroxy-lower alkylsulfonyl, arylsulfonyl, aryl-lower alkylsulfonyl, 2-methylthioethyl, mercaptomethyl, 3-indolylmethyl, 4-imidazolylmethyl, 3-guanidinopropyl or halogen; and

R^c represents hydrogen or lower alkyl, and of salts of these compounds, characterized in that an allyl alcohol of the formula



(II)

is reacted with a malonic acid ester of the formula



(III)

in which R^a represents a group $COOR^b$ and R^b represents lower alkyl, in the presence of a tetraalkoxy derivative of titanium or zirconium, at temperatures of from 150° to 250° C., and, if desired, the resulting compound of the formula IV in which R^c represents lower alkyl is hydrolyzed with an aqueous base.

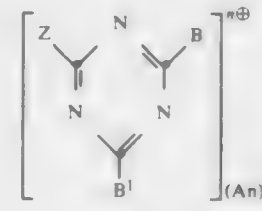
5,010,190

CATIONIC COMPOUNDS

Willy Stingelin, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

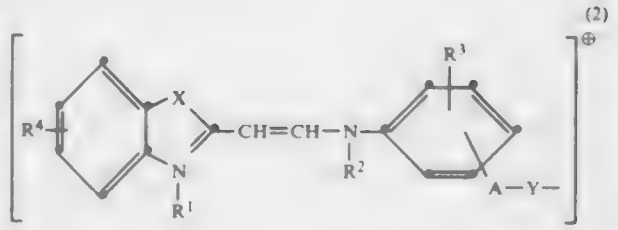
Filed May 9, 1988, Ser. No. 192,316
Claims priority, application Switzerland, May 20, 1987, 1941/87
Int. Cl.[5] C07D 401/04, 403/04
U.S. Cl. 544—198 15 Claims

1. A cationic compound of formula



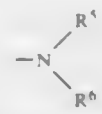
(1)

wherein
Z is a radical of formula



(2)

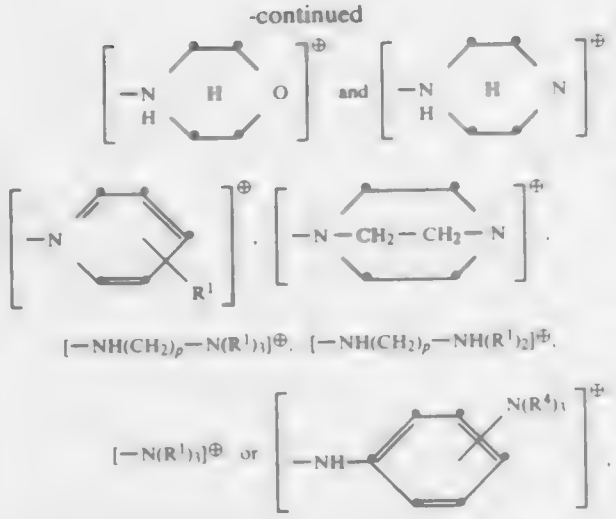
B and B^1 are each independently of the other a radical Z, a radical of the formula



or a cationic radical different from Z selected from the group consisting of



-continued



wherein R^1 and R^4 are as defined below and p is 2 or 3.

R^1 is unsubstituted C_1-C_6alkyl or C_3-C_4alkenyl,

R^2 is unsubstituted or substituted C_1-C_6alkyl, wherein the substituent is C_1-C_4alkoxy, CN, halogen, phenyl, alkylphenyl, alkoxyphenyl, $-CONH_2$, $-CO-NH-C_1$-C_4alkyl or $-CO-N(C_1$-$C_4alkyl)_2$,

R^3 and R^4 are each independently of the other (1) hydrogen, (2) unsubstituted or substituted C_1-C_4alkyl, wherein the substituent is C_1-C_4-alkoxy, CN, halogen, phenyl, alkylphenyl, alkoxyphenyl, $-COHN_2$, $-CO-NH-C_1$-C_4alkyl or $-CO-N(C_1$-$C_4alkyl)_2$, (3) unsubstituted or substituted C_1-C_4alkoxy, wherein the substituent is phenyl, (4) nitro, (5) unsubstituted or substituted benzoylamino or acetylamin, wherein the substitutent is halogen, $-NH_2$, $-NH-C_1$-C_4alkyl or $-N(C_1$-$C_4alkyl)_2$, (6) halogen or (7) —CN,

R^5 and R^6 are each independently of the other hydrogen, unsubstituted or substituted C_1-C_6alkyl, wherein the substituent is C_1-C_4alkoxy, CN, halogen, phenyl, alkylphenyl, alkoxyphenyl, $-CONH_2$, $-CO-NH-C_1$-C_4alkyl or $-CO-N(C_1$-$C_4alkyl)_2$, C_3-C_6alkenyl, phenyl or naphthyl or

R^5 and R^6, together with the linking nitrogen, are thiazole, imidazole, pyrazole, triazole, pyrrolidine, piperazine, piperidine or morpholine,

X is a sulfur atom or the group



wherein R^7 and R^8 are each independently of the other C_1-C_6alkyl or C_3-C_4alkenyl or can also be linked to each other to form a 5- or 6-membered carbocyclic ring,

A is a direct bond, $-NH-C_1$-C_4alkylene, $-O-C_1$-C_4alkylene, C_1-C_4alkylene, phenylene, —O—phenylene or —N—H—phenylene,

Y is —NH—, $-NR^1$, —O—or —S—,

n is 1, 2 or 3, and

$An^{\ominus}$ is an anion.

5,010,191

IMAGING AGENTS FOR IN VIVO MAGNETIC RESONANCE AND SCINTIGRAPHIC IMAGING

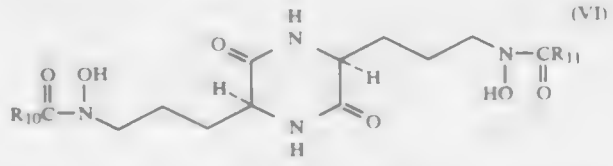
Barry L. Engelstad, Orinda; Kenneth N. Raymond, Berkeley; John P. Huberty, Corte Madera, and David L. White, Oakland, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Aug. 19, 1985, Ser. No. 767,214

Int. Cl.[5] **C07D** *241/08*

U.S. Cl. 544—225 **2 Claims**

1 A metal complex comprising a metal ion complexed with a ligand of the Formula VI:



(VI)

wherein R_{10} and R_{11} are independently alkyl of 1-6 carbon atoms, aryl of 5 to 20 carbon atoms, or OR_{12}, wherein R_{12} is hydrogen or alkyl of 1-6 carbon atoms.

5,010,192

PYRIDAZINONE MANUFACTURE

Michael Yelland, Rossendale, and John Conway, Manchester, both of England, assignors to Imperial Chemical Industries PLC, London, England

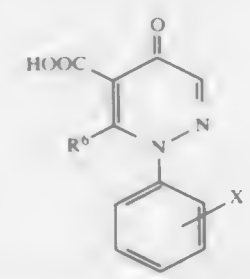
Filed Sep. 13, 1989, Ser. No. 406,338

Claims priority, application United Kingdom, Sep. 13, 1988, 8821449

Int. Cl.[5] **C07D** *237/24*

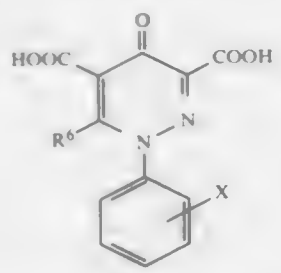
U.S. Cl. 544—239 **4 Claims**

1. Process for recovering a monocarboxylic acid of formula (V):



(V)

from a dicarboxylic acid of formula (IV):



(IV)

where R^6 is H, alkyl or halo, and X represents hydrogen or from one to three substituents (which may be the same or different) selected from alkyl, halo or nitro; which comprises heating the compound (IV) at a temperature in the range 160°-180° C. with 95-100% sulphuric acid for a time sufficient to bring about substantial monodecarboxylation, the weight ratio of (IV) to sulphuric acid used being in the range from about 1:4 to about 1:10.

5,010,193

PREPARATION OF PHOSPHORIC ACID DERIVATIVES AND INTERMEDIATES

Fritz Maurer; Reinhard Lantzsch, both of Wuppertal; Helmut Fiege, and Albert Schnatterer, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

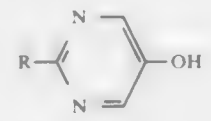
Filed Dec. 9, 1988, Ser. No. 282,712

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1987, 3742983; Jun. 14, 1988, 3820176

Int. Cl.[5] **C07F** *9/6512*; **C07D** *239/36, 239/46*

U.S. Cl. 544—243 **6 Claims**

1. A process for the preparation of a compound of the formula

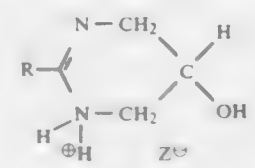


(V)

in which:

R represents hydrogen, alkoxy having 1 to 12 carbon atoms, alkylamino of dialkylamino each having 1 to 6 carbon atoms in each alkyl group, alkyl having 1 to 12 carbon atoms which is unsubstituted or substituted by alkoxy having 1 to 4 carbon atoms or alkylsulphonyl having 1 to 4 carbon atoms in the alkyl group, cycloalkyl having 3 to 8 carbon atoms which is unsubstituted or substituted by alkyl having 1 to 4 carbon atoms, or aryl having 6 to 10 carbon atoms or benzyl which are each unsubstituted or substituted by alkyl, alkoxy or alkylsulphonyl each having 1 to 4 carbon atoms in the alkyl group;

comprising oxidizing a 5-hydroxy-3,4,5,6-tetrahydropyrimidine salt of the formula



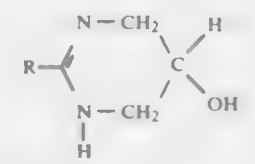
(IV)

in which

Z is chlorine or $R^5—CO_2$, and

R^5 represents alkoxy, alkylthio, alkylamino or dialkylamino each having 1 to 6 carbon atoms in the aklyl group, or phenyl each being unsubstituted or substituted by one or more substituents independently selected from the group consisting of alkyl, alkoxy, and alkylthio each having 1 to 4 carbon atoms, halogen, cyano, and nitro;

or the corresponding free 5-hydroxy-3,4,5,6-tetrahydropyrimidine of the formula



(IVa)

in the liquid phase in the presence of a solvent and a base at a temperature between about 0° C. and 300° C. using oxygen or an oxygen-containing gas.

5,010,194

METHOD FOR THE RESOLUTION OF FOLINIC ACID

Hans R. Mueller, Schaffhausen; Martin Ulmann, Dachsen; Josef Conti, Schaffhausen, all of Switzerland, and Guenter Muerdel, Tengen-Buesslingen, Fed. Rep. of Germany, assignors to Eprova AG, Schaffhausen, Switzerland

Filed Nov. 7, 1989, Ser. No. 432,819

Claims priority, application Switzerland, Nov. 11, 1988, 04182/88

Int. Cl.[5] **C07D** *475/04*

U.S. Cl. 544—258 **21 Claims**

1. A method of separating diastereomers of (6R,S)-folinates, comprising adding a sufficient amount of a water-soluble alkali metal or ammonium salt of an inorganic or organic acid to an aqueous starting solution of an alkali metal or alkaline earth metal salt of (6R,S)-folinic acid at a neutral pH to precipitate the (6R)-folinate, separating off the resultant (6R)-folinate precipitate and isolating the (6S)-folinate from the filtrate.

5,010,195

HERBICIDAL ALKOXY-1,2,4-TRIAZOLO(1,5-C)PRIMIDINE-2-SULFONAMIDES

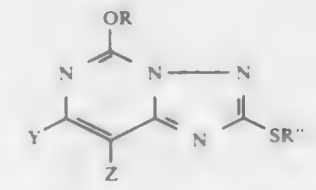
John C. Van Heertum, Concord; Ben C. Gerwick, III, Clayton, and William A. Kleschick, Martinez, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 198,278, May 25, 1988, abandoned. This application May 3, 1989, Ser. No. 347,601

Int. Cl.[5] **C07D** *487/02*

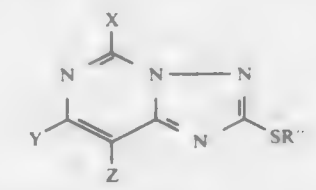
U.S. Cl. 544—263 **7 Claims**

1. A method of preparing a 5-alkoxy-1,2,4-triazolo 1,5-c]pyrimidine product compound of the formula

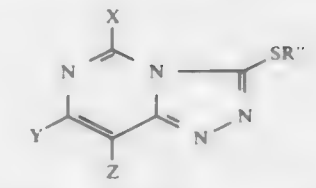


wherein Y and Z each, independently represent OR, H, CH_3, CF_3, Cl, Br, or F; R represents C_1-C_3 alkyl; and R'' represents benzyl or C_2-C_4 alkyl

which comprises combining a starting compound of the first formula



or of the second formula



wherein X represent C_1-C_4 alkylthio; Y and Z each, independently represents OR, H, CH_3, CF_3, Cl, Br, or F; R represents C_1-C_3 alkyl; and R'' represents benzyl or C_2-C_4 alkyl

with a carbonyl or cyano substituted vinyl compound in which the carbonyl or cyano substituent is attached directly to the

vinyl group and that is reactive with C_1-C_4 alkylthiols and a catalytic amount of an alkali metal C_1-C_3 alkoxide in a medium containing the corresponding alcohol and under conditions conductive to the formation of said product compound

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5,010,196

ACYLATED HEXAHYDROPYRIMIDINES

Robin G. Shepard, Windsor, England, assignor to John Wyeth and Brothers Limited, Maidenhead, England

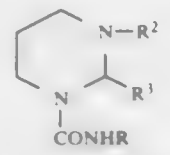
Division of Ser. No. 544,452, Jun. 27, 1990. This application Oct. 2, 1990, Ser. No. 591,594

Claims priority, application United Kingdom, Jun. 30, 1989, 8915131.0

Int. Cl.[5] **C07D** *239/04*

U.S. Cl. 544—335 **2 Claims**

1. A compound of formula



where R is C_{1-6} alkyl or C_{6-10} aryl, wherein the alkyl or aryl group is optionally substituted with one or more groups selected from the group consisting of halogen, hydroxy, lower alkoxy, amino, lower alkylamino, diloweralkylamino, lower acylamino and trifluoromethyl, R^2 is lower alkyl and R^3 is hydrogen or lower alkyl

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5,010,197

POLYPHENYLQUINOXALINES VIA AROMATIC NUCLEOPHILIC DISPLACEMENT

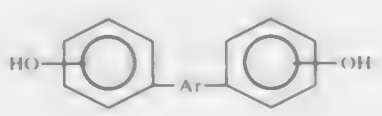
Paul M. Hergenrother, Yorktown, and John W. Connell, Newport News, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 250,661, Sep. 28, 1988, abandoned. Filed Dec. 22, 1989, Ser. No. 454,820

Int. Cl.[4] **C08G** *8/02*; **C07D** *241/36*

U.S. Cl. 544—353 **3 Claims**

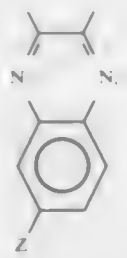
1. A di(hydroxyphenyl)quinoxaline having the general structure



wherein

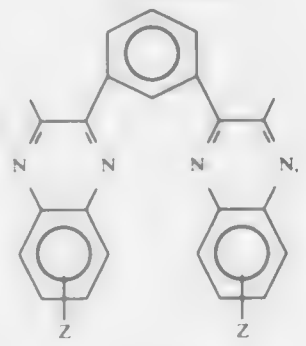
Ar is a radical selected from the group consisting of

(A)

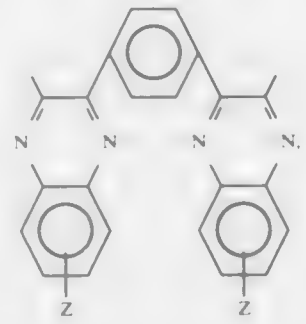


-continued

(B)



(C)



wherein

Z is a substituent selected from the group consisting of: H, F, Cl, Br, CH_3, CH_2CH_3, OCH_3, C_6H_5, and C_6H_5O.

5,010,198

INTERMEDIATES FOR THE SYNTHESIS OF BENZOXAZOL- AND BENZOTHIAZOLAMINE DERIVATIVES, USEFUL AS ANTI-ANOXIC AGENTS

Raymond A. Stokbroekx, Beerse; Marcel G. M. Luyckx, Geel, and Frans E. Janssens, Bonheiden, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

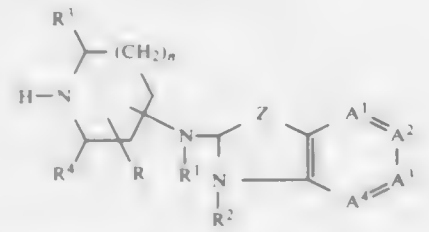
Continuation-in-part of Ser. No. 786,895, Oct. 11, 1985, Pat. No. 4,861,785, which is a continuation-in-part of Ser. No. 677,412, Dec. 3, 1984, abandoned. This application Aug. 24, 1989, Ser. No. 398,212

Int. Cl.[4] **C07D** *471/04*, *277/60*, *263/58*

U.S. Cl. 546—114 **23 Claims**

1. A compound of the formula

(III)



a pharmaceutically acceptable acid addition salt, or a possible stereochemically isomeric form thereof, wherein

A^1 A^2 A^3 A^4

is a bivalent group of the formula

—CH=CH—CH=CH— (a),

—N=CH—CH=CH— (b),

—CH=N—CH=CH— (c),

—CH=CH—N=CH— (d), or

—CH=CH—CH=N— (e),

wherein one or two hydrogen atoms in the group

$-A^1=A^2-A^3=A^4-$

may, each independently from each other, be replaced by halo, C_{1-6}alkyl, hydroxy, C_{1-6}alkyloxy, or trifluoromethyl;

Z is O or S;

n is 0 or the integer 1;

R is a member selected from the group consisting of hydrogen, C_{1-6}alkyl, hydroxy, or C_{1-6}alkyloxy;

R^1 and R^2 are hydrogen, C_{1-6}alkyl, or Ar-C_{1-6}alkyl, provided that when the dotted line between the nitrogen atom bearing R^1, the intermediate carbon atom, and the nitrogen atom bearing R^2 indicates that a double bond exists between the nitrogen bearing R^1 and said intermediate carbon atom, then R^1 is absent, or when the double bond exists between the said intermediate carbon atom and the nitrogen bearing R^2, then R^2 is absent; wherein said intermediate carbon atom is the carbon atom positioned between the nitrogen bearing R^1 and the nitrogen bearing R^2,

wherein Ar is phenyl optionally substituted with up to three substituents, each such substituent being independently selected from the group consisting of C_{1-6}alkyl, C_{1-6}alkyloxy, halo, trifluoromethyl, cyano, C_{1-6}alkylcarbonyl, nitro, amino, and aminocarbonyl; and

R^3 or R^4 are both hydrogens or R^3 and R^4 combined may form a bivalent group of the formula $—CH_2—CH_2—$.

5,010,199

Patent Not Issued For This Number

5,010,200

PYRIMIDINE DERIVATIVES

Edward McDonald, Marlow; Roger Salmon, Bracknell; Alan J. Whittle, Twyford, and Michael G. Hutchings, Manchester, all of Great Britain, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 206,097, Jun. 13, 1988, Pat. No. 4,962,109, which is a continuation-in-part of Ser. No. 942,436, Dec. 16, 1986, Pat. No. 4,762,835. This application Feb. 16, 1990, Ser. No. 485,083

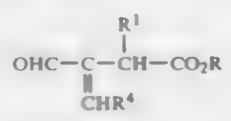
Claims priority, application United Kingdom, Dec. 23, 1985, 8531637; Jun. 17, 1987, 8714233

Int. Cl.[5] **C07D** *295/06*, *295/10*, *229/00*

U.S. Cl. 546—245 **1 Claim**

1. A compound of formula (VI):

(VI)



wherein R' is selected from alkyl of 1 to 6 carbon atoms; alkenyl of 2 to 8 carbon atoms; alkynyl of 2 to 6 carbon atoms; haloalkyl of 1 to 4 carbon atoms; haloalkenyl of 2 to 8 carbon atoms; and cycloalkyl of 3 to 6 carbon atoms optionally substituted by one or more substituents selected from alkyl of 1 to 4 carbon atoms and halogen; R represents lower alkyl of from 1 to 6 carbon atoms, and R^5 represents alkoxy of from 1 to 6 carbon atoms, dialkylamino wherein each alkyl group is from 1 to 4 carbon atoms, piperidin-1-yl or pyrrolidin-1-yl.

5,010,201

PROCESS FOR THE PREPARATION OF SUBSTITUTED 2-CHLOROPYRIDINES

Dieter Kaufmann, Bergisch Gladbach, and Bernd Gallenkamp, Wuppertal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 1, 1989, Ser. No. 430,389

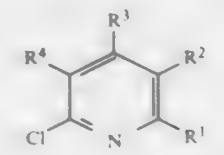
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1988, 3839332

Int. Cl.[5] **C07D** *213/61*

U.S. Cl. 546—316 **9 Claims**

1. Process for the preparation of substituted 2-chloropyridine derivatives of the formula (I)

(I)



in which

R^1 represents hydrogen, chlorine, cyano, carbalkoxy(C_1-C_4) or



where R^5 and R^6 are identical or different and represent hydrogen or alkyl (C_1-C_4),

R^2 represents hydrogen, chlorine, alkyl(C_1-C_4), halogenoalkyl(C_1-C_4), cyanoalkyl(C_1-C_4), alkoxy(C_1-C_4)-alkyl(C_1-C_4), dialkylamino(C_1-C_4)alkyl(C_1-C_4), carbalkoxy(C_1-C_4) or



where R^5 and R^6 are identical or different and represent hydrogen or alkyl (C_1-C_4)

or where R^1 and R^2 together represent the bivalent group —CH=CH—CH=CH—,

R^3 represents hydrogen, chlorine, carbalkoxy(C_1-C_4) or



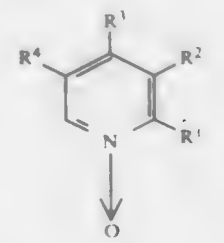
where R^5 and R^6 are identical or different and represent hydrogen or alkyl (C_1-C_4), and

R^4 represents hydrogen, chlorine or cyano,

or where R^3 and R^4 together represent the bivalent group —CH=CH—CH=CH—,

wherein pyridine 1-oxides of the formula (II)

(II)



in which

R^1, R^2, R^3 and R^4 have the abovementioned meaning are reacted with a chlorine-containing phosphonic acid deriv-

ative from the series of the chlorophosphoric esters and chlorophosphoramides in the presence of an inert organic solvent and in the presence of an acid acceptor at temperatures between −20° C. and 200° C., and the resulting product is separated further, if appropriate.

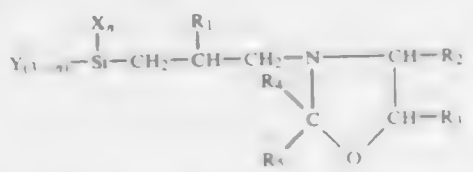
5,010,202

NOVEL SILICON-ORGANIC COMPOUNDS, CONTAINING AN OXAZOLIDINE GROUP

Alberto Greco, Desano, Italy, assignor to Enichem Synthesis S. p. A., Palermo, Italy

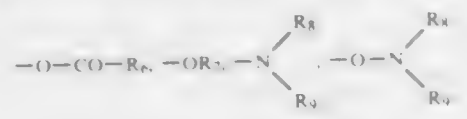
Filed May 11, 1990, Ser. No. 522,218
Claims priority, application Italy, May 11, 1989, 20442 A/89
Int. Cl.[5] C07D *263/04*, C07F *7/02*
U.S. Cl. 548—110 5 Claims

1 Silicon-organic compounds having the general formula (I)



(I)

wherein n is an integer from 0 to 2, X is a hydrogen atom, a linear- or a branched-chain alkyl, or an aryl, y is a hydrolytically labile organic group selected from the groups



R_1 is a hydrogen atom or a methyl, R_2 and R_3, equal to, or different from one another, are a hydrogen atom, a linear- or a branched-chain alkyl having from 1 to 6 carbon atoms, or an aryl; R_4 and R_5, equal to, or different from one another, are a hydrogen atom, a linear- or branched-chain alkyl or alkenyl containing from 1 to 6 carbon atoms, a cycloalkyl, an aryl, or R_4 and R_5, taken concurrently together with the carbon atom and R_5, taken concurrently together with the carbon atom to which they are bonded, make up a cycloaliphatic ring having from 4 to 8 carbon atoms, R_6 and R_7, equal to, or different from one another, are an alkyl or an alkenyl having from 1 to 6 carbon atoms, R_8 and R_9, equal to, or different from one another, are an alkyl or an alkenyl having from 1 to 6 carbon atoms, a cycloalkyl, an aryl, or R_8 and R_9, taken concurrently together with the adjacent nitrogen atom, make up a saturated 5-membered, 6-membered, 7-membered or 8-membered heterocyclic ring

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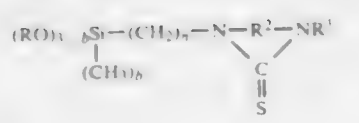
5,010,203

METHOD OF PREPARING ORGANYLOXYSILYL

Ulrich Deschler, and Peter Kleinschmit, both of Hanau, Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

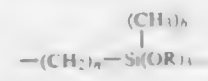
Filed May 26, 1989, Ser. No. 357,723
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1988, 3821464
Int. Cl.[5] C07F *7/10*, *7/18*
U.S. Cl. 548—110 5 Claims

1. A method of preparing an cyclic N,N,N' and N,N,N',N'-substituted organyloxy-functional thiourea having the formula

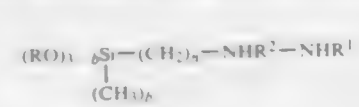


III

in which
n is in the range 1 to 6,
R is alkyl with 1 to 6 carbon atoms, cycloalkyl with 5 to 7 atoms or aryl
R^1 is hydrogen or

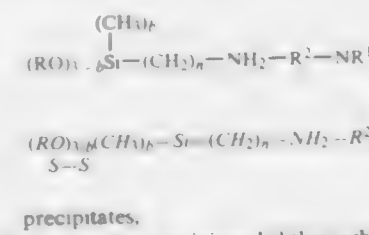


R^2 is alkylene with 1 to 4 carbon atoms or arylene
b is 0, 1 or 2
which comprises reacting
(a) An aminopropyl silane of the general formula (I)



I

in which the substituents have the meanings given above with carbon disulfide in an organic solvent, whereby a dithiocarbamate of the formula (II)



II

precipitates,
(b) heating the precipitated dithiocarbamate until no more hydrogen sulfide is released and separating said cyclic N,N,N' and N,N,N',N'-substituted organyloxy-functional thiourea

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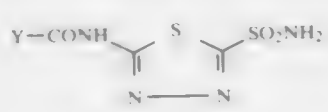
5,010,204

ACETAZOLAMIDE-RELATED COMPOUNDS, PROCESS FOR THEIR PREPARATION, AND PHARMACEUTICAL COMPOSITION CONTAINING THE SAME

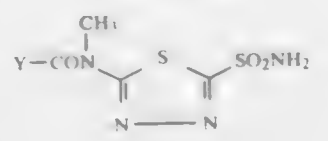
Simonetta Antonaroli; Bianco Armandodariano, both of Rome; Brufani Mario, Castel Gandolfo; Lo Baido Giuseppe, and Reade Giorgio, both of Rome, all of Italy, assignors to Instituto Chimico Internazionale Dr. Giuseppe Reade S.r.l., Rome, Italy

Filed Jul. 18, 1989, Ser. No. 381,453
Claims priority, application Italy, Jul. 29, 1988, 48251 A/88
Int. Cl.[4] C07D *285/08*
U.S. Cl. 548—128 7 Claims

1. Acetazolamide or its N-methyl derivatives, having inhibiting activity of carbonic anhydrase, of the formulae

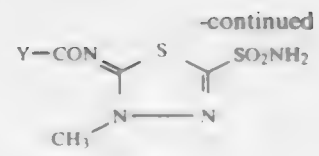


(I)



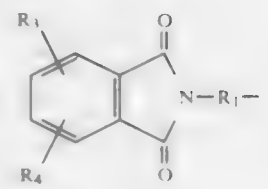
(II)

-continued



(III)

wherein Y is



wherein R_1 is a straight or branched alkylene or arylalkylene, or a phenylene, R_2 is hydrogen or a straight or branched alkyl possibly substituted with halogen, R_3 and R_4, which can be the same or different from each other, and hydrogen or straight or branched alkyl, and the physiologically acceptable salts thereof

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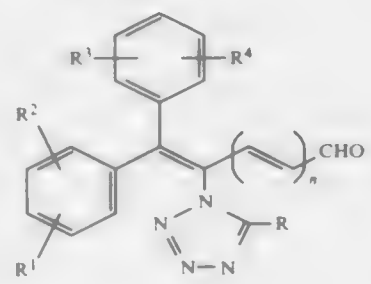
5,010,205

ANTIHYPERCHOLESTEROLEMIC TETRAZOL-1-YL INTERMEDIATES

Sing-Yuen Sit, Meriden, and John J. Wright, Guilford, both of Conn., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 235,355, Aug. 23, 1988, Pat. No. 4,870,187. This application Jul. 28, 1989, Ser. No. 386,373
Int. Cl.[5] C07D *257/04*
U.S. Cl. 548—253 5 Claims

1. A compound of the formula



wherein
R^1, R^2, R^3
and R^4 each are independently hydrogen, halogen, C_{1-4}alkyl, C_{1-4} alkoxy, or trifluoromethyl;
n is zero or 1 and
R is hydrogen, C_{1-4}alkyl or phenyl.

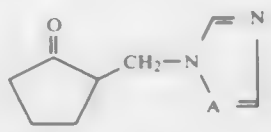
5,010,206

AZOLE DERIVATIVE AND AGRICULTURAL/HORTICULTURAL FUNGICIDE CONTAINING SAID DERIVATIVE AS ACTIVE INGREDIENT

Hiroyuki Enari; Satoru Kumazawa; Susumu Shimizu; Atsushi Ito; Nobuo Sato, and Toshihide Saishoji, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaishi, Japan

Division of Ser. No. 443,582, Nov. 30, 1989, Pat. No. 4,962,278, which is a division of Ser. No. 129,629, Dec. 7, 1987, Pat. No. 4,902,702. This application Jul. 31, 1990, Ser. No. 560,754
Claims priority, application Japan, Dec. 22, 1986, 1-305908
Int. Cl.[5] C07D *248/08*
U.S. Cl. 548—262.2 1 Claim

1. A cyclopentanone derivative represented by the formula (II).



(II)

wherein A represents a nitrogen atom.

5,010,207

PROCESS FOR THE PRODUCTION OF TRIMELLITIC ANHYDRIDE WITH SUPERIOR COLOR PROPERTIES

Chang M. Park, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Jan. 10, 1990, Ser. No. 463,253
Int. Cl.[5] C07D *307/89*
U.S. Cl. 549—245 16 Claims

1. The process for the production of trimellitic anhydride with improved color, the process comprising a treatment of trimellitic anhydride in the presence of a silicon compound selected from the group consisting of colloidal silica and silicic acid activated with an aliphatic acid or anhydride of from 1 to eight carbon atoms, selected from the group consisting of formic acid, acetic acid, propionic acid, 2-ethylhexanoic acid, acetic anhydride, propionic anhydride and maleic anhydride, said treatment at a temperature of from about 200° C. to about 300° C. followed by fractionation at a temperature of about 200° to about 275° C. and a pressure of about 1 to about 25 mm mercury.

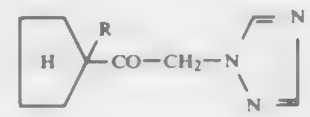
5,010,208

NOVEL ALKYLCYCLOALKYL TRIAZOLYLMETHYL KETONES AS FUNGICIDE INTERMEDIATES

Wolfgang Kramer; Manfred Jautelat, both of Burscheid, and Eckart Kranz, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 54,551, May 27, 1987, Pat. No. 4,921,967, which is a continuation of Ser. No. 438,086, Nov. 1, 1982, abandoned. This application Feb. 16, 1990, Ser. No. 482,106
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1981, 3145857
The portion of the term of this patent subsequent to May 1, 2007, has been disclaimed.
Int. Cl.[5] C07D *249/08*
U.S. Cl. 548—267.8 3 Claims

1. An alkylcycloalkyl triazolylmethyl ketone of the formula



(I)

in which
R is methyl or ethyl.

5,010,209

POWER CABLE WITH WATER SWELLABLE AGENTS AND ELONGATED METAL ELEMENTS OUTSIDE CABLE INSULATION

Fabrizio Marciano-Agostinelli, Columbia, S.C.; Marco Barbaro-Forleo, Short Hills, N.J.; Carlo Marin, Vigevano, Italy, and Paul L. Cinquemani, Lexington, S.C., assignors to Pirelli Cable Corp., Florham Park, N.J.

Continuation-in-part of Ser. No. 287,486, Dec. 20, 1988, which is a continuation-in-part of Ser. No. 68,670, Jul. 1, 1987, which is a division of Ser. No. 864,196, May 16, 1986, Pat. No. 4,703,132.
This application Sep. 7, 1989, Ser. No. 404,320
Int. Cl.[5] H01B 7/28
U.S. Cl. 174—23 C 33 Claims



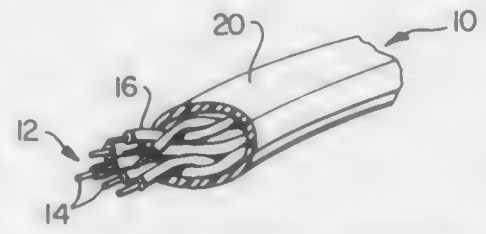
1 An electrical power cable comprising a stranded conductor formed by a plurality of wires stranded together, a semi-conductive stress control layer around said conductor, a layer of insulation around said stress control layer, a semi-conductive insulation shield around said insulation, said insulation shield having an outer surface of substantially constant cross-sectional radius and a metal shield which is disposed around said insulation shield and which is one of a helically wound metal tape, a plurality of metal straps and a plurality of metal wires, said metal shield having surfaces extending longitudinally of said cable and being adjacent to each other, and particles of a water swellable material at least at the adjacent surfaces of said metal shield.

5,010,210

TELECOMMUNICATIONS CABLE

Shiraz I. Sidi, Pointe Claire; Paul A. Guilbert, LaSalle; Lise A. Desroches, Boisbriand, and Michel Plasse, Lachine, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 21, 1990, Ser. No. 541,646
Int. Cl.[5] H01B 11/02
U.S. Cl. 174—34 3 Claims



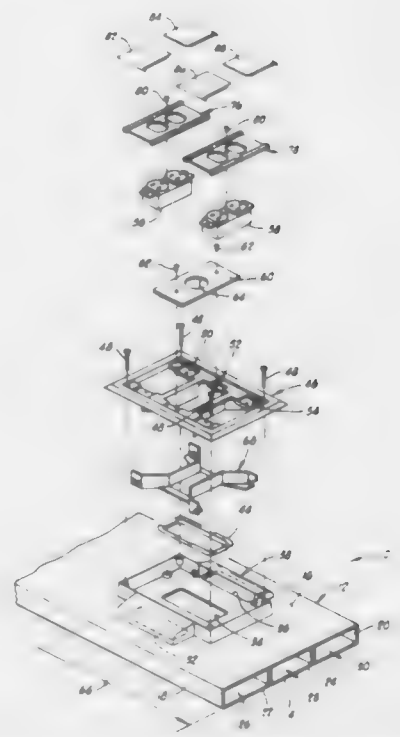
1 An unshielded telecommunications cable having a nominal characteristic impedance of 100 ohms and a core comprising a maximum of six pairs of individually insulated conductor wires, the wire insulation formed from a flame retardant polyolefin base compound and with the insulated conductors of each pair twisted together with the maximum twist lay of 2.3 inches and the core surrounded by a flame retardant jacket.

5,010,211

FLUSHING FLOOR FITTING

Edward C. Bartee, Fairfield, Ohio, assignor to Square D Company, Palatine, Ill.

Filed Jun. 29, 1989, Ser. No. 373,414
Int. Cl.[5] H02G 3/18
U.S. Cl. 174—48 24 Claims



1. An electrical duct system to be placed in a floor, comprising:

a duct having a bottom wall, a top wall, first and second side walls joining said bottom and top walls, and first and second interior walls dividing an interior of said duct into three parallel cells extending parallel to a length of said duct, said three cells being a central cell and two outer cells, said top wall having a central access opening and two outer access openings defined therethrough and communicated with said central cell and said two outer cells, respectively;

an access unit housing having an open bottom and an open top, said housing being attached to said top wall of said duct so that said open bottom of said housing is communicated with said central and two outer access openings;

a trim ring connected to said open top of said housing and having first, second and third mounting means defined therein for mounting outlet devices therein substantially flush with a surface of said floor, said first, second and third mounting means being aligned in a direction generally parallel to said length of said duct with said second mounting means located in line between said first and third mounting means; and

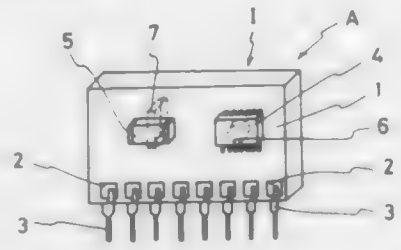
a divider means, located in said housing, for dividing an interior of said housing into spaced first and third chambers, each partially overlying and communicated with said central access opening and isolated from said two outer access openings, and a second chamber extending between said first and third chambers and communicated with both said two outer access openings and isolated from said central access opening, said first, second and third chambers being communicated with said first, second and third mounting means, respectively, of said trim ring.

5,010,212

RESIN COATED ELECTRIC CIRCUIT BOARD DEVICE

Chiaki Sumi, and Wataru Kuwayama, both of Aichi, Japan, assignors to Aisin Seiki K.K., Aichi, Japan

Filed May 30, 1989, Ser. No. 357,929
Claims priority, application Japan, May 31, 1988, 63-134917
Int. Cl.[5] H05K 1/18
U.S. Cl. 174—52.2 2 Claims



1 A resin coated electric circuit board device comprising

a base plate having at least one through hole extending therethrough;

at least one electrical device mounted on and electrically connected to said base plate in overlying spaced relation to said through hole; and

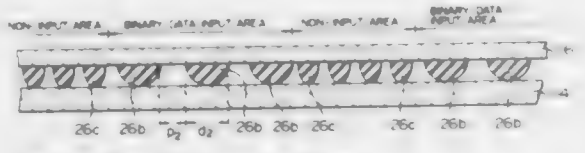
resin coating means covering said base plate and each electrical device including said through hole and space between said electrical device and said base plate

5,010,213

SIGNAL INPUT SHEET

Masafumi Moriwaki, Yamanashi; Shigeaki Sano, Fuchu; Katsunori Hatakeyama, Koganei; Hiroshi Yamada, Koganei, and Youzou Nouno, Koganei, all of Japan, assignors to Toppan Moore Company, Ltd., Tokyo, Japan

Filed Dec. 27, 1989, Ser. No. 457,401
Claims priority, application Japan, Dec. 29, 1988, 63-335494
Int. Cl.[5] G08C 21/00
U.S. Cl. 178—18 5 Claims



1 A signal input sheet comprising:

a flexible upper laminate having a lower surface and an upper surface, said upper laminate having one of a conductive layer and a resistive layer on its lower surface as a first layer, said upper surface of the upper laminate being divided into at least one hand-written input area for the input of characters and lines and at least one binary data input area for the input of single depressions;

a lower laminate having a lower surface and an upper surface, said lower laminate having one of a conductive layer and a resistive layer on its upper surface as a second layer, where said first layer faces said second layer and at least one of said first layer and said second layer being formed as a resistance layer;

a plurality of insulative spacers interposed between said first layer and said second layer, said insulative spacers arranged at intervals such as to allow an electrical connection between said first layer and said second layer, where a depressing pressure on the upper surface of said upper laminate causes the electrical connection between said first layer and said second layer, said insulative spacers having a larger width in said binary data input area and having a larger spacing between adjacent insulative spacers in said binary data input area;

a voltage source coupled between said first layer and said second layer; and

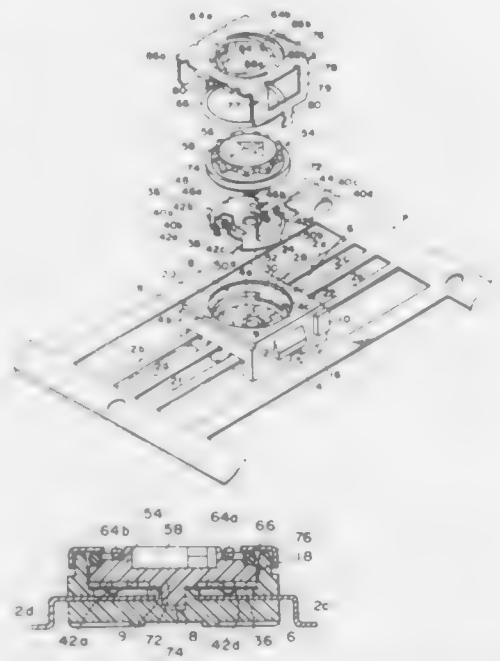
means for detecting a position at which said depressing pressure is applied on the upper surface of said upper laminate

5,010,214

ROTARY SWITCH

Atsuo Yamazaki, c/o Iruma Center, Copal Electronics Co., Ltd. No. 110-1, Shimoshinden, Araku, Iruma City, Saitama Prefecture, Japan

Filed Jul. 7, 1989, Ser. No. 376,599
Claims priority, application Japan, Aug. 11, 1988, 63-106294[U]; Aug. 11, 1988, 63-200966; Aug. 23, 1988, 63-110242[U]
Int. Cl.[5] H01H 19/60
U.S. Cl. 200—6 B 2 Claims



1. A rotary switch, comprising:

a housing having an upwardly open chamber therein and said chamber having a ledge therearound intermediate the depth dimension of said chamber and at least one recess means in said ledge extending in the depth direction of said chamber;

terminal lead fixed contacts in said housing exposed in the bottom of said chamber and spaced from each other;

a planar plate-shaped contact member having a plurality of circumferentially extending output contact fingers and a common contact finger thereon and spaced from each other for permitting individual movement thereof transversely of the plane of said contact member and each output contact finger having a contact projection thereon projecting transversely of the plane of said contact member and a contact point at the end thereof, said common contact finger having a contact projection projecting in the opposite direction from the contact projections of said output contact fingers, and said contact member further having at least one projecting member projecting from the peripheral edge of said contact member, said contact member being in said chamber with said projecting member engaged in said recess means in said ledge and said contact fingers opposed to corresponding terminal lead fixed contacts in the bottom of said chamber with the contact points normally spaced from said terminal lead fixed contacts and with said contact projection on said common contact finger in contact with one of said terminal lead fixed contacts; and

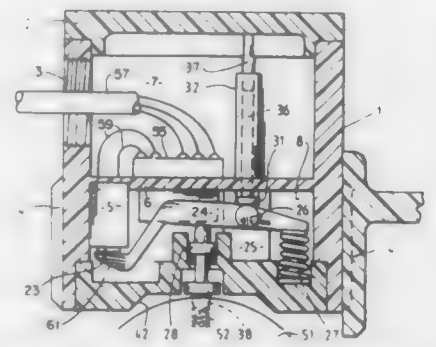
a rotor rotatably mounted in said chamber and having a circuit board on the under side thereof toward said contact member, said circuit board having cam patterns thereon for engagement with the contact projections on corresponding ones of said contact fingers for causing said contact points on said contact fingers to contact said terminal lead fixed contacts in the bottom of said chamber seriatim as said rotor is rotated, whereby said contact member is held in position in said housing between said rotor and the bottom of said housing and is held against movement within said chamber by the engagement of said projecting member with said recess means.

5,010,215

ELECTRICAL SWITCHING MECHANISM

Jonathon E. Farrell, and Mark C. Anthony, both of 8 Chomley Street, Cranbourne, Victoria, Australia 3977

PCT No. PCT/AU88/00405, § 371 Date Aug. 1, 1989, § 102(e) Date Aug. 1, 1989, PCT Pub. No. WO89/03582, PCT Pub. Date Apr. 20, 1989
PCT Filed Oct. 14, 1988, Ser. No. 373,293
Claims priority, application Australia, Oct. 16, 1987, PI4965
Int. Cl.[5] H01H 9/22
U.S. Cl. 200—50 A 7 Claims



1. An electrical switching mechanism comprising:

a housing;

an electrical switch mounted in said housing and actuatable from a first circuit state to a second circuit state;

an operator member extending through a wall of said housing for movement inwardly and outwardly with respect to said housing;

a switch actuator mounted within said housing for movement with respect to said housing, said switch actuator being engageable by said operator member for moving said switch actuator, said switch actuator engaging said switch for actuating same;

biasing means coupled to said switch actuator for biasing said switch actuator toward a first position in which said switch is actuated to the first circuit state and said operator member is moved outwardly of said housing by contact with said switch actuator, said operator member being capable of being urged inwardly of said housing by a force external of said housing to move said switch actuator against the bias of said biasing means to a second position for actuating said switch to the second circuit state;

removable access cover means on said housing for providing access within said housing; and

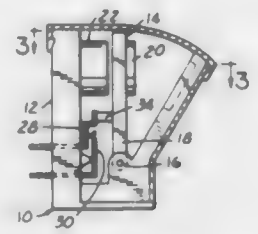
means within said housing engaging said access cover means and said switch actuator which, upon removal of said cover means, allows said biasing means to move said switch actuator into a condition in which said operator member is unable to operate said switch actuator to the second position.

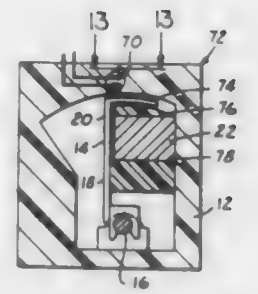
5,010,216

VELOCITY CHANGE SENSORS

Michael R. Sewell, and Allan W. DeJong, both of Chatham, Canada, assignors to Siemens-Bendix Automotive Electronics Limited, Chatham, Canada

Filed Dec. 21, 1989, Ser. No. 454,674
Int. Cl.[5] H01H 35/14
U.S. Cl. 200—61.45 M 33 Claims





1. A velocity change sensor comprising a body, a mass mounted on said body for swinging motion about an axis that lies transverse to the direction in which velocity change is sensed by the sensor, means on said body and said mass, including a permanent magnet, forming a magnetic circuit for biasing said mass about said axis to an initial position from which said mass swings in response to certain velocity changes applied to the sensor, electrical switch means comprising a pair of electrical contacts mounted on said body at least one of which said pair is resiliently held in non-conducting relationship with the other of said pair coincident with occupancy of said initial position by said mass and which assumes a conducting relationship with said other of said pair only after said mass has swung a predetermined arcuate distance from said initial position.

25. A velocity change sensor comprising a body, a mass mounted on said body for swinging motion about an axis that lies transverse to the direction in which velocity change is sensed by the sensor, means on said body and said mass, including a permanent magnet, forming a magnetic circuit for biasing said mass about said axis to an initial position from which said mass swings in response to certain velocity changes applied to the sensor, reed switch means mounted on said body and is operated in response to a predetermined arcuate displacement of said mass from said initial position, said mass comprising a shutter that is interactive with said magnet and said reed switch means for causing operation of said reed switch means.

5,010,217

INERTIA SWITCH MOUNTING HOUSING

Peter Huenliken, Chatham; John A. Gurd, Wallaceburg, and Douglas Woodman, Chatham, all of Canada, assignors to Siemens Automotive Limited, Chatham, Canada

Filed Feb. 26, 1990, Ser. No. 485,342
Int. Cl.[5] H01H 35/14
U.S. Cl. 200—61.45 R 7 Claims

1. In an inertia switch assembly of the type in which an inertia switch assembly element is disposed within a mounting housing and at least partially encapsulated therein by potting material, said inertia switch assembly element comprising an enclosure containing both an inertial mass that moves within

said enclosure in response to the inertia switch assembly being subjected to certain velocity change and electrical contacts that are operated by said inertial mass to give a switch signal in response to motion of said inertial mass within said enclosure caused by said certain velocity change, the improvement which comprises said enclosure having an open end that is closed by a closure assembly which includes both a closure and an electrical conductor means via which said electrical contacts are placed in conducting relationship with an electrical terminal means which is accessible from the exterior of said mounting housing, sealing means that is axially captured between said open end of said enclosure and said closure assembly to prevent the intrusion of potting material into said enclosure, said electrical terminal means is integrally formed with said electrical conductor means so as to be disposed by said electrical conductor means in axially overlapping and radially outwardly spaced relationship to said enclosure, said mounting housing comprises a radially disposed wall portion which comprises aperture means through which said electrical conductor means passes to said electrical terminal means, and closure means on said electrical conductor means closing said aperture means.

5. In an inertia switch assembly of the type comprising an inertia switch assembly element disposed within a mounting housing, said inertia switch assembly element comprising an enclosure containing both an inertial mass that moves within said enclosure in response to the inertia switch assembly being subjected to certain velocity change and electrical contacts that are operated by said inertial mass to give a switch signal in response to motion of said inertial mass within said enclosure caused by said certain velocity change, said inertia switch assembly element being of the type comprising a magnetic circuit, including a magnet, that magnetically restrains said inertial mass, the improvement wherein said enclosure is non-magnetic, a magnetically conductive element that forms a part of said magnetic circuit at least partially envelopes said body, said magnetically conductive element comprises an axially slotted tube having an end wall, and said magnet is axially disposed between said end wall and said body

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5,010,218

FLOAT CONTROLLED SWITCH

Paul P. Reimers, 720 N. Wood St., Valentine, Nebr. 69201

Filed Feb. 9, 1990, Ser. No. 478,840
Int. Cl.[5] H01H *35/18*
U.S. Cl. 200—84 R **8 Claims**

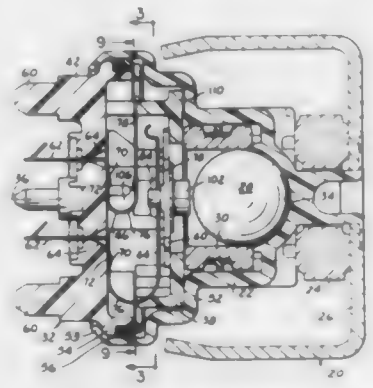
1. A float controlled switch, comprising:
(a) a switch portion;
(b) a float portion being displaced a distance from said switch potion;
(c) a tank, said float portion being disposed in said tank filled with a liquid while said switch portion is disposed outside of said tank so that said switch portion is protected from said liquid;
(d) said float portion includes a hollow circular cylinder with a closed bottom, said hollow circular cylinder containing a hole approximately near said closed bottom of said hollow circular cylinder; and
(e) said switch portion includes a substantially square self contained support, said self contained support being made of plastic and having an end that is tampered into the ground outside the tank so that no holes or clamps are necessary to secure said switching portion to said tank.

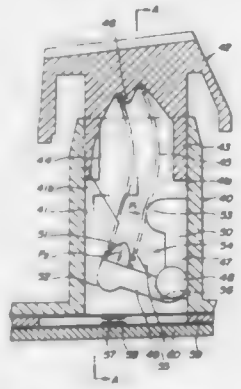
5,010,219

PUSH BUTTON SWITCH WITH ACTUATOR FOR APPLYING TRANSVERSE FORCE TO BUCKLING SPRING

Takafumi Kato, Iwaki, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Jul. 7, 1989, Ser. No. 376,712
Claims priority, application Japan, Jul. 11, 1988, 63-90944[U]
Int. Cl.[5] H01H *13/30*
U.S. Cl. 200—408 **5 Claims**





1. A push button switch comprising:
a casing,
a key top slidably insertable into said casing,
a contact portion arranged below said key top,
an actuator rotatably supported on said casing to open and close said contact portion by pressing said contact portion,
a spring retained with curving in a first orientation between said actuator and said key top,
characterized in that a click portion is provided on said actuator by which a transverse force is applied to an outside portion of said spring at or near a midpoint of said spring when said click portion of said actuator is actuated by downward movement of said key top so as to invert the first curved orientation of said spring.

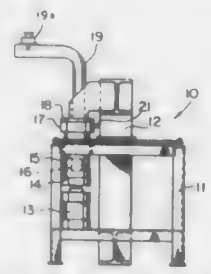
5,010,220

PROCESS AND APPARATUS FOR HEATING BODIES AT HIGH TEMPERATURE AND PRESSURE UTILIZING MICROWAVE ENERGY

Prasad S. Apté, Kingston, and Aniket Pant, Inverary, both of Canada, assignors to Alcan International Limited, Montreal, Canada

Continuation of Ser. No. 308,834, Feb. 9, 1989, abandoned. This application Aug. 30, 1990, Ser. No. 576,164
Claims priority, application Canada, Feb. 16, 1988, 558986
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—10.55 M **26 Claims**

1. A process of sintering and isostatically compressing a body comprising particles of a sinterable material, which process comprises:
locating said body in a vessel acting as a resonant cavity for microwave radiation of a predetermined frequency, said vessel being able to withstand an internal pressure of at least 20,000 psi at a temperature effective for sintering said particles of sinterable material;
irradiating said body in said vessel with microwave energy of about said predetermined frequency for a time sufficient to raise the temperature of the body to said temperature effective for sintering said particles of sinterable material; and



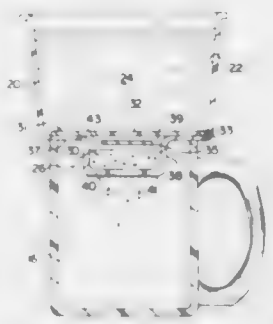
raising pressure in said vessel to said pressure of at least 20,000 psi to pressurize said body isostatically.

5,010,221

MICROWAVEABLE COFFEE MAKERS

M. Gary Grossman, Riverside, Conn., and Edward H. Meisner, Short Hills, N.J., assignors to GEE Associates, Edgewater, N.J.

Filed Jun. 11, 1990, Ser. No. 535,724
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—10.55 E **8 Claims**



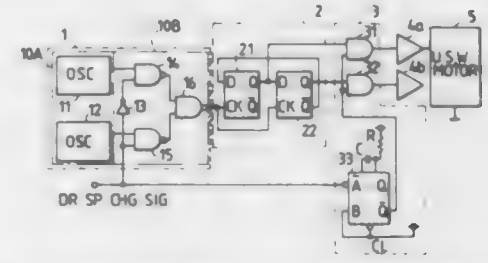
1. A drip-type coffee maker adapted to discharge freshly brewed coffee, comprising:
a reservoir for holding water to be heated to a temperature for brewing coffee,
a coffee filter element adapted to hold coffee grounds and to receive the heated water from said reservoir and dispense freshly brewed coffee therefrom, and
a partition between said reservoir and said coffee filter element, including a body having at least one aperture therein, a member adapted to cover said aperture, and a non-toxic heat responsive sealing substance adapted to releasably secure said member to the underside of said body and over said aperture to seal said opening until water in said reservoir reaches a temperature for brewing coffee, whereupon said heat responsive substance is adapted to release said member from said body which drops therefrom into said coffee filter element to open said aperture to the flow of heated water therethrough and into said filter element and the coffee grounds to become freshly brewed coffee ready for dispensing from the coffee maker.

5,010,222

DRIVING DEVICE FOR ULTRASONIC WAVE MOTOR

Ryoichi Suganuma, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jun. 5, 1990, Ser. No. 533,410
Claims priority, application Japan, Jun. 8, 1989, 1-146261
Int. Cl.[5] H01L *41/08*
U.S. Cl. 318—116 **7 Claims**



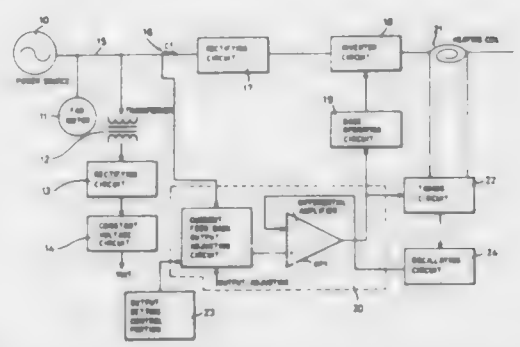
1. A driving device for an ultrasonic wave motor provided with:
a stator member having an electrostrictive member and a resilient member and adapted to generate a travelling vibration wave in said resilient member by excitation with said electrostrictive member; and
a moving member maintained in pressure contact with said stator member and driven by said travelling vibration member; comprising:
drive signal forming means for forming AC voltage signals for high-speed drive and low-speed drive, for application to said electrostrictive member;
wherein said electrostrictive member is excited into vibration by said AC voltage signal;
switch means for selectively switching the AC voltage signals of high-speed drive and low-speed drive for application to said electrostrictive member; and
temporary stop means for reducing the frequency of the AC voltage signal, applied to said electrostrictive member, to zero at least once at the switching from the high-speed drive state to the low-speed drive state.

5,010,223

OUTPUT CONTROL CIRCUIT OF A 4-BURNER ELECTRONICS INDUCTION HEATING COOK SYSTEM AND A CONTROL METHOD THEREOF

Jeong Y. Kim, Seoul, Rep. of Korea, assignor to Sang Wook Suh International, Seoul, Rep. of Korea

Filed May 31, 1989, Ser. No. 358,809
Claims priority, application Rep. of Korea, May 31, 1988, 6536/88
Int. Cl.[5] H05B *6/08*
U.S. Cl. 219—10.77 **3 Claims**



1. A system for controlling the output of an electronic induction heating cook system, the system comprising;
(1) means for rectifying the AC current of a power source;

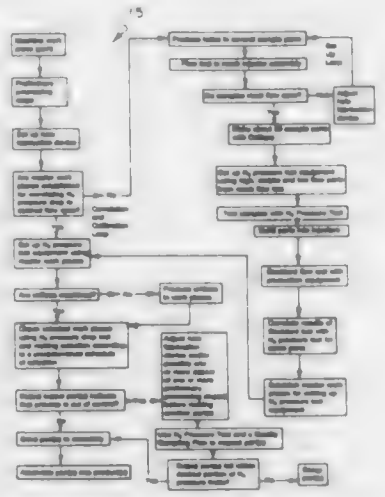
(2) an invertor circuit connector to said rectifying means for applying a frequency voltage to at least one heating coil;
(3) an output control means provided with a current feedback/output adjusting circuit and a pulse width modulation circuit, said current feedback/output adjusting circuit for monitoring a detected current from said power source and for outputting either a first signal if said detected current is more than a predetermined value or a second signal if the detected current is less than said predetermined value, and said pulse width modulation circuit for receiving said first signal or said second signal from said current feedback/output adjusting circuit and for receiving a triangular wave;
(4) a base operating means connected to an output of said output control means, said base operating means for controlling the operation of said invertor circuit according to said output;
(5) a timing circuit connected to said output of said output control means, said timing circuit for generating a pulse cycle having a predetermined time constant,
(6) a wave oscillating circuit for generating said triangular wave corresponding to said pulse cycle of said timing circuit; and
(7) an output setting control portion connected to said feedback/output adjusting circuit, said output setting control portion for setting said predetermined value via a selecting key corresponding to a desired heating level for said at least one heating coil, said output setting control portion comprising a microprocessor for generating a predetermined output according to a selection of said selecting key and comprising a decoder connected to said microprocessor for receiving said predetermined output and for optically controlling photocouplers connected in parallel to said decoder in a logical OR configuration, and said photocouplers for adjusting said predetermined value.

5,010,224

VERY SMALL ORIFICE MANUFACTURING SYSTEM

Roy D. Shirey, Laurens; Michael T. Nelson, and Robert J. Laurenzi, both of Taylors, all of S.C., assignors to Lucas Industries, plc, United Kingdom

Filed Jun. 12, 1989, Ser. No. 365,258
Int. Cl.[5] B23H *9/14, 7/20*
U.S. Cl. 219—69.17 **21 Claims**



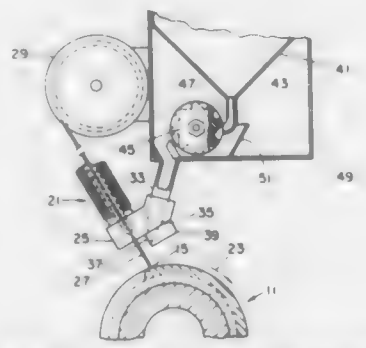
17 A method for manufacturing a small orifice in each of a succession of production work pieces destined for assembly into a desired product, wherein the desired product performs according to a preselected flow specification, the method comprising the steps of:
(a) establishing a correlation between the desired flow performance of the production work piece and a test gas pressure associated with the flow through the orifice of the production work piece by the steps including
(i) machining an orifice through each work piece in a group including about 30 sample work pieces,
(ii) taking gas pressure data associated with the flow of the test gas through each of the machined orifices of the sample work pieces,
(iii) assembling each of the sample work pieces into at least one desired product,
(iv) test flowing each of the assembled products with the actual fluid or a close simulation of the actual fluid, and
(v) correlating the results of the fluid tests of the assembled products with the sample workpieces with the results of the gas pressure tests of the unassembled sample workpieces to produce a correlation of test gas pressure values versus fluid flow values for the desired product,
(b) machining an orifice through each production work piece;
(c) connecting a test gas pressure source via a gas pressure gauge to discharge through said orifice of each said production work piece chosen according to a statistical process control plan;
(d) measuring on said gauge the gas pressure measurement related to flow through each said orifice so chosen, and
(e) using said correlation and said gauge pressure measurement to determine whether said chosen orifice satisfies the preselected flow specification.

5,010,225

TOOL JOINT AND METHOD OF HARDFACING SAME

Frank J. Carlin, Houston, Tex., assignor to Grant TFW, Houston, Tex.

Filed Sep. 15, 1989, Ser. No. 408,074
Int. Cl.[5] B23K *9/04*
U.S. Cl. 219—76.12 **9 Claims**



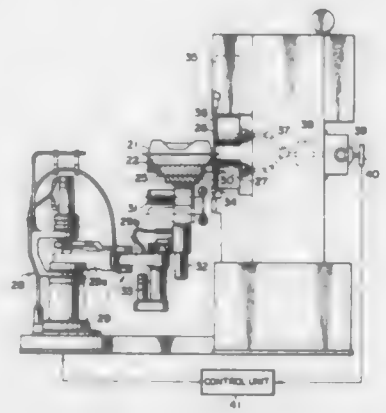
1. A method of applying grooved bands of hardsurfacing on a tool joint for earth boring drill pipe, the hardfacing having tungsten carbide granules in an alloy steel matrix, the method including the steps of rotating the tool joint, providing an arc between an electrode and the tool joint to create a weld puddle, reciprocating the electrode parallel to the tool joint axis, and feeding granules into the weld puddle, the improvement comprising:
(1) applying the weld puddle within a groove around the exterior of the tool joint to a groove depth of from between about 0.75 inches to about 0.150 inches;
(2) discontinuing the feed of the granules into the weld puddle; and
(3) continuing the application of the weld puddle around the tool joint and in the grooves to provide a protruding substantially tungsten carbide free hardfacing surface above the outer diameter of the tool joint of from between about 0.050 inches to about 0.175 inches.

5,010,226

AUTOMATIC SEAM WELDING APPARATUS

Kazuhiro Sato; Tomomi Kishi; Koji Umeda; Yasushi Uchida, and Masahiko Takeuchi, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 6, 1989, Ser. No. 403,400
Claims priority, application Japan, Sep. 28, 1988, 63-240678
Int. Cl.[5] B23K *11/06*
U.S. Cl. 219—81 **12 Claims**



1. An apparatus for seam welding overlapping peripheral flange portions of two workpieces disposed one on top of the other to form a tank, the apparatus comprising:
a base;
a pair of roller electrodes rotatably mounted to the base, the electrodes having opposing peripheral surfaces for nipping and seam welding the overlapping peripheral flange portions of workpieces disposed therebetween;
means for sensing the diameter of one of the roller electrodes;
a jig for holding the two disposed workpieces;
a robot assembly mounted to the base, the robot assembly including an articulate arm, the arm being manipulatable in the horizontal, vertical, and inclined planes, means for moving the outer end of the arm in horizontal, vertical and inclined planes relative to the opposing surfaces of the pair of electrodes for maintaining the flange of the tank in the desired welding orientation in accordance with the sensed diameter of said roller electrode and regardless of the inclination and variation of the flange portion of the tank in the horizontal and vertical planes;
means for detachably and rotatably mounting the jig to the outer end in the bore of the arm; and
control means including means for seam welding the peripheral flange portions of workpieces held by the jig during feeding of the flange portions between the opposite electrode surfaces.

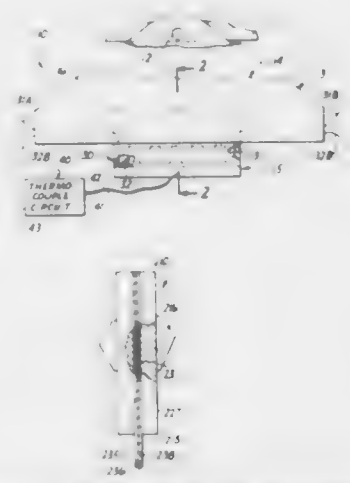
5,010,227

SOLDERING APPARATUS AND METHOD OF USING THE SAME

Thomas W. Todd, 10515 Earthstar Ct., San Diego, Calif. 92127

Filed Feb. 15, 1989, Ser. No. 311,655
Int. Cl.[5] B23K *1/02, 11/30;* H05B *3/42*
U.S. Cl. 219—85.16 **20 Claims**

1. A soldering apparatus including a soldering head, comprising:
thermod means for heating uniformly a solder material to form a substantially uniform solder joint;
said thermod means including conductor means for transferring thermal energy to said solder material, said conductor means being generally a thin flat elongated plate composed of a thermally conductive electrically insulative material;
said thermod means including a pair of first and second heating elements for converting electrical energy to thermal energy to heat said plate to soldering temperatures;
said heating elements being disposed on opposite sides of said flat plate at a substantial distance from the bottom edge thereof;
said thermod means further including a pair of first and second elongated spacing members, each one being interposed between said plate and one of respective first and second heating elements for isolating electrically said heating elements from said plate to inhibit electrical current from flowing in said plate and for permitting heat flow from said heating elements to said plate;
said thermod means further including a pair of first and second heat confining elongated members for directing the thermal energy generated by said heating elements toward said plate, said heat confining members being composed of a thermally and electrically non-conductive material;
said first and second heat confining elongated members being spaced apart on opposite sides of said plate engaging



the respective first and second heating elements for directing the thermal energy generated thereby toward said plate;
said plate depending downwardly between said first and second spacing members terminating in a bottom edge having a substantially flat surface throughout its entire longitudinal length for transferring uniformly thermal energy to said solder material;
holding means disposed in a spaced apart manner relative to said conductor means for securing the conductor means and the heating means relative to the soldering head and for thermally insulating the soldering head from said heating means and said conductor means;
wherein said holding means includes insulating means for electrically and thermally insulating said thermod means from the soldering head;
said insulating means including means for securing said thermod means to the soldering head; and
said insulating means being an elongated block member for receiving a portion of said thermod means

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5,010,228

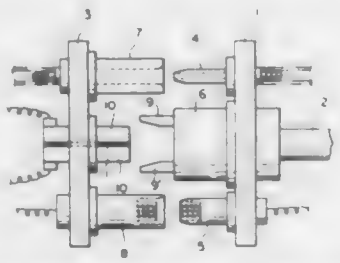
TOOL CHANGER FOR WELDING ROBOT

Toshihiro Nishiwaki, Kanagawa, Japan, assignor to Obara Corporation, Tokyo, Japan

Filed Dec. 9, 1988, Ser. No. 282,601
Claims priority, application Japan, Dec. 28, 1987, 62-329426; Feb. 16, 1988, 63-31823; Oct. 25, 1988, 63-26705
Int. Cl.[5] B23K *11/00*
U.S. Cl. 219—86.25 **5 Claims**

1. A tool changer for a welding robot, comprising:
a first base plate associated with a robot arm and a second

base plate associated with a tool member, a plurality of first connector parts supported on said first base plate, said first connector parts being adapted to supply at least one of fluid and electricity to the tool member from the robot arm, a plurality of second connector parts supported on said second base plate, said second connector parts being adapted to receive at least one of fluid and electricity from said first connector parts, each said first connector part being adapted to mate with and form a connection with a respective said second connector part, said connector parts being arranged such that respective pairs of said connector parts mate when said base plates are disposed in a predetermined relationship adjacent one another, each



said base plate having a substantially cylindrical coupler element extending therefrom and a yoke fixedly attached thereto, each said yoke having a central opening therethrough and a plurality of fixing elements extending radially outwardly from said central opening, said cylindrical coupler elements being respectively received in said central openings of said yokes, at least some of said first connector parts being carried in groups on platelike first connector units which are detachably mounted on respective said fixing elements associated with said first base plate, and at least some of said second connector parts being carried in groups on platelike second connector units which are detachably mounted on respective said fixing elements associated with said second base plate.

5,010,229

APPARATUS FOR ELECTRON BEAM WELDING OF WORKPIECES

Hans Lamatsch, Heroldsberg, and Dieter Vanek, Nüremberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

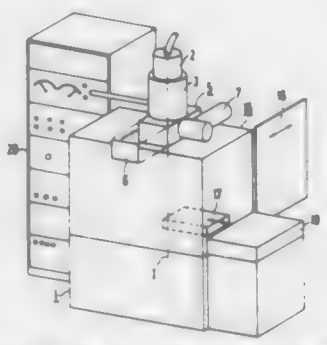
PCT No. PCT/DE88/00732, § 371 Date May 24, 1990, § 102(e) Date May 24, 1990, PCT Pub. No. WO89/05206, PCT Pub. Date Jun. 15, 1989

PCT Filed Nov. 25, 1988, Ser. No. 477,958

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1987, 3740552

Int. Cl.[5] B23K *15/00*

U.S. Cl. 219—121.21 **5 Claims**



1. An apparatus for welding workpieces with electrons comprising:

an electron beam generator having a beaming direction axis;

a first workpiece chamber having a small volume and a second workpiece chamber having a large volume connected to one another via a slide valve located in the beaming direction axis region;

a vacuum pump for evacuating said first and second chambers, said vacuum pump being coupled only to said first chamber having said small volume;

said first chamber having said small volume being adjacent to said electron beam generator and said second chamber having said large volume following adjacent to said first chamber;

each of said first and second chambers having separate access doors, whereby each chamber can be loaded with workpieces independent of one another;

said first chamber with said smaller volume serving for fast welding of relatively small workpieces, and said second chamber with said large volume serving for welding of relatively large workpieces.

5,010,230

LASER PROCESSOR

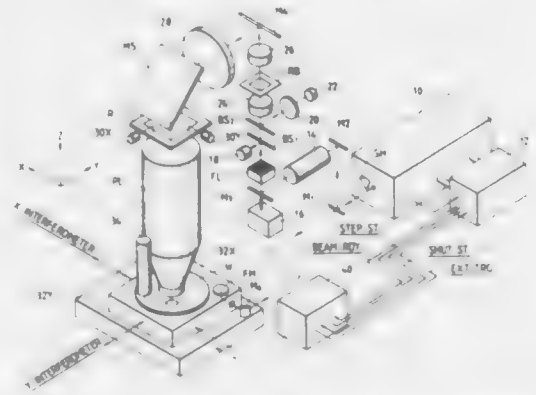
Tsunesaburo Uemura, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jul. 20, 1990, Ser. No. 554,840

Claims priority, application Japan, Jul. 24, 1989, 1-190862

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.62 **2 Claims**



1. In a laser processor provided with a pulse oscillating laser light source, excitation means for exciting said laser light source in response to a trigger signal for pulse oscillation, beam quality adjusting means for adjusting a beam quality of a laser light within a preset standard as monitoring the pulse-oscillated laser light at least partly, a working apparatus for exposing or processing a workpiece by projecting the adjusted laser light thereon, the improvement comprising:

a screening member for cutting off an optical path of said laser light to the workpiece when said working apparatus interrupts an operation using said laser light for a predetermined period of time or over;

trigger control means for impressing said trigger signal on said excitation means in a low frequency band necessary for said beam quality adjusting means to stabilize a beam quality of said laser light while the screening member cuts off the optical path;

abnormal detecting means for generating a quality abnormal signal when detecting a beam quality of said laser light coming under a standard necessary for said exposure or processing;

correction means for keeping a cut-off operation of said screening member when the quality abnormal signal is generated, and correcting a frequency band of the trigger signal to be impressed on said excitation means to the low frequency band set by said trigger control means or over

5,010,231

METHOD OF FORMING LINES OF WEAKNESS IN OR GROOVING A PLASTIC MATERIAL, ESPECIALLY A PACKAGING MATERIAL

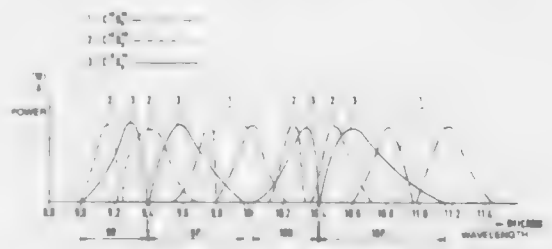
Gert J. Huizinga, Leeuwarden, Netherlands, assignor to LPF Verpakkingen B.V., Netherlands

Filed May 17, 1990, Ser. No. 525,246

Claims priority, application Netherlands, May 19, 1989, 8901257

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.69 **4 Claims**



1. A method of forming lines of weakness in or grooving a plastic material, especially a packaging material, by local vaporization or degradation by means of a laser beam, which laser beam and which plastic or packaging material can be moved in relation to each other, characterized in that the laser beam is generated by means of a wavelength tunable laser tuned to a wavelength selected on the basis of the wavelength depending absorption spectrum of the material to be processed.

5,010,232

METHOD OF AND APPARATUS FOR PERFORATING PRINTED CIRCUIT BOARD

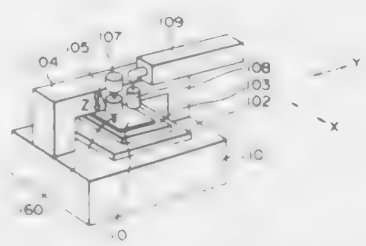
Kunio Arai, Atsugi, and Yasuhiko Kanaya, Machida, both of Japan, assignors to Hitachi Seiko, Ltd., Ebina, Japan

Filed Jan. 23, 1990, Ser. No. 468,914

Claims priority, application Japan, Jan. 27, 1989, 01-016157

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.7 **14 Claims**



1. A method of perforating a printed circuit board having a copper foil layer on one side thereof, at least one intermediate resin layer and a layer on the other side thereof, so as to form a connection hole for providing an electrical connection between said copper foil layer and said layer on the other side of said printed circuit board, said method comprising:

preparing a printed circuit board perforation apparatus which has a laser processing head capable of processing said printed circuit board by means of a laser beam and a drill head capable of drilling said printed circuit board;

conducting drilling into said resin layer through said copper foil layer by said drilling head so as to form a pilot hole; and

irradiating through said pilot hole a laser beam by said laser processing head to the portion of said resin layer remaining at the bottom of said pilot hole so as to remove the resin, thereby forming said connection hole reaching said layer on the other side of said printed circuit board.

5,010,233

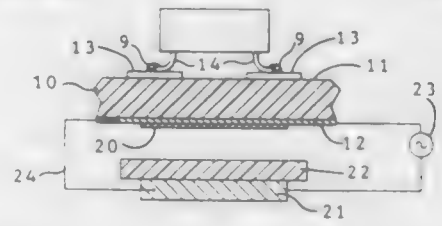
SELF REGULATING TEMPERATURE HEATER AS AN INTEGRAL PART OF A PRINTED CIRCUIT BOARD

Homer E. Henschen, Carlisle; Michael J. McKee, New Cumberland, and Joseph M. Pawlikowski, Lancaster, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 29, 1988, Ser. No. 277,095

Int. Cl.[5] H05B *3/12, 6/10*

U.S. Cl. 219—209 **19 Claims**



1 An article containing portions to be heated by delivery of sufficient thermal energy to at least one connection site to melt electrically-conductive fusible material at the connection site, said apparatus comprising:

a support structure comprising an electrically-insulative thermally conductive circuit board having first and second opposite board surfaces spaced by a board thickness dimension, with at least one contact pad secured to said circuit board at said connection site, said pad being disposed on said first board surface;

a selectively energizable self-regulating heater for generating said sufficient thermal energy, said heater having a thermally-conductive portion permanently secured to said support structure in spaced proximity to said connection site to permit thermal energy generated by said heater to be conducted to said connection site through the circuit board, said heater having a substrate of electrically and thermally conductive non-magnetic substrate material having first and second opposite surfaces, the substrate disposed over the entirety of said second surface of said circuit board and secured to said circuit board with the second substrate surface against the second board surface, a surface layer of magnetic surface layer material affixed to said substrate on less than the entirety of said first substrate surface, said surface layer aligned with said pad through the thickness of said circuit board, said surface layer material being electrically and thermally conductive but having a much greater electrical resistance than said substrate material, wherein said self-regulating heater is energizable by passing a constant amplitude alternating current of known frequency therethrough and the depth of said surface layer on said first surface of said substrate is approximately one skin depth at said known frequency, whereby current through said heater is concentrated in said surface layer at temperatures below the Curie temperature of said surface layer material and expands into said substrate material at temperatures equal to and above said Curie temperature.

5,010,234

DEVICE FOR AIR-CONDITIONING PREMISES WITH EXCHANGE OF HEAT ENERGY BY LOW TEMPERATURE INFRARED RADIATION

Fernand Scherrer, 2 rue Georges Bizet, 68170 Rixheim, and Joseph Rousset, 22 rue des Ecoles, 75005 Paris, both of France

Filed Dec. 2, 1988, Ser. No. 279,432

Claims priority, application France, Dec. 4, 1987, 87 16891; Jun. 23, 1988, 88 08461

Int. Cl.[5] H05B *3/34*

U.S. Cl. 219—213 **20 Claims**

1. A device for air-conditioning premises, with exchange of heat energy by low temperature infrared radiation, comprising:

three suspended elements, the first suspended element being a reflector element, the second suspended element being a flat heat exchanger element, and the third suspended element being a first sheet;

said flat heat exchanger element exchanging heat energy by low temperature infrared radiation, said flat heat exchanger element extending parallel to a wall of the room and being spaced therefrom, said flat heat exchanger element being a low temperature infrared radiation emitter and including an assembly of juxtaposed individual films fixed to one another to form a second sheet;

said reflector element being positioned between said heat exchanger element and the wall, said reflecting element reflecting the low temperature infrared radiation,



said individual films being fixed on an incombustible cloth having a weft permitting optimum passage of the infrared radiation, said cloth having a mesh such that the nature and dimensions thereof are such that in the event of a fire affecting said films, the association by adhesion or welding of said films on the incombustible support cloth limits the propagation of the flames and avoids the melting material dropping onto the occupants of the premises, by retention in the meshes of the weave of the cloth;

said first sheet facing and being disposed towards the interior of the room and being stretched across the room, said first sheet being made of a material behaving in a diathermic manner with respect to the low temperature infrared radiation, said heat exchanger element and said reflector element, and

means hooking each of said first and said second sheets along their edges to walls of the room.

5,010,235

ELECTRIC COOKER PLATE

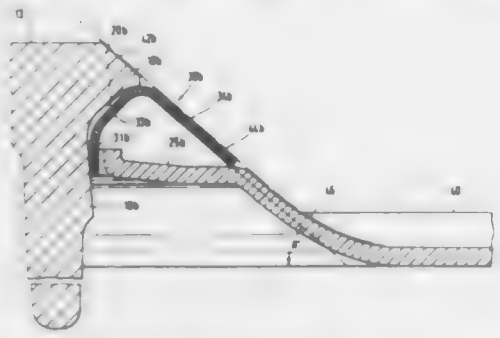
Karl Fischer, deceased, late of Oberderdingen; Gerhard Borst, executor, Enzlingen-Liebersbronn; Heinz Treffinger, executor, and Dorothee Fischer, executrix, both of Oberderdingen, all of Fed. Rep. of Germany, assignors to E.G.O. Elektro-Gerate Blanc u. Fischer, Oberderdingen, Fed. Rep. of Germany

which is a continuation-in-part of Ser. No. 968,047, Dec. 8, 1978, abandoned. This application Apr. 28, 1989, Ser. No. 345,111

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1977, 2755806; Dec. 14, 1977, 2755807

Int. Cl.[5] H05B *3/70*

U.S. Cl. 219—455 **13 Claims**



1. An electric cooker comprising:

a fitting plate having an opening surrounded by an upwardly directed rim, the rim being surrounded by a shoulder and the shoulder being surrounded by a rounded section;

a cooker plate disposed in the opening and having a cooking surface on which a cooking vessel can be stood; and,

a sheet metal ring surrounding the cooker plate, and projecting beyond the cooker plate, the ring having an irregular U-shaped cross-section with a radial internal section fixed to the outer rim surface of the cooker plate, and a radial external section which overlaps the rim of the fitting plate, wherein:

(a) the external section of the sheet metal ring is arranged and bevelled in such a way that the outermost edge of the cooker plate, the external section of the ring and the rounded section of the fitting plate lie substantially on and define a common curve,

(b) the maximum inclination of the curve relative to horizontal is not more than 45°,

(c) the external section of the ring rests with linear contact on the shoulder of the fitting plate, adjacent to the rounded section; thereby forming a transition, enabling the cooking vessel to be pushed smoothly from the cooking surface onto the fitting plate, and

(d) the height of the ring is less than 5 mm.

5,010,236

Patent Not Issued For This Number

5,010,237

IC CARD SYSTEM FOR PREVENTING UNAUTHORIZED DATA ALTERATION

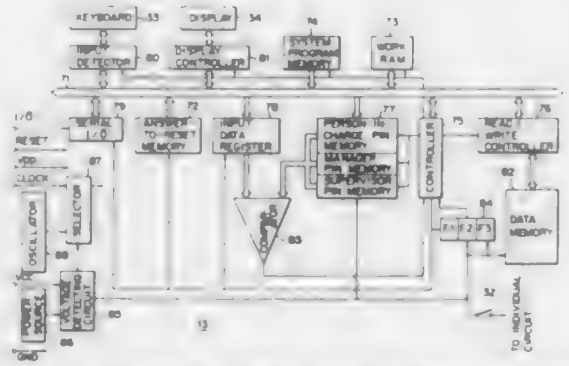
Shigeyuki Kawana, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Apr. 6, 1988, Ser. No. 178,237

Claims priority, application Japan, Apr. 10, 1987, 62-87070; Jul. 24, 1987, 62-112703[U]

Int. Cl.[5] G06F *15/30*

U.S. Cl. 235—379 **15 Claims**



1 An IC card system having an IC card and a terminal unit used for processing transaction data generated in association with use of said IC card, said system comprising:

(a) an IC card including:

memory means for storing at least first PIN (personal identification number) data and second PIN data;

input means for entering PIN data;

collation means for comparing PIN data from said input means with said first and second PIN data stored in said memory means to detect coincidence therebetween;

data memory means for storing data inputted from said terminal unit;

first and second storage means for respectively storing first and second permission data each of which represents an allowable operation of said terminal unit;

control means for inputting said first permission data into said first storage means and clearing said second storage means when a coincidence between the first PIN data and the entered PIN data is detected by said collation means, and for inputting said second permission data into said second storage means and clearing said first storage means when a coincidence between the second PIN data and the entered PIN data is detected by said collation means; and

(b) a terminal including:

data input means for inputting transaction data into said data memory means of said IC card on condition that said first storage means has the permission data stored in it; and

transferring means for retrieving the stored transaction data from said data memory means of said IC card and transferring the retrieved transaction data to a host computer coupled thereto on condition that said second storage means has the second permission data stored in it.

5,010,238

AUTOMATIC CASH TRANSACTION SYSTEM AND METHOD

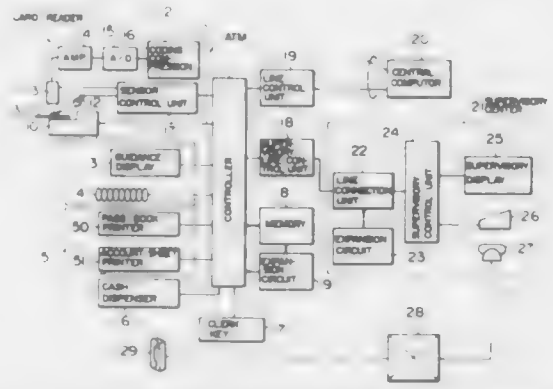
Osamu Kadono, Kasugai, and Kunio Ushizima, Seto, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 31, 1989, Ser. No. 304,095

Claims priority, application Japan, Mar. 18, 1988, 63-63278; Apr. 15, 1988, 63-93123

Int. Cl.[5] G06F *15/30*

U.S. Cl. 235—379 **16 Claims**



1. An automatic cash transaction system comprising a plurality of automated teller machines and a supervisory center for supervising the automated teller machines, wherein cash transactions are performed using an identification card which stores an index representative at least of the number of a user's account,

each of said plurality of automated teller machines comprising:

guidance display means for displaying a guidance such as a transaction operation guidance;

optical information reading means for taking a surface image information of said identification card as a digital information;

operation means for inputting necessary data for a current transaction operation, and designating a particular past transaction;

data storing means for digitally storing for each transaction the surface image information of said identification card obtained by said optical information reading means and said corresponding transaction information including said data inputted from said operation means as an electronic journal; and

control means for reading out the surface image information of an identification card associated with a past transaction information stored in said data storing means designated by said operation means to display said surface information on said guidance display means, and capable of sending a current transaction information including said data inputted from said operation means and the surface image information of said identification card to said supervisory center when said control means detects a transaction failure; and

said supervisory center comprising supervisory display means for displaying thereon said current transaction information and identification card surface information sent from said control means, and supervisory control means for reading out said electronic journal of past transaction stored in said data storing means to display on said supervisory display.

5,010,239

IC CARD READER/WRITER

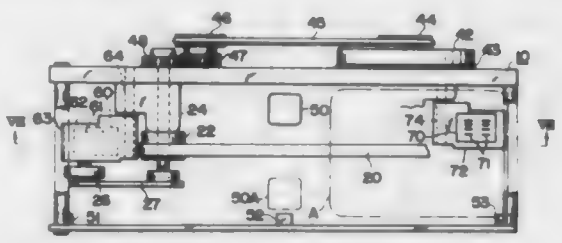
Katsuya Mita, Kyoto, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Oct. 4, 1988, Ser. No. 253,036

Claims priority, application Japan, Oct. 9, 1987, 62-155056[U]

Int. Cl.[5] G06F *7/06*

U.S. Cl. 235—441 **3 Claims**



1. An IC card reader/writer comprising:

an IC card inserting port:

an IC card conveying apparatus extending from said IC card inserting port to an inside of the IC card reader/writer;

a first connector having contact members and disposed near one end of said IC card conveying apparatus, the first connector being adapted to electrically connect with an IC card of first kind of format; and

a second connector having contact members and disposed near other end of said IC card conveying apparatus, the second connector being adapted to electrically connect with an IC card of second kind of format.

5,010,240

COMPOSITE TICKET PROCESSING UNIT

Dunstan P. Sheldon, Altadena, Calif., assignor to Mag-Tek, Inc., Carson, Calif.

Filed Apr. 11, 1989, Ser. No. 336,401

Int. Cl.[5] G06K *5/00, 7/00;* **G06F** *15/20;* **B26D** *7/06*

U.S. Cl. 235—382 **10 Claims**

1. A terminal for processing composite documents severable into plural sections, as including a ticket and a pass, said documents having a machine-readable record as a magnetic stripe, said terminal comprising:

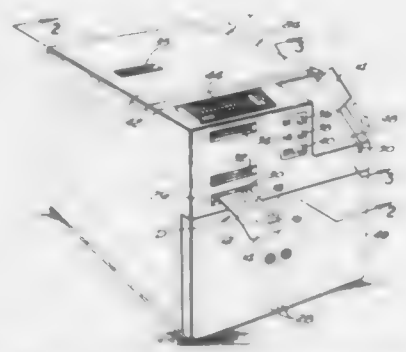
a housing defining a document input port, at least one exit port, at least one collection bin, and a channel slot for guiding the movement of a passing document section;

document track means affixed in said housing to transport

document sections from said input port alternatively to a collection bin or an exit port;

a sensor fixed in said housing in the proximity of said track means to read and process data from said document sections;

a document burster affixed contiguous to said track means at a location beyond said sensor for separating said document into sections;



a second sensor affixed contiguous to said channel slot to read and process one of the document sections separated by the burster as it passes through said channel slot, and

a control unit connected to said first and second sensors to control said track means, said burster and to provide indications of document acceptability.

5,010,241

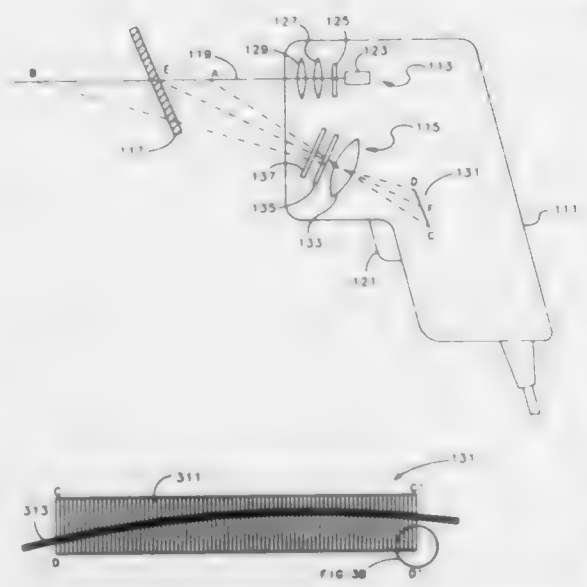
SENSOR ARRAY AND ILLUMINATION SYSTEM FOR A LARGE DEPTH-OF-FIELD BAR CODE SCANNER

Mark M. Butterworth, Santa Clara, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 12, 1989, Ser. No. 296,997

Int. Cl.[5] G06K *7/10, 7/14*

U.S. Cl. 235—462 **42 Claims**



1. An optical system for a bar code scanner for reading a bar code tag, comprising:

a focusing means having an optical axis;

illumination means for projecting a sheet of light along an object plane at a first acute angle with respect to a plane perpendicular to the optical axis of the focusing means, for illuminating a strip on the bar code tag to be read, and

a detector array for receiving light reflected from the bar code tag, with a plurality of elements having a long axis and a short axis, positioned substantially in an image plane at a second acute angle with respect to a plane perpendicular to the optical axis of the focusing means, with the long axis of the elements arranged substantially perpendicular to the image of the illuminated strip of the bar code tag, the projection of the long axis of the elements of the detector array onto the object plane defining the working range of the optical system;

a plane through the focusing means perpendicular to the optical axis of the focusing means, the image plane and the object plane all intersecting along a line so that an image of the illuminated strip of the bar code tag is formed substantially in focus on the detector array when the bar code tag is within the working range of the optical system.

5,010,242

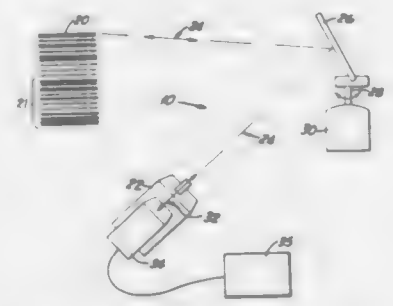
METHOD AND APPARATUS FOR VARIABLE SPEED SCANNING OF BAR CODES

Louis J. Frontino, Cherry Hill, N.J., assignor to Mars Incorporated, McLean, Va.

Filed May 8, 1989, Ser. No. 349,090

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—467 **27 Claims**



1. An apparatus for variable speed scanning of an optically readable code, comprising:

means for generating a light beam;

means for deflecting said light beam across an optically readable code target, said code reflecting at least a portion of said light beam back toward said apparatus;

means operatively connected to said deflecting means for automatically controlling the rate at which said light beam is deflected across said object so that the optically readable code is first scanned at a first scan velocity and then is scanned a second time at a second scan velocity; and

means for processing said reflected portion of said light beam to decode the optically readable code target.

5,010,243

METHOD OF PRODUCING AN OPTICAL RECORDING CARD HAVING A HOLOGRAM CONTAINED THEREIN

Yoichi Fukushima; Minoru Fujita; Yuji Kakinuma, and Toshio Haga, all of Tokyo, Japan, assignors to Kyodo Printing Co., Ltd., Tokyo, Japan

Division of Ser. No. 108,473, Oct. 14, 1987, Pat. No. 4,945,215. This application Apr. 14, 1989, Ser. No. 338,713

Claims priority, application Japan, Oct. 15, 1986, 61-244995; Oct. 24, 1986, 61-163468

Int. Cl.[5] G06K *19/16, 19/18*

U.S. Cl. 235—488 **11 Claims**



1. A method of producing an optical recording card having a hologram contained therein, the card comprising a transparent front substrate of which an inside surface includes a hologram portion building area and an optical recording portion building area, said hologram portion building area being formed with a pattern of concavity and convexity in the form of interference fringe of hologram, a reflective metallic film covering said pattern of concavity and convexity, an optical recording pattern layer comprising a metallic film for covering said optical recording portion building area, and wherein said optical recording card includes a rear substrate adapted to be adhered to said front substrate in the form of sandwiching a reflective metallic film and said optical recording pattern layer, the method comprising the steps of

die pressing said pattern of concavity and convexity in the form of an interference fringe in said hologram portion building area of said transparent front substrate,

forming a reflective metallic film over said hologram portion building area and said optical recording portion building area of said front substrate after completion of said step of die pressing,

patterning reflective metallic film on the optical recording portion building area of said front substrate in accordance with an optical recording pattern after completion of said step of forming the reflective film,

adhering said rear substrate to said inside surface of said front substrate in the form of sandwiching said reflective metallic film after completion of said step of patterning, and

die punching both said front and said rear substrates to a shape of said optical recording card after completion of said step of adhering.

5,010,244

METHOD TO DETECT RADIATION AND MEASURE ITS ANGLE OF INCIDENCE AND A DETECTOR ARRANGEMENT TO CARRY OUT THE METHOD

Kurt Nissborg, Skäninge, Sweden, assignor to Forsvarets Forskningsanstalt, Stockholm, Sweden

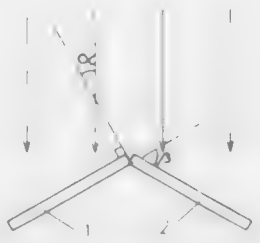
PCT No. PCT/SE88/00646, § 371 Date Jul. 20, 1989, § 102(e) Date Jul. 20, 1989, PCT Pub. No. WO89/04972, PCT Pub. Date Jun. 1, 1989

PCT Filed Nov. 25, 1988, Ser. No. 392,529

Claims priority, application Sweden, Nov. 27, 1987, 8704739

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—206.1 **8 Claims**



1. A method for detecting short pulses of speckled radiation caused by a turbulent atmosphere, and to measure its angle of incidence in relation to a reference direction comprising the steps of:

placing at least two detectors so they receive an irradiance that is essentially uncorrelated in the case of speckled radiation wherein the detectors are comprised of two detector elements, mounted so both detector elements receive essentially the same irradiance and in a direction that the normals of respective detector elements form a known angle with each other; and

calculating the angle of incidence using signals from the detector elements that depend on the shape of the sensitivity beams, and said angle between the detector elements.

5,010,245

RADIATION TRANSDUCING DEVICE WITH LOCATION IDENTIFICATION

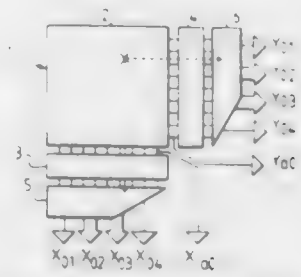
Bart M. H. L. Dierickx, Mortsel, Belgium, assignor to Interuniversitair Micro-Elektronica Centrum VZW, Belgium

Filed May 25, 1989, Ser. No. 356,800

Claims priority, application Netherlands, May 25, 1988, 8801342

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—208.1 **14 Claims**



1. A radiation transducing device for transducing radiation, comprising: an array of radiation sensitive elements, comparator elements connected to at least a portion of said array for comparing the amount of radiation received by the radiation sensitive elements to a predetermined threshold value, encoding element connected to said comparator elements for producing an output effective for identifying the location of said radiation sensitive elements which have been exposed to radiation and measuring means connected to said radiation sensitive elements for determining the amount of incident radiation collected in an element during a predetermined time period.

5,010,246

OPTICAL HEAD APPARATUS APPLICABLE TO OPTICAL DISC APPARATUS

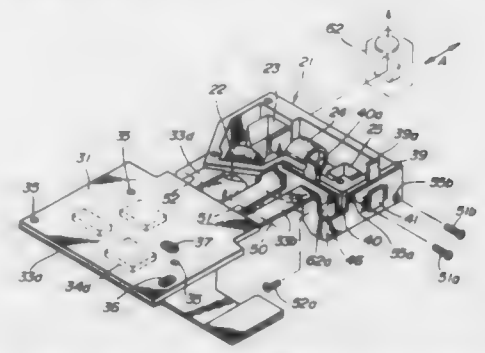
Hiroshi Tsuyuguchi; Yasushi Noda, both of Tokyo; Tsutomu Morita, Mitaka, and Kenji Shimozawa, Sagamihara, all of Japan, assignors to TEAC Corporation, Japan

Filed Jan. 16, 1990, Ser. No. 464,975

Claims priority, application Japan, Jan. 18, 1989, 1-3939[U]

Int. Cl.[5] H01J *3/14, 5/16;* **G11B** *7/00*

U.S. Cl. 250—216 **8 Claims**



1. An optical head apparatus applicable to an optical disc apparatus, comprising:

a case body having an open surface and a window through which an opto-electronics component can be positioned and housing optical components inside it;

a lid being attachable and detachable with respect to the open surface of said case body; and

a flexible printed circuit board having a base portion which is adhered to said lid and on which electronic components are mounted, and a protruding portion protruding from said base portion and having an opto-electronic component fixed to the distal end portion of it, said opto-elec-

tronic component being electrically connected with an electronic circuit which is formed by said electronic component on said base portion of said flexible printed circuit board, the distal end portion of said protruding portion of said flexible printed circuit board being fixed to said case body so that said opto-electronic component is positioned to said window,

whereby, when said electronic circuit and said opto-electronic component are maintained in a status of electrical contact said lid can be attached and detached with respect to said case body due to the bending of said protruding portion of said flexible printed circuit board

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5,010,247

METHOD OF CLASSIFYING OBJECTS ACCORDING TO SHAPE

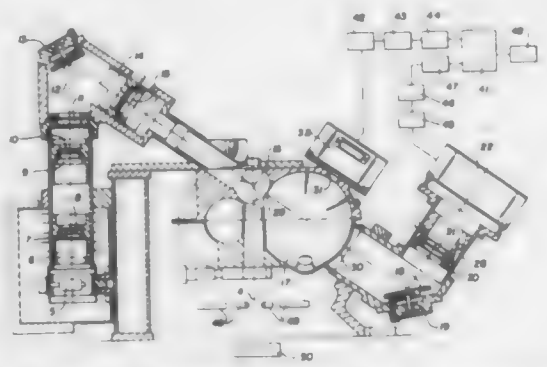
Martin P. Smith, Wargrave, and Colin D. Saunders, Marlow, both of England, assignors to Spandrel Establishment, Vaduz, Liechtenstein

Filed Oct. 6, 1989, Ser. No. 418,265

Claims priority, application United Kingdom, Oct. 7, 1988, 8823570

Int. Cl.[5] G01N *9/04*; **B07C** *5/04*

U.S. Cl. 250—223 R **9 Claims**



1. A method of making a rough classification of objects according to shape, comprising:

passing the objects in succession through a viewing zone,

in the viewing zone, viewing each object with at least three viewers which view along angularly spaced axes and thereby sensing respective areas presented to said viewers whereby said viewers give signals representative of said respective presented areas, and

comparing said signals from each respective viewer to make a rough determination of the shape of the object

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5,010,248

SAMPLING HYDROPHONE

Wolfgang Eisenmenger, Landhausstrasse 7, D-7140 Ludwigsburg, and Joachim Staudenraus, Bruchlstrasse 45, D-7303 Neuhausen, both of Fed. Rep. of Germany

PCT No. PCT/EP89/00053, § 371 Date Nov. 24, 1989, § 102(e) Date Nov. 24, 1989, PCT Pub. No. WO89/06512, PCT Pub. Date Jul. 27, 1989

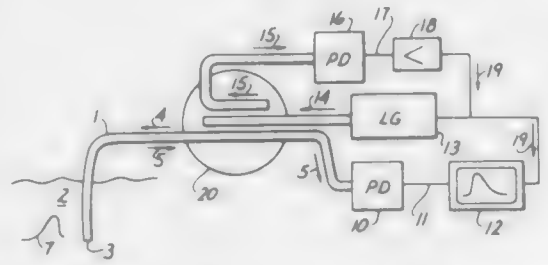
PCT Filed Jan. 17, 1989, Ser. No. 411,479

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1988, 3802024

Int. Cl.[5] H01J *5/16*

U.S. Cl. 250—227.21 **12 Claims**

1. Hydrophone probe for measuring pressure amplitudes in a liquid medium (2) comprising, a light conductor in the form of an optical waveguide (1) having one end situated in the liquid medium; means connected on opposite end of the waveguide to be responsive to changes in the degree of reflection of light at the boundary 3 of said end and of liquid adjacent said end of the light conductor on account of pressure dependent changes in the relative index of refraction at said boundary and with reference to the liquid medium for being indicative of variable pressure amplitudes in said liquid medium, said means further including an optical reflection measuring device having a large



temporal resolution sufficient to respond to pressure variations beyond a megahertz range

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5,010,249

DIAMOND PROBE AND FORMING METHOD THEREOF

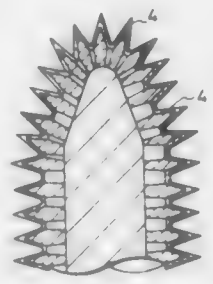
Akira Nishikawa, Tokyo, Japan, assignor to Seiko Instruments Inc., Japan

Filed Sep. 13, 1989, Ser. No. 406,458

Claims priority, application Japan, Sep. 13, 1988, 63-228991

Int. Cl.[5] H01J *37/26*

U.S. Cl. 250—306 **2 Claims**



2. A diamond probe comprising: a probe material having a pointed tip on which to form a carbon film comprised of a mixture of a columnar diamond crystal and an amorphous carbonic component, and a conductive film coated on said carbon film.

5,010,250

SYSTEM FOR SURFACE TEMPERATURE MEASUREMENT WITH PICOSECOND TIME RESOLUTION

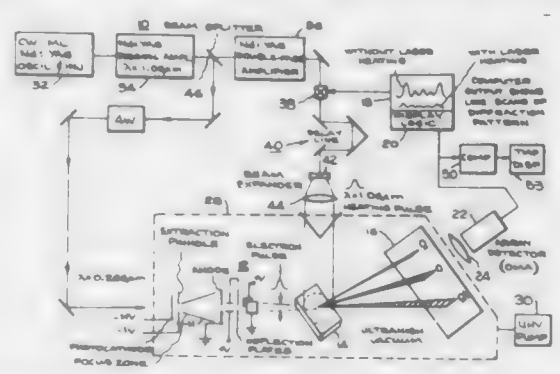
Hani E. Elsayed-Ali, Rochester, N.Y., assignor to The University of Rochester, Rochester, N.Y.

Filed Jan. 9, 1990, Ser. No. 462,376

Int. Cl.[5] H01J *37/295*

U.S. Cl. 250—310 **13 Claims**

1. A system for measuring the thermal characteristic of the surface lattice of solid state material which comprises means for generating successive pairs or groups of pairs of electron pulses and laser pulses which are synchronous with each other and are separated by successively greater periods of time, which pulses are incident on said surface of said material, means for detecting diffraction patterns produced by said electron pulses upon reflection from said surface, and means



responsive to said patterns for obtaining said thermal characteristic.

5,010,251

RADIATION DETECTOR ARRAY USING RADIATION SENSITIVE BRIDGES

Jan Grinberg, Los Angeles; Murray S. Welkowsky, Chatsworth; Chiung-Sheng Wu, Los Angeles, and Paul O. Braatz, Canoga Park, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Division of Ser. No. 370,109, Jun. 21, 1989, Pat. No. 4,922,116, which is a continuation-in-part of Ser. No. 228,630, Aug. 4, 1988, abandoned. This application Jan. 11, 1990, Ser. No. 463,563

Int. Cl.[5] H01L *31/09*

U.S. Cl. 250—332 **46 Claims**



1. A two-dimensional sensing array for electromagnetic radiation (emr), comprising:

a substrate,

an array of emr detector cells in said substrate, each of said cells including an emr sensitive bridge structure spanning a portion of the cell, said bridge structure being shaped to form a generally thermally insulative gap between the bridge structure and substrate, and having a defined characteristic which varies in accordance with the amount of emr received by the bridge, and

means for monitoring said defined characteristic for each of said cells.

5,010,252

IONIZATION DETECTOR

Douglas S. Steele, Saratoga Springs, N.Y., assignor to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 565,670, Dec. 27, 1983, Pat. No. 4,613,313. This application Jun. 10, 1986, Ser. No. 872,588

The portion of the term of this patent subsequent to Sep. 23, 2003, has been disclaimed.

Int. Cl.[5] G01T *1/185*

U.S. Cl. 250—385.1 **16 Claims**

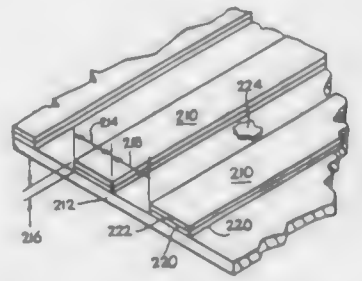
1. An ionization detector, comprising:

(a) a chamber containing xenon gas at a pressure exceeding 800 pounds per square inch;

(b) collimation means for collimating incoming radiation;

(c) window means for admitting collimated radiation into the chamber and for preventing escape of xenon from the chamber;

(d) an array of substantially parallel, elongated detector elements supported by a substrate and extending into the chamber and having a cross-sectional configuration inside the chamber which is substantially identical to the cross-sectional configuration outside the chamber, the array having metallic residue located in the spaces between the detector elements such that the cross-sectional area of the residue, when viewed from above the array, is less than



0.50% of the area of the spacing between the detector elements, the array having been manufactured by a process which includes the following steps:

(i) depositing an array of detector elements upon the substrate in a configuration which is substantially identical to the configuration of (d), each detector element comprising a nickel-containing layer adjacent the substrate and gold-containing layer atop the nickel-containing layer;

(ii) removing the gold-containing layer so as to provide an array of detector elements comprised of the nickel-containing layer; and

(iii) removing metallic residue located in the spaces between the detector elements so that said residue has said cross-sectional area.

5,010,253

DETECTION SYSTEM FOR CATHODOLUMINESCENCE ANALYSIS

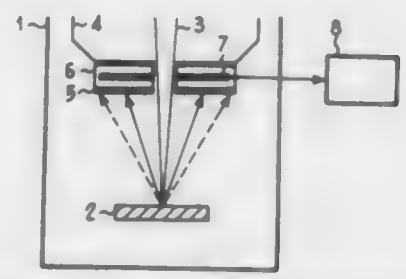
Marco Braglia, Turin; Roberto DeFranceschi, Vinovo, and Paolo Montangero, Turin, all of Italy, assignors to SIP - Societa Italiana per L-Esercizio Delle Telecomunicazioni P.A., Turin, Italy

Filed Dec. 4, 1989, Ser. No. 445,412

Claims priority, application Italy, Dec. 16, 1988, 68115 A/88

Int. Cl.[5] H01J *37/09*

U.S. Cl. 250—399 **7 Claims**



1. A detection system for material analysis by cathodoluminescence, comprising:

means for directing a beam of electrons onto a sample of a material to be analyzed whereby said sample generated photons characteristic of said material;

a detector positioned proximal to said sample for receiving photons generated by said sample; and

a photon-passing electron-blocking screen disposed between said sample and said detector to intercept electrons from said sample and prevent impingement of electrons from said sample on said detector, said screen being constituted of a plate of a glass selected from the group which consists of fluoride glasses, chalcogenide glasses and Ag-based glasses.

5,010,254

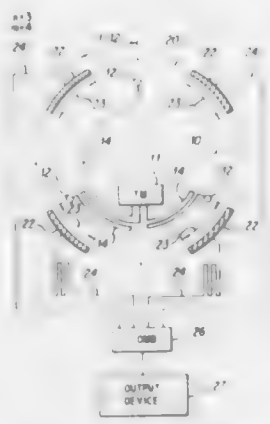
SYSTEM FOR COMMUNICATING ENERGY BETWEEN RELATIVELY MOVING DEVICES

John F. Moore, Libertyville, Ill., assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Apr. 5, 1989, Ser. No. 333,249

Int. Cl.[5] G02B *27/00*

U.S. Cl. 250—551 **18 Claims**



1. A system for communicating energy from a first device to a second device, where the first and second devices are capable of movement relative to one other and include corresponding first and second parallel line segments which pass by one another upon the relative movement of the devices, comprising

means for transmitting energy, including a plurality of transmitting elements mounted on the first device equidistant from one another along a first length of the first line segment; and

means for receiving energy from the transmitting means, including a plurality of receiving elements mounted on the second device equidistant from one another along a second length of the second line segment corresponding to the first length of the first line segment;

wherein the number of receiving elements is different than the number of transmitting elements, and

wherein the transmitting elements are point sources, and the receiving elements are extended receivers having a range of operation which is 1/(n-m) of the length of the second line segment, where n is the number of transmitting elements and m is the number of receiving elements, such that the range of operation between a transmitting element and a receiving element is sufficient to assure an operative relationship between at least one of the transmitting elements and one of the receiving elements upon the relative movement of the devices.

5,010,255

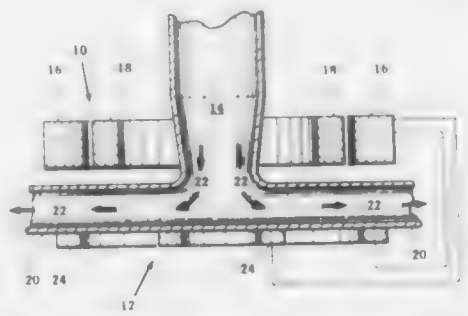
HIGH CURRENT MAGNETOHYDRODYNAMIC GIGAWATT PULSE GENERATOR

Mohamed A. Hilal, Madison, Wis., and Jerome F. Parmer, San Diego, Calif., assignors to General Dynamics Corporation, Convair Division, San Diego, Calif.

Filed Jan. 5, 1990, Ser. No. 461,510

Int. Cl.[5] H03K *3/38, 31/00*

U.S. Cl. 307—106 **4 Claims**



1. A high current MHD gigawatt pulse generator comprising.

a pulse power transformer having a superconducting primary winding and a normal secondary winding;

a gas high temperature channel extending through said pulse power transformer adjacent to said primary winding and beyond;

a magnetohydrodynamic disk generator having electrical current pickups positioned opposite said pulse power transformer attached to said channel whereby gas in said channel flows through magnetic flux created by said primary winding of said pulse power transformer and across said pickups of said magnetohydrodynamic generator, said pickups are electrically attached to said primary for storing current from said electrical current pickups therein;

means for initially storing current in said primary, and

means for supplying a gas flow through said channel.

5,010,256

GATE OUTPUT DRIVER USING SLEW-RATE CONTROL

Curtis J. Dicke, Colorado Springs, Colo., assignor to United Technologies Corporation, Hartford, Conn.

Filed Feb. 21, 1989, Ser. No. 313,193

Int. Cl.[5] H03K *5/08, 5/12, 6/04*

U.S. Cl. 307—263 **6 Claims**



1. A circuit for controlling the output of an integrated circuit to limit the rate of change of output current comprising:

an output inverter having a P-channel output transistor having a P-gate and being connected between a positive power supply terminal and an output node and an N-channel output transistor having an N-gate and being connected between said output node and a negative power supply terminal;

a first bias circuit connected to said P-gate and comprising a first P-channel bias transistor connected to said positive power supply terminal, a first N-channel bias transistor that is connected between said P-channel bias transistor and said first P-gate and a second N-channel bias transistor connected between said P-gate and said negative power supply terminal;

a second bias circuit connected to said N-gate and comprising a second P-channel bias transistor connected to said N-gate, a third N-channel bias transistor connected between said second P-channel bias transistor and said negative power supply terminal, and a third P-channel bias transistor connected between said N-gate and said positive power supply terminal, in which;

said output node is connected to a gate of said first P-channel bias transistor and to a gate of said third N-channel bias transistor; and

said first and second N-channel bias transistors, and said second and third P-channel bias transistors are all controlled by an input node that is also connected to said P-gate and said N-gate.

5,010,257

BICMOS LOGIC CIRCUIT WITH FULL SWING OPERATION

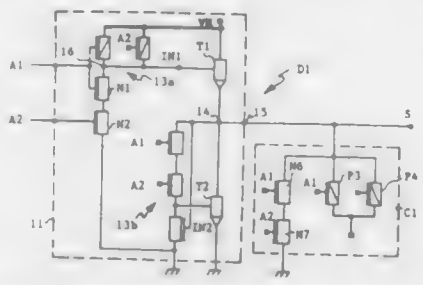
Gerard Boudon, Mennecy; Pierre Mollier, Boissise Le Roi; Jean-Paul Nuez, Savigny Sur Orge; Ieng Ong, Antony; Pascal Tannhof, Perthes, and Franck Wallart, Cesson, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 13, 1990, Ser. No. 493,014

Claims priority, application European Pat. Off., Mar. 14, 1989, 89480044.0

Int. Cl.[5] H03K *19/02, 19/094, 3/01*

U.S. Cl. 307—446 **13 Claims**



1. A BICMOS logic circuit biased between first and second supply voltages, comprising:

a CMOS logic circuit driven by a plurality of logic input signals;

a driving circuit connected to said CMOS logic circuit and including first and second bipolar transistors connected in series with an output node therebetween for providing an output signal on said output node; and

interface circuit means comprised of at least one pair of CMOS transistors connected to said first and second supply voltages for forcing said output signal to swing fully between said first and second supply voltages responsive to said logic input signals.

5,010,258

PROGRAMABLE LOGIC ARRAY USING ONE CONTROL CLOCK SIGNAL

Kimiyoshi Usami, Yokohama, and Aya Ishii, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 12, 1989, Ser. No. 406,099

Int. Cl.[5] H03R *19/096*

U.S. Cl. 307—469 **8 Claims**

1. A programable logic array, comprising:

an AND array and an OR array respectively composed of a plurality of second conductivity type MOS transistors;

a plurality of first conductivity type MOS transistors of a first group each having one terminal connected to an electrical power source for supplying a predetermined voltage; and

a plurality of first conductivity type MOS transistors of a second group each having one terminal connected to said electrical power source,

wherein a true single clock signal is supplied to gate terminals of said first conductivity type MOS transistors of said second group;



a complementary clock signal of said true single clock signal is supplied to gate terminals of said first conductivity type MOS transistors of said first group; and

wherein a ratio of gate width W and gate length L, i.e., W/L, of each of said first conductivity type MOS transistors of said second group is smaller than that of said first conductivity type MOS transistors of said first group

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5,010,259

VOLTAGE BOOSTING CIRCUIT AND OPERATING METHOD THEREOF

Yoshinori Inoue; Masaki Kumanoya; Takahiro Komatsu; Yasuhiro Konishi, and Katsumi Dosaka, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1989, Ser. No. 454,580

Claims priority, application Japan, Dec. 28, 1988, 63-332238

Int. Cl.[5] H03K *4/58, 19/017, 17/04, 19/094*

U.S. Cl. 307—482 **12 Claims**

1. A voltage boosting circuit provided in a semiconductor integrated circuit device for generating at an output terminal an output signal boosted to be higher than a supply voltage, comprising:

charging means provided between a power supply and a prescribed node in said voltage boosting circuit for being conductive when the potential of said node is lower than a given value, thereby charging said prescribed node, and being nonconductive when the potential of said prescribed node is higher than a given value, thereby preventing charge from flowing back to the power supply from said prescribed node,

signal inverting means responsive to an input signal for providing said output signal inverted from said input signal to an output terminal thereof based on the potential of said prescribed node and a ground potential,

delay means coupled between said output terminal and said

prescribed node for delaying said output signal by a given time, and



capacitor means responsive to the output of said delay means for boosting the potential of said prescribed node and consequently boosting said output signal.

5,010,260

INTEGRATED CIRCUIT FURNISHING A SEGMENTED INPUT CIRCUIT

Roger D. Norwood, Sugarland, and David V. Kersh, III, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 455,870, Dec. 19, 1989, abandoned, which is a continuation of Ser. No. 265,069, Oct. 31, 1988, abandoned. This application Jun. 11, 1990, Ser. No. 537,207

Int. Cl.[5] **H03K** *17/08, 17/16, 19/003, 19/092*

U.S. Cl. 307—482.1 **16 Claims**

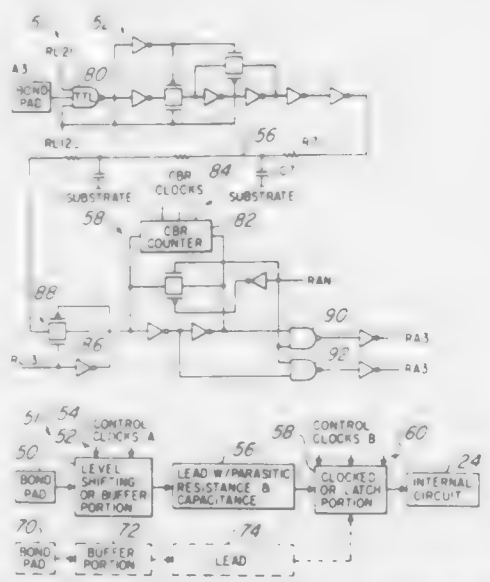
1. An integrated circuit furnishing a segmented input circuit, comprising:

A. a substrate of semiconductor material;

B. plural bonding pads carried upon said substrate at the margin of said substrate, at least some of said bonding pads receiving signals from external of said substrated;

C. an internal circuit formed on said substrate and receiving at least one of said signals received at one of said bonding pads, said one bonding pad being spaced from said internal circuit a distance that otherwise includes sufficient parasitic capacitance and resistance to distort said at least one signal; and

D. an input circuit formed on said substrate and connecting said one bonding pad to said internal circuit to carry said at least one signal from said bonding pad to said internal circuit, said input circuit including a level shifing portion located adjacent said bonding pad that changes said signal from external of said substrate to voltage levels used in



said internal circuit, a lead subject to parasitic resistance and capacitance extending from said level shifting portion and carrying said level shifted signal, and a clocked portion located adjacent said internal circuit and connected to said lead to pass said signal from said lead to said internal circuit in conjunction with control clocks extending to said clocked portion.

5,010,261

LOSSLESS GATE DRIVER CIRCUIT FOR A HIGH FREQUENCY CONVERTER

Robert L. Steigerwald, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 8, 1989, Ser. No. 447,947

Int. Cl.[5] **H03K** *17/687, 19/017*

U.S. Cl. 307—571 **15 Claims**

1. An efficient gate driver circuit for driving a semiconductor power switching device of a high-frequency power converter, said power switching device having an input capacitance, comprising:

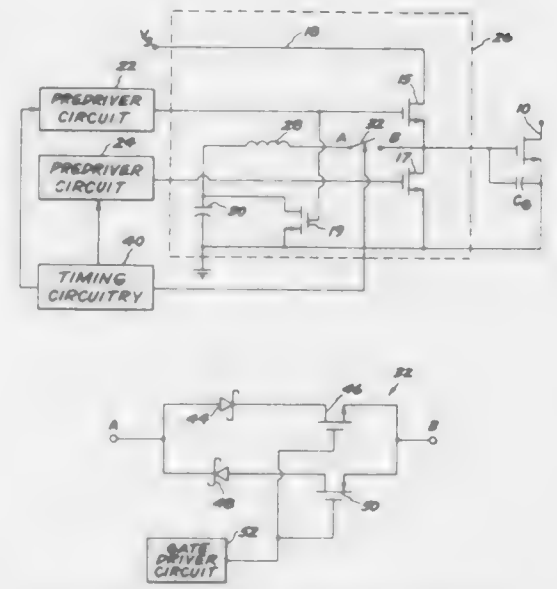
first and second switch means for coupling to a gate drive power supply and connected in series in a half-bridge configuration with a junction therebetween, the gate of said power switching device being coupled to said junction,

ac switch means having two terminals, one of said terminals being coupled to said first and second switch means at said junction therebetween;

resonant circuit means coupled to the other one of said terminals of said ac switch means for resonantly charging and discharging said input capacitance so as to result in substantially lossless gate driver switching, said ac switch means being operable to couple said series resonant circuit to said power switching device during the resonant charging and discharging of said input capacitance;

said first switch means ensuring that said input capacitance is fully charged and said power switching device remains on before said ac switch means is activated in order to discharge said input capacitance; and

said second switch means ensuring that said input capacitance is fully discharged and said power switching device



remains off before said ac switch means is activated in order to charge said input capacitance.

5,010,262

STRONG MAGNETIC THRUST FORCE TYPE ACTUATOR

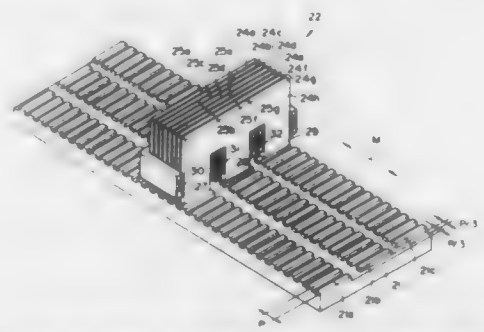
Hiroshi Nakagawa, and Minoru Maeda, both of Mie, Japan, assignors to Shinko Electric Company Ltd., Tokyo, Japan

Filed Jul. 18, 1989, Ser. No. 381,351

Claims priority, application Japan, Jul. 20, 1988, 63-180497; Nov. 8, 1988, 63-282021; Nov. 8, 1988, 63-282022; Nov. 14, 1988, 63-287033

Int. Cl.[5] **H02K** *41/00*

U.S. Cl. 310—12 **17 Claims**



1. A strong magnetic thrust force type actuator comprising:

a primary magnetic member supported by a support means moving along a predetermined direction, the primary magnetic member generating a magnetic field in a direction transverse to the predetermined direction through magnetic poles thereof; and

a secondary magnetic member having a plurality of facing portions facing the primary magnetic member, in which the facing portions are disposed at an equal pitch in the predetermined direction, thus moving the primary magnetic member relative to the secondary magnetic member when a magnetic field acts upon the facing portions formed with the secondary magnetic member, the improvement wherein

the primary magnetic member comprises:

a core having a plurality of plate members separated by first equal pitches in the predetermined direction, in which the plate members have facing portions which extend in a direction transverse to the predetermined direction;

a plurality of permanent magnet, inserted between side surfaces of the plate members in a direction perpendicular to the facing portions so that adjacent permanent magnets are of an opposite polarity; and

an insulated wire wound around the cores so as to form magnetic poles, wherein

the secondary magnetic member comprises:

the facing portions facing the facing portions formed with the primary magnetic member, the facing portions disposed at a second equal pitch in the predetermined direction, the second equal pitch of the facing portion formed with the secondary magnetic member approximately twice as large as the first equal pitch of the facing portion formed with the primary magnetic member,

whereby when the insulated wire is energized facing portions of the primary magnetic member which are disposed toward the facing portions formed with the secondary magnetic member contribute to produce a magnetic thrust for moving the primary magnetic member relative to the secondary magnetic member.

5,010,263

HALL EFFECT TYPE SENSING DEVICE

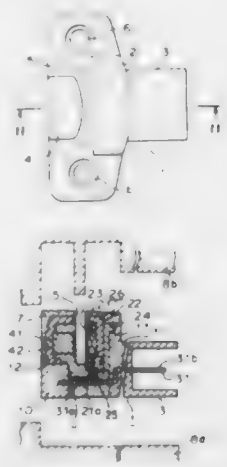
Shigemi Murata, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 14, 1990, Ser. No. 479,921

Claims priority, application Japan, Feb. 21, 1989, 1-39455; Feb. 23, 1989, 1-41884

Int. Cl.[5] **F01B** *7/14*

U.S. Cl. 310—68 B **3 Claims**



1. A Hall effect type sensing device, comprising:

magnetic circuit forming means including a permanent magnet;

a Hall transducing element arranged in a magnetic circuit formed by the magnetic circuit forming means;

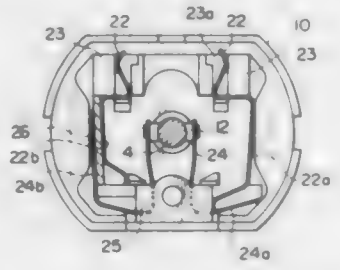
a frame body having a holding part for locating and holding the magnetic circuit forming means and the Hall transducing element in predetermined positions, the frame body being prepared by primary molding; and

a protective compound encapsulating the magnetic circuit forming means, the permanent magnet, and the Hall transducing element together with the frame body to prevent any relative movement therebetween, the protective compound being prepared by secondary molding and defining a gap in the magnetic circuit forming means, a movable shutter, and said gap adapted to accommodate said movable shutter.

5,010,264
MINIATURE MOTOR HAVING POSITIVE-COEFFICIENT THERMISTOR

Shinjiro Yamada; Seiki Satoh, both of Utsunomiya; Kazuichi Mabuchi, Matsudo; Shiei Kitao, Matsudo, and Yoshiaki Egawa, Matsudo, all of Japan, assignors to Mabuchi Motor Co., Ltd., Chiba and Mitsui Mining & Smelting Co., Tokyo, both of, Japan

Filed Sep. 1, 1989, Ser. No. 402,499
Claims priority, application Japan, Sep. 9, 1988, 63-118363[U]; Dec. 14, 1988, 63-162101[U]
Int. Cl.[5] H02K *11/00*; H01C *7/02*; H02H *5/04*
U.S. Cl. 310—72 9 Claims



1. A miniature motor having a positive-coefficient thermistor comprising a stator having a permanent magnet as a field, a rotor formed by winding a plurality of rotor windings on a rotor core; current being fed to said rotor windings via a commutator making sliding contact with brushes supported by a motor cover plate, making contact with a commutator, and a positive co-efficient thermistor for controlling current to said rotor windings, in which said motor cover plate has a pair of terminal holders for holding terminals;

said terminals including a pair of terminals made of an electrically conductive material and having engaging and locking portions for engaging with said terminal holders;

said brushes including a pair of brush arms made of an electrically conductive material,

connecting members disposed in such a manner as to come in resilient contact with any one of said brush arms and one of said terminals to ensure an electrical connection between said brush arms and said terminals,

a first supporting member disposed in such a manner as to come in resilient contact with one of said brush arms to electrically connect to said brush arms; and ,

a second supporting member disposed in such a manner as to come in resilient contact with the other one of said terminals are provided in said motor cover plate; said positive-coefficient thermistor being held between said first and second supporting members.

5,010,265
MOISTURE DRAIN BUSH FOR AN ENGINE STARTER MOTOR

Takao Tanaka, and Kazuhiro Odahara, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

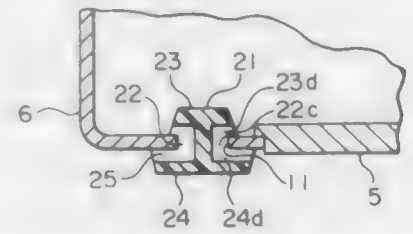
Filed Feb. 9, 1990, Ser. No. 477,376
Claims priority, application Japan, Feb. 10, 1989, 1-32123
Int. Cl.[5] H02K *5/10*
U.S. Cl. 310—88 5 Claims

1. A moisture drain bush adapted to be inserted into and held by a moisture drain hole defined in a housing wall of an engine starter motor, comprising:

a stem having a first and a second end, said stem having an axial length substantially equal to a thickness of said housing wall and having an axial groove extending between said first and second ends of said stem;

a first flange having a substantially flat inner surface radially extending from said first end of said stem, said inner surface having a diameter larger than the diameter of said drain hole and having a first radial groove connected to one end of said axial groove in said stem and radially extending to the outer periphery of said first flange; and

a second flange having a substantially flat inner surface radially extending from said second end of said stem, said inner surface having a diameter larger than the diameter of said drain hole and having a second radial groove



connected to the other end of said axial groove in said stem and radially extending to the outer periphery of said second flange;

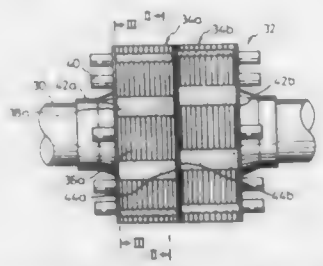
whereby, when said drain bush is inserted within said drain hole in said motor housing, said axial groove and said first and second radial grooves as well as said drain hole together defining a continuous but bent moisture drain path

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5,010,266
ANTI-CLOGGING OFFSET FOR ROTOR OF SYNCHRONOUS MOTOR

Hiroyuki Uchida, Yamanashi, Japan, assignor to Fanuc LTD, Yamanashi, Japan

PCT No. PCT/JP88/00879, § 371 Date Apr. 25, 1989, § 102(e) Date Apr. 25, 1989, PCT Pub. No. WO89/02183, PCT Pub. Date Mar. 9, 1989
PCT Filed Sep. 2, 1988, Ser. No. 368,400
Claims priority, application Japan, Sep. 3, 1987, 62-219242
Int. Cl.[5] H02K *21/14*
U.S. Cl. 310—156 5 Claims

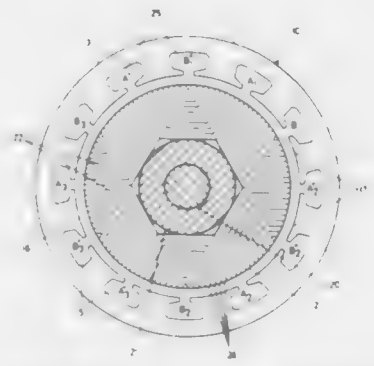


1. A rotor structure of a synchronous motor having a rotor core held between permanent magnets, wherein each of a plurality of unitary rotor elements constituting the rotor is arranged at one of two different angular positions around a central axis of said rotor which positions correspond with a period of slot ripple of the motor, such that an angular difference between said two angular positions is an angle corresponding to a half wave of the slot ripple, wherein axial end portions of permanent magnet elements and rotor core elements which together constitute the unitary rotor element in each angular position provide axial recesses and projections, and wherein each unitary rotor element of said rotor is provided with end plate members arranged at both ends of said rotor and between said unitary rotor elements, said end plate members being formed with axial projections and recesses engaged, respectively, with said axial recesses and projections formed by said permanent magnet elements and said rotor core elements such that said end plate members hold each unitary rotor element precisely at a prescribed angular position.

5,010,267
VARIABLE SPEED MACHINE WITH HIGH POWER DENSITY

Thomas A. Lipo, and Longya Xu, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation of Ser. No. 243,073, Sep. 9, 1988, abandoned. This application Dec. 22, 1989, Ser. No. 456,032
Int. Cl.[5] H02K *19/02*
U.S. Cl. 310—162 15 Claims



1. A reluctance machine adapted for variable speed drive, comprising:

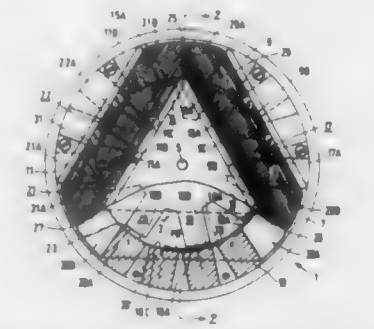
(a) a stator including a core, and windings supported thereon formed of multiple coils, the windings having full pitch, plural poles and plural phases;

(b) a rotor having multiple pole segments which each include means for guiding the flux of the stator windings to provide maximum inductance for a stator coil of each pole and phase which is conducting current when the rotor segment is aligned with that coil and minimum inductance when the rotor segment is out of alignment with that coil and aligned with the adjacent coil of the stator, with the number of rotor segments distributed about the periphery of the rotor equal to the number of stator poles.

5,010,268
ELECTRICAL MULTI-POLE MACHINE

Reinder H. Dijken, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 31, 1989, Ser. No. 359,468
Claims priority, application Netherlands, Jun. 27, 1988, 8801628
Int. Cl.[5] H02K *1/12, 21/26, 1/00*
U.S. Cl. 310—254 4 Claims



1. An electrical multi-pole machine of the electromagnetic type, the machine comprising:

a first machine section which comprises a soft-magnetic first body provided with permanent magnets having pole faces disposed along a first circularly cylindrical surface, said pole faces extending both axially and tangentially,

a second machine section which is coaxial with the first machine section and which comprises a second body provided with soft-magnetic teeth having regularly spaced tooth surfaces which are disposed along a second circularly cylindrical surface and which cooperate with the pole faces via an air gap, said tooth surfaces also extending both axially and tangentially,

at least three active coils each having two opposite coil sides, and

a machine shaft about which said machine sections are rotatable relative to each other, characterized in that

the soft-magnetic first body is a cylindrical outer body on whose inner side the radially magnetized magnets are arranged,

the first machine section is constructed as the stator and the second machine section is constructed as the rotor, and the pole faces, viewed in the circumferential direction of said first cylindrical surface, are arranged in groups, at least three groups of magnets being distinguished, the number of groups of magnets being equal to the number of active coils, which groups are separated from one another by coils slots in which the coil sides of the active coils are accommodated, adjacent pole faces along said first circularly cylindrical surface in each of said groups having opposite polarities,

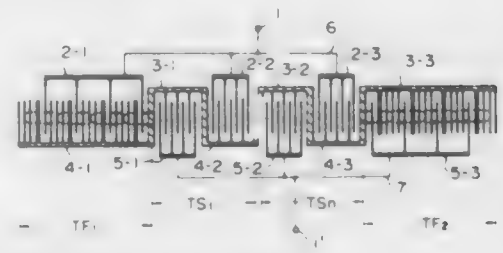
a tangential dimension of the axially and tangentially extending tooth surfaces is smaller than or equal to a corresponding tangential dimension of the pole faces, and

two of said coil sides of the active coils are accommodated in each of the coil slots which extend at least substantially parallel to the machine shaft, said coil sides of each individual active coil each being accommodated in one of the coil slots at opposite sides of one of the groups of magnets and being interconnected by coil end portions.

5,010,269
SAW RESONATOR HAVING A BROAD BANDWIDTH

Mitsutaka Hikita, Hachioji; Atsushi Sumioka, Kokubunji; Toyoji Tabuchi, Kodaira; Kazuhito Kuroesawa, Katsuta, and Tuneo Kinoshita, Kokubunji, all of Japan, assignors to Hitachi, Ltd.; Hitachi Denshi Kabushiki Kaisha, both of Tokyo and Hitachi Communication System, Inc., Yokohama, all of, Japan

Filed Dec. 9, 1988, Ser. No. 282,177
Claims priority, application Japan, Dec. 14, 1987, 62-314136
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—313 B 13 Claims



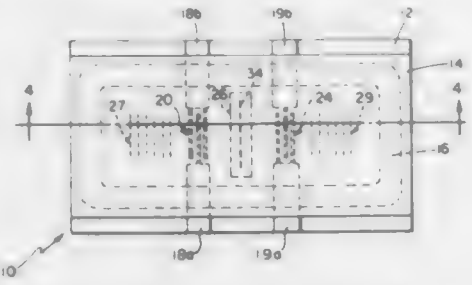
1. A SAW resonator comprising:

a piezoelectric substrate;

a plurality of resonating SAW transducer units formed on said substrate and juxtaposed in a direction of propagation of acoustic waves on said substrate, each of said resonating SAW transducer units including at least one first SAW transducer and at least one second SAW transducer electrically connected with each other and juxtaposed in said acoustic wave propagation direction on said substrate; and

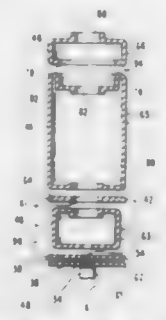
first and second unidirectionally reflecting SAW transducer units formed on said substrate and arranged to be juxtaposed in said acoustic wave propagation direction with respect to said plurality of juxtaposed resonating SAW transducer units on first and second ends thereof, respectively.

5,010,270
SAW DEVICE
James A. Greer, Andover, Mass., assignor to Raytheon Company, Lexington, Mass.
Continuation of Ser. No. 293,607, Jan. 5, 1989, abandoned, which is a continuation of Ser. No. 153,186, Mar. 8, 1988, abandoned, which is a continuation of Ser. No. 944,911, Dec. 22, 1986, abandoned. This application Nov. 28, 1989, Ser. No. 442,404
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—313 B 29 Claims



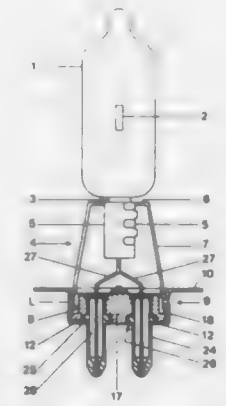
1. A surface acoustic wave device comprising:
a base having a surface for supporting surface wave propagation, including at least a transducer coupled to said surface wave propagation surface;
a cover disposed over said base enclosing said surface wave propagating surface, said cover comprised of a material which is optically transparent to electromagnetic energy generally in the wavelength range of about 0.185 μm to 4 μm;
a first layer comprised of a metal oxide and disposed between said cover and base; and
a second layer comprised of a metal oxide and disposed on said surface wave propagation surface with a first one of said first and second layers having a recess and with a second, different one of said first and second layers disposed in alignment with said recess and having dimensions comparable to those of said recess.

5,010,271
COLOR PICTURE TUBE HAVING AN ELECTRON GUN WITH REDUCED CONVERGENCE DRIFT
Loren L. Maninger, and Bruce G. Marks, both of Lancaster, Pa., assignors to RCA Licensing Corporation, Princeton, N.J.
Filed Oct. 24, 1989, Ser. No. 427,230
Int. Cl.[5] H01J *29/50, 29/51*
U.S. Cl. 313—412 10 Claims



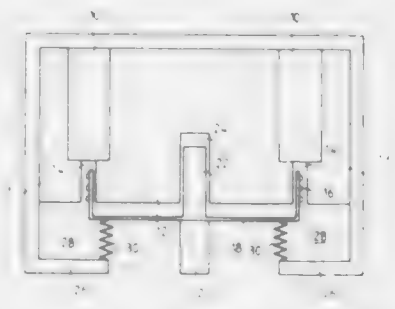
1. In a color picture tube including a screen and an inline electron gun for generating and directing three inline electron beams along separate paths toward said screen, said electron gun comprising a plurality of cathodes and at least six electrodes longitudinally spaced from said cathodes, the improvement comprising
the first, second and fourth electrodes from said cathodes being of materials having lower coefficients of thermal expansion than the coefficients of thermal expansion of the materials of the other electrodes.

5,010,272
CEMENTLESS ELECTRIC LAMP - BASE COMBINATION
Fritz Eckhardt, Gerstetten; Peter Helbig, Sontheim, and Walter Schoenherr, Giengen, all of Fed. Rep. of Germany, assignors to Patent Treuhand Gesellschaft für elektrische Gluhlampen mbH, Munich, Fed. Rep. of Germany
Filed Feb. 20, 1990, Ser. No. 482,289
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1989, 8902247[U], Jun. 9, 1989, 8907108[U]
Int. Cl.[5] H01K *1/46*
U.S. Cl. 313—579 21 Claims



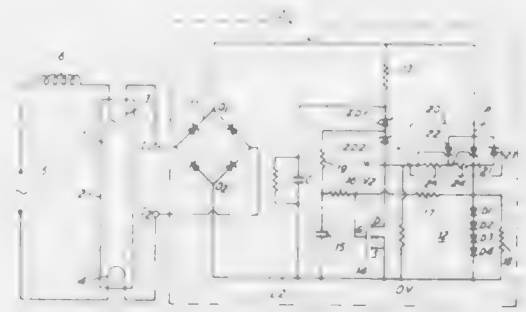
1. A cementless electric lamp (1, 31) and base combination in which the lamp comprises a single-ended bulb (1, 31) having a press seal (3, 33) at one end thereof, filaments (2, 32) located within the bulb, and current connection leads (27, 51) extending outwardly of the press seal; and
the base comprises
a metallic base sleeve (9, 40), a base core (17, 48) of insulating material, and terminal contact elements (24, 24', 56) electrically connected to said current connection leads (27, 51), and
means (4, 7, 38) coupled to the bulb and secured to the base sleeve for attaching the bulb to the base sleeve,
wherein
the base sleeve (9, 40) is a hollow essentially cylindrical structure;
the base core (17, 48) is an apertured, essentially cylindrical solid structure dimensioned and shaped to fit into said hollow base sleeve, and defining an end surface (16', 47) remote from the lamp;
a rim (12, 15', 50) formed on one of said structures and in engagement with an end portion of the other of said structures; and
projecting tabs (13, 13', 45) formed on said sleeve and bent by about 90° and extending at least in part transversely to the longitudinal axis (CL) of the lamp and over part of the end surface (16', 47); and
wherein said rim and said projecting tabs are, respectively, positioned to lock the base core into the base sleeve and hence lock the base core and the base sleeve together without play.

5,010,273
AGILE MAGNETRON WITH TUNING MOTOR WITH IMPROVED COOLING
Alain Vermersch, Velizy, France, assignor to Thomson-CSF, Puteaux, France
Filed Jul. 7, 1989, Ser. No. 377,092
Claims priority, application France, Jul. 8, 1988, 88 09308
Int. Cl.[5] H01J *25/50*
U.S. Cl. 315—39.61 6 Claims



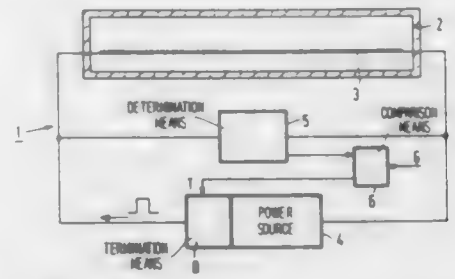
1. A frequency tuning motor for an agile magnetron, said motor having a coil that moves in a very narrow gap facing a pole piece wherein, in order to improve the cooling of the motor, the space between the coil and the pole piece is filled with a gas having high thermal conductivity.

5,010,274
STARTER CIRCUITS FOR DISCHARGE LAMPS
Geoffrey J. Phillips, Gilesgate, and Kevin F. George, Merstham, both of England, assignors to Thorn EMI plc, London, England
Filed Mar. 16, 1989, Ser. No. 324,510
Claims priority, application United Kingdom, Mar. 17, 1988, 8806384
Int. Cl.[5] H05B *41/36*
U.S. Cl. 315—101 12 Claims



1. A starter circuit suitable for a discharge lamp which is connected to an alternating voltage supply by means of a reactive ballast, the starter circuit comprising a rectifier for connecting the lamp to first and second voltage supply lines; at least one diode; a current control circuit having a controlled current path connected in series with said at least one diode between the voltage supply lines, the current control circuit being arranged to control flow of current in said controlled current path in dependence on a first control voltage applied at a control terminal of the current control circuit, whereby, in operation, the controlled current path can be triggered into a non-conducting state to present a relatively high impedance, preventing a flow of current in said path, and can be triggered into a conducting state to present a relatively low impedance allowing a flow of current in said path; means for deriving from the rectified supply a predetermined said control voltage to trigger said current control circuit into said conducting state and a field effect transistor arranged to modify said predetermined control voltage in dependence on a further control voltage applied to the gate electrode of said field effect transistor, to trigger said current control circuit into said non-conducting state and cause a high voltage striking pulse to be applied across the lamp, said further control voltage being dependent on a voltage at a junction between said at least one diode and said controlled current path, whereby the starting circuit, in operation, triggers said controlled current path into its conducting an non-conducting state a plurality of times during a half cycle of applied alternating voltage to provide a succession of said high voltage striking pulses across said discharge lamp during a single half cycle of the rectified supply thereby assisting the starting of said lamp.

5,010,275
ELECTRON TUBE DEVICE AND ELECTRON TUBE
Ronald van der Wilk, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Apr. 13, 1989, Ser. No. 337,241
Claims priority, application Netherlands, Apr. 20, 1988, 8801016
Int. Cl.[5] H05B *41/36*
U.S. Cl. 315—106 7 Claims

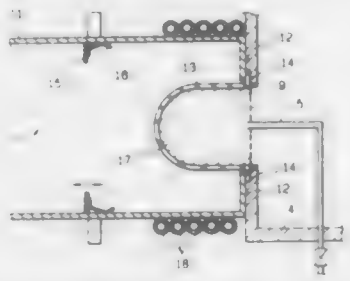


1. In an electron display tube apparatus including an envelope containing a line cathode and including an electric power source for repetitively supplying power pulses to the line cathode, the improvement comprising means for controlling the line cathode temperature, said means including:
a. termination means electrically connected to the power source and having an input for receiving a control signal, said termination means effecting termination of each of the power pulses when the control signal is applied to the input;
b. determination means coupled to the line cathode for directly determining the temperature of said cathode and for producing a value representative of said temperature;
c. comparison means electrically connected to the determination means and to the input of the termination means, said comparison means producing said control signal when the value representative of the line cathode temperature reaches a predetermined magnitude, thereby effecting termination of the pulse instantaneously being supplied to the line cathode.

5,010,276
MICROWAVE PLASMA CVD APPARATUS WITH PLASMA GENERATING CHAMBER CONSTITUTING A CYLINDRICAL CAVITY RESONATOR
Hiroshi Echizen, Tokyo, and Satoshi Takaki, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 3, 1988, Ser. No. 252,646
Claims priority, application Japan, Oct. 9, 1987, 62-256030; Oct. 9, 1987, 62-256031
Int. Cl.[5] H01J *7/24*
U.S. Cl. 315—111.21 8 Claims

1. In a microwave plasma CVD apparatus comprising a treating chamber having means for supporting a body to be treated therein, a plasma generating chamber connected to the treating chamber through a metal mesh, means for introducing a gas into the plasma generating chamber, and means for introducing microwave to convert the gas in the plasma generating

chamber into a plasma, the improvement comprising (a) means for maintaining the microwaves in continuous oscillation, (b) the plasma generating chamber constituteing a cylindrical cavity resonator defined by the metal mesh and a stop or stops, and (c) a bell-jar (i) smaller than the cavity in the axial length and (ii) smaller than the inside diameter of said cavity being disposed in the cylindrical cavity resonator in contact with the



metal mesh, thereby constituting a reentrant cylindrical cavity resonator through generation of electric discharge in the bell-jar,

the single stop is disposed slidably along the cylindrical cavity or, alternatively, a plurality of the stops are disposed, the aperture of the stop is circular, 5-vane or polygonal, and the open area ratio of the aperture is variable

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5,010,277

ELECTRONIC CONVERTER SUPPLIED BY AN ALTERNATING CURRENT DISTRIBUTION NETWORK

Henri Courier de Mere, Les Berruries, Mettray, France 37390

Filed Mar. 16, 1990, Ser. No. 494,980
Int. Cl.[5] H05B *37/02*
U.S. Cl. 315—200 R **13 Claims**



1 Electronic device for the conversion of energy supplied by a low frequency alternating mains voltage supply, rectified but not filtered, comprising a high frequency oscillator provided with switching means for which the conduction duty cycle is automatically maintained inversely proportional to the instantaneous value of the said rectified voltage, this oscillator being provided, at the output, with an oscillator circuit provided with a first inductor for matching the impedance of the load used to that of the said oscillator, characterized by the fact that a second inductor **12** derives a portion of the high frequency energy extracted by the said switching means so that, after rectification, the voltage thus obtained, suitably polarized, is added to the above mentioned rectified mains voltage, thus permitting an average resulting voltage to be obtained, which is at least equal to the peak voltage developed by the said mains supply, and additionally, another portion of the high frequency energy is extracted from the above mentioned oscillating circuit and after rectification, the voltage thus obtained suitably polarized is also applied in series with the rectified mains voltage, this, in order to perfect the low frequency demodulation of the rectified supply voltage of the said oscillator and to improve the linearity of the current taken from the mains supply in case of major variations in the nominal voltage of the mains supply, being such that, definitively, by means of the automatic control of the conduction cycle of the said switching means, the supply voltage of the said oscillator becomes continuous, without detrimentally affecting the sinusoidal nature of the mains supply current, this having as the final consequence the supply of the above mentioned load, having a stable or otherwise impedance, such as the series of discharge lamps **31***a* and **31***b* with a voltage for which the envelope is maintained continuous, without for as much, requiring necessary recourse to high capacitance electrolytic smoothing capacitors

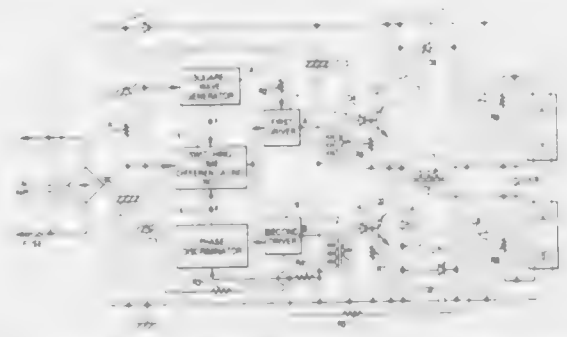
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5,010,278

ELECTRONIC SWITCHING BALLAST FOR A FLUORESCENT LAMP

Sung H. Kang, Jinjoen-Meon, Rep. of Korea, assignor to Sung Ho Korea Company, Seoul, Rep. of Korea

Filed Jun. 14, 1989, Ser. No. 365,865
Int. Cl.[5] H05B *37/02*
U.S. Cl. 315—224 **4 Claims**



1. An electronic switching ballast for fluorescent lamps, comprising:

rectifying circuit means for rectifying an alternating current input signal provided to the input of said ballast to a direct current signal;

square wave generator means, coupled to the rectifying circuit means, for providing a square wave signal in response to said direct current signal;

phase discriminator means, coupled to the rectifying circuit means, for comparing a feedback signal with a reference voltage in response to said direct current signal to provide a full-wave rectified signal;

switching time differentiating circuit means, coupled to the square wave generator and phase discriminator means, for combining said square wave signal and said full-wave rectified signal, and for providing a pair of pulsed signals in reference to said combined signals, said pair of pulsed signals being out of phase with respect to one another; and

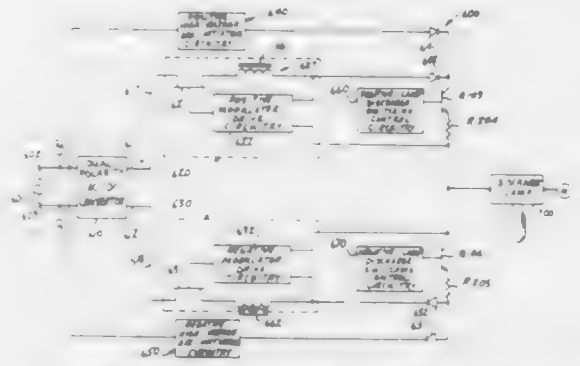
wave-shaping circuit means, coupled to the switching time differentiating circuit means, for providing a sinusoidal output signal in reference to said pair of pulsed signals to an external circuit, the output of said wave-shaping circuit means being coupled to the input of said phase discriminator means to feed back at least portion of said sinusoidal output signal to the phase discriminator means.

5,010,279

SWITCHED CAPACITIVE BALLASTS FOR DISCHARGE LAMPS

Michael S. Lathom, 4314 Forest Lakes Dr., Del Valle, Tex. 78617; Bruce B. Gullixson, 1513 W. Jackson, and Bruce P. Sweat, 3015 E. 16th, both of, Spokane, Wash. 99205

Continuation-in-part of Ser. No. 769,482, Aug. 26, 1985, Pat. No. 4,808,886. This application Mar. 11, 1988, Ser. No. 167,255
Int. Cl.[5] H05B *37/00, 39/00/41/14*
U.S. Cl. 315—227 R **103 Claims**



1 A ballast circuit for controlling electrical current flow through an electrical discharge lamp from an electricity source providing alternating electrical current having positive potential portions and negative potential portions, comprising:

positive electrical charge storage means connected to receive current from said electricity source during said positive potential portions;

negative electrical charge storage means connected to receive current from said electricity source during said negative potential portions;

at least one positive current modulator for controllably modulating current discharged from the positive electrical charge storage means for powering the discharge lamp;

at least one negative current modulator for controllably modulating current discharged from the negative electrical charge storage means for powering the discharge lamp;

wherein at least one of said current modulators comprises a current flow rate control means connected to controllably conduct current from a charge storage means to power said discharge lamp; and modulation control means for controlling said current flow rate control means; said current flow rate control means being a current gate controlled by the modulation control means to conduct pulses of electrical current from the charge storage means;

at least one positive current switching means connected to receive positive current from said positive electrical charge storage means and control positive current flow through said discharge lamp to define positive lamp discharge periods;

at least one negative current switching means connected to receive negative current from said negative electrical charge storage means and control negative current flow through said discharge lamp to define negative lamp discharge periods;

switching control means for controlling said positive and negative switching means so that positive lamp discharge periods do not occur simultaneously with negative lamp discharge periods;

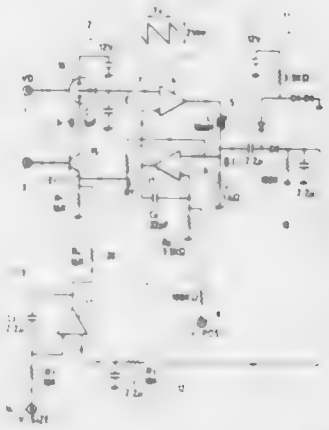
wherein said pulses are provided at a modulation frequency which is at least 10 times more frequent than a lamp frequency at which the discharge lamp operates.

5,010,280

VERTICAL DEFLECTION CIRCUIT FOR CRT DISPLAY DEVICE

Masanori Ogino; Takeo Yamada, and Miyuki Ikeda, all of Kanagawa, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 26, 1990, Ser. No. 514,592
Claims priority, application Japan, May 29, 1989, 1-132604
Int. Cl.[5] H01J *29/70, 29/72*
U.S. Cl. 315—388 **8 Claims**



1. A vertical deflection circuit for a CRT display device, including a ramp wave signal generator having a vertical synchronizing signal input and a biasing terminal and an output circuit including an operational amplifier having an inverted input and a non-inverted input connected to an output of said ramp wave signal generator, said output circuit responsive to a ramp wave signal at an output of said ramp wave signal generator to drive a vertical deflection coil, said vertical deflection circuit comprising: first feedback means including amplitude detector means for detecting vertical deflection current amplitude and for feeding said vertical deflection current amplitude back to said ramp wave signal generator to thereby stabilize vertical size of a display image on a screen of said CRT device, second negative feedback means connected between said deflection coil and said inverted input of said output circuit for detecting a mean vertical deflection current and for feeding a detected mean vertical deflection current back to said output circuit to thereby stabilize a vertical position of said display image on said CRT screen and means for controlling amounts of feedback of said first feedback means and said second negative feedback means to thereby regulate vertical size and vertical position of said display image on said CRT screen variably

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5,010,281

HIGH VOLTAGE STABILIZATION CIRCUIT FOR VIDEO DISPLAY APPARATUS

Enrique Rodriguez-Cavazos, Indianapolis, Ind., assignor to RCA Licensing Corporation, Princeton, N.J.

Filed Apr. 30, 1990, Ser. No. 516,487
Int. Cl.[5] H01J *29/70;* **H04N** *5/63*
U.S. Cl. 315—411 **13 Claims**

1. A high voltage power supply of a video apparatus, comprising:

a source of an input signal at a frequency that is related to a deflection frequency;

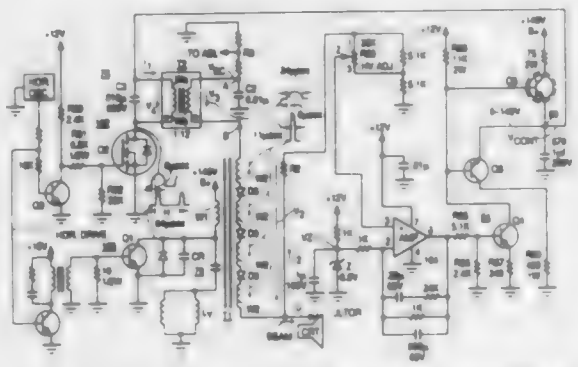
a first flyback resonant circuit that includes a deflection winding;

first switching means responsive to said input signal and coupled to said first flyback resonant circuit for generating a resonant first flyback pulse voltage at a frequency that is related to a deflection frequency that is developed across a high voltage winding of a flyback transformer;

a second flyback resonant circuit;

second switching means responsive to said input signal and

coupled to said second flyback resonant circuit for generating a resonant second flyback pulse voltage at a frequency that is related to said deflection frequency having a controllable amplitude, said second flyback pulse voltage being applied in series with said first flyback voltage to produce a high voltage pulse that is coupled to an electrode of a cathode ray tube having an amplitude that



is in accordance with a sum of said first and second flyback pulse voltages, such that a leading edge of a given pulse of said second flyback voltage occurs prior to a leading edge of said first flyback pulse voltage; and

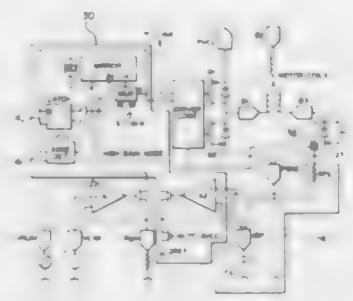
a control circuit for varying said amplitude of said second flyback pulse voltage in a manner that varies said amplitude of said high voltage pulse.

5,010,282

METHOD AND APPARATUS FOR DRIVING A DC MOTOR

Gregory O. Moberg, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 11, 1989, Ser. No. 350,870
Int. Cl.[5] H02P *6/02*
U.S. Cl. 318—254 **12 Claims**



1. A control circuit for a DC motor, said control circuit comprising:

a. driver means for applying a phase current to coils of a DC motor in accordance with a commutation sequence, said driver means including a plurality of FET current sink transistors, each transistors, each current sink transistor corresponding to one of said coils of said DC motor;

b. sensing means for sensing a drain-to-source voltage of one of said current sink transistors when an ON gate voltage is applied thereto by said driver means and applying said drain-to-source voltage across a drain and source of an FET reference transistor;

c. means for supplying said ON gate voltage to a gate of said FET reference transistor thereby inducing a reference current to flow through said FET reference transistor that is proportional to a current flowing through said current sink transistor that has said ON gate voltage applied thereto; and

d. means for generating a feedback current based on said reference current that is proportional to the drain-to-source voltage sensed by said sensing means and inversely proportional to a drain-to-source resistance of said FET reference transistor;

e. comparing means for comparing said feedback current to a secondary reference current and controlling an operating current level of said DC motor in response thereto

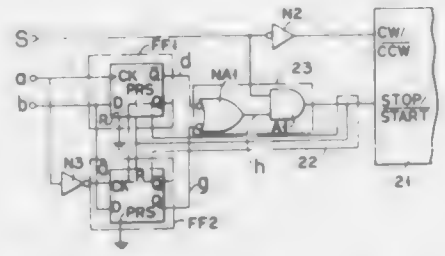
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5,010,283

MOTOR CONTROL CIRCUIT

Kimio Kitajima, and Hiroyuki Kiuchi, both of Komagane, Japan, assignors to Sankyo Seiki Mfg. Co., Ltd., Tokyo, Japan

Filed Jan. 12, 1990, Ser. No. 464,354
Claims priority, application Japan, Jan. 13, 1988, 1-6471
Int. Cl.[5] H02P *3/10*
U.S. Cl. 318—373 **12 Claims**



3. A motor control circuit for causing a motor to have a reduce stopping time comprising:

means for supplying n rotational signals whose relative phase differences are proportional to the rotational speed of a motor and are nominally related by 360°/n;

means for forming inverted signals from n-1 of said rotational signals;

a motor drive circuit;

means for supplying a signal to stop the motor;

rotational direction instruction means for controlling said motor drive circuit so that said motor is reversely rotated when said signal to stop said motor is supplied;

means for discriminating the direction of said motor and for determining, from said n signals and from said n-1 inverted signals, a predetermined initial flange of said n signals and n-1 inverted signals following a reversal of said motor and for supplying a signal to said motor drive circuit to de-energize said motor upon determining said initial change; and

means for holding said motor in a stopped condition following stopping of said motor.

8. A method for reducing the time for a motor to come to a complete stop comprising:

supplying a plurality of n rotational signals related to the rotational speed of a motor by the relative phase difference therebetween, the signals nominally being related by 360°/n;

forming n-1 inverted signals from said n rotational signals;

reversing the rotational direction of said motor in response to a signal to stop the motor;

determining, from said n signals and n-1 inverted signals, a predetermined initial change of any of said n rotational signals and n-1 inverted signals following a reversal of said motor;

de-energizing said motor upon determining said initial change; and

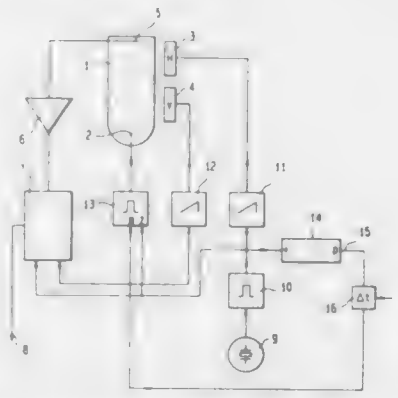
positively holding the motor in a stopped state after said motor has come to a complete stop.

5,010,284

DEVICE FOR THE OPTICAL RECORDING OF RAPID PROCESSES WITH A TV CAMERA

Wilhelm Heinz, Linkenheim, Fed. Rep. of Germany, assignor to European Atomic Energy Community, Luxembourg

Filed Nov. 17, 1989, Ser. No. 437,565
Claims priority, application Luxembourg, Nov. 18, 1988, 87392
Int. Cl.[5] G09G *1/04*; H01J *29/52*
U.S. Cl. 315—384 **6 Claims**



1. A device for the optical recording of rapid processes with at least one TV camera, which comprises means for deviating and suppressing a scanning beam, in order to make the scanning beam run successively and cyclically over N lines of a picture plane on which the processes are projected, line pulses being produced during scanning of said N lines, the device further comprising:

cyclic line counter means for carrying out one counting step for each of said line pulses and providing an end-of-count pulse after p line pulses, N/p being an integer $>>1$,

the TV camera having a beam suppression circuit with the end-of-count pulse being applied thereto for suppressing the scanning beam;

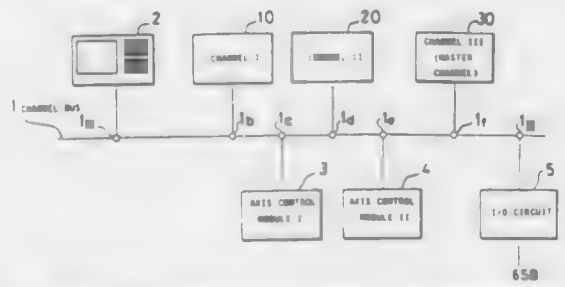
and a sawtooth generator, synchronized with the end-of-count pulse of the counter means, for controlling the vertical deviation of the scanning beam.

5,010,285

NUMERICAL CONTROL SYSTEM

Hideaki Kawamura, Hachioji; Kentaro Fujibayashi, Musashino, and Yosato Hitaka, Tokyo, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP89/00225, § 371 Date Oct. 17, 1989, § 102(e) Date Oct. 17, 1989, PCT Pub. No. WO89/08876, PCT Pub. Date Sep. 21, 1989
PCT Filed Mar. 2, 1989, Ser. No. 425,175
Claims priority, application Japan, Mar. 9, 1988, 63-55761
Int. Cl.[5] G05B *19/18*
U.S. Cl. 318—569 **3 Claims**



1 A numerical control system for controlling a plurality of axes with a plurality of channels, comprising:

means for receiving machining programs;

means for receiving a single block signal;

means for interrupting a machining program of a first channel in response to said single block signal being received; and

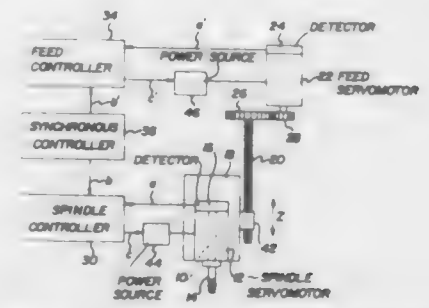
single block control means for controlling the channels so that when the machining program for the first channel is interrupted, machining programs for other channels are suspended.

5,010,286

METHOD OF SYNCHRONOUS CONTROL OF SPINDLE MOTOR AND FEED MOTOR

Kosei Nakamura; Shinichi Kono; Kazuhisa Numai, and Masami Kimijima, all of Yamanashi, Japan, assignors to Fanuc Ltd., Yamanashi, Japan

PCT No. PCT/JP88/00907, § 371 Date May 8, 1989, § 102(e) Date May 8, 1989, PCT Pub. No. WO89/02618, PCT Pub. Date Mar. 23, 1989
PCT Filed Sep. 9, 1988, Ser. No. 365,158
Claims priority, application Japan, Sep. 14, 1987, 62-228514
Int. Cl.[5] G05B *19/18*
U.S. Cl. 318—571 **2 Claims**



1. A method of control of a spindle servomotor during machining, with a feed servomotor movably connected to the spindle servomotor such that the feed servomotor translationally moves the spindle servomotor along a longitudinal axis of the spindle servomotor, wherein the spindle servomotor has a torque limit versus rotational speed function curve represented by a straight line over a first speed range and a hyperbola over a second speed range, said method comprising the step of:

(a) detecting a rotational speed of the spindle servomotor;

(b) moving the spindle servomotor along a longitudinal axis with a translational speed determined by a speed of the feed servomotor; and

(c) controlling the speed of the spindle servomotor in response to said torque limit function curve such that the spindle servomotor is accelerated over said first speed range along a straight line to have a constant torque and over said second speed range along a hyperbola line to have a decreasing torque so as to maintain a maximum torque of said spindle servomotor as said spindle is moved longitudinally.

5,010,287

INDUCTION MOTOR CONTROL SYSTEM

Tadayoshi Mukai, Izumi-Otsu, and Akira Yoshino, Seto, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Feb. 22, 1989, Ser. No. 313,461
Claims priority, application Japan, Feb. 24, 1988, 63-40997
Int. Cl.[5] H02P *5/34*
U.S. Cl. 318—801 **8 Claims**

1. An induction motor control system comprising:

an inverter for supplying a variable frequency AC voltage to drive said induction motor;

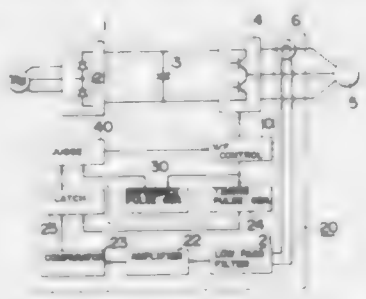
volt/frequency control means controlling said inverter to produce a suitable voltage and frequency in a predetermined relationship therebetween;

means for detecting a power factor phase angle between a motor current from said inverter and said inverter output voltage as indicative of an amount of load imposed on the motor;

means for producing a predetermined reference angle;

judge means comparing said detected power factor phase angle with said predetermined reference angle, which is a frequency dependent angle indicative of a standard load at a given frequency, in order to provide a control output in response to which said volt/frequency control section alters said inverter output voltage out of said predetermined relationship with the frequency for improving motor efficiency;

said volt/frequency control means operating to store a plurality of V/F curves, with respect to differing load requirements, each representing a functional relation between said inverter output voltage and the inverter frequency;



said volt/frequency control means operating to designate one of the V/F curves for producing said inverter output voltage determined by said designated V/F curve with respect to a given frequency; and

said volt/frequency control means responding to said first and second control outputs respectively to select from said V/F curves at least one curve having greater and lower inverter output voltages than said designated curve with respect to the given frequency for controlling said inverter to supply said greater and lower inverter output voltages while keeping the selected frequency substantially unchanged.

5,010,288

VECTOR CONTROL SYSTEM FOR A SQUIRREL-CAGE ASYNCHRONOUS ELECTRIC MOTOR

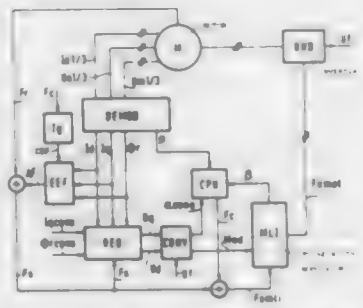
Pierre Poline, Trevoux, France, assignor to GEC Alsthom SA, Paris, France

Filed Mar. 21, 1990, Ser. No. 496,703

Claims priority, application France, Mar. 21, 1989, 89 03685

Int. Cl.[5] H02P *5/28*

U.S. Cl. 318—811 **4 Claims**



1. A vector control system for a squirrel-cage asynchronous electric motor powered by a width-modulated pulse generator controlling an inverter which converts a DC feed voltage into at least one AC feed voltage applied to the asynchronous motor, said AC voltage having an amplitude defining a current supplied by the generator to the motor and a flux in the motor, said system comprising means for evaluating magnitude and phase of flux in the motor relative to a fixed frame of reference, means for evaluating first in-phase and quadrature components, relative to said flux in the motor, of the current supplied to the motor, means for evaluating the speed of rotation of the motor, and means for evaluating the DC motor feed voltage, wherein the system further comprises means for determining second in-phase and quadrature components relative to said flux in the motor, which define a control voltage as a function of said first components and of a requested torque value, and wherein the system also comprises means for converting said second components into a corresponding polar representation having a magnitude and phase angle, with the magnitude of said polar representation being supplied directly to said pulse generator in order to control the amplitude of the AC feed voltage applied to the motor, while the phase angle of said polar representation is supplied to a phase control module which also receives said flux phase and a phase value of the voltage produced by the pulse generator, and which establishes a frequency correction value which is added to a stator frequency value to constitute a frequency control signal transmitted to the pulse generator to control the frequency of the AC voltage supplied thereby to the motor, in order that the difference between said flux phase and said phase value tends to equal said phase angle of said polar representation.

5,010,289

ANTI-FROST SYSTEM FOR A WINDSHIELD OF A MOTOR VEHICLE

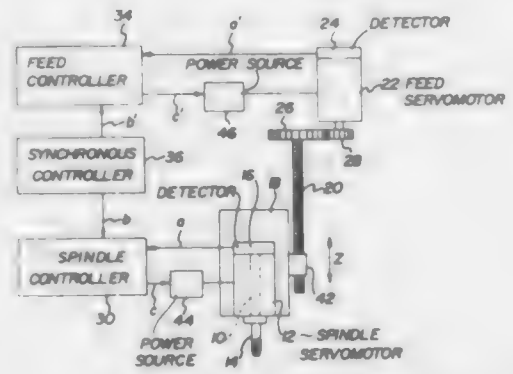
Hirohisa Takada, Fukaya, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 19, 1990, Ser. No. 467,614

Claims priority, application Japan, Feb. 15, 1989, 1-37273

Int. Cl.[5] B60L *1/02*; B60S *1/54*

U.S. Cl. 322—8 **5 Claims**



1. A system for preventing frost from accumulating on a windshield of a motor vehicle having a battery and a wiper system including an intermittent wiper unit for intermittently operating a wiper of the vehicle, comprising

a heating element provided on the windshield;

a temperature switch producing a temperature signal when the temperature of the windshield is at about 0° C.;

a humidity switch for producing a humidity signal when the humidity of air outside of the windshield becomes about 100%;

a gate responsive to the temperature signal and the humidity signal for producing a frost signal;

switch means provided between the heating element and the battery of the vehicle responsive to the frost signal for energizing the heating element; and

operating means responsive to the frost signal for operating the intermittent wiper unit.

5,010,290

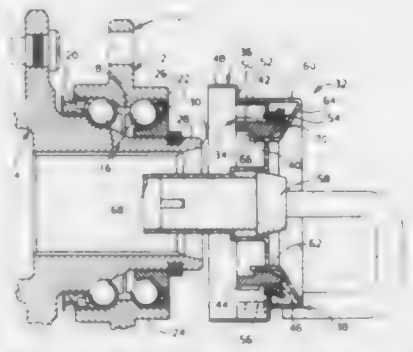
EASILY INSTALLED WHEEL BEARING SENSOR PACKAGE

David A. Foster, Castalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 19, 1990, Ser. No. 554,484

Int. Cl.[5] G01P *3/44*; G01B *7/30*

U.S. Cl. 324—173 **3 Claims**



1 A self contained sensor package adapted to be installed to a bearing, said bearing having a stationary race and coaxial rotating race with an interior annular space between said races maintained by a complement of rolling elements contained within said annular space, said rotating race also having a cylindrical surface located outside of said annular space, said sensor package comprising,

a generally annular sensor ring having a cylindrical mounting surface sized so as to slide closely axially over said rotating race cylindrical surface, said sensor ring also having a magnetic portion, and a rubbing seal surface coaxial to said mounting surface located axially outboard of said magnetic portion,

a generally cylindrical casing adapted to be press fitted axially over said stationary race,

a seal secured to said casing and adapted to sealingly engage said sensor ring seal surface when said sensor ring and casing are maintained coaxial to one another, and,

a shipping and installation jig maintaining said sensor ring and casing in coaxial relation as a package, said jig including a first cylindrical shell press fitted tightly over the outside of said casing, a coaxial, second cylindrical shell fitted slidably over said sensor ring mounting surface, and an annular rim interconnecting said first and second shells at coaxial, circular hinge lines, so that said second shell may shift axially outwardly relative to said first shell while said first and second shells remain coaxial,

whereby said package may be installed to said bearing by sliding said casing axially over the outside of said stationary race as said sensor ring mounting surface simultaneously slides axially over said rotating race cylindrical surface, thereby pushing said jig second cylindrical shell off of said sensor ring and shifting it axially outboard of said first shell, after which said first shell may be removed from said casing, leaving said casing and sensor ring installed to said bearing axially outboard of said annular bearing space, with said sensor ring magnetic portion protected within said casing by said casing seal.

5,010,291

SINGLE QUADRANT CHOPPER TIMING CONTROL CIRCUIT FOR DISCONTINUOUS CURRENT

Charles W. Edwards, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 29, 1990, Ser. No. 529,844

Int. Cl.[5] H02M *7/44*

U.S. Cl. 323—222 **7 Claims**

7. A single quadrant chopper timing control circuit for providing discontinuous current, comprising:

first summer means for summing a reference voltage and a feedback voltage and outputting a summed voltage;

voltage regulator means for receiving the summed voltage and outputting a current demand signal;

second summer means, for summing the current demand signal, a feedback current, and a mimic current, and outputting a summed current;

hysteresis controller means for receiving the summed current from said second summer means and outputting a hysteresis signal;

first comparator means for receiving a current, determining whether the current is below a predetermined value, and outputting a signal;



logic means for receiving the hysteresis signal and the signal from said first comparator means and outputting a logic signal;

mimic integrator means for receiving the logic signal and the signal from said first comparator means and for outputting a mimic current when the current from said first comparator means is below the predetermined value, the mimic current being input to said second summer means; and

second comparator means for receiving the mimic current and outputting an enabling signal if the mimic current is greater than or equal to zero.

5,010,292

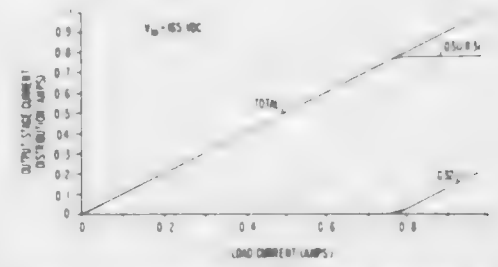
VOLTAGE REGULATOR WITH REDUCED SEMICONDUCTOR POWER DISSIPATION

Robert L. Lyle, Jr., Knoxville, Tenn., assignor to North American Philips Corporation, New York, N.Y.

Filed Dec. 12, 1989, Ser. No. 449,664

Int. Cl.[5] G05F *1/56*

U.S. Cl. 323—274 **6 Claims**



1. A linear, series pass voltage regulator including an input for receiving an unregulated first DC voltage and including an output for supplying a variable load current at a regulated second DC voltage having a predetermined magnitude, said voltage regulator comprising:

a. a variable impedance output stage electrically connected between the input and the output for carrying the load current; and

b. control circuitry electrically connected to the voltage regulator input and to the output stage for comparing the second DC voltage to a reference voltage and for producing a control signal for controlling the impedance of the output stage to effect maintenance of the second DC voltage at the predetermined magnitude despite variations of the first DC voltage and the load current;

characterized in that the output stage comprises:

(1) a first impedance comprising a series combination of a resistor and a first semiconductor device output impe-

dance electrically connected between the input and the output of the regulator, said first semiconductor device having an input for receiving said control signal to effect variation of the device output impedance;

(2) a second impedance comprising a series combination of a second semiconductor device output impedance and voltage-dropping semiconductor means electrically connected between the input and the output of the regulator, said second semiconductor device having an input for receiving said control signal to effect variation of the device output impedance, said input of said second semiconductor device being electrically connected to the control circuitry for receiving the control signal; and

(3) resistive coupling means electrically connecting a junction between the voltage-dropping semiconductor junction means and the output impedance of the second semiconductor device to the input of the first semiconductor device for coupling the control signal to said input of said first semiconductor device, said control signal effecting, in sequence, a gradual decrease in the first impedance from a high value to a low value as the load current increases to a predetermined magnitude, while the second impedance remains at a value which is much higher than the value of the first impedance, followed by a gradual decrease in the second impedance from said higher value as the load current increases above said predetermined magnitude, while the first impedance remains at said low value

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5,010,293

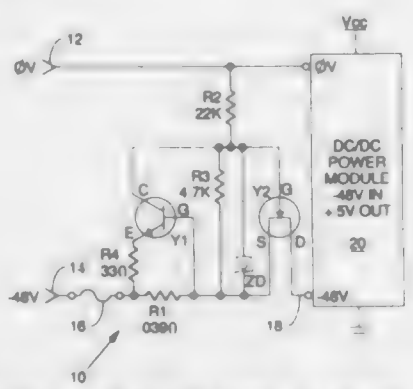
INRUSH CURRENT LIMITING CIRCUIT

William F. Ellersick, Redwood City, Calif., assignor to Raynet Corporation, Menlo Park, Calif.

Filed Nov. 20, 1989, Ser. No. 439,596

Int. Cl.[5] G05F *1/573*

U.S. Cl. 323—278 **13 Claims**



1 An inrush current limiting circuit for limiting initial current flow to a power load characterized by a high capacitive reactance otherwise causing excessive inrush current, the circuit comprising:

plug in connection means to a power source and two conductor paths leading from the plug in connection means,

power FET means having a source element to drain element path in series with one of the conductor paths and having a gate connection,

active current sense means for sensing excessive inrush current including bipolar transistor means connected to shunt the gate element of the power FET means to the potential at its source element when the bipolar transistor means is conducting, and sense resistor means in series with one of the conductor paths for controlling a base element of the bipolar transistor means to cause the bipolar transistor means to conduct when current through the sense resistor exceeds a predetermined amount, and,

bias resistor means connected to the gate element of the power FET means normally to bias the power FET means into full conduction between the source and drain elements when the bipolar transistor means is not conducting.

5,010,294

METHOD FOR TOPICALLY-RESOLVED DETERMINATION OF THE DIFFUSION LENGTH OF MINORITY CHARGE CARRIERS IN A SEMICONDUCTOR CRYSTAL BODY WITH THE ASSISTANCE OF AN ELECTROLYTIC CELL

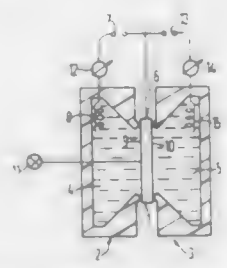
Helmut Foell, and Volker Lehmann, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 11, 1990, Ser. No. 522,115

Claims priority, application Fed. Rep. of Germany, May 31, 1989, 3917702

Int. Cl.[5] G01R *31/26*

U.S. Cl. 324—158 D **4 Claims**



1. A method for determining the diffusion length L of minority charge carriers in a semiconductor crystal body carrying an ohmic contact, comprising the steps of:

applying a measuring cell having an electrode therein to one side of the semiconductor crystal body so that a first surface thereof is exposed to the interior of the measuring cell;

filling the measuring cell with electrolyte so that the surface and the electrode are in contact with the electrolyte;

applying a voltage between the electrode and the ohmic contact to produce an inhibiting space charge zone at the first surface of the semiconductor crystal body;

irradiating the surface with light having a predetermined wavelength $\lambda > 800$ nm to produce a photocurrent I_l between the first surface and the electrode;

measuring the photocurrent I_l; and

determining the diffusion length L from the equation

$$I_l/I_{l,max} = (\alpha L/(1+\alpha L))\, e^{-\alpha w}$$

where α is the absorption coefficient for radiation having the predetermined wavelength λ, w is the expanse of the inhibiting space charge zone, and $I_{l,max}$ is a calibrated current obtained from a known specimen having an extremely long diffusion length.

5,010,295

BALL SCREW SUPPORTED Z STAGE

William B. Lindsay, Mountain View, Calif., assignor to General Signal Corporation, Stamford, Conn.

Filed Jun. 14, 1989, Ser. No. 365,878

Int. Cl.[5] G01R *1/02, 1/04*

U.S. Cl. 324—158 R **9 Claims**

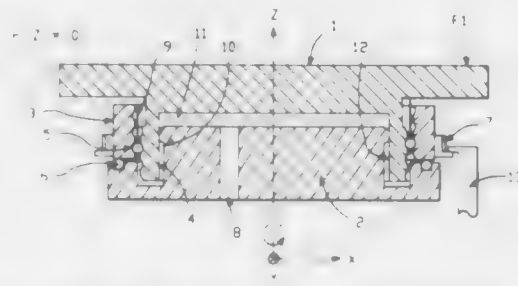
1. In a wafer prober, a support stage comprising p1 a chuck top for supporting an external load, said chuck top adapted to be movable up and down with respect to the Z axis,

ball screw means for supporting said chuck top wherein said balls crew means include an outer race and an inner race with corresponding matching helical grooves, one or more spiral rows of balls, a cylindrical ball retainer and an array of balls for supporting said outer race,

a base for supporting said ball screw means,

means for applying a vertical preload to said chuck top which is greater than said external load,

said ball screw means including means for radially constraining said chuck top in the XY plane,



said means for applying including a piston connected to said base, a cylinder bore connected to said inner race with a close slip fit to said piston so as to form a chamber, and means for applying a vacuum source to said chamber.

5,010,296

WAFER PROBER

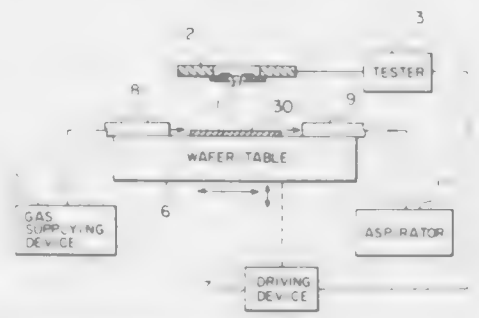
Kazuhisa Okada, Itami, and Ichirou Kusumoto, Kawanishi, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Mar. 12, 1990, Ser. No. 492,051

Claims priority, application Japan, Dec. 13, 1989, 1-321470

Int. Cl.[5] G01R *1/06, 31/02*

U.S. Cl. 324—158 P **7 Claims**



1 A wafer prober comprising:

supporting means for supporting a wafer having a plurality of electrode pads disposed on a surface thereof;

a plurality of probes for contacting respective electrode pads on a wafer supported by said supporting means;

a nozzle having a nozzle opening for spraying a gas onto the electrode pads on the wafer contacted by said probes; and

a suction duct having a duct opening for aspirating waste generated by contacting said plurality of probes with the plurality of electrode pads on the wafer and carried by gas sprayed through said nozzle wherein said nozzle opening and said duct opening are disposed directly opposite each other and said plurality of probes are disposed therebetween.

5,010,297

AUTOMATIC TEST EQUIPMENT WITH ACTIVE LOAD HAVING HIGH-SPEED INHIBIT MODE SWITCHING

Douglas W. Babcock, Londonderry, N.H., assignor to Analog Devices, Incorporated, Norwood, Mass.

Filed Dec. 1, 1989, Ser. No. 444,815

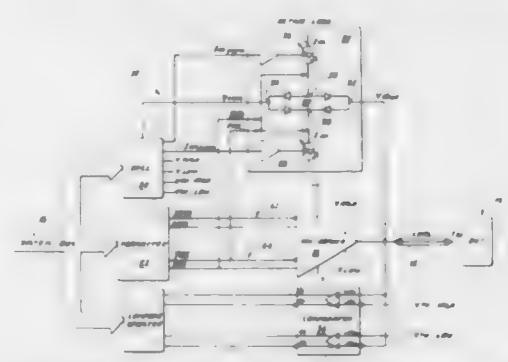
Int. Cl.[5] G01R *19/00*

U.S. Cl. 324—158 R **10 Claims**

1. For use in apparatus for automatically testing multi-pin ICs by applying signals to selected pins and measuring the output response at other pins to each of which is connected an active load of the type including a diode commutation circuit having a supply terminal and an output terminal to be connected to a pin of the device under test; said active load comprising:

first and second matched transistor switch circuits arranged when activated to supply equal output currents;

means connecting the output of one of said transistor switch circuits to said supply terminal of said diode commutation circuit so that when that one transistor switch circuit is



turned on its output current can flow through said diode circuit to the corresponding pin connected to said output terminal of said active load;

means connecting the output of the other transistor switch circuit to a return line; and

means to regulate the magnitudes of said equal currents through said first and second transistor switch circuits

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5,010,298

VARIABLE INDUCTANCE DISPLACEMENT MEASURING DEVICE WITH SLIDABLE METAL SLEEVE AND FERRITE BEAD CORE

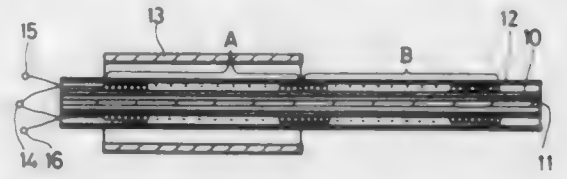
Saburo Uemura, Yokohama, Japan, assignor to Macome Corporation, Tokyo, Japan

Filed Jun. 26, 1989, Ser. No. 371,742

Claims priority, application Japan, Oct. 27, 1988, 63-271434

Int. Cl.[5] G01B *7/14;* **G08C** *19/08;* **H01F** *27/24*

U.S. Cl. 324—207.19 **5 Claims**



1 A displacement measuring apparatus comprising

a variable inductance coil formed of a pair of coils, each being wound at a predetermined length and disposed adjacent to each other in their axial directions about a core made of a material having high magnetic permeability and being covered by a protective tube and a slidable metal sleeve disposed over said inductance coil, said sleeve being of substantially the same length of one of said coils and being coupled to an object to be measured for movement in response thereto, said core being made of a metal wire and a plurality of ferrite beads connected in series and covering said metal wire; and

a detecting circuit comprising a high frequency pulse oscillator, the said pair of coils of said variable inductance coil, a pair of resistors, and a pair of rectifiers, said pair of coils being connected together at their one ends to one output terminal of said oscillator, said pair of resistors being connected at their one ends to the other ends of said pair of coils, respectively, while being connected together at their other ends to the other output terminal of said oscillator, said pair of rectifier rectifying voltages produced across said pair of resistors and delivering a difference voltage therebetween, wherein when said metal sleeve is

slidably moved, said detecting circuit generating a direct current voltage in correspondence with the displacement of said metal sleeve

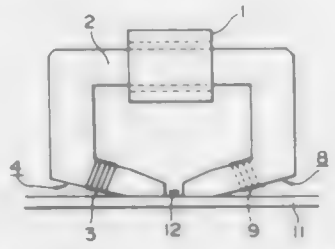
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5,010,299

METHOD FOR MEASURING STRESS ON STEEL BY DETERMINING THE REVERSE MAGNETIC PERMEABILITY UNDER A MAGNETIC BIAS FIELD

Hidekazu Nishizawa, Osaka, and Tomoaki Utsunomiya, Ehime, both of Japan, assignors to Nikkoshi Co., Ltd., Tokyo, Japan

Filed Mar. 9, 1990, Ser. No. 491,423
Claims priority, application Japan, Mar. 17, 1989, 1-65364
Int. Cl.[5] G01B *7/24*; **G01R** *33/18*
U.S. Cl. 324—209 **2 Claims**



1 A method for the determination of a stress in a steel material which comprises the steps of

(a) determining the reversible magnetic permeability μ by using a stress detector of steel materials utilizing the phenomenon of magnetostriction under a magnetic bias field H_0 within the range of approach to the saturation magnetization;

(b) calculating the value of M, which is the first-order factor on $1/H_0^3$ for the reversible magnetic permeability μ of the steel material in the equation $\mu = 1 + M/H_0^3$, utilizing the values of μ; and

(c) calculating the values of a principal stress σ_1 in the steel material, the other principal stress σ_2 in the steel material which is in the direction perpendicular to the direction of σ_1 and the angle θ between the direction of σ_1 and the direction at which the reversible magnetic permeability μ is determined, from the equation

$$\sqrt{M} = a + b[(\sigma_1 + \sigma_2) + 3(\sigma_1 - \sigma_2)\cos 2\theta],$$

in which a is the value of the square root of M in a stress-free state and b is the stress sensitivity

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5,010,300

MULTI-AXIS PRE-SATURATED SPIN ECHO PHASE ENCODED SPECTROSCOPY

Martyn N. J. Paley, Mayfield Village; James B. Murdoch, Solon; David A. Lampman, Lakewood, and James M. McNally, Chagrin Falls, all of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio

Continuation-in-part of Ser. No. 7,392,480, Aug. 11, 1989. This application Nov. 22, 1989, Ser. No. 440,894
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **15 Claims**

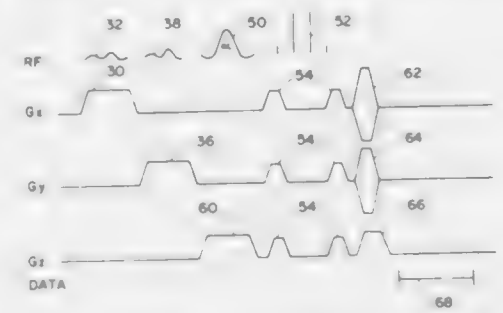
1 A method of magnetic resonance spectroscopy comprising:

defining a region of interest by pre-saturating regions thereabout;

exciting resonance in the region of interest;

encoding spatial locations along at least one direction by phase encoding the excited resonance along the selected direction;

collecting resonance data in the absence of a magnetic field gradient and Fourier transforming the collected data into an array of spectra, each spectrum corresponding to the



resonance signal from a spatial section along the phase encode direction

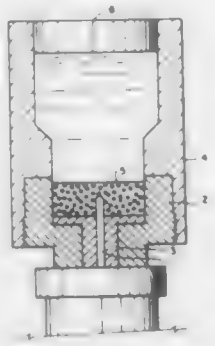
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5,010,301

METHOD FOR DETERMINING THE SWELLING CLAY CONTENT OF CEMENT MIXTURES BY DIELECTRIC MEASUREMENTS

Peter K. Leung, Sugar Land; Ronald P. Steiger, and Kenneth R. Kunze, both of Houston, all of Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Aug. 22, 1989, Ser. No. 397,053
The portion of the term of this patent subsequent to Oct. 24, 2006, has been disclaimed.
Int. Cl.[5] G01V *3/06*, *3/12*
U.S. Cl. 324—376 **21 Claims**



1. A method for measuring the swelling-clay content of wet cement mixtures by dielectric measurements, comprising the steps of:

(a) washing a wet cement mix sample with a fluid having a water activity substantially less than that of water;

(b) packing the washed cement mix sample into a sample cell suitable for dielectric measurement;

(c) measuring the dielectric constant at a preselected frequency, and

(d) comparing the measured dielectric constant of the cement mix sample to a calibration curve to determine the swelling-clay content.

5,010,302

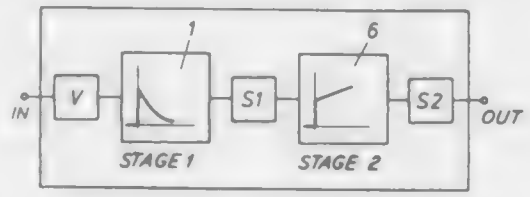
CHARGE AMPLIFIER CIRCUIT

Peter W. Krempl, Kainbach; Guenther Wegscheider, and Gerhard Woess, both of Graz, all of Austria, assignors to AVL Gesellschaft fuer Verbrennungs-kraftmaschinen und Messtechnik m.b.H., Prof. Dr. Dr. h.c. Hans List, Austria

Filed Sep. 1, 1989, Ser. No. 401,822
Claims priority, application Austria, Sep. 2, 1988, 2171/88
Int. Cl.[5] H03F *3/191*
U.S. Cl. 330—107 **7 Claims**

1. A charge amplifier circuit having an input and an output, comprising:

(a) a first stage including an operational amplifier having a signal output that is fed back to a signal input of the operational amplifier via a feedback element including a capacitor and which exhibits a finite resistance, the feedback element defining a break-over frequency f_I defined as $\frac{1}{2}\pi RC$ where R is the resistance of the feedback elements and C is the capacitance of the feedback element, the signal input serving as the input of the charge amplifier circuit;



(b) a second stage including a proportional-integrating (PI) unit having an input coupled to the signal output of the operational amplifier and an output that serves as the output for the charge amplifier circuit, the PI unit having a break-over frequency f_{II}, the frequency f_{II} being substantially equal to the frequency f_I, and

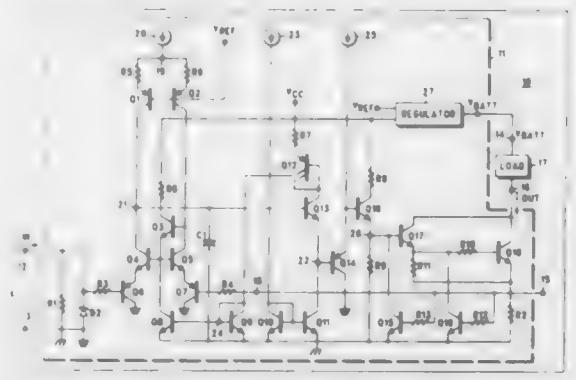
(c) whereby, no signal proportional to the output of the second stage is fed back to the signal input of the first stage.

5,010,303

BALANCED INTEGRATED CIRCUIT DIFFERENTIAL AMPLIFIER

Jeffrey J. Braun, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 8, 1989, Ser. No. 447,956
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—257 **20 Claims**



1 An integrated circuit differential amplifier comprising:

differential input stage means including at least a pair of first and second semiconductor devices each having an input electrode, an output electrode and a common electrode, the common electrodes being connected to each other, said input stage means providing at one of said output electrodes a differential signal related to the difference between two input signals each separately coupled to a different one of said input electrodes;

output stage means having an input terminal connected to said one output electrode of said input stage means for amplifying said differential signal and providing said amplified differential signal as an output signal at an output terminal of said output stage means, said output stage means inherently providing a predetermined impedance and current load at said one output electrode of said input stage means by virtue of its connection thereto,

wherein the improvement comprises,

current mirror circuitry for developing a current mirror signal substantially corresponding to output current drawn through said output stage means regardless of any current drawn by any additional circuitry connected to said output terminal; and

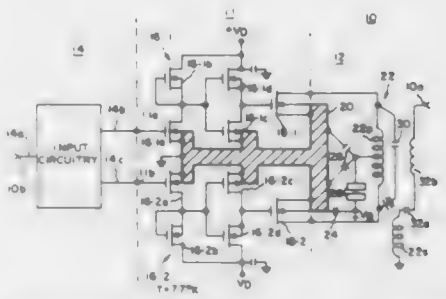
load balancing circuit means having current there through determined by said current mirror signal and having an input terminal directly coupled to and loading another one of said input stage output electrodes, wherein said balancing circuit means provides at its input terminal an impedance and current load substantially identical to the impedance and current load provided by said output stage means regardless of any current drawn by any additional circuitry connected to said output terminal, whereby offset variation of said differential signal as a function of conduction of said output stage means is reduced.

5,010,304

CRYOGENICALLY-COOLED RADIO-FREQUENCY POWER AMPLIFIER

Otward M. Mueller, Ballston Lake, and William A. Edelstein, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 3, 1989, Ser. No. 431,361
Int. Cl.[5] H03F *3/26*, *3/16*
U.S. Cl. 330—269 **14 Claims**



1 A radio-frequency (RF) power amplifier, comprising:

at least one active solid-state RF power device, having an input impedance and an output impedance;

input means for matching the input impedance of the at least one active power device to an amplifier input;

output means for matching the output impedance of the at least one active power device to an amplifier output,

the at least one power device further comprising active driving means responsive to an RF signal from the input means;

the power amplifier further comprising substrate means, with high thermal conductivity, for supporting the at least one active power device; and

cryogenic means, contacting at least the substrate means, for removing thermal energy from the at least one active power device.

5,010,305

MICROWAVE INTEGRATED CIRCUIT

Nobuo Shiga, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Japan

Filed Dec. 7, 1989, Ser. No. 447,062
Claims priority, application Japan, Dec. 22, 1988, 63-324357
Int. Cl.[5] H03F *3/16*, *3/60*
U.S. Cl. 330—277 **18 Claims**

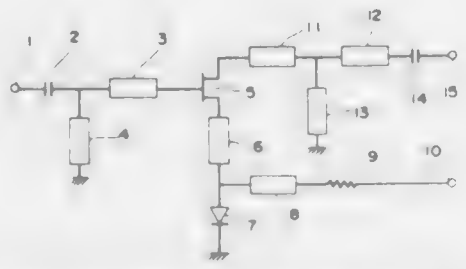
1. A microwave integrated circuit having a plurality of circuit components integrated therein, comprising:

initial stage amplification means having a field effect transistor;

series circuit means having an inductive element connected in series with a variable capacitance element, one end of said series circuit means being connected to a source of

said field effect transistor and the other end being connected to ground, and

control means including a circuit with a microstrip and a resistor which are serially connected for controlling the capacitance of said variable capacitance element by an external signal,



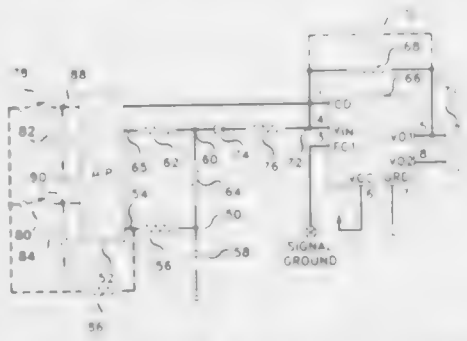
one end of said control means being connected to a junction of said variable capacitance element and said inductive element and said external signal being applied to the other end of said control means.

5,010,306

LOW COST DIGITAL AMPLITUDE REGULATOR

Walter G. Kutzavitch, Freehold, and Eugene J. Rosenthal, Highland Park, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 20, 1990, Ser. No. 482,442
Int. Cl.[5] H03G 3/18
U.S. Cl. 330—284 15 Claims



1. Apparatus for digitally regulating the magnitude of an output signal derived from an input signal comprising:

means for generating a stream of pulses with a controllable variable duty cycle;

means for controlling said duty cycle of said pulses;

means for supplying said generated stream of variable duty cycle pulses;

first means for filtering said supplied stream of variable duty cycle pulses to develop a DC voltage, the magnitude of said DC voltage being responsive to and proportional with the duty cycle of said stream of pulses;

an input signal source for supplying said input signal;

means for devloping a composite output signal containing components of said input signal and said DC voltage;

a source of a predetermined threshold level;

second means supplied with said composite output signal and being responsive to said predetermined threshold level for filtering any portion of said composite signal the magnitude of which is below said threshold level and for supplying as an output a filtered version of said composite signal; and

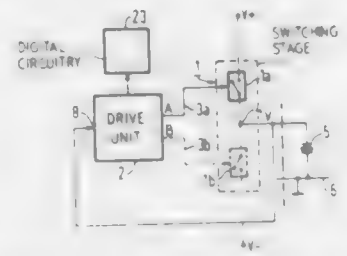
amplifier means for amplifying said output of said second means to generate an output signal having a prescribed output magnitude.

5,010,307

OSCILLATOR HAVING PERIODICALLY PULSED CRYSTAL

Hans G. Strandberg, Lundbyberg, Sweden, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 19, 1990, Ser. No. 467,180
Claims priority, application European Pat. Off., Jan. 20, 1989, 89100970.6
Int. Cl.[5] H03B 5/36
U.S. Cl. 331—116 FE 10 Claims



1. An oscillator circuit for use with a supply line at a voltage having a polarity and a line at reference potential, said oscillator circuit comprising:

a crystal having a first terminal connected to said line at reference potential, and a second terminal;

switch means having an output directly connected to said second terminal of said crystal, a control input, and being connected to said supply line for, when closed, connecting said supply line to said crystal to energize said crystal so that said crystal generates an output signal which executes a periodic oscillation; and

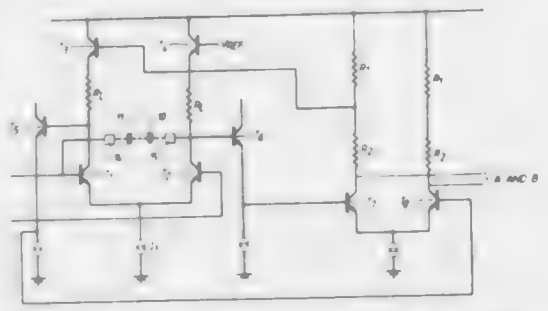
drive means having an input connected to said output of said switch means and having an output connected to said control input of said switch means for closing said switch means for a fraction of a half-period of said periodic oscillation during those half-periods which have the same polarity as said supply line voltage.

5,010,308

CRYSTAL OSCILLATOR WITH OFFSET AND HYSTERESIS

Nicholas P. Cowley, Wroughton, United Kingdom, assignor to Plessey Overseas Limited, Ilford, England

PCT No. PCT/GB89/00420, § 371 Date Mar. 7, 1990, § 102(e) Date Mar. 7, 1990, PCT Pub. No. WO89/11180, PCT Pub. Date Nov. 16, 1989
PCT Filed Apr. 20, 1989, Ser. No. 438,453
Claims priority, application United Kingdom, May 11, 1988, 8811193
Int. Cl.[5] H03B 5/36
U.S. Cl. 331—116 R 3 Claims



1. A crystal oscillator comprising a pair of differentially arranged transistors to the bases of which an input signal may be differentially applied, a crystal and a capacitor being connectable between the collector of a first of the transistors and the base of a second of the transistors, the oscillator outputs being provided differentially on the collectors of the first and second transistors, and a feedback loop established by an output of one of the transistors serving to drive a further transistor connected as a load in the collector of the other of the transistors

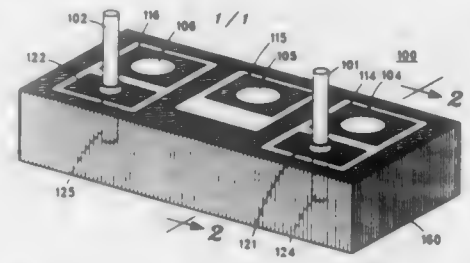
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5,010,309

CERAMIC BLOCK FILTER WITH CO-FIRED COUPLING PINS

Keith R. Manssen, Long Grove, and Michael F. Moutrie, Buffalo Grove, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 22, 1989, Ser. No. 455,725
Int. Cl.[5] H01P 1/202
U.S. Cl. 333—206 12 Claims



1 A filter, comprising:

a dielectric block having top, bottom and side surfaces and having at least first and second holes each extending from the top surface toward the bottom surface, said bottom and said surfaces and said first and second holes being substantially covered with a conductive material for producing producing first and second transmission line resonators;

first resonator electrode means disposed on the top surface of said dielectric block and connected to the conductive material of said first hole;

second resonator electrode means disposed on the top surface of said dielectric block and connected to the conductive material of said second hole;

first coupling electrode means disposed on the top surface of said dielectric block for capacitively coupling to said first resonator electrode means of said first hole, said first coupling electrode means including a hole having surfaces covered with a conductive material;

second coupling electrode means disposed on the top surface of said dielectric block for capacitively coupling to said second resonator electrode means of said second hole, said second coupling electrode means including a hole having surfaces covered with a conductive material;

a first coupling pin having a portion disposed in the hole in said first coupling electrode means;

a second coupling pin having a portion disposed in the hole in said second coupling electrode means; and

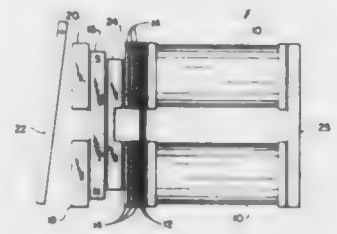
said conductive material and said first and second coupling pins having been simultaneously co-fired for bonding said conductive material to said dielectric block, for bonding said first coupling pin to the conductive material of said first coupling electrode means and hole in said first coupling electrode means, and for bonding said second coupling pin to the conductive material of said second coupling electrode means and hole in said second coupling electrode means.

5,010,310

ALTERNATING CURRENT IMMUNIZED RELAY AND METHOD OF IMMUNIZING A RELAY TO ALTERNATING CURRENT

Klaus H. Frielinghaus, Rochester, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Filed Jun. 16, 1988, Ser. No. 208,181
Int. Cl.[5] H01F 7/10
U.S. Cl. 335—243 7 Claims



1. A relay apparatus which comprises:

an armature;

means for pivotally mounting said armature;

first and second pole pieces dimensioned, configured and disposed for cooperation with said armature;

a magnetic circuit including at least one coil;

a plurality of iron shunt lamina spanning said magnetic circuit intermediate at least said one coil and said first and second pole pieces; and

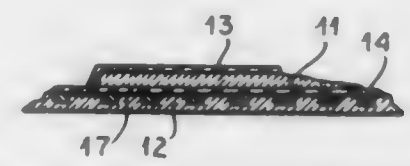
a plurality of copper washer slugs in said magnetic circuit intermediate at least one of said first and second pole pieces and said iron shunt lamina.

5,010,311

ELECTRONIC MODULATION OF MAGNETIC FIELDS

Aharon Z. Hed, Nashua, N.H., assignor to International Superconductor Corp., Riverdale, N.Y.

Filed Feb. 22, 1989, Ser. No. 314,426
Int. Cl.[5] H01F 7/22
U.S. Cl. 335—216 18 Claims



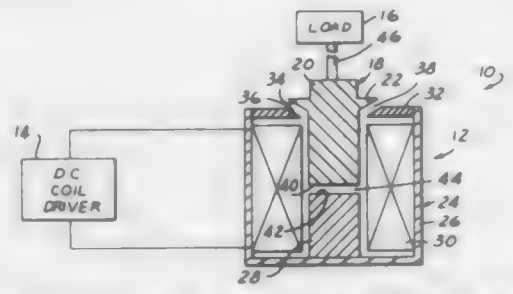
1. A method of modulating a magnetic field, comprising the steps of:

(a) establishing a magnetic field to be modulated;

(b) inserting into said magnetic field a generally flat solid body of a superconductive material having a critical temperature T_c below which the body is superconductive, a critical current density J_c at which said body has a transition between superconductive and nonsuperconductive states and a critical magnetic field H_c which is a function of temperature and current and above which superconductivity of said body is quenched to a mixed state transitting to the nonsuperconductive state said body being positioned to have its major dimensions in a plane perpendicular to said field; and

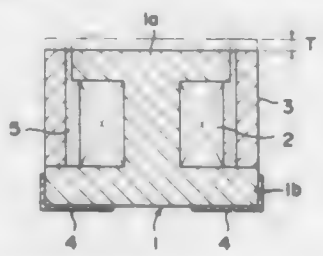
(c) controllably periodically or intermittently and reversibly altering the state of said body from one of said states to another of said states, thereby modulating said magnetic field.

5,010,312
SOLENOID ACTUATORS
Krystyn Motykiewicz, Southington, Conn., assignor to Rostra Engineered Components, Waterbury, Conn.
Filed Apr. 10, 1990, Ser. No. 507,025
Int. Cl.[5] H01F 7/08
U.S. Cl. 335—261 12 Claims



1. A solenoid actuator that comprises: an armature including a ferromagnetic body mounted for movement through a stroke along a defined axis, and a stator including an electrical coil surrounding said axis and a ferromagnetic stator body having a first portion axially opposed to said armature body and a second portion radially surrounding and spaced from said armature body, characterized in that said armature further includes ferromagnetic means moveably mounted on said armature body radially adjacent and opposed to said second portion of said stator body, said means and said second portion of said stator body having opposed axially overlapping tapering surfaces that are symmetrical with respect to said axis.

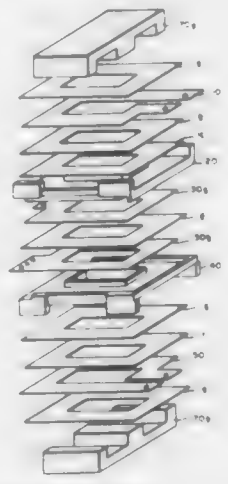
5,010,313
CHIP COIL
Toshimi Kaneko; Tetsuya Morinaga, and Tetsuo Hatakenaka, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan
Filed May 30, 1990, Ser. No. 530,402
Claims priority, application Japan, Jun. 2, 1989, 1-141896
Int. Cl.[5] H01F 3/00
U.S. Cl. 335—296 3 Claims



1. A chip coil comprising:
a core made of a magnetic material;
a coil wound around the core;
a sleeve core enclosing the coil, the sleeve core made of a magnetic material,
wherein the upper surface of the core and the upper surface of the sleeve core are ground so as to adjust the inductance of the chip coil.

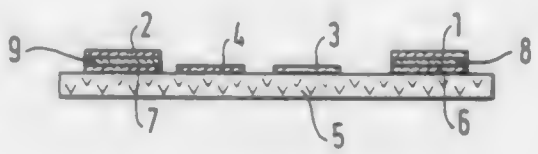
5,010,314
LOW-PROFILE PLANAR TRANSFORMER FOR USE IN OFF-LINE SWITCHING POWER SUPPLIES
Alexander Estrov, Newton, Mass., assignor to Multisource Technology Corp., Waltham, Mass.
Filed Mar. 30, 1990, Ser. No. 502,523
Int. Cl.[5] H01F 27/30
U.S. Cl. 336—198 3 Claims

1. A transformer assembly comprising:
a. first and second bobbin members of insulating material, each said bobbin member having a pair of opposed planar surfaces defining a central aperture therein, at least one of the bobbin members having a raised wall extending from each surface and encircling said aperture;
b. a first planar conductive winding disposed adjacent a first surface of the at least one bobbin member;
c. a second planar conductive winding disposed adjacent a second surface of the at least one bobbin member;



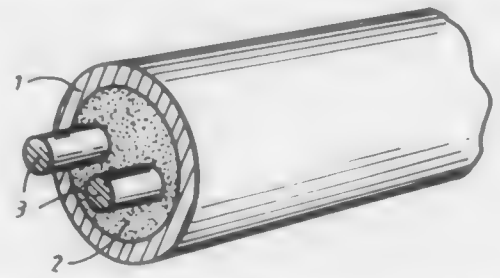
d. first and second core members;
e. insulation means between the first winding and the first core member; and
f. the first and second core members defining a magnetic path through the central aperture and linking the first and second windings.

5,010,315
THERMAL RADIATION SENSOR
Horst Fedter, Bühlertal; Werner Grünwald, Gerlingen; Peter Nolting, Bühlertal; Claudio de la Prieta, Stuttgart, and Kurt Schmid, Ditzingen-Schöckingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
PCT No. PCT/DE88/00134, § 371 Date Aug. 18, 1989, § 102(e) Date Aug. 18, 1989, PCT Pub. No. WO88/07180, PCT Pub. Date Sep. 22, 1988
PCT Filed Mar. 10, 1988, Ser. No. 425,166
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1987, 3709201
Int. Cl.[5] H01C 7/06
U.S. Cl. 338—7 4 Claims



1. Thermal radiation sensor comprising two receiver surfaces which are exposed to the radiation, one receiver surface (1) having a high absorption capacity with reference to the thermal radiation, the other (2) having a low absorption capacity, both receiver surfaces comprise a NTC resistance material and are combined in a bridge circuit together with two temperature-independent resistors (3 and 4), characterized in that the NTC resistors (1) and (2) comprise underlying heating layers (6) and (7) which keep the two NTC resistors at a constant temperature.

5,010,316
THERMOCOUPLES OF ENHANCED STABILITY
Noel A. Burley, Melbourne, Australia, assignor to Bell-TRH Limited, New South Wales, Australia
Filed Feb. 24, 1988, Ser. No. 159,923
Claims priority, application Australia, Oct. 23, 1987, PI5032
Int. Cl.[5] H01C 1/03
U.S. Cl. 338—238 10 Claims



1. Mineral insulated, metal-sheathed (MIMS) cable in which the sheath alloy has the following composition:

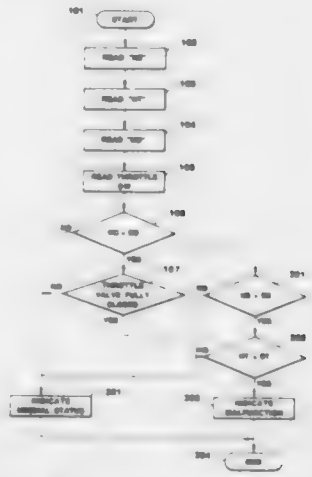
Element	Concentration (wt %)
Cr	14.0 ± 0.5
Nb	3.5 ± 1.5
Si	1.4 ± 0.1
Mg	0.15 ± 0.05
Ce	0.05 ± 0.05
Ni	balance

5,010,317
SATELLITE BASED SIMULCAST PAGING SYSTEM
Robert J. Schwendeman, Pompano Beach, and William J. Kuznicki, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 30, 1989, Ser. No. 444,457
Int. Cl.[5] H04Q 1/30
U.S. Cl. 340—311.1 30 Claims



12 A simulcast paging communication system, comprising.
a plurality of terrestrial receivers, at least some of which are capable of receiving paging information simulcast from at least one satellite and one or more terrestrial stations;
the terrestrial stations being capable of simulcasting the paging information with at least one satellite, and capable of adapting the paging information so as to be compatible with at least one of the plurality of terrestrial receivers; and
at least one satellite capable of simulcasting the paging information to at least one terrestrial station for reception by at least one of the plurality of terrestrial receivers.

5,010,318
SYSTEM FOR DETECTING MALFUNCTION OF TURBINE SPEED MEASURING DEVICE FOR TORQUE CONVERTER OF AUTOMOTIVE AUTOMATIC TRANSMISSION
Hiroshi Yamaguchi, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Mar. 19, 1990, Ser. No. 495,123
Claims priority, application Japan, Apr. 19, 1989, 1-99836
Int. Cl.[5] B60Q 9/00; G08B 21/00
U.S. Cl. 340—439 6 Claims



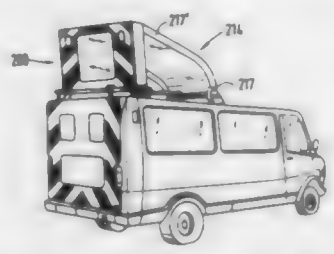
1. In a unit including an engine, a torque converter and a transmission gear train,
a first sensor issuing a first information signal representative of the rotation speed of an output means of said engine;
a second sensor issuing a second information signal representative of the rotation speed of an output means of said torque converter;
a third sensor issuing a third information signal representative of the rotation speed of an output means of said transmission gear train;
first means for respectively determining first, second and third reference minimum speeds of the respective output means of said engine, said torque converter and said transmission gear train; and
second means for issuing an alarm signal when the rotation speed derived from said first information signal is higher than said first reference minimum speed, the rotation speed derived from said third information signal is higher than said third reference minimum speed and the rotation speed derived from said second information signal is lower than said second reference minimum speed.

5,010,319
WARNING LIGHT DEVICE
Erich Killinger, Gaggenau, Fed. Rep. of Germany, assignor to Dambach-Werke GmbH, Fed. Rep. of Germany
Filed Oct. 2, 1989, Ser. No. 416,061
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1988, 3833544
Int. Cl.[5] B60Q 1/26
U.S. Cl. 340—472 6 Claims

1. A warning light device having a warning panel (25), for regulating traffic, attached in a vertical position near a rear of a motor vehicle and various traffic symbols being displayed on said warning panel (25) with controllable electric luminous elements, the warning light device comprising: said warning panel (25) having a controllable optical fiber display matrix

(12), said matrix having a plurality of optical fiber bundles (50, 51) illuminated at one end by individually triggerable light sources (40–43) to define said various traffic symbols, and said optical fiber bundles (50, 51) at their opposite ends having free ends of individual optical fibers (29–32) near said optical fiber display matrix (12), said free ends terminating in positions to display said various traffic symbols (17, 18), said warning panel (25) being attached to a roof of and extending to said rear of said motor vehicle (14);

at least one of an electric power supply system (11) of said motor vehicle (14) and a supplementary electric power pack (23) mounted in said motor vehicle (14) for supplying power to the warning light device (10), an operating panel (13) disposed near a dashboard of said motor vehicle (14)

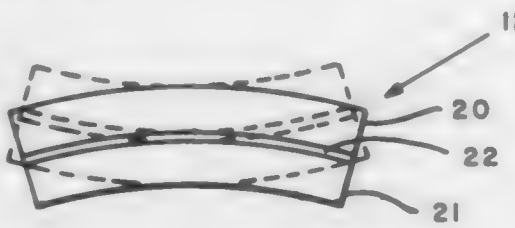


for switching the warning light device (10) on and off and for initiating displays of said various traffic symbols (17, 18) on said optical fiber display matrix (12);

said operating panel (13), at least one of said electric power supply system (11) and said supplementary electric power pack (23), and said optical fiber display matrix (12) being connected through connecting cables (16, 19) installed within said motor vehicle (14); and

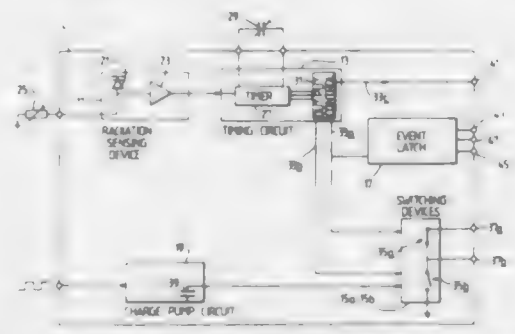
a spoiler (214) pivotally attached to a rooftop stand construction, remote from a swivel shaft of a holder (202), said spoiler (214) covering said optical fiber display matrix (12) which is folded onto said roof both in an operating position and in a folded-down position, with a cross section of said spoiler (214) converging toward a front of said motor vehicle (14).

5,010,320
SELF MODULATING ELECTRONIC ARTICLE SURVEILLANCE MARKER
Robert A. Cordery, Danbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.
Filed Dec. 8, 1989, Ser. No. 448,183
Int. Cl.[5] G08B *13/24*
U.S. Cl. 340—551 **10 Claims**



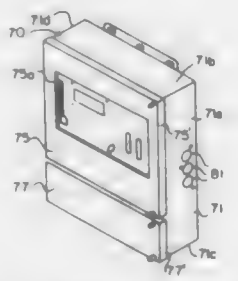
1. In an electronic surveillance marker that includes a magnetostrictive first element adapted to experience a dimensional change in a first direction in the presence of a magnetic field, the improvement comprising a second element firmly affixed to said first element, said second element being of a substantially non-magnetostrictive material, whereby said first element bends in the presence of a magnetic field and said bending varies the susceptibility of said first element.

5,010,321
NUCLEAR EVENT DETECTORS
David J. Larser, Lynsted, and Clive D. Goodchild, Northfleet, both of England, assignors to Gec-Marconi Limited, England
Filed Oct. 2, 1989, Ser. No. 416,052
Claims priority, application United Kingdom, Oct. 5, 1988, 8823398
Int. Cl.[5] G08B *17/12*
U.S. Cl. 340—600 **4 Claims**



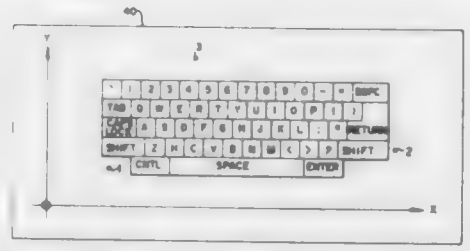
1. A nuclear event detector for use in the protection of electronic equipment having a plurality of devices, comprising: radiation sensing means for producing an output in response to the incidence thereon of radiation above a threshold level; timing circuit means responsive to the output of the sensing means for producing first and second control signals; a first terminal for connection to a first power supply line for first devices of the equipment which are not to be protected on the occurrence of a nuclear event; a second terminal for connection to a second supply line for second devices of the equipment which are to be protected on the occurrence of a nuclear event; controllable first electrical switching means for providing a normally closed first switch path between said first and second terminals; and controllable second electrical switching means for providing a normally open second switch path between said second terminal and ground; said first and second switching means being controlled by said first and second control signals respectively so that in response to the incidence of radiation on said sensing means above said threshold level said first switch path opens, thereby to isolate said second power supply line from said first power supply line; and thereafter said second switch path closes, thereby to shunt to ground residual stored electrical energy in said second devices connected with said second power supply line.

5,010,322
HOUSING FOR A PROCESS CONTROLLER
John J. Fry; George R. Hall, II, both of Wickliffe, and Robert A. Smith, Mentor, all of Ohio, assignors to Gas Research Institute, Chicago, Ill.
Continuation-in-part of Ser. No. 84,689, Aug. 12, 1987. This application Dec. 21, 1988, Ser. No. 287,734
Int. Cl.[5] G09G *1/00*
U.S. Cl. 340—700 **7 Claims**



1. A housing for a process controller means in a system including a sensor assembly having at least one sensing means for providing an output signal indicative of a parameter of the process, the process controller means receiving and processing the output signal and generating control outputs for maintaining a desired operation of the process, said housing comprising: a body portion including a generally box-like member having top and bottom walls, a side wall, first and second end walls, and an open side, cover means pivotally mounted on said member adjacent said open side and movable between an open position and a closed position, said cover means in its closed position overlying said open side to close said body portion, said body portion defining means for mounting said process controller means within said member and means for mounting connection means within said member, said connection means constructed and arranged for connecting said process controller means to said sensor assembly, said member defining flange means extending along the periphery of its open side, and when said cover means is in its closed position, said cover means having a first portion extending in overlying relation with said flange means defining a first gap, and a second portion in overlying relation with portions of said top, bottom and side walls defining a second gap which extends perpendicular to said first gap, the ratio of the length of the overlapping portions of said member and said cover means to the width of one of said gaps therebetween being in the range of about 15:1 to 20:1 and the ratio of the length of the overlapping portions of said member and said cover means to the width of the other of said gaps being in the range of about 5:1 to about 10:1, thereby defining a closed housing which substantially attenuates electromagnetic radio frequency interference thereby isolating said process controller means therefrom whenever said cover means is in its closed position.

5,010,323
INTERACTIVE OVERLAY DRIVEN COMPUTER DISPLAY SYSTEM
Clifford J. Hoffman, 120 Spirea Dr., Dayton, Ohio 45419
Filed May 9, 1988, Ser. No. 191,379
Int. Cl.[5] G09G *5/00*
U.S. Cl. 340—706 **21 Claims**



1. An overlay driven stored file display system comprising:

(a) a tablet and stylus means for providing a coordinate signal representative of the coordinates of any of a plurality of points on the tablet selected by the position of said stylus on said tablet;

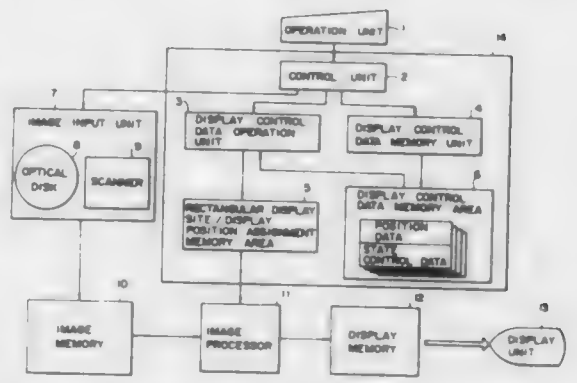
(b) storing means for addressably storing a plurality of files each at a unique file address;

(c) an overlay for random placement on said tablet, said overlay having positioned thereon at least three points having a unique angular relationship defining a file address;

(d) means responsive to the coordinate signals generated when said stylus is sequentially positioned at each of said three points on said overlay for translating and normalizing the coordinates of the file address of the overlay to an overlay management space such that the file address of said overlay, corresponding to a unique file address of said storing means, causes an access of said storing means to retrieve a stored file; and

(e) means for displaying the retrieved file.

5,010,324
SEQUENTIAL PAGE UNIT IMAGE DISPLAY DEVICE HAVING DISPLAY CONTROL MEMORY
Hikari Yamamoto, Kanagawa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 16, 1988, Ser. No. 245,210
Claims priority, application Japan, Sep. 16, 1987, 62-231716
Int. Cl.[5] G09G *5/00*
U.S. Cl. 340—723 **7 Claims**



1. An image display device, comprising:

an operation input means for receiving an operator's instruction;

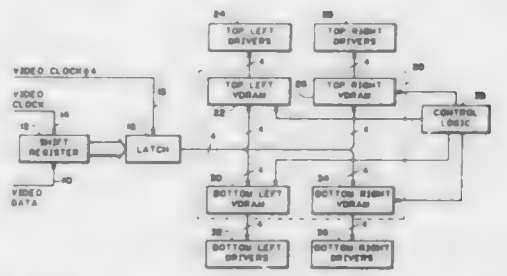
a display means for displaying image data of a page unit;

a display control data generator means for generating display control data for controlling a display state and a display position by enlarging, reducing, rotating or scrolling the image data of a page unit in accordance with an operator's instruction;

a display control data memory means for storing display control data of a display state position and a display state generated by said display control data generating means; and

a display control means for controlling a display state of image data of a next page by using the display control data stored in said display control data memory means in accordance with an instruction input by an operator.

5,010,325
DRIVING NETWORK FOR TFEL PANEL EMPLOYING A VIDEO FRAME BUFFER
Michael J. Zinchkovski, Portland, Oreg., assignor to Planar Systems, Inc., Beaverton, Oreg.
Filed Dec. 19, 1988, Ser. No. 286,231
Int. Cl.[5] G09G *3/30*
U.S. Cl. 340—781 **5 Claims**



1. A driving network for an AC TFEL panel including orthoganally disposed sets of scanning and data electrodes sandwiching an electroluminescent laminar structure comprising:

(a) n independently driven sets of data electrodes;

(b) a buffer memory for each of said sets for storing video data;

(c) clock means for storing said video data in said buffer memories at a rate of m bits per clock pulse where the frequency of said clock means is f_1;

(d) data output means for asynchronously extracting said video data from said buffer memories at a second clock frequency, f_2, wherein m×n bits are extracted from the buffer memories per clock pulse wherein f_2 is less than F_1 and wherein m×n f_2 is greater than mf_1.

5,010,326

CIRCUIT FOR DRIVING A LIQUID CRYSTAL DISPLAY DEVICE

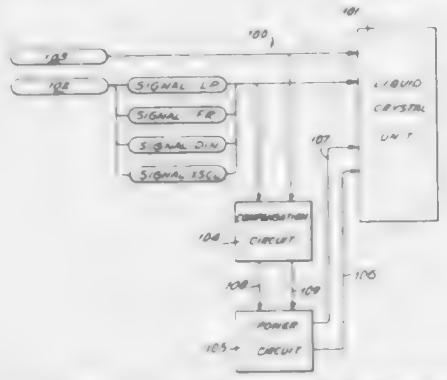
Katsunori Yamazaki, and Mitsuo Nagato, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Aug. 15, 1988, Ser. No. 232,750

Claims priority, application Japan, Aug. 13, 1987, 62-202154; Feb. 9, 1988, 63-27922; Feb. 9, 1988, 63-27923; Feb. 9, 1988, 63-27924

Int. Cl.[5] G09G 3/36

U.S. Cl. 340—784 **41 Claims**



1. A matrix liquid crystal display device for displaying characters or a pattern comprising:

a first substrate,

a plurality of common electrodes being formed on said first substrate;

a second substrate;

a plurality of segment electrodes being formed on said second substrate,

a liquid crystal layer sandwiched between said first substrate and said second substrate;

multiplex driving means for providing a common voltage waveform including a selected voltage or a non-selected voltage to said plurality of common electrodes and providing a segment voltage waveform including an ON voltage or an OFF voltage to said plurality of segment electrodes,

compensation means for compensating at least one of said common voltage waveform or said segment voltage waveform based upon said pattern or said characters to be displayed in said liquid crystal display device; and

said common electrodes intersecting said segment electrodes to define a matrix having a dot at each intersection, the dots being in either an ON state or an OFF state depending on the voltage applied to the intersecting common and segment electrodes, said multiplex driving means sequentially switching the selected voltage among the common electrodes, the compensation means receiving a data signal representative of the characters or pattern to be displayed, and producing a sign signal and strength signal, said multiplex driving means providing a common voltage waveform or a segment voltage waveform in which at least one portion of each waveform changes in a direction and size based on the sign signal and the strength signal.

5,010,327

METHOD OF DRIVING A LIQUID CRYSTAL MATRIX PANEL

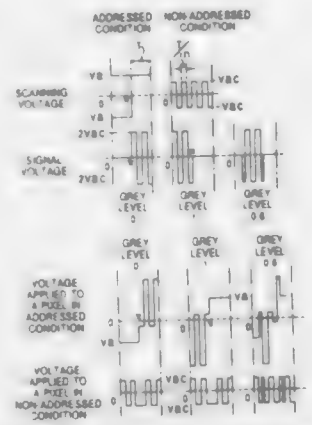
Naohide Wakita, Kobe; Tsuyoshi Uemura, Higashiosaka; Hiroyuki Ohnishi, Ikeda; Noriko Ohba, Nara; Isao Ota, Osaka, and Shingo Fujita, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 5, 1986, Ser. No. 903,773

Claims priority, application Japan, Sep. 6, 1985, 60-198010; Sep. 6, 1985, 60-198012; May 9, 1986, 61-107003

Int. Cl.[5] G09G 3/36

U.S. Cl. 340—784 **9 Claims**



1. A method of driving a liquid crystal matrix panel where a ferroelectric liquid crystal having negative dielectric anisotropy is held between scanning electrodes and signal electrodes crossing the scanning electrodes to form a matrix of pixels at crossing positions of the scanning and signal electrodes, comprising the steps of:

applying signal voltage pulses to a signal electrode and addressing voltage pulses to a scanning electrode in an addressed condition so as to make an addressed pixel at the crossing position of the signal electrode and the scanning electrode to be a desired molecular orientation state; and

applying to the scanning electrode, in a non-addressed condition following the addressed condition, voltage pulses whose frequency is higher than that of the addressing voltage pulses and higher than a frequency in which spontaneous polarization of the ferroelectric liquid crystal can follow and whose average voltage is zero so that the effective value of voltage pulses applied to the pixel in the non-addressed condition becomes a substantially constant value greater than an effective threshold voltage at which a molecular orientation stabilizing effect begins to be produced by the dielectric anisotropy, whereby the state of the pixel made in the addressed condition is held in the non-addressed condition until a next addressed condition.

5,010,328

DISPLAY DEVICE

Christopher J. Morris, Feltham; Ian Coulson, Maidenhead, and Paul W. H. Surguy, Uxbridge, all of England, assignors to Thorn EMI plc, London, England

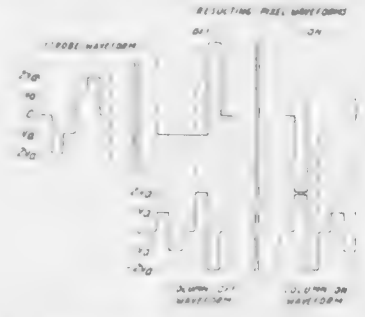
Filed Jul. 18, 1988, Ser. No. 220,316

Claims priority, application United Kingdom, Jul. 21, 1987, 8717172; Aug. 3, 1987, 8718351

Int. Cl.[5] G09G 3/00

U.S. Cl. 340—784 **18 Claims**

1. A method of addressing a matrix-array type liquid crystal cell with a ferroelectric liquid crystal layer having a plurality of pixels defined by areas of overlap between members of a first set of electrodes on one side of the liquid crystal layer and members of a second set of electrodes on the other side of the liquid crystal layer, each of said pixels having a first and a second optically distinguishable state, and having a response time for switching between said first and said second states which depends on the potential difference across the liquid crystal layer, the method including the step of applying a switching pixel waveform to a selected pixel to switch said selected pixel between said first and second states wherein said switching pixel waveform is charge-balanced and comprises a switching pulse having a pulse width and pulse height magni-



tude which, in combination, switch said selected pixel and another pulse, contributing to charge balancing, having a pulse height magnitude greater than the pulse height magnitude of said switching pulse and a pulse width which is less than that of the switching pulse and which, in combination with the pulse height magnitude thereof, is insufficient to switch said selected pixel, thereby to enable charge balanced addressing of said pixel with a waveform having a duration less than twice that of the switching pulse.

5,010,329

BLOCK POLLING DATA COMMUNICATION SYSTEM HAVING OPTIMUM BLOCK DETERMINATION MEANS

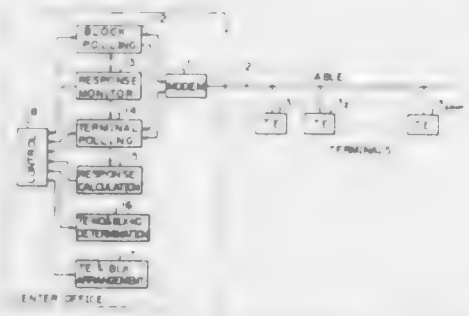
Kaoru Nagakura, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 180,320, Apr. 11, 1988, abandoned. This application Aug. 2, 1990, Ser. No. 562,412

Claims priority, application Japan, Apr. 10, 1987, 62-88507

Int. Cl.[5] G05B 23/02

U.S. Cl. 340—825.080 **27 Claims**



1. A block polling data communication system, comprising a center office;

a plurality of terminals, divided into a plurality of terminal blocks, each including at least one terminal; and

a cable connecting the center office and the terminals,

said center office including

block polling means for performing operations polling the terminal blocks,

response monitor means, operatively connected to the block polling means to cooperate therewith, for detecting and storing a request signal for a data transfer for a terminal in the terminal block of which the polling is effected,

terminal polling means, operatively connected to the response monitor means, for performing operations sequentially polling all of the terminals in each terminal block in which at least one terminal responded to the polling and issued the request for the data transfer, and terminal and block rearrangement means for obtaining an average frequency of occurrences of requests from all of said terminals by counting a number of requests received in said center office from among all of said terminals and dividing by a number of times each of said terminals was polled, determining an optimum number of terminal blocks based on the average frequency so that a total polling time for the operations by said block polling means and said terminal polling means is minimized, and allocating said terminals into said optimum number of terminal blocks,

the block polling means effecting the polling of the terminal blocks rearranged by the terminal and block rearrangement means, and

the terminal polling means effecting the polling of each terminal in the terminal blocks determined at the terminal and block rearrangement means in which at least one terminal responded to the polling from the block polling means.

5,010,330

PAGING SYSTEM EMPLOYING DESIGNATED FRAME COMMENCING INFORMATION SERVICE DATA MESSAGE TRANSMISSION

Gregory O. Snowden, Boca Raton; Clifford E. Barrett, III, and Fernando Gomez, both of West Palm Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 26, 1989, Ser. No. 456,423

Int. Cl.[5] H04B 7/00

U.S. Cl. 340—825.21 **33 Claims**



1. A system for selective radio communication of call information from a transmitting terminal to a population of selectively addressable receivers, said transmitting terminal being operative to transmit said information periodically in transmission periods comprising a plurality of batches, each batch commencing with a predetermined synchronization code followed by a predetermined plurality of sequential frames which may include an individual selective call address of a receiver followed by an individual or group data message for said addressed receiver, each receiver being assigned one frame of each transmission batch, and operative to search for its individual selective call address in said assigned frame in each transmission batch and, when addressed, to receive the associated data message in subsequent frames, said system comprising:

a subset of information service subscribing receivers of said population of receivers;

said transmitting terminal for also transmitting in at least one batch of a transmission period an information service call address in each of the assigned frames of said subset of receivers, and, when said information service call address has been transmitted in all of the assigned frames of said receivers of said subset, for transmitting, in the same transmission period, an associated information service data message in frames subsequent the synchronization code of a designated batch subsequent said at least one batch; and

each said receiver of said subset being programmed to search each batch of a transmission period, for said information service call address solely in its assigned frame and, when addressed by said information service call address, to receive the associated information service data message in frames subsequent the synchronization code of said designated subsequent batch of the same transmission period

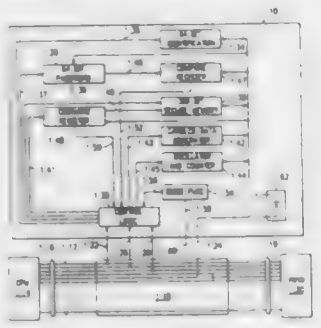
5,010,331
TIME-KEY INTEGRATED CIRCUIT

Donald R. Dias, Carrollton; Robert D. Lee, Denton; Michael L. Bolan, Dallas, and Francis A. Scherpenberg, Carrollton, all of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 163,082, Mar. 2, 1988, Pat. No. 4,935,645, and a continuation-in-part of Ser. No. 163,279, Mar. 2, 1988, Pat. No. 4,897,860, and a continuation-in-part of Ser. No. 412,767, Sep. 26, 1989, Pat. No. 4,943,804, which is a continuation of Ser. No. 163,281, Mar. 2, 1988, Pat. No. 4,870,401, and a continuation of Ser. No. 163,280, Mar. 2, 1988, and a continuation of Ser. No. 273,698, Nov. 21, 1988. This application Nov. 14, 1989, Ser. No. 437,012

Int. Cl.[5] **H04Q** *1/00*; **H01H** *47/00*

U.S. Cl. 340—825.310 **1 Claim**



1. An electronic key, comprising:

a timing circuit which can be calibrated;

a fusing and detection circuit, comprising:

a fuse element;

a fuse input terminal, connected so that said fuse element can be blown by applying a large abnormal voltage to said fuse input terminal;

a comparator,

having first and second inputs operatively connected to said fuse element in such relation that

said first input of said comparator receives a voltage which is dependent on the state of said fuse element

and said second input of said comparator receives a voltage which is not substantially dependent on the state of said fuse element,

wherein said comparator compares said first and second inputs and provides a logic output which, in a first state, indicates that said fuse element has not been blown, and, in a second state, indicates that said fuse element has been blown;

wherein said fuse input terminal is operatively connected to said inputs of said comparator in such relation that any large abnormal voltage which is applied to said fuse input terminal will tend to drive the output of said comparator into said second state;

wherein said output of said comparator is connected to said timing circuit so that said second output state of said comparator prevents calibration of said timing circuit;

a counter, connected to count accesses to said electronic key;

control logic including a latch which can be set by receipt of a predetermined external command, said control logic being configured so that

at least some commands are accepted before said fuse element has been blown but are not accepted after said fuse element is blown;

at least some other commands are accepted after said fuse element has been blown and before said latch has been set, but are not accepted after said latch has been set; and

at least some other commands are accepted after said latch has been set and before said counter counts off a predetermined number of accesses, but are not accepted after said counter has counted said predetermined number of accesses;

wherein said latch cannot be reset after said fuse element has been blown,

and wherein said control logic and said counter are configured so that, if power is restored after said fuse element has already been blown, said counter will immediately provide an output indicating that said predetermined number of accesses has already occurred.

5,010,332
DATA TRANSMISSION APPARATUS

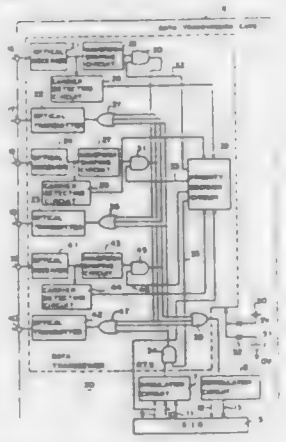
Noritaka Egami, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 228,509, Aug. 5, 1988, abandoned. This application May 25, 1990, Ser. No. 528,287

Claims priority, application Japan, Aug. 6, 1987, 62-195181

Int. Cl.[5] **H04Q** *1/00*

U.S. Cl. 340—825.5 **5 Claims**



1. A data transmission apparatus for use in each of a plurality of stations of a communication system, comprising:

a plurality of input terminals for receiving data from predetermined other stations of said system;

a plurality of output terminals for transmitting data to said other stations; and

a data transceiver unit, including

means for transmitting data generated by the station in which said apparatus is being used to all of said output terminals simultaneously,

means for receiving data from said input terminals including means for storing said received data internally, and simultaneously transmitting said received data to said output terminals except for an output terminal connected to the station from which said received data was transmitted, and

priority decision means for detecting data received at said input terminals and enabling said means for receiving to store and simultaneously transmit only the earliest received data.

5,010,333
ADVANCED DIGITAL TELEMETRY SYSTEM FOR MONOCABLE TRANSMISSION FEATURING MULTILEVEL CORRELATIVE CODING AND ADAPTIVE TRANSVERSAL FILTER EQUALIZER

Wallace R. Gardner, Houston; Kenneth R. Goodman; Robert D. Puckett, both of LaPorte, and Ricky L. Draehn, Houston, all of Tex., assignors to Halliburton Logging Services, Inc., Houston, Tex.

Filed May 17, 1989, Ser. No. 353,278

Int. Cl.[5] **G01V** *1/00*

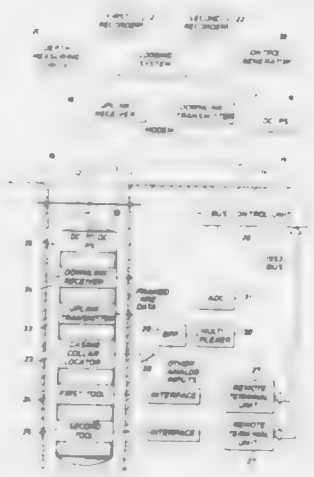
U.S. Cl. 340—856 **24 Claims**

1. A telemetry system for use in transfer of a data system from a sonde in a well borehole to the surface via an armored monocable having defined electrical characteristics of impedance, capacitance and inductance and the system includes a sonde supported uplink transmitter, comprising:

(a) a bus control unit in a sonde having an input data bus for receiving data from at least on tool supported inn the sonde wherein the tool data is required at the surface;

(b) means connected to said bus control unit for receiving a flow of data therefrom, said means encoding the data to form a duobinary encoded stream of data symbols wherein each data symbol represents an input data state and also correlates to another data state;

(c) modulator means forming a carrier signal, said means provided with said duobinary symbol to form an output data stream modulated on the carrier signal wherein the carrier signal has a specified carrier frequency, and further wherein the carrier signal is centered at a specified and width for subsequent transmission and further wherein



each data symbol is encoded with a positive carrier peak value and each symbol is also encoded with a negative and adjacent carrier peak;

(d) output driver means provided with the modulated carrier signal and having an analog output connected to the monocable deployed as a logging cable extending from the sonde to the surface andd wherein the monocable has a specified band width within limits in part determined by the electrical characteristics of t he monocable in use; and

(e) wherein said carrier frequency is centered in a band width determined by the characteristics of the monocable driven by the output means and further wherein the modulated duobinary signal placed thereon is frequency limited to fit within the band width.

5,010,334
TRANSDUCER DEVICE

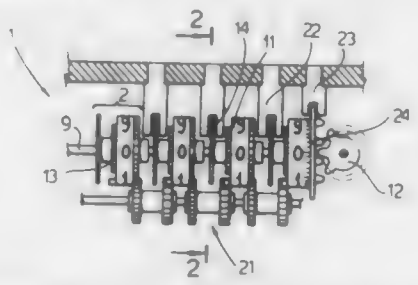
Vittorio Ponzio, Milan, Italy, assignor to Fabbriche Riunite Misuratori Secofgas S.p.A., Milan, Italy

Filed Jan. 17, 1989, Ser. No. 297,434

Claims priority, application Italy, Jan. 18, 1988, 19101 A/88

Int. Cl.[5] **G06M** *1/22, 1/27*

U.S. Cl. 340—870.28 **17 Claims**



1 A transducer device comprising at least one pair of coded revolving metric indicators each comprising a metric drum and a revolving coded element, wherein said metric drums and said revolving coded elements are mounted for rotation on a common shaft, and wherein said coded revolving elements are each positioned out of phase ahead at a predetermined angle with respect to a preceding coded revolving element, said device further comprising a remote display device, a reading device generating signals indicative of rotary position of a said metric drum, and electronic processing means for preventing a signal from being sent to said display device when said signal has a value representing an amount lower than that of any signal previously sent.

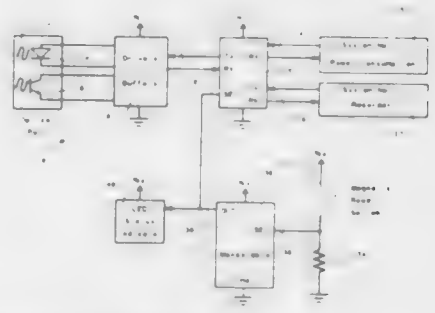
5,010,335
OPTICAL PORT MULTIPLEXER FOR ELECTRIC METERING EQUIPMENT

Richard Coppola, Norcross, and Farrokh Khandaghabadi, Lawrenceville, both of Ga., assignors to Schlumberger Industries, Inc., Norcross, Ga.

Continuation of Ser. No. 277,164, Nov. 29, 1988, abandoned. This application May 21, 1990, Ser. No. 527,684

Int. Cl.[5] **G08B** *17/00*; **G01R** *13/04*

U.S. Cl. 340—870.28 **10 Claims**



1. An improved utility meter comprising:

(a) at least two electronic systems each of which comprises an independent source of data within the meter, each of said electronic systems further including data lines for communicating said data from each of said electronic systems to a retriever device;

(b) an optical port for transferring data from a selected one of said electronic systems to said retriever device, said optical port having data lines which can be connected to said data lines of said electronic systems;

(c) a multiplexer circuit within the meter and electrically connected between said optical port and said electronic systems for selectively connecting said data lines of one of said electronic systems to said data lines of said optical port; and

(d) a magnetic reed switch positioned within said utility meter proximate to a glass cover for switching said multiplexer circuit in response to noninvasive presence of a reed switch actuating means outside said glass cover within the operative proximity of said magnetic reed switch, said reed switch actuating means being independent of said retriever device, whereby said data lines of said selected one of said electronic systems are selectively connected to said data lines of said optical port.

5,010,336
TEMPORARY TRAFFIC LIGHT CONTROL

John L. Moesle, Northfield, and Lars O. Stolpe, Evanston, both of Ill., assignors to Jelp, Inc., Northfield, Ill.

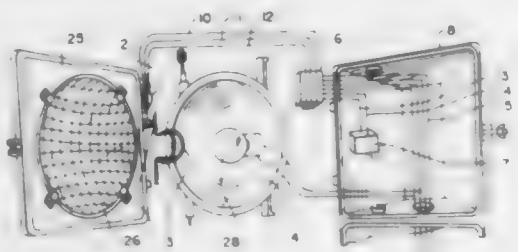
Filed Aug. 1, 1989, Ser. No. 388,244

Int. Cl.[5] **G08G** *1/95, 1/97*

U.S. Cl. 340—907 **15 Claims**

1. For use in a conventional traffic signaling device comprising a series of lights sequentially energized from a conventional utility power source, means for supplanting said traffic signal-

ing device upon failure of said utility power source comprising an independently powered light source mounted within said signaling device including a xenon flash lamp, means for exciting said lamp comprising a capacitive energy storage device including a battery, a battery charging device, trigger means for discharging said capacitive energy storage device through said xenon flash lamp upon said capacitive energy storage device becoming sufficiently charged, a voltage sensor provid-



ing means for controlling the energization of an energy storage device charging means attendant upon the loss of resumption of full line voltage from said utility power source,

and means for discharging said capacitive energy storage device through said xenon lamp comprising an argon filled tube operative as a fast high voltage switch connecting said capacitive energy storage device to said xenon lamp

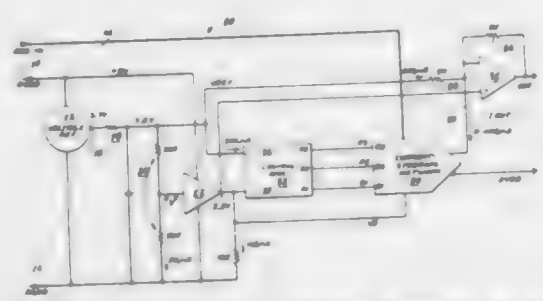
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5,010,337

HIGH RESOLUTION D/A CONVERTER OPERABLE WITH SINGLE SUPPLY VOLTAGE

Shinichi Hisano, Boston, Mass.; Apparajan Ganesan, Salem, N.H., and Thomas S. Guy, Andover, Mass., assignors to Analog Devices, Incorporated, Norwood, Mass.

Filed Mar. 15, 1990, Ser. No. 493,997
Int. Cl.[5] H03M *1/78*
U.S. Cl. 341—154 **8 Claims**



1 A high-resolution D/A converter integrated on an IC chip and operable with a relatively low single-supply voltage, said converter comprising:

a current-steering network having a plurality of matched current-source cells each comprising a bipolar current-source transistor;

means responsive to a multi-bit input signal for turning said current-source cells on or off, with the resultant current being steered to an output line;

resistor means connected to said current-source cells and including an R/2R network for at least a selected group thereof,

a voltage reference to be powered by said single supply voltage and operable to produce a stable reference voltage on an output line;

a control amplifier receiving a voltage corresponding to said reference voltage and arranged to produce a control signal;

means connecting said control signal to said current-source cells to set the level of the currents therefrom;

an output operational amplifier having first and second input terminals;

means supplying to said first input terminal a voltage proportional to said corresponding voltage; and

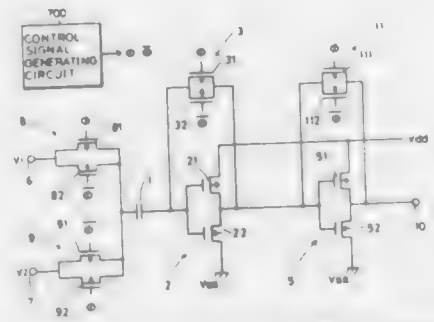
means coupling said second input terminal to a signal derived from the output of said current-steering network.

5,010,338

COMPARATOR CIRCUIT AND ANALOG TO DIGITAL CONVERTER

Takahiro Miki, and Shiro Hosotani, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 18, 1988, Ser. No. 260,126
Claims priority, application Japan, Oct. 19, 1987, 62-264159
Int. Cl.[5] H03K *5/24*, **H03M** *1/36*
U.S. Cl. 341—159 **13 Claims**



1. A comparator circuit for comparing first and second input voltages comprising:

first input means for receiving said first input voltage,

second input means for receiving said second input voltage,

capacitor means having first and second electrodes;

first switching means connected between said first input means and said first electrode of said capacitor means;

second switching means connected between said second input means and said first electrode of said capacitor means;

first inverter means having an input connected to said second electrode of said capacitor means;

third switching means connected across said first inverter means;

second inverter means having an input conductively connected to the output of said first inverter means;

fourth switching means connected across said second inverter means;

timing control means connected to said first, second, third and fourth switching means for controlling the switching operations thereof such that said first, third and fourth switching means are turned on whereas said second switching means is turned off at a first timing, and said first, third and fourth switching means are turned off whereas said second switching means is turned on at a second timing later than said first timing

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5,010,339

ULTRA LINEAR SPECTROSCOPIC ANALOG-TO-DIGITAL CONVERTER

David A. Giangano, Elmhurst; Martin Kesselman, Commack; Steven Bocskor, Ronkonkoma, and Anthony R. Celona, Northport, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Apr. 2, 1990, Ser. No. 502,746
Int. Cl.[5] H03M *1/34*
U.S. Cl. 341—164 **9 Claims**

1. In an analog-to-digital converter (ADC) network having means for generating a variable analog count for summing with

an analog input signal, the result of which is converted to a digital number by an ADC, the variable count being subtracted thereafter for a final digital output, the improvement comprising:

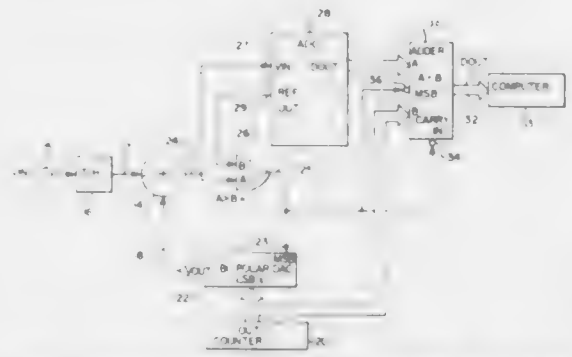
bi-polar digital-to-analog converter (DAC) means connected between a digital number generator which generates the variable count and a first input of a summing means;

means for sampling the input signal;

means for connecting the sampled input signal to a second input of the summing means;

a comparator;

means connecting a full scale reference voltage of the ADC to a first input of the comparator;



means connecting the output of the summing means to a second input of the comparator to obtain a comparison;

the bi-polar DAC having a most significant bit (MSB) input connected to the output of the comparator for setting the MSB of the DAC when the comparison indicates the full scale of the ADC is exceeded;

wherein first and second inputs of the summing means are subtracted thereby producing a comparator input within range for the ADC; and

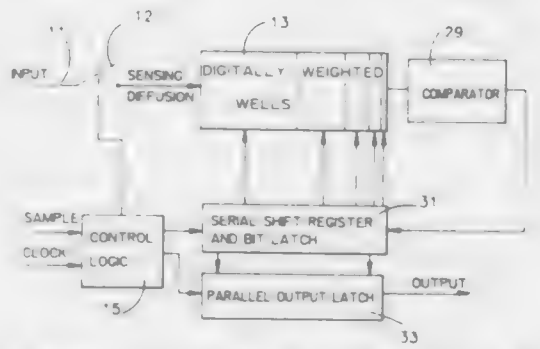
means connected to the output of the ADC and the number generator for separating the variable count from the output of the DAC thereby reconstructing the digitally converted analog input signal.

5,010,340

CHARGE DOMAIN SUCCESSIVE APPROXIMATION ANALOG TO DIGITAL CONVERTER

Paul E. Green, La Mirada, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 26, 1990, Ser. No. 498,788
Int. Cl.[5] H03M *1/38*
U.S. Cl. 341—172 **18 Claims**



1 A method of converting an analog signal to a digital representation comprising first through Nth bits, with the first bit being the most significant bit, the digital representation including a kth bit, the method comprising:

(a) setting first through Nth charge storage gates, including a kth gate, in a charge accept mode, wherein each of said charge storage gates has a charge accept mode and a charge expel mode.,

(b) receiving a charge packet representative of a signal amplitude;

(c) storing said charge packet proportionately in said gates;

(d) setting said kth gate in the charge expel mode and expelling the charge from said kth gate onto a sensing diffusion connected to said gates and onto others of said gates;

(e) detecting whether said sensing diffusion is in a first condition or a second condition;

(f) if said sensing diffusion is in said first condition, recording a "0" for the kth bit of said digital representation, and holding said kth gate in said charge expel mode; and

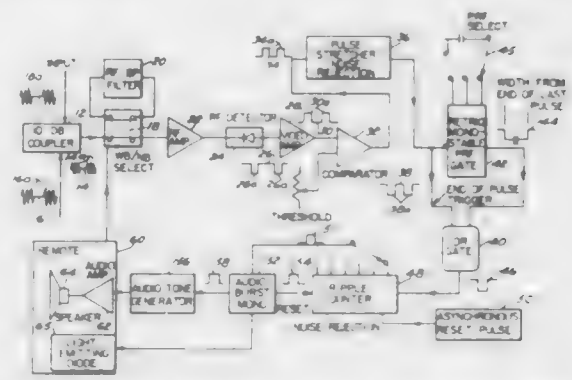
(g) if said sensing diffusion is in said second condition, recording a "1" for the kth bit of said digital representation and resetting said kth gate to said charge accept mode.

5,010,341

HIGH PULSE REPETITION FREQUENCY RADAR EARLY WARNING RECEIVER

William P. Huntley, Old Lyme, and David J. Swanick, Salem, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 4, 1989, Ser. No. 417,616
Int. Cl.[5] G01S *13/04*
U.S. Cl. 342—20 **5 Claims**



1. A high pulse repetition frequency radar early warning receiver comprising:

coupler means for receiving an input signal and transmitting an attenuated version of said input signal;

wideband/narrow band select switch means connected for receiving said attenuated signal, selecting a portion of said attenuated signal and transmitting said selected portion of said attenuated signal;

RF detector means connected to receive said selected portion of said signal, amplitude detecting said selected portion of said signal, and transmitting the amplitude detected signal;

comparator means connected to said RF detector for receiving said amplitude detected signal and for generating digital pulses when said amplitude detected signal exceeds a predetermined magnitude;

pulse stretching means connected to said comparator for receiving said digital pulses, lengthening the time frame of the received pulses, and transmitting the lengthened pulses;

pulse repetition frequency determining circuit means connected to said pulse stretcher for receiving said lengthened pulses and for generating output pulses when the frequency of the lengthened pulses exceeds a predetermined frequency;

counting circuit means connected to said pulse repetition frequency determining circuit means for receiving said generated output pulses and for generating an output signal when the number of received pulses exceeds a

predetermined value within a predetermined period of time; and

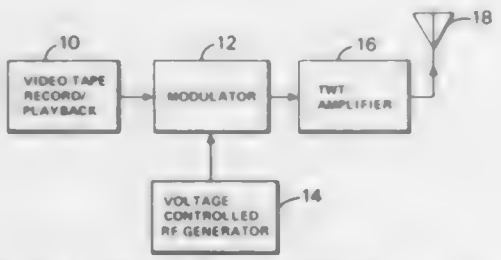
signal means connected to said counting circuit for receiving said generated output signal and for generating at least one of an audio and visual signal upon receipt of said generated output signal.

5,010,342

RADAR SIMULATOR

James R. Jones, Jr., 2944 Renault Pl., San Diego, Calif. 92122

Filed May 14, 1973, Ser. No. 365,303
Int. Cl.[5] G01S 7/40; G09B 9/00
U.S. Cl. 342—169 7 Claims



1. A radar signature simulator comprising

(a) means for generating the video portion of a radar signature,

(b) RF signal generating means for generating an RF signal of a predetermined frequency,

(c) amplitude modulator circuit means coupled to said video generating means and to said RF signal generating means for providing an amplitude modulated RF output signal,

(d) linear amplifier means coupled to said modulator circuit means for linearly amplifying said modulated signal,

(e) broad-band antenna means coupled to said linear amplifier means for transmitting said amplified dmodulated signal

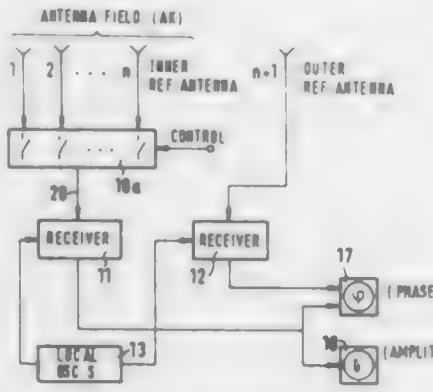
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5,010,343

METHOD AND DEVICE IN THE ANTENNA AND RECEIVING SYSTEM OF A RADIO THEODOLITE

Heary Andersson, Espoo, Finland, assignor to Vaisala Oy, Finland

Filed Apr. 25, 1989, Ser. No. 352,836
Claims priority, application Finland, Apr. 26, 1988, 881956
Int. Cl.[5] G01S 5/04
U.S. Cl. 342—432 4 Claims



1. Radio theodolite apparatus for measuring a radio signal arriving from a transmitter comprising:

an antenna system including at least three antennas (1 . . . n − 1), in an antenna field (AK), which includes an inner reference antenna (n) as well as an antenna selection unit (10a), receiver devices (11), phase-measurement devices (17), amplitude-measurement devices, and control and measurement device(60);

a reference antenna (n + 1) not belonging to the antenna field (AK) and a related receiver device (12) connected to the antenna system, whereby the phases of the signals of all the antennas (1 . . . n) belonging to the antenna field can be measured in relation to the reference signal obtained into said receiver device (12); and

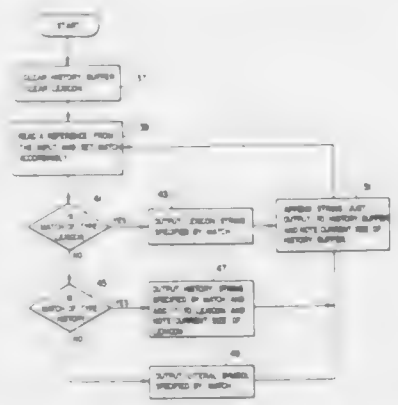
the outer reference antenna (n + 1) is placed at a distance larger than two wavelengths (λ) from the nearest other antenna (1 n).

5,010,344

METHOD OF DECODING COMPRESSED DATA

Michael E. Nagy, Tampa, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1989, Ser. No. 458,117
Int. Cl.[5] H03M 7/40
U.S. Cl. 341—65 2 Claims



2. A method of decoding a compressed free-form data stream made up of a sequence of literal references, lexicon references and history references, which comprises the steps of:

a) reading the first bit of said sequence;

b) reading the next eight bits of said sequence and emitting the symbol represented by said eight bits if said first bit is a zero;

c) inserting the symbol emitted in step b) in a history buffer,

d) noting the current size of said history buffer;

e) reading the second bit of said sequence if said first bit is a one;

f) if said second bit is a zero, reading the next number of bits of said sequence equal to the base two logarithm, rounded up to the nearest integer, of said current size of said history buffer, said number of bits identifying an offset into said history buffer, then reading the next number of bits of said sequence equal to the base two logarithm, rounded up to the nearest integer, of a preselected maximum history reference length, said number of bits identifying a length of a symbol string in said history buffer, and then emitting the string of symbols from said history buffer identified by said offset and length values;

g) inserting the string emitted in step f) in said history buffer;

h) noting the current size of said history buffer;

i) inserting the string emitted in step f) in a lexicon;

j) noting the current size of said lexicon;

k) if said second bit is a one, reading the next number of bits from said sequence equal to the base two logarithm, rounded up to the nearest integer, of said current size of said lexicon, said number of bits representing an index into said lexicon, and emitting the string of symbols from said lexicon identified by said index;

l) inserting the string emitted in step k) in said history buffer;

m) noting the current size of said history buffer; and

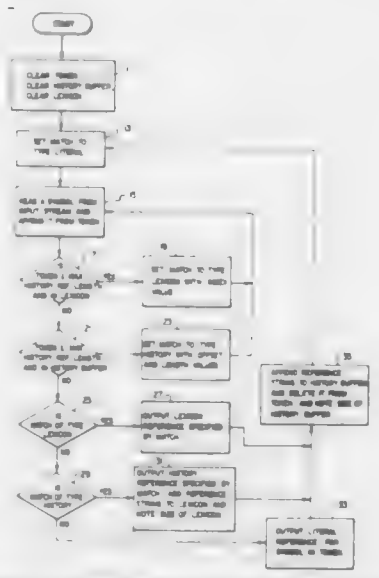
n) repeating steps a) through m) until said sequence is exhausted.

5,010,345

DATA COMPRESSION METHOD

Michael E. Nagy, Tampa, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1989, Ser. No. 458,119
Int. Cl.[5] H03M 7/40
U.S. Cl. 341—65 15 Claims



1 A method of compressing data made up of a sequence of symbols, which comprises the steps of:

recording in a fixed length history buffer symbols of said sequence;

emitting a history reference whenever a string of symbols from said sequence is duplicated in said history buffer;

recording in a lexicon strings of symbols that have been emitted by means of history references; and,

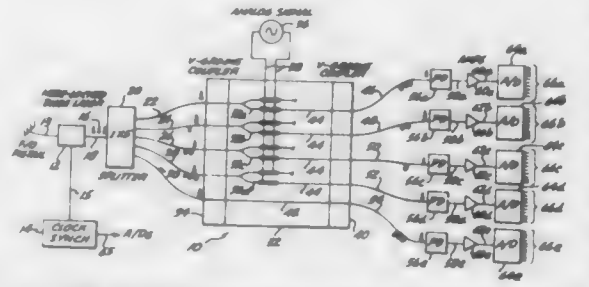
emitting a lexicon reference whenever a string of symbols from said sequence is duplicated in said lexicon.

5,010,346

ELECTRO-OPTICAL ANALOG-TO-DIGITAL CONVERTER AND METHOD FOR DIGITIZING AN ANALOG SIGNAL

Michael C. Hamilton, and John A. Bell, both of Redmond, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Oct. 27, 1989, Ser. No. 427,730
Int. Cl.[5] H03M 1/00
U.S. Cl. 341—137 24 Claims



1. A high speed, electro-optical analog-to-digital converter, for digitizing an analog signal, comprising:

(a) clock means for producing synchronization signals;

(b) light source means, connected to receive the synchronization signals and operative to produce pulses of light in response thereto;

(c) modulator means for modulating an intensity of the pulses of light as a function of an amplitude of the analog signal and thereby producing modulated light pulses, light pulses entering the modulator means at successively different times being modulated in response to the amplitude of the analog signal at those different times;

(d) demultiplexing means, for demultiplexing the light pulses produced by the light source means;

(e) detector means, connected to receive light pulses that have been demultiplexed by the demultiplexing means and modulated by the modulating means, for producing electrical signals having a magnitude proportional to the intensity of said light pulses; and

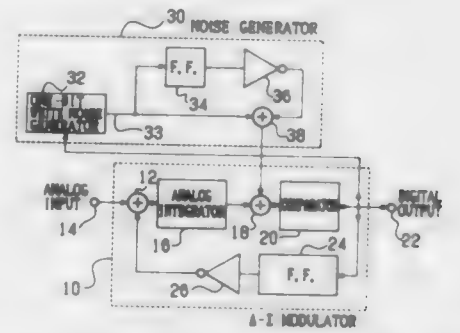
(f) a plurality of electrical analog-to-digital converters, each connected to receive a different one of the electrical signals and to receive the synchronization signals produced by the clock means, for producing digital data that vary as a function of the magnitude of said electrical signals, said digital data produced thereby corresponding to the amplitude of the analog signal at the different times.

5,010,347

ANALOG-TO-DIGITAL CONVERTER HAVING AN EXCELLENT SIGNAL-TO-NOISE RATIO FOR SMALL SIGNALS

Akira Yukawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 26, 1988, Ser. No. 249,158
Claims priority, application Japan, Sep. 25, 1987, 62-24141; Sep. 25, 1987, 62-24142; Oct. 1, 1987, 62-249228
Int. Cl.[5] H03M 3/00
U.S. Cl. 341—143 8 Claims



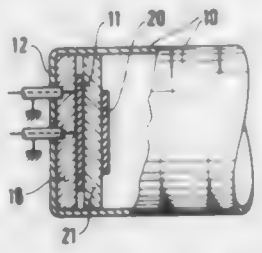
1. An oversampled analog-to-digital converter which includes an analog-to-digital converting circuit having at least an analog signal input terminal, an adder means having a first input connected to the analog signal input terminal and a second input, and a comparator having an input coupled to receive an output of the adder means and operating to generate a digital signal at a given sampling frequency, this digital signal being applied to the second input of the adder means, wherein the improvement comprises a noise generator including a one-bit white noise generator connected to receive the digital signal outputted from the comparator for generating a one-bit white noise signal, and means coupled to the one-bit white noise generator for outputting a signal indicative of a difference between values of two white noise signals at two continuous sampling points, this difference signal being added to the input of the comparator, wherein said digital signal is generated without subtracting said one-bit white noise signal therefrom.

5,010,348

DEVICE FOR EXCITING A WAVEGUIDE WITH CIRCULAR POLARIZATION FROM A PLANE ANTENNA

Didier Rene, Toulouse; Thierry Dusseux, Colombes, and Philippe Ginestet, Toulouse, all of France, assignors to Alcatel Espace, Courbevoie, France

Filed Nov. 7, 1988, Ser. No. 268,302
Claims priority, application France, Nov. 5, 1987, 87 15359
Int. Cl.[5] H01Q 1/38
U.S. Cl. 343—700 MS 7 Claims



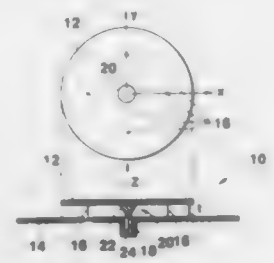
1 A device for exciting a rectinlinear hollow waveguide having an axis of symmetry and being closed at a first end perpendicular to said axis of symmetry; said device comprising: a plane antenna comprising a ground plane constituted by said first end of the waveguide; at least two dielectric layers, separated by a first metallic surface, and disposed on the interior surface of said waveguide first end; the dielectric layer of said layers remote from said waveguide first end having a second metallic surface disposed thereon, said dielectric layers and said metallic surfaces all being disposed symmetrically with respect to the axis of symmetry of the waveguide, and wherein said metallic surfaces each form a radiating element and constitute a plurality of superposed resonators disposed on the interior surface of said waveguide first end, at least one pair of coaxial lines connected to said first metallic surface, circumferentially spaced from each other by 90° relative to the axis of symmetry of the waveguide and a circuit including a hybrid coupler feeding said coaxial line in quadrature for exciting the waveguide with circular polarization.

5,010,349

PLANE PATCH ANTENNA

Tsuyoshi Mizuno, Yokosuka, and Motoki Hirano, Yokohama, both of Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Mar. 16, 1990, Ser. No. 494,343
Claims priority, application Japan, Apr. 12, 1989, 1-90681
Int. Cl.[5] H01Q 1/36
U.S. Cl. 343—700 MS 6 Claims



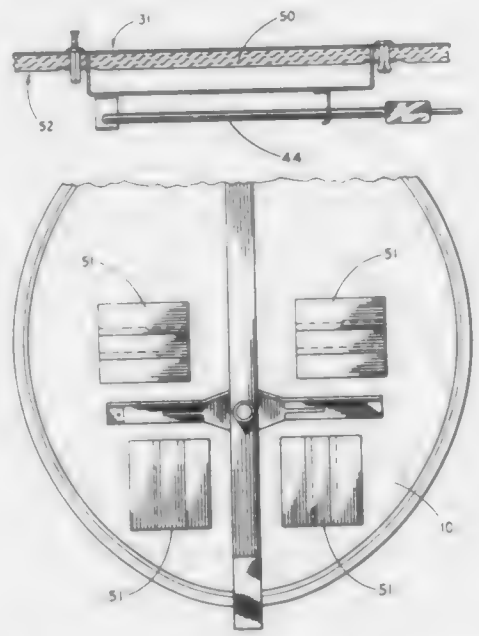
1. A plane patch antenna comprising:
a patch conductive plate member;
an earth conductive plate member;
a plurality of short pins extending between the patch and earth plane members to maintain the patch and earth plate members in spaced-parallel relation to each other and to make electric connection between the patch and earth plate members; and
a feeder shaft extending from the patch plate member for electrical connection of the patch plate member to a lead wire, the feeder shaft having a tapered portion extending from the patch plate member toward the earth plate member, the tapered portion having a cross-sectional area decreasing as going away from the patch plate member, the tapered portion having a maximum diameter in its area of attachment to the patch plate member, the maximum diameter being in a range of 0.12λ to 0.18λ.

5,010,350

ANTI-ICING AND DE-ICING SYSTEM FOR REFLECTOR-TYPE MICROWAVE ANTENNAS

Charles L. Lipkin, Naperville, and Marianne Jones, Lockport, both of Ill., assignors to Andrew Corporation, Orland Park, Ill.

Continuation-in-part of Ser. No. 130,809, Nov. 25, 1987, abandoned. This application Oct. 13, 1989, Ser. No. 421,173
Int. Cl.[5] H01Q 1/02
U.S. Cl. 343—704 11 Claims



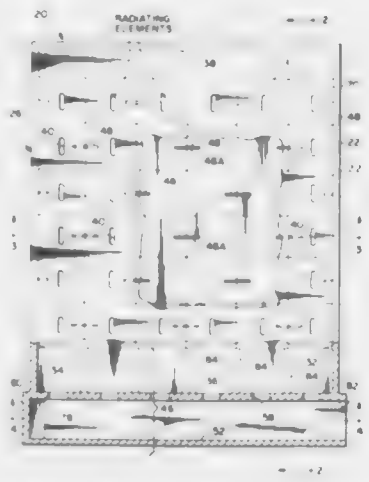
1 An anti-icing and de-icing system for a reflector-type microwave antenna having a paraboloidal reflector for launching and receiving microwave signals, said system comprising
a thermally non-conductive enclosure forming an enclosed cavity adjacent the rear surface of said reflector,
radiant heating means within said enclosure for heating the rear surface of said reflector with radiant energy emanating in a range of directions from said heating means in such a way that the air in said cavity is in turn heated by heat transferred to said air from the rear surface of said reflector, and
means within said enclosure for directing the radiating energy emanating from said heating to said rear surface of said paraboloidal reflector,
said heating means having a front side facing said rear surface of said flector and said directing means further comprising means for diverting at least a portion of the radiant energy emanating from said front side of said heating source and dispersed said diverted energy across the rear surface of said paraboloidal reflector.

5,010,351

SLOT RADIATOR ASSEMBLY WITH VANE TUNING

Kenneth C. Kelly, Sherman Oaks, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 8, 1990, Ser. No. 477,089
Int. Cl.[5] H01Q 13/10
U.S. Cl. 343—771 10 Claims



1. An array antenna, comprising:
a hollow waveguide of rectangular cross-section having first and second opposed broadwalls, and first and second opposed sidewalls, joined together along their respective longitudinal edges, said broadwalls and said sidewalls being comprised of conductive material to thereby render said waveguide capable of supporting the propagation of an electromagnetic wave through said waveguide, along the longitudinal dimension thereof;
a matrix of radiating slots provided in said first broadwall, said matrix being defined by a plurality M of rows of said slots, and a plurality N of columns of said slots, with each of said slots being oriented with its longitudinal dimension substantially parallel to the longitudinal dimension of said waveguide;
a plurality of vanes provided on said second broadwall and extending only partially across the internal height dimension of said waveguide, said vanes being configured with relation to each said column of slots in an alternating pattern such that successive ones of said vanes corresponding to successive rows of a column are located on opposite sides of said slots occupying said successive rows of that column;
wherein said vanes each lie in a plane disposed transverse to said sidewalls of said waveguide;
wherein the width of said broadwalls is at least N times greater than the height of said sidewalls; and,
wherein said vanes function to provide a sinuous path of propagation of said electromagnetic wave along each said column of slots so as to enhance coupling of said electromagnetic wave through said slots.

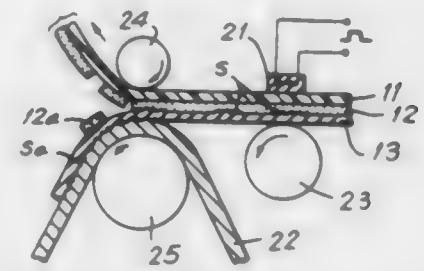
5,010,352

THERMAL TRANSFER INK PRINTING APPARATUS

Katsumori Takei; Hitoshi Fukushima; Kohei Iwamoto, and Hiroto Nakamura, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 104,139, Oct. 5, 1987, Pat. No. 4,914,079. This application Jan. 19, 1990, Ser. No. 467,114
Claims priority, application Japan, Oct. 6, 1986, 61-237482
Int. Cl.[5] G01D 15/10; B41J 2/315
U.S. Cl. 346—76 PH 6 Claims

1 A thermal transfer printing apparatus adapted for forming an image on a recording medium with a thermal transfer ink medium having at least a heat resistant support layer, a thermal ink layer thereon and an ink transfer layer on the ink layer, comprising:
a thermal print head for selectively applying thermal energy to the thermal transfer ink medium in a selected pattern corresponding to a desired image;
first platen means disposed opposite to the print head with the thermal transfer ink medium and not the recording medium therebetween for cooperating with the print head for contacting the thermal transfer ink medium to the print head for transferring the thermal energy from the



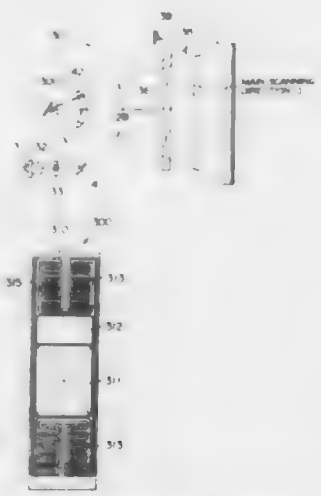
printing head to selectively heat the ink layer for transfer of selected portions of the ink layer to the ink transfer layer; and
second platen means for contacting the ink transfer layer leaving a position between the print head and the first platen means to the recording medium and for separating the support layer and unselected ink portions from the ink transfer layer and selected ink portions and for adhering the ink transfer layer and selected ink portions to the recording medium.

5,010,353

LASER RECORDER WITH INTEGRALLY MOLDED DEFLECTOR

Takashi Murahashi; Toshihiko Nakazawa; Toshihiro Takesue, and Toshihiro Motoi, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 203,697, Jun. 7, 1988, abandoned, which is a continuation-in-part of Ser. No. 68,142, Jun. 29, 1987, abandoned. This application Mar. 1, 1990, Ser. No. 490,518
Claims priority, application Japan, Jul. 4, 1986, 61-158559; May 11, 1987, 62-113853; Jul. 20, 1987, 62-181659
Int. Cl.[5] H04N 1/21
U.S. Cl. 346—108 8 Claims


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32
32
32

a beam correcting lens system interposed between said deflector and a recording medium so that said laser beam, deflected by said deflector, scans said recording medium through said lens system to write in said image signal,

wherein said deflecting element is molded integrally of a frame, a reflecting mirror, a drive coil and a ligament, and said deflector is driven at or near a natural frequency of said deflecting element, and

a length D in the main scanning direction at a laser beam reflecting surface of said reflecting mirror is selected to comply with the following formula,

$$D \geq 1.64 \times (\lambda F/d \cos(\alpha/2) + \alpha/2)$$

wherein λ is a wavelength of laser beam, F is a focal length of a lens for scanning, d is a diameter of laser beam in the main scanning direction on the recording medium, and α is an angle of incident beam to the reflecting mirror with respect to an optical axis of reflecting beam.

5,010,354

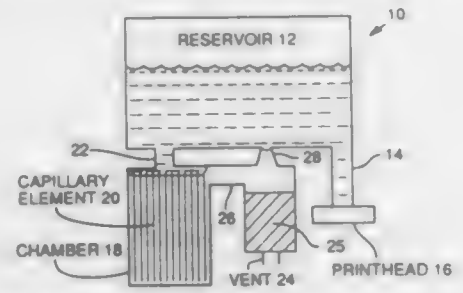
INK JET PEN WITH IMPROVED VOLUMETRIC EFFICIENCY

Bruce Cowger; John H. Dion, and William E. Peters, all of Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 28, 1989, Ser. No. 442,746

Int. Cl.[5] B41J *2/175*

U.S. Cl. 346—140 R **16 Claims**



1. An ink jet pen, comprising:

an ink reservoir for supplying ink to a printhead;

a chamber adjacent to the ink reservoir; and

capillary volume means contained within the chamber comprising a plurality of spaced plates, the capillary means being in fluid communication with the ink reservoir for maintaining pressure at the printhead at less than ambient pressure, the capillary means supplying ink to and accepting ink from the reservoir in response to a change in pressure within the reservoir.

5,010,355

INK JET PRINTHEAD HAVING IONIC PASSIVATION OF ELECTRICAL CIRCUITRY

William G. Hawkins, Webster; Cathie J. Burke, Rochester; Daniel O. Roll, Fishers; Pamela J. Hartman, Hilton, and Diane Atkinson, Marion, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

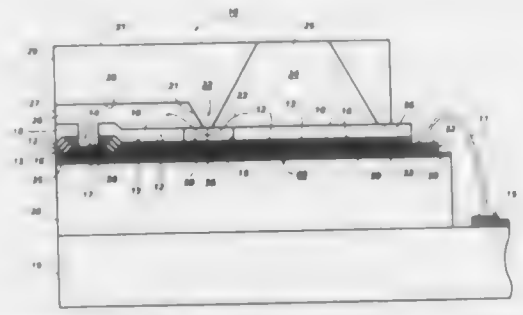
Filed Dec. 26, 1989, Ser. No. 456,431

Int. Cl.[5] B41J *2/34;* **H01L** *21/00*

U.S. Cl. 346—140 R **6 Claims**

1. An improved ink jet printhead having a plurality of parallel ink flow channels, each of which terminate with an ink droplet emitting nozzle at one end and communicate with an ink supplying reservoir at the other end, a heating element with a cavitational protective layer thereover being located in each channel a predetermined distance upstream from the nozzle, and MOS electronic circuitry monolithically integrated within the printhead for applying electrical pulses to the heating elements to produce bubbles momentarily on the protective layer of the heating element in response thereto, each of said bubbles expelling an ink droplet from the nozzles, wherein the improvement comprises:

ionic passivation of the MOS electronic circuitry through the deposition of a multi-layered, thin film insulative coating thereon consisting of a first layer of doped or undoped silicon dioxide directly over the MOS electronic circuitry and heating elements with protective layer having a thickness of 200 Å to 2 μm followed by a second layer of plasma nitride over the first layer having a thickness of 1000 Å to 3 μm, the silicon nitride being dry etched over the protective layer of the heating elements and electrical



contact pads for external connection to electrical power to expose the first layer of silicon oxide, followed by etching of the silicon oxide to remove it from the protective layer and contact pads, whereby the etch sequence prevents both contact pads and the heating element protective layers from being attacked, and the MOS circuitry is concurrently protected from mobile ions in the ink by said multi-layered, ionic passivation, while maintaining the cost effective fabrication of a printhead having heating elements with a cavitational protective layer to enhance their life time.

5,010,356

METHOD OF FORMING AN ADHERENT FLUOROSILANE LAYER ON A SUBSTRATE AND INK JET RECORDING HEAD CONTAINING SUCH A LAYER

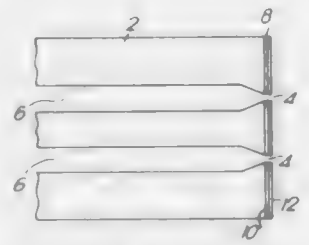
Rosemary B. Albinson, London, England, assignor to XAAR Limited, England

Filed Oct. 2, 1989, Ser. No. 415,726

Claims priority, application United Kingdom, Oct. 19, 1988, 8824436; Mar. 20, 1989, 8906380

Int. Cl.[5] G01D *15/18;* **B05D** *5/08, 7/24*

U.S. Cl. 346—140 R **38 Claims**



1. A method of reducing the wettability of a surface comprising plastic or non-vitreous inorganic material by providing an adherent coating of fluorosilane on said surface, said method comprising the steps of:

(a) forming on said surface an adherent first layer comprising cured siloxane; and

(b) applying to said first layer a second layer comprising at least one fluorosilane having a silicon atom to which is attached at least one hydrolyzable group and at least one fluorine-containing organic group which donates non-wetting properties to said second layer.

26. An ink jet recording head of the type in which ink droplets are jetted from a jet orifice of said head toward a recording material, said head defining a surface surrounding said jet orifice comprising plastic or non-vitreous inorganic material coated with a fluorosilane layer which reduces the wettability of said surface, with a layer comprising cured siloxane which is adherent to said surface interposed between said surface and said fluorosilane layer, said fluorosilane layer being derived from at least one fluorosilane having at least one hydrolyzable group attached to a silicon atom.

5,010,357

CAMERA IMAGE PLANE SIZE CONTROL DEVICE

Masayuki Misawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

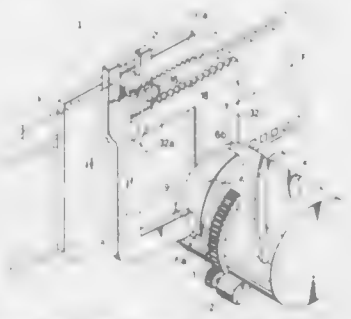
Division of Ser. No. 188,410, filed as PCT JP87/00649 on Sep. 1, 1987, published as WO88/01754 on Mar. 10, 1988, Pat. No. 4,987,436.

This application Jul. 19, 1989, Ser. No. 382,109

Claims priority, application Japan, Sep. 2, 1986, 61-134573; Sep. 25, 1986, 61-146871; Oct. 27, 1986, 61-164390; Oct. 27, 1986, 61-164391; Oct. 27, 1986, 61-164392

Int. Cl.[5] G03B *13/32, 1/18, 17/00*

U.S. Cl. 354—159 **66 Claims**



1. An apparatus for controlling the size of an image plane in a camera having a zoom lens, said zoom lens comprising means for displacing an exit pupil of the lens in accordance with a zooming operation of said lens, said apparatus comprising first and second movable aperture frames together forming an aperture which comprises means for defining the size of said image plane, said first and second movable aperture frames being movable in directions substantially parallel to the direction of movement of film which is travelling within said camera, said movable aperture frames being movable in response to movement of said exit pupil during a zooming operation, said movable aperture frames thereby comprising means for restricting the size of said image plane within predetermined limits.

5,010,358

PREDETERMINED MAGNIFICATION PHOTOGRAPHING APPARATUS FOR A CAMERA

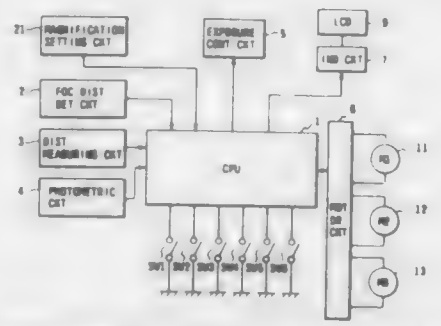
Hidenori Miyamoto, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Dec. 11, 1989, Ser. No. 448,322

Claims priority, application Japan, Dec. 13, 1988, 63-315778

Int. Cl.[5] G03B *3/00, 13/18, 1/18*

U.S. Cl. 354—402 **17 Claims**



1 A predetermined magnification photographing apparatus for a camera using a zoom lens for effecting zoom photographing at a predetermined photographing magnification comprising:

driving means for driving said zoom lens;

detecting means for detecting distance to an object moving along an optic axis of said zoom lens and speed of movement of said object;

output means for outputting an operation signal; and

control means for causing said detecting means to repetitively detect the distance to said object and the speed of movement of said object as long as said operation signal is output, repetitively predicting the distance to said object after a predetermined time on the basis of said detected distance and said detected speed of movement, repetitively determining a desired zoom position of said zoom lens on the basis of said predicted distance, and operating said driving means to drive said zoom lens to said desired zoom position.

5,010,359

METHOD AND APPARATUS FOR PHOTOMETRY FROM PLURAL POINTS OF AUTOMATIC EXPOSURE CAMERA

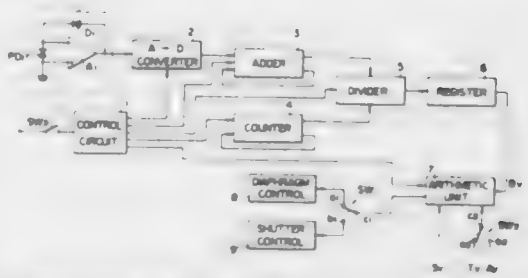
Yoshihisa Maitani, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Japan

Continuation of Ser. No. 263,032, May 12, 1981, abandoned. This application Mar. 14, 1983, Ser. No. 469,471

Claims priority, application Japan, Jul. 31, 1980, 55-105656

Int. Cl.[5] G03B *7/08, 7/091;* **H03K** *21/00;* **G06F** *7/52*

U.S. Cl. 354—410 **13 Claims**



1. An apparatus for an automatic exposure camera for effecting photometry of a plurality of small areas in the image field of an object being photographed, comprising:

a taking lens for focussing an image of the object being photographed upon a surface in said camera;

a single photometric element provided in the camera and positioned relative to said surface for determining the brightness of a relatively small area of the image field of the object created at said surface;

a viewfinder on the camera cooperating with said taking lens enabling the operator to view the image field;

a switch for activating said single photometric element upon each operation of the switch which is activated each time a predeterrmined desired area of an image field is aligned with said single photometric element through the aid of said viewfinder to obtain a photometric value at the selected small area;

memory means in said camera for storing a plurality of successive photometric values obtained from said single photometric element each time said switch is operated, said values indicating the brightness of said predetermined desired area with which said single photometric element is aligned;

calculation means responsive to operation of said switch for performing a calculation utilizing the plurality of photometric values stored in said stored means and the number of photometric values stored to derive a calculation value;

exposure control means responsive to values of film speed and either an aperture setting or a shutter speed setting

preset into said camera for controlling an exposure of said camera in accordance with said preset values and said calculation value, upon initiation of a photographing operation.

5,010,360

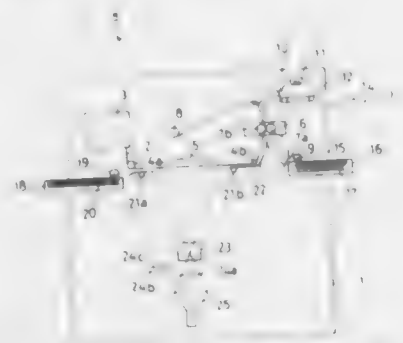
IMAGE FORMING APPARATUS

Takemi Yamamoto; Osamu Nagata; Ryohei Komiya; Jun Sakai, and Yoshiyuki Ban, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Sep. 27, 1990, Ser. No. 589,095

Int. Cl.[5] G03B *27/72*

U.S. Cl. 355—20 **5 Claims**



1. An image forming apparatus for forming an image on a sheet by using a cathode ray tube as a light source which comprises;

(a) a cathode ray tube for selectively emitting light signals onto a photosensitive pressure-sensitive sheet or heat-developing color silver chloride sheet;

(b) a first sheet accommodating portion for accommodating a plurality of developing sheets cooperating with the photosensitive pressure-sensitive sheet;

(c) a second sheet accommodating portion for accommodating a plurarity of silver chloride sheets;

(d) a transferring mechanism for transferring the photosensitive pressure-sensitive sheet so as to form an exposing portion located opposite to the cathode ray tube, the silver chloride sheet being selectively portioned at the exposing portion;

(e) a pressure developing unit disposed along a transferring path of the photosensitive pressure-sensitive sheet for transferring a latent image formed on the photosensitive pressure-sensitive sheet onto the developing sheet fed from the first sheet accommodating portion;

(f) a heat-fixing unit for fixing an image on the developing sheet or the silver chloride sheet; and

(g) a controlling circuit for controlling the cathode ray tube, which comprises an image signal inverting means for inverting a polarity of an image signal so as to invert light and darkness of an image formed on the cathode ray tube and/or a deflecting circuit for inverting an image formed on the cathode ray tube in a mirror image relationship.

5,010,361

COPYING DEVICE FOR MODIFYING (DISTORTING) FILM PATTERNS

Michael Wulff, Grambeker Weg 161, D-2410 Mölln, Fed. Rep. of Germany

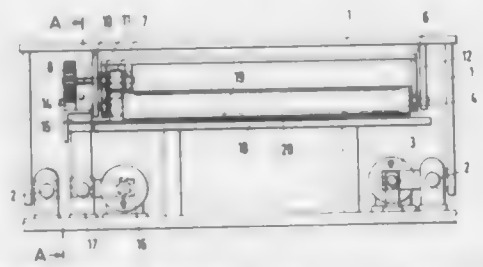
Filed Dec. 7, 1989, Ser. No. 447,222

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1988, 3841100

Int. Cl.[5] G03B *27/68*

U.S. Cl. 355—52 **4 Claims**

1. A copying device for modification of a film pattern which is arranged on a film to be exposed, is moved relative to the film corresponding to a desired elongation or compression by means of moving a holder, and is exposed by a light source which is moved over the film pattern and film in an axial direction fixed by the relative movement between the film pattern and the film, wherein at least one contact pressure roller rolling in the pattern is moved along with its light source, the holder (15) being arranged only on one side so as to clamp an adjoining edge of the film pattern which extends



parallel to the axial direction of the relative movement between the film pattern (19) and the film (20) and the movement of the light source (1), the at least one contact pressure roller (4, 5) being coupled with the holder (15) so as to move with said holder (15).

5,010,362

IMAGE PROJECTING SYSTEM

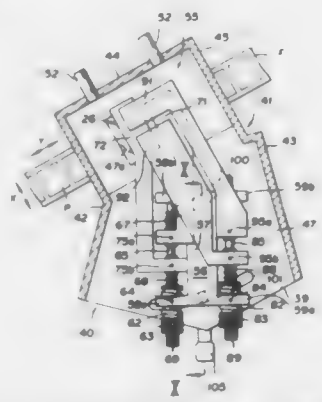
Hajime Otsuki; Osami Kato, and Hideaki Kusano, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 222,402, Jul. 21, 1988, abandoned. This application Sep. 4, 1990, Ser. No. 579,183

Claims priority, application Japan, Jul. 21, 1987, 62-182056; Jul. 21, 1987, 62-182057

Int. Cl.[5] G03B *27/58*

U.S. Cl. 355—74 **25 Claims**



1. In an image projecting device which causes a light from a light source to impinge on a film and projects an image on said film onto an image receiver through a projection lens, the improvement comprising:

masking means for intercepting an optical path from said light source to said image receiver, the masking means being formed integrally with said projection lens, and

means for rotating the masking means, said masking means being rotatable around the optical axis relative to the film.

5,010,363

IMAGE FORMING APPARATUS HAVING SHEET JAM REACTION RESET MEANS

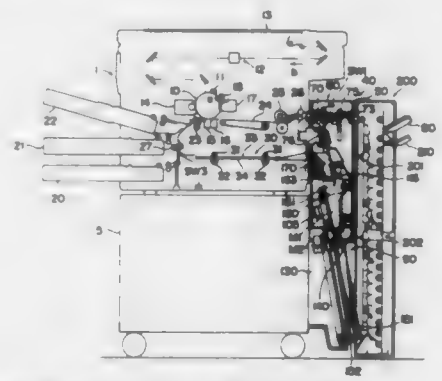
Kimihiko Higashio, Osaka, and Takeshi Yoshikai, Minokamo, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 29, 1989, Ser. No. 459,122

Claims priority, application Japan, Dec. 30, 1988, 63-333169; Dec. 30, 1988, 63-333171

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—206 **5 Claims**



1. An image forming apparatus comprising:

an image forming section where an image is formed on a sheet;

a sheet handling section for receiving printed sheets from the image forming section, said sheet handling section being operable in an ejection mode of ejecting printed sheets outside and in a mode of collecting printed sheets inside thereof to process the sheets;

means provided in the sheet handling section for detecting a sheet, which means is disposed in a sheet path taking sheets outside said sheet handling section;

means for detecting the occurrence of a sheet jam at each part in the sheet handling section;

means for reacting to a sheet jam by discontinuing the operation of the apparatus in response to a jam signal generated from the sheet jam detecting means; and

means for resetting the sheet jam reaction, when the apparatus is relieved of the sheet jam, by canceling the discontinuance of the operation of the apparatus in accordance with the operation mode in which the sheet handling section was operated before the discontinuance,

wherein when the operation mode of the sheet handling section before the discontinuance is the ejection mode, the jam reaction resetting operation is executed in response to a signal indicating that the sheet detecting means does not detect a sheet after the jam reacting operation.

5,010,364

COPIER WITH AUTOMATIC DOCUMENT FEED HAVING JAM PREVENTION FUNCTION

Yoshikazu Maekawa, and Tetsuo Hirata, both of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Feb. 1, 1990, Ser. No. 473,475

Claims priority, application Japan, Feb. 3, 1989, 1-23673; Feb. 3, 1989, 1-23674

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—207 **5 Claims**

1. An apparatus for sequentially copying plural sheets of documents, comprising:

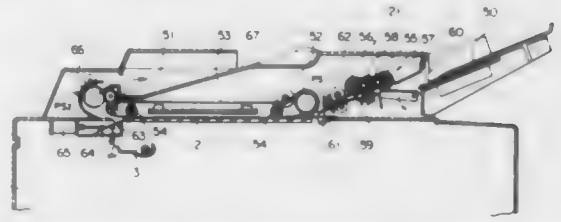
a sheet passage through which the documents are fed;

a document platen on which the documents are copied, said document platen forming a part of said sheet passage;

feeding means for feeding the documents onto said document platen through said sheet passage;

stop means movable between a first position and a second position, said stop means being positioned to contact a fed document to stop it at a predetermined position on said document platen when in said first position and said stop means being positioned so as not to contact a fed document when in said second position;

sensing means for detecting a document longer than a predetermined length prior to the document contacting the stop means; and



control means, responsive to the detection of a document longer than the predetermined length, for moving the stop means to the second position prior to the detected document contacting the stop means.

5,010,365

ELECTROPHOTOGRAPHIC APPARATUS HAVING POSITIONING MECHANISM FOR DETACHABLE PROCESS CARTRIDGE

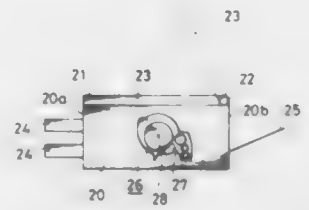
Sunao Hatanaka, Takizawa, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

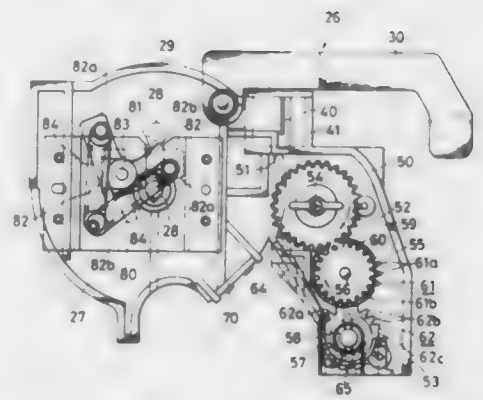
Filed Feb. 7, 1989, Ser. No. 307,863

Claims priority, application Japan, Mar. 31, 1988, 63-41844[U]

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—211 **3 Claims**





1. An electrophotographic apparatus having a process cartridge including a cleaner and a photosensitive drum, said photosensitive drum rotating on a rotational shaft detachably mounted in a housing having a driving mechanism for driving said photosensitive drum arranged thereon, said apparatus comprising:

an opening formed at the top of said housing openable by a cover for inserting and removing said process cartridge; and

a positioning mechanism for positioning the rotational shaft inserted through said opening at a predetermined position

capable of transmitting the drive of said driving mechanism to the rotational shaft;

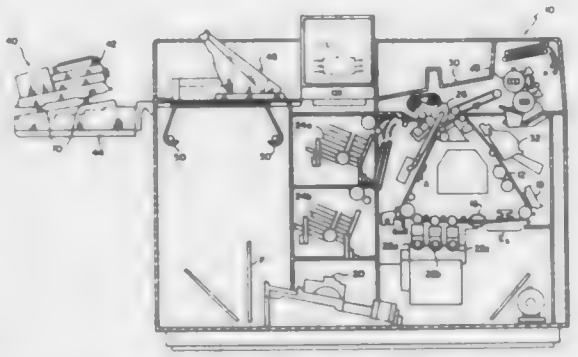
wherein said positioning mechanism includes means for mounting said process cartridge in said housing in a single action and for dismounting said process cartridge from said housing in a single action, and including a slit formed at a guide plate, and a bell-crank-shaped holding lever.

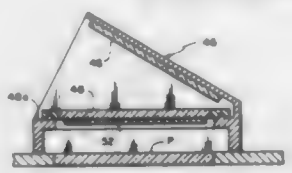
5,010,366

SLIDE TRANSPARENCY PROJECTOR APPARATUS FOR USE WITH AN ELECTROPHOTOGRAPHIC REPRODUCTION MACHINE

Carlton J. Baxter, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 15, 1989, Ser. No. 366,396
Int. Cl.[5] G03G *15/04*
U.S. Cl. 355—240 **9 Claims**





1 For use with an electrophotographic reproduction machine including a transparent platen for supporting information to be reproduced, means for exposing information located on said transparent platen, a photoconductive member upon which latent image charge patterns of such information are formed, and a main lens assembly for projecting focused image of information on said transparent platen onto said photoconductive member to form such latent image charge patterns, apparatus for enabling said electrophotographic reproduction machine to make reproductions of slide transparencies, said apparatus comprising:

means for projecting a real image of a slide transparency along an optical path onto said transparent platen;

a Fresnel lens; and

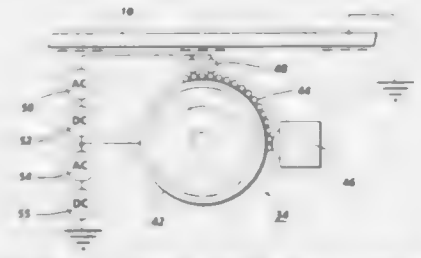
means for supporting said Fresnel lens in said optical path of said projecting means as a field lens for said main lens assembly, said supporting means maintaining said Fresnel lens in spaced relation to said transparent platen beyond the depth of focus of said main lens assembly.

5,010,367

DUAL AC DEVELOPMENT SYSTEM FOR CONTROLLING THE SPACING OF A TONER CLOUD

Dan A. Hays, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 11, 1989, Ser. No. 448,407
Int. Cl.[5] G03G *15/08*
U.S. Cl. 355—247 **32 Claims**



1. Apparatus for forming images on an image receiving surface with developer, said apparatus comprising:

a supply of developer;

means for transporting developer from said supply to an area adjacent said image receiving surface;

means for forming transported developer into a cloud of marking particles;

means for controlling the spacing of said marking particle cloud relative to said image receiver without interacting with said image receiving surface; and

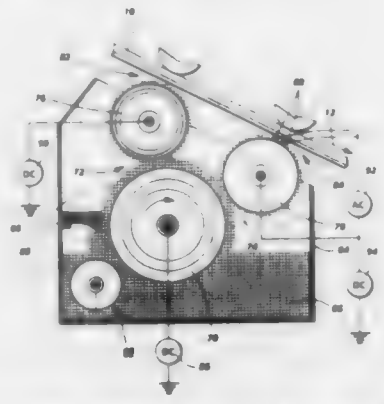
means for establishing a development field between said transporting means and said image receiving surface for causing an image on said image receiving surface to be developed with marking particles.

5,010,368

MAGNETIC TRANSPORT ROLL FOR SUPPLYING TONER OR CARRIER AND TONER TO A DONOR AND MAGNETIC DEVELOPER ROLL RESPECTIVELY

John F. O'Brien, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 20, 1990, Ser. No. 482,110
Int. Cl.[5] G03G *15/06*
U.S. Cl. 355—259 **3 Claims**



1. An electrophotographic printing machine of the type having an electrostatic latent image recorded on a photoconductive surface developed by toner to form a visible image thereof, wherein the improvement includes:

a housing defining a chamber adapted to store a supply of developer material comprising at least carrier and toner therein;

a donor roll positioned at least partially in the chamber of said housing, said donor roll being adapted to deliver toner to the surface to develop the latent image recorded thereon with toner;

a magnetic developer roll spaced from said donor roll and positioned at least partially in the chamber of said housing, said developer roll being adapted to deliver developer material to the surface to develop the latent image recorded thereon with toner;

a magnetic transport roll adapted to transport developer material to a first loading zone where a portion of the developer material is attracted to said magnetic developer roll with the remainder of the developer material being transported to a second loading zone where toner is attracted from carrier to said donor roll, and

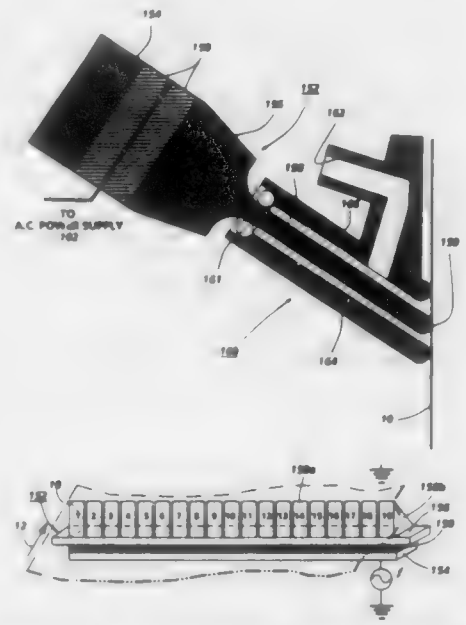
an electrode member positioned in the space between the surface and said donor roll, said electrode member being closely spaced from said donor roll and being electrically biased to detach toner from said donor roll so as to form a toner cloud in the space between said electrode member and the surface with detached toner from the toner cloud developing the latent image.

5,010,369

SEGMENTED RESONATOR STRUCTURE HAVING A UNIFORM RESPONSE FOR ELECTROPHOTOGRAPHIC IMAGING

William J. Nowak, Webster; Anthony A. Attardi, Rochester, and Daniel W. Costanza, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 2, 1990, Ser. No. 548,517
Int. Cl.[5] G03G *15/14*
U.S. Cl. 355—273 **15 Claims**



1. In an imaging device having a non-rigid member with a charge retentive surface moving along an endless path, means for creating a latent image on the charge retentive surface, means for imagewise developing the latent image with toner, means for electrostatically transferring the developed toner image to a copy sheet, and a resonator for enhancing toner release from the charge retentive surface and producing relatively high frequency vibratory energy, and having a portion thereof adapted for contact across the flexible belt member, generally transverse to the direction of movement thereof, the resonator comprising:

a horn member for applying the high frequency vibratory energy to the belt member, having a platform portion, a horn portion, and a contacting portion;

vibratory energy producing means coupled to said horn platform, for generating the high frequency vibratory energy;

support means for supporting the combination of said vibratory energy producing means and said horn member;

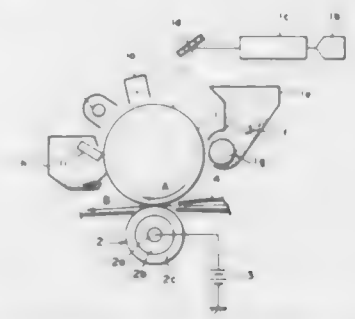
said horn member divided into a plurality of horn segments across said belt member, each horn segment including horn portion and contacting portion in substantially non-contacting relationship with adjacent horn segments.

5,010,370

TRANSFER APPARATUS AND IMAGE BEARING APPARATUS USING SAME HAVING TRANSFER MEANS FOR CONTACTING A BACKSIDE OF A TRANSFER MATERIAL

Junji Araya, Yokohama; Yukihiro Ohzeki, Kashiwa; Toshio Miyamoto, Tokyo; Koichi Hiroshima, Yokohama; Yasushi Sato, and Kimio Nakahata, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1989, Ser. No. 426,002
Claims priority, application Japan, Oct. 29, 1988, 63-271990
Int. Cl.[5] G03G *15/16*
U.S. Cl. 355—274 **14 Claims**



1. An image forming apparatus, comprising:

an image bearing member;

latent image forming means for forming an electrostatic latent image on said image bearing member;

developing means for developing an electrostatic latent image formed on said image bearing member into a toner image with toner;

transfer means for contacting a backside of the transfer material, for urging the transfer material to said image bearing member having the toner image and for applying a transfer bias to transfer the toner image to the transfer material;

wherein amounts of electric charge applied to the transfer material by said transfer means during a transfer operation satisfy the relation:

$$A \geq B/2$$

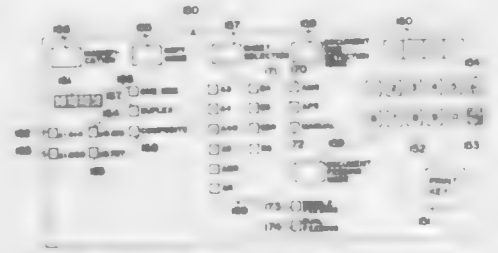
where A is an amount of the charge at a portion of the transfer material where the toner is present, and B is an amount of the charge at a portion of the transfer material where the toner is absent.

5,010,371

COPYING APPARATUS PROVIDED WITH AUTOMATIC DOCUMENT FEEDER

Hirokazu Matsuo, and Hiroyasu Nagato, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 192,371, May 10, 1988, abandoned.
This application Jan. 23, 1990, Ser. No. 469,702
Claims priority, application Japan, May 12, 1987, 62-115336; May 18, 1987, 62-121648; May 20, 1987, 62-124140; May 20, 1987, 62-124141; May 20, 1987, 62-124142; May 20, 1987, 62-124143
Int. Cl.[5] G03G 21/00
U.S. Cl. 355—313 11 Claims



1 A copying apparatus comprising

a rectangular platen,

transporting means for sequentially feeding first and second original documents and placing them on said platen side by side in the document feeding direction,

image forming means for copying the images of the documents placed side by side on said platen to a single surface of a copy sheet,

detecting means for detecting the size of a document fed by said transporting means, and

control means for inhibiting the operation of feeding the second document by said transporting means and allowing said image forming means to form the image of the first document, when the first document is placed on the platen with its longer side thereof in parallel to the longer side of said platen

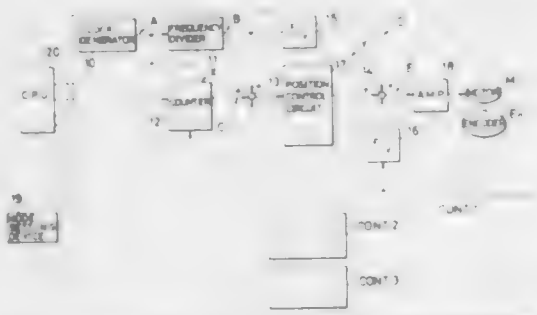
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5,010,372

BLACK-AND-WHITE AND COLOR COPIER OPERABLE AT DIFFERENT PROCESSING SPEEDS

Nobuo Kasahara; Masayoshi Watanuki, both of Yokohama; Satoru Maeno, Mie, and Masato Ohkuni, Ise, all of Japan, assignors to Ricoh Company, Ltd. and Shinko Electric Co., Ltd., both of Tokyo, Japan

Filed Aug. 28, 1989, Ser. No. 398,916
Claims priority, application Japan, Sep. 2, 1988, 63-220091
Int. Cl.[5] G03G 21/00
U.S. Cl. 355—313 6 Claims



1 A copying machine with a variable process speed having a black-and-white copying mode and color copying mode, comprising

a scanning optical system for optically scanning an original document, having color filters used in said color copying mode for decomposing color into red, green and blue;

a first drive unit for driving said scanning optical system,

a photosensitive means for obtaining a latent image of said original document, in association with said scanning optical system;

a second drive unit for driving said photosensitive means;

developer means for developing said latent image, having a black developer for developing said latent image obtained without said color filters in said black-and-white copying mode and a yellow developer, a magenta developer and a cyan developer for developing said latent image in respective complementary colors to red, green and blue in said color copying mode;

transfer means rotated in proximity to said photosensitive means and for transferring said developed latent image onto a transfer paper held on a transfer means to provide a copy of the original document,

a third drive unit for driving said transfer means,

a drive condition setting device for judging a designated copy mode and for giving speeds of said respective drive units varying in accordance with respective copy modes, having a pulse generating circuit for generating a series of pulses for controlling operations of said respective drive units, a frequency divider for dividing said series of pulses, and a frequency dividing ratio selecting means for selecting a frequency dividing ratio of said series of pulses to provide a series of divided pulses having a present frequency such that the speeds of the respective drive units are suitable for the designated copy mode, and

accelerating means for accelerating said speeds of said respective driving units in order to correct operating positions of said respective drive units, and having counter means for counting a given number of pulses generated by said pulse generating circuit, and an adder means for adding a counted value of said counter means to an output of said frequency divider

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5,010,373

APPARATUS FOR SUPPLYING AND DISCHARGING ORIGINALS IN A COPYING MACHINE

Johannes L. J. M. Linssen, Baarlo, and Jozef J. A. Pleyers, Panningen, both of Netherlands, assignors to Oce Nederland B.V., Netherlands

Filed Jul. 10, 1990, Ser. No. 550,390
Claims priority, application Netherlands, Jul. 14, 1989, 8901828
Int. Cl.[5] G03G 21/00
U.S. Cl. 355—319 10 Claims



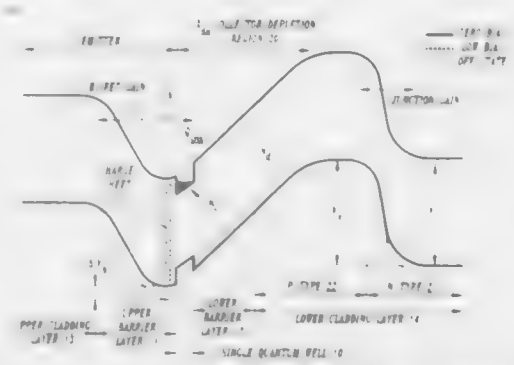
1 In an apparatus for supplying and discharging originals in a copying machine comprising a first cassette and a second cassette for originals, a first feed path for feeding originals from the first cassette to an imaging means of the copying machine and so formed that the originals are fed to the imaging means in a reversed orientation; a second feed path for feeding originals from the second cassette to the imaging means; a turnover path for turning over originals coming from the imaging means and returning them to the imaging means; a first discharge path for discharging originals from the imaging means to the first cassette and so formed that the originals are deposited in the first cassette in a reversed orientation, and a control means for controlling the transport of the originals; the improvement comprising the second feed path being so formed that the originals are fed to the imaging means in the same orientation as they had in the second cassette; a second discharge path is provided to discharge originals from the imaging means to the second cassette and is so formed that originals are deposited in the second cassette in the same orientation as they had when leaving the imaging means; and wherein the control means is so constructed that: (a) duplex originals, at least in the production of the first up to and including the penultimate set of copies, are fed from the cassette in which they are situated to the imaging means and, after both sides have been copied, are discharged to the other cassette, and (b) simplex originals, at least in the production of the second up to and including the last set of copies, are fed from the same cassette to the imaging means.

5,010,374

QUANTUM WELL LASER UTILIZING AN INVERSION LAYER

Paul W. Cooke, Fair Haven, and Geoffrey W. Taylor, Holmdel, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 5, 1990, Ser. No. 533,549
Int. Cl.[5] H01L 29/161, 33/00; H01S 3/19
U.S. Cl. 357—16 9 Claims



1 In a laser comprising a quantum well region forming first and second heterojunction interfaces with upper and lower carrier confinement regions, respectively, the improvement comprising

a charge sheet formed substantially near said first heterojunction interface and within said upper carrier confinement region such that an inversion layer is produced in said quantum well region, said quantum well region being substantially undoped, said upper and lower carrier confinement regions having a first conductivity type, said charge sheet having a second conductivity type opposite to said first conductivity type, and said charge sheet having a doping concentration sufficiently greater than said upper carrier confinement region for producing said inversion layer.

5,010,375

SEMICONDUCTOR LASER DEVICE

Yoshito Seiwa, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed May 17, 1989, Ser. No. 353,029
Claims priority, application Japan, May 23, 1988, 63-126111
Int. Cl.[5] H01L 29/161
U.S. Cl. 357—16 5 Claims

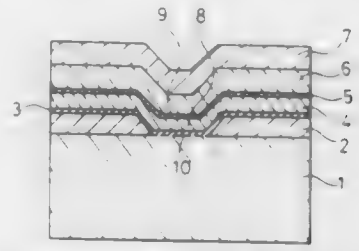
1. A semiconductor laser device comprising:

a first conductivity type Si substrate;

a current confinement layer comprising a second conductivity type Si disposed on said substrate and having an aperture extending through said current confinement layer to said substrate;

a plurality of compound semiconductor layers including successively disposed lower cladding, active, and upper cladding layers comprising AlGaAs and GaAs disposed opposite said current confinement layer, opposite said Si substrate, and in said aperture in said current confinement layer forming a semiconductor laser; and

an AlGaAs buffer layer disposed between and in contact with said Si substrate and said plurality of compound semiconductor layers for relieving stress caused by the difference in lattice constants between said substrate and said plurality of compound semiconductor layers.

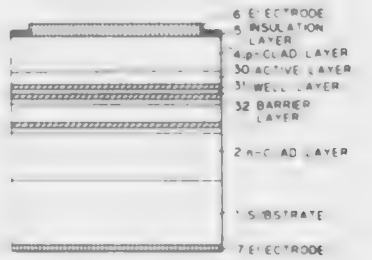


5,010,376

LIGHT EMITTING HETEROJUNCTION SEMICONDUCTOR DEVICE

Kohsuke Nishimura, and Kazuo Sakai, both of Tokyo, Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Jul. 31, 1990, Ser. No. 560,692
Claims priority, application Japan, Sep. 1, 1989, 1-224712
Int. Cl.[5] H01L 27/14
U.S. Cl. 357—17 13 Claims



1. A light emitting semiconductor device comprising;

a substrate made of one selected from III-V group compound semiconductor, and group IV semiconductor,

an active layer (3) sandwiched by clad layers (2,4) deposited on said substrate (1),

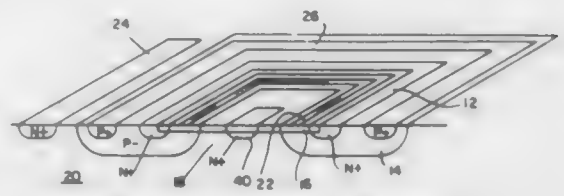
said active layer and clad layers being made of group II-VI compound semiconductor which lattice matches with the substrate, and has essentially the same linear thermal expansion coefficient as that of the substrate.

5,010,377

ISOLATED GATE MESFET AND METHOD OF TRIMMING

James D. Beasom, Melbourne Village, Fla., assignor to Harris Corporation, Melbourne, Fla.

Division of Ser. No. 164,342, Mar. 4, 1988, Pat. No. 4,418,746.
This application Jun. 14, 1990, Ser. No. 537,936
Int. Cl.[5] H01L 29/80
U.S. Cl. 357—22 28 Claims



1. A junction field effect transistor comprising

a drain region of a first conductivity type,
an annular bottom gate region of a second conductivity type in said drain region;
a source region of said first conductivity type in said annular bottom gate region;
a channel region of said first conductivity type extending through said bottom gate region and connecting said source and drain regions; and
an annular top gate in contact with said channel region, and isolated from said bottom gate region by said channel region, and of a material forming a Schottky barrier diode with said channel region.

5,010,378

TAPERED TRENCH STRUCTURE AND PROCESS

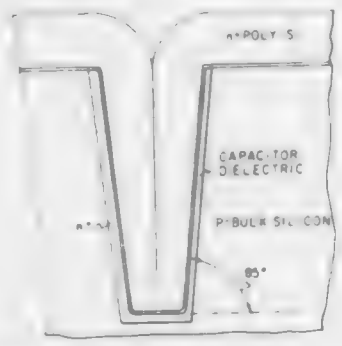
Monte A. Douglas, Coppell, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 296,397, Jan. 6, 1989, Pat. No. 4,916,511, which is a continuation of Ser. No. 10,374, Feb. 3, 1987, abandoned, which is a division of Ser. No. 841,391, Mar. 19, 1986, Pat. No. 4,690,729, which is a continuation-in-part of Ser. No. 730,701, May 3, 1985, Pat. No. 4,702,795. This application Feb. 20, 1990, Ser. No. 481,430

The portion of the term of this patent subsequent to Apr. 10, 2007, has been disclaimed.

Int. Cl.[1] **H01L** *29/68, 29/06, 27/02*

U.S. Cl. 357—23.6 **10 Claims**



1. An integrated circuit, comprising:
(a) a semiconductor layer with a surface;
(b) at least one memory cell at said surface, said memory cell including a capacitor and an access device connected to said capacitor;
(c) wherein said capacitor has a plate along a sidewall of a trench that extends from said surface into said layer, said trench with an aspect ratio of at least 2.5 to 1 and positively sloping sidewalls without bowing or undercut

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5,010,379

SEMICONDUCTOR MEMORY DEVICE WITH TWO STORAGE NODES

Tatsuya Ishii, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

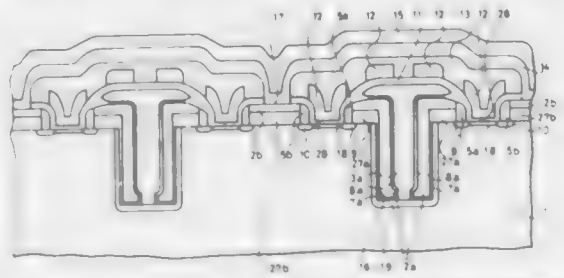
Filed Jun. 22, 1989, Ser. No. 369,965

Claims priority, application Japan, Aug. 26, 1988, 63-213209

Int. Cl.[5] **H01L** *27/10, 29/06, 27/02*

U.S. Cl. 357—23.6 **15 Claims**

7. A semiconductor memory device comprising:
a first conductivity type semiconductor substrate (1) having a planar surface,
a trench (16) formed on said planar surface and having side walls and a bottom surface,
a first region (19) of a capacitor cell plate formed of a second conductivity type layer on the side walls and the bottom surface of said trench,
two capacitor storage nodes (2*a*) each having first and second surfaces thereof covered by respective capacitor dielectric films (7*a* and 8*a*) and formed along the side walls of said trench, said two storage nodes facing each other,
a second region (3*a*) of said cell plate formed of an electrically conductive material, said second region being interposed between said two storage nodes (2*a*) and electrically connected to said first region (19) of the cell plate at the bottom surface of said trench (16), and
field effect transistors (9, 10, 12, 18 and 28) each connected to one of said storage nodes (2*a*) and formed on said planar surface



5,010,380

VOLTAGE STRESS ALTERABLE ESD PROTECTION STRUCTURE

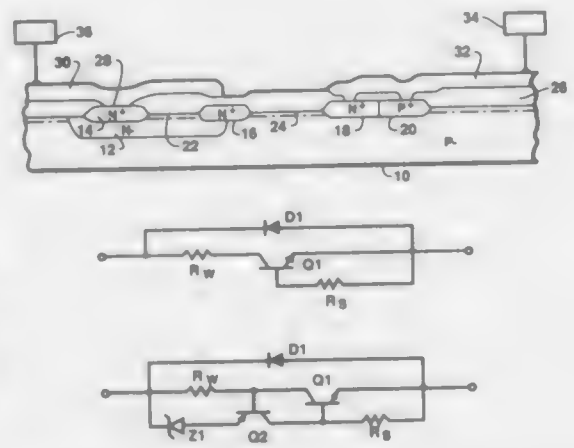
Leslie R. Avery, Flemington, N.J., assignor to David Sarnoff Research Center, Inc.

Filed May 4, 1990, Ser. No. 516,497

Claims priority, application United Kingdom, May 17, 1989, 8911360

Int. Cl.[1] **H01L** *29/06*

U.S. Cl. 357—23.13 **15 Claims**



1 A protection circuit comprising:
a semiconductor substrate of a first conductivity type having a surface;
a well region of second conductivity type in the substrate at the surface thereof, the well region of second conductivity type having disposed therein spaced first and second regions of second conductivity type having relatively higher conductivity than the well region;
a third region of first conductivity type in the substrate at the surface thereof and spaced from the well region;
a fourth region of second conductivity type in the substrate at the surface thereof spaced from the well region and adjacent the third region;
a terminal overlying and contacting the surface over the first region; and
a field layer of first conductivity type in the substrate and adjacent the surface thereof extending completely between the first and second regions and completely between the third and fourth regions;

said circuit forming a first transistor of a first conductivity type in which the fourth region of second conductivity type forms the emitter, the substrate forms the base region, and the second region forms the collector; a diode formed between the well region and the substrate; a resistor formed by the portion of the well region between the first and second regions; and a resistor formed by the portion of the substrate between the second and the third regions.

5,010,381

SEMICONDUCTOR LIGHT RECEIVING ELEMENT

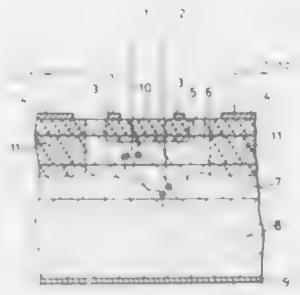
Tetsuo Shiba, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Feb. 28, 1990, Ser. No. 486,354

Claims priority, application Japan, Aug. 24, 1989, 1-219903

Int. Cl.[1] **H01L** *27/14*

U.S. Cl. 357—30 **15 Claims**



1 A semiconductor light detector comprising:
a semiconductor substrate;
at least two first conductivity type semiconductor layers successively disposed on said semiconductor substrate, each layer having an energy band gap, the energy band gaps of the respective layers increasing from the substrate to the layer most distant from the substrate, the layer most distant from the substrate including a light incident surface;
a first second conductivity type semiconductor region disposed at the surface extending into the layer most distant from the substrate; and
a successive second conductivity type semiconductor region corresponding to each first conductivity type layer between the most distant first conductivity type layer and the substrate extending from the surface to the corresponding layer, each successive second conductivity type region being successively disposed more remotely from the first second conductivity type region.

5,010,382

HETEROJUNCTION BIPOLAR TRANSISTOR HAVING DOUBLE HETERO STRUCTURE

Riichi Katoh, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

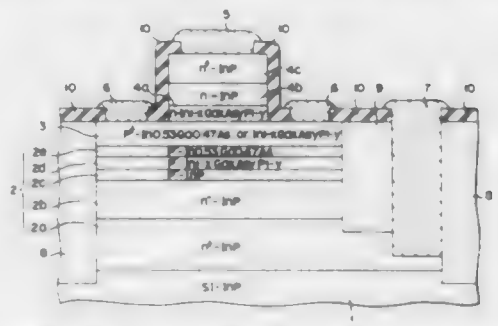
Filed Dec. 4, 1989, Ser. No. 445,984

Claims priority, application Japan, Dec. 9, 1988, 63-311753; Feb. 14, 1989, 1-34405

Int. Cl.[5] **H01L** *29/72, 27/12, 29/161*

U.S. Cl. 357—34 **10 Claims**

1. A double heterojunction bipolar transistor, comprising:
a first conductivity type emitter layer;
a second conductivity type base layer which is in contact with the emitter layer and forms a first heterojunction in conjunction with the emitter layer; and
a collector layer which is in contact with the base layer, said collector layer being made up of a first conductivity type semiconductor layer and a second conductivity type semiconductor layer and including a second conductivity type low-impurity concentration layer which is in contact with the base layer such that the low-impurity concentration layer has an impurity concentration lower than that of the base layer, said collector layer forming a second heterojunction in conjunction with the base layer, the second heterojunction including a transition layer which is formed such that the band gap thereof varies stepwise or smoothly, said transition layer being isolated from the base layer, and said emitter layer and said collector layer being formed of a semiconductor material having a band gap wider than that of the base layer.



5,010,383

POWER TRANSISTOR DEVICE AND METHOD FOR MAKING THE SAME

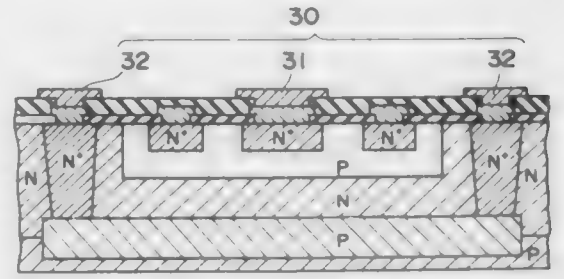
Masaharu Wataguchi, Ota, Japan, assignor to Sanyo Electric Co. Ltd., Osaka, Japan

Continuation of Ser. No. 310,781, Feb. 14, 1989, abandoned. This application Oct. 11, 1990, Ser. No. 596,737

Claims priority, application Japan, Feb. 18, 1988, 63-35662

Int. Cl.[5] **H01L** *29/72*

U.S. Cl. 357—36 **9 Claims**



1. A power transistor device comprising:
a collector region made of a first conductivity type and having an upper surface;
a base region made of a second conductivity type and provided within said collector region and having an upper surface flush with said upper surface of said collector region;
an elongated resistor region provided within said base region and having said first conductivity type and having an upper surface flush with said upper surface of said base region, said elongated resistor region forming first and second emitter stabilizing resistances which are aligned substantially linearly;
a first elongated emitter region provided within said base region located on one side of said elongated resistor region and extending in a direction of elongation parallel to said elongated resistor region and having an upper surface flush with said upper surface of said base region;
a second elongated emitter region provided within said base region located on an opposite side of said elongated resistor region and extending in a direction of elongation parallel to said elongated resistor region and having an upper surface flush with said upper surface of said base region,

connecting means for electrically connecting said first and second elongated emitter regions respectively with opposite ends of said elongated resistor region; and

emitter electrode means connected to said elongated resistor region at an area between said first and second emitter stabilizing resistances.

5,010,384

GATE TURN-OFF THYRISTOR WITH RESISTANCE LAYERS

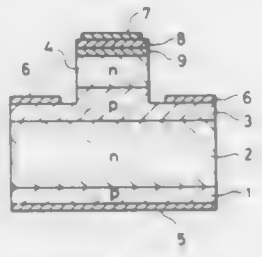
Hiromu Haruki; Fumiaki Kirihata, and Osamu Hashimoto, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 147,738, Jan. 25, 1988, abandoned. This application Jul. 20, 1989, Ser. No. 383,263

Claims priority, application Japan, Jan. 29, 1987, 62-018963; Aug. 6, 1987, 62-196911

Int. Cl.[5] H01L *29/74, 27/02, 29/06, 29/52*

U.S. Cl. 357—38 **2 Claims**



2. A gate turn-off thristor, comprising:

a first main electrode;

an emitter layer of a first conductivity type disposed on said first main electrode;

a first base layer of a second conductivity type disposed on said emitter layer;

a second base layer of the first conductivity type disposed on said first base layer, said second base layer having a plurality of protrusions;

a plurality of emitter layers of the second conductivity type disposed on respective ones of said plurality of protrusions of said second base layer, each of said plurality of emitter layers being in the form of a protruded island;

a gate electrode disposed on a portion of said second base layer other than said protrusions on which said plurality of emitter layers are disposed;

a plurality of metal layers disposed on said plurality of emitter layers, respectively;

a plurality of resistance layers disposed on said plurality of metal layers, respectively; and

a plurality of second main electrodes disposed on said plurality of resistance layers;

wherein each respective one of said plurality of resistance layers, in the respective direction of the thickness of each of said plurality of resistance layers, has a resistance within a range from 15 to 500 $m\Omega \cdot mm^2$.

5,010,385

RESISTIVE ELEMENT USING DEPLETION-MODE MOSFETS

Patrick A. Shoemaker, Lemon Grove, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 30, 1990, Ser. No. 502,701

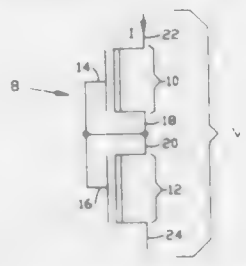
Int. Cl.[5] H01L *27/02*

U.S. Cl. 357—41 **12 Claims**

1. A linear resistance element, comprising:

a first depletion-type field effect transistor having a gate, a source electrode, a drain electrode, a first channel width-to-length ratio, a first channel mobility, and a first threshold voltage, said source and drain electrodes defining a first source-drain current path; and

a second depletion-type field effect transistor having a gate, a source electrode, a drain electrode, a second channel width-to-length ratio, a second channel mobility, and a second threshold voltage, said source and drain electrodes defining a second source-drain current path; wherein



said first and second source-drain current paths are connected in series with each other at a node, said gates of said first and second transistors are connected in common with said node, said first and second channel width-to-length ratios are substantially equal, said first and second channel mobilities are substantially equal, and said first and second threshold voltages are substantially equal.

5,010,386

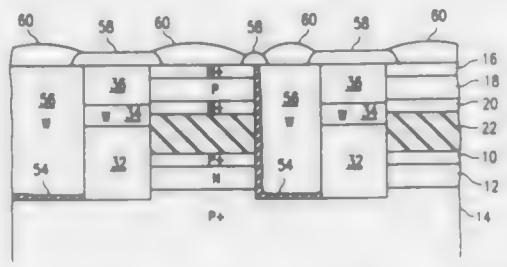
INSULATOR SEPARATED VERTICAL CMOS

Robert Groover, III, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 26, 1989, Ser. No. 457,030

Int. Cl.[5] H01L *27/02, 29/06, 29/10, 27/01*

U.S. Cl. 357—42 **16 Claims**



1. A complementary semiconductor device structure comprising:

a substrate of a first conductivity type;

a first channel layer of a second conductivity type formed on the surface of said substrate;

a first source/drain layer of said first conductivity type formed on the surface of said first channel layer;

an insulating layer formed on the surface of said first source/drain layer;

a second source/drain layer of said second conductivity type formed on the surface of said insulating layer;

a second channel layer of said first conductivity type formed on the surface of said second source/drain layer;

a third source/drain layer of said second conductivity type formed on the surface of said second channel layer; and

gate circuitry vertically disposed on an edge perpendicular to the plane of and adjacent to said first and second channel layers, and insulated therefrom.

5,010,387

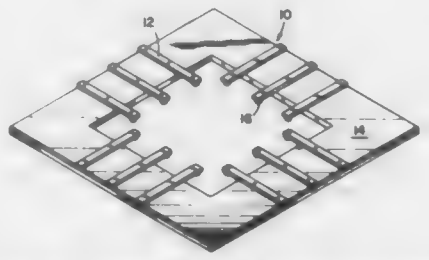
SOLDER BONDING MATERIAL

Thomas J. Dunaway, St Louis Park; Richard K. Spielberger, Maple Grove; Lori A. Dicks, New Hope, and Jerald M. Loy, Anoka, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 21, 1988, Ser. No. 274,412

Int. Cl.[5] H01L *23/48, 23/54*

U.S. Cl. 357—70 **14 Claims**



1 A leadframe assembly having conductive elements preformed with high strength solder bumps for use in interconnecting the leadframe with an electronic device comprising:

a) leadframe means comprising at least one of power, ground, and signal conductive elements for transmitting input and output signals to bonding locations on an electronic device; and

b) solder bumps preformed on the conductive elements for selective bonding with bonding locations on the electronic device, the solder bumps comprising a composition for maintaining a single solid phase over the temperature range of 0° C. to 150° C.

5,010,388

CONNECTION STRUCTURE BETWEEN COMPONENTS FOR SEMICONDUCTOR APPARATUS

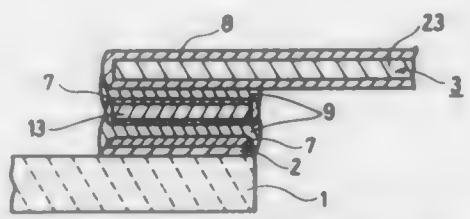
Akira Sasame; Hitoyuki Sakanoue; Hisao Takeuchi; Masaya Miyake; Akira Yamakawa; Yasuhisa Yushio, and Hitoshi Akazawa, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jun. 28, 1988, Ser. No. 212,944

Claims priority, application Japan, Jul. 3, 1987, 62-165190; Jul. 14, 1987, 62-175070; Oct. 30, 1987, 62-275277; Dec. 15, 1987, 62-315330

Int. Cl.[5] H01L *23/48, 23/02, 39/02, 29/44*

U.S. Cl. 357—70 **9 Claims**



1. A connection structure between components of a semiconductor apparatus, comprising: a base member made of aluminum nitride having a major surface on which a semiconductor device is to be mounted, said aluminum nitride having a first thermal expansion coefficient, a connection member to be joined to said base member, said connection member being made of an alloy selected from the group consisting of iron-nickel alloys and iron-nickel-cobalt alloys having a second thermal expansion coefficient, a plastically deformable stress relieving member interposed between said aluminum nitride base member and said connection member, and a soldering material for joining said base member, said stress relieving member, and said connection member, said plastically deformable stress relieving member being made of a material selected from the group consisting of copper, copper alloys, nickel alloys, iron, and aluminum having a plastic deformability sufficiently high for relieving a thermal stress caused by a difference between said first and second thermal expansion coefficients of said base member and of said connection member during a cooling process at the time of soldering.

5,010,389

INTEGRATED CIRCUIT SUBSTRATE WITH CONTACTS THEREON FOR A PACKAGING STRUCTURE

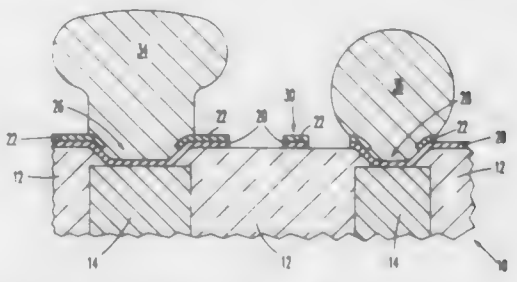
Peter Gassauge, Boeblingen; Volker Kreuter, Schoenaich, and Helmut Schettler, Dettenhausen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 29, 1990, Ser. No. 529,827

Claims priority, application European Pat. Off., Jul. 26, 1989, 89113765.5

Int. Cl.[5] H01L *23/48*

U.S. Cl. 357—67 **18 Claims**



1. An integrated circuit substrate with contacts thereon for a packaging structure comprising:

a substrate with at least one terminal means,

a conductive layer on said substrate covering at least a portion of said terminal means;

a conductive bump on at least a portion of said conductive layer;

an insulator layer on said conductive layer around at least a portion of said conductive bump, and wherein at least a portion of said insulator layer is underneath said conductive bump.

5,010,390

PLASTIC-MOLDED SEMICONDUCTOR DEVICE

Shigeru Tanaka, Fujisawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

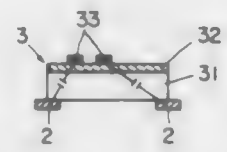
Continuation of Ser. No. 640,875, Aug. 15, 1984, Pat. No. 4,768,078. This application Sep. 3, 1987, Ser. No. 92,521

Claims priority, application Japan, Aug. 31, 1983, 58-160124

The portion of the term of this patent subsequent to Aug. 30, 2005, has been disclaimed.

Int. Cl.[5] H01L *23/28, 23/48*

U.S. Cl. 357—72 **1 Claim**



1. A device comprising:

a semiconductor pellet having an insulating substrate with a periphery along an outer edge of said insulating substrate,

an integrated circuit formed on said insulating substrate, and

a pellet mounting member on which said semiconductor pellet is mounted, said pellet mounting member having a lead frame with a conductive support means for supporting said insulating substrate in a manner to produce a reduced parasitic capacitance by contacting said insulating substrate only at the periphery of said insulating sub-

strate, wherein said device is a plastic-molded semiconductor device,

wherein said lead frame has an inner lead, wherein said conductive support means is in form of a substantially rectangular ring of substantially the same size as said semiconductor pellet, and said substantially rectangular ring is connected to an end of said inner lead of said lead frame.

5,010,391

DIGITAL VIDEO SIGNAL PROCESSING DEVICE

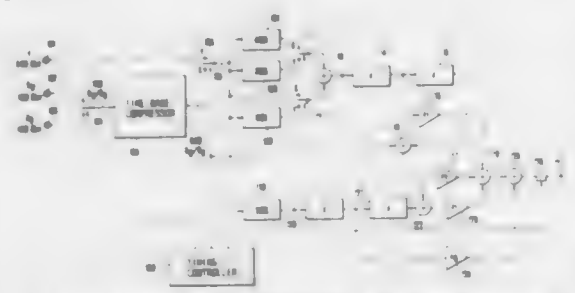
Makoto Shimokoriyama, Kanagawa, and Toshihiro Yagisawa, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1988, Ser. No. 261,915

Claims priority, application Japan, Oct. 27, 1987, 62-272281; Oct. 27, 1987, 62-272284

Int. Cl.[5] H04N *11/10*

U.S. Cl. 358—14 **5 Claims**



1 A digital video signal processing device, comprising:

(a) time-division multiplexing means for providing a time-division multiplexed signal by time-division multiplexing a digital luminance signal with a line-sequential digital color difference signal for each horizontal scanning line;

(b) a digital filter for limiting a bandwidth of said time-division multiplexed signal in a two-dimensional frequency region, said digital filter including a delay circuit for delaying said time-division multiplexed signal;

(c) sampling means for subsampling said time-base multiplexed signal output from said digital filter; and

(d) control means for controlling a bandwidth to be limited by said digital filter, said control means including a switching circuit for switching a delay time of said delay circuit so that said digital luminance signal is delayed for a first delay time and said line-sequential digital color differential signal is delayed for a second delay time which is different from the first delay time where said bandwidth is determined corresponding to a two-dimensional frequency by said sampling means for said digital luminance signal and said line-sequential digital color difference signal

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5,010,392

METHOD OF AND APPARATUS FOR RECEIVING HIGH DEFINITION TELEVISION SIGNALS

Michael G. Croll, Horsham, United Kingdom, assignor to British Broadcasting Corporation, London, England

Filed Jul. 28, 1989, Ser. No. 386,785

Claims priority, application United Kingdom, Jul. 28, 1988, 8817978; Jul. 28, 1988, 8817979

Int. Cl.[5] H04N *11/22, 9/64*

U.S. Cl. 358—21 R **23 Claims**

1 A method of receiving high definition television signals transmitted in a first signal format, comprising

receiving the signals and decoding with a first decoder compatible with the first signal format to provide first decoded luminance and chrominance components;

time compressing the decoded luminance and chrominance components under the control of a control signal which determines the degree of time compression,

decoding the time compressed signals with a second decoder compatible with the time compressed signal to provide decoded time compressed signals,



time expanding the decoded time compressed signals under the control of the control signal, the control signal determining a degree of time expansion substantially equal to the degree of time compression; and

displaying or recording the information conveyed by the time expanded signals.

5,010,393

METHOD AND APPARATUS FOR ADJUSTING CHROMA

Kenji Saito, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 27, 1989, Ser. No. 385,449

Claims priority, application Japan, Aug. 30, 1988, 63-216105

Int. Cl.[5] H04N *9/64*

U.S. Cl. 358—29 **20 Claims**



1 An apparatus for adjusting chroma comprising

image pickup means, coupled to image signals of a desired scene, for converting said image signals to red, green, and blue color signals,

color signal amplifier means, coupled to said image pickup means, for amplifying said red, green, and blue color signals,

matrix means, coupled to said color signal amplifier means, for converting said amplified red, green and blue color signals to a brightness signal and first and second color difference signals;

video signal producing means, coupled to said matrix means, for combining said first and second color difference signals to produce a chroma signal and for amplifying said chroma signal in a chroma amplifier to provide as output an amplified chroma signals;

strong color difference signal detection means, coupled to said matrix means, for detecting when both of said first and second color difference signals exceed a predetermined range of acceptable levels and for outputting strong color difference signals indicative thereof; and

chroma information detecting means, coupled to said strong color difference signal detection means, for combining said strong color difference signals and for outputting a chroma indicative signal of a level corresponding to the level of high chroma colors present in said desired scene,

said chroma amplifier controlled in response to said chroma indicative signal to have a normal chroma gain level when said level of high chroma colors is high and to have a high chroma gain level when said level of high chroma colors is low.

5,010,394

AUTOMATIC WHITE BALANCE CIRCUIT CAPABLE OF EFFECTIVELY ADJUSTING WHITE BALANCE UNDER A FLASHING LIGHT SOURCE

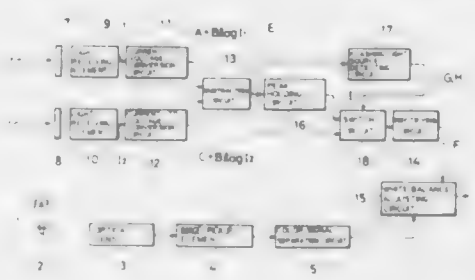
Fumihide Murao, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1989, Ser. No. 387,999

Claims priority, application Japan, Jan. 18, 1989, 1-9016

Int. Cl.[5] H04N *9/73 C*

U.S. Cl. 358—29 **10 Claims**



1 An automatic white balance circuit contained in an image pickup apparatus for automatically adjusting white balance when there is a change in ratios between respective color components included in light applied from a light source to an object picked up by said image pickup apparatus, said automatic white balance circuit comprising:

ratio signal generating means for receiving said light from said light source to generate and output a ratio signal indicating a ratio between prescribed two of said color components included in said light;

a holding circuit connected to said ratio signal generating means for holding and outputting said ratio signal corresponding to a maximum value of illuminance of said light applied from said light source to said object;

a flashing light source detecting circuit for detecting a number of flashing times of said light source to output a first signal when said number of flashing times exceeds a prescribed number while outputting a second signal when the former is less than the latter;

a switch circuit connected to said ratio signal generating means, said holding circuit and said flashing light source detecting circuit for outputting an output of said holding circuit in response to said first signal from said flashing light source detecting circuit while outputting an output from said ratio signal generating means in response to said second signal; and

a white balance adjusting circuit for adjusting white balance in accordance with an output from said switch circuit.

5,010,395

SOLID STATE IMAGING APPARATUS

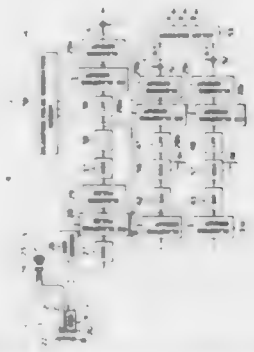
Kiyoshi Tsuji, Tanashi, and Kenji Kimura, Tachikawa, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 13, 1989, Ser. No. 322,038

Claims priority, application Japan, Apr. 20, 1988, 63-98840; May 25, 1988, 63-129238

Int. Cl.[5] A61B *1/04*, **H04N** *5/18*

U.S. Cl. 358—44 **5 Claims**



1. A solid state imaging apparatus comprising:

an imaging means having a solid state imaging device for photoelectrically converting an object image and outputting a picture image signal;

a signal processing means connected with said imaging means, for processing said picture image signal obtained by said solid state imaging device and outputting a video signal;

a gain adjusting means provided in said signal processing means for receiving the photoelectrically converted output of said solid state imaging device and variably controlling the gain; and

a direct current-clamping means connected to receive an output from said gain adjusting means for direct current-clamping an optical black part included in the output signal of said solid state imaging device and stabilizing the black level of said video signal.

5,010,396

TELEVISION PROJECTOR FOR PROJECTION DISPLAY

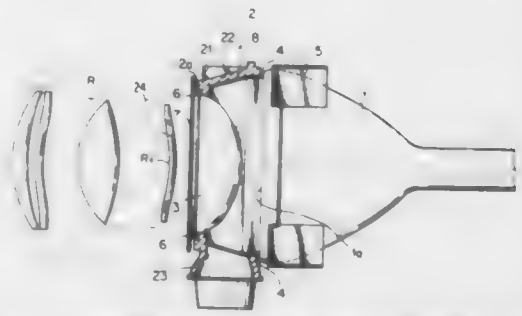
Masaaki Hanyu, and Yukio Ozaki, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 26, 1990, Ser. No. 514,803

Claims priority, application Japan, Jul. 31, 1989, 1-196927

Int. Cl.[5] H04N *9/31*

U.S. Cl. 358—60 **6 Claims**



1. A TV projector for a three-tube projection display which projects a red picture, a green picture and a blue picture by three projection TV CRTs through three projection lenses disposed in front of the three projection TV CRTs, respectively, wherein a component lens of at least one of the projection lenses of the TV projector contains a light-absorbing

substance capable of absorbing light components of the corresponding color picture in a sideband of the spectrum of the color picture.

5,010,397

TRIPLE TUBE TYPE PROJECTION TELEVISION

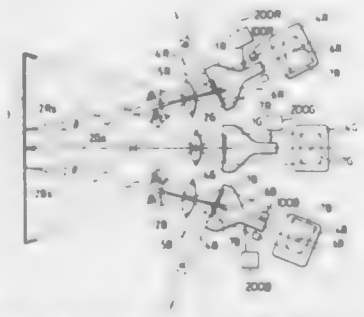
Shinichi Hasegawa, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 3, 1989, Ser. No. 374,699

Claims priority, application Japan, Oct. 26, 1988, 63-268308

Int. Cl.[5] H04N *9/31*

U.S. Cl. 358—60 **4 Claims**



1 A triple tube type projection television for projecting images from blue, green and red projecting tubes onto a screen by lenses disposed in front of the respective projecting tubes and synthesizing the images from said three projecting tubes on the screen to provide a color image, wherein

intersection points between the screen and respective ones of the optical axes of lenses on both sides of a central lens are offset outwardly from the intersection point between the screen and the optical axis of the central lens;

tube centers of the projecting tubes on said both sides are dislocated outwardly from the optical axes of the lenses therefor;

said triple tube type projection television comprising:

cooling means coupled to said projecting tubes in order to proved adequate cooling thereof; and

means for applying an external magnetic field to said projecting tubes in order to supplementally adjust the images on the screen.

5,010,398

METHOD FOR COLOUR CORRECTION BY DRY DOT ETCHING USING PHOTOGRAPHICALLY PRODUCED MASK

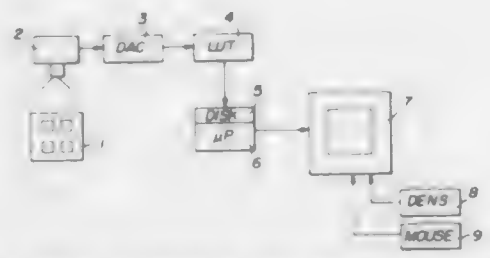
Pierre H. Nys, Berchem; Paul W. Vinck, Hove, both of Belgium, and Andreas von Erdmannsdorff, Monheim, Fed. Rep. of Germany, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Jun. 29, 1989, Ser. No. 372,844

Claims priority, application European Pat. Off., Aug. 23, 1988, 88201787.4

Int. Cl.[5] G03F *3/08, 3/10*

U.S. Cl. 358—80 **5 Claims**



1 A method of producing dot-size corrected or modified halftone colour separations of an image for use in making a printing plate for printing reproductions of said image, which method comprises the steps of scanning each of said halftone separations separately to produce an electrical signal representing the same and digitizing said signals,

storing said digitized values into a digital storage device,

visualising from said digitized values on an image display device an image representative of at least one of said halftone separations,

defining on said displayed image and by means of said stored values at least one area to be corrected,

calculating by means of a microprocessor to which said stored values are applied at least one combination of halftone colour separation positives and/or negatives of said image that when exposed in overlaying relation on a photographic film yields a mask for isolating each such area to be corrected,

visualising and evaluating the resultant mask alone or in superposition with at least one of said halftone separations on said image display device,

redefining said area to be corrected in accordance with the result of said evaluation and recalculating a mask therefor by means of the stored data or by means of data pertaining to the previously calculated mask and visualising said recalculated mask for further evaluation as an acceptable final mask,

photographically producing said recalculated mask for isolating said area to be corrected,

determining the percentage dot size correction (increase or decrease) that is required, and

exposing and processing light-sensitive print material to produce a print exhibiting the required percentage dot-size correction by subjecting said print material to a normal exposure for reproducing the corresponding original halftone separation plus an additional overexposure through the combination of said final mask and the corresponding halftone separation for a dose to give the determined change in dot size

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5,010,399

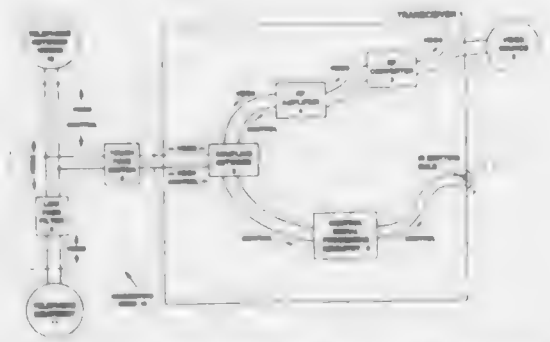
VIDEO TRANSMISSION AND CONTROL SYSTEM UTILIZING INTERNAL TELEPHONE LINES

David D. Goodman, Arlington, Va., and Robert Domnitz, Lexington, Mass., assignors to Inline Connection Corporation, Arlington, Va.

Filed Jul. 14, 1989, Ser. No. 379,751

Int. Cl.[5] H04N *7/12*

U.S. Cl. 358—85 **30 Claims**



2 A communications system that includes a network of wiring, a plurality of ports ordinarily used for connection of telephone equipment to said network, and an interface to a telephone system, said ports being located in different areas, said network comprising a plurality of 2-wire conductive paths connecting said ports to said interface, the communications system including a first one of said ports and a first electronic device (1) located in a first area, and a second one of said ports and a second electronic device (15) located in a second area, the system further including an apparatus (2) located in said

first area, said apparatus responding to infrared light signals received from an infrared light transmitter for determining operational modes of said apparatus, said apparatus being out of range of said light transmitter when said light transmitter is located in the second area, wherein:

(a) said second electronic device (15) further includes:

first converting means for converting infrared light radiation to a first series of electrical impulses,

first representing means for representing said first series of electrical impulses as a second series of electrical impulses, information content of said second series being substantially the same as the information content of said first series, substantially all of the energy of said second series being concentrated at frequencies above the highest frequency used for communication by ordinary telephone devices, wherein said first representing means includes:

means for creating a weighted average signal, said weighted average signal being a weighted average of the energy level of said first series of electrical impulses over a preceding time period of predetermined length,

means for creating a first bi-level signal, said first bi-level signal assuming a high state when the energy level of said first series of electrical impulses exceeds said weighted average signal, said first bi-level signal otherwise assuming a low state,

means for suppressing noise by creating a second bi-level signal, said second bi-level signal assuming a high state whenever the energy level of said first series of electrical impulses exceeds said weighted average by a fixed factor at any time over a preceding time period of fixed length, said second bi-level signal otherwise assuming a low state, and

means for providing an RF carrier only when both said first bi-level signal and said second bi-level signal are at the higher of their two said levels;

said second electronic device (15) further including first transmitting means, connected to said second one of said ports, for transmitting said second series of electrical impulses onto the network, said first transmitting means comprising first filtering means for presenting a high impedance to signals whose energy is concentrated at frequencies below the highest frequency used for communication by ordinary telephone devices, while allowing said second series of electrical impulses to transmit substantially unchanged, and wherein

(b) said first electronic device (1) further includes:

first recovering means, connected to said first one of said ports, for recovering said second series of electrical impulses from the network wiring, said first recovering means comprising second filtering means for presenting a high impedance to signals whose energy is concentrated at frequencies below the highest frequency used for communication by ordinary telephone devices, while allowing said second series of electrical impulses to transmit substantially unchanged,

second representing means for representing said second series of electrical impulses as a third series of electrical impulses, information content of said third series being substantially the same as the information content of said second series, and

second converting means for converting said third series of electrical impulses to infrared light radiation, said second converting means creating a light pattern with substantially the same characteristics as the light pattern created by the infrared light radiation in the second area.

5,010,400

TELEVISION TUNER FOR RECEIVING MULTIPLE BAND TELEVISION SIGNALS

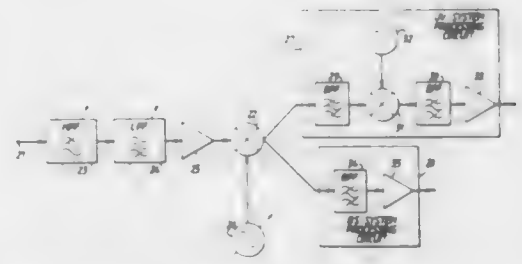
Hideki Oto, Saitama, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Aug. 2, 1989, Ser. No. 388,493

Claims priority, application Japan, Aug. 3, 1988, 63-193998

Int. Cl.[5] H04N *1/00, 7/10*

U.S. Cl. 358—86 **7 Claims**



1. A television tuner for use in a television receiver to receive a VHF signal band, a UHF signal band, and a satellite signal band converted from a received satellite signal, all of which are provided as a combined signal by a

an input means to receive the combined signal from the signal combiner;

first oscillator having variable frequency;

first mixer means to receive the combined signal and the output of the first oscillator means to convert the combined signal into a first intermediate frequency signal if the VHF and UHF signals are to be utilized by the television receiver or a second intermediate frequency signal if the satellite signal is to be utilized by the television receiver;

first and second band-pass filter means connected to the first mixer means to receive first and second intermediate frequency signals, wherein the first band-pass filter means is designed to pass the first intermediate frequency signal and the second band-pass filter means is designed to pass the second intermediate frequency signal; and

means for processing the signals passed by the first and second band-pass filter means to provide a standard VHF and UHF television signals and a frequency modulated satellite signal.

5,010,401

PICTURE CODING AND DECODING APPARATUS USING VECTOR QUANTIZATION

Tokumichi Murakami; Kohtaro Asai; Koh Kamizawa; Masami Nishida, all of Kamakura; Eizo Yamazaki, Tokyo; Atsushi Itoh, Yokohama, and Naoto Kinjoh, Kamakura, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP88/00796, § 371 Date Apr. 7, 1989, § 102(e) Date Apr. 7, 1989

PCT Filed Aug. 11, 1988, Ser. No. 340,009

Int. Cl.[5] H04N *7/12, 7/18*

U.S. Cl. 358—136 **8 Claims**

1. An interframe encoding and decoding apparatus comprising:

an encoding section composed of

a frame memory for storing one frame of a video signal series;

a raster/block scan converting circuit for dividing an input signal series into blocks of k samples each (k: a positive integer) to form input block data;

a subtractor for obtaining interframe differential block data by subtracting block data stored in said frame memory from said input block data, corresponding to the same position as that of the input block data in the period of at least one frame before;

a motion detecting circuit for comparing an absolute value

sum of amplitudes of samples within the block of said interframe differential block data with a motion detection threshold value, and detecting motion in units of block and determining motion information of movement existing when said sum is greater than said threshold value and no movement when said sum is less than said threshold value;

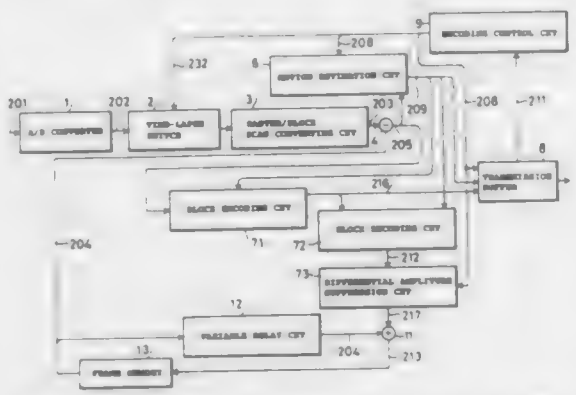
a block encoding circuit for encoding the interframe differential block data of movement existing as valid blocks into encoded block data;

a transmission data buffer for converting the motion information and the encoded block data into a suitable code word and storing it for a predetermined and fixed time, and then transmitting it together with the motion detection threshold value to the transmission line at a predetermined and fixed speed and calculating the storage amount of the encoded data in the predetermined and fixed time;

an encoding control circuit for determining said motion detection threshold value and an input time lapse according to changes of said storage amount of encoded data;

a block decoding circuit for decoding said encoded block data to reproduce the interframe differential block data of movement existing, and discriminating blocks of no movement as invalid blocks and making sample values of an interframe differential decoded block data corresponding to an invalid block all zero;

a differential amplitude suppressing circuit for suppressing the amplitude value of the decoded interframe differential block data obtained in said block decoding circuit non-linearly based on said motion detection threshold value; and



an adder for adding the suppressed decoded interframe differential block data to said block data in the frame memory and obtaining reproduction block data, and replacing block data in said frame memory with reproduction block data of the same position in a frame as that of the block data in the frame memory; and

a decoding section composed of

a reception data buffer memory for receiving the encoded data supplied through the transmission line and storing it for a predetermined and fixed time, and then decoding the motion information and the encoded block data from the code word and separating and outputting the motion detection threshold value;

a block decoding circuit for decoding and reproducing the interframe differential block data of movement existing from said encoded block data from said reception buffer memory, and discriminating the block of no movement as an invalid block and making sample values of the reproduced interframe differential block data corresponding to an invalid block all zero;

a differential amplitude suppressing circuit for suppressing the amplitude value of the decoded interframe differential block data obtained in said block decoding circuit non-linearly based on the motion detection threshold value;

a frame memory for storing one frame of a video signal series in blocks;

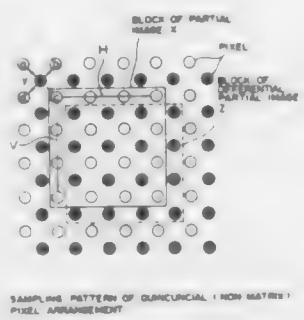
an adder for adding the suppressed interframe differential decode block data to the block data from said frame memory and obtaining reproduction block data, and writing the reproduction block data at the same position as that of the block data within said frame memory; and a block-/raster scan converting circuit for converting the reproduction block data from said adder into a signal series in raster form.

5,010,402

VIDEO SIGNAL COMPRESSION APPARATUS

Masakazu Nishino, Kashiwara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 17, 1990, Ser. No. 524,741
Int. Cl.[5] H04N *7/133*
U.S. Cl. 358—138 **6 Claims**



1. A video signal compression apparatus comprising:

a separation circuit for receiving a video signal having a non-matrix pixel arrangement and separating the received signal into a plurality of partial images each having a matrix pixel arrangement;

an interpolation circuit for producing from a predetermined partial image of the plurality of partial images an interpolated partial image for pixel positions of a remaining partial image of them;

a subtractor circuit for producing a differential partial image from the difference between the remaining partial image and the interpolated partial image;

an orthogonal transformation and coding circuit for converting the predetermined partial image into a plurality of blocks and coding them by an orthogonal transformation;

a coding circuit for converting the differential partial image into plural blocks to code them;

a code length estimate circuit for determining a code length of a coded output of the coding circuit; and

a code length assignment circuit for assigning a code length of a coded output of the orthogonal transformation and coding circuit adaptively by a code length output determined by the code length estimate circuit.

5,010,403

MEASUREMENT OF TIMEBASE JITTER FOR COMPONENT VIDEO

Edward D. Wardzala, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

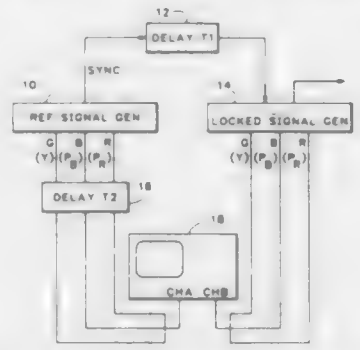
Filed Apr. 12, 1990, Ser. No. 507,817
Int. Cl.[5] H04N *17/00*
U.S. Cl. 358—139 **12 Claims**

1. A method of measuring timebase jitter comprising the steps of:

generating a test signal from a reference signal generator and

from a local signal generator the two test signals being identical;

adjusting the timing between the two test signals; and



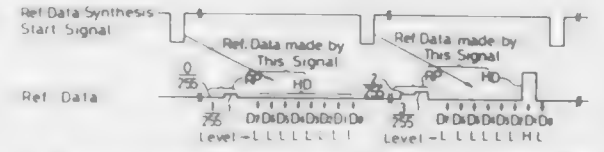
processing the test signals together to provide a display of the timebase jitter.

5,010,404

CHARACTERISTICS CORRECTOR

Yoshiyuki Sasaki; Kenji Tsunashima; Ikuo Ookuma, and Toshifumi Fujii, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 13, 1988, Ser. No. 283,981
Claims priority, application Japan, Dec. 14, 1987, 62-315597; Jun. 30, 1988, 63-164540; Jul. 22, 1988, 63-184247
Int. Cl.[5] H04N *17/00*
U.S. Cl. 358—139 **10 Claims**



1. A characteristics corrector in a video signal processing system for correcting characteristics of the video signal processing system at the time of recording and/or reproducing a video signal, the corrector comprising:

reference pulse generating means for generating reference pulses of varying amplitudes corresponding to plural gradations from a black level to a white level of a video signal to be recorded, the reference pulses, each being of a single non-varying amplitude and being recorded during a blanking period of the video signal;

pulse amplitude data generating means for generating quantified data used for amplitude discrimination of the reference pulses;

reference data interleaving means for interleaving, as reference data, the reference pulses and corresponding pulse amplitude data indicative of the amplitudes thereof during the blanking period; and

level correcting means for correcting the level of a reproduced video signal by utilization of a plurality of reference pulses and corresponding pulse amplitude data obtained from the reproduced video signal.

5,010,405

RECEIVER-COMPATIBLE ENHANCED DEFINITION TELEVISION SYSTEM

William F. Schreiber, Cambridge; Andrew B. Lippman, Salem; Edward H. Adelson, Cambridge, all of Mass., and Aran N. Netravali, Westfield, N.J., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Feb. 2, 1989, Ser. No. 305,796
Int. Cl.[5] H04N *7/04*
U.S. Cl. 358—141 **29 Claims**

1. A television encoder for generating a receiver-compatible signal from a production video signal containing enhancement information which cannot be displayed on a standard receiver, the receiver-compatible signal being compatible with the standard receiver, the encoder comprising:

a. a filter bank for dividing the video signal into at least two groups of spatial frequency components including a first group and a second group, the first group containing members which when combined together form a standard video signal which is displayed by the standard receiver



and the second group containing the enhancement information;

b. a quantizer for quantizing at least one member of the first group;

c. a combiner for adding at least one member of the second group to a quantized member of the first group to produce a modified first group; and

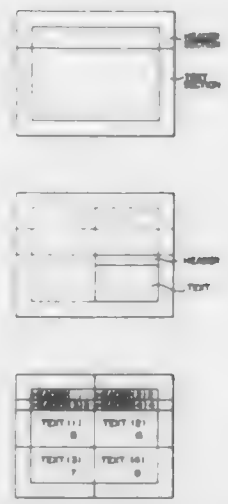
d. a synthesizer for combining the members of the modified first group to generate the receiver-compatible signal.

5,010,406

APPARATUS FOR RECEIVING CHARACTER MULTIPLEX BROADCASTING

Toshikatsu Kawakami, Mishima; Shin Fukuda, Hirakata; Hiroyasu Shinbo, Toyonaka; Toyoaki Umemura, Itami; Ken Sakamoto, Takatsuki, and Tomoji Kondo, Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 19, 1989, Ser. No. 354,241
Claims priority, application Japan, May 25, 1988, 63-127733
Int. Cl.[5] H04N *7/087*
U.S. Cl. 358—147 **3 Claims**



1. A character multiplex broadcasting receiving apparatus comprising:

means for receiving, storing, and displaying character signals representing character images which were multiplexed for a vertical blanking period of a television signal including information representing a television image;

division signal generating means, receiving a horizontal pulse, a vertical pulse and a clock signal, for generating division signals, said division signals being employed in the reduction of a picture plane to be received and displayed and in the simultaneous display of images in a plurality of divided picture planes in a display screen

based on said horizontal pulse, said vertical pulse, and said clock signal; and

selection signal generating means for selecting either said television image or one of said character images for each of said divided picture planes.

5,010,407

VIDEO EFFECTS SYSTEM WITH RECIRCULATION VIDEO COMBINE AND OUTPUT COMBINE

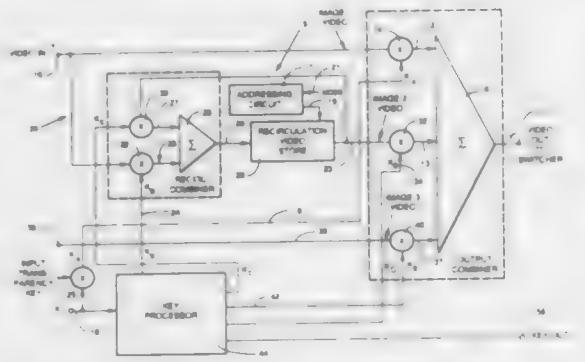
David E. Trytko, Foster City, Calif., assignor to Ampex Corporation, Redwood City, Calif.

PCT No. PCT/US88/01031, § 371 Date Nov. 11, 1988, § 102(e) Date Nov. 11, 1988, PCT Pub. No. WO88/07801, PCT Pub. Date Oct. 6, 1988

Continuation of Ser. No. 32,155, Mar. 27, 1987, abandoned. This PCT application Mar. 25, 1988, Ser. No. 333,201

Int. Cl.[5] H04N *5/262, 9/74, 5/14, 5/53*

U.S. Cl. 358—183 26 Claims



1. A video effects system for generating composite output video from one or more video sources comprising:

a video input;

recirculation means having an output and having an input coupled to said video input for storing video from said video input and presenting said stored video at said output at a later time;

output combine means coupled to said video input and to the output of said recirculation means for combining video from said video input and from the output of said recirculation means in proportion to first and second key signals to generate composite output video;

a first key processor means for generating said first and second key signals such that one of said first and second key signals is a function of the other of said first and second key signals such that said output video does not have a gain in excess of the maximum available gain resource;

wherein said recirculation means includes means to couple a recirculated video from said output back into the input of said recirculation means to alter a gain of said recirculated video in accordance with a third key signal and to combine said recirculated video with video from said video input; and

further comprising second key processor means for generating said third key signal as a function of a fourth key signal such that the combined video stored in said recirculation means does not have a gain greater than a maximum available gain resource.

5,010,408

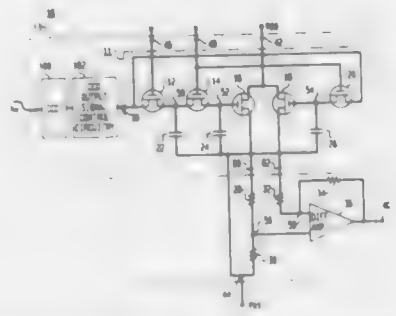
DOUBLY CORRELATED SAMPLE AND HOLD CIRCUIT

William J. Toobey, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 25, 1989, Ser. No. 412,064

Int. Cl.[5] H04N *3/14, 5/335*

U.S. Cl. 358—213.11 26 Claims



1 Circuitry comprising:

first, second and third sample and hold circuits each having a control terminal, an input terminal and an output terminal;

the input terminals of the first and second sample and hold circuits being coupled together to a circuitry input terminal;

the output terminal of the first sample and hold circuit being coupled to the input of the third sample and hold circuit;

the second and third sample and hold circuits being essentially identical;

first and second essentially identical source followers each having a control terminal and an output terminal;

the output of the second sample and hold circuit being coupled to the control terminal of the first source follower;

the output terminal of the third sample and hold circuit being coupled to the control terminal of the second source follower;

subtraction means, which has a first input coupled to the output of the first source follower, has a second input coupled to the output of the second source follower and has an output coupled to a circuitry output terminal, for during operation of the circuitry subtracting signals appearing on the outputs of the source followers from each other to generate an output signal which is the difference between signals appearing on the output terminals of the source followers; and

the sample and hold circuits an the source followers being formed on a common semiconductor body which does not include the subtraction means.

5,010,409

IMAGE SENSING SYSTEM

Tokuji Ishida; Toshio Norita, and Jun Hasegawa, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 141,080, Jan. 5, 1988. This application Nov. 16, 1989, Ser. No. 437,526

Claims priority, application Japan, Jan. 6, 1987, 62-950; Mar. 18, 1987, 62-63459

Int. Cl.[5] H04N *3/14*

U.S. Cl. 358—213.19 4 Claims

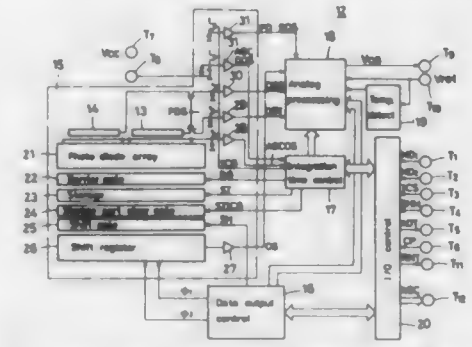
1. An image sensing device comprising:

reference voltage generating means for generating a reference voltage;

an image sensor for receiving light from an object and for outputting an electric signal;

A/D converting means for converting an analog signal into a digital signal, a dynamic range of said A/D converting means being limited to the reference voltage; and

voltage adjusting means for adjusting the electric signal from said image sensor based on the dynamic range of said



A/D converting means and transferring the adjusted signal to said A/D converting means.

5,010,410

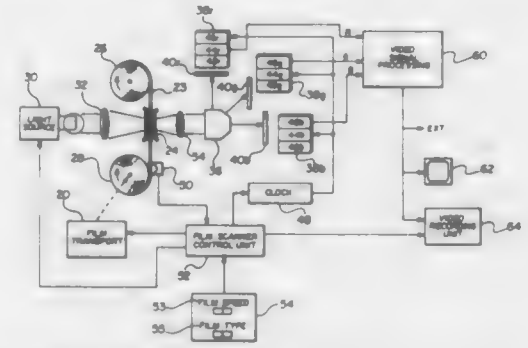
METHOD AND APPARATUS FOR SIGNAL COMPANDING

Lawrence J. Bernstein, Honeoye Falls, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 16, 1989, Ser. No. 422,348

Int. Cl.[5] H04N *3/36, 5/253*

U.S. Cl. 358—214 6 Claims



3. An apparatus comprising:

a. transport means for transporting film through a film gate;

b. illumination means for passing light through said film gate and focusing said light onto at least one light sensitive device that generates an output light signal;

c. selection means for selecting the type of film to be transported through said film gate by said transport means and generating a film type signal indicative thereof;

d. companding means for receiving said output light signal and said film type signal, and generating an output signal having a transfer curve that corresponds to said film type signal wherein said companding means includes a summing circuit, a logarithmic amplifier coupled to said summing circuit, and a feedback circuit coupled to said summing circuit and an output of said logarithmic amplifier, and wherein said feedback circuit includes a compression ratio adjustment circuit that generates a reference signal corresponding to a selected transfer curve in response to said film type signal; and

e. processing means for receiving said output signal generated by said companding means and producing a video output signal.

5,010,411

VIDEO DISPLAY SYSTEM

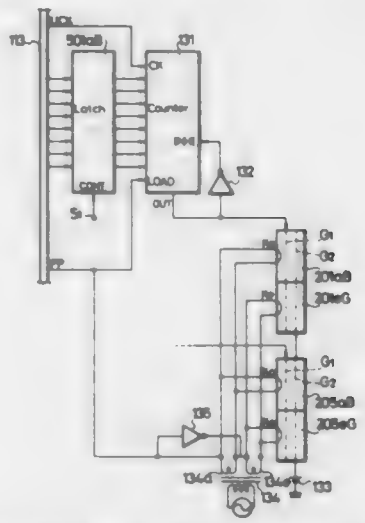
Satoshi Shimada, Kanagawa, and Yuji Watanabe, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 30, 1986, Ser. No. 824,236

Claims priority, application Japan, Jan. 31, 1985, 60-017129

Int. Cl.[5] H04N *5/66*

U.S. Cl. 358—230 4 Claims



1. A video display system comprising: a video signal source for supplying a video signal; a plurality of display cells arranged in rows and columns in an X-Y matrix form; and a plurality of driving circuits for driving said plurality of display cells in response to said video signal, characterized in that each of said driving circuits is provided to commonly drive a plurality of said display cells adjacent to each other in the column direction, and switching means provided for switchably activating different ones of said plurality of said display cells cyclically at a field rate of said video signal, wherein said plurality of the display cells adjacent to each other are two neighboring display cells in the column direction, and wherein each of said driving circuits includes a scanning converter for doubling the vertical frequency of said video signal; and a pulse width modulation circuit responsive to said converted video signal for deriving a PWM signal corresponding to the brightness level of said converted video signal.

5,010,412

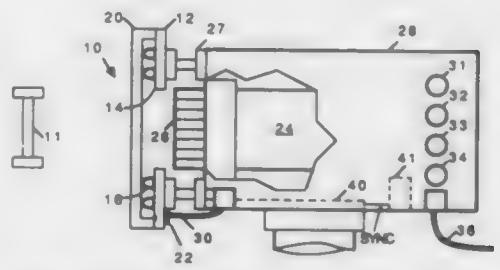
HIGH FREQUENCY, LOW POWER LIGHT SOURCE FOR VIDEO CAMERA

Gregory M. Garrias, Federal Way, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 27, 1988, Ser. No. 290,581

Int. Cl.[5] H04N *3/12, 7/18*

U.S. Cl. 358—240 13 Claims



1. A light source for providing illumination of an object, said light source comprising:

a diode for emitting light when energized;

means for periodically energizing said diode with an adjustable frequency and duty cycle such that said diode emits a sequence of light flashes illuminating said object; and

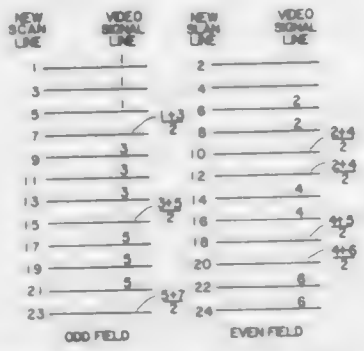
enabling means for selectively enabling and disabling said means for periodically energizing said diode, said enabling means being operatively responsive to a synchronization signal.

5,010,413

METHOD AND APPARATUS FOR DISPLAYING AN ENLARGED IMAGE ON MULTIPLE MONITORS TO FORM A COMPOSITE IMAGE

Edward Bahr, Maywood, N.J., assignor to Imtech International, Inc., New York, N.Y.

Filed Oct. 10, 1989, Ser. No. 419,094
Int. Cl.[5] H04N 5/68
U.S. Cl. 358—242 11 Claims



1. A method for displaying an image from video signals, comprising the steps of:

generating video signals indicative of an interlaced image, said video signals containing video field data in two interlaced fields, each of said fields comprising successively occurring video line data;

enlarging the image by replicating the video line data;

determining where replications of the video line data of each of the interlaced fields would result in distortion between the two interlaced fields;

providing a selected combination of video line data in place of the replications which would result in said distortion; and

displaying the enlarged image on a plurality of monitors each having successively occurring scan lines so that each of the monitors displays at most a respective portion of the enlarged image which is less than an entirety of the enlarged image and so that a composite of each portion displayed on the monitors together constitute the enlarged image, the step of displaying including interlacing the successively occurring scan lines for each respective one of said monitors, forming display signals for the video line data including that which was replicated and that which was provided, and correlating said display signals with said scan lines for the monitors so that each monitor will display only the respective portion of the enlarged image.

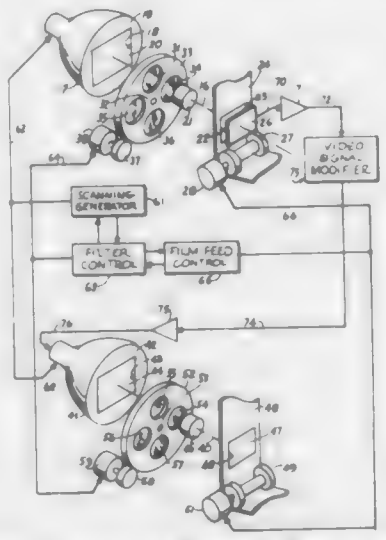
5,010,414

PROCESS ELIMINATING THE USE OF A MASTER POSITIVE FILM FOR MAKING A DUPLICATE NEGATIVE OF A COLOR MOTION PICTURE

Roy A. Clapp, 2505 S. Kiwanis Ave., Sioux Falls, S. Dak. 57105

Filed Nov. 27, 1985, Ser. No. 802,511
Int. Cl.[5] H04N 5/87, 5/253
U.S. Cl. 358—244 7 Claims

1. The process of making a duplicate color motion picture negative from an original motion picture negative, comprising, an exposure cycle including the steps of generating an analog electrical signal corresponding to a single dye layer of a frame of the original color motion picture negative by projecting one or more scanning cycles of a continuous raster pattern formed upon a first monochromatic cathode ray tube, through a first optical filter restricting the light energy to a predetermined wave length band, focusing said raster pattern on a single frame of the original negative and thence to a photo sensor, supplying said analog signal to a second monochromatic cathode ray tube to simultaneously display a positive image thereon, precise synchronism of the raster patterns insured by providing both cathode ray tubes a common deflection source, and finally projecting the positive image through a second filter adapted to substantially restrict exposure to a single emulsion layer corresponding to the dye layer of the original negative being scanned, and onto a photosensitive surface of an unexposed color motion picture film; changing first and second optical filters and repeating the exposure cycle until the latent images of all duplicate negative emulsion layers are completed



for said frame; advancing both negative and photosensitive films one frame and repeating the above process steps until the complete negative is copied; and finally chemically processing the photosensitive film to form a duplicate negative suitable for release printing, wherein the scanning cycles consist of a raster pattern formed by a continuously energized electron beam traversing a path, starting at one corner of the field of the cathode ray tube, proceeds along a path parallel to one edge of the field until it completes its passage to the opposite end of said path, then moves a distance approximately equal to the electron beam diameter at right angles, then proceeds along a path parallel to its previous movement, repeating this pattern until the complete field has been covered, whereupon the beam retraces the foregoing pattern in a reverse direction to return to its starting point.

5,010,415

IMAGE FORMING APPARATUS HAVING SWITCHABLE COLOR SEPARATION FILTER UNITS

Makoto Suzuki, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Japan

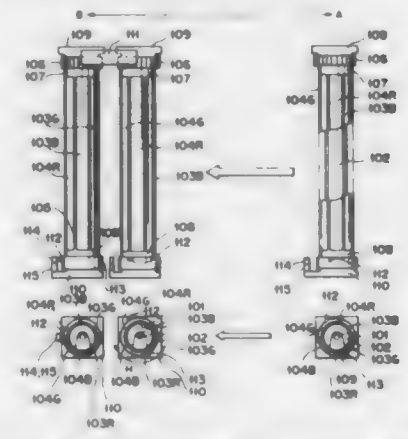
Filed Aug. 21, 1990, Ser. No. 570,545
Claims priority, application Japan, Aug. 24, 1989, 1-217822
Int. Cl.[5] G03F 3/06; H04N 1/29; G01D 15/14
U.S. Cl. 358—302 6 Claims

1. An image forming apparatus for forming a mask member on the basis of a color image information and exposing a photosensitive recording medium to light through the mask member to thereby forming a color image, including:

a light source for emitting light;

at least two color separation filter units for passing the light therethrough and providing transmitted lights having different half-widths in wavelength to thereby. irradiate the light having a desired half-width in wavelength to the photosensitive recording medium;

a position detecting unit for detecting each position of said color separation filter units; and



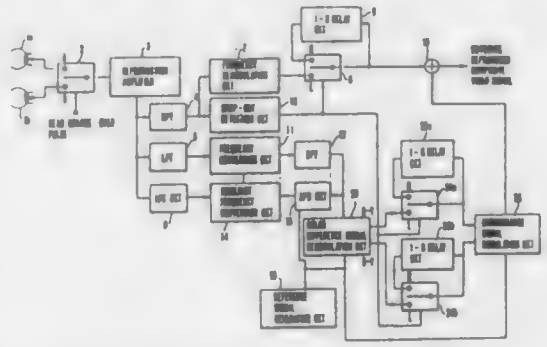
a switching unit for performing a switching operation between said color separation filter units to position desired one of said color separation filter units in an optical path of the light.

5,010,416

COLOR VIDEO SIGNAL REPRODUCING APPARATUS

Hiroto Yasumura; Masahide Hirasawa; Minoru Noji, all of Kanagawa, Japan; Susumu Kozuki, Tokyo; Koji Takahashi, and Katsuji Yoshimura, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 39,085, Apr. 16, 1987, Pat. No. 4,896,219.
This application Oct. 11, 1989, Ser. No. 420,764
Claims priority, application Japan, Apr. 23, 1986, 61-093978; Apr. 23, 1986, 61-093979; May 12, 1986, 61-107983; May 12, 1986, 61-107984; May 12, 1986, 61-107986
Int. Cl.[5] H04N 9/88
U.S. Cl. 358—314 4 Claims



1. A video signal reproducing apparatus for reproducing a composite video signal from a record bearing medium on which the composite video signal is recorded, said composite video signal being formed, from a color video signal including at least a luminance signal and a chrominance signal, by frequency-modulating said luminance signal, frequency-converting said chrominance signal into a signal having a lower frequency band than its original frequency band and then frequency-multiplexing the both signals, comprising:

(a) reproducing means for reproducing said composite video signal from said record bearing medium;

(b) separating means for separating the frequency-modulated luminance signal and the frequency-converted chrominance signal from said composite video signal reproduced by said reproducing means outputting the separated signals, respectively;

(c) demodulating means for demodulating the frequency-converted chrominance signal outputted from said separating means into a plurality of different base-band signals and for outputting these signals, respectively; and

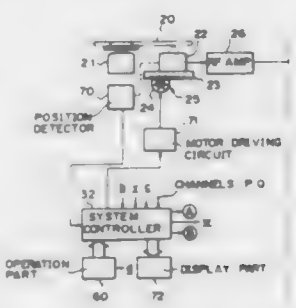
(d) drop-out compensating means for applying drop-out compensation to said plurality of different base-band signals outputted from said demodulating means.

5,010,417

PLAYBACK METHOD FOR USE IN A RECORDING MEDIUM PLAYING APPARATUS USING INFORMATION CONTROL SIGNALS

Junichi Yoshio; Sumio Hosaka; Hisao Matsuoka; Yoshichiro Tsuda; Shoichi Katagiri, all of Tokorozawa, and Satoru Nomura, Yamanashi, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 21, 1988, Ser. No. 287,148
Claims priority, application Japan, Apr. 25, 1988, 63-102177
Int. Cl.[5] H04N 5/76
U.S. Cl. 358—335 5 Claims



1. A playback method for use in an apparatus for playing a recording medium having an index code area, a first area in which only an audio information signal is recorded, and a second area in which a video signal and an audio information signal are recorded by using a multiplexing operation, said playback method comprising the steps of:

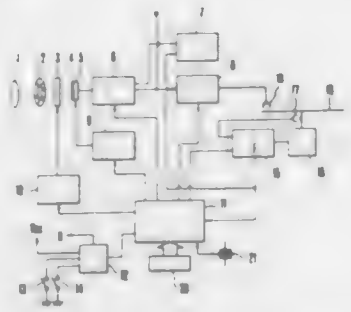
reading information recorded in said index code area in response to a command;

detecting, from information recovered from said index code area, information indicating the presence of picture data which indicates that a code including picture information is inserted as a subcode of said audio information signal;

moving a pickup to a position for reading information of said first area of said recording medium when said information indicating the presence of picture data is detected; and

reproducing information of said first area in priority to reproducing information of other areas of said recording medium.

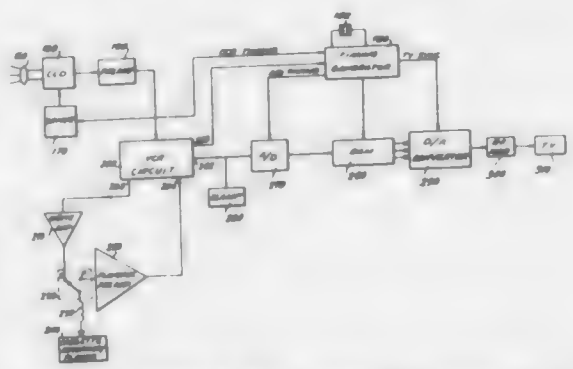
5,010,418
IMAGE PICK-UP DEVICE
Takao Kinoshita, Tokyo; Akihiko Tojo, Kanagawa; Tsutomu Takayama, Kanagawa; Toshio Kaji, Kanagawa, and Nobuyoshi Tanaka, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 274,703, Nov. 15, 1988, Pat. No. 4,910,606, which is a continuation of Ser. No. 195,492, May 18, 1988, abandoned, which is a continuation of Ser. No. 860,513, May 7, 1986, Pat. No. 4,783,204, which is a continuation of Ser. No. 452,500, Dec. 23, 1982, Pat. No. 4,599,657. This application Jan. 2, 1990, Ser. No. 459,564
Claims priority, application Japan, Dec. 29, 1981, 56-215333; Dec. 29, 1981, 56-215337; Dec. 29, 1981, 56-215342; Dec. 29, 1981, 56-215343; Dec. 29, 1981, 56-215344; Dec. 29, 1981, 56-215345
Int. Cl.[5] H04N *5/76*
U.S. Cl. 358—335 8 Claims



1. An image pick up device comprising:
(a) charge-transferable solid-state image pick-up means, having a light sensing part and a shaded storage part, said light sensing part having a photoelectric transducing ability and capable of holding temporarily an electrical image information formed in the light sensing part by transferring it to the storage part;
(b) control means for controlling the transfer of the electrical image information in the solid-state image pick-up means; and
(c) light shading means for shading the light sensing part at least during the time for transferring the electrical information in the light sensing part of the solid-state image pick-up means to the storage part.

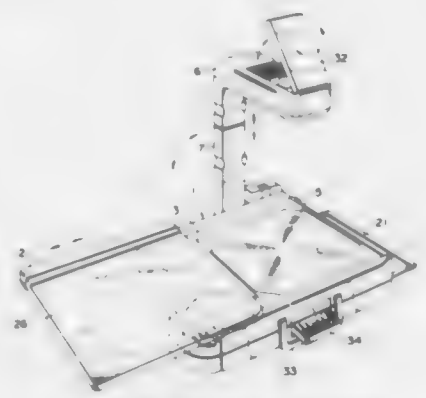
5,010,419
APPARATUS FOR STORING VIDEO SIGNALS ON AUDIO CASSETTE
Thomas Heidt, Long Valley, N.J., and James C. Wickstead, Pitney Rd. and W. Main, Mendham, N.J. 07945, assignors to James C. Wickstead, Mendham, N.J.
Continuation of Ser. No. 938,087, Dec. 4, 1986, Pat. No. 4,875,107. This application Jul. 23, 1989, Ser. No. 378,749
Int. Cl.[5] H04N *5/782*
U.S. Cl. 358—335 19 Claims

1. A video apparatus for storing video images on a recording medium comprising:
camera means for converting light images into electrical video signals;
processing means coupled to the camera means including means for converting the electronic video signal into a low bandwidth frequency modulated analog storage signal with a bandwidth substantially lower than a standard television video signal; and
recording means coupled to the processing means for storing the low bandwidth frequency modulated analog storage signal on an audio cassette having a standard speed allowing storage of an audio bandwidth signal, the recording means including drive means for driving the audio cassette at higher than normal speed to increase the bandwidth storage capacity of the audio cassette and recording head



means for storing the low bandwidth frequency modulated analog storage signal on the audio cassette.

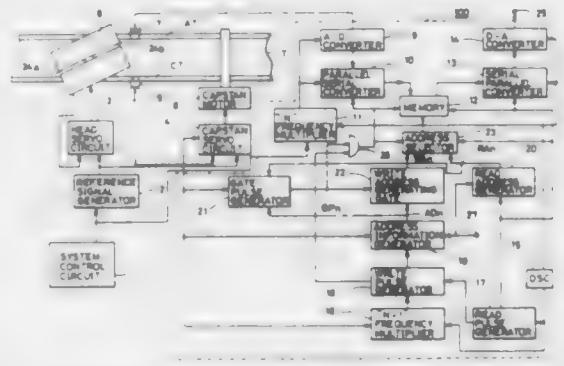
5,010,420
IMAGE PROCESSING APPARATUS
Takanori Hasegawa, Hachioji; Nobuyuki Abe, Toride; Toru Hibara, Tachikawa; Toshihiko Hirose, Yatsushiro; Takashi Kanda, Kofu; Hiroshi Saito; Masaki Oshima, both of Koma, and Eiji Nakazawa, Niiasaki, all of Japan, assignors to Riso Kagaku Corporation, Tokyo and Nippon Seimitsu Kogyo Kabushiki Kaisha, Kofu, both of, Japan
Filed Oct. 25, 1989, Ser. No. 426,550
Claims priority, application Japan, Oct. 31, 1988, 63-275789; Oct. 31, 1988, 63-275790; Oct. 31, 1988, 63-142163[U]; Oct. 31, 1988, 63-142164[U]; Oct. 31, 1988, 63-142165[U]; Oct. 31, 1988, 63-142166[U]; Oct. 31, 1988, 63-142167[U]; Oct. 31, 1988, 63-142168[U]
Int. Cl.[5] H04M *1/40*
U.S. Cl. 358—471 7 Claims



1. An image processing apparatus comprising:
(a) an input unit for inputting an image of an initial original in terms of image signals;
(b) a support table on which the initial original is to be set, said support table being movably mounted along said input unit;
(c) an image processing unit for processing the image signals from said input unit;
(d) an image forming unit for forming on a continuous sheet a subject image according to the image signals processed by said image processing unit to provide an OHP original;
(e) a reflection-type focusing plate on which the OHP original is to be set, said reflection-type focusing plate being movably disposed alongside said input unit;
(f) a projecting unit disposed above said reflection-type focusing plate for projecting the subject image of the OHP original set on said reflection-type focusing plate; and
(g) means for detecting the movement of said support table

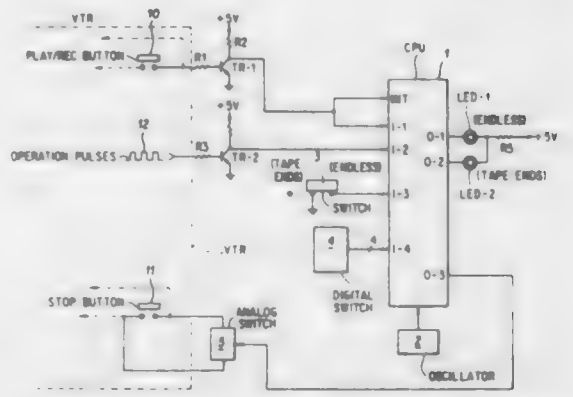
or said reflection-type focusing plate to deenergize said projecting unit.

5,010,421
VARIABLE SPEED SOUND REPRODUCING APPARATUS FOR SOUND REPRODUCTION AND REVIEW SYSTEM
Takeshi Arai, Saitama, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Dec. 15, 1988, Ser. No. 284,878
Claims priority, application Japan, Dec. 16, 1987, 57-319321
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—32 3 Claims



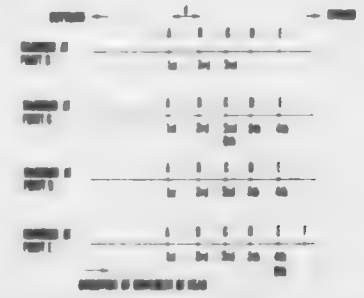
1. A sound reproducing apparatus comprising:
means (1, 2, 3, 4, 5, 6, 7, 8) for scanning a recording media having at least a sound signal recorded thereon at a predetermined recording speed, in the direction opposite to that at the time of recording at a reproducing speed N (N: positive integer) times said predetermined recording speed to reproduce said sound signal,
memory means (12) to which and from which a digital signal can be written and read out,
read address generating means (15, 17, 20) for generating a read address signal changed in one direction in a predetermined cycle for specifying an address at which the digital signal is to be read from said memory means,
means (15, 16, 18, 19) for generating address information changed in the direction opposite to that of said read address signal at a speed N times that of said read address signal,
address generating means (21, 22) for supplying said address information as a write address signal for specifying an address at which the digital signal is to be written to said memory means in a cycle corresponding to N/(N+1) times said predetermined cycle of said read address signal and only during a first period corresponding to 1/(N+1) times said predetermined cycle of said read address signal,
address supplying means (17, 18, 23, 26) for supplying said read address signal to said memory means when said read address signal is generated and supplying said write address signal to said memory means when said write address signal is generated during the first period,
means (9, 10, 11, 15) for converting the sound signal reproduced by said reproducing means into a digital signal at a first speed proportional to said reproducing speed and writing the same to the address specified by said write address signal in said memory means, and
means (13, 14, 15) for reading out said digital sound signal from the address specified by said read address signal in said memory means at a second speed proportional to said recording speed and converting the same into an analog signal.

5,010,422
DRIVING SYSTEM FOR ENDLESS VIDEO TAPE BY ONE-TOUCH TIMER
Kazuo Hashimoto, Tokyo, Japan, assignor to Hashimoto Corporation, Tokyo, Japan
Filed Feb. 21, 1990, Ser. No. 483,034
Claims priority, application Japan, Feb. 24, 1989, 1-44255
Int. Cl.[5] G11B *15/18, 19/02*
U.S. Cl. 360—69 10 Claims



1. A driving system for an endless video tape comprising:
a video tape recorder (VTR);
a one-touch timer which is preset by a predetermined one-touch operation; and
control means for driving the VTR in response to the one-touch timer, including means for automatically stopping the VTR if a set time of a predetermined period of said one-touch timer elapses during a driving operation of the VTR, and means responsive to a change in a VTR operation mode to any other mode during said driving, for automatically extending the set time of said one-touch timer for the predetermined period of time and stopping the VTR after said predetermined period of time elapses.

5,010,423
TRACKING DEVICE AND METHOD
Yuji Sakaegi, Tokyo, and Nobuo Fukushima, Kanagawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 51,479, May 18, 1987, abandoned. This application Nov. 27, 1989, Ser. No. 442,383
Claims priority, application Japan, May 21, 1986, 61-116954
Int. Cl.[5] G11B *5/596*
U.S. Cl. 360—77.06 12 Claims



1. An automatic tracking device for detecting a level of a signal reproduced from a track on a recording medium by a reproducing head and tracking said head to a position at which the signal takes the maximum level, comprising:
(a) indicating means for indicating a target track;
(b) detecting means operating in such a manner that, prior to the detecting of a signal for the logical central position of said target track, signals for positions front and rear adjacent to said logical central position of said target track,

respectively, are detected, and, after that, the signal for the logical central position of said target track is detected; and

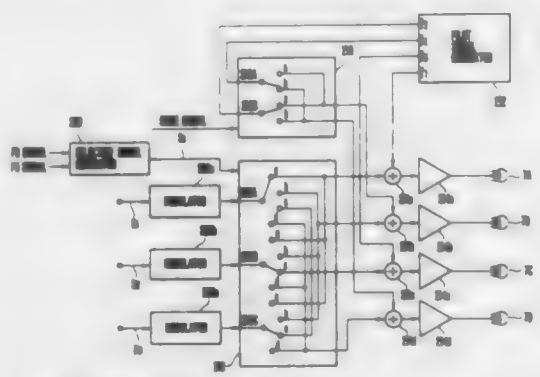
(c) discriminating means for determining the best position of said head based on the signals detected at all the aforesaid positions of said head, said discriminating means being arranged to determine a direction for a location of said best position of said head based on said detected signals in the case where said best position of said head is not determined based on said outputs and to displace said head for a predetermined distance in said direction, and to set the position of the head displaced for said predetermined distance in said direction as a new central position and determine the best position of said head on the basis of signals detected at positions front and rear adjacent said new central position and at said new central position.

5,010,424

RECORDING APPARATUS FOR AN INFORMATION SIGNAL WITH A PLURAL KINDS OF PILOT SIGNALS USING A PLURALITY OF HEADS

Masahide Hasegawa; Mitsuhiro Otokawa, both of Kanagawa; Hidetoshi Matsuoka, Tokyo, and Noritsugu Hirata, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 34,793, Apr. 3, 1987, Pat. No. 4,897,739.
This application May 10, 1989, Ser. No. 349,755
Claims priority, application Japan, Apr. 7, 1986, 61-078393; Apr. 9, 1986, 61-080146; Apr. 9, 1986, 61-080147; Jun. 23, 1986, 61-144713; Jun. 23, 1986, 61-144714
Int. Cl.[5] G11B 5/588
U.S. Cl. 360—77.140 7 Claims



1. A recording apparatus, comprising:

(a) a cylinder member having n rotary heads (where n is an integer of not less than 3) on its outer peripheral surface to rotate with a phase difference of (360/n)° from each other;

(b) a tape guide member training a tape-shaped recording medium around said cylinder member over an angular range of not less than (360(n − 1)/n)°;

(c) producing means for producing n kinds of pilot signals having different frequencies from one another;

(d) input means for inputting an information signal;

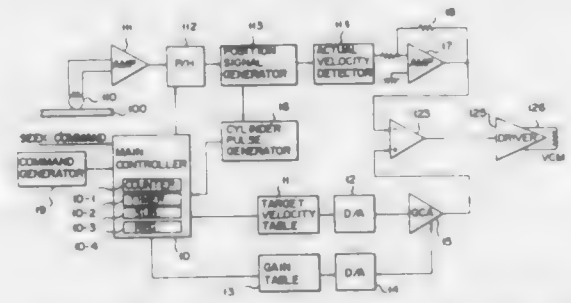
(e) recording means for recording said n kinds of pilot signals and said information signal on the medium, said recording means including first supply means for supplying said information signal to said n rotary heads in turn, and second supply means for supplying said n kinds of pilot signals to said n rotary heads, each of said n kinds of pilot signals unchangeably supplying only a predetermined one of said n rotary heads.

5,010,425

ACCESS CONTROLLER FOR CONTROLLING THE SEEK OPERATION OF A HEAD RELATIVE TO A RECORDING MEDIUM

Kenji Asai, Oome, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 5, 1989, Ser. No. 333,279
Claims priority, application Japan, Apr. 6, 1988, 63-84770
Int. Cl.[5] G11B 5/55
U.S. Cl. 360—78.04 15 Claims



1. An access controller for a recording medium, comprising:

an access mechanism having at least one head, for moving said head relative to said recording medium in accordance with an input velocity difference signal;

driving means responsive to an input seek command, for generating a primary velocity signal in accordance with a distance from a current position of said head to a destination cylinder designated by the seek command, amplifying the primary velocity signal in accordance with input gain data to obtain a target velocity signal, generating an actual velocity signal from position data readout from said recording medium by said head while said head is moved, and generating the velocity difference signal from the target velocity signal and the actual velocity signal to output the velocity difference signal to said access mechanism; and

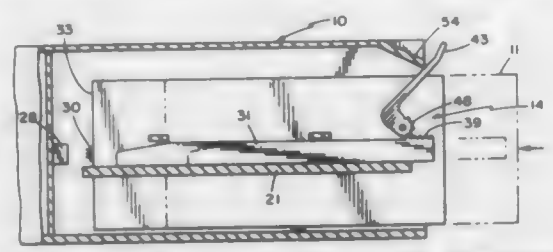
determination means responsive to an input adjustment command, for determining the gain data and outputting the gain data to said driving means.

5,010,426

INSTALLATION MECHANISM FOR REMOVABLE COMPUTER DRIVE MODULE

Horst M. Kreaz, Bridgman, Mich., assignor to Zenith Data Systems Corporation, Mt. Prospect, Ill.

Filed Feb. 3, 1989, Ser. No. 306,613
Int. Cl.[5] G11B 17/04
U.S. Cl. 360—97.01 12 Claims



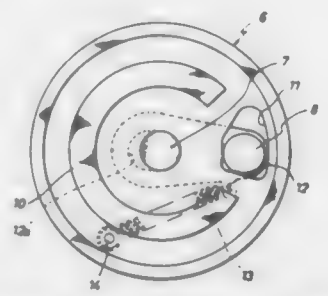
1. A computer component with removable drive module, comprising: a computer component housing including an opening with stationary module guide means, a terminal connector in the housing opening, a drive module removably received in the opening and guided therein by the guide means, having a connector fixed thereto releasably engageable with the housing connector, and an installation assembly for engaging the two connectors and holding the module in position in the housing including an automatically engaging handle operated interengaging drive means having a portion thereof on the housing interengaging a portion thereof on the module including means to automatically engage and operate the drive by module movement without handle pressure as the module is pushed along the housing guide means toward a position where the connectors engage so the handle may thereafter be operated to move the connectors to their final engaged positions.

5,010,427

APPARATUS FOR POSITIONING A MAGNETIC DISK ON A DISK DRIVE

Katsuhiko Taguchi, and Kazuya Mitsumori, both of Chofu, Japan, assignors to Juki Corporation, Chofu, Japan

Continuation of Ser. No. 767,090, Aug. 19, 1985, Pat. No. 4,873,595. This application Jun. 30, 1989, Ser. No. 374,964
Claims priority, application Japan, Aug. 23, 1984, 59-175784
Int. Cl.[5] G11B 5/012
U.S. Cl. 360—99.05 11 Claims



1. Apparatus for positioning a magnetic disk upon a magnetic disk drive which includes a motor drive spindle and a turntable fixedly mounted upon said spindle, comprising:

a driving pin;

biasing means for biasingly mounting said driving pin upon said motor drive spindle so as to be movable in both radial and circumferential directions relative to said spindle and said turntable;

means for urging said driving pin toward said spindle;

means for defining a first hole within said magnetic disk within which said motor drive spindle is to be disposed;

means for defining a second hole within said magnetic disk within which said driving pin is to be disposed; and

means for defining a positioning third hole within said turntable for cooperating with said means defining said second hole so as to confine said driving pin between said means for defining said second hole and said means for defining said third hole whereby said magnetic disk will be properly positioned upon said magnetic disk drive.

5,010,428

TILTING OPTICAL DISC LOADING MECHANISM WITH AUTOMATIC CENTERING AND EJECTION OF DISCS OF DIFFERENT DIAMETERS

Stephane M. d'Alayerde Costemore d'Arc, Brussels, Belgium, assignor to Staar S.A., Belgium

Filed Sep. 26, 1989, Ser. No. 412,478
Claims priority, application Belgium, Nov. 17, 1988, 8801303
Int. Cl.[5] G11B 17/04
U.S. Cl. 360—99.06 24 Claims

1. A disc player/recorder apparatus comprising:

a frame,

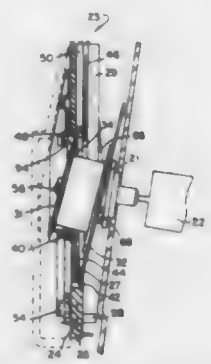
a horizontal spindle on said frame adapted to receive a disc on one end of said spindle in a vertical operating plane, and

a loading and centering device for discs of different diameters including:

a loading member pivotally mounted to said frame for movement between an introduction position and an operating position, said member having a disc loading surface,

guides on said loading surface which engage lateral edges of a disc of a first diameter or of a second smaller diameter and guide either diameter disc along different parallel loading planes to a location substantially centered laterally with respect to the end of the spindle,

positioning elements on said loading surface which engage a lower edge of a disc of the first diameter or of the second diameter and position either diameter disc in a location substantially centered vertically with respect to the end of



the spindle upon movement of said loading member between the introduction position and the operating position whereby the disc is translated between an introduction plane tilted upwardly and away from the vertical operating plane, and is returned to the introduction plane upon return movement of said loading member, and

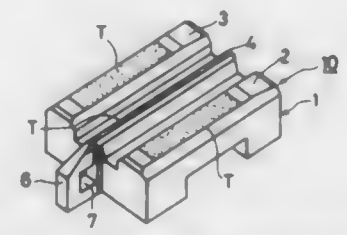
clamping means carried by said loading member for clamping a disc on the end of said spindle in the vertical operating plane when said member is in the operating position.

5,010,429

FLOATING MAGNETIC HEAD HAVING IMPROVED STATIC FRICTION COEFFICIENT

Akira Taguchi; Shigetoshi Morita; Shunichi Taka; Hirohide Yamada; Yoshiaki Takada; Shinji Furuichi, and Masahiro Ao, all of Mooka, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Jun. 1, 1989, Ser. No. 360,124
Claims priority, application Japan, Nov. 22, 1988, 63-295652
Int. Cl.[5] G11B 5/60
U.S. Cl. 360—103 8 Claims



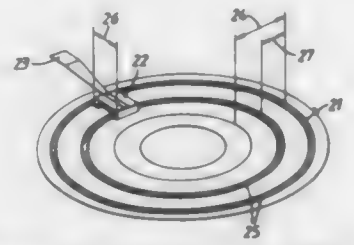
1. A magnetic head comprising: a slider made of a polycrystalline ceramic material; and a magnetic core, said slider having a surface to be opposed to a magnetic disk, said opposed surface being formed of lands and grooves having a height difference of 50 to 200 A on an average and a repetition pitch of 5 to 20 microns on an average.

5,010,430

HEAD SLIDER ARRANGEMENT FOR MAGNETIC DISK STORAGE DEVICE

Takehito Yamada, Kanagawa; Kazushi Tanimoto, Tokyo; Yuji Sakai; Takao Muraoka, both of Kanagawa; Tetsuo Inoue, Chiba, and Yoshinao Takada, Kanagawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 29, 1988, Ser. No. 226,062
Claims priority, application Japan, Jul. 30, 1987, 62-191410; Aug. 13, 1987, 62-202236; Dec. 11, 1987, 62-311884
Int. Cl.[5] G11B 5/60, 5/596
U.S. Cl. 360—103 21 Claims



1. A magnetic disk storage device, comprising:
a magnetic disk having a disk surface including an inner side and an outer side with a storing/reproduction region formed thereon;
a head slider facing the disk surface and having a plurality of parallel projections to generate an air bearing, including an inner floating value and an outer floating value;
a plurality of magnetic heads, each having a head gap in one of said projections; and
means for compensating differences of said floating values of said magnetic heads based on circumferentially different speeds on the inner side and the outer side of the disk surface.

21. A magnetic disk storage device, comprising:
a magnetic disk having a disk surface with a storing/reproduction region including a servo region formed thereof, said storing/reproducing region having a width, said servo region storing coarse servo signal and a fine servo signal;
a head slider facing the disk surface and having a plurality of parallel projections to generate an air bearing;
two magnetic heads each having a head gap in one of said projections and having an interval between head gaps of at least one half of the width of the storing/reproduction region of the disk;
a coarse servo positioning signal detector circuit detecting the coarse servo signal obtained by an inner head;
a fine servo positioning signal detector circuit detecting the fine servo signal obtained by an outer head;
a positioning control circuit controlling the position of the head using outputs of said detector circuits.

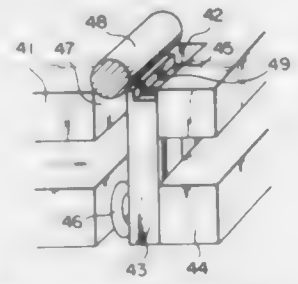
5,010,431

FLYING-TYPE COMPOSITE MAGNETIC HEAD

Tadashi Shinohara, Chiyoda; Toshikazu Nishiyama, Fukaya; Kazumi Nogachi, Kamikawa; Hitoshi Iwata, and Shigekazu Suwabe, both of Kumagaya, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Jan. 27, 1989, Ser. No. 302,419
Claims priority, application Japan, Jan. 28, 1988, 63-18382
Int. Cl.[5] G11B 5/60
U.S. Cl. 360—103 23 Claims

1. A flying-type composite magnetic head comprising:
(a) a slider made of a non-magnetic ceramic material and having side rails extending longitudinally on both lateral sides of said head, one of said rails having a slit extending longitudinally therein; and
(b) a magnetic core fixable in said slit and including—
(i) a pair of core pieces having flat opposing surfaces parallel to each other for defining a magnetic gap,
(ii) an Fe-Al-Si thin layer formed on one of said flat opposing parallel surfaces of said core pieces,
(iii) a first glass layer for bonding said pair of core pieces together,
(iv) a second glass layer for fixing said magnetic core in said slit, said second glass layer filling the slit on sides of said magnetic core, and



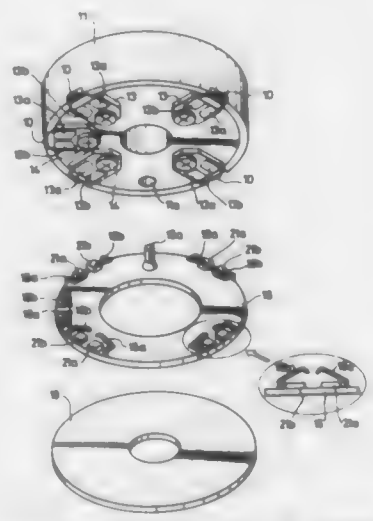
(v) a track surface on said magnetic core having a track width defined by a notch longitudinally formed in said magnetic core, said magnetic gap and said notch having depths wherein the depth of the notch is equal to or greater than the depth of said magnetic gap, and said magnetic core having a thickness and said first glass layer having a remaining thickness after bonding of the core pieces and forming of the notch wherein the remaining thickness of said first glass layer is equal to or greater than the thickness of said magnetic core.

5,010,432

ROTARY HEAD DRUM APPARATUS COMPRISING RESILIENT ELECTRICAL CONNECTORS

Hideo Fukushima, Tokyo, and Masakazu Kurashima, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 26, 1989, Ser. No. 371,293
Claims priority, application Japan, Jun. 28, 1988, 63-159942; Jun. 28, 1988, 63-159943; Jun. 28, 1988, 63-159944
Int. Cl.[5] G11B 5/52, 15/60
U.S. Cl. 360—108 10 Claims



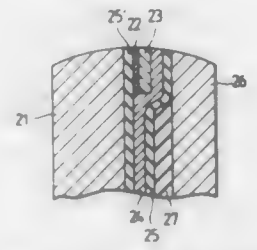
1. In a rotary head drum apparatus in which at least one magnetic head is attached to a rotary drum member for rotation relative to a stationary structure, and a rotary transformer is provided for transmitting electrical signals between said magnetic head and said stationary structure and includes a rotor and a stator fixed relative to said rotary drum member and said stationary structure, respectively, and having respective coils; means for connecting said at least one magnetic head to the coil of said rotor of the rotary transformer comprising:
resilient electrical contactor means;
means for mounting said resilient electrical contactor means on one of said rotary drum member and said rotor; and
electrical contact portion means;
means for mounting said electrical contact portion means on the other of said rotary drum member and said rotor for contact with said electrical contactor means, and wherein said electrical contactor means is urged resiliently against said electrical contact portion means in response to assembling together of said rotary drum member and said rotary transformer; and
means electrically connecting said at least one magnetic head with one of said electrical contactor means and said electrical contact portion means which is mounted on said rotary drum member, whereby an electrical path is established between said at least one magnetic head and said rotor.

5,010,433

MAGNETORESISTIVE MAGNETIC HEAD HAVING A SHUNT FILM OF NB

Masahiro Kitada, Hamura; Noboru Shimizu, Tokorozawa; Hideo Tanabe, Higashi-murayama, and Hitoshi Nakamura, Hachiouji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 16, 1989, Ser. No. 310,922
Claims priority, application Japan, Feb. 26, 1988, 63-41987
Int. Cl.[5] G11B 5/127
U.S. Cl. 360—113 9 Claims



1. A magnetoresistive magnetic head comprising:
a two-layer film consisting of a magnetoresistive film and a shunt film, the magnetoresistive film being formed of an Ni-Fe alloy film which contains 7 to 27 wt % of Fe and a virtually remaining percentage of Ni, and the shunt film being formed of an Nb film having an electrical resistivity of not more than 30 μΩcm and being deposited by the electron-beam evaporation method.

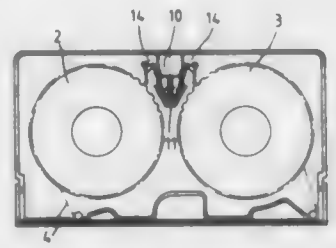
5,010,434

TAPE CASSETTE HAVING A TWO-REEL BRAKE SYSTEM HAVING IDENTICAL BRAKE LEVERS THEREFOR

Klaus Schoettle, Heidelberg; Artur Buhk, Erpolzheim, and Lothar Gliniorz, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 14, 1989, Ser. No. 338,093
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1988, 68805416[U]
Int. Cl.[5] G11B 23/02, 15/32
U.S. Cl. 360—132 9 Claims

1. A tape cassette having a two-reel brake system, substantially consisting of an actuating element and two rotatable brake levers which are associated with two reels, mounted with bias on a cassette housing and arranged for actuation by



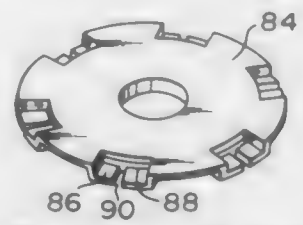
an actuating element, wherein the brake levers are of identical shape rather than being a mirror image of each other.

5,010,435

HUB FOR A DISK TYPE RECORDING MEDIUM

Haruo Shiba; Masaru Ikebe, and Toshihiko Ishida, all of Komoro, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Dec. 2, 1988, Ser. No. 279,090
Claims priority, application Japan, Dec. 3, 1987, 62-184643
Int. Cl.[5] G11B 23/03, 5/84
U.S. Cl. 360—133 1 Claim



1. A hub to be attached to the central portion of a recording medium which comprises:
a flat plate-like body made of a metallic material and including upper and lower surfaces and at least one indentation having a depth sufficiently large to form an aperture between the lower surface of the flat plate-like body and an upper surface of the indentation, the aperture having an outer boundary positioned substantially transversely to at least one of the upper and lower surfaces of the flat plate-like body, and
an annular resinous body firmly attached to said flat plate-like body by insertion-molding such that at least a portion of the annular resinous body extends through the aperture for connection said annular resinous body to said flat plate-like body,
wherein said at least one indentation is divided into two sections, and
wherein in addition to said aperture a slit is formed in at least one indentation in the radial direction.

5,010,436

APPARATUS FOR INCORPORATING LOCK PLATES IN VIDEO CASSETTES

Naoto Takayama, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

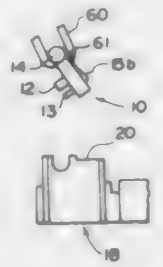
Filed Sep. 28, 1989, Ser. No. 413,670
Claims priority, application Japan, Sep. 29, 1988, 63-245796; Oct. 4, 1988, 63-130211[U]
Int. Cl.[5] G11B 23/113
U.S. Cl. 360—137 4 Claims

1. An apparatus for incorporating a lock plate in a video cassette, wherein a lock plate composed of:
(a) a sheet-like plate body,
(b) protrusions protruding from the plate body in a direction approximately normal thereto,
(c) a shaft combined integrally with the plate body and

extending adjacent and approximately parallel to the plate body, and

(d) a torsion spring having a coiled portion engaged with the shaft,

is incorporated in a cassette case body of a video cassette in order to allow a guard panel of the video cassette to be locked in a closed position, which video cassette is composed of the cassette case body in which a magnetic tape is accommodated, and the guard panel mounted on a surface of the cassette case body, along which surface the magnetic tape slides,



the apparatus for incorporating a lock plate in a video cassette comprising:

(i) a plate holding means which holds said lock plate in an obliquely inclined orientation so that the surface of said plate body, on which surface said protrusions are formed, faces down obliquely and so that said shaft extends horizontally above said plate body, and

(ii) a fitting means which grasps the lock plate held by said plate holding means, moves it linearly while keeping it in the inclined orientation, and thereby fits said lock plate into said cassette case body.

5,010,437

RECORDING MEDIUM PLAYER APPARATUS

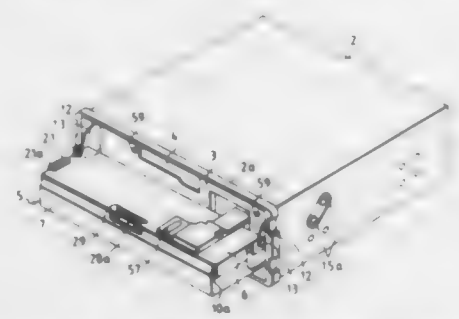
Nobuo Utsugi; Hisashi Kihara; Shuichi Mori; Junichi Fuse; Takashi Miyake, and Yoshikatsu Ikata, all of Saitama, Japan, assignors to Pioneer Electronic Corp., Tokyo, Japan

Filed Mar. 6, 1990, Ser. No. 488,826

Claims priority, application Japan, Jun. 7, 1989, 1-144413

Int. Cl.[5] G11B *33/02*

U.S. Cl. 360—137 **7 Claims**



1. A recording medium player apparatus comprising

a housing enclosing a play means and having an insertion slot formed at a front surface portion thereof for insertion of a recording medium carrying an information signal,

an open/close body disposed so as to openably cover said insertion slot and provided with an operation portion for controlling the operation of said play means, and

further comprising a support member pivotally disposed on said housing for pivotally supporting at a free end portion thereof said open/close body;

a first driving means for pivotally moving said support member; and

a second driving means for pivotally moving said open/-close body relative to said support member.

5,010,438

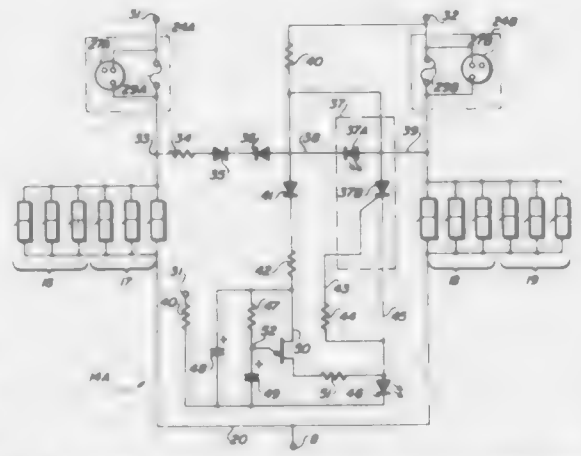
PLUG-IN TRANSIENT VOLTAGE SUPPRESSOR MODULE

Peter J. Brady, Glendale, Ariz., assignor to Square D Company, Palatine, Ill.

Filed Jun. 16, 1989, Ser. No. 367,028

Int. Cl.[5] H02H *9/06*

U.S. Cl. 361—56 **20 Claims**



1. A surge suppressor module capable of repeatedly suppressing ten kiloampere surges, comprising in combination:

(a) a printed circuit board having a plurality of metal strip conductors thereon, and a plurality of via holes extending through the printed circuit board and through the various metal strip conductors;

(b) an elongated ground bus generally perpendicular to the printed circuit board having an edge soldered to a metal conductor on the printed circuit board;

(c) a first fuse having a first terminal connected to a first power line conductor, and a second terminal, and a second fuse having a first terminal connected to a second power line conductor and also having a second terminal;

(d) a first group of metal oxide varistors each having a first terminal and a second terminal, the first terminal of each of the metal oxide varistors of the first group being connected to the second terminal of the first fuse, the second terminals of the metal oxide varistors of the first group being connected, respectively, by some of the metal strip conductors to the edge of the ground bus by means of the metal conductor, and a second group of metal oxide varistors each having a first terminal and a second terminal, the first terminals of the metal oxide varistors of the second group being connected to the second terminal of the second fuse, the second terminals of the metal oxide varistors of the second group being connected by some of the metal strip conductors to the edge of the ground bus by means of the metal conductor, the metal oxide varistors of the first and second groups being positioned on opposite sides of the ground bus;

(e) a plastic housing adapted to be plugged into a single slot of a power distribution panel enclosing the printed circuit board, the ground bus extending through a first edge wall of the housing;

(f) means for connecting an external ground conductor to the ground bus;

(g) first and second conductive prongs extending through a second edge wall of the housing;

(h) first and second means attached to the printed circuit board and electrically connected to the first and second power line conductors for electrically contacting the first and second conductive prongs, respectively.

5,010,439

CONTROL CIRCUIT FOR THE CLAMPING VOLTAGE OF AN INDUCTIVE LOAD DRIVEN BY A POWER DEVICE IN A HIGH SIDE DRIVER CONFIGURATION

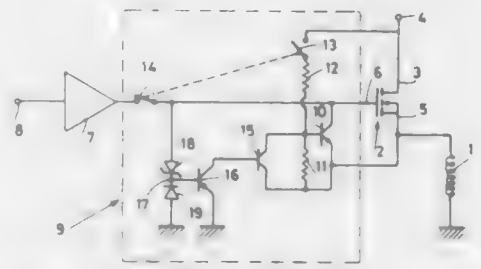
Michele Zina, Comiso, and Sergio Palara, Acicastello, both of Italy, assignors to SGS-Thomson Microelectronics s.r.l., Milano, Italy

Filed Jun. 12, 1989, Ser. No. 364,174

Claims priority, application Italy, Jul. 29, 1988, 21561 A/88

Int. Cl.[5] H02H *7/20;* **H03K** *17/60*

U.S. Cl. 361—91 **3 Claims**



1. Control circuit for the clamping voltage of an inductive load driven by a power device having a power supply terminal, a load terminal connected to earth through the inductive load and a control terminal connected to an alternating control signal input, there being provided a discharge circuit for the inductive load which is activated when said clamping voltage is attained, characterized in that it includes a switching element connected between said control terminal and said load terminal and having a control element connected to a voltage supply by first switching means operating in push-pull with second switching means connected between said control terminal and said control signal input and at the latter's same frequency so as to accomplish a direct connection between said control terminal and said load terminal whenever the power device is shut down, said discharge circuit including threshold means having a predetermined firing threshold which are activated when the voltage at the load terminal of the power device falls below earth until it reaches said firing threshold where said threshold means are constituted by a Zener diode connected between said control terminal of the power device and earth by a diode, there being provided means sensitive to the firing of said Zener diode to control the deactivation of said switching element for the subsequent turning on of said power device.

5,010,440

PIPE LINER HAVING ELECTRICALLY CONDUCTIVE WIRES FOR HARDENING AND ELECTROSTATIC BUILD-UP PREVENTION

Mamiko Endo, Kita-Kasukabe Haitsu, 368, Umeda, Kasukabe-shi, Saitama-ken, Japan

Filed Dec. 6, 1989, Ser. No. 446,889

Claims priority, application Japan, Dec. 9, 1988, 63-310160

Int. Cl.[5] H05F *1/00;* **F16L** *11/12, 55/18, 55/16*

U.S. Cl. 361—215 **8 Claims**

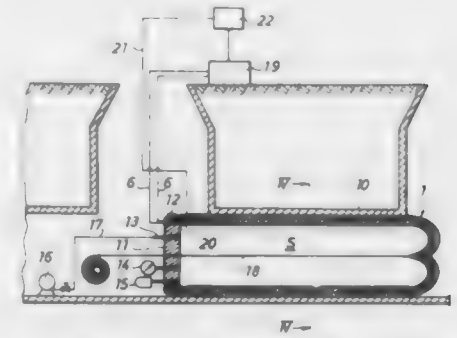
1. A pipe liner (1) with which a pipe is internally lined, comprising:

a resin-absorbable flexible tube made of electrically conductive material,

an electrically insulating means which is provided along at least one generatrix of said resin-absorbable flexible tube and penetrating through the whole thickness thereof, so as to electrically disconnect the circumferential circuit formed by said resin-absorbable flexible tube at said at least one generatrix,

a thermosetting resin absorbed in said resin-absorbable flexible tube,

at least one pair of wires having an electrical conductivity greater than that of said resin-absorbable flexible tube, said at least one pair of wires being laid on, and passed along the whole length of, said resin-absorbable flexible tube, and being arranged such that the wires of the same pair are close to each other but are electrically isolated from each other by said electrically insulating means, and



an electrically insulating hermetic film which forms the innermost layer of said pipe liner, when the pipe liner is inserted in the pipe.

5,010,441

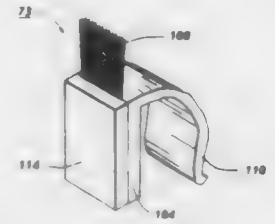
GROUNDING BRUSH

Elizabeth D. Fox, Rochester, and Alan G. Schlageter, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 24, 1990, Ser. No. 469,873

Int. Cl.[5] H05F *3/02;* **G03G** *21/00*

U.S. Cl. 361—221 **10 Claims**



1. A device for electrically conductive rotating shaft, including:

an electrically grounded member;

electrically conductive means, mounted removably on the shaft and rotating therewith to periodically contact said grounded member, for periodically electrically grounding the rotating shaft.

5,010,442

BREAK-AWAY ELEMENT FOR ELECTRICAL CAPACITOR

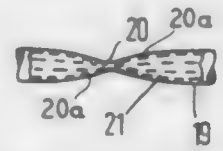
Werner Erhardt, Baiendorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 26, 1989, Ser. No. 357,251

Claims priority, application Fed. Rep. of Germany, May 26, 1988, 3817903

Int. Cl.[5] H01G *1/13*

U.S. Cl. 361—275 **11 Claims**



1. In an electrical capacitor having a housing, an improved

over-pressure break-away element composed of a malleably deformed wire having a rated break location with a smooth surface and a gradual continuous transition from a cross section of said wire to a cross section of said break location

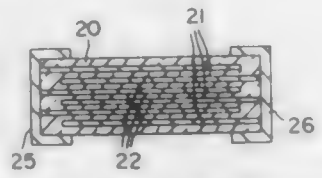
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5,010,443

CAPACITOR WITH FINE GRAINED $BATIO_3$ BODY AND METHOD FOR MAKING

Galeb H. Maher, North Adams, Mass., assignor to MRA Laboratories, Inc., North Adams, Mass.

Filed Jan. 11, 1990, Ser. No. 463,705
Int. Cl.[5] H01G 4/12, 7/00; C04B 35/46
U.S. Cl. 361—321 **15 Claims**



1. A monolithic ceramic capacitor comprised of a barium titanate body, two groups of interdigitated electrodes buried in said body and extending respectively to opposite ends of said body, and two conductive terminations contacting said two groups respectively at said opposing body ends:

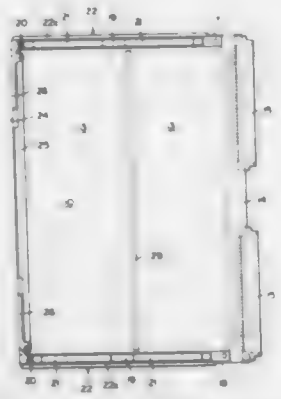
said body being comprised of sintered barium titanate grains having an average size of from 0.5 to 0.9 micron, and in the grain boundaries from 1.5 to 2.5 weight percent of a silicate flux and a lesser amount of a reactivity-inhibitor compound.

5,010,444

RACK MOUNTED CIRCUIT BOARD

Alan J. Storrow, and Nigel J. Knighton, both of Northampton, England, assignors to Radstone Technology Limited, Northampton, Northamptonshire, England

Continuation of Ser. No. 121,023, Nov. 13, 1987, Pat. No. 4,879,634. This application Oct. 24, 1989, Ser. No. 426,548
The portion of the term of this patent subsequent to Nov. 7, 2006, has been disclaimed.
Int. Cl.[5] H05K 7/20
U.S. Cl. 361—386 **14 Claims**



14. The combination of a box, a rack mounted circuit board, and a board clamping means removably clamping the circuit board in the box,

said box comprising a bus arrangement provided at a rear portion of said box; and a rack including at least one slot into which said circuit board slides;

said circuit board comprising a substrate having opposed first and second surfaces; a printed circuit provided on said first surface; at least one connector mounted on said circuit board adjacent a first edge of said circuit board which connects said printed circuit to said bus arrangement; heat management means provided on said second surface conducting excess heat from components supported on said circuit board including at least one guide at each of a pair of opposite edges of said circuit board adjacent said first edge, said guide defining a conduction surface and projection means formed by each guide for inserting said circuit board in said rack; and

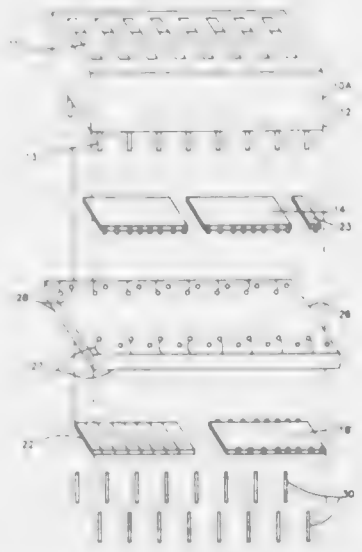
said board clamping means urging each conduction surface of the guides into thermal contact with a surface of said rack and clamping the circuit board.

5,010,445

DIP SWITCH WITH BUILT-IN ACTIVE INTERFACING CIRCUITRY

Christoffer S. Weinold, 1307 Ridge Rd., Vista, Calif. 92083

Filed Jan. 25, 1990, Ser. No. 470,089
Int. Cl.[5] H05K 7/00
U.S. Cl. 361—392 **18 Claims**



1. An integrated switch and circuit assembly comprising:

a dual-inline package comprising an elongated body having a top rectangular surface, a bottom rectangular surface opposite to said top rectangular surface, of the same size as said top rectangular surface, and having a first plurality of metal leads having a given spacing and size and extending therefrom such that said leads can be attached to a mounting device and provide electrical and mechanical connections for said package,

said dual-inline package containing a plurality of switches, said switches each having a manually operable switch-actuating member on said top surface and a plurality of switch contacts within said package,

an electrical circuit comprising a plurality of interconnected electronic components, said components including a plurality of transistors arranged to provide an active electronic circuit for interfacing said switches with an electronic system, said electrical circuit being mechanically mounted in said package between said top and bottom rectangular surfaces of said package, and

means for electrically interconnecting said electrical circuit between said switch contacts and said first plurality of metal leads, said means for interconnecting comprising (a) a corresponding second plurality of metal leads having the same spacing between adjacent leads as said first plurality of leads, and (b) means for connecting said electronic components to both of said pluralities of leads,

said electrical circuit and said means for interconnecting being confined within the dimensions of said bottom and top rectangular surfaces of said dual-inline package when

seen from a direction facing and orthogonal to said top rectangular surface

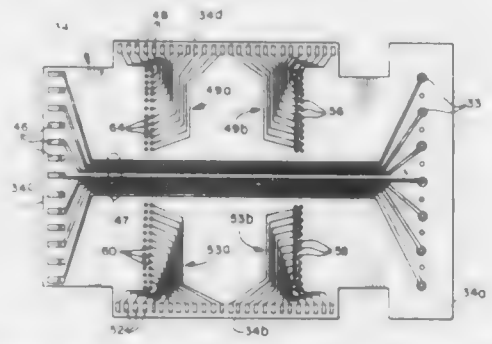
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5,010,446

MULTI-EDGE EXTENDER BOARD

Michael B. Scannell, Chicago, Ill., assignor to Commonwealth Edison Company, Chicago, Ill.

Filed Oct. 30, 1989, Ser. No. 428,917
Int. Cl.[5] G01R 31/22
U.S. Cl. 361—398 **34 Claims**



1. For use with a circuit board having first and second adjacent edges with first and second terminal means respectively disposed thereon for coupling said circuit board to circuitry in a support structure in which said circuit board is mounted, apparatus for directly coupling said circuit board to said circuitry with said circuit board removed from said support structure, said apparatus comprising:

a generally planar, rigid substrate having a plurality of edges;

third and fourth terminal means disposed on respective opposed first and second edges of said substrate for coupling the circuitry in the support structure to the circuit board, wherein the apparatus further includes conductive means for electrically coupling said third and fourth terminal means and wherein said third terminal means for coupling to the circuitry in the support structure and said fourth terminal means is for coupling to the first terminal means of the circuit board;

fifth and sixth terminal means respectively disposed on a third edge and on an inner portion of said substrate for coupling the circuitry in the support structure to the circuit board, wherein said third edge is adjacent to the first edge of said substrate and said fifth and sixth terminal means are electrically coupled; and

first coupling means for coupling said sixth terminal means to the second terminal means on the circuit board.

5,010,447

DIVIDED CAPACITOR MOUNTING PADS

James S. Wallace, Sugarland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

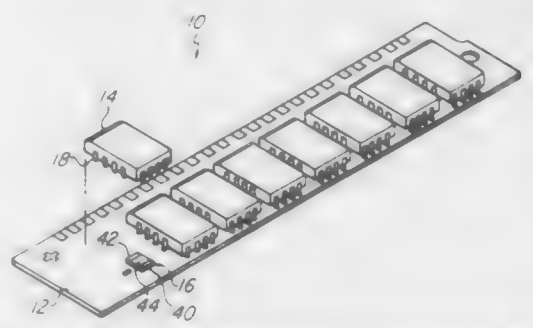
Filed Dec. 28, 1988, Ser. No. 290,778
Int. Cl.[5] H05K 7/10
U.S. Cl. 361—400 **10 Claims**

1. An arrangement for surface mounting an electrical component in a desired circuit that is carried on an insulating substrate, the arrangement being testable electrically to indicate the proper mechanical mounting of said component, said arrangement comprising:

A. a first pad carried on said substrate and at which said component is to be mounted, said first pad having two parts electrically insulated from one another and spaced from one another by a certain distance;

B. said component having a first terminal with a dimension of at least said certain distance, said component being mounted to said two parts of said first pad to bridge mechanically and electrically the space between said two parts with said terminal; and

C. one lead in said desired circuit extending to one part of said first pad and another lead in said desired circuit extending to the other part of said first pad to place said component terminal bridging said space between said pad parts in series with said leads so that proper mechanical mounting of said terminal to said two pad parts becomes testable by a series circuit through said leads.

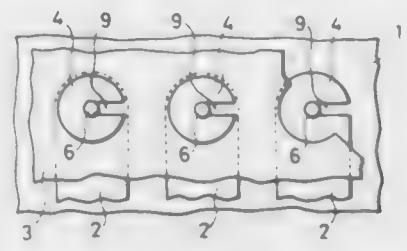


5,010,448

PRINTED CIRCUIT BOARD

Tadaomi Kobari, Iwaki, Japan, assignor to Alpine Electronics Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 134,619, Dec. 18, 1987, abandoned, which is a continuation of Ser. No. 900,500, Aug. 26, 1986, abandoned. This application Jan. 18, 1989, Ser. No. 298,527
Int. Cl.[5] H05K 7/10
U.S. Cl. 361—403 **11 Claims**



1. A printed circuit board having a plurality of conductive patterns printed on an insulating substrate, said patterns having a plurality of respective lands, each of said lands being formed by a layer of conductor material, each of said lands having a center hole formed through a center portion of said lands, said substrate having holes therethrough in alignment with each of said center holes in said lands for mounting a respective electrical terminal therethrough, and each of said lands having one or more peripheral holes at peripheral portions of said lands, said substrate being imperforate beneath said peripheral holes,

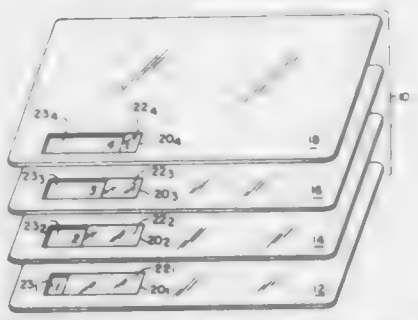
said peripheral holes being solely for the purpose of reducing the area of conductor material on which solder adheres so as to limit the amount of solder adhering to said lands and to prevent the formation of a solder bridge between adjacent lands.

5,010,449

MULTI-LAYER PRINTED CIRCUIT BOARD AND A METHOD FOR ASSURING ASSEMBLY IN A SELECTED ORDER

Robert L. Baldino, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 4, 1990, Ser. No. 504,466
Int. Cl.[5] H05K 1/11
U.S. Cl. 361—414 11 Claims



1. A method for assuring that a multi-layer circuit board has been assembled in a selected order comprising the steps of

forming a label on each layer of the multi-layer circuit board, with each label having a unique indicia thereon indicative of that layers position in a correctly assembled multi-layer circuit board;

forming a semi-transparent area in each layer above the last layer to be viewed, with the size of each semi-transparent area limited to that necessary to view only the indicia of the correctly assembled layers positioned below that particular layer, such that an incorrectly positioned layer prevents the viewing of at least one indicia; and

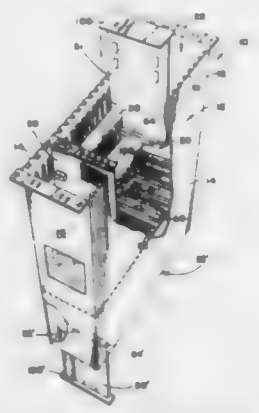
viewing the assembled multi-layer circuit board to assure the order of said unique indicia.

5,010,450

FRONT-REAR MODULAR UNIT

David A. Werdin, Eagan, and Reinhold Henke, St. Paul, both of Minn., assignors to ADC Telecommunications, Inc., Minneapolis, Minn.

Continuation of Ser. No. 204,751, Jan. 10, 1988. This application Sep. 21, 1988, Ser. No. 247,151
Int. Cl.[4] H05K 7/14
U.S. Cl. 361—415 29 Claims



1. A front and rear modular conversion unit comprising:

a chassis including four side-walls and open front and rear ends;

a motherboard printed circuit board mounted inside said chassis to form a front module insertion area and a rear module insertion area, said motherboard including a plurality of connectors for receiving a cooperating mating connector, said connectors mounted on both sides of said motherboard;

means for connecting connectors on opposite sides of said motherboard in pairs;

one or more conversion card module means for converting a conditioned electrical signal to a fiber optic signal mounted in the front end of said chassis and mating with said connectors;

one or more rear card module means each for conditioning electrical signals to provide said conditioned electrical signals, said rear card module means mounted in the rear of said chassis and mating with said connectors on said motherboard, said rear card module means including connector means for connecting to an electrical cable carrying signal to be converted by said conversion card module means, and

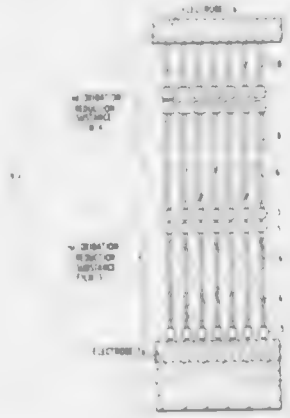
whereby electrical signals can be connected to said rear card module means, processed on said rear card module means, connected through to said conversion card module means through said connectors on said motherboard, and converted on said conversion card module means.

5,010,451

ELECTRONIC DEVICE

Satoshi Ueyama; Hiroaki Kawakubo; Satoru Isoda, and Mitsuo Maeda, all of Hyogo, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Filed Mar. 28, 1990, Ser. No. 500,347
Claims priority, application Japan, Mar. 29, 1989, 1-79236; Mar. 29, 1989, 1-79237; Mar. 31, 1989, 1-81827
Int. Cl.[5] H01G 9/02; B32B 7/02; A01N 43/38
U.S. Cl. 361—504 12 Claims



1. An electronic device comprising:

a first oxidation-reduction substance film of a first oxidation-reduction substance;

a second oxidation-reduction substance film of a second oxidation-reduction substance having a redox potential different from that of said first oxidation-reduction substance and being accumulatedly contacted and joined on said first oxidation-reduction substance film; and

a first electrode electrically connected to said first oxidation-reduction substance film and a second electrode electrically connected to said second oxidation-reduction substance film;

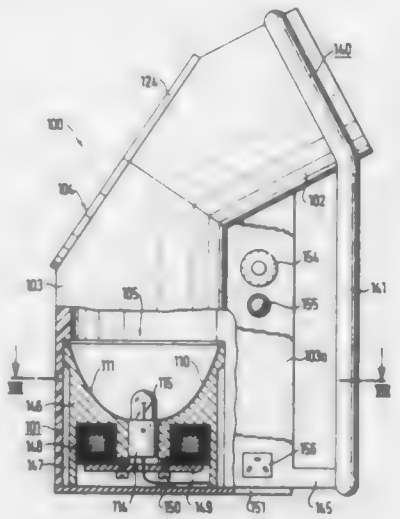
wherein said first oxidation-reduction substance is composed of one of a flavin derivative and a porphyrin derivative while said second oxidation-reduction substance is composed of another one so as to provide transistor characteristics or switching characteristics by utilizing the difference in redox potential between said first and second oxidation-reduction substances.

5,010,452

THERAPEUTIC LAMP FOR BIOSTIMULATION WITH POLARIZED LIGHT

Werner Kreiser, Embrach, Switzerland; Michael Lantos, Budapest, and Peter Kolta, Pécs, both of Hungary, assignors to Harrier GmbH Gesellschaft fur den Vertrieb medizinischer und technischer Gerate, Fed. Rep. of Germany

PCT No. PCT/EP88/00900, § 371 Date Apr. 14, 1989, § 102(e) Date Apr. 14, 1989, PCT Pub. No. WO89/03236, PCT Pub. Date Apr. 20, 1989
PCT Filed Oct. 7, 1988, Ser. No. 348,008
Claims priority, application Fed. Rep. of Germany, Oct. 7, 1987, 3733905; Sep. 16, 1988, 88115249
Int. Cl.[5] F21V 9/14
U.S. Cl. 362—19 11 Claims



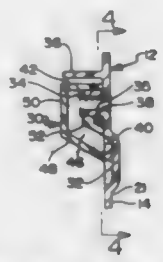
1. Therapeutic lamp for biostimulation with polarized light, comprising a light source with a power substantially between 30W and 300W and being substantially a point source, a reflector with a rotational paraboloid light reflecting surface defining a focal point arranged behind the light source so that said focal point substantially coinciding with said point source to reflect forward the majority of light emitted by said source in a parallel path, a polarizer arranged in said path to generate polarized output light propagating in a predetermined direction and having a cross-section of at least 100 cm^2, wherein said lamp further comprises a first tube with a first axis coinciding with axis of rotation of said paraboloid surface, said reflector with said light source being fixed to said first tube so that a sealed connection is provided therebetween, a second tube with a second axis closing an angle between 100° and 20° with said first axis, said tubes having substantially equal and circular cross-sections and are attached to each other to form an integral housing, both of said tubes are cut with a plane extending normal to a plane determined by said first and second axes so that said plane cuts substantially the whole cross-sections of both tubes, said cutting plane closing substantially the same angle with said first and second axis, whereby an opening with an elliptical contour line is defined, a light diverting means closing said opening for diverting light arriving from said first tube to axial direction of said second tube, said means comprising a closing plate of a heat conducting material, a light transparent plate arranged in frontal section of said second tube to close inner space thereof, and heat dissipating means for providing operational temperature for said light source, said tubes forming parts of an integral housing made preferably of a plastic material, said housing comprises a round bar encircling the frontal and upper half of said second tube and extending downwardly substantially parallel to said first axis in the form of a pair of spaced legs.

5,010,453

VEHICLE LAMP VENTILATION SYSTEM

Sylvan R. Ketterman, Pendleton, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 28, 1990, Ser. No. 573,620
Int. Cl.[5] F21M 3/00
U.S. Cl. 362—61 3 Claims



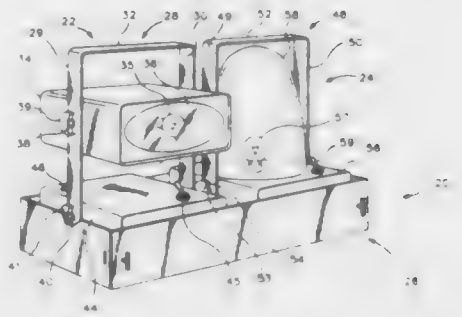
1. In combination with a vehicle lamp housing provided with a backwall defined by an inner reflecting surface and a outer support surface, a tubular projection extending outwardly from said support surface of said lamp housing and having an opening formed therein for allowing air to flow into and out of said lamp housing, a channel formed in said outer support surface of said housing adjacent said tubular projection, a vent device made of an elastomeric material connected to said tubular projection and cooperating with said channel to provide a shielded passage for said air to flow to and from said opening through said channel for venting the interior of said lamp housing.

5,010,454

PORTABLE LIGHT ASSEMBLY FOR AN AUTOMOBILE

Steven R. Hopper, 1596 "A" Coronado Ave., San Diego, Calif. 92154

Filed Jul. 12, 1989, Ser. No. 378,652
Int. Cl.[5] B60Q 1/00
U.S. Cl. 362—61 4 Claims



1. A portable flashlight assembly for an automobile comprising:

a flashlight having a rechargable battery base unit;

a signal lamp having a rechargable battery base unit;

a combination recharging and storage housing;

means for detachably securing said respective rechargable battery base units to said combination recharging and storage housing so that they may be recharged from the battery of an automobile; and

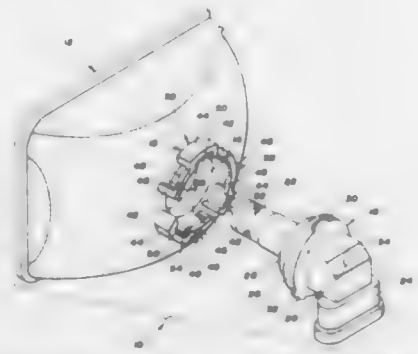
said flashlight comprising:

an inverted U-shaped handle having a pair of laterally spaced upright members each having a top end and a bottom end, said respective top ends being connected by a cross member, the bottom ends of said upright members being pivotally secured to the rechargable battery base unit of said flashlight;

a lamp housing having laterally spaced side walls and a front wall having a lens mounted therein, a high intensity bulb removably mounted in said lamp housing behind said lens; and

means for pivotally supporting said lamp housing about a horizontal axis between said spaced upright members at a height intermediate said top and bottom ends.

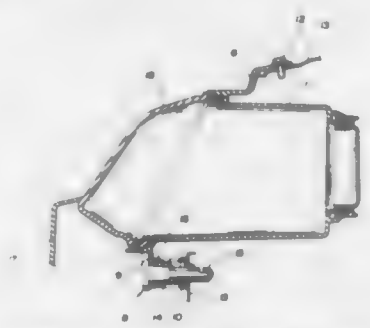
5,010,455
HEADLAMP ASSEMBLY
John M. Lealtin; William E. Nagengast, and Robert G. Roeske, all of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed May 7, 1990, Ser. No. 520,314
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 362—61 3 Claims



1. In combination, a vehicle headlamp assembly including a plastic reflector formed with a parabolic reflecting surface and a circular opening in said reflecting surface and adapted to receive the light bulb of a replaceable light bulb assembly from the rear of said reflector, said replaceable light bulb assembly having a collar and three circumferentially spaced ears projecting radially outwardly therefrom, a retainer integrally formed on the rear of said reflector during the molding of said reflector for receiving said ears and for maintaining said light bulb assembly in a predetermined position relative to said circular opening, said retainer comprising three separate and physically separated circumferentially retainer sections surrounding said circular opening of said reflector, the opposite ends of each of said retainer sections having an axially extending leg integrally formed with the rear of said reflector, a bridge member integrally formed with and interconnecting the legs of each of said retainer sections and having a ramp portion formed thereon, each of said retainer sections receiving one of said ears, a stop surface in at least one of said retainer sections, the arrangement being such that upon said retainer sections receiving said ears of said light bulb assembly the latter is thereafter rotated to cause each of said ears to move into initial contact with said ramp portion of each of said retainer sections so as to cause the bridge member to initially flex axially outwardly relative to said circular opening and upon continued rotation of said light bulb assembly one of said ears engages said stop surface after which said bridge member of each of said retainer sections serves to press said light bulb assembly inwardly towards said circular opening to orient said light bulb axially with respect to said reflecting surface.

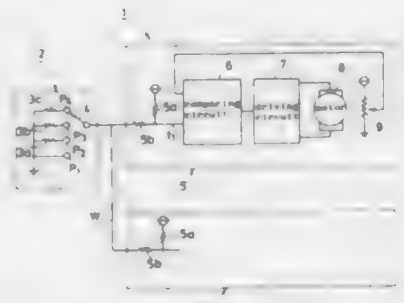
5,010,456
HEADLIGHT SUPPORT
Karl-Heinz Reichman, Stockstadt, and Heinrich W. Krumb, Treburr, both of Fed. Rep. of Germany, assignors to General Motors Corporation, Detroit, Mich.
Filed Jan. 19, 1990, Ser. No. 467,435
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1989, 3902229
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 362—61 3 Claims

1. A headlamp assembly mounted at the front end of a motor vehicle adjacent a forwardly located panel of the motor vehicle, means connected to an upper portion of said headlamp assembly for allowing said headlamp assembly to pivot about a horizontal axis extending transversely to the longitudinal axis of said motor vehicle, and means connected to a lower portion of said headlamp assembly for biasing the latter forwardly into contact with said panel so as to eliminate any gap between said panel and said headlamp assembly, the improvement wherein said last mentioned means includes a lever member having a first end portion and a second end portion, a plug member formed with said lower portion of said headlamp assembly that extends into the first end portion of said lever member, means



fastening the second end portion of said lever member to said motor vehicle for adjustable movement about an axis substantially parallel to the longitudinal axis of said plug member, a spring between said plug member and said lever member for biasing said headlamp assembly into contact with said panel, a catch formed on said plug member, and a stop member formed on said first end portion of said lever member cooperating with said catch for limiting the forward movement of said headlamp relative to the motor vehicle.

5,010,457
APPARATUS FOR ADJUSTING ATTITUDE OF OPTICAL AXES OF HEAD LAMPS ON VEHICLE
Yukio Ohmamyuda, Sagamihara; Toru Tanabe, Machida; Osamu Matsumoto, Fuchu; Hidenobu Suzuki, Kawasaki, and Masashi Jyouzuka, Yokohama, all of Japan, assignors to Stanley Electric Co., Ltd., Japan
Filed Jul. 31, 1990, Ser. No. 560,106
Claims priority, application Japan, Jul. 31, 1989, 1-89948[U], Jul. 31, 1989, 1-89949[U]
Int. Cl.[5] B60Q *1/06*
U.S. Cl. 362—66 8 Claims

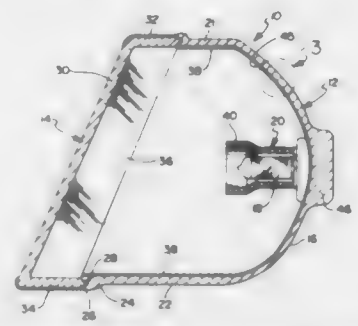


1. In an apparatus for properly adjusting a head lamp on a vehicle wherein said apparatus comprises a motor driven actuator for adjusting an angle of elevation to be assumed by said head lamp and a controlling section for controlling actuation of said motor driven actuator by selectively changing a resistance value thereof, said motor driven actuator including a voltage comparing circuit, a motor circuit responsive to said comparing circuit and a potentiometer for generating a signal representative of the output position of the motor, said comparing circuit generating a signal responsive to the outputs of said potentiometer and said controlling section, said motor circuit comprising a driving circuit and a motor, and said controlling section including a switch and a plurality of resistors selectively connected to said switch via a plurality of contact positions to selectively come in contact with said switch depending on the present angle of a elevation, the improvement comprising:

a voltage dividing circuit arranged upstream of said voltage comparing circuit in the motor driven actutor, said voltage dividing circuit comprising two series connected resistors of which the common junction point between said two resistors is connected to one input terminal of said comparing circuit, one of said two resistors being connected to said switch in the controlling section; and

one of said contact positions being directly earthed, whereby said resistance value of the controlling section becomes zero ohms when the angle of elevation assumed by the head lamps is maximized in an upward tilted state being controlled by said voltage dividing circuit.

5,010,458
HEADLAMP ASSEMBLY
Robert L. Fraizer, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Sep. 1, 1989, Ser. No. 401,891
Int. Cl.[5] F21M *3/02*
U.S. Cl. 362—80 9 Claims



1 A method of causing the clear lens of a vehicle headlamp to appear to an observer to be of a particular color when not lighted by the headlamp light source to provide a desired amount of light, said method comprising the steps of providing a rectangular headlamp housing having a cavity defined by a pair of planar and parallel upper and lower walls each having an inner surface and joined to a parabolic reflector portion having an inner surface, coating the inner surface of said parabolic reflector portion with a base coat having a desired color, and applying a semi-transparent metallic film over said basecoat so as to allow the color of said basecoat to be seen without preventing the desired amount of light emitted by said light source from being reflected by said parabolic reflector portion through said lens.

5,010,459
CONSOLE/LAMP UNIT COORDINATION AND COMMUNICATION IN LIGHTING SYSTEMS
Brooks W. Taylor, and Thomas E. Walsh, both of Dallas, Tex., assignors to Vari-Lite, Inc., Dallas, Tex.
Continuation of Ser. No. 249,225, Sep. 22, 1988, which is a continuation-in-part of Ser. No. 120,743, Nov. 12, 1987, abandoned, which is a continuation-in-part of Ser. No. 887,178, Jul. 17, 1986, abandoned. This application Jul. 18, 1990, Ser. No. 555,121
Int. Cl.[5] F21V *33/00*
U.S. Cl. 362—85 36 Claims

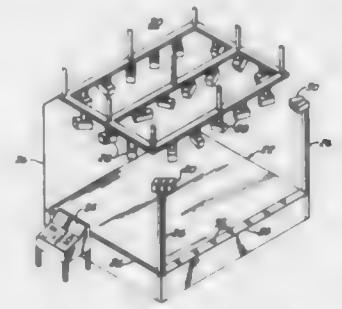
1. A lighting system having a plurality of multiple parameter lamp units each with respective control means for adjusting parameters of the associated lamp, a remote console control system for exercising control over said lamp units, a communication link between said console control system and said units, and a communication control system for coordinating the exchange of information between said console system and said lamps comprising:

(1) in said lamp units,

i. a processor including a communication controller coupled to said link for receiving signals from, and transmitting signals to said console control system;

ii. lamp identification means associated with the respective lamp processor for identifying each lamp to the console control system;

iii. said processor including means for recognizing calls



from said console control system which require a reply by the respective lamp unit;

iv. said processor also including means for generating said replies;

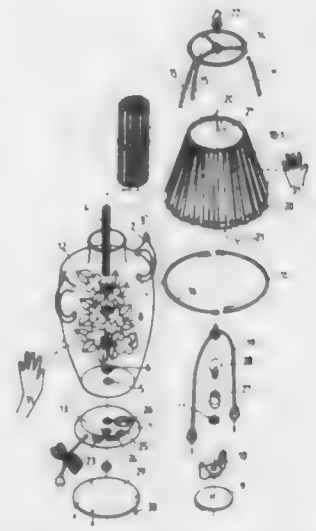
(2) in said console control system:

i. a processor including

(1) a communication controller coupled to said link for receiving signals from, and transmitting signals to said lamp units; and

(2) means for selectively and coordinately exercising communication control over said lamp units.

5,010,460
WATERSCAPE LAMP WITH SHADE OF PROXIMITY-CAPACITANCE-SENSING TYPE DEVICE
John Y. Lin, 1st Floor No. 12, Lane 179, Lee Shing Rd., Sec. 1, San Chung City, Taipei, Taiwan
Filed May 2, 1990, Ser. No. 517,811
Int. Cl.[5] F21V *23/04*
U.S. Cl. 362—101 3 Claims



1. A proximity-capacitance-sensing type lamp device with waterscape comprising:

a base block with a bottom plate underneath, having an IC mounted on the bottom side thereof, a center hole for mounting a metal pipe, a bulb socket to mount a small

bulb, a light aperture at one side thereof, and a pair of power wires mounted through one side thereof;

a lamp stand being fixedly mounted on said base block by means of said metal pipe, a metal pad, and a water-tight rubber nut;

a suitable volume of conductive water, being used as a conductor to transmit a signal for controlling the brightness of the lamp device, filled in said lamp stand which is substantially a transparent container;

a lamp shade being mounted on a metal supporting frame; and

a metal fixture being fixedly mounted to said metal pipe over said lamp stand.

5,010,461

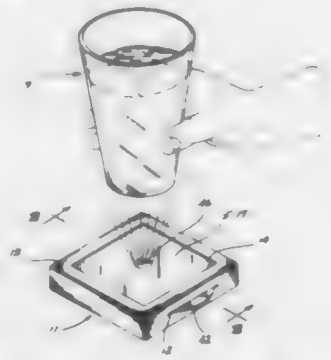
MULTICOLOR PRESSURE-SENSITIVE ILLUMINATING DISPLAY PLATFORM

Kunio Saotome, 1-1-4 Nakamurakita, Nerima-ku, Tokyo, Japan

Filed Dec. 11, 1989, Ser. No. 448,724

Int. Cl.[5] F21V *33/00*

U.S. Cl. 362—101 12 Claims



1. A display platform for illuminating and supporting an object, comprised of:

(a) a housing having a light passing panel for supporting an object;

(b) illuminating means located in said housing beneath said light passing panel for illuminating an object supported by said light passing panel;

(c) an electrical power supply located in said housing;

(d) pressure sensitive switch means connected in circuit with said illuminating means and said electrical power supply for activating said illuminating means when an object of sufficient weight is placed on said light passing panel;

(e) filter assembly disposed between said illuminating means and said light passing panel, said filter assembly having a plurality of individual filters; and,

(f) means for manually moving the filter assembly, including when the object is disposed on the light passing panel, to selectively align the filters of the filter assembly with the illuminating means for filtering the light from the illuminating means to illuminate the object supported by the light passing panel.

5,010,462

ILLUMINATION DEVICE FOR A HAND-HELD REMOTE CONTROL UNIT

Joseph H. Mintzer, Hartsdale, N.Y., assignor to M.C.R. Farmer, Inc., Hartsdale, N.Y.

Continuation-in-part of Ser. No. 179,744, Apr. 11, 1988, Pat. No. 4,893,222. This application Jan. 8, 1990, Ser. No. 462,064

The portion of the term of this patent subsequent to Jan. 9, 2007, has been disclaimed.

Int. Cl.[5] F21V *33/00*

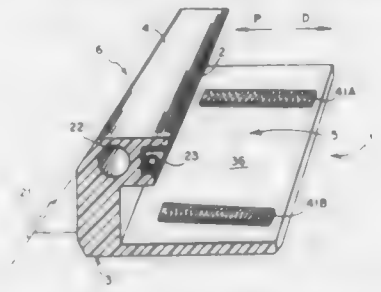
U.S. Cl. 362—109 20 Claims

1. An illumination device for use with a hand-held remote control unit having a length, width and height and a back panel and a front control panel, said illumination device comprising:

a base and a projection extending from and projecting above said base and being exposed to a space formed above said base;

said projection containing illumination means capable of producing light rays directed toward said space; and

attachment means for releasably attaching at least a portion of the back panel of a hand-held remote control unit to at least



a portion of said base so that at least a portion of the length and width and the entire height of the hand-held remote control unit is maintained in a position within said space above said base so as to subject a selected surface of the front control panel to said illumination means for facilitating illumination of the selected surface by reflecting light rays therefrom, while permitting actuation and operation of the hand-held remote control unit.

5,010,463

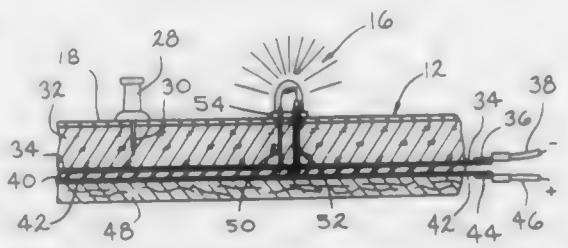
ELECTRIFIED BULLETIN BOARD WITH ILLUMINABLE PUSH-PIN

David L. Ross, 2 Ridgemore Dr., Ann Arbor, Mich. 48103

Filed Apr. 30, 1990, Ser. No. 516,477

Int. Cl.[5] F21V *33/00*

U.S. Cl. 362—253 18 Claims



1. An electrified display assembly adapted for connection to an electrical power source and comprising:

a penetrable display board having a plurality of substrate layers including a first conductive layer spaced apart from a second conductive layer;

a retaining layer being positioned to one side of said conductive layers and being of a sufficient thickness to thereby prevent a substantial majority of pin-type tacking means from contacting said conductive layers when inserted into said assembly through said retaining layer;

means for conducting said conductive layers to an electrical potential; and

means for illumination capable of being randomly mounted onto said board so as to thereby electrically contact said conductive layers and induce said illumination means to emit light, said retaining layer supporting and retaining said illumination means in said assembly.

5,010,464

ARC LENGTH CHANGING APPARATUS IS EXPOSING DEVICE AND METHOD THEREOF

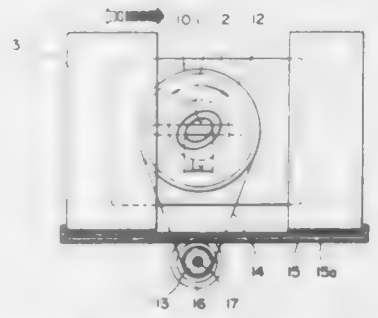
Lee Kwang-sik, Suwon, and Kim Chul-woo, Seoul, both of Rep. of Korea, assignors to Samsung Electron Devices Co., Ltd., Hwasung, Rep. of Korea

Filed Dec. 20, 1989, Ser. No. 453,956

Claims priority, application Rep. of Korea, Dec. 23, 1988, 88-21358[U]

Int. Cl.[5] F21V *13/00*

U.S. Cl. 362—284 6 Claims



1 In an exposing device having a lamp, a light-sensitive panel, and a reciprocally movable shutter interposed between said lamp and said panel for guiding light from said lamp to said panel, the improvement comprising a circular control disc interposed between said lamp and said shutter for varying a pattern of light transmitted from said lamp to said shutter, said control disk having sprocket teeth therearound and being rotatable at a speed synchronized with the moving speed of said shutter, said shutter having a frame with a rack formed thereon, a pinion meahsing with and rotatably driven by said rack, a sprocket wheel formed integrally with said pinion, and a chain coupling said sprocket wheel with said sprocket teeth of said circular control disc.

5,010,465

OPTICAL LIGHTING SYSTEM

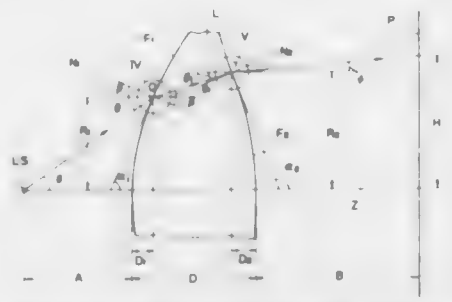
Kenji Endo, and Shinichi Nagata, both of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan

Filed Jul. 27, 1988, Ser. No. 225,039

Claims priority, application Japan, Jul. 31, 1987, 62-193330; Jun. 20, 1988, 63-153305

Int. Cl.[5] F21V *5/00*

U.S. Cl. 362—337 2 Claims



1. An optical lighting system for radiating light emitted from a light source to a surface, comprising:

an optical lens associated with a longitudinal optical axis for radiating the light from the light source, the optical lens having an incident light plane and an existing light plane;

the incident light plane and exiting light plane being oriented with respect to the longitudinal optical axis; the orientation of the incident light plane and exiting light plane being effective to produce irradiance on the surface at a point H defined by S(H), and being so that a light ray proceeding from the light source to the incident light plane makes an angle θ with the longitudinal optical axis such that the relationship between S(H) and θ is defined by:

$$\int S(H)HdH = \int J(\theta) \sin \theta d\theta$$

and an angle α_1 made by the incident light plane and the optical axis, is defined by:

$$\tan \alpha_1 = (-n \cos \theta_1 = \cos \theta)/(n \sin \theta_1 - \sin \theta)$$

and an angle α_2, which is the angle made by the exiting light plane and the longitudinal optical axis, is defined by

$$\tan \alpha_2 = (-n \cos \theta_1 + \cos \theta)/(n \sin \theta_1 \cdot - \sin \phi)$$

wherein, $J(\theta)$ is the radiant intensity of the light source, n is the refractive index of the optical lens system, θ_1 is an angle which a light ray proceeding through the optical lens makes with the longitudinal optical axis, and ϕ is an angle a ray proceeding from the exiting plane to the surface makes with the longitudinal optical axis.

5,010,466

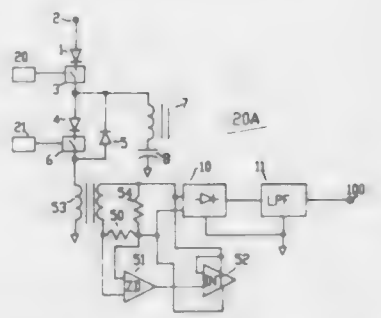
RESONANT MODE POWER SUPPLY WITH CONSTANT OUTPUT VOLTAGE

Fred Mirow, 2725 W. Country Club Rd., Philadelphia, Pa. 19131

Filed Dec. 8, 1989, Ser. No. 448,161

Int. Cl.[5] H02M *3/355*

U.S. Cl. 363—16 9 Claims



1. A resonant mode converter for obtaining a DC output voltage comprising;

a transformer;

switch means electrically coupled to said transformer for controlling the frequency at which a capacitor is charged and discharged,

said switch means adapted to switch only during zero current through said switch means,

means for rectifying a transformer signal across said transformer to obtain a pulsating DC voltage,

means for integrating said transformer signal to determine a rectifier input integral value,

means for shorting an input of said rectifying means in accordance with said rectifier input integral value; and,

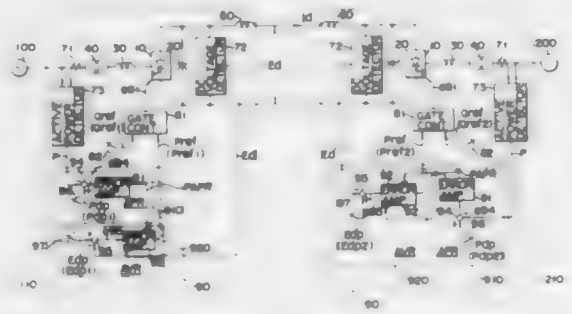
means for filtering the pulsating DC voltage to provide a substantially ripple-free DC output signal.

5,010,467

CONTROL APPARATUS OF DC POWER COUPLING SYSTEM

Yukio Tokiwa, Tokyo; Fumitoshi Ichikawa, Urawa; Naomi Nakamura, Tokorozawa; Syunichi Hirose, Tokyo, and Haruhisa Inokuchi, Kunitachi, all of Japan, assignors to The Tokyo Electric Power Co., Inc., Tokyo and Kabushiki Kaisha Toshiba, Kawasaki, both of, Japan

Filed Nov. 1, 1989, Ser. No. 430,577
Claims priority, application Japan, Nov. 2, 1988, 63-277934
Int. Cl.[5] H02M *5/45*; H02J *3/06*
U.S. Cl. 363—37 15 Claims



1. A control apparatus of a DC power coupling system being formed of a plurality of power converters which are coupled together by a DC circuit, wherein:

one of said power converters comprises:

first power exchange means for exchanging electric power between a first AC power system and said DC circuit;

first power detecting means for detecting a first active power of the electric power exchanged between said first AC power system and said DC circuit;

first voltage detecting means for detecting a first DC voltage of said DC circuit;

first power exchange control means for controlling the power exchanging operation of said first power exchange means to be based on either one of said first active power and said first DC voltage; and

first determining means for determining which one of said first active power and said first DC voltage is to be used for the control performed by said first power exchange control means in accordance with a relative magnitude of said first DC voltage with respect to said first active power; and

another of said power converters comprises:

second power exchange means for exchanging electric power between a second AC power system and said DC circuit;

second power detecting means for detecting a second active power of the electric power exchanged between said second AC power system and said DC circuit;

second voltage detecting means for detecting a second DC voltage of said DC circuit;

second power exchange control means for controlling the power exchanging operation of said second power exchange means to be based on either one of said second active power and said second DC voltage; and

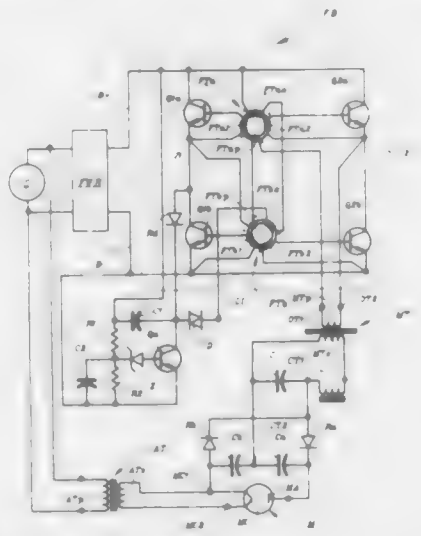
second determining means for determining which one of said second active power and said second DC voltage is to be used for the control performed by said second power exchange control means in accordance with a relative magnitude of said second DC voltage with respect to said second active power.

5,010,468

POWER-LINE-OPERATED HIGH FREQUENCY POWER SUPPLY

Ole K. Nilssen, Caesar Dr., Barrington, Ill. 60010

Continuation of Ser. No. 40,809, Apr. 21, 1987, Pat. No. 4,908,754, which is a continuation of Ser. No. 679,929, Dec. 10, 1984, Pat. No. 4,680,506. This application Jan. 11, 1990, Ser. No. 463,455
The portion of the term of this patent subsequent to Jun. 9, 2004, has been disclaimed.
Int. Cl.[5] H02M *5/458*
U.S. Cl. 363—37 12 Claims



1. An arrangement comprising:

a power line providing an AC voltage at a pair of power line terminals; the AC voltage having a first fundamental period and a first fundamental frequency; and

a frequency-converting power supply connected with the power line terminals and operative to provide a high frequency output voltage at a pair of power output terminals; the high frequency output voltage having a second fundamental frequency; the second fundamental frequency being substantially higher than the first fundamental frequency; the frequency-converting power supply including:

(i) a rectifier connected with the power line terminals and operative to provide a substantially unfiltered DC voltage at a set of DC terminals; the absolute instantaneous magnitude of the DC voltage being, at least during half of said first fundamental period, substantially equal to that of the AC voltage; and

(ii) bridge inverter means connected in circuit between the DC terminals and the power output terminals; the bridge inverter means being operative to provide the high frequency output voltage; the absolute instantaneous magnitude of the high frequency output voltage being substantially equal to that of the DC voltage;

whereby, at least during half of said first fundamental period, the absolute instantaneous magnitude of the high frequency output voltage is substantially equal to that of the AC voltage

5,010,469

UNINTERRUPTIBLE POWER SUPPLY WITH DUAL LEVEL VOLTAGE INPUT

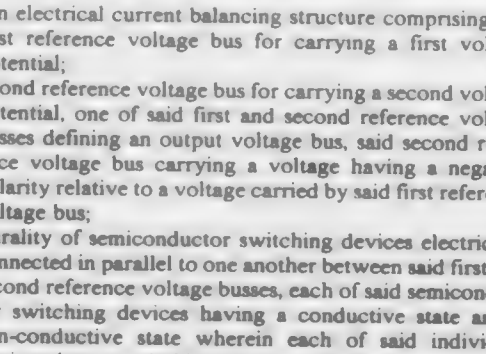
Howard H. Bobry, Lynnwood, Wash., assignor to Albar, Lynnwood, Wash.

Filed May 9, 1990, Ser. No. 521,236
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—37 7 Claims

1. An inverter comprising:

a transformer having a primary winding and a secondary winding, said primary winding being divided into at least three portions;

a first d.c. source applied alternately across a first less than all portions of the primary winding and then across a second less than all portions of the primary winding, said first and second less than all portions having a common portion; and



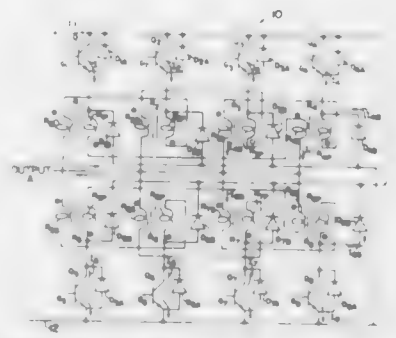
a second d.c. source applied alternatingly across at least a portion of said common portion when said first d.c. source is less than a predetermined voltage, whereby said secondary winding is maintained at a relatively constant a.c. voltage.

5,010,470

CURRENT BALANCING STRUCTURE FOR SEMICONDUCTOR SWITCHING DEVICES

Kenneth Lipman, and Douglas G. Young, both of West Hartford, Conn., assignors to International Fuel Cells, Windsor, Conn.

Filed Mar. 20, 1990, Ser. No. 496,278
Int. Cl.[5] H02M *7/5387*
U.S. Cl. 363—132 7 Claims



1. An electrical current balancing structure comprising:

a first reference voltage bus for carrying a first voltage potential;

a second reference voltage bus for carrying a second voltage potential, one of said first and second reference voltage busses defining an output voltage bus, said second reference voltage bus carrying a voltage having a negative polarity relative to a voltage carried by said first reference voltage bus;

a plurality of semiconductor switching devices electrically connected in parallel to one another between said first and second reference voltage busses, each of said semiconductor switching devices having a conductive state and a non-conductive state wherein each of said individual semiconductor switching devices selectively conducts an electric current from said first reference voltage bus to said second reference voltage bus when said respective switching devices are in said conductive state;

magnetic current balancing means connected one-for-one in series between each of said individual semiconductor switching means and said one of said first and second reference voltage busses defining said output bus for causing equal current to flow through said respective individual semiconductor switching devices that are in said conductive state;

a third reference voltage bus for carrying a third voltage potential, and

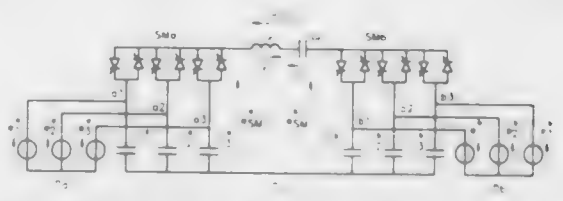
a plurality of diode means for connecting said third reference voltage bus at a junction formed by the series connection between each of said semiconductor switching devices and said balancing means and in a polarity such that an electric current flows between said balancing means and said third reference voltage bus in response to one or more of said individual semiconductor switching devices being in said non-conductive state at substantially the same time that one or more of said individual semiconductor switching devices being in said conductive state, whereby the sum of currents flowing through all of said conductive semiconductor switching devices is less than the current flowing in said one of said first and second reference voltage busses defining said output voltage bus.

5,010,471

THREE-PHASE AC-TO-AC SERIES RESONANT POWER CONVERTER WITH RESTUSED NUMBER OF SWITCHES

J. Ben Klaassens, Delft, Netherlands; Hian K. Lauw, Corvallis, Oreg., and Freddy de Beer, Delft, Netherlands, assignors to Robert F. Frijouf, Tampa, Fla.

Filed Jan. 26, 1989, Ser. No. 371,712
Int. Cl.[5] H02M *5/27*
U.S. Cl. 363—160 7 Claims



1. An improved resonant converter for transferring electrical power between a first, second and third input and a first, second and third output, comprising:

a series resonant circuit including a capacitor and an inductor connected in series;

first, second and third bidirectional input switch means connecting the first, second and third inputs to said series resonant circuit, respectively;

first, second and third bidirectional output switch means connecting the first, second and third outputs to said series resonant circuit, respectively;

first, second and third input capacitor means connected to the first, second and third inputs, respectively;

first, second and third output capacitor means connected to the first, second and third outputs, respectively; and

means connecting said first, second and third input capacitor means to said first, second and third output capacitor means for enabling only six bidirectional switches to interconnect the first, second and third inputs to the first, second and third outputs.

5,010,472

CUSTOMER PARTICIPATORY ELEVATOR CONTROL SYSTEM

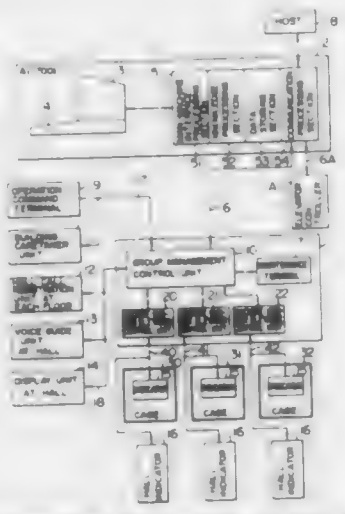
Kenzi Yoneda; Takaaki Ueshima; Soshiro Kuzunuki, all of Katsuta; Yuzo Morita, Hitachi, and Toshimitsu Tobita, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 17, 1989, Ser. No. 311,952
Claims priority, application Japan, Mar. 4, 1988, 63-49536
Int. Cl.[5] G05B *13/02, 17/42*; G09C *15/00*; B66B *3/00*
U.S. Cl. 364—148 7 Claims

1. A customer participatory elevator control system for use in an elevator system having a plurality of elevators serving a

plurality of floors, means for storing predetermined specification information necessary to operate said elevators, and means for controlling the operation of said elevators on the basis of said predetermined specification information, said control system comprising:

means for setting and storing information necessary to operate said elevators on a trial basis;



means for rewriting the contents of said predetermined specification information storing means into trial operation information;

means for controlling a trial operation of said elevators on the basis of the trial operation information; and

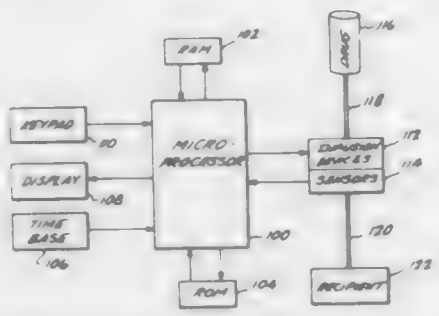
means for analyzing results of the trial operation and restoring the original contents of said predetermined specification information storing means in response to said analyzed results.

5,010,473

METHOD AND APPARATUS FOR MODEL-BASED CONTROL OF AN OPEN-LOOP PROCESS

James R. Jacobs, Durham, N.C., assignor to Duke University, Durham, N.C.

Filed Aug. 31, 1989, Ser. No. 401,996
Int. Cl.[5] G05B *13/04*; A61M *5/172*
U.S. Cl. 364—150 22 Claims



1. A method for controlling a process to obtain a specified output, O_s, where the process is described by a linear model that defines an output of the process as a function of a specified control signal, wherein the control signal controls an actuator that affects the process, said method comprising the steps of:

(a) arbitrarily selecting a first value, X_1, and a second value, X_2, for the control signal, and initializing a plurality of state variables in the model;

(b) as a function of the first and second values of the control signal, which are respectively input to the model, determining corresponding first and second output values, O_1 and O_2, that would be obtained at the end of an interval of time, Δt, were the control signal to be applied for this interval;

(c) interpolating with respect to the first and second values of the control signal and corresponding first and second output values to determine a desired value, X_d, for the control signal that should produce the specified output, O_s, at the end of the time interval, Δt;

(d) for the time interval, Δt, operating the process using the desired value, X_d, determined in step (c) for the control signal;

(e) determining a value, X_a, of the control signal actually used by the actuator during the time interval, Δt;

(f) using the model, determining a computed value for the output, O_c, as a function of the value of the control signal determined in step (e); and

(g) reiteratively repeating steps (b) through (f), each successive iteration using values for the state variables in the model that depend on the computed value of the output determined in step (f) of the previous iteration, so that control of the process tracks changes in the specified output and the process quickly converges on the specified output

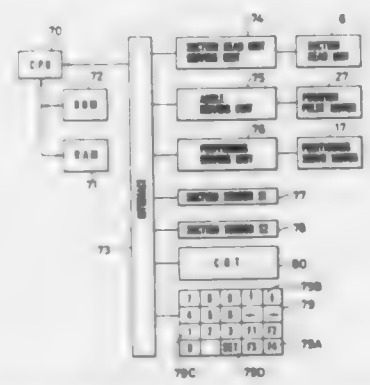
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5,010,474

ELECTRONIC PARTS POSITIONING APPARATUS

Shigeru Tsuruta, Ohizumimachi, and Sadao Masuda, Menumamachi, both of Japan, assignors to Sanyo Electric Co., Ltd., Morigushu, Japan

Filed Jan. 17, 1989, Ser. No. 298,178
Claims priority, application Japan, Jan. 19, 1988, 63-8869
Int. Cl.[5] G05B *19/18*
U.S. Cl. 364—167.01 21 Claims



1. An electronic parts positioning apparatus for horizontally positioning a chip part held by holding means after a closing operation is effected by relative movement of at least two pairs of opposing positioning pawls, comprising:

setting means for setting information concerning an interval between opposing positioning pawls of each of said two pairs and information concerning a size of said chip part;

memory means for storing the information set by said setting means;

calculating means for calculating a distance for moving relatively said positioning pawls at a high speed and a distance for moving relatively said positioning pawls at a low speed thereafter and for positioning on the basis of the information stored in said memory means; and

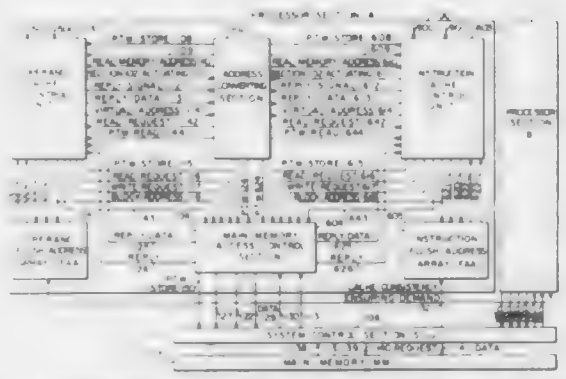
control means for controlling a driving source for driving said positioning pawls toward each other so that said positioning pawls may at first move at the high speed and thereafter move at the low speed, in correspondence with each said distance calculated by said calculating means.

5,010,475

CONSISTENCY ENSURING SYSTEM FOR THE CONTENTS OF A CACHE MEMORY

Osamu Hazawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 934,092, Nov. 24, 1986, abandoned. This application Oct. 28, 1988, Ser. No. 264,067
Claims priority, application Japan, Nov. 25, 1985, 60-265781
Int. Cl.[5] G06F *15/16*
U.S. Cl. 364—200 4 Claims



1 A consistency ensuring system having at least one main memory and a plurality of processors, each of said plurality of processors having a corresponding instruction cache memory and a corresponding operand cache memory wherein each of said plural processors comprises:

flush address array means for keeping a copy of an address array to be looked up and for invalidating a block of data in the corresponding instruction cache memory or the corresponding operand cache memory in response to storing a corresponding block of data into said main memory from a non-corresponding processor;

address converting means for converting a virtual address to a real address and for updating a page table word after address conversion resulting in an updated page table word and storing the updated page table word in said main memory and not in said corresponding instruction cache memory and said corresponding operand cache memory;

signal generating means for generating a page table word store notice signal when said address converting means stores said updated page table word into said main memory; and

flush address array invalidating means for looking up and invalidating, in response to said page table word store notice signal and a real memory address of said page table word from said corresponding processor, the corresponding block of data in the corresponding instruction cache memory and the corresponding operand cache memory of said corresponding processor,

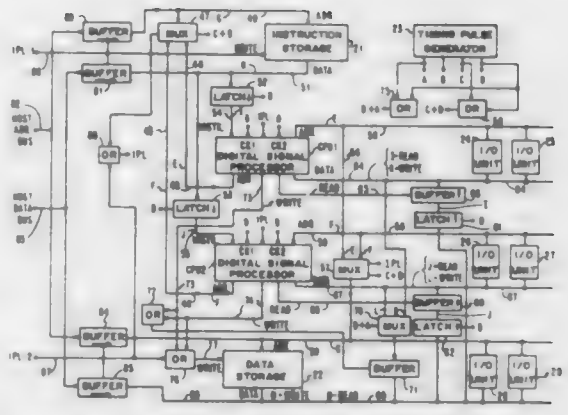
wherein whenever an instruction is stored in the corresponding instruction cache memory and the main memory, said instruction cannot be stored in the corresponding operand cache memory and, whenever an operand is stored in the corresponding operand cache memory and the main memory, said operand cannot be stored in the corresponding instruction cache memory.

5,010,476

TIME MULTIPLEXED SYSTEM FOR TIGHTLY COUPLING PIPELINED PROCESSORS TO SEPARATE SHARED INSTRUCTION AND DATA STORAGE UNITS

Gordon T. Davis, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 20, 1986, Ser. No. 876,625
Int. Cl.[5] G06F *13/14, 13/40, 9/38*
U.S. Cl. 364—200 5 Claims



1. A digital information processing system comprising:

at least two digital processors;

an instruction storage mechanism for storing processor operating instructions;

a first multiplexing mechanism for coupling the processors to the instruction storage mechanism in a time multiplexed manner for enabling each processor to have a periodic regularly occurring turn at accessing the instruction storage mechanism;

a separate data storage mechanism for storing data separate from said mechanism for storing processor operating instructions;

and a second multiplexing mechanism for coupling the processors to the data storage mechanism in a time multiplexed manner for enabling each processor to have a periodic regularly occurring turn at accessing the data storage mechanism;

each digital processor being a pipelined processor having an instruction fetching mechanism, an instruction decode mechanism and an execution mechanism;

each digital processor having an address bus port and a data bus port for the instruction fetching mechanism;

each digital processor having an address bus port and a data bus port for the execution mechanism;

the first multiplexing mechanism including means for coupling the address bus ports and the data bus ports for the instruction fetching mechanisms to the instruction storage mechanism so that each instruction fetching mechanism is given a periodic regularly occurring turn for purposes of accessing the instruction storage mechanism;

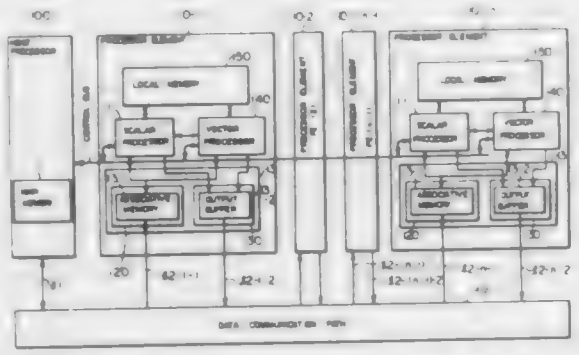
and the second multiplexing mechanism includes means for coupling the address bus ports and the data bus ports for the execution mechanisms to the data storage mechanism so that each execution mechanism is given a periodic regularly occurring turn for purposes of accessing the data storage mechanism.

5,010,477

METHOD AND APPARATUS FOR TRANSFERRING VECTOR DATA BETWEEN PARALLEL PROCESSING SYSTEM WITH REGISTERS & LOGIC FOR INTER-PROCESSOR DATA COMMUNICATION INDEPENDENTS OF PROCESSING OPERATIONS

Koichiro Omoda, Sagamihara; Teruo Tanaka, Hachioji; Junji Nakagoshi; Naoki Hamanaka, both of Tokyo, and Shigeo Nagashima, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 15, 1987, Ser. No. 109,293
Claims priority, application Japan, Oct. 17, 1986, 61-245241; Oct. 29, 1986, 61-255663
Int. Cl.[5] G06F *7/02, 15/347, 15/16, 9/38*
U.S. Cl. 364—200 12 Claims



1. A parallel processor system having a plurality of processors and a data communication path connected to said processors for transmitting data between said processors, each of said processors comprising:

(a) a memory for storing data and for storing instructions, the data including a plurality of vector data each comprising a set of vector elements, and the instructions comprising vector instructions;

(b) a plurality of vector registers connected to said memory, each vector register storing vector data, receiving vector data from said memory and providing vector data to said memory;

(c) operation means, connected to said vector registers, for performing an operation on vector data read from one of the vector registers, and for providing vector data obtained as a result of the operation to one of the vector registers;

(d) a data receiver connected to said data communication path for receiving vector data from said data communication path, the vector data being transmitted by another processor;

(e) a data transmitter connected to said data communication path for transmitting vector data to be processed by another processor to said data communications path; and,

(f) control means, connected to said memory, said vector registers, said data transmitter, and said data receiver, for controlling vector data reading from and vector data writing into said vector registers, said control means including execution means, responsive to a vector instruction of a first kind, fetched from said memory for reading first vector data from a first register of said vector registers designated by the vector instruction and for providing the first vector data to said data transmitter to be transmitted thereby, and the execution means further being responsive to a vector instruction of a second kind, fetched from said memory for writing into a second register of said vector registers designated by the vector instruction, second vector data received by said data receiver.

5,010,478

ENTITY-ATTRIBUTE VALUE DATABASE SYSTEM WITH INVERSE ATTRIBUTE FOR SELECTIVELY RELATING TWO DIFFERENT ENTITIES

Roger L. Deran, 1958 Menalto Ave., Menlo Park, Calif. 94025

Continuation of Ser. No. 850,961, Apr. 11, 1986, abandoned.
This application Aug. 2, 1989, Ser. No. 393,093
Int. Cl.[5] G06F *15/417*
U.S. Cl. 364—200 7 Claims

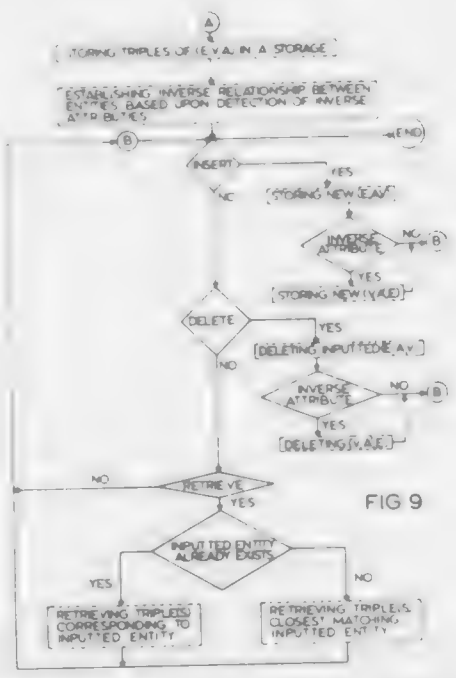


FIG 9

1. In a database management system having storage means, editor means, input means, and display means, a machine-implementing method comprising the steps of:

storing a plurality of triples in said storage means, each said triple includes an entity, an atribute of said entity, and a value of said attribute; each of said triples are arranged in a predetermined order according to relative significance of said entities, each of said triples having a common entity are arranged sequentially in said predetermined order according to relative significance of the corresponding attributes, each of said triples having the common entity and a common attribute are arranged sequentially in said predetermined order according to relative significance of the corresponding values;

selectively establishing an inverse relationship between one or more of said attributes and another one or more of said attributes in response to one of inputted information from the system and information inputting via the input means;

displaying a sequence of subset of said plurality of triples in said display means;

interactively inputting a new triple with an entity, an attribute, and a value via said input means wherein said attribute of said new triple is inputted explicitly or implicitly;

inserting said new triple into a specified location of said plurality of arranged triples according to eh significance of said entity, said atribute, and said value of said new triple;

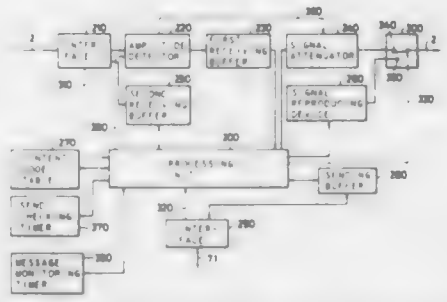
determining by said editor means whether said atribute of said inputted triple has an inverse attribute, and, if so, storing an inverted triple having said value, said inverse attribute, and said entity of said inputted triple into another specified location of said plurality of arranged triples according to the significance of said entity, said attribute, an said value of said inverted triple.

5,010,479

INFORMATION PROCESSING AND STORAGE SYSTEM WITH SIGNAL TRANSMISSION LOOP LINE

Kinji Mori; Yuko Kunai, both of Kawasaki; Masakazu Akiyama, Katsuta; Tadaaki Kadoya, Narashino; Katsumi Kawano, Nerima; Shoji Miyamoto; Makoto Nohmi, both of Kawasaki; Sadanori Shingai, Yokohama, and Hirokazu Ihara, Machida, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 498,553, May 26, 1983, Pat. No. 4,763,254. This application Feb. 22, 1988, Ser. No. 158,698
The portion of the term of this patent subsequent to Aug. 9, 2005, has been disclaimed.
Int. Cl.[5] G06F *3/00, 3/04*
U.S. Cl. 364—200 17 Claims



1. An information processing and storage system comprising:

means in the form of a first signal transmission line for effecting transmission of data for purposes of storing that data;

first means connected to said first signal transmission line for inputting and outputting data to and from said first signal transmission line; and

second means connected to said first means for selectively fetching data from said first signal transmission line via said first means without eliminating the fetched data from said first signal transmission line;

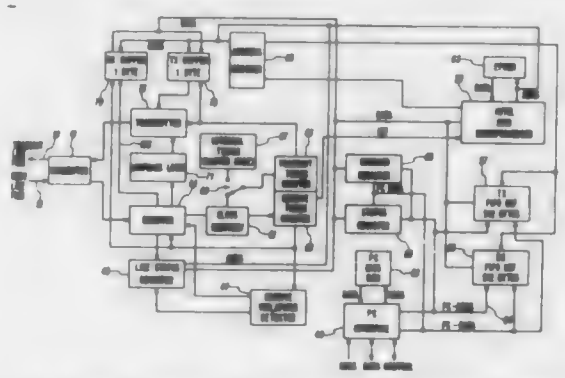
said first means including third means for controlling the storage of data on said first signal transmission line by controlling the period of storage of data on said first signal transmission line in accordance with whether or not said data is fetched by said second means.

5,010,480

COMMUNICATION INTERFACE FOR INTERFACING A DATA BUS OF A COMPUTER TO A HIGH SPEED BIPOLAR COMMUNICATION SYSTEM

T. Raj Natarajan, Plano, Tex., assignor to DSP Technology, Carrollton, Tex.

Filed Jul. 21, 1987, Ser. No. 76,171
Int. Cl.[5] G06F *3/00*
U.S. Cl. 364—200 16 Claims



1. A digital interface for interfacing a Personal Computer data bus directly to a digital service used for transmitting and receiving digital data, the digital interface comprises:

a first digital format receiver interfacible to the digital service and includes a first digital format to a second digital format converter;

a first digital format transmitter interfacible to the digital service and includes a second digital format to a first digital format converter;

transmit buffer operatively connected between the Personal Computer data bus and the first digital format transmitter;

receiver buffer operatively connected between the Person Computer data bus and the first digital format receiver; and

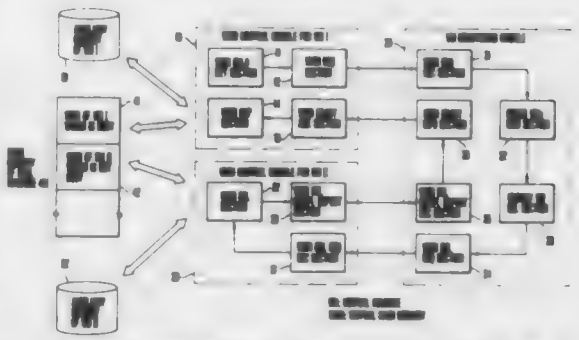
a control system operatively connected to the first digital format receiver, first digital format transmitter, transmit buffer and receiver buffer and includes a clock recovery circuit operatively connected to the first digital format receiver for recovering a clock signal from the digital data having the first digital format.

5,010,481

MAIN MEMORY CONTROL SYSTEM FOR VIRTUAL MACHINE

Tomoyuki Ishida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 7, 1988, Ser. No. 254,709
Claims priority, application Japan, Oct. 9, 1987, 62-255842
Int. Cl.[5] G06F *12/08*
U.S. Cl. 364—200 2 Claims



1. A virtual main memory control system coupled for use with a real data processing machine coupled to a real main memory, said real machine having a plurality of virtual data processing machines and said real main memory having a plurality of virtual main memories, each virtual main memory of said plurality of virtual main memories having a dedicated relationship with only one respective virtual machine of said plurality of virtual machines, having a given data storage capacity and providing a storage overload indication when storage requirements of a respective virtual machine are in excess of said given capacity, said virtual main memory control system comprising:

mean for detecting said storage overload indication for one virtual main memory of said plurality of virtual maim memories, having said dedicated relationship with a respective one virtual machine of said plurality of virtual machines having given storage requirements:

means for requesting access to another virtual main memory of said plurality of virtual main memories for said one virtual machine in response to said means for detecting;

means for monitoring said plurality of virtual main memories to locate at least one of said plurality of virtual main memories having an unused given storage capacity sufficient for said given storage requirements of said one virtual machine, in response to said means for requesting;

means for selecting one of said located virtual main memories in response to said means for monitoring, said selected virtual main memory having said dedicated relationship with another virtual machine;

means for releasing said selected virtual main memory from said dedicated relationship with said other virtual machine, in response to said means for selecting to provide availability of said selected virtual main memory,

means for informing said one virtual machine of said availability of said selected virtual main memory, in response to said means for releasing; and

means for supplying access to said selected virtual main memory for said one virtual machine, in response to said means for informing.

5,010,482

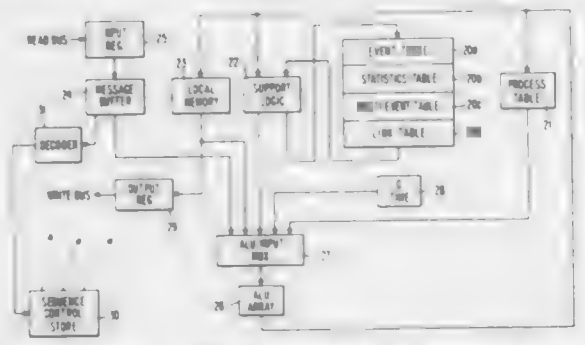
MULTI-EVENT MECHANISM FOR QUEUING HAPPENED EVENTS FOR A LARGE DATA PROCESSING SYSTEM

John A. Keller, Coatesville; Barry S. Traylor, Downingtown, and Robert H. Tickner, Paoli, all of Pa., assignors to Unisys Corp., Detroit, Mich.

Continuation of Ser. No. 68,860, Jul. 2, 1987, abandoned. This application Mar. 23, 1989, Ser. No. 328,812

Int. Cl.[5] G06F *9/46*

U.S. Cl. 364—200 **11 Claims**



1. In a processing system having at least one central processor and at least one memory module for storing a plurality of processes to be executed by said at least one processor, which processes require different events to occur before their execution can be completed, a multi-event queuing mechanism comprising:

input means coupled to said at least one central processor to receive a command to allocate one of an event token and a multi-event token to a process currently being executed;

event table means coupled to said input means to store status information about various events designated by allocated event tokens including whether that event token has been allocated and whether that event has occurred;

multi-event table means coupled to said input means and said event table means to store information about various events that have been grouped together designated by allocated multi-event tokens and to form a linked list of such events as each event occurs;

output means coupled to said event table means, said multi-event table means, and to said at least one central processor for transmission of a requested event token received from said event table means and a requested multi-event token received from said multi-event table means; and

control means coupled to said input means, output means, event table means, and multi-event table means to respond to said command and to maintain status of the various event tokens and multi-event tokens including whether they are available.

5,010,483

VECTOR PROCESSOR CAPABLE OF INDIRECT ADDRESSING

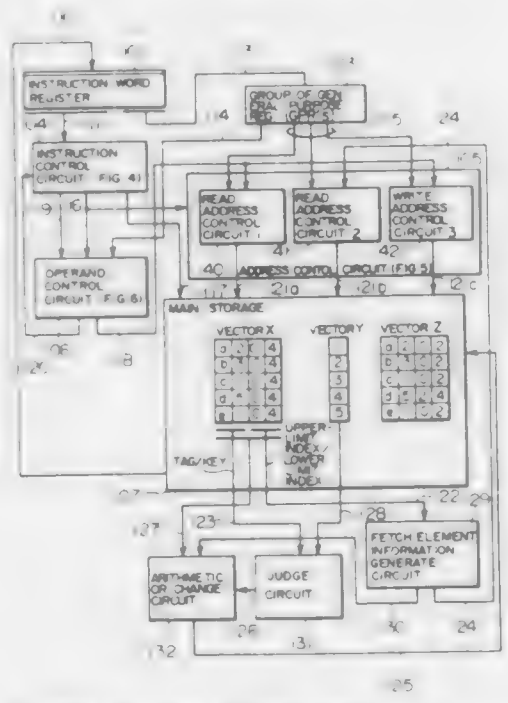
Yusuke Mishina, Kunitachi, and Keiji Kojima, Kodaira, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 7, 1988, Ser. No. 178,913

Claims priority, application Japan, Apr. 8, 1987, 62-84735

Int. Cl.[5] G06F *15/347*

U.S. Cl. 364—200 **22 Claims**



1. A vector processing apparatus comprising:

means for holding a plurality of vectors each including a plurality of sequential elements;

first read means connected to said holding means for sequentially reading from said holding means a group of elements of a first vector in an order of the elements, each element of the first vector including first and second portions, the first portion having data to receive an arithmetic or logic operation, the second portion having an index related to a corresponding element of the second vector which should receive the arithmetic or logic operation together with the element of the first vector;

second read means connected to said holding means for sequentially reading from said holding means a group of elements of the second vector in parallel to reading of the group of elements of the first vector;

operation means connected to said first and second read means for effecting in a pipeline manner the arithmetic or logic operation on pairs of operands, one operand of each pair including a first portion of an element of the first vector, read out by said first read means and another operand of the pair including a corresponding element of the second vector, read out by said second read means;

said second read means including indirect read means for effecting a predetermined operation on respective second portions of respective elements of the first vector read out by said first read means, to generate addresses of corresponding elements of the second vector which are to be subjected to the arithmetic or logic operation together with the first portions of the respective elements of the first vector, and for sequentially reading from said holding means the corresponding elements of the second vector based on the generated addresses.

5,010,484

DISC GUIDE MECHANISM FOR AUTOMOTIVE DISC PLAYER

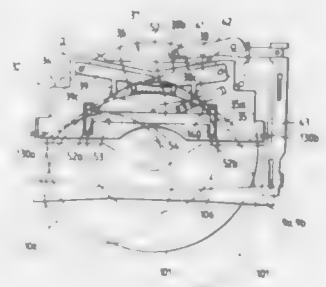
Kazuo Kobayashi; Kiyoshi Morikawa; Yoshinori Yamada; Masakazu Kurumada, and Masanori Sugihara, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 30, 1990, Ser. No. 501,823

Claims priority, application Japan, Mar. 31, 1989, 1-83723

Int. Cl.[5] G11B *3/70, 5/84, 7/26*

U.S. Cl. 369—77.2 **1 Claim**



1. A disc reproducing apparatus in which a large- or small-diameter disc inserted through a disc inserting opening is transferred to a predetermined position within a player, a clamper arm extending over a turntable on which the disc is placed is operated to fix the disc onto the turntable, and information recorded in the disc is reproduced by rotating the turntable, wherein:

a disc guide plate for guiding the small-diameter disc to a clamp position is pivotally mounted to said clamper arm,

a disc guiding recess into which the small-diameter disc can slip and which has a sufficiently wide opening,

a restraining member for blocking the advancement of only the large diameter disc into the disc guiding recess;

when said small-diameter disc is inserted through the disc inserting opening, said small-diameter disc is advanced into the disc guiding recess to be positioned at the clamp position;

when the large-diameter disc is inserted through the disc inserting opening, the large-diameter disc is guided by said restraining member to the outside of said disc guiding recess such that the large-diameter disc pushes away the disc guide plate to be guided to the clamp position on said turntable.

5,010,485

APPARATUS, SYSTEM AND METHOD FOR CREATING CREDIT VOUCHERS USABLE AT POINT OF PURCHASE STATIONS

Steven T. Bigari, Colorado Springs, Colo., assignor to JBH Ventures, Manitou Springs, Colo.

Filed Jan. 31, 1989, Ser. No. 304,566

Int. Cl.[5] G06F *15/30*

U.S. Cl. 364—408 **39 Claims**

1. A payment voucher processing apparatus adapted to be used in conjunction with a family of charge cards wherein a customer who has a member charge card can execute a proposed transaction to obtain a guaranteed voucher for a selected maximum charge amount for purchase of goods or services from a merchant wherein a host institution administers customer accounts for the family of charge cards and has verification means for inquiring into the customer account to determine an availability of funds for a proposed charge and issues an approval status signal when funds are available and a disapproval status signal when funds are not available in the customer account, the payment voucher processing apparatus comprising:

a processing means for processing a proposed transaction;

a start means for producing a start signal to initiate a transaction event;

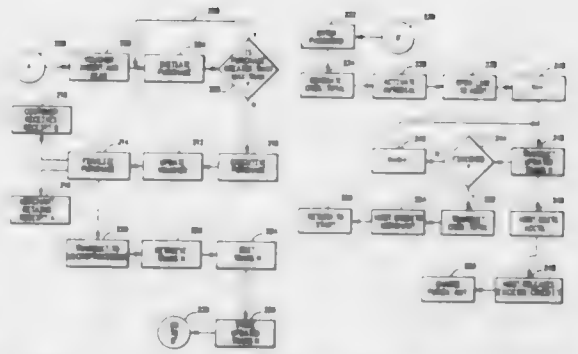
entry means for inputting into said processing means the proposed transaction including account identification data of a member charge card correlated to a customer account administered by the host institution and a maximum charge amount;

means for establishing communication with the host institution;

means for transmitting the identification data and the maximum charge amount to the host institution to interrogate the host institution regarding the availability of funds in customer account at least equal to the maximum charge amount;

receiving means for receiving approval and disapproval signals from the host institution;

said processing means including means responsive to an approval signal for producing a print signal,



voucher producing means responsive to the print signal to produce a voucher indexed with a maximum transaction charge equal to the maximum charge amount, and with the account identification data;

means for storing the account identification data and the maximum charge amount for each approved transaction;

means for retrieving each approved transaction; and

edit means for editing each approved transaction to charge the maximum charge amount to an actual purchase amount whereby the actual purchase amount and the account identification data may be communicated to the host institution by way of the transmitting means.

13. A payment voucher apparatus for use in conjunction with a family of charge cards wherein customers who have a respective member of said family of charge cards can each execute a transaction to obtain a guaranteed voucher for a selected maximum charge amount for use in purchasing goods or services from a merchant wherein a host institution adminis-

ters accounts for the family of charge cards and issues approval/disapproval status signals for a proposed charge and a guarantee of payment of the proposed charge along with approval identifier data when the merchant receives an approval thereof, the payment voucher apparatus comprising:

data transmitting and receiving means for transmitting and receiving data respectively to and from the host institution over a communication line established therebetween;

a microprocessor in communication with said data transmitting and receiving means;

manual entry means for inputting into said microprocessor transaction data corresponding to the proposed charge including the maximum charge amount, said manual entry means including a start key means for initiating the transactions;

an autodialer means responsive to activation of the start key means for automatically opening the communication line with the host institution;

a charge card reader operative to receive a customer's charge card and produce identification data corresponding to the charge card, said identification data transmitted to the host institution by said data transmitting and receiving means over the communication line opened by the autodialer means;

said microprocessor operative in response to input of transaction data from said manual entry means to interrogate the host institution by way of said data transmitting and receiving means in order to obtain the approval/disapproval status for the proposed charge, said microprocessor operative in response to an approval signal and approval identifier data to produce a print signal, said microprocessor including data storage means for storing the identification data and the transaction data for each approved transaction;

a printer operative in response to the print signal to produce a voucher being exchangeable for goods or services of the merchant; said voucher being for an approved charge corresponding to the maximum charge amount, said voucher indexed with transaction identification data, the maximum charge amount and the approval identifier data; and

said microprocessor operative in response to input of the actual purchase amount for the respective transaction by the manual entry means to retrieve the respective transaction data stored in said data storage means and edit the respective maximum charge amount to reflect the actual purchase amount for the respective transaction and store said actual purchase amount, whereby each voucher is corrected at a point of purchase to create an updated receipt reflecting an actual purchase amount.

36. A method for processing charge card transactions for a family of charge cards administered by a host institution wherein the host institution maintains a cardholder file of available credit limit for each member card account in the family of charge cards and wherein a merchant can obtain an approval for a proposed credit charge against a charge card of a customer which charge card is a member of the family of charge cards comprising the steps of:

providing at least one payment voucher producing apparatus at a first location at a facility of the merchant including a data processor with memory;

providing at least one point of purchase sales station at a second location at the facility of the merchant remote from said first location;

entering identification data into said payment voucher producing apparatus corresponding to a respective customer charge card;

entering a maximum charge amount into said payment voucher producing apparatus corresponding to a proposed charge transaction;

electronically transmitting to the host institution over a communication line the identification data and the maximum charge amount correlated thereto;

verifying at the host institution the available credit limit in the member card account corresponding to the respective customer charge card to determine if the credit limit of the member card account to be exceeded;

issuing one of an approval signal if the maximum charge amount does not cause the credit limit to be exceeded while reserving the maximum charge amount in the member card account concurrently with the issuance of the approval signal and a disapproval signal if the maximum charge amount will cause the credit limit of the member card account to be exceeded;

automatically producing a voucher at the payment voucher producing apparatus in response to receipt of an approval signal from the host institution, said voucher being automatically indexed with the identification data and maximum charge amount;

storing the proposed charge transaction in memory of the data processor;

completing a purchase transaction for selected goods or services at the point of purchase station for an actual purchase amount less than or equal to the maximum charge amount;

updating the voucher at the point of purchase station to reflect the actual purchase amount;

editing the proposed charge transaction utilizing the data processor at the payment voucher apparatus to edit the maximum charge amount to an updated charge amount equal the actual charge amount;

electronically transmitting the updated charge amount and the identification data of the respective customer charge card to the host institution; and

retrieving and updating the respective member card account at the host institution to edit the maximum charge amount to the updated charge amount and release the difference therebetween back into the member charge account so that it is again available in the credit limit of the member card account.

5,010,486

SYSTEM AND METHOD FOR LANGUAGE TRANSLATION INCLUDING REPLACEMENT OF A SELECTED WORD FOR FUTURE TRANSLATION

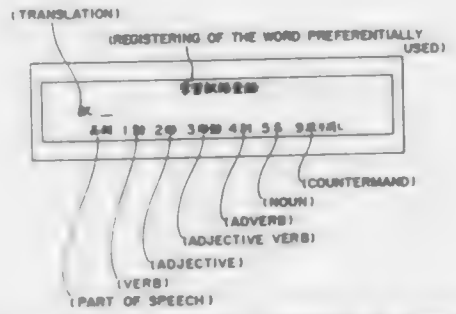
Hitoshi Suzuki; Shinobu Shiotani; Shinji Tokunaga, all of Nara; Tokuyuki Hirai, Yamatokoriyma; Yoji Fukumochi, Nara; Shuzo Kugimiya, Nara, and Ichiko Sata, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 126,263, Nov. 27, 1987, abandoned. This application Feb. 5, 1990, Ser. No. 474,245

Claims priority, application Japan, Nov. 28, 1986, 61-284487; Nov. 28, 1986, 61-284488

Int. Cl.[5] G06F *15/38*

U.S. Cl. 364—419 **4 Claims**



1. A translation apparatus for translating an inputted sentence of an original language into a sentence of a target language and for outputting the translated sentence as an outputted sentence, comprising:

indicating means for indicating a selected word contained in the inputted sentence;

dictionary means for storing words corresponding to words of the original language and the targe language;

output means, operatively connected to said dictionary means and said indicating means, for outputting translated equivalent words of the target language from said dictionary means corresponding to said selected word;

input means, operatively connected to said output means, for inputting a desired translated equivalent word correspondign to said selected word, said desired translated equivalent word not being part of the output of said output means;

replacing means, operatively connected to said output means and said input means, for replacing the translated equivalent of said selected word contained in the translated sentence with a translated equivalent word selected from the outputted translated words of said dictionary means or with said new translated equivalent word inputted by said input means; and

means, operatively connected to said replacing means, for preferentially using said translated equivalent word used by said replacing means during future translation processes.

5,010,487

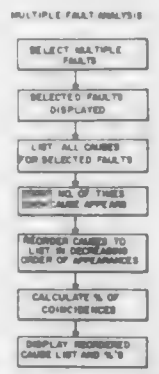
COMPUTER-BASED ENGINE DIAGNOSTIC METHOD

Van T. Stonehocker, Beloit, Wis., assignor to Coltec Industries Inc., New York, N.Y.

Filed Mar. 2, 1989, Ser. No. 317,893

Int. Cl.[5] G01M *15/00*; G06F *15/40*

U.S. Cl. 364—424.03 **4 Claims**



1. A system including a computer and a software program for providing product diagnostic information to a user, said system performing the method comprising the steps of:

storing a list of observable product faults;

storing a list of causes for each observable product fault;

displaying from said list of stored faults a group of two or more observable product faults;

and

in response to a user indication of at least two said observable product faults, displaying in decreasing order by number of occurrences, causes which are common to said user-indication of observed product faults, whereby the most probable cause for said observed product faults occurs at the head of said displayed group of product faults.

5,010,488

BEAR-WHEEL CONTROL METHOD FOR A MOTOR VEHICLE WITH A FOUR-WHEEL STEERING SYSTEM

Saiichiro Ohshita, and Kazuhiro Fukamachi, both of Oota, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1989, Ser. No. 352,839

Claims priority, application Japan, May 16, 1988, 63-118579; Jul. 28, 1988, 63-189084

Int. Cl.[5] B62D *6/00*

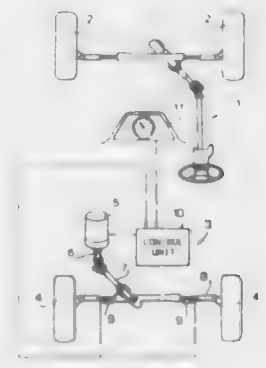
U.S. Cl. 364—424.05 **4 Claims**

1. A method for controlling rear wheels of a four-wheel steering vehicle having a rear-wheel steering control system, comprising the steps of;

detecting rear-wheel slip angle (βr);

providing a transfer function (G(s)) including at least a derivative element;

calculating a desired rear-wheel steering angle (δr) upon an equation based on said rear-wheel slip angle and said transfer function expressed as



$$\delta r = -G(S)\, kr\, \beta r$$

where kr is a steering coefficient; and

applying the desired rear-wheel steering angle to the rear-wheel steering control system for controlling the rear wheels to the desired rear-wheel steering angle.

5,010,489

ANTI-SKID CONTROL SYSTEM WITH A COMMON BRAKING PRESSURE CONTROL DEVICE FOR DIFFERENT WHEELS

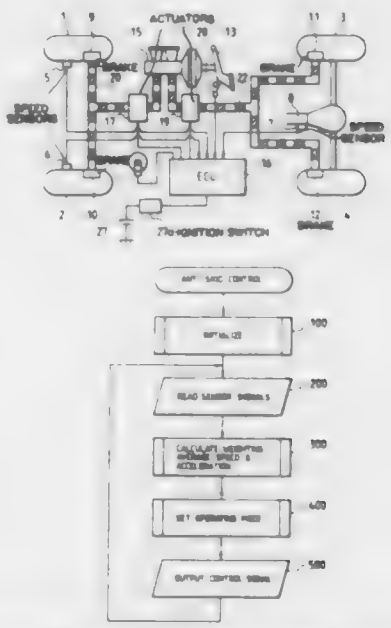
Shouichi Masaki, Chiryu; Akira Fukushima, Kariya; Shusaku Fujimoto, Kariya, and Makoto Nakano, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 3, 1989, Ser. No. 332,799

Claims priority, application Japan, Apr. 5, 1988, 63-83370

Int. Cl.[5] B60T *8/82*

U.S. Cl. 364—426.02 **12 Claims**



1. An anti-skid control system for use in a motor vehicle having at least first and second wheels and first and second

wheel-braking cylinders, braking pressures applied to said first and second wheel-braking cylinders being adjusted by a single braking pressure adjusting device to become equal to each other, said control system comprising:

first and second wheel speed sensors for respectively detecting rotational speeds of said first and second wheels to output first and second signals indicative of the detected rotational speeds thereof;

running state detecting means for detecting a running state of said motor vehicle to output a signal indicative of the detected running state thereof;

weighting coefficient determining means for determining, on the basis of the running state detected by said running state detecting means, weighting coefficients for the speeds detected by said wheel speed detecting sensors and gradually changing the weighting coefficients thereof in accordance with variations of the running state thereof;

calculation means for calculating a weighted average wheel speed on the basis of the wheel speeds of said first and second wheels and the weighting coefficients determined by said weighting coefficient determining means; and

control means for outputting a control signal to said barking pressure adjusting device in accordance with the calculated weighted average wheel speed so as to control the braking pressure to be applied to said first and second wheel-braking cylinders.

5,010,490

CONSTANT SPEED CONTROL APPARATUS FOR MOTOR VEHICLE

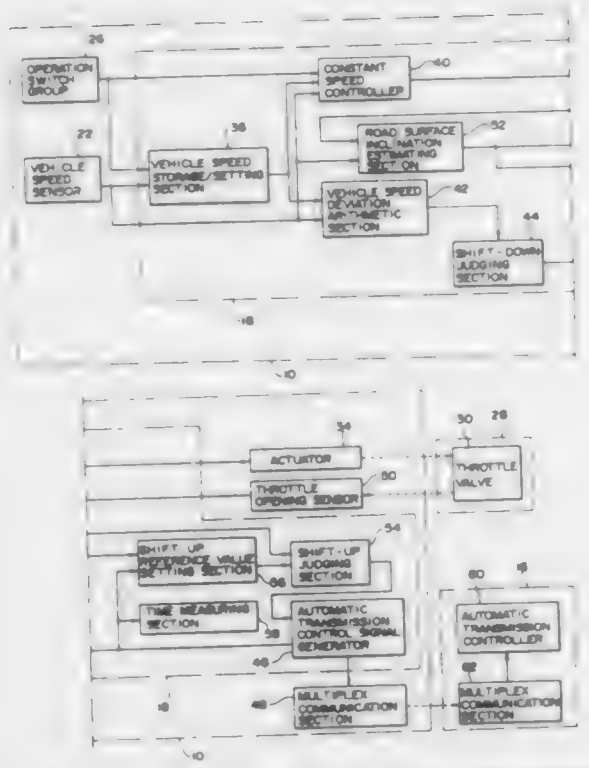
Yasuo Naito; Hiroyuki Kouzaki, both of Himeji, and Takeshi Murai, Hiroshima, all of Japan, assignors to Mitsubishi Electric Corporation, Tokyo and Mazda Motor Corporation, Hiroshima, both of, Japan

Filed Apr. 26, 1989, Ser. No. 343,380

Claims priority, application Japan, Apr. 28, 1988, 63-106142

Int. Cl.[5] B60K *31/00, 41/18*

U.S. Cl. 364—426.04 **15 Claims**



1. A constant speed control apparatus for a motor vehicle, comprising:

setting means for setting a target vehicle speed;

first detection means for detecting a vehicle speed of a traveling vehicle;

shift-down signal output means for, when the detected vehicle speed is decreased from the target vehicle speed to fall outside a predetermined range in a constant speed travel state, outputting a signal to cause an automatic transmission to perform a shift-down operation;

second detection means for detecting that the detected vehicle speed is substantially recovered to the target vehicle speed after the shift-down signal is output;

estimation means for estimating a road surface inclination on a basis of an engine load and the detected vehicle speed; and

shift-up signal output means for, when the detection result by said second detection means and an estimation result of substantially not an uphill by said estimation means are established, outputting a shift-up signal to said automatic transmission.

5,010,491

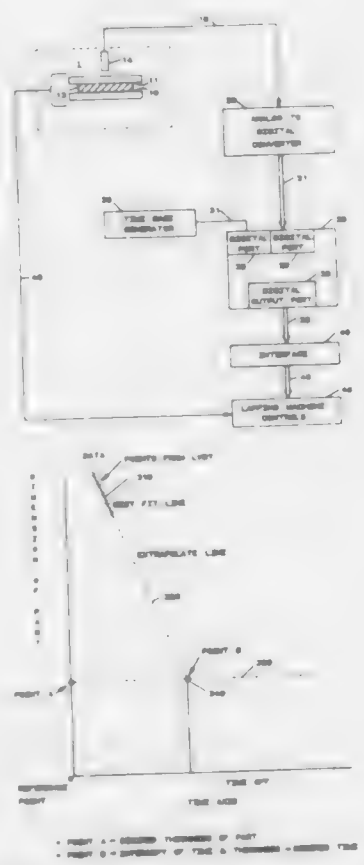
AUTOMATED SYSTEM FOR MACHINING PARTS TO CLOSE TOLERANCES

Alberto Biasillo, Maine, N.Y., and Richard C. Taylor, Warren Center, Pa., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 27, 1988, Ser. No. 290,588

Int. Cl.[5] G06F *15/46;* **G05B** *19/18*

U.S. Cl. 364—474.28 **15 Claims**



1. A lapping machine control system comprising:

a. means for measuring the relative positions of first and second laps to develop analog signals representing the instantaneous distance between said laps;

b. analog to digital converter means for converting said analog signals to digital form;

c. control computer means for reading said digital signals as periodic intervals;

d. curve fitting means in said computer means for developing a curve representing the separation of said laps as a function of time;

e. extrapolation mans in said computer means for predicting the point in time when the separation of said laps will reach a desired value; and,

f. means coupled to said extrapolation means for changing mode of said lapping machine when said point in time is reached.

5,010,492

SPINDLE CONTROL SYSTEM AND NUMERICAL CONTROL APPARATUS

Mitsuo Kurakake, Hino, and Jiro Kinoshita, Minamitsuru, both of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

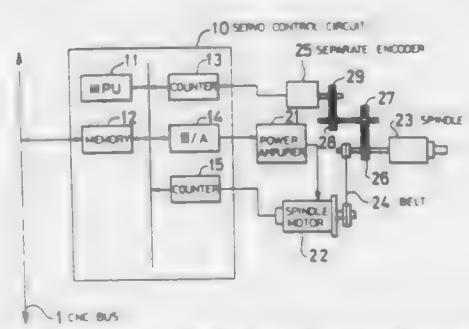
PCT No. PCT/JP88/00875, § 371 Date Apr. 17, 1989, § 102(e) Date Apr. 17, 1989, PCT Pub. No. WO89/02104, PCT Pub. Date Mar. 9, 1989

PCT Filed Aug. 31, 1988, Ser. No. 343,150

Claims priority, application Japan, Sep. 2, 1987, 62-220013

Int. Cl.[5] G05B *19/407*

U.S. Cl. 364—474.29 **2 Claims**



1. A spindle control system for a numerical control apparatus (CNC) including a CNC bus, a spindle, and a spindle motor which produces pulses, comprising:

a servo control circuit, coupled to the CNC bus, for providing a command, said servo control circuit including:

a microprocessor;

a memory coupled to said microprocessor; and

first and second counters for counting pulses, said second counter coupled to the spindle motor to count the pulses produced by the spindle motor;

a power amplifier, a coupled to said servo control circuit and the spindle motor, for receiving the command from said servo control circuit and for controlling the rotation of the spindle motor; and

a separate encoder, coupled to said first counter and the spindle, for feeding back pulses to said first counter for contour control.

5,010,493

LOAD DISTRIBUTION METHOD

Kenji Matsumoto, Aiko; Tomoatsu Yanagita, Ebina; Yoshinori Nishiyama, Odawara; Masahiko Nagai, Naka, and Mitsuru Morikuni, Ebina, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Computer Engineering Co., Ltd., Kanagawa, both of, Japan

Filed Apr. 26, 1989, Ser. No. 343,362

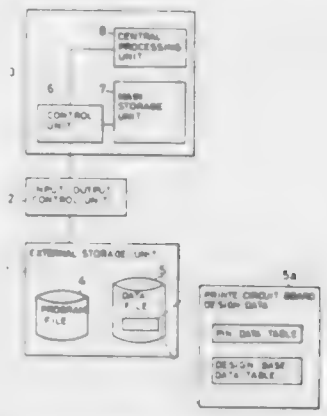
Claims priority, application Japan, Apr. 26, 1988, 63-103553

Int. Cl.[5] G06F *15/60*

U.S. Cl. 364—490 **10 Claims**

1. A load distribution method in which loads are divided into groups and each of plural input pins of integrated circuits of a load is wired continuously with one stroke of a signal transmission line in an order from a driving output pin in each group when wiring for distributing a drive signal from a driving output pin of an integrated circuit to plural input pins of integrated circuits, functioning as loads, which are mounted at given positions on a printed circuit board, the load distribution method comprising:

dividing the loads into groups by equally distributing a number of the loads so as to allow a load capacity to be equal on each of plural signal transmission lines;



computing a signal propagation delay time of a signal transmission line wired in an equal distance to a load which is equal in a wiring order from the driving output pin in each group; and

grouping the loads by determining a combination of loads in which the signal propagation delay time of the signal transmission line becomes the shortest.

5,010,494

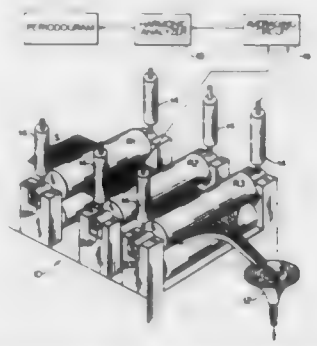
METHOD AND APPARATUS FOR DETECTING MECHANICAL ROLL IMPERFECTIONS IN A ROLLER DRAFTING SYSTEM

Peter R. Lord, Raleigh, N.C., assignor to North Carolina State University, Raleigh, N.C.

Filed Sep. 9, 1988, Ser. No. 242,752

Int. Cl.[5] G01N *27/82;* **B21B** *37/00*

U.S. Cl. 364—507 **21 Claims**



13. An apparatus for drafting an advancing strand of material, comprising:

a plurality of rotating mechanical components including at least two sets of cooperating drafting rolls,

means for guiding an advancing strand of material serially through the sets of rolls,

means mounting at least one pair of cooperating rolls of at least one of said sets so as to permit the separation between said one pair of rolls to vary, and including means for biasing said one pair of rolls toward each other to grip the advancing strand of material, and such that the thickness of the advancing strand of material causes said one pair of rolls to separate,

means for rotating the rolls within at least one of said sets at

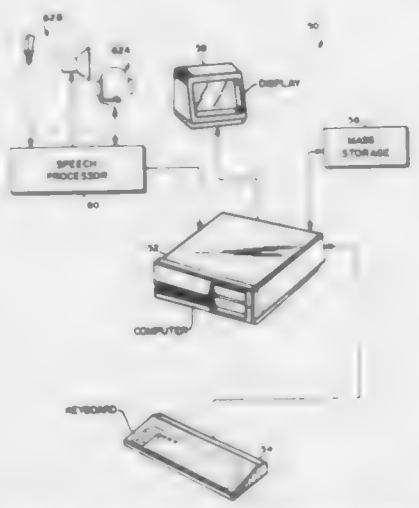
a different surface velocity from that of other sets so as to draft the material passing therethrough,
means for monitoring the separation between said one pair of cooperating rolls,
means for generating a signal representative of the separation between said one pair of cooperating rolls,
means for processing the generated signal so as to identify harmonic components thereof, and
means for correlating the processed signal with rotational frequencies of selected ones of the rotating mechanical components, and whereby synchronism between harmonic components of the processed signal and a rotational frequency is indicative of a mechanical imperfection in the associated mechanical component.

5,010,495

INTERACTIVE LANGUAGE LEARNING SYSTEM

John A. Willetts, Kensington, Md., assignor to American Language Academy, Rockville, Md.

Filed Feb. 2, 1989, Ser. No. 305,223
Int. Cl.[5] G10L *5/00*
U.S. Cl. 364—513.5 **25 Claims**



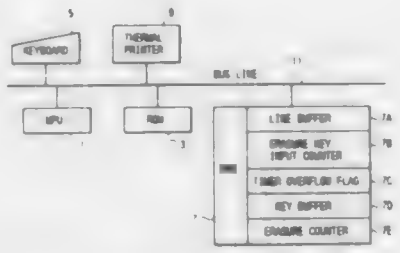
1. An interactive language learning system comprising:
storing means for storing a digitized speech version of a passage of language and for also storing a digital data textual version of said same passage;
a display for displaying text corresponding to said passage;
selecting means operatively connected to said display and to said storing means and operable by a user for selecting a portion of said passage, and for causing the portion of said stored digital data textual version corresponding to said selected passage portion to be displayed as text on said display; and
speech processing means for:
selecting the portion of said stored digitized speech version corresponding to said selected portion of said passage,
converting said selected digitized speech version portion to audio signals for use in generating speech sounds,
converting audio signals representing user speech into digitized speech signals representing said user speech, and
subsequently reconverting said digitized speech signals representing said user speech to audio signals for use in generating further speech sounds so as to permit said user to listen to and compare his own speech with a spoken version of said passage corresponding to said stored digitized speech version.

5,010,496

DOCUMENT PROCESSING SYSTEM

Nobuo Shibazaki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 14, 1989, Ser. No. 365,719
Claims priority, application Japan, Jun. 17, 1988, 63-148222
Int. Cl.[5] G06K *15/00*
U.S. Cl. 364—519 **8 Claims**



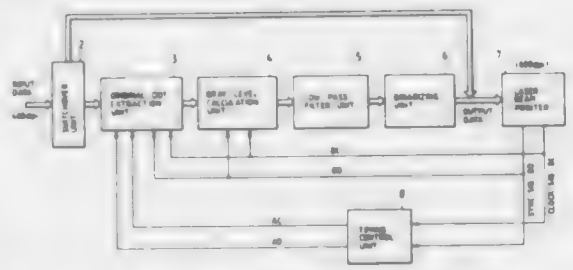
1. A document processing system comprising:
instruction means for instructing, by entry,
erasing means for erasing a printed character;
counter means for counting a first number of entries of said instruction means; and
control means for controlling said erasing means to erase a second number of printed characters, said second number being equal to said first number of entries counted by said counter means.

5,010,497

IMAGE INFORMATION RECORDER HAVING A RESOLUTION DENSITY TRANSFORMATION DEVICE

Akira Shimada, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 9, 1989, Ser. No. 294,677
Claims priority, application Japan, Jan. 19, 1988, 63-7630
Int. Cl.[5] G06F *15/66*
U.S. Cl. 364—519 **6 Claims**



1. An image information recorder comprising:
printer means, capable of substantially continuous printing in a scanning line direction, for reproducing binary input data of an image having a first resolution density supplied to said printer means as a visual image having a second resolution density in accordance with the binary input data;
original dot extraction means for receiving therein the binary input data in response to a predetermined timing control signal generated on the basis of a synchronizing signal used for scanning and a clock signal from said printer means and for selecting dots from the binary input which contribute to a gray level calculation of a dot in the image to be reproduced in response to the synchronizing signal used for scanning and the clock signal;
gray level calculation means, responsive to the synchronizing signal and the clock signal, for carrying out the gray level calculation in accordance with a predetermined algorithm based on gray levels of the dots selected by said original dot extraction means for converting a result of the gray level calculation into analog form to produce an analog image signal;

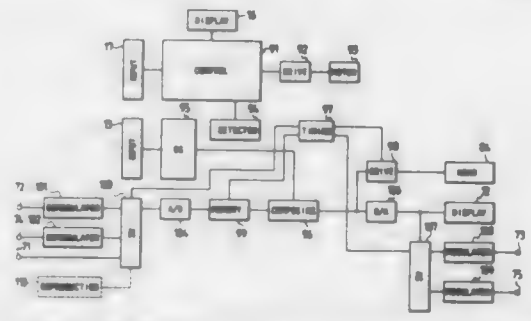
low pass filter means for smoothing the analog image signal produced by said gray level calculation means; and
binarizing means for comparing the analog image signal smoothed by said low pass filter means with a threshold signal of a predetermined constant value to produce the binary input data supplied to said printer means.

5,010,498

VIDEO PRINTER

Hidenobu Miyata, Tokyo, Japan, assignor to GFK GmbH, Nuremberg, Fed. Rep. of Germany

Filed Sep. 29, 1989, Ser. No. 414,509
Claims priority, application Japan, Oct. 4, 1988, 63-130354[U]
Int. Cl.[5] G06K *15/00*
U.S. Cl. 364—519 **18 Claims**



1. A video printing device having a housing and comprising therein:
input means adapted to receive main video signals;
memory means connected to said input means, for selectively storing one of said main video signals and a portion thereof;
video signal generating means for generating auxiliary video signals;
composing circuit means connected to said memory means and to said video signal generating means, for receiving and selectively composing said main video signals and said auxiliary video signals;
display means connected to said composing circuit means for display information according to output signals of said composing circuit means;
printing means connected to said composing circuit means for printing information according to the output signals thereof; and
mode selection means connected to said memory means and operable between a passing mode condition in which said memory means is switched so as to be inoperative and said composing circuit means receive said main video signals from said input means without temporary storage in said memory means, and a second mode condition in which said memory means is switched so as to operative and said composing circuit means receive main video signals stored in said memory means.

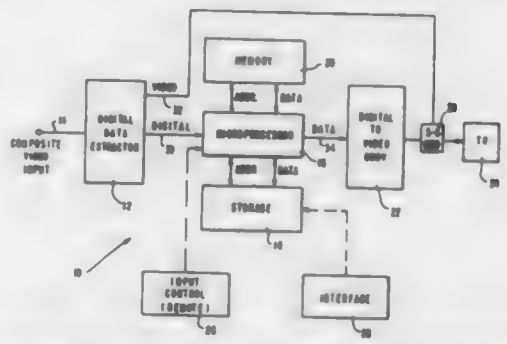
5,010,499

DIGITAL DATA CAPTURE FOR USE WITH TV SET OR MONITOR

Keen Y. Yee, 57 Ogden Ave., White Plains, N.Y. 10605

Continuation of Ser. No. 158,592, Feb. 22, 1988, Pat. No. 4,894,789. This application Oct. 30, 1989, Ser. No. 429,078
The portion of the term of this patent subsequent to Jan. 16, 2007, has been disclaimed.
Int. Cl.[5] H04N *7/10*
U.S. Cl. 364—521 **16 Claims**

1. A digital data capture apparatus used by a receiving party and operating in combination with a receiving tv set or monitor having associated therewith an extraction circuit for extracting digital data from a composite video-digital signal received by said tv set or monitor comprising:
a tv set or monitor receiving a composite video-digital signal,
means associated with said tv set or monitor for receiving a composite video-digital signal, said signal including digital data having no addresses associated therewith,
storage means for storing selected digital data under control of instructions directed to a microprocessor, said selected digital data being selectively extracted from said composite signal by said receiving party,



memory means communicating with said microprocessor for storing programs, said selected digital data, and addresses therfor,
a microprocessor for receiving said selected digital data from said extraction circuit, said microprocessor communicating with said memory means and with said storage means for controlling the selected storage, retrieval, and display of said selected digital data, and
a digital-to-video converter for converting siad selected digital data to video signals suitable for display on the screen of said tv set or monitor.

5,010,500

GESTURE-MODIFIED DIAGRAM FOR RETRIEVAL OF IMAGE RESEMBLING DIAGRAM, WITH PARTS SELECTABLE FOR FURTHER INTERACTIVE RETRIEVAL

Ranjit Makkuni, San Francisco; Frank Zdybel, Jr., and Robert A. Stults, both of Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 26, 1989, Ser. No. 303,351
Int. Cl.[5] G06F *3/14*
U.S. Cl. 364—521 **24 Claims**



1. An information retrieval system comprising:
presenting means for providing presentations to a user, the presenting means comprising display means for providing visual presentations to the user;
selection input means for providing signals indicating user selections within visual presentations provided by the display means;
gesture input means for providing data based on gestures of the user;

memory for storing a plurality of interactive items, the display means being capable of providing a respective interactive presentation based on each of the interactive items; the respective interactive presentations of a first one of the interactive items including a first image, the first image including a plurality of parts including a first part; the memory further being for storing, for each of the parts of the first image, a respective set of related information items based on each of which the presenting means can provide a respective presentation for providing information to the user; the respective set of related information items of the first part including a first information item; the first image further including, for each of the parts, a respective selectable bounded area that is selectable by the user with the selection input means in requesting presentations based on information items from the respective set of related information items;

first means for using visual feature data from the gesture input means to determine whether the first image includes features resembling a desired set of visual features and, if so, for causing the display means to provide the first interactive item's respective interactive presentation that includes the first image; the visual feature data being based on a gesture indicating the desired set of visual features; the visual feature data indicating the gesture's path of motion; and

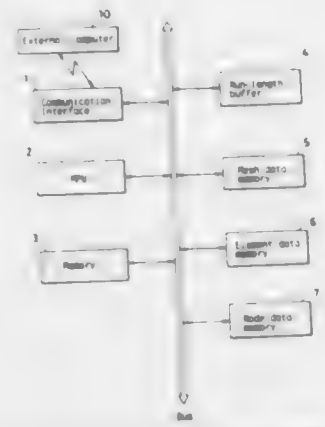
second means for receiving a request signal requesting the first information item's respective presentation and for responding to the request signal by causing the presenting means to provide the first information item's respective presentation for providing information to the user; the request signal including a selection signal from the selection input means, the selection signal indicating user selection of the first part's respective selectable bounded area.

5,010,501

THREE-DIMENSIONAL GEOMETRY PROCESSING METHOD AND APPARATUS THEREFOR

Yoshiki Arakawa, Yawata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 19, 1988, Ser. No. 259,826
Claims priority, application Japan, Oct. 20, 1987, 62-264411
Int. Cl.[5] G06F *15/62*
U.S. Cl. 364—522 3 Claims



2. A three-dimensional geometry processing apparatus comprising:

a geometry processing computer for creating three-dimensional run-length data representing a three-dimensional object geometry having a surface,

means for dividing an analysis domain enclosing said three-dimensional object geometry into a plurality of elements of three-dimensional geometry having apexes designated as nodes,

means for examining intersection of said elements to said three-dimensional object geometry by using said run-length data,

means for selecting all elements enclosed in said three-dimensional object geometry and all elements intersecting with said surface of said three-dimensional object geometry,

means for creating data of nodes of said selected elements,

means for selecting nodes being present outward from said three-dimensional object geometry of said all elements intersecting with said surface of said three-dimensional object geometry,

means for shifting said nodes being present outward from said three-dimensional object geometry onto the surface of said three-dimensional object geometry on the basis of a first predetermined rule,

means for examining shape of elements which nodes are shifted onto said three-dimensional object geometry,

means for selecting elements conforming to a second predetermined rule, said second predetermined rule being used to select elements that conform to a preselected shape, and

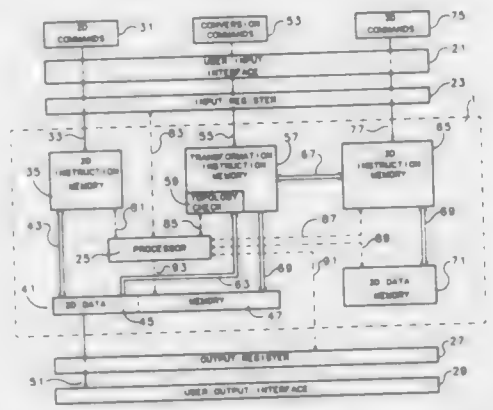
memories for memorizing said three-dimensional run-length data, element data which is topology data of said element, node data represented by coordinate values of said apexes and mesh data for instructing dividing manner of said analysis domain.

5,010,502

METHOD AND APPARATUS FOR GENERATING REPRESENTATIONS OF 3-DIMENSIONAL OBJECTS

Heinz Diebel, Boeblingen; Ralf Peterhoff, Weil im Schoenbuch, and Evelyn Thuemling, Boeblingen, all of Fed. Rep. of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 58,487, Jun. 5, 1987, abandoned. This application Mar. 13, 1990, Ser. No. 494,921
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1986, 86107786
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—522 5 Claims



1. An apparatus for processing a representation of a three dimensional object and for depicting the representation on a display means, comprising:

an input device;

determination means, coupled to the input device for receiving a command from an input device and for determining whether the command is either a 2D command or a 3D command;

2D processing means, coupled to the determination means and selectable thereby in case that the command is a 2D command, for using the command to process the representation in a 2D mode;

2D memory means, coupled to the 2D processing means, for storing two dimensional data regarding the object; the 2D memory means comprising; a first part which is user accessible and which is operative for receiving the 2D view information; and a second part which is not user accessible and which contains other 2D view information created by a rendering processor;

transformation means, coupled to the determination means and selectable thereby in case that the command is a 3D command, for transforming the two dimensional data stored in the 2D memory means into a three dimensional geometry, the transformation means comprising; a profile processor for transforming 2D geometry into 3D geometry; and the rendering processor for transforming 3D geometry information into 2D view information and for storing the 2D view information in the 2D memory means;

3D processing means, coupled to the transformation means for using the command to process the representation in a 3D mode;

3D memory means, coupled to the transformation and 3D processing means, for storing and receiving three dimensional data regarding the object; and

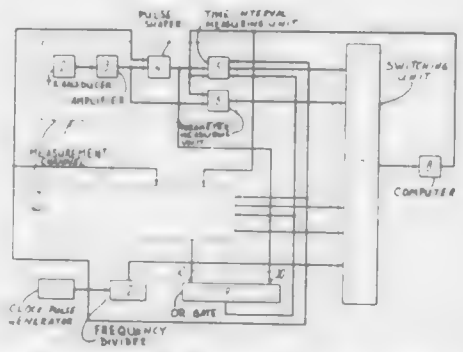
wherein the display means is coupled to the 2D and 3D memory means for displaying the representation.

5,010,503

APPARATUS FOR ACOUSTIC-EMISSION INSPECTION OF ARTICLES

Boris E. Paton, Kiev; Vladimir F. Utkin, Dnepropetrovsk; Anatoly Y. Nedoseka, Kiev; Nikolai T. Khromyak, Kiev; Nikolai V. Gorlitsyn, Kiev; Viktor G. Tikhy, Dnepropetrovsk; Evgeny D. Mezintsev, Moscow, and Nikolai N. Mezhuev, Dnepropetrovsk, all of U.S.S.R., assignors to Institut Elektrosvarki Imeni E.O. Patona Akademii Nauk Ukrainskoi SSR, Kiev, U.S.S.R.

PCT No. PCT/US88/00091, § 371 Date Dec. 19, 1989, § 102(e) Date Dec. 19, 1989, PCT Pub. No. WO89/10560, PCT Pub. Date Nov. 2, 1989
PCT Filed Apr. 20, 1988, Ser. No. 449,854
Int. Cl.[5] G01N *29/04*
U.S. Cl. 364—569 2 Claims



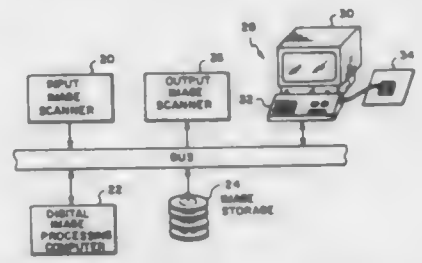
1. An apparatus for acoustic-emission inspection of articles, comprising: channels each including a series connection of a transducer of acoustic emission signals, positionable on an article under inspection, and an amplifier of electric signals, having an output connected to a shaper of single pulses and to a unit for measuring parameters of acoustic emission signals, and also a clock pulse generator connected with each channel, a switching unit having inputs connected to outputs of the units for measuring the parameters of acoustic emission signals and also connected with the shapers of single pulses of respective channels, and a computer for processing acoustic-emission data, connected to the switching unit, further comprising, in each channel, a unit for measuring time intervals, having a first input connected to an output of the shaper of single pulses, a second input connected to an output of the clock pulse generator, and an output connected to the input of the switching unit, and also a frequency divider having an input connected to the output of the clock pulse generator and an output connected to the switching unit, and an OR gate having inputs in a number equalling the number of the channels, said inputs of said OR gate being connected to the respective outputs of the shapers of single pulses of each channel, and having an output connected to third inputs of the respective units for measuring time intervals in each channel.

5,010,504

DIGITAL IMAGE NOISE SUPPRESSION METHOD USING SVD BLOCK TRANSFORM

Hsien-Che Lee; Hui-Jung Lee, both of Penfield; Heesun Kwon, Pittsford, and Jeanine Liang, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/US88/00519, § 371 Date Oct. 12, 1989, § 102(e) Date Oct. 12, 1989, PCT Pub. No. WO89/07799, PCT Pub. Date Aug. 24, 1989
PCT Filed Feb. 22, 1988, Ser. No. 435,490
The portion of the term of this patent subsequent to Jul. 31, 2007, has been disclaimed.
Int. Cl.[5] H03F *1/26*
U.S. Cl. 364—574 8 Claims



1. A method of processing an image in a digital computer for reducing noise in the image, comprising the steps of:

(a) generating a nonlinear gain function based upon the measured statistics of the SVD singular values for image noise;

(b) filtering the digital image to produce a detail image and a low pass filtering image;

(c) dividing the detail image into blocks;

(d) transforming the blocks employing an SVD transformation to produce singular vectors and arrays of singular values;

(e) applying the nonlinear gain function to the arrays of singular values to produce arrays of modified singular values;

(f) performing an inverse SVD on the singular vectors with modified singular values to produce blocks of processed detail image values; and

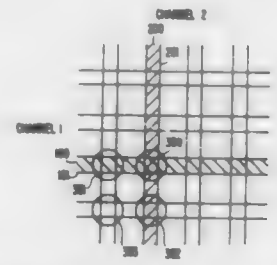
(g) combining the processed image detail values with the low pass filtered image values to produce the processed digital image.

5,010,505

OPTICAL CROSS BAR ARITHMETIC/LOGIC UNIT

R. A. Falk, Renton; C. D. Capps, and T. L. Houk, both of Seattle, all of Wash., assignors to The Boeing Company, Seattle, Wash.

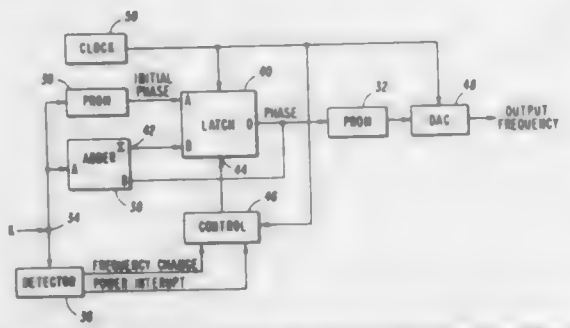
Filed Feb. 27, 1987, Ser. No. 19,761
Int. Cl.[5] G06E *1/04*
U.S. Cl. 364—713 26 Claims



3. Apparatus for performing arithmetic operations in residue arithmetic comprising:

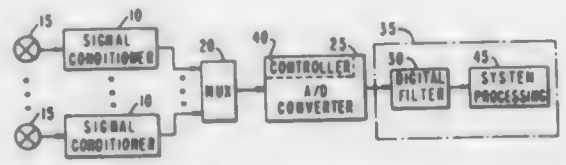
(a) a first plurality of light sources corresponding in number to N wherein N is a given modulus;
(b) a second plurality of light sources corresponding in number to N;
(c) means for energizing a first one of said first plurality of light sources corresponding to the residue of a first number modulo said given modulus;
(d) means for energizing a second one of said second plurality of light sources corresponding to the residue of a second number modulo said given modulus;
(e) means for directing light from said first and second energized ones of said light sources to intersect each other in an intersecting region;
(f) means for detecting light intensity at said intersecting region; and
(g) means for discriminating at said intersecting region between:
(1) a first state, wherein a first level of light intensity is detected resulting from light transmitted to the detecting means from only one or none of said first and second energized ones of said light sources, and
(2) a second state, wherein a second level of light intensity is detected resulting from light transmitted to the detecting means from both of said first and second energized ones of said light sources, wherein said first and second states indicate an output state of the arithmetic operation.

5,010,506
SPURIOUS LEVEL REDUCTION AND CONTROL METHOD FOR DIRECT DIGITAL SYNTHESIZERS
Dennis J. Hracirik, Hiawatha, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Jan. 19, 1989, Ser. No. 369,414
Int. Cl.[5] G06F 15/31
U.S. Cl. 364—721 12 Claims



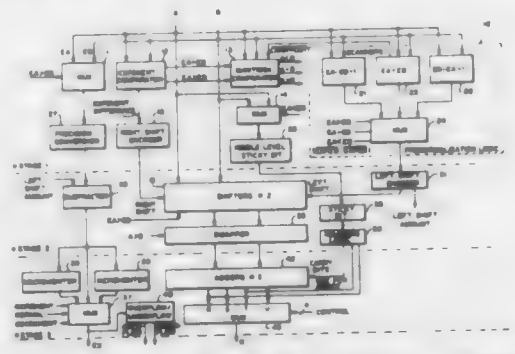
1. A direct digital synthesizer that outputs at least a predetermined output frequency related signal from a received digital signal, K, comprising:
means for permanently storing for continuing reference an initial phase value of the digital signal, K, said means for storing providing said initial phase value on an output thereof;
means for adding having a first input for receiving said digital signal, K, having a second input, and having an output which provides a summation of signals received on said first and second inputs;
means for latching having a first input connected to said output of said means for storing said initial phase value, having a second input connected to said output of said means for adding and having an output connected to said second input of said means for adding, said means for latching also having a third input for receiving a select signal for selecting between receiving on said first and second inputs of said means for latching;
means for detecting changes in predetermined parameters related to spurious signal levels in the output of said direct digital synthesizer and generating a spurious level detect signal;
means for providing said select signal in response to said spurious level detect signal indicative of changes in said predetermined parameters; and
said output frequency related signal being provided on said output of said means for latching.

5,010,507
SAMPLED DIGITAL FILTER SYSTEM
Thomas J. Kenny, Plum Borough, Pa., assignor to Westinghouse Electrical Corp., Pittsburgh, Pa.
Filed Jan. 25, 1989, Ser. No. 301,406
Int. Cl.[5] G06F 15/31
U.S. Cl. 364—724.01 6 Claims



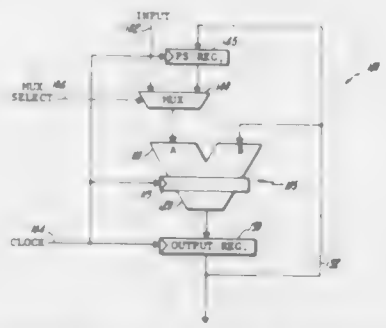
1. A sampled digital filter system for processing an input signal including an unwanted signal component, said system comprising:
sampling means having first and second sampling intervals, for receiving the input signal, for sampling the input signal with said second sampling interval for a limited time within said first sampling interval and for providing samples of the input signal as input samples; and
digital filter means for digital filtering the input samples so as to provide a filtered output corresponding to the input signal with the unwanted signal component filtered out.

5,010,508
PRENORMALIZATION FOR A FLOATING-POINT ADDER
Hon P. Sit, Fremont; David Galbi, Mountain View, and Alfred K. Chan, San Jose, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.
Filed Feb. 14, 1989, Ser. No. 311,294
Int. Cl.[5] G06F 5/01, 7/50
U.S. Cl. 364—748 16 Claims



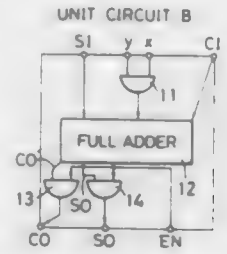
1. In a floating-point adder for performing a subtraction operation by subtracting a first operand from a second operand to obtain a difference, a prenormalization circuit for prenormalizing mantissas of said operands prior to performing said subtraction operation, comprising:
a first logic circuit coupled to receive mantissas of said operands for logically operating on said mantissas to predict a number of leading 0s in a resultant mantissa of said difference if said exponent value of said first operand is greater in magnitude than said exponent value of said second operand by a value of one;
a second logic circuit coupled to receive mantissas of said operands for logically operating on said mantissas to predict a number of leading 0s in said resultant mantissa if said exponent value of said second operand is greater in magnitude than said exponent value of said first operand by a value of one;
a third logic circuit coupled to receive mantissas of said operands for logically operating on said mantissas to predict a number of leading 0s in said resultant mantissa if said exponent values of said operands are equal;
shifter means coupled to receive said mantissas of said operands and outputs from said first, second and third logic circuits for shifting said operands to prevent leading 0s from occurring in said resultant mantissa;
wherein said exponent value of said first operand is greater in magnitude than said exponent value of said second operand by a value of one, said shifter means causes each of said operands to be shifted by a number determined by said output of said first logic circuit;
if said exponent value of said second operand is greater in magnitude than said exponent value of said first operand by a value of one, said shifter means causes each of said operands to be shifted by a number determined by said output of said second logic circuit; and
if said exponent value of said operands are equal, said shifter means causes each of said operands to be shifted by a number determined by said output of said third logic circuit;
said shifted operands provide said resultant mantissa which does not require post-normalization.

5,010,509
ACCUMULATOR FOR COMPLEX NUMBERS
Roger G. Cox; Mark A. Reber, and Michael W. Yeager, all of Colorado Springs, Colo., assignors to United Technologies Corporation, Hartford, Conn.
Filed Oct. 5, 1988, Ser. No. 253,817
Int. Cl.[5] G06F 7/38, 7/50
U.S. Cl. 364—748 3 Claims



1. An integrated circuit accumulator comprising an adder having first and second input ports, combinational logic means having a set of adder modules for adding first and second input numbers presented to said input ports to form a sum, and an output register means for transferring said sum to said second input port for further addition, said combination logic means being connected between said first and second ports and said output register means characterized in that:
said combinational logic means includes therein first and second portions of combinational logic means and an intermediate storage means connected therebetween, intermediate storage means for storing intermediate data comprising an intermediate form of a partially completed addition operation and having a sum portion containing at least one sum register for storing at least one low order sum bit representing a sum of corresponding low order bits of said first and second numbers, a carry portion for storing a carry bit from the highest one of said at least one sum register and further having a data portion containing at least one pair of data registers for storing high order pairs of bits of said first and second numbers, whereby said adder is divided into said first portion before said intermediate register and said second portion after said register; and
means for loading a third input number into said first input port and means for transferring a fourth input number from said output register means into said second input port when said intermediate data is in said intermediate storage means, whereby said second portion of said adder performs steps in the addition of said first and second numbers and said first portion of said after performs steps in the addition of said third and fourth numbers simultaneously.

5,010,510
MULTIPLYING UNIT CIRCUIT
Eiichi Nishimura; Takao Nakamura, and Hisaki Ishida, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Japan
Division of Ser. No. 300,492, Jan. 20, 1989. This application Sep. 7, 1990, Ser. No. 579,343
Claims priority, application Japan, Jan. 25, 1988, 63-14184
Int. Cl.[5] G06F 7/52
U.S. Cl. 364—758 4 Claims

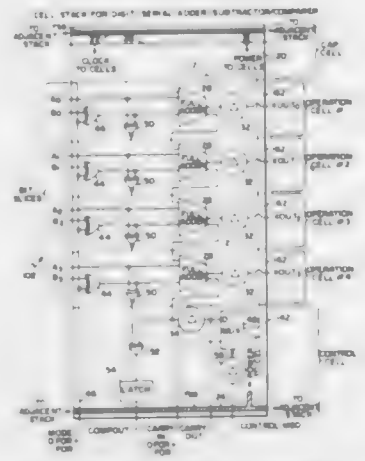


1. A multiplying unit circuit for performing a multiplication operation on a multiplicand input and a multiplier input, comprising:
a one-bit multiplicand input terminal for receiving a one-bit multiplicand input;
a one-bit multiplicand input terminal for receiving a one-bit multiplier input;
a bit multiplication circuit performing bit multiplication on said multiplicand input and said multiplier input to generate a bit product;
a one-bit sum input terminal for receiving a one-bit sum input;
a one-bit carry input terminal for receiving a one-bit carry input;
a full adder for receiving said bit product, said sum input, and said carry input, and performing bit addition thereon to generate a one-bit sum output and a one-bit carry output;
said sum output and said carry output assuming a first state and a second state to represent a binary bit, power consumption being lower in said first state than in said second state;
an enable signal input terminal for receiving enable signals having active state and inactive state; and
a keeping means for keeping said sum output and said carry output in said first state while said enable signal input is in the inactive state.

5,010,511
DIGIT-SERIAL LINEAR COMBINING APPARATUS USEFUL IN DIVIDERS

Richard I. Hartley, Schenectady, N.Y., and Peter F. Corbett, Princeton, N.J., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 182,602, Apr. 18, 1988, Pat. No. 4,951,221. This application Oct. 31, 1988, Ser. No. 265,210
Int. Cl.[5] **G06F** *7/50, 7/52*
U.S. Cl. 364—786 **58 Claims**



1. Linear combining apparatus for digit-serial first and second operands each having words of W bits simultaneously supplied during respective clock intervals as successive W/n digits of n bits apiece in an efficient arithmetic, n being a plural integer and W being a multiple at least two of n, the less significant digits of each word preceding the more significant digits, the sign bit if any of each word included in its most significant digit, the bits of each digit being respectively identified by consecutive ordinal numbers first through n^{th} in order of their increasing significance, said linear combining apparatus comprising:

a plurality n in number of full adders respectively identified by consecutive ordinal numbers first through n^{th}, each full adder having a respective augend input port for receiving the bits of said first operand digits identified by the same ordinal number as that full adder, each full adder having a respective addend input port for receiving the bits of said second operand digits identified by the same ordinal number as that full adder, each full adder having a carry input port and a sum output port and a carry output port, the carry output port of each of said plurality of full adders except the nth being connected to the carry input port of the one of said plurality of full adders that is identified by the next higher ordinal number;

means for supplying a digit-serial output signal responsive to the bits supplied at the sum output ports of said first through n^{th} full adders;

selection apparatus for selecting a forced carry bit to the carry input port of said first full adder during the first digits of words of said first and second operands and for otherwise selecting the bit supplied at the carry output port of said n^{th} full adder as delayed by one clock interval to the carry input port of said first full adder;

a (n+1)th unit-clock-delay element included in said selection apparatus, having an input port to which the carry output port of said n^{th} full adder connects, and having an output port; and

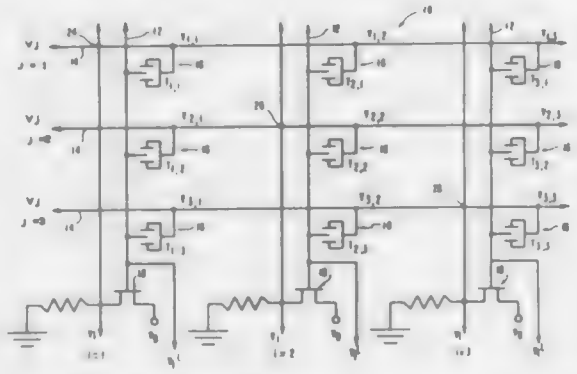
a multiplexer included in said selection apparatus, having a first input port connected to the output port of said first unit-clock-delay element, having a second input port connected for receiving said forced carry bit, having an output port connected to the carry input port of said first full adder, responding to a control signal being in a first state thereof during all digits of said digit-serial operands except the first digits to select the bit supplied to its first input port to its output port, and responding to said control signal being in a second state thereof during only the first digits of said digit-serial operands to select the forced carry bit supplied to its second input port to its output port; and

selective complementing apparatus for generating said second operands as the equals of or as the one's complements of third digit-serial operands, depending on whether a mode signal is a ZERO or is a ONE, in which said linear combining apparatus said mode signal is applied to the second input port of said multiplexer to cause said linear combining apparatus to be operative as an adder when said mode signal is a ZERO and to be operative as a subtractor when said mode signal is a ONE.

5,010,512
NEURAL NETWORK HAVING AN ASSOCIATIVE MEMORY THAT LEARNS BY EXAMPLE

Allan M. Hartstein, Chappaqua, and Roger H. Koch, Amawalk, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jan. 12, 1989, Ser. No. 296,111
Int. Cl.[5] **G06G** *7/00;* **H03K** *19/08*
U.S. Cl. 364—807 **28 Claims**



1. A neural network comprising;

a matrix of a plurality of output electrodes intersecting with a plurality of input electrodes at intersecting regions, and a plurality of electronic elements coupling said output electrodes to said input electrodes at said intersecting regions;

means interconnecting said electronic elements such that input signals are continuously processed by said electronic elements;

each of said electronic elements comprising an analog threshold device in which its output voltage increases substantially symmetrically in both the positive and negative directions from a threshold voltage as a function of its input voltage.

5,010,513
DATA PROCESSING APPARATUS

Shigeru Ueda, Kamifukuoka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

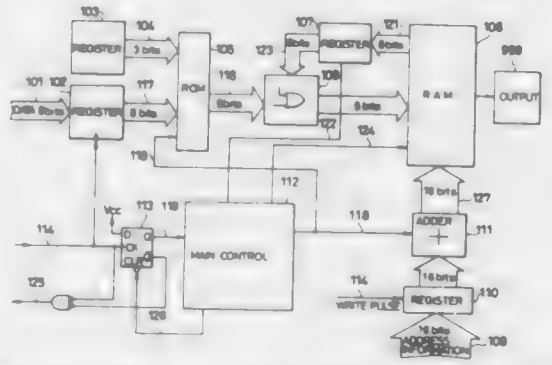
Continuation of Ser. No. 704,081, Feb. 21, 1985, abandoned. This application Jul. 6, 1988, Ser. No. 218,485
Claims priority, application Japan, Feb. 24, 1984, 59-33612; Feb. 24, 1984, 59-33613; Feb. 24, 1984, 59-33614; Feb. 24, 1984, 59-33615; Feb. 24, 1984, 59-33618
Int. Cl.[5] **G06F** *13/00*
U.S. Cl. 364—900 **7 Claims**

1. A recording apparatus for recording an image transmitted from a host in the form of code data and control data, comprising:

conversion means for converting the code data transmitted from the host into image data;

a first random access memory capable of storing therein the image data converted by said conversion means and the control data, the image data and the control data being stored in accordance with address data transmitted from the host, the address data representing which area of said first random access memory stores the image data and which area stores the control data;

data processing means for conducting write-processing in an overlapping manner on image data previously stored in said first random access memory and on image data newly entered into said apparatus, and for storing the processed data in said first random access memory;



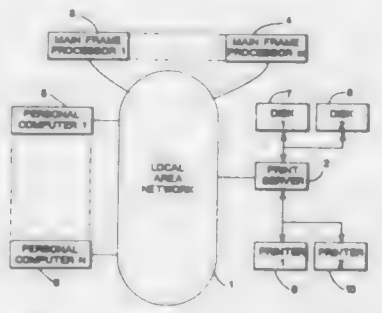
recording means for recording the image data which has been write-processed in the overlapping manner by said data processing means and stored in said first random access memory; and

control means for controlling said data processing means such that said data processing means can conduct the write-processing in the overlapping manner in response to address data transmitted from the host that represents the area of said first random access memory which stores image data and said data processing means cannot conduct write-processing in the overlapping manner in response to address data transmitted from the host that represents the area of said first random access memory which stores control data.

5,010,514
STRUCTURED FIELDS AT A DATA STREAM BOUNDARY FOR DELIMITING FILES

B. William Kippenhan, and Andrew W. Maholick, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 26, 1989, Ser. No. 344,178
Int. Cl.[5] **G06F** *3/12*
U.S. Cl. 364—900 **10 Claims**



1 In a computer network having a plurality of host processors and microprocessors collectively referred to as sender devices, a plurality of printer devices, and at least one print server referred to as a receiver device, a method for delineating the beginning and the end of a data file sent to a print server for spooling to a target printer device, said method comprising:

sending an inquiry from the sender device to the print server to determine the functional capabilities of the target printer device;

returning a response from said print server to the sender device indicating the functions supported by the target printer device;

appending a beginning of file structured data field to the beginning of the data stream to form a modified data stream to be sent to the print server;

transmitting said modified data stream to said print server;

appending an end of file structured data field to the end of the modified data stream and transmitting said structured field to said print server;

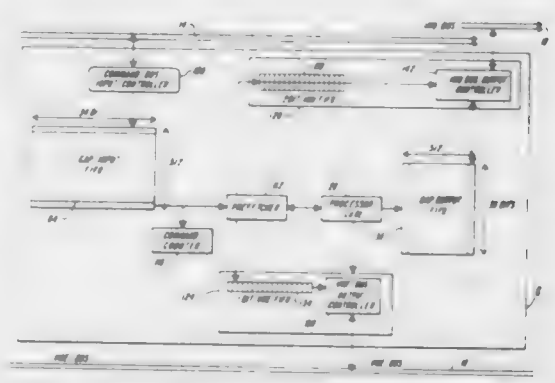
examining and processing said modified data stream to extract the beginning of file and end of file structured data fields; and

sending the file contained in the data stream to the target printer device for printing.

5,010,515
PARALLEL GRAPHICS PROCESSOR WITH WORKLOAD DISTRIBUTING AND DEPENDENCY MECHANISMS AND METHOD FOR DISTRIBUTING WORKLOAD

John G. Torborg, Jr., Carlisle, Mass., assignor to Raster Technologies, Inc., Westford, Mass.

Continuation of Ser. No. 78,874, Jul. 28, 1987, abandoned. This application Sep. 11, 1990, Ser. No. 581,401
Int. Cl.[5] **G06F** *15/16*
U.S. Cl. 364—900 **31 Claims**



1. An apparatus for generating and manipulating graphic images in accordance with instructions from an operator, transmitted through an input device to a first processor which generates a first, ordered sequence of commands, and sends each command of the first sequence over a command bus to a plurality of graphic arithmetic processors, designated as GAPs, which each has a GAP first in first out (designated as "FIFO") input memory and which GAPs generate together a second sequence of commands that are transmitted over an image memory unit bus (designated as "IMU Bus") to an image memory unit, comprising:

a. for each GAP a command bus input controller for establishing a plurality of GAP arbitration priority levels corresponding to a plurality of degrees of GAP input FIFO emptiness and for arbitrating among the GAPs so that one GAP which has a GAP input FIFO, as compared to which no other GAP's input FIFO is more empty, receives a command of the first sequence;

b. for each GAP, means for the command bus input controller to communicate FIFO emptiness signals with the command bus input controller of each other GAP over the command bus; and

c. means for storing order information for all commands of the first sequence which have not yet been executed; and

d. for each GAP, means for transmitting commands of the

second sequence from said GAP to the image memory unit according to an order based upon the stored order information and substance of the first sequence of commands.

5,010,516

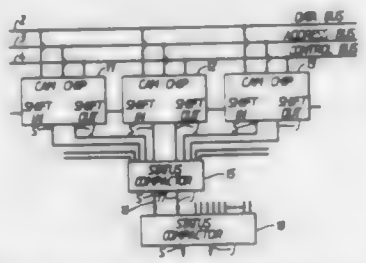
CONTENT ADDRESSABLE MEMORY

Martin Oates, Bedford, England, assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 344,171, Apr. 27, 1989, abandoned, which is a continuation of Ser. No. 142,758, Jan. 11, 1988, Pat. No. 4,852,059. This application Apr. 30, 1990, Ser. No. 517,975

Int. Cl.[5] G11C *15/00*

U.S. Cl. 365—49 3 Claims



1. A content addressable memory comprising:
A. A memory array adapted to contain plural digits;
B. an input adapted to receive an input key code consistng of plural digits;
C. comparator circuits comparing the plural digits of said key code with the plural digits of said memory array;
D. a first output carrying a first signal indicating the presence in the memory of matches to the key code; and
E. a second output carrying a second signal indicating only one match to the input key code in the whole or a determined part of the memory.

5,010,517

SEMICONDUCTOR OPTICAL APPARATUS

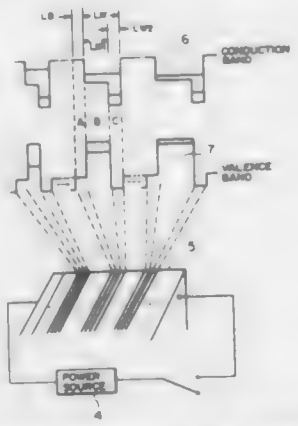
Masahito Migita, Hachioji; Tsuyoshi Uda; Osam Kanehisa, both of Kodaira, and Masatoshi Shiiki, Musashimurayo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 16, 1988, Ser. No. 271,681

Claims priority, application Japan, Nov. 18, 1987, 62-289322

Int. Cl.[5] G11C *11/42*

U.S. Cl. 365—114 33 Claims



1. A semiconductor optical device comprising a quantum well super-lattice structure for recording information by receiving light, said structure including a direct transition semiconductor as a component thereof, wherein energy of the light is received in an exciton absorption state of the direct transition semiconductor, and wherein said quantum well super-lattice structure includes a multi-quantum well super-lattice structure (MQW) in which a set of quantum well super-lattice structures are laminated.

5,010,518

SEMICONDUCTOR MEMORY DEVICE

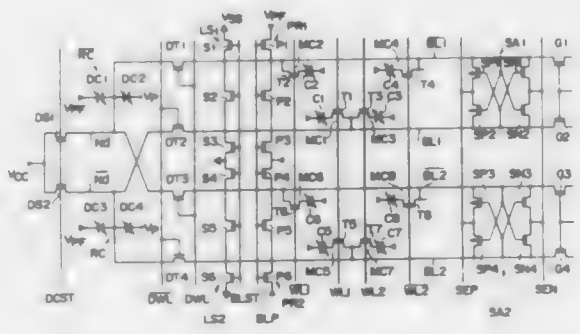
Haruki Toda, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 16, 1989, Ser. No. 422,051

Claims priority, application Japan, Oct. 19, 1988, 63-263153

Int. Cl.[5] G11C *11/34*

U.S. Cl. 365—145 17 Claims



1. A semiconductor memory device comprising:
a first bit line;
a second bit line, paired with the first bit line;
a third bit line connected to the first bit line;
a fourth bit line paired with the third bit line and connected to the second bit line;
a memory cell array, connected to the bit lines, and containing memory cells;
a first reference cell, connected to the first bit line and the third bit line, including a cell which is formed of substantially the same area, capacity and structure as the memory cells of the memory cell array, and providing a first reference potential at a time of reading out data from the memory cells in the memory cell array; and
a second reference cell, connected to the second bit line and the fourth bit line, including a cell which is formed of substantially the same area, capacity and structure as the memory cells of the memory cell array, and providing a second reference potential at a time of reading out data from the memory cells in the memory cell array.

5,010,519

DYNAMIC SEMICONDUCTOR MEMORY DEVICE FORMED BY 2-TRANSISTOR CELLS

Masahiko Yoshimoto, and Tetsuya Matsumura, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1988, Ser. No. 267,328

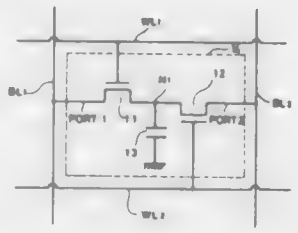
Claims priority, application Japan, Nov. 17, 1987, 62-291345; Dec. 14, 1987, 62-317807

Int. Cl.[5] G11C *11/40*

U.S. Cl. 365—149 25 Claims

7. A dynamic semiconductor memory device having a small occupied area, comprising:
a plurality of memory cells arranged in at least one column for storing information,
at least one write bit line provided corresponding to each column of said plurality of memory cells,
at least one read bit line provided corresponding to each column of said plurality of memory cells,
a plurality of first selecting lines each provided corresponding to each of said memory cells in said each column,
a plurality of second selecting lines each provided corresponding to each of said memory cells in said each column,

first selecting means for applying a write selecting signal to any of said plurality of first selecting lines, and
second selecting means for applying a read selecting signal to any of said plurality of second selecting lines,
each of said memory cells comprising
capacitance means for storing information,
a first transistor connected between said write bit line and said capacitance means and responsive to said write selecting signal applied to corresponding one of said first selecting lines for transferring information applied through said write bit line to said capacitance means, and
a second transistor connected between said read bit line and said capacitance means and responsive to said read selecting signal applied to corresponding one of said second selecting lines for transferring information stored in said capacitance means to said read bit line.



5,010,520

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE WITH STABILIZED DATA WRITE CHARACTERISTIC

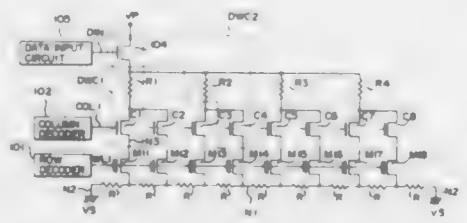
Hidenobu Minagawa, Kawasaki; Yuuichi Tatsumi, Tokyo; Hiroshi Iwahashi, Yokohama; Masamichi Asano, Tokyo; Hiroto Nakai, Kawasaki, and Mizuho Imai, Annaka, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 27, 1988, Ser. No. 224,953

Claims priority, application Japan, Jul. 29, 1987, 62-189433; Nov. 12, 1987, 62-285748

Int. Cl.[5] G11C *11/34, 11/40, 11/412, 17/12*

U.S. Cl. 365—174 21 Claims



1. A nonvolatile semiconductor memory device comprising:
a power source;
a nonvolatile memory cell transistor having a drain and a source;
a load transistor having a drain, a source, and a gate, said source of said load transistor being coupled to said drain of said memory cell transistor, said drain of said load transistor being connected to said power source, and said gate of said load transistor being coupled for reception of an input data signal; and
a wiring layer connected in series to a path of said drain and said source of said load transistor and between said power source and said drain of said memory cell transistor, resistance of said wiring layer being larger than a resistance of said load transistor when said load transistor is turned on.

5,010,521

CMOS STATIC MEMORY

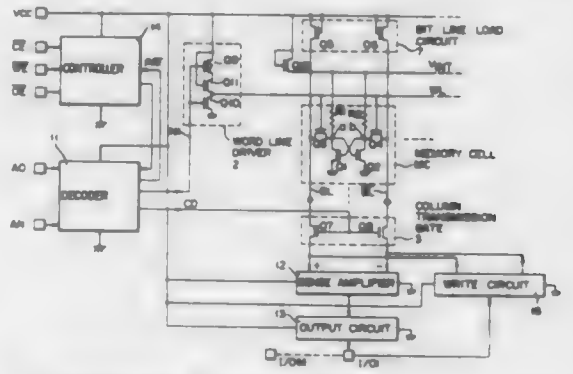
Masataka Matsui, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 1, 1989, Ser. No. 401,811

Claims priority, application Japan, Sep. 6, 1988, 63-223001

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—189.01 2 Claims



1. A CMOS static memory comprising:
a memory cell array constituted by a plurality of memory cells two-dimensionally arranged in word and bit line directions, each of the memory cells being provided with a flip-flop circuit constituted by a pair of pull-down n-type MOSFETs and a pair of pull-up resistor elements, and a pair of transmission gate n-type MOSFETs, a source of each of which is connected to a corresponding one of a pair of output terminals of said flip-flop circuit, a gate of each of which is connected to a word line, and a drain of each of which is connected to a corresponding one of a pair of bit lines; and
peripheral circuits including n-type MOSFETs for performing a write/read operation for each of said memory cells, wherein said pair of pull-down n-type MOSFETs and said pair of transmission gate n-type MOSFETs each have a gate oxide film whose thickness and gate length are less than those of the gate oxide films of said n-type MOSFETs of said peripheral circuits.

5,010,522

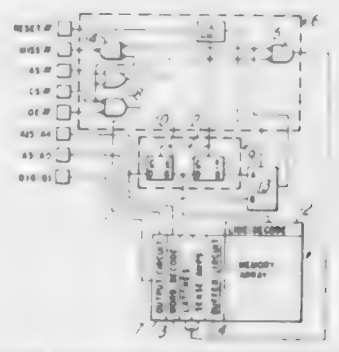
INTEGRATED-CIRCUIT CONFIGURATION HAVING FAST LOCAL ACCESS TIME

Benjamin H. Ashmore, Jr., Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 279,758, Dec. 5, 1988, abandoned. This application Nov. 29, 1989, Ser. No. 443,293

Int. Cl.[5] G11C *11/40*

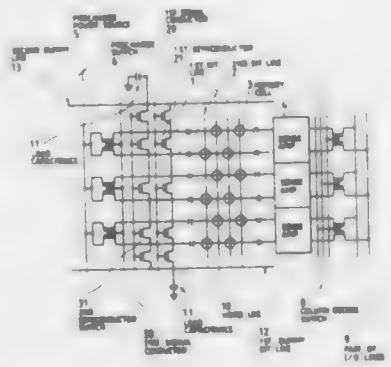
U.S. Cl. 365—189.07 37 Claims



1. An integrated circuit with memory array including:
a pipeline circuit connected to a microprocessor for storing data address information received from a microprocessor upon receipt of a first signal from a microprocessor;

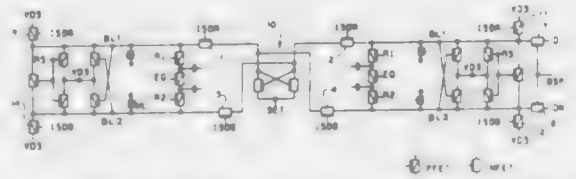
a comparison circuit connected to the input of said pipeline circuit and to the output of said pipeline circuit for generating a second signal if the data address information received from said microprocessor is the same as the data address information stored in said pipeline circuit and for generating a third signal if the data address information received from said microprocessor is different from the data address information stored in said pipeline circuit;
a line buffer circuit for selectively storing data corresponding to said data address information stored in said pipeline circuit;
a logic circuit connected to said comparison circuit, to said line buffer circuit and to said microprocessor for transmitting said third signal to said microprocessor and to said line buffer circuit, but not transmitting said second signal; and
an output circuit connected to said line buffer circuit and to said microprocessor for transmitting said data to said microprocessor upon receiving a fourth signal from said microprocessor;
wherein said third signal causes said microprocessor to delay transmission of said fourth signal until after said data address information received from said microprocessor has been stored in said pipeline circuit and after data corresponding to said received data address information has been stored in said pipeline circuit.

5,010,523
SENSING CIRCUIT FOR A DYNAMIC RANDOM ACCESS MEMORY
Hiroyuki Yamauchi, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan
Filed Mar. 6, 1990, Ser. No. 488,927
Claims priority, application Japan, Mar. 6, 1989, 1-53099
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—205 **10 Claims**



6. A sensing circuit for a dynamic random access memory, comprising:
a plurality of pairs of first bit lines capable of being connected to a memory cell and second bit lines complemented with respect to the first bit lines;
a sense amplifying means for receiving and amplifying a signal;
a first signal conductor for sending a first control signal;
a second signal conductor for sending a second control signal;
a first semiconductor switch controlled by the first control signal from said first signal conductor and connected to a point between the first bit lines of said pairs and said sense amplifying means;
a second semiconductor switch controlled by the second control signal from said second signal conductor and connected to a point between the second bit lines of said pairs and said sense amplifying means;
a plurality of pair of third bit lines capable of being connected to a memory cell and fourth bit lines complemented with respect to the third bit lines, and pairs of the third and fourth bit lines being provided across said sense amplifying means from corresponding pairs of the first and second bit lines;
a third signal conductor for sending a third control signal;
a fourth signal conductor for sending a fourth control signal;
a third semiconductor switch controlled by the third control signal from said third signal conductor and connected to a point between the third bit lines of said pairs and said sense amplifying means; and
a fourth semiconductor switch controlled by the fourth control signal from said fourth signal conductor and connected to a point between the fourth bit lines of said pairs and said sense amplifying means.

5,010,524
CROSSTALK-SHIELDED-BIT-LINE DRAM
John A. Fifield, Underhill, and Howard L. Kalter, Colchester, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 20, 1989, Ser. No. 340,962
Int. Cl.[5] G11C *11/40*
U.S. Cl. 365—205 **11 Claims**

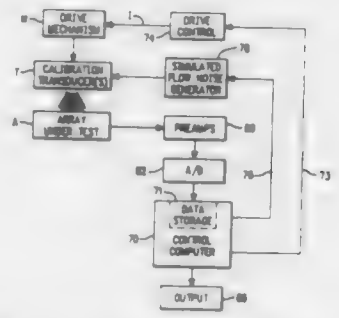


1. A charge storage memory system having a plurality of memory cells arranged in columns and rows, each cell capable of being coupled to a respective one of a plurality of column lines, row select means for accessing memory cells, a plurality of sense amplifiers for sensing stored information associated with memory cells in predetermined columns,
a first plurality of interdigitated column lines associated with a plurality of sense amplifiers,
a second plurality of interdigitated column lines each arranged so as to be physically adjacent to at least one of the first plurality of column lines,
means for sensing information on the first plurality of column lines, and
means for coupling the second plurality of interdigitated column lines to a common source of predetermined potential at least during the time information available on the first plurality of column lines is being sensed.

5,010,525
SONAR TEST SYSTEM AND METHOD
Dale D. Skinner, and John H. Thompson, both of Severna Park, Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jan. 2, 1990, Ser. No. 459,861
Int. Cl.[5] H04B *17/00*
U.S. Cl. 367—13 **9 Claims**

1. Apparatus for testing a transducer array, comprising:
(A) a test transducer;
(B) a drive mechanism for positioning said test transducer over said array;
(C) an acoustic coupling medium disposed between said test transducer and said array;
(D) signal generating means for providing said test transducer with a simulated flow noise signal;
(E) said test transducer being operable to transmit a corresponding acoustic signal across said medium toward said array;
(F) means for storing the resultant output signals of all of the transducers of said array in response to receipt of said acoustic signal;

(G) means for providing said drive mechanism with a drive signal to move said test transducer to different predetermined positions over said array for projection of said acoustic signal; and



(H) means for combining and processing all of said output signals of the transducers of said array, for all transmissions of said test transducer, to derive an array output response signal for analysis purposes.

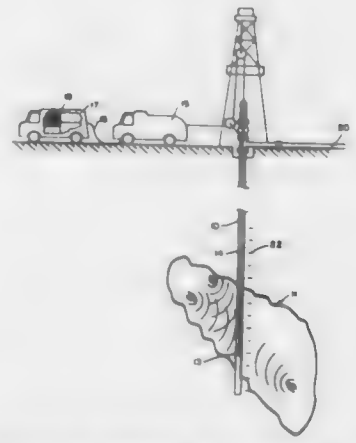
5,010,526
METHOD OF DIGITAL FILTERING
Andrew F. Linville, Jr., Dallas, and Thomas E. Shirley, Richardson, both of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.
Filed Jul. 30, 1990, Ser. No. 560,409
Int. Cl.[5] G01V *1/28, 1/36*
U.S. Cl. 367—46 **10 Claims**

6. A method of removing noise components from seismic data recorded in seismic exploration wherein seismic energy sources are activated at spaced locations along a line of exploration, and signals responsive to reflection of the seismic energy within the earth are recorded as a function of time at spaced locations along the line of exploration to produce a series of seismic traces, said seismic traces comprising seismic data components and noise components, said method comprising the steps of:
determining the frequency of energy to be filtered from the records;
choosing the bandwidth of the filter to be applied;
selecting a filter order n;
computing the exact autocorrelation function for one or more bands of energy to be filtered according to the following equation:

$$R_x(\tau) = B\left[\frac{\sin \pi B\tau}{\pi B\tau}\right]\cos(2\pi f_0\tau)$$

wherein:
$R_x(\tau)$ is the exact autocorrelation function of the noise;
B is the bandwidth of the noise to be removed;
f_0 is the center frequency of the band of noise to be removed; and
τ is 0, 1, . . . n−1;
using the autocorrelation function $R_x(\tau)$ thus determined to generate a series of filter coefficients $h_0, h_1, \ldots h_{n-1}$; and
applying said filter coefficients $h_0, h_1, \ldots h_{n-1}$ to the data to filter out the undesired frequency components.

5,010,527
METHOD FOR DETERMINING THE DEPTH OF A HYDRAULIC FRACTURE ZONE IN THE EARTH
Kenneth D. Mahrer, Dallas, Tex., assignor to Gas Research Institute, Chicago, Ill.
Filed Nov. 29, 1988, Ser. No. 277,559
Int. Cl.[5] G01V *1/40*
U.S. Cl. 367—86 **40 Claims**



27. The method of determining the depth of a zone of hydraulic fracture proximate to a wellbore following the application of hydraulic pressure within the bore of a well to cause fracturing in the geological environment around the bore, comprising:
a. while the wellbore is still pressurized, positioning a motion detector at spaced depths within the bore during a time following the cessation of the application of hydraulic pressure, such depths extending vertically beyond at least one vertical limit of the zone of the anticipated vertical extent of the fracture,
b. sensing and recording seismic wave motion for a period of time at each depth, such wave motion having a combined pre-pressurization plus pressure-induced background level with two horizontal components and a vertical component and having motion components from sources not attributable to the fracturing, and having discrete signal components from sources attributable to the fracturing,
c. analyzing such motion recordings at each depth, including
(1) eliminating motion components not attributable to the fracturing,
(2) eliminating discrete signal components from sources attributable to the fracturing,
(3) determining the average background level of the two combined horizontal components and of the vertical component of motion as measured by the motion detector,
(4) and comparing the average background level of motion for the combined horizontal components of motion

to the vertical component of motion, whereby the ratio of the horizontal to the vertical components provides an indication of the presence or absence of fracturing at such depth.

5,010,528

DOPPLER FLOW VELOCITY DISTRIBUTION MEASURING APPARATUS

Shigeo Ohtsuki, 11-7 Chiyoda 4-chome, Sagamihara-shi, Kanagawa 229, and Motonao Tanaka, 4-16 Kunimi 4-chome, Sendai-shi, Miyagi 981, both of Japan

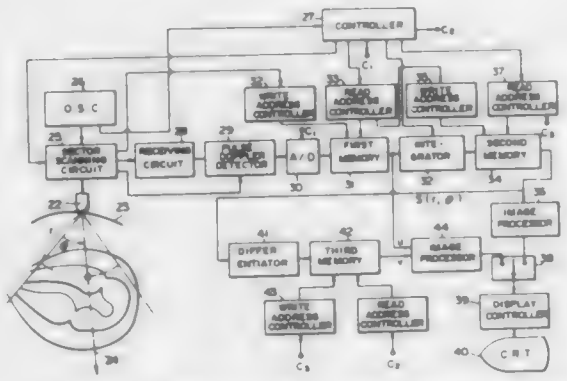
PCT No. PCT/JP89/00659, § 371 Date Feb. 28, 1990, § 102(e) Date Feb. 28, 1990, PCT Pub. No. WO90/00033, PCT Pub. Date Jan. 11, 1990

PCT Filed Jun. 30, 1989, Ser. No. 465,183

Claims priority, application Japan, Jun. 30, 1988, 63-164573

Int. Cl.[5] G01S *15/00*; G01F *1/66*; A61B *8/06*

U.S. Cl. 367—90 **4 Claims**



1. A Doppler flow velocity measuring apparatus, comprising:

a means for obtaining a Doppler velocity distribution in the direction of a beam by utilizing a Doppler effect obtained from the echo reflected from a fluid when an ultrasonic wave or an electromagnetic wave is transmitted to and received from said fluid and scanning a desired transverse section with reflected echo;

a first memory means for storing the Doppler velocity distribution;

a means for obtaining a stream function by reading out the stored Doppler velocity in a direction orthogonal to the direction of said beam and cumulatively integrating said Doppler velocity at each point;

a second memory means for two-dimensionally storing said stream function obtained; and

a means for obtaining the velocity component in the scanning plane which is orthogonal to the direction of said beam by reading out the stream function distribution in the direction of said beam and differentiating said stream function distribution in the direction of said beam.

5,010,529

UNDERWATER TRANSMITTER APPARATUS

Kenneth A. Mayuss, 1920 E. Almeria, Phoenix, Ariz. 85006

Filed Apr. 13, 1990, Ser. No. 508,655

Int. Cl.[5] H04B *1/02*

U.S. Cl. 367—137 **15 Claims**

1. Underwater signalling apparatus, comprising, in combination:

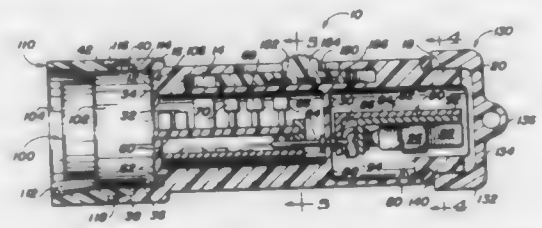
housing means, including a first chamber and a second chamber;

transducer means for providing an audible output at least partially disposed in the first chamber;

circuitry means disposed in the first chamber and connected to the transducer means for providing an output for the transducer means;

first switch means in the first chamber connected to the circuitry means for activating the circuitry means to provide the output for the transducer means;

second switch means on the housing means and movable to actuate the first switch means; and



battery means in the second chamber for providing electrical power for the circuitry means and the transducer means.

5,010,530

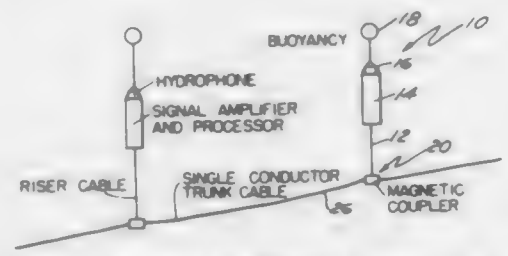
MAGNETIC COUPLER FOR ELECTROACOUSTIC HYDROPHONES

Thomas P. Riley, Westport, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 26, 1990, Ser. No. 544,574

Int. Cl.[5] G01V *1/38*

U.S. Cl. 367—154 **7 Claims**



1. A magnetic coupler for coupling a plurality of electroacoustic transducers to a trunk cable which comprises:

a split magnetic core including at least two sections, a first section and a second section;

a pair of encapsulants, first encapsulant for said first section of said split magnetic core and a second encapsulant for said second section of said split magnetic core, forming encapsulated first and second sections of said split magnetic core;

fastener means for mounting said first and second encapsulated sections of said split magnetic core around said trunk cable at any preselected points thereof, thus coupling said encapsulated second section of said split magnetic core thereto;

a plurality of electronic processors including power source for supplying power to each of said plurality of electroacoustic transducers;

means for connecting an output of a member of said plurality of transducers to a corresponding member of said plurality of electronic processors; and

means for coupling an output of a member of said plurality of electronic processors to said encapsulated first section of said split magnetic core.

5,010,531

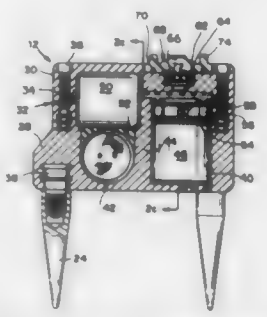
THREE-DIMENSIONAL GEOPHONE

William O. McNeel, Houston, Tex., assignor to Western Atlas International, Inc., Houston, Tex.

Filed Oct. 2, 1989, Ser. No. 415,559

Int. Cl.[5] H04R *1/02*

U.S. Cl. 367—188 **11 Claims**



1. An apparatus for detecting transient signals along orthogonal axes, comprising in combination:

(a) a housing;

(b) a plurality of sensors orthogonally disposed within said housing, at least one of the sensors being located above another of the sensors and separated therefrom by a compliant member;

(c) conductor means extending through said housing for interconnecting said sensors to a remote recording unit;

(d) means for substantially sealing said conductor means with said housing; and

(e) means disposed within the sealing means for anchoring the conductor means to the apparatus.

5,010,532

ELECTRONIC WATCH HAVING AN OPENING FOR RECEIVING A BATTERY AND A COVER CLOSING THIS OPENING, AND METHOD OF MASS-PRODUCING THIS WATCH

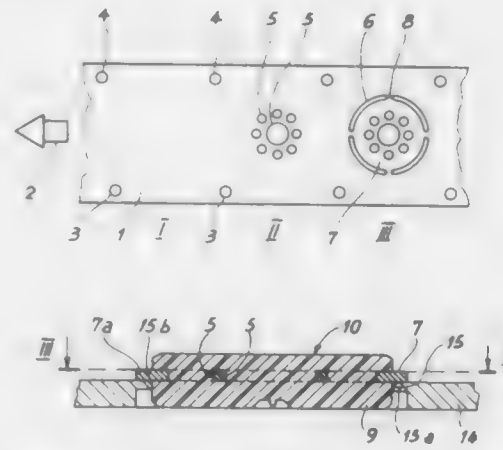
Friedrich Perrot, Lengnau, Switzerland, assignor to ETA SA Fabriques d'Ebauches, Grenchen, Switzerland

Filed Jun. 27, 1989, Ser. No. 371,942

Claims priority, application Switzerland, Jun. 30, 1988, 02494/88

Int. Cl.[4] G04B *37/00*

U.S. Cl. 368—88 **28 Claims**



1. An electronic watch comprising internal parts which define a battery housing, at least one external part having an opening for inserting a battery in said housing, and a removable cover having an inner potion engaged in said opening and an outer portion closing said opening, said cover comprising a rigid armature which is at least partially embedded in a packing member made of a flexible and elastic material; said packing member being molded around at least a portion of said armature so that respective parts of said packing member are on inner and outer sides of said armature and anchor said packing member to said armature; said armature being situated at least partly in said outer portion of the cover and bearing at least indirectly and locally against said external part of the watch around said opening; said external part of the watch and said packing member of the cover having respective annular surfaces in contact with one another; and said packing member of the cover being arranged so that its annular surface is pressed against that of said external part of the watch to provide fluid-tight closure of said opening.

5,010,533

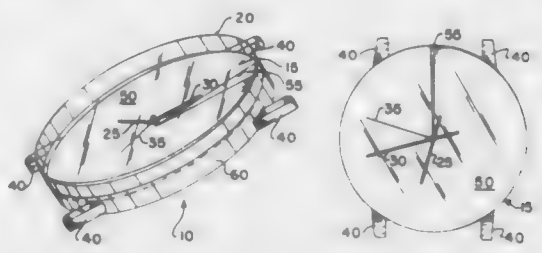
DIAL FACE FOR CLOCK OR WATCH

Bruce N. Blackburn, Pelham, N.Y., assignor to Bernard Weinstein, New York, N.Y.

Division of Ser. No. 441,747, Nov. 27, 1989, which is a continuation-in-part of Ser. No. 260,411, Oct. 20, 1988, Pat. No. 4,884,256. This application Mar. 2, 1990, Ser. No. 488,571

Int. Cl.[5] G04B *19/00*

U.S. Cl. 368—223 **28 Claims**



1. An apparatus for indicating time comprising:

(a) a face having a stationary helical member positioned about a central point wherein the distance between any point upon the helical member relative to a horizontal base plane increases along the circumference of said helical member, and a single step member connecting the ends of said helical member to form an indicia from which elapsed time is measured and a continuous surface about said central point; and

(b) means operatively associated with said step member for determining elapsed time;

(c) wherein said time determining means comprises a pair of hands which move relative to said continuous surface whereby the position of said hands relative to said radial edges indicates elapsed time.

5,010,534

OPTICAL INFORMATION RECORDING-REPRODUCING APPARATUS

Masahiko Enari, Yokohama; Satoshi Shikichi; Fumiaki Kawaguchi, both of Tokyo; Kenichi Suzuki; Masayuki Usui, both of Yokohama; Hiroshi Matsuoka, Kawasaki; Kazuhiko Matsuoka; Hideki Hosoya, both of Yokohama; Akio Aoki, Tokyo, and Kazuo Minoura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 166,802, Mar. 3, 1988, Pat. No. 4,912,697, which is a continuation of Ser. No. 812,995, Dec. 24, 1985, abandoned. This application Aug. 29, 1989, Ser. No. 399,719

Claims priority, application Japan, Dec. 29, 1984, 59-275172; Apr. 19, 1985, 60-84019; Apr. 19, 1985, 60-84111; Jun. 7, 1985, 60-124696

Int. Cl.[4] G11B *7/00*

U.S. Cl. 369—32 **7 Claims**

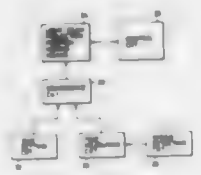
1. A method for intermittently recording and/or reproducing information on or from an optical recording medium hav-

ing a plurality of tracks, in accordance with control of a controller, the method comprising the steps of:

moving a light beam from a home position to a desired track on the recording medium;

effecting information recording or reproduction by scanning the desired track with the light beam;

placing and maintaining the light beam in a stand-by state in which the light beam is applied to the desired track without being returned to the home position, after the termination of the information recording or reproduction;



starting a next information recording or reproduction operation with the light beam being applied to the medium, when the controller commands the next information recording or reproduction operation before the lapse of a predetermined time in the stand-by state; and

terminating the application of the light beam to the recording medium, when the controller gives no command for commencing the next information recording or reproduction operation after the lapse of the predetermined time in the stand-by state.

5,010,535

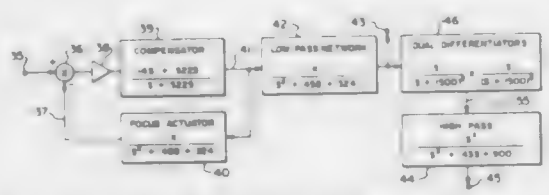
APPARATUS AND PROCESS FOR MEASURING DATA DISK RUNOUT AND ACCELERATION PARAMETERS

Mark L. Davis, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 19, 1989, Ser. No. 299,361

Int. Cl.[5] G11B *17/00, 21/10*

U.S. Cl. 369—32 **11 Claims**



11. In a disk drive for exchanging data with a media having circular data tracks through a transducer element which is positioned in proximity to the data tracks for interchanging data information therewith with the physical orientation of the transducer element controlled by a servo loop having a disk drive actuator responsive to an error signal produced by a comparator which compares a reference signal defining a selected transducer-to-track relationship with a signal reflecting an actual transducer position with respect to the track, apparatus for indicating the amount of offset of a selected track from ideal circularity comprising

a low pass filter network including an amplifier and a feedback circuit for simulating a transfer function of the disk drive actuator,

means coupling the error signal to an input of said low pass filter,

amplifying means for receiving an output signal of said low pass filter to amplify said output signal,

means for receiving an output of said amplifying means for indicating the runout of a track corresponding to the reference signal which established the error signal, and

means for adjusting the gain of said amplifying means for calibrating said output thereof.

5,010,536

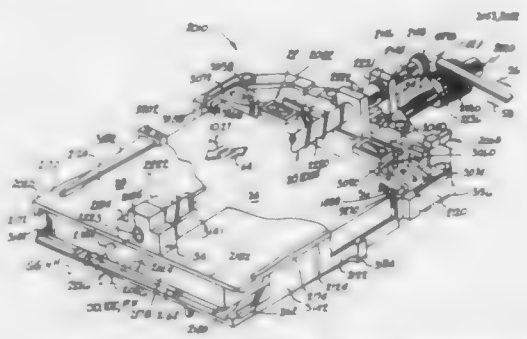
CARTRIDGE HANDLING SYSTEM

Mark E. Wanger; Jennifer L. Methlie, both of Fort Collins; Leslie G. Christie, Greeley; Daniel R. Danner, Fort Collins, all of Colo.; Douglas R. Domel, Carlsbad, Calif.; David P. Jones, Fort Collins, Colo.; Thomas C. Oliver, Fort Collins, Colo., and Donald J. Stavely, Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 22, 1989, Ser. No. 314,012

Int. Cl.[5] G11B *17/22*

U.S. Cl. 369—36 **21 Claims**



1. A cartridge handling system for use in association with a plurality of longitudinally extending rearwardly opening cartridge holding units arranged in a laterally and vertically extending array comprising:

(a) cartridge engaging means for engaging an exposed end portion of a cartridge positioned in an aligned holding unit;

(b) longitudinal displacement means operatively associated with said engaging means for longitudinally displacing a cartridge engaged by said engaging means;

(c) flipping means operatively associated with said engaging means for invertingly rotating a cartridge engaged by said engaging means about a longitudinally extending flip axis;

(d) lateral displacement means operatively associated with said engaging means for laterally displacing a cartridge engaged by said engaging means; and

(e) unitary, rotatable drive means having a drive shaft rotatable in a first direction and a second direction opposite said first direction clutchlessly drivingly linked to said longitudinal displacement means, said flipping means, and said lateral displacement means for providing driving force thereto.

5,010,537

OPTICAL DISC DEVICE WITH MULTI-HEAD SLIDER AND TRACKING CONTROL

Hiroya Ohkuma, Tokyo, and Satoru Sanada, Yokohama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Jul. 21, 1988, Ser. No. 222,036

Claims priority, application Japan, Jul. 27, 1987, 62-187236; Sep. 24, 1987, 62-239797

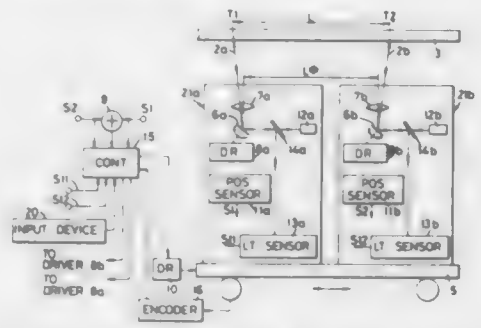
Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—44.32 **10 Claims**

1. In an apparatus for writing information to or reading information from a disc-like recording medium having a plurality of tracks formed thereon,

(a) slider means radially movable along said recording medium;

(b) a pair of head means on said slider means, each of said head means having an optical system for applying a light beam to said recording medium, said optical systems having respective optic axes that are substantially parallel to each other in a plane substantially radially of said recording medium, said optical systems having means for adjusting the inclination of the light beams in said plane relative to said optic axes, respectively; and



(c) control means for controlling the position of said slider means radially of said recording medium relative to a designated pair of said tracks and for controlling said inclination adjusting means so that said light beams are applied to the tracks of said pair of tracks, respectively, with substantially equal inclinations of said light beams.

5,010,538

FOCUS SERVO APPARATUS

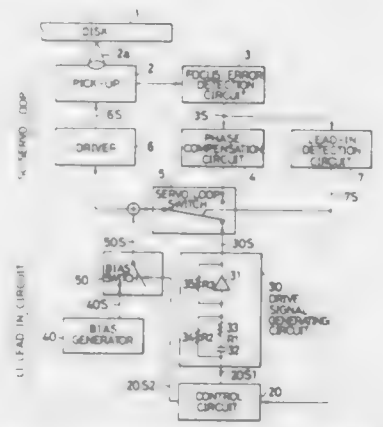
Takayuki Takeda, and Masayasu Satoh, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed May 23, 1988, Ser. No. 197,263

Claims priority, application Japan, May 25, 1987, 62-127624; May 25, 1987, 62-127625; May 25, 1987, 62-127626

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—44.36 **28 Claims**



1. A focus servo apparatus for moving an objective lens from a distant position toward the surface of a disk in an optical disk drive and maintaining the lens in the correct position to focus a beam of light onto the surface of the disk, comprising:

a servo loop for maintaining said objective lens at the position of correct focus, having a lead-in detection circuit for generating an acquisition signal when said objective lens has been moved into the range in which it can be controlled by the servo loop, and a servo loop switch for closing the servo loop in response to said acquistion signal; and

a lead-in circuit means connected to said servo loop, for generating a drive signal to move said objective lens into said range before said servo loop is closed, such that said drive signal abruptly rises from a first level to an initial peak at a second level, then falls to a third level that is between said first and second levels, said drive signal remaining substantially constant at said third level for a period of time greater than it took to change from said first level to said third level.

5,010,539

OPTICAL DISK DEVICE FOR STORING BOTH ANALOG AND DISCRETE DATA AND WHICH UTILIZES BOTH CLV AND CAV TECHNIQUES

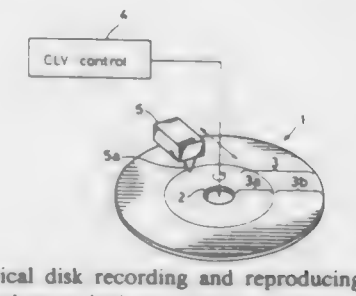
Shigeo Terashima, Tenri; Kentaro Tsuji, Fukuoka, and Hiroshi Fuji, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 26, 1989, Ser. No. 301,583

Claims priority, application Japan, Jan. 29, 1988, 63-20478

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—50 **8 Claims**



1. An optical disk recording and reproducing device for recording and reproducing continuous analog and discrete data information to or from an optical disk, wherein said optical disk recording/reproducing device comprises:

laser light means for producing an information bearing light beam representing said continuous analog and discrete data information;

analog data processing means for compressing and elongating said analog data information;

discrete data processing means for inserting error correction codes in said discrete data information;

means for recording and reproducing continuous signals received from said analog and discrete data processing means representing said analog and discrete data information separately in different recording regions on said optical disk using said laser light means, wherein said analog and discrete data information are recorded on said optical disk; and

disk rotation control means for controlling the rotation of said optical disk at a given linear speed and rotary angular speed for accessing said divided recording regions;

rotary drive means responsive to said rotation control means for rotating said disk at a predetermined constant linear velocity and constant angular velocity while reproducing and recording information from and to said disk.

5,010,540

APPARATUS FOR RECORDING AND REPRODUCING INFORMATION ON AND FROM AN OPTICAL DISK

Hiroshi Fuji; Tsuneo Fujiwara, both of Tenri; Takashi Iwaki, Nara; Tomiyuki Numata, Tenri; Kentaroh Tsuji, Nara; Shigemi Maeda, Yamatokoriyama; Takeshi Yamaguchi, Nara; Kunio Kojima, Nara; Toshihisa Deguchi, Nara, and Shigeo Terashima, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 29, 1988, Ser. No. 225,892

Claims priority, application Japan, Jul. 31, 1987, 62-193119; Jan. 22, 1988, 63-13194

Int. Cl.[5] G11B *15/52, 27/22*

U.S. Cl. 369—50 **5 Claims**

1. In an apparatus for recording and reproducing information on and from an optical disk, having an optical head wherein said optical disk is irradiated by a information bearing light beam, said apparatus comprising:

rotational driving means for rotating said optical disk;

reproduction means for reproducing information recorded on said optical disk to output reproduced signals;
position detection means for detecting the radial position of a region of said disk irradiated by said light beam;
first control means responsive to said position detection means for producing a first control signal and for controlling the rotational speed of said rotational driving means using said detected radial position;
judging means for judging whether or not said output reproduced signals are reproduced from a region of said optical disk where information has been already recorded;



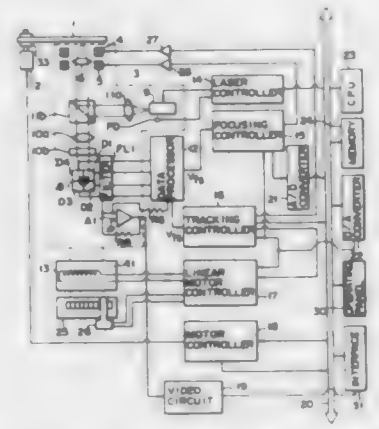
second control means for producing a second control signal and for controlling the rotational speed of said rotational driving means, on the basis of said reproduced signals; and
switch means responsive to said judging means for controlling said rotational driving means by said first control signal when said reproduced signals are not reproduced from a region where information has been already recorded, and controlled by said second control signal when said reproduced signals are reproduced from a region where information has been already recorded.

5,010,541

APPARATUS HAVING A MOVABLE PORTION AND A FIXED PORTION FOR REPRODUCING DATA FROM AN OPTICAL DISK BY A LIGHT BEAM

Ryoji Takeuchi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 23, 1988, Ser. No. 289,128
Claims priority, application Japan, Dec. 26, 1987, 62-330492
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—107 **13 Claims**



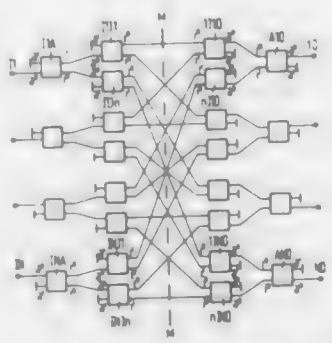
1. An apparatus for reproducing stored data from an optical disk by a light beam, the apparatus having a movable portion and a fixed portion, comprising:
a housing disposed on the movable portion of the apparatus and movable in a radial direction of the optical disk, said housing having
means for directing the light beam onto the optical disk such that at least a portion of the light beam is reflected from the optical disk,
means for detecting the light beam reflected from the optical disk and for generating an electrical signal corresponding to the detected light beam,
means for dividing the electrical signal generated by the detecting means into a low frequency component and a high frequency component representative of the stored data, and
means for amplifying the high frequency component;
means for moving the housing in the radial direction of the optical disk;
means, disposed on the fixed portion of the apparatus and responsive to the low frequency component, for adjusting a distance between the directing means and the optical disk; and
means, responsive to the amplifying means, for outputting the stored data from the optical disk.

5,010,542

MULTI-STAGE SWITCHING NETWORK FOR LIGHT WAVEGUIDES

Juergen Pfaff, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 15, 1988, Ser. No. 232,504
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1987, 3727827
Int. Cl.[5] H04J *14/00*
U.S. Cl. 370—1 **4 Claims**



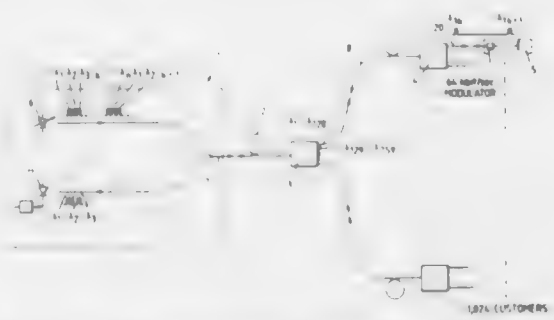
1. A multi-stage switching matrix network with a plurality of optical binary couplers which include a plurality of terminals and which can be switched to a direct path condition by switching signals and which will be in a crossed through connected condition when no switching signal is present, and which has terminals for the switching matrix network (I1,. . ., IN; 1O,. . ., NO) constitutes the tope of a pyramid of optical binary couplers (IA1,I1J1,I1Jn;. . .;nJNO, 1JNO,ANO) said pyramid being provided individually for each of said terminals of the switching matrix network and respectively ending before a cneterline (M—M) of the switching matrix network, in which each optical binary coupler (IA1, I1J1, I1Jn;. . .;nJNO, 1JNO,ANO) has a terminal which is unconnected in one of its two light conducting path (a') on the side not facing a centerline (M—M) of the switching matrix network and which is connected in a light conducting manner beyond the centerline (M—M) of the switching matrix network with every binary coupler pyramid (1J10,nJ10,A10;. . . 1JNO,nJNO,ANO;I1J1,I1A;. . .;INJ1, INJn, INA) located on the other side, characterized in that, the individual optical binary couplers are connected in a light conducting fashion with the respective binary coupler pyramid (1J10, nJ10, A10; . . .;1JNO, nJNO,ANO; I1J1, I1Jn, I1A;. . .;INJ1, INJn, INA) and beyond the centerline of the switching matrix network such that every switching path of the switching matrix network originating from a switching matrix network terminal (I1,. . .IN) or leading to a switching matrix network terminal (1O,. . .NO) contains a terminal which is unconnected (a') of an optical binary coupler so that if there are no switching signals present a connection will not exist between an input and an output of said switching matrix and the incoming signal is always switched to one of said unconnected terminals unless a switching signal is present.

5,010,543

OPTICAL MULTIPLEXING

Alan M. Hill, Stowmarket, England, assignor to British Telecommunications public limited company, London, England

PCT No. PCT/GB88/00460, § 371 Date Feb. 7, 1989, § 102(e) Date Feb. 7, 1989, PCT Pub. No. WO88/10037, PCT Pub. Date Dec. 15, 1988
PCT Filed Jun. 13, 1988, Ser. No. 312,706
Claims priority, application United Kingdom, Jun. 12, 1987, 8713794
Int. Cl.[5] H04J *14/00*
U.S. Cl. 370—3 **17 Claims**



4. An optical communications system having a control station, a first optical path connecting the control station to a node and secondary optical paths connecting the node to two or more receiving stations including:
an optical encoder for an optical communications system comprising an optical source for generating an optical signal corresponding to a time-domain multiplexed signal of two or more information channels having a tuning means arranged to vary the wavelength of the optical signal so that those portions of the optical signal corresponding to a respective distinct channel are generated at a distinct wavelength;
a first transmitting means for transmitting the optical signal from the control station via the first optical path to the node; and
a passive wavelength analyser at the node arranged to direct respective wavelength channels via the secondary optical paths to the receiving stations.

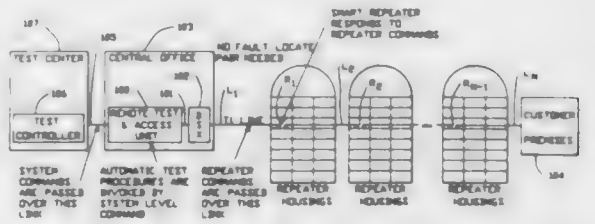
5,010,544

FAULT LOCATION OPERATING SYSTEM WITH LOOPBACK

Ker-Chin Chang, San Jose; Clarence E. Elkins, Pleasant Hill; Paul A. Marshall, Morgan Hill; Duane E. Dunwoodie, Los Altos; Mohamed M. Mansour, Sunnyvale; Paul R. Bauer, Morgan Hill, and Walter A. Lobitz, Westwood, all of Calif., assignors to Wiltron Company, Morgan Hill, Calif.

Filed Jan. 9, 1989, Ser. No. 295,257
Int. Cl.[5] H04J *1/16, 3/14*
U.S. Cl. 370—13.1 **102 Claims**

1. An apparatus for transmitting data from a first terminal to a second terminal, comprising:
a plurality of bidirectional transmission links L_i for i equal to 1 through N, across which data may be transmitted, each transmission L_i having a first end and a second end, and the plurality including a first transmission link L_1;
test control means, connected at the first terminal to the first end of the first transmission link L_1, for communicating control signals in-band across the first transmission link L_1;
a plurality of repeaters R_i, for i equal to 1 through N−1, each of the repeaters connected to the second end of one transmission link L_i in the plurality and the first end of an other transmission link L_{i+1} in the plurality, and including:
first means for repeating data transmitted from the one transmission link L_i for transmission on the other transmission link L_{i+1},
second means for repeating data transmitted from the other transmission link L_{i+1} for transmission on the one transmission link L_i; and
means, responsive to the control signals on the one transmission link L_i, for looping back data transmitted from the one transmission link L_i for transmission on the one transmission link L_i.

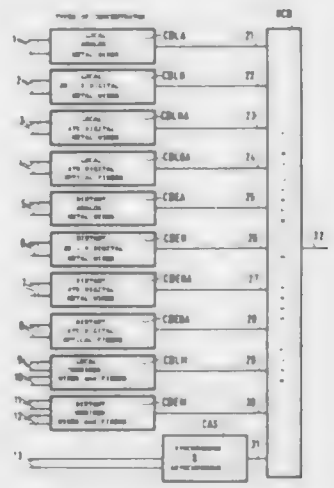


5,010,545

ASYNCHRONOUS TIME-DIVISION MULTISERVICE DIGITAL SATELLITE CENTER FOR CONNECTING SUBSCRIBERS

Jean-Baptiste Jacob, Saint-Guay-Perros, France, assignor to Alcatel Cit, Paris, France

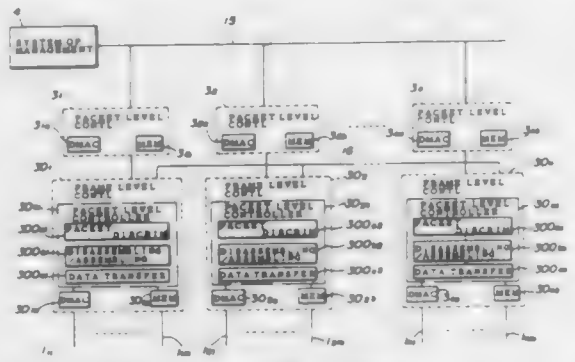
Filed Apr. 10, 1990, Ser. No. 507,418
Claims priority, application France, Apr. 13, 1989, 89 04907
Int. Cl.[5] H04Q *11/00*
U.S. Cl. 370—56 **6 Claims**



1. An asynchronous time division multiservice digital satellite center for connecting analog and digital subscribers, the center comprising a digital control unit and digital concentrators of at least one of the following types: local, distant, and versatile distant for connecting subscribers over metal wire lines, with the digital control unit being connected by multiplex links to the concentrators and to a parent digital exchange, wherein said multiplex links are asynchronous multiplex links conveying information packets designated cells, wherein the concentrators are multiservice concentrators delivering information received from subscribers in the form of the cells and transmitting information to subscribers taken from the cells,

and wherein the digital control unit is a multiservice control unit comprising a multiservice switching network for switching the cells, and connected to the multiservice concentrators and to the parent digital exchange via said asynchronous multiplex links, and a control station connected to the multiservice switching network for controlling said cells.

5,010,546
PACKET SWITCHING SYSTEM
Masaaki Kato, Kawagai, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed Jun. 15, 1989, Ser. No. 366,485
Claims priority, application Japan, Jun. 20, 1988, 63-151865
Int. Cl.[5] H04J 3/26
U.S. Cl. 370—85.11 14 Claims



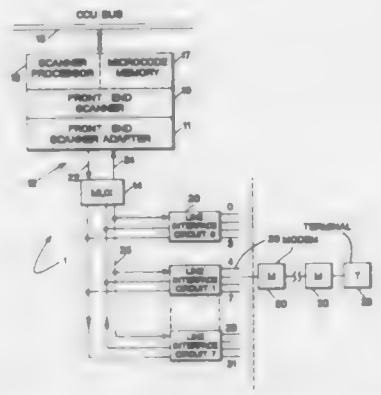
1. A packet switching system comprising:
a plurality of communication lines;
at least first and second data control means respectively connected to first and second groups of said communication lines;
at least first and second packet control means respectively connected to said first and second data control means;
a first bus connecting said first and second packet control means; and
a second bus connecting said first and second data control means,
said first and second data control means having identical construction and each comprising packet discriminating means for discriminating a type of packet received, packet disassembling/assembling means for disassembling a data packet into a header portion and a data portion and for assembling the disassembled header portion and data portion into the data packet, and data transfer means for controlling transfer of packets,
in said first data control means said packet discriminating means discriminating the type of packet received from a communication line within said first group of communication lines which is connected to said first data control means, said packet disassembling/assembling means disassembling the received packet into a header portion and a data portion when said packet discriminating means discriminates the received packet as being a data packet, and said data transfer means transferring the header portion to said first packet control means and the data portion to said second data control means via said second bus,
said first packet control means transferring the header portion to said second packet control means via said first bus, said second packet control means transferring the header portion to said second data control means,
in said second data control means said packet disassembling/assembling means assembling the header portion received from said second packet control means and the data portion received via said second bus into the data packet, and said data transfer means transferring the assembled data packet on a communication line within said second group of communication lines which is connected to said second data control means.

5,010,547
MULTIPLE MESSAGING USING A SINGLE SELECTIVE CALL ADDRESS
Richard E. Johnson, Lake Worth; Amy R. Kabcenell, Highland Beach, and Joan S. DeLuca, Boca Raton, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 10, 1989, Ser. No. 377,649
Int. Cl.[5] H04J 3/26
U.S. Cl. 370—94.1 18 Claims



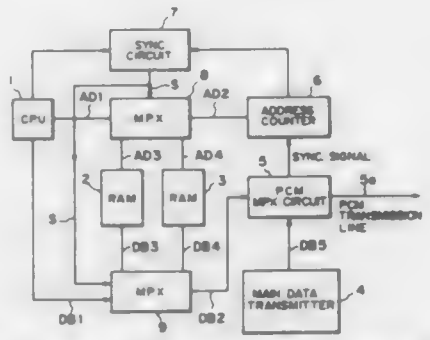
1. A method for receiving information by a selected selective call receiver from a single transmission comprising the steps of:
locating message storage instructions in said information, and
storing a message associated with said message storage instructions by appending said message to existing data in a specific memory area in accordance with said message storage instructions.

5,010,548
SCANNER INTERFACE FOR THE LINE ADAPTERS OF A COMMUNICATION CONTROLLER
Yves Granger, Antibes, and Daniel Wind, La Trinite, both of France, assignors to IBM Corporation, Armonk, N.Y.
Filed Jan. 17, 1989, Ser. No. 297,730
Int. Cl.[5] G06F 13/38
U.S. Cl. 370—95.1 8 Claims



1. A line adapter (1) of a communications controller, for exchanging data and control information between line interface circuits, LICs, (20) connected to external transmission lines (26) and the central control unit, CCU, of the communications controller, said line adapter including, for scanning the lines (26), cyclic scanning means FES (10) exchanging information with the LICs (20) through a bidirectional, inbound-outbound, serial link (12) on which data and control informations are partitioned into frames comprised of data slots and control slots, each pair of data and control slots being dedicated to a determined line (26), line-adapter (1) being characterized in that:
the scanning means FES (10) and serial link (12) are being operated independently according to their own timings, said scanning means including a front end scanner adapter interface, FESA, (11), for interfacing said cyclic scanning means FES (10) with said bidirectional serial link (12).

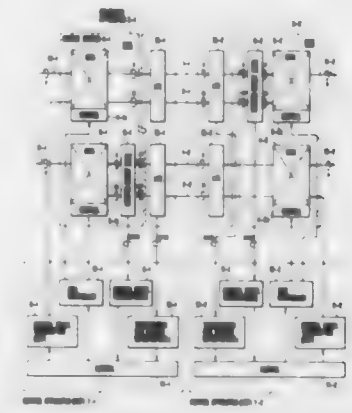
5,010,549
PACKET DATA GENERATOR
Hiromi Katou, Atsugi, and Hirokazu Kobayashi, Saitama, both of Japan, assignors to Kabushiki Kaisha Kenwood, Tokyo, Japan
Filed Apr. 20, 1989, Ser. No. 340,811
Claims priority, application Japan, Apr. 23, 1988, 63-99350
Int. Cl.[5] H04J 3/12, 3/24
U.S. Cl. 370—110.1 2 Claims



1. Data transmission system including a PCM main data source for generating a PCM main data, a PCM additional data source for generating a PCM additional data and a multiplexer for multiplexing the PCM main data and additional data in a predetermined rate for transmission, said PCM additional data source comprising:
first and second memories for storing the PCM additional data;
a processor unit that is operative in a different rate from said predetermined rate for recruiting the PCM additional data stored in the memories; and
an address counter that is operative in synchronization with said predetermined rate of said multiplexer for generating addresses to be applied to one of said memories;
wherein one of said first and second memories is connected to said address counter and multiplexer so that the PCM input data stored in said one memory is read-out with the addressing by said address counter in synchronization with said predetermined rate and supplied to said multiplexer for transmission; and
the other of said first and second memories in response to a request of requiring a PCM input data to be transmitted, is connected to said processor unit so that the PCM input data stored in the other memory is rewritten with the addressing and data provided by said processor unit operating in said different rate, and in response to the completion of the rewriting is then connected to said address counter and multiplexer in place of said one memory.

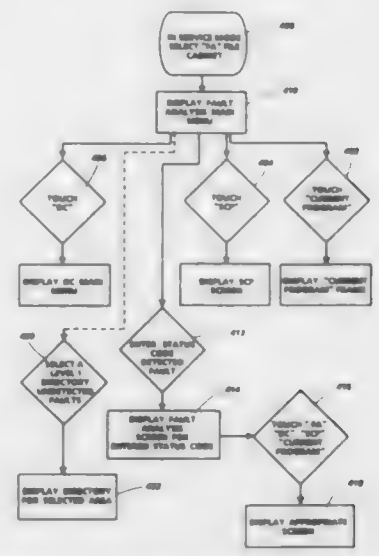
5,010,550
TRANSMISSION LINE SWITCHING SYSTEM
Yoshimi Hirata, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Feb. 2, 1989, Ser. No. 305,927
Claims priority, application Japan, Feb. 4, 1988, 63-22916
Int. Cl.[5] G06F 11/20
U.S. Cl. 371—8.2 6 Claims

1. A transmission line switching system, comprising:
(A) a first plurality of normal transmission lines extending between first and second remote stations;
(B) a second plurality of standby transmission lines extending between said first and second remote stations; and
(C) control means for switching transmission between said normal and standby transmission lines as a function of the condition of said normal transmission lines, said control means:
(1) monitoring the condition of said normal transmission lines;
(2) upon detection of a failure in one of said normal transmission lines selecting one of said standby transmission lines and sending a control signal from said first station to said second station and then back to said first station over said selected standby transmission line; and



(3) if said control signal is received at said first station and indicates that said selected standby transmission line has not failed, causing transmission to be switched from said failed normal transmission line to said selected standby transmission line.

5,010,551
SELF CONTAINED TROUBLESHOOTING AID FOR DECLARED AND NON DECLARED MACHINE PROBLEMS
Alan Goldsmith, Fairport, and Hugh O. Forbes, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Apr. 14, 1989, Ser. No. 339,462
Int. Cl.[5] G06F 11/00; G01R 31/28
U.S. Cl. 371—16.4 9 Claims



1. In a reproduction machine having a plurality of interactive machine components cooperable to produce copies from document originals including a control having a touch operative user interface and screen display, a self contained method of problem analysis comprising the steps of:
entering into a problem analysis mode in the machine,
providing a portion of the display to manifest a fault code if a machine fault actually exists,
displaying a first plurality of system indicators related to suspected machine problems,
touch entering into the control via the user interface a fault

code number, if a fault code is manifested in said portion of the display, or

touch activating one of the, system indicators and

displaying a second plurality of system indicators related to said one of the systems indicators the second plurality of system indicators providing visual representations to identify said suspected machine problem.

5,010,552

DEVICE AND METHOD FOR THE GENERATION OF TEST VECTORS AND TESTING METHOD FOR INTEGRATED CIRCUITS

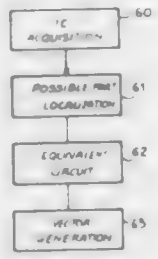
Bernard Dias, and Arnaud du Chene, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Oct. 8, 1987, Ser. No. 107,502

Claims priority, application France, Oct. 10, 1986, 86 14148

Int. Cl.[5] G01R *31/28;* G06F *11/22*

U.S. Cl. 371—27 7 Claims



1. A method of testing each of a series of integrated logic circuits comprising (FIG. 54)

the steps of

analyzing (60) each type of integrated circuit and determining (61) possible logic faults therein including logic faults caused by the physical structure and relative position of the circuit elements in the integrated logic circuit and how each such logic fault would affect outputs expected to be triggered from said integrated logic circuit by a particular pattern of inputs,

generating (63) and applying to inputs of each circuit at least one test vector per possible logic fault so that said vector applied to said logic circuit will trigger at least one actual output pattern which will reveal the existence of any such logic fault;

comparing the actual pattern of outputs from said integrated logic circuit with said expected outputs, and

indicating, for each integrated logic circuit tested, whether said actual and expected output patterns match,

wherein the fault-determining step comprises

the step of determining (62) cells logically equivalent to actual parts of the integrated circuit.

5,010,553

HIGH SPEED, ERROR-FREE DATA TRANSMISSION SYSTEM AND METHOD

Clifford D. Scheller, Bartlett; Aaron A. Collins, Arlington Heights, and Joseph M. Hansen, Roselle, all of Ill., assignors to Compuquest, Inc., Schaumburg, Ill.

Filed Dec. 5, 1988, Ser. No. 279,914

Int. Cl.[5] G08C *25/00*

U.S. Cl. 371—35 17 Claims

1. A method of transmitting data from a transmitter to a receiver with improved throughput comprising the steps of:

formulating data into identifiable packets;

sequentially transmitting said packets to a receiver;

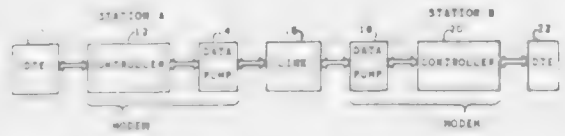
checking for errors in received packets;

loading error-free packets in sequence onto a packet carousel having a fixed number of packet positions;

removing error-free packets in sequence from said carousel;

signaling the identity of a defective packet to said transmitter in a header identifying the number of the packet, the number of total bytes and the number of data bytes in the packet, and error detection information,

maintaining an empty position on said packet carousel for a packet found to be defective;



retaining error-free data packets in positions subsequent to said empty position on said carousel; and

retransmitting said identified packet by interspersing it in the normal sequence of transmitted packets.

5,010,554

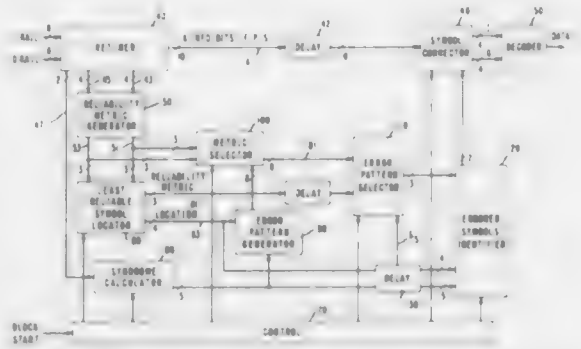
ERROR CORRECTION METHOD AND APPARATUS

Linda K. Bechtel, Newburyport, and Gary D. Martin, North Andover, both of Mass., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 12, 1989, Ser. No. 350,494

Int. Cl.[5] G06F *11/10;* H03M *13/00*

U.S. Cl. 371—37.1 Claims



1. Apparatus for correcting block coded data received in the form of discrete symbols that may incorporate one or more errors comprising:

analog-to-digital converting means (20) for converting said received symbols into hard bits corresponding to the received data and soft bits indicative of the proximity of said received symbol values to valid symbol values;

syndrome calculating means (60) responsive to said hard bits for calculating the syndrome of each received coded block,

reliability metric generating means (50) responsive to said soft bits for generating a reliability metric for each received symbol;

error pattern candidate retrieving means (90) responsive to said syndrome for identifying a plurality of error pattern candidates, each such candidate comprising one or more symbols for correction to produce a valid symbol block, and

error correcting means (100, 110, 120, 140) responsive to said error pattern candidates and said reliability metrics for correcting the symbols of one of said identified error pattern candidates to produce the valid symbol block closest to the received symbol values characterized in that;

said data is encoded according to a block code having an over-all parity bit;

said apparatus further comprises:

least reliable symbol identifying means (80) responsive to said reliability metrics for identifying the symbol in each coded block that is closest to a slicing level;

in response to a non-zero even syndrome, said error pattern candidate retrieving means identifies the complete set of two-symbol errors that can produce the said even syndrome; and

in response to an odd syndrome said error pattern candidate retrieving means identifies the one single-symbol error and the complete set of three-symbol errors, each including said least reliable symbol, that can produce the said odd syndrome.

5,010,555

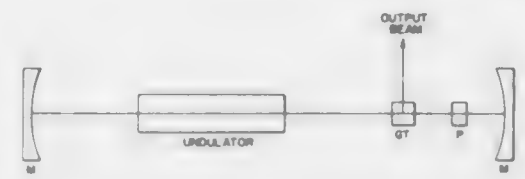
NON-LINEAR INTRACTIVITY OPTICAL DEVICES FOR FREE ELECTRON LASERS

John M. J. Madey, 2120 Amherst St., Palo Alto, Calif. 94306; Stephen V. Benson, 624 Leksich Ave., Mountain View, Calif. 94041; John F. Schultz, 3834 Nimitz St., Eau Claire, Wis. 54701, and Antonello Cutolo, Via Claudio 21, Naples, Italy 80125

Continuation of Ser. No. 338,527, Apr. 14, 1989, abandoned, which is a continuation of Ser. No. 258,081, Oct. 13, 1988, abandoned, which is a continuation of Ser. No. 186,781, Apr. 25, 1988, abandoned, which is a continuation of Ser. No. 921,923, Oct. 22, 1986, abandoned. This application Jul. 25, 1990, Ser. No. 560,461

Int. Cl.[5] H01S *3/00*

U.S. Cl. 372—2 12 Claims



1. An improved free-electron laser (FEL) oscillator comprising:

an electron accelerator system which injects a beam of relativistic electrons along an axis;

undulator means for generating a periodic transverse motion of said beam about said axis;

a set of mirrors disposed about said axis defining a resonant optical cavity along said axis, said cavity having an optical length that defines a round-trip cavity transit time; and

a transmissive non-linear optical means mounted on said axis for producing a phase-matched interaction between the optical wave supported by said resonator and a field in the group consisting of an externally applied acoustic field, an externally applied electric field, and the optical wave itself, thereby modulating the amplitude polarization, or wave vector of the optical wave.

5,010,556

A STRIPE-SHAPED HETEROJUNCTION LASER WITH UNIQUE CURRENT CONFINEMENT

Koichi Imanaka, Kyoto, and Hiroshi Imamoto, Takatsuki, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Division of Ser. No. 48,616, May 11, 1987, Pat. No. 4,839,307. This application Jan. 13, 1989, Ser. No. 297,025

Claims priority, application Japan, May 14, 1986, 61-108652; Mar. 10, 1987, 62-52964

Int. Cl.[5] H01S *3/19;* H01L *33/00*

U.S. Cl. 372—46 14 Claims

1. A semiconductor laser having internal current restriction, comprising:

an n-side electrode and a p-side electrode;

a resonant cavity;

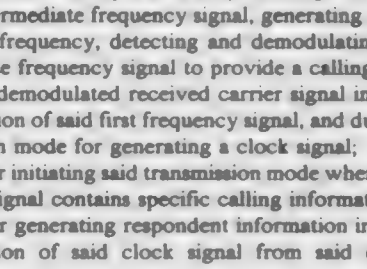
a (100) face-oriented p-type GaAs substrate having a difference in level exposing an (n11) (n=1-5) A face;

an Si-doped $Al_zGa_{1-z}As$ current restriction layer formed on said substrate;

a p-type $Al_yGa_{1-y}As$ cladding layer formed on said current restriction layer;

an active layer formed on said p-type cladding layer;

an n-type $Al_xGa_{1-x}As$ cladding layer having Sn as a dopant formed on said active layer; and



an n^+-GaAs contact layer formed on said n-type cladding layer.

5,010,557

MOBILE RADIO TRANSMITTER USING BAND EXPANDING METHOD

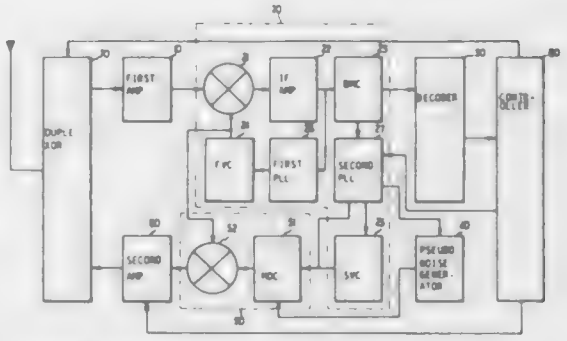
Soon-Ik Chun, Kwachun, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 13, 1989, Ser. No. 421,057

Claims priority, application Rep. of Korea, Oct. 13, 1988, 1988-13356

Int. Cl.[5] H04K *1/04*

U.S. Cl. 375—1 15 Claims



7. A transceiver, comprising:

means for converting a first frequency signal received into an intermediate frequency signal, generating a local oscillation frequency, detecting and demodulating said intermediate frequency signal to provide a calling code signal and a demodulated received carrier signal in response to reception of said first frequency signal, and during a transmission mode for generating a clock signal;

means for initiating said transmission mode when said calling code signal contains specific calling information;

means for generating respondent information in response to reception of said clock signal from said demodulator means;

modulator means for receiving the local oscillation frequency, the demodulated received carrier signal and the respondent information, executing a first modulation of said respondent information by use of the demodulated received carrier to produce a first modulated signal, and then mixing the first modulated signal with said local oscillation frequency to produce a second modulated signal; and

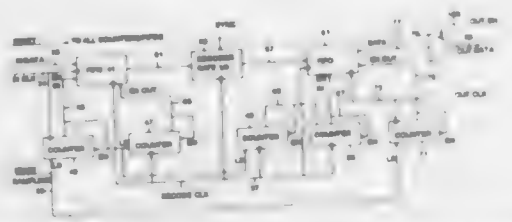
duplexor means for transmitting the second modulated signal from said second amplifier during said transmission mode, and for applying said first frequency signal to said converting means in the absence off said transmission mode.

5,010,558

DATA OVERLAP DECODER

Richard A. Yost, West Melbourne, and David H. Damerow, Palm Bay, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Sep. 29, 1988, Ser. No. 250,697
Int. Cl.[5] H04L *27/00*; H04B *1/10*
U.S. Cl. 375—37 **10 Claims**



1. For use with a communication system having a transmitter site whereat information signals are encoded at a first encoding rate and transmitted over a communication channel to a receiver site whereat encoded information signals that have been transmitted over said communication channel from said transmitter site are received, an apparatus for recovering said signals comprising:

a plurality of first means, each of which is coupled to receive said encoded information signals, for extracting, at a rate less than said encoding rate, a respective portion of said received encoded information signals that overlaps another portion of said information signals the time of occurrence of which is different from the time of occurrence of said respective portion; and

second means for combining extracted portions of the received encoded information signals decoded by said plurality of second means and thereby producing output signals corresponding to said information signals; and wherein

each first means includes first memory means for storing a respective sequential overlapping portion of said received encoded information signals, and decoding means, coupled to said first memory means, for decoding signals stored therein at a rate lower than said first rate at which said information signals are encoded at said transmitter site and producing therefrom a portion of said information signals; and wherein

each of said first means includes means for writing said respective overlapping portion of said received encoded information signals into said first memory means at a rate corresponding to the data rate of said received signals, and for coupling the contents of said first memory means to said decoding means at a clock rate corresponding to said lower rate.

5,010,559

SYSTEM FOR SYNCHRONIZING DATA FRAMES IN A SERIAL BIT STREAM

James T. O'Connor, Dallas, and David A. Courtright, Carrollton, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Filed Jun. 30, 1989, Ser. No. 374,277
Int. Cl.[5] H04J *3/06*
U.S. Cl. 375—116 **14 Claims**

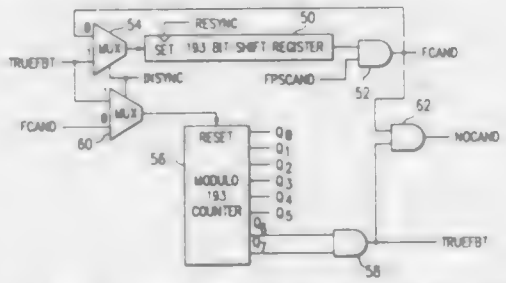
1. A system for determining frame alignment within a serial data stream, each frame having a frame bit, comprising:

a shift register having N bit locations, said register initially having all N bits set to a first logic state;

first logic means for generating a candidate signal when selected bits from the data stream match a preselected pattern;

second logic means for shifting the first logic state into said shift register if a current shift register output is in the first logic state and said first logic means is generating a candidate signal, and for shifting a second logic state into said shift register otherwise; and

a modulo N counter, wherein said counter is incremented each time said second logic means shifts the second logic



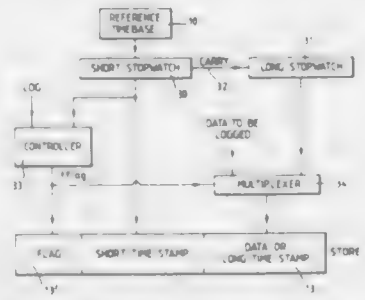
state into said shift register, and wherein said counter generates a signal identifying a frame bit position when it counts to (N − 1), and wherein said counter is reset when the first logic state is shifted into said register by said second logic means.

5,010,560

DATA LOGGING APPARATUS

Mark A. Janney, Temple; Roger Newey, Scottsdale, and Irwin J. Robinson, III, Mesa, all of Ariz., assignors to Marconi Instruments, Inc., Scottsdale, Ariz.

Filed Jan. 17, 1989, Ser. No. 297,690
Int. Cl.[5] G04F *10/00*
U.S. Cl. 377—20 **5 Claims**



1. Apparatus for real-time stamping data in data logging applications, the apparatus comprising:

a) a reference time base;

b) short stopwatch means for generating from the reference time base a short-time stamp;

c) means for combining data to be logged with said short-time stamp;

d) means for storing the data and the short-time stamp;

e) a long stopwatch means connected to said short stopwatch means for generating at intervals a long-time stamp; and

f) a controller circuit for controlling the storage of the data and of the long-time and short-time stamps, the controller circuit being operative to store said long-time stamp at predetermined intervals.

5,010,561

CIRCUIT FOR MULTIPLYING THE FREQUENCY IN ONE SERIES OF INPUT PULSES

Tatsuo Itoh, Higashikurume, Japan, assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

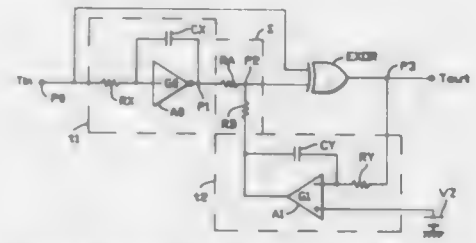
Filed May 22, 1989, Ser. No. 355,694
Claims priority, application Japan, May 23, 1988, 63-126899
Int. Cl.[5] H03B *5/20, 19/00*; H03K *4/06*
U.S. Cl. 377—47 **1 Claim**

1. A circuit which multiplies the frequency in a series of input pulses with a given frequency and a duty cycle essentially of 50% comprising:

a circuit which includes a means to generate a ramp signal in which the ramp portion is formed as a function of the repetition of the input pulse by responding to the input pulses,

an exclusive-OR logic to evaluate the exclusive-OR logic of said input pulses and the output from said ramp signal generating means.

a feedback means which couples the output of said exclu-



sive-OR logic to the input of said exclusive-OR logic for integrating the output of said exclusive-OR logic including adding means for adding said integrated feedback signal with said ramp signal from said ramp signal generating means, said added signals coupled to the input of said exclusive-OR logic, and

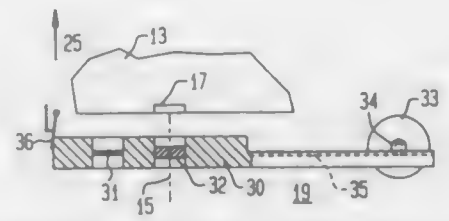
a threshold voltage adjusting means coupled to said integrating and feedback means for providing a multiplied frequency having a 50% duty cycle at the output of said exclusive-OR logic by determining the direct current level of the integrating and feedback signal.

5,010,562

APPARATUS AND METHOD FOR INHIBITING THE GENERATION OF EXCESSIVE RADIATION

Francisco Hernandez, Concord, and Jerry Chamberlain, Pittsburg, both of Calif., assignors to Siemens Medical Laboratories, Inc., Walnut Creek, Calif.

Filed Aug. 31, 1989, Ser. No. 401,355
Int. Cl.[5] A61N *5/10*
U.S. Cl. 378—125 **19 Claims**



1. An apparatus for generating electron radiation or X-ray radiation, said apparatus comprising:

accelerator means for generating and accelerating electrons to form an electron beam which has a predetermined low intensity level for the generation of said electron radiation or a predetermined high intensity level for the generation of said X-ray radiation;

supporting means for supporting a scattering foil and a target and for selectively moving either said foil into the trajectory of said electron beam having said low intensity level for generating said electron radiation upon impingement of said electrons there or on said target into the trajectory of said electron beam having said high intensity level for generating said X-ray radiation upon impingement of said electrons thereon;

detecting means operable by said supporting means for sensing the position of said target relative to the trajectory of said electron beam; and

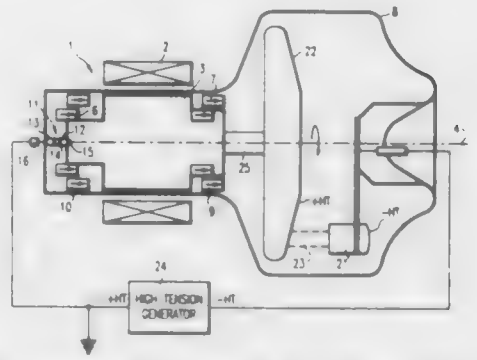
inhibiting means coupled to said accelerator means and to said detecting means for preventing the generation of an electron beam having said high intensity level if said foil and not said target is positioned in the trajectory of said electron beam.

5,010,563

SYSTEM FOR THE SUSPENSION OF A ROTATING ANODE OF AN X-RAY TUBE WITH PASSIVE MAGNETIC BEARINGS

Michel Laurent, Plaisir; Marc Doukhan, Noisy Le Roi, and Pierre Nouailhaguet, Issy les Moulineaux, all of France, assignors to General Electric CGR S.A., Issy les Moulineaux, France

Filed Sep. 12, 1989, Ser. No. 406,254
Claims priority, application France, Sep. 23, 1988, 88 12483
Int. Cl.[5] H01J *35/10*
U.S. Cl. 378—132 **8 Claims**



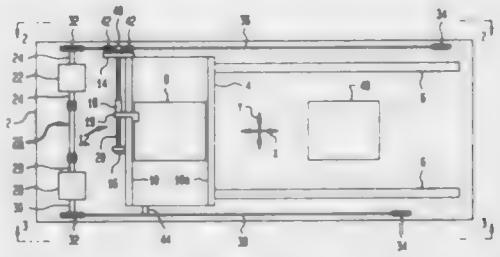
1. A system for the suspension of a rotating anode of an X-ray tube which has a rotor rotating on an axis, one end of which supports the anode and a stator placed at the outside of said tube, wherein said system comprises at least two first magnetized rings fixed to the rotor, and at least two other magnetized rings fixed a casing of said tube, said rings being positioned with respect to one another so that said rotor can rotate without mechanical friction around an axis of rotation and so that it is axially shifted so as to come into contact with a thrust-bearing placed on a side opposite that of the anode.

5,010,564

DUAL AXIS TRANSLATION MECHANISM

Howard C. Thomas, Westminster, Colo., assignor to Eureka X-Ray Tube, Inc., Chicago, Ill.

Filed Sep. 14, 1989, Ser. No. 406,991
Int. Cl.[5] G03B *42/04*
U.S. Cl. 378—176 **25 Claims**



1. A mechanism for selective translation of an object along first and second axes, comprising:

a frame;

a carriage mounted on said frame so as to allow movement of said carriage with respect to said frame along a first axis;

a holder for said object;

intermediate mounting means coupled with said holder and said carriage for mounting said holder on said carriage so

as to allow movement of said holder with respect to said carriage along a second axis which is different from said first axis;

a motor for selectively driving a first shaft;

a drive/brake assembly for providing a second shaft which, in a drive mode of said assembly is driven synchronously with said first shaft and, which in a brake mode of said assembly is held non-driven while said first shaft is being driven; and

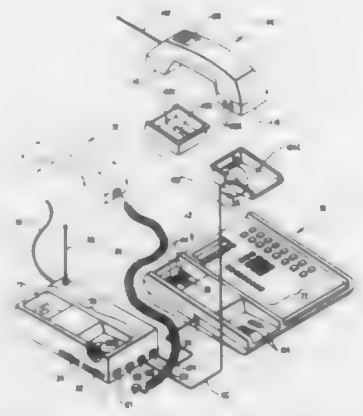
first and second endless belts mounted for rotating movement within said frame and extending in a direction parallel to said first axis, said first and second belts being coupled to said first and second shafts, respectively, for receiving selective rotational movement therefrom, with said first belt also being coupled to said intermediate mounting means for causing selective movement of said object holder in a direction parallel to said second axis during said brake mode of said drive/brake assembly and said second belt being coupled with said carriage for causing selective movement of said carriage in a direction parallel to said first axis and no movement of said object holder in a direction parallel to said second axis during said drive mode of said drive/brake assembly.

5,010,565

APPARATUS AND METHOD FOR ADDING CORDLESS HANDSET CAPABILITY TO AN EXISTING CORDED TELEPHONE

Bryan Nash, 2561 E. 3370 South, Salt Lake City, Utah 84109, and Trenton D. Stoddard, 5872 Fontaine Bleu Dr., Salt Lake City, Utah 84121

Filed Jun. 29, 1990, Ser. No. 546,567
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—61 48 Claims



37. A system for adding cordless capability to an existing corded telephone, the existing corded telephone having an original corded base with a handset cradle, a handset jack, and a corded handset with a cord, the system comprising:

a cordless handset comprising a wireless transmitter and a wireless receiver;

at least one battery charging connector located on the cordless handset;

first charging cradle means fitting onto said original handset cradle for receiving a telephone handset, the charging cradle means being free standing from the existing corded telephone;

first charging contact means, positioned in the first charging cradle means, for conveying a charging current to the battery charging connector on the cordless handset when the cordless handset is resting in the first charging cradle means;

first hook switch means at said corded base for actuating said corded telephone when said corded handset is carried by said first charging cradle means;

a cordless base;

a wireless transmitter located in the cordless base;

a wireless receiver located in the cordless base;

a charging circuit means located in the cordless base;

first interconnection means for electrically connecting the handset jack of the corded base to the cordless base so that information can be conveyed therebetween such that duplex communications can be established between the existing corded telephone and the cordless handset;

second charging cradle means formed at said cordless base for receiving a handset;

second charging contact means positioned in said second charging cradle means for conveying a charging current to the battery charging connector on the cordless handset when the cordless handset is resting in the second charging cradle means; and

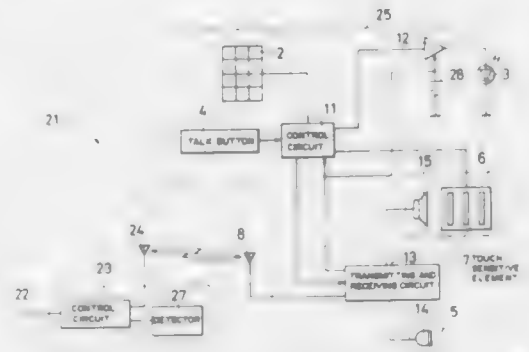
second hook switch means at said cordless base for actuating said corded telephone when said corded handset is carried by said second charging cradle means.

5,010,566

CORDLESS TELEPHONE

Masayoshi Seo, Higashi-Hiroshima, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 7, 1989, Ser. No. 403,887
Claims priority, application Japan, Sep. 8, 1988, 63-225347
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—61 18 Claims



1. A cordless telephone apparatus including a base unit connected to a telephone line for communication, and a handset, operatively connected to the base unit by radio waves, including a speaker, a microphone, a transmitting and receiving circuit for communicating with the base unit by radio waves, transforming the signals from a caller into acoustic sound by the speaker, and second the output from the microphone to the caller, and a battery for providing the transmitting and receiving circuit with electric power, the handset further comprising:

display means for indicating an in-service state of the cordless telephone activated for communication;

contact detecting means for detecting contact of a user with an area proximate to the speaker;

activation detecting means for detecting activation of the cordless telephone for communications to detect the in service state; and

control means operatively connected to the display means, the contact detecting means and the activation detecting means, for controlling the display means to stop indicating an in-service state when an area proximate to the speaker is detected to be in contact with a user and an in service state is detected, in response to the contact detecting means and activation detecting means, and for controlling the display means to indicate an in-service state when an area proximate to the speaker is not detected to be in contact with a user and an in service state is detected; and

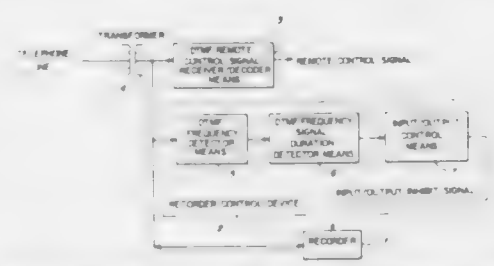
the handset battery means for electrically powering the handset.

5,010,567

RECORDER CONTROL APPARATUS FOR AUTOMATIC TELEPHONE ANSWERING SYSTEM

Masayuki Tsushima, Chofu, Japan, assignor to Tandy Electronics Japan Ltd., Tokyo, Japan

Filed Aug. 5, 1988, Ser. No. 229,126
Int. Cl.[5] H04M *1/65*
U.S. Cl. 379—77 17 Claims



14. In an automatic telephone answering system including a recorder having an input and an output connected to a telephone line for the recording and playing of messages and which is remotely controllable through the use of a dual-tone signal, a method for controlling the recorder comprising the steps of:

detecting the dual-tone signal, with a minimum time Td for such detection;

inhibiting the recorder when the dual-tone signal having dual-tone frequencies continues for a predetermined maximum allowable time, T max, which is less than said minimum time Td;

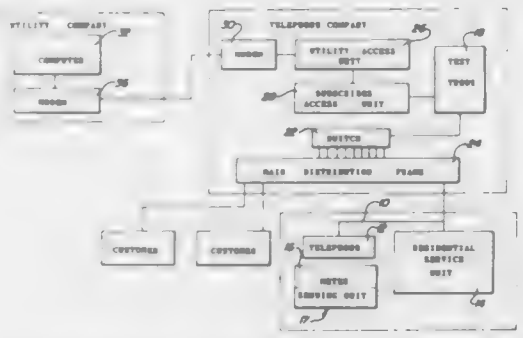
thereby preventing the signal having the dual-tone frequencies from being input to or output from the recorder over a period of time longer than the minimum time Td.

5,010,568

REMOTE METER READING METHOD AND APPARATUS

David P. Merriam; Dale L. Scott, both of Albuquerque, and Bryan F. Scott, Rio Rancho, all of N. Mex., assignors to Sparton Corporation, Jackson, Mich.

Filed Apr. 4, 1989, Ser. No. 333,117
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—107 9 Claims



1. In an automatic meter reading system of the type which utilizes a telephone system having a central office, multiple subscriber lines each having a subscriber telephone connected therewith at a subscriber station, said subscriber lines being coupled to a switch in the central office for selective connection of any one of the subscriber lines to another line, voltage supply means for supplying electrical power from the central office to the subscriber lines, a test trunk for selectively accessing said subscriber lines without ringing the telephone of the selected line, a subscriber line access means coupled with the test trunk for accessing a selected line, a transponder at the subscriber station coupled with said subscriber line and with one or more utility meters, and control signal means coupled with the subscriber access means for generating a control signal for a transponder at a selected subscriber station, the improvement wherein said transponder comprises:

detecting means for detecting a control signal on the telephone line,

a microprocessor including a read/write memory,

a meter pulse generating means coupled with said meter for producing an electrical meter pulse corresponding to a predetermined meter event,

first coupling means for coupling the meter pulse generating means to the microprocessor,

means for switching the microprocessor from a quiescent mode to an active mode in response to a meter pulse,

the microprocessor being programmed to count pulses from said meter pulse generating means and for storing the pulse count in said read/write memory, and for switching the microprocessor to the quiescent mode after the pulse count is stored,

a DTMF tone generator coupled with the microprocessor,

second coupling means for coupling said detecting means to said microprocessor,

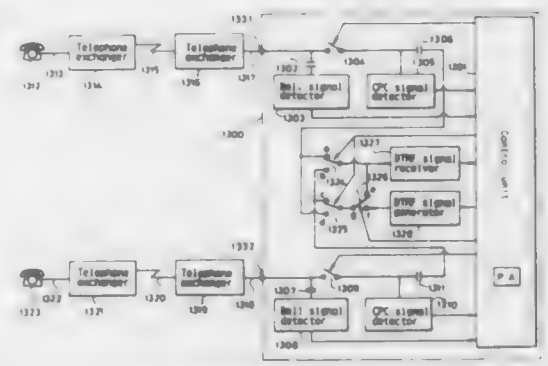
and means for switching the microprocessor from a quiescent mode to an active mode in response to a control signal, said microprocessor being programmed to produce a tone generator signal for said tone generator in response to a predetermined control signal for producing a sequence of tone pairs representing said pulse count stored in the read/write memory and for switching the microprocessor to the quiescent mode after the sequence of tone pairs is produced.

5,010,569

TELEPHONE-CALL DISTRIBUTOR

Hiromi Katagawa, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 2, 1989, Ser. No. 388,446
Claims priority, application Japan, Aug. 3, 1988, 63-194074; Aug. 3, 1988, 63-194075; Aug. 3, 1988, 63-194076
Int. Cl.[5] H04M *9/00*
U.S. Cl. 379—210 12 Claims



1. A telephone-call distributor comprising:

signal receiving means for receiving a first DTMF signal coming from a first telephone line and outputting a dial data signal;

control means for receiving said dial data signal from said signal receiving means;

signal generating means, responsive to said control means, for generating a second DTMF signal having a same code as said dial data signal;

forwarding means for forwarding said second DTMF signal generated by said signal generating means to a second telephone line; and

connecting means, responsive to said control means, for connecting said first telephone line with said second telephone line to thereby make a speaking circuit therebetween, said first telephone line being connected to a first

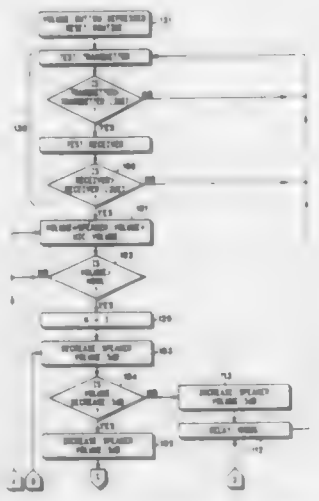
telephone set and said second telephone line being connected to a second telephone set.

5,010,570

METHOD FOR ACTIVE FEEDBACK SUPPRESSION

Daniel E. Kobylarz, Burnsville, Minn., and David K. Ford, Mesa, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 20, 1990, Ser. No. 481,531
Int. Cl.[5] H04M 9/08
U.S. Cl. 379—390 13 Claims



7. A method for actively suppressing feedback in a communications device having a system loop gain stored in memory, a received audio signal, a transmitted audio signal, and a user volume substantially equal to a speaker volume plus a microphone volume, the steps comprising:

(A) comparing the transmitted audio signal to a first predetermined limit;

(B) comparing the received audio signal to a second predetermined limit if the transmitted audio signal is less than the first predetermined limit;

(C) repeating from step A if the received audio signal is less than the second predetermined limit;

(D) decreasing the speaker volume by a first predetermined amount if the user volume is greater than the system loop gain;

(E) delaying for a predetermined time and repeating from step A if the microphone volume does not decrease by the first predetermined amount, increasing the speaker volume by the first predetermined amount;

(F) increasing the speaker volume by the first predetermined amount;

(G) delaying for the predetermined time and repeating from step A if the microphone volume does not increase by the first predetermined amount;

(H) repeating steps D–G a predetermined number of times;

(I) decreasing the microphone volume and the speaker volume by a second predetermined amount until the user volume is less than the system loop gain stored in memory and greater than or equal to a mid-range of the speaker volume;

(J) increasing the microphone volume and the speaker volume by the second predetermined amount until the user volume within a range bounded by the system loop gain as a lower limit and nominal volume as an upper limit; and

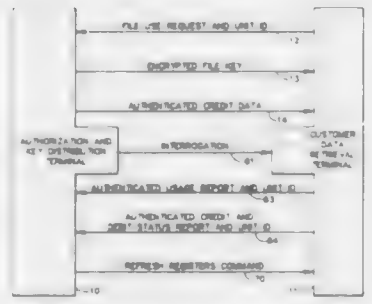
(K) repeating from step A.

5,010,571

METERING RETRIEVAL OF ENCRYPTED DATA STORED IN CUSTOMER DATA RETRIEVAL TERMINAL

Ron D. Katznelson, San Diego, Calif., assignor to Titan Linkabit Corporation and Cable/Home Communication Corporation, both of San Diego, Calif.

Filed Sep. 10, 1986, Ser. No. 905,775
Int. Cl.[5] H04L 9/00
U.S. Cl. 380—4 43 Claims



1. A method of controlling and accounting for retrieval of data from a memory, comprising the steps of

(a) providing a memory containing an encrypted data file from which retrieval must be authorized;

(b) authorizing said retrieval by providing an encryption key for enabling retrieval of said data and a credit signal for use in limiting the amount of data to be retrieved from said file;

(c) limiting the amount of data retrieved from said file in accordance with said credit signal;

(d) recording the amount of data retrieved from said file;

(e) reporting the recorded amount of data retrieved from said file; and

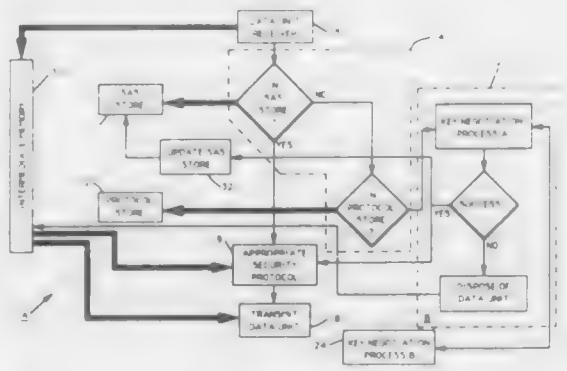
(f) authenticating said report.

5,010,572

DISTRIBUTED INFORMATION SYSTEM HAVING AUTOMATIC INVOCATION OF KEY MANAGEMENT NEGOTIATIONS PROTOCOL AND METHOD

Erwin W. Bathrick, La Habra, and James E. Zmuda, El Toro, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 27, 1990, Ser. No. 515,819
Int. Cl.[5] H04I 9/02
U.S. Cl. 380—21 4 Claims



1. In a distributed information system which includes a plurality of end-systems each of which includes data unit transmitting and receiving means having a security protocol and a corresponding security protocol key from one end-system to another end-system, the improvement comprising:

secure address storage means for storing a set of end-system addresses and corresponding end-system security protocol keys;

protocol address storage means for storing a set of end-system addresses requiring security protocol data transfers;

data unit receiver means for receiving a data unit and for generating a data unit transfer request signal which includes an end-system address and data unit security protocol;

intermediate storage means for storing a received data unit in response of a data transfer request signal and outputting the stored data unit to the end-system transmitting and receiving means in response to a transfer enable signal;

automatic key management processor means responsive to the data unit transfer request signal for comparing the received data unit security key and end-system address to the set of end system address and security protocol keys, and for generating the transfer enable signal in response to a match therebetween, and in the absence of a match therebetween, comparing the received data unit address to the end-system addresses from the protocol address storage means and generating a security key protocol request signal in response to a match therebetween, and for generating the transfer enable signal in response to the absence of a match between the data unit address and an address in the set of addresses stored in the protocol address storage means;

security key negotiating means responsive to the security key protocol request signal for negotiating a security key with another end-system and for generating a security key negotiation confirm signal upon completion of a negotiation;

means responsive to the security key negotiation confirm signal for storing the security key for the another end-system in the one system secure address store storage means;

and wherein each end-system is responsive to the security key negotiation confirm signal and is adapted to generate the transfer enable signal, and wherein the end-system data unit transmitting and receiving means are responsive to the transfer enable signal and are adapted to transfer the data unit corresponding to the security protocol of the received data unit, and wherein the security key negotiation comprises a fully encrypted negotiation exchange.

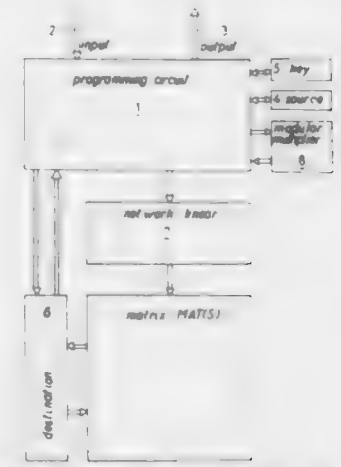
5,010,573

CRYPTOGRAPHIC SYSTEM BY BLOCS OF BINERY DATA

Emile P. Musyck, Amerikalaan 28, 2440 Geel, and Christian E. Musyck, Rue de Boulez 26, 5980 Grez Doiceau, both of Belgium

Filed Apr. 27, 1990, Ser. No. 515,236
Claims priority, application Belgium, Apr. 28, 1989, 8900467
Int. Cl.[5] H04L 9/06
U.S. Cl. 380—28 13 Claims

1. A cryptographic system for converting a vector of data of n bits to a ciphered vector of n bits under the control of a cryptographic key that is formed by a vector of n bits, too, with n being a whole number comprising means that allows, using a DLM (discrete Logarithnm Multiplier) algorithnm, for calculating from an input vector Es referred to a source vector and that corresponds to the data to be ciphered, an output vector Ed that corresponds to the ciphered text which is equal to the state of a linear shift register that corresponds to a register composed of n elements and of one negative feedback loop, at least, with the latter being formed by or-exclusive circuits, the inlets and outlets of which are linked to the outlets and inlets of the elements of the shift register so as to obtain for this shift register the maximum possible length of $2\exp(n)-1$ for the sequence of the consecutive states, referred to as linear sequence, with each state of this register representing a jump, the origin of which is a reference vector referred to as "zero-origin", and with the value of the jump being the sequence number of this state in the linear sequence, with these means also being so designed that each jump may be expressed in the form of a linear relation REL as a function of the n first states of the linear sequence as from the "zero-origin" state, with the n states allowing for grouping in the form of n columns in view of achieving a square matrix referred to as MAT(O), with this matrix containing implicitly all the elements that characterize the shift register, with the aforesaid relation REL constituting an invariant for a jump that comprises an equal number of consecutive states of the linear sequence between the origin and the destination of the jump, with the origin of the jump corresponding to the first vector of a set of n consecutive states of the linear sequence grouped in columns in order to obtain a square matrix MAT(S), with the matrix product of this matrix by the vector REL giving the destination of the jump, with the



algorithm DLM allowing for searching for the aforesaid output vector while using this linear relation, the vector which corresponds to the state of the linear sequence being defined by a jump counted from the reference vector "zero-origin" equal to k times the modulo $(2\exp(n)-1)$ jump that characterizes the source vector, with the jump corresponding to the output vector of the algorithm DLM being obtained through a succession of jumps put end to end and commencing at this reference vector, with these jumps being of two types, the first type being equal to the jump from the reference vector to the source vector and a second type being equal to the jump from the reference vector to the destination of the jump made last.

5,010,574

VECTOR QUANTIZER SEARCH ARRANGEMENT

Robert C. Wang, Meadham Township, Morris County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 13, 1989, Ser. No. 365,642
Int. Cl.[5] G10L 5/00
U.S. Cl. 381—42 23 Claims

1. A method for coding a multi-element signal comprising the steps of:

storing a plurality of multi-element reference signals $y_1, y_2, \ldots, y_N$ in a codebook storage array representable in a prescribed vector space;

receiving a multi-element input signal x representable in the prescribed vector space; and

selecting one of the stored reference signals y_m to represent the multi-element input signal;

the selecting step including:

selecting a predetermined orientation of a reference line for projection mapping in the prescribed vector space,

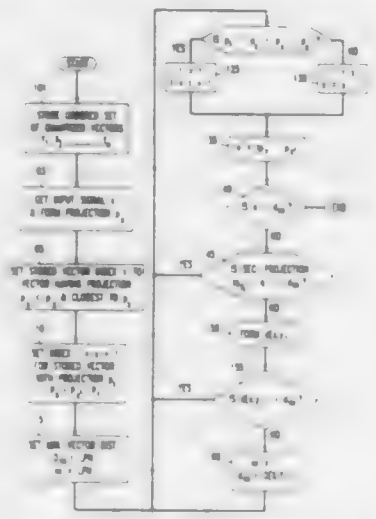
forming a set of signals each representative of the projection p_{yn} of the reference signal y_n on the reference line with the predetermined orientation in the prescribed vector space,

forming a signal representative of the projection p_x of the input signal on the reference line with the predetermined orientation in the prescribed vector space,

choosing one or more of the stored reference signals y_i

responsive to their projections p_{yi} on the reference line with the predetermined orientation,

generating for each chosen reference signal y_i, a signal representative of the difference between the reference signal projection and the input signal projection on the reference



line with the predetermined orientation $|p_{yi}-p_x|$ responsive to the reference signal projection p_x, and input signal projection p_x, and

determining the reference signal y_m that most closely matches the input signal responsive to the projection difference signals.

5,010,575

AUDIO CURRENT PICK-UP DEVICE

Yozo Marutake; Tatsuro Fukutome, and Motomu Asami, all of Tokyo, Japan, assignors to Rion Kabushiki Kaisha, Tokyo, Japan

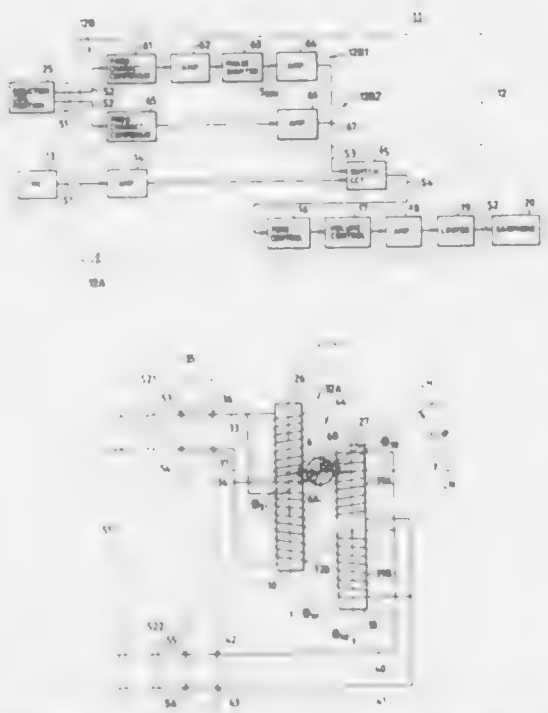
Filed May 17, 1989, Ser. No. 353,839

Claims priority, application Japan, May 30, 1988, 63-134085

Int. Cl.[5] H04R *25/00*; H04M *1/100*

U.S. Cl. 381—68 3 Claims

1. An audio current pick-up device comprising a first magnetic induction coil means including at least one induction coil, a second magnetic induction coil means including at least one induction coil, said first and said second magnetic induction coil means being arranged in parallel to each other with an axial positional deviation of said induction coil of said first magnetic induction coil means with respect to that of said second magnetic induction coil means by a predetermined amount, and circuit means for combining output signals of said first and said second magnetic induction coil means to form a sound output signal, wherein said first and said second magnetic induction coil means include magnetic rod cores, respectively, and wherein a pair of coils are wound in opposite directions on respective halves of each of said magnetic rod cores,



said pair of coils being connected in parallel to each other, and said output signals being derived from said coil pairs

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5,010,576

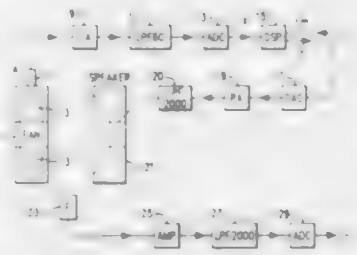
ACTIVE ACOUSTIC ATTENUATION SYSTEM FOR REDUCING TONAL NOISE IN ROTATING EQUIPMENT

Peter D. Hill, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 22, 1990, Ser. No. 468,329

Int. Cl.[5] G10K *11/16*

U.S. Cl. 381—71 24 Claims



15. An active acoustic attenuation system for attenuating tonal noise associated with a fan having a plurality of blades, said system comprising:

an accelerometer mounted on said fan and generating a sinusoidal signal having a frequency representative of the rotational speed of said fan,

means clipping said sinusoidal signal to generate a clipped signal having a fundamental frequency equal to the frequency of rotation of said fan and containing harmonic frequencies of the fundamental frequency of said fan speed which include the fundamental frequency and harmonic frequencies of said blade pass tonal noise; speaker means mounted adjacent said fan and generating canceling sound for combination with and attenuation of said fundamental frequency and harmonic frequencies of the blade pass tonal noise of said fan;

an error microphone spaced from said fan and said speaker detecting said combination of tonal noise and canceling sound and generating an error signal therefrom; and

electronic controller means responsive to the clipped signal and said error signal for driving said speaker, said electronic controller means including adaptive filter means which accommodates for acoustics delays between said fan, the speaker and the error microphone.

5,010,577

ELECTRONIC VOLUME DEVICE

Masayuki Sakanishi, Tokyo, and Takaaki Ishii, Sagamihara, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 26, 1988, Ser. No. 262,649

Claims priority, application Japan, Oct. 29, 1987, 62-165985[U]

Int. Cl.[5] H03G *3/00*

U.S. Cl. 381—104 11 Claims



1 An electronic volume device comprising:

a volume control circuit constituted by a monolithic integrated circuit and having a signal output terminal, including switching control signal generating means for generating a switching control signal having a duty cycle corresponding to a desired proportion of attenuation, and means for switching the signal output terminal between a floating state and a grounded state in accordance with the switching signal generated by the switching control generating means;

a signal line through which an input analog signal is applied;

means for connecting the signal output terminal of the volume control circuit to the signal line; and

a low pass filter connected to the signal line for forming an output signal by eliminating high frequency components from the signal on the signal line.

5,010,578

METHOD AND APPARATUS FOR THE IDENTIFICATION OF METAL SURFACE FINISHES

Pierre Siener, Thionville, and Antoine Steiner, Metz, both of France, assignors to Institut de Recherches de la Siderurgie Francaise-Irsid, Puteaux, France

Filed Jul. 17, 1989, Ser. No. 380,354

Claims priority, application France, Jul. 20, 1988, 88 09833

Int. Cl.[5] G06K *9/00, 9/46, 9/52, 9/66*

U.S. Cl. 382—8 8 Claims

1. Method for the identification of metal surface finishes, wherein: at least a sample portion of said surface is omnidirectionally lit,

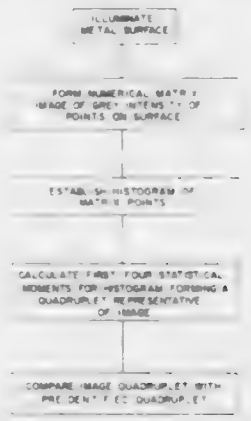
a numerical matrix image of said surface is formed, in which each matrix point is associated with a value of grey intensity as a function of the luminous intensity reflected by the corresponding element of the surface,

the set of collected values is processed in the following way:

a histogram is established, for the entire set of matrix points, of the number of points per level of grey intensity,

the first four statistical moments are calculated for said histogram, forming a quadruplet constituting four coordinates of an identification vector of the image, of order equal to or greater than four, said quadruplet being representative of the image,

said image quadruplet is compared to at least one of several pre-identified and catalogued quadruplets,



and if the image quadruplet is equal, allowing for predetermined tolerances for each moment, to one of said catalogued quadruplets, said image quadruplet is attributed the identity of said catalogued quadruplet.

5,010,579

HAND-WRITTEN, ON-LINE CHARACTER RECOGNITION APPARATUS AND METHOD

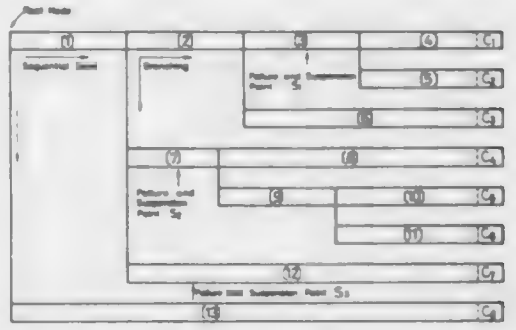
Kimiyoshi Yoshida, Kanagawa; Akio Sakano, Ibaraki; Hirofumi Tamori, Tokyo, and Masayuki Chatani, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 24, 1989, Ser. No. 398,086

Claims priority, application Japan, Aug. 30, 1988, 63-215572

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—13 8 Claims



1. A hand-written, on-line character recognition apparatus comprising:

(a) means for electronically receiving hand-written stroke pattern information data;

(b) dictionary means organized in a tree and branch structure for electronically storing character data describing stroke characteristics of characters, the beginning and ending of each branch being taken as different nodes with one or more branches sharing the same nodes;

(c) evaluation scan control means for scanning the tree and branches of the dictionary means to search for character data corresponding to the hand-written stroke pattern information data, wherein the evaluation scan control means compares the hand-written stroke pattern information data with the character data stored in the successive branches of the dictionary means, continuing on to the next successive branch as long as the degree of inconsistency does not exceed a predetermined limit and returning

to the previous node to perform the same operation with respect to the character data stored in an alternative branch when the degree of inconsistency does exceed the predetermined limit; and

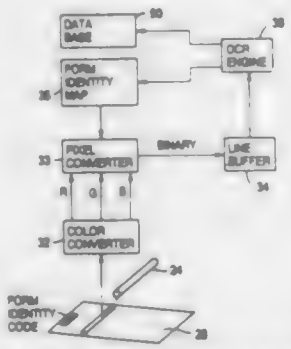
(d) save means for storing the conditions of the evaluation scan control means, wherein at least the conditions of the evaluation scanning existing at the beginning of each branch are saved in the save means upon branching in order to allow recursive use of the branches of the character data stored in the dictionary means when the evaluation scan control means has returned to the alternative branch after the degree of inconsistency exceeded the predetermined limit.

5,010,580

METHOD AND APPARATUS FOR EXTRACTING INFORMATION FROM FORMS

Kent D. Vincent, Cupertino, and Rueiming Jamp, Mountain View, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 25, 1989, Ser. No. 398,677
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—17 **7 Claims**



1. A system for extracting handwritten and typed information of a predetermined color from a form printed in a different color, comprising:

scanner means for scanning pixel locations on a printed form;

detector means for detecting at least two color values for each scanned pixel location;

comparator means for comparing the detected color values with reference color values;

identifier means for identifying and distinguishing ones of the pixel locations on the printed form from adjacent pixel locations by comparison of their color values to the reference color values, which identifier means provides a binary output for each scanned pixel location such that one state of the binary output represents correspondence between the detected color values of the scanned pixel location and at least one of the reference color values and, thereby, indicates whether handwritten and typed information on the printed form is to be extracted from the form when the color of the printing on the form is substantially different from the color of the handwritten and typed information at adjacent locations on the printed form; and

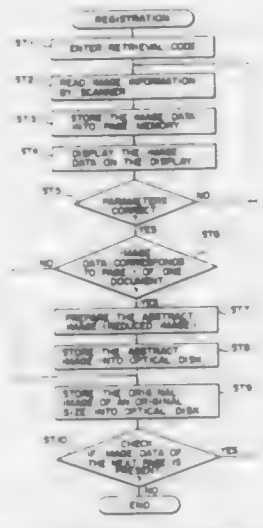
an optical character recognition engine for receiving data regarding identified ones of the pixel locations.

5,010,581

DATA PROCESSING APPARATUS HAVING FUNCTION FOR RETRIEVING ABSTRACT AND ORIGINAL IMAGE DATA

Masayuki Kanno, Fujisawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 30, 1988, Ser. No. 278,086
Claims priority, application Japan, Nov. 30, 1987, 62-302685
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—56 **24 Claims**



1. An image information filing apparatus comprising:

input means for inputting an original image which includes data covering a plurality of pages;

first memory means for temporarily storing the original image input by said input means;

drafting means for drafting an abstract image, the abstract image being formed of a predetermined portion or a combination of predetermined portions of the original image;

second memory means for storing the original image as stored in said first memory means and the abstract image drafted by said drafting means in association with the original image; and

retrieve means for retrieving the abstract image, based on retrieval data corresponding to both the original image and the abstract image, from the second memory means and for retrieving the original image associated with the abstract image when the retrieved abstract image is designated by the retrieval data,

in which said second memory means stores the abstract image as a first page of the original image.

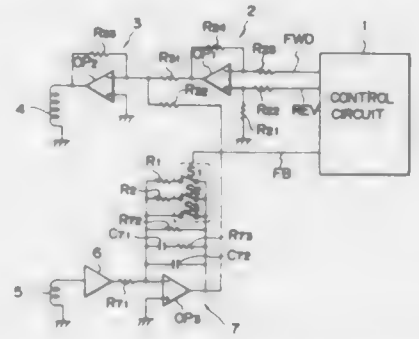
5,010,582

PICKUP DRIVING DEVICE FOR DISK PLAYER

Katsumi Kawamura, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 8, 1990, Ser. No. 476,948
Claims priority, application Japan, Apr. 4, 1989, 1-84974
Int. Cl.[5] H02P *5/00*
U.S. Cl. 388—815 **2 Claims**

1. A pickup driving device for a disk player comprising: a slider for holding a pickup for a disk player, a motor for moving said slider in a radial direction of a disk, a voltage generation means for generating a driving voltage corresponding to an operation command, an amplifier circuit for amplifying said driving voltage and supplying it to said motor, a speed detection means for obtaining a speed signal corresponding to a moving speed of said slider, and a negative feedback circuit for reverse amplifying said speed signal and for superimposing the voltage to said driving voltage, wherein the gain of said negative feedback circuit is variable, and the gain of said negative feedback circuit is made to vary correspondingly to the contents of said operation command, wherein the gain of said negative feedback circuit is made high when the content of said operation command is a first operation mode in which said slider is moved at a low speed, and the gain of said negative feedback circuit is made low when the content of said operation command is a second operation mode in which said slider is moved at a high speed.

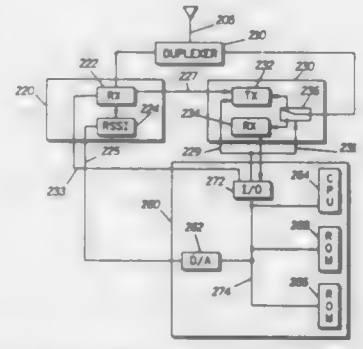


5,010,583

REPEATER FOR A WIDE AREA COVERAGE SYSTEM

William D. Parken, Wilton Manors, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 2, 1989, Ser. No. 415,818
Int. Cl.[5] H04B *17/00*
U.S. Cl. 455—9 **2 Claims**



1. A repeater for receiving a signal on an inbound channel and transmitting said signal on an outbound channel, comprising:

a first receiver means for receiving said signal on said inbound channel,

determination means for determining quality characteristic of said signal when received on said inbound channel,

a second receiver means for monitoring presence of a channel activity on said outbound channel,

controller means responsive to presence of said channel activity on said outbound channel and said quality characteristic of said signal for generating a control signal:

transmitter means responsive to said control signal for transmitting said signal on said outbound channel.

5,010,584

MOBILE COMMUNICATION TRANSCEIVER

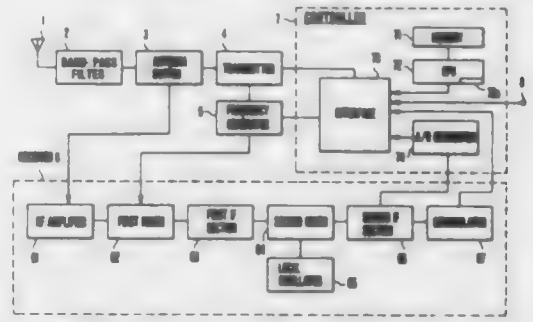
Kenji Seki, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Sep. 6, 1989, Ser. No. 403,601
Claims priority, application Japan, Sep. 14, 1988, 63-228504
Int. Cl.[5] H04B *1/44*
U.S. Cl. 455—83 **7 Claims**

1. A mobile communication transceiver including a receiver for demodulating a high-frequency signal, a transmitter for modulating a low-frequency signal into the high-frequency signal and amplifying the high-frequency signal, a frequency generator for transmitting a local frequency signal to said receiver in a reception mode and for transmitting the high-frequency signal for generating a transmission frequency signal to said transmitter in a transmission mode, a controller for transmitting data for changing a frequency of said frequency generator and for receiving transmission ON or OFF data to switch transmission and reception modes, and an antenna switch for switching between said receiver and said transmitter, wherein said controller comprises:

an A/D converter for converting an output voltage corresponding to a reception input voltage from said receiver into a digital signal;

a memory for storing a plurality of predetermined data for determining a speech enable electric field level and a



plurality of predetermined data for determining a high electric field level;

determining means for determining a speech enable electric field level by comparing the digital signal from said A/D converter with the speech enable electric field level determination data stored in said memory;

comparing means for comparing the digital signal supplied from said A/D converter through an interface with the high electric field level determination data stored in said memory when the high electric field level is determined; and

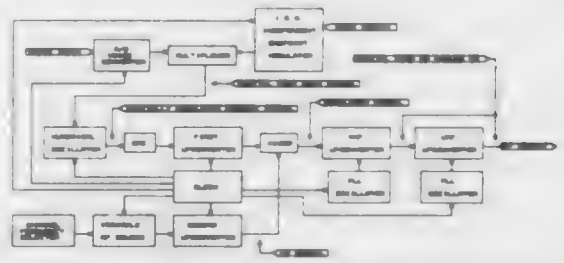
a CPU for selecting a determination level of the speech enable electric field level from the plurality of data stored in said memory.

5,010,585

DIGITAL DATA AND ANALOG RADIO FREQUENCY TRANSMITTER

Rafael A. Garcia, P.O. Box 530153, Miami Shores, Fla. 33153

Filed Jun. 1, 1990, Ser. No. 531,587
Int. Cl.[5] H04B *1/04;* **H04L** *27/12*
U.S. Cl. 455—118 **11 Claims**



1. An RF transmitter for transmitting either analog voice or digital data comprising:

multiplexing means for switching between an analog voice input and digital data inputs to provide a selected signal,

numerical oscillator means connected to the output of the multiplexing means for converting the selected signal to a digitally modulated numeric frequency signal,

D/A conversion means connected to the output of the numerical oscillator means for converting the digitally modulated numeric frequency signal to an analog signal,

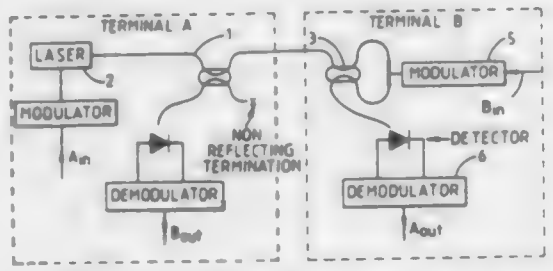
first upconversion means connected to the output of the D/A conversion means for upconverting the analog signal to a first higher frequency signal,
variable RF source means for providing a selected accurate preset frequency signal within a range of frequencies,
second upconversion means connected to the output of the variable RF source means for upconverting the preset frequency signal to a second higher frequency signal,
mixing means connected to the output of both the first and second upconversion means to provide a modulated signal,
clock means connected to the numerical oscillator means, the variable RF source means and the first and second upconversion means for providing synchronization for each said means.

5,010,586

OPTICAL TWO-WAY TRANSMISSION SYSTEM WITH LOOP REFLECTOR MODULATOR

David B. Mortimore, Felixstowe, and David B. Payne, Wickham Market, both of England, assignors to British Telecommunications public limited company, England

PCT No. PCT/GB88/00291, § 371 Date Dec. 13, 1988, § 102(e) Date Dec. 13, 1988, PCT Pub. No. WO88/08232, PCT Pub. Date Oct. 20, 1988
PCT Filed Apr. 14, 1988, Ser. No. 288,251
Claims priority, application United Kingdom, Apr. 15, 1987, 8709072
Int. Cl.[5] H04B *10/12*
U.S. Cl. 455—605 12 Claims



1 A two way transmission system of the type for transmitting signals over a transmission line, said system comprising:
a first terminal operatively coupled to said transmission line, said first terminal having a source and further including:
a first modulation means for inputting a signal to said transmission line, and
a first demodulator for receiving return signals from a second terminal; and
a second terminal operatively coupled to said transmission line, said second terminal comprising:
a further demodulator, and
an interferometric loop reflector having a
second modulation means for inputting return signals to the transmission line.

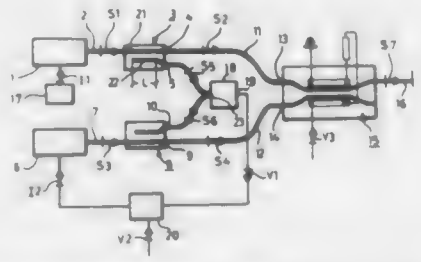
5,010,587

APPARTAUS FOR TRANSMITTING A COHERENT FREQUENCY MODULATED OPTICAL SIGNAL

Hans A. Eklund, Nykvarn, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Mar. 8, 1989, Ser. No. 321,065
Claims priority, application Sweden, Mar. 11, 1988, 8800884
Int. Cl.[5] H04B *10/04*
U.S. Cl. 455—618 4 Claims

1. Apparatus for transmitting a coherent, frequency modulated optical signal, said apparatus comprising:
a laser light source transmitting at least two frequencies, each frequency having a spectral bandwidth which is less than 100 MHz,
an optical coupler connected to the laser light source and controllable by an electrical control means wherein the laser light source includes at least two laser devices each with an optical output connected to an optical input of the optical coupler and also to at least one photodetector, each photodetector connected to said optical outputs of two of said laser devices; at least one of the laser devices being connected to a frequency-determining normal control circuit which determines the light frequency of this laser device; each of the other of said at least two laser devices connected to a frequency control circuit which controls the light frequency of the respective laser device, and said at least one photodetector connected to one of



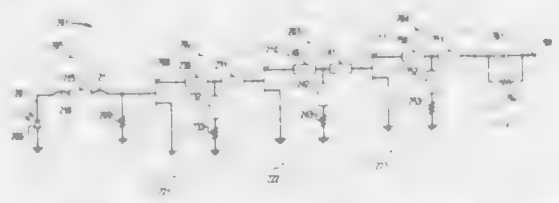
the frequency controlling circuits, said at least one photodetector transmits difference signals corresponding to the difference between frequencies of the laser devices, to the frequency controlling circuits which transmit control signals corresponding to said difference signals and at least one outside reference signal to the other of said at least two laser devices, so that the frequency differences of the laser devices are determined by said at least one outside reference signal; the electrical control means coupling the light alternatingly from the at least two laser devices to an output of the optical coupler such as to constitute the coherent, frequency modulated optical signal.

5,010,588

ULTRAWIDE-BANDWIDTH LOW-NOISE OPTICAL RECEIVER

James L. Gimlett, Holmdel, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Continuation-in-part of Ser. No. 166,267, Mar. 10, 1988, abandoned. This application Mar. 6, 1989, Ser. No. 318,844
Int. Cl.[5] H04B *10/06*
U.S. Cl. 455—619 16 Claims



1. An optical receiver having a bandwidth that extends from near dc to the multi-gigahertz range for converting a received optical signal to an amplified electrical signal at the output of the receiver, said receiver comprising:
photodetector means for converting the received optical signal to a proportional low-level electrical signal,
inductive/resistive frequency enhancement means connected to said photodetector means for extending the high frequency response of a first stage of an amplifying means and for providing a high input impedance to said first stage,
said amplifying means being connected between said frequency enhancement means and said receiver output and comprising a plurality of amplifying stages each comprising a transistor amplifier and a microwave matching circuit comprising a modified T-network having as series-arm impedances inductive elements and as a shunt-leg

impedance a microwave element in series with a resistor, said amplifying stages providing individual input and output impedances decreasing successively from said high input impedance at said first of said stages to a low output impedance at the last of said stages, the resistor in the shunt-leg of each modified T-network being chosen to extend the bandwidth of each stage to near the dc level and the values of said inductive and microwave elements being chosen to preserve the high frequency response as extended by said frequency enhancement means.

DESIGN PATENTS

GRANTED APR. 23, 1991

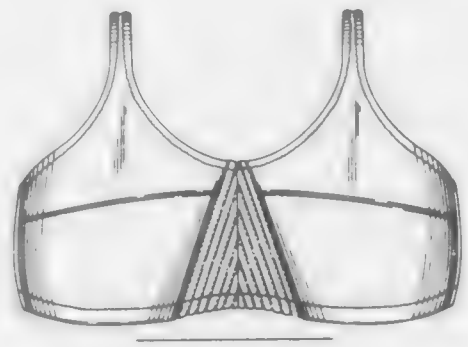
ERRATA

For CLASS	See PATENT NO.
D25-122	316,444
D26-068	316,452

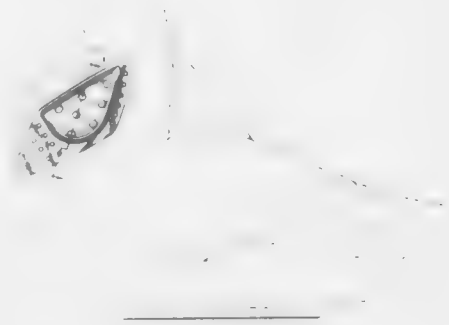
DESIGNS

APRIL 23, 1991

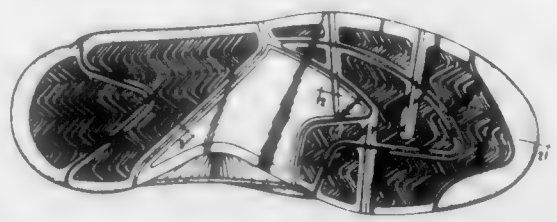
316,322
SPORTS BRASSIERE
Paula K. Bosler; Robert H. Bosler, both of Reno, Nev., and Melvin A. Pomeranz, Los Angeles, Calif., assignors to Firm Action Sports Apparel, Reno, Nev.
Filed Mar. 30, 1987, Ser. No. 31,531
Term of patent 14 years
U.S. Cl. D2—24



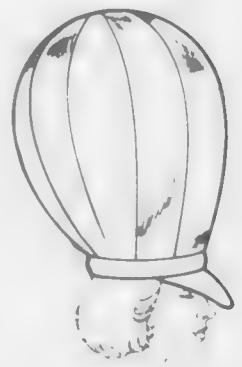
316,323
QUARTER PANEL SET FOR SHOE UPPER
Tinker Hatfield, Portland, Oreg., assignor to Nike, Inc. and Nike International Ltd., both of Beaverton, Oreg.
Filed Jun. 15, 1990, Ser. No. 538,494
Term of patent 14 years
U.S. Cl. D2—314



316,324
CUP SHAPED SHOE SOLE
Bruce E. Rogers, Portland, Oreg., assignor to Nike, Inc. and Nike International Ltd., both of Beaverton, Oreg.
Filed Jun. 15, 1990, Ser. No. 539,521
Term of patent 14 years
U.S. Cl. D2—320



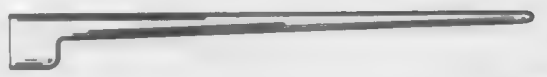
316,325
INFLATABLE HAT
Estelle M. Redden, P.O. Box 104-Easy St., Cedar Key, Fla. 32625
Filed Jun. 8, 1987, Ser. No. 22,422
Term of patent 14 years
U.S. Cl. D2—509



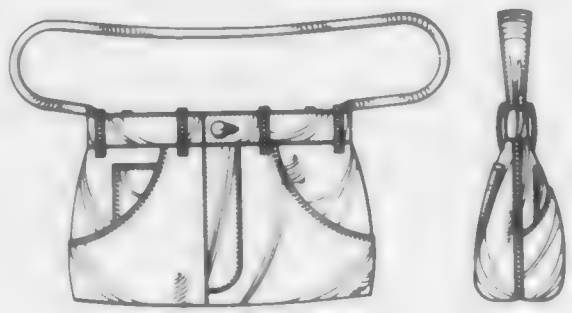
316,326
POCKET FOR A CRUTCH
Eugene S. Kaldenbach, 301 Jennie Run, LaPlata, Md. 20646
Filed Feb. 19, 1988, Ser. No. 157,524
Term of patent 14 years
U.S. Cl. D3—10



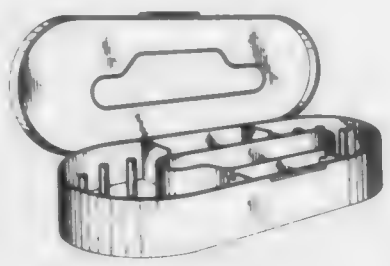
316,327
FISHING ROD AND REEL HOLDER
Homer L. Craft, 6143 Ivanhoe, Bartlett, Tenn. 38134
Filed Sep. 27, 1988, Ser. No. 250,125
Term of patent 14 years
U.S. Cl. D3—38



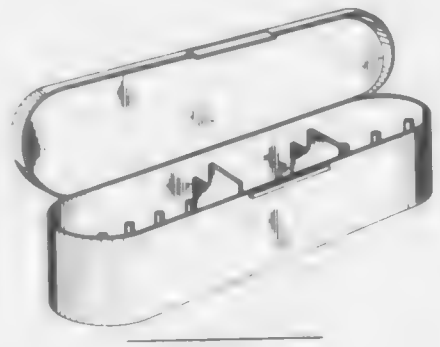
316,328
WOMAN'S SHOULDER BAG
Kathy Willoughby, P.O. Box 417, Wayne, Okla. 73095
Filed Sep. 2, 1988, Ser. No. 240,104
Term of patent 14 years
U.S. Cl. D3—44



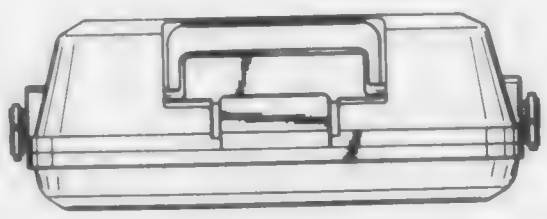
316,329
SOCKET ORGANIZER WITH A HANDLE
Peter Vicento, 3445 Cleveland St. N.E., Minneapolis, Minn. 55418
Filed May 17, 1988, Ser. No. 194,736
Term of patent 14 years
U.S. Cl. D3—74



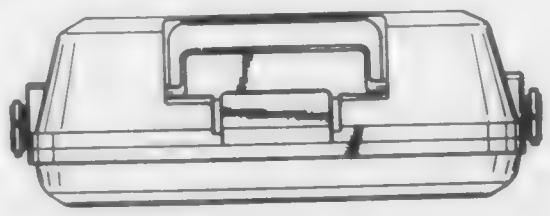
316,330
SOCKET ORGANIZER
Peter Vicento, 3445 Cleveland St. NE., Minneapolis, Minn. 55418
Filed May 17, 1988, Ser. No. 194,737
Term of patent 14 years
U.S. Cl. D3—74



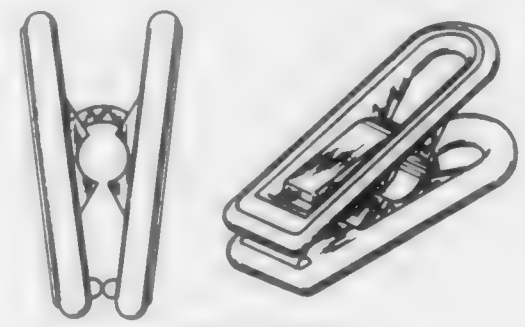
316,331
CONTAINER
John A. Bridges, Nashville, and Richard D. Booten, Brentwood, both of Tenn., assignors to Aladdin Industries, Nashville, Tenn.
Filed Oct. 21, 1988, Ser. No. 260,555
The portion of the term of this patent subsequent to Apr. 23, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D3—74



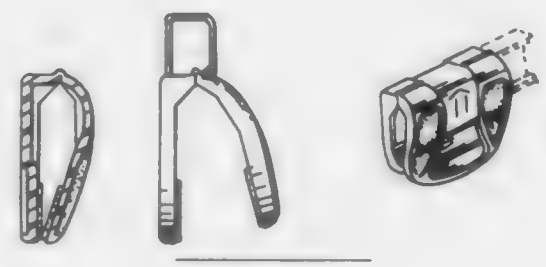
316,332
CONTAINER
John A. Bridges, Nashville, and Richard D. Booten, Brentwood, both of Tenn., assignors to Aladdin Industries Inc., Nashville, Tenn.
Filed Oct. 21, 1988, Ser. No. 260,556
The portion of the term of this patent subsequent to Apr. 23, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D3—74



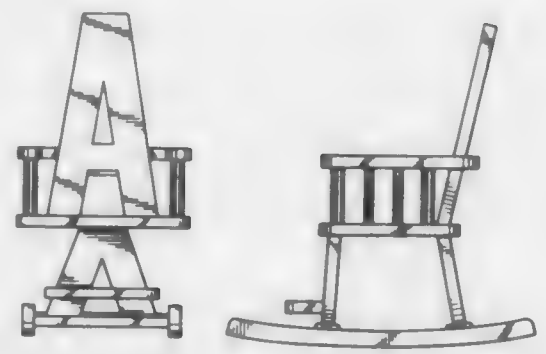
316,333
CLIP FOR A CLOTHES HANGER
Isao Maki, Tokyo, Japan, assignor to Soko Co., Ltd., Tokyo, Japan
Filed Apr. 4, 1989, Ser. No. 333,594
Claims priority, application Japan, Oct. 7, 1988, 63-39213
Term of patent 14 years
U.S. Cl. D6—328



316,334
CLAMP FOR A GARMENT CLAMPING HANGER
Everett L. Duester, Zeeland, Mich., assignor to Batts, Inc., Zeeland, Mich.
Filed Oct. 30, 1989, Ser. No. 429,181
Term of patent 14 years
U.S. Cl. D6—328



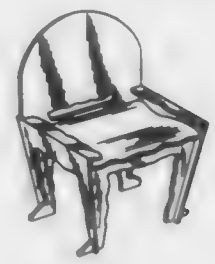
316,335
CHAIR
Michael Karas, 211 W. Main St., Waunakee, Wis. 53597
Filed Sep. 8, 1987, Ser. No. 94,433
Term of patent 14 years
U.S. Cl. D6—345



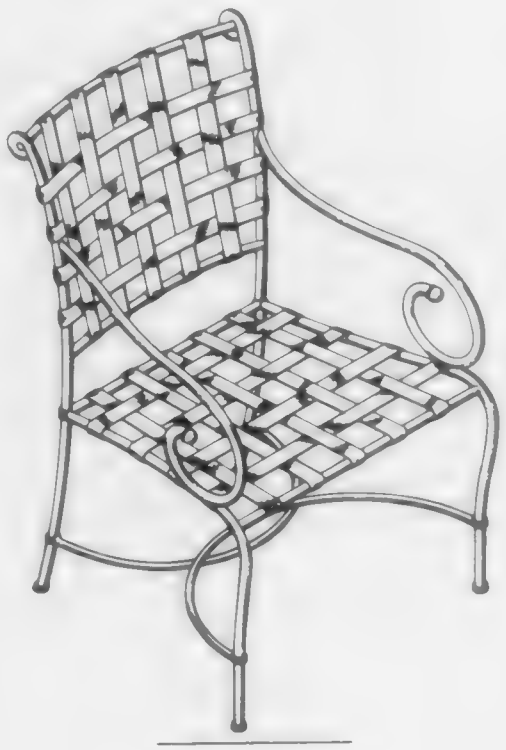
316,336
CHAISE
Richard Frinier, Long Beach, Calif., assignor to Brown Jordan Company, El Monte, Calif.
Filed Jul. 19, 1988, Ser. No. 221,190
Term of patent 14 years
U.S. Cl. D6—361



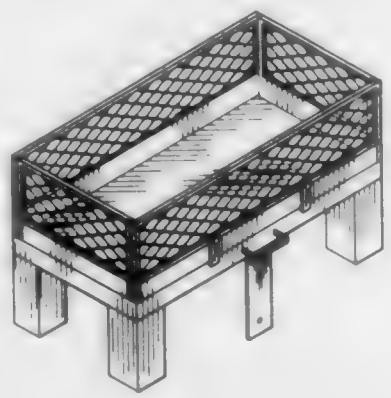
316,337
CHAIR
Bradley R. Orsburn, 5345 S. University, Chicago, Ill. 60615
Filed Feb. 10, 1988, Ser. No. 154,628
Term of patent 14 years
U.S. Cl. D6—374



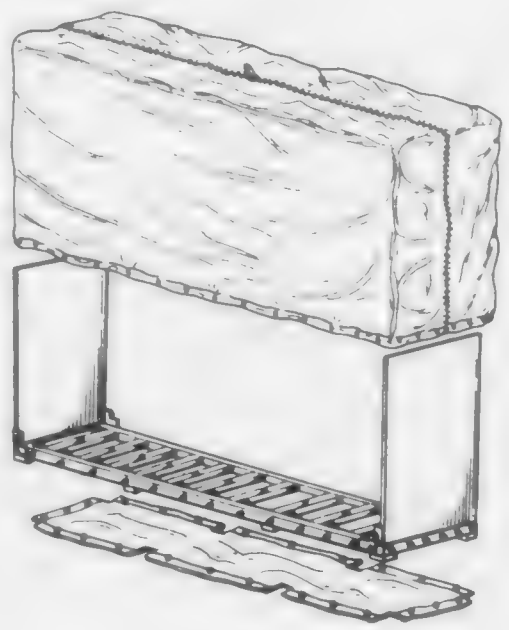
316,338
CHAIR
Richard Frisier, Long Beach, Calif., assignor to Brown Jordan Company, El Monte, Calif.
Filed Jan. 11, 1988, Ser. No. 142,748
Term of patent 14 years
U.S. Cl. D6—380



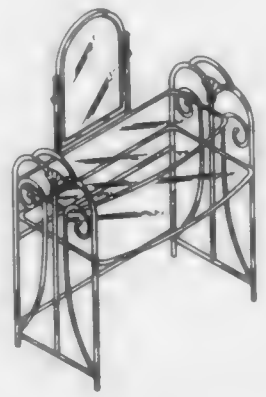
316,339
PORTABLE COLLAPSIBLE CRIB
Gwen S. Taylor, 325 N. Patterson St., Prince George B.C., Canada V2M 3J3
Filed Aug. 21, 1987, Ser. No. 87,905
Term of patent 14 years
U.S. Cl. D6—391



316,340
COMBINED LOG HOLDER AND COVER
Larry Richardson, 3235 Valley View St., Powder Springs, Ga. 30073
Filed Jul. 20, 1987, Ser. No. 75,312
Term of patent 14 years
U.S. Cl. D6—397



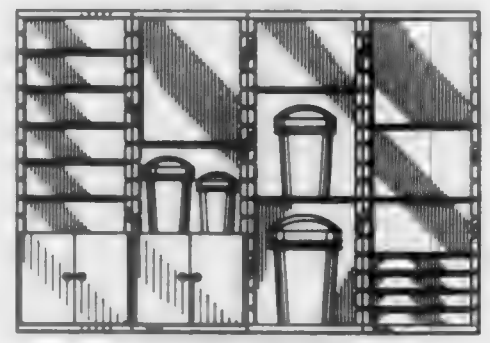
316,341
VANITY TABLE
Peter M. Y. Kee, Happy Valley, Hong Kong, assignor to Rosalco, Inc., Louisville, Ky.
Filed Jul. 31, 1990, Ser. No. 560,311
Term of patent 14 years
U.S. Cl. D6—397



316,342
TOWEL RACK
Peter M. Y. Kee, Happy Valley, Hong Kong, assignor to Rosalco, Inc., Louisville, Ky.
Filed Jul. 31, 1990, Ser. No. 560,318
Term of patent 14 years
U.S. Cl. D6—410



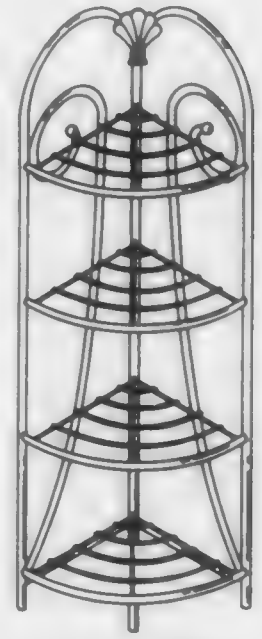
316,343
CHILDREN'S TOY ORGANIZER
Michael J. Coon, 20 Woodside Ave., Oneonta, N.Y. 13820
Filed Nov. 3, 1988, Ser. No. 266,144
Term of patent 14 years
U.S. Cl. D6—436



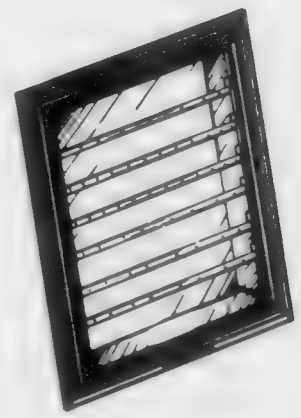
316,344
MAGAZINE RACK
Peter M. Y. Kee, Happy Valley, Hong Kong, assignor to Rosalco, Inc., Louisville, Ky.
Filed Jul. 31, 1990, Ser. No. 560,316
Term of patent 14 years
U.S. Cl. D6—462



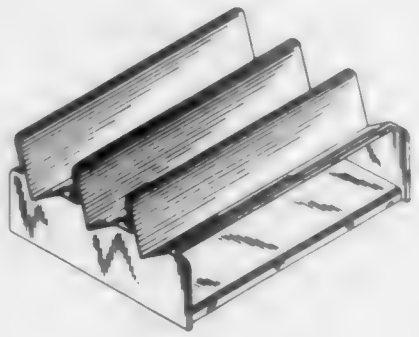
316,345
CORNER SHELF
Peter Mo Yau Kee, Happy Valley, Hong Kong, assignor to Rosalco, Inc., Louisville, Ky.
Filed Jul. 31, 1990, Ser. No. 560,315
Term of patent 14 years
U.S. Cl. D6—465



316,346
DISPLAY CASE FOR JEWELRY ITEMS
Mallory B. Jackson, and Joseph S. Jackson, Jr., both of 11840 N. 54th St., Scottsdale, Ariz. 85254
Filed Apr. 15, 1988, Ser. No. 182,308
Term of patent 14 years
U.S. Cl. D6—464



316,347
SUPPORT STAND FOR HANDHELD REMOTE CONTROLLERS
Eugene Getto, New York, N.Y., assignor to Itemakers Ltd., Forest Hills, N.Y.
Filed Jun. 15, 1988, Ser. No. 207,304
Term of patent 14 years
U.S. Cl. D6—467



316,348
TABLE
Vittorio Livi, Pesaro, Italy, assignor to FIAM S.r.l., Tavullia, Italy
Filed Feb. 1, 1985, Ser. No. 697,387
Claims priority, application Italy, Aug. 6, 1984, 22804 B/84
Term of patent 14 years
U.S. Cl. D6—484



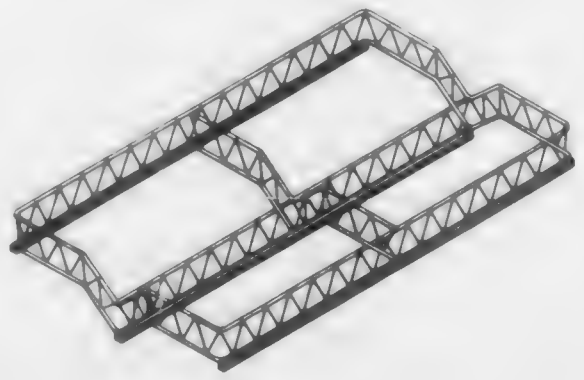
316,349
TABLE
Peter M. Y. Kee, Happy Valley, Hong Kong, assignor to Rosalco, Inc., Louisville, Ky.
Filed Jul. 31, 1990, Ser. No. 560,320
Term of patent 14 years
U.S. Cl. D6—487



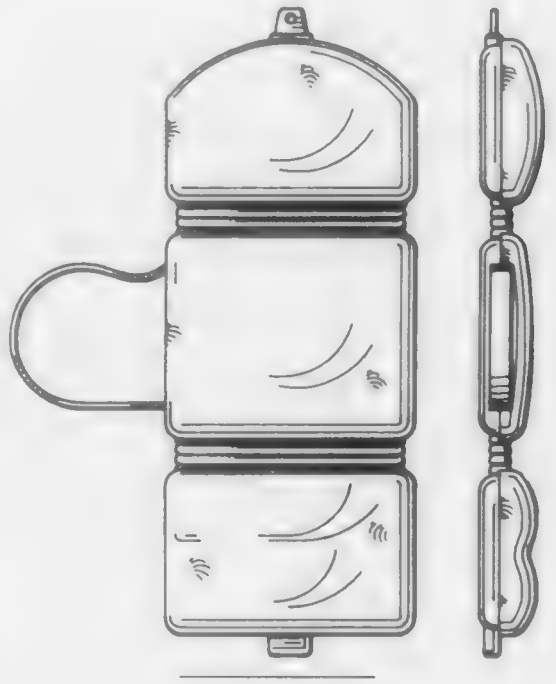
316,350
SUPPORT PEDESTAL FOR A TABLE
Steven A. Beaudry, 12261 Drake St., Coon Rapids, Minn. 55433
Filed Aug. 4, 1987, Ser. No. 81,436
Term of patent 14 years
U.S. Cl. D6—495



316,351
HANGING DISPLAY ASSEMBLY
Richard J. Rubin, Newton, Mass., assignor to Boston Metal Products Corp., Medford, Mass.
Filed Jan. 23, 1989, Ser. No. 301,251
Term of patent 14 years
U.S. Cl. D6—513



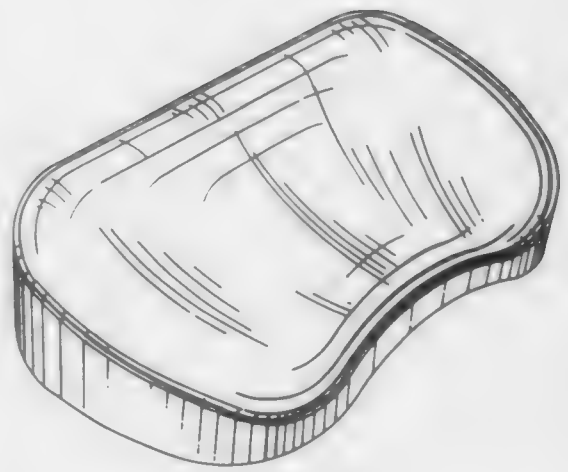
316,352
COMBINATION BABY COOLING PAD AND COVER THEREFOR
Marvel K. Anson, 7411 W. Division Rd., Andrews, Ind. 46702
Filed May 26, 1989, Ser. No. 357,100
Term of patent 14 years
U.S. Cl. D6—596



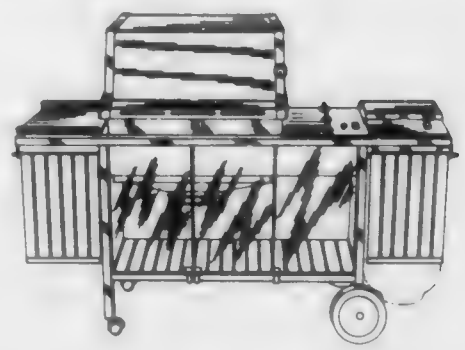
316,353
PILLOW
John R. Dobson, Campbelltown, Australia, assignor to [redacted] Dobson, Campbelltown, Australia, a part interest
Filed Feb. 3, 1989, Ser. No. 306,645
Claims priority, application Australia, Aug. 5, 1988, 2645
Term of patent 14 years
U.S. Cl. D6—601



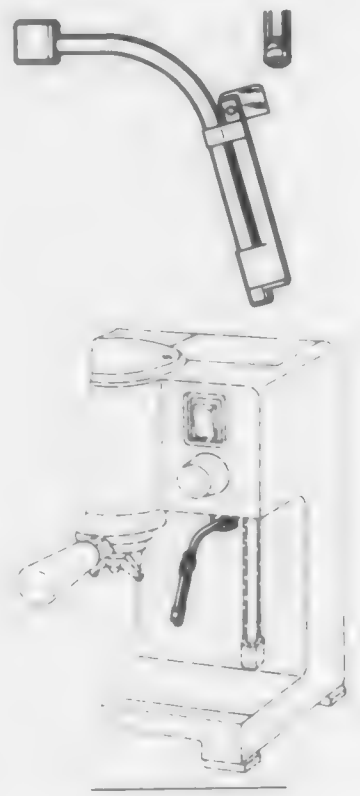
316,354
LOIN REST
Robert Bool, 62 Victoria Street, Belmoral Heights, Queensland 4171, Australia
Filed Feb. 21, 1989, Ser. No. 313,257
Claims priority, application Benelux, Aug. 19, 1988, 63548-00
Term of patent 14 years
U.S. Cl. D6—601



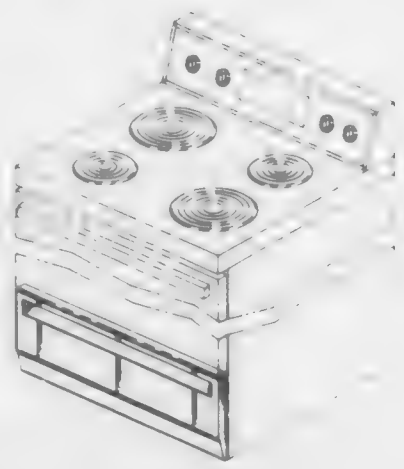
316,355
PORTABLE GAS GRILL
James C. Stephen, Arlington Heights; Erich J. Schlosser, Barrington, and Donald D. Pestka, Arlington Heights, all of Ill., assignors to Weber-Stephen Products Co., Palatine, Ill.
Filed Aug. 12, 1988, Ser. No. 231,843
Term of patent 14 years
U.S. Cl. D7—339



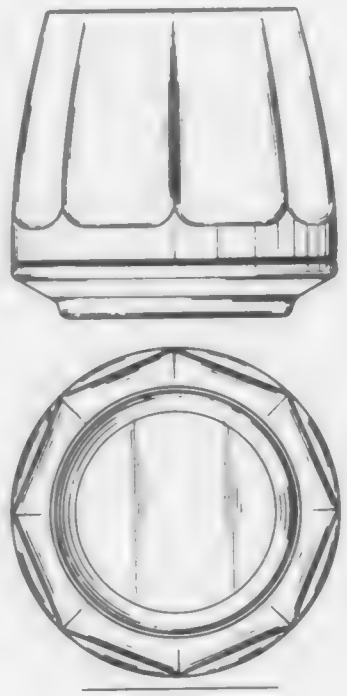
316,356
CAPPUCCINO MAKING ADAPTER FOR AN ESPRESSO MACHINE
Michael Borgmann, Solingen, Fed. Rep. of Germany, assignor to Robert Krups Stiftung & Co. KG., Solingen, Fed. Rep. of Germany
Filed Jan. 9, 1988, Ser. No. 205,114
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1987, 5MR9831
Term of patent 14 years
U.S. Cl. D7—398



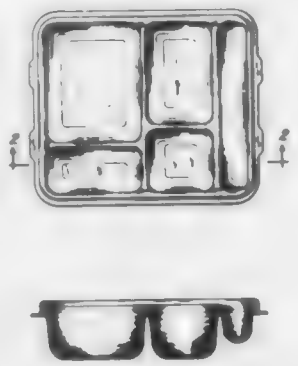
316,357
COOKING RANGE DRAWER PANEL
William D. Chanda, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Jun. 17, 1988, Ser. No. 208,018
Term of patent 14 years
U.S. Cl. D7—405



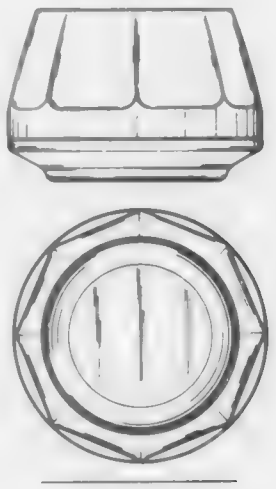
316,358
INSULATED DRINKING TUMBLER
Christopher S. Thorp, Mystic, Conn., assignor to Dinex International, Inc., Norwich, Conn.
Filed May 2, 1988, Ser. No. 189,520
The portion of the term of this patent subsequent to Apr. 23, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—531



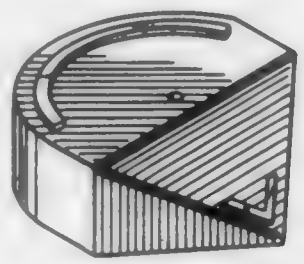
316,359
FOOD SERVING TRAY
John W. Anderson, Springfield, Mass., assignor to Temp-Tech Co. Inc., Springfield, Mass.
Filed Dec. 19, 1988, Ser. No. 286,059
Term of patent 14 years
U.S. Cl. D7—549



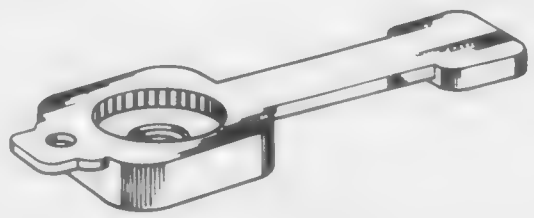
316,360
INSULATED BOWL
Christopher S. Thorp, Mystic, Conn., assignor to Dinex International, Inc., Norwich, Conn.
Filed May 2, 1988, Ser. No. 189,700
The portion of the term of this patent subsequent to Apr. 23, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—565



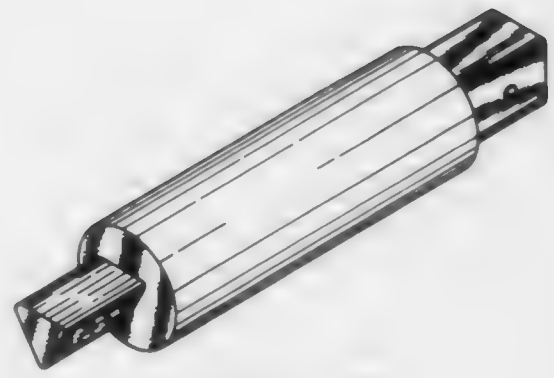
316,361
MARKING INSTRUMENT
Michael D. Kieffer, Avonmore, Pa., assignor to Mannington Mills, Inc., Salem, N.J.
Filed Apr. 11, 1988, Ser. No. 180,032
Term of patent 14 years
U.S. Cl. D8—14



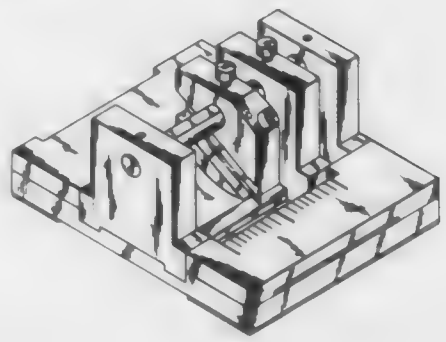
316,362
COMBINED BOTTLE CAP AND CAN TAB OPENER
Michael E. Hughes, 7112 Jefferson, NE., Albuquerque, N. Mex. 87109, assignor to Michael E. Hughes, Albuquerque, N. Mex.
Continuation-in-part of Ser. No. 798,577, Nov. 15, 1985. This application Mar. 30, 1987, Ser. No. 33,481
Term of patent 14 years
U.S. Cl. D8—40



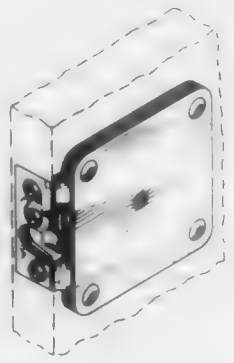
316,363
SOCKET ADAPTER FOR A DRILL
Rayford Lisenbee, P.O. Box 222, Winona, Miss. 38967
Filed Nov. 4, 1987, Ser. No. 116,677
Term of patent 14 years
U.S. Cl. D8—70

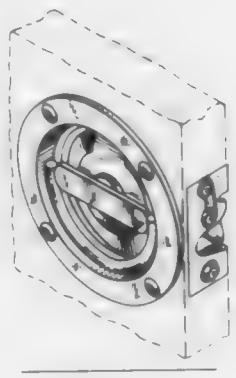


316,364
APPARATUS FOR SLITTING ELONGATED FLEXIBLE TAPE
William C. Isaacson, North Hollywood, and Herbert A. Farmery, Anaheim, both of Calif., assignors to Keen Corporation, New York, N.Y.
Filed May 20, 1987, Ser. No. 52,563
Term of patent 14 years
U.S. Cl. D8—98

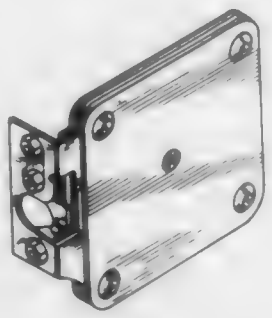


316,365
ROTARY LOCK
Randall C. Hansen, Lake Forest, Ill., and Gilbert H. Krahn, Kenosha, Wis., assignors to A.L. Hansen Manufacturing Company, Waukegan, Ill.
Filed Jan. 13, 1989, Ser. No. 297,064
Term of patent 14 years
U.S. Cl. D8—331

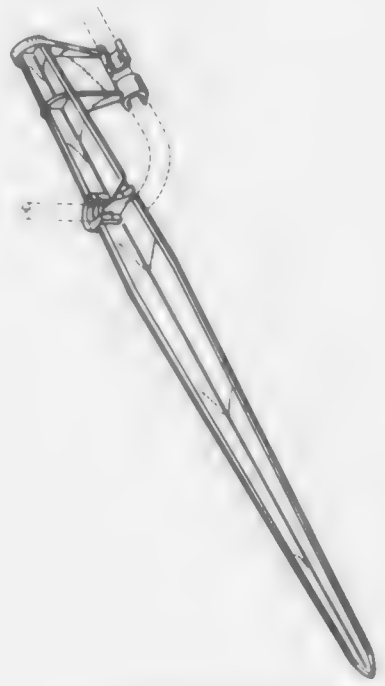




316,366
ROTARY LOCK
Randall C. Hansen, Lake Forest, Ill., and Gilbert H. Krahn, Kenosha, Wis., assignors to A. L. Hansen Manufacturing Company, Waukegan, Ill.
Filed Jan. 13, 1989, Ser. No. 297,534
Term of patent 14 years
U.S. Cl. D8—331



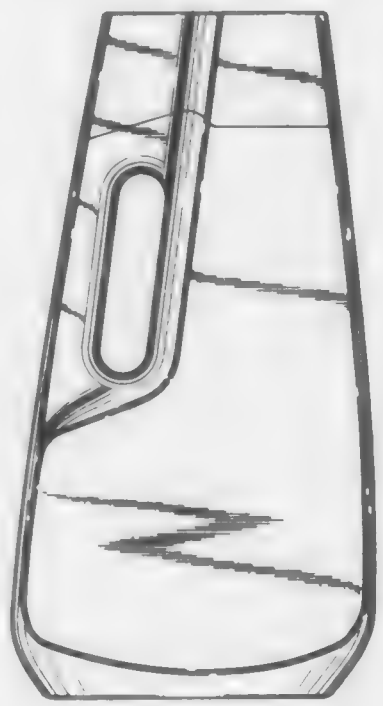
316,367
GROUND STAKE FOR RETAINING IRRIGATION CONDUIT
Donald O. Olson, 1935 Altozana Dr., El Cajon, Calif. 92020
Filed Dec. 27, 1988, Ser. No. 290,096
Term of patent 14 years
U.S. Cl. D8—356



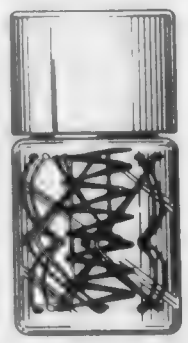
316,368
CLAMP
Daniel Kirby, Box 773, Kahnawake, Quebec J0L 1B0, Canada
Filed Mar. 23, 1989, Ser. No. 327,578
Term of patent 14 years
U.S. Cl. D8—395



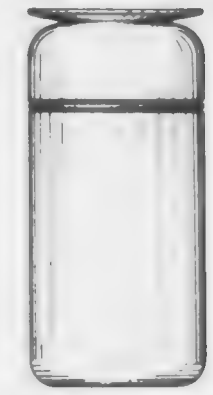
316,369
COMBINED BOTTLE AND MEASURING CUP COVER
Joseph Thompson, Upper Saddle River, N.J., assignor to Sterling Drug Inc., Rensselaer, N.Y.
Filed May 31, 1988, Ser. No. 200,369
Term of patent 14 years
U.S. Cl. D9—337



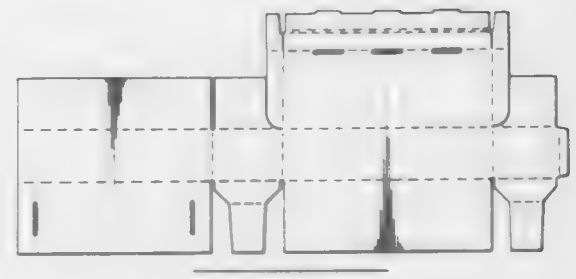
316,370
COSMETIC CONTAINER
David Hoenig, East Brunswick, N.J., assignor to Revlon, Inc., New York, N.Y.
Filed Oct. 7, 1988, Ser. No. 255,171
Term of patent 14 years
U.S. Cl. D9—337



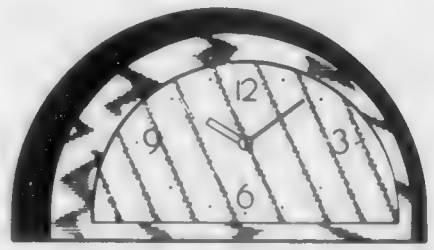
316,371
CONTAINER
Jean-Jacques Vola, Verrieres-le-Buisson, France, assignor to Honeywell, Inc., Minneapolis, Minn.
Filed Sep. 8, 1988, Ser. No. 242,276
Term of patent 14 years
U.S. Cl. D9—353



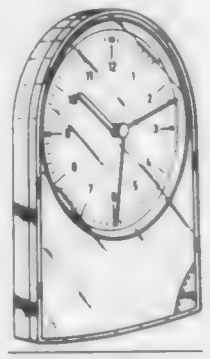
316,372
STORAGE BOX BLANK
Wedon G. Boggus, Jr., San Angelo, Tex., assignor to Stor-A-File, Inc., San Angelo, Tex.
Division of Ser. No. 67,911, Jun. 29, 1987, Pat. No. 8,312,402.
This application Sep. 4, 1990, Ser. No. 576,900
Term of patent 14 years
U.S. Cl. D9—433



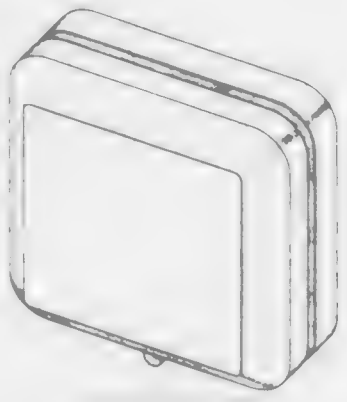
316,373
CLOCK
Seiji Odaka, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Dec. 21, 1987, Ser. No. 135,629
Claims priority, application Japan, Jun. 22, 1987, 62-25327
Term of patent 14 years
U.S. Cl. D10—28



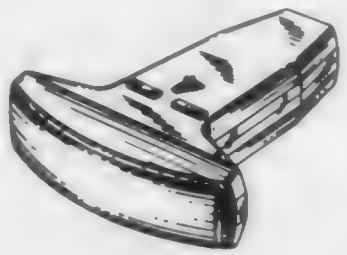
316,374
CLOCK
Hartmut Esslinger, and Wolfgang Jeschke, both of Altensteig, Fed. Rep. of Germany, assignors to Junghans Uhren GmbH, Schramberg, Fed. Rep. of Germany
Filed Jan. 4, 1988, Ser. No. 140,411
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1987, MR 1321 0B
Term of patent 14 years
U.S. Cl. D10—28



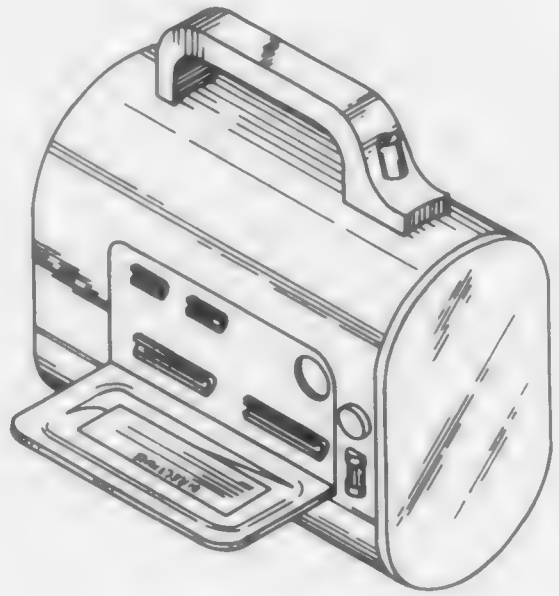
316,375
THERMOSTAT
Robert J. Tiedemann, Stamford, Conn., assignor to ITT Corporation, New York, N.Y.
Filed Jun. 27, 1989, Ser. No. 372,783
Term of patent 14 years
U.S. Cl. D10—50



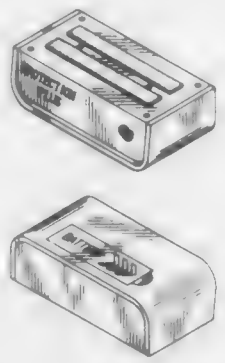
316,376
ULTRASONIC PROBE
Patrick G. Dubut, St. Paul de Vence, France, assignor to CGR Ultrasonic, Villenoy-les-Meaux, France
Filed May 22, 1987, Ser. No. 53,420
Claims priority, application France, Nov. 25, 1986, 86 6228
Term of patent 14 years
U.S. Cl. D10—60



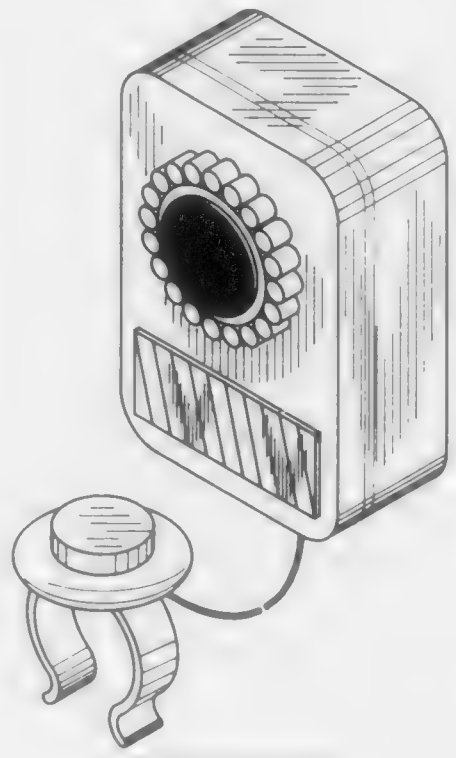
316,377
WATTMETER
Dan B. Merlin, 4012 Tybo Ave., Las Vegas, Nev. 89110
Filed Nov. 14, 1988, Ser. No. 270,281
Term of patent 14 years
U.S. Cl. D10—78



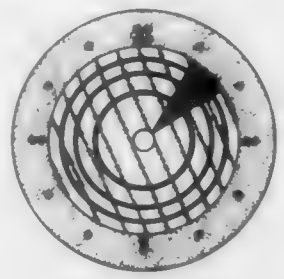
316,378
AUTOMOBILE ANTI-THEFT ALARM
John Liantonio, 3 Wichard Dr., Oakdale, N.Y. 11769
Filed Dec. 6, 1988, Ser. No. 280,525
Term of patent 14 years
U.S. Cl. D10—106



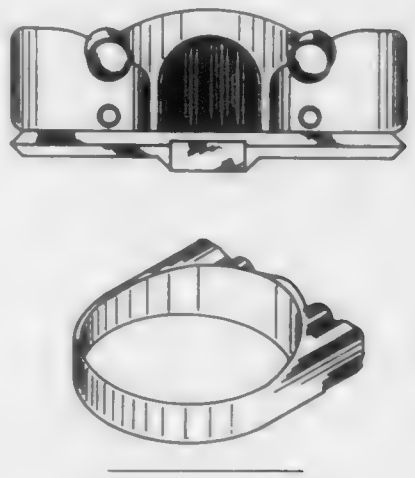
316,379
ALARM FOR A BICYCLE
Darren S. Labas, 142 - 8 St. NW., Medicine Hat, Alberta, Canada T1A 6P3
Filed Jul. 7, 1988, Ser. No. 216,249
Term of patent 14 years
U.S. Cl. D10—116



316,380
WATCH DIAL
Ryoichi Kaneko, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jun. 1, 1988, Ser. No. 201,094
Claims priority, application Japan, Dec. 7, 1987, 62-50034
Term of patent 14 years
U.S. Cl. D10—126



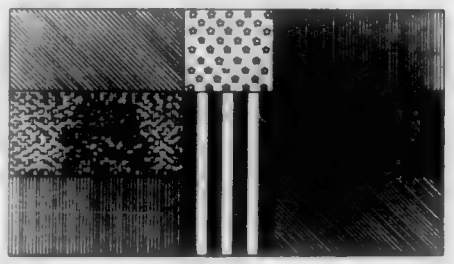
316,381
FINGER RING
Brian A. Klym, 22 Kinkora Drive, Winnipeg, Manitoba, Canada R3R 2L6
Filed Feb. 29, 1988, Ser. No. 161,675
Term of patent 14 years
U.S. Cl. D11—30



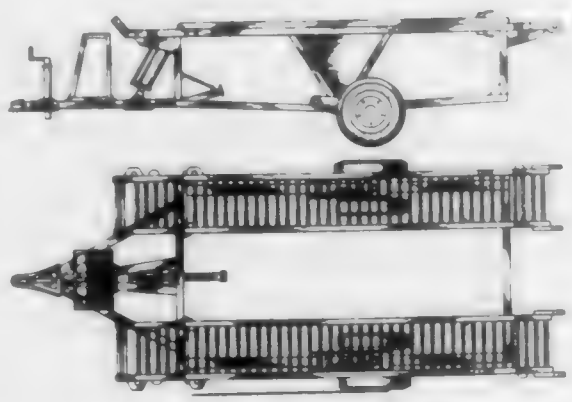
316,382
PLANT WATERER
Moises B. Lorenzana, 601 Lake Hinsdale Dr., Willowbrook, Ill. 60559, and Vance A. Lorenzana, 698 Spring Hill Cir., Naperville, Ill. 60540
Filed Dec. 27, 1988, Ser. No. 289,751
Term of patent 14 years
U.S. Cl. D11—164



316,383
FLAG
Vincent Paramore, 2207 Johnson St., Hollywood, Fla. 33020
Filed May 31, 1990, Ser. No. 531,794
Term of patent 14 years
U.S. Cl. D11—167



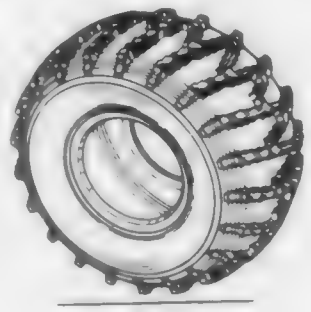
316,384
VEHICLE SERVICE TRAILER, OR SIMILAR ARTICLE
Raymond E. Teagarden, 9430 Mission Blvd., Riverside, Calif. 92509
Filed Nov. 28, 1988, Ser. No. 276,554
Term of patent 14 years
U.S. Cl. D12—94



316,385
VEHICLE TIRE
Peter R. Marriott, Hurley, Nr. Atherstone, England, assignor to SP Tyres UK Ltd., Birmingham, England
Filed May 5, 1988, Ser. No. 190,520
Claims priority, application United Kingdom, Nov. 6, 1987, 1046105
Term of patent 14 years
U.S. Cl. D12—146



316,386
AUTOMOBILE TIRE
[redacted] Fujiki, Hyogo, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo, Japan
Filed May 25, 1989, Ser. No. 357,215
Claims priority, application Japan, Dec. 26, 1988, 63-51[redacted]
Term of patent 14 years
U.S. Cl. D12—146

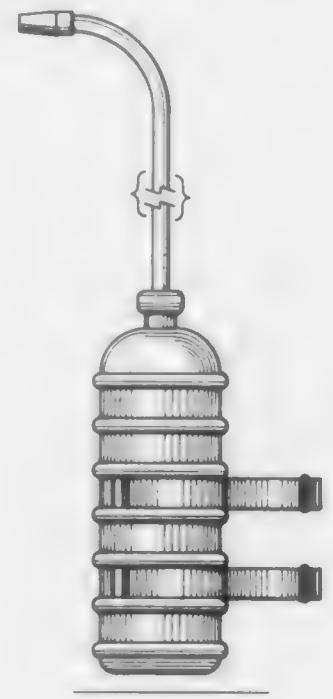


316,387
TIRE
Pentti Eromäki, Nokia, Finland, assignor to Nokia Tyres Limited, Nokia, Finland
Filed Dec. 14, 1988, Ser. No. 284,474
Claims priority, application Finland, Jun. 15, 1988, 541/88
Term of patent 14 years
U.S. Cl. D12—147



316,388
TIRE
Bill J. Wallet, Marshallville, and Joseph F. Molnar, Wadsworth, both of Ohio, assignors to Bridgestone/Firestone, Inc., Akron, Ohio
Filed Jun. 23, 1989, Ser. No. 370,510
Term of patent 14 years
U.S. Cl. D12—147

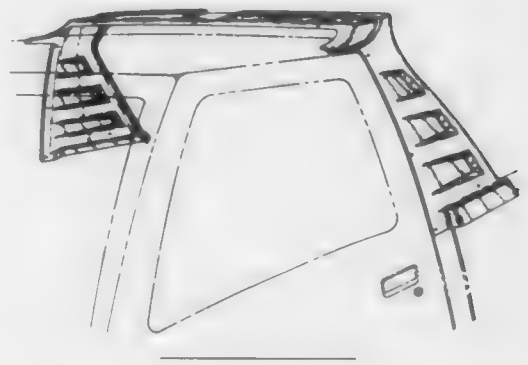
316,389
BOTTLE FOR ATTACHMENT TO A BICYCLE
Daniel H. Wood, 2108 Marchita Way, Carmichael, Calif. 95608, and Thomas S. W. Lee, 8462 Rick Mary Ct., Fair Oakes, Calif. 95628
Filed Sep. 2, 1988, Ser. No. 240,105
Term of patent 14 years
U.S. Cl. D12—158



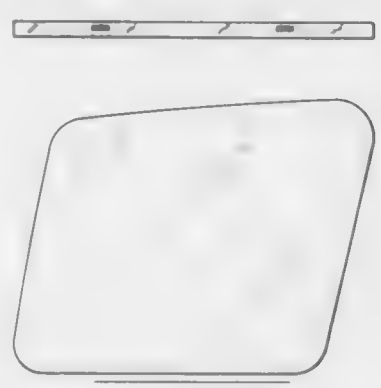
316,390
AIR DAM FOR AN AUTOMOBILE
Kazuhiro Ichinose, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 8, 1989, Ser. No. 391,374
Claims priority, application Japan, Feb. 8, 1989, 1-4411
Term of patent 14 years
U.S. Cl. D12—181



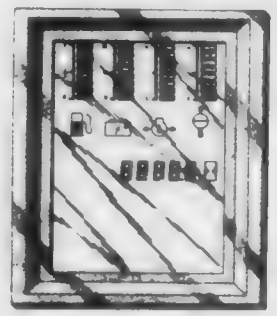
316,391
CAB FAIRING FOR TRUCKS
David M. Lund, Coon Rapids, Minn., assignor to Lund Industries, Incorporated, Minneapolis, Minn.
Filed Sep. 25, 1989, Ser. No. 410,048
Term of patent 14 years
U.S. Cl. D12—181



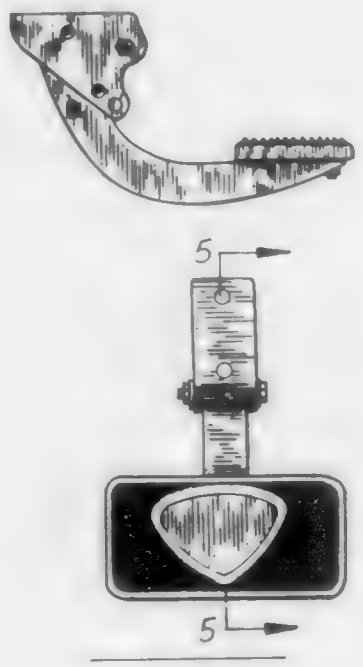
316,392
GLARE REDUCTION SHIELD FOR ATTACHMENT TO A VEHICLE MIRROR OR SIMILAR ARTICLE
Charles C. Rebeck, R.R. 3, Box 28A, Winamac, Ind. 46996
Filed Aug. 15, 1988, Ser. No. 232,653
Term of patent 14 years
U.S. Cl. D12—187



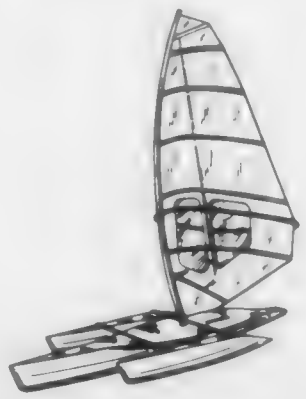
316,393
VEHICLE MONITORING DISPLAY PANEL
Wally L. Kaczmarski, Lisbon, N. Dak., assignor to Clark Equipment Company, South Bend, Ind.
Filed Jul. 25, 1988, Ser. No. 224,472
Term of patent 14 years
U.S. Cl. D12—192



316,394
COMBINED VEHICLE STEP AND MOUNTING BRACKET
Jeff A. Carr, 10433 Samoline Ave., Downey, Calif. 90241
Filed Oct. 30, 1989, Ser. No. 428,749
Term of patent 14 years
U.S. Cl. D12—203



316,395
SAILING CRAFT
Toshiharu Yamada, Cypress, Calif., and Kunihiko Kobayashi, Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Feb. 24, 1989, Ser. No. 315,034
Term of patent 14 years
U.S. Cl. D12—304



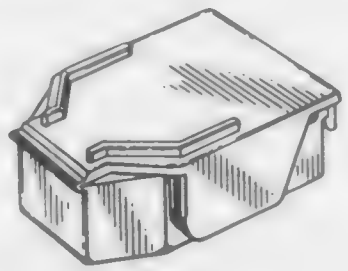
316,396
UNINTERRUPTIBLE POWER SUPPLY CELL
Jean Decoene, Charavines, and Georges Herman, Grenoble, both of France, assignors to Merlin Gerin, Meylan, France
Filed Aug. 13, 1987, Ser. No. 84,755
Claims priority, application France, Feb. 13, 1987, 505
Term of patent 14 years
U.S. Cl. D13—101



316,397
PORTABLE, RECHARGEABLE STORAGE BATTERY
Raymond F. Herbert, Yorkshire, United Kingdom, assignor to Powerbank Limited, United Kingdom
Filed Aug. 16, 1988, Ser. No. 232,895
Term of patent 14 years
U.S. Cl. D13—106



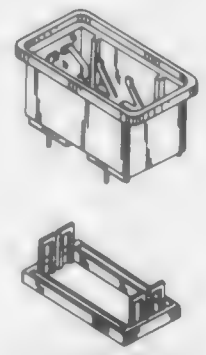
316,398
HOUSING FOR A BATTERY TERMINAL CONNECTOR
Jeremy C. Hill, 603½ Orchid Ave., Corona del Mar, Calif. 92628, assignor to Ronald G. Slagle, Laguna Beach and Jeremy C. Hill, Corona del Mar, both of, Calif.
Filed Sep. 19, 1988, Ser. No. 246,380
Term of patent 14 years
U.S. Cl. D13—120



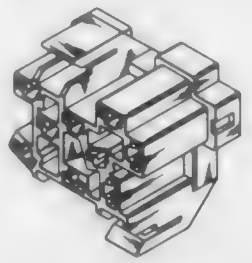
316,399
PANEL ELECTRICAL CONNECTOR
Richard F. Wharton, Glenview, Ill., assignor to Safco Corporation, Chicago, Ill.
Filed Oct. 28, 1988, Ser. No. 264,188
Term of patent 14 years
U.S. Cl. D13—133



316,400
OUTER HOUSING OF ELECTRICAL CONNECTOR
Yasuharu Moriai, and Osamu Ito, both of Suzuka, Japan, assignors to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan
Filed Nov. 14, 1988, Ser. No. 271,082
Claims priority, application Japan, May 13, 1988, 63-18980
Term of patent 14 years
U.S. Cl. D13—133



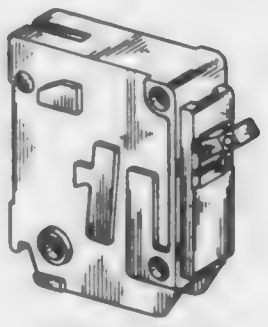
316,401
HOUSING FOR AN ELECTRICAL CONNECTOR
Hitoshi Sakai, Gotenba, Japan, assignor to Yazaki Corporation, Japan
Filed Oct. 7, 1988, Ser. No. 255,526
Claims priority, application Japan, Apr. 7, 1988, 63-13736
Term of patent 14 years
U.S. Cl. D13—146



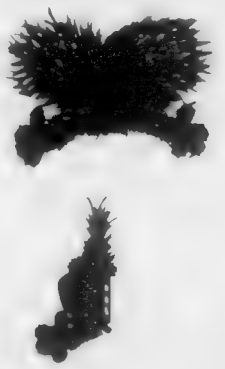
316,402
COVER FOR AN AUTOMOBILE-TYPE CIGARETTE LIGHTER RECEPTACLE
Larry Baker, 608 Albert Way, Petaluma, Calif. 94952
Filed Feb. 24, 1987, Ser. No. 18,184
Term of patent 14 years
U.S. Cl. D13—156



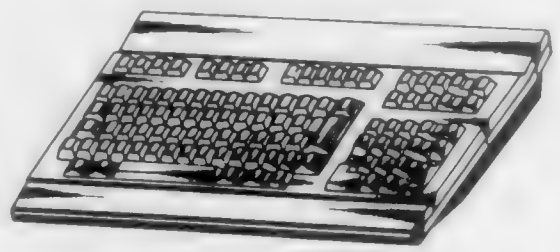
316,403
BREAKER CASE
James M. Mercer, Charlottesville, Va., and Keith A. Singer, Wilmington, N.C., assignors to Cooper Industries, Inc., Houston, Tex.
Filed Jun. 19, 1989, Ser. No. 368,018
Term of patent 14 years
U.S. Cl. D13—160



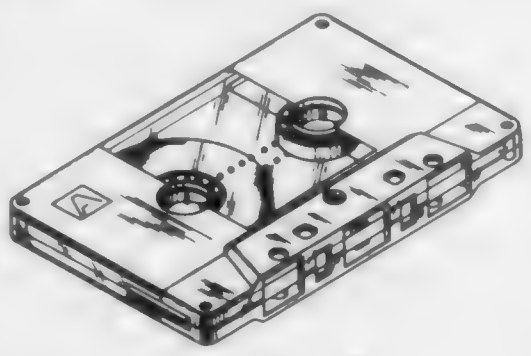
316,404
MAGNET
Ronald K. Calleja, 12 Primula Avenue, North Altona, Victoria 3025, Australia
Filed Jun. 13, 1988, Ser. No. 211,100
Claims priority, application Australia, Dec. 18, 1987, 4714/87
Term of patent 14 years
U.S. Cl. D13—183



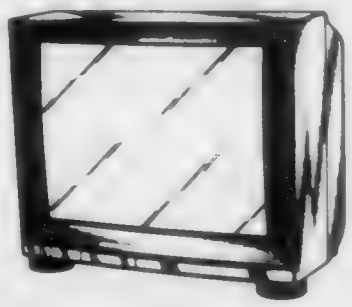
316,405
KEYBOARD FOR DATA PROCESSING SYSTEM
Isamu Yoshitake, Fuchu, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Feb. 27, 1989, Ser. No. 316,451
Term of patent 14 years
U.S. Cl. D14—100



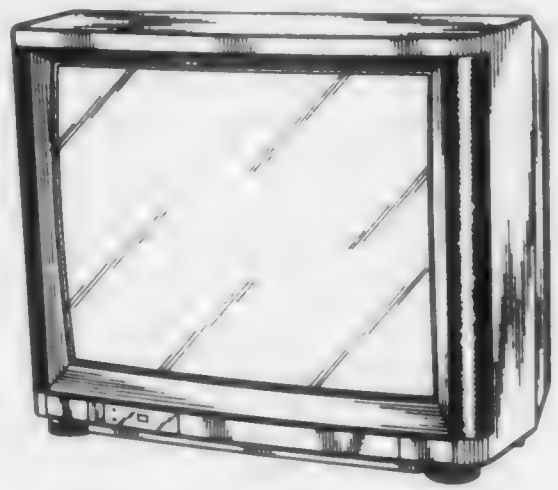
316,406
AUDIO CASSETTE
Fuyuki Yoshera, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 29, 1988, Ser. No. 291,877
Claims priority, application Japan, Jun. 29, 1988, 63-25956
Term of patent 14 years
U.S. Cl. D14—121



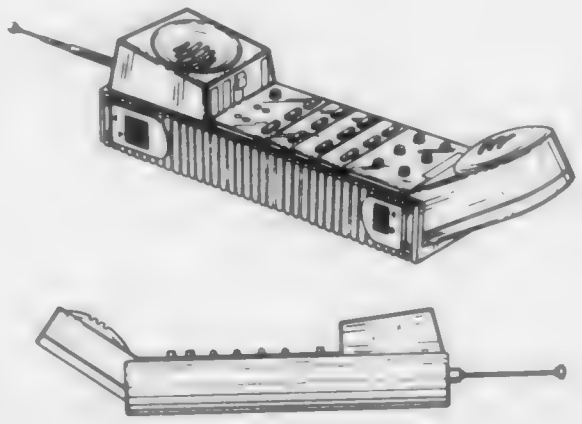
316,407
TELEVISION RECEIVER
Masao Yoshikawa, and Yuzo Fujii, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 31, 1989, Ser. No. 361,002
Claims priority, application Japan, Dec. 2, 1988, 63-47323
Term of patent 14 years
U.S. Cl. D14—126



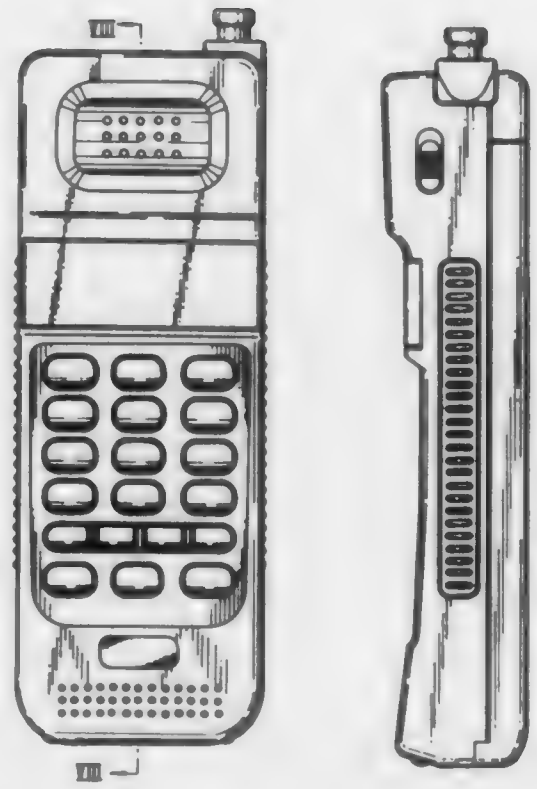
316,408
TELEVISION RECEIVER
Hiroyuki Tsubaki; Masao Yoshikawa, and Kazutoshi Masunari, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jun. 6, 1989, Ser. No. 362,301
Claims priority, application Japan, Dec. 9, 1988, 63-48184
Term of patent 14 years
U.S. Cl. D14—126



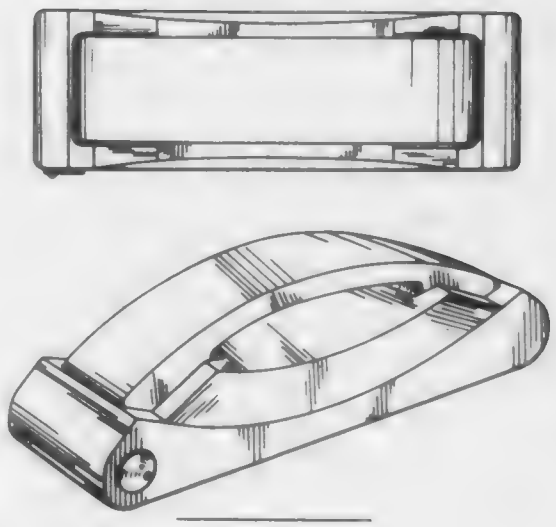
316,409
CORDLESS HANDSET TELEPHONE
David A. Sharbaugh, Irvine, Calif., assignor to PhoneMate, Torrance, Calif.
Filed Nov. 16, 1989, Ser. No. 437,974
Term of patent 14 years
U.S. Cl. D14—138



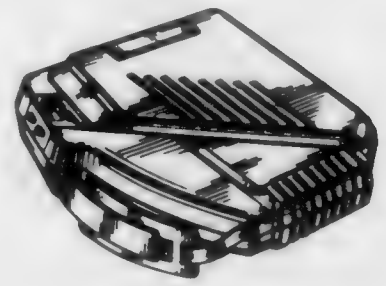
316,410
PORTABLE RADIO TELEPHONE
Katsuhito Watanabe, and Naoko Seki, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Aug. 21, 1990, Ser. No. 571,092
Claims priority, application Japan, Feb. 21, 1990, 2-5181
Term of patent 14 years
U.S. Cl. D14—138



316,411
TELEPHONE
Cosmo Falloro, Pavia, Italy, assignor to Haina S.p.A., Rivoli Torino, Italy
Filed Jul. 6, 1990, Ser. No. 549,499
Claims priority, application Italy, Jan. 23, 1990, 52837/90[U]
Term of patent 14 years
U.S. Cl. D14—147

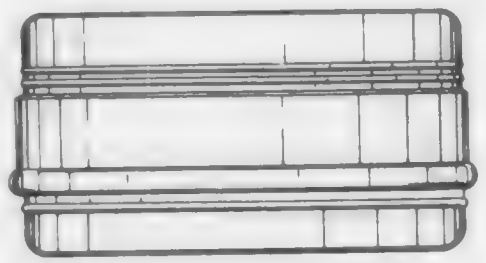


316,412
VOICE TRANSLATOR
Allen W. VanNoy, Bothell, Wash., assignor to Advanced Products and Technologies, Inc., Redmond, Wash.
Filed Jul. 5, 1988, Ser. No. 216,698
Term of patent 14 years
U.S. Cl. D14—158

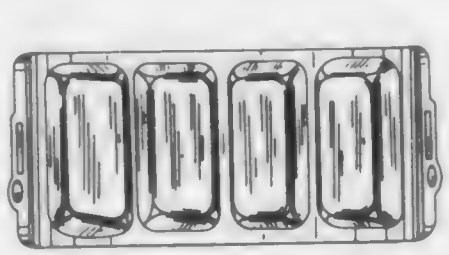


316,413
LOUDSPEAKER CABINET
Andrew E. Flanders, 570 N. 10th Ave., Cornelius, Oreg. 97113
Filed Jun. 25, 1987, Ser. No. 66,796
Term of patent 14 years
U.S. Cl. D14—214

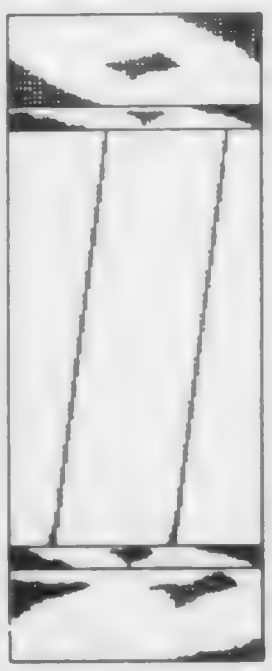
316,414
CUSHION FOR ATTACHMENT TO THE ARCUATE HEADBAND CONNECTING THE EARPIECE MEMBERS OF A COMMUNICATIONS HEADSET
Domenic L. Fratantonio, and Robert E. Dalbec, both of Worcester, Mass., assignors to David Clark Company Incorporated, Worcester, Mass.
Filed Jan. 27, 1989, Ser. No. 302,731
Term of patent 14 years
U.S. Cl. D14—223

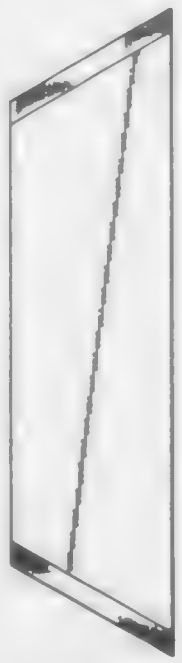


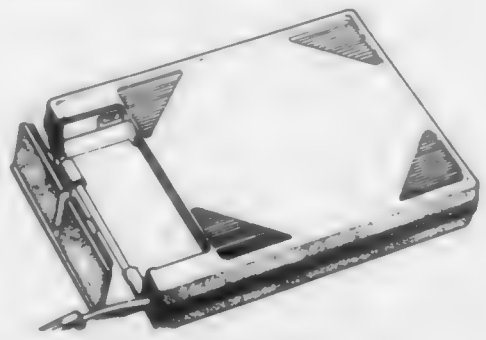




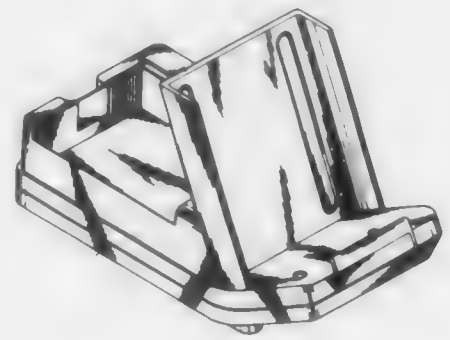
316,415
HOUSING FOR AN UNDER TELEPHONE EXTENSION REEL
Paul S. Hepworth, Guildford, England, assignor to Plessey Plugs Limited, Burton on Trent, England
Filed Sep. 8, 1988, Ser. No. 404,439
Claims priority, application United Kingdom, Mar. 9, 1989, 1057746
Term of patent 14 years
U.S. Cl. D14—231

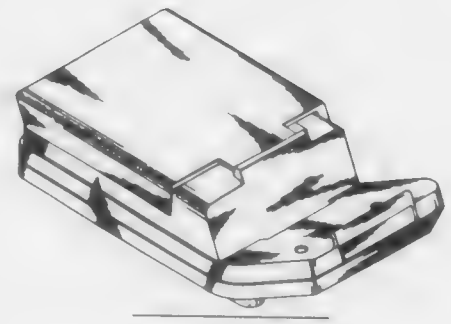




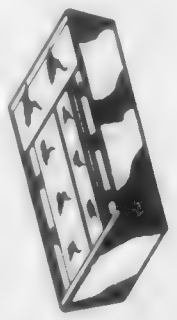


316,416
STAND FOR A PORTABLE TELEPHONE
Malcolm C. Cant, Wokingham, and Ron Major, Stroud, both of England, assignors to Technophone Limited, Surrey, England
Filed Jun. 7, 1989, Ser. No. 364,001
Claims priority, application United Kingdom, Jan. 31, 1989, 1056756
Term of patent 14 years
U.S. Cl. D14—252





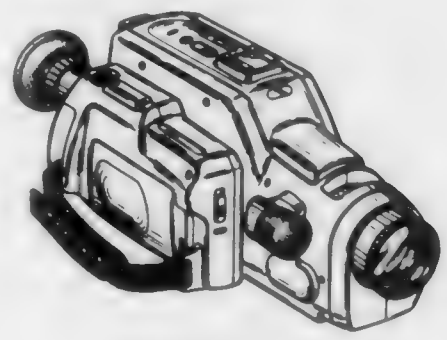
316,417
RADIO HOUSING OR SIMILAR ARTICLE
Eugene J. Wall, LaGrange; Bruce D. Hillier, Hoffman Estates, and Terrance N. Taylor, Cary, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 27, 1987, Ser. No. 43,135
Term of patent 14 years
U.S. Cl. D14—299



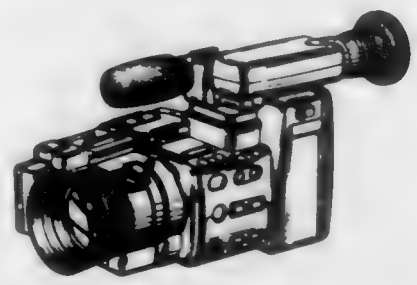
316,418
TURBINE HOUSING
Steven R. Benson, 5919 S. 350 West, Murray, Utah 84107
Filed Jan. 17, 1989, Ser. No. 296,987
Term of patent 14 years
U.S. Cl. D15—5



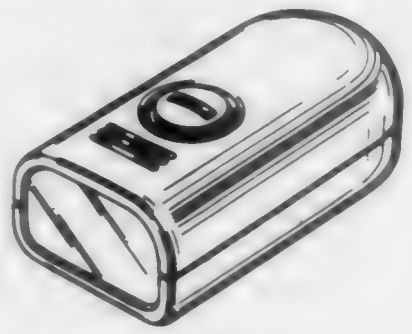
316,419
COMBINED VIDEO CAMERA AND TAPE RECORDER
Yoshiyuki Matsumura, Kunitachi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 2, 1988, Ser. No. 279,149
Claims priority, application Japan, Jun. 6, 1988, 63-22369
Term of patent 14 years
U.S. Cl. D16—202



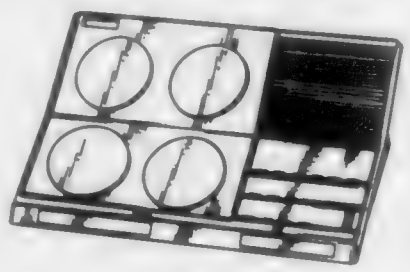
316,420
VIDEO CAMERA WITH VIDEO TAPE RECORDER
Chifuyu Tanaka, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 16, 1989, Ser. No. 367,102
Claims priority, application Japan, Dec. 19, 1988, 63-49434
Term of patent 14 years
U.S. Cl. D16—202



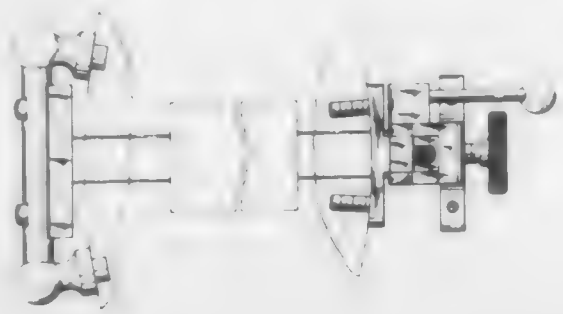
316,421
INFRARED IRRADIATION DEVICE FOR VIDEO CAMERA
Toru Shinano, Yokohama, and Kazuaki Sakuta, Koganei, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 2, 1988, Ser. No. 151,085
Claims priority, application Japan, Aug. 4, 1987, 62-31919
Term of patent 14 years
U.S. Cl. D16—237



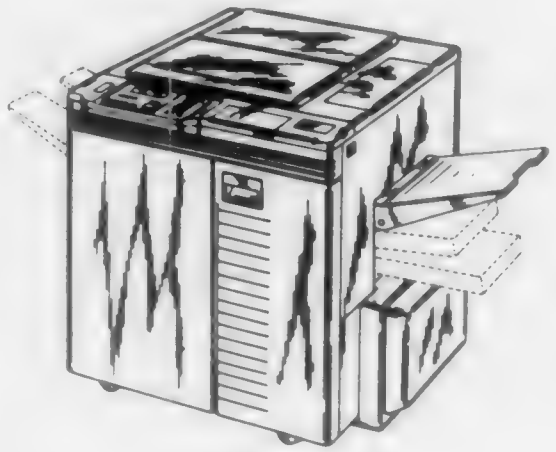
316,422
ELECTRONIC DRUM
Junko Mine, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan
Filed Jun. 13, 1988, Ser. No. 207,438
Claims priority, application Japan, Dec. 10, 1987, 62-50520
Term of patent 14 years
U.S. Cl. D17—22



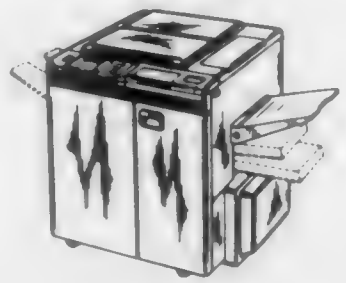
316,423
SNARE DRUM THROW OFF
Joseph P. Montineri, P.O. Box 3186, Dept. C, Vernon, Conn. 06066
Filed Jul. 12, 1988, Ser. No. 217,811
Term of patent 14 years
U.S. Cl. D17—22



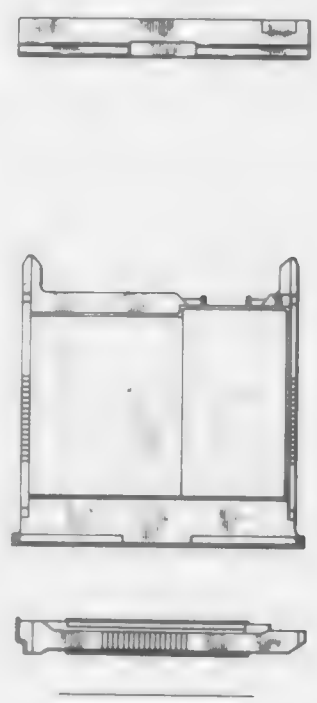
316,424
COPYING MACHINE
Takeshi Komada, Yokohama; Tomohiko Hirata, Kawasaki, and Minoru Aoyama, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 18, 1988, Ser. No. 220,111
Claims priority, application Japan, Jan. 19, 1988, 63-1809
The portion of the term of this patent subsequent to Apr. 23, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—39



316,425
COPYING MACHINE
Minoru Aoyama, Tokyo; Takeshi Komada, Yokohama, and Tomohiko Hirata, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 21, 1988, Ser. No. 260,490
Claims priority, application Japan, Apr. 25, 1988, 63-17020
The portion of the term of this patent subsequent to Apr. 23, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—39



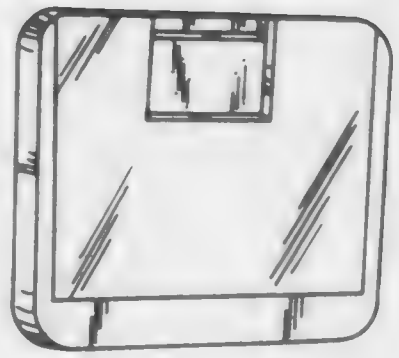
316,426
PAPER SUPPLY CASSETTE
Takeshi Komada, Yokohama, and Masataka Isomoto, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 19, 1988, Ser. No. 221,181
Claims priority, application Japan, Jan. 22, 1988, 63-2[illegible]2
Term of patent 14 years
U.S. Cl. D18—44



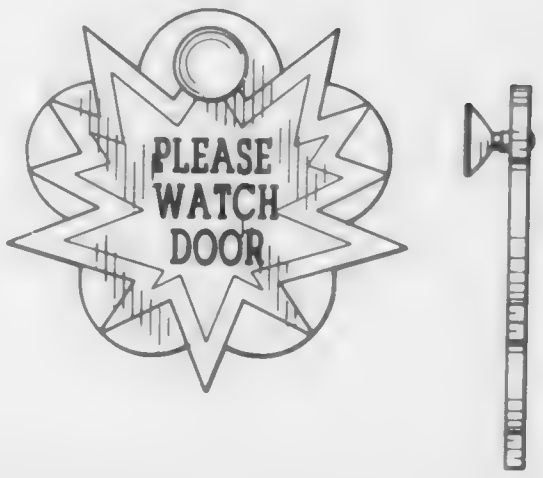
316,427
WRITING IMPLEMENT
Bernhard Tinz, Brunnwiesen 43 d, 7000 Stuttgart 75, BRD, Fed. Rep. of Germany
Filed Jul. 18, 1988, Ser. No. 220,845
Term of patent 14 years
U.S. Cl. D19—48



316,428
HEADER FOR A NEWSPAPER VENDING BIN OR SIMILAR ARTICLE
Milton J. Meri, New City, N.Y., assignor to Gannett Co., Inc., Arlington, Va.
Filed Aug. 14, 1987, Ser. No. 85,415
Term of patent 14 years
U.S. Cl. D20—8



316,429
SIGN
David S. Gutierrez, 14771 Harper, Midway City, Calif. 92655
Filed Apr. 3, 1989, Ser. No. 332,105
Term of patent 14 years
U.S. Cl. D20—42



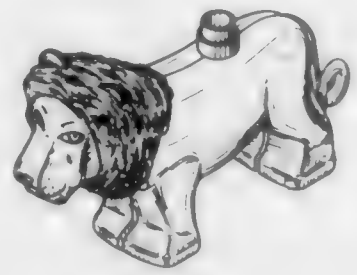
316,430
TOY BUILDING ELEMENT
Edel S. Andersen, Randbol, Denmark, assignor to Interlego AG, Baar, Switzerland
Filed May 9, 1989, Ser. No. 349,341
Term of patent 14 years
U.S. Cl. D21—108



316,431
TOY POLAR BEAR
Christian Stephensen, Marstal, and Jacob Nielsen, Copenhagens, both of Denmark, assignors to Interlego A.G., Baar, Switzerland
Filed Nov. 29, 1989, Ser. No. 443,224
Term of patent 14 years
U.S. Cl. D21—108



316,432
TOY LION
Christian Stephenson, Marstal, and Jacob Nielsen, Copenhagen S, both of Denmark, assignors to Interlego A.G., Baar, Switzerland
Filed Nov. 29, 1989, Ser. No. 443,226
Term of patent 14 years
U.S. Cl. D21—108



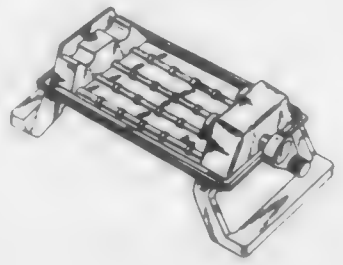
316,433
TOY GIRAFFE
Christian Stephensen, Marstal, and Jacob Nielsen, Copenhagens, both of Denmark, assignors to Interlego A.G., Baar, Switzerland
Filed Nov. 29, 1989, Ser. No. 443,228
Term of patent 14 years
U.S. Cl. D21—108



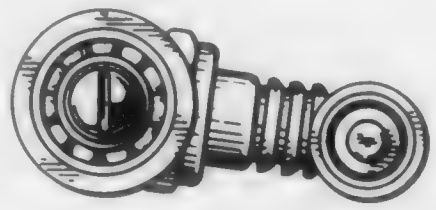
316,434
TOY TIGER
Christian Stephensen, Marstal, and Jacob Nielsen, Copenhagen S, both of Denmark, assignors to Interlego A.G., Baar, Switzerland
Filed Nov. 29, 1989, Ser. No. 443,229
Term of patent 14 years
U.S. Cl. D21—108



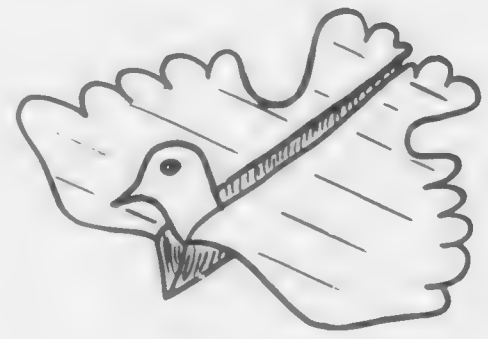
316,435
TOY COOKING GRILL
Janet E. Snell-Kelly, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Aug. 15, 1988, Ser. No. 232,583
Term of patent 14 years
U.S. Cl. D21—122



316,436
SPARKPLUG TOY CAR
Victor E. Franzone, 36 R.D. #2, Mertztown, Pa. 19539
Filed May 22, 1989, Ser. No. 354,938
Term of patent 14 years
U.S. Cl. D21—128



316,437
TOY BIRD
Jeffrey L. Peyton, P.O. Box C-32000, Richmond, Va. 23261-2000
Filed Jun. 2, 1987, Ser. No. 57,244
Term of patent 14 years
U.S. Cl. D21—160



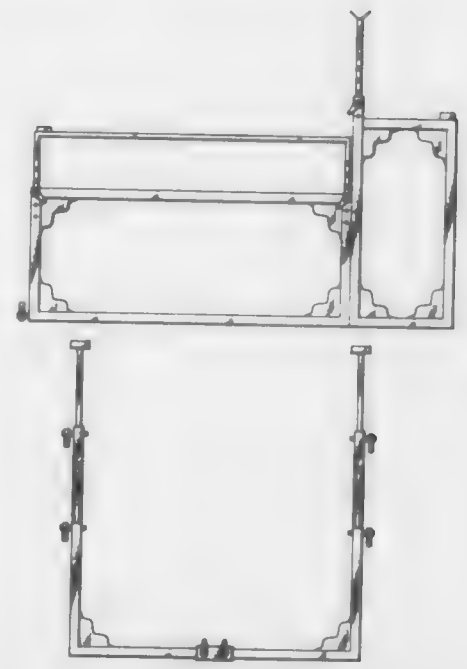
316,438
DOLL
Jerrie Waine, 121-E Crabapple La., Birmingham, Ala. 35214
Filed Sep. 26, 1988, Ser. No. 249,169
Term of patent 14 years
U.S. Cl. D21—171



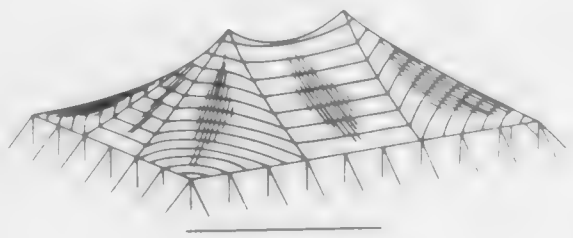
316,439
COMBINED STUFFED TOY AND TRANSPARENT CONTAINER THEREFOR
Richard C. Arginsky, Ellenville, N.Y., assignor to The Plush Factory Inc., Ellenville, N.Y.
Filed Jan. 11, 1988, Ser. No. 142,847
Term of patent 14 years
U.S. Cl. D21—159



316,440
FREE WEIGHT SAFETY RACK
Mark E. Ekern, 207 N. Prarie, Flandreau, S. Dak. 57028
Filed Dec. 6, 1988, Ser. No. 280,522
Term of patent 14 years
U.S. Cl. D21—191



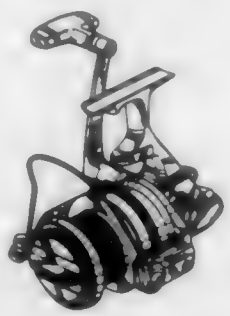
316,441
TENT
Todd Dalland, 110 Reade St., New York, N.Y. 10013
Division of Ser. No. 30,912, Mar. 26, 1987, Pat. No. D. 307,311. This application Feb. 5, 1990, Ser. No. 475,430
Term of patent 14 years
U.S. Cl. D21—253



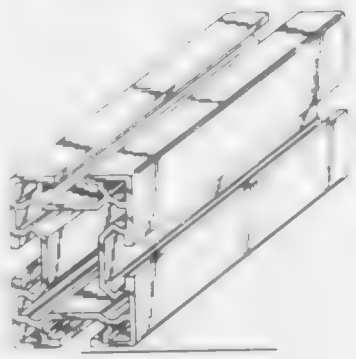
316,442
GUN
Thierry Guidat; Alain Lechelle, both of Mulhouse; Marc Renard, Pierrefitte, and Jean P. Puel, Puteaux, all of France, assignors to Matra Manurhin Defense, Velizy Villacoublay, France
Filed Apr. 6, 1988, Ser. No. 178,287
Term of patent 14 years
U.S. Cl. D22—104



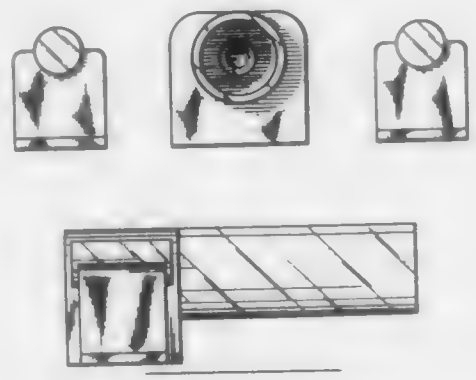
316,443
FISHING REEL
Toshiaki Yoshikawa, and Akihisa Shiozaki, both of Musashino, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Dec. 19, 1988, Ser. No. 285,954
Claims priority, application Japan, Jun. 20, 1988, 63-24465
Term of patent 14 years
U.S. Cl. D22—141



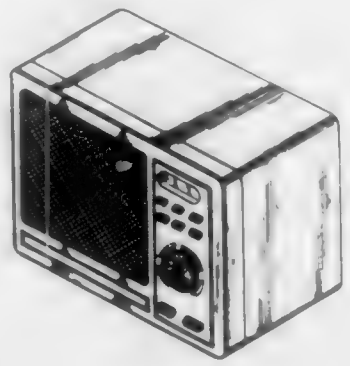
316,444
BEAM
Goran Abbestam, Landerigatan 2, S-416 70 Goteborg, and Leif Lachoulus, Utsiktsliden 5, S-445 00 Surte, both of Sweden
Division of Ser. No. 368,527, Jun. 20, 1989. This application Jul. 26, 1990, Ser. No. 558,191
Claims priority, application Sweden, Dec. 21, 1988, 882944
Term of patent 14 years
U.S. Cl. D25—122



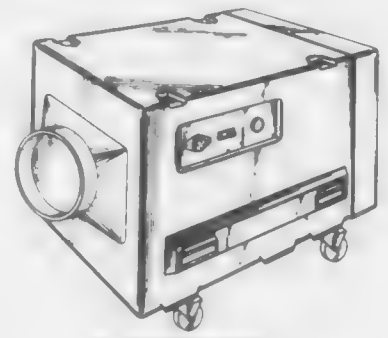
316,445
FAUCET SET
Regina Razumov, San Diego, Calif., assignor to Harden Industries, Inc., Los Angeles, Calif.
Filed May 11, 1988, Ser. No. 192,505
Term of patent 14 years
U.S. Cl. D23—242



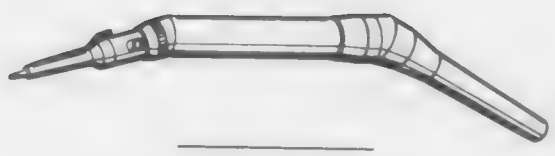
316,446
ELECTRIC HEATER
Wen T. Lee, Tainan, Taiwan, assignor to Caho-Yang Electric Mgf. Co., Ltd., Tainan, Taiwan
Filed Mar. 10, 1989, Ser. No. 321,336
Term of patent 14 years
U.S. Cl. D23—335



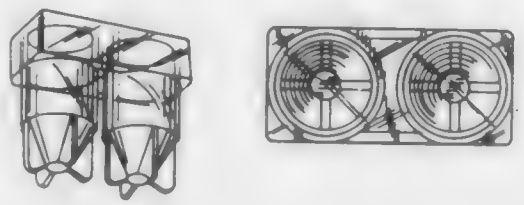
316,447
NEGATIVE PRESSURE AIR FILTRATION HOUSING
James C. Woodson; Ron W. Mumford, and Kenneth S. Kondo, all of Houston, Tex., assignors to Critical Industries, Inc., Houston, Tex.
Filed Sep. 19, 1989, Ser. No. 408,800
Term of patent 14 years
U.S. Cl. D23—365



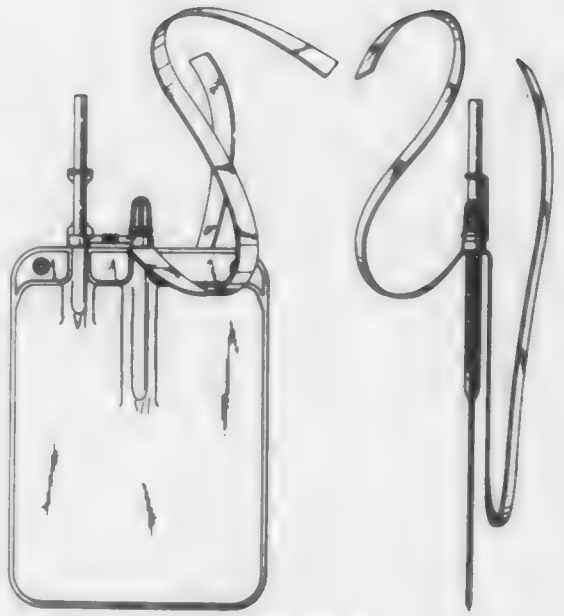
316,448
ULTRASONIC ASPIRATOR FOR MICROSCOPIC NEUROSURGERY
Masaichi Kijima, Tokyo, and Nobumichi Yajima, Nagano, both of Japan, assignors to Aloka Co., Ltd., Tokyo and Ueda Japan Radio Co., Ltd., Nagano, both of, Japan
Filed Mar. 31, 1988, Ser. No. 176,391
Claims priority, application Japan, Oct. 2, 1987, 62-40561
Term of patent 14 years
U.S. Cl. D24—26



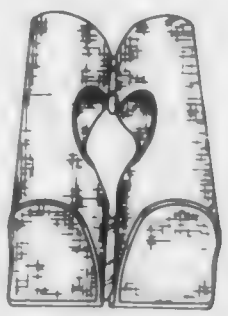
316,449
DUAL RESERVOIR SAMPLE CUP
Michael D'Aquino, Miami, Fla., and Julius Becker, Cincinnati, Ohio, assignors to Baxter International Inc., Deerfield, Ill.
Division of Ser. No. 146,144, Jan. 15, 1988, Pat. No. Des. 309,779. This application May 14, 1990, Ser. No. 506,327
Term of patent 14 years
U.S. Cl. D24—29



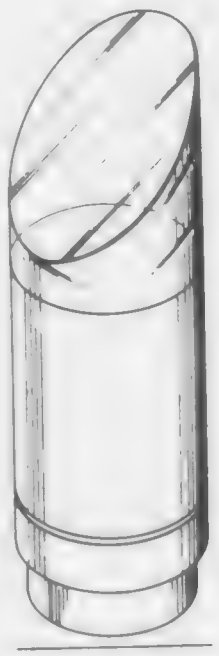
316,450
SURGICAL DRAINAGE CONTAINER
Kevin R. Baber, Folkestone, England, assignor to Smiths Industries Public Limited Company, London, England
Filed May 25, 1988, Ser. No. 198,819
Claims priority, application United Kingdom, Dec. 10, 1987, 1046997
Term of patent 14 years
U.S. Cl. D24—58



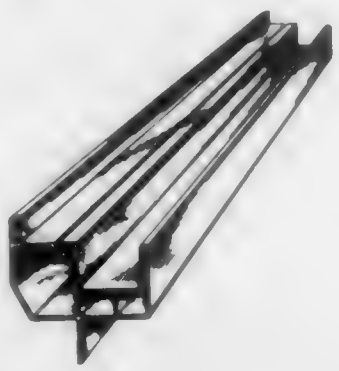
316,451
FOLDABLE CHIROPRACTIC PILLOW
Alan B. Carnathan, and Susan G. Carnathan, both of Edgemont, Ark., assignors to Slack, Inc., Greers Ferry, Ark.
Filed Mar. 14, 1988, Ser. No. 167,432
Term of patent 14 years
U.S. Cl. D24—64



316,452
OUTDOOR BOLLARD LIGHTING FIXTURE
Hiroshi Kira, Westlake Village, Calif., assignor to Lumiere Design and Manufacturing, Inc., Westlake, Calif.
Filed Oct. 13, 1989, Ser. No. 421,394
Term of patent 14 years
U.S. Cl. D26—68



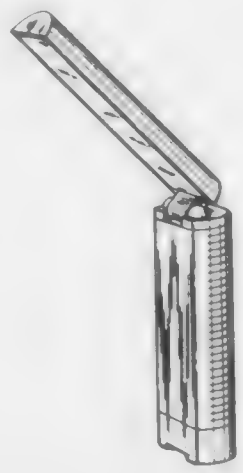
316,453
WINDOW COMPONENT EXTRUSION
Dennis Westphal, Galva, and Jonathan Piles, McPherson, both of Kans., assignors to CertainTeed Corporation, Valley Forge, Pa.
Filed Sep. 12, 1989, Ser. No. 406,112
The portion of the term of this patent subsequent to May 15, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D25—122



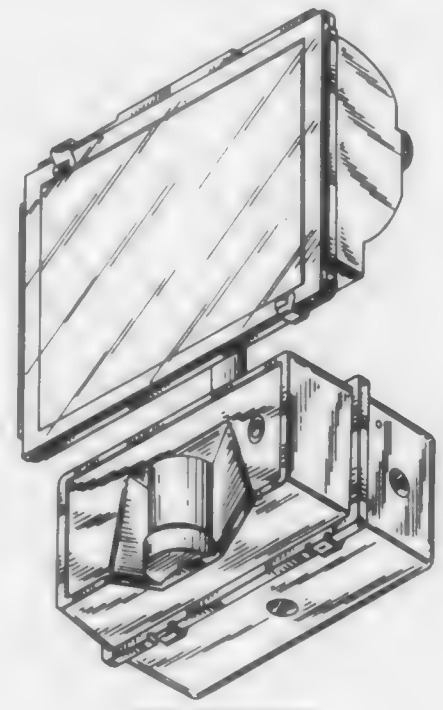
316,454
BATTERY OPERATED LIGHT FOR A HANDHELD COMPUTER GAME MACHINE SCREEN
Angelo Tortola, Lexington, and Robert Howitt, Leominster, both of Mass., assignors to Curtis Manufacturing Company, Inc., Jaffrey, N.H.
Filed Jun. 18, 1990, Ser. No. 540,501
Term of patent 14 years
U.S. Cl. D26—24



316,455
TORCH
Leonardus A. C. Krol, Gorinchem, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 3, 1988, Ser. No. 253,285
Claims priority, application United Kingdom, Apr. 13, 1[illegible] 1049931
Term of patent 14 years
U.S. Cl. D26—44



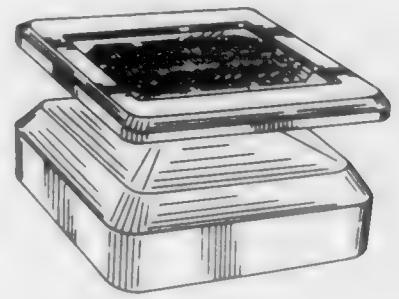
316,456
COMBINED OUTDOOR FLOODLIGHT AND PHOTO ELECTRIC CONTROL THEREFOR
Giovanni De Candia, Germantown, Tenn., assignor to FL Industries, Inc., Livingston, N.J.
Filed Feb. 1, 1988, Ser. No. 151,244
Term of patent 14 years
U.S. Cl. D26—63



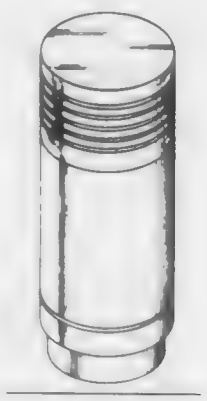
316,457
POST LANTERN OR THE LIKE
Robert De'Armond, Louisville, Ky., assignor to Thomas Industries Inc., Louisville, Ky.
Filed Jul. 6, 1987, Ser. No. 69,952
Term of patent 14 years
U.S. Cl. D26—67



316,458
SOLAR POWERED OUTDOOR RECREATIONAL LAMP
James C. Spotts, Kowloon, and Haw R. Chai, Des Voeux, both of Hong Kong, assignors to Australux North America, Ltd., Hong Kong
Filed Oct. 3, 1989, Ser. No. 416,444
Term of patent 14 years
U.S. Cl. D26—67



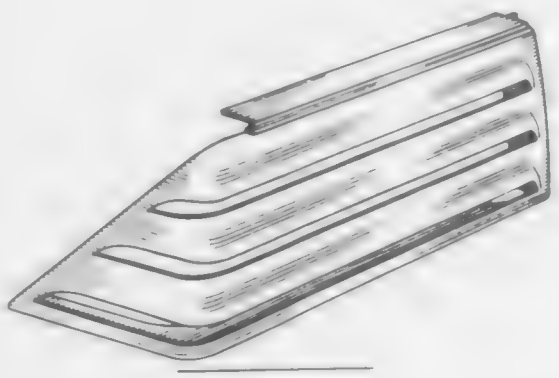
316,459
OUTDOOR BOLLARD LIGHTING FIXTURE
Hiroshi Kira, Westlake Village, Calif., assignor to Lumiere Design and Manufacturing, Inc., Westlake, Calif.
Filed Oct. 13, 1989, Ser. No. 421,395
Term of patent 14 years
U.S. Cl. D26—68



316,460
SHIELD FOR PROTECTING A TRUCK DRIVING LIGHT FROM ROAD DAMAGE
Roy M. Neece, Rte. 9, Box 289V, Saginaw, Tex. 76179
Filed Aug. 30, 1988, Ser. No. 238,160
Term of patent 14 years
U.S. Cl. D26—139



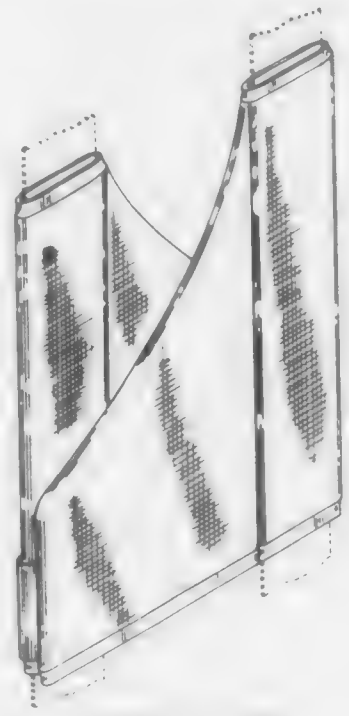
316,461
PAIR OF LOUVERED TAIL LIGHT COVERS
Gregory A. McGlothlin, 625 Grand Mesa Ave., Grand Junction, Colo. 81503
Filed Oct. 14, 1988, Ser. No. 257,797
Term of patent 14 years
U.S. Cl. D26—139



316,462
COSMETIC COMPACT
Frederico Restrepo, Paris, France, assignor to Societe D'Hygiene Dermatologique de Vichy, Vichy, France
Filed Feb. 27, 1989, Ser. No. 316,445
Claims priority, application Int'l Pat. Institute, Sep. 2, 1988, DM/01167,3
Term of patent 14 years
U.S. Cl. D28—83



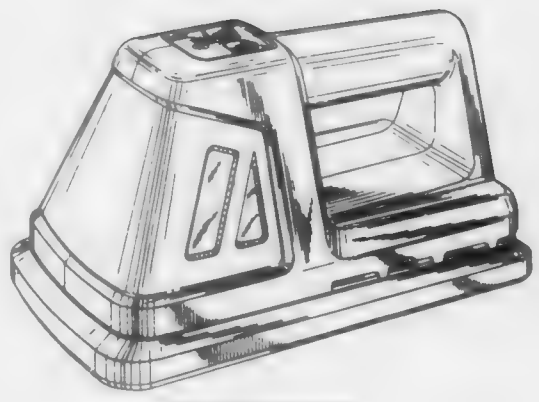
316,463
CHEST RESTRAINT FOR SHOULDER HARNESS
Michael R. Gravel, Little Falls, N.Y., assignor to Tumble Forms, Inc., Dolgeville, N.Y.
Filed Apr. 4, 1988, Ser. No. 176,981
Term of patent 14 years
U.S. Cl. D29—10



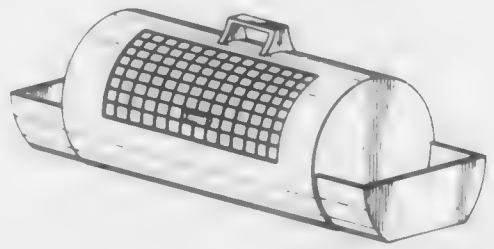
316,464
PET CUSHION
Peggy E. Kelley, 8202 Artic Kemp Rd., Frederick, Md. 21701
Filed Sep. 13, 1988, Ser. No. 243,775
Term of patent 14 years
U.S. Cl. D30—118



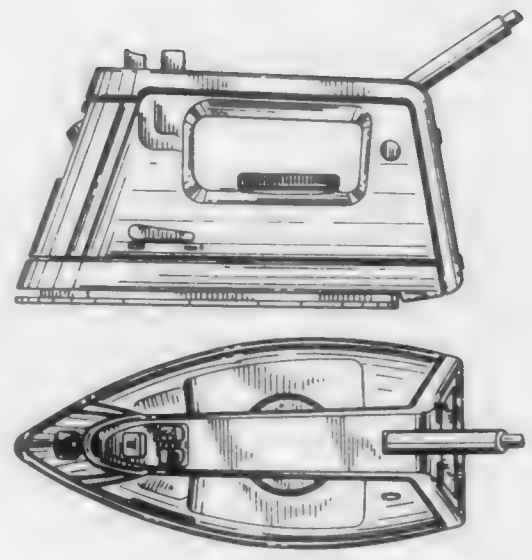
316,465
STEAM GENERATING MACHINE
Ulrich Reiferscheid, Ravensburg, Fed. Rep. of Germany, and Robin H. Spratt, Tyne & Wear, England, assignors to Black & Decker Inc., Newark, Del.
Continuation-in-part of Ser. No. 174,318, Mar. 25, 1988, abandoned. This application Oct. 17, 1988, Ser. No. 258,694
Claims priority, application United Kingdom, Sep. 28, 1987, 1045199; Apr. 26, 1988, 1050273
Term of patent 14 years
U.S. Cl. D32—17



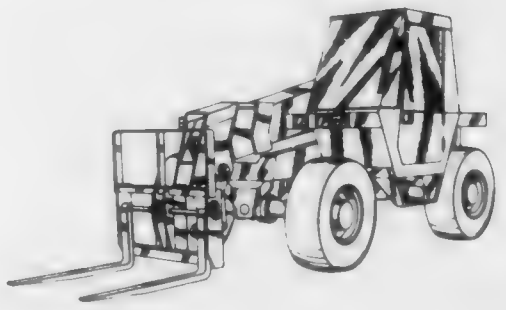
316,466
LAUNDRY CONTAINER
Michael J. Veasey, 15215 Threech La., Webster, Tex. 77059
Filed Aug. 24, 1988, Ser. No. 235,646
Term of patent 14 years
U.S. Cl. D32—37



316,467
IRON
Lung W. Choi, Kowloon, Hong Kong, assignor to Goodway Electrical Co., Ltd., Kowloon, Hong Kong
Filed Sep. 6, 1989, Ser. No. 402,855
Claims priority, application United Kingdom, Mar. 10, 1989, 1057762
Term of patent 14 years
U.S. Cl. D32—70



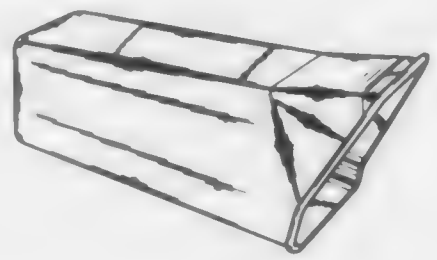
316,468
TELESCOPIC MATERIAL HANDLING VEHICLE
Dale D. Sandrock, Pekin, Ill.; Stephen H. Gill, Mentor; Llewellyn L. Walter, Chardon, both of Ohio; David P. Brown, Osmotherly, and James Wilson, Sunderland, both of United Kingdom, assignors to Caterpillar Industrial Inc., Mentor, Ohio
Filed Apr. 29, 1988, Ser. No. 187,784
Term of patent 14 years
U.S. Cl. D34—37



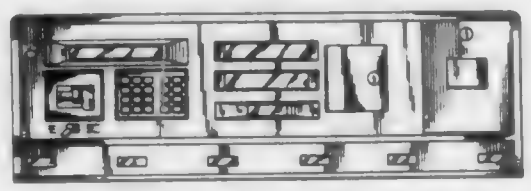
316,469
GRAVE MARKER
Armando Zapata, Box 428, Rosharon, Tex. 77583
Filed Jun. 22, 1988, Ser. No. 210,285
Term of patent 14 years
U.S. Cl. D99—18



316,470
NEWSPAPER BOX
Carl D. Fuemmeler, 1809 S. Morris, Mexico, Mo. 65265
Filed Jun. 10, 1987, Ser. No. 60,371
Term of patent 14 years
U.S. Cl. D99—29



316,471
CREDIT AND DEBIT AUTHORIZATION PANEL OR SIMILAR ARTICLE
Donald P. Austin, Jamestown; Albert L. Lawrence, Thomasville, and Arthur C. Prewitt, Julian, all of N.C., assignors to Gilbarco Inc., Greensboro, N.C.
Filed Jun. 24, 1988, Ser. No. 210,779
Term of patent 14 years
U.S. Cl. D99—43



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23RD DAY OF APRIL, 1991

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice)

A S Ferrosan *See*—
Braestrup, Claus T., Nielsen, Mogens C., Christensen, Joergen A., Engelstoft, Mogens, Schou, Henning, Eder, Ulrich, Neef, Gunter; Huth, Andreas, Rahtz, Dieter, and Schmiechen, Ralph, 5,010,077, Cl. 514-228.800.

A Stucki Company Division of Hansen, Inc *See*—
Wiebe, Donald, 5,009,521, Cl. 384-191.100

Abb, Thomas *See*—
Sacco, Bruno, Tomforde, Johann, Abb, Thomas, and Stengmann, Bruno, 5,009,042, Cl. 52-36.000

Abbott Laboratories *See*—
Brinker, Dale R., and Reiland, Thomas L., 5,009,897, Cl. 424-469.000

Abe, Akira, to Fuji Photo Film Co., Ltd. Method for processing silver halide photosensitive materials. 5,009,983, Cl. 430-372.000

Abe, Nobuyuki *See*—
Hasegawa, Takanori, Abe, Nobuyuki, Hibara, Toru, Hirose, Toshihiko, Kanda, Takashi, Saito, Hiroshi, Oshima, Masaki, and Nakazawa, Eiji, 5,010,420, Cl. 358-471.000

Abe, Ryoji, Okita, Junichi, Miyagoshi, Katsunobu, and Hashiyama, Kouichi, to Mazda Motor Corporation. Crankshaft supporting structure for an internal combustion engine. 5,009,205, Cl. 123-195.00H

Abe, Shigenobu *See*—
Hayashi, Yasuyuki, and Abe, Shigenobu, 5,009,451, Cl. 280-724.000

Abou-Gharbia, Magid A., Yardley, John P., and Childers, Wayne E., Jr., to American Home Products Corporation. Aryl- and heteroaryl piperazinyl carboxamides having central nervous system activity. 5,010,078, Cl. 514-252.000

Abou-Issa, Hussein M.: *See*—
Minton, John P., Webb, Thomas E., and Abou-Issa, Hussein M., 5,010,107, Cl. 514-578.000

Abraham, Martin J., III. System for cooling beer for remote dispensing. 5,009,082, Cl. 62-390.000

Abu-Isa, Ismat A., Eusebi, Elio, Jaynes, Craig B., Moran, Susan C., and Roy, Michael A., to General Motors Corporation. Process for forming an elastomeric membrane. 5,009,827, Cl. 264-156.000.

Abu-Isa, Ismat A., to General Motors Corporation. Dual modulus oriented elastomeric filaments. 5,009,955, Cl. 428-401.000

Acrymet Industries Inc.: *See*—
Paul, Stanley, 5,009,048, Cl. 52-308.000

Adanlock: *See*—
Roller, Timothy J.; and Thiele, Robert E., 5,009,470, Cl. 312-325.000

ADC Telecommunications, Inc *See*—
Werdin, David A., and Henke, Reinhold, 5,010,450, Cl. 361-415.000

Adelson, Edward H *See*—
Schreiber, William F., Lippman, Andrew B., Adelson, Edward H., and Netravali, Aran N., 5,010,405, Cl. 358-141.000

Adler, Robert *See*—
Petrik, Michael A., Adler, Robert J., and Wineland, Jonathan D., 5,009,796, Cl. 210-787.000

Adler, Robert J *See*—
Petrik, Michael A., Adler, Robert J., and Wineland, Jonathan D., 5,009,796, Cl. 210-787.000

Advance Display Technologies, Inc *See*—
Knudson, Steven B., 5,009,475, Cl. 350-96.100

Advanced Energy Industries, Inc *See*—
Siefkes, Jerry D.; Harpold, John G., and Schatz, Douglas S., 5,009,764, Cl. 204-298.080

Advanced Environmental Research Group *See*—
Gerritsen, Hendrik J., 5,009,484, Cl. 350-162.110

Advanced Micro Devices, Inc *See*—
Allen, Bert L., Gwozdz, Peter S., and Bowers, Thomas R., 5,010,024, Cl. 437-24.000
Itoh, Tatsuo, 5,010,561, Cl. 377-47.000
Liu, Yow-Juang (Bill); and Hadjizadeh-Amini, Zahra, 5,010,029, Cl. 437-44.000

Advanced Technologies Management, Inc *See*—
Hise, Ralph E., 5,009,763, Cl. 204-255.000

AE PLC: *See*—
Beaurepaire, Olivier, and Thompson, Frederick H., 5,009,124, Cl. 74-595.000

AEG Westinghouse Transportation Systems, Inc *See*—
Karg, Kenneth A.; Hvozda, Carl K., Neddermeyer, Robert N., and Feld, Alexander, 5,009,148, Cl. 98-10.000

Aeolian Partnership *See*—
Smith, Raoul D., 5,009,571, Cl. 416-79.000

Aerolux Produktions- und Handelsgesellschaft mbH *See*—
Miloslaus, Ludwig, 5,009,259, Cl. 160-323.100

Afromowitz, Martin A., to University of Washington, Board of Regents of the. Method of monitoring solidification of a liquid composition. 5,009,102, Cl. 73-590.000

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Kosugi, Yoshitsugu, Tanaka, Hideoki, Suzuki, Hideo, and Shiraki, Masaru, 5,010,004, Cl. 435-134.000

Agfa Gevaert Aktiengesellschaft *See*—
Grigat, Ernst; Meckel, Walter, and Nippe, Burkhard, 5,009,925, Cl. 427-48.000
Kunitz, Friedrich-Wilhelm, and Wichmann, Ralf, 5,009,985, Cl. 430-430.000
Scheerer, Rainer, and Moll, Franz, 5,009,990, Cl. 430-539.000

Agfa-Gevaert, N.V. *See*—
De Rycke, Gino L., Rutges, Antonius A., and De Prijcker, Jozef P., 5,009,984, Cl. 430-404.000
Nys, Pierre H., Vinck, Paul W., and von Erdmannsdorff, Andreas, 5,010,398, Cl. 358-80.000

Agip Petroli S.p.A.: *See*—
Brandolese, Ernesto, 5,009,803, Cl. 252-49.500

Agnew, Marc N *See*—
Allen, Richard C., Agnew, Marc N., and Fink, David M., 5,010,083, Cl. 514-292.000

Agri-Tech Incorporated *See*—
Chance, Lynn C., and Low, John A., 5,009,307, Cl. 198-538.000

Ahmad, Jameel, and Valenza, Joseph P., to High Technologies, Inc. Reinforced asphalt concrete and structure for producing same. 5,009,543, Cl. 404-70.000

Ahmad, Mohammad R., and Barke, Oscar A., to Floss Products Corporation. Dentifrice. 5,009,886, Cl. 424-58.000

Ahmed, Hassan J., to Westinghouse Electric Corp. Nuclear fuel rod helium leak inspection apparatus and method. 5,009,835, Cl. 376-251.000.

Ahmed, Salah H., and Luksas, Anthony J., to Dairy Research, Inc. Cheese-like spread composition and method of making. 5,009,913, Cl. 426-581.000

Aichi Steel Works, Ltd *See*—
Sugimoto, Atsushi, Nakano, Osamu, Yasuda, Shigeru, Maeda, Chikatoshi, Ozone, Toshio, and Kawagoe, Makoto, 5,009,843, Cl. 420-112.000.

Aichi Steel Works, Ltd *See*—
Honkura, Yoshinobu, Matsuo, Toru, and Murata, Kouji, 5,009,723, Cl. 148-12.00E

Aikoh Co., Ltd. *See*—
Iwahashi, Takashi, 5,009,887, Cl. 424-76.100

Air Products and Chemicals, Inc *See*—
Angus, Richard O., and Yaeoub, Kahlil, 5,009,679, Cl. 55-16.000
Ellison, Thomas L., Roberts, David A.; Ivankovits, John C., and Norman, John A. T., 5,009,725, Cl. 148-23.000
Famili, Amir F., Marten, F. Lennart, and Mohanty, Dillip K., 5,010,153, Cl. 526-243.000.

Aisan Kogyo Kabushiki Kaisha: *See*—
Hanai, Kazumichi; Mine, Koichi, and Kikuta, Hikaru, 5,009,575, Cl. 417-244.000

Aisin-AW Kabushiki Kaisha: *See*—
Harada, Kyouji, Kato, Eiji, Sakaguchi, Yoshikazu, Watanabe, Suzuaki; and Hoshino, Akira, 5,009,290, Cl. 188-71.500.

Aisin Seiki K.K.: *See*—
Sumi, Chiaki; and Kuwayama, Wataru, 5,010,212, Cl. 174-52.200.

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Kuki, Nobuyuki; Isomura, Yukio, Suzumura, Hirokazu; Sakakibara, Yoshikazu, and Ishihara, Hiroshi, 5,009,035, Cl. 49-352.000

Akana, Yoshinori *See*—
Kohsaka, Masaki, Higashi, Isaburou, Akana, Yoshinori; Hashimoto, Mikio; and Yatsu, Tadao, 5,010,146, Cl. 525-439.000

Akazawa, Hiroyuki, and Imae, Toshihiro, to Seiko Epson Corporation. Paper feeding apparatus for accommodating different lengths of recording media for use with a printer. 5,009,532, Cl. 400-636.200

Akazawa, Hitoshi *See*—
Sasame, Akira, Sakanoue, Hitoyuki, Takeuchi, Hisao; Miyake, Masaya, Yamakawa, Akira; Yushio, Yasuhisa, and Akazawa, Hitoshi, 5,010,388, Cl. 357-70.000

Akebono Brake Industry Co., Ltd *See*—
Takahashi, Nobuyuki, 5,009,293, Cl. 188-72.400.

Akebono Research and Development Centre Ltd.: *See*—
Takahashi, Nobuyuki, 5,009,293, Cl. 188-72.400.

Aker Engineering a.s. *See*—
Brekke, Kristian, 5,009,680, Cl. 55-40.000

Akiyama, Masakazu *See*—
Mori, Kinji, Kunai, Yuko, Akiyama, Masakazu, Kadoya, Tadaaki, Kawano, Katsumi, Miyamoto, Shoji, Nohmi, Makoto, Shingai, Sadanori, and Ihara, Hirokazu, 5,010,479, Cl. 364-200.000

Akizawa, Nobuyuki, Kudo, Yasunori, Kanai, Toshiyuki, Kamei, Yasuo, Oyama, Nobuaki, and Negishi, Akihito, to Max Co., Ltd. Electric stapler 5,009,355, Cl. 227-114.000

Akva A/S *See*—
Molaug, Ole, and Risa, Steinar, 5,009,908, Cl. 426-454.000

Akzo N.V. *See*—
Becker, John W., 5,009,896, Cl. 424-467.000
Roos, Antonius, 5,009,829, Cl. 264-210.600
Sikkema, Doetze J., 5,010,168, Cl. 528-338.000

Albar *See*—
Bobry, Howard H., 5,010,469, Cl. 363-37.000

Alberta Energy Company Ltd. *See*—
Schramm, Laurier L., and Smith, Russell G., 5,009,773, Cl. 208-391.000

Albino, Anthony, Lloyd, Kenneth, Ikeda, Hisami, and Old, Lloyd, to Sloan-Kettering Institute for Cancer Research. Monoclonal antibodies to melanoma cells. 5,009,995, Cl. 435-7.230

Albinson, Rosemary B., to XAAR Limited. Method of forming an adherent fluorosilane layer on a substrate and ink jet recording head containing such a layer. 5,010,356, Cl. 346-140.00R

Alcan International Limited *See*—
Apte, Prasad S., and Pant, Aniket, 5,010,220, Cl. 219-10.55M

Alcatel Cit *See*—
Jacob, Jean-Baptiste, 5,010,545, Cl. 370-56.000

Alcatel Espace *See*—
Rene, Didier, Dusseux, Thierry, and Ginestet, Philippe, 5,010,348, Cl. 343-700.0MS

Alestrom, Peter *See*—
Gautvik, Kaare M., Alestrom, Peter, Oven, Tordis B., and Gabrielsen, Odd S., 5,010,010, Cl. 435-252.300

Alfa Wasserman S.p.A. *See*—
Piani, Silvano, Tamagnone, Gianfranco, Alpino, Raul R., Milani, Maria R., and Fantuz, Marinella, 5,010,063, Cl. 514-56.000

Alferness, Rodney C., Budnikis, Zigmantas L., Hagelbarger, David W., Kogelnik, Herwig W., and Netravali, Arun N., to AT&T Bell Laboratories. Optical interconnect arrangement. 5,009,477, Cl. 350-96.150

Allen, Bert L., Gwozdz, Peter S., and Bowers, Thomas R., to Advanced Micro Devices, Inc. Passivation for integrated circuit structures. 5,010,024, Cl. 437-24.000

Allen, Ernie L. *See*—
Johnson, Harlan B., Wiedrich, Charles R., Allen, Ernie L., and Howell, Peter P., 5,009,806, Cl. 252-187.280

Allen, Richard C., Agnew, Marc N., and Fink, David M., to Hoechst-Roussel Pharmaceuticals, Inc. 2,6-methano-1,3-benzodiazocine compounds which have useful pharmaceutical utility. 5,010,083, Cl. 514-292.000

Allen, Tate C. Aquatic amusement device. 5,009,413, Cl. 272-1.00B

Allenson, Stephan J. *See*—
Williamson, Charles D., Allenson, Stephan J., and Gabel, Robert K., 5,009,267, Cl. 166-271.000

Allied-Signal Inc. *See*—
Banik, Anthony, 5,009,704, Cl. 75-238.000
Baughman, Ray H., Buff, Ernest D., Eckhardt, Helmut, and Fuchs, Gerhard H., 5,009,044, Cl. 52-171.000
Damgaard-Iversen, Karsten, Morris, Robert C., Chin, Timothy C., and Kuper, Jerry W., 5,009,658, Cl. 606-128.000

Alpha Industries, Inc. *See*—
Nolan, John H., and Skvarce, Dennis H., 5,009,140, Cl. 83-698.000

Alpine Electronics Inc. *See*—
Kobari, Tadaomi, 5,010,448, Cl. 361-403.000

Alpino, Raul R. *See*—
Piani, Silvano, Tamagnone, Gianfranco, Alpino, Raul R., Milani, Maria R., and Fantuz, Marinella, 5,010,063, Cl. 514-56.000

Alps, Brian J. *See*—
Pascal, Jean C., Lee, Chi-Ho, Alps, Brian J., Pinhas, Henri, and Whiting, Roger L., 5,010,075, Cl. 514-218.000

Alps Electric Co., Ltd. *See*—
Hatanaka, Sunao, 5,010,365, Cl. 355-211.000
Kato, Takafumi, 5,010,219, Cl. 200-408.000

Alquist, John W., to Lake Shore, Inc. Cable tensioning device. 5,009,353, Cl. 226-172.000

Alt, Eckhard. For the thermodilution method of determining cardiac output. 5,009,234, Cl. 128-672.000

Alting, Cornelis L. *See*—
Haisma, Jan, Alting, Cornelis L., and Michielsen, Theodorus M., 5,009,689, Cl. 65-33.000

Alto, Brian J., and Alto, Gregory F. Roof shingle stripper apparatus. 5,009,131, Cl. 81-45.000

Alto, Gregory F. *See*—
Alto, Brian J., and Alto, Gregory F., 5,009,131, Cl. 81-45.000

Ameda AG *See*—
Riedweg, Robert; and Schlensog, Klaus, 5,009,638, Cl. 604-74.000

Amemiya, Koji *See*—
Takeuchi, Tatsuo, and Amemiya, Koji, 5,009,945, Cl. 428-76.000

American Cyanamid Company *See*—
Brady, Thomas E., Condon, Michael E., and Marc, Pierre A., 5,009,699, Cl. 71-92.000
Brown, Dale G., Siddens, Jack K., Diehl, Robert E., and Wright, Donald P., Jr., 5,010,098, Cl. 514-426.000

American Home Products Corporation *See*—
Abou-Gharbia, Magid A., Yardley, John P., and Childers, Wayne E., Jr., 5,010,078, Cl. 514-252.000
Felman, Steven W., Jirkovsky, Ivo L., and Memoli, Kevin A., 5,010,102, Cl. 514-473.000

American Language Academy *See*—
Willetts, John A., 5,010,495, Cl. 364-513.500

American Maize-Products Company *See*—
Mauro, David J., Furcsik, Susan L., Katz, Frances R., Faron, Eugene J., II, Gottneid, David J., and Pustek, Frank J., 5,009,911, Cl. 426-578.000

American Standard Inc. *See*—
Cocciadiferro, Michael J., and De Serio, Robert J., 5,009,059, Cl. 53-472.000
Okoren, Ronald W., 5,009,075, Cl. 62-127.000

Ames, Wilbur R., IV *See*—
Eilert, Randall N., Neel, Robert M., Harvey, N. Thatcher, Ames, Wilbur R., IV, and Lord, Randall D., 5,008,974, Cl. 16-114.00R

Ametani, Minoru, Funakoshi, Keigo, Kira, Akihiko, Matsushita, Takao and Shirakura, Keizo, to Nitto Denko Corporation. Process for peeling protective film off a wafer. 5,009,735, Cl. 156-241.000

Amoco Corporation *See*—
Clark, Frederick T., Hensley, Albert L., Jr., Lyzinski, David, and Peck, Lawrence B., 5,009,771, Cl. 208-216.0PP
Miller, Jeffrey T., and Hensley, Albert L., Jr., 5,009,770, Cl. 208-209.000
Park, Chang M., 5,010,207, Cl. 549-245.000

AMP Incorporated *See*—
Correll, Robert S., Jr., and Wiltraut, David D., 5,008,999, Cl. 29-882.000
Fogg, Michael W., Koegel, Keith S., Shuey, John R., Zelko, William E., and Beamenderfer, Robert E., 5,009,614, Cl. 439-497.000
Fogg, Michael W., and Morningstar, Leroy J., 5,009,616, Cl. 439-608.000
Henschen, Homer E., McKee, Michael J., and Pawlikowski, Joseph M., 5,010,233, Cl. 219-209.000
Shipe, Joanne E., 5,009,608, Cl. 439-331.000

Ampex Corporation *See*—
Trytko, David E., 5,010,407, Cl. 358-183.000

Analog Devices, Incorporated *See*—
Babcock, Douglas W., 5,010,297, Cl. 324-158.00R
Hisano, Shinichi, Ganesan, Apparajan, and Guy, Thomas S., 5,010,337, Cl. 341-154.000

Anchor Hocking Corporation *See*—
Ochs, Charles S., 5,009,324, Cl. 215-276.000

Andersen, Niels J. to Cabinnovent ApS. Device for the heating or cooling of food-stuffs. 5,009,150, Cl. 99-360.000

Andersen, Peter H. *See*—
Gronwald, Frederik, Andersen, Peter H., Faarup, Peter, Guddal, Erling, Hansen, Kristian T., Hansen, Louis B., and Nielsen, Erik B., 5,010,074, Cl. 514-213.000

Andersson, Henry, to Vaisala Oy. Method and device in the antenna and receiving system of a radio theodolite. 5,010,343, Cl. 342-432.000

Ando, Yasunori *See*—
Ogata, Kiyoshi, Ando, Yasunori, and Kamijo, Eiji, 5,009,923, Cl. 427-38.000

Ando, Yoshihira *See*—
Ueda, Makoto, Ando, Yoshihira, Sakurai, Shungo, and Yoshioka, Ritsuo, 5,009,840, Cl. 376-435.000

Andre, Gerald *See*—
Ergan, Francoise, Trani, Michael, and Andre, Gerald, 5,010,006, Cl. 435-177.000

Andrew Corporation *See*—
Lupkin, Charles I., and Jones, Marianne, 5,010,350, Cl. 343-704.000

Andrews, Claude R. *See*—
Wason, Satish K., Mooney, Gerry, Andrews, Claude R., Tarquini, Michael E., Kosin, John A., and Garcia, Rod A., 5,009,810, Cl. 252-350.000

Angst, Christof *See*—
Herold, Peter, and Angst, Christof, 5,010,189, Cl. 544-174.000

Angus, Richard O., and Yacoub, Kahlil, to Air Products and Chemicals, Inc. Membranes formed from rigid aromatic polyimide polymers. 5,009,679, Cl. 55-16.000

Anthony, Mark C. *See*—
Farrell, Jonathon E., and Anthony, Mark C., 5,010,215, Cl. 200-50.00A

Antonaroli, Simonetta, Bianco, Armandodariano, Brufani, Mario, Lo Baido, Giuseppe, and Rende, Giorgio, to Instituto Chimico Internazionale Dr. Giuseppe Rende S.r.l. Acetazolamide-related compounds, process for their preparation, and pharmaceutical composition containing the same. 5,010,204, Cl. 548-128.000

Antonelli, Joseph A., Scopazzi, Christopher, and Doherty, Mark M., to Du Pont de Nemours, E. I., and Company. Process for preparing stabilized polymer dispersion. 5,010,140, Cl. 525-269.000

Ao, Masahiro *See*—
Taguchi, Akira, Morita, Shigetoshi, Taka, Shunichi, Yamada, Hirohide, Takada, Yoshiaki, Furuichi, Shinji, and Ao, Masahiro, 5,010,429, Cl. 360-103.000

Aoki, Akio *See*—
Enari, Masahiko, Shikichi, Satoshi, Kawaguchi, Fumiaki, Suzuki, Kenichi, Usui, Masayuki, Matsuoka, Hiroshi, Matsuoka, Kazuhiko, Hosoya, Hideki, Aoki, Akio, and Minoura, Kazuo, 5,010,534, Cl. 369-32.000

Aoki, Hiroatsu *See*—
Kinoshita, Kitoshi, and Aoki, Hiroatsu, 5,009,481, Cl. 350-96.186

Aoki, Kozo, and Takahashi, Osamu, to Fuji Photo Film Co., Ltd. Silver halide photographic material. 5,009,989, Cl. 430-512.000

Aoki, Masaaki, Kamiyama, Masayuki, Asai, Kiyotsugu, and Yamaguchi, Akihiro, to Mitsui Toatsu Chemicals, Inc. Polyaldimine derivatives. 5,010,161, Cl. 528-59.000

Application Des Gaz *See*—
Roldan, Antoine, and Demilliere-Vergnais, Daniel, 5,009,592, Cl. 432-222.000

Apte, Prasad S., and Pant, Aniket, to Alcan International Limited. Process and apparatus for heating bodies at high temperature and pressure utilizing microwave energy. 5,010,220, Cl. 219-10.55M

Arai, Kunio; and Kanaya, Yasuhiko, to Hitachi Seiko, Ltd. Method of and apparatus for perforating printed circuit board. 5,010,232, Cl. 219-121.700

Arai, Takeshi, to Sanyo Electric Co., Ltd. Variable speed sound reproducing apparatus for sound reproduction and review system. 5,010,421, Cl. 360-32.000

Arai, Yoshiaki *See*—
Kida, Michio, Arai, Yoshiaki; and Sahira, Kensho, 5,009,862, Cl. 422-249.000.

Arai, Yuji, Shin, Yuaki, Ishiguro, Takashi, and Hamada, Emiko, to Taiyo Yuden Co., Ltd. Method of manufacturing an optical information recorded disc. 5,009,818, Cl. 264-1.003

Arakawa, Yoshiki, to Matsushita Electric Industrial Co., Ltd. Three-dimensional geometry processing method and apparatus therefor. 5,010,501, Cl. 364-522.000

Aratani, Shin-ichi, to Central Glass Company, Limited. Method of bending glass plate. 5,009,671, Cl. 65-106.000

Araya, Junji, Ohzeki, Yukihiro; Miyamoto, Toshio, Hiroshima, Koichi, Sato, Yasushi, and Nakahata, Kimio, to Canon Kabushiki Kaisha. Transfer apparatus and image bearing apparatus using same having transfer means for contacting a backside of a transfer material. 5,010,370, Cl. 355-274.000

Arch Development Corporation *See*—
Maroni, Victor A., 5,010,053, Cl. 505-1.000

Arco Chemical Technology, Inc. *See*—
Schuchardt, Jonathan L., 5,010,047, Cl. 502-24.000

Arditty, Herve, and Lefevre, Hevre, to Thomson-CSF. Monomode optical fiber ring interferometric device with semiconductor diode as light energy emission-reception/amplification means. 5,009,504, Cl. 356-350.000

Arizona Instrument Corp. *See*—
Bell, William E., and McNerney, John J., 5,010,021, Cl. 436-120.000.

Armour, Thomas W., II. Multi-purpose fastening device. 5,008,987, Cl. 24-442.000

Armstrong, Gordon P. *See*—
Pollet, Jean-Claude, Williams, Gary L.; Armstrong, Gordon P., and Miller, David G., 5,009,941, Cl. 428-36.300

Arnold, Edward *See*—
Arnold, Lawrence J., 5,009,135, Cl. 81-488.000

Arnold, Lawrence J., to Arnold, Edward. Brake adjustment tool. 5,009,135, Cl. 81-488.000

Arns, James A. *See*—
Shih, I-Fu, Chang, David B., Arns, James A., Moss, Gaylord E., and Smith, Ronald T., 5,009,502, Cl. 356-152.000

Aronoff, Marvin S., Keyes, Denis E., and Hahn, Robert C., Sr., to E. R. Squibb & Sons, Inc. Starch containing film ostomy pouches. 5,009,648, Cl. 604-332.000

Arora, Sudershan K. *See*—
Ronsen, Bruce, Arora, Sudershan K., and Thomas, Albert V., 5,010,058, Cl. 514-23.000

Arrington, Stephen T., and Bradley, Gary W., to Halliburton Company. Process for removing copper and copper oxide deposits from surfaces. 5,009,714, Cl. 134-2.000

Arthur Guinness Son & Company (Dublin) Limited *See*—
Byrne, William J., 5,009,901, Cl. 426-112.000

Arthur, James C. *See*—
Howe, Michael G., Arthur, James C., and Usleman, Robert T., 5,009,065, Cl. 60-288.000

Arthurs, Raymond C., to Saepter Manufacturing Company Limited. Bottle carrier assembly. 5,009,314, Cl. 206-427.000

Arvidson, Arvid N., Dosaj, Vishu D., and May, James B., to Dow Corning Corporation. Silicon smelting process in direct current furnace. 5,009,703, Cl. 75-10.360

Arvin Industries, Inc. *See*—
Howe, Michael G., Arthur, James C., and Usleman, Robert T., 5,009,065, Cl. 60-288.000

Asahi Glass Company, Ltd. *See*—
Nakanishi, Kazuki, 5,009,688, Cl. 65-18.300

Asahi Kogaku Kogyo Kabushiki Kaisha *See*—
Misawa, Masayuki, 5,010,357, Cl. 354-159.000
Morimoto, Akira, 5,009,472, Cl. 350-6.500

Asahi, Naotatsu *See*—
Iizuka, Nobuyuki, Hirose, Fumiyuki, Asahi, Naotatsu, and Kojima, Yoshitaka, 5,009,070, Cl. 60-753.000

Asai, Hiromitsu *See*—
Takajo, Toshimi, Asai, Hiromitsu, and Haginuma, Kiyoshi, 5,009,520, Cl. 384-100.000

Asai, Kenji, to Kabushiki Kaisha Toshiba. Access controller for controlling the seek operation of a head relative to a recording medium. 5,010,425, Cl. 360-78.040

Asai, Kiyotsugu *See*—
Aoki, Masaaki, Kamiyama, Masayuki, Asai, Kiyotsugu, and Yamaguchi, Akihiro, 5,010,161, Cl. 528-59.000

Asai, Kohtaro *See*—
Murakami, Tokumichi, Asai, Kohtaro; Kamizawa, Koh, Nishida, Masami, Yamazaki, Fizo, Itoh, Atsushi, and Kinjoh, Naoto, 5,010,401, Cl. 358-136.000

Asami, Motomu *See*—
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Asano, Masamichi *See*—
Minagawa, Hidenobu, Tatsumi, Yuuichi, Iwahashi, Hiroshi, Asano, Masamichi, Nakai, Hiroto, and Imai, Mizuho, 5,010,520, Cl. 365-174.000.

Asanuma, Masato, and Kaneshige, Masatoshi, to Sharp Kabushiki Kaisha. Developing device with shutter. 5,009,187, Cl. 118-658.000

Asao, Kouichiro *See*—
Ohmae, Tadayuki, Sakurai, Tadashi, and Asao, Kouichiro, 5,009,951, Cl. 428-294.000

Asche, James E., to Clark Equipment Company. Retractable boom stop. 5,009,566, Cl. 414-722.000

Asea Brown Boveri Limited *See*—
Mechtersheimer, Gunter, 5,009,858, Cl. 422-186.190

Ashahi Glass Company, Ltd. *See*—
Harano, Takeshi, Takaki, Satoru, Shigesato, Yuzo, Suzuki, Koichi, Hashimoto, Naoki, Kojima, Hiroyasu, and Oyama, Takuji, 5,009,922, Cl. 427-37.000

Ashland Oil, Inc. *See*—
Yatsuka, Takeshi, Murata, Hiroshi, Mizumura, Yutaka, and Kotera, Nobukazu, 5,009,960, Cl. 428-423.100

Ashlock Company. *See*—
Hirtle, Thomas W., Cimperman, Frederick J., and Silbermann, Klaus, 5,009,909, Cl. 426-481.000

Ashmore, Benjamin H., Jr., to Texas Instruments Incorporated. Integrated-circuit configuration having fast local access time. 5,010,522, Cl. 365-189.070

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Soderberg, Per O., 5,009,596, Cl. 433-173.000

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Alferness, Rodney C., Budnikis, Zigmantas L., Hagelbarger, David W., Kogelnik, Herwig W., and Netravali, Arun N., 5,009,477, Cl. 350-96.150
Bechtel, Linda K., and Martin, Gary D., 5,010,554, Cl. 371-37.100
Cooke, Paul W., and Taylor, Geoffrey W., 5,010,374, Cl. 357-16.000
Dodd, Courtney V., and Munie, Gregory C., 5,009,724, Cl. 148-23.000
Kutzavitch, Walter G., and Rosenthal, Eugene J., 5,010,306, Cl. 330-284.000
Wang, Robert C., 5,010,574, Cl. 381-42.000

Atkinson, Diane *See*—
Hawkins, William G., Burke, Cathie J., Roll, Daniel O., Hartman, Pamela J., and Atkinson, Diane, 5,010,355, Cl. 346-140.00R

Atochem *See*—
Colombier, Christian, and Cuer, Jean-Pierre, 5,010,158, Cl. 528-28.000
Lescaut, Pierre L., 5,009,737, Cl. 156-264.000
Pralus, Christian, 5,009,754, Cl. 204-82.000

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Lindstrom, Michael J., 5,010,022, Cl. 436-123.000

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Chuang, Karl T., McMonagle, James B., Quaiattini, Robert J., Seddon, William A., and Clegg, David E., 5,009,872, Cl. 423-245.300

Atsumi, Kiminori *See*—
Sakuma, Shuji, Atsumi, Kiminori, and Fujita, Keijiro, 5,009,898, Cl. 424-618.000

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Attardi, Anthony A. *See*—
Nowak, William J., Attardi, Anthony A., and Costanza, Daniel W., 5,010,369, Cl. 355-273.000

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Glockler, Gerhard, Muller, Heinz, Kepplinger, Leopold W., Matzawrakos, Panajiotis, Koch, Erwin, and Auberger, Heinrich, 5,009,397, Cl. 266-197.000

Audi AG *See*—
van Basshuysen, Richard, and Bauder, Armin, 5,009,200, Cl. 123-52.00M

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Herberg, Gerhard, Hoffmann, Hans-Jurgen, Gesenhues, Ludger, Huang, Zhen, and Hoscher, Reinhard, 5,009,450, Cl. 280-707.000

Auld, John W., Stringer, Brian F., and Stringer, Brian F., to Noshe Engineering Limited. Article orientators. 5,009,305, Cl. 198-395.000

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Robins, Kendall H., Austin, Dennis K., and Spraggs, Richard W., 5,009,163, Cl. 102-301.000

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Ringwood, Alfred E., 5,010,043, Cl. 501-90.000

Authement, Sherrill A., Sr. Chair lift apparatus. 5,009,284, Cl. 182-142.000

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Wedler, Peter, and Eckmann, Peter, 5,008,989, Cl. 24-641.000

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Avery, Leslie R., to David Sarnoff Research Center, Inc. Voltage stress alterable ESD protection structure. 5,010,380, Cl. 357-23.130

Avidan, Amos A., and Yurchak, Sergei, to Mobil Oil Corporation. Integrated catalytic reactor system with light olefin upgrading. 5,009,851, Cl. 422-141.000

AVL Gesellschaft fuer Verbrennungs-kraftmaschinen und Messtechnik m.b.H., Prof. Dr. Dr. h.c. Hans List *See*—
Krempl, Peter W., Wegscheider, Guenther and Woess, Gerhard, 5,010,302, Cl. 330-107.000

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Wilmott, James M., Koelle, William H., and Znaiden, Alexander P., 5,010,110, Cl. 514-758.000

B. F. Goodrich Company, The *See—*
Fisher, John M., and Young, David R., 5,009,249, Cl. 137-495.000
Lai, John T., and Filla, Deborah S., 5,010,177, Cl. 534-586.000
Lai, John T., 5,010,178, Cl. 534-586.000
Lai, John T., 5,010,179, Cl. 534-586.000
Yu, Simon H. P., 5,010,139, Cl. 525-187.000

B&W Fuel Company *See—*
King, Raymond A., 5,009,839, Cl. 376-352.000

Babcock, Douglas W., to Analog Devices, Incorporated Automatic test equipment with active load having high-speed inhibit mode switching 5,010,297, Cl. 324-158.00R

Babcock Industries, Inc *See—*
Chaczyk, Adam W., and Baumgarten, John M., 5,009,122, Cl. 74-502.600

Babl, Albert *See—*
Kunz, Reiner, Babl, Albert, Zahradnicek, Ales, and Dietrich, Rainer, 5,009,674, Cl. 51-295.000

Bachit, Emil Heat-insulating building and/or light element 5,009,218, Cl. 126-452.000

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Waeber, Rene, Knabenhans, Fritz, and Bachmann, Othmar, 5,008,978, Cl. 19-66.0CC

Back, Anthony C., to John Crane U.K. Limited Mechanical face seal including two diaphragms surrounding a gland plate 5,009,437, Cl. 277-88.000

Bacon, Edward R. *See—*
Lesher, George Y., deceased, Bacon, Edward R., Singh, Baldev, and Kuo, Gee-Hong, 5,010,086, Cl. 514-303.000

Baer, Thomas *See—*
Schmidt, Richard R., Baer, Thomas, Zimmerman, Peter, and Wendel, Albrecht, 5,010,059, Cl. 514-25.000

Bagcraft Corporation of America *See—*
Faltynek, Mark, 5,009,518, Cl. 383-106.000

Bahr, Edward, to Imtech International, Inc. Method and apparatus for displaying an enlarged image on multiple monitors to form a composite image 5,010,413, Cl. 358-242.000

Bailey, Thomas F., Lancaster, Charles E., and Lee, Richard, to Drilex Systems, Inc. Packer for wellhead repair unit 5,009,265, Cl. 166-118.000

Baker Cummins Pharmaceuticals, Inc *See—*
Hsiao, Charles, 5,009,894, Cl. 424-451.000

Baker, Derrick J., Bugden, Walter G., and Smith, Peter R., to Lilliwyte Societe Anonyme Joining of ceramic components to metal components 5,009,357, Cl. 228-122.000

Baker Hughes Incorporated *See—*
Sliger, Kris M., Moeller, Randolph C., and Williamson, Scott E., 5,009,264, Cl. 166-106.000

Bakhshi, Shiv K. *See—*
Klett, Paul A., Bakhshi, Shiv K., and Stahl, Steven B., 5,009,932, Cl. 427-243.000

Balakrishnan, Ramesh, and Boissevain, Mathew G., to Measurex Corporation Process and system for controlling the basis weight of a sheet material 5,009,748, Cl. 162-198.000

Balasubramanian, Mannarsamy, and Choudhury, Pranab, to Ethyl Corporation Process for preparing organosilazanes 5,010,157, Cl. 528-14.000

Baldino, Robert L., to Eastman Kodak Company Multi-layer printed circuit board and a method for assuring assembly in a selected order 5,010,449, Cl. 361-414.000

Ban, Yoshiyuki *See—*
Yamamoto, Takemi, Nagata, Osamu, Komiya, Ryohei, Sakai, Jun, and Ban, Yoshiyuki, 5,010,160, Cl. 355-20.000

Bando Chemical Industries, Ltd *See—*
Yasuda, Masashi, Uchimoto, Yoshihiro, and Mikata, Yasunori, 5,009,352, Cl. 226-94.000

Banik, Anthony, to Allied-Signal Inc. Processing nickel-base superalloy powders for improved thermomechanical working 5,009,704, Cl. 75-238.000

Bank, Howard M., Cifuentes, Martin E., and Martin, Theresa F., to Dow Corning Corporation Process for the synthesis of soluble, condensed hydridosilicon resins containing low levels of silanol 5,010,159, Cl. 528-23.000

Banks, James V., to Control Fluidics, Inc. Filter system 5,009,776, Cl. 210-108.000

Bankstahl, Herbert A., Forsgren, Lyle M., Newman, Neil A., Beck, Wayne T., and Griffiths, John M., to Brunswick Corporation Torque splitting drive train mechanism for a dual counterrotating propeller marine drive system 5,009,621, Cl. 440-75.000

Barbaro-Forleo, Marco *See—*
Marciano-Agostinelli, Fabrizio, Barbaro-Forleo, Marco, Marin, Carlo, and Cinquemani, Paul L., 5,010,209, Cl. 174-23.00C

Barke, Oscar A. *See—*
Ahmad, Mohammad R., and Barke, Oscar A., 5,009,886, Cl. 424-58.000

Barker, Allan, to Senetics Corporation Indicator cap for a medicine bottle 5,009,338, Cl. 215-230.000

Barker, Owen P. Solar harness 5,009,243, Cl. 136-246.000

Barlow, Wayne K. *See—*
Stokes, Barry O., Bradshaw, Gary D., and Barlow, Wayne K., 5,009,185, Cl. 118-52.000

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Baroid Technology, Inc *See—*
House, Roy F., and Hoover, Lonnie D., 5,009,798, Cl. 252-8.551

Barrett, Clifford E., III *See—*
Snowden, Gregory O., Barrett, Clifford E., III, and Gomez, Fernando, 5,010,330, Cl. 340-825.210

Barrios, Richard C., and Hayes, Philip A., to Modern Industries, Inc. Triangular truss walkout cantilever 5,008,967, Cl. 14-7.000

Bartee, Edward C., to Square D Company Flushing floor fitting 5,010,211, Cl. 174-48.000

Bartels, Craig R., to Texaco Inc. Separation of compositions containing water and organic oxygenates 5,009,783, Cl. 210-500.410

Bartholomew, Donald D., to Proprietary Technology, Inc. Swivelable quick connector assembly 5,009,454, Cl. 285-24.000

Bartilucci, Mark P., Karsner, Grant G., and Tracy, William J., III, to Mobil Oil Corporation Recycle of oily refinery wastes 5,009,767, Cl. 208-85.000

Bartkowski, Klaus-Dieter, and Venn, Peter, to Gebr. Happich GmbH Chemical method of avoiding a rainbow effect caused by the layer of oxide produced upon the brightening of parts of aluminum or aluminum alloys 5,009,756, Cl. 204-129.350

Barton, Russell L., to Eli Lilly and Company Antibody-drug conjugates 5,010,176, Cl. 530-388.000

Bary, Daniel *See—*
Lessi, Jacques, Perreau, Philippe, Bary, Daniel, and Grard, Guy, 5,009,512, Cl. 374-6.000

BASF Aktiengesellschaft *See—*
Bloemacher, Martin, Schlegel, Reinhold, and Weinand, Dieter, 5,009,841, Cl. 419-23.000
Hahn, Klaus, Guhr, Uwe, Hintz, Hans, Wittenberg, Dietmar, and Gleich, Peter, 5,010,111, Cl. 521-56.000
Hennig, Karl, Hartmann, Heinrich, and Raubenheimer, Hans-Juergen, 5,010,150, Cl. 526-88.000
Hermeling, Dieter, Becker, Rainer, and Dobler, Walter, 5,009,753, Cl. 204-75.000
Keil, Michael, Schirmer, Ulrich, Kast, Juergen, Kolassa, Dieter, Wuerzer, Bruno, Meyer, Norbert, Rademacher, Wilhelm, Jung, Johann, and Carlson, Dale R., 5,009,702, Cl. 71-100.000
Martischius, Franz-Dieter, Vogel, Hans-Henning, Greif, Norbert, Oppenlaender, Knut, Denzinger, Walter, and Hartmann, Heinrich, 5,009,670, Cl. 44-385.000
Perner, Johannes, Diessel, Paul, Hartmann, Heinrich, Denzinger, Walter, Oftring, Alfred, and Schoenleben, Willibald, 5,009,805, Cl. 252-174.240
Plath, Peter, Eicken, Karl, Rueb, Lothar, Schwalge, Barbara, Westphalen, Karl-Otto, and Wuerzer, Bruno, 5,009,701, Cl. 71-96.000
Schoettle, Klaus, Buhk, Artur, and Ghniorz, Lothar, 5,010,434, Cl. 360-132.000
Steck, Werner, Marosi, Laszlo, Haberkorn, Herbert, Feser, Rainer, Huebner, Werner, and Jakusch, Helmut, 5,009,877, Cl. 423-607.000

Bass, Eric Exercise shield device, diagnostic tool 5,009,414, Cl. 272-76.000

Bateman, Paul M. *See—*
Ivey, John S., Bateman, Paul M., Clauss, Julius A., Cole, Edward H., Jr., and Mott, Philip J., 5,009,631, Cl. 474-213.000

Batesville Casket Company, Inc *See—*
Craft, William K., 5,008,990, Cl. 27-2.000

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Bauder, Armin *See—*
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Bauer, Paul R. *See—*
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Bauer, Ralph *See—*
Rue, Charles V., van de Merwe, Ronald H., Bauer, Ralph, Pellow, Scott W., Cottringer, Thomas E., and Klok, Richard J., 5,009,676, Cl. 51-309.000

Baufume, Michel *See—*
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Baughman, Ray H., Buff, Ernest D., Eckhardt, Helmut, and Fuchs, Gerhard H., to Allied Signal Inc. Dual-pane thermal window with liquid crystal shade 5,009,044, Cl. 52-171.000

Baumann, Wolfgang J., to University of Minnesota, Regents of the Phospholipase A2-resistant liposomes 5,009,956, Cl. 428-402.200

Baumgarten, John M. *See—*
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Baxter, Carlton J., to Eastman Kodak Company Slide transparency projector apparatus for use with an electrophotographic reproduction machine 5,010,366, Cl. 355-240.000

Baxter International Inc. *See—*
Minshall, Billy W., Purohit, Kailash, Nygard, John E., Sintim-Damoa, Kwame, Giesler, Richard, and Woodworth, Archie, 5,009,654, Cl. 604-410.000
Pike, Kelly A., and Hessel, Stephen R., 5,009,251, Cl. 137-601.000

Bayer Aktiengesellschaft *See—*
De Cleyn, Rene, Thometzek, Peter, and Rademachers, Jakob, 5,009,879, Cl. 423-610.000
Eckel, Thomas, Lettz, Edgar, Wittmann, Dieter, Ott, Karl-Heinz, Peters, Horst, and Schoeps, Jochen, 5,010,135, Cl. 525-63.000

Henning, Rolf, Benz, Gunter, Stasch, Johannes-Peter, Knorr, Andreas, and Bender, Wolfgang, 5,010,057, Cl. 514-018.000
Kaufmann, Dieter, and Gallenkamp, Bernd, 5,010,201, Cl. 546-316.000
Kohler, Burkhard, and Meyer, Rolf-Volker, 5,010,169, Cl. 528-388.000
Kramer, Wolfgang, Weissmuller, Joachim, Berg, Dieter, Brandes, Wilhelm, and Dutzmann, Stefan, 5,010,101, Cl. 514-462.000
Kramer, Wolfgang, Jautelat, Manfred, and Kranz, Eckart, 5,010,208, Cl. 548-267.800
Lindel, Hans, Hallenbach, Werner, Berschauer, Friedrich, Greife, Heinrich, and Klotz, Gernot, 5,010,091, Cl. 514-357.000
Maurer, Fritz, Lantzsch, Reinhard, Fiege, Helmut, and Schnatterer, Albert, 5,010,193, Cl. 544-243.000
Schade, Gerold, Marhold, Albrecht, and Brandes, Wilhelm, 5,010,094, Cl. 514-399.000
Serini, Volker, Freitag, Dieter, Westeppe, Uwe, Idel, Karsten, Grigo, Ulrich, Casser, Carl, Paetz, Klaus-Christian, and Hajek, Manfred, 5,010,162, Cl. 528-196.000
Serini, Volker, Freitag, Dieter, Westeppe, Uwe, Idel, Karsten, Grigo, Ulrich, Casser, Carl, Paetz, Klaus-Christian, and Hajek, Manfred, 5,010,163, Cl. 528-196.000
Fraubel, Harro, Strenger, Heinrich, Weber, Karl A., Müller, Hans-Werner, Zapfel, Horst, and Hummel, Axel, 5,009,921, Cl. 427-31.000
Wagner, Joachim, Peltzer, Karl, and Rasshofer, Werner, 5,009,950, Cl. 428-290.000
Westeppe, Uwe, Piejko, Karl-Erwin, and Lindner, Christian, 5,010,138, Cl. 525-183.000
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Beasom, James D., to Harris Corporation Isolated gate MESFET and method of trimming 5,010,377, Cl. 357-22.000

Beattie, David C. *See—*
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Beattie, Patrick J., Olivert, Andrew L., and Sylvester, Richard J., to John D. Brush & Co., Inc. Combination lock assembly 5,009,090, Cl. 70-326.000

Beauch, Howard D. *See—*
Iseler, Stanley J., Beauch, Howard D., Everett, Benjamin H., II, and Sutorik, John P., 5,009,120, Cl. 74-493.000

Beaurepaire, Olivier, and Thompson, Frederick H., to AE PLC Wrist pin 5,009,124, Cl. 74-595.000

Bechtel, Linda K., and Martin, Gary D., to AT&T Bell Laboratories Error correction method and apparatus 5,010,554, Cl. 371-37.100

Beck, Boyd R., and Harris, Robert D., to Harris Research Inc. Composition and method for providing stain resistance to polyamide fibers using carbonated solutions 5,009,667, Cl. 8-115.560

Beck, Terry E. *See—*
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Beck, Wayne T. *See—*
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Becker, Rainer *See—*
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Bell Communications Research, Inc *See—*
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Bell, Craig J., to Smiths Industries Medical Systems, Inc. Blood containment device 5,009,850, Cl. 422-99.000

Bell, George S. Wave actuated power generating apparatus 5,009,568, Cl. 415-3.100

Bell, John A. *See—*
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Bell, William E., and McNerney, John J., to Arizona Instrument Corp. Method for restoring the sensing capacity of an electrical sensor 5,010,021, Cl. 436-120.000

Beloit Corporation *See—*
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Bengt Henningson *See—*
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Benin, Joshua, Di Maio, William G., Morin, Carl F., and Lawler, James A., to Du Pont de Nemours, E. I., and Company Vortexing liquid container 5,009,942, Cl. 428-36.600

Bennett, Ronald, to Ultra Creative Corp. Plastic film bag with a multi-layered bight through which a hanger extends and related methods 5,009,515, Cl. 383-23.000

Bennington, Thomas E. Flight simulator apparatus using an inoperative aircraft 5,009,598, Cl. 434-30.000.

Benson, Stephen V. *See—*
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Benson, Werner *See—*
Waldeck, Harald, Benson, Werner, Zeugner, Horst, Wolf, Klaus-Ullrich, Gregory, Peter-Colin, Hamminga, Derk, and van Wijngaarden, Ineke, 5,010,076, Cl. 514-221.000

Benz, Gunter *See—*
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Berendt, Hans-Ulrich, and Topfl, Rosemarie, to Ciba-Geigy Corporation Mixture of assistants and its use in the dyeing of synthetic fibre materials acid ester of oxyalkylated phendl, nonionic surfactant and dye carrier 5,009,668, Cl. 8-557.000

Berendt, Hans-Ulrich *See—*
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Berg, Dieter *See—*
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Berger, Richard C., and Berger, Paul L. Pipe hanger and support 5,009,386, Cl. 248-613.000.

Bergman, James F. *See—*
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Bergsten, Curt A. Article cassette for a vending machine 5,009,328, Cl. 221-152.000

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Bernardin, Leo J., to Kimberly-Clark Corporation Absorbent structure designed for absorbing body fluids 5,009,650, Cl. 604-378.000

Bernstein, Lawrence J., to Eastman Kodak Company Method and apparatus for signal companding 5,010,410, Cl. 358-214.000

Bernstrom, Marvin L., to Eaton Corporation Rotary fluid pressure device and improved stationary valve plate therefor 5,009,582, Cl. 418-61.300

Berry, David H *See—*
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Berschauer, Friedrich *See—*
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Bewsey, John A., to Harvest Chemicals (Proprietary) Limited Alginate composition for application to a soil or plant locus 5,009,710, Cl. 106-208.000

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Bieganski, Zdzislaw Coaxial cable stripper 5,009,130, Cl. 81-9.400

Biftu, Tesfaye, Chabala, John C., Bugianesi, Robert L., Ponpipom, Mitree M., and Sahoo, Soumya P., to Merck & Co. Inc. Certain 2,5-diaryl tetrahydrofurans and analogs thereof as PAF antagonists 5,010,100, Cl. 514-461.000

Bigari, Steven T., to JBH Ventures Apparatus, system and method for creating credit vouchers usable at point of purchase stations. 5,010,485, Cl. 364-408.000

Bikson, Benjamin; Nelson, Joyce K., and Perrin, Jerry E., to Union Carbide Industrial Gases Technology Corporation Process for recovery of ammonia from an ammonia-containing gas mixture 5,009,678, Cl. 55-16.000

Bilsbury, Stephen J., Dennis, William G., Jr., and Kernosky, Stephen K., to Olin Corporation Low cost penetrator projectile 5,009,166, Cl. 102-516.000

Bimbi, Domenico Automotive parts support rack 5,009,337, Cl. 211-86.000

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Biomeasure, Inc *See—*
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Hayes, Ann G., and Birch, Phillip J., 5,010,096, Cl 514-411.000

Bishai, Macram N., to McCord Winn Textron Inc Port fuel injection and induction system for internal combustion engine 5,009,212, Cl 123-533.000

Bittler, Dieter, Laurent, Henry, Rach, Petra, and Topert, Michael, to Schering Aktiengesellschaft Androstane derivatives 5,010,071, Cl 514-178.000

Black, Robert H., and Venaleck, John T., to Ohio Associated Enterprises, Inc Method and apparatus for making electrical connecting device 5,009,618, Cl 439-736.000

Blackburn, Bruce N., to Weinstein, Bernard Dial face for clock or watch 5,010,533, Cl 368-223.000

Blaney, Carol A *See—*
Hossain, Shafi U., and Blaney, Carol A., 5,009,745, Cl 162-5.000
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Blaschek, Otto Sound insulated interchangeable lens 5,009,499, Cl 352-35.000

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Bloemacher, Martin, Schlegel, Reinhold, and Weinand, Dieter, to BASF Aktiengesellschaft Process for dewaxing injection molded metal pieces and for improving the properties thereof 5,009,841, Cl 419-23.000

Blount, David H Flame-retardant polyurethane products 5,010,113, Cl 521-107.000

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Serwer, Philip, and Griess, Gary A., 5,009,759, Cl 204-182.800

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Ries, Stanley K., Wert, Violet F., and Nair, Muraleedharan G., 5,009,698, Cl 71-92.000

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Boden, Karl, Ibach, Harald, and Linke, Udo, to Kernforschungsanlage Julich GmbH Bar and crucible magnetic suspension for a crystal-growing apparatus 5,009,865, Cl 422-249.000

Bodkins, Stanley H., to Gillette Company, The Anti-pilferage fixture 5,009,334, Cl 211-54.100

Boehringer Mannheim Corp *See—*
Serbousek, Jon C., and Engelhardt, John A., 5,009,665, Cl 623-22.000
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Boeing Company, The *See—*
Falk, R A., Capps, C D., and Houk, T L., 5,010,505, Cl 364-713.000
Garriss, Gregory M., 5,010,412, Cl 358-240.000
Hamilton, Michael C., and Bell, John A., 5,010,346, Cl 341-137.000

Boes, Rudolph Twine feeding apparatus for round hay balers 5,009,154, Cl 100-5.000

Boghen, Franklin M., Camanni, Franco, Del Soldato, Piero, Ghigo, Ezio, and Muller, Eugenio, to Pierrel SpA Pharmaceutical composition for intranasal administration, comprising GH-releasing hormone, a cholinergic agonist and optionally a bile salt 5,010,056, Cl 514-12.000

Boissevain, Mathew G *See—*
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Boissonneault, Roger M., to Warner-Lambert Company Graduated estrogen contraceptive 5,010,070, Cl 514-171.000

Bolan, Michael L *See—*
Dias, Donald R., Lee, Robert D., Bolan, Michael L., and Scherpenberg, Francis A., 5,010,331, Cl 340-825.310

Bolte, Georg, to Schmalbach-Lubeca AG Easy-open package for fluent material 5,009,364, Cl. 229-123.200

Bolton, Barbara A *See—*
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Bonnand, Christian, Mascart, Dominique, and Druelle, Philippe, to Stein Industrie, and Electricite de France Machine for remotely lining the inside of a heat exchanger tube end with a sleeve 5,008,996, Cl 29-727.000

Bonnell, Raymond J., to Vickers, Incorporated Power transmission 5,009,067, Cl 60-484.000

Bopp, Lawrence H., to General Electric Company Method for biodegrading PCBs 5,009,999, Cl 435-29.000

Borchardt, Jurgen *See—*
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Bottom, Carey B., and Kwoka, Margaret N., to Marion Laboratories, Inc Stable liquid form of 5-aminosalicylic acid 5,010,069, Cl 514-166.000

Boudon, Gerard, Mollier, Pierre, Nuez, Jean-Paul, Ong, Ieng, Tannhof, Pascal, and Wallart, Franck, to International Business Machines Corporation BICMOS logic circuit with full swing operation 5,010,257, Cl 307-446.000

Bournonville, Jean-Paul *See—*
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Bourque, Douglas A *See—*
Gilberto, Daniel G., 5,009,132, Cl 81-57.300

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Bowman, James *See—*
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Braatz, Paul O *See—*
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Bradshaw, Gary D *See—*
Stokes, Barry O., Bradshaw, Gary D., and Barlow, Wayne K., 5,009,185, Cl 118-52.000

Brady, Peter J, to Square D Company Plug-in transient voltage suppressor module 5,010,438, Cl 361-56.000

Brady, Richard L *See—*
deFigueiredo, Mario P., and Brady, Richard L., 5,009,903, Cl 426-243.000

Brady, Thomas E., Condon, Michael E., and Marc, Pierre A., to American Cyanamid Company 1-{[O-(cyclopropylcarbonyl)phenyl]sulfamoyl}-3-(4,6-dimethoxy-2-pyrimidinyl)urea herbicidal composition and use 5,009,699, Cl 71-92.000

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Braglia, Marco, DeFranceschi, Roberto, and Montangero, Paolo, to SIP - Societa Italiana per l'Esercizio Delle Telecomunicazioni P A Detection system for cathodoluminescence analysis 5,010,253, Cl 250-399.000

Brake, Anthony J., and Van Den Berg, Johan A., to Chiron Corporation, and Gist-Brocades NV DNA constructs containing a Kluyveromyces alpha factor leader sequence for directing secretion of heterologous polypeptides 5,010,182, Cl 536-27.000

Branam, Timothy R., Roberts, Jeffrey J., and Schoenberger, Jack O., to Westinghouse Electric Corporation Method and apparatus for monitoring and measuring dynamic loads in thrust inducing systems 5,009,101, Cl 73-168.000

Brandes, Wilhelm *See—*
Kramer, Wolfgang, Weissmuller, Joachim, Berg, Dieter, Brandes, Wilhelm, and Dutzmann, Stefan, 5,010,101, Cl 514-462.000
Schade, Gerold, Marhold, Albrecht, and Brandes, Wilhelm, 5,010,094, Cl 514-399.000

Brandolese, Ernesto, to Agip Petroli S p A Lubricant fluid for the cold-rolling of steel 5,009,803, Cl 252-49.500

Brangle, Edward J, Jr Quick-assembled folding carton with reinforced bottom that locks in position 5,009,362, Cl 229-117.000

Braun, Anthony E *See—*
Jons, Roena B., 5,009,054, Cl 53-397.000

Braun, Jeffrey J, to Motorola, Inc Balanced integrated circuit differential amplifier 5,010,303, Cl 330-257.000

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Wullenweber, Heinz, Kohl, Peter, Jung, Herbert, Borchardt, Jurgen, Bickle, Wolfgang, and Braus, Jurgen, 5,010,050, Cl 502-301.000

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Breeding, Kenneth E *See—*
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Bremel, Robert D *See—*
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Brennesholtz, Matthew S, to North American Philips Corporation Method for forming a deposited layer on a skirted substrate 5,009,930, Cl 427-236.000

Bretthauer, Hans-Jurgen *See—*
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Bricker, Mark *See—*
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Bridgestone Corporation *See—*
Ikeda, Kazunari, and Sanada, Koichi, 5,009,732, Cl 156-177.000
Yamagishi, Hisashi, Kakiuchi, Shinichi, and Tomita, Seisuke, 5,009,428, Cl 273-232.000

Bridgestone/Firestone, Inc *See—*
Weitzenhof, David A., 5,009,401, Cl 267-64.210

Briggs & Stratton Corporation *See—*
Fiorenza, John A., II, 5,009,208, Cl 123-335.000

Brinker, Dale R., and Reiland, Thomas L., to Abbott Laboratories Pharmaceutical granules and tablets made therefrom 5,009,897, Cl 424-469.000

Bristol-Myers Company *See—*
Sit, Sing-Yuen, and Wright, John J., 5,010,205, Cl 548-253.000

British Aerospace Public Limited Company *See—*
Malvern, Alan R., 5,009,505, Cl 356-352.000

British Broadcasting Corporation *See—*
Croll, Michael G., 5,010,392, Cl 358-21.00R

British Nuclear Fuels plc *See—*
Hodgson, Graham, 5,009,817, Cl 264-0.500

British Telecommunications public limited company *See—*
Hill, Alan M., 5,010,543, Cl 370-3.000
Mortimore, David B. and Payne, David B., 5,010,586, Cl 455-605.000

Brockmuller, Uwe, and Weber, Hans-Gerd, to SKF GmbH Roller seating 5,009,525, Cl 384-576.000

Brooks, Kenneth J *See—*
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Broome, Albert, to Brava Patient Och Invent AB Method for performing a surgical closure of a skin incision or wound and means for carrying out the method 5,009,663, Cl 606-232.000

Brother Kogyo Kabushiki Kaisha *See—*
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Kuzuya, Susumu, Shimizu, Seiji, Kato, Mikio, Ishikawa, Yujiro, Sakai, Takashi, and Yuki, Eiji, 5,009,530, Cl 400-188.000
Suzuki, Makoto, 5,010,415, Cl 358-302.000
Yamamoto, Takemi, Nagata, Osamu, Komiya, Ryohei, Sakai, Jun, and Ban, Yoshiyuki, 5,010,360, Cl 355-20.000

Brothers, William S Urine collection system 5,009,236, Cl 128-761.000

Broussard, Paul C, Sr Liquid-to-liquid oil absorption method 5,009,787, Cl 210-634.000

Brown, Alan R *See—*
Welch, Richard M., Brown, Alan R., and Phillips, Arthur P., 5,010,088, Cl 514-312.000

Brown, Dale G, Siddens, Jack K, Diehl, Robert E, and Wright, Donald P, Jr, to American Cyanamid Company Arylpyrrole insecticidal acaricidal and nematicidal agents and methods for the preparation thereof 5,010,098, Cl 514-426.000

Brown, Sterling B *See—*
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Broxton, Peter A, to Lonc raine Broxton & Partners Limited Decorative condiment shakers 5,009,341, Cl 222-130.000

Bruck, Robert *See—*
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Brufani, Mario *See—*
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Brunner, Gerald Apparatus to fill seed-fertilizer drills 5,009,254, Cl 141-35.000

Brunson, Welton K *See—*
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Brunswick Corporation *See—*
Bankstahl, Herbert A., Forsgren, Lyle M., Newman, Neil A., Beck, Wayne T., and Griffiths, John M., 5,009,621, Cl 440-75.000
Cleary, Terrance M., Donahue, Raymond J., Hesterberg, William G., and Torello, Lawrence J., 5,009,260, Cl 164-255.000

Bucek, Pavel *See—*
Paigrt, Jan, Smetak, Vincenc, Kalina, Jaroslav, Zemek, Michal, Pus, Milan, and Bucek, Pavel, 5,009,253, Cl 139-116.200

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Baughman, Ray H., Buff, Ernest D, Eckhardt, Helmut, and Fuchs, Gerhard H., 5,009,044, Cl 52-171.000

Bugden, Walter G *See—*
Baker, Derrick J., Bugden, Walter G., and Smith, Peter R., 5,009,357, Cl 228-122.000

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Syrinek, Allen R., Buggs, Ralph N and Gabel, Robert K., 5,009,799, Cl 252-8.553

Bugianesi, Robert L *See—*
Biftu, Tesfaye, Chabala, John C., Bugianesi, Robert L., Ponpipom, Mitree M., and Sahoo, Soumya P., 5,010,100, Cl 514-461.000

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Bunshah, Rointan F, Parsons, James D, and Stafsudd, Oscar M, to University of California, The Regents of the Wafer base for silicon carbide semiconductor device 5,010,035, Cl 437-100.000

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Burgener, Larry L, and Durbin, Larry L, to Honeywell Inc Mounting arrangement for avionics equipment 5,009,385, Cl 248-346.000

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Burley, Noel A, to Bell-TRH Limited Thermocouples of enhanced stability 5,010,316, Cl 338-238.000

Burlison, Gary L Axe head mounted handle protector 5,009,010, Cl 30-308.100

Burman, Barry A Animal deterrent apparatus 5,009,192, Cl 119-29.000

Burndy Corporation *See—*
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Burns, David R *See—*
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Burres, Neal S *See—*
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Buss, Erich *See—*
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Bustamante, Michael R, Renaker, John J, Jr, and Magley, Donald A, to Dameosur S A De C V Method for absorbing liquids using dealginate kelp 5,009,790, Cl 210-689.000

Butkus, Anthony K, and Martin, Scott D, to Norton Company Chromia-magnesia refractory body 5,010,046, Cl 501-117.000

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Butler, Ronnie T, to Peace River Arms & Accessories, Inc Sling mountable pouch for firearms 5,009,346, Cl 224-205.000

Butterworth, Mark M, to Hewlett-Packard Company Sensor array and illumination system for a large depth-of-field bar code scanner 5,010,241, Cl 235-462.000

Buxton, Galina P, and Tang, Kuo-Chang, to Olin Hunt Specialty Products Inc Electrostatographic particulate toner and developer compositions 5,009,979, Cl 430-110.000

Bykhovsky, David G, and Panov, Alexandr N Device for transfer of molten metal 5,009,399, Cl 266-237.000

Byrne, William J, to Arthur Guinness Son & Company (Dublin) Limited Method of packaging a beverage and a beverage package 5,009,901, Cl 426-112.000

C R Bard, Inc *See—*
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Lin, True-Lon, Fathauer, Robert W., and Grunthaner, Paula J., 5,010,037, Cl. 437-200.000
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Enari, Masahiko, Shikichi, Satoshi, Kawaguchi, Fumiaki, Suzuki, Kenichi, Usui, Masayuki, Matsuoka, Hiroshi, Matsuoka, Kazuhiko, Hosoya, Hideki, Aoki, Akio, and Minoura, Kazuo, 5,010,534, Cl. 369-32.000
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Honda, Mitsuru, Koike, Atsushi, Kimura, Tomohiro, Ogawa, Kyosuke, and Murai, Kenichi, 5,009,974, Cl. 430-69.000
Kinoshita, Takao, Tojo, Akihiko, Takayama, Tsutomu, Kaji, Toshio, and Tanaka, Nobuyoshi, 5,010,418, Cl. 358-335.000
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Shibazaki, Nobuo, 5,010,496, Cl. 364-519.000
Shimokoriyama, Makoto, and Yagisawa, Toshihiro, 5,010,391, Cl. 358-14.000
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den Hartog, Hulbert, and van Perlstein, Erik B., to Hoogovens Groep B.V. Method and apparatus for the manufacture of formable steel strip 5,009,396, Cl. 266-115.000
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Helmer, Ulla K. E.; and Stensio, Karl-Erland M., 5,009,789, Cl. 210-641.000
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Bonnand, Christian; Mascart, Dominique; and Druelle, Philippe, 5,008,996, Cl. 29-727.000
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Weinberg, Norman L.; Genders, John D.; and Minkler, Alfred O., 5,009,869, Cl. 423-210.000
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Barton, Russell L., 5,010,176, Cl. 530-388.000
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Ellersick, William F., to Raynet Corporation. Inrush current limiting circuit. 5,010,293, Cl. 323-278.000
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McGeehan, John K., 5,009,994, Cl. 435-4.000
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D'Aquila, Anthony; Smart, Charles F.; and Varian, Raymond H., 5,009,354, Cl. 227-2.000
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Enari, Masahiko, Shikichi, Satoshi, Kawaguchi, Fumiaki, Suzuki, Kenichi, Usui, Masayuki, Matsuoka, Hiroshi, Matsuoka, Kazuhiko, Hosova, Hideki, Aoki, Akio, and Minoura, Kazuo, to Canon Kabushiki Kaisha Optical information recording-reproducing apparatus 5,010,534, Cl 369-32.000

Endo, Kenji, and Nagata, Shinichi, to Dainippon Screen Mfg Co , Ltd Optical lighting system 5,010,465, Cl 362-337.000

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Endo, Mineyo, Takegami, Kiyoyoshi, Hishida, Noriaki, and Miyaji, Itsuo, to Nippon Densan Corporation Magnetic fluid seal assembly 5,009,436, Cl 277-80.000

Endoh, Shyuzo *See*—
Sakuta, Masaharu, Urano, Toshiharu, Tanaka, Kyoichi, Sugiyama, Masashi, Endoh, Shyuzo, and Fujioka, Keisuke, 5,009,713, Cl 106-727.000

Energy Sciences Inc *See*—
Wyman, John E , 5,009,924, Cl 427-44.000

Engel, Klaus *See*—
Kelkenberg, Heike, Ruback, Wulf, and Engel, Klaus, 5,009,814, Cl 252-548.000

Engelhard Corporation *See*—
Rudy, Wayne M , 5,010,051, Cl 502-304.000

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Serbousek, Jon C and Engelhardt, John A , 5,009,665, Cl 623-22.000

Engelstad, Barry L , Raymond, Kenneth N , Huberty, John P and White, David L , to University of California, The Regents of the Imaging agents for in vivo magnetic resonance and scintigraphic imaging 5,010,191, Cl 544-225.000

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Braestrup, Claus T , Nielsen, Mogens C Christensen, Joergen A , Engelstoft, Mogens, Schou, Henning, Eder, Ulrich Neef, Gunter, Huth, Andreas, Rahtz, Dieter, and Schmiechen, Ralph, 5,010,077, Cl 514-228.800

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Greco, Alberto, 5,010,202, Cl 548-110.000

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Robins, Kendall H , Austin, Dennis K , and Spraggs, Richard W , 5,009,163, Cl 102-301.000

Enzyme Bio-Systems Ltd *See*—
Brumm, Phillip J , 5,010,008, Cl 435-202.000

EOL, Inc *See*—
Hutchinson, Donald P , 5,009,230, Cl 128-633.000

Eprova AG *See*—
Mueller, Hans R Ulmann, Martin, Conti, Josef, and Muerdel, Guenter, 5,010,194, Cl 544-258.000

Ergan, Francoise, Trani, Michael, and Andre, Gerald, to Canada, Her Majesty the Queen in Right of Canada as represented by the National Research Council of Lipase immdolized by cross-linking with inert protein for glyceride synthesis 5,010,006, Cl 435-177.000

Erhardt, Werner, to Siemens Aktiengesellschaft Break-away element for electrical capacitor 5,010,442, Cl 361-275.000

Erlendsson, Gudni, and Hjaltason, Thorgeir D , to Rite Lite Partnership, Sign plate for illuminated sign 5,009,019, Cl 40-541.000

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Steinike, Ulrich, 5,008,972, Cl 15-312.200

Esau, LaVerne, to Liberty Diversified Industries, Inc Fork lift attachment 5,009,565, Cl 414-607.000

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Taylor, Fletcher B , Jr and Esmon, Charles T , 5,009,889, Cl 424-94.640

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Schramm, Laurier L , and Smith, Russell G , 5,009,773, Cl 208-391.000

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Estrov, Alexander, to Multisource Technology Corp Low-profile planar transformer for use in off-line switching power supplies 5,010,314, Cl 336-198.000

ETA SA Fabriques d'Ebauches *See*—
Perrot, Friedrich, 5,010,532, Cl 368-88.000

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Balasubramanian, Mannarsamy and Choudhury, Pranab, 5,010,157, Cl 528-14.000
Lam, William Y , and Liesen, Gregory P , 5,009,802, Cl 252-48.200
Niebylski, Leonard M , 5,009,961, Cl 428-446.000

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Thomas, Howard C , 5,010,564, Cl 378-176.000

Euroceltique, S A *See*—
Hofer, Peter, 5,010,081, Cl 514-263.000

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Heinz, Wilhelm, 5,010,284, Cl 315-384.000

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Abu-Isa, Ismat A Eusebi, Elio, Jaynes, Craig B Moran, Susan C and Roy, Michael A , 5,009,827, Cl 264-156.000

Evans Automotive, Division of Evans Industries, Inc *See*—
Raj, Joseph T , 5,009,938, Cl 428-31.000

Evans, Thomas L Wasserman, Carol B Shea, Timothy J and Campbell, John R , to General Electric Company Method for preparing block polyphenylene ether-polycarbonates 5,010,143, Cl 525-394.000

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Iseler, Stanley J Beauch, Howard D Everett, Benjamin H , II and Sutorik, John P , 5,009,120, Cl 74-493.000

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Leung, Peter K , Steiger, Ronald P , and Kunze, Kenneth R 5,010,301, Cl 324-376.000

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Polak, Bob, 5,009,174, Cl 110-264.000

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Schmitt, Hans J and Blazek, Vladimir, 5,009,231, Cl 128-633.000

Faarup, Peter *See*—
Gronwald, Frederik, Andersen, Peter H Faarup, Peter, Guddal, Erling Hansen, Kristian T , Hansen, Louis B and Nielsen, Erik B , 5,010,074, Cl 514-213.000

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Ponzio, Vittorio, 5,010,334, Cl 340-870.280

Falbo, G P "Sonny" and Harris, Jesse W Apparatus for and a method of facilitating the excavating and refilling of a trench 5,009,548, Cl 405-179.000

Falk, Kevin L *See*—
Holtan, Ramer B , Jr Falk, Kevin L , Bergman, James F Smith, James R and Nelson, Kenneth E , 5,009,496, Cl 351-156.000

Falk, R A Capps, C D and Houk, T L , to Boeing Company, The Optical cross bar arithmetic/logic unit 5,010,505, Cl 364-713.000

Faltynek, Mark, to Bagcraft Corporation of America Window-style bag with integral coupon 5,009,518, Cl 383-106.000

Famili, Amir F , Marten, F Lennart, and Mohanty, Dillip K , to Air Products and Chemicals, Inc Copolymers of vinyl acetate and fluorine-containing acrylate monomers 5,010,153, Cl 526-243.000

Fan Engineering GmbH *See*—
Eichler, Dietrich, 5,009,795, Cl 210-744.000

Fantuz, Marinella *See*—
Piani, Silvano Tamagnone, Gianfranco, Alpino, Raul R Milani, Maria R and Fantuz, Marinella, 5,010,063, Cl 514-56.000

Fanuc Ltd *See*—
Kawamura, Hideaki Fujibayashi, Kentaro, and Hitaka, Yosato 5,010,285, Cl 318-569.000
Nakamura, Kosei Kono, Shinichi, Numai, Kazuhisa and Kimijima, Masami, 5,010,286, Cl 318-571.000

Fanuc Ltd *See*—
Kurakake, Mitsuo and Kinoshita, Jiro, 5,010,492, Cl 364-474.290
Uchida, Hiroyuki, 5,010,266, Cl 310-156.000

Faron, Eugene J , II *See*—
Mauro, David J , Furesik, Susan L , Katz, Frances R Faron, Eugene J , II, Gottneid, David J and Pustek, Frank J 5,009,911, Cl 426-578.000

Farrell, Jonathon E , and Anthony, Mark C Electrical switching mechanism 5,010,215, Cl 200-50.00A

Farrentine, Anselmo N Dispensing apparatus 5,009,329, Cl 221-175.000

Fathauer, Robert W *See*—
Lin, True-Lon, Fathauer, Robert W , and Grunthaner, Paula J 5,010,037, Cl 437-200.000

Faughn, Jim A , to United States of America, Army Air distribution connector valve 5,009,252, Cl 137-614.040

Fay, Fredric S , Fogarty, Kevin E , and Rodgers, Cyril, to University of Massachusetts Medical Center Filter accessory for an imaging microspectrofluorimeter 5,009,488, Cl 350-315.000

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Nash, Stephen E and Pichler, Gerald P , 5,009,434, Cl 277-1.000

Fedin, Marat A , Kuznetsova, Tatyana A , Lysenkov, Viktor I Novikova, Svetlana A , Savchuk, Valentin A Sedelnikov, Anatoly I , Shabunya, Vera P , Udarov, Boris G Tikhonova, Tatyana S Polyakova, Nina P , and Paklin, Sergei I Method of sterilizing anthers of plants 5,010,106, Cl 514-546.000

Fedter, Horst, Grunwald, Werner, Nolting, Peter de la Prieta, Claudio, and Schmid, Kurt, to Robert Bosch GmbH Thermal radiation sensor 5,010,315, Cl 338-7.000

Fee, Thomas G Rail-mounted rack for bowl-shaped or kettle-shaped containers such as outdoor grills and the like 5,009,380, Cl 248-214.000

Feld, Alexander *See*—
Karg, Kenneth A Hvozda, Carl K , Neddermeyer, Robert N , and Feld, Alexander, 5,009,148, Cl 98-10.000

Feldman, Marc D Skalak, Thomas C , and Belardinelli, Luiz, to University of Virginia Alumni Patents Foundation, The Metabolic catheter 5,009,634, Cl 604-27.000

Feldstein, Michael A *See*—
Hunter, Gregory H , Wells, Benjamin A , and Feldstein, Michael A , 5,009,473, Cl 350-6.600

Feldstein, Nathan Colloidal compositions for electroless deposition 5,009,965, Cl 428-546.000

Felman, Steven W Jirkovsky, Ivo L and Memoli, Kevin A , to American Home Products Corp Anti-ulcer 5-(2-substituted ethenyl)-3(2H)-furanones 5,010,102, Cl 514-473.000

Felt, Mildred T *See*—
Gilberto, Daniel G , 5,009,132, Cl 81-57.300

Fenger, Michael L , and Vargo, Francis R , to Consolidation Coal Company Recycling catalyst bed for flue gas treatment 5,009,856, Cl 422-178.000

Fenner, David F , and Menown, John S A remotely controllable position indicator system 5,009,501, Cl 356-152.000

Fenton, E Dale Trailer and trailer unloading system 5,009,567, Cl 414-786.000

Feranda, Louis, Sr Propeller guard 5,009,620, Cl 440-72.000

Ferguson, H William, Jr *See*—
Ptaschek, Lawrence Bowman, James and Ferguson, H William, Jr , 5,009,058, Cl 53-469.000

Ferrar, Wayne T *See*—
Coltrain, Bradley K , Ferrar, Wayne T , and Landry, Christine J , 5,010,128, Cl 524-405.000

Ferrua, Bernard and Moulin, Claude, to Compagnie Oris Industrie S A Process for the immunological quantitative determination of T_3 and/or T_4 thyroid hormones, using thyroglobulin 5,010,017, Cl 436-500.000

Feser, Rainer *See*—
Steck, Werner, Marosi, Laszlo Haberkorn, Herbert, Feser, Rainer, Huebner, Werner and Jakusch, Helmut, 5,009,877, Cl 423-607.000

Fiat Auto S p A *See*—
Di Nunzio, Vittorio Giaccardi, Eraldo, and Saluzzo, Sergio, 5,009,213, Cl 123-620.000

Fidler, Jerry D *See*—
Diekevers, Mark S , and Fidler, Jerry D , 5,009,017, Cl 37-142.00A

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Maurer, Fritz, Lantzsch, Reinhard, Fiege, Helmut, and Schnatterer, Albert, 5,010,193, Cl 544-243.000

Fifield, John A and Kalter, Howard L , to International Business Machines Corporation Crosstalk-shielded-bit-line dram 5,010,524, Cl 365-205.000

Filla, Deborah S *See*—
Lai, John T , and Filla, Deborah S , 5,010,177, Cl 534-586.000

Fink, David M *See*—
Allen, Richard C , Agnew, Marc N , and Fink, David M , 5,010,083, Cl 514-292.000

Finney, Patrick D Disposable container for storing and dispensing pet food 5,009,310, Cl 206-229.000

Finter, Jurgen, Hilti, Bruno, Mayer, Carl W , Minder, Ernst, and Pfeifer, Josef, to Ciba-Geigy Corporation Antistatic and electrically conducting polymers and moulding materials 5,009,812, Cl 252-500.000

Fiorenza, John A , II, to Briggs & Stratton Corporation Engine speed limiter 5,009,208, Cl 123-335.000

Fiquet, Claire *See*—
Grollier, Jean-Francois, Fiquet, Claire, Fourcadier, Chantal, Dubief, Claude, and Cauwet, Daniele, 5,009,880, Cl 424-047.000

Fischbach, Karl H *See*—
Schneider, Alfred, Loos, Horst, and Fischbach, Karl H , 5,009,034, Cl 49-192.000

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Fischer, Karl, Borst, Gerhard, executor, Treffinger, Heinz, executor, and Fischer, Dorothee, executrix, 5,010,235, Cl 219-455.000

Fischer, Karl, Borst, Gerhard, executor, Treffinger, Heinz, executor, and Fischer, Dorothee, executrix, to E G O Elektro-Gerate Blanc u Fischer Electric cooker plate 5,010,235, Cl 219-455.000

Fisher, John M , and Young, David R , to B F Goodrich Company, The Valve for fluid container 5,009,249, Cl 137-495.000

Fisher, Terrence L *See*—
Matoushek, Robert J , Fisher, Terrence L , and Whritenor, James A , 5,009,509, Cl 346-138.000

Fleischer, Erwin *See*—
Worschech, Kurt, Wedl, Peter, Fleischer, Erwin, Loeffelholz, Frido, and Jaeckel, Manfred, 5,010,123, Cl 524-114.000

Floss Products Corporation *See*—
Ahmad, Mohammad R , and Barke, Oscar A , 5,009,886, Cl 424-58.000

Fly, Anderson B , to Fly Enterprises, Inc Weighted membrane structures 5,009,041, Cl 52-2.190

Fly Enterprises, Inc *See*—
Fly, Anderson B , 5,009,041, Cl 52-2.190

FMC Corporation *See*—
Wolf, Steven D , Manganaro, James L , and Miller, Ronald H , 5,009,677, Cl 55-12.000

Focke & Co (GmbH & Co) *See*—
Focke, Heinz, and Sussenguth, Jurgen, 5,009,322, Cl 209-536.000
Focke, Heinz, and Bretthauer, Hans-Jurgen, 5,009,741, Cl 156-483.000

Focke, Heinz, and Sussenguth, Jurgen, to Focke & Co (GmbH & Co) Process and apparatus for checking/separating out cigarettes 5,009,322, Cl 209-536.000

Focke, Heinz, and Bretthauer, Hans-Jurgen, to Focke & Co (GmbH & Co) Method and device for the application of revenue stamps to packs 5,009,741, Cl 156-483.000

Foell, Helmut, and Lehmann, Volker, to Siemens Aktiengesellschaft Method for topically-resolved determination of the diffusion length of minority charge carriers in a semiconductor crystal body with the assistance of an electrolytic cell 5,010,294, Cl 324-158.00D

Fogarty, Kevin E *See*—
Fay, Fredric S , Fogarty, Kevin E , and Rodgers, Cyril, 5,009,488, Cl 350-315.000

Fogg, Michael W , Koegel, Keith S , Shuey, John R , Zelko, William E , and Beamenderfer, Robert E , to AMP Incorporated Shielded cable assembly with floating ground 5,009,614, Cl 439-497.000

Fogg, Michael W , and Morningstar, Leroy J , to AMP Incorporated Connector assembly with back shell having vanes 5,009,616, Cl 439-608.000

Folger, Russell F , and Fox, Gerald P , to Timken Company, The Double row bearing assembly 5,009,523, Cl 384-475.000

Fomby, K A Resilient arm rest 5,009,468, Cl 297-412.000

Fong, Chi-Ming, Chew, Wai-Kwok, and Law, Garry C , to Video Technology Industries, Inc Electronic educational video system apparatus 5,009,603, Cl 434-323.000

Foothills Diamond Coring (1980) Ltd *See*—
Grabinski, Piotr, 5,009,273, Cl 175-61.000

Forbes, Hugh O *See*—
Goldsmith, Alan, and Forbes, Hugh O , 5,010,551, Cl 371-16.400

Ford, David K *See*—
Kobylarz, Daniel E and Ford, David K , 5,010,570, Cl 379-390.000

Forrest, Scott M *See*—
Missimer, Dale J , Fyfe, David T , Jr , Housman, Joseph J , and Forrest, Scott M , 5,009,073, Cl 62-51.100

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Stover, Detlev, Buchkremer, Hans-Peter and Hecker, Rudolf, 5,009,359, Cl 228-175.000

Forsgren, Lyle M *See*—
Bankstahl, Herbert A , Forsgren, Lyle M , Newman, Neil A , Beck, Wayne T , and Griffiths, John M , 5,009,621, Cl 440-75.000

Forsvarets Forskningsanstalt *See*—
Nissborg, Kurt, 5,010,244, Cl 250-206.100

Foschaar, William L *See*—
Serkes, Jonathan M , and Foschaar, William L , 5,010,013, Cl 435-285.000

Foster, David A , to General Motors Corporation Easily installed wheel bearing sensor package 5,010,290, Cl 324-173.000

Foster, Francis E *See*—
Wilmeth, Thomas S , Wilmeth, Steven L , and Foster, Francis E , 5,009,000, Cl 29-888.020

Foster, Francis G , to Lever Brothers Company, Division of Conopco Inc Fabric softening additive for detergent compositions cellulose ether and organic fabric softener 5,009,800, Cl 252-8.900

Foster, Stephen I , Stimler, Jeffrey J , and Nonnemacher, Gail S , to Dow Chemical Company, The Non-dusting window envelope film utilizing a particulate anti-flecking agent 5,009,953, Cl 428-327.000

Fougerolle, Fabrice *See*—
Saxod, Michel, and Fougerolle, Fabrice, 5,009,742, Cl 156-633.000

Fourcadier, Chantal *See*—
Grollier, Jean-Francois, Fiquet, Claire, Fourcadier, Chantal, Dubief, Claude, and Cauwet, Daniele, 5,009,880, Cl 424-047.000

Fournel, Paul Versatile structure for all machining work mainly on soft materials 5,009,255, Cl 144-1.00R

Fox, Elizabeth D , and Schlageter, Alan G , to Xerox Corporation Grounding brush 5,010,441, Cl 361-221.000

Fox, Gerald P *See*—
Folger, Russell F , and Fox, Gerald P , 5,009,523, Cl 384-475.000

Fox, Leslie R , Wade, Paul C , and Schmidt, William L , to Digital Equipment Corp Method of cooling and powering an integrated circuit chip using a compliant interposing pad 5,010,038, Cl 437-215.000

Frazer, Robert L , to General Motors Corporation Headlamp assembly 5,010,458, Cl 362-80.000

Frank, Lenore G R *See*—
Nickerson, Mark A , Poole, John S , and Frank, Lenore G R , 5,009,778, Cl 210-198.200

Franke, Friedrich H , and Paersch, Michael J Process for producing a solid, finely divided fuel based on coal 5,009,671, Cl 44-598.000

Fraser, Donald E , to Hunter Douglas Inc Method and clip for securing a slat of a venetian blind 5,009,258, Cl 160-168.100

Fregnan, Giancarlo, Vandoni, Guido, and Torri, Giangiacomo, to Edmond Pharma s r l Inclusion complexes of dipyridamole with cyclodextrins 5,010,064, Cl 514-58.000

Freidel, Kenneth, Littleton, L Arthur, and Freund, William G , to Muirfield Holdings L P Method and apparatus for bending glass 5,009,693, Cl 65-107.000

Freitag, Dieter *See*—
Serini, Volker, Freitag, Dieter, Westeppe, Uwe, Idel, Karsten, Grigo, Ulrich, Casser, Carl, Paetz, Klaus-Christian, and Hajek, Manfred, 5,010,162, Cl 528-196.000
Serini, Volker, Freitag, Dieter, Westeppe, Uwe, Idel, Karsten, Grigo, Ulrich, Casser, Carl, Paetz, Klaus-Christian, and Hajek, Manfred, 5,010,163, Cl 528-196.000
Westeppe, Uwe, Weymans, Gunther, Grigo, Ulrich, Idel, Karsten-Josef, and Freitag, Dieter, 5,010,147, Cl 525-462.000

French, J Timothy *See*—
Brazell, David O , and French, J Timothy, 5,009,221, Cl 126-538.000

Fresenius, AG *See*—
Keymling, Michael, 5,009,639, Cl 604-96.000

Freund, William G *See*—
Freidel, Kenneth, Littleton, L Arthur, and Freund, William G , 5,009,693, Cl 65-107.000

Friedrich, Wolfgang, and Worsching, Alfred, to Du Pont de Nemours, E I , and Company Photographic silver halide emulsion 5,009,992, Cl 430-573.000

Frielinghaus, Klaus H , to General Signal Corporation Alternating current immunized relay and method of immunizing a relay to alternating current 5,010,310, Cl 335-243.000

Frijouf, Robert F *See*—
Klaassens, J Ben, Lauw, Hian K , and de Beer, Freddy, 5,010,471, Cl 363-160.000

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Jollenbeck, Martin, Berendt, Hans-Ulrich, and Fringeli, Werner, 5,009,669, Cl. 8-573.000

Frontino, Louis J., to Mars Incorporated. Method and apparatus for variable speed scanning of bar codes. 5,010,242, Cl. 235-467.000

Fry, John J., Hall, George R., II, and Smith, Robert A., to Gas Research Institute. Housing for a process controller. 5,010,322, Cl. 340-700.000

Fuchs, Gerhard H. *See*—
Baughman, Ray H., Buff, Ernest D., Eckhardt, Helmut, and Fuchs, Gerhard H., 5,009,044, Cl. 52-171.000

Fuji Electric Co., Ltd. *See*—
Haruki, Hiromu, Kirihata, Fumiaki, and Hashimoto, Osamu, 5,010,384, Cl. 357-38.000

Fuji, Hiroshi, Fujiwara, Tsuneo, Iwaki, Takashi, Numata, Tomiyuki, Tsuji, Kentaroh, Maeda, Shigemi, Yamaguchi, Takeshi, Kojima, Kunio, Deguchi, Toshihisa, and Terashima, Shigeo, to Sharp Kabushiki Kaisha. Apparatus for recording and reproducing information on and from an optical disk. 5,010,540, Cl. 369-50.000

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Terashima, Shigeo, Tsuji, Kentaro, and Fuji, Hiroshi, 5,010,539, Cl. 369-50.000

Fuji Jukogyo Kabushiki Kaisha. *See*—
Ishii, Norio, 5,009,204, Cl. 123-193.00H
Morikawa, Koji, 5,009,201, Cl. 123-65.0BA
Morimoto, Yoshihiko, and Kohno, Tetsushi, 5,009,127, Cl. 74-866.000
Morimoto, Yoshihiko, and Kohno, Tetsushi, 5,009,129, Cl. 74-866.000
Ohshita, Sanchiro, and Fukamachi, Kazuhiro, 5,010,488, Cl. 364-424.050
Takada, Hiroshisa, 5,010,289, Cl. 322-8.000

Fuji Photo Film Co., Ltd. *See*—
Abe, Akira, 5,009,983, Cl. 430-372.000
Aoki, Kozo, and Takahashi, Osamu, 5,009,989, Cl. 430-512.000
Iida, Shinobu, Fujiyama, Masaaki, and Yamada, Keisuke, 5,009,929, Cl. 427-130.000
Inoue, Noriyuki, and Heki, Tatsuo, 5,009,993, Cl. 430-605.000
Kato, Eiichi, and Ishii, Kazuo, 5,009,975, Cl. 430-96.000
Sato, Kenji, 5,010,393, Cl. 358-29.000
Takayama, Naoto, 5,010,436, Cl. 360-137.000

Fujibayashi, Kentaro. *See*—
Kawamura, Hideaki, Fujibayashi, Kentaro, and Hitaka, Yosato, 5,010,285, Cl. 318-569.000

Fujihira, Junichi. *See*—
Hasegawa, Minekazu, Ikeda, Keiichi, and Fujihira, Junichi, 5,009,464, Cl. 296-213.000

Fuji, Masahiro, Hatakeyama, Masakazu, and Hiraki, Jun, to Chisso Corporation. Method for treating food to control the growth of yeasts. 5,009,907, Cl. 426-335.000

Fuji, Masao. *See*—
Seshimo, Yuu, and Fuji, Masao, 5,009,263, Cl. 165-151.000

Fuji, Takao. *See*—
Shioyama, Tsutomu, Minakami, Ko, Fuji, Takao, and Ohtomi, Koichi, 5,009,838, Cl. 376-310.000

Fuji, Toshifumi. *See*—
Sasaki, Yoshiyuki, Tsunashima, Kenji, Ookuma, Ikuo, and Fuji, Toshifumi, 5,010,408, Cl. 358-139.000

Fuji, Yoshiharu, and Fujita, Yukitoshi, to Sharp Kabushiki Kaisha. Paper feeding system for a shredder. 5,009,410, Cl. 271-127.000

Fujikura Ltd. *See*—
Onodera, Tsutomu, and Yamada, Takeshi, 5,009,513, Cl. 374-41.000

Fujikura, Masahiro. *See*—
Sakamoto, Hiroaki, Fujikura, Masahiro, and Mukai, Toshio, 5,009,706, Cl. 75-244.000

Fujimoto, Shusaku. *See*—
Masaki, Shouichi, Fukushima, Akira, Fujimoto, Shusaku, and Nakano, Makoto, 5,010,489, Cl. 364-426.020

Fujimoto, Yoji. *See*—
Hayashi, Hiroyuki, Seto, Tsuneo, Miura, Hironori, and Fujimoto, Yoji, 5,009,094, Cl. 72-225.000

Fujioka, Keisuke. *See*—
Sakuta, Masaharu, Urano, Toshiharu, Tanaka, Kyoichi, Sugiyama, Masashi, Endoh, Shyuzo, and Fujioka, Keisuke, 5,009,713, Cl. 106-727.000

Fujisawa Pharmaceutical Company, Ltd. *See*—
Sakuta, Masaharu, Urano, Toshiharu, Tanaka, Kyoichi, Sugiyama, Masashi, Endoh, Shyuzo, and Fujioka, Keisuke, 5,009,713, Cl. 106-727.000
Shiokawa, Youichi, Takimoto, Koichi, and Takenaka, Kohei, 5,010,093, Cl. 514-374.000

Fujita, Keijiro. *See*—
Sakuma, Shuji, Atsumi, Kiminori, and Fujita, Keijiro, 5,009,898, Cl. 424-618.000

Fujita, Minoru. *See*—
Fukushima, Yoichi, Fujita, Minoru, Kakinuma, Yuji, and Haga, Toshio, 5,010,243, Cl. 235-488.000

Fujita, Shingo. *See*—
Wakita, Naohide, Uemura, Tsuyoshi, Ohmishi, Hiroyuki, Ohba, Noriko, Ota, Isao, and Fujita, Shingo, 5,010,127, Cl. 340-784.000

Fujita, Toshio, Yamashita, Yoshisato, Yoshida, Shigemitsu, and Yamahira, Katsutoshi, to Chisso Corporation. Fertilizer with a degradative coating. 5,009,696, Cl. 71-64.070

Fujita, Yukitoshi. *See*—
Fuji, Yoshiharu, and Fujita, Yukitoshi, 5,009,410, Cl. 271-127.000

Fujitsu Limited. *See*—
Kato, Masaaki, 5,010,546, Cl. 370-85.110
Kinoshita, Kitoshi, and Aoki, Hiroatsu, 5,009,481, Cl. 350-96.180
Nagakura, Kaoru, 5,010,329, Cl. 340-825.080

Fujiwara, Tsuneo. *See*—
Fuji, Hiroshi, Fujiwara, Tsuneo, Iwaki, Takashi, Numata, Tomiyuki, Tsuji, Kentaroh, Maeda, Shigemi, Yamaguchi, Takeshi, Kojima, Kunio, Deguchi, Toshihisa, and Terashima, Shigeo, 5,010,540, Cl. 369-50.000

Fujiyama, Masaaki. *See*—
Iida, Shinobu, Fujiyama, Masaaki, and Yamada, Keisuke, 5,009,929, Cl. 427-130.000

Fukamachi, Kazuhiro. *See*—
Ohshita, Sanchiro, and Fukamachi, Kazuhiro, 5,010,488, Cl. 364-424.050

Fukuda, Hisashi, to Oki Electric Industry Co., Ltd. Method of forming an insulating film. 5,009,926, Cl. 427-55.000

Fukuda, Shin. *See*—
Kawakami, Toshikatsu, Fukuda, Shin, Shinbo, Hiroyasu, Umemura, Toyoaki, Sakamoto, Ken, and Kondo, Tomeji, 5,010,406, Cl. 358-147.000

Fukui, Tetsuro. *See*—
Mihara, Chieko, Santoh, Tsuyoshi, Sugata, Hiroyuki, and Fukui, Tetsuro, 5,009,957, Cl. 430-495.000

Fukumochi, Yoji. *See*—
Suzuki, Hitoshi, Shiotani, Shinobu, Tokunaga, Shinji, Hirai, Tokuyuki, Fukumochi, Yoji, Kugimiya, Shuzo, and Sata, Ichiko, 5,010,486, Cl. 364-419.000

Fukushima, Akira. *See*—
Masaki, Shouichi, Fukushima, Akira, Fujimoto, Shusaku, and Nakano, Makoto, 5,010,489, Cl. 364-426.020

Fukushima, Hideo, and Kurushima, Masakazu, to Sony Corporation. Rotary head drum apparatus comprising resilient electrical connectors. 5,010,432, Cl. 360-108.000

Fukushima, Hitoshi. *See*—
Takei, Katsumori, Fukushima, Hitoshi, Iwamoto, Kohei, and Nakamura, Hiroto, 5,010,352, Cl. 346-76.0PH

Fukushima, Nobuo. *See*—
Sakaegi, Yuji, and Fukushima, Nobuo, 5,010,423, Cl. 360-77.060

Fukushima, Yoichi, Fujita, Minoru, Kakinuma, Yuji, and Haga, Toshio, to Kyodo Printing Co., Ltd. Method of producing an optical recording card having a hologram contained therein. 5,010,243, Cl. 235-488.000

Fukutome, Tatsuro. *See*—
Marutake, Yozo, Fukutome, Tatsuro, and Asami, Motomu, 5,010,575, Cl. 381-68.000

Fuller, George C., Martin, George R., Mueller, Richard A., and Reich, Reuven, to G. D. Searle & Co., and United States of America Health and Human Services. Use of heterocyclic amides to inhibit tumor metastasis. 5,010,080, Cl. 514-255.000

Funabashi, Yuichi. *See*—
Umeda, Itsuki, Takashima, Masaaki, Zama, Yoshiaki, Takemura, Yasuhiko, Funabashi, Yuichi, Watanabe, Junichiro, Takeda, Kiyoshi, and Matsumoto, Makoto, 5,010,137, Cl. 525-104.000

Funakoshi, Keigo. *See*—
Ametani, Minoru, Funakoshi, Keigo, Kira, Akihiko, Matsushita, Takao, and Shirakura, Keizo, 5,009,735, Cl. 156-241.000

Funato, Ryo. *See*—
Yoshida, Kenji, Funato, Ryo, Takahiro, Syuji, Kubo, Shinji, and Inagaki, Notoshi, 5,009,978, Cl. 430-109.000

Furesik, Susan L. *See*—
Mauro, David J., Furesik, Susan L., Katz, Frances R., Faron, Eugene J., II, Gottneid, David J., and Pastek, Frank J., 5,009,911, Cl. 426-578.000

Furuichi, Shinji. *See*—
Taguchi, Akira, Morita, Shigetoshi, Taka, Shunichi, Yamada, Hirohide, Takada, Yoshiaki, Furuichi, Shinji, and Aoi, Masahiro, 5,010,429, Cl. 360-103.000

Furukawa Mfg., Co., Ltd. *See*—
Furukawa, Takao, 5,009,060, Cl. 53-512.000

Furukawa, Takao, to FCS Corporation, and Furukawa Mfg., Co., Ltd. Vacuum packaging apparatus. 5,009,060, Cl. 53-512.000

Fuse, Junichi. *See*—
Utsugi, Nobuo, Kihara, Hisashi, Mori, Shuichi, Fuse, Junichi, Miyake, Takashi, and Ikata, Yoshikatsu, 5,010,437, Cl. 360-137.000

Fussell, David A. *See*—
van Druff, Albert, Jr., and Fussell, David A., 5,009,366, Cl. 232-17.000

Fyfe, David T., Jr. *See*—
Missimer, Dale J., Fyfe, David T., Jr., Housman, Joseph J., and Forrest, Scott M., 5,009,073, Cl. 62-51.100

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Fuller, George C., Martin, George R., Mueller, Richard A., and Reich, Reuven, 5,010,080, Cl. 514-255.000

Gabel, Dewitt. Zero camber steering suspension. 5,009,447, Cl. 280-661.000

Gabel, Robert K. *See*—
Syrinek, Allen R., Buggs, Ralph N., and Gabel, Robert K., 5,009,799, Cl. 252-8.553
Williamson, Charles D., Allenson, Stephan J., and Gabel, Robert K., 5,009,267, Cl. 166-271.000

Gabriele, Valentino, to J. C. Pardo and Sons. Scraper mounting arrangement for food process agitators. 5,009,510, Cl. 366-311.000

Gabrielsen, Odd S. *See*—
Gautvik, Kaare M., Alestrom, Peter, Oven, Tordis B., and Gabrielsen, Odd S., 5,010,010, Cl. 435-252.300

Gador, Ardon. Method and apparatus for protection against heat. 5,009,514, Cl. 374-138.000

Gagnet, Thomas R., to Ingersoll-Rand Company. Compressor unloader controller. 5,009,576, Cl. 417-295.000

Gagnon, Andre F. *See*—
Takeuchi, Kenji, Gagnon, Andre F., Cheung, Augustine C., and Meyer, Philip E., 5,009,833, Cl. 376-217.000

Galbi, David. *See*—
Sit, Hon P., Galbi, David, and Chan, Alfred K., 5,010,508, Cl. 364-748.000

Galiasso, Roberto, Morales, Alfredo, and Salazar, Jose A., to Intevep, S.A. Hydrocracking high residual contained in vacuum gas oil. 5,009,768, Cl. 208-89.000

Gallagher, James L. *See*—
Pyret, Thomas W., and Gallagher, James L., 5,009,640, Cl. 604-117.000

Gallenkamp, Bernd. *See*—
Kaufmann, Dieter, and Gallenkamp, Bernd, 5,010,201, Cl. 546-316.000

Ganesan, Apparajan. *See*—
Hisano, Shinichi, Ganesan, Apparajan, and Guy, Thomas S., 5,010,337, Cl. 341-154.000

Gansauge, Peter, Kreuter, Volker, and Schettler, Helmut, to International Business Machines Corporation. Integrated circuit substrate with contacts thereon for a packaging structure. 5,010,389, Cl. 357-67.000

Garber, Eduard A. *See*—
Tipukhin, Jury V., Danilov, Leonid I., Ivoditov, Albert N., Garber, Eduard A., Subbotin, Anatoly N., Pavlov, Valentin P., Zhukov, Jury K., and Pimenov, Alexandr F., 5,009,037, Cl. 51-7.000

Garcia, Rafael A. Digital data and analog radio frequency transmitter. 5,010,585, Cl. 455-118.000

Garcia, Rod A. *See*—
Kosin, John A., Mooney, Gerry, Tarquini, Michael A., and Garcia, Rod A., 5,009,809, Cl. 252-350.000
Wason, Satish K., Mooney, Gerry, Andrews, Claude R., Tarquini, Michael E., Kosin, John A., and Garcia, Rod A., 5,009,810, Cl. 252-350.000

Gardner, Wallace R., Goodman, Kenneth R., Puckett, Robert D., and Draehn, Ricky L., to Halliburton Logging Services, Inc. Advanced digital telemetry system for monocable transmission featuring multilevel correlative coding and adaptive transversal filter equalizer. 5,010,333, Cl. 340-856.000

Garg, Diwakar, Mueller, Carl F., Schaffer, Leslie E., and Dyer, Paul N. Hard outer coatings deposited on titanium or titanium alloys. 5,009,966, Cl. 428-627.000

Garniss, Gregory M., to Boeing Company, The. High frequency, low power light source for video camera. 5,010,412, Cl. 358-240.000

Gas Research Institute. *See*—
Fry, John J., Hall, George R., II, and Smith, Robert A., 5,010,322, Cl. 340-700.000
Mahrer, Kenneth D., 5,010,527, Cl. 367-86.000
Wilkinson, William H., 5,009,086, Cl. 62-476.000

Gaster, Laramie M. *See*—
Markwell, Roger E., Smith, Stephen A., Hughes, Ian, and Gaster, Laramie M., 5,010,097, Cl. 514-419.000

Gatan Incorporated. *See*—
Swann, Peter R., 5,009,743, Cl. 156-643.000

Gatchel, Gary, Newgarden, Joseph E., and Lynn, Gordon E., to Newgarden, Joseph E. Table tennis ball serving device. 5,009,421, Cl. 273-30.000

Gatschmann, Klaus G. *See*—
Schmidt, Ernst, Stehmeier, Heinz, Ruppert, Heinrich W., Gatschmann, Klaus G., and Schutze, Gunter, 5,009,237, Cl. 131-70.000

Gatzemeyer, Dwight L. *See*—
Sorensen, Joseph A., and Gatzemeyer, Dwight L., 5,009,134, Cl. 81-487.000

Gautvik, Kaare M., Alestrom, Peter, Oven, Tordis B., and Gabrielsen, Odd S., to Selmer-Sande, A/S. Production of human parathyroid hormone from microorganisms. 5,010,010, Cl. 435-252.300

Gavet, Louis, Chatelin, Roger, Sotton, Michel, Guigal, Robert, and Laurent, Philippe, to Centre Technique Industriel dit. Institut Textile de France, and Probiotec (SARL). One-use device for biological tests. 5,009,846, Cl. 422-56.000

Gay, Eddie C. *See*—
Tomezuk, Zygmunt, Miller, William F., Wolson, Raymond D., and Gay, Eddie C., 5,009,752, Cl. 204-64.00R

Gebhardt, Rolf. Perifusion apparatus for culturing living cells and perifusion culturing process. 5,010,014, Cl. 435-310.000

Gebr. Happich GmbH. *See*—
Bartkowski, Klaus-Dieter, and Venn, Peter, 5,009,756, Cl. 204-129.350

GEC Alsthom SA. *See*—
Poline, Pierre, 5,010,288, Cl. 318-811.000

Gec-Marconi Limited. *See*—
Larner, David J., and Goodchild, Clive D., 5,010,321, Cl. 340-600.000

GEE Associates. *See*—
Grossman, M. Gary, and Meisner, Edward H., 5,010,221, Cl. 219-10.55F.

Geeck, Carol A. Shopping container device. 5,009,516, Cl. 383-37.000

Geffken, Henry P. Self-activating keel. 5,009,178, Cl. 114-163.000

Gehrmann, Bernd, and Treptow, Heinz, to Barmag AG. Method of producing a bulked composite yarn. 5,008,992, Cl. 28-271.000

Gen, Shokyu. *See*—
Ikada, Yoshito, and Gen, Shokyu, 5,010,145, Cl. 525-415.000

Genders, John D. *See*—
Weinberg, Norman L., Genders, John D., and Minkler, Alfred O., 5,009,869, Cl. 423-210.000

Genentech, Inc. *See*—
Chang, Chung N., Hitzeman, Ronald A., and Matteucci, Mark D., 5,010,003, Cl. 435-69.900
Levinson, Arthur, Simonsen, Christian, and Yelverton, Elizabeth M., 5,010,002, Cl. 435-69.200

General Dynamics Corporation. *See*—
Johnson, Delwin O., 5,009,104, Cl. 73-597.000

General Dynamics Corporation, Convair Division. *See*—
Hilal, Mohamed A., and Parmer, Jerome F., 5,010,255, Cl. 307-106.000

General Electric CGR S.A. *See*—
Laurent, Michel, Doukhan, Marc, and Noualhaguet, Pierre, 5,010,563, Cl. 378-132.000

General Electric Company. *See*—
Bopp, Lawrence H., 5,009,999, Cl. 435-29.000
Cho, Hyun S., 5,009,673, Cl. 51-293.000
Desorcie, James L., and O'Brien, Michael J., 5,010,118, Cl. 522-31.000
Evans, Thomas L., Wasserman, Carol B., Shea, Timothy J., and Campbell, John R., 5,010,143, Cl. 525-394.000
Hartley, Richard I., and Corbett, Peter F., 5,010,511, Cl. 364-786.000
Lewis, Larry N., 5,010,148, Cl. 525-464.000
Mueller, Otward M., and Edelstein, William A., 5,010,304, Cl. 330-269.000
Phanstiel, Ott, IV, and Brown, Sterling B., 5,010,144, Cl. 525-397.000
Polasko, Kenneth J., and Wemple, Ivan L., 5,010,018, Cl. 437-3.000
Possin, George E., and Ching-Yeu, Wei, 5,010,027, Cl. 437-41.000
Richardson, David L., Clark, Jack P., Kowdley, Balasubramanian S., Patterson, Peter M., Perry, Richard W., and Smith, Thurman D., 5,009,105, Cl. 73-621.000
Steele, Douglas S., 5,010,252, Cl. 250-385.100
Steigerwald, Robert L., 5,010,261, Cl. 307-571.000

General Hospital Corporation, The. *See*—
Donahoe, Patricia K., 5,010,055, Cl. 514-8.000

General Instrument Corporation. *See*—
Einthoven, Willem G., and Mitchell, Muni M., 5,010,023, Cl. 437-8.000

General Motors Corporation. *See*—
Abu-Isa, Ismat A., Eusebi, Elio, Jaynes, Craig B., Moran, Susan C., and Roy, Michael A., 5,009,827, Cl. 264-156.000
Abu-Isa, Ismat A., 5,009,955, Cl. 428-401.000
Charles, Harlan W., 5,009,459, Cl. 296-84.100
DeLaRosa, Robert L., 5,009,600, Cl. 434-82.000
Foster, David A., 5,010,290, Cl. 324-173.000
Fraizer, Robert L., 5,010,458, Cl. 362-80.000
Ghoneim, Youssef A., 5,009,294, Cl. 192-1.220
Goubeaux, Ronald J., and Pettitt, Edward D., 5,009,074, Cl. 62-115.000
Halstead, Gary A., and Treloar, Ronald C., 5,009,262, Cl. 165-140.000
Hoffman, Charles T., Jr., Gordon, Ralph A., Hosmer, Thomas P., and Lucas, Robert M., 5,009,292, Cl. 188-71.700
Iseler, Stanley J., Beauch, Howard D., Everett, Benjamin H., II, and Sutorik, John P., 5,009,120, Cl. 74-493.000
Jochum, Gunter, 5,009,681, Cl. 55-416.000
Katcherian, Ricky V., 5,009,462, Cl. 296-201.000
Ketterman, Sylvan R., 5,010,453, Cl. 362-61.000
Kinkade, Charles E., Sharp, Harold L., and Vrbensky, Robert F., 5,009,295, Cl. 192-4.00A
Laxmanan, Venkatasubramanian, 5,009,844, Cl. 420-548.000
Luallin, John M., Nagengast, William E., and Roeske, Robert G., 5,010,455, Cl. 362-61.000
MacFarlane, Glen R., 5,009,199, Cl. 123-52.0MF
Miller, Gregory A., 5,009,452, Cl. 280-730.000
Ordo, James P., Raszkowski, James A., and Klemen, Donald, 5,009,116, Cl. 74-331.000
Ordo, James P., and Latshaw, Harry E., 5,009,117, Cl. 74-331.000
Ostrand, James C., 5,009,392, Cl. 251-180.000
Raszkowski, James A., and Klemen, Donald, 5,009,118, Cl. 74-331.000
Reichman, Karl-Heinz, and Krumb, Heinrich W., 5,010,456, Cl. 362-61.000
Romig, Kenneth L., 5,009,300, Cl. 192-98.000
Smith-Horn, Garry R., and Wendt, Robert J., 5,009,461, Cl. 296-146.000
Smith, Jack E., 5,009,405, Cl. 267-273.000
Spitler, Wayne L., 5,009,301, Cl. 192-106.200
VanGorder, David H., and Wilson, Kenny R., 5,009,066, Cl. 60-415.000

General Signal Corporation. *See*—
Frielinghaus, Klaus H., 5,010,310, Cl. 335-243.000
Lindsay, William B., 5,010,295, Cl. 324-158.00R

Genesit Oy. *See*—
Palva, Ilkka, 5,010,000, Cl. 435-69.100
Palva, Ilkka, 5,010,015, Cl. 435-320.000

Gentry, Scott D *See—*
Wallace, William D., Cutler, Christopher A. and Gentry, Scott D. 5,009,662, Cl. 606-192.000

Genzyme Corporation *See—*
Dunn, Joseph T., 5,009,888, Cl. 424-94.300

George, Kevin E. *See—*
Phillips, Geoffrey J.; and George, Kevin E., 5,010,274, Cl. 315-101.000

Gerber Garment Technology, Inc. *See—*
Kuchta, Richard, 5,009,168, Cl. 104-172.100

Gerke, David B. and MacDonald, Michael, to Inter-Link Communications Inc. Overhead support system for TV monitors, 5,009,384, Cl. 248-343.000

Germann, Albrecht J., to De La Rue Giori S.A. Multi-color rotary printing machine for simultaneous recto-verso printing, 5,009,156, Cl. 101-177.000

Gerritsen, Hendrik J., to Advanced Environmental Research Group. Diffraction gratings having high efficiencies, 5,009,484, Cl. 350-162.110.

Gerson, David, to Printers Service, Inc. Blanket and roller wash for printing apparatus, 5,009,716, Cl. 134-40.000

Gersten, Martin, Tibbling, Lars, and Maus, Roy, to Computed Anatomy Inc. Interchangeable keratoscope device, 5,009,498, Cl. 351-212.000

Gerwick, Ben C., III *See—*
Van Heertum, John C., Gerwick, Ben C., III, and Kleschick, William A., 5,010,195, Cl. 544-263.000

Gesenhues, Ludger *See—*
Herberg, Gerhard, Hoffmann, Hans-Jurgen, Gesenhues, Ludger, Huang, Zhen, and Hoscher, Reinhard, 5,009,450, Cl. 280.707.000

GFK GmbH *See—*
Miyata, Hidenobu, 5,010,498, Cl. 364-519.000

Ghigo, Ezio *See—*
Boghen, Franklin M., Camanni, Franco, Del Soldato, Piero, Ghigo, Ezio, and Muller, Eugenio, 5,010,056, Cl. 514-12.000.

Ghoneim, Youssef A., to General Motors Corporation. Vehicle traction control system, 5,009,294, Cl. 192-1.220.

Giaccardi, Eraldo *See—*
Di Nunzio, Vittorio, Giaccardi, Eraldo, and Saluzzo, Sergio, 5,009,213, Cl. 123-620.000

Giangano, David A., Kesselman, Martin, Boeskor, Steven, and Celona, Anthony R., to Grumman Aerospace Corporation. Ultra linear spectroscopic analog to-digital converter, 5,010,339, Cl. 341-164.000

Giannopoulos, Fanis *See—*
Nathoo, Nazim S. and Giannopoulos, Fanis, 5,009,409, Cl. 271-90.000

Giarraffa, Savia *See—*
Manfredi, Carl, Manfredi, Antonina, Manfredi, Dario P. and Giarraffa, Savia, 5,009,374, Cl. 244-1.00R

Giesler, Richard *See—*
Minshall, Billy W., Purohit, Kailash, Nygard, John F., Sintim-Damoa, Kwame, Giesler, Richard, and Woodworth, Archie, 5,009,654, Cl. 604-410.000

Gilberto, Daniel G. to Grant, Robert A. Bourque, Douglas A.; and Felt, Mildred T., a part interest. Torque device, 5,009,132, Cl. 81-57.300

Giles, Gary J., to Dresser Industries, Inc. System to avoid icing in the discharge piping of a pressure relief valve, 5,009,246, Cl. 137-205.500

Gill, Manzur, and Lin, Sung-Wei, to Texas Instruments Incorporated. Method of making hot electron programmable, tunnel-electron erasable contactless EEPROM, 5,010,028, Cl. 437-43.000

Gillette Canada Inc. *See—*
Suhonen, Christopher H., 5,009,883, Cl. 424-52.000
Suhonen, Christopher H., 5,009,884, Cl. 424-52.000

Gillette Company, The *See—*
Bodkins, Stanley H., 5,009,334, Cl. 211-54.100

Gimlett, James L., to Bell Communications Research, Inc. Ultrawide bandwidth low-noise optical receiver, 5,010,588, Cl. 455-619.000

Ginestet, Philippe *See—*
Rene, Didier, Dusseux, Thierry, and Ginestet, Philippe, 5,010,348, Cl. 343-700.0MS

Gingerich, Richard G. W. *See—*
Reilly, Kenneth T., Gingerich, Richard G. W. and Poss, Christopher S., 5,009,808, Cl. 252-301.60S

Gist-Brocades NV *See—*
Brake, Anthony J., and Van Den Berg, Johan A., 5,010,182, Cl. 536-27.000

Glaenzer-Spicer *See—*
Roullot, Michel, 5,009,628, Cl. 464-111.000

Glaxo Group Limited *See—*
Hayes, Ann G. and Birch, Phillip J., 5,010,096, Cl. 514-411.000

Gleaves, John T. *See—*
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Gleich, Peter *See—*
Hahn, Klaus, Guhr, Uwe, Hintz, Hans, Wittenberg, Dietmar, and Gleich, Peter, 5,010,111, Cl. 521-56.000

Glicksman, Leon R. and Lanciani, Arlene J., to Massachusetts Institute of Technology. Method and apparatus for improving the insulating properties of closed cell foam, 5,010,112, Cl. 521-76.000

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Schoettle, Klaus, Buhk, Artur, and Glinnorz, Lothar, 5,010,434, Cl. 360-132.000

Glockler, Gerhard, Muller, Heinz, Kepplinger, Leopold W.; Matzawrakos, Panajiotis, Koch, Erwin, and Auberger, Heinrich, to Voest-Alpine Industrieanlagenbau GmbH. Plant to be used for metallurgical treatments of metal compounds and/or metal alloys or for producing calcium carbide, 5,009,397, Cl. 266-197.000

Glomb, Reiner Maresch, Peter and Wagner, Ralf, to Th. Kieserling & Albrecht GmbH & Co., Werkzeugmaschinenfabrik. Turning machine, 5,009,136, Cl. 82-127.000

Gocho, Makoto. *See—*
Noda, Hidetoshi, Gocho, Makoto, Shimizu, Masayasu, Komatsu, Osamu, and Inoue, Hideaki, 5,009,707, Cl. 75-375.000.

Goelzer, Alan R., to Stone & Webster Engineering Corporation. Process for catalytic cracking of hydrocarbons, 5,009,769, Cl. 208-113.000

Goldberg, Barry A. to Westvaco Corporation. Composite paperboard and polymer package, 5,009,939, Cl. 428-34.200

Goldfarb, Adolph E. and Goldfarb, Martin L., to Goldfarb, Adolph E. Surprise action game, 5,009,431, Cl. 273-258.000.

Goldfarb, Martin L. *See—*
Goldfarb, Adolph E. and Goldfarb, Martin L., 5,009,431, Cl. 273-258.000

Goldsmith, Alan and Forbes, Hugh O. to Xerox Corporation. Self contained troubleshooting aid for declared and non declared machine problems, 5,010,551, Cl. 371-16.400

Goldsmith, Robert L., to CeraMem Corporation. Cross-flow filtration device with filtrate network and method of forming same, 5,009,781, Cl. 210-247.000

Gomez, Fernando *See—*
Snowden, Gregory O., Barrett, Clifford E. III and Gomez, Fernando, 5,010,330, Cl. 340-825.210

Gomi, Takayuki, to Sony Corporation. Process for making bipolar transistor, 5,010,026, Cl. 437-31.000

Gonda, Hideyuki, to Sanden Corporation. Electromagnetic clutch having a structure for reducing impact noise, 5,009,297, Cl. 192-84.00C

Goodchild, Clive D. *See—*
Larner, David J. and Goodchild, Clive D., 5,010,321, Cl. 340.600.000

Goodman, David D. and Domnitz, Robert, to Inline Connection Corporation. Video transmission and control system utilizing internal telephone lines, 5,010,399, Cl. 358-85.000

Goodman, Kenneth R. *See—*
Gardner, Wallace R., Goodman, Kenneth R., Puckett, Robert D. and Draehn, Ricky L., 5,010,333, Cl. 340-856.000

Goodwin, Brent E., Karn, Donald L. and Mistyurik, John D., to Monarch Marking Systems, Inc. Hand-held labeler, 5,009,739, Cl. 156-384.000.

Gordon, Herman B., Owens, Mark J., Rubinstein, Leon, and Simpson, Scott, to Rogers Corporation. Flexible circuit connector, 5,009,607, Cl. 439-67.000.

Gordon, Ralph A. *See—*
Hoffman, Chalres T., Jr., Gordon, Ralph A., Hosmer, Thomas P. and Lucas, Robert M., 5,009,292, Cl. 188-71.700.

Gordon, Richard A. Tank cover III, 5,009,190, Cl. 119-5.000

Gordon, Richard A. Circular cat toy, 5,009,193, Cl. 119-29.000

Gorlitsyn, Nikolai V. *See—*
Paton, Boris E.; Utkin, Vladimir F., Nedoseka, Anatoly Y., Khromyak, Nikolai I., Gorlitsyn, Nikolai V., Tikhy, Viktor G., Mezintsev, Evgeny D. and Mezhuev, Nikolai N., 5,010,503, Cl. 364-569.000

Gorski, Jack: *See—*
Schuler, Linda A., Gorski, Jack; Hurley, Walter L., Bremel, Robert D., and Rottman, Fritz M., 5,010,011, Cl. 435-252.300

Gorthey, Lee A. *See—*
Chapman, George R., Jr.; Gorthey, Lee A. and Priester, Donnan E., 5,010,130, Cl. 524-445.000

Gorton, Lanny A., to Pacesetter Infusion, Ltd. Patient-controlled analgesia security attachment for a medication infusion system, 5,009,641, Cl. 604-131.000

Gottneid, David J. *See—*
Mauro, David J., Furesik, Susan I., Katz, Frances R., Faron, Eugene J., II, Gottneid, David J. and Pustek, Frank J., 5,009,911, Cl. 426-578.000

Goubeaux, Ronald J., and Pettitt, Edward D., to General Motors Corporation. Low refrigerant charge protection method for a variable displacement compressor, 5,009,074, Cl. 62-115.000.

Gould, John H., to United States of America, Health and Human Services. Quick color test to detect lead release from glaze and enamel coatings, 5,010,020, Cl. 436-77.000

Goulter, Barbara *See—*
Goulter, Victor, and Goulter, Barbara, 5,009,649, Cl. 604-351.000

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Grabinski, Piotr, to Foothills Diamond Coring (1980) Ltd. Deflection apparatus, 5,009,273, Cl. 175-61.000

Graham, John A. *See—*
Wilson, Cary L., and Graham, John A., 5,009,685, Cl. 55-385.200

Grandjean, Pierre-Andre; and Lee, Philip H. J., to Medtronic, Inc. Steroid eluting intramuscular lead, 5,009,229, Cl. 128-419.00P

Grange, Kenneth, to Wilkinson Sword Gesellschaft mit beschrankter Haftung. Razor, 5,009,003, Cl. 30-30.000

Granger, Yves and Wind, Daniel, to International Business Machines Corporation. Scanner interface for the line adapters of a communication controller, 5,010,548, Cl. 370-95.100

Grant Airmass Corporation. *See—*
Grant, Benton H., 5,009,579, Cl. 417-413.000

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Grant, Robert A. *See—*
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Grant TFW. *See—*
Carlin, Frank J., 5,010,225, Cl. 219-76.120

Grard, Guy *See—*
Less, Jacques, Perreau, Philippe, Bary, Daniel, and Grard, Guy, 5,009,512, Cl. 374-6.000

Grasdepot, Francois, to Schlumberger Industries. Optical pressure sensor and a method and apparatus for making such a sensor, 5,009,107, Cl. 73-705.000

Greco, Alberto, to Enichem Synthesis S.p.A. Novel silicon-organic compounds, containing an oxazolidine group, 5,010,202, Cl. 548-110.000

Green, Paul E., to Rockwell International Corporation. Charge domain successive approximation analog to digital converter, 5,010,340, Cl. 341-172.000

Greer, James A., to Raytheon Company. Saw device, 5,010,270, Cl. 310-313.00D

Gregory, Peter-Colin *See—*
Waldeck, Harald, Benson, Werner, Zeugner, Horst, Wolf, Klaus-Ullrich, Gregory, Peter-Colin, Hamminga, Derk, and van Wijngaarden, Ineke, 5,010,076, Cl. 514-221.000

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Martischius, Franz-Dieter, Vogel, Hans-Henning, Greif, Norbert, Oppenlaender, Knut, Denzinger, Walter, and Hartmann, Heinrich, 5,009,670, Cl. 44-385.000

Greife, Heinrich *See—*
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Griffiths, John M. *See—*
Bankstahl, Herbert A., Forsgren, Lyle M., Newman, Neil A., Beck, Wayne T., and Griffiths, John M., 5,009,621, Cl. 440-75.000

Grigat, Ernst, Meckel, Walter, and Nippe, Burkhard, to Agfa Gevaert Aktiengesellschaft. Process for the production of magnetic recording carriers, 5,009,925, Cl. 427-48.000

Grigo, Ulrich *See—*
Serini, Volker, Freitag, Dieter, Westeppe, Uwe, Idel, Karsten, Grigo, Ulrich, Casser, Carl, Paetz, Klaus-Christian, and Hajek, Manfred, 5,010,162, Cl. 528-196.000
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Westeppe, Uwe, Weymans, Gunther, Grigo, Ulrich, Idel, Karsten-Josef, and Freitag, Dieter, 5,010,147, Cl. 525-462.000

Grimm, Noel P., and Seivar, James, to Westinghouse Electric Corp. Method for temporary shielding of reactor vessel internals, 5,009,836, Cl. 376-260.000

Grinberg, Jan Welkowsky, Murray S. Wu, Chung-Sheng, and Braatz, Paul O., to Hughes Aircraft Company. Radiation detector array using radiation sensitive bridges, 5,010,251, Cl. 250-332.000

Grinberg, Oded, to MNY Holdings and Agencies Limited. Non-penetrating projectile and means therefor, 5,009,164, Cl. 102-502.000

Grindley, Inc *See—*
Grindley, John R., and Grindley, Robert M., 5,009,244, Cl. 137-101.110

Grindley, John R. and Grindley, Robert M., to Grindley, Inc., and Robwen, Inc. Fire fighting foam mixing system, 5,009,244, Cl. 137-101.110

Grindley, Robert M *See—*
Grindley, John R. and Grindley, Robert M., 5,009,244, Cl. 137-101.110

Grisoni, Bernard F., to Dow Corning France S.A. Silicone foams, 5,010,115, Cl. 521-154.000

Grob, Ferdinand, Kienzler, Dieter, Linder, Ernst, Potschin, Roger, and Stutzenberger, Heinz, to Robert Bosch GmbH. Apparatus for measuring the particulate matter in the flue gas or exhaust gas from a combustion process, 5,009,064, Cl. 60-276.000

Grollier, Jean-Francois, Fiquet, Claire, Fourcadier, Chantal, Dubief, Claude, and Cauwet, Daniele, to L'Oreal. Composition and process for the treatment of keratin materials with polymers, 5,009,880, Cl. 424-047.000

Gronvald, Frederik C. and Braestrup, Claus, to Novo Nordisk A/S. N-(butenyl substituted) azaheterocyclic carboxylic acids, 5,010,090, Cl. 514-326.000

Gronwald, Frederik, Andersen, Peter H., Faarup, Peter, Guddal, Erling, Hansen, Kristian T. Hansen, Louis B., and Nielsen, Erik B., to Novo Nordisk A/S. Novel benzazepine derivatives, 5,010,074, Cl. 514-213.000

Groover, Robert, III, to Texas Instruments Incorporated. Insulator separated vertical CMOS, 5,010,386, Cl. 357-42.000

Grossman, M. Gary, and Meisner, Edward H., to GEE Associates. Microwaveable coffee makers, 5,010,221, Cl. 219-10.55E

Gruber, Milan A., to Shook, Ed, Jr. Roofing clamp, 5,009,050, Cl. 52-408.000

Gruber, Norman G., and Krauss, Owen T., to Western Atlas International, Inc. Down hole reservoir fluid sampler, 5,009,100, Cl. 73-155.000

Gruenwald, Heinrich, Ramisch, Hans, and Pawlakowitsch, Anton, to Leybold Aktiengesellschaft. Apparatus for plasma etching, 5,009,738, Cl. 156-345.000

Grumman Aerospace Corporation *See—*
Giangano, David A., Kesselman, Martin, Boeskor, Steven, and Celona, Anthony R., 5,010,339, Cl. 341-164.000
Solomon, Allen L., 5,010,025, Cl. 437-29.000

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Grunwald, Werner, Holfelder, Gerhard, De La Prieta, Claudio, and Schmid, Kurt, to Robert Bosch GmbH. Printing paste and method of applying said paste, 5,009,708, Cl. 106-105.000

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GTE Government Systems Corporation *See—*
Leonard, Donald A., and Sweeney, Harold E., 5,009,500, Cl. 356-43.000

GTE Products Corporation *See—*
Kim, Tai K., and Vanderpool, Clarence D., 5,009,788, Cl. 210-639.000
Reddy, V. Butchi, 5,009,807, Cl. 252-301.40H
Reilly, Kenneth T., Gingerich, Richard G. W., and Poss, Christopher S., 5,009,808, Cl. 252-301.60S

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Gronwald, Frederik, Andersen, Peter H., Faarup, Peter, Guddal, Erling, Hansen, Kristian T., Hansen, Louis B., and Nielsen, Erik B., 5,010,074, Cl. 514-213.000

Gueret, Jean-Louis, to L'Oreal. Piston dispenser for paste or solid products, 5,009,534, Cl. 401-75.000

Gueroult, Alain *See—*
Clairouin, Noel, Gueroult, Alain, and Lemoyne, Remi, 5,009,918, Cl. 426-643.000

Gugel, Bernd, Kaufmann, Clemens, Kitzberger, Herbert, and Rohrer, Kurt, to Mannesmann Aktiengesellschaft. Matrix print head of hinged-clapper-armature construction, 5,009,529, Cl. 400-124.000

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Gulf Canada Limited *See—*
Schramm, Laurier L., and Smith, Russell G., 5,009,773, Cl. 208-391.000

Gullixson, Bruce B. *See—*
Lathom, Michael S., Gullixson, Bruce B., and Sweat, Bruce P., 5,010,279, Cl. 315-227.00R

Gunasekera, Malika, Gunasekera, Sarath P., Longley, Ross E., and Burres, Neal S., to Harbor Branch Oceanographic Institution, Inc. Discodermolide compounds, compositions containing same and method of preparation and use, 5,010,099, Cl. 514-459.000

Gunasekera, Sarath P *See—*
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Gurd, John A *See—*
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Petit, Laurent, Bournonville, Jean-Paul, Guth, Jean-Louis, Raatz, Francis, and Serve, Alain, 5,010,048, Cl. 502-61.000

Guthrie, Robin J., Katz, Murray, and Schroll, Craig R., to International Fuel Cells Corporation. Fuel cell end plate structure, 5,009,968, Cl. 429-26.000

Guy, Thomas S *See—*
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Hagelauer, Ulrich, to Storz Medical AG. Apparatus for degassing fluids, 5,009,682, Cl. 55-159.000

Hagelbarger, David W. *See—*
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Haginuma, Kiyoshi *See—*
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Hahn, Charles J. Reduced flow bearing, 5,009,522, Cl. 384-288.000

Hahn, Klaus, Guhr, Uwe, Hintz, Hans, Wittenberg, Dietmar, and Gleich, Peter, to BASF Aktiengesellschaft. Flame resistant, expand-

able styrene polymers and foams, and flame retardants 5,010,111, Cl 521-56.000

Hahn, Robert C., Sr. *See*—
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Haisma, Jan, Alting, Cornelis L., and Michielsen, Theodorus M., to U.S. Philips Corporation Method of manufacturing a semiconductor device 5,009,689, Cl 65-33.000

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Hall, David E Load bearing cover and rack for a pick-up truck 5,009,457, Cl 296-3.000

Hall, George R., II *See*—
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Hall, James T., to Hughes Aircraft Company Multiple-notch rugate filters and a controlled method of manufacture thereof 5,009,485, Cl 350-163.000

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Halstead, Gary A., and Trelvar, Ronald C., to General Motors Corporation Combination radiator and condenser apparatus for motor vehicle 5,009,262, Cl 165-140.000

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Hamano, Hiroyuki, to Canon Kabushiki Kaisha Zoom lens 5,009,492 Cl 350-427.000

Hamilton, Lowell E *See*—
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Hamilton, Michael C., and Bell, John A., to Boeing Company, The Electro-optical analog-to-digital converter and method for digitizing an analog signal 5,010,346, Cl 341-137.000

Hamlin, Robert N., Shockey, Rick L. and Tassel, Robert A. V., to Schneider (USA) Inc Fiber tip atherectomy catheter 5,009,659, Cl 606-159.000

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Hanai, Kazumichi Mine, Koichi, and Kikuta, Hikaru, to Aisan Kogyo Kabushiki Kaisha Vapor lock preventing mechanism in motor-driven fuel pump 5,009,575, Cl 417-244.000

Hanaoka, Motoyoshi *See*—
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Hanawa, Akinori *See*—
Tanaka, Kazuyuki, Iwami, Etsuji, Matsuzawa, Jun, Mukoyama, Yoshiyuki Shibata, Noriohiko, Hanawa, Akinori, and Yokota, Mitsuo, 5,009,949, Cl 428-260.000

Handler, Vivian M Sheet-material dispensing box 5,009,351, Cl 225-52.000

Handley, Dean A., Houlihan, William J., and Weinstein, David B., to Sandoz Pharmaceuticals Corp Triglyceride-water emulsion pharmaceutical vehicles 5,010,067, Cl 514-75.000

Hane, Motomu *See*—
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Hanerus, Goran, and Ljungstrom, Tommy, to Tetra Pak Holdings & Finance S.A. Method of and an apparatus for venting a filling plant 5,009,339, Cl 222-1.000

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Hansa Metallwerke AG *See*—
Oberdorfer, Hans, 5,009,247, Cl 137-218.000

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Hansen, Joseph M *See*—
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Hansen, Louis B *See*—
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Hanyu, Masaaki, and Ozaki, Yukio, to Pioneer Electronic Corporation Television projector for projection display 5,010,396, Cl 358-60.000

Harada, Kinji, Ikeda, Kyoichi, Kuwayama, Hideki, Kobayashi, Takashi, Nishikawa, Tadashi, Watanabe, Tetsuya, and Yoshida, Takashi to Yokogawa Electric Corporation Vibrating type transducer 5,009,108, Cl 73-704.000

Harada, Kyouji, Kato, Eiji, Sakaguchi, Yoshikazu, Watanabe, Suzuaki and Hoshino, Akira, to Aisin-AW Kabushiki Kaisha, and Toyota Jidosha Kabushiki Kaisha Multi-disk brake for automatic transmission 5,009,290, Cl 188-71.500

Harandi, Mohsen N., and Owen, Hartley, to Mobil Oil Corporation Extraction and reactor system 5,009,859, Cl 422-189.000

Harano, Takeshi Takaki, Satoru, Shigesato, Yuzo Suzuki, Koichi Hashimoto, Naoki, Kojima, Hiroyasu, and Oyama, Takuji, to Ashahi Glass Company, Ltd Method of forming a transparent conductive film 5,009,922, Cl 427-37.000

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Hardin, Paul W., Jr., and Taylor, Wayne Traffic barrier gate 5,009,542, Cl 404-6.000

Hardy, Sidney D *See*—
McAuliffe, Lawrence, Jr., and Hardy, Sidney D., 5,009,390, Cl 251-129.200

Harper-Wyman Company *See*—
Massey, Dale A., 5,009,393, Cl 251.207.000

Harpold, John G *See*—
Siefkes, Jerry D Harpold, John G., and Schatz, Douglas S., 5,009,764, Cl 204-298.080

Harrier GmbH Gesellschaft fur den Vertrieb medizinischer und technischer Gerate *See*—
Krebser, Werner, Lantos, Michael, and Kolta, Peter, 5,010,452, Cl 362-19.000

Harris Corporation *See*—
Beasom, James D., 5,010,377, Cl 357-22.000
Yost, Richard A., and Damerow, David H., 5,010,558, Cl 375-37.000

Harris, Jesse W *See*—
Falbo, G P "Sonny" and Harris, Jesse W., 5,009,548, Cl 405-179.000

Harris Research Inc *See*—
Beck, Boyd R and Harris, Robert D., 5,009,667, Cl 8-115.560

Harris, Robert D *See*—
Beck, Boyd R, and Harris, Robert D., 5,009,667, Cl 8-115.560

Harth, Arthur Dowbrowski, Adrian T., and Williams, Bernard O Gameboard amusement device 5,009,424, Cl 273-85.00D

Hartley, Richard I and Corbett, Peter F., to General Electric Company Digit-serial linear combining apparatus useful in dividers 5,010,511, Cl 364-786.000

Hartman, Pamela J *See*—
Hawkins, William G Burke, Cathie J Roll, Daniel O Hartman, Pamela J and Atkinson, Diane, 5,010,355, Cl 346-140.00R

Hartmann, Heinrich *See*—
Hennig, Karl Hartmann, Heinrich, and Raubenheimer, Hans Juergen, 5,010,150, Cl 526-88.000
Martischius, Franz-Dieter, Vogel, Hans-Henning Greif, Norbert Oppenlaender, Knut, Denzinger, Walter, and Hartmann, Heinrich, 5,009,670, Cl 44-385.000
Perner, Johannes Diessel, Paul Hartmann, Heinrich Denzinger, Walter Oftring, Alfred, and Schoenleben, Willibald, 5,009,805, Cl 252-174.240

Hartstein, Allan M., and Koch, Roger H., to International Business Machines Corp Neural network having an associative memory that learns by example 5,010,512, Cl 364-807.000

Haruki, Hiromu, Kirihata, Fumiaki, and Hashimoto, Osamu, to Fuji Electric Co., Ltd Gate turn-off thyristor with resistance layers 5,010,384, Cl 357-38.000

Harvest Chemicals (Proprietary) Limited *See*—
Bewsey, John A., 5,009,710, Cl 106-208.000

Harvey, Karen N *See*—
Mowforth, Clive W., Bullock, James F., Maternaghan, Trevor J and Harvey, Karen N., 5,009,991, Cl 430-567.000

Harvey, N Thatcher *See*—
Eilert, Randall N., Neel, Robert M., Harvey, N Thatcher, Ames, Wilbur R., IV, and Lord, Randall D., 5,008,974, Cl 16-114.00R

Hasegawa, Jun *See*—
Ishida, Tokuji, Norita, Toshio, and Hasegawa, Jun, 5,010,409, Cl 358-213.190

Hasegawa, Masahide, Otokawa, Mitsuhiro, Matsuoka, Hidetoshi, and Hirata, Norttsugu, to Canon Kabushiki Kaisha Recording apparatus for an information signal with a plural kinds of pilot signals using a plurality of heads 5,010,424, Cl 360-77.140

Hasegawa, Minekazu, Ikeda, Keiichi, and Fujihira, Junichi, to Kinugawa Rubber Industrial Co., Ltd Structure for draining liquid for a vehicle and method for forming the structure 5,009,464, Cl 296-213.000

Hasegawa, Shinichi, to Pioneer Electronic Corporation Triple tube type projection television 5,010,397, Cl 358-60.000

Hasegawa, Takanori, Abe, Nobuyuki, Hibara, Toru, Hirose, Toshihiko, Kanda, Takashi, Saito, Hiroshi, Oshima, Masaki, and Nakazawa, Eiji, to Riso Kagaku Corporation, and Nippon Seimitsu Kogyo Kabushiki Kaisha Image processing apparatus 5,010,420, Cl. 358-471.000

Hashimoto Corporation *See*—
Hashimoto, Kazuo, 5,010,422, Cl 360-69.000

Hashimoto Forming Industry Co., Ltd *See*—
Iwata, Takao, and Hotta, Tetsuo, 5,009,460, Cl 296-93.000

Hashimoto, Kazuo, to Hashimoto Corporation Driving system for endless video tape by one-touch timer 5,010,422, Cl 360-69.000

Hashimoto, Mikio *See*—
Kohsaka, Masaki, Higashi, Isaburou, Akana, Yoshinori, Hashimoto, Mikio, and Yatsu, Tadao, 5,010,146, Cl 525-439.000.

Hashimoto, Naoki *See*—
Harano, Takeshi, Takaki, Satoru, Shigesato, Yuzo, Suzuki, Koichi, Hashimoto, Naoki, Kojima, Hiroyasu, and Oyama, Takuji, 5,009,922, Cl 427-37.000

Hashimoto, Osamu *See*—
Haruki, Hiromu, Kirihata, Fumiaki, and Hashimoto, Osamu, 5,010,384, Cl 357-38.000

Hashiyama, Kouichi *See*—
Abe, Ryoji, Okita, Junichi, Miyagoshi, Katsunobu, and Hashiyama, Kouichi, 5,009,205, Cl 123-195.00H

Haskel, Inc *See*—
Kelly, John W., 5,009,002, Cl 29-890.031

Hassler, Dietrich, and Schmidt, Erhard, to Siemens Aktiengesellschaft Extracorporeal lithotripsy apparatus using high intensity shock waves for calculus disintegration and low intensity shock waves for imaging 5,009,232, Cl 128-660.030

Hata, Kazuyoshi, to Minolta Camera Kabushiki Kaisha Compact zoom lens system 5,009,491, Cl 350-427.000

Hatakenaka, Tetsuo *See*—
Kaneko, Toshimi, Morinaga, Tetsuya, and Hatakenaka, Tetsuo, 5,010,313, Cl 335-296.000

Hatakeyama, Katsunori *See*—
Moriwaki, Masafumi, Sano, Shigeaki, Hatakeyama, Katsunori, Yamada, Hiroshi, and Nouno, Youzou, 5,010,213, Cl 178-18.000

Hatakeyama, Masakazu *See*—
Fujii, Masahiro, Hatakeyama, Masakazu, and Hiraki, Jun, 5,009,907, Cl 426-335.000

Hatanaka, Sunao, to Alps Electric Co., Ltd Electrophotographic apparatus having positioning mechanism for detachable process cartridge 5,010,365, Cl 355-211.000

Hatano, Hideki *See*—
Kouno, Tomomitsu, Hatano, Hideki, Yamaji, Takashi, Ootaki, Sakashi, and Nishida, Masami, 5,009,490, Cl 350-342.000

Hatomoto, Isamu, and Matsuo, Yoshiteru, to Kuraray Company Limited, and Honda Giken Kogyo Kabushiki Kaisha Composite sheet for automotive use 5,009,946, Cl 428-87.000

Hattori, Akio *See*—
Machida, Satoshi, and Hattori, Akio, 5,009,125, Cl 74-606.00R

Hattori, Chikamasa *See*—
Kameyama, Fumio, and Hattori, Chikamasa, 5,009,554, Cl 409-231.000

Hawkins, William G., Burke, Cathie J., Roll, Daniel O., Hartman, Pamela J., and Atkinson, Diane, to Xerox Corporation Ink jet printhead having ionic passivation of electrical circuitry 5,010,355, Cl 346-140.00R

Haws Company *See*—
Stein, Matthew I., 5,008,963, Cl 4-620.000

Hayakawa, Takeshi, Narikawa, Shiro, Ohashi, Kunio, and Tsujimoto, Yoshiharu, to Sharp Kabushiki Kaisha Photosensitive member for electrophotography having amorphous silicon 5,009,977, Cl 430-84.000

Hayase, Isao, and Tejima, Kunisuke, to Hitachi, Ltd Rotary compressor of variable displacement type 5,009,577, Cl 417-295.000

Hayashi, Hiroshige *See*—
Naganuma, Hiroshi, Sato, Kenji, Yamamoto, Masashi, Kubota, Toshiaki, Hayashi, Hiroshige, and Ishizaka, Yoshirou, 5,009,080, Cl 62-256.000

Hayashi, Hiroyuki, Seto, Tsuneo, Miura, Hironori, and Fujimoto, Yoji, to Kawasaki Steel Corporation Method of rolling H-shaped steels 5,009,094, Cl 72-225.000

Hayashi, Tetsuo *See*—
Okumoto, Takaharu, Hayashida, Tadashi, Kawada, Kazuo, and Hayashi, Tetsuo, 5,009,423, Cl 273-80.200

Hayashi, Tstsuya *See*—
Okumoto, Takaharu, Ninomiya, Toshio, and Hayashi, Tstsuya, 5,009,425, Cl 273-167.00R

Hayashi, Yasuyuki, and Abe, Shigenobu, to Kabushiki Kaisha Showa Seisakusho Shock absorber for use in a vehicle 5,009,451, Cl 280-724.000

Hayashi, Yutaka, Itoh, Atuo, Imai, Mizuho, and Iida, Hideyo, to Japan as represented by general director of Agency of Industrial Science and Technology, Taiyo Yuden Co., Ltd., and Research Development Corporation of Japan Method for forming a transparent conductive metal oxide film 5,009,928, Cl 427-126.300

Hayashida, Tadashi *See*—
Okumoto, Takaharu, Hayashida, Tadashi, Kawada, Kazuo, and Hayashi, Tetsuo, 5,009,423, Cl 273-80.200

Hayden, James D *See*—
Pfiester, James R., and Hayden, James D., 5,010,030, Cl 437-192.000

Hayes, Ann G., and Birch, Phillip J., to Glaxo Group Limited Method of protecting mammals against neuronal damage resulting from cerebral ischemia 5,010,096, Cl 514-411.000

Hayes, Philip A *See*—
Barrios, Richard C., and Hayes, Philip A., 5,008,967, Cl 14-7.000

Hays, Dan A., to Xerox Corporation Dual AC development system for controlling the spacing of a toner cloud 5,010,367, Cl 355-247.000

Hazawa, Osamu, to NEC Corporation Consistency ensuring system for the contents of a cache memory 5,010,475, Cl 364-200.000

HBOG-Ohl Sands Limited Partnership *See*—
Schramm, Laurier L., and Smith, Russell G., 5,009,773, Cl 208-391.000

Hebert, Alfred M Magnetic element with magnesium coil for filter 5,009,779, Cl 210-223.000

Hecker, Rudolf *See*—
Stover, Detlev, Buchkremer, Hans-Peter, and Hecker, Rudolf, 5,009,359, Cl 228-175.000

Hector, Francis N., Jr *See*—
Hector, Francis N., Sr., and Hector, Francis N., Jr., 5,009,569, Cl 415-4.100

Hector, Francis N., Sr., and Hector, Francis N., Jr. Wind energy collection system 5,009,569, Cl 415-4.100

Hed, Aharon Z., to International Superconductor Corp. Electronic modulation of magnetic fields 5,010,311, Cl 335-216.000

Heidelberger Druckmaschinen AG *See*—
Wirz, Arno, 5,009,161, Cl 101-425.000

Heidt, Thomas, and Wickstead, James C., to Wickstead, James C Apparatus for storing video signals on audio cassette 5,010,419, Cl 358-335.000

Heilporn, Marc *See*—
Prieels, Jean-Paul, Maschelein, Charles, and Heilporn, Marc, 5,010,007, Cl 435-190.000

Heimala, Seppo O., Hyvarinen, Olli V. J., and Metsarinta, Maija-Leena, to Outokumpu Oy Method for removing sulphur and nitrogen compounds from gas 5,009,870, Cl 423-239.000

Heinemann, Hans-Joachim *See*—
Palm, Gangolf, Lehmann, Karl-Heinz, and Heinemann, Hans-Joachim, 5,008,979, Cl 19-97.000

Heins, Ralph C Portable cleat 5,008,983, Cl 24-131.00C

Heinz, Wilhelm, to European Atomic Energy Community Device for the optical recording of rapid processes with a TV camera 5,010,284, Cl 315-384.000

Heitmann, Uwe, to Korber AG Apparatus for supplying fibrous material to machines for simultaneously producing a plurality of cigarette rods 5,009,238, Cl 131-108.000

Heki, Tatsuo *See*—
Inoue, Noriyuki, and Heki, Tatsuo, 5,009,993, Cl 430-605.000

Helbig, Peter *See*—
Eckhardt, Fritz, Helbig, Peter, and Schoenherr, Walter, 5,010,272, Cl 313-579.000

Hellergvist, Carl G., to Vanderbilt University Therapeutic agent and method of inhibiting vascularization of tumors 5,010,062, Cl 514-54.000

Helmer, Ulla K E., and Stensio, Karl-Erland M., to EKA Nobel Method and plant for separation of synthetic water soluble polymers 5,009,789, Cl 210-641.000

Hemming, Valda K Nursing garment 5,008,960, Cl 2-104.000

Hendrickson, Alfred A., and Smith, Darrell W., to Michigan Technological University, Board of Control of Method of making high strength articles from forged powder steel alloys 5,009,842, Cl 419-28.000

Henke, Reinhold *See*—
Werdin, David A., and Henke, Reinhold, 5,010,450, Cl 361-415.000

Hennig, Karl, Hartmann, Heinrich, and Raubenheimer, Hans-Juergen, to BASF Aktiengesellschaft Controlling the particle size in the preparation of polymer powders 5,010,150, Cl 526-88.000

Henning, Rolf, Benz, Gunter, Stasch, Johannes-Peter, Knorr, Andreas, and Bender, Wolfgang, to Bayer Aktiengesellschaft Renin-inhibiting peptides having an aminomethyl side chain 5,010,057, Cl 514-018.000

Hennings, Detlev F. K., and Schreinemacher, Herbert J., to U.S. Philips Corp Method of manufacturing barium titanate $BaTiO_3$ 5,009,876, Cl 423-598.000

Henschen, Homer E., McKee, Michael J., and Pawlikowski, Joseph M., to AMP Incorporated Self regulating temperature heater as an integral part of a printed circuit board 5,010,233, Cl 219-209.000

Hensley, Albert L., Jr *See*—
Clark, Frederick T., Hensley, Albert L., Jr., Lyzinski, David, and Peck, Lawrence B., 5,009,771, Cl 208-216.0PP
Miller, Jeffrey T., and Hensley, Albert L., Jr., 5,009,770, Cl 208-209.000

Henttinen, Kauko *See*—
Maenpaa, Matti Tehtoluoma Teuvo Henttinen Kauko Jokipalo, Pertti Saren, Aimo, and Piirinen, Seppo, 5,009,096, Cl 72-239.000

Her Majesty the Queen in right of the Province of Alberta *See*—
Schramm, Laurier L. and Smith, Russell G., 5,009,773, Cl 208-391.000

Her, Ming-Long Diving case massager 5,009,222, Cl 128-36.000

Herberg, Gerhard, Hoffmann, Hans-Jurgen, Gesenhues, Ludger, Huang, Zhen, and Hoscher, Reinhard, to August Bilstein GmbH & Co. KG Vibration-absorber sensor for a semi-actively controlled chassis with a relative-velocity sensor and with electromes for processing their outputs 5,009,450, Cl 280-707.000

Hergenrother, Paul M. and Connell, John W., to United States of America, National Aeronautics and Space Administration Polyphenylquinoxalines via aromatic nucleophilic displacement 5,010,197, Cl 544-353.000

Herigstad, David P *See*—
Case, Marvin L., Sturm, Robert E. and Herigstad, David P., 5,009,563, Cl 414-4?0.000

Herman Miller, Inc *See*—
Kurrasch, Andrew J., 5,009,043, Cl 52-145.000

Hermanson, Fredrik, to Bengt Henningson Tool-holder for tools on a perforated board 5,009,381, Cl 248-221.100

Hermeling, Dieter, Becker, Rainer, and Dobler, Walter, to BASF Aktiengesellschaft Preparation of dihydroxydiones 5,009,753, Cl 204-75.000

Hernandez, Francisco, and Chamberlain, Jerry, to Siemens Medical Laboratories, Inc Apparatus and method for inhibiting the generation of excessive radiation 5,010,562, Cl 378-125.000

Herold, Peter, and Angst, Christof, to Ciba-Geigy Corporation Processes for the preparation of 5-amino-4-hydroxy-valeric acid derivatives 5,010,189, Cl 544-174.000

Herrington, Ronald M., Turner, Robert B., and Mattiega, Roney J., to Dow Chemical Company Flexible polyurethane foams prepared using low unsaturation polyether polyols 5,010,117, Cl 521-159.000

Hess, Steven L *See*—
Cook, Phillip M. and Hess, Steven L., 5,010,156, Cl 527-403.000

Hessel, Stephen R *See*—
Pike, Kelly A., and Hessel, Stephen R., 5,009,251, Cl 137-601.000

Hester, Troy I., to United States of America, Army Device and method for detecting and displaying crossover pattern in precision winding 5,009,373, Cl 242-158.000R

Hesterberg, William G *See*—
Cleary, Terrance M., Donahue, Raymond J., Hesterberg, William G., and Toriello, Lawrence J., 5,009,260, Cl 164-255.000

Heuling, Ulrich S Process and apparatus for harvesting of crops from stalks and chopping the stalks 5,009,061, Cl 56-104.000

Heuvelsland, Albert J., to Dow Chemical Company Production of polyether polyols with reduced unsaturation 5,010,187, Cl 536-120.000

Hewlett-Packard Company *See*—
Butterworth, Mark M., 5,010,241, Cl 235/462.000
Cowger, Bruce Dion, John H., and Peters, William F., 5,010,354, Cl 346-140.000R
Davis, Mark L., 5,010,535, Cl 369-32.000
Diebel, Heinz Peterhoff, Ralf and Thuemling, Evelyn, 5,010,502, Cl 364-522.000
Eilert, Randall N., Neel, Robert M., Harvey, N. Thatcher Ames, Wilbur R., IV, and Lord, Randall D., 5,008,974, Cl 16-114.00R
Nickerson, Mark A., Poole, John S., and Frank, Lenore G. R., 5,009,778, Cl 210-198.200
Vincent, Kent D., and Jamp, Rueiming, 5,010,580, Cl 382-17.000
Wanger, Mark E., Methlie, Jennifer L., Christie, Leslie G., Dauner, Daniel R., Domel, Douglas R., Jones, David P., Oliver, Thomas C., and Stavely, Donald J., 5,010,536, Cl 369-36.000

Hexcel Corporation *See*—
Cloyd, Willard C., and Nelson, Robert M., 5,009,927, Cl 427-121.000

Hi-Tek Polymers, Inc *See*—
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Hibara, Toru *See*—
Hasegawa, Takanori, Abe, Nobuyuki Hibara, Toru Hirose, Toshihiko, Kanda, Takashi, Sato, Hiroshi Oshima, Masaki and Nakazawa, Eiji, 5,010,420, Cl 358-471.000

Hickman, Grayce A *See*—
Calviello, Joseph A., and Hickman, Grayce A., 5,010,036, Cl 437-173.000

Higashi, Isaburou *See*—
Kohsaka, Masaki, Higashi, Isaburou, Akana, Yoshinori, Hashimoto, Mikio, and Yatsu, Tadao, 5,010,146, Cl 525-439.000

Higashio, Kimihiko, and Yoshikai, Takeshi, to Minolta Camera Kabushiki Kaisha Image forming apparatus having sheet jam reaction reset means 5,010,363, Cl 355-206.000

High Technologies, Inc *See*—
Ahmad, Jameel, and Valenza, Joseph P., 5,009,543, Cl 404-70.000

Higuchi, Naoshige, and Miyake, Toru, to Dai Nippon Printing Co., Ltd Blank plates for forming multi-color fluorescent planes and methods for forming multi-color fluorescent planes 5,009,972, Cl 430-7.000

Higuchi, Naniyoshi, Yamagishi, Miki, and Miyachi, Tsuneharu, to Nippon Kokan Kabushiki Kaisha Method of removing mercury in exhaust gases from a waster incinerator 5,009,871, Cl 423-240.000

Higuchi, Shigetaka, Noguchi, Isao, and Odashima, Tohru, to Sony Corporation Method of mounting flat coil 5,008,998, Cl 29-840.000

Hijikata, Kenichi *See*—
Komabayashi, Masashi Kuramochi, Kunio, and Hijikata, Kenichi 5,009,717, Cl 136-201.000

Hikita, Mitsutaka, Sumioka, Atsushi Tabuchi, Toyoji Kurosawa Kazuhito, and Kinoshita, Tuneo to Hitachi, Ltd., Hitachi Denshi Kabushiki Kaisha, and Hitachi Communication System, Inc SAW resonator having a broad bandwidth 5,010,269, Cl 310-313.00B

Hilal, Mohamed A. and Parmer, Jerome F., to General Dynamics Corporation, Convair Division High current magnetohydrodynamic gigawatt pulse generator 5,010,255, Cl 307-106.000

Hilbish, Brian K., Leonard, David W., Sr., Burgess, Arnold C., and Burns, David R., to Simplimatic Engineering Company Article handling device with low profile side guides 5,009,550, Cl 406-87.000

Hill, Alan M., to British Telecommunications public limited company Optical multiplexing 5,010,543, Cl 370-3.000

Hill, Ira D., and White, Robert D Oral hygiene gels 5,009,881, Cl 424-49.000

Hill, Peter D., to Westinghouse Electric Corp. Active acoustic attenuation system for reducing tonal noise in rotating equipment 5,010,576, Cl 381-71.000

Hilti Aktiengesellschaft *See*—
Manschitz, Erwin, 5,009,440, Cl 279-71.000

Hilti, Bruno *See*—
Finter, Jurgen Hilti, Bruno Mayer, Carl W. Minder, Ernst and Pfeifer, Josef, 5,009,812, Cl 252-500.000

Hinterman, Timothy W *See*—
Hinterman, William H. and Hinterman, Timothy W., 5,009,091, Cl 72-21.000

Hinterman, William H. and Hinterman, Timothy W. Press counterbalance system 5,009,091, Cl 72-21.000

Hintz, Hans *See*—
Hahn, Klaus Guhr, Uwe Hintz, Hans Wittenberg, Dietmar, and Gleich, Peter, 5,010,111, Cl 521-56.000

Hioki, Masahito *See*—
Shirai, Tadayoshi and Hioki, Masahito, 5,009,538, Cl 403-134.000

Hipple Cancer Research Corporation *See*—
Murphy, Martin J., Jr. Stubbs, Jack B. and Leonard, Thomas A., 5,009,503, Cl 356-339.000

Hirai, Tokuyuki *See*—
Suzuki, Hitoshi, Shiotani, Shinobu Tokunaga, Shinji, Hirai, Tokuyuki Fukumochi, Yoji Kugimiya, Shuzo, and Sata, Ichiko 5,010,486, Cl 364-419.000

Hiraki, Jun *See*—
Fujii, Masahiro Hatakeyama, Masakazu and Hiraki, Jun 5,009,907, Cl 426-335.000

Hirano, Motoki *See*—
Mizuno, Tsuyoshi, and Hirano, Motoki, 5,010,349, Cl 343-700.0MS

Hirano, Yoshinao, Sato, Katsumo Nagamori, Shigeru, Murata, Katsuhide, Horikiri, Kazuhito, and Shirai, Junji, to Mitsui Engineering & Shipbuilding Co., Ltd Optical molding apparatus and movable base device therefor 5,009,585, Cl 425-174.400

Hiraoka, Takeshi, Takeguchi, Shunsuke, and Kawai, Satoshi, to Nippon Piston Ring Co. Ltd Camshaft 5,009,123, Cl 74-567.000

Hirasawa, Masahide *See*—
Yasumura, Hiroto Hirasawa, Masahide, Noji, Minoru Kozuki Susumu, Takahashi, Koji, and Yoshimura, Katsuji, 5,010,416, Cl 358-314.000

Hirata, Noritsugu *See*—
Hasegawa Masahide, Otokawa, Mitsuhiro, Matsuoka, Hidetoshi and Hirata, Noritsugu, 5,010,424, Cl 360-77.140

Hirata, Tetsuo *See*—
Maekawa, Yoshikazu and Hirata, Tetsuo, 5,010,364, Cl 355-207.000

Hirata, Yoshimi, to NEC Corporation Transmission line switching system 5,010,550, Cl 371-8.200

Hirazawa, Nobuhiro, to Tokai Rubber Industries, Ltd. Fluid-filled elastic mount 5,009,404, Cl 267-140.100

Hirose, Fumiyuki *See*—
Izuka, Nobuyuki, Hirose, Fumiyuki, Asahi, Naotatsu, and Kojima, Yoshitaka, 5,009,070, Cl 60-753.000

Hirose, Sachio, Hane, Motomu, and Inagawa, Masanobu, to Mitsubishi Petrochemical Co., Ltd. Novel calcitonin derivative and salt thereof 5,010,174, Cl 530-307.000

Hirose, Syunichi *See*—
Tokiwa, Yukio, Ichikawa, Fumitoshi, Nakamura, Naomi, Hirose, Syunichi, and Inokuchi, Haruhisa, 5,010,467, Cl 363-37.000

Hirose, Toshihiko *See*—
Hasegawa, Takanori, Abe, Nobuyuki, Hibara, Toru, Hirose, Toshihiko, Kanda, Takashi, Sato, Hiroshi, Oshima, Masaki, and Nakazawa, Eiji, 5,010,420, Cl 358-471.000

Hiroshima, Koichi *See*—
Araya, Junji, Ohzeki, Yukihiro, Miyamoto, Toshio, Hiroshima, Koichi, Sato, Yasushi, and Nakahata, Kimio, 5,010,370, Cl 355-274.000

Hirota, Hajime *See*—
Watanabe, Taichi, Ogino, Hidekazu, Hirota, Hajime, Koshika, Tomohito, Moriya, Naoko, and Nozaki, Toshio, 5,009,813, Cl 252-545.000

Hirtle, Thomas W., Cimperman, Frederick J., and Silbermann, Klaus, to Ashlock Company Coring method 5,009,909, Cl 426-481.000

Hisano, Shinichi, Ganesan, Apparajan, and Guy, Thomas S., to Analog Devices, Incorporated High resolution D/A converter operable with single supply voltage 5,010,337, Cl 341-154.000

Hise, Ralph E., to Advanced Technologies Management, Inc Honeycomb solid oxide electrolytic cell assembly and method 5,009,763, Cl 204-255.000

Hishida, Noriaki *See*—
Endo, Mineyo, Takegami, Kiyoyoshi, Hishida, Noriaki, and Miyaji, Itsuo, 5,009,436, Cl 277-80.000

Hitachi Chemical Company, Ltd *See*—
Tanaka, Kazuyuki, Iwami, Etsuji, Matsuzawa, Jun, Mukoyama, Yoshiyuki, Shibata, Noriohiko, Hanawa, Akinori, and Yokota, Mitsuo, 5,009,949, Cl 428-260.000

Hitachi Communication System, Inc *See*—
Hikita, Mitsutaka, Sumioka, Atsushi, Tabuchi, Toyoji, Kurosawa, Kazuhito, and Kinoshita, Tuneo, 5,010,269, Cl 310-313.00B

Hitachi Computer Engineering Co., Ltd *See*—
Matsumoto, Kenji, Yanagita, Tomoatsu, Nishiyama, Yoshinori, Nagai, Masahiko, and Morikuni, Mitsuru, 5,010,493, Cl 364-490.000

Hitachi Denshi Kabushiki Kaisha *See*—
Hikita, Mitsutaka, Sumioka, Atsushi, Tabuchi, Toyoji, Kurosawa, Kazuhito, and Kinoshita, Tuneo, 5,010,269, Cl 310-313.00B

Hitachi, Ltd *See*—
Hayase, Isao, and Tejima, Kunisuke, 5,009,577, Cl 417-295.000
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Inzuka, Nobuyuki, Hirose, Fumiyuki, Asahi, Naotatsu, and Kojima, Yoshitaka, 5,009,070, Cl 60-753.000
Kadono, Osamu, and Ushizima, Kunio, 5,010,238, Cl 235-379.000
Kitada, Masahiro, Shimizu, Noboru, Tanabe, Hideo, and Nakamura, Hitoshi, 5,010,433, Cl 360-113.000
Matsumoto, Kenji Yanagita, Tomoatsu, Nishiyama, Yoshinori, Nagai, Masahiko and Morikuni, Mitsuru, 5,010,493, Cl 364-490.000
Migita, Masahito, Uda, Tsuyoshi, Kanehisa, Osam, and Shiiki, Masatoshi, 5,010,517, Cl 365-114.000
Mishina, Yusuke, and Kojima, Keiji, 5,010,483, Cl 364-200.000
Mori, Kinji, Kunai, Yuko, Akiyama, Masakazu, Kadoya, Tadaaki, Kawano, Katsumi, Miyamoto, Shoji, Nohmi, Makoto, Shingai, Sadanori, and Ihara, Hirokazu, 5,010,479, Cl 364-200.000
Ogino, Masanori, Yamada, Takeo, and Ikeda, Miyuki, 5,010,280, Cl 315-388.000
Omoda, Koichiro, Tanaka, Teruo, Nakagoshi, Junji, Hamanaka, Naoki, and Nagashima, Shigeo, 5,010,477, Cl. 364-200.000
Shimada, Akira, 5,010,497, Cl 364-519.000
Yamamoto, Hikari, 5,010,324, Cl 340-723.000
Yoneda, Kenzi, Ueshima, Takaaki, Kuzunuki, Soshiro, Morita, Yuzo, and Tobita, Toshimitsu, 5,010,472, Cl 364-148.000

Hitachi Metals, Ltd *See*—
Shinohara, Tadashi, Nishiyama, Toshikazu, Noguchi, Kazumi, Iwata, Hitoshi, and Suwabe, Shigekazu, 5,010,431, Cl 360-103.000
Taguchi, Akira, Morita, Shigetoshi, Taka, Shunichi, Yamada, Hirohide, Takada, Yoshiaki, Furuichi, Shinji, and Ao, Masahiro, 5,010,429, Cl 360-103.000

Hitachi Seiko, Ltd *See*—
Arai, Kunio, and Kanaya, Yasuhiko, 5,010,232, Cl 219-121.700

Hitaka, Yosato *See*—
Kawamura, Hideaki, Fujibayashi, Kentaro, and Hitaka, Yosato, 5,010,285, Cl 318-569.000

Hitoshi, Nagato *See*—
Masasumi, Yana, Hitoshi, Nagato, Kiyoshi, Yamada, Shyoji, Ueno, and Kunihiro, Shibuya, 5,009,527, Cl 400-120.000

Hitzeman, Ronald A *See*—
Chang, Chung N., Hitzeman, Ronald A., and Matteucci, Mark D., 5,010,003, Cl 435-69.900

Hjaltason, Thorgeir D *See*—
Erlendsson, Gudni, and Hjaltason, Thorgeir D., 5,009,019, Cl 40-541.000

Ho, Fang C *See*—
Dobrowolski, Jerzy A., Ho, Fang C., and Waldorf, Allan J., 5,009,486, Cl 350-164.000

Hodgkin, Johnathon *See*—
Steele, John, Johansen, Oddvar, Johnson, Graham, and Hodgkin, Johnathon, 5,010,009, Cl 435-240.243

Hodgson, Graham, to British Nuclear Fuels plc Uranium dioxide production 5,009,817, Cl 264-0.500

Hoechst AG *See*—
Sprintschnik, Gerhard, Niederstaetter, Walter, Reiss, Kurt, von Asten, Wolfgang, Scharf, Gunther, and Grzembra, Barbara, 5,009,722, Cl 148-2.000
Hoechst Aktiengesellschaft *See*—
Springer, Hartmut, and Reiher, Uwe, 5,010,180, Cl 534-638.000
Walch, Axel, Wildhardt, Juergen, and Beissel, Dieter, 5,009,824, Cl 264-45.100
Wullbrandt, Dieter, Keller, Reinhold, Schlingmann, Merten, Holla, Wolfgang, and Schneider, Manfred, 5,010,012, Cl 435-280.000

Hoechst Celanese Corporation *See*—
Cohen, Richmond R., and Luzio, Gary A., 5,009,239, Cl 131-342.000

Hoechst-Roussel Pharmaceuticals, Inc *See*—
Allen, Richard C., Agnew, Marc N., and Fink, David M., 5,010,083, Cl 514-292.000

Hofer, Peter, to Euroceltique, S.A. 6-thioxanthines 5,010,081, Cl 514-263.000

Hoffman, Chalres T., Jr., Gordon, Ralph A., Hosmer, Thomas P., and Lucas, Robert M., to General Motors Corporation Mechanism and method of positive arcuate orientation of a first member and a second member, particularly for brake adjusted orientation of a drive member and a driven member in a disc brake assembly having parking brake mechanism 5,009,292, Cl 188-71.700

Hoffman, Clifford J Interactive overlay driven computer display system 5,010,323, Cl 340-706.000

Hoffmann, Hans-Jurgen *See*—
Herberg, Gerhard, Hoffmann, Hans-Jurgen, Gesenhues, Ludger, Huang, Zhen, and Hoscher, Reinhard, 5,009,450, Cl 280-707.000

Hoffmann-La Roche Inc *See*—
Lambert, Robert W., Martin, Joseph A., and Thomas, Gareth J., 5,010,060, Cl 514-49.000

Hogue, Etheridge C., to Hogue, Etheridge C Portable automatic water-releasing plant receptacle 5,009,032, Cl 47-79.000

Hokuyo, Shigeru, Oda, Takao, and Matsumoto, Hideo, to Mitsubishi Denki Kabushiki Kaisha Solar cell 5,009,720, Cl 136-255.000

Hokuyo, Shigeru *See*—
Matsumoto, Hideo, and Hokuyo, Shigeru, 5,009,721, Cl 136-256.000

Holder, Tommie J *See*—
Sullivan, Robert W., Holder, Tommie J., and Buchanan, Max F., 5,009,198, Cl 123-43.00A

Holfelder, Gerhard *See*—
Grunwald, Werner, Holfelder, Gerhard, De La Prieta, Claudio, and Schmid, Kurt, 5,009,708, Cl 106-105.000

Holla, Wolfgang *See*—
Wullbrandt, Dieter, Keller, Reinhold, Schlingmann, Merten, Holla, Wolfgang, and Schneider, Manfred, 5,010,012, Cl 435-280.000

Holt, William T. Hull hole closure for an oil tanker 5,009,180, Cl 114-229.000

Holt, William T Mechanical resuscitator 5,009,226, Cl 128-205.180

Holtan, Ramer B., Jr., Falk, Kevin L., Bergman, James F., Smith, James R., and Nelson, Kenneth E., to Holtan, Ramer B., Jr Eyeglasses and headgear combination 5,009,496, Cl 351-156.000

Holtzer, Dominique Removable coin storage receptacle for slot machines 5,009,365, Cl 232-16.000

Honda Giken Kogyo Kabushiki Kaisha *See*—
Hatomoto, Isamu, and Matsuo, Yoshiteru, 5,009,946, Cl 428-87.000
Kushida, Kazumitsu, Kudou, Osamu, Ogawa, Sumitaka, and Uike, Hiroshi, 5,009,211, Cl 123-491.000
Saitoh, Masahiro, Yoshida, Suguru, Obata, Keiichi, and Ono, Yoshinobu, 5,009,463, Cl 296-210.000
Seki, Yasunari, 5,009,203, Cl 123-90.160

Honda, Mitsuru, Koike, Atsushi, Kimura, Tomohiro, Ogawa, Kyosuke, and Murai, Keiichi, to Canon Kabushiki Kaisha Surface-treated metal body, process for producing the same, photoconductive member using the same and rigid ball for treating metal body surface 5,009,974, Cl 430-69.000

Honda, Yutaka *See*—
Kirihara, Tomoo, Nakagawa, Ippei, Seki, Yoshinobu, Honda, Yutaka, and Ichihara, Yasuo, 5,009,751, Cl 204-61.000

Honeywell Inc *See*—
Burgener, Larry L., and Durbin, Larry L., 5,009,385, Cl 248-346.000
Dunaway, Thomas J., Spielberger, Richard K., Dicks, Lori A., and Loy, Jerald M., 5,010,387, Cl 357-70.000
Lee, James C., 5,009,920, Cl 427-9.000

Honkura, Yoshinobu, Matsuo, Toru, and Murata, Kouji, to Aichi Steel Works, Ltd Method for manufacturing high strength non-magnetic stainless steel 5,009,723, Cl 148-12.00E

Hood, Richard L *See*—
Nelson, Stephen R., and Hood, Richard L., 5,009,772, Cl 208-309.000

Hoogovens Groep B V *See*—
den Hartog, Huibert, and van Perlstein, Erik B., 5,009,396, Cl 266-115.000

Hooper, Alan *See*—
Kronfli, Esam, Lovell, Keith V., Hooper, Alan, and Neat, Robin J., 5,009,970, Cl 429-192.000

Hoover, Lonnie D *See*—
House, Roy F., and Hoover, Lonnie D., 5,009,798, Cl 252-8.551

Hopper, Steven R Portable light assembly for an automobile 5,010,454, Cl 362-61.000

Horii, Masami, Komakine, Shigeo Ochiai, Kuniaki, and Kondoh, Takashi, to Tokyo Electric Co., Ltd Dot print head 5,009,528, Cl 400-124.000

Horikiri, Kazuhito *See*—
Hirano, Yoshinao, Sato, Katsumo, Nagamori, Shigeru, Murata, Katsuhide, Horikiri, Kazuhito, and Shirai, Junji, 5,009,585, Cl 425-174.400

Hosaka, Sumio *See*—
Yoshio, Junichi, Hosaka, Sumio, Matsuoka, Hisao, Tsuda, Youichirou, Katagiri, Shoichi, and Nomura, Satoru, 5,010,417, Cl 358-335.000

Hoscher, Reinhard *See*—
Herberg, Gerhard, Hoffmann, Hans-Jurgen, Gesenhues, Ludger, Huang, Zhen, and Hoscher, Reinhard, 5,009,450, Cl 280-707.000

Hoshino, Akira *See*—
Harada, Kyouji, Kato, Eiji, Sakaguchi, Yoshikazu, Watanabe, Suzuaki, and Hoshino, Akira, 5,009,290, Cl 188-71.500

Hosmer, Thomas P *See*—
Hoffman, Chalres T., Jr., Gordon, Ralph A., Hosmer, Thomas P., and Lucas, Robert M., 5,009,292, Cl 188-71.700

Hosotani, Shiro *See*—
Miki, Takahiro, and Hosotani, Shiro, 5,010,338, Cl 341-159.000

Hosotani, Takashi, and Inoue, Kiyoshi, to Nissan Motor Co., Ltd Control for load carrier of lift truck 5,009,562, Cl 414-440.000

Hosoya, Hideki *See*—
Enari, Masahiko; Shikichi, Satoshi; Kawaguchi, Fumiaki; Suzuki, Kenichi; Usui, Masayuki; Matsuoka, Hiroshi; Matsuoka, Kazuhiko; Hosoya, Hideki; Aoki, Akio; and Minoura, Kazuo, 5,010,534, Cl. 369-32.000

Hosoya, Yoshihiro *See*—
Nishimoto, Akihiko; Hosoya, Yoshihiro; Tomita, Kunikazu; Urabe, Toshiaki; and Jitsukawa, Masaharu, 5,009,726, Cl. 148-111.000

Hossain, Shafi U., and Blaney, Carol A., to Kimberly-Clark Corporation. Method for removing polychlorinated dibenzodioxins and polychlorinated dibenzofurans from secondary fibers using supercritical CO_2 extraction. 5,009,745, Cl. 162-5.000.

Hossain, Shafi U., and Blaney, Carol A., to Kimberly-Clark Corporation. Method for removing stickies from secondary fibers using supercritical CO_2 solvent extraction. 5,009,746, Cl. 162-5.000

Hostetler, Eldon, to Ziggity Systems, Inc. Drinker shield. 5,009,194, Cl. 119-72.000.

Hotta, Shu *See*—
Wakita, Katsuya, Sonoda, Nobuo; Shimizu, Tokihiko; Hotta, Shu; and Soga, Mamoru, 5,009,815, Cl. 252-582.000

Hotta, Tetsuo *See*—
Iwata, Takao, and Hotta, Tetsuo, 5,009,460, Cl. 296-93.000

Houk, T. L. *See*—
Falk, R. A.; Capps, C. D.; and Houk, T. L., 5,010,505, Cl. 364-713.000

Houlihan, William J. *See*—
Handley, Dean A.; Houlihan, William J.; and Weinstein, David B., 5,010,067, Cl. 514-75.000

House, Roy F., and Hoover, Lonnie D., to Baroid Technology, Inc. Low fluid loss heavy brines containing hydroxyethyl cellulose. 5,009,798, Cl. 252-8.551

Housman, Joseph J. *See*—
Missimer, Dale J.; Fyfe, David T., Jr.; Housman, Joseph J.; and Forrest, Scott M., 5,009,073, Cl. 62-51.100.

Hovsepian, Mirik *See*—
West, Paul; Hovsepian, Mirik; and Thomas, Ronald, 5,009,111, Cl. 73-862.610.

Howard, John H. *See*—
Raikes, Terry E.; Kramer, William L.; Howard, John H.; Moore, Wayne D.; Jackson, Louis; and Kotecki, Jeffrey D., 5,009,276, Cl. 177-25.150

Howatt, George F. Ball-tip stud and alignment tool and method of use. 5,009,443, Cl. 280-477.000

Howe, Michael G., Arthur, James C., and Useman, Robert L., to Arvin Industries, Inc. Tuned exhaust processor assembly. 5,009,065, Cl. 60-288.000

Howell, Peter P. *See*—
Johnson, Harlan B.; Wiedrich, Charles R.; Allen, Ernie L.; and Howell, Peter P., 5,009,806, Cl. 252-187.280

Hoyt, Donald A., to Attacher Lures. High-speed fishing lure. 5,009,023, Cl. 43-42.500

Hrncirik, Dennis J., to Rockwell International Corporation. Spurious level reduction and control method for direct digital synthesizers. 5,010,506, Cl. 364-721.000

Hsiao, Charles, to Baker Cummins Pharmaceuticals, Inc. Arrangement for and method of administering a pharmaceutical preparation. 5,009,894, Cl. 424-451.000

Hu, Chun-Min *See*—
Chiang, Wen-Yen; and Hu, Chun-Min, 5,010,134, Cl. 525-57.000

Huang, Xiaohua *See*—
Zare, Richard N.; Huang, Xiaohua; and Ohms, Jack I., 5,009,760, Cl. 204-183.300

Huang, Zhen *See*—
Herberg, Gerhard; Hoffmann, Hans-Jurgen; Gesenhues, Ludger; Huang, Zhen; and Hoscher, Reinhard, 5,009,450, Cl. 280-707.000

Hubbard, Vance M., and Brunson, Welton K., to Tecnol, Inc. Sanitary head covering and method of manufacture. 5,008,961, Cl. 2-195.000

Huberty, John P. *See*—
Engelstad, Barry L.; Raymond, Kenneth N.; Huberty, John P.; and White, David L., 5,010,191, Cl. 544-225.000

Huebner, Werner. *See*—
Steck, Werner; Marosi, Laszlo; Haberkorn, Herbert; Feser, Rainer; Huebner, Werner; and Jakusch, Helmut, 5,009,877, Cl. 424-607.000.

Huels Aktiengesellschaft *See*—
Scharf, Helmut, 5,009,878, Cl. 423-608.000

Huenniken, Peter Gurd; John A., and Woodman, Douglas, to Siemens Automotive Limited. Inertia switch mounting housing. 5,010,217, Cl. 200-61.45R

Huffaker, Almyra; and Spector, George. Instruction clip for sewing machine. 5,009,382, Cl. 248-284.000

Hughes Aircraft Company *See*—
Bathrick, Erwin W.; and Zmuda, James E., 5,010,572, Cl. 380-21.000.
Crumly, William R.; Wonth, Blake F.; and Walen, James R., 5,009,605, Cl. 439-67.000
Grinberg, Jan; Welkowsky, Murray S.; Wu, Chiung-Sheng; and Braatz, Paul O., 5,010,251, Cl. 250-332.000
Hall, James T., 5,009,485, Cl. 350-163.000
Iossi, Daryl R.; Cook, Lacy G.; and Koppensteiner, Alfred, 5,009,494, Cl. 350-620.000
Kelly, Kenneth C., 5,010,351, Cl. 343-771.000
Shih, I-Fu; Chang, David B.; Arns, James A.; Moss, Gaylord F.; and Smith, Ronald T., 5,009,502, Cl. 356-152.000

Hughes, Dale L. *See*—
Sawyer, Alan G.; Hughes, Dale L.; and Petree, Edwyn H., 5,009,006, Cl. 30-90.600

Hughes, Ian *See*—
Markwell, Roger F.; Smith, Stephen A.; Hughes, Ian; and Gaster, Laramie M., 5,010,097, Cl. 514-419.000

Huizinga, Gert J., to L.PF Verpakkingen B.V. Method of forming lines of weakness in or grooving a plastic material, especially a packaging material, 5,010,231, Cl. 219-121.690

Hula, Emil; and Maresch, Gerald, to Maschinenfabrik Andritz Actiengesellschaft. Process and apparatus for the manufacture of a metal foil. 5,009,750, Cl. 204-13.000

Huls Aktiengesellschaft *See*—
Kelkenberg, Heike; Ruback, Wult; and Engel, Klaus, 5,009,814, Cl. 252-548.000

Hummel, Axel *See*—
Traubel, Harro; Strenger, Heinrich; Weber, Karl A.; Muller, Hans Werner; Zapfel, Horst; and Hummel, Axel, 5,009,921, Cl. 427-31.000

Hungerford, Robert E. Barbecuing protective food support. 5,009,151, Cl. 99-445.000

Hunter Douglas Inc. *See*—
Fraser, Donald E., 5,009,258, Cl. 160-168.100

Hunter, Gregory H.; Wells, Benjamin A.; and Feldstein, Michael A., to Reflection Technology, Inc. Low vibration resonant scanning unit for miniature optical display apparatus. 5,009,473, Cl. 350-6.600

Huntley, William P., and Swanick, David J., to United States of America, Navy. High pulse repetition frequency radar early warning receiver. 5,010,341, Cl. 342-20.000

Hurley, Walter L. *See*—
Schuler, Linda A.; Gorski, Jack; Hurley, Walter L.; Bremel, Robert D.; and Rottman, Fritz M., 5,010,011, Cl. 435-252.300

Hutchings, Michael G. *See*—
McDonald, Edward; Salmon, Roger; Whittle, Alan J.; and Hutchings, Michael G., 5,010,200, Cl. 546-245.000

Hutchinson, Donald P. to EOL, Inc. Personal glucose monitor. 5,009,230, Cl. 128-633.000

Huth, Andreas *See*—
Braestrup, Claus T.; Nielsen, Mogens C.; Christensen, Joergen A.; Engelstoft, Mogens; Schou, Henning; Eder, Ulrich; Neef, Gunter; Huth, Andreas; Rahtz, Dieter; and Schmechen, Ralph, 5,010,077, Cl. 514-228.800

Hvozda, Carl K. *See*—
Karg, Kenneth A.; Hvozda, Carl K.; Neddermeyer, Robert N.; and Feld, Alexander, 5,009,148, Cl. 98-10.000

Hyland, George J., to Crane Co. Motor-driven pumps. 5,009,578, Cl. 417-365.000

Hyvarinen, Olli V. J. *See*—
Heimala, Seppo O.; Hyvarinen, Olli V. J.; and Metsarinta, Marja Leena, 5,009,870, Cl. 423-239.000

I-Stat Corporation *See*—
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Ibach, Harald *See*—
Boden, Karl; Ibach, Harald; and Linke, Udo, 5,009,865, Cl. 422-249.000

Ibe, Hiroyuki, and Uesugi, Toshiharu, to Shin-Etsu Handotai Company Limited. Recharging device for czochralski method. 5,009,864, Cl. 422-249.000

Ibsen, Robert L.; Chadwick, Thomas C.; and Pritchard, Sally A., to Den-Mat Corporation. Strong dental porcelain and method for its manufacture. 5,009,709, Cl. 106-35.000

Ichihara, Yasuo *See*—
Kirihara, Tomoo; Nakagawa, Ippei; Seki, Yoshinobu; Honda, Yutaka; and Ichihara, Yasuo, 5,009,751, Cl. 204-61.000

Ichikawa, Fumitoshi *See*—
Tokiwa, Yukio; Ichikawa, Fumitoshi; Nakamura, Naomi; Hirose, Syunichi; and Inokuchi, Haruhisa, 5,010,467, Cl. 363-37.000

Ichikawa, Mitsuo *See*—
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Idel, Karsten *See*—
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Serini, Volker; Freitag, Dieter; Westeppe, Uwe; Idel, Karsten; Grigo, Ulrich; Casser, Carl; Paetz, Klaus-Christian; and Hajek, Manfred, 5,010,163, Cl. 528-196.000

Idel, Karsten-Josef *See*—
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Idemitsu Petrochemical Co., Ltd. *See*—
Tomotsu, Norio, 5,010,151, Cl. 526-105.000

Iggulden, Jerry R. *See*—
Streck, Donald A.; and Iggulden, Jerry R., 5,009,368, Cl. 239-70.000.

Ihara, Hirokazu *See*—
Mori, Kinji; Kunai, Yuko; Akiyama, Masakazu; Kadoya, Tadaaki; Kawano, Katsumi; Miyamoto, Shoji; Nohmi, Makoto; Shingai, Sadanori; and Ihara, Hirokazu, 5,010,479, Cl. 364-200.000

Iida, Hideyo *See*—
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Iida, Shinobu; Fujiyama, Masaaki; and Yamada, Keisuke, to Fuji Photo Film Co., Ltd. Process for the preparation of magnetic recording medium. 5,009,929, Cl. 427-130.000

Iizuka, Nobuyuki; Hirose, Fumiyuki; Asahi, Naotatsu; and Kojima, Yoshitaka, to Hitachi, Ltd. Combustion apparatus for gas turbine. 5,009,070, Cl. 60-753.000

Ikada, Yoshito, and Gen, Shokyu, to Daicel Chemical Industries, Ltd. Polylactic acid fiber. 5,010,145, Cl. 525-415.000

Ikata, Yoshikatsu *See*—
Utsugi, Nobuo; Kihara, Hisashi; Mori, Shuichi; Fuse, Junichi; Miyake, Takashi; and Ikata, Yoshikatsu, 5,010,437, Cl. 360-137.000

Ikebe, Masaru *See*—
Shiba, Haruo; Ikebe, Masaru; and Ishida, Toshihiko, 5,010,435, Cl. 360-133.000

Ikeda Bussan Co., Ltd. *See*
Mouri, Takayuki, 5,009,469, Cl. 297-468.000

Ikeda, Hayato; Sawada, Masahiro; Nakamura, Norihiko; and Yokomachi, Naoya, to Kabushiki Kaisha Toyoda Jidoshokki Seisakushi. Lubricating oil supplying mechanism in swash plate type compressor. 5,009,286, Cl. 184-6.170

Ikeda, Hayato; Sawada, Masahiro; and Nakamura, Norihiko, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Thrust bearing and shoe lubricator for a swash plate type compressor. 5,009,574, Cl. 417-222.000

Ikeda, Hisami *See*—
Albino, Anthony Lloyd; Kenneth Ikeda, Hisami; and Old, Lloyd, 5,009,995, Cl. 435-7.230.

Ikeda, Kazunari, and Sanada, Koichi, to Bridgestone Corporation. Method of manufacturing member for use in tire including engaging wires between gears. 5,009,732, Cl. 156-177.000

Ikeda, Kenichi *See*—
Hasegawa, Minekazu; Ikeda, Kenichi; and Fujihira, Junichi, 5,009,464, Cl. 296-213.000

Ikeda, Kyoichi *See*—
Harada, Kinji; Ikeda, Kyoichi; Kuwayama, Hideki; Kobayashi, Takashi; Nishikawa, Tadashi; Watanabe, Tetsuya; and Yoshida, Takashi, 5,009,108, Cl. 73-704.000

Ikeda, Masaaki *See*—
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Ikeda, Miyuki *See*—
Ogino, Masanori; Yamada, Takeo; and Ikeda, Miyuki, 5,010,280, Cl. 315-366.000

Ikeda, Takeo *See* Ikeda, Takeo, Sushi forming method. 5,009,905, Cl. 426-297.000

Ikeda, Yasuhiro, to Shin-Etsu Handotai Co., Ltd. Semiconductor rod zone melting apparatus. 5,009,860, Cl. 422-250.000

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Mowforth, Clive W.; Bullock, James F.; Maternaghan, Trevor J.; and Harvey, Karen N., 5,009,991, Cl. 430-567.000

Ilmanen, Reino *See*—
LePisto, Matti; Ilmanen, Reino; Karlsson, Markku; and Laakso, Sauli, 5,009,016, Cl. 34-41.000

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Imamoto, Hiroshi *See*—
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Imanage, Fisuke *See*—
Ohkawa, Osamu; Tamahoko, Tetsuya; and Imanage, Fisuke, 5,009,296, Cl. 192-20.000

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Imhoff, Ray, and Seif, Sadraddin. Water conservation device. 5,009,572, Cl. 417-32.000

Imperial Chemical Industries PLC *See*—
McDonald, Edward; Salmon, Roger; Whittle, Alan J.; and Hutchings, Michael G., 5,010,200, Cl. 546-245.000
Ramshaw, Colin; and Winnington, Terence, 5,009,085, Cl. 62-476.000
Yeates, Steven G.; and Padget, John C., 5,010,121, Cl. 523-336.000
Yelland, Michael; and Conway, John, 5,010,192, Cl. 544-239.000

Imtech International, Inc. *See*—
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In Vitro Scientific Products, Inc. *See*—
Serkes, Jonathan M.; and Foschaar, William L., 5,010,013, Cl. 435-285.000

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Incorvia, Samuel A. *See*—
Cullen, John S.; Incorvia, Samuel A.; Nigon, Christopher S.; and Vaylen, Nicholas E., 5,009,308, Cl. 206-204.000

Induni, Michael I. Roll-up roof covering for automobiles with removable roof panels. 5,009,465, Cl. 296-219.000

Industrial Material Technology, Inc. *See*—
Castellano, Thomas P., 5,009,291, Cl. 188-71.600

Industrie Automation Sondertechnik GmbH & Co. *See*—
Muller, German, 5,009,793, Cl. 210-710.000

Ingersoll-Rand Company, *See*—
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Inline Connection Corporation *See*—
Goodman, David D.; and Domnitz, Robert, 5,010,399, Cl. 358-85.000.

Inoi, Takeshi, to Chisso Corporation. Antimicrobial agent composition. 5,010,109, Cl. 514-714.000

Inokuchi, Haruhisa *See*—
Tokiwa, Yukio; Ichikawa, Fumitoshi; Nakamura, Naomi; Hirose, Syunichi; and Inokuchi, Haruhisa, 5,010,467, Cl. 363-37.000

Inorganic Recycling Incorporated *See*—
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Inoue, Hiroshi; Yokono, Wataru; and Okuda, Yasuji, to Sakura Color Products Corp. Water base pigment ink compositions for use in marking pens. 5,009,536, Cl. 401-198.000

Inoue, Kiyoshi *See*—
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Inoue, Noriyuki; and Heki, Tatsuo, to Fuji Photo Film Co., Ltd. Direct positive photographic material. 5,009,993, Cl. 430-605.000

Inoue, Takashi *See*—
Sato, Izumi; Sato, Koji; and Inoue, Takashi, 5,009,103, Cl. 73-597.000

Inoue, Tetsuo *See*
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Inoue, Yoshinori; Kumanoya, Masaki; Komatsu, Takahiro; Konishi, Yasuhiro; and Dosaka, Katsumi, to Mitsubishi Denki Kabushiki Kaisha. Voltage boosting circuit and operating method thereof. 5,010,259, Cl. 307-482.000

Insalaco, Michael D. *See*—
Kubler, John M.; and Insalaco, Michael D., 5,009,106, Cl. 73-651.000

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Stiener, Pierre; and Steiner, Antoine, 5,010,578, Cl. 392-8.000

Institut Elektrosvarki Imeni E.O. Patona Akademii Nauk Ukrainskoi SSR *See*—
Paton, Boris E.; Utkin, Vladimir F.; Nedoseka, Anatoly Y.; Khromyak, Nikolai T.; Gorlitsyn, Nikolai V.; Tikhy, Viktor G.; Mezintsev, Evgeny D.; and Mezhuev, Nikolai N., 5,010,503, Cl. 364-569.000

Institut Francais Du Petrole *See*—
Petit, Laurent; Bournonville, Jean-Paul; Guth, Jean-Louis; Raatz, Francis; and Seive, Alain, 5,010,048, Cl. 502-61.000

Institute Francais du Petrole *See*—
Lessi, Jacques; Perreau, Philippe; Bary, Daniel; and Grard, Guy, 5,009,512, Cl. 374-6.000

Instituto Chimico Internazionale Dr. Giuseppe Rende S.r.l. *See*—
Antonaroli, Simonetta; Bianco, Armandodariano; Brufani, Mario; Lo Baido, Giuseppe; and Rende, Giorgio, 5,010,204, Cl. 548-128.000

Intech International, Inc. *See*—
Walter, Bruno H., 5,009,272, Cl. 175-56.000

Intel Corporation *See*—
Sit, Hon P.; Galbi, David; and Chan, Alfred K., 5,010,508, Cl. 364-748.000

Inter-Link Communications Inc. *See*—
Gerke, David B.; and MacDonald, Michael, 5,009,384, Cl. 248-343.000

Interconneet Devices, Inc. *See*—
Langgard, Ulf R.; and Thurston, William E., 5,009,613, Cl. 439-482.000

Interlock Corporation *See*—
Mobley, Dewey F.; Peterson, Robert G., Sr.; and LaCava, James E., 5,009,615, Cl. 439-595.000

Internacional de Technicas y diseno, S.A. *See*—
Perez Blanco, Juan M., 5,009,415, Cl. 272-114.000

International Business Machines Corp. *See*
Biasillo, Alberto; and Taylor, Richard C., 5,010,491, Cl. 364-474.280
Boudon, Gerard; Mollier, Pierre; Suez, Jean-Paul; Ong, Teng Tannhof, Pascal; and Wallart, Franck, 5,010,257, Cl. 307-446.000
Davis, Gordon T., 5,010,476, Cl. 364-200.000
Infield, John A.; and Kalter, Howard L., 5,010,524, Cl. 365-205.000
Gansauge, Peter; Kreuter, Volker; and Schettler, Helmut, 5,010,389, Cl. 357-67.000
Granger, Yves; and Wind, Daniel, 5,010,546, Cl. 370-95.100
Hartstein, Allan M.; and Koch, Roger H., 5,010,512, Cl. 364-807.000
Kippenhan, B. William; and Maholick, Andrew W., 5,010,514, Cl. 364-900.000.
Nagy, Michael E., 5,010,344, Cl. 341-65.000
Nagy, Michael E., 5,010,345, Cl. 341-65.000

International Dioxcide, Inc. *See*—
Kelley, Joseph M.; Kucher, Donald C.; and Mavurnik, George, 5,009,875, Cl. 423-477.000

International Fuel Cells *See*—
Lipman, Kenneth, and Young, Douglas G., 5,010,470, Cl 363-132 000
International Fuel Cells Corporation *See*
Guthrie, Robin J., Katz, Murray, and Schroll, Craig R., 5,009,968 Cl 429-26 000
Scheffler, Glenn W., 5,009,967, Cl 429-23 000
International Immunoassay Laboratories, Inc *See*—
Shah, Vipin D., Kulkarni, Padmaker V. and Miranda, Quirinus R 5,009,996, Cl 435-7 000
International Superconductor Corp *See*
Hed, Aharon Z., 5,010,311, Cl 335 216 000
Interuniversitair Micro-Elektronica Centrum VZW *See*
Dierickx, Bart M. H. L., 5,010,245, Cl 250-208 100
Intevep, S.A *See*—
Galiasso, Roberto, Morales, Alfredo, and Salazar, Jose A. 5,009,768, Cl 208-89 000
Intospace GmbH *See*—
Plaas-Link, Andreas, 5,009,861, Cl 422-245 000
Iossi, Daryl R., Cook, Lacy G., and Koppensteiner, Alfred, to Hughes Aircraft Company Wide field all reflective multiple field of view telescope 5,009,494, Cl 350-620 000
Irvine, Bruce G. R *See*—
Irvine, Bruce W. and Irvine, Bruce G. R., 5,009,455, Cl 285-106 000
Irvine, Bruce W., and Irvine, Bruce G. R veal 5,009,455, Cl 285-106 000
Iseler, Stanley J., Beauch, Howard D., Everett, Benjamin H. II and Sutorik, John P., to General Motors Corporation Manual control for adjustable steering column 5,009,120, Cl 74-493 000
Ishida, Hisaki *See*—
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Ishida, Junji *See*—
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Ishida, Takashi, and Kondo, Masao, to Yamaha Corporation Automatic performance apparatus having automatic synchronizing function 5,009,145, Cl 84-612 000
Ishida, Tokuji, Norita, Toshio, and Hasegawa, Jun, to Minolta Camera Kabushiki Kaisha Image sensing system, 5,010,409, Cl 358-213 190
Ishida, Tomoyuki, to NEC Corporation Main memory control system for virtual machine 5,010,481, Cl 364-200 000
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Ishiguro, Takashi *See*—
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Ishii, Kazuo *See*—
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Ishii, Norio, to Fuji Jukogyo Kabushiki Kaisha Spark plug arrangement in an overhead camshaft engine 5,009,204, Cl 123-193 00H
Ishii, Takaaki *See*—
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Ishii, Tatsuya, to Mitsubishi Denki Kabushiki Kaisha Semiconductor memory device with two storage nodes 5,010,379, Cl 357-23 600
Ishikawa Gasket Co., Ltd *See*—
Udagawa, Tsunekazu, 5,009,438, Cl 277-235 00B
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Isuzu Motors Limited *See*—
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Ito, Atsushi *See*—
Enari, Hiroyuki, Kumazawa, Satoru, Shimizu, Susumu, Ito, Atsushi, Sato, Nobuo, and Saishoji, Toshihide, 5,010,206, Cl 548-262 200
Itoh, Akira and Haino, Kozo, to Mitsubishi Paper Mills Limited Electrophotographic photoreceptor 5,009,976, Cl 430-59 000
Itoh, Atsushi *See*—
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Itoh, Atuo *See*—
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Itoh, Tatsuo, to Advanced Micro Devices, Inc. Circuit for multiplying the frequency in one series of input pulses 5,010,561, Cl 377-47 000
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Ivankovits, John C *See*—
Ellison, Thomas L., Roberts, David A., Ivankovits, John C. and Norman, John A. T., 5,009,725, Cl 148-23 000
Ivey, John S., Bateman, Paul M., Clauss, Julius A., Cole, Edward H., Jr. and Mott, Philip J., to Borg Warner Automotive Inc. CVT chain-belt 5,009,631 Cl 474-213 000
Ivoditov, Albert N. *See*—
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Iwahashi, Takashi, to Aikoh Co., Ltd. Deodorant composition in the form of a gel 5,009,887, Cl 424-76 100
Iwaki, Takashi *See*—
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Iwata, Takao and Hotta, Tetsuo, to Hashimoto Forming Industry Co. Ltd. Window molding member for automobiles 5,009,460, Cl 296-93 000
J. C. Pardo and Sons *See*—
Gabriele, Valentino, 5,009,510, Cl 366-311 000
J. I. Case Company *See*—
McSweeney, Michael A., and Stufflebeam, John F., 5,009,345, Cl 222-556 000
J. M. Huber Corporation *See*—
Kosin, John A., Mooney, Gerry, Tarquini, Michael A., and Garcia, Rod A., 5,009,809, Cl 252-350 000
Wason, Satish K., Mooney, Gerry, Andrews, Claude R., Tarquini, Michael E., Kosin, John A., and Garcia, Rod A., 5,009,810, Cl 252-350 000
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Jacob, Jean-Baptiste, to Alcatel Cit Asynchronous time-division multiservice digital satellite center for connecting subscribers 5,010,545, Cl 370-56 000
Jacobs, James R., to Duke University Method and apparatus for model-based control of an open-loop process, 5,010,473, Cl 364-150 000
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Janssens, Frans E. *See*—
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Jantzen, Ellen E. Shape giving system for soft purses 5,009,319, Cl 206-544 000
Japan as represented by general director of Agency of Industrial Science and Technology *See*—
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Japan Aviation Electronics Industry Limited *See*—
Okada, Kenichi, Nishino, Masashi, and Tanigawa, Shu, 5,009,480, Cl 350-96 150
Sasaki, Hiroyuki, Shimamura, Masato, Noda, Juichi, Hanafusa, Hiroaki, and Takeuchi, Yoshiaki, 5,009,478, Cl 350-96 150
Japan Synthetic Rubber Co., Ltd *See*—
Umeda, Itsuki, Takashima, Masaaki, Zama, Yoshiaki, Takemura, Yasuhiko, Funabashi, Yuichi, Watanabe, Junichiro, Takeda, Kiyoshi, and Matsumoto, Makoto, 5,010,137, Cl 525-104 000
Jarrett, Guy R Separable multi-layered wiping mitten 5,008,969, Cl 15-227 000
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Jaynes, Craig B. *See*—
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Jochum, Günter, to General Motors Corporation Air inlet chamber for a mixture former of a motor vehicle 5,009,681, Cl 55-416 000
Joergensen, Tage W. and Christensen, Leif, to Slagteriernes Forskningsinstitut System for the stalling of animals 5,009,191, Cl 119-20 000
Johansen, Keld Pedersen, Erik, and Tops e, Haldor F. A., to Haldor Topsoe A/S Method for the preparation of superconducting products 5,010,054, Cl 505-1 000
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Johinke, Bruce L., to South Australian Co-Operative Bulk Handling Limited Reducing hoop stress in silos 5,009,046, Cl 52-197 000
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Back, Anthony C., 5,009,437, Cl 277-88 000
John D. Brush & Co., Inc *See*—
Beattie, Patrick J., Oliveri, Andrew L., and Sylvester, Richard J., 5,009,090, Cl 70-326 000
John, Thomas, and Bock, Georg, to MAN Roland Druckmaschinen AG Offset printing machine system 5,009,158, Cl 101-219 000
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Sheperd, Robin G., 5,010,196, Cl 544-335 000
Johnson, Bruce R., to Muskegon Automation Equipment, Inc Brake shoe rivet press 5,008,995, Cl 29-252 000
Johnson, Delwin O., to General Dynamics Corporation Ultrasonic cure monitoring of advanced composites 5,009,104, Cl 73-597 000
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Johnson, Harlan B. Wiedrich, Charles R. Allen, Ernie L., and Howell, Peter P., to PPG Industries, Inc Calcium hypochlorite article 5,009,806 Cl 252-187 280
Johnson, Harlan B., Laferty, Samuel B., Wagner Melvin P., and Mohnot, Shantilal M., to PPG Industries, Inc Gas recombinant separator 5,009,971, Cl 429-252 000
Johnson, Hewitt M Fireplace log holder and alarm 5,009,217, Cl 126-152 00B
Johnson, Peter W *See*—
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Johnson, Richard E., Kabcenell, Amy R. and DeLuca, Joan S., to Motorola, Inc. Multiple messaging using a single selective call address 5,010,547, Cl 370-94 100
Johnson, Roscoe F. Oil spill control 5,009,179, Cl 114-229 000
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Jollenbeck, Martin, Berendt, Hans-Ulrich and Fringeli, Werner, to Ciba-Geigy Corporation Aqueous dispensions of 2-(2'-hydroxyphenyl)benzotriazoles 5,009,669, Cl 8-573 000
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Wanger, Mark E., Methlie, Jennifer L., Christie, Leslie G., Dauner, Daniel R. Domel, Douglas R., Jones, David P., Oliver, Thomas C., and Stavely, Donald J., 5,010,536, Cl 369-36 000
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Jones, Richard L., to Conoco Inc Process for producing a petroleum wax composition 5,010,126, Cl 524-349 000
Jones, William R., Jr., to Columbian Chemicals Company Axial reactor with coaxial oil injection 5,009,854, Cl 422-150 000
Jonker, Robert G. C Display device for flat articles 5,009,335, Cl 211-55 000
Jons, Roena B., to Braun, Anthony E., a part interest Method of storing thread in an embroidery thread-holder 5,009,054, Cl 53-397 000
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Julian, John C., and Phelps, David S., to Lamb-Weston, Inc Blade assembly for slicing food products 5,009,141, Cl 83-857 000
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Kabushiki Kaisha Kobe Seiko Sho *See*—
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Kanno, Masayuki, 5,010,581, Cl 382-56 000
Katoh, Ruichi, 5,010,382, Cl 357-34 000
Matsui, Masataka, 5,010,521, Cl 365-189 010
Minagawa, Hidenobu, Tatsumi, Yuuichi, Iwahashi, Hiroshi, Asano Masamichi, Nakai, Hiroto, and Imai, Mizuho, 5,010,520, Cl 365-174 000
Minami, Fumihiro, 5,010,031, Cl 437-51 000
Moore, John F., 5,010,254, Cl 250-551 000
Ohkoshi, Seizi, and Kuwahara, Eiji, 5,009,078, Cl 62-160 000
Okoshi, Seiji, and Kuwahara, Eiji, 5,009,077, Cl 62-160 000
Oto, Hideki, 5,010,400, Cl 358-86 000
Sakanishi, Masayuki, and Ishii, Takaaki, 5,010,577, Cl 381-104 000
Shioyama, Tsutomu, Minakami, Ko, Fujii, Takao, and Ohtomi, Koichi, 5,009,838, Cl 376-310 000
Takeuchi, Ryoji, 5,010,541, Cl 369-107 000
Tanaka, Shigeru, 5,010,390, Cl 357-72 000
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Tokiwa, Yukio, Ichikawa, Fumitoshi, Nakamura, Naomi, Hirose Syunichi, and Inokuchi, Haruhisa, 5,010,467, Cl 363-37 000
Ueda, Makoto, Ando, Yoshihira Sakurai, Shungo, and Yoshioka, Ritsuo, 5,009,840, Cl 376-435 000
Usami, Kimiyoshi, and Ishii, Aya, 5,010,258, Cl 307-469 000
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Kabushiki Kaisha Toyoda Jidoshokki Seisakushi *See*—
Ikeda, Hayato, Sawada, Masahiro, Nakamura, Norihiko, and Yokomachi, Naoya, 5,009,286, Cl 184-6 170
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Ikeda, Hayato, Sawada, Masahiro and Nakamura, Norihiko, 5,009,574, Cl 417-222 000
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Koga, Shigeyuki, and Sugiue, Shigeki, 5,009,172, Cl 110-242 000

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Yasui, Mitsuo, 5,009,188, Cl. 119-3.000

Kadono, Osamu, and Ushizima, Kunio, to Hitachi, Ltd. Automatic cash transaction system and method 5,010,238, Cl. 235-379.000

Kadoya, Tadaaki *See*—
Mori, Kinji, Kunai, Yuko, Akiyama, Masakazu, Kadoya, Tadaaki, Kawano, Katsumi, Miyamoto, Shoji, Nohmi, Makoto, Shingai, Sadanori, and Ihara, Hirokazu, 5,010,479, Cl. 364-200.000

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Kakinuma, Yuji *See*—
Fukushima, Yoichi, Fujita, Minoru, Kakinuma, Yuji, and Haga, Toshio, 5,010,243, Cl. 235-488.000

Kakiuchi, Shinichi *See*—
Yamagishi, Hisashi, Kakiuchi, Shinichi, and Tomita, Seisuke, 5,009,428, Cl. 273-232.000

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Waldeck, Harald, Benson, Werner, Zeugner, Horst, Wolf, Klaus Ullrich, Gregory, Peter-Colin, Hamminga, Derk, and van Wijngaarden, Ineke, 5,010,076, Cl. 514-221.000

Kalina, Jaroslav *See*—
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Kalman, Thomas I., to Research Foundation of State University of N.Y. The Compositions and methods comprising 2-mercaptomethylglutaric acid derivatives 5,010,103, Cl. 514-495.000

Kalotay, Paul, Bruck, Robert, Emch, Arnold, and Martella, Donald, to Micro Motion, Inc. Flow tube drive circuit having a bursty output for use in a coriolis meter 5,009,109, Cl. 73-861.380

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Fifield, John A., and Kalter, Howard L., 5,010,524, Cl. 365-205.000

Kamayachi, Yuichi, and Inagaki, Syoji, to Taiyo Ink Manufacturing Co., Ltd. Resist ink composition 5,009,982, Cl. 430-280.000

Kamei, Yasuo *See*—
Akizawa, Nobuyuki, Kudo, Yasunori, Kanai, Toshiyuki, Kamei, Yasuo, Oyama, Nobuaki, and Negishi, Akihito, 5,009,355, Cl. 227-114.000

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Kamijo, Eiji *See*—
Ogata, Kiyoshi, Ando, Yasunori, and Kamijo, Eiji, 5,009,923, Cl. 427-38.000

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Shima, Yoshinobu, and Kamio, Hiroshi, 5,009,863, Cl. 422-249.000

Kamishiiri, Nobuyuki, Kaneda, Manabu, Tanaami, Toshiyasu, and Maeda, Miho, to Kao Corporation Surface material for sanitary articles and its preparing method 5,009,651, Cl. 604-378.000

Kamiya, Takashi *See*—
Yamauchi, Hiroshi, Sugiyama, Isao, Saito, Isao, Nomoto, Seiichiro, Kamiya, Takashi, Machida, Yoshimasa, and Negi, Shigeto, 5,010,188, Cl. 540-222.000

Kamiyama, Masayuki *See*—
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Kamizawa, Koh *See*—
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Kamrat, Esko, to Janesko Oy Arrangement for displacing a measuring head of a measuring means into and from a process space 5,009,113, Cl. 73-866.500

Kanai, Seita *See*—
Edahiro, Takeshi, and Kanai, Seita, 5,009,449, Cl. 280-690.000

Kanai, Toshiyuki *See*—
Akizawa, Nobuyuki, Kudo, Yasunori, Kanai, Toshiyuki, Kamei, Yasuo, Oyama, Nobuaki, and Negishi, Akihito, 5,009,355, Cl. 227-114.000

Kanaya, Yasuhiko *See*—
Arai, Kunio, and Kanaya, Yasuhiko, 5,010,232, Cl. 219-121.700

Kanda, Makoto *See*—
Mitarai, Tadashi, and Kanda, Makoto, 5,009,590, Cl. 432-121.000

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Hasegawa, Takanori, Abe, Nobuyuki, Hibara, Toru, Hirose, Toshihiko, Kanda, Takashi, Saito, Hiroshi, Oshima, Masaki, and Nakazawa, Eiji, 5,010,420, Cl. 358-471.000

Kandachi, Takayoshi, to Central Glass Company, Limited. Sintered glass body with opaquely mottled pattern and method of producing same 5,010,042, Cl. 501-32.000

Kane, John M. *See*—
Palfreyman, Michael G., Wiech, Norbert L., Cheng, Hsien C., and Kane, John M., 5,010,072, Cl. 514-183.000

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Kanehira, Makoto, Nakagawa, Takerou, Tsubakimoto, Yasumasa, Tanaka, Kouji, Takahashi, Toshio, and Ikeda, Masaaki, to Tsubakimoto Chain Co. Chain formed by link elements of identical shape 5,009,630, Cl. 474-211.000

Kanehisa, Osam *See*—
Migita, Masahito, Uda, Tsuyoshi, Kanehisa, Osam, and Shiiki, Masatoshi, 5,010,517, Cl. 365-114.000

Kaneko, Toshimi, Morinaga, Tetsuya, and Hatakenaka, Tetsuo, to Murata Manufacturing Co., Ltd. Chip coil 5,010,313, Cl. 335.296.000

Kaneshige, Masatoshi *See*—
Asanuma, Masato, and Kaneshige, Masatoshi, 5,009,187, Cl. 118-658.000

Kang, Sung H., to Sung Ho Korea Company Electronic switching ballast for a fluorescent lamp 5,010,278, Cl. 315-224.000

Kanno, Masayuki, to Kabushiki Kaisha Toshiba Data processing apparatus having function for retrieving abstract and original image data 5,010,581, Cl. 382-56.000

Kansai Paint Co., Ltd. *See*—
Morita, Kaoru, and Shioda, Atsushi, 5,010,149, Cl. 525-481.000

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Kamishiiri, Nobuyuki, Kaneda, Manabu, Tanaami, Toshiyasu, and Maeda, Miho, 5,009,651, Cl. 604-378.000
Watanabe, Taichi, Ogino, Hidekazu, Hirota, Hajime, Koshika, Tomohito, Moriya, Naoko, and Nozaki, Toshio, 5,009,813, Cl. 252-545.000

Kappas, Attallah, and Drummond, George S., to Rockefeller University, The Use of liposomes as carriers for metalloporphyrins 5,010,073, Cl. 514-185.000

Karasawa, Akira *See*—
Oshima, Etsuo, Obase, Hiroyuki, Karasawa, Akira, Kubo, Kazuhiro, Miki, Ichiro, and Ishii, Akio, 5,010,087, Cl. 514-307.000
Oshima, Etsuo, Obase, Hiroyuki, Karasawa, Akira, Kubo, Kazuhiro, Miki, Ichiro, and Ishii, Akio, 5,010,104, Cl. 514-510.000

Karg, Kenneth A., Hvozda, Carl K., Neddermeyer, Robert N., and Feld, Alexander, to AEG Westinghouse Transportation Systems, Inc. Vehicle air exchange according to passenger load 5,009,148, Cl. 98-10.000

Karl H. Sengewald KG *See*—
Kruessel, Bernhard, 5,009,632, Cl. 493-189.000

Karl Lautenschlager GmbH & Co. KG *See*—
Lautenschlager, Karl, and Lautenschlager, Gerhard W., 5,008,977, Cl. 16-278.000

Karl Storz Endoscopy-America, Inc. *See*—
Damgaard-Iversen, Karsten, Morris, Robert C., Chin, Timothy C. and Kuper, Jerry W., 5,009,658, Cl. 606-128.000

Karlsson, Markku *See*—
LePisto, Matti, Ilmanen, Reijo, Karlsson, Markku, and Laakso, Sauli, 5,009,016, Cl. 34-41.000

Karn, Donald L. *See*—
Goodwin, Brent E., Karn, Donald L., and Mistyurik, John D., 5,009,739, Cl. 156-384.000

Karsner, Grant G. *See*—
Bartilucci, Mark P., Karsner, Grant G., and Tracy, William J., III, 5,009,767, Cl. 208-85.000

Kasahara, Nobuo, Watanuki, Masayoshi, Maeno, Satoru, and Ohkuni, Masato, to Ricoh Company, Ltd., and Shinko Electric Co., Ltd. Black-and-white and color copier operable at different processing speeds 5,010,372, Cl. 355-313.000

Kashuba, Glen A. *See*—
Van Syckle, Peter B., and Kashuba, Glen A., 5,009,666, Cl. 623-23.000

Kast, Juergen *See*—
Keil, Michael, Schirmer, Ulrich, Kast, Juergen, Kolassa, Dieter, Wuerzer, Bruno, Meyer, Norbert, Rademacher, Wilhelm, Jung, Johann, and Carlson, Dale R., 5,009,702, Cl. 71-100.000

Katagawa, Hiromi, to Matsushita Electric Industrial Co., Ltd. Telephone-call distributor 5,010,569, Cl. 379-210.000

Katagiri, Shoichi *See*—
Yoshio, Junichi, Hosaka, Sumio, Matsuoka, Hisao, Tsuda, Youichirou, Katagiri, Shoichi, and Nomura, Satoru, 5,010,417, Cl. 358-335.000

Katahashi, Eriko *See*—
Matsubara, Shinichi, Uehara, Masafumi, Bunya, Shinichi, and Katahashi, Eriko, 5,009,981, Cl. 430-175.000

Katamoto, Tsutomu *See*—
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Katcherian, Ricky V., to General Motors Corporation Window reveal molding 5,009,462, Cl. 296-201.000

Kato, Eiichi, and Ishii, Kazuo, to Fuji Photo Film Co., Ltd. Electrophotographic photoreceptor 5,009,975, Cl. 430-96.000

Kato, Eiji *See*—
Harada, Kyouji, Kato, Eiji, Sakaguchi, Yoshikazu, Watanabe, Suzuaki, and Hoshino, Akira, 5,009,290, Cl. 188-71.500

Kato, Masaaki, to Fujitsu Limited Packet switching system 5,010,546, Cl. 370-85.110

Kato, Mikio *See*—
Kuzuya, Susumu, Shimizu, Seiji, Kato, Mikio, Ishikawa, Yujiro, Sakai, Takashi, and Yuki, Eiji, 5,009,530, Cl. 400-188.000

Kato, Osami *See*—
Otsuki, Hajime, Kusano, Hideaki, and Kato, Osami, 5,010,362, Cl. 355-74.000

Kato, Rentaro, and Suzuki, Tatsuya, to Tokai Rubber Industries, Ltd. Fluid-filled elastic mount 5,009,403, Cl. 267-140.100

Kato, Takafumi, to Alps Electric Co., Ltd. Push button switch with actuator for applying transverse force to buckling spring 5,010,219, Cl. 200-408.000

Katoh, Riichi, to Kabushiki Kaisha Toshiba Heterojunction bipolar transistor having double hetero structure 5,010,382, Cl. 357-34.000

Katoh, Takayuki, to Mitsubishi Denki Kabushiki Kaisha Method of making a semiconductor device operating in high frequency range 5,010,019, Cl. 437-8.000

Katou, Hiromi, and Kobayahsi, Hirokazu, to Kabushiki Kaisha Kenwood Packet data generator 5,010,549, Cl. 370-110.100

Katz, Frances R. *See*—
Mauro, David J., Furesik, Susan L., Katz, Frances R., Faron, Eugene J., II, Gottneid, David J., and Pustek, Frank J., 5,009,911, Cl. 426-578.000

Katz, Marcella M. Human lifelike dolls, mannequins and humanoids and pet animal dolls and methods of individualizing and personalizing same 5,009,626, Cl. 446-391.000

Katz, Michael Method of evaluating meconium content of amniotic fluid 5,009,507, Cl. 356-421.000

Katz, Murray *See*—
Guthrie, Robin J., Katz, Murray, and Schroll, Craig R., 5,009,968, Cl. 429-26.000

Katznelson, Ron D., to Titan Linkabit Corporation, and Cable/Home Communication Corporation Metering retrieval of encrypted data stored in customer data retrieval terminal 5,010,571, Cl. 380-4.000

Kaufmann, Clemens *See*—
Gugel, Bernd, Kaufmann, Clemens, Kitzberger, Herbert, and Rohrer, Kurt, 5,009,529, Cl. 400-124.000

Kaufmann, Dieter, and Gallenkamp, Bernd, to Bayer Aktiengesellschaft Process for the preparation of substituted 2-chloropyridines 5,010,201, Cl. 546-316.000

Kawada, Haruki *See*—
Eguchi, Ken, Kawada, Haruki, Sakai, Kunihiro, Tomida, Yoshinori, Matsuda, Hiroshi, Tsuboyama, Akira, Takimoto, Kiyoshi, and Takamatsu, Osamu, 5,009,489, Cl. 350-341.000

Kawada, Kazuo *See*—
Okumoto, Takaharu, Hayashida, Tadashi, Kawada, Kazuo, and Hayashi, Tetsuo, 5,009,423, Cl. 273-80.200

Kawagoe, Makoto *See*—
Sugimoto, Atsushi, Nakano, Osamu, Yasuda, Shigeru, Maeda, Chikatoshi, Ozone, Toshio, and Kawagoe, Makoto, 5,009,843, Cl. 420-112.000

Kawaguchi, Fumiaki *See*—
Enari, Masahiko, Shikichi, Satoshi Kawaguchi, Fumiaki, Suzuki, Kenichi, Usui, Masayuki, Matsuoka, Hiroshi, Matsuoka, Kazuhiko, Hosoya, Hideki, Aoki, Akio, and Minoura, Kazuo, 5,010,534, Cl. 369-32.000

Kawaguchi, Takayuki, Shiro, Takashi, Iwata, Kaoru, and Daido, Takahiro, to Teijin Limited Naphthalocyanine based compound and optical recording medium containing the same 5,009,986, Cl. 430-495.000

Kawai, Satoshi *See*—
Hiraoka, Takeshi, Takeguchi, Shunsuke, and Kawai, Satoshi, 5,009,123, Cl. 74-567.000

Kawakami, Toshikatsu, Fukuda, Shin, Shinbo, Hiroyasu, Unemura, Toyoaki, Sakamoto, Ken, and Kondo, Tomoji, to Matsushita Electric Industrial Co., Ltd. Apparatus for receiving character multiplex broadcasting 5,010,406, Cl. 358-147.000

Kawakubo, Hiroaki *See*—
Ueyama, Satoshi, Kawakubo, Hiroaki, Isoda, Satoru, and Maeda, Mitsuo, 5,010,451, Cl. 361-504.000

Kawamura, Hideaki, Fujibayashi, Kentaro, and Hitaka, Yosato, to Fanuc Ltd. Numerical control system 5,010,285, Cl. 318-569.000

Kawamura, Hideo, to Isuzu Motors Limited Electromagnetically operated valve assembly for use in internal combustion engine 5,009,202, Cl. 123-90.110

Kawamura, Hideo, to Isuzu Ceramics Research Institute, Co., Ltd. Electromagnetic force valve driving apparatus 5,009,389, Cl. 251-129.100

Kawamura, Katsumi, to Pioneer Electronic Corporation Pickup driving device for disk player 5,010,582, Cl. 388-815.000

Kawana, Shigeyuki, to Casio Computer Co., Ltd. IC card system for preventing unauthorized data alteration 5,010,237, Cl. 235-379.000

Kawano, Katsumi *See*—
Mori, Kinji, Kunai, Yuko, Akiyama, Masakazu, Kadoya, Tadaaki, Kawano, Katsumi, Miyamoto, Shoji, Nohmi, Makoto, Shingai, Sadanori, and Ihara, Hirokazu, 5,010,479, Cl. 364-200.000

Kawasaki Steel Corporation *See*—
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KB Lighting, Inc. *See*—
Weber, Walter K., 5,009,325, Cl. 220-374.000

Keil, Michael, Schirmer, Ulrich, Kast, Juergen, Kolassa, Dieter, Wuerzer, Bruno, Meyer, Norbert, Rademacher, Wilhelm, Jung, Johann, and Carlson, Dale R., to BASF Aktiengesellschaft Cyclohexenone compounds and use as herbicides or as plant growth regulators 5,009,702, Cl. 71-100.000

Kelkenberg, Heike, Ruback, Wulf, and Engel, Klaus, to Huls Aktiengesellschaft Use of n-polyhydroxyalkyl fatty acid amides as thickening agents for liquid aqueous surfactant systems 5,009,814, Cl. 252-548.000

Keller, John A., Traylor, Barry S., and Tickner, Robert H., to Unisys Corp. Multi-event mechanism for queuing happened events for a large data processing system 5,010,482, Cl. 364-200.000

Keller, Reinhold *See*—
Wullbrandt, Dieter, Keller, Reinhold, Schlingmann, Merten, Holla, Wolfgang, and Schneider, Manfred, 5,010,012, Cl. 435-280.000

Kelley, Joseph M., Kucher, Donald C., and Mayurnik, George, to International Dioxcide, Inc. Process of preparing clorine dioxide and apparatus therefor 5,009,875, Cl. 423-477.000

Kelly, John W., to Haskel, Inc. Method for radially expanding and anchoring sleeves within tubes 5,009,002, Cl. 29-890.031

Kelly, Kenneth C., to Hughes Aircraft Company Slot radiator assembly with vane tuning 5,010,351, Cl. 343-771.000

Kendall Company, The *See*—
Steigerwald, Carl J., 5,009,391, Cl. 251-149.100
Wortley, Ronald W., and Beattie, David C., 5,009,636, Cl. 604-43.000

Kenny, Thomas J., to Westinghouse Electrical Corp. Sampled digital filter system 5,010,507, Cl. 364-724.010

Kensinger, Jesse P. *See*—
Langenbeck, Keith A., and Kensinger, Jesse P., 5,009,053, Cl. 53-58.000

Keough, Laurence J., to Pitney Bowes Inc. Sorting system for organizing randomly ordered route grouped mail in delivery order sequence 5,009,321, Cl. 209-3.100

Kepplinger, Leopold W *See*—
Glockler, Gerhard, Muller, Heinz, Kepplinger, Leopold W., Matzawrakos, Panajiotis, Koch, Erwin, and Auberger, Heinrich, 5,009,397, Cl. 266-197.000

Kernforschungsanlage Julich GmbH *See*—
Boden, Karl, Ibach, Harald, and Linke, Udo, 5,009,865, Cl. 422-249.000

Kernosky, Stephen K *See*—
Bilsbury, Stephen J., Dennis, William G., Jr. and Kernosky, Stephen K., 5,009,166, Cl. 102-516.000

Kerr, E. Michael, Connelly, Lawrence J., Roe, William J., and Vallowe, Robert M., to Nalco Chemical Company Crystal modification in wet process phosphoric acid production 5,009,873, Cl. 423-320.000

Kerr-McGee Corporation *See*—
Nelson, Stephen R., and Hood, Richard I., 5,009,772, Cl. 208-309.000

Kersh, David V., III *See*—
Norwood, Roger D., and Kersh, David V., III, 5,010,260, Cl. 307-482.100

Kesselman, Martin *See*—
Giangano, David A., Kesselman, Martin, Boeskor, Steven, and Celona, Anthony R., 5,010,339, Cl. 341-164.000

Kessler, David L *See*—
Esola, John L., and Kessler, David L., 5,009,245, Cl. 137-116.500

Ketterman, Sylvan R., to General Motors Corporation Vehicle lamp ventilation system 5,010,453, Cl. 362-61.000

Keyes, Denis E *See*—
Aronoff, Marvin S., Keyes, Denis E., and Hahn, Robert C., Sr., 5,009,648, Cl. 604-332.000

Keymling, Michael, to Fresenius, AG Gastric/duodenal/jejunal catheter for percutaneous enternal feeding 5,009,639, Cl. 604-96.000

Khandaghabadi, Farrokh *See*—
Coppola, Richard, and Khandaghabadi, Farrokh, 5,010,335, Cl. 340-870.280

Khelifa, Noureddine *See*—
Schwetje, Norbert, Sizmann, Rudolf, and Khelifa, Noureddine, 5,009,071, Cl. 62-4.000

Khromyak, Nikolai T *See*—
Paton, Boris E., Utkin, Vladimir F., Nedoseka, Anatoly Y., Khromyak, Nikolai T., Gorlitsyn, Nikolai V., Tikhy, Viktor G., Mezintsev, Evgeny D., and Mezhuev, Nikolai N., 5,010,503, Cl. 364-569.000

Kida, Michio, Arai, Yoshiaki, and Sahira, Kensho, to Mitsubishi Kinzoku Kabushiki Kaisha Apparatus and process for growing crystals of semiconductor materials 5,009,862, Cl. 422-249.000

Kienzler, Dieter *See*—
Grob, Ferdinand, Kienzler, Dieter, Linder, Ernst, Potschin, Roger, and Stutzenberger, Heinz, 5,009,064, Cl. 60-276.000

Kigami, Takeo *See*—
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Kihara, Hisashi *See*—
Utsugi, Nobuo, Kihara, Hisashi, Mori, Shuichi, Fuse, Junichi, Miyake, Takashi, and Ikata, Yoshikatsu, 5,010,437, Cl. 360-137.000

Kijima, Takao, Edahiro, Takeshi, Koyama, Toshihide, and Taniguchi, Haruyuki, to Mazda Motor Corporation Vehicle suspension system 5,009,448, Cl. 280-673.000

Kikuta, Hikaru *See*—
Hanai, Kazumichi, Mine, Koichi, and Kikuta, Hikaru, 5,009,575, Cl. 417-244.000

Kikuyama, Hirohisa *See*—
Ohmi, Tadahiro, Miki, Masahiro, Kikuyama, Hirohisa, and Maeno, Matagoro, 5,009,963, Cl. 428-472.200

Killinger, Erich, to Dambach-Werke GmbH Warning light device 5,010,319, Cl. 340-472.000

Kim, Jeong Y., to Sang Wook Suh International Output control circuit of a 4-burner electronics induction heating cook system and a control method thereof 5,010,223, Cl. 219-10.770

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Kim, Tai K., and Vanderpool, Clarence D., to GTE Products Corporation. Method for removing organic and tungsten from sodium sulfate solution. 5,009,788, Cl. 210-639.000

Kimball, Donald B., Jr. *See*—
Kruse, Jurgen M., and Kimball, Donald B., Jr., 5,010,125, Cl. 524-308.000

Kimberly-Clark Corporation *See*—
Bernardin, Leo J., 5,009,650, Cl. 604-378.000
Hossain, Shafi U., and Blaney, Carol A., 5,009,745, Cl. 162-5.000
Hossain, Shafi U., and Blaney, Carol A., 5,009,746, Cl. 162-5.000

Kimijima, Masami. *See*—
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Kimura, Kenji. *See*—
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Kimura, Hiroshi. *See*—
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Kimura, Tomohiro. *See*—
Honda, Mitsuru, Koike, Atsushi, Kimura, Tomohiro, Ogawa, Kyosuke, and Murai, Keiichi, 5,009,974, Cl. 430-69.000

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Vrzalik, John H., 5,008,965, Cl. 5-61.000

King, Raymond A., to B&W Fuel Company. Nuclear fuel assembly bottom nozzle plate. 5,009,839, Cl. 376-352.000

Kingsley, Jeffery P. *See*—
Weise, Mark K., Kingsley, Jeffery P., and Litz, Lawrence M., 5,009,816, Cl. 261-21.000

Kinjoh, Naoto. *See*—
Murakami, Tokumichi, Asai, Kohtaro, Kamizawa, Koh, Nishida, Masami, Yamazaki, Eizo, Itoh, Atsushi, and Kinjoh, Naoto, 5,010,401, Cl. 358-136.000

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Kurakake, Mitsuo, and Kinoshita, Jiro, 5,010,492, Cl. 364-474.290

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Hikita, Mitsutaka, Sumioka, Atsushi, Tabuchi, Toyoji, Kurosawa, Kazuhito, and Kinoshita, Tuneo, 5,010,269, Cl. 310-313.00B

Kintz, Karl A. *See*—
Liang, Rong-Chang, Colyer, Emerson K., Chen, Jing-Den, Kintz, Karl A. and Suen, Chih-Her, 5,010,114, Cl. 521-109.100

Kinugawa Rubber Industrial Co., Ltd. *See*—
Hasegawa, Minekazu, Ikeda, Kenichi, and Fujihira, Junichi, 5,009,464, Cl. 296-213.000

Kippenhan, B. William, and Maholick, Andrew W., to International Business Machines Corporation. Structured fields at a data stream boundary for delimiting files. 5,010,514, Cl. 364-900.000

Kira, Akihiko. *See*—
Ametani, Minoru, Funakoshi, Keigo, Kira, Akihiko, Matsushita, Takao, and Shirakura, Keizo, 5,009,735, Cl. 156-241.000

Kirchhof, Rolf, to U.S. Philips Corporation. Method of adjusting a printing gap in a printer. 5,009,526, Cl. 400-56.000

Kirihara, Tomoo, Nakagawa, Ippei, Seki, Yoshinobu, Honda, Yutaka, and Ichihara, Yasuo, to Mitsubishi Nuclear Fuel Company, Ltd. Process for separation of hafnium tetrachloride from zirconium tetrachloride. 5,009,751, Cl. 204-61.000

Kirihata, Fumiaki. *See*—
Haruki, Hiromu, Kirihata, Fumiaki, and Hashimoto, Osamu, 5,010,384, Cl. 357-38.000

Kiryu, Naohiko. *See*—
Maruyama, Hiroshi, Kiryu, Naohiko, Minezaki, Etsuko, Tagashira, Susumu, and Shimokawahara, Hisashi, 5,009,944, Cl. 428-40.000

Kishi, Tomomi. *See*—
Sato, Kazuhiro, Kishi, Tomomi, Umeda, Koji, Uchida, Yasushi and Takeuchi, Masahiko, 5,010,226, Cl. 219-81.000

Kist, William J. Animal trap with sanitary handling means. 5,009,317 Cl. 206-466.000

Kistler Instrumente AG. *See*—
Kubler, John M., and Insalaco, Michael D., 5,009,106, Cl. 73-651.000

Kita, Jean-Claude, Puff, Roger M., Petrovic, Alexandre, and Chretien, Marcel, to Charbonnages de France. Cooled fluidization grid. 5,009,852, Cl. 422-143.000

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Kitajima, Kimio, and Kiuchi, Hiroyuki, to Sankyo Seiki Mfg. Co., Ltd. Motor control circuit. 5,010,283, Cl. 318-373.000

Kitamura, Keiji. *See*—
Koyama, Akihiro, Kitamura, Keiji and Yamamoto, Nobuyuki, 5,010,041, Cl. 501-4.000

Kitamura, Koichiro, to Kitamura Machinery Co., Ltd. Tool holder for machine tool. 5,009,555, Cl. 409-232.000

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Kitamura, Koichiro, 5,009,555, Cl. 409-232.000

Kitao, Shiei. *See*—
Yamada, Shinjiro, Satoh, Seiki, Mabuchi, Kazuichi, Kitao, Shiei and Egawa, Yoshiaki, 5,010,264, Cl. 310-72.000

Kitzberger, Herbert. *See*—
Gugel, Bernd, Kaufmann, Clemens, Kitzberger, Herbert, and Rohrer, Kurt, 5,009,529, Cl. 400-124.000

Kiuchi, Hiroyuki. *See*—
Kitajima, Kimio, and Kiuchi, Hiroyuki, 5,010,283, Cl. 318-373.000

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Klein, David C. Test tube cassette system and cassettes for use therein. 5,009,316, Cl. 206-443.000

Kleinschmit, Peter. *See*—
Deschler, Ulrich and Kleinschmit, Peter, 5,010,203, Cl. 548-110.000

Klemen, Donald. *See*—
Ordo, James P., Raszkowski, James A., and Klemen, Donald, 5,009,116, Cl. 74-331.000
Raszkowski, James A., and Klemen, Donald, 5,009,118, Cl. 74-331.000

Klepsch, Wilhelm, and Plobst, Dietmar, to Senoplast Klepsch & Co. Insulating wall for refrigerator devices. 5,009,952, Cl. 428-319.100

Kleschick, William A. *See*—
Van Heertum, John C., Gerwick, Ben C., III, and Kleschick William A., 5,010,195, Cl. 544-263.000

Klett, Paul A., Bakhshi, Shiv K., and Stahl, Steven B., to Owens-Corning Fiberglas Corporation. Method and apparatus for impregnating a porous substrate with foam. 5,009,932, Cl. 427-243.000

Kline, Loren H., Sherwin, Harry A., and Telep, Robert J., to Coltec Industries Inc. Control module having multiple solenoid actuated valves. 5,009,250, Cl. 137-596.170

Klok, Richard J. *See*—
Rue, Charles V., van de Merwe, Ronald H., Bauer, Ralph, Pellow, Scott W., Cottringer, Thomas E., and Klok, Richard J., 5,009,676, Cl. 51-309.000

Klotz, Gernot. *See*—
Lindel, Hans, Hallenbach, Werner, Berschauer, Friedrich, Greife Heinrich, and Klotz, Gernot, 5,010,091, Cl. 514-357.000

Knabenhans, Fritz. *See*—
Waeber, Rene, Knabenhans, Fritz and Bachmann, Othmar, 5,008,978, Cl. 19-66.00C

Knighton, Nigel J. *See*—
Storrow, Alan J., and Knighton, Nigel J., 5,010,444, Cl. 361-386.000

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Knopp, John V. Eigenvector synthesizer. 5,009,143, Cl. 84-604.000

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Henning, Rolf, Benz, Gunter, Stasch, Johannes-Peter, Knorr Andreas, and Bender, Wolfgang, 5,010,057, Cl. 514-018.000

Knudson, Steven B., to Advance Display Technologies, Inc. Image transfer device and method of manufacture. 5,009,475, Cl. 350-96.100

Kobari, Tadaomi, to Alpine Electronics Inc. Printed circuit board 5,010,448, Cl. 361-403.000

Kobayahsi, Hirokazu. *See*—
Katou, Hiromi and Kobayahsi, Hirokazu, 5,010,549, Cl. 370-110.100

Kobayashi, Kazuo, Morikawa, Kiyoshi, Yamada, Yoshinori Kurumada, Masakazu, and Sugihara, Masanori, to Pioneer Electronic Corporation. Disc guide mechanism for automotive disc player 5,010,484, Cl. 369-77.200

Kobayashi, Masanobu. *See*—
Maeno, Yoshinori, Kobayashi, Masanobu, and Oishi, Kayoko, 5,009,762, Cl. 204-192.160

Kobayashi, Takashi. *See*—
Harada, Kinji, Ikeda, Kyoichi, Kuwayama, Hideki, Kobayashi, Takashi, Nishikawa, Tadashi, Watanabe, Tetsuya, and Yoshida, Takashi, 5,009,108, Cl. 73-704.000

Kobayashi, Yoshiharu. *See*—
Sato, Shuichi, Koguchi, Yoshimi, and Kobayashi, Yoshiharu, 5,009,177, Cl. 112-292.000

Kobylarz, Daniel F., and Ford, David K., to Motorola, Inc. Method for active feedback suppression. 5,010,570, Cl. 379-390.000

Koch, Edmund, and Pruss, Dieter, to Dragerwerk Aktiengesellschaft. Mirror arrangement for a beam path in a multiple-reflection measuring cell. 5,009,493, Cl. 350-619.000

Koch, Erwin. *See*—
Glockler, Gerhard, Muller, Heinz, Kepplinger, Leopold W., Matzawrakos, Panajiotis, Koch, Erwin, and Auberger, Heinrich, 5,009,397, Cl. 266-197.000

Koch Industries, Inc. *See*—
Elias, Samir F., and Morrison, Daryl K., 5,010,129, Cl. 524-413.000

Koch, Peter. *See*—
Reich, Harry, and Koch, Peter, 5,009,643, Cl. 604-165.000

Koch, Roger H. *See*—
Hartstein, Allan M., and Koch, Roger H., 5,010,512, Cl. 364-807.000

Koegel, Keith S. *See*—
Fogg, Michael W., Koegel, Keith S., Shuey, John R., Zelko, William E., and Beamenderfer, Robert E., 5,009,614, Cl. 439-497.000

Koelle, William H. *See*—
Wilmott, James M.; Koelle, William H., and Znaiden, Alexander P., 5,010,110, Cl. 514-758.000

Koga, Shigeyuki, and Sugiue, Shigeki, to Kabushiki Kaisha Toyoseikusho. Method for and apparatus of thermal treatment of human waste. 5,009,172, Cl. 110-242.000

Kogelnik, Herwig W. *See*—
Alferness, Rodney C.; Budrikis, Zigmantas L.; Hagelbarger, David W., Kogelnik, Herwig W., and Netravali, Arun N., 5,009,477, Cl. 350-96.150.

Koguchi, Yoshimi. *See*—
Sato, Shuichi, Koguchi, Yoshimi, and Kobayashi, Yoshiharu, 5,009,177, Cl. 112-292.000

Kohl, Peter. *See*—
Wullenweber, Heinz, Kohl, Peter, Jung, Herbert, Borchardt, Jurgen, Bickle, Wolfgang, and Braus, Jurgen, 5,010,050, Cl. 502-301.000

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Kohno, Tetsushi. *See*—
Morimoto, Yoshihiko, and Kohno, Tetsushi, 5,009,127, Cl. 74-866.000
Morimoto, Yoshihiko, and Kohno, Tetsushi, 5,009,129, Cl. 74-866.000

Kohsaka, Masaki, Higashi, Isaburou, Akana, Yoshinori; Hashimoto, Mikio; and Yatsu, Tadao, to Mitsui Petrochemical Industries, Ltd. Polyester carbonate copolymers, processes for preparing same and polyester resin compositions containing said copolymers. 5,010,146, Cl. 525-439.000.

Koike, Atsushi. *See*—
Honda, Mitsuru, Koike, Atsushi, Kimura, Tomohiro, Ogawa, Kyosuke, and Murai, Keiichi, 5,009,974, Cl. 430-69.000

Koike, Seiji, to Tokyo Electric Co., Ltd. Color ink ribbon and printer using this ribbon. 5,009,531, Cl. 400-240.300

Kojima, Hiroyasu. *See*—
Harano, Takeshi, Takaki, Satoru, Shigesato, Yuzo, Suzuki, Koichi, Hashimoto, Naoki, Kojima, Hiroyasu, and Oyama, Takuji, 5,009,922, Cl. 427-37.000

Kojima, Keiji. *See*—
Mishina, Yusuke; and Kojima, Keiji, 5,010,483, Cl. 364-200.000

Kojima, Kunio. *See*—
Fuji, Hiroshi, Fujiwara, Tsuneo, Iwaki, Takashi; Numata, Tomiyuki, Tsuji, Kentaroh, Maeda, Shigemi, Yamaguchi, Takeshi, Kojima, Kunio; Deguchi, Toshihisa, and Terashima, Shigeo, 5,010,540, Cl. 369-50.000

Kojima, Yoshitaka. *See*—
Iizuka, Nobuyuki, Hirose, Fumiyuki; Asahi, Naotatsu, and Kojima, Yoshitaka, 5,009,070, Cl. 60-753.000

Kokusai Denshin Denwa Co., Ltd. *See*—
Nishimura, Kohsuke, and Sakai, Kazuo, 5,010,376, Cl. 357-17.000

Kolassa, Dieter: *See*—
Keil, Michael, Schirmer, Ulrich, Kast, Juergen, Kolassa, Dieter, Wuerzer, Bruno, Meyer, Norbert; Rademacher, Wilhelm, Jung, Johann, and Carlson, Dale R., 5,009,702, Cl. 71-100.000

Kolta, Peter. *See*—
Krebser, Werner, Lantos, Michael, and Kolta, Peter, 5,010,452, Cl. 362-19.000

Komabayashi, Masashi; Kuramochi, Kunio, and Hijikata, Kenichi, to Mitsubishi Metal Corporation. Thermoelectric element and method of manufacturing same. 5,009,717, Cl. 136-201.000

Komakine, Shigeo. *See*—
Horii, Masami, Komakine, Shigeo, Ochiai, Kuniaki, and Kondoh, Takashi, 5,009,528, Cl. 400-124.000

Komatsu, Osamu. *See*—
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Komatsu, Takahiro: *See*—
Inoue, Yoshinori; Kumanoya, Masaki, Komatsu, Takahiro, Konishi, Yasuhiro; and Dosaka, Katsumi, 5,010,259, Cl. 307-482.000

Komiya, Ryohei. *See*—
Yamamoto, Takemi; Nagata, Osamu; Komiya, Ryohei; Sakai, Jun, and Ban, Yoshiyuki, 5,010,360, Cl. 355-20.000

Kondo, Masao. *See*—
Ishida, Takashi; and Kondo, Masao, 5,009,145, Cl. 84-612.000

Kondo, Tomoji. *See*—
Kawakami, Toshikatsu, Fukuda, Shin, Shinbo, Hiroyasu, Unemura, Toyoaki, Sakamoto, Ken, and Kondo, Tomoji, 5,010,406, Cl. 358-147.000

Kondoh, Takashi. *See*—
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Konica Corporation. *See*—
Maekawa, Yoshikazu, and Hirata, Tetsuo, 5,010,364, Cl. 355-207.000
Matsubara, Shinichi, Uehara, Masafumi, Bunya, Shinichi, and Katahashi, Eriko, 5,009,981, Cl. 430-175.000.
Murahashi, Takashi, Nakazawa, Toshihiko, Takesue, Toshihiro, and Motoi, Toshihiro, 5,010,353, Cl. 346-108.000
Yagi, Toshihiko, and Yamada, Yoshitaka, 5,009,988, Cl. 430-505.000

Konishi, Yasuhiro. *See*—
Inoue, Yoshinori, Kumanoya, Masaki, Komatsu, Takahiro, Konishi, Yasuhiro, and Dosaka, Katsumi, 5,010,259, Cl. 307-482.000

Kono, Shinichi. *See*—
Nakamura, Kosei, Kono, Shinichi, Numai, Kazuhisa, and Kimijima, Masami, 5,010,286, Cl. 318-571.000

Konse, Hiroaki. *See*—
Yamanaka, Masahiko, Hanaoka, Motoyoshi, Konse, Hiroaki, Shigeno, Haruhisa, and Kinoshita, Masakatsu, 5,009,936, Cl. 427-407.100

Koppensteiner, Alfred. *See*—
Iossi, Daryl R., Cook, Lacy G., and Koppensteiner, Alfred, 5,009,494, Cl. 350-620.000

Korber AG. *See*—
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Koshika, Tomohito. *See*—
Watanabe, Taichi, Ogino, Hidekazu, Hirota, Hajime, Koshika, Tomohito, Moriya, Naoko, and Nozaki, Toshio, 5,009,813, Cl. 252-545.000.

Kosin, John A., Mooney, Gerry, Tarquini, Michael A., and Garcia, Rod A., to J. M. Huber Corporation. High temperature endothermic blowing agents compositions and applications. 5,009,809, Cl. 252-350.000

Kosin, John A. *See*—
Wason, Satish K., Mooney, Gerry, Andrews, Claude R., Tarquini, Michael E., Kosin, John A., and Garcia, Rod A., 5,009,810, Cl. 252-350.000

Koski, Greg, to R.W. Technology, Inc. Plastic-rubber composites 5,010,122, Cl. 524-80.000

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Kotecki, Jeffrey D. *See*—
Raikes, Terry E., Kramer, William L., Howard, John H., Moore, Wayne D., Jackson, Louis, and Kotecki, Jeffrey D., 5,009,276, Cl. 177-25.150

Kotera, Nobukazu. *See*—
Yatsuka, Takeshi, Murata, Hiroshi, Mizumura, Yutaka, and Kotera, Nobukazu, 5,009,960, Cl. 428-423.100

Kotobuki & Co., Ltd. *See*—
Kageyama, Hidehei, 5,009,533, Cl. 401-65.000

Kouno, Tomomitsu, Hatano, Hideki, Yamaji, Takashi, Ootaki, Sakashi, and Nishida, Masami, to Pioneer Electronic Corp. Photo-conductive liquid crystal light valve. 5,009,490, Cl. 350-342.000

Kouzuki, Hiroyuki. *See*—
Naito, Yasuo, Kouzuki, Hiroyuki, and Murai, Takeshi, 5,010,490, Cl. 364-426.040

Kovacs, Richard C., Krambeck, Frederick J., and Sarli, Michael S., to Mobil Oil Corporation. Fluid catalytic cracking regeneration with reduction of nitrogen oxide. 5,009,853, Cl. 422-144.000

Kowdley, Balasubramanian S. *See*—
Richardson, David L., Clark, Jack P., Kowdley, Balasubramanian S., Patterson, Peter M., Perry, Richard W., and Smith, Thurman D., 5,009,105, Cl. 73-621.000

Koyama, Akihiro; Kitamura, Keiji, and Yamamoto, Nobuyuki, to Nippon Sheet Glass Co., Ltd. Colored low-expansion transparent glass ceramic. 5,010,041, Cl. 501-4.000

Koyama, Toshihide. *See*—
Kijima, Takao, Edahiro, Takeshi, Koyama, Toshihide, and Taniguchi, Haruyuki, 5,009,448, Cl. 280-673.000

Kozikowski, Barbara A. *See*—
Degenhardt, Charles R., and Kozikowski, Barbara A., 5,009,882, Cl. 424-52.000

Kozuki, Susumu. *See*—
Yasumura, Hiroto, Hirasawa, Masahide, Noji, Minoru, Kozuki, Susumu, Takahashi, Koji, and Yoshimura, Katsuji, 5,010,416, Cl. 358-314.000

Kraft General Foods, Inc. *See*—
Kratochvil, John F., 5,009,867, Cl. 426-128.000
Wiant, Matthew J., Lynch, William R., and LeFreniere, Robert C., 5,009,917, Cl. 426-631.000

Krambeck, Frederick J. *See*—
Kovacs, Richard C., Krambeck, Frederick J., and Sarli, Michael S., 5,009,853, Cl. 422-144.000

Kramer, William J. Packaging carton. 5,009,320, Cl. 206-607.000

Kramer, William L. *See*—
Raikes, Terry E., Kramer, William L., Howard, John H., Moore, Wayne D., Jackson, Louis, and Kotecki, Jeffrey D., 5,009,276, Cl. 177-25.150.

Kramer, Wolfgang, Weissmuller, Joachim, Berg, Dieter, Brandes, Wilhelm, and Dutzmann, Stefan, to Bayer Aktiengesellschaft. Pesticidal aminomethylheterocyclic compounds. 5,010,101, Cl. 514-462.000

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Kramer, Wolfgang, Jautelat, Manfred, and Kranz, Eckart, 5,010,208, Cl. 548-267.800

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Krauss, Owen T. *See*—
Gruber, Norman G., and Krauss, Owen T., 5,009,100, Cl. 73-155.000

Krebser, Werner, Lantos, Michael, and Kolta, Peter, to Harmer GmbH Gesellschaft fur den Vertrieb medizinischer und technischer Gerate

Therapeutic lamp for biostimulation with polarized light 5,010,452, Cl 362-19 000)
Krempl, Peter W Wegscheider, Guenther, and Woess, Gerhard, to AVL Gesellschaft fuer Verbrennungs kraftmaschinen und Messtechnik m b H, Prof Dr Dr hc Hans List Charge amplifier circuit 5,010,302, Cl 330-107 000)
Krenz, Horst M, to Zenith Data Systems Corporation Installation mechanism for removable computer drive module 5,010,426, Cl 360-97 010.
Kreuter, Volker See—
Gansauge, Peter, Kreuter, Volker and Schettler, Helmut 5,010,389, Cl 357-67 000
Kreuzer, Franz-Heinrich See—
Wenski, Guido, Maier, Ludwig, and Kreuzer, Franz-Heinrich, 5,009,934, Cl 427-387 000.
Kromrey, Robert V, to United Technologies Corporation Method of molding a composite article using softened glass as a pressure transmitting medium 5,009,687, Cl 65 18 100
Kromrey, Robert V, to United Technologies Corporation Method of molding a carbon-carbon composite 5,009,823, Cl 264-29 700
Kronfli, Esam, Lovell, Keith V, Hooper, Alan, and Neat, Robin J, to United Kingdom Atomic Energy Authority Polymer electrolytes 5,009,970, Cl 429-192 000
Kruck, Richard W, Cur, Omer N, Leclear, Douglas D, Kuehl, Steven J, and Burn, Ralph R, to Whirlpool Corporation Modular mechanical refrigeration unit 5,009,081, Cl 62-264 000
Kruessel, Bernhard, to Karl H Sengewald KG Method and device for joining foil hoses 5,009,632, Cl 493-189 000
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Reichman, Karl-Heinz, and Krumb, Heinrich W, 5,010,456, Cl 362-61 000
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Sippel, Achim; Kruse, Heinz-Josef; and Becker, Wilfried 5,009,167, Cl 102 524 000
Kruse, Jurgen M and Kimball, Donald B Jr, to XAAR Limited Room temperature plain paper ink 5,010,125, Cl 524-308 000
Kruse, Rodger C See
Scholsky, Kevin M, Larsen, Lisa M, and Kruse, Rodger C, 5,010,166, Cl 528-323 000
Ku, San-Mei, and Perry, Kathleen A Method of forming contacts to a semiconductor device 5,010,039, Cl 437-228 000
Kubler, John M and Insalaco, Michael D, to Kistler Instrumente AG Accerlerometer with improved shock resistance 5,009,106, Cl 73-651 000
Kubo, Kazuhito See—
Oshima, Etsuo, Obase, Hiroyuki, Karasawa, Akira, Kubo, Kazuhito, Miki, Ichiro, and Ishii, Akio, 5,010,087, Cl 514-307 000
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Kelley, Joseph M, Kucher, Donald C, and Mayurnik, George, 5,009,875, Cl 423-477 000
Kuchta, Richard, to Gerber Garment Technology Inc Track expander and method of use 5,009,168, Cl 104-172 100
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Akizawa, Nobuyuki, Kudo, Yasunori, Kanai, Toshiyuki, Kamei, Yasuo, Oyama, Nobuaki, and Negishi, Akihito, 5,009,355, Cl 227-114 000
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Kushida, Kazumitsu, Kudou, Osamu, Ogawa, Sumitaka, and Uike, Hiroshi, 5,009,211, Cl 123-491 000
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Kruck, Richard W, Cur, Omer N, Leclear, Douglas D, Kuehl, Steven J, and Burn, Ralph R, 5,009,081, Cl 62-264 000
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Kuhara, Takashi Device for providing communication between water tanks of heat accumulation tank system 5,009,261, Cl 165-96 000
Kuhl, Virgil F and Noll, Guenter, to Motorola, Inc Clip assembly 5,008,908, Cl 24-510 000
Kuki, Nobuyuki, Isomura, Yukio, Suzumura, Hirokazu, Sakakibara, Yoshikazu, and Ishihara, Hiroshi, to Aisin Seiki Kabushiki Kaisha Window regulator apparatus 5,009,035, Cl 49-352 000
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Manic, Milan, and Kulas, John L, 5,009,271, Cl 175 53 000
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Masasumi, Yana Hitoshi, Nagato, Kiyoshi, Yamada, Shyoji, Ueno, and Kunihiro, Shibuya, 5,009,527, Cl 400-120 000
Kuntz, Friedrich Wilhelm, and Wichmann, Ralf, to Agfa-Gevaert Aktiengesellschaft Iron complexes and bleaching baths containing same 5,009,985, Cl. 430-430 000
Kunz, Reiner, Babl, Albert, Zahradnicek, Ales, and Dietrich, Rainer Abrasives 5,009,674, Cl. 51-295 000
Kunz, Reiner, and Dietrich, Rainer, to Lonza LTD Coated silicon carbide abrasive grain 5,009,675, Cl 51-295 000
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Kuo, Gee-Hong See—
Lesher, George Y, deceased, Bacon, Edward R, Singh, Baldev, and Kuo, Gee-Hong, 5,010,086, Cl 514-303 000
Kuper, Jerry W See
Damgaard-Iversen, Karsten, Morris, Robert C, Chin, Timothy C, and Kuper, Jerry W, 5,009,658, Cl 606-128 000
Kurakake, Mitsuo, and Kinoshita, Jiro, to Fanuc Ltd Spindle control system and numerical control apparatus 5,010,492, Cl 364-474 290
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Komabayashi, Masashi, Kuramochi, Kunio, and Hijikata, Kenichi, 5,009,717, Cl 156-201 000
Kuraray Company Limited See—
Hatomoto, Isamu; and Matsuo, Yoshiteru, 5,009,946, Cl 428-87 000.
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Kushiyama, Takashi, and Kurihara, Yoshiyasu, 5,009,581, Cl 417-540 000
Kurita, Masanori See—
Uehara, Katsuhiro, Kurita, Masanori, and Murakami, Masakazu 5,009,584, Cl 425 135 000
Kuroda, Takeshi See—
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Kurpick, Daniel L See
Redl, Robert F, 5,009,015, Cl 33-409 000
Kurrasch, Andrew J, to Herman Miller Inc Acoustic panel 5,009,043, Cl 52-145 000
Kurtz, Noel T Means and method for automatic resonance tuning 5,009,142, Cl 84-454 000
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Kobayashi, Kazuo, Morikawa, Kiyoshi, Yamada, Yoshinori, Kurumada, Masakazu, and Sugihara, Masanori, 5,010,484, Cl 369-77 200
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Kusano, Hideaki See
Otsuki, Hajime; Kusano, Hideaki, and Kato, Osami, 5,010,362, Cl 355-74 000
Kushida, Kazumitsu, Kudou, Osamu, Ogawa, Sumitaka, and Uike, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha Fuel injection controlling device for two-cycle engine 5,009,211, Cl 123-491 000
Kushiyama, Takashi, and Kurihara, Yoshiyasu, to Jidosha Kiki Co Ltd Fluid accumulator for anti-skid brakes 5,009,581, Cl 417-540 000
Kuster, Hans-Werner, and Vanaschen, Luc, to Saint Gobain Vitrage Apparatus for producing two dimensionally bent glass 5,009,695, Cl 65 182 200.
Kusumoto, Ichirou See—
Okada, Kazuhisa; and Kusumoto, Ichirou, 5,010,296, Cl 324 158.00P
Kutzavitch, Walter G, and Rosenthal, Eugene J, to AT&T Bell Laboratories Low cost digital amplitude regulator 5,010,306, Cl 330-284 000
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Kuwayama, Hideki See—
Harada, Kinji, Ikeda, Kyoichi, Kuwayama, Hideki, Kobayashi, Takashi, Nishikawa, Tadashi, Watanabe, Tetsuya, and Yoshida, Takashi, 5,009,108, Cl. 73-704 000
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Fedin, Marat A, Kuznetsova, Tatyana A, Tysenkov, Viktor I, Nesvikova, Svetlana A, Savchuk, Valentin A, Sedelnikov, Anatoly I, Shabunya, Vera P, Udarov, Boris G, Tikhonova, Tatyana S, Polyakova, Nina P, and Paklin, Sergei I, 5,010,106, Cl 514-546 000
Kuzuicki, William J See
Schwendeman, Robert J, and Kuzuicki, William J, 5,010,317, Cl 340-311 100
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Yoneda, Kenzi, Ueshima, Takaaki, Kuzunuki, Soshiro, Morita, Yuzo, and Tobita, Toshimitsu, 5,010,472, Cl 364-148 000
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Kwang-sik, Lee, and Chul-woo, Kim, to Samsung Electron Devices Co, Ltd ARC length changing apparatus is exposing device and method thereof 5,010,464, Cl 362-284 000
Kwoka, Margaret N See—
Bottom, Carey B, and Kwoka, Margaret N, 5,010,069, Cl 514-166 000
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Oshima, Etsuo, Obase, Hiroyuki, Karasawa, Akira, Kubo, Kazuhito, Miki, Ichiro, and Ishii, Akio, 5,010,104, Cl 514-510 000
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Laakso, Sauli See—
LePisto, Matti, Ilmanen, Reijo, Karlsson, Markku, and Laakso, Sauli, 5,009,016, Cl 34-41 000
Laakso, Timo to STL Trading Co Method and a support arrangement in a roller vehicle to be steered by a roller mat 5,009,278, Cl 180-9 440
LaCava, James E See
Mobley, Dewey F, Peterson, Robert G, Sr, and LaCava, James E, 5,009,615, Cl 439-545 000
Lachenmeier, Andreas, to Viscosuisse S A Device and process for intermingling a bundle of threads using a turbulent air stream 5,008,991, Cl 28-271 000)
Laferty, Samuel B See
Johnson, Harlan B, Laferty, Samuel B, Wagner, Melvin P, and Mohnot, Shantilal M, 5,009,971, Cl 429-252 000
Lager, Kjell-Tarnstrom, Anders, Ostlund, Olov, and Driver, Joseph W, to Svenska Skateboy AB Skate sharpening device 5,009,039, Cl 51 165 770
Lai, John T and Filla, Deborah S, to B F Goodrich Company, The Process for the preparation of an azonitrile dicarboxylic acid initiator in acetone having a low salt and low water content 5,010,177, Cl 534-586 000
Lai, John T, to B F Goodrich Company, The Process for the preparation of mixed azonitrile carboxylic acid initiators 5,010,178, Cl 534-586 000
Lai, John T, to B F Goodrich Company, The Process for the preparation of mixed, symmetrical azonitrile dicarboxylic dicyano acids and initiators 5,010 179, Cl 534-586 000
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Alquist, John W, 5,009 353, Cl. 226-172 000
Lam, William Y and Lieser, Gregory P, to Ethyl Corporation Phenolic antioxidant composition 5,009,802, Cl 252-48 200.
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Lamb-Weston, Inc See—
Julian, John C, and Phelps, David S, 5,009,141, Cl 83-852 000)
Lambert, Peter M See—
Clayton, Simon N, Lambert, Peter M, and Wevers, Jean, 5,009,804, Cl 252-90 000
Lambert, Robert W, Martin, Joseph A, and Thomas, Gareth J, to Hoffmann-La Roche Inc Method of treating herpes simplex viral infection employing pyrimidine derivatives 5,010,060, Cl 514-49 000
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Paley, Martyn N J, Murdoch, James B, Lampman, David A, and McNally, James M, 5,010,300, Cl 324-309 000.
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Bailey, Thomas E, Lancaster, Charles E, and Lee, Richard, 5,009,265, Cl 166-118 000)
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Glicksman, Leon R, and Lanciani, Arlene J, 5,010,112, Cl 521-76 000
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Miller, Bill L, Perry, H Bruce, and DeGregorio, Robert, 5,009,899, Cl 426-2 000)
Landry, Christine J See
Coltrain, Bradley K, Ferrar, Wayne T, and Landry, Christine J 5,010 128, Cl. 524-405 000)
Lang, Armin, and Schweizer, Bernhard, to Zahnradfabrik Friedrichshafen, AG Torque sensor, in particular for electric steering mechanism 5,009,110, Cl 73-862 330
Langenbeck, Keith A and Kensinger, Jesse P, to Langenbeck, Keith A Storage and transport tray and tray packing system 5,009,053, Cl 53-58 000
Langer, Robert S See—
Ron, Eyal, Staubli, Andrea, and Langer, Robert S, 5,010,167, Cl 528-328 000)
Langgard, Ulf R and Thurston, William E, to Interconnect Devices, Inc Spring contact twister probe for testing electrical printed circuit boards 5,009,613, Cl 439-482 000)
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Krebser, Werner, Lantos, Michael, and Kolta, Peter, 5,010,452, Cl 362-19 000
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Maurer, Fritz, Lantzsch, Reinhard, Fiege, Helmut, and Schnatterer, Albert, 5,010,193, Cl. 544-243 000
Lanside Technology Company, LP See
Newkirk, Marc S, 5,010 044, Cl 501 93 000
Larner, David J, and Goodchild, Clive D, to Gec-Marconi Limited Nuclear event detectors 5,010,321, Cl 340-600 000)
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Petrohilos, Harry G, 5,009,233, Cl 128-666 000)
Lasinvast Svenska AB See—
Eck, Berth, 5,009,456, Cl 292-173 000)
Latham, Michael S, Gullixson, Bruce B, and Sweat, Bruce P Switched capacitive ballasts for discharge lamps 5,010,279, Cl 315-227 00R
Latshaw, Harry E See—
Ordo, James P, and Latshaw, Harry E, 5,009,117, Cl 74-331 000
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Lauks, Imants R, to I-Stat Corporation Metal oxide electrodes 5,009,766, Cl 204-419 000
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Laurent, Michel, Doukhan, Marc, and Noualhaguet, Pierre to General Electric CGR S A System for the suspension of a rotating anode of an x-ray tube with passive magnetic bearings 5,010 563, Cl 378 132 000
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Laurenzi, Robert J See—
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Lautenschlager, Gerhard W See—
Lautenschlager, Karl; and Lautenschlager, Gerhard W, 5,008,977, Cl 16-278 000)
Lautenschlager, Karl, and Lautenschlager, Gerhard W, to Karl Lautenschlager GmbH & Co KG Cabinet hinge with closing mechanism 5,008,977, Cl 16-278 000)
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Klaassens, J Ben, Lauw, Hian K, and de Beer, Freddy, 5,010 471 Cl 363-160 000
Law, Garry C See—
Fong, Chi-Ming, Chew, Wai-Kwok, and Law, Garry C, 5,009,603 Cl 434-323 000)
Lawler, James A See—
Benin, Joshua; Di Mato, William G, Morin, Carl F, and Lawler, James A, 5,009,942, Cl 428 36 600
Lawrence, Lowell J, Ruzo, Luis O, and Olson, Gene L, to Pharmacology & Toxicology Research Lab Method and apparatus for conducting field dissipation and leaching studies 5,009,112, Cl 73-866 000.
Lawrence, Ronald L, and Miller, Mark R, to Miller, Mark R, and Berling, Steven J Dual liquid spraying assembly 5,009,342, Cl 222-136 000
Laxmanan, Venkatasubramanian, to General Motors Corporation Process for manufacturing spheroidal hypoeutectic aluminum alloy 5,009,844, Cl. 420-548 000)
Layton, Jack See—
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Leach, Robert M and Richards, Michael J, to Osmose Wood Preserving, Inc Composition and process for imparting fire retardant properties and improved thermal stability to cellulosic materials 5,009,964, Cl 428-526 000)
Leben, David G Container and improved method for carrying and transporting computer tape cartridges 5,009,312, Cl. 206-387 000)
LeBlanc, Peter E, to Belout Corporation Pulseless screen 5,009,774, Cl. 209-273 000
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Lee, Chi-Ho *See*—
Pascal, Jean C., Lee, Chi-Ho, Alps, Brian J., Pinhas, Henri, and Whiting, Roger L., 5,010,075, Cl. 514-218.000

Lee, Chi-Long, and Willis, Robin L., Jr., to Dow Corning Corporation, Microencapsulated platinum-group metals and compounds thereof, 5,009,957, Cl. 428-402.220

Lee, Ernest D., to Westinghouse Electric Corp., Fused salt process for purifying zirconium and/or hafnium tetrachlorides, 5,009,866, Cl. 423-73.000

Lee, Guo-Shin, Fishing rod holder, 5,009,027, Cl. 43-21.200

Lee, Hae-Weon *See*—
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Lee, Hsien-Che, Lee, Hui-Jung, Kwon, Heemin, and Liang, Jeanine, to Eastman Kodak Company, Digital image noise suppression method using SVD block transform, 5,010,504, Cl. 364-574.000

Lee, Hui-Jung *See*—
Lee, Hsien-Che, Lee, Hui-Jung, Kwon, Heemin, and Liang, Jeanine, 5,010,504, Cl. 364-574.000

Lee, James C., to Honeywell Inc., Method for applying optical interference coating, 5,009,920, Cl. 427-9.000

Lee, Philip H. J. *See*—
Grandjean, Pierre-Andre, and Lee, Philip H. J., 5,009,229, Cl. 128/419.00P

Lee, Richard *See*—
Bailey, Thomas F., Lancaster, Charles F., and Lee, Richard, 5,009,265, Cl. 166-118.000

Lee, Robert D. *See*—
Dias, Donald R., Lee, Robert D., Bolan, Michael L., and Scherpenberg, Francis A., 5,010,331, Cl. 340/825.310

Lee, Ta J., to Merck & Co., Inc., Antihypercholesterolemic compounds, 5,010,105, Cl. 514-510.000

Lee, Vincent K. W., Improved kaleidoscope structure, 5,009,471, Cl. 350-4.100

Lefevre, Hevre *See*—
Arditty, Herve, and Lefevre, Hevre, 5,009,504, Cl. 356-350.000

LeFreniere, Robert C. *See*—
Wiant, Matthew J., Lynch, William R., and LeFreniere, Robert C., 5,009,917, Cl. 426-631.000

Lehmann, Karl-Heinz *See*—
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Lehmann, Volker *See*—
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Lehto, Jorma, to Oy Tampella AB, Method of and an arrangement for gluing a web to a core in a reeling device, 5,009,736, Cl. 156-250.000

Lehtoluoma, Teuvo *See*—
Maenpaa, Matti, Lehtoluoma, Teuvo, Henttinen, Kauko, Jokipalo, Pertti, Saren, Aimo, and Pirinen, Seppo, 5,009,096, Cl. 72-239.000

Leitz, Edgar *See*—
Eckel, Thomas, Leitz, Edgar, Wittmann, Dieter, Ott, Karl-Heinz, Peters, Horst, and Schoeps, Jochen, 5,010,135, Cl. 525-63.000

Leland Stanford Junior University, Board of Trustees of the *See*—
Zare, Richard N., Huang, Xiaohua, and Ohms, Jack I., 5,009,760, Cl. 204-183.300

Lemoyne, Remi *See*—
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Leonard, David W., Sr. *See*—
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Leonard, Donald A. and Sweeney, Harold E., to GTE Government Systems Corporation, Remote method of measuring subsurface water temperatures, 5,009,500, Cl. 356-43.000

Leonard, Thomas A. *See*—
Murphy, Martin J., Jr., Stubbs, Jack B., and Leonard, Thomas A., 5,009,503, Cl. 356-339.000

Lepinoy, Dominique, to Lepinoy Industrie, Method, device and padded product for maintaining an object, 5,009,318, Cl. 206-524.800

Lepinoy Industrie *See*—
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LePisto, Matti, Ilmanen, Reijo, Karlsson, Markku, and Laakso, Sauli, to Valmet Oy, Method for on-machine coating-drying of a paper web or the like, 5,009,016, Cl. 34-41.000

Lepow, Joyce, Sheet for foam sofa bed, 5,008,966, Cl. 5-496.000

Lescaut, Pierre L., to Atochem, Method of joining pipes at their ends to form a pipeline, 5,009,737, Cl. 156-264.000

Lesher, George Y., deceased (by Lesher, Louise E., executrix), Bacon, Edward R., Singh, Baldev, and Kuo, Gee-Hong, to Sterling Drug Inc., Imidazopyridines, compositions and use, 5,010,086, Cl. 514-303.000

Lesher, Louise E., executrix *See*—
Lesher, George Y., deceased, Bacon, Edward R., Singh, Baldev, and Kuo, Gee-Hong, 5,010,086, Cl. 514-303.000

Lesa, Jacques, Perreau, Philippe, Bary, Daniel, and Grard, Guy, to Institute Francais du Petrole, Device and method for measuring the deformations of a sample, 5,009,512, Cl. 374-6.000

Leung, Peter K., Steiger, Ronald P., and Kunze, Kenneth R., to Exxon Production Research Company, Method for determining the swelling clay content of cement mixtures by dielectric measurements, 5,010,301, Cl. 324-376.000

Lever Brothers Company, Division of Conopco Inc. *See*—
Foster, Francis G., 5,009,800, Cl. 252-8.900

Levi, Mark W., to United States of America, America, Wafer cleaning method, 5,009,240, Cl. 134-7.000

Levine, Harry, Slade, Louise, Van Lengerich, Bernhard, and Pickup, John G., to Nabisco Brands, Inc., Glassy matrices containing volatile and/or labile components, and processes for preparation and use thereof, 5,009,900, Cl. 426-96.000

Levinson, Arthur, Simonsen, Christian, and Yelverton, Elizabeth M., to Genentech, Inc., Human t-PA production using vectors coding DHFR protein, 5,010,002, Cl. 435-69.200

Levison, Barrie, Towel or cloth container, 5,009,327, Cl. 220-890.000

Levy, Davida, Magnetic jewelry closure with clip, 5,008,984, Cl. 24-303.000

Lewis, Larry N., to General Electric Company, Flame retardant aromatic polycarbonate compositions, 5,010,148, Cl. 525-464.000

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Gruenwald, Heinrich, Ramisch, Hans, and Pawlakowitsch, Anton, 5,009,738, Cl. 156-345.000

Liang, Jeanine *See*—
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Liang, Rong-Chang, Colyer, Emerson K., Chen, Jing-Den, Lee, Karl A., and Suen, Chih Her, to Mead Corporation, The, Microsuspension polymerization, 5,010,114, Cl. 521-109.100

Liaw, Peter, Structure of a multipurpose, hand-held swivel type stationery case, 5,009,336, Cl. 211-69.100

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Liberty Diversified Industries, Inc. *See*—
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Liesen, Gregory P. *See*—
Lam, William Y., and Liesen, Gregory P., 5,009,802, Cl. 252/48.200

Liet, Frederieus, to Liets Agrarische Technieken B.V., Heating device, 5,009,219, Cl. 126-523.000

Liets Agrarische Technieken B.V. *See*—
Liet, Frederieus, 5,009,219, Cl. 126-523.000

Light Ideas Incorporated *See*—
Streck, Donald A., and Iggulden, Jerry R., 5,009,368, Cl. 239-70.000

Lilliwyte Societe Anonyme *See*—
Baker, Derrick J., Bugden, Walter G., and Smith, Peter R., 5,009,357, Cl. 228-122.000

Lin, Emily M. Y. Double hook-bolt unit lock, 5,009,089, Cl. 70-114.000

Lin, Israel J., and Yotvat, Jacob, Magnetic treatment of water used for agricultural purposes, 5,009,791, Cl. 210/695.000

Lin, Jiang-Jen *See*—
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Lin, John Y. Waterscape lamp with shade of proximity-capacitance sensing type device, 5,010,460, Cl. 362-101.000

Lin, Sung-Wei *See*—
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Lin, True-Lon, Fathauer, Robert W., and Grunthaner, Paula J., to California Institute of Technology, Pinhole-free growth of epitaxial CoSi2 film on Si(111), 5,010,037, Cl. 437-200.000

Lincoln, Thomas C., to Mierodot Inc., Method and apparatus for fabricating a pigtailed lens assembly, 5,009,482, Cl. 350-96.180

Lindel, Hans, Hallenbach, Werner, Berschauer, Friedrich, Greife, Heinrich, and Klotz, Gernot, to Bayer Aktiengesellschaft, 2,4-dihalogeno-6-pyridylethanolphenylisopropylamines for shifting the protein-fat ratio of animals in favor of protein, 5,010,091, Cl. 514-357.000

Linder, Ernst *See*—
Grob, Ferdinand, Kienzler, Dieter, Linder, Ernst, Potschin, Roger, and Stutzenberger, Heinz, 5,009,064, Cl. 60-276.000

Lindner, Christian *See*—
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Lindsay, William B., to General Signal Corporation, Ball screw supported Z stage, 5,010,295, Cl. 324-158.00R

Lindstrom, Michael J., to Atochem North America, Inc., Method for determining sulfur loading in organic polysulfides, 5,010,022, Cl. 436-123.000

Linke, Udo *See*—
Boden, Karl, Ihach, Harald, and Linke, Udo, 5,009,865, Cl. 422-249.000

Linsmeyer, Greg *See*—
Linsmeyer, John C., and Linsmeyer, Greg, 5,009,378, Cl. 248-99.000

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Linssen, Johannes L. J. M. and Pleyers, Jozef J. A., to Oce-Nederland B.V., Apparatus for supplying and discharging originals in a copying machine, 5,010,373, Cl. 355-319.000

Linville, Andrew F., Jr., and Shirley, Thomas E., to Mobil Oil Corporation, Method of digital filtering, 5,010,526, Cl. 367-46.000

Lipkin, Charles L., and Jones, Marianne, to Andrew Corporation, Anti-icing and de-icing system for reflector-type microwave antennas, 5,010,350, Cl. 343-704.000

Lipman, Kenneth, and Young, Douglas G., to International Fuel Cells, Current balancing structure for semiconductor switching devices, 5,010,470, Cl. 363-132.000

Lipo, Thomas A., and Xu, Longya, to Wisconsin Alumni Research Foundation, Variable speed machine with high power density, 5,010,267, Cl. 310-162.000

Liposome Company, Inc., The *See*—
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Lippman, Andrew B. *See*—
Schreiber, William F., Lippman, Andrew B., Adelson, Edward H., and Netravali, Aran N., 5,010,405, Cl. 358-141.000

Lipukhin, Jury V., Danilov, Leonid I., Ivoditov, Albert N., Garber, Eduard A., Subbotin, Anatoly N., Pavlov, Valentin P., Zhukov, Jury K., and Pimenov, Alexandr F., Apparatus for descaling the surface of a strip, 5,009,037, Cl. 51-7.000

Littleton, L. Arthur *See*—
Freidel, Kenneth; Littleton, L. Arthur, and Freund, William G., 5,009,693, Cl. 65-107.000

Litz, Lawrence M. *See*—
Weise, Mark K., Kingsley, Jeffery P., and Litz, Lawrence M., 5,009,816, Cl. 261-21.000

Liu, Yow-Juang (Bill), and Hadjizadeh-Amini, Zahra, to Advanced Micro Devices, Inc., Method of detecting the width of spacers and lightly doped drain regions, 5,010,029, Cl. 437-44.000

Ljungstrom, Tommy *See*—
Hanerus, Goran, and Ljungstrom, Tommy, 5,009,339, Cl. 222-1.000

Lloyd, Kenneth *See*—
Albino, Anthony, Lloyd, Kenneth, Ikeda, Hisami, and Old, Lloyd, 5,009,995, Cl. 435-7.230

Lo Baido, Giuseppe *See*—
Antonaroli, Simonetta, Bianco, Armandodariano, Brufani, Mario, Lo Baido, Giuseppe, and Rende, Giorgio, 5,010,204, Cl. 548-128.000

Lobitz, Walter A. *See*—
Chang, Ker-Chin, Elkins, Clarence E., Marshall, Paul A., Dunwoodie, Duane F., Mansour, Mohamed M., Bauer, Paul R., and Lobitz, Walter A., 5,010,544, Cl. 370-13.100

Loeffelholz, Frido *See*—
Worschech, Kurt, Wedl, Peter, Fleischer, Erwin, Loeffelholz, Frido, and Jaeckel, Manfred, 5,010,123, Cl. 524-114.000

Loewe, Erhard, to Du Pont de Nemours, E. I., and Company, Roll cassette with spacers for height adjustment, 5,009,372, Cl. 242-71.100.

Lof, Stig U., to Unroc Aktiebolag, Laterally adjustable drilling tool, 5,009,274, Cl. 175-260.000

Loge, Olaf *See*—
Skuballa, Werner; Dahl, Helmut, Vorbrueggen, Helmut, Loge, Olaf, and Thierauch, Karl-Heinz, 5,010,065, Cl. 514-58.000.

Lombardino, Paul A., Saxon, Ronald L., and Supchak, Dennis W., to Pharmacia Diagnostics Inc., Reagent tablet dispenser, 5,009,561, Cl. 414-412.000.

Lonardi, Emile, to Paul Wirth S.A., Device for reducing the stresses on a sealing shutter, 5,009,398, Cl. 266-199.000.

Loncraine Broxton & Partners Limited *See*—
Broxton, Peter A., 5,009,341, Cl. 222-130.000

Long, Royal B., Lock device with retaining cable, 5,009,087, Cl. 70-49.000

Longley, Ross E. *See*—
Gunasekera, Mahka, Gunasekera, Sarath P., Longley, Ross E., and Burres, Neal S., 5,010,099, Cl. 514-459.000

Longuet-Higgins, Michael S., Building blocks, 5,009,625, Cl. 446-92.000

Lonza LTD *See*—
Kunz, Reiner, and Dietrich, Rainer, 5,009,675, Cl. 51-295.000

Loos, Horst *See*—
Schneider, Alfred, Loos, Horst, and Fischbach, Karl H., 5,009,034, Cl. 49-192.000

Lord, Peter R., to North Carolina State University, Method and apparatus for detecting mechanical roll imperfections in a roler drafting system, 5,010,494, Cl. 364-507.000

Lord, Randall D. *See*—
Eilert, Randall N., Neel, Robert M., Harvey, N. Thatcher, Ames, Wilbur R., IV, and Lord, Randall D., 5,008,974, Cl. 16-114.00R

L'Oreal *See*—
Grollier, Jean-Francois, Fiquet, Claire, Fourcadier, Chantal, Dubief, Claude, and Cauwet, Daniele, 5,009,880, Cl. 424-047.000
Gueret, Jean-Louis, 5,009,534, Cl. 401-75.000
Morane, Bruno, 5,009,340, Cl. 222-94.000

Lorenzana, Moises B. and Lorenzana, Vance A., Apparatus for supplying water continuously to tree stand, 5,009,028, Cl. 47-40.500

Lorenzana, Vance A. *See*—
Lorenzana, Moises B. and Lorenzana, Vance A., 5,009,028, Cl. 47-40.500

Lovell, Keith V. *See*—
Kronfli, Esam, Lovell, Keith V., Hooper, Alan, and Neat, Robin J., 5,009,970, Cl. 429-192.000

Low, John A. *See*—
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Lov, Jerald M. *See*—
Dunaway, Thomas J., Spielberger, Richard K., Dicks, Lori A., and Lov, Jerald M., 5,010,387, Cl. 357-70.000

LPF Verpakkingen B.V. *See*—
Huizinga, Gert J., 5,010,231, Cl. 219-121.690

Luallin, John M., Nagengast, William E., and Roeske, Robert G., to General Motors Corporation, Headlamp assembly, 5,010,455, Cl. 362-61.000

Lucas Industries, plc *See*—
Shirley, Roy D., Nelson, Michael T., and Laurenzi, Robert J., 5,010,224, Cl. 219-69.170

Lucas, Robert M. *See*—
Hoffman, Charles T., Jr., Gordon, Ralph A., Hosmer, Thomas P., and Lucas, Robert M., 5,009,292, Cl. 188-71.700

Luddy, Michael A. G. *See*—
Chow, Allan T., and Luddy, Michael A. G., 5,009,998, Cl. 435-7.920

Ludwig, James F. Arrow rest and holder apparatus, 5,009,215, Cl. 124-44.500

Lueschen, Jeffrey D. Surfing saucer, 5,009,623, Cl. 441-56.000

Lui, Chung Y., to Merck & Co., Inc., Sustained release with high and low viscosity HPMC, 5,009,895, Cl. 424-465.000

Luksas, Anthony J. *See*—
Ahmed, Salah H., and Luksas, Anthony J., 5,009,913, Cl. 426-581.000

Lurie, Mark, Production of extruded round rod, 5,009,825, Cl. 264-148.000

Lutz, David E., and Lutz, David W., Cargo carrying vehicle having a movable bulkhead located therein, 5,009,564, Cl. 414-510.000

Lutz, David W. *See*—
Lutz, David E., and Lutz, David W., 5,009,564, Cl. 414-510.000

Lutzke, Wayne, to Nigrelli Systems, Inc., Automatic case accumulator, 5,009,303, Cl. 198-347.300

Luycka, Marcel G. M. *See*—
Stokbroekx, Raymond A., Luycka, Marcel G. M., and Janssens, Frans E., 5,010,198, Cl. 546-114.000

Luzio, Gary A. *See*—
Cohen, Richmond R., and Luzio, Gary A., 5,009,239, Cl. 131-342.000

Lyle, Robert L., Jr., to North American Philips Corporation, Voltage regulator with reduced semiconductor power dissipation, 5,010,292, Cl. 323-274.000.

Lynch, William R. *See*—
Wiant, Matthew J., Lynch, William R., and LeFreniere, Robert C., 5,009,917, Cl. 426-631.000.

Lynn, Gordon E. *See*—
Gatchel, Gary, Newgarden, Joseph E., and Lynn, Gordon E., 5,009,421, Cl. 273-30.000

Lyon, Richard S. *See*—
Sarko, Leonard S., and Lyon, Richard S., 5,009,511, Cl. 366-348.000.

Lysenkov, Viktor I. *See*—
Fedin, Marat A., Kuznetsova, Tatyana A., Lysenkov, Viktor I., Novikova, Svetlana A., Savchuk, Valentin A., Sedelnikov, Anatoly I., Shabunya, Vera P., Udarov, Boris G., Tikhonova, Tatyana S., Polyakova, Nina P., and Paklin, Sergei I., 5,010,106, Cl. 514-546.000.

Lyzinski, David *See*—
Clark, Frederick T., Hensley, Albert L., Jr., Lyzinski, David, and Peck, Lawrence B., 5,009,771, Cl. 208-216.0PP

M C R. Farmer, Inc. *See*—
Mintzer, Joseph H., 5,010,462, Cl. 362-109.000

M E P. Macchine Elettroniche Piegatrici S.p.A. *See*—
Del Fabro, Marcello; and Del Fabro, Giorgio, 5,009,097, Cl. 72-387.000

M&FC Holding Company, Inc. *See*—
Esola, John L.; and Kessler, David I., 5,009,245, Cl. 137-116.500

Mabuchi, Kazuichi. *See*—
Yamada, Shinjiro, Satoh, Seiki, Mabuchi, Kazuichi, Kitao, Shiei, and Egawa, Yoshiaki, 5,010,264, Cl. 310-72.000

Mabuchi Motor Co., Ltd. *See*—
Yamada, Shinjiro, Satoh, Seiki, Mabuchi, Kazuichi, Kitao, Shiei, and Egawa, Yoshiaki, 5,010,264, Cl. 310-72.000

MacDonald, Michael *See*—
Gerke, David B., and MacDonald, Michael, 5,009,384, Cl. 248-343.000.

Macfarlane, Donald E. Process for purifying DNA and RNA using cationic detergents, 5,010,183, Cl. 536-27.000

MacFarlane, Glen R., to General Motors Corporation, Intake reservoir for an engine having a check valve, 5,009,199, Cl. 123-52.0MF

Machida, Satoshi, and Hatton, Akio, to Kubota Ltd., Speed control structure, 5,009,125, Cl. 74-606.00R

Machida, Yoshimasa *See*—
Yamauchi, Hiroshi, Sugiyama, Isao, Saito, Isao, Nomoto, Seiichiro, Kamiya, Takashi, Machida, Yoshimasa, and Negi, Shigeto, 5,010,188, Cl. 540-222.000

Machinefabriek Wila B.V. *See*—
van Merksteijn, Jacobus L., 5,009,098, Cl. 72-389.000.

Mackenzie, Harold B., to New Life Foundation, Municipal solid waste material sorting trommel system, 5,009,370, Cl. 241-24.000

MacLeod, Richard J., Chubb, Norman L., and Schiedegger, Charles E., to Tapco Products Company, Inc., Roof vent, 5,009,149, Cl. 98-42.210.

Macome Corporation *See*—
Uemura, Saburo, 5,010,298, Cl. 324-207.190

MacPherson plc *See*—
Waddington, Keith J. and Johnson, Peter W., 5,009,935, Cl. 428-457.000

Madey, John M. J., Benson, Stephen V., Schultz, John F., and Cutolo, Antonello, Non-linear intracivity optical devices for free electron lasers, 5,010,555, Cl. 372-2.000

Maeda, Chikatoshi *See*—
Sugimoto, Atsushi, Nakano, Osamu, Yasuda, Shigeru, Maeda, Chikatoshi, Ozone, Toshio, and Kawagoe, Makoto, 5,009,843, Cl. 420-112.000

Maeda Industries, Ltd. *See*—
Tagawa, Koichi, 5,009,629, Cl. 474/80.000

Maeda, Miho *See*—
Kamishiori, Nobuyuki, Kaneda, Manabu, Tanaami, Toshiyasu, and Maeda, Miho, 5,009,651, Cl. 604-378.000

Maeda, Minoru *See*—
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Maeda, Mitsuo *See*—
Ueyama, Satoshi, Kawakubo, Hiroaki, Isoda, Satoru, and Maeda, Mitsuo, 5,010,451, Cl. 361-504.000

Maeda, Shigemi *See—*
Fuji, Hiroshi, Fujiwara, Tsuneo, Iwaki, Takashi, Numata, Tomiyuki, Tsuji, Kentaroh, Maeda, Shigemi, Yamaguchi, Takeshi, Kojima, Kunio, Deguchi, Toshihisa, and Terashima, Shigeo, 5,010,540, Cl. 369-50.000

Maekawa, Yoshikazu, and Hirata, Tetsuo, to Konica Corporation Copier with automatic document feed having jam prevention function 5,010,364, Cl. 355-207.000

Maeno, Matagoro *See—*
Ohmi, Tadahiro, Miki, Masahiro, Kikuyama, Hirohisa, and Maeno, Matagoro, 5,009,963, Cl. 428-472.200

Maeno, Satoru *See—*
Kasahara, Nobuo, Watanuki, Masayoshi, Maeno, Satoru, and Ohkuni, Masato, 5,010,372, Cl. 355-313.000

Maeno, Yoshinori, Kobayashi, Masanobu, and Oishi, Kayoko, to Oki Electric Industry Co., Ltd. Magneto-optical recording medium having protective film with increased kerr effect and improved protection characteristic and manufacturing method of the same 5,009,762, Cl. 204-192.160

Maenpaa, Matti, Lehtoluoma, Teuvo, Henttinen, Kauko, Jokipalo, Pertti, Saren, Aimo, and Pirinen, Seppo, to Rautaruukki Oy Method and apparatus for the replacing of working rolls in a rolling mill 5,009,096, Cl. 72.239.000

Mag-Tek, Inc *See—*
Sheldon, Dunstan P., 5,010,240, Cl. 235-382.000

Magley, Donald A *See—*
Bustamante, Michael R., Renaker, John J., Jr., and Magley, Donald A., 5,009,790, Cl. 210-689.000

Maher, Galeb H., to MRA Laboratories, Inc. Capacitor with fine grained $BaTiO_3$ body and method for making 5,010,443, Cl. 361-321.000

Maholick, Andrew W *See—*
Kippenhan, B. William, and Maholick, Andrew W., 5,010,514, Cl. 364-900.000

Mahrer, Kenneth D., to Gas Research Institute Method for determining the depth of a hydraulic fracture zone in the earth 5,010,527, Cl. 367-86.000

Maier, Ludwig *See—*
Wenski, Guido, Maier, Ludwig, and Kreuzer, Franz-Heinrich, 5,009,934, Cl. 427-387.000

Maier, Ulrich *See—*
Seidel, Willi, Ehniss, Roland, Skabrond, Klaus, Sauter, Ulrich, Maier, Ulrich, and Ebner, Roland, 5,009,128, Cl. 74-866.000

Maitani, Yoshihisa, to Olympus Optical Company Ltd. Method and apparatus for photometry from plural points of automatic exposure camera 5,010,359, Cl. 354-410.000

Makita, Kensuke *See—*
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Makkuni, Ranjit, Zdybel, Frank, Jr., and Stults, Robert A., to Xerox Corporation Gesture-modified diagram for retrieval of image resembling diagram, with parts selectable for further interactive retrieval 5,010,500, Cl. 364-521.000

Malherbe, Bent, to Sony Corporation Method of making surface finishing rollers as well as a roller made thereby 5,008,993, Cl. 29-125.000

Malvern, Alan R., to British Aerospace Public Limited Company Optical sensor for determining changes in a dimension and/or a temperature of an object 5,009,505, Cl. 356-352.000

MAN Nutzfahrzeuge Aktiengesellschaft *See—*
Deschler, Gerhard, 5,009,001, Cl. 29-888.080

MAN Roland Druckmaschinen AG *See—*
John, Thomas, and Bock, Georg, 5,009,158, Cl. 101-219.000

Manabe, Hajime, and Murata, Yoshiyuki, to Casio Computer Co., Ltd. Electronic percussion instrument having a memory function and a musical tone parameter control function 5,009,146, Cl. 84-615.000

Manabe, Haruhiko *See—*
Suzuki, Fumio, Kuroda, Takeshi, Nakasato, Yoshisuke, Ohmori, Kenji, and Manabe, Haruhiko, 5,010,084, Cl. 514-293.000

Mandai, Harufumi, Tanaka, Yukio, Takakura, Shinichi, and Nakagawa, Takuji, to Murata Manufacturing Co., Ltd. Method of manufacturing laminated ceramic electronic component 5,009,744, Cl. 156-656.000

Manderfeld, Donald J., and Sells, Robert A., to DataCard Corporation Input hopper apparatus 5,009,411, Cl. 271-129.000

Manfredi, Antonina *See—*
Manfredi, Carl, Manfredi, Antonina, Manfredi, Dario P., and Giarraffa, Savia, 5,009,374, Cl. 244-1.00R

Manfredi, Carl, Manfredi, Antonina, Manfredi, Dario P., and Giarraffa, Savia Aircraft with releasable wings 5,009,374, Cl. 244-1.00R

Manfredi, Dario P *See—*
Manfredi, Carl, Manfredi, Antonina, Manfredi, Dario P., and Giarraffa, Savia, 5,009,374, Cl. 244-1.00R

Manganaro, James L *See—*
Wolf, Steven D., Manganaro, James L., and Miller, Ronald H., 5,009,677, Cl. 55-12.000

Mangeruga, Joseph N Debris collection for a lawnmower 5,009,377, Cl. 248-99.000

Maninger, Loren L., and Marks, Bruce G., to RCA Licensing Corporation Color picture tube having an electron gun with reduced convergence drift 5,010,271, Cl. 313-412.000

Mannesmann Aktiengesellschaft *See—*
Gugel, Bernd, Kaufmann, Clemens, Kitzberger, Herbert, and Rohrer, Kurt, 5,009,529, Cl. 400-124.000

Manoliu, Juliana, to National Semiconductor Corporation CMOS and bipolar fabrication process using selective epitaxial growth scalable to below 0.5 micron 5,010,034, Cl. 437-89.000

Manoury, Philippe, Binet, Jean, Obitz, Daniel, Defosse, Gerard, Dewitte, Elisabeth, and Veronique, Corinne, to Synthelabo Indolone derivatives, their preparation and their application in therapy 5,010,079, Cl. 514-253.000

Manschitz, Erwin, to Hilti Aktiengesellschaft Tool chuck for tool bits 5,009,440, Cl. 279-71.000

Mansour, Mohamed M *See—*
Chang, Ker-Chin, Elkins, Clarence F., Marshall, Paul A., Dunwoodie, Duane E., Mansour, Mohamed M., Bauer, Paul R., and Lobitz, Walter A., 5,010,544, Cl. 370-13.100

Manssen, Keith R., and Moutrie, Michael F., to Motorola, Inc. Ceramic block filter with co-fired coupling pins 5,010,309, Cl. 333-206.000

Mansukhani, Gul *See—*
Cherukuri, Subraman R., Raman, Krishna, Mansukhani, Gul, Cirese, Ralph, and Wong, Lucy I., 5,009,893, Cl. 424-440.000

Manufacture d'Appareillage Electrique de Cahors *See—*
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Manufacturer's Consultants, Inc *See—*
Smith, Franklin G., 5,009,256, Cl. 152-221.000

Manville Corporation *See—*
Smith, Timothy R., 5,009,906, Cl. 426-330.400

Marc, Pierre A *See—*
Brady, Thomas F., Condon, Michael F., and Marc, Pierre A., 5,009,699, Cl. 71-92.000

Marciano-Agostinelli, Fabrizio, Barbaro-Forleo, Marco, Marin, Carlo and Cinquemani, Paul L., to Pirelli Cable Corp. Power cable with water swellable agents and elongated metal elements outside cable insulation 5,010,209, Cl. 174-23.00C

Marconi Instruments, Inc *See—*
Janney, Mark A., Newey, Roger, and Robinson, Irwin J., III, 5,010,560, Cl. 377-20.000

Maresch, Gerald *See—*
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Maresch, Peter *See—*
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Marhold, Albrecht *See—*
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Maric, Milan, and Kulas, John I Drill assembly 5,009,271, Cl. 175-53.000

Marin, Carlo *See—*
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Marin Tek, Inc *See—*
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Marine Environmental Research, Inc *See—*
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Marion Laboratories, Inc *See—*
Bottom, Carey B., and Kwoka, Margaret N., 5,010,069, Cl. 514-166.000

Markel Industries, Inc *See—*
Preston, Wallace, 5,008,968, Cl. 15-1.510

Marks, Bruce G *See—*
Maninger, Loren L., and Marks, Bruce G., 5,010,271, Cl. 313-412.000

Markwell, Roger E., Smith, Stephen A., Hughes, Ian, and Gaster, Laramie M., to Beecham Pharmaceuticals Novel compounds 5,010,097, Cl. 514-419.000

Maroni, Victor A., to Arch Development Corporation Method of bonding metals to ceramics 5,010,053, Cl. 505-1.000

Marosi, Laszlo *See—*
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Marrelli, John C *See—*
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Mars Incorporated *See—*
Frontino, Louis J., 5,010,242, Cl. 235-467.000

Marshall, Paul A *See—*
Chang, Ker-Chin, Elkins, Clarence F., Marshall, Paul A., Dunwoodie, Duane E., Mansour, Mohamed M., Bauer, Paul R., and Lobitz, Walter A., 5,010,544, Cl. 370-13.100

Marshall, Rick A Metal fence post extractor 5,009,394, Cl. 254-30.000

Martella, Donald *See—*
Kalotay, Paul, Bruck, Robert, Emch, Arnold, and Martella, Donald, 5,009,109, Cl. 73-861.380

Martelli, Joseph M Batting practice method 5,009,420, Cl. 273-26.00R

Marten, F. Lennart *See—*
Famili, Amir F., Marten, F. Lennart, and Mohanty, Dillip K., 5,010,153, Cl. 526-243.000

Martin, Antonio M., and Scott, Peter J., to Memorial University of Newfoundland Liquid organic peat fertilizer and process of preparing same 5,009,697, Cl. 71-24.000

Martin Automatic, Inc *See—*
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Martin Brinkmann AG *See—*
Schmidt, Ernst, Stehmeier, Heinz, Ruppert, Heinrich W., Gatschmann, Klaus G., and Schutze, Gunter, 5,009,237, Cl. 131-70.000

Martin, Gary D *See—*
Bechtel, Linda K., and Martin, Gary D., 5,010,554, Cl. 371-37.100

Martin, George R *See—*
Fuller, George C., Martin, George R., Mueller, Richard A., and Reich, Reuven, 5,010,080, Cl. 514-255.000

Martin GmbH fur Umwelt-und Energietechnik *See—*
Martin, Johannes J. E., and Martin, Walter J., 5,009,171, Cl. 110-109.000

Martin, Johannes J. E., and Martin, Walter J., to Martin GmbH fur Umwelt-und Energietechnik Feed device with filling hopper and adjoining feed chute for feeding waste to incineration plants 5,009,171, Cl. 110-109.000

Martin, Joseph A *See—*
Lambert, Robert W., Martin, Joseph A., and Thomas, Gareth J., 5,010,060, Cl. 514-49.000

Martin, Luther W., and Smith, Richard L Window cutter for gas service tie-overs 5,009,007, Cl. 30-92.000

Martin, Scott D *See—*
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Martin, Theresa E *See—*
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Martin, Walter J *See—*
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Martinez, David M., and Campbell, Gordon C., to Robert Bosch Power Tool Corporation Saber saw 5,009,012, Cl. 30-394.000

Martinschus, Franz-Dieter, Vogel, Hans-Henning, Greif, Norbert, Oppenlaender, Knut, Denzinger, Walter, and Hartmann, Heinrich, to BASF Aktiengesellschaft Fuels for gasoline engines 5,009,670, Cl. 44-385.000

Maru, Shingo, to Maruyama Mfg. Co., Ltd. Multiple reciprocating pump 5,009,580, Cl. 417-533.000

Marutake, Yozo, Fukutome, Tatsuro, and Asami, Motomu, to Rion Kabushiki Kaisha Audio current pick-up device 5,010,575, Cl. 381-68.000

Maruyama, Hiroshi, Kiryu, Naohiko, Minezaki, Etsuko, Tagashira, Susumu, and Shimokawahara, Hisashi, to Somar Corporation Light-safe masking film 5,009,944, Cl. 428-40.000

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Masaki, Shouichi, Fukushima, Akira, Fujimoto, Shusaku, and Nakano, Makoto, to Nippondenso Co., Ltd. Anti-skid control system with a common braking pressure control device for different wheels 5,010,489, Cl. 364-426.020

Masasumi, Yana, Hitoshi, Nagato, Kiyoshi, Yamada, Shyoji, Ueno, and Kunihiro, Shibuya, to Tokyo Shibaura Denki Kabushiki Kaisha Thermal transfer color printer with sheet retaining and guiding structure adjacent platen 5,009,527, Cl. 400-120.000

Mascart, Dominique *See—*
Bonnand, Christian, Mascart, Dominique, and Druelle, Philippe, 5,008,996, Cl. 29-727.000

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Maschinenfabrik Rieter AG *See—*
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Mashita, Kentaro *See—*
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Schreiber, William F., Lippman, Andrew B., Adelson, Edward H., and Netravali, Aran N., 5,010,405, Cl. 358-141.000

Massey, Dale A., to Harper-Wyman Company Linear flow turn-down valve 5,009,393, Cl. 251-207.000

Masuda, Kenji, to Daikin Industries, Ltd. Flowmeter 5,009,248, Cl. 137-486.000

Masuda, Sadao *See—*
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Maternaghan, Trevor J *See—*
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Matijega, Roney J *See—*
Herrington, Ronald M., Turner, Robert B., and Matijega, Roney J., 5,010,117, Cl. 521-159.000

Matoushek, Robert J., Fisher, Terrence L., and Whritenor, James A., to Eastman Kodak Company Clamping apparatus for thermal transfer printer 5,009,509, Cl. 346-138.000

Matsubara, Shinichi, Uehara, Masafumi, Bunya, Shinichi, and Katabashi, Eriko, to Konica Corporation, and Mitsubishi Kasei Corporation Photosensitive composition 5,009,981, Cl. 430-175.000

Matsuda, Hiroshi *See—*
Eguchi, Ken, Kawada, Haruki, Sakai, Kunihiro, Tomida, Yoshinori, Matsuda, Hiroshi, Tsuboyama, Akira, Takimoto, Kiyoshi, and Takamatsu, Osamu, 5,009,489, Cl. 350-341.000

Matsuda, Naohiko, and Makita, Kensuke, to Central Glass Company, Limited Method and apparatus for coating thin liquid film on plate surface 5,009,933, Cl. 427-287.000

Matsuda, Toshiro, to Nissan Motor Company, Limited Method and system for detecting wheel slippage 5,009,279, Cl. 180-197.000

Matsui, Masataka, to Kabushiki Kaisha Toshiba CMOS static memory 5,010,521, Cl. 365-189.010

Matsumoto, Hideo, and Hokuyo, Shigeru, to Mitsubishi Denki Kabushiki Kaisha Solar cell 5,009,721, Cl. 136-256.000

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Matsumoto, Sakae, and Ichikawa, Mitsuo, to Nippon Seiko Kabushiki Kaisha Telescopic steering column device 5,009,121, Cl. 74-493.000

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Yoshimoto, Masahiko, and Matsumura, Tetsuya, 5,010,519, Cl. 365-149.000

Matsuo, Hirokazu, and Nagato, Hiroyasu, to Minolta Camera Kabushiki Kaisha Copying apparatus provided with automatic document feeder 5,010,371, Cl. 355-313.000

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Enari, Masahiko, Shikichi, Satoshi, Kawaguchi, Fumiaki, Suzuki, Kenichi, Usui, Masayuki, Matsuoka, Hiroshi, Matsuoka, Kazuhiko, Hosoya, Hideki, Aoki, Akio, and Minoura, Kazuo, 5,010,534, Cl. 369-32.000

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Enari, Masahiko, Shikichi, Satoshi, Kawaguchi, Fumiaki, Suzuki, Kenichi, Usui, Masayuki, Matsuoka, Hiroshi, Matsuoka, Kazuhiko, Hosoya, Hideki, Aoki, Akio, and Minoura, Kazuo, 5,010,534, Cl. 369-32.000

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Matsushita Electric Industrial Co., Ltd *See—*
Arakawa, Yoshiki, 5,010,501, Cl. 364-522.000
Katagawa, Hiromi, 5,010,569, Cl. 379-210.000
Kawakami, Toshikatsu, Fukuda, Shin-Shinbo, Hiroyasu, Unemura, Toyoaki, Sakamoto, Ken, and Kondo, Tomoji, 5,010,406, Cl. 358-147.000
Nishino, Masakazu, 5,010,402, Cl. 358-138.000
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Wakita, Naohide, Uemura, Tsuyoshi, Ohnishi, Hiroyuki, Ohba, Noriko, Ota, Isao, and Fujita, Shingo, 5,010,327, Cl. 340-784.000
Yamashita, Akio, Yoshimura, Susumu, and Tsuchiya, Sohji, 5,009,958, Cl. 428-411.100
Yamauchi, Hiroyuki, 5,010,523, Cl. 365-205.000

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Mukai, Tadayoshi, and Yoshino, Akira, 5,010,287, Cl. 318-801.000

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Ametani, Minoru, Funakoshi, Keigo, Kira, Akihiko, Matsushita, Takao, and Shirakura, Keizo, 5,009,735, Cl. 156-241.000

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Gloeckler, Gerhard, Muller, Heinz, Kepplinger, Leopold W., Matzawrakos, Panajiotis, Koch, Erwin, and Auberger, Heinrich, 5,009,397, Cl. 266-197.000

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Mauro, David J., Furcsik, Susan L., Katz, Frances R., Faron, Eugene J., II, Gottned, David J., and Pustek, Frank J., to American Maize-Products Company Foodstuff containing aewx starch 5,009,911, Cl. 426-578.000

Maus, Roy *See—*
Gersten, Martin, Tibbling, Lars, and Maus, Roy, 5,009,498, Cl. 351-212.000

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Akizawa, Nobuyuki, Kudo, Yasunori, Kanai, Toshiyuki, Kamei, Yasuo, Oyama, Nobuaki, and Negishi, Akihito, 5,009,355, Cl. 227-114.000

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Maya, Leon, to United States of America, Energy Low-loss binder for hot pressing boron nitride 5,010,045, Cl 501-96.000
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Richardson, Curtis G , 5,009,570, Cl 415-174.200
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Kelley, Joseph M Kucher, Donald C and Mayurnik, George, 5,009,875, Cl 423-477.000
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Abe, Ryoji, Okita, Junichi, Miyagoshi, Katsunobu and Hashiyama, Kouichi, 5,009,205, Cl 123-195.00H
Edahiro, Takeshi, and Kanai, Seita, 5,009,449, Cl 280-690.000
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Okada, Kenji, and Ueno, Hiroshi, 5,009,758, Cl 204-180.800
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Bishai, Macram N , 5,009,212, Cl 123-533.000
McCoy, David C Adjustable armrest for chair 5,009,467, Cl 297-411.000
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McCree, John O , to Dow Chemical Company, The Method of forming a reclosable container with grip strip 5,009,828, Cl 264-177.100
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McElrath, Kenneth O , Jr Robertson, Martha H and Chow, Wai Yan Ternary adhesive compositions 5,010,119, Cl 523-205.000
McGeehan, John K , to E-M Diagnostic Systems, Inc Particles containing mannitol suitable for tabletting into diagnostic reagents 5,009,994, Cl 435-4.000
McKee, Michael J *See*—
Henschen, Homer F , McKee, Michael J and Pawlikowski, Joseph M , 5,010,233, Cl 219-209.000
McKinzie, James W Rapid miosis with control of intraocular pressure 5,009,892, Cl 424-422.000
McManus, Michael J Berry, David H , and Dover, Harold P to Schlegel Corporation Elastomeric strip and method of manufacture 5,009,947, Cl 428-122.000
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Chuang, Karl T McMonagle, James B Quaiattini, Robert J Seddon, William A and Clegg, David E , 5,009,872, Cl 423-245.300
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Paley, Martyn N J Murdoch, James B Lampman, David A and McNally, James M , 5,010,300, Cl 324-309.000
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Daignault, Kenneth J , Jr McNamara, Edward I and Sinofsky, Edward I , 5,009,655, Cl 606-007.000
MCNC *See*—
Reisman, Arnold, Nayak, Deepak and Turlik, Iwona, 5,009,360, Cl 228-198.000
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Bell, William E and McNerney, John J , 5,010,021, Cl 436-120.000
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Petroff, Cvetan, 5,009,040, Cl 51-214.000
McShane, James F , to Plough, Inc Cup for dyeing eggs 5,009,940, Cl 428-35.700
McSweeney, Michael A and Stufflebeam, John F , to J I Case Company Chute closure apparatus 5,009,345, Cl 222-556.000
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Sievers, Uve, 5,009,664, Cl 623-16.000
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Tsuji, Tsuyoshi, Satoh, Masaaki, and Yunoki, Masayuki, 5,009,775, Cl 210-85.000
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McDonald, Ray S , 5,009,644, Cl 604-175.000
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Lee, Ta J , 5,010,105, Cl 514-510.000
Lin, Chung Y , 5,009,895, Cl 424-465.000
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Smith, Lynn C , and Merlino, Mario J , 5,008,962, Cl 2-234.000
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Methlie, Jennifer L *See*—
Wanger, Mark E , Methlie, Jennifer L Christie, Leslie G , Dauner, Daniel R , Domel Douglas R Jones, David P Oliver, Thomas C , and Stavely, Donald J , 5,010,536, Cl 369-36.000
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Heimala, Seppo O Hyvarinen, Olli V J , and Metsarinta, Maija-Leena, 5,009,870, Cl 423-239.000
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Pruett, Wayne P , Meyer, Max F , Jr and Breeding, Kenneth F , 5,010,165, Cl 528-272.000
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Kalotay, Paul, Bruck, Robert, Emch, Arnold, and Martella, Donald, 5,009,109, Cl 73-861.380
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Yasuda, Masashi, Uchimoto, Yoshihiro, and Mikata, Yasunori, 5,009,352, Cl 226-94.000
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Piani, Silvano, Tamagnone, Gianfranco Alpino, Raul R , Milani, Maria R , and Fantuz, Marinella, 5,010,063, Cl 514-56.000
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Pettersen, Jarl M , Nilsson, Arild, and Millaway, Robert M , 5,009,792, Cl 210-705.000
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Pollet, Jean-Claude, Williams, Gary L , Armstrong, Gordon P , and Miller, David G , 5,009,941, Cl 428-36.300
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Minami, Fumihiro, to Kabushiki Kaisha Toshiba Automatic wiring method for semiconductor integrated circuit devices 5,010,031, Cl 437-51.000
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Kosugi, Yoshitsugu, Tanaka, Hideoki, Suzuki, Hideo, and Shiraki, Masaru, 5,010,004, Cl 435-134.000
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Cole, Susan M , 5,009,224, Cl 128-156.000
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Minton, John P , Webb, Thomas E , and Abou-Issa, Hussein M , to Ohio State University Research Foundation Method and composition for achieving anticarcinogenic activity 5,010,107, Cl 514-578.000
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Hokuyo, Shigeru, Oda, Takao, and Matsumoto, Hideo, 5,009,720, Cl 136-255.000
Inoue, Yoshinori, Kumanoya, Masaki, Komatsu, Takahiro, Konishi, Yasuhiro, and Dosaka, Katsumi, 5,010,259, Cl 307-482.000
Ishii, Tatsuya, 5,010,379, Cl 357-23.600
Katoh, Takayuki, 5,010,019, Cl 437-8.000
Matsumoto, Hideo, and Hokuyo, Shigeru, 5,009,721, Cl 136-256.000
Miki, Takahiro, and Hosotani, Shiro, 5,010,338, Cl 341-159.000
Mitarai, Tadashi, and Kanda, Makoto, 5,009,590, Cl 432-121.000
Murakami, Tokumichi, Asai, Kohtaro, Kamizawa, Koh, Nishida, Masami, Yamazaki, Eizo, Itoh, Atsushi, and Kinjoh, Naoto, 5,010,401, Cl 358-136.000
Murao, Fumihide, 5,010,394, Cl 358-29.000
Murata, Shigemi, 5,010,263, Cl 316-68.00B
Nagao, Masashi, 5,009,072, Cl 62-6.000
Okada, Kazuhisa, and Kusumoto, Ichirou, 5,010,296, Cl 324-158.00P
Okuda, Hiroshi, and Ozawa, Masayuki, 5,009,209, Cl 123-415.000
Sasaki, Yoshiyuki, Tsunashima, Kenji, Ookuma, Ikuo, and Fujii, Toshifumi, 5,010,404, Cl 358-139.000
Seiwa, Yoshito, 5,010,375, Cl 357-16.000
Shiba, Tetsuo, 5,010,381, Cl 357-30.000

Tanaka, Takao and Odahara, Kazuhiro, 5,010,265, Cl. 219-69.000
Yoshida, Susumu, 5,009,719, Cl. 136-249.000
Yoshimoto, Masahiko and Matsumura, Tetsuya, 5,010,519, Cl. 365-149.000

Mitsubishi Electric Corporation *See*—
Saito, Yasuo, Kouzuki, Hiroyuki and Murai, Takeshi, 5,010,490, Cl. 364-426.040

Mitsubishi Kasei Corporation *See*—
Matsubara, Shinichi, Uehara, Masafumi, Bunya, Shinichi and Katahashi, Eriko, 5,009,991, Cl. 430-175.000

Mitsubishi Kinzoku Kabushiki Kaisha *See*—
Kida, Michio, Arai, Yoshiaki and Sahira, Kenshi, 5,009,562, Cl. 422-249.000

Mitsubishi Metal Corporation *See*—
Komabayashi, Masashi, Kuramochi, Kunio and Hiraiwa, Kenichi, 5,009,717, Cl. 136-201.000
Yoshimura, Hironori and Shyogo, Inada, 5,009,705, Cl. 75-246.000

Mitsubishi Nuclear Fuel Company, Ltd. *See*—
Kirihara, Tomoo, Nakagawa, Ippei, Seki, Yoshinobu, Honda, Yutaka and Ichihara, Yasuo, 5,009,751, Cl. 264-61.000

Mitsubishi Paper Mills Limited *See*—
Itoh, Akira and Haino, Kozo, 5,009,976, Cl. 430-567.000

Mitsubishi Petrochemical Co. Ltd. *See*—
Hirose, Sachio, Hane, Motomu and Inagawa, Masamoto, 5,010,174, Cl. 530-307.000

Mitsubishi Rayon Co., Ltd. *See*—
Yoshida, Kenji, Funato, Ryo, Takahito, Syuji, Kubo, Shinji and Inagaki, Nobushi, 5,009,978, Cl. 430-109.000

Mitsui Engineering & Shipbuilding Co., Ltd. *See*—
Hirano, Yoshinao, Sato, Katsuhiro, Nagamori, Shigeru, Murata, Katsuhide, Horikiri, Kazuhiro and Shirai, Junji, 5,010,565, Cl. 425-174.000

Mitsui Mining & Smelting Co. *See*—
Yamada, Shinjiro, Satoh, Seiki, Mabuchi, Kazuichi, Kitao, Shie and Egawa, Yoshiaki, 5,010,264, Cl. 310-72.000

Mitsui Petrochemical Industries, Ltd. *See*—
Kobsaka, Masaki, Higashi, Isaburou, Akana, Yoshinori, Hashimoto, Mikio and Yatsu, Tadao, 5,010,146, Cl. 525-4.000
Morinaga, Akio and Kigami, Takeo, 5,010,132, Cl. 524-601.000

Mitsui Toatsu Chemicals, Inc. *See*—
Aoki, Masaaki, Kamiyama, Masayuki, Asai, Kiyotsugu and Yamaguchi, Akihiro, 5,010,161, Cl. 528-59.000

Mitsumori, Kazuya *See*—
Taguchi, Katsuhiko and Mitsumori, Kazuya, 5,010,427, Cl. 360-99.150

Miura, Hironori *See*—
Hayashi, Hiroyuki, Seto, Tsuneo, Miura, Hironori and Fujimoto, Yoji, 5,009,994, Cl. 72-225.000

Miyachi, Tsuneharu *See*—
Higuchi, Nariyoshi, Yamagishi, Miki and Miyachi, Tsuneharu, 5,009,671, Cl. 424-240.000

Miyagoshi, Katsunobu *See*—
Abe, Ryoji, Okeya, Junichi, Miyagoshi, Katsunobu and Hashiyama, Kouichi, 5,009,265, Cl. 123-195.00H

Miyaji, Itsuo *See*—
Endo, Mineyo, Takegami, Kiyoyoshi, Hishida, Noriaki and Miyaji, Itsuo, 5,009,436, Cl. 277-80.000

Miyake, Masaya *See*—
Sasame, Akira, Sakamoue, Hitoyuki, Takeuchi, Hisao, Miyake, Masaya, Yamakawa, Akira, Yoshio, Yasuhisa and Akazawa, Hitoshi, 5,010,356, Cl. 357-71.000

Miyake, Takashi *See*—
Utsugi, Nobuo, Kihara, Hisashi, Mori, Shuichi, Fuse, Junichi, Miyake, Takashi and Ikata, Yoshikatsu, 5,010,437, Cl. 360-137.000

Miyake, Toru *See*—
Higuchi, Naroshige and Miyake, Toru, 5,009,972, Cl. 430-7.000

Miyamoto, Hidenori, to Nikon Corporation, Predetermined magnification photographing apparatus for a camera, 5,010,358, Cl. 354-402.000

Miyamoto, Shoji *See*—
Mori, Kinji, Kuma, Yuko, Akiyama, Masakazu, Kadowa, Tadaaki, Kawano, Katsumi, Miyamoto, Shoji, Nohmi, Makoto, Shingai, Sadamori, and Ihara, Hirokazu, 5,010,479, Cl. 364-200.000

Miyamoto, Toshio *See*—
Araya, Junji, Ohzeki, Yukihiro, Miyamoto, Toshio, Hiroshima, Koichi, Sato, Yasushi, and Nakahata, Kimio, 5,010,370, Cl. 355-274.000

Miyata, Hidenobu, to GFK GmbH, Video printer, 5,010,408, Cl. 364-519.000

Mizumura, Yutaka *See*—
Yatsuka, Takeshi, Murata, Hiroshi, Mizumura, Yutaka and Kotera, Nobukazu, 5,009,960, Cl. 428-423.100

Mizuno, Tsuyoshi and Hirano, Motoki, to Nissan Motor Company, Ltd., Plane patch antenna, 5,010,349, Cl. 343-700.0MS

MNY Holdings and Agencies Limited *See*—
Grinberg, Oded, 5,009,164, Cl. 102-502.000

Moberg, Gregory O., to Eastman Kodak Company, Method and apparatus for driving a DC motor, 5,010,282, Cl. 318-254.000

Mobil Oil Corporation *See*—
Avidan, Amos A. and Yurchak, Sergei, 5,009,851, Cl. 422-141.000
Bartilucci, Mark P., Karsner, Grant G. and Tracy, William J. III, 5,009,767, Cl. 208-65.000
Harandi, Mohsen N. and Owen, Hartley, 5,009,850, Cl. 422-189.000
Kovacs, Richard C., Krambeck, Frederick J. and Sarli, Michael S., 5,009,853, Cl. 422-144.000
Linville, Andrew F. Jr. and Shirley, Thomas F., 5,011,526, Cl. 367-46.000

Mobil Solar Energy Corporation *See*—
Vayman, Zinovy S., 5,010,380, Cl. 437-230.000

Mobley, Dewey F., Peterson, Robert G. Sr. and LaCava, James E., to Interlock Corporation, Terminal assembly with fixed and flexible tab receptacle retainers, 5,009,615, Cl. 439-595.000

Modern Industries, Inc. *See*—
Barnes, Richard C. and Hayes, Philip A., 5,009,967, Cl. 14-7.000

Moeller, Randolph C. *See*—
Sliger, Kris M., Moeller, Randolph C. and Williamson, Scott E., 5,009,264, Cl. 166-106.000

Mohanty, Dilip K. *See*—
Hamdi, Amir F., Marten, F. Lennart and Mohanty, Dilip K., 5,010,158, Cl. 526-243.000

Mohnot, Shantilal M. *See*—
Johnson, Hiram B., Laferty, Samuel B., Wright, Merwin P. and Mohnot, Shantilal M., 5,009,671, Cl. 427-252.000

Moring, Ove and Resa, Steinar, to Akva A/S, Method of pelleting dry pellets from a mixture containing thermo-hardened ingredients particularly for use as fish feed, and the machine for carrying out the process, 5,009,808, Cl. 426-454.000

Mold Masters Limited *See*—
Schmidt, Harald H., 5,009,718, Cl. 156-242.000

Moles, Incorporated *See*—
Plocek, Edward J., Weiss, Stephen Z. and Pike, Benjamin, 5,009,604, Cl. 433-154.000
Regner, Kent, 5,009,641, Cl. 433-26.000
Rishworth, Paul E., Rishworth, Dennis E. and Dixon, Daniel A., 5,009,612, Cl. 433-40.000

Molins, Alberto F., Method of recovering energy from sea waves, 5,009,069, Cl. 60-641.200

Moll, Franz *See*—
Scheerer, Rainer and Moll, Franz, 5,009,900, Cl. 430-300.000

Mollier, Pierre *See*—
Bouden, Gerard, Mollier, Pierre, Suez, Jean-Paul, Ong, Teng Tannhot, Pascal and Wallart, Francis, 5,011,257, Cl. 385-146.000

Monarch Marking Systems, Inc. *See*—
Goodwin, Brent E., Karn, Donald L. and Mistarz, John D., 5,009,789, Cl. 156-384.000

Monroe, James A. *See*—
Newman, Jack and Monroe, James A., 5,010,267, Cl. 307-116.000

Monsanto Company *See*—
Ebner, Jerry R. and Gleaves, John T., 5,009,842, Cl. 422-63.000
Hardiman, Christopher T., 5,011,154, Cl. 527-145.000
Iwaszkowicz, Carlos, 5,009,369, Cl. 260-22.000

Montangero, Paolo *See*—
Braglia, Marco, DeFrancesco, Robert, and Montangero, Paolo, 5,010,254, Cl. 250-396.000

Montgomery, Gary V. and Beck, Terry E., to Sunbeam Plastics Corporation, Tamper indicating closure having a rotary seal, 5,009,329, Cl. 215-252.000

Moody, Paul E., to United States of America, Navy, Submarine torpedo tube shutterway launch mode adapter, 5,009,152, Cl. 114-238.000

Mooney, Gerry *See*—
Kosin, John A., Mooney, Gerry, Tarquini, Michael V. and Garcia, Rod A., 5,009,820, Cl. 252-350.000
Wason, Satish K., Mooney, Gerry, Andrews, Claude R., Tarquini, Michael E., Kosin, John A. and Garcia, Rod A., 5,009,810, Cl. 252-350.000

Moore, John F. to Kabushiki Kaisha Toshiba, System for communicating energy between territory missing devices, 5,010,294, Cl. 250-551.000

Moore, Richard C. *See*—
Dekeyser, Mark A. and Moore, Richard C., 5,010,005, Cl. 514-7.000

Moore, Wayne D. *See*—
Raikes, Terry F., Kramer, William L., Howard, John H., Moore, Wayne D., Jackson, Lewis and Kotecki, Jeffrey D., 5,009,277, Cl. 137-25.5

Morales, Alfredo *See*—
Galbasso, Roberto, Morales, Alfredo and Salazar, Jose A., 5,009,268, Cl. 205-367.000

Moran, Larry K. and Murray, Thomas R., to Conoco, Inc., Well cement fluid loss additive and method, 5,009,267, Cl. 166-293.000

Moran, Susan C. *See*—
Abu Isa, Ismat A., Lusebi, Elio, Jaynes, Craig B., Moran, Susan C. and Rey, Michael A., 5,009,827, Cl. 264-156.000

Morand, Michel, to Wyant & Company, Limited, Bathroom tissue dispenser (spindle release), 5,009,313, Cl. 206-391.000

Morane, Bruno, to L'Oreal, Packaging container using a system of fermentation to produce a propulsive gas, 5,009,340, Cl. 222-94.000

Moreau, Sylviane *See*—
Kim, Sun H. and Moreau, Sylviane, 5,010,089, Cl. 514-314.000

Morgan, Charles R., Reverse-diffusing baffle for applying sprout inhibitor to stored potatoes, 5,009,152, Cl. 99-476.000

Morgan, Cheryle L. and Judy, Millard M., Medical sponges and wipes with a barrier impermeable to infectious agents, 5,009,652, Cl. 604-365.100

Mori, Kinji, Kuma, Yuko, Akiyama, Masakazu, Kadowa, Tadaaki, Kawano, Katsumi, Miyamoto, Shoji, Nohmi, Makoto, Shingai, Sadamori, and Ihara, Hirokazu, to Hitachi, Ltd., Information processing and storage system with signal transmission loop line, 5,010,479, Cl. 364-200.000

Mori, Shuichi *See*—
Utsugi, Nobuo, Kihara, Hisashi, Mori, Shuichi, Fuse, Junichi, Miyake, Takashi and Ikata, Yoshikatsu, 5,010,437, Cl. 360-137.000

Morikawa, Kiyoshi *See*—
Kobayashi, Kazuo, Morikawa, Kiyoshi, Yamada, Yoshinori, Kurumada, Masakazu, and Sugihara, Masanori, 5,010,484, Cl. 369-77.200

Morikawa, Koji, to Fuji Jukogyo Kabushiki Kaisha, Two-cycle engine having a direct fuel injection system, 5,009,201, Cl. 123-65.0BA

Morikuni, Mitsuru *See*—
Matsumoto, Kenji, Yanagita, Tomoatsu, Nishiyama, Yoshinori, Nagai, Masahiko, and Morikuni, Mitsuru, 5,010,493, Cl. 364-490.000

Morimoto, Akira, to Asahi Kogaku Kogyo Kabushiki Kaisha, Light scanning device with polarizing device to make light transmission more uniform, 5,009,472, Cl. 350-6.500

Morimoto, Yoshihiko and Kohno, Tetsushi, to Fuji Jukogyo Kabushiki Kaisha, Transmission ratio control system for a continuously variable transmission, 5,009,127, Cl. 74-866.000

Morimoto, Yoshihiko, and Kohno, Tetsushi, to Fuji Jukogyo Kabushiki Kaisha, Transmission ratio control system for a continuously variable transmission, 5,009,129, Cl. 74-866.000

Morin, Carl F. *See*—
Benin, Joshua, Di Maio, William G., Morin, Carl F., and Lawler, James A., 5,009,942, Cl. 428-36.600

Morinaga, Akio, and Kigami, Takeo, to Mitsui Petrochemical Industries, Ltd., Water-base paint for coating the inside surface of metallic can, 5,010,132, Cl. 524-601.000

Morinaga, Tetsuya *See*—
Kaneko, Toshimi, Morinaga, Tetsuya, and Hatakenaka, Tetsuo, 5,010,313, Cl. 335-296.000

Morita, Kaoru, and Shioda, Atsushi, to Kansai Paint Co., Ltd., Can interior coating composition, 5,010,149, Cl. 525-481.000

Morita, Shigetoshi *See*—
Taguchi, Akira, Morita, Shigetoshi, Taka, Shunichi, Yamada, Hirohide, Takada, Yoshiaki, Furuichi, Shinji, and Ao, Masahiro, 5,010,429, Cl. 360-103.000

Morita, Tsutomu *See*—
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Morita, Yuzo *See*—
Yoneda, Kenzi, Ueshima, Takaaki, Kuzunuki, Soshiro, Morita, Yuzo, and Tobita, Toshimitsu, 5,010,472, Cl. 364-148.000

Moriwaki, Masafumi, Sano, Shigeaki, Hatakeyama, Katsunori, Yamada, Hiroshi, and Nouno, Youzou, to Toppan Moore Company, Ltd., Signal input sheet, 5,010,213, Cl. 178-18.000

Moriya, Naoko *See*—
Watanabe, Taichi, Ogino, Hidekazu, Hirota, Hajime, Koshika, Tomohito, Moriya, Naoko, and Nozaki, Toshio, 5,009,813, Cl. 252-545.000

Morningstar, Leroy J. *See*—
Fogg, Michael W., and Morningstar, Leroy J., 5,009,616, Cl. 439-608.000

Morris, Christopher J., Coulson, Ian, and Surguy, Paul W. H., to Thorn EMI plc, Display device, 5,010,328, Cl. 340-784.000

Morris, James K., Jacketed paint pellet, 5,009,165, Cl. 102-513.000

Morris, Robert C. *See*—
Damgaard-Iversen, Karsten, Morris, Robert C., Chin, Timothy C., and Kuper, Jerry W., 5,009,658, Cl. 606-128.000

Morrison, Daryl K. *See*—
Elias, Samir F., and Morrison, Daryl K., 5,010,129, Cl. 524-413.000

Morrison, Shawn J., to Northern Telecom Limited, Optical fiber coupling device and method for its use, 5,009,479, Cl. 350-96.150

Mortimore, David B., and Payne, David B., to British Telecommunications public limited company, Optical two-way transmission system with loop reflector modulator, 5,010,586, Cl. 455-605.000

Mosele, John L., and Stolpe, Lars O., to Jelp, Inc., Temporary traffic light control, 5,010,336, Cl. 340-907.000

Moss, Gaylord E. *See*—
Shih, I-Fu, Chang, David B., Arns, James A., Moss, Gaylord E., and Smith, Ronald T., 5,009,502, Cl. 356-152.000

Motoi, Toshihiro *See*—
Murahashi, Takashi, Nakazawa, Toshihiko, Takesue, Toshihiro, and Motoi, Toshihiro, 5,010,353, Cl. 346-108.000

Motorola, Inc. *See*—
Braun, Jeffrey J., 5,010,303, Cl. 330-257.000
Johnson, Richard F., Kabcenell, Amy R., and DeLuca, Joan S., 5,010,547, Cl. 370-94.100
Kobylarz, Daniel E., and Ford, David K., 5,010,570, Cl. 379-390.000
Kuhl, Virgil F., and Noll, Guenter, 5,008,988, Cl. 24-510.000
Manssen, Keith R., and Moutrie, Michael F., 5,010,309, Cl. 333-206.000
Parken, William D., 5,010,583, Cl. 455-9.000
Pfiester, James R., and Hayden, James D., 5,010,030, Cl. 437-192.000
Schwendeman, Robert J., and Kuznicki, William J., 5,010,317, Cl. 340-311.100
Snowden, Gregory O., Barrett, Clifford E., III, and Gomez, Fernando, 5,010,330, Cl. 340-825.210

Motoyama, Shimesu *See*—
Niwa, Kozo, and Motoyama, Shimesu, 5,009,891, Cl. 424-195.100

Mott, Philip J. *See*—
Ivey, John S., Bateman, Paul M., Clauss, Julius A., Cole, Edward H., Jr., and Mott, Philip J., 5,009,631, Cl. 474-213.000

Motykiewicz, Krystyn, to Rostra Engineered Components, Solenoid actuators, 5,010,312, Cl. 335-261.000

Moulin, Claude *See*—
Ferrua, Bernard, and Moulin, Claude, 5,010,017, Cl. 436-500.000

Mouri, Takayuki, to Ikeda Bussan Co., Ltd., Vehicle seat with seatbelt buckler receiver, 5,009,469, Cl. 297-468.000

Moutrie, Michael F. *See*—
Manssen, Keith R., and Moutrie, Michael F., 5,010,309, Cl. 333-206.000

Mowforth, Clive W., Bullock, James F., Maternaghan, Trevor J., and Harvey, Karen N., to Ilford Limited, Silver halide emulsions containing twinned silver halide crystals, 5,009,991, Cl. 430-567.000

MRA Laboratories, Inc. *See*—
Maher, Caleb H., 5,010,443, Cl. 361-321.000

Muellenberg, Ralph, Clamping set with screw sleeve, 5,009,539, Cl. 403-370.000

Mueller, Carl F. *See*—
Garg, Diwakar, Mueller, Carl F., Schaffer, Leslie E., and Dyer, Paul N., 5,009,966, Cl. 428-627.000

Mueller, Hans R., Ulmann, Martin, Conti, Josef, and Muerdel, Guenter, to Eprova AG, Method for the resolution of folinic acid, 5,010,194, Cl. 544-258.000

Mueller, Karl F., to Ciba-Geigy Corporation, Reactive silicone and/or fluorine containing hydrophilic prepolymers and polymers thereof, 5,010,141, Cl. 525-276.000

Mueller, Karl F., to Ciba-Geigy Corporation, Vinyl-urethane substituted hydroxyethyl cellulose, 5,010,155, Cl. 527-301.000

Mueller, Otward M., and Edelstein, William A., to General Electric Company, Cryogenically-cooled radio-frequency power amplifier, 5,010,304, Cl. 330-269.000

Mueller, Richard A. *See*—
Fuller, George C., Martin, George R., Mueller, Richard A., and Reich, Reuven, 5,010,080, Cl. 514-255.000

Mueller, Timothy T. Sculpture apparatus, 5,009,599, Cl. 434-81.000

Muerdel, Guenter *See*—
Mueller, Hans R., Ulmann, Martin, Conti, Josef, and Muerdel, Guenter, 5,010,194, Cl. 544-258.000

Muirfield Holdings L.P. *See*—
Freidel, Kenneth, Littleton, I. Arthur, and Freund, William G., 5,009,693, Cl. 65-107.000

Mukai, Tadayoshi and Yoshino, Akira, to Matsushita Electric Works, Ltd., Induction motor control system, 5,010,287, Cl. 318-801.000

Mukai, Toshio *See*—
Sakamoto, Hiroaki, Fujikura, Masahiro, and Mukai, Toshio, 5,009,706, Cl. 75-244.000

Mukoyama, Yoshiyuki *See*—
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Muller, Eugenio *See*—
Boghen, Franklin M., Camanni, Franco, Del Soldato, Piero, Ghigo, Ezio, and Muller, Eugenio, 5,010,056, Cl. 514-12.000

Muller, German, to Industrie Automation Sondertechnik GmbH & Co., Process for the separation of heavy metals from waste materials, 5,009,793, Cl. 210-710.000

Muller, Hans-Werner *See*—
Traubel, Harro, Strenger, Heinrich, Weber, Karl A., Muller, Hans-Werner, Zapfel, Horst, and Hummel, Axel, 5,009,921, Cl. 427-31.000

Muller, Heinz *See*—
Gloeckler, Gerhard, Muller, Heinz, Kepplinger, Leopold W., Matzawrakos, Panajiotis, Koch, Erwin, and Auberger, Heinrich, 5,009,397, Cl. 266-197.000

Mullverbrennungsanlage Wuppertal GmbH *See*—
Temelli, Sedat, 5,009,173, Cl. 110-244.000

Multiform Desiccants, Inc. *See*—
Cullen, John S., Incorvia, Samuel A., Sigon, Christopher S. and Vaylen, Nicholas E., 5,009,308, Cl. 206-204.000

Multisource Technology Corp. *See*—
Estrov, Alexander, 5,010,314, Cl. 336-198.000

Munie, Gregory C. *See*—
Dodd, Courtney V., and Munie, Gregory C., 5,009,724, Cl. 148-23.000

Murahashi, Takashi, Nakazawa, Toshihiko, Takesue, Toshihiro, and Motoi, Toshihiro, to Konica Corporation, Laser recorder with integrally molded deflector, 5,010,353, Cl. 346-108.000

Murai, Keiichi *See*—
Honda, Mitsuru, Koike, Atsushi, Kimura, Tomohiro, Ogawa, Kyosuke, and Murai, Keiichi, 5,009,974, Cl. 430-69.000

Murai, Takeshi *See*—
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Murakami, Masakazu *See*—
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Murakami, Tokumichi, Asai, Kohtaro, Kamizawa, Koh, Nishida, Masami, Yamazaki, Eizo, Itoh, Atsushi, and Kinjoh, Naoto, to Mitsubishi Denki Kabushiki Kaisha, Picture coding and decoding apparatus using vector quantization, 5,010,401, Cl. 358-136.000

Murao, Fumihide, to Mitsubishi Denki Kabushiki Kaisha, Automatic white balance circuit capable of effectively adjusting white balance under a flashing light source, 5,010,394, Cl. 358-29.000

Muraoka, Takao *See*—
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Murata, Hiroshi *See*—
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Murata, Katsuhide *See*—
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Murata, Kouji *See*—
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Murata Manufacturing Co., Ltd *See*—
Kaneko, Toshimi, Morinaga, Tetsuya, and Hatakenaka, Tetsuo, 5,010,313, Cl 335-296.000
Mandai, Harufumi, Tanaka, Yukio, Takakura, Shinichi and Nakagawa, Takuji, 5,009,744, Cl 156-656.000

Murata, Shigemi, to Mitsubishi Denki Kabushiki Kaisha Hall effect type sensing device 5,010,263, Cl 310-68.00B

Murata, Yoshiyuki *See*—
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Murdoch, James B *See*—
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Murphy, Martin J., Jr., Stubbs, Jack B, and Leonard, Thomas A., to Hipple Cancer Research Corporation Automated capillary scanning system 5,009,503, Cl 356-339.000

Murray, Thomas R *See*—
Moran, Larry K, and Murray, Thomas R., 5,009,269, Cl 166-293.000

Murray, William D *See*—
Duff, Sheldon J B, and Murray, William D., 5,010,005, Cl 435-147.000

Muskegon Automation Equipment, Inc *See*—
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Musyck, Christian E *See*—
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Musyck, Emile P, and Musyck, Christian E, Cryptographic system by blocs of binery data 5,010,573, Cl 380-28.000

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Nagai, Masahiko *See*—
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Nagakura, Kaoru, to Fujitsu Limited Block polling data communication system having optimum block determination means 5,010,329, Cl 340-825.080

Nagamori, Shigeru *See*—
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Nagano, Masashi, to Shimano Industrial Company Limited Brake control apparatus for bicycle 5,009,119, Cl 74-489.000

Naganuma, Hiroshi, Sato, Kenji, Yamamoto, Masashi, Kubota, Toshiaki, Hayashi, Hiroshige, and Ishizaka, Yoshirou, to Sanyo Electric Co., Ltd Low-temperature show case 5,009,080, Cl 62-256.000

Nagao, Masashi, to Mitsubishi Denki Kabushiki Kaisha Refrigerator 5,009,072, Cl 62-6.000

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Nagy, Michael E., to International Business Machines Corporation Method of decoding compressed data 5,010,344, Cl 341-65.000

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Nair, Muraleedharan G *See*—
Ries, Stanley K., Wert, Violet F., and Nair, Muraleedharan G., 5,009,698, Cl 71-92.000

Naito, Yasuo, Kouzuki, Hiroyuki, and Murai, Takeshi, to Mitsubishi Electric Corporation, and Mazda Motor Corporation Constant speed control apparatus for motor vehicle 5,010,490, Cl 364-426.040

Nakagawa, Hiroshi and Maeda, Minoru, to Shinko Electric Company Ltd Strong magnetic thrust force type actuator 5,010,262, Cl 310-12.000

Nakagawa, Ippei *See*—
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Nakagawa, Toyoaki, Sinbuichi, Hiroshi, Terasaka, Katsunori and Saito, Makoto, to Nissan Motor Co., Ltd Air/fuel ratio feedback control system for lean combustion engine 5,009,210, Cl 123-489.000

Nakagoshi, Junji *See*—
Omoda, Koichiro, Tanaka, Teruo, Nakagoshi, Junji, Hamanaka, Naoki, and Nagashima, Shigeo, 5,010,477, Cl 364-200.000

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Nakai, Kenchiro and Nakanishi, Yoshinori, to Otis Elevator Company Sheave array arrangement for elevator 5,009,288, Cl 187-20.000

Nakamura, Haruyuki *See*—
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Nakamura, Hiroto *See*—
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Nakamura, Hitoshi *See*—
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Nakamura, Kosei, Kono, Shinichi, Numai, Kazuhisa and Kimijima, Masami, to Fanuc Ltd Method of synchronous control of spindle motor and feed motor 5,010,286, Cl 318-571.000

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Nakanishi, Kazuki, to Asahi Glass Company, Ltd., and Soga, Naohiro Process for producing porous glass 5,009,688, Cl 65-18.300

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Nalco Chemical Company *See*—
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Syrinek, Allen R, Buggs, Ralph N., and Gabel, Robert K., 5,009,799, Cl 252-8.553
Williamson, Charles D., Allenson, Stephan J., and Gabel, Robert K., 5,009,267, Cl 166-271.000

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Nance, James G., to Cooper Industries, Inc Blowout preventer string support 5,009,289, Cl 188-67.000

Narikawa, Shiro *See*—
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Nash, Bryan, and Stoddard, Trenton D Apparatus and method for adding cordless handset capability to an existing corded telephone 5,010,565, Cl 379-61.000

Nash, Stephen E., and Pichler, Gerald P., to Federal-Mogul Corporation Stretchable oil seal and method of installation 5,009,434, Cl 277-1.000

Natarajan, T Raj, to DSP Technology Communication interface for interfacing a data bus of a computer to a high-speed bipolar communication system 5,010,480, Cl 364-200.000

Nathoo, Nazim S., and Giannopoulos, Fanis, to Shell Oil Company Method and apparatus for manipulation of fabric 5,009,409, Cl 271-90.000

National Science Council *See*—
Chiang, Wen-Yen, and Hu, Chun-Min, 5,010,134, Cl 525-57.000

National Semiconductor *See*—
Phy, William S., 5,008,997, Cl 29-827.000

National Semiconductor Corporation *See*—
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Nayfaver, Frank R Towline and release system for water sports adjunct devices 5,009,183, Cl 114-253.000

Neat, Robin J *See*—
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Ishida, Tomoyuki, 5,010,481, Cl 364-200.000
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Neel, Robert M *See*—
Eilert, Randall N., Neel, Robert M, Harvey, N. Thatcher, Ames, Wilbur R., IV, and Lord, Randall D., 5,008,974, Cl 16-114.00R

Neff, Gregor N Aquatic cage and method 5,009,189, Cl 119-3.000

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Nelson, Jerry T Adjustable gun butt 5,009,021, Cl 42-73.000

Nelson, Joyce K *See*—
Bikson, Benjamin, Nelson, Joyce K., and Perrin, Jerry E., 5,009,678, Cl 55-16.000

Nelson, Kenneth E *See*—
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Newgarden, Joseph E *See*—
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Newkirk, Marc S., to Lanxide Technology Company, LP Process for preparing self-supporting bodies and products produced thereby 5,010,044, Cl 501-93.000

Newman, Jack, and Monroe, James A., to Sy-Quest International Limited Apparatus for hypodermic injection of liquids 5,009,637, Cl 604-68.000

Newman, Neil A *See*—
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Neynaber Chemie GmbH *See*—
Worschech, Kurt, Wedl, Peter, Fleischer, Erwin, Loeffelholz, Frido, and Jaeckel, Manfred, 5,010,123, Cl 524-114.000

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NGK Insulators, Ltd *See*—
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Nguyen, Tho Q., and Casadei, Alberto L., to Westinghouse Electric Corp Axially modular fuel assembly and rod for optimal fuel utilization 5,009,837, Cl 376-261.000

Nickel, Klaus-Dietrich, to Citadel Investments Limited Rotary disintegrating device 5,009,371, Cl 241-187.000

Nickerson, Mark A., Poole, John S., and Frank, Lenore G R., to Hewlett-Packard Company Axially-driven valve controlled fluid trapping assembly 5,009,778, Cl 210-198.200

Niebylski, Leonard M., to Ethyl Corporation Preceramic compositions and ceramic products 5,009,961, Cl 428-446.000

Niederstaetter, Walter *See*—
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Nielsen, Erik B *See*—
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Nielsen, Kenneth A, to Union Carbide Chemicals and Plastics Technology Corporation Methods and apparatus for obtaining wider sprays when spraying liquids by airless techniques 5,009,367, Cl 239-3.000

Nielsen, Mogens C *See*—
Braestrup, Claus T., Nielsen, Mogens C., Christensen, Joergen A., Engelstoft, Mogens, Schou, Henning, Eder, Ulrich, Neef, Gunter, Huth, Andreas, Rahtz, Dieter, and Schmiechen, Ralph, 5,010,077, Cl 514-228.800

Nieuwstad, Peter P Endotracheal tube holder 5,009,227, Cl 128-207.170

Nigon, Christopher S *See*—
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Nigrelli Systems, Inc *See*—
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Nikkoshi Co., Ltd *See*—
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Miyamoto, Hidenori, 5,010,358, Cl 354-402.000
Ohkuma, Hiroya, and Sanada, Satoru, 5,010,537, Cl 369-44.320
Suganuma, Ryoichi, 5,010,222, Cl 318-116.000
Uemura, Tsunesaburo, 5,010,230, Cl 219-121.620

Nilssen, Ole K Power-line-operated high-frequency power supply 5,010,468, Cl 363-37.000

Nilsson, Arild *See*—
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Nilsson, Karl E., to Bayern-Chemie Gesellschaft fuer flugchemische Antriebe mbH Gas generator for inflating a safety bag 5,009,855, Cl 422-164.000

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Nippon Densan Corporation *See*—
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Nippon Flute Co., Ltd *See*—
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Nippon Kokan Kabushiki Kaisha *See*—
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Nippon Nyukazai Company, Ltd *See*—
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Nippon Paint Co Ltd *See*—
Yamanaka, Masahiko, Hanaoka, Motoyoshi, Konse, Hiroaki, Shigeno, Haruhisa, and Kinoshita, Masakatsu, 5,009,936, Cl 427-407.100
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Nippon Piston Ring Co Ltd *See*—
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Nippon Seiko Kabushiki Kaisha *See*—
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Ono, Katsuyasu, 5,009,453, Cl 280-804.000

Takajo, Toshimi, Asai, Hiromitsu, and Haginuma, Kiyoshi, 5,009,520, Cl 384-100 000

Nippon Seimitsu Kogyo Kabushiki Kaisha *See*—
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Nippon Sheet Glass Co , Ltd *See*—
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Nippon Steel Corporation *See*—
Sakamoto, Hiroaki, Fujikura, Masahiro, and Mukai, Toshio, 5,009,706, Cl 75-244 000

Nippon Telegraph and Telephone Corporation *See*—
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Nippondenso Co , Ltd *See*—
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Nishida, Masami *See*—
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Nishikawa, Akira, to Seiko Instruments Inc Diamond probe and forming method thereof 5,010,249, Cl 250-306 000

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Nishimoto, Akihiko, Hosoya, Yoshihiro, Tomita, Kunikazu, Urabe, Toshiaki, and Jitsukawa, Masaharu, to NKK Corporation Method of making non-oriented silicon steel sheets having excellent magnetic properties 5,009,726, Cl 148-111 000

Nishimura, Eiichi, Nakamura, Takao, and Ishida, Hisaki, to Oki Electric Industry Co , Ltd Multiplying unit circuit 5,010,510, Cl 364-758 000

Nishimura, Kohsuke, and Sakai, Kazuo, to Kokusai Denshin Denwa Co , Ltd Light emitting heterojunction semiconductor device 5,010,376, Cl 357-17 000

Nishino, Masakazu, to Matsushita Electric Industrial Co , Ltd Video signal compression apparatus 5,010,402, Cl 358-138 000

Nishino, Masashi *See*—
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Nishitani, Masami, and Suetomi, Joji, to Central Glass Company, Ltd Method for heat treatment of glass plate to strengthen its peripheral region 5,009,694, Cl 65-115 000

Nishiwaki, Toshihiro, to Obara Corporation Tool changer for welding robot 5,010,228, Cl 219-86 250

Nishiyama, Toshikazu *See*—
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Nishizawa, Hidekazu, and Utsunomiya, Tomoaki, to Nikkoshi Co , Ltd Method for measuring stress on steel by determining the reverse magnetic permeability under a magnetic bias field 5,010,299, Cl 324-209 000

Nishizawa, Hideyuki Apparatus for washing narrow neck bottles 5,009,241, Cl 134-102 000

Nissan Motor Co , Ltd *See*—
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Matsuda, Toshiro, 5,009,279, Cl 180-197 000
Mizuno, Tsuyoshi, and Hirano, Motoki, 5,010,349, Cl 343-700 0MS
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Sato, Shigeki, 5,009,402, Cl 267-140 100
Yamaguchi, Hiroshi, 5,010,318, Cl 340-439 000
Yamanaka, Masahiko, Hanaoka, Motoyoshi, Konse, Hiroaki Shigeno, Haruhisa, and Kinoshita, Masakatsu, 5,009,936, Cl 427-407 100

Nissborg, Kurt, to Forsvarets Forskningsanstalt Method to detect radiation and measure its angle of incidence and a detector arrangement to carry out the method 5,010,244, Cl 250-206 100

Nissim, Yosi Check destripper 5,009,139, Cl 83-419 000

Nissin Electric Co , Ltd *See*—
Ogata, Kiyoshi, Ando, Yasunori, and Kamijo, Eiji, 5,009,923, Cl 427-38 000

Nitto Chemical Industry Company, Ltd *See*—
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Nitto Denko Corporation *See*—
Ametani, Minoru, Funakoshi, Keigo Kira, Akihiko, Matsushita, Takao, and Shirakura, Keizo, 5,009,735, Cl 156-241 000

Niwa, Kozo, and Motoyama, Shimesu, to Niwa, Kozo Antioxidant composition of natural products and producing method thereof 5,009,891, Cl 424-195 100

Nixon, Floyd K Method of making a milk formulation 5,009,912, Cl 426-580 000

NKG Insulators, Ltd *See*—
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NKK Corporation *See*—
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Noda, Hidetoshi, Gocho, Makoto, Shimizu, Masayasu, Komatsu, Osamu, and Inoue, Hideaki, to NKK Corporation Method for manufacturing agglomerates of sintered pellets 5,009,707, Cl 75-375 000

Noda, Juichi *See*—
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Higuchi, Shigetaka, Noguchi, Isao, and Odashima, Tohru, 5,008,998, Cl 29-840 000

Noguchi, Kazumi *See*—
Shinohara, Tadashi, Nishiyama, Toshikazu, Noguchi, Kazumi Iwata, Hitoshi, and Suwabe, Shigekazu, 5,010,431, Cl 360-103 000

Nohmi, Makoto *See*—
Mori, Kinji, Kunai, Yuko, Akiyama, Masakazu, Kadoya, Tadaaki Kawano, Katsumi, Miyamoto, Shoji, Nohmi, Makoto, Shingai, Sadanori, and Ihara, Hirokazu, 5,010,479, Cl 364-200 000

Noji, Minoru *See*—
Yasumura, Hiroto, Hirasawa, Masahide, Noji, Minoru, Kozuki, Susumu, Takahashi, Koji, and Yoshimura, Katsuji, 5,010,416, Cl 358-314 000

Nolan, John H and Skvarce, Dennis H , to Alpha Industries, Inc Clamping apparatus for cut-off die set 5,009,140, Cl 83-698 000

Nolan, Vernon E L Fastening means 5,009,540, Cl 403-405 100

Noll, Guenter *See*—
Kuhl, Virgil F and Noll, Guenter, 5,008,988, Cl 24-510 000

Nolting, Peter *See*—
Fedter, Horst, Grunwald, Werner, Nolting, Peter de la Prieta, Claudio, and Schmid, Kurt, 5,010,315, Cl 338-7 000

Nomoto, Seiichiro *See*—
Yamauchi, Hiroshi Sugiyama, Isao Saito, Isao Nomoto, Seiichiro Kamiya, Takashi Machida, Yoshimasa, and Negi, Shigeto, 5,010,188, Cl 540-222 000

Nomura, Satoru *See*—
Yoshio, Junichi, Hosaka, Sumio, Matsuoka, Hisao Tsuda, Youichirou, Katagiri, Shoichi, and Nomura, Satoru, 5,010,417, Cl 358-335 000

Nonnemacher, Gail S *See*—
Foster, Stephen I , Stimler, Jeffrey J , and Nonnemacher, Gail S , 5,009,953, Cl 428-327 000

Norita, Toshio *See*—
Ishida, Tokuji, Norita, Toshio, and Hasegawa, Jun, 5,010,409, Cl 358-213 190

Norman, John A T *See*—
Ellison, Thomas L , Roberts, David A , Ivankovits, John C , and Norman, John A T , 5,009,725, Cl 148-23 000

Norsk Hydro a s *See*—
Pettersen, Jarl M , Nilsson, Arild, and Millaway, Robert M , 5,009,792, Cl 210-705 000

North American Philips Corporation *See*—
Brennesholtz, Matthew S , 5,009,930, Cl 427-236 000
Lyle, Robert L , Jr , 5,010,292, Cl 323-274 000

North Carolina State University *See*—
Lord, Peter R , 5,010,494, Cl 364-507 000

Northern Telecom Limited *See*—
Morrison, Shawn J , 5,009,479, Cl 350-96 150
Sidi, Shiraz I Guilbert, Paul A , Desroches, Lise A , and Plasse, Michel, 5,010,210, Cl 174-34 000

Norton Company *See*—
Butkus, Anthony K , and Martin, Scott D , 5,010,046, Cl 501-117 000
Rue, Charles V , van de Merwe, Ronald H , Bauer, Ralph Pellow, Scott W , Cottringer, Thomas E and Klok, Richard J , 5,009,676, Cl 51-309 000

Norwood, Roger D , and Kersh, David V , III, to Texas Instruments Incorporated Integrated circuit furnishing a segmented input circuit 5,010,260, Cl 307-482 100

Noshe Engineering Limited *See*—
Auld, John W Stringer, Brian F , and Stringer, Brian F , 5,009,305, Cl 198-395 000

Noualhaguet, Pierre *See*—
Laurent, Michel, Doukhan, Marc, and Noualhaguet, Pierre, 5,010,563, Cl 378-132 000

Nouno, Youzou *See*—
Moriwaki, Masafumi, Sano, Shigeaki, Hatakeyama, Katsunori, Yamada, Hiroshi, and Nouno, Youzou, 5,010,213, Cl 178-18 000

Novikova, Svetlana A *See*—
Fedin, Marat A , Kuznetsova, Tatyana A , Lysenkov, Viktor I , Novikova, Svetlana A , Savchuk, Valentin A , Sedelnikov, Anatoly I , Shabunya, Vera P , Udarov, Boris G , Tikhonova, Tatyana S , Polyakova, Nina P , and Paklin, Sergei I , 5,010,106, Cl 514-546 000

Novo Nordisk A/S *See*—
Gronvald, Frederik C , and Braestrup, Claus, 5,010,090, Cl 514-326 000

Gronwald, Frederik, Andersen, Peter H , Faarup, Peter, Guddal, Erling, Hansen, Kristian T , Hansen, Louis B , and Nielsen, Erik B , 5,010,074, Cl 514-213 000

Nowak, William J , Attardi, Anthony A , and Costanza, Daniel W , to Xerox Corporation Segmented resonator structure having a uniform response for electrophotographic imaging 5,010,369, Cl 355-273 000

Nowman, William G Method and apparatus for drilling hardplate 5,009,553, Cl 408-1 00R

Nozaki, Toshio *See*—
Watanabe, Taichi, Ogino, Hidekazu, Hirota, Hajime, Koshika, Tomohito, Moriya, Naoko, and Nozaki, Toshio, 5,009,813, Cl 252-545 000

NSW Corporation, Inc *See*—
Ptaschek, Lawrence, Bowman, James, and Ferguson, H William, Jr , 5,009,058, Cl 53-469 000

NTH, Inc *See*—
Coleman, Darold D , and Nesseth, Raymond P , 5,009,545, Cl 404-100 000

Nuez, Jean-Paul *See*—
Boudon, Gerard, Mollier, Pierre, Nuez, Jean-Paul, Ong, Ieng, Tannhof, Pascal, and Wallart, Franck, 5,010,257, Cl 307-446 000

Numai, Kazuhisa *See*—
Nakamura, Kosei, Kono, Shinichi, Numai, Kazuhisa, and Kimijima, Masami, 5,010,286, Cl 318-571 000

Numata, Tomiyuki *See*—
Fuji, Hiroshi, Fujiwara, Tsuneo, Iwaki, Takashi, Numata, Tomiyuki, Tsuji, Kentaroh, Maeda, Shigemi, Yamaguchi, Takeshi, Kojima, Kunio, Deguchi, Toshihisa, and Terashima, Shigeo, 5,010,540, Cl 369-50 000

Nygard, John E *See*—
Minshall, Billy W , Purohit, Kailash, Nygard, John E , Sintim-Damoa, Kwame, Giesler, Richard, and Woodworth, Archie, 5,009,654, Cl 604-410 000

Nys, Pierre H , Vinck, Paul W , and von Erdmannsdorff, Andreas, to Agfa-Gevaert, N V Method for colour correction by dry dot etching using photographically produced mask 5,010,398, Cl 358-80 000

Oates, Martin, to Texas Instruments Incorporated Content addressable memory 5,010,516, Cl 365-49 000

Obara Corporation *See*—
Nishiwaki, Toshihiro, 5,010,228, Cl 219-86 250

Obase, Hiroyuki *See*—
Oshima, Etsuo, Obase, Hiroyuki, Karasawa, Akira, Kubo, Kazuhiro, Miki, Ichiro, and Ishii, Akio, 5,010,087, Cl 514-307 000
Oshima, Etsuo, Obase, Hiroyuki, Karasawa, Akira, Kubo, Kazuhiro, Miki, Ichiro, and Ishii, Akio, 5,010,104, Cl 514-510 000

Obata, Kenichi *See*—
Saitoh, Masahiro, Yoshida, Suguru, Obata, Kenichi, and Ono, Yoshinobu, 5,009,463, Cl 296-210 000

Oberdörfer, Hans, to Hansa Metallwerke AG Pipe interrupter 5,009,247, Cl 137-218 000

Obitz, Daniel *See*—
Manoury, Philippe, Binet, Jean, Obitz, Daniel, Defosse, Gerard, Dewitte, Elisabeth, and Veronique, Corinne, 5,010,079, Cl 514-253 000

O'Brien, John F , to Xerox Corporation Magnetic transport roll for supplying toner or carrier and toner to a donor and magnetic developer roll respectively 5,010,368, Cl 355-259 000

O'Brien, Michael J *See*—
Desforcie, James L , and O'Brien, Michael J , 5,010,118, Cl 522-31 000

Oce Nederland B V *See*—
Linssen, Johannes L J M , and Plevers, Jozef J A , 5,010,373, Cl 355-319 000

Ochiai, Kuniaki *See*—
Horii, Masami, Komakine, Shigeo, Ochiai, Kuniaki, and Kondoh, Takashi, 5,009,528, Cl 400-124 000

Ochs, Charles S , to Anchor Hocking Corporation Closure having thermally responsive water washing slots 5,009,324, Cl 215-276 000

O'Connor, James T , and Courtright, David A , to SGS-Thomson Microelectronics, Inc System for synchronizing data frames in a serial bit stream 5,010,559, Cl 375-116 000

Oculus Optikgeraete GmbH *See*—
Reiner, Josef, 5,009,487, Cl 350-286 000

Oda, Takao *See*—
Hokuyo, Shigeru, Oda, Takao, and Matsumoto, Hideo, 5,009,720, Cl 136-255 000

Odahara, Kazuhiro *See*—
Tanaka, Takao, and Odahara, Kazuhiro, 5,010,265, Cl 310-88 000

Odashima, Tohru *See*—
Higuchi, Shigetaka, Noguchi, Isao, and Odashima, Tohru, 5,008,998, Cl 29-840 000

Oftring, Alfred *See*—
Perner, Johannes, Diessel, Paul, Hartmann, Heinrich, Denzinger, Walter, Oftring, Alfred, and Schoenleben, Willibald, 5,009,805, Cl 252-174 240

Ogata, Kiyoshi, Ando, Yasunori, and Kamijo, Eiji, to Nissin Electric Co , Ltd Method of forming diamond film 5,009,923, Cl 427-38 000

Ogawa, Ikuzo, to Kabushiki Kaisha Maruzen Shokuhin Method for preparing konjak chip 5,009,915, Cl 426-615 000

Ogawa, Kyosuke *See*—
Honda, Mitsuru, Koike, Atsushi, Kimura, Tomohiro, Ogawa, Kyosuke, and Murai, Keiichi, 5,009,974, Cl 430-69 000

Ogawa, Sumitaka *See*—
Kushida, Kazumitsu, Kudou, Osamu, Ogawa, Sumitaka, and Uike, Hiroshi, 5,009,211, Cl 123-491 000

Ogino, Hidekazu *See*—
Watanabe, Taichi, Ogino, Hidekazu, Hirota, Hajime, Koshika, Tomohito, Moriya, Naoko, and Nozaki, Toshio, 5,009,813, Cl 252-545 000

Ogino, Masanori, Yamada, Takeo, and Ikeda, Miyuki, to Hitachi, Ltd Vertical deflection circuit for CRT display device 5,010,280, Cl 315-388 000

Ohashi, Kunio *See*—
Hayakawa, Takeshi, Narikawa, Shiro, Ohashi, Kunio, and Tsujimoto, Yoshiharu, 5,009,977, Cl 430-84 000

Ohba, Noriko *See*—
Wakita, Naohide, Uemura, Tsuyoshi, Ohnishi, Hiroyuki, Ohba, Noriko, Ota, Isao, and Fujita, Shingo, 5,010,327, Cl 340-784 000

Ohio Associated Enterprises, Inc *See*—
Black, Robert H , and Venaleck, John T , 5,009,618, Cl 439-736 000

Ohio State University Research Foundation *See*—
Minton, John P , Webb, Thomas E , and Abou-Issa, Hussein M , 5,010,107, Cl 514-578 000

Ohio University *See*—
Collier, John R , and Collier, Billie J , 5,009,954, Cl 428-400 000

Ohkawa, Osamu, Tamahoko, Tetsuya, and Imanage, Eisuke, to Tokyo Seat Co , Ltd Power transmitting apparatus for use in vehicle 5,009,296, Cl 192-20 000

Ohkoshi, Seizi, and Kuwahara, Eiji, to Kabushiki Kaisha Toshiba Multi-system air conditioning machine 5,009,078, Cl 62-160 000

Ohkuma, Hiroya, and Sanada, Satoru, to Nikon Corporation Optical disc device with multi-head slider and tracking control 5,010,537, Cl 369-44 320

Ohkuni, Masato *See*—
Kasahara, Nobuo, Watanuki, Masayoshi, Maeno, Satoru, and Ohkuni, Masato, 5,010,372, Cl 355-313 000

Ohmae, Tadayuki, Sakurai, Tadashi, and Asao, Kouichiro, to Sumitomo Chemical Co , Ltd Conjugate fibers and nonwoven molding thereof 5,009,951, Cl 428-294 000

Ohmae, Tadayuki, Toyoshima, Yoshiki, Mashita, Kentaro, Yamaguchi, Noboru, and Nambu, Jinsho, to Sumitomo Chemical Company, Limited Process for producing impact-resistant polyamide resin compositions 5,010,136, Cl 525-66 000

Ohmamyuda, Yukio, Tanabe, Toru, Matsumoto, Osamu, Suzuki, Hidenobu, and Jyouzuka, Masashi, to Stanley Electric Co , Ltd Apparatus for adjusting attitude of optical axes of head lamps on vehicle 5,010,457, Cl 362-66 000

Ohmi, Tadahiro, Miki, Masahiro, Kikuyama, Hirohisa, and Maeno, Matagoro Metal material with film passivated by fluorination and apparatus composed of the metal material 5,009,963, Cl 428-472 200

Ohmori, Kenji *See*—
Suzuki, Fumio, Kuroda, Takeshi, Nakasato, Yoshisuke, Ohmori, Kenji, and Manabe, Haruhiko, 5,010,084, Cl 514-293 000

Ohms, Jack I *See*—
Zare, Richard N , Huang, Xiaohua, and Ohms, Jack I , 5,009,760, Cl 204-183 300

Ohnishi, Hiroyuki *See*—
Wakita, Naohide, Uemura, Tsuyoshi, Ohnishi, Hiroyuki, Ohba, Noriko, Ota, Isao, and Fujita, Shingo, 5,010,327, Cl 340-784 000

Ohshita, Saiichiro, and Fukamachi, Kazuhiro, to Fuji Jukogyo Kabushiki Kaisha Bear-wheel control method for a motor vehicle with a four-wheel steering system 5,010,488, Cl 364-424 050

Ohtomi, Koichi *See*—
Shioyama, Tsutomu, Minakami, Ko, Fujii, Takao, and Ohtomi, Koichi, 5,009,838, Cl 376-310 000

Ohtsuki, Shigeo, and Tanaka, Motonao Doppler flow velocity distribution measuring apparatus 5,010,528, Cl 367-90 000

Ohzeki, Yukihiro *See*—
Araya, Junji, Ohzeki, Yukihiro, Miyamoto, Toshio, Hiroshima, Koichi, Sato, Yasushi, and Nakahata, Kimio, 5,010,370, Cl 355-274 000

Oilar, Clayton D Combination writing implement and toothpick dispenser 5,009,535, Cl 401-195 000

Oishi, Kayoko *See*—
Maeno, Yoshinori, Kobayashi, Masanobu, and Oishi, Kayoko, 5,009,762, Cl 204-192 160

Okada, Kazuhisa, and Kusumoto, Ichirou, to Mitsubishi Denki Kabushiki Kaisha Wafer prober 5,010,296, Cl 324-158 00P

Okada, Kenichi, Nishino, Masashi and Tanigawa, Shu, to Japan Aviation Electronics Industry Limited Fiber optic gyro 5,009,480, Cl 350-96 150

Okada, Kenji, and Ueno, Hiroshi, to Mazda Motor Manufacturing (USA) Corp Closed noncontinuous electrodeposition painting system 5,009,758, Cl 204-180 800

Okazaki, Hiroshi *See*—
Matsushita, Nobutaka, Okazaki, Hiroshi Yamanouchi, Shosuke Osawa, Yoshitaka, and Tsujigatto, Isao, 5,009,959, Cl 428-419 000

Oki Electric Industry Co , Ltd *See*—
Fukuda, Hisashi, 5,009,926, Cl 427-55 000
Maeno, Yoshinori, Kobayashi, Masanobu, and Oishi, Kayoko, 5,009,762, Cl 204-192 160
Nishimura, Eiichi, Nakamura, Takao, and Ishida, Hisaki, 5,010,510, Cl 364-758 000
Takeda, Takayuki, and Satoh, Masayasu, 5,010,538, Cl 369-44 360

Okita, Junichi *See*—
Abe, Ryoji, Okita, Junichi, Miyagoshi, Katsunobu, and Hashiyama, Kouichi, 5,009,205, Cl. 123-195.00H

Oklahoma Medical Research Foundation *See*—
Taylor, Fletcher B., Jr., and Esmon, Charles T., 5,009,889, Cl. 424-94.640

Okoren, Ronald W., to American Standard Inc. Fault determination test method for systems including an electronic expansion valve and electronic controller, 5,009,075, Cl. 62-127.000

Okoshi, Seiji, and Kuwahara, Eiji, to Kabushiki Kaisha Toshiba, Multi-system air conditioner, 5,009,077, Cl. 62-160.000

Okuda, Hiroshi, and Ozawa, Masayuki, to Mitsubishi Denki Kabushiki Kaisha, Ignition timing control circuit for an internal combustion engine, 5,009,209, Cl. 123-415.000

Okuda, Tamotsu *See*—
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Okuda, Yasuji *See*—
Inoue, Hiroshi, Yokono, Wataru, and Okuda, Yasuji, 5,009,536, Cl. 401-198.000

Okumoto, Takaharu, Hayashida, Tadashi, Kawada, Kazuo, and Hayashi, Tetsuo, to Yokohama Rubber Co., Ltd., The, Wood golf club and its production method, 5,009,423, Cl. 273-80.200

Okumoto, Takaharu, Ninomiya, Toshio, and Hayashi, Tetsuya, to Yokohama Rubber Co., Ltd., The, Golf club head, 5,009,425, Cl. 273-167.00R

Old, Lloyd *See*—
Albino, Anthony, Lloyd, Kenneth, Ikeda, Hisami, and Old, Lloyd, 5,009,995, Cl. 435-7.230

Olding, Michael, Chimney crown mold, 5,009,047, Cl. 52-218.000

O'Lenick, Anthony J., Jr., Miller, John C., and Clumpner, J. Michael, to LCE Partnership, Free radical stabilized alkoxylates, 5,010,173, Cl. 528-408.000

Olin Corporation *See*—
Bilsbury, Stephen J., Dennis, William G., Jr., and Kernosky, Stephen K., 5,009,166, Cl. 102-516.000
Rothgery, Eugene F., 5,009,700, Cl. 71-94.000

Olin Hunt Specialty Products Inc. *See*—
Buxton, Galina P. and Tang, Kuo-Chang, 5,009,979, Cl. 430-110.000

Oliver, Thomas C. *See*—
Wanger, Mark F., Methlie, Jennifer L., Christie, Leslie G., Dauner, Daniel R., Domel, Douglas R., Jones, David P., Oliver, Thomas C., and Stavely, Donald J., 5,010,536, Cl. 369-36.000

Olivieri, Andrew L. *See*—
Beattie, Patrick J., Olivieri, Andrew L., and Sylvester, Richard J., 5,009,090, Cl. 70-326.000

Olson, Gene L. *See*—
Lawrence, Lowell J., Ruzo, Luis O., and Olson, Gene L., 5,009,112, Cl. 73-866.000

Olsson, Lars-Inge R., and Hamacek, Kent F., to Perstorp AB, Flowability improving agent, process for the production thereof and use thereof, 5,010,124, Cl. 524-141.000

Olympus Optical Company Ltd. *See*—
Maitani, Yoshihisa, 5,010,359, Cl. 354-410.000
Tsuji, Kiyoshi, and Kimura, Kenji, 5,010,395, Cl. 358-44.000

Omoda, Koichiro, Tanaka, Teruo, Nakagoshi, Junji, Hamanaka, Naoki, and Nagashima, Shigeo, to Hitachi, Ltd., Method and apparatus for transferring vector data between parallel processing system with registers & logic for inter-processor data communication independents of processing operations, 5,010,477, Cl. 364-200.000

Omron Tateisi Electronics Co. *See*—
Imanaka, Koichi, and Imamoto, Hiroshi, 5,010,556, Cl. 372-46.000
Mita, Katsuya, 5,010,239, Cl. 235-441.000

Ong, Ieng *See*—
Boudon, Gerard, Mollier, Pierre, Nuez, Jean-Paul, Ong, Ieng, Tannhof, Pascal, and Wallart, Franck, 5,010,257, Cl. 307-446.000

Ono, Katsuyasu, to Nippon Seiko Kabushiki Kaisha, Webbing guiding structure for automobile seat belt system, 5,009,453, Cl. 280-808.000

Ono, Yoshinobu *See*—
Satoh, Masahiro, Yoshida, Suguru, Obata, Keiichi, and Ono, Yoshinobu, 5,009,463, Cl. 296-219.000

Onodera, Tsutomu, and Yamada, Takeshi, to Fujikura Ltd., Method of measuring quantity of heat applied to optical fiber, 5,009,513, Cl. 374-31.000

Ookuma, Ikuo *See*—
Sasaki, Yoshiyuki, Tsunashima, Kenji, Ookuma, Ikuo, and Fujii, Toshifumi, 5,010,404, Cl. 358-139.000

Ootaki, Sakashi *See*—
Kouno, Tomomitsu, Hatano, Hideki, Yamaji, Takashi, Ootaki, Sakashi, and Nishida, Masami, 5,009,490, Cl. 350-342.000

Oppenlaender, Knut *See*—
Martuschitus, Franz Dieter, Vogel, Hans Henning, Greif, Norbert, Oppenlaender, Knut, Denzinger, Walter, and Hartmann, Heinrich, 5,009,670, Cl. 44-385.000

Ordo, James P., Rawzkowski, James A., and Klemen, Donald, to General Motors Corporation, Power transmission, 5,009,116, Cl. 74-331.000

Ordo, James P., and Latshaw, Harry F., to General Motors Corporation, Countershaft power transmission with dowel pin and seal ring structure, 5,009,117, Cl. 74-331.000

Oremland, Ronald S., to United States of America, Interior, Selenate removal from waste water, 5,009,786, Cl. 210-602.000

Osawa, Yoshitaka *See*—
Matsushita, Nobutaka, Okazaki, Hiroshi, Yamanouchi, Shosuke, Osawa, Yoshitaka, and Tsujiguchi, Isao, 5,009,959, Cl. 428-419.000

Osborn, Carl F., Dental mouth prop, 5,009,595, Cl. 433-140.000

Osborn, Thomas W., III, to Procter & Gamble Company, The, Thin, flexible sanitary napkin, 5,009,653, Cl. 604-385.100

Oshima, Etsuo, Ohase, Hiroyuki, Karasawa, Akira, Kubo, Kazuhiro, Miki, Ichiro, and Ishii, Akio, to Kyowa Hakko Kogyo Co., Ltd., Tricyclic compounds and TXA_2 antagonistic compositions thereof, 5,010,087, Cl. 514-307.000

Oshima, Etsuo, Ohase, Hiroyuki, Karasawa, Akira, Kubo, Kazuhiro, Miki, Ichiro, and Ishii, Akio, to Kyowa Hakko Kogyo Co., Ltd., Tricyclic compounds, 5,010,104, Cl. 514-510.000

Oshima, Masaki *See*—
Hasegawa, Takanori, Abe, Nobuyuki, Hibara, Toru, Hirose, Toshihiko, Kanda, Takashi, Saito, Hiroshi, Oshima, Masaki, and Nakazawa, Eiji, 5,010,420, Cl. 358-471.000

Oshima, Shinji, and Misawa, Hidenobu, to NGK Insulators, Ltd., Closed end sleeve producing method and core structure used in the method, 5,009,832, Cl. 264-571.000

Osmose Wood Preserving, Inc. *See*—
Leach, Robert M. and Richards, Michael J., 5,009,964, Cl. 428-526.000

Ostic, Ernest L. *See*—
Spehar, Eli G., 5,009,170, Cl. 108-36.000

Ostlund, Olov *See*—
Lager, Kjell, Tarnstrom, Anders, Ostlund, Olov, and Driver, Joseph W., 5,009,039, Cl. 51-165.720

Ostrand, James C., to General Motors Corporation, Rotary air valve, 5,009,392, Cl. 251-180.000

Ota, Isao *See*—
Wakita, Naohide, Uemura, Tsuyoshi, Ohnishi, Hiroyuki, Ohba, Norriko, Ota, Isao, and Fujita, Shingo, 5,010,327, Cl. 340-784.000

Otis Elevator Company *See*—
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Sansevero, Frank M., 5,009,302, Cl. 198-328.000

Oto, Hideki, to Kabushiki Kaisha Toshiba, Television tuner for receiving multiple band television signals, 5,010,400, Cl. 358-86.000

Otokawa, Mitsuhiro *See*—
Hasegawa, Masahide, Otokawa, Mitsuhiro, Matsuoka, Hidetoshi, and Hirata, Noritsugu, 5,010,424, Cl. 360-77.140

Otsuki, Hajime, Kusano, Hideaki, and Kato, Osami, to Minolta Camera Kabushiki Kaisha, Image projecting system, 5,010,362, Cl. 355-74.000

Ott, Gerhard, to Dr. Ing. hc F. Porsche AG, Active spring and damper system, 5,009,400, Cl. 267-64.110

Ott, Karl-Heinz *See*—
Eckel, Thomas, Leitz, Edgar, Wittmann, Dieter, Ott, Karl-Heinz, Peters, Horst, and Schoeps, Jochen, 5,010,135, Cl. 525-63.000

Outboard Marine Corporation *See*—
Meier, Peter W., 5,009,619, Cl. 440-53.000

Outokumpu Oy *See*—
Heimala, Seppo O., Hyvarinen, Olli V. J., and Metsarinta, Marja-Leena, 5,009,870, Cl. 423-239.000

Oven, Tordis B. *See*—
Gautvik, Kaare M., Alestrom, Peter, Oven, Tordis B., and Gabrielsen, Odd S., 5,010,010, Cl. 435-252.300

Overman, Gregg *See*—
West, Michael H., and Overman, Gregg, 5,009,937, Cl. 427-440.000

Owen, Hartley *See*—
Harandi, Mohsen N. and Owen, Hartley, 5,009,859, Cl. 422-189.000

Owens Corning Fiberglas Corporation *See*—
Klett, Paul A., Bakhshi, Shiv K., and Stahl, Steven B., 5,009,962, Cl. 427-243.000
Pollet, Jean-Claude, Williams, Gary L., Armstrong, Gordon P., and Miller, David G., 5,009,941, Cl. 428-36.300

Owens, Mark J. *See*—
Gordon, Herman B., Owens, Mark J., Rubinstein, Leon, and Simpson, Scott, 5,009,607, Cl. 439-67.000

Oy Alko AB *See*—
Palva, Ilkka, 5,010,000, Cl. 435-69.100
Palva, Ilkka, 5,010,035, Cl. 435-320.000

Oy Lampella AB *See*—
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Oyama, Nobuaki *See*—
Akizawa, Nobuyuki, Kudo, Yasunori, Kanai, Toshiyuki, Kamei, Yasuo, Oyama, Nobuaki, and Negishi, Akihito, 5,009,355, Cl. 227-114.000

Oyama, Takuji *See*—
Harano, Takeshi, Takaki, Satoru, Shigesato, Yuzo, Suzuki, Koichi, Hashimoto, Naoki, Kojima, Hiroyasu, and Oyama, Takuji, 5,009,922, Cl. 427-37.000

Ozaki, Yukio *See*—
Hanyu, Masaaki, and Ozaki, Yukio, 5,010,396, Cl. 358-60.000

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Ozone, Toshio *See*—
Sugimoto, Atsushi, Nakano, Osamu, Yasuda, Shigeru, Maeda, Chikatoshi, Ozone, Toshio, and Kawagoe, Makoto, 5,009,843, Cl. 420-112.000

Pacesetter Infusion, Ltd. *See*—
Gorton, Lanny A., 5,009,641, Cl. 604-131.000

Padget, John C. *See*—
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Mauro, David J., Furesik, Susan I., Katz, Frances R., Faron, Eugene J., II, Gottneid, David J., and Pustek, Frank J., 5,009,911, Cl. 426-578.000

Pyret, Thomas W., and Gallagher, James L., to Upjohn Company, The, Slip cap for cannula use, 5,009,640, Cl. 604-117.000

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Quanscan, Inc. *See*—
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Quemere, Eric, to Rhone-Poulenc Chimie, Zirconium dioxide gas desulfurization catalyst, 5,010,052, Cl. 502-304.000

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R.W. Technology, Inc.: *See*—
Koski, Greg, 5,010,122, Cl. 524-80.000

Raatz, Francis. *See*—
Petit, Laurent, Bournonville, Jean-Paul, Guth, Jean-Louis, Raatz, Francis, and Serve, Alain, 5,010,048, Cl. 502-61.000

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De Cleyn, Rene, Thometzek, Peter, and Rademachers, Jakob, 5,009,879, Cl. 423-610.000

Radkowski, Stanley J. Match head composition and method of making same, 5,009,729, Cl. 149-109.400

Radstone Technology Limited. *See*—
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Raj, Joseph T., to Evans Automotive, Division of Evans Industries, Inc., Customized automobile, 5,009,938, Cl. 428-31.000

Rajagopalan, Parthasarathi. *See*—
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Raman, Krishna. *See*—
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Ramisch, Hans. *See*—
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Ramsey, E. Don. Combination backpack and tree stand, 5,009,285, Cl. 182-187.000

Ramshaw, Colin, and Winnington, Terence, to Imperial Chemical Industries plc, and Caradon Mira Ltd. Heat pumps, 5,009,085, Cl. 62-476.000

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Raszkowski, James A., and Klemen, Donald, to General Motors Corporation, Power transmission with parallel identical countershafts, 5,009,118, Cl. 74-331.000

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Raubenheimer, Hans-Juergen. *See*—
Hennig, Karl, Hartmann, Heinrich, and Raubenheimer, Hans Juergen, 5,010,150, Cl. 526-88.000

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Raytheon Company. *See*—
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RCA Licensing Corporation. *See*—
Maninger, Loren L., and Marks, Bruce G., 5,010,271, Cl. 313-412.000
Rodriguez-Cavazos, Enrique, 5,010,281, Cl. 315-411.000

Reaves, Thomas A., and Sherritt, John S., to Premier Industries, Inc., Insulated container system for shipping perishable products, 5,009,326, Cl. 220-441.000

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Reddy, V. Butchi, to GTE Products Corporation, Niobium-activated yttrium tantalate x-ray phosphor with improved brightness and method of making same, 5,009,807, Cl. 252-301.40H

Redl, Robert F., to Volpe, Louis J., Jr., Wagner, Steven F., and Kurpiek, Daniel L., Brick line tool, 5,009,015, Cl. 33-409.000

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Regnier, Kent, to Molex Incorporated, High density electrical connector for printed circuit boards, 5,009,611, Cl. 439-326.000

Reich, Harry, and Koch, Peter, to Richard Wolf Medical Instruments Corp. Self-retaining electrically insulative trocar sleeve and trocar 5,009,643, Cl. 604-165.000

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Reichman, Karl-Heinz, and Krumb, Heinrich W., to General Motors Corporation Headlight support 5,010,456, Cl. 362-61.000.

Reid, Alexander D. Dart for aiming at a game board 5,009,433, Cl. 273-419.000

Reid, Lee R., and Yuan, Han-Tzong, to Texas Instruments Incorporated. Semiconductor layer with optical communication between chips disposed therein. 5,009,476, Cl. 350-96.110

Reiher, Uwe *See*—
Springer, Hartmut; and Reiher, Uwe, 5,010,180, Cl. 534-638.000

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Brinker, Dale R., and Reiland, Thomas L., 5,009,897, Cl. 424-469.000

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Kalman, Thomas I., 5,010,103, Cl. 514-495.000

Respironics Inc. *See*—
Searberry, Eugene N., 5,009,635, Cl. 604-27.000

Rettie, C. William. Rotary cutter device 5,009,138, Cl. 83-413.000

Rettig, Helmut; Weiss, Karl, and Buss, Erich, to Uni-Cardan Aktiengesellschaft. Apparatus and method for fitting a protective boot particularly for articulated joint assemblies 5,008,994, Cl. 29-235.000

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Rhone-Poulenc Chimie *See*—
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Rhone-Poulenc Specialties Chimiques *See*—
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Richard, Carl E. *See*—
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Richard, David L. Roping practice apparatus 5,009,432, Cl. 273-339.000

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Richardson, Curtis G., to Maytag Corporation. Mounting assembly for the impeller of a fluid pump. 5,009,570, Cl. 415-174.200.

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Riebli, Peter, to Ciba-Geigy Corporation. Pesticidal 2-hydrazinopyramidine compounds. 5,010,082, Cl. 514-272.000

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Ries, Stanley K., Wert, Violet F., and Nair, Muraleedharan G., to Board of Trustees operating Michigan State University. Method for stimulating plant growth using synthetically produced 9-beta-D(+) adenosine 5,009,698, Cl. 71-92.000

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Riley, Thomas P., to United States of America, Navy. Magnetic coupler for electroacoustic hydrophones 5,010,530, Cl. 367-154.000

Ring, Gregg, Sr., and Soper, Daniel C., to Randolph Austin Company, Inc. Variable occlusion peristaltic apparatus and method 5,009,573, Cl. 417-53.000

Ringot, Patrice, and Parendel, Marc, to Neyrpic Framatome Mecanique. Device for driving in rotation a structure of large diameter particularly an antenna. 5,009,115, Cl. 74-89.150

Ringwood, Alfred E., to Australian National University, The. Production of diamond compacts consisting essentially of diamond crystals bonded by silicon carbide 5,010,043, Cl. 501-90.000

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Robare, Douglas F. F. Container carrier 5,009,315, Cl. 206-427.000

Robert Bosch GmbH. *See*—
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Grob, Ferdinand, Kienzler, Dieter, Linder, Ernst, Potschin, Roger, and Stutzenberger, Heinz, 5,009,064, Cl. 60-276.000
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Roberts, David A. *See*—
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Roberts, Jeffrey J. *See*—
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Robertson, Martha H. *See*—
McElrath, Kenneth O., Jr., Robertson, Martha H., and Chow, Wai Yan, 5,010,119, Cl. 523-205.000.

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Robinson, Dennis W., to Spafax Holdings Plc. Method of producing an optical component, and components formed thereby 5,009,761, Cl. 204-192.140

Robinson, Irwin J., III *See*—
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Rockwell, Marshall A., III. Optical waveguide display system 5,009,483, Cl. 350-96.240

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Roderick, Zackary A., and Rode, Leon A., to Simplimatic Engineering Company. Printed circuit board conveyor and method 5,009,306, Cl. 198-414.000

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Roll, Daniel O. *See*—
Hawkins, William G., Burke, Cathie J., Roll, Daniel O., Hartman, Pamela J., and Atkinson, Diane, 5,010,355, Cl. 346-140.00R.

Roller, Timothy J., and Thiele, Robert E., to Adanlock. Lateral file drawer position lock 5,009,470, Cl. 312-325.000

Romig, Kenneth L., to General Motors Corporation. Anti-rotation device for the release bearing of a manually operated clutch 5,009,300, Cl. 192-98.000

Ron, Eyal; Staubli, Andrea; and Langer, Robert S., to Massachusetts Institute of Technology. Polytamide-and imide-co-anhydride) for biological application 5,010,167, Cl. 528-328.000

Ronsen, Bruce, Arora, Sudershan K., and Thomas, Albert V., to 501 Greenwich Pharmaceuticals Incorporated. 3,5,6-substituted derivatives of 1,2-O-isopropylidene-α,D-glucofuranose and intermediates for preparing these derivatives 5,010,058, Cl. 514-23.000

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Roodenburg, Joop, and Roodenburg, Hendrik F., to Itrec B.V. Earthquake simulator for a theme park 5,009,412, Cl. 272-2.000

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Ross, Lawrence M. Bow draw stop 5,009,216, Cl. 124-88.000

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Ruder, Carl J., Haney, Ronald J., Chutorash, Richard J., Bostad, Wayne W., Zweig, Arnold A., and Payne, Lyle B., to Yellow Freight System, Inc. Mixed freight handling system 5,009,560, Cl. 414-392.000

Rudy, Wayne M., to Engelhard Corporation. Staged three-way conversion catalyst and method of using the same 5,010,051, Cl. 502-304.000

Rue, Charles V., van de Merwe, Ronald H.; Bauer, Ralph, Pellow, Scott W., Cottringer, Thomas E., and Klok, Richard J., to Norton Company. Sintered sol gel alumina abrasive filaments 5,009,676, Cl. 51-309.000

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Rutledge, Gary L., to Marrelli, John C. Plastic film bag with integral plastic film tie element, and associated fabrication methods 5,009,517, Cl. 383-72.000

Rutter, William J., and Santi, Daniel V., to University of California, The Regents of the. General method for producing and selecting peptides with specific properties 5,010,175, Cl. 530-334.000

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Sato, Izumi, Saito, Koji, and Inoue, Takashi, 5,009,103, Cl. 73-597.000.

Saito, Makoto *See*—
Nakagawa, Toyoaki, Sanbuichi, Hiroshi, Terasaka, Katsunori, and Saito, Makoto, 5,009,210, Cl. 123-489.000

Saitoh, Masahiro, Yoshida, Suguru, Obata, Keiichi, and Ono, Yoshinobu, to Honda Giken Kogyo Kabushiki Kaisha. Reinforced plastic automobile body structure 5,009,463, Cl. 296-210.000

Sakae Riken Kogyo Co., Ltd. *See*—
Watanabe, Toshiharu, 5,009,020, Cl. 40-547.000

Sakaegi, Yuji, and Fukushima, Nobuo, to Canon Kabushiki Kaisha. Tracking device and method 5,010,423, Cl. 360-77.060

Sakaguchi, Yoshikazu *See*—
Harada, Kyouji, Kato, Eiji, Sakaguchi, Yoshikazu, Watanabe, Suzuaki, and Hoshino, Akira, 5,009,290, Cl. 188-71.500

Sakai, Jun *See*—
Yamamoto, Takemi, Nagata, Osamu, Komiya, Ryohei, Sakai, Jun, and Ban, Yoshiyuki, 5,010,360, Cl. 355-20.000

Sakai, Kazuo *See*—
Nishimura, Kohsuke; and Sakai, Kazuo, 5,010,376, Cl. 357-17.000

Sakai, Kunihiro *See*—
Eguchi, Ken, Kawada, Haruki, Sakai, Kunihiro, Tomida, Yoshinori, Matsuda, Hiroshi, Tsuboyama, Akira, Takimoto, Kiyoshi, and Takamatsu, Osamu, 5,009,489, Cl. 350-341.000.

Sakai, Mieko Process for fabricating a circular frame 5,009,733, Cl. 156-184.000

Sakai, Takashi *See*—
Kuzuya, Susumu, Shimizu, Seiji, Kato, Mikio, Ishikawa, Yujiro Sakai, Takashi, and Yuki, Eiji, 5,009,530, Cl. 400-188.000

Sakai, Yuji *See*—
Yamada, Takehito, Tanimoto, Kazushi, Sakai, Yuji, Muraoka, Takao, Inoue, Tetsuo, and Takada, Yoshinao, 5,010,430, Cl 360-103 000

Sakakibara, Yoshikazu *See*—
Kuki, Nobuyuki, Isomura, Yukio, Suzumura, Hirokazu, Sakakibara, Yoshikazu, and Ishihara, Hiroshi, 5,009,035, Cl 49-352 000

Sakamaki, Iwao, to Sakamaki Mfg Co, Ltd Chuck for tools 5,009,439, Cl 279-62 000

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Sakamaki, Iwao, 5,009,439, Cl 279-62 000

Sakamoto, Hiroaki, Fujikura, Masahiro, and Mukai, Toshio, to Nippon Steel Corporation Rare-earth antisotropic powders and magnets and their manufacturing processes 5,009,706, Cl 75-244 000

Sakamoto, Ken *See*—
Kawakami, Toshikatsu, Fukuda, Shin, Shinbo, Hiroyasu, Unemura, Toyoaki, Sakamoto, Ken, and Kondo, Tomoji, 5,010,406, Cl 358-147 000

Sakanishi, Masayuki, and Ishii, Takaaki, to Kabushiki Kaisha Toshiba Electronic volume device 5,010,577, Cl 381-104 000

Sakano, Akio *See*—
Yoshida, Kimiyoshi, Sakano, Akio, Tamori, Hirofumi, and Chatani, Masayuki, 5,010,579, Cl 382-13 000

Sakanoue, Hitoyuki *See*—
Sasame, Akira, Sakanoue, Hitoyuki, Takeuchi, Hisao, Miyake, Masaya, Yamakawa, Akira, Yushio, Yasuhisa, and Akazawa, Hitoshi, 5,010,388, Cl 357-70 000

Sakashita, Kiichiro *See*—
Yoshida, Satoshi, Nakahara, Toshiaki, Tanikawa, Hirohide, and Sakashita, Kiichiro, 5,009,973, Cl 430-45 000

Sakuma, Shuji, Atsumi, Kiminori, and Fujita, Keijiro, to Kabushiki Kaisha Sangi Antimicrobial hydroxyapatite powders and methods for preparing them 5,009,898, Cl 424-618 000

Sakura Color Products Corp *See*—
Inoue, Hiroshi, Yokono, Wataru, and Okuda, Yasuji, 5,009,536, Cl 401-198 000
Sugiura, Koji, 5,010,120, Cl 523-219 000

Sakurai, Shungo *See*—
Ueda, Makoto, Ando, Yoshihira, Sakurai, Shungo, and Yoshioka, Ritsuo, 5,009,840, Cl 376-435 000

Sakurai, Tadashi *See*—
Ohmae, Tadayuki, Sakurai, Tadashi, and Asao, Kouichiro, 5,009,951, Cl 428-294 000

Sakuta, Masaharu, Urano, Toshiharu, Tanaka, Kyoichi, Sugiyama, Masashi, Endoh, Shyuzo, and Fujioka, Keisuke, to Fujisawa Pharmaceutical Company, Ltd Takenaka Komuten Company, Ltd and Nippon Nyukazai Company, Ltd Cement composition and a process for preparation thereof 5,009,713, Cl 106-727 000

Salazar, Jose A *See*—
Galiasso, Roberto, Morales, Alfredo, and Salazar, Jose A, 5,009,768, Cl 208-89 000

Salmon, Roger *See*—
McDonald, Edward, Salmon, Roger, Whittle, Alan J, and Hutchings, Michael G, 5,010,200, Cl 546-245 000

Salomon S A *See*—
Laudet, Jean-Luc, and Rullier, Pierre, 5,008,986, Cl 24-289 000

Saluzzo, Sergio *See*—
Di Nunzio, Vittorio, Giaccardi, Eraldo, and Saluzzo, Sergio, 5,009,213, Cl 123-620 000

Samsung Electron Devices Co, Ltd *See*—
Kwang-sik, Lee, and Chul-woo, Kim, 5,010,464, Cl 362-284 000

SamSung Electronics Co, Ltd *See*—
Chun, Soon-Ik, 5,010,557, Cl 375-1 000

Sanada, Koichi *See*—
Ikeda, Kazunari, and Sanada, Koichi, 5,009,732, Cl 156-177 000

Sanada, Satoru *See*—
Ohkuma, Hiroya, and Sanada, Satoru, 5,010,537, Cl 369-44 320

Sanbuichi, Hiroshi *See*—
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Sanden Corporation *See*—
Gonda, Hideyuki, 5,009,297, Cl 192-84 000C

Sandoz Pharmaceuticals Corp *See*—
Handley, Dean A, Houlihan, William J, and Weinstein, David B, 5,010,067, Cl 514-75 000

Sang Wook Suh International *See*—
Kim, Jeong Y, 5,010,223, Cl 219-10 770

Sankyo Seiki Mfg Co, Ltd *See*—
Kitajima, Kimio, and Kiuchi, Hiroyuki, 5,010,283, Cl 318-373 000

Sannel, Benjamin H Miller, Steven A, and Sells, Robert A, to Datacard Corporation Output hopper apparatus 5,009,332, Cl 209-652 000

Sano, Shigeaki *See*—
Morwaki, Masafumi Sano, Shigeaki, Hatakeyama, Katsunori, Yamada, Hiroshi, and Nouno, Youzou, 5,010,213, Cl 128-18 000

Sansevero, Frank M, to Otis Elevator Company Curved escalator with fixed center constant radius path of travel 5,009,302, Cl 198-328 000

Santi, Daniel V *See*—
Rutter, William J, and Santi, Daniel V, 5,010,175, Cl 530-334 000

Santoh, Tsuyoshi *See*—
Mihara, Chieko Santoh, Tsuyoshi, Sugata, Hiroyuki, and Fukui, Tetsuro, 5,009,987, Cl 430-495 000

Sanyo Electric Co, Ltd *See*—
Arai, Takeshi, 5,010,421, Cl 360-32 000

Naganuma, Hiroshi, Sato, Kenji, Yamamoto, Masashi, Kubota, Toshiaki, Hayashi, Hiroshige, and Ishizaka, Yoshirou, 5,009,080, Cl 62-256 000

Tsuruta, Shigeru, and Masuda, Sadao, 5,010,474, Cl 364-167 010

Wataguchi, Masaharu, 5,010,383, Cl 357-36 000

Saotome, Kunio Multicolor pressure-sensitive illuminating display platform 5,010,461, Cl 362-101 000

Saren, Aimo *See*—
Maenpaa, Matti, Lehtoluoma, Teuvo, Henttinen, Kauko, Jokipalo, Pertti, Saren, Aimo, and Pirinen, Seppo, 5,009,096, Cl 72-239 000

Sarko, Leonard S, and Lyon, Richard S, to Inorganic Recycling Incorporated Inorganic recycling process 5,009,511, Cl 366-348 000

Sarkozi, Jeff Abdominal exercise device 5,009,417, Cl 272-145 000

Sarli, Michael S *See*—
Kovacs, Richard C, Krambeck, Frederick J, and Sarli, Michael S, 5,009,853, Cl 422-144 000

Sarrasin, Michael J, to Millipore Corporation Multi-well filtration apparatus 5,009,780, Cl 210-238 000

Sasaki, Hiroyuki, Shimamura, Masato, Noda, Juichi, Hanafusa, Hiroaki, and Takeuchi, Yoshiaki, to Japan Aviation Electronics Industry Limited, and Nippon Telegraph and Telephone Corporation Method for the manufacture of an optical fiber coupler 5,009,478, Cl 350-96 150

Sasaki, Yoshiyuki, Tsunashima, Kenji, Ookuma, Ikuo, and Fujii, Toshifumi, to Mitsubishi Denki Kabushiki Kaisha Characteristics corrector 5,010,404, Cl 358-139 000

Sasame, Akira, Sakanoue, Hitoyuki, Takeuchi, Hisao, Miyake, Masaya, Yamakawa, Akira, Yushio, Yasuhisa, and Akazawa, Hitoshi, to Sumitomo Electric Industries, Ltd Connection structure between components for semiconductor apparatus 5,010,388, Cl 357-70 000

Saslaw, Irving M, Topalian, Harry H, and Rispoli, Joseph M, to Saslaw & Topalian Associates, Inc Method for frying comestibles in a microwave oven 5,009,904, Cl 426-243 000

Saslaw & Topalian Associates, Inc *See*—
Saslaw, Irving M, Topalian, Harry H, and Rispoli, Joseph M, 5,009,904, Cl 426-243 000

Sata, Ichiko *See*—
Suzuki, Hitoshi, Shiotani, Shinobu, Tokunaga, Shinji, Hirai, Tokuyuki, Fukumochi, Yoji, Kugimiya, Shuzo, and Sata, Ichiko, 5,010,486, Cl 364-419 000

Sato, Izumi, Saito, Koji, and Inoue, Takashi, to Tokyo Keiki Co, Ltd Ultrasonic thickness measuring method and apparatus 5,009,103, Cl 73-597 000

Sato, Katsumo *See*—
Hirano, Yoshinao, Sato, Katsumo, Nagamori, Shigeru, Murata, Katsuhide, Horikiri, Kazuhito, and Shirai, Junji, 5,009,585, Cl 425-174 400

Sato, Kazuhiro, Kishi, Tomomi, Umeda, Koji, Uchida, Yasushi, and Takeuchi, Masahiko, to Toyota Jidosha Kabushiki Kaisha Automatic seam welding apparatus 5,010,226, Cl 219-81 000

Sato, Kenji *See*—
Naganuma, Hiroshi, Sato, Kenji, Yamamoto, Masashi, Kubota, Toshiaki, Hayashi, Hiroshige, and Ishizaka, Yoshirou, 5,009,080, Cl 62-256 000

Sato, Nobuo *See*—
Enari, Hiroyuki, Kumazawa, Satoru, Shimizu, Susumu, Ito, Atsushi, Sato, Nobuo, and Saishoji, Toshihide, 5,010,206, Cl 548-262 200

Sato, Shigeki, to Nissan Motor Co, Ltd Vehicle engine and suspension vibration control arrangement 5,009,402, Cl 267-140 100

Sato, Shuichi, Koguchi, Yoshimi, and Kobayashi, Yoshiharu, to SSMC Inc Thread cutting unit having a rotatably driverble cutting knife and loop spreading plate for a sewing machine 5,009,177, Cl 112-292 000

Sato, Yasushi *See*—
Araya, Junji, Ohzeki, Yukihiro, Miyamoto, Toshio, Hiroshima, Koichi, Sato, Yasushi, and Nakahata, Kimio, 5,010,370, Cl 355-274 000

Satoh, Masaaki *See*—
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Satoh, Masayasu *See*—
Takeda, Takayuki, and Satoh, Masayasu, 5,010,538, Cl 369-44 360

Satoh, Seiki *See*—
Yamada, Shinjiro, Satoh, Seiki, Mabuchi, Kazuichi, Kitao, Shiei, and Egawa, Yoshiaki, 5,010,264, Cl 310-72 000

Saunders, Colin D *See*—
Smith, Martin P, and Saunders, Colin D, 5,010,247, Cl 250 223 00R

Sauter, Ulrich *See*—
Seidel, Willi Ehniss, Roland, Skabrond, Klaus, Sauter, Ulrich, Maier, Ulrich, and Ebner, Roland, 5,009,128, Cl 74-866 000

Savchuk, Valentin A *See*—
Fedin, Marat A, Kuznetsova, Tatyana A, Lysenkov, Viktor I, Novikova, Svetlana A, Savchuk, Valentin A, Sedelnikov, Anatoly I, Shabunya, Vera P, Udarov, Boris G, Tikhonova, Tatyana S, Polyakova, Nina P, and Paklin, Sergei I, 5,010,106 Cl 514-546 000

Savedra, Emilio, Jr Tree lifter 5,009,558, Cl 414-23 000

Sawada, Masahiro *See*—
Ikeda, Hayato, Sawada, Masahiro, Nakamura, Norihiko, and Yokomachi, Naoya, 5,009,286, Cl 184-6 170
Ikeda, Hayato, Sawada, Masahiro, and Nakamura, Norihiko, 5,009,574, Cl 417-222 000

Sawyer, Alan G, Hughes, Dale L, and Petree, Edwyn H, to Sawyer, Alan G, and Hughes, Dale L Cable stripping tool 5,009,006, Cl 30-90 600

Saxod, Michel, and Fougerolle, Fabrice Method and apparatus for making sealing rings of the radial type with sealing lip of fluoroplastic 5,009,742, Cl 156-633 000

Saxon, Ronald L *See*—
Lombardino, Paul A, Saxon, Ronald L, and Supchak, Dennis W, 5,009,561, Cl 414-412 000

Sharra, Anthony J Method and test kit for the determination of fetal pulmonary maturity status 5,010,016, Cl 436-63 000

Scannell, Michael B, to Commonwealth Edison Company Multi-edge extender board 5,010,446, Cl 361-398 000

Scarberry, Eugene N, to Respironics Inc Pump apparatus 5,009,635, Cl 604-27 000

Schade, Gerold, Marhold, Albrecht, and Brandes, Wilhelm, to Bayer Aktiengesellschaft Imidazolyl compounds and their use as fungicides 5,010,094, Cl 514-399 000

Schaefer, Roland, to Kulzer & Co GmbH Composite dental prosthesis element formed of filled acrylate/methacrylate polymers 5,009,597, Cl 433-212 100

Schaffer, Leslie E *See*—
Garg, Diwakar, Mueller, Carl F, Schaffer, Leslie E, and Dyer, Paul N, 5,009,966, Cl 428-627 000

Scharf, Gunther *See*—
Sprintschnik, Gerhard, Niederstaetter, Walter, Reiss, Kurt, von Asten, Wolfgang, Scharf, Gunther, and Grzembra, Barbara, 5,009,722, Cl 148-2 000

Scharf, Helmut, to Huels Aktiengesellschaft Zirconium dioxide powder, processes for its preparation and its use for the production of sintered articles 5,009,878, Cl 423-608 000

Schatz, Douglas S *See*—
Siefkes, Jerry D, Harpold, John G, and Schatz, Douglas S, 5,009,764, Cl 204-298 000

Scheerer, Rainer, and Moll, Franz, to Agfa-Gevaert Aktiengesellschaft Photographic recording material 5,009,990, Cl 430-539 000

Scheffler, Glenn W, to International Fuel Cells Corporation Fuel cell power plant fuel control 5,009,967, Cl 429-23 000

Scheller, Clifford D, Collins, Aaron A, and Hansen, Joseph M, to Compuquest, Inc High speed, error-free data transmission system and method 5,010,553, Cl 371-35 000

Schenk, Robert J Removable rigid support structure for circuit cards 5,009,311, Cl 206-332 000

Schering Aktiengesellschaft *See*—
Bittler, Dieter, Laurent, Henry, Rach, Petra, and Topert, Michael, 5,010,071, Cl 514-178 000
Braestrup, Claus T, Nielsen, Mogens C, Christensen, Joergen A, Engelstoft, Mogens, Schou, Henning, Eder, Ulrich, Neef, Gunter, Huth, Andreas, Rahtz, Dieter, and Schmiechen, Ralph, 5,010,077, Cl 514-228 800
Skuballa, Werner, Dahl, Helmut, Vorbrueggen, Helmut, Loge, Olaf, and Thierauch, Karl-Heinz, 5,010,065, Cl 514-58 000

Scherpenberg, Francis A *See*—
Dias, Donald R, Lee, Robert D, Bolan, Michael L, and Scherpenberg, Francis A, 5,010,331, Cl 340-825 310

Scherrer, Fernand, and Rousset, Joseph Device for air-conditioning premises with exchange of heat energy by low temperature infrared radiation 5,010,234, Cl 219-213 000

Schettler, Helmut *See*—
Gansauge, Peter, Kreuter, Volker, and Schettler, Helmut, 5,010,389, Cl 357-67 000

Schiedegger, Charles E *See*—
MacLeod, Richard J, Chubb, Norman L, and Schiedegger, Charles E, 5,009,149, Cl 98-42 210

Schill, John M, and Schill, William C Retainer assemblies for elongated objects 5,009,350, Cl 224-324 000

Schill, William C *See*—
Schill, John M, and Schill, William C, 5,009,350, Cl 224-324 000

Schirmer, Ulrich *See*—
Keil, Michael, Schirmer, Ulrich, Kast, Juergen, Kolassa, Dieter, Wuerzer, Bruno, Meyer, Norbert, Rademacher, Wilhelm, Jung, Johann, and Carlson, Dale R, 5,009,702, Cl 71-100 000.

Schlageter, Alan G *See*—
Fox, Elizabeth D, and Schlageter, Alan G, 5,010,441, Cl 361-221 000

Schlegel Corporation *See*—
McManus, Michael J, Berry, David H, and Dover, Harold P, 5,009,947, Cl 428-122 000

Schlegel, Reinhold *See*—
Bloemacher, Martin, Schlegel, Reinhold, and Weinand, Dieter, 5,009,841, Cl 419-23 000

Schlensog, Klaus *See*—
Riedweg, Robert, and Schlensog, Klaus, 5,009,638, Cl 604-74 000

Schlingmann, Merten *See*—
Wullbrandt, Dieter, Keller, Reinhold, Schlingmann, Merten, Holla, Wolfgang, and Schneider, Manfred, 5,010,012, Cl 435-280 000

Schlumberger Industries *See*—
Grasdepot, Francois, 5,009,107, Cl 73-705 000

Schlumberger Industries, Inc. *See*—
Coppola, Richard, and Khandaghabadi, Farrokh, 5,010,335, Cl 340-870 280

Schmalbach-Lubeca AG *See*—
Bolte, Georg, 5,009,364, Cl 229-123 200

Schmalzl, Ekkehard Multi-directional drive for roller conveyors or similar 5,009,304, Cl 198-372 000

Schmid, Kurt *See*—
Fedter, Horst, Grunwald, Werner, Nolting, Peter, de la Prieta, Claudio, and Schmid, Kurt, 5,010,315, Cl 338-7 000
Grunwald, Werner, Holfelder, Gerhard, De La Prieta, Claudio, and Schmid, Kurt, 5,009,708, Cl 106-105 000

Schmidt, Erhard *See*—
Hassler, Dietrich, and Schmidt, Erhard, 5,009,232, Cl 128-660 030

Schmidt, Ernst, Stehmeier, Heinz, Ruppert, Heinrich W, Gatschmann, Klaus G, and Schutze, Gunter, to Martin Brinkmann AG Device for making cigarettes 5,009,237, Cl 131-70 000

Schmidt, Harald H, to Mold-Masters Limited Thermocouple construction 5,009,718, Cl 136-232 000

Schmidt, Richard R, Baer, Thomas, Zimmerman, Peter, and Wendel, Albrecht, to Solco Basel AG Pharmaceutical products and lactosyl compounds 5,010,059, Cl 514-25 000

Schmidt, William L *See*—
Fox, Leslie R, Wade, Paul C, and Schmidt, William L, 5,010,038, Cl 437-215 000

Schmiechen, Ralph *See*—
Braestrup, Claus T, Nielsen, Mogens C, Christensen, Joergen A, Engelstoft, Mogens, Schou, Henning, Eder, Ulrich, Neef, Gunter, Huth, Andreas, Rahtz, Dieter, and Schmiechen, Ralph, 5,010,077, Cl 514-228 800

Schmitt, Hans J, and Blazek, Vladimir, to Fa Nattermann Arzneimittel GmbH Microprocessor controlled apparatus for the noninvasive determination of peripheral outflow and flow disturbances 5,009,231, Cl 128-633 000

Schnatterer, Albert *See*—
Maurer, Fritz, Lantzsch, Reinhard, Fiege, Helmut, and Schnatterer, Albert, 5,010,193, Cl 544-243 000

Schneider, Alfred, Loos, Horst, and Fischbach, Karl H, to Siegenia-Frank KG Closure support 5,009,034, Cl 49-192 000

Schneider, Karl D Transportation of hospital patients 5,009,442, Cl 280-304 100

Schneider, Manfred *See*—
Wullbrandt, Dieter, Keller, Reinhold, Schlingmann, Merten, Holla, Wolfgang, and Schneider, Manfred, 5,010,012, Cl 435-280 000

Schneider (USA) Inc *See*—
Hamlin, Robert N, Shockey, Rick L, and Tassel, Robert A V, 5,009,659, Cl 606-159 000

Schoenberger, Jack O *See*—
Branam, Timothy R, Roberts, Jeffrey J, and Schoenberger, Jack O, 5,009,101, Cl 73-168 000

Schoenherr, Walter *See*—
Eckhardt, Fritz, Helbig, Peter, and Schoenherr, Walter, 5,010,272, Cl 313-579 000

Schoenleben, Willibald *See*—
Perner, Johannes, Diessel, Paul, Hartmann, Heinrich, Denzinger, Walter, Oftring, Alfred, and Schoenleben, Willibald, 5,009,805, Cl 252-174 240

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Eckel, Thomas, Leitz, Edgar, Wittmann, Dieter, Ott, Karl-Heinz, Peters, Horst, and Schoeps, Jochen, 5,010,135, Cl 525-63 000

Schoettle, Klaus, Buhk, Artur, and Glimorz, Lothar, to BASF Aktiengesellschaft Tape cassette having a two-reel brake system having identical brake levers therefor 5,010,434, Cl 360-132 000

Schollhorn, Wolf D Process for forming urea-formaldehyde resin and use 5,010,164, Cl 528-243 000

Scholsky, Kevin M, Larsen, Lisa M, and Kruse, Rodger C, to S C Johnson & Son, Inc Process and apparatus for producing polyol polymers and polyol polymers so produced 5,010,166, Cl 528-323 000

Schottli AG *See*—
Corvaglia, Romeo, and Schottli, Martin, 5,009,587, Cl 425-549 000

Schottli, Martin *See*—
Corvaglia, Romeo, and Schottli, Martin, 5,009,587, Cl 425-549 000

Schou, Henning *See*—
Braestrup, Claus T, Nielsen, Mogens C, Christensen, Joergen A, Engelstoft, Mogens, Schou, Henning, Eder, Ulrich, Neef, Gunter, Huth, Andreas, Rahtz, Dieter, and Schmiechen, Ralph, 5,010,077, Cl 514-228 800

Schrader, James R *See*—
Pember, David A, and Schrader, James R, 5,009,175, Cl 111-173 000

Schramm, Laurier L, and Smith, Russell G, to Alberta Energy Company Ltd, Canadian Occidental Petroleum Ltd, Esso Resources Canada Limited, part interest to each, Gulf Canada Limited, Her Majesty the Queen in right of the Province of Alberta, HBOG-Oil Sands Limited Partnership, PanCanadian Petroleum Limited, and Petro-Canada Inc Monitoring surfactant content to control hot water process for tar sand 5,009,773, Cl 208-391 000

Schreiber, William F, Lippman, Andrew B, Adelson, Edward H, and Netravali, Aran N, to Massachusetts Institute of Technology Receiver-compatible enhanced definition television system 5,010,405, Cl 358-141 000

Schreinemacher, Herbert J *See*—
Hennings, Detlev F K, and Schreinemacher, Herbert J, 5,009,876, Cl 423-598 000

Schroll, Craig R *See*—
Guthrie, Robin J, Katz, Murray, and Schroll, Craig R, 5,009,968, Cl 429-26 000

Schruff, Herbert Blind riveting nut 5,009,556, Cl 411-15 000

Schuchardt, Jonathan L, to Arco Chemical Technology, Inc Recovery of double metal cyanide complex catalyst from a polymer 5,010,047, Cl 502-24 000

Schuler, Linda A . Gorski, Jack Hurley, Walter L . Bremel, Robert D . and Rottman, Fritz M . to Wisconsin Alumni Research Foundation Bovine placental lactogen gene 5,010,011, Cl 435-252.300

Schultz, John F *See—*
Madey, John M J . Benson, Stephen V . Schultz, John F . and Cutolo, Antonello, 5,010,555, Cl 372-2.000

Schutze, Gunter *See—*
Schmidt, Ernst, Stehmeier, Heinz, Ruppert, Heinrich W . Gatschmann, Klaus G . and Schutze, Gunter, 5,009,237, Cl 131-70.000

Schwaebische Huettenwerke GmbH *See—*
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Schwalge, Barbara *See—*
Plath, Peter, Eicken, Karl, Rueb, Lothar Schwalge, Barbara, Westphalen, Karl-Otto, and Wuerzer, Bruno, 5,009,201, Cl 71-96.000

Schwank, Johannes *See—*
Villa-Garcia, Maria A . and Schwank, Johannes, 5,010,049, Cl 502-60.000

Schweizer, Bernhard *See—*
Lang, Armin, and Schweizer, Bernhard, 5,009,110, Cl 73-862.330

Schwendeman, Robert J , and Kuznicki, William J , to Motorola, Inc Satellite based simulcast paging system 5,010,317, Cl 340-311.100

Schwetje, Norbert, Sizmann, Rudolf and Khelifa, Noureddine to Kali-Chemie AG Process for adsorption cooling conditioning by means of low-temperature heat 5,009,071, Cl 62-4.000

Science Accessories Corp *See—*
Sindeband, Seymour J and Butler, Robert, 5,009,277, Cl 178-18.000

Scopazzi, Christopher *See—*
Antonelli, Joseph A Scopazzi, Christopher and Doherty, Mark M , 5,010,140, Cl 525-269.000

Scot Industries, Inc *See—*
Wilmeth, Thomas S , Wilmeth, Steven L , and Foster, Francis F , 5,009,000, Cl 29-888.020

Scott, Bryan F *See—*
Merriam, David P , Scott, Dale L and Scott, Bryan F , 5,010,568, Cl 379-107.000

Scott, Dale L. *See—*
Merriam, David P Scott, Dale L and Scott, Bryan F , 5,010,568 Cl 379-107.000

Scott, Peter J *See—*
Martin, Antonio M and Scott, Peter J , 5,009,697, Cl 71-24.000

Scott, Samuel C and Scott, William C , III Object-retainer for upright concrete construction forms 5,009,387, Cl 249-96.000

Scott, William C , III *See—*
Scott, Samuel C and Scott, William C , III 5,009,387 Cl 249-96.000

Scribner, Richard M *See—*
Penney, Penio, Rajagopalan Parthasarathi and Scribner, Richard M , 5,010,085, Cl 514-299.000

Sebag, Alain F Container with multiple functions 5,009,018, Cl 40-306.000

Secretarski, James M , and Crowell, Terry M On board automatic diesel engine cooling water chemical treatment dispensing system 5,009,848, Cl 422-62.000

Seddon, William A *See—*
Chuang, Karl T McMonagle, James B Quarattini, Robert J Seddon, William A , and Clegg, David E , 5,009,872, Cl 423-245.300

Sedelnikov, Anatoly I *See—*
Fedin, Marat A , Kuznetsova, Tatyana A Lysenkov, Viktor I Novikova, Svetlana A Savchuk, Valentin A Sedelnikov, Anatoly I Shabunya, Vera P , Udarov, Boris G Tikhonova, Tatyana S Polyakova, Nina P and Paklin, Sergei L , 5,010,106, Cl 514-546.000

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Seidel, Willi Ehniss, Roland, Skabrond, Klaus, Sauter, Ulrich, Maier, Ulrich, and Ebner, Roland, to Dr Ing h c F Porsche AG Indicating system for an automatic motor vehicle transmission 5,009,128 Cl 74-866.000

Seif, Sadraddin *See—*
Imhoff, Ray, and Seif, Sadraddin, 5,009,572, Cl 417-32.000

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Akazawa, Hiroyuki, and Imae, Toshihiro, 5,009,532, Cl 400-636.200
Takei, Katsumori, Fukushima, Hitoshi, Iwamoto, Kohei, and Nakamura, Hiroto, 5,010,352, Cl 346-76.0PH
Yamazaki, Katsunori, and Nagato, Mitsuo, 5,010,326, Cl 340-784.000

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Nishikawa, Akira, 5,010,249, Cl 250-306.000

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Petit, Laurent, Bournonville, Jean-Paul Guth, Jean-Louis, Raatz, Francis, and Seive, Alain, 5,010,048, Cl 502-61.000

Seiwa, Yoshito, to Mitsubishi Denki Kabushiki Kaisha Semiconductor laser device 5,010,375, Cl 357-16.000

Sejvar, James *See—*
Grimm, Noel P , and Sejvar, James, 5,009,836, Cl 376-260.000

Seki, Kenji, to NEC Corporation Mobile communication transceiver 5,010,584, Cl 455-83.000

Seki, Yasunari, to Honda Giken Kogyo Kabushiki Kaisha Control method for valve-timing changeover in engine 5,009,203, Cl 123-90.160

Seki, Yoshinobu *See—*
Kirihara, Tomoo Nakagawa, Ippei Seki, Yoshinobu, Honda Yutaka, and Ichihara, Yasuo, 5,009,751 Cl 204-61.000

Sells, Robert A *See—*
Manderfeld, Donald J , and Sells, Robert A , 5,009,411, Cl 271-129.000
Sannel, Benjamin H Miller, Steven A and Sells, Robert A 5,009,332, Cl 209-652.000

Selmer-Sande, A S *See—*
Gautvik, Kaare M Alestrom, Peter, Oven, Tordis B , and Gabrielsen, Odd S , 5,010,010, Cl 435-252.300

Senetics Corporation *See—*
Barker, Allan, 5,009,338, Cl 215-230.000

Senoplast Klepsch & Co *See—*
Klepsch, Wilhelm, and Plobst, Dietmar, 5,009,952 Cl 428-319.100

Seo, Masayoshi, to Sharp Kabushiki Kaisha Cordless telephone 5,010,566, Cl 379-61.000

Serbousek, Jon C and Engelhardt, John A , to Boehringer Mannheim Corp Acetabular cup 5,009,665, Cl 623-22.000

Serini, Volker, Freitag, Dieter, Westeppe, Uwe, Idel, Karsten, Grigo, Ulrich, Casser, Carl, Paetz, Klaus-Christian, and Hajek, Manfred, to Bayer Aktiengesellschaft Polycarbonate of alkyl cyclohexylidene bisphenol 5,010,162, Cl 528-196.000

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Serkes, Jonathan M and Foschaar, William L , to In-Vitro Scientific Products, Inc Roller bottle for tissue culture growth 5,010,013, Cl 435-285.000

Serpelloni, Michel, to Roquette Freres Process for conferring cheese making properties on overheated milks for the manufacture of rennet cheeses 5,009,914, Cl 426-582.000

Serwer, Philip, and Griess, Gary A , to Board of Regents, The University of Texas System Methods for producing agarose gels having variable pore sizes 5,009,759, Cl 204-182.800

Seshimo, Yuu, and Fujii, Masao, to Mitsubishi Denki K K Heat exchanger utilizing pressure differential 5,009,263, Cl 165.151.000

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Hayashi, Hiroyuki, Seto, Tsuneo Miura, Hironori and Fujimoto, Yoji, 5,009,094, Cl 72-225.000

Seville, Alan R Polyurethane molding composition, method and article 5,010,133, Cl 524-871.000

Sewell, Michael R and DeJong, Allan W , to Siemens-Bendix Automotive Electronics Limited Velocity change sensors 5,010,216, Cl 200-61.45M

Sewer Rodding Equipment Company *See—*
Prange, Charles J , 5,009,242, Cl 134-113.000

SGS-Thomson Microelectronics, Inc *See—*
O'Connor, James T , and Courtright, David A , 5,010,559, Cl 375-116.000

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Zisa, Michele and Palara, Sergio, 5,010,439, Cl 361-91.000

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Fedin, Marat A , Kuznetsova, Tatyana A Lysenkov, Viktor I Novikova, Svetlana A Savchuk, Valentin A Sedelnikov, Anatoly I Shabunya, Vera P , Udarov, Boris G Tikhonova, Tatyana S Polyakova, Nina P and Paklin, Sergei L , 5,010,106, Cl 514-546.000

Shah, Vipin D , Kulkarni, Padmaker V , and Miranda, Quirinus R , to International Immunoassay Laboratories, Inc Two site cross-reaction immunometric sandwich assay method 5,009,996, Cl 435-7.000

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Kinkade, Charles F Sharp, Harold I and Vrbensky, Robert F , 5,009,295, Cl 192-4.00A

Sharp Kabushiki Kaisha *See—*
Asanuma, Masato and Kaneshige, Masatoshi, 5,009,187, Cl 118-658.000
Fuji, Hiroshi, Fujiwara, Tsuneo Iwaki, Takashi Numata, Tomiyuki, Tsuji, Kentaroh, Maeda, Shigemi, Yamaguchi, Takeshi, Kojima, Kunio, Deguchi, Toshihisa, and Terashima, Shigeo, 5,010,540, Cl 369-50.000
Fujii, Yoshihalu, and Fujita, Yukitoshi, 5,009,410, Cl 271-127.000
Hayakawa, Takeshi, Narikawa, Shiro, Ohashi, Kunio and Tsujimoto, Yoshiharu, 5,009,977, Cl 430-84.000
Seo, Masayoshi, 5,010,566, Cl 379-61.000
Suzuki, Hitoshi Shiotani, Shinobu, Tokunaga, Shinji, Hirai, Tokuyuki Fukumochi, Yoji, Kugimiya, Shuzo and Sata, Ichiko 5,010,486, Cl 364-419.000
Tanaka, Syozo, Takushima, Akiro, Shinobu, Yoshiharu, and Eguchi, Masaki, 5,009,084, Cl 62-441.000
Terashima, Shigeo Tsuji, Kentaro, and Fuji, Hiroshi, 5,010,539, Cl 369-50.000

Shea, Timothy J *See—*
Evans, Thomas L , Wasserman, Carol B Shea, Timothy J , and Campbell, John R , 5,010,143, Cl 525-394.000

Sheehan, James Medical swab weighing apparatus 5,009,275, Cl 177-25.130

Shekleton, Jack R , and Smith, Robert W , to Sundstrand Corporation Stored energy combustor fuel injection system 5,009,589, Cl 431-183.000

Sheldon, Dunstan P , to Mag-Tek, Inc Composite ticket processing unit 5,010,240, Cl 235-382.000

Shell Oil Company *See—*
Nathoo, Nazim S , and Giannopoulos, Fanis, 5,009,409, Cl 271-90.000
Rosenbrand, Gerrit G , and Wong, Pui K , 5,010,170, Cl 528-392.000
van Broekhoven, Johannes A M , and Miedema, Wiebren A , 5,010,171, Cl 528-392.000
Van Leeuwen, Petrus W N M , and Roobeek, Cornelis F , 5,010,172, Cl 528-392.000

Sheperd, Robin G , to John Wyeth and Brothers Limited Acylated hexahydropyrimidines 5,010,196, Cl 544-335.000

Sherritt, John S *See—*
Reaves, Thomas A , and Sherritt, John S , 5,009,326, Cl 220-441.000

Sherwin, Harry A *See—*
Kline, Loren H , Sherwin, Harry A , and Telep, Robert J , 5,009,250, Cl 137-596.170

Shiba, Haruo, Ikebe, Masaru, and Ishida, Toshihiko, to TDK Corporation Hub for a disk type recording medium 5,010,435, Cl 360-133.000

Shiba, Tetsuo, to Mitsubishi Denki Kabushiki Kaisha Semiconductor light receiving element 5,010,381, Cl 357-30.000

Shibata, Norihiko *See—*
Tanaka, Kazuyuki, Iwami, Etsuji, Matsuzawa, Jun, Mukoyama, Yoshiyuki, Shibata, Norihiko, Hanawa, Akinori, and Yokota, Mitsuo, 5,009,949, Cl 428-260.000

Shibazaki, Nobuo, to Canon Kabushiki Kaisha Document processing system 5,010,496, Cl 364-519.000

Shiga, Nobuo, to Sumitomo Electric Industries, Ltd Microwave integrated circuit 5,010,305, Cl 330-277.000

Shigeno, Haruhisa *See—*
Yamanaka, Masahiko, Hanaoka, Motoyoshi, Konse, Hiroaki, Shigeno, Haruhisa, and Kinoshita, Masakatsu, 5,009,936, Cl 427-407.100

Shigesato, Yuzo *See—*
Harano, Takeshi, Takaki, Satoru, Shigesato, Yuzo, Suzuki, Koichi, Hashimoto, Naoki, Kojima, Hiroyasu, and Oyama, Takuji, 5,009,922, Cl 427-37.000

Shigeta, Katsunori, and Nakamura, Haruyuki, to Mitsubishi Denki K K Sewing data forming method and device for sewing machine 5,009,176, Cl 112-121.120

Shih, I-Fu, Chang, David B , Arns, James A , Moss, Gaylord E , and Smith, Ronald T , to Hughes Aircraft Company System of holographic optical elements for testing laser range finders 5,009,502, Cl 356-152.000

Shiki, Masatoshi *See—*
Migita, Masahito, Uda, Tsuyoshi, Kanehisa, Osam, and Shiki, Masatoshi, 5,010,517, Cl 365-114.000

Shikichi, Satoshi *See—*
Enari, Masahiko, Shikichi, Satoshi, Kawaguchi, Fumiaki, Suzuki, Kenichi, Usui, Masayuki, Matsuoka, Hiroshi, Matsuoka, Kazuhiko, Hosoya, Hideki, Aoki, Akio, and Minoura, Kazuo, 5,010,534, Cl 369-32.000

Shima, Yoshinobu, and Kamio, Hiroshi, to NKK Corporation Apparatus for manufacturing silicon single crystals 5,009,863, Cl 422-249.000

Shimada, Akira, to Hitachi, Ltd Image information recorder having a resolution density transformation device 5,010,497, Cl 364-519.000

Shimada, Satoshi, and Watanabe, Yuji, to Sony Corporation Video display system 5,010,411, Cl 358-230.000

Shimamura, Masato *See—*
Sasaki, Hiroyuki, Shimamura, Masato, Noda, Juichi, Hanafusa, Hiroaki, and Takeuchi, Yoshiaki, 5,009,478, Cl 350-96.150

Shimano Industrial Company Limited *See—*
Nagano, Masashi, 5,009,119, Cl 74-489.000

Shimizu, Masayasu *See—*
Noda, Hidetoshi, Gocho, Makoto, Shimizu, Masayasu, Komatsu, Osamu, and Inoue, Hideaki, 5,009,707, Cl 75-375.000

Shimizu, Noboru *See—*
Kitada, Masahiro, Shimizu, Noboru, Tanabe, Hideo, and Nakamura, Hitoshi, 5,010,433, Cl 360-113.000

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Kuzuya, Susumu, Shimizu, Seiji, Kato, Mikio, Ishikawa, Yujiro, Sakai, Takashi, and Yuki, Eiji, 5,009,530, Cl 400-188.000

Shimizu, Shigeru *See—*
Nakamura, Tomio, Shimizu, Shigeru, and Takeuchi, Kikuko, 5,009,811, Cl 252-500.000

Shimizu, Susumu *See—*
Enari, Hiroyuki, Kumazawa, Satoru, Shimizu, Susumu, Ito, Atsushi, Sato, Nobuo, and Saishoji, Toshihide, 5,010,206, Cl 548-262.200

Shimizu, Tokihiko *See—*
Wakita, Katsuya, Sonoda, Nobuo, Shimizu, Tokihiko, Hotta, Shu, and Soga, Mamoru, 5,009,815, Cl 252-582.000

Shimokawahara, Hisashi *See—*
Maruyama, Hiroshi, Kiryu, Naohiko, Minezaki, Etsuko, Tagashira, Susumu, and Shimokawahara, Hisashi, 5,009,944, Cl 428-40.000

Shimokoriyama, Makoto, and Yagisawa, Toshihiro, to Canon Kabushiki Kaisha Digital video signal processing device 5,010,391, Cl 358-14.000

Shimozawa, Kenji *See—*
Tsuyuguchi, Hiroshi, Noda, Yasushi, Morita, Tsutomu, and Shimozawa, Kenji, 5,010,246, Cl 250-216.000

Shin-Etsu Handotai Company Limited *See—*
Ibe, Hiroyuki, and Uesugi, Toshiharu, 5,009,864, Cl 422-249.000
Ikeda, Yasuhiro, 5,009,860, Cl 422-250.000

Shin, Yuaki *See—*
Arai, Yuji, Shin, Yuaki, Ishiguro, Takashi, and Hamada, Emiko, 5,009,818, Cl 264-1.003

Shinbo, Hiroyasu *See—*
Kawakami, Toshikatsu, Fukuda, Shin, Shinbo, Hiroyasu, Unemura, Toyoaki, Sakamoto, Ken, and Kondo, Tomoji, 5,010,406, Cl 358-147.000

Shingai, Sadanori *See—*
Mori, Kinji, Kunai, Yuko, Akiyama, Masakazu, Kadoya, Tadaaki, Kawano, Katsumi, Miyamoto, Shoji, Nohmi, Makoto, Shingai, Sadanori, and Ihara, Hirokazu, 5,010,479, Cl 364-200.000

Shinko Electric Co., Ltd *See—*
Kasahara, Nobuo, Watanuki, Masayoshi, Maeno, Satoru, and Ohkuni, Masato, 5,010,372, Cl 355-313.000
Nakagawa, Hiroshi, and Maeda, Minoru, 5,010,262, Cl 310-12.000.

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Shinohara, Tadashi, Nishiyama, Toshikazu, Noguchi, Kazumi, Iwata, Hitoshi, and Suwabe, Shigekazu, to Hitachi Metals, Ltd Flying-type composite magnetic head. 5,010,431, Cl 360-103.000

Shioda, Atsushi *See—*
Morita, Kaoru, and Shioda, Atsushi, 5,010,149, Cl 525-481.000

Shiokawa, Youichi, Takimoto, Koichi, and Takenaka, Kohei, to Fujisawa Pharmaceutical Co , Ltd Nitric ester derivative 5,010,093, Cl 514-374.000

Shiotani, Shinobu *See—*
Suzuki, Hitoshi, Shiotani, Shinobu, Tokunaga, Shinji, Hirai, Tokuyuki, Fukumochi, Yoji, Kugimiya, Shuzo, and Sata, Ichiko, 5,010,486, Cl 364-419.000

Shioyama, Tsutomu, Minakami, Ko, Fujii, Takao, and Ohtomi, Koichi, to Kabushiki Kaisha Toshiba Internal pump for nuclear reactor 5,009,838, Cl 376-310.000

Shipe, Joanne E , to AMP Incorporated Separable connector assembly for an IC Chip Carrier 5,009,608, Cl 439-331.000

Shirai, Junji *See—*
Hirano, Yoshinao, Sato, Katsumo, Nagamori, Shigeru, Murata, Katsuhide, Horikiri, Kazuhito, and Shirai, Junji, 5,009,585, Cl 425-174.400

Shirai, Tadayoshi, and Hioki, Masahito, to Ishikawa Tekko Kabushiki Kaisha Ball joint 5,009,538, Cl 403-134.000

Shiraki, Masaru *See—*
Kosugi, Yoshitsugu, Tanaka, Hideoki, Suzuki, Hideo, and Shiraki, Masaru, 5,010,004, Cl 435-134.000

Shirakura, Keizo *See—*
Ametani, Minoru, Funakoshi, Keigo, Kira, Akihiko, Matsushita, Takao, and Shirakura, Keizo, 5,009,735, Cl 156-241.000

Shirey, Roy D , Nelson, Michael T , and Laurenzi, Robert J , to Lucas Industries, plc Very small orifice manufacturing system 5,010,224, Cl 219-69.170

Shirley, Thomas E *See—*
Linville, Andrew F , Jr , and Shirley, Thomas E , 5,010,526, Cl 367-46.000

Shiro, Takashi *See—*
Kawaguchi, Takayuki, Shiro, Takashi, Iwata, Kaoru, and Daido, Takahiro, 5,009,986, Cl 430-495.000

Shockey, Rick L *See—*
Hamlin, Robert N , Shockey, Rick L , and Tassel, Robert A V , 5,009,659, Cl 606-159.000

Shoemaker, Patrick A , to United States of America, Navy Reustive element using depletion-mode MOSFET's 5,010,385, Cl 357-41.000

Shook, Ed , Jr *See—*
Gruber, Milan A , 5,009,050, Cl 52-408.000

Shor, Peter S Refining method 5,009,755, Cl 204-111.000

Shuey, John R *See—*
Fogg, Michael W , Koegel, Keith S , Shuey, John R , Zelko, William E , and Beamenderfer, Robert E , 5,009,614, Cl 439-497.000

Shute, Thomas A Pouch for mounting to a vehicle door 5,009,458, Cl 296-37.130

Shyogo, Inada *See—*
Yoshimura, Hironori, and Shyogo, Inada, 5,009,705, Cl 75-240.000

Shyoji, Ueno *See—*
Masasumi, Yana, Hitoshi, Nagato, Kiyoshi, Yamada, Shyoji, Ueno, and Kunihiro, Shibuya, 5,009,527, Cl 400-120.000

Siddens, Jack K *See—*
Brown, Dale G , Siddens, Jack K , Diehl, Robert E , and Wright, Donald P , Jr , 5,010,098, Cl 514-426.000

Sidi, Shiraz I , Guilbert, Paul A , Desroches, Lise A , and Plasse, Michel, to Northern Telecom Limited Telecommunications cable 5,010,210, Cl 174-34.000

Siefkes, Jerry D , Harpold, John G , and Schatz, Douglas S , to Advanced Energy Industries, Inc Apparatus for removal of electrical shorts in a sputtering system 5,009,764, Cl 204-298.080

Siegenia-Frank KG *See—*
Schneider, Alfred, Loos, Horst, and Fischbach, Karl H , 5,009,034, Cl 49-192.000

Siemens Aktiengesellschaft *See—*
Erhardt, Werner, 5,010,442, Cl 361-275.000
Foell, Helmut, and Lehmann, Volker, 5,010,294, Cl 324-158.00D
Hassler, Dietrich, and Schmidt, Erhard, 5,009,232, Cl 128-660.030
Lamatsch, Hans, and Vanek, Dieter, 5,010,229, Cl 219-121.210
Pfaff, Juergen, 5,010,542, Cl 370-1.000
Strandberg, Hans G , 5,010,307, Cl 331-116.0FE
Trimborn, Peter, 5,009,782, Cl 210-360.100

Siemens Automotive Limited *See*—
Hueniken, Peter Gurd, John A. and Woodman, Douglas, 5,010,217, Cl. 200-61.45R

Siemens-Bendix Automotive Electronics Limited *See*—
Sewell, Michael R. and DeJong, Allan W., 5,010,216, Cl. 200-61.45M

Siemens Medical Laboratories, Inc. *See*—
Hernandez, Francisco, and Chamberlain, Jerry, 5,010,562, Cl. 378-125.000

Siener, Pierre, and Steiner, Antoine, to Institut de Recherches de la Siderurgie Francaise-Irsid. Method and apparatus for the identification of metal surface finishes, 5,010,578, Cl. 382-8.000

Sievers, Uve, to Mecron Medizinische Produkte GmbH. Marrow nail for the treatment of bone fractures, 5,009,664, Cl. 623-16.000

Sikkema, Doetze J., to Akzo nv. Aramid polymer from aromatic diacarboxylic acid mixture and aromatic diamine mixture, 5,010,168, Cl. 528-338.000

Silbermann, Klaus *See*—
Hirtle, Thomas W., Cimperman, Frederick J. and Silbermann, Klaus, 5,009,909, Cl. 426-481.000

Silver, Jules, and Tarozzi, Richard A. Syringe for dispensing measured quantities of a material, 5,009,645, Cl. 604-207.000

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Simmons, Chris B. Apparatus and method for wrapping bundles of newspapers or the like, 5,009,055, Cl. 53-397.000

Simonsen, Christian *See*—
Levinson, Arthur, Simonsen, Christian, and Yelverton, Elizabeth M., 5,010,002, Cl. 435-69.200

Simplimatic Engineering Company *See*—
Hilbish, Brian K., Leonard, David W., Sr., Burgess, Arnold C. and Burns, David R., 5,009,550, Cl. 406-87.000
Roderick, Zackary A., and Rode, Leon A., 5,009,306, Cl. 198-414.000

Simpson, Scott *See*—
Gordon, Herman B., Owens, Mark J., Rubinstein, Leon, and Simpson, Scott, 5,009,607, Cl. 439-67.000

Sindeband, Seymour J., and Butler, Robert, to Science Accessories Corp. Method and apparatus for position determination, 5,009,237, Cl. 178-18.000

Singh, Baldev *See*—
Lesher, George Y., deceased, Bacon, Edward R., Singh, Baldev, and Kuo, Gee-Hong, 5,010,086, Cl. 514-303.000

Sinofsky, Edward I. *See*—
Daignault, Kenneth J., Jr., McNamara, Edward J., and Sinofsky, Edward L., 5,009,655, Cl. 606-007.000

Sintim-Damoa, Kwame *See*—
Minshall, Billy W., Purohit, Kailash, Nygard, John F., Sintim-Damoa, Kwame, Giesler, Richard, and Woodworth, Archie, 5,009,654, Cl. 604-410.000

SIP - Societa Italiana per l'Esercizio Delle Telecomunicazioni P.A. *See*—
Braglia, Marco, DeFranceschi, Roberto, and Montangero, Paolo, 5,010,253, Cl. 250-399.000

Sippel, Achim, Kruse, Heinz-Josef, and Becker, Wilfried, to Rheinmetall GmbH. High-explosive projectile, 5,009,167, Cl. 102-524.000

Sit, Hon P., Galbi, David, and Chan, Alfred K., to Intel Corporation. Prenormalization for a floating-point adder, 5,010,508, Cl. 364-748.000

Sit, Sing-Yuen, and Wright, John J., to Bristol-Myers Company. Anti-hypercholesterolemic tetrazol-1-yl intermediates, 5,010,205, Cl. 548-253.000

Sizmann, Rudolf *See*—
Schwetje, Norbert, Sizmann, Rudolf, and Khelifa, Noureddine, 5,009,071, Cl. 62-4.000

Skabrond, Klaus *See*—
Seidel, Willi, Ehniss, Roland, Skabrond, Klaus, Sauter, Ulrich, Maier, Ulrich, and Ebner, Roland, 5,009,128, Cl. 74-866.000

Skalak, Thomas C. *See*—
Feldman, Marc D., Skalak, Thomas C., and Belardinelli, Luiz, 5,009,634, Cl. 604-27.000

SKF GmbH *See*—
Broekmuller, Uwe, and Weber, Hans-Gerd, 5,009,525, Cl. 384-576.000
Dittenhoefer, Thomas, 5,009,524, Cl. 384-475.000

Skinner, Dale D. and Thompson, John H., to Westinghouse Electric Corp. Sonar test system and method, 5,010,525, Cl. 367-13.000

Skuballa, Werner, Dahl, Helmut, Vorbrueggen, Helmut, Loge, Olaf, and Thierauch, Karl-Heinz, to Schering Aktiengesellschaft. Cyclodextrin clathrates of 5-cyanoprostacyclin derivatives and their use as pharmaceutical agents, 5,010,065, Cl. 514-58.000

Skvarce, Dennis H. *See*—
Nolan, John H., and Skvarce, Dennis H., 5,009,140, Cl. 83-698.000

Slade, Louise *See*—
Levine, Harry, Slade, Louise, Van Lengerich, Bernhard, and Pickup, John G., 5,009,900, Cl. 426-96.000

Slagteriernes Forskningsinstitut *See*—
Joergensen, Tage W., and Christensen, Leif, 5,009,191, Cl. 119-20.000

Sleik Ice Limited *See*—
Rzechula, Michael J., 5,010,127, Cl. 524-379.000

Sliger, Kris M., Moeller, Randolph C., and Williamson, Scott E., to Baker Hughes Incorporated. Well production apparatus including pump means and thermal absorption means, 5,009,264, Cl. 166-106.000

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Albino, Anthony, Lloyd, Kenneth, Ikeda, Hisami, and Old, Lloyd, 5,009,995, Cl. 435-7.240

Smaling, Oral M., to White Consolidated Industries, Inc. Method of manufacturing an outer vacuum cleaner bag for an upright cleaner, 5,009,633, Cl. 493-214.000

Smart, Charles F. *See*—
D'Aquila, Anthony, Smart, Charles F., and Varian, Raymond H., 5,009,354, Cl. 227-2.000

Smetak, Vincenc *See*—
Pajgrt, Jan, Smetak, Vincenc, Kalina, Jaroslav, Zemek, Michal, Pus, Milan, and Bucek, Pavel, 5,009,253, Cl. 139-116.200

Smith, Darrell W. *See*—
Hendrickson, Alfred A., and Smith, Darrell W., 5,009,842, Cl. 419-28.000

Smith, Franklin G., to Manufacturer's Consultants, Inc. Cord-type tire traction device, 5,009,256, Cl. 152-221.000

Smith-Horn, Garry R., and Wendt, Robert J., to General Motors Corporation. Vehicle door pivoted side glass, 5,009,461, Cl. 296-146.000

Smith, Jack E., to General Motors Corporation. Strap wrench end attachment assembly for a twisted rope torsion bar, 5,009,405, Cl. 267-273.000

Smith, James R. *See*—
Holtan, Ramer B., Jr., Falk, Kevin I., Bergman, James F., Smith, James R., and Nelson, Kenneth E., 5,009,496, Cl. 351-156.000

Smith, Lynn U., and Merlino, Mario J., to Smith, Lynn U. Easy to fasten trousers, 5,008,962, Cl. 2-234.000

Smith, Martin P., and Saunders, Colin D., to Spandrel Establishment. Method of classifying objects according to shape, 5,010,247, Cl. 250-223.00R

Smith, Peter R. *See*—
Baker, Derrick J., Bugden, Walter G., and Smith, Peter R., 5,009,357, Cl. 228-122.000

Smith, Raoul D., to Aeolian Partnership. Wind motor, 5,009,571, Cl. 416-79.000

Smith, Richard L. *See*—
Martin, Luther W. and Smith, Richard L., 5,009,007, Cl. 30-92.000

Smith, Robert A. *See*—
Fry, John J., Hall, George R., II, and Smith, Robert A., 5,010,322, Cl. 340-700.000

Smith, Robert W. *See*—
Shekleton, Jack R. and Smith, Robert W., 5,009,589, Cl. 431-183.000

Smith, Rodney B. *See*—
Spehar, Eli G., 5,009,170, Cl. 108-36.000

Smith, Ronald T. *See*—
Shih, I-Fu, Chang, David B., Arns, James A., Moss, Gaylord F. and Smith, Ronald T., 5,009,502, Cl. 356-152.000

Smith, Russell G. *See*—
Schramm, Laurier L. and Smith, Russell G., 5,009,773, Cl. 208-391.000

Smith, Sanford N., to Phillips Petroleum Company. Apparatus for separating elongated contaminants from a stream of material, 5,009,331, Cl. 209-615.000

Smith, Stephen A. *See*—
Markwell, Roger F., Smith, Stephen A., Hughes, Ian, and Gaster, Laramie M., 5,010,097, Cl. 514-419.000

Smith, Thurman D. *See*—
Richardson, David L., Clark, Jack P., Kowdley, Balasubramanian S., Patterson, Peter M., Perry, Richard W., and Smith, Thurman D., 5,009,105, Cl. 73-621.000

Smith, Timothy R., to Manville Corporation. Method and composition for filtering beer, ale or malt liquor to reduce multivalent metal cations, 5,009,906, Cl. 426-330.400

Smiths Industries Medical Systems, Inc. *See*—
Bell, Craig J., 5,009,850, Cl. 422-99.000

Smiths Industries Public Limited Company *See*—
Cross, David E., Brooks, Kenneth J. and Whiteside, Neil A., 5,009,647, Cl. 604-332.000

Smithson, Joseph P. Enclosed yoke clasp for bola-style necktie, 5,008,981, Cl. 24-49.00R

Snowden, Gregory O., Barrett, Clifford E., III, and Gomez, Fernando to Motorola, Inc. Paging system employing designated frame commencing information service data message transmission, 5,010,330, Cl. 340-825.210

Soderberg, Per O., to Astra Meditec Aktiebolag. Device for fixing a dental prothesis, 5,009,596, Cl. 433-173.000

Soderlund, Frits *See*—
Carlsson, Anders Johansson, Lars, and Soderlund, Frits, 5,009,583, Cl. 418-104.000

Soga, Mamoru *See*—
Wakita, Katsuya, Sonoda, Nobuo, Shimizu, Tokihiko, Hotta, Shu, and Soga, Mamoru, 5,009,815, Cl. 252-582.000

Soga, Naohiro *See*—
Nakanishi, Kazuki, 5,009,688, Cl. 65-18.300

Solco Basel AG *See*—
Schmidt, Richard R., Baer, Thomas, Zimmerman, Peter, and Wendel, Albrecht, 5,010,059, Cl. 514-25.000

Solomon, Allen I., to Grumman Aerospace Corporation. Method of making trench JFET integrated circuit elements, 5,010,025, Cl. 437-29.000

Solomon, Donald F. Reverse osmosis and hot water system, 5,009,777, Cl. 210-134.000

Solomons, Clive C. Kit for determining blood platelet stress, 5,009,847, Cl. 422-61.000

Solvent Services, Inc., *See*—
Dieter, Douglas K., 5,009,266, Cl. 166-245.000

Somar Corporation *See*—
Maruyama, Hiroshi, Kiryu, Naohiko, Minezaki, Etsuko, Tagashira, Susumu, and Shimokawahara, Hisashi, 5,009,944, Cl. 428-40.000

Sonoda, Nobuo *See*—
Wakita, Katsuya, Sonoda, Nobuo, Shimizu, Tokihiko, Hotta, Shu, and Soga, Mamoru, 5,009,815, Cl. 252-582.000

Sony Corporation *See*—
Fukushima, Hideo, and Kurushima, Masakazu, 5,010,432, Cl. 360-108.000
Gomi, Takayuki, 5,010,026, Cl. 437-31.000
Higuchi, Shigetaka, Noguchi, Isao, and Odashima, Tohru, 5,008,998, Cl. 29-840.000
Malherbe, Bent, 5,008,993, Cl. 29-125.000
Shimada, Satoshi, and Watanabe, Yuji, 5,010,411, Cl. 358-230.000
Yoshida, Kimiyoshi, Sakano, Akio, Tamori, Hirofumi, and Chatani, Masayuki, 5,010,579, Cl. 382-13.000

Soong, Tsai C. Sports racket, 5,009,422, Cl. 273-73.00D

Soper, Daniel C. *See*—
Ring, Gregg, Sr., and Soper, Daniel C., 5,009,573, Cl. 417-53.000

Sorensen, Joseph A., and Gatzemeyer, Dwight L. to Petersen Manufacturing Co., Inc. Quick-action bar clamp, 5,009,134, Cl. 81-487.000

Sotton, Michel *See*—
Gavet, Louis Chatelin, Roger, Sotton, Michel, Guigal, Robert, and Laurent, Philippe, 5,009,846, Cl. 422-56.000

Souders, Karen. Jewelry holder kit, 5,009,333, Cl. 211-13.000

South Australian Co-Operative Bulk Handling Limited *See*—
Johnke, Bruce L., 5,009,046, Cl. 52-197.000

Spafax Holdings Plc *See*—
Robinson, Dennis W., 5,009,761, Cl. 204-192.140

Spalding & Evenflo Companies, Inc. *See*—
Stiefel, Joseph F., Melvin, Terence, and Nesbitt, R. Dennis, 5,009,427, Cl. 273-232.000

Spandrel Establishment *See*—
Smith, Martin P., and Saunders, Colin D., 5,010,247, Cl. 250-223.00R

Sparton Corporation *See*—
Merriam, David P., Scott, Dale E., and Scott, Bryan E., 5,010,568, Cl. 379-107.000

Speck, Ulrich, and Roumeliotis, Panayiotis, Guar flour, 5,010,061, Cl. 514-54.000

Spector, George *See*—
Huffaker, Almyria, and Spector, George, 5,009,382, Cl. 248-284.000

Spehar, Eli G., to Smith, Rodney B.; and Ostic, Ernest I. Portable body massage table, 5,009,170, Cl. 108-36.000

Speranza, George P., Lin, Jiang-Jen, and Cuscurida, Michael, to Texaco Inc. Process for preparing novel diamines, 5,010,160, Cl. 528-45.000

Spielberger, Richard K. *See*—
Dunaway, Thomas J., Spielberger, Richard K., Dicks, Lori A., and Loy, Jerald M., 5,010,387, Cl. 357-70.000.

Spies, Alfons, to Dr. Johannes Heidenhain GmbH. Photoelectric position-measuring arrangement having a plurality of shiftable grids, 5,009,506, Cl. 356-356.000

Spinos, Frank T., and Worley, Sharon M. Beverage cooler, 5,009,083, Cl. 62-400.000

Spitler, Wayne I., to General Motors Corporation. Clutch damper assembly, 5,009,301, Cl. 192-106.200

Spitz, Robert A., and Bricker, Mark, to East Penn Manufacturing Co., Inc. Process for the extended use of strip acid employed in the reclamation of battery acid fluid from expanded lead-acid batteries, 5,009,868, Cl. 423-139.000

Spraggs, Richard W. *See*—
Robins, Kendall H., Austin, Dennis K. and Spraggs, Richard W., 5,009,163, Cl. 102-301.000

Springer, Hartmut; and Reiher, Uwe, to Hoechst Aktiengesellschaft. Water-soluble azo compounds having a N-(phenethyl)-amido-carbonyl-methoxyphenyl radical, substituted by a fiber-reactive group of the vinylsulfone series, suitable as fiber-reactive dyestuffs, 5,010,180, Cl. 534-638.000

Sprintschnik, Gerhard, Niederstaetter, Walter, Reiss, Kurt, von Asten, Wolfgang, Scharf, Gunther, and Grzembra, Barbara, to Hoechst AG. and Vereinigte Aluminum Werke A.G. Process for producing base material for an aluminum offset printing plate, 5,009,722, Cl. 148-2.000

Square D Company *See*—
Bartee, Edward C., 5,010,211, Cl. 174-48.000
Brady, Peter J., 5,010,438, Cl. 361-56.000

SSMC Inc. *See*—
Sato, Shuichi, Koguchi, Yoshimi, and Kobayashi, Yoshiharu, 5,009,177, Cl. 112-292.000

Staar S.A. *See*—
d'Alayerde, Costemore d'Arc, Stephane M., 5,010,428, Cl. 360-99.060

Stafsudd, Oscar M. *See*—
Bunshah, Rointan F., Parsons, James D. and Stafsudd, Oscar M., 5,010,035, Cl. 437-100.000

Stahl, Steven B. *See*—
Klett, Paul A., Bakhshi, Shiv K. and Stahl, Steven B., 5,009,932, Cl. 427-243.000

Stahl, Ted, to Stahls' Inc. Pre-sewn letter and method, 5,009,943, Cl. 428-40.000

Stahls' Inc. *See*—
Stahl, Ted, 5,009,943, Cl. 428-40.000

Stankus, John C. to Jennmar Corporation. Expansion assembly for mine roof bolts, 5,009,549, Cl. 405-261.000

Stanley Electric Co., Ltd. *See*—
Ohmamyuda, Yukio, Tanabe, Toru, Matsumoto, Osamu, Suzuki, Hidenobu, and Jyouzuka, Masashi, 5,010,457, Cl. 362-66.000

Starr, George N. to Delaware Capital Formation, Inc. Vehicle lift, 5,009,287, Cl. 187-8.410

Stasch, Johannes-Peter *See*—
Henning, Rolf, Benz, Gunter, Stasch, Johannes-Peter, Knorr, Andreas, and Bender, Wolfgang, 5,010,057, Cl. 514-018.000

Staubli, Andrea *See*—
Ron, Eyal; Staubli, Andrea and Langer, Robert S., 5,010,167, Cl. 528-328.000

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Stavely, Donald J. *See*—
Wanger, Mark E., Methlie, Jennifer L., Christie, Leslie G., Dauner, Daniel R., Domel, Douglas R., Jones, David P., Oliver, Thomas C. and Stavely, Donald J., 5,010,536, Cl. 369-36.000

Steck, Werner, Marosi, Laszlo, Haberkorn, Herbert; Feser, Rainer, Huebner, Werner, and Jakusch, Helmut; to BASF Aktiengesellschaft. Stabilization of acicular ferromagnetic chromium dioxide, 5,009,827, Cl. 423-607.000

Steele, Douglas S., to General Electric Company. Ionization detector, 5,010,252, Cl. 250-385.100

Steele, John, Johansen, Oddvar, Johnson, Graham, and Hodgkin, Johnathon, to Commonwealth Scientific & Industrial Research Organisation & Telectronics Pty. Limited. Material for cell attachment and growth, 5,010,009, Cl. 435-240.243

Stehmeier, Heinz *See*—
Schmidt, Ernst, Stehmeier, Heinz, Ruppert, Heinrich W., Gatschmann, Klaus G. and Schutze, Gunter, 5,009,237, Cl. 131-70.000

Steiger, Ronald P. *See*—
Leung, Peter K., Steiger, Ronald P., and Kunze, Kenneth R., 5,010,301, Cl. 324-376.000

Steigerwald, Carl J. to Kendall Company, The. Valve assembly, 5,009,391, Cl. 251-149.100

Steigerwald, Robert L., to General Electric Company. Lossless gate driver circuit for a high frequency converter, 5,010,261, Cl. 307-571.000

Stein-Industrie *See*—
Bonnand, Christian, Mascart, Dominique, and Druelle, Philippe, 5,008,996, Cl. 29-727.000

Stein, Matthew L. to Haws Company. Emergency wash station, 5,008,963, Cl. 4-620.000

Steiner, Antoine *See*—
Siener, Pierre, and Steiner, Antoine, 5,010,578, Cl. 382-8.000

Steinke, Ulrich, to Ernst Jacobi & Co. KG. Cleaning device for textile machines disposed in a row, 5,008,972, Cl. 15-312.200

Stenemann, Bruno *See*—
Sacco, Bruno, Tomforde, Johann, Abb, Thomas, and Stenemann, Bruno, 5,009,042, Cl. 52-36.000

Stengel, Philip B., to Creative Binding Systems, Inc. Booklet binding system, 5,009,537, Cl. 402-21.000

Stenqvist, Jan N. Printing unit, 5,009,159, Cl. 101-351.000

Stensio, Karl-Erland M. *See*—
Helmer, Ulla K. E., and Stensio, Karl-Erland M., 5,009,789, Cl. 210-641.000

Stephens, Robert S. *See*—
Penny, Glenn S., Stephens, Robert S., and Winslow, Alan R., 5,009,797, Cl. 252-8.551

Sterk, Geert J., Timmerman, Henk, and van der Goot, Henk, to Cedona Pharmaceuticals B.V. N-(W-substituted alkyl)-imidazol-4-yl)alkyl) guanidine, 5,010,095, Cl. 514-400.000

Sterling Drug Inc. *See*—
Lesher, George Y., deceased, Bacon, Edward R., Singh, Baldev, and Kuo, Gee-Hong, 5,010,086, Cl. 514-303.000

Stewart, Kenneth W., Sr., to United Technologies Electro Systems, Inc. Windshield wiper arm, 5,008,971, Cl. 15-250.200

Stiefel, Joseph F., Melvin, Terence, and Nesbitt, R. Dennis, to Spalding & Evenflo Companies, Inc. Golf ball, 5,009,427, Cl. 273-232.000

Stimler, Jeffrey J. *See*—
Foster, Stephen I., Stimler, Jeffrey J. and Nonnemacher, Gail S., 5,009,953, Cl. 428-327.000.

Stingelin, Willy, to Ciba-Geigy Corporation. Cationic compounds, 5,010,190, Cl. 544-198.000

Stinson, Robert A. Scraping tool, 5,009,009, Cl. 30-172.000

Stoddard, Trenton D. *See*—
Nash, Bryan, and Stoddard, Trenton D., 5,010,565, Cl. 379-61.000.

Stokbroekx, Raymond A., Luyckx, Marcel G. M., and Janssens, Frans E., to Janssen Pharmaceutica N.V. Intermediates for the synthesis of benzoxazol- and benzothiazolamine derivatives, useful as anti-anoxic agents, 5,010,198, Cl. 546-114.000

Stokes, Barry O., Bradshaw, Gary D., and Barlow, Wayne K., to Wescor, Inc. Apparatus for applying a controlled amount of reagent to a microscope slide or the like, 5,009,185, Cl. 118-52.000

Stolpe, Lars O. *See*—
Mosele, John I., and Stolpe, Lars O., 5,010,336, Cl. 340-907.000

Stone & Webster Engineering Corporation *See*—
Goelzer, Alan R., 5,009,769, Cl. 208-113.000

Stonehocker, Van T., to Coltec Industries Inc. Computer-based engine diagnostic method, 5,010,487, Cl. 364-424.030

Storrow, Alan J., and Knighton, Nigel J., to Radstone Technology Limited. Rack mounted circuit board, 5,010,444, Cl. 361-386.000

Storz Medical AG *See—*
Hagelauer, Ulrich, 5,009,682, Cl. 55-159.000

Stover, Detlev, Buchkremer, Hans-Peter, and Hecker, Rudolf, to Forschungszentrum Julich GmbH Process for joining workpieces of metal or ceramic by boundary surface diffusion 5,009,359, Cl. 228-175.000

Strandberg, Hans G., to Siemens Aktiengesellschaft Oscillator having periodically pulsed crystal 5,010,307, Cl. 331-116.0FE

Streck, Donald A., and Iggulden, Jerry R., to Light Ideas Incorporated Constant pressure, variable-volume irrigation sprinklers 5,009,368, Cl. 239-70.000

Streeter, Willie L. Microcomputer controlled rotation game 5,009,419, Cl. 273-454.000

Strenger, Heinrich *See—*
Traubel, Harro, Strenger, Heinrich, Weber, Karl A., Muller, Hans Werner, Zapfel, Horst, and Hummel, Axel, 5,009,921, Cl. 427-31.000

Stringer, Brian F. *See—*
Auld, John W., Stringer, Brian F., and Stringer, Brian F., 5,009,305, Cl. 198-395.000
Auld, John W., Stringer, Brian F., and Stringer, Brian F., 5,009,305, Cl. 198-395.000

Stubbs, Jack B. *See—*
Murphy, Martin J., Jr., Stubbs, Jack B., and Leonard, Thomas A., 5,009,503, Cl. 356-339.000

Stufflebeam, John F. *See—*
McSweeney, Michael A., and Stufflebeam, John F., 5,009,345, Cl. 222-556.000

Stults, Robert A. *See—*
Makkuni, Ranjit, Zdybel, Frank, Jr., and Stults, Robert A., 5,010,500, Cl. 364-521.000

Sturm, Robert E. *See—*
Case, Marvin L., Sturm, Robert E., and Herigstad, David P., 5,009,563, Cl. 414-470.000

Stutzenberger, Heinz *See—*
Grob, Ferdinand, Kienzler, Dieter, Linder, Ernst, Potschin, Roger, and Stutzenberger, Heinz, 5,009,064, Cl. 60-276.000

Subbotin, Anatoly N. *See—*
Lipukhin, Jury V., Danilov, Leonid I., Ivoditov, Albert N., Garber, Eduard A., Subbotin, Anatoly N., Pavlov, Valentin P., Zhukov, Jury K., and Pimenov, Alexandr F., 5,009,037, Cl. 51-7.000

Sudo, Masamichi, and Okuda, Tamotsu, to Daikyo Gomu Seiko Ltd Sliding stopper for a syringe 5,009,646, Cl. 604-230.000

Suen, Chih-Her *See—*
Liang, Rong-Chang, Colyer, Emerson K., Chen, Jing-Den, Kintz, Karl A., and Suen, Chih-Her, 5,010,114, Cl. 521-109.100

Suetomi, Joji *See—*
Nishitani, Masami, and Suetomi, Joji, 5,009,694, Cl. 65-115.000

Suganuma, Ryoichi, to Nikon Corporation Driving device for ultrasonic wave motor 5,010,222, Cl. 318-116.000

Sugata, Hiroyuki *See—*
Mihara, Chieko, Santoh, Tsuyoshi, Sugata, Hiroyuki, and Fukui, Tetsuro, 5,009,987, Cl. 430-495.000

Sugihara, Masanori *See—*
Kobayashi, Kazuo, Morikawa, Kiyoshi, Yamada, Yoshinori, Kurumada, Masakazu, and Sugihara, Masanori, 5,010,484, Cl. 369-77.200

Sugimoto, Atsushi, Nakano, Osamu, Yasuda, Shigeru, Maeda, Chikatoshi, Ozone, Toshio, and Kawagoe, Makoto, to Aichi Steel Works, Ltd., Toyota Jidosha Kabushiki Kaisha, and Chuo Hatsujo Kabushiki Kaisha Spring steel having good durability and sag-resistance 5,009,843, Cl. 420-112.000

Sugiue, Shigeki *See—*
Koga, Shigeyuki, and Sugiue, Shigeki, 5,009,172, Cl. 110-242.000

Sugiura, Koji, to Sakura Color Products Corporation Solid adhesive composition 5,010,120, Cl. 523-219.000

Sugiura, Shozou *See—*
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Sugiyama, Isao *See—*
Yamauchi, Hiroshi, Sugiyama, Isao, Saito, Isao, Nomoto, Seiichiro, Kamiya, Takashi, Machida, Yoshimasa, and Negi, Shigeto, 5,010,188, Cl. 540-222.000

Sugiyama, Masashi *See—*
Sakuta, Masaharu, Urano, Toshiharu, Tanaka, Kyoichi, Sugiyama, Masashi, Endoh, Shyuzo, and Fujioka, Keisuke, 5,009,713, Cl. 106-727.000

Suhonen, Christopher H., to Gillette Canada Inc. Aqueous stannous fluoride non-abrasive home treatment gel compositions 5,009,883, Cl. 424-52.000

Suhonen, Christopher H., to Gillette Canada Inc. Stabilized aqueous stannous fluoride mouthwash 5,009,884, Cl. 424-52.000

Sullivan Engine Works, Inc. *See—*
Sullivan, Robert W., Holder, Tommie J., and Buchanan, Max F., 5,009,198, Cl. 123-43.00A

Sullivan, Robert W., Holder, Tommie J., and Buchanan, Max F., to Sullivan Engine Works, Inc. Rotary vee engine 5,009,198, Cl. 123-43.00A

Sumi, Chiaki, and Kuwayama, Wataru, to Aisin Seiki K.K. Resin coated electric circuit board device 5,010,212, Cl. 174-52.200

Sumioka, Atsushi *See—*
Hikita, Mitsutaka, Sumioka, Atsushi, Tabuchi, Toyoji, Kurosawa, Kazuhito, and Kinoshita, Tuneo, 5,010,269, Cl. 310-313.00B

Sumitomo Chemical Co., Ltd *See—*
Ohmae, Tadayuki, Sakurai, Tadashi, and Asao, Kouichiro, 5,009,951, Cl. 428-294.000

Ohmae, Tadayuki, Toyoshima, Yoshiki, Mashita, Kentaro, Yamaguchi, Noboru, and Nambu, Jinsho, 5,010,136, Cl. 525-66.000

Sumitomo Electric Industries Ltd *See—*
Matsushita, Nobutaka, Okazaki, Hiroshi, Yamanouchi, Shosuke, Osawa, Yoshitaka, and Tsujigaito, Isao, 5,009,959, Cl. 428-419.000
Sasame, Akira, Sakanoue, Hitoyuki, Takeuchi, Hisao, Miyake, Masaya, Yamakawa, Akira, Yushio, Yasuhisa, and Akazawa, Hitoshi, 5,010,388, Cl. 357-70.000
Shiga, Nobuo, 5,010,305, Cl. 330-277.000

Sun, Shin Ching, Purifying air conditioner 5,009,683, Cl. 55-131.000

Sunbeam Plastics Corporation *See—*
Montgomery, Gary V., and Beck, Terry E., 5,009,323, Cl. 215-252.000

Sundstrand Corporation *See—*
Shekleton, Jack R., and Smith, Robert W., 5,009,589, Cl. 431-183.000

Sung Ho Korea Company *See—*
Kang, Sung H., 5,010,278, Cl. 315-224.000

Supchak, Dennis W. *See—*
Lombardino, Paul A., Saxon, Ronald L., and Supchak, Dennis W., 5,009,561, Cl. 414-412.000

Superior Fireplace Company *See—*
Brazell, David O., and French, J. Timothy, 5,009,221, Cl. 126-538.000

Surguy, Paul W. H. *See—*
Morris, Christopher J., Coulson, Ian, and Surguy, Paul W. H., 5,010,328, Cl. 340-784.000

Sussenguth, Jurgen *See—*
Focke, Heinz, and Sussenguth, Jurgen, 5,009,322, Cl. 209-536.000

Sutorik, John P. *See—*
Iseler, Stanley J., Beauch, Howard D., Everett, Benjamin H., II, and Sutorik, John P., 5,009,120, Cl. 74-493.000

Suwabe, Shigekazu *See—*
Shinohara, Tadashi, Nishiyama, Toshikazu, Noguchi, Kazumi, Iwata, Hitoshi, and Suwabe, Shigekazu, 5,010,431, Cl. 360-103.000

Suzuki, Fumio, Kuroda, Takeshi, Nakasato, Yoshisuke, Ohmori, Kenji, and Manabe, Haruhiko, to Kyowa Hakko Kogyo Co., Ltd Imidazoquinolone derivatives 5,010,084, Cl. 514-293.000

Suzuki, Hidenobu *See—*
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Suzuki, Hideo *See—*
Kosugi, Yoshitsugu, Tanaka, Hideoki, Suzuki, Hideo, and Shiraki, Masaru, 5,010,004, Cl. 435-134.000

Suzuki, Hitoshi, Shiotani, Shinobu, Tokunaga, Shinji, Hirai, Tokuyuki, Fukumochi, Yoji, Kugimiya, Shuzo, and Sata, Ichiko, to Sharp Kabushiki Kaisha System and method for language translation including replacement of a selected word for future translation 5,010,486, Cl. 364-419.000

Suzuki Jidosha Kogyo Kabushiki Kaisha *See—*
Yuunaga, Toshifumi, 5,009,686, Cl. 55-419.000

Suzuki, Kenichi *See—*
Enari, Masahiko, Shikichi, Satoshi, Kawaguchi, Fumiaki, Suzuki, Kenichi, Usui, Masayuki, Matsuoka, Hiroshi, Matsuoka, Kazuhiko, Hosoya, Hideki, Aoki, Akio, and Minoura, Kazuo, 5,010,534, Cl. 369-32.000

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Harano, Takeshi, Takaki, Satoru, Shigesato, Yuzo, Suzuki, Koichi, Hashimoto, Naoki, Kojima, Hiroyasu, and Oyama, Takuji, 5,009,922, Cl. 427-37.000

Suzuki, Makoto, to Brother Kogyo Kabushiki Kaisha Image forming apparatus having switchable color separation filter units 5,010,415, Cl. 358-302.000

Suzuki, Tatsuya *See—*
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Suzumura, Hirokazu *See—*
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Carlsson, Anders, Johansson, Lars, and Soderlund, Frits, 5,009,583, Cl. 418-104.000

Svenska Skatebox AB *See—*
Lager, Kjell, Tarnstrom, Anders, Ostlund, Olov, and Driver, Joseph W., 5,009,039, Cl. 51-165.770

Swanick, David J *See—*
Huntley, William P., and Swanick, David J., 5,010,341, Cl. 342-20.000

Swann, Peter R., to Gatan Incorporated. Chemically-assisted ion beam milling system for the preparation of transmission electron microscope specimens. 5,009,743, Cl. 156-643.000

Swartz, Roy, to Delaware Investments Corp Material handling system and control valve therefor 5,009,551, Cl. 406-128.000

Sweat, Bruce P *See—*
Lathom, Michael S., Gullixson, Bruce B., and Sweat, Bruce P., 5,010,279, Cl. 315-227.00R

Sweeney, Harold E *See—*
Leonard, Donald A., and Sweeney, Harold E., 5,009,500, Cl. 356-43.000

Sy-Quest International Limited *See—*
Newman, Jack, and Monroe, James A., 5,009,637, Cl. 604-68.000

Sylvester, Richard J *See—*
Beattie, Patrick J., Oliveri, Andrew L., and Sylvester, Richard J., 5,009,090, Cl. 70-326.000

Synfina-Oleofina *See—*
Prieels, Jean-Paul, Maschelein, Charles, and Heilporn, Marc, 5,010,007, Cl. 435-190.000.

Syntex Pharmaceuticals Ltd *See—*
Pascal, Jean C.; Lee, Chi-Ho, Alps, Brian J.; Pinhas, Henri, and Whiting, Roger L., 5,010,075, Cl. 514-218.000

Synthelabo *See—*
Manoury, Philippe; Binet, Jean, Obitz, Daniel, Defosse, Gerard, Dewitte, Elisabeth, and Veronique, Corinne, 5,010,079, Cl. 514-253.000

Syntro Corporation: *See—*
Pollock, Thomas J., 5,010,001, Cl. 435-69.100

Syrinek, Allen R., Buggs, Ralph N., and Gabel, Robert K., to Nalco Chemical Company. Inorganic acid solution viscosifier and corrosion inhibitor and method. 5,009,799, Cl. 252-8.553

Tabuchi, Toyoji *See—*
Hikita, Mitsutaka; Sumioka, Atsushi; Tabuchi, Toyoji, Kurosawa, Kazuhito, and Kinoshita, Tuneo, 5,010,269, Cl. 310-313.00B

Tagashira, Susumu *See—*
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Kamayachi, Yuichi, and Inagaki, Syoji, 5,009,982, Cl. 430-280.000

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Arai, Yuji; Shin, Yuaki, Ishiguro, Takashi, and Hamada, Emiko, 5,009,818, Cl. 264-1.003
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Takahashi, Nobuyuki, to Akebono Brake Industry Co., Ltd., and Akebono Research and Development Centre Ltd Disc brake apparatus 5,009,293, Cl. 188-72.400

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Kinoshita, Takao; Tojo, Akihiko, Takayama, Tsutomu; Kaji, Toshio; and Tanaka, Nobuyoshi, 5,010,418, Cl. 358-335.000

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Takeda, Takayuki, and Satoh, Masayasu, to Oki Electric Industry Co., Ltd Focus servo apparatus 5,010,538, Cl. 369-44.360

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Taket, Katsumori, Fukushima, Hitoshi, Iwamoto, Kohei, and Nakamura, Hiroto, to Seiko Epson Corporation Thermal transfer ink printing apparatus 5,010,352, Cl. 346-76.0PH.

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Takeuchi, Kenji, Gagnon, Andre F., Cheung, Augustine C., and Meyer, Philip E., to Westinghouse Electric Corp. Expert system for surveillance, diagnosis and prognosis of plant operation 5,009,833, Cl. 376-217.000

Takeuchi, Kikuko *See—*
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Takeuchi, Tatsuo, and Amemiya, Koji, to Canon Kabushiki Kaisha Transparent film and color image forming method 5,009,945, Cl. 428-76.000

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Sasaki, Hiroyuki, Shimamura, Masato, Noda, Juichi, Hanafusa, Hiroaki, and Takeuchi, Yoshiaki, 5,009,478, Cl. 350-96.150

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Tanabe, Hideo *See—*
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Tanaka, Hideoki *See—*
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Tanaka, Kouji *See—*
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Tanaka, Shigeru, to Kabushiki Kaisha Toshiba Plastic-molded semiconductor device 5,010,390, Cl 357-72 000

Tanaka, Syozo, Takushima, Akiro, Shinobu, Yoshiharu, and Eguchi, Masaki, to Sharp Kabushiki Kaisha Refrigerator 5,009,084, Cl 62-441 000

Tanaka, Takao, and Odahara, Kazuhiro, to Mitsubishi Denki Kabushiki Kaisha Moisture drain bush for an engine starter motor 5,010,265, Cl 310-88 000

Tanaka, Teruo *See*—
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Tang, Thomas E., Wei, Che-Chia, Haken, Roger A., and Chapman, Richard A., to Texas Instruments Incorporated Process for making CMOS device with both P+ and N+ gates including refractory metal silicide and nitride interconnects 5,010,032, Cl 437-57 000

Tanigawa, Shu *See*—
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Boudon, Gerard, Mollier, Pierre Nuez, Jean-Paul, Ong, Ieng, Tannhof, Pascal, and Wallart, Franck, 5,010,257, Cl 307-446 000

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Tarnstrom, Anders *See*—
Lager, Kjell, Tarnstrom, Anders, Ostlund, Olov, and Driver, Joseph W., 5,009,039, Cl 51-165 770

Tarozzi, Richard A *See*—
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Tarquini, Michael A *See*—
Kosin, John A., Mooney, Gerry, Tarquini, Michael A., and Garcia, Rod A., 5,009,809, Cl 252-350 000

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Tatum, David M Sealing assembly for relatively movable members 5,009,519, Cl 384-94 000

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Taylor, Fletcher B., Jr and Esmon, Charles T., to Oklahoma Medical Research Foundation Treatment of dysfunctional vascular endothelium using activated protein C 5,009,889, Cl 424-94 640

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Taylor, Richard C *See*—
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Taylor, Wayne *See*—
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Tejima, Kunisuke *See*—
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Tektronix, Inc *See*—
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Telep, Robert J *See*—
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Temelli, Sedat, to Mullverbrennungsanlage Wuppertal GmbH Apparatus for incineration of refuse 5,009,173, Cl 110-244 000

Temperature Engineering Corp *See*—
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Tessaro, John E., to Westinghouse Electric Corp Curvilinear translating latch and linkage arrangement in a control rod drive mechanism of a nuclear reactor 5,009,834, Cl 376-232 000

Tetra Pak Holdings & Finance S A *See*—
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Kalfoglou, George, 5,009,268, Cl 166-274 000
Speranza, George P., Lin, Jiang-Jen, and Cuscurida, Michael, 5,010,160, Cl 528-45 000

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Ashmore, Benjamin H., Jr., 5,010,522, Cl 365-189 070
Douglas, Monte A., 5,010,378, Cl 357-23 600
Gill, Manzur, and Lin, Sung-Wei, 5,010,028, Cl 437-43 000
Groover, Robert, III, 5,010,386, Cl 357-42 000
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Oates, Martin, 5,010,516, Cl 365-49 000
Reid, Lee R., and Yuan, Han-Tzong, 5,009,476, Cl 350-96 110
Tang, Thomas E., Wei, Che-Chia, Haken, Roger A., and Chapman, Richard A., 5,010,032, Cl 437-57 000
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Texo Corporation *See*—
Wagner, Steven D., 5,010,131, Cl 524-457 000

Th Kieserling & Albrecht GmbH & Co., Werkzeugmaschinenfabrik *See*—
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Therond, Michel, to Manufacture d'Appareillage Electrique de Cahors Method of making an insulating support arm for an electric line pole 5,009,734, Cl 156-184 000

Thiele, Robert E *See*—
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Thomas, Albert V *See*—
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Thomas, Brian J., to Welch Allyn, Inc Assembly for a D C HID lamp 5,009,617, Cl 439-679 000

Thomas, Gareth J *See*—
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Thomas, Howard C., to Eureka X-Ray Tube, Inc Dual axis translation mechanism 5,010,564, Cl 378-176 000

Thomas, Ronald *See*—
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Thometzek, Peter *See*—
De Cleyn, Rene, Thometzek, Peter, and Rademachers, Jakob, 5,009,879, Cl 423-610 000

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Thomson-CSF *See*—
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Thoraval, Dominique, and Bovenkamp, John W., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence Chemical agent detectors for chemical nerve agents 5,009,845, Cl 422-56 000

Thorn EMI plc *See*—
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Phillips, Geoffrey J., and George, Kevin F., 5,010,274, Cl 315-101 000

Thuemling, Evelyn *See*—
Diebel, Heinz, Peterhoff, Ralf and Thuemling, Evelyn, 5,010,502, Cl 364-522 000

Thurston, Kurt W Plastic barricade with limiting bolt 5,009,541, Cl 404-6 000

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Langgard, Ulf R., and Thurston, William E., 5,009,613, Cl 439-482 000

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Fedin, Marat A., Kuznetsova, Tatyana A., Lysenkov, Viktor I., Novikova, Svetlana A., Savchuk, Valentin A., Sedelnikov, Anatoly I., Shabunya, Vera P., Udarov, Boris G., Tikhonova, Tatyana S., Polyakova, Nina P., and Paklin, Sergei I., 5,010,106, Cl 514-546 000

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Timmerman, Henk *See*—
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Toda, Haruki, to Kabushiki Kaisha Toshiba Semiconductor memory device 5,010,518, Cl 365-145 000

Toda Kogyo Corp *See*—
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Toft, Lonnie P Ski board binding 5,009,441, Cl 280-14 200

Tojo, Akihiko *See*—
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Tokiwa, Yukio, Ichikawa, Fumitoshi, Nakamura, Naomi, Hirose, Syunichi, and Inokuchi, Haruhisa, to Tokyo Electric Power Co., Inc., The, and Kabushiki Kaisha Toshiba Control apparatus of DC power coupling system 5,010,467, Cl 363-37 000

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Tokunaga, Shinji *See*—
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Tokyo Shibaura Denki Kabushiki Kaisha *See*—
Masasumi, Yana, Hitoshi, Nagato, Kiyoshi, Yamada, Shyoji, Ueno, and Kunihiro, Shibuya, 5,009,527, Cl 400-120 000

Tomczuk, Zygmunt, Miller, William E., Wolson, Raymond D., and Gay, Eddie C., to United States of America, Energy Process and apparatus for recovery of fissionable materials from spent reactor fuel by anodic dissolution 5,009,752, Cl 204-64 00R

Tomforde, Johann *See*—
Sacco, Bruno, Tomforde, Johann, Abb, Thomas, and Stenemann, Bruno, 5,009,042, Cl 52-36 000

Tomida, Yoshinori *See*—
Eguchi, Ken, Kawada, Haruki, Sakai, Kunihiro Tomida, Yoshinori, Matsuda, Hiroshi, Tsuboyama, Akira, Takimoto, Kiyoshi, and Takamatsu, Osamu, 5,009,489, Cl 350-341 000

Tomita, Kunikazu *See*—
Nishimoto, Akihiko, Hosoya, Yoshihiro, Tomita, Kunikazu, Urabe, Toshiaki, and Jitsukawa, Masaharu, 5,009,726, Cl 148-111 000

Tomita, Seisuke *See*—
Yamagishi, Hisashi, Kakiuchi, Shinichi, and Tomita, Seisuke, 5,009,428, Cl 273-232 000

Tomotsu, Norio, to Idemitsu Petrochemical Co., Ltd Method for preparing ethylene polymers 5,010,151, Cl 526-105 000

Toohey, William J, to Eastman Kodak Company Doubly correlated sample and hold circuit 5,010,408, Cl 358-213 110

Topalian, Harry H *See*—
Saslaw, Irving M., Topalian, Harry H, and Rispoli, Joseph M., 5,009,904, Cl 426-243 000

Topert, Michael *See*—
Bittler, Dieter, Laurent, Henry Rach, Petra and Topert, Michael, 5,010,071, Cl 514-178 000

Topfl, Rosemarie *See*—
Berendt, Hans-Ulrich, and Topfl, Rosemarie, 5,009,668, Cl 8-557 000

Toppan Moore Company, Ltd *See*—
Moriwaki, Masafumi, Sano, Shigeaki, Hatakeyama, Katsunori, Yamada, Hiroshi, and Nouno, Youzou, 5,010,213, Cl 178-18 000

Tops e, Haldor F A *See*—
Johansen, Keld, Pedersen, Erik, and Tops e, Haldor F A., 5,010,054, Cl 505-1 000

Torborg, John G, Jr, to Raster Technologies, Inc Parallel graphics processor with workload distributing and dependency mechanisms and method for distributing workload 5,010,515, Cl 364-900 000

Toriello, Lawrence I *See*—
Cleary, Terrance M., Donahue, Raymond J., Hesterberg, William G, and Toriello, Lawrence I., 5,009,260, Cl 164-255 000

Torikai, Setsuo *See*—
Yoshikawa, Akira, and Torikai, Setsuo, 5,009,038, Cl 51-126 000

Torri, Giangiacomo *See*—
Fregnan, Giancarlo, Vandoni, Guido, and Torri, Giangiacomo, 5,010,064, Cl 514-58 000

Toshiba Silicone Co, Ltd *See*—
Umeda, Itsuki, Takashima, Masaaki, Zama, Yoshiaki, Takemura, Yasuhiko, Funabashi, Yuichi, Watanabe, Junichiro, Takeda, Kiyoshi, and Matsumoto, Makoto, 5,010,137, Cl 525-104 000

Tosoh SMD, Inc *See*—
Qamar, Sohail S, Conard, Harry W, and Hamilton, Lowell E., 5,009,765, Cl 204-298 120

Toyoshima, Yoshiki *See*—
Ohmae, Tadayuki, Toyoshima, Yoshiki, Mashita, Kentaro, Yamaguchi, Noboru, and Nambu, Jinsho, 5,010,136, Cl 525-66 000

Toyota Jidosha Kabushiki Kaisha *See*—
Harada, Kyouji, Kato, Eiji, Sakaguchi, Yoshikazu, Watanabe, Suzuaki, and Hoshino, Akira, 5,009,290, Cl 188-71 500
Sato, Kazuhiro, Kishi, Tomomi, Umeda, Koji, Uchida, Yasushi and Takeuchi, Masahiko, 5,010,226, Cl 219-81 000
Sugimoto, Atsushi, Nakano, Osamu, Yasuda, Shigeru, Maeda, Chikatoshi, Ozone, Toshio, and Kawagoe, Makoto, 5,009,843, Cl 420-112 000

Tozier, Michel C System of restoring rough tool handles 5,009,730, Cl 156-85 000

Tracy, William J, III *See*—
Bartlucci, Mark P, Karsner, Grant G, and Tracy, William J, III, 5,009,767, Cl 208-85 000

Trani, Michael *See*—
Ergan, Francoise, Trani, Michael, and Andre, Gerald, 5,010,006, Cl 435-177 000

Traubel, Harro, Strenger, Heinrich, Weber, Karl A, Muller, Hans-Werner, Zapfel, Horst, and Hummel, Axel, to Bayer Aktiengesellschaft Process for finishing leather 5,009,921, Cl 427-31 000

Traylor, Barry S *See*—
Keller, John A, Traylor, Barry S, and Tickner, Robert H, 5,010,482, Cl 364-200 000

Treffinger, Heinz, executor *See*—
Fischer, Karl, Borst, Gerhard, executor, Treffinger, Heinz, executor, and Fischer, Dorothee, executrix, 5,010,235, Cl 219-455 000

Treloar, Ronald C *See*—
Halstead, Gary A., and Treloar, Ronald C, 5,009,262, Cl 165-140 000

Treptow, Heinz *See*—
Gehrmann, Bernd, and Treptow, Heinz, 5,008,992, Cl 28-271 000

Trezza, Ronald F Clip construction for aligning siding sections 5,009,051, Cl 52-410 000

Tridan Tool & Machine, Inc *See*—
Voss, Harlan F, 5,009,095, Cl 72-335 000

Trilling Medical Technologies, Inc *See*—
DiPippo, Ascanio G, 5,009,890, Cl 424-195 100

Trimborn, Peter, to Siemens Aktiengesellschaft Liquid separator integrated into a pressure chamber housing abutting a liquid ring pump 5,009,782, Cl 210-360 100

Trout, Torence J. *See*—
El-Sayed, Lyla M, and Trout, Torence J, 5,009,980, Cl 430-114 000

Truesdale, Carlton M. *See*—
Miller, William J., and Truesdale, Carlton M., 5,009,692, Cl. 65-3.110

Trytko, David E., to Ampex Corporation. Video effects system with recirculation video combine and output combine, 5,010,407, Cl. 358-183.000

Tsai, Su J. Scraper having a hand grip construction, 5,008,970, Cl. 15.236.010

Tsay, Chyi J. Elevator-type parking lot, 5,009,559, Cl. 414-259.000

Tsubakimoto Chain Co. *See*—
Kanehira, Makoto, Nakagawa, Takerou, Tsubakimoto, Yasumasa, Tanaka, Kouji, Takahashi, Toshio, and Ikeda, Masaaki, 5,009,630, Cl. 474-211.000.

Tsubakimoto, Yasumasa. *See*—
Kanehira, Makoto, Nakagawa, Takerou, Tsubakimoto, Yasumasa, Tanaka, Kouji, Takahashi, Toshio, and Ikeda, Masaaki, 5,009,630, Cl. 474-211.000.

Tsuboyama, Akira. *See*—
Eguchi, Ken, Kawada, Haruki, Sakai, Kunihiro, Tomida, Yoshinori, Matsuda, Hiroshi, Tsuboyama, Akira, Takimoto, Kiyoshi, and Takamatsu, Osamu, 5,009,409, Cl. 350-341.000

Tsuchiya, Sohji. *See*—
Yamashita, Akio, Yoshimura, Susumu, and Tsuchiya, Sohji, 5,009,958, Cl. 428-411.100

Tsuda, Youichirou. *See*—
Yoshio, Junichi, Hosaka, Sumio, Matsuoka, Hisao, Tsuda, Youichirou, Katagiri, Shoichi, and Nomura, Satoru, 5,010,417, Cl. 358-135.000

Tsuji, Kentaro. *See*—
Terashima, Shigeo, Tsuji, Kentaro, and Fuji, Hiroshi, 5,010,539, Cl. 369-50.000

Tsuji, Kentaroh. *See*—
Fuji, Hiroshi, Fujiwara, Tsuneo, Iwaki, Takashi, Numata, Tomiyuki, Tsuji, Kentaroh, Maeda, Shigemi, Yamaguchi, Takeshi, Kojima, Kunio, Deguchi, Toshihisa, and Terashima, Shigeo, 5,010,540, Cl. 369-50.000

Tsuji, Kiyoshi, and Kimura, Kenji, to Olympus Optical Co., Ltd. Solid state imaging apparatus, 5,010,395, Cl. 358-44.000

Tsuji, Tsuyoshi, Satoh, Masaaki, and Yunoki, Masayuki, to Med-Tech Inc. Method of controlling amount of removed water by ultrafiltration and control device for controlling amount of removed water by ultrafiltration in hemodialysis, 5,009,775, Cl. 210-85.000

Tsujigaito, Isao. *See*—
Matsushita, Nobutaka; Okazaki, Hiroshi, Yamanouchi, Shosuke, Osawa, Yoshitaka, and Tsujigaito, Isao, 5,009,959, Cl. 428-419.000

Tsujimoto, Yoshiharu. *See*—
Hayakawa, Takeshi, Narikawa, Shiro, Ohashi, Kunio, and Tsujimoto, Yoshiharu, 5,009,977, Cl. 430-84.000

Tsukamoto, Tatsusabu Chip, 5,008,982, Cl. 24-67.900

Tsunashima, Kenji. *See*—
Sasaki, Yoshiyuki, Tsunashima, Kenji, Ookuma, Ikuo, and Fujii, Toshifumi, 5,010,404, Cl. 358-139.000.

Tsuruta, Shigeru, and Masuda, Sadao, to Sanyo Electric Co., Ltd. Electronic parts positioning apparatus, 5,010,474, Cl. 364-167.010

Tsushima, Masayuki, to Tandy Electronics Japan Ltd. Recorder control apparatus for automatic telephone answering system, 5,010,567, Cl. 379-77.000

Tsuyuguchi, Hiroshi, Noda, Yasushi, Morita, Tsutomu, and Shimozawa, Kenji, to TEAC Corporation. Optical head apparatus applicable to optical disc apparatus, 5,010,246, Cl. 250-216.000

Turfco Manufacturing, Incorporated. *See*—
Vangsgard, Kip S., 5,009,270, Cl. 172-42.000

Turi, Eran, to Union Camp Corporation. Extrusion coated substrates with separable and removable layers, 5,009,831, Cl. 264-510.000.

Turlik, Iwona. *See*—
Reisman, Arnold, Nayak, Deepak, and Turlik, Iwona, 5,009,360, Cl. 228-198.000.

Turner, Alan D. *See*—
Chan, May L., and Turner, Alan D., 5,009,728, Cl. 149-19.100

Turner, Robert B. *See*—
Herrington, Ronald M., Turner, Robert B., and Matijega, Ronev J., 5,010,117, Cl. 521-159.000

Tuthill, Clinton D. *See*—
Curlee, Richard M., Tuthill, Clinton D., and Watkins, Randall D., 5,009,690, Cl. 65-40.000

Uchida, Hiroyuki, to Fanuc LTD. Anti-clogging offset for rotor of synchronous motor, 5,010,266, Cl. 310-156.000

Uchida, Yasushi. *See*—
Sato, Kazuhiro, Kishi, Tomomi, Umeda, Koji, Uchida, Yasushi, and Takeuchi, Masahiko, 5,010,226, Cl. 219-81.000

Uchimoto, Yoshihiro. *See*—
Yasuda, Masashi, Uchimoto, Yoshihiro, and Mikata, Yasunori, 5,009,352, Cl. 226-94.000

Uda, Tsuyoshi. *See*—
Migita, Masahito, Uda, Tsuyoshi, Kanehisa, Osam, and Shiki, Masatoshi, 5,010,517, Cl. 365-114.000

Udagawa, Tsunekazu, to Ishikawa Gasket Co., Ltd. Steel laminate gasket with associated beads, 5,009,438, Cl. 277-235.00B

Udarov, Boris G. *See*—
Fedin, Marat A., Kuznetsova, Tatyana A., Lysenkov, Viktor I., Novikova, Svetlana A., Savchuk, Valentin A., Sedelnikov, Anatoly I., Shabunya, Vera P., Udarov, Boris G., Tikhonova, Tatyana S., Polyakova, Nina P., and Paklin, Sergei I., 5,010,106, Cl. 514-546.000

Ueda, Makoto, Ando, Yoshihira, Sakurai, Shungo, and Yoshioka, Ritsuo, to Kabushiki Kaisha Toshiba. Fuel assembly for nuclear reactor, 5,009,840, Cl. 376-435.000.

Ueda, Shigeru, to Canon Kabushiki Kaisha. Data processing apparatus, 5,010,513, Cl. 364-900.000

Uehara, Katsuhiro, Kurita, Masanori, and Murakami, Masakazu, to Kabushiki Kaisha Kobe Seiko Sho. Interlock system for isostatic forming press, 5,009,584, Cl. 425-135.000

Uehara, Masafumi. *See*—
Matsubara, Shinichi, Uehara, Masafumi, Bunya, Shinichi, and Katahashi, Eriko, 5,009,981, Cl. 430-175.000

Uemura, Saburo, to Macome Corporation. Variable inductance displacement measuring device with slidable metal sleeve and ferrite head core, 5,010,298, Cl. 324-207.190

Uemura, Tsunesaburo, to Nikon Corporation. Laser processor, 5,010,230, Cl. 219-121.620

Uemura, Tsuyoshi. *See*—
Wakita, Naohide, Uemura, Tsuyoshi, Ohmishi, Hiroyuki, Ohba, Noriko, Ota, Isao, and Fujita, Shingo, 5,010,327, Cl. 340-784.000

Ueno, Hiroshi. *See*—
Okada, Kenji, and Ueno, Hiroshi, 5,009,758, Cl. 204-180.000

Ueshima, Takaaki. *See*—
Yoneda, Kenzi, Ueshima, Takaaki, Kuzunuki, Soshiro, Morita, Yuzo, and Tobita, Toshimitsu, 5,010,472, Cl. 364-148.000

Uesugi, Toshiharu. *See*—
Ibe, Hiroyuki, and Uesugi, Toshiharu, 5,009,864, Cl. 422-249.000

Uevama, Satoshi, Kawakubo, Hiroaki, Isoda, Satoru, and Maeda, Mitsuo, to Mitsubishi Denki K.K. Electronic device, 5,010,451, Cl. 361-504.000

Uike, Hiroshi. *See*—
Kushida, Kazumitsu, Kudou, Osamu, Ogawa, Sumitaka, and Uike, Hiroshi, 5,009,211, Cl. 123-491.000

Ulmann, Martin. *See*—
Mueller, Hans R., Ulmann, Martin, Conti, Josef, and Muerdel, Guenter, 5,010,194, Cl. 544-258.000

Ultra Creative Corp. *See*—
Bennett, Ronald, 5,009,515, Cl. 383-23.000

Umeda, Itsuki, Takashima, Masaaki, Zama, Yoshiaki, Takemura, Yasuhiko, Funabashi, Yuichi, Watanabe, Junichiro, Takeda, Kiyoshi, and Matsumoto, Makoto, to Japan Synthetic Rubber Co., Ltd. and Toshiba Silicone Co., Ltd. Rubber composition, and oil seal and rubber hose obtained therefrom, 5,010,137, Cl. 525-104.000

Umeda, Koji. *See*—
Sato, Kazuhiro, Kishi, Tomomi, Umeda, Koji, Uchida, Yasushi, and Takeuchi, Masahiko, 5,010,226, Cl. 219-81.000

Unemura, Toyoaki. *See*—
Kawakami, Toshikatsu, Fukuda, Shin, Shinbo, Hiroyasu, Unemura, Toyoaki, Sakamoto, Ken, and Kondo, Tomoji, 5,010,406, Cl. 358-147.000

Uni-Cardan Aktiengesellschaft. *See*—
Rettig, Helmut, Weiss, Karl, and Buss, Erich, 5,008,994, Cl. 29-235.000

Unico Co., Ltd. *See*—
Yasuda, Masashi, Uchimoto, Yoshihiro, and Mikata, Yasunori, 5,009,352, Cl. 226-94.000

Union Camp Corporation. *See*—
Turi, Eran, 5,009,831, Cl. 264-510.000

Union Carbide Chemicals and Plastics Technology Corporation. *See*—
Nielsen, Kenneth A., 5,009,367, Cl. 239-3.000

Union Carbide Industrial Gases Technology Corporation. *See*—
Bikson, Benjamin, Nelson, Joyce K., and Perrin, Jerry E., 5,009,678, Cl. 55-16.000
Weise, Mark K., Kingsley, Jeffery P., and Litz, Lawrence M., 5,009,816, Cl. 261-21.000

Unitroc Aktiebolag. *See*—
Lof, Stig U., 5,009,274, Cl. 175-260.000

Uniroyal Chemical Company, Inc. *See*—
Dekeyser, Mark A., and Moore, Richard C., 5,010,068, Cl. 514-79.000

Uniroyal Chemical Ltd. Ltee. *See*—
Dekeyser, Mark A., and Moore, Richard C., 5,010,068, Cl. 514-79.000

Unisys Corp. *See*—
Keller, John A., Traylor, Barry S., and Tickner, Robert H., 5,010,482, Cl. 364-200.000

United Kingdom Atomic Energy Authority. *See*—
Kronfli, Esam, Lovell, Keith V., Hooper, Alan, and Neat, Robin J., 5,009,970, Cl. 429-192.000

United States of America
America. *See*—
Levi, Mark W., 5,009,240, Cl. 134-7.000
Army. *See*—
Faughn, Jim A., 5,009,252, Cl. 137-614.040
Hester, Troy I., 5,009,373, Cl. 242-158.00R
Energy. *See*—
Curlee, Richard M., Tuthill, Clinton D., and Watkins, Randall D., 5,009,690, Cl. 65-40.000
Maya, Leon, 5,010,045, Cl. 501-96.000
Tomczuk, Zygmunt, Miller, William F., Wolson, Raymond D., and Gay, Eddie C., 5,009,752, Cl. 204-64.00R
Health and Human Services. *See*—
Fuller, George C., Martin, George R., Mueller, Richard A., and Reich, Reuven, 5,010,080, Cl. 514-255.000
Gould, John H., 5,010,020, Cl. 436-77.000
Interior. *See*—
Oremland, Ronald S., 5,009,786, Cl. 210-602.000

National Aeronautics and Space Administration. *See*—
Hergenrother, Paul M., and Connell, John W., 5,010,197, Cl. 544-353.000
Navy. *See*—
Chan, May L., and Turner, Alan D., 5,009,728, Cl. 149-19.100
Huntley, William P., and Swanick, David J., 5,010,341, Cl. 342-20.000
Moody, Paul E., 5,009,182, Cl. 114-238.000
Riley, Thomas P., 5,010,530, Cl. 367-154.000
Shoemaker, Patrick A., 5,010,385, Cl. 357-41.000
Silvia, Denis A., 5,009,162, Cl. 102-275.900

U S. Philips Corporation. *See*—
Dijken, Reinder H., 5,010,268, Cl. 310-254.000
Haisma, Jan, Alting, Cornelis L., and Michielsen, Theodorus M., 5,009,689, Cl. 65-33.000
Hennings, Detlev F. K., and Schreinemacher, Herbert J., 5,009,876, Cl. 423-598.000
Kirchhof, Rolf, 5,009,526, Cl. 400-56.000
van der Wilk, Ronald, 5,010,275, Cl. 315-106.000

United Technologies Corporation. *See*—
Cox, Roger G., Reber, Mark A., and Yeager, Michael W., 5,010,509, Cl. 364-748.000
Dicke, Curtis J., 5,010,256, Cl. 307-263.000
Kromrey, Robert V., 5,009,687, Cl. 65-18.100
Kromrey, Robert V., 5,009,823, Cl. 264-29.700

United Technologies Electro Systems, Inc. *See*—
Stewart, Kenneth W., Sr., 5,008,971, Cl. 15-250.200

University of California, The Regents of the. *See*—
Bunshah, Rointan F., Parsons, James D., and Stafsudd, Oscar M., 5,010,035, Cl. 437-100.000
Engelstad, Barry L., Raymond, Kenneth N., Huberty, John P., and White, David L., 5,010,191, Cl. 544-225.000
Rutter, William J., and Santi, Daniel V., 5,010,175, Cl. 530-334.000

University of Florida. *See*—
Sacks, Michael D., and Lee, Hae-Weon, 5,009,822, Cl. 264-23.000

University of Massachusetts Medical Center. *See*—
Fay, Fredric S., Fogarty, Kevin E., and Rodgers, Cyril, 5,009,488, Cl. 350-315.000

University of Michigan, The Regents of the. *See*—
Villa-Garcia, Maria A., and Schwank, Johannes, 5,010,049, Cl. 502-60.000

University of Minnesota, Regents of the. *See*—
Baumann, Wolfgang J., 5,009,956, Cl. 428-402.200

University of Rochester, The. *See*—
Elsayed-Ali, Hani E., 5,010,250, Cl. 250-310.000

University of Virginia Alumni Patents Foundation, The. *See*—
Feldman, Marc D., Skalak, Thomas C., and Belardinelli, Luiz, 5,009,634, Cl. 604-27.000

University of Washington, Board of Regents of the. *See*—
Afromowitz, Martin A., 5,009,102, Cl. 73-590.000

Upchurch, Paul E. Line-handling device, 5,009,181, Cl. 114-230.000

Upjohn Company, The. *See*—
Pyret, Thomas W., and Gallagher, James L., 5,009,640, Cl. 604-117.000

Urabe, Toshiaki. *See*—
Nishimoto, Akihiko, Hosoya, Yoshihiro, Tomita, Kunikazu, Urabe, Toshiaki, and Jitsukawa, Masaharu, 5,009,726, Cl. 148-111.000

Urano, Toshiharu. *See*—
Sakuta, Masaharu, Urano, Toshiharu, Tanaka, Kyoichi, Sugiyama, Masashi, Endoh, Shyuzo, and Fujioka, Keisuke, 5,009,713, Cl. 106-727.000

Urban, Frank J., to Pfizer Inc. Processes for digoxigenin beta-cellobioside, 5,010,185, Cl. 536-6.100

Urich, Oren D., and Meyer, Vernie G., to Colorado National Manufacturers, Inc. Baling apparatus, 5,009,062, Cl. 56-341.000

Usami, Kimiyoshi, and Ishii, Aya, to Kabushiki Kaisha Toshiba. Programable logic array using one control clock signal, 5,010,258, Cl. 307-469.000

Ushizima, Kunio. *See*—
Kadono, Osamu, and Ushizima, Kunio, 5,010,238, Cl. 235-379.000

Usleman, Robert T. *See*—
Howe, Michael G., Arthur, James C., and Usleman, Robert T., 5,009,065, Cl. 60-288.000

Usui Kokusai Sangyo Kaisha Ltd. *See*—
Usui, Masayoshi, 5,009,376, Cl. 248-74.100

Usui, Masayoshi, to Usui Kokusai Sangyo Kaisha Ltd. Seizure-fixing device of pipe by clamp member, 5,009,376, Cl. 248-74.100

Usui, Masayuki. *See*—
Enari, Masahiko; Shikichi, Satoshi, Kawaguchi, Fumiaki; Suzuki, Kenichi, Usui, Masayuki, Matsuoka, Hiroshi, Matsuoka, Kazuhiko, Hosoya, Hideki, Aoki, Akio, and Minoura, Kazuo, 5,010,534, Cl. 369-32.000

Utkin, Vladimir F. *See*—
Paton, Boris E., Utkin, Vladimir F., Nedoseka, Anatoly Y., Khromyak, Nikolai T., Gorlitsyn, Nikolai V., Tikhy, Viktor G., Mezintsev, Evgeny D., and Mezhuev, Nikolai N., 5,010,503, Cl. 364-569.000

Utsugi, Nobuo, Kihara, Hisashi, Mori, Shuichi, Fuse, Junichi; Miyake, Takashi, and Ikata, Yoshikatsu, to Pioneer Electronic Corp. Recording medium player apparatus, 5,010,437, Cl. 360-137.000

Utsunomiya, Tomoaki. *See*—
Nishizawa, Hidekazu, and Utsunomiya, Tomoaki, 5,010,299, Cl. 324-209.000

Vaisala Oy. *See*—
Andersson, Henry, 5,010,343, Cl. 342-432.000

Valenza, Joseph P. *See*—
Ahmad, Jameel, and Valenza, Joseph P., 5,009,543, Cl. 404-70.000

Vallowe, Robert M. *See*—
Kerr, E. Michael, Connelly, Lawrence J., Roe, William J., and Vallowe, Robert M., 5,009,873, Cl. 423-320.000

Valmet Oy. *See*—
LePisto, Matti, Ilmanen, Reijo, Karlsson, Markku, and Laakso, Sauli, 5,009,016, Cl. 34-41.000

Vanaschen, Luc. *See*—
Kuster, Hans-Werner, and Vanaschen, Luc, 5,009,695, Cl. 65-182.200

van Banning, Robert J. H. M. *See*—
Knop, Albert W., and van Banning, Robert J. H. M., 5,009,031, Cl. 47-64.000

van Basshuysen, Richard; and Bauder, Armin, to Audi AG. Intake manifold assembly for a multicylinder internal combustion engine, 5,009,200, Cl. 123-52.00M

van Broekhoven, Johannes A. M., and Miedema, Wiebren A., to Shell Oil Company. Carbon monoxide/olefin polymerization with catalyst comprising p. bidentate ligand having non-hydrocarbyl substituent, 5,010,171, Cl. 528-392.000

van de Merwe, Ronald H. *See*—
Rue, Charles V.; van de Merwe, Ronald H., Bauer, Ralph, Pellow, Scott W., Cottringer, Thomas E., and Klok, Richard J., 5,009,676, Cl. 51-309.000

Van Den Berg, Johan A. *See*—
Brake, Anthony J., and Van Den Berg, Johan A., 5,010,182, Cl. 536-27.000

Vanderbilt University. *See*—
Hellergvist, Carl G., 5,010,062, Cl. 514-54.000

van der Goot, Henk. *See*—
Sterk, Geert J., Timmerman, Henk, and van der Goot, Henk, 5,010,095, Cl. 514-400.000

Vanderpool, Clarence D. *See*—
Kim, Tai K., and Vanderpool, Clarence D., 5,009,788, Cl. 210-639.000

van der Wilk, Ronald, to U S. Philips Corporation. Electron tube device and electron tube, 5,010,275, Cl. 315-106.000

Vandoni, Guido. *See*—
Fregnan, Giancarlo; Vandoni, Guido, and Torri, Giangiacomo, 5,010,064, Cl. 514-58.000

van Druff, Albert, Jr.; and Fussell, David A., to Cornerstone Products Inc. Mailbox insert, 5,009,366, Cl. 232-17.000

Vanek, Dieter. *See*—
Lamatsch, Hans; and Vanek, Dieter, 5,010,229, Cl. 219-121.210

VanGorder, David H., and Wilson, Kenny R., to General Motors Corporation. Automotive power steering system, 5,009,066, Cl. 60-415.000

Vangsgard, Kip S., to Turfco Manufacturing, Incorporated. Earth-working machine with single handle for adjusting and locking blade depth, 5,009,270, Cl. 172-42.000

Van Heertum, John C., Gerwick, Ben C., III, and Kleschick, William A., to Dow Chemical Company, The. Herbicidal alkoxy-1,2,4-triazolo(1,5-c)pyrimidine-2-sulfonamides, 5,010,195, Cl. 544-263.000

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Van Lengerich, Bernhard. *See*—
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Wilson, Cary L., and Graham, John A. System for improving the work environment in a contaminated room 5,009,685, Cl 55-385.200
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Winslow, James G., to Temperature Engineering Corp. Refrigerant loss monitor 5,009,076, Cl 62-129.000
Wirz, Arno, to Heidelberger Druckmaschinen AG. Device for cleaning sheet-transfer cylinders in rotary printing presses 5,009,161, Cl 101-425.000
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Elfarra, Adnan A., 5,010,092, Cl 514-359.000
Lipo, Thomas A., and Xu, Longya, 5,010,267, Cl 310-162.000
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Wondolo, Henry K. Apparatus for mixing concrete 5,009,508, Cl 366-10.000
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Worwag, Peter, to Dupro AG. Multi-purpose suction nozzle 5,008,973, Cl 15-416.000
Woskow, Robert. Light switch and outlet guard 5,009,610, Cl 439-142.000
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Plath, Peter, Ficken, Karl, Rueb, Lothar, Schwalge, Barbara, Westphalen, Karl-Otto, and Wuerzer, Bruno, 5,009,701, Cl 71-96.000
Wulff, Michael. Copying device for modifying (distorting) film patterns 5,010,361, Cl 355-52.000
Wullbrandt, Dieter, Keller, Reinhold, Schlingmann, Merten, Holla, Wolfgang, and Schneider, Manfred, to Hoechst Aktiengesellschaft. Process for the enzymatic preparation of optically active phosphorus containing functional acetic acid derivatives 5,010,012, Cl 435-280.000
Wullenweber, Heinz, Kohl, Peter, Jung, Herbert, Borchardt, Jurgen, Bickle, Wolfgang, and Braus, Jurgen, to Metallgesellschaft AG. Process of producing composite material consisting of sheet metal plates, metal strips and foils having a skeleton surface structure and use of the composite materials 5,010,050, Cl 502-301.000
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Fox, Elizabeth D., and Schlageter, Alan G., 5,010,441, Cl 361-221.000
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Hawkins, William G., Burke, Cathie J., Roll, Daniel O., Hartman, Pamela J., and Atkinson, Diane, 5,010,355, Cl 346-140.00R
Hays, Dan A., 5,010,367, Cl 355-247.000
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Yablonovitch, Max, to Y.B. Technology. Thumb actuator for folding knife 5,009,008, Cl 30-158.000
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Yamada, Takehito, Tanimoto, Kazushi, Sakai, Yuji, Muraoka, Takao, Inoue, Tetsuo, and Takada, Yoshinao, to Kabushiki Kaisha Toshiba. Head slider arrangement for magnetic disk storage device 5,010,430, Cl 360-103.000
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Yamaguchi, Hiroshi, to Nissan Motor Co., Ltd. System for detecting malfunction of turbine speed measuring device for torque converter of automotive automatic transmission 5,010,318, Cl 340-439.000
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Yamanaka, Masahiko, Hanaoka, Motoyoshi, Konse, Hiroaki, Shigeno, Haruhisa, and Kinoshita, Masakatsu, to Nissan Motor Co., Ltd. and Nippon Paint Co. Ltd. Method for forming tranparent multilayers 5,009,936, Cl 427-407.100
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Kuzuya, Susumu, Shimizu, Seiji, Kato, Mikio, Ishikawa, Yujiro, Sakai, Takashi, and Yuki, Eiji, 5,009,530, Cl. 400-188.000
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Tsuji, Tsuyoshi, Satoh, Masaaki, and Yunoki, Masayuki, 5,009,775, Cl. 210-85.000
Yurchak, Sergei *See*—
Avidan, Amos A., and Yurchak, Sergei, 5,009,851, Cl. 422-141.000
Yushio, Yasuhisa *See*—
Sasame, Akira, Sakanoue, Hitoyuki, Takeuchi, Hisao, Miyake, Masaya, Yamakawa, Akira, Yushio, Yasuhisa, and Akazawa, Hitoshi, 5,010,388, Cl. 357-70.000
Yuunaga, Toshifumi, to Suzuki Jidosha Kogyo Kabushiki Kaisha Air cleaner of engine for vehicle 5,009,686, Cl. 55-419.000
Zahnfabrik Friedrichshafen AG *See*—
Meisinger, Erwin, and Zimmer, Jurgen, 5,009,126, Cl. 74-733.100
Zahnradfabrik Friedrichshafen, AG *See*—
Lang, Armin, and Schweizer, Bernhard, 5,009,110, Cl. 73-862.330
Zahradnicek, Ales *See*—
Kunz, Reiner, Babl, Albert, Zahradnicek, Ales, and Dietrich, Rainer, 5,009,674, Cl. 51-295.000
Zama, Yoshiaki *See*—
Umeda, Itsuki, Takashima, Masaaki, Zama, Yoshiaki, Takemura, Yasuhiko, Funabashi, Yuichi, Watanabe, Junichiro, Takeda, Kiyoshi, and Matsumoto, Makoto, 5,010,137, Cl. 525-104.000
Zapfel, Horst *See*—
Traubel, Harro, Strenger, Heinrich, Weber, Karl A., Muller, Hans-Werner, Zapfel, Horst, and Hummel, Axel, 5,009,921, Cl. 427-31.000
Zare, Richard N., Huang, Xiaohua, and Ohms, Jack I., to Leland Stanford Junior University, Board of Trustees of the System for measuring electrokinetic properties and for characterizing electrokinetic separations by monitoring current in electrophoresis 5,009,760, Cl. 204-183.300
Zavatone, James F Bridge separated tray and blank for forming it 5,009,363, Cl. 229-120.170
Zdybel, Frank, Jr *See*—
Makkuni, Ranjit, Zdybel, Frank, Jr., and Stults, Robert A., 5,010,500, Cl. 364-521.000
Zelko, William E *See*—
Fogg, Michael W., Koegel, Keith S., Shuey, John R., Zelko, William E., and Beamenderfer, Robert E., 5,009,614, Cl. 439-497.000
Zemek, Michal *See*—
Pajgrt, Jan, Smetak, Vincenc, Kalina, Jaroslav, Zemek, Michal, Pus, Milan, and Bucek, Pavel, 5,009,253, Cl. 139-116.200
Zenith Data Systems Corporation *See*—
Krenz, Horst M., 5,010,426, Cl. 360-97.010
Zeugner, Horst *See*—
Waldeck, Harald, Benson, Werner, Zeugner, Horst, Wolf, Klaus-Ulrich, Gregory, Peter-Colin, Hamminga, Derk, and van Wijngaarden, Ineke, 5,010,076, Cl. 514-221.000
Zhukov, Jury K *See*—
Lupukhin, Jury V, Danilov, Leonid I., Ivoditov, Albert N., Garber, Eduard A., Subbotin, Anatoly N., Pavlov, Valentin P., Zhukov, Jury K., and Pimenov, Alexandr F., 5,009,037, Cl. 51-7.000
Ziggity Systems, Inc *See*—
Hostetler, Eldon, 5,009,194, Cl. 119-72.000
Zimmer, Jurgen *See*—
Meisinger, Erwin, and Zimmer, Jurgen, 5,009,126, Cl. 74-733.100
Zimmerman, Peter *See*—
Schmidt, Richard R., Baer, Thomas, Zimmerman, Peter, and Wendel, Albrecht, 5,010,059, Cl. 514-25.000
Zimmermann, Arnold Closure clip, especially for the closure of bags and a method and machine for applying the same 5,008,980, Cl. 24-30.50R

Zinsmeyer, Thomas M., to Carrier Corporation Refrigerant flow control device 5,009,079, Cl. 62-218.000
Zisa, Michele, and Palara, Sergio, to SGS-Thomson Microelectronics s.r.l. Control circuit for the clamping voltage of an inductive load driven by a power device in a high side driver configuration 5,010,439, Cl. 361-91.000
Ziuchkovski, Michael J., to Planar Systems, Inc Driving network for TFEL panel employing a video frame buffer 5,010,325, Cl. 340-781.000
Zmuda, James E *See*
Bathrick, Erwin W., and Zmuda, James E., 5,010,572, Cl. 380-21.000
Znaiden, Alexander P *See*—
Wilmott, James M., Koelle, William H., and Znaiden, Alexander P., 5,010,110, Cl. 514-758.000
ZVS Vyzkumnevyvojovy ustav *See*—
Pajgrt, Jan, Smetak, Vincenc, Kalina, Jaroslav, Zemek, Michal, Pus, Milan, and Bucek, Pavel, 5,009,253, Cl. 139-116.200
Zweig, Arnold A *See*—
Ruder, Carl J., Haney, Ronald J., Chutorash, Richard J., Bostad, Wayne W., Zweig, Arnold A., and Payne, Lyle B., 5,009,560, Cl. 414-392.000
Zwicker, Horst Method of forming pretzels from strands of dough 5,009,910, Cl. 426-499.000
3TL Trading Co *See*—
Laakso, Timo, 5,009,278, Cl. 180-9.440
501 Greenwich Pharmaceuticals Incorporated *See*—
Ronsen, Bruce, Arora, Sudershan K, and Thomas, Albert V., 5,010,058, Cl. 514-23.000

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23RD DAY OF APRIL, 1991

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice)

Ballheimer, Benny, and Stratton, Michael K., to Caterpillar Inc. Internal combustion engine noise reduction plate. Re. 33,575, Cl. 123-198.00E.

Caterpillar Inc. *See*—
Ballheimer, Benny, and Stratton, Michael K., Re. 33,575, Cl. 123-198.00E.

Eaton Corporation. *See*—
Latsko, James M., Re. 33,576, Cl. 192.88.00B.

Farrall, George A. *See*—
Harnden, John D., Jr., Kornrumpf, William P., and Farrall, George A., Re. 33,577, Cl. 310-332.000.

General Electric Company. *See*—
Harnden, John D., Jr., Kornrumpf, William P., and Farrall, George A., Re. 33,577, Cl. 310-332.000.

Harnden, John D., Jr.; Kornrumpf, William P., and Farrall, George A., to General Electric Company. Advanced piezoceramic power switching devices employing protective gastight enclosure and method of manufacture. Re. 33,577, Cl. 310-332.000.

Kirk, Alan R., and Scherrer, Robert A., to Riker Laboratories, Inc. Substituted biphenyl derivatives. Re. 33,574, Cl. 514-563.000.

Kornrumpf, William P. *See*—
Harnden, John D., Jr., Kornrumpf, William P., and Farrall, George A., Re. 33,577, Cl. 310-332.000.

Latsko, James M., to Eaton Corporation. Coupling assembly and friction shoe therefor. Re. 33,576, Cl. 192.88.00B.

Riker Laboratories, Inc. *See*—
Kirk, Alan R., and Scherrer, Robert A., Re. 33,574, Cl. 514-563.000.

Scherrer, Robert A. *See*—
Kirk, Alan R., and Scherrer, Robert A., Re. 33,574, Cl. 514-563.000.

Stratton, Michael K. *See*—
Ballheimer, Benny, and Stratton, Michael K., Re. 33,575, Cl. 123-198.00E.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

deRojas, Edward. *See*—
Frieder, Philip M., and deRojas, Edward, B1 4,645,317, Cl. 351-164.000.

Frieder, Philip M., and deRojas, Edward, to Optical Systems International, Inc. Eyeglass lens modules and method. B1 4,645,317, 4-23-91, Cl. 351-164.000.

M & I Door Systems Limited. *See*—
Palmer, Glenn R., B1 4,478,268, Cl. 160-310.000.

Optical Systems International, Inc. *See*—
Frieder, Philip M., and deRojas, Edward, B1 4,645,317, Cl. 351-164.000.

Palmer, Glenn R., to M & I Door Systems Limited. Door structure. B1 4,478,268, 4-23-91, Cl. 160-310.000.

LIST OF DESIGN PATENTEES

A. I. Hansen Manufacturing Company. *See*—
Hansen, Randall C., and Krahn, Gilbert H., 316,365, Cl. D8-331.000.
Hansen, Randall C., and Krahn, Gilbert H., 316,366, Cl. D8-331.000.

Abbestam, Goran, and Lachonius, Leif. Beam. 316,444, 4-23-91, Cl. D25-122.000.

Advanced Products and Technologies, Inc. *See*—
VanNoy, Allen W., 316,412, Cl. D14-158.000.

Aladdin Industries. *See*—
Bridges, John A., and Booten, Richard D., 316,331, Cl. D3-74.000.

Aladdin Industries Inc. *See*—
Bridges, John A., and Booten, Richard D., 316,332, Cl. D3-74.000.

Aloka Co., Ltd. *See*—
Kijima, Masaichi, and Yajima, Nobumichi, 316,448, Cl. D24-26.000.

Andersen, Edel S., to Interlego AG. Toy building element. 316,430, 4-23-91, Cl. D21-108.000.

Anderson, John W., to Temp-Tech Co. Inc. Food serving tray. 316,359, 4-23-91, Cl. D7-549.000.

Anson, Karen K. Combination baby cooling pad and cover therefor. 316,352, 4-23-91, Cl. D6-596.000.

Aoyama, Minoru, Komada, Takeshi, and Hirata, Tomohiko, to Canon Kabushiki Kaisha. Copying machine. 316,425, 4-23-91, Cl. D18-19.000.

Aoyama, Minoru. *See*—
Komada, Takeshi, Hirata, Tomohiko, and Aoyama, Minoru, 316,424, Cl. D18-39.000.

Arginsky, Richard C., to Plush Factory Inc., The. Combined stuffed toy and transparent container therefor. 316,439, 4-23-91, Cl. D21-159.000.

Austin, Donald P., Lawrence, Albert L., and Prewitt, Arthur C., to Gilbarco Inc. Credit and debit authorization panel or similar article. 316,471, 4-23-91, Cl. D99-43.000.

Australux North America, Ltd. *See*—
Spotts, James C., and Chai, Haw R., 316,458, Cl. D26-67.000.

Baber, Kevin R., to Smiths Industries Public Limited Company. Surgical drainage container. 316,450, 4-23-91, Cl. D24-58.000.

Baker, Larry. Cover for an automobile-type cigarette lighter receptacle. 316,402, 4-23-91, Cl. D13-156.000.

Batts, Inc. *See*—
Duester, Everett L., 316,334, Cl. D6-328.000.

Baxter International Inc. *See*—
D'Aquino, Michael, and Becker, Julius, 316,449, Cl. D24-29.000.

Beaudry, Steven A. Support pedestal for a table. 316,350, 4-23-91, Cl. D6-495.000.

Becker, Julius. *See*—
D'Aquino, Michael, and Becker, Julius, 316,449, Cl. D24-29.000.

Benson, Steven R. Turbine housing. 316,418, 4-23-91, Cl. D15-5.000.

Black & Decker Inc.: *See*—
Reifersceid, Ulrich, and Spratt, Robin H., 316,465, Cl. D32-17.000.

Boggus, Wedon G., Jr., to Stor-A-File, Inc. Storage box blank. 316,372, 4-23-91, Cl. D9-433.000.

Bool, Robert. Loin rest. 316,354, 4-23-91, Cl. D6-601.000.

Booten, Richard D. *See*—
Bridges, John A., and Booten, Richard D., 316,331, Cl. D3-74.000.
Bridges, John A., and Booten, Richard D., 316,332, Cl. D3-74.000.

Borgmann, Michael, to Robert Krups Stiftung & Co. KG. Cappuccino making adapter for an espresso machine. 316,356, 4-23-91, Cl. D7-398.000.

Bosler, Paula K., Bosler, Robert H., and Pomeranz, Melvin A., to Firm Action Sports Apparel. Sports brassiere. 316,322, 4-23-91, Cl. D2-24.000.

Bosler, Robert H. *See*—
Bosler, Paula K., Bosler, Robert H., and Pomeranz, Melvin A., 316,322, Cl. D2-24.000.

Boston Metal Products Corp. *See*—
Rubin, Richard J., 316,351, Cl. D6-513.000.

Bridges, John A., and Booten, Richard D., to Aladdin Industries. Container. 316,331, 4-23-91, Cl. D3-74.000.

Bridges, John A., and Booten, Richard D., to Aladdin Industries Inc. Container. 316,332, 4-23-91, Cl. D3-74.000.

Bridgestone Firestone, Inc. *See*—
Wallet, Bill J., and Molnar, Joseph F., 316,388, Cl. D12-147.000.

Brown, David P. *See*—
Sandrock, Dale D., Gill, Stephen H., Walter, Llewellyn I., Brown, David P., and Wilson, James, 316,468, Cl. D34-37.000.

Brown Jordan Company. *See*—
Ermer, Richard, 316,336, Cl. D6-361.000.
Ermer, Richard, 316,338, Cl. D6-380.000.

Cabo Yang Electric Mgf. Co., Ltd. *See*—
Lee, Wen T., 316,446, Cl. D23-335.000.

Calleja, Ronald K. Magnet. 316,404, 4-23-91, Cl. D13-183.000.

Canon Kabushiki Kaisha. *See*—
Aoyama, Minoru, Komada, Takeshi, and Hirata, Tomohiko, 316,425, Cl. D18-39.000.
Komada, Takeshi, Hirata, Tomohiko, and Aoyama, Minoru, 316,424, Cl. D18-39.000.
Komada, Takeshi, and Isomoto, Masataka, 316,426, Cl. D18-44.000.
Matsumura, Yoshiyuki, 316,419, Cl. D16-202.000.
Shimano, Toru, and Sakuta, Kazuaki, 316,421, Cl. D16-237.000.
Tanaka, Chifuyu, 316,420, Cl. D16-202.000.

Cant, Malcolm C., and Major, Ron, to Technophone Limited. Stand for a portable telephone. 316,416, 4-23-91, Cl. D14-252.000.

Carnathan, Alan B., and Carnathan, Susan G., to Slack, Inc. Foldable chiropractic pillow. 316,451, 4-23-91, Cl. D24-64.000.

Carnathan, Susan G. *See*—
Carnathan, Alan B., and Carnathan, Susan G., 316,451, Cl. D24-64.000.

Carr, Jeff A. Combined vehicle step and mounting bracket. 316,394, 4-23-91, Cl. D12-203.000.

Casio Computer Co., Ltd. *See*—
Yoshitake, Isamu, 316,405, Cl. D14-100.000.

Caterpillar Industrial Inc. *See*—
Sandrock, Dale D., Gill, Stephen H., Walter, Llewellyn I., Brown, David P., and Wilson, James, 316,468, Cl. D34-37.000.

CertainTeed Corporation. *See*—
Westphal, Dennis, and Piles, Jonathan, 316,453, Cl. D25-122.000.

CGR Ultrasonic. *See*—
Dubut, Patrick G., 316,376, Cl. D10-60.000.

Chai, Haw R. *See*—
Spotts, James C., and Chai, Haw R., 316,458, Cl. D26-67.000.

Chanda, William D., to General Electric Company. Cooking range drawer panel. 316,357, 4-23-91, Cl. D7-405.000.

Choi, Lung W., to Goodway Electrical Co., Ltd. Iron. 316,467, 4-23-91, Cl. D32-70.000.

Clark Equipment Company. *See*—
Kaczmarski, Wally L., 316,393, Cl. D12-192.000.

Coon, Michael J. Children's toy organizer. 316,343, 4-23-91, Cl. D6-416.000.

Cooper Industries, Inc. *See*—
Mercer, James M., and Singer, Keith A., 316,403, Cl. D13-160.000.

Craft, Homer L. Fishing rod and reel holder. 316,327, 4-23-91, Cl. D3-38.000.

Critical Industries, Inc. *See*—
Woodson, James C., Mumford, Ron W., and Kondo, Kenneth S., 316,447, Cl. D23-365.000.

Curtis Manufacturing Company, Inc. *See*—
Tortola, Angelo, and Howitt, Robert, 316,454, Cl. D26-24.000.

Daiwa Seiko, Inc. *See*—
Yoshikawa, Toshiaki, and Shiozaki, Akihisa, 316,443, Cl. D22-141.000.

Dalbec, Robert F. *See*—
Fratantonio, Domenic L., and Dalbec, Robert F., 316,414, Cl. D14-223.000.

Dalland, Todd. Tent. 316,441, 4-23-91, Cl. D21-253.000.

D'Aquino, Michael, and Becker, Julius, to Baxter International Inc. Dual reservoir sample cup. 316,449, 4-23-91, Cl. D24-29.000.

David-Clark Company Incorporated. *See*—
Fratantonio, Domenic L., and Dalbec, Robert F., 316,414, Cl. D14-223.000.

De'Armond, Robert, to Thomas Industries Inc. Post lantern or the like. 316,457, 4-23-91, Cl. D26-67.000.

De Candia, Giovanni, to FI Industries, Inc. Combined outdoor floodlight and photo electric control therefor. 316,456, 4-23-91, Cl. D26-63.000.

Decosse, Jean, and Herman, Georges, to Gerin, Merlin. Uninterruptible power supply cell. 316,396, 4-23-91, Cl. D13-101.000.

Dinex International, Inc. *See*—
Thorp, Christopher S., 316,358, Cl. D7-531.000.
Thorp, Christopher S., 316,360, Cl. D7-565.000.

Dobson, John R., to Dobson, Susan, a part interest. Pillow. 316,353, 4-23-91, Cl. D6-601.000.

Dobson, Susan. *See*—
Dobson, John R., 316,353, Cl. D6-601.000.

Dubut, Patrick G., to CGR Ultrasonic. Ultrasonic probe. 316,376, 4-23-91, Cl. D10-60.000.

Duester, Everett L., to Batts, Inc. Clamp for a garment clamping hanger. 316,334, 4-23-91, Cl. D6-328.000.

Ekern, Mark E. Free weight safety rack. 316,440, 4-23-91, Cl. D21-191.000.

Fromaki, Pentti, to Nokia Tyres Limited. Tire. 316,387, 4-23-91, Cl. D12-147.000.

Esslinger, Hartmut, and Joensson, Wolfgang, to Junghans Uhren GmbH. Clock. 316,374, 4-23-91, Cl. D10-28.000.

Faliero, Comin, to Raina S.p.A. Telephone. 316,411, 4-23-91, Cl. D14-147.000.

Farmery, Herbert A. *See*—
Isaacson, William C., and Farmery, Herbert A., 316,364, Cl. D8-98.000.

FIAM S.r.l. *See*—
Livi, Vittorio, 316,348, Cl. D6-484.000.

Firm Action Sports Apparel. *See*—
Bosler, Paula K., Bosler, Robert H., and Pomeranz, Melvin A., 316,322, Cl. D2-24.000.

FI Industries, Inc. *See*—
De Candia, Giovanni, 316,456, Cl. D26-63.000.

Flanders, Andrew E. Loudspeaker cabinet. 316,413, 4-23-91, Cl. D14-214.000.

Franzone, Victor F. Sparkplug toy car. 316,436, 4-23-91, Cl. D21-128.000.

Fratantonio, Domenic L., and Dalbec, Robert E., to David Clark Company Incorporated. Cushion for attachment to the arcuate head band connecting the earpiece members of a communications headset. 316,414, 4-23-91, Cl. D14-223.000.

Ermer, Richard, to Brown Jordan Company. Chaise. 316,336, 4-23-91, Cl. D6-361.000.

Ermer, Richard, to Brown Jordan Company. Chair. 316,338, 4-23-91, Cl. D6-380.000.

Fuemmeler, Carl D. Newspaper box. 316,470, 4-23-91, Cl. D99-29.000.

Fuji Photo Film Co., Ltd. *See*—
Yonehara, Fuyuki, 316,406, Cl. D24-121.000.

Fujii, Yuzo. *See*—
Yoshikawa, Masao, and Fujii, Yuzo, 316,407, Cl. D14-126.000.

Fujiki, Tetsushi, to Sumitomo Rubber Industries, Ltd. Automobile tire. 316,386, 4-23-91, Cl. D12-146.000.

Gannett Co., Inc. *See*—
Merl, Milton J., 316,428, Cl. D20-8.000.

General Electric Company. *See*—
Chanda, William D., 316,357, Cl. D7-405.000.

Gerin, Merlin. *See*—
Decosse, Jean, and Herman, Georges, 316,396, Cl. D13-101.000.

Getto, Eugene, to Itemakers Ltd. Support stand for handheld remote controllers. 316,347, 4-23-91, Cl. D6-467.000.

Gilbarco Inc. *See*—
Austin, Donald P., Lawrence, Albert L., and Prewitt, Arthur C., 316,471, Cl. D99-43.000.

Gill, Stephen H. *See*—
Sandrock, Dale D., Gill, Stephen H., Walter, Llewellyn I., Brown, David P., and Wilson, James, 316,468, Cl. D34-37.000.

Goodway Electrical Co., Ltd. *See*—
Choi, Lung W., 316,467, Cl. D32-70.000.

Gravel, Michael R., to Tumble Forms, Inc. Chest restraint for shoulder harness. 316,463, 4-23-91, Cl. D29-10.000.

Guidat, Thierry; Lechelle, Alain; Renard, Marc; and Puel, Jean P., to Matra Manurhin Defense. Gun. 316,442, 4-23-91, Cl. D22-104.000.

Gutierrez, David S. Sign. 316,429, 4-23-91, Cl. D20-42.000.

Hansen, Randall C., and Krahn, Gilbert H., to A. I. Hansen Manufacturing Company. Rotary lock. 316,365, 4-23-91, Cl. D8-331.000.

Hansen, Randall C., and Krahn, Gilbert H., to A. I. Hansen Manufacturing Company. Rotary lock. 316,366, 4-23-91, Cl. D8-331.000.

Harden Industries, Inc. *See*—
Razumov, Regina, 316,445, Cl. D23-242.000.

Hatfield, Tinker, to Nike, Inc., and Nike International Ltd. Quarter panel set for shoe upper. 316,323, 4-23-91, Cl. D2-314.000.

Hepworth, Paul S., to Plas Plugs Limited. Housing for an under telephone extension reel. 316,415, 4-23-91, Cl. D14-251.000.

Herbert, Raymond F., to Powerbank Limited. Portable, rechargeable storage battery. 316,397, 4-23-91, Cl. D13-106.000.

Herman, Georges. *See*—
Decosse, Jean, and Herman, Georges, 316,396, Cl. D13-101.000.

Hill, Jeremy C., to Slagle, Ronald G., and Hill, Jeremy C. Housing for a battery terminal connector. 316,398, 4-23-91, Cl. D13-120.000.

Hillier, Bruce D. *See*—
Wall, Eugene J., Hillier, Bruce D., and Taylor, Terrance N., 316,417, Cl. D14-299.000.

Hirata, Tomohiko. *See*—
Aoyama, Minoru, Komada, Takeshi, and Hirata, Tomohiko, 316,425, Cl. D18-39.000.
Komada, Takeshi, Hirata, Tomohiko, and Aoyama, Minoru, 316,424, Cl. D18-39.000.

Hoenig, David, to Revlon, Inc. Cosmetic container. 316,370, 4-23-91, Cl. D9-337.000.

Honda Giken Kogyo Kabushiki Kaisha. *See*—
Ichinose, Kazuhiro, 316,390, Cl. D12-181.000.

Honeywell, Inc. *See*—
Vola, Jean-Jacques, 316,371, Cl. D9-353.000.

Howitt, Robert. *See*—
Tortola, Angelo, and Howitt, Robert, 316,454, Cl. D26-24.000.

Hughes, Michael F., to Hughes, Michael F. Combined bottle cap and can tab opener. 316,362, 4-23-91, Cl. D8-40.000.

Ichinose, Kazuhiro, to Honda Giken Kogyo Kabushiki Kaisha. Air dam for an automobile. 316,390, 4-23-91, Cl. D12-181.000

Interlego A.G. *See*—
Andersen, Edel S., 316,430, Cl. D21-108.000

Interlego A.G. *See*—
Stephensen, Christian, and Nielsen, Jacob, 316,431, Cl. D21-108.000
Stephensen, Christian, and Nielsen, Jacob, 316,433, Cl. D21-108.000
Stephensen, Christian, and Nielsen, Jacob, 316,434, Cl. D21-108.000
Stephenson, Christian, and Nielsen, Jacob, 316,432, Cl. D21-108.000

Isaacson, William C., and Farmery, Herbert A., to Keen Corporation. Apparatus for slitting elongated flexible tape. 316,364, 4-23-91, Cl. D8-98.000

Isomoto, Masataka. *See*—
Komada, Takeshi, and Isomoto, Masataka, 316,426, Cl. D18-44.000

Itemakers Ltd. *See*—
Getto, Eugene, 316,347, Cl. D6-467.000

Ito, Osamu. *See*—
Moriai, Yasuharu, and Ito, Osamu, 316,400, Cl. D13-133.000

ITT Corporation. *See*—
Tiedemann, Robert J., 316,375, Cl. D10-50.000

Jackson, Joseph S., Jr. *See*—
Jackson, Mallory B., and Jackson, Joseph S., Jr., 316,346, Cl. D6-464.000

Jackson, Mallory B., and Jackson, Joseph S., Jr. Display case for jewelry items. 316,346, 4-23-91, Cl. D6-464.000

Joenssen, Wolfgang. *See*—
Esslinger, Hartmut, and Joenssen, Wolfgang, 316,374, Cl. D10-28.000

Junghans Uhren GmbH. *See*—
Esslinger, Hartmut, and Joenssen, Wolfgang, 316,374, Cl. D10-28.000

Kaczmarski, Wally L., to Clark Equipment Company. Vehicle monitoring display panel. 316,393, 4-23-91, Cl. D12-192.000

Kaldenbach, Eugene S. Pocket for a crutch. 316,326, 4-23-91, Cl. D3-10.000

Kaneko, Ryoichi, to Seikosha Co., Ltd. Watch dial. 316,380, 4-23-91, Cl. D10-126.000

Karas, Michael. Chair. 316,335, 4-23-91, Cl. D6-345.000

Kee, Peter M. Y., to Rosalco, Inc. Vanity table. 316,341, 4-23-91, Cl. D6-397.000

Kee, Peter M. Y., to Rosalco, Inc. Towel rack. 316,342, 4-23-91, Cl. D6-410.000

Kee, Peter M. Y., to Rosalco, Inc. Magazine rack. 316,344, 4-23-91, Cl. D6-462.000

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385.2 5,009,685
416 5,009,681
419 5,009,686

CLASS 56
104 5,009,061
341 5,009,062

CLASS 57
124 5,009,063

CLASS 60
276 5,009,064
288 5,009,065
415 5,009,066
484 5,009,067
583 5,009,068
641.1 5,009,069
753 5,009,070

CLASS 62
4 5,009,071
6 5,009,072
51.1 5,009,073
115 5,009,074
127 5,009,075
129 5,009,076
160 5,009,077
5,009,078
218 5,009,079
256 5,009,080
264 5,009,081
390 5,009,082
400 5,009,083
441 5,009,084
476 5,009,085
5,009,086

CLASS 65
3.11 5,009,692
18.1 5,009,687
18.3 5,009,688
33 5,009,689
40 5,009,690
106 5,009,691
107 5,009,693
115 5,009,694
182.2 5,009,695

CLASS 70
49 5,009,087
63 5,009,088
114 5,009,089
326 5,009,090

CLASS 71
24 5,009,697
64.07 5,009,696
92 5,009,698
5,009,699
94 5,009,700
96 5,009,701
100 5,009,702

CLASS 72
21 5,009,091
148 5,009,092
177 5,009,093
225 5,009,094
239 5,009,096
335 5,009,095
387 5,009,097
389 5,009,098

CLASS 73
1.G 5,009,099
155 5,009,100
168 5,009,101
590 5,009,102
597 5,009,103
5,009,104
621 5,009,105
651 5,009,106
704 5,009,108
705 5,009,107
861.38 5,009,109
862.33 5,009,110
862.61 5,009,111
866 5,009,112
866.5 5,009,113

CLASS 74
15.63 5,009,114
89.150 5,009,115
331 5,009,116
5,009,117
5,009,118
489 5,009,119
493 5,009,120
5,009,121
502.6 5,009,122
567 5,009,123
595 5,009,124
606.R 5,009,125
733.1 5,009,126
866 5,009,127
5,009,128
5,009,129

CLASS 75
10.36 5,009,703
238 5,009,704
240 5,009,705
244 5,009,706
375 5,009,707

CLASS 81
9.4 5,009,130
45 5,009,131
57.3 5,009,132
180.1 5,009,133
487 5,009,134
488 5,009,135

CLASS 82
127 5,009,136

CLASS 83
209 5,009,137
413 5,009,138
419 5,009,139
698 5,009,140
857 5,009,141

CLASS 84
454 5,009,142
604 5,009,143
612 5,009,145
615 5,009,146
618 5,009,147

CLASS 98
10 5,009,148
42.21 5,009,149

CLASS 99
360 5,009,150
445 5,009,151
476 5,009,152

CLASS 100
2 5,009,153
5 5,009,154
233 5,009,155

CLASS 101
177 5,009,156
178 5,009,157
219 5,009,158
351 5,009,159
422 5,009,160
425 5,009,161

CLASS 102
275.9 5,009,162
301 5,009,163
502 5,009,164
511 5,009,165
516 5,009,166
524 5,009,167

CLASS 104
172.1 5,009,168

CLASS 105
4.1 5,009,169

CLASS 106
35 5,009,709
105 5,009,708
208 5,009,710
415 5,009,711
456 5,009,712
727 5,009,713

CLASS 108
36 5,009,170

CLASS 110
109 5,009,171
242 5,009,172
244 5,009,173
264 5,009,174

CLASS 111
173 5,009,175

CLASS 112
121.12 5,009,176
292 5,009,177

CLASS 116
143 5,009,178
229 5,009,179
5,009,180
230 5,009,181
238 5,009,182
253 5,009,183
161 5,009,184

CLASS 118
52 5,009,185
658 5,009,187

CLASS 119
3 5,009,188
5,009,189
5,009,190
20 5,009,191
29 5,009,192
5,009,193
72 5,009,194
86 5,009,195
101 5,009,196
159 5,009,197

CLASS 123
43.A 5,009,198
52.M 5,009,200
52.MF 5,009,199
65.BA 5,009,201
90.11 5,009,202
90.16 5,009,203
193.H 5,009,204
195.H 5,009,205
198.E Re.33,575
248 5,009,206
261 5,009,207
335 5,009,208
415 5,009,209
489 5,009,210
491 5,009,211
533 5,009,212
620 5,009,213

CLASS 124
35.2 5,009,214
44.5 5,009,215
88 5,009,216

CLASS 126
152.B 5,009,217
452 5,009,218
523 5,009,219
5,009,220
538 5,009,221

CLASS 128
36 5,009,222
80.C 5,009,223
156 5,009,224
201.24 5,009,225
205.18 5,009,226
207.17 5,009,227
380 5,009,228
419.P 5,009,229
633 5,009,230
5,009,231
660.03 5,009,232
666 5,009,233
672 5,009,234
760 5,009,235
761 5,009,236

CLASS 131
70 5,009,237
108 5,009,238
342 5,009,239

CLASS 134
2 5,009,714
7 5,009,240
22.11 5,009,715
40 5,009,716
102 5,009,241
113 5,009,242

CLASS 136
201 5,009,717
232 5,009,718
246 5,009,243
249 5,009,719
255 5,009,720
256 5,009,721

CLASS 137
101.11 5,009,244
116.5 5,009,245
205.5 5,009,246
218 5,009,247
486 5,009,248
495 5,009,249
596.17 5,009,250
601 5,009,251
614.04 5,009,252

CLASS 139
116.2 5,009,253

CLASS 141
35 5,009,254

CLASS 144
1.R 5,009,255

CLASS 148
2 5,009,722
12.E 5,009,723
23 5,009,724
5,009,725
111 5,009,726

CLASS 149
19.1 5,009,728
109.4 5,009,729

CLASS 152
221 5,009,256

CLASS 156
85 5,009,730
154 5,009,731
177 5,009,732
184 5,009,733
5,009,734
241 5,009,735
250 5,009,736
264 5,009,737
345 5,009,738
353 5,009,740
384 5,009,739
483 5,009,741
633 5,009,742
643 5,009,743
656 5,009,744

CLASS 157
1.26 5,009,257

CLASS 160
168.1 5,009,258
310 B1 4,478,268
323.1 5,009,259

CLASS 162
5 5,009,745
5,009,746
115 5,009,747
198 5,009,748
271 5,009,749

CLASS 164
255 5,009,260

CLASS 165
96 5,009,261
140 5,009,262
151 5,009,263

CLASS 166
106 5,009,264
118 5,009,265
245 5,009,266
271 5,009,267
274 5,009,268
293 5,009,269

CLASS 172
42 5,009,270

CLASS 174
23.C 5,010,209
34 5,010,210
48 5,010,211
52.2 5,010,212

CLASS 175
53 5,009,271
56 5,009,272
61 5,009,273
260 5,009,274

CLASS 177
25.13 5,009,275
25.15 5,009,276

CLASS 178
18 5,009,277
5,010,213
CLASS 180
9 44 5,009,278
197 5,009,279
CLASS 181
160 5,009,280
5,009,281
CLASS 182
88 5,009,282
116 5,009,283
142 5,009,284
187 5,009,285
CLASS 184
6 17 5,009,286
CLASS 187
8 41 5,009,287
20 5,009,288
CLASS 188
67 5,009,289
71 5 5,009,290
71 6 5,009,291
71 7 5,009,292
72 4 5,009,293
CLASS 192
1 22 5,009,294
4 A 5,009,295
20 5,009,296
84 C 5,009,297
85 C 5,009,299
88 B Re 33,576
98 5,009,300
106 2 5,009,301
CLASS 198
328 5,009,302
347 1 5,009,303
372 5,009,304
395 5,009,305
414 5,009,306
538 5,009,307
CLASS 200
6 B 5,010,214
50 A 5,010,215
61 45 M 5,010,216
61 45 R 5,010,217
84 R 5,010,218
408 5,010,219
CLASS 204
13 5,009,750
61 5,009,751
64 R 5,009,752
75 5,009,753
82 5,009,754
111 5,009,755
129 15 5,009,756
147 5,009,757
180 X 5,009,758
182 R 5,009,759
183 1 5,009,760
192 14 5,009,761
192 16 5,009,762
255 5,009,763
298 08 5,009,764
298 12 5,009,765
419 5,009,766
CLASS 206
204 5,009,308
219 5,009,309
229 5,009,310
332 5,009,311
387 5,009,312
391 5,009,313
427 5,009,314
5,009,315
443 5,009,316
466 5,009,317
524 R 5,009,318
544 5,009,319
607 5,009,320
CLASS 208
85 5,009,767
89 5,009,768
113 5,009,769
209 5,009,770
216 PP 5,009,771
309 5,009,772
391 5,009,773
CLASS 209
11 5,009,321
273 5,009,774
536 5,009,322
615 5,009,131
652 5,009,132
CLASS 210
85 5,009,775
108 5,009,776
134 5,009,777
198 2 5,009,778
223 5,009,779
238 5,009,780
247 5,009,781
360 1 5,009,782
500 41 5,009,783
512 1 5,009,784
512 2 5,009,785
602 5,009,786
634 5,009,787
639 5,009,788
641 5,009,789
689 5,009,790
695 5,009,791
705 5,009,792
710 5,009,793
739 5,009,794
744 5,009,795
787 5,009,796
CLASS 211
13 5,009,133
54 1 5,009,134
55 5,009,135
69 1 5,009,136
86 5,009,137
CLASS 215
230 5,009,338
252 5,009,323
276 5,009,324
CLASS 219
10 55 E 5,010,221
10 55 M 5,010,220
10 77 5,010,223
69 17 5,010,224
76 12 5,010,225
81 5,010,226
85 16 5,010,227
86 25 5,010,228
121 21 5,010,229
121 62 5,010,230
121 69 5,010,231
121 7 5,010,232
209 5,010,233
213 5,010,234
455 5,010,235
CLASS 220
374 5,009,325
441 5,009,326
890 5,009,327
CLASS 221
152 5,009,328
175 5,009,329
196 5,009,330
CLASS 222
1 5,009,339
94 5,009,340
130 5,009,341
136 5,009,342
192 5,009,343
325 5,009,344
556 5,009,345
CLASS 224
205 5,009,346
219 5,009,347
232 5,009,348
260 5,009,349
324 5,009,350
CLASS 225
52 5,009,351
CLASS 226
94 5,009,352
172 5,009,353
CLASS 227
2 5,009,354
114 5,009,355
120 5,009,356
CLASS 228
122 5,009,357
175 5,009,359
198 5,009,360
CLASS 229
1 5 R 5,009,361
117 5,009,362
120 17 5,009,363
123 2 5,009,364
CLASS 232
16 5,009,365
17 5,009,366
CLASS 235
379 5,010,237
382 5,010,238
441 5,010,240
462 5,010,241
467 5,010,242
488 5,010,243
CLASS 239
1 5,009,167
76 5,009,168
221 5,009,169
CLASS 241
24 5,009,170
187 5,009,171
CLASS 242
71 1 5,009,172
158 R 5,009,173
CLASS 244
1 R 5,009,174
CLASS 248
74 1 5,009,176
99 5,009,177
5,009,178
176 5,009,179
214 5,009,180
221 1 5,009,181
284 5,009,182
343 5,009,183
5,009,184
346 5,009,185
613 5,009,186
CLASS 249
96 5,009,187
CLASS 250
206 1 5,010,244
208 1 5,010,245
216 5,010,246
223 R 5,010,247
227 21 5,010,248
306 5,010,249
310 5,010,250
332 5,010,251
385 1 5,010,252
399 5,010,253
551 5,010,254
CLASS 251
65 5,009,388
129 1 5,009,389
129 2 5,009,390
149 1 5,009,391
180 5,009,392
207 5,009,393
CLASS 252
8 551 5,009,797
5,009,798
8 553 5,009,799
8 9 5,009,800
48 2 5,009,802
49 5 5,009,803
90 5,009,804
033 2 5,009,801
174 24 5,009,805
187 28 5,009,806
301 4-H 5,009,807
301 60 S 5,009,808
350 5,009,809
5,009,810
500 5,009,811
5,009,812
545 5,009,813
548 5,009,814
582 5,009,815
CLASS 254
30 5,009,194
CLASS 261
21 5,009,816
CLASS 264
0 5 5,009,817
1 003 5,009,818
4 1 5,009,819
13 5,009,820
20 5,009,821
23 5,009,822
29 7 5,009,823
45 1 5,009,824
148 5,009,825
154 5,009,826
156 5,009,827
177 1 5,009,828
210 6 5,009,829
290 5 5,009,830
510 5,009,831
571 5,009,832
CLASS 266
92 5,009,395
115 5,009,396
197 5,009,397
199 5,009,398
237 5,009,399
CLASS 267
64 11 5,009,400
64 21 5,009,401
140 1 5,009,402
5,009,403
5,009,404
5,009,405
CLASS 269
17 5,009,406
322 5,009,407
CLASS 270
57 5,009,408
CLASS 271
90 5,009,409
125 5,009,410
129 5,009,411
CLASS 272
1 B 5,009,413
2 5,009,412
76 5,009,414
114 5,009,415
143 5,009,416
145 5,009,417
CLASS 273
26 R 5,009,420
30 5,009,421
71 D 5,009,422
80 2 5,009,423
85 D 5,009,424
167 R 5,009,425
186 A 5,009,426
232 5,009,427
5,009,428
240 5,009,429
255 5,009,430
258 5,009,431
339 5,009,432
419 5,009,433
448 5,009,418
454 5,009,419
CLASS 277
1 5,009,434
23 5,009,435
80 5,009,436
88 5,009,437
235 B 5,009,438
CLASS 279
62 5,009,439
71 5,009,440
CLASS 280
14 2 5,009,441
304 1 5,009,442
477 5,009,443
5,009,444
5,009,445
479 2 5,009,446
661 5,009,447
671 5,009,448
690 5,009,449
707 5,009,450
724 5,009,451
730 5,009,452
804 5,009,453
CLASS 285
24 5,009,454
106 5,009,455
CLASS 292
173 5,009,456
CLASS 296
1 5,009,457
37 13 5,009,458
84 1 5,009,459
93 5,009,460
146 5,009,461
201 5,009,462
210 5,009,463
211 5,009,464
219 5,009,465
CLASS 297
323 5,009,466
411 5,009,467
412 5,009,468
468 5,009,469
CLASS 307
106 5,010,255
263 5,010,256
446 5,010,257
469 5,010,258
482 5,010,259
482 1 5,010,260
571 5,010,261
CLASS 310
12 5,010,262
68 B 5,010,263
72 5,010,264
88 5,010,265
156 5,010,266
162 5,010,267
254 5,010,268
313 B 5,010,269
313 D 5,010,270
332 Re 33,577
CLASS 312
325 5,009,470
CLASS 313
412 5,010,271
559 5,010,272
CLASS 315
39 61 5,010,273
101 5,010,274
106 5,010,275
111 21 5,010,276
200 R 5,010,277
224 5,010,278
227 R 5,010,279
308 5,010,284
388 5,010,280
417 5,010,281
CLASS 318
116 5,010,222
254 5,010,282
273 5,010,283
569 5,010,285
571 5,010,286
601 5,010,287
611 5,010,288
CLASS 322
8 5,010,289
CLASS 323
222 5,010,291
274 5,010,292
278 5,010,293
CLASS 324
158 D 5,010,294
158 P 5,010,296
158 R 5,010,295
5,010,297
173 5,010,290
202 19 5,010,298
209 5,010,299
309 5,010,300
376 5,010,301
CLASS 330
107 5,010,302
252 5,010,303
269 5,010,304
272 5,010,305
284 5,010,306
CLASS 331
116 FF 5,010,307
116 R 5,010,308
CLASS 333
206 5,010,309
CLASS 335
216 5,010,311
243 5,010,310
261 5,010,312
296 5,010,313
CLASS 336
198 5,010,314
CLASS 338
7 5,010,315
238 5,010,316
CLASS 340
311 1 5,010,317
439 5,010,318
472 5,010,319
551 5,010,320
600 5,010,321
700 5,010,322
706 5,010,323
723 5,010,324
781 5,010,325
744 5,010,326
5,010,327
5,010,328
825 080 5,010,329
825 21 5,010,330
825 310 5,010,331
825 5 5,010,332
856 5,010,333
870 28 5,010,334
5,010,335
907 5,010,336
CLASS 341
65 5,010,344
5,010,345
137 5,010,346
143 5,010,347
154 5,010,337
159 5,010,338
164 5,010,339
172 5,010,340
CLASS 342
20 5,010,341
169 5,010,342
432 5,010,343
CLASS 343
700 MS 5,010,348
5,010,349
704 5,010,350
771 5,010,351
CLASS 346
76 PH 5,010,352
108 5,010,353
138 5,009,509
140 R 5,010,354
5,010,355
5,010,356
CLASS 350
4 1 5,009,471
6 5 5,009,472
6 6 5,009,473
96 10 5,009,475
96 11 5,009,476
96 15 5,009,477
5,009,478
5,009,479
5,009,480
96 18 5,009,481
5,009,482
96 2 5,009,474
96 24 5,009,483
162 11 5,009,484
163 5,009,485
164 5,009,486
286 5,009,487
315 5,009,488
341 5,009,489
342 5,009,490
427 5,009,491
5,009,492
619 5,009,493
620 5,009,494
CLASS 351
153 5,009,495
156 5,009,496
161 5,009,497
164 Bl 4,645,317
212 5,009,498
CLASS 352
35 5,009,499
CLASS 354
159 5,010,352
402 5,010,358
410 5,010,359
CLASS 355
20 5,010,360
52 5,010,361
74 5,010,362
206 5,010,363
207 5,010,364
211 5,010,365
240 5,010,366
247 5,010,367
259 5,010,368
273 5,010,369
274 5,010,370
313 5,010,371
5,010,372
319 5,010,373
CLASS 356
43 5,009,500
152 5,009,501
5,009,502
339 5,009,503
350 5,009,504
352 5,009,505
356 5,009,506
421 5,009,507
CLASS 357
16 5,010,374
5,010,375
17 5,010,376
22 5,010,377
23 13 5,010,380
23 6 5,010,378
30 5,010,381
34 5,010,382
36 5,010,383
38 5,010,384
41 5,010,385
42 5,010,386
67 5,010,389
70 5,010,387
5,010,388
72 5,010,390
CLASS 358
14 5,010,391
21 R 5,010,392
29 5,010,393
5,010,394
44 5,010,395
60 5,010,396
5,010,397
80 5,010,398
85 5,010,399
86 5,010,400
136 5,010,401
138 5,010,402
139 5,010,403
5,010,404
141 5,010,405
147 5,010,406
183 5,010,407
213 11 5,010,408
213 19 5,010,409
214 5,010,410
230 5,010,411
240 5,010,412
242 5,010,413
244 5,010,414
302 5,010,415
314 5,010,416
335 5,010,417
5,010,418
5,010,419
471 5,010,420
CLASS 360
32 5,010,421
69 5,010,422
77 06 5,010,423
77 140 5,010,424
78 04 5,010,425
97 01 5,010,426
99 05 5,010,427
99 06 5,010 428
103 5,010,429
5,010,430
5,010,431
108 5,010,432
113 5,010,433
132 5,010,434
133 5,010,435
137 5,010,436
5,010,437
CLASS 361
56 5,010,438
91 5,010,439
215 5,010,440
221 5,010,441
275 5,010,442
321 5,010,443
386 5,010,444
392 5,010,445
398 5,010,446
400 5,010,447
403 5,010,448
414 5,010,449
415 5,010,450
504 5,010,451
CLASS 362
19 5,010,452
61 5,010,453
5,010,454
5,010,455
5,010,456
66 5,010,457
80 5,010,458
85 5,010,459
101 5,010,460
5,010,461
109 5,010,462
253 5,010,463
284 5,010,464
337 5,010,465
CLASS 363
16 5,010,466
17 5,010,467
5,010,468
5,010,469
132 5,010,470
160 5,010,471
CLASS 364
148 5,010,472
150 5,010,473
167 01 5,010,474
200 5,010,475
5,010,476
5,010,477
408 5,010,478
419 5,010,479
5,010,480
5,010,481
5,010,482
5,010,483
5,010,485
5,010,486
424 03 5,010,487
424 05 5,010,488
426 02 5,010,489
426 04 5,010,490
474 28 5,010,491
474 29 5,010,492
490 5,010,493
507 5,010,494
513 5 5,010,495
519 5,010,496
5,010,497
5,010,498
521 5,010,499
5,010,500
522 5,010,501
5,010,502
569 5,010,503
574 5,010,504
713 5,010,505
721 5,010,506
724 01 5,010,507
748 5,010,508
5,010,509
758 5,010,510
786 5,010,511
807 5,010,512
900 5,010,513
5,010,514
5,010,515
CLASS 365
49 5,010,516
114 5,010,517
145 5,010,518
149 5,010,519
174 5,010,520
189 01 5,010,521
189 07 5,010,522
205 5,010,523
5,010,524
CLASS 366
10 5,009,508
311 5,009,510
348 5,009,511
CLASS 367
13 5,010,525
46 5,010,526
86 5,010,527
90 5,010,528
137 5,010,529
154 5,010,530
188 5,010,531
CLASS 368
88 5,010,532
223 5,010,533
CLASS 369
32 5,010,534
5,010,535
36 5,010,536
44 32 5,010,537
44 36 5,010,538
50 5,010,539
5,010,540
77 2 5,010,484
107 5,010,541
CLASS 370
1 5,010,542
3 5,010,543
13 1 5,010,544
56 5,010,545
85 11 5,010,546
94 1 5,010,547
95 1 5,010,548
110 1 5,010,549
CLASS 371
8 2 5,010,550
16 4 5,010,551
27 5,010,552
35 5,010,553
37 1 5,010,554
CLASS 372
2 5,010,555
46 5,010,556
CLASS 374
6 5,009,512
31 5,009,513
138 5,009,514
CLASS 375
1 5,010,557
37 5,010,558
116 5,010,559
CLASS 376
217 5,009,833
232 5,009,834
251 5,009,835
260 5,009,836
261 5,009,837
310 5,009,838
352 5,009,839
435 5,009,840
CLASS 377
20 5,010,560
47 5,010,561
CLASS 378
125 5,010,562
132 5,010,563
176 5,010,564
CLASS 379
61 5,010,565
5,010,566
77 5,010,567
107 5,010,568
210 5,010,569
390 5,010,570
CLASS [redacted]
4 5,010,571
21 5,010,572
28 5,010,573
CLASS 381
42 5,010,574
68 5,010,575
71 5,010,576
104 5,010,577
CLASS 382
8 5,010,578
13 5,010,579
17 5,010,580
56 5,010,581
CLASS 383
23 5,009,515
37 5,009,516
72 5,009,517
106 5,009,518
CLASS 384
94 5,009,519
100 5,009,520
191 1 5,009,521
288 5,009,522
475 5,009,523
5,009,524
576 5,009,525
CLASS 388
815 5,010,582
CLASS 400
56 5,009,526
120 5,009,527
124 5,009,528
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188 5,009,530
402 5,009,531
636 2 5,009,532
CLASS 401
65 5,009,533
75 5,009,534
195 5,009,535
198 5,009,536
CLASS 402
21 5,009,537
CLASS 403
134 5,009,538
370 5,009,539
405 1 5,009,540
CLASS 404
6 5,009,541
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70 5,009,543
72 5,009,544
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110 5,009,546
112 5,009,547
CLASS [redacted]
179 5,009,548
261 5,009,549
CLASS 406
87 5,009,550
128 5,009,551
193 5,009,552
CLASS 408
1 R 5,009,553
CLASS 409
231 5,009,554
232 5,009,555
CLASS 411
15 5,009,556
504 5,009,557
CLASS 414
23 5,009,558
259 5,009,559
392 5,009,560
412 5,009,561
440 5,009,562
470 5,009,563
510 5,009,564
607 5,009,565
722 5,009,566
786 5,009,567
CLASS 415
3 1 5,009,568
4 1 5,009,569
174 2 5,009,570
CLASS 416
79 5,009,571
CLASS 417
32 5,009,572
53 5,009,573
222 5,009,574
244 5,009,575
295 5,009,576
5,009,577
365 5,009,578
413 5,009,579
533 5,009,580
540 5,009,581
CLASS 418
61 3 5,009,582
104 5,009,583
CLASS 419
23 5,009,841
28 5,009,842
CLASS 420
112 5,009,843
548 5,009,844
CLASS 422
56 5,009,845
5,009,846
61 5,009,847
62 5,009,848
83 5,009,849
99 5,009,850
141 5,009,851
143 5,009,852
144 5,009,853
150 5,009,854
164 5,009,855
178 5,009,856
70 5,009,857
186 19 5,009,858
189 5,009,859
245 5,009,861
249 5,009,862
5,009,863
5,009,864
5,009,865
250 5,009,860
CLASS 423
73 5,009,866
139 5,009,868
210 5,009,869
239 5,009,870
240 5,009,871
245 3 5,009,872
320 5,009,873
335 5,009,874
477 5,009,875
598 5,009,876
607 5,009,877
608 5,009,878
610 5,009,879
CLASS 424
49 5,009,881
52 5,009,882
5,009,883
5,009,884
53 5,009,885
58 5,009,886
59 5,009,969
84 5,009,887
94 3 5,009,888
94 64 5,009,889
047 5,009,880
195 1 5,009,890
195 100 5,009,891
422 5,009,892
440 5,009,893
451 5,009,894
465 5,009,895
467 5,009,896
469 5,009,897
618 5,009,898
CLASS 425
135 5,009,584
174 4 5,009,585
311 5,009,586
549 5,009,587
CLASS 426
2 5,009,899
96 5,009,900
112 5,009,901
128 5,009,867
138 5,009,902
243 5,009,903
5,009,904
297 5,009,905
330 4 5,009,906
335 5,009,907
454 5,009,908
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578 5,009,911
580 5,009,912
581 5,009,913
582 5,009,914
615 5,009,915
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631 5,009,917
643 5,009,918
CLASS 427
1 5,009,919
9 5,009,920
31 5,009,921
37 5,009,922
38 5,009,923
44 5,009,924
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55 5,009,926
121 5,009,927
126 3 5,009,928
130 5,009,929
195 5,009,931
236 5,009,930
243 5,009,932
287 5,009,933
387 5,009,934
407 1 5,009,936
440 5,009,937
CLASS 428
31 5,009,938
34 2 5,009,939
35 7 5,009,940
36 3 5,009,941
36 6 5,009,942
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401 5,009,955
402 2 5,009,956
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411 1 5,009,958
419 5,009,959
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470 5,009,962
472 2 5,009,963
526 5,009,964
546 5,009,965
627 5,009,966
CLASS 429
23 5,009,967
26 5,009,968
192 5,009,970
252 5,009,971
CLASS 430
7 5,009,972
45 5,009,973
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573 5,009,992
605 5,009,993
CLASS 431
31 5,009,588
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CLASS 432
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CLASS 433
73 5,009,594
140 5,009,595
173 5,009,596
212 1 5,009,597
221 5,009,593
CLASS 434
30 5,009,598
81 5,009,599
82 5,009,600
260 5,009,601
300 5,009,602
323 5,009,603
CLASS 435
4 5,009,994
7 5,009,996
7 23 5,009,995
7 4 5,009,997
7 92 5,009,998
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240 243 5,010,009
252 3 5,010,010
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280 5,010,012
285 5,010,013
310 5,010,014
320 5,010,015
CLASS 436
63 5,010,016
77 5,010,020
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123 5,010,022
500 5,010,017
CLASS 437
3 5,010,018
8 5,010,019
5,010,023
24 5,010,024
29 5,010,025
31 5,010,026
41 5,010,027
43 5,010,028
44 5,010,029
51 5,010,031
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83 5,010,033
89 5,010,034
100 5,010,035
173 5,010,036
192 5,010,030
200 5,010,037
215 5,010,038
228 5,010,039
230 5,010,040
CLASS 439
15 5,009,604
59 5,009,606
67 5,009,605
5,009,607
73 5,009,609
142 5,009,610
326 5,009,611
331 5,009,608
403 5,009,612
482 5,009,613
497 5,009,614
595 5,009,615
608 5,009,616
679 5,009,617
736 5,009,618
CLASS 440
53 5,009,619
72 5,009,620
75 5,009,621
88 5,009,622

CLASS 441

56 5,009,623

CLASS 446

71 5,009,624
92 5,009,625
191 5,009,626

CLASS 453

10 5,009,627

CLASS 455

9 5,010,583
83 5,010,584
118 5,010,585
605 5,010,586
618 5,010,587
619 5,010,588

CLASS 464

111 5,009,628

CLASS 474

80 5,009,629
211 5,009,630
213 5,009,631

CLASS 493

189 5,009,632
214 5,009,633

CLASS 501

4 5,010,041
32 5,010,042
90 5,010,043
93 5,010,044
96 5,010,045
117 5,010,046

CLASS 502

24 5,010,047
60 5,010,049
61 5,010,048
301 5,010,050
304 5,010,051
5,010,052

CLASS 505

1 5,010,053
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CLASS 514

8 5,010,055
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23 5,010,058
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510 5,010,105
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546 Re 33,574
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578 5,010,108
619 5,010,109
714 5,010,110
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CLASS 521

56 5,010,111
76 5,010,112
107 5,010,113
109.1 5,010,114
154 5,010,115
155 5,010,116
159 5,010,117

CLASS 522

31 5,010,118

CLASS 523

205 5,010,119
219 5,010,120
336 5,010,121

CLASS 524

80 5,010,122
114 5,010,123
141 5,010,124
5,010,125
308 5,010,126
349 5,010,127
379 5,010,128
405 5,010,129
413 5,010,130
445 5,010,131
457 5,010,132
601 5,010,133

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57 5,010,134
63 5,010,135
66 5,010,136
104 5,010,137
183 5,010,138
187 5,010,139
269 5,010,140
276 5,010,141
312.4 5,010,142
394 5,010,143
397 5,010,144
415 5,010,145
419 5,010,146
462 5,010,147
464 5,010,148
481 5,010,149

CLASS 526

88 5,010,150
105 5,010,151
106 5,010,152
135 5,010,154
243 5,010,153

CLASS 527

301 5,010,155
403 5,010,156

CLASS 528

14 5,010,157
23 5,010,159
28 5,010,158
45 5,010,160
59 5,010,161
196 5,010,162
5,010,163
243 5,010,164
272 5,010,165
323 5,010,166
328 5,010,167
338 5,010,168
388 5,010,169
392 5,010,170
871 5,010,133
5,010,171
5,010,172
408 5,010,173

CLASS 530

307 5,010,174
334 5,010,175
388 5,010,176

CLASS 534

586 5,010,177
5,010,178
5,010,179
638 5,010,180

CLASS 536

61 5,010,185
20 5,010,181
27 5,010,182
5,010,183
55.1 5,010,184
114 5,010,186
120 5,010,187

CLASS 540

222 5,010,188

CLASS 544

174 5,010,189
198 5,010,190
225 5,010,191
239 5,010,192
243 5,010,193
258 5,010,194
263 5,010,195
315 5,010,196
353 5,010,197

CLASS 546

114 5,010,198
245 5,010,200
316 5,010,201

CLASS 548

110 5,010,202
5,010,203
128 5,010,204
253 5,010,205
262.2 5,010,206
265.8 5,010,208

CLASS 549

245 5,010,207

CLASS 604

27 5,009,634
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43 5,009,636
68 5,009,637
74 5,009,638
96 5,009,639
117 5,009,640
133 5,009,641
158 5,009,642
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175 5,009,644
207 5,009,645
230 5,009,646
332 5,009,647
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351 5,009,649
378 5,009,650
5,009,651
385.1 5,009,652
5,009,653
410 5,009,654

CLASS 606

48 5,009,656
007 5,009,655
120 5,009,657
128 5,009,658
159 5,009,659
166 5,009,660
170 5,009,661
192 5,009,662
232 5,009,663

CLASS 623

16 5,009,664
22 5,009,665
23 5,009,666

CLASSIFICATION OF DESIGNS

D2	24	316,322		467	316,347		433	316,372		106	316,397	D17	22	316,422	D24	26	316,448
	114	316,323		484	316,348	D10—	28	316,373		120	316,398			316,423		29	316,449
	320	316,324		487	316,349			316,374		133	316,399	D18	19	316,424		58	316,450
	509	316,325		495	316,350		50	316,375			316,400			316,425		64	316,451
D3	10	316,326		513	316,351		60	316,376		146	316,401		44	316,426	D25	122	316,444
	38	316,327		596	316,352		78	316,377		156	316,402	D19	48	316,427			316,453
	44	316,328		601	316,353		106	316,378		160	316,403	D20	8	316,428	D26	24	316,454
	74	316,329			316,354		116	316,379		183	316,404		42	316,429		44	316,455
		316,330	D7—	139	316,355		126	316,380	D14—	100	316,405	D21	108	316,430		63	316,456
		316,331		198	316,356	D11—	30	316,381		121	316,406			316,431		67	316,457
		316,332		405	316,357		164	316,382		126	316,407			316,432			316,458
D6	328	316,333		531	316,358		167	316,383			316,408			316,433		68	316,452
		316,334		549	316,359	D12—	94	316,384		138	316,409			316,434			316,459
	345	316,335		565	316,360		146	316,385			316,410		122	316,435		139	316,460
	361	316,336	D8—	14	316,361			316,386		147	316,411		128	316,436			316,461
	374	316,337		40	316,362		147	316,387		158	316,412		159	316,439	D28	83	316,462
	380	316,338		70	316,363			316,388		214	316,413		160	316,437	D29—	10	316,463
	391	316,339		98	316,364		158	316,389		223	316,414		171	316,438	D30	118	316,464
	397	316,340		331	316,365		181	316,390		251	316,415		191	316,440	D32	17	316,465
		316,341			316,366			316,391		252	316,416		253	316,441		37	316,466
	410	316,342		156	316,367		187	316,392		299	316,417	D22—	104	316,442		70	316,467
	436	316,343		195	316,368		192	316,393	D15	5	316,418		141	316,443	D34—	17	316,468
	462	316,344	D9—	137	316,369		203	316,394	D16	202	316,419	D23—	242	316,445	D99—	18	316,469
	464	316,346			316,370		304	316,395			316,420		335	316,446		29	316,470
	465	316,345		351	316,371	D13	101	316,396		237	316,421		365	316,447		43	316,471

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P	37	7,502		38	7,503		7,504		41	7,505		7,506		7,507

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01	5,009,021		5,009,500		5,010,166		5,009,579		5,009,842			5,009,065
	5,009,032		5,009,502		5,010,175		5,009,642		5,009,891			5,009,116
	5,009,373		5,009,507		5,010,182		5,009,658		5,009,658			5,009,117
	5,009,685		5,009,516		5,010,191		5,009,700		5,010,173			5,009,118
02	5,009,326		5,009,535		5,010,195		5,009,747		5,010,335			5,009,194
04	5,008,966		5,009,547		5,010,227		5,009,967	15	5,009,508			5,009,225
	5,009,178		5,009,571		5,010,240		5,009,968		5,009,905			5,009,323
	5,009,385		5,009,572		5,010,241		5,010,116	16	5,009,152			5,009,344
	5,009,553		5,009,589		5,010,251		5,010,125		5,009,175			5,009,665
	5,009,607		5,009,594		5,010,293		5,010,181		5,009,677			5,010,133
	5,009,704		5,009,596		5,010,295		5,010,185	17	Re 33,556			5,010,176
	5,009,927		5,009,605		5,010,340		5,010,205		5,009,007			5,010,281
	5,010,021		5,009,610		5,010,342		5,010,221		5,009,317			5,010,453
	5,010,303		5,009,623		5,010,351		5,010,312		5,009,028			5,009,455
	5,010,438		5,009,626		5,010,385		5,010,320		5,009,317			5,010,458
	5,010,529		5,009,641		5,010,407		5,010,341		5,009,337	19		5,010,964
	5,010,560		5,009,649		5,010,445		5,010,470		5,009,345			5,009,379
06	5,008,960		5,009,654		5,010,454	10	5,009,239		5,009,370			5,009,465
	5,008,963		5,009,660		5,010,478		5,009,917		5,009,391			5,009,899
	5,008,969		5,009,661		5,010,500		5,009,942		5,009,393			5,010,183
	5,008,983		5,009,687		5,010,508		5,009,998		5,009,421			5,010,506
	5,008,997		5,009,709		5,010,544		5,010,044		5,009,424	20		5,009,217
	5,009,002		5,009,715		5,010,556	11	5,009,419		5,009,518			5,009,312
	5,009,056		5,009,725		5,010,562	12	5,008,984		5,009,570			5,009,560
	5,009,073		5,009,728		5,010,571		5,008,988		5,009,604			5,009,565
	5,009,083		5,009,730		5,010,572		5,009,026		5,009,611			5,009,613
	5,009,088		5,009,748		5,010,580		5,009,095		5,009,627			5,010,089
	5,009,099		5,009,748	08	5,009,062		5,009,179		5,009,633			5,010,129
	5,009,104		5,009,760		5,009,109		5,009,330		5,009,749	21		5,008,967
	5,009,105		5,009,777		5,009,155		5,009,346		5,009,752			5,009,022
	5,009,111		5,009,786		5,009,264		5,009,351		5,009,770			5,009,112
	5,009,119		5,009,790		5,009,338		5,009,467		5,009,771	22		5,009,082
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	5,009,342		5,009,997		5,010,503		5,010,317		5,010,008	24		5,009,162
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	316,364		316,360	18 316,352	316,391	316,463	48 316,372
	316,367		316,375	316,392	28 316,363	37 316,471	316,447
	316,384		316,423	20 316,453	29 316,470	38 316,393	316,460
	316,389	12	316,325	21 316,357	32 316,322	39 316,388	316,466
	316,394		316,383	316,457	316,377	40 316,328	316,469
	316,395		316,449	24 316,326	34 316,369	41 316,323	49 316,418
	316,398	13	316,340	316,464	316,370	316,324	51 316,403
	316,402	17	316,337	25 316,351	35 316,362	316,413	316,437
	316,409		316,355	316,359	36 316,343	42 316,361	53 316,412
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PLANT PATENTS

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290-991 O.G.-91-1

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1118 O.G. 54 on Nov. 27, 1990.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987 and at 1091 O.G. 2 on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar in relation to the German Mark as of Jan. 3, 1991, and was announced in the *Official Gazette* at 1122 O.G. 564 on Jan. 1, 1991.

International PCT fees were changed on March 1, 1991 due to a difference in the exchange rate of the U.S. dollar in relation to the Swiss Franc and were announced in the *Official Gazette* at 1122 O.G. 629 on Jan. 22, 1991.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Apr. 17, 1989 and were announced in the *Official Gazette* at 1100 O.G. 24 on Mar. 7, 1989.

The current schedule of PCT fees (in U.S. dollars) is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	550.00
—Corresponding prior U.S. national application filed	380.00
—Supplemental search fee, per additional invention	150.00
European Patent Office as ISA	1492.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as ISA	400.00
—Additional examination fee, per additional invention	130.00
—ISA not the USPTO	600.00
—Additional examination fee, per additional invention	200.00
International fees	
Basic fee	559.00
Basic Supplemental fee (for each page over 30)	11.00
Designation fee per country or region for the first 10 national or regional offices	135.00
Designation fee for 11th and subsequent designations	No Charge
Handling fee	171.00

U.S. National Stage fees

	Small Entity	Regular
USPTO was IPEA	165.00	330.00
USPTO was ISA but not IPEA	185.00	370.00
USPTO was neither ISA nor IPEA	250.00	500.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	25.00	50.00
—For each independent claim in excess of 3	18.00	36.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	60.00	120.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	60.00	120.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	30.00	30.00

Dec. 21, 1990 HARRY F. MANBECK, Jr.
Assistant Secretary and Commissioner of Patents and Trademarks.

Status of Appeal Cases

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Assignment to Panel For A Decision Without a Hearing as of March 29, 1991.

Chemical Discipline -	April 2, 1990
Mechanical Discipline -	March 1, 1990
Electrical Discipline -	June 12, 1990

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting the Setting of Hearing Date as of March 29, 1991.

Chemical -	June 2, 1990
Electrical -	No cases awaiting to be set for hearing
Mechanical -	No cases awaiting to be set for hearing

Board of Patent Appeals and Interferences Decisions Rendered in Ex Parte Appeals During the Month of March 1991.

Affirmed	268
Affirmed-in-Part	58
Reversed	125
Total Decided	451

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Apr. 17, 1989. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on April 26, 1988 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,739,522 through 4,741,049
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on April 24, 1984 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,443,891 through 4,445,230
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months are set forth in 37 CFR 1.20(e) and (f), as amended Nov. 5, 1990, which are reproduced below:

37 CFR § 1.20 Post-issuance fees and surcharges

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant $245.00

"(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant .....$495.00"

"(h) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) $415.00
By other than a small entity ..... $830.00"

"(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f)) $835.00
By other than a small enttity ..... $1670.00"

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(k), (l) and (m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 ..... $120.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity(§1.9(f)) $60.00
By other than a small entity ..... $120.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been unavoidable ..... $550.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED FEBRUARY 17, 1991 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,373,211	06/285,959	2/15/83
4,373,220	06/228,598	2/15/83
4,373,232	06/229,154	2/15/83
4,373,235	06/340,375	2/15/83
4,373,238	06/237,493	2/15/83
4,373,254	06/251,075	2/15/83
4,373,263	06/217,448	2/15/83
4,373,266	06/313,208	2/15/83
4,373,274	06/236,204	2/15/83
4,373,276	06/235,318	2/15/83
4,373,278	06/263,917	2/15/83
4,373,289	06/332,642	2/15/83
4,373,290	06/275,982	2/15/83
4,373,292	06/257,361	2/15/83
4,373,305	06/232,371	2/15/83
4,373,320	06/257,181	2/15/83
4,373,343	06/262,258	2/15/83
4,373,403	06/229,472	2/15/83
4,373,411	06/233,456	2/15/83
4,373,428	06/219,385	2/15/83
4,373,433	06/228,701	2/15/83
4,373,443	06/322,603	2/15/83
4,373,458	06/271,023	2/15/83
4,373,471	06/287,255	2/15/83
4,373,477	06/220,490	2/15/83
4,373,478	06/258,023	2/15/83
4,373,481	06/256,557	2/15/83
4,373,497	06/303,949	2/15/83
4,373,500	06/305,791	2/15/83
4,373,538	06/234,454	2/15/83
4,373,563	06/230,041	2/15/83
4,373,565	06/244,782	2/15/83
4,373,566	06/270,206	2/15/83
4,373,571	06/257,442	2/15/83
4,373,575	06/246,430	2/15/83
4,373,576	06/222,948	2/15/83
4,373,589	06/231,114	2/15/83
4,373,615	06/228,707	2/15/83
4,373,617	06/269,344	2/15/83
4,373,634	06/225,954	2/15/83
4,373,645	06/248,765	2/15/83
4,373,660	06/358,981	2/15/83
4,373,670	06/288,334	2/15/83
4,373,671	06/253,458	2/15/83
4,373,702	06/263,630	2/15/83
4,373,715	06/249,817	2/15/83
4,373,728	06/312,644	2/15/83
4,373,733	06/263,151	2/15/83
4,373,734	06/269,327	2/15/83
4,373,736	06/219,267	2/15/83
4,373,742	06/247,692	2/15/83
4,373,744	06/221,707	2/15/83
4,373,773	06/228,495	2/15/83
4,373,789	06/245,022	2/15/83
4,373,837	06/267,700	2/15/83

Patent Number	Serial Number	Issue Date
4,373,874	06/280,333	2/15/83
4,373,885	06/221,794	2/15/83
4,373,889	06/234,172	2/15/83
4,373,902	06/228,139	2/15/83
4,373,906	06/221,074	2/15/83
4,373,907	06/268,074	2/15/83
4,373,910	06/298,315	2/15/83
4,373,915	06/316,994	2/15/83
4,373,939	06/285,151	2/15/83
4,373,947	06/260,178	2/15/83
4,373,968	06/276,881	2/15/83
4,373,977	06/277,365	2/15/83
4,373,980	06/230,271	2/15/83
4,373,989	06/325,933	2/15/83
4,373,992	06/249,322	2/15/83
4,373,994	06/306,551	2/15/83
4,373,995	06/308,818	2/15/83
4,373,998	06/315,066	2/15/83
4,374,001	06/231,832	2/15/83
4,374,002	06/354,571	2/15/83
4,374,004	06/278,744	2/15/83
4,374,013	06/239,979	2/15/83
4,374,019	06/263,398	2/15/83
4,374,030	06/318,446	2/15/83
4,374,031	06/268,310	2/15/83
4,344,045	06/257,060	2/15/83
4,374,051	06/228,357	2/15/83
4,374,053	06/303,011	2/15/83
4,374,055	06/314,002	2/15/83
4,374,057	06/289,551	2/15/83
4,374,059	06/262,324	2/15/83
4,374,062	06/311,454	2/15/83
4,374,069	06/253,319	2/15/83
4,374,071	06/292,162	2/15/83
4,374,075	06/274,604	2/15/83
4,374,082	06/293,782	2/15/83
4,374,084	06/249,977	2/15/83
4,374,091	06/293,415	2/15/83
4,374,093	06/296,600	2/15/83
4,374,102	06/321,288	2/15/83
4,374,107	06/304,758	2/15/83
4,374,110	06/273,519	2/15/83
4,374,115	06/296,155	2/15/83
4,374,136	06/313,493	2/15/83
4,374,138	06/321,020	2/15/83
4,374,140	06/233,275	2/15/83
4,374,155	06/239,747	2/15/83
4,374,160	06/245,147	2/15/83
4,374,169	06/301,546	2/15/83
4,374,183	06/293,418	2/15/83
4,374,194	06/327,527	2/15/83
4,374,195	06/215,889	2/15/83
4,374,211	06/302,330	2/15/83
4,374,214	06/239,963	2/15/83
4,374,218	06/352,510	2/15/83
4,374,228	06/289,587	2/15/83
4,374,261	06/315,780	2/15/83
4,374,277	06/305,533	2/15/83
4,374,289	06/313,535	2/15/83
4,374,293	06/293,030	2/15/83
4,374,321	06/300,729	2/15/83
4,374,327	06/228,872	2/15/83
4,374,337	06/233,963	2/15/83
4,374,350	06/216,836	2/15/83
4,374,352	06/285,588	2/15/83
4,374,354	06/276,507	2/15/83
4,374,355	06/239,725	2/15/83
4,374,357	06/286,446	2/15/83
4,374,370	06/248,753	2/15/83
4,374,374	06/254,214	2/15/83
4,374,383	06/219,081	2/15/83
4,642,817	06/741,794	2/17/87
4,642,827	06/797,479	2/17/87
4,642,829	06/656,136	2/17/87
4,642,832	06/721,851	2/17/87
4,642,839	06/741,868	2/17/87
4,642,855	06/779,440	2/17/87
4,642,857	06/543,842	2/17/87
4,642,863	06/723,630	2/17/87
4,642,869	06/694,365	2/17/87
4,642,876	06/724,458	2/17/87
4,642,886	06/634,541	2/17/87
4,642,893	06/710,419	2/17/87
4,642,894	06/733,086	2/17/87
4,642,896	06/453,586	2/17/87
4,642,897	06/681,942	2/17/87
4,642,898	06/851,249	2/17/87
4,642,899	06/757,141	2/17/87
4,642,900	06/752,520	2/17/87
4,642,909	06/706,135	2/17/87
4,642,914	06/707,829	2/17/87
4,642,915	06/765,400	2/17/87
4,642,922	06/806,275	2/17/87
4,642,924	06/569,653	2/17/87
4,642,926	06/551,962	2/17/87
4,642,927	06/806,093	2/17/87
4,642,930	06/802,684	2/17/87
4,642,935	06/860,802	2/17/87
4,642,940	06/667,562	2/17/87
4,642,941	06/773,465	2/17/87
4,642,942	06/755,003	2/17/87
4,642,958	06/610,879	2/17/87
4,642,959	06/556,147	2/17/87
4,642,960	06/680,900	2/17/87
4,642,963	06/623,155	2/17/87
4,642,965	06/701,506	2/17/87
4,642,974	06/832,010	2/17/87
4,642,983	06/731,193	2/17/87
4,642,999	06/829,182	2/17/87
4,643,006	06/826,141	2/17/87
4,643,016	06/839,847	2/17/87
4,643,020	06/743,469	2/17/87
4,643,023	06/793,956	2/17/87
4,643,024	06/799,473	2/17/87
4,643,032	06/729,170	2/17/87
4,643,034	06/599,014	2/17/87
4,643,039	06/711,482	2/17/87
4,643,050	06/742,715	2/17/87
4,643,055	06/861,588	2/17/87
4,643,058	06/609,050	2/17/87
4,643,062	06/770,347	2/17/87
4,643,064	06/815,612	2/17/87
4,643,070	06/781,517	2/17/87
4,643,073	06/633,217	2/17/87
4,643,096	06/800,742	2/17/87
4,643,102	06/666,317	2/17/87
4,643,112	06/777,927	2/17/87
4,643,125	06/796,900	2/17/87
4,643,126	06/673,904	2/17/87
4,643,129	06/775,636	2/17/87
4,643,136	06/611,438	2/17/87
4,643,139	06/632,810	2/17/87
4,643,144	06/762,617	2/17/87
4,643,158	06/715,206	2/17/87
4,643,159	06/784,772	2/17/87
4,643,160	06/654,964	2/17/87
4,643,164	06/821,756	2/17/87
4,643,165	06/833,905	2/17/87
4,643,182	06/486,737	2/17/87
4,643,207	06/793,335	2/17/87
4,643,208	06/670,266	2/17/87
4,643,209	06/858,180	2/17/87
4,643,225	06/705,193	2/17/87
4,643,229	06/744,054	2/17/87
4,643,237	06/712,003	2/17/87
4,643,239	06/672,629	2/17/87
4,643,244	06/847,149	2/17/87
4,643,245	06/697,074	2/17/87
4,643,247	06/681,674	2/17/87
4,643,267	06/800,736	2/17/87
4,643,271	06/683,230	2/17/87
4,643,272	06/739,551	2/17/87
4,643,273	06/661,291	2/17/87
4,643,274	06/884,497	2/17/87
4,643,278	06/695,010	2/17/87
4,643,280	06/835,202	2/17/87

Patent Number	Serial Number	Issue Date
4,643,282	06/616,298	2/17/87
4,643,305	06/716,441	2/17/87
4,643,306	06/796,248	2/17/87
4,643,308	06/826,309	2/17/87
4,643,315	06/866,190	2/17/87
4,643,318	06/834,781	2/17/87
4,643,335	06/719,989	2/17/87
4,643,339	06/714,819	2/17/87
4,643,342	06/808,550	2/17/87
4,643,343	06/776,000	2/17/87
4,643,349	06/838,763	2/17/87
4,643,355	06/808,380	2/17/87
4,643,358	06/730,303	2/17/87
4,643,368	06/821,699	2/17/87
4,643,369	06/820,265	2/17/87
4,643,372	06/840,595	2/17/78
4,643,378	06/770,017	2/17/87
4,643,381	06/695,809	2/17/87
4,643,397	06/726,252	2/17/87
4,643,402	06/758,330	2/17/87
4,643,404	06/737,203	2/17/87
4,643,409	06/771,535	2/17/87
4,643,415	06/740,554	2/17/87
4,643,417	06/542,888	2/17/87
4,643,421	06/646,685	2/17/87
4,643,422	06/712,272	2/17/87
4,643,424	06/690,450	2/17/87
4,643,426	06/769,410	2/17/87
4,643,427	06/859,445	2/17/87
4,643,429	06/732,921	2/17/87
4,643,431	06/718,878	2/17/87
4,643,432	06/683,221	2/17/87
4,643,433	06/755,495	2/17/87
4,643,434	06/633,345	2/17/87
4,643,440	06/825,339	2/17/87
4,643,443	06/601,569	2/17/87
4,643,444	06/755,163	2/17/87
4,643,448	06/762,674	2/17/87
4,643,453	06/700,098	2/17/87
4,643,454	06/819,109	2/17/87
4,643,455	06/783,786	2/17/87
4,643,462	06/821,940	2/17/87
4,643,468	06/735,675	2/17/87
4,643,471	06/798,555	2/17/87
4,643,473	06/825,378	2/17/87
4,643,479	06/759,481	2/17/87
4,643,483	06/680,472	2/17/87
4,643,489	06/699,650	2/17/87
4,643,497	06/777,831	2/17/87
4,643,501	06/656,648	2/17/87
4,643,502	06/820,109	2/17/87
4,643,508	06/463,046	2/17/87
4,643,510	06/720,062	2/17/87
4,643,519	06/873,872	2/17/87
4,643,523	06/750,005	2/17/87
4,643,547	06/664,832	2/17/87
4,643,567	06/621,731	2/17/87
4,643,570	06/722,113	2/17/87
4,643,588	06/718,914	2/17/87
4,643,589	06/764,384	2/17/87
4,643,607	06/786,217	2/17/87
4,643,609	06/820,190	2/17/87
4,643,613	06/718,344	2/17/87
4,643,622	06/715,681	2/17/87
4,643,625	06/745,790	2/17/87
4,643,628	06/603,827	2/17/87
4,643,632	06/721,638	2/17/87
4,643,636	06/757,256	2/17/87
4,643,637	06/775,874	2/17/87
4,643,658	06/654,849	2/17/87
4,643,672	06/803,802	2/17/87
4,643,680	06/776,494	2/17/87
4,643,682	06/732,938	2/17/87
4,643,683	06/734,457	2/17/87
4,643,690	06/771,483	2/17/87
4,643,692	06/778,528	2/17/87
4,643,693	06/701,862	2/17/87
4,643,697	06/836,296	2/17/87
4,643,698	06/686,215	2/17/87
4,643,699	06/775,967	2/17/87
4,643,723	06/811,804	2/17/87
4,643,725	06/750,020	2/17/87
4,643,739	06/792,811	2/17/87
4,643,741	06/681,546	2/17/87
4,643,747	06/762,703	2/17/87
4,643,754	06/862,671	2/17/87
4,643,762	06/645,452	2/17/87
4,643,787	06/729,929	2/17/87
4,643,792	06/761,826	2/17/87
4,643,797	06/759,243	2/17/87
4,643,808	06/657,545	2/17/87
4,643,809	06/791,236	2/17/87
4,643,811	06/845,185	2/17/87
4,643,812	06/694,610	2/17/87
4,643,818	06/760,897	2/17/87
4,643,826	06/790,984	2/17/87
4,643,831	06/812,304	2/17/87
4,643,833	06/726,492	2/17/87
4,643,837	06/649,351	2/17/87
4,643,843	06/848,928	2/17/87
4,643,855	06/612,842	2/17/87
4,643,857	06/503,906	2/17/87
4,643,868	06/548,279	2/17/87
4,643,899	06/551,220	2/17/87
4,643,903	06/747,551	2/17/87
4,643,906	06/781,019	2/17/87
4,643,947	06/624,405	2/17/87
4,643,958	06/775,316	2/17/87
4,643,960	06/617,695	2/17/87
4,643,971	06/567,066	2/17/87
4,643,993	06/495,717	2/17/87
4,644,001	06/634,650	2/17/87
4,644,003	06/719,405	2/17/87
4,644,009	06/665,428	2/17/87
4,644,011	06/754,181	2/17/87
4,644,012	06/684,144	2/17/87
4,644,054	06/782,494	2/17/87
4,644,078	06/741,250	2/17/87
4,644,086	06/767,014	2/17/87
4,644,095	06/701,752	2/17/87
4,644,096	06/713,312	2/17/87
4,644,104	06/849,205	2/17/87
4,644,105	06/751,364	2/17/84
4,644,107	06/665,264	2/17/87
4,644,110	06/761,045	2/17/87
4,644,123	06/651,745	2/17/87
4,644,127	06/767,540	2/17/87
4,644,132	06/785,698	2/17/87
4,644,135	06/527,534	2/17/87
4,644,140	06/646,314	2/17/87
4,644,143	06/681,116	2/17/87
4,644,145	06/728,999	2/17/87
4,644,153	06/777,135	2/17/87
4,644,154	06/592,814	2/17/87
4,644,156	06/692,392	2/17/87
4,644,177	06/687,738	2/17/87
4,644,180	06/793,857	2/17/87
4,644,190	06/632,660	2/17/87
4,644,203	06/824,594	2/17/87
4,644,206	06/665,318	2/17/87
4,644,219	06/667,753	2/17/87
4,644,245	06/692,982	2/17/87
4,644,247	06/587,951	2/17/87
4,644,248	06/790,681	2/17/87
4,644,251	06/718,263	2/17/87
4,644,255	06/838,424	2/17/87
4,644,260	06/762,185	2/17/87
4,644,275	06/691,669	2/17/87
4,644,282	06/613,355	2/17/87
4,644,285	06/658,612	2/17/87
4,644,294	06/693,777	2/17/87
4,644,304	06/293,469	2/17/87
4,644,309	06/839,678	2/17/87
4,644,315	06/671,544	2/17/87
4,644,317	06/711,032	2/17/87
4,644,321	06/663,252	2/17/87

Patent Number	Serial Number	Issue Date
4,644,339	06/471,286	2/17/87
4,644,347	06/522,066	2/17/87
4,644,351	06/608,334	2/17/87
4,644,371	06/793,684	2/17/87
4,644,381	06/721,257	2/17/87
4,644,389	06/706,390	2/17/87
4,644,396	06/737,643	2/17/87
4,644,401	06/666,118	2/17/87
4,644,410	06/710,075	2/17/87
4,644,417	06/710,863	2/17/87
4,644,423	06/666,320	2/17/87
4,644,434	06/527,287	2/17/87
4,644,444	06/765,775	2/17/87
4,644,449	06/693,292	2/17/87
4,644,450	06/819,114	2/17/87
4,644,455	06/682,437	2/17/87
4,644,456	06/802,314	2/17/87
4,644,477	06/632,632	2/17/87
4,644,507	06/589,105	2/17/87
4,644,512	06/580,914	2/17/87
4,644,513	06/685,479	2/17/87
4,644,515	06/673,549	2/17/87
4,644,518	06/645,774	2/17/87
4,644,525	06/644,532	2/17/87
4,644,526	06/671,124	2/17/87
4,644,530	06/775,549	2/17/87
4,644,547	06/625,864	2/17/87
4,644,550	06/690,496	2/17/87
4,644,559	06/587,726	2/17/87
4,644,571	06/770,091	2/17/87
4,644,572	06/797,093	2/17/87
4,644,575	06/673,844	2/17/87
4,644,578	06/453,421	2/17/87

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b) The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b).

4,417,591 Re. S. N. 07/663,070, Filed Feb. 28, 1991, Cl. 128, APPARATUS AND METHOD FOR TOPOGRAPHIC DISPLAY OF MULTICHANNEL EEG DATA, Norman D. Culver, Owner of Record: *Nicolet Instrument Corporation*, Attorney or Agent: James M. Smith, Ex. Gp.: 335

4,778,431, Re. S. N. 07/599,317, Filed Oct. 17, 1990, Cl. 446/221, ANIMATED BALLOONS, Joseph E. Dudley, Owner of Record: *Inventor*, Attorney or Agent: Herbert D. Hart, Ex. Gp.: 331

4,809,422, Re. S. N. 07/665,590, Filed Mar. 6, 1991, Cl. 29/568, MACHINE TOOL WITH INDEX MEANS, Koichiro Kitamura, Owner of Record: *Kitamura Machinery Co., Ltd., Toyama-Ken, Japan*, Attorney or Agent: Herbert I. Cantor, Ex. Gp.: 322

4,809,539 Re. S. N. 07/666,150, Filed Mar. 5, 1991, Cl. 73/116, REMOTE MIXTURE CONTROL TOOL WITH CLEANING FUNCTION, Lynn R. Goodman, Owner of Record: *Diag. Inc., Santa Ana, Calif.*, Attorney or Agent: Lowell Anderson, Ex. Gp.: 265

4,809,633, Re. S. N. 07/670,348, Filed Mar. 15, 1991, Cl. 114/210, FREE FALL WINDLASS, Jose Santos, Owner of Record: *Scott Fetzer Company, Bridgeport, Conn.*, Attorney or Agent: James E. Barlow, Ex. Gp.: 315

4,810,498, Re. S. N. 07/665,031, Filed Mar. 6, 1991, Cl. 424/195.1, NAIL OIL COMPOSITION, Paul J. DiMeglio, Owner of Record: *Peau Corp., Dumfries, Va.*, Attorney or Agent: Alan E. Schiavelli, Ex. Gp.: 183

4,811,172, Re. S. N. 07/666,118, Filed Mar. 6, 1991, Cl. 362/61, LIGHTING SYSTEMS EMPLOYING OPTICAL FIBERS, John M. Davenport, et al., Owner of Record: *General Electric Co., Schenectady, N.Y.*, Attorney or Agent: George E. Hawranko, Ex. Gp.: 346

4,811,735, Re. S. N. 07/668,670, Filed Mar. 13, 1991, Cl. 128/305, STONE DESTROYING CATHERTER AND METHOD OF USE, John Nash, et al., Owner of Record: *Kensey Nash Corp., Exton, Pa.*, Attorney or Agent: Martin L. Faigus, Ex. Gp.: 345

4,812,319, Re. S. N. 07/667,284, Filed Mar. 11, 1991, Cl. 426/127, SHEET MATERIALS AND PACKAGING THEREFROM, Joseph C. Hsu, et al., Owner of Record: *American National Can Company, Chicago, Ill.*, Attorney or Agent: Thomas A. O'Rourke, Ex. Gp.: 132

4,813,584, Re. S. N. 07/670,700, Filed Mar. 18, 1991, Cl. 224/42.44, DETACHABLE CARGO CARRIER, Michael D. Wiley, Owner of Record: *Inventor*, Attorney or Agent: Douglas W. Sprinkle, Ex. Gp.: 243

4,865,686, Re. S. N. 07/608,397, Filed Nov. 2, 1990, Cl. 156/643, LASER SCRIBING METHOD, Hisato Shinohara, Owner of Record: *Semiconductor Energy Laboratory Co., Ltd., Atsugi-Shi, Japan*, Attorney or Agent: Donald R. Strudebaker, Ex. Gp.: 133

4,867,106, Re. S. N. 07/670,712, Filed Mar. 18, 1991, Cl. 122/13.00R, DIRECT POWER VENTED WATER HEATER, Charles W. Staats, Owner of Record: *Bradford-White Corporation, Philadelphia, Pa.*, Attorney or Agent: Austin R. Miller, Ex. Gp.: 344

4,871,312, Re. S. N. 07/668,911, Filed Mar. 13, 1991, Cl. 433/164, DENTAL COMPACTOR INSTRUMENT, Derek E. Heath, Owner of Record: *Quality Dental Products, Inc., Johnson City, Tenn.*, Attorney or Agent: Charles B. Elderkin, Ex. Gp.: 333

4,892,399 Re. S. N. 07/664,949, Filed Mar. 5, 1991, Cl. 350/569, DOOR VIEWER, Chul Hoon Ahn, Owner of Record: *Seung Hee Han, Seoul, Republic of Korea*, Attorney or Agent: William J. Sapone, Ex. Gp.: 257

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

4,574,914, Reexam. No. 90/002,301, Requested Mar. 21, 1991, Cl. 181/268, COMPACT, SOUND-ATTENUATING MUFFLER FOR HIGH-PERFORMANCE INTERNAL COMBUSTION ENGINE, Ray T. Flugger, Owner of Record: *Flowmaster Inc., Santa Rosa, Calif.*, Attorney or Agent: Robert B. Chickering, Flehr, Hohbach, Albritton, et al., San Fransisco, Calif., Ex. Gp.: 213, Requester: Owner

4,640,719, Reexam. No. 90/002,295, Requested Mar. 13, 1991, Cl. 134/040, METHOD FOR PRINTED CIRCUIT BOARD AND/OR PRINTED WIRING BOARD CLEANING, Michael E. Hayes, et al., Owner of Record: *Petroferm, Inc., Fernandina, Fla.*, Attorney or Agent: Joseph F. Posillico, Synnestvedt & Lechner, Philadelphia, Pa., Ex. Gp.: 132, Requester: Owner

4,719,852, Reexam. No. 90/002,296, Requested Mar. 15, 1991, Cl. 100/299.A, AIRCRAFT TRASH COMPACTOR, James L. Durbin, et al., Owner of Record: *Aero-Design Tech., Inc., Valencia, Calif.*, Attorney or Agent: John D. Bauerfield, Kelly, Bauerfield & Lowery, Woodland Hills, Calif., Ex. Gp.: 247, Requester: Owner

4,753,801, Reexam. No. 90/002,303, Requested Mar. 22, 1991, Cl. 424/465, SUSTAINED RELEASE TABLETS, Peter L. Oren, et al., Owner of Record: *Eli Lilly & Co., Indianapolis, Ind.*, Attorney or Agent: Bruce J. Barclay, Indianapolis, Ind., Ex. Gp.: 152, Requester: Dianne B. Elderkin, Woodcock, Washburn, Kurtz, et al., Philadelphia, Pa.

Errata

In the list of patents which expired on Sept. 16, 1990, due to failure to pay maintenance fees, in the O.G. of Nov. 27, 1990, the following patent should not have appeared:

Patent No.	Serial No.	Issue Date	Filing Date
4,612,648	06/692,787	9/16/86	1/17/85

"All reference to Reexamination Certificate No. B1 4,315,398 (1415th) appearing in the Official Gazette of Feb. 19, 1991 should be deleted since no reexamination certificate has been granted."

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceeding sent by registered mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Wilbur L. Krause, Kenmore, Wash., Reg. 1,504,893, for the mark "WET SPOT", Canc. No. 19,492.

JEAN BROWN
Administrator, Trademark
Trial and Appeal Board
For JEFFREY M. SAMUELS
Assistant Commissioner for Trademarks

Status of PTO Services

The following is an update of the status of PTO services for Mar. 1991:

Service Item	FY 1990 Goal (Calendar Days)*	Monthly Average (Calendar Days)*
Filing Receipts:		
Patents	22	18
Trademarks	30	53
Patent/Trademark Copies:		
Special Window Coupons	24 Hours	16 Hours
Window Coupons	5	2
Mail Coupons	12	5
Letter Orders	16	13
Electronic Ordering Service (EOS)	11	3
Certified Copies:		
Trademark Registrations	21	21
Applications-As-Filed	17	10
File-Wrapper/Contents	N/A	19
Walk-up Certification	1	1
Patent Application Expedited	5	5
Trademark Search Library:		
Filing Pending Marks	23	27
Filing Reg. Certificates	Issue Date+2 days	On Goal
Filing Temp. Drawings	8	13
Assignments:		
Recording Patent-New Applications	20**	15
Recording Patent-Mail Room Recpts.	20	19
Return Patents-New Applications	34**	43
Return Patents-Mail Room Recpts.	34	45
Recording Trademarks	20	19
Returning Trademark Documents	34	40
Avg. Days from Issue Fee Payment to Issue Date	90-100	118
Issue Fee Receipts Mailed	4 weeks prior to Issue Date	On Time
Patent Copies Available	95% on Issue Date	90% on Issue Date + 5
Trademark Copies Available	95% on Issue Date	98% on Issue Date

* Unless otherwise noted.
** Goal reflects the number of days from the date the filing receipt is mailed.

IMPROVEMENTS TO SERVICES

•*Trademark Assignment Processing System (TAPS)*• A new automated TAPS became operational on February 4, 1991. This new automated system was developed to improve the quality of the assignment recordation process and the file integrity of the Assignment search files by eliminating the typing and filing of trademark assignment records in the Assignment Search Room.

Typing of cards for the Assignment search files has been replaced with direct key entry into TRAM. Recordation notices, which had not previously been provided, are now being generated for each trademark assignment document processed and accompany all returned documents. Computer terminals containing the assignment information keyed in TRAM are available for public searching in the Assignment Search Room.

•*New Special PTO Mail Box*• The Correspondence and Mail Division has established a special box, Box DD, to expedite processing of Disclosure Documents. Currently, anyone filing a disclosure document or sending material relating to the program would mail the document/material to the Commissioner Patent and Trademark Office, Washington, D.C. 20231. As a result, the disclosure document would be processed along with the thousands of other pieces of mail sent to the same address.

By establishing Box DD, the Correspondence and Mail Division can readily identify an incoming disclosure document or related information by the unique mailing address on the envelope. The envelope will be sorted from the remainder of the mail and forwarded directly to the Correspondence Branch which handles this program.

When sending disclosure documents to the Patent and Trademark Office, the envelope should be addressed as follows:

Box DD
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Box DD should also be typed/written in the lower left-hand corner of the envelope.

Please remember that only disclosure documents or material related to the disclosure document program should be placed in the envelope addressed to Box DD. Otherwise, processing of the unrelated material may be delayed.

•*Certification Process Review Team*• The Office is conducting a complete review of certification processing with the goal of streamlining operations to better meet customer needs. All of the supervisors and managers in the certification area, as well as employees, are involved.

As part of the review, several meetings with certification custmomers have been held to ensure that customer views are heard and to share the findings and recommendations derived during the certification process review. Customer meetings will continue to be held the third Wednesday of each month. Anyone interested in attending these meetings should contact the Assignment/Certification Services Division at 703-557-1552.

The Certification Process Review Team, along with volunteers from the public user group, are working to develop a form for use in ordering certified copies from the Certification Branch. The form will serve as an easy to use order blank, and will also include definitions of the various types of documents to ensure that the document requested by the customer is provided by the Certification Branch. The form is in draft stage and will be available within a few months.

Until the order form containing definitions of the various types of documents is available, the guidance for requesting certification services is provided in the following Helpful Hints notice under *Certification Services*.

Apr. 5, 1991

THERESA A. BRELSFORD
Assistant Commissioner
for Administration

HELPFUL HINTS

•*Trademark Assignments•Review of Recordation Notices*

Since recordation notices are now provided for all trademark assignments being recorded, requestors of assignment recordation services now have the opportunity to ensure that information was properly recorded. Please carefully review each recordation or non-recordation notice. Errors on the recordation notices represent errors in the TAPS. If you should find any errors, please send a request for correction to:

U.S. Patent and Trademark Office
Assignment Branch
CP2-5C14
Washington, D.C. 20231

Assignments with Multiple Properties

When submitting trademark assignments which contain multiple properties, please ensure that the lists of property numbers appear in numeric order with application numbers and registration numbers separated. Lists which are out of numeric order or mix application and registration numbers require additional processing steps and, therefore, slow down the recordation process.

•*Certification Services*•Following is a series of helpful hints that have been developed to date as a result of the meetings with customers and the Certification Process Review Team meetings.

Provide complete information for all requests:

—Service requested (e.g., Certified Copies of *enter type of document requested)*
—Requestor's name or company
—Date of request
—Address of requestor
—Daytime telephone number
—Deposit account or method of payment information
—Address or local PTO Box Number to which copies should be sent
—Complete application number, patent number, or trademark number of document requested (The application number must include the two-digit series code such as 06 or 07 for patent applications and 73 or 74 for trademark applications, and the six-digit serial number).
—Any additional information as might be necessary (see specific types of documents below).

Separate requests for ordering different products

When ordering copies from the Certification Branch, request only one type of service per order to speed processing. Example: a request for a copy of a patent application as filed should be separate from a request for a patent file wrapper and contents.

Ensure authorization to order certified copies of applications as filed

When requesting a certified copy of a patent application as filed, if either the attorney of record has changed since filing or a power to inspect has been filed, please provide a copy of the new power of attorney or the power to inspect. The Certification Branch prepares the bulk of certified copies of applications as filed from microfiche that contains information pertaining to the attorney of record at the time of filing. When a change in attorney of record is made, or when a power to inspect has been filed, this information is not readily available to the Certification Branch unless it is provided with the request.

Limit the number for each expedited order for certified copies of patent application as filed

When submitting requests for expedited certified copies of patent applications as filed, please include no more than three different application numbers on one request. The Certification Branch fills all copies from one request as a complete order. The Office's experience has been that orders which have no more than three application numbers can be filled and delivered most quickly within our five-day service goal; orders with a large number of individual application numbers often result in one or more applications requiring special research or handling which can slow the process. For example, better service can usually be given on five individual orders with three application numbers on each one rather than one order with 15 application numbers on it.

In addition, some customers are using terms such as "rush" or "special" on every order they place; other customers use those terms to identify requests they want to be filled within five days. Please refrain from using the words such as "rush" or "special" and only use the term "expedite" when you have requested and paid for five-day expedited service.

Do not request refunds unless the Office failed to properly fulfill the request.

The Patent and Trademark Office is prohibited from providing refunds to customers except where the fee is paid by actual mistake or in excess, such as a payment not required by law, or in situations where the Office failed to properly fulfill the request. The

Certification Branch, therefore, cannot provide refunds for customers who no longer need a service or for "a mere change of purpose after the payment of money." See 37 CFR 1.26.

Note specific guidance below for each type of document requested.

Patent Applications as Filed

These documents are also frequently called "priority documents" or "foreign priority documents." Please refer to these documents as **Patent Applications as Filed** when requesting certification services.

— 17 Calendar Day Regular Service
— 5 Calendar Day Expedited Service
$10.00 for Regular Service per certified copy
$20.00 for Expedited Serivce per certified copy

Papers supplied are:
Patent application (including specification, claim, abstract (if any))
Any Drawings

If the person requesting the certified copy is not the same as one of the attorney names on the power of attorney originally filed with the application, a power of attorney or power to inspect must be provided for each appliation requested.

If the application as filed being requested is Rule 1.62 file wrapper continuation application, please indicate this on your request. In addition, please provide the parent application number(s) for each Rule 1.62 application.

Uncertified copies of patent applications as filed can also be provided by the Certification Branch. Fulfillment times and costs are the same as for certified copies.

To speed processing, the Certification Branch has instituted a new processing step in the fulfillment of certified copies of patent applications as filed. Within the first day of receipt of these orders, a check is made of the file of microfiche of patent applications as filed. If a microfiche is not available for fulfillment of the order, steps are immediately taken to order the actual file for fulfillment. Certification Branch employees will also call the customer to alert them of the potential for delayed receipt of copies when the microfiche is not available. Therefore, please include a current telephone number on all orders for patent applications as filed. The turnaround time for regular orders (17 days) can normally still be met if the microfiche is missing; the 5-day goal for expedited orders is more difficult to meet when the file must be ordered.

Patent File Wrapper and Contents

These documents are also frequently called "file history," "file history of an application" and "prosecution file." Please refer to these documents as **Patent File Wrapper and Contents** when requesting certification service.
— 25 Calendar Day Service
$170.00 per certified copy
Papers supplied are:

Face of file wrapper
Transmittal letter
Fee record sheet
Patent application, (including specification, claims, abstract (if any)), oath or declaration
Drawings
Papers in numerical order (per table of contents)
Table of contents

A power of attorney or power to inspect must be provided for each pending or abandoned file requested unless the power of attorney or power to inspect was submitted with the application and the requestor is listed on that power.

Uncertified copies of patent file wrappes and contents can also be provided by the Certification Branch. Fulfillment times and costs are the same as for certified copies.

Issued Patents

Certified Copy of Issued Patent

— 17 Calendar Day Service
$4.50 per certified copy of an issued patent *except* for a plant patent
$13.00 certified copy of an issued plant patent

Uncertified copies of issued patents CANNOT be provided by the Certification Branch. Requests for regular, uncertified patent copies can be ordered through the PTO's normal copy fulfillment service:

Commissioner of Patents and Trademarks
Box 9
Washington, D.C. 20231

The cost for an uncertified copy of an issued patent is $1.50. An uncertified copy of a plant patent is $10.00.

Patent Customer Supplied Copies

Certification of Copy of Patent Document Supplied by the Customer (These documents commonly include U.S. Patents; file wrappers and contents; selected papers from a file wrapper; classification listings and PTO publications). This service is only available to local customers because they must provide the actual source document and a complete copy produced from the actual source document.

— Next Calendar Day Service

$10.00 for Next Calendar Day Service per certified copy

A clean copy of the documents must be submitted along with the request for this service. CUSTOMERS MAY NOT SUBMIT COPIES OF PATENT APPLICATIONS AS FILED FOR THIS SERIVCE.

Trademark Application As Filed

These documents are also frequently called "priority documents" or "foreign priority documents." Please refer to these documents as **Trademark Applications as Filed** when requesting this service.

— 17 Calendar Day Service

$0.30 per page
$3.50 per certificate

Papers supplied are:

Face of file wrapper
Transmittal letter
Fee record sheet
Trademark application (including declaration, specimen and drawing)

The total number of pages in the trademark application as filed is multipied by $0.30. A $3.50 certification charge is added to the total page cost to arrive at the total cost for this service.

Uncertified copies of trademark application as filed can also be provided by the Certification Branch. The fulfillment time is the same. Only the $0.30 per page charge is incurred for uncertified copies of trademark applications as filed.

Trademark File Wrapper and Contents

These documents are also frequently called "file history," "file history of an application" and "prosecution file." Please refer to these documents as **Trademark File Wrapper and Contents** when requesting this service.

$0.30 per page
$3.50. per certificate

Papers supplied are:

Face of file wrapper
Transmittal letter
Fee record sheet
Trademark application (including declaration, specimen and drawing)
Papers in numerical order (per table of contents)
Table of contents

The total number of pages in the trademark file wrapper and contents is multiplied by $0.30. A $3.50 certification charge is added to the total page cost to arrive at the total cost for this service.

Uncertified copies of trademark file wrappers and contents can also be provided by the Certification Branch. Fulfillment times remain the same. Only the $0.30 per page charge is incurred for uncertified copies of trademark applications as filed.

Registered Trademarks

Certified copies of registered trademarks CANNOT be supplied by the Certification Branch. Requests for these copies (also known as "status copies") can be ordered from:

U.S. Patent and Trademark Office
Attn: Post Registration Section - Certification
Washington, D.C. 20231

Phone: (703) 308-0483

— 21 Calendar Day Regular Service
— 72 HOUR Expedited Service

$10 for regular service
$35 for expedited service

It should be noted that the above stated turnaround times for certified copies of registrations do not begin until the request is actually received in the Post Registration Section. In addition, any requests for expedited service received after noon are treated as if they were received on the next business day. No more than five (5) expedited requests are permitted per day per firm or party.

Regular, uncertified copies of registerd trademarks can be ordered through the PTO's normal copy fulfillment service:

U.S. Patent and Trademark Office
Box 9
Washington, D.C. 20231

Miscellaneous Documents

Certified copies of miscellaneous PTO records (such as sections of the MPEP, TMEP, 37 CFR, PTO letters, etc.) can be ordered from the Certification Branch.

Requests for these documents are provided as follows:

Patent related documents

— 25 Calendar Day Service at $10.00 per document

Trademark related documents

— 25 Calendar Day Service at $0.30 per page and $3.50 per certificate

Request for these types of services must identify the specific document or portion of the document requested.

In the past, certified copies of the Manual of Patent Examining Procedures have been provided by the Office of the Assistant Commissioner for Patents. The Certification Branch currently maintains a collection of the various editions and revisions of the Manual of Patent Examining Procedures (MPEP) on microfilm reels. Members of the public may request certified copies of chapters or sections of the various editions and revisions of the MPEP directly from the Certification Branch.

For the purpose of assessing fees, each chapter of the MPEP is considered to be one document. The fee for certification service is $10.00 for each chapter, or portion of a chapter ordered. The same chapter of two editions, or two revisions of the same chapter within the same edition, would be considered as two documents for fee accounting purposes. Examples: (1) A customer requests a certified copy of Chapter 100 from the 3rd Edition, Revision 2. The charge would be $10.00. (2) A customer requests a certified copy of Chapter 100, Section 100.1 from the original 2nd Edition. The charge would be $10.00. (3) A customer requests a certified copy of Chapter 100 from the 2nd Edition, Revision 1 and Chapter 200 from the original 3rd Edition. The charge would be $20.00.

Requests for certified copies of the MPEP may be sent via United States mail addressed to:

Commissioner of Patents and Trademarks
Box 10
Washington, D.C. 20231

or may be hand carried and placed at the Finance Cashier's Window or Public Service Window.

Requests must inlcude the Edition and Revision number from which the copy should be produced and specify the Chapter(s) or portions of the chapter(s) desired.

Customers may either request that their copies be mailed to a mailing address or be delivered to a Public Service Window box.

The turnaround time from receipt of the order at the Patent and Trademark Office to mailing of the certified copy is five working days.

Apr. 5, 1991

THERESA A. BRELSFORD
Assistant Commissioner
for Administration

PATENT NOTICES

Certificates of Correction For Week of April 30, 1991

Re. 32,738	4,818,839	4,861,805	4,896,394
4,481,487	4,819,307	4,863,384	4,896,786
4,605,504	4,819,465	4,863,531	4,896,921
4,681,730	4,819,743	4,863,949	4,897,378
4,689,093	4,819,849	4,865,662	4,897,597
4,699,147	4,820,209	4,867,516	4,901,396
4,699,679	4,820,390	4,869,826	4,901,494
4,700,330	4,821,195	4,870,009	4,901,577
4,747,071	4,821,250	4,870,088	4,902,047
4,748,310	4,821,587	4,871,571	4,902,093
4,755,218	4,822,018	4,871,768	4,902,583
4,768,330	4,824,789	4,872,835	4,903,402
4,769,847	4,828,356	4,874,122	4,904,272
4,785,380	4,829,098	4,876,171	4,904,319
4,792,814	4,830,733	4,876,518	4,908,190
4,795,699	4,831,293	4,877,037	4,908,868
4,802,170	4,831,411	4,879,328	4,909,259
4,803,349	4,833,402	4,879,514	4,909,314
4,804,021	4,834,459	4,882,161	4,909,425
4,804,381	4,834,882	4,882,491	4,910,566
4,804,539	4,835,005	4,883,537	4,910,694
4,804,758	4,835,405	4,883,687	4,913,629
4,805,277	4,835,647	4,884,052	4,915,001
4,805,587	4,836,020	4,884,704	4,917,020
4,808,926	4,838,924	4,885,338	4,918,174
4,809,930	4,839,942	4,887,292	4,950,956
4,810,288	4,841,392	4,887,446	4,951,845
4,810,409	4,845,126	4,888,053	4,958,621
4,812,507	4,845,275	4,888,503	4,970,565
4,813,174	4,846,730	4,889,600	4,972,006
4,814,524	4,846,764	4,889,646	4,972,058
4,814,572	4,849,781	4,889,656	4,974,000
4,814,786	4,850,292	4,892,692	4,979,603
4,815,121	4,850,892	4,893,030	4,981,715
4,815,843	4,853,449	4,895,170	
4,816,034	4,854,571	4,895,217	
4,817,478	4,859,625	4,895,753	

Disclaimers

4,663,089.—*Jerry D. Lowry; Sylvia [redacted]. Lowry*, both of Thorndike, Me. DIFFUSED BUBBLE AERATION SYSTEM. Patent dated May 5, 1987. Disclaimer filed Jan. 7, 1991, by the inventors.

Hereby enters this disclaimer to claims 1-3, 5 and 8-13 of said patent.

4,718,153.—*Donald H. Armitage*, Grand Rapids; *Robert C. Angell*, Spring Lake, both of Mich. CUSHION MANUFACTURING PROCESS. Patent dated Jan. 12, 1988. Disclaimer filed Jan. 2, 1991, by the assignee, Steelcase, Inc.

Hereby enters this disclaimer to claim 36 of said patent.

4,731,938.—*Richard L. White*, Dallas, Tex. ANAEROBIC PASTEURIZING CONDITIONING SYSTEM. Patent dated Mar. 22, 1988. Disclaimer filed Mar. 12, 1990, by the assignee, VE Holding Corp.

The term of this patent subsequent to May 25, 2004, has been disclaimed.

4,790,922.—*Russel Huffer*, Owatonna, Minn. TEMPERABLE LOW EMISSIVITY AND REFLECTIVE WINDOWS. Patent dated Dec. 13, 1988. Disclaimer filed Feb. 4, 1991, by the assignee, Viracon, Inc.

Hereby enters this discliamer to claims 1 and 2 of said patent.

4,921,017.—*Atsushi Tada*, Tokyo, Japan. CHECK VALVE. Patent dated May 1, 1990. Disclaimer filed Dec. 20, 1990, by the inventor.

Hereby enters this disclaimer to claim 1 of said patent.

4,830,781.—*Richard W. Oswald*, Madison, Conn. TIRE BODY REINFORCING COMPONENT AND APPARATUS AND METHOD FOR PRODUCING SAME. Patent dated May 16, 1989. Disclaimer filed Feb. 20, 1991, by the assignee, Pirelli Armstrong Tire Corp.

Hereby enters this disclaimer to claims 1-7, 10-13, 15 and 16 of said patent.

4,962,729.—*Aurelio F. Barreto*, St. Hawthorne, Calif.; *Darrell R. Paxman*, Redmond, Wash. INSULATED SHELTER FOR PET ANIMALS AND METHOD OF MANUFACTURE THEREOF. Patent dated Oct. 16, 1990. Disclaimer filed Feb. 4, 1991, by the assignee, Dogloo, Inc.

Hereby enters this disclaimer to claims 1, 8, 9, 10, 11, and 14 of said patent.

4,993,097.—*Mark D'Amato*, Montreal, Canada. CIRCUIT BOARD DEBURRING SYSTEM. Patent dated Feb. 19, 1991. Disclaimer filed Dec. 10, 1990, by the assignee, D.E.M. Controls of Canada.

The term of this patent subsequent to Feb. 19, 2008, has been disclaimed.

Disclaimer and Dedications

4,698,262.—*Abraham Schwartz*, Durham; *Joel Williams*, Cary; *Robert D. Stevens*, Durham, all of N. C. FLUORESCENTLY LABELED MICROBEADS. Patent dated Oct. 6, 1987. Disclaimer and Dedication filed Feb. 14, 1991, by the assignee, Becton, Dickinson and Co.

Hereby disclaims and dedicates to the Public the remaining term of said patent.

4,871,789.—*Jeffrey Dormish*, Pittsburgh, Pa.; *Wolfgang Henning*, Kuerten, Fed. Rep. of Germany. PROCESS FOR THE PREPARATION OF AQUEOUS POLYURETHANE-POLYUREA DISPERSIONS. Patent dated Oct. 3, 1989. Disclaimer and Dedication filed Feb. 8, 1991, by the assignees, Bayer Aktiengesellschaft and Mobay Corp.

Hereby disclaims and dedicates to the Public the entire term of said patent.

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Expiration of patents: The patents within the range of numbers indicated below expire during March 1991 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,795,014 to 3,800,328 inclusive
Plant Patents ..... 3,501 to 3,534 inclusive

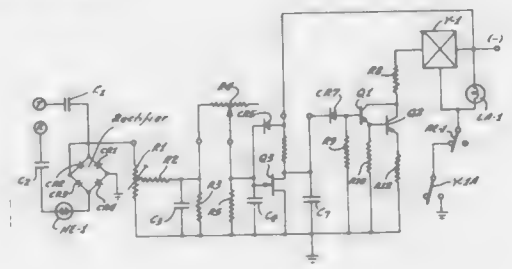
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,723,656 (1454th)

TELEPHONE ANSWERING SYSTEM

Lawrence A. Curtis, Hunting Beach, and Elmer C. Bonsky, Long Beach, both of Calif., assignors to Virsonic Corporation

Reexamination Request No. 90/002,003, Apr. 18, 1990.
Reexamination Certificate for Patent No. 3,723,656, issued Mar. 27, 1973, Ser. No. 132,961, Apr. 12, 1971.
Int. Cl.[5] H04M *11/10*
U.S. Cl. 379—82



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1 and 2 is confirmed.

1. In a telephone answering system which includes first circuitry for transmitting a recorded message over a telephone line in response to a ring signal, and a second circuitry for subsequently recording a message received over the telephone line from a calling party, the combination of:

means including a manually operated switch for activating and deactivating the system;

control circuit means coupled to the telephone line and responsive to incoming telephone ring signals for producing an output which rises above a particular threshold after a predetermined number of the aforesaid ring signals have been received;

relay means, connected to said control circuit means to be activated by said output therefrom, for electrically bypassing said switch when said output from said control circuit means rises above said predetermined threshold; and

holding circuit means, connected to said relay means, for maintaining said relay means in an activated condition until said telephone answering system enters a reset mode.

B1 4,044,187 (1455th)

FILM LAMINATES HAVING A REIRRADIATED LAYER

William P. Kremkau, Watkinsville, Ga., assignor to W. R. Grace & Co.

Reexamination Request No. 90/002,124, Sep. 5, 1990.
Reexamination Certificate for Patent No. 4,044,187, issued Aug. 23, 1977, Ser. No. 580,103, May 22, 1975.
Int. Cl.[5] B05D *3/06;* **B32B** *7/02, 27/08*
U.S. Cl. 428—212

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 2–13, 15 is confirmed.

Claims 1, 14 are determined to be patentable as amended.

Claims 16–20, dependent on an amended claim, are determined to be patentable.

New claims 21–29 are added and determined to be patentable.

14. A polymeric film laminate comprising:

(*i*) *a relatively gas impermeable layer, and*

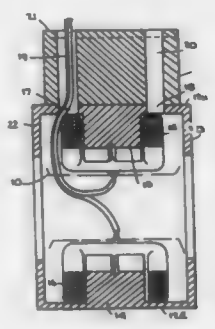
(*ii*) a plurality of cross-linked layers, at least one of said layers being cross-linked to a greater degree than any other cross-linked layer.

B1 4,420,982 (1456th)

UNITARY ELECTROMAGNETIC FLOWMETER WITH SEALED COILS

Roy F. Schmoock, Yardley, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Reexamination Request No. 90/001,443, Feb. 22, 1988.
Reexamination Certificate for Patent No. 4,420,982, issued Dec. 20, 1983, Ser. No. 398,809, Jul. 16, 1982.
Division of Ser. No. 174,609, Aug. 1, 1980, Pat. No. 4,358,963, which is a continuation-in-part of Ser. No. 75,037, Sep. 12, 1979, Pat. No. 4,253,340, which is a continuation-in-part of Ser. No. 811,276, Jun. 29, 1977, Pat. No. 4,181,018, which is a division of Ser. No. 771,420, Feb. 23, 1977, Pat. No. 4,098,118
Int. Cl.[5] G01F *1/58*
U.S. Cl. 73—861.12



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–6 are cancelled.

New claims 7, 8 are added and determined to be patentable.

7. A flangeless electromagnetic flowmeter unit interposable between the end flanges of the upstream and downstream pipes of a line conducting a fluid whose flow rate is to be metered, the end flanges of the pipes having a predetermined diameter and a circle of bolt holes, said unit comprising:

A. a cylindrical housing having an external diameter which is smaller than that of the circle, the ends of the housing being engageable by the end flanges of the pipes, whereby when the unit is interposed between the end flanges of the pipes, the housing lies within the circle and the flanges are bridged by bolts passing through the holes to encage the unit and subject it to a compressive force effecting a fluid seal;

B. a non-magnetic spool coaxially disposed within said housing and provided with end flanges which are seated against the ends of the upstream and downstream pipes and define with said housing an internal cavity, said spool forming a fluid conduit having a longitudinal flow axis which joins the upstream and downstream pipes, said spool having a strength

sufficient to withstand the pressure of fluid flowing in the conduit and said compressive force;

C. a pair of electromagnet coils disposed at diametrically-opposed sides of said spool to create a magnetic field whose lines of flux extend across the conduit, said coils lying on a coil axis which is normal to said flow axis; and

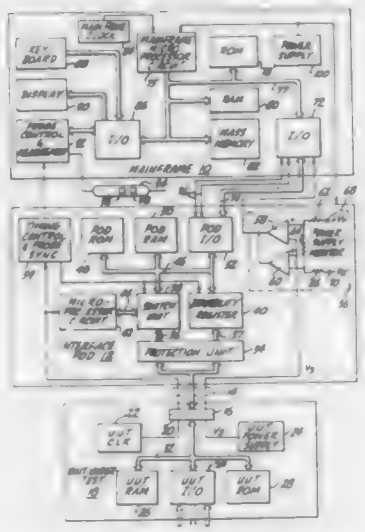
D. a pair of electrodes mounted on said spool at diametrically-opposed positions along an electrode axis perpendicular both to the coil axis and to the flow axis whereby the fluid which flows through the conduit intersects said lines of flux to induce a signal in said electrodes which is a function of flow rate.

B1 4,455,654 (1457th)

TEST APPARATUS FOR ELECTRONIC ASSEMBLIES EMPLOYING A MICROPROCESSOR

Kasi S. Bhaskar, Edmonds; Alden J. Carlson, Bothell, both of Wash.; Alastair N. Couper, Honolulu, Hi.; Dennis L. Lambert, Bothell, and Marshall H. Scott, Woodinville, both of Wash., assignors to John Fluke Mfg. Co., Inc.

Reexamination Request No. 90/001,763, Apr. 26, 1989.
Reexamination Certificate for Patent No. 4,455,654, issued Jun. 19, 1984, Ser. No. 270,926, Jun. 5, 1981.
Int. Cl.[5] G06F *11/22*
U.S. Cl. 371—16.2



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–14**, **16** and **43–56** is confirmed.

Claims **15** and **29–42** are cancelled.

Claims **17–**[illegible] are determined to be patentable as amended.

New Claims **57–111** are added and determined to be patentable.

1. A test system for functionally testing a microprocessor-based assembly of the type wherein a microprocessor circuit communicates with at least one of a random access memory unit, a read-only memory unit and an input/output register via an interconnection bus, and a clock circuit coupling a periodic clock signal to said microprocessor circuit to establish a bus cycle of a predetermined length, said test system comprising:

a second microprocessor circuit substantially identical to said microprocessor circuit of said microprocessor-based assembly being tested;

interconnection means for connecting said test system to said microprocessor-based assembly being tested with said test system being connected to replace said microprocessor circuit of said assembly being tested, said interconnection means including means for coupling said clock signal to said second microprocessor circuit;

memory means, including means for storing instructions and data for programming said second microprocessor circuit, for supplying addressing and data signals;

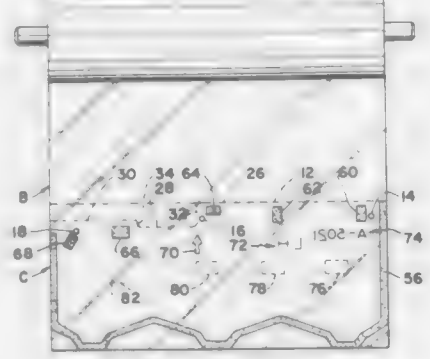
switching means for selectively coupling said second microprocessor circuit between a first operational state wherein said second microprocessor is in signal communication with said memory means and a second operational state wherein said second microprocessor circuit is in signal communication with said interconnection means to supply signals to and receive signals from said interconnection bus of said microprocessor-based assembly being tested, said switching means including timing means responsive to said clock signal supplied by said microprocessor-based assembly for switching said second microprocessor circuit into said second operational state at a predetermined time, said second microprocessor circuit being maintained in said second operational state for a single bus cycle each time said switching means switches said second microprocessor from said first operational state to said second operational state.

B1 4,604,302 (1458th)

METHOD OF MANUFACTURING WATER DEFLECTOR FOR VEHICLE DOORS

Robert A. Isaksen, Chardon; David E. Frappier, Mayfield Hts., and Wallace R. Jones, Waite Hill Village, all of Ohio, assignors to The Excello Specialty Company

Reexamination Request No. 90/001,529, Jun. 20, 1988.
Reexamination Certificate for Patent No. 4,604,302, issued Aug. 5, 1986, Ser. No. 612,414, May 21, 1984.
Division of Ser. No. 415,228, Sep. 7, 1982, Pat. No. 4,469,732
Int. Cl.[5] B32B *31/18*
U.S. Cl. 427—2[illegible].6



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–4** are cancelled.

[1. A method of manufacturing water deflectors for application to the inner panels of vehicle doors comprising the steps of:

providing flat and flexible sheets of plastic material;

applying permanently plastic pressure sensitive adhesive to one face of each said sheet to cover a minor portion thereof in a pattern differnt from the peripheral shape of each said sheet and forming the outline of a desired configuration of a water deflector for application to the inner panel of a vehicle door;

curing said sheets for substantially permanently bonding said adhesive to said one face;

placing a plurality of said sheets on top of one another in a commonly oriented stacked relationship; and,

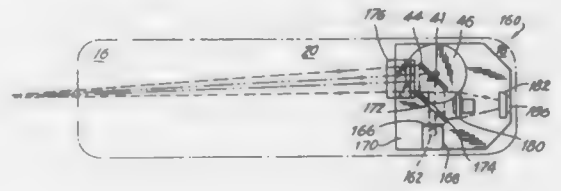
die cutting said stacked sheets generally along said desired configuration outwardly of said adhesive.**]**

B1 4,845,350 (1459th)

NARROW-BODIED, SINGLE- AND TWIN-WINDOWED PORTABLE LASER SCANNING HEAD FOR READING BAR CODE SYMBOLS

Howard M. Shepard, Great River; Edward D. Barkan, South Setauket, and Jerome Swartz, Stonybrook, all of N.Y., assignors to Symbol Technologies Inc., Bohemia, N.Y.

Reexamination Request No. 90/001,909, Dec. 14, 1989.
Reexamination Certificate for Patent No. 4,845,350, issued Jul. 4, 1989, Ser. No. 148,555, Jan. 26, 1988.
Division of Ser. No. 883,923, Jul. 10, 1986, Pat. No. 4,758,717, which is a division of Ser. No. 519,523, Aug. 1, 1983, Pat. No. 4,673,805, which is a division of Ser. No. 342,231, Jan. 25, 1982, Pat. No. 4,409,470
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—472



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

New claims **2–5** are added and determined to be patentable.

1. In a scanning system for reading symbols, a hand-held, solid-state, retro-reflective laser scanning head comprising:

(a) means including a laser diode in the head for emitting an incident laser beam, and *a movable reflector in the head* for directing the incident laser beam *along a first optical path* on zones on **[**successive symbols**]** *a respective symbol* to be read, *said movable reflector directly receiving laser light of variable intensity reflected off the zones of the respective symbol along a second optical path, said paths extending along a straight line between the respective symbol and the reflector;*

(b) sensor means in the head and aimed at, and having a field of view on, **[**a**]** *the* respective symbol, said field of view overlapping a respective zone on the symbol being read;

(c) scanning means for *moving the reflector and for* simultaneously scanning a respective zone and the overlapping field of view across the respective symbol;

(d) said sensor means being operative, during scanning, for detecting *the* laser light of variable intensity reflected off the **[**zone of the respective symbol**]** *reflector*, and for generating an electrical signal which is indicative of the detected laser light intensity; and

(e) signal processing means in the head, for processing the electrical signal to generate therefrom data descriptive of the respective symbol being read.

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 33,578

HYDRAULIC MASTER CYLINDER ASSEMBLY

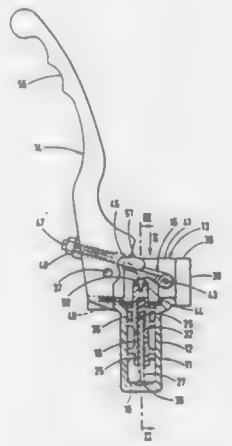
Richard A. Bass, Leamington Spa, England, assignor to Automotive Products plc, Leamington Spa, England

Original No. 4,635,442, dated Jan. 13, 1987, Ser. No. 766,269, Aug. 16, 1985. Application for reissue Feb. 6, 1990, Ser. No. 475,993

Claims priority, application United Kingdom, Aug. 29, 1984, 8421830

Int. Cl.[5] **B60T** *7/02*

U.S. Cl. 60—554 **21 Claims**



1. A hydraulic master cylinder assembly comprising a hydraulic master cylinder and an actuating mechanism, the hydraulic master cylinder having a body member defining a bore therein and being adapted for attachment to part of a vehicle, a piston slideably supported in the bore, and an input member of the piston for co-operation with part of the actuating mechanism, the actuating mechanism having a driver operated actuating lever and an operative connection to connect the actuating lever to the input member said operative connection including *adjustable* means *including a single adjustable member* for *the selective* altering *of* the travel ratio between the actuating lever and the input member.

Re. 33,579

LITERATURE APPLYING MECHANISM

Helmut Voltmer, Park Ridge; Alfred F. Schwenzer, Totowa, and Edward J. Mazur, Montville, all of N.J., assignors to New Jersey Machine Inc., Fairfield, N.J.

Original No. 4,555,299, dated Nov. 26, 1985, Ser. No. 628,761, Jul. 9, 1984. Continuation-in-part of Ser. No. 542,731, Oct. 17, 1983, Pat. No. 4,502,910. Application for reissue Sep. 28, 1987, Ser. No. 101,643

Int. Cl.[5] **B65C** *6/40*

U.S. Cl. 156—552 **11 Claims**

1. A system for applying literature to the sidewall of an object comprising:

means for pressing the literature against said sidewall:

[hopper] means for storing the literature;

a tape having an adhesive coating for carrying pieces of the literature from said [hopper] *storing* means to said pressing means;

means for moving said tape to said pressing means repetitively such that there are time intervals of advancement of the tape alternating with rest intervals during which said tape is stationary;

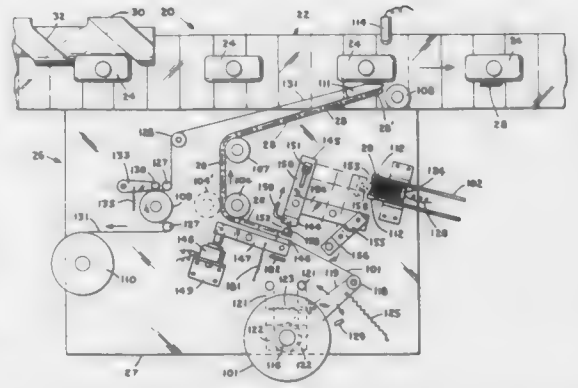
vacuum operated transporting means for transferring a piece of the literature from said [hopper] *storing* means to said tape during one of said rest intervals, said transporting means including suction cup means for engaging with a piece of the literature upon initiation of a vacuum, and for releasing the piece of literature upon termination of the vacuum;

vacuum means coupled to said suction cup means for applying a vacuum thereto and for terminating such vacuum;

a swing-arm assembly for carrying said suction cup means from said [hopper] *storing* means to the adhesive coating on said tape so as to permit engagement of said piece of literature with the adhesive coating;

a crank drive rotatably driven and connecting with said swing-arm assembly to impart motion thereto for transferring the literature; and

a vacuum valve driven by a shaft of said crank drive in synchronism with the operation of said swing-arm assembly, said vacuum valve initiating the vacuum and suction



of the suction cup means at one position of said swing-arm assembly, said vacuum valve terminating the vacuum and the suction of the suction cup means at a second position of the swing-arm assembly; and said system further comprising

a pad disposed adjacent said second position of said suction cup means and on the opposite side of said tape from said suction cup means in said second position;

means for positioning said pad at the backside of said tape, said positioning means advancing said pad to said tape for restraining a transverse movement of said tape in response to pressure of said literature associated with the emplacement of said literature upon said adhesive coating by said transporting means, said positioning means retracting said pad from said tape upon a withdrawal of said suction cup means for said tape, thereby inhibiting any contact of said suction cup means with said adhesive coating; and

means for synchronizing the operation of said positioning means with movement of said crank drive, thereby to co-ordinate the positioning of said pad with the operation of said transporting means.

Re. 33,580

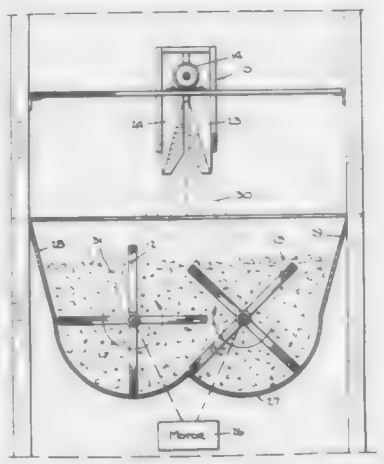
INFRARED DEHYDRATOR UNIT FOR MINCED FISH

Joseph Fraioli, 8 Seymour Pl., White Plains, N.Y. 10605

Original No. 4,781,933, dated Nov. 1, 1988, Ser. No. 95,027, Sep. 10, 1987. Continuation-in-part of Ser. No. 937,220, Dec. 3, 1986, Pat. No. 4,702,693. Application for reissue Oct. 10, 1989, Ser. No. 419,600

Int. Cl.[5] **A23L** *3/00;* **F26B** *3/00*

U.S. Cl. 426—242 **10 Claims**



7. The method of producing an edible fish product comprising the steps of:

A. mincing raw fish to produce small pieces thereof;

B. placing a load of the fish pieces in an open tank having side walls;

C. projecting into the tank a beam of infrared rays having a pattern which is directed mainly on the load and substantially avoids the side walls; and

D. agitating the pieces in the tank to pick up the pieces in the load thereof and exposing them to the incident beam until such time as the pieces are dehydrated.

10. A dehydrator unit for a load of moist pieces, said unit comprising:

A. an infrared heater provided with a refractory body having a radiation horn from which is projected a diverging beam of infrared rays; and

B. a tank disposed in the path of the beam and adapted to contain a load of moist pieces to be dehydrated, said tank having side walls confining the load and provided with an agitator to pick up and expose all pieces of the load to the rays incident thereto to effect dehydration of these pieces, said beam having a radiation pattern which substantially confines the projected rays to the pieces and avoids striking said side walls, thereby preventing scorching and sticking of the agitated pieces when they make contact with the side walls.

Re. 33,581

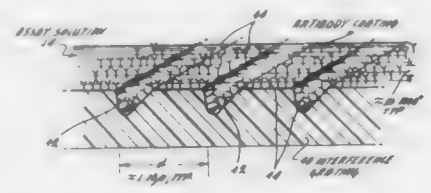
IMMUNOASSAY USING OPTICAL INTERFERENCE DETECTION

David F. Nicoli, 448 Mills Way, Goleta, Calif. 93117, and Virgil B. Elings, 1155 Via Tranquilla, Santa Barbara, Calif. 93110

Original No. 4,647,544, dated Mar. 3, 1987, Ser. No. 624,460, Jun. 25, 1984. Application for reissue Jul. 13, 1987, Ser. No. 72,699

Int. Cl.[5] **C01N** *33/53*

U.S. Cl. 435—7.2 **40 Claims**



49. A flat immunoassay substrate having a uniform coating thereon, the uniform coating comprising an immunochemical optical interference pattern of microscopic dimensions of alternating areas of an active and deactivated member of a binding pair consisting of ligand and antiligand, the uniform coating having effectively uniform scattering properties and having a minimum scattering intensity at Bragg angles θ_B, the pattern of alternating areas forming an optical interference grating with a detectable scattering intensity at Bragg angles θ_x if the one member of the binding pair is bound to the other member of the binding pair.

PLANT PATENTS

GRANTED APRIL 30, 1991

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

7,508

ROSE PLANT JACCART

William A. Warriner, Tustin, Calif., assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Feb. 9, 1990, Ser. No. 478,194

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its ability to propagate easily from soft wood cuttings, near continuous bloom during the growing season, novel white edged with red blooms, resistance to disease and its dwarf but vigorous habit of growth.

7,509

ROSE PLANT KORBOLAK

Wilhelm Kordes, Sparrieshoop, Fed. Rep. of Germany, assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Feb. 6, 1990, Ser. No. 475,955

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by its exceptionally high yield of long stemmed roses, its large flower size, its very long vase life, and its healthy disease resistant foliage.

7,510

ROSE PLANT KORXENNA

Wilhelm Kordes, Sparrieshoop, Fed. Rep. of Germany, assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Feb. 6, 1990, Ser. No. 475,976

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—21 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by its strong disesase resistant foliage, long stems, high yield of cut stems, large bright red flowers and five (5) to seven (7) leaflet leaves.

7,511

CHRYSANTHEMUM PLANT NAMED DARK YELLOW FINA

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Nov. 14, 1989, Ser. No. 435,823

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct Chrysanthemum plant named Dark Yellow Fina, as described and illustrated.

7,512

CHRYSANTHEMUM PLANT NAMED DONNA

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Dec. 29, 1989, Ser. No. 458,836

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct Chrysanthemum plant named Donna, as described and illustrated.

7,513

CHRYSANTHEMUM PLANT NAMED NAOMI

Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Dec. 29, 1989, Ser. No. 458,837

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct Chrysanthemum plant named Naomi, as described and illustrated.

PATENTS

GRANTED APR. 30, 1991

ERRATA

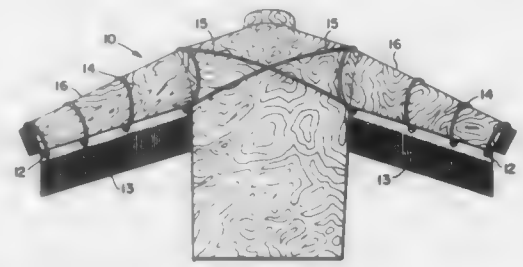
For CLASS	See PATENT NO.
303-076	5,010,651
128-844	5,010,871
132-054	5,010,914
114-039	5,010,932
296-153	5,010,996
296-203	5,011,201
445-024	5,011,391
606-166	5,011,498
106-001	5,011,530
435-069	5,011,795
424-057	5,011,830
525-477	5,011,900
356-376	5,011,960
250-288	5,012,052
313-149	5,012,160
324-166	5,012,207
340-702	5,012,274
335-253	5,012,292
378-065	5,012,357
367-089	5,012,449
360-032	5,012,459
337-003	5,012,495

PATENTS

GRANTED APRIL 30, 1991

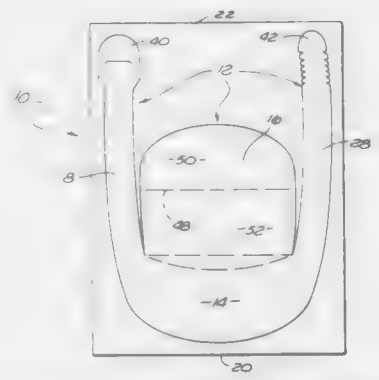
GENERAL AND MECHANICAL

5,010,589
CLOTHING WITH IMPROVED CAMOUFLAGE
Douglas N. Hamilton, 12211 Rainbow Ave., Anchorage, Ak. 99516
Filed Jan. 25, 1989, Ser. No. 301,1[illegible]
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—1 **11 Claims**



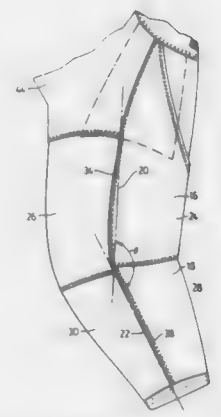
1. In combination:
a piece of clothing including camouflage means for providing camouflage for the wearer of the clothing,
removable fringe which may be attached to, and detached from, said clothing, said fringe comprising a multiplicity of elongated elements held by said clothing with a first end of each element adjacent said clothing and the other end hanging vertically from said clothing, and
supporting means for removable attachment to said clothing, said supporting means supporting said first-ends of said elements,
wherein said supporting means is a sheet of material and said elements are positioned along at least one face of said sheet.

5,010,590
VISOR-CAP
William Haber, 5812 Donna Ave., Tarzana, Calif. 91356, and Jack Takeshita, 12816 Montague St., Pacoima, Calif. 91331
Filed Jun. 2, 1989, Ser. No. 360,419
Int. Cl.[5] A61F *9/00*
U.S. Cl. 2—12 **8 Claims**



1. A fully rectangular sheet of a single type of die-cut material suitable for use as a place mat, for forming a visor-cap comprising:
a fully rectangular blank of a single type of material having two longer sides and two shorter sides;
a unitary die-cut portion of said rectangular blank having a bill extending generally along one of said shorter sides, two straps affixed to opposite sides of said bill and extending generally along said longer sides to points adjacent the other shorter side and including mating joining means, and
a crown portion formed between said straps and extending to first and second points at opposite sides of said bill; and
first and second structural fold lines extending between said first and second points, the first of said fold lines extending substantially directly between said two points, and the second of said fold lines being curved toward the forward end of said bill;
whereby said sheet may be initially used as a place mat or the like, and then said die-cut portion may be separated from said rectangular blank, and said crown and said bill may be formed into a visor-cap by folding at said two fold lines and securing said straps together by said joining means.

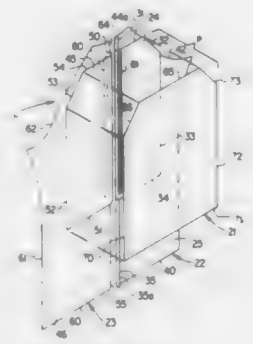
5,010,591
FIRE FIGHTER'S COAT HAVING IMPROVED SLEEVE CONSTRUCTION
Shaik M. Kalaam, Scarborough, Canada, assignor to Safeco Mfg. Limited, Scarborough, Canada
Filed Apr. 2, 1990, Ser. No. 502,635
Int. Cl.[5] A41D *3/02*
U.S. Cl. 2—93 **3 Claims**



1. A fire fighter's coat comprising:
a main body portion and a pair of sleeves each made from a tough, thermally insulated fabric which has a degree of flexibility which is substantially less than that of conventional street clothing; said sleeves each having an upper arm portion which has a sleeve passage opening therethrough which has a first axis which extends longitudinally thereof and a forearm portion which has a forearm passage opening therethrough which has a second axis which extends longitudinally thereof, said forearm portion being attached to the upper arm portion in such a manner that said second axis is inclined forwardly with respect to the upper arm portion when the sleeve is in a relaxed position, thereby to provide a natural forward set to the sleeve which serves to substantially reduce the resistance offered by the sleeve to movement of the fire fighter's arms to a position required to enable the wearer to bring his hands together to grasp an object located in front of the coat, the upper sleeve portion and the forearm portion of each sleeve having a front panel and a back panel, the front and back panels of the upper portion being secured to one another along first seam lines which extend longitudinally thereof and the front and back portions of the forearm portion being secured to one another along second seam lines which extend longitudinally thereof, the front panel of the upper portion being secured to the front panel of the forearm portion along a third seam line and the back panel of the upper portion being secured to the back panel of the forearm portion along a fourth seam line,

said third and fourth seam lines being angularly inclined with respect to one another to provide the angular inclination of the forearm portion with respect to the upper portion.

5,010,592
SELF-STORING COAT
John R. Skiles, Jr., Dallas, Tex., assignor to Ol'Sonora Trading Company Inc., Sonora, Tex.
Filed May 19, 1989, Ser. No. 354,638
Int. Cl.[5] A41D *3/00, 15/00*
U.S. Cl. 2—93 **7 Claims**



1. A self-storing coat comprising:
a coat body;
a lining in said coat body including back panel portions along an inside back of said coat body;
a storage pocket attached with said lining back panel portions between said back panel portions and said coat body along a central portion of said back of said coat;
means along said lining back panel portions defining a vertical opening into said storage pocket extending along a back center line of said coat substantially the length of said storage pocket from the vicinity of the collar end of said coat toward the skirt end of said coat; and
fastening means on said lining back panel portions along said opening for releasably securing said opening closed during wearing of said coat and during a storage mode of said coat when said coat and lining are folded into said storage pocket.

5,010,593
DECORATIVE NECKTIE KNOT COVER
Carl T. Stevens, Jr., 7411 E. Montecito Dr., Tucson, Ariz. 85710
Continuation-in-part of Ser. No. 422,238, Oct. 16, 1989. This application Aug. 23, 1990, Ser. No. 571,290
Int. Cl.[5] A41D *25/02, 25/14*
U.S. Cl. 2—152 R **18 Claims**



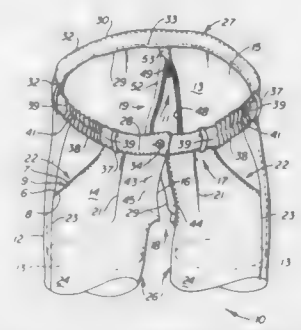
1. A decorative cover for the knot of a necktie being worn by a person comprising:
a front face adapted to receive decoration;
at least one side panel operably attached to said front face;
a top panel operably attached to said front face;
a rear panel spaced apart and parallel to said front face, said rear panel operably attached to said top panel, said front face, side panel, top panel, and rear panel each contributing to form the walls of a cavity to encompass the knot, said front face, side panel, top panel, and rear panel also contributing to form a plurality of openings between the panels into the cavity to allow entrance of the tie into the cavity and its exit therefrom;
a protruding tab operably attached to said side panel, said protruding tab also defining in part the cavity encompassing the knot; and
fastening means securing said protruding tab to said back panel to secure and define the cavity encompassing the necktie knot whereby the decorative cover is secured about the necktie knot against inadvertent removal.

5,010,594
DAMPENING MASK FOR USE IN AIRCRAFT
Shigeaki Suzuki, Yokohama, and Hideo Inoue, Tokyo, both of Japan, assignors to Japan Air Lines Co., Ltd., Tokyo, Japan
Filed Jun. 27, 1989, Ser. No. 371,971
Int. Cl.[5] A62B *18/02*
U.S. Cl. 2—206 **8 Claims**



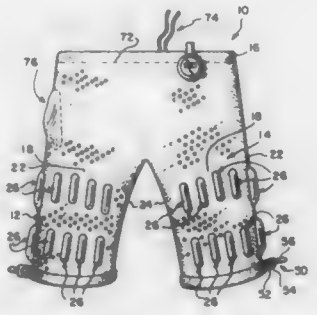
1. A dampening mask for dampening dry air of an environment to be respired by a wearer of the mask, said mask comprising:
a mask body of a size adapted to fit over at least the nose of a wearer and of a shape adapted to form a small space therein in front of the nose of a wearer that is separated by the mask body from the environment outside of the mask body; and
a ventilation-passage member extending through said mask body from a location in front of the nose of a wearer when the mask body is fitted thereover,
said ventilation-passage member comrpising a honeycomb structure of moisture absorbing material defining a plurality of tubular cavities through which air can pass between said space and the environment outside of the mask body when the mask body is fitted over at least the nose of the wearer, said moisture absorbing material being Japanese paper comprising bast fibers, and
said Japanese paper capable of absorbing moisture in dampened air passing through said cavities and capable of releasing moisture absorbed thereby to dry air passing through said cavities, whereby when the mask is worn in an envioronment of dry air, respiration through said ventilation-passage member causes moisture in air being exhaled to be absorbed by said Japanese paper and causes moisture absorbed by said Japanese paper to be released to air being inhaled.

5,010,595
SEPARABLE PANTS WITH INTEGRAL UNDERPANTS
Carolyn A. Stradley, P.O. Box 1155, Marietta, Ga. 30061
Filed Mar. 26, 1990, Ser. No. 498,770
Int. Cl.[5] A41D *1/06, 13/02*
U.S. Cl. 2—227 **13 Claims**



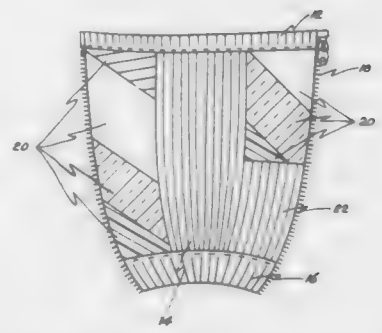
1. A woman's garment constructed of fabric comprising:
outer pants having front, side, and rear portions and a waist band with leg portions depending therefrom separate from one another to form a crotch portion in said outer pants;
an inner lining affixed to the interior of said outer pants about the waist band of said outer pants and conforming to the shape of the interior of said outer pants;
a releasable seam having opposed side edges within the fabric of said outer pants extending from immediately below the waist band at the rear portion of said outer pants and downwardly through the crotch portion and upwardly toward the front portion of said outer pants;
a seam having opposed side edges within the fabric of said inner lining;
the side edges of the seam of said inner lining being attached to the corresponding side edges of the releasable seam of said outer pants for creating a single releasable opening within said outer pants and said inner lining to expose the buttocks and crotch of the wearer; and
said releasable opening extending from immediately below said waistband at the rear portion of said outer pants downwardly through said crotch portion of said outer pants and upwardly toward the front portion of said outer pants immediately below said waistband.

5,010,596
CONFORMABLE WEIGHTED CONDITIONING GARMENT
Darryl L. Brown, 349 E. Piru St., Los Angeles, Calif. 90061, and Terence Kirkpatrick, 15910 N. Bend Ct., Houston, Tex. 77073
Filed Jun. 25, 1990, Ser. No. 542,820
Int. Cl.[5] A41D *1/08, 1/06;* **A63B** *21/00*
U.S. Cl. 2—228 **10 Claims**



1. A garment for physical conditioning comprising a pair of leg and thigh sections constructed of a flexible, stretchable material for encompassing and hugging the thighs of a wearer wherein each of said leg sections is formed with a plurality of pouches spaced laterally apart adjacent the thighs of a wearer and a plurality of weights disposed separately in at least some of said pouches and being immobilized therewithin.

5,010,597
GAITER FOR BICYCLING
Chris A. Glover, 4 Allison St., Concord, N.H. 03301
Filed Aug. 13, 1990, Ser. No. 566,569
Int. Cl.[5] A41B *11/00;* **A41D** *17/02*
U.S. Cl. 2—242 **10 Claims**



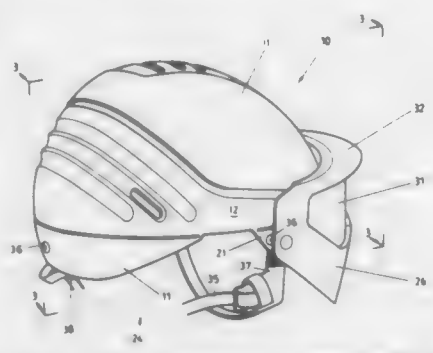
1. A gaiter for protecting slacks or trousers of a bicyclist from contacting the chain of the bicycle comprising:
a cuff panel of a stretchable material, having top and side edges, adapted to fit snugly around the ankle of the bicyclist to position the slacks or trousers comfortably close to the bicyclist ankle;
a protective panel having bottom and side edges with the bottom edge of said protective panel fastened to the top edge of said cuff panel, said protective panel being a stretchable material sized to substantially cover the inside lower leg of the wearer when tensioned around the lower leg of the bicyclist;
a support panel having top, bottom and side edges, sized to substantially cover the outside lower leg of the wearer with the top edge being greater than the bottom edge to correspond to the differences in the bicyclist's leg circumference from below the knee down to the ankle and sized to cause said protective panel to be tensioned around the bicyclist leg keeping said gaiter comfortably in place during the flexion of the bicyclist's lower leg, said support panel having side edges attached to the side edges of said protective panel;
fastener means, attached adjacent to a mid point between side edges of said cuff panel and the side edges of said protective panel, for releasable joining said gaiter to the lower leg of said bicyclist;
pocket panel, substantially rectangular in shape, attached to the lower portion of said support panel along three sides to form a pocket open at the top, adapted to hold the bicyclist's small items while bicycling

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5,010,598
SAFETY HELMET
David P. Flynn, and John E. Oretti, both of Blackburn, Australia, assignors to Britax Child-Care Products Pty. Ltd., Victoria, Australia
Filed Feb. 2, 1990, Ser. No. 473,904
Int. Cl.[5] A42B *1/06*
U.S. Cl. 2—410 **9 Claims**

1. A safety helmet comprising:
a main body of a shape to entirely overlie the head of a wearer,
an overbody,
means for securing the overbody to extend over a portion of the main body,
spacer ribs between the overbody and the main body separating said bodies and thereby maintaining an air space therebetween,

an inner body,
means for securing the inner body within the main body,
vent surfaces extending through both the inner body and the main body defining primary vents opening upwardly therefrom to said air space, and
further vent surfaces in the overbody defining secondary vents opening upwardly from the overbody,



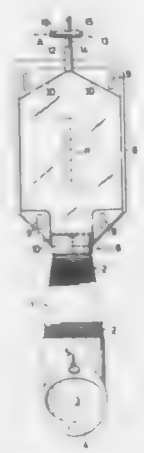
the configuration being such that air located within the inner body is heated by a wearer of the helmet and moves upwardly through the primary vents into said air space by convection, and air within said air space having a higher air temperature than environmental air temperature moves upwardly and outwardly therefrom through the secondary vents by convection.

5,010,5[illegible]

PORTABLE UNISEX URINAL

Leif Nilsson, Blåbärsvägen 1, S-260 40 Viken, Sweden

Filed Dec. 18, 1987, Ser. No. 134,942
Claims priority, application Sweden, Mar. 30, 1987, 8701299
Int. Cl.[5] A61G *9/00*
U.S. Cl. 4—144.2 **9 Claims**



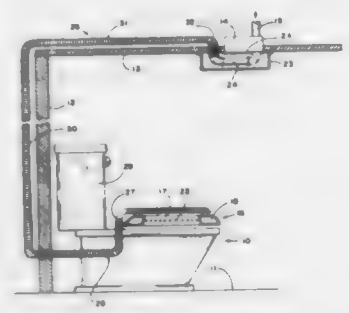
1. A disposable device for collecting and temporarily storing urine of an individual of either sex, said device comprising a combination of:
(a) a urine tube which has first and second openings, of which the first opening forms a urine inlet end of said tube and the second opening serves as a urine outlet, wherein the first opening is larger than the second opening, and wherein the tube has provided at a location along its length means which enable the tube to be bent plastically to a desired curved configuration;
(b) a urine collecting bag which is made of a flexible material and which has an inlet end and an openable outlet end, said bag having a bottom portion which converges in a direction towards the outlet opening;
(c) a valve means which includes a valve body which in longitudinal section is of U-shape, a proximal end which communicates with the urine tube, and a distal end which communicates with the urine collecting bag, wherein the distal end of the valve body is embraced by the upper open end of the bag to establish communication between the valve means and said bag, wherein the valve means together with the urine collecting bag form a unit, wherein the outer surface of the distal end of the valve body lies sealingly against the inner wall of the urine tube in the region of its second opening, wherein the distal end of the valve body is fitted with a liquid and vapor impermeable diaphragm which deflects downwardly under the influence of liquid pressure directed towards the bag to permit liquid to flow into the bag, wherein the distal end of the valve body has arranged therein a perforated bottom against the undersurface of which the diaphragm seats in normal use of the device, perforations in said bottom being conically tapered and the diaphragm being sufficiently resilient to return the diaphragm to position sealingly against said perforations after liquid passes to seal the valve body against back-flow of liquid, gas, odor, or bacteria and wherein seating of the diaphragm on said bottom is guided by a centrally located guide means that holds the center of the diaphragm substantially in the center of the perforations; and
(d) a lid to close the first closable opening of urine tube (a).

5,010,600

TOILET ODOR REMOVAL SYSTEM

Anthony Prisco, 3600 Redwood St., Las Vegas, Nev. 89103

Filed Feb. 16, 1990, Ser. No. 481,344
Int. Cl.[5] E03D *9/05*
U.S. Cl. 4—217 **2 Claims**



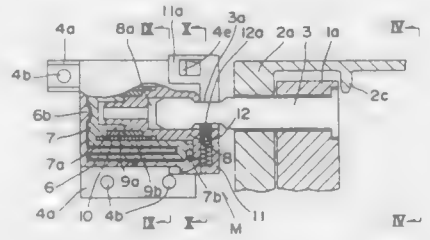
1. A kit for enhancing the withdrawal of noxious vapors from a bathroom having an existing exhaust fan contained in a housing vented to the atmosphere, the housing having a large air intake opening in the bathroom, the kit including:
(a) a generally annular toilet seat having a central opening and a peripheral conduit that extends internally around the seat and terminates at the rear end of the seat in an exhaust outlet;
and a plurality of laterally extending apertures that communicate the peripheral conduit with the central opening of the toilet seat;
(b) a cover assembly including means for reducing the area of the existing housing air intake opening to a restricted vapor intake aperture;
(c) an exhaust duct for connection at one of its ends to the toilet seat conduit exhaust outlet,
the exhaust duct being of sufficient length to extend from its connection to the toilet seat conduit exhaust outlet to the restricted vapor intake aperture in the cover assembly; and
(d) said cover assembly further including:
(i) a cover plate having a restricted vapor intake aperture therein,
the cover plate being adapted to be mounted over the air intake of the existing fan housing, and
(ii) a cover box that covers the cover plate and the end of the exhaust duct attached to the cover plate at the restricted vapor intake aperture;
whereby the exhaust fan can be operated to draw noxious vapors from the toilet seat through the exhaust duct and the restricted vapor intake aperture into the fan housing for discharge to the atmosphere.

5,010,601

MECHANISM FOR OPENING AND CLOSING TOILET SEAT AND COVER

Keiichi Kobayashi; Masazumi Moriwaki, both of Kitakyushu; Sigenari Kadomatsu, Yokohama; Yuji Fujie, Yokohama, and Masanobu Kawamoto, Yokohama, all of Japan, assignors to Toto Ltd., Fukuoka and Nifco Inc., Kanagawa, both of, Japan

Continuation-in-part of Ser. No. 300,470, Jan. 23, 1989, abandoned. This application Jul. 26, 1990, Ser. No. 560,267
Claims priority, application Japan, Jan. 26, 1988, 63-16149
Int. Cl.[5] A47K *13/12, 13/10*
U.S. Cl. 4—236 **23 Claims**



1. Apparatus for controlling pivotal movement of a pivotal member on a water closet comprising casing means mounted on said water closet, a rotor means rotatably mounted in said casing means, viscous material means interposed between said rotor means and said casing means providing relative rotational resistance between said rotor means and said casing means, a joint means coaxial with said rotor means, spring clutch means operably disposed between said rotor means and said joint means and operable to drive said rotor means in one direction when said joint means is rotated in one direction while permitting said joint means to rotate in an opposite direction without driving said rotor means in said opposite direction, shaft means connected to said pivotal member, said shaft means being coaxial with said joint means, and interplay means interposed between said shaft means and said joint means operable to permit said shaft means to rotate an angular amount in said one direction without driving said joint means and operable such that when said shaft means continues to rotate further beyond said angular amount in said one direction, said shaft means drives said joint means, whereby said pivot member attached to said shaft means is freely rotatable in said one direction said angular amount and thence further rotatable in said one direction to a closed position while being restrained by said viscous material means, said pivot member being rotatable in said opposite direction from said closed position to an open position without being restrained by said viscous material means.

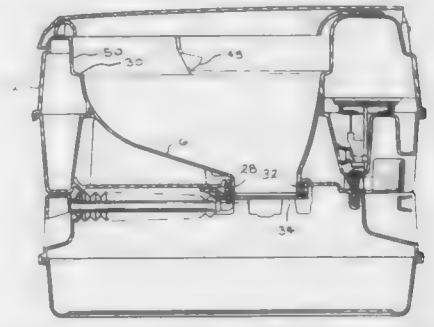
5,010,602

TOILET WITH PULSED FLOW OF FLUSH WATER

Charles L. Sargent; John M. Antos, and Scott I. Biba, all of Ann Arbor, Mich., assignors to Thetford Corporation, Ann Arbor, Mich.

Continuation of Ser. No. 471,710, Jan. 29, 1990, abandoned, which is a continuation of Ser. No. 309,776, Feb. 10, 1989, abandoned, which is a division of Ser. No. 114,081, Oct. 27, 1987, abandoned. This applicatiou Jul. 13, 1990, Ser. No. 553,353
Int. Cl.[5] E03D *11/00*
U.S. Cl. 4—432 **2 Claims**

2. In a toilet which includes a seat section having a bowl with a bottom discharge opening and a flush water discharge means for discharging flush water into said bowl for flushing waste in said bowl through said discharge opening, said bowl having a generally horizontal ledge at the upper end thereof, said discharge means being operable of discharge flush water in a generally horizontal direction onto said ledge so that it will travel around the periphery of said bowl on said ledge, and means for operating said discharge means intermittently so that



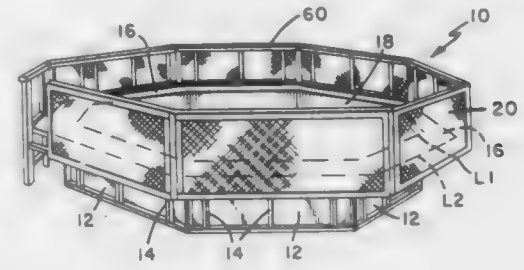
pulses of flush water can be discharged onto said ledge, said water in each pulse initially moving onto said ledge at a high velocity and as the water moving on the ledge loses it momentum, and as the velocity of the water decreases, the centrifugal force of the water that is holding it on the ledge decresed and the water gradually runs off said ledge around substantially the entire periphery of said bowl to uniformly wet said bowl.

5,010,603

MODULAR ABOVE GROUND SWIMMING POOL

Lewis R. Hertzog, 167 N. Bingaman St., Reading, Pa. 19606

Filed Jan. 11, 1990, Ser. No. 463,568
Int. Cl.[5] E04H *4/00;* **E02D** *00/00*
U.S. Cl. 4—506 **7 Claims**



1. An above ground swimming pool comprising a plurality of modular components each of which is prefabricated and ready for assembly in combination at the construction site each including:
(a) a modular wall panel formed integrally with a rearwardly extending flange
(i) at each of the sides of the panel for securing a contiguous panel through said flange to a contiguous panel to form a continuous swimming pool perimeter wall and
(ii) at the top and at the bottom of each modular panel, said top flange and bottom flange being provided further with a brace-end confining lip or second flange extending from the end of each of said top and bottom flange and toward the opposite flange and in a direction substantially parellel to the said panel wall;
(b) a unitary modular brace for supporting each of a swimming pool wall, a deck at the top of said wall at the periphery of the swimming pool and a protective fence positioned above the swimming pool wall and comprised of four linear pieces of cut standard construction lumber and locked in a modular configuration and including
(i) a first vertical piece whose top and bottom ends are inserted, respectively, in the said top and bottom wall

panel flanges to brace the swimming pool wall panel at the backside of the panel,

(ii) a deck supporting piece secured to and near the top of said first vertical piece and extending horizotally rearwardly from said first vertical piece and secured at its opposite end to

(iii) a second vertical piece which extends upward from a horizontal deck supporting piece, said horizontal piece being located at a point below the top of said first vertical piece a distance substantially equal to the width of said standard lumber and such that a deck receiving recess is provided on the horizontal piece between said first and second vertical pieces, and

(iv) a diagonal piece to secured at its lower end on the lower part of said first vertical piece and at its upper end at the juncture of the said horizontal deck supporting piece and the lower end of said second vertical piece;

(c) a preformed modular deck complimentally configured to and received in said recess between said first and second vertical pieces and resting on said horizontal piece, and

(d) a screen or fence secured on said second vertical piece and providing an enclosure at the top of and surrounding the the swimming pool wall.

5,010,604

AUTOMATIC HAIR AND SCALP TREATMENT APPARATUS FOR CONTACTING THE SCALP BEHIND THE EARS

Archie M. Miller, Brentwood, Tenn., assignor to IHT, Inc., North Nashville, Tenn.

Filed Apr. 5, 1990, Ser. No. 504,846
Int. Cl.[5] A45D *19/10*
U.S. Cl. 4—519 **3 Claims**



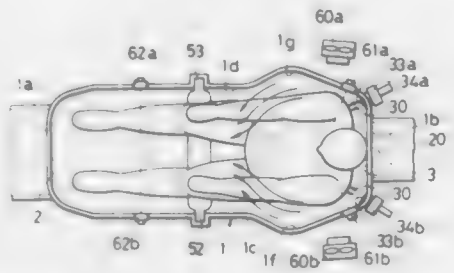
1. In the apparatus for use in applying hair and scalp treating solutions to the human head, which includes a bowl, a closure therefor adapted to enclose the head with the face outside the closure and the back of the neck on the bowl front, an arcuate header including upper and lower spray manifolds adapted to oscillate in an arc from a point opposite the forehead to a point opposite the neck, means imparting partial rotation to the arcuate header to effect said oscillatory movement, a plurality of nozzles disposed on each manifold to dispense adjacent pressurized sprays of treating solutions, means enabling spray from the manifolds to contact an area behind one's ears wherein at least one nozzle is disposed on each manifold opposite an ear so that spray therefrom reaches the ear, wherein the said at least one nozzle on the lower manifold is so disposed that it is inclined away from the upper manifold at an angle of inclination with respect to the plane in which the lower arcuate manifold lies, wherein the said at least one nozzle on the upper manifold is so disposed that it is inclined away from the lower manifold at an angle of inclination with respect to the plane in which the upper arcuate manifold lies, wherein the nozzles on each manifold are adapted to dispense fan sprays in a plane perpendicular to the plane through that manifold, and wherein the axis of the circle which the oscillatory arc would inscribe is offset from the ear, being positioned below the ear toward the top of the head so that the curve inscribed around the ear by spray from the inclined nozzles is the involute of a circle such that spray from the inclined nozzles contacs the scalp behind the ears.

5,010,605

BODY MASSAGING APPARATUS OF WATER CURRENT TYPE

Toshio Shiina, Kawasaki; Keiko Miyamoto, Yokohama; Kouji Izumi, Yokohama; Yasuro Hayashi, Yokohama; Yonenobu Karasawa, Numazu; Satoru Uematsu, Numazu, and Naoki Sei, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 10, 1989, Ser. No. 335,734
Claims priority, application Japan, Apr. 13, 1988, 63-90814; Apr. 13, 1988, 63-90815; Jan. 24, 1989, 1-14800
Int. Cl.[5] A61H *33/02*
U.S. Cl. 4—542 **12 Claims**



8. Apparatus comprising:

an elongated tub having a water inlet and a water outlet, said tub containing water in which a patient's body can be immersed with the long axis of the body extending generally along the length of the tub and with the patient's head adjacent the water inlet and the patient's feet adjacent the water outlet;

a circulating conduit extending outside the tub and connecting the inlet and outlet to circulate water from the outlet into the inlet;

main flow means for selectively introducing into said tub, through said water inlet, a substantially uniform water flow which substantially surrounds the patient while flowing through the tub and generates vortices at least at the abdominal area of the patient and exits the tub through said water outlet;

jet flow means for selectively introducing into said tub at least one pulsed flow of water impinging on at least one selected area of the patient's body; and

control means controlling the main flow means and the jet flow means to turn on and turn off said uniform water flow and said pulsed flow at selected times to subject the patient to the pulsed flow during one time interval and to at least the uniform flow during another time interval.

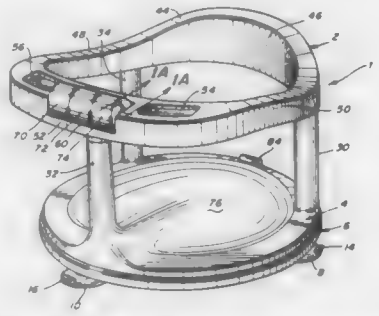
5,010,606

BATH SEAT

Michael S. Bernstein, Natick, Mass.; David W. Crossley, Woonsocket, R.I., and Michael I. Lerner, Brookline, Mass., assignors to Safety 1st, Inc., Chestnut Hill, Mass.

Filed Feb. 27, 1990, Ser. No. 485,619
Int. Cl.[5] A47K *3/024*
U.S. Cl. 4—572 **23 Claims**

1. A bath seat comprising a base, intermediate and top portions, said intermediate portion being substantially planar and disposed proximate and superimposed over said base, said top portion including a generally circular enclosed frame having backrest, side arm and front sections, cooperating means between said base portion and intermediate portion to secure said intermediate and said base portions together and enabling rotational motion therebetween, a seat integrally formed in said intermediate portion and substantially in the plane with said cooperating means, and support means for supporting said top portion in a spaced-apart relationship with said intermediate portion, said support means including apertures that allow



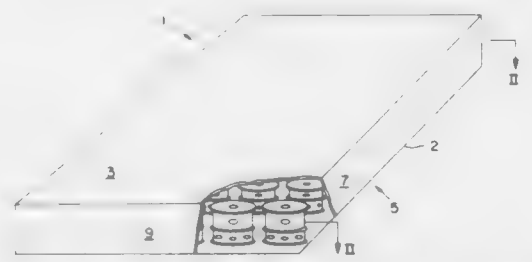
legs of a person using the seat to extend outwardly beyond an outer edge of the intermediate portion.

5,010,607

DAMPING CHAMBER FOR WATERBED MATTRESS

Robert A. Sobie, #410-31 Reliance Court, New Westminster, B.C., Canada V3H 6C6

Filed Jan. 25, 1990, Ser. No. 470,901
Claims priority, application Canada, Jan. 2, 1990, 2006972
Int. Cl.[5] A47C *27/08*
U.S. Cl. 5—450 **8 Claims**



1. A damping baffle for a waterbed mattress wherein said mattress comprises a top wall, bottom wall and side walls connecting said top and bottom walls and thereby forming a liquid-retaining envelope, said baffle having an interior and an exterior and comprising:

(a) a first chamber having a vertical side wall, said side wall having a lower edge and an upper edge, a top panel fixed to said upper edge of said side wall and a bottom panel fixed to said lower edge of said side wall, said side wall, top panel and bottom panel thereby separating the interior of said chamber from the exterior of said chamber;

(b) a second chamber connected to said bottom panel off said first chamber, said second chamber having a vertical side wall having a lower edge and an upper edge, said upper edge of said side wall being fixed to said bottom panel of said first chamber and said lower edge of said side wall being fixed to said bottom wall of said waterbed mattress; and

(c) flotation means adjacent said top panel of said first chamber;

wherein said top panel and said side wall of said first chamber are each provided with at least one aperture to permit the flow of liquid between the interior of said first chamber and the exterior of said baffle, said bottom panel of said first chamber is provided with at least one aperture to permit the flow of liquid between the interior of said second chamber and the interior of said first chamber, and said side wall of second chamber is provided with at least one aperture to permit the flow of liquid between the interior of said second chamber and the exterior of said baffle; and

wherein the area of said aperture or apertures in said side wall of said second chamber is greater than the area of said apertures or apertures in said side wall of said first chamber;

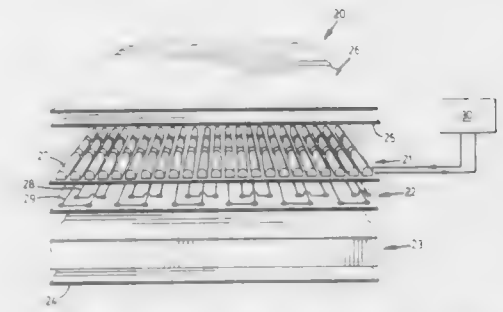
and wherein the combined height of said side wall of said first chamber and said side wall of said second chamber is less than the height of said side wall of said waterbed mattress, the height of said side wall of said first chamber being more than twice as great as the height of said side wall of said second chamber, and the volume of said first chamber being more than twice as great as the volume of said second chamber, and wherein said apertures are so configured that said second chamber collapses prior to said first chamber when said top wall of said waterbed mattress is forced downwardly against said top panel of said first chamber.

5,010,608

SUPPORT SYSTEM FOR REDUCING FORMATION OF DECUBITUS ULCERS

Richard I. Barnett, Bath, and William C. Knapp, Kingston, both of Canada, assignors to Du Pont Canada Inc., Mississauga and Queen's University at Kingston, Kingston, both of, Canada

Filed Oct. 11, 1989, Ser. No. 419,891
Int. Cl.[5] A47C *27/08*
U.S. Cl. 5—453 **36 Claims**



1. A support system comprising: a plurality of separate cells of selected size of shape in a monolayer, said cells being formed from flexible material; said material being sufficiently impermeable to a fluid contained in said cells so that each cell may be alternately (with respect to the adjacent cell) and repeatedly inflated and deflated; said cells being of such size and shape and having such intercellular spacing so that, in at least one of the width and length of said support system, the distance between centres of adjacent inflated cells (including the distance across a deflated cell) is less than approximately 25 millimeters; and said support system is capable of supporting a human body without bottoming out either of or between said inflated cells.

5,010,609

ANATOMICALLY CONFORMABLE FOAM SUPPORT PAD

David L. Farley, 18672 Evergreen Ave., Yorba Linda, Calif. 92686

Continuation of Ser. No. 176,925, Apr. 4, 1988, Pat. No. 4,879,776. This application Sep. 22, 1989, Ser. No. 411,051
The portion of the term of this patent subsequent to Nov. 14, 2006, has been disclaimed.
Int. Cl.[5] A47C *27/14*
U.S. Cl. 5—464 **20 Claims**

1. A convoluted foam pad for supporting a human body, comprising:

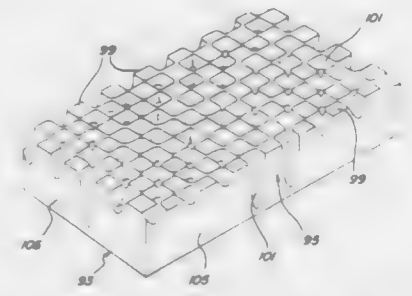
a bottom;

a shoulder support area for supporting the shoulder portion of a body formed by peaks arranged in rows, wherein each peak has a substantially flat top and is spaced from any adjacent peak in the same row by a valley;

a tail support area for supporting the tail portion of said body formed by peaks arranged in rows, wherein each peak has

a substantially flat top and is spaced from any adjacent peak in the same row by a valley; and

a general support area surrounding said shoulder support area and said tail support area formed by peaks arranged in rows, wherein each peak has a substantially flat top and is spaced from any adjacent peak in the same row by a valley, said valleys of said shoulder support area, said



valleys of said tail support area and said valleys of said general support area each having an average valley thickness, wherein each of said peaks has a substantially uniform peak thickness and wherein said average valley thickness of said valleys in said shoulder support area and said average valley thickness of said valleys in said tail support area are less than said average valley thickness of said valleys in said general support area.

5,010,610

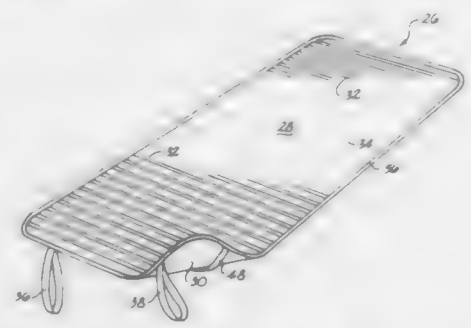
MULTILAYER SUPPLEMENTAL SUPPORT PAD

Robert E. Ackley, Greenville, S.C., assignor to Span-America Medical Systems, Inc., Greenville, S.C.

Filed Jan. 10, 1990, Ser. No. 463,338

Int. Cl.[5] A47G *9/06, 9/00;* **A47C** *27/14*

U.S. Cl. 5—481 **19 Claims**



1. A portable support pad, comprising:

an integral foam member comprising a generally rectangular shaped planar layer generally of a predetermined, constant thickness in a range from about one-fourth of an inch to about one inch thick;

fabric coverings received on both sides of said foam member layer and received about the edges of said layer so that said foam member is fully encased;

generally straight-line stitching through said pad at spaced intervals therealong so as to secure said fabric coverings to said foam member, said spaced intervals being generally no greater than about two and one-half inches, and said spaced stitching extending laterally relative said generally rectangular shaped foam member layer so that said pad may be rolled up in a longitudinal direction perpendicular to the direction of said stitching; and

elastic strap means comprising at least one integral loop secured at one end of said pad and functional when said pad is rolled up for surrounding said pad and elastically maintaining same in such rolled up condition.

5,010,611

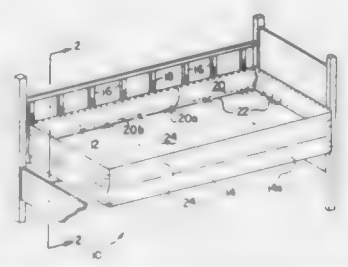
FITTED SAFETY CRIB SHEET WITH INTEGRAL BUMPER LINER

Sarah Mallett, Box 571, Jackson, N.H. 03846

Continuation of Ser. No. 362,609, Jun. 7, 1989, abandoned. This application Jun. 27, 1990, Ser. No. 547,385

Int. Cl.[5] A47G *9/04;* **A47C** *27/08*

U.S. Cl. 5—497 **5 Claims**



1. A fitted sheet for a mattress for a crib with vertical rails, the mattress having a top plane surface and vertical sides, said sheet comprising

a peripheral edge coinciding with the vertical sides of the mattress, and, integral with said sheet,

a crib bumper liner with a top edge and a bottom edge, said bottom edge fixedly and permanently joined for its entire length to said peripheral edge of said sheet along an upper edge of the mattress in a manner to prevent a child from extending a limb between said bumper liner and said sheet, and

means for securing the top edge of said bumper liner to the vertical rails of the crib,

said integral sheet and crib bumper liner formed of a limp fabric material and adapted to be removed from a crib mattress for laundering.

5,010,612

METHOD FOR CONTINUOUS DYEING OF TUBULAR COTTON KNIT FABRICS

Aage Jensen, Vanlose; Jeppe Stingsen, and Jakob Landberg, both of Frederiksberg, all of Denmark, assignors to Vald. Henriksen A/S, Soborg, Denmark

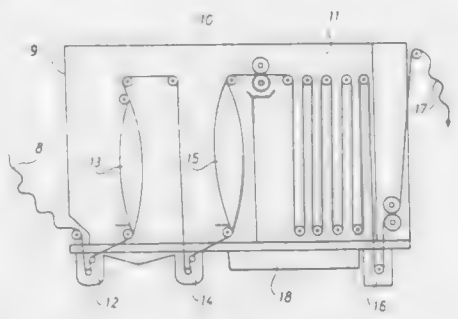
PCT No. PCT/DK88/00085, § 371 Date Nov. 21, 1989, § 102(e) Date Nov. 21, 1989, PCT Pub. No. WO88/09410, PCT Pub. Date Dec. 1, 1988

PCT Filed May 27, 1988, Ser. No. 438,413

Claims priority, application Denmark, May 29, 1987, 2780/87

Int. Cl.[5] D06B *3/12*

U.S. Cl. 8—149.1 **4 Claims**



1. A method for continuous dyeing of tubular cotton knit fabrics with reactive dyes, in which method the fabric passes sequentially through the padding phase, optionally a swelling phase, a leveling phase conducted in a steamer, a fixation phase conducted in said steamer, and a washing out, and in which the tubular fabric is ballooned at least once in the leveling phase, characterized in that before each ballooning in the leveling phase the length of fabric is passed through a bath of a neutral, inert salt and after each ballooning in the leveling phase is squeezed to approximately the same moisture content as at the inlet to the salt bath, the squeezed off liquid being recirculated to the salt bath.

5,010,613

METHOD FOR TREATING A WEB OF MATERIAL IN A JIG

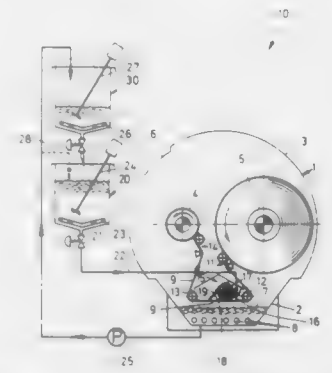
Manfred Driesen, and Dieter Itgenshorst, both of Krefeld, Fed. Rep. of Germany, assignors to Eduard Küsters Maschinenfabrik GmbH & Co KG, Krefeld, Fed. Rep. of Germany

Division of Ser. No. 326,462, Mar. 20, 1989, which is a continuation of Ser. No. 158,335, Feb. 22, 1988, abandoned. This application Dec. 4, 1989, Ser. No. 432,074

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1987, 3705390

Int. Cl.[5] D06B *1/04*

U.S. Cl. 8—151 **4 Claims**



1. A method of treating a web of material in a jig having first and second housing portions with the second housing portion containing a bath comprising the steps of:

(a) mounting a web of material to be treated on two mutually parallel winding rollers disposed in the first housing portion;

(b) conducting the web of material along a path disposed in the first housing portion;

(c) filling a reservoir tank with the total quantity of treatment liquor necessary for at least one treatment pass of the web;

(d) supplying an applicator system with the quantity of treatment liquor contained in the reservoir tank;

(e) uniformly applying a proportioned quantity of treatment liquor to the web of material from the applicator system as the web passes along a portion of the path disposed above the level of the bath in the second housing portion; and

(f) maintaining the quantity of treatment liquor contained in the reservoir tank separate from the bath for at least one treatment pass of the web.

5,010,614

ARTICULATED BRIDGE GANGWAY BETWEEN RAILROAD CARS

Peter Braemert, Wolfenbuttel, and Ingo Britzke, Kassel, both of Fed. Rep. of Germany, assignors to Hubner Gummi - und Kunststoff GmbH, Kassel, Fed. Rep. of Germany

Filed Aug. 28, 1989, Ser. No. 399,767

Int. Cl.[5] E01D *1/00*

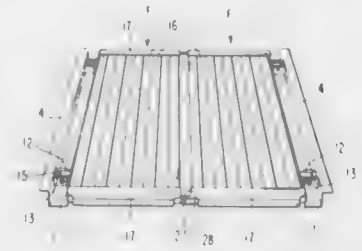
U.S. Cl. 14—71.1 **12 Claims**

1. An articulated bridge component for use in cooperation with another similar bridge component to span the space between two interconnected railway cars, comprising:

two laterally-spaced-apart side rails extending from one end of a railway car in the longitudinal direction of the car,

a floor plate including a frame having two side walls, and a plurality of bridge elements extending between the frame side walls and transverse to the longitudinal direction of said car;

means associated with the end of the floor plate remote from said car for interconnecting the floor plate with a similar floor plate extending from a second car coupled to said car,



a carriage slidable along the side rails in a direction toward and away from said car, and

means for interconnecting the carriage with the end of the floor plate nearest said car, so that the carriage and floor plate are movable together toward and away from said car in order to compensate for relative motion between two coupled cars in the longitudinal direction of the cars.

5,010,615

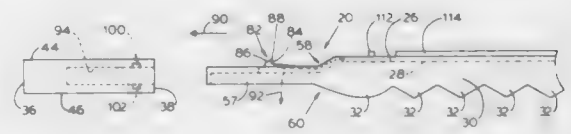
HAND-HOLDABLE TOOL HAVING A DETACHABLE HANDLE

Patricia Carter, 726 Kimberly Ct., Radcliff, Ky. 40160

Filed Jul. 28, 1989, Ser. No. 386,434

Int. Cl.[5] A47L *13/17, 17/08;* **B25G** *3/18*

U.S. Cl. 15—104.94 **13 Claims**



1. A hand-holdable tool comprising:

(A) a handle unit which includes a body having a rear end, a front end, sides, a top surface, and a bottom surface;

(B) a head unit which includes a body element having a forward end, an aft end, sides and an upper surface and a lower surface; and

(C) a locking and release mechanism detachably connecting said handle unit to said head unit and which includes

(1) a neck portion on the front end of said handle unit body,

(2) a cutout defined in said handle unit body and extending into said body neck portion and being defined by said body to have a rear end, a front end and sides, said cutout front end being located in said neck portion and said cutout rear end being located in said body, said neck portion having a top surface which is spaced from said body top surface, said neck portion having a curved shoulder portion connecting said neck portion top surface to said body top surface;

(3) a flexible arm connected at a rear end thereof to said body at said cutout rear end and extending into said cutout and into said neck portion and having a forward end thereof located adjacent to said cutout front end, said flexible arm having a top surface which is located adjacent to said body top surface, said flexible arm top surface being flush with said body top surface and with said neck portion top surface and with said curved shoulder for essentially the entire length of said flexible arm from the flexible arm rear end to the flexible arm forward end,

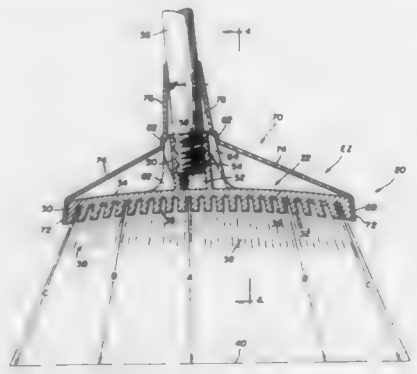
(4) a tooth on said flexible arm and located adjacent to said flexible arm forward end, said tooth including
(a) a shoulder which extends upwardly from said flexible arm top surface, and
(b) a ramp which intersects said tooth shoulder at a location spaced above said flexible arm top surface to form an apex, and which slopes downwardly from said apex toward said flexible arm forward end,
(5) said flexible arm being spaced from said cutout front end and sides and being movable with respect to said body toward said neck body bottom surface and being connected to said body to be biased into a position to locate said tooth apex above said neck portion top surface, said arm being movable against said bias to locate said tooth apex beneath said neck portion top surface,
(6) a neck portion receiving channel defined interiorly of said head unit body element to extend from said body element aft end towards said body element forward end and being sized to accommodate said body neck portion, and
(7) lock receiving means defined in said head unit body element and located adjacent to said channel and including a recess defined in said body element and opening into said channel, said body element having a ledge defining one side of said recess with said ledge being located to abut said tooth shoulder when said neck portion is fully inserted into said channel with said apex positioned above said neck portion top surface to lock said head unit to said handle unit.

5,010,616

SLANTED HANDLE BROOM

Enzo Berti, Mirano, Italy, assignor to The Libman Company, Arcola, Ill.

Filed Nov. 27, 1989, Ser. No. 441,478
Int. Cl.[5] A46B *9/02*
U.S. Cl. 15—159 R **22 Claims**



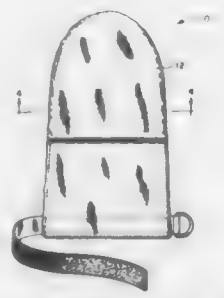
1. A broom comprising:
an elongated block with opposing side walls and end walls, a top and, when viewed in side elevation, having a concavely curved bottom;
the block bottom having a plurality of spaced apart holes extending into the block from the block bottom;
a plurality of tufts of broom fibers, with each tuft comprising a plurality of fibers having essentially the same length, with each tuft having an upper end and a lower end and with the tufts taken as a group having fibers of essentially the same length;
the holes in the block bottom having about the same depth; each hole containing the upper end of a tuft of broom fibers embedded therein whereby a fanning effect results in which the fibers fan out from the block bottom to the lower end of the tuft;
each of the holes in the block concavely curved bottom having a direction such that the respective tufts embedded in the holes extend downwardly from the block concavely curved bottom for a substantially uniform length and the concavity of the block bottom compensates for the fanning effect of the tufts so that the lower ends of the tufts terminate in a horizontal plane and provide a straight sweeping surface, without a need to cut the lower ends of the tufts after they are embedded in the holes; and
the lower end of a broom handle being connected to the block.

5,010,617

POLISHING MITTEN

Walter Nelson, 1936 Park St., Hartford, Conn. 06106

Filed Feb. 13, 1989, Ser. No. 309,438
Int. Cl.[5] A47L *23/10*
U.S. Cl. 15—227 **18 Claims**



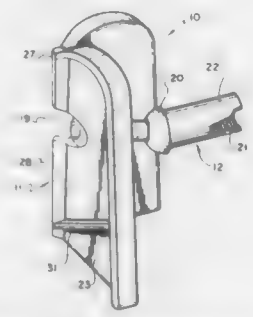
1. A polishing mitten apparataus for polishing a shoe or other associated object which comprises:
a first web shaped fabric member having a portion thereof dimensioned and configured with an outline that is substantially the same as the palm and extended fingers of the intended user, said first web shaped fabric member including a layer of absorbent non-woven fabric;
a second web shaped fabric member having a portion thereof which is substantially the same size and shape as the first web shaped fabric member and further including an extension dimensioned and configured for extending over the wrist of the user; and a strap member fixed to said extenison dimensioned and configured for encircling the wrist of the user.

5,010,618

CORNER FINISHING TOOL

Eugene B. Croft, P.O. Box 663, Thayne, Wyo. 83127

Filed Jun. 15, 1990, Ser. No. 538,424
Int. Cl.[5] B05C *17/10;* **B29C** *23/00*
U.S. Cl. 15—235.7 **5 Claims**



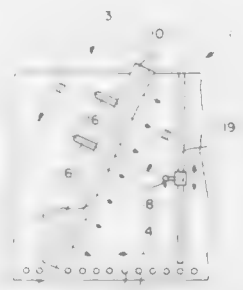
1. A corner finishing tool comprising a head including a pair of interconnecting wings extending from a junction at a selected angle from one another; a socket for a ball formed in the junction of the wings at rear faces of the wings; a ridge projecting from the intersection of the wings at face surfaces of the wings and having a leading edge and a rear end; a flange arranged around the outermost peripheral edges of the wings and connecting to a rear end of the ridge; and a mud dam projecting from a front face of each wing to the outermost surface of said ridge and extending rearwardly and outwardly of said ridge into engagement with said wing flange, with the outermost edge of said flange projecting from each wing face surface beyond the outermost edge of each said dam.

5,010,619

NOZZLE FOR DRYING SHEET GLASS

Peter Lisec, Bahnhofstrasse 34, A-3363 Amstetten-Hausmening, Austria

Filed Mar. 20, 1990, Ser. No. 496,952
Claims priority, application Austria, Apr. 11, 1989, 853/89
Int. Cl.[5] A47L *5/38, 15/00*
U.S. Cl. 15—307 **12 Claims**



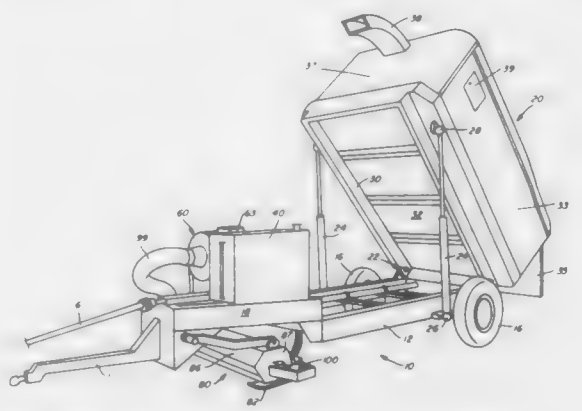
1. In a sheet glass washing machine (1) having conveying means (5) for conveying glass sheets successively through a washing zone (2) and a drying zone (3) and having in said drying zone a nozzle (10) having air outlet opening means (11) that extend upwardly in a direction away from said conveying means (5); the improvement comprising at least one shutoff element (12) for selectively shutting off a region of said opening means (11) located farthest from said conveying means (5), and means (16) for moving said at least one shutoff element (12) between positions in which it opens and closes said region.

5,010,620

STALL AND PASTURE VACUUM MACHINE

Ronald E. Young, Rte. 1, Box 1340 OSR, Bryan, Tex. 77803

Filed May 22, 1989, Ser. No. 355,482
Int. Cl.[5] B60P *1/34*
U.S. Cl. 15—347 **6 Claims**



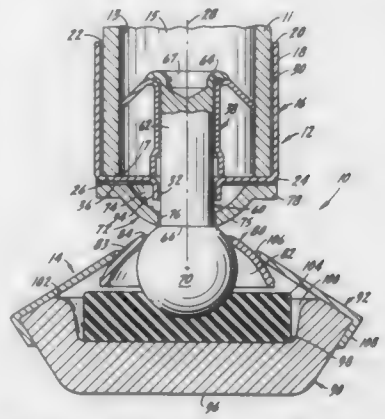
1. A stall and pasture vacuum machine comprising:
a trailer frame supported by an axle and wheels;
an extension at the one end of said frame;
centrifugal blower means mounted on said extension, said blower means having a vertical outlet;
drive train means mounted on said extension and connected to a pulley drive, said pulley drive rotating said blower means;
a mucking device supported by and below said extension, said mucking device having a pair of skids adapted to be pulled along the ground;
receptacle means pivoted at the other end of said frame, said receptacle means having inlet means connectable to said vertical outlet of said blower means; and
flexible hose means connected to said mucking device whereby said blower means will suck manure on the ground into said receptacle means.

5,010,621

GLIDE ASSEMBLY WITH INSIDE HOLDING CLIP

Robert E. Bock, Woodbury, Conn., assignor to Illinois Tool Works, Inc., Glenview, Ill.

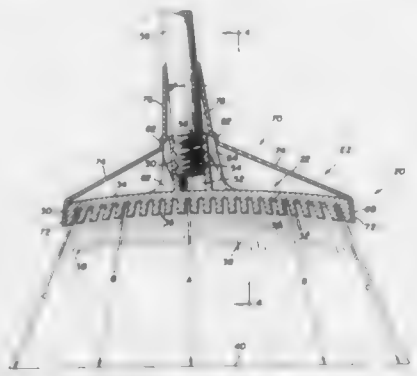
Filed Nov. 16, 1989, Ser. No. 437,388
Int. Cl.[5] B60B *33/00*
U.S. Cl. 16—39 **10 Claims**



1. An inner gripping glide assembly for mounting upon a tubular member, wherein said tubular member has an inner surface and an outer surface, comprising:
an upper sub-assembly, for mounting said glide assembly upon said tubular member, comprising a substantially cup-shaped housing having an upstanding peripheral wall for engaging said outer surface of said tubular member, and an end wall for engaging a lower open end of said tubular member, an aperture being defined within said end wall of said housing; and a tubular clip comprising a body having a longitudinal axis, a first lower end of said body being engaged with said end wall of said housing, and a plurality of resiliently flexible gripping prongs extending downwardly from a second upper end of said tubular clip body at a predetermined acute angle with respect to said longitudinal axis of said tubular clip body and integrally formed therewith as a single piece for resiliently and flexibly engaging said inner surface of said tubular member so as to retain said upper sub-assembly, and said glide assembly, upon said tubular member, said tubular clip body and said prongs having the same relatively small thickness dimension such that said prongs are resiliently flexible and wherein the outer diametrical extent of said tubular clip body is only slightly greater than the inner diametrical extent thereof whereby the outer peripheral surface of said tubular clip body is remotely spaced from said inner surface of said tubular member so as to permit said prongs to undergo substantial flexure toward and away from said tubular clip body in order to accommodatingly engage said inner surface of a particular one of a plurality of tubular members having different internal diametrical dimensions;
a lower sub-assembly having a floor-engaging base of said glide assembly mounted thereon; and
means, engaged at one end thereof with said lower sub-assembly, and projecting upwardly through said aperture, defined within said end wall of said housing of said upper sub-assembly, and said tubular clip body such that a sec-

(4) a tooth on said flexible arm and located adjacent to said flexible arm forward end, said tooth including
(a) a shoulder which extends upwardly from said flexible arm top surface, and
(b) a ramp which intersects said tooth shoulder at a location spaced above said flexible arm top surface to form an apex, and which slopes downwardly from said apex toward said flexible arm forward end,
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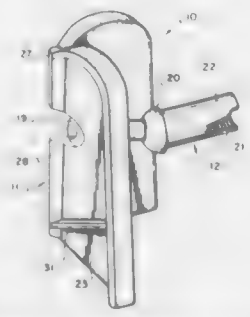
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Int. Cl.[5] A47L *23/10*
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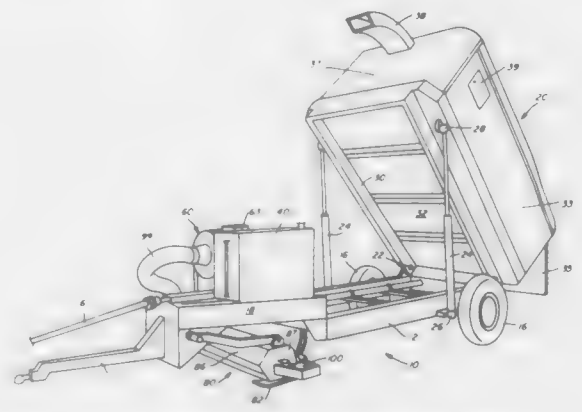
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Peter Lisec, Bahnhofstrasse 34, A-3363 Amstetten-Hausmening, Austria
Filed Mar. 20, 1990, Ser. No. 496,952
Claims priority, application Austria, Apr. 11, 1989, 853/89
Int. Cl.[5] A47L *5/38, 15/00*
U.S. Cl. 15—307 **12 Claims**



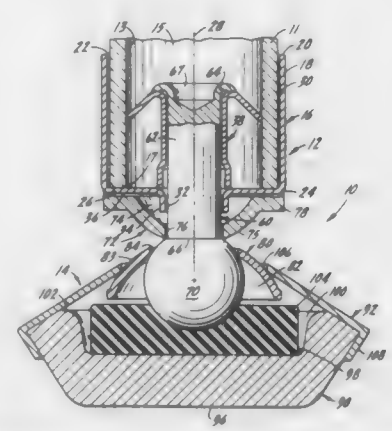
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5,010,620
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Ronald E. Young, Rte. 1, Box 1340 OSR, Bryan, Tex. 77803
Filed May 22, 1989, Ser. No. 355,482
Int. Cl.[5] B60P *1/34*
U.S. Cl. 15—347 **6 Claims**



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an extension at the one end of said frame;
centrifugal blower means mounted on said extension, said blower means having a vertical outlet;
drive train means mounted on said extension and connected to a pulley drive, said pulley drive rotating said blower means;
a mucking device supported by and below said extension, said mucking device having a pair of skids adapted to be pulled along the ground;
receptacle means pivoted at the other end of said frame, said receptacle means having inlet means connectable to said vertical outlet of said blower means; and
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GLIDE ASSEMBLY WITH INSIDE HOLDING CLIP
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Int. Cl.[5] B60B *33/00*
U.S. Cl. 16—39 **10 Claims**



1. An inner gripping glide assembly for mounting upon a tubular member, wherein said tubular member has an inner surface and an outer surface, comprising:
an upper sub-assembly, for mounting said glide assembly upon said tubular member, comprising a substantially cup-shaped housing having an upstanding peripheral wall for engaging said outer surface of said tubular member, and an end wall for engaging a lower open end of said tubular member, an aperture being defined within said end wall of said housing; and a tubular clip comprising a body having a longitudinal axis, a first lower end of said body being engaged with said end wall of said housing, and a plurality of resiliently flexible gripping prongs extending downwardly from a second upper end of said tubular clip body at a predetermined acute angle with respect to said longitudinal axis of said tubular clip body and integrally formed therewith as a single piece for resiliently and flexibly engaging said inner surface of said tubular member so as to retain said upper sub-assembly, and said glide assembly, upon said tubular member, said tubular clip body and said prongs having the same relatively small thickness dimension such that said prongs are resiliently flexible and wherein the outer diametrical extent of said tubular clip body is only slightly greater than the inner diametrical extent thereof whereby the outer peripheral surface of said tubular clip body is remotely spaced from said inner surface of said tubular member so as to permit said prongs to undergo substantial flexure toward and away from said tubular clip body in order to accommodatingly engage said inner surface of a particular one of a plurality of tubular members having different internal diametrical dimensions;
a lower sub-assembly having a floor-engaging base of said glide assembly mounted thereon; and
means, engaged at one end thereof with said lower sub-assembly, and projecting upwardly through said aperture, defined within said end wall of said housing of said upper sub-assembly, and said tubular clip body such that a sec-

ond end thereof engages said second upper end of said tubular clip body, for coupling said lower sub-assembly to said upper sub-assembly.

5,010,622

DOOR STOPPER

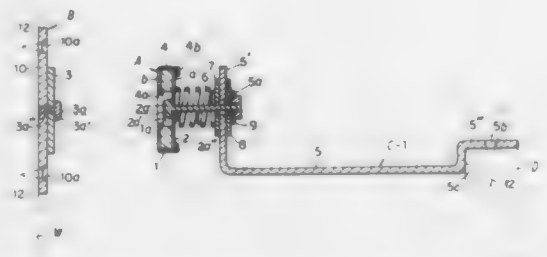
Tamao Morita, 47-1 Arakawa 6-chome Arakawa-ku, Tokyo, Japan

Continuation of Ser. No. 295,677, Jan. 11, 1989, abandoned. This application Jun. 26, 1990, Ser. No. 544,098

Claims priority, application Japan, Apr. 28, 1988, 63-103834; Apr. 28, 1988, 63-103835; Apr. 28, 1988, 63-103836; Apr. 28, 1988, 63-103837

Int. Cl.[5] E05C *17/56*

U.S. Cl. 16—85 11 Claims



1. An apparatus for stopping and holding a door open, comprising:

(a) a first ferromagnetic plate means comprising:

a first ferromagnetic plate having a hole in its center; and

a first ferromagnetic projection being positioned through said hole;

(b) a magnetic holding means comprising:

a disk-like permanent magnet having a hole through its center;

a second disc-like ferromagnetic plate having a hole being positioned against a first pole of said permanent magnet;

means for fixedly holding said permanent magnet against said second ferromagnetic plate; and

a second ferromagnetic projection being positioned through said holes of said magnetic holding means;

(c) a first mounting mans for mounting one of said first plate means and said magnetic holding means on one of said door and a co-operating fixed surface;

(d) a second mounting means for mounting the other of said first plate means and said magnetic holding means on the other of said door and said fixed surface; and

(e) a biasing means for biasing one of said magnetic holding means and said first plate on said second mounting means away from the respective door and cooperating fixed surface,

whereby when said door is moved to its open position, a second pole of said permanent magnet being positioned and aligned with said first plate means to complete a magnetic circuit to hold said door open and said first projection engaging said second projection within said hole of said permanent magnet to enhance said magnetic circuit.

5,010,623

TEXTILE FIBRE MIXING APPARATUS

Pietro B. Marzoli, and Emilio Vezzoli, both of Via Durante, 1, Palazzolo sull'Oglio (BS), Italy

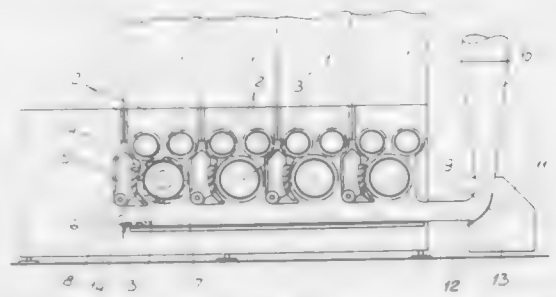
Filed Nov. 8, 1989, Ser. No. 433,512

Claims priority, application Italy, Jun. 1, 1989, 20727/89[U]

Int. Cl.[5] D01G *13/00*

U.S. Cl. 19—145.5 1 Claim

1. A mixing apparatus for mixing textile fibres, in particular cotton staple fibres, comprising a plurality of adjoining vertical cells supplied with a fibre material to be processed, two counter-rotating horizontal parallel rollers arranged at bottom portions of said cells, a staple opening cylinder arranged under said rollers, a vertical grid adjoining said cylinder and communicating with a not spinnable material collecting chamber, said collecting chamber including a rotary worm screw for removing not spinnable waste material, said cells opening, at said bottom portion thereof, on a horizontal rectangular cross-section channel for conveying textile material to be processed to a further processing machine and being provided with means for removing settled particles from said channel, said channel



being closed at one end thereof by a closing grid, said channel extending at an opposite end thereof with an upward curved portion and a fibre material suction duct for conveying said material to said further processing machine, said upward curved portion of said channel being defined by a comb member correspondingly curved and operating as a gate member, said comb member having teeth spaced with a pitch from 2 to 10 mm and being pivoted, against a coil spring, on a horizontal axis so as to communicate said curved portion with a static negative pressure chamber, said channel further comprising, near said closing grid, an air blowing device which is so controlled as to increase a suction air flow rate.

5,010,624

SPINNING MACHINE HAVING SEVERAL SPINNING POINTS

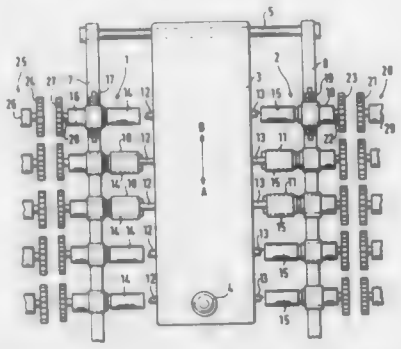
Fritz Stahlecker, Bad Überkingen, Fed. Rep. of Germany, assignor to Hans Stahlecker, Fed. Rep. of Germany, a part interest

Filed Dec. 6, 1989, Ser. No. 446,694

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1988, 3841544

Int. Cl.[5] D01H *5/74*

U.S. Cl. 19—261 18 Claims



1. A drafting arrangement for a spinning machine having several spinning points, at least one drafting unit being assigned to each of these spinning points and each drafting unit containing several top rollers and several drivable bottom rollers, and at least the bottom rollers assigned to a feeding side for fiber material being driven by a common drive shaft extending in a longitudinal direction of the machine by means of transmission devices containing a shiftable coupling for selectively engaging and disengaging a driving connection between the common drive shaft and respective ones of said bottom rollers, wherein at least the bottom rollers assigned to the feeding side are arranged adjustably for accommodating the adjusting of their position with respect to the respective rollers which follow while maintaining a driving connection between the common drive shaft and the respective ones of said bottom rollers.

5,010,625

SCREW-ON BUTTON

Richard A. Joyer, P.O. Box 778, Pearsall, Tex. 78061

Filed Jun. 2, 1989, Ser. No. 360,472

Int. Cl.[5] A44B *1/18*

U.S. Cl. 24—90 R 3 Claims



1. An assembly for fastening a button head onto a fabric, comprising:

a head;

a post connected to said head, said post having a first portion and a second portion;

said first portion detachably connected to said second portion with a circumferential notch formed therebetween, said second portion being a means for penetration through said fabric, said circumferential notch being a means for breaking the connection between said first portion and said second portion; and

a disc family engageable with said first portion of said post after detachment of said second portion such that said head is rigidly fixed onto said fabric.

5,010,626

HOSE CLAMP WITH FLANGED CAPTIVE TENSIONING NUT AND PIVOTED BRIDGING ELEMENT

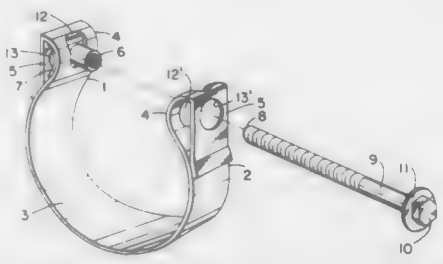
Ramon P. Dominguez, Barcelona, Spain, assignor to Mikalor, S.A., Barcelona, Spain

Filed Oct. 25, 1989, Ser. No. 426,440

Claims priority, application Spain, Nov. 3, 1988, 8803895; Feb. 10, 1989, 8900808

Int. Cl.[5] F16L *33/04*

U.S. Cl. 24—279 6 Claims



1. A hose clamp comprising a metal strap having first and second closed loops, each said first and second closed loops having a pair of inner and outer aligned slots, said first closed loop having a curved section joined by a substantially straight section in a sharply defined joining angle, an end portion of said straight section being bonded to said strap to form said first closed loop, a captive nut frictionally mounted within said first loop, said captive nut comprising a cylindrical tubular barrel with internal threads and a continuous circumference, an elongated semicylindrical curved flange extending from an end portion of said tubular barrel, the curvature of said flange corresponding to the curvature of said curved section within said first loop, said tubular barrel extending through said inner slot with said attached flange abutting the internal curvature of said first loop, and tensioning means comprising a threaded bolt passing through the aligned openings of said second loop and threaded into said tubular barrel whereby threading said bolt in mid tubular barrel causes said tubular barrel to pull said flange and abutting curved section of said first loop toward said second loop to tighten the clamp.

5,010,627

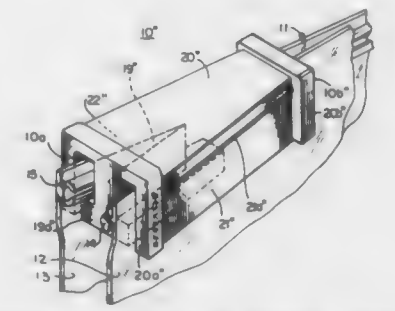
FOLDABLE PLASTIC SLIDER AND METHOD OF ASSEMBLY WITH A PLASTIC RECLOSABLE FASTENER

Fox J. Herrington, Holcomb, and Alex Goncarovs, Canandaigua, both of N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Mar. 7, 1990, Ser. No. 490,108

Int. Cl.[5] A44B *19/00*

U.S. Cl. 24—400 11 Claims



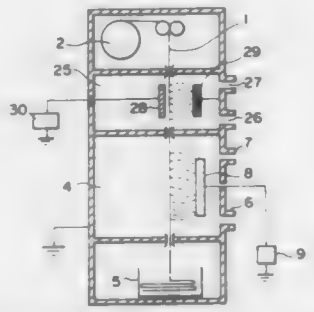
1. A foldable plastic slider for straddling relation with a profiled plastic reclosable fastener particularly suited for thermoplastic bags and the like formed by a pair of flexible plastic sheets having a top edge with separable fastener means extending along the length thereof comprising reclosable interlocking rib and groove profile elements on the respective sheets, the straddling slider for closing or opening the reclosable fastener elements comprising a separator finger and interlocking complementary structure formed from plastic for moving along the fastener, the complementary structure comprising a transverse support member having the wedged-shaped separator finger depending therefrom, said support member having depending structure located on opposite sides of said separator finger, a pair of side walls connected to said support member at locations adjacent said depending structure and at least one of said side walls being foldable relative to said depending structure, and means for interlocking said depending structure with said side walls to interlock said side walls with said support member, said side walls extending from an opening end of the slider to the closing end, the side walls being spaced wider apart at the opening end to permit separation of the rib and groove elements by the separator finger extending between the side walls at the opening end, the side walls being spaced sufficiently close together at the closing end to press the rib and groove elements into interlocking relationship as the slider is moved in a fastener closing direction, at least one of said separator finger and said side walls having shoulder structure on the bottom thereof for cooperating with the bottom of the fastener to prevent the slider from being lifted off the top edge of the fastener while the slider straddles the fastener.

5,010,628

COUPLING ELEMENT ROW FOR SLIDE FASTENER AND SURFACE TREATING METHOD FOR THE SAME

Hiroshi Yamagata, Tateyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Apr. 9, 1990, Ser. No. 506,247
Claims priority, application Japan, Apr. 7, 1989, 1-86848
Int. Cl.[5] A44B *19/02*
U.S. Cl. 24—405 5 Claims



1. A surface treating method for a coupling element row for a slide fastener comprising the steps of:

etching the surface of a continuous coupling element row made of a synthetic resin, and

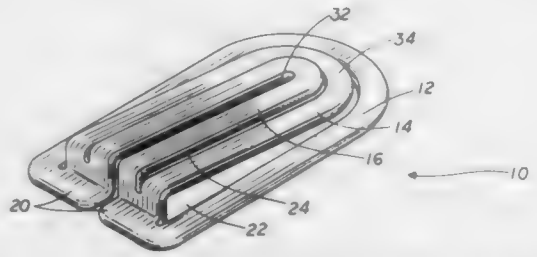
depositing fine metal particles individually on the etched surface of said continuous coupling element row by sputtering while feeding said coupling element row so as not to distort the pitch thereof.

5,010,629

PAPER CLIP WITH VERTICAL PANEL

Suzy C. Hirzel, 933 Shellwood Way, Sacramento, Calif. 95831

Filed Dec. 27, 1989, Ser. No. 457,948
Int. Cl.[5] B42F *1/02*
U.S. Cl. 24—67.9 5 Claims



1. An Improved Clip with a Neck comprising: Upper, middle and lower horizontal panels having front, side and back, with a generally vertical neck having bottom and top surface, said bottom surface is connected to said lower panel, said top surface is connected to said middle panel, said lower panel is larger than said middle panel, and said middle panel is larger than the upper panel, the front tip of said upper and middle panels are tapered for easy insertion of objects, said lower panel back is connected to horizontal base, said base is adapted to be pushed down by finger(s) to steady said clip while said panels are opened for loading of objects, said lower and middle panels having a vertical gap therebetween, said gap is greater at the back of he panel area than the front panel area when said panels are not in use, said upper panel and middle panel are in the same plane, said lower and middle panel accomodate thicker object therebetween than between said middle and upper panels, said lower panel is generally in a straight line, said clip is made of one piece, said clip is longer in length form front to back than from side to side,

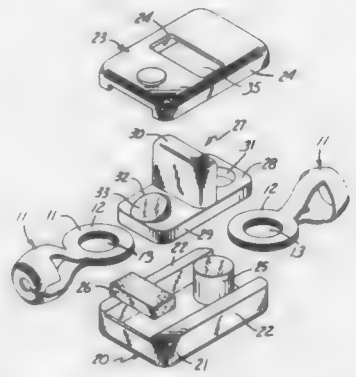
Wherein said upper panel, neck, and base having a single slot for flexibility and minimumizing the total weight of the clip.

5,010,630

CLASP MECHANISM

Steven E. Mickelson, 1509 W. Seventh St., Red Wing, Minn. 55066

Filed Dec. 15, 1989, Ser. No. 451,043
Int. Cl.[5] A44C *5/00*
U.S. Cl. 24—647 4 Claims



1. A clasp for releasably securing opposed first and second ends of a strand, wherein said clasp is adapted to be secured to said first end of said strand and to releasably engage said second end of said strand, said clasp comprising:

(a) A casing having top and bottom portions defining a first and second end, each of said first and second ends having an opening defined therein;

(b) A post positioned within said casing connecting said top and bottom portions adjacent said opening in said first end of said casing;

(c) A first end engaging element adapted to engage said first end of said strand, said first end engaging element being secured to said post;

(d) A latch member mounted within said casing to said post, said latch member having an upwardly projecting lug located adjacent said opening in said second end of said casing, said latch member being operable between a first, engaged position and a second, disengaged position;

(e) Springs means for biasing said latch member in said first, engaged position;

(f) A second end engaging element adapted to be secured to said second end of said strand, said second end engaging element being insertable through said opening in said second end of said casing for engagement with said lug of said latch member; and

(g) Means for deflecting said latch member from said first, engaged position to said second, disengaged position.

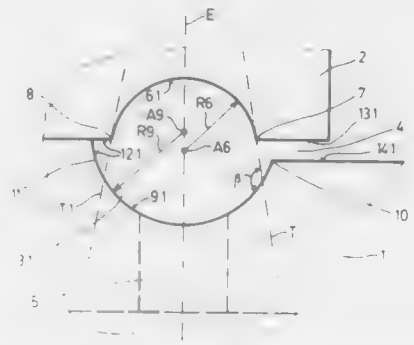
5,010,631

AIR NOZZLE FOR THE INTERLACING OF MULTIFILAMENT YARNS

Helmut Ritter, Wattwil, Switzerland, assignor to Helmrlein Maschinenfabrik AG, Wattwil, Switzerland

Filed Feb. 6, 1990, Ser. No. 475,835
Claims priority, application Switzerland, Feb. 15, 1989, 530/89
Int. Cl.[5] D02J *1/08*
U.S. Cl. 28—274 9 Claims

1. An air nozzle for the interlacing of multifilament yarns, with a continuous yarn channel (3.1; 3.3) into which terminate laterally at least one air feed bore (5) and a threading slot (4), characterized in that the wall of the yarn channel (3.1; 3.3) comprises two wall sections of arcuate concave cross section, namely a baffle wall section (6.1; 6.3) lying in opposition to the orifice of the air feed bore (5) and a nozzle wall section (9.1; 9.3) proximate to the orifice of the air feed bore (5), the threading slot (4) terminating into the yarn channel (3.1; 3.3) between the baffle wall section and the nozzle wall section; and that the tangential plane (T) on the baffle wall section (6.1; 6.3) containing an orifice rim (7) of the threading slot (4) lying in the baffle



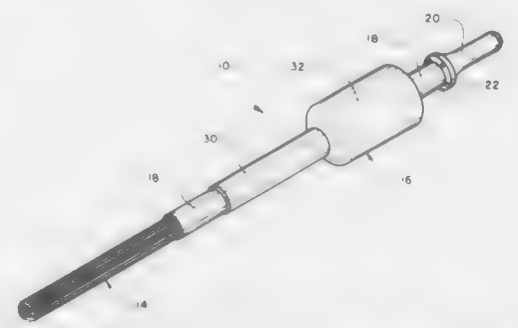
wall section (6.1; 6.3) passes through the nozzle wall section (9.1; 9.3).

5,010,632

DESCALING DEVICE

Thomas A. Gardner, 22397 Park Edge Cir., Fairview Park, Ohio 44126

Filed Apr. 2, 1990, Ser. No. 503,459
Int. Cl.[5] B21C *43/04*
U.S. Cl. 29—81.14 10 Claims



1. A device for removing foreign material from surfaces, such as metal, wood, stone, or the like, comprising:

an elongates shank aligned along a central axis having a first end and a second end;

a plurality of elongated descaling members assembled side-by-side in a closely packed bundle;

means for securing said descaling members to said first end of said shank, wherein said descaling members extend longitudinally therefrom along said axis and are movable therewith;

means for attaching said second end of said shank to reciprocating means; and

sleeve means having a bore extending therethrough, said bore dimensioned to slidably receive said shank and said descaling member therein, said sleeve means being movable along said shank to vary the portion of said descaling members confined therein.

5,010,633

CONTROLLED DEFLECTION ROLL WITH HEAT BARRIER

Dale A. Brown, Milton, and Arnold J. Roerig, Beloit, both of Wis., assignors to Beloit Corporation, Beloit, Wis.

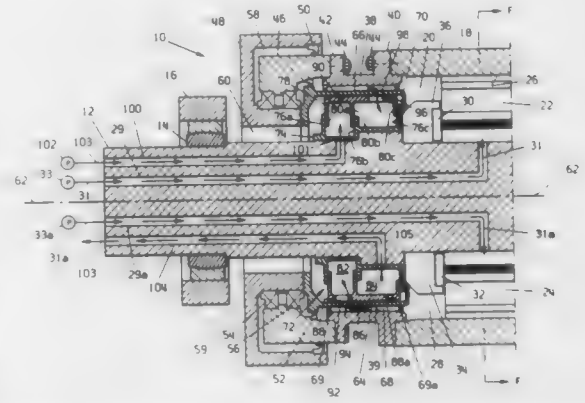
Filed Jun. 21, 1990, Ser. No. 541,578
Int. Cl.[5] B21B *29/00*
U.S. Cl. 29—113.2 21 Claims

1. In a controlled deflection roll for moving into, and out of, nipping engagement with a mating roll, and having a non-rotatable center shaft, a hollow, cylindrical roll shell having a longitudinal axis of rotation and disposed about the center shaft to define an interior cavity of the roll therewith, bearings near either end of the center shaft and disposed about the center shaft, support means to support the roll shell against the center shaft to position the roll shell into, and out of, nipping engagement with the mating roll, or to adjust the nip line of contact therebetween, or both, the combination comprising:

bearing means near either end of the roll shell;

the bearings rotatably locating the bearing means co-axially relative to the roll shell, or an annular, co-axial spacer extension thereof;

means for maintaining bearing lubricant in the bearing means for lubricating the bearings;



means for supplying hydraulic fluid for actuating the support means and lubricating the interface between the roll shell and support means in the interior cavity; and

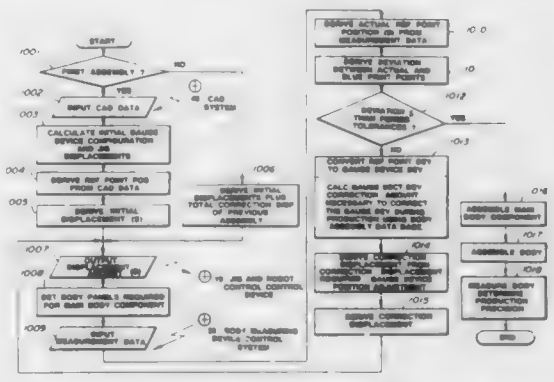
barrier means disposed between the roll shaft and the roll shell, or an annular, co-axial spacer extension thereof, near at least one end of the roll, the barrier means comprising a radially extensible chamber means for receiving a cooling liquid, said barrier means comprising a liquid barrier and a heat shield between the hydraulic fluid in the interior cavity and the bearing on the corresponding end of the roll.

5,010,634

VEHICLE ASSEMBLY METHOD AND APPARATUS

Satoshi Uemura, Tokyo; Susumu Kawada, Kumakura; Yoshitada Sekine, Yokohama, and Tatsuo Miyauchi, Utsunomiya, all of Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Dec. 9, 1988, Ser. No. 282,189
Claims priority, application Japan, Dec. 10, 1987, 62-313024
Int. Cl.[5] B23P *21/00*
U.S. Cl. 29—407 4 Claims



1. An assembly arrangement wherein a plurality of work pieces are to be connected with a given degree of precision to a structure, comprising:

means for determining a position in which each of said plurality of work pieces should be connected relative to

said structure using pre-recorded data which relates to the design of said structure;

work support means for supporting and moving each of said plurality of work pieces into its determined position relative to said structure;

means for determining a correct position for each of a plurality of reference points defined on each of said plurality of work pieces using said pre-recorded structure design data;

structure measuring means for determining an actual position for each among said plurality of reference points;

means for determining the deviation between the actual position and the correct position for each of said reference points while each of said work pieces are supported in situ;

a memory bank, said memory bank containing said pre-recorded data and an inference means, wherein said inference means is used in combination with said pre-recorded data to determine correction values for correcting any deviations which are in excess of predetermined tolerances in a manner which reduces or eliminates the deviations; and

means for fixing said work pieces to said body when the deviations between the correct and actual reference points are within said predetermined tolerances.

2. In a method of assembling a structure wherein a plurality of work pieces are connected with a given degree of precision, to a structure the steps of;

determining a position in which said plurality of work pieces should be disposed relative to a body forming part of said structure using pre-recorded data which related to the design of said structure;

using work support means to support and move said plurality of work pieces into the determined positions relative to said body;

determining a correct position for each of a plurality of reference points defined on each of said plurality of work pieces, using said pre-recorded data;

determining an actual position for each of said plurality of reference points using structure measuring means;

determining the deviation between each of the actual positions and the correct positions of each of said reference points after each of said work pieces have been moved into said determined position;

using a memory bank which contains said pre-recorded moved into said determined positions;

using a memory bank which contains said pre-recorded data and an inference means wherein said inference means is used in combination with the pre-recorded data to determine correction values for correcting any deviations which are in excess of predetermined tolerances in a manner which reduces or eliminates the differences; and

fixing said work pieces to said body when the deviations between the correct and actual reference points are within said predetermined tolerances.

5,010,635

SUCKER ROD COUPLING BREAKING TOOL

Paul H. Clark, Box 69308, Odessa, Tex. 79769-9308

Filed Jul. 5, 1988, Ser. No. 215,064

Int. Cl.[5] B23P *19/04*

U.S. Cl. 29—426.5 **10 Claims**

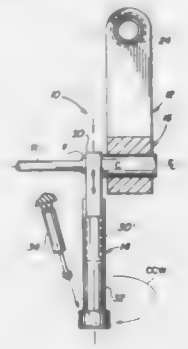
1. Method of loosening a rod coupling that is threadedly attached to an end of a joint of sucker rod having wrench flats thereon, said rod coupling has a smooth outer surface and an axial centerline; comprising the steps of:

surrounding the coupling with a radially active coupling engaging means; providing said radially active coupling engaging means with three longitudinally extending clamp members that have a circumferentially extending interior that jointly extend 360 degrees about the axial centerline of the coupling; and,

pivotally attaching a pair of clamp arms to opposed ends of a link and pivotally attaching one said clamp member to the link, another clamp member to one arm, and the other clamp member to the other arm;

and moving the arms towards one another with a scissor-like action to grasp the coupling between the clamp members with great force;

extending an open-ended wrench into engagement with the wrench flat of the joint of sucker rod, and then radially moving the coupling engaging means into engagement



with the outer surface of the coupling with a force that is of a magnitude required to break the threaded connection between the rod and coupling when the rod is rotated respective to the coupling;

rotating the open-ended wrench respective to the coupling engaging means until the threaded connection is broken and then rotating the coupling respective to the rod to remove the coupling from the end of the rod.

5,010,636

METHOD FOR PRECONDITIONING BELTS ON BELT DRIVES

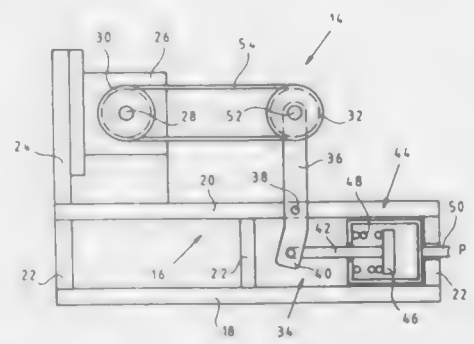
Erich Hall, Wettstetten, and Helmut Schorwerth, Ingolstadt, both of Fed. Rep. of Germany, assignors to Audi AG, Ingolstadt, Fed. Rep. of Germany

Filed Jun. 23, 1989, Ser. No. 370,838

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1988, 3821369

Int. Cl.[5] B23P *11/02*

U.S. Cl. 29—446 **10 Claims**



1. A method of providing a belt on a belt drive comprising the steps of driving the belt on a preconditioning device at a predetermined tension level and for a predetermined period of time prior to installing the belt on the belt drive, and installing the belt on the belt drive immediately after removal from the preconditioning device.

5,010,637

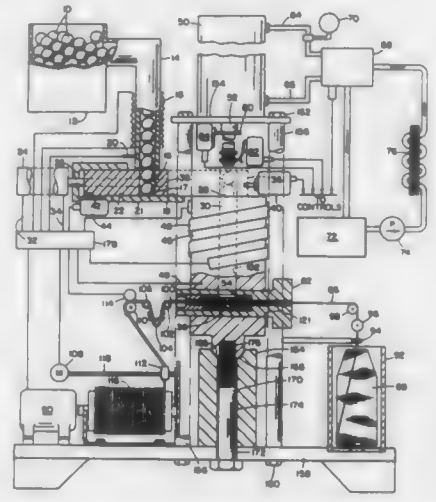
METHOD AND APPARATUS FOR COATING A CORE MATERIAL WITH METAL

Richard J. Blanyer, P.O. Box 18394, Austin, Tex. 78760, and Charles L. Mathews, P.O. Box 6290, Austin, Tex. 78762

Continuation of Ser. No. 14,250, Feb. 12, 1987, abandoned, which is a division of Ser. No. 763,851, Aug. 12, 1985, Pat. No. 4,658,623, which is a continuation-in-part of Ser. No. 643,676, Aug. 22, 1984, abandoned. This application Nov. 10, 1988, Ser. No. 255,973

Int. Cl.[5] B21D *39/00*

U.S. Cl. 29—505 **2 Claims**



1. A method for coating elongated core material with metal, comprising the steps of:

feeding an elongated core material into an extrusion die;

providing a compression chamber having an inside wall and a piston within said compression chamber, said piston having an opening therethrough which is completely surrounded by said piston;

feeding a metal into said compression chamber;

moving said piston within said compression chamber thereby creating an extrusion pressure and compressing said metal from the compression chamber into the extrusion die;

directing a portion of the metal in the compression chamber through the opening in said piston and into an annular region formed by the piston and the inside wall of the compression chamber with a pressure less than the extrusion pressure, thereby sealing the piston along the inside wall of the compression chamber and substantially preventing leakage of said metal past the piston during compression of the metal; and

applying a uniform coating of the metal in the extrusion die to the core material as the core material is fed through the die.

5,010,638

METHOD FOR THE ASSEMBLY OF SMALL ELECTRICAL MACHINES

Antonello Lanfranco, Turin, Italy, assignor to Aspera S.r.l., Turin, Italy

PCT No. PCT/EP88/00165, § 371 Date Oct. 2, 1989, § 102(e) Date Oct. 2, 1989, PCT Pub. No. WO88/07781, PCT Pub. Date Oct. 6, 1988

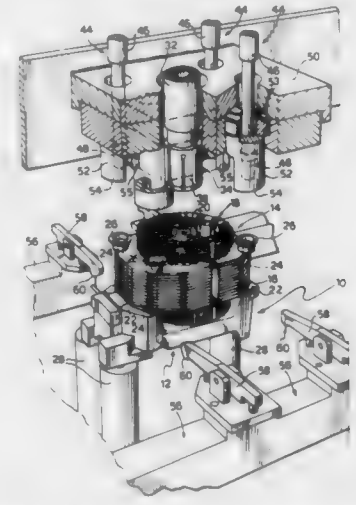
PCT Filed Mar. 4, 1988, Ser. No. 411,533

Claims priority, application Italy, Apr. 1, 1987, 67257 A/87

Int. Cl.[5] H02K *15/02*

U.S. Cl. 29—596 **5 Claims**

1. A method for assembling a stator (**14**) comprised of a stack of core laminations (**16**) and windings (**18**) therefor on to a respective head support (**12**) of a small rotary electrical machine in a position concentric with a rotary shaft (**20**) mounted in the support (**12**), in which the periphery of one end face of the stack (**16**) of laminations rests on peripheral coplanar surfaces (**22**) of the support (**12**) which define a reference plane (P), a centering device (**34**) is interposed between the shaft (**20**) and the stack (**16**), and the stack and the support are held together by means of peripheral bolts (**24**) inserted in regions corresponding with the coplanar surfaces (**22**) of the support (**12**), perpendicular to these surfaces, and are screwed into the support, characterised in that before the bolts (**24**) are tightened, the stack (**16**) is clamped between the coplanar surfaces (**22**) on one side and thrust members (**52**) on the other side, said thrust members (**52**) being applied to the other end face of the stack (**16**) in regions also corresponding with the regions of insertion of the bolts (**24**), with clamping forces normal to the reference plane (P) and at least substantially equal to those predetermined tightening forces to be applied by the bolts on the stack, the bolts (**24**) are then tightened to apply said predetermined tightening forces on the stack and the clamping forces applied by the thrust members (**52**) are then released.



5,010,639

TRANSFER TOOL AND COVER-STRIP MAGAZINE FOR DRAWING COILS INTO STATORS OF ELECTRIC MOTORS

Franz Veser, Kanalstrasse 16, 7980 Ravensburg, Fed. Rep. of Germany

Filed Apr. 14, 1989, Ser. No. 337,946

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1988, 3812726

Int. Cl.[5] H02K *15/06*

U.S. Cl. 29—734 **17 Claims**

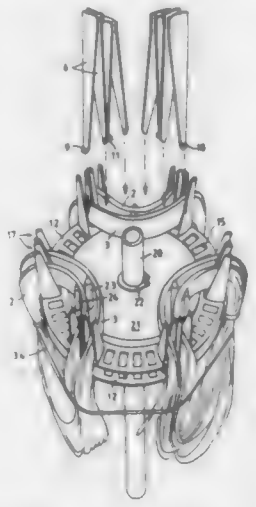
1. A transfer tool for transporting coils from a place of manufacture to a stator having a number of longitudinal grooves, divided into divisions, through which the coils are to be drawn, said transfer tool having a winding axis and comprising:

a carrier arrangement having means for receiving a tubular stem therethrough, said tubular stem receiving means being concentric with the winding axis, and a plurality of identically shaped receiving locations angularly disposed about its periphery;

transfer means for receiving coils in a flat shape with at least the sides of the coils being parallel to the winding axis, and

fastening means for releasably fastening said transfer means to receiving locations of the carrier arrangement wherein said fastened transfer means extend in the same axial direc-

tion as the tubular stem received in the receiving means, and the number and angular spacings of the receiving



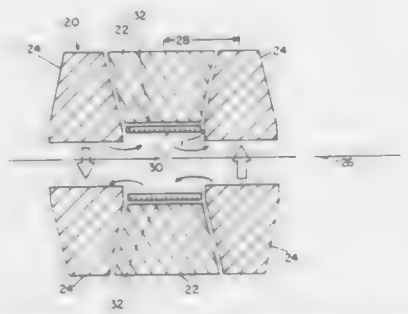
locations correspond to the number of grooves and groove divisions of the stator.

5,010,640

METHOD FOR IMPROVING A WIGGLER

Stephen C. Gottschalk, Woodinville, Wash., assignor to Amoco Corporation, Chicatgo, Ill.

Filed Jul. 21, 1989, Ser. No. 383,743
Int. Cl.[5] H01F *7/06*
U.S. Cl. 29—602.1 5 Claims



1. A method for producing an N-pole wiggler by modifying an existing N-pole wiggler, the modified N-pole wiggler having a desired longitudinal magnetic field, comprising the steps of:

(a) measuring the individual effect on the magnetic field of the existing N-pole wiggler of adding an individual shim of known thickness to a first of the N pole pieces of the existing N-pole wiggler;

(b) measuring the individual effects on the magnetic field of the existing N-pole wiggler of separately adding individual shims of known thickness to each of the remaining N pole pieces of the existing N-pole wiggler;

(c) computing the effect on the magnetic field of the existing N-pole wiggler of modifying the existing N-pole wiggler by simultaneously adding all of the shims to the corresponding N pole pieces of the wiggler;

(d) adjusting the thicknesses of the individual shims to minimize the difference between the magnetic field of the desired wiggler and the actual magnetic field of the modified wiggler; and

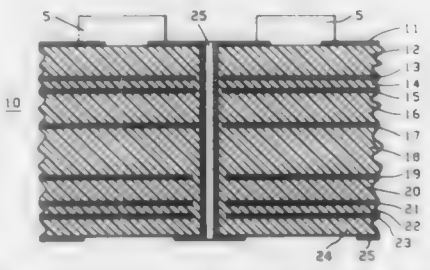
(e) adding shims having the desired thickness to the existing wiggler.

5,010,641

METHOD OF MAKING MULTILAYER PRINTED CIRCUIT BOARD

John R. Sisler, Scott's Valley, Calif., assignor to Unisys Corp. (Formerly Burroughs Corp.), Detroit, Mich.

Filed Jun. 30, 1989, Ser. No. 374,118
Int. Cl.[5] H05K *3/36*
U.S. Cl. 29—830 10 Claims



1. A method of making a multilayer printed circuit board comprised of interleaved contiguous conductive and insulative dielectric layers, said method comprising:

providing a power-ground plane sandwich component comprised of a curable dielectric layer contiguously sandwiched between a conductive power plane layer and a conductive ground plane layer;

fully curing the dielectric layer of said sandwich component;

providing a single-trace component comprised of a circuit trace formed on a partially cured dielectric layer; assembling said components such that one side of said sandwich component is adjacent to and contiguous with the dielectric layer of said single-trace component; and

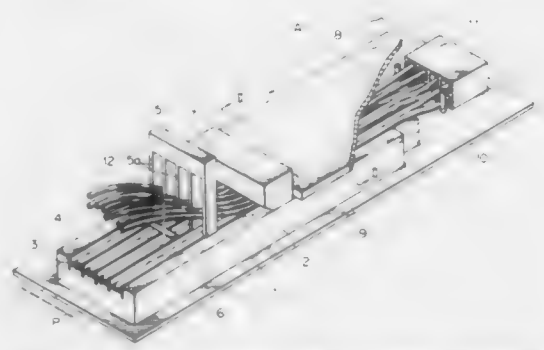
laminating said components to form said board, the dielectric layer of said single-trace component becoming fully cured by said laminating.

5,010,642

METHOD AND APPARATUS FOR MAKING A FLAT WIRING HARNESS

Mineo Takahashi; Susumu Nakayama; Osamu Yamashima; Satoshi Suzuki; Toshihiko Harada, and Keiji Aiso, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Dec. 15, 1989, Ser. No. 450,968
Claims priority, application Japan, Dec. 27, 1988, 63-327959
Int. Cl.[5] H01R *43/00;* B23P *19/00*
U.S. Cl. 29—868 11 Claims



1. A method of making a flat wiring harness comprising the steps of:

unraveling intertwined wires by parallel arranged comb teeth;

pushing at least one smoothed-out wire into each straight wire accommodating groove in a grooved jig; and

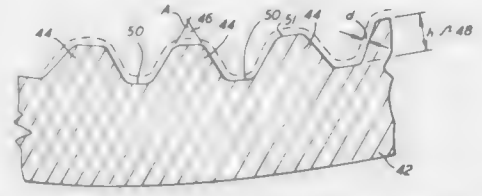
putting a cover on the grooved jig to maintain the laid wires in position.

5,010,643

HIGH PERFORMANCE HEAT TRANSFER TUBE FOR HEAT EXCHANGER

Steven R. Zohler, Manlius, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 244,294, Sep. 15, 1988, Pat. No. 4,938,282.
This application Jun. 21, 1990, Ser. No. 541,715
Int. Cl.[5] F28F *1/40*
U.S. Cl. 29—890.048 11 Claims



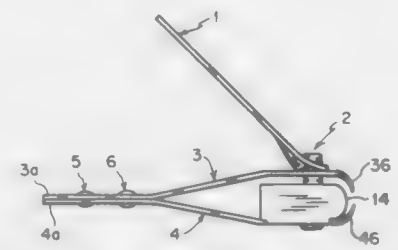
1. A method of making an internally ribbed heat transfer tube from a smooth-walled tubular metal workpiece by positioning the tubular workpiece on a generally cylindrical mandrel that has a plurality of helical grooves formed on its surface, and rolling a gang of discs over the exterior surface of the tubular workpiece above the mandrel so that the metal of the workpiece flows into the mandrel grooves to form said internal ribs at a given pitch, with said ribs having a predetermined height; wherein the improvement comprises forming said ribs so that the pitch thereof is on the order of 0.060 to 0.090 inches, and said ribs are formed with said predetermined height 0.015 to 0.030 times the inside diameter.

5,010,644

NAIL CLIPPING ENCOMPASSING CONTAINER TO RETAIN NAIL CLIPPINGS

Mahmut I. Goench, 77-68 270 St., New Hyde Park, N.Y. 11040

Filed Oct. 26, 1989, Ser. No. 409,021
Int. Cl.[5] A45D *29/00*
U.S. Cl. 30—28 4 Claims



1. A fingernail and toenail clipper comprising:

a longitudinal center-line;

an upper jaw having a first end and a second end;

a lower jaw having a first end and a second end;

means for attaching said upper jaw at said first end to said lower jaw at said first end;

a main rivet for attaching said second end of said upper jaw a spaced distance above said second end of said lower jaw;

a nail clipping retaining box positioned beneath said second end of said upper jaw and integrally attached to and above said second end of said lower jaw, without being attached to the upper jaw, so that said retaining box is between said upper and lower jaws, said main rivet passing through said retaining box;

said retaining box comprising a first extension laterally attached along one side of the lower jaw second end, with said first extension having a back end comprising a first foldable flap portion, and a second extension laterally attached along the other side of the lower jaw second end, with said second extension having a back end comprising a second foldable flap portion; and

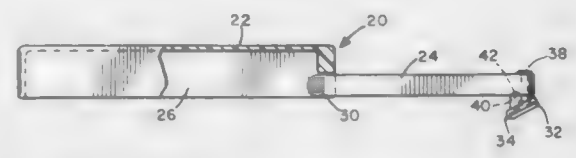
whereby said retaining box further comprises having each of the first extension and the second extension folded along each's laterally attached side, so as to be perpendicular to the lower jaw, but parallel to the longitudinal center line, and each extension having its back end foldable flap portion folded so as to be simultaneously perpendicular to the lower jaw and perpendicular to the longitudinal center-line, so as to complete the construction of the retaining box.

5,010,645

FOLDABLE T-SHAPED SHAVER

Hironori Furukawa, 11344 Tortuga St., Cypress, Calif. 90630

Filed Jan. 22, 1990, Ser. No. 468,178
Int. Cl.[5] B26B *21/00*
U.S. Cl. 30—47 5 Claims



1. A shaver comprising:

a grooved based stem having two ends;

an extension stem having two ends connected rotatably about a first axis at one said end thereof to one said end of said grooved base stem; and

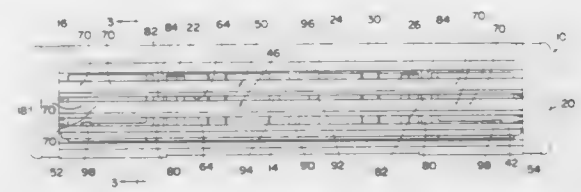
a razor blade holder for holding a razor blade connected rotatably about a second axis perpendicular to said first axis to the other said end of said extension stem.

5,010,646

SHAVING SYSTEM

Nicolae Neamtu, Quincy, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Jan. 26, 1990, Ser. No. 471,099
Int. Cl.[5] B26B *21/00, 19/44, 19/12*
U.S. Cl. 30—50 20 Claims



1. A razor blade member that has a first planar portion and a second planar portion, said second planar portion being angularly offset from said first planar portion and connected to said first planar portion by a transition region, the longitudinal edge of said first planar portion remote from said transition region being a cutting edge, and stress balancing deformation along the longitudinal length of said planar portions and adjacent said transition region.

5,010,647

IMPACT SCRAPING TOOL FOR SCRAPING MATERIAL FROM SURFACES

Thomas C. Gray, 683 N. Fox, Flagstaff, Ariz. 86001

Filed Jul. 25, 1989, Ser. No. 385,284
Int. Cl.[5] B26B *3/00*
U.S. Cl. 30—169 8 Claims

1. An improved impact scraping tool for scraping material from surfaces, comprising:

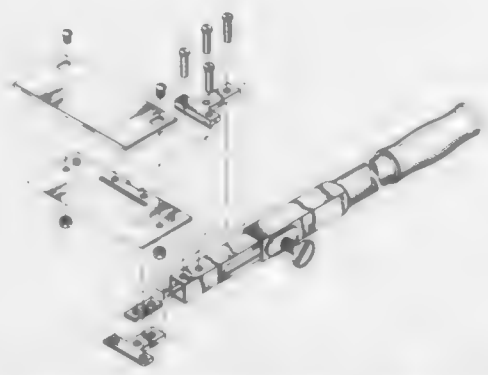
(a) A ramming member having a longitudinal axis for transmitting thrust faces externally applied to said ramming member to said surface;

(b) A thrust member telescopically mounted to said ramming

member to permit slidable axial movement relative thereto;

(c) Barrier means carried by said ramming member for barring further axial movement of said ramming member relative to said thrust member such that the momentum of said ramming member is transferred to said thrust member upon said thrust member engaging said barrier means;

(d) a blade support plate carried by said thrust member having a laterally extending groove in its upper and under surfaces;



(e) A pair of clamp members having a laterally extending shoulder adapted for insertion into said lateral grooves where said clamp members are mounted to said thrust member; and

(f) A cutting blade removably mounted to said blade support plate such that upon application of an external thrust force to said ramming member said thrust member will engage said barrier means where upon the momentum of said ramming member is transferred to said thrust member thereby permitting said cutting blade to impact against said material surface.

5,010,648

GRAY HAIR CUTTER

Koichi Takigawa, Tokyo, Japan, assignor to Takigawa Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1989, Ser. No. 445,559

Claims priority, application Japan, Feb. 27, 1989, 1-20303[U]

Int. Cl.[5] B26B *19/22, 29/00, 27/00;* **A45D** *29/00*

U.S. Cl. 30—195 **6 Claims**



1. A device for cutting gray hairs comprising a grip, and an operating member extending from said grip, said operating member including a generally hook-shaped end portion provided with an open slot therein having coplanar opposed facing surface portions defining an entrance therebetween for insertion of a hair to be cut, and a cutting edge extending along one of said surface portions of said slot in facing relation to the other of said surface portions and being disposed in the plane of said surface portions, said grip including a storage area and said operating member including means mounting said operating member for movement between a position within said storage area and an extended position away from said storage area.

5,010,649

CUTTERHEAD FOR A VEGETATION CUTTER APPARATUS

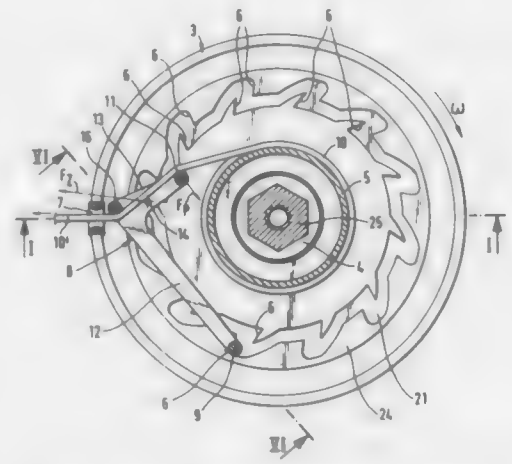
Joachim Hoffmann, Aichwald, Fed. Rep. of Germany, assignor to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed May 14, 1990, Ser. No. 522,782

Claims priority, application Fed. Rep. of Germany, May [redacted], 1989, 3916525

Int. Cl.[5] A01D *50/00*

U.S. Cl. 30—276 **10 Claims**



1. A cutterhead for a rotatably-driven vegetation cutter apparatus defining a drive axis about which the cutterhead is rotatably driven, the cutterhead comprising:

a housing adapted to be rotatably driven by the vegetation cutter apparatus about said axis;

said housing having a hub formed thereon so as to extend along said axis;

a spool carrying a flexible cutting filament wound thereon and being rotatably journalled on said hub;

said housing having a pass-through opening formed therein for passing the cutting filament to the outside;

indexing means for permitting an incremental rotation of said spool relative to said housing to pay out incremental lengths of the cutting filament, said indexing means including:

a blocking lever pivotally journalled in said housing and having first and second lever arms, said first lever arm having a switching arm formed thereon and said second lever arm having redirecting means formed thereon for guiding the cutting filament over said blocking lever while also defining a location at which a centripetal force is applied to said blocking lever by said filament;

said redirecting means defining an open rounded surface for freely guiding said filament thereon so as to cause said filament to change direction and apply said centripetal force to said blocking lever at said rounded surface;

switching stop means formed on said spool for coacting with said switching arm;

said blocking lever being mounted in said housing so as to be movable between a blocking position where said switching arm coacts in dependence upon centrifugal force with said switching stop means to prevent a rotational movement of said spool with respect to said housing and a release position wherein said switching arm coacts in dependence upon centrifugal force with said switching stop means to release said spool for movement relative to said housing to pay out an incremental length of the filament; and,

said switching arm and said redirecting means being spaced at a peripheral distance from each other so as to cause said first lever arm to be longer than said second lever arm.

5,010,650

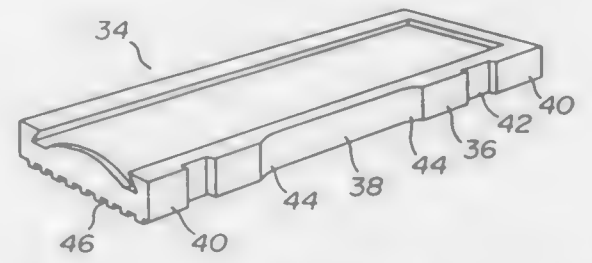
SEAM CUTTER

Maurice Despins, and William Carveth, both of Edmonton,, Canada, assignors to Omnimart Distributions Inc., Edmonton, Canada

Filed Sep. 2, 1988, Ser. No. 239,898

Int. Cl.[5] B26B *3/00*

U.S. Cl. 30—304 **18 Claims**



1. A cutter for cutting seams in overlapping upper and lower flooring materials, in which the edge of the upper flooring material is exposed, the cutter comprising:

a body having a handle defining an upper end of the body and having a forward longitudinal end and a rearward longitudinal end;

a base defining a lower end of the body and elongated in the longitudinal direction for supporting the body on one of the upper and lower overlapping flooring materials, and having a first guiding edge extending between the forward longitudinal end and the rearward longitudinal end of the body;

a foot connected to the body adjacent to the base for supporting the body on the other of the lower and upper flooring material and having a second guiding edge extending between the forward longitudinal end and rearward longitudinal end of the body;

a blade slidably disposed against the body between the foot and the base for cutting the flooring material;

one of the first and second guiding edges having a laterally recessed portion between the forward longitudinal end and the rearward longitudinal end of the body, so that the vertical edge of the upper flooring material does not contact the guiding edge in the recessed portion in use;

fastening means for fastening the blade at a chosen position in relation to the body.

5,010,651

PORTABLE CIRCULAR SAW

Ronald R. Techter, Lake Zurich; Gregg M. Mangialardi, Park Ridge, and Raymond R. Esparza, Chicago, all of Ill., assignors to Skil Corporation, Chicago, Ill.

Filed Jul. 10, 1990, Ser. No. 550,839

Int. Cl.[5] B23D *51/02, 47/02, 50/00;* **B27C** *5/00*

U.S. Cl. 30—376 **8 Claims**

1. A circular saw for cutting 2X lumber at an angle of 60° with the vertical comprising:

a motor housing assembly;

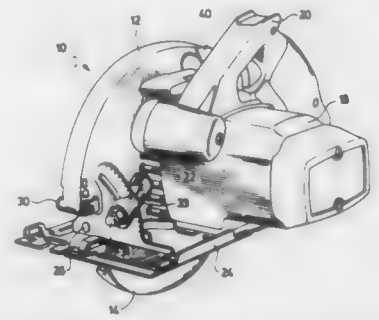
a circular saw blade having a diameter of at least 8¼ inches attached to the saw blade with a blade bolt and washer;

a footplate having an opening therein for receiving the saw blade;

a front and a rear pivot point on said footplate and connected to said motor housing assembly for enabling said housing assembly and said attached saw blade to be rotated at least 60° from the vertical;

said front and rear pivot points having a height above the footplate such that, when supporting the guard in substantially the horizontal position, the distance of the lowest portion of the saw blade below the housing will have a vertical component sufficient to pass through 2X lumber when the blade is rotated 60°;

pivoting means coupled to one of the front and rear pivot points for enabling the depth of the saw extending below the footplate to be adjusted by pivoting the motor housing



assembly upwardly and downwardly about the pivoting means in the plane of the saw blade; and

a depth-of-cut bracket mounted on the footplate of the motor housing assembly at the end opposite the pivoting means and having indicia thereon to indicate the depth of cut when the housing is pivoted about the pivoting means to the position indicated, said bracket having 60° indicia thereon to indicate the proper pivot angle of the motor housing for a 60° cut.

5,010,652

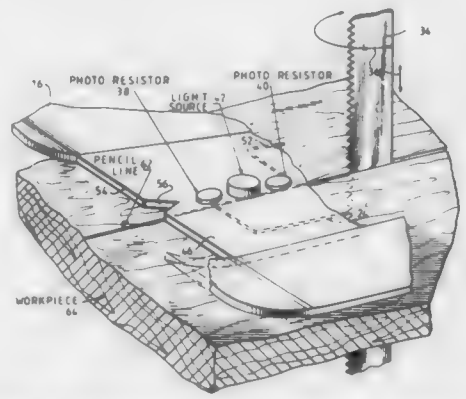
OPTICALLY GUIDED POWER SABRE SAW

David J. Miletich, 8206 Mason Hill Rd., Woodstock, Ill. 60098

Filed Mar. 19, 1990, Ser. No. 495,105

Int. Cl.[5] B27B *19/04*

U.S. Cl. 30—393 **10 Claims**



1. An optically guided power sabre saw using a penciled or an inscribed line to follow, comprising:

(a) a housing;

(b) a base plate attached to and displaced a distance from said housing, a right vertical support and a left vertical support both being disposed said distance and connecting said base plate to said housing;

(c) internal drift correcting means disposed internally to said housing and including a saw blade having reciprocating motion so that the penciled or inscribed line followed by said saw blade during the cutting process is automatically corrected; and

(d) external drift correcting means disposed externally to said housing and on said base plate and including a right photoresistor and a left photoresistor so that as said saw blade travels along said penciled or inscribed line, any drift off said penciled or inscribed line would be detected

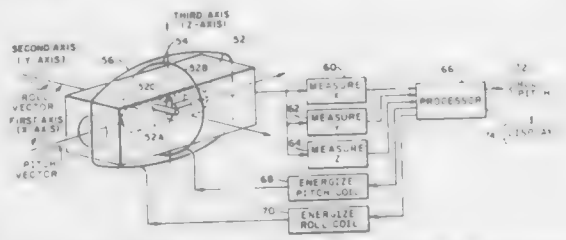
by said right and said left photoresistors and instantly fed back to said blade drive motor for said saw blade correction.

5,010,653

APPARATUS AND METHOD FOR DETERMINING AZIMUTH, PITCH AND ROLL

John T. Fowler, Marblehead, Mass., assignor to Digicourse, Inc., Harahan, La.

Continuation of Ser. No. 162,007, Feb. 29, 1988, abandoned.
This application Oct. 20, 1989, Ser. No. 427,894
Int. Cl.[5] G01C *17/38, 17/28*
U.S. Cl. 33—356 **7 Claims**



1. A method of determining orientation relative to a reference frame having first, second and third mutually orthogonal axes comprising the steps of:

measuring the Earth's magnetic field to determine a first set of three substantially independent field components relative to said reference frame, including a first-axis component represented as Xe, a second-axis component represented as Ye and a third-axis component represented as Ze;

applying a first predetermined magnetic field along said second axis relative to said reference frame;

measuring a second set of three substantially independent composite field components relative to said reference frame, representing a composite magnetic field comprising the Earth's magnetic field and said first predetermined magnetic field, including a second first-axis component represented as Xr, a second second-axis component represented as Yr and a second third-axis component represented as Zr;

determining a value corresponding to azimuth according to the arctangent of (Ye/Xe);

determining a value corresponding to roll according to the arctangent of (Yr−Ye)/(Zr−Ze); and

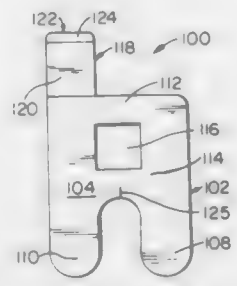
providing signals corresponding to the azimuth and roll.

5,010,654

TILE SPACER

Horacio C. Funes, Jr., Dunellen, N.J., assignor to Masonry Design Plus, Inc., Dunellen, N.J.

Filed Jan. 29, 1990, Ser. No. 471,536
Int. Cl.[5] G01B *5/14*
U.S. Cl. 33—526 **14 Claims**



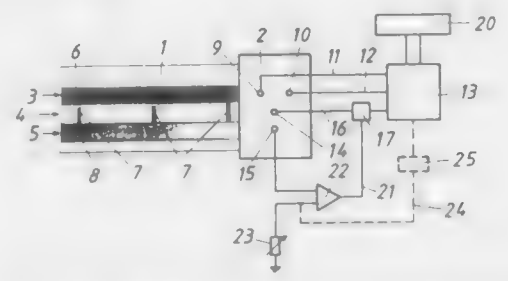
1. A spacer comprising a flat body formed from a pair of spaced apart surfaces, one end of said body having said pair of spaced apart surfaces arranged parallel to each other to provide a portion of uniform thickness therebetween, said one end of said body including a pair of laterally spaced apart legs each of the same uniform thickness formed by said spaced apart surfaces, a first web formed from said body connecting said legs at one common end thereof, a second web formed from said body connecting said legs at a location spaced from said first web to provide an opening therebetween, and another end of said body having a surface arranged at an angle to one of said spaced apart surfaces to provide a portion of decreasing thickness therebetween.

5,010,655

INCREMENTAL MEASURING SYSTEM

Heinz Rieder, Oberndorf, and Max Schwaiger, Ostermiething, both of Austria, assignors to Sentop Rieder und Schwaiger Gesellschaft m.b.H., Tarsdorf, Austria

Filed Jan. 25, 1990, Ser. No. 470,110
Claims priority, application Austria, Feb. 9, 1989, 275/89
Int. Cl.[5] G01B *11/04*
U.S. Cl. 33—706 **21 Claims**



15. In a scale member for use in an incremental measuring system, which scale member is provided with an incremental scale, with a reference track, which is parallel to said scale and contains a plurality of reference marks associated with respective reference points, and a control track, which is parallel to said scale, wherein said scale and said reference track are adapted to be scanned by an optoelectronic scanning method, the improvement residing in that

said control track is adapted to be scanned by said optoelectronic scanning method and has portions which are disposed adjacent to respective ones of said reference marks and have different signal generating characteristics.

produced by a pattern which consists of discrete pattern elements and which varies along said scale in at least one of the parameters consisting of the pattern element density and pattern element size.

5,010,656

THERAPEUTIC APPARATUS

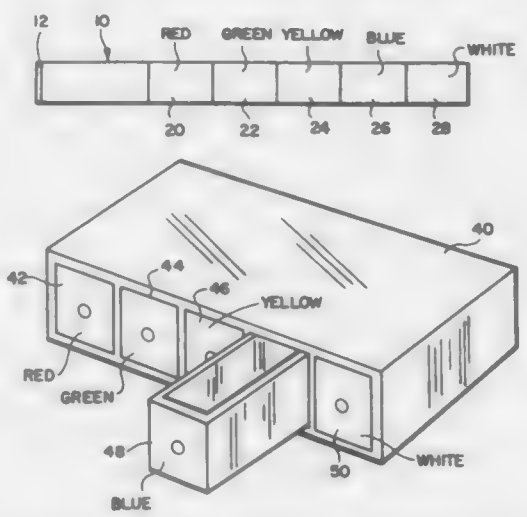
James B. Broselow, 24 White Eagle Ranch, Rte. 12, Hickory, N.C. 28602

Continuation of Ser. No. 197,592, May 23, 1988, abandoned, which is a continuation-in-part of Ser. No. 133,956, Dec. 17, 1987, Pat. No. 4,823,469, which is a continuation-in-part of Ser. No. 910,490, Sep. 23, 1986, Pat. No. 4,713,888, which is a continuation-in-part of Ser. No. 789,497, Oct. 21, 1985, abandoned. This application Oct. 9, 1990, Ser. No. 595,657
Int. Cl.[5] G01B *3/02*
U.S. Cl. 33—759 **10 Claims**

1. Apparatus for selection of emergency medical equipment and drug dosages for therapeutic treatment of a patient comprising:

(a) a measuring tape for measuring the heel-to-crown height of a patient, said measuring tape having coded zones representing a medical equipment of drug dosage indication along an effective length thereof; and

(b) a treatment dispenser having a plurality of sections containing emergency medical equipment and drugs, said dispenser sections being correspondingly coded to the measuring tape whereby a treatment administered using



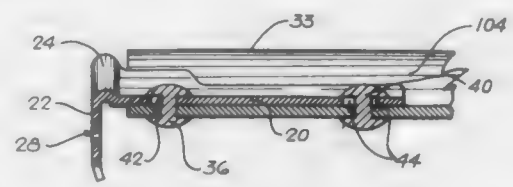
the coding of the treatment dispenser is correlated to the heel-to-crown height of a paticnt as measured by the tape.

5,010,657

TAPE MEASURE END HOOK

Ralph E. Knapp, Barrie, Canada, assignor to Cooper Industries, Inc., Houston, Tex.

Filed Jun. 29, 1989, Ser. No. 374,039
Int. Cl.[5] G01B *3/10*
U.S. Cl. 33—770 **6 Claims**



1. An end hook adapted to be attached to a tape measure, said tape measure defining a longitudinal axis and adapted to be received in a housing, said end hook comprising:

an abutting member having an inside surface and adapted to receive a force from said housing;

a tape attachment member attached to said abutting member and adapted to move along an axis substantially parallel to said longitudinal axis;

said tape attachment member defining first, second and third openings having first, second and third perimeters, respectively;

a reference point defined as a point of said third perimeter of said third opening located farthest from said abutting member;

first, second and third rivets attached to said tape measure and adapted to be received by said first, second and third openings, respectively; and

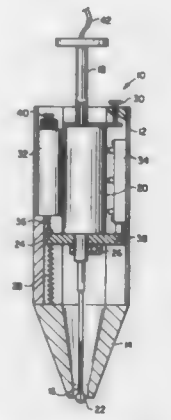
wherein said third rivet and said reference point define a gap when said inside surface receives a force from said housing substantially perpendicular to said inside surface such that said force is substantially absorbed by and substantially equally distributed between said first and second rivets.

5,010,658

HOLE PROFILE GAGING SYSTEMS

Jerry T. Griffith, Arlington, and Scott J. Pleva, Irving, both of Tex., assignors to LTV Aerospace and Defense Company, Dallas, Tex.

Filed Nov. 22, 1988, Ser. No. 274,985
Int. Cl.[5] G01B *5/20, 7/28*
U.S. Cl. 33—784 **30 Claims**



1. A hole profile gage comprising:

probe means for repeatedly sensing the contour of the inner surface of a hole as the probe means travels the length of the hole, and outputting a signal corresponding to the sensed contours;

extension means for extending said probe means into said hole;

retraction means including a dampener for retracting said probe means through said hole once the probe means are extended into said bore; and

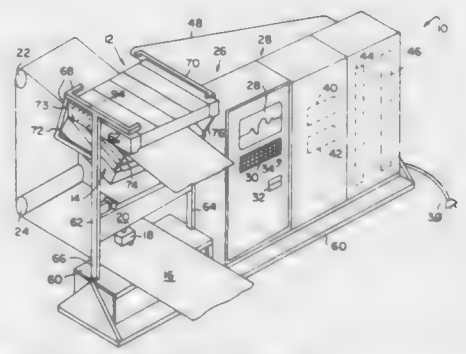
processing means for receiving the signal output from said probe means and computing a profile of said hole.

5,010,659

INFRARED DRYING SYSTEM

Robert E. Treleven, Oneida, Wis., assignor to W.R. Grace & Co.-Conn., New York, N.Y.

Filed Sep. 8, 1989, Ser. No. 104,895
Int. Cl.[5] F26B *3/32*
U.S. Cl. 34—41 **12 Claims**



1. Infrared drying system comprising:

a. traveling web of material and means for supporting said web;

b. sensing means supported above said web and traveling across the width of said web;

c. means for generating profile signals of the output of said sensing means across the width of said web with respect to a set point;

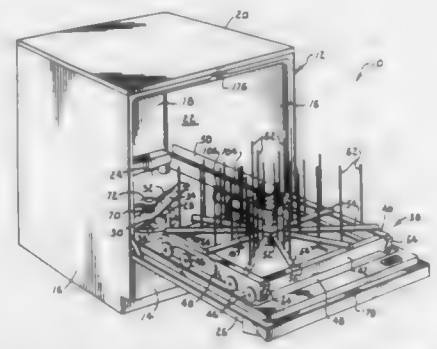
d. means for generating a plurality of control signals, for switching a power controller including storage means,

said storage means including an algorithm for switching power to an infrared lamp;
e. infrared module means positioned above said web in proximity to said sensing means; and,
f. power controllers connected between a source of power and each of said infrared lamps and to each of said control signals for controlling each of said infrared means.

5,010,660
METHOD AND APPARATUS FOR DRYING GLASSWARE

Larry G. Hambleton, Olathe, Kans.; Claude L. Sears, Liberty, and Elmer B. Offutt, Independence, both of Mo., assignors to Labconco Corporation, Kansas City, Mo.

Division of Ser. No. 92,898, Sep. 4, 1987, Pat. No. 4,820,351. This application Jan. 6, 1989, Ser. No. 293,956
Int. Cl.[5] F26B *13/30*
U.S. Cl. 34—92 **9 Claims**



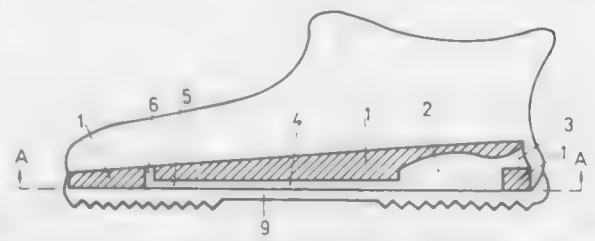
1. Apparatus for drying glassware articles each having an open top end, said apparatus comprising:
a housing presenting a substantially enclosed compartment;
a manifold coupled with said housing;
a plurality of generally horizontal conduits coupled with and extending radially outward from said manifold;
a plurality of generally vertical tubes coupled with each of said conduits, each of said tubes being adapted to receive a glassware article thereon in an inverted position with the open end of the tube located within the article; and
means for applying vacuum to said manifold to draw air from within said articles while air from the compartment enters said articles through the open top ends thereof to effect circulation of air within the articles to dry the insides of the articles.

5,010,661
UNIDIRECTIONAL AIRFLOW VENTILATING SHOE AND A UNIDIRECTIONAL AIRFLOW VENTILATING INSOLE FOR SHOES

Chi-kong Chu, 9/F, Block A, Man Hei Mansion, 2-12 Johston Rd., Wanchi, Hong Kong

Continuation of Ser. No. 280,542, Dec. 6, 1988, abandoned. This application May 2, 1990, Ser. No. 517,449
Claims priority, application Hong Kong, Dec. 7, 1987, 87107387
Int. Cl.[5] A43B *7/06, 13/38*
U.S. Cl. 36—3 B **11 Claims**

1. A unidirectional airflow ventilating shoe comprising an upper part, a sole, and a unidirectional airflow ventilating layer provided inside the shoe on the sole, wherein the ventilating layer having a heel portion and a fore part and including a compressible cavity at the bottom surface in the heel portion of the layer; said heel portion having a substantially vertical back wall portion in which an air inlet opening to the rear area of the shoe resides in such a manner that when force is applied to the heel portion of the layer, the air inlet is closed as a result of the back wall collapsing; and an elastic main airflow passage at the front of the cavity leading to the fore part of the layer, the fore end of the main airflow passage being divided into a plurality

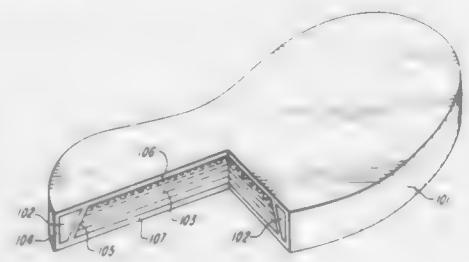


of branches, the fore end of each branch being provided with an air outlet leading to the upper surface of the layer.

5,010,662
SOLE FOR REACTIVE DISTRIBUTION OF STRESS ON THE FOOT

Leonid V. Dabuzhsky, 86 High Rock Ter., Newton, Mass. 02167, and Moisey M. Lerner, 75 Rolling La., Needham, Mass. 02192

Continuation of Ser. No. 138,957, Dec. 29, 1987, which is a continuation-in-part of Ser. No. 106,152, Oct. 8, 1987, abandoned. This application Apr. 12, 1990, Ser. No. 509,418
Int. Cl.[5] A43B *13/20*
U.S. Cl. 36—28 **8 Claims**



1. A sole comprising:
a case for placement between the foot and ground having
a top portion for location of said case against the plantar portion of the foot;
a bottom portion spaced apart from said top portion for location of said case against the ground;
an outer wall for connecting said top portion to said bottom portion and encompassing space therebetween;
an inner wall for connecting said top portion to said bottom portion and for defining therebetween and within said outer wall at least one chamber containing air and at least on chamber containing liquid, said inner wall comprised of resilient material sufficiently elastic for providing communication of pressure between said at least one chamber containing air and said at least one chamber containing liquid; and
said at least one chamber containing liquid being defined by a ceiling of surface area S_1 and a floor of surface area S_2 greater than S_1.

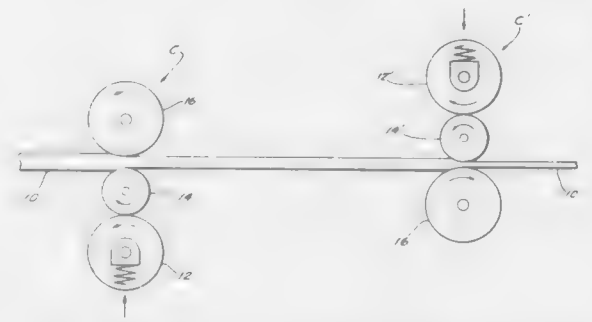
5,010,663
LOW PERMEABILITY FABRIC AND METHOD OF MAKING SAME

Peter B. Thornton, Bronxville; Stanley H. Cone, and George W. Booz, both of Hornell, all of N.Y., assignors to Stern & Stern Industries, Inc., New York, N.Y.

Division of Ser. No. 264,158, Oct. 28, 1988, Pat. No. 4,977,016. This application Jun. 26, 1990, Ser. No. 544,127
Int. Cl.[5] D03D *1/00;* **B60R** *21/16;* **D06F** *61/02*
U.S. Cl. 38—52 **10 Claims**

1. A method of making a strong, lightweight, thin, flexible fabric of low permeability comprising the steps of:

(A) providing an uncoated, woven, strong, lightweight, thin, flexible cloth of high permeability; and
(B) calendering the cloth on both sides without thermal

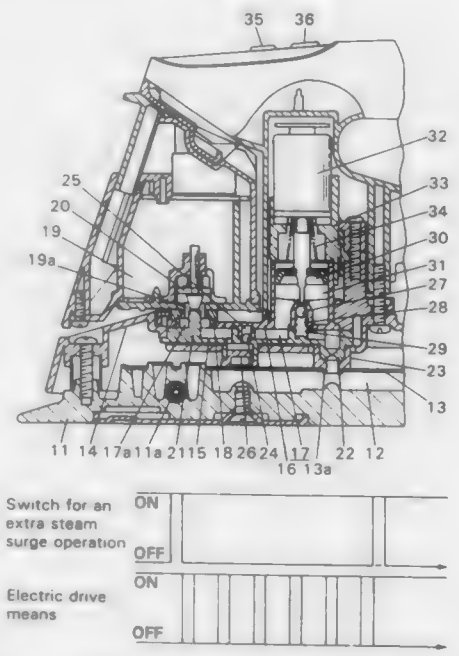


degradation to reduce the permeability to not more than three cubic feet of air per minute per square foot of cloth (1.5 $cm^3/sec/cm^2$) at a pressure drop of 0.5 inch of water (1.27 cm) across the cloth.

5,010,664
STEAM IRON HAVING A SOLLENOID DRIVEN PUMP AND HEATED EVAPORATION CHAMBER FOR PROVIDING STEAM AND OPERABLE FOR FURTHER PROVIDING EXTRA STEAM AT SPECIFIED INTERVALS

Chikashi Sakano, Yao; Selichi Nakada, Sanda; Masao Shimizu, Nishinomiya; Shinichi Ito, Kobe, and Toshiyoshi Yamamoto, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 16, 1989, Ser. No. 438,387
Claims priority, application Japan, Nov. 18, 1988, 63-292708; Nov. 18, 1988, 63-292710; Nov. 18, 1988, 63-292736
Int. Cl.[5] D06F *75/00, 75/10, 75/14, 75/20*
U.S. Cl. 38—77.7 **9 Claims**

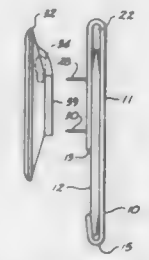


1. A steam iron comprising a soleplate to be heated by a heater, a fluid evaporation chamber disposed upon the soleplate for generating steam therein, a tank located above the evaporation chamber, and an electric drive means for delivering water from the tank to the evaporation chamber, wherein said electric drive means is driven at specified intervals so as to generate extra steam.

5,010,665
MODULAR ELECTRONIC BADGE

Cornell Clinkscales, 105 Catlin Cir., Greenville, S.C. 29607

Filed Apr. 3, 1986, Ser. No. 847,511
Int. Cl.[5] A44C *3/00*
U.S. Cl. 40—1.5 **9 Claims**

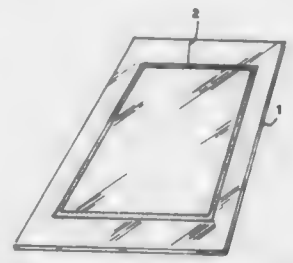


1. A battery-operated electronic apparatus, comprising:
a first housing having electronic circuitry protectively enclosed therein, said first housing defining a chamber which opens to the exterior of said first housing, and which is adapted to receive a battery, said first housing further including an engagement member integral therewith for retaining a battery within said chamber slidably introduced thereto; and
a second housing having an electrical load enclosed therein, said second housing being removably supported on and electrically associated with said first housing, whereby said electrical load may be driven by said electronic circuitry when said is powered by a battery received in said chamber; wherein
said chamber includes contact means for electrically engaging a battery retained therein by said engagement member, receipt of which automatically provides power to said electronic circuitry as such battery is slidably situated relative said engagement member.

5,010,666
CUSHIONED FRAMED ARTICLE

Carlos Robles, Lomas Vista Hermosa, Mexico, assignor to Plasticos Cream, S.A., Mexico

Filed May 18, 1987, Ser. No. 51,540
Claims priority, application Mexico, May 26, 1986, 2500
Int. Cl.[5] A47G *1/06;* **G09F** *1/12*
U.S. Cl. 40—154 **5 Claims**



1. A cushioned frame for a generally planar article, comprising:
a bottom layer of heat-sealable material having edges,
a relatively rigid base of material having first and second sides, said first side having heat sealable adhesive stripes thereon defining a section to be framed,
a layer of foam material secured to said base by the adhesive stripes and having substantially the configuration and size of the base,
an upper layer of heat-sealable material sealed along its edge

portions to edge portions of the bottom layer of heat-sealable material to enclose the layer of foam material between the upper and lower layers of heat-sealable material, and

a layer of transparent or translucent heat-sealable material sized and configurated to fit in the section defined by said adhesive stripes, and disposed over the upper layer of heat-sealable material, secured thereto by depressed heat-seal stripes and cooperating with the upper layer to define an envelope to receive said picture,

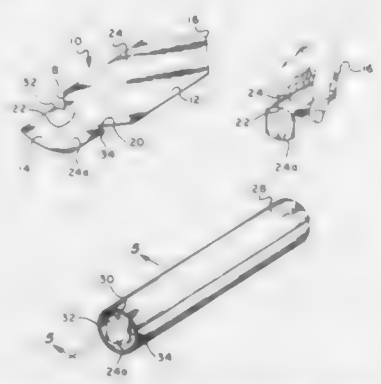
the layer of foam material being compressed at the heat-seal stripes which bond together the sheet of transparent or translucent material, the upper layer of heat-sealable material and the layer of foam material, thereby defining a raised bas-relief framing portion outwardly of the depressed seal stripes and a framed cushioned section.

5,010,667

IDENTIFICATION TAG FOR ROLLED DRAWINGS

Herman A. Hassinger, 282 Chester Ave., Moorestown, N.J. 08057

Filed Jun. 28, 1989, Ser. No. 372,571
Int. Cl.[5] G09F *3/00*
U.S. Cl. 40—309 **5 Claims**



1. An identification tag for identifying rolled documents such as architectural or engineering drawings or the like that are normally rolled into cylindrical form with the sheets thereof forming a spiral and wherein said rolled documents are normally stacked upon each other or stored in a rack with only their ends exposed, said tag comprising:

an elongated strip of substantially planar sheet material, said material being of a thickness and composition so as to be rigid enough to substantially sustain its shape but flexible enough so that it can be easily flexed by a person's hand, said strip being divided into a holding portion at one end thereof and a tag portion at the other, said holding portion and said tag portion being integral with each other;

a transition portion lying between said holding and tag portions, said transition portion including a score line across the width of said strip, said score line being arcuately shaped with the center portion of said line being in the direction of said holding portion;

the width of said transition portion being less than the width of said tag portion and less than the width of the main section of said holding portion, the width of said transition portion being narrowest at said score line and tapering outwardly to said tag portion at one end thereof and to said holding portion at the other end;

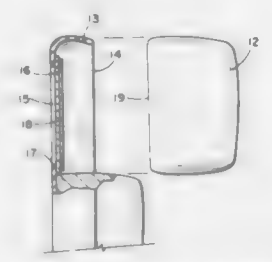
whereby when the side edges of said holding portion are flexed downwardly to curve said holding portion into the shape of a rolled document, the tag portion can be bent downwardly where it substantially retains its planar shape and also remains in a position which is substantially perpendicular to the axis of said holding portion, the upper edge of said tag portion adjacent said transition portion, however, being concavely curved.

5,010,668

ADVERTISING DEVICE FOR AIRLINER SEAT BACK OR SNACK TRAY TABLE

Stephen J. Zeligson, 1815 E. 31st Pl., Tulsa County, Okla. 74105

Filed Feb. 28, 1989, Ser. No. 317,024
Int. Cl.[5] G09F *3/00*
U.S. Cl. 40—324 **14 Claims**



1. In airliner passenger seats having cushions supported by a seat back having a continuous smooth-flowing gradual contour along substantially the entire back surface thereof, an improvement facilitating the display of replaceable printed or pictorial materials for viewing by passengers seated rearwardly of the displaying seat comprising:

a window having a perimeter disposed in and conforming to said contour of said seat back;

a transparent window pane shaped to overlap said perimeter of said window;

means for securing said pane to the interior of said seat back with said window pane disposed to conform to said contour of said seatback in overlapping relationship to said perimeter;

means permitting the removable insertion of said printed or pictorial materials in face-to-face relationship with said pane, and

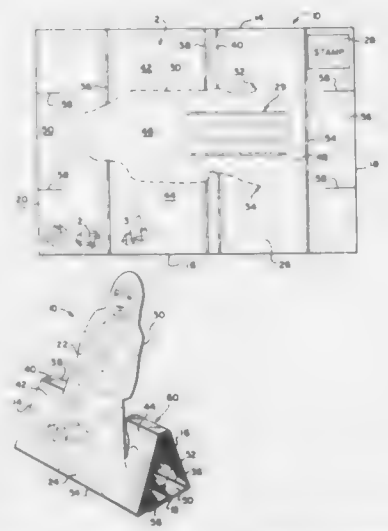
means for holding said printed or pictorial materials in said face-to-face relationship.

5,010,669

POST CARD WITH POP-OUT FIGURE

George Moran, 800 Electric Ave., Seal Beach, Calif. 90740

Filed May 22, 1989, Ser. No. 354,101
Int. Cl.[5] G09F *1/08*
U.S. Cl. 40—539 **16 Claims**



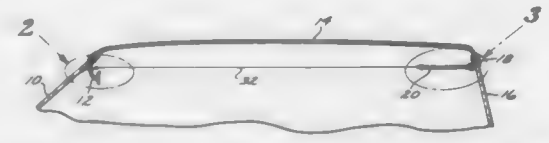
1. A mailing card comprising a single rectangular planar, sheet of only a single thickness of card stock having a face and an opposite obverse surface, a pair of straight mutually parallel longitudinal edges and a pair of straight mutually parallel transverse edges perpendicular to said longitudinal edges, a figure printed on said face of said card stock, a perforated outline formed as a frangible tear line on said card stock extending entirely through the thickness of said card stock and circumscribing a portion of said figure and terminating at both ends proximate to a selected one of said edges such that said portion of said figure is separable along said frangible tear line from the surrounding areas of said card stock adjacent said perforated outline to leave an opening therebehind in the shape of said portion of said figure extending entirely through the thickness of said card stock, a plurality of mutually parallel lines of weakness defined on said card stock extending parallel to said selected one of said edges, wherein at least one of said lines of weakness is discontinuous and is defined on said card stock and extends to said perforated outline from said edges of said card that are perpendicular to said selected one of said edges, thereby defining a gap in said line of weakness that extends across said figure and an indicia of placement of a postage stamp near one corner of said card stock on said obverse surface.

5,010,670

AUTOMOBILE WINDOW DISPLAY APPARATUS

Mario J. Minervini, 3192 Blackwell Dr., Vista, Calif. 92084

Filed Dec. 14, 1989, Ser. No. 451,456
Int. Cl.[5] G09F *21/04*
U.S. Cl. 40—593 **3 Claims**



1. In combination with an automobile having a rear window, a windshield, rear structure adjacent the rear window, and a rear view mirror mount adjacent the windshield, improved window display apparatus comprising:

a display panel for carrying a message, the panel being adapted to move between a substantially horizontal retracted position and a substantially vertical display position in which the message is visible from outside the automobile through the rear window;

hinge means pivotally mounting the upper extremity of the panel to the rear structure; and

an elongated flexible element mounted at its rearward end to the lower extremity of the panel, and including mounting means comprising a hook at the forward end of the flexible element attachable to the rear view mirror mount, the forward end of the flexible element being graspable by a user for demounting the hook from the rear view mirror mount, and for rearward movement with the user's hand to rearwardly move the flexible element and permit the display panel to pivot from the retracted position to the display position.

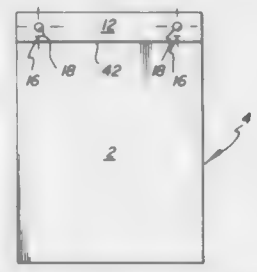
5,010,671

FLIP CHART PAD

David R. Stonehouse, Mississauga, Canada, assignor to Dennison Stationery Products Company, Milford, Mass.

Continuation of Ser. No. 121,794, Nov. 13, 1987, abandoned. This application Jul. 19, 1989, Ser. No. 381,831
Int. Cl.[5] G09F *7/12*
U.S. Cl. 40—594 **26 Claims**

1. In a flip-chart pad comprising a plurality of overlying tear sheets releaseably attracted to one another by means of static cling so as to define said pad, each said sheet adapted for writing thereon and for dry erasure of said writing for reuse of said sheet, and each said sheet being removeable from said pad



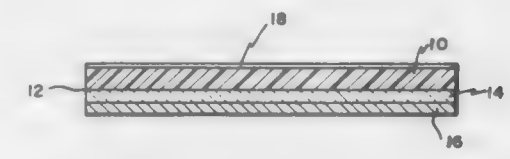
for releaseable securement to a surface solely by means of static cling.

5,010,672

LAMINATED SIGN

Kelly R. Coleman, 516 Belle Isle Ave., Belleair Beach, Fla. 34635

Filed Feb. 29, 1988, Ser. No. 161,688
Int. Cl.[5] G09F *19/00*
U.S. Cl. 40—615 **7 Claims**



1. A sign which comprises:

a flexible facing including a first and a second surface and having an overall dimension of said sign;

a thin flexible sheet having a first side and a second side, graphics applied onto said second side of said thin flexible sheet, said first side of said thin flexible sheet being secured onto said second surface of said flexible facing by adhesive means; and

a protective covering backing sheet of thin vinyl including a first surface and a second surface, said first surface of said protective backing sheet being applied over said thin flexible sheet and secured to said second side of said thin flexible sheet and a secured to a portion of said second surface of said flexible facing by adhesive means to protect said graphics, whereupon said sign may be installed in a special frame allowing said graphics to be viewed only through said first side of said flexible facing, and a protective coating of a material applied onto said first surface of said facing which blocks ultraviolet light, whereby ultraviolet light that is harmful to graphics will pass through at least two thicknesses of material for protection of said graphics from the ultraviolet light.

5,010,673

PLASTIC CARD HOLDER

John K. Connor; Charles M. Connor, Jr., and H. B. Stroup, Jr., all of Asheville, N.C., assignors to Collectors Products Corporation, Asheville, N.C.

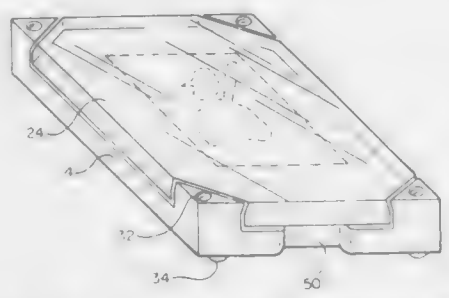
Filed Jul. 7, 1989, Ser. No. 376,816
Int. Cl.[5] G09F *3/18*
U.S. Cl. 40—661 **22 Claims**

16. A plastic holder for receiving and containing a display item, comprising:

(a) a generally rectangular clear base panel having a top surface and a bottom surface and a surface area greater than that of the display item, the top surface having a recess therein for containing the display item and a plural-

ity of flanges extending upwardly from the top surface of the base panel at each corner thereof;

(b) a separate clear insert panel having a top surface and a flat bottom surface and a surface area greater than that of the display item, and having notches about a periphery of the insert panel in positions corresponding to the flanges on the top surface of the base panel adapted for mating with the flanges of the base panel; and



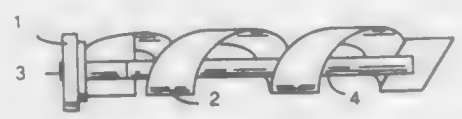
(c) said flanges and said notches providing a means for securing the insert panel to the base panel, wherein each of said flanges is provided with a recess, each of the notches of said insert panel being provided with a horizontally protruding rim, the rim of said insert panel mating with the recess of said flange when the holder is assembled, said insert panel being adapted for engagement with said base panel by manual pressure.

5,010,674

SPRING ACTUATED SAFETY CARTRIDGE

Don Horton, 5902 Kirkwood Pl. N., Seattle, Wash. 98103

Filed Aug. 31, 1989, Ser. No. 401,098
Int. Cl.[5] F41A *17/00*
U.S. Cl. 42—70.11 **3 Claims**



1. A cartridge, to be inserted into a gun having a chamber and a firing pin, comprising:

(a) a spring of a diameter that fits into the chamber of the gun when compressed but would expand into tight engagement if unwound;

(b) means to hold the spring in a compressed state; and

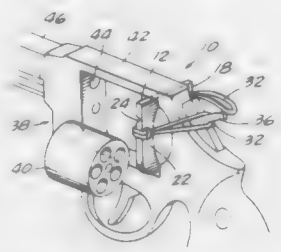
(c) means for the firing pin to release the means holding the spring in a compressed state.

5,010,675

FIRE PIN SHIELD

Albert B. Selleck, 2000 Palmira Dr., Reno, Nev. 89511

Filed Feb. 29, 1990, Ser. No. 483,373
Int. Cl.[5] F41A *17/64*
U.S. Cl. 42—70.11 **8 Claims**



1. A firing pin shield to protect the firing pin and working mechanism of both small and large revolvers during cleaning of the bore of a revolver's barrel with the revolver cylinder moved away from the revolver's frame, comprising:

a shield member made from material impervious to cleaning oils, solvents, and lubricants, and having a polygonal shape with a front surface and a rear surface and a top and a bottom;

an indentation formed in said front surface of said shield member and located in parallel relationship and close proximity to said top of said shield member; and

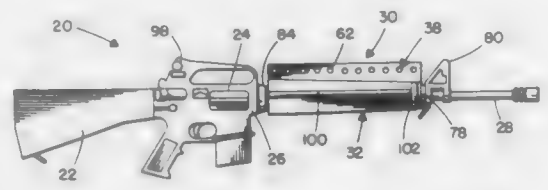
means for securing said shield member to the breech face of a revolver when the cylinder of said revolver is moved away from said revolver's frame.

5,010,676

HAND GUARD FOR FIREARMS

Paul G. Kennedy, East Hartford, Conn., assignor to CFPI Inc., Wilmington, Del.

Filed Mar. 21, 1989, Ser. No. 497,128
Int. Cl.[5] F41C *23/16*
U.S. Cl. 42—71.010 **21 Claims**



1. A hand guard for the barrel of a firearm comprising:

an elongated housing adapted to be mounted on the barrel for encapsulating a predetermined length of the barrel and defining a convection chamber therein;

said housing having a longitudinal axis substantially aligned with the longitudinal axis of the barrel;

said housing being generally of pear-shaped cross section having a broadened, flattened, bottom member, a narrow, tall chimney member with a pair of spaced substantially vertically disposed sidewalls, and a transversely extending bridge member joining said sidewalls, and opposed connecting members uniting said bottom member and said sidewalls;

said housing having a plurality of longitudinally spaced inlet ports formed in said bottom member and a plurality of longitudinally spaced exhaust ports in each of said sidewalls;

whereby heat from the barrel of the firearm creates convection currents in said convection chamber which draw ambient air into said convection chamber through the inlet ports, around the barrel, and out through the exhaust ports, thereby cooling the barrel and directing the heated air away from said bridge member.

5,010,677

PLUG FOR SHOTGUN OR RIFLE BARREL USING BLACK POWDER

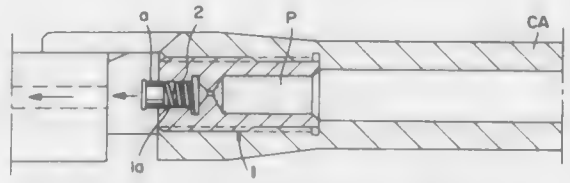
Claude Verney Carron, 23 Ter rue Emile Clermont, 42100 Saint Etienne, France

Filed Mar. 8, 1990, Ser. No. 490,343
Claims priority, application France, Dec. 20, 1989, 89 17523
Int. Cl.[5] F41A *21/10*
U.S. Cl. 42—77 **4 Claims**

1. A plug for a barrel of a fireman, said firearm using black powder and a primer to ignite the black podwer, comprising:

a plug configured for mating engagement with the barrel of the firearm, said plug including a powder chamber adapted to receive the black powder, a primer chamber adapted to receive the primer, and a passageway communicating between the primer chamber and the powder chamber; and,

an elastic component housed within the the primer chamber for bearing outwardly on the primer, said elastic component dimensioned to allow at least partial introduction of said primer into the primer chamber, full introduction of the primer into the primer chamber upon closing the



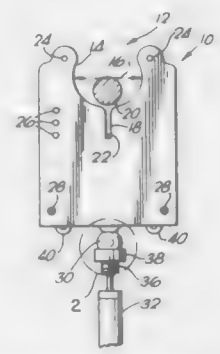
firearm, and at least partial projection of the primer from within the primer chamber upon opening the firearm, wherein said elastic component makes direct surface contact with said primer.

5,010,678

BITE INDICATOR

Jeffrey A. Peck, 53 Thackery Road, Larkfield, England, and William R. Thurston, 15 Harold Road, Hawley, Dartford, England DA2 7SA

Filed May 19, 1989, Ser. No. 354,130
Claims priority, application United Kingdom, Jan. 19, 1989, 8901170
Int. Cl.[5] A01K *97/12*
U.S. Cl. 43—17 **18 Claims**



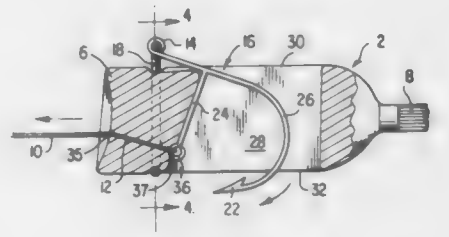
1. A fishing bite indicator including means for guiding a fishing line along a path in which it runs in abutment with a sensor operable to generate or modulate an output when moved, means for monitoring the output of the sensor and generating an audible and/or visual indication upon generation or modulation of an electrical signal by said sensor, wherein the sensor comprises a sensing device operable to generate or modulate a voltage when it is moved or vibrated and which is mounted in a sealed casing shaped to support a fishing rod and is provided with a stylus passing through a water resistant or water impermeable sheath to a position in which it abuts in use a fishing line such that movement of the fishing line will cause movement of the stylus, wherein said casing has an opening within which in use a fishing rod rests, the opening comprises a mouth part of a first width through which the rod may pass, a second part of width greater than said first width within which in use the rod rests, and a slot part of width less than said first width which receives the line associated with the rod and within which said stylus extends, the walls of said slot part being shaped to guide the fishing line into a path in which its abuts the stylus, the indicator further including a freely rotatably mounted cam member located and positioned to engage the fishing line and in use be rotated thereby when the fishing line moves, said cam member being positioned further to engage and cause movement of the stylus when the cam member is rotated.

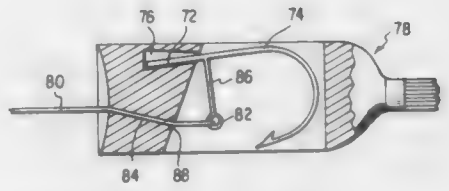
5,010,679

FISHING LURE AND FISH HOOK

Michael M. Tischer, 725 N. West St., Dover, Del. 19901

Filed Jan. 5, 1990, Ser. No. 461,291
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.04 **13 Claims**





1. A weedless fishing lure comprising:

an elongated body including a forward end, a rearward end and an intermediate portion joined at one end to the forward end and joined at the other end to the rearward end, and a fish hook including a first end portion, a second end portion comprising a barbed point, and a shank portion therebetween, wherein said lure body comprises:

slot means for receiving the fish hook extending through said intermediate portion, said slot means comprising elongated openings on opposite sides of said intermediate portion;

channel means communicating with said slot means extending through said forward end and through a leading surface of the slot means, for receiving an elongated line, wherein said elongated line is attached to said fish hook at one end and extends through said channel means for connecting to a fishing rod; and

resilient means extending around an outer perimeter of said lure body for retaining the first end portion of the fish hook outside the lure body adjacent one of said elongated openings;

whereby tension on the line causes rotation of the fish hook in said slot means to expose the barbed point through the other of said elongated openings in the intermediate portion of said lure.

5,010,680

FISH HOOK EXTRACTION DEVICE

Robert C. Lytle, 529 13th St., Manhattan Beach, Calif. 90266

Filed Aug. 20, 1990, Ser. No. 569,718
Int. Cl.[5] A01K *97/00*
U.S. Cl. 43—53.5 **7 Claims**

1. A hook extraction device comprising:

an upper portion,

a lower portion pivotably secured to said upper portion,

a first line having two ends, one end being secured to said upper portion,

a second line having two ends, one end being secured to said upper portion,

a hook eye nest secured to the other end of said first line, said hook eye nest being adapted to surround a hook eye of a hook located in a person, and

a loop formed at the other end of said second line adapted to be secured to a bend of a hook located in a person so that

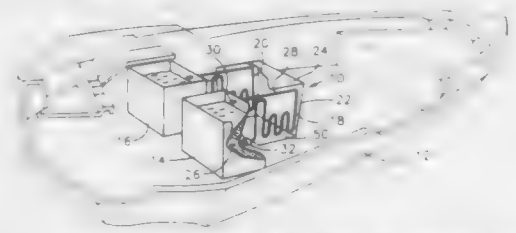
upon pivoting of said upper portion with respect to said lower portion said first line is moved to move said hook



eye nest to unseat a barb of the hook and said second line is moved to extract the hook from a finger of a person.

5,010,681
COOLER FOR LIVE WELL WITH RECIRCULATED WATER

Robert A. Cox, Jr., Rte. 80, Box 980, Camdenton, Mo. 65020
Filed Jul. 30, 1990, Ser. No. 559,611
Int. Cl.[5] A01K *97/00*
U.S. Cl. 43—57 **10 Claims**



1. A cooler and aerator for live wells and storage chest for items to be cooled, said cooler comprising an ice chest having an open central area for receiving ice and said items to be cooled, a cooling coil in said ice chest having an inlet receiving water from a live well and an outlet communicating with an aerating means for discharging cooled aerated water into said live well, means for circulating water from said live well through said coil and aerating means, means for supporting said coil adjacent an interior side wall of said ice chest, said means comprising a protective rigid baffle substantially covering said coil, said baffle being supported with respect to said coil and said interior wall to provide for free circulation of ice water from said open central area past said coil, said coil being supported in sandwich relation between said interior side wall and the baffle.

5,010,682
ANIMAL TRAP

Gino Saccon, 1625 Kent/Des-Moines Rd., Seattle, Wash. 98188
Filed Jul. 24, 1990, Ser. No. 557,189
Int. Cl.[5] A01M *23/30*
U.S. Cl. 43—81 **2 Claims**

1. An animal trap, comprising:
a spring means;
first and second arm members extending from said spring means to outward ends, said outward ends being biased apart by said spring means;
a loop portion on said first arm member positioned to substantially encircle the outward end of said second arm member;
a jaw portion on said second arm member positioned to be biased toward a side of said loop portion opposite said first arm member; and
a trigger member movably carried by said first arm member, said trigger member including a paddle portion and a detent portion;
said paddle portion positionable in substantial axial alignment with said loop portion when said detent portion is positioned to hold the outward end of said second arm member in a position relatively adjacent the outward end of said first arm member with stored spring energy such that movement of said trigger member will release the outward end of said second arm member causing the jaw



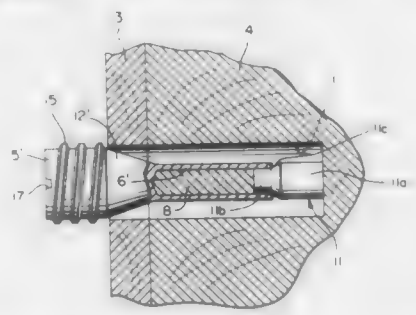
portion to be moved by said spring means across said loop portion toward said side opposite said first arm member to forcefully clamp the animal within said loop portion;
wherein said jaw portion includes a longitudinal split substantially along a longitudinal plane in said outward end of said second arm member and portions on each side of said split being bent apart radially outwardly in a shear direction substantially parallel to said plane.

5,010,683

Patent Not Issued For This Number

5,010,684
TREE TREATMENT CAPSULE

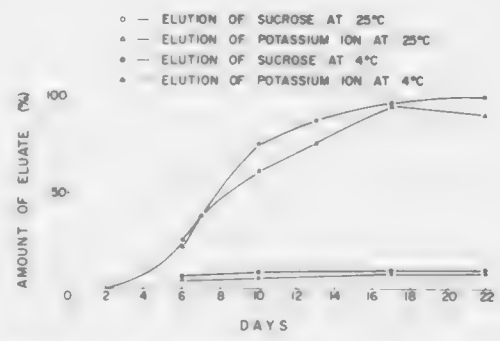
Hans Merving, Bergius vag 4, S-644 00, Torshälla, Sweden, assignor to Hans Merving, Torshalle, Sweden
Continuation-in-part of Ser. No. 393,841, Aug. 7, 1989, Pat. No. 4,905,410, which is a continuation of Ser. No. 184,072, Apr. 20, 1988, abandoned. This application Sep. 22, 1989, Ser. No. 410,884
Claims priority, application Sweden, Apr. 24, 1987, 8701680
The portion of the term of this patent subsequent to Mar. 6, 2007, has been disclaimed.
Int. Cl.[5] A01G *29/00*
U.S. Cl. 47—57.5 **17 Claims**



1. A tree treatment capsule for insertion into a bore in a tree comprising:
a head element.
a shank portion of smaller diameter integrally formed with said head element by a tapered portion, said shank portion having an internal cavity,
a chemical agent for treating a tree disposed in said internal cavity;
said shank portion having an end remote from said head element, said end having an opening for said internal cavity,
a tapered plug sealingly closing said opening,
said plug being tapered from a diameter larger than the diameter of said opening to a diameter smaller than the diameter of said opening such that said plug is only partially insertable into said opening in order to obtain a tight fit between said plug and said opening,
said head element, said shank portion, said chemical agent and said plug forming a self-contained capsule which is insertable as a unit into a bore in a tree having a diameter greater than the diameter of the shank portion and a length shorter than the length of the capsule so that when inserted into the tree, said plug abuts an end wall of the bore, said shank portion being frangible so that when a force is applied to said head element to move said shank portion towards said plug, said plug expands said opening and breaks said shank portion to enable the chemical agent to pass out of the shank portion into an annular space defined between the shank portion and the bore to mix with the tree sap, said capsule, when fully inserted into the bore having the head element seal the bore to prevent any leakage of the chemical agent from the bore.

5,010,685
ARTIFICIAL SEED COMPRISING A SUSTAINED-RELEASE SUGAR GRANULE

Yuji Sakamoto, Tochigi; Seiichi Umeda, and Hiroaki Ogishima, both of Saitama, all of Japan, assignors to Kirin Beer Kabushiki Kaisha, Tokyo, Japan
Filed May 1, 1989, Ser. No. 345,897
Claims priority, application Japan, May 2, 1988, 63-109624
Int. Cl.[5] A01C *1/06, 21/00*
U.S. Cl. 47—57.6 **5 Claims**

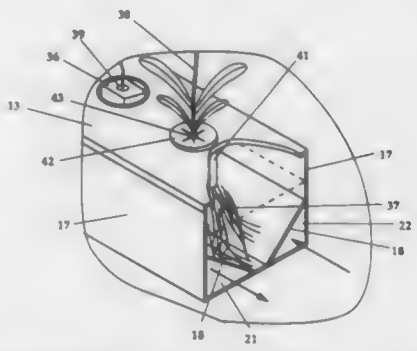


1. An artificial seed comprising
plant meristematic tissue and
at least one sustained-release granule of sugar comprising a core comprising primarily one or more of a monosaccharide, a disaccharide and a trisaccharide and an outer film comprising 10–90% by weight of an ethylene-vinyl acetate copolymer and 90–10% by weight of a wax, which are encapsulated in a gel matrix.

5,010,686
HYDROPONIC SYSTEM

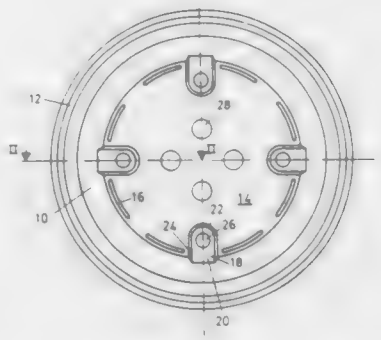
Daniel J. Rivest, P.O. Box 99, Mill Valley, Calif. 94942
Filed Apr. 20, 1990, Ser. No. 512,154
Int. Cl.[5] A01G *31/00*
U.S. Cl. 47—62 **11 Claims**

1. A hydroponic system, including a channel-like trough having opposed side walls and end walls and a closed bottom defining an upwardly opening coffer, a top cover secured to the trough and dimensioned to close the upwardly opening coffer, a plurality of holes formed in said top cover, a plurality of plant supporting members, each secured in one of said holes and disposed to support a plant with the plant roots extending into said trough and the stem entending upwardly from said top cover, said closed bottom of said trough including a pair of oblique walls joined longitudinally to form a V-shaped bottom extending longitudinally in said trough, a bottom wall extending generally orthogonally between said side walls, said bottom wall, side walls and oblique walls forming a pair of closed chambers extending longitudinally along said trough, each of said oblique walls including an upper edge joined to a respective one of said side walls along a medial line extending longitudinally therealong, each of said oblique walls including a lower edge joined to said bottom wall along a medial line extending longitudinally therealong.



5,010,687
FLOWERPOT

Erling Hougard, Jyllinge, Denmark, assignor to OS Plastic A/S, Farum, Denmark
Continuation of Ser. No. 266,222, Oct. 28, 1988, abandoned, which is a continuation of Ser. No. 829,059, Jan. 21, 1986, abandoned. This application Aug. 10, 1990, Ser. No. 566,808
Int. Cl.[5] A01G *9/02*
U.S. Cl. 47—79 **13 Claims**



1. A flowerpot comprising a sidewall; a substantially plane bottom having at least one opening for the passage of water thereinto; at least one inlet located in said flowerpot sidewall at the lowermost part of the pot for cooperation with a bottom irrigation plant, said inlet providing access to a channel having a top wall portion and first and second sidewall portions, said top portion extending a distance above the bottom of the pot, being arranged essentially parallel to said bottom, and said top portion provided with at least one opening for the passage of air and water, and a plurality of supporting legs arranged on the bottom of the pot extending radially from the sidewall of the pot; wherein at least two of said supporting legs comprises said first and second sidewall portions of said channel.

5,010,688
GARAGE DOOR OPERATOR WITH PLASTIC DRIVE BELT

Kenneth J. Dombrowski, Wheaton, and Joseph Ergun, Itasca, both of Ill., assignors to The Chamberlain Group, Inc., Elmhurst, Ill.
Filed Apr. 30, 1990, Ser. No. 516,662
Int. Cl.[5] E05F *15/16;* **F16H** *19/06*
U.S. Cl. 49—362 **15 Claims**

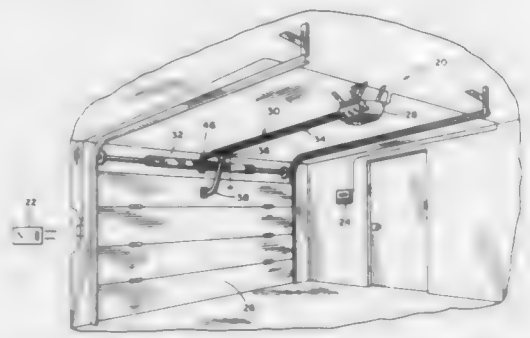
1. A garage door operator for moving a garage door be-

tween an open position and a closed position, said operator comprising:

a head unit for being fixedly held by a supporting structure positioned remote from said door, said head unit including a motor and a drive wheel having spaced teeth on its periphery for being driven by said motor;

elongate rail means having a first end for being fixedly held by a supporting structure disposed adjacent and above said door, said rail means including a pulley located adjacent said first end, said rail means further including a second end for being fixedly held adjacent to and in alignment with said drive wheel; and

a drive belt assembly for training about said drive wheel and said pulley in two runs and for being supported by said rail means, said belt assembly including a length of a plastic belt with teeth on one surface thereof matching the teeth on said drive wheel, said belt assembly further including a trolley means for connection to said garage door and a first connector for joining one end of said plastic belt to



one end of said trolley means, said plastic belt having a lower surface to which the belt teeth extend, said drive wheel having an upper surface to which the wheel teeth extend, said drive wheel being adapted to engage only said plastic belt component of said belt assembly, said first connector including a belt clip comprising a pair of spaced, aligned side walls, one of said side walls having an inside surface with undulations corresponding to the teeth of said plastic belt, said first connector further including a clip holder deformable from an as-formed position in which said holder can receive said side walls flanking said belt with the belt teeth aligned with said undulations to a deformed position in which said holder firmly holds said side walls with said belt positioned therebetween whereby said belt assembly can be installed by training it around said pulley, moving the plastic belt lower surface over the drive wheel upper surface until their respective teeth are aligned and moving said belt downwardly to train it about said drive wheel.

5,010,689

GLASS RUN CHANNEL

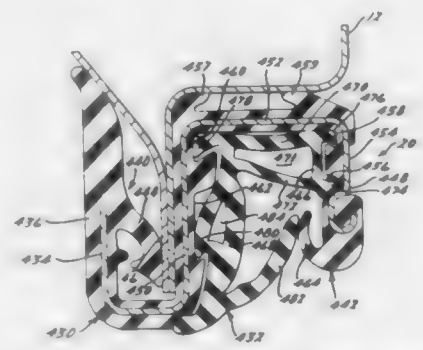
Robert A. Vaughan, Dearborn, Mich., assignor to The Standard Products Company, Cleveland, Ohio

Filed Mar. 19, 1990, Ser. No. 495,783
Int. Cl.[5] E05D *15/16*
U.S. Cl. 49—440 **10 Claims**

1. A glass run channel weather strip comprising:

a first elongated member including a reinforcement element and a skin integrally bonded to said reinforcement member, said first member, in cross-section, having an overall S-shaped with a first and second U-shaped portion, said first U-shaped portion of the S-shape first member having means adapted for retaining the first member onto a flange, the second U-shaped portion having one or more retaining channels formed in the integral skin on the interior of the U-shaped portion; and

a second elongated member having an overall U-shape in cross-section, one or more projecting members projecting from the exterior of the U-shape having shapes complementary to the shapes of the one or more channels in the second U-shaped portion of the S-shaped member adapted for coupling with said one or more channels for mechanically retaining said second member within said first member, and a finger member projecting from one of the legs of the U-shaped second member into the interior of the U-shaped second member to provide a seal when a window is positioned in the glass run channel.

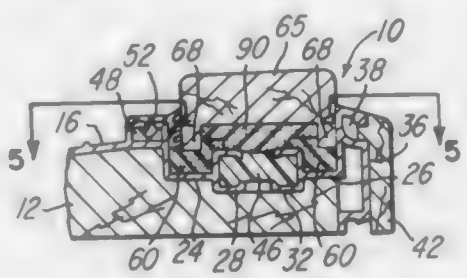


5,010,690

ADJUSTABLE THRESHOLD ASSEMBLY WITH WATER-TIGHT SEALS

David C. Geoffrey, Richmond, Ind., assignor to Imperial Products, Inc., Richmond, Ind.

Filed Apr. 14, 1990, Ser. No. 509,704
Int. Cl.[5] E06B *1/70*
U.S. Cl. 49—468 **10 Claims**



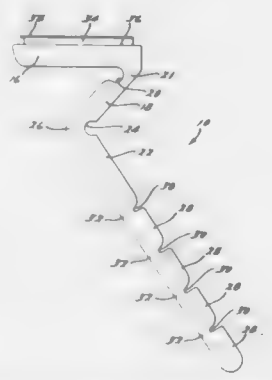
1. An improved threshold assembly adapted to be installed below the bottom surface of a movable door, comprising an elongated horizontal sill member including a sloping top wall connected to walls defining a longitudinally extending and upwardly facing cavity, a first resilient closed cell foam material within said cavity, an elongated rail member disposed within said cavity and having opposite end portions and a bottom surface, said rail member including longitudinally extending means projecting downwardly into said first foam material within said cavity to form a fluid-tight dependable seal between said rail member and said sill member, means for adjusting said rail member vertically within said cavity, a pad of second resilient closed cell foam material engaging said bottom surface of each said end portion of said rail member, each said pad of second foam material overlapping and engaging said first foam material within said cavity to form fluid-tight seals at said opposite end portions of said rail member, and said first and second foam material being compressible and expandable in response to vertical adjustment of said rail member for maintaining said fluid-tight seal with different vertical positions of said rail member.

5,010,691

WEATHER SEAL FOR A DOOR

Kenjiro Takahashi, Dearborn Heights, Mich., assignor to The Standard Products Company, Cleveland, Ohio

Filed Aug. 8, 1989, Ser. No. 390,776
Int. Cl.[5] E06B *7/16*
U.S. Cl. 49—482 **7 Claims**



1. A weather seal for a door having a gap between the door and a support surface comprising:

a base member adapted to be secured to a surface of the door, said base member extending longitudinally in a plane along the surface of the door;

a hinge member pivotally connected to said base member for pivotal movement relative to said base member and extending outwardly in a first direction at an angle to the plane of said base member;

a sealing lip pivotally connected to said hinge member for pivotal movement relative to said hinge member and extending outwardly in a second direction further removed from said base member and at an angle opposite to an angle between said hinge member and said base member and having a first position at an angle to the plane of said base member and a second position to engage a support surface to effect a seal between the door and the support surface;

said sealing lip including means for varying the width of said sealing lip to a predetermined width to effect a seal between the door and the support surface.

5,010,692

POLISHING DEVICE

Takao Ishida, Aichi; Hiroshi Hagiwara, and Ichizo Kakumu, both of Nagoya, all of Japan, assignors to Sintobrator, Ltd., Aichi, Japan

Continuation of Ser. No. 307,037, Feb. 7, 1989, abandoned, which is a division of Ser. No. 177,268, Apr. 4, 1988, abandoned. This application Feb. 6, 1990, Ser. No. 474,690
Int. Cl.[5] B24B *1/00*
U.S. Cl. 51—283 R **2 Claims**

1. A method of polishing a workpiece comprising the steps of:

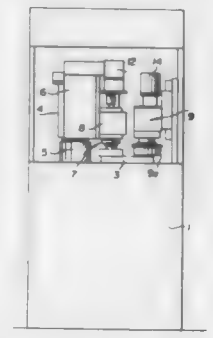
positioning said workpiece in a holding device comprising a movable arm;

delivering said workpiece from a supply position to a grinding position by movement of said movable arm;

pressing a surface of the workpiece to a grinding surface of a rotary grindstone while rotating the grindstone;

rotating said workpiece about a central axis of the workpiece while pressing said surface of the workpiece against said grinding surface;

feeding a rotating truing dressing grinding downwardly against said rotary grindstone grinding surface at a position spaced apart from said workpiece; and simultaneously with said pressing and rotating of said workpiece, continuously truing dressing said grinding surface



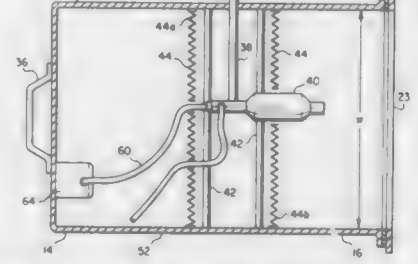
by said truing dressing grindstone at said position spaced apart from said workpiece.

5,010,693

SELF-CONTAINED SANDBLASTING UNIT

Tobie D. Hatch, 201 Shady Shores, No. 94, Lake Dallas, Tex. 75065

Filed Sep. 15, 1989, Ser. No. 408,196
Int. Cl.[5] B24C *9/00, 3/06, 5/04*
U.S. Cl. 51—427 **11 Claims**



1. A self-contained sandblasting unit comprising:

a housing, said housing having a principal body portion and an outlet body portion, said outlet body portion having a proximal end and a distal end, said outlet body portion defining an opening therethrough at said distal end thereof whereby the interior of said housing is in communication with the external environment of said housing through said opening, said proximal end of said outlet body portion being connected to said principal body portion;

a slidable support bar mounted through said principal body portion whereby said support bar is laterally slidable through said principal body portion;

a means for isolating said slidable support bar from the interior environment of said housing;

a nozzle, said nozzle mounted on said slidable support bar whereby said nozzle is directed through said opening defined through said distal end of said outlet body portion, and whereby said nozzle is laterally slidable through said principal body portion;

a compressed air source attached to said nozzle; and

a particulate matter source connected to said nozzle whereby a stream of compressed air and particulate matter is directed through said nozzle and through said opening defined through said distal end of said outlet body portion at a constant angle as said nozzle is moved laterally through said principal body portion.

5,010,694

FLUID CUTTING MACHINE

Robert O. Agbede, Monroeville, Pa., assignor to Advanced Technology Systems, Inc., Monroeville, Pa.

Filed Aug. 1, 1989, Ser. No. 388,151
Int. Cl.[5] B24C *3/06*
U.S. Cl. 51—429 **19 Claims**



1. Apparatus for severing metal casing comprising,
a supply of abrasive particles,
a vessel for storage of the abrasive particles,
said vessel having an inlet at the bottom of said vessel for receiving air under pressure to pressurize said vessel to a preselected level to suspend the abrasive particles in said vessel, said vessel inlet serving as an outlet for discharging from the bottom of said vessel the abrasive particles entrained in a pressurized air stream,
a source of water under pressure,
a nozzle assembly positioned adjacent the metal casing to be severed,
said nozzle assembly having a first inlet for receiving the abrasive particles entrained in said pressurized air stream, a second inlet for receiving a flow of the pressurized water, a mixing chamber, an outlet nozzle for discharging the abrasive particles encapsulated in the flow of pressurized water to form an abrasive cutting stream,
manipulator means for mounting said nozzle assembly for rotation at a controlled rate around the casing as said abrasive cutting stream impacts the surface of the casing,
means for charging said vessel with compressed air through said vessel inlet to maintain the abrasive particles suspended under pressure within said vessel wherein the abrasive particles have a size capable of maintaining substantially all the particles in said vessel in suspension by the air under pressure, and
conduit means for controlling the flow of the abrasive particles entrained in said pressurized air stream from said vessel inlet through said nozzle assembly inlet to said mixing chamber for mixture with the pressurized water and discharge from said outlet nozzle as said abrasive cutting stream upon the metal casing.

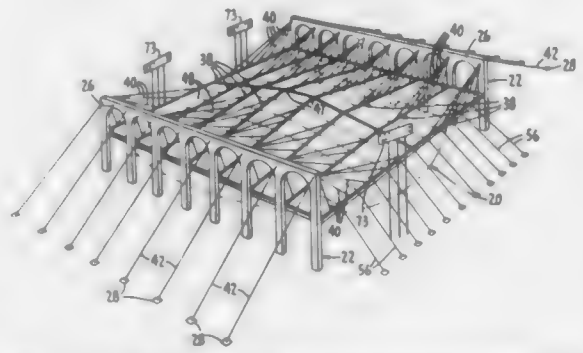
5,010,695

CABLE-STAY ROOF FOR STADIUM OR ARENA AND METHOD OF CONSTRUCTION OF SAME

Adam T. Schildge, Jr., 899 Green St., San Francisco, Calif. 94133

Filed Jan. 10, 1990, Ser. No. 462,831
Int. Cl.[5] E04H *3/10*; E04B *7/14*
U.S. Cl. 52—6 **8 Claims**

5. A roof structure for use over an open topped stadium, said structure comprising:
(a) a first row of cable stay towers located outside one side of the stadium;
(b) a second row of cable stay towers located outside the stadium to the side thereof opposite said one side;
(c) a first roof section cantilevered from the first row of towers and extending therefrom partially over the stadium and toward the second row of towers, said first roof section being disposed in compression imparting relationship to the first row of towers;
(d) a second roof section cantilevered from the second row of towers and extending therefrom partially over the stadium and toward the first row of towers, said second roof section being disposed in compression imparting relationship to the second row of towers and said first and second roof sections having spaced distal edges defining a open span gap therebetween;
(e) first cable stay means extending from each row of said towers to suspend the load of the roof section cantilevered therefrom,



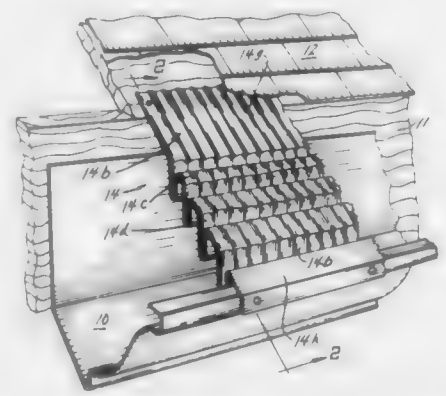
(f) second cable stay means extending from each row of said towers to counterbalance the load imparted to the towers by the first cable stay means;
(g) an intermediate roof section disposed between the first and second roof sections to at least partially close the gap therebetween; and,
(h) cable stays suspending the intermediate roof section in tension between the first and second rows of towers to support the intermediate section without imparting substantial loading to the first and second roof sections.

5,010,696

ROOF GUTTER ATTACHMENT

Richard D. Knittel, R. 4, Pinckard Pike, Versailles, Ky. 40383

Filed Aug. 13, 1990, Ser. No. 565,932
Int. Cl.[5] E04D *13/00*
U.S. Cl. 52—12 **13 Claims**



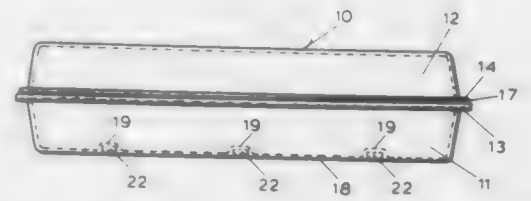
1. An attachment for a gutter positioned in the eave region of a building comprising a body overlying said gutter at an operative position, said body presenting a series of generally parallel horizontal steps angling in a downward direction in a pattern encouraging liquid flow to an outlet in said gutter, said steps each separated by a receiving pocket, and where said receiving pocket includes outlet means for liquid discharge into said gutter.

5,010,697

MAUSOLEUM CONSTRUCTION

Jerry C. Schwarten, 5131 N. Cumberland Blvd., Milwaukee, Wis. 53217

Continuation of Ser. No. 700,412, Feb. 11, 1985, Pat. No. 4,669,157. This application May 15, 1987, Ser. No. 50,731
The portion of the term of this patent subsequent to Jun. 2, 2004, has been disclaimed.
Int. Cl.[5] A61G *17/00*
U.S. Cl. 52—134 **2 Claims**



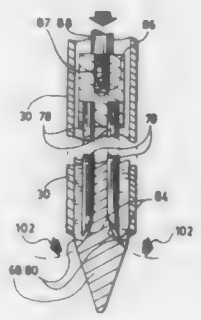
1. A mausoleum, comprising a plurality of caskets, each of said caskets including a lower, trough-shaped, upwardly opening bottom portion having an upper peripheral lateral flange, an upper, trough-shaped, downwardly opening bottom portion cover having a lower perpheral lateral flange superposed on said upper flange of said bottom portion, and means for sealing said flanges together in an airtight fashion; a support structure made of structural members and having means for supporting each of said caskets; and a housing enclosing said caskets and said support structure, wherein said means for supporting said caskets comprises a plurality of pairs op parallel, spaced apart rails, each of said caskets being insertable between a pair of said rails so that said flanges of each casket are superposed on said pair of rails on opposite lateral sides of said casket to support said casket.

5,010,698

ANCHORING POST ASSEMBLY

Denis P. Hugron, 1855, Georges, St-Hubert, Quebec, Canada

Filed Jul. 17, 1990, Ser. No. 553,526
Int. Cl.[5] E02D *5/80*
U.S. Cl. 52—160 **4 Claims**



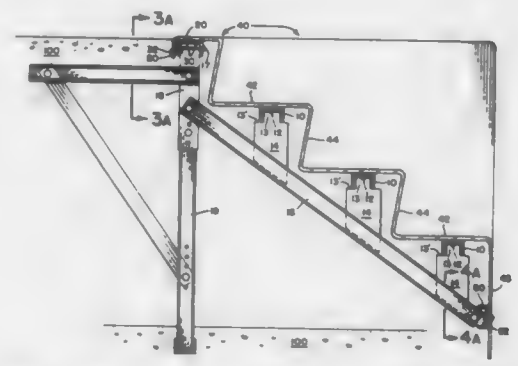
1. An anchoring post adapted to be driven into the ground, said post comprising:
a hollow uniform cylindrical member;
a pointed tip rigidly secured to the lower end of said cylindrical member, said tip having an upper tubular portion fittingly inserted into said cylindrical member and a conical lower portion extending below said cylindrical member, said tubular portion having a pair of vertical recessed channels grooved on its periphery and diametrically disposed relative to each other, said channels extending downwardly and partly into the conical portion to provide a pair of diametrically disposed openings below the cylindrical member, said channels having a slanted lower face directed outwardly in opposite directions, a tubular neck portion slidingly fitting into said cylidrical member above said pointed tip, a pair of elongated prongs rigidly secured to said tubular neck portion at the lower end thereof, said prongs being diametrically disposed relative to said tubular neck portion, and each prong adapted to fittingly slide into a corresponding channel of said channels, said neck portion being provided with a threaded bore adapted to threadedly receive a threaded bar for downwardly pushing said prongs through said openings until said neck portion abuts against said pointed tip, said prongs adapted to laterally extend outwardly relative to said cylindrical member, a sleeve inwardly secured at the upper end of said cylindrical member, said sleeve having an internally threaded hole, a flat ring secured at the upper end of said cylindrical member and of said sleeve for providing a wide striking surface for driving said cylindrical member into the ground and a tieing nut threadedly mounted in said sleeve for tightly closing said threaded hole,
whereby said cylindrical member is driven into the ground by pressure applied on said flat ring, and said prongs are driven through said openings into the ground laterally in opposite directions relative to the cylindrical member by said bar pushing on said neck portion through said sleeve, said threaded hole being subsequently closed by said tieing nut.

5,010,699

MODULAR STAIR SUPPORT FIXTURES HAVING ALTERNATE PACKAGING USAGE

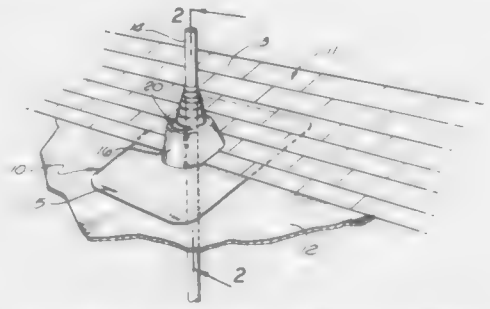
John V. Maiuccoro, Albany, and John Gardenier, Guilderland, both of N.Y., assignors to Saratoga Spa & Bath, Latham, N.Y.

Filed May 9, 1990, Ser. No. 521,328
Int. Cl.[5] E02D *27/00*
U.S. Cl. 52—169.8 **5 Claims**



1. In a stair support system comprising a preformed stair module and including a folding outer leg having top and bottom ends with bottom end securing means and top end fastening means for connection to a stair module top end fixing means, a stringer having a top end removably connected to the outer leg, adapted to underlie steps of said module and removably connectable by bottom end fastening means to a buttress riser of said module, and a plurality of stair support members each of which has a first support end connected to the stringer and a second support end adapted to underlie and support a normally horizontal step structural element, an improvement comprising:
a first rigid brace means disposed in a collar means of said module, said first brace means further comprising mortise means therewithin and adapted to receive an outer leg therein and directly contact an end of said outer leg;
a second rigid brace means disposed on the module at the backside of said buttress riser of said module and comprising a front buttress, said front buttress adapted for fastening thereto said stringer; and
said plurality of support members each defining at each said second support end thereof a plane tenon.

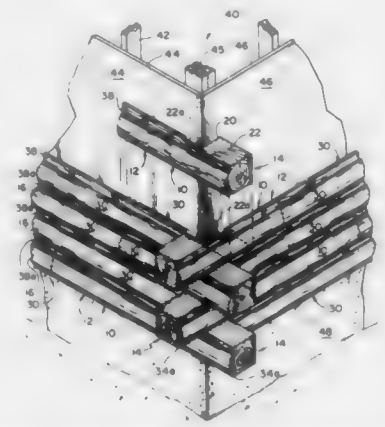
5,010,700
ROOF JACK
Earl Blair, 19340 E. San Jose Ave., City of Industry, Calif. 91748
Continuation of Ser. No. 374,286, Jun. 30, 1989, abandoned. This application Jul. 23, 1990, Ser. No. 581,422
Int. Cl.[5] E04H *12/28*
U.S. Cl. 52—199 **15 Claims**



1. A roof jack or vent seal for use on a generally planar pitched roof having a vent or structure extending upward through the roof and requiring a weather seal comprising:
- a flexible vacuum formed unitary plastic member of polymeric-synthetic rubber material including a generally planar portion;
- said generally planar portion surrounding an upstanding portion;
- said upstanding portion including a plurality of coaxial substantially parallel stepped reduced diameter tubular portions, each including an upstanding portion of substantial length having an internal dimension generally coorresponding to the outside dimensions of a structure to be used with said roof jack; and
- said flexible plastic member including a transition portion between said base portion and at least one of said tubular portions;
- said transition portion including at least one corrugation which will flex to allow the generally planar portion to conform to the plane of the roof to which the roof jack is secured permitting the tubular portion to extend generally parallel to the length of a structure extending therethrough;
- said flexible plastic member being severable at the tubular portion corresponding to the outside dimension of the vent.

5,010,701
CORNER SYSTEM FOR LOG CABIN SIDING
Brenton S. Halsey, Jr., Richmond, Va., and Arthur C. Larson, Brewer, Me., assignors to Diamond Occidental Forest, Inc., Old Town, Me.
Filed Dec. 5, 1989, Ser. No. 446,328
Int. Cl.[5] E04B *1/10*
U.S. Cl. 52—233 **8 Claims**

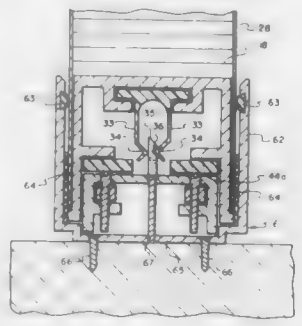
1. A corner system for building construction with log cabin siding comprising:
- a building corner with first and second walls covered with sheathing material intersecting substantially at right angles;
- elongate wall siding pieces applied over the walls, said wall siding pieces having a flat inner side facing the building wall and a curved outer side for simulated log cabin appearance, said wall siding pieces being applied in substantial horizontal alignment over the walls and arranged with top and bottom edges of adjacent wall siding pieces abutting;
- elongate corner siding pieces for use on the walls at the building corner, said corner siding pieces having an elongate wall covering portion matching the wall siding pieces and being arranged in horizontal alignment with the wall siding pieces, and an elongate projecting log end portion extending beyond the building corner, said projecting log end portion being formed integrally in a single piece with the wall covering portion, each corner siding piece being cut from a single piece of wood without a joint or seam and with continuous grain between the wall covering portion and projecting log end portion;
- said projecting log end portion having a thickness substantially greater than the wall covering portion for simulated whole log appearance at the building corner;
- said corner siding pieces on the intersecting walls at the building corner being arranged in vertical sequence at the building corner with projecting log end portions extending alternately from the first and second walls substantially at right angles to each other, each corner siding piece having a wall covering portion applied to one of the first or second walls and a projecting log end portion with a flat reverse facing side abutting against the other wall;
- said corner siding pieces being formed with a flat inset surface on top formed over the length of the projecting log



end portion and along a length of the wall covering portion a distance substantially equal to the lateral thickness of the projecting log end portion for accommodating the projecting log end portion of the next corner siding piece extending at right angles in vertical sequence above;
- each corner siding piece on one wall having the projecting log end portion abutting the end of a wall siding piece applied in horizontal alignment and at right angles on the other wall;
- the corner siding pieces being formed with projecting log end portions having flat top and bottom faces along the length of the projecting log end portions, said projecting log end portions resting on each other in vertical sequence;
- the projecting log end portion of each corner siding piece on one wall being formed with a flat inner face, the abutting wall siding piece in horizontal alignment at right angles on the other wall being formed with a straight edge at the end for abutting against the flat inner face of the projecting log end portion.

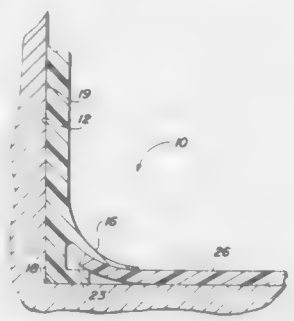
5,010,702
MODULAR WALL SYSTEM
Terry L. Daw, and David F. Procter, both of Salt Lake City, Utah, assignors to Daw Technologies, Inc., Salt Lake City, Utah
Continuation-in-part of Ser. No. 331,826, Apr. 3, 1989. This application May 30, 1989, Ser. No. 358,876
Int. Cl.[5] E04B *2/88;* **E04H** *5/00*
U.S. Cl. 52—241 **5 Claims**

1. A modular wall system for removable placement between a floor and a ceiling comprising:
- panel means having a top portion and a bottom portion, said bottom portion including a first fastening member and a generally U-shaped channel member having two leg members separated by a central member, said central member comprising a bottom surface along substantially the entire length thereof, said bottom surface having means for attaching said first fastening member thereto,
- head means attachable to the ceiling for contacting said top portion of said panel means,
- elongate floor means comprising a second fastening member and a generally U-shaped channel portion having two leg portions separated by a central portion, said floor means being placeable on the floor for contacting said bottom portion of said panel means, said central portion comprising a support surface which extends along substantially the entire length thereof, said second fastening member being located on said support surface,



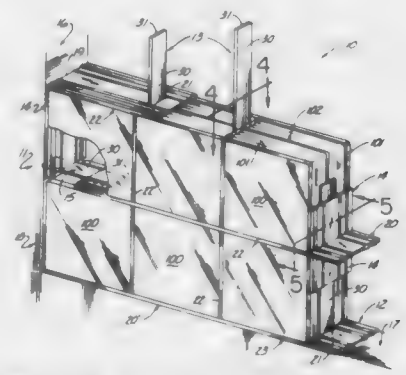
whereby, when said panel means is positioned on said elongate floor means, said first fastening member can attach to said second fastening member while said bottom surface and said support surface remain in spaced-apart relationship,
- said modular wall system further including means attachable to the floor for cradling said floor means, said cradling means comprising a U-shaped member having a central portion and leg portions, said central portion having means for attachment to the floor and to said floor means, each of said leg portions having means for aligning said bottom portion of said panel means and gasket means for inhibiting the flow of airborne particulates around said bottom portion of said panel means, whereby said floor means is prevented from contacting the floor by said cradling means.

5,010,703
WALLBASE MOLDING STRIP
Mort Pearlman, 7360 SW 16th Street, Plantation, Fla. 33317, and Neal V. Valkenburg, P.O. Box 224, Astatula, Fla. 32705
Continuation of Ser. No. 237,576, Aug. 26, 1988, abandoned. This application Sep. 18, 1989, Ser. No. 409,956
Int. Cl.[5] E04F *19/04*
U.S. Cl. 52—288 **9 Claims**



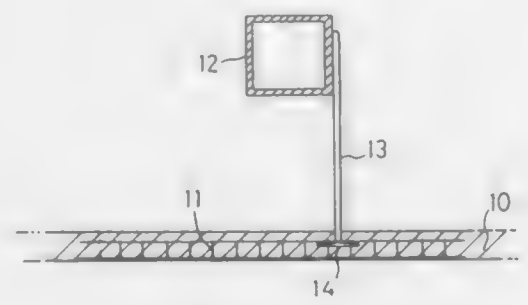
1. In combination with a wall, a floor joining said wall and a flooring material of certain thickness covering said floor, an elongated wallbase molding strip of resilient material comprising:
- a vertical back portion having front and rear surfaces bounded by top and bottom edges;
- a skirt portion extending outwardly and downwardly in a smooth and continuous contour from said front surface of said back portion along a first line intermediate said top and bottom edges to a skirt portion leading edge; and
- self-hinge means in the form of a recess running longitudinally along said rear surface of said strip along a second line, said recess being dimensioned, configured and adapted for facilitating the folding of a bottom part of said back portion away from a top part of said back portion along a second line intermediate said top and bottom edges, said second line being below said first line;
- said bottom part being folded forwardly at said recess, said rear surface being positioned against said wall at said top part and against said floor at said bottom part; and said skirt portion pressing down at said leading edge onto said flooring material, with said contour serving as a smooth and continuous transition from said front surface above said first line to said flooring material.

5,010,704
GLASS BLOCK CONSTRUCTION ASSEMBLY
Earl G. Thompson, 16121 SE. Fourth St., Vancouver, Wash. 98684
Filed May 21, 1990, Ser. No. 525,569
Int. Cl.[5] E04G *21/18*
U.S. Cl. 52—308 **3 Claims**



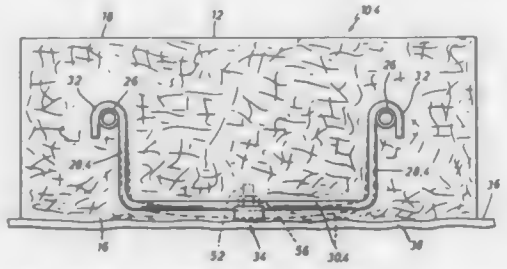
1. A glass block construction assembly for glass blocks having raised beads surrounding the external faces of the block and an intermediate raised bead surrounding the interior periphery of the block wherein the assembly comprises:
- an outer assembly unit including vertical and horizontal wall segments which form an open framework member;
- a horizontal alignment unit comprising a plurality of elongated contoured slat members provided with a plurality of spaced apertures; and opposed sides which are contoured and colored to resemble a concave tooled joint; wherein, the contoured members are further provided with a pair of upper and lower raised longitudinal ribs which are disposed on opposite sides of the said plurality of apertures;
- a vertical alignment unit comprising: a plurality of elongated relatively thin and flat slat members provided with at least one elongated longitudinal slot wherein the flat slat members are dimensioned to be received in selected ones of said plurality of spaced apertures in the plurality of contoured slat members for forming an open matrix within the said assembly unit wherein the glass blocks are dimensioned to be received within the openings in the matrix; and, a plurality of vertical spacing units comprising truncated segments of said flat slat members wherein, said truncated segments of said flat members are dimensioned to be received between the raised longitudinal ribs on one side of the contoured slat members; and wherein, the longitudinal recess in the flat slat members is dimensioned to receive the said intermediate raised bead on the glass blocks.

5,010,705
CURTAIN WALL
Shigeyuki Akihama, Kanagawa; Mikio Kobayashi, Tokyo; Tatsuo Suenaga, Tokyo; Toshiyuki Fukumoto, Tokyo; Yoshikazu Taniguchi, Tokyo, and Hiroaki Nakagawa, Tokyo, all of Japan, assignors to Kajima Corporation, Tokyo, Japan
Division of Ser. No. 339,788, Jan. 4, 1989. This application May 1, 1990, Ser. No. 517,224
Int. Cl.[5] E04C *2/26, 2/46;* E04B *2/88*
U.S. Cl. 52—477 10 Claims



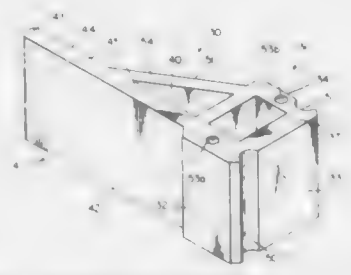
1. A curtain wall building panel, comprising:
a plurality of first sets of first fibers, each of said first fibers extending substantially parallel to a first direction, each of said first sets containing a plurality of said first fibers disposed in a respective plane and spaced from each other by respective first distances, each of said respective planes of said first sets being disposed substantially parallel to each other and being spaced from each other by respective second distances;
a plurality of second sets of second fibers, each of said second fibers extending substantially parallel to a second direction perpendicular to said first direction, each of said second sets containing a plurality of said second fibers disposed in a respective plane and spaced from each other by respective third distances, each of said respective planes of said second sets being disposed substantially parallel to each other and to said respective planes of said first sets and being spaced from each other by said respective second distances, said first fibers of each of said first sets being connected to said second fibers in an associated one of said second sets at intersection points;
a plurality of third fibers extending substantially parallel to a third direction substantially perpendicular to both said first and said second directions, each of said third fibers being connected to an associated one of said intersection points in each of said first and second sets, said first, said second and said third fibers being formed from one or more of the group consisting of carbon, aramid, glass, formalized polyvinylalcohol or polyethelene, whereby said first, second and third fibers comprise edges of at least one cell and define a self-supporting three dimensional braid;
a frame spaced from said braid and extending in a plane substantially parallel to said respective planes of said first and second sets;
at least one flexible anchor extending between said frame and said braid, a first end of said anchor being connected to said frame and a second end of said anchor being connected to said braid; and
an essentially rigid building material encompassing, and at least essentially filling said at least on cell of, said braid and encompassing a portion of said at least one anchor.

5,010,706
INSULATION AND THE PROVISION THEREOF
Robert A. Sauder, Emporia, Kans., assignor to Thermal Ceramics, Inc., Augusta, Ga.
Continuation of Ser. No. 920,282, Oct. 17, 1986, Pat. No. 4,984,405, which is a continuation of Ser. No. 830,462, Feb. 18, 1986, abandoned, which is a continuation of Ser. No. 752,078, Jul. 3, 1985, abandoned, which is a continuation of Ser. No. 331,673, Dec. 17, 1981, abandoned. This application May 10, 1990, Ser. No. 521,749
The portion of the term of this patent subsequent to Jan. 15, 2008, has been disclaimed.
Int. Cl.[5] E04B *1/80*
U.S. Cl. 52—506 32 Claims



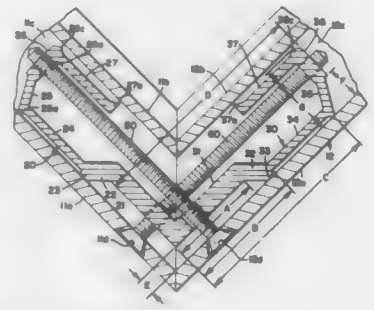
1. An insulation member for insulating a furnace surface, comprising:
a deformable mat of fibrous insulation material having a cold face, to be positioned against a furnace surface, the mat having an opposed hot face, the fibrous insulation material having fiber planes which extend generally normally with respect to the cold face;
elongated connection means having a mounting for receiving a stud to be attached to the furnace surface, and having channels remote from said mounting, the connection means being positioned in the mat so that contact between the cold face and the furnace surface consists substantially entirely of said fibrous insulation material, thereby presenting a deformable cold face that can conform to the contour of the furnace surface; and,
elongated linear members extending generally parallel to the cold face and transversely with respect to the fiber planes, the elongated linear members being positioned within the mat spaced from both the cold face and the hot face, the elongated linear members being disposed in said channels of the connection means.

5,010,707
RETAINING WALL BLOCK MODULE
Ned Nelson, 3 Lake Bellevue Dr., Suite 200, and William H. Duesenberg, 3 Lake Bellevue Dr., Suite 100, both of Bellevue, Wash. 98005
Filed Aug. 21, 1989, Ser. No. 396,088
Int. Cl.[5] E04B *5/04*
U.S. Cl. 52—605 8 Claims



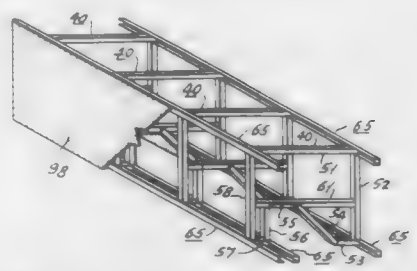
1. A retaining wall block comprising:
(a) A body having a front surface, a vertical central passageway, and one or more identically shaped vertical recesses;
(b) A leg extending laterally from said body and having a vertical end surface with a shape complementary to that of said recesses, wherein said leg joins said body forwardly of a center of said central passageway, and
(c) a diagonal support disposed between said body and said leg.

5,010,708
CORNER LOCK
Harold H. Evans, Hudson, Wis., and Todd W. Bruchu, Lake Elmo, Minn., assignors to Anderson Corporation, Bayport, Minn.
Filed Mar. 10, 1989, Ser. No. 321,730
Int. Cl.[5] F16B *7/00*
U.S. Cl. 52—656 11 Claims



9. A frame corner comprising:
(a) a first frame member having a mitred end and forming an opening and channel and first channel cavity at its mitred end;
(b) a second frame member having a mitred end and forming an opening and second channel cavity member at its mitred end;
(c) both of said cavities having first surfaces and second, opposite surfaces; and
(d) a corner fastener for cooperatively connecting said first frame member to said second frame member, said fastener comprising:
(i) a first leg member having a first and second end, and a second leg member, having a first and second end, said first ends cooperatively connected to each other at an intersection;
(ii) said leg members in relation to the intersection each having proximal and distal sections;
(iii) said proximal sections each having an aperture formed therein through which the fastening members may pass;
(iv) said first leg member having an auxiliary section cooperatively connected to said distal section, said auxiliary section of said first leg having an a threaded aperture for receiving the first fastening member;
(v) said second leg member having an auxiliary section cooperatively connected to said distal section, said auxiliary section of said second leg having a threaded aperture for receiving the second fastening member; and
(vi) said distal sections being offset relative to said proximal sections respectively, whereby when said fastener is inserted in the channel cavities, said distal section of the first leg member contacts the first surface of the first channel cavity and the distal section of the second leg section contacts the first surface of the second channel cavity, wherein said distal sections act as a fulcrum against the first surfaces when the fastening members are tightened through said threaded apertures and brought closer to the frame members by rotation of said fastening members in said threaded apertures, thereby permitting alignment and adjustment of the mitres of the first and second frame members.

5,010,709
BENDABLE CHANNEL CONSTRUCTION ELEMENT
Felix Paz, 256 Greenway Rd., Lido Beach, N.Y. 11561
Filed Feb. 28, 1990, Ser. No. 486,078
Int. Cl.[5] E04C *2/38;* E04B *1/00*
U.S. Cl. 52—658 13 Claims



1. A construction element comprising:
an elongated channel having a generally U-shaped cross-section that includes a web, parallel firs and second arms each having a front end and rear end, said arms at their front ends being connected to said web and extending rearward from opposite ends of said web;
said channel being bendable to define integrally formed first and second sections that are disposed at a selected angle with respect to each other and connected in end to end relation at a transverse bend line in said web;
said channel prior to bending thereof at said bend line having said first and second sections in axial alignment;
prior to bending of said channel at said bend line, said first and second arms each having a notch therein extending between said front and rear ends and including a V-section having its apex disposed at as front end;
said bend line extending between the apiece of said V-sections prior to bending of said channel at said bend line, each of said arms having first and second aperture means disposed on opposite sides of said notch;
with said channel sections being disposed at said selected angle said first aperture means being aligned with said second aperture means;
said first and second aperture means of said first arm, when aligned, being adapted to receive a fastening means to maintain said channel sections disposed at said selected angle;
said first and second aperture means of said second arm, when aligned, being adapted to receive fastening means to maintain said channel sections disposed at said selected angle;
said front end and said rear end being spaced by a distance that is comparable to the length of said transverse bend line; and
each of said V-sections extending toward said rear end for a distance that is substantially less than the distance between said front end and said rear end.

5,010,710
GROUND ROD DRIVER
Daniel W. Gray, Maple City, Mich., and Thomas E. Jewett, Littleton, Colo., assignors to Foresight Industries, Inc., Commerce City, Colo.
Filed Apr. 16, 1990, Ser. No. 509,133
Int. Cl.[5] E04B *1/00*
U.S. Cl. 52—742 22 Claims

1. A device for driving rods and the like into the ground which comprises a body member having a rod receiving passage therethrough, a clamp in said passage to releasably lock an intermediate portion of a rod in said passage to the body member, an open top, closed bottom socket in the body member spaced laterally from the passage, and a drive shank slidable in

said socket adapted to strike the bottom of the socket and projecting above the body member and adapted to be impacted

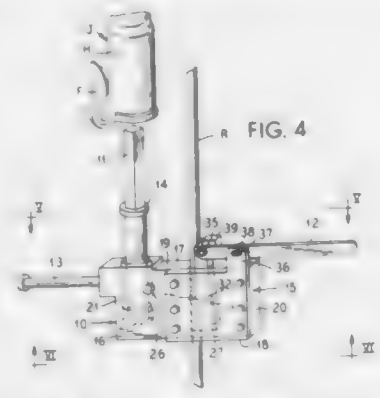


FIG. 4

by a driving tool for transferring driving force through the body member to the rod clamped in the passage

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5,010,711

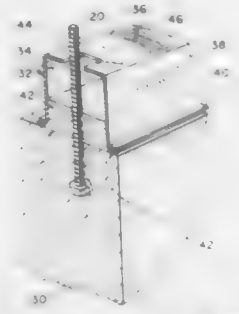
FOUNDATION LEVELING AND EQUALIZATION SYSTEM

Gilford P. Batio, and Jeffrey A. Batio, both of 534 N. Grace St., Mundelein, Ill. 60060

Continuation of Ser. No. 187,385, Apr. 28, 1988, abandoned. This application Jan. 10, 1990, Ser. No. 463,903

Int. Cl.[5] E04B *1/00*

U.S. Cl. 52—742 **9 Claims**



1 A method of applying a layer of filler material to an existing concrete foundation to provide a substantially level foundation surface, comprising the steps of:

selecting a settable filler material having a slow enough setting time and a low enough viscosity to flow and assume a level condition over a substantial portion of a wall without the need of screeding,

generally determining the amount of deviation of the top surface of a foundation wall from a level surface,

determining the amount of said filler material sufficient to exceed the volume formed by said deviation along said foundation wall,

positioning a means to retain said filler material along said top surface of said foundation wall,

securing said filler material retaining means to said foundation such that it provides for a sufficient vertical interval above said foundation for said filler material to seek its own horizontal level within said retaining means,

pouring said determined amount of filler material into said filler retaining means,

allowing said filler material to seek its own level within said retaining means, and

allowing said filler material to harden.

5,010,712

METHOD OF AND APPARATUS FOR THE PACKAGING OF PRESSURE-SENSITIVE ARTICLES

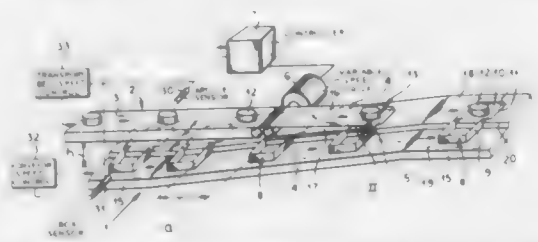
Heinz F. Odenthal, Zülpich, Fed. Rep. of Germany, assignor to Ostma Maschinenbau GmbH, Zulpich, Fed. Rep. of Germany

Filed Aug. 8, 1990, Ser. No. 565,019

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1989, 3926261

Int. Cl.[5] B65B *5/04, 23/00*

U.S. Cl. 53—55 **6 Claims**



1 A method of packing pressure-sensitive articles, comprising the steps of:

(a) advancing prefolded boxes each formed with a packing underlay in mutually spaced relationship continuously in succession in a transport direction along a transport path so that each of said packing underlays extends away from a respective cover and is formed with sidewall flaps;

(b) simultaneously advancing on a continuously driven transport belt above said boxes, a succession of said articles in mutually spaced relationship in said direction;

(c) transferring said articles one at a time from said transport belt to a delivery belt converging toward said path so that only one of said articles at a time is present on said delivery belt;

(d) continuously feeding each of said articles on said delivery belt to a transfer location substantially meeting a respective one of said packing underlays to transfer the article to the respective underlay;

(e) controlling a speed of said delivery belt for each article thereon so that each article meets the respective underlay at said location; and

(f) erecting the respective flaps of each underlay to which a respective article has been transferred and folding the respective cover thereover to enclose the article in the respective box

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5,010,713

APPARATUS FOR PACKAGING FISHES IN CANS

Leif Leander, Askim, Sweden, assignor to VMK Fish Machinery AB, Goteborg, Sweden

Filed Jul. 18, 1989, Ser. No. 381,184

Claims priority, application Sweden, Jul. 20, 1988, 8802684-4

Int. Cl.[5] B65B *5/08, 35/56*

U.S. Cl. 53—142 **8 Claims**

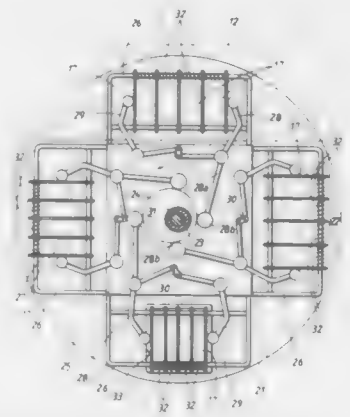
1. An apparatus for packaging fish in cans comprising:

conveyor means for conveying fish at a substantially continuous speed wherein each fish is positioned on the conveyor means with a predetermined longitudinal and transverse orientation;

a vertical shaft cooperating with said conveyor means; and

at least two matrix means for delivering said fish from said conveyor means to said cans, each of said matrix means connected to said vertical shaft and comprising a plurality of adjacent compartments wherein any two adjacent compartments are separated by a side wall, and wherein each of said matrix means are spaced at an equal angular distance around said vertical shaft;

said conveyor means cooperating with said vertical shaft such that said conveyor means conveys fish at a substantially continuous speed to one of said matrix means, whereby said vertical shaft rotates said matrix means in increments, said vertical shaft rotating one increment after



a predetermined number of fish are delivered by the conveyor means to one of said matrix means.

5,010,714

PACKAGING MACHINE

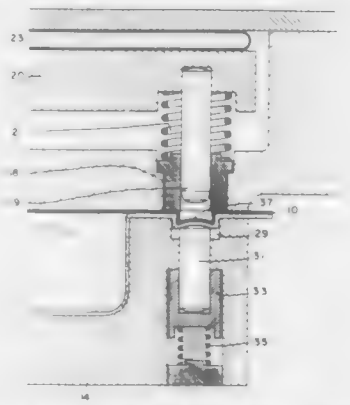
Emmerich Medwed, Wolfertschwenden, and Engelbert Wiest, Dietmannsried, both of Fed. Rep. of Germany, assignors to 501 Multivac Sepp Haggnemuller KG, Olfertschwenden, Fed. Rep. of Germany

Filed Jul. 30, 1990, Ser. No. 559,901

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1989, 3925746

Int. Cl.[5] B65B *7/28, 61/18*

U.S. Cl. 53—412 **14 Claims**



13. A method for producing a reclosable package comprising the steps of

forming in a bottom sheet a container having a surrounding edge defining an edge plane,

closing said container by means of a cover sheet sealed to said edge,

deforming at least one portion of said edge to form a protuberance projecting from said edge plane in both sheets, and

backforming a central region of said protuberance towards said edge plane such that an edge region of said backformed protuberance substantially converges from said edge towards said central region to thereby form reclosable closures in said cover sheet and container edge.

5,010,715

METHOD AND APPARATUS FOR CONVEYING ARTICLES, PARTICULARLY WAFER-SHAPED FOOD PRODUCTS

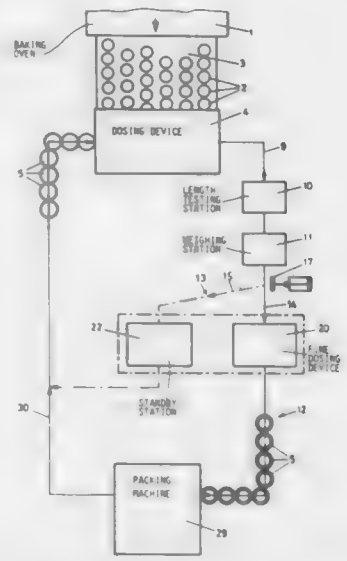
René Fluck, Schleitheim, Switzerland, assignor to SIG Schweizerische-Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Feb. 23, 1989, Ser. No. 313,868

Claims priority, application Switzerland, Feb. 25, 1988, 708/88

Int. Cl.[5] B65B *5/10, 65/08*

U.S. Cl. 53—447 **7 Claims**



1. A method of supplying stacks of flat articles to a packing machine; each article stack being of predetermined weight and length; comprising the following steps:

(a) charging receptacles in a dosing device with articles to obtain in each receptacle an article stack shorter and lighter than said predetermined weight and length;

(b) advancing some of the charged receptacles to a standby station and some of the charged receptacles to a fine dosing device;

(c) charging the receptacles in the fine dosing device with articles until the predetermined weight and length are substantially reached; said charging step in said fine dosing device including the step of transferring articles from a receptacle dwelling in said standby station to a receptacle dwelling in the fine dosing device;

(d) subsequent to step (c), advancing the receptacles from the fine dosing device to the packing machine; and

(e) advancing empty receptacles from the packing machine and the standby station to the dosing device.

5,010,716

AIR-FLOATED CUTTING APPARATUS WITH OVERHEAD GRASS CATCHER

Arthur L. Fassauer, 420 Foster La., Canyon, Tex. 79015

Continuation-in-part of Ser. No. 395,799, Aug. 18, 1989, abandoned. This application Dec. 4, 1989, Ser. No. 445,460

Int. Cl.[5] A01D *75/00*

U.S. Cl. 56—12.1 **25 Claims**

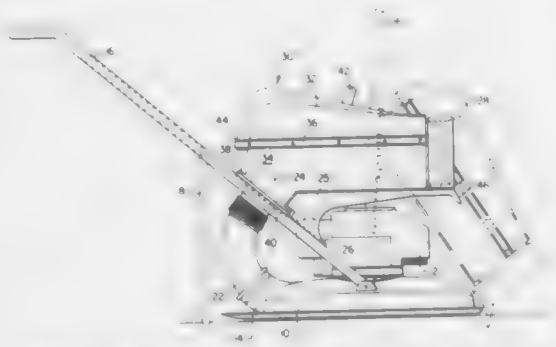
1. A cutting apparatus for lawns with a grass catcher for clippings, comprising:

a housing for moving along the surface of the grass;

a cutting mechanism disposed in said housing for cutting the grass and creating clippings internal to said housing;

a primary discharge port for interfacing between the interior of said housing and the exterior thereof for discharging clippings at an angle of less than 45° relative to the surface of the ground;

means for discharging grass clippings from the interior of said housing out through said primary discharge port, said means for discharging tolerant to back pressure such that a high volumetric flow of grass clippings is maintained for a substantially wide range of back pressures on said primary discharge port;



a diverter for diverting the clippings from said primary discharge port to a secondary discharge port, said secondary discharge port oriented at an angle greater than 90° relative to the surface of the grass.

a substantially sealed receptacle having an inlet port for interfacing with said secondary discharge port, said receptacle for holding the clippings; and

means for supporting said receptacle relative to said housing

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5,010,717

OSCILLATING-TYPE MOWING APPARATUS

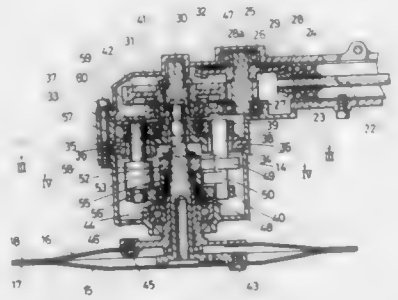
Masaharu Nakamura, and Kazuo Kajimura, both of Tokyo, Japan, assignors to Komatsu Zenoah Company, Tokyo, Japan

Filed Mar. 26, 1990, Ser. No. 498,631

Claims priority, application Japan, Mar. 27, 1989, 1-71854; Jun. 2, 1989, 1-64005[U]

Int. Cl.[5] **A01D** *34/30, 34/84*

U.S. Cl. 56—17.6 **8 Claims**



1. A mowing apparatus, comprising;

a motive power source for supplying rotating motion;

a pair of first and second cutting disks slidably supported with respect to each other, each of said disks including a plurality of peripheral cutting teeth;

means for reciprocatively oscillating said first and second cutting disks in opposite directions relative to each other within a predetermined oscillating range by the rotating motion of said motive power source; and

means for rotating said first and second cutting disks in one direction while said first and second cutting disks are oscillated reciprocatively by said reciprocatively oscillating means, said rotating means also being driven by the rotating motion of said motive power source through said reciprocatively oscillating means.

5,010,718

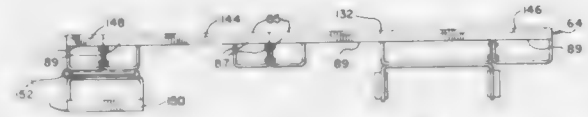
SYSTEM FOR MOUNTING AND SUPPORTING HARVESTING UNITS OF A COTTON HARVESTER

Michael J. Covington, LaGrange, and Jesse H. Orsborn, Hinsdale, both of Ill., assignors to J. I. Case Company, Racine, Wis.

Continuation-in-part of Ser. No. 280,372, Dec. 6, 1988. This application Nov. 13, 1989, Ser. No. 436,304

Int. Cl.[5] **A01D** *46/14*

U.S. Cl. 56—40 **15 Claims**



1 A system for mounting and supporting a harvesting unit for lateral movement while generally maintaining a predetermined disposition relative to a mobile frame of cotton harvester to harvest cotton from cotton plants, said system comprising:

a lift assembly pivotally connected to and extending forwardly from said frame;

an elongated tool bar assembly connected to said lift assembly to permit said tool bar assembly to be vertically moved relative to said frame, said tool bar assembly including at least one elongated support laterally extending across a forward end of said frame and configured to define at least three laterally extended and joined generally flat support surfaces extending between first and second ends of said support; and

mounting means arranged toward a rear end of said harvesting unit for mounting said harvesting unit to hang from said tool bar assembly, said mounting means including a a harvesting unit bracket assembly connected to a rearward end of said harvesting unit and configured with laterally extending support surfaces arranged in confronting relation to and slidably embracing each of said support surface defined by said elongated support in a non-point contact relationship whereby substantial surface area contact it provided between said bracket assembly and each of the support surfacers on said elongated support in a manner facilitating selective lateral sliding movement of said harvesting unit along and between ends of said support while inhibiting rotational movement of said harvesting unit about said tool bar assembly and thereby maintaining said predetermined disposition relative to said frame regardless of its lateral position along said support.

5,010,719

METHOD AND SYSTEM FOR AUTOMATICALLY STEERING ALONG ROW CROPS

Scott A. Korthuis, Lynden, Wash., assignor to Korvan Industries, Inc., Lynden, Wash.

Continuation-in-part of Ser. No. 302,588, Jan. 25, 1989, abandoned, which is a continuation of Ser. No. 202,116, Jun. 3, 1988, abandoned, which is a continuation of Ser. No. 875,631, Jun. 18, 1986, Pat. No. 4,750,322. This application May 19, 1989, Ser. No. 354,346

Int. Cl.[5] **B62D** *5/06*

U.S. Cl. 56—10.2 **20 Claims**

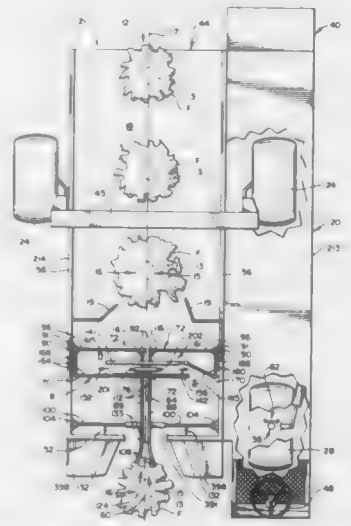
8. A crop tending machine having first and second sides and able to travel along a crop row having a crop row axis and first and second crop sides oppositely positioned relative to said crop row axis, said machine comprising:

a. a chassis arranged to travel along said crop row axis, said chassis defining a crop engaging region with an alignment location which is desirably near said crop row axis during operation of said machine;

b. location sensing means responsive to location of said machine relative to said crop row axis and arranged to provide an output related to distance of said alignment location from said crop prow axis;

c. steerable wheel means for directing travel of said machine and mounted to said machine so as to be movable to, respectively, a first predetermined angular position or a second predetermined angular position that are angularly displaced relative to a straight ahead travel position, and which direct travel of said machine toward the first and second sides of the machine, respectively;

d. steering control means responsive to said location sensing means in a manner to move said steerable wheel means to



said first angular position when said sensing means senses the location of the machine to be more toward said second crop side and to maintain said wheel means in said first angular position until said sensing means senses the location of the machine is more toward said first crop side, at which time said steering control means moves said wheel means to said second angular position and maintains said wheel means in said second angular position until said machine is more toward said second crop side, in a manner to cause said machine to move in sequential curved path segments back and fourth.

5,010,720

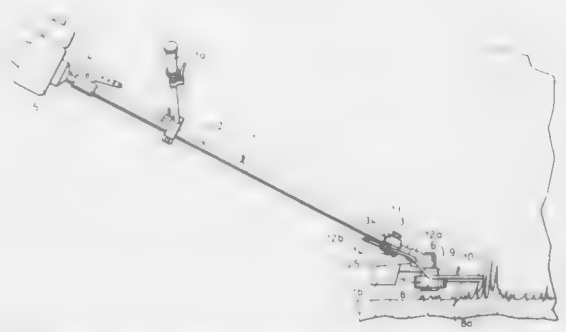
TRIMMER GUARD AND GUIDE ASSEMBLY

Louis V. Corsi, 205 N. Charity St., Bethel, Ohio 45106

Continuation-in-part of Ser. No. 393,414, Aug. 14, 1989, abandoned. This application Jun. 26, 1990, Ser. No. 543,629

Int. Cl.[5] **A01D** *34/67*

U.S. Cl. 56—320.1 **18 Claims**



1 A guard and guide assembly for a powered operator hand-held grass and weed trimmer having a trimming means in the form of a flexible, string-like filament segment extending from a spool of said filament and having a free end, said trimmer comprising an elongated tubular body having forward and rearward ends, means to rotatively and releasably support said spool and trimming filament segment at said forward end of said trimmer body, prime mover means mounted on said trimmer and operatively connected to said spool to rotate said spool and filament segment at high speed in a circular path of travel, said guard and guide of said assembly comprising an element having a forward portion with an arcuate peripheral configuration and an upwardly, inwardly, and rearwardly extending rearward portion, said guard and guide assembly including means to operatively attach said guard and guide to said trimmer body, said guard and guide having an operative position wherein its arcuate portion extends away from said operator and overlies the forward portion of said circular path of travel of said filament segment and extends slightly beyond said free end of said filament segment.

5,010,721

ARRANGEMENT FOR THE GENERATION OF A YARN HAVING FANCY TWISTS ARRANGED AND/OR FORMED AT RANDOM

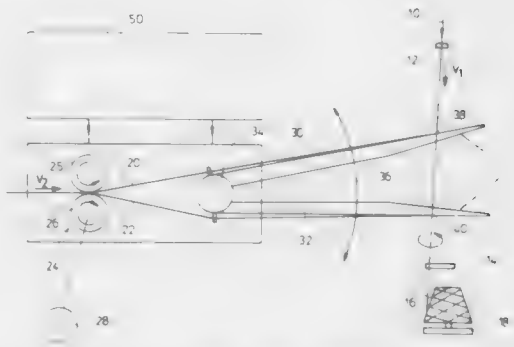
Friedrich Aalderink, Greenville, S.C., assignor to Eno Electronic GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 218,632, Jul. 13, 1988, abandoned. This application Dec. 15, 1989, Ser. No. 453,182

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1987, 3723243

Int. Cl.[5] **D02G** *3/36, 3/34*

U.S. Cl. 57—11 **1 Claim**



1. A device for producing a yarn having fancy twists arranged and/or formed at random, comprising

(a) cop means rotatable about an axis of rotation for winding the yarn on a winding body and cop drive means for driving said cop means about said axis of rotation,

(b) first thread guide means arranged approximately on said axis of rotation of said cop means for guiding basic yarn threads fed, said basic yarn threads being twisted by the rotation of said cop means to form a yarn and being wound on said winding body,

(c) second thread guide means supported by holding means and arranged between said first thread guide means and said cop means and movable along said basic yarn threads, said basic yarn threads from said first thread guide means passing through said second thread guide means, wherein said holding means comprise a fancy twist lever extending laterally from said basic yarn threads between said first thread guide means and said cop means and being pivotally mounted about an axis extending crosswise to said basic yarn threads wherein said second thread guide means is movably guided longitudinally of said fancy twist lever,

(d) means for feeding a fancy twist yarn thread,

(e) means for guiding said fancy twists yarn thread through said second thread guide means to be twisted with the basic yarn threads due to the rotation of said cop,

(f) a second fancy twist lever extending laterally from said basic yarn threads between said first thread guide means and said cop means and being pivotally mounted about an axis extending crosswise to said basic yarn threads,

(g) third thread guide means supported by said second fancy

twist lever, said basic yarn threads from said first thread guide means passing through said third thread guide means,

(h) means for feeding a second fancy twist yarn thread,

(i) means for guiding said second fancy twist yarn thread through said second thread guide means to be twisted with the basic yarn threads due to the rotation of said cop,

(j) said third thread guide means being movably guided longitudinally of said second fancy twist lever

(k) drive means for rocking said fancy twist levers substantially along said basic yarn threads and

(l) electronic control means for controlling said drive means, said control means comprising random generator means, whereby the rocking of the fancy twist levers takes place at random, said first and second fancy twist levers being controlled independently from each other in accordance with random distributions.

5,010,722

ROTARY RING WINDING DEVICE

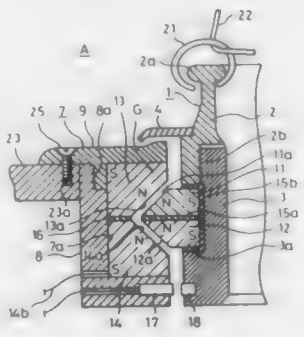
Hiroshi Yamaguchi, 9-7, Ooyamada 4-chome, Kuwana-shi, Mie, and Masashi Yamaguchi, Osaka, both of Japan, assignors to Hiroshi Yamaguchi and Hiroshi Kimura, both of, Japan

Continuation of Ser. No. 402,346, Sep. 5, 1989, abandoned. This application Apr. 16, 1990, Ser. No. 511,943

Claims priority, application Japan, Sep. 5, 1988, 63-223249

Int. Cl.[5] D01H 7/56, 7/64

U.S. Cl. 57—124 14 Claims



1. An improvement in a ring winding device, which comprises a spindle, a ring rail able to be alternately displaced upward and downward along the axial direction of said spindle, a rotary ring member rotatably supported at said ring rail by a bearing device coaxially with said spindle, said rotary ring member being provided with a ring-shaped flange portion whereon a traveller for guiding a yarn can be slidably mounted, means for driving said spindle and means for displacing said ring rail, comprising:

a bearing device provided with a first annular magnetic member coaxially disposed therein and horizontal to an axial center thereof, and a rotary ring member provided with a second annular magnetic member coaxially disposed at an outside annular surface thereof at a position facing said first annular magnetic member,

said first annular magnetic member being provided with a horizontal annular recess, and said second annular magnetic member being provided with a radially projected annular portion having a radial cross-section such that said projected portion can be engaged in said annular recess of said first magnetic member with an air-gap therebetween,

said first annular magnetic member being divided into an upper annular portion and a lower annular portion with respect to said projected annular portion of said second annular magnetic member, at least one of said upper and lower annular portions of said first annular magnetic member being formed by an electric magnet, and the other portion of said first annular magnetic member and said second annular magnetic member being formed by permanent magnets respectively,

said electric magnet of said first annular magnetic member being capable of controlling a magnetic action thereof by controlling an exciting current applied thereto,

whereby said rotary ring member can be freely rotatably supported by said bearing by controlling said exciting current in the normal spinning operation, and a brake force can be applied to said free rotation of said rotary ring member by controlling said exciting current.

5,010,723

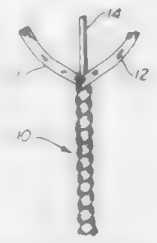
TWISTED YARN WHICH WILL MAINTAIN ITS TWIST AND PRODUCTS PRODUCED THEREFROM

Joseph M. Wilen, Atlanta, Ga., assignor to Wilen Manufacturing, Atlanta, Ga.

Filed Oct. 26, 1989, Ser. No. 427,728

Int. Cl.[5] D02G 3/40

U.S. Cl. 57—210 1 Claim



1. A twisted yarn which is suitable for use in a mop and which is absorbent, flexible and does not readily untwist comprising:

(a) a pair of individually twisted plies formed of cellulosic fibers, said plies being twisted together to form a balanced double helix yarn, the outer portions of said twisted plies remaining hydrophilic;

(b) a thermoplastic binder in the interior of said yarn and around which said plies pass, said binder binding only the inner portions of said plies together;

(c) said cellulosic fibers being selected from the group consisting of cotton fibers and cotton rayon fibers;

(d) the twist of each ply being from about 2 twists per inch to about 4 twists per inch;

(e) said twisted yarn having from about 1 to about 2 twists per inch; and

(f) said thermoplastic binder being selected from the group consisting of polyethylene and polyproplylene having a melting point from about 170° F. to about 205° F.

5,010,724

METHOD AND APPARATUS FOR PRODUCING PACKAGES

Arthur Rebsamen, Stallikon, Switzerland, assignor to Machinenfabrik Schweiter AG

Filed Dec. 16, 1988, Ser. No. 285,191

Claims priority, application Switzerland, Dec. 16, 1987, 4899/87

Int. Cl.[5] D01H 9/10

U.S. Cl. 57—270 2 Claims

1. Method for producing packages, comprising the steps of:

providing a plurality of yarn carriers,

providing a ring spinning frame and a group of spinning stations,

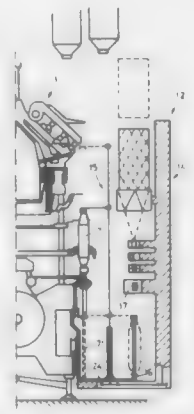
spinning the yarn carriers in the spinning stations,

providing a rewinding station cooperating with said group of spinning stations, said rewinding station including a holder for receiving a yarn carrier,

providing gripping means for handling a yarn carrier,

taking up the yarn carrier by said gripping means in case of a thread break, a batch change and a full yarn carrier and conveying the yarn carrier to the holder forming part of the rewinding station, and

rewinding the yarn carrier in the rewinding station to produce packages, wherein



the gripping means is moved with the rewinding station along the spinning stations.

5,010,725

SYSTEM FOR TRANSPORTING ROVING BOBBINS BETWEEN ROVING AND SPINNING PROCESSES

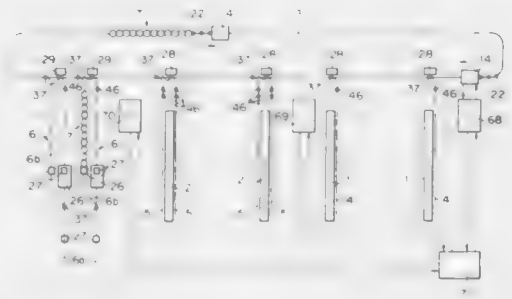
Yoshiharu Yasui; Katsumi Nakane; Osamu Suzuki, and Masahiko Kimbara, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho and Nisshinbo Industries, Inc., both of Tokyo, Japan

Continuation of Ser. No. 241,696, Sep. 7, 1988, abandoned. This application May 29, 1990, Ser. No. 530,462

Claims priority, application Japan, Sep. 12, 1987, 62-229187

Int. Cl.[5] D01H 9/18

U.S. Cl. 57—281 5 Claims



1. A system for transporting roving bobbins in a cyclic manner between a roving process and a spinning process, in which the roving bobbins are transported, while suspended from a carrier, along a main rail arranged to form in endless loop and working rails branched from the main rail, the working rails comprising a roving frame rail and a spinning frame rail the improvement comprising—said carrier comprising a plurality of support members, connected to each other, each support member comprising a bobbin hanger suspended from the bottom of the support member, said carrier having a means for detachable connection with a tractor having detachable connection means at a back end thereof for detachable connection with the carrier, the tractor movable along the main rail, means disposed on the main rail for representing the respective working rail address, which are detected by a sensor mounted on the tractor; and a station, disposed at least in the inlet area of the roving and spinning processes, respectively, said station transmitting a command when the tractor reaches a position corresponding to the station, the command issued from a central control unit supervising the system to the tractor, said command being prepared in accordance with information regarding the conditions of the tractor and of the respective frames and working rails and said command also including information regarding the working rail address requiring transportation of a carrier.

5,010,726

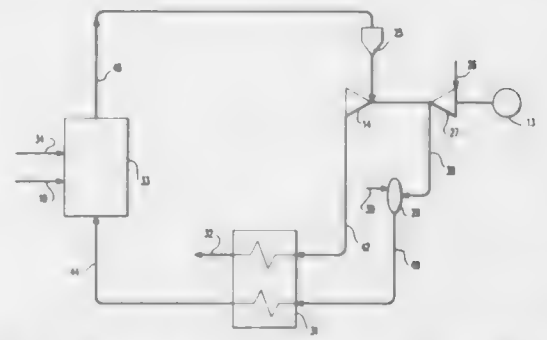
SYSTEM AND METHOD FOR EFFICIENTLY GENERATING POWER IN A SOLID FUEL GAS TURBINE

Richard V. Garland, Chuluota, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 250,277, Sep. 28, 1988, Pat. No.

Int. Cl.[5] F02C 7/10

U.S. Cl. 60—39.05 5 Claims



1. A method for generating electrical power utilizing a compressor, spray evaporator, turbine, pressurized fluidized bed combustor (hereinafter PFBC), regenerator, dynamo-electric machine, and solid fuel, comprising the steps of:

(a) compressing and heating air in said compressor;

(b) cooling said hot compressed air in said spray evaporator, thereby producing cooled compressed air of increased mass flow;

(c) heating said cooled compressed air in said regenerator, thereby producing heated compressed air;

(d) fluidizing and burning said solid fuel in said PFBC using said heated compressed air to fluidize said solid fuel and provide oxygen for said burning, thereby producing hot compressed combustion gas;

(e) expanding said hot compressed combustion gas in said turbine, thereby producing rotating shaft power and expanded combustion gas;

(f) cooling said expanded combustion gas in said regenerator; and

(g) converting said rotating shaft power to electrical power in a dynamo-electric machine.

5,010,727

METHOD FOR EVALUATING THE WORKING LINE CHARACTERISTICS OF A COMPRESSOR OF A GAS TURBINE ENGINE

Michael J. Cox, Derby, England, assignor to Rolls-Royce PLC, London, England

Division of Ser. No. 150,238, Jan. 29, 1988, Pat. No. 4,856,274. This application May 31, 1989, Ser. No. 359,144

Claims priority, application United Kingdom, Mar. 23, 1987, 8706878

Int. Cl.[5] F02C 7/00

U.S. Cl. 60—39.06 2 Claims

1. A method of evaluating the working line characteristics of a compressor of a gas turbine engine comprising the steps of:

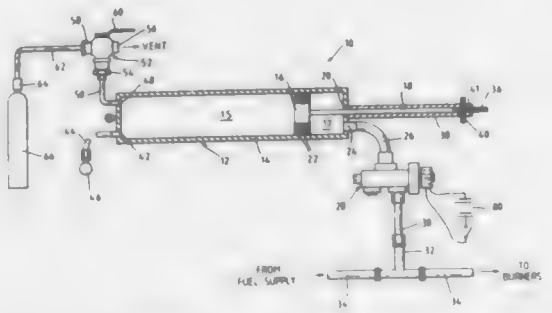
supplying fuel from the engine's normal fuel tank to a fuel accumulator, the fuel accumulator being connected to the engine during the evaluation;

pressurizing the fuel in the fuel accumulator;

measuring the pressure of the fuel in the accumulator;

supplying the fuel in the accumulator to a combustion chamber of the gas turbine engine to increase the pressure in the combustion chamber; and

determining whether said measured pressure of fuel in the fuel accumulator results in a pressure increase in said combustion chamber sufficient to induce a surge in said compressor,



wherein the pressure of the pressurized fuel in the fuel accumulator sufficient to induce any such surge is indicative of said working line characteristics of said compressor.

5,010,728

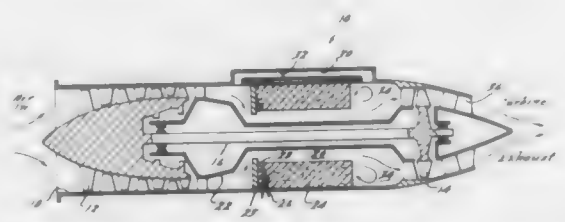
SOLID FUEL TURBINE ENGINE

John R. Joy, Brighton, Mich., assignor to Williams International Corporation, Walled Lake, Mich.

Filed Oct. 18, 1985, Ser. No. 7[illegible],315

Int. Cl.[5] F02G *1/00*

U.S. Cl. 60—39.464 **3 Claims**



1. A solid fuel turbine engine comprising

a centrally disposed axially extending rotatable compressor drive shaft,

an annular combustion chamber having an inlet end and an outlet end and disposed about said compressor drive shaft intermediate the ends thereof,

the annular configuration of said combustion chamber being defined by a pair of radially spaced, cylindrical walls which are concentric with one another and with said shaft,

an annular solid fuel charge in said combustion chamber for producing combustion gases,

an expansion chamber at the outlet end of said combustion chamber and axially aligned therewith,

a compressor on said shaft at the inlet end of said combustion chamber for delivering air to said combustion chamber to provide the principal source of oxygen for combustion, and

a turbine on the other end of said shaft at the outlet end of said combustion chamber driven by said combustion gases and driving aid compressor.

5,010,729

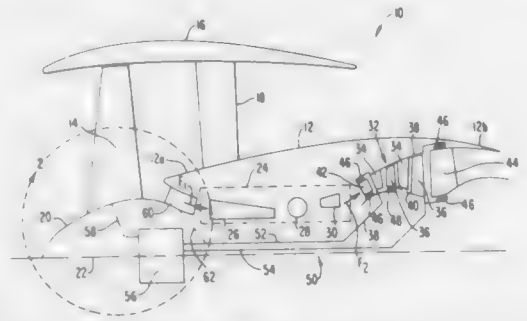
GEARED COUNTERROTATING TURBINE/FAN PROPULSION SYSTEM

Arthur P. Adamson; Lawrence Butler, both of Cincinnati, and Robert A. Wall, Wyoming, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jan. 3, 1989, Ser. No. 292,802

Int. Cl.[5] F02K *3/72*

U.S. Cl. 60—226.1 **9 Claims**



1 An axial flow fan jet engine comprising:

at least one set of fan blades for providing by-pass air and thrust;

a core portion for generating hot combustion gases, the core portion including a high pressure compressor for providing compressed air, a combustor for combusting the compressed air with fuel to produce the combustion gases, and a turbine for driving the high pressure compressor;

counterrotating turbine means mounted rearwardly of the engine core portion and disposed to be driven by the hot combustion gases exiting said engine core portion, said counterrotating turbine means including at least one set of first turbine blades configured and mounted to rotate in one angular direction relative to the engine axis, and at least one set of second turbine blades positioned axially adjacent said first blade set and configured and mounted to rotate in the opposite angular direction;

high speed shaft means operatively connected to said counterrotating turbine means and extending axially to a position forward of the engine core portion, said high speed shaft means including at least two counterrotating shaft members each connected to be driven by a respective one of said first blade set and said second blade set; and

reduction gear means positioned forwardly of the core engine portion and operatively connected to be driven by both of said two shaft members, said reduction gear means including output means operatively connected to drive said fan blades at a rotational speed less than the rotational speed of either of said two shaft members;

wherein said reduction gear means includes a pair of cooperating planetary gear assemblies, each of said assemblies having a rotatable sun gear, a ring gear, and set of planetary gears disposed between the the respective ring gear and sun gear, each of said sun gears being operatively connected to be driven by a respective one of said two shaft members.

5,010,730

GAS-FED HYBRID PROPULSION SYSTEM

William H. Knuth, and John H. Beveridge, both of Huntsville, Ala., assignors to Acurex Corporation, Mountain View, Calif.

Continuation of Ser. No. 159,782, Feb. 24, 1988, abandoned. This application Nov. 7, 1989, Ser. No. 434,526

Int. Cl.[5] F02K *5/00*

U.S. Cl. 60—246 **23 Claims**

1. A self contained propulsion system comprising:

a solid propellant grain;

a motor casing for containing the solid propellant grain;

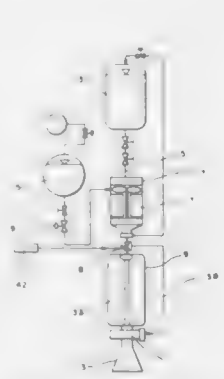
a first fluid propellant that will combust with the solid propellant when ignited, said first fluid propellant being stored in a liquid form apart from the solid propellant;

gasification means for gasifying substantially all of the first fluid propellant before the propellant is delivered to the motor casing;

delivery means for delivering at least a portion of the gasified fluid propellant from the gasification means to the motor casing in the region of the solid propellant grain;

ignition means for initiating burning of the combined propellants;

a first fluid storage tank for storing the liquified first propellant;



a second fluid propellant that will combust with the first fluid propellant when ignited;

a second fluid storage tank for storing the second fluid propellant; and

wherein said gasification means mixes a flowstream of said first fluid propellant with a flowstream of the second fluid propellant and combusts the mixture to produce a gasified propellant flowstream, the gasification means including a preburner wherein said first and second fluid propellants are combined and partially burned to gasify the combustion products and substantially all of the unburned first fluid propellant flowstream.

5,010,731

EXHAUSTING APPARATUS OF FOUR-CYCLE FOUR-CYLINDER ENGINE

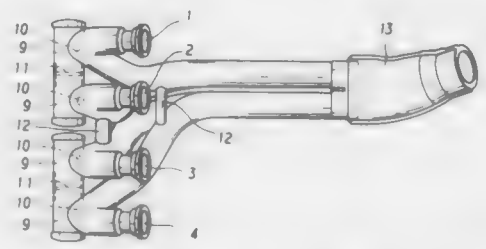
Kazuhiko Onishi, Toyohashi, Japan, assignor to Suzuki Jidosha Kogyo Kabushiki Kaisha, Kamimura, Japan

Filed Feb. 26, 1990, Ser. No. 484,9[illegible]

Claims priority, application Japan, Mar. 1, 1989, 1-46676

Int. Cl.[5] F02B *27/02*

U.S. Cl. 60—313 **9 Claims**



1. An exhausting apparatus of a four-cycle, four-cylinder engine having four cylinders each of which is provided with an exhaust port, comprising:

four exhaust pipes connected to corresponding ones of said exhaust ports of said engine cylinders, said four exhaust pipes being separated into first and second groups, each group including two exhaust pipes, in accordance with ignition timings, said first and second groups of said exhaust pipes being shifted by means of an angle of 360°;

exhaust chamber means including exhaust chambers in communication with front portions of said exhaust pipes respectively through means of communication holes;

two communication pipes, one connecting said first group of said exhaust pipes, and the other one connecting said second group of said exhaust pipes;

a collecting cylinder means to which downstream ends of said exhaust pipes are connected;

a separator means separating an interior portion of said collecting cylinder means into two sections within which said first and second groups of said exhaust pipes are disposed, respectively;

a collecting exhaust pipe connected to a downstream end of said collecting cylinder means; and

a muffler means mounted upon said collecting exhaust pipe.

5,010,732

HYDRAULIC PRESSURE BOOSTER WITH A RESTRICTOR PRODUCING A BRAKING SENSATION

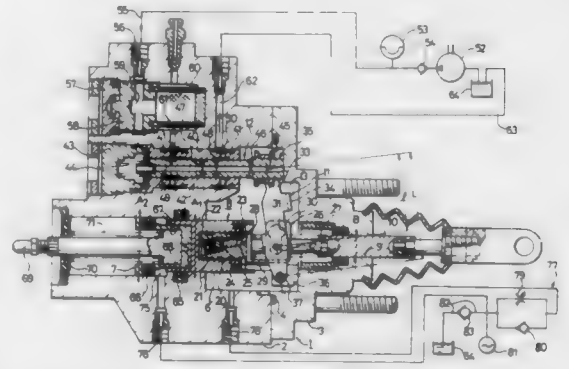
Isao Yagi, Saitama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed May 4, 1989, Ser. No. 347,494

Claims priority, application Japan, May 19, 1988, 63-122275

Int. Cl.[5] F16D *31/02*

U.S. Cl. 60—413 **4 Claims**



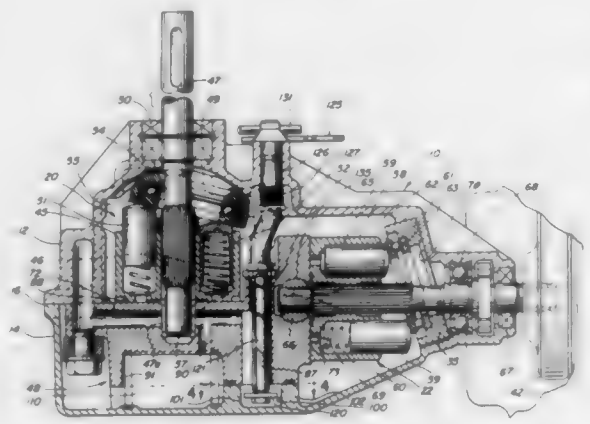
1. A hydraulic pressure booster comprising a first piston of a smaller diameter and a second piston of a greater diameter which are disposed in a housing so as to be reciprocable in a common direction and which are disposed in abutment against each other, a first power chamber formed in one free end of the first piston, a second power chamber formed in the other end of the first piston which is disposed for abutment against the second piston, a communication passage providing a communication between the first and the second power chambers, and a control valve adapted to be operated as a result of a mechanical connection with an input shaft for introducing a hydraulic pressure into the first power chamber having a magnitude which depends on the magnitude of an input force applied to the input shaft to thereby drive the first piston forward, the hydraulic pressure introduced into the first power chamber being introduced into the second power chamber through the communication passage; wherein an orifice which retards the introduction of the hydraulic pressure from the first to the second power chamber, and a check valve which allows a flow of a pressure fluid from the second to the first chamber are connected in shunt with each other in the communication passage.

5,010,733

HYDROSTATIC TRANSMISSION WITH HYDRAULIC BYPASS AND AIR BLEED

Alan W. Johnson, Ames, Iowa, assignor to Sauer-Sundstrand Inc., Ames, Iowa

Filed Mar. 24, 1989, Ser. No. 328,470
Int. Cl.[5] F16D *31/02*
U.S. Cl. 60—453 10 Claims



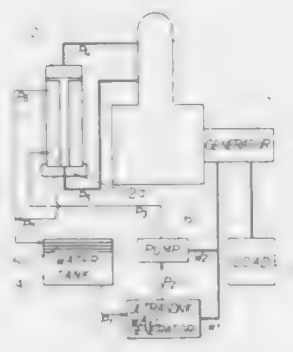
1. A hydrostatic transmission comprising, a housing with a sump, a pair of hydraulic displacement units in said housing each having a rotatable cylinder block, means extending between said cylinder blocks providing a pair of ports coacting with each cylinder block, a first fluid passage connecting one port of each pair, a second fluid passage connecting the second ports of each pair, a housing recess at the bottom of the housing for holding filtered make-up oil, a pair of bypass valves normally closed to prevent flow of pressure fluid from either of said first and second passages to said housing recess, means operable to open said bypass valves to connect the first and second passages for a bypass operation, a passage extending upwardly from said housing recess and opening to the upper interior of the housing, movable seal means at the upper end of the passage for sealing the passage, and means for opening the seal means in response to opening the bypass valves.

5,010,734

COOLING SYSTEM FOR A STIRLING ENGINE

Kwang S. Ho, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Aug. 22, 1990, Ser. No. 570,729
Claims priority, application Rep. of Korea, Aug. 31, 1989, 12573/1989
Int. Cl.[5] F02G *1/055*
U.S. Cl. 60—517 3 Claims



1. A cooling system for a Stirling engine with working fluid, which comprises:

a cooler attached to said Stirling engine,

an ultrasonic wave generator for making liquid into atomized particles of liquid,

a liquid tank for feeding liquid to said ultrasonic wave generator, and

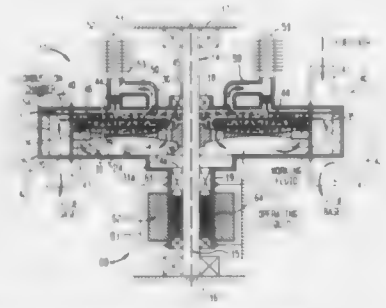
a pump for pumping said atomized particles of liquid produced from said ultrasonic wave generator so as to circulate to said cooler attached to the Stirling engine, whereby working fluid of the Stirling engine is effectively cooled.

5,010,735

CENTRIFUGAL HEAT ENGINE AND METHOD FOR USING THE SAME

Gad Assaf, Rehovot, Israel, assignor to Geophysical Engineering Company, Seattle, Wash.

Filed Oct. 6, 1989, Ser. No. 418,268
Int. Cl.[5] F01K *11/04*
U.S. Cl. 60—669 32 Claims



1 A centrifugal heat engine comprising:

(a) a first member rotatably mounted on a second member;

(b) said first member having an annular chamber on its periphery containing a vaporizable working fluid, and a central chamber separated from the annular chamber by a bulkhead, said central chamber containing an operating liquid;

(c) an hydraulic turbine mounted on said second member and projecting into said central chamber for dividing the same into two axially displaced compartments each of which contains operating liquid;

(d) heating means for heating and vaporizing the working fluid in said annular chamber;

(e) conduit means for conducting vaporized working fluid produced in said annular chamber into one of said compartments wherein the vaporized working fluid expands in the operating liquid producing a liquid/gas mixture in said one compartment, rotation of said first member relative to the second member creating a pressure differential between said two compartments which is related to the rotational speed of the first member and the density distribution of the fluids in the second compartment; and

(f) flow means on said turbine and said first member for effecting a flow path for operating fluid between said compartments in response to said pressure differential thereby imparting rotation to said first member which creates said pressure gradient in said operating fluid.

5,010,736

COOLING SYSTEM FOR ENCLOSURES

Michael L. York, Fairfield, and Steven E. Broerman, Mason, both of Ohio, assignors to Vortec Corporation, Cincinnati, Ohio

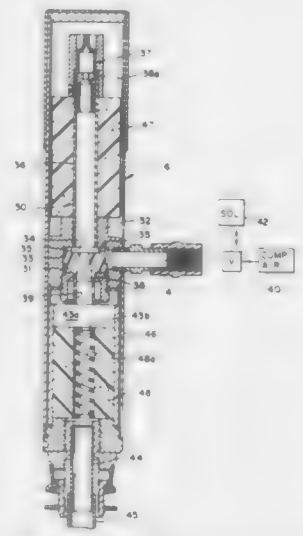
Filed Apr. 16, 1990, Ser. No. 509,902
Int. Cl.[5] F25B *9/02*
U.S. Cl. 62—5 10 Claims

1. A cooling system for cooling the inside of an enclosure, said system comprising:

a housing defining a first chamber and an inlet and outlet for the first chamber for communication with the enclosure;

a first cooling assembly secured to the housing and including evaporator means disposed in the first chamber for extracting heat from a fluid which flows from the enclosure through the inlet of the first chamber and condenser means for discharging the heat extracted by the evaporator means; and

a second cooling assembly including a vortex tube with a hot portion, a cold portion, and a generator portion disposed between the hot and cold portions, the cold portion being in fluid communication with the enclosure;



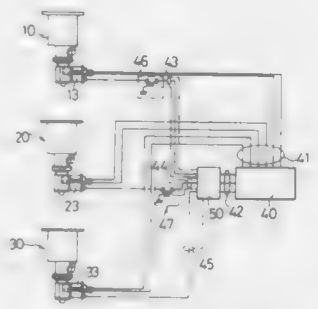
said second cooling assembly including temperature sensing means disposed proximate the inlet of the first chamber for sensing the temperature of fluid flowing into the first chamber from the enclosure and control means connected to the temperature sensing means for controlling the operation of the vortex tube so that the vortex tube operates at a predetermined temperature of the fluid flowing into the first chamber.

5,010,737

MULTI-HEADED CRYOPUMP APPARATUS

Nobuo Okumura, Toyota, and Atsuyuki Miura, Hazu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 30, 1990, Ser. No. 501,778
Claims priority, application Japan, Mar. 30, 1989, 1-080560
Int. Cl.[5] F25B *9/00*
U.S. Cl. 62—6 3 Claims



1 A multi-headed cryopump apparatus comprising:

a plurality of cryopumps;

a common compressor connected to each of the plurality cryopumps;

a plurality of valve means each of which is interposed between each cryopump and the compressor;

a plurality of motors for driving a corresponding cryopump;

a plurality of current detecting sensors for detecting the current supplied to a corresponding motor; and

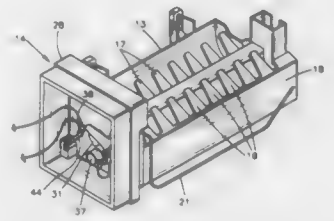
a control unit for controlling the operation of each valve means on the basis of the result of each current detecting sensor in such manner that the plural valve means operate in turn with a constant cycle.

5,010,738

ICE MAKER WITH THERMAL PROTECTION

Ralph W. Brown, Orleans; Sammie C. Beach, Gowen, and Gary R. Peter, Rockford, all of Mich., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Mar. 23, 1990, Ser. No. 498,204
Int. Cl.[5] F25C *1/24*
U.S. Cl. 62—135 10 Claims



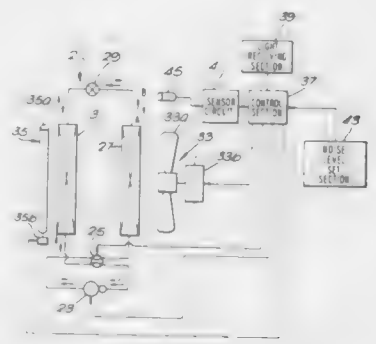
8. An ice maker comprising an aluminum mold having cavities in which water is frozen to form ice cubes, a heater in heat exchange relationship with said mold operable to heat said mold and melt said ice cubes along the interface therewith to allow removal of said ice cubes from said mold, a non-metallic control housing having an inner wall in abutting relation with a portion of said mold and defining a closed chamber, said inner wall having openings therein exposing surface portions of said aluminum mold to said chamber, controls in said chamber including a first control positioned in an opening in said inner wall operable to energize said heater when ice cubes are frozen in said cavities and to subsequently de-energize said heater, and a thermal fuse in said chamber mounted in an opening in said inner wall abutting an adjacent surface of said mold and operating to de-energize said heater when excessive temperatures occur.

5,010,739

AIR CONDITIONING APPARATUS HAVING AUDIBLE SOUND LEVEL CONTROL FUNCTION

Masao Isshiki, Shizuoka, and Takeshi Kumazawa, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jun. 14, 1990, Ser. No. 538,257
Claims priority, application Japan, Jun. 30, 1989, 1-169660; Jul. 26, 1989, 1-191274
Int. Cl.[5] G05D *23/32*
U.S. Cl. 62—158 12 Claims



1. An air conditioning apparatus comprising:

means for conditioning air circulating in a closed space, the

conditioning means radiating a variable level of audible sound during its operation;

sound sensor means for detecting an actual audible sound value (Na) including the audible sound value from the conditioning means while the conditioning means is operated and a background audible sound value (Nb) which is a sound value when the conditioning means is stopped;

memory means for previously storing a predetermined audible sound value (Ns);

means for modifying the predetermined audible sound value to output a modified audible sound value (Ns');

means for comparing the actual audible sound value (Na) with one of the predetermined audible sound value (Ns) and the modified audible sound value (Ns'); and

control means for reducing the level of the audible sound from the conditioning means when the actual audible sound value is greater than one of the predetermined audible sound value and the modified audible sound value

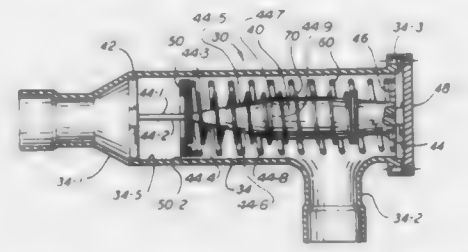
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5,010,740

REFRIGERATION SYSTEM WITH MASS FLOW LIMITING DEVICE

Robert J. Backus, Dewitt; Robert A. Chopko, Liverpool; Alan S. Drucker, Dewitt, and Chester D. Ripka, Syracuse, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 7, 1990, Ser. No. 475,566
Int. Cl.[5] F25B *41/04*, D03D *39/10*
U.S. Cl. 62—217 **7 Claims**



1. A closed refrigeration system containing refrigerant comprising:

compressor means for compressing said refrigerant and including an inlet and an outlet;

means for driving said compressor means;

said closed refrigeration system defining a refrigerant circuit whereby said refrigerant compressed by said compressor means passes from said outlet serially through condenser means, expansion means, evaporator means and flow limiting means before returning to said compressor means via said inlet;

said flow limiting means including:

a housing having an inlet connected to said evaporator means, an outlet connected to said compressor and with a flow path connecting said inlet and said outlet of said housing;

an elongated member axially located in said flow path and serially having a fixed cross section portion and a variable cross section portion in an axial downstream direction with said variable cross section portion increasing in going from said inlet of said housing towards said outlet of said housing for at least a portion of the length of said elongated member;

annular means in said housing having an aperture receiving said fixed and variable cross section portions of said elongated member and coacting therewith to define a flow path;

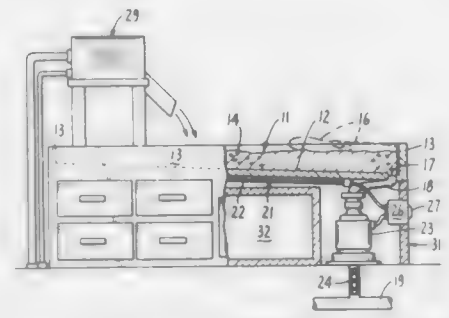
biasing means acting on said annular means to bias said annular means towards said inlet of said housing whereby refrigerant entering said housing passes through said flow path defined by said aperture and said elongated member creating a differential pressure across said annular means tending to move said annular means in a downstream direction towards said outlet of said housing to restrict said flow path defined by said annular means and said variable cross section portion of said elongated member in opposition to said biasing means so that said inlet of said compressor is always supplied with refrigerant at an essentially constant pressure when said annular means is coacting with said variable cross section portion.

5,010,741

CHILLED FOOD DISPLAY COUNTER

Lori J. Gelatini, 4637 Greenbush Dr., Concord, Calif. 94521

Filed Jul. 31, 1990, Ser. No. 560,344
Int. Cl.[5] A47F *3/04*
U.S. Cl. 62—246 **6 Claims**



1. A counter for displaying chilled foods on a bed of ice, comprising

a waterproof tray portion having a generally flat bottom surrounded by an upstanding wall of sufficient height for said tray to contain a bed of ice of desired depth upon which chilled foods are displayed for sale,

said bottom of said tray being flatly inclined downwardly to a drain opening,

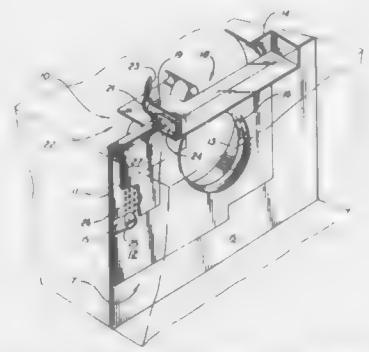
a drain conduit communicating with said drain opening and adapted for discharging into a waste water drain, and heating means operatively connected to said tray for melting the ice therein when said chilled food is removed from said bed of ice at the end of the day.

5,010,742

ACTUATION MECHANISM FOR VENT AND EXHAUST DOORS

Theodore S. Bolton, Liverpool, and Curtis L. Tobin, Sr., Chittenango, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 8, 1988, Ser. No. 153,745
Int. Cl.[5] F25D *23/12*
U.S. Cl. 62—262 **20 Claims**



1. In a room air conditioner of the type having a partition dividing indoor and outdoor sections and having vent and exhaust openings for exhausting room air into the outdoor section and for venting outdoor air into the indoor section an improved control mechanism comprising:

a scroll structure mounted in the indoor section and having the vent and exhaust openings integrally formed therewith, said vent opening being so disposed as to selectively provide fluid communication from said outdoor section to said indoor section, and said exhaust opening being so disposed so as to provide fluid communication from said indoor section to said outdoor section;

a vent door mounted on said scroll structure for selectively opening or closing said vent opening;

an exhaust door mounted to said scroll structure for selectively opening or closing said exhaust opening; and

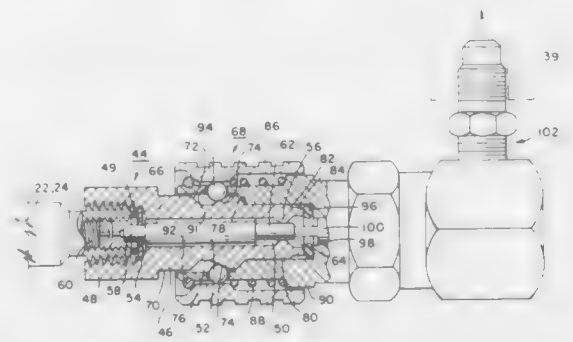
an actuator mechanism mounted to said scroll structure and mechanically linked to said vent and exhaust doors to selectively operate them between open and closed positions.

5,010,743

TEST FITTING ADAPTER FOR REFRIGERANT LINES

Phillip L. Hale, Rowlett, Tex., assignor to Richard E. Glaser, Dallas, Tex., a part interest

Filed Dec. 15, 1989, Ser. No. 451,291
Int. Cl.[5] F25B *45/00*
U.S. Cl. 62—292 **4 Claims**



1. In a system for diagnostic servicing a vehicular refrigeration unit having a male threaded service connector and located in the engine vicinity within the engine compartment of the vehicle by obtaining a pressure measurement of the refrigerant gas contained in the unit including a pressure gauge, flexible tubing secured in communication with said pressure gauge, and a coupling at the distal end of said tubing for attaching said tubing to a threaded service connector of a vehicular refrigeration unit to be serviced, the improvement for placement intervening the service connector and the tube coupling comprising:

an adapter fitting having a threaded female connector at one end for effecting a pressure tight attachment to the service connector of the refrigeration unit and having an unthreaded male configured opposite end for receipt of a female quick disconnect tubular coupler; and

a female quick disconnect coupler to which the distal end of said tubing can be attached and adapted to effect a quick joinder at said opposite end of said adapter fitting with the coupling of said tubing.

5,010,744

METHOD OF CONSTRUCTING PLATING PILE KNIT FABRIC AND SINKER THEREFOR

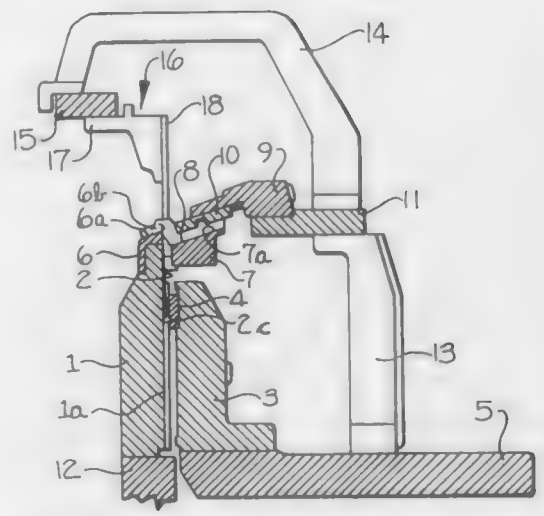
Shinji Kawase, and Shyozo Yorisue, both of Hyogo, Japan, assignors to Precision Fukuhara Works, Ltd., Japan

Filed Jan. 12, 1990, Ser. No. 464,242
Claims priority, application Japan, Mar. 13, 1989, 1-61434
Int. Cl.[5] D04B *9/12*
U.S. Cl. 66—93 **4 Claims**

1. A method of constructing a plated pile knit fabric on a circular knitting machine fitted for feeding a ground yarn and a pile yarn, with the knitting machine having sinkers obliquely movable from an advanced, innermost lower position to a receded, outermost upper position, and wherein each sinker includes a forward end portion having a throat extending transversely inwardly thereat to define a downwardly extending sinker nose positioned above the throat and a substantially horizontally extending upper pile position control ledge positioned rearwardly of the nose for engaging a pile yarn and determining the height of a formed pile yarn loop, and a sinker top knitting ledge surface defined by a lower surface of the throat for engaging a ground yarn and properly positioning the yarn onto a knitting needle and ensuring plating of the knit fabric, the method comprising the steps of

(a) feeding a ground yarn and pile yarn to a raised, open latch needle hook having previously formed ground yarn loops and pile yarn loops positioned on the needle stem,

(b) lowering the needle so that the previously formed ground yarn loops and the pile yarn loops rise on the needle stem and close the needle latch onto the ground and pile yarns fed thereto while also obliquely advancing the sinker so that the pile yarn is received onto the upper pile position control ledge of the sinker and the ground yarn is received into the sinker throat and onto the sinker top knitting ledge, and both yarns are positioned higher than the hook of the needle.

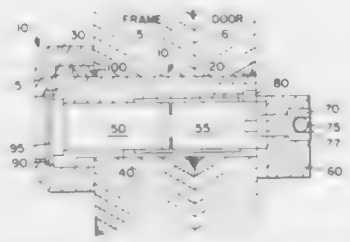


(c) transferring the ground yarn to the inner side of the needle hook by further advancing the sinker as the needle is lowered so that the ground yarn received in the sinker throat is moved forwardly toward the inner side of the needle hook as the sinker advances,

(d) lowering the needle to clear the previously formed ground and pile yarn loops from the needle while tightening the cleared loops with the sinker by advancing the sinker to the most advanced, innermost lower position,

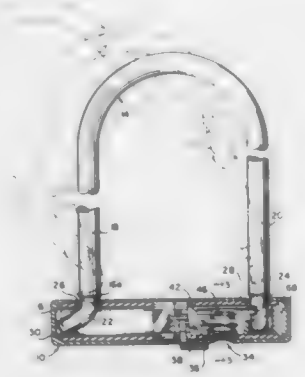
(e) raising the needle so that the formed pile and ground loops are transferred to the needle stem and receding the sinker after the needle reaches a desired safety level so that as the needle is raised, the upper pile position control ledge and the sinker top knitting ledge is positioned lower than the needle hook and the formed pile loop received onto the pile position control ledge is cleared therefrom, and wherein the sinker is obliquely moved so that the sinker top knitting ledge always intersects the needle obliquely whereas the pile position control ledge intersects the needle horizontally and is displaced upward when receding the sinker inwardly and displaced downward while advancing the sinker outwardly.

5,010,745
HIGH SECURITY POST LOCK
Charles E. Hall, Salem, and Stevie C. Roop, Dugspur, both of Va., assignors to Medeco Security Locks, Inc., Salem, Va.
Filed Aug. 2, 1989, Ser. No. 388,495
Int. Cl.[5] E05B *67/36*
U.S. Cl. 70—32 7 Claims



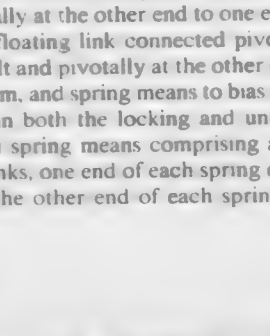
1. A high security post lock of the type including:
a shell means for passing through a door and securing the door against undesired movement;
a head member disposed at a first end of said shell means;
a locking cam rotatably mounted at a second end of said shell means and moveable from a first position wherein the cam is coextensive with the shell means to a second position wherein the cam projects outwardly from the shell means;
and a lock actuator means housed within the shell means and in engagement with the head member and the locking cam [means] for selectively securing the locking cam against rotation;
with improvements in control of the locking cam wherein rotation of the locking cam relative to the shell is limited by a pin movable in an arcuate groove, the pin and groove being on facing portions of the shell means and locking cam.

5,010,744
BICYCLE LOCK
Michael S. Zane, Cambridge, and Peter L. Zane, Hingham, both of Mass., assignors to Kryptonite Corporation, Boston, Mass.
Filed Apr. 25, 1990, Ser. No. 514,175
Int. Cl.[5] F05B *67/04*
U.S. Cl. 70—39 22 Claims



1. A bicycle lock comprising:
(a) a U-shaped shackle and a cross bar designed to lock across the open end of said shackle;
(b) said shackle formed with a pair of legs, one of said legs formed at its free end with means for securing said shackle at said free end to one end of said cross bar, said means also serving as a fulcrum to allow for a tilting motion between said shackle and said cross bar, the other of said legs formed at its free end with a lock engaging portion;
(c) a locking mechanism mounted in the side of said cross bar in between said pair of legs of said shackle;
(d) said locking mechanism including a dead bolt designed to engage said lock engaging portion of said other of said legs of said shackle, said dead bolt having two operative positions: a locking position in which said bolt extends into said lock engaging portion and, a non-locking position in which said bolt is withdrawn from said lock engaging portion, said dead bolt is designed to reciprocate between said two operative positions as effected by said locking mechanism when it is manipulated by a detachable key; and
(e) means removably to secure said locking mechanism within said cross bar.

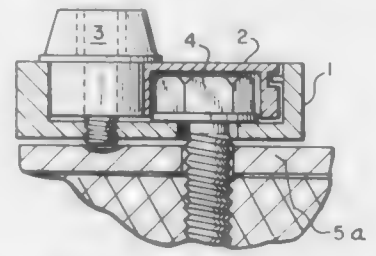
5,010,747
SECUR A DOOR POLICE LOCK
H. Peter Norden, Jr., 3 Crest Hill Pl., Smithtown, N.Y. 11787
Filed Feb. 5, 1990, Ser. No. 475,257
Int. Cl.[5] E05B *65/00*
U.S. Cl. 70—94 6 Claims



1. In combination with an inwardly or outwardly opening door mounted in the opening of a room or a building having a frame forming said opening in which said door is mounted, said frame including door jamb means having a portion thereof extending inwardly so that said door when shut is flush against one surface of said portion, door locking means comprising a lever arm pivotally mounted at its center on the inner surface of said door, means for supporting for slidable movement in a straight line a first bolt adjacent one edge of said door, means for supporting for slidable movement in a straight line a second bolt adjacent an opposite edge of said door, both of the aforesaid straight lines being aligned with each other so that the aforesaid bolts slide in opposite directions along the same straight line without any rotation with respect to said straight line, connecting means in response to the rotation of said lever arm in one direction to cause said bolts to slide away from each other, and in response to the rotation of said lever arm in the opposite direction to cause said bolts to move toward each other, lock means on the outside of said door passing through said door and connected to said lever arm to permit the use of a key to rotate said lever arm, knob means on the inside of said door connected to said lever arm through pin and cylinder means to permit the rotation of said lever arm by said knob means without causing movement within said lock means to permit rotation of said lever arm to open said door when said lock is in the locked position without disengaging said knob means from said lock, and retainer means mounted on said frame to lock said door when said lever arm is rotated in said one direction causing said bolts to engage said retainer means and to unlock said door when said lever arm is rotated in the opposite direction causing said bolts to become disengaged from said retainer means, said connecting means comprising a first floating link connected pivotally at one end to said first bolt and pivotally at the other end to one end of said lever arm and a second floating link connected pivotally at one end to said second bolt and pivotally at the other end to the other end of said lever arm, and spring means to bias said first and second floating links in both the locking and unlocking positions of said bolts, said spring means comprising a spring for each of said floating links, one end of each spring connected to a floating link, and the other end of each spring connected to said door.

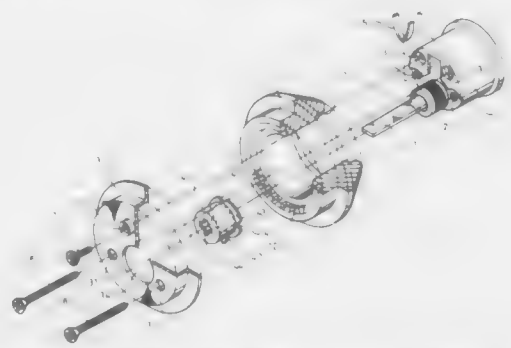
5,010,748
STUD OR BOLT LOCKING DEVICE
Jay S. Derman, 4141 Dixie Canyon Ave., Los Angeles, Calif. 91423
Filed Jul. 23, 1990, Ser. No. 555,854
Int. Cl.[5] F16B *41/00*
U.S. Cl. 70—164 7 Claims

1. A locking device for bolts or studs comprising:
a block, having portions adapted for seating a lock, and for seating the head of a bolt or a stud nut which is fastened to a stud;
a cover member, sized and shaped to cover said block portion which seats the head of a bolt or stud nut; said cover member having a cylindrical shape with a flat edge formed on approximately one quarter of its circumference; said cover member having a cup-shaped recess



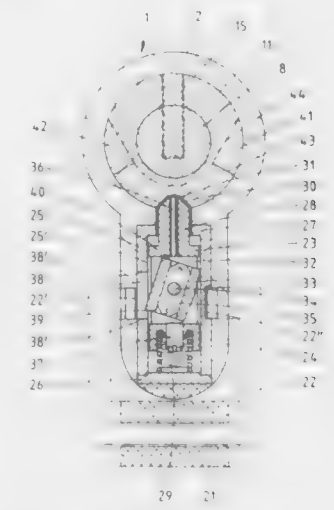
formed in its bottom surface, large enough to accomodate the head of a bolt or stud nut; and
a lock, sized and shaped to be seated in said block portion and having a threaded member for securing to said block, so that said lock will bear against the flat edge and part of the top of said cover member, preventing removal of said cover member and thereby preventing access to said head of bolt or stud nut.

5,010,749
LOCKING DEVICE FOR AN AUXILIARY LOCK
Jui C. Lin, KangShan, Kaohsiung, Taiwan, assignor to Taiwan Fu Hsing Industry Co., Ltd., Hsien, Taiwan
Filed Jul. 23, 1990, Ser. No. 555,606
Int. Cl.[5] E05B *9/04*
U.S. Cl. 70—190 6 Claims



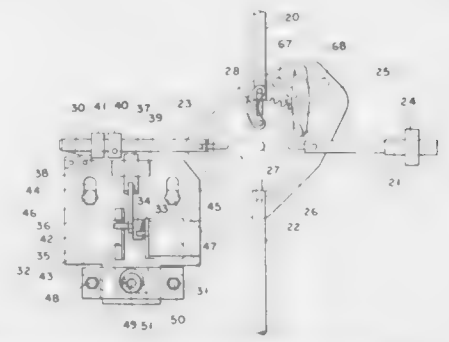
1 A locking device for an auxiliary lock comprising a rotatable ring, a base and an actuating wheel, said rotatable ring being provided with teeth around an inner peripheral edge for a tooth in the actuating wheel to engage with one of said teeth, said actuating wheel being provided with a cross-shaped hole for an actuating plate passing through a-dead bolt for mutual movement thereof, said rotatable ring being fitted around the lock and combined with the base at one vertical side to enable said ring to rotate said wheel, said tooth being separable from one of the teeth of the rotatable ring when said wheel is rotated 90°, said actuating wheel rotates the actuating plate 90° to extend the dead bolt for locking the lock when said wheel is rotated 90° by said ring.

5,010,750
LOCK CYLINDER WITH ELECTROMAGNETIC TUMBLER
Werner Böser, Zulpich; Giselher Sieg, Erftstadt, and Robert Wedekind, Erftstadt-Erp, all of Fed. Rep. of Germany, assignors to Dom-Sicherheitstechnik GmbH & Co. KG, Fed. Rep. of Germany
Filed Jan. 31, 1990, Ser. No. 473,009
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1989, 3902992
Int. Cl.[5] E05B *47/06*
U.S. Cl. 70—276 15 Claims



1. A lock cylinder suitable for mortise locks with mechanically operating tumbler pins controlled by a key and at least one electromagnetic tumbler which is arranged in a cylinder casing and comprises a coil as well as a locking member which can be displaced by electromagnetic forces for an additional tumbler pin which is in addition to the key-controlled operating tumbler pins and which is spring-loaded in a locking direction and with an electronic evaluator which is responsive to a key code, wherein said locking member is pivotally mounted in a recess in said additional tumbler pins and enters a locking position in front of a stop on said cylinder casing.

5,010,751
SAFE DEVICE AND MECHANISM FOR OPERATING THE SAME
Moshe Schwartz, and Noam Avni, both of Kibutz Hatzor, Israel, assignors to Omen Metal Products, Israel
Filed Jan. 31, 1989, Ser. No. 304,944
Claims priority, application Israel, Feb. 3, 1988, 85307; Dec. 2, 1988, 88567
Int. Cl.[5] E05B *47/06*
U.S. Cl. 70—276 10 Claims



1. A magnetic card-operated safe comprising:

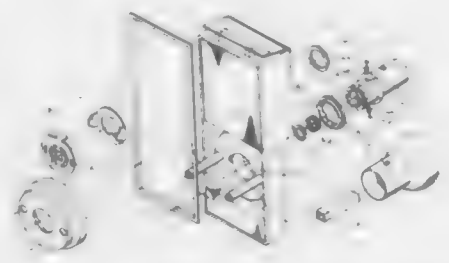
a body with a structural element;
a door;
a locking mechanism for locking said door;
a support fixed to said structural element with a base plate, on which the locking mechanism is mounted and which is slidably mounted on said structural element for limited rectilinear displacement between a forward and a rear position of the locking mechanism, an eccentric rotatably mounted on said support and engaging an opening in said base plate, whereby rotation of said eccentric will cause said rectilinear displacement of said base plate, said eccentric being so mounted that it may freely rotate whereby to displace said base plate from the rear to the forward position;
a source of power including a battery;
an electric motor for operating said locking mechanism,
a magnetic card reader for reading data stored in the magnetic card used for operating the safe;
permanent memory means for permanently storing information;
volatile memory menas for storing data as long, and only as long, as electric tension is applied thereto;
means for transferring the data read by the magnetic card reader from said magnetic card to a segment of said volatile memory means when no such data are registered therein and for comparing said read data with the data registered therein, when there are such registered data, and with the information stored in said permanent memory means;
electronic circuit means for operating said motor, said magnetic card reader, said permanent memory means, said volatile memory means and said data transferring and comparing means;
switch means, operable when said safe door is open to selectively connect and disconnect said power source to said electronic circuit means;
means for changing the power drawn from said power source, when it is so operatively connected to said electronic circuit means, between at least one high level sufficient to actuate said electric motor and at least one low level sufficient to prevent erasure of the data stored in said volatile memory; and
control means for actuating said electric motor to activate said locking mechanism to lock or unlock said safe door, when said magnetic card is read by said magnetic card reader, only if the data read by this latter corresponds to those registered in said volatile memory means or to information stored in said permanent memory means.

5,010,752

STRUCTURE FOR CONTROLLING THE DEAD BOLT IN AN ELECTRONIC LOCK

Ruey J. Lin, KangShan, Taiwan, assignor to Taiwan Fu Hsing Industry Co., Ltd., KangShan, Taiwan

Filed Jan. 23, 1990, Ser. No. 469,017
Int. Cl.[5] E05B *47/00*
U.S. Cl. 70—277 7 Claims



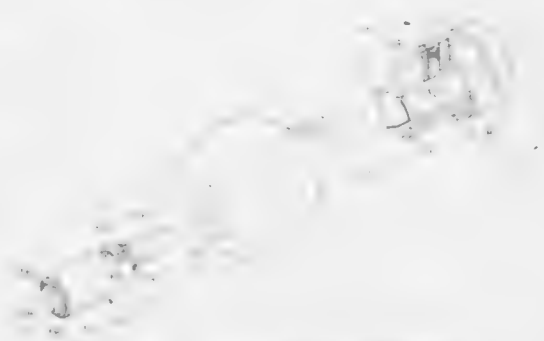
1. A structure for controlling a dead bolt in an electro-magnetic lock comprising:
a control case fixed at the outer side of a door for a coded card to insert in and provided with a shaft hole for a shaft of an outside knob to run through and to rotate therein, said outside knob rotating an inner tube having a square hole for an outside square shaft to fit therein so that the rotation of the outside knob can also rotate the outside square shaft;
a bottom plate combined with an inner case fixed at the inside of the door, said bottom plate and inner case having respectively a corresponding shaft hole for a shaft of an inner knob to fit and rotate therein together, said inner knob combined with an inner tube in its inner hole to rotate together, said inner tube having two opposite slots at an outer end thereof for two opposite projections of a moving ring to engage with, said moving ring having a square shaft hole for an inner square shaft fixed in the moving plate of the dead bolt to fit in, said inner square moving plate of the dead bolt to fit in, said inner square shaft having an inner through hole for a moving rod to pass through to rotate therein idly, said moving rod being longer than the inner square shaft and having both ends extending out of the inner square shaft, one end of said moving rod being square and fitting in the outer square shaft for mutual movement therewith, another end of said moving rod being oval and fixed with a peripherally toothed turning disc confined by a limit plate so as to rotate the limit plate but not to move it lengthwise, said limit plate having a projection to stick in a hole in the inner tube; and
an electro-magnetic coil contained inside the inner tube for producing magnetism to pull a central rod running through the electro-magnetic coil, one end of said central rod linked with a clutch, said clutch provided with a plurality of grooves for engaging with teeth of the turning disc, another end of said central rod being urged by a spring into contact with a disc, said disc provided with tapered grooves for tapered protrusions on a turning button to selectably contact with, said turning button set in the shaft hole of the inside knob and able to be rotated to move the disc so as to push the central rod to make the clutch engage with the turning disc.

5,010,753

INTERCHANGEABLE CORE LOCK

Frederick Boris, Jr., Meriden, Conn., assignor to Lori Corporation, Southington, Conn.

Filed Jul. 6, 1990, Ser. No. 549,409
Int. Cl.[5] E05B *9/04*
U.S. Cl. 70—371 7 Claims



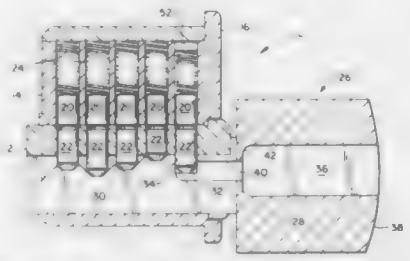
1. A replaceable core lock system comprising:
cylinder lock means, said lock means including shell means and a plug which is rotatable relative to the shell means about an axis, the plug defining a keyway which extends axially thereof, said lock means further including a retainer pin tumbler receiving bore which extends through the shell means and an activating pin tumbler receiving bore which extends between said keyway and the outer circumference of the plug, said retainer and activating pin tumbler receiving bores having axes which are oriented generally transversely with respect to the axis of rotation of the plug, the axes of said retainer and activating pin tumbler receiving bores being non-aligned when the plug is in an unrotated state relative to the shell means, said bores being positioned so as to be capable of being brought into alignment, the shell means further having a non-linear groove which extends from said retainer pin tumbler receiving bore to a first end of the shell means, said shell means first end being disposed oppositely with respect to the key insertion end of the keyway, said plug and shell means cooperating to define a plurality of locking pin tumbler receiving chambers, locking pin tumbler stacks being disposed in said locking pin tumbler receiving chambers and defining the bitting of said lock means;
an activating pin disposed in said activating pin tumbler receiving bore, said activating pin being movable along said bore and being sized to at least in part be received in said retainer pin tumbler receiving bore;
core retainer means, said retainer means including a housing which defines a retainer pin tumbler receiving chamber, said retainer pin tumbler receiving chamber of said housing being axially alignable with said retainer pin tumbler receiving bore in said shell means, said retainer means further including a resiliently biased retainer pin tumbler, said retainer pin tumbler being reciprocal in said housing chamber to normally engage said retainer pin tumbler receiving bore in said shell means to thereby capture said cylinder lock means against motion relative to said housing, insertion into the plug keyway of a control key having a bitting which engages said activating pin transversely repositioning the inwardly disposed end of said retainer pin tumbler to the level of the intersection of said retainer pin tumbler receiving bore in said shell means with said groove whereby said cylinder lock means may be rotated relative to said housing and may be separated therefrom.

5,010,754

LOCK ACTUATOR WITH REMOVABLE OPERATOR

Nelson J. De Angelo, Southington, and Kenneth T. Theriault, Meriden, both of Conn., assignors to Lori Corporation, Southington, Conn.

Filed Jul. 6, 1990, Ser. No. 549,280
Int. Cl.[5] E05B *11/00*
U.S. Cl. 70—[illegible] 20 Claims



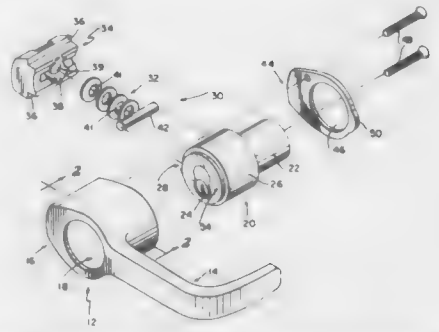
1. An actuator for a movable latch member comprising:
lock means, said lock means including a shell and a generally cylindrical plug which is rotatable about an axis relative to said shell, said plug and shell defining a shear line at the interface therebetween and also cooperating to define a plurality of pin tumbler receiving bores which extend across said shear line with said plug in the unrotated state, a pin tumbler comprising at least a resiliently biased driver pin and a bottom pin being disposed in each of said bores, said plug also defining a keyway which intersects said bores whereby the bottom pins of said tumblers may partly extend into said keyway, at least some of said pin tumblers thereby defining the bitting for said lock means, said bitting defining pin tumblers being replaceable whereby the lock means bitting may be changed, at least one of said pin tumblers being a trapping pin tumbler, said one pin tumbler being permanently captured in said lock means;
an operator for said lock means, said operator comprising manually operable handle means and a blade extension, said blade extension projecting from said handle means and having a size and shape generally complementary to said plug defined keyway whereby said blade extension may be received in said keyway, said blade extension being provided with bitting defining surface irregularities which cooperate with the pin tumblers which define the lock bitting to position such pin tumblers such that the shear line between pins thereof lies on the shear line between said plug and shell, said blade extension further being provided with a trapping recess configured to receive the bottom pin of said trapping pin tumbler, a shear line between pins of said trapping pin tumbler being located on the shear line between said lock means plug and shell when said trapping pin tumbler bottom pin is received in said trapping recess, the presence of said operator blade extension in said plug defined keyway permitting relative rotation between said lock means plug and shell by the application of torque to said handle means, the engagement of said trapping pin tumbler bottom pin in said blade extension recess preventing withdrawal of said blade extension from said keyway, said operator further having a slot which extends through said handle means and into said blade extension to intersect said trapping recess; and
an operator release key, said key having a shape which is generally complementary to said slot in said operator and a length which is greater than the depth of said slot, said release key being provided with a camming surface which cooperates with the bottom pin of said trapping pin tumbler to force said trapping pin tumbler bottom pin out of said trapping recess whereby said operator blade extension may be axially withdrawn from said plug keyway be imparting an axial force to said handle means when said release key is inserted in said slot, such withdrawal of said operator blade extension separating said operator from said lock means thereby permitting said pin tumblers to be repositioned whereby pin tumbler comprising pins extend across said shear line between said plug and shell and relative rotation therebetween is prevented.

5,010,755

LOCK WITH TORQUE-RELEASE MEANS

Walter E. Best, Indianapolis, Ind., assignor to Best Lock Corporation, Indianapolis, Ind.

Filed Nov. 20, 1989, Ser. No. 439,238
Int. Cl.[5] E05B *15/16*
U.S. Cl. 70—422 3 Claims



1. A door handle assembly for operating a door-latching system, the door handle assembly comprising
a lock-receiving cylinder for coupling to the door-latching system, the lock-receiving cylinder being formed to include an axially extending groove,
a handle shell surrounding the lock-receiving cylinder, the

handle shell including a lever handle and being formed to include an axially extending elongated chamber,

drive means for yieldably interconnecting the lock-receiving cylinder and the handle shell to establish a normal driving connection so that the lock-receiving cylinder is rotated about an axis of rotation in response to a first torque level applied to the handle shell and is stationary in response to torque levels above the first torque level, the drive means including a rod sized for mounting in the axially extending groove to establish the normal driving connection and spring means for yieldably biasing the rod toward the axially extending groove,

a support block supporting the spring means, the support block being slidably mounted in the elongated chamber and

a retainer for retaining the support block and the drive means within the elongated chamber

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5,010,756

METHOD OF AND APPARATUS FOR CONTROLLING SHAPE OF ROLLED MATERIAL ON MULTI-HIGH ROLLING MILL

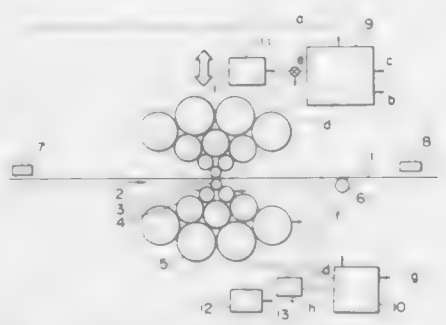
Kazuo Nose; Hiroyuki Yamamoto; Shiro Koike; Masakazu Shimomura, all of Kobe; Hajime Tsubono, Neyagawa; Soichi Kitagawa, Kobe; Yasumasa Fujisaki, Kobe; Yasushi Maeda, Kobe; Tetsuya Wakebe, Kobe, and Yasuyuki Kamiyama, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Nov. 28, 1989, Ser. No. 442,534

Claims priority, application Japan, Nov. 29, 1988, 63-2[illegible]495; Mar. 3, 1989, 1-49774; Aug. 30, 1989, 1-221803

Int. Cl.[5] B21B *37/02*

U.S. Cl. 72—9 6 Claims



1. A method of controlling the shape of a rolled material on a multi-high rolling mill which includes a strip shape meter for detecting an elongation in a rolling direction of a rolled material on the outgoing side of said multi-high rolling mill as a strip shape, a strip shape controlling actuator for controlling the strip shape of the rolled material, a strip thickness controlling actuator for controlling a strip thickness of the rolled material, a strip shape controlling device for outputting an operation amount to said strip shape controlling actuator to control said strip shape controlling actuator in accordance with a result of detection by said strip shape meter, and a strip thickness controlling device for outputting an operation amount to said strip thickness controlling actuator to control said strip thickness controlling actuator, and wherein the strip shape and the strip thickness of the rolled material are controlled by said strip shape controlling device and said strip thickness controlling device while correcting the operation amount from said strip thickness controlling device taking into consideration a change of the strip thickness which is caused by changing the operation amount of said strip shape controlling actuator said method comprising the steps of:

defining and setting in advance a total performance index with which a strip shape and a strip thickness on the outgoing side of the rolled material are to be evaluated using a difference between a preset target strip shape and a strip shape on the outgoing side of said multi-high rolling mill detected by said strip shape meter and a difference between a strip thickness variation caused by a change of the operation amount of each of the actuators and a preset target strip thickness variation upon changing of the operation amount of each of the actuators:

normally detecting, during strip shape control of the rolled material, the strip shape of the rolled material by means of said strip shape meter:

calculating, in accordance with a result of detection from said strip shape meter, operation amounts for said strip shape controlling actuator and said strip thickness controlling actuator which makes the value of the total performance index minimum; and

controlling said strip shape controlling actuator in accordance with an operation amount calculated by said strip shape controlling device and controlling said strip thickness controlling actuator in accordance with an operation amount obtained by adding an operation amount calculated by said strip shape controlling device to an operation amount from said strip thickness controlling device.

5,010,757

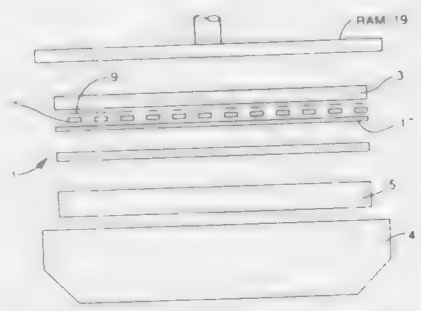
METHOD OF FORMING DIMPLES IN A CONDUCTIVE SUBSTRATE

David A. Fishman, Santa Clara, and Jon D. Hone, San Jose, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 29, 1990, Ser. No. 471,308

Int. Cl.[5] B21D *22/10*

U.S. Cl. 72—60 12 Claims



1. Method of forming shallow fiducial dimples upon a thin flexible electrical circuit comprising a first deflectable substrate having a thickness of about one mil overlaying a second substrate having recesses therein to be aligned with said dimples, said method comprising the steps of:

(a) providing a first support member having highly resilient pads affixed thereto, said pads having a shape corresponding to the shape of said dimples;

(b) providing a second support member;

(c) positioning said flexible electrical circuit between said first and second support members so that said highly resilient pads are aligned with the recesses within said second substrate; and

(d) applying a sufficient opposing force to said first and second members to cause said first substrate to be deflected by said pads by about one mil into said recesses to form said dimples.

5,010,758

BENDING MACHINE

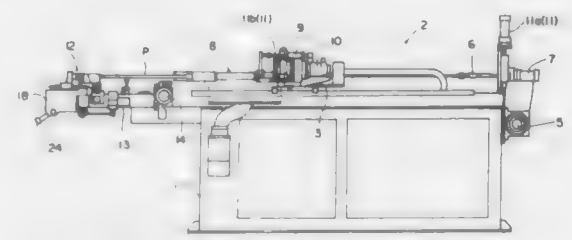
Hideaki Togoshi, Nishinomiya, Japan, assignor to Chiyoda Kogyo Co., Ltd., Osaka, Japan

Continuation of Ser. No. 267,675, Nov. 3, 1988, abandoned, which is a continuation of Ser. No. 813,337, Dec. 26, 1985, abandoned, which is a continuation-in-part of Ser. No. 761,626, Aug. 1, 1985, abandoned. This application Mar. 12, 1990, Ser. No. 494,892

Claims priority, application Japan, Mar. 23, 19[illegible], 59-42559; Nov. 22, 1985, 60-180475

Int. Cl.[5] B21D *7/04*

U.S. Cl. 72—157 13 Claims



1. In a bending machine comprising

a base block,

a bending assembly, and

means mounted on the base block for holding a length of a workpiece and advancing the workpiece in a first direction to the bending assembly,

the bending assembly comprising means defining a rotational axis, a plurality of rotatable bend dies arranged along said rotational axis and a plurality of clamp dies movable toward and away from the bend dies, the bend dies and the clamp dies being adapted to hold the workpiece therebetween and bend the workpiece by rotating in unison about the rotational axis, the improvement comprising

means for mounting said bending assembly to said base block for movement in a first plane perpendicular to and a first actuator coupled to said base block and means for mounting said bending assembly for moving the bending assembly in said first plane in a second direction transverse of said first direction,

said means for holding and advancing being mounted on the base block to be movable in a third direction parallel to said rotational axis, and further comprising a second actuator, and means coupling said second actuator to said holding and advancing means and base block for moving the holding and advancing means in said third direction whereby a workpiece held by said feed means is moved in said third direction.

5,010,759

WHEEL RIM SHAPING APPARATUS HAVING A SINGLE COTTER SUPPORTABLE AT BOTH ENDS THEREOF

Shojiro Yokomizo, Yokohama; Kouji Izumida, Ayase; Takeshi Saito, Yokohama, and Yutaka Yanamoto, Ayase, all of Japan, assignors to Topy Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 289,303, Dec. 23, 1988, abandoned. This application Jun. 5, 1990, Ser. No. 532,161

Claims priority, application Japan, Dec. 23, 1987, 62-323857

Int. Cl.[5] B21D *53/30*

U.S. Cl. 72—393 11 Claims

1. A wheel rim shaping apparatus to be mounted between a fixed member and a movable member of a press apparatus, comprising:

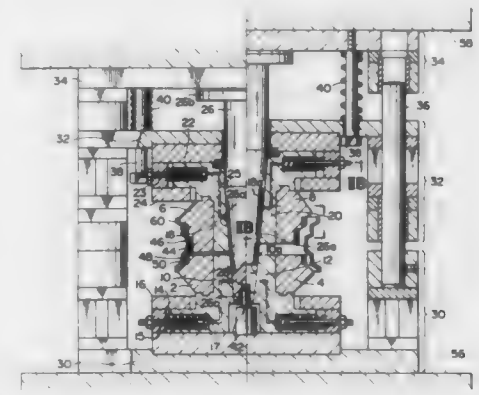
a first die split into a plurality of first die elements in a circumferential direction of the first die so that the first die can expand and contract in a radial direction of the first die;

a second die provided coaxially with the first die so as to be movable relative to the first die in an axial direction of the first die, the second die being split into a plurality of second die elements in a circumferential direction of the second die so that the second die can expand and contact in a radial direction of the second die;

a first die holder split into a plurality of first die holder elements in a circumferential direction of the first die holder, a first spring means urging each of the first die holder elements in a radially inward direction of the first die holder for constant engagement with said cotter, said first die holder elements engaging the first die so as to expand and contract the first die;

a second die holder split into a plurality of second die holder elements in a circumferential direction of the second die holder, a second spring means urging each of the second die holder elements in a radially inward direction of the second die holder for constant engagement with said cotter, said second die holder elements engaging the second die so as to expand and contract the second die;

a single cotter having a central axis is provided coaxially with the first and second dies and movable in an axial direction of the cotter, the cotter having a bushing with an axially extending and axially open hole having a central axis coaxial with said central axis of the cotter is located in a lower end portion of the cotter, said axially open hole having a continuous circumferential inner surface, the cotter being capable of extending through the second die holder into the first die holder to engage the first and second die holders when the cotter is moved in a direction toward the first die holder supporting member;



a first die holder supporting member secured to a fixed member of a press apparatus, the first die holder supporting member supporting the first die holder for slidably mounting each of the first die holder elements relative to the first die holder supporting member in the radial direction of the first die holder;

a second die holder supporting member provided on one side of the first die holder supporting member and movable relative to the first die holder supporting member, in an axial direction of the first die holder supporting member, the second die holder supporting member supporting the second die holder for slidably mounting each of the second die holder elements relative to the second die holder supporting member in the radial direction of the second die holder;

a cotter supporting member provided on the same side of the first die holder supporting member as the second die holder supporting member and provided further from the first die holder supporting member than the second die holder supporting member, the cotter supporting member being movable relative to the first die holder supporting member and the second die holder supporting member in the axial direction of the first die holder supporting member, the cotter supporting member being secured to a movable member of the press apparatus, the cotter supporting member securely supporting the cotter at one end portion of the cotter;

oil path means located in said first die holder and in said

second die holder for providing lubricating oil to sliding surfaces between said first die holder and said cotter and between said second die holder and said cotter respectively; and

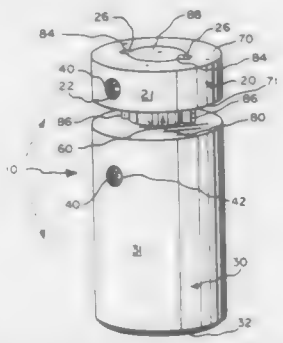
means for guiding said cotter including a cotter guide fixedly supported so as to be fixed in a position with respect to the first die holder supporting member, the cotter guide having an upwardly extending pin fixed thereto and having a central axis in alignment with said center axis of the cotter, the cotter guide being capable of slidably engaging the cotter at said continuous circumferential inner surface of said axially open hole of the cotter when the cotter is moved in the direction toward the first die holder supporting member.

5,010,760

MULTI-USE FILL HEIGHT TEST DEVICES

Terry E. Nish, and Cecil R. McCray, both of Salt Lake City, Utah, assignors to Servi-Tech, Inc., Salt Lake City, Utah

Filed Apr. 6, 1990, Ser. No. 505,960
Int. Cl.[5] G01B *3/30*
U.S. Cl. 73—1 H **11 Claims**



1. A method of calibrating container filling and closure applying equipment comprising the steps of:

adjustably interrelating a base of free-standing test device and a fill level simulating member thereof;

positioning the fill level simulating member at a predetermined elevation above the base without disruption of the interrelationship between the base and the fill level simulating member;

releasibly securing the fill level simulating member at said predetermined elevation against inadvertent change;

causing the free-standing test device comprising the fill level simulating member so releasibly secured at said predetermined elevation to be displaced through filling and closure applying equipment comprising at least one fill level sensor;

calibrating the at least one fill level sensor to correspond to the fill level simulated by the test device.

5,010,761

AUTOMATED LEAK DETECTION APPARATUS AND METHOD THEREFOR

Bernard Cohen, Woodland Hills; Don B. Caplan, Agua Dulce, and Edward G. Edwards, Woodland Hills, all of Calif., assignors to Superior Industries International, Inc., Van Nuys, Calif.

Filed Mar. 1, 1990, Ser. No. 487,596
Int. Cl.[5] G01M *3/20*
U.S. Cl. 73—40.7 **30 Claims**

1. A leak detection system for detecting leaks in an object, the system comprising:

handling means for moving the object;

measurement means for measuring the object; and

sealing means for sealing a part of the object to form a chamber;

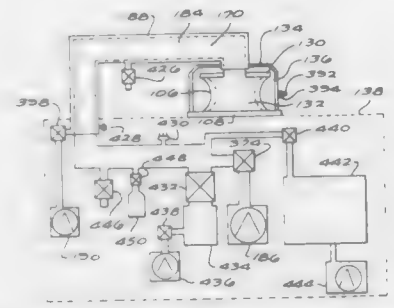
enclosing means for forming an enclosure about the object including the chamber;

first vacuum means for creating a partial vacuum in the chamber;

second vacuum means for providing a partial vacuum to the enclosure such that the partial vacuum of the enclosure is less than the partial vacuum of the chamber;

test gas supply means for introducing a test gas in the outer enclosure, detection means for detecting the amount of test gas in the chamber;

memory means for storing data regarding unacceptable leak rates for a plurality of different objects;



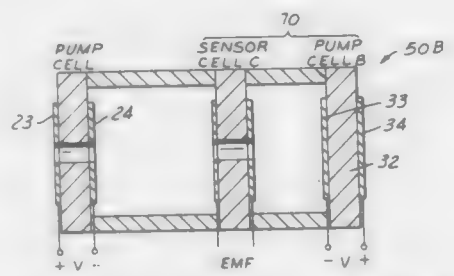
controller means for automatically controlling the handling means to receive the object, move the object to the measurement means, move the object to the detection means, the controller means also for automatically receiving the measurement of the object from the measurement means, for automatically controlling the test gas supply means to introduce test gas into the enclosing means, for automatically receiving the amount of detected test gas from the detection means, for automatically comparing the measurement of the object and the amount of detected test gas to the data in the memory means and for automatically determining whether the object has an unacceptable leak rate based on such comparison.

5,010,762

MEASUREMENT AND CONTROL OF EXHAUST GAS RECIRCULATION WITH AN OXYGEN PUMPING DEVICE

Eleftherios Logothetis, Birmingham, and Richard E. Soltis, Redford, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 222,864, Jul. 22, 1988, Pat. No. 4,909,072.
This application Nov. 30, 1989, Ser. No. 443,537
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—116 **11 Claims**



9. An electrochemical device for measuring the percentage of exhaust gas recirculation (EGR) in an intake air and exhaust gas mixture of an internal combustion engine, said electrochemical device including:

a first solid electrochemical pump cell having a first pair of opposed electrodes;

a second solid electrochemical pump cell having a second pair of opposed electrodes;

a supporting structure coupled to said first and second pump cells to form with them a restricted volume;

an aperture for providing communication between said restricted volume and an ambient of said intake air and exhaust gas mixture;

a first external circuit means coupled to said first pump cell for passing a constant current through said first pump cell so that of said first pair of opposed electrodes a first pump cell electrode inside said volume is biased negatively causing a portion of the oxygen molecules inside said volume to be pumped out by said current flowing through said first pump cell;

a second external circuit means coupled to said second pump cell for applying a constant voltage across said second pump cell so that of said second pair of opposed electrodes a second pump cell electrode inside said volume is biased negatively, said constant voltage across said second pump cell being sufficient to cause substantially all of the remainder of the oxygen molecules inside said volume to be pumped out by a current flowing through said second pump cell but less than that capable of disassociating CO_2 or H_2O molecules;

a third external circuit means coupled to said second pump cell for measuring said current flowing through said second pump cell, said second pump cell current being proportional to the percentage of O_2 molecules inside said volume not pumped out by said first pump cell and also proportional to the percentage of O_2 molecules in the intake air and exhaust gas mixture; and

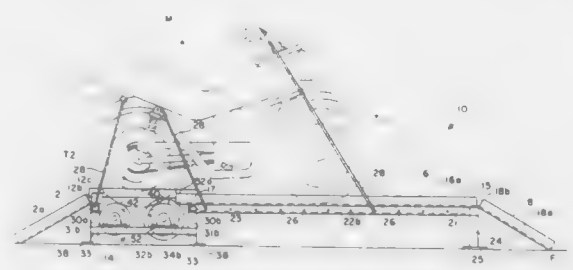
means defining a diffusion barrier between said first pump cell and said second pump cell.

5,010,763

ROAD SIMULATION DEVICE

William J. Schneider, Rte. 1, Box 339, E. Bernstadt, Ky. 40729

Filed Jan. 24, 1990, Ser. No. 469,333
Int. Cl.[5] G01M *15/00*
U.S. Cl. 73—117 **17 Claims**



1. A road simulation device for qualitative testing or demonstration of a motorcycle, the device comprising:

(a) a motorcycle support frame including entrance means, exit means, a rigid, immovable one-piece longitudinal motorcycle support means extending substantially horizontally between said entrance means and said exit means, having a length at least as long as a motorcycle to be tested or demonstrated thereon and having opposing ends one of said opposing ends fixed substantially adjacent to said exit means, and vertical support means for positioning said longitudinal motorcycle support means spacedly upward from a floor at the exit end of said longitudinal motorcycle support means;

(b) a housing disposed between said entrance means and said longitudinal motorcycle support means;

(c) a rotation assembly located within said housing and including a first roller and a second roller positioned side-by-side, horizontally parallel to each other and perpendicular to the longitudinal axis of the motorcycle support means for rotatably supporting and for forcible rotation by the rear tire of a motorcycle positioned upright upon said device;

(d) drag applying means connected to said first roller; and

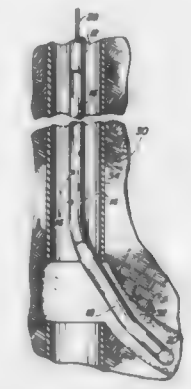
(e) means for controlling said drag applying means attached thereto; whereby to simulate the effect of a road to permit qualitative testing or demonstration of the operation of a motorcycle secured upon said road simulation device without the necessity of placing a driver on the motorcycle and taking the motorcycle onto a road.

5,010,764

METHOD AND APPARATUS FOR LOGGING SHORT RADIUS HORIZONTAL DRAINHOLES

David E. Taylor, Lafayette, La., assignor to Marathon Oil Company, Findlay, Ohio

Filed Nov. 1, 1989, Ser. No. 432,103
Int. Cl.[5] E21B *47/00*
U.S. Cl. 73—151 **9 Claims**



1. Apparatus for use in logging a short radius horizontal drainhole, comprising:

a tubing string having a lower portion;

the lower portion of the tubing string including sensor support means therein;

the lower portion of the tubing string containing openings communicating with the interior thereof in the vicinity of the sensor support means to thereby expose the interior to the pressure and temperature conditions of the horizontal drainhole; and

the lower portion of the tubing string including an end portion extending transversely of the tubing string.

5,010,765

METHOD OF MONITORING CORE SAMPLING DURING BOREHOLE DRILLING

Allen Duckworth, Middlefield; Derek Barnes, Wallingford, both of Conn., and Thomas L. Gennings, Anchorage, Ak., assignors to Teleco Oilfield Services Inc., Meriden, Conn.

Filed Aug. 25, 1989, Ser. No. 398,668
Int. Cl.[5] E21B *49/00*
U.S. Cl. 73—153 **6 Claims**

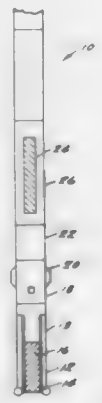
1. A method of monitoring the acquisition of a core sample obtained from a coring tool on a drillstring in a borehole, comprising the steps of:

measuring the weight of a portion of the drillstring at a pre-selected borehole depth when the drillstring is off bottom to define a first measurement;

drilling to acquire a core sample; measuring the weight of a portion of the drillstring at a pre-selected borehole depth when the drillstring is off-bottom to define a second measurement;

determining the difference between the first and second

measurements, the difference corresponding to the weight of the core sample; and



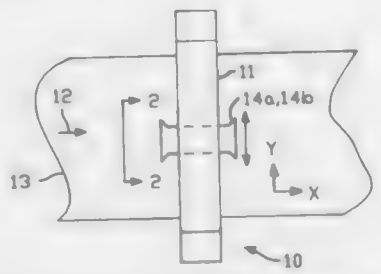
comparing the measured core sample weight to a calculated weight of a full core sample to determine if the core sample has been acquired.

5,010,766

ERROR COMPENSATION FOR MEASURING GAUGES

Pekka M. Typpo, Cupertino, Calif., assignor to Impact Systems, Inc., San Jose, Calif.

Filed Nov. 30, 1989, Ser. No. 443,926
Int. Cl.[5] G01B *7/14;* **G01N** *27/72*
U.S. Cl. 73—159 **9 Claims**



1. Apparatus for error compensating a measured characteristic of a moving sheet material, including a pair of transducers for measuring said characteristic spaced opposite each other with the sheet therebetween and mounted on opposite scanning heads to traverse across the direction of movement of the moving sheet, the transducers along with said scanning heads being subject to mechanical displacement error in both a lateral relationship (X,Y) parallel to the plane of the moving sheet and in a vertical direction perpendicular to the sheet where the spacing Z between the heads may change, said error compensating apparatus comprising:

metal target means mounted on said one scanning head,

means mounted on said other scanning head opposite said target means for measuring at least said X, Y displacement error, including two pairs of eddy current sensors mounted with one scanning head, each of said sensors generating an output signal related to its distance from a portion of said target opposite such sensor, an eddy current being induced in said target portion by said sensor, the combined said signals of one said pair of sensors indicating X displacement error and said other pair Y displacement error;

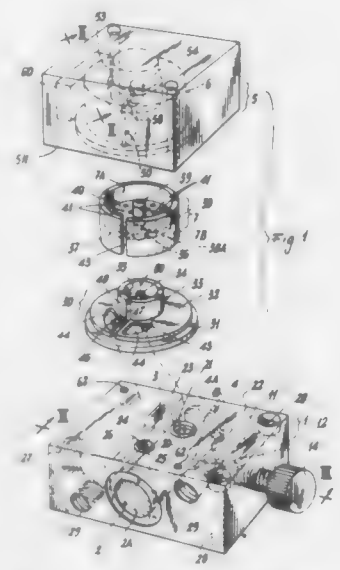
process means responsive to said X, Y displacement errors for correcting said measured characteristic.

5,010,767

MODULAR DEVICE FOR MEASURING THE VOLUMETRIC FLOW RATE OF A LIQUID, PARTICULARLY A LUBRICANT FLUID, IN A HYDRAULIC CIRCUIT

Gualtiero Divisi, Milan, Italy, assignor to Dropsa S.p.A., Italy

Filed Oct. 26, 1989, Ser. No. 427,742
Claims priority, application Italy, Nov. 25, 1988, 22751 A/88
Int. Cl.[5] G01F *3/08*
U.S. Cl. 73—253 **17 Claims**



1. A device for measuring the volumetric flow rate of a fluid, in particular a lubricant fluid in a hydraulic circuit, said device comprising:

(a) a circular rotor rotating eccentrically in a circular chamber under the action of pressurized fluid which enters and leaves at different points of said chamber;

(b) a fixed sensor located close to a point within said circular chamber, the cyclic rotation of said rotor causing it to approach said point so that the sensor generates a signal;

a distributor block provided with an entry bore and an exit bore;

a measurement block;

a feed duct and a return duct within sadi distribution block to and from said measurement block, said measurement block removably suppported by the distributor block;

said distributor block being provided with means for adjusting the fluid flow to the measurement block;

said sensor, the circular chamber and the rotor being located in said measurement block;

wherein said means for adjusting said fluid flow to the measuring block is a needle valve;

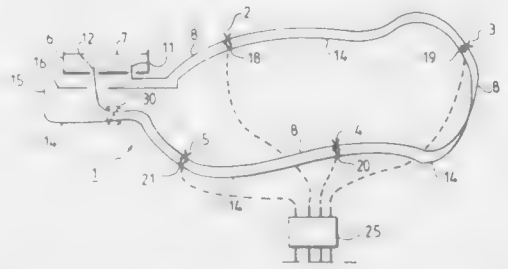
wherein the distributor block comprises a channel which opens into said entry bore, a duct connected to said channel and a chamber connected to said duct in which said means for adjusting said fluid flow to the measurement block comprising said needle valve are located, and comprising said feed duct extending from said chamber and opening into a port in that surface on which said measurement block rests on said distributor block, and said surface having a further port said distributor block having said return duct connecting with said further port and terminating in the exit bore such that said feed duct and said return duct respectively feed fluid from said distributor block to said measurement block and return fluid from said measurement block to said distributor block and said measurement block measures the volumetric flow rate of fluid flowing through said channel.

5,010,768

DEVICE FOR MULTIMEASUREMENT OF VERTICAL POSITION VARIATION AND A LEVEL-SETTING SYSTEM EQUIPPED WITH SAID DEVICE

Patrice Le Baud, Clamart, France, assignor to Societe d'Etudes Techniques et d'Entreprises Generales-Sodeteg, Le Plessis-Robinson, France

PCT No. PCT/FR88/00473, § 371 Date Jul. 31, 1989, § 102(e) Date Jul. 31, 1989, PCT Pub. No. WO89/03018, PCT Pub. Date Apr. 6, 1989
PCT Filed Sep. 27, 1988, Ser. No. 368,365
Claims priority, application France, Sep. 29, 1987, 87 13455
Int. Cl.[5] G01F *23/16*
U.S. Cl. 73—299 **14 Claims**



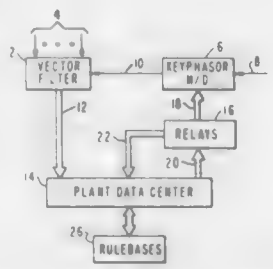
1. A device for multimeasurement of vertical position variation of a number of predetermined points of an industrial or scientific construction or installation, wherein said device comprises means for measuring pressure which appears at the locations of said points and the variation of which is directly related to a variation in level of said points, said means being constituted by a tank containing liquid and open to free air and at least one tube which is attached respectively to said points and the ends of which are in free communication with the tank so as to be continuously filled with said liquid, and by pressure gages at least one of said gages being attached to a lower portion of a wall of said tube at each of said points and means for converting measurement results constituted by an electronic apparatus for amplification and conversion of the electrical measurement data emitted by said gages to data for linear measurement of variation in level of said points, and providing an output signal of said data.

5,010,769

AUTOMATIC PSEUDOKEYPHASOR GENERATOR

Ian J. King, Winter Springs, and Michael P. Chow, Orlando, both of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 31, 1990, Ser. No. 473,004
Int. Cl.[5] G01N *29/00*
U.S. Cl. 73—660 **7 Claims**



1. In apparatus for analyzing the vibratory behavior of a rotating machine in response to signals representing vibrations occurring in the machine, which apparatus includes: a controllable signal generator connected to receive an input signal representing the rate of rotation of the machine and to produce an output signal representing a rate of rotation bearing a selected relation to the rate of rotation represented by the input signal, the generator being responsive to digital signals which set the value of the selected relation; and a signal analyzing device connected to receive the signals representing vibrations and the output signal from the signal generator for processing the signals representing vibrations as a function of the machine rotation rate represented by the output signal from the signal generator, the improvement comprising:

digital signal supply means providing first digital signals representing the value of the selected relation; and

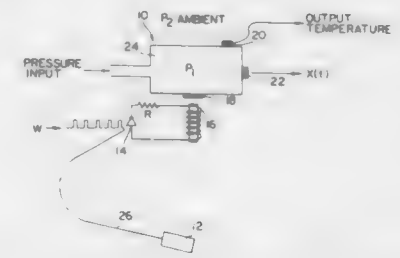
electrically controlled signal generating means connected between said digital signal supply means and said controllable signal generator for supplying to said controllable signal generator second digital signals which correspond to the first digital signals and which act to set the value of the selected relation.

5,010,770

VIBRATING TUBE FIBER OPTIC PRESSURE TRANSDUCER WITH LIGHT-POWERED ELECTRO-MAGNETIC DRIVE

John W. Berthold, Salem, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Sep. 20, 1989, Ser. No. 409,849
Int. Cl.[5] G01L *11/00*
U.S. Cl. 73—702 **11 Claims**



1. A fiber optic transducer for measuring the pressure within a vessel, comprising:

means for producing a first series of light pulses;

means for converting said first series of light pulses into magnetic pulses;

optical fiber means for transmitting said first series of light pulses from said light pulse producing means to said converting means;

magnetic means operatively connected to the vessel whose pressure is being measured for converting said magnetic pulses applied thereto into periodic mechanical vibration of the vessel;

means for producing a secondary light signal, said secondary light signal being directed toward and reflected from a reflective means attached to the vessel producing a modulated reflected secondary light signal proportional to said periodic mechanical vibration of the vessel, said producing means providing a reference light signal for producing a reflected reference light signal with a difference in phase between said reflected secondary light signal and the reflected reference light signal; and

means for measuring said modulated reflected secondary light signal for determining the pressure within the vessel.

5,010,771

FAST RESPONSE, HIGH SENSITIVITY MANOMETRIC WIND SENSOR

Charles W. Bruce, Las Cruces, N. Mex., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

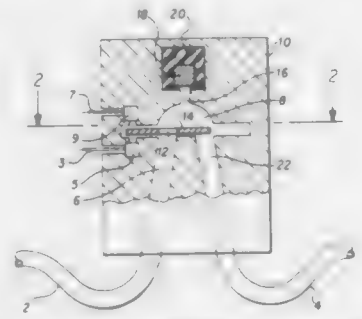
Filed Apr. 4, 1990, Ser. No. 504,525
Int. Cl.[5] G01F *1/20, 1/46;* **G01C** *21/00;* **G01L** *11/00*
U.S. Cl. 73—861.18 **8 Claims**

1. A sensor for measuring gas flow comprising:

a housing having a first orifice for receiving dynamic gas flow therethrough, a second orifice spaced from the first

orifice and communicating with a static gas, and a plenum spaced from the first and second orifice communicating with a microphone;

an oblong flat plate alternator means located inwardly of the



housing and having an aperture located thereon for alternately completing a passage between the phenum and the first and second orifices thus subjecting the microphone to a resultant acoustic wave dependent upon the dynamic gas flow, said alternator means driven by a tuning fork

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5,010,772

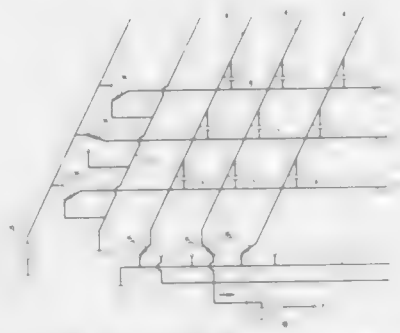
PRESSURE MAPPING SYSTEM WITH CAPACITIVE MEASURING PAD

Joe D. Bourland; Charles F. Barbs; Leslie A. Geddes; Willis A. Tacker, Jr., and George P. Graber, all of W. Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Continuation-in-part of Ser. No. 850,518, Apr. 11, 1986, Pat. No. 4,827,763. This application May 5, 1989, Ser. No. 347,921

Int. Cl.[5] A61B *5/10*; **G01L** *5/00, 1/14*

U.S. Cl. 73—862.04 **21 Claims**



18. A system for monitoring the distribution of forces on a surface, comprising:

a pad having first and second arrays of electrodes and insulating material disposed between said first and second arrays to form a matrix of capacitive nodes each of which has a capacitance that varies in accordance with the degree of pressure on the pad at the location of the node;

means for scanning the electrodes of said first and second arrays to thereby successively address nodes in said matrix,

means for measuring the capacitance of an addressed node by sensing current of a scanned electrode of said second array; and

means for connecting each electrode of said second array to a reference potential for the driving signal to thereby render all electrodes of said second array at substantially zero volts to thereby isolate the measured capacitance from the effects of changes in capacitance of nodes other than the addressed node whose capacitance is being measured

5,010,773

SENSOR TIP FOR A ROBOTIC GRIPPER AND METHOD OF MANUFACTURE

Robert D. Lorenz, and Gregory T. Jackson, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jan. 24, 1990, Ser. No. 469,381

Int. Cl.[5] G01L *1/16, 5/16*

U.S. Cl. 73—862.04 **30 Claims**



23. A sensor tip for use in a robotic hand which is capable of manipulating an object, the sensor tip providing feedback information on forces acting upon the sensor tip by the object, the sensor tip comprising:

(a) a body that contacts the object being manipulated,

(b) a transducer disposed on the body which produces an electrical signal to yield information on a force or torque component acting upon the sensor tip by the object being manipulated, and

(c) buffer amplifier means for the electrical signal produced by the transducer and providing an output signal, the means including an operational amplifier having an input and an output, the transducer being connected in a feedback loop between the output and the input of the amplifier to produce an output voltage from the amplifier which is indicative of strain in the transducer

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5,010,774

DISTRIBUTION TYPE TACTILE SENSOR

Kanaya Kikuo; Katsuhiko Kanamori, both of Hiratsuka, and Ryosuke Masuda, Fujisawa, all of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

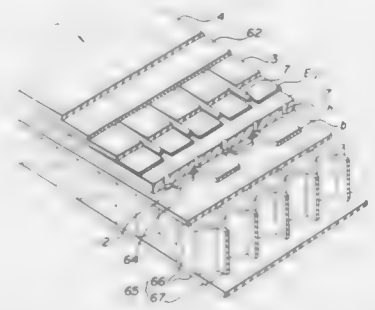
PCT No. PCT/JP88/01122, § 371 Date Jun. 3, 1989, § 102(e) Date Jun. 3, 1989

PCT Filed Nov. 4, 1988, Ser. No. 381,710

Claims priority, application Japan, Nov. 5, 1987, 62-278348; Jan. 19, 1988, 63-7419

Int. Cl.[5] G01L *5/00, 1/20*; **H01C** *10/10*; **B25J** *19/02*

U.S. Cl. 73—862.04 **8 Claims**



1. A distribution type tactile sensor comprising:

a plurality of electrodes provided in pairs at respective pressure sensing points on a pressure sensitive conductive rubber sheet capable of changing the electrical resistance responsive to compressive forces; and

rectifier means provided to respective electrodes for rectifying the current flowing across each pair of electrodes through the rubber sheet, the electrodes being divided into groups each comprising electrodes arranged in a line corresponding to respective polarities of the electrodes, wherein electrodes in respective electrode groups are parallel connected to one another through electrode leads, and directions of a division of electrode groups divided into respective polarities are crossed with one another at respective pressure sensing points;

wherein belts of the pressure sensitive conductive rubber sheet are disposed in a mutually parallel and spaced arrangement on pairs of electrodes provided on a sensor board in a chessboard arrangement, a cover having a relatively low friction resistance and comprising a flexible material is applied to the surfaces of the belts of the rubber sheet, and a flexible surface-forming member is further applied on the cover thereby providing a laminate structure; and wherein the peripheral edge of the laminate structure is fixed and electrodes having respective polarities are divided into respective groups in a mutually perpendicular arrangement.

5,010,775

CAPACITIVE SENSOR OF DISPLACEMENT AND TWIST ANGLE SENSOR INCLUDING AT LEAST ONE SUCH CAPACITIVE SENSOR

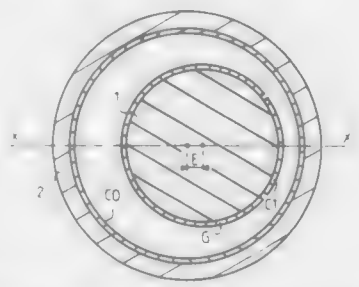
Joël Choisnet, La Frette sur Seine, France, assignor to Thomson-CSF, Puteaux, France

Filed Mar. 22, 1990, Ser. No. 497,531

Claims priority, application France, Apr. 4, 1989, 89 04402

Int. Cl.[5] G01L *3/02*

U.S. Cl. 73—862.33 **5 Claims**



1. A capacitive sensor of displacements comprising a first and a second support having, respectively, a first and a second longitudinal axis, parallel to each other, these supports being provided with electrodes to form capacitors wherein, to measure relative displacements of the two supports perpendicularly to the first and second axis, the first support has a cylindrical hole, the geometrical axis of which forms the first axis, the second support has a cylindrical rod, the geometrical axis of which forms the second axis, this rod being positioned so that it goes freely through the cylindrical hole and thus has facing walls with the hole, and the electrodes are borne by the facing walls of the hole and of the rod, some of said electrodes being borne on the same wall and separated from each other by a gap parallel to the first axis and to the second axis.

5,010,776

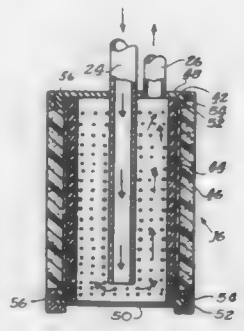
ENVIRONMENTAL CONTAMINATION DETECTION AND ANALYZING SYSTEM AND METHOD

Daniel P. Lucero, Triangle, Va., and Susan K. Hendrickson, Germantown, Md., assignors to IIT Research Institute, Chicago, Ill.

Filed May 4, 1989, Ser. No. 347,424

Int. Cl.[5] G01N *1/22*

U.S. Cl. 73—863.23 **6 Claims**



1. In a sampler system for underground testing for contaminants, an implant having a gas permeable tube wall portion for collecting a gas sample from the soil in an underground zone, the flow of gas into the implant when inserted in the soil having a total impedance composed of a tubular membrane diffusion impedance of the gas permeable tube wall portion and a soil gas impedance in series therewith, the tube wall material and structure being such that the tubular membrane diffusion impedance is low enough to allow gas flow through the membrane while at the same time is high enough when compared to the soil gas impedance to effectively render the soil gas impedance insignificant, whereby the property of tubular membrane diffusion impedance of the tube wall portion substantially represents the total diffusion impedance to soil gas flowing from the soil into the implant.

5,010,777

APPARATUS AND METHOD FOR ESTABLISHING SELECTED ENVIRONMENTAL CHARACTERISTICS

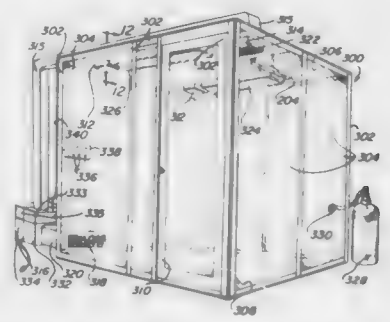
James E. Yehl, and Rex R. Coppom, both of Boulder, Colo., assignors to American Environmental Systems, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 138,143, Dec. 28, 1987, Pat. No. 4,911,737, and a continuation-in-part of Ser. No. 300,121, Jan. 23, 1989. This application Jun. 13, 1989, Ser. No. 365,670

The portion of the term of this patent subsequent to Mar. 27, 2007, has been disclaimed.

Int. Cl.[5] G01N *1/12*

U.S. Cl. 73—861.81 **25 Claims**



1. A method for establishing selected environmental characteristics comprising:

establishing a substantially enclosed area having an entry way, said enclosed area being established at least partly utilizing materials characterized by low conductivity;

generating a selected quantity of ions within said area by applying voltage to electrode means so that ions are produced thereat;

generating an electrostatic field within said area by applying voltage to field collector means to thereby provide a selected electrostatic field intensity within said area, said electrostatic field intensity and said quantity of ions generated being selectable independently of one another; and

pulsating said electrostatic field at said field collector means at a selected frequency.

5,010,778

VIBRATOR

Franz Riedl, Munich, Fed. Rep. of Germany, assignor to Wacker-Werke GmbH & Co. KG, Munich, Fed. Rep. of Germany

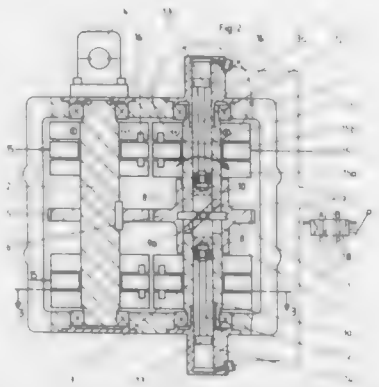
PCT No. PCT/EP89/00222, § 371 Date Oct. 26, 1989, § 102(e) Date Oct. 26, 1989, PCT Pub. No. WO89/07988, PCT Pub. Date Sep. 8, 1989

PCT Filed Mar. 3, 1989, Ser. No. 442,321

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1988, 3806897

Int. Cl.[5] F16H *33/02;* **B01F** *11/00*

U.S. Cl. 74—61 **2 Claims**



1. In a vibrator having two axially parallel, interlocking, counterrotating unbalanced shafts, one of which is driven by a drive motor, with said unbalanced shafts, for continuous opposite rotation for altering the phase relationship of eccentrics, being coupled via a hub that is disposed in a rotatable yet axially fixed manner on one of said unbalanced shafts and that in a wall thereof that surrounds said one shaft is provided with a groove that extends along said one shaft and in which slidingly engages a pin that is fixedly secured to said one shaft and that, in a slot of said one shaft that extends therealong and at an angle to said hub groove, is displaceable via an adjustment member that is disposed coaxially in said one shaft and is randomly actuatable via a servomotor means, the improvement wherein:

the direction of operation of said driven shaft is reversible, each of said unbalanced shafts has an eccentric part that is fixedly mounted thereon and has an eccentric part that is freely rotatable thereon over a predetermined angular range between extreme positions that are delimited by stop means which, relative to said fixed eccentric part, are disposed so that the entire eccentric, comprised of said fixed eccentric part and said movable eccentric part, in one extreme position of said movable eccentric part has a maximum value and in the other extreme position has a minimum value, with the rotatable eccentric parts on both unbalanced shafts each assuming the same extreme position, which is a function of the direction of operation; and

said servomotor means is double acting and comprises two single-acting servomotors having opposite directions of operation, with one of said servomotors engaging said adjustment member from one end of said one unbalanced shaft, and with the other of said servomotors engaging said adjustment member from the other end of said one unbalanced shaft.

5,010,779

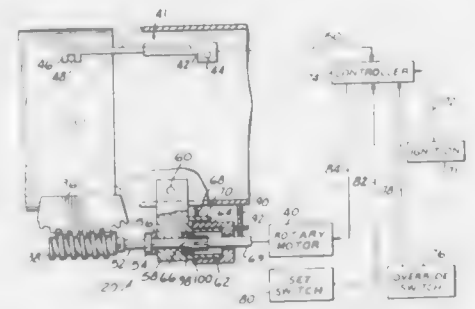
AUTOMATIC STEERING WHEEL PIVOTING MECHANISM

Ross W. Herron, Lathrup Village, and Garry E. Beard, Livonia, both of Mich., assignors to Ultra Precision Manufacturing, Ltd., Birmingham, Mich.

Filed Sep. 5, 1989, Ser. No. 402,782

Int. Cl.[5] B62D *1/18*

U.S. Cl. 74—493 **19 Claims**



1 A vehicle steering system comprising

a fixed steering column;

a wheel column pivotally connected to said fixed steering column, said wheel column supporting a steering wheel and allowing relative rotation thereof, said steering wheel rotating a steering rod, said steering rod being connected to a connection in said fixed steering column, said connection being operable connected to a steering mechanism, and

said wheel columns being selectively position in one of a plurality of pivoted positions relative to said fixed steering column, there being means for selecting one of said plurality of pivoted positions relative to said fixed steering column and automatic means operably connected to said wheel column for driving said wheel column thereto;

said automatic means comprising a mechanical connection between said steering column and said wheel column, said mechanical connection being at a plurality of contact points; and

said mechanical connection comprising a rack and worm gear connection, said rack being curved and fixed to said wheel column, said worm gear being pivotally mounted to said steering column and rotated by said automatic means.

5,010,780

DEVICE FOR ACTUATING A REMOTELY POSITIONED SPRING-BIASED LATCH

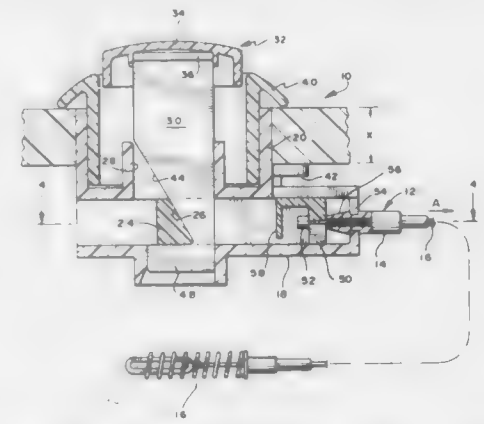
Hugh S. Hatfield, Lenoir City, Tenn., assignor to Plastic Industries, Inc., Athens, Tenn.

Filed May 15, 1990, Ser. No. 523,538

Int. Cl.[5] F16C *1/10*

U.S. Cl. 74—501.5 R **6 Claims**

1. In combination, a remotely positioned, spring-biased latch mechanism and actuating means therefor comprising a control cable, a sheath surrounding the control cable actuator means, one end of the control cable connected to actuator means, a plastic housing, a plastic shuttle slidably mounted in the housing, means on the housing for attaching the sheath of the control cable, means for attaching the other end of the control cable to the shuttle, thereby biasing the shuttle in a direction of the actuator means, a wall on the shuttle inclined in respect to the attached control cable, a push button, a push button stem attached to the push button, means slidably mounting the push button stem in the housing and through an opening in the shuttle, an inclined wall on the push button stem, said inclined wall mating with the inclined wall on the shuttle, whereby



when the push button is depressed, the shuttle is cammed laterally to actuate the actuator means.

5,010,781

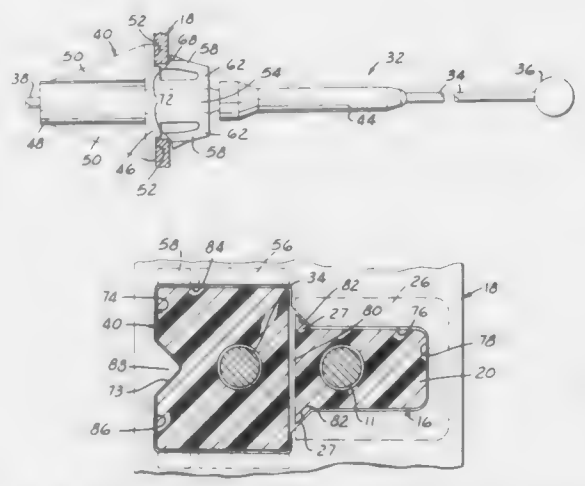
RETAINING ASSEMBLY FOR THROTTLE AND SPEED CONTROL CABLES

Michael P. Kirk, Utica, and Blake W. Good, Livonia, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed May 29, 1990, Ser. No. 529,847

Int. Cl.[5] F16C *1/10;* **F16G** *11/00*

U.S. Cl. 74—502.4 **17 Claims**



12. A retaining assembly retaining a throttle control cable and speed control cable to a cable mounting bracket, comprising:

a first end fitting on the speed control cable having means for allowing said first end fitting to slide into an aperture in the cable mounting bracket and for preventing longitudinal movement of said first end fitting relative to the cable mounting bracket;

a second end fitting on the throttle control cable having means for allowing said second end fitting to snap into the aperture in the cable mounting bracket for preventing longitudinal movement of said second end fitting relative to the cable mounting bracket and having means abutting said first end fitting for preventing said first end fitting from disengaging the cable mounting brackets;

wherein said first end fitting has a first body and said slide means comprises first and second flanges extending outwardly from said first body to define a space longitudinally therebetween;

wherein said second end fitting has a second body and a retention portion transversely spaced from said second body and said abutting means comprises a portion on said second body adapted to abut said first body; and

wherein said snap means comprises first and second retaining clips extending outwardly from each side of said second body and said retention portion.

5,010,782

POSITION ADJUSTABLE PEDAL ASSEMBLY

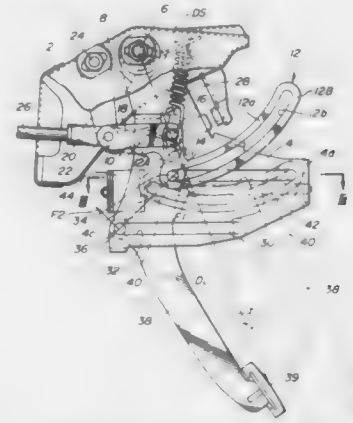
Yasushi Asano, and Yoshimasa Kataumi, both of Shizuoka, Japan, assignors to Fuji Kiko Company, Ltd., Tokyo, Japan

Filed Jul. 28, 1989, Ser. No. 386,401

Claims priority, application Japan, Jul. 28, 1988, 63-188774; Jul. 28, 1988, 63-188775; Jul. 28, 1988, 63-188776; Jul. 28, 1988, 63-188777

Int. Cl.[5] G05G *1/14*

U.S. Cl. 74—512 **12 Claims**



1. A position adjustable pedal assembly for a vehicle comprising:

a stationary bracket fixed to a stationary portion of the vehicle;

a lever connected to said stationary bracket for a pivotal movement relative to said stationary bracket about a first pivot axis;

a pedal arm with a pedal pad at its lower end, said pedal arm connected to said lever for pivotal movement with said lever as one integral unit in response to a depression force applied to the pedal pad;

pedal position adjusting means including a drive member and a driven member, said drive member adapted to be activated by a vehicle driver's operation, said driven member mounted on said pedal arm to be selectively driven by said drive member to move in a longitudinal direction of the vehicle along with said pedal arm relative to said lever so as to adjust a position of the pedal pad in the longitudinal direction of the vehicle;

an adjust lever provided on said lever, said adjust lever being allowed a relative movement to said lever and having a connecting member which is adapted to move within a first arc-shaped track in response to the relative movement of said adjust lever;

a second arc-shaped track formed on said adjust lever;

a first linear track formed on said lever and extending in the longitudinal direction of the vehicle;

a first guide member provided on said pedal arm, said first guide member adapted to move within said first linear track, and simultaneously within said second arc-shaped track formed on said adjust lever when said pedal arm is driven to move in the longitudinal direction of the vehicle via said pedal position adjusting means, said movement of the first guide member changing a distance from said first

pivot axis to said pedal pad corresponding to a magnitude of the movement of said first guide member and simultaneously allowing said relative movement of the adjust lever to change a position of said connecting member within said first arc-shaped track corresponding to said magnitude of the movement of said first guide member; and

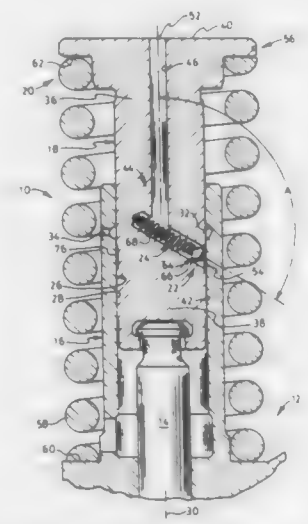
operating member means connected to said connecting member for receiving therefrom the depression force applied to said pedal pad via said pedal arm and said lever and for transmitting said depression force to a vehicle operation system to operate same.

5,010,783

TAPPET RETAINER ASSEMBLY

James D. Sparks, Edelstein, and Dennis E. Van Meter, Peoria, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jul. 2, 1990, Ser. No. 547,008
Int. Cl.[5] G05G *5/06*
U.S. Cl. 74—527 **15 Claims**



1. A tappet retainer assembly comprising:

a housing having an inner peripheral surface defining a bore;

a tappet having first and second end portions, each tappet end portion having an outer peripheral surface thereon, said tappet first end portion positioned outside of the housing bore, said tappet second end portion reciprocally positioned in the housing bore so that its outer peripheral surface is adjacent to and faces the housing inner peripheral surface, said tappet further including internal passage means extending from the outer peripheral surface of the tappet first end portion to the outer peripheral surface of the tappet second end portion;

first means for biasing displacement of the tappet in a direction outwardly of the housing bore;

stop means for limiting displacement of the tappet out of the housing bore, said stop means including an annular recess defined in the housing inner peripheral surface and a stop positioned in the tappet internal passage means; and

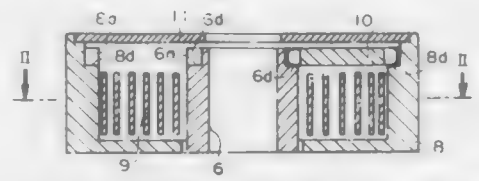
second means for biasing the stop against the housing inner peripheral surface, said second biasing means positioned in the tappet internal passage means.

5,010,784

ELECTRICAL CONNECTING DEVICE FOR A STEERING WHEEL OF A MOTOR VEHICLE

Wataru Nakazato, Gunma, and Akira Takase, Oota, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 9, 1989, Ser. No. 321,368
Claims priority, application Japan, Mar. 14, 1988, 63-034335[U]
Int. Cl.[5] H01R *39/02*; G05G *1/08, 5/04*
U.S. Cl. 74—498 **6 Claims**



1. An electrical connecting device for a steering wheel of a motor vehicle comprising:

an inner cylinder secured to the steering wheel;

an outer cylinder secured to a steering column for the steering wheel;

a flexible helical strip disposed between the inner and outer cylinders, said strip having one end connected to the inner cylinder and an opposite end connected to the outer cylinder;

a planetary gear device having a sun gear formed on an outer periphery of the inner cylinder, a ring gear formed on an inner periphery of the outer cylinder, and a planet pinion engaged with the sun gear and the ring gear; and

a stopper provided on a periphery of the ring gear for stopping a planet pinion at revolution ends thereof; and

said inner and outer cylinders being formed with shelves adjacent a bottom of said sun gear and said ring gear; and

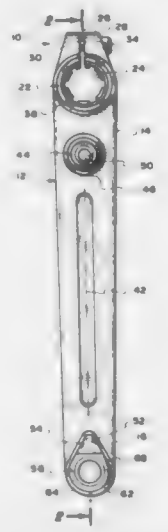
said planet pinion being supported by teeth of said planet meshing with said sun and ring gears resting on said shelves.

5,010,785

CRANK ARM FOR A BICYLCE

Ysmael E. Romero, Santa Paula, Calif., assignor to Seattle Bike Supply, Kent, Wash.

Filed Jun. 11, 1990, Ser. No. 535,703
Int. Cl.[5] G05G *1/14*
U.S. Cl. 74—594.1 **5 Claims**



1. A crank arm adapted to be connected between a pedal and a hub bearing assembly of a bicycle, said crank arm comprising:

an elongated tubular housing having an inner end and an outer end, said housing having a first longitudinal center axis;

a spline connection located at said inner end, said spline connection having a second longitudinal center axis, said second longitudinal center axis being located transverse to said first longitudinal center axis, said spline connection being fixed to said housing, said spline connection adapted to engage a hub bearing assembly of a bicycle; and

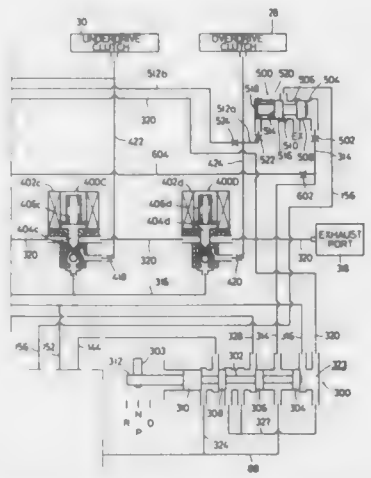
a threaded connection located at said outer end, said threaded connection having a third longitudinal center axis, said third longitudinal center axis being located transverse to said first longitudinal center axis, said threaded connection adapted to engage a bicycle pedal, said threaded connection being formed within a plug, said plug having an exterior surface, said exterior surface having a teardrop shape, said teardrop shape establishing a mechanical connection with said housing in addition to a welding connection, said mechanical connection preventing rotation of said plug relative to said housing.

5,010,786

AUTOMATIC TRANSMISSION CONTROL PRESSURE REGULATOR HAVING SPEED SENSITIVE VALVE ARRANGEMENT

Takeo Hiramatsu, No. 104, Uguisudai, Nagaokakyo-shi, Kyoto, and Tsunefumi Niiyama, 105, Maruyama Coop, No. 2-18, Maruyama, Kamifukuoka-shi, Saitama, both of Japan

Division of Ser. No. 158,318, Feb. 22, 1988. This application Oct. 19, 1989, Ser. No. 423,932
Claims priority, application Japan, Feb. 25, 1987, 62-42037
Int. Cl.[5] B60K *41/16*
U.S. Cl. 74—867 **3 Claims**



1. A hydraulic control system for an automatic transmission of a vehicle, the automatic transmission comprising a plurality of engaging means including low speed engaging means for achieving a relatively low gear ratio and high speed engaging means for achieving a relatively high gear ratio, said hydraulic control system comprising:

pump means for generating a hydraulic pressure;

selector means having a plurality of positions selectable through manual operation, for supplying the hydraulic pressure generated by said pump means to an engaging means selected from among said plurality of engaging means when one of said plurality of positions is selected;

a plurality of electromagnetic valve means as many as said plurality of engaging means, each arranged between a corresponding one of said engaging means and said selector means, for controlling the intensity of the hydraulic pressure supplied from said selector means to said corresponding engaging means in accordance with operating conditions of the vehicle;

signal hydraulic pressure supplying means for generating a signal hydraulic pressure;

pressure regulating valve means arranged between said selector means and said pump means, for reducing the hydraulic pressure supplied from said pump means to said selector means when said signal hydraulic pressure is supplied from said signal hydraulic pressure supplying means; and

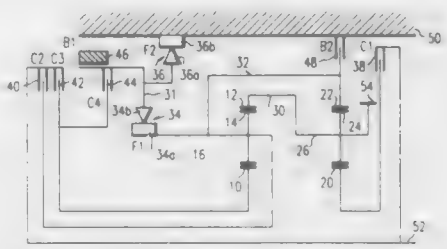
switching valve means movable between a supply position in which said signal hydraulic pressure is supplied from said signal hydraulic pressure supplying means to said pressure regulating valve means, and a discharge position in which said signal hydraulic pressure is discharged from said pressure regulating valve means, said switching valve means being switched to said supply position when the hydraulic pressure supplied to said high speed engaging means through said electromagnetic valve means associated with said high speed engaging means becomes higher than a predetermined value.

5,010,787

HYDRAULIC CONTROL DEVICE FOR AUTOMATIC TRANSMISSION FOR VEHICLE ADAPTED TO ENGAGE CLUTCH AT DIFFERENT SPEED ACCORDING TO ENGINE OUTPUT POWER

Mitsuru Takada; Hiroshi Itoh, both of Toyota; Tokuyuki Takahashi, Aichi, and Makoto Funahashi, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 2, 1989, Ser. No. 388,488
Claims priority, application Japan, Aug. 2, 1988, 63-192965; Sep. 12, 1988, 63-228269; Feb. 6, 1989, 1-27243
Int. Cl.[5] B60K *41/16*
U.S. Cl. 74—867 **6 Claims**



1. In an automatic transmission for a vehicle such as an automobile having a speed stage shifting mechanism including parallelly arranged first and second hydraulically operated input clutches and adapted to provide a certain first speed stage in which said first and second input clutches are both engaged and a certain second speed stage higher than said first speed stage in which said first input clutch is disengaged and said second input clutch is engaged, the engagement of said first input clutch in said first speed stage being not essential unless engine brake availability is required,

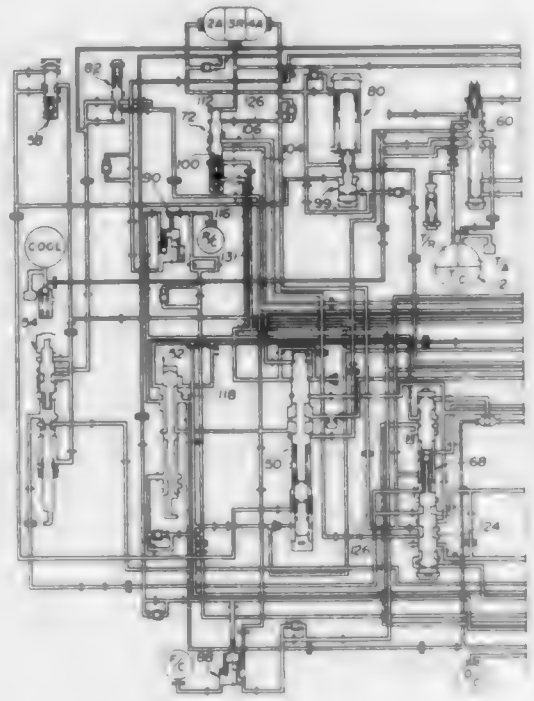
a hydraulic control device comprising a switching over valve variably operable according to an input signal representing engine output power so as to switch over supply of a hydraulic pressure to said first input clutch between a first mode of relatively slowly supplying said hydraulic pressure to said first input clutch and a second mode of relatively quickly supplying said hydraulic pressure to said first input clutch according to whether engine output power is higher than a determinate power level or less than said determinate power level, respectively.

5,010,788

AUTOMATIC AUTOMOTIVE TRANSMISSION HAVING 4-2 DOWNSHIFT SEQUENCE VALVE

Kazuhiko Sugano, Yokohama, and Akihiro Ueki, Zama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 6, 1990, Ser. No. 505,265
Claims priority, application Japan, Apr. 17, 1989, 1-95236
Int. Cl.[5] B60K *41/06*
U.S. Cl. 74—868 **3 Claims**



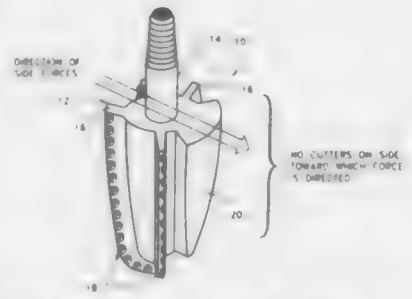
1. In a transmission having:
a first chamber means which is associated with the production of a first predetermined gear ratio,
a second chamber means which is associated with the production of a second predetermined gear ratio which is one gear ratio lower than the first predetermined one, and
a third chamber means for conditioning a first friction element to assume a condition wherein the transmission can produce engine braking, when supplied with hydraulic pressure; an arrangement comprising:
a friction element control valve for supplying hydraulic pressure to said third chamber means in response to a hydraulic pressure signal which is produced by a manual valve when said manual valve is set in a first predetermined position; and
a sequence valve which, in the absence of the hydraulic pressure signal, enables a shift which skips over a gear intermediate of the gear from which the shift is being made, and the gear to which is being made, said sequence valve being responsive, in the absence of the hydraulic pressure signal, to the pressure which is supplied to the second chamber means associated with the intermediate gear and arranged such that, when the pressure which is supplied to the second chamber means is below a predetermined level, said sequence valve shifts from a first state wherein pressure is supplied to said first chamber means, to a second state wherein the pressure which is supplied to the first chamber means is drained, said sequence valve being responsive to the presence of said hydraulic pressure signal to shift from the first state to the second state irrespective of the pressure being supplied to the second chamber means.

5,010,789

METHOD OF MAKING IMBALANCED COMPENSATED DRILL BIT

J. Ford Brett, Tulsa, and Tommy M. Warren, Coweta, both of Okla., assignors to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 313,126, Feb. 21, 1989, abandoned. This application Oct. 6, 1989, Ser. No. 418,416
The portion of the term of this patent subsequent to Mar. 28, 2006, has been disclaimed.
Int. Cl.[5] B21K *5/02*
U.S. Cl. 76—108.2 **10 Claims**



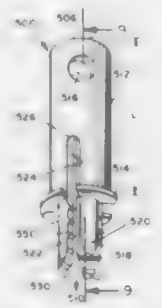
1. A method for making a drill bit of the type having a bearing zone on a side portion of a bit body and a cutting zone with a plurality of cutters mounted on the bit body, comprising the steps of:
mounting a preselected number of cutters within the cutting zone on the bit body;
generating a model of the geometry of the bit body and cutters mounted thereon;
calculating the imbalance force which would occur in said bit body under defined drilling parameters;
using the imbalance force and model to calculate the position of at least one additional cutter which when mounted within the cutting zone on the bit body in said calculated position would create a net imbalance force directed towards the bearing zone; and
mounting an additional cutter within the cutting zone on said bit body in the position so calculated.

5,010,790

APPARATUS FOR REMOVING A SOFT STOPPER FROM A CONTAINER

Richard C. K. Yen, 1440 E. Comstock Ave., Glendora, Calif. 91740

Continuation-in-part of Ser. No. 401,186, Aug. 31, 1989, Pat. No. 4,916,985. This application Mar. 29, 1990, Ser. No. 500,991
Int. Cl.[5] B67B *7/02*
U.S. Cl. 81—3.45 **37 Claims**



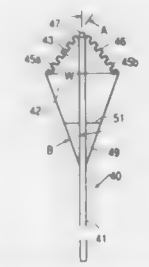
1. An apparatus for removing a soft stopper from a container, comprising:
a. an elongated thin walled hollow generally cylindrical body having a lower end which is open and extends into an interior chamber within the body which interior chamber is bounded by an interior wall of the body;
b. A multiplicity of spaced apart longitudinal slits in the wall of said elongated thin walled hollow generally cylindrical body extending from the lower open end for a portion of the length of the elongated body to divide the lower portion of the wall of the elongated thin walled hollow generally cylindrical body into a multiplicity of wedge sections separated from one another by a respective longitudinal slit;
c. an exterior fixed broken ring extending around the circumference of said thin walled hollow generally cylindrical body at a location along the length of said multiplicity of wedge sections, the breaks in the ring aligned with the longitudinal slits in the wall of the elongated thin walled hollow generally cylindrical body; and
d. at least one inwardly extending spiral thread extending from the interior surface of said thin walled hollow generally cylindrical body and winding from the lower tip of one wedge section across the interior surface of all wedge sections and onto the wall of the cavity within the body above the location of the fixed broken ring.

5,010,791

SHINGLE PRY BAR

James D. Williams, R.F.D 4, Thornwood Rd., Carmel, N.Y. 10512

Filed Jul. 23, 1990, Ser. No. 556,909
Int. Cl.[5] E04D *15/00*
U.S. Cl. 81—45 **16 Claims**



1. Roofing shingle removal tool comprising
a handle (**41**);
a prying blade (**42**) having
an essentially triangular, substantially flat forward portion (**43**) defining an apex region (**47**) and two lateral sides (**45***a*, **45***b*);
nail receiving notches (**44**) formed in said lateral sides and defining teeth (**46**) therebetween, and
a rear support portion (**49**) extending from the forward portion;
first attachment means (**48**) for attaching said forward portion to said handle immediately adjacent the apex region, and for retaining the forward portion with respect to said handle at a first angle (D); and
second attachment means (**50**) for attaching said rear support portion to said handle at a position remote from said first attachment means,
said blade defining a bend or heel (**51**) between said forward portion and said support portion, which bend or heel or ridge line (**51**) is spaced from said handle by a predetermined distance (h).

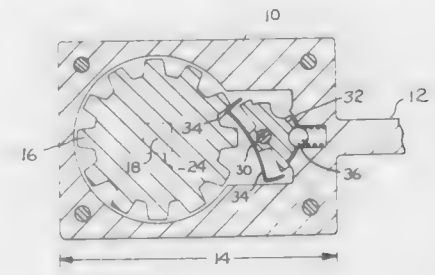
5,010,792

SOCKET WRENCH DRILL ATTACHMENT

Mark L. Clarno, 2649 Garfield St., Longview, Wash. 98632

Filed Jul. 13, 1989, Ser. No. 379,069
Int. Cl.[5] B25B *13/00*
U.S. Cl. 81—58.1 **1 Claim**

1. A ratchet wrench, comprising a housing having a manually rotatable housing having a rotation axis; an elongated handle extending from said housing away from the rotation axis; a gear mounted within said housing for rotation on said axis; a manually-operated ratchet mechanism mounted within said housing in operative engagement with said gear for causing the gear to have one way rotary motion; a square cross-sectioned stub shaft extending from one face of said gear out of said housing on the rotation axis, said square cross-sectioned shaft having four straight flat sides thereon adapted to mate with a wrench socket; and a triangular cross-sectioned stub shaft extending from the other face of said gear out of said housing on the rotation axis, said triangular cross-sectioned shaft having three straight flat sides thereon adapted to fit into the chuck of a power drill whereby said gear can be power driven while the human operator grasps said handle to hold the housing motionless; said manually-operated ratchet mechanism including a carrier (**32**) rotatably mounted within the housing



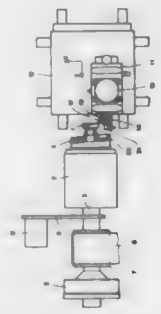
for rotation on a second axis parallel to the gear rotation axis, an external manual lever (**38**) connected to said carrier for rotating said carrier to two different positions, and a resilient means (**34**) mounted on said carrier, said resilient means having two oppositely-projecting ends adapted to selectively engage said gear, whereby one end of the resilient means has ratchet engagement with the gear in one position of the carrier, and the other end of the resilient means has ratchet engagement with the gear in a different position of the carrier; said lever being operable to adjust the position of the carrier to change the direction of rotation of said gear; said triangular cross-sectioned shaft having a greater axial length than the square cross-sectioned shaft; said triangular cross-sectioned shaft having a lesser diameter than the square cross-sectioned shaft.

5,010,793

MACHINING APPARATUS FOR PRECISE TURNING OF AN OUTSIDE SURFACE

Hans J. Leiber, Tramelan, Switzerland, assignor to Kummer Freres SA Fabrique de machines, Tramelan, Switzerland

Filed May 2, 1989, Ser. No. 346,464
Claims priority, application Switzerland, May 10, 1988, 1780/88
Int. Cl.[5] B23B *3/28*
U.S. Cl. 82—19 **6 Claims**



1. An auxiliary apparatus for the precision turning of a lateral surface of a workpiece fixed by chucking means in a spindle of a machine having a cross-slide, said apparatus comprising:
a base fixed on said cross-slide;
a guided slide movable in a predetermined direction relative to said base;

means integral with said guided slide for holding a plurality of turning tools,

spring means disposed in said base for urging said guided slide in said predetermined direction,

a cam control device including a plurality of cams driven rotatingly synchronously with said spindle, each cam having a guide surface for effecting controlled displacements of said guided slide, each of said tools thus machining a respective portion of said lateral surface,

means for driving all of said cams synchronously; and

a plurality of transmission members mounted on said guided slide, each co-operating with a corresponding one of said cams,

said cams and said transmission members being arranged so that each of said transmission members can be brought successively by displacement of said cross-slide into a bearing position in which each said transmission member rests against said guide surface of the corresponding cam against the action of said spring means for controlling displacement of said guided slide

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5,010,794

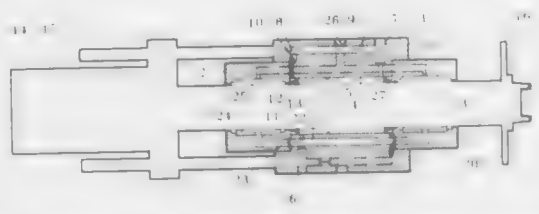
HYDROSTATIC SPINDLE DEVICE

Earl E. Klager, 8220 Klager Rd., Saline, Mich. 48176

Filed Feb. 5, 1990, Ser. No. 459,183

Int. Cl.[5] B23B *19/02*

U.S. Cl. 82—147 **1 Claim**



1. A hydrostatic spindle device for the purpose of driving a cutting tool or workpiece comprising:

a spindle rotably and translatably supported by hydrostatic radial bearings;

hydrostatic radial bearing mounted on each end of a housing through which the spindle extends, one end to which a hydraulic motor for rotating the spindle is attached, and the opposite end to hold a cutting tool or workpiece;

a piston formed integral with the spindle, operating within a cylinder, in the area between the hydrostatic radial bearings to control translational position, velocity, and acceleration of the spindle, as hydraulic fluid is controllably introduced into the cylinder;

a hydrostatic thrust bearing at each end of the cylinder to create an opposing force on the piston as it nears the end of its stroke, actuated by the piston substantially restricting a hydraulic fluid exit port as hydraulic fluid is introduced to the exit port end of the cylinder via an inlet port interconnected through a restrictor and inwardly allowing check valve to pressurized hydraulic fluid on the opposite side the piston, interchanging hydraulic fluid inlet and exit ports through external hydraulic fluid flow control devices moves the piston to unrestrict the previously restricted port, and closes the check valve to prevent hydraulic fluid escape from the pressurized side of the piston, said hydrostatic thrust bearings being effective to prevent wear arising from action of rotating piston forced unopposed against the cylinder end.

5,010,795

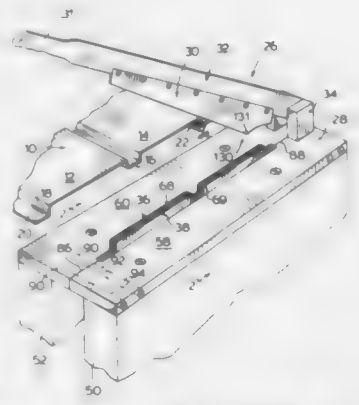
APPARATUS FOR CUTTING METAL AND PLASTIC SHEET

Jozef Kania, 1036 Johnson's Lane, Mississauga, Ontario, Canada L5J 2P7

Filed Dec. 1, 1986, Ser. No. 936,178

Int. Cl.[5] B23D *17/08, 23/00*

U.S. Cl. 83—607 **7 Claims**



1 A sheet material cutter for shearing various widths of sheet material comprising a base, a shearing blade of a length greater than the maximum width of sheet material to be cut, and spaced apart shearing dies mounted on said base and defining a shearing slot through which said blade travels when shearing a width of sheet material, said base having a working surface, means for mounting said spaced apart shearing dies on said base, each of said shearing dies having a shearing die edge, said mounting means spacing opposing said shearing die edges apart to define said shearing slot, said shearing blade having an essentially consistent thickness along its length which is essentially planar in transverse section to define two spaced apart shearing edges along said blade length, each said blade shearing edge being proximate a corresponding said shearing die edge as said blade travels through said slot, each said shearing die having a lower portion along its length secured on said base by said mounting means and one or more upper portion extending appreciably above said working surface to provide a cantilever mounting for said die shearing edge, said shearing die upper portions supporting sheet material underside when being cut, said shearing blade being mounted on a handle, means for pivotally mounting an end of said handle on said base to position said blade shearing edge in register with said shearing slot, said blade shearing edge being contoured to present a pointed section which enters said shearing slot first at a location intermediate ends of said slot and close to said slot end adjacent said handle mounting means, said blade shearing edge to each side of said pointed section of said blade entering said shearing slot at an angle relative to said die shearing edges, said shearing die upper portions being of consistent thickness along their length and of sufficient height above said base relative to said thickness of said shearing die to permit outward flexing in said cantilever mounted upper portions thereof upon engagement by said blade, said cantilever mounted upper portions of said shearing dies flexing outwardly slightly as needed when said shearing blade shears material along said slot and sheared material and said blade enter said slot.

5,010,796

HELICAL SPLIT RING FRENCH FRY AND APPARATUS FOR MAKING THE SAME

George A. Mendenhall, 4252 S. Eagleson Rd., Boise, Id. 83705

Filed Jan. 31, 1990, Ser. No. 472,714

Int. Cl.[5] B26D *3/11, 7/06*

U.S. Cl. 83—865 **9 Claims**

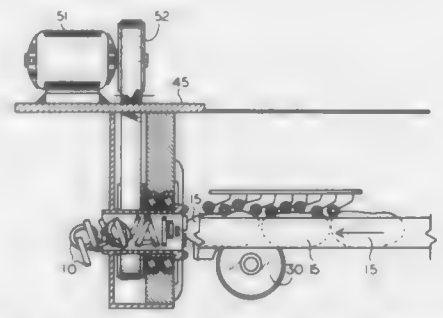
1. A cut food piece formed in the shape of a helical split ring

cut from a whole food product having a longitudinal axis by use of the process of:

cutting a slot in the whole food product which is aligned with and radially extends into and along the longitudinal axis of said whole food product;

aligning the longitudinal axis of the whole food product coincident to a central axis of a cutter blade assembly;

moving the aligned and slotted whole food product into cutting engagement with a cutter blade assembly having a wheel plate having a planar surface for rotation about a



central axis, a plurality of ring cutters attached to and extending normally out from the planar surface of the wheel plate for cutting continuous concentric helical spirals in the whole food product, a sheer blade attached to and extending angularly out from the planar surface for cutting concentric helical rings of cut food product off the whole food product, and said wheel plate further having a transport hole positioned adjacent to the sheer blade for passage of sheered concentric helical split rings of cut food product through the cutter blade assembly.

5,010,797

ARRANGEMENT FOR CUTTING AND/OR STRIPPING APPARATUSES

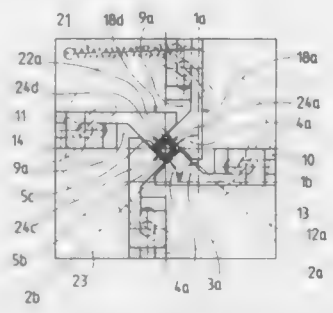
Jiri Stepan, St. Gallerstrasse 76, CH-7320 Sargans, Switzerland

Filed Jun. 23, 1988, Ser. No. 210,578

Claims priority, application Switzerland, Jun. 30, 1987, 2494/87

Int. Cl.[5] H02G *1/12*

U.S. Cl. 83—883 **15 Claims**



1. An arrangement of at least three jaws, lying substantially in a common plane, in an apparatus for cutting or stripping sleeve-like insulation from cable-like articles, wherein the jaws have means permitting each jaw to be displaceable under positive control into engagement with such an article with each jaw engaging the article at a certain respective contact point, said contact point depending on the diameter of the article and being different for each respective diameter of the article.

5,010,798

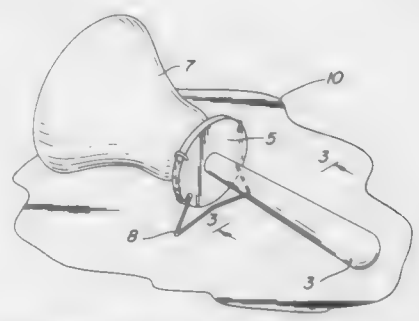
HANDBELL ANTI-ROLL CLIP

Jacob H. Malta, New Britain, Pa., assignor to Malmark, Inc., Plumsteadville, Pa.

Filed Jun. 27, 1990, Ser. No. 546,369

Int. Cl.[5] G10K *1/07*

U.S. Cl. 84—406 **10 Claims**



1. An anti-roll stand for a handbell, comprising:

a. a handbell having a circular hand guard; and

b. a stand having a base and a vertically-extending portion connecting said base with a top portion having resilient gripping means which firmly affix said stand to said handbell.

5,010,799

ELECTRONIC KEYBOARD INSTRUMENT WITH KEY DISPLACEMENT SENSORS

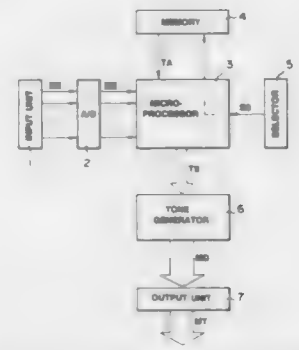
Kikuji Tanaka, and Kohtaro Hanzawa, both of Fussa, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 278,603, Dec. 1, 1988, abandoned. This application Mar. 19, 1990, Ser. No. 496,128

Claims priority, application Japan, Dec. 1, 1987, 62-305969

Int. Cl.[5] G10H *1/057, 1/46*

U.S. Cl. 84—627 **12 Claims**



9. An electronic keyboard instrument, comprising:

a keyboard having a plurality of keys;

a plurality of key displacement sensor means each disposed in relation to a different one of said keys for detecting variable displacement of a key induced by a key operation, and for providing a corresponding displacement signal;

a plurality of selectively operative tone control means having tone control algorithms different from one another, for processing the displacement signal from said key displacement sensor means in manners different from one another to provide tone parameters; and

manually operative selector means for selecting one of said plurality of tone control means as being operative during play of the instrument, so that the selected tone control means commonly applies its tone control algorithm to displacement signals from said plurality of displacement sensor means.

5,010,800

ELECTRONIC MUSICAL INSTRUMENT CAPABLE OF SELECTING BETWEEN FRET AND FRETLESS MODES

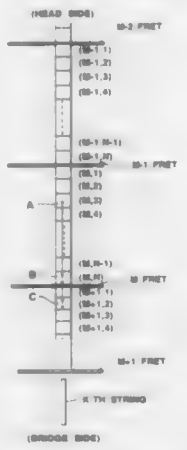
Satoshi Yoshida, Hamura, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Sep. 14, 1989, Ser. No. 407,226

Claims priority, application Japan, Sep. 20, 1988, 63-123102[U]

Int. Cl.[5] G10D *3/06*; G10H *1/34*

U.S. Cl. 84—646 27 Claims



1. An electronic musical instrument comprising

a fingerboard having a fingering operation area over which a player performs a fingering operation;

mode setting means for selectively setting a fret mode for dividing said fingering operation area into a plurality of first pitch designation regions in half-tone pitch units, and a fretless mode for dividing each of said first pitch designation regions into a plurality of second pitch designation regions in pitch units smaller than said half-tone pitch units; and

pitch designating means for, when a fingering operation position is changed within a specific first pitch designation region of said plurality of first pitch designation regions in said fret mode set by said mode setting means, designating a same pitch as assigned to said specific first pitch designation region irrespective of a change in fingering operation position, and for, when said fingering operation position is changed to a specific second pitch designation region in said plurality of second pitch designation regions in said fretless mode set by said mode setting means, newly designating a pitch assigned to said specific second pitch designation region in response to a change in fingering operation position.

5,010,801

ELECTRONIC MUSICAL INSTRUMENT WITH A TONE PARAMETER CONTROL FUNCTION

Shigeo Sakashita, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed May 16, 1989, Ser. No. 352,559

Claims priority, application Japan, May 23, 1988, 63-67775[U]

Int. Cl.[5] G10H *1/053, 1/06, 1/18*

U.S. Cl. 84—735 20 Claims

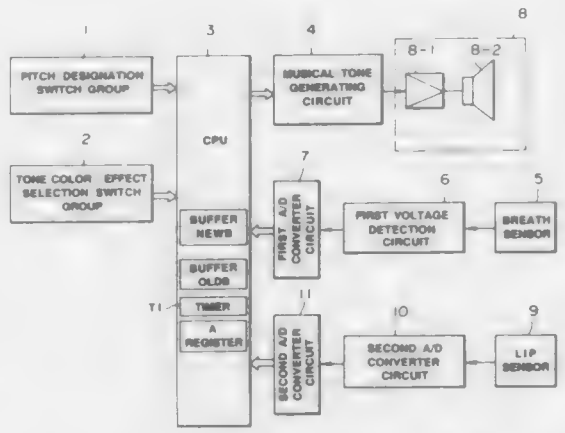
6. An electronic musical instrument, comprising:

performance-input detection means for detecting a state of performance input by a player;

instruction means for giving an instruction to start generation of a musical tone in response to performance input force detected by said performance-input detection means when said performance-input force exceeds a predetermined value;

tendency detection means for judging if a variation in performance-input force during a predetermined time period detected by said performance-input detection means exhibits a tendency to increase or a tendency to decrease after a musical tone has been generated in accordance with the instruction from said instruction means;

output means for outputting first control data when said tendency detection means judges that the variation in the performance-input force during a predetermined time period exhibits a tendency to increase and meanwhile for outputting second control data when said tendency detection means judges that the variation in the performance-input force during a predetermined time period exhibits a tendency to decrease; and



control means for controlling parameters of said musical tone in accordance with the first control data, when said output means outputs the first control data while the musical tone is being generated in accordance with the instruction from said instruction means and for controlling at the same time so as to start generation of a sound of a particular effect, and for controlling parameters of the above musical tone in accordance with the second control data in a different manner from that in accordance with the first control data, when said output means outputs the second control data while the musical tone is being generated in accordance with the instruction from said instruction means and for controlling at the same time so as to stop generation of the sound of a particular effect.

5,010,802

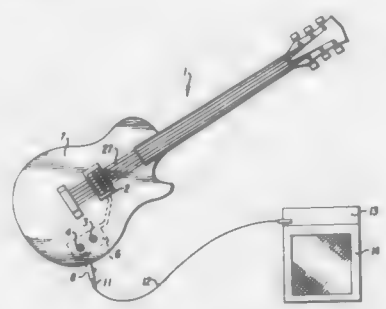
ELECTRO-ACOUSTIC CONNECTOR FOR AMPLIFIED MUSICAL INSTRUMENTS

Terry M. Lanham, 4833 Meadow Lark La., Waldorf, Md. 20601

Filed Dec. 15, 1989, Ser. No. 450,962

Int. Cl.[5] G10H *3/18*

U.S. Cl. 84—743 6 Claims



1. An electro-acoustic connector for connecting a musical instrument to an electronic amplifier and adapted to receive both electrical signals from a transducer associated with said musical instrument and soundwaves produced by said musical instrument, said musical instrument having outlet means for transmitting said electrical signals and soundwaves, and electro-acoustic connector comprising a housing including a combined electrical and acoustic inlet means adapted for connection to said outlet means of said musical instrument for receiving said electrical signals and soundwaves from said outlet means of said musical instrument, said inlet means being adapted for transmitting soundwaves from said outlet means of said musical instrument into said housing, a microphone disposed in said housing for receiving said soundwaves transmitted from said outlet means of said musical instrument and generating electrical signals in response to said soundwaves, electrical outlet means in said housing for receiving electrical inlet means connected to an electronic amplifier, said electrical outlet means being adapted for transmitting electrical signals from said combined electrical and acoustic inlet means to said electrical outlet means, multiple contact switch means, and electrical conductor means connecting said combined electrical and acoustic inlet means, said microphone and said electrical outlet means to said switch means, said switch means being adapted to connect only said combined electrical and acoustic inlet means to said electrical outlet means or connect only said microphone to said electrical outlet means whereby electrical signals transmitted from said inlet means or from said microphone are transmitted to said electrical outlet means.

phone at the other end, for electrically connecting the microphone to the output jack and supporting it in a desired position within the instrument;

e. a sheathed cable coiled tightly around the rod and connectable at one end to the output jack and at the other end to the microphone; and

f. shrink wrap tubing surrounding and mechanically connecting adjacent portions of the coiled sheathed cable and output jack.

5,010,803

MICROPHONE MOUNT

Kenneth D. Donnell, 672 Norlene, Grass Valley, Calif. 95949

Filed Nov. 8, 1988, Ser. No. 268,934

Int. Cl.[5] G10H *3/00, 3/14, 3/18*

U.S. Cl. 84—743 5 Claims



1. An adjustable microphone assembly for mounting inside a musical instrument, comprising:

a. a miniature microphone;

b. an output jack comprising a threaded barrel having two ends, which barrel may receive a threaded nut from either end for permitting insertion of the jack from within the instrument into an opening in the wall of the instrument and allow communication between the inside and the outside of the instrument;

c. a threaded strap button nut for securing the output jack in the instrument by threading the nut onto the output jack from outside the instrument against a flat bearing surface and for receiving one end of an instrument supporting strap;

d. a bendable rod mechanically and electrically connectable to the output jack at one end of the rod and to the microphone at the other end, for electrically connecting the microphone to the output jack and supporting it in a desired position within the instrument;

e. a sheathed cable coiled tightly around the rod and connectable at one end to the output jack and at the other end to the microphone; and

f. shrink wrap tubing surrounding and mechanically connecting adjacent portions of the coiled sheathed cable and output jack.

5,010,804

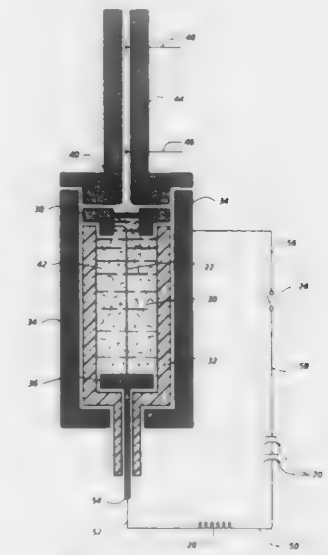
LAUNCHING PROJECTILES WITH HYDROGEN GAS GENERATED FROM TITANIUM-WATER REACTIONS

Woodrow W. Lee, Potomac, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 6, 1990, Ser. No. 564,892

Int. Cl.[5] F41F *1/00*

U.S. Cl. 89—7 21 Claims



1. A method of propelling a projectile from a device comprising:

(1) applying a high power pulse of electrical current to a metal conductor causing the metal conductor to explode and thus disperse the metal into a mixture of water and a titanium fuel selected from the group consisting of (a) titanium powder and (b) a mixture of titanium powder and boron powder wherein the molar ratio of boron to titanium is from more than 0:1 up to about 3:1, and wherein the pieces of dispersed metal from the exploded conductor provide hot spots which initiate a chemical reaction between the titanium fuel and water to generate hydrogen at high pressure in a chamber;

(2) continuing to supply the high powered pulse of electrical current to drive the reaction between the titanium fuel and water after the metal conductor has exploded and initiated the reaction;

(3) allowing the hydrogen gas pressure in the chamber to build to a preselected level; and then

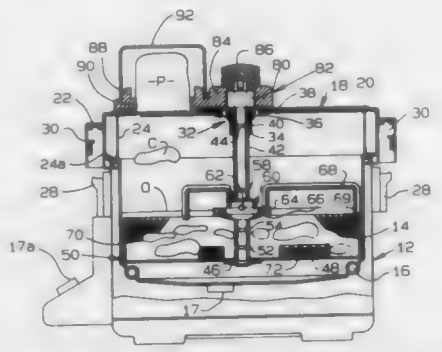
(4) using the hydrogen gas to push a projectile from the device.

5,010,805

POTATO CHIP MAKER INCLUDING APPARATUS FOR CENTRIFUGALLY REMOVING COOKING OIL FROM ANY PRODUCT

Daniel A. Ferrara, Looking Glass Rd., Bantam, Conn. 06750

Filed Sep. 13, 1989, Ser. No. 406,470
Int. Cl.[5] A41J *37/12*
U.S. Cl. 99—353 **9 Claims**



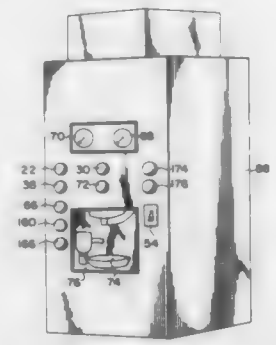
1. A potato chip maker comprising a cylindrical container, a cover for the container, a journal mounted vertically in the center of the cover, a shaft extending down through the journal, a perforate cylindrical basket mounted in its center on the bottom of the shaft, means for raising the shaft and holding the shaft in raised condition, a crank coupled to the upper end of the shaft by one-way clutch, the distal end of the crank mounting a potato holder offset from the shaft and having an open bottom, the cover being formed with an inlet opening offset from the shaft equal to the offset of the holder, a cutter disposed over the opening and parallel to the cover and spaced thereabove a distance equal to the thickness of a potato chip.

5,010,806

MACHINE TO FAST COOK PASTA AND SIMILAR FOODS

Henry R. Narcisi, 238 Larch Rd., Frankfort, Ill. 60423, and Ernest S. Kettelson, 16801 Ridge Rd., Minooka, Ill. 60447

Filed Aug. 9, 1990, Ser. No. 564,902
Int. Cl.[5] A47J *37/12*
U.S. Cl. 99—357 **22 Claims**



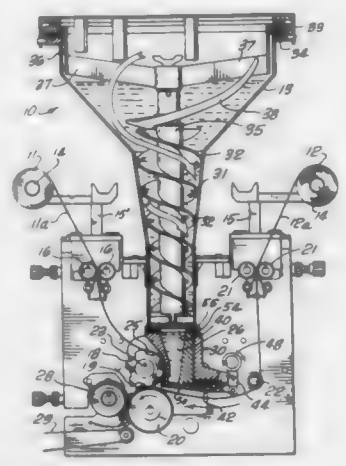
1. A fast cook machine to fast cook pasta and similar food products, comprising a cooking chamber to receive said pasta or similar food products for cooking therein, first stage cooking means to provide a first stage of cooking for said cooking chamber, second stage cooking means to provide a second stage of cooking for said cooking chamber, first stage connecting means to connect said first stage cooking means to said cooking chamber and second stage connecting means to connect said second stage cooking means to said same cooking chamber, food inlet means to permit entry of said pasta or similar food products into said cooking chamber for cooking and food outlet means to permit exit of said pasta or similar food products from said cooking chamber after completion of both said first and second stages of cooking within said same cooking chamber.

5,010,807

RAVIOLI MACHINE

Jim L. Anderson; Terry W. Beltz, both of Marysville, and Raymond E. Taylor, West Mansfield, all of Ohio, assignors to Nestec S.A., Vevey, Switzerland

Filed Jul. 17, 1990, Ser. No. 553,490
Int. Cl.[5] A21C *9/00*; **A23P** *1/00*
U.S. Cl. 99—450.6 **8 Claims**



1. In a machine for producing ravioli having a filling material hopper, a female die roll having a plurality of mold cavities for forming the ravioli, an anvil roll mounted adjacent the die roll to define a nip therebetween, means for feeding a first dough sheet over the die roll and into said nip, means for feeding a second dough sheet into said nip, and dispensing means for feeding a filling material from said hopper into a dough-lined mold cavity in the die roll whereby the dough sheets are sealed together around individual portions of filling material by passage through said nip, the improvement in which

said dispensing means comprises a slide bar dispenser in communication with the filling material hopper mounted in juxtaposition with said die roll, said dispenser having a longitudinal row of openings in the surface of the dispenser adjacent the nip between the die roll and the anvil roll, a plurality of slide bars in communication with said openings, said slide bars being mounted for reciprocating movement toward and away from the die roll on a substantially horizontal plane tangent to said nip, means for effecting reciprocatory movement of said slide bars, and means for coordinating the reciprocatory movement of the slide bars with the rotation of said die roll whereby filling material is discharged from the openings in the dispenser into the dough-lined mold cavities on said die roll immediately preceding said nip.

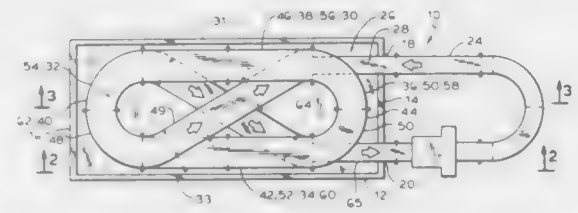
5,010,808

SPIRAL CONVEYOR OVEN

William E. Lanham, Conyers, Ga., assignor to APV Baker Inc., Atlanta, Ga.

Continuation-in-part of Ser. No. 468,756, Jan. 23, 1990, Pat. No.
Int. Cl.[5] A23L *3/02*; **F27B** *9/00, 9/16*; **B65G** *21/18*
U.S. Cl. 99—443 C **19 Claims**

1. A baking apparatus, comprising means forming an oven enclosure having opposed end portions and opposed sides; a conveyor for food products adapted to convey such products into and out of said enclosure at a controlled rate of speed along a path of travel, said enclosure having conveyor inlet and outlet openings formed in at least one of said end portions at predetermined elevations therein; said conveyor comprising an endless conveyor having an endless center drive chain, a first straight inlet section which passes through said conveyor inlet opening, a riser section following a generally spiral shaped path of travel through a plurality of levels of increasing elevation to a predetermined level adjacent one side of the enclosure, a second straight section extending from said predetermined level at said one side of the enclosure in a generally straight declining path of travel to a predetermined elevation and position between levels of the riser section of the conveyor on the opposite side of the enclosure, a declining section located between the levels of said riser section and extending from said predetermined position to a lower position in the enclosure while generally continuously decreasing in elevation, and a final straight section leading from said declining section to said conveyor outlet opening of the enclosure whereby the position of pans on the conveyor relative to the side of the conveyor are reversed during travel in the riser and declining sections of the conveyor; means for supplying heat to said enclosure for baking products in said oven; and means located outside of said enclosure for driving said center chain conveyor through its path of travel in the enclosure.

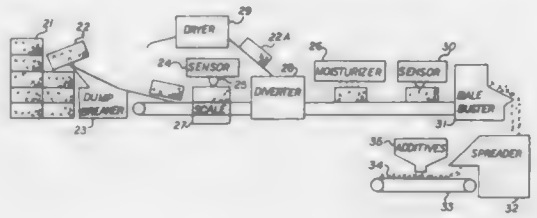


5,010,809

FODDER CONDITIONING AND PACKING PROCESS

Kenneth J. Williams, 2 W. McCabe Rd., El Centro, Calif. 92243

Filed Nov. 24, 1989, Ser. No. 440,796
Int. Cl.[5] B30B *13/00*
U.S. Cl. 100—35 **3 Claims**



1. A process for conditioning and compacting bales of fodder prior to storage and shipment which comprises the steps of:

equalizing the moisture level of said fodder including

measuring the moisture content of each of said bales;

if said moisture content is below a first predetermined level, moisturizing said bale by a given amount of moisture;

if said moisture level is above a second predetermined level, drying said bale;

breaking said bales and spreading their contents into a generally density-wise homogeneous mat;

injecting additives into said mat;

conveying and breaking said mat into batches of generally equal weight; and

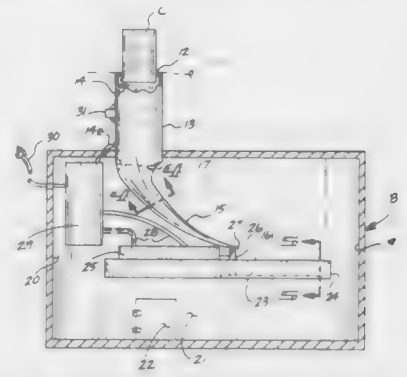
compacting each of said batches into separate bundles.

5,010,810

CAN DISPOSAL APPARATUS

Dale J. DeLorme, 4724 Evergreen St., Sheboygon, Wis. 53081

Filed Feb. 28, 1990, Ser. No. 486,293
Int. Cl.[5] B30B *15/30, 9/32*
U.S. Cl. 100—49 **1 Claim**



1. A can disposal apparatus operative in association with an elongate cylindrical can, wherein the can is defined by a predetermined height, and wherein the apparatus comprises,

an elongate, horizontally oriented counter top, and

a conduit underlying and intersecting the counter top through a conduit entrance opening defined by a predetermined diameter greater than a can diameter defined by the can, and

the conduit overlying a horizontal support tray, wherein the conduit includes an exit opening formed at its lower terminal end, and

a housing enclosure encompassing the support tray and the exit opening, and the housing including a forward wall and a side wall, and

the support tray spaced from the forward wall of the housing, and the housing including a storage compartment underlying the support tray, and

crushing means operative with the support tray to crush the can for subsequent deposit within the storage compartment, and

wherein a forward end of the support tray is spaced a further distance from the forward wall of the housing a spacing less than one-half the predetermined height of the can, and

wherein the exit opening of the conduit includes an arcuate chute integrally associated with the exit opening, and wherein the arcuate chute is directed downwardly and forwardly of the exit opening, and wherein the arcuate chute includes a lower edge spaced above the support tray, and wherein the crushing means includes a reciprocatable ram positioned underlying the forward edge of the arcuate chute in a retracted position, and wherein the ram is positioned forwardly of the forward edge of the arcuate chute adjacent the forward wall of the housing between the forward wall of the housing and the forward end of the support tray, and

wherein the crushing means further includes an elongate cylinder coaxially aligned with the support tray, and wherein a power source is positioned within the housing and is operative to extend and retract the ram to the forward wall of the housing, and

further including a switch lever positioned within the conduit normally biased in a horizontal orientation and positioned adjacent the entrance opening, wherein the switch lever is in electrical communication with a timer, wherein the timer actuates the power source for actuation of the ram upon directing of a can interiorly of the conduit through the entrance opening, and

wherein the support tray is tapered to a narrowed forward end from a wider portion of the support tray adjacent to and underlying the forward edge of the arcuate chute to a

narrowed forward portion to the support tray coincident with the forward end of the support tray, and

wherein the housing includes an access door formed through the housing underlying the support tray to provide access to the storage compartment within the housing.

5,010,811

MARKING DEVICE ADAPTED FOR MOUNTING ON A FASTENER DRIVING APPARATUS

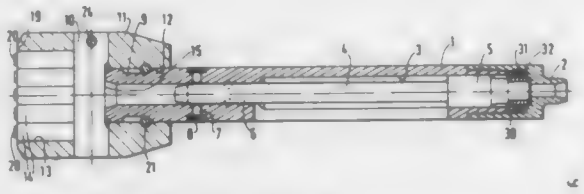
Roland Almeras, and Patrick Herelier, both of Tournon, France, assignors to Societe de Prospection et D'Inventions Techniques (S.P.I.T.), Cedex, France

Filed Jun. 30, 1989, Ser. No. 373,976

Claims priority, application France, Jul. 1, 1988, 88 08927

Int. Cl.[5] B31F *1/00*

U.S. Cl. 101—3.1 **25 Claims**



1. A marking device, comprising:

a barrel;

a piston movably disposed within said barrel between a first stored position and a second actuating position;

means for moving said piston between said first stored position and said second actuating position;

a case movably mounted upon one end of said barrel such that said one end of said barrel is disposed within said case and said case is movable with respect to said one end of said barrel between a marking position and a non-marking position;

at least one punch, having marking indicia thereon, mounted within said case; and

an anvil fixedly mounted upon said case for receiving an actuating force from said piston,

said anvil, said case, and said at least one punch all being substantially fixed with respect to each other and collectively defining a unit which is mounted upon said barrel for movement with respect to said barrel when said piston is moved from said first stored position to said second actuating position so as to act upon said anvil and move said case, said anvil, and said at least one punch from said non-marking position to said marking position.

5,010,812

ELECTRONIC DEVICE FOR CONTROLLING A PRINTING MACHINE

Anton Rodi; Udo Blasius, both of Leimen; Jürgen Reithofer, Nussloch, and Karl-Heinz May, Viernheim, all of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

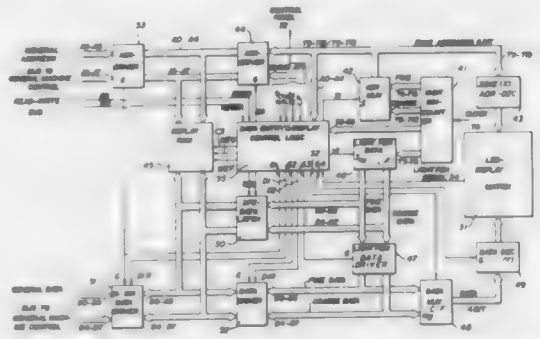
Continuation of Ser. No. 47,017, May 5, 1987, abandoned, which is a continuation-in-part of Ser. No. 770,702, Aug. 29, 1985, abandoned, which is a continuation-in-part of Ser. No. 445,243, Nov. 29, 1982, abandoned. This application Aug. 22, 1989, Ser. No. 397,374

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1981, 3147312

Int. Cl.[5] B41F *31/04, 13/12*

U.S. Cl. 101—148 **32 Claims**

1. A printing machine comprising: a data entry and display apparatus, a plurality of printing control elements included in the printing machine, each printing control element having actual and desired position values, a plurality of first optical elements arranged as a matrix which includes a plurality of rows and a plurality of columns, connected to said control elements, wherein each column represents a respective one of said printing control elements, and wherein each first optical element in said column represents a position value for a respective one of said printing control elements, a light pen having a contract point including a second optical element; said light pen being disposable so that said contact point is in optical



contact with one of said first optical elements, and timing means operatively engaging said first and second optical elements for timingly coordinating the position of said contact point in said optical contact with a respective one of said first optical elements for entering a respective position value for said printing control element.

5,010,813

MULTICOLOR FLEXOGRAPHIC MACHINE WITH A DEVICE FOR AUTOMATICALLY LOADING AND UNLOADING BLOCK-HOLDING ROLLERS

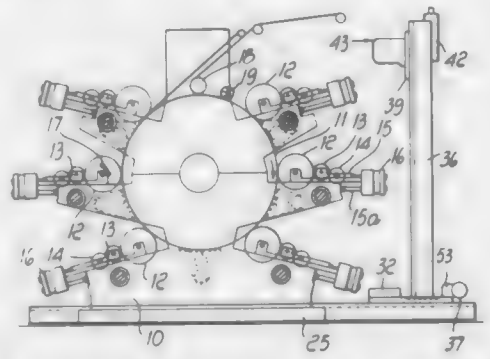
Flavio Buffo, Villafranca, Italy, assignor to Uteco S.p.A. Flexo & Converting Machinery, San Martino Buon Albergo, Italy

Filed May 29, 1990, Ser. No. 529,426

Claims priority, application Italy, Jun. 2, 1989, 84940 A/89

Int. Cl.[5] B41F *5/24, 13/00*

U.S. Cl. 101—178 **14 Claims**



1. A multicolor flexographic machine with star-shaped structure, having two supporting shoulders, a printing drum or offset roller mounted for rotation on said shoulders, a plurality of inking stations arranged angularly spaced around said drum, each station comprising a block-holding roller adjacent to the offset roller and a screen cylinder which is arranged to transfer ink from a drawing roller or from a doctor blade to the block-holding roller and can be moved close to, or away from, the offset roller, wherein it comprises a device or robot for automatic and sequential loading and unloading of the block-holding rollers on and from the various inking stations, said device having a support saddle or carriage which is motor-driven along guides which extend parallel to one of said shoulders, an upright structure which extends from said support carriage and is mounted for rotation about a vertical axis, a retractable arm which projects from said upright structure, grip or clamping means supported by said arm and adapted to engage an end or hold of a block-holding roller to raise it in a cantilevered manner, actuating means on said upright structure which are adapted to cause said arm to retract or extend, and program control means for controlling said loading and unloading device.

5,010,814

METHOD OF NON-OVERLAP HALFTONE-DOT PRINTING OF COLORED ORIGINAL ON CYLINDRICAL CONTAINER OUTER SURFACE

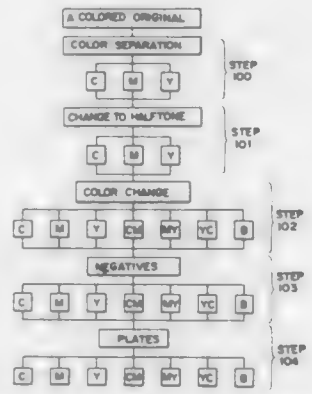
Toshibumi Shishikura, Shimizu, Japan, assignor to Daiwa Can Company, Tokyo, Japan

Filed Feb. 28, 1990, Ser. No. 486,104

Claims priority, application Japan, Mar. 13, 1989, 1-60240

Int. Cl.[5] B41F *17/22*

U.S. Cl. 101—211 **1 Claim**



1. A method of dry offset non-overlap half-tone dot printing of a colored original on the outer surface of a cylindrical container, comprising the steps of:

color separating a colored original of a print to be provided on the outer surface of the cylindrical container into three primary colors, cyan, magenta and yellow;

effecting a change-to-halftone to convert the color density of each of said three primary colors obtained by said color separation into proportional dot areas;

changing those portions of said dot areas of each of said primary colors that overlap with said dot areas of either one of the other said primary colors to give a resultant optical image of a secondary color in said colored original into corresponding dot areas of said secondary color, obtainable by blending two of said three primary colors with each other to produce cyan-magenta, magenta-yellow or yellow-cyan;

changing those portions of said dot areas of each of said primary colors that overlap with said dot areas of both of the other two said primary colors in said colored original into corresponding dot areas of a tertiary color, obtainable by blending said three primary colors together;

making an offset printing plate for each of said primary, secondary and tertiary colors, each said printing plate having raised portions representing printing elements in said plate being so arranged that an image produced by said plate for any one of said primary, secondary and tertiary colors does not overlap with images produced by said plates for the said other colors to give a compounded image reproducing the colored original;

kneading an ink of each of said primary, secondary and tertiary colors with a plurality of ink distributing rollers and supplying said ink to said raised portions of said plate for a respective said color;

transferring each said kneaded ink on said raised portions of said plate one color after another onto a common offset printing blanket, and

further transferring said inks of all said colors on said blanket simultaneously onto the outer surface of the cylindrical container;

wherein said step of effecting a change-to-halftone comprises giving an effect of contact screening at the same angle for all said primary colors and forming pixels defined by screen pitch in contact screening so as to produce a compounded image on the outer surface of the cylindrical container consisting of at most three colors including one of said three primary colors, one of three secondary colors obtainable by blending any two of said three primary colors, and said tertiary color.

5,010,815

DOCTOR DEVICE

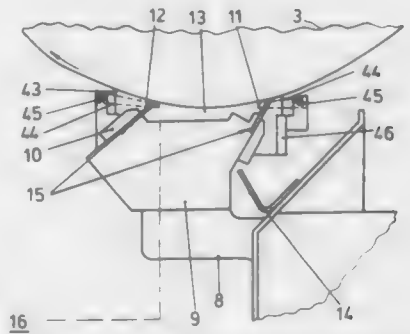
Norbert Weisbrod, Hessheim, and Norbert Köbler, Beindersheim, both of Fed. Rep. of Germany, assignors to Albert-Frankenthal AG, Frankenthal, Fed. Rep. of Germany

Filed Dec. 27, 1988, Ser. No. 290,152

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1988, 3800411

Int. Cl.[5] B41F *7/02*

U.S. Cl. 101—217 **4 Claims**



1. A doctor arrangement for wiping excess ink from a pitted cylinder forming a part of an off set press inking unit, comprising:

at least one doctor blade; and,

a blade mount having a slot extending along the length of said blade mount in which said blade is loosely fitted, said slot having a clearance width with an oversize with respect to the thickness of said doctor blade, the oversize amounting to 3/100 to 4/100 mm, said arrangement being entirely devoid of any other structure which tends to grip said doctor blade in said slot.

5,010,816

WEB TENSIONING DEVICE FOR PRINTING PRESS

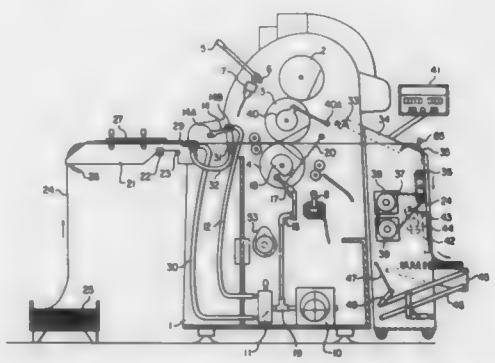
Jean-Claude Sarda, 48 Avenue Claude Vellefaux, Paris, France 75010

Filed Nov. 10, 1988, Ser. No. 269,861

Claims priority, application France, Nov. 12, 1987, 87 15614

Int. Cl.[5] B41F *13/02;* **B65H** *20/12*

U.S. Cl. 101—228 **9 Claims**



7. In a printing press having a blanket cylinder and a press cylinder for printing on a continuous web that is drawn from an input region on an input side of the blanket cylinder and

press cylinder to an output region on an opposite side of the input region, the press having pressure releasing means for releasing pressure between the blanket cylinder and press cylinder after printing each format, an improved feed and drive mechanism for conveying the web from the input region to the output region, comprising in combination:

an electrically actuated drive means disposed at the output region for selectively pulling the web forward from the blanket cylinder and the press cylinder;

a tube extending below the web at the input region for sliding contact with the web and having a plurality of apertures;

vacuum means for providing a vacuum to the tube;

means for mounting the tube rotatably to the press for allowing it to rotate in a forward direction a selected distance as the web is drawn forward by the press and blanket cylinders while in the printing position as a result of the adherence of the web to the tube because of the vacuum; and

spring means for urging the tube to rotate in a rearward direction when tension in the web is released as the press and blanket cylinders move to the released position, the vacuum applied to the web through the apertures causing the tube to draw the web in a rearward direction to remove any slack in the web following the printing of each format.

5,010,817

METHOD AND APPARATUS FOR FLEXOGRAPHIC PRINTING

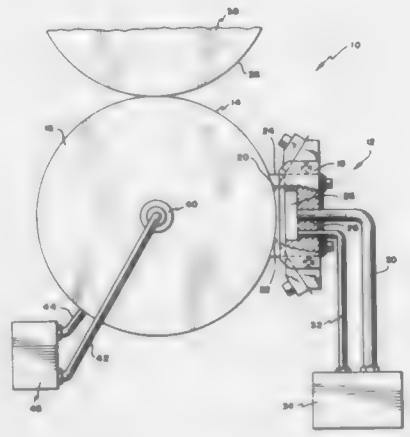
Heinrich Konrad Grosshauser, Würzburg, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Würzburg, Fed. Rep. of Germany

Filed Apr. 18, 1989, Ser. No. 339,692

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1988, 3814049

Int. Cl.[5] **B41F** *31/04, 31/06, 31/08;* **B41L** *27/10*

U.S. Cl. 101—350 **2 Claims**



1. A method for preventing plugging of screened surfaces of a printing plate which is inked-in by water-based printing inks in a web-fed rotary printing machine which prints a printed medium, said method comprising:

providing an inking unit;

providing a printing plate having screened surfaces;

supplying a water-based printing ink continuously to said inking unit;

contacting said printing ink in said inking unit with a screened ink roller;

removing unused water-based printing ink continuously from said inking unit;

maintaining the temperature of said water-based ink in said inking unit within a first temperature range between 9 and 14 degrees Celsius;

supplying said water-based printing ink from said screened ink roller to said printing plate; and

maintaining a surface portion of said screened ink roller which supplies said water-based ink to said printing plate within a second, higher temperature range between 18 and 22 degrees Celsius.

5,010,818

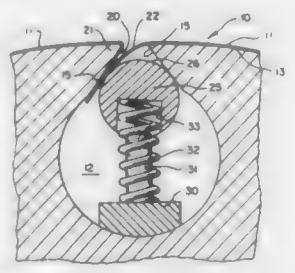
TENSIONLESS PLATE LOCK-UP

Alan R. Wallschlaeger, Sr., Elmhurst, Ill., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 161,640, Feb. 29, 1988, abandoned. This application Nov. 17, 1989, Ser. No. 437,877

Int. Cl.[5] **B41F** *27/12*

U.S. Cl. 101—415.1 **2 Claims**



1. In combination:

a. a printing cylinder in a printing press having a longitudinal slot formed in an outer surface thereof to define at least one undercut surface against which both ends of a flexible printing plate are clamped to hold the plate securely against the outer surface of said cylinder;

b. locking means including a plurality of individual cylinders substantially evenly spaced along the length of said longitudinal slot;

c. individual spring biasing means disposed in operative compression between the bottom of said longitudinal slot and a spring receiving opening in each of said cylinders to urge individually each of said cylinders outwardly against the overlapping ends of the plate and hold them against said undercut surface; and

d. spacer means secured to the bottom of said longitudinal slot, said spacer means including a bar extending along the length of said slot, said bar including a plurality of evenly spaced protruding studs which receive said individual spring biasing means to hold said spring biasing means at fixed locations; said spring biasing means extending from the base of said studs to beyond the longitudinal extent of said studs and to the full depth of said spring receiving opening.

5,010,819

BLANKET CLEANING APPARATUS WITH SELECTIVELY ENGAGEABLE FLICKER BAR

Diego Uribe, Barrington; Paul Driskill, Elgin, and Rolf Hantscho, Lake Zurich, all of Ill., assignors to Oxy-Dry Corporation, Itasca, Ill.

Filed Sep. 22, 1989, Ser. No. 411,104

Int. Cl.[5] **B41F** *35/00*

U.S. Cl. 101—425 **35 Claims**

1. An apparatus for cleaning a surface of a cylinder of a printing press having undesired foreign matter thereon comprising

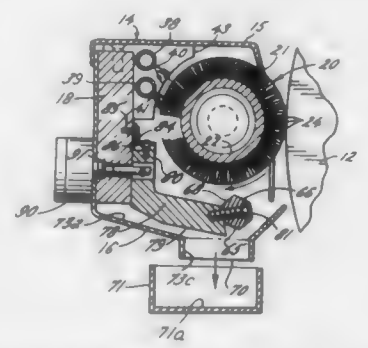
scrub means including a rotatable brush roller having a longitudinal axis and radially extending bristles,

means for moving said rotatable brush roller into and out of engagement with the surface to be cleaned,

means for applying cleaning fluid to said cylinder surface to facilitate removal of foreign matter from said surface when said brush roller is in engagement with said surface,

a flicker bar mounted for movement between an inoperative position removed from the bristles of said brush roller and an operative position engaging the brush roller such that the bristles thereof pass over the flicker bar and are flexed to effect removal of cleaning fluid and foreign matter carried by the bristles, and

means for moving said flicker bar between said operative



and inoperative positions, said flicker bar moving means being operable in timed relation to said brush roller moving means whereby said flicker bar is moveable into engaging relationship with said brush roller for removing cleaning fluid and foreign matter from the bristles of the brush roller while said brush roller is out of engagement with the surface to be cleaned.

5,010,820

PROCESS FOR THE DEFINED PRODUCTION OF AN INK DISTRIBUTION APPROPRIATE TO A PRODUCTION RUN IN THE INKING UNIT OF ROTARY PRINTING PRESSES

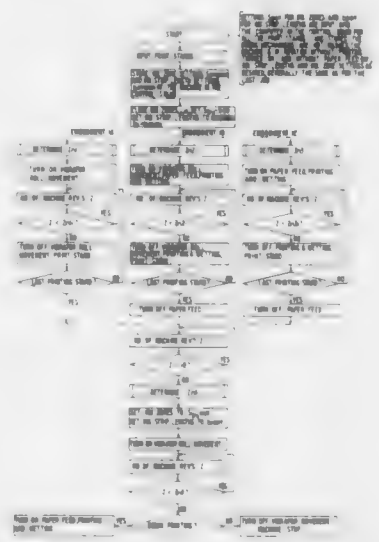
Gerhard Löffler, Walldorf, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Continuation of Ser. No. 166,556, Mar. 10, 1988, abandoned. This application Feb. 20, 1990, Ser. No. 482,260

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1987, 3707695

Int. Cl.[5] **B41F** *31/04, 31/20;* **B41M** *27/08*

U.S. Cl. 101—484 **19 Claims**



1. A controlled process for producing a previous ink zone profile corresponding to a previous printing job in at least one printing stand of a printing press and for changing from the previous ink zone profile corresponding to the previous printing job to a subsequent ink zone profile corresponding to a subsequent printing job, said subsequent printing job being carried out immediately subsequent to said previous printing job, said printing stand comprising a printing plate cylinder for positioning a printing plate, an ink reservoir for holding a supply of ink and an inking mechanism for transferring the ink between said ink reservoir and said printing plate during operation of said printing stand, said inking mechanism comprising a plurality of inking rollers, a plurality of individually adjustable ink zone metering devices, at least one ink fountain roller positioned adjacent said plurality of individually adjustable ink zone metering devices, and at least one ink transfer roller for transferring the ink between said ink fountain roller and at least one of said plurality of inking rollers, each of said plurality of individually adjustable ink zone metering devices defining a substantially corresponding ink zone of said at least one printing stand, said process comprising the steps of:

(a) producing the previous ink zone profile by initiating operation of:

said printing plate cylinder,

said plurality of inking rollers,

said at least one ink transfer roller, and

said at least one ink fountain roller, and

by transferring ink from said ink reservoir to said printing plate cylinder via forward a route of travel which extends:

from said ink reservoir through at least one of said plurality of individually adjustable ink zone metering devices,

thereafter to said at least one ink fountain roller,

thereafter to said at least one ink transfer roller,

thereafter to said plurality of inking rollers, and

thereafter to said printing plate cylinder;

(b) printing said previous printing job;

(c) terminating the printing of said previous printing job; and

(d) changing to subsequent ink zone profile corresponding to said immediately subsequent printing job by the process comprising the steps of:

(e) calculating at least one previous parameter characterizing said previous ink zone profile;

(f) calculating at least one subsequent parameter characterizing said subsequent ink zone profile;

wherein said subsequent printing job is carried out immediately subsequent to said previous printing job; and

(g) adjusting at least one of said plurality of adjustable ink zone metering devices, in accordance with said calculated previous and said subsequent parameters, and operating said inking mechanism to thereby change the ink zone profile in said printing stand from said previous ink zone profile to said subsequent ink zone profile, said operation of said inking mechanism comprising the transfer of ink from said inking mechanism and through at least one of said plurality of individually adjustable ink zone metering devices to said ink reservoir;

wherein said adjusting and operating step (g) comprises the steps of:

(g1) adjusting at least one of said plurality of individually adjustable ink zone metering devices to transfer ink from said inking mechanism to said ink reservoir;

(g2) initiating operation of:

said printing plate cylinder,

said plurality of inking rollers,

said at least one ink transfer roller, and

said at least one ink fountain roller;

to transfer ink from said printing plate cylinder to said ink reservoir via a reverse route of travel which extends:

from said printing plate cylinder to said same plurality of inking rollers as in step (a),

thereafter to said same at least one ink transfer roller as in step (a),

thereafter to said same at least one ink fountain roller as in step (a),

thereafter through at least one of said same plurality of individually adjustable ink zone metering devices as in step (a), and

thereafter to said same ink reservoir as in step (a);

(g3) continuing operation of said printing plate cylinder, said plurality of inking rollers, said at least one ink transfer

roller and said at least one ink transfer roller until said plurality of inking rollers have a defined base ink layer deposited thereon;

(g4) adjusting at least one of said plurality of individually adjustable ink zone metering devices to transfer ink from said ink reservoir to said inking mechanism;

(g5) initiating operation of said at least one ink transfer roller to thereby transfer ink, on the surface of said at least one ink transfer roller, to said inking mechanism through at least one of said plurality of individually adjustable ink metering devices;

(g6) continuing operation of said at least one ink transfer roller until said subsequent ink zone profile is established; and

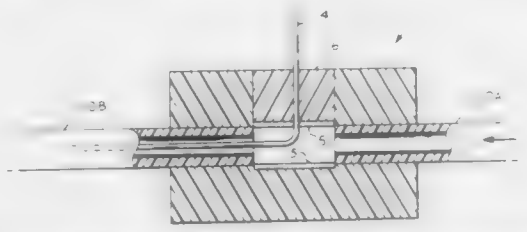
(h) printing said immediately subsequent printing job.

5,010,821

DUAL PURPOSE ENERGY TRANSFER CORD

Jim W. Blain, Scotts Valley, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Dec. 22, 1986, Ser. No. 945,047
Int. Cl.[5] C06C *5/04*
U.S. Cl. 102—275.8 **10 Claims**



1. A percussive reaction transferral/signal transmission means comprising

a tubular structure defining a hollow, elongated, gas channel,

means for creating and sustaining a percussion wave within said channel,

said percussion sustaining means comprising a reactive substance distributed as a thin layer on the inner surface of said tube,

and signal transmission means contained as the only other element within said channel,

said signal transmission means having an outer diameter substantially less than the inner diameter of said reactive substance.

5,010,822

EXPLOSIVE INITIATOR WITH ANGLED FIBER OPTIC INPUT

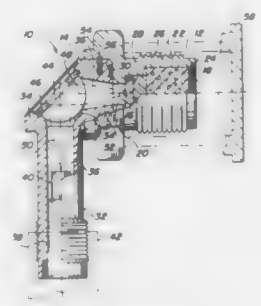
Mark Folsom, Hollister, Calif., assignor to Whittaker Ordnance, Inc., Hollister, Calif.

Filed Feb. 2, 1990, Ser. No. 473,785
Int. Cl.[5] F42C *13/02*
U.S. Cl. 102—201 **6 Claims**

1. An improved explosve initiator with an angled fiber optic input, said initiator comprising, in combination:

(a) a hollow elongated initiator cartridge having a longitudinal axis and a longitudinal passageway extending therethrough with an input end and an output end, an explosve positioned in said passageway, said explosive being explosively responsive to light of sufficient intensity and appropriate wavelength, a transparent window in said passageway sealing said explosive from said input end, and an output closure in said passageway downstream of said explosive; and,

(b) a hollow adapter connected to said cartridge input end, a part of said adapter extending at an angle from said longitudinal axis of said cartridge, said adapter having a longitudinal passageway extending therethrough with an output end adjacent to said cartridge input end and with an input end for holding the output end of an optical fiber having an output end and an input end, said adapter having a first portion containing said adapter input end and being at an angle to said cartridge longitudinal axis, and having a second portion containing said adapter output end and being in line with said cartridge longitudinal axis,



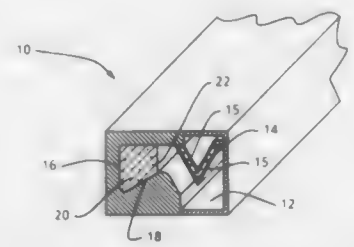
said first and second adapter portions intersecting, and a mirror lens disposed in said adapter passageway at the intersection of said first and second adapter portions for reflection of a light beam from said optical fiber into said cartridge passageway and for focusing said beam on said window to initiate said explosion.

5,010,823

LINEAR PROPELLING SEPARATOR

Peter A. Morrison, Laurel, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 13, 1990, Ser. No. 553,499
Int. Cl.[5] F42B *1/02*
U.S. Cl. 102—307 **7 Claims**



1. A device for use in severing a structure and spatially separating the severed parts, comprising:

an elongate housing adapted to be secured in adjacency to a structure to be severed;

said elongate housing having cavities extending generally coextensive throughout the length thereof;

an outwardly facing shaped explosive charge located in one of the housing cavities and adapted upon detonation to explosively sever a structure in its path; and,

a propelling charge located in another cavity of the housing which cavity has a throat opening defining a propulsion nozzle in communication with the one cavity and facing transversely to the direction of the outwardly facing shaped-charge;

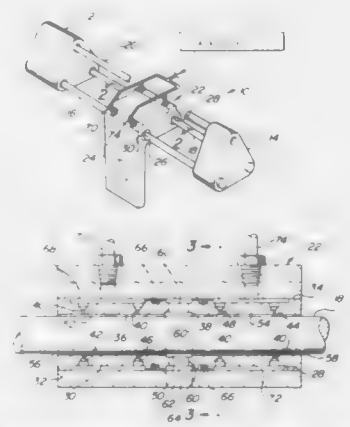
whereby, upon detonation of the shaped-charge, the structure is severed, and, by-products of detonation of the shaped-charge ignite the propelling charge for spatially separating the severed parts.

5,010,824

LINEARLY MOVABLE TOOL OR WORK HANDLING UNIT

Raymond P. DeSantis, Troy, Mich., assignor to PTX-Pentronix, Inc., Lincoln Park, Mich.

Filed Dec. 4, 1989, Ser. No. 446,191
Int. Cl.[5] F16C *32/06*
U.S. Cl. 104—23.001 **12 Claims**



1. A linearly movable tool or work piece handling unit for operation in an abrasive particle atmosphere comprising:

cylindrical ways supported relative to each other at both ends;

a bushing surrounding each of said ways defining a pneumatic bearing gap between each of said ways and the bushing with an annular opening to atmosphere at both ends of said bushing and an air outlet intermediate the ends of said bushing in communication with said gap;

said bushings each having an array of circumferentially spaced radial input orifices adjacent each end of said bushing and an intermediate array adjacent each side of said air outlet for introducing pressurized air to said pneumatic bearing gap which defines a cylindrical pressure pad in said bearing gap between each end array and intermediate array of orifices;

a carriage receiving said bushings for movement of said carriage along said ways; and

passage means in said carriage for supplying said pressurized air to said orifices and for removing air from said air outlet.

5,010,825

RAIL CAR END ASSEMBLY

Harold E. Hesch, St. John, Ind., assignor to Trinity Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 352,715, May 12, 1989, Pat. No. 4,9 4,234, which is a continuation of Ser. No. 65,948, Jun. 24, 1987, abandoned. This application Apr. 11, 1990, Ser. No. 508,365
Int. Cl.[5] B61D *17/06*
U.S. Cl. 105—378 **9 Claims**

1. A railway car having a pair of longitudinal ends and comprising:

a generally horizontal floor structure;

first and second laterally spaced generally longitudinally extending side walls connected with the floor structure and extending generally upwardly therefrom;

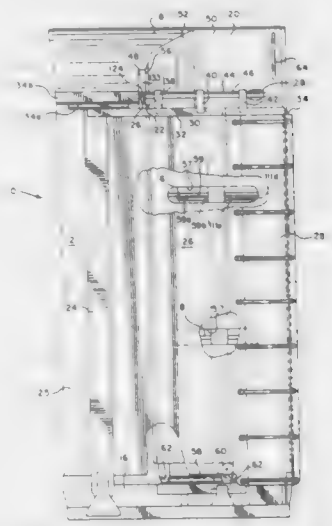
said side walls extending substantially continuously between the ends of the car and defining an end opening therebetween at one of the ends of the railway car;

a generally vertical support post supported on said floor structure adjacent one of said side walls;

said support post being positioned laterally inwardly from said side wall and longitudinally inward from the end of the car, said support post and said side wall defining a space therebetween;

first guiding means supported on the floor structure and extending within said space;

a door movably supported on the first guiding means for movement between a closed position covering a portion of the opening and an open position wherein the door is positioned within the space between the support post and said one of the side walls whereby the railway car has substantially continuous side walls while permitting the placement of the door laterally outward of the support post when the door is in the open position, and a locking mechanism for securing the door in the closed position, said locking mechanism comprising;



a first lower keeper structure supported on the floor structure; and

a first latch structure supported on the door and supporting a first latch member therein;

the keeper structure receiving the latch member therein for securing the door in the closed position, and said latch structure having biasing means urging the latch member downwardly;

said keeper structure comprising:

a receiving portion having an aperture therein receiving the latch member;

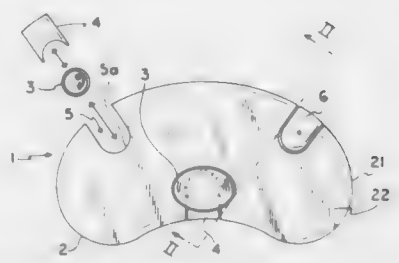
a ramp member connected with the receiving portion for cammingly elevating the latch member to the receiving portion as the door is moved to the closed position.

5,010,826

PLATFORM HAVING A NOTCH AND PLUG MEMBER THEREFOR

Barbara L. Kudlac, Apt. 14A, 3298 S. Lakewood, Tulsa, Okla. 74135

Filed Dec. 20, 1989, Ser. No. 453,845
Int. Cl.[5] A47B *85/00*
U.S. Cl. 108—25 **7 Claims**



1. A serving unit comprising;

a substantially planar platform having top and bottom faces and an outer edge,

said platform provided with at least one U-shaped notch vertically extending completely therethrough,

each notch bounded by a semi-circular inner wall joined to a pair of opposed parallel side walls, said side walls terminating with the platform outer edge,

the notch side walls each including a longitudinal side wall channel therein spaced from said top and bottom faces,

a food server including a food receiving body attached to a base having an arcuate periphery, said arcuate periphery mating within the sidewall channels whereby,

said food server is attachable to said platform upon the lateral insertion of said base into a said notch with said arcuate periphery mating within said channels, and

a planar plug member having side walls and an inner wall mating with the area as defined by the notch side wall and the notch inner wall, said plug member provided with an outer wall, a track extending outwardly from the plug member side walls and mating with the side wall channels whereby,

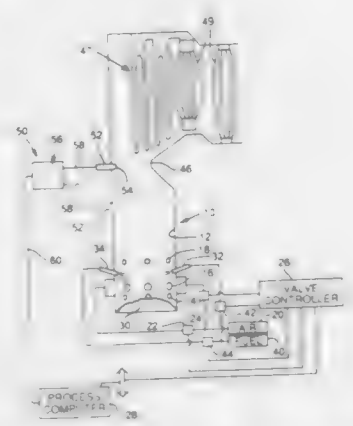
upon removal of said food server base from a said notch, said plug member is insertable into said notch and retained therein by engagement of the side wall tracks within said channels with said plug member fully filling said notch as the plug member outer wall is juxtaposed said platform outer edge.

5,010,827

APPARATUS FOR DETECTING CARRYOVER PARTICLES IN THE INTERIOR OF A FURNACE

George Kychakoff, Maple Valley, Wash., and Gene P. Ort, Spring, Tex., assignors to Wyerehaeuser Company, Tacoma, Wash.

Filed May 8, 1990, Ser. No. 521,082
Int. Cl.[5] F23N *5/00*
U.S. Cl. 110—185 **9 Claims**



1. An apparatus for detecting carryover particles in the interior of a furnace comprising

plural spaced apart carryover particle detectors each directed toward a different region of the interior of the furnace for detecting the presence of carryover particles in such regions of the furnace interior, the detectors producing output signals upon the detection of carryover particles,

a signal processor coupled to the detectors for receiving the output signals and for producing a count signal corresponding to the count of the carryover particles detected by the detectors

5,010,828

GASIFICATION REACTOR FOR COMBUSTIBLE SOLID MATERIAL

Heinz Mallek, Linnich, Fed. Rep. of Germany, assignor to Forschungszentrum Jülich GmbH, Jülich, Fed. Rep. of Germany

Filed Jul. 23, 1990, Ser. No. 556,824
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1989, 3924626
Int. Cl.[5] F23G *5/00, 5/12*
U.S. Cl. 110—256 **7 Claims**



1. A gasifying reactor for combustible solid materials having a gasification shaft, a movable support at the lower end of said shaft for accumulation thereabove a loose filling of solid material in said shaft, said movable support leaving gaps between at least its principal edges and walls of said shaft for passage of gases and solid material pieces, mains for supplying an oxygen containing gasification medium for gasification and partial combustion of solid material in said accumulation of solid material above said support, a combustion chamber below said support for combustion of gas passing through said passages which is generated in said accumulation of said material, gas suction means connected to said combustion chamber for removal of gases produced by combustion and an ash chamber below said combustion chamber and closing the bottom thereof for receiving solid materials converted in part to ashes falling through said passages and through said combustion chamber, characterized in that:

a movable emptying device **(18)** for ashes is provided at the bottom of said ash chamber **(16)** in such a way that passages **(20)** remain between edges of said emptying device and walls of said ash chamber for introducing an oxygen containing gas into the ashes in said ash chamber from below, said passages being subject to change of width during movement of said device.

5,010,829

METHOD AND APPARATUS FOR TREATMENT OF HAZARDOUS WASTE IN ABSENCE OF OXYGEN

Prabhakar Kulkarni, 12027 Circle Dr. E., Houston, Tex. 77071

Continuation-in-part of Ser. No. 241,318, Sep. 15, 1988, Pat. No. 4,896,614. This application Jan. 29, 1990, Ser. No. 471,551
Int. Cl.[5] F23G *7/04*
U.S. Cl. 110—346 **8 Claims**

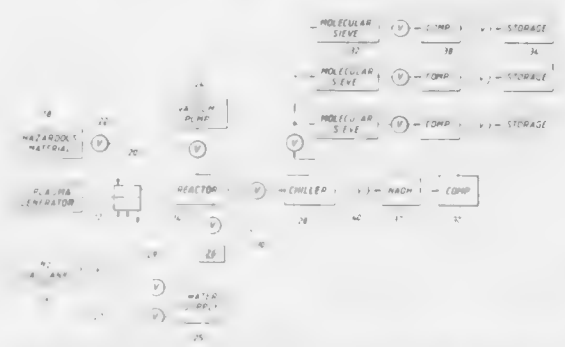
1. A method of converting solid hazardous waste material into useful by-products, comprising the steps of:

(a) introducing the solid waste material into a first high temperature zone generated by at least one plasma gun and converting the waste material into a mixture of carbon black, gases and metallic non-converted material,

(b) collecting said mixture in a first reactor chamber in the absence of oxygen for preventing the recombination of said mixture with oxygen,

(c) discharging the carbon black and metallic nonconverted material into a magnetic separator for separating the metallic material from the carbon black and collecting said metallic material for subsequent use;

(d) directing said carbon black through a second high temperature zone into a second reactor chamber for further separation and conversion of hazardous constituents into non-hazardous gases;



(e) directing the gases from said first and second reactor chambers through cooling apparatus for reducing the temperature of said gases;

(f) passing said gases through molecular sieve apparatus permitting selected constituents of said gases to pass through said molecular sieve apparatus; and

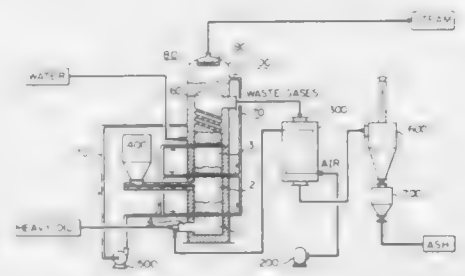
(f) collecting said selected constituents in storage vessels.

5,010,830

PROCESS AND APPARATUS FOR INCINERATING WET REFUSE

Masahiro Asuka; Shinjiro Yokota; Makoto Tonogouchi, and Mitsuo Kasai, all of Ube, Japan, assignors to Ube Industries, Inc., Japan

Continuation of Ser. No. 306,727, Feb. 6, 1989, abandoned. This application Jul. 6, 1990, Ser. No. 549,641
Claims priority, application Japan, Feb. 9, 1988, 63-26628; Jun. 14, 1988, 63-144683; Jun. 28, 1988, 63-158101; Oct. 4, 1988, 63-249120
Int. Cl.[5] F23D *1/00*; F23G *5/00*
U.S. Cl. 110—347 **6 Claims**



1. A process for incinerating wet refuse containing not less than 60% water and having a size of not more than 30 mm in a combustion chamber having a fluidized bed of solid particles formed therein, comprising:

(a) forming at least three adjacent chamber zones arranged vertically and in series, two or more upper zones thereof having perforated bottoms and being provided with a fluid and heat medium of solid particles, said medium being fluidized to form a fluidized bed on each perforated bottom by gases fed continuously from below said zones;

(b) continuously feeding air into the lower non-fluidized bed zone to cause a combustion and fluidization, and through the upper fluidized bed zones via the perforated bottoms thereof, to be discharged from a topmost fluidized bed zone;

(c) continuously feeding wet refuse into an intermediate primary fluidized bed zone;

(d) continuously feeding auxiliary fuel into the lower non-fluidized bed zone to cause a combustion with a part of the fed air, whereby a combination of said air feed, said refuse feed, and said fluidization of the heat particle medium, generates sufficient heat energy to dry the fed refuse and incinerate 70% to 80% of the dried fed refuse in said intermediate primary fluidized bed zone; the balance of said refuse being in a form of unburnt carbon particles having a size small enough to move upward through said perforated bottoms, said carbon particles being forced to move from said intermediate primary fluidized bed zone into one or more of said upper fluidized bed zones and to be incinerated therein, said generated heat energy combining with additional heat energy generated by an incineration of the refuse with a remaining portion of the fed air

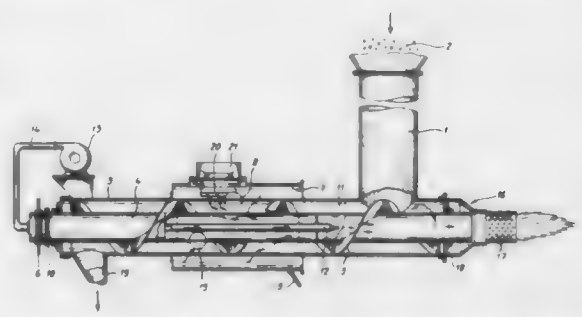
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5,010,831

PARTICULATE FUEL BURNER AND METHOD OF OPERATION

Frans L. Halfhide, Binnenwalder 17, NL-1112 RW Diemen, Netherlands

PCT No. PCT/NL88/00017, § 371 Date Oct. 18, 1989, § 102(e) Date Oct. 18, 1989, PCT Pub. No. WO88/08505, PCT Pub. Date Nov. 3, 1988
PCT Filed Apr. 18, 1988, Ser. No. 427,118
Claims priority, application Netherlands, Apr. 21, 1987, 8700945
Int. Cl.[5] F23D *1/00*
U.S. Cl. 110—347 **8 Claims**



1. Burner comprising two coaxially mounted tubes provided with means to introduce air as well as particulate matter in the space between both tubes and means to discharge burnt matter from that space and wherein the inner tube being at least partially gas porous, said inner tube being provided with means to introduce a combustion agent, characterized in that, in the space between both tubes screw conveyor means are provided.

5,010,832

QUICK FEED DRIVE UNIT HAVING AN ELECTROMAGNETIC CLUTCH, A WORM, WORM WHEEL, AND PATTERN WHEEL FOR FEEDING A SEWN CLOTH IN A PERFORATING SEWING MACHINE

Katsuo Hiratsuka; Yoshiyuki Odaka, and Takeshi Yoshida, all of Tochigi, Japan, assignors to SSMC Inc., Edison, N.J.

Filed Sep. 22, 1989, Ser. No. 410,788
Claims priority, application Japan, Oct. 20, 1988, 63-136174[U]
Int. Cl.[5] D05B *3/00, 3/04, 3/06, 69/10*
U.S. Cl. 112—68 **2 Claims**

1. A quick feeding driving unit for use in a perforating sewing machine having a bed and comprising:

a quick feeding shaft having two opposite ends;

a worm secured to one end of the quick feeding shaft;

said quick feeding shaft having a portion thereof rotatably supported in a bearing secured to said bed and rotatable in one direction;

a magnetic clutch having a stationary winding supported by the bed and a magnetic clutch shaft having two opposite ends, one end of the clutch shaft being coaxially opera-

tively connected to the other end of the feeding shaft, the clutch, when the winding is energized, engaging the clutch shaft with the feeding shaft to transmit a rotational driving force of the clutch shaft to the feeding shaft;

a pattern wheel shaft having two opposite ends and disposed at a right angle to the quick feeding shaft and rotatably supported at one end thereof in a bearing secured at the bed;



a pattern wheel secured at the other end of the pattern wheel shaft for feeding a sewn cloth quickly,

a worm wheel coaxially fixed to the pattern wheel shaft at an intermediate portion thereof and meshing with said worm, the worm wheel and the worm constituting a gear mechanism for transmitting the rotational driving force of the quick feeding shaft to the pattern wheel shaft

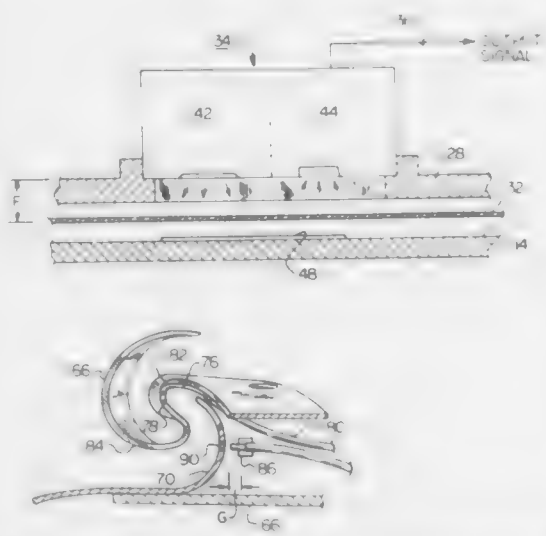
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5,010,833

EDGE DETECTOR FOR FELLING FOLDER AND METHOD

James T. Spencer, III, Greensboro, and James K. Walker, Elon College, both of N.C., assignors to Wrangler, Greensboro, N.C.

Filed Sep. 6, 1988, Ser. No. 240,859
Int. Cl.[5] D05B *35/10*
U.S. Cl. 112—262.1 **44 Claims**



42 A method for detecting the presence of a workpiece of cut fabric wherein the workpiece is processed by a sewing machine having a work surface over which the workpiece is progressively moved, comprising the steps of

(a) directing electromagnetic radiation upon said workpiece,

(b) receiving electromagnetic radiation reflected from said workpiece;

(c) attenuating said radiation when said workpiece is not present, and

(d) providing an output signal in response to said reflected radiation, said output signal indicating the presence of said workpiece

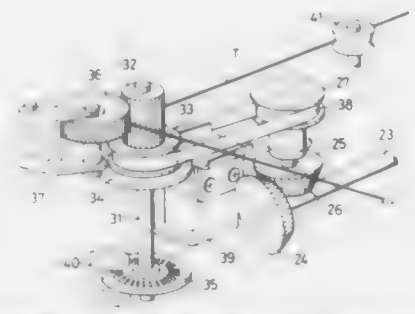
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5,010,834

CLUTCH TYPE ROLLER FEED FOR A SEWING MACHINE NEEDLE THREAD

Ikuro Iimuro, Sagamihara; Toshiki Matsushita, and Toshihiro Furuya, both of Chofu, all of Japan, assignors to Juki Corporation, Chofu, Japan

Filed Oct. 26, 1988, Ser. No. 262,710
Claims priority, application Japan, Oct. 31, 1987, 62-276464; Jun. 30, 1988, 63-164613
Int. Cl.[5] D05B *49/04*
U.S. Cl. 112—302 **14 Claims**



1 A needle thread feeding mechanism, comprising

(a) a drive source including a drive shaft, a first pulley, means for allowing said first pulley to loosely receive said drive shaft therethrough, and connect means for frictionally connecting said first pulley to said drive shaft;

(b) thread drawing means including a driven shaft, a drawing roller for drawing needle thread from a spool, and a second pulley, said drawing roller and said second pulley being fixed to said driven shaft.

(c) a belt for transmitting the rotation of said first pulley to said driven shaft;

(d) detecting means for detecting the rotation of said drawing roller to generate a signal; and

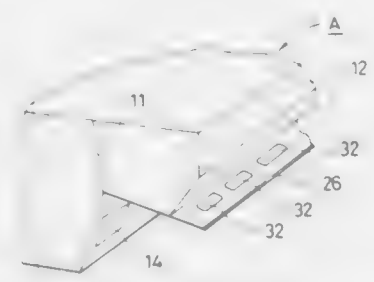
(e) disconnect means responsive to said detected signal for drivingly disconnecting said first pulley from said drive shaft.

5,010,835

SEMI-SUBMERGED GLASS BOAT

Yoshikuni Kunitake, Nagareyama, and Yasuhiro Harita, Funabashi, both of Japan, assignors to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, Japan

Filed Nov. 30, 1989, Ser. No. 443,631
Claims priority, application Japan, Dec. 2, 1988, 63-156578[U]; Dec. 2, 1988, 63-156579; Feb. 2, 1989, 1-11005; Mar. 10, 1989, 1-26665[U]
Int. Cl.[5] B63B *35/72*
U.S. Cl. 114—66 **5 Claims**



1. A semi-submerged glass boat having a hull formed of a main hull having a center line, a center of gravity, a center of flotation, and float tanks provided on lateral sides of an upper part of said main hull, said main hull having observation windows provided on the lateral sides of a lower part thereof and anti-rolling fins secured to a bottom of each float tank, each anti-rolling fin projecting outside of a straight line connecting the outer end part of the bottom of the float tank and the outer end part of the bottom of the main hull, and projecting along a line from the center line of the main hull between the center of flotation and the center of gravity, and a bottom point on the float tank, an outermost edge of each said anti-rolling fin being within a vertical extension line of an outer side surface of the float tank

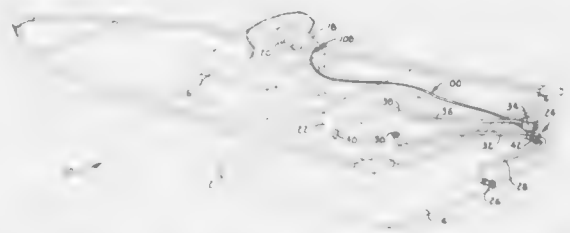
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5,010,836

LIVEWELL VALVE FOR FISHING BOATS

Anthony L. Riviezzo, Springfield, Mo., assignor to Tracker Marine Corporation, Springfield, Mo.

Filed Jul. 27, 1989, Ser. No. 385,448
Int. Cl.[5] B63B *35/14*
U.S. Cl. 114—255 **13 Claims**



1 A valve for controlling waterflow to and from a livewell in a fishing boat, said valve comprising:

a valve body having a flow passage therethrough and a substantially cylindrical valve chamber intersecting said flow passage, said valve body being arranged to accommodate a flow of water between a body of fresh water and the livewell when said flow passage is open;

a substantially cylindrical valve plug having a longitudinal axis and a flow port extending therethrough perpendicular to said axis, and opposite longitudinal ends between which said flow port is located, said valve plug being mounted in said valve chamber for axial rotation between an open position wherein said port is aligned with said flow passage to allow flow therethrough and a closed position wherein said port is misaligned with said flow passage and said valve plug blocks said flow passage;

seal means for effecting fluid tight seals between said valve plug and said valve body at locations between said flow port and each said end of said valve plug, said seal means including an annular groove located in and coaxial with said valve chamber in proximity to each of said ends of said plug, an O-ring mounted in each of said grooves, and means mounted on said valve plug in proximity to said ends thereof for compressing an associated one of said O-rings against said groove; and

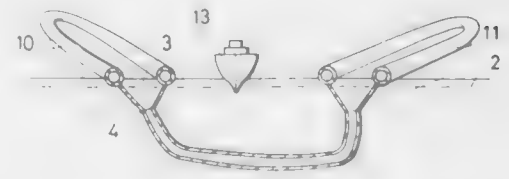
means for effecting rotation of said valve plug between said open and closed positions from a location remote from said valve body.

5,010,837

FLOATING RACEWAY, FLOATING WATER STORAGE TANK, COMPOSITE FLOATING RACEWAY, MARINE PADDY FARMING DEVICE, FLOATING HYDROPONIC FARMING DEVICE, AND VESSEL

Tokuzo Hirose, 13-13, Higashiyamacho, Ashiya-shi, Hyogo-ken, Japan

Filed Aug. 17, 1989, Ser. No. 394,941
Claims priority, application Japan, Jun. 8, 1989, 1-146438
Int. Cl.[5] B65D *88/78*
U.S. Cl. 114—256 **2 Claims**



1. A composite floating raceway comprising:

a pair of raceways, each of said raceways including a raceway portion formed of a trough-shaped tough and flexible film of material defining a space therein for accommodating water, and a floating bank portion extending along the periphery of said raceway portion,

said floating bank portion imparting buoyancy to said raceway portion when the raceway portion is disposed in a body of water such that said trough-shaped raceway extends below the surface of the body of water while said floating bank portion floats thereon, and providing a barrier with respect to said space against a body of water when said raceway portion is disposed in the body of water with said floating bank portion floating on the surface of the body of water; and

a communicating raceway formed of a tube of flexible material interconnecting said pair of raceways and communicating with the space defined in each said raceway portion, said tube of flexible material allowing said pair of raceways to be spaced apart from one another to in turn allow marine traffic to pass therebetween when said pair of raceways are disposed in a body of water.

2. A floating farming device comprising:

a raceway portion formed of a trough-shaped tough and flexible film of material defining a space therein for accommodating water, said trough-shaped film forming sides of said raceway portion extending around said space at an upper part of the raceway portion;

a floating bank portion extending along the periphery of said raceway portion at said upper part thereof, and imparting buoyancy to said raceway portion when the raceway portion is disposed in a body of water such that said trough-shaped raceway extends below the surface of the body of water while said floating bank portion floats thereon;

a buoyant support around the entirety of which said floating bank portion extends, said buoyant support extending across said space from one side of said raceway portion toward the other side of said raceway portion so as to be floatable on freshwater occupying the space defined in said raceway portion, and said buoyant support being capable of supporting plants thereon; and

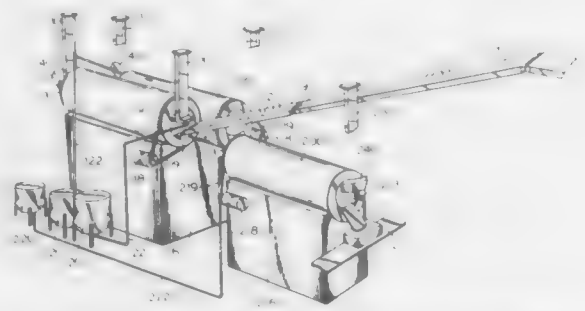
a membrane extending radially outwardly from said floating bank portion and a second floating bank portion extending around said membrane and imparting buoyancy to said membrane, said membrane and said second floating bank portion providing a barrier with respect to said space against a body of water when said raceway portion is disposed in the body of water with said floating bank portion floating on the surface of the body of water.

5,010,838

APPARATUS FOR CONTINUOUS PAN COATING

William Simelunas, Glen Rock, N.J., and Joseph T. Deloy, Lyndhurst, N.Y., assignors to Nabisco Brands, Inc., East Hanover, N.J.

Filed Jul. 10, 1985, Ser. No. 753,738
Int. Cl.[5] A23G *3/26*
U.S. Cl. 118—19 15 Claims



1. An apparatus useful for continuous pan coating of edible cores, comprising in combination:

a coating drum arranged for rotation around an inclined axis and having an inlet opening at the upper axial end of said inclined coating drum for reception of said edible cores, a discharge opening at the lower axial end of said drum, whereby the force of gravity urges said cores through said drum during pan coating operation;

means for continuously driving said drum;

means for providing coating material to said cores at a controllable rate, said means for providing coating material comprising a coating manifold extending lengthwise through the interior of said coating drum and provided with adjustable coating nozzles along the length thereof for selectively controlling the rate that coating material is delivered to said cores, and a control means for selectively adjusting each of said nozzles from a location exterior said coating drum to vary the quantity of coating material ejected from each of said nozzles per unit of time, each of said adjustable coating nozzles comprising a nozzle housing having a coating supply bore with an exit port, a movable means for restricting fluid flow through said exit port responsive to means for adjusting said flow restriction means, said adjustment means fixed to said nozzle housing at a location exterior thereto and operable to adjust said flow restriction means;

means for simultaneously delivering drying gas to said cores at a controllable rate during passage of said cores through said drum;

at least one after-treatment drum likewise arranged for rotation around an inclined axis and having an inlet opening at the upper axial end of said inclined after-treatment drum for the reception of said coated cores from said coating drum, a discharge opening for the discharge of treated coated cores and means for continuously driving said at least one after-treatment drum;

means for continuously conveying said coated cores from said discharge end of said coating drum to said inlet opening of said after-treatment drum; and

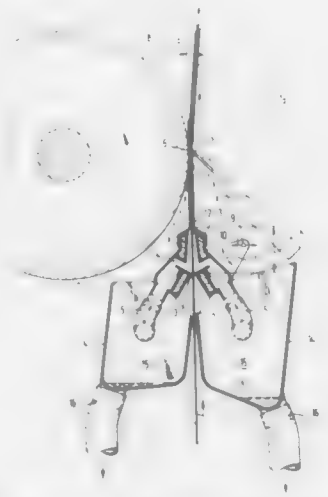
means for continuously providing after-treatment coating to said coated cores at a controllable rate during the passage of said cores through said after-treatment drum.

5,010,839

COATER FOR SELECTIVELY COATING A RUNNING WEB EITHER ON ONE SIDE OR ON BOTH SIDES

Dan Eklund, Kauniainen, and Markku Grästen, Järvenpää, both of Finland, assignors to Valmet Paper Machinery Inc., Helsinki, Finland

Continuation of Ser. No. 580,882, Feb. 16, 1984, abandoned.
This application Nov. 17, 1987, Ser. No. 121,668
Claims priority, application Finland, Mar. 1, 1983, 830674
The portion of the term of this patent subsequent to Dec. 15, 2004, has been disclaimed.
Int. Cl.[5] B05C *11/02*
U.S. Cl. 118—122 14 Claims



1. A device for coating at least one side of a running paper web, comprising:

a roll having a central axis,

means supporting the roll for rotation about its central axis,

a counter piece which cooperates with the roll to define a smoothing nip,

a coating substance applicator disposed below the smoothing nip and spaced therefrom along a linear path of movement of the web, said applicator comprising

means defining an applicator chamber at one side of said path of movement, and means for feeding coating substance to the applicator chamber to form therein a body of coating substance in substantially non-pressurized contact over a contact distance of at least 5 cm with one side of a web passing upwardly along said path to the smoothing nip, said means defining the applicator chamber being spaced from the path of movement of the web, allowing the coating substance to contact the web in substantially non-pressurized manner and also allowing the web to run through the applicator substantially without any mechanical contact with the applicator, and

means defining a collecting space below said applicator and said smoothing nip for collecting excess coating substance and leading it to a recycling system.

5,010,840

SHORT DWELL COATER APPARATUS

L. H. Busker, and E. W. Wight, both of Rockton, Ill., assignors to Beloit Corporation, Beloit, Wis.

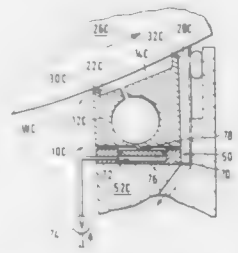
Filed Oct. 30, 1989, Ser. No. 429,200
Int. Cl.[5] B05D *1/02*
U.S. Cl. 118—421 13 Claims

1. A short dwell coater apparatus for coating a web with a coating material, said web moving contiguously with a rotating backing roll, said apparatus comprising:

a housing disposed on the opposite side of the web relative to the backing roll, said housing defining a coating chamber having an upstream and a downstream end, said chamber being connected to a pressurized source of the coating material, said chamber being exposed to the web such that the web supported by the backing roll is coated with the coating material during passage of the web past said coating chamber, said upstream and downstream ends of said coating chamber defining a first and second weir respectively, each of said weirs extending in a cross-machine direction such that said coating chamber is bounded by said weirs and the web moving between said weirs;

said first weir defining a first overflow gap disposed between said first weir and the web moving past said first weir;

said second weir defining a second overflow gap disposed between said second weir and the web moving past said second weir, the arrangement being such that during use of the apparatus, when the web moves past said coating chamber, coating material is coated onto the web while



excess coating material overflows through said first and second gaps for recirculation through said coating chamber;

a resilient blade disposed downstream relative to said second weir, said blade cooperating with the coating material coated onto the web such that the pressure exerted by the coating material on said blade is less than the pressure of the coating material within said coating chamber, so that mottling and streaking of the resultant web is inhibited, while maintaining minimum pressure on said blade; and

said apparatus further including: overflow control means connected to said housing for controllably urging said housing and said first and second weirs radially relative to the backing roll for controlling said first and second gaps such that the pressure within said coating chamber is controlled, the arrangement being such that when said weirs are urged towards the web, said gaps are decreased and the pressure within said coating chamber is increased.

5,010,841

ROTATING SEALANT APPLICATOR

William R. Stewart, LaPalma, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed May 23, 1989, Ser. No. 355,674
Int. Cl.[5] B05C *5/02*
U.S. Cl. 118—711 4 Claims

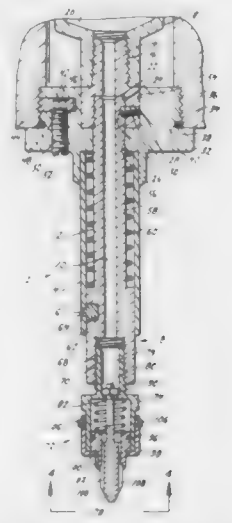
1. A sealant dispenser for discharging sealant into a fastener hole, comprising:

(a) a sleeve having a first bore and an oblique slot;

(b) a dispenser tube within said first bore having a longitudinal channel;

(c) spring means operatively connected to said dispenser tube, for biasing said dispenser tube toward an outward position relative to said sleeve;

(d) a guide pin attached to said dispenser tube, said guide pin extending into said oblique slot; and



(e) a nozzle attached to said dispenser tube that dispenses the sealant, said nozzle having a plurality of openings in fluid communication with said longitudinal channel.

5,010,[illegible]2

APPARATUS FOR FORMING THIN FILM

Masao Oda; Yoshimi Kinoshita, and Masahiro Hayama, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1989, Ser. No. 362,745
Claims priority, application Japan, Oct. 25, 1988, 63-268746
Int. Cl.[5] C23C *16/50*
U.S. Cl. 118—723 6 Claims



1. An apparatus for forming a thin film which comprises a reaction chamber for containing a substrate therein and forming the thin film on a surface of said substrate by a reaction of a first reactive gas with an active species formed through excitation of a second reactive gas, said reaction chamber comprising:

heater means for supporting and heating said substrate;

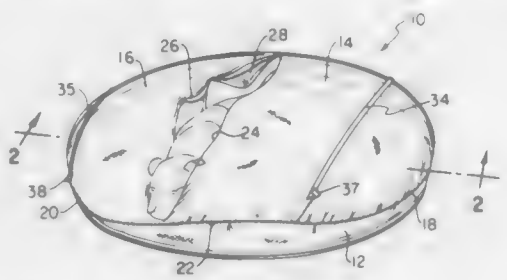
a reactive gas supply portion comprising diffusing means disposed facing and completely covering the surface of said substrate so as to diffuse the first reactive gas and supply uniformly said first reactive gas directly over the surface of said substrate; and

active species supply means comprising uniformizing means disposed adjacent said diffusing means on a side opposite

said substrate surface and completely covering said substrate surface, so as to introduce said active species and uniformly mix said active species with said first reactive gas in the vicinity of the surface of the substrate directly over the entire area of the substrate, and supply uniformly the mixed gas subsequent to a gas-phase chemical reaction to the surface of said substrate for forming said thin film

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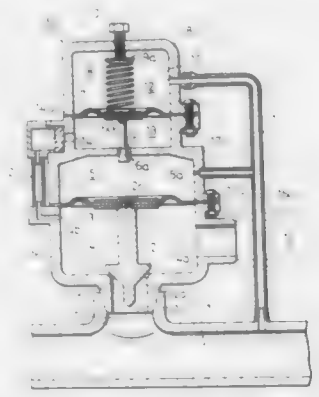
5,010,843
PET BED
Beth Henry, La Tierra Nueva, 1063 Buckman Rd., Santa Fe, N. Mex. 87501
Filed Nov. 16, 1989, Ser. No. 438,163
Int. Cl.[5] A01K *1/035*
U.S. Cl. 119—28.5 **12 Claims**



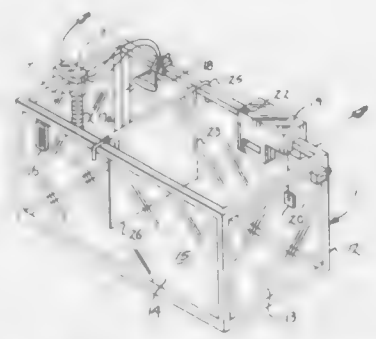
1. A bed for pet comprising:
a base having a defined area;
a first top cushion having a first edge around the perimeter thereof, said first cushion being positioned on top of said base and covering a first portion of said base area, said first cushion being attached to said base along a major portion of said first edge, a minor portion of said first edge being unattached to said base, said unattached portion being an entrance to a first pocket formed between said first cushion and said base;
a second top cushion having a second edge around the perimeter thereof, said second cushion being positioned on top of said base and covering a second portion of said base area, an attachment being formed between said base and the second edge of said second top cushion, the unattached portion of said first top cushion edge being opposed to said second top cushion, a trough being formed between said cushions, said pocket entrance being within said trough.

5,010,844
VACUUM-PRESSURE SUPPLY DEVICE
Toru Takeuchi, and Minoru Matsugawa, both of Suzaka, Japan, assignors to Orion Machinery Co., Ltd., Nagano, Japan
Division of Ser. No. 218,235, Jul. 12, 1988, Pat. No. 4,944,249.
This application Mar. 15, 1990, Ser. No. 494,151
Int. Cl.[5] A01J *5/04*
U.S. Cl. 119—14.25 **1 Claim**

1. A method of supplying vacuum pressure to a cow milking unit for milking purposes, comprising the steps of:
generating a high vacuum pressure in a high vacuum pressure pipe line using a vacuum pump; providing a low vacuum pressure pipe line; connecting the low vacuum pressure pipe line to the high vacuum pressure line via a vacuum pressure adjuster to generate a vacuum pressure in the low vacuum pressure pipe line which is lower than the vacuum of the high vacuum pressure pipe line and maintaining the vacuum pressure of the high vacuum pressure pipe line at a required vacuum pressure to provide both a high and a low vacuum pressure to a cow milking unit employing a single vacuum pump



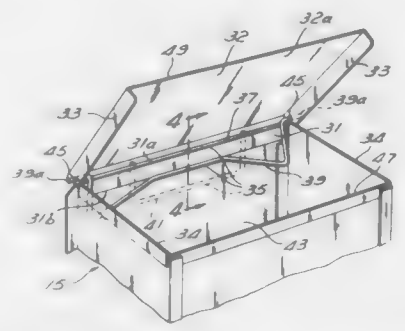
5,010,845
REPTILE CAGE APPARATUS
Diana M. Azpûrua, and Francisco J. Azpurua, both of Shore Base Yacht Service, Oficina, Postal Telegraphica, Pampatar Margarita, Venezuela 6316
Filed Mar. 15, 1990, Ser. No. 493,820
Int. Cl.[5] A01K *1/00*
U.S. Cl. 119—17 **4 Claims**



1. A reptile cage apparatus comprising, in combination,
a framed transparent enclosure, the transparent enclosure including a rigid perimeter framework, the perimeter framework including a transparent forward end wall and a transparent rear end wall spaced away from and parallel to the forward wall, and
a transparent forward end side wall spaced away from and parallel to a transparent rear side wall, and
the walls orthogonally mounted integrally to an underlying opaque floor, and
a heating means mounted on the framework for providing selective heating of an interior of the enclosure, and
a humidifier means mounted on the framework for providing selective humidification of the enclosure, and
wherein the heating means includes a first heating means mounted to an upper end of the rear end wall, and a second heating means mounted to upper end of the rear side wall, and a thermometer mounted to an interior surface of the forward side wall to provide visual observation of temperature within the enclosure, and
wherein the first heating means includes a resistance heater and a thermostat, and the second heating means includes an infra-red lamp directed interiorly of the enclosure and operatively associated with the thermostat to permit recurrent heating by the resistance heater and the infra-red lamp, and

wherein the humidifier includes a fan mounted interiorly thereof, the fan operatively associated with a humidistat, wherein the humidistat is mounted interiorly of the enclosure and suspended from the humidifier, and the humidifier further includes a fill plug to permit directing of water interiorly of the humidifier, and
further including a flexible heat reflector web selectively mounted within the enclosure, the heat reflector web including a flexible web including a lower terminal edge and an upper terminal edge, the upper terminal edge defined by a tube, and a "U" shaped rigid rod captured within the tube, the rigid rod spanning the forward and rear side walls of the enclosure, and fixedly mounted within the tube to permit furling of the web about the "U" shaped rigid rod.

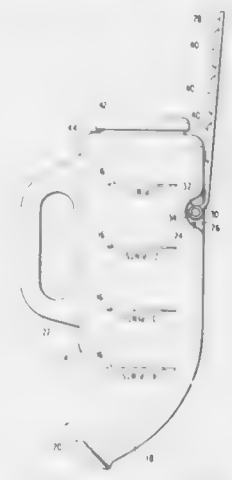
5,010,846
LABORATORY ANIMAL FEEDER COVER
Thomas O. Nass, 14502 La Cuarta, Whittier, Calif. 90605
Filed Nov. 6, 1989, Ser. No. 432,527
Int. Cl.[5] A01K *39/00*
U.S. Cl. 119—18 **12 Claims**



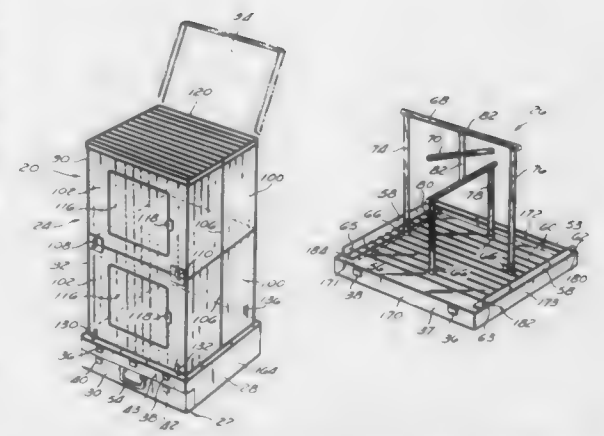
1. An apparatus comprising:
a laboratory animal feeder having an upper open end and a plurality of walls, at least one of said walls having a flange formed thereon;
a generally planar member sized to extend over the upper open end of said laboratory animal feeder;
a spring clip pivotally mounted to said planar member and engageable with one wall of said laboratory animal feeder to pivotally mount said planar member to said laboratory animal feeder, said spring clip being formed from a juxtaposed first and second wire member, said first member sized to extend downwardly upon one side of said one wall of said laboratory animal feeder and said second member sized to extend downwardly upon the opposite side of said one wall of said laboratory animal feeder; and
a shoulder portion formed upon said second member of said spring clip, said shoulder portion positioned to abut an edge portion of the flange formed on said one wall of said laboratory animal feeder.

5,010,847
CALF FEEDER BOTTLE FOR DRY FEED
Joe T. Braden, Pickton, Tex., assignor to Braden Industries, Pickton, Tex.
Filed Nov. 21, 1989, Ser. No. 439,956
Int. Cl.[5] A01K *5/00*
U.S. Cl. 119—18 **5 Claims**

1. A calf feeder bottle for dry feed comprising a bottle having a curved neck portion at one end thereof curved toward one side of said bottle, support means pivotally connected to said bottle on a side opposite said one side for supporting the bottle in an inverted position with the neck portion disposed downwardly and nipple means detachably connected to said neck portion and including flap valve means therein normally closing said nipple means while permitting dispensing of dry feed upon application of pressure to said nipple means.



5,010,848
FOLDING TRAVEL CAGE
William J. Rankin, 1250 Victoria, Abilene, Tex. 79603
Filed Oct. 23, 1989, Ser. No. 425,579
Int. Cl.[5] A01K *31/08, 31/12*
U.S. Cl. 119—26 **13 Claims**



1. An adjustable, portable travel animal cage which may be conveniently stored in a self-contained suitcase and quickly and easily be assembled into a small cage or a large cage, comprising:
a suitcase base;
a suitcase lid having means for securing said lid to said suitcase base to form a closed suitcase;

a first grate storable in said suitcase and removably attached to said suitcase base for providing a cage floor;

a first cage wall assembly having a top and bottom, corners and four rectangular sides hingeably interconnected at the corners for placement upon said suitcase base to form an animal cage of a height suitable for automobile travel, said first cage wall assembly being collapsible and storable in said suitcase and having means for releasably securing said first cage wall assembly on top of said suitcase base;

a cage lid storable in said suitcase for securing to the top of said first cage wall assembly and enclosing said cage to prevent escape of birds therefrom, and

a second wall assembly having a top and bottom, corners and four rectangular sides hingeably interconnected at the corners for placement between said suitcase base and said first cage wall assembly to form an animal cage of a height suitable for a long-term storage of an animal, said second cage wall assembly being collapsible and storable in said suitcase and having means for securing said second cage wall assembly between said suitcase base and said first cage wall assembly.

12. A playpen for birds, comprising:

a rigid U-shaped outer frame having a horizontal upper perch and depending legs;

a rigid U-shaped inner frame which is shorter and narrower than said outer frame, said inner frame having a horizontal lower perch and depending legs;

a first support column rigidly attached to and extending downwardly from said upper perch;

a second support column rigidly attached to and extending upwardly from said lower perch;

a horizontal intermediate perch rotatably disposed between said first and second support columns; and

an elastic member connecting said first and second support columns and urging same against said intermediate perch above the shelf for depositing the feed onto the shelf for taking by the animal with any feed moved by the animal from the shelf falling into the trough; the shelf being positioned above the rear wall so that rear portion thereof, extends rearwardly of the upper edge of the rear wall, and said shelf being movable in a vertical direction from a first position, in which a lower edge of the flange at the front edge of the shelf is located below said upper edge of the rear wall and closely adjacent the rear wall, to a second position, in which the shelf is raised to define a first space between the lower edge of the flange and the rear wall and a second space between the upper edge of the rear wall and an underside of the shelf to allow a jet of cleaning fluid to exit from the trough moving up the rear wall, behind the flange, under the shelf and over the upper edge of the rear wall

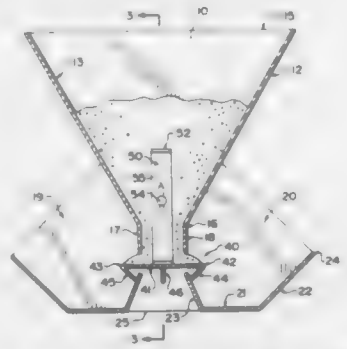
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5,010,849

FEEDER FOR ANIMALS

Jonathan R. Kleinsasser, Ste. Agathe, Canada, assignor to Crystal Spring Colony Farms Ltd., Agathe, Canada

Filed Oct. 2, 1989, Ser. No. 415,619
Int. Cl.[5] A01K *5/00*
U.S. Cl. 119—53 6 Claims



1. A feeder for animals comprising a trough, means for supporting the trough on a floor surface; the trough being defined by a base wall on which feed can rest for being eaten by the animal, a front wall extending generally upwardly from the base wall to a front edge over which the animal standing on the floor surface can reach to access the feed on the base wall, and a rear wall extending generally upwardly from the base wall to an upper edge, the front wall, rear wall and base wall acting to confine the feed in the trough; the upper edge of the rear wall being shaped and arranged so that material falling outwardly therefrom falls onto the floor surface for disposal; a shelf having a front edge extending along the trough at a position above the base wall, rearwardly of the front wall, forwardly of the upper edge of the rear wall and a height accessible by the animal, the shelf having a downwardly extending flange along the front edge thereof; and a hopper

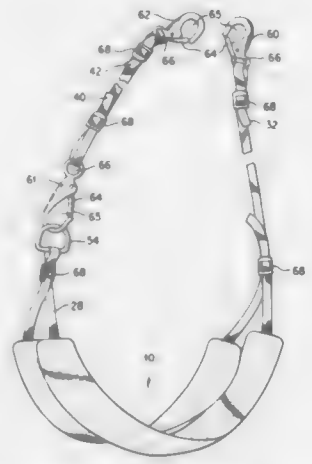
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5,010,850

SEAT AND HARNESS DEVICE

Michael P. Sailer, HCR 70, Box 110, Plymouth, Vt. 05056

Filed Sep. 12, 1990, Ser. No. 581,024
Int. Cl.[5] A01K *29/00*; A62B *35/00*
U.S. Cl. 119—96 10 Claims



1. A sling/harness device comprising:

a first elongated pad having a first end and a second end;

a second elongated pad having a first end and a second end;

a first strap segment engaging said first end of said first elongated pad;

a second strap segment engaging said second end of said first elongated pad and said second end of said second elongated pad;

a third strap segment engaging said first end of said second elongated pad, said third strap segment having a free end and said first strap segment attaching to said third strap segment forming a junction point, said junction point being substantially equal distant from said first elongated pad and said second elongated pad;

a second strap having a second strap first end and a second strap second end; and

means for attaching said second strap to said second strap segment, said means having an opening therein through which said third strap segment can be slidably engaged.

5,010,851

METHODS OF RAISING COMMERCIAL ANIMALS

Gadi Gvaryahu, Rehovot, Israel, and Danis L. Cunningham, Athens, Ga., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation-in-part of Ser. No. 58,116, Jun. 4, 1987, Pat. No. 4,913,092, and a continuation-in-part of Ser. No. 217,977, Jul. 12, 1988. This application Apr. 2, 1990, Ser. No. 502,276
The portion of the term of this patent subsequent to Apr. 3, 2007, has been disclaimed.
Int. Cl.[5] A01K *31/00*
U.S. Cl. 119—174 9 Claims

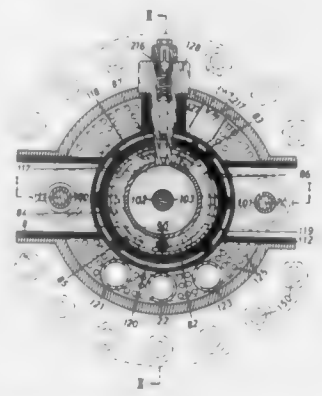
1. A method of raising precocial birds comprising exposing precocial birds to the combined effects of filial imprinting, environmental enrichment and music for improving their feeding habits and general behavior.

5,010,852

HEAT ENGINE

Milorad S. Milisavljevic, Gutschstrasse 6/148, Lucerne, Switzerland

Filed Apr. 14, 1989, Ser. No. 339,321
Int. Cl.[5] F02B *69/06*
U.S. Cl. 123—21 15 Claims



1. A heat engine, comprising:

a cylinder block;

a cylinder-block casing enclosing said cylinder block and defining therewith an upper part of a crankcase;

a cylinder member received in said cylinder block and formed with:

an inner working cylinder,

an outer cylinder surrounding said inner cylinder and spaced therefrom by a spacing,

an annular constricting shoulder extending inwardly from said inner working cylinder, and

a common bottom for said inner working cylinder and said outer cylinder;

a cylinder block head mounted on said casing above said cylinder member;

another cylinder suspended from said cylinder block head and extending into said working cylinder and defining an internal cylinder motor within said other cylinder;

a piston member slidable in said working and other cylinders and comprising an outer piston received between said other cylinder and said working cylinder and delimiting at least one air compressor with at least one of said cylinders and an inner piston received in said other cylinder and delimiting said internal cylinder motor at said end of said piston member, and a bottom at an opposite end of said piston member common to both said inner and outer pistons;

at least one pair of oil filters received in said cylinder member between said working cylinder and said outer cylinder and communicating between said crankcase and said head;

at least one pair of air filters received in said cylinder member between said working cylinder and said outer cylinder, connected to an air intake and communicating with said motors and with said compressors through bores formed in said working cylinder;

respective valves for selectively blocking and unblocking said bores;

a camshaft in said head provided with cams for operating at least some of said valves;

means for connecting said piston member to a crankshaft whereby, in an upper dead position, said inner piston defines in said internal cylinder motor an upper expansion chamber;

a first tappet valve opening into said upper expansion chamber and operated by said camshaft;

means in said other cylinder above said tappet valve defining a secondary chamber communicating with said upper expansion chamber upon opening of said first tappet valve;

means in said other cylinder defining a preliminary chamber above said secondary chamber and communicating with said secondary chamber upon opening of a second tappet valve coaxial with said first tappet valve and controlled by said camshaft; and

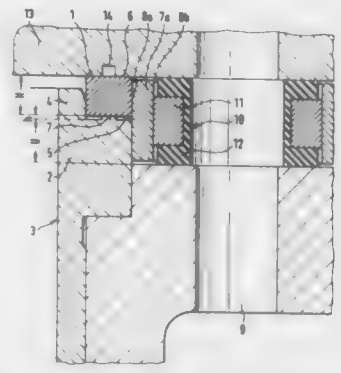
a compressed air distributor connected with said compressor and communicating with said preliminary chamber through a third tappet valve coaxial with said first and second tappet valves and controlled by said camshaft.

5,010,853

CYLINDER HEAD SEALING ELEMENT FOR RECIPROCATING PISTON ENGINES

Heribert Kubis, Nuremberg, and Josef Winter, Rednitzhembach, both of Fed. Rep. of Germany, assignors to MAN Nutzfahrzeuge Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Filed Jul. 12, 1990, Ser. No. 552,181
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1989, 3922885
Int. Cl.[5] F02F *1/10*
U.S. Cl. 123—41.[illegible] 6 Claims



1. In a cylinder head sealing element for a reciprocating piston engine, especially an internal combustion engine, and advantageously an engine having cylinder liners, whereby an end face of a cylinder liner that faces a cylinder head is provided with a collar that has a centering means and also has an annular rib that is concentric to said cylinder liner, with said cylinder head, across from said rib, being provided with an annular groove that is concentric to said rib, and whereby when cylinder head screws are tightened, said sealing element, which is disposed between said rib and said groove, penetrates into said groove and is penetrated by said rib, accompanied by plastic deformation of said sealing element, the improvement wherein:

said sealing element is formed by a ring, with said ring resting against said centering means with a clearance fit;

said ring has a first end face that faces said rib and has a surface area with a value A1;

said ring has a second end face that faces said groove and has

a surface area, less an annular surface area of said groove, with a value A2;

the ratio of A1 to A2 is

$$\frac{A1}{A2} = \frac{3}{2}$$

said rib has an annular surface area with a value A3, and the ratio of A3 to A2 is

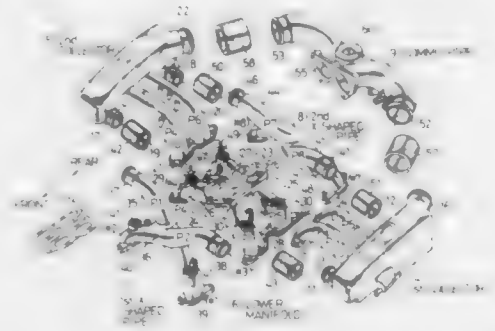
$$\frac{A1}{A2} = \frac{3}{2}$$

5,010,854

INTAKE APPARATUS FOR V-TYPE 8-CYL INTERNAL COMBUSTION ENGINE

Urabe Suehiro, Fujisawa; Honma Masayuki, and Kamibeppu Tohru, both of Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 12, 1990, Ser. No. 551,367
Int. Cl.[5] F02B 75/18
U.S. Cl. 123—52 MV **11 Claims**



1 An intake apparatus for a V-type eight-cylinder engine having a cylinder block with a first bank along which first, third, fifth and seventh cylinders are arranged open and a second bank along which second, fourth, sixth and eight cylinders are arranged open, comprising:

(a) a first collector disposed over said first bank an formed by casting with third and fifth upper bent branch pipes;

(b) a second collector disposed over said second bank and formed by casting with fourth and sixth upper bent branch pipes;

(c) a first X-shaped pipe member disposed at first ends of the first and second banks and formed by casting with a first intake pipe connected between the first cylinder and said second collector and a second intake pipe connected between the second cylinder and said first collector;

(d) a second X-shaped pipe member disposed at second ends of the first and second banks and formed by casting with a seventh intake pipe connected between the seventh cylinder and said second collector and an eighth intake pipe connected between the eighth cylinder and said first collector; and

(e) a lower manifold (6) disposed between the first and second collectors and between said first and second X-shaped pipes and formed by casting with a third lower bent branch pipe connected between the third cylinder and the third upper bent branch pipe into U-shape, a fifth lower bent branch pipe connected between the fifth cylinder and the fifth upper bent branch pipe into U-shape, a fourth lower bent branch pipe connected between the fourth cylinder and the fourth upper bent branch pipe into U-shape, and a sixth lower bent branch pipe connected between the sixth cylinder and the sixth upper bent pipe into U-shape.

5,010,855

CAMSHAFT DRIVING ARRANGEMENT FOR DOUBLE OVERHEAD CAMSHAFT ENGINE

Etsuo Ogami, Yokohama, and Yoshio Iwasa, Nagareyama, both of Japan, assignors to Nissan Motor Company, Ltd. of No. 2, Yokohama, Japan

Filed Dec. 14, 1989, Ser. No. 450,509
Claims priority, application Japan, Dec. 26, 1988, 63-326033
Int. Cl.[5] F01L 1/02; F02F 7/00
U.S. Cl. 123—[illegible].31 **4 Claims**



1. In a DOHC engine having a cylinder block including at least one cylinder bank, a cylinder head mounted on each of the at least one cylinder bank, a pair of camshafts rotatably mounted on the cylinder head, and a crankshaft, further comprising:

a pair of cam sprockets respectively mounted to the pair of camshafts on one end thereof;

a sprocket chamber formed on the cylinder head at one end thereof, said sprocket chamber being formed with a lateral opening, said sprocket chamber receiving said pair of cam sprockets;

an idler gear rotatably mounted to the cylinder head;

a timing chain drivingly interconnecting the crankshaft and said idler gear;

a camshaft driving chain drivingly interconnecting said idler gear and said pair of cam sprockets;

a first tensioner mounted to the cylinder block, said first tensioner adjusting the tension of said timing chain;

a second tensioner mounted to a wall defining in part said sprocket chamber, said second tensioner adjusting the tension of said camshaft driving chain; and

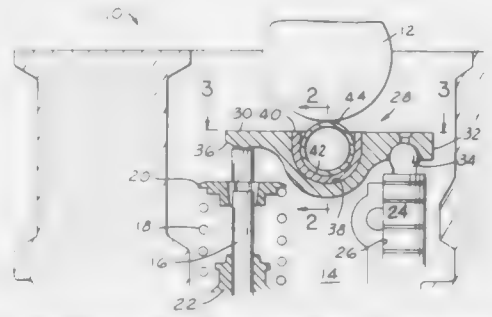
means defining an access to said first tensioner, said access defining means including a front cover detachably mounted to the cylinder block to conceal said timing chain and formed with an opening positioned opposite to said first tensioner.

5,010,856

ENGINE FINGER FOLLOWER TYPE ROCKER ARM ASSEMBLY

William K. Ojala, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 15, 1990, Ser. No. 597,460
Int. Cl.[5] F01M 9/10; F01L 1/18
U.S. Cl. 123—90.36 **9 Claims**



1. A reduced friction finger follower type rocker arm assembly for an overhead camshaft type engine including a one-piece pivotally movable finger follower type lever having a fulcrum at one end and engaging an engine valve stem at its opposite end for reciprocation thereof, the lever having a recess therein opening upwardly and containing an axleless roller bearing therein against lateral movement and an engine rotated cam located above the roller and contiguous thereto for rotating the roller in the lever, the recess including a smoothly formed one-piece bearing insert in the lever upon which the roller slides during rotation by the cam for reducing friction between the parts, the recess retaining engine lubricant admitted thereto during operation of the engine for further reducing friction between the parts and for a lubricated restart after engine shutdown

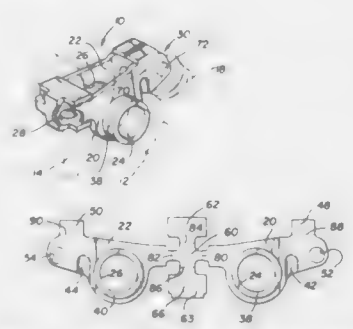
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5,010,857

ROCKER ARM

Heinrich J. Hempelmann, Farmington Hills, and Eugene P. Manier, Canton, both of Mich., assignors to NI Industries, Inc., Novi, Mich.

Filed Aug. 15, 1990, Ser. No. 567,829
Int. Cl.[5] F01L 1/18
U.S. Cl. 123—90.39 **14 Claims**



1. A rocker arm formed from a one-piece sheet metal blank,

a pair of sidewalls opposing one another, said pair of side walls each defining an aperture, said apertures being positioned coaxial with one another with an integral circumferential flange extending from each sidewall about said aperture therein to define a shaft journal;

an end wall integral with and interconnecting said side walls at one end thereof;

at least one integral finger extending transversely from each said sidewall towards the other said side wall, the ends of said fingers being welded together to rigidify said rocker arm;

force receiving means adjacent one end of said rocker arm adapted to engage a push rod or the like; and

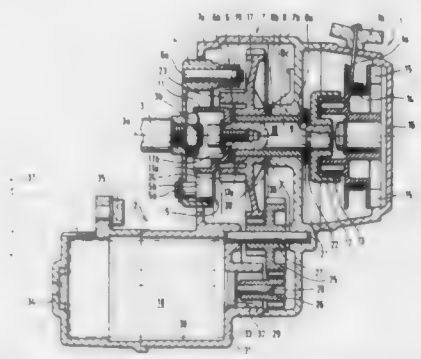
force exerting means at the opposite end of said rocker arm than said force exerting means and adapted for contacting a valve stem or the like to activate same.

5,010,858

STARTER ARRANGEMENT FOR AN INTERNAL COMBUSTION ENGINE

Roland Schierling, Affalterbach, and Hans-Peter Dohse, Kernen, both of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Sep. 14, 1989, Ser. No. 407,339
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1988, 3[illegible]1710
Int. Cl.[5] F02N 3/02, 11/00
U.S. Cl. 123—179 P **9 Claims**



1. A starter arrangement for an internal combustion engine, especially a two-stroke engine of a portable handheld tool such as a motor-driven chain saw or the like, the engine having a crankshaft and the starter arrangement comprising:

a housing;

a manual starter device mounted in said housing;

an electric starter motor; and,

an overrun clutch assembly interposed between the crankshaft and the manual starter device as well as between said crankshaft and said electric starter motor, the overrun clutch assembly including:

a carrier fixedly mounted on the crankshaft so as to rotate therewith;

a first drive member rotatably mounted in said housing and operatively connected to said manual starter device so as to be rotatable therewith;

first latching means for connecting said first drive member to said carrier to rotate said carrier therewith so long as said first drive member rotates faster than said carrier and to disconnect said first drive member from said carrier as soon as the speed of said carrier exceeds the speed of said first drive member;

a second drive member rotatably mounted in said housing and operatively connected to said electric starter motor so as to be rotatable therewith;

second latching means for connecting said second drive member to said carrier to rotate said carrier therewith so long as said second drive member rotates faster than said carrier and to disconnect said second drive member from said carrier as soon as the speed of said carrier exceeds the speed of said second drive member;

said overrun clutch further including rotating connecting means rotatably journalled in said housing for fixedly connecting said manual starter device to said first drive member so as to cause said first drive member to rotate with said manual starter device independently of said second drive member;

said second drive member being rotatably mounted in said housing so as to be rotatable relative to said rotating connecting means; and,

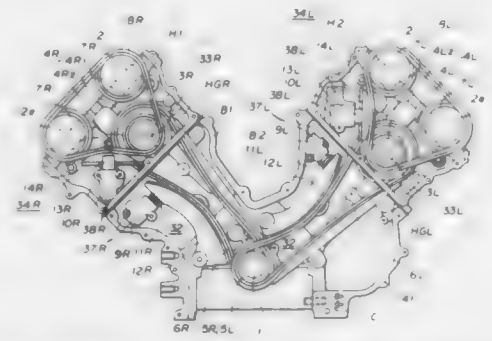
said overrun clutch assembly further including torque transmitting means for interconnecting said second drive member and said starter motor so as to permit said starter motor to rotate said second drive member independently of said first drive member.

5,010,859

CHAIN COVER FOR V-TYPE ENGINE

Etsuo Ogami, Yokohama, and Yoshio Iwasa, Nagareyama, both of Japan, assignors to Nissan Motor Company, Ltd. of No. 2, Yokohama, Japan

Filed Mar. 14, 1990, Ser. No. 498,245
Claims priority, application Japan, Mar. 15, 1989, 1-[illegible]886
Int. Cl.[5] F02F *7/00*
U.S. Cl. 123—195 C **3 Claims**



1. In a V-type engine having a cylinder block bifurcated to form two cylinder banks, a cylinder head mounted on each of the cylinder banks, and a crankshaft, comprising:
- a first camshaft rotatably mounted to one of the cylinder heads;
- a second camshaft rotatably mounted to the other of the cylinder heads;
- a first chain drivingly interconnecting the crankshaft and said first camshaft;
- a second chain drivingly interconnecting the crankshaft and said second camshaft;
- first and second tensioners so constructed and arranged as to provide the tensions to said first and second chains, respectively;
- a first cover so constructed and arranged as to conceal said first and second chains, said first cover being formed with two openings positioned adjacent said first and second tensioners; and
- a pair of second covers so constructed and arranged as to conceal said two openings in a seal-tight manner.

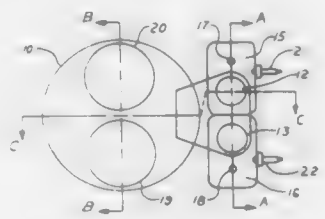
5,010,860

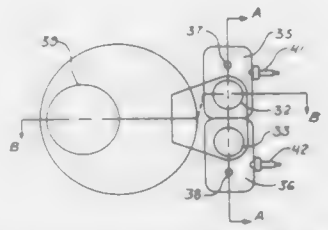
INTERNAL COMBUSTION ENGINE WITH TWIN COMBUSTION CHAMBERS

Thomas Broussard, P.O. Box 841081, Houston, Tex. 77284-1081

Filed Apr. 30, 1990, Ser. No. 516,971
Int. Cl.[5] F02B *19/00*
U.S. Cl. 123—256 **1 Claim**

1. A twin combustion chamber type internal-combustion engine comprising;
- a first combustion space and a second combustion space each of a size to provide a desired compression ratio and shaped to minimize heat loss,
- an upper cylinder space of sufficient size to minimize an amount of air that remains in said upper cylinder space when a piston is at top center,
- a main passage formed in said upper cylinder space and of sufficient size to permit flow alternately therethrough between said combustion spaces and said cylinder space,
- a first combustion valve in a first passage in communication with said main passage and a second combustion valve in a second passage in communication with said main passage, said valves open and close said first and second passages to said first and second combustion spaces respectively,
- at least one exhaust valve controlling passage from said upper cylinder space,
- a first fuel injector and a second fuel injector located in said first and second combustion spaces respectively and positioned to sufficiently mix fuel and the air to form respective charges,
- a first ignition plug and a second ignition plug located in said first and second combustion spaces respectively and positioned to provide proper ignition, wherein
- said first combustion valve opens to release a burnt charge from said first combustion space into said cylinder space at the beginning of a first expansion stroke to drive said piston and remains open to receive fresh air during a first compression stroke and then closing at the end of the first compression stroke,
- said second combustion valve opens to release a burnt charge from said second combustion space at the beginning of a second expansion stroke to drive said piston and remains open to receive fresh air during a second compression stroke and then closing at the end of the second compression stroke,
- the metered amount of charge in said first and second combustion spaces being ignited respectively by said first and second ignition plugs or by auto-ignition and completely burnt during the period when said first and second combustion valves are closed.





5,010,861

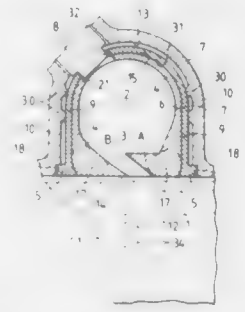
HEAT-INSULATING STRUCTURE OF SWIRL CHAMBER AND PRODUCTION METHOD THEREOF

Hiroshi Matsuoka, Yamato, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan

Filed Jul. 27, 1990, Ser. No. 558,544
Claims priority, application Japan, Aug. 10, 1989, 1-205644
Int. Cl.[5] F02B *19/08, 19/16*
U.S. Cl. 123—271 **14 Claims**

1. In an internal combustion engine including a cylinder block having formed therein cylinders, a cylinder head fixed to said cylinder block and equipped with hole portions formed in such a manner as to correspond to said cylinders for forming swirl chambers, and main combustion chambers formed inside said cylinders of said cylinder block, a heat-insulating structure of a swirl chamber comprising:
- swirl chamber blocks having formed therein said swirl chambers and jet ports establishing communication between said swirl chambers and said main combustion chambers, and made of a ceramic material; and
- cast metal blocks formed by casting a metal material into gaps in molded articles made of a fiber-reinforced material and disposed outside said swirl chamber blocks, said cast metal blocks being fixed to said hole portions formed in said cylinder head.

11. A production method of a heat-insulating structure of a swirl chamber comprising the steps of:
- forming swirl chamber blocks equipped with swirl chambers, jet ports for establishing communication between said swirl chambers and said main combustion chambers and fitting holes for receiving fuel injection nozzles therethrough, from a ceramic material;
- disposing a molded article made of a fiber-reinforced material and having gaps outside each of said swirl chamber blocks;
- packing casting sand into the portions for forming said swirl chambers, said jet ports and said fitting holes formed in said swirl chamber blocks;
- disposing said swirl chamber blocks having packed thereinto said casting sand and encompassed by said molded articles into casting molds having gates;
- pouring molten metal via said gates so as to pack said molten metal material into said gaps of said molded articles;
- forming cast metal blocks;
- cooling and solidifying said molten metal material packed into said gaps of said molded articles so as to form said molded articles in said cast metal blocks; and
- fitting and fixing said cast metal blocks into said hole portions formed in said cylinder head.

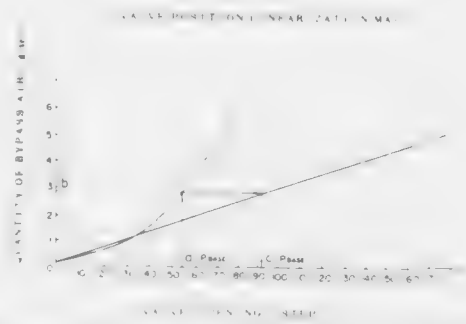


5,010,862

METHOD FOR CONTROLLING THE QUANTITY OF INTAKE AIR SUPPLIED TO AN INTERNAL COMBUSTION ENGINE

Toru Hashimoto; Hitoshi Kamura, both of Kyoto; Katutoshi Yoshida, Anjo; Takeshi Jimbo, and Tokushige Inuzuka, both of Okazaki, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 21, 1990, Ser. No. [illegible]2,527
Claims priority, application Japan, Feb. 28, 1989, 1-48270
Int. Cl.[5] F02D *41/16*
U.S. Cl. 123—339 **8 Claims**



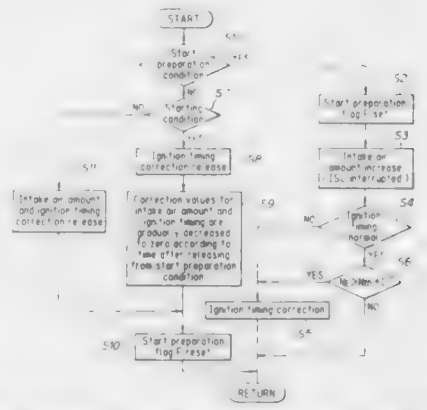
1. A method for controlling an internal combustion engine provided with a flow control valve which has a non-linear characteristic between the quantity of intake air flowing therethrough and the position of its valve member when the flow control valve is in its open position, and for controlling the quantity of intake air supplied to the engine by actuating the flow control valve by an actuator, said method comprising:
- a first step of converting the position of the valve member of said flow control valve under a predetermined operating condition of said engine into a quantity of intake air determined according to said non-linear characteristic of said flow control valve;
- a second step of adding, to said quantity of intake air computed as a result of the conversion according to said non-linear characteristic, a pre-set intake air quantity change previously determined to deal with a change in the operating condition of the engine thereby computing an objective quantity of intake air;
- a third step of converting said objective quantity of intake air into an objective position of the valve member of said flow control valve according to said non-linear characteristic; and
- a fourth step of actuating said flow control valve by said actuator on the basis of a deviation of the real position of the valve member of said flow control valve from the objective position of the valve member of said flow control valve.

5,010,863

APPARATUS FOR PREVENTING ENGINE FROM STALLING

Tetsuro Ishida; Yoshiaki Hano; Katsuo Akishino, all of Kyoto, and Toyoaki Fukui, Uji, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 16, 1990, Ser. No. 568,466
Claims priority, application Japan, Aug. 31, 1989, 1-223316
Int. Cl.[5] F02D *41/04*
U.S. Cl. 123—339 **20 Claims**



1. An apparatus for preventing an engine from stalling comprising start preparation detecting means for detecting a start preparation condition of a vehicle, intake air amount increasing means for increasing the amount of intake air when the vehicle is in a start preparation condition compared to an idling condition, rotation speed increase prevention means for suppressing an increase in rotation speed of the engine due to said increase in the amount of intake air by said intake air amount increasing means, start detecting means for detecting a starting condition of the vehicle, and control means for interrupting operations of said intake air amount increasing means and said rotation speed increase prevention means according to a detection signal of the start preparation condition by said start preparation detecting means.

5,010,864

IGNITION TIMING CONTROL APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

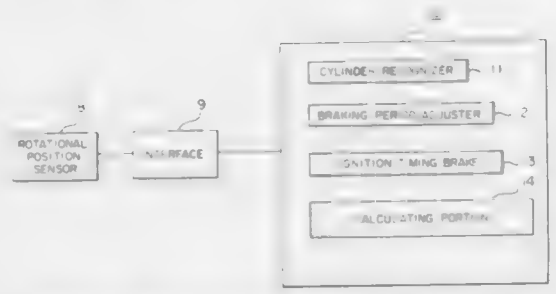
Atsuko Matsuoka, and Wataru Fukui, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1989, Ser. No. 421,022

Claims priority, application Japan, Oct. 13, 1988, 63-255834; Oct. 13, 1988, 63-255835

Int. Cl.[5] F02P *5/15*

U.S. Cl. 123—414 **3 Claims**



1. An ignition timing control apparatus for a multi-cylinder internal combustion engine comprising:

a position sensor for generating a series of position signals, each signal corresponding to one of the cylinders of the engine and indicating a first position and a second position with respect to top dead center of a piston of the corresponding cylinder, the number of degrees of crankshaft rotation of the engine between the first and second positions being different for a prescribed reference cylinder of the engine from that for the other cylinders of the engine,

cylinder recognizing means for recognizing the reference cylinder based on the signals from the position sensor;

ignition timing calculating means for calculating a target ignition timing;

ignition timing braking means for performing ignition timing braking on a cylinder if (1) the target ignition timing falls during a predetermined braking period A for the cylinder, the braking period A being measured from the time when the piston of the cylinder is at its first position, and (2) ignition has yet to take place by the time the piston reaches its second position; and

braking period adjusting means for changing the length of the braking period A from a prescribed first length to a prescribed second length for either of the reference cylinder and the other cylinders after cylinder recognition has been completed by the cylinder recognizing means.

5,010,865

IGNITION TIMING CONTROLLER FOR AN INTERNAL COMBUSTION ENGINE

Wataru Fukui, and Toshio Iwata, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1990, Ser. No. 485,004

Claims priority, application Japan, Feb. 27, 1989, 1-43322; Feb. 27, 1989, 1-43323

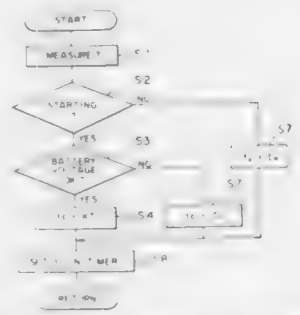
Int. Cl.[5] F02P *5/15*

U.S. Cl. 123—424 **13 Claims**

1. An ignition timing controller for a multi-cylinder internal combustion engine comprising:

a rotational signal generator which generates a signal in synchrony with the engine rotations which indicates a prescribed first piston position with respect to top dead center of the piston of each cylinder of the engine; and

an ignition timing calculator including means for determining whether the engine is operating in a starting mode or a normal operating mode, generating a signal to initiate current conduction through an ignition coil at a certain piston position when the engine is operating in the normal operating mode, calculating a delay period when the engine is operating in the starting mode, and generating a signal to initiate current conduction through the ignition coil only after the delay period has elapsed, as measured from the first piston position, when the engine is operating



in the starting mode to thereby reduce the duration of current flow through the ignition coil and attendantly prevent thermal damage

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5,010,866

NONLINEAR FEEDBACK CONTROL METHOD AND APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

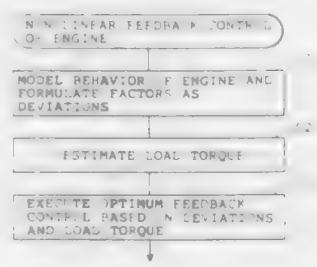
Akira Ohata, Mishima, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Apr. 12, 1989, Ser. No. 337,178

Claims priority, application Japan, Apr. 12, 1988, 63-89739

Int. Cl.[5] F02D *41/14*

U.S. Cl. 123—436 **12 Claims**



1. A nonlinear feedback control method for an internal combustion engine comprising the steps of:

preparing a model of the behavior of the engine by formulating a motion equation representing the fluctuating motion of the engine, including a load torque portion that is an unmeasurable state of the engine, and formulating the mass conservation equation representing fluctuations in an intake air pressure of the engine for a predetermined time, including a mass flow portion that is an unmeasurable state of the engine,

detecting a measurable state of the engine;

determining deviations that are unmeasurable factors between the actual engine operation and the modeled behavior of the engine according to the measurable states of the engine;

incorporating the deviations into the motion equation and the mass conservation equation;

estimating the load torque by developing the simultaneous equations of the motion equation and the mass conservation equation for an augmented system; and

executing optimum feedback control based on the measurable operating states of the engine, the formulated deviations, and the estimated load torque.

5,010,867

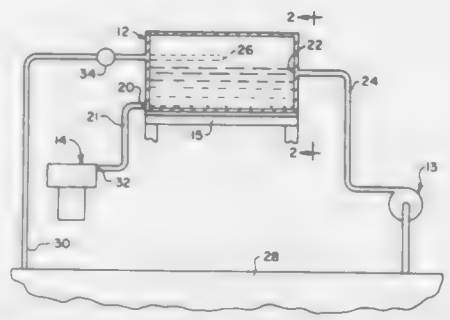
FUEL ECONOMIZER

Raphael B. Johstoneaux, Miami, Fla., assignor to S.O.F.O. Engineering & Distributing Co., Hialeah, Fla.

Continuation of Ser. No. 156,852, Jun. 5, 1980, abandoned, which is a continuation of Ser. No. 817,172, Jul. 20, 1977, abandoned, which is a continuation-in-part of Ser. No. 657,572, Feb. 12, 1976, abandoned. This application Dec. 19, 1986, Ser. No. 943,722

Int. Cl.[5] F02M *37/00*

U.S. Cl. 123—511 **1 Claim**



1. A system for supplying liquid fuel under reduced pressure to the carburetor of an internal combustion engine said system including fuel reservoir and a fuel pump for drawing fuel from the reservoir and supplying it to the carburetor, and means for reducing the pressure at which fuel is supplied to the carburetor, said pressure reducing means comprising:

a closed container having a hollow, unencumbered interior, said container being connected between the fuel pump and the carburetor for holding a quantity of fuel sufficient for acceleration demands of the carburetor;

a first unrestricted line connected between said closed container at a location above the bottom thereof and the outlet of said fuel pump for carrying fuel to said closed container from said fuel pump;

a second unrestricted line connected between said closed container and said carburetor for supplying the latter with fuel from said closed container; and

a third constantly-open relief line connected between the fuel reservoir and said closed container at a point on said closed container above the level where said first line connects thereto and adjacent the top thereof so that a predetermined quantity of fuel will be held in the said closed container and available to meet acceleration demands in response to the suction of the carburetor, said constantly-open relief line consisting of a hollow elongated conduit containing means for adjusting the openness thereof for bleeding off fuel pump pressure thereby setting a reduced pressure on the fuel in said closed container relative to fuel pump pressure thereby developing a reduced pressure at which fuel is supplied to the carburetor whereby the said closed container will hold a volume of fuel with a sufficient air or vapor cushion thereabove at a substantially uniform pressure less than fuel pump pressure while the pump is in operation.

5,010,8[illegible]

GAS-PHASE PROPANE FUEL DELIVERY SYSTEM

Jerry Clements, 24555 Pases De Toronto, Yorba Linda, Calif. 92[illegible]6

Filed Apr. 3, 1990, Ser. No. 504,558

Int. Cl.[5] F02B *43/00*

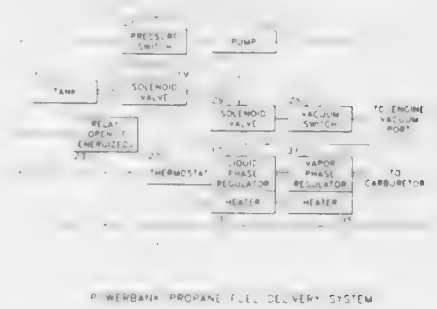
U.S. Cl. 123—527 **7 Claims**

1. A gas-phase fuel delivery system for delivering a vapor phase fuel independent of exterior temperatures, the system comprising:

a storage tank for storing a volume of fuel; a regulator in fluid communication with said tank for receiving fuel from said tank and for outputting the fuel in a vapor phase;

a pressure sensor in fluid communication with said tank for monitoring pressure within said tank, said pressure sensor being operative to generate a pump enable signal when the pressure within said tank is less than a predetermined threshold;

a pump in fluid communication with said tank and said



POWERMAX PROPANE FUEL DELIVERY SYSTEM

regulator for supplementing fluid pressure of the fuel from said tank to said regulator in response to the pump enable signal from the pressure sensor, the pump being operative to supplement fuel fluid pressure to a level sufficient to cause the output of said regulator to remain in a vapor phase.

5,010,869

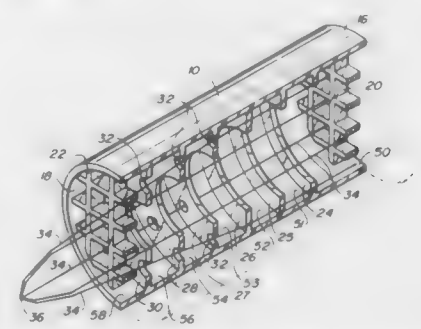
AIR IONIZATION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Jimmy L. Lee, Rohnert Park, Calif., assignor to Zenion Industries, Inc., Rohnert Park, Calif.

Filed Aug. 11, 1989, Ser. No. 392,752

Int. Cl.[5] F02M *33/00*

U.S. Cl. 123—539 **32 Claims**



1. A combustion air ionization apparatus for internal combustion engines comprising:

a container having an air inlet and an air outlet;

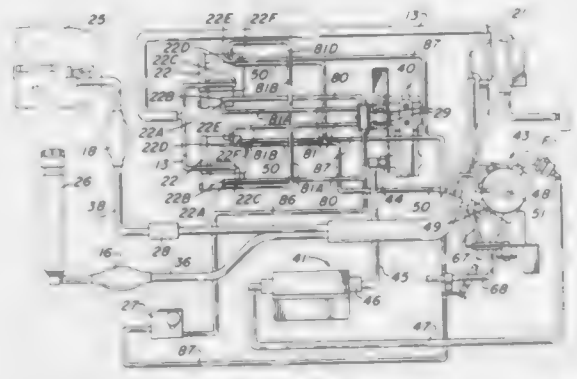
means for communicating the container air outlet with the combustion air inlet of an internal combustion engine;

an electrical charge source disposed in the container;

a voltage source connected in a circuit path to the electrical charge source, said voltage source providing a series of voltage pulses of a single polarity ranging from a non-zero base voltage to a predetermined peak voltage; and

means for creating pockets of static air in the container said means for creating pockets of static air comprising a baffle disposed in the container.

5,010,870
PORTABLE ENGINE-PUMP ASSEMBLY
Michael A. Laskaris, Collegeville; Kalman Broitman, Dresher; Richard E. Teske, Norristown; David L. Miller, Conshohocken, and Michael Sulmone, Trooper, all of Pa., assignors to Hale Fire Pump Company, Conshohocken, Pa.
Filed Apr. 10, 1990, Ser. No. 507,670
Int. Cl.[5] F02B 1/00
U.S. Cl. 123—576 14 Claims



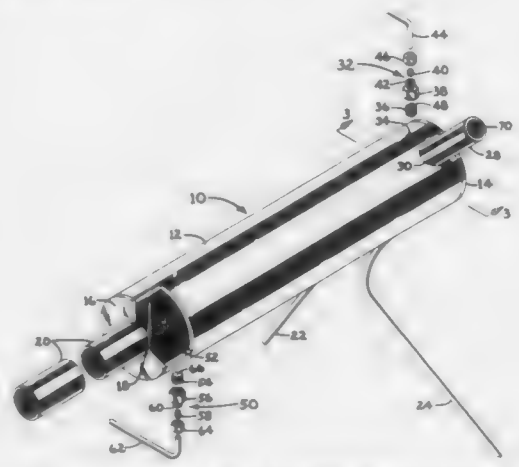
1. In an internal combustion engine adapted to operate on a running fuel of low volatility such as a kerosene based fuel or a diesel fuel, the combination comprising
a fuel inlet means for delivering fuel to the engine combustion chamber,
means for supplying said running fuel to said fuel inlet means, and
means for supplying a starting fuel having a relatively high volatility to said fuel inlet means for use in starting the engine,
said means for supplying said running fuel comprising a carburetor means including
a carburetor bowl,
an idle fuel supply passage means having an idle orifice restriction therein,
a high speed fuel supply passage means having a high speed orifice restriction therein, and
a fuel enrichment supply passage means constructed and arranged to bypass said high speed orifice and said idle orifice to compensate for the increased viscosity of said running fuel at extremely low temperatures by providing a substantial supply of fuel at said low temperatures

5,010,871
PROPHYLACTIC SAFETY DEVICE
Louis J. Christina, and Anna M. Christina, both of 42-30 189th St., Flushing, N.Y. 11358-2815
Filed Jun. 16, 1989, Ser. No. 367,354
Int. Cl.[5] A61F 6/04
U.S. Cl. 128—844 6 Claims



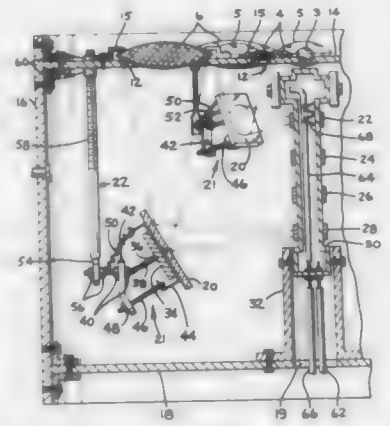
1. A prophylactic condom comprising an open-ended sheath, said sheath comprising a rim, integral with said sheath and located at the open end of said sheath, and an attached sealing device, said attached sealing device comprising:
(a) a foot attached to said sheath at said rim;
(b) an elastic ring portion; and
(c) a stem separating said foot and said elastic ring portion.

5,010,872
STEAM-PRODUCING ORCHARD HEATER
Edward J. Kish, 9305 Tieton Dr., Yakima, Wash. 98908, and Joseph E. Smith, 31379 Pittsburg Rd., St. Helens, Oreg. 97051
Filed Aug. 22, 1990, Ser. No. 570,869
Int. Cl.[5] A01G 13/06
U.S. Cl. 126—59.5 8 Claims



1. A steam-producing pulse-jet-combustion orchard heater comprising:
a cylindrical metal combustion chamber having a first end in which combustion occurs, and having a second end,
an exhaust tube connected to the combustion chamber for conveying the products of combustion to the surrounding atmosphere,
a means to supply liquefied petroleum gas to the combustion chamber,
a means to supply air to the combustion chamber,
a means to inject water directly into the combustion chamber near the second end thereof, and
a means to support the heater above the ground.

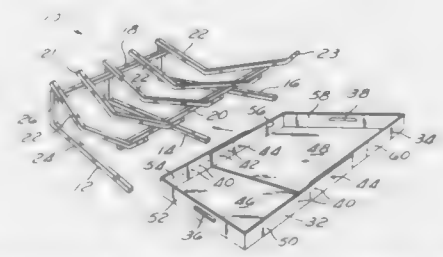
5,010,873
SOLAR ENERGY INTENSIFIER AND COLLECTOR SYSTEM
Jack W. Hoyle, 2609 Taylorsville Rd., Louisville, Ky. 40205
Filed Aug. 29, 1990, Ser. No. 574,057
Int. Cl.[5] F24J 2/08
U.S. Cl. 126—440 10 Claims



1. A solar energy intensifier and collector system comprising
a plurality of solar radiation intensifying lenses disposed in a single plane in at least one circular array, each said circular array having a common center,
mounting means for supporting said lenses,

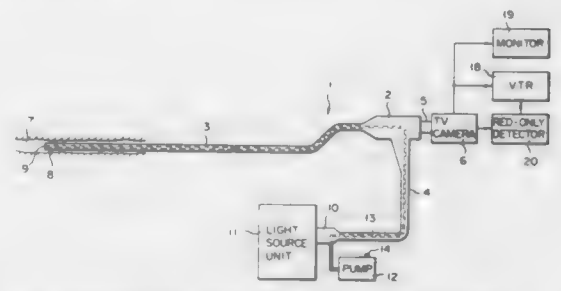
a plurality of solar radiation reflector assemblies equal in number to said plurality of lenses and spaced from said mounting means, each of said assemblies being adapted to reflect solar energy beamed thereon from a different one of said lenses inwardly toward an axis of said circular array, and
solar radiation absorbing means disposed on said axis in a line of sight of each of said reflector assemblies, each of said assemblies being disposed so as to reflect solar radiation passing through its corresponding lens onto said absorbing means at the focal point of said corresponding lens.

5,010,874
FIREPLACE GRATE WITH ADJUSTABLE ASH PAN
Joel D. Toth, 1924 Mamosa Pl., Fullerton, Calif. 92634
Continuation-in-part of Ser. No. 414,190, Sep. 28, 1989. This application Mar. 2, 1990, Ser. No. 487,458
Int. Cl.[5] F24B 1/193
U.S. Cl. 126—543 2 Claims



1. An ash pan for collecting ashes in a fireplace, said ash pan comprising:
(a) a first section having a substantially planar bottom and having first, second and third substantially planar walls attached thereto;
(b) a recessed handle formed in the first wall of said first section;
(c) a linear array of apertures formed in said second and third walls of said first section, said apertures sized to receive a screw;
(d) a second section having a substantially planar bottom and having first, second and third substantially planar walls attached thereto, said second section sized to be received within said first section;
(e) a recessed handle formed in the first wall of said second section;
(f) at least one aperture formed in said second and third walls of said second section such that two screws may be used to adjustably attach said first and second sections together;
(g) wherein the shape of said first and second sections, when attached together, defines a trapezoid;
(h) wherein said first, second and third walls of said first section and said first, second and third walls of said second section are inclined outward at an angle of approximately 5 degrees to the vertical to facilitate stacking;
(i) wherein the minimum width of the ash pan is approximately 26 inches and the maximum width is approximately 33 inches; and
(j) wherein the shape and adjustability of the ash pan make it suitable for use in a wide variety of fireplaces.

5,010,875
INTRAVASCULAR ENDOSCOPE APPARATUS
Shinichi Kato, Ome, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 356,996, May 25, 1989, Pat. No. 4,934,339. This application May 22, 1990, Ser. No. 526,841
Claims priority, application Japan, Oct. 7, 1988, 63-252958
The portion of the term of this patent subsequent to Jun. 19, 2007, has been disclaimed.
Int. Cl.[5] A61B 1/04
U.S. Cl. 128—6 13 Claims

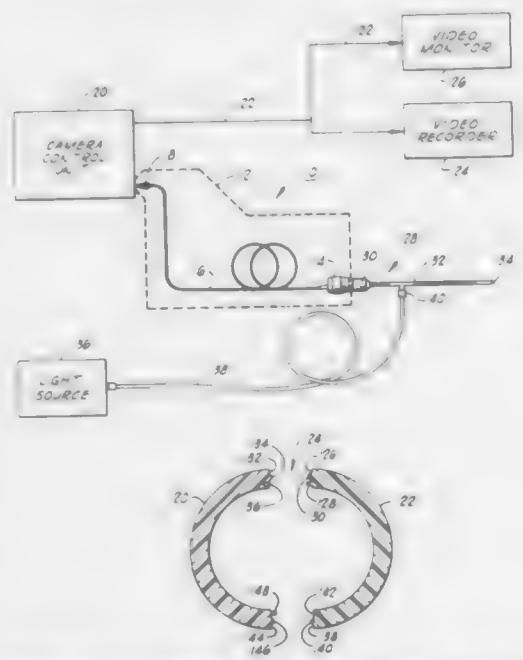


1. An intravascular endoscope apparatus, comprising:
an endoscope main body, having an insert portion to be inserted into a blood vessel, for observing the interior of the blood vessel;
fluid supplying means, coupled to said endoscope main body, for spraying a fluid through said insert portion;
image recording means, coupled to said endoscope main body, for recording an image observed by said endoscope main body;
color tone detecting means for detecting a color tone of the image observed by said endoscope main body; and
control means for controlling an operation state of said image recording means in accordance with a detection result of said color tone detecting means.

5,010,876
ARTHROSCOPIC SURGICAL PRACTICE
Gary D. Henley; Larry B. Milner, both of Yukon, and Clifford A. Dowdy, Oklahoma City, all of Okla., assignors to Smith & Nephew Dyonics, Inc., Andover, Mass.
Filed Jun. 2, 1986, Ser. No. 869,595
Int. Cl.[5] A61B 1/04
U.S. Cl. 128—6 9 Claims

1. In combination with video monitor, camera control unit, light source and scope instrument for imaging surgical activity, a disposable camera device comprising:
an imaging device including control circuitry;
a sterilized connector cable of pre-selected length connected to said control circuitry and extending to an external plug connector for connection to said camera control unit;
a sterilized camera housing means for containing said imaging device and control circuitry in sealed, fluid-tight disposition, said camera housing means consisting of a generally cylindrical housing bisected to define a first half-housing having sidewall, base portion and sleeve portion, and a second half-housing having sidewall, base portion and sleeve portion for mating engagement as said first and second half-housings are juxtaposed; and

sterile container means for enclosing and maintaining said camera housing means and connector cable in sterile



storage until opening of the container means for exposure during usage.

5,010,877

SURGICAL COLLAR AND LINER THEREFOR

Sue Druskoczi, 64 Second St., Fairfield, Conn. 06430

Filed Nov. 24, 1989, Ser. No. 440,716
Int. Cl.[5] A61F *5/01, 5/00*
U.S. Cl. 128—87 B **7 Claims**



7. A liner for use with a surgical collar comprising a flat blank of soft pliable absorbent washable material,

said blank having opposed end portions,

said opposed end portions being outwardly and reversely folded to form an end pocket thereat,

said end pockets being adapted to receive the opposed ends of a surgical collar,

said blank having opposed longitudinally extending marginal portions adapted to be reversely folded along the longitudinal edges therof

said longitudinally extending marginal portions extending beyond the longitudinal edges of a surgical collar, and

said longitudinally extending marginal portions being foldable outwardly and reversably about the longitudinal circumferential edges of the collar,

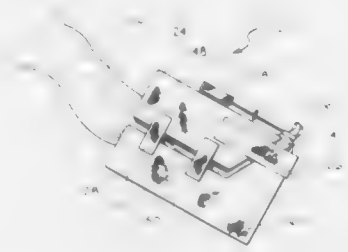
at least one of said end pockets having a slit formed therein adapted for providing a pass through for the collar securing means.

5,010,878

APPARATUS FOR MOBILIZING A PATIENT'S TOES

Joel L. Kline, 6854 Maple Leaf Dr., Carlsbad, Calif. 92009, and Mindy S. Armstrong, 3910 Lamont #6, San Diego, Calif. 92109

Filed Aug. 29, 1989, Ser. No. 3[illegible],846
Int. Cl.[5] A61H *1/02*
U.S. Cl. 128—25 R **12 Claims**



1. An apparatus for supporting a patient's foot and adjustably positioning a continuous passive motion device for mobilizing a patient's toes, comprising:

a soft resilient foam base for supporting a patient's lower leg and foot, said base having a concave channel extending substantially along a longitudinal axis of said base for supporting the posterior portion of said lower leg, said base further having a slanted abutment at one end of said channel having a depression for supporting the heel, said abutment forming a base angle with said longitudinal axis of about one hundred twenty degrees;

a soft resilient foam cover having a top surface and a concave channel extending substantially along a longitudinal axis of said cover, said cover being engageable with the anterior portion of said lower leg;

means for detachably fastening said cover to said base securely in position about said lower leg to hold said foot in a fixed position at said base angle of about one hundred twenty degrees;

means mounted on said top surface for removably adjustably attaching said continuous passive motion device securely in position for anterior topical placement of the device for mobilizing the patient's toes;

a continuous passive motion device having means for removably attaching said device to said cover; and

marking means for indicating longitudinal positioning of said continuous passive motion device on said top surface.

5,010,879

DEVICE FOR CORRECTING SPINAL DEFORMITIES

Hideshige Moriya; Hiroshi Kitahara; Shohei Minami, all of Chiba, Japan; Keijiro Isobe, Ontario, Canada; Yoshinori Nakata, Chiba, and Chiaki Tanaka, Tokyo, both of Japan, assignors to Tanaka Medical Instrument Manufacturing Co., Japan

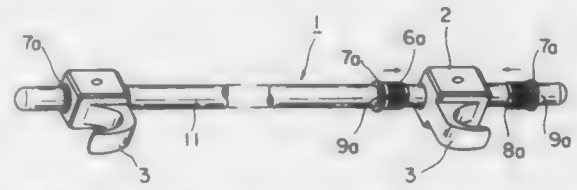
Filed Oct. 17, 1989, Ser. No. 422,562
Claims priority, application Japan, Mar. 31, 1989, 1-82019
Int. Cl.[5] A61F *5/00, 5/04*
U.S. Cl. 128—69 **9 Claims**

1. A device for correcting spinal deformities by attachment to a patient's spine for a predetermined period for correctively fixing the same, comprising:

an elongated rod, having a smooth peripheral surface;

a hook member, formed with a hook-like engagement member at one end and comprising a retaining portion through which said elongated rod is loosely inserted; and

a wedge-like fixing member in the form of a hollow cylinder formed with a lengthwise slit, said cylinder having a flange at a first end and a taper at a second end,



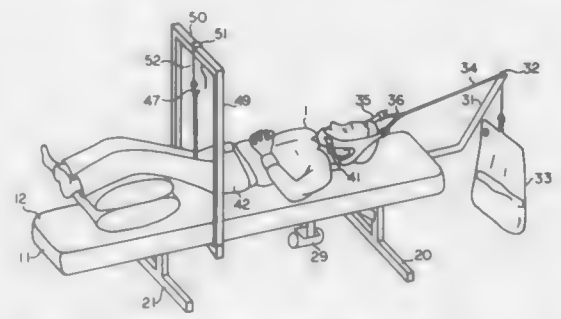
whereby said elongated rod is loosely inserted into said retaining portion of said hook member with a predetermined play and the fixing member mounted on the elongated rod is forcibly inserted at said tapered end thereof into an interstice formed between the loosely fitted rod and hook members to thereby firmly fix the hook member to the elongated rod.

5,010,880

HOME TRACTION DEVICE

Mark A. Lamb, 2535 S. Black Cat Rd., Meridian, Id. 83642

Filed May 11, 1989, Ser. No. 350,456
Int. Cl.[5] A61F *5/00*
U.S. Cl. 128—71 **6 Claims**



1. A home traction device which comprises:

base means;

planar table means being attached to and supported by said base means;

pelvic support means for elevating and longitudinally supporting the pelvic area of a user;

head harness means for longitudinally supporting the head and suboccipital regions of a user;

tensive means cooperating with said pelvic support means and said head harness means for applying tensive forces to the spine of a user; and

vibration means being disposed in said planar table means to induce vibrations normal to the plane of the table along the spine of the user.

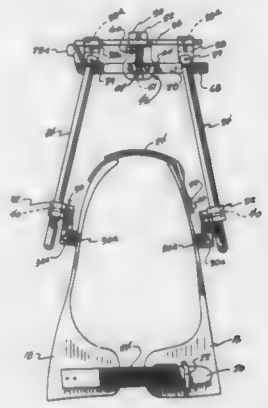
5,010,881

ORTHOPEDIC FIXATION DEVICE

Michael P. Boudreau; Randall W. Jacoby, both of Greenwood, and James L. Laughlin, Hodges, all of S.C., assignors to Kirschner Medical Corporation, Timonium, Md.

Continuation of Ser. No. 224,826, Jul. 27, 1988. This application Jan. 24, 1990, Ser. No. 457,082
Int. Cl.[5] A61F *5/01;* **A61H** *1/02*
U.S. Cl. 128—76 R **7 Claims**

1. An improved ambulatory halo device to be worn by a patient for rigid immbilization of the cervical spine comprising vest means for positionally fixed attachment to the upper torso of the patient, a halo member for closely surrounding the skull of a patient between the eyes and the top of the skull, said halo member having a plurality of radially adjustable skull pins disposed about the halo for engagement with the skull of the patient to fix the position of the skull relative to the halo member, and framework means for adjustably fixing the position of the halo member relative to the vest means to maintain traction on and rigidly immobilize the cervical spine of the patient; said framework means comprising first and second pairs of generally rigid support rods having upper and lower end portions, means attaching said lower end portion of each support rod to the vest, means for adjustable axial movement of each support rod and for adjustable pivotal movement in an anterior/posterior direction and a lateral direction whereby said upper end portions of said first pair of said support rods may be generally positioned in anterior/posterior spaced relation laterally on one side of the skull of a patient and said upper end portions of said second pair of said support rods may be generally positioned in anterior/posterior spaced relation laterally on the other side of the skull, means interconnecting said upper end portions of said support rods of each pair on each side of the skull comprising a first clamp means pivotally attached to said upper end portion of each support rod, a rigid connector rod



extending between said support rods of each respective pair and grippingly held within said first clamp means on said support rods whereby a connector rod extends in anterior/-posterior direction on each side of the skull of the patient, and an adjustable bracket means mounted for sliding movement along and for fixed location on each connector rod, each bracket means including means engaging an opposite side portion of the halo member for positional adjustment of the halo member in elevation, anterior/posterior translation and tilt, and in rotation about a medial axis of the body of a patient without loss of control of traction on the cervical spine of the patient, each of said adjustable bracket means comprising a housing having means for pivotal attachment of said halo member thereto for said anterior/posterior tilt adjustment of the halo relative to the patient, each housing including a central passageway therein, each of said adjustable bracket means further comprising a second clamp means attached to its respective connector rod and having a post slidably received within the housing passageway, and means for adjustably positioning the housing along the longitudinal axis of the post to positionally adjust the halo member in elevation relative to the patient.

5,010,882

IMPLANTABLE PENILE PROSTHESIS

Mark Polyak, Minnetonka, and Robert W. Pugh, Jr., Lakeville, both of Minn., assignors to American Medical Systems, Inc., Minnetonka, Minn.

Filed Nov. 13, 1989, Ser. No. 435,641
Int. Cl.[5] A61F *2/26*
U.S. Cl. 128—79 **30 Claims**

1. A penile prosthesis implantable within at least one corpus cavernosum of the penis, said prosthesis comprising:

an implantable broadly tubular enclosure;

a generally tubular pressurizable chamber section defined within said enclosure, said chamber section being transformable from a flaccid to an erect state, and which is capable of being squeezed or bent; and a deflation valve for returning said chamber section from the erect to flaccid state, said valve being in fluid communication with said tubular pressurizable chamber section and with a fluid



reservoir, said valve comprising closure means for normally keeping the valve in a closed mode, means for time-deferring the transfer of fluid within said valve thereby effecting a change in the internal pressure conditions within said valve, and a movable partition disposed within a distensible chamber within said valve capable of exerting sufficient force upon said closure means, as a consequence of said change in internal pressure conditions, to place said valve in an open mode.

5,010,883

SURGICAL DRESSING

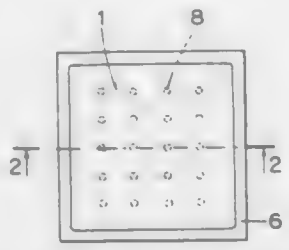
David A. Rawlings, Stansted Mountfitchet, and William D. Potter, Hertfordshire, both of Great Britain, assignors to Smith & Nephew Associated Companies plc, United Kingdom

Continuation of Ser. No. 143,624, Jan. 12, 1988, abandoned, which is a continuation of Ser. No. 574, Dec. 31, 1986, abandoned, which is a continuation of Ser. No. 682,606, Dec. 17, 1984, abandoned. This application May 8, 1989, Ser. No. 349,393

Claims priority, application United Kingdom, Dec. 24, 1983, 8334484

Int. Cl.[5] A61F *13/00;* **A61L** *15/00;* **B32B** *3/26*

U.S. Cl. 128—155 **16 Claims**



1. An adhesive dressing suitable for use on moist wounds which dressing comprises a pressure sensitive adhesive-coated wound contacting first layer which has holes therethrough capable of transmitting liquid water and a moisture vapour permeable continuous film attached to the non-wound contacting surface of the first layer thereby forming a reservoir into which water can pass and evaporate therefrom, said adhesive coated first layer being of a material which has a moisture vapour permeability in the absence of holes therethrough of less than 300 gm^{-2} and 24 hr^{-1} and said moisture vapour permeable continuous film having a moisture vapour permeability which is greater when in contact with liquid water than when not in contact with liquid water.

5,010,884

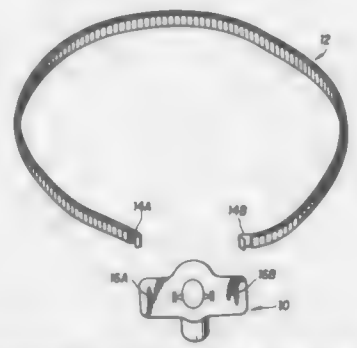
EXPANDABLE METAL TRACHEOSTOMY BAND

Arthur E. Van Derdoes, 3324 Beech, Port Arthur, Tex. 77642, and Jerry A. Van Derdoes, 3737 Locust, Port Arthur, Tex. 77642

Filed Sep. 10, 1990, Ser. No. 580,111

Int. Cl.[5] H61M *16/00*

U.S. Cl. 128—207.17 **1 Claim**



1. In combination a tracheostomy tube and an expandable metal tracheostomy tube holder comprising:

a non-corrosive metal expandable band and a tracheostomy tube, said band including resilient means tending to maintain said band in a non-expanded condition, said band having a metal hook affixed on each end and being of sufficient length to fit around the neck when expanded, said hooks attaching said band to said tracheostomy tube whereby said band is expandable to fit around the neck and said resilient means maintains said band and, therefore, said tracheostomy tube in place with a non-binding fit.

5,010,885

ULTRASONIC ECHOGRAPH WITH CONTROLLABLE PHASE COHERENCE

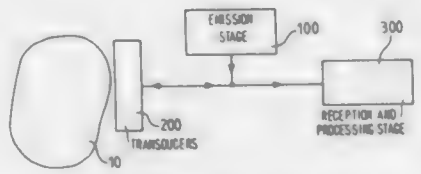
Mathias Fink, Meudon; Fabrice Cancre, Paris, and Patrick Pesqué, Perigny, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 19, 1989, Ser. No. 354,010

Claims priority, application France, May 20, 1988, 88 06789

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—660.07 **13 Claims**



1. Ultrasonic echograph comprising at least one set of n ultrasonic transducers, means for the emission of ultrasonic wave towards a medium to be explored containing obstacles to said waves, and means for the reception and for the processing of the ultrasonic signals returned by the obstacles encountered in said medium, said emission means comprising, upstream of the ultrasonic transducers allocated to the emission of the ultrasonic waves, a corresponding number of generators of signals for the excitation of the transducers allocated to the emission, said generators of excitation signals being connected to a single clock circuit provided to define the instants of triggering of each one of said generators in accordance with a random delay law superimposed on at least a focusing law imposed on the transducers allocated to the emission, the values of said random delays being distributed in such a manner that the variations of these values are included within an interval of time corresponding at least to the transit time of a

half-wavelength by the ultrasonic waves within the medium examined.

5,010,886

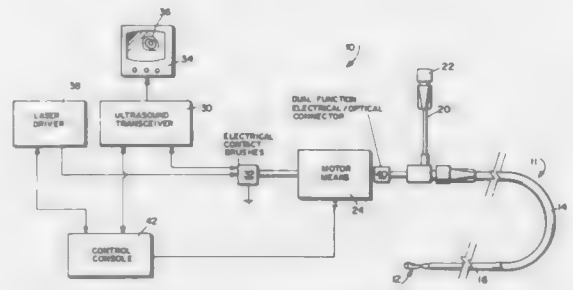
MEDICAL PROBE ASSEMBLY HAVING COMBINED ULTRASONIC IMAGING AND LASER ABLATION CAPABILITIES

James D. Passafaro, Santa Ana, and James M. Griffith, Newport Beach, both of Calif., assignors to InterTherapy, Inc., Santa Ana, Calif.

Filed Aug. 18, 1989, Ser. No. 395,840

Int. Cl.[5] A61B *8/12*

U.S. Cl. 128—660.03 **24 Claims**



1. An intravascular probe assembly comprising:

a distally located housing;

optical fiber means having an end terminating within said housing for directing a beam of light along a first path generally parallel to a longitudinal axis of said housing;

ultrasonic transducer means disposed within said housing for generating ultrasonic acoustic waves and for propagating said generated acoustic waves along a second path generally parallel to said housing longitudinal axis;

means disposed in said first and second paths for redirecting said light beam and said acoustic waves from said first and second paths to respective redirected paths generally radially of said housing, and

electrical connection means for electrically connecting said transducer means in series, said electrical connection means including;

(i) means for establishing electrical connection between an outer periphery of said ultrasonic transducer means and said housing;

(ii) two-lead cable means having a terminal end located within a proximal portion of said housing;

(iii) a longitudinally extending channel defined in said housing and extending from a proximal location adjacent said terminal end of said two-lead cable means to a distal location adjacent a distal face of said transducer means;

(iv) an electrically insulated wire disposed in said defined channel and having exposed proximal and distal ends at said proximal and distal locations of said defined channel, respectively;

(v) an electrically conductive filler material which fills said channel and retains said wire therewithin;

(vi) one of said leads of said two-lead cable means being electrically connected to said exposed proximal end of said wire at said proximal location of said channel; wherein

(vii) said exposed distal end of said wire at said distal location of said channel is electrically connected to a distal face of said transducer means; and wherein

(viii) another lead of said two-lead cable means is electrically connected to a proximal region of said housing, whereby said transducer means is series connected.

5,010,887

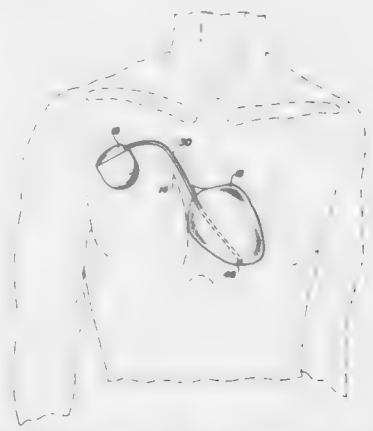
NOISE DISCRIMINATION IN IMPLANTABLE PACEMAKERS

Hans T. Thornander, Paris, France, assignor to Siemens-Pacesetter, Inc., Sylmar, Calif.

Filed Nov. 17, 1989, Ser. No. 438,818

Int. Cl.[5] A61B *5/04*

U.S. Cl. 128—696 **21 Claims**



1. A noise discrimination circuit used in an implantable medical device, said implantable medical device including sensing means for sensing electrical signals originating within heart tissue with which said medical device is in electrical contact, said sensing means comprising a single wire lead in contact with said heart tissue, said noise discrimination circuit comprising:

first and second threshold detectors coupled to the sensing means, the first threshold detector generating a first signal when the electrical signal sensed exceeds a first threshold value, the second threshold detector generating a second signal when the electrical signal sensed falls below a second threshold value;

timer means for generating a window signal having a prescribed time period, the window signal being triggered whenever the electrical signal sensed exceeds the first threshold value;

latch means for generating a latch signal upon the occurrence of the first signal and for terminating the latch signal upon the occurrence of the second signal; and

means for designating the electrical signal sensed as being valid during an interval defined by the absence of the window signal and the presence of the latch signal.

5,010,888

METHOD AND APPARATUS FOR DETECTION OF POSTERIOR ISCHEMIA

Hossein Jadvar, Ann Arbor, Mich., and Robert C. Arzbaecher, Chicago, Ill., assignors to Arzco Medical Electronics, Inc., Vernon Hills, Ill.

Continuation-in-part of Ser. No. 173,367, Mar. 25, 1988. This application Nov. 4, 1988, Ser. No. 267,459

Int. Cl.[5] A61B *5/04*

U.S. Cl. 128—696 **42 Claims**

1. A method of automatically detecting a selected posterior heart condition in a person comprising:

positioning a sensing electrode adjacent a posterior surface of the person's heart;

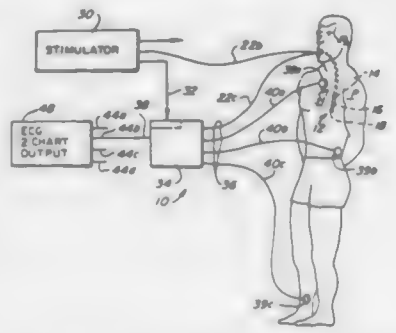
electrically stressing the heart;

detecting electrical signals from the electrode that have been generated in response to stressing the heart irrespective of the presence of stressing induced artifacts;

filtering the detected signals;

automatically locating a local maximum of the filtered signals;

automatically measuring selected regions of the filtered signals adjacent the local maximum; and



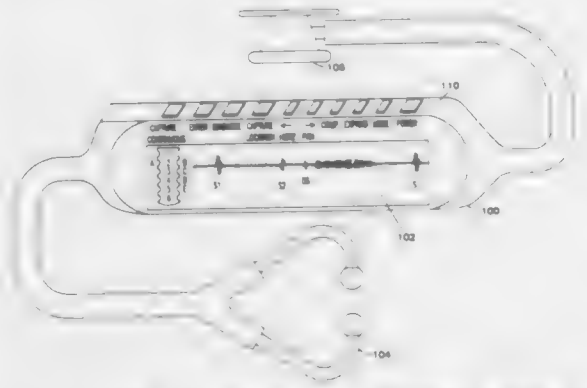
generating an indicium indicative of the presence or absence of the selected posterior heart condition.

5,010,889

INTELLIGENT STETHOSCOPE

Mark S. Bredesen, and Elliott D. Schmerler, both of Incline Village, Nev., assignors to Bloodline Technology, Incline Village, Nev.

Filed Feb. 4, 1988, Ser. No. 153,719
Int. Cl.[5] A61B *5/62, 7/00*
U.S. Cl. 128—715 **34 Claims**



1. An intelligent stethoscope for automatic diagnosis of sensed body sounds, comprising:

(a) input means for receiving the sensed body sounds;

(b) first memory means connected to said input means for storing the sensed body sounds;

(c) second memory means for storing first characteristics of at least one representative body sounds corresponding to a known physical abnormality;

(d) control means connected to said first memory means and said second memory means for generating second characteristics corresponding to the sensed body sounds and for comparing said second characteristics corresponding to the sensed body sounds of said first memory means to said first characteristics of said at least one representative body sounds of said second memory means; and

(e) indicator means attached to said control means for indicating a match between said second characteristics and said first characteristics.

5,010,890

VITAL SIGNS MONITORING SYSTEM

Robert L. Pfohl, Anaheim Hills, and James D. Uphold, Canoga Park, both of Calif., assignors to Vitacomm, Ltd., Orange, Calif.

Continuation of Ser. No. 828,777, Feb. 7, 1986, Pat. No. 4,705,048, which is a continuation of Ser. No. 660,454, Oct. 12, 1984, abandoned, which is a continuation-in-part of Ser. No. 522,640, Aug. 11, 1983, Pat. No. 4,619,268. This application Nov. 2, 1987, Ser. No. 116,287
The portion of the term of this patent subsequent to Nov. 10, 2004, has been disclaimed.
Int. Cl.[5] A61B *5/0205*
U.S. Cl. 128—773 **25 Claims**



1. A portable patient vital signs monitoring system comprising, in combination:

first sensing means to be attached to a patient's body for sensing a first physiological condition represented by heart and lung sounds and for generating a first electrical signal corresponding thereto;

second sensing means to be attached to a patient's body for sensing a second physiological condition and for generating a second electrical signal corresponding thereto;

elongated conductor means connected to said first and second sensing means for conducting said signals away from the patient's body;

a remotely located monitoring unit including control means connected to said conductor means for receiving said first and second signals from said conductor means and for processing said signals;

said monitoring unit including an IR transmitter having emitter means for omnidirectional transmission of said processed first and second signals; and

a remote portable, IR receiver to be worn on an operator's body for receiving said processed first and second signals and for converting said received signals into audible form.

5,010,891

CEREBRAL BIOPOTENTIAL ANALYSIS SYSTEM AND METHOD

Nassib G. Chamoun, Dedham, Mass., assignor to Biometrak Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 107,357, Oct. 9, 1987, Pat. No. 4,907,597. This application Apr. 12, 1989, Ser. No. 336,874
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—731 **70 Claims**

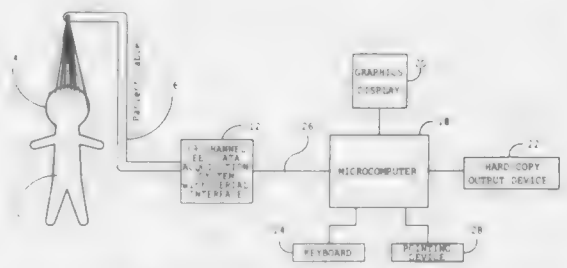
1. A method of noninvasively detecting cerebral phenomena comprising the steps of:

acquiring electroencephalographic signals through at least one electrode from a body surface of a subject being analyzed;

filtering said electroencephalographic signals to obtain filtered signals having frequencies between 2 and 500 hertz;

dividing said filtered signals into a plurality of equally sized data records,

characterizing dynamic phase relations within said filtered signals by processing said filtered signals to generate bispectral values;



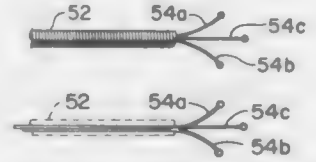
comparing said generated bispectral values to reference values to derive a diagnostic index that quantifies the detected cerebral phenomena.

5,010,892

BODY LUMEN MEASURING INSTRUMENT

David P. Colvin, Apex; Raymond A. Whitney, Raleigh, both of N.C.; Bernard R. Marsh, Upperco, Md.; William M. Kline, Gloversville, N.Y.; Ronald R. Rizzo, Gloversville, N.Y., and Mark E. Orlosky, Gloversville, N.Y., assignors to Triangle Research and Development Corp., Research Triangle Park, N.C.; Johns Hopkins University, Baltimore, Md. and Medical Evaluation Devices & Instruments Corp., Gloversville, N.Y.

Filed May 4, 1988, Ser. No. 189,998
Int. Cl.[5] A61B *5/103*
U.S. Cl. 128—774 **2 Claims**



1. An instrument for determining size characteristics of body lumens or passageways or the like and comprising:

an elongated flexible sleeve adapted to be inserted into a body lumen or passageway or the like;

a handle secured to one end of said flexible sleeve;

an elongated cable slidably received within said sleeve and including probe means for determining body lumen or passageway or the like size characteristics at one end thereof; means cooperatively associated with said handle for sliding said cable within said sleeve so as to selectively extend and withdraw said probe means from the other end of the sleeve, wherein said elongated cable comprises a first cable, wherein said probe means comprises at least one resilient wire connected at one end thereof to said cable and having a normally curved shape so that said at least one wire extends generally radially outwardly from the other end of said flexible sleeve remote from said handle when extended by said sliding means, wherein said elongated cable further comprises a second cable and wherein said probe means also comprises at least one resilient wire connected at one end thereof to said second cable and extending generally coaxially outwardly from the end of said flexible sleeve when extended by said sliding means; and

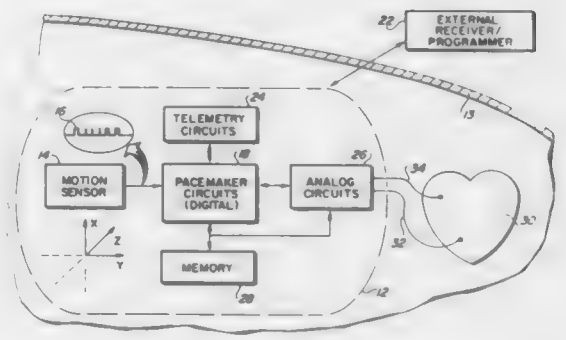
measurement means mounted on said handle and cooperatively associated with said cable sliding means for measuring movement by said probe means.

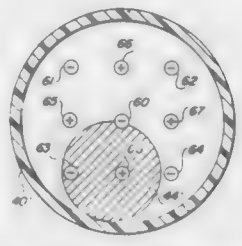
5,010,893

MOTION SENSOR FOR IMPLANTED MEDICAL DEVICE

Jason A. Sholder, Canoga Park, Calif., assignor to Siemens-Pacesetter, Inc., Sylmar, Calif.

Continuation-in-part of Ser. No. 3,433, Jan. 15, 1987, Pat. No. 4,771,780. This application Mar. 24, 1988, Ser. No. 172,610
The portion of the term of this patent subsequent to Sep. 20, 2005, has been disclaimed.
Int. Cl.[5] A61N *1/36*
U.S. Cl. 128—782 **15 Claims**





1. A body implantable motion sensor for use with a pacemaker, said sensor comprising:

housing means for implantation in a body, said housing means comprising a housing containing electronic circuits, said housing including an enclosed non-conductive cavity therewithin having a plurality of conductive electrodes exposed on an inside wall of said enclosed non-conductive cavity;

means responsive to the application of external forces for making and breaking electrical contact between at least two of said plurality of electrodes; and

means for electrically monitoring said electrodes with said electronic circuits for determining when electrical contact is made therebetween.

5,010,894

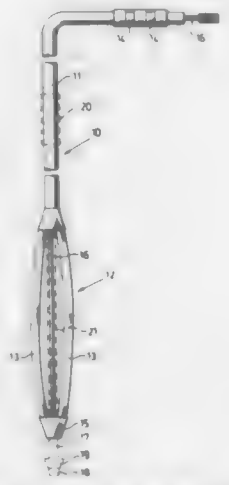
INTRAVASCULAR ELECTRODE LEAD USABLE FOR CARDIAC DEFIBRILLATION

Knut O. Edhag, Sandstensvägen 11, Bromma, Sweden S-161 39

PCT No. PCT/SE89/00002, § 371 Date Sep. 7, 1989, § 102(e) Date Sep. 7, 1989, PCT Pub. No. WO89/06148, PCT Pub. Date Jul. 13, 1989
PCT Filed Jan. 9, 1989, Ser. No. 399,489
Claims priority, application Sweden, Jan. 7, 1988, 00019/88
Int. Cl.[5] A61N *1/05*
U.S. Cl. 128—785 **4 Claims**

1. An intravascular electrode lead usable for cardiac defibrillation, said lead comprising an elongate electrically insulated lead body having a central longitudinal cavity and an electrode arrangement carried by said lead body and extending substantially in the longitudinal direction of the lead body from an end thereof and insertable into an atrial or ventricular cardiac room, said electrode arrangement comprising at least two

elongate resiliently flexible electrodes which are arranged to be brought into resilient contact with circumferentially spaced portions of the surrounding wall of said room, said electrodes extending in longitudinally mutually overlapping and circumferentially spaced apart relationship from a first end of said electrode arrangement, where said electrodes are anchored to the lead body adjacent to each other and to a second end of said electrode arrangement where said electrodes are anchored adjacent to each other to a common interconnecting member, which is arranged to each other to a common interconnecting member, which is arranged for limited movement in the longitudinal direction of the electrode arrangement to permit the electrodes to move in relation to each other under the action of spring forces from laterally retracted positions in which they



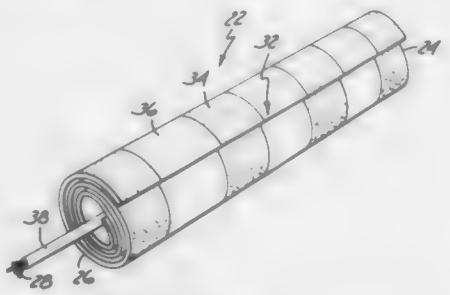
extend close to each other along their whole length and in which they permit an unobstructed insertion of the electrode arrangement into said room, to laterally expanded positions, in which they may bear resiliently against the surrounding wall of said room, the electrode lead further comprising a stylet wire removably inserted through the central longitudinal cavity in the lead body and applied against said interconnecting member to releasably hold the interconnecting member in a position in which said member, in its turn, may hold said electrodes in their laterally retracted positions, and an elastic tensile member, forming an extension of the lead body and extending to the interconnecting member and connected thereto to apply a spring-force on the interconnecting member, tending to assist in moving said electrodes to their said laterally expanded positions.

5,010,895

EXPANDABLE VAGINAL ELECTRODE

Donald D. Maurer, and Stacy D. Mattson, both of Anoka, Minn., assignors to Empi, Inc., St. Paul, Minn.

Filed Aug. 3, 1989, Ser. No. 389,175
Int. Cl.[5] A61N *1/05*
U.S. Cl. 128—788 **27 Claims**



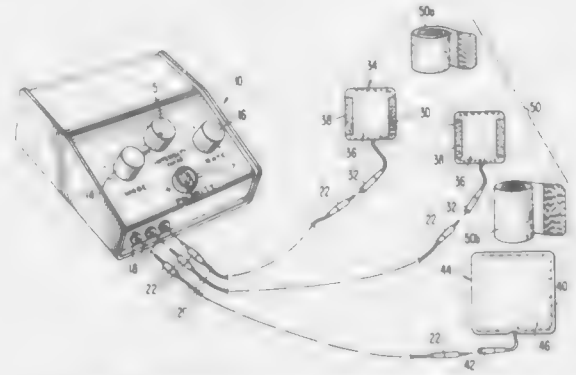
1. A vaginal electrode, including:
a sheet of material having a first surface and windable into a spiral, the sheet of material tending to unwind after insertion into a woman's vagina to force the first surface against the vaginal wall;
a plurality of electrically isolated conductive electrode elements on the first surface of the sheet of material so as to contact the vaginal wall after insertion, and
leads for coupling electrical signals to the electrode elements.

5,010,896

PULSED GALVANIC STIMULATOR

Barbara-Ann Westbrook, Falls Church, Va., assignor to Westec Corporation, Manassas, Va.

Filed Oct. 17, 1989, Ser. No. 422,532
Int. Cl.[5] A61N *1/04*
U.S. Cl. 128—798 **14 Claims**



1. A pulsed galvanic medical treatment device, comprising:
means for controlling power;
a plurality of substantially planar pads, including treatment and return pads, said treatment and return pads each having a coating forming a first surface thereof, a liquid absorbing member forming a second surface thereof opposite said first surface, and an electrical conductor disposed between said first and second surfaces;
a first elongated band adapted to be wrapped around a first part of a body to be treated;
means for adjustably attaching said treatment pads to said first elongated band;
connecting means for connecting the electrical conductor of each of said pads to said power control means;
a second elongated band adapted to be wrapped around a second part of the body to be treated; and
means for adjustably attaching said return pad to said second elongated band;
wherein each of said first and second elongated bands has a substantially inelastic starter portion forming a first end portion thereof and adapted to receive said treatment pads and said return pad, respectively, an elastic tightening portion forming a second end portion thereof, and fasteners located on said first and second end portions and adapted to be joined to said inelastic starter portion.

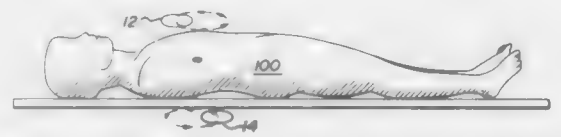
5,010,897

APPARATUS FOR DEEP HEATING OF CANCER

Harry H. Leveen, 321 Confederate Cir., Charleston, S.C. 29407

Filed Apr. 26, 1989, Ser. No. 343,832
Int. Cl.[5] A61N *1/40*
U.S. Cl. 128—804 **17 Claims**

1. An apparatus for developing radio frequency energy between spaced coils to apply an electromagnetic field between the coils to heat a tumor deep seated in a human body comprising a pair of spaced coils spaced apart a distance greater than the diameter of the smallest coil, a radio frequency generator means which generates radio frequency waves to at least one of said coils, means to rotate said coils so that one coil is movably positioned from one surface of the body and the other coil is movably positioned from another surface of the body with both coils being movably positioned from the respective surface of the body to move synchronously in planes which are parallel to each other to maximize magnetic lines of force on said tumor.



5,010,898

HEAD SUPPORTING AND SUSTAINING APPARATUS

Gisleine C. de Kanawati, and George G. Philot, both of Sao Paulo, Brazil, assignors to Mara Teixeira De Freitas, Sao Paulo, Brazil

Filed May 15, 1990, Ser. No. 524,298
Claims priority, application Brazil, May 16, 1989, 8902279
Int. Cl.[5] A61F *5/37*
U.S. Cl. 128—845 **16 Claims**

1. An apparatus for movably supporting the head of a patient in an upright position to a support element comprising:
(a) means for mounting the apparatus on the support element comprising a slidable rod and a mounting element having a first guide member formed thereon for receiving the slidable rod, stop means for positioning the rod within the first guide member, and a second guide member comprising a cushioned brace and stop means thereon for slidably positioning the cushioned brace along the rod;
(b) hanger means operatively associated with the mounting means;
(c) means for movably supporting the head of the patient; and
(d) resilient means connecting the supporting means to the hanger means whereby the head of the patient is supported and maintained in an upright position for relatively unrestrained movement by the patient.

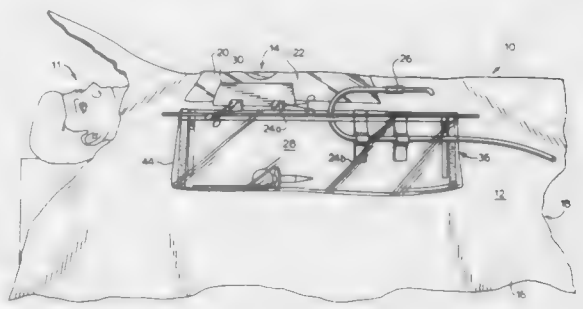
5,010,899

SURGICAL DRAPE WITH LOOPS

Joseph F. Thompson, Lindenhurst, Ill., assignor to Baxter International Inc., Deerfield, Ill.

Filed Jun. 26, 1990, Ser. No. 543,638
Int. Cl.[5] A61B *19/08, 19/10*
U.S. Cl. 128—849 **3 Claims**

1. A drape for covering a patient during a procedure comprising:
a main sheet for covering the operative site of a patient, said main sheet having an upper surface positioned away from said patient and a lower surface positioned in proximity with said patient, said main sheet having fenestration means for accessing the operative site;
a plurality of loops attached to said upper surface of said main sheet for maintaining medical devices; and
a second sheet having edges, one of said edges of said second sheet being attached to said upper surface of said drape in juxtaposition with said fenestration means, and said plurality of loops being located in close proximity to said attached edge of said second sheet, wherein said second sheet further includes sealing means along at least one edge adjacent said attached edge for allowing said second sheet to be foldingly sealed to itself along said adjacent edge to form a pocket-like structure, said loops being alternatively positioned inside or outside of said pocket-like structure.

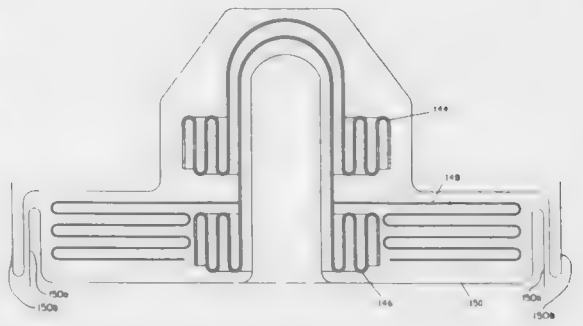


5,010,900

LOWER LIMB POSITIONING APPARATUS AND SURGICAL DRAPE

Geoffrey F. Auchinleck, #5-1182 West 7th Avenue, Vancouver, British Columbia, Canada V6H 1B4 ; James A. McEwen, 5259 Turquoise Drive, Richmond, British Columbia, Canada V7C 4Z6 ; John C. Osborne, 4040 Toronto Street, Port Coquitlam, British Columbia, Canada V3B 6X8 , and Carlo R. Bussani, 4877 Colbrook Court, Burnaby, British Columbia, Switzerland V5G 3Y4

Filed Feb. 27, 1989. Ser. No. 316,852
Int. Cl.[5] A61F *5/04*
U.S. Cl. 128—855 **4 Claims**



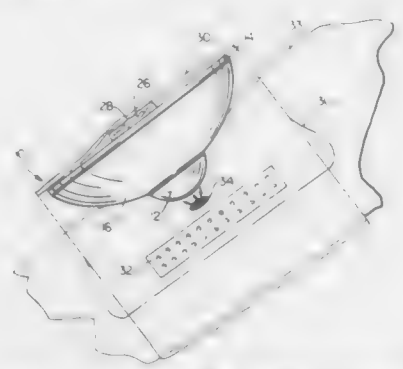
1. A surgical drape assembly, comprising:
a first flexible tube having an open end and
a second flexible tube having an open end and a closed end, the closed end of the second flexible tube being disposed within the first flexible tube; and
removable flexible wrap material sealed around the first and second flexible tubes, the wrap material extending into the second flexible tube to define a space into which an object may be inserted to be within the second flexible tube with the wrap material positioned between the object and the second flexible tube.

5,010,901
DEVICE FOR PREVENTING SUCKING OF THUMB OR FINGER
Jaime M. Pales, Calle Mendez Vigo 343, Dorado, P.R. 00646
Filed Sep. 20, 1985, Ser. No. 778,484
Int. Cl.[5] A61F *13/10*
U.S. Cl. 128—880 2 Claims



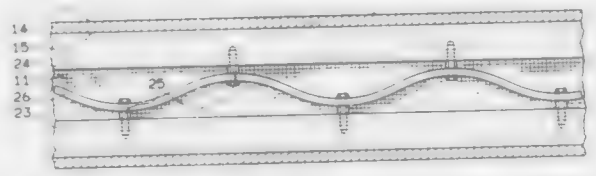
1. A device for preventing sucking of at least one of the digits of the human hand, comprising:
(a) a glove having a part encircling the wrist and at least a part of the hand, and a tubular part shaped to closely enclose at least one of the digits and having a closed outer end,
(b) an annular flat flange extending radially outwardly from the tubular part a distance such as to prevent insertion thereof into the mouth and at a position spaced downwardly from said closed outer end to which when said glove is in its position of use is adjacent to but below the outer end of said at least one digit.

5,010,902
COMPRESSION ORB
Robert D. Rambo, Sellersville, Pa., and John A. Yorke, Canastota, N.Y., assignors to Ace Medical Inc., Sellersville, Pa.
Filed Jul. 19, 1990, Ser. No. 554,349
Int. Cl.[5] A61F *5/30, 5/34*
U.S. Cl. 128—888 3 Claims



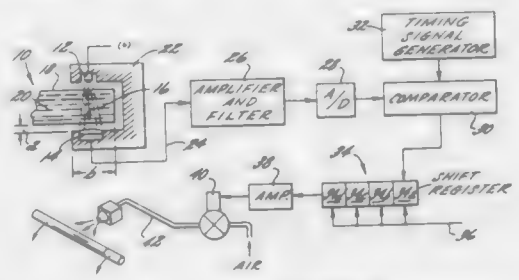
1. A compression orb for use in combination with flexible bandage means for application and securement of said orb to an arterial or venous puncture site to simulate manual digital pressure hemostasis, said orb comprising:
(a) a circular base having a substantially flat bandage contacting surface including means for attachment to said bandage means;
(b) a first domed surface integrally extending from the side of said base opposite said bandage contacting surface, said first domed surface having an internal, concave surface; and
(c) a second domed surface integrally formed and raised from said first domed surface wherein the center of said second domed surface is concentric with said first domed surface and said circular base and wherein said orb is formed as a hollow piece.

5,010,903
CONTINUOUS-WORM CIGARETTE-MAKING MACHINE
Bruno Belvederi, Bologna, Italy, assignor to G.D. S.p.A., Bologna, Italy
Filed Feb. 21, 1989, Ser. No. 313,413
Claims priority, application Italy, Mar. 4, 1988, 3358 A/88
Int. Cl.[5] A24C *5/18*
U.S. Cl. 131—84.3 2 Claims



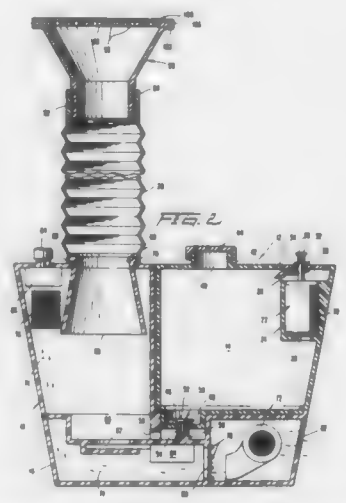
1. A continuous-worm cigarette-making machine, comprising a chimney for upwardly feeding a continuous flow of tobacco particles, a conveyor for forming and transferring a layer of tobacco particles, said conveyor comprising an air-permeable belt closed in a loop around two end rollers which define in said belt a stringer arranged at an upper outlet end of said chimney, a box-like body internal to said loop and downwardly delimited by a wall in contact with said stringer, suction means connected to said box-like body, a longitudinal opening inside said box-like body closed by said stringer, a contrast element internal to said box-like body arranged in contact with said stringer so as to oppose the action exerted on said stringer, through said longitudinal opening, by said suction means, wherein said contrast element comprises a strip in contact with said stringer at its lower edge, wherein said strip is undulated in the plane of said stringer.

5,010,904
METHOD AND APPARATUS FOR DETECTING LOOSE ENDS OF CIGARETTES
Wallace R. Lassiter, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed Dec. 21, 1989, Ser. No. 454,208
Int. Cl.[5] A24C *5/32, 5/34*
U.S. Cl. 131—280 44 Claims



1. An apparatus for identifying cigarettes having loose ends comprising:
conveyor means for serially conveying a plurality of cigarettes along a path of travel with the cigarettes being oriented transversely to the direction of travel so that tobacco filled ends of the cigarettes pass serially along one side of the conveying means; and
inspection means fixedly positioned along the path of travel adjacent the one side of the conveyor and comprising an infrared emitter and an infrared receiver, the emitter and receiver being aligned with each other on opposite sides of, and spaced from, the path of travel so that tobacco filled end portions of the cigarettes serially pass between the emitter and the receiver.

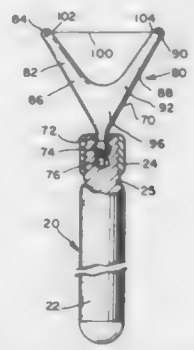
5,010,905
WATER-VAPOR HAIR TREATMENT APPARATUS
Marilyn J. Snyder, 1185 Park Ave., New York, N.Y. 10028, and Susan Bjurman, 969 Hilgard Ave., Los Angeles, Calif. 90024
Filed Oct. 20, 1989, Ser. No. 424,612
Int. Cl.[5] A45D *19/16*
U.S. Cl. 132—272 22 Claims



1. An apparatus for treating hair with moisture, comprising:
a base member including
a water reservoir for holding a predetermined quantity of water, said water reservoir including manually actuable dispensing means for holding a predetermined quantity of hair care products and dispensing said hair care products into said water upon manual actuation of said dispensing means,
means for producing vapor from said water or from water containing hair care products,
means for connecting said water reservoir to said vapor producing means to allow a flow of water from said water reservoir to said vapor producing means, and
outlet means for delivering said vapor out of said vapor producing means;
an elongated flexible hose, having a first end and a second end, detachably connectable to said outlet means at said first end, for use in directing said vapor to a subject's hair; and
detachable nozzle means, detachably connectable to said second end of said elongated flexible hose, for creating jets of vapor to apply to said subject's hair.

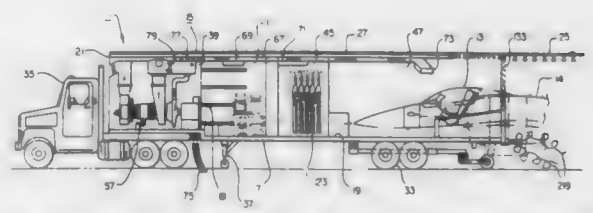
5,010,906
MULTI-PURPOSE DENTAL APPLICATOR
Roberto Preciutti, 5883 Cape Horn Dr., Agoura Hills, Calif. 91301
Filed Apr. 13, 1990, Ser. No. 509,287
Int. Cl.[5] A61C *15/00*
U.S. Cl. 132—323 34 Claims

1. A multi-purpose dental applicator comprising:
a. a handle member further comprising,
(i) an elongated shank,
(ii) a throat section extending from the elongated shank and extending to a head section,
(iii) the head section including an internal opening at the top of the head section leading to a generally inverted frustum shaped cavity which in turn is contiguous with and leading to a spherical cavity which in turn is contiguous with and leading to an arcuate cavity within the head section,
(iv) the outer surface of the head section having threads thereon,
(v) a slidable collar which partially rests around the throat section of the handle and having internal threads for mating engagement with the threads on the head section;
b. an interchangeable removable member further comprising,
(i) an elongated shank,
(ii) the elongated shank ending in a spherical ball at one end,
(iii) a stem extending from the spherical ball at a location diametrically opposite to an attachment point of the



elongated shank and the spherical ball and in alignment with the elongated shank, and
(iv) a dental applicator part integral with the elongated shank at the end remote from the spherical ball;
c. whereby the interchangeable removable member can be removably retained within the head of said handle by insertion of the shank, spherical ball and stem into the head through the opening in the top of the head while the collar is resting partially on the throat of the handle, with the stem resting in the arcuate cavity, the spherical ball retained within the spherical cavity and a portion of the shank resting within the inverted frustum shaped cavity, and the collar is then threaded onto the head to thereby tighten the interchangeable removable member into the head.

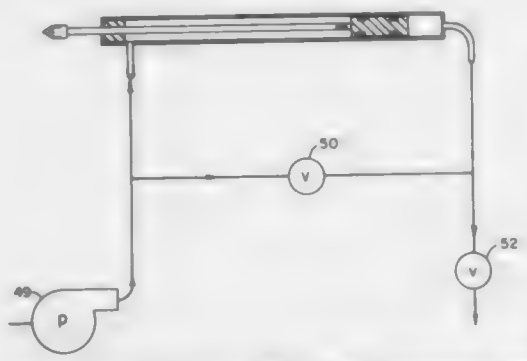
5,010,907
MOBILE ENCLOSURE FOR ALLOWING ACCESS TO A VEHICLE IN AN UNSAFE ENVIRONMENT
Kenneth C. Henson, and Michael K. Barron, both of Fort Worth, Tex., assignors to General Dynamics Corporation, Fort Worth, Tex.
Filed Dec. 22, 1989, Ser. No. 456,163
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—94 21 Claims



7. A portable enclosure for protecting humans from an unsafe exterior environment and for allowing access to an aircraft comprising:
(a) a plurality of chambers located within said enclosure, said chambers capable of being pressurized above the exterior air pressure so as to prevent ingress of the unsafe

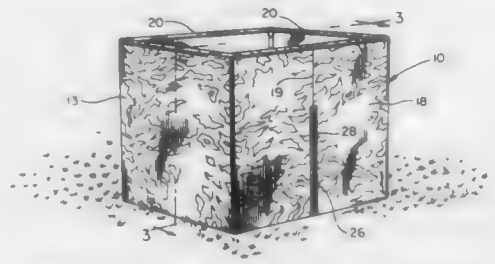
exterior air into said chambers, said chambers communicating with each other by interior doorways;
(b) one of said chambers being adapted to receive the vehicle personnel hatchway portion of an aircraft, said chamber allowing a pilot to access the cockpit and a crew to work on the cockpit without protective clothing;
(c) said one chamber having aircraft docking doors that allow the aircraft vehicle personnel hatchway portion to ingress and egress said one chamber, said docking doors being contoured to fit around the aircraft vehicle personnel hatchway portion, said docking doors opening and closing around the vehicle personnel hatchway portion as the vehicle personnel hatchway portion enters said one chamber;
(d) another of said chambers being a decontamination chamber, said decontamination chamber having a hatch which allows ingress and egress of humans into said enclosure, said decontamination chamber having a decontamination area for decontaminating protective clothing worn by humans who enter said enclosure and an area for storing said protective clothing, said decontamination area comprising shower means for spraying water and decontaminants and air wash means for providing high volume flow of decontaminated air;
(e) ventilation means for providing air to said chambers and said air wash means, said ventilation means comprising filtration means for filtering and decontaminating exterior air for use, said ventilation means providing sufficient decontaminated air to said chambers such that the air pressure inside of said enclosure is greater than the exterior air pressure, with the decontaminated air flowing from said clean chamber to said decontamination chamber;
(f) power generating means for providing electrical power for said enclosure.

5,010,908
APPARATUS FOR CLEANING THE INTERIOR OF ELONGATED TUBULAR OBJECTS
Andrew E. McLeod; Gaines C. Fields, both of Kingsport, Tenn., and Donald J. Sanders, Gate City, Va., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 29, 1990, Ser. No. 471,580
Int. Cl.[5] B08B *3/02, 9/04*
U.S. Cl. 134—168 C **2 Claims**



1. An apparatus for cleaning the interior of elongated tubular objects with pressurized fluid comprising:
(a) a cylinder having opposite closed ends,
(b) a double-acting piston mounted for reciprocating motion in said cylinder defining variable volume chambers at each end of said cylinder,
(c) a hollow rod fixed to the piston and extending coaxially with the cylinder through an end thereof defining a chamber of said cylinder through which the hollow rod extends, said rod having a nozzle at the end thereof outside said cylinder and openings therein for allowing passage of fluid from said cylinder to the inside of said hollow rod,
(d) means providing a fluid seal between said rod and said cylinder end,
(e) a first conduit for supplying pressurized fluid to the chamber of said cylinder through which the hollow rod extends,
(f) a second conduit for conducting pressurized liquid to and from the others chamber of said cylinder,
(g) a connecting conduit having a valve connecting said first and second conduits,
(h) said second conduit having a valve downstream from the junction with said connecting conduit, and
(i) means for supplying fluid under pressure to said first conduit upstream from its junction with said connecting conduit.

5,010,909
KNOCK-DOWN DEER BLIND
Thomas J. Cleveland, P.O. Box 153, Carlsbad, Tex. 76934
Filed Apr. 17, 1990, Ser. No. 510,121
Int. Cl.[5] E04H *15/00*
U.S. Cl. 135—901 **6 Claims**

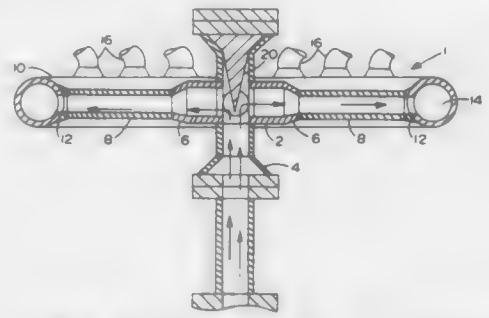


1. A hunting blind including a skeletal frame incorporating upper and lower open frames of generally the same shape and the same size, said upper and lower frames each including a plurality of relatively angulated, generally horizontal and substantially straight marginal members releasably interconnected at adjacent ends to define corner portions between peripherally adjacent marginal members, corresponding corner portions of said frames being joined by elongated, generally straight and upstanding spacing members including upper and lower ends releasably connected to corresponding corner portions of said upper and lower frames, respectively, and extending therebetween, and a cover for said skeletal frame including an upstanding peripherally continuous sleeve of flexible material having open upper and lower ends, said sleeve being downwardly telescoped over said frame, the upper end of said sleeve including inwardly directed peripherally adjacent and extending upper end flaps projecting inwardly over the marginal members of said upper frame, adjacent ends of said flaps being secured relative each other, said sleeve also including peripherally extending lower end flaps on its lower end directed inwardly beneath said lower frame, said sleeve, intermediate the opposite ends of one of said lower end flaps including a slot cut through said one lower end flap and also an upstanding slit extending upwardly along said sleeve from the lower end thereof to a point spaced below the upper end thereof, said slot and slit including communicated adjacent ends, means removably closing said slit, and means releasably closing said slot.

5,010,910
STEAM DISTRIBUTION MANIFOLD
Patrick J. Hickey, Paso Robles, Calif., assignor to Mobil Oil Corporation, Fairfax, Va.
Filed May 21, 1990, Ser. No. 526,475
Int. Cl.[5] F16K *51/00;* **E21B** *43/24*
U.S. Cl. 137—1 **17 Claims**

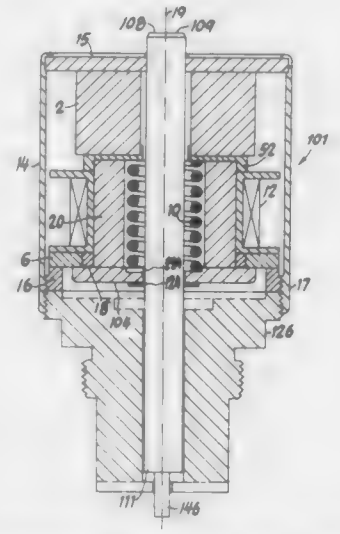
10. A method for distributing a two-phase mixed stream of vapor and liquid of substantially uniform quality to multiple injector sites, comprising the steps of:

(a) feeding a two-phase mixed stream of vapor and liquid into a generally toroidally configured steam distribution manifold, the steam distribution manifold including:
(i) a flow disperser having an inlet port for receiving the vapor-liquid mixture and at least two outlet ports;
(ii) at least two hollow runners, each runner having a first end in fluid communication with one of the outlet ports of the flow disperser and a second end;
(iii) a substantially toroidal manifold shell having at least



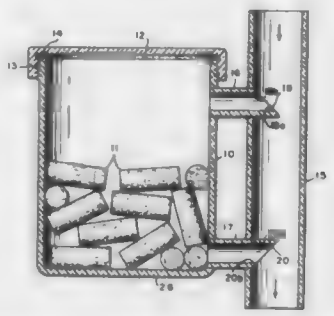
two fluid receiver ports in fluid communication with each of the second ends of the runners, the manifold shell defining a manifold chamber; and
(iv) a plurality of distribution ports spaced about the substantially toroidal manifold shell, each distribution port in fluid communication with the manifold chamber of the toroidal manifold shell; and
(b) distributing the two-phase mixed stream of vapor and liquid from the distribution ports of the steam distribution manifold to a plurality of injector sites.

5,010,911
ELECTROMAGNETIC VALVE OPERATOR
Dale A. Grant, Marinette, Wis., assignor to Wormald U.S., Inc., Marinette, Wis.
Filed Dec. 15, 1989, Ser. No. 451,734
Int. Cl.[5] F16K *31/08;* **H01F** *7/08*
U.S. Cl. 137—68.1 **17 Claims**



1. An electromagnetic operator apparatus comprising:
a. a hollow housing of magnetically permeable material, having a longitudinal axis and an inner wall, said housing having a first end and a second end;
b. a magnet having an intrinsic room temperature magnetic coercivity of at least about 5,000 Oersteds in close magnetic contact with said first end of said housing, and substantially axially aligned with said longitudinal axis, said magnet stationary within said housing;
c. a coil;
d. a core, of magnetically permeable material, substantially axially aligned with said longitudinal axis, at least a portion of said coil being disposed about said core and said core including a portion extending axially beyond said coil and away from said magnet;
e. a pole piece, of magnetically permeable material, disposed adjacent said coil and about said portion of said core extending beyond said coil and away from said magnet, said pole piece in close magnetic contact with said inner wall of said housing and forming a gap, between an inner surface of said pole piece and said portion of said core;
f. an armature, including an armature plate, of magnetically permeable material, disposed for reciprocal movement in said housing between first and second stable positions, along said longitudinal axis, said plate disposed to overlie, in close magnetic contact, said core and said pole piece in said first position, and to be spaced from said pole piece and said core in said second position;
g. means for urging said armature plate with a force of at least 35 pounds to said second position;
h. said magnet being sufficiently spaced from said inner wall and located in close magnetic contact with said core, for directing flux from said magnet through the entirety of said core prior to passing said flux into said inner wall when said armature is in said first position and when said armature is in said second position, said first position being a working position and said second position being a non-working position;
i. whereby said magnet exerts sufficient flux to overcome said means for urging and to hold said armature in said first position when said armature has been returned to said first position after having been in said second position in spite of the close magnetic contact between said magnet and core, whereby said operator has no non-working gap to divert flux to said inner wall prior to the passing through said core.

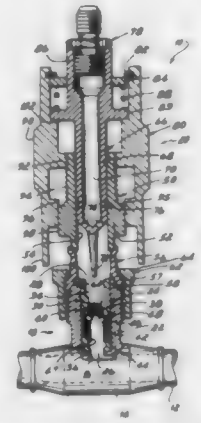
5,010,912
WATER TREATING DEVICE, OR SIMILAR ARTICLE
Richard D. Riding, 16631 Canyon View, Riverside, Calif. 92504
Filed Mar. 15, 1990, Ser. No. 493,629
Int. Cl.[5] B05B *7/14;* **B01D** *11/02*
U.S. Cl. 137—268 **3 Claims**



1. A device particularly adapted for treating water comprising:
a supply pipe adapted to be supported in a vertical position and convey a downward stream of water therethrough;
a container adapted to receive soluble solid agglomerates and having a closure lid;
an inlet pipe extending between said supply pipe and said container in the upper portion of said container; and
an outlet pipe extending between said container and said supply pipe from near the lower end of said container;
the inlet and outlet pipes serving to support said container in an upright position for use, said inlet pipe having a part extending into said supply pipe with a lower portion and

an upper portion, the lower portion extending farther into the supply pipe than the upper portion whereby to direct water from said supply pipe into said container and over said solids, and said outlet pipe being located near the lower end 15 of said container to enable most of the water in said container to drain out of it when water flow into said supply pipe is discontinued.

5,010,913
FLUID BLEED APPARATUS
Martin A. Clements, Cincinnati, Ohio, assignor to General Electric Co., Cincinnati, Ohio
Filed Jan. 10, 1990, Ser. No. 463,073
Int. Cl.[5] F16K *31/44*
U.S. Cl. 137—322 **12 Claims**



1. Apparatus for bleeding fluid from a fluid line, comprising:
a bleed valve adapted to mount to the wall of a fluid line over an opening therein, said bleed valve having a seat and a valve member, said valve member being movable with respect to said seat between an open position spaced from said seat to permit the passage of fluid from the fluid line through said bleed valve and a closed position against said seat to prevent the passage of fluid therethrough;
biasing means for urging said valve member to said closed position against said seat;
a valve actuator coupled to said bleed valve, said valve actuator including:
(i) a plunger slidably disposed within said actuator and engageable with said valve member;
(ii) force limiting means for exerting a limiting controlled force between said actuator and said plunger so that said valve member is moved from said closed position to said open position without damaging said biasing means associated with said valve member;
(iii) means for receiving fluid from said bleed valve with said valve member in said open position.

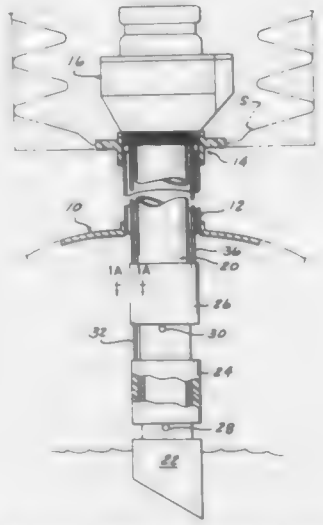
5,010,914
WIG
Heinz Merges, Herzogstrasse 29, D-5000 Koeln 1, Fed. Rep. of Germany
Filed Aug. 15, 1989, Ser. No. 393,730
Claims priority, application Fed. Rep. of Germany, May 30, 1989, 8906608[U]
Int. Cl.[5] A41G *5/00*
U.S. Cl. 132—54 **9 Claims**

1. A wig adapted to be worn by a person to cover a bald spot comprising a support member (10) for hair shaped like the calotte of the head and including curved webs,
said support member (10) being formed as a basket of rods (12, 13) radiating from a crown area and defining in pairs an intermediate space (14) continuously and uninterruptedly extending from said crown area to a free end of each of said rods (12, 13), and outer surfaces of said rods (12, 13) are directly covered with and carry hair secured



thereto whereby said support member (10) and hair can be applied to and removed from a person's bald spot.

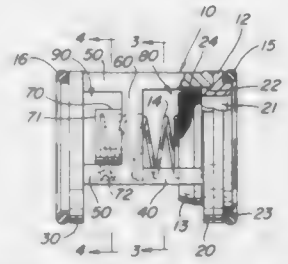
5,010,915
TWO STAGE AUTOMATIC SHUT OFF VALVE
Bruce Johnson, Muskegon, and Robert Whitney, Grand Haven, both of Mich., assignors to EBW, Inc., Muskegon, Mich.
Filed Jun. 6, 1990, Ser. No. 534,442
Int. Cl.[5] F16K *31/22, 33/00*
U.S. Cl. 137—423 **15 Claims**



1. A shut off valve assembly for shutting off the flow of fluid into and to prevent overfilling of said tank, said tank having a storage tank, an inlet pipe projecting upwardly from the top of said tank, said valve assembly comprising a valve housing mounted at the upper end of said inlet pipe, an elongate drop tube fixed at its upper end to said housing and projecting downwardly from said housing through said inlet pipe into said tank to an open lower end located substantially below the top of said tank, means defining a fluid inlet chamber at the upper end of said housing for receiving fluid under pressure from a fluid supply source and a fluid flow passage extending downwardly from said chamber through said housing and said drop tube for conducting fluid from said inlet chamber into said tank tube, a first hollow tubular float slidably received upon said drop tube adjacent the lower end thereof, a second hollow float slidably received upon said drop lube at a location spaced above said first float and below the top of said tank, a first valve flapper pivotally mounted in said inlet chamber adjacent the upper end of said flow passage for pivotal movement between an open position clear of said flow passage and a closed position wherein said first valve flapper overlies and blocks a major portion of said flow passage, a second valve flapper mounted in said inlet chamber adjacent the upper end of said

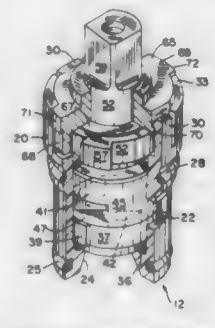
flow passage for movement between an open position clear of said flow passage and a closed position wherein said second valve flapper overlies and blocks a minor portion of said flow passage, said first and second valve flappers when in their respective closed positions cooperatively blocking all fluid communication between said inlet chamber and said flow passage, first and second flapper actuating means respectively coupled between said first and second floats and and said first and second valve flappers for normally locating said first and second flappers in their respective open positions when the level of fluid within said tank is below a preselected first level and for pivoting said first flapper toward its closed position when the level of fluid within said tank rises above said first level and for pivoting said second flapper toward its closed position when the level of fluid in said tank rises above a second level substantially above said first level for shutting off the flow of fluid into and to prevent overfilling of said tank.

5,010,916
CHECK VALVE
David E. Albrecht, 1383 Granary Rd., Blue Bell, Pa. 19422
Filed Mar. 23, 1990, Ser. No. 498,918
Int. Cl.[5] F16K *15/02, 27/00*
U.S. Cl. 137—454.2 **10 Claims**



1. In a slip-in check valve adapted to be slipped into place in a cylindrical bore of a fluid flow component for controlling axial flow through said bore, said check valve having an annular valve seat providing means, a movable valve member cooperable with said valve seat for controlling flow therepast, spring means for biasing said valve member toward said valve seat, and a cartridge valve body for supporting said valve seat providing means, said valve member, and said spring means in their operating positions, the improvement comprising:
said cartridge having a cage-like configuration and including an inlet retainer portion adapted to support said valve seat providing means at an inlet end of the check valve,
an outlet retainer portion defining an outlet port at an outlet end of the check valve and spaced axially away from said inlet retainer portion,
said valve seat providing means, said inlet retainer and said outlet retainer each having cylindrical wall portions of the same outer diameter which fits slidably within said cylindrical bore so that said cartridge and valve seat providing means can be slipped into said cylindrical bore to be concentric therewith.
a valve stop portion located between said inlet and outlet retainer portion for limiting the movement of said valve member away from said valve seat,
a plurality of inlet posts extending axially between said inlet retainer portion and said stop portion in circumferentially spaced apart relation,
a spring retainer centrally located on said stop portion for supporting said spring means in its operative position,
said valve member being located on the inlet side of said stop portion and within said inlet posts for movement toward and away from said valve seat,
a plurality of outlet posts extending axially between said stop portion and said outlet retainer in circumferentially spaced apart relation.
a plurality of inlet windows defined between said inlet posts to provide flow passages for the flow of fluid radially outwardly from said valve seat and the inlet side of said valve member to the outer portions of said cartridge, and
a plurality of outlet windows defined between said outlet posts to provide flow passages for the flow of fluid radially inwardly from the outer portions of said cartridge to said outlet port,
said stop portion having peripheral wall portions spaced radially inwardly from the outer portions of said cartridge to cooperate with said cylindrical bore to provide flow passages for the flow of fluid axially from said inlet windows to said outlet windows within the outer diameter of said cartridge.

5,010,917
FLUID CONTROL VALVE
Muhammad Iqbal, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Apr. 2, 1990, Ser. No. 502,929
Int. Cl.[5] F16K *27/06*
U.S. Cl. 137—454.6 **15 Claims**

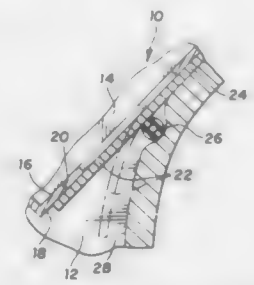


1. A cartridge fluid control valve for use in a valve housing, the housing having a fluid inlet and a fluid outlet, the cartridge comprising:
a body member having:
an inlet port open to the fluid inlet; and
a side wall with an aperture therethrough;
a stationary valve element positioned within the body member, the stationary valve element having at least one aperture therethrough;
a movable valve element rotatably mounted within the body member adjacent the stationary valve element, the rotational position of the movable valve element relative to the stationary valve element regulating fluid flow through the cartridge;
a valve stem linked to the movable valve element in the body to rotate therewith;
a stop element extending radially outward from and rotatable with the valve stem; and
a stop table which is mounted within the body member, the stop table having:
a leg which limits rotational movement of the stop element; and
a radially-projecting extension which extends radially past the cartridge and through the aperture in the side wall of the body member to engage the housing so as to limit rotation of the stop table relative to the housing.

5,010,918
REED VALVE HAVING VARIABLE LENGTH PETAL
Jay Tolsma, Grand Ledge, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 17, 1990, Ser. No. 524,603
Int. Cl.[5] F16K *15/16*
U.S. Cl. 137—512.15 **9 Claims**

1. A reed valve for a passage defined by an inner surface in an engine comprising:
a cage mounted across the passage, said cage having a cage port, an upstream side and a downstream side;

a flexible petal having a fixed portion connected to said cage enabling said petal to flex away from said cage in a cantilevered manner, said petal overlying said cage port to allow fluid flow therethrough from said upstream side to said downstream side by flexing away from said cage, and to obstruct fluid back-flow in the reverse direction by seating against said cage; and



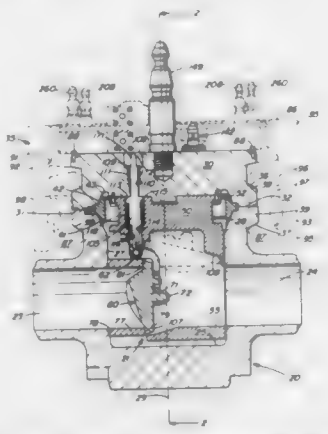
an inflatable member adjoining a portion of said petal which flexes away from said cage, said petal being sandwiched between said inflatable member and cage so that inflation of said inflatable member obstructs said flexing of said petal away from said cage to reduce the effective length of said petal.

5,010,919

SUBSEA BARRIER VALVE

Charles C. Partridge, Houston, Tex., assignor to Tom Wheatley Valve Co., Houston, Tex.

Filed Feb. 23, 1990, Ser. No. 484,055
Int. Cl.[5] F16K *15/00*
U.S. Cl. 137—527.4 **12 Claims**



1. A subsea barrier valve comprising a valve body having a valve chamber therein and inlet and outlet ports communicating with said chamber to define a flow passage through said valve, said valve body having an access opening communicating with said valve chamber;

a cover member for said access opening;

a valve insert member mounted to said cover member and suspended thereon within said valve chamber;

a valve clapper element in said chamber;

a valve clapper shaft mounted on said valve insert body in said valve body for limited axial rotation;

means connecting said valve clapper to said clapper shaft whereby said valve clapper is pivotally movable in said valve chamber between a first closed position wherein said valve clapper closes said flow passage and a second full open position wherein said valve clapper is an unobstructing valve open position with respect to said flow passage with said flow passage being partially open when said valve clapper is in a pivoted position intermediate said first and second positions;

clamp means for releasably clamping said cover member to said valve body in a position which covers and seals said access opening, said cover member having a bore opening extending therethrough;

latch means selectively operable for latching said valve clapper in the valve open position, said latch means comprising a locking shaft mounted to extend through said valve cover bore opening with an internal end portion of said locking shaft extending into said valve chamber and an external end portion being engageable outside said cover member to impart axial rotation to said locking shaft;

seal means mounted in said cover bore opening for establishing a fluid-tight seal between said locking shaft and said cover member; and

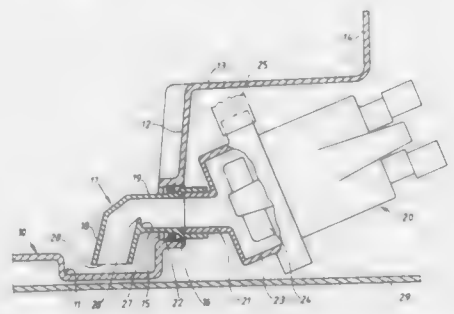
a drive gear mechanism operatively connected to said internal end portion of the lock shaft responsive to axial rotation of said locking shaft to pivotally move said valve clapper between the valve closed and valve open positions and to lock said valve clapper in the valve open position, said drive mechanism including a clutch gear means for allowing free pivotal movement of said clapper element from the valve closed position to a position proximate said full open position.

5,010,920

DEVICE FOR EMPTYING WATER FROM A DISHWASHER

Anders K. H. Tolf, and Keijo A. Stridh, both of Jönköping, Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Mar. 29, 1990, Ser. No. 502,067
Claims priority, application Sweden, Apr. 5, 1989, 8901194
Int. Cl.[5] F16K *24/00*
U.S. Cl. 137—565 **16 Claims**



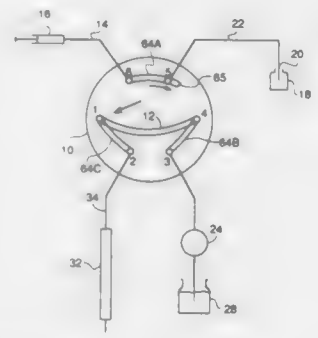
1. A device for a dishwasher comprising a tub with a bottom which is provided with a sump (**11**) for collecting liquid circulating in the tub, the liquid during emptying of the dishwasher being distributed from the sump to the inlet side of a sewage pump (**20**) from which the liquid is discharged to a sewer, the bottom surface of the sump (**11**) being disposed no higher than the level of the pump housing (**23**) of the sewage pump, the inlet (**21**) of the sewage pump communicating via a pipe (**17**) with the sump, wherein the pipe (**17**) has a restriction (**26**). the pipe (**17**) comprising an outer part (**18**), the axial direction of which is mainly vertical. and an inner part (**19**). the axial direction of which is mainly horizontal. the restriction (**26**) being a wall extending mainly vertically upwards from the inner part (**19**).

5,010,921

NONSYMMETRICAL VALVE

Andre Nohl, San Jose, Calif., assignor to Spectra-Physics, Inc., San Jose, Calif.

Filed Jul. 17, 1989, Ser. No. 380,827
Int. Cl.[5] F16K *11/74, 3/08*
U.S. Cl. 137—625.46 **4 Claims**



1. A valve comprising:

at least six ports; and

at least three non-connected channels, each channel selectively connecting only two ports at any one time;

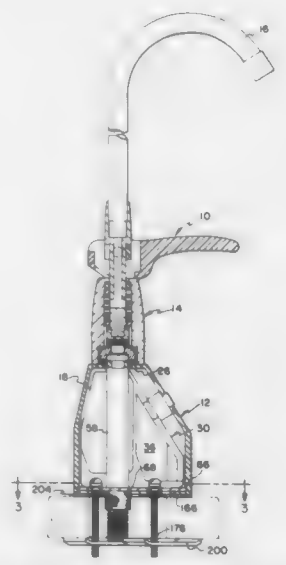
wherein a first channel is of a length greater than a length of the two other channels and wherein the ports are arranged symmetrically about a circle, and each of the channels has a shape which is a segment of the circle.

5,010,922

ACCESSORY FAUCET HAVING QUICK ATTACHING MEANS

Frank J. Agresta, Wallingford, Conn., assignor to WPM, Inc., Waterbury, Conn.

Continuation-in-part of Ser. No. 525,069, May 18, 1990, which is a division of Ser. No. 448,526, Dec. 11, 1989, Pat. No. 4,967,784. This application Sep. 10, 1990, Ser. No. 579,678
Int. Cl.[5] E03C *1/02*
U.S. Cl. 137—359 **13 Claims**



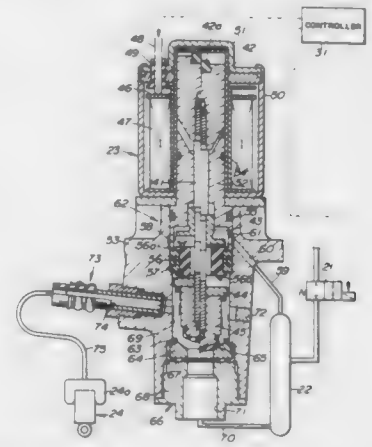
1. An accessory faucet for installation on a sink or counter top over an access opening, the faucet including a threaded inlet pipe for connection to a water inlet, a faucet outlet portion, the threaded pipe and the faucet outlet portion having a common axis, a valve housing and a base assembly under the housing, both positioned between the threaded pipe and the faucet outlet, valve means in the valve housing for controlling flow into the faucet outlet portion, means connecting the valve housing to the threaded pipe, a base plate having an aperture therein, the base plate aperture receiving the threaded pipe, immobilizing means holding the base plate on the pipe against movement with respect thereto, an installation plate substantially the same diameter as the base plate, and having an opening for the pipe, means securing the installation plate to the sink over the access opening, the installation plate having at least two spaced upstanding elements having downwardly inclined locking surfaces, the base plate being formed with holes aligned respectively with the elements, each hole narrowing in the same rotary direction whereby the faucet can be mounted on the sink by inserting the pipe into the opening in the installation plate, aligning the elements and the wider portion of the holes, juxtaposing the plates and turning the base plate so that the inclined locking surfaces wedge against the margins of the narrower part of the holes, and resilient gasket means disposed under the base assembly urging it upward to enhance the wedging action.

5,010,923

STRUCTURE OF AN ELECTROMAGNETIC VALVE FOR OPENING AND CLOSING A FLUID FLOW PASSAGE

Masanori Kouda; Minoru Suzuki; Tetsuya Okamura, and Toshihisa Tobisawa, all of Kanagawa, Japan, assignors to Atsugi Motor Parts Company, Limited, Kanagawa, Japan

Filed Dec. 1, 1987, Ser. No. 127,193
Int. Cl.[5] F16K *11/04*
U.S. Cl. 137—625.34 **11 Claims**



1. An electromagnetic valve comprising:

a hollow housing;

a valve seating member disposed in said hollow housing so as to define a first main chamber and a second chamber, said valve seating member having a central bore;

a plunger reciprocally mounted within said hollow housing and received in said central bore and in said first main chamber and said second chamber;

a first valve member mounted on said plunger and movable therewith within said second chamber for opening and closing a fluid passageway between said first and second chambers and a second valve member mounted on said plunger and movable therewith within said first chamber;

spring means for biasing said plunger to a first position for opening a fluid passageway between a valve seat and said second valve member for communicating fluid from a pressurized fluid supply means via said first chamber to a first passage means and for moving said first valve member so as to open said fluid passageway between said first chamber and said second chamber;

electromagnetic means for biasing said plunger to a second position for closing said second valve member for preventing communication of fluid from said pressurized fluid supply means to said first passage means and for closing said first valve; and

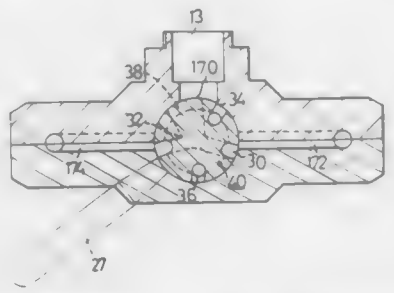
second passage means for continually communicating fluid from said pressurized fluid supply means to said second chamber so that fluid pressures between the first chamber and the second chamber are balanced regardless of the position of the second valve.

5,010,924

SINGLE HANDLE MIXING FAUCET

Chin S. Jenn, No. 23-6, Ping Ho St., Ta Lin Chen, Chia I Hsien, Taiwan

Filed Jul. 19, 1990, Ser. No. 554,380
Int. Cl.[5] F16K *11/083*
U.S. Cl. 137—625.47 **4 Claims**



1. A faucet comprising:

a substantially T-shaped body with a truncated cone-shaped compartment formed therein, a hot water passage and a cold water passage being formed in said T-shaped body and respectively communicating with a hot water supply and a cold water supply, a shower outlet which communicates with a shower head and a tub outlet which communicates with a tub being formed on an inner periphery of said cone-shaped compartment;

a truncated cone being pivotally received in said cone-shaped compartment, a control arm being attached to said truncated cone for pivotally controlling the water temperature as well as the output destination of the faucet, said truncated cone having a first hot water path, a first cold water path and a shower head path formed therein which communicate with one another, said truncated cone further having a second hot water path and a second cold water path formed therein which independently communicate with said tub outlet, such that

all of said first and second hot water paths, said first and second cold water paths and said shower head path are blocked when said control arm is in a neutral position;

said first hot water path, said first cold water path and said shower head path are respectively communicable with said hot water passage, said cold water passage and said shower outlet when said control arm is in a leftward Position while said second hot water path and said second cold water path are blocked; and

said first hot water path and said cold water path are respectively communicable with said hot water passage and said cold water passage when said control arm is in a rightward position while said first hot water path, said first cold water path and said shower head path are blocked.

5,010,925

NORMALLY CLOSED DUCKBILL VALVE ASSEMBLY

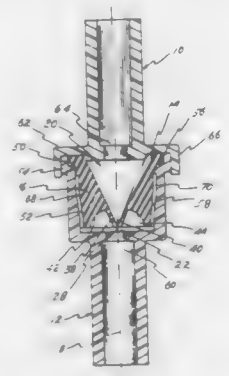
Gordon E. Atkinson, Cedarville, and James C. Bailey, Yellow Springs, both of Ohio, assignors to Vernay Laboratories, Inc., Yellow Springs, Ohio

Filed Apr. 9, 1990, Ser. No. 506,142
Int. Cl.[5] F16K *15/14*
U.S. Cl. 137—847 **13 Claims**

1. A one-way duckbill check valve for use in a flow path for permitting relatively free flow in said flow path in a first direction from a first to a second end of said valve and for preventing flow in said path in a second opposite direction, said valve comprising:

an elongated valve body having a central longitudinal axis and an outer wall wherein said outer wall is substantially parallel to said axis and defines an axial and circumferential extent of said second end of said valve;

a pair of valve lips positioned within the axial and circumferential extent of said second end defined by said outer wall portion of said valve body and oriented in diverging relationship to each other toward said first end of said valve;



said valve body and lips being formed of an elastomeric material and wherein said lips define an elongated normally closed outlet opening of said valve at said second end; and

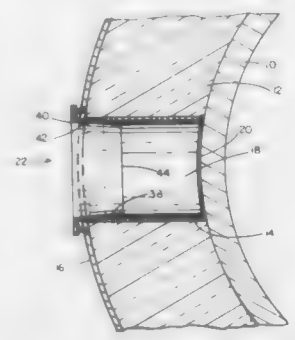
means forming a pivot connection between said outer wall and said lips including a pair of connecting walls located on either side of said outlet opening and extending radially inwardly from said outer wall to intersect said lips along a smoothly curved edge.

5,010,926

INSULATION ACCESS APERTURE LINER

Herman Kurth, 600 N. 18th Pl.; David Kemble, 2410 Francis Rd., and Romeo N. Ubungen, 2307 N. 18th Pl., all of Mount Vernon, Wash. 98273

Filed Mar. 17, 1989, Ser. No. 325,458
Int. Cl.[5] F16L *55/10, 9/14*
U.S. Cl. 138—149 **12 Claims**



1. A through insulation access aperture liner to provide visual access to an insulated pipe wall comprising:

a body having a substantially cylindrical portion depending from a flange, said flange having means to attach said body to the outer surface of said insulation;

a tubular extension extending from said substantially cylindrical body section to said wall, said extension including a saddle cut end mating with said wall to prevent entry of insulation into said body; and

cover means pivotally mounted on said flange for closing the outer opening of said liner.

5,010,927

HOLD-DOWN DEVICE FOR JACQUARD-CONTROLLED LOOMS

Walter Keim, Senden, Fed. Rep. of Germany, assignor to Grosse Webereimaschinen GmbH, Burlafingen, Fed. Rep. of Germany

Filed Jan. 10, 1989, Ser. No. 295,593
Int. Cl.[5] D03C *3/24*
U.S. Cl. 139—89 **14 Claims**



1. A hold-down device for Jacquard-controlled loom machines, said machine having needles for weaving, in which warp threads are movable in a pattern between two shed positions under control of the Jacquard machine by means of a cord assembly and a pull-down device connected to a frame of the machine, said pull-down device including a spring force exerting means and being further connected at one end to said cord assembly to exert said spring force thereon, comprising:

a cord releasably attached to another end of the cord assembly and connected to a respective needle of the Jacquard machine, said cord being pulled downwards against a lifting movement of the needles, and a resilient element arranged releasably between the hook cord and the cord assembly,

wherein the spring force exerting means is constructed to apply said spring force according to predetermined parameters of a weaving process for which the device is used, and said resilient element has a spring force that corresponds to the force required by the Jacquard machine to pull down the needles.

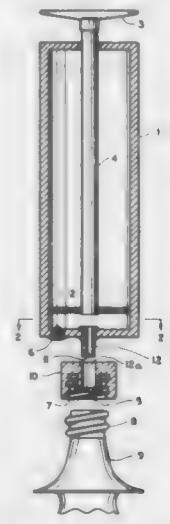
5,010,928

REPRESSURIZER FOR CARBONATED DRINK CONTAINERS

Mitchell J. Ballas, 925 Nixon Ave., Indiana, Pa. 15701

Filed Jul. 13, 1990, Ser. No. 552,309
Int. Cl.[5] B65B *31/00, 1/04;* **B65D** *39/00*
U.S. Cl. 141—64 **1 Claim**

1. For use in combination with a bottle having an externally threaded opening, a cap which is internally threaded to engage said externally threaded opening, said cap having a central tubular opening at the top thereof and a one-way valve at the bottom of said tubular opening, a hand operated air pump including a cylinder, a piston therein, a handle operatively connected to said piston and extending externally of said cylinder and a rubber air outlet tube connected to said cylinder and extending outwardly of said pump of a size to detachably fit snugly inside said central tubular opening of said cap in an air-tight manner, whereby said pump is useful for caps of



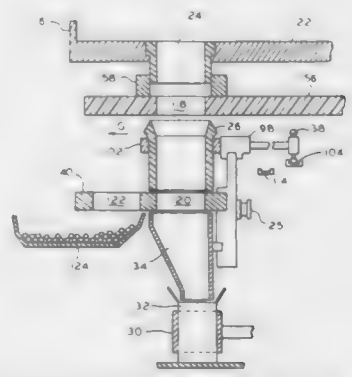
different internal thread sizes for use on different bottle openings of corresponding thread sizes.

5,010,929

FAST ACTING DOUBLE LOADING SYSTEM FOR AUTOMATIC PACKAGING MACHINE

Steven Tisma, Chicago, Ill., assignor to Tisma Machine Corporation

Continuation-in-part of Ser. No. 164,010, Mar. 4, 1988, Pat. No. 4,856,566. This application May 9, 1989, Ser. No. 349,224
The portion of the term of this patent subsequent to Aug. 15, 2006, has been disclaimed.
Int. Cl.[5] B65B *3/04*
U.S. Cl. 141—1 **28 Claims**



8. A method of transferring product through an automatic packaging machine for controllably loading at least two different products, said method comprising the steps of:

(a) simultaneously transporting a plurality of bottomless measuring cups, bottomless transfer cups, and boxes around closed paths which converge with each other in at least two different predetermined points along said paths;

(b) supporting products within said measuring cups and said transfer cups by individually associated underlying surfaces which are interrupted at predetermined locations to selectively allow product to fall in a two step operation out of said cups in order to transfer product from said measuring cups to said transfer cups and from said transfer cups to said boxes in at least said two predetermined points;

(c) detecting the presence or absence of any of said boxes as they move around said path; and

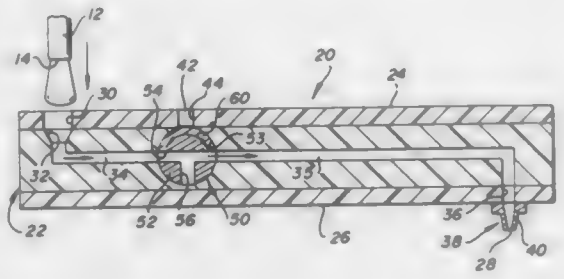
(d) continuously moving said cups over said surfaces in coordination with movement of said boxes in order to produce a three step fill sequence at each of said predetermined points, said fill sequence comprising (i) transferring product from said measuring cups through one of said surface interruptions into said transfer cups, (ii) transferring product from said transfer cups through another of said surface interruptions into said boxes which are individually associated with said transfer cups; and (iii) selectively deflecting the path of one of said transfer cups responsive to the detection of an absence of a box in step (c), said selective deflection being effective at one of said two predetermined points where the absent box would otherwise be filled, so that product is not transferred from said transfer cup through said other interruption while it is in said deflected path.

5,010,930

PIPETTE AND LIQUID TRANSFER APPARATUS FOR DISPENSING LIQUID FOR ANALYSIS

Richard L. Columbus, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 22, 1989, Ser. No. 455,548
Int. Cl.[5] B65B *1/04; B67D 5/00*
U.S. Cl. 141—1 **6 Claims**



1. Apparatus for dispensing liquid, comprising a pipette, and a liquid transfer apparatus for manually receiving liquid from said pipette at an inlet aperture and for automatically dispensing that liquid at a dispensing aperture onto a test element, said transfer apparatus comprising

means defining said inlet aperture for liquid to be deposited into the apparatus,

means defining said dispensing aperture for dispensing some of the liquid in droplet form,

means defining a first liquid flow path extending from said inlet aperture towards said dispensing aperture,

means defining an air vent at the exterior of the apparatus and a second flow path extending from said vent towards said first flow path,

and valve means interposed between said first and second flow paths for allowing continuous flow alternately from said inlet aperture to said dispensing aperture, or from said air vent to said dispensing aperture with said inlet aperture blocked,

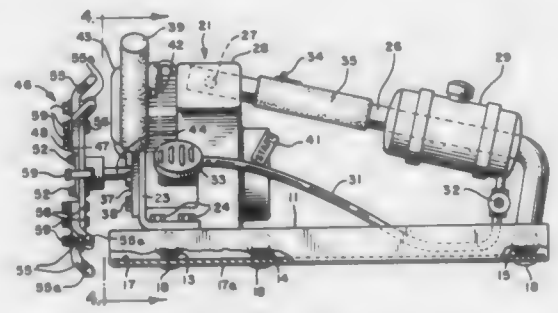
said apparatus further including a first support adapted to support a test element with an upper surface that is to receive the liquid, a second support adapted to support said transfer apparatus, and means for accurately positioning said second support from said first support at a predetermined distance such that an initial droplet from said dispensing aperture contacts said upper surface while still in contact with said dispensing aperture to achieve proper dispensing of the liquid onto the test element.

5,010,931

PORTABLE STUMP REMOVER

Steven M. Hooser, 1 S. 726 Ott Ave., Glen Ellyn, Ill. 60137

Continuation of Ser. No. 466,462, Jan. 16, 1990, abandoned. This application Aug. 28, 1990, Ser. No. 573,107
Int. Cl.[5] B02C *1/04*
U.S. Cl. 144—2 N **43 Claims**



1. A portable, self-contained stump remover which is manually movable by an operator across a tree stump to effect grinding thereof, comprising;

a base element having a lower base surface for engaging and resting on the top of the tree stump when the stump remover is placed on the stump;

at least one rotatable cutting device having a plurality of cutting teeth;

and driving means for rotating said cutting device to rotate said cutting teeth through a circular path at least a portion of which path extends below said lower base surface, a cutting depth being defined by the extent to which the rotating cutting teeth project below the base surface,

the lower base surface engaging the tree stump and supporting, guiding and stabilizing the stump remover as the stump remover is manually moved by the operator across the stump, the stump thereby being cut away and ground down to the cutting depth as the stump remover traverses the stump.

5,010,932

ADJUSTABLE SAILBOARD BOOM HANDLE APPARATUS

Joseph A. Brinz, 1040 Focis St., Apt. 14, Metairie, La. 70005

Filed Jul. 10, 1989, Ser. No. 377,701
Int. Cl.[5] B63B *35/79*
U.S. Cl. 114—39.2 **10 Claims**



1. An adjustable sailboard boom handle apparatus for use with a board sailor having a flat elongated buoyant board having a mast that carries a sail, the mast movably attached to the board center portion and a transverse hand held boom and

attached to the mast and generally encircling the sail during use, comprising:

(a) a pair of spaced apart attachments affixable at spaced apart respective fore and aft positions along the boom;

(b) a handle assembly including fore and aft handle portions attached respectively to the boom at the pair of attachments and providing an enlarged gripping surface that is spaced from the boom during use;

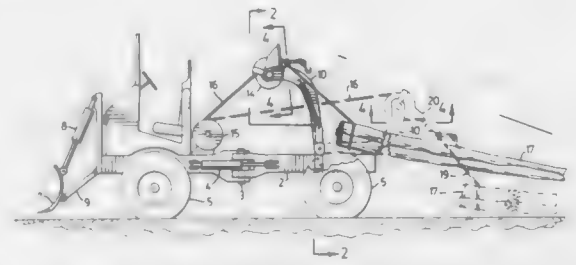
(c) the pair of handle portions being pivotally attached respectively to the pair of attachments, and to each other at a position spaced away from the boom, so that the handle portions can be angularly oriented to form an angle with each other, each handle portion forming an acute angle with the boom.

5,010,933

LOG SKIDDING VEHICLE

James R. Doyle, G12-378 Lake Street, Sault Ste. Marie, Ontario, Canada P6B 3K9

Filed Jun. 8, 1990, Ser. No. 535,068
Int. Cl.[5] A01G *23/08;* **B60P** *1/04*
U.S. Cl. 144—336 **13 Claims**



1. A vehicle having a chassis for skidding timber comprising:

a frame having inner and outer ends, said frame pivotally mounted at its inner end to a rearward portion of said chassis for rotation about a horizontal axis transverse to the vehicle's longitudinal axis between a forward and a rearward position;

a cable sheave pivotally mounted to said outer end of said frame for rotation about a transverse sheave axis;

a cable winch connected to said chassis forward of the inner end of said frame;

a cable, the forward end of which engages said cable winch, said cable being reeved over said cable sheave;

attachment means, connected to the rearward end of said cable, for securing at least one log to said cable; and

abutment means, connected to said outer end of said frame outward of said cable sheave, for engaging said attachment means as said cable and log are drawn forwardly by said winch to rotate said frame from said rearward position, to said forward position, whereby the load exerted by said cable upon said vehicle is applied forward of the rear wheels of said vehicle when said frame is in a forward position.

5,010,934

SLICER APPARATUS FOR WOODWORK

Toshihei Mochizuki, and Shigeru Ikeda, both of Shizuoka, Japan, assignors to Marunaka Tekkosho, Inc., Shizuoka, Japan

Filed Apr. 17, 1990, Ser. No. 510,222
Claims priority, application Japan, Mar. 6, 1990, 2-54285
Int. Cl.[5] B27L *5/06*
U.S. Cl. 144—175 **10 Claims**

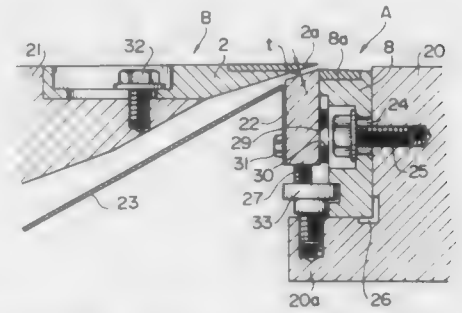
1. A woodwork slicer apparatus for slicing a material, comprising,

a table for supporting the material to be sliced and having an opening therein,

means for moving the material on the table, said moving means being installed on the table for forcibly transferring the material on the table for slicing,

a knife attached to the table to be located at one side of the opening and having an edge and a relief face,

a knife piece attached to the table to be located at a side of the opening opposite to the knife, said knife piece being arranged parallel to the knife, and



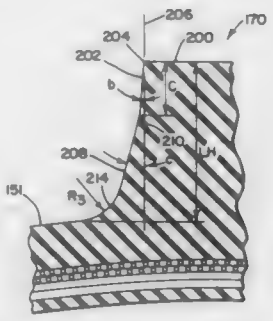
a support member attached to the knife piece and located at a side opposite to the relief face of the knife to form a space between the support member and the relief face of the knife, said space being at least substantially the same as a thickness of a piece of the material sliced by the knife so that the sliced piece does not warp after being sliced by the knife to prevent warp and twist of the sliced piece of the material.

5,010,935

AGRICULTURAL TIRE AND TREAD LUG THEREFOR

Mark L. Bonko, Hartville, and Loran C. Lopp, Jr., Wadsworth, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 11, 1989, Ser. No. 419,878
Int. Cl.[5] B60C *11/03*
U.S. Cl. 152—209 B **5 Claims**



1. A pneumatic tire for agricultural use having a tread including an inner tread surface and a plurality of spaced tread lugs, the inner tread surface being spaced between tread lugs, each of the lugs having at least one sidewall, and in cross-section comprising:

a first substantially straight portion extending radially inwardly from a cutting edge of a radially outermost surface of said lug at a first angular inclination in the range of 0° to 5° with respect to the radial direction;

a second substantially straight portion extending radially inwardly at a second angular inclination in the range of 12° to 25° with respect to the radial direction;

a first concave curved portion extending from said first straight portion to the second straight portion;

a second concave curved portion extending radially inwardly from the second straight portion to the inner tread surface; and

wherein each of such lugs is spaced apart from another of such lugs by a distance of at least 12% to about 15% of the

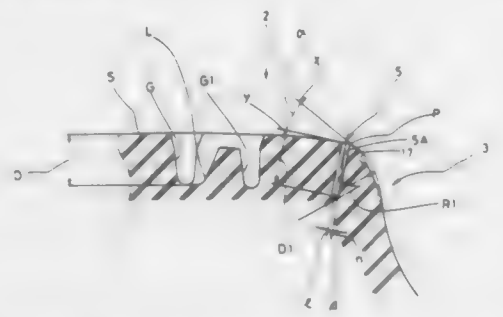
tread width and wherein the net-to-gross ratio of the tire is in the range of 25% to 40%.

5,010,936

RADIAL TIRE INCLUDING A NARROW GROOVE IN THE TREAD SHOULDER

Kazuki Numata, Nishinomiya, and Kiyoshi Ochiai, Kobe, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo, Japan

Filed Jul. 26, 1989, Ser. No. 385,148
Claims priority, application Japan, Aug. 11, 1988, 63-202558
Int. Cl.[5] B60C *11/03*
U.S. Cl. 152—209 R **2 Claims**



1. A pneumatic radial tire comprising

a tread portion and a pair of buttress portions located one on each side of the tread portion adjacently to the tread portion,

said tread portion provided with wide main grooves and narrow, straight axially outer grooves extending circumferentially of the tire,

each of said narrow, straight axially outer grooves disposed in a boundary region between said tread portion and each buttress portion so that the radially outer edge of the axially outer groove sidewall thereof corresponds with an intersection between the surfaces of the tread portion and the buttress portion,

said narrow, straight axially outer grooves being inclined axially inward at the bottom thereof at an angle of 0 to 5 degrees in a normal direction to the surface of the tread portion and at an axially inward position adjacent to said intersection,

the contour of each buttress portion comprising a circular arc portion adjacent to said intersection having a radius R1 of 15 to 35 mm, and

a tangent X to the buttress portion at said intersection being inclined at an angle of 25 to 35 degrees with respect to a tangent Y to the tread portion at said intersection.

5,010,937

BELTED TIRE FOR VEHICLES

Jonny Janus, Kreuzstrasse 53, D-4000 Düsseldorf 1, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 57,500, Jun. 3, 1987, Pat. No. 4,809,758. This application Mar. 6, 1989, Ser. No. 319,524
The portion of the term of this patent subsequent to Mar. 7, 2006, has been disclaimed.
Int. Cl.[5] B60C *9/18*
U.S. Cl. 152—531 **6 Claims**

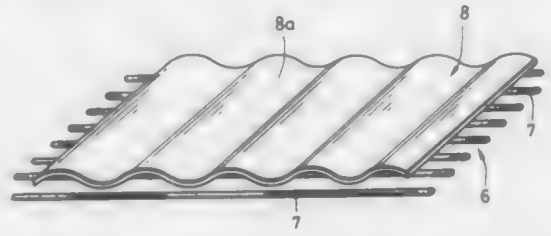
1. A dual belted tire for vehicles, comprising

(a) a toroidal body having an equatorial tire plane of elastomeric material with a contact surface at the outer periphery,

(b) a circumferentially extending annular belt construction which is embedded as an insert in the region of the contact surface in the material of the body and which comprises a first circumferential belt defining a zero degree position to the equatorial tire plane for circumferential stiffness and a second transverse belt for lateral stiffness, said belts being separate,

(c) said circumferential belt having a number of annular strength supports which are arranged substantially in the zero degrees position and in juxtaposed relationship at lateral spacings in at least one plane and which extend in the circumferential direction of the body,

(d) said transverse belt having at least one transverse bracing strength support which extends substantially over the width of the contact surface and which is embedded in the



elastomeric material in parallel relationship to and at a spacing from the circumferentially extending strength supports of the circumferential belt,

(e) said transverse belt including at least one strip,

(f) said at least one strip is steel foil and has corrugated portions, the flutes thereof being aligned substantially transversely to said zero degree annular strength supports, and

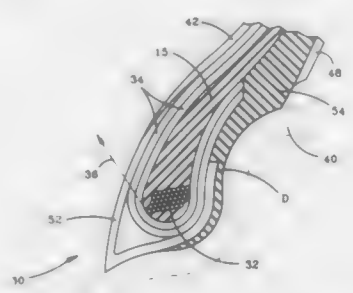
(g) the transverse belt being stretchable in the circumferential direction of the tire at least as much as the strength supports of the circumferential belt.

5,010,938

TIRE INCORPORATING A BEAD RING COMPRISING ROUND WIRE DISPOSED IN THE SHAPE OF A PARALLELOGRAM

Mahmoud C. Assaad, and Danny E. Harrison, both of Uniontown, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Mar. 30, 1990, Ser. No. 501,446
Int. Cl.[5] B60C *15/04*
U.S. Cl. 152—539 **3 Claims**



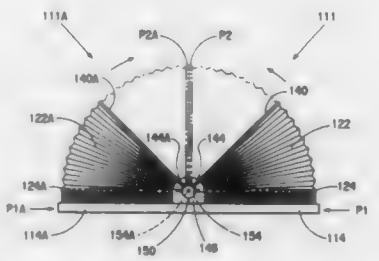
1. A pneumatic tire comprising a bead area, said bead area comprising an apex, a bead ring, and a reinforced carcass ply wrapped around said bead ring, said bead ring comprising metal wire having a circular cross section, said wire forming multiple adjoining annular turns wherein said turns of wire are disposed in the cross section shape of a parallelogram having an acute angle of 75°–85°, each turn of wire in said bead ring is coated with a layer of about 0.005 to 0.015 inch green rubber whereby said green rubber provides a rubber matrix in which bead wires are contained when the green rubber is cured, and substantially maintains the relative position of wires in said bead, and wherein rubber in said matrix is harder than rubber used in said apex.

5,010,939

BLIND FOR ARCHED WINDOWS

William J. King, 108 Cheyenne Ct., Newark, Del. 19702

Filed Feb. 16, 1990, Ser. No. 480,916
Int. Cl.[5] E06B *3/94*
U.S. Cl. 160—84.1 **6 Claims**



1. An arcuate blind for arched windows having a first assembly of elements comprising:

a base having an upper side and a lower side;

an arcuately foldable body being adaptable to assume an open position and a closed position, the arcuately foldable body having

a stationary radial end-portion and a movable radial end-portion, the stationary radial end-portion rigidly supported on the upper side of the base,

an inner arc and an outer arc, the two arcs having a common center, and being fully developed when the foldable body is in the open position;

a rigid leading rib connected along the movable radial end-portion, the rigid leading rib having an inner end and an outer end, the inner end being movable in the vicinity of the inner arc and the outer end being movable in the vicinity of the outer arc;

central transmission means having an inlet and an outlet, for transmitting substantially radial motion to the leading rib with the outlet being connected to the inner end of the leading rib, thus causing the foldable body to fold and unfold in a radial manner, the transmission means supported on the base in the vicinity of the common center of the inner and outer arcs, the central transmission means comprising a worm gear, the worm gear being positioned in a manner to act as a brake against any spontaneous movement of the blind; and

motion means connected to the inlet of the central transmission means for providing external motion to said central transmission means.

5,010,940

SWINGABLE JUNCTION FOR A WINDOW COVERING

Norbert Marocco, 46 Pennygrass Court, Woodbridge, Ontario, Canada

Continuation-in-part of Ser. No. 299,456, Jan. 23, 1989, abandoned, which is a continuation-in-part of Ser. No. 190,061, May 4, 1988, abandoned. This application Oct. 6, 1989, Ser. No. 418,175
Int. Cl.[5] E06B *9/36*
U.S. Cl. 160—168.1 **35 Claims**

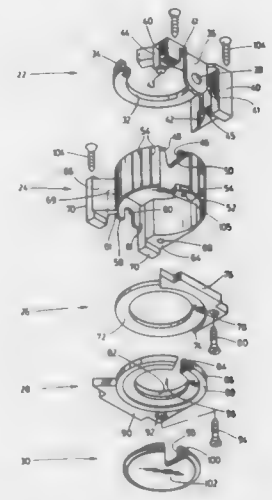
1. A corner junction assembly for use in association with window coverings supported on two adjacent rails, said rails each having at least one movable window covering control means, said corner junction assembly comprising:

upper and lower annular bearing ring means defining respective bearing openings;

respective upper and lower annular bearing hub means rotationally engaged within respective bearing openings in said bearing ring means to permit relative rotation thereof about a common axis;

respective locking rings formed integrally with respective said bearing hub means and making a rotatable captive pressure fit within respective said bearing ring means;

rail engagement means connected to respective ones of said bearing ring means and said bearing hub means for engagement with adjacent ends of respective ones of said rails, and,



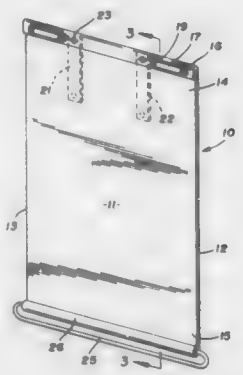
means attached to said corner junction assembly for facilitating operation of said control means around said corner.

5,010,941

GOLF CART DROP CURTAIN

Victor Ross, Sr., and Victor Ross, Jr., both of P.O. Box 34, New Castle, Pa. 16103

Filed May 10, 1990, Ser. No. 521,441
Int. Cl.[5] A47H *1/00*
U.S. Cl. 160—330 **2 Claims**



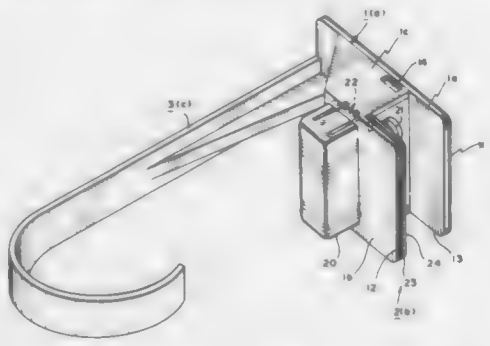
1. A golf cart drop curtain for use on golf carts to protect golf bags and golf clubs within said bags, said golf cart having a roof in spaced relation to said cart, said drop curtain comprising; a flexible sheet of non-porous material, said sheet is of a generally rectangular configuration having a top portion and a bottom portion, said top portion defining an area of increased thickness, a tubular member formed on said bottom portion of said flexible sheet by rolling said bottom portion upon itself, means for securing said top portion to said golf cart roof, an elastic cord secured by its free ends into said tubular member and extending therefrom in space parallel relation to said tubular member of said sheet.

5,010,942

HOOKING FRAME OF A WINDOW/BATHROOM CURTAIN

Wu-Hu Hung, 8F., No. 126, Roosevelt Road, Sec 3, Taipei, Taiwan

Filed Jan. 30, 1990, Ser. No. 472,657
Int. Cl.[5] A47H *1/00*
U.S. Cl. 160—349.1 **5 Claims**



1. A retaining bracket for a curtain comprising:

(a) a base body adapted to be attached to a wall or the like, the base body defining first and second spaced apart clamping surfaces.

(b) a pushing member having a clamping portion operatively associated with the base body so as to be reciprocally movable with respect to the base body between a first position wherein a clamping force is exerted between the clamping portion and the first clamping surface, and a second position wherein a clamping force is exerted between the clamping portion and the second clamping surface;

(c) biasing means operatively interposed between the pushing member and the base body to urge the pushing member toward its first position;

(d) releasable latching means operatively interposed between the pushing member and the base body to releasably latch the pushing member in its second position; and,

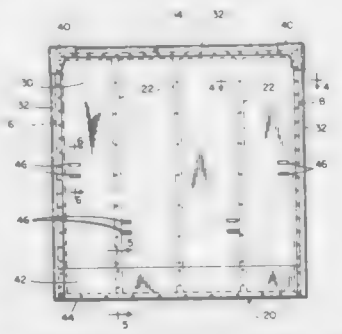
(e) a hook member extending from the base body.

5,010,943

LIGHTWEIGHT INSULATING PARTITION

Gregory J. Boyer, 30122-50th La. S., Auburn, Wash. 98001

Filed Jan. 10, 1989, Ser. No. 295,654
Int. Cl.[5] A47G *5/00*
U.S. Cl. 160—351 **4 Claims**



1. A self-supporting partition for an enclosed volume, such as a refrigerated vehicle, the partition having front and back planar surfaces and a thickness dimension therebetween, comprising:

a frame which includes a top member, opposing side members and a base member;

at least one panel of insulation supported within said frame, wherein the frame and insulation are constructed and arranged such that the partition is capable of flexing under pressure;

a flexible member for sealing the frame to the interior boundaries of the refrigerated vehicle and for maintaining the partition in place within the vehicle, said flexible member extending along and outwardly from the frame's top and side members, wherein the flexible member has a width which is approximately as great as the thickness of said partition and a height which is approximately at least as great as said width, and wherein the flexible member is resilient and compressible, such that when the flexible member is compressed to permit the partition to fit upright within the vehicle, the partition is maintained in place solely by said flexible member, acting against the interior boundaries of the vehicle;

a flexible protective skin member covering at least a portion of opposed planar surfaces of the insulation;

a bumper plate of a rigid material which is substantially thicker than the protective skin member and resistant to puncture, extending across the partition and upwardly for a selected distance from the lower edge thereof, covering a portion of each skin member; and

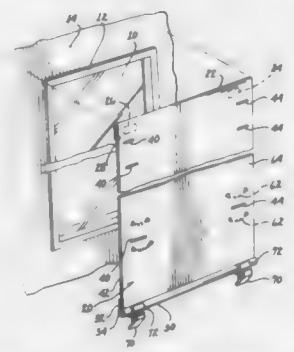
a rigid skin plate secured to the lower edge of the base member of the frame and in contact with the floor boundary of the vehicle when the partition is in place in the vehicle, said skid plate being of such a material that it does not adhere to the floor boundary of the refrigerated vehicle.

5,010,944

VERTICALLY FOLDABLE WINDOW COVERING AND RETAINING CLIP

Althea J. Bussert, P.O. Box 27808, Tempe, Ariz. 85282

Continuation-in-part of Ser. No. 231,870, Aug. 12, 1988, which is a continuation-in-part of Ser. No. 37,686, Apr. 13, 1987, Pat. No. 4,836,265. This application Jan. 26, 1990, Ser. No. 470,874
Int. Cl.[5] A47H *23/00*
U.S. Cl. 160—354 **28 Claims**



1. Apparatus for temporarily covering a window to a selected degree of exposure, said apparatus comprising in combination:

I. a window covering comprising:

(a) material foldable upon itself to expose the window commensurate with the number and height of folds;

(b) at least a column of slots extending upwardly from a lower edge of said covering;

(c) at least one loop in vertical alignment with said column of slots; and

(d) means for vertically dependingly supporting said covering across a window;

II. a clip comprising:

(a) retention means for retaining the lower edge of said covering;

(b) a hooked flange for engaging one of said slots, said hooked flange having a width commensurate with the width of said slots for penetrably engaging one of said slots upon folding of a lower part of said covering adjacent an upper part of said covering;

(c) a flange for engaging one of said loops, said flange having a width commensurate with the width of said loops for penetrably engaging one of said loops upon folding of a lower part of said folded covering adjacent an upper part of said folded covering; and

(d) means for supporting said hooked flange and said flange upon said retention means;

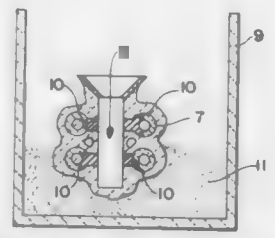
whereby, said clip can retain said covering folded over once or twice to expose a part of the covered window.

5,010,945

INVESTMENT CASTING TECHNIQUE FOR THE FORMATION OF METAL MATRIX COMPOSITE BODIES AND PRODUCTS PRODUCED THEREBY

John T. Burke, Hockessin, Del., assignor to Lanxide Technology Company, LP, Newark, Del.

Filed Nov. 10, 1988, Ser. No. 269,302
Int. Cl.[5] B22D *11/14*
U.S. Cl. 164—97 **44 Claims**



1. A method for forming a metal matrix composite body comprising:

forming an investment shell having a cavity therein; providing a barrier material in at least a portion of said cavity; providing a substantially non-reactive filler in the cavity; contacting molten matrix metal with said filler material;

spontaneously infiltrating molten matrix metal into at least a portion of the filler up to said barrier material; and

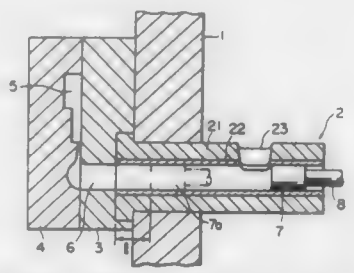
cooling said matrix metal within said filler, thereby forming a shaped metal matrix composite body corresponding substantially in shape to at least a portion of said cavity.

5,010,946

DIE CASTING CYLINDER

Shingo Nogami; Toshinori Yashiro; Toshio Okitsu; Kiyoshi Furushima, and Itsuo Korenaga, all of Kitakyusyu, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

PCT No. PCT/JP88/01018, § 371 Date Jun. 6, 1989, § 102(e) Date Jun. 6, 1989, PCT Pub. No. WO89/03263, PCT Pub. Date Apr. 20, 1989
PCT Filed Oct. 6, 1988, Ser. No. 368,393
Claims priority, application Japan, Oct. 7, 1987, 62-253198; Jun. 14, 1988, 63-78384
Int. Cl.[5] B22D *17/10, 17/20*
U.S. Cl. 164—312 **5 Claims**



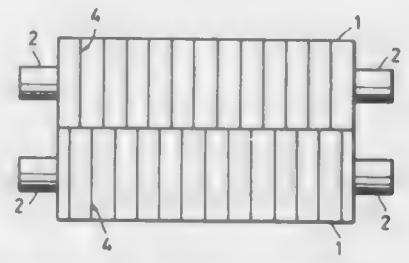
1. A die casting cylinder comprising an outer cylindrical member made of a metal and a ceramic inner cylindrical member, in a boundary between which a plurality of voids are provided, wherein said voids are grooves provided in an inner surface of said outer cylindrical member or in an outer surface of said inner cylindrical member, the width "a" of each groove and the distance "b" between the adjacent grooves satisfying an a/b ratio of 1:1–6:1.

5,010,947

TWIN COOLING ROLL APPARATUS FOR PRODUCING RAPIDLY SOLIDIFIED METAL STRIP

Masao Yukumoto; Michiharu Ozawa, and Hiroshi Yamane, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Feb. 23, 1990, Ser. No. 484,538
Claims priority, application Japan, Feb. 27, 1989, 1-43115
Int. Cl.[5] B22D *11/06*
U.S. Cl. 164—428 **2 Claims**



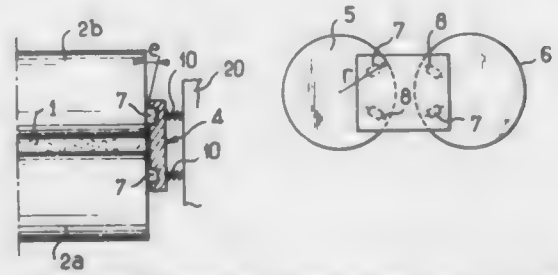
1. A twin cooling-roll continuous casting apparatus for producing a single metal strip, having a thickness of 1 mm. or less, directly from a molten metal through rapid solidification wherein each of said cooling rolls: has parallel grooves formed in the peripheral surface thereof so as to extend in a direction which crosses the direction of the roll axis, and said grooves on one of said cooling rolls are at a phase difference from the grooves on the other cooling rolls.

5,010,948

DEVICE FOR CONTINUOUSLY CASTING LIQUID METAL BETWEEN TWO ROLLS

Philippe Blin; Georges Weber, both of Metz, and Jacques Barbe, Saint Etienne, all of France, assignors to Institut de Recherces de la Siderurgie Francaise "Irsid", Paris, France

Filed May 22, 1990, Ser. No. 526,432
Claims priority, application France, May 29, 1989, 89 07011
Int. Cl.[5] B22D *11/06*
U.S. Cl. 164—428 **10 Claims**



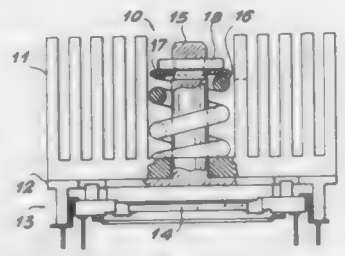
1. Device for continuously casting liquid metal, comprising two parallel horizontal rolls having end surfaces and cylindrical surfaces and spaced a predetermined distance apart and delimiting between the rolls a space for receiving liquid metal cast as a flat product under the rolls, plates for closing ends of said space disposed alongside said end surfaces of the rolls, and rolling members interposed between and in contact with said plates and said end surfaces of the rolls for maintaining a determined clearance between the plates and said end surfaces of the rolls constant during the casting.

5,010,949

DEVICE FOR FASTENING TOGETHER UNDER PRESSURE TWO PIECES, ONE TO THE OTHER

Gérard Dehaine, Chatillon, France, assignor to Bull, S.A., Paris, France

Filed Mar. 20, 1989, Ser. No. 325,763
Claims priority, application France, Mar. 22, 1988, 88 03675
Int. Cl.[5] F28F *7/00*; H01L *23/40*
U.S. Cl. 165—76 32 Claims



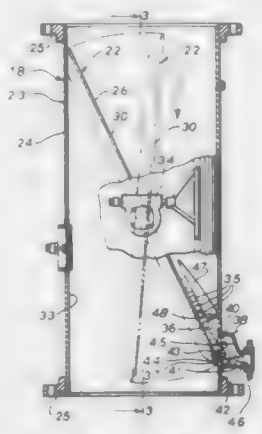
1. A device for dissipating heat from an integrated circuit, comprising a first piece coupled to said integrated circuit, a second piece having a surface and an opposite face, the surface adapted to thermally engage said first piece for enabling heat dissipation away from the integrated circuit, means for urging the first and second pieces together in thermal engagement, the means comprising a removable spring with shape memory, the spring extending between said opposite face of said second piece and a support means removably connected to said first piece.

5,010,950

BALL STRAINER FOR CIRCULATING BALL CLEANING SYSTEM

Donald J. Voith, Milwaukee, Wis., assignor to Water Services of America, Inc., Milwaukee, Wis.

Filed Sep. 13, 1989, Ser. No. 406,779
Int. Cl.[5] F28G *1/12*; B08B *9/04*
U.S. Cl. 165—95 6 Claims



1. In a circulating ball cleaning system for a fluid-carrying process piping arrangement, including a tubular ball straining section having a generally smooth cylindrical interior wall having an elliptical screen mounted in a screening position therein said screen having a regular elliptical edge in continuous engagement with the section wall and the screen surface disposed at an acute angle to the section wall to provide a narrow downstream collecting and discharge area, the improvement comprising:

a ball collecting and discharge chamber in the wall of the tubular section at the collecting and discharge area, said chamber lying entirely outside the cylindrical interior wall,

said chamber having an enlarged inlet opening in the interior surface of the section wall defining an enlarged cylindrical subchamber and a smaller outlet opening radially outwardly of said inlet opening,

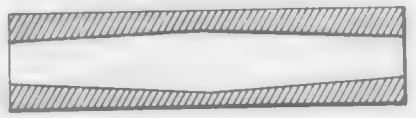
whereby continuous engagement between the edge of the elliptical screen and the cylindrical interior wall in the screening position is maintained.

5,010,951

GRADED-GROOVE HEAT PIPE

Michael R. Kapolnek, Sunnyvale; Alexander R. Feild, Mt. View; Robert T. Hartle, Cupertino, and Hillard R. Holmes, Menlo Park, all of Calif., assignors to Lockhead Missiels & Space Company, Inc., Sunnyvale, Calif.

Filed Aug. 3, 1989, Ser. No. 389,238
Int. Cl.[5] F28D *15/02*
U.S. Cl. 165—104.26 4 Claims



1. A heat pipe comprising a closed hollow structure elongate along an axis, said heat pipe having:

(a) an evaporator domain in which working fluid in liquid phase is evaporated to vapor phase, and

(b) a condenser domain to which working fluid in vapor phase is conveyed for condensation to liquid phase,

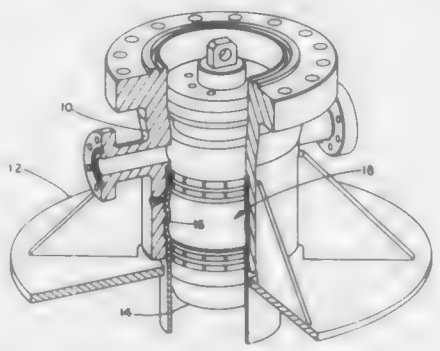
said evaporator domain and said condenser domain being separated from each other along said axis, a capillary groove being provided on an interior surface portion of said heat pipe to transport liquid-phase working fluid by capillary action from said condenser domain to said evaporator domain for evaporation to vapor phase, said capillary groove having a transverse cross-sectional dimension that varies continuously with length of said heat pipe, said transverse cross-sectional dimension having an extreme value at a location between opposite ends of said capillary groove in accordance with a predetermined profile for said capillary groove.

5,010,952

TUBULAR MEMBER SECURED WITHIN A WELL SUPPORT MEMBER WITH A PRELOAD

Arthur H. T. Chin, Houston, and Thomas R. Schmitz, Katy, both of Tex., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Sep. 17, 1987, Ser. No. 98,197
Int. Cl.[5] E21B *19/16*, *33/04*
U.S. Cl. 166—75.1 5 Claims



1. A preloaded joint comprising:

an annular wellhead member,

a well string having an upper end,

said wellhead member having an internal recess with an upper end and a lower end, the upper end of said recess being tapered radially inward and upward, said wellhead member recess having a plurality of grooves below said upper end,

said well string being radially cold formed into said recess with its upper end being wedged downwardly by said tapered upper end of said recess to provide a compression preload on said well string in addition to a tight gripping and sealing engagement between said well string and the interior of said wellhead member as said well string is radially cold formed into said recess,

said well string is radially formed into said grooves to provide said gripping and sealing engagement.

5,010,953

SAND CONSOLIDATION METHODS

Robert H. Friedman, and Billy W. Surles, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 2, 1990, Ser. No. 459,609
Int. Cl.[5] E21B *33/138*, *43/24*
U.S. Cl. 166—288 8 Claims

1. A method for consolidating unconsolidated mineral particles including sand in a subterranean petroleum formation penetrated by a well in fluid communication with at least a portion of the formation, comprising:

introducing a sand consolidating fluid into the formation, said sand consolidating fluid containing a polymerizable compound comprising a monomer or oligomer, a diluent for the polymerizable compound, an acid catalyst capable of causing condensation polymerization of the polymerizable compound at fluid injection temperatures and an effective amount of swelling polymer which reduces shrinkage of the polymerizable compound during polymerization; and

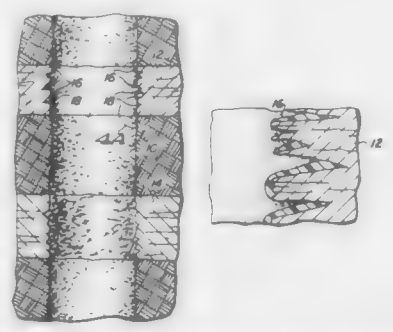
allowing the injection fluid to remain in the formation for a period of time sufficient to accomplish at least partial polymerization of the polymerizable compound, forming a permeable consolidated mass around the wellbore.

5,010,954

GEL COMPOSITION AND METHOD OF TREATMENT

David O. Falk, Denver, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Division of Ser. No. 331,405, Mar. 30, 1989, Pat. No. 4,968,442.
This application Jul. 25, 1990, Ser. No. 557,870
Int. Cl.[5] E21B *33/138*, *43/22*
U.S. Cl. 166—295 9 Claims



4. A method of treating at least one of a plurality of formations intersected by a well bore comprising:

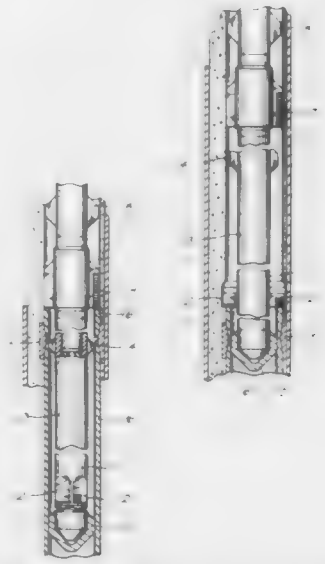
introducing into one of the plurality of formations which has a permeability which differs from another of the plurality of formations a first aqueous solution comprising a polymeric material selected from a biopolymer or a synthetic polymer, a crosslinking agent comprising a chromic carboxylate complex, a solvent selected from water or brine, and a gel breaker consisting essentially of ethylenediaminetetraacetic acid, the polymeric material crosslinking with the chromic carboxylate complex to form a gel impervious to fluid flow, the ethylenediaminetetraacetic acid being present in amount sufficient to break the gel after a predetermined period of time to a predetermined degree whereby limited permeability is restored to said one of the plurality of formations, said limited permeability more closely matching the permeability of said another of the plurality of formations.

5,010,955

CASING MILL AND METHOD

Johann B. Springer, Hanover, Fed. Rep. of Germany, assignor to Smith International, Inc., Houston, Tex.

Filed May 29, 1990, Ser. No. 530,107
Int. Cl.[5] E21B *10/46*, *29/00*
U.S. Cl. 166—298 26 Claims



13. A casing mill for milling oil well casing having sections of pipe coupled together by external couplings comprising:

a housing;

blades on the housing having a diameter sufficient for milling only pipe;

movable blades on the housing movable to a diameter sufficient for milling both pipe and coupling;

means in the housing for moving the movable blades to the diameter sufficient for milling both pipe and coupling; and

means for stabilizing the housing centered in a pipe to be milled.

26. A method for milling casing cemented in an oil well, the casing comprising a plurality of pipe sections interconnected by a plurality of couplings external to the pipe sections comprising:

milling both pipe and couplings in the vicinity of couplings; and

milling only pipe between the vicinities of adjacent couplings.

5,010,956

SUBSEA TREE CAP WELL CHOKE SYSTEM

John M. Bednar, Harvey, La., assignor to Exxon Production Research Company, Houston, Tex.

Filed Mar. 28, 1990, Ser. No. 500,438
Int. Cl.[5] E21B *34/04*, *43/01*
U.S. Cl. 166—344 2 Claims

1. An apparatus useful in subsea well completions requiring a subsea choke comprising:

a wellhead connector having a first connector passage therethrough in communication with production tubing in a wellbore and also having a second connector passage therethrough in communication with an annulus in the wellbore;

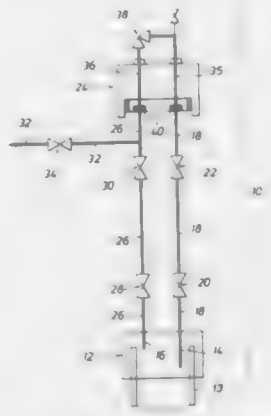
a tree flow passage connected to the wellhead connector and in communication with the first connector passage and extending through a first valve;

a tree annulus passage connected to the wellhead connector and in communication with the second connector passage and extending through a second valve;

a tree cap having:

1. a tree cap flow passage extending therethrough with the tree cap connected to and in communication with the tree flow passage at one end of the tree cap flow passage, and

2. a choke return passage extending therethrough with the tree cap connected to and in communication with the



tree annulus passage at one end of the choke return passage;

a choke located on the tree cap and in communication with the tree cap flow passage and also in communication with the choke return passage whereby fluid flows through the tree cap flow passage and through the choke and then through the choke return passage; and

a production line in communication with the tree annulus passage between the second valve and the tree cap and extending through a third valve.

5,010,957

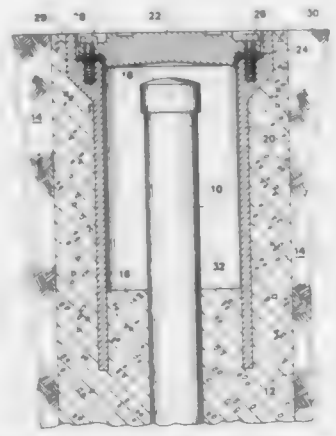
ENVIRONMENTAL MONITORING WELL HOUSING AND PROTECTION METHOD

Donald A. Kenner, Rt. 3, Box 220A, Sherwood, Oreg. 97140

Filed Aug. 22, 1989, Ser. No. 397,010

Int. Cl.[5] E21B *33/03*

U.S. Cl. 166—379 **19 Claims**



13. A method for housing and protecting an environmental monitoring well having a well pipe disposed in a well bore with an upper end extending toward the surface of the ground, comprising:

(a) placing an enclosure in said well bore around said upper end of said well pipe, said enclosure being of unitary construction and having an upper opening, a lower opening and an inwardly-protruding ledge between said upper opening and said lower opening;

(b) placing sealing means in said well bore between the outer surface of said well pipe and the inner surface of said enclosure, said sealing means being a composition distinct from said well pipe and said enclosure and having a characteristic that allows it to flow into the space between the outer surface of said well pipe and the inner surface of said enclosure and assume a stable condition so as to seal off the space therebetween;

(c) placing on said ledge a flexible gasket having a shape substantially identical to the shape of the surface of said ledge;

(d) placing on said gasket within said enclosure a cover having an upper surface and a peripheral shape substantially identical to the shape of the interior of said enclosure, and

(e) attaching said cover to said enclosure so that said upper opening of said enclosure and said upper surface of said cover are substantially flush with the surface of the ground.

5,010,958

MULTIPLE CUP BRIDGE PLUG FOR SEALING A WELL CASING AND METHOD

Dale E. Meek, Sugarland, and Merlin D. Hansen, Missouri City, both of Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Jun. 5, 1990, Ser. No. 533,624

Int. Cl.[5] E21B *33/128, 33/129*

U.S. Cl. 166—382 **19 Claims**

4. A method of sealing a well casing, a plurality of successively sized cups adapted to interfit together being disposed within said well casing, each cup of the plurality of cups having a side and a top, the side and the top of said each cup together defining a hollow interior within said each cup, comprising the steps of:

applying a compressive load to both ends of said successively sized cups, the top of said each cup entering the hollow interior of a next adjacent cup of a successively larger size during the application of said compressive load, the applying step continuing until said plurality of cups interfit tightly together; and

further applying said compressive load to said both ends of the tightly interfitting, successively sized cups until a plug is formed, the plug sealing said well casing.

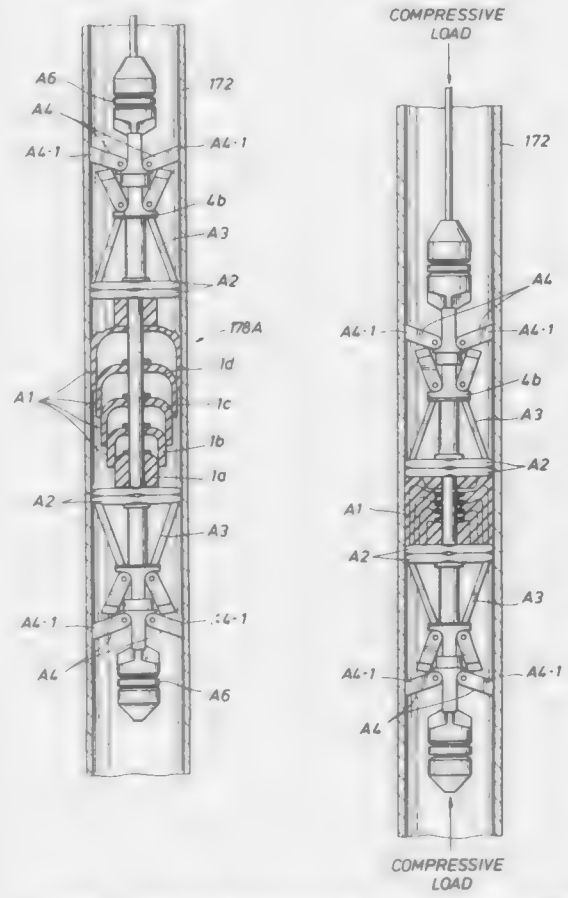
14. A sealing apparatus for sealing a well casing, comprising:

a plurality of cups of successively larger sizes, each cup of the plurality having a side and a top, the side and the top defining a hollow interior within said each cup; and

means for applying a compressive load to said plurality of cups,

the top of said cup entering the hollow interior of a next adjacent cup of successively larger size when the means for applying applies said compressive load to said plurality of cups,

the plurality of cups interfitting tightly together to form said sealing apparatus for sealing said well casing when said



means for applying continues to apply said compressive load to said plurality of cups.

5,010,959

AUTOMATIC SPRINKLER HEAD

Douglas A. Lostoski, Richfield, Ohio, assignor to Automatic Sprinkler Corporation of America, Cleveland, Ohio

Filed Dec. 7, 1989, Ser. No. 447,045

Int. Cl.[5] A62C *37/08*

U.S. Cl. 169—37 **5 Claims**

1. An automatic sprinkler head having:

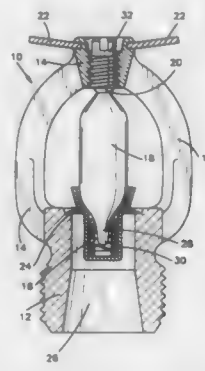
a body with a passageway for fire-extinguishing fluid;

a frame extending from said body having a deflector plate opposite said passageway;

a closure assembly for closing said passageway, said closure assembly including a closure thimble;

a glass bulb interposed between said closure assembly and said deflector plate to hold said closure assembly closed, said glass bulb having a capillary end which is enclosed by the closure thimble, and said glass bulb being thermally responsive so as to fracture at a predetermined temperature into fragments and release said closure assembly; and

means to minimize lodgement of said closure assembly and fragments of said glass bulb, said means being at least partially enclosed by the closure thimble and being interposed between the closure thimble and the glass bulb such that one end of said means is lodged against the end of the glass bulb having the capillary end and the other end of said means is lodged against the closure thimble, and said



means causing the closure assembly and fragments of the glass bulb to tumble away from the axis of the passageway when the glass bulb fractures.

5,010,960

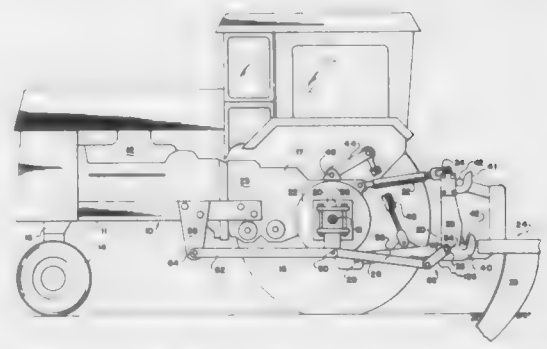
METHOD OF TILLING WITH IMPROVED DRAFT CONNECTION

Billey R. Barnes, Lemesa; Ronny L. Barnes, and David A. Gary, both of O'Donnell, all of Tex., assignors to Bar-Gar Corporation, O'Donnell, Tex.

Division of Ser. No. 331,454, Mar. 31, 1989, Pat. No. 4,905,769, which is a continuation-in-part of Ser. No. 925,162, Oct. 31, 1986, Pat. No. 4,860,833, which is a continuation-in-part of Ser. No. 754,619, Jul. 12, 1985, Pat. No. 4,655,295. This application Feb. 12, 1990, Ser. No. 479,083

Int. Cl.[5] A01B *59/041, 59/06*

U.S. Cl. 172—1 **4 Claims**



1. The procedure for tilling agricultural land with an agricultural tractor having

a. a differential housing to which a rear axle housing is connected,

b. rear wheels journaled to the axle housing,

c. large low pressure tires on the rear wheels,

d. a front axle,

e. front wheels on the front axle,

f. two spaced apart frame beams extending rearward from the front axle,

g. an engine on the frame beams,

h. transmission means on the tractor for transmitting power from the engine to the rear wheels,

i. a transmission housing interconnecting the frame beams and the differential housing,

j. a quick hitch yoke in the form of a vertical frame,

k. said yoke including three hooks, two draft hooks at the same level and spaced apart, and a top hook above and between the draft hooks,

l. two draft links,

m. each draft link pivoted to the yoke immediately forward

a draft hook, each draft link pivoted to the differential housing,

n. a top link connected from the yoke immediately forward of the top hook and extending to the differential housing,

o. an earth working implement having three bolts,

p. said three bolts located in said three hooks to quickly attach and detach the earth working implement to the quick hitch yoke,

q. the improved method of tilling the soil comprising:

r. at least partially drafting the earth working implement through the yoke from the frame beams forward of the transmission means, and

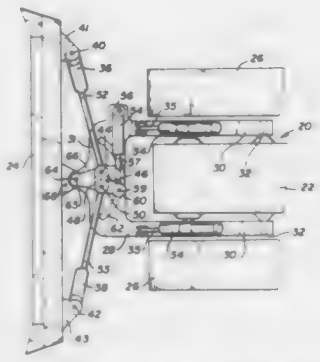
s. rigidly fixing horizontally and vertically the earth working implement to the tractor while tilling the soil.

5,010,961

ANGLE-TILT-PITCH MECHANISM FOR DOZER BLADE

Claude M. Frisbee, Schofield, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Feb. 20, 1990, Ser. No. 481,928
Int. Cl.[5] E02F *3/76*
U.S. Cl. 172—821 **12 Claims**



1. In an earth-working vehicle, a blade mounting arrangement comprising:

an earth-engaging blade;

a frame defining a longitudinal axis;

means to connect said blade to said frame, said means to connect allowing said blade to be moved to pitch forwardly or rearwardly by pivoting about an axis transverse to said longitudinal axis, to tilt by pivoting about said longitudinal axis, or to angle by pivoting about an axis extending vertically relative to said longitudinal axis; and

hydraulic cylinders for controlling the pitch, tilt and angling movement;

said hydraulic cylinders being pivotally connected to an intermediate member, said intermediate member being pivotally connected to said blade and movable relative to said frame;

wherein a pair of hydraulic cylinders control the pitch and tilt, and a single hydraulic cylinder controls angle movement; and

wherein said pair of hydraulic cylinders is pivotally connected to said blade and pivotally connected to said intermediate member, said single hydraulic cylinder is pivotally connected to said frame and pivotally connected to said intermediate member.

5,010,962

INDICATING APPARATUS FOR A COUPLING

John J. Illoom, Jr., St. Charles, Ill., assignor to Caterpillar Inc., Peoria, Ill.

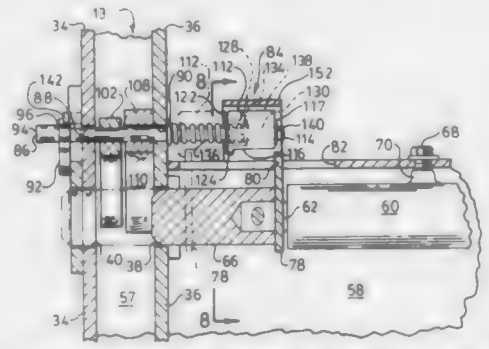
Filed Apr. 30, 1990, Ser. No. 516,367
Int. Cl.[5] A01B *39/20, 51/00;* **G01D** *5/00, 5/02*
U.S. Cl. 172—430 **18 Claims**

1. An apparatus for indicating the coupled condition between a first and second member, said first member having an opening formed therein and the second member having a mounting pin moveable into said opening to couple the respective members, comprising:

a plate having an opening formed therein and being mounted to the second member;

a shaft positioned in the opening formed in the plate;

a lever mounted on the shaft, said lever and said shaft being rotatable with respect to the plate member to establish



contact between the first and second members only when said members are in a position sufficient for being coupled to one another; and

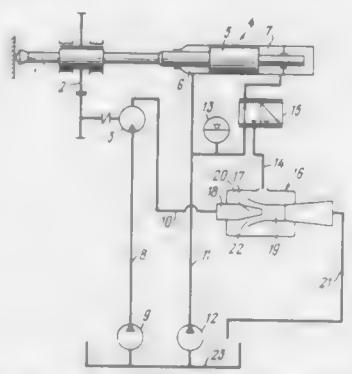
means for indicating the movement of the pin into the opening of the first member, said indicating means being operable only when contact between the first and second members has been established.

5,010,963

HYDRAULIC DRILLING MACHINE

Jury I. Neroznikov, ulitsa 40 let Kazakhstana, 40, kv.41; Ivan P. Rudakov, both of Karaganda; Valentin N. Fanshtein, 1 mikroralon, 63 kv. 10, Stepnogorsk; Vladimir A. Medyanik, ulitsa Shevchenok, 17, kv. 51, Zheltye Vody, and Valentina V. Gavrilova, ulitsa Mukanova, 13, kv. 64, Karaganda, all of U.S.S.R.

PCT No. PCT/SU89/00095, § 371 Date Mar. 2, 1990, § 102(e) Date Mar. 2, 1990, PCT Pub. No. WO89/11022, PCT Pub. Date Nov. 16, 1989
PCT Filed Apr. 14, 1989, Ser. No. 460,937
Claims priority, application U.S.S.R., May 4, 1988, 4473992
Int. Cl.[5] B25D *9/00*
U.S. Cl. 173—105 **1 Claim**



1. A hydraulic drilling machine comprising a drill tool (1) connected through a reduction gear (2) to a hydraulic motor (3) having a hydraulic pressure line (8) and a hydraulic discharge line (10), and a hydraulic percussive mechanism (4) with an idle stroke chamber (6) and a work stroke chamber (7), hydraulic pressure and discharge lines communicating with the hydraulic percussive mechanism (4) via a fluid distributor (15), a hydraulic accumulator (13) connected to the hydraulic pressure line (11) of the hydraulic percussive mechanism and hydraulic pumps (9 and 12), CHARACTERIZED in that the machine is provided with a means (16) for sucking liquid from

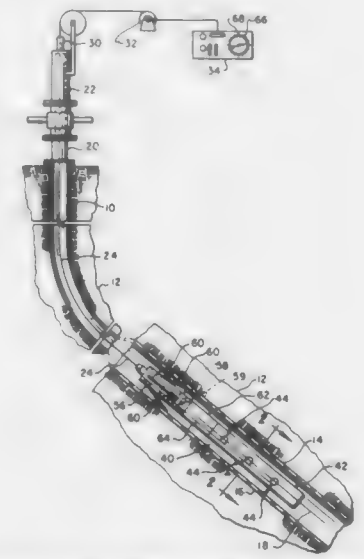
the work stroke chamber (7) of the hydraulic percussive mechanism (4) during its idle stroke including a mixing chamber (17) connected to the discharge line (14) of the hydraulic percussive mechanism via the fluid distributor (15), an ejector (18) and a diffuser (19) positioned in the mixing chamber (17), the ejector (18) being connected to the discharge line (10) of the hydraulic motor (3) and having a nozzle (20) positioned in the diffuser (19), said diffuser is connected to a hydraulic discharge line (21) common to the hydraulic motor (3) and hydraulic percussive mechanism (4).

5,010,964

METHOD AND APPARATUS FOR ORIENTING WELLBORE PERFORATIONS

H. Mitchell Cornette, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 6, 1990, Ser. No. 506,139
Int. Cl.[5] E21B *43/119*
U.S. Cl. 175—4.51 **2 Claims**



1. A method for perforating a casing in a portion of a wellbore inclined to the vertical preparatory to extending a hydraulic fracture into a formation region of interest in a preferred direction of said fracture comprising the steps of:

determining a preferred angular orientation of perforations in said casing for forming said fracture with respect to a reference point on said wellbore and the longitudinal wellbore axis in said region of interest;

providing a perforating apparatus including at least one perforating gun for firing a perforating charge to penetrate said casing to provide an opening for the flow of fluids between said formation and said wellbore, said apparatus including a reference unit for indicating the position of said apparatus in said wellbore with respect to the wellbore axis and said reference point, a housing, gripper means for engagement with said wellbore wall to hold said housing non-rotatable with respect to said axis, and motor means disposed in said housing and operably connected to said reference unit and said perforating gun for ratating said reference unit and said perforating gun to orient said perforating gun in a predetermined direction;

inserting said apparatus into said wellbore and positioning said apparatus adjacent to said region of interest;

determining the high side of said portion of said wellbore defined by a poing on said wellbore wall intersected by a line which lies in a plane which includes the vector indicating the direction of the force of gravity and passing through said wellbore axis;

operating said motor means to orient said perforating gun in said predetermined direction with respect to said line; and

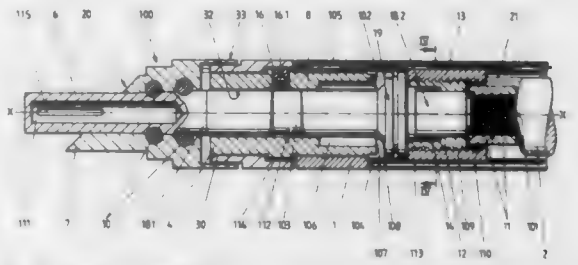
operating said apparatus to effect firing of said perforating gun to form at least one perforation in said casing.

5,010,965

SELF-PROPELLED RAM BORING MACHINE

Robert Schmelzer, Lennestadt, Fed. Rep. of Germany, assignor to Tracto-Technik Paul Schmidt Maschinenfabrik KG

Filed Apr. 4, 1990, Ser. No. 505,047
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1989, 3911467
Int. Cl.[5] E21B *4/06, 7/08, 47/024*
U.S. Cl. 175—19 **16 Claims**



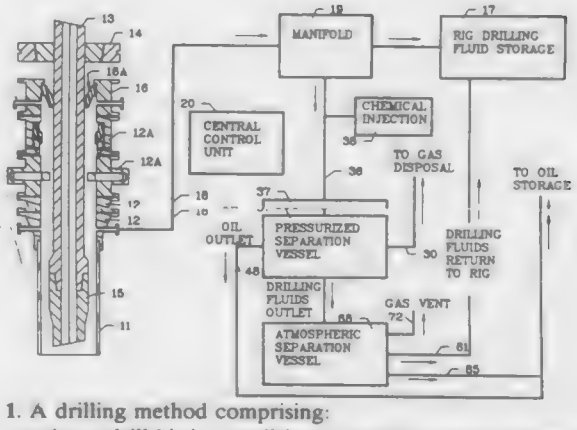
1. A self-propelled ram boring machine, in particular for making earth bores, having a striking tool at the leading end of a cylindrical housing, a striking piston movable to subject said striking tool to ramming blows, said striking piston being driven with pulsating, translatory working strokes, wherein said striking tool is mounted in the housing to rotate about the axis of rotation and comprises kinematic means cooperating with said housing for transforming a translatory movement following each blow of said striking piston into a gradual rotary movement, and means for initiating or interrupting the rotary movement.

5,010,966

DRILLING METHOD

Charles O. Stokley, Houston, and Richard C. Haas, Corpus Christi, both of Tex., assignors to Chalkbus, Inc., Houston, Tex.

Filed Apr. 16, 1990, Ser. No. 509,203
Int. Cl.[5] E21B *21/06*
U.S. Cl. 175—66 **3 Claims**



1. A drilling method comprising:

rotating a drill bit in a well head to drill a well in an earth formation while circulating drilling fluid consisting essentially of a liquid;

conducting the returning drilling fluid, and oil and gas from the formation to a flow rate control valve and to a pressure control valve;

conducting fluid from said flow rate control valve and said pressure control valve to a separator vessel maintained under pressure;

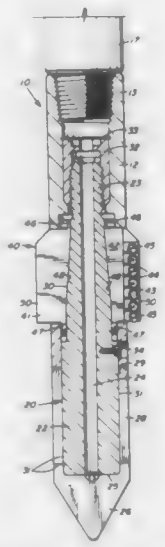
separating gas from the returning fluid in said separator vessel and conducting the separated gas from said separator vessel to disposal facilities;
conducting the remaining fluid in said separator vessel to an atmospheric separator vessel;
continuously circulating air through said atmospheric separator vessel to dilute to an inflammable mixture and to remove any well gases therein, and
separating the oil and drilling fluid in said atmospheric separator vessel and conducting the oil to disposal and returning the drilling fluid to the well.

5,010,967

MILLING APPARATUS WITH REPLACEABLE BLADES

Praful C. Desai, Houston, Tex., assignor to Smith International, Inc., Houston, Tex.

Filed May 9, 1989, Ser. No. 349,182
Int. Cl.[5] E21B *10/62*
U.S. Cl. 175—406 **3 Claims**



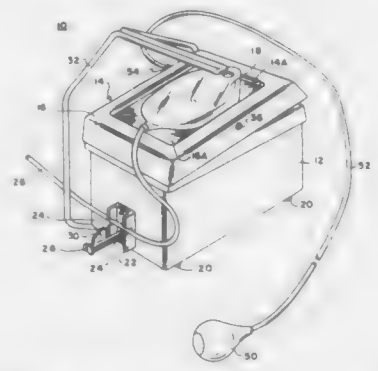
1. A pipe milling apparatus having replaceable milling blades fixedly secured within said apparatus prior to insertion of said apparatus into a wellbore for milling and cutting pipe utilized in oil and gas wells, said milling apparatus comprising:
a cylindrical body, said body forming a first upstream threaded end adapted to be connected to a drill string and a second downstream open, said body further forming at least a pair of equidistantly spaced, longitudinally extending slots therethrough positioned about midway between said first and second ends of said body,
at least a pair of pipe milling blades forming first and second ends adapted to be radially inserted through said slots in said cylindrical body from the inside of said body, means formed by said blade to fixedly secure said blade against an inside wall formed by said body, said blades extend radially from said body, said blades further form a cutting surface positioned toward a direction of rotation and along a radially disposed second downstream end formed by said milling blades, said cutting surface containing cutting means oriented substantially longitudinally adjacent said first longitudinally extending outer surface, the cutting means being positioned to mill said pipe as said milling apparatus is rotated, a first longitudinally extending outer surface formed by said blade determines the radial extension of said blade, an inner longitudinally extending surface formed by said blade forms an angled cam surface, the cam surface being angled from an axis of the milling apparatus,
a cylindrical mandrel confined within said cylindrical body and forming a first upstream end and a second pointed downstream pilot end said second pilot end serves to centrally guide said pipe milling apparatus down said well bore and into an end of said pipe to be milled, said mandrel further forming a tapered conical portion between said first and second end, the taper of the mandrel narrows from a large diameter nearest the second pilot end towards the first upstream threaded end, said conical surface substantially parallels said inner longitudinally extending surface formed by said cutter blades.

5,010,968

BLOOD AGITATING AND WEIGHING APPARATUS

Thomas E. Barrow, Rte. 3, Box 117B, Jacksonville, Tex. 75766

Filed Nov. 27, 1989, Ser. No. 441,311
Int. Cl.[5] G01G *13/02*
U.S. Cl. 177—118 **16 Claims**



1. Apparatus for agitating a liquid collected in container, comprising:
a base member;
a support member for receiving a container, said support member being pivotally mounted onto said base member;
means for biasing said support member to a first tilted position relative to the base member;
an inflatable member disposed between said support member and said base member; and,
means for introducing pneumatic pressure into said inflatable member to expand said inflatable member and for allowing said pneumatic pressure to be released therefrom.

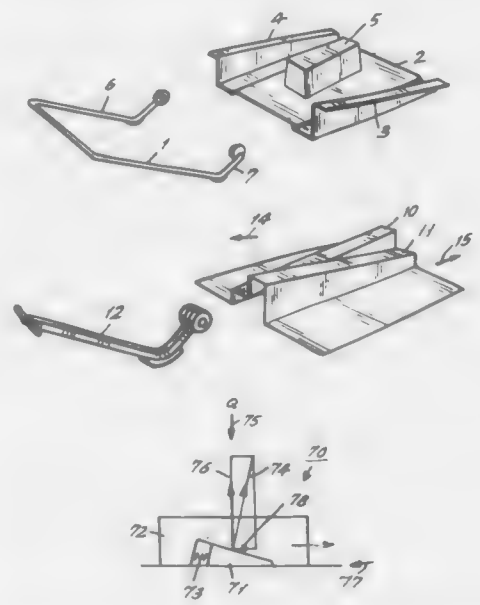
5,010,969

DRIVE SYSTEM

Georg Hirmann, Griesernweg 14, 8037 Zürich, Switzerland

PCT No. PCT/CH87/00064, § 371 Date Feb. 3, 1988, § 102(e) Date Feb. 3, 1988, PCT Pub. No. WO87/07586, PCT Pub. Date Dec. 17, 1987
Continuation-in-part of Ser. No. 129,965, Dec. 4, 1987, which is a continuation of Ser. No. 800,615, Nov. 12, 1985, abandoned.
This PCT application Jun. 4, 1987, Ser. No. 163,116
Claims priority, application Switzerland, Jun. 4, 1986, 2266/86; Jun. 25, 1986, 2568/86
Int. Cl.[5] B62D *57/002;* **B65G** *7/002*
U.S. Cl. 180—8.1 **12 Claims**

1. A drive device for conveying a load in a predetermined forward direction which is opposite to a predetermined backward direction, said device comprising:
a support platform with an upward-facing side for supporting said load and a downward-facing bottom side;
an inclined ramp connected to and defining an angle of incline with respect to said support platform, said ramp having a bottom side facing generally downward and generally backward;
lift means which is locatable below said ramp and which is operable for moving upward against said downward-facing ramp side to provide a generally upward lift against said downward-facing ramp side; and
means for providing a low coefficient of friction between said downward-facing ramp side and said upwardly movable lift means, thereby permitting said ramp and support platform to move freely in said predetermined forward conveying direction when said lift means is moved upward against said bottom ramp side, without requiring said lift means to move in either said forward or said backward direction.

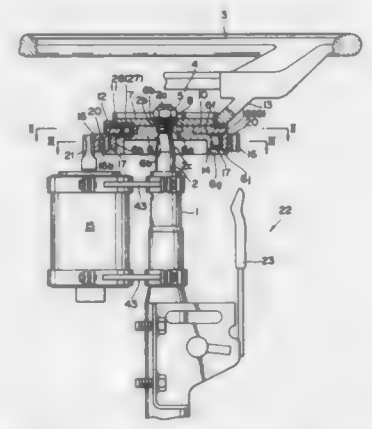


5,010,970

POWER-ASSISTED STEERING SYSTEM

Toshihiko Yamamoto, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed May 26, 1989, Ser. No. 357,194
Claims priority, application Japan, May 27, 1988, 63-130783; Oct. 31, 1988, 63-275045
Int. Cl.[5] B62D *5/04*
U.S. Cl. 180—79.1 **18 Claims**



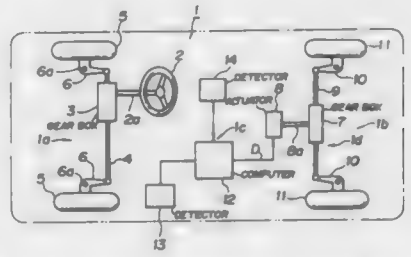
1. A power-assisted steering system for an automotive vehicle having a steering shaft rotatably supported by a steering column and a steering wheel through which a steering torque is transmitted to said steering shaft, said steering system comprising:
an electric motor mounted on said steering column having an output shaft offset from said steering shaft;
a connecting structure, said connecting structure comprising a driven steering member fixed to said steering shaft, a drive member fixed to said steering wheel, a motor driven member engaging said output shaft disposed radially outwardly of said driven steering member, a clutch mechanism disposed between said motor driven member and said driven steering member, and at least one spring disposed between said driven steering member and said drive member, said at least one spring providing a torsional resistance to movement of said drive member relative to said driven steering member, said connecting structure selectively connecting said steering shaft to a steering torque transmitted from said steering wheel when said steering torque is smaller than a predetermined torque equal to said torsional resistance and a motor output transmitted from said output shaft when said steering torque is greater than said predetermined torque; and
torque detecting means disposed in cooperation with said connecting structure for detecting said predetermined torque so as to actuate said electric motor, thereby rotating said output shaft and said motor driven member, engaging said clutch, and assisting in rotating said steering shaft.

5,010,971

STEERING SYSTEM FOR VEHICLES

Tetsuro Hamada, Tochigi; Shoichi Sano, Tokyo, and Yoshimi Furukawa, Tochigi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 690,167, Jan. 10, 1985, Pat. No. 4,964,401, and a continuation-in-part of Ser. No. 684,613, Dec. 21, 1984, Pat. No. 4,971,175. This application May 3, 1988, Ser. No. 189,657
Claims priority, application Japan, Dec. 23, 1983, 58-243354; Dec. 23, 1983, 58-243355
Int. Cl.[5] B62D *5/06*
U.S. Cl. 180—140 **5 Claims**



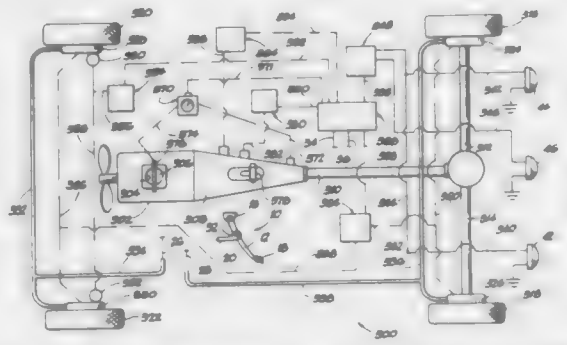
1. A steering system for a vehicle having front and rear steered wheels, comprising:
means for detecting a turning state of the vehicle;
means for detecting a velocity derivative of the vehicle;
means for determining a steering angle for the vehicle's rear wheels dependent on output signals of said turning state detecting means and said velocity derivative detecting means; and
means for driving the rear wheels to said steering angle as determined by said determining means;
said determining means including means for providing a reference steering angle for the rear wheels dependent on the output signal from said turning state detecting means, and means for correcting said reference steering angle dependent on at least the output signal of said velocity derivative detecting means to establish said steering angle for the rear wheels; and
said correcting means correcting said reference steering angle by way of a correction amount and a correction direction both corresponding to said velocity derivative.

5,010,972

COMBINATION VEHICULAR BRAKING AND ACCESSORY CONTROL SYSTEM

Ronald D. Ingraham; Todd M. Nykerk, and Peter H. Strom, all of Reed City, Mich., assignors to Nartron Corporation, Reed City, Mich.

Filed Jul. 6, 1989, Ser. No. 375,946
Int. Cl.[5] B60K *31/02*
U.S. Cl. 180—178 **22 Claims**



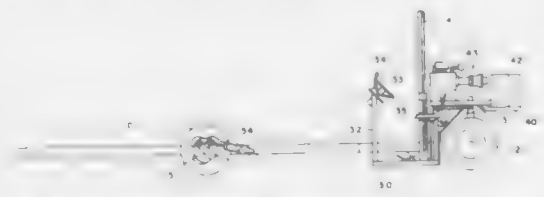
1. A braking and accessory control system for a vehicle having accessory means, comprising an arrangement effective for creating output signals, said arrangement comprising a first movable element, a second movable element, said first movable element being operatively connected to and effective for moving said second movable element, signal generating means effective for indicating when preselected magnitudes of a first force are applied to said first movable element when said first movable element is operatively engaging and at least urging said second movable element to move, said signal generating means comprising force sensitive electrical resistance means, wherein said force sensitive electrical resistance means varies its electrical resistance in response to the magnitudes of forces applied thereto, and wherein said force sensitive electrical resistance means is situated as to have applied thereagainst a reaction-force of a magnitude dependent upon the magnitude of said first force being applied in increasing magnitudes to said first movable element, said force sensitive electrical resistance means being effective upon said reaction-force attaining preselected magnitudes to produce related magnitudes of electrical resistance resulting in an output signal of varying electrical magnitude indicative of the corresponding attainment of said preselected magnitudes by said first force applied to said first movable element, and wherein said output signal is effective for initiating a response in said accessory means of said vehicle, wherein said first movable element comprises a manually actuatable vehicular brake lever, wherein said second movable element comprises a vehicular brake system actuating linkage, wherein said brake lever is pivotally mounted by first pivot means at least near a first of its ends to associated vehicular support structure as to have a second of its ends opposite to said first end generally freely swingable, wherein said actuating linkage is operatively connected to said brake lever by second pivot means, wherein one of said pivot means comprises said force sensitive resistance means, and further comprising first logic control electrical circuit means electrically connected to said force sensitive resistance means, second electrical circuit means electrically connected to said first circuit means, vehicular stop lamp means, wherein said accessory means comprises vehicular anti-skid brake system control means, wherein when said force sensitive resistance means produces an output signal of a first preselected electrical magnitude said first circuit means causes a first electrical control signal to be applied to said second circuit means to cause energization of said second circuit means and thereby energization of said vehicular stop lamp means, wherein when said force sensitive resistance means produces an output signal of a second preselected electrical magnitude said first circuit means causes a second electrical control signal to be applied to said vehicular anti-skid brake system control means, and wherein said first circuit means is effective to maintain energization of said second circuit means and said vehicular stop lamp means as the magnitude of said output signal changes from said first preselected electrical magnitude to said second preselected electrical magnitude.

5,010,973

FREIGHT CARRIER

Philip A. Brown, 4689 - 8 Mile Rd., NW., Conklin, Mich. 49403

Filed Aug. 31, 1989, Ser. No. 400,662
Int. Cl.[5] B60P *1/02*
U.S. Cl. 180—213 **1 Claim**



1. A load-carrying vehicle, comprising:
a load-carrying platform section having wheel means;
a power section coupled to said platform section in fixed relationship with respect to relative rotation about a vertical axis, said power section including steerable drive wheel means and motor means adapted to rotate said drive wheel means;
means forming an operator's station including a footrest platform mounted on said power section adjacent ground level and laterally offset from a portion of said platform and from said drive wheel means; and
wherein said load-carrying platform section wheel means is vertically adjustable with respect to said load-carrying platform section, and is provided with drive means energized by said motor means, said platform section wheel drive means including spindle means and a wheel sprocket secured to at least one wheel rotatably mounted on said spindle, and also including a double chain having two sides, one side thereof being in fixed engagement with said wheel sprocket, and further including motor means having a driving sprocket laterally opposite said wheel sprocket, and rotatable on an axis adjacent and displaced from said wheel sprocket axis of rotation in engagement with the other of said two sides of said double chain, said letter motor means being mounted on a member fixed with respect to said spindle.

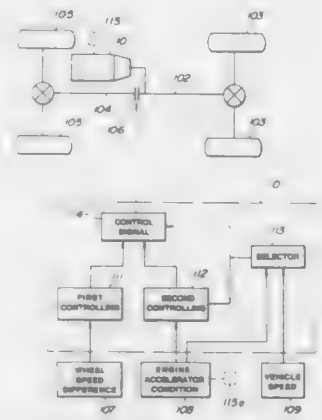
5,010,974

4WD VEHICLE WITH DRIVING FORCE DISTRIBUTION CONTROL

Toshiro Matsuda, Sagamihara, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 10, 1990, Ser. No. 506,788
Claims priority, application Japan, Apr. 10, 1989, 1-89969
Int. Cl.[5] B60K *17/34*
U.S. Cl. 180—233 **13 Claims**

1. A driving force distribution control system for a vehicle, comprising:
a torque distributing means comprising a primary drive means for transmitting a driving force from an engine of the vehicle to primary drive wheels of the vehicle, and a secondary drive means for transmitting a driving force from the engine to secondary drive wheels of the vehicle through a torque distributing clutch capable of varying the driving force transmitted to the secondary drive wheels in response to a control signal,
a first sensor means for determining a wheel speed difference between a primary wheel speed of said primary wheels and a secondary wheel speed of said secondary wheels,
a second sensor means for sensing an engine condition of an engine system which includes the engine and an accelerator system of the engine,
a third sensor means for sensing a vehicle speed of the vehicle,
a controller means for producing said control signal by processing signals of said first, second and third sensor means, said controller means comprising a first controlling means for normally controlling a clutch engagement force of said torque distributing clutch in accordance with said wheel speed difference, and a second controlling means for controlling the clutch engagement force in accordance with said engine condition when the engine system is in a predetermined state for accelerating the vehicle, and at the same time said vehicle speed is lower than a predetermined threshold speed value.



5,010,975

MOTOR VEHICLE COMPRISING TWO DRIVEN AXLES

Hans D. Sommer, Graz, Austria, assignor to Steyr-Daimler-Puch AG, Vienna, Austria

Filed Nov. 13, 1989, Ser. No. 436,067
Claims priority, application Austria, Dec. 21, 1988, 3119/88
Int. Cl.[5] B60K *17/35*
U.S. Cl. 180—248 **6 Claims**



1. A motor vehicle comprising
first and second driven axles,
a transmission for driving said first and second driven axles, said transmission including at least one selectively engageable road gear and a selectively engageable cross-country gear,
a drive train operatively connecting said transmission to said second driven axle, said drive train including a liquid friction coupling and a clutch preceding said liquid friction coupling, said clutch being operative between a first position in which said second driven axle is connected to said transmission via said clutch and said liquid friction coupling, a second position in which said second driven axle is connected directly to said transmission via said clutch, and a third position in which said second driven axle is disconnected from said transmission,
first pick-up means for detecting which of said cross-country gear and said road gear is selected,
second pick-up means for detecting the speed of said vehicle,
third pick-up means for detecting when a brake is actuated, and
automatic switching and control means responsive to said first, second, and third pick-up means for automatically shifting said clutch into said first position when said road gear is selected, into said second position when said cross-country gear is selected, and into said third position when the speed of said vehicle is above a threshold value and said brake is actuated.

5,010,976

CHARACTERIZATION OF THE FULL ELASTIC EFFECT OF THE NEAR SURFACE ON SEISMIC WAVES

Tom P. Airhart, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 4, 1989, Ser. No. 417,792
Int. Cl.[5] G01V *1/00*
U.S. Cl. 181—108 **44 Claims**



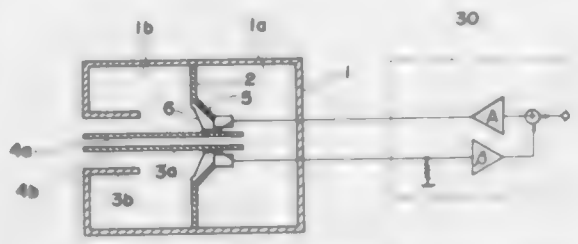
1. A method for determining the full elastic effect of a near surface layer on a seismic source wave, comprising the steps of:
placing a plurality of surface seismic receivers arranged along a first direction on the surface of the earth;
placing at least one buried sensor beneath the surface of the earth at a depth where the filtering effect of the near surface layer is substantial;
injecting a directed seismic wave into the ground at a first source location remote from said surface receivers, such that at least one surface receiver is in-line and at least one surface receiver is off-line with respect to the projected path of said directed seismic wave;
receiving said seismic wave with said surface receivers and said buried sensor;
generating from said buried sensor and said surface receivers electrical representations of said received seismic waves; and
interpreting said electrical representations to determine the effect of the near surface layer on said seismic wave.

5,010,977

ACOUSTIC APPARATUS WITH PLURAL RESONATORS HAVING DIFFERENT RESONANCE FREQUENCIES

Kazunari Furukawa, and Daisuke Suzuki, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Jul. 13, 1989, Ser. No. 379,583
Claims priority, application Japan, Jul. 22, 1988, 63-96436[U]
Int. Cl.[5] G10K *11/04*
U.S. Cl. 181—160 8 Claims



1. An acoustic apparatus, comprising:

a housing having a plurality of cavities therein defining a plurality of resonators for generating an acoustic wave by resonance, wherein each of said cavities includes an acoustic mass means for causing said cavity to acoustically communicate with an external region, said plurality of resonators having different resonance frequencies and having resonance acoustic radiation portions arranged adjacent to each other and each having an end opening to an outside of the housing; and

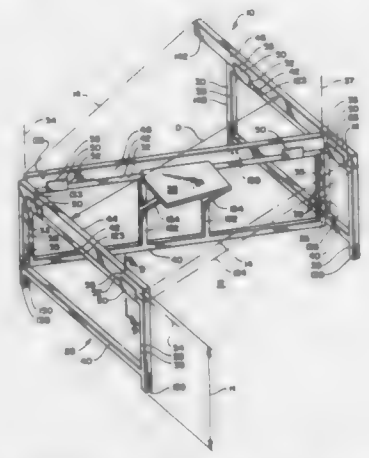
a vibrator having a front surface for driving one of said resonators and an opposing rear surface for driving another of said resonators.

5,010,978

APPARATUS AND METHOD FOR A SAWING STAND

Scott A. Jimmerson, 2591 N. Shore Rd., Bellingham, Wash. 98226

Filed Mar. 29, 1990, Ser. No. 501,262
Int. Cl.[5] B27B *21/00*; B25H *1/06*
U.S. Cl. 182—153 21 Claims



1. A board supporting assembly for supporting a plurality of board means so that a workpiece may be placed upon the board means and sawed thereon, said assembly having a longitudinal axis and a transverse axis, said assembly comprising:

a. a front board supporting means adapted to support a front board means at a front end of said assembly;

b. a rear board supporting means adapted to support a rear board means at a rear end of said assembly;

c. a connecting board supporting means adapted to support an intermediate board means and connected pivotally at a front end thereof to said front board supporting means in a manner that said front board supporting means is able to be rotated about a front pivot axis to a collapsed position, and with said connecting board supporting means being connected pivotally at a rear end thereof to said rear board supporting means in a manner that said rear board supporting means may be rotated about a rear pivot axis to a collapsed position

d. each of said front, rear, and connecting board supporting means comprising:

i. a board support portion defining a horizontally extending line;

ii. a board securing means for securing a lower portion of a related one of said front, rear, and intermediate board means at said horizontal line; and

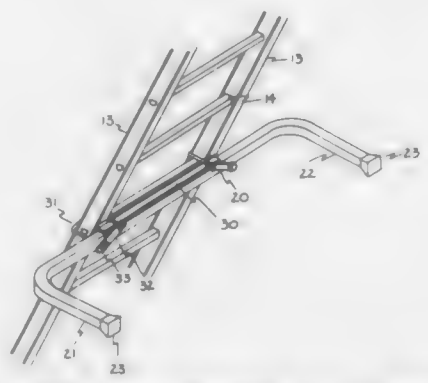
iii. a base means for ground surface engagement, said assembly being adapted to position a top portion of said board means within a workpiece supporting plane, a length of said connecting board supporting means being at least about 4½ feet, whereby said board means is able to be positioned upon said board supporting means, a sheet of four foot by eight foot material is able to be placed upon top surfaces of said board means, and a longitudinal displacement component along said longitudinal axis from said front board means to said rear board means is able to be at least 4½ feet so that said sheet of material is able to remain supported by said board means while being sawed.

5,010,979

LADDER STABILIZING DEVICE

Arthur L. Shreve, III, P.O. Box 25, Butler, Md. 210[illegible]

Filed Jan. 30, 1990, Ser. No. 475,697
Int. Cl.[5] E06C *7/48*
U.S. Cl. 182—214 6 Claims



1. An improved ladder stabilizing device for supporting a ladder adjacent to a substantially vertical surface, of the type in which a ladder having a pair of generally parallel side rails connected by a plurality of transverse ladder rungs therebetween, is held by a first supporting means for supporting said ladder at a spaced distance from the said surface, and a second supporting means for removably clamping said first means to said ladder, and a third supporting means, wherein the improved third supporting means comprises:

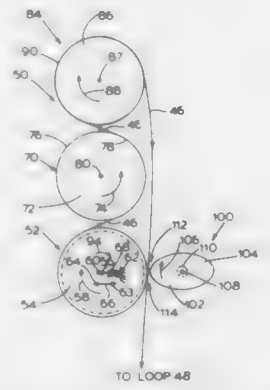
a generally U-shaped member having parallel opposing sides positioned at oblique angles to a bottom of said member, an inside of said U-shaped member being shaped to receive and substantially engage and hold the said first supporting means parallel to the sides of the third supporting means and at right angles to the said vertical surface.

5,010,980

ASSEMBLY FOR LOWERING A PERSON TO SAFETY FROM A BUILDING

Richard B. Thomas, 10 Quintard Ave., Old Greenwich, Conn. 06870

Filed Jul. 25, 1990, Ser. No. 557,064
Int. Cl.[5] A62B *1/00*
U.S. Cl. 182—236 5 Claims



1. An assembly for lowering a person to safety from a building comprising:

(A) two bracket elements, each having

(1) an L-shaped body having a long leg and a short leg,

(2) fastener elements in said short leg which are attachable to a sill of a building window to releasably mount said each bracket element to that sill, and

(3) an elongated slot defined through said long leg;

(B) a housing having

(1) a hollow cylindrical body having two ends and a longitudinal centerline and an elongated slot defined therethrough,

(2) fastener elements on said hollow body which attach said housing to said bracket elements so that said housing longitudinal centerline is oriented essentially horizontally;

(C) a rope element having a person-supporting loop on one end thereof;

(D) a rope element storage and deployment unit which includes

(1) a storage drum having a longitudinal centerline and being rotatably mounted inside said housing body, said rope element having a second end affixed to said storage drum and being wound onto said storage drum to be dispensed from said storage drum when said drum rotates about said drum longitudinal centerline in a forward direction during a descent operation, and to be wound onto said storage drum when said storage drum rotates in a reverse direction about said drum longitudinal centerline,

(2) a support axle mounted on said housing body and attached to said storage drum on said storage drum longitudinal centerline and supporting said storage drum for rotation about said storage drum longitudinal centerline,

(3) a mounting element firmly affixed to said housing body,

(4) a spring element attaching said support axle to said mounting element and biasing said support axle in a first direction away from said mounting element,

(5) a first guide roller located adjacent to said storage drum and including

(a) a peripheral surface and a longitudinal centerline which is oriented to be parallel to said drum longitudinal centerline,

(b) a first mounting axle attached to said housing body, said first guide roller being mounted on said first mounting axle to rotate about said first mounting axle, and

(c) said rope element contacting said first guide roller about a first portion of the peripheral surface of said first guide roller,

(6) a second guide roller located adjacent to said first guide roller, with said first guide roller being located between said storage drum and said second guide roller, said second guide roller including

(a) a peripheral surface and a longitudinal centerline which is oriented to be parallel to said first guide roller longitudinal centerline,

(b) a second mounting axle attached to said housing body, said second guide roller being mounted on said second mounting axle to rotate about said second mounting axle, and

(c) said rope element contacting said second guide roller about a first portion of the peripheral surface of said second guide roller,

(7) said first and second guide rollers and said storage drum being in a stacked configuration with said first guide roller first peripheral surface portion being on an opposite side of said first guide roller from said second guide roller first peripheral surface portion so that said rope element snakes around said first guide roller and exerts a rope force on said storage drum which opposes the biasing force exerted on said storage drum by said spring element,

(8) a cam element mounted on said housing body adjacent to said storage drum, said cam element being mounted on an axle to rotate and having two lobe ends, said lobe ends abutting against the portion of the rope element located on said storage drum when said cam element is in a first position and being spaced from said storage drum to define a gap when said cam element is in a second position as said cam element rotates, said cam element axle being mounted on said housing body,

(9) a torsion spring connected at one end thereof to said housing body and connected at another end thereof to said cam element axle and biasing said axle to rotate; and

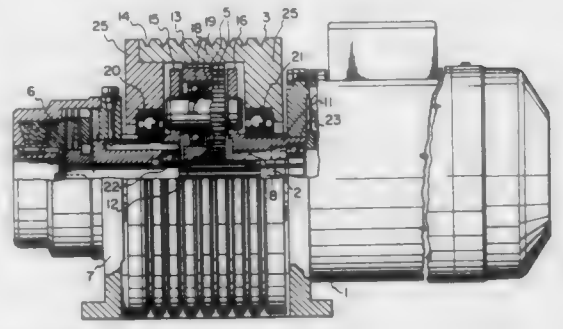
(E) said rope element extending between said cam element and said storage drum to be jammed against the portion of said rope element on said storage drum when said cam element is in said first position and preventing further rope from moving off of said storage drum, and to be released when said cam element is in said second position to permit further rope to move off of said storage drum.

5,010,981

ELEVATOR MACHINE

Urho J. Heikkinen, Espoo, Finland, assignor to Kone Elevator GmbH, Baar, Switzerland

Filed Jul. 7, 1989, Ser. No. 376,478
Claims priority, application Finland, Jul. 7, 1988, 883244
Int. Cl.[5] B66B *11/04*
U.S. Cl. 187—20 5 Claims



1. An elevator machine comprising:

a drive motor;

a drive shaft driven by said motor, said driveshaft being provided with gear teeth which are purposed to mesh with one or more intermediate gears;
said driveshaft being rotatably mounted in bearings located inside a fixed supporting axle;
said fixed supporting axle comprising one or more tubular parts and one or more flanges interconnected by one or more connecting members placed on the periphery of said flanges and rendering the supporting axle rigid, and wherein said one or more flanges support one or more intermediate gears between them, said one or more intermediate gears purposed to intermesh with said teeth of said driveshaft;
a traction sheave purposed to transmit motion of said drive shaft to an elevator car by means of cables;
said traction sheave being provided with internal toothing purposed to engage with said intermediate gears;
said intermediate gears comprising a gear assembly to reduce rotational speed of said motor for said traction sheave, said gear assembly being located inside said traction sheave;
said drive shaft passing through said traction sheave, said drive motor being coupled to one end of said drive shaft and a brake being mounted on the other end of said drive shaft on the opposite side of said traction sheave.

5,010,982

METHOD AND APPARATUS FOR IMPROVING VEHICLE TRACTION AND ROADABILITY

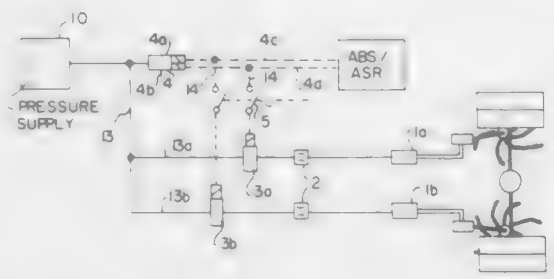
Joachim Sedlmayr, Lisle, Ill., assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 7, 1989, Ser. No. 390,035

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1988, 3826775

Int. Cl.[5] B60C *27/00*

U.S. Cl. 188—4 B **21 Claims**



1. A method for improving traction and roadability in vehicles including wheels and wheel brake cylinders, comprising the steps of initiating a traction control means to supply control signals to at least one control valve to control flow of a pressure medium to said brake cylinders and to separate adjusting cylinders (**1***a*, **1***b*), automatically evaluating signals generated by the traction control means to control said at least one fluid control valve for supplying a flow of said pressure medium to said separate adjusting cylinders (**1***a*, **1***b*) for controlling separate traction promoting means for increasing the wheel grip, and activating said separate traction promoting means for increasing the wheel grip on a road surface.

5,010,983

SHAFT LOCKING DEVICE

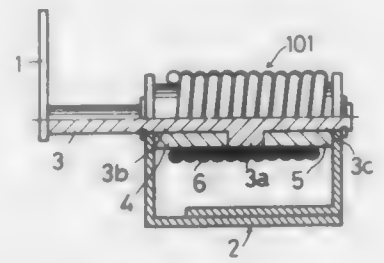
Yoshiharu Kitamura, Komagane, Japan, assignor to NHK Spring Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 318,081, Mar. 2, 1989, abandoned. This application Jun. 28, 1990, Ser. No. 544,817

Claims priority, application Japan, Mar. 4, 1988, 63-[illegible]201; Mar. 4, 1988, 63-28202; Dec. 21, 1988, 63-165569

Int. Cl.[5] F16D *63/00*

U.S. Cl. 188—67 **11 Claims**



1. A shaft-locking device for locking rotation at any arbitrary position of an article requiring control of an inclined angle, said device comprising
a movable bracket secured to the article requiring control of an inclined angle,
a fixed bracket secured to a supporting member for supporting the article,
two fixed shafts integrally secured to said fixed bracket,
a movable shaft rotatably secured to the movable bracket,
the movable shaft being a stepped shaft with two small diameter portions being mounted within the fixed shafts and an outer diameter of a large diameter portion of the movable shaft being at least equal to the outer diameter of said fixed shafts and one of said fixed shafts being located between said movable bracket and said large diameter portion of said movable shaft,
a continuous coil spring spiraling in a single direction surrounding the fixed shafts and the movable shaft in a closely contacted state,
opposite end portions of said coil spring surrounding said fixed shafts to securely lock rotation of said movable bracket at any arbitrary position until an external force is applied to the movable bracket which is greater than a locking force exerted by the end portions of the coil spring on the fixed shafts to release said coil spring from said fixed shaft by expansion of said coil spring.

5,010,984

POWER TRANSFER ASSEMBLY WITH ONE-PIECE RETAINER RING

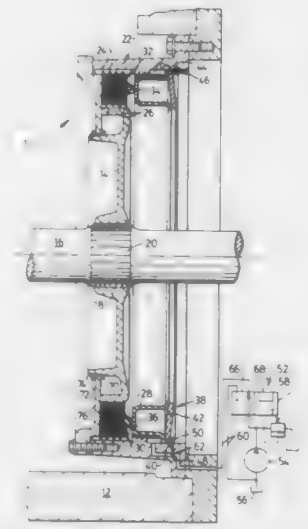
Bryan G. Lammers, Washington, and David M. Fee, Groveland, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jun. 7, 1990, Ser. No. 544,292

Int. Cl.[5] F16D *55/36*

U.S. Cl. 188—71.5 **8 Claims**

1. A power transfer assembly, comprising:
a stationary non-rotatable housing;
a rotatable hub;
a rotatable power shaft splined to said hub;
a plurality of first and second friction discs splined respectively to said housing and to said hub, each of said first friction discs being adjacent at least one of said second friction discs;
a powered piston positioned within and moveable relative to said housing;
a cushion spring positioned between said piston and said friction discs;
first power means for moving said piston into contact with said cushion spring; and
a one-piece retainer and wear ring secured within said housing and in contact with said first power means, said one-piece retainer and wear ring including a split ring member having first and second portions, said first portion having



a substantially rectangular shape in cross-section, and said second portion having a substantially bulbous shape in cross-section.

5,010,985

DISC ASSEMBLIES FOR VEHICLE DISC BRAKES

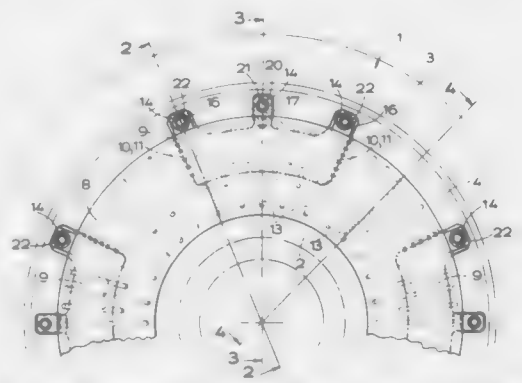
David F. Russell, Mickle Trafford, and Keith Mungo, Liverpool, both of England, assignors to Lucas Industries Public Limited Company, Birmingham, England

Filed Aug. 30, 1989, Ser. No. 400,509

Claims priority, application United Kingdom, Sep. 2, 1988, 8821630

Int. Cl.[5] F16D *65/10*

U.S. Cl. 188—218 XL **8 Claims**



1. A disc assembly for a vehicle disc brake comprising a rotor, a pair of oppositely directed faces defined on said rotor, and an annular braking disc mounted on each of said faces, each said braking disc having a braking area and circumferentially spaced apart lugs which extend radially outwardly from the perimeter of the braking disc radially beyond the braking area, carrier means including a carrier plate, being secured both to the braking disc and to the rotor, the carrier plate having a plurality of lugs, said lugs extending radially outwardly with respect to the rotor; complementary radial abutment faces being provided on the carrier plate and the brake disc respectively, said lugs on the carrier plate being superimposed on said lugs of the brake disc; means for connecting at least one of said lugs of the carrier plate to the rotor; means for fastening another one of said lugs of the carrier plate to a superimposed one of said lugs of the brake disc; and means for permitting relative radial movement of said disc and said carrier.

5,010,986

BRAKEBAND

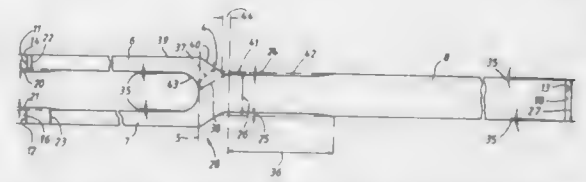
Gunter Jürgens, Stuttgart; Jürgen Pickard, Wernau, and Werner Sell, Quierschied, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Nov. 29, 1989, Ser. No. 442,654

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1988, 3841096

Int. Cl.[5] F16D *65/06*

U.S. Cl. 188—250 H **8 Claims**



1. A brakeband having two side band portions which branch off from a central connecting portion in one circumferential direction of an axis of rotation of a brake;
a middle band portion, located axially between these two side band portions, which branches off from the connecting portion in an opposite circumferential direction;
a thrust piece located circumferentially adjacent to each of free band ends of the two side band portions;
wherein circumferentially mutually confronting free end faces of the two side band portions and of the adjacent thrust piece are welded to one another;
wherein the free band ends of the side band portions are widened in the direction of the axis of rotation of the brake, in an axial direction pointing only toward the middle band, in such a manner as to provide a cross sectional area for the weld between said free band ends and said adjacent thrust pieces which is greater than the cross sectional area of said side bands in an area adjacent said widened band ends; and
wherein the middle band portion is narrowed at a region which is located adjacent the connecting portion and axially opposite the widened free band ends when said brakeband is disposed in the installed state, in such a manner as to effect an increase in a critical stress cross-section of said side bands in an area where said side bands branch off from said central connecting portion.

5,010,987

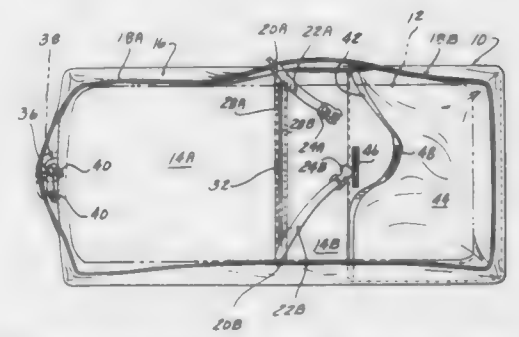
GARMENT BAG COVER

John Evans, Chesterfield, Mo., assignor to Design Research, Inc., Cookeville, Tenn.

Filed Apr. 20, 1990, Ser. No. 512,787

Int. Cl.[5] A45C *3/08, 13/30, 13/38*

U.S. Cl. 190—26 **5 Claims**



1. A cover for a garment bag luggage item comprising:

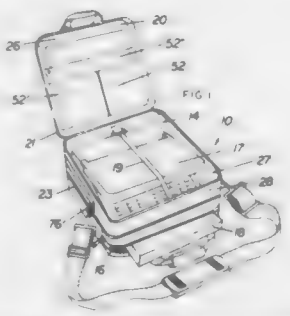
a generally rectangular main section of flexible material, of a size and shape to allow a garment bag to be laid atop said main section with the bag lying within its perimeter, said main section comprised of a pair of opposite halves lying on either side of the center of said main section;
an upturned border extending around said main section perimeter of a depth corresponding to that of said garment bag, the inside of said border defining a cover interior;
a pair of zipper tracks, each track extending about a respective one half of said border, each track joined to the other at either end at said center of said main section, and at least one zipper slider on one of said joined ends of said tracks, adapted to zipper together said tracks when said tracks are generally aligned with each other with said main section halves folded together;
a pair of straps, each one of said pair of strips connected at one end to a respective side of the interior of said cover at the center of said main section, the other end of each of said pair of straps free, means adapting the other end of each of said straps to be connected to each other to extend said connected straps across said cover;
a zippered opening extending partially across said main section at said center, whereby access to said garment bag through said opening is enabled.

5,010,988

EXPANDABLE SHOCK PROTECTED CARRYING CASE

Lauren Brown, 3704 NW. 82nd St., Miami, Fla. 33147

Filed Mar. 19, 1990, Ser. No. 495,614
Int. Cl.[5] A45C *7/00;* **B65D** *85/30*
U.S. Cl. 190—104 **20 Claims**



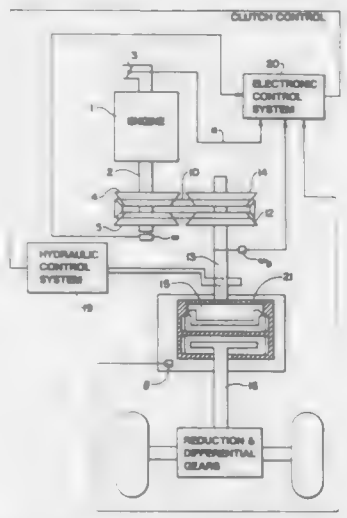
1. An expandable carrying case comprising:
a case including an exterior shell formed of a substantially rigid, yet flexible material defining an outer exposed surface, said case including a front panel, a rear panel and a surrounding side wall structure connecting between said front and said rear panels in enclosing relation to a case interior,
a main storage compartment formed in said case interior between said front panel and an interior dividing wall,
an expansion zone formed in said side wall structure between said interior dividing wall and said rear panel, said expansion zone structured and configured to permit movement of said rear panel relative to said interior dividing wall between a collapsed position and an expanded position,
a secondary storage compartment formed in said case between said interior dividing wall and said rear panel in the expanded position,
an inner lining disposed in substantially covering and surrounding relation to an interior surface of said case interior,
shock absorbing means disposed between said exterior shell and said inner lining and defined by a layer of shock absorbent material structured and configured to absorb impact to said exterior shell and forming a shock barrier between said exterior shell and said case interior,
access means formed in said surrounding side wall structure providing access to said main storage compartment and said secondary storage compartment, and
handle means disposed on said case for a single handed portability of said case.

5,010,989

CLUTCH CONTROL FOR HIGH-RESPONSE CONTINUOUSLY VARIABLE TRANSMISSION

Peter Huntley, Ithaca, N.Y., assignor to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Oct. 17, 1989, Ser. No. 422,627
Int. Cl.[5] B60K *41/02*
U.S. Cl. 192—0.033 **16 Claims**



1. A continuously variable transmission system having a controllable variable speed component and an adjustable clutch and means for controlling operation of said clutch in response to a demand for rapid power increase, said means for controlling clutch operation comprising:
means for providing a desired engine speed;
means for providing a measure of the actual engine speed;
means for comparing said desired engine speed with said measure of said actual engine speed measure to provide an error signal representative of the difference between said desired engine speed and said actual engine speed; and
means responsive to said error signal for providing an output signal representative of a required clutch engagement rate to allow said clutch to slip at a required controlled amount to facilitate an increase in said engine speed.

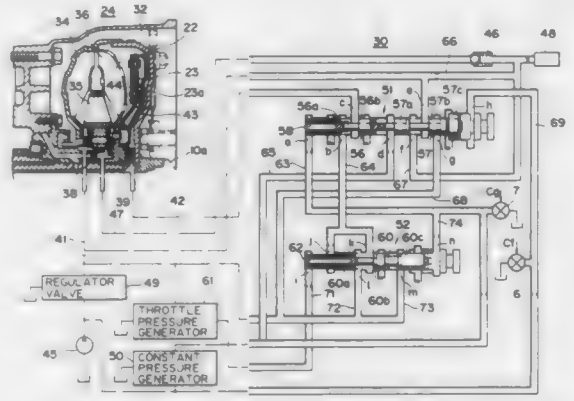
5,010,990

SLIP CONTROL SYSTEM FOR LOCKUP TORQUE CONVERTER

Hiroshi Yoshimura; Takuji Fujiwara; Kozo Ishi, and Kazuo Takemoto, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Nov. 6, 1989, Ser. No. 432,214
Claims priority, application Japan, Nov. 4, 1988, 63-278608; Aug. 17, 1989, 1-211972
Int. Cl.[5] F16H *61/14, 45/02*
U.S. Cl. 192—3.3 **23 Claims**

1. A slip control system for a lockup torque converter of an automatic transmission for an automotive vehicle having an engine, said lockup torque convertor consisting of a torque input element operatively connected to said engine, a torque output element operatively connected to said automatic transmission, and a lockup clutch for selectively coupling said torque input element and said torque output element of said lockup torque convertor, said slip control system comprising:
a shift operation detecting means for detecting shifting of said automatic transmission;
a deceleration detecting means for detecting that said automotive vehicle is decelerating in a predetermined speed region;
a hydraulic pressure supply system for supplying hydraulic pressure to said lockup torque convertor so as to actuate said lockup clutch to selectively couple said torque input element and said torque output element of said lockup torque converter; and
a hydraulic pressure control means disposed in said hydraulic pressure supply system for varying said hydraulic



pressure to provide at least two different slippage states of said lockup torque converter differentiating a first slipping stage when said deceleration detecting means detects deceleration of said automotive vehicle from a second slipping state when the deceleration detecting means detects no deceleration of said automotive vehicle in a condition where said shift operation detecting means detects a specified shifting of said automatic transmission, whereby allowing said lockup torque converter to differently slip dependent on deceleration of the vehicle.

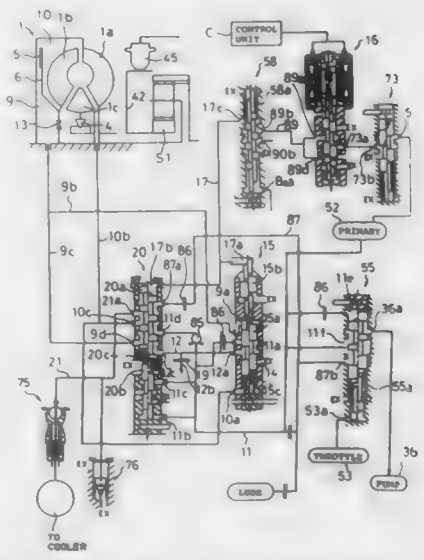
5,010,991

LOCK-UP CLUTCH CONTROL DEVICE FOR A TORQUE CONVERTER

Kazumasa Tsukamoto; Kazunori Ishikawa, both of Toyota; Takuji Taniguchi, Okazaki; Kunihiro Iwatsuki, and Yutaka Taga, both of Aichi, all of Japan, assignors to Aisin Aw Co., Ltd. and Toyota Jidosha Kabushiki Kaisha, both of, Japan

Filed Sep. 14, 1989, Ser. No. 407,948
Claims priority, application Japan, Sep. 16, 1988, 63-231774
Int. Cl.[5] F16H *45/02*
U.S. Cl. 192—3.3 **8 Claims**

1. A lock up clutch control for a torque convertor, comprising:
an oil pressure supplying device,
regulator valve means for providing a regulated oil pressure,
a torque convertor for hydraulically transmitting engine power to an automatic transmission,
a lock up clutch disposed in the torque convertor with an orifice,
first and second oil chambers defined by the lock up clutch for supplying an oil fluid to release and connect the lock up clutch respectively and connected therebetween through said orifice,
a lock up valve means disposed between the torque convertor and the regulator valve means for selectively supplying the regulated oil pressure to one of the first and second oil chambers and connecting the torque convertor to an exhaust port to regulate a differential pressure between inside pressures of the first and second oil chambers, and
a solenoid valve means disposed between the oil supplying pressure source and the lock up valve means for regulating the differential pressure,
said lock up valve means having
a lock up relay valve for selectively supplying the regulated oil pressure to one of the first and second oil chambers, and
a lock up control valve for connecting the torque convertor to an exhaust port to regulate the differential pressure between the inside pressures of the first and second oil chambers,
said lock up relay valve including
a spool,
a first port connected to the first oil chamber,
a second port connected to the second oil chamber,
a third port connected to the regulator valve means for supplying the regulated oil pressure, and
a first control chamber connected to the solenoid valve means for supplying a solenoid controlled oil pressure to selectively connect the third port to one of the first and second ports,
said lock up control valve including



a second spool biased by a constant pressure means,
a first counter oil chamber connected to the first oil chamber,
a second counter oil chamber connected to the second oil chamber,
a second control chamber connected to the solenoid valve means, and
a third oil chamber connected to the torque convertor for connecting the torque convertor to an exhaust port through the spool to control the differential pressure in the torque convertor,
whereby said lock up control valve controls a connection between the torque convertor and the exhaust port under the condition of a differential-pressured state of the first and second oil chambers based on a solenoid controlled oil pressure.

5,010,992

AXIALLY OPERATING POSITIONING ELEMENT, PARTICULARLY FOR A FRICTION CLUTCH STRUCTURE

Ruprecht Maurer, Bad Homburg, Fed. Rep. of Germany, assignor to Ringspann GmbH, Bad Homburg, Fed. Rep. of Germany

Filed Jan. 3, 1990, Ser. No. 460,409
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1989, 3902360
Int. Cl.[5] F16D *13/50*
U.S. Cl. 192—70.27 **22 Claims**

1. Positioning apparatus to position a group of movable elements (9) located radially with respect to a shaft (1), optionally forming a clutch operating element to position axially

shiftable clutch plates (3, 5), selectively, into and out of engagement with each other, having

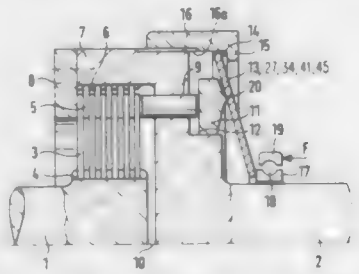
a ring disk;

circumferential means (14, 15) for supporting the ring disk at an outer circumference thereof and there locating said ring disk at a predetermined position with respect to said shaft;

movable means (18) engageable with an inner circumference of said ring disk and adjacent the circumference of the shaft, for moving the central region of the ring disk;

fulcrum means (11, 20) coupled to the movable elements (9) and engaging said disks opposite said movable means (18) at a radial position intermediate the inner circumference,

said movable means, upon axial movement in direction to and from said fulcrum means, deflecting said ring disk between essentially planar shape or position and conical



shape or position while applying a positioning force on said fulcrum means and hence moving said movable elements (9),

wherein the ring disk comprises a ring disk system (26) including individual separate parts or elements (27, 34, 41, 45) of generally sector shape;

said parts or elements are formed with inner engagement means (29, 30; 35, 37, 36;42, 43, 44; 46, 47, 48) for mutually supporting said parts or elements with respect to radial movement thereof; and

wherein said individual separate parts or elements (27, 34, 41, 45) are formed with outer circumferential engagement means outwardly of said inner engagement means for holding said parts in circumferentially essentially clearance-free or play-free alignment in all shapes or positions which said separate parts or elements may assume.

5,010,993

SERVO CONTROL DEVICE FOR A TORQUE COUPLING DEVICE, IN PARTICULAR FOR AUTOMOTIVE VEHICLES

Armadno Carneiro, Lyons; Marc Falcoz, Saint-Germain-En Laye, and Robert Michel, Mery-Sur-Oise, all of France, assignors to Valeo, Paris, France

Filed Jan. 16, 1990, Ser. No. 464,927

Claims priority, application France, Jan. 16, 1989, 89 00427

Int. Cl.[5] F16D *19/00*

U.S. Cl. 192—84 R **10 Claims**

1. A servo control device for modifying the state of a torque coupling device, wherein the control device comprises:

a fixed support defining a main axis of the device;

an electric motor mounted on the fixed support in a position offset from the main axis;

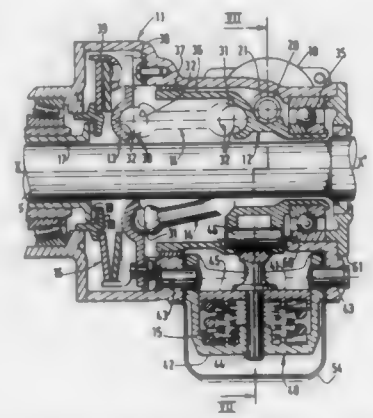
a driving member and a driven member;

means mounting the driving member in the fixed support for movement with respect to the latter in a rotational sense only;

means mounting the driven member in the fixed support coaxially, and in opposed relationship, with the driving member, for movement with respect to the fixed support in a translational sense only;

a mechanical connection coupling the electric motor with the driving member for actuating the latter;

and a plurality of elongated connecting members distributed circumferentially around the main axis, each of the driving member and driven member having a plurality of pivot means each mounting a respective end of a connecting member thereon, whereby each elongate connecting



member is pivoted to both the driving member and the driven member so that the driving member can drive the driven member through the connecting members.

5,010,994

CENTRIFUGAL CLUTCH AND METHOD OF PRODUCING SAME

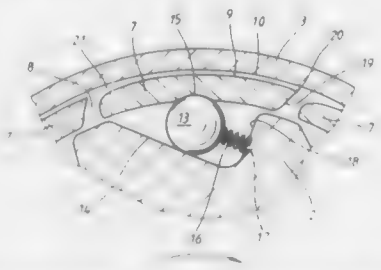
Hermann Heireth, Esslingen, and Dieter Messerschmidt, Korntal, both of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Apr. 20, 1990, Ser. No. 512,184

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1989, 3913106

Int. Cl.[5] F16D *23/10, 43/06*

U.S. Cl. 192—103 B **18 Claims**



1. A centrifugal clutch, comprising a rotatable ring, a drum-shaped outer runner, a driving inner runner over whose circumference are distributed and carried resilient clutch elements constructed in one piece with the rotating ring so as to move radially outwardly with increasing rotational speed and, at clutch speed, bear against an inner surface of the outer runner to drive the outer runner with the elements extending from the ring in an axial direction of the clutch and forming segments whose outer surfaces are matched to the inner surface of the outer runner in a peripheral direction, wherein the ring forms, with the clutch elements, an intermediate runner, and is operatively associated with the inner runner such that, upon fixing of the intermediate runner with respect to the inner runner in a radial direction, a slight relative motion of the intermediate runner in the peripheral direction is provided, and rolling members which are supported on inclined faces of the inner runner, which faces are arranged between the associated clutch elements and the inner runner and rise in a direction opposite to a direction of rotation of the inner runner.

5,010,995

SLOT MACHINE

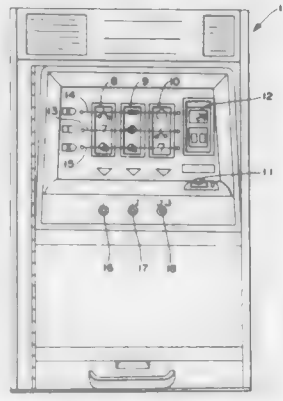
Kazuo Okada, Tokyo, Japan, assignor to Kabushiki Kaisha Universal, Tochigi, Japan

Continuation of Ser. No. 732,248, May 1, 1985, abandoned. This application Sep. 15, 1987, Ser. No. 97,423

Claims priority, application Japan, May 7, 1984, 59-65537

Int. Cl.[5] G07F *17/34*

U.S. Cl. 194—219 **4 Claims**



4. A slot machine of the type having a plurality of lengthwise movable series of different symbols, means to select combinations of symbols at random during each game, and means to award prize coins when predetermined prize-winning combinations occur on prize-winning rows of symbols, comprising

(a) player-actuated means for designating any selected one of a plurality of combinations of plural prize-winning rows prior to each game, wherein said each combination has different number of said prize-winning rows in such a way that a combination with larger number of the prize-winning rows has all rows which another combination with smaller number of the prize-winning rows has; and

(b) means for starting the lengthwise movement of said series, said means for starting the lengthwise movement of said series operating to start the lengthwise movement of said series responsive to actuation by the player of said designating means.

5,010,996

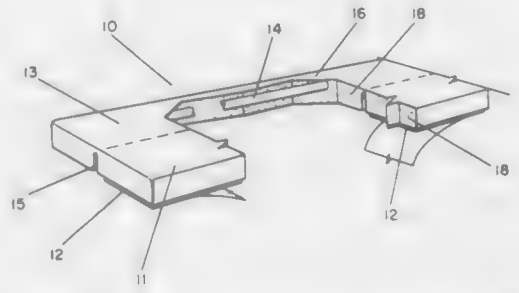
WINDOW SILL ARMREST FOR MOTOR VEHICLES

Billy D. Washburn, 04 Peach Blossom, Los Lunas, N. Mex. 87031

Filed Dec. 4, 1989, Ser. No. 445,182

Int. Cl.[5] B60J *9/00*

U.S. Cl. 296—153 **48 Claims**



1. An armrest adapted to be attached to the window sill of a motor vehicle comprising:

a longitudinal inner support segment affixable to the window sill by adhering means disposed on an underside thereof;

a longitudinal outer resilient support segment proximate and outboard of said inner support segment, said outer support segment comprising weighting means;

means for longitudinally hinging said outer segment to said inner affixable segment, said hinging means comprising a slot, said slot being sufficiently deep to accommodate vehicle windows which only partially retract; and

cover means for at least partially enclosing said segments.

5,010,997

TRANSPORT SYTSTEM

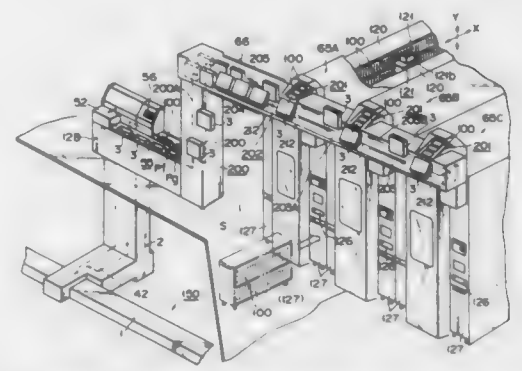
Yukito Matsuo, and Tsuyoshi Ishida, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 13, 1988, Ser. No. 243,864

Claims priority, application Japan, Sep. 14, 1987, 62-230025

Int. Cl.[5] B65G *47/46*

U.S. Cl. 198—349.7 **19 Claims**



1. A system for transporting articles to stations having different addresses, respectively, comprising:

storage means for storing a plurality of articles, each article containing specific identification and address information;

selecting means for selecting address information and for retrieving said articles having the selected address information from said storage means;

carrying means for carrying a group of articles having the same selected address to a station having an address designated by the selected address information, the number of articles included in said group being not more than a predetermined number;

conveying means for conveying the articles retrieved from the selecting means and depositing the articles in the carrying means; and

transport means for transporting said articles carried in said carrying means from said storage means to said stations and for transporting said articles carried in said carrying means from one station to another.

5,010,998

DIVERTER

Colin G. MacMillan, Cirencester, England, assignor to The Post Office, London, United Kingdom

Filed Jun. 29, 1989, Ser. No. 373,929

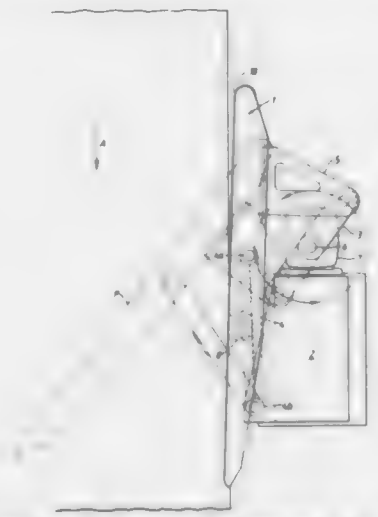
Claims priority, application United Kingdom, Jul. 7, 1988, 8816218.5

Int. Cl.[5] B65G *47/46*

U.S. Cl. 198—372 **8 Claims**

1. A diverter for diverting articles travelling on a conveyor, laterally of the conveying direction, comprising a diverter member which is mounted on a linkage for movement into and out of the path of the articles and which has an elongate article contact part to cooperate with the articles travelling on the conveyor, the linkage including a pivotal connection with the diverter member intermediate the length of the part, the arrangement of the linkage being such that the movement of the diverter member into the path of each article comprises an initial generally bodily movement in which the diverter member pivots about said pivotal connection to a small degree to enhance the diverting action of the portion of the article contact part nearer the approach of the articles such that the article contact parts pivots into the article path to give the

article a sustained push, followed by a pivoting movement about said pivotal connection in the opposite direction such that the near portion of the article contact part moves out of



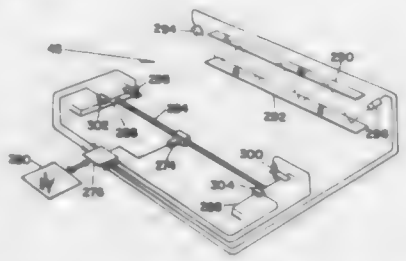
the article path while pivoting that portion of the article into the article path to give the article a final nudge to complete the lateral displacement.

5,010,999

HIGH LAMINATION SPEED AUTOMATIC LAMINATOR

Amedeo Candore, Bodio Lomnago, Italy, assignor to Morton International, Inc., Chicago, Ill.

Division of Ser. No. 371,572, Jun. 26, 1989, Pat. No. 4,961,808. This application Mar. 23, 1990, Ser. No. 498,774
Claims priority, application Italy, Aug. 26, 1988, 48305 A/88
Int. Cl.[5] B65G *47/26*
U.S. Cl. 198—456 **1 Claim**



1. An automatic centering device for centering a board being conveyed into a machine, said board having parallel side edges, comprising:

means providing adjustable spaced parallel edges between which said board is conveyed with the side edges thereof substantially parallel to said adjustable spaced parallel edges,

reversible motor means,

screw means,

said reversible motor means and screw means being connected between said adjustable spaced parallel edges for effecting lateral displacement thereof,

a pair of vertically spaced elongated parallel mirrors between which said board is moved as said board is conveyed into the machine, said mirrors having adjacent first ends and adjacent second ends and positioned substantially perpendicularly with respect to said adjustable spaced parallel edges,

modulated infrared beam emitting means positioned adjacent said first ends of said mirrors,

infrared beam receiving means positioned adjacent said second ends of said mirrors and operative to respond to infrared reflections therebetween thereby to provide a signal to said reversible motor means that said board is between said mirrors for effecting energization thereof in the direction to close said parallel edges to center said board,

a slowing down photocell positioned above each of said adjustable spaced parallel edges, each of said slowing down photocells being arranged to respond to the presence of said board to provide a signal for effecting a decrease in the energization of said reversible motor,

a stop photocell positioned above each of said adjustable spaced parallel edges and arranged to respond to the presence of said board to provide a signal for effecting a discontinuance of the energization of said reversible motor, and

servocontrol means to which said signals from said infrared beam receiving means, slowing down photocells, and stop photocells are applied for controlling the operation of said reversible motor means to close said adjustable spaced parallel edges to center said board, the signals from said slowing down photocells being operative to effect a slowing down action on said reversible motor means, and the signals from said stop photocells being operative to effect stopping of said reversible motor means,

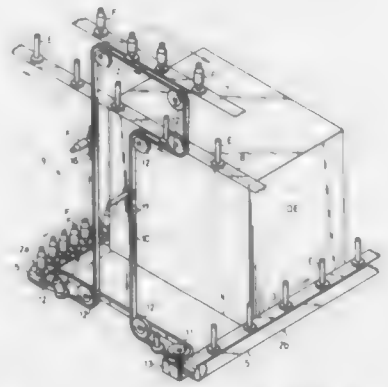
whereby precise centering of said board is effected with the side edges thereof parallel to said adjustable spaced parallel edges.

5,011,000

BOBBIN CARRIER IN SPINNING MACHINE

Yoshio Kawasaki, Shimada; Tatsutake Horibe, Fujieda; Takayuki Morita, Kariya; Haruyoshi Nakamura, Kariya; Kengo Ohashi, Kariya, and Tsutomu Miyazaki, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyda Jidoshokki Seisakusho, Aichi and Nisshinbo Industries, Inc., Tokyo, both of, Japan

Filed Jun. 19, 1989, Ser. No. 368,023
Claims priority, application Japan, Jun. 21, 1988, 63-152662
Int. Cl.[5] B65G *29/00*
U.S. Cl. 198—465.1 **10 Claims**



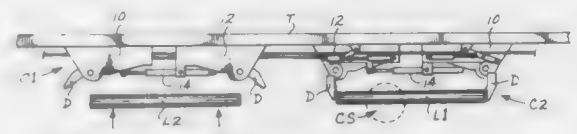
1. A bobbin carrier in a spinning machine for carrying out full bobbins from and carrying in empty bobbins to a respective carrier provided on each longitudinal side of the spinning machine, the bobbins being supported on peg trays having trays from which pegs project from a face of the tray, and the bobbins being delivered by the bobbin carrier to a full-bobbin-carrying conveyor and received by the bobbin carrier from an empty-bobbin-carrying conveyor which conveyors extend substantially perpendicularly to the longitudinal direction of the spinning machine in the vicinity of one end in the longitudinal direction of the spinning machine, characterized in that the bobbin carrier comprises an endless belt provided adjacent both the carriers and the conveyors, guiding means for guiding and supporting the belt, driving means operatively connected to the belt for driving the belt, a pair of linear guiding members disposed so as to extend along the belt for sandwiching the pegs of the peg trays, the belt carrying the peg trays while sandwiching the trays elastically with pressure in cooperation with the guiding members, a full-bobbin introducing portion provided in the full-bobbin-carrying conveyor where delivering and receiving of the peg trays from the belt to the full-bobbin-carrying conveyor can occur, an empty-bobbin-discharging portion provided in the empty-bobbin-carrying conveyor where delivering and receiving of the peg trays from the empty-bobbin-carrying conveyor to the belt can occur, and a controlling member provided at the empty-bobbin-discharging portion and movable between a working position where it can engage the peg trays on the empty-bobbin-carrying conveyor and a waiting position not engageable therewith, the controlling member when in the working position controlling the moving direction of the peg trays to cause passage of the peg trays from the empty-bobbin-carrying conveyor to the belt.

5,011,001

TWIN CARRIAGE SYSTEM

Robert E. Cameron, Warrenton, Oreg.

Filed Sep. 15, 1989, Ser. No. 407,968
Int. Cl.[5] B65B *47/00*
U.S. Cl. 198—468.2 **13 Claims**



1. An end-dogging log carriage, comprising:

an elongated track comprising laterally spaced first and second track portions presenting inwardly directed first and second support rails, each said support rail including an upper support wheel engaging surface;

first and second carriage sections, each said section carrying an end dog for dogging an end of a log;

connector means extending between and adjustably interconnecting the carriage sections;

each carriage section comprising a frame having a top and inner and outer ends and first and second sides, a transverse axle at each end of said frame, on top of the frame, extending between said track portions above said rails, a carriage wheel at each end of each axle, said carriage wheels contacting said rails and serving to mount the carriage sections for movement along the rails;

each end dog being pivotally connected to its carriage section frame at a location below the rails, each end dog being positioned substantially vertically below said first support rail;

an elongated stabilizing rail positioned relatively adjacent the second support rail; and

stabilizing roller means at each end of each carriage section engaging the stabilizing rail and, together with the support rails and the carriage wheels, stabilizing the carriage section in position as it moves along the support rails.

5,011,002

SCRAPER APPARATUS FOR CONVEYOR BELTS

A. Todd Gibbs, Allentown, Pa., assignor to ASGCO Manufacturing, Inc., Allentown, Pa.

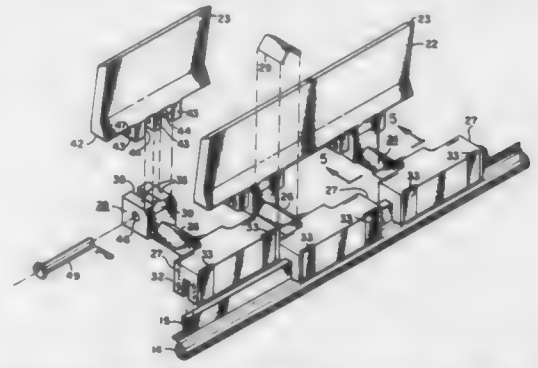
Continuation-in-part of Ser. No. 457,112, Dec. 26, 1989. This application Jul. 25, 1990, Ser. No. 557,642
Int. Cl.[5] B65G *45/00*
U.S. Cl. 198—497 **21 Claims**

1. In a scraper assembly for a conveyor belt normally traveling in one direction but capable of travel in the reverse direction, the assembly including a trailing arm supported at one end adjacent the belt and extending generally in the direction of normal travel of the belt, a scraper blade mounted at the distal end of said trailing arm having a home position disposed at an attack angle to the approaching portion of said belt, and having a scraping edge engaging said belt along a scraping line transverse to said normal direction of travel, and means biasing said trailing arm toward said belt to forcibly engage said scraping edge with said belt along said scraping line, the improvement wherein said assembly includes

a stud element releasably mounting said scraper blade on the distal end of said trailing arm,

the distal end of said trailing arm having an exposed surface confronting said scraper blade,

the scraper blade having abutment means remote from said scraping edge operable to engage said exposed surface,



said stud element affording pivotal movement of said blade about a blade axis parallel to said scraping edge,

the engagement of said abutment means with said exposed surface being effective to limit said pivotal movement,

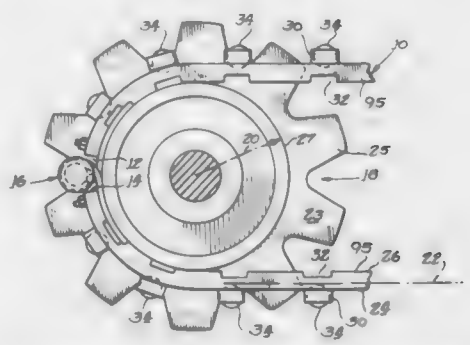
at least one of said exposed surface and said abutment means being of resilient material to yieldingly resist pivotal movement of said blade away from its home position upon encountering an obstruction on the belt as it travels past the blade, and to return said blade to its home position upon travel of the obstruction beyond the blade.

5,011,003

FULL DIAMETER HINGE ROD AND NOTCHED HARVESTER FASTENER

Alfred E. Gladding, Naperville, Ill., assignor to Flexible Steel Lacing Company, Downers Grove, Ill.

Filed Mar. 31, 1989, Ser. No. 332,228
Int. Cl.[5] B65G *17/00*
U.S. Cl. 198—728 **3 Claims**



1. In a conveyor belt assembly movable about a drive drum and having a plurality of fading rods equally spaced about an endless loop, the combination comprising:

a first belt having an outer edge and having opposite belt ends to be joined together to form a first endless belt loop,

a second belt having an outer edge and having opposite belt ends to be joined together to form a second endless belt loop,

a plurality of grading rods spanning said first and second belts, said grading rods being equally spaced from each other at equal distances and parallel to each other and having a predetermined diameter,

opposed belt fasteners of identical shape secured to the respective opposite ends of the first and second belts, an outer edge of each belt fastener being located adjacent to or inwardly of the outer edge of a first or second belt,

loops formed on the respective belt fasteners on the first and second belts to receive a hinge pin therein,

a hinge pin grading rod disposed parallel to said other grading rods and spaced equally therefrom and having opposite ends inserted into intermeshed loops for hingedly connecting the loops of the respectively-opposed belt fasteners to connect the belt fasteners to form the endless first and second belts,

said hinge pin grading rod being spaced at the equal spacing from the other grading rods and having a substantially constant diameter between the first and second belts and within the hinge loops,

retainer means between the hinge pin grading pin and the belt fasteners to hold the hinge pin grading rod from sliding from the loops, said retainer means being located inwardly of the outer edges of the belts,

lugs formed on the bottom of the first and second belts,

ends on the belts having reduced thickness and recesses formed by removal of the lugs at the ends of the respective belts,

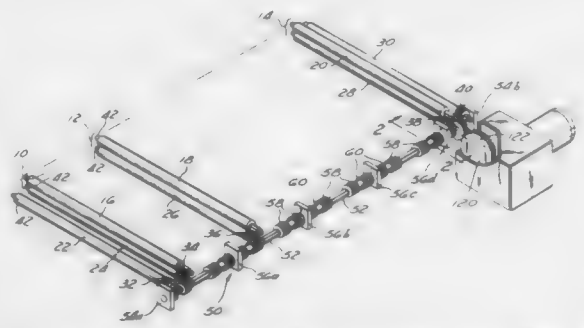
the belt fasteners having a lower plate disposed in one of said recesses to provide a substantially flush lower surface for the bottom or each of the first and second belts as it moves about the drive drum.

5,011,004

CONVEYOR DRIVE ASSEMBLY

Mark D'Amato, Montreal, Canada, assignor to D.E.M. Controls of Canada, Montreal, Canada

Filed Jul. 7, 1989, Ser. No. 377,422
Int. Cl.[5] B65G *13/06*
U.S. Cl. 198—791 **36 Claims**



1. A drive assembly for rotationally driving a plurality of conveyor rollers mechanically connected thereto, said drive assembly comprising:

an elongate, non-cylindrical drive shaft having first and second ends;

a plurality of roller drivers disposed about the drive shaft at spaced locations along the length thereof; and

a plurality of bearing assemblies disposed about the drive shaft at spaced locations along the length thereof, said bearing assemblies being sized and configured to hold and support said drive shaft in substantially fixed position relative to said conveyor rollers while permitting functional rotational movement of the drive shaft so as to drive said conveyor rollers;

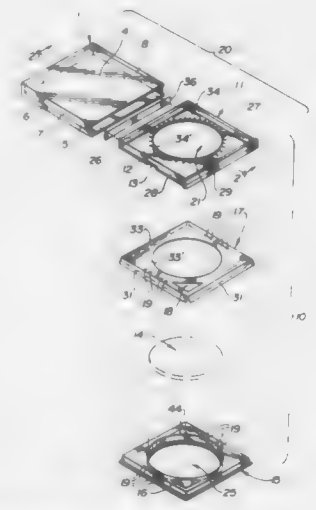
said bearing assemblies comprising first and second bearing members having a plurality of plastic rolling elements positioned therebetween to permit rotational movement of said first bearing member relative to said second bearing member.

5,011,005

PROTECTIVE COIN HOLDER

Bruce D. Boyd, Sidney; Robert J. Geoghegan, Columbus; Barbara A. Metz, Baltimore; Karen L. Rosen; Richard D. Rosen, both of Hilliard, all of Ohio; Alex Bally, Pittsburgh, Pa., and Ronald J. Sears, Worthington, Ohio, assignors to Amos Press, Inc., Sidney, Ohio

Filed Jul. 20, 1989, Ser. No. 383,368
Int. Cl.[5] A45G *1/00*
U.S. Cl. 206—0.81 **61 Claims**



1. A coin holder, comprising

an outer cover;

an inner element adapted to retain a coin therein, slidably inserted into said outer cover;

means for removably securing said inner element in said outer cover; and

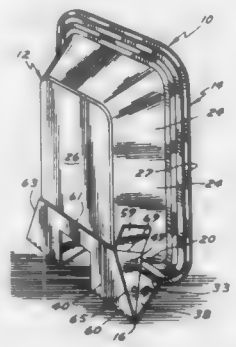
tamper-evident means for permanently indicating removal of said inner element from said outer cover, said tamper-evident means interconnecting to at least a portion of opposing outer surfaces of said inner element and inner surfaces of said outer cover.

5,011,006

CONTAINER WITH LID CLOSURE HAVING AN IMPROVED FLARED STAND FEATURE

David S. Anderson, Brooklyn Park, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 509,658, Apr. 16, 1990, which is a continuation-in-part of Ser. No. 418,425, Oct. 6, 1989, Pat. No. 4,962,849. This application Apr. 26, 1990, Ser. No. 515,012
Int. Cl.[5] B65D *5/52*
U.S. Cl. 206—45.24 **22 Claims**



18. A one-piece package blank for a package lid useful as a lid closure for an open faced tray having a sidewall fabricated with a peripheral flange and which supports the tray in a vertical position, comprising:

A. a first major face panel for overlaying the tray open face having inner and outer major surfaces and first and second ends;

B. a stand tab hingedly connected to the first end of the face panel along a first common transverse fold line, said stand tab comprising

a base panel hingedly connected to the face panel along the first transverse fold line,

a rear panel hingedly connected to the base panel along a second common fold line,

at least one support panel hingedly connected to the rear panel along a third common fold line,

a tray index brace defined by an opposed pair of first and second laterally extending cut lines in the base panel and rear panels extending inwardly from the second, common transverse fold line and each cut line terminating at one end at a first minor transverse fold line in the base panel extending between the first and second cut lines and terminating at the second end at a second minor transverse fold line in the rear panel, said second common fold line extending between the first and second cut lines, and

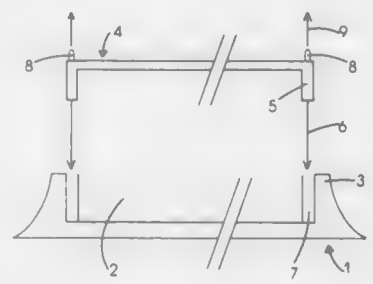
C. a pull tab hingedly connected to the first end of the face panel along a fourth transverse common fold line.

5,011,007

ABSORBENT REPLENISHABLE GARAGE MAT

Barry K. Kenimer, 1615 Sunnywind Ct., Chesterfield, Mo. 63017

Filed Nov. 18, 1988, Ser. No. 273,417
Int. Cl.[5] B65D *77/04, 81/26*
U.S. Cl. 206—205 **9 Claims**



1. A rectangular-shaped mat of semi-rigid material containing and utilizing absorbent material to absorb liquid debris which drips from the underside of a motor vehicle, and comprising:

(a) a lower portion of flat semi-rigid material with a continuous raised lip around the periphery thereby forming a reservoir for the absorbent material;

(b) an upper portion of a meshed semi-rigid material which allows liquid debris to pass through freely, thereby making contact with the absorbent material within the reservoir;

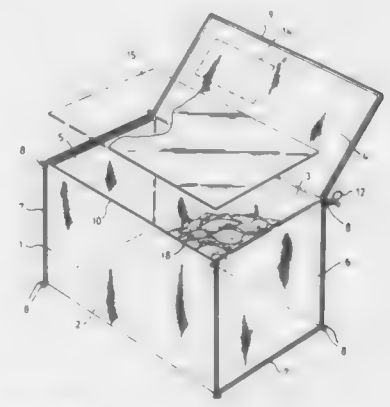
(c) a means for removably attaching the upper and lower portions so as to contain and secure the absorbent material.

5,011,008

CONTAINER

Barry P. Baker, Newtownards, Northern Ireland, assignor to Gallaher Limited, Surrey, England

Division of Ser. No. 324,975, Mar. 20, 1989, Pat. No. 4,934,125, which is a continuation of Ser. No. 108,053, Oct. 13, 1987, abandoned. This application Jan. 12, 1990, Ser. No. 464,521
Claims priority, application United Kingdom, Oct. 13, 1986, 8624480; Jan. 13, 1987, 8700705; Sep. 16, 1987, 8721745
Int. Cl.[5] A24F *15/00*
U.S. Cl. 206—242 **10 Claims**



1. In combination:

a container comprising rectangular bottom, top, front, rear and two side walls, of which at least said front, rear and side walls are formed of pliable sheets of non-shape sustaining fabric comprising woven polypropylene; and said top wall being connectable by a sliding clasp fastener along at least three edges thereof to adjacent upper edges of adjacent ones of said walls, said container having a length between its side walls of at least 80 cm, a width of at least 50 cm and a height of at least 35 cm; and

a compressed block of tobacco within said container;

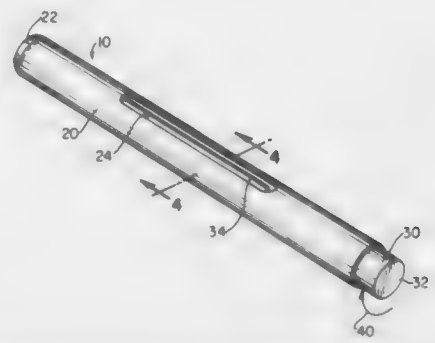
said clasp fastener joining together said top wall three edges to said adjacent upper edges of adjacent ones of said walls.

5,011,009

CIGAR STORAGE AND TRANSPORTATION CONTAINER

Raymond Scheurer, Schoenenbuch, Switzerland, assignor to Davidoff of Geneva, Inc., New York, N.Y.

Filed Aug. 12, 1988, Ser. No. 231,572
Int. Cl.[5] B65D *85/10*
U.S. Cl. 206—270 **3 Claims**



1. A container for storing a and transporting cigars comprising:

an outer tubular member having a closed end and open end;

an inner tubular member dimensioned to be telescoped within said outer tubular member and having an open end and a closed end opposite the closed end of said outer tubular member, said inner tubular member being slid into

said outer tubular member to a redefined stopped position, to define the closed position of said container, the tubular members overlapping over substantially their entire length in the closed position, with a portion of the inner tubular member protruding from the outer one;

said inner and outer tubular members having side openings which conform substantially in size and shape and are positioned so as to be capable of being brought into full alignment by relative rotation of said inner and outer tubular members, said openings being elongated and being smaller in the circumferential direction of said tubular members than the diameter of a cigar, said openings extending along the axes of said inner and outer tubular members for a substantial proportion of their length, the interior of said container being sealed from the exterior thereof when said openings are completely out of alignment, and various degrees of ventilation being provided to the interior of said container, when said openings are brought into various degrees of alignment.

5,011,010

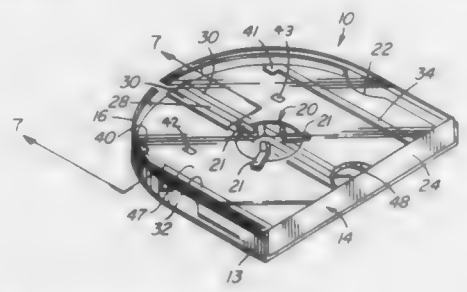
COMPACT DISC CONTAINER

Nicholas J. Francis, 19545 Hammond Road, Pitt Meadows, B.C., Canada V3Y 1L5 , and Vernon E. Stewart, 12031 North Bonson Road, Pitt Meadows, B.C., Canada V3Y 1K6

Filed Jan. 30, 1990, Ser. No. 472,513

Int. Cl.[5] B65D *85/57*

U.S. Cl. 206—307 **19 Claims**



1. A disc container comprising:

(a) a sleeve having an enclosed cavity, said sleeve having an inner end and an open outer end;

(b) a disc-retaining tray having an inner end and an outer end, said tray being slidably displaceable within said cavity between a closed position whereat said tray is enclosed within said sleeve, and an open position whereat said tray extends outwardly from said sleeve outer end;

(c) locking means for releasably locking said tray in said closed position; and,

(d) release means extending through said sleeve inner end and operatively associated with said tray inner end for disengaging said locking means, whereby gravitational forces may slide said tray from said closed position to said open position when said container is oriented with said sleeve inner end above said sleeve outer end.

5,011,011

TRAY FOR TRANSPORTING VEHICLE TURBOCHARGERS

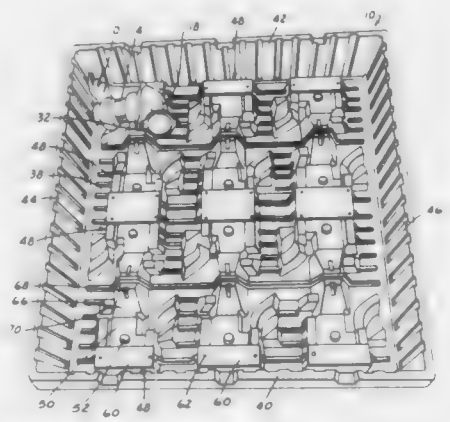
Garry B. Kidd, Novi, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Jul. 26, 1990, Ser. No. 559,115

Int. Cl.[5] B65D *85/68*

U.S. Cl. 206—319 **6 Claims**

1. A tray for transporting vehicle turbochargers which comprise a generally cylindrical primary body portion having a longitudinal axis, a generally cylindrical secondary body portion extending outwardly from one end of the primary body portion having a longitudinal axis substantially perpendicular to the longitudinal axis of the primary body portion, a generally cylindrical first arm adjacent the other end of the primary body portion extending radially outwardly therefrom and having a longitudinally axis substantially perpendicular to the longitudinal axis of the primary body portion and oblique to the longitudinal axis of the secondary body portion, a generally cylindrical second arm having a longitudinal axis portion which extends axially outwardly from the primary body portions, a first bracket extending radially outwardly from one side of the outer periphery of the primary body portion intermediate the outer ends thereof, a second bracket extending radially outwardly from the opposite side of the outer periphery of the primary body portion intermediate the outer ends thereof, a projection extending radially outwardly from the outer periphery of the primary body portion intermediate the first and second brackets, the primary body portion having a recess extending radially inwardly from the outer periphery thereof between the first bracket and projection, and a flange



at the outer end of the secondary body portion extending radially outwardly; the tray comprising a generally rectangular tray body having a bottom wall, side and end walls extending upwardly from the bottom wall, a plurality of cradles each for receiving a turbocharger projecting upwardly from the upper surface of the bottom wall, each cradle including a first platform to support the turbocharger projection, an upwardly extending projection in the first platform for extending into the turbocharger recess, the first platform having a first recess adjacent the lastmentioned projection to receive the first turbocharger bracket, a second platform extending upwardly at an angle from the first platform, the second platform having a second recess to receive the second turbocharger bracket, the lastmentioned projection and first and second recesses restraining longitudinal and transverse movement of a turbocharger received in the cradle.

5,011,012

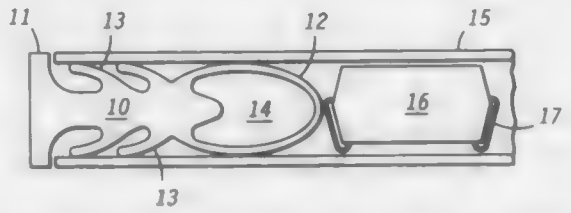
TOLERANCE COMPENSATING END PLUG

Harry C. Kattleman, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 16, 1990, Ser. No. 509,264

Int. Cl.[5] B65D *85/30*

U.S. Cl. 206—328 **4 Claims**



1. A tolerance compensating end plug for use in a semiconductor device carrier, comprising: an elongated configuration having a first end, a body, and a second end, the first end being larger than the body so that the first end engages the semiconductor device carrier on its outside to prevent the first end from being inserted into the carrier, the body being large enough to provide a friction fit with the carrier's inside, and the second end having tolerance compensating means to compensate for variations in length of semiconductor devices located inside the carrier wherein the second end and its tolerance compensating means are unitary with the body and the first end said first end defining a cross-sectional area extending outwardly and transversely from said body in opposite directions, said body including resilient fins at an acute angle with the elongated direction of the body, said second end being hollow.

2. The combination of a tolerance compensating end plug plugging up an end of a semiconductor device carrier, the semiconductor device carrier being tubular in configuration and having an inside shaped to accommodate semiconductor devices, the tolerance compensating end plug, comprising: a first end and a second end, and a body portion located between the first and second ends; the first end being transversely larger than the inside of the semiconductor device carrier preventing any portion of the first end from entering the inside of the semiconductor device carrier; the body portion being large enough to provide a resilient friction fit with the inside of the semiconductor device carrier; and the second end being adopted to be resiliently longitudinally deformed to serve as a shock absorber for semiconductor devices located within the semiconductor device carrier and to compensate for tolerance differences of lengths of the semiconductor devices.

5,011,013

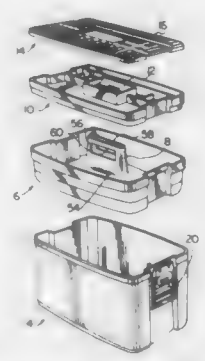
PORTABLE STORAGE CONTAINER

Edward Meisner, Short Hills; Michael P. Ballone, New Providence, and Young Park, Palisades Park, all of N.J., assignors to Waterloo Industries, Inc., Waterloo, Iowa

Filed Apr. 27, 1990, Ser. No. 516,031

Int. Cl.[5] B65D *21/02, 43/03*

U.S. Cl. 206—373 **24 Claims**



1. A portable storage apparatus comprising:

(a) a container;

(b) a cover removably mountable on the container and comprising a work surface thereon, a centrally disposed opening and a recess about the opening of sufficient size to enable entry of a hand; and

(c) a hand-holdable tray assembly removably insertable into the container in a nesting relationship thereiwth and comprising a first tray having a centrally positioned handle extending upwardly into the recess of the cover but not above the work surface, said handle adapted to be gripped by the user by placing the hand within the recess.

5,011,014

PACKAGING FOR ARTICLES, IN PARTICULAR THOSE HAVING A RIGHT PARALLELEPIPED SHAPE

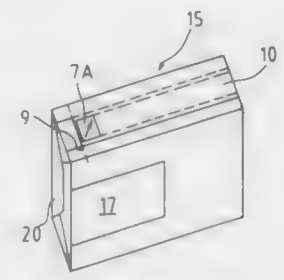
Gerald-Wolfgang Borck, Ludwigshafen; Manfred Ell, Rheinau, and Hans-Dieter Erhardt, Renchen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 321,061, Mar. 9, 1989, abandoned. This application Apr. 24, 1990, Ser. No. 515,646

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1988, 8803229[U]

Int. Cl.[5] B65D *85/672, 3/26, 65/26;* **B43M** *7/00*

U.S. Cl. 206—387 **13 Claims**



1. Packaging for articles consisting of film material which, in the form of a substantially closed film envelope, tightly encloses the articles, the film envelope being provided with tear means and being at least partially printed and being provided with heat-sealing means for joining unprinted surfaces of the film material,

wherein the tear means comprises a tear part which is integral with the film and carries printing, in a predetermined location, on the side of the film to be heat-sealed, such that the printing which inherently prevents heat-sealing in said location, substantially delineates the area over which the tear takes place, and

wherein one tear line is provided in the proximity of said tear part to initiate the tear.

5,011,015

CONTAINER FOR MAGNETIC TAPE CASSETTES WITH SET DISPLACING SPRING MEANS

Manfred Ziegler, Dornstetten, and Edmund Koerner, Waldachtal, both of Fed. Rep. of Germany, assignors to Fischerwerke Artur Fischer GmbH & Co. KG, Waldachtal, Fed. Rep. of Germany

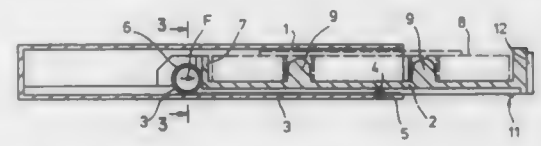
Filed Mar. 14, 1988, Ser. No. 167,833

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1987[DE], 708356

The portion of the term of this patent subsequent to Sep. 30, 2006, has been disclaimed.

Int. Cl.[5] B65D *85/672*

U.S. Cl. 206—387 **4 Claims**



1. Container for magnetic tape cassettes or similar information carriers, comprising a housing having an opening; a slide inserted into said opening of said housing and having a catch engageable in said housing, and receiving and holding a magnetic tape cassette; means to displace said slide after said catch has been released from said housing, between an inserted position in said housing and an extended position outwardly of said housing, said means including a spring strip formed so that it winds up automatically to displace said slide to said extended position, said strip having one end fastened to said housing in a region of said opening of said housing into which said slide is

inserted, and another end provided with a spring coil which engages said slide as said spring strip winds up; and guide means including a bottom guide provided on said housing and guiding said spring strip from below, and two lateral guides provided on said slide and guiding said spring coil therebetween said spring coil having a maximum diameter which is lesser than an internal height of said housing.

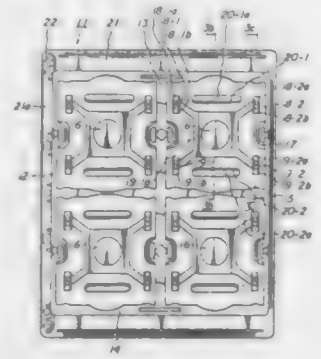
4. Container for magnetic tape cassettes or similar information carriers, comprising a housing having an opening; a slide inserted into said opening of said housing, said slide having a rear wall and having a catch engageable in said housing and receiving and holding a magnetic tape cassette; means to displace said slide after said catch has been released from said housing, between an inserted position in said housing and an extended position outwardly of said housing, said means including a spring strip engaging said rear wall of said slide and formed so that it winds up automatically to displace said slide to said extended position, said strip having one end fastened to said housing in a region of said opening of said housing into which said slide is inserted, and another end provided with a spring coil which engages said slide as said spring strip winds up; and guide means including a bottom guide provided on said housing and guiding said spring strip from below, and two lateral guides provided on said slide and guiding said spring coil therebetween, said spring coil having a maximum diameter which is lesser than an internal height of said housing, said strip having a predetermined width, said lateral guides being laterally spaced from one another by a distance so as to guide said spring coil in contact with the slide.

5,011,016

FILE SHEET FOR FILING INFORMATION RECORDING MEDIA

Jiro Ozeki, Tokyo, Japan, assignor to Slidex Corporation, Tokyo, Japan

Filed Sep. 28, 1989, Ser. No. 413,6[illegible]
Claims priority, application Japan, Sep. 30, 1988, 63-244371
Int. Cl.[5] B65D *1/24, 85/57*
U.S. Cl. 206—456 **5 Claims**



1. A file sheet for filing information recording media, said file sheet comprising

a rectangular sheet made of hard material and having a generally flat bottom surface, said sheet having the following parts formed integrally therewith:

a frame formed along each side of the sheet to divide the sheet into at least one lateral partition and at least one longitudinal partition, said frame being raised from a bottom surface of the sheet by a first distance;

a flange formed outside the frame;

said at least one lateral partition being raised from the bottom surface of the sheet by said first distance and extending in a lateral direction of the rectangular sheet;

said at least one longitudinal partition being raised from the bottom of the sheet by said first distance and extending in a longitudinal direction of the rectangular sheet,

said frame, said at least one lateral partition and said at least one longitudinal partition dividing the space formed by the frame into a plurality of rectangular compartments for filing information recording media therein;

a plurality of lugs formed in the frame and said at least one longitudinal partition such that at least two lugs are positioned in each compartment, said lugs being raised from the bottom surface of the sheet by said first distance and projecting over the bottom surface;

a first pair of pad portions in each compartment raised from the bottom surface of the sheet by a second distance smaller than said first distance and positioned adjacent to the at least one lateral partition and the at least one longitudinal partition of the frame and separated from the at least one lateral partition and the at least one longitudinal partition of the frame by a portion of said bottom surface, each of said first pair of pad portions including inclined side walls viewed in the longitudinal direction of the frame;

a second pair of pad portions in each compartment raised from the bottom surface of the sheet by said second distance and positioned adjacent to the at least one lateral partition and the at least one longitudinal partition and separated from the at least one lateral partition and the at least one longitudinal partition by a portion of said bottom surface, each of said second pair of pad portions including inclined side walls viewed in the longitudinal direction of the frame; and

a plurality of holes formed in the flange along one longitudinal side of the sheet,

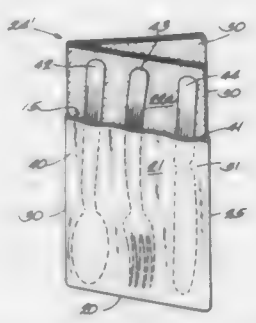
so that information recording media may be both inserted and withdrawn from opposite sides of said frame.

5,011,017

FOLDED PAPER NAPKIN WITH UTENSIL POCKET

William E. Giesen, Appleton, Wis., assignor to Wisconsin Tissue Mills Inc., Menasha, Wis.

Continuation-in-part of Ser. No. 355,231, May 22, 1989, abandoned. This application Feb. 12, 1990, Ser. No. 479,142
Int. Cl.[5] B65D *73/00*
U.S. Cl. 206—494 **4 Claims**



1. In a paper napkin comprising a square or rectangular sheet having a pair of opposed parallel first edges and a pair of opposed parallel second edges perpendicular to the first edges, the sheet being folded to define a folded napkin having a pocket for holding utensils,

the improvement wherein: the folded napkin includes:

(1) a first fold parallel to and spaced from one edge of the sheet,

(2) a second fold parallel to the first fold,

(3) a first panel defined between the first fold and said one edge, a second panel defined between the first fold and the second fold, and a third panel defined between the second fold and the edge of the sheet opposite from said one edge, the panels arranged with the first panel between the second and third panels,

(4) a first perpendicular fold perpendicular to the first and second folds to position the second panel exterior of the third panel, and

(5) a second perpendicular fold parallel to the first perpendicular fold; the folded napkin having a pocket including

(6) a closed bottom portion defined by a section of the second fold,

(7) opposed closed side portions defined by the first and second perpendicular folds, and

(8) an open top portion defined by the first fold, and

(9) a front surface comprising a portion of the second panel;

a portion of the third panel extends beyond the open top portion of the pocket; and

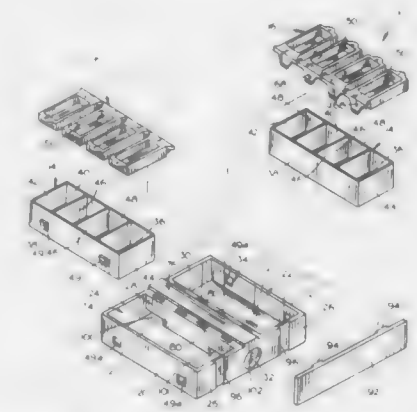
the sheet includes first and second plies that have different colors, and the front surface of the pocket consists of part of the first ply and the front surface of the portion of the third panel extending beyond the open top portion of the pocket consists of part of the second ply.

5,011,018

MEDICATION DISPENSER WITH REMOVABLE LINER

Paul J. Keffeler, 9706 Brentwood Rd., Omaha, Nebr. [illegible]114

Filed Jul. 24, 1990, Ser. No. 557,197
Int. Cl.[5] B65D *83/04, 1/24*
U.S. Cl. 206—532 **1 Claim**



1. A medication dispenser, comprising,

a container comprising at least a pair of upstanding side walls, opposite upstanding end walls, and a pair of spaced apart divider walls extending between said end walls in spaced relation from said side walls to define a pair of spaced apart, generally trough-shaped cavities,

an elongated tab collection chamber positioned between said divider walls for collecting tabs fractured from said covers,

a multicompartment liner removably insertable into each of said cavities, each of said liners defining a plurality of open-topped compartments whereby medication placed within said compartments is maintained out of direct contact with said container,

a plurality of disposable compartment covers, each adapted to overlie and close a respective one of said compartments,

each cover including a separate integral fracturable tab adjacent to one end thereof,

coating lock means on said container and on the individual tabs for independently securing each tab in snap-fit locked relation onto said container, each cover being fractured from its respective tab in response to upward movement of the opposite end of said cover to open said compartment,

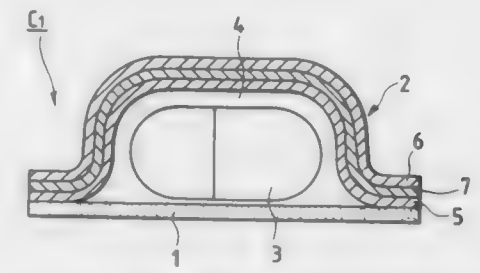
each of said divider walls having at least one opening formed therein which extends between said tab collection chamber and the cavity adjacent thereto to permit the fractured tabs to pass from said collection chamber into said cavity when the associated liner is removed therefrom to permit the fractured tabs in the dispenser to be removed therefrom.

5,011,019

CONTAINER FOR PACKAGING MEDICINE

Toyomi Satoh, Tokyo; Kiyonori Hosoi, Kanagawa; Katsuji Kinoshita, Kanagawa; Shinjiro Murata, Kanagawa; Shunzo Fukatsu, Tokyo, and Tooru Ichikawa, Saitama, all of Japan, assignors to Kabushiki Kaisha Hosokawa Yoko, Tokyo, Japan

Filed Nov. 20, 1989, Ser. No. 439,590
Claims priority, application Japan, Nov. 21, 1988, 63-294404
Int. Cl.[5] B65D *83/04*
U.S. Cl. 206—530 **5 Claims**



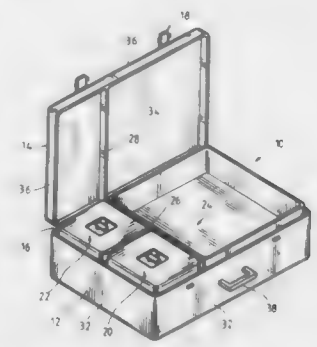
1. A container for packaging a medicine therein comprising a laminated sheet including an olefin layer into which a deodorizing agent is mixed, said laminated sheet forming at least a part of the container and said laminated sheet comprising an inner polypropylene layer opposed to a medicine accommodated in the container, an intermediate olefin layer of polyethylene and an outer polypropylene layer, said olefin layer being sandwiched between the inner and outer polypropylene layers.

5,011,020

CYTOTOXIC AGENT CONTAINMENT KIT

Kathleen R. Stevens, Sugar Land, and Thomas H. Connor, Dickinson, both of Tex., assignors to The Board of Regents, The University of Texas System, Austin, Tex.

Filed Jul. 19, 1989, Ser. No. 382,434
Int. Cl.[5] A61B *19/02*
U.S. Cl. 206—570 **8 Claims**



1. A disposable containment kit for drugs, including:

a bottom enclosure member;

a top enclosure member which is hingedly connected at one edge to the bottom enclosure, whereby the top enclosure and bottom enclosure can be closed to define a sealed enclosure;

a sealable, substantially leakproof drug container which is impermeable to liquid and located within the enclosure defined by the top enclosure member and the bottom enclosure member and is capable of holding drugs and apparatus needed to administer the drugs;

a sealable waste container which is impermeable to liquid and located within the enclosure defined by the top enclosure member and the bottom enclosure member and is capable of holding used drug containers and apparatus;

at least one storage compartment which is located in the bottom enclosure;

a removable tray which is adapted to rest on top of the storage compartment, and which can be removed to provide an aseptic work surface on which to prepare drugs for administration; and

at least one absorbent pad on the removable tray;

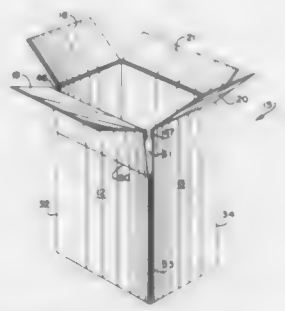
which absorbent pad covers the upper surface of the tray and is removable from the tray, and which absorbent pad contains a chemical reagent which changes in color when a selected drug contacts it.

5,011,021

EASY UNPACKING DEEP CONTAINER

Jack D. Coltrane, Trinity, and Joseph R. Kushner, High Point, both of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Feb. 7, 1990, Ser. No. 476,304
Int. Cl.[5] B65D *5/54*
U.S. Cl. 206—620 **20 Claims**



1. A cardboard container of generally a rectangular parallepiped shape, comprising four side panels defining the walls of said parallepiped and having a top and a bottom and connected together at generally vertically-extending corners, and means defining a bottom of said parallepiped; and

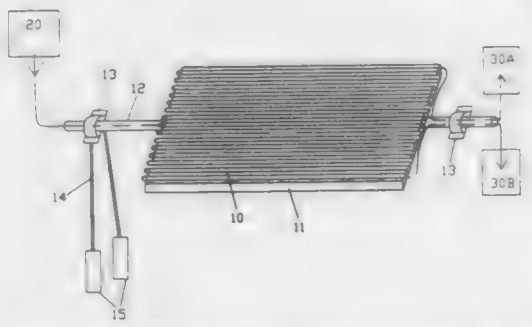
means defining a line of separation at least the corners on opposite sides of one of said panels, said lines of separation in said corners being adjacent, but spaced from, the top of said panel, and said lines of separation having sufficient length so that upon impacting or cutting the portions of said corners above said lines of separation the upper portion of said side panel may be readily detached at said corners, and folded over to allow ready access to the bottom interior of said parallepiped.

5,011,022

CYCLIC FLOW SLURRY FRACTIONATION

Prakash T. Palepu, 2541 Overlook Rd., Apt. No. 6, Cleveland, Ohio 44106; Cheng-Kuang Wu, 376 Balmoral Dr., Richmond Heights, Ohio 44143, and Robert J. Adler, 3068 Van Aken Blvd., Shaker Heights, Ohio 44120

Filed Nov. 15, 1988, Ser. No. 271,999
Int. Cl.[5] B03D *3/00;* **B01D** *21/00*
U.S. Cl. 209—155 **14 Claims**



1. Apparatus for fractionating a first and a second particle in a fluid, said first particle having a first sedimenting rate and said second particle having a second sedimenting rate less than said first sedimenting rate, said apparatus comprising

a tube having a generally lengthwise axis and being adapted to contain said mixture of particles in said fluid, said first and second particles having, respectively, first and second original axial positions, and said tube being so oriented that said particles are urged toward an inner surface of said tube;

first flow generation means to cause a first flow of said fluid in a first direction along said axis;

first flow control means to impose a first velocity and a first time period upon said first flow such that said first particle will be carried a substantial distance in said first direction from said first original position, and then will sediment at said inner surface during said time period of said first flow but said second particle will not sediment;

second flow generation means to cause a second flow of said fluid in a second direction opposite said first direction;

second flow control means to impose a second velocity and a second time period upon said second flow such that said first particle will remain sedimented and said second particle will be carried by said second flow a substantial distance in said second direction from said second original position, and then will sediment at said inner surface; and

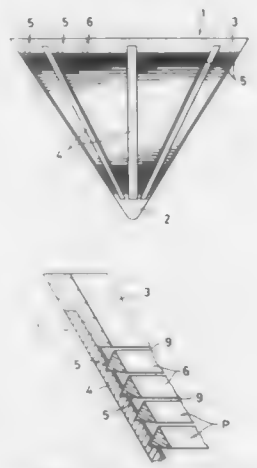
resuspension means to resuspend said first and second particles without substantially dispersing them axially from their sites of sedimentation, said resuspension means comprising means independent of axial flows.

5,011,023

CONICAL ELEMENT FOR FILTERING AND SEPARATION

Koichi Arai, Kanagawa, Japan, assignor to Arai Machinery Corporation, Japan

Continuation of Ser. No. 184,080, Apr. 20, 1988, abandoned.
This application Dec. 8, 1989, Ser. No. 449,122
Claims priority, application Japan, Apr. 21, 1987, 62-096198
Int. Cl.[5] B07B *1/46*
U.S. Cl. 209—400 **13 Claims**



1. A frustro-conical filter for filtering various substances and separating particles, said frustro-conical filter including, in combination:

(a) a central member forming the apex of said filter and having at least a portion of a concave groove formed therein,

(b) an annular member coaxial with said central member and having at least a portion of a concave groove formed therein,

(c) a plurality of extending support frames connecting said central member and said annular member, and together forming a conically shaped frame,

(d) discrete locking grooves provided in said extending support frames and arranged to extend in a helical fashion along the support frames from the central member to the annular member,

(e) a wire of uniform cross section formed into a helix and extending from said concave groove in said annular member to said concave groove in said central member and engaging said locking grooves in said extending support frames, the interior of said wire forming a smooth conical curved surface,

(f) a locking device on said central member to fix said wire into said concave groove in said central member, and

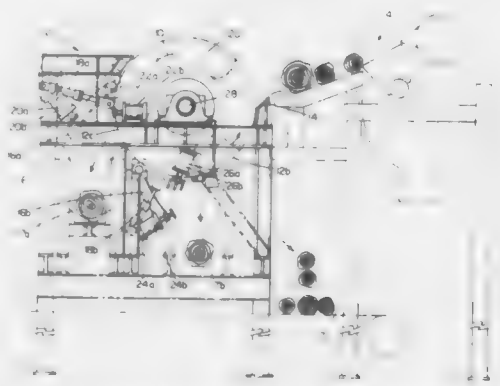
(g) a locking device on said annular member to fix said wire into said concave groove in said annular member.

5,011,024

ROTARY LOG SORTER

Leroy R. Bunney, P.O. Box 1081, Everett, Wash. 98206

Filed Oct. 23, 1989, Ser. No. 425,673
Int. Cl.[5] B07C *5/14*
U.S. Cl. 209—517 **3 Claims**



1. A rotary drum log sorter for sorting logs received from a log feeder adjacent to the log sorter comprising

a. a frame;

b. a rotating drum mounted to said frame, said drum being substantially circular in cross section and having circumferential pocket means adapted to receive logs;

c. gate means hingably mounted to said frame and adjacent to said rotating drum, said gate means having a closed position wherein a log in said pocket means of said rotating drum is prevented from leaving said pocket means as said pocket means rotates past said gate means in the closed position, said gate means having an open position wherein a log in said pocket means will exit from said pocket means as said pocket means rotates past said gate means in the open position, said gate means including an upper first gate and a lower second gate, said upper first gate and said lower second gate so arranged spatially that as said drum rotates about a horizontal axis, the first and second gates, when in a closed position, prevent the gravity discharge of the logs at respective first and second discharge positions, and there being a third discharge position, so located relative to the first and second gates, that any logs not discharged at the first and second discharge position are discharged at the third position; and

d. first shock absorbing means mounted to said frame for absorbing the shock of said gate means swinging open.

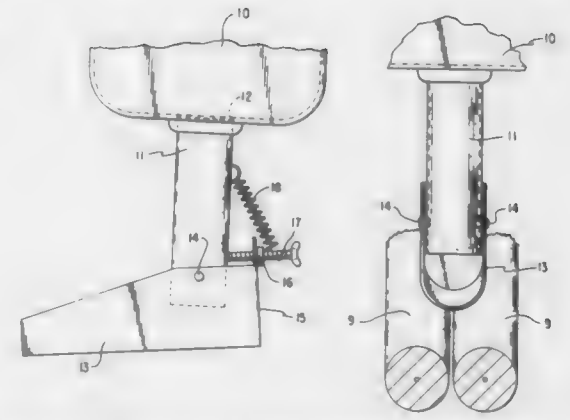
5,011,025

FEEDER FOR SEED CLEANER

Edward H. Lacey, P.O. Box 796, Trent, S. Dak. 57065

Filed Nov. 13, 1989, Ser. No. 435,597
Int. Cl.[5] B07B *13/16*
U.S. Cl. 209—618 **5 Claims**

1. For use with a seed cleaning machine having at least one pair of cleaning rollers, a feeding device comprising hopper means, a spout extending from said hopper means above each said pair of rollers, and chute means including a chute movably mounted on said spout adapted to receive seed from said hopper means through said spout for delivery to said rollers, screw means threadably engaged with said chute and adapted



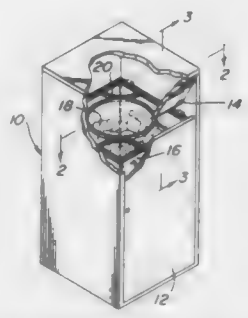
to engage said spout and a spring engaged between said spout and said chute means to bias said screw means into engagement with said spout.

5,011,026

SOLID WASTE DISPOSAL SCREENING APPARATUS

Ronald C. Hausman, and Judith A. Hausman, both of 202 Robert Rd., Emmaus, Pa. 18049

Filed May 15, 1989, Ser. No. 352,043
Int. Cl.[5] B07B *1/04, 1/46;* **B05D** *25/00*
U.S. Cl. 209—675 **8 Claims**



1. A screen or grid adapted to be placed substantially horizontally and in close proximity to the trash receiving end of a trash receptacle housed within an enclosure member having upstanding interior walls which permits smaller dimensioned trash to pass through openings in the screen or grid but will prevent larger dimensioned reusable objects, such as food carrying trays, from being mistakenly or inadvertently disposed of in the trash receptacle, said grid characterized by having a large central opening defined by an annular ring and being dimensioned smaller than the smallest dimension of the length or width of the larger dimensioned reusable objects, said opening supported centrally within an outer perimeter of the screen or grid by support members attached to the annular

ring at equidistant points along the circumference of the ring and to the perimeter at equidistant points along the perimeter.

5,011,027

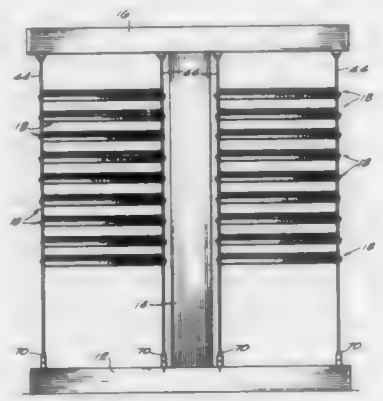
SUSPENSION SYSTEM FOR DISPLAYING EYEGLASS FRAMES

Peter J. Van Slett, Wauwatosa, Wis., assignor to Eyecare One Corp., Wauwatosa, Wis.

Continuation of Ser. No. 272,229, Nov. 16, 1988, abandoned. This application Jan. 26, 1990, Ser. No. 474,622

Int. Cl.[5] A47F *7/00*

U.S. Cl. 211—13 **23 Claims**



1. A display device for displaying eyeglass frames, the display device comprising;

a frame having a base and an upper portion spaced above the base, the upper portion and the base defining a display area therebetween,

at least one elongated shelf adapted to support a plurality of pairs of eyeglass frames, and

means for supporting the shelf between the upper portion and the base, the means for supporting the shelf including at least a pair of spaced apart vertical support members each having an upper end and a lower end, the upper end of each vertical support member being fixed to the upper portion of the frame, and the lower end of each vertical support member being fixed to the base, and each vertical support member having a shelf support member selectively adjustably supported thereon, each shelf support member being releaseably fixed to the respective vertical support member, the shelf support members being adapted to be positioned under portions of the shelf to support the shelf, the elongated shelf including opposite ends, a pair of spaced apart frame members at the opposite ends of the shelf, each of the spaced apart frame members defining an aperture adapted to house a respective one of the vertical support members, and an elongated article supporting surface extending between the spaced apart frame members, the shelf support members each including a first portion adapted to be housed in a respective one of the apertures defined by a respective one of the spaced apart frame members, and an upwardly facing support surface adapted to support a respective one of the opposite ends of the frame members, the shelf support members and the respective one of the frame members being separable.

5,011,028

ADJUSTABLE ARROW HOLDER

Donald C. Sweeney, South 9417 Freeman Rd., Medical Lake, Wash. 99022

Filed Mar. 5, 1990, Ser. No. 487,535

Int. Cl.[5] A47F *7/00*

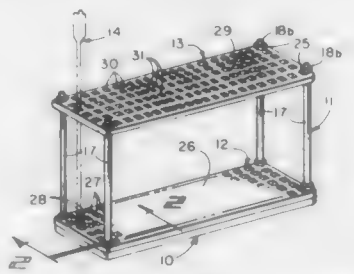
U.S. Cl. 211—60.1 **3 Claims**

1. A holder for archery arrows, that maintains individual arrows in spaced, vertical array, comprising in combination:

a base having a solid rigid, planar base plate defining at least four vertical support holes extending herethrough for releasable interconnection of a vertical support element;

at least four vertical support elements communicating with each vertical support element hole defined in the base to extend vertically upwardly a spaced distance above the base, each said vertical support having threaded upper and lower end portions, and each said threaded end portion carrying spacedly adjacent nuts;

a lower arrow head holder plate comprising a rigid planar holder plate defining a plurality of spacedly arrayed arrow head holding orifices with orifice defining septa between adjacent orifices, holes for passage of the vertical support elements therethrough, and a peripheral shape substantially the same as the base, said arrow head holder plate positioned immediately above the base with a first nut carried by the lower threaded portion of the vertical support elements on the undersurface of the base and the adjacent nut carried by the same threaded end portion of



the same vertical support element on the upper surface of the arrow head holder plate; and

an upper rigid arrow shaft holder plate having a rigid planar element defining a plurality of spaced arrow holding orifices defined by septa between adjacent orifices, said orifices arrayed similarly to the orifices defined in the lower arrow head holder plate to support an arrow extending between both said holder plates in substantially vertical orientation, holes for passage of the vertical support elements therethrough, and a peripheral shape substantially the same as the base, said arrow shaft holder plate carried by the vertical supports extending therethrough with a first nut carried by the upper threaded portion of the vertical support elements positioned on the undersurface and a second nut carried by the same upper threaded portion of the same vertical support element positioned on the upper surface of the arrow shank holder plate in fastening adjacency therewith.

5,011,029

COAT LIFT HANGER

Seiji Sugasawara; Ken Tsuneki; Kazuyoshi Ohshima; Yojiro Nakayama; Tatsuya Hayakawa, and Seiichiro Tamura, all of Tokyo, Japan, assignors to Sugatsune Industrial Co., Ltd., Tokyo, Japan

Filed Jun. 27, 1989, Ser. No. 372,080

Claims priority, application Japan, Jun. 30, 1988, 63-163070; Jun. 16, 1989, 1-153726

Int. Cl.[5] A47F *5/08*

U.S. Cl. 211—104 **2 Claims**

1. A lift coat hanger comprising

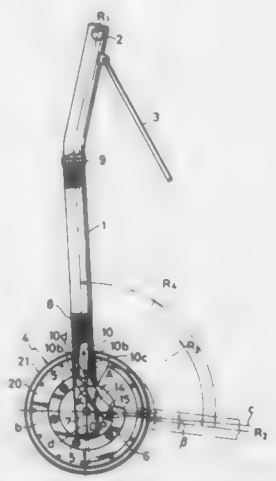
a hanger pipe for holding hangers,

an arm capable of being pivotally tilted downwardly forward and returned to its upright standing position for moving said hanger pipe up and down, wherein said hanger pipe is horizontally extending from and fitted to an upper end of said arm,

a rotary lever pivotally connected at one end to the upper end of said arm and extending along a length of said arm to a lower end of said arm in the upright position of said arm so as to be swung out when said arm in tilted forward and an opposite free end of said rotary lever being located adjacent to the lower end of said arm in the upright position of said arm for tilting and returning said arm by pulling and pushing the free end of said rotary lever.

a restoring spring means capable of restoring the arm from its forwardly tilted open position to its upright standing closed position by using the force stored in it by the arm when the arm is forwardly pivoted from the upright standing closed position to the forwardly tilted open position by pulling on the free end of said rotary lever,

a damper connected with the lower end of said arm for damping the rotary motion of said arm transmitted thereto from said arm by means of a movable shaft so as to reduce



the rotational speed of said arm when pivoted between its upright standing closed position and its forwardly tilted open position, and

a transmission/disconnection mechanism provided between said movable shaft of the damper and the lower end of the arm to make said damper selectively operational only within a predetermined range where the arm is moved down and comes close to the forwardly tilted open position by pulling on the free end of said rotary lever and a corresponding range where the arm is moved up and reaches the upright standing closed position by pushing on the free end of said rotary lever.

5,011,030

FASTENING MEMBER FOR A CURTAIN TELESCOPIC ROD

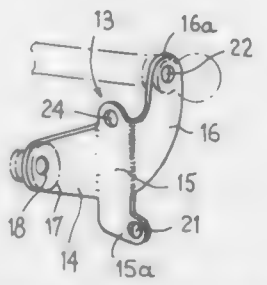
Jacques Alaurent, 14 rue Villebois-Mareuil, Cormeilles-en-Parisis, France 95240

Continuation-in-part of Ser. No. 309,764, May 5, 1988, abandoned. This application Nov. 2, 1989, Ser. No. 430,604

Claims priority, application France, May 6, 1987, 87 06396

Int. Cl.[5] A47H *1/00*

U.S. Cl. 211—105.6 **7 Claims**



1. A fastening member for a telescopic rod having an internal spring for supporting a curtain on a window frame or door frame, said fastening member being adapted to be mounted to an end portion of the telescopic rod, and said fastening member comprising:

a first flat section extending in a first direction having a fixation portion at an end thereof for fixation to the frame;

a second flat section extending from said first flat section in a second direction substantially perpendicular to said first direction, said second flat section having a lower end, and said second flat section having at least at said lower end a support area, located below said fixation portion of said first flat section in use, said support area being adapted to bear on the frame; and

a third flat section extending from said second flat section upwardly therefrom in use and in a third direction parallel to said first flat section, said third section having an upper end portion thereof adapted to fit on the end portion of the telescopic rod which in use is located at a level higher than the level of said fixation portion of said first flat section, and said third section being laterally offset on said second flat section with respect to said first flat section such that said third flat section, when in use on a window frame, will be laterally located beyong the vertical edge of the window pane.

5,011,031

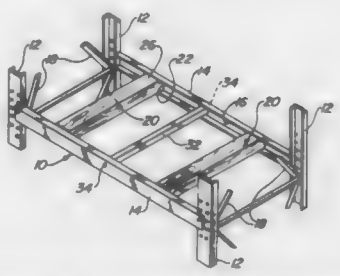
CROSSBAR SYSTEM FOR RACK

Anthony N. Konstant, 920 Fisher La., Winnetka, Ill. 60093

Filed Aug. 11, 1989, Ser. No. 392,540

Int. Cl.[5] A47B *47/00*

U.S. Cl. 211—191 **15 Claims**



1. A method of manufacturing a rack which comprises a pair of parallel side beams, each defining a groove facing the other side beam, which method comprises:

inserting between said side beams a crossbar with the opposed ends of said crossbar each occupying a side beam facing groove, to extend between said side beams, while flexing said side beams outwardly for said insertion; inserting between said side beams a spacer bar positioned along a central portion of said side beams, said spacer bar having opposed ends and being shorter than said crossbar; and tightly securing each said side beam to one of said opposed ends of said spacer bar to draw said central portion of each said side beam inwardly relative to said crossbar, to provide high constricting pressure securance between the ends of said crossbar and the side beams.

5,011,032

PATIENT DOSAGE REGIMEN COMPLIANCE BOTTLE CAP

Bruce L. Rollman, 662 Melvin Dr., Baltimore, Md. 21230

Filed Feb. 28, 1990, Ser. No. 486,298

Int. Cl.[5] B65D *51/24;* **G09F** *9/40*

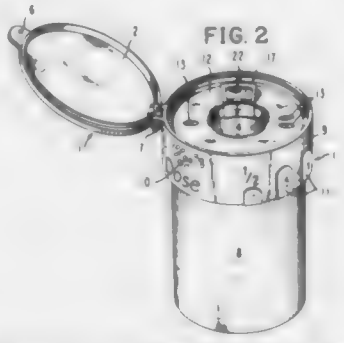
U.S. Cl. 215—230 **7 Claims**

1. A closure cap adapted for attachment to the neck of a standard prescription medicine container to aid patient compliance of a dosage regimen of solid dosage units of medicine such as pills, capsules and tablets comprising a lid with a skirt integrally connected thereto by a living hinge wherein:

(a) said skirt is adapted to attach to a prescription medicine container open neck, said skirt having a ring attached on the inside surface thereof, said ring having a center hole of a diameter which permits one dosage unit to pass therethrough at a time and being attached on said skirt so that

when said skirt is attached to said container neck, the ring opening is concentric with said open neck of said container, said ring having indicia on the top surface thereof which displays the number of times medicine is taken or is to be taken in a time frame, said ring also having on the top and bottom surfaces thereof a circumferential groove intermediate the center hole and the inside edge of the neck of the container and having movably attached thereto a U-shaped slide with a non-rigid upper leg and a lower leg wherein the upper leg has means to fit in the upper groove and the lower leg has means to fit in the lower groove, said upper leg having an opening therein enabling the user to see or feel the indicia on the top

FIG. 2



surface of said ring providing the number of the last dosage taken or remaining dosage to be taken in the reference time frame and said skirt having on its outer surface indicia displaying the number of medication units to be taken during each time period the medicine must be taken;

(b) said lid of said cap having a tab on the outside periphery thereof for the patient to pull said lid upward to the open position unsealing the opening of said container, the top surface of said lid having indicia thereon displaying the dosage regimen per unit time and the outer surface of said annular skirt having indicia displaying the number of medication units to take during each time period the medicine must be taken.

5,011,033

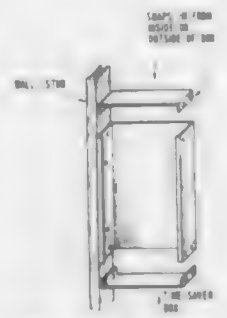
ELECTRICAL SERVICE CENTER

Thomas Roth, 91 Powhatan Trail, Medford, N.J. 08055

Continuation of Ser. No. 418,785, Sep. 16, 1982, abandoned. This application Mar. 7, 1989, Ser. No. 319,663

Int. Cl.[5] H02B *1/08*

U.S. Cl. 220—3.94 **4 Claims**



1. An electrical service box consisting of an enclosure body member comprising a back and two opposing sides, and a plurality of circuit breaker or fuse means mounted to said body means between said sides, said enclosure body member adapted to be mounted to building studs or building walls, a top enclosure member and a bottom enclosure member, each of which is adapted to be mounted in slidable contact with said enclosure body, said top enclosure member and said bottom enclosure member each provided with means of wire or cable openings as the primary access for electrical service into and out of said service box to said circuit breaker or fuse means, said enclosure body and said top and bottom members each provided with means for locking said top member and said bottom member when said top and bottom members are positioned within said enclosure in appropriate top and bottom positions.

5,011,034

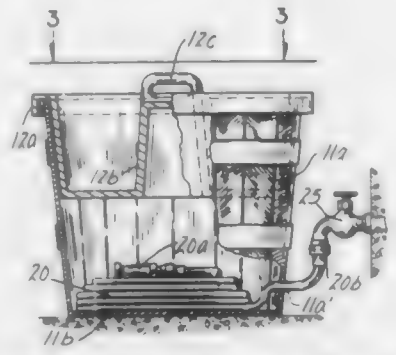
GARDEN HOSE CONCEALING ARRANGEMENT INCLUDING INDEPENDENTLY USABLE LID

Don E. Abel, 4 Douglas Dr., Olney, Ill. 62450

Filed Jan. 29, 1990, Ser. No. 471,783

Int. Cl.[5] B65D *51/28*

U.S. Cl. 220—23.86 **4 Claims**



1. An arrangement for concealing a garden hose comprising, in combination, a receptacle and said garden hose, said receptacle having a side wall including an upper edge and a bottom wall, said garden hose received on said bottom wall in a coiled and layered relationship, and a lid including a side wall and a flat bottom wall received on and hanging from said upper edge of said side wall of said receptacle and defined by a centrally disposed post including an upper surface and presenting space therearound of sufficient depth to receive vegetation, where handle means are presented on said centrally disposed post, where said lid is usable independently of said receptacle, and where said flat bottom wall thereof selectively rests on a supporting surface.

5,011,035

PRESSURE REGULATING SYSTEM FOR USE IN PRESSURE COOKERS AND PRESSURE COOKER HAVING THE SAME

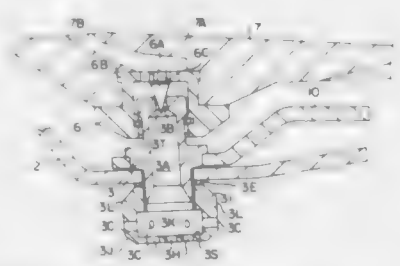
Naranammalpuram S. Subramanian, Maharashtra, India, assignor to Hawkins Cookers Limited, Maharashtra, India

Continuation of Ser. No. 235,458, Aug. 24, 1988, abandoned. This application May 22, 1990, Ser. No. 526,789

Claims priority, application India, Jul. 21, 1987, 231/87

Int. Cl.[5] B65D *51/16*

U.S. Cl. 220—203 **1 Claim**



1. An improved pressure regulating system for use in pressure cookers comprising of a vent tube adapted to be secured in a hole in the lid of the pressure cooker by a hollow holding nut and a vent weight adapted to be freely seated in the vent tube by a tapered pin at the top of said vent tube, said vent

weight being mounted on a fulcrumed lever which has a passage exposed to the atmosphere and in flow communication with one or more openings formed through the base section of the vent weight which extends laterally from said tapered pin, characterized by the improvement wherein said vent tube comprises of a plurality of sections including:

(a) a lowermost frusto conical section having an inward taper towards its top; and

(b) an upper cylindrical section having a narrow bore for receiving the tapered pin of the vent weight, and in flow communication with the narrow end of an upper frusto conical shaped channel having an inward taper toward the top end, said latter channel being disposed with its larger end of said taper being contiguous to the upper end of;

(c) an intermediate central cylindrical section, said intermediate cylindrical section having a central cylindrical passage of substantially larger diameter than the bore of aforesaid upper cylindrical section and communicating with:

(i) said upper frusto conical section and

(ii) said lowermost frusto conical section to provide a central steam passage between said bore and said lowermost frusto conical section,

(d) and wherein said hollow holding nut includes an enlarged lower cylindrical chamber having a planar bottom surface and a lateral side, a plurality of holes through said bottom surface and also through the lateral side, each hole in the lateral side being in alignment with a hole in the bottom planar surface, for the escape of steam from the pressure cooker through the vent tube, said lower cylindrical chamber of the holding nut being in flow alignment and communication through an upper cylindrical chamber in the nut which is in flow alignment and communication with said lowermost frusto conical section of said vent tube, the arrangement being such that when the vent tube is secured to the lid of the pressure cooker with the help of the holding nut and the vent weight is mounted on said vent tube through said tapered pin, the steam formed in the pressure cooker builds up to a predetermined pressure, initially assumes a laminar flow in said enlarged lower cylindrical section of the holding nut, and continues to flow as a laminar stream through said sections of the holding nut and the vent tube, and then escapes at a steady rate through the vent weight as dry steam without any appreciable quantity of condensed water.

5,011,036

FRONT LOADING, FOOT OPERATED REFUSE BIN

Dennis M. Souza, 1617 Carnelian Ct., and Tad E. Jakes, 505 Placer Dr., both of Woodland, Calif. 95695

Continuation-in-part of Ser. No. 535,026, Jun. 8, 1990, abandoned. This application Nov. 26, 1990, Ser. No. 618,[illegible]61

Int. Cl.[5] B65D *43/26*

U.S. Cl. 220—263 **5 Claims**

1. A front-end loading refuse bin having a floor, a front wall, back wall and side walls forming a box, the walls having upper edges terminating in a reinforced perimeter, the bin having a lift sleeve on each side wall, and the bin having a lid apparatus comprising:

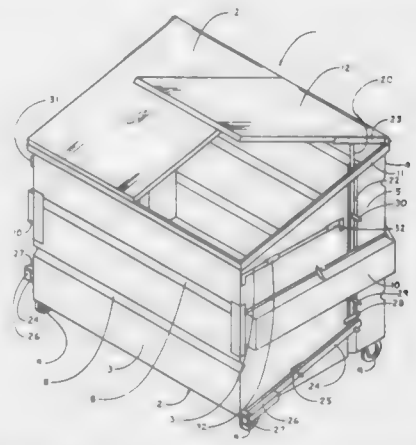
a. a lid rotatably mounted to the rear portion of the perimeter extending above a side wall,

b. a support device on the underside of the lid adjacent the side wall,

c. a channel formed in the side wall, interior to perimeter and lift sleeve,

d. a push rod mounted to travel vertically within the channel and having a top end to contact the support device and having a stowed position in which the lid is closed and a open position in which the rod has been moved upward and the top has moved along the support device forcing an opening of the lid, and further the push rod having a bottom end pivotally attached to the rearward end of a swing arm,

e. the swing arm is pivotally secured to the side wall by an attaching means located near the lower central portion of



the side wall and having a pedal surface at the forward end of the swing arm,

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5,011,037

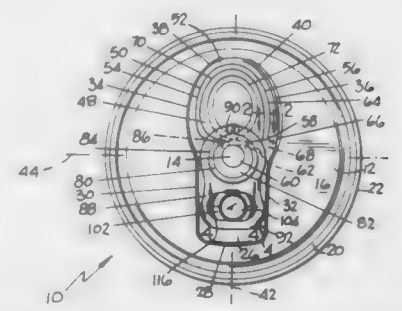
CONTAINER END MEMBER

Bruce A. Moen, Golden, and Harold Cook, Jr., Evergreen, both of Colo., assignors to Adolph Coors Company, Golden, Colo.

Filed Nov. 30, 1989, Ser. No. 443,510

Int. Cl.[5] B65D *17/34*

U.S. Cl. 220—271 **11 Claims**



1. A container end member or the like for sealed association with a container member to provide a sealed container and which is provided with a system for forming openings therein comprising:

a one piece end member having a cylindrical peripheral end surface and a central axis;

an annular exterior rim portion on said end member for sealed association with the container member;

a central end wall portion integrally connected to said annular exterior rim portion and extending generally transversely to said central axis and having an outer surface and an inner surface;

a first severable tab portion in and integrally connected to said central end wall portion;

a first hinge portion integral with said central end wall portion and having spaced apart ends;

severable score line groove means having ends adjacent to said spaced apart ends of said first hinge portion and defining said first severable tab portion so that said first severable tab portion may be severed from said central wall portion in response to applied axially inwardly directed forces and form a pour opening in said central end wall portion;

force applying means for applying said axially inwardly directed forces on said severable tab portion;

pivot means permanently mounted on said central end wall

portion for pivotally mounting said force applying means on said central end wall portion;

said force applying means having an abutment end portion for contacting said first severable tab portion and a handle end portion so that, when an axially outwardly directed force is applied to said handle portion, said force applying means will pivot about said pivot means so that said abutment end portion will apply said axially inwardly directed forces to said first severable tab portion to sever said first severable tab portion along said first score line groove means and form said pour opening in said central end wall portion;

a second severable tab portion in and integrally connected to said central end wall portion;

said second severable tab portion being located in said central end wall portion at a location spaced from said first severable tab portion;

a second hinge portion integral with said central end wall portion and said second severable tab portion;

said second severable tab portion having a raised surface projecting axially outwardly from said central end wall portion so that an axially inwardly directed force may be applied thereto to sever said second severable tab portion and form a vent opening in said central end wall portion; and

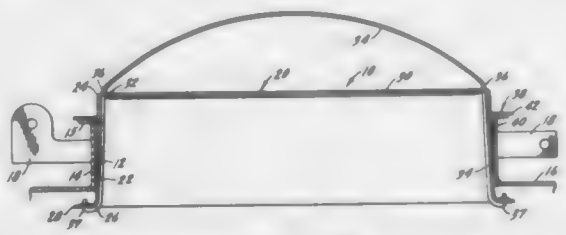
retaining means for retaining said first severable tab portion, said force applying means and said second severable tab portion on said end member after said pour and vent openings have been formed.

5,011,038

HOPPER CAR INLET OPENING PROTECTOR

Francis R. Schultz, Woodridge, Ill., assignor to Salco Product Inc., Romeoville, Ill.

Filed Mar. 26, 1990, Ser. No. 498,430
Int. Cl.[5] B65D *45/32, 39/04, 39, 16*
U.S. Cl. 220—320 **13 Claims**



1. In a container having walls defining a compartment having an interior and exterior, with an inlet opening defined by a coaming, the inlet opening extending through at least one wall and providing communication between the interior and exterior of the compartment, the coaming having at least one internal dimension between opposite sides thereof, an improved inlet opening protector, comprising:

a throat liner adapted to be placed in the inlet opening and having an annular skirt of a height at least as great as the height of the coaming, the skirt defining spaced first and second edges each having an external dimension between opposite sides thereof, the skirt being sized and tapered such that the external dimension of said first edge is less than the internal dimension of the coaming and the external dimension of the second edge is greater than the internal dimension of the coaming whereby a portion of the skirt between said edges engages the coaming when the liner is placed coaxially in the inlet opening;

a plate member connected to the skirt and extending across the annular space defined by the skirt; and

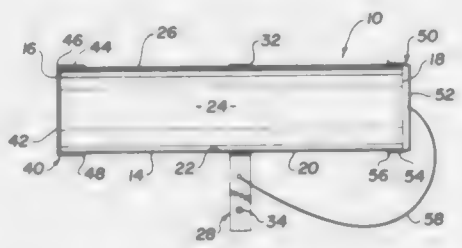
a short liner having an annular ferrule and a radial collar attached to the ferrule, the ferrule defining an opening of a size permitting the first edge of the throat liner to fit through but not the second edge, the collar being engageable with the coaming when the short liner is positioned over the throat liner installed coaxially in the inlet opening.

5,011,039

DEVICE TO SUPPORT AND PROTECT DOCUMENTS

Tommi L. Crow, 804 Ramblewood, Lewisville, Tex. 75067

Filed Mar. 9, 1989, Ser. No. 320,995
Int. Cl.[5] B61D *21/00*
U.S. Cl. 220—357 **20 Claims**



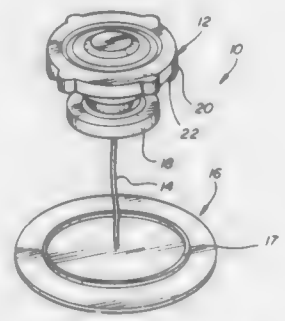
1. A device to support and protect documents, which may be damaged when contacted with water, comprising: a tubular body being constructed of a material sufficiently transparent to allow visual observation of the documents when disposed within a chamber in said body, said body having first and second ends and a wall extending between the first and second ends and circumscribing the chamber; attaching means connected to said body for attaching said body to a support member; first stopper means connected to said body for preventing moisture from gaining access through the first end into the chamber in said body; and second stopper means selectively connected to said body for preventing moisture from gaining access through the second end into the chamber in said body when connected to said body and for permitting access to the chamber in said body when inserting the documents into said body when said second stopper means is disconnected from said body, said second stopper means having a blocking wall and at least one side wall connected to and extending away from said blocking wall, the side wall being sufficiently flexible to engage and slide over an exterior surface of the wall of said body, the wall of said body being made from a material and having a thickness chosen to provide sufficient resiliency so that the wall will not tear when said second stopper means is connected to said body.

5,011,040

RADIATOR SAFETY CAP

Leonard L. Kinast, 39239 Polo Club Dr., Apt. 105, Farmington Hills, Mich. 48124

Filed Jul. 13, 1990, Ser. No. 554,188
Int. Cl.[5] B65D *55/16*
U.S. Cl. 220—375 **11 Claims**



1. A radiator cap assembly comprising:

a cap having means adapted for securing the cap to a fill tube;

tether means for providing attachment to said cap, said tether means adapted to be positioned within a radiator; and

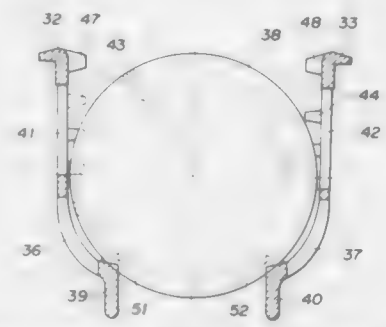
seal means adapted for sealing the fill tube, said seal means coupled with said tether means and adapted to be positioned within a radiator, said seal means adapted to float in a cooling fluid within the radiator and said seal means being responsive to increased pressure within the radiator such that if the cap is removed from the radiator in an increased pressure situation, said seal means will seal the fill tube preventing rapid escape of pressurized fluid from within the radiator.

5,011,041

BASKET FOR PROCESSING THIN PLATES

Takeyoshi Kakizaki, Houya, Japan, assignor to Kakizaki Mfg. Co., Ltd., Tokyo, Japan

Filed Sep. 13, 1989, Ser. No. 406,569
Claims priority, application Japan, Sep. 14, 1988, 63-228450
Int. Cl.[5] B65D *85/57*
U.S. Cl. 220—507 **11 Claims**



1. In a basket for processing thin plates, said basket comprising

a rectangular container having an upper and a lower opening and parallel side walls interconnected by parallel end walls for use in storing said thin plates,

each of the parallel side walls including space holding members engaged with opposite sides of each of the thin plates to align the thin plates in side-by-side relation and to space the thin plates apart,

each of said side walls including a foundation block located to define said lower opening therebetween and to support with minimal contact a lower portion of the thin plates, said foundation block projecting inwardly toward a central region of said container, and a plurality of vertical slits located above said foundation block defining flowthrough openings,

an inner surface of each of said side walls located between said vertical slits being provided with plural rod-like projections extending inwardly in opposite directions to each other toward the central region to form the space holding members,

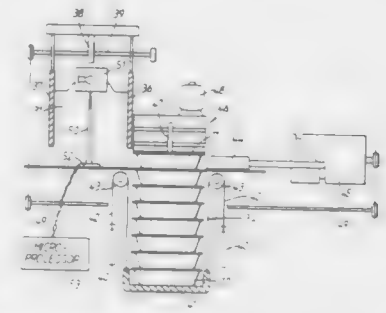
said rod-like projections being arranged in spaced-apart relation along an inserting direction of the thin plates so as to form a group of said rod-like projections, and said group of said rod-like projections being arranged in spaced side-by-side relation along a longitudinal direction of the container for receiving the thin plates between adjoining groups of said rod-like projections.

5,011,042

VENDING SYSTEMS FOR HOT FOODS

Martin C. Bunce; David W. Helps, both of London; Leonard A. Jenkins, Southmoor, and Adrian C. Noke, Wantage, all of England, assignors to CMB Foodcan plc, Corcester, England

Filed Apr. 11, 1989, Ser. No. 336,062
Claims priority, application United Kingdom, Apr. 11, 1988, 8808456; Apr. 28, 1988, 8810140
Int. Cl.[5] G07F *11/72*
U.S. Cl. 221—150 A **64 Claims**



1. A vending system for dispensing containers of hot food, comprising:

a plurality of stacks of food-containing trays containing a corresponding number of different varieties of food, each tray carrying machine readable heating instructions on a lateral extension of a horizontal flange extending outward from an upwardly extending wall of the tray,

a microwave oven whose horizontal dimensions are those of the trays and exceed them only by up to 10 mm, the vertical dimension of the microwave oven to ensure that a resonant cavity, bounded by one of the trays, is produced for microwave radiation of the wavelength used;

a reading head adapted to read the heating instructions and to supply a corresponding control signal to the microwave oven; and

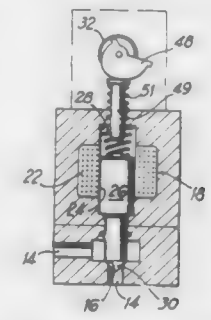
means for feeding one of said trays into the microwave oven on demand.

5,011,043

POST-MIX BEVERAGE DISPENSER VALVE WITH CONTINUOUS SOLENOID MODULATION

Roger C. Whigham, Atlanta, and John H. Bearden, Marietta, both of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Division of Ser. No. 58,448, Jun. 5, 1987, Pat. No. 4,884,720.
This application Jun. 23, 1989, Ser. No. 370,371
Int. Cl.[5] B67D *5/08*
U.S. Cl. 222—63 **1 Claim**



1. A beverage dispenser valve comprising:

(a) a water conduit and a separate syrup conduit, each including a valve seat;

(b) a solenoid valve associated with each of said conduits for controlling the flow therethrough, at least one of said solenoid valves being adapted for continuous modulation

and including an armature with a graduated flow control valve member on its distal end adapted to contact a valve seat to close the respective conduit to flow therethrough when said solenoid valve is de-energized;

(c) means for energizing said solenoid valves to open them when it is desired to dispense a drink from said dispenser valve;

(d) at least one of said solenoid valves including continuously movable stop means for positioning said armature at any position between its two end positions when said solenoid valves are energized, such that the area of the flow opening through said valve seat can be continuously controlled by moving said stop means any desired distance;

(e) means for moving said movable stop means any desired amount to control the flow through at least one solenoid valve; and

(f) said moving means including a motor, a cam connected to said motor, and a linearly movable stop spring biased into contact with said cam.

5,011,044

ANTI-ASSAULT DEVICE

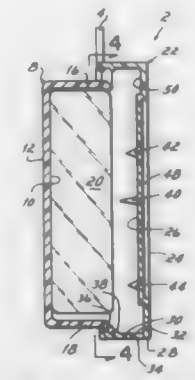
Arlon R. Brown, 1368 Neeb Rd., Cincinnati, Ohio 45238

PCT No. PCT/US87/01526, § 371 Date Dec. 29, 1989, § 102(e) Date Dec. 29, 1989, PCT Pub. No. WO89/00147, PCT Pub. Date Jan. 12, 1989

PCT Filed Jun. 2, 1987, Ser. No. 499,281

Int. Cl.[5] B67B *7/24*

U.S. Cl. 222—78 18 Claims



1. An apparatus for discouraging physical attack comprising:

a rupturable sealed vial, said vial containing a liquid composition having an obnoxious odor;

a base comprising a plate having a front face, a rear face, an outer edge, and a plurality of resilient fingers attached adjacent to said outer edge on said front face and extending perpendicularly therefrom, a portion of said fingers having tips which are directed inwardly to retain said vial, and the remaining fingers having tips directed outwardly; and

a cover comprising a plate having a front face, a rear face, an outer edge, a skirt having inward and outward surfaces attached to said outer edge of said plate wherein said skirt is positioned approximately perpendicular to said rear face of said plate and has projections on said inward surface which temporarily engage said remaining fingers having outwardly directed tips on said base, and means on said rear face of said plate for rupturing said vial.

5,011,045

PAINT TONER DISPENSING MACHINE

Anssi Tammi, Vanha Ulvila, Finland, assignor to Cimcorp Oy, Ulvila, Finland

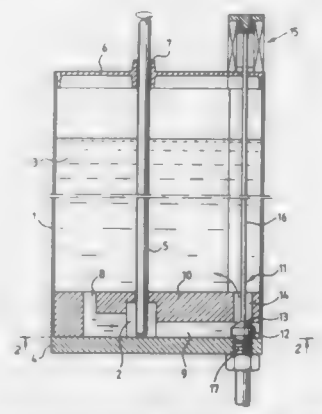
PCT No. PCT/FI88/00039, § 371 Date Sep. 14, 1989, § 102(e) Date Sep. 14, 1989, PCT Pub. No. WO88/06980, PCT Pub. Date Sep. 22, 1988

PCT Filed Mar. 17, 1988, Ser. No. 401,436

Claims priority, application Finland, Mar. 20, 1987, 871239

Int. Cl.[5] B65D *88/54*

U.S. Cl. 222—318 1 Claim



1. A paint toner dispensing machine for dispensing solvent-diluted color pastes in particular, comprising

at least one paste container having a bottom and a side wall and provided with

a cover preventing the evaporation of the solvent of the color paste;

a gear-type color paste pump for pumping paste for the selective dispensing or circulation thereof and comprising a drive shaft which is led through the cover of the container;

a dispensing valve located within the container for the dispensing of the color paste; and

a floor positioned above said bottom;

said pump being arranged completely within the paste container between the bottom thereof and said floor essentially below the surface of the color paste when the color paste is contained in the container, said floor forming together with said bottom therebetween a suction conduit, pressure conduit, return conduit and dispensing conduit for the pump, all within the container; and

said pressure conduit being by means of said dispensing valve selectively connectable within the container either to the return conduit or the dispensing conduit.

5,011,046

PUMP DISPENSER HAVING VALVED PRESUCTION CHAMBER AND OUTLET

Lothar Graf, Rielasingen-Worblingen, and Karl-Heinz Fuchs, Radolfzell, both of Fed. Rep. of Germany, assignors to Ing. Erich Pfeiffer GmbH & Co. KG, Fed. Rep. of Germany

Filed Feb. 27, 1989, Ser. No. 316,083

Claims priority, application Fed. Rep. of Germany, May 8, 1987, 3715301

Int. Cl.[5] G01F *11/04*

U.S. Cl. 222—321 24 Claims

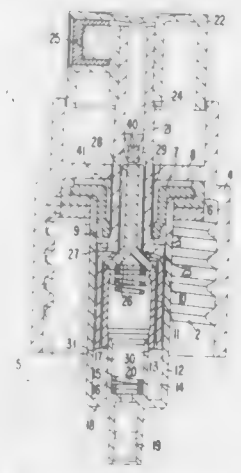
1. A dispenser for manually dispensing media, said dispenser comprising:

at least one manually operable thrust piston pump having a casing and at least one piston unit with at least one pump piston, the piston unit being movable in at least one pump cylinder along a cylinder path over a pump stroke from an initial position to a stroke end position;

a pump chamber being defined between said pump cylinder and said pump piston, said pump chamber being connectable to an inlet for filling the pump chamber from a reservoir, and for discharge purposes being connected to an outlet duct leading to an outlet port;

a presuction chamber with a presuction piston associated with an inlet side of said pump chamber, overflow means being provided for ductively connecting said presuction chamber to said pump chamber, and means being provided for closing said presuction chamber during the pump stroke with respect to the pump chamber; and,

an outlet valve associated with said outlet duct, and further comprising means for positively at least partially opening said outlet valve substantially at stroke end position.



5,011,047

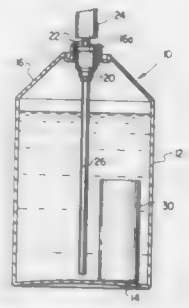
DISPENSING APPARATUS

Rudiger Cruysberghs, Rijkevorsel, Belgium, assignor to I.P.R.S., Luxembourg

Filed Sep. 5, 1990, Ser. No. 577,900

Int. Cl.[5] B65D *83/66*

U.S. Cl. 222—396 42 Claims



1. Apparatus for maintaining a constant predetermined pressure in a pressurized container for dispensing product contained in the container from the container at said constant pressure, said apparatus comprising:

a vessel disposed in said container,

a cylinder member disposed in said vessel and defining with said vessel a first chamber for containing pressurized gas;

a piston member disposed in said vessel and defining with said cylinder member a second chamber;

one of said members being exposed to the pressure in said container for moving to a first position relative to the other member in response to said predetermined pressure in said container;

means in said second chamber for moving said one member to a second position relative to said other member in response to the pressure in said container decreasing below said predetermined pressure; and

means responsive to said one member moving to said second position for connecting said first chamber with said container to permit said pressurized gas to pass from said first chamber to said container, said latter means being responsive to said one member moving to said first position for disconnecting said first chamber with said container to prevent said passages of said gas.

5,011,048

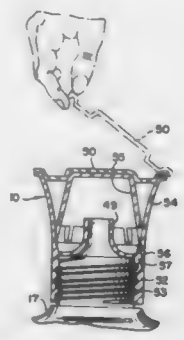
LIQUID DISPENSING MEASURING CAP

Alexander D. Mark, 50 Park Ave., Passaic, N.J. 07055

Continuation of Ser. No. 215,250, Jul. 6, 1988, abandoned. This application Mar. 8, 1990, Ser. No. 492,404

Int. Cl.[5] G01F *11/26*

U.S. Cl. 222—455 8 Claims



1. A removable cap for dispensing liquids in pre-measured quantities from a liquid-filled container comprising an elongated member forming an internal spout having a bottom end adapted to be fastened to said liquid-filled container, an open top end through which a pre-measured quantity of liquid is discharged and wall means extending from the bottom end of such member for forming an open annular reservoir around said internal spout, a removable cover connected to said wall means, with said cover having a closed position and an open position and means projecting from said cover for forming a collection chamber, with said collection chamber extending from said cover a distance sufficient to overlap the open top end of said internal spout when said cover is in the closed position for collecting a pre-measured quantity of liquid when said cap and container is turned upside down, and means in said cover for forming an outer spout, with said outer spout located on the periphery of said cap and laterally offset from the open top end of said internal spout whereby the liquid collected in said collection chamber is dispensed through said outer spout when the cap and container is at least partially turned right side up for discharging the liquid through the outer spout.

5,011,049

MOLTEN METAL TRANSFER TUBE

Marcus P. Borom, Schenectady; Lawrence E. Szala, Scotia; Milivoj Brun, Ballston Lake; Steven A. Miller, Amsterdam, all of N.Y., and David P. Mourer, Danvers, Mass., assignors to General Electric Company, Schenectady, N.Y.

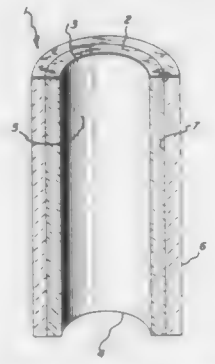
Filed Apr. 17, 1989, Ser. No. 339,460

Int. Cl.[5] B22D *37/00*

U.S. Cl. 222—590 9 Claims

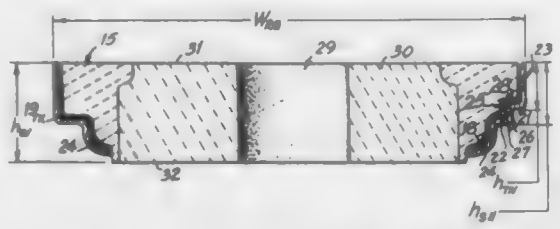
1. A process for producing a transfer tube useful for transfer of molten metal comprised of a high density hollow tube having directly bonded to its outer surface wall a continuous polycrystalline shell with a maximum density of about 80% of theoretical which comprises providing a high density polycrystalline hollow tube comprised of ceramic oxide material, said high density tube having a density of at least about 90% of its theoretical density, providing particulate ceramic oxide material which sinters to form said shell, providing a mold having a closed end portion and an open end portion and an inner wall sufficient to enable formation of said transfer tube, disposing said high density tube in said mold with its outer

surface wall spaced from said inner wall of said mold thereby forming a space for receiving said shell-forming particulate material, depositing said shell-forming particulate material in said space between said high density tube and inner wall of said mold to form a body of freely deposited particulate material, said shell-forming particulate material being deposited in an



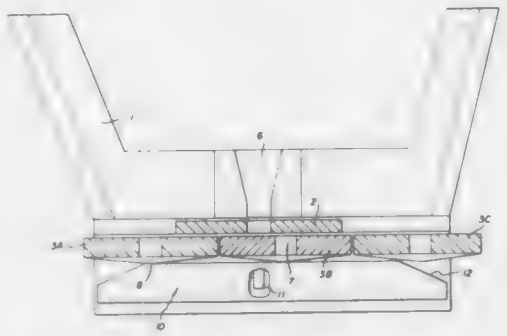
amount sufficient to form said shell, heating the resulting assembly to a temperature at which said shell-forming material sinters to produce said transfer tube, said sintering being carried out in an atmosphere or a partial vacuum which has no significant deleterious effect on said assembly, said mold having no significant deleterious effect on said transfer tube.

5,011,050
STEPPED GATE SAFETY ARRANGEMENT
Edward A. Verel, Valparaiso, Ind., assignor to Leco Corporation, St. Joseph, Mich.
Filed Oct. 31, 1990, Ser. No. 606,764
Int. Cl.[5] B22D *41/34*
U.S. Cl. 222—600 **14 Claims**



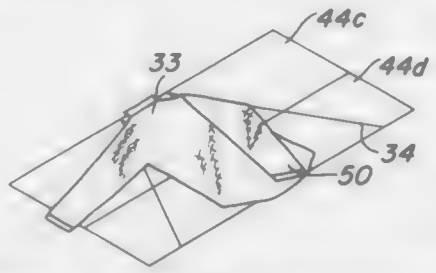
1. A gate for use in a valve mechanism where the gates are loaded into the mechanism along a loading path to a loaded position, said gate having a generally rectilinear shape; defining a generally planar sealing surface thereon adapted to form a seal in said valve mechanism when said gate is in the operative position in said valve mechanism; defining a loading axis along said sealing surface to be oriented generally in registration with the loading path in the valve mechanism during the loading of said gate to the loaded position in the valve mechanism; and including a pair of opposed sides thereon extending parallel said loading axis, one of which has a first thickness and the second of which has a second thickness greater than said first thickness so that said gate will load into the valve mechanism with only one orientation.

5,011,051
METALLURGICAL VESSEL SLIDE VALVE
Schmuel Kleeblatt, Strassen, Luxembourg, assignor to Cerafer S.A.R.L. Co., Luxembourg
Filed Oct. 20, 1989, Ser. No. 424,097
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1988, 3835687
Int. Cl.[5] B22D *37/00*
U.S. Cl. 222—600 **15 Claims**



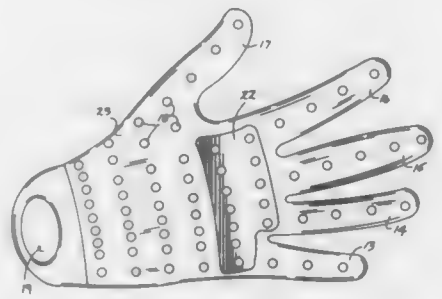
1. A metallurgical vessel slide valve comprising:
a fixed closure plate defining a closure plate passage bore; a displaceable refractory material slide plate adjacent to and facing said closure plate defining a slide plate passage bore;
guide rails each exhibiting a bearing culmination point connected to said slide plate;
spring supported contact rails positioned to support said guide rail bearing culmination points;
an axle pivot supporting each contact rail aligned transversely to an axis of said closure plate passage bore and connected to support springs.

5,011,052
FOLDING DEVICE FOR APPAREL
Jason S. Craig, 413 Bonnie La., Lansdale, Pa. 19446
Filed Oct. 12, 1989, Ser. No. 420,306
Int. Cl.[5] A41M *33/00*
U.S. Cl. 223—37 **8 Claims**



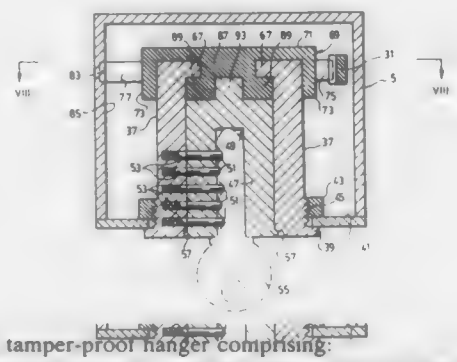
6. A manually operated shirt folding device comprising:
(a) a flat and rectangular shaped member,
(b) said member being dimensioned for receiving a dress shirt upon its upper surface,
(c) a plurality of creases formed in said member which are oriented in a vertical, horizontal and diagonal manner,
(d) said diagonal creases allowing the members to fold the sleeves of said shirt upon the body portion of said shirt,
(e) said vertical creases allowing said member to fold the sides of said shirt to reduce its width dimension after said sleeves have been folded,
(f) said horizontal creases allowing said member to fold said shirt in half to reduce the vertical dimension of said shirt, and
(g) whereby the horizontal, vertical and diagonal creases allow said member to uniformly package said dress shirt in a repetitive manner.

5,011,053
GLOVE SUPPORT APPARATUS
Donald C. Davies, 2305 N. 44th St. #257, Phoenix, Ariz. 85008
Filed Feb. 5, 1990, Ser. No. 475,235
Int. Cl.[5] F26B *5/00;* **A41D** *19/00*
U.S. Cl. 223—78 **4 Claims**



1. A glove support apparatus comprising,
a curvilinear glove shaped body member including a top surface and a bottom surface, and
five finger projections, and
a matrix of openings formed throughout the body member, and
a flexible loop member fixedly mounted to a rear portion of the body member remote from the finger projections, and
wherein the bottom surface of the body member includes a cavity directed interiorly of the body member adjacent the five finger projections.

5,011,054
TAMPER PROOF HANGER WITH IMPROVED RATCHET ARM IN LOCK
Claude Mauffette, Montreal, Canada, assignor to Quada Internationale Ltd., Québec, Canada
Filed Feb. 27, 1990, Ser. No. 485,527
Int. Cl.[5] A47G *25/30, 25/14*
U.S. Cl. 223—88 **4 Claims**



1. A tamper-proof hanger comprising:
a garment support member having a central casing with inner walls and a pair of garment support arms extending from one end of said casing and projecting laterally on either side thereof,
a garment gripping member having a central portion slidable in said central casing, axially thereof, and having a pair of gripping arms extending laterally from said central portion and out of said central casing, said gripping arms being provided at the ends thereof with means adapted for pressing and locking a garment onto said support arms when said gripping member is moved toward said garment support arms into garment locking position; said garment gripping member having a rack inserted and movable within said central casing, and
means within said casing, engageable with said rack for selectively holding said gripping member into and out of said garment locking position; the improvement wherein said selectively holding means comprises;
a cylinder lock within said central casing; an outer lock cylinder solid with said casing;
a rotary lock barrel within said outer cylinder; and tumbler and peg means operatively connecting said lock cylinder and said lock barrel;
a key removably insertable in said lock barrel for rotating said lock barrel;
an operating member rotatably mounted on said outer lock cylinder within said central casing;
coupling means on said operating member and on said lock barrel for allowing rotation of said operating member when said lock barrel is key-operated into rotation;
a pawl integrally and radially projecting from said operating member and having a free end operatively engaging said rack of said gripping member;
a resilient lever integrally and radially projecting from said rotary operating member and having a free end resiliently applied against one of said inner walls of said central casing to press said pawl against said rack;
wherein the distance between said casing inner wall and said rack is preselected for said resilient lever to bias said pawl into said operative engagement with said rack;
wherein said operating member is cup-shaped, having a circular bottom wall sitting over the casing inner end of said lock cylinder, and having a cylindrical skirt surrounding said lock cylinder, said pawl and resilient lever projecting radially from said skirt;
wherein said lock barrel has a key-insertion end and an operating end within said outer lock cylinder; and wherein said coupling means comprises;
a coupling cylinder projecting from said bottom wall; coaxially therewith, and having a free end;
a pair of outwardly projecting radial collars at said free end, diametrically opposing one another;
a pair of inwardly projecting lugs at the casing inner end of said lock cylinder, diametrically opposing one another; said collars being disposed beneath said lugs for holding said operating member captive on said lock cylinder;
a pair of inwardly projecting radial ears at the free end of said coupling cylinder, diametrically opposing one another and each having a tenon-engaging face; and
a tenon extending from said lock barrel and having opposing surfaces in operative engagement with said tenon engaging faces of said radial ears, constructed so that rotation of said lock barrel causes rotation of said cup-shaped operating member.

5,011,055
BICYCLE PUMP BRACKET
John J. Neugent, 20751 Circulo Durango, Yorba Linda, Calif. 92686
Filed Nov. 8, 1989, Ser. No. 433,588
Int. Cl.[5] B62J *7/00*
U.S. Cl. 224—39 **11 Claims**



1. A bicycle pump bracket for detachably securing an elongated cylindrical bicycle pump body to a bicycle tubular frame member, said bracket comprising:

an elongated base having an inner surface concavely curved about a firs axis and adapted to fit a tubular frame member of a bicycle,

first and second hooks fixed to and projecting from an outer side of said base, said hooks being mutually spaced along the length of said base, said first hook having an opening lying in a transverse plane substantially perpendicular to said first axis and opening laterally of said base in a first direction, said second hook having an opening lying in a plane substantially parallel to and spaced from said transverse plane, and opening laterally of said base in a second direction opposite said first direction, each said hook being formed of a continuous U-shaped rod having ends fixed to said base and having a bight defining one side of the hook opening.

5,011,056

INFLATABLE CHILD HOLDER

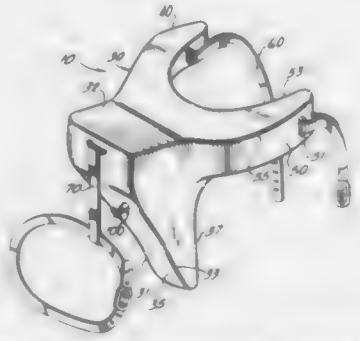
Fred E. Larreategui, Ed. Banco de los Andes, Av. Amazonas 477 y Roca 8 piso, of. 806, Quito, Ecuador

Continuation-in-part of Ser. No. 315,976, Feb. 27, 1989, Pat. No. 4,915,277. This application Apr. 6, 1990, Ser. No. 505,621

The portion of the term of this patent subsequent to Apr. 10, 2007, has been disclaimed.

Int. Cl.[5] A61G *1/00*

U.S. Cl. 224—159 **6 Claims**



1. A holder for children removably mounted on a person, comprising:

A. saddle seat means having a downwardly extending leg member that is positioned against the person's upper thigh and having two slightly curved arm members, substantially perpendicular to said leg member, that conform and embrace the waistline of the person; and one of said arm members conforms to the contour of the lower back area of the person and it has a less pronounced curvature than the other arm member, and wherein said saddle means further includes an inwardly extending flange member that is positioned below said arm members so that it rests on the person's hip bone thereby keeping said holder in place and said saddle seat means is made out of an inflatable material;

B. belt means for removably securing said saddle seat means to said person's waist and said belt means being mounted to the ends of said arms; and

C. strap means for partially supporting the weight of said saddle seat means and said strap means being of sufficiently large dimensions to extend over the neck and shoulder area opposite to the side of the person where said saddle seat means is mounted.

5,011,057

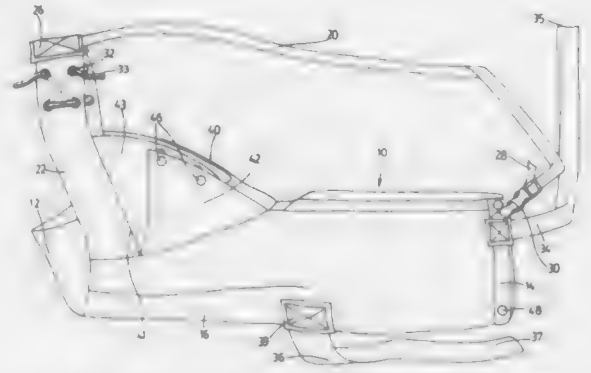
BABY CARRIER

Cathleen Perruzza, 35 Croteau Cresc., Thornhill, Ont., Canada L4J 5S7 , and Anne Briggs, 28 Cranbrooke Avenue, Toronto, Canada M5M 1M4

Filed May 30, 1990, Ser. No. 530,528

Int. Cl.[5] A47D *13/02*

U.S. Cl. 224—158 **7 Claims**



1. A baby carrier for supporting a baby in prone position at least in front of a person carrying the baby, said baby carrier comprising:

an elongate pouch of flexible material to accommodate a prone baby, said pouch having a head end, a foot end and elongate sides adapted to upstand to each side of said baby, each said elongate side having a respective head portion toward said head end;

a harness connected to said pouch at said foot end, and connected to each said elongate side in the region of said head end, and adapted to pass over one, or alternatively the other, shoulder of said person, to locate said respective head portions of said elongate sides adjacent respective breasts of said person when said carrier is in use; and

an openable panel in each of said head portions to provide a baby in the said carrier access to the respective breast wherein each panel can be opened independently of the other panel.

5,011,058

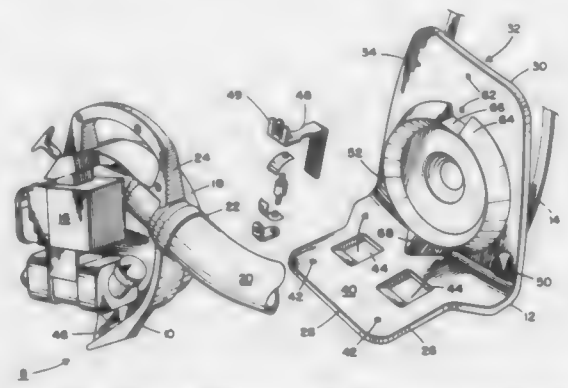
LEAF BLOWER BACK PACK FRAME

Michael D. Sapp, Rockwell, and Donald R. Gaskey, Jr., Monroe, both of N.C., assignors to Textron Inc., Providence, R.I.

Filed Jan. 30, 1990, Ser. No. 472,653

Int. Cl.[5] B05B *3/10*

U.S. Cl. 224—261 **12 Claims**



1. A back pack for use in carrying a blower, the back pack having a frame and straps for removably supporting the back pack and blower on an operator, said frame comprising:

a first portion adapted to, at least partially, removably support a blower thereon; and

a second portion fixedly connected to said first portion and having a first side and a second side, said first side being adapted to be removably supported on an operator's back, said second side having an intake restrictor suitably sized, shaped, and located relative to said first portion for operably cooperating with an air intake of a blower mounted to the back pack to provide a restrictive air flow space between the blower and said second side and, said restrictor is adapted to substantially prevent intrusion of foreign objects into a blower air intake, to reduce noise emanating from a blower air intake, and to nonetheless allow proper air flow through the space into the blower air intake.

5,011,059

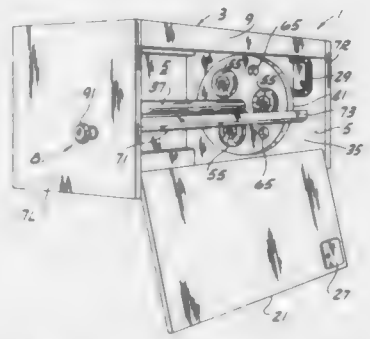
DEVICE FOR HOLDING ROLLS OF WRAPPING MATERIAL

Harold Jennings, Jr., and Carol A. Jennings, both of 5831 Bristlecone Ct., St. Louis, Mo. 63129

Continuation of Ser. No. 246,343, Sep. 19, 1988, abandoned. This application Jul. 20, 1990, Ser. No. 556,559

Int. Cl.[5] B26F *3/02*

U.S. Cl. 225—35 **12 Claims**



1. A device for holding a plurality of rolls of wrapping material and for cutting a selected length of wrapping material pulled from a selected roll, comprising:

a housing having a front, a back and opposite side walls;

a rack between the side walls of the housing for holding said plurality of rolls of wrapping material with the rolls extending generally horizontally between the side walls, each roll being rotatable on the rack about an axis extending longitudinally of the roll;

bearings attached to the side walls of the housing mounting the rack for rotation of the rack relative to the housing on a generally horizontal axis, said rack being rotatable on said axis for moving a selected roll of wrapping material into a dispensing position adjacent the front of the housing;

means for locking the rack against rotation relative to the housing when a selected roll is in said dispensing position;

cutting means extending generally horizontally at the front of the housing for cutting a length of wrapping material pulled from a selected roll in said dispensing position; and

a door at the front of the housing movable between an open position wherein wrapping material may be pulled from a respective roll and cut to length, and a closed position for concealing said rolls from view, said rack comprising a shaft having opposite ends rotatable in said bearings, a pair of support members on the shaft adjacent opposite ends of the shaft, and trunnions on the support members receivable in the ends of the rolls to enable rotation of the rolls on their respective axes, said shaft being removable from said bearings without detaching the bearings from the side walls of the housing to enable the rack to be readily removed from the housing, and at least one of said support members being removable from the shaft when the rack is removed from the housing to permit rolls to be mounted on and dismounted from said trunnions.

5,011,060

ROLL FOR SPREADING AND GUIDING A FABRIC WEB

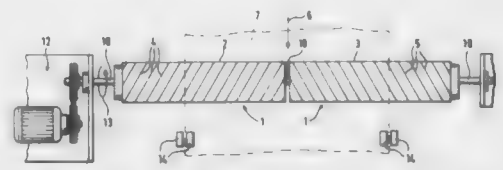
Hans Cramer, Aachen, Fed. Rep. of Germany, assignor to H. Krantz GmbH & Co., Aachen, Fed. Rep. of Germany

Filed Nov. 7, 1989, Ser. No. 432,467

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1988, 3839473

Int. Cl.[5] B23Q *16/00;* **B06C** *3/06;* **B21B** *1/22*

U.S. Cl. 226—15 **3 Claims**



1. An apparatus for spreading and guiding a fabric web positively advanced in a selected direction comprising a shaft, first and second cylinders coaxially mounted on said shaft for rotation relative to said shaft and to each other, said cylinders having end portions said end portions of said cylinders being disposed in proximate spaced relation adjacent the center of said shaft, said cylinders including helical configurations on the periphery thereof positioned to support said web, the pitches of said configurations being arrayed in opposite directions, means for rotating said shaft in a direction opposite said selected direction, and first and second clutch means interposed between said shaft and said first and second cylinders respectively for selectively coupling said cylinders to said shaft for rotation therewith for shifting said fabric web laterally of said shaft in a selected direction in accordance with which of said clutch means is energized, said web being spread in a widthwise direction by said cylinders when said cylinders are decoupled from said shaft.

5,011,061

WIRE BONDING DEVICE

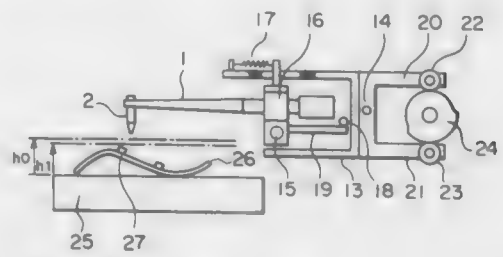
Kazuyuki Funatsu, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 18, 1989, Ser. No. 381,249

Claims priority, application Japan, Jul. 22, 1988, 63-184309

Int. Cl.[5] H01L *21/60;* **B23K** *20/00*

U.S. Cl. 228—1.1 **6 Claims**



1. A wire bonding device including:

a capillary means for causing a wire to make press-contact with a bonding face at at least a first bonding position and a second bonding position thereof;

a driving motor means for raising and lowering said capillary;

a storage means for storing capillary contact data indicating a height of said capillary relative to said bonding face at which said capillary comes in contact with said bonding face at said first bonding position; and

a control means, responsive to said data stored in said storage means, for causing said capillary to be lowered at said second bonding position at a first predetermined velocity down to said height of said capillary relative to said bonding face at which said capillary contacts said bonding face at said first bonding position, and subsequently, if said

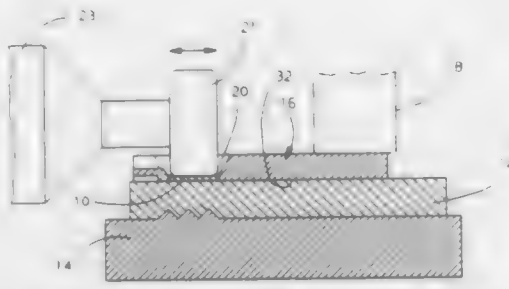
capillary is not in contact with said bonding face at said second bonding position, for lowering said capillary at a second predetermined velocity which is lower than said first predetermined velocity until said capillary makes contact with said bonding face at said second bonding position.

5,011,062

ULTRASONIC WELDING MASK

Todd G. Nakanishi, and Matthew F. Taylor, both of Kokomo, Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed May 9, 1990, Ser. No. 520,907
Int. Cl.[5] B23K *20/10;* **H01L** *21/48*
U.S. Cl. 228—1.1 **8 Claims**



1. A welding mask for use in the ultrasonic welding of a first metallic part to a second metallic part comprising, a bore extending through said mask for receiving said first part when a lower surface of said mask is engaged with an upper surface of said second part, said bore having a first positioning surface that is complementary to the outer edge configuration of said first part and which can contact the outer edges of said first part when said first part is located inside said positioning surface and during vibration of said first part by ultrasonic welding apparatus, said bore having a second surface that extends from the lower end of said first positioning surface to said lower surface of said mask, said second surface being located outwardly of said positioning surface whereby said second surface does not contact said first part during ultrasonic welding of said first part to said second part.

5,011,063

METHOD OF BONDING A CERAMIC COMPOSITE BODY TO A SECOND BODY AND ARTICLES PRODUCED THEREBY

Terry D. Claar, Newark, Del., assignor to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 296,837, Jan. 13, 1989, abandoned. This application Jul. 23, 1990, Ser. No. 560,491
Int. Cl.[5] B23K *31/00, 103/16;* **C22C** *1/02;* **C04B** *35/58*
U.S. Cl. 228—122 **15 Claims**

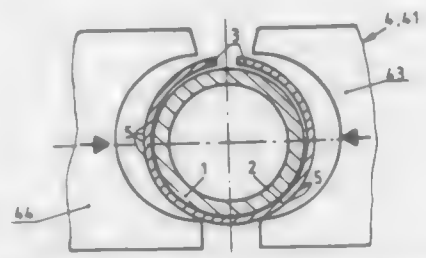
1. A method of producing a self-supporting body comprising producing a first composite body by:
selecting a parent metal;
heating said parent metal in a substantially inert atmosphere to a temperature above its melting point to permit infiltration of molten parent metal into a mass comprising boron carbide and to permit reaction of molten parent metal with said boron carbide to form at least one boron-containing compound;
continuing said infiltration reaction for a time sufficient to produce said first composite body comprising at least one parent metal boron-containing compound;
providing a quantity of excess metal to at least a portion of at least one surface of said first composite body wherein said quantity is sufficient to permit bonding of said first composite body to a second body; and
bonding said first composite body to said second body thereby forming a self-supporting body.

5,011,064

METHOD OF MANUFACTURING A DOUBLE-WALLED TUBE

Heinrich Fuss, Schorenweg 44, D-4788 Warstein 1, Fed. Rep. of Germany

Continuation of Ser. No. 72,262, Jun. 19, 1987, abandoned. This application Mar. 29, 1990, Ser. No. 501,971
Int. Cl.[5] B23K *31/02, 37/04;* **B21D** *39/04*
U.S. Cl. 228—151 **19 Claims**



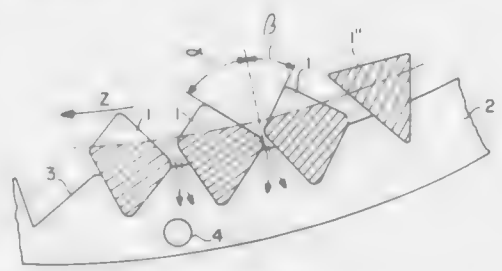
1. A method of manufacturing a double-walled tube comprising the steps of:
(1) providing a wear-resistant prefabricated nonslotted inner pipe having a predetermined outer diameter and a predetermined wall thickness;
(2) arranging around said prefabricated inner pipe a shock and impact resistant previously bent sheet metal single-wall slotted tube which has longitudinal edges and a longitudinally extending slot defined by the longitudinal edges;
(3) applying pressing forces along at least three unchanging lines extending longitudinally along the wall of the slotted tube for holding substantially stationary and pressing the slotted tube tightly against said prefabricated nonslotted inner pipe for eliminating gaps between the prefabricated inner pipe and the slotted tube so that the inner diameter of the slotted tube substantially attains the predetermined outer diameter of the prefabricated inner pipe for bringing the longitudinal edges into an abutting relationship to define a longitudinal welding gap and for forming the outer pipe of the double-walled pipe without changing the predetermined outer diameter and the predetermined pipe wall thickness of the inner pipe; and
(4) welding along the longitudinal welding gap of the slotted tube while the slotted tube is held tightly against the prefabricated inner pipe during said step of applying pressing forces.

5,011,065

SCREEN BASKET AND METHOD OF MANUFACTURE

Walter Musselmann, Heidenheim, Fed. Rep. of Germany, assignor to J.M. Voith GmbH, Fed. Rep. of Germany

Filed Nov. 14, 1988, Ser. No. 270,261
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1987, 3738746; May 11, 1988, 3816152
Int. Cl.[5] B23K *31/02*
U.S. Cl. 228—170 **11 Claims**



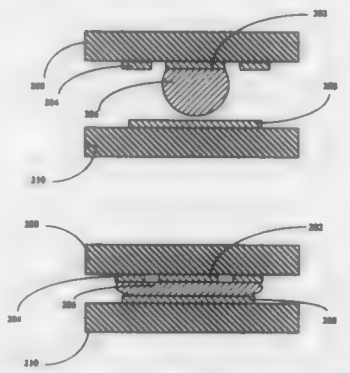
1. A screen basket comprising:
a plurality of rods each positioned approximately parallel to the rotational symmetrical axis of said basket, each rod having a cross-section in the shape of a polygon or a triangle or a circle;
a plurality of rings for connecting said plurality of rods, wherein said plurality of rods form screen slots therebetween, each of said plurality of rings has a recess, formed by a gear-cutting machine, in the shape of a section of the cross-section of said plurality of rods and adapted to receive the plurality of rods therein; and,
means for fastening said plurality of rods to said plurality of rings, wherein said fastening means is either soldering or welding.

5,011,066

ENHANCED COLLAPSE SOLDER INTERCONNECTION

Kenneth R. Thompson, Sunrise, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 27, 1990, Ser. No. 558,939
Int. Cl.[5] B23K *31/02;* **H05K** *3/34*
U.S. Cl. 228—180.2 **11 Claims**



1. An enhanced collapse solder interconnect assembly comprising:
a pair of substrates having solderable surfaces on opposing faces, at least one solderable surface on at least one of the substrates including an associated closely spaced solderable surface; and
solder interconnecting the solderable surfaces of the substrates: the solder connecting to the associated closely spaced solderable surface upon melting and collapsing.

4. A method of manufacturing an enhanced collapse solder interconnect assembly comprising the steps of:
providing a first substrate having at least one solder pad having an associated substantially peripheral closely spaced solderable surface;
providing a second substrate having at least one solder pad;
providing a solder bump on at least one of the solder pads;
positioning the substrates into an adjacent location with the solder pads in register;
reflowing the solder bump to interconnect the solder pad of the first substrate to the associated substantially peripheral closely spaced solderable surface, and to the solder pad of the second substrate.

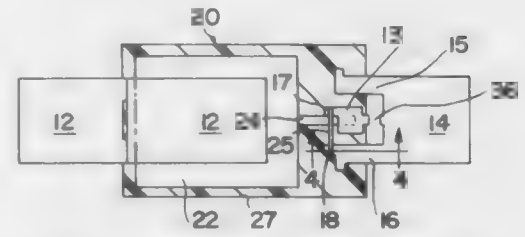
5,011,067

METHOD FOR ATTACHING A FUSE WIRE TO A LEAD FRAME

Robert L. Foisy, Sanford, Me., assignor to Sprague Electric Company, North Adams, Mass.

Filed Mar. 26, 1990, Ser. No. 500,351
Int. Cl.[5] B23K *23/00*
U.S. Cl. 228—241 **6 Claims**

1. A method for attaching a fuse wire to a lead frame comprising:
(a) providing a lead frame having a patterned metallic layer comprised of contiguous parts, two of said parts being a first pair of tabs having one space therebetween and a second and third space on either side thereof;
(b) positioning a fuse strand across and in contact with said first pair of lead-frame tabs extending into said second and third spaces, said fuse strand comprised of two separate but mutually adjacent lengths respectively of two exothermically alloyable metals; and
(c) heating points in said fuse strand in said second and third space respectively to initiate exothermic alloying at each said point and to cause the portions of said fuse strand between each of said points and the adjacent one of said first pair of tabs to progressively alloy and melt to carry a hot liquid ball of alloyed fusestrand metal to each of said first-pair tabs where the tab heat-sinks and reduces the temperature of said fuse strand to stop said progressive alloying, and to form a metallurgical connection between an unfused middle segment of said fuse strand and said each of said first-pair tabs leaving the ends of said middle fuse strand segment metallurgically bonded to said first-pair tabs so that said middle segment electrically bridges said first-pair tabs.

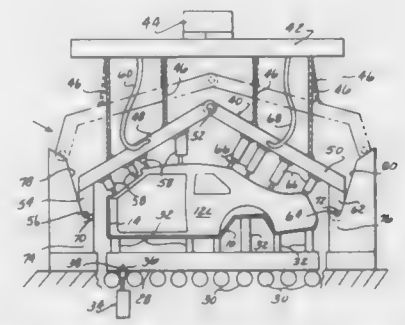


5,011,068

AUTOMOTIVE BOD. FRAMING SYSTEM

Robert R. Stoutenburg, South Lyon; Michael R. Dugas, Brighton, and Mark W. Hazelton, West Bloomfield, all of Mich., assignors to Progressive Tool & Industries Co., Soughfield, Mich.

Filed Dec. 5, 1989, Ser. No. 446,131
Int. Cl.[5] B23K *37/04*
U.S. Cl. 228—4.1 **10 Claims**



1. Framing apparatus for clamping the loosely assembled floor panel, side panels and header members of a vehicle body subassembly having a front to rear axis in an accurately oriented relationship to said front to rear axis and to each other for welding into a permanently assembled substantially rigid subassembly, said apparatus comprising conveyer means including a carrier movable along a predetermined path to and from a welding station, floor panel support means on said carrier for supporting the floor panel of said body subassembly in a predetermined fixed relationship to said carrier with said front to rear axis of said body subassembly parallel to said path, means at said welding station for locating said carrier and the body subassembly thereon in a predetermined welding pattern, a clamping frame assembly including a front frame section having a front and a rear end and a rear frame section having a front and a rear end, pivot means pivotally connecting the rear end of said front frame section to the front end of said rear

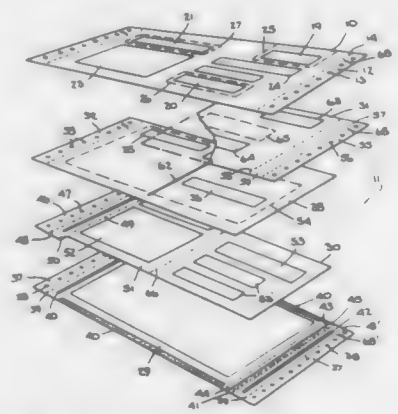
frame section for pivotal movement about a horizontal axis overlying and normal to said predetermined path, support post means engageable with the front end of said front frame section and the rear end of said rear frame section and operable when said carriage and the body subassembly by therein is at said welding position to support said clamping frame assembly in an operating position overlying said body subassembly from front to rear, releasable clamp means on said front and rear frame sections operable when said clamping frame assembly is in said operating position to clamp said side panels and said header members into said accurately oriented relationship to each other and to said floor panels, and clamping frame actuating means operable where said clamp means are released for pivoting said front and rear frame sections upwardly away from said body subassembly to locate said clamping assembly in a transfer position clear of said body subassembly.

5,011,069

CONTINUOUS MAILER ASSEMBLY

Charles G. Bowen, La Grangeville, and Anthony B. Dolce, Pleasant Valley, both of N.Y., assignors to Transkrit Corporation, Brewster, N.Y.

Filed Jun. 26, 1990, Ser. No. 545,340
Int. Cl.[5] B65D *27/06, 27/10*
U.S. Cl. 229—69 **17 Claims**



1. A mailer unit comprising
a front ply of predetermined width;
a back ply secured to said front ply on three sides thereof to define an open-ended pocket therewith;
at least one removable insert ply within said pocket between said front and back plies;
a cover ply removably secured to said front ply in overlying relation, said cover play having a front surface to receive an outgoing address thereon; and
an image transfer means on at least one of said front ply and said cover ply for imprinting of a reply address on said front ply under said cover ply.

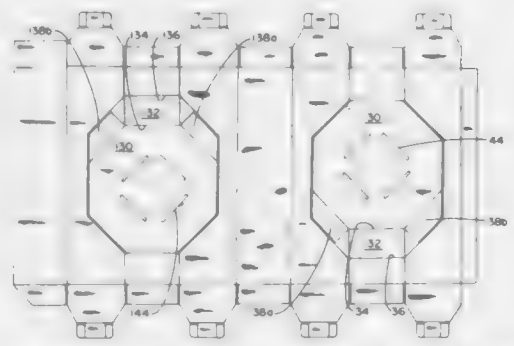
5,011,070

DISPLAY CARTON

Robert L. Plunkett, Harrington Park, N.J., assignor to Accurate Box Company, Inc., Paterson, N.J.

Filed Dec. 7, 1989, Ser. No. 447,565
Int. Cl.[5] B65D *5/42*
U.S. Cl. 229—109 **9 Claims**

1. A display container for holding and displaying articles of manufacture, said container comprising a front, side, a back, a bottom panel between said front, sides and back, and a top panel opposite said bottom panel and between said front, sides and back, said front, sides and back defining an interior, said bottom panel being formed from a cut-out section partially cut from and connected to at least said front, said cut-out section having been folded into said interior to thereby form said bottom panel and a front display window exposing said interior, said top panel being formed from a second cut-out section partially cut from and connected to at least said back, said



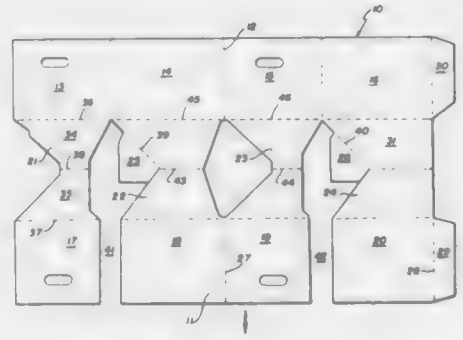
cut-out section having been folded into said interior to thereby form said top panel and a back display window exposing said interior.

5,011,071

CARTON

Louis Lopez, 214 Pleasant St., Leominster, Mass. 01453

Filed Jul. 10, 1989, Ser. No. 377,726
Int. Cl.[5] B65D *5/36*
U.S. Cl. 229—117 **4 Claims**



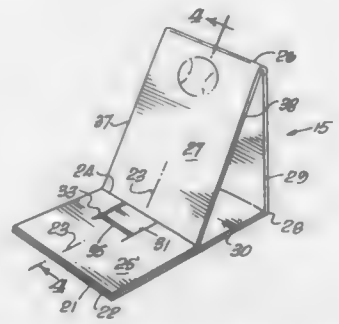
1. Carton comprising:
(a) inner and outer snugly nesting tubular shells of corrugated board having lines of corrugation, the outer shell consisting of four side wall panels, each panel having two side edges hingedly connected to the side edges of other panels lengthwise of the said lines of corrugation, the inner tubular shell also having four side wall panels, the shells being movable lengthwise into and out of a set-up relatonship in which the side wall panels of the shells are in overlying relationship in sets of two to provide for a double-walled construction,
(b) a plurality of foldable strips hingedly connecting adjacent bottom edges of each said set of overlying side wall panels, said strips being unfolded and extensions of their respective side wall panels when the inner shell is noncoextensive with the outer shell, said strips extending transversely of the side wall panels to form a carton floor when said shells are telescoped into set-up relationship, and
(c) reinforcing tabs hingedly connected to each of two alternate strips, each tab being fastened to one of the two non-tabbed strips.

5,011,072

SPORT CARD STABILIZER

Henry F. Ludwig, Fullerton, Calif., assignor to Morris Reisman, Villa Park, Calif.

Filed Aug. 13, 1990, Ser. No. 566,142
Int. Cl.[5] B65D *1/24*
U.S. Cl. 229—120.23 **8 Claims**



1. A stabilizer for holding sport cards or other cards in a vertical to an angled position so that the user can easily view a group of cards, said stabilizer being collapsible for compact storage, said stabilizer comprising:
an elongated, rectangular, unitary sheet having a longitudinal axis, a first end, a second end and two longitudinal edges and having three folds perpendicular to said longitudinal axis extending between the longitudinal edges and two cuts, said unitary sheet including:
a first fold in an upward direction separated from said first end forming a first panel between the first end and the first fold;
a second fold in a downward direction separated from said first fold forming a second panel between said first fold and said second fold;
a third fold in a downward direction separated from said second fold and said second end forming a third panel between said second fold and said third fold and a fourth panel between said third fold and the second end of the elongated rectangular unitary sheet;
a first cut formed in one of said first and fourth panels, said first cut being in a generally "U" shape with the base of the "U" lying parallel to said folds and the arms of the "U" pointing away from the second and third folds and forming a tab from the panel; and
a second cut being in a straight line parallel to said folds, one of the cuts being in the first panel and the other of the cuts being in the fourth panel and said unitary sheet being folded so that said first panel is entirely supported on said fourth panel.

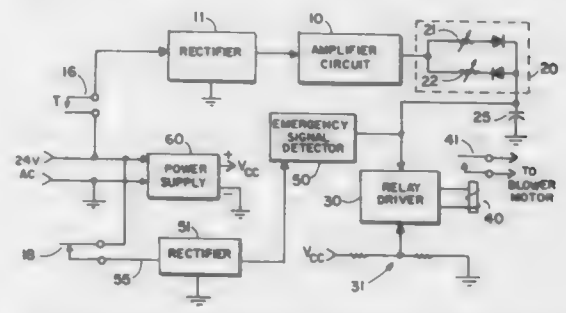
5,011,073

CONTROL TO OPERATE A FORCED AIR BLOWER

Lowell F. Izaguirre, Sr., and Jose M. Perotti, both of Miami, Fla., assignors to Cam-Stat, Inc., Hialeah, Fla.

Filed Nov. 3, 1989, Ser. No. 431,291
Int. Cl.[5] F23N *3/00*
U.S. Cl. 236—11 **9 Claims**

1. A control circuit for controlling an electric motor operated air blower responsive to a control signal from a thermostat comprising:
(a) ON-OFF control means operatively connected to said blower motor;
(b) input means for receiving an ON control signal from said thermostat; and
(c) delay means connected between said input means and said ON-OFF control means, said delay means having a first adjustment means for selecting a turn-on delay when said ON control signal is received, and a second adjustment means for selecting a turn-off delay when said ON control signal ceases,
said input means including:
(d) a rectifier for rectifying an ac ON control signal; and
(e) an amplifier circuit for receiving said rectified control signal;
said first adjustment means of said delay means including
(f) a first adjustable resistor connected between said amplifier circuit and a first diode to a capacitor, said capacitor receiving a charging current from said amplifier circuit via said first resistor and said first diode when said rectified control signal is present at said amplifier circuit,



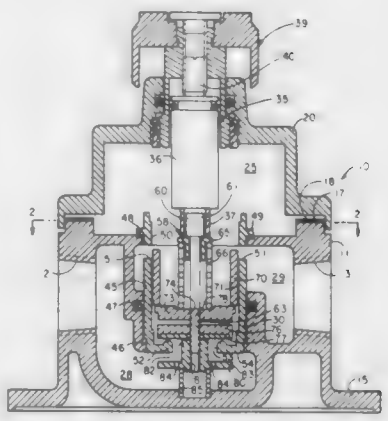
whereby a first selected voltage of said capacitor turns on said control means;
said adjustment means of said delay means including
(g) a second adjustable resistor connected between said amplifier circuit and a second diode to said capacitor, said capacitor discharging through said second diode, said second resistor and said amplifier circuit upon cessation of said rectified control signal, whereby a second selected voltage on said capacitor turns off said control means.

5,011,074

THERMOSTATIC MIXING VALVE WITH THERMOSTAT FAILURE COMPENSATION

Kevin B. Kline, Indianapolis, Ind., assignor to Lawler Manufacturing Co., Inc., Indianapolis, Ind.

Filed Jul. 20, 1990, Ser. No. 556,128
Int. Cl.[5] G05D *23/13*
U.S. Cl. 236—12.13 **6 Claims**



1. A thermally controlled mixing valve assembly comprising:
a valve body defining:
a hot fluid inlet;
a cold fluid inlet;
a fluid mixing chamber; and
a fluid outlet communicating with said fluid mixing chamber;
a thermally responsive control member disposed at least partially within said fluid mixing chamber and movable, in a normal operating condition, in response to the temperature of fluid in said mixing chamber;
flow control means actuated by said con ol member for

controlling the flow of a hot fluid from said hot fluid inlet and a relatively colder fluid from said cold fluid inlet to said fluid mixing chamber in relation to movement of said thermally responsive control member; and

failure responsive means for substantially restricting flow of the hot fluid from said hot fluid inlet to said mixing chamber upon failure of said thermal responsive control member, said failure means including:

a first valve member, separate from said flow control means, connected to said control member and disposed between said hot fluid inlet and said mixing chamber, wherein said valve member is movable with said control member in said normal operating condition without substantially restricting flow between said hot fluid inlet and said mixing chamber; and

biasing means for biasing said valve member to a closed position substantially restricting hot flow between said hot fluid inlet and said mixing chamber upon failure of said control member.

5,011,075

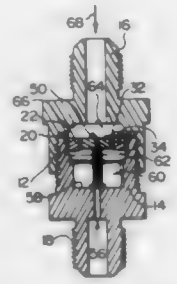
VARIABLE FLOW VALVE

Robert L. Vandiver, 9 Murifield Dr., Siloam Springs, Ark. 72761

Filed Jan. 22, 1990, Ser. No. 468,244

Int. Cl.[5] G05D *23/10*

U.S. Cl. 236—48 R **10 Claims**



1. A temperature-responsive fluid flow control device comprising:

(a) a body portion defining an enclosed chamber, and inlet and outlet passages or predetermined cross-sectional areas for flow of a fluid into and out of said chamber, respectively;

(b) flow control means positioned within said chamber and movable between first and second positions, wherein flow through said body portion is established through passages of first and second cross sectional areas, respectively, said flow control means comprising an elongated stem member having an axial bore extending therethrough and an end portion movable into and out of engagement with an internal wall of said enclosed chamber when said control means is in said first and second positions, respectively, said end portion being in covering relation to one of said inlet and outlet passages with said axial bore in alignment therewith when in engagement with said internal wall to limit flow through said covered passage to that flowing through said axial bore;

(c) a circular disc positioned within said chamber and movable between two distinct positions with a snap action in response to the temperature of said disc as determined by the temperature of fluid within said chamber, said disc being supported at its periphery in a substantially fixed position, whereby movement of said disc between said two distinct positions occurs at the center of said disc; and

(d) means connecting said disc at its center to said flow control means to move said control means between said first and second positions in response to respective movement of said disc between said two distinct positions thereof.

5,011,076

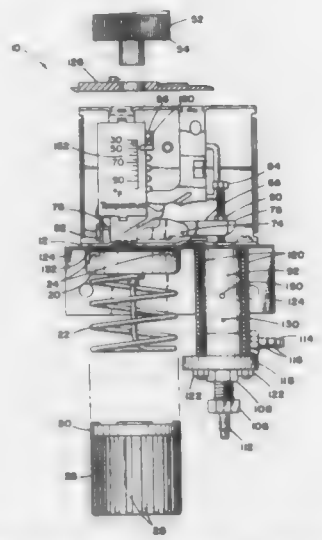
PNEUMATIC TEMPERATURE CONTROL

Ike Wurtz, R 2, Box 105, Wecota, S. Dak. 57438

Filed Feb. 16, 1990, Ser. No. 480,848

Int. Cl.[5] F24F *13/08*

U.S. Cl. 236—49.4 **2 Claims**



1. A pneumatic temperature control comprising:

a frame;

a fluid receptacle mounted to said frame containing a fluid therein capable of expanding or contracting with temperature, and further having a surface capable of movement responding to said fluid expansion or contraction;

a spring positioned on said frame to exert a force on said receptacle surface, said spring having adjusting means for selectively controlling the force exerted on said receptacle surface, said force being calibrated to achieve a desired movement of said receptacle surface at a preselected temperature;

an elongated trigger mounted to said frame having a first end movable by movement of said receptacle surface and a second end movable in response to movement of said first end; and

a module attached to said frame having air valve means for controlling the flow of air between an air supply port and an air output port, said air valve means in communication with said second end of said trigger, whereby expansion and contraction of said fluid actuates said air valve means to control the flow of air to operate a pneumatic device, said air valve means including a diaphragm fixed to said module, a rod extending through said diaphragm, a first end of said rod being in movable communication with said second end of said trigger, a variable air inlet valve fixed to said module being in communication with a second end of said rod, an air output port in said module, the air flow through said output port being dependent on the displacement of said variable air inlet valve.

5,011,077

RAILWAYS

William H. Hodgson, Braithwaite; Colin G. Stanworth, Marchington, and David J. Thompson, Derby, all of England, assignors to British Steel plc and British Railways Board, both of London, England

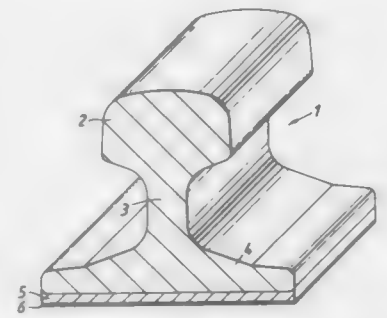
Filed Sep. 18, 1989, Ser. No. 409,568

Claims priority, application United Kingdom, Sep. 22, 1988, 8822293

Int. Cl.[5] E01B *9/68*

U.S. Cl. 238—283 **18 Claims**

1. A steel rail having secured to it a composite body for absorbing vibrational energy generated by vehicular traffic on said rail, the composite body comprising a viscoelastic material bonded to, and sandwiched between, both the rail and a constraining member substantially stiffer in tension than the viscoelastic material.



5,011,078

SURFACE MARKING METHOD TO OBTAIN UNIFORM COATING

Charles A. Eisterhold, Star Rte. 2, Jefferson City, Mo. 65101

Continuation of Ser. No. 155,903, Feb. 16, 1988, abandoned. This application Feb. 22, 1989, Ser. No. 314,309

Int. Cl.[5] B05B *17/00*

U.S. Cl. 239—1 **1 Claim**

1. A method for spraying a generally flat surface with a spray material, the method comprising the steps of:

(a) defining a grid on the flat surface, the grid including a plurality of marks on the flat surface,

(b) spacing the plurality marks to correspond to a spray frequency within a corresponding portion of the grid,

(c) pumping the spray material from a spray material reservoir to a spray means for directing the spray material on to the generally flat surface,

(d) generating a signal corresponding to a desired amount of the spray material pumped to the spray means,

(e) transmitting the signal to a spray operator,

(f) spraying the generally flat surface within the portion of the grid by the spray operator in response to the transmitted signal, whereby the spray operator puts down a desired amount of spray material on the generally flat surface.

5,011,079

UNIT INJECTOR AND DRIVE TRAIN WITH IMPROVED PUSH ROD-PLUNGER CONNECTION

J. Victor Perr, Greenwood, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Continuation of Ser. No. 315,612, Feb. 27, 1989, abandoned. This application Aug. 16, 1990, Ser. No. 568,633

Int. Cl.[5] F02M *51/20*

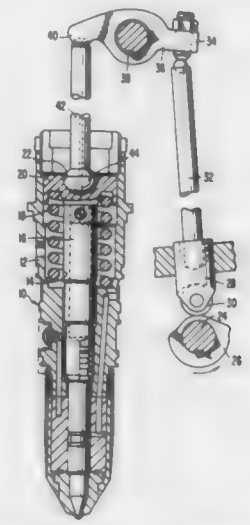
U.S. Cl. 239—95 **9 Claims**

1. A fuel injector assembly adapted to be operated intermittently by an injector drive train having a pivotable arm comprising:

an injector body having a bore;

a plunger assembly mounted for reciprocal movement within said injector body bore, said plunger assembly including a lower portion mounted for sliding movement within a lower section of said injector body bore and an upper portion mounted for sliding movement within an upper section of said injector body;

a push rod having a first end and a second end, said first end



connected to one side of the pivotable arm, said second end of said push rod having a spherical portion;

a connection means for pivotally joining said push rod to said upper portion of said plunger assembly in a manner to minimize wear between said push rod and said plunger assembly, said connection beans having a concave portion complimentary in shape to said spherical portion for receiving said spherical portion, said concave portion and said spherical portion having a diameter equal to at least the outer diameter of said lower portion of said plunger assembly.

5,011,080

CONVERGENT/DIVERGENT NOZZLE CONSTRUCTION

William K. Barcza; Curtis W. Berger, both of Stuart, and Luke A. Hmiel, Jupiter, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 18, 1990, Ser. No. 510,755

Int. Cl.[5] F02K *1/08*

U.S. Cl. 239—265.39 **1 Claim**

1. A convergent/divergent nozzle construction for an engine having a support frame for supporting a plurality of annularly spaced flap portions, each portion comprising:

a pair of A-frames;

a convergent flap pivotally mounted at one corner of each A-frame;

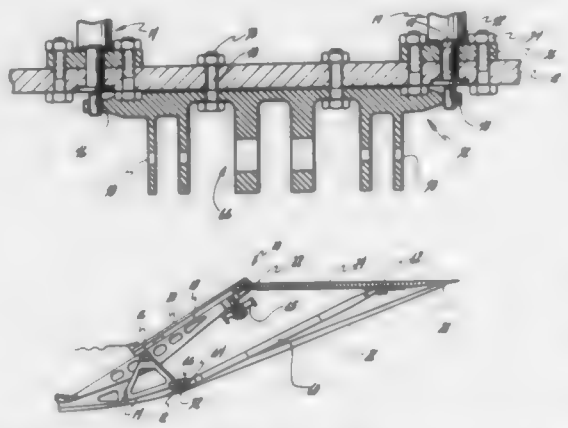
a divergent flap pivotally mounted to said convergent flap at two transversely spaced locations;

a mode strut bracket having a mode strut slot;

a mode strut pivotally mounted to said divergent flap and pivotally mounted in said mode strut slot;

an external flap pivotally connected to said divergent flap at two transversely spaced locations and pivotally mounted to said mode strut bracket at two transversely spaced locations;

said A-frames pinned to said mode strut bracket at a plurality of locations with tight tolerance pins and openings; and



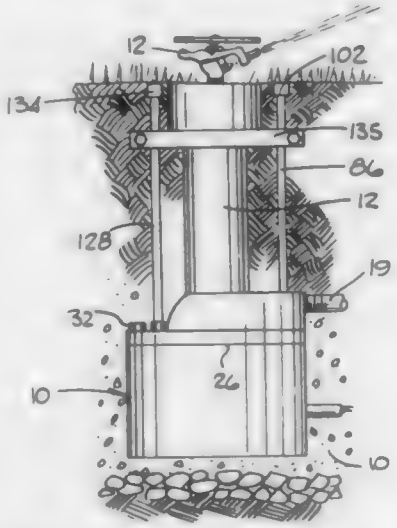
said A-frame and said mode strut bracket each bolted to said support structure with bolts and loosely toleranced bolt holes.

5,011,081

IRRIGATION SYSTEM HAVING UNDERHEAD SPRINKLER VALVE

Carl J. Bentley, 1321 S. Bowen, Longmont, Colo. 80501

Filed Aug. 11, 1989, Ser. No. 393,668
Int. Cl.[5] F16K *31/12*
U.S. Cl. 239—569 **16 Claims**



1. In an improved irrigation system of the type having a sprinkler head and fluid supply means for supplying the sprinkler head with fluid, wherein the improvement comprises a remote controllable valve assembly including:

a housing having interior walls defining an inner chamber, an inlet in fluid communication with said inner chamber, an outlet in fluid communication with said inner chamber and a valve seat surrounding the entrance of said outlet, said inlet also being in fluid communication with said fluid supply means, said outlet also being in fluid communication with said sprinkler head;

a flexible diaphragm extending across said inner chamber and being attached to said interior walls thereof so as to divide said inner chamber into an upper chamber and a lower chamber wherein said upper chamber is in fluid communication with said inlet and said outlet;

valve closing means located in said upper chamber and attached to said diaphragm for sealing engagement with said valve seat to stop fluid flow through said outlet to said sprinkler head;

means for remotely controlling fluid pressure in said lower chamber to deflect said diaphragm upwardly and downwardly for purposes of moving said valve closing means in and out of sealing engagement with said valve seat, thereby opening and closing said valve assembly; and

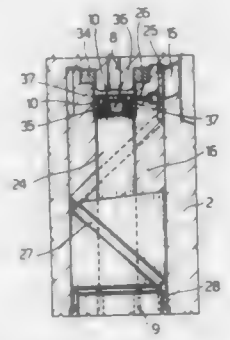
diaphragm deflection control means for controlling the deflection of said diaphragm into said lower chamber to control fluid flow through said valve assembly.

5,011,082

PERFECTED DIESEL ENGINE ELECTROMAGNETIC FUEL INJECTOR

Francesco P. Ausiello, Bologna, and Mario Ricco, Bari, both of Italy, assignors to Weber S.r.l., Torino, Italy

Filed Feb. 27, 1990, Ser. No. 485,617
Claims priority, application Italy, Mar. 3, 1989, 67146 A/89
Int. Cl.[5] F02M *59/00, 47/02*
U.S. Cl. 239—585 **4 Claims**



1. A Diesel engine electromagnetic fuel injector comprising:

a plunger (1) sliding inside the injector body (2), for controlling fuel passage between an injection chamber (3), supplied with fuel under pressure, and at least one injection orifice (4) formed in an injection nozzle (5) secured to said body (2);

an electromagnetic fuel metering valve (6) for controlling fuel passage, through a drain orifice, between a control chamber (8), supplied with fuel under pressure, and a low-pressure chamber, so as to reduce the pressure of the fuel in said control chamber (8) by draining the same through said orifice;

surface portions of said plunger being exposed to the fuel inside said injection chamber (3) and said control chamber (8), so that the pressures inside said chambers and acting on said surface portions displace said plunger (1) when the pressure in said control chamber (8) falls to a given value;

said fuel under pressure being supplied to said injection chamber (3) and said control chamber (8) by means of a single fitting (13) connected to a supply pipe (14) and coming out inside a supply orifice (15) formed in said body (2) and communicating with said control chamber (8) and with a supply duct for feeding fuel into said injection chamber (3) and substantially formed inside a series of sleeves (16,17) housed inside an axial hole (19) in said body (2) and inside which said plunger (1) slides axially;

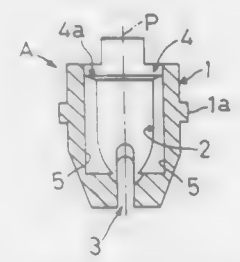
characterised by the fact that said fuel supply orifice (15) comes out inside an annular chamber (25) formed between the outer surface of the top sleeve (16) in said series and said axial hole (19) in said body (2); said annular chamber (25) communicating with said control chamber (8) via at least one radial hole (26) formed in said sleeve (16), and with a helical groove (27) formed on the outer surface of said sleeve (16) and defining the first portion of said duct supplying fuel to said injection chamber (3).

5,011,083

LIQUID-SPRAYING NOZZLE

Kozo Matsumoto, and Hiroyoshi Asakawa, both of Nishinomiya, Japan, assignors to Kyoritsu Gokin Mfg. Co., Ltd., Japan

Filed May 3, 1989, Ser. No. 347,074
Int. Cl.[5] B05B *1/02*
U.S. Cl. 239—590.5 **4 Claims**



1. A liquid-spraying nozzle comprising:

a bottom-equipped tubular nozzle body 1, including;

an inner peripheral face 2 formed at an inner bottom portion of the body 1 and coaxial or substantially coaxial with a nozzle axis P,

a laterally-elongated orifice 3 defined at least in a part of the bottom portion of said nozzle body normal or substantially normal to the nozzle axis P when viewed from the direction of the nozzle axis, said orifice substantially crossing the nozzle body 1 and having a uniform width over its entire lateral extent;

a large-diameter peripheral face 4 formed upstream of said inner peripheral face 2 and having a larger inner diameter than said inner peripheral face 2;

a stepped portion 4a formed and connecting between said inner peripheral face 2 and said large-diameter peripheral face 4, and

a pair of elongated grooves 5 disposed along the inner peripheral face extending in the direction of the nozzle axis P and having substantially parallel opposing faces facing each other, each said elongated groove 5 having an arcuate cross section, a downstream end in the vicinity of said orifice 3 and an upstream end opened at said stepped portion 4a;

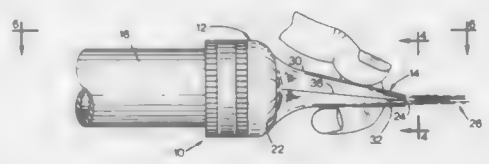
whereby liquid flowing from said large-diameter peripheral face 4 and liquid flowing from said pair of elongated grooves flows in a continuous downstream direction into said orifice 3.

5,011,084

GARDEN HOSE SPOUT

Jonathan S. Toland, Rte. 1, Box 244A, Cornelius, Oreg. 97113

Filed Sep. 7, 1989, Ser. No. 404,844
Int. Cl.[5] B05B *9/00*
U.S. Cl. 239—602 **14 Claims**



1. A hand operated spout for a fluid carrying hose having an outlet, the spout comprising:

a conduit having a first end and a second end, said conduit comprising a pair of opposed rigid plates, said plates being interconnected by flexible side sections and;

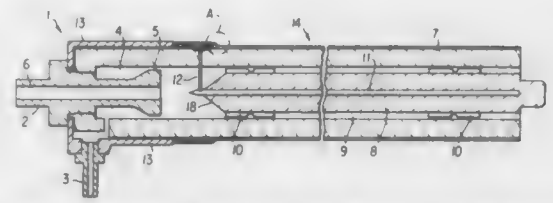
adapter means for coupling the first end of said conduit to the outlet of said hose, at least one of said opposed rigid plates being hingedly attached at said first end of said conduit to said adapter means, said rigid plates being freely movable between an open position and a closed position at said second end of said conduit by hand gripping action, whereby fluid provided at the outlet of said hose passes from the first end of said conduit to the second end of said conduit and exists the spout in a stream having an intensity, volume and spray pattern influenced by said gripping action exerted upon said conduit.

5,011,085

APPARATUS IN A POWDER SPRAYER

Ingemar Lööf, Skillingaryd, Sweden, assignor to AC Greiff Ytbehandling AB, Nacka, Sweden

PCT No. PCT/SE88/00199, § 371 Date Nov. 16, 1989, § 102(e) Date Nov. 16, 1989, PCT Pub. No. WO88/08332, PCT Pub. Date Nov. 3, 1988
PCT Filed Apr. 18, 1988, Ser. No. 424,308
Claims priority, application Sweden, Apr. 28, 1987, 8701776
Int. Cl.[5] B05B *5/47*
U.S. Cl. 239—690 **5 Claims**



1. An apparatus in a powder sprayer comprising an annular friction charging channel (9) defined by an inner, longitudinal body (8) with a surface of electrically insulating material, and a tubular body (7) surrounding the inner body with an inner surface of electrically insulating material, the channel being surrounded, radially beyond the insulating material of the tubular body, by an outer electric conductor (14), characterised in that there is disposed, inside the annular channel (9) and inside the insulating material of the longitudinal body (8), an inner electric conductor (11) which is electrically connected (12) to the outer conductor (14) and that the inner electric conductor extends along substantially the whole length of the charging channel (9).

5,011,086

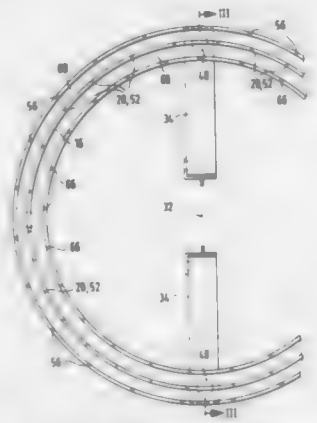
SPRAY COATING DEVICE FOR ELECTRICALLY CONDUCTIVE COATING LIQUIDS

Adolf H. Sonnleitner, Offenbach, and Karl H. Bergmann, Wacholderberg, both of Fed. Rep. of Germany, assignors to Ransburg Corporation, Indianapolis, Ind.

PCT No. PCT/US88/02107, § 371 Date Nov. 30, 1989, § 102(e) Date Nov. 30, 1989, PCT Pub. No. WO88/10152, PCT Pub. Date Dec. 29, 1988
PCT Filed Jun. 13, 1988, Ser. No. 438,495
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1987, 3720201; European Pat. Off., Mar. 15, 1988, 88104055.4
Int. Cl.[5] B05B *5/00*
U.S. Cl. 239—691 **33 Claims**

1. An electrode assembly for an atomizer, the atomizer including an atomizer axis along which material dispensed by the atomizer migrates toward an article to be coated thereby, a plane generally perpendicular to the atomizer axis, the location from which material to be atomized by the atomizer is dispensed lying generally in the plane, and the material dispensed by the atomizer being projected generally along the axis in a first direction away from a first side of the plane, the electrode assembly comprising an electrode holder defining a plane curve, a plurality of electrodes, the electrode holder holding the electrodes in spaced orientation to each other, the electrode holder including first and second surfaces inclined toward each other in the first direction toward the plane,

means defining first openings therein on a side thereof facing in the first direction from a second side the plane opposite the first side thereof toward the plane, the first openings being spaced along the electrode holder, means providing a second opening or second openings in the electrode holder to direct a second stream or second streams of a gas or mixture of gases at superatmospheric pressure across the first surface, means providing a third opening or third openings in the electrode holder to direct a third stream or third streams of a gas or mixture of gases at superatmospheric pressure across the second surface, the second and third streams of a gas or mixture of gases encountering each other in the vicinity of the first openings, means for fixing the electrodes to the electrode holder with the electrodes extending into the first openings, means for supporting the electrode holder on the second side of the plane adjacent the atomizer with the electrodes extending in the first direction toward the plane and for substantially insulating the electrodes electrically from the atomizer, an electrostatic potential supply, means for coupling the electrodes to the electrostatic potential supply, and the electrode holder including means for feeding a gas or mixture of gases at low superatmospheric pressure to the first openings.

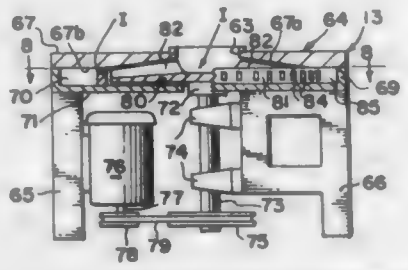


5,011,087

METHOD OF AND APPARATUS FOR CONTINUOUSLY TREATING COMMINUTED SYNTHETIC PLASTIC CONTAINERS AND PRODUCTS HAVING CONTAMINANTS BONDED THERETO FOR RECYCLING PURPOSES

Larry D. Richardson, 5755 Wade Rd., Coleman, Mich. 48618, and Tommy M. Pohlman, 3525 N. Branch Dr., Beaverton, Mich. 48612

Filed May 14, 1990, Ser. No. 522,637
Int. Cl.[5] B02C *19/00*
U.S. Cl. 241—5 **30 Claims**



1. A method of continuously treating comminuted synthetic plastic containers and products, having cellulosic or resin labels or other contaminants adhered thereto, wherein the containers have been reduced to flakes of plastic and/or flakes of plastic which have parts of the contaminant bonded thereto, comprising the steps of;

a. passing the flakes in a continuous stream through a separator to remove any loose fluff and fines from the flake stream;

b. receiving the stream continuously and passing the flakes in a continuous flow stream through a cryogenic housing subjecting the flow stream to cryogenic brittlizing temperatures;

c. separating flakes from the flow stream and hurling them with bond disintegrating force individually against an impacting wall to impact each flake individually, without interference from other flakes of a nature which might shield the flake, to thereby yield a discharge stream comprising flakes and any contaminant fines or fluff; and

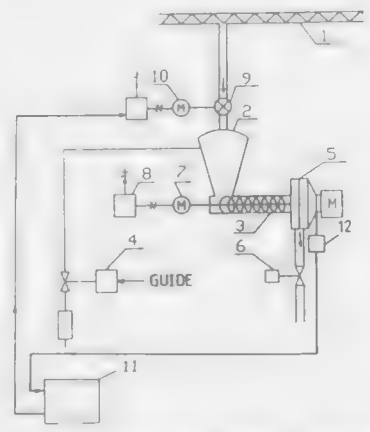
d. continuously passing the discharge stream from step c continuously through a separator to remove any fines and/or fluff produced from the discharge stream while discharging the flakes, free of contaminants, in a flow stream.

5,011,088

CONTROL METHOD FOR A CHIP REFINER

Aslak Savonjousi, Espoo, Finland, assignor to ABB Strömberg Teollisuus OY, Helsinki, Finland

Filed Jan. 3, 1990, Ser. No. 460,585
Int. Cl.[5] B02C *25/00*
U.S. Cl. 241—21 **5 Claims**



1. A method for controlling feed rate of a chip refiner comprising the steps of:

metering chip stock from a chip stock meter to a refiner for refining:

feeding metered chips by a chip feeder to refiner disks, said refiner disks being mounted on an axial bearing;

adding water to the chips prior to feeding the chips between the refiner disks;

measuring temperature of the axial bearing of the refiner disks; and

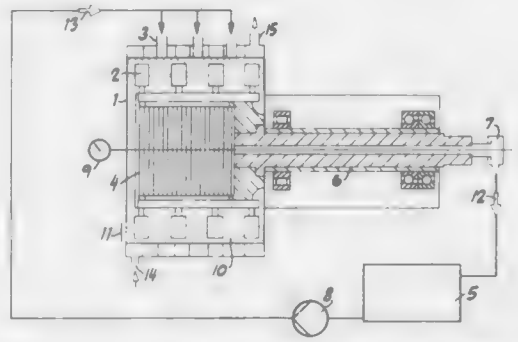
controlling a quantity of chip stock metered to the chip feeder in response to measured temperature of the axial bearing whereby temperature of the axial bearing is regulated to a generally constant level.

5,011,089

DISPERSING PROCESS AND STIRRED BALL MILL FOR CARRYING OUT THIS PROCESS

Friedrich Vock; Gerd Kissau, and Klaus Warnke, all of Münster, Fed. Rep. of Germany, assignors to BASF Lacke+Farben AG, Münster, Fed. Rep. of Germany

Continuation of Ser. No. 298,783, Jan. 17, 1989, abandoned, which is a continuation of Ser. No. 893,302, Jun. 16, 1986, abandoned. This application May 4, 1990, Ser. No. 518,273
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1984, 3437866
Int. Cl.[5] B02C *17/16, 23/10, 23/36*
U.S. Cl. 241—21 **20 Claims**



1. A method of dispersing solids in a liquid phase comprising the steps of:

feeding a mill base comprising solids and a liquid phase into a hollow body having a substantially cylindrical inner surface and containing a grinding medium and a sieve means, said mill base being fed radially inwardly with respect to said hollow body into said hollow body;

rotating said grinding medium relative to said hollow body and sieve means at such a speed that the grinding medium forms an annular charge in contact on an outer side with said cylindrical inner surface and defining on an inner side a cylindrical space essentially free of said grinding medium in which cylindrical space is situated the sieve means, such that the annular charge rotates around the sieve means without substantially colliding with said sieve means;

conveying said mill base radially inwardly with respect to said hollow body through said charge toward the sieve means so that a fluidized bed is formed with respect to said grinding medium; and

passing said mill base radially inwardly with respect to said hollow body through said sieve means, thereby separating said mill base from any residual grinding medium.

5,011,090

METHOD FOR CONTROLLING A CHIP REFINER

Aslak Savonjousi, Espoo, Finland, assignor to ABB Stromberg Teollisuus Oy, Helsinki, Finland

Filed Jan. 3, 1990, Ser. No. 460,368
Int. Cl.[5] B02C *25/00*
U.S. Cl. 241—21 **5 Claims**

1. A method for controlling feed rate of a chip refiner comprising the steps of:

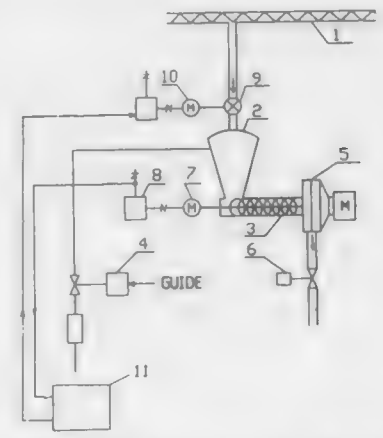
metering chip stock from a chip stock meter to a refiner for refining:

feeding metered chips by a chip feeder to refiner disks;

adding water to the chips prior to feeding the chips between the refiner disks;

measuring power input to the chip feeder; and

controlling a quantity of chip stock metered to the chip feeder in response to measured input power to the chip



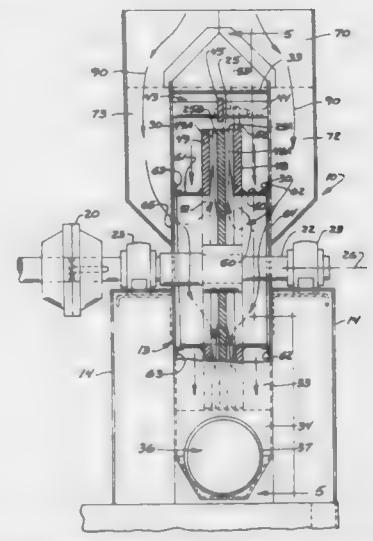
feeder whereby input power to the chip feeder is regulated to a generally constant level.

5,011,091

CELLULOSE FIBERIZATION APPARATUS

Ivyl D. Kopecky, Ypsilanti, N. Dak., assignor to Haybuster Manufacturing Inc., Jamestown, N. Dak.

Filed Aug. 10, 1989, Ser. No. 392,742
Int. Cl.[5] B02C *7/06*
U.S. Cl. 241—259.1 **11 Claims**



1. A fiberization apparatus for breaking waste paper into fibers comprising a housing, a rotor disc mounted in said housing for rotation about an axis, at least one stator disc mounted in said housing adjacent one side of said rotor disc, said rotor disc having a plurality of teeth formed in at least the one side surface thereof said teeth extending generally radially outward to an outer periphery edge, and said stator disc having a plurality of teeth formed in the surface thereof that faces the rotor, said stator disc having a material feed opening in the center thereof defining a periphery spaced outwardly from the axis of rotation of the rotor, and the teeth on the rotor disc extending inwardly toward the axis of rotation so that the opening on the stator disc leaves a portion of the teeth on the rotating disc exposed.

5,011,092

METHOD OF RANDOM DOFFING WOUND PACKAGES FROM TWO SIDES OF A TEXTILE YARN PROCESSING MACHINE

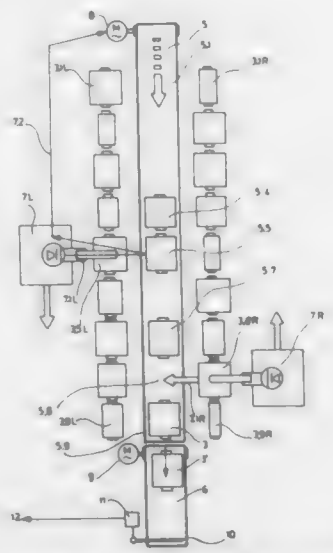
Jürgen Kallmann, Kaarst, Fed. Rep. of Germany, assignor to Palitex Project Company GmbH, Krefeld, Fed. Rep. of Germany

Filed Mar. 27, 1990, Ser. No. 499,772

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1989, 3912513

Int. Cl.[5] B65H *54/26, 67/06*

U.S. Cl. 242—35.5 A **3 Claims**



1. Method of random doffing wound packages with an automated handling device from parallel successive takeup zones on two sides of a textile yarn processing machine onto a driven conveyor belt extending centrally of the machine between the successive parallel takeup zones, said method being characterized by providing a vacant position on the conveyor belt for doffing a wound package from a desired takeup zone regardless of previously doffed wound packages on the conveyor belt; said method comprising the steps of:

successively sensing with the automated handling device whether the position on the conveyor belt adjacent the takeup zone having a wound package to be doffed is vacant or occupied by a doffed wound package, and signaling the drive of the conveyor belt;

advancing the conveyor belt in stepwise movements is a signal is received that the position is occupied and until the signal indicates that the position is vacant;

providing a buffer zone device at the forward end of the conveyor belt and transferring wound packages from the forward end of the conveyor belt as such wound packages reach the forward end of the conveyor belt during stepwise advancing movements of the conveyor belt; and

successively doffing the wound packages with the automated handling device from the desired takeup zones onto the vacant positions on the conveyor belt.

5,011,093

DEFLECTABLE MEDIA GUIDES FOR ASSISTING IN MEDIA TRANSPORT

David M. Mayer, Fremont, and Jay J. Cisneroz, San Jose, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 14, 1990, Ser. No. 493,252

Int. Cl.[5] B65H *19/20;* **G03B** *27/32;* **B26D** *5/20*

U.S. Cl. 242—56 R **4 Claims**

1. A media transport apparatus comprising

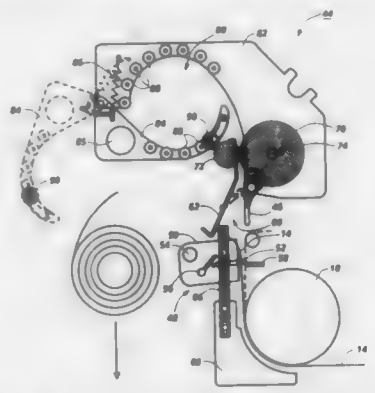
means for supplying a recording medium,

means for collecting sections of said recording medium,

means for driving said recording medium from said means for supplying to said means for collecting along a transport path,

means for severing said recording medium into said sections, said means for severing being located between said means for driving and said means for collecting,

means for moving said means for severing in a plane substantially parallel to the plane of said recording medium and in



a direction substantially transverse to the direction of movement of said recording medium, and

deflectable means for defining a portion of said transport path in interference relationship with said means for severing, said deflectable means being readily displaced by said means for severing and providing a rigid guide for said recording medium when not displaced.

5,011,094

SHAFT FOR MOUNTING ARTICLE

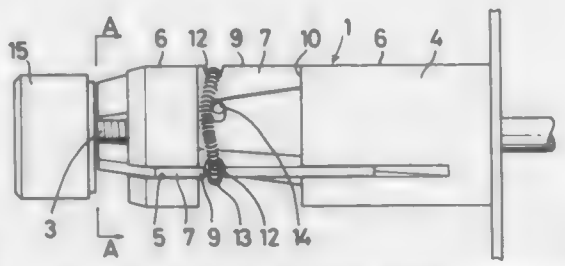
Yoshifumi Azuma, Wakayama, Japan, assignor to Noritsu Kenkyu Center Co., Ltd., Osaka, Japan

Filed Mar. 10, 1987, Ser. No. 24,156

Claims priority, application Japan, Mar. 10, 1986, 61-35154

Int. Cl.[5] B65H *17/02*

U.S. Cl. 242—72.1 **5 Claims**



1. A device for supporting an article having a center hole, said device comprising:

a core shaft;

a boss concentrically mounted on and secured to said core shaft and extending in an axial direction thereon, said boss having a plurality of grooves each of which extends in and is tapered in said axial direction, and said grooves being spaced from one another around said boss;

a plurality of sliders for fixing the article relative to said core shaft and each of which is slidably mounted and guided in a respective one of said grooves, each of the sliders having a bottom edge contacting said boss at the bottom of the respective said groove in which it is mounted and a top edge opposite the bottom edge, each of the sliders movable in said axial direction along the respective said groove in which it is mounted between a first position at which the top edge thereof is disposed below the outer circumferential surface of said boss and a second position at which the top edge thereof protrudes radially outward from the outer circumferential surface of said boss;

urging means for exerting a biasing force in a direction opposite to said axial direction that biases said sliders toward said first position; and

a rotatable knob disposed at one end of said core shaft and abutting each of said sliders for moving each of said sliders from said first position to said second position, and said knob being movable along and fixable relative to said core shaft for adjustably maintaining said sliders in respective fixed positions against the biasing force exerted by said urging means.

5,011,095

Patent Not Issued For This Number

5,011,096

TAPE CASSETTE

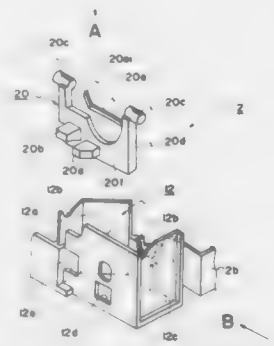
Harushige Nagai, Ishioka; Masato Kiryu, Mito; Takeshi Sasaki, and Akira Saotome, both of Ibaraki, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Apr. 14, 1989, Ser. No. 337,818

Claims priority, application Japan, Apr. 20, 1988, 63-53337[U]

Int. Cl.[5] G11B *23/087*

U.S. Cl. 242—199 **2 Claims**



1. A tape cassette comprising a cassette body in which a pair of tape reels are mounted, a protective lid pivotally mounted on a front end of the body for movement between open and closed positions, and a locking mechanism for the lid for releasably locking the lid in the closed position, the locking mechanism including a lock plate pivotally mounted in a chamber at one side of the cassette body and having a locking claw with a locking position wherein the claw extends through an opening in one wall of the body defining said chamber to lock the lid, the lock plate being movable inwardly to retract the claw in said opening and release the lid, wherein the plate is provided with a position limiting member of elasticly deformable material and the lid is formed with a projection extending into said chamber to cooperate with said limiting member, said projection being moved between first and second positions when the lid is opened and closed respectively, said limiting member and said projection being relatively configured and disposed for (a) providing clearance therebetween when the lid is closed and the claw is in locking position (b) providing engagement therebetween when the plate is moved inwardly dot release the lid, and (c) providing disengagement between the limiting member and the projection when the lid is opened and the projection is moved from the second position to the first position.

5,011,097

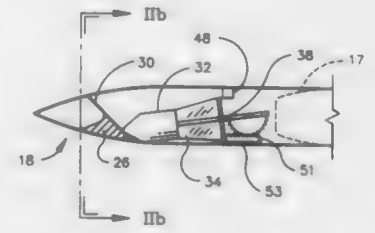
VEHICLE STEERING DEVICE

Bruce W. Travor, Holland, and Roger A. Holler, Warminster, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 30, 1990, Ser. No. 579,921

Int. Cl.[5] F41G *7/00*

U.S. Cl. 244—3.21 **8 Claims**



1. A vehicle steering device, that is joined to an air-dropped component, comprising:

a. aerodynamic housing means, including a front tip end, to provide necessary structure to join to the component;

b. nose cavity means in said housing means carrying orientation means that causes the device to assume proper longitudinal orientation with respect to the earth's gravitational field;

c. gravity reaction means located inside said housing means adjacent said nose cavity to force the device to seek the earth's surface; and

d. guiding means connected to said reaction means to adjust the flight path of the device during free-fall.

5,011,098

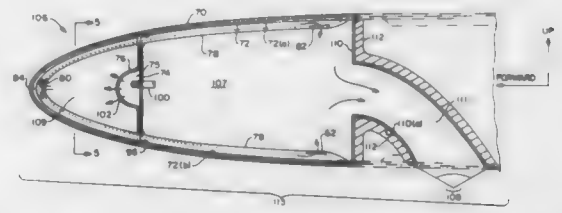
THERMAL ANTI-ICING SYSTEM FOR AIRCRAFT

Douglas McLaren, Seattle, and William W. Orr, Mercer Island, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 30, 1988, Ser. No. 292,541

Int. Cl.[5] B64D *15/04*

U.S. Cl. 244—134 B **12 Claims**



1. The combination of an aircraft structure having a leading edge and a system for heating said structure to inhibit the formation of ice on said leading edge, said structure having an outer skin with spaced apart, exposed surface defining segments and said heating system including:

a. an inner skin with a segment of complementary configuration adjacent a segment of said outer skin and cooperating therewith to form a series of flow passages which: are disposed in side-by-side relationship, extend from the leading edge of said structure toward the rear thereof, and have inlets at the leading edge of the structure and outlets to the rear of said inlets;

b. a bulkhead so extending spanwise of said structure between the inlets and outlets of said flow passages and from one side to the other of said structure as to form a heated fluid inlet plenum that keeps fluid from escaping toward the rear of the structure;

c. a heated fluid supply manifold: located in said structure on the forward side of said bulkhead, spanning said series of fluid flow passages, and having outlet passages at intervals

along the length of the manifold through which the heated fluid can flow into the inlet plenum;

d. means bonding said outer skin to said inner skin and said manifold to said bulkhead; and

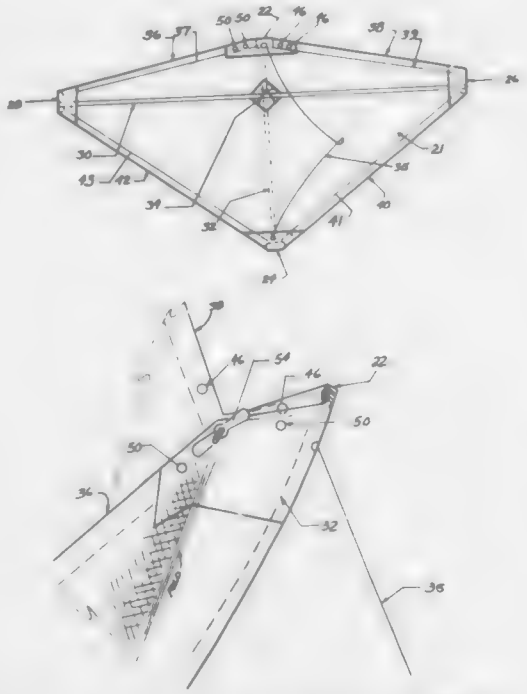
e. means for effecting a flow of a heated fluid: into said supply manifold, from said manifold toward the leading edge of said structure, through said inlets into said flow passages, through said passages, and from said outlets to thereby affect a transfer of thermal energy from said fluid to the outer skin of said structure to heat said skin and thereby inhibit the formation of ice on that skin.

5,011,099

KITE WITH SELF INDUCED DIHEDRAL ADJUSTABLE KEEL AND STABILIZING SAIL TURBINES

Rudolph W. Harburg, 1020 Mapleton Ave., Boulder, Colo. 80302

Filed Sep. 7, 1989, Ser. No. 404,[illegible]2
Int. Cl.[5] B64C *31/06*
U.S. Cl. 244—153 R **15 Claims**



1. A wind responsive kite comprising in combination:

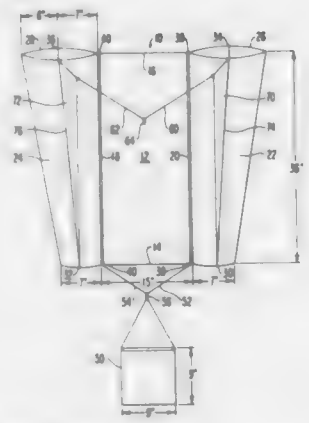
a diamond shaped flexible flight skin having four corners, a top corner, a bottom corner, a right corner and a left corner; a horizontal wing spar which attaches to the flight skin at its right and left corners where the horizontal wing spar is positioned on the windward side of the flight skin, and where the horizontal wing spar is longer than the distance measured along the flight skin between the two points of attachment at its aforementioned right and left corners causing the horizontal wing spar to bow into an initial dihedral due to the tension in the flight skin; and a vertical spar which attaches to the flight skin at its top and bottom corners where the vertical spar is positioned on the leeward side of the flight skin.

5,011,100

KITE

Richard Gerstein, 2711 Euclid St., #B, Santa Monica, Calif. 90405

Filed Jan. 10, 1990, Ser. No. 463,174
Int. Cl.[5] B64C *31/06*
U.S. Cl. 244—153 R **8 Claims**



1. A foldable kite, comprising;

a flexible panel having at least four sides formed by a top edge, a bottom edge, and two side edges;

an equal number of flexible tubes adjacent each of said side edges of said flexible panel, each of said tubes having a respective central axis generally parallel to said adjacent side edges of said flexible panel, and said flexible tubes having an opening at each end configured to allow air to flow therethrough about said central axis while in flight;

flexible diaphragm contained within each of said flexible tubes, dividing said flexible tube into at least two portions;

support means for said flexible panel generally extending parallel to side edges; and

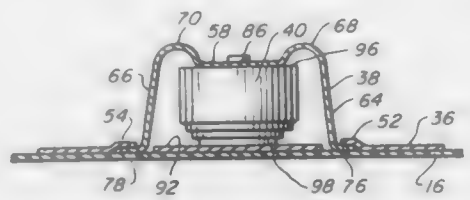
at least two flexible wings, each positioned along a respective one of said flexible tubes each of said wings being generally triangular in shape and having one side which is generally of the same length as a respective one of said flexible tubes.

5,011,101

SURFACE MOUNTING SPRING CLIP

William J. Buchser, Marrs Township, Posey County, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Continuation of Ser. No. 224,457, Jul. 26, 1988, abandoned, which is a division of Ser. No. 115,207, Nov. 2, 1987, Pat. No. 4,776,178. This application Jul. 13, 1989, Ser. No. 380,692
Int. Cl.[5] G12B *9/00*
U.S. Cl. 248—27.3 **8 Claims**



1. A mounting assembly for surface mounting a device comprising:

a wall having a substantially flat surface portion and a pair of opposed spaced openings with raised wall portions above said openings to provide raised sockets; and

a spring clip, including a body of resilient strip material including a flat central portion for facially engaging a flat upper surface of the device, said central portion defining opposite ends,

first and second side portions each having an upper end and a lower end and a length between said upper and lower ends preselected to space said central portion in use away from the wall less than the height of the device, the spacing between said sides portions being greater than the width of the device to permit inward movement of said side portions when the device is disposed therebetween,

first and second resilient yieldable semicircular, downwardly opening connecting portions connecting said opposite ends of said central portion to said upper ends of said first and second side portions respectively, said connecting portions being constructed to cause said side portions to diverge downwardly, and

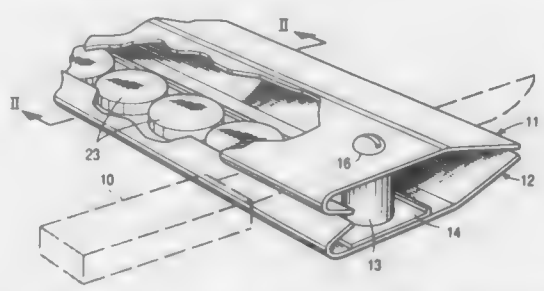
first and second flat tabs turned outwardly from said lower ends of said side portions below said central portion and removably received in the sockets and having said central portion bearing downwardly on the upper surface of the device and resiliently urge the device into facial contact with the flat surface portion of the wall, said tabs extending outwardly sufficiently to remain in the sockets notwithstanding the device urging said central portion resiliently outwardly and thereby cause said side portions to be urged resiliently inwardly, said tabs maintaining said flat central portion accurately parallel to the outer surface of the device.

5,011,102

MAGNETIC KNIFE HOLDER

Walter J. Kiellr, 1137 N. Patterson, Santa Barbara, Calif. 93111

Filed Apr. 30, 1990, Ser. No. 516,6[illegible]
Int. Cl.[5] A47G *21/14*
U.S. Cl. 248—37.3 **2 Claims**



1. A magnetic knife holder having a front and rear comprising:

(a) a pair of spaced elongated cowlings each having a front curved nose and a guide strip projecting rearwardly from the nose and inclined toward each other;

(b) an elongated strip of magnetic material disposed between the cowlings and having a rear flange;

(c) and a plurality of disc magnets disposed on the strip of magnetic material between the flange and the rear edge of one of the guide strips to underlie the rear edge of said one guide strip.

5,011,103

LEAF BAG AND COLLAPSIBLE FRAME

Franklin A. Hayes, and Harold E. Sexton, both of Asheboro, N.C., assignors to A.R.T. of Asheboro, Ltd., Asheboro, N.C.

Filed Apr. 5, 1990, Ser. No. 505,936
Int. Cl.[5] B65B *67/00*
U.S. Cl. 24[illegible]—[illegible] **8 Claims**

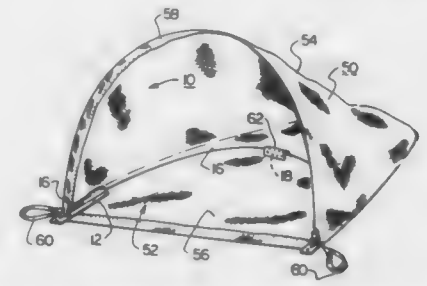
1. A trash and leaf collection container comprising:

(a) a flexible bag-like container having an open end and a closed end, said open end having a minor portion and a major arcuate portion, a rod receiving means extending around said major arcuate portion;

(b) a self-supporting frame for receiving said open end of said flexible container and comprising:

(i) an arch lying in a substantially upright plane formed by a rod means extending through said rod receiving means with the central portion thereof flexed and the opposite ends of said rods means protruding downwardly and outwardly of each end of said rod receiving means;

(ii) a pair of spaced elongated stabilizing feet, each of said stabilizing feet being placed at one end of said minor portion and extending into said bag in a direction paral-



lel to the longitudinal axis thereof, means associated with each of said feet for connecting one end of said rod means thereto and maintaining said arch in said vertical plane;

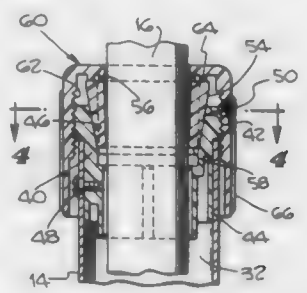
(c) whereby said flexible bag-like container with its rod receiving means cooperates with said stabilizing feet to establish and maintain the trash and leaf collection container in an open upright position without any supplemental struts extending from said arch into said container which interfere with the filling and emptying of said container.

5,011,104

ADJUSTABLE FRAME

Roger C. Fang, Alhambra, Calif., assignor to Tatung Company of America, Inc., Long Beach, Calif.

Filed May 7, 1990, Ser. No. 519,915
Int. Cl.[5] A47G *29/00*
U.S. Cl. 248—125 **4 Claims**



1. An adjustable frame comprising:

an outer tubular member and an inner cylindrical frame member adapted to be disposed in longitudinally adjustable relation with and end of said inner frame member projecting within said outer tubular member, said frame member being of substantially smaller diameter than the interior surface of said outer member so as to provide an annular space therebetween;

a collet holder extending partially within said tubular member and having throughout most of its length an exterior cylindrical surface which fits rather closely within the interior surface of said tubular member, said collet holder having an externally threaded outer end portion which extends longitudinally beyond the end of said tubular member, said collet holder also having a tapered interior wall surface which is of largest diameter at said outer end, said externally treaded portion of said collet holder being

of larger diameter than the external surface of said tubular member;

a collet circumdisposed about said frame member in a normally loose relation therewith and having an inner end extending partially within said collet holder and said tubular member, said collet having a cylindrical interior surface and its outer surface being longitudinally tapered with its smallest radial wall thickness at said inner end, the exterior surface of said collet and the interior surface of said collet holder thus providing longitudinally tapered mating cam surfaces;

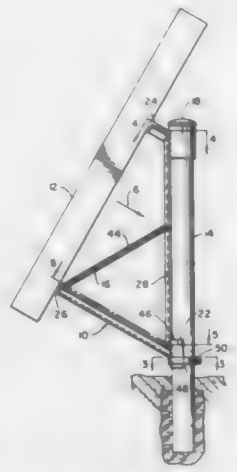
said collet being made of a resilient material, said collet having a circumferentially gap therein so that it may be radially compressed against the outer surface of said frame member; and

a sleeve member having a cup-shaped end with an opening therein which is circumdisposed about said frame member, having a circumferential ledge inside said cup-shaped end which engages the outer end of said collet, having internal threads which threadedly engage the external threads of said extended portion of said collet holder, and having a knurled exterior surface adapted for rotating said sleeve in one direction so as to drive said collet into said collet holder and thereby radially compress said collet against said frame member and create a radial expansion force within said annular space for locking said frame member in a selected position of longitudinal adjustment relative to said tubular member.

5,011,105
COLLECTOR STAND

John L. Sobieski, and Edward W. Bottum, both of Brighton, Mich., assignors to Refrigeration Research, Inc., Brighton, Mich.

Filed Aug. 13, 1979, Ser. No. 66,045
The portion of the term of this patent subsequent to Aug. 30, 2003, has been disclaimed.
Int. Cl.[5] E04G *5/06*
U.S. Cl. 248—219.1 **4 Claims**

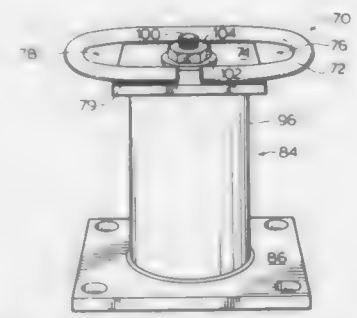


1. A vertical post, one end of which is stationarily mounted, a solar collector positioned adjacent said post and at an oblique angle thereto, a frame secured to the collector including a pair of parallel collector angle iron members fastened to the collector, the lower of which is positioned adjacent the lower edge of the collector and the upper of which is positioned above the center of gravity of the collector, a post angle iron member extending adjacent to and parallel to the post, an upper iron channel member extending between the upper end of the post angle iron member at one end and the upper collector angle iron member at the other end, a pair of upper angle iron bracing members extending at one end from the upper end of the post angle iron member to the upper collector angle iron member at the other end in spaced relation to the other end of the upper channel iron member, a bottom channel iron member extending at one end from the other end of the post angle iron member to the lower collector angle iron member at the other end thereof, a pair of lower angle iron bracing members extending at one end from the lower end of the post angle iron member to the lower collector angle iron member at the other end thereof in spaced relation to the other end of the lower channel iron member, and a pair of central angle iron bracing members extending from the post angle iron member at one end to the lower collector angle iron member at the other end adjacent to the other end of the lower angle iron bracing members an end cap in the form of a cylinder closed at one end secured to the frame adjacent the upper end of the post angle iron member and sleeved over the upper end of the post, a semi-cylindrical abutment member secured to the other end of the post angle iron member adapted to abut the post in spaced relation to the end cap, and a collar securing the semi-cylindrical abutment member to the post.

5,011,106
ROOF SAFETY ANCHOR

Parvaneh Cody, Don Mills, Canada, assignor to Stanford Cody Limited, Woodbridge, Canada

Filed Mar. 27, 1990, Ser. No. 499,966
Int. Cl.[5] A62B *35/02, 37/00*
U.S. Cl. 248—237 **10 Claims**



1. A safety anchor for mounting on the roof of a building comprising

an anchor member;

a base supporting said anchor member;

said anchor member being a C shaped bar having two closed loops extending to either side of said base, and an elongate securing member defined by the portion of said anchor member in contact with said base, said closed loops being defined by the interior periphery of the portion of said anchor member extending from said base and the exterior periphery of the base between the portion of said anchor member in contact with the surface of said base,

said anchor member being attached to said base by a plurality of points of attachment between said elongate securing member and said surface of said base extending substantially and continuously across said surface of said base, said plurality of points of attachment being provided by a continuous weld between said portion of said anchor in contact with said base and said surface of said base.

5,011,107
POST ANCHOR APPARATUS

Roger R. Reece, 9415 E. 500 S., Upland, Ind. 46989

Filed Mar. 15, 1990, Ser. No. 493,850
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—545 **1 Claim**

1. A post anchor apparatus comprising,

a rigid, elongate cylindrical support shaft including a lower terminal end and an upper terminal end, the upper terminal end including a mounting head integrally secured to the upper terminal end, the mounting head configured for reception of a lower terminal end of a fence post therewithin, and

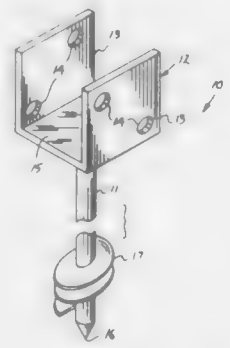
first helical web integrally mounted about the post shaft adjacent the lower terminal end, and

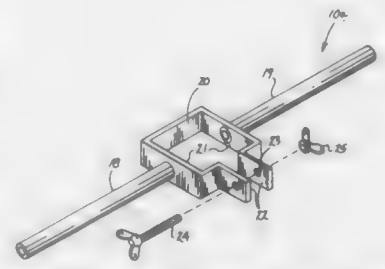
wherein the lower terminal end is pointed, and

wherein the mounting head includes a rigid planar floor, the rigid planar floor integrally and orthogonally mounted to the upper terminal end of the support shaft, and the floor including spaced parallel webs integrally and orthogonally mounted to opposed sides of the floor, with the webs including a plurality of apertures therethrough for receiving fasteners to secure the webs to the lower terminal ends of the fence post, and

wherein the mounting head further includes further webs integrally mounted to the floor to define an enclosed socket to receive the lower terminal end of the fence post, and

further including a further helical web integrally formed about the support shaft formed between the helical web





and the mounting head, and the further helical web defined by a predetermined pitch, and the helical web defined by a first pitch, wherein the predetermined pitch is greater than the first pitch, and

further including a torque member, the torque member including spaced, coaxially aligned handles, the handles integrally and orthogonally mounted to spaced side walls, the side walls integrally and orthogonally mounted to a rear plate, and the side walls integrally and orthogonally mounted to "L" shaped brackets at their forward terminal ends, the "L" shaped brackets including an aperture formed through each "L" shaped bracket, wherein the aperture of each "L" shaped bracket is aligned relative to one another, and a threaded member received through the apertures, and a fastener securable to the threaded member to clamp the "L" shaped brackets together, and clampingly enclose the post within the member to effect rotation of the post to secure the post within the support surface.

5,011,108
ACTIVE MOUNTS

Hsiang M. Chen, Latham; Paul Lewis, Scotia, and Donald S. Wilson, Clifton Park, all of N.Y., assignors to Mechanical Technology Incorporated, Latham, N.Y.

Filed Aug. 10, 1989, Ser. No. 392,197
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—550 **17 Claims**

1. An active mount system comprising:

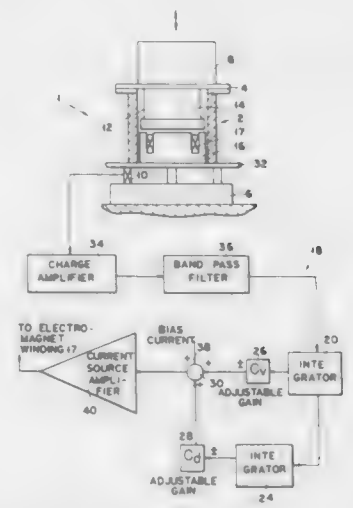
a relatively low stiffness resilient mount for supporting a load in compression from a machine supporting base to a supporting structure;

sensing means for sensing a level of vibrational force transmitted from said load through said resilient mount;

control signalling means for transmitting a signal in response to the level of vibrational force sensed by said sensing means; and

force transducing means for providing a force to attenuate said vibrational force transmitted through said resilient mount in response to said signal from said control signalling means;

wherein said force transducing means includes an electromagnetic device in parallel with said resilient mount, and



means for providing a D.C. bias current to preload the electromagnetic device;

wherein said sensing means includes means for determining displacement and velocity of the load; and

wherein said force transducing means, in response to said means for determining displacement and velocity of the load, provides a force to change stiffness and damping characteristics, respectively, of said resilient mount.

5,011,109
SUSPENSION DEVICE FOR SEAT

Kojiro Nagata, Akishima, Japan, assignor to Tachi-S Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1989, Ser. No. 324,076
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—564 **3 Claims**

3. A suspension device for seat, comprising:

an upper movable frame;

a lower base frame fixed to a floor;

an X-shaped link means provided between said upper movable and lower base frames;

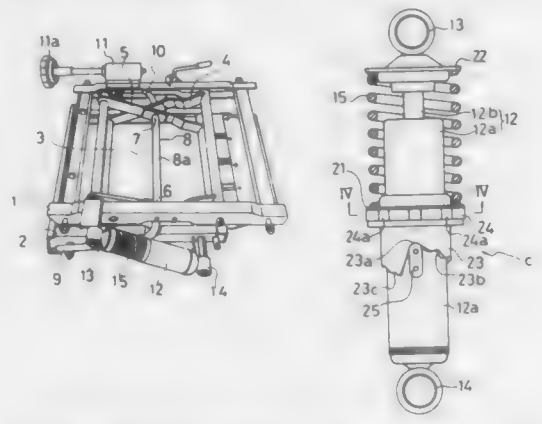
a torsion bar connected with and disposed between said upper and lower base frames, by means of which said upper movable frame is given a repercussive force to resiliently resist against a weight of an occupant thereon;

a shock absorber connected with and disposed between said upper movable and lower base frames, such that said shock absorber is located outwardly of said two frame;

an adjusting means for adjusting said repercussive force of said torsion bar, said adjusting means being provided at said shock absorber, and

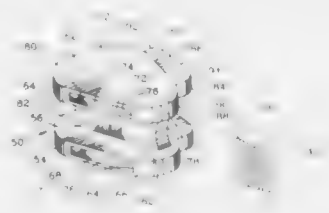
wherein said adjusting mechanism comprises a rotatable ring attached idly about said shock absorber, a cylindrical guide piece integral with said rotatable ring, said cylindrical guide piece being idly attached about said shock absorber, whereby both rotatable ring and cylindrical guide piece are free to move in a coaxial, longitudinal direction of said shock absorber and to rotate about said shock

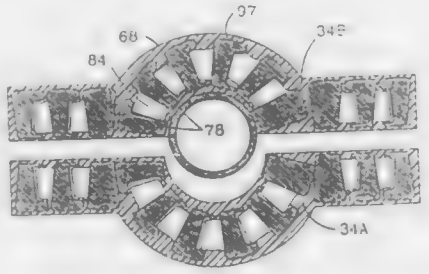
absorber, and said engagement portions of said adjusting mechanism comprise a plurality of irregular, wavy



notches which are formed at a lower end of said cylindrical guide piece and are varied in level of their valleys.

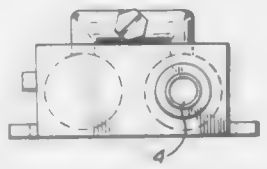
5,011,110
BOP SEAL WITH IMPROVED METAL INSERTS
Tri C. Le, Sugar Land, Tex., assignor to Baroid Technology, Inc., Houston, Tex.
Filed Aug. 16, 1990, Ser. No. 568,600
Int. Cl.[5] E21B *33/06*
U.S. Cl. 251—1.1 **20 Claims**





1. A sealing assembly for a ram block of a blowout preventer for sealing with a pipe or the like within a well bore, the sealing assembly comprising:
- a resilient seal having a generally semi-circular portion adapted for engagement with the pipe;
- a plurality of rigid inserts each at least substantially embedded within the seal and circumferentially arranged about the semi-circular portion of the seal;
- each insert including an upper flange having an upper radially innermost surface for pressing the seal into sealing engagement with the pipe, a lower flange, and a rib fixedly interconnecting the upper and lower flanges;
- each insert having a slot within at least one of the upper and lower flanges, the slot having an opening adjacent a side of the flange and forming a cavity defined by the flange; and
- each insert further having a male interconnecting member extending circumferentially outward from an opposing side of the flange for sliding engagement within the slot of an adjacent member, such that the circumferentially spaced inserts are independently movable with respect to each other and are interconnected while the blowout preventer closes about the pipe.

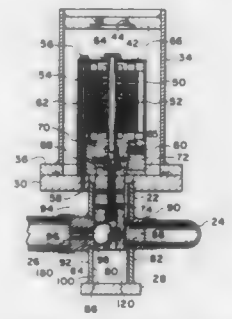
5,011,111
DAMPING CONTROL DEVICE
Marvin I. Nelson, 613 N. Washington, Dell Rapids, S. Dak. 57022, and John S. Reedy, 1604 Keystone, Brandon, both of S. Dak. 57005
Continuation of Ser. No. 375,039, Jul. 3, 1989, abandoned. This application Feb. 20, 1990, Ser. No. 481,866
Int. Cl.[5] F16K *31/383*
U.S. Cl. 251—54 **4 Claims**



3. A damping control device, comprising:
- a. a first cylinder;
- b. A first piston located within said first cylinder which traverses said first cylinder;
- c. a second cylinder which communicates with said first cylinder;
- d. a free floating piston located within said second cylinder which moves transversely along the entire length of said second cylinder to expel a constant volume of fluid by one side of said free floating piston into the first cylinder on one side of said first piston, and to expel a constant volume of fluid by an opposite side of said first piston into said second cylinder on an opposite side of said free floating piston, causing a movement thereby of said free floating piston in response to a movement of said first piston, wherein said free floating piston sealingly engages the cylinder walls of said second cylinder so that said free floating piston acts to keep a constant volume of fluid on each side of said free floating piston and corresponding side of said first piston;
- e. a connecting channel which connects one end of said first cylinder with a corresponding end of said second cylinder, and which transports fluid to and from said first cylinder and said second cylinder as said first piston traverses said first cylinder;
- f. an additional connecting channel which connects an opposite end of said first cylinder with an opposite end of said second cylinder, and which transports fluid to and from said first cylinder and said second cylinder as said first piston traverses said first cylinder; and
- g. a control means which causes said first piston to traverse said first cylinder, and to transport said fluid into and out of said first cylinder and into and out of said second cylinder.

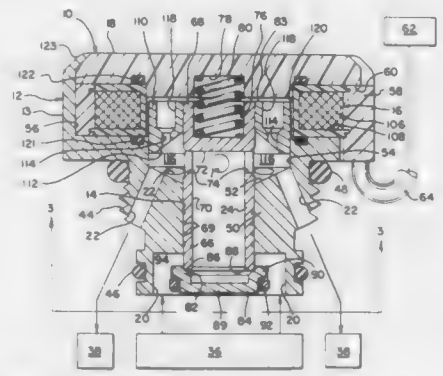
5,011,112
INCREMENTAL ELECTRICALLY ACTUATED VALVE
Paul R. Glamm, La Crosse, Wis., assignor to American Standard Inc., New York, N.Y.
Division of Ser. No. 286,683, Dec. 20, 1988, Pat. No. 4,928,494. This application Sep. 11, 1989, Ser. No. 405,160
Int. Cl.[5] F16K *31/04, 3/32*
U.S. Cl. 251—129.11 **24 Claims**

1. A variable flow rate valve comprised of:
- A valve body defining an internal metering chamber having a substantially planar outlet surface, said valve body having a first wall defining an inlet aperture for permitting fluid flow into said metering chamber and a second wall defining an outlet aperture for permitting fluid flow from said metering chamber;
- a rectilinear metering piston disposed in said metering chamber in sliding engagement with said planar outlet surface, said metering piston having a metering orifice and a closure cavity spaced from said metering orifice, said metering piston further having a bore connecting said metering orifice and said closure cavity;



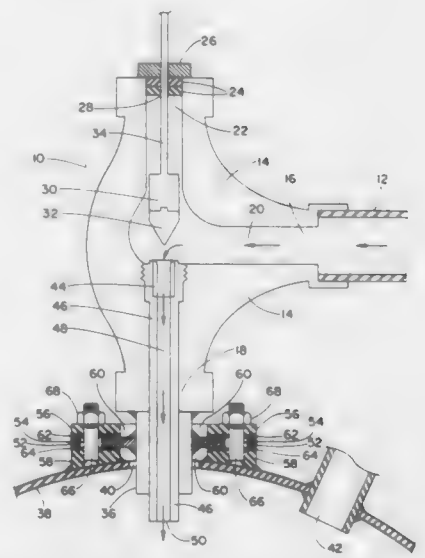
- a closure member disposed in said closure cavity for sealingly engaging said second wall of said valve body;
- means for sealingly biasing said metering piston against said planar outlet surface of said valve body metering chamber; and
- means for incrementally moving said metering piston in said metering chamber.

5,011,113
FLUID CONTROL VALVE
Thomas J. Stobbs, West Allis; Kishor J. Patel, Mukowonago; Frank M. Fritz, Milwaukee; Dale A. Knutson, Nashotah, and James P. Janecke, Waukesha, all of Wis., assignors to Applied Power Inc., Butler, Wis.
Continuation-in-part of Ser. No. 290,374, Dec. 29, 1988. This application Apr. 27, 1990, Ser. No. 515,553
Int. Cl.[5] F16K *31/06*
U.S. Cl. 251—129.16 **16 Claims**



1. A valve, comprising:
- a housing having a main bore, inlet and outlet ports in communication with the main bore, and an end portion;
- a poppet slidably mounted in the main bore, the poppet having:
  - a sealing end;
  - an opposite end;
  - a longitudinal central bore open at the sealing end and terminating in a pressure wall; and
  - a radial cross bore providing fluid communication between the central bore and the outlet port;
- a valve seat sized to receive the sealing end of the poppet and prevent fluid communication between the inlet port and the central bore when the sealing end of the poppet is in contact with the valve seat;
- means for biasing the poppet so that the sealing end contacts the valve seat and the opposite end is spaced apart from the end portion of the housing, the space between the opposite end of the poppet and the end portion of the housing forming a damping chamber;
- means for channeling fluid between the central bore and the damping chamber; and
- an actuator operable in response to an input current to produce a magnetic flux path tending to move the poppet out of contact with the valve seat;
- wherein:
  - the sealing end of the poppet has an outer beveled edge; and
  - the valve seat has a frusto-conical surface, the surface designed to accept the beveled edge to prevent fluid communication between the inlet port and the central bore when the beveled edge is in contact with the surface.

5,011,114
CONTROL VALVE WITH DISPLACEMENT-COMPENSATING SEAL
Kent T. Depuydt, Bevent, and Joseph S. Tikalsky, Weston, both of Wis., assignors to Zimpro Passavant Environmental Systems, Inc., Rothschild, Wis.
Filed Feb. 5, 1990, Ser. No. 475,[illegible]6
Int. Cl.[5] F16K *51/00*
U.S. Cl. 251—144 **8 Claims**



1. A pressure reducing control valve with displacement-compensating exterior seal apparatus, said valve and seal apparatus comprising;
- a valve body with an inlet and an outlet and a fluid passageway therebetween, said valve body having an opening therein on the side opposite said outlet;
- a sealing means within said opposite side opening with an aperture therein;
- an outlet nozzle member connected to said valve body outlet, said nozzle member extending into a discharge receiving vessel through an aperture therein;
- a valve seat and support assembly with longitudinal aperture therein, said seat and support assembly positioned within said passageway between said inlet and said outlet, said support assembly extending from said passageway, through said outlet and beyond the end of said outlet nozzle member into said discharge receiving vessel;
- a valve member in said passageway between said inlet and said outlet, said valve member movable toward said valve outlet for seating against said valve seat for sealing said passageway against fluid flow therethrough, said valve member extending through said aperture in the sealing

means within said opening opposite the outlet, and extending beyond said valve body; and

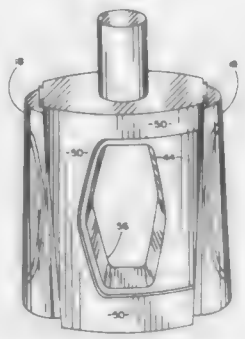
sealing means between said outlet nozzle and said discharge receiving vessel adapted to allow displacement of said valve body and nozzle relative to said receiving vessel, while preventing escape of fluid entering said receiving vessel from said valve.

5,011,115

SELF SUPPORTING PLUG FOR A DOUBLE BLOCK AND BLEED PLUG VALVE

Gordon M. Smith, Brookshire, and Hans M. Van Der Wiel, Fulshear, both of Tex., assignors to Johnston Pump/General Valve Inc., Brookshire, Tex.

Filed Dec. 29, 1989, Ser. No. 459,224
Int. Cl.[5] F16K *5/04*
U.S. Cl. 251—161 **4 Claims**



1. An improved double block and bleed plug valve of the type having retractable slips, a tapered cylindrical plug and a stem for opening and closing the valve by rotation of the plug to control the position of a passage through the plug and by axial movement of the plug to control the seating of the slips against an interior surface of a valve body for blocking and unblocking the inlet and outlet of the valve; the improvement comprising:

said plug having an outer diameter of at least a first portion of a radial surface thereof which is substantially equal to an inner diameter of said interior surface of said valve body adjacent said plug surface portion for radially supporting said plug within said valve body, said radial surface of said plug having a pair of second surface portions relieved relative to said first portion for spacing said second surfaces from said interior surface of said valve body, each of said pair of second surfaces being disposed adjacent an opening of said passage formed through said plug and extending on at least one side therefrom to a slip and defining a shoulder about said opening, thereby substantially preventing scuffing an interior surface portion of said valve body defining a seating area of said slip.

5,011,116

SHOCK ABSORBING SEALING MEANS FOR FLOW CONTROL DEVICES

Jack B. Alberts, and Michael D. McNeely, both of Houston, Tex., assignors to Keystone International Holdings Corp.

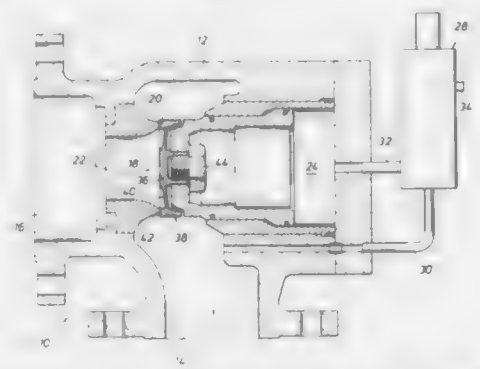
Filed Mar. 30, 1990, Ser. No. 502,047
Int. Cl.[5] F16K *25/00, 31/122, 17/04*
U.S. Cl. 251—334 **30 Claims**

1. In a fluid operated valve having a valve body including a flow passage and a hard annular seat ring mounted within the valve body about the flow passage;

an improved fluid pressure responsive reciprocable valve member mounted within the valve body for movement between open and closed positions relative to said flow passage and adapted to seat in closed position on said hard seat ring and to exert an impact force against said hard seat ring when seating thereon in response to fluid pressure changes, said improved valve member comprising:

a central hub;

a hard outer annular seal ring having radially inner and outer peripheral surfaces and spaced radially from said central hub for seating in face-to-face contact relation with said seat ring in the closed position of said valve member; and



a flexible connecting member extending in a generally radial direction between said hub and said radially inner peripheral surface of said seal ring, said connecting member flexing between said hub and said inner peripheral surface of said outer seal ring after initial contact of said hard seal ring with said hard seat ring to absorb impact loads resulting from contact of said hard seal ring against said hard seat ring without substantial movement of said hard seal ring.

5,011,117

POST PULLER

Dale Youngblood, P.O. Box 245, La Sal, Utah 84530, and Harry L. Hutchins, 2780 Desert Rd., Moab, Utah 84532

Filed Apr. 16, 1990, Ser. No. 509,728
Int. Cl.[5] B66F *3/06;* **E21B** *10/02*
U.S. Cl. 254—30 **1 Claim**



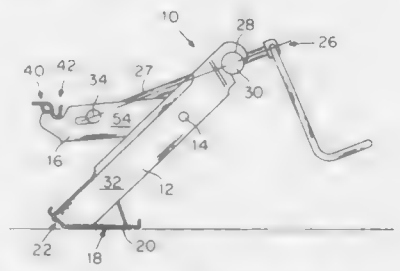
1. A metal post puller apparatus, wherein the post has a T cross-section: said apparatus comprising a single thickened plate having a post-encircling hole therethrough; said hole having the same T cross-sectional shape as the post but with a slight edge clearance therearound to facilitate downward motion of the plate on the post; said hole having edges thereof acutely angled to the plane of the thickened plate whereby the plate assumes a tilted condition on the post; and a lifter chain attached to said plate; said lifter chain comprising a plural number of separate spaced chain sections, and enlarged circular rings interconnecting the chain sections; each chain section comprising a plurality of endless egg-shaped chain links interlocked together; each enlarged circular ring having a diameter substantially larger than the length of each chain link, whereby each circular ring can serve as a device for attaching the chain to a lifter mechanism.

5,011,118

JACK

Peter Brosius, Ayl, Fed. Rep. of Germany, assignor to August Bilstein GmbH & Co. KG, Ennepetal, Fed. Rep. of Germany

Filed Jun. 29, 1990, Ser. No. 546,107
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1989, 3921826
Int. Cl.[5] B66F *3/12*
U.S. Cl. 254—126 **7 Claims**



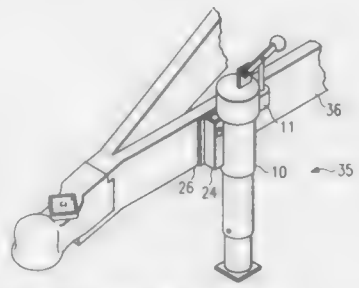
1. A jack comprising: at least one leg; an arm pivotably connected to said leg; height adjusting means supported by said leg and connected to said arm for raising and lowering said arm; said arm having an outer free end; a supporting plate on said outer free end of said arm; a horizontal shaft on said outer free end, said supporting plate pivoting on said horizontal shaft; said supporting plate having at least one eye for securing said supporting plate to said shaft, said eye being stamped out of said supporting plate; said eye having ends integral and in one piece with said supporting plate, said plate supporting a load stably and safely in every angular position of said plate that said plate may assume when supporting said load without damaging said plate even when said plate is loaded only on one side of said plate.

5,011,119

CONVENIENTLY ATTACHED HYDRAULIC TRAILER JACK

Robert L. Harrington, P.O. Box 9448, Midland, Tex. 79708

Filed Jan. 25, 1990, Ser. No. 470,098
Int. Cl.[5] B60S *9/02*
U.S. Cl. 254—420 **21 Claims**



1. A hydraulic trailer jack, comprising:

a flange plate;

a bracket rotatably connected to the flange plate;

a hydraulic fluid circuiting body mechanically connected to the bracket comprising,

a plurality of chambers formed in the circuiting body for receiving fluid, including a reservoir chamber which is capped by a flexible bellows, a pumping cavity chamber, and an actuator containment tube chamber;

a valve system for establishing a directional flow of fluid through the chambers;

a pump actuator slidably engaged within the pumping cavity chamber to thereby form a pump for differentially pressurizing the various chambers; and

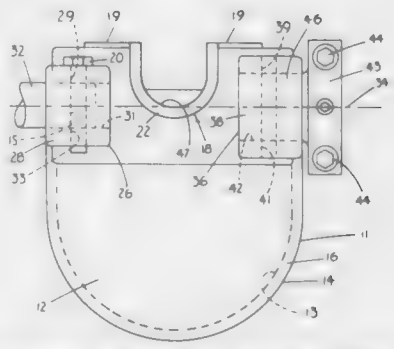
an extension member slidably engaged within at least one of the chambers of the circuiting body.

5,011,120

METAL CASTING LADLE

Philip N. Bear, Rosemount, Minn., assignor to Versa Companies, Minneapolis, Minn.

Filed Oct. 2, 1989, Ser. No. 416,268
Int. Cl.[5] B22D *41/06*
U.S. Cl. 266—240 **7 Claims**



1. A metal casting ladle used on a metal casting machine having either a left or right mounting connector for picking up and transferring by rotational motion about a horizontal pour axis a preselected amount of a flowable fluid metal to a casting mold which comprises:

a. a bowl having a wall with inner and outer surfaces and terminating in a top rim;

b. said bowl having a spout formed at a first side of said bowl said spout having a lip positioned below the said rim of said bowl and extending beyond said bowl to provide an outlet opening for metal to be poured from said bowl;

c. the wall of said bowl forming uniform curved inner and outer surfaces at the interface between said spout and the wall of said bowl to provide a uniform inner surface for the flow of molten metal;

d. a left mounting block connected to the outer surface of said wall at the interface with said spout;

e. a right mounting block connected to the outer surface of said wall at the interface with said spout and opposite the left mounting block;

f. said left and right mounting blocks providing independent and alternative mounting attachments for metal casting machines having either left or right mounting connector; and

g. a bracket adapted to interconnect one of said mounting blocks of said ladle and said metal casting machine such that the pour axis falls through said lip.

5,011,121

SEAL FOR GAS SPRING

Ralph Oriola, Danielson, Conn.; Charles F. Romine, Atlantic Beach, N.C., and Edward O. Meisner, Elkhart, Ind., assignors to Eagle-Picher Industries, Inc., Cincinnati, Ohio

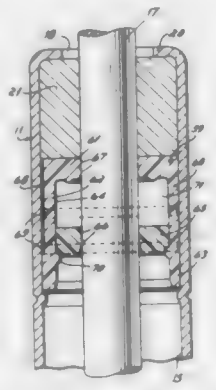
Filed Apr. 15, 1987, Ser. No. 38,829
Int. Cl.[5] F16F *5/00*
U.S. Cl. 267—64.11 **5 Claims**

1. In a gas spring having a cylinder, a piston reciprocable in said cylinder, a rod connected to said piston and projecting out of one end of said cylinder, and a rod guide fixed in said one end of said cylinder and having a bore slidably receiving said rod, a seal between said rod and said cylinder comprising,

a cup-shaped element having a transverse wall, said transverse wall slidably engaging said rod and forming a gas-tight seal with said rod,

an axially-extending skirt integral with said transverse wall,

said skirt engaging the inner surface of said cylinder and forming a one-way check valve therewith,



and passageway means molded in the outer surface of said cup-shaped element through which gas under pressure flows to said skirt to fill said gas spring.

5,011,122

RESILIENT TORSION ARRANGEMENT

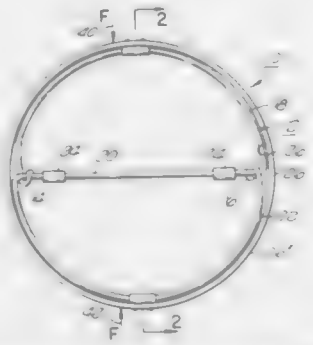
Frank Meyers, 317 Calle Mayor, Redondo Beach, Calif. 90277, and Lawrence L. Rutstrom, Torrance, Calif., assignors to Frank Meyers, Redondo Beach, Calif.

Filed Aug. 23, 1982, Ser. No. 410,854

The portion of the term of this patent subsequent to Aug. 30, 2006, has been disclaimed.

Int. Cl.[5] F16F *1/14*

U.S. Cl. 267—154 **32 Claims**



1. A resilient torsion arrangement, comprising, in combination,

a wire-like body member having a first end, a second end, and an elongated length between said first end and said second end thereof, and formed to define:

an upper portion having a first predetermined open geometrical configuration;

a transverse portion extending across said first predetermined open geometrical configuration;

a lower portion having a second predetermined open geometrical configuration;

said upper portion resiliently movable toward said lower portion to put said transverse portion into torsion; and

said first end and said second end of said body member are restrained at a preselected spaced-apart location on said transverse portion.

5,011,123

SYSTEM AND METHOD FOR COLLATING BOOK AND PAMPHLET SIGNATURES AND THE LIKE

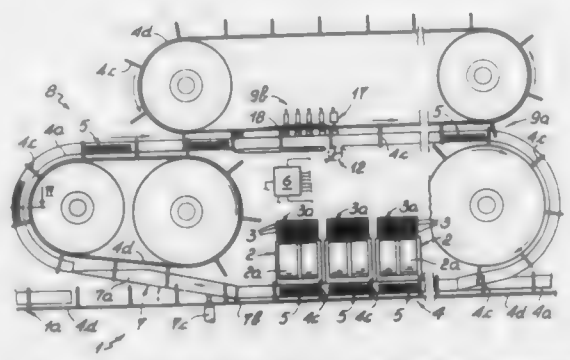
Vittorio Vigano, Verdellino, Italy, assignor to Plastiver S.A.S. Di Giovanni e Vittorio Vigano & C., Ciserano-Zingonia, Italy

Filed Apr. 12, 1989, Ser. No. 337,227

Claims priority, application Italy, Apr. 13, 1988, 20187 A/88

Int. Cl.[5] B65H *39/02*

U.S. Cl. 270—54 **23 Claims**



1. A system for collating signatures for books, pamphlets, and the like, comprising: a plurality of consecutively arranged stations (2) adapted to deliver said signatures (3), a transport (4) adapted to pick up said signatures (3) and take them from said stations (2) to form growing stacks (5) of said signatures (3), and a diverting device (7) adapted to convey said stacks (5) out of said transport (4), said system being characterized in that it has a reclaiming apparatus comprising:

a reclaim belt (9*a*) extending from said diverting device (7) to a position of said transport (4) upstream of said diverting device (7) and at least some of said stations (2), and

a monitoring means (6) effective to detect anomalies in the delivery of said signatures (3) and the locations of said stacks (5) affected by said anomalies, and effective to control the activation and deactivation of said stations (2), said diverting device (7) being linked operatively to said monitoring means (6) and operative to divert said stacks (5) affected by anomalies toward said reclaim belt (9*a*).

5,011,124

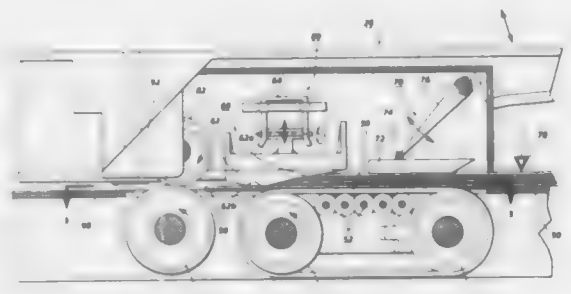
RETARD FEEDER RETARD PAD MOUNTING

Peter A. Sardano, Fairport, and Irvin J. Kazmierczak, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Feb. 6, 1990, Ser. No. 475,530

Int. Cl.[5] B65H *3/04*

U.S. Cl. 271—35 **9 Claims**



1. In a retard type sheet separating and feeding apparatus for separating and sequentially feeding individual sheets of paper or the like from a sheet stack in a sheet feeding direction through a sheet feeding path including a large area retard nip defined by a large area retard member and an opposing large area frictional sheet feeding belt member positioned to oppos-

ingly engage opposite sides of said sheet stack, the improvement comprising a limited movement mounting system for said retard member for providing desired mobility on desired axes of movement and preventing undesired movement on undesired axes of movement, said retard member mounting system comprising means for precluding tilting of said retard member in said sheet feeding direction and for providing free lateral tilt of said retard member laterally of said sheet feeding direction relative to the opposing sheet feeding member for self-leveling of said retard member relative to the opposing sheet feeding member in the direction laterally of said sheet feeding direction, and cooperative means for maintaining and supporting a large generally planar surface area of said frictional sheet feeding belt member surface operatively opposing a substantial area of said retard member on said opposite side of said sheet stack to optimize said sheet separation and feeding while minimizing varying, uneven or localized high pressure points which could induce image smearing and the like sheet separation and feeding difficulties.

5,011,125

DELIVERY SHEET BRAKE FOR A SHEET-FED PRINTING PRESS

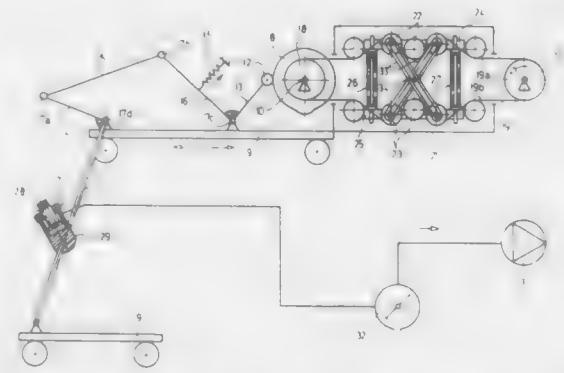
Nikolaus Spiegel, Walldorf; Karl-Heinz Filsinger, Wiesloch, and Roland Hirth, Römerberg, all of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Oct. 25, 1989, Ser. No. 426,936

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1988, 3836254

Int. Cl.[5] B65H *29/68*

U.S. Cl. 271—183 **9 Claims**



1. Delivery sheet brake for a sheet-fed printing press having a suction element for gripping a sheet at a trailing edge thereof, the suction element being disposed on an adjustable slide for format adjustment and being guidably movable on a closed path loop extending through a transfer position and a release position for the sheet, and a step-up transmission connecting the suction element to a uniformly revolving drive element disposed likewise on the slide, said transmission including an articulated lever for accelerating the suction element to sheet travel speed before it reaches the transfer position and decelerating the suction element after sheet transfer until the suction element reaches the release position, comprising a chain wheel connected to the drive element disposed on the adjustable slide, a drive chain directly connecting said chain wheel with a chain wheel of a drive for the printing press, and a chain-storage device for said drive chain, said chain-storage device being in cooperative engagement with said drive chain so as to compensate for changes in length of said drive chain without any phase displacement of said chain wheels.

5,011,126

AUTOMATIC SHEET STACK LOADING MECHANISM OF SHEET FEEDING APPARATUS

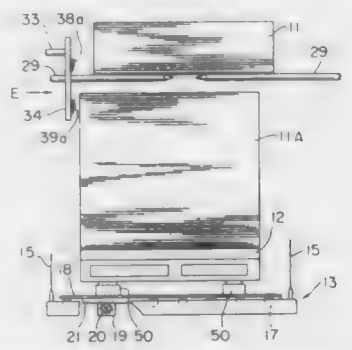
Daiji Suzuki, Yokohama, and Yasuhiro Sudo, Shinjuku, both of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 7, 1989, Ser. No. 376,621

Claims priority, application Japan, Jul. 13, 1988, 63-172694

Int. Cl.[5] B65H *7/02*

U.S. Cl. 271—227 **5 Claims**



1. An automatic sheet stack loading mechanism of a sheet feeding apparatus, comprising:

a main lift adapted to support thereon a stack of sheets to be fed;

a sheet separator disposed over the main lift to act on the uppermost sheet of the stack of sheets so as to separate the sheets one by one from the stack, said main lift being movable upwardly to bring the uppermost sheet of the stack thereon to a predetermined height position relative to the sheet separator;

horizontally extending parallel spits for insertion under the stack of sheets supported by the main lift to support the load of the stack from below thereby to enable the main lift to be lowered to receive a new stack of sheets thereon while the uppermost sheet of said first stack is held at said predetermined height;

a pair of vertically movable carriages disposed at both sides of the main lift with respect to the direction transverse to the direction of feed of the sheets from said first stack, each of said carriages carrying thereon the parallel spits so that the parallel spits extend in said transverse direction and are shiftable toward and away from the stack on the main lift;

shifting means for shifting the spits toward and away from the stack on the main lift;

sheet stack aligning means disposed at both transverse sides of the main lift for aligning the side faces of the stacks; and

motive power means for moving the aligning means towards and away from the stacks, said aligning means and said motive power means being mounted on the carriages.

5,011,127

MULTIPLE DOCUMENT DETECTOR

Thomas A. Hamilton, Fife, Scotland; Michael M. Kerrigan, Rogerstown Rush, Co., Ireland, and John A. Wilson, Livingston, Scotland, assignors to Unisys Corporation, Blue Bell, Pa.

PCT No. PCT/US89/00766, § 371 Date Jan. 17, 1990, § 102(e) Date Jan. 17, 1990, PCT Pub. No. WO89/08068, PCT Pub. Date Sep. 8, 1989

PCT Filed Feb. 27, 1989, Ser. No. 477,905

Claims priority, application United Kingdom, Mar. 4, 1988, 8805180

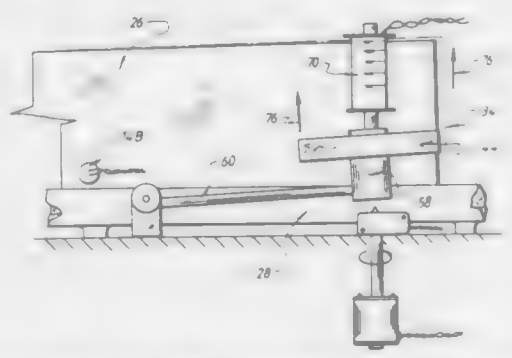
Int. Cl.[5] B65H *7/12*

U.S. Cl. 271—262 **12 Claims**

1. A document detector for detecting multiple documents moving along a track, said detector comprising:

a driven wheel having a peripheral velocity equal to the velocity of a document in the track;

an idler wheel, means for supporting said idler wheel in a manner to permit its movement in a transverse direction relative to the direction of movement of a document, said supporting means urging said idler wheel against said driven wheel to form a nip to accept a document; said idler wheel having a preferred position relative to said driven wheel;



displacement means operative to urge said idler wheel away from said preferred position in said transverse direction, said displacement means permitting said idler wheel to remain in said preferred position in the presence of a single document in said nip and causing said idler wheel to deviate from said preferred position in response to the presence of multiple document in said nip; and

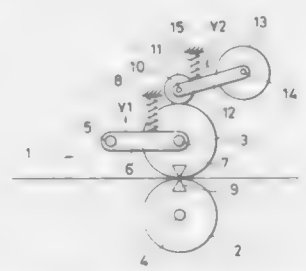
sensor means for detecting a deviation of said idler wheel from said preferred position.

5,011,128

APPARATUS FOR DETECTING THE THICKNESS OF SHEETS

Keiji Tsuji, Tokyo, Japan, assignor to Laurel Bank Machines Co., Ltd., Tokyo, Japan

Filed Apr. 25, 1989, Ser. No. 342,797
Claims priority, application Japan, Apr. 26, 1988, 63-102905
Int. Cl.[5] B65H *7/12*
U.S. Cl. 271—263 **22 Claims**



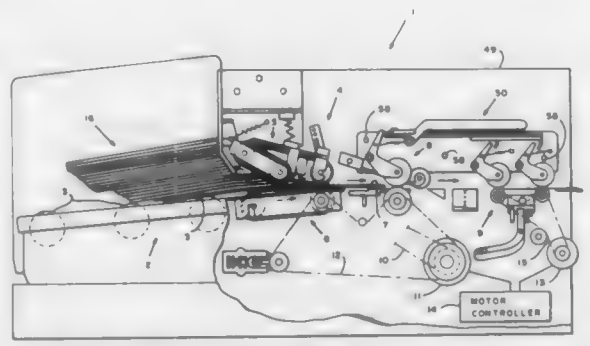
1. An apparatus for detecting the thickness of sheets by detecting displacement of one of a pair of rollers disposed so as to face each other across a transporting path of the sheets, said pair of rollers being driven by driving means, said pair of the rollers essentially consisting of a reference roller rotatable about a fixed shaft and a movable roller abuttable against said reference roller and rotatably mounted on a movable shaft displaceable with respect to said reference roller, said apparatus comprising timing signal generating means for generating timing signals synchronized with rotation of said reference roller and said movable roller, displacement detecting means for detecting an amount of displacement of said movable roller by detecting an amount of displacement of said movable shaft in synchronism with said timing signals, sheet detecting means for detecting whether or not the sheets are present at a portion where said reference roller and said movable roller face each other, sheet thickness calculating means for calculating the thickness of the sheet by deducting, in accordance with the timing signals, the amount of displacement of said movable roller detected by said displacement detecting means when said sheet detecting means do not detect any sheet at the portion where said reference roller and said movable roller face each other from the amount of displacement of said movable roller detecting by said displacement detecting means when said sheet detecting means detect the sheet at the portion where said reference roller and said movable roller face each other, a ratio of the diameter of the reference roller and the movable roller is M, wherein M is not less than 1, and the least common multiple between M and 1 is not more than 10, and correction data memory means for storing the amount of displacement of the movable roller detected when said sheet detecting means do not detect any sheet at the portion where the reference roller and the movable roller face each other as correction data, deducting means for deducting said correction data stored in said correction data memory means when a corresponding timing signal was output in the last cycle, a cycle being defined as the rotation cycle of the one of the reference roller and the movable roller which has a diameter not less than that of the other, from the amount of displacement of the movable roller detected when said sheet detecting means detect at least one sheet at the portion where the reference roller and the movable roller face each other to obtain the sheet thickness data, sheet thickness data memory means for storing said sheet thickness data, and sheet thickness calculating means for calculating the thickness of the sheet based upon said sheet thickness data stored in the sheet thickness data memory means.

5,011,129

JAM CLEARANCE APPARATUS FOR SHEETFEEDING DEVICE

Russell W. Holbrook, Middlebury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 14, 1989, Ser. No. 435,906
Int. Cl.[5] B65H *5/02, 5/04*
U.S. Cl. 271—274 **2 Claims**



1. A jam clearance device for a sheetfeeding device, said sheetfeeding device having a deck and registration wall, a plurality of drive rollers rotatively mounted within said sheetfeeding device such that a portion of said drive rollers extend through respective slots in said deck slightly above the transport surface of said deck, said jam clearance device comprising:

a support frame fixably mounted to said sheetfeeding device;

a plurality of biasing wheels rotatively mounted to said support frame such that said biasing wheels are biased in a home position against a respective one of said drive rollers and are positionable to a second position vertically displaced from said respective drive rollers;

handle means for positioning said biasing wheels in said home position or said second position;

said support frame having a first frame section fixably mounted to said registration wall having a plurality of pivot shafts pivotally mounted to said first frame section, each of said pivot shafts having a plurality of linking arms fixably mounted generally perpendicular along its length to said pivot shaft, a plurality of wheel shafts fixably mounted to one end of said linking arms of said respective pivot shaft, said biasing wheels rotatably mounted to said respective wheel shaft;

biasing means for causing said linking arms to bias said biasing wheels against said rollers in said home position;

said handle means being positionable from a home position to a second position or causing said linking arms to pivot said pivot shaft, in said second position, and thereby causing said linking arms to raise said biasing wheels, said handle means including a second frame slidably mounted to said first frame such that said second frame may be positioned from a first position to a second position, said second frame having cross beam members respectively aligned opposite said linking arms of said respective pivot shaft such that displacement of said second frame causes said cross beam members to abuttingly displace said respective linking arms;

a handle pivotally mounted to said first frame such that said handle may be positioned from a first position to a second position over center; and

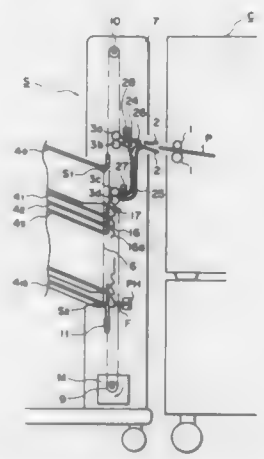
buckle means pivotally mounted to said second frame and said handle for causing said second frame to displace in response to displacement of said handle.

5,011,130

SHEET SORTER

Masataka Naito, Kawasaki; Masakazu Hiroi, and Kimiaki Hayakawa, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 2, 1989, Ser. No. 305,093
Claims priority, application Japan, Feb. 4, 1988, 63-25443
Int. Cl.[5] B65H *39/11*
U.S. Cl. 271—288 **6 Claims**



1. A sheet sorter for use with an apparatus having a sorting mode and a non-sorting mode, said sorter comprising:

first sheet discharging means for discharging sheet materials exclusively during operation in said non-sorting mode;

second sheet discharging means for discharging sheet materials during operation in said sorting mode;

a single bin for receiving sheet materials from said first sheet discharging means during operation in the non-sorting mode;

a plurality of bins for use during the sorting mode operation, a first bin of said plurality of bins being single bin is opposed to said first sheet discharging means;

wherein during operation in the sorting mode, the plural bins are sequentially opposed to said second sheet discharging means; and

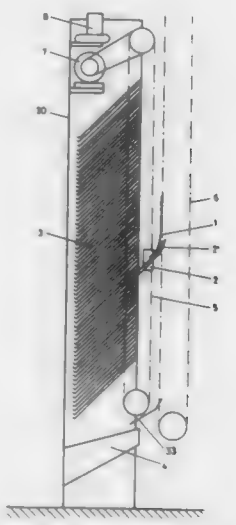
supporting means for supporting said single bin and said sorting bin with a predetermined positional relation to move them together.

5,011,131

SORTING APPARATUS

Willy Maier, Kloten, and Thomas Bachmann, Zurich, both of Switzerland, assignors to Daverio AG, Zurich, Switzerland

Filed May 3, 1989, Ser. No. 347,150
Claims priority, application Switzerland, Jul. 11, 1988, 2641/88
Int. Cl.[5] B65H *39/06*
U.S. Cl. 271—289 **12 Claims**



1. A sorting device for flexible printing plates comprising:

a frame receiving a plurality of shelves placed one above another, for receiving said printing plates therein;

transport means for moving the printing plates along the shelves and located in front of the shelves adjacent to insertion openings of the shelves; and

at least one sorting carriage positioned between the shelves and the transport means, which is movable along the shelves and which includes means for selectively transferring printing plates from the transport means to the shelves;

wherein each of the shelves is pivotally mounted at a lower edge thereof, and the sorting carriage has retractable means for slightly lifting a second shelf located above a first shelf which is to receive a printing plate to define an enlarged insertion opening between the first and second shelves; and

wherein the sorting carriage has a pivotal flap which in one position engages the printing plates conveyed by the transport means for deflection toward the shelves, and which can be pivoted into another, bypass position.

5,011,132

LOAD ACCUMULATOR HAVING POSITIVE DRIVE CONVEYOR

Peter Guttinger, 862 Cabot Trail, Milton, Canada L9T 3S8 , and Marinus J. M. Langen, 21 Chilcot Avenue, Toronto, Ontariro, Canada M9W 1T9

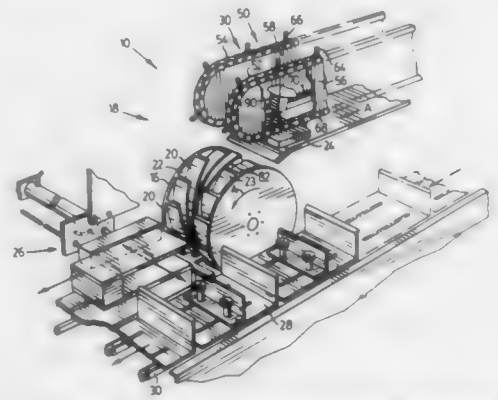
Filed May 29, 1990, Ser. No. 530,197
Int. Cl.[5] B65H *29/20*
U.S. Cl. 271—315 **2 Claims**

1. In a load accumulator which has a stacking wheel mounted for high speed rotation, the stacking wheel having a plurality of spirally extending load receiving pockets which open tangentially therefrom at circumferentially spaced intervals and conveyor means for conveying load items one at a time to a transfer station in which the load items are transferred into a pocket of the stacking wheel, the improvement wherein said conveyor means comprises;

(a) a platform that extends toward the stacking wheel in a plane that extends above the stacking wheel, the platform

having a discharge edge located in the transfer station in a transferred relationship with respect to the pockets of the stacking wheel,

(b) an endless conveyor mounted above the platform and having a forward run located in close proximity to the platform and extending toward the discharge end of the platform, and

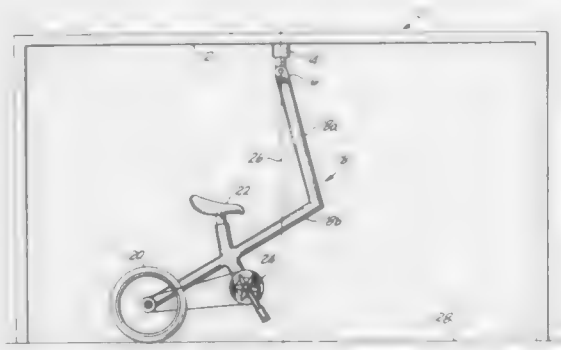


(c) a plurality of load pushing fingers mounted on the endless conveyor and projecting outwardly therefrom so as to extend from the forward run toward the platform and be operable to provide a positive drive for pushing load items along the platform to and over the discharge edge.

5,011,133
PEDAL DRIVEN SWIVEL TOY

Raymond T. Myers, Sr., 2609 So. El Camino Real, San Clemente, Calif. 92672

Filed Jul. 16, 1990, Ser. No. 552,771
Int. Cl.[5] A63G *1/28*
U.S. Cl. 272—33 B **7 Claims**



1. A toy suspended from a support structure over a horizontal surface, the toy comprising:

attachment means having a rotating pivot with two degrees of freedom;

an angle member depending from the attachment point, the angle member having an overall length greater than the height of the support structure from the horizontal surface and traversing a vertical axis extending downward from the attachment point;

a rotational means attached to an end of the angle member distal the attachment means, the rotation member adapted for frictional engagement of the horizontal surface;

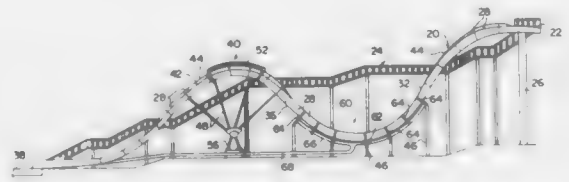
drive means for providing rotational force to the rotation means; and,

a seat attached to the angle member to support a child proximate the drive means to allow operation of the drive means by the child.

5,011,134
WATERSLIDE WITH UPHILL RUN AND FLOTATION DEVICE THEREFOR

Frederick Langford, 212 Crest Rd., Cape May Court House, N.J. 08210

Filed Mar. 26, 1990, Ser. No. 499,622
Int. Cl.[5] A63G *21/10*
U.S. Cl. 272—56.5 R **12 Claims**



1. A waterslide, comprising:

an elongated trough defining a rider path proceeding generally from a higher elevation to a lower elevation, the trough having a downward gradient whereby a rider can traverse the path substantially by force of gravity, and at least one downhill section followed by an uphill section;

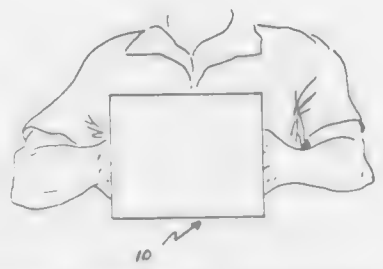
a first means for injecting water into the trough adjacent a point of relatively higher elevation of the trough along the path, thereby establishing a gravity flow of water in a forward direction relative to the rider path along the downhill section of the trough toward an area of relatively lower elevation between the downhill section and the uphill section;

a water extraction means disposed adjacent the area of relatively lower elevation for removing water from the trough.

5,011,135
THERAPEUTIC HAND EXERCISER

Robert M. Patik, 823 Reservoir St., Mt. Pleasant, Pa. 15666

Continuation-in-part of Ser. No. 199,862, May 25, 1988, abandoned. This application Jul. 10, 1989, Ser. No. 377,258
Int. Cl.[5] A63B *23/16*
U.S. Cl. 272—67 **6 Claims**



1. A therapeutic hand exerciser which comprises:

a. a body of pliable material;

b. opposing end surfaces on said body;

c. elongate finger holes extending through each opposing end surface toward the other opposing end surface;

d. said finger holes sized so as to closely encompass said fingers when inserted through said finger holes and into said body.

5,011,136
ENERGY-EFFICIENT RUNNING BRACE

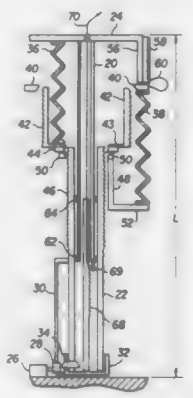
Brian G. Rennex, 2332 Antiqua Ct., Reston, Va. 22091

Filed Nov. 9, 1988, Ser. No. 269,174
Int. Cl.[5] A63B *23/04;* **A61H** *3/00*
U.S. Cl. 272—70 **6 Claims**

1. In an energy-efficient running brace the improvement comprising:

a harness worn by the user of said running brace;

asymmetric travel means coupled to the harness for absorbing said user's downward momentum over an impact travel distance during impact of said user's foot on a surface and for imparting thrust to said user during thrust off of said surface over a thrust travel distance greater than said impact travel distance;

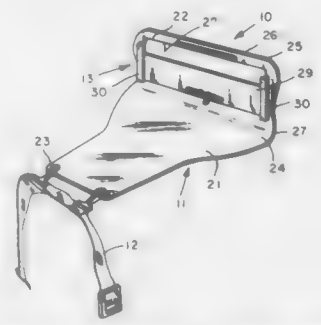


augmented foot-lift means rotatably attached to the user's foot for lifting the user's foot an additional height beyond that permitted by said asymmetrical travel means during a stride recovery period when the user's foot is not in contact with said surface.

5,011,137
VARIABLE RESISTANCE DEVICE FOR USE IN TRAINING SWIMMERS

Steven J. Murphy, 203 Avenue A, Redondo Beach, Calif. 90277

Filed Jan. 29, 1990, Ser. No. 471,868
Int. Cl.[5] A63B *69/12*
U.S. Cl. 272—71 **3 Claims**



1. A variable resistance device for use in training a swimmer, said variable resistance device comprising:

a. a belt which is disposable around the swimmer's torso and securable thereto;

b. an L-shaped scoop member which is integrally formed out of a relatively non-reflexible sheet of plastic material having a support portion which is substantially in the shape of a truncated triangle with a top edge and a bottom edge and a resistance portion which has a flat surface area and which is substantially in the shape of a rectangle with a frist edge and a second edge which is contiguous with said bottom edge of said support portion;

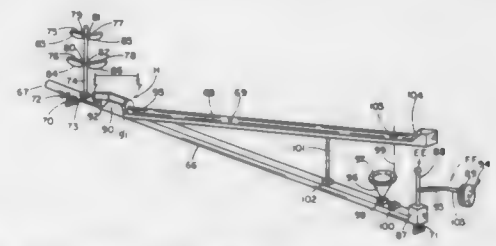
b. attaching means for loosely attaching said L-shaped scoop member to said belt so that said L-shaped scoop member may move in response to the swimmer's movement; and

c. surface area varying means for varying said flat surface area of said resistance portion of said L-shaped scoop member so that effective resistance of said flat surface area to the swimmer is variable.

5,011,138
SPORTS DEVICE

J. Cameron Rankin, 212 Burgwyn Rd., Montgomery, Ala. 36105

Filed Jan. 19, 1990, Ser. No. 468,224
Int. Cl.[5] A63B *21/06, 67/22*
U.S. Cl. 272—117 **61 Claims**



1. A sports device comprising:

an unconstrained elongated support means freely liftable manually from its resting place, and disposed for tilting movement while in its lifted position;

a handle fixed to said elongated support means for gripped relation by an individual to effect said lifting and tilting movement;

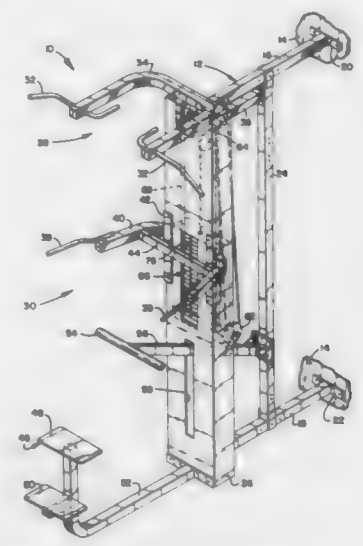
weight shifting means responsive to said tilting movement for changing the balance point of said elongated support means to vary the difficulty of manually tilting said elongated support means; and

weight receiving means fixed adjacent to one end of said elongated support means to receive and support said weight shifting means during said manual tilting of said elongated support means.

5,011,139
ASSISTED DIP/CHIN EXERCISE DEVICE

Carl K. Towley, III, Owatonna, Minn., assignor to Lumex, Inc., Bay Shore, N.Y.

Filed Mar. 9, 1990, Ser. No. 491,000
Int. Cl.[5] A63B *21/062*
U.S. Cl. 272—118 **18 Claims**



1. Exercise apparatus, which comprises:

a frame;

a chin bar mounted on said frame:

an assist bar positioned below said chin bar;

an arm pivoted at one end to said frame, said assist bar being secured to the other end of said arm for pivotal movement in an arcuate path toward and away from said chin bar; and

means including a pulley and cable system and selective weight stack connected between said arm and frame for

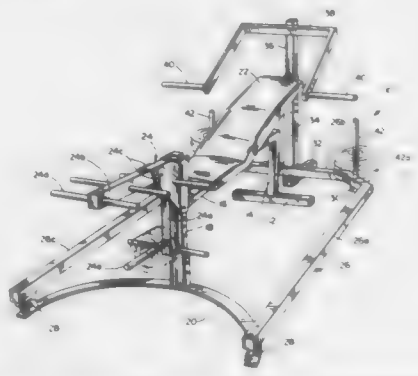
normally urging said assist bar upwardly toward said chin bar.

5,011,140

MULTI-PURPOSE SAFETY EXERCISE APPARATUS

Alfred A. Adessi, 2129 NE. 44th St., Fort Lauderdale, Fla. 33308

Filed Sep. 21, 1990, Ser. No. 586,428
Int. Cl.[5] A63B *21/062, 21/00, 21/06*
U.S. Cl. 272—118 **1 Claim**



1. A safety weight lifting exercising apparatus which provides for free lift weight resistance without requiring an assistant comprising:
a padded elongated bench;
a rigid horizontal first frame support member connected to said bench;
first vertical support member connected to one end of said horizontal support member;
first horizontally disposed floor support member connected to said first vertical support member;
second vertical support member connected at the opposite end of said first horizontal support member;
second horizontally disposed floor support member connected to said second vertical support member;
a horizontally disposed U-shaped rigid support frame pivotally connected at the free ends of said U-shape to said second floor support, said U-shaped frame including a pair of elongated parallel frame members disposed parallel to said bench, and extending in length past the end of said bench, and a U-shaped transverse support frame member connecting said elongated frame members at the base of said U-shape and situated near a user's upper body;
a third vertical support member connected to a central point of said U-shaped transverse frame member;
a weight lifting handle connected to one end of said third vertical support member;
a set of weights;
a pair of weight receiving rods vertically disposed on each side of the ends of said U-shaped transverse frame member for receiving said weights; and
supporting means mounted to bottom side of said U-shaped transverse frame member for elevating said frame above the ground in the down position;
whereby, upon raising said weight lifting handle, the U-shaped frame is pivoted upwards and said weights on said weight receiving rods are also lifted.

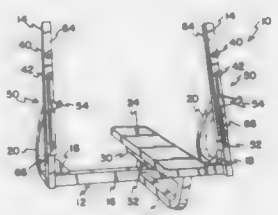
5,011,141

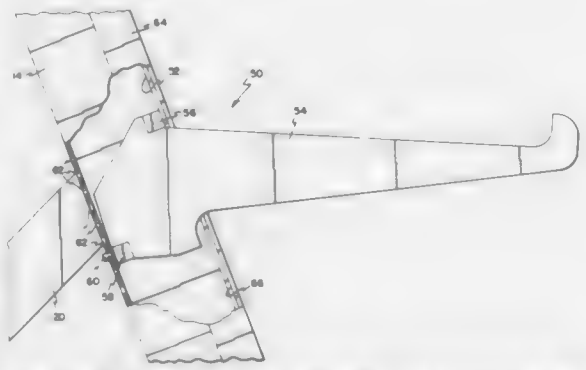
BENCH PRESS WITH ADJUSTABLE SAFETY/RANGE LIMITING BARS

Carl K. Towley, III, and Dennis C. Johnson, both of Owatonna, Minn., assignors to Lumex, Inc., Bay Shore, N.Y.

Filed Feb. 28, 1990, Ser. No. 486,119
Int. Cl.[5] A63B *21/078*
U.S. Cl. 272—123 **11 Claims**

1. A safety/catch bar assembly for use with an exercise device, which comprises:
an upright having spaced apart inclined front and back walls, the front wall having an elongate slot therein;
a bar having an inner end and an opposite upwardly curved outer end, the inner end being adapted to extend through the slot in the front wall of said upright;
a pair of spaced apart front and back stops secured to the inner end of said bar for wedging engagement between the front and back walls of said upright;





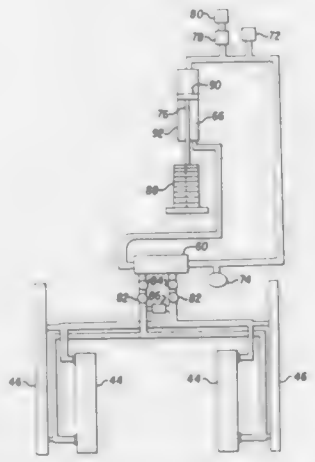
the slot in the front wall of said upright including an enlarged portion dimensioned for passage of said stops therethrough; and
a locator pin secured to the inner end of said bar for selective registration with a column off spaced apart holes in the back wall of said upright.

5,011,142

EXERCISE CONTROL SYSTEM

Christopher Eckler, P.O. Box 564, Nashua, N.H. 03061

Filed Nov. 20, 1989, Ser. No. 438,097
Int. Cl.[5] A63B *21/008*
U.S. Cl. 272—130 **4 Claims**



1. An exercise machine comprising:
a frame;

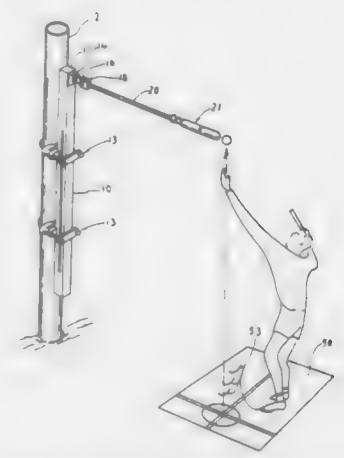
a user force point whereupon a user can exert forces while exercising;
at least one movable member connecting said frame to said user force point;
a first fluid motion means connecting said frame to said user force point, containing a variable volume of fluid, and moving said user force point relative to said frame upon variation of the volume of fluid therein;
a weight capable of vertical motion;
a second fluid motion means containing a variable volume of fluid, attached to said weight in such a way that the volume of fluid contained in said second fluid motion means varies upon vertical motion of said weight;
an adjustable constriction for fluid friction;
flow means for transferring fluid between said first and second fluid motion means, and through said constriction;
control means for regulating the flow of fluid through said flow means; whereby
the user may exert forces in lifting and lowering said weight and in forcing fluid through said constriction.

5,011,143

TENNIS TRAINING DEVICE

Raymond Jones, 2 Loombah Avenue, Lindfield, New South Wales, Australia

PCT No. PCT/AU88/00260, § 371 Date Apr. 12, 1989, § 102(e) Date Apr. 12, 1989, PCT Pub. No. WO89/00441, PCT Pub. Date Jan. 26, 1989
PCT Filed Jul. 18, 1988, Ser. No. 340,177
Claims priority, application Australia, Jul. 16, 1987, PI3151
Int. Cl.[5] A63B *61/00*
U.S. Cl. 273—29 A **9 Claims**



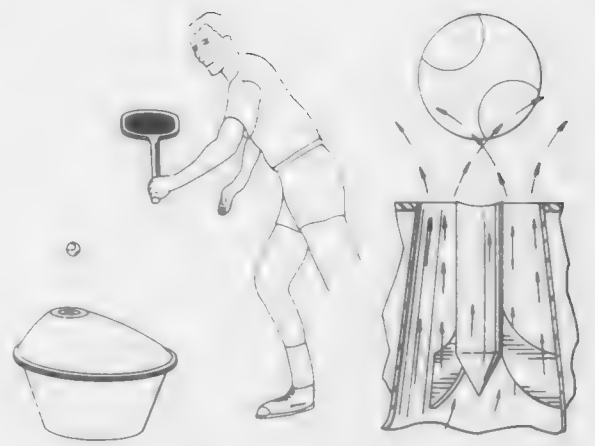
1. A device for practising a racquet shot and ball placement for a tennis serve comprising a first support member, a second support member extending from the first support member, hinge means connecting the second support member to the first support member and target means on the second support member;
said hinge means including a first mounting secured to the first support member, a second mounting secured to the second support member and a hinge piece connected between the first and second mountings, said hinge piece being a flexible planar material; the arrangement being such that when the target means is struck by a racquet, the second support member will pivot horizontally about the hinge means and then return to its original position,
said first support member being a height adjustable upright, said second support member extending substantially horizontally from said upright;
a clamp for securing the upright to a post, said clamp comprising a device and further including a clamp for securing the upright to a post, said clamp comprising a base plate adapted to be positioned against the post, a U-bolt passing around the post and through the base plate, said base plate having outwardly directed spacer means for receiving a tennis court mesh therebetween, a first clamp plate mounted on the U-bolt and secured to the base plate, a second clamp plate mounted on the U-bolt spaced from the first clamp plate so as to receive the upright therebetween, and means for securing the second clamp plate to the U-bolt.

5,011,144

BALL PRACTICE TEE

Hugo Marello, 119 Elgin Street, Thornhill, Ontario, Canada L3T 1W7, and James Allan, West Vancouver, Canada, assignors to Hugo Marello, Thornhill, Canada

Continuation-in-part of Ser. No. 137,574, Jan. 24, 1987, abandoned. This application Jun. 29, 1989, Ser. No. 372,854
Int. Cl.[5] A63B *69/38*
U.S. Cl. 273—29 **9 Claims**



1. A ball practice tee comprising:
a housing;
an air compressor positioned within the housing; and a vertically oriented frusto-conical outlet nozzle of shallow taper connected to the compressor and opening from the housing, the nozzle having a coaxial blind core fixed within said nozzle and forming with the nozzle and annular outlet passage whereby air will pass from said nozzle only between said core and said nozzle, and whereby upon actuation of the compressor a laterally expanding annular air flow issues from the nozzle to stably support a ball in mid-air centrally above the nozzle.

5,011,145

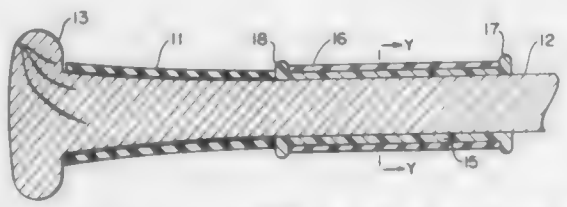
BASEBALL BAT WITH ROTARY GRIP

Robert J. Bartkowicz, 3 Canal St., Sayreville, N.J. 08872

Filed Sep. 4, 1987, Ser. No. 93,243
Int. Cl.[5] A63B *59/06*
U.S. Cl. 273—72 R **14 Claims**

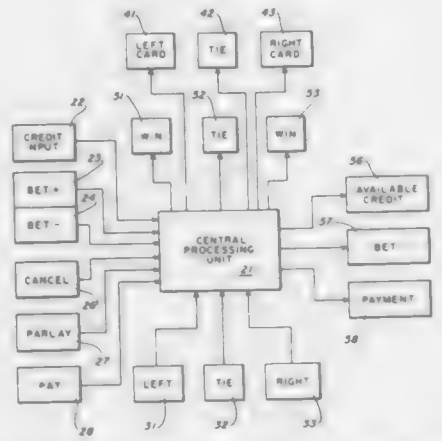
1. A baseball bat having a non-rotatable handle adjacent an end of the bat,
an upper hand grip rotatably mounted on the handle, and
spacer means for positioning said hand grip a predetermined

distance from said end of said bat, said predetermined distance being sufficiently great to permit grasping of the



handle by one hand between the end of the bat and the upper hand grip.

5,011,146
VIDEO CARD GAME
Stewart M. Lamle, 3 Fordham Hill Oval, Suite 15F, Bronx, N.Y. 10468
Filed Aug. 28, 1989, Ser. No. 399,227
Int. Cl.[5] A63F *1/00, 9/22*
U.S. Cl. 273—85 CP 6 Claims



1. A game apparatus for playing a video version of a game in which one or more card decks comprise two-sided cards having indicia on the front and back sides thereof in which N forms of indicia are used, each deck comprises N^2 cards, and each indicia combination occurs twice in each deck except for twin indicia combinations which occur only once, and in which the cards are shuffled and presented two at a time to a player who views the indicia on the front side of a Left and a Right card and bets on the Left card or the Right card having a higher indicia value on the back side thereof, or on both cards having the same value on the back sides thereof, the apparatus comprising:

a central processing means for storing the front and back face values of the one or more decks of cards which have been shuffled into a random order;

display means for displaying the indicia on the front side of the Left and the Right card;

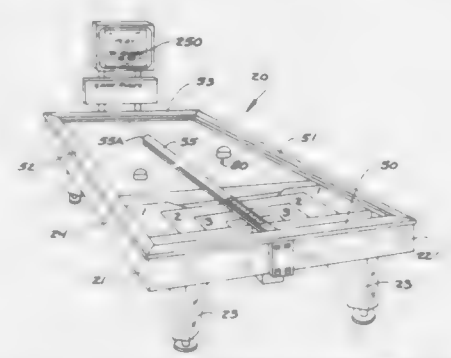
means for betting that the indicia on the back side of the Left car has a higher or lower value than the indicia on the back side of the Right card;

means for betting that the indicia on the back sides of the Left and Right cards are equal in value;

means for displaying the indicia on the back sides of the Left and Right cards; and

means for indicating the outcome of the bet.

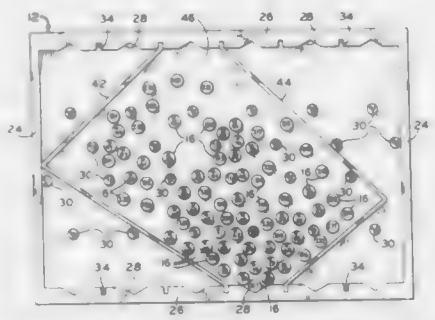
5,011,147
SHUFFLEBOARD BILLIARDS
Dale A. Thomas, and Adeline M. Thomas, both of 342 Spruce St., Dickinson, N. Dak. 58601
Continuation of Ser. No. 141,330, Jan. 5, 1988, abandoned. This application Oct. 18, 1989, Ser. No. 423,622
Int. Cl.[5] A63B *71/00*
U.S. Cl. 273—126 A 13 Claims



1. A shuffleboard game comprising a rectangular table having first and second opposite ends, and opposite sides joining said ends to define a playing surface, the sides and opposite ends comprising side and end walls extending upwardly from the playing surface, a central, narrow elongated divider substantially midway between the sides and extending from adjacent said first end, adjacent which a player stands to a position spaced from said second end, said divider extending for a length substantially greater than one-half of the length of the side walls, and cushion means on opposite sides of the divider and on the side and end walls being capable of rebounding a sliding game piece that is slid along the table surface by a player, the divider having sides parallel to each other and to the side walls, and the end walls being substantially perpendicular to the length of the divider said playing surface comprising a smooth top surface for supporting a sliding game piece, a scoring region visible on said top surface comprising scoring patterns defined at said surface only adjacent said first end thereof, said scoring patterns, having high scoring and lower scoring areas on each side of said center divider at said first end, said scoring areas extending a selected distance from said first end and toward said second end, and across said surface between said center divider and the sides of the playing surface, and a game piece pit recessed below said playing surface and extending across the table between the side walls and being positioned between the end wall at said first end and said scoring region

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5,011,148
RANDOMIZING APPARATUS
Jerry A. Stebing, 212 Pursley Dr., Fort Wayne, Ind. 46807
Filed Apr. 10, 1990, Ser. No. 507,660
Int. Cl.[5] A63F *7/04*
U.S. Cl. 273—144 B 19 Claims



19. An apparatus for selecting a subset of indicia elements

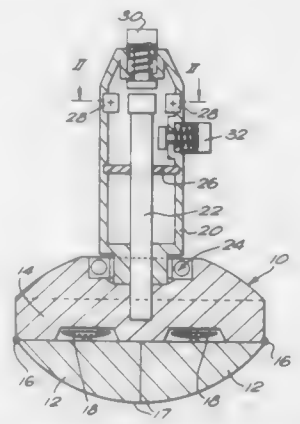
from a set including a plurality of indicia elements, said apparatus comprising:

a frame including a base and a plurality of walls defining an interior region;

a plurality of receptacles in communication with said interior region, each said receptacle adapted to select one of the indicia elements; and

at least one separator means for subdividing said interior region into a plurality of compartments, said separator means detachably positioned within said interior region.

5,011,149
JOYSTICK
Victor J. Purnell, 1 Pantddu Cottages, Christchurch, Aberbeeg Gwent, United Kingdom
PCT No. PCT/GB88/01139, § 371 Date Jul. 12, 1990, § 102(e) Date Jul. 12, 1990, PCT Pub. No. WO89/06022, PCT Pub. Date Jun. 29, 1989
PCT Filed Dec. 21, 1988, Ser. No. 488,073
Claims priority, application United Kingdom, Dec. 22, 1987, 8729845
Int. Cl.[5] A63B *71/00*
U.S. Cl. 273—1[illegible] B 18 Claims



1. A joystick controller, which comprises a base (**10**), an elongate element (**22**) fixed to the base and projecting upwardly therefrom, a tubular joystick (**20**) positioned around the fixed elongate element and pivotally mounted to the base, and electrical contacts (**28**) carried by one of the tubular joystick and elongate element, and arranged to make selectively with the other one of the tubular joystick and elongate element depending on the direction in which the tubular joystick is tilted.

5,011,150
GOLF TEE RETRIEVING SYSTEM
David B. Averill, 4706 Glenbrooke Ter., Sarasota, Fla. 34243
Filed Jun. 25, 1990, Ser. No. 543,209
Int. Cl.[5] A63B *57/00, 53/00*
U.S. Cl. 273—162 C 2 Claims

1. A golf tee retrieving system comprising:

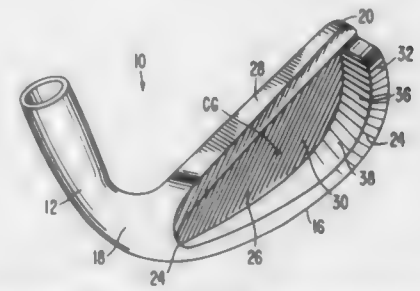
a golf tee having one portion of a mating two part releasably connectable hook and loop system connected atop an enlarged upper golf ball supporting surface of said tee;

the other portion of said hook and loop system adhesively connectable onto an upper handle end of a golf club;



said hook and loop system so connected releasably connecting the golf club handle to said golf tee for retrieval of said golf tee from atop the ground.

5,011,151
WEIGHT DISTRIBUTION FOR GOLF CLUB HEAD
Anthony J. Antonious, 205 E. Joppa Rd., Towson, Md. 21204
Filed Sep. 6, 1989, Ser. No. 403,494
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—164 8 Claims



1. In a perimeter weighted iron type golf club head including a hosel, a heel portion, toe portion, a sole portion a striking face to hit a ball along an intended line of flight, a top ridge, a longitudinal axis bisecting the striking face, a peripheral mass projecting rearwardly from said golf club head and forming a cavity including a rear face defining a bottom of said cavity and located behind said striking face, wherein the improvement comprises:

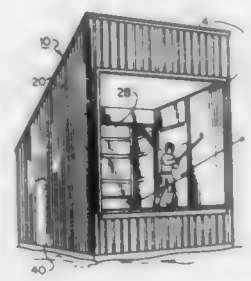
a toe counterweight having an upper portion formed as an upper and rearward extension of said peripheral mass and located generally adjacent an upper toe portion of said club head, said toe counterweight formed rearwardly from a plane defined by said rear face at said rear cavity and located below said top ridge said toe counterweight having a rear surface;

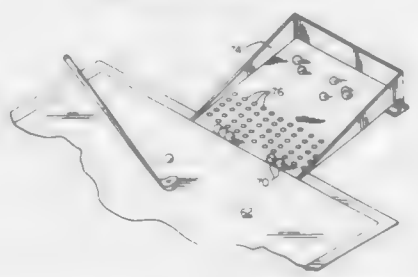
said toe counterweight having a rearwardly extending, downwardly sloping, parabolic surface, a lower portion of which is integrally formed with said peripheral mass adjacent a lower toe portion of said club head;

said toe counterweight bulging immediately away from said rear face at said upper toe portion and having a substantial portion of its mass located above said longitudinal axis of said club head.

5,011,152
STALL ENCLOSURE FOR ALL-WEATHER GOLF DRIVING RANGE

Harvey W. Hugunin, 114 Myers Rd., Liverpool, N.Y. 13088
Continuation-in-part of Ser. No. 224,115, Jul. 26, 1988, Pat. No. 4,889,342. This application Oct. 2, 1989, Ser. No. 415,855
The portion of the term of this patent subsequent to Dec. 26, 2006, has been disclaimed.
Int. Cl.[5] A63B *69/36; F24F 9/00, 13/00*
U.S. Cl. 273—176 R **21 Claims**



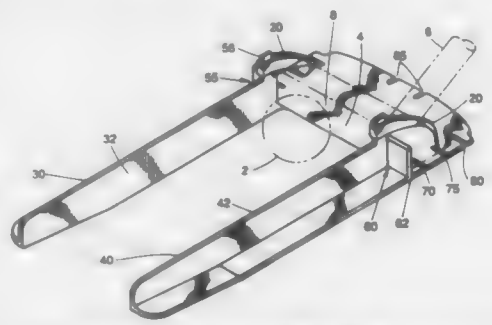


1. A stall-type enclosure for use by a golfer at a driving range during inclement weather, said enclosure comprising:
(a) a roof and side, back and front walls, said front wall having an opening through which a ball may be driven by a golfer standing within said enclosure and executing a full swing;
(b) a floor within said enclosure elevated above ground level to provide an enclosed space beneath said flooring;
(c) an air plenum positioned within said enclosed space, said plenum having an open top of first, predetermined outline;
(d) means providing heated air to said plenum;
(e) a predetermined section of said flooring comprising an open grating, having a second, predetermined outline, larger than said first outline, a first portion of said grating being positioned directly above said open top of said plenum, in fully covering relation thereto; and
(f) a mat adapted for supporting said golfer and ball, said mat being positioned upon said first portion of said open grating and having a third, predetermined outline, smaller than said first outline, whereby said heated air may rise through said open grating in an area at least partially surrounding said mat.

5,011,153
GOLF PUTTING AID AND TEACHING DEVICE

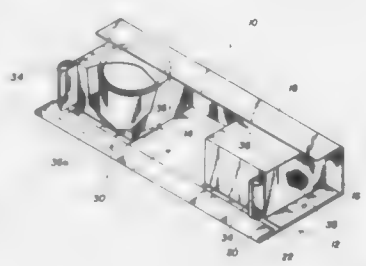
Thomas H. Watkins, 9513 Steinbeck La., Bakersfield, Calif. 93311
Filed Jul. 13, 1990, Ser. No. 552,622
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186 A **12 Claims**

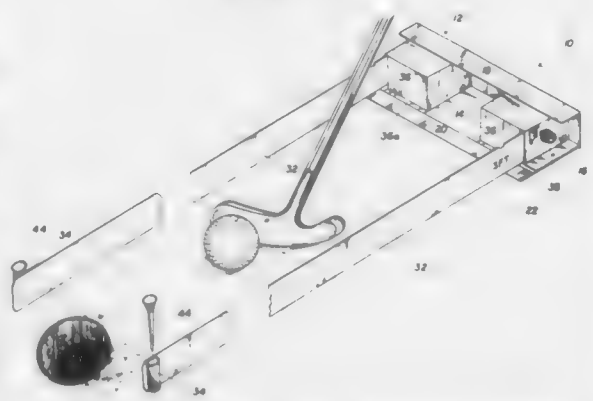
1. A golf ball putting aid comprising:
a generally U-shaped bracket having a cross brace and two projection s positioned in a spaced parallel relationship with each other and at a generally right angular position to said cross brace;
a generally U-shaped opening formed by said cross brace and said two projections, and having an open end opposite that to said cross brace;
vertical abutment means positioned on said cross brace for engaging the face of a putter which is demountably secured to said putting aid;
an elastic securement means for temporarily securing the putter head to said putting aid whereby when said putting aid is mounted to the golfer's putter and while stroking the golf ball during the putting process, said spaced projections visually indicate to the golfer how squarely the golfer is hitting the golf ball with the putter.



5,011,154
PUTTING PRACTICE DEVICE

Sandy W. Ruwen, 228 E. 5th St., Red Springs, N.C. 28377
Filed Oct. 15, 1990, Ser. No. 598,837
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—192 **13 Claims**



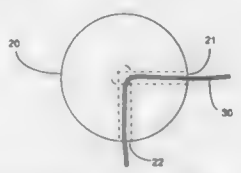


1. A golf putting teaching and practice aid comprising:
(a) a frame structure;
(b) a pair of extendable and retractable putting guides mounted on the frame structure, each putting guide being moveable between an extended position and a retracted position and each putting guide including an elongated strip that assumes a coiled position when in the retracted position;
(c) wherein the extended position the putting guides form a pair of parallel retainers that defines an elongated putting area there between; and
(d) means for laterally adjusting at least one of the putting guides on the frame structure such that the width of the putting area can be varied to accommodate various putter head widths.

5,011,155
GOLF PRACTICE DEVICE

Suraphol Udomkesmalee, and Phaichitr Tiemsanjai, both of 3323 W. 134th St., Hawthorne, Calif. 90250
Filed Nov. 13, 1990, Ser. No. 612,930
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—200 A **2 Claims**

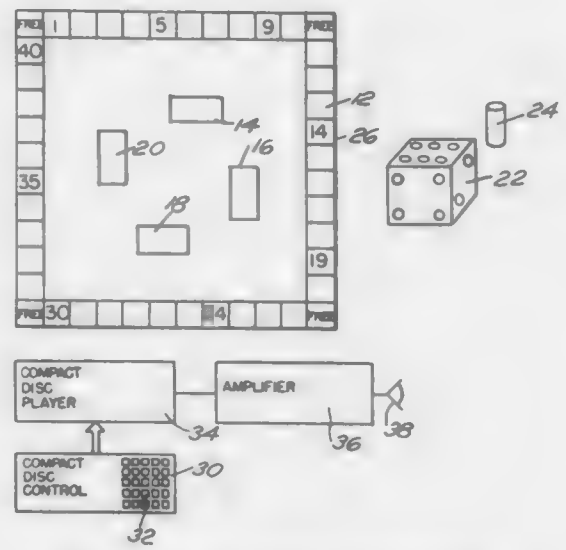




1. A golf practice device comprising a golf ball having an opening passing therethrough, a flexible cord passing through said opening and having first and second ends, means for anchoring each of said ends to substantially spaced apart locations on a base member from which said golf ball may be driven with a golf club, and said opening through said ball defining a continuous pathway which is not straight throughout its entire length whereby said golf ball may be placed upon said base member with the opposite ends of said cord anchored to said base member, and a clear point of contact on said golf ball is available for an impact with the striking face of a golf club which causes said ball to travel along said cord.

5,011,156
BOARD GAME APPARATUS

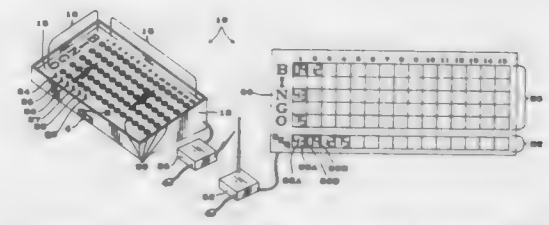
Robert J. LaChance, Jr., and Nancy LaChance, both of 38 Kensington Rd., Cranston, R.I. 02905
Filed May 7, 1990, Ser. No. 520,037
Int. Cl.[5] A63F *3/00;* **G09B** *5/00*
U.S. Cl. 273—237 **4 Claims**



1. A game apparatus comprising in combination:
a. a plurality of recorded tracks on a recordable medium;
b. a playback apparatus for converting the recorded tracks to an audio signal;
c. a control apparatus coupled to the playback apparatus for selecting a recorded track;
d. a game board having at least a path of spaces thereon;
e. tokens for each player for moving along the spaces;
f. chance means for determining the number of spaces a player may advance; and
g. means including specific indicia on some spaces to determine in part the track to be selected for instruction of additional movement of a player's tokens.

5,011,157
ELECTRONIC GAME DISPLAY DEVICE

John G. Lovell, Sr., Knoxville, and Garry W. Owens, Morristown, both of Tenn., assignors to Bonus Games, Knoxville, Tenn.
Filed Mar. 8, 1990, Ser. No. 490,293
Int. Cl.[5] A63F *3/06*
U.S. Cl. 273—238 **20 Claims**



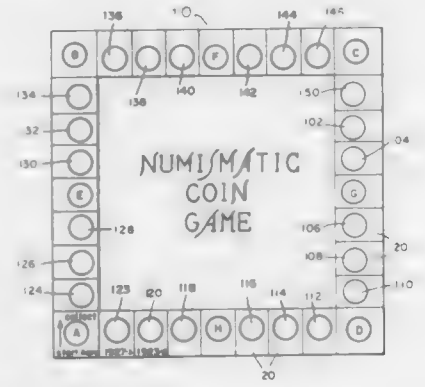
1. A device for displaying numerical digits in both a coordinate location area, and in a sequence of selection order area, together with a control unit and electronic circuitry appropriate to the encoding, sending, receiving, and decoding of data representative of said digits, comprising:
an operator's console fitted with a plurality of receptacles uniquely identified by row-column coordinates for receiving balls with encoded identification markings imprinted thereon, said markings corresponding to said uniquely identified receptacles;
means for registering both the unique coordinate location identification data and the sequential occurrence data of selected said encoded balls automatically upon the deposit of said encoded balls into the appropriate said receptacle on said console;
data encoding means for preparing said coordinate and sequential data for transmission;
means for transmitting said encoded coordinate and sequential data between said data encoding means and a receiver;
means for receiving and decoding said transmitted coordinate and sequential data into displayable information;
at least one display board for displaying said displayable information consisting of numerical digit indicating portions, which digit portions, when selected, are illuminated in both a coordinate location order portion of said at least one display board, and in a sequential order of selection portion of said at least one display board; and
means for selectively activating multiple light bulb portions of said at least one display board, said light bulb portions revealing, when lighted, patterns which correspond with the numerical digits represented by said decoded coordinate and sequential data.

5,011,158

NUMISMATIC COIN GAME

Rose H. Roberts, and James M. Roberts, both of 7525 Sherman Hoyt Ave., Twenty-Nine Palms, Calif. 92277

Filed Jul. 16, 1990, Ser. No. 552,863
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—256 2 Claims



1. A coin game comprising:

a. a game board having a multiplicity of sequentially arranged landing spaces arranged along a path thereon;

b. a multiplicity of playing pieces for movement along the game board, a selected playing piece assigned to each player of the game;

c. random movement selection means for causing each playing piece to be moved along the path of the sequentially arranged landing spaces and to land on a specific one of the landing spaces;

d. play money, gold shares and silver shares;

e. a selected subset of said sequentially arranged landing spaces representing 24 coins of a Peace Dollar Series, with a specific one coin from the Peace Dollar Series assigned to a selected one of the landing spaces;

f. one of said landing spaces being a start square for positioning the playing pieces at the start of the game;

g. two of said landing spaces each being a bonus square wherein a player whose playing piece lands on the space may collect a sum of money or any one of said Peace Dollar Series coins;

h. two of said landing spaces each being a buy or sell gold or silver space wherein a player whose playing piece lands on the space may purchase or sell gold and silver shares;

i. one of said landing spaces being a buy any coin space wherein a player whose playing piece lands on the space may buy any coin of the 24 Peace Dollar Series except one 1928-P coin;

j. one of said landing spaces being an auction space wherein a player whose playing piece lands on the space may purchase the 1928-P coin of the 24 Peace Dollar Series;

k. one of said landing spaces representing a 1927-D $ 20 St. Gaudin gold coin space wherein a player whose playing piece lands on the space may buy the 1927-F $ 20 St. Gaudin gold coin; and

a coin board given to each player to receive coins purchased during the game which represent the 24 coins of the Peace Dollar series and individualized coins representing each coin of the Peace Dollar Series;

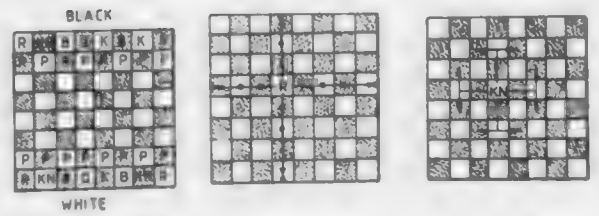
m. wherein each player is given a sum of play money at the start of the game and the the rules of the game require the player to invest wisely in gold shares, silver shares and retained play money as the player's playing piece is moved around the board and lands on the landing spaces, and the object of the game is to either collect all 24 coins of the Peace Dollar Series or to be able to purchase the 1927-D $ 20 St. Gaudin gold coin.

5,011,159

METHOD OF PLAYING A CHESS GAME

Michael Fortunato, and Michael A. Fortunato, both of 1659 Barbara Ct., East Meadow, N.Y. 11554

Filed Jan. 16, 1990, Ser. No. 465,976
Int. Cl.[5] A63F *3/02*
U.S. Cl. 273—260 1 Claim



1. A method of playing a board game comprising the steps of:

providing a game board having a grid of spaces on the surface thereon;

providing a plurality of playing pieces, said piece divided into two opposing sets, each set of pieces having distinguishing means thereon to visually distinguish one set of pieces from the opposing set pieces, each set of pieces having six differently configured playing pieces;

providing a conventional pair of six-sided dice, the faces of each die having a number from 1 to 6;

providing money in a money pot;

assigning a different predetermined movement capability to each of the six differently configured pieces;

assigning a number on a die face to a differently configured piece, wherein each number on a die corresponds to a differently configured piece; assigning one of the differently configured pieces of each set as the superior piece;

assigning a set of pieces to each player;

placing the pieces on the board;

each player in turn rolling the dice, moving two pieces which correspond to the two numbers appearing one the dice, wherein movement is limited to the assigned movement capability;

capturing an opposing piece when a piece lands on a space occupied by said opposing piece;

providing an objective to the game wherein players move their pieces to a position wherein the opposing superior piece is held in check or capable of being captured upon the next move of the pieces;

assigning a different monetary amount to each of the six different pieces, wherein when a player capture an opposing piece, that player is rewarded the corresponding monetary amount from the money pot;

rewarding a player : monetary amount from the money pot whenever his/her pieces are positioned to hold an opposing superior piece in check;

penalizing a player by requiring the player to place a predetermined amount of his/her own money in the money pot every turn his/her playing pieces are unable to move or unable to capture an opposing playing piece;

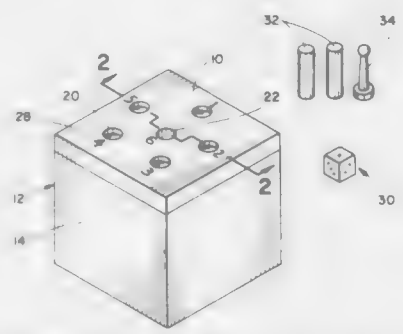
penalizing a player by requiring the player to place a predetermined amount of his/her own money in the money pot every turn his/her superior piece is unable to get out of check.

5,011,160

METHOD OF PLAYING A PROBABILITY GAME

Joseph Lacza, 27303 Westown Blvd., Westlake, Ohio 44145

Filed Oct. 11, 1989, Ser. No. 420,012
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—268 5 Claims



1. A method for playing a game by two or more players on a playing board having a plurality of spaced playing positions which are each identified by a different indicium, the game further including two sets of movable pieces, one set for each player, and a random indicium generator, the method comprising:

a first player obtaining an indicium;

the first player positioning one of his pieces in the board playing position identified by the indicium obtained;

the first player obtaining a second indicium and positioning another of his pieces at the board playing position identified by the second indicium, wherein if the second indicium is the same as the first indicium the first player has to remove said one of his pieces from the board and give way to a second player, and wherein the first player keeps playing until a) he runs out of pieces or b) he has to remove one of the pieces on the board or c) he decides to give way to the second player;

the second player obtaining an indicium;

the second player positioning one of his pieces at the board playing position identified by the indicium obtained, wherein if the playing position identified is already filled by a player piece, it is removed and added to the second player's supply of pieces, thereupon the second player must give way to the next player;

otherwise, the second player obtaining a second indicium and positioning another of his pieces in the board playing position identified by the second indicium obtained, wherein if the second indicium obtained is the same as the first indicium the second player has to remove said one of his pieces from the playing board and give way to the next player, wherein the second player keeps playing until a) he runs out of pieces or b) he has to remove one of the pieces on the board or c) he decides to give way to the next player;

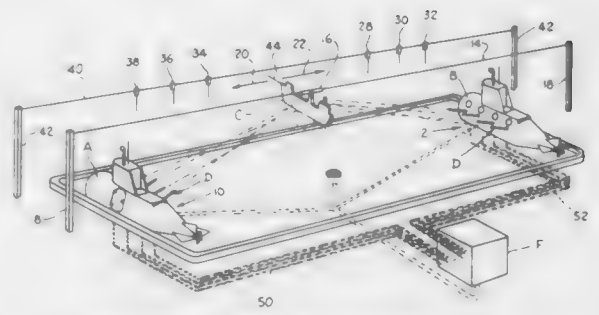
wherein the winner of the game is the player who first runs out of pieces.

5,011,161

WATER AMUSEMENT GAME

Marion C. Galphin, P.O. Box 34, Ninety-Six, S.C. 29666

Filed Sep. 25, 1989, Ser. No. 412,011
Int. Cl.[5] A63B *71/02*; A63H *23/00*
U.S. Cl. 273—349 30 Claims



1. A water amusement game comprising:

a first player station at which at least a first player is stationed, a second player station at which at least a second player is stationed, and said first and second stations being spaced from one another;

at least one water cannon at each of said first and second stations operable by said players, said water cannons emitting a water jet which impinges upon said target in response I0 to the operation of said water cannons by said players in accordance with the manipulation and skill of said players;

a target;

sensing means for detecting a condition of said target in response to the impingement of said water jet on said target;

water dispensing means for dispensing water on said players at said first and second stations; and

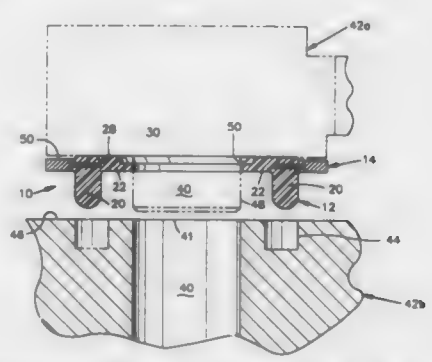
control means for activating said water dispensing means in response to signals received from said sensor means in response to said detection of said target condition to dispense water at said first and second stations in accordance with the skill of said players at said first and second stations to accurately hit said target with said water jet.

5,011,162

BI-LOBED SEALING ELEMENT AND RETAINER

Jerry G. Jelinek, La Habra, Calif., assignor to Parker Hannifin Corporation, Cleveland, Ohio

Filed Jul. 20, 1989, Ser. No. 382,458
Int. Cl.[5] F16J *15/12*
U.S. Cl. 277—11 5 Claims



1. An elastomeric sealing device for sealing a fluid passageway at the interface of two mateable parts wherein each of said mateable parts has a flat sealing surface which is in a close paraliel facing relationship with the other sealing surface when the parts are mated together, and wherein one of said mateable parts has a groove formed in the sealing surface thereof which

surrounds the fluid passageway and either one of said mateable parts has a boss which extends from the sealing surface thereof into the fluid passageway of the other part when the parts are mated together, said sealing device comprising: a bi-lobed elastomeric seal integrally molded on a relatively rigid retainer, said retainer and seal having a central opening therethrough which closely conforms to the shape of the fluid passageway at the interface of the mateable parts, said retainer being generally planar in construction with a load bearing peripheral portion that is clamped between the sealing surfaces of the mated parts, and a thinner flange portion which extends inwardly from the inner edge of said peripheral portion towards said central opening, said bi-lobed seal being of unitary construction molded about said retainer flange portion, said seal having a first lobe which extends perpendicularly from one surface of said retainer flange portion and is shaped and sized to be received in said groove and to sealingly fill most of the void in said groove when the parts are mated together, said seal having a second lobe which extends from said flange transverse said first lobe and defines said central opening, said second lobe being sized and shaped to have an interference fit with said boss to position said first lobe in said groove when the parts are mated together, said second lobe having a flat portion closely spaced from said retainer load bearing peripheral portion to seal the surface of the mated part which faces said groove.

5,011,163

FLAME-RESISTANT ELASTIC SEALING MEMBER

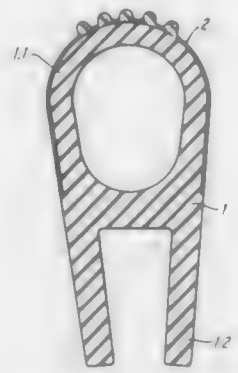
Dietmar Hermann, Garbsen, and Helmbrecht Schmidt, Niestetal-Sandershausen, both of Fed. Rep. of Germany, assignors to Continental Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Sep. 20, 1989, Ser. No. 410,072

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1988, 3831894

Int. Cl.[5] F16J *9/00;* **F02F** *11/00*

U.S. Cl. 277—26 **9 Claims**



1. A flame-resistant, elastic sealing member comprising: a strip-like body of a given length and made from a material selected from the group consisting of rubber and rubber-like synthetic material, said body having opposing side surfaces that extend the length of the body and are spaced apart by a given width, said body having a bottom for supporting the body on a support surface, said body further having a top surface that bridges said opposing side surfaces, said body further defining an upper sealing portion and a lower base portion, said side surfaces being divided into an upper section and a lower section, said upper sealing portion including said top surfaces and said upper section of said opposing side surfaces, said lower base portion including said bottom and said lower section of said opposing side surfaces, said lower base portion being for disposal in a groove having said support surface and wherein said groove is defined by opposing side walls, said upper sealing portion having a continuous fire protecting surface layer thereover covering said top surface and said upper section of said opposing side surfaces, said protecting surface layer containing therethrough flame-retarding additives to make said upper sealing portion flame-resistant, said layer ending at a location defining the demarcation between said upper sealing portion and said lower base portion so that said lower section of said side surfaces is devoid of said fire protecting surface layer, said sealing member being for disposal in said groove so that said lower base portion from said bottom to said demarcation is covered and thereby protected by said side walls of said groove along said lower section of said side surface.

5,011,164

DOUBLE-DISK, SPRING-BIASED MECHANICAL SEAL ASSEMBLY

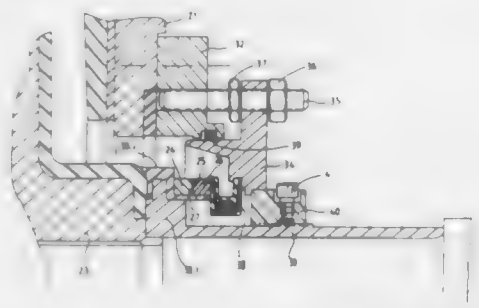
Raymond W. Hinks, Transvaal, South Africa, assignor to Terratech Mining Services (PTY) Ltd., Bryanston, South Africa

Filed Oct. 17, 1989, Ser. No. 423,207

Claims priority, application South Africa, Oct. 18, 1988, 88/7762

Int. Cl.[5] F16J *15/34*

U.S. Cl. 277—40 **6 Claims**



1. A mechanical seal arrangement for use in association with a pump casing structure and a drive shaft for driving a pump impeller which is housed in the pump casing structure, the seal arrangement comprising:

a rotatable seal ring having a seal face mountable concentrically on the drive shaft for rotation with the drive shaft;

a non-rotatable seal ring having a seal face mountable in axial alignement with the rotatable seal ring; and

biasing means for providing a biasing force to urge the rotatable and non-rotatable seal rings axially towards each other for effecting sealing engagement of the seal faces thereof; the arrangement being characterized by the biasing means comprising at least two disk spring elements spaced apart and encapsulated in an elastomeric body, which defines in use a pressure surface against which a fluid may exert a force complementary to the biasing force of the biasing means, the biasing means being locatable in a tensioned state between either one of the seal rings and the pump casing structure; and by the non-rotatable seal ring being bonded directly to the elastomeric body of the biasing means, with the rotatable seal ring being bonded directly to a shaft sleeve fitted over the drive shaft.

5,011,165

SEALING DEVICE ESPECIALLY FOR HARD DISK DRIVES

Heinrich Cap, Peterzell, Fed. Rep. of Germany, assignor to Papst-Motoren GmbH & Co. KG, St. Georgen, Fed. Rep. of Germany

Filed May 1, 1989, Ser. No. 345,932

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1988, 8805661[U]; Aug. 18, 1988, 3828081

Int. Cl.[5] F16J *15/40, 15/54*

U.S. Cl. 277—80 **8 Claims**

1. A seal in which a permanent magnet provides excitation, comprising:

a rotatable shaft having a straight cylindrical outer surface

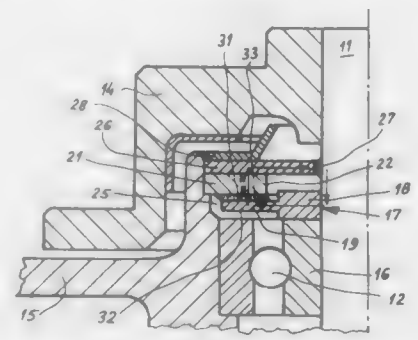
and supported in a ball bearing system, each ball bearing having an inner race and an outer race;

a magnetically conductive bearing ring mounted on the shaft immediately adjacent one end of the bearing system, the bearing ring having two radial portions,

a sleeve portion immediately surrounding the shaft and having a given axial dimension and

a disk portion radially outwardly of the sleeve portion having an axial dimension less than that of the sleeve portion, the axial center of both portions lying in the same radial plane;

a permanent magnet ring axially adjacent the bearing ring, the magnet ring having an inner diameter greater than the outer diameter of the sleeve portion of the bearing ring,



the magnet ring opposing a substantial portion of the disk portion of the bearing ring;

a labyrinth gap defined between the bearing system and the permanent magnet ring on both sides of the disk portion of the bearing ring radially extending therebetween;

a ring pole having an inner diameter concentric with and greater than the shaft and located axially adjacent the permanent magnet ring on the side opposite the bearing system, the ring pole extending radially inwardly toward the shaft parallel to the sleeve portion of the bearing ring; and

an active pole gap defined between the inner diameter of said ring pole and said shaft and filled with magnetically conductive fluid.

5,011,166

MECHANICAL FACE SEALS

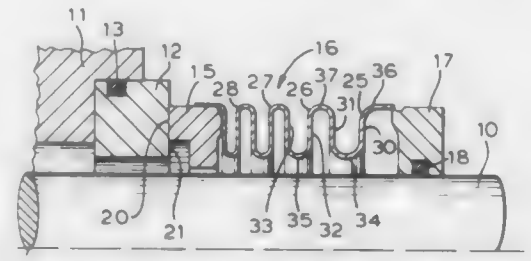
Christopher J. Watts, Slough, United Kingdom, assignor to John Crane UK Limited, United Kingdom

Filed Apr. 13, 1990, Ser. No. 509,018

Claims priority, application United Kingdom, Apr. 24, 1989, 8909289

Int. Cl.[5] F16J *15/36*

U.S. Cl. 277—88 **15 Claims**



1. A mechanical face seal including a seal face member which is secured in fixed rotational relationship and sealed with respect to one of a pair of relatively rotatable components by means of a resilient bellows unit, said bellows unit being attached at one end to the associated component and at the other end to the seal face member, the seal face member being biassed into sealing engagement with a second seal face member associated with the other component by compression of the bellows unit, the bellows unit defining a plurality of convolutions, each convolution having a pitch which is the axial separation between a point on one convolution and a corresponding point on the next convolution and a depth which is the radial separation between the extremity of the crown and the extremity of the root of the convolution, wherein at least one of the pitch and depth of the convolutions differs along the length of the bellows.

5,011,167

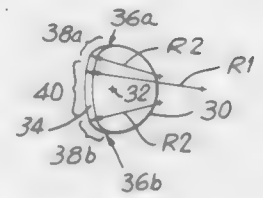
CHUCK JAW

Paul T. Jordan, Seneca, S.C., assignor to Jacobs Chuck Technology Corporation, Wilmington, Del.

Filed Mar. 12, 1990, Ser. No. 491,729

Int. Cl.[5] B23B *31/12*

U.S. Cl. 279—62 **6 Claims**



1. In a chuck having (1) a main body having a longitudinal axis, (2) a plurality of longitudinal jaws disposed in said main body and spaced around the longitudinal axis of said main body, each of said jaws having a longitudinal axis which is inclined relative to the longitudinal axis of said main body, and (3) a nut mounted on said main body for rotation relative to said main body about the longitudinal axis of said main body, said nut being threadedly engaged with thread segments on each of said jaws for causing each of said jaws to move relative to said main body parallel to the longitudinal axis of said jaw when said nut is rotated relative to said main body, the thread segments on each of said jaws extending transverse to the longitudinal axis of said jaw from a first end edge to a second end edge and having a first portion intermediate said end edges which is curved to substantially conform to the thread on said nut, the improvement comprising:

a second portion of said thread segments on each of said jaws, said second portion extending from one of said end edges to said first portion and having curvature which is in the same direction as but greater than the curvature of said first portion.

5,011,168

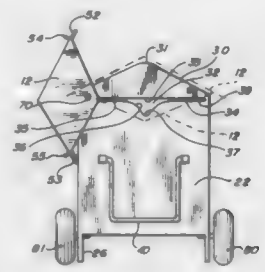
PORTABLE GARBAGE CONTAINER

Ferdinando Deamicis, 9560 John St Rd., Thunder Bay, Ontario P7B 4E2, Canada

Filed Oct. 20, 1989, Ser. No. 408,549

Int. Cl.[5] B62B *1/00*

U.S. Cl. 280—47.26 **10 Claims**



10. A portable garbage container comprising:

a housing with sidewalls, front and rear end walls, and a floor, each of the end walls having an apex formed by

upper angled edges, each of the sidewalls having upper linear edges,

a pair of rear wheels affixed to the floor of the housing,

a pair of front legs affixed to the floor opposite the wheels,

a swingable handle affixed to the front end wall for lifting and pulling the container,

an angled cover mountable on the upper angled edges of the end walls and upper linear edges of the sidewalls, the cover having eaves overhanging the end walls and sidewalls of the housing and diamond shaped supports affixed on each end of the cover and exteriorly of the end walls, each of the supports including a roller about which the cover is tiltable, each of the eaves including a pair of handles for aiding in tilting and sliding the cover, and

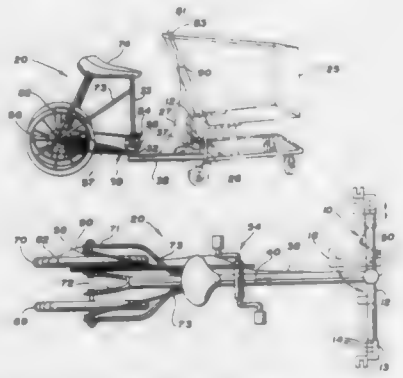
a transverse slot formed in each of the end walls of the housing, each of the slots including a first, centrally disposed seat for receiving the roller when the cover is in a closed position, a pair of second seats disposed in side portions of each of the end walls for receiving the rollers when the cover is in an open position, and a pair of curved, downwardly extending edge portions leading into the first seat for facilitating the sliding of the cover into the closed position whereby the rollers are slidable in the slots between the seats and the cover is tiltable simultaneously to allow the cover to be efficiently opened and closed.

5,011,169

HUMAN POWER SHOPPING CART PROPULSION DEVICE

Harold Henderson, 3566 Whiporwill Dr., Austin, Mich. 48467, and Larry Henderson, 1933 S. Pinnebog Rd., Bad Axe, Mich. 48413

Filed Jun. 5, 1989, Ser. No. 361,643
Int. Cl.[5] B62K *7/00, 27/12*
U.S. Cl. 280—202 **4 Claims**



1. A human-powered shopping cart propulsion device, comprising:

a wheeled propulsion unit including pedals;

a yoke which extends forwardly from said propulsion unit;

an adjustable length crossbar means for attaching said yoke to a shopping cart;

said adjustable length crossbar includes attachment members at each end adapted to engage a shopping cart post;

one of said attachment members is attached to a levered sleeve;

said levered sleeve is pivotally attached to a connecting arm;

said connecting arm is pivotally attached to a lever pivotally attached to said crossbar; and

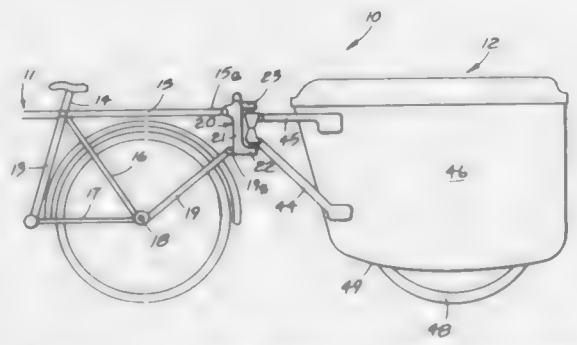
rotation of said lever causes said levered sleeve to engage and disengage a shopping cart post.

5,011,170

PEDAL CYCLE AND MOTORCYCLE TRAILER

Alexander D. Forbes, and Sheena C. Forbes, both of 11 Millburn Park, Baltasound, Shetland, Scotland ZE29EB

Filed Mar. 26, 1990, Ser. No. 500,528
Int. Cl.[5] B62K *27/00;* **B62J** *7/04*
U.S. Cl. 280—204 **5 Claims**



1. A bicycle and trailer apparatus comprising, in combination,

a bicycle including forward and rear wheels mounted within the bicycle including a vertical main support telescopingly receiving a bicycle seat support therewithin at an upper end of the main support, and

a link member extending horizontally and overlying the rear wheel and a further link member extending from an axle of the rear wheel upwardly and spaced from a rear terminal end of the link member, and

the rear terminal end of the link member and an upper terminal end of the further link member secured in a spaced relationship to a mounting yoke, and

a trailer housing including a hitch pin means mounted within a hitch pin housing for vertical and horizontal rotation relative to the hitch pin housing, the hitch pin housing including a plurality of trailer links to secure the trailer housing to the hitch pin housing, the trailer housing including a tire member rotatably mounted therewithin, and

the hitch pin selectively secured to the mounting yoke for limited vertical and horizontal rotation of the hitch pin relative to the mounting yoke, and

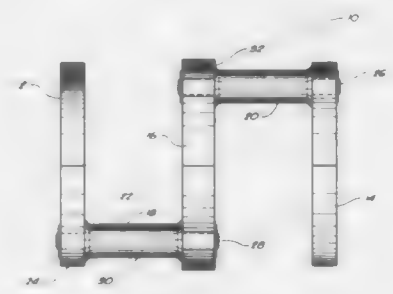
wherein the mounting yoke comprises an "L" shaped member including a horizontal lower leg and a vertical upper leg extending orthogonally and integrally from the horizontal leg, wherein the horizontal leg includes a bifurcated upper end to pivotally receive a cup member therewithin, the bifurcated upper end includes a first leg spaced from and parallel to a second leg, wherein the second leg extends upwardly and beyond the first leg, and an "L" shaped cup member pivotally mounted between the first and second legs, the "L" shaped cup member including a first cup leg including a semi-cylindrical recess directed within a lower surface of the first cup leg, and a lock aperture directed through the second cup leg, the lock aperture aligned with a further lock aperture directed through an upper end of the second leg of the "L" shaped cup member is in a lowered position, and a lock pin selectively receivable through the lock aperture and the further lock aperture when the "L" shaped cup member is in the lowered second position, and a further cup shaped recess directed interiorly within an upper surface of the vertical leg of the "L" shaped yoke, the further semi-cylindrical recess aligned with the semi-cylindrical recess when the "L" shaped cup member is in the lowered second position, and the first and second semi-cylindrical recesses spaced a distance equal to a predetermined length defined by the hitch pin.

5,011,171

SELF-PROPELLED VEHICLE

Walter R. Cook, Rt. 3, Box 14, Port Lavaca, Tex. 77979

Filed Apr. 20, 1990, Ser. No. 512,168
Int. Cl.[5] B62K *1/00*
U.S. Cl. 280—221 **20 Claims**



1. A self-propelled vehicle comprising:

a first wheel;

a second wheel; and

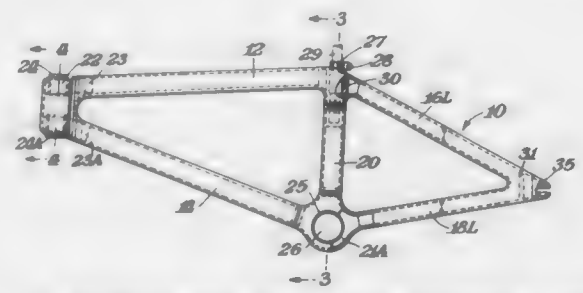
a third wheel of greater diameter than said first and second wheels, said third wheel having a center of rotation aligned with said first and second wheels, said third wheel connected to said first wheel by a first pedal, said third wheel connected to said second wheel by a second pedal, said first and second wheels located on opposite sides of said third wheel.

5,011,172

LIGHTWEIGHT BICYCLE WITH IMPROVED FRONT AND REAR WHEEL FORK AND METHOD OF CONSTRUCTING SAME

August T. Bellanca, and August T. Bellanca, Jr., both of Wilson Point Rd., Galena, Md. 21635

Filed Jan. 30, 1989, Ser. No. 302,948
Int. Cl.[5] B62K *19/02, 19/16, 19/30*
U.S. Cl. 280—281.1 **9 Claims**



1. a lightweight, rigid bicycle frame comprising left and right subassemblies which; (a) are the mirror image of each other; each subassembly has a "C" shaped cross-section; each subassembly has a forward and rear end and said subassemblies are attached to each other at the forward ends to form a front portion of the frame comprising:

(a) a head tube;

(b) a crank housing;

(c) a rear fork;

(d) a top hollow member having a front end and a rear end wherein said front end is attached to the head tube;

(e) a down hollow member having a forward and a rear end wherein said forward end is attached to the head tube;

(f) a down seat hollow member having a top end and a bottom end wherein said top end is attached to the rear end of the top hollow member and the bottom end is attached to the crank housing; said rear ends of said left and right subassemblies being separated from each other to form a cavity to which is inserted and attached;

(g) a rear "C" shaped subassembly in the shape of an oval folded about its minor axis and mounted in said cavity and attached to said rear ends of said left and right subassemblies with the C-shape of said rear subassembly complementing the C-shape of the respective left and right subassemblies to form said rear fork; and

(h) said rear fork of the frame comprising:

(i) two seatstay hollow members each having a forward end and a rear end wherein the forward ends are attached to the top of the down seat hollow member;

(ii) two chainstay hollow members each having a forward end and a rear end wherein the forward end is attached to the crank housing and the rear end of each of the chainstay hollow members is attached to the rear end of a respective seatstay hollow member; and

(iii) the rear "C" shaped subassembly is in the shape of an oval fold 160 to 166 degrees about its minor axis.

5,011,173

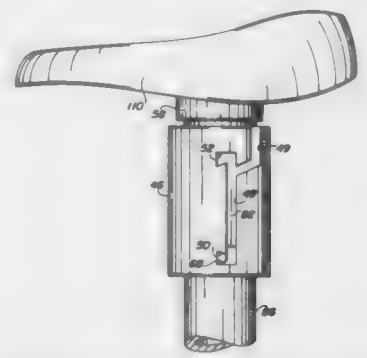
Patent Not Issued For This Number

5,011,174

ADJUSTABLE HEIGHT BICYCLE SEAT MECHANISM

Robert A. Ross-Clunis, 2900 Vista Del Rey, NE. Unit 28D, Albuquerque, N. Mex. 87112

Filed Oct. 30, 1989, Ser. No. 428,776
Int. Cl.[5] B62K *1/06*
U.S. Cl. 280—287 **25 Claims**



1. A height adjustable device for mounting a bicycle seat onto the frame of a bicycle, comprising:

a hollow lower tube member;

spring means for providing both a torsion and a compressive biasing force, said spring means having a first end and a second end, said first end of said spring means being secured relative to said lower tube member;

an upper member installed in and extending from said lower tube member, said upper member being longitudinally slidable and rotatable with respect to said lower tube member, said second end of said spring means being secured relative to said upper member;

first guide means mounted on said lower tube member; and

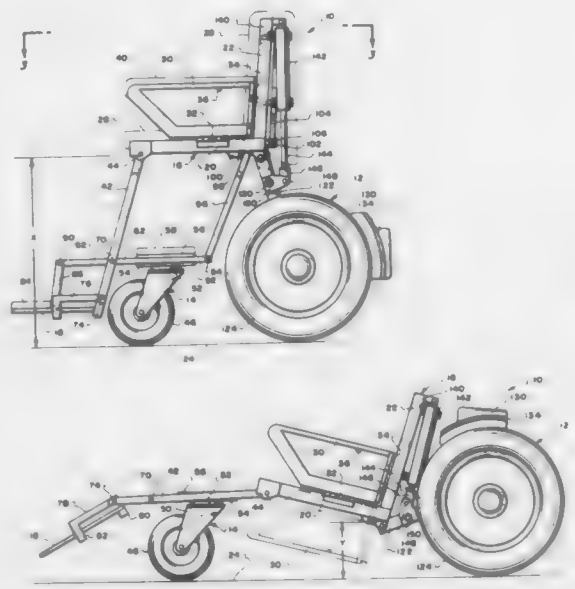
second guide means mounted on said upper tube member, said first and second guide means cooperating to limit the longitudinal movement of said upper member with respect to said lower tube member between a raised position and a lowered position, said first and second guide means allowing relative rotation of said upper member with respect to said lower tube member between locked and unlocked positions at either said raised position or said lowered position.

5,011,175

WHEELCHAIR

J. Dudley Nicholson, 9715 Elizabeth Lake Rd., and Stanley Secretan, 9211 Elizabeth Lake Rd., both of Leona Valley, Calif. 93551

Continuation of Ser. No. 361,390, Jun. 5, 1989, abandoned. This application Aug. 13, 1990, Ser. No. 566,266
Int. Cl.[5] B62M 1/14
U.S. Cl. 280—304.1 3 Claims



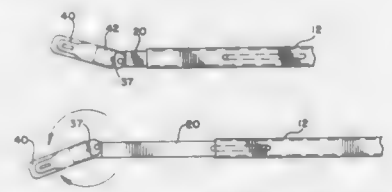
1. A wheelchair comprising:
a chair-like frame having a seat section adapted to support a buttocks of a human being, said seat section having longitudinal opposite edges defined as a forward edge and a rearward edge, said seat frame including a back section adapted to support a back of a human being, said back section being fixedly mounted onto said seat section;
a leg rail assembly pivotally mounted to said seat section at said forward edge;
a linkage assembly connected between said leg rail assembly and said seat section at said rearward edge;
a front wheel assembly being mounted on said linkage assembly, said front wheel assembly to continually rest on a supportive surface;
a rear wheel assembly pivotally mounted to said seat section at said rearward edge, said rear wheel assembly to continually rest on the supportive surface;
an actuator assembly connected to both said rear wheel assembly and said linkage assembly, said actuator assembly for causing movement of said seat frame between an upper position and a lower position, said lower position being located substantially nearer the supportive surface than said upper position, with said seat frame in said upper position said front wheel assembly being located nearest said rear wheel assembly with both said front wheel assembly and said rear wheel assembly being located between said seat frame and the supportive surface, with said seat frame in said lower position said front wheel assembly being located furthest from said rear wheel assembly with said seat frame being located substantially between said front wheel assembly and said rear wheel assembly, both said front wheel assembly and said rear wheel assembly being movable relative to each other and movable relative to said seat frame; and
a footplate pivotally mounted to the free outer end of both said leg rail assembly and said linkage assembly, during movement of said seat frame from said upper position to said lower position said footplate is simultaneously moved from a substantially horizontally oriented position through an angle below the horizontal to an inclined position.

5,011,176

ADJUSTABLE TRAILER COUPLING

Horace Eppinette, Galena, Mo., assignor to Flexi-Hitch, Inc., Crane, Mo.

Filed Oct. 23, 1989, Ser. No. 421,110
Int. Cl.[5] B60D 1/40
U.S. Cl. 280—479.3 6 Claims



1. A coupling device mounted to a towed vehicle for connecting a towing vehicle to a towing bar mounted on the towed vehicle when the two vehicles are not aligned with each other comprising:
a trailer hitch at one end of the coupling device for connection to the towing vehicle;
a telescopic arm received in telescopic relationship within the towing bar located at the other end of the coupling device, the telescopic arm having opposite ends with one end protruding from the towing bar, the telescopic arm extendable between a retracted, locked position to a fully extended position;
locking means for selectively locking and unlocking the telescopic arm with respect to the towing bar comprising a locking pin which passes through locking pin receiving holes in the towing bar and telescopic arm when the telescopic arm is in the retracted position;
an articulating arm having one end connected to the trailer hitch and the other end pivotally connected at a pivot point to the one end of the telescopic arm for allowing the articulating arm to pivot with respect to the telescopic arm, the other end of the articulating arm having a locking pin receiving hole which is in alignment with the locking pin receiving holes in the towing bar and telescopic arm when the telescopic arm is in the retracted, locked position whereby the locking pin is received by all three locking receiving holes.
an anti-pivot collar which can be selectively positioned with respect to the pivot point to either not encircle or encircle the pivot point for respectively permitting or restraining pivotal movement between the articulating arm and telescopic arm; and
means associated with the trailer hitch for positioning the anti-pivot collar with respect to the pivot point for the selective positioning of the anti-pivot collar.

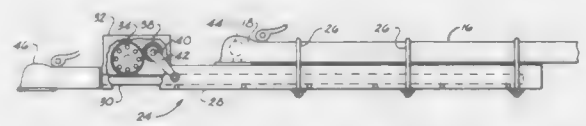
5,011,177

AUXILIARY TRAILER EXTENSION TONGUE

Farrell Grice, Star Rte. Box 68, Swansea, S.C. 29160

Filed Feb. 26, 1990, Ser. No. 485,147
Int. Cl.[5] B60D 1/14, 1/62
U.S. Cl. 280—482 8 Claims

1. An auxiliary trailer extension kit adapted to be operatively and detachably interconnected between a trailer tongue of a conventional trailer having a ball-type hitch at one end thereof, and a conventional swivel hitch ball mounted on a trailing vehicle, said auxiliary trailer extension kit comprising:
an elongated tubular member adapted to be detachably secured to the trailer tongue;
releasable attachment means secured to said elongated tubular member for detachably interconnecting said elongated tubular member in a fixed relationship with the trailer tongue;
a conventional swivel hitch ball mounted on the top surface of said elongated tubular member and upon which the ball-type hitch of the conventional trailer is adapted to be applied;
an elongated extension member adapted for telescoping relative said elongated tubular member, said extension member comprising an upturned toothed gear rack journaled in said elongated tubular member and having a ball-type hitch attached adjacent one end thereof for application to a conventional swivel hitch ball mounted on a trailing vehicle; and



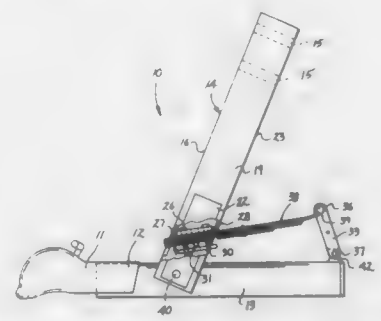
drive means for selectively alternately extending and retracting said extension member relative to said elongated tubular member for effecting controlled elongation of the trailer tongue, said drive means including a housing received on the distal end of said elongated tubular member at an upper surface thereof and having a relatively enlarged gear rotatably supported in said housing and engaged with said upturned toothed gear rack through an opening therein, so that controlled rotation of said relatively enlarged gear results in corresponding controlled relative movement between said extension member and said elongated tubular member.

5,011,178

TRAILER HITCH APPARATUS

Stanley W. Sanderson, 312 Sanderson Rd., Newport, N.C. 28570

Filed Feb. 26, 1990, Ser. No. 484,978
Int. Cl.[5] B60D 1/14
U.S. Cl. 280—483 6 Claims



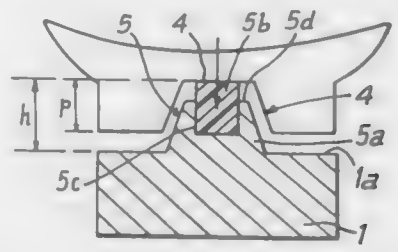
1. A trailer hitch apparatus comprising, in combination,
a trailer ball socket mounted to and integrally aligned with a socket support tube, the socket support tube coextensive with and mounted in an aligned relationship to a primary support tube at its forwardmost end, the primary support tube pivotally receiving a secondary support tube rearward of the socket support tube, and
a pivot pin transversely directed through spaced side walls of the primary support tube and is directed through spaced forward flanges of the secondary support tube, and
a biasing means for biasing vibration directed through the trailer ball socket mounted at its forward end interiorly of the secondary support tube and at its rear end to the primary support tube, and
wherein the secondary support tube includes a top wall spaced from and parallel to a bottom wall, the top wall including a "U" shaped forward end spaced rearwardly of the forward flanges, and the bottom wall including a bottom wall "U" shaped forward end spaced rearwardly of the "U" shaped forward end of the top wall to receive the biasing means therethrough.

5,011,179

LATERAL GUIDE APPARATUS FOR CROSS-COUNTRY SKI, SKI SHOE OPERABLE THEREWITH, AND IMPROVED SKI-COUNTRY SKI

Alain Bejean, La Clusaz, and Gerard Graillat, Annecy, both of France, assignors to Salomon S.A., Annecy Cedex, France

Continuation of Ser. No. 246,791, Sep. 20, 1988, abandoned. This application Apr. 25, 1990, Ser. No. 513,023
Claims priority, application France, Nov. 18, 1987, 87 15951
Int. Cl.[5] A63C 5/04
U.S. Cl. 280—615 15 Claims



1. Apparatus for a cross-country ski-shoe whose toe is attached to the top surface of a cross-country ski for effecting displacement of the heel of the shoe relative to the ski, said shoe having a longitudinal groove in its sole at least in the front portion thereof, said groove being defined by a bottom and a pair of spaced, lateral guide faces, said apparatus comprising:
(a) a longitudinal guide rib adapted to be attached to the upper surface of the ski at a location where said groove receives said rib when the sole of the shoe seats flat on the ski;
(b) said rib including an elastic element that is engaged by the bottom of said groove in the shoe when the heel seats flat on the ski, and that is resiliently deformed thereby;
(c) said elastic element being constructed and arranged so that, in response to downward movement of the heel of the shoe into engagement with the ski, energy stored in the elastic element by reason of its resilient deformation is sufficient to create a force on the sole of the shoe that imparts an upward rebound to the heel of the shoe; and
(d) wherein the longitudinal guide rib is formed in two portions, a relatively rigid lower portion, and an upper elastic portion embedded in a longitudinal groove in the upper surface of the lower portion, said elastic portion projecting above said upper surface so as to be elastically compressed by the bottom of the groove of the sole of the shoe when the heel seats flat on the ski, said rigid portion engaging and guiding the lateral guide faces of the groove in the sole of the shoe when the heel seats flat on the ski.

5,011,180

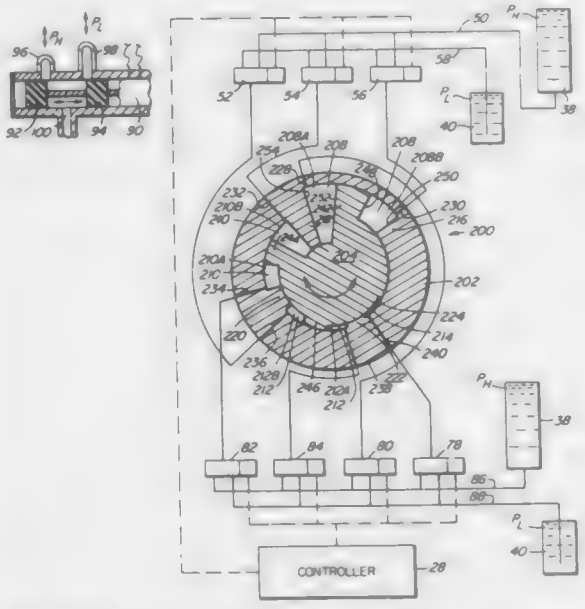
DIGITAL SUSPENSION SYSTEM

Andrew B. Dunwoody, Richmond, Canada, assignor to The University of British Columbia, Canada

Filed Feb. 2, 1990, Ser. No. 473,748
Int. Cl.[5] B60G 13/08
U.S. Cl. 280—707 7 Claims

1. A suspension system for a wheeled vehicle having a body portion comprising means for sensing lateral and longitudinal acceleration of said body portion, a digital hydraulic actuator supporting said body portion from each of said wheels, each said actuator including a plurality of different effective area actuator sections, a first source of hydraulic fluid at a first pressure, a second source of hydraulic fluid at a second pressure, said second pressure being significantly different from said first pressure, valve means for selectively connecting

either one or the other of said first and said second sources to selected of said actuator sections thereby to vary the number of said actuator sections and thereby the amount of said effective area of each said actuator subjected to said first and said second pressures to selectively vary the force applied by each said actuator independent of the extension of said actuator, com-



puter means for controlling said valves to adjust the number of said actuator sections of each said digital hydraulic actuator subjected to said first and said second pressured based on anticipated forces at each said actuator as determined by said computer means based on conditions sensed by said means for sensing lateral and longitudinal acceleration thereby to maintain said body portion substantially stable.

5,011,181

STEERING WHEEL MOUNTED AIR BAG MODULE INCLUDING ELECTROMAGNETICALLY SHIELDED SENSOR

Horst Laucht, Bruckmuehl; Richard Baur, Pfaffenhofen; Bernd Werner, Schliersee; Karl E. Nilsson, Ottobrunn, and Peter Hora, Schrobenhausen, all of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm GmbH, Ottobrunn and Bayern-Chemie Gesellschaft fuer Flugchemische Antriebe, Aschau/Inn, both of, Fed. Rep. of Germany

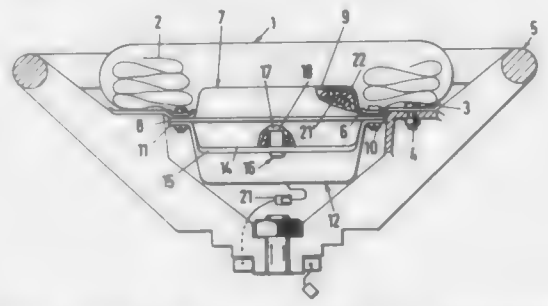
PCT No. PCT/EP89/00680, § 371 Date Jan. 31, 1990, § 102(e) Date Jan. 31, 1990

PCT Filed Jun. 16, 1989, Ser. No. 458,730

Int. Cl.[5] B60R *21/20, 21/32*

U.S. Cl. 280—731 **5 Claims**

1. A safety device for motor vehicles for protecting a person against impact injuries, comprising air bag means fastened to a steering wheel of the vehicle for protecting a person, gas generator means including a gas generator housing with a first mounting flange for generating an inflating gas for said air bag means, electronic ignition means for starting a gas generation in response to an impact, sensor means for activating said electronic ignition means, a sensor housing having a second mounting flange attached to said first mounting flange of said gas generator housing, support means and attachment elements for securing said first and second mounting flanges in a position on the steering wheel in such a way that said sensor housing and said gas generator housing form a complete electromagnetic shielding for said sensor means and said electronic ignition means, and wherein said first mounting flange and said



second mounting flange are integral flanges of the respective gas generator housing and sensor housing, said first and second mounting flanges having a matching form so that their exact position relative to each other is fixed by said attachment elements.

5,011,182

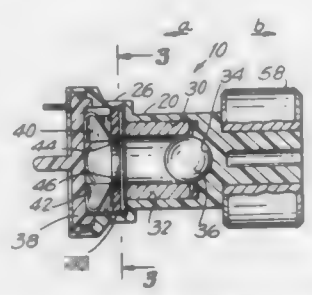
VELOCITY CHANGE SENSOR WITH CONTACT RETAINER

Harald S. Husby, Budd Lake; Allen K. Breed, Boonton Township, Morris County, and Ted Thuen, Morris Plains, all of N.J., assignors to Breed Automotive Technology, Inc., Boonton Township, Morris County, N.J.

Filed Oct. 6, 1989, Ser. No. 417,914

Int. Cl.[5] B60R *21/32;* **H01H** *35/02, 35/14*

U.S. Cl. 280—735 **12 Claims**



1. An accelerometer for sensing velocity changes comprising:

a housing with a first end a second end opposite said first end and defining a chamber therebetween;

a pair of flexible contact means disposed at said first end and having contact ends extending into said chamber;

retaining means disposed in said housing for biasing said contact ends to a preselected position with respect to said first end;

a sensing element movably disposed in said housing; and

biasing means for generating a biasing force on said sensing element for urging said sensing element toward a first position, said sensing element being constructed and arranged to move toward a second position away from said first position in response to a deceleration force exceeding said biasing force, for contacting said contact ends in said preselected position.

5,011,183

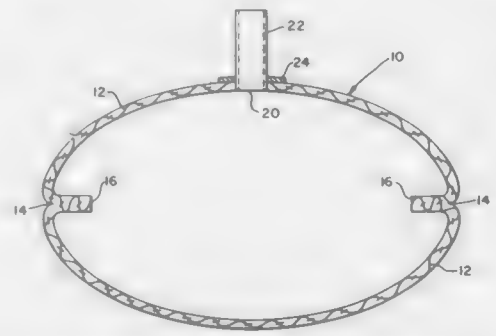
BAG, AIRBAG, AND METHOD OF MAKING THE SAME

Peter B. Thornton, Bronxville; Fred P. Woodworth, Arkpport, and Stanley H. Cone, Hornell, all of N.Y., assignors to Stern & Stern Industries, Inc., New York, N.Y.

Filed Jun. 8, 1990, Ser. No. 535,772

Int. Cl.[5] B60R *21/20*

U.S. Cl. 280—743 **19 Claims**



1. A bag suitable for use in an airbag comprising:

a seamless bag of integral, unitary, one-piece woven construction, said bag defining:

(i) a pair of opposed panels of substantial area formed in a plain weave of a first yarn density;

(ii) a single intermediate margin of slight width joining the peripheries of said opposed panels together, said intermediate margin being formed in a plain interweave of a second yarn density greater than said first yarn density; and

(iii) a single outer margin of substantially greater width than said intermediate margin extending about the periphery of said intermediate margin, said outer margin being formed in a weave looser than said plain interweave.

5,011,184

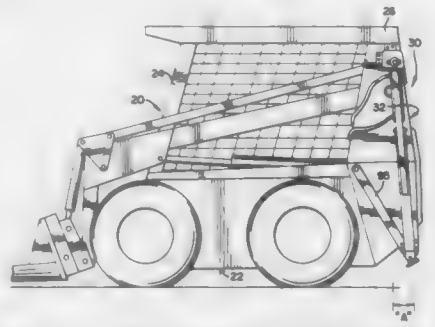
STABILIZER SYSTEM

Robert W. Loudon, 26011 N. Fairfield Rd., Lake Zurich, Ill. 60042

Filed Sep. 28, 1989, Ser. No. 413,781

Int. Cl.[5] B60S *9/12*

U.S. Cl. 280—766.1 **20 Claims**



1. A system for a utility vehicle having generally vertically oriented longitudinal and lateral walls, dimensional profile space, and undercarriage clearance space, said system comprising:

a. a stabilizer unit, said unit mounted in close conformity to the generally vertically oriented walls, said unit comprising:

(i) a leg, said leg including an angular-shaped straight tube, said leg extending generally groundward and mounted in close conformity to said vertically oriented walls of said vehicle;

(ii) a sleeve, said sleeve including an angularly shaped hollow tube within which said leg may slidably travel;

(iii) a pad, said pad connected to a groundward end of said leg and carried exterior to said sleeve, said pad including a ground engaging surface;

(iv) hydraulic means, said hydraulic means including a fluid actuated piston cylinder, said piston cylinder including a piston having a groundward-oriented end affixed to an end of said leg, said piston cylinder further including a cylinder secured to said vehicle and extending generally external of said sleeve;

(v) securement means for attaching said stabilizer unit to the vehicle, said securement means including a housing by which one end of said cylinder is secured to said vehicle; and

b. means for controlling said stabilizer unit and by which said hydraulic means may be actuated to extend said piston and thereby said leg within the dimensional profile of said vehicle and downwardly until said ground engaging surface of said pad contacts the ground and to retract said piston and thereby said leg upwardly to a non-ground engaging position at which no part of said leg and said pad extend into said undercarriage clearance space.

5,011,185

LOCKING MEANS FOR A DRIVE MEMBER OF A PASSIVE SAFETY-BELT SYSTEM

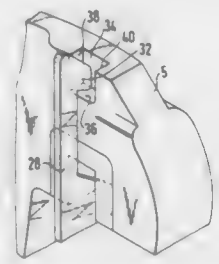
Michael Stütz, Spraitbach, and Thomas Mödinger, Vordersteinenberg, both of Fed. Rep. of Germany, assignors to TRW Repa GmbH, Fed. Rep. of Germany

Filed Aug. 31, 1989, Ser. No. 401,052

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1988, 3830288

Int. Cl.[5] B60R *22/06, 22/24*

U.S. Cl. 280—804 **1 Claim**



1. In a passive safety belt system for vehicles, comprising:

a guide member secured on a vehicle bodywork,

a drive member slidably mounted in said guide member and having a safety belt fitting mounted thereto, said drive member being movable along said guide member between a belt wearing position and a belt stowing position,

a locking member pivotally mounted adjacent to said guide member for engaging said drive member in said belt wearing position,

the improvement wherein:

said locking member is a plate-like elongated ratchet hook pivotally mounted at one end thereof about an axis and comprising at its other end a nose extending laterally from the ratchet hook in a direction substantially opposite to the direction of travel of the vehicle and perpendicular to the drive member,

said ratchet hook being arranged on a side of said drive member to which tensile force occurring at said drive member upon a vehicle frontal crash is directed,

said drive member comprises on a side thereof facing said ratchet hook a recess into which said nose portion of said ratchet hook dips to lock said drive member,

said recess of said drive member is rectangular, as viewed in a direction opposite to the normal direction of travel of the vehicle, and comprises two parallel boundary walls which are perpendicular to the pivot axis of said ratchet hook and spaced from each other by a predetermined spacing which is substantially greater than the thickness of said plate-like ratchet hook, so that the side faces of said

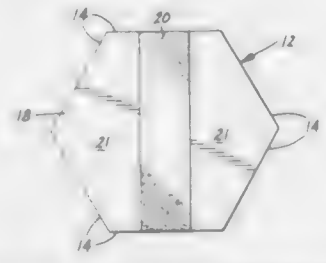
nose portion of said ratchet hook remain at a distance from said boundary walls when said nose portion is engaged into said recess.

5,011,186

HEXAGONAL PAD

Douglas P. Bodziak; Ray A. Hunder; Steven P. Roth; Steven L. Grovender, and Robert P. Molenda, all of St. Paul, Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Feb. 14, 1990, Ser. No. 479,841
Int. Cl.[5] B42D *1/00*
U.S. Cl. 281—12 **5 Claims**



1. A pad comprising a plurality of flexible sheets each having a regular hexagonal peripheral edge defined by six straight edge portions, a front surface adapted to be written on, a rear surface, and a coating of repositionable pressure sensitive adhesive over a portion of said rear surface extending across the rear surface of said sheet between opposite straight edge portions releasably adhering said sheet to an underlying sheet in said pad with the straight edge portions of the peripheral edges of said sheets in alignment, said rear surface of each sheet having a portion free of adhesive adjacent the intersection of two straight edge portions on one side of said opposite straight edge portions to afford removal of said sheets from said pad by peeling the uppermost sheet from underlying sheets in the pad,

whereby a user may write information on the front surfaces of a plurality of the sheets, remove said plurality of the sheets, and adhere the removed sheets to a planar surface in side by side relationship with straight edge portions of up to six adjacent sheets in contact to represent relationships between the information on the sheets.

5,011,187

BINDING SYSTEM FOR CONNECTED FAN FOLDED SHEETS

Ray A. Hunder; Larry A. Bettenhausen; Alden R. Miles; William A. Mittelstadt; Stephen H. Dwyer, and Gary R. Hanson, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 144,420, Jan. 14, 1988, abandoned. This application Jan. 4, 1989, Ser. No. 294,936
Int. Cl.[5] B42D *1/04, 3/02;* **B42C** *11/04, 13/00*
U.S. Cl. 281—15.1 **17 Claims**

1. A bound document comprising:

a multiplicity of similarly sized sheets each having a spine edge, an outer edge opposite said spine edge, and opposite major side surfaces, said sheets being disposed in a stack having opposite sides with the spine edges of said sheets aligned to define a generally planar surface at generally a right angle to said opposite sides, each of said sheets, except for the outermost sheets in the stack which are each joined only along one of said edges, being joined at both of said edges to sheets adjacent its major side surfaces with the spine edges of the sheet being joined to the spine edge of the sheet along one of said side surfaces, and the outer edge of the sheet being joined to the outer edge of the sheet along the other of said side surfaces;

a pair of cover plates disposed on opposite sides of said stack and each having a spine edge aligned with the spine edges of the sheets in said stack;

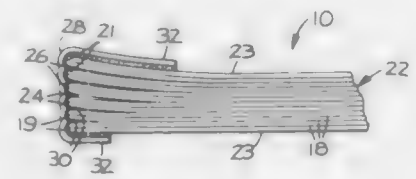
a highly flexible strong backing having low resilience; and

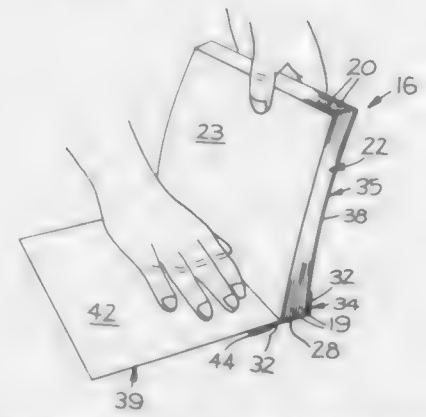
a layer of pressure sensitive adhesive adhered to said backing, which layer of pressure sensitive adhesive has been adhered across the aligned spine edges of said sheets and cover plates and along narrow side surface portions adjacent said spine edges on corresponding sides of said sheets when said sheets were disposed to expose said narrow side surface portions relative to said adjacent sheets;

said layer of pressure sensitive adhesive and said backing being pleated by retained adhesion of said layer of pressure sensitive adhesive to said spine edges and said narrow side surface portions contacted by the layer of pressure sensitive adhesive when said sheets were disposed to expose said narrow side surface portions relative to said adjacent sheets;

said layer of pressure sensitive adhesive adhering to narrow side surface portions of the sheets adjacent the narrow side surface portions of the sheets contacted by the layer of pressure sensitive adhesive when said sheets were disposed to expose said narrow side surface portions relative to said adjacent sheets;

said backing having end portions adhered to portions of said cover plates adjacent said spine edges;





said backing being a sheet material having a flexibility/stiffness of less than about 200 grams resistance to flexing when measured in accordance with the International Nonwoven Disposable Association Handle-O-Meter Stiffness Standard Test, IST 90.0-75 R-82 using a test sample of said sheet material 20.32 centimeter by 20.32 centimeter and having a slot into which said test sample of sheet material is pressed adjusted to be 0.635 centimeter wide and said test sample of sheet material is caused by the test to bend in an arc extending in the same direction along the test sample of material as the arcs around which the sheet material will have to bend to form pleats; and

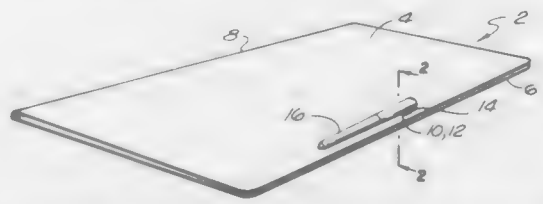
said pressure sensitive adhesive having a minimum adhesion of 30 ounces per inch, when tested in accordance with ASTM D 3330-81 by adhering a piece of white bond paper to a glass plate with double coated tape, adhering a ½ inch wide strip comprising the pressure sensitive adhesive to be tested on a backing to the surface of the paper opposite the glass plate, and peeling one end of the strip from the paper by bending the strip 180 degrees and pulling it parallel to the surface of the paper so that the adhesive is pealed from the paper at a speed of 12 inches per minute; resists dead load peel for at least 500 minutes when tested by adhering a piece of the same white bond paper to a stainless steel plate with double coated tape, adhering a ½ inch wide strip comprising a layer of the pressure sensitive adhesive to be tested on a backing to the surface of the piece of paper opposite the stainless steel plate along a ¾ inch length at one end of the strip, positioning the plate vertically, bending the strip 180 degrees away from the plate, and hanging a 100 gram weight from the end of the strip opposite its adhered end length so that the weight tends to peel the strip from the piece of paper; and achieves a value of at least 15 ounces per inch when tested by the test identified as Quick Stick PSTL-5, which is Test number 5 of Pressure Sensitive Tape Counsel.

5,011,188

FOLDER

Martin Zoland, 7 Mandeville Crescent, Toorak, Victoria, Australia 3142 , and Mark Rossato, 15 Leslie Street, Richmond North, Victoria, Australia

Filed May 23, 1990, Ser. No. 528,041
Int. Cl.[5] B42D *3/12*
U.S. Cl. 281—30 **12 Claims**



1. A folder and writing instrument combination, said writing instrument including a clip and an elongated portion, said clip having first and second ends with said first end affixed to said elongated portion, said folder including a front cover with an inside portion and an outside portion, and a back cover with an inside portion and an outside portion, said front cover and said back cover being joined at one side thereof so as to form a spine, said front and back covers having first and second edges adjacent said spine and a third edge opposite said spine, said combination comprising:

(a) a first hole disposed adjacent said third edge of said front cover opposite said spine;

(b) a second hole disposed adjacent said third edge of said back cover opposite said spine, wherein said first hole and said second hole are in alignment when said folder is in a closed position, and wherein said second end of said clip is adapted to be inserted into said aligned holes such that said clip is adjacent to outside portion of one of said front and back covers, and said elongated portion is adjacent the outside portion of the other of said front and back covers,

whereby said front and back covers are secured in a closed position when said clip engages said first and second holes, and said front and back portions may be opened when said clip is disengaged from said first and second holes.

5,011,189

PUBLICATION REFERENCE-AID SYSTEM APPARATUS THEREFOR

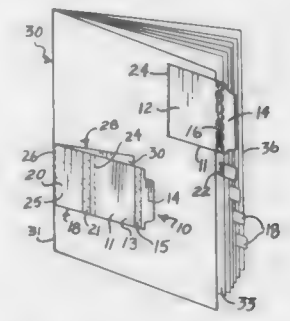
Craig W. Olson, P.O. Box 302, Fontana on Geneva Lake, Wis. 53125

Continuation-in-part of Ser. No. 147,366, Jan. 25, 1988, abandoned, which is a continuation-in-part of Ser. No. 940,422, Dec. 11, 1986, abandoned. This application Jul. 31, 1989, Ser. No. 388,319
Int. Cl.[5] B42D *15/00, 1/00;* **B42F** *21/00;* **B32B** *5/16*
U.S. Cl. 283—81 **14 Claims**

1. A reference-aid apparatus adapted for use with and temporary securement to a publication, said apparatus comprising:

a substrate formed of sheet stock, said substrate comprising a primary marker member and at least one secondary marker member with said at least one secondary marker member being releasably attached to said primary marker member by a line of separations;

said primary marker member further comprising a head tab portion with said portion being adapted to receive first indicia thereon for identifying a publication, said primary marker member further comprising on one face thereof a directory area with said directory area having second indicia thereon defining at least one inscribable entry area with third indicia located adjacent to and being specific to each of the said at least one inscribable areas on said primary marker member, the other face of said primary marker member comprising an attaching means area with



a releasable and reusable pressure sensitive adhesive permanently attached thereto and covered by a removable protective sheet;

said at least one secondary marker member containing on one face thereof fourth indicia defining at least one inscribable entry area thereon with fifth indicia located adjacent to and being specific to each of the said at least one inscribable entry areas on said secondary marker member, the other face of said secondary marker member comprising an attaching means area with a releasable and reusable pressure sensitive adhesive permanently attached thereto and covered by a removable protective sheet; and

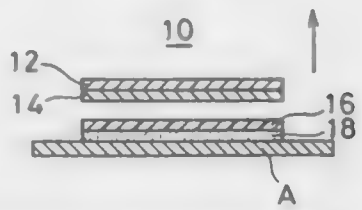
said third and fifth indicia having a predetermined associative relationship.

5,011,190

TEMPORARILY STICKING MATERIAL

Noboru Matsuguchi, and Tadaski Matsuguchi, both of Suita, Japan, assignors to Daimatsu Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed Sep. 16, 1988, Ser. No. 245,883
Claims priority, application Japan, Sep. 18, 1987, 62-235331
The portion of the term of this patent subsequent to Apr. 9, 2008, has been disclaimed.
Int. Cl.[5] B42D *15/00;* **B32B** *3/00*
U.S. Cl. 283—101 **5 Claims**



1. A temporary sticking material comprising a base material which is at least partially opaque, an inter-layer peel ply adhered to said base material, a resin layer which is at least partially transparent adhered to said inter-layer peel ply, a substrate, indicia means defining indicia on one side of said substrate, an adhesive layer which is at least partially transparent adhered between said substrate and said resin layer with said adhesive layer being in contact with said one side of said sub-

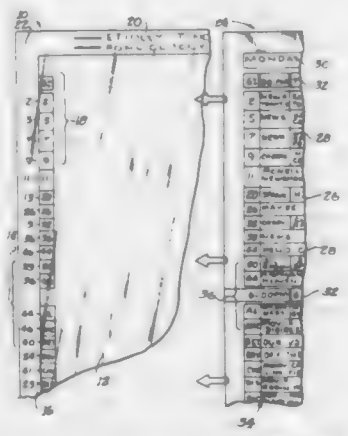
strate having said indicia, said inter-layer peel ply being adhered to said resin layer with an adhering strength which is less than the adhering strength between said inter-layer peel ply and said base material, less than adhering strength between said resin layer and said adhesive layer, and less than adhering strength between said adhesive layer and said substrate, said base material and inter-layer peel ply being peelable off of said resih layer as separation occurs between said inter-layer peel ply and said resin layer, said indicia on said substrate being viewable through said transparent resin layer and said transparent adhesive layer after said opaque base material and said inter-layer peel ply have been peeled off of said resin layer.

5,011,191

VIEW-THROUGH INFORMATION CONVERTER

James M. Gannon, and Germaine A. Gannon, both of 21 W. 542 22nd St., Glen Ellyn, Ill. 60137

Filed May 23, 1990, Ser. No. 527,588
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—115 **8 Claims**



1. An information converter in combination with a pre-printed information listing, said information converter comprising transparent film means for superimposing onto said pre-printed information listing such that substantially all of the information presented on said information listing is viewable through said transparent film means, first cross-reference means on one side of said transparent film means for converting a predetermined portion of the information presented on said information listing into directly usable data thereby facilitating utilization of the information presented on said information listing, said first cross-reference means comprising a series of graphic indicia corresponding to graphic indicia appearing on the pre-printed information listing, and alignment means for enabling proper alignment of said first cross-reference means with the predetermined portion of the information listing to be converted.

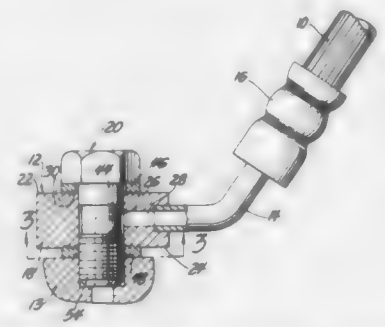
5,011,192

BOLT RETAINING HYDRAULIC END FITTING ASSEMBLY

Juan M. Campo, Bloomfield Hills, Mich., assignor to Michigan Brake Manufacturing, Inc., Troy, Mich.

Filed Dec. 18, 1989, Ser. No. 451,867
Int. Cl.[5] F16L *55/00*
U.S. Cl. 285—23 **6 Claims**

1. An end fitting assembly of the type including a housing having a pair of generally planar and parallel spaced faces, a cylindrical chamber extending through said housing and opening into said faces, a plurality of circular V-shape grooves formed in each of said faces and concentric with said chamber, a passage extending through said housing and having an inner end communicating with said chamber said passage having an outer end, a fluid supply conduit secured to said housing and communicating with the outer end of said housing passage, a bolt having a shank adapted to extend through said cylindrical chamber, said shank having a circumferentially reduced portion communicating with said housing passage, the end of said shank remote from the bolt head and extending from the reduced portion being threaded, an axial passage formed in said bolt shank and terminating at one end at the shank end opposite the bolt head, a transverse passage formed in said shank and communicating said axial passage with th· circumferentially reduced shank portion, a first all metal washer disposed between the bolt head and one of said housing faces and overlaying the associated concentric grooves and a second all metal washer surrounding the threaded portion of the bolt shank and adapted to loosely retain the bolt to said housing proximate the other and adjacent face of said housing, the improvement comprising:



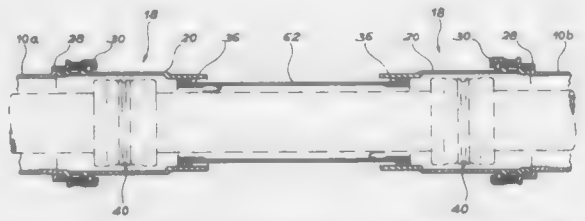
said second washer being circular and overlaying a plurality of said concentric housing grooves, a circular area proximate the inner circumference of the second washer being displaced radially inwardly to interengage with the threaded shank to retain said bolt to the housing.

5,011,193

DEVICE FOR THE TIGHT, DISMANTLABLE COUPLING OF TWO TUBES, PARTICULARLY FOR A FUEL TRANSFER INSTALLATION

Alain Porte, Colomiers, France, assignor to Aerospatiale Societe Nationale Industrielle, France

Filed Nov. 22, 1989, Ser. No. 440,712
Claims priority, application France, Nov. 25, 1988, 88 15413
Int. Cl.[5] F16L *39/04*
U.S. Cl. 285—31 **4 Claims**



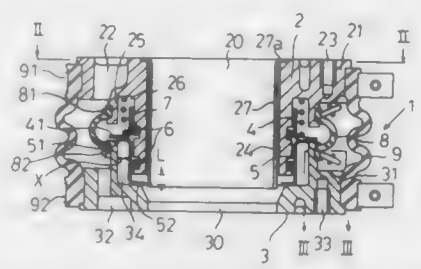
1. A dismantlable external device for the tight coupling of first and second external tubes, surrounding first and second internal tubes connected by a dismantlable internal coupling device, said dismantlable external device comprising a connecting sleeve and means for the tight fixing of a first end of said sleeve to the first external tube, a second end of the connecting sleeve being in tight contact with the second external tube, in such a way that the sleeve can slide on the latter following the dismantling of the tight fixing means, thus allowing a free access to the dismantlable internal coupling device.

5,011,194

FLEXIBLE PIPE CONNECTING DEVICE FOR HIGH TEMPERATURE FLUID

Shigemitsu Nitta, Kakogawa, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Japan

Filed Oct. 5, 1989, Ser. No. 417,271
Claims priority, application Japan, Oct. 8, 19[illegible], 63-131991[U]
Int. Cl.[5] F16L *53/00*
U.S. Cl. 285—41 **3 Claims**



1. A pipe fitting device which passes high temperature fluid therein, and connects pipings with dynamic relative dislocation to each other of longitudinal and lateral directions, comprising:

a first cylindrical block (2) which has a cylindrical ring portion (24) having a through hole (20) at a center for passing said fluid, and a flange (21) formed on an outside of one end of said ring portion (24) facing to an end of one of said pipings;

a second cylindrical block (3) which has a flange (31) one surface thereof faces to an end of the other of said pipings, and an annular edge member defining an opening (34) incorporating with play the ring portion (24) of said first cylindrical block (2), said edge member is formed on the opposite surface of said flange (31);

a follower ring (5) which is disposed between the ring portion (24) of said first cylindrical block (2) and the edge member of the opening (34) of said second cylindrical block (3), in contact with the outer circumferential surface of the ring portion (24) of the first cylindrical block (2) and has a bent end portion (51) in sliding contact with a edge member end surface of the opening (34) of the second cylindrical block (3);

a spring (7) which pushes said follower ring (5) to the second cylindrical block (3) side;

flexible connection sleeves (9,8) which respectively connect the flanges (21,31) of said first cylindrical block (2) and the second cylindrical block (3), as well as the ring portion (24) of the first cylindrical block (2) and the edge member end portion of the opening (34) of the second cylindrical block (3); and

through holes (22,32) which are respectively drilled into the first and second cylindrical blocks (2,3) to communicate with the gap between said connection sleeves (8,9) so as to flow cooling medium.

5,011,195

CONSTANT VOLUME CONNECTOR

Douglas J. Nightingale, Jonesboro, Ga., assignor to Rolls-Royce Inc., Atlanta, Ga.

Filed Dec. 18, 1989, Ser. No. 452,278
Int. Cl.[5] F16L *27/00*
U.S. Cl. 285—302 **15 Claims**

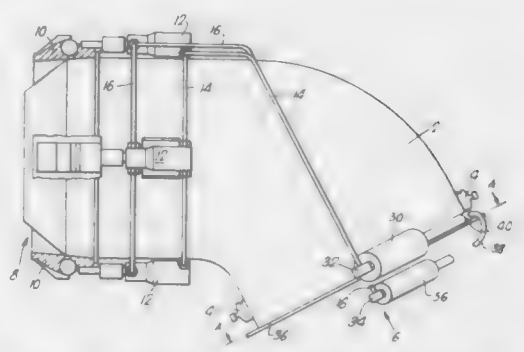
1. A constant volume connector for providing a constant volume fluid path joining two conduits having compound relative movement therebetween in any direction, said connector comprising:

a telescoping assembly comprising a plurality of hollow members which define a first internal fluid path of variable length;

swivel means at either end of the telescoping assembly for connecting said first internal fluid path with the moveable conduits;

cylinder means moveable with one of said plurality of hollow members of the telescoping assembly;

piston means moveable with another of said plurality of hollow members, said piston means being slidably engaged with said cylinder means to define a second internal fluid path having a volume which varies according to the length of the telescoping assembly and in inverse proportion to the volume of said first internal fluid path; and



transfer means connecting said second internal fluid path with said first internal fluid path;

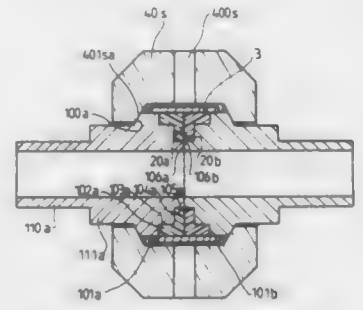
whereby for a change in length of the telescoping assembly, the change in volume of said second internal fluid path by displacement of the piston means is equal to the opposite change in volume of the first internal fluid path due to the compound relative movement of the conduits in any direction.

5,011,196

UNION FOR FLUID CONDUITS, IN PARTICULAR FOR HIGH PURITY GAS

André Sabatier, 83, avenue du Président Kennedy, 94190 Villeneuve Saint-Georges, and Raymond Depraetere, 1, rue des Coquelicots, 91000 Evry, both of France

Filed Apr. 9, 1990, Ser. No. 506,110
Claims priority, application France, Apr. 12, 1989, 89 04836
Int. Cl.[5] F16L *19/02*
U.S. Cl. 285—367 **16 Claims**



1. A union for fluid conduits comprising:

(A) two end fittings, each having:

(a) a fixing end intended to join to at least one respective conduit;

(b) a free connecting face;

(c) a coaxial metallic body, having an internal bore whose diameter is continuous with that of the conduit to be connected to it and presenting externally thereon, starting from a proximal point at said fixing end, a conical bearing surface flaring outwardly towards a cylindrical bearing surface, said cylindrical bearing surface being followed by at least one flat shoulder radially inwardly recessed towards and connected to a central projecting

cylindrical portion, said central projecting cylindrical portion projecting in a direction axially away from said fixing end and terminating in an annular radially inwardly extending polished distal section where said internal bore issues;

(d) a washer having an external cylindrical shape and made of a deformable synthetic material, said washer being contact-fitted on the central cylindrical portion to abut against said flat shoulder, and having a flat annular radial face which, together with said polished section, forms the free connecting face,

(B) a metallic elongate cylindrical ring internally accommodating with a contact fit the two washers and a part at least of each of the two cylindrical bearing surfaces of said two end fittings when placed face to face, so that the two free connecting faces come to be opposite each other;

(C) two half-shells having two conical bearing surfaces similar to the two respective conical bearing surfaces of the two metallic coaxial bodies, and

(D) means for clamping these two half-shells together to ensure the connection of the fluid conduits.

5,011,197

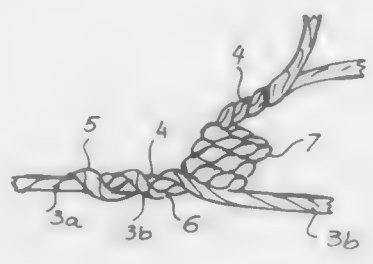
METHOD FOR TYING TWINES INTO CLOSED LOOPES

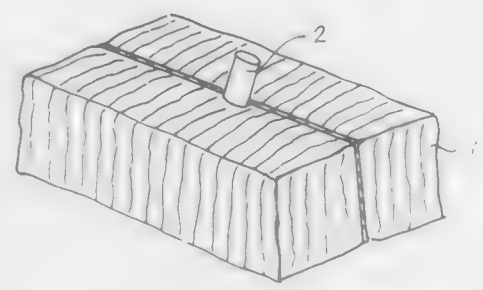
Joseph Molitorisz, 1506 13th St., Ames, Iowa 50010

Filed Jan. 31, 1990, Ser. No. 472,853

Int. Cl.[5] B65H *69/04*

U.S. Cl. 289—1.5 **1 Claim**





1. A method to secure a twine including a pair of strands tightly wrapped in a closed loop around an object comprising the steps of, placing the twine around an object in suitable length to form a loop around the object,

placing ends of the pair of strands which includes two single strands together, twisting the two single strands into a double strand forming a tightly wrapped closed loop of the twine around the object,

continuing the twisting action and causing a portion of one of the single strands of the twine forming the tightly wrapped loop around the object to be twisted together with a portion of the double strand, forming a triple strand of the twine with the direction and sense of the winding of the double strand and one of the single strands being opposite to the direction and sense of the twisting of the two single strands into a double strand, resulting in the overlapping twisting of the single and the double strands of the said twine, producing a knotting effect on the looped twine, preventing the reversal of the twisting of the strands of the twine under the action of the tensile forces acting on the looped twine securing the looped twine around the object, continuing the twisting action of the portion of the double strand of the twine not being twisted into the triple strand to form a coiled configuration while moving the ends of the pair of strands toward the object following the changes in the length of the twisted strands during the twisting process, and releasing the twine.

5,011,198

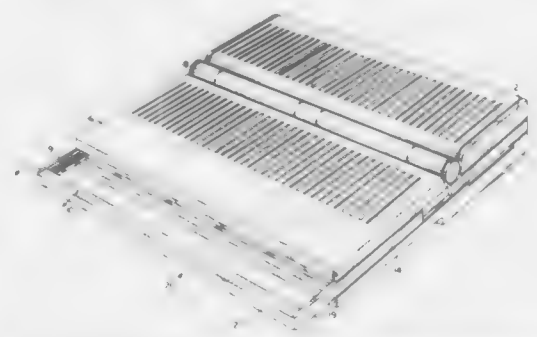
HANDLE LATCH ASSEMBLY

Eric I. Gruenberg, Soquel; James R. Stewart, San Jose, and James J. Halicho, Sunnyvale, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Apr. 20, 1989, Ser. No. 341,048

Int. Cl.[5] E05C *9/02;* **B65D** *25/28*

U.S. Cl. 292—41 **13 Claims**



1. An improved handle and latch assembly for a portable personal computer comprising:

a handle means slideably coupled to a cover of said computer;

a latching means moveably disposed with said cover and extending partially out of said cover, said latching means engaging with an opening disposed on said computer such that when said latching means is engaged with said opening said cover is locked in a first position;

wherein when said handle slides in a first direction, said handle contacts and moves said latching means thereby disengaging said latching means from said opening and allowing said cover to be moved away from said first position.

5,011,199

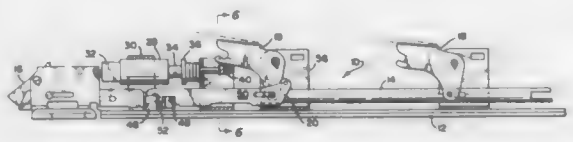
PANIC EXIT DEVICE HAVING AN EXIT-DELAYING MECHANISM

Peter E. Lowe, San Francisco; Peter H. Muller, Los Gatos, both of Calif.; Michael D. Coleman, Zionsville, and Paul J. Haeck, Indianapolis, both of Ind., assignors to Von Duprin, Inc., Indianapolis, Ind.

Filed Dec. 28, 1989, Ser. No. 458,194

Int. Cl.[5] E05C *3/08*

U.S. Cl. 292—92 **30 Claims**



1. A panic exit device having an exit-delaying mechanism, comprising:

an elongated frame;

a latchbolt mounted to said frame for movement relative thereto between a first, latched position in extension, outwardly, from said frame, and a second, unlatched position retracted, and substantially confined, within said frame;

manually-actuated linkage means having (a) a linkage coupled to said latchbolt and mounted to said frame for movement relative to, and only lengthwise of, said frame, for moving said latchbolt from said first position to said second position, and (b) an arm, pivotally mounted to said frame, and coupled to said linkage, for moving said linkage lengthwise of said frame;

first means mounted to said frame, and movable relative to said frame between a first disposition thereof (a) for obstructing movement of said linkage means, and a second disposition thereof (b) for obstructing movement of said linkage means; and

second means mounted to said frame operative in response to, and with a specific time delay following, manual actuation of said linkage means, for moving said first means from said first disposition thereof to said second disposition thereof.

5,011,200

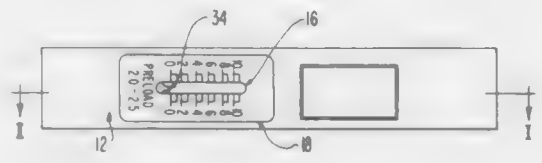
LATCH WITH PRELOAD INDICATION

Jerry L. Glancy, Wichita, and John C. Birch, Derby, both of Kans., assignors to The Boeing Company, Seattle, Wash.

Filed Nov. 21, 1989, Ser. No. 439,337

Int. Cl.[5] E05C *5/00*

U.S. Cl. 292—113 **15 Claims**



1. A latch for selectively securing together a pair of relatively movable panels in an aircraft, said latch comprising:

a latch keeper attached to one of the panels;

a latch handle pivotally attached to the other panel and moveable between open and closed positions;

a latch hook connected to said handle and disposed to selectively engage said keeper; and

means for visually indicating the relative value of a preload engagement force between said hook and said keeper, said force existing when said latch is closed.

5,011,201

FRONT STRUCTURE OF VEHICLE BODY

Hisao Takahashi, Higashihiroshima; Kaoru Yamane, Hiroshima; Kiyomi Hirakami, Hiroshima, and Kazuo Ikeda, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jul. 7, 1988, Ser. No. 216,660

Claims priority, application Japan, Jul. 10, 1987, 62-106895

Int. Cl.[5] B62D *23/00*

U.S. Cl. 296—203 **6 Claims**

1. A front structure for a vehicle body having an engine room at its front end, said front structure comprising:

(a) front side frames, each extending in a longitudinal direction of the vehicle body along opposite sides of an engine room and formed of an outer member and an inner member forming a closed cross section,

(b) a dashboard lower panel extending vertically and disposed near rear edges of said front side frames,

(c) a floor panel extending rearwardly from a lower edge of said dashboard lower panel,

(d) side sills, each extending in the longitudinal direction of the vehicle body along opposite sides of the floor panel and formed of an outer panel and an inner panel forming a closed cross section,

(e) a projection extending from the front end of each of said side sills, each projection extending inwardly from the front end of each of said side sills relative to said vehicle body and having a front surface extending in a transverse direction of said vehicle body and an inner surface extending generally in a longitudinal direction of said vehicle body,

(f) a pair of connecting members, each of said pair of connecting members affixed to one of said front surfaces of



said projections and extending inwardly beyond said inner surface and affixed to a rear part of the outer member of one of said front side frames, and

(g) a pair of reinforcing members, each of said reinforcing members interposed between said dashboard lower panel and one of said connecting members and affixed to said dashboard lower panel and said one of said connecting members.

5,011,202

HANDLE ASSEMBLY FOR USE WITH DOOR LOCKING DEVICE

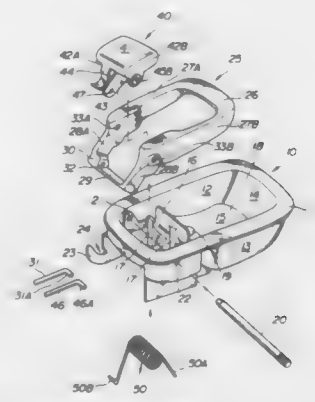
Yuichi Kato, and Masazumi Miyagawa, both of Yokohama, Japan, assignors to Ohi Seisakusho Co., Ltd., Yokohama, Japan

Filed Mar. 7, 1989, Ser. No. 320,060

Claims priority, application Japan, Mar. 24, 1988, 63-37686[U]

Int. Cl.[5] E05B *5/00*

U.S. Cl. 292—336.3 **16 Claims**



1. A handle structure comprising:

a body having a recess formed therein;

an integral handle proper comprising a bent rectangular frame and including a first U-shaped part and a second U-shaped part which is inclined relative to said first U-shaped part, each of said first and second U-shaped parts comprising two generally parallel legs and a cross portion, said cross portion of said second U-shaped part defining a bridge portion which includes a connecting part to which an operating member is connected;

means for pivotally connecting said frame of said handle proper in such a manner that said second U-shaped part is kept received in said recess of said body even when, due to a pivotal movement of said handle proper, said first U-shaped part is pivoted outside said body;

a knob received in and pivotally held by said frame of said handle proper; and

biasing means for biasing said handle proper in such a direction as to draw said first U-shaped part toward a bottom wall of said recess of said body;

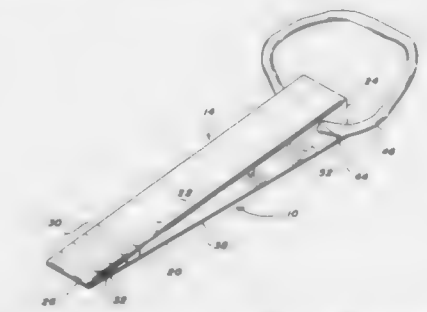
wherein pivotal connection between said handle proper and said body and pivotal connection between said knob and said handle proper are achieved through a common hinge pin which is pivotally supported by opposed side walls of said body;

wherein said hinge pin passes through aligned openings which are formed at a junction of said first U-shaped part and said second U-shaped part;

wherein said biasing means comprises a coil spring which is disposed about said hinge pin having one end engaged to said body and the other end engaged to said second U-shaped portion; and

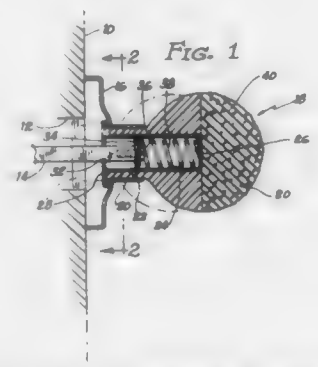
wherein said second U-shaped part is formed with a bored thicker portion which is thicker in cross section than the cross section of the rest of said second U-shaped part and to which a hook portion of a first operating rod is pivotally connected.

5,011,203
SECURITY DOOR BLOCK
Donald L. W. Tackett, R.R. 4, Box 317, Salem, Ill. 62881
Filed Oct. 4, 1990, Ser. No. 592,961
Int. Cl.[5] E05C *17/54*
U.S. Cl. 292—343 **12 Claims**



1. A security door block comprising a wedge shaped body member adapted to be inserted between the lower edge of a closed door and a floor and having a floor engaging side and a door engaging side converging from a rear end towards an apex end, said door engaging side inclined at a low angle to the floor engaging side between 4 degrees and 10 degrees to maximize the mechanical advantage of the wedging action between the lower edge of the door and the wedge shaped body, said floor engaging side having a floor engaging surface composed of a material the frictional resistance of which with the floor is appreciably greater than the frictional resistance of the lower edge of the door with the door engaging side of the wedge shaped body, said apex end of the wedge shaped body including means for manually and selectively truncating the apex end whereby the wedge shaped body can be trimmed for use with doors of different thicknesses and doors hung at different spacings between the lower edge of the door and the floor such that the apex end does not extend beyond the outside lower edge of the door where it could be kicked.

5,011,204
RESILIENT DOOR KNOB
Randall C. Labrum, 2862 Via del Alazan, Bonita, Calif. 92002
Filed Apr. 30, 1990, Ser. No. 516,806
Int. Cl.[5] E05C *21/02*
U.S. Cl. 292—347 **7 Claims**



1. A resilient doorknob assembly for engaging the doorlatch structure of a door having a transverse shaft which operates a latch element when rotated, said doorknob comprising:

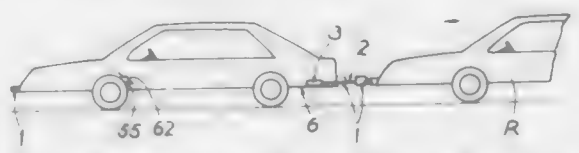
(a) a knob body;

(b) a shaft mounting which mounts said knob body and slidably engages said shaft in operation;

(c) limit means defining limits to the travel of said knob body as it travels toward and away from said door; and

(d) bias means biasing said knob body away from said door such that upon said doorknob impacting an obstacle, it will yield axially on the end of said shaft against said bias means.

5,011,205
TELESCOPICALLY-OPERATED SAFETY VEHICLE BUMPER
Shiu-Yen Liu, P.O. Box 55-47, Taipei, Taiwan
Filed Jul. 9, 1990, Ser. No. 549,754
Int. Cl.[5] B60R *19/02*
U.S. Cl. 293—5 **2 Claims**



1. A telescopically-operated vehicle bumper comprising:

a bumper secured on two guide rods reciprocatively held on a chassis of a car body;

a driving means operatively extending said bumper outwardly for preventing a direct hit on the cat body by an external impact force acting on said bumper, and operatively retracted to be approximate to the car body;

a driving fluid booster producing a high pressure fluid for driving said driving means for extending or retracting said bumper; and

a control means having a sensor operatively trodden by a brake pedal for actuating an electrical control circuit for controlling the extending or the retraction of said bumper, the improvement which comprises:

said driving means including at least one set of twin cylinders having a primary cylinder and a secondary cylinder respectively provided with two pistons in said two cylinders secured on two opposite ends of a piston rod connected to one said guide rod, said primary cylinder having a left hole formed in a left end portion of the primary cylinders for directing driving fluid therethrough, said secondary cylinder having a right hole formed on a right end portion of the secondary cylinder for directing fluid therethrough opposite to the primary cylinder, said piston rod reciprocating through a right rod hole formed on a right end portion of the primary cylinder and through a left rod hole formed on a left end portion of the secondary cylinder, whereby when directing a driving fluid into said primary cylinder to push two said pistons and releasing the fluid in said secondary cylinder, said piston rod, said guide rod, said bumper can be extended outwardly, and upon a flowing of the driving fluid into the secondary cylinder and releasing of the fluid from the primary cylinder, the bumper can be retracted; and

said control means including a first solenoid valve normally closed and provided in a first pipe operatively open for directing fluid into said primary cylinder, a second solenoid valve normally closed and provided in a seccond delivery pipe operatively opened for directing fluid into said secondary cylinder, a third solenoid valve normally closed and provided in a vent pipe branched from said first delivery pipe operatively opened for releasing fluid from said primary cylinder, and a fourth solenoid valve normally closed and provided in another vent pipe branched from the second delivery pipe operatively opened for releaasing fluid from said secondary cylinder, and a first microswitch provided in said sensor operatively depressed by a brake pedal for extending the bumper, a second microswitch provided at a left dead point of the pistons to be operatively actuated by an actuating roller secured on an inner end portion of the guide rod for switching off an extension indicator lamp when retracting the bumper, a third microswitch provided at a right dead point of the pistons to be operated by said actuating roller for closing said first and fourth solenoid valves for stopping the outward extending of the bumper, and a fourth microswitch provided at the left dead point of the pistons to be operatively depressed by said roller for closing said second and third solenoid valves for stopping the inward retraction of the bumper, said extension indicator lamp being lit when powered by the electrical control circuit through said second microswitch normally closed upon an extension of the bumper.

5,011,206
DEVICE FOR EXTRACTING FOREIGN PIECES OR PARTICLES FROM FUEL ASSEMBLIES OF A NUCLEAR REACTOR
Louis Guironnet, Lyons, France, assignor to Framatome, Courbevoie and Cogema, Velizy Villacoublay, both of, France
Filed Jun. 30, 1989, Ser. No. 373,554
Claims priority, application France, Jul. 4, 1988, 88 9025
Int. Cl.[5] G21C *19/26*
U.S. Cl. 294—86.41 **6 Claims**



1. Device for extraction of foreign particles from fuel assemblies of a core of a nuclear reactor which fuel assemblies are placed under water in a pool, said device comprising

(a) a vertical pole having an upper end and a lower end;

(b) a manipulating member at said upper end of said pole for displacing said pole in horizontal and vertical directions;

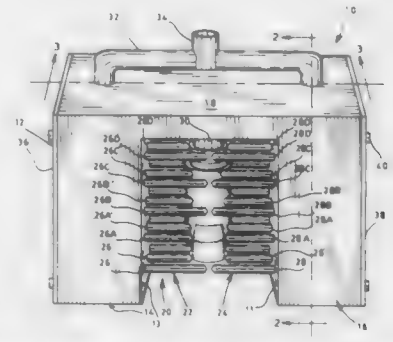
(c) a gripper support mounted pivotally about a horizontal axis at said lower end of said pole;

(d) a gripper of a shape and size adapted to an extraction to be performed and being fastened to one end of said gripper support;

(e) elastic return means cooperating with said pivoting gripper support so as to return said gripper into a grasping position distant from a vertical axis of said pole; and

(f) a control mechanism for opening and closing said gripper, said gripper support comprising a flexible element passing through a sheath connected directly, at a first end of said sheath, to a movable nose of said gripper and connected, at a second end of said sheath, to means for exerting a pull and a push on said flexible element, making it possible to open and close said gripper.

5,011,207
ROBOTIC END EFFECTOR FOR GRASPING OBJECTS
S. Scott Stevens, Rte. 1, Box 302A, Harriman, Tenn. 37748
Continuation-in-part of Ser. No. 80,616, Aug. 3, 1987, Pat. No. 4,896,914. This application Nov. 20, 1989, Ser. No. 439,776
The portion of the term of this patent subsequent to Jan. 30, 2007, has been disclaimed.
Int. Cl.[5] B25J *9/14*
U.S. Cl. 294—88 **2 Claims**



1. A device for grasping an object having a surface, which comprises:

a substantially hemispherical housing defining a central cavity for at least partially receiving said object;

a plurality of arcuate finger units carried by said housing, said finger units each having a distal end for engaging said surface, and a further end positioned within said housing, said plurality of finger units being sufficient in number to support said object when said object is grasped by said distal ends of said finger units;

guide means for each of said finger units, said guide means providing for movement of said finger units along fixed arcuate paths relative to said housing into and out of said central cavity; and

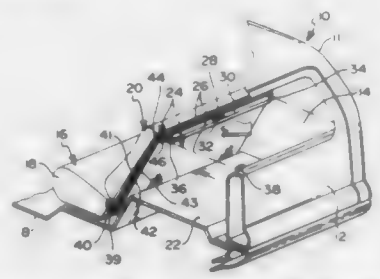
movement means operatively associated between said housing and each of said finger units for selective reciprocative movement of said finger units along their individual axes in said fixed arcuate paths from a first position substantially stored within said housing to a second position within said central cavity to engage said surface of said object with said distal ends, and for selective movement to return to said first position and release said surface of said object.

5,011,208

CONCEALED INTEGRATED SEAT CARGO SCREEN

Sandra Lewallen, Rochester Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 23, 1990, Ser. No. 488,818
Int. Cl.[5] B60R 5/04
U.S. Cl. 296—37.16 4 Claims



1. In a vehicle body having a cargo floor accessible through a vehicle body door and a rear seat having a seat back that folds forwardly to extend the cargo floor, a cargo screen for covering the cargo floor comprising;

a flexible screen having a forward and rearward end;

means for removably attaching the rearward end of the flexible screen to the vehicle body aft of the rear seat;

a reel means mounted on the vehicle body below the cargo floor level for mounting the forward end of the flexible screen; and

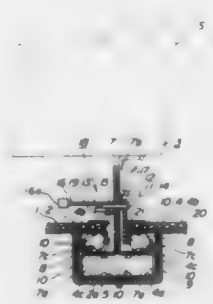
guide means mounted on the seat back of the rear seat above the cargo floor for guiding the flexible screen from the reel means towards the means for removably attaching whereby the reel means is concealed beneath the cargo floor and the screen is suspended above the cargo floor to conceal the cargo floor.

5,011,209

ARRANGEMENT FOR MOUNTING SEAT SLIDING DEVICE ON VEHICLE FLOOR

Isamu Takarabe; Mikio Honma, and Hatsuo Hayakawa, all of Yokohama, Japan, assignors to Ohi Seisakusho Co., Ltd., Yokohama, Japan

Filed Jul. 25, 1989, Ser. No. 384,703
Claims priority, application Japan, Jul. 26, 1988, 63-184496
Int. Cl.[5] B60N 1/08
U.S. Cl. 296—65.1 13 Claims



1. In a motor vehicle, a sliding seat arrangement, comprising:

a groove in said vehicle floor;

a seat sliding device which comprises two units, each including a stationary rail, a movable rail slidably interlocked with said stationary rail and movement smoothing means for smoothing the movement of said movable rail relative to said stationary rail, one unit of said seat sliding device being tightly received in said groove having a given part of said movable rail projecting upward from said groove;

a rug spread on said vehicle floor in a manner to cover said groove, said rug having an elongated slit through which said given part of said movable rail is projected upward, said elongated slit extending along said groove of said floor, so that the sliding movement of said movable rail relative to said stationary rail causes said given part of the movable rail to move in and along said elongated slit; and

second means connecting said given part to said seat,

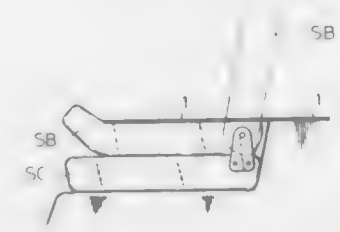
wherein the length of said stationary rail is longer than that of said movable rail.

5,011,210

STRUCTURE FOR FIXING THE TERMINAL END OF CARPET IN AUTOMOTIVE SEAT

Nobuhiro Inoue, Akishima, Japan, assignor to Tachi-S Co. Ltd., Tokyo, Japan

Filed Apr. 10, 1990, Ser. No. 507,163
Int. Cl.[5] B60R 5/00
U.S. Cl. 296—69 6 Claims



1. A structure for fixing a terminal end of a carpet in an automotive seat, in which a seat back of said seat has a rear side as part of said seat back to be used as a load-carrying platform and the carpet is attached to said rear side of said seat back, and said structure comprising:

a recessed area formed in said rear side of said seat back, in which recessed area has a projecting member;

an anchor member of a generally T-shaped configuration in section, which is fixed to an end of a covering member affixed over a frontal side of said seat back, said anchor member comprising a horizontal plate area and an engagement portion projecting from said horizontal plate area, said horizontal plate area having a securing part for securing a terminal end of said carpet in said recessed area;

wherein, said engagement portion of said anchor member is engaged with said projecting member at said recessed area, said terminal end of said carpet is pressed down by said securing part of said anchor member, so as to secure said end of said covering member and terminal end of said carpet into said recessed area, whereby the carpet is positively fixed to said rear side of said seat back.

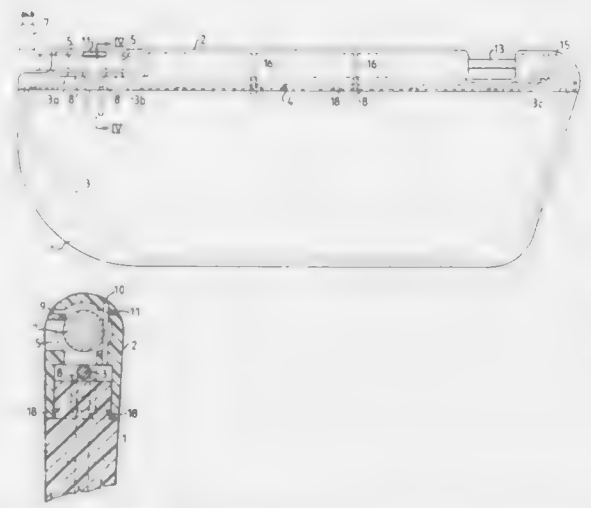
5,011,211

SUN VISOR FOR MOTOR VEHICLES

E. Gunnar Svensson, Malung, Sweden, assignor to Autopart Sweden AB, Malung, Sweden

Filed Apr. 13, 1989, Ser. No. 337,740
Claims priority, application Sweden, Apr. 29, 1988, 8801630
Int. Cl.[5] B60J 3/00
U.S. Cl. 296—97.1 20 Claims

1. Sun visor for motor vehicles comprising an oblong plate (1) of soft material, a main bearing for rotatable bearing of a main shaft and a shaft holder for a second shaft, the main bearing and the holder being spaced from each other and arranged on an oblong, rigid body (2), which is rigidly fixed to one long side (4) of the plate (1) to form a smooth transition to the plate, reinforcing means embedded in the plate, and reinforcing means having, on the side (4) of the plate facing the rigid body (2), portions (3a, 3b, 3c) extending outside the plate, the rigid body having clip-like means (8) attachable to the



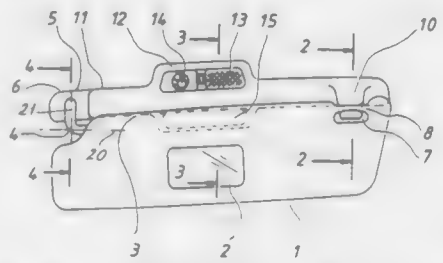
reinforcing means (3), which are snapped over the reinforcing means to fix the rigid body to a long side of the soft plate (1).

5,011,212

SUN VISOR AND SUPPORT STRUCTURE FOR MOTOR VEHICLES

Lothar Viertel, Altforweiler, Fed. Rep. of Germany, and Patrick Welter, Lachambre, France, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany

Filed Nov. 9, 1989, Ser. No. 435,031
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1988, 3838117
Int. Cl.[5] B60J 3/00
U.S. Cl. 296—97.9 3 Claims



1. A sun visor and support structure for a motor vehicle, which comprises:

a sun visor body having a longitudinal edge extending from a first side edge of the body to a second, opposed side edge, the sun visor body further having a recess defined in the longitudinal edge adjacent to the second side edge and a bore substantially parallel to the longitudinal edge and disposed adjacent to such longitudinal edge;

a support shaft extending across the recess approximately parallel to the longitudinal edge and connected at the ends thereof to the sun visor body;

an L-shaped arm having a first portion rotatably received within the bore of the sun visor body and having a second portion extending substantially perpendicular from the first portion; and

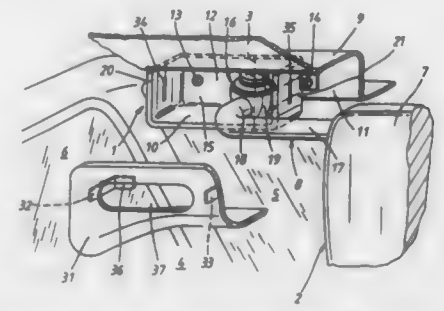
an elongated support member adapted to be mounted over a front windshield of the motor vehicle and having a length approximately equal to a length of the longitudinal edge of the sun visor body, the support member having an integral bracket at one end for rotatably receiving the second portion of the L-shaped arm so that the sun visor body may rotate about a first axis passing through the second portion and having an integral bracket at another end for detachably and rotatably receiving the support shaft so that the sun visor body may rotate about a second axis which is substantially perpendicular to the first axis and which passes through the first portion of the L-shaped arm.

5,011,213

SWIVEL BEARING FOR A SUN VISOR

Gerhard Zweigart; Ferdinand Greiner, both of Aidlingen; Heinz Baumert; Peter Scheiffele, both of Sindelfingen, and Manfred Nowak, Solingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed Sep. 5, 1989, Ser. No. 402,537
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1988, 3829976
Int. Cl.[5] B60J 3/02
U.S. Cl. 296—97.13 13 Claims



1. Swivel bearing for a vehicle sun visor, which sun visor can be swivelled about a vertical axis of the vehicle into a covering position oriented approximately horizontally in its longitudinal extension, in front of either a front or a side window, which bearing has a curved bearing rod which is accommodated in a sun visor body of the sun visor and is swivellably mounted in a bearing bracket fixed to a vehicle windscreen frame extending transversely about a front vehicle window, wherein the bearing bracket exhibits a hollow space open towards the vehicle interior, said bearing bracket being fixable in recessed fashion in a recess of the windscreen frame, and wherein the hollow space of the bearing bracket is covered by a covering part mounted at the bearing bracket, said covering part having a slot-shaped swivel opening for the curved bearing rod.

5,011,214

TRUCK BOX COVER

Randolph K. Friesen, 702-351 Saguenay Drive, Saskatoon, Saskatchewan, Canada S7K 5T4 , and J. David A. Wight, General Delivery, Hughenden, Alberta, Canada T0B 2E0

Filed Jun. 25, 1990, Ser. No. 543,097
Int. Cl.[5] B60P 3/32
U.S. Cl. 296—100 21 Claims

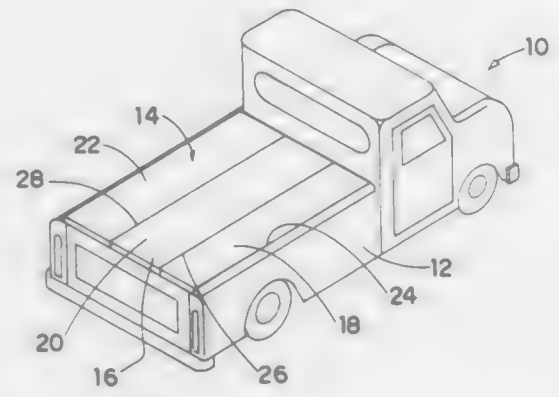
1. In combination with a truck box having parallel side walls and an open top therebetween, a cover for the open top of the box, said cover comprising:

a panel including plurality of panel segments hinged together side by side for folding of the panel segments about parallel hinge axes between an extended condition with the panel segments arranged side by side and substantially coplanar and a folded condition with the panel segments arranged face to face;

mounting means mounting an edge of the panel on one side

of the truck box for pivotal movement about a mounting axis parallel to the hinge axes;

linkage means connecting the panel segments for causing simultaneously movement of the panel segment between the extended and folded conditions; and



support means supporting the panel above the open top of the box such that in the extended condition the panel closes the open top of the box and in the folded condition the panel segments are arranged along said one side of the truck box in an upright orientation.

5,011,215

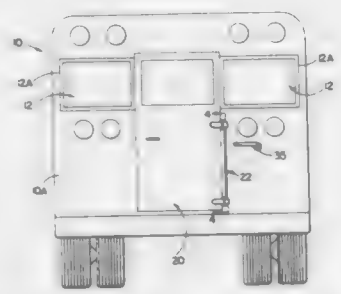
ESCAPE DOOR SYSTEM

Benjamin F. Kalina, Box 377, Bowman, N. Dak. 58623

Filed Jul. 20, 1990, Ser. No. 556,649

Int. Cl.[5] B60J *9/02*

U.S. Cl. 296—146 **19 Claims**



1. An escape door system for a bus having an upright wall member with an escape opening therein, wherein said door system comprises:

(a) an escape door having first and second opposite side edges; wherein said door encloses said escape opening;

(b) at least one aperture in said wall member adjacent said escape opening;

(c) at least one tab member carried by said first side edge of said door, wherein said tab member includes first and second opposite side edges, wherein said first side edge of said tab member is hingedly connected to said first side edge of said door; wherein said second side edge of said tab member projects through said aperture;

(d) retention means interiorly of said bus for retaining said tab member in said aperture; wherein said retention means is movable between a first position in which said tab member is locked in said aperture, and a second position in which said tab member is unlocked;

wherein said escape door can be separated from said wall member when said tab member is unlocked.

5,011,216

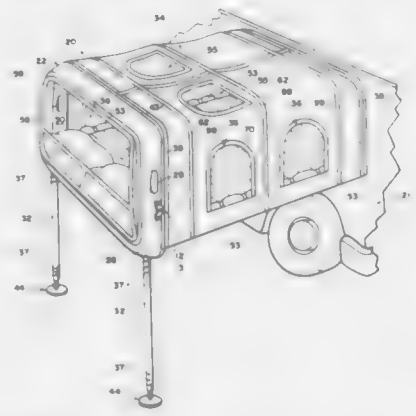
EXPANDABLE SLEEPING COMPARTMENT FOR VEHICLES

Milo Baughman, 24 South 600 East, Salt Lake City, Utah [redacted]102

Filed Jun. 15, 1989, Ser. No. 3[redacted],553

Int. Cl.[5] B60P *3/39*

U.S. Cl. 296—164 **32 Claims**



1. In combination:

a vehicle comprising a side opening; and

a closure segment/sleeping compartment comprising:

housing means which in a closed position comprises means circumscribing the vehicle opening, means spanning across the vehicle side opening and means releasibly securing the housing means in the closed position against inadvertent relocation, the housing means further comprising means releasing the housing means from the closed position and means accommodating substantially rectilinear generally horizontal displacement of the released housing means from said closed position to an open position above a ground location;

vertical support means selectively interposable between the housing means when in the open position and the ground location; and

canopy means comprises substantially rectilinearly displaceable sheet means interposed between the vehicle adjacent to the opening and the housing means to define a tent-like structure in the open position and which collapses in a folded pattern between the vehicle and the housing means in the closed position, the canopy means further comprising substantially rectilinearly foldable base means upon which sleep-accommodating means is supported in generally horizontal relation.

5,011,217

UNIFIED FRAME/BODY ASSEMBLY FOR VEHICLE

Clark C. Simpson, Martin, Mich., and Paul C. Weirs, Lexington, Ky., assignors to Clark Equipment Company, South Bend, Ind.

Filed Feb. 27, 1990, Ser. No. 489,735

Continuation of Ser. No. 244,288, Sep. 15, 1988, abandoned.

Int. Cl.[5] B62D *23/00;* **B60R** *11/24*

U.S. Cl. 296—203 **13 Claims**

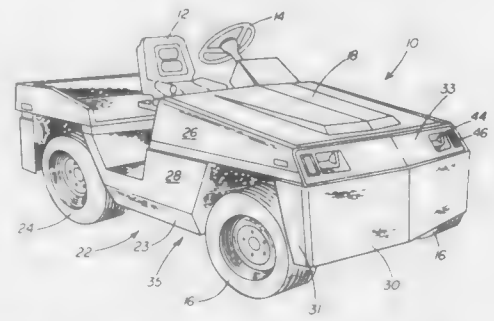
1. A unified frame/body assembly for supporting the weight of a vehicle with suspension means and connected to ground engaging wheels, comprising:

a reinforced center body section;

flexible suspension means;

a bumper member;

means for mounting the flexible suspension means to said body section, both said reinforced center body section and said mounting means having a forward terminus spaced from said bumper member;



means for connecting said flexible suspension means to said bumper member so that said flexible suspension means extends directly between and bridges said mounting means of said body section and said bumper member; and

quarter panel means and hood means structurally bridging between said body section and said bumper member.

5,011,218

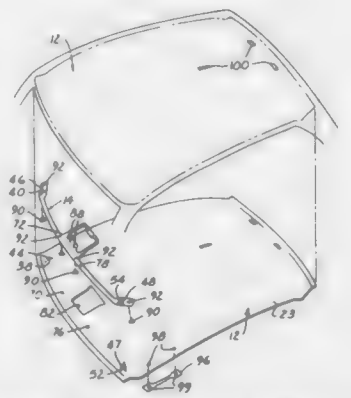
HEADLINER

Edward L. Danner, Warren, and Alan D. Picken, Pontiac, both of Mich., assignors to Van Dresser Corporation, Troy, Mich.

Filed Jan. 17, 1989, Ser. No. 297,492

Int. Cl.[5] B60J *7/00*

U.S. Cl. 296—214 **9 Claims**



1. A headliner and retainer assembly adapted to be installed in a vehicle adjacent the roof thereof, said assembly comprising a headliner panel, headliner accessory components, and an elongated retainer bar, said retainer bar extending along one edge portion of said headliner panel on the side thereof which, when said assembly is installed, faces the roof of the vehicle, said components being disposed on the opposite side of said headliner panel and secured to said retainer bar by fasteners extending through said headliner panel to provide a sandwich assembly which is capable of being installed as a unit in the vehicle, and means for securing said retainer bar to the roof structure of the vehicle.

5,011,219

SLIDING RAISABLE ROOF OF FLAT CONSTRUCTION FOR MOTOR VEHICLES

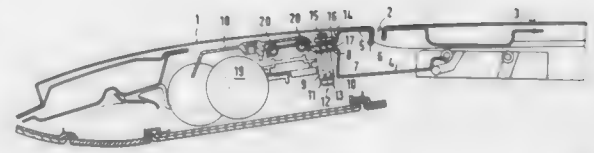
Karl Bauhof, Weinsberg, Fed. Rep. of Germany, assignor to Karosseriewerke Weinsberg GmbH, Weinsberg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 274,202, Nov. 21, 1988, abandoned. This application Jun. 5, 1990, Ser. No. 534,312

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1987, 8715439[U]

Int. Cl.[5] B60J *7/05, 7/053*

U.S. Cl. 296—221 **4 Claims**



1. A raisable sliding roof for a motor vehicle roof with a cutout therein, comprising:

a roof reinforcement disposed on the vehicle roof so as to peripherally surround the roof cutout;

a slidable rigid cover having a front end and a rear end, and which is slidable into a closed position in which the roof cutout is covered, said cover being selectively displaceable into an opening position, in which said cover is released from the roof cutout, and a ventilation position in which the rear end of the cover is raised relative to the roof so as to allow ventilation;

a casing having two halves hinged together so as to be articulated about an axis transverse to the sliding direction of said cover, the casing halves each having outer ends;

elastic joints provided so as to connect the outer end of each of the casing halves to the vehicle roof so that the casing halves are each pivotable at their outer ends about an axis transverse to the cover sliding direction;

lifting and lowering means supported at the vehicle roof for swiveling the casing halves so that the casing is shifted from a substantially horizontally normal position into a downwardly bent position relative to the vehicle roof;

guide rails provided in said casing;

sliding shoes provided in said guide rails and connected to said cover so as to support the front end of said cover;

additional sliding shoes provided in said guide rails, and supporting arms having one end hinged to said additional sliding shoes and another end attached to said cover so as to support the rear end of said cover;

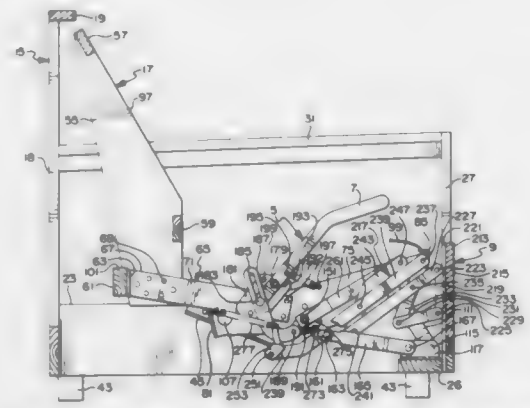
blocks of resilient elastic material and pressure springs arranged so as to support at least one of the casing halves at a horizontal extension region of the roof reinforcement at least partially surrounding the roof opening;

a strip-shaped angle beam which is outwardly directed relative to the roof cutout, and is connected horizontally to an upper edge area of a front wall of said at least one casing half so that said beam and said at least one casing half rest against said blocks of resilient elastic material;

a plurality of screw bolts including one bolt passing through each block so that the block abuts a head of the screw bolt; and

a nut and one of said pressure springs being arranged on each of said plurality of bolts at an end opposite said head so as to support said bolt, said nut and spring being on an upper side of the roof reinforcement relative to the vehicle roof.

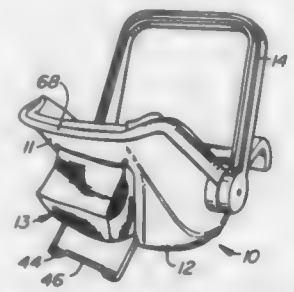
5,011,220
CHAIR MECHANISM
Larry P. LaPointe, Temperance, Mich., assignor to La-Z-Boy Chair Company, Monroe, Mich.
Continuation of Ser. No. 220,558, Jul. 18, 1988. This application Aug. 16, 1990, Ser. No. 568,631
Int. Cl.[5] A47C *1/02*
U.S. Cl. 297—89 **16 Claims**



1. A chair comprising a base, a seat and back frame, support means movably mounting the frame on the base for translatory movement between an upright first position and a recline second position, a transverse shaft mounted at opposite ends on opposite sides of the frame for angular movement in a first direction and for angular movement in a second direction opposite to the first direction and for translatory movement with the frame, connection means connecting the shaft to the base so that said shaft moves in the first direction when said frame moves from the upright first position to the recline second position and said shaft moves in its second direction when said frame moves from the recline second position to the upright first position, said connection means including frame positioning means for holding the frame in the upright first and recline second positions, a leg rest assembly mounted on the frame for movement between a retracted first position and an extended second position, said leg rest assembly being supported on said frame and connected to said shaft so that movement of the shaft in its first direction moves the leg rest assembly from its retracted first to its extended second position, said leg rest assembly being connected to said shaft so that movement of the leg rest assembly from its extended second position to its retracted first position moves said shaft in its second direction and in a translatory direction and thereby moves the frame from its recline second position to its upright first position.

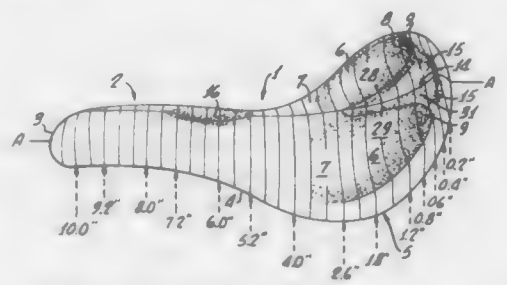
5,011,221
BABY CARRIER
Robert D. Wise, Akron, Ohio, assignor to Century Products Company, Macedonia, Ohio
Continuation of Ser. No. 550,261, Nov. 8, 1983, Pat. No. 4,634,175. This application Jun. 20, 1986, Ser. No. 876,960
Int. Cl.[5] A47D *13/02*
U.S. Cl. 297—191 **10 Claims**

1. A shell type baby carrier comprising:
a shell type seat defining an inside area for holding a baby and including sides forming arm rests, a back, a foot and a head;
a pair of hub gears, one each on the outside of respective arm rests;
a U-shaped support having ends rotatably connected by said hub gears to said arm rests and lockable by said hub gears in a limited number of predetermined positions;
an underside of the seat forming a pair of integral rockers with floor contacting surfaces;
a pouch, having an access opening, sized to fit beneath the underside of the shell, below the head, and between the rockers; and



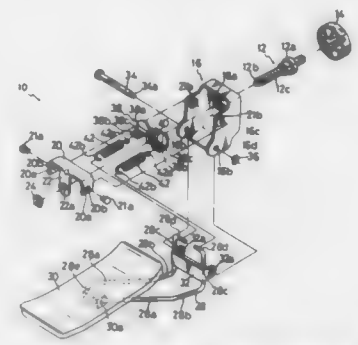
means for releasably securing said pouch to and against the underside of said seat with the access opening at the back of said seat to allow user access to the access opening from the back of the seat.

5,011,222
ORTHOTIC CYCLE SADDLE
Paul M. Yates, 1922 Waltonia Dr., Montrose, Calif. 91020; George R. Yates, 17591 Collins La., Huntington Beach, Calif. 92647, and George Yates, Jr., 151 Cumberland Rd., Glendale, Calif. 91202
Filed Jul. 11, 1989, Ser. No. 378,018
Int. Cl.[5] B62J *1/00*
U.S. Cl. 297—195 **11 Claims**



1. A cycle saddle comprising:
a shell having a single, compound upper seating surface, said seating surface including a forwardly disposed horn member having a generally horizontal upper surface and a rearwardly disposed laterally flaring cantle thrust plate member, the cantle thrust plate member including means, defining a pair of forwardly facing bilateral concavities matching the rise to near vertical portion of the right and left rear ischii of a rider when seated upon said shell, for providing bilateral anatomic support for the ruse to near vertical potion of the right and left ischium including corresponding musculature and tissue, said concavities rising above the generally horizontal upper horn surface;
means defining a forwardly projecting central coccyx support member raised above the generally horizontal upper horn surface, located between said forwardly facing raised bilateral concavities, for supporting the coccyx of the rider and preventing the forward facing concavities from intersecting the coccyx, said central coccyx support member comprises a substantially flat plane having an inclination in the range of about 25 degrees to about 45 degrees relative to said upper horn surface.

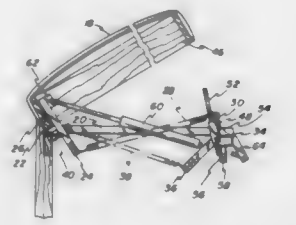
5,011,223
LUMBAR SUPPORT DEVICE FOR VEHICLE SEAT
Sakae Kato, Akishima, Japan, assignor to Tachi-S Co., Ltd., Tokyo, Japan
Filed Aug. 29, 1989, Ser. No. 399,809
Claims priority, application Japan, Jul. 11, 1988, 63-091035
Int. Cl.[5] A47C *3/00*
U.S. Cl. 297—284 **2 Claims**



1. A lumbar support device for a vehicle seat, comprising:
a support arm including a lumbar support plate which is rockable upon and end of said support arm;
a drive shaft which is free to be rotated by a handle fixed thereto; and
a spring means for biasing said support arm in a given direction, said spring means being disposed between said support arm and drive shaft such that said spring means is operatively connected with both said support arm and drive shaft,
whereby operation of said handle causes rotation of said drive shaft which in turns causes expansion and contraction of said spring means so as to adjust a biasing force of said support arm, thus adjusting a lumbar support force at said lumbar support plate; wherein
said drive shaft is formed with a male threaded portion, wherein there is provided a slider means which has a female threaded hole in which is threadedly engaged said male threaded portion of said drive shaft, such that said slider means is movable in a longitudinal direction of said drive shaft, and, wherein said spring means comprises a pair of tension springs which are disposed on opposite sides of and in symmetrical relation to said drive shaft; said spring means being provided between said slider means and support arm;
wherein a container-like bracket is fixed to a lower portion of a seat back frame of said seat, and
wherein said support arm is rotatably connected to a lower part of said bracket by means of a support pin, wherein a support bracket having a hole formed therein, in which one end of said drive shaft is rotatably secured, is fixed in an upper part of said bracket, and wherein said bracket has a hole through which the other end portion of said drive shaft is rotatably supported, in such a manner that said drive shaft is free to be rotated and prevented against movement in a longitudinal direction thereof.

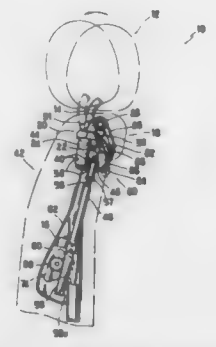
5,011,224
ARISE-ASSIST CHAIR
Gerald S. Paul, 201 E. Westcott, Liberty, Ind.
Filed Nov. 20, 1989, Ser. No. 439,218
Int. Cl.[5] A47C *1/02*
U.S. Cl. 297—339 **15 Claims**

1. An assist chair for assisting a person in rising from a sitting to a standing position, the improvement comprising:
a frame,
a seat attached to said frame at a pivot point for pivotal movement upward and downward relative to said frame,
pivot means extending from a lower portion of said seat wherein said pivot means is attached to said seat in stationary relationship thereto,
attachment means supported by mounting means mounted to said frame, said attachment means defining an attachment point thereon and said attachment point on said attachment means being supported for movement toward and away from said pivot point and pivot means,
first biasing means connecting said pivot means and said attachment point on said attachment means for biasing said pivot means toward said attachment means and causing said seat to pivot upwardly,
second biasing means operatively connected to said attachment means and said frame for biasing said attachment point on said attachment means away from said pivot point and pivot means, and



said second biasing means allowing said attachment point on said attachment means to move toward said pivot point as said seat moves downwardly to assume a downwardly pivoted position, and said second biasing means causing said attachment point on said attachment means to move away from said pivot point as said seat moves upwardly to assume an upwardly pivoted position, such that said first biasing means applies a lesser biasing force when said seat is in a downwardly pivoted position and said first biasing means applies a greater biasing force when said seat is in an upwardly pivoted position than if said attachment point on said attachment means were in a fixed position relative to said pivot point and pivot means.

5,011,225
STRUCTURE OF A MOVABLE HEADREST
Akira Nemoto, Akishima, Japan, assignor to Tachi-S Co. Ltd., Tokyo, Japan
Filed Mar. 16, 1990, Ser. No. 495,272
Int. Cl.[5] A47C *7/36*
U.S. Cl. 297—408 **7 Claims**



1. A structure of a movable headrest, in which said headrest is connected upon a seat back of a seat and movable between a use position where it sits on top of the seat back for supporting the head of an occupant sitting on the seat and a non-use position where said headrest is located, permitting said occupant to attain a good field view without hindrance of said headrest, said structure comprising:
a removable headrest body having a pair of headrest stays which are attached atop said seat back;

a shaft which is rotatably supported between a pair of spaced-apart support brackets in an upper area of said seat back;

a headrest stay holder in which each of said pair of headrest stays is received, each of said headrest stay holders being fixed to said shaft, and including a locking means for locking and unlocking said headrest stays, said locking means having a lock release means for placing said locking means in an unlocked state, to thereby release a locked state of said headrest stays against said holder;

a lock actuating means for selectively locking and unlocking said release means associated with said headrest stay holder; and

a headrest drive mechanism for causing rotational movement of said headrest body between said use position and non-use position, said mechanism being operatively connected with a drive means so as to impart a drive force to said shaft, thereby causing seat headrest body to rotate; and

a means for allowing removal of said headrest stays that allow removal of said headrest body from said top of said seat back,

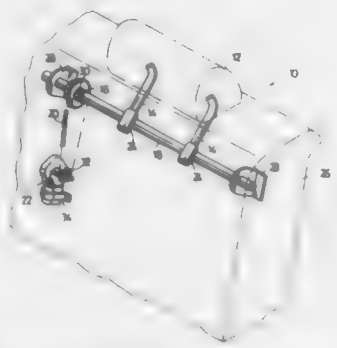
whereby said headrest body is moved between said use and non-use positions through said headrest drive mechanism, and said headrest body is removable from said top of said seat back by operation of said means for actuating said lock release means associated with said headrest stay holder.

5,011,226

HEADREST

Tetsuo Ikeda, and Akira Nemoto, both of Akishima, Japan, assignors to Tachi-S Co., Ltd., Tokyo, Japan

Filed Jan. 5, 1990, Ser. No. 461,518
Int. Cl.[5] A47C *1/10*
U.S. Cl. 297—403 **3 Claims**



1. A headrest, which is provided on a seat back of a seat, comprising:

a pair of spaced support brackets fixed within said seat back;

a shaft which is rotatably extended between said pair of support brackets, said shaft being provided with a first sprocket;

a headrest body which is fixed via a stay to said shaft;

a motor fixed in said seat back, said motor being disposed at a lower part of a lateral side of said seat back and having a second sprocket; and

an endless chain extended between said first and second sprockets,

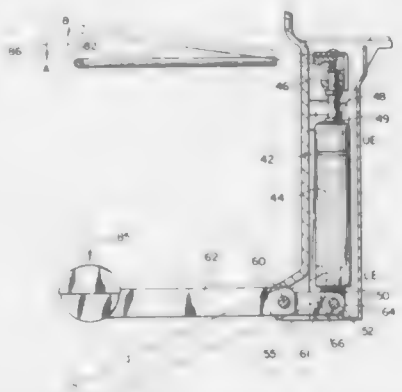
wherein an operation of said motor causes cyclic movement of said endless chain to rotate said shaft, thereby displacing said headrest body in a direction forwardly and backwardly relative to said seat back.

5,011,227

ADJUSTABLE FOOTREST FOR A CHAIR

Hendrik R. van Hekken, Allentown, and Thomas L. Latone, Quakertown, both of Pa., assignors to Knoll International, Inc., New York City, N.Y.

Filed Jan. 16, 1990, Ser. No. 465,341
Int. Cl.[5] A47C *7/50*
U.S. Cl. 297—434 **22 Claims**



1. An adjustable footrest mechanism for a chair having a base and a seat supported thereon, said footrest mechanism comprising:

an elongated housing;

means for securing said housing to the underside of said seat;

an elongated hydraulic gas cylinder having first and second ends, said cylinder being positioned within said housing;

a movable piston slidably mounted within said cylinder and emerging from said first end, said piston being mounted to said housing;

an elongated leg terminating at one end in a footrest and at the other end in a connection point;

means for pivotally mounting said elongated leg to said housing with said other end being positioned within said housing;

means for pivotally mounting said connection point to the second end of said cylinder; and

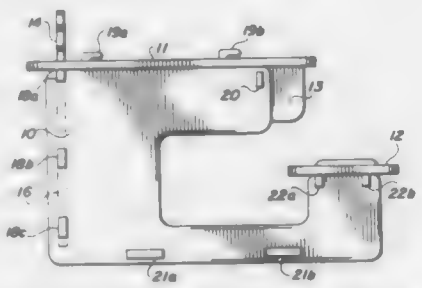
actuator means for operating said gas cylinder to permit movement of said cylinder relative to said piston thus altering the position of said footrest.

5,011,228

COLLAPSABLE/STACKABLE ARTICLE OF FURNITURE

Gerald Marcantel, 4708 S. Irving Ave., Tucson, Ariz. 85714

Filed Sep. 22, 1989, Ser. No. 411,318
Int. Cl.[5] A47C *4/00*; A47B *3/06*
U.S. Cl. 297—442 **10 Claims**



1. A portable shooting bench capable of being disassembled comprising:

(a) two side panels, each of said side panels having,

(1) a table support portion having a front edge, a top edge, and a rear edge, said front edge having at least two female attachment slots, said rear edge having at least one female attachment slot, and said top edge having at least two male extensions,

(2) a seat support portion having at last one male extension thereon along a top edge, and

(3) a bottom portion connecting a lower part of said table support portion and a lower part of said seat support portion and having, at least two female attachment slots therein;

(b) a seat panel having at least one female attachment slot at each end, each of said female attachment slots of said seat panel mating with one of said male extensions of said seat support portion of each side panel;

(c) a table top panel having at least two female attachment slots at each end, each of said female attachment slots of said table top panel mating with said male extensions of said top edges of said table support portion of each side panel;

(d) a front panel having at least two male extensions at each end, each of said male extensions of said front panel mating with one of said female attachment slots of the front edges of said table support portion of each side panel;

(e) a top support panel member having,

(1) at least two male extensions of each end mating with one of said female attachment slots of said rear edges of said table support portion of each side panel,

(2) at least four male extensions located along side edges of said top support panel member being mateable, in the disassembled state, to said at least two female attachment slots of said bottom portion of each side panel; and,

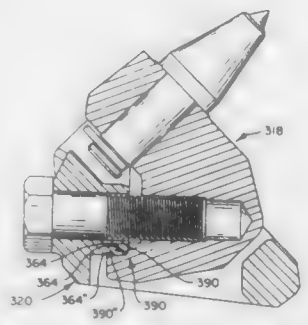
(f) a locking key formed from an elongated member having at least one locking mechanism along each side and for selectively securing at least one male extension of each of said side panels whereby in the disassembled state, the two side panels, the top support panel, and the locking key form an envelope for storage of the remaining panels.

5,011,229

MINER CUTTING BIT HOLDING APPARATUS

Michael L. O'Neill, Lucinda; Stephen P. Moore, Sandy Lake, and Eugene F. Pendolino, Franklin, all of Pa., assignors to Joy Technologies Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 269,381, Nov. 9, 1988, Pat. No. 4,915,455. This application Feb. 5, 1990, Ser. No. 475,063
Int. Cl.[5] E21C *35/18*
U.S. Cl. 299—91 **23 Claims**



1. Apparatus for supporting a cutting bit on a moveable cutting head at a predetermined cutting angle, said cutting bit having an extended shank and a central axis passing through said shank, comprising:

a. a bit holder having an upper body portion and a lower shank portion where said body portion includes an aperture for receiving said shank of said cutting bit for supporting said cutting bit at said predetermined cutting angle, and at least one rear upper first abutment surface disposed substantially perpendicular to the axis of said cutting bit, and said shank portion includes a rear lower second abutment surface having a substantially horizontal primary area;

b. a mounting base which may be attached to said cutting head, said mounting base having a cavity therein for receiving the shank portion of said bit holder, said mounting base having a rear member having at least one forward upper abutment surface disposed substantially perpendicular to the axis of said cutting bit and engaged by said at least one first abutment surface and a forward lower abutment surface having a substantially horizontal secondary area which is engaged by the horizontal primary area of said second abutment surface; and

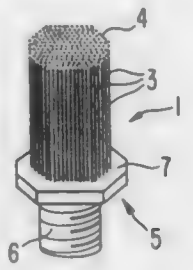
c. means for urging said at least one first abutment surface into engagement with said at least one forward upper abutment surface of said mounting base and said horizontal primary area of said second abutment surface into engagement with said horizontal secondary area of said forward lower abutment surface of said mounting base.

5,011,230

PROCESS FOR THE PRODUCTION OF BRUSHWARE

Georg Weihrauch, Waldmichelbach, Fed. Rep. of Germany, assignor to Coronet-Werke Heinrich Schlerf GmbH, Waldmichelbach, Fed. Rep. of Germany

Continuation of Ser. No. 823,648, Jan. 29, 1986, abandoned. This application Nov. 23, 1987, Ser. No. 123,887
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1985, 3503223
Int. Cl.[5] A46D *3/00*
U.S. Cl. 300—21 **16 Claims**



1. A process for the production of brushware comprising a bristle carrier and at least one thermoplastic material bristle bundle fixed thereto, the method comprising the steps of melting ends of the at least one bristle bundle to form a solid attachment means, advancing the at least one bristle bundle in correspondence to a melt advance, shaping the melted ends of the bristle bundle into a bolt having at least a portion which has a greater size than free ends of the at least one bristle bundle, shaping a contour on the bolt for enabling fastening to the bristle carrier, and providing a corresponding contour in the bristle carrier.

5,011,231

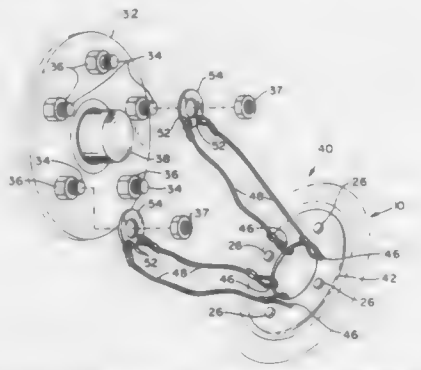
CHEVROLET RALLY CAP KEEPER

David S. Weber, 141 Maple St., Lake Ronkonkoma, N.Y. 11779

Filed Aug. 22, 1990, Ser. No. 571,511
Int. Cl.[5] B60B *7/16*
U.S. Cl. 301—37 AT **6 Claims**

1. In combination with an automotive vehicle wheel, a rally cap having means for frictionally engaging said wheel to enclose the lug studs of said wheel, said rally cap constructed of at least two parts held together by threaded members, an anti-theft device comprising a ring, means in said ring for permitting all of said threaded members to attach said ring to said rally cap, a plurality of extended flexible members each attached at one end to said ring, and washer means to the other end of each of said flexible members for engagement with the lug studs of said wheel and retained by a second set of said nuts on said lug studs, said flexible members being of sufficient length to permit said second set of stud nuts to be removed to mount said washer means on said lug studs and mount said stud

nuts while said ring remains attached to said rally cap, permitting said rally cap to be mounted on said vehicle wheel com-



pletely enclosing and hiding said anti-theft device and effectively deterring the theft of said rally cap.

5,011,232

MOUNTING MECHANISM OF WHEEL CAP

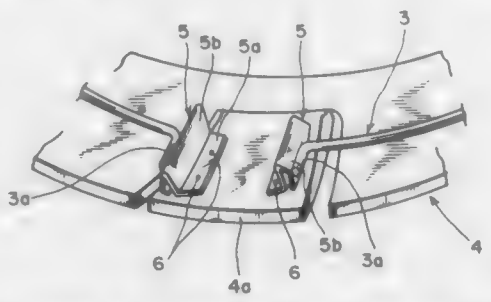
Toshio Itoh, and Yasuhide Narita, both of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Denki Seisakusho, Aichi, Japan

Filed Nov. 1, 1989, Ser. No. 430,155

Claims priority, application Japan, Nov. 4, 1988, 63-144493[U]

Int. Cl.[5] B60B *7/06*

U.S. Cl. 301—37 P **4 Claims**



1. A mounting mechanism of a wheel cap comprising:

engaging claws arranged at specified portions of a rear surface of a wheel cap body of the cap;

a flexible ring arranged on the rear surface of the body and on the inner side of each claw in a radial direction of the body for applying an urging force thereof on the inner surface of each claw while said ring contacts with the inner surface thereof under pressure, said claws being outwardly pressed in a radial direction of said ring by the urging force;

a closing lid for moving between a ring engaging position where said lid closes into engagement with free ends of said ring and a ring releasing position where said lid is away from the free ends of said ring; and

a projection arranged on a rear surface of said lid and contacting with free ends of said ring in the ring engaging position of said lid so that said projection maintains the urging force on said flexible ring in the engaging position whereby said claws engage with a hump portion of a disc wheel so that the cap is mounted on the disc wheel to be capable of being dismounted therefrom.

5,011,233

CAP FOR HUB UNIT AND HUB UNIT FOR AXLE OF AUTOMOBILE

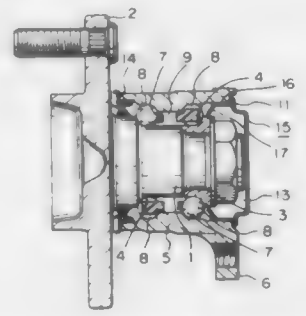
Yasunori Nomura, and Naoki Mitsue, both of Kanagawa, Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1989, Ser. No. 435,866

Claims priority, application Japan, Nov. 18, 1988, 63-149650[U]; Jul. 20, 1989, 1-84519[U]

Int. Cl.[5] B60B *27/00, 7/00*

U.S. Cl. 301—108 R **4 Claims**



1. A cap for use in a hub unit including an inner ring member having an outer peripheral surface with an outward race way thereon, an outer ring member having an inner peripheral surface including an inward race way thereon, and a plurality of rolling elements disposed in between said outward and inward race ways, said cap being secured to the opening at one end of said outer ring member to close said opening, said cap having a secured forward portion engaging the inner peripheral surface of the outer ring member adjacent said opening at said one end of said outer ring member and a projecting wall integrally formed with said secured forward portion, said projecting wall extending from said secured forward portion inwardly toward said inner ring member and having a peripheral edge in close proximity to said inner ring member to prevent grease present in the space accommodating said rolling elements from moving toward said opening.

5,011,234

ARRANGEMENT FOR MOUNTING A BRAKE POWER BOOSTER

Gilbert Bischoff, Hattersheim; Karl Breitwieser, Reinheim, and Eckhard Emmel, Hungen, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt Am Main, Fed. Rep. of Germany

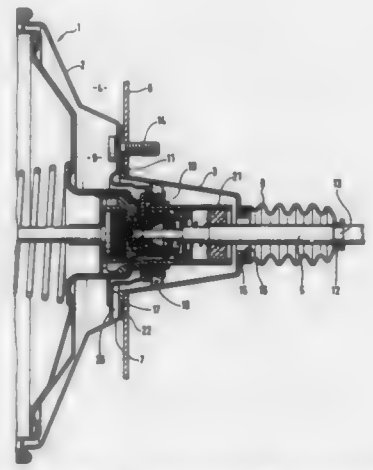
Filed Jun. 16, 1989, Ser. No. 367,409

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1988, 3822554

Int. Cl.[5] B60T *13/52*

U.S. Cl. 303—4 **13 Claims**

1. An apparatus for mounting a brake power booster to a splash-board of a motor vehicle, which brake power booster is actuatable by means of an operating rod and is provided in a booster housing with at least an evacuatable first and a ventilatable second working chamber, said splash-board separating said motor vehicle's passenger compartment from a mounting compartment of the brake power booster, wherein the aeration of the second working chamber (9) is effected by way of an aeration compartment (10) communicating with the mounting compartment (4), said aeration compartment being confined by means of a protecting sleeve (3) at least partially surrounding one of the booster housing (2) and a control valve housing (21), said protecting sleeve being sealed both relative to the splash-board (6) and relative to the operating rod (5) wherein said protecting sleeve comprises a plastic material which engages said booster housing in snap-in relationship therewith and wherein said protecting sleeve and said operating rod are surrounded by a flexible bellows and wherein said protecting sleeve (3) is provided with a radial collar (11) clamped between



the booster housing and a cooperating member of the motor vehicle and including a sealing ring abutting the collar (11).

5,011,235

ANTI-SKID CONTROL APPARATUS FOR A VEHICLE BRAKING SYSTEM

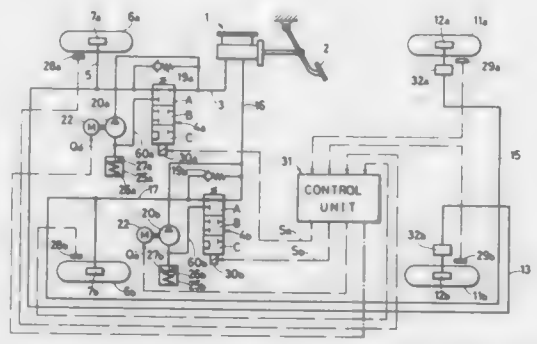
Tetsuro Arikawa, Kanagawa, Japan, assignor to Nippon A B S, Ltd., Tokyo, Japan

Division of Ser. No. 212,517, Jun. 28, 1988, Pat. No. 4,979,784. This application Jul. 18, 1990, Ser. No. 555,172

Claims priority, application Japan, Jun. 30, 1987, 62-164376; Sep. 8, 1987, 62-225094

Int. Cl.[5] B60T *8/62*

U.S. Cl. 303—96 **7 Claims**



1. In an anti-skid control apparatus for a vehicle braking system including:

(A) a pair of front wheels and a pair of rear wheels which are diagonally connected with each other;

(B) wheel speed sensors associated with mid wheels, respectively;

(C) a first fluid pressure control valve device for controlling the brake fluid pressure of the wheel cylinder of one of said front wheels, arranged between a first fluid pressure generating chamber of a tandem master cylinder and said wheel cylinder of the one front wheel;

(D) a second fluid pressure control valve device for controlling the brake fluid pressure of the wheel cylinder of another of said front wheels, arranged between a second fluid pressure generating chamber of said tandem master cylinder and said wheel cylinder of the other front wheel; and

(E) a control unit receiving outputs of said wheel speed sensors for measuring the skid conditions of said front and rear wheels and for generating instructions for controlling said first and second fluid pressure control valve devices;

the improvement in which said control unit judges the skid condition of the one rear wheel on the larger one of the braking frictional coefficients of the sides of the road on which said wheels are running, on the basis of the acceleration condition and slip condition of said one rear wheel, while it judges the skid condition of the other rear wheel on the smaller one of the braking frictional coefficients of the sides of the road on which said wheels are running, only on the basis of the acceleration condition of said other rear wheel, and the braking pressures of said front and rear wheels of the respective conduit systems are controlled in a select-low manner.

5,011,236

PROCESS FOR CARRYING OUT A LOAD-DEPENDENT BRAKE REGULATION OF BRAKES ON A VEHICLE HAVING AN ANTI-LOCK SYSTEM

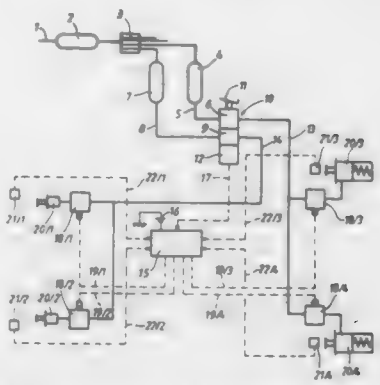
Bernhard Toepfer, Stuttgart, and Michael Reiner, Fellbach, both of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed Sep. 5, 1989, Ser. No. 402,538

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1988, 3829951

Int. Cl.[5] B60T *8/60*

U.S. Cl. 303—100 **22 Claims**



1. Process for carrying out a load-dependent brake regulation of brakes on a commercial vehicle equipped with an electrically acting anti-lock system having an electronic central control and ABS brake valves adjacent the axle of the vehicle and possessing rotational-speed transmitters assigned to each brakeable wheel for providing instantaneous whee speed for an ABS control;

providing a load dependent regulation that is effective at a wheel brake pressure near a locking limit of the brakes; and

automatically regulating mid-axle brake-pressure distribution solely according to wheel-speed signals supplied by the rotational-speed transmitters, in a slip range below a range in which the ABS function takes effect;

wherein the automatic regulation of the brake-pressure distribution only occurs upon exceeding of a first predeterminable brake value in response to a correctable difference between mid-axle wheel speeds during braking.

5,011,237

ANTI-LOCK BRAKING SYSTEM

Michael F. Matouka, Utica, Mich.; Yudh V. Rajput, Xenia, Ohio; Paul D. Wilkey, Vandalia, Ohio, and James A. Bright, Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 17, 1989, Ser. No. 353,320

Int. Cl.[5] B60T *8/42*

U.S. Cl. 303—115 **19 Claims**

1. A vehicle wheel anti-lock braking system (ABS) comprising:

master cylinder means for supplying pressurized fluid;

a wheel brake means receiving pressurized fluid from said master cylinder means and for restraining rotational movement of said wheel;

an ABS controller cognizant of the rotational condition of said wheel and providing a signal when the rotational condition of said wheel is within present parameters;

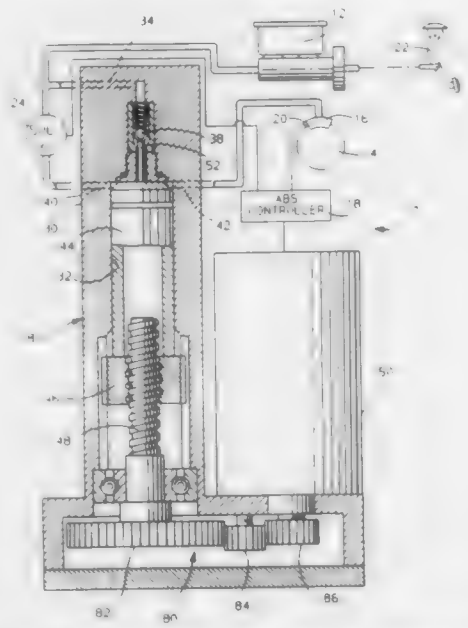
isolation means responsive to an activation signal given by said controller to prevent fluid communication between said master cylinder means and said wheel brake means;

reversible motor means for powering said power screw, said motor means being responsive to signals given by said controller;

a non-rotative sleeve located between said power screw and said motor means in a fixed position, said sleeve having an inner diameter of a first value;

a coil spring having a free outer diameter of a second value generally equal to or greater than said first value, said coil spring being captured within said non-rotative sleeve, and said coil spring having a tang on each end;

a driver member with a torsion transfer portion projecting into said non-rotative sleeve, said driver member having a rotational axis, said driver member having an angular



position in correspondence with the angular position of said motor means, said driver member having first and second contact surfaces for engagement with said spring tangs to cause said tangs to release and to allow said spring to have sliding movement within said non-rotative sleeve in both directions;

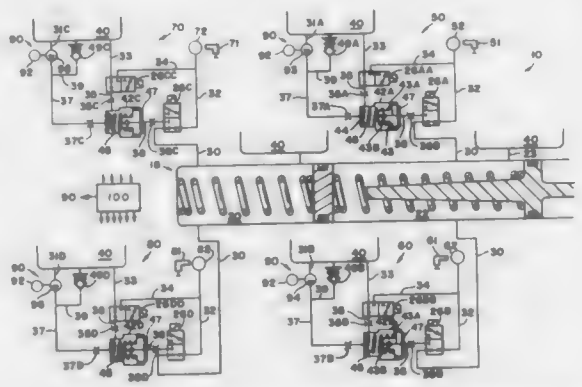
a driven member with an angular position in correspondence with the angular position of said power screw, said driven member having a rotational axis generally coterminous with said rotational axis of said river member and said driven member having projecting into said sleeve a torsion transfer portion for making contact with said driver member torsion transfer portion for transferring torque from said driver member to said power screw, said driven member having at least one contact surface for making contact on said spring tang on the opposite side of said spring tang said driver contact surface makes contact on to cause said spring to radially expand and lock within said sleeve to prevent torque from said power screw being transferred to said motor means when said piston is moving away from a position more adjacent to said means of fluid communication of said actuator frame bore with said wheel brake means by fluid pressure within bore.

5,011,238

MASTER CYLINDER WITH INTEGRATED ADAPTIVE BRAKING AND TRACTION CONTROL SYSTEM

Arthur K. Brown, Jr., South Bend, Ind., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Mar. 19, 1990, Ser. No. 497,954
Int. Cl.[5] B60T *8/32*
U.S. Cl. 303—116 **22 Claims**



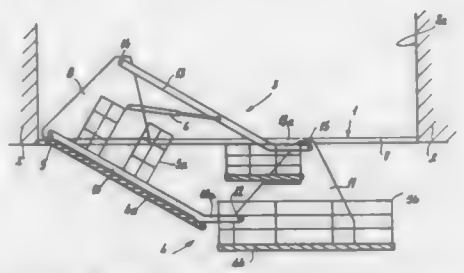
1. An integrated adaptive braking and traction control system assembly, comprising an elongated body having a mounting end and an axial bore extending from said mounting end, a master cylinder assembly operatively disposed in said bore, reservoir means communicating with said master cylinder assembly, pump means disposed adjacent the mounting end to communicate pressure toward wheel brakes of an associated vehicle, the elongated body including a plurality of valve devices of the adaptive braking and traction control system assembly, a plurality of displacement chambers with displacement pistons disposed therein, and a plurality of passages connecting together the valve devices, the master cylinder assembly with the wheel brakes via certain ones of the valve devices, the pump means with the displacement chambers, and the reservoir means with the master cylinder assembly, to provide the integrated adaptive braking and traction control system assembly for mounting on a vehicle.

5,011,239

DEVICE FOR SUSPENDED STORAGE

Georges Guërin, Laplume, France, assignor to Sogal Industrie Franchise Industrielle Societe Anonyme S.I.F.I.S.A., Laplume, France

Filed Jan. 9, 1990, Ser. No. 462,703
Claims priority, application France, Jan. 12, 1989, 89 00837
Int. Cl.[5] A47B *67/02*
U.S. Cl. 312—248 **10 Claims**



1. A storage device comprising:

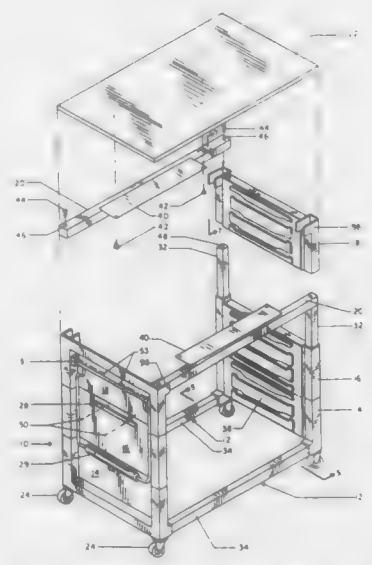
a horizontal supporting structure delimiting an opening; and at least one storage unit accommodated in the opening, said at least one storage unit articulated on the supporting structure capable of pivoting between two positions, a closed position in which the storage unit is integrated into a storage space and covers the opening and an open position in which the inside of the storage unit is accessible to the user, each said storage unit further comprising a quadrilateral four-bar linkage suspension system formed by a first and a second elongated parallel suspension link attached on each of opposite sides of the supporting structure, said first and second suspension links on each side of the supporting structure are pivotally attached at one end, said first suspension link above said second suspension link, to be offset and articulated about a horizontal axis, each said first and second suspension link articulated on an opposite end about a horizontal axis where pivotally attached on the storage unit, wherein the storage unit further comprises a closure panel consisting of at least two parts which abut in the closed position to horizontally cover over the opening in the supporting structure and permit storage on an inner side of said parts of said closure panel as defined when in the closed position, a first part of said closure panel associated with said second suspension link of the quadrilateral four-bar linkage pivotally attached on each side of said supporting structure and a second part of said closure panel associated with an element to which the opposite ends of said first and second suspension links are pivotally attached to complete the quadrilateral four-bar linkage, a side of the two parts of the closure panel facing into the opening in the closed position being accessible to the user in the open position, and return means for the closure panel that cooperates with the quadrilateral four-bar linkage to return the closure panel to its closed position and to brake its downward opening.

5,011,240

SEGMENTED SIDE WALL CART

James O. Kelley, Spring Lake, and Steven F. Goodman, Wyoming, both of Mich., assignors to Milcare, Inc., Zeeland, Mich.

Filed Nov. 28, 1989, Ser. No. 442,188
Int. Cl.[5] A47B *91/00*
U.S. Cl. 312—250 **18 Claims**



1. A utility cart having a front, back, side, top, bottom and comprising a housing having a pair of U-shaped frames spanning the front and back portions of said cart, each of said U-shaped frames having a pair of upright legs joined by a bottom bight portion;

at least two side wall segments forming opposite sides of said cart, each of said side wall segments having frame receiving means at side edges thereof and shaped to receive the -legs-.of the U-shaped frame member;

said at least two side wall segments being spaced apart by said U-shaped frames with said legs of said U-shaped frames being retained by said receiving means;

means connecting the upper portions of said upright legs of each of said U-shaped-frame members together; and

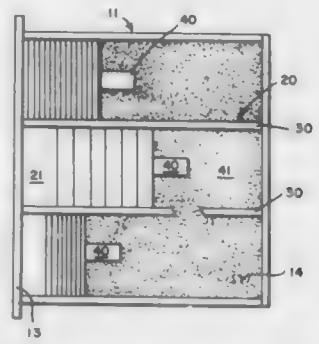
a plurality of drawers or trays slidably mounted to said side wall segments.

5,011,241

ADJUSTABLE STORAGE SYSTEM FOR AUDIO AND/OR VIDEO MEDIA

James M. Horton, 287 S. Clarkson Str., Denver, Colo. 80209, and Eric L. Bunge, 300 E. 17th Ave., Number 1422, Denver, Colo. 80203

Filed Jan. 17, 1989, Ser. No. 298,110
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—330.1 **3 Claims**



1. An adjustable storage system for storing audio and/or video media for use with a cabinet which has at least one drawer with a bottom wall a front wall and a back wall wherein audio and/or video media of different heights, different widths and different thicknesses are arranged in a plurality of rows on the bottom wall of the drawer each of the rows extending from the front wall to the back wall, said adjustable storage system for storing audio and/or video media comprising:

a. a plurality of stops, each of which has a bottom surface and a front surface which is at an angle of slightly more than ninety degrees to said bottom surface and the top edge of which contacts the rear wall of the last of the audio and/or video media in each row;

b. stop coupling means for detachably coupling one of said plurality of stops to the bottom wall of the drawer whereby said adjustable storage system for storing audio-/or visual media may be adjusted to store additional audio and/or video media in each row by moving one of said plurality of stops;

c. a plurality of dividers, each of which has a bottom surface, each of said plurality of dividers being disposed between two rows of the audio and/or video media; and

d. divider coupling means for detachably coupling each of said plurality of dividers to the bottom wall of each drawer whereby said adjustable storage system for storing audio and/or visual media may be adjusted to store wider audio and/or video media in each row by moving one of said plurality of dividers.

5,011,242

DRAWER GUIDE ASSEMBLY

Peter A. Cosme, R.R. 7-Box 319, Lockport, Ill. 60441

Filed Feb. 3, 1987, Ser. No. 10,545
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—344.1 **16 Claims**

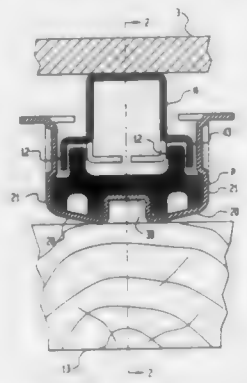
1. A prefabricated metal drawer-slide assembly for mounting in a cavity of a furniture unit, comprising:

(a) a female channel-shaped guide member terminating in ends on a common level, said member adapted to be mounted in said cavity and to extend between front and

back sides of the furniture unit, for guiding a complementary male component affixed to a bottom side of a slideable drawer adapted for reciprocally movement in said cavity,

(b) an elevated reinforcing rib extending along the major length of a bottom side of said female guide member between said ends,

(c) downwardly sloping terminal portions extending from opposite ends of said elevated rib for mergence with said



opposite ends, each of said terminal portions being inclined slightly to the horizontal and provided with a screw opening adapted to accommodate an attachment screw for affixing said female guide member to frame elements of said furniture unit on a common level, said screws adapted to extend at a slight angle to the vertical and sufficient to clear a driving tool of the screw from the frame elements of the furniture unit irrespective of any vertical spacing between the frame elements.

5,011,243

REFLECTANCE INFRARED MICROSCOPE HAVING HIGH RADIATION THROUGHPUT

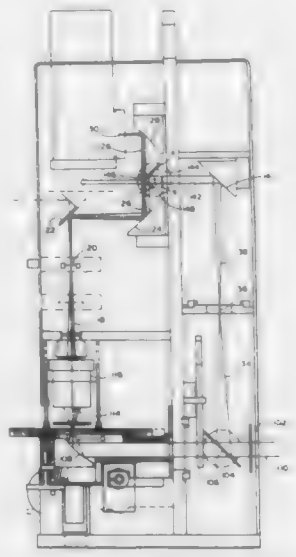
Walter M. Doyle, Laguna Beach, and Norman S. Hughes, San Clemente, both of Calif., assignors to Laser Precision Corporation, Irvine, Calif.

Filed Sep. 16, 1986, Ser. No. [illegible]7,995

The portion of the term of this patent subsequent to Aug. 1, 2006, has been disclaimed.

Int. Cl.[5] G02B *21/06, 21/18*; G01N *21/00*

U.S. Cl. 350—1.2 **11 Claims**



1. In an optical instrument having a sample supported in the instrument, a fully-reflecting objective, means for observing visible radiation at the sample location, a detector of infrared radiation, and means for causing a post-interferometer infrared radiation beam to enter the instrument, an infrared optical system combining transmission mode and reflectance mode functions, comprising:

transmission mode means for directing the post-interferometer radiation beam into and completely through the objective from one direction for transmission illumination of the sample;

reflectance mode means for directing the post-interferometer infrared radiation beam into and completely through the objective from the opposite direction for reflectance illumination of the sample;

the reflectance mode means including a beamsplitter which (a) incorporates a fully reflecting mirror, (b) is located at a distance from the objective, and (c) causes approximately half of the interferometer infrared radiation beam to pass through the objective to be reflected by the sample; and

means for directing substantially an entire sample-reflected radiation to the detector.

5,011,244

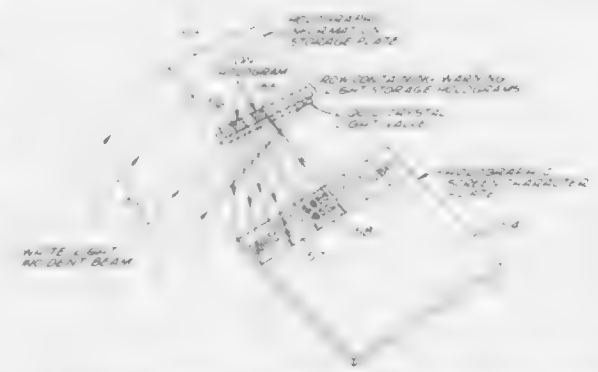
HOLOGRAPHIC FULL COLOR DATA RETRIEVAL AND PROJECTION SYSTEM

Ronald T. Smith, Redondo Beach, and Ronald G. Hegg, Inglewood, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 16, 1988, Ser. No. 285,898

Int. Cl.[5] G03H *1/26*

U.S. Cl. 350—3.75 **6 Claims**



1. A holographic data retrieval and projection system comprising: a low-power light source means for producing a collimated beam of white light; at least one reflective holographic information storage plate including a plurality of holographic elements wherein each of said elements diffracts incident light over a predetermined, desired spectral bandwidth; and a holographic screen character plate comprising a plurality of reflective screen character holograms in predetermined, desired shapes and sizes, each screen character hologram being adapted to diffract light lying within a wavelength band which includes the incident light thereon in a uniform well-defined bundle of diffuse light directed toward a viewer, each screen character hologram being tuned to diffract a predetermined, desired color of light, and to transmit all other light colors incident thereon, said information storage plate and said screen character storage plate being spaced from one another and oriented so that the various light colors diffracted from said information storage plate strike predetermined, desired screen character hologram locations on said screen character storage plate.

5,011,245

RADIATION SCANNING APPARATUS

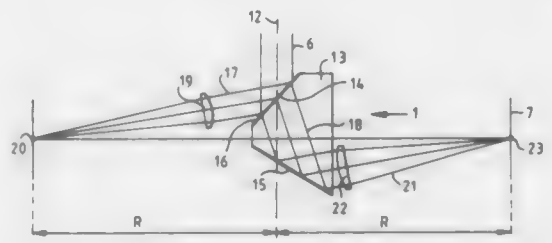
Ronald Gibbs, Bedfordshire, United Kingdom, assignor to Crosfield Electronics Limited, London, England

Filed Jul. 21, 1989, Ser. No. 382,931

Claims priority, application United Kingdom, Aug. 5, 1988, 8818661

Int. Cl.[5] G02B *26/10*

U.S. Cl. 350—6.5 **5 Claims**



1. Radiation scanning apparatus comprising a record medium support; and a rotatably mounted scanning device on which a modulated radiation beam is incident, wherein device splits said incident beam into at least first and second subsidiary beams which scan in turn across a record medium on said support during relative rotation between said scanning device and said support, each said subsidiary beam exposing a respective scan line on said record medium in accordance with the beam modulation, and wherein the support and said device are relatively movable such that the scan lines are offset in the direction of relative movement.

5,011,246

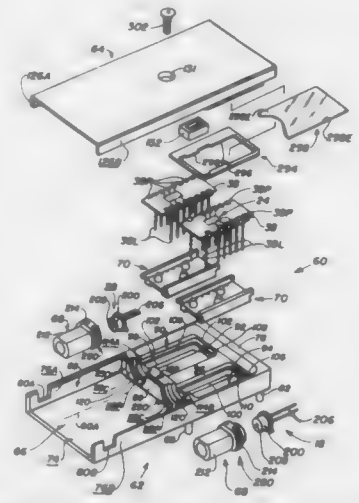
HOUSING FOR AN OPTO-ELECTRONIC DEVICE

Anthony A. Corradetti, Brookhaven, Pa.; Edward P. Gargiulo, Wilmington, Del.; Leland L. Krauss, Glenmoor, Pa., and Robert W. Hooley, Ipswich, England, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 354,530, May 19, 1989, abandoned. This application Jun. 29, 1990, Ser. No. 544,794

Int. Cl.[5] G02B *6/42*

U.S. Cl. 350—96.2 **38 Claims**



1. A housing for interconnecting an opto-electronic device with a ferrule having an optical fiber extending therethrough so that a point on the ferrule and a point on the device lie within a predetermined distance of each other along a common axis, the housing having an axis therethrough, the housing comprising:

a base, a cover cooperable with the base to define a chamber,

a mounting member having a tip thereon and a bore therein, the bore having an axis therethrough, the mounting member extending into the chamber, the mounting member having a retainer for supporting an opto-electronic device in a predetermined position along the axis of the bore,

a pivot arrangement disposed on the mounting member and cooperating with at least one of the base or the cover for accommodating motion of the mounting member in response to a deflecting force imposed on the mounting member as a ferrule is introduced into the bore of the mounting member,

thereby to permit the axis of the mounting member to translate in two orthogonal directions in a plane perpendicular to the axis of the housing and to permit the mounting member to pivot to displace the tip of the mounting member in the two orthogonal directions in the plane perpendicular to the axis of the housing, so that the axis of the mounting member is alignable collinearly with the axis of the ferrule.

5,011,247

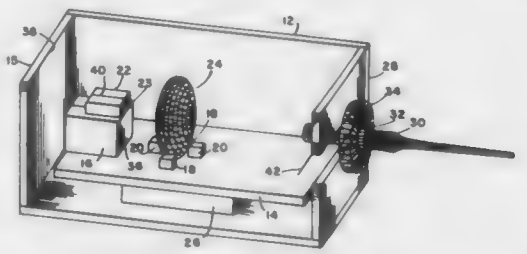
UPTAPERED SINGLE-MODE OPTICAL FIBER PACKAGE FOR OPTOLECTRONIC COMPONENTS

Robert A. Boudreau, Hampton, N.H., and William C. Rideout, Townsend, Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 2, 1990, Ser. No. 487,497

Int. Cl.[5] G02B *6/42*

U.S. Cl. 350—96.2 **26 Claims**



1. A package for an optoelectronic semiconductor device having a photo-active element optically coupled to an uptapered single-mode optical fiber connecting said optoelectronic device to an external device, comprising:

a housing to enclose the necessary components to convert electrical signals to optical signals;

a substrate carrier having a solderable surface within said housing;

an optoelectronic device having an photo-active element secured to said substrate carrier;

a lens, having a numerical aperture sufficient to access optically said photo-active element secured to said carrier a fixed distance from said photo-active element to yield a desired magnification of a light beam emanating from said photo-active element by expanding the size of said beam;

an uptapered single-mode optical fiber extending from within said housing to the exterior of said housing through a port thereof, said optical fiber being positioned by active alignment;

means to secure said uptapered optical fiber to said housing such that the uptapered end of said optical fiber is optically coupled through said lens to said photo-active element and the opposite end of said optical fiber is outside said housing; and

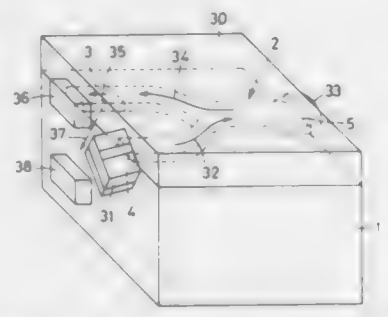
a plurality of reference means on said housing and said carrier such that said optoelectronic device, said lens and said optical fiber are mechanically positioned with respect to one or more of said reference means; and such that uptapered said optical fiber is externally aligned and secured to said package.

5,011,248

THIN-FILM OPTICAL FUNCTION ELEMENT, AND OPTICAL HEAD USING THE SAME

Kazunari Taki, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Japan

Division of Ser. No. 261,232, Oct. 24, 1988, Pat. No. 4,943,131.
This application May 16, 1990, Ser. No. 524,037
Claims priority, application Japan, Oct. 30, 1987, 62-277009
Int. Cl.[5] G02B *6/12*; G11B *5/127*
U.S. Cl. 350—96.11 **6 Claims**



1. An optical head for a magnetooptical disk, incorporating a thin-film optical function element comprising:

a substrate formed of a dielectric material;

a first optical waveguide consisting of a thin film of a dielectric material formed on said substrate, said first optical waveguide having a substantially same propagation constant with respect to two different modes which have field patterns whose vibrating directions are perpendicular to each other; and

a second optical waveguide consisting of another thin film of another dielectric material formed on said substrate, said second optical waveguide being optically coupled to said first optical waveguide, and guiding therethrough only one of said two different modes; and

wherein said first optical waveguide comprises an Y-branching waveguide having a common path and two branch paths which merge with each other into said common path, and said second optical waveguide is coupled to one of said two branch paths of said Y-branching waveguide, said optical head comprising (a) a light emitting-element coupled to the other branch path of said Y-branching waveguide and operable to emit a linearly polarized light beam, (b) a converging lens coupled to said common path of said Y-branching waveguide, for converging said linearly polarized light beam which is guided through said first optical waveguide, and (c) at least one light-sensitive element each coupled to a corresponding one of said second optical waveguide and a portion of said substrate adjacent to said second optical waveguide.

5,011,249

CIRCUIT FOR THE TRANSMISSION OF OPTICAL SIGNALS

Stephen H. Diaz, Palo Alto, Calif., assignor to Raychem Corp., Menlo Park, Calif.

Filed Dec. 20, 1989, Ser. No. 454,099
Int. Cl.[5] G02B *6/12*
U.S. Cl. 350—96.11 **21 Claims**

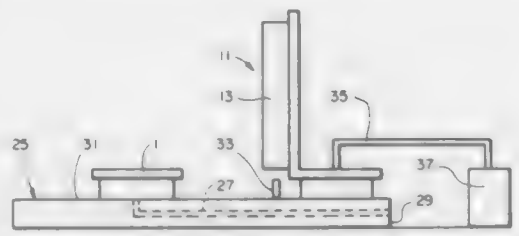
21. A circuit for the transmission of optical signals, comprising:

(a) a substrate;

(b) a waveguide through which an optical signal can pass when the circuit is in use;

(c) an optical component which includes an optically active device which is optically connected to the waveguide, the waveguide and the device being separated by a fluid which is transparent to the optical signal; and

(d) means by which the substrate and the component are mechanically interconnected, the interconnection means allowing the substrate and the device to move relative to one another, at least in the plane which extends perpendicular to the direction in which the signal passes between



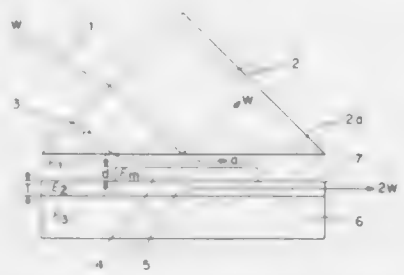
the waveguide and the device, the interconnection means including at least one wire which extends between the substrate and the component.

5,011,250

OPTICAL HARMONIC GENERATOR

Yoshio Okada, Saitama, and Toshihiko Takano, Kashiwa, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 16, 1989, Ser. No. 367,128
Claims priority, application Japan, Jun. 16, 1988, 63-148529
Int. Cl.[5] G02F *1/37*
U.S. Cl. 350—96.12 **12 Claims**



5. A frequency conversion apparatus comprising a laser beam source;

an optical harmonic generator including an optical component for emitting light having a propagation constant greater than that of incident light;

a metal thin film in which a surface plasmon is excited by the light emitted from said optical component; and

a waveguide including a nonlinear optical thin film for emitting, from an end face thereof, light with a wavelength which is 1/N (N: integer equal to or larger than two) of the incident light, by the surface plasmon of said metal thin film;

wherein the thickness of said metal thin film and the depth of said waveguide are selected such that the propagation constant of said surface plasmon of said metal thin film is coincident with the propagation constant of the light having the 1/N wavelength with respect to the incident light wavelength and propagating through said waveguide.

5,011,251

ACHROMATIC FIBER OPTIC COUPLER

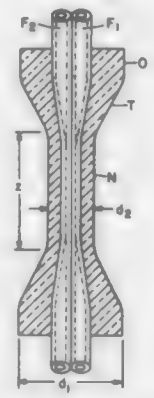
William J. Miller; Carlton M. Truesdale; David L. Weidman, and Donald R. Young, Jr., all of Corning, N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Dec. 8, 1989, Ser. No. 447,808
Int. Cl.[5] G02B *6/26*
U.S. Cl. 350—96.15 **26 Claims**

1. An achromatic fiber optic coupler comprising

an elongated body of matrix glass having a refractive index n_3, said body having two opposed ends and a midregion,

a plurality of optical fibers extending longitudinally through said body, each of said fibers comprising a core of refractive index n_1 and a cladding of refractive index less than n_1 but greater than n_3, the refractive index n_2 of the cladding of a first of said fibers being different from the refractive index n_2' of the cladding of a second of said fibers by such an amount that the value of Δ_{clads} is greater than zero but less than 0.03%, wherein Δ_{clads} equals $(n_2^2-n_2'^2)/2n_2^2$,



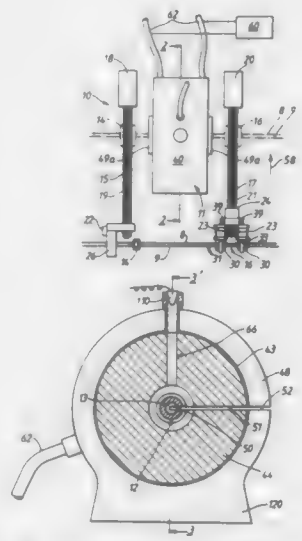
said fibers being fused together along with the midregion of said matrix glass, the diameter of the central portion of said midregion and the diameters of said optical fibers in said central portion being smaller than the diameters thereof at the ends of said body, whereby a portion of an optical power propagating in one of said fibers couples to the other of said fibers.

5,011,252

FABRICATION OF FIBRE OPTIC COMPONENTS

David A. Thorncraft, Isabella Plains; David R. Kennedy, Kambah; Scott C. Rashleigh, Wanniassa, and Timothy P. Dabbs, Eastwood, all of Australia, assignors to The Commonwealth of Australia, Canberra, Australia

PCT No. PCT/AU87/00374, § 371 Date Sep. 12, 1988, § 102(e) Date Sep. 12, 1988, PCT Pub. No. WO88/03660, PCT Pub. Date May 19, 1988
PCT Filed Nov. 9, 1987, Ser. No. 258,697
Claims priority, application Australia, Nov. 14, 1986, PH8979/86
Int. Cl.[5] G02B *6/26*
U.S. Cl. 350—96.15 **24 Claims**



1. Apparatus for fabricating a fused biconical taper fibre optic coupler, comprising:

a hollow furnace having a longitudinal slot;

means to hold at least to suitably prepared optical fibres in intimate side-by-side contact;

means to relatively laterally move the fibres into and out of said furnace through said slot;

means to heat the furnace to in turn heat segments of the fibres therein while these segments are in intimate side-by-side contact to a temperature sufficient to cause the fibre segments to fuse together; and

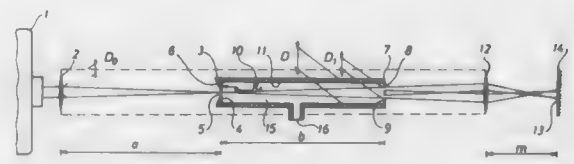
means to longitudinally draw the heated fibres while in the hot furnace to cause each fused fibre to develop a biconical taper and so form a coupler.

5,011,253

OPTICAL SYSTEM FOR LASER MARKING

Flemming Olsen, 30, Nordskovvej, Stenlille DK-4295, Denmark

PCT No. PCT/DK88/00201, § 371 Date May 7, 1990, § 102(e) Date May 7, 1990, PCT Pub. No. WO89/05208, PCT Pub. Date Jun. 15, 1989
PCT Filed Dec. 2, 1988, Ser. No. 474,136
Claims priority, application Denmark, Dec. 8, 1987, 6447/87
Int. Cl.[5] G02B *6/32*
U.S. Cl. 350—96.18 **11 Claims**



1. An optical system for laser marking and comprising

when seen in the direction of a light beam of a predetermined transverse measurement (D_0) and emitted by a laser (1)—a mask (7) including a mask pattern (8), and an image-producing means (12), such as a lens, and whereby the transverse measurement (D1) of the laser beam on the mask (7) is larger than the transverse measurement of the mask pattern (8), characterised in

that a focusing means (2), such as a lens, and a concave mirror (3) are situated between the laser (1) and the mask (7), the focusing means (2) being situated to focus the laser beam emitted by the laser (1) to have said transverse measurement (D1) on the mask (7) after focusing, the concave mirror (3) being situated with its vertex in the focal point of the focusing means (2) and with the reflecting surface (4) facing the mask (7), and where an inlet opening (5) is shaped about the vertex, the transverse measurement of said inlet opening being slightly larger than the transverse measurement of the focal point,

that the mask (7) is shaped as a mirror, preferably a plane mirror, with the reflecting surface (9) facing the concave mirror (3),

and that the radius of the curvature (R_4) of the concave mirror (3) is longer than twice the distance (b) between the mask (7) and the concave mirror (3).

5,011,254

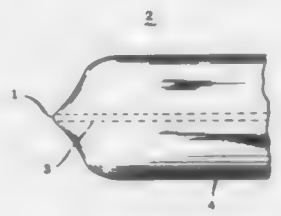
COUPLING OF OPTICAL DEVICES TO OPTICAL FIBERS BY MEANS OF MICROLENSES

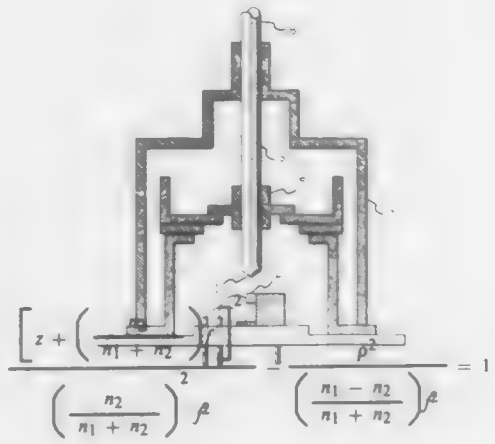
Christopher A. Edwards, Gilette, and Herman M. Presby, Highland Park, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 30, 1989, Ser. No. 444,578
Int. Cl.[5] G02B *6/42*
U.S. Cl. 350—96.18 **41 Claims**

1. An optical communication package comprising an optical device, an optical fiber and a microlens for improving coupling of optical power between the optical fiber and the optical device, in which said microlens lies within the boundaries of the fiber and has a contour shape selected so that light coupling losses arising from at least fiber truncation, mode mismatch and spherical aberration are substantially removed, the contour

shape of said microlens comprises substantially a hyperboloid of revolution which is described by the following expression:





$$\left[z+\left(\frac{n_1}{n_1+n_2}\right)f\right]^2\Big/\left(\frac{n_2}{n_1+n_2}\right)^2 f^2 \;-\; \rho^2\Big/\left(\frac{n_1-n_2}{n_1+n_2}\right)^2 f^2 = 1$$

wherein z is a lens axial coordinate, n_1 and n_2 are each the index of refraction of the material of the lens and of the medium surrounding the lens, respectively, ρ is the axial coordinate and f is the focal distance of this lens defined by the following expression:

$$f=\frac{\pi\omega_0\omega_1{}^2}{\lambda\sqrt{\omega_1{}^2-\omega_0{}^2}}$$

wherein ω_0 is a mode radius of the optical device, ω_1 is a mode radius of the optical fiber and λ is a wavelength of the optical power being coupled.

5,011,255

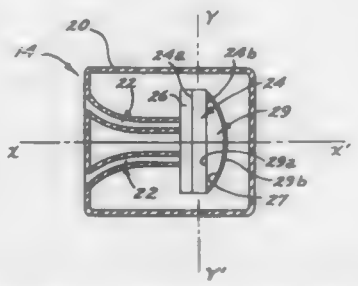
HOLOGRAPHIC OPTICAL FIBER COUPLER

Terry P. Bowen, Etters, Pa., and John R. Rowlette, Clemmons, N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 12, 1990, Ser. No. 508,884

Int. Cl.[5] G02B *6/34, 5/32*

U.S. Cl. 350—96.19 **52 Claims**



1. An optical fiber coupler for coupling first and second optical fibers, comprising:

a housing; and

a holographic optical element (HOE) in said housing, said HOE having first and second faces and an optical axis;

said housing having first and second guide means therein, said first and second guide means being adapted to guide the ends of the first and second fibers, respectively, to contact said first face of said HOE, perpendicular thereto, and equidistant from said optical axis;

said HOE being adapted to couple optical energy from said first guide means to said second guide means and from said second guide means to said first guide means.

5,011,256

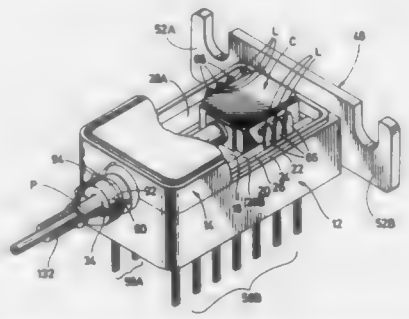
PACKAGE FOR AN OPTO-ELECTRONIC COMPONENT

Melvin H. Johnson, Chadds Ford; Leland L. Krauss, Aston, and Dirk Landman, Lancaster, all of Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 28, 1988, Ser. No. 263,188

Int. Cl.[5] G02B *6/36*

U.S. Cl. 350—96.20 **34 Claims**



33. A package for an opto-electronic component comprising:

a base;

a sidewall on the base, the sidewall having an upper edge thereon, the edge being interrupted by a notch formed in the sidewall, an open cradle member mounted to the sidewall in proximity to and in communication with the notch therein;

a cover having a rim thereon, the rim of the cover being engageable with the upper edge of the sidewall, the rim of the cover being interrupted by an opening that registers with the notch in the edge of the sidewall, a cradle canopy mounted to the cover in proximity to and in communication with the opening therein;

a heat conducting member having a planar portion thereon, a portion of the base of the package being defined by the planar portion of the heat conducting member;

means for securing the cover to the base, the securing means comprising a bead mounted on each of the cover and the sidewall of the base, the beads being interengaged when the cover is received on the sidewall;

the cover, when received on the sidewall, cooperating with the sidewall and the base to define a generally enclosed component receiving chamber, the notch in the sidewall and the opening in the cover cooperating to define an access aperture, the chamber being accessible through the access aperture,

the cradle and the canopy cooperating with each other when the cover is mounted to the sidewall to define a tubular extension extending from the sidewall, the tubular extension being in communication with the chamber through the aperture defined by the registered opening and notch; and

an elastomeric boot connected to the tubular extension.

5,011,257

OPTICAL FIBER PATCH PANEL

Paul F. Wettengel, Ipswich, and Kevin M. Bishop, Woodbridge, both of England, assignors to British Telecommunications public limited company, Great Britain

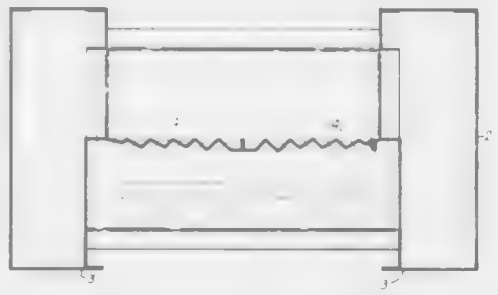
PCT No. PCT/GB89/00717, § 371 Date Mar. 23, 1990, § 102(e) Date Mar. 23, 1990, PCT Pub. No. WO90/00261, PCT Pub. Date Jan. 11, 1990

PCT Filed Jun. 27, 1989, Ser. No. 469,554

Claims priority, application United Kingdom, Jun. 29, 1988, 8815446

Int. Cl.[5] G02B *6/26*

U.S. Cl. 350—96.20 **13 Claims**



1. Apparatus for supporting multiple line connections in an optical communication system, the apparatus comprising means for supporting a plurality of line connectors in a patching panel characterised in that the patching panel comprises a series of corrugations defining alternately disposed faces, and in which to each side of a central line on the patching panel parallel to the corrugations alternate faces are provided with apertures for receiving line connectors.

5,011,258

OPTICAL FIBER CONNECTOR

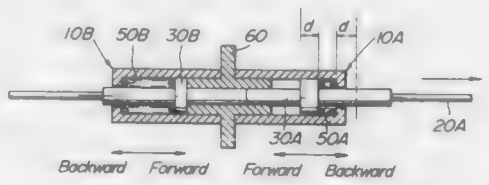
Mitsuru Takeda, Tokyo, Japan, assignor to Daiichi Denshi Kogyo Kabushiki Kaisha, Japan

Filed Aug. 22, 1990, Ser. No. 570,825

Claims priority, application Japan, Aug. 31, 1989, 1-102155[U]

Int. Cl.[5] G02B *6/26*

U.S. Cl. 350—96.20 **6 Claims**



1. An optical fiber connector (10) comprising a ferrule (30) accommodating an optical fiber cord (20) fixed at center thereof, said ferrule (30) is fitted in a connector sleeve (40) in axially movable manner, and a compression spring (50) is provided between bottom portion (42) of said connector sleeve (40) and said ferrule (30), and in connecting condition a pair of such connectors (10) are used and said ferrules (30) of right and left connectors (10) are abutted together by restoring force of each of the springs (50) of the connectors (10) by constraining each spring (50) by an amount d, the invention is characterized in that a maximum amount of constriction of the spring (50) is less than double of said amount d of constriction.

5,011,259

METHOD FOR ALIGNING TWO WAVEGUIDE FIBER ENDS AND AN APPARATUS FOR PERFORMING THE METHOD

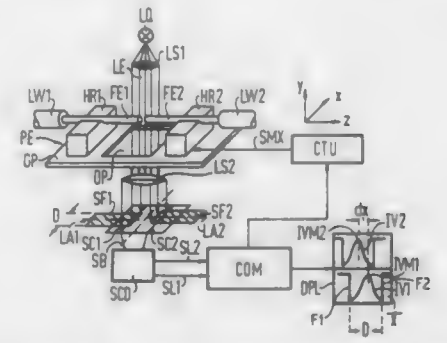
Winfried Lieber, Kaiserslautern, and Thomas Eder, Krailling, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 4, 1990, Ser. No. 532,653

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1989, 3918089

Int. Cl.[5] G02B *6/00, 6/26*

U.S. Cl. 350—96.21 **19 Claims**



1. In a method for the true alignment of two fiber ends, which includes illuminating the fiber ends to generate a picture of the fiber ends, and then scanning the picture with a sensor of a video camera, the improvements comprising the step of scanning includes scanning each of the fiber ends at least once transversely relative to the longitudinal axis to form a row, said step of illuminating being performed with the fiber ends acting as cylindrical lenses to create a maximum intensity for the center of the fibers, determining the intensity distribution separately for the imaging of each fiber end and determining the position of the respective longitudinal axis of the fiber and a mutual lateral offset between the fibers by using the intensity distribution and then adjusting the ends of the fiber based on the determined offset, said step of determining the intensity distribution including determining every row's discrete intensity values column-by-column and recording these values in a memory unit, said intensity distribution, wherein quantisized in columns and obtained for both fiber ends line-by-line, being made available for the evaluation for both fiber ends separately and in that from the difference in the columnwise position of the intensity distribution of the two fiber ends, the alignment error is determined and the post-adjustment of at least one fiber end for a true alignment is performed.

5,011,260

BUFFERED OPTICAL FIBER HAVING A STRIPPABLE BUFFER LAYER

M. Fred Marx, Dunwoody; Parry A. Moss, Stone Mountain; Mary J. Presnell, Atlanta; John W. Shea, Chamblee, all of Ga., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 26, 1989, Ser. No. 385,755

Int. Cl.[5] G02B *6/44;* B05B *5/00;* B05D *5/06;* B65H *69/02*

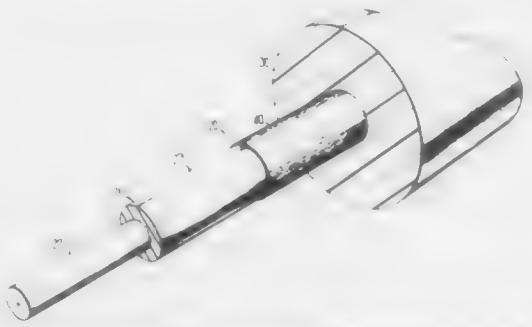
U.S. Cl. 350—96.23 **10 Claims**

1. A buffered optical fiber, which comprises:

an optical fiber which includes at least one layer of a coating material; and

a plastic buffering material which encloses said optical fiber, said buffering material having a controlled coupling to said at least one coating layer of said optical fiber such that said plastic buffering material has suitable adhesion to said

at least one coating layer during normal use but which is such as to allow removal of said plastic buffering material



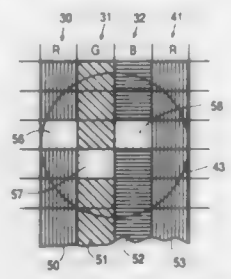
from said optical fiber upon the application of suitably low stripping forces.

5,011,261

COLOR PAGE SCANNER USING FIBER OPTIC BUNDLE AND A PHOTOSENSOR ARRAY

Eugene I. Gordon, Summit, N.J., assignor to Photon Imaging Corp., Edison, N.J.

Filed Apr. 17, 1989, Ser. No. 339,602
Int. Cl.[5] G02B *6/00, 6/06;* **H04N** *1/46*
U.S. Cl. 350—96.25 **18 Claims**



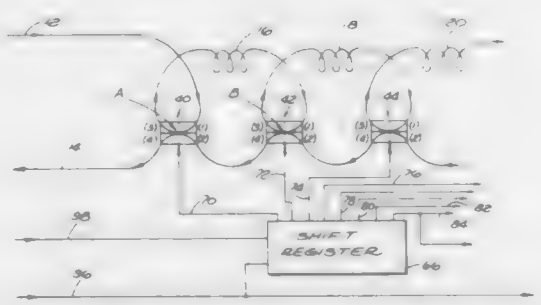
1. A color image scanner including a plurality of light pipes for transmitting an image from an entrance face to an exit face, an array of photosensors coupled to said exit face and including at least first, second, and third sensors for each fiber end in said exit face, a filter positioned between said exit face and said sensor array, said filter including a repetitive pattern of first, second, and third color areas corresponding to said first, second, and third sensors for each of said fiber ends.

5,011,262

FIBER OPTIC SENSOR ARRAY

Michael R. Layton, Clayton, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Apr. 16, 1990, Ser. No. 509,236
Int. Cl.[5] G02B *6/02, 6/16*
U.S. Cl. 350—96.29 **7 Claims**



1. A fiber optic sensing array comprising, in combination:

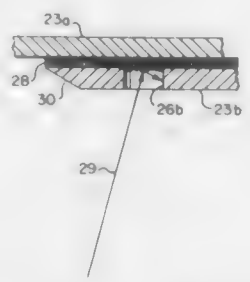
(a) a continuous optical fiber, said fiber being arranged into a sensor branch and a return bus;
(b) said sensor branch including a plurality of distinct fiber sensing coils;
(c) a plurality of switchable directional couplers, each of said couplers including a pair of input ports and a pair of output ports arranged so that communication is provided between said bus and said sensor branch;
(d) said sensor branch and said return bus being arranged so that a fiber segment of said sensor branch passes from an input port to an output port of each of said couplers and a fiber segment of said return bus passes from an input port to an output port of each of said couplers;
(e) means for selectively switching each of said couplers between an "on" state and an "off" state whereby, in said "off" state, light is not coupled between said sensor branch and said return bus segments of said optical fiber;
(f) means for applying a coherent optical pulse to said optical fiber;
(g) means for applying predetermined electrical signals to said couplers so that each coupler is switched to an "on" state prior to arrival of said pulse and switched to said "off" state after transit of said pulse therethrough; and
(h) means engaged to the termination of said optical fiber adjacent said return bus for receiving the optical output of said array.

5,011,263

PERFORATE PROJECTION SCREEN

Clayton L. Hopper, Canal Fulton, Ohio, assignor to Astro-Tec Manufacturing, Inc., Canal Fulton, Ohio

Filed May 11, 1990, Ser. No. 522,371
Int. Cl.[5] G03B *21/56*
U.S. Cl. 350—125 **12 Claims**



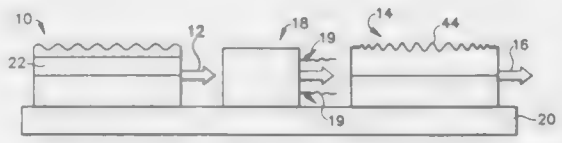
1. A perforate projection screen with substantially uniform reflectivity throughout its visible surface comprising:
(A) at least one perforate panel having:
(1) a light reflective surface on one side thereof, and
(2) a plurality of rows of holes therethrough located substantially throughout the entire reflective surface of each such panel,
(B) each such panel adapted to be mounted a spaced distance from a substantially non-reflective surface, thereby creating a substantially uniformly dark non-reflective chamber behind the panel; and
(C) a dark material covering the surfaces of any objects which are in sufficiently close proximity to the back of the panel to be visible through the holes in the panel without such covering, said dark material having a textured surface comprised of a plurality of dark fibers extending vertically from the surface thereof to reduce the surface reflectivity of all such objects so that they are not visible through the holes in the panel.

5,011,264

WIDE LINEAR DYNAMIC RANGE OPTICAL MODULATOR

Eric M. Bradley, San Diego, and Ronald F. Mathis, Ramona, both of Calif., assignors to General Dynamics Corp., Electronics Divn., San Diego, Calif.

Filed Dec. 28, 1989, Ser. No. 458,156
Int. Cl.[5] G02B *27/42;* **H01S** *3/10*
U.S. Cl. 350—162.24 **21 Claims**



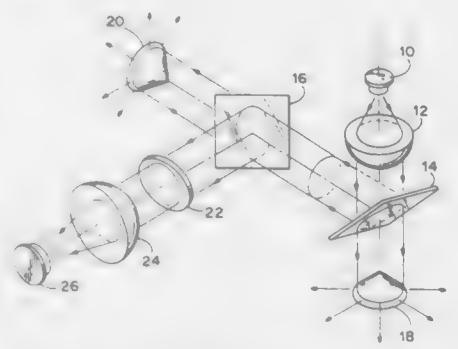
1. An apparatus for generating an amplitude modulated optical signal comprising:
signal generation means for generating an input optical signal at a wavelength;
tunable filter means, sharing a common optical axis with said signal generation means, for receiving said optical signal, said filter means responsive to an input control signal for varying the amplitude of said optical signal in a manner linear with said wavelength and for providing an output amplitude modulated optical signal; and
optical isolator means, located between and sharing said common optical axis with said signal generation means and said filter means, for preventing optical signals originating at said filter means traveling towards said signal generation means from impinging on said signal generation means.

5,011,265

OPTICAL ATTENUATOR

Hisashi Tamamura, and Shoji Sekiguchi, both of Tokyo, Japan, assignors to Sony/Tektronix Corporation, Tokyo, Japan

Filed Feb. 7, 1990, Ser. No. 476,833
Claims priority, application Japan, Oct. 6, 1989, 1-261763
Int. Cl.[5] B02B *27/14, 27/42*
U.S. Cl. 350—173 **6 Claims**



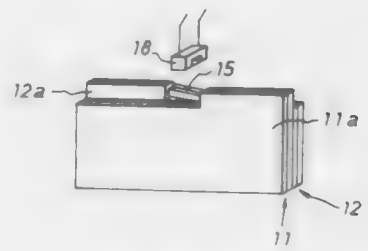
1. An optical attenuator comprising:
a first beam splitter for receiving an incident light beam from a light source at a predetermined angle of incidence to split the beam into a first reflected light beam and a first transmitted light beam;
a first deflecting means for deflecting the first transmitted light beam from said first beam splitter to cause the deflected light to be propagated in other than the incident direction of the first transmitted light beam;
a second beam splitter for receiving the first reflected light beam at said predetermined angle of incidence and in a plane of incidence perpendicular to the plane of incidence in which the first beam splitter receives the incident light, beam to split the first reflected light beam into a second reflected light beam and a second transmitted light beam; and
a second deflecting means for deflecting the second transmitted light beam from the second beam splitter to cause the deflected light to be propagated in other than the incident direction of the second transmitted light beam.

5,011,266

LIQUID CRYSTAL DISPLAY DEVICE

Takumi Suzuki, and Kiyohiro Uehara, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

PCT No. PCT/JP88/00058, § 371 Date Sep. 22, 1988, § 102(e) Date Sep. 22, 1988
PCT Filed Jan. 26, 1988, Ser. No. 254,774
Claims priority, application Japan, Jan. 26, 1987, 62-9656; May 14, 1987, 62-72526; Jul. 28, 1987, 62-114663
Int. Cl.[5] G02F *1/133*
U.S. Cl. 350—335 **5 Claims**



1. A multi-layered liquid crystal display device, comprising:
liquid crystal display panels each including two sheets of polymer films kept apart from each other, and two transparent electrodes laminated respectively with inside surfaces of said respective polymer films, said inside surfaces facing each other;
two first electrode lead-out portions extending respectively together with said two transparent electrodes of one of said liquid crystal display panels in one identical direction outwardly from a display area of said one of said liquid crystal display panels;
two second electrode lead-out portions extending respectively together with said two transparent electrodes of the other of said liquid crystal display panels in one identical direction outwardly from a display area of said other of said liquid crystal panels;
an external circuit substrate inserted between said first electrode lead-out portions at one portion thereof and inserted between said second electrode lead-out portions at another portion thereof; and
a connector mounted on said external circuit substrate for connecting electrically said two transparent electrodes of the respective liquid crystal display panels with an external drive circuit through said external circuit substrate.

5,011,267

METHOD FOR TILTED ALIGNMENT OF LIQUID CRYSTALS WITH IMPROVED PHOTOSTABILITY

Leroy J. Miller, Canoga Park; Willis H. Smith, Jr., Newbury Park; Anna M. Lackner, Los Angeles, and J. David Margerum, Woodland Hills, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 14, 1986, Ser. No. 919,155
Int. Cl.[5] G02F *1/13*
U.S. Cl. 350—340 **11 Claims**

1. A method of preparing a liquid crystal cell having a pair of opposed surfaces and exhibiting an improved photostability and temperature insensitivity, comprising:
treating at least one surface of the opposed cell surfaces to provide generally aligned tilted surface microstructures

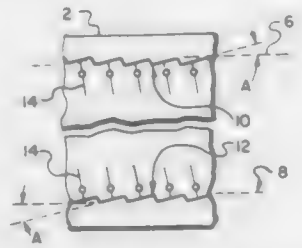
with free hydroxyl groups located thereon, said step of treating comprising:

a. depositing a first layer of SiO_x on said at least one surface at a medium grazing angle, wherein x ranges from 1 to 2;

b. rotating said at least one surface by 90° and

c. depositing a second layer of SiO_x on said first layer at a shallow grazing angle;

chemically reacting said microstructures with a long chain alcohol to bond long chain alkoxy groups to said microstructures at the location of the free hydroxyl groups, the



alcohol having the formula ROH, where R is a carbon chain having at least about 6 carbon atoms therein, the treatment of the opposed cell surfaces and the minimum length of the carbon chain being selected to yield a tilted-perpendicular alignment for the alkoxy groups substantially independent of the carbon chain length in the approximate tilt angle range of 0.5°-6°;

introducing liquid crystal material into said cell so that the liquid crystal has substantially the same alignment as the long chain alkoxy groups, the alignment being retained in the presence of photodecomposition.

5,011,268

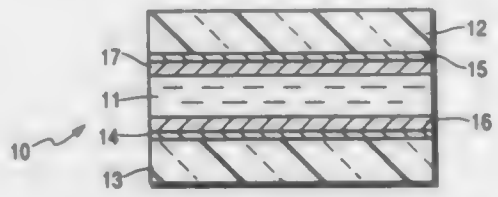
INORGANIC ALIGNMENT LAYER FOR LIQUID CRYSTAL DEVICES AND METHOD OF FORMING

Grzegorz Kaganowicz, Belle Mead, N.J., assignor to General Electric Company, Princeton, N.J.

Filed Oct. 30, 1989, Ser. No. 428,698

Int. Cl.[5] G02F *1/133*

U.S. Cl. 350—341 **6 Claims**



1. In a liquid crystal device having a liquid crystal material disposed between first and second substrates and electrical electrodes arranged on the surfaces of said substrates adjacent to said liquid crystal material, an improved alignment layer comprising:

a glow discharge deposited layer of a porous inorganic, silicon based dielectric material on said electrodes.

5,011,269

METHOD OF DRIVING A FERROELECTRIC LIQUID CRYSTAL MATRIX PANEL

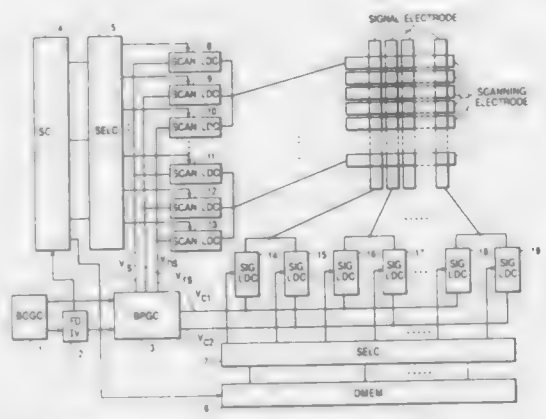
Naohide Wakita, Kobe; Tsuyoshi Uemura, Higashiosaka; Hiroyuki Ohnishi, Ikeda; Noriko Ohba, Nara, and Isao Ota, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 5, 1986, Ser. No. 903,772

Claims priority, application Japan, Sep. 6, 1985, 60-198014; Sep. 6, 1985, 60-198015

Int. Cl.[5] G02F *1/13;* **G09G** *3/36*

U.S. Cl. 350—350 S **2 Claims**



1. A method of driving a liquid crystal matrix panel of the type in which ferroelectric liquid crystal is held between scanning electrodes and signal electrodes to form a matrix-arrayed pixels, characterized by: applying a first group of pulse voltages during a reset phase to an Nth scanning electrode connected to pixels in an Nth row when pixels in another row are selected, said first group of pulse voltages having enough peak value and pulse width to bring the pixels in the Nth row into a constant state of either bright or dark, thereby to reset said pixels in said Nth row; and applying, during a selected phase in which the pixels in said Nth row are to be selected, a second group of pulse voltages so that the pixels in said Nth row are either inverted or keep their state in accordance with signal voltages applied to the signal electrodes, wherein one grey-level is obtained by making a multiple number of field scannings while applying said first group of pulse voltages at different timing with each field scanning.

5,011,270

LIQUID CRYSTAL ELECTRO-OPTICAL DEVICE AND MANUFACTURING METHOD THEREFOR

Shunpei Yamazaki, Tokyo, and Masahiko Sato, Atsugi, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Atsugi, Japan

Division of Ser. No. 470,725, Jan. 26, 1990, which is a continuation of Ser. No. 250,411, Sep. 28, 1989, Pat. No. 4,906,074. This application Mar. 6, 1990, Ser. No. 489,348

Claims priority, application Japan, Sep. 29, 1987, 62-244808; Oct. 7, 1987, 62-253178; Oct. 7, 1987, 62-253179; Oct. 7, 1987, 62-253180

Int. Cl.[5] G02F *1/13*

U.S. Cl. 350—350 S **5 Claims**

1. A liquid crystal device comprising:

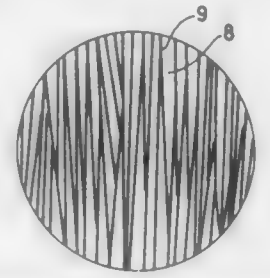
a pair of substrates;

a chiral smectic liquid crystal interposed between said substrates;

an electrode arrangement provided for defining a plurality of cell regions in said liquid crystal layer in array form and for applying an electric field to each region;

an orientation control surface formed at least one inside surface of said substrates;

wherein said each region consists of a plurality of micro-domains each of which forms a lozenge having two diagonals, the length of one of said diagonals is not more than



450 microns and not less than 200 microns, and the length of another diagonal is not more than 25 microns and not less than 8 microns.

5,011,271

LIGHT SHUTTER ARRAYS FOR FORMING IMAGES

Itaru Saito; Ken Matsubara; Kouichi Shingaki; Tomohiko Masuda, and Hirohisa Kitano, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

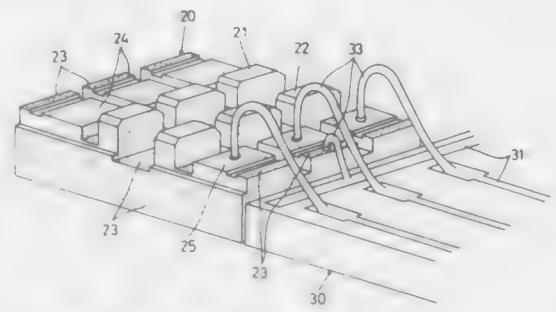
Filed Dec. 9, 1988, Ser. No. 282,304

Claims priority, application Japan, Dec. 11, 1987, 62-315007

The portion of the term of this patent subsequent to Aug. 8, 2006, has been disclaimed.

Int. Cl.[5] G02F *1/01, 1/03*

U.S. Cl. 350—356 **29 Claims**



1. A light shutter means comprising:

a plurality of shutter elements formed of a material having an electro-optical effect, said elements defined independently and three-dimensionally on an upper face of a substantially polyhedral chip and aligned in at least two arrays; each said element having a shutter window for selective light transmission therethrough; and

a common electrode, formed between said arrays, and extending at least from one end thereof to a first side face of the chip nearest said one end;

wherein the shutter elements of one array are disposed parallel with the shutter elements of the other array on said upper face of said chip.

5,011,272

COMPACT ZOOM LENS

Hiroki Nakayama, Kanagawa; Nozomu Kitagishi, Tokyo; Jun Hattori, Kanagawa; Shigeyuki Suda, and Akihisa Horiuchi, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 810,670, Dec. 18, 1985, abandoned. This application Mar. 27, 1989, Ser. No. 329,588

Claims priority, application Japan, Dec. 21, 1984, 59-271261; May 13, 1985, 60-102399; Jun. 25, 1985, 60-138195

Int. Cl.[5] G02B *15/00, 3/00, 9/00*

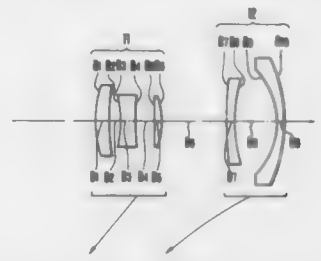
U.S. Cl. 350—427 **10 Claims**

1. A zoom lens comprising:

a positive lens unit having a plurality of lens components having a positive refractive power; and

a negative lens unit having a plurality of lens components positioned nearer the image side than said positive lens unit;

wherein said positive and negative lens units are movable such that a zooming operation from wide angle to telephoto is performed by decreasing the distance between



said positive lens unit and said negative lens unit and by simultaneously moving said positive and negative lens units toward the object side, and wherein at least one lens unit compensates for image aberrations in cooperation with other lens components and includes at least one single distributive index type lens component having an optical axis in common with the other lens components, thereby to compensate for said image aberrations due to zooming throughout the entire zooming range.

5,011,273

LENS BARREL OF A ZOOM LENS

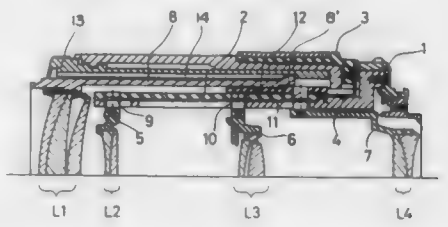
Masayuki Ueyama, and Minoru Kuwana, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 12, 1989, Ser. No. 336,847

Claims priority, application Japan, Apr. 13, 1988, 63-90543

Int. Cl.[5] G02B *15/00, 7/04*

U.S. Cl. 350—429 **9 Claims**



1. A lens barrel for a zoom lens having a first lens group and at least one second lens group the first and second lens groups moving as a linked unit during zooming, said lens barrel comprising:

a stationary cam ring capable of being fixedly mounted on a camera body;

a movable cam ring rotatably supported relative to said stationary cam ring;

a first lens holder for holding said first lens group at a location outside said stationary cam ring and said movable cam ring;

a second lens holder for holding said second lens group at a location inside said stationary cam ring and said movable cam ring; and

a connecting means for connecting said first and second lens holders via said first and second cam rings.

5,011,274

EYEGLASS FRAME COMPRISING A SCREW JOINT WHICH IS PROTECTED FROM BECOMING LOOSE

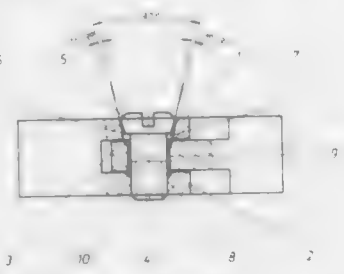
Reiner Wagner, Ispringen, Fed. Rep. of Germany, assignor to OBE-Werk Ohnmacht & Baumgartner GmbH & Co. KG, Ispringen, Fed. Rep. of Germany

Filed Nov. 20, 1989, Ser. No. 439,289

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1989, 8904802[U]

Int. Cl.[5] G02C *5/14, 5/22, 1/08*

U.S. Cl. 351—121 **7 Claims**



1. In an eyeglass frame comprising

at least two frame members, one of which is formed on opposite sides with a tapped bore and with a conical opening, which tapped bore and conical opening are axially aligned and open toward each other, and

a screw having a screw-threaded shank, which is screwed into said tapped bore, and a conical head portion, which tapers toward said shank and extends into said conical opening and engages said one frame member in said conical opening,

the improvement residing in that

said conical head portion tapers with an included angle of 20 to 40 degrees and defines with said one frame member in said conical opening a clearance angle of 1 to 3 degrees and a clearance space which surrounds said shank.

5,011,275

DIMETHYLACRYLAMIDE-COPOLYMER HYDROGELS WITH HIGH OXYGEN PERMEABILITY

Karl F. Mueller, New York, N.Y., assignor to Ciba Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 356,801, May 23, 1989, Pat. No. 4,954,587, which is a continuation-in-part of Ser. No. 215,101, Jul. 5, 1988, abandoned. This application Jul. 6, 1990, Ser. No. 549,528

Int. Cl.[5] G02C *7/04*

U.S. Cl. 351—160 H **14 Claims**

1. A hydrated composition in form of a contact lens which comprises a copolymer, having the characteristics of high clarity, high oxygen permeability and which is, in the water swollen hydrated state, soft and flexible, which copolymer comprises the polymerization product of, with weight percent based on the total weight of monomers (a), (b), (c) and (d), of

(a) 24.9 to 70 percent by weight of N,N-dimethylacrylamide,

(b) 65 to 19.9 percent by weight of a vinyl monomer selected from the group consisting of the acrylate or methacrylate esters of formula B1

$$CH_2=\underset{\displaystyle R_1}{\overset{|}{C}}-COO(CH_2)_n(CF_2)_mCF_2X \qquad (B1)$$

wherein

R_1 is hydrogen or methyl,

n is an integer from 1–4,

m is an integer from 0–11,

X is hydrogen or fluorine, with the proviso that, when m is 0, X is fluorine, and

hexafluoroisopropyl methacrylate,

(c) 10 to 40 percent by weight of a C_2-C_4-hydroxyalkyl acrylate or methacrylate, a C_2-C_4-alkoxy-alkyl acrylate or methacrylate or an oligosiloxanyl-silylalkyl acrylate or methacrylate containing 2 to 10 silicon atoms, or mixture thereof, and

(d) 0.1 to 3 percent by weight of a crosslinking agent having at least two copolymerizable vinyl groups.

5,011,276

APPARATUS FOR MEASURING REFRACTIVE POWER OF EYE

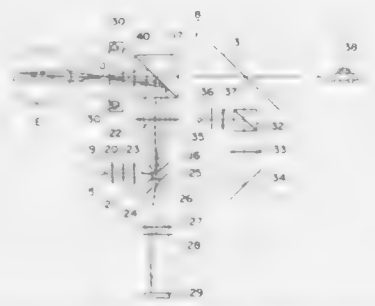
Masakatsu Iwamoto, Kagawa, Japan, assignor to Ryusyo Industrial Co., Ltd., Osaka, Japan

Filed Jun. 26, 1989, Ser. No. 371,544

Claims priority, application Japan, Jun. 27, 1988, 63-158495; Dec. 29, 1988, 63-331999; Dec. 29, 1988, 63-332000; May 29, 1989, 1-136389; May 29, 1989, 1-136390

Int. Cl.[5] A61B *3/10*

U.S. Cl. 351—211 **16 Claims**



1. An apparatus for measuring the refractive power of an eye having an optical measuring device provided with a measuring optical system for measuring the refractive power of the eye and a main body for calculating the refractive power of the eye based on data transmitted thereto from said optical measuring device, wherein said optical measuring device is separated from said main body so as to be hand-movable with respect to said main body and includes:

a measuring light projecting optical system for projecting a measuring light so as to project an optical pattern on the retina of the eye;

a measuring light receiving optical system in which a light reflected from the pattern projected on the retina of the eye is received by a light receiving sensor;

a visual target optical system for allowing the eye to watch a visual target disposed at a far point with respect to the eye, and

an optical system including an illuminating optical system and an optical axes-aligned state detecting optical system which comprises an illuminating light source for illuminating the eye so that an illuminated pattern image reflected from the cornea of the eye is used as an optical axes-aligned state detecting light, the optical axes-aligned state detecting optical system allowing said light receiving sensor to receive a light reflected form the eye;

a monitor means being provided at least in one of said optical measuring device and said main body so as to display the eye based on an image signal transmitted thereto from said light receiving sensor and to display an optical axes-aligned state detecting reticle pattern on the screen thereof, said main body comprising:

an image processing device for detecting coordinates of the illuminated pattern image and the projected pattern image with respect to an optical axis of said measuring light receiving optical system and luminances of the illuminated and projected pattern images based on image signals transmitted thereto from said light receiving sensor;

optical axes-aligned state detecting means for detecting the axes-aligned state of said measuring optical system with respect to the eye based on the coordinate data of the illuminated pattern image transmitted thereto from said image processing device;

in-focus state detecting means for detecting the focused state of said measuring optical system with respect to the eye based on luminance data of the illuminated pattern image transmitted thereto from said image processing device;

measurement starting means for allowing said measuring light projecting optical system to project a measuring light based on focusing and axes-aligning information transmitted thereto from said optical axes-aligned state detecting means and said in-focus state detecting means, and

calculating means for calculating the refractive power of the eye based on the coordinate data of the illuminated pattern image transmitted thereto from said image processing device.

5,011,277

MULTI-SCREEN PROJECTOR

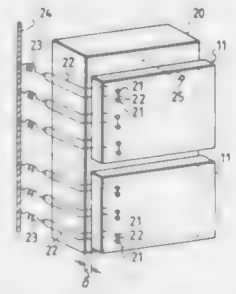
Masanori Ogino, Yokohama; Yoshiaki Iwahara, Yokosuka; Yuzo Tamura, Yokohama, and Shoji Kuroda, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 9, 1990, Ser. No. 521,015

Claims priority, application Japan, May 10, 1989, 1-114906

Int. Cl.[5] G03B *21/60*

U.S. Cl. 353—94 **26 Claims**



1. A multi-screen projector comprising:

n×m unit projectors arranged horizontally in m columns and vertically in n rows like a matrix, where n and m are positive integers either of which is two or more;

transmisive screen means comprised of a plurality of sheets including at least n×m Fresnel sheets and m or n×m front sheets having lenticular stripes for diffusing the light horizontally, said transmissive screen means being formed by a plurality of unit screens each of which is composed of layers of sheets including at least a Fresnel sheet and a front sheet; and

spring means;

wherein one of two sheets included in said layers of sheets composing said each of unit screens is provided with the shape having a one-dimensional curvature for separating the peripheries of the two sheets in the unloaded state when the centers of the two sheets are in touch with each other, and

said spring means provides a force to pull the peripheries of said two sheets toward each other for said one of the two sheets.

5,011,278

OPTICAL CORRELATOR METHOD AND APPARATUS FOR PARTICLE IMAGE VELOCIMETRY PROCESSING

Patrick V. Farrell, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

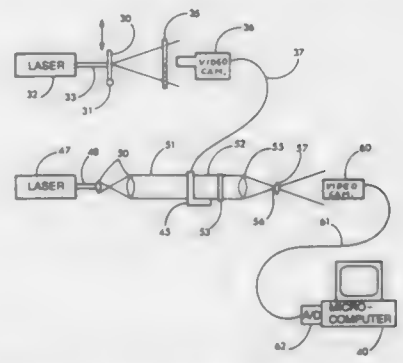
Filed Apr. 25, 1989, Ser. No. 342,982

Int. Cl.[5] G01P *3/36;* **G01B** *9/02*

U.S. Cl. 356—28 **24 Claims**

1. A method of image processing for use in measuring the velocity of particles flowing in a fluid, wherein images of the particles have been recorded on optical medium in an optical double exposure showing the displacement of the particles over a time increment, comprising the steps of:

(a) projecting light through a portion of the medium onto a screen to form an image of Young's fringes:



(b) modulating a second beam of light in a two dimensional array in accordance with the image formed on the screen to produce a diffraction pattern in the light so modulated;

(c) forming an image of the diffraction pattern.

5,011,279

FIBER-OPTICAL SENSOR

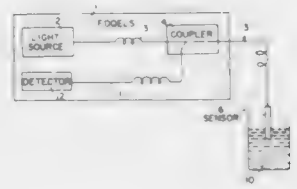
Helmut Auweter, Limburgerhof; Dieter Horn, Heidelberg; Dieter Lilge, and Juergen Wortmann, both of Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 10, 1988, Ser. No. 205,353

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1987, 3719806

Int. Cl.[5] G01N *21/00*

U.S. Cl. 356—28.5 **2 Claims**



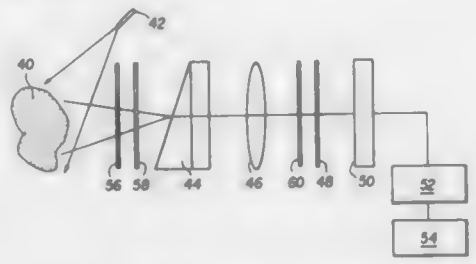
1. A fiber-optical sensor for measuring the Doppler broadening of scattered laser light by the principle of quasi-elastic light scattering (QELS) , the scattered light originating from scattering of laser light by particles in movement in the sample (10) being measured, having a light guide (3) selected from the group consisting of a single-mode light guide and a multi-mode light guide used as an immersion probe into said sample and which transfers laser light from a source (2) to said sample and further which transfers light scattered from said sample to a detector (12) wherein the emergence surface (7) for the laser light at the end of said light guide is inclined at an angle $1° \leqq \phi \leqq 15°$, the angle of inclination being defined by the optical axis (8) of said light guide and the normal (9) of said emergence surface.

5,011,280

METHOD OF MEASURING DISPLACEMENT BETWEEN POINTS ON A TEST OBJECT

Yau Y. Hung, 3130 Quail Ridge Cir., Rochester Hills, Mich. 48309

Division of Ser. No. 129,709, Dec. 7, 1987, Pat. No. 4,887,899. This application Oct. 23, 1989, Ser. No. 425,250
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—35.5 **7 Claims**



1. A method of measuring displacement between two points on a test object, comprising the steps of:
(a) generating a first interference pattern representing the superposition of laterally-displaced images of the test object, while the object is in an undeformed state,
(b) generating a sequence of second interference patterns representing the superposition of laterally-displaced images of the test object, while the object is in a deformed state, and repeatedly producing third interference patterns determined by comparing each of said second interference patterns with the first interference pattern, the generating steps comprising the steps of storing the patterns in a computer, the comparing step being performed by electronically comparing the respective second patterns with the first pattern,
(c) selecting a point on one of the third interference patterns corresponding to the points on the test object,
(d) adjusting an optical element so as to adjust the phase of the second interference patterns currently being formed, by a measured amount, until the corresponding third interference pattern comprises a fringe pattern having an extremum at the selected point, and
(e) converting the measured amount of phase adjustment into a value of the displacement between the points on the object.

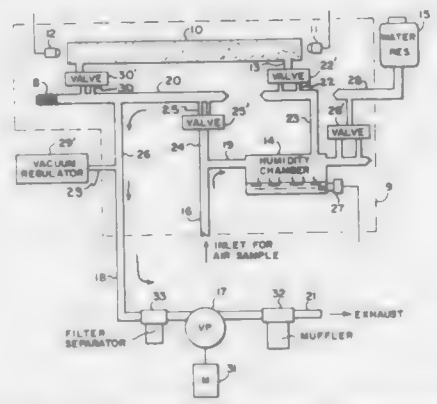
5,011,281

HUMIDIFICATION AND CLOUD CHAMBER BLOCK FOR PARTICLE CONCENTRATION DETECTION

Eric W. Harris, Moncks Corner, S.C., assignor to Research Equipment Corporation, North Charleston, S.C.

Continuation-in-part of Ser. No. 352,149, May 15, 1989, Pat. No. 4,967,187. This application Sep. 18, 1989, Ser. No. 408,880
Int. Cl.[5] G01N *1/00*
U.S. Cl. 356—37 **5 Claims**

1. A device for determing the density or changes in density of small particles, comprising:
a monolithic block of material that is impervious to light;
an elongated chamber formed in said block and defining a cloud chamber for receiving a source of light at one end and a photo detector at the opposite end, said chamber having input and output passageways;
a trough, formed in said block, and defining a humidification chamber;
a first passageway for connecting said humidification chamber to the input passageway of said cloud chamber within said block;
an air inlet passageway formed in said block;
an intermediate passageway formed within said block and coupled to said air inlet passageway, said intermediate passageway being coupled with said humidity chamber and the output passageway of said cloud chamber; and,
an exhaust opening formed in said block and communicative to said cloud chamber through the intermediate chamber for permitting a vacuum to be established in the intermediate passageway within said block, wherein said elongated



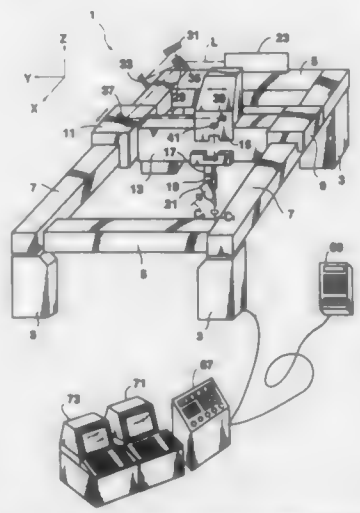
chamber, intermediate passageway and trough are contained within said block to minimize the length of the connecting passageways.

5,011,282

LASER BEAM PATH ALIGNMENT APPARATUS FOR LASER PROCESSING MACHINES

Stanley L. Ream, Charlottesville, Va.; C. S. Lee, Torrance, Calif.; G. C. Lim, Cerritos, Calif., and Kenneth Fukae, Westminster, Calif., assignors to Amada Company, Limited, Japan

Filed Nov. 16, 1989, Ser. No. 438,842
Int. Cl.[5] G01B *11/26*
U.S. Cl. 356—153 **6 Claims**



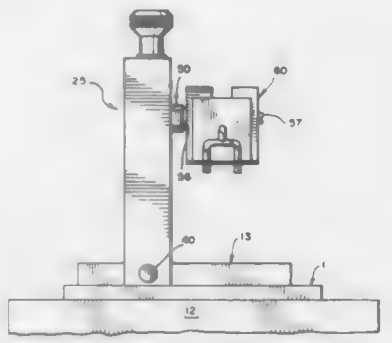
1. A laser beam path alignment apparatus for a laser processing machine that is provided with a laser generator, a laser processing head for performing laser processing, a means for moving the laser processing head in a predetermined axis direction, and a mirror for guiding a laser beam from the laser generator to the laser processing head, comprising:
means for detecting a laser beam position through which the laser beam passes, the laser beam position being defined in a plane perpendicular to the predetermined axis direction;
means for storing a first laser beam position which is detected by the laser beam position detecting means in the case where the moving means is positioned at a first position in the predetermined axis direction;
means for displaying the first laser beam position and a second beam position, the second laser beam position being detected by the laser beam position detecting means in the case where the moving means is positioned at a second position in the predetermined axis direction; and
means for rotating the mirror about an axis lying in the surface of the mirror, whereby the second laser beam position is changed to coincide with the first laser beam position.

5,011,283

FLOW CELL SUPPORT DEVICE

Tony R. Carrie, Evansville, and Robert A. Newton, Owensville, both of Ind., assignors to Bristol-Myers Squibb Co., New York, N.Y.

Filed Jan. 8, 1990, Ser. No. 461,879
Int. Cl.[5] G01N *21/01*
U.S. Cl. 356—246 **9 Claims**



1. A support for a spectrophotometric flow cell comprising:
(a) a base plate, said base plate including a front surface;
(b) a mounting bar including a back face, said mounting bar mounted on said front surface of said base plate along said back face of said mounting bar;
(c) a support arm slidably and releasably attached to said mounting bar, said support arm including an elongate cavity and two support legs forming a slot for receiving said mounting bar;
(d) an adjustment plug; and
(e) means for locating and adjusting the position of said adjustment plug within said elongate cavity.

5,011,284

DETECTION SYSTEM FOR RAMAN SCATTERING EMPLOYING HOLOGRAPHIC DIFFRACTION

James M. Tedesco, Livonia; Harry Owen, Saline, and Byung J. Chang, Ann Arbor, all of Mich., assignors to Kaiser Optical Systems, Ann Arbor, Mich.

Filed Mar. 22, 1990, Ser. No. 497,238
Int. Cl.[5] G01N *21/65;* **G01J** *3/44*
U.S. Cl. 356—301 **16 Claims**

1. A Raman scattering detector comprising:
a source of collimated, substantially monochromatic light along a primary optical axis;
a first right angle prism having a first right angle face disposed perpendicular to said primary optical axis, a second right angle face disposed parallel to said primary optical axis, and an oblique face;
a holographic optical element disposed parallel to said oblique face of said first right angle prism, said holographic optical element having embedded therein regions of alternating indices of refraction for passing said monochromatic light substantially undiffracted while diffracting light at the wavelengths of expected Raman scattered light through an angle of approximately 90 degrees;
a second right angle prism having an oblique face disposed parallel to said holographic optical element, and a first right angle face disposed perpendicular to said primary optical axis;
a sample cell disposed on said primary optical axis beyond said first right angle face of said second right angle prism for holding a sample substance to be irradiated;
a concentrating lens disposed perpendicular to said primary optical axis between said first right angle face of said second right angle prism and said sample cell for concentrating said monochromatic light on the sample within said sample cell and for collimating Raman scattered light parallel to said primary optical axis;



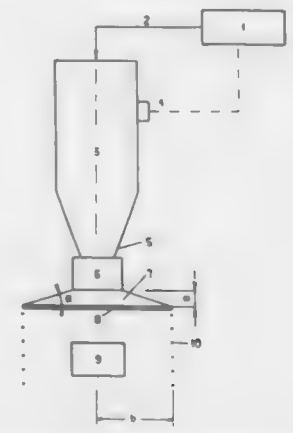
a focussing lens disposed parallel to said second right angle face of said first right angle prism having a secondary optical axis perpendicular to said primary optical axis for focussing Raman scattered light diffracted by said holographic optical element at a focal plane; and
at least one photosensitive detector disposed on said focal plane of said focussing lens at a location off said secondary axis.

5,011,285

METHOD AND APARATUS FOR PERFORMING AUTOMATIC PARTICLE ANALYSIS

Terje Jorgensen, Skien; Oddbjorn E. Strand, Eidanger, and Odd A. Asbjornsen, Arnold, all of Norway, assignors to Norsk Hydro a.s., Oslo, Norway

PCT No. PCT/NO88/00095, § 371 Date Sep. 20, 1989, § 102(e) Date Sep. 20, 1989, PCT Pub. No. WO89/05971, PCT Pub. Date Jun. 29, 1989
PCT Filed Dec. 16, 1988, Ser. No. 399,479
Claims priority, application Norway, Dec. 18, 1987, 875304
Int. Cl.[5] G01N *15/02*
U.S. Cl. 356—335 **11 Claims**



1. A method of automatically analyzing a sample group of

particles to determine the size distribution of the particles and their deviation from a desired shape, comprising the steps of:

providing a container for particle samples, said container having an outlet for the particles, a vibrating plate having an outer edge positioned below said outlet a distance a, wherein the length between a center line of said outlet of said container and said outer edge of said vibrating plate is a distance b, said distances a and b being chosen such that the particles of the particle samples will flow from said outlet of said container onto said vibrating plate and over said outer edge in a monolayer when said plate vibrates, with an angle α of the surface of the particles on said vibrating plate relative to a horizontal plane at 50% to 90% of the sliding angle of the particles;

placing particle samples in said container such that the particle samples flow through said container and onto said vibrating plate via said outlet;

vibrating said vibrating plate with the particle samples thereon so as to form a monolayer of said particles flowing over said outer edge of said vibrating plate;

lighting said monolayer;

pictorially recording said monolayer while said monolayer is lit to obtain a pictorial record of said monolayer; and

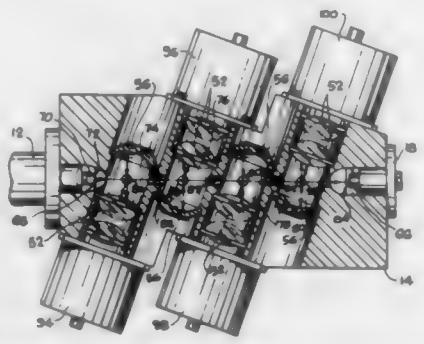
analyzing said pictorial record of said monolayer to determine the size distribution of the particles therein.

5,011,286

MULTISENSOR PARTICLE COUNTER UTILIZING A SINGLE ENERGY SOURCE

Louis J. Petralli, Grants Pass, Oreg., assignor to Met One, Inc., Grants Pass, Oreg.

Filed Aug. 3, 1989, Ser. No. 389,061
Int. Cl.[5] G01N *21/00*
U.S. Cl. 356—343 **18 Claims**



1. An apparatus for the detection of individual particles in a fluid comprising:

a sensor body having a plurality of sample regions therein, adjacent sample regions being joined by an optical passageway,

a light source disposed with respect to said sensor body to project an incident beam along a light path through each of said sample regions via said optical passageway joining adjacent sample regions,

means for directing a plurality of generally identical sample flows of particle-bearing gas of substantially identical humidity into the sample regions such that each sample gas flow passes through said light path, none of said sample gas flows being reference flows with respect to the other sample gas flows, and

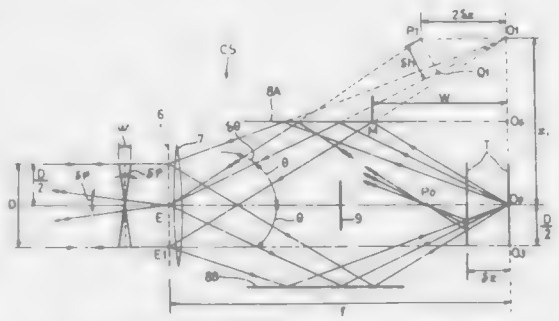
a plurality of detector means for sensing scattered light caused by impingement of individual particles along said light path and for providing a signal corresponding to the quantity of sensed light, thereby allowing counting of said particles, said detector means being disposed with respect to said sensor body such that each detector means is substantially limited to sensing of scattered light from an operationally separate sample region.

5,011,287

INTERFEROMETER OBJECT POSITION MEASURING SYSTEM AND DEVICE

Masayuki Mino, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 129,730, Dec. 7, 1987, abandoned. This application Dec. 7, 1989, Ser. No. 450,504
Claims priority, application Japan, Dec. 8, 1986, 61-292110
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—356 **26 Claims**



1. An object position measuring method comprising the steps of:

generating parallel beams of light;

diffracting the light beams to produce a pair of positive and negative diffracted beams;

focusing the positive and negative beams onto a pair of symmetrically disposed mirrors so that the positive and negative beams will reflect off of opposite mirrors and be incident onto the object;

reflecting the positive and negative beams off of the object so that the positive beam is reflected towards the mirror which reflected the incident negative beam, and the negative beam is reflected towards the mirror that reflected the incident positive beams;

focusing the positive and negative beams that have been reflected back from the object and off of the symmetrically disposed mirrors;

re-diffracting each of the diffracted beams reflected by the object to interfere with each other thereby to provide interference fringes if the object is not positioned at a predetermined point when each of the diffracted beams is concentrated on the object; and

evaluating the interference fringes to determine the position of the object.

5,011,288

POSITION CONTROL SYSTEM FOR UNMANNED AUTOMATED VEHICLE

Akio Noji; Kenji Kamimura, and Sadachika Tsuzuki, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 28, 1989, Ser. No. 344,574
Claims priority, application Japan, May 13, 1988, 63-116689
Int. Cl.[5] G01B *11/14;* **B60T** *7/16;* **G08G** *1/123*
U.S. Cl. 356—375 **4 Claims**

1. A position control system for a moving vehicle comprising;

light-reflecting means disposed at at least three positions apart from the moving vehicle and reflecting light in the direction of incident light;

light beam source means mounted on the moving vehicle for emitting a light beam;

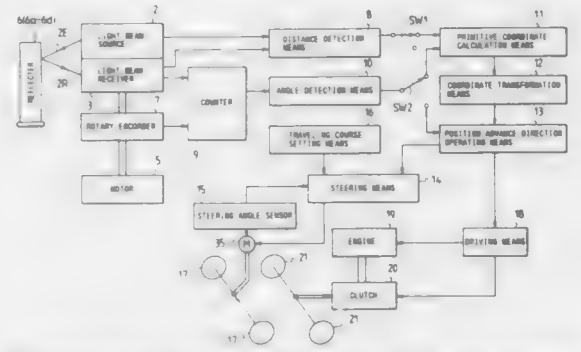
light beam scanning means mounted on the moving vehicle for scanning the light beam in all the different azimuthal directions around the moving vehicle;

beam receiver means mounted on the moving vehicle for receiving beams of light reflected from the light-reflecting means;

distance detection means on said vehicle for detecting each distance between the moving vehicle and each of the light-reflecting means on the basis of the output of the beam receiver means;

angle detection means on said vehicle for detecting differential azimuths between two adjoining light-reflecting means on the basis of the output of the beam receiver means;

first calculating means on said vehicle for calculating the positions of the respective light-reflecting means on the basis of said detected distances and said detected differential azimuths, said calculation being on a primitive coordinate system wherein the position of the moving vehicle is fixed as the origin;



coordinate transformation means coupled to said first calculating means for transforming said primitive coordinate system to an execution coordinate system wherein the calculated position of one of the light-reflecting means is defined as the origin; and

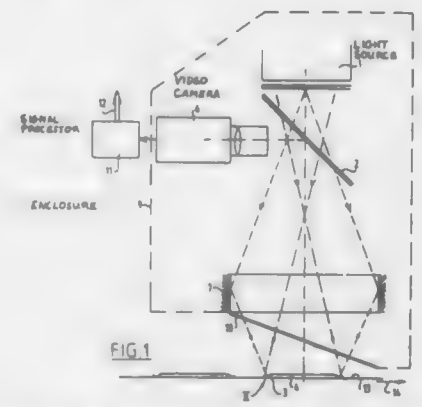
second calculating means coupled to said coordinate transformation means and to said angle detection means for calculating the position of the moving vehicle on said execution coordinate system by use of triangular techniques employing detected differential azimuths provided by said angle detection means and the positions of said light reflecting means calculated by said first calculating means.

5,011,289

METHOD AND AN APPARATUS FOR CHECKING AN OBJECT FOR THE PRESENCE OF FILLING COMPOUND

Nicholaas C. Swart, Deventer, Netherlands, assignor to Heuft-Qualiplus B.V., Deventer, Netherlands

Filed Nov. 20, 1989, Ser. No. 439,543
Claims priority, application Netherlands, Nov. 21, 1988, 8802870
Int. Cl.[5] G01N *21/88*
U.S. Cl. 356—394 **9 Claims**



1. A method for inspecting the gutter of a container lid, comprising the steps of:

placing the container lid in a path of a light,

directing the light toward the gutter of the container lid, such that at least some light is reflected from the gutter, thereby forming an image of the gutter;

monitoring the image formed by the reflected light;

comparing the image of the gutter with a reference to determine if the gutter is flawed; and

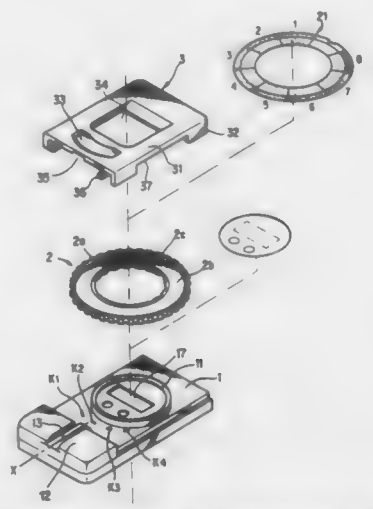
generating a rejection signal if the gutter is flawed.

5,011,290

TEST SAMPLE COLOR COMPARISON DEVICE

Takao Terada, 1-2, Morikawachinishi, Higashiosaka-shi, Osaka; Hiroyuki Ota, 3-1, Demaru-cho, Takatsuki-shi, Osaka; Shigeru Makita, 748-1, Higashiimakojimachi, Shichihonmatsunishiiru, Imakojidori, Kamigyo-ku, Kyoto-shi, Kyoto, all of Japan; Bernd G. Herpichboehm, 6801 Gull Ct., Indianapolis, Ind. 46256; George H. Sierra, 8365 Cedar Key Dr., Indianapolis, Ind. 46256; Robert B. Summers, 6136 Drawbridge La., Indianapolis, Ind. 46256, and Thomas M. Watlington, 8040 Flatrock Ct., Indianapolis, Ind. 46256

Continuation of Ser. No. 268,561, Nov. 8, 1988, abandoned. This application Aug. 14, 1990, Ser. No. 567,699
Claims priority, application Japan, Nov. 8, 1987, 62-282780; Dec. 7, 1987, 62-310246
Int. Cl.[5] G01J *3/52*
U.S. Cl. 356—423 **4 Claims**



1. A test sample color comparison device comprising:

a casing unit having an insertion slot for receiving a color test sample, and a display section for viewably displaying a color test sample inserted in said slot along with a succession of reference color shades;

a manipulable member mounted so that it can be moved and having an upper portion;

a comparative color test sample section having said succession of reference shades positioned in a pattern, said color test sample section being located on said upper portion of said manipulable member, said succession of reference color shades being successively moved into a viewable position adjacent said color test sample in said display section upon movement of said manipulable member to thereby permit a visual comparison of said reference color shades with a color of said color test sample through said display section;

switch means for converting the position of said manipulable member into an electrical signal representing a position of said comparative color test sample section relative to said color test sample;

an uneven patterned code section movable with movement of said manipulable member for operating said switch means; and,

a display means for displaying a designated color shade

significance corresponding to the relative position of said comparative color test sample section to said color test sample in accordance with said electrical signal.

5,011,291

APPARATUS FOR PRODUCING RUBBER MIXTURES

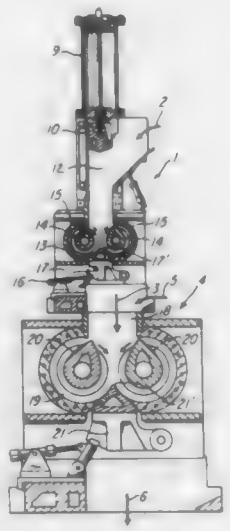
Julius Peter, Tiergartenstr. 107, 3000 Hannover 71, Fed. Rep. of Germany

Division of Ser. No. 149,718, Jan. 29, 1988, Pat. No. 4,910,237. This application Nov. 22, 1989, Ser. No. 441,051

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1987, 3702833

Int. Cl.[5] B19B 1/06

U.S. Cl. 366—91 10 Claims



1. An apparatus for producing rubber mixtures in two stages, namely a master-batching stage and a final mixing stage, in a discontinuous batch-type process that includes adding reactive ingredients, said apparatus comprising a master batcher with a first mixing chamber, a ram kneader and first cooling surface means for said master-batching stage, and a final mixer with a second mixing chamber, a ram-less kneader and second cooling surface means for said final mixing stage, in which:

a master batcher and a final mixer are combined to form a unit by disposing said master batcher above said final mixer, said master batcher and said final mixer communicating such that an outlet port of said master batcher opens directly into an inlet of said final mixer; with said second mixing chamber having a volume greater than a volume of said first mixing chamber; with said master batcher having a saddle at a bottom portion with which said outlet port that opens to said final mixer is closed; and, by opening said saddle, a material to be mixed is successively passed through, and transferred from, said master batcher to said final mixer, without intermediate storage thereof, by force of gravity.

5,011,292

LIQUID PUMPING, MIXING AND DISPENSING APPARATUS

Timothy Trapasso, Phinney Rd., Gramby, N.Y. 13609, and John J. Howland, R.D. 3, Lockwood Rd., Auburn, N.Y. 13021

Filed Aug. 1, 1990, Ser. No. 561,177

Int. Cl.[5] B01F 15/04

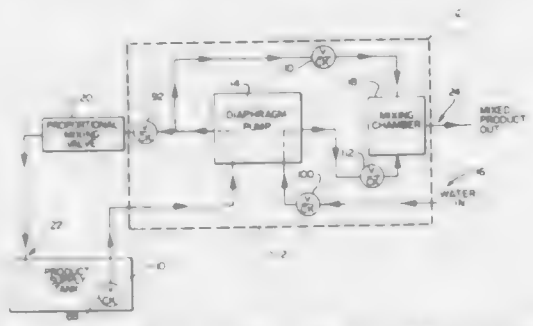
U.S. Cl. 366—161 10 Claims

1. Apparatus for pumping a first liquid from a first remote location and mixing said first liquid in predetermined proportion with a second liquid, said apparatus including means to dispense the mixture of said first and second liquid to a second remote location, said apparatus comprising:

(a) a housing having an internal cavity adapted to receive and contain said second liquid;

(b) a first conduit having first and second ends, said first end communicating with said first liquid at said first remote location;

(c) a pump mounted in said housing internal cavity, said pump having first and second inlet ports and first and second outlet ports, said first conduit second end communicating with said first inlet port and said second liquid contained in said housing communicating with said second inlet port, said pump being operable to discharge said first and second liquids through said first and second outlet ports, respectively, at substantially equal rates;



(d) second and third conduits each having first and second ends, said second conduit first end communicating with said first outlet port and said third conduit first end communicating with said second outlet port;

(e) static mixing means having a third inlet port and a third outlet port, said second ends of both of said second and third conduits communicating with said third inlet port, whereby said first and second liquids are dispensed into said static mixing means and combined therein into said mixture; and

(f) a fourth conduit having first and second ends, said fourth conduit first end communicating with said third outlet port and said fourth conduit second end communicating with said second remote location.

5,011,293

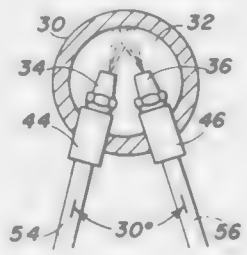
EMULSIFIER MIXING CELL

Donald E. Roop, Worthington; David L. Bachman; Eugene J. Mezey, both of Columbus, all of Ohio, and Philip W. Bartram, Abingdon, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 12, 1989, Ser. No. 420,810

Int. Cl.[5] B01F 5/02, 5/04; B01J 13/00

U.S. Cl. 366—173 5 Claims



1. An apparatus for producing an emulsion having a water containing component and an oil containing component, consisting essentially of:

a cylindrical cell having a circular interior wall;

a first nozzle passing through said cell for spraying the water containing component against said interior wall;

a second nozzle passing through said cell in space relation to said first nozzle for spraying the oil containing component against said interior wall, said first and second nozzles being positioned so that the sprays of all said components intermingle with each other in space relationship to said interior wall prior to impingement on said interior circular wall

a plurality of means separably connected to the first and second nozzles for providing when needed said water containing component to the first nozzle and for providing said oil containing component to said second nozzle.

5,011,294

ELECTRONIC CLINICAL THERMOMETER

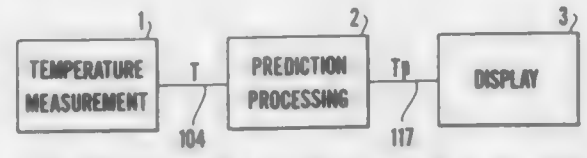
Keiji Yamaguchi, Shimizu, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 363,892, May 18, 1989. This application Sep. 18, 1990, Ser. No. 584,344

Claims priority, application Japan, Nov. 19, 1986, 61-274088; Nov. 19, 1986, 61-274089

Int. Cl.[5] G06F 15/42; G01K 3/00

U.S. Cl. 374—107 4 Claims



1. An electronic clinical thermometer for predicting a sensed temperature that will prevail at a future time, comprising:

first memory means for storing a predetermined predictive functional formula in which values of predetermined coefficient parameters for superimposing said prediction function on a sensed temperature curve are undetermined;

temperature sensing means for sensing temperature and generating temperature data indicative of the temperature sensed;

time signal generating means for measuring elapsed time from start of temperature measurement and generating time data indicative of the measured elapsed time;

second memory means for storing the sensed temperature data in a manner correlated with the time data that prevailed when the temperature data were sensed;

data reading means for reading plural items of temperature data out of said second memory means by a predetermined method as measurement proceeds;

signal analyzing means for setting values of said coefficient parameters by solving simultaneous equations constituted by a plurality of said predictive functional formulae, in which the read temperature data serve as purposive variables and functions of the time data related to these temperature data serve as explicative variables; and

prediction processing means for calculating sensed temperature that will prevail at a future time in accordance with said predictive functional formula specified by the set values of the coefficient parameters.

5,011,295

METHOD AND APPARATUS TO SIMULTANEOUSLY MEASURE EMISSIVITIES AND THERMODYNAMIC TEMPERATURES OF REMOTE OBJECTS

Shankar Krishnan, Arlington Heights, Ill.; George P. Hansen, Austin, Tex.; Robert H. Hauge, Houston, Tex.; John L. Margrave, Houston, Tex., and Charles A. Rey, Riverwoods, Ill., assignors to Houston Advanced Research Center, The Woodlands, Tex.

Filed Oct. 17, 1989, Ser. No. 422,644

Int. Cl.[5] G01J 5/58, 5/10; G01K 7/00

U.S. Cl. 374—126 17 Claims

11. Apparatus for measurement of the thermodynamic temperature of a radiating object comprising

a light source means of given wavelength for reflecting a beam of light off the object at a given angle,

means for interrupting said beam of light,

detector means for receiving radiation from said object comprising both

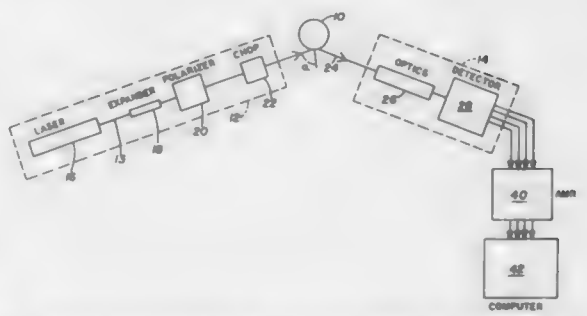
the self-emitted radiation from the object when the light is off in order to determine the brightness temperature of the object and

combined reflected and transmitted radiation from the object when the light source means is on, in order to determine the emissivity of the object.

said detector means comprising means for amplitude splitting of the received radiation into two component beams,

means for dividing each of the two component beams into two beams each of polar components, and

means for measuring the intensities of the four resulting components, said intensities being related to the four



Strokes vectors of the received radiation, and computing means for computing the brightness temperature and emissivity of the object and for combining said brightness temperature and said emissivity to determine the thermodynamic temperature of the object.

17. Method for non-contact determination of the thermodynamic temperature of a remote object, said method comprising the steps of directing a polarized light beam to the object causing said light to be reflected and transmitted from said object, measuring four polarization components of the light reflected and transmitted from the object to determine emissivity, interrupting said polarized light beam and simultaneously measuring the brightness temperature of the object from radiation self-emitted from the object, and combining the two measurements to determine the thermodynamic temperature.

5,011,296

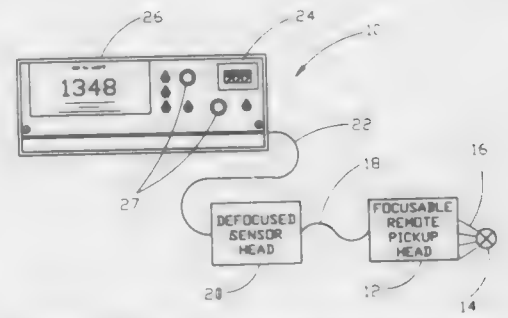
METHOD OF USING INFRARED THERMOMETER WITH REMOTE FIBER OPTIC PICKUP

George Bartosiak, Naperville; Christopher Siskovic, Libertyville; Henry H. Tap, Algonquin; Sam Paris, Chicago, and Arthur E. Goldberg, Evanston, all of Ill., assignors to Square D Company, Palatine, Ill.

Division of Ser. No. 296,225, Jan. 12, 1989, Pat. No. 4,919,505. This application Jan. 25, 1990, Ser. No. 470,271

Int. Cl.[5] G01J 5/10, 5/08

U.S. Cl. 374—131 12 Claims



1. A method of using a remote infrared thermometer to determine the temperature of a target, comprising the steps of:

mounting an analyzer at a first located remote from the target to provide an indication of temperature based on electrical signals from a photosensor head electrically connected therewith;

mounting the photosensor head at a location remote from the target;

mounting a focusable lens assembly spaced from photosensor head and having

an objective lens at a fixed location with respect to the target, and

a fixed aperture at a variable location with respect to the target and within fucusable range of the target;

adjusting the focusable lens assembly while keeping said aperture fixed after said assembly is mounted at said fixed location to focus the lens assembly on a selected target; and

passing the light of the target from the lens assembly to a remote photosensor of the photosensor head via an elongate fiber optic cable for conversion thereby to corresponding electrical signals representative of the light from the target on which the lens assembly is focused.

5,011,297

APPARATUS FOR DETECTING THE TEMPERATURE OF AN OBJECT ON A COORDINATE MEASURING APPARATUS

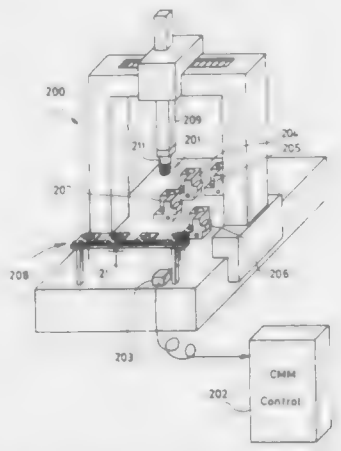
Jakob Tittl, Sontheim/Brenz, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Division of Ser. No. 369,517, Jun. 21, 1989. This application Sep. 24, 1990, Ser. No. 587,032

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1988, 3823373

Int. Cl.[5] G01K *1/14, 13/00;* **G01D** *3/04*

U.S. Cl. 374—141 **7 Claims**



1. In a coordinate measuring apparatus having a movable measuring arm for moving and releasably engaging a plurality of coordinate measuring sensor components, each of the coordinate measuring sensor components having a holder which enables the coordinate measuring sensor components to be exchanged one for the other, a temperature sensor component for measuring the temperature of an object being measured by said coordinate measuring apparatus, the temperature sensor component comprising:

a temperature sensor holder having a form corresponding to the form of the holder of each of said coordinate measuring sensor components, whereby said temperature sensor component is exchanged with one of said coordinate measuring sensor components to measure the temperature of the object.

5,011,298

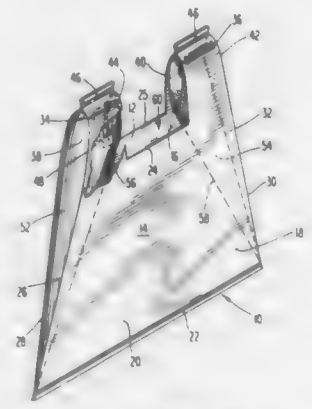
HALTER TOP BAG

Ajit K. Bose, Lawrenceville, N.J., and Kurt F. Strater, Barnesville, Ga., assignors to Union Camp Corporation, Wayne, N.J.

Continuation-in-part of Ser. No. 299,860, Jan. 19, 1989, abandoned. This application Jun. 7, 1990, Ser. No. 534,797

Int. Cl.[5] B65D *30/10, 30/20, 33/06*

U.S. Cl. 383—8 **1 Claim**



1. A halter top bag, which comprises:

a hollow tube of substantially uniform diameter formed from a flexible film of a thermoplastic resin, folded upon itself to form

(a) a rear panel having

(i) an inner bag surface;

(ii) an outer bag surface;

(iii) an imperforated film body defined by the inner and outer bag surfaces and having a substantially trapezoidal configuration including a base end, a peak end, a first side edge and a second side edge; and

(iv) a pair of handle members integrally joined to and extending outwardly from the peak end of the film body, said handle members having an inner side edge intersecting the peak end and an outer side edge integrally joined to the respective panel side edge.

(b) a front panel having

(i) an inner bag surface;

(ii) an outer bag surface;

(iii) an imperforate film body defined by the inner and outer bag surface (b) (i) and (ii) and having a substantially trapezoidal configuration including a base end, a peak end, a first side edge and a second side edge; and

(iv) a pair of handle members integrally joined to and extending outwardly from the peak end of the front panel film body, said handle members having an inner side edge intersecting the peak end and an outer side edge integrally joined to the respective panel side edge.

(c) a first gusset between and integrally joining together the first side edges of the film bodies of the front and rear panels, said gusset having a width at a point adjacent to the peak edges of the film bodies, which is twice the distance from a point of intersection of the peak end and the inner handle member edge and a point horizontally disposed from said point of intersection on the outer handle member edge; said gusset width decreasing linearly to a width of about zero to 0.5 inches at a point of intersection of the first side edges of the front and rear panels and the base end;

(d) a second gusset between and integrally joining together the second side edges of the film bodies of the front panel and rear panels, said second gusset having a width at a point adjacent to the peak edges of the film bodies which is twice the distance from a point of intersection of the peak end and the inner handle member edge and a point horizontally disposed from said point of intersection on the outer handle member edge; said gusset width decreasing linearly to a width of about zero to 0.5 inches at a point of intersection of the first side edges of the front and rear panels and the base end; and

(e) a bag mouth defined by the peak ends of the front and the rear panels taken together;

said front panel overlying the rear panel and conforming in size and configuration to the size and configuration of the rear panel;

said first gusset having a size and configuration conforming to the size and configuration of the second gusset;

the paired handle members of the rear panel being sealed to the paired handle members of the front panel to form a sealed top handle edge, which sealed edge forms a pair of handles at the bag mouth;

the base end of the front panel being sealed to the base end of the rear panel forming a base end of the halter top bag, the width of the sealed base ends being narrower than the bag mouth.

5,011,299

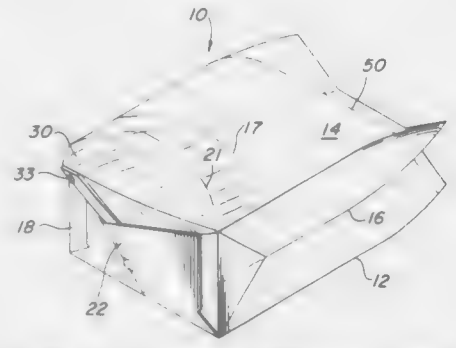
BAG CONSTRUCTION

Richard A. Black, Jr., Hatsalem, and Gilbert N. Yannuzzi, Jr., Richboro, both of Pa., assignors to American Packaging Corporation, Philadelphia, Pa.

Filed Feb. 20, 1990, Ser. No. 481,858

Int. Cl.[5] B65D *30/18*

U.S. Cl. 383—126 **5 Claims**



1. In a bag of the gusseted square-bottom type having a generally rectangular bottom formed by a diamond fold having at its ends a pair of bottom fold portions, said bottom fold portions being folded over along parallel spaced apart fold lines forming side edges of the bag bottom, the portion of the diamond fold between said fold lines being rectangular, said bottom fold portions being constructed to overlap one another in the folded condition thereof, the outer bottom fold portion being adhesively secured to the inner bottom fold portion between the opposed faces of the overlapping regions, the improvement comprising:

said inner bottom fold portion having a generally rectangular configuration and being sealed adjacent said fold line thereof, and

said outer fold portion having a generally triangular configuration and being sealed at its outer most ends to define an inner enclosed space which communicates with the interior of the bag, said adhesive securing said outer bag bottom fold portion to said inner bottom fold portion being responsive to the occurrence of an elevated temperature thereof to lose at least some of its adhesive properties whereby said outer bottom fold portion can move away from the bag bottom to break the attachment thereto in response to a force applied to said outer bottom fold portion as a result of gases flowing from the interior of the bag into said inner enclosed space within said outer bottom fold portion.

5,011,300

LINEAR SLIDING BEARING

Hiroshi Teramachi, Tokyo, Japan, assignor to THK Co., Ltd., Tokyo, Japan

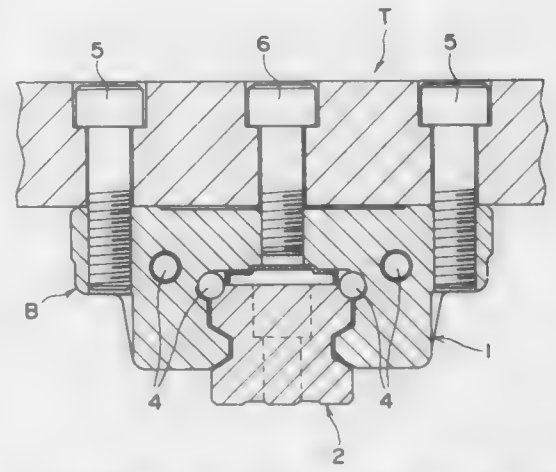
PCT No. PCT/JP89/00829, § 371 Date Apr. 3, 1990, § 102(e) Date Apr. 3, 1990, PCT Pub. No. WO90/02271, PCT Pub. Date Mar. 8, 1990

PCT Filed Aug. 15, 1989, Ser. No. 469,465

Claims priority, application Japan, Aug. 16, 1988, 63-202668

Int. Cl.[5] F16C *21/00, 29/06*

U.S. Cl. 384—25 **2 Claims**



1. A linear sliding bearing comprising: a sliding bed having a section of generally inverted C-shape and including a horizontal portion and a pair of skirts depending downward from the two ends of the horizontal portion to form a recess at its lower side and formed in its inner sides with a pair of load races extending longitudinally thereof and with relief ball tracks corresponding to the load races; a track base having its upper portion fitted in the recess of said sliding bed, while maintaining a predetermined spacing inbetween, and formed with rolling races corresponding to said load races; a pair of covers attached to the front and rear end faces of said sliding bed and formed in their inner sides with guide grooves for providing the communicating connections between the end portions of the load races and the relief ball tracks of said sliding bed to form endless ball tracks; and a multiplicity of rolling members circulating in said endless ball tracks to bear the loads between the load races of said sliding bed and the rolling grooves of said track base,

wherein the improvement resides: in that the load races of said sliding bed are formed in the inner sides and at the roots of said skirts; in that the races of said track base corresponding to the load races of said sliding bed are formed at the shoulders of said track base; in that there is formed, between each of the leading ends of the inner sides of the skirts of said sliding bed and each of the two sides of the track base facing the former, a sliding bearing mechanism which include convex and concave portions having upward taper surfaces and downward taper surfaces shaped to be fitted in a wedged manner; and in that there is interposed, between said sliding bed and a table to be mounted on the upper surface of said sliding bed, gap adjusting means which includes a suspension or pressure mechanism for elastically deforming the horizontal portion of said sliding bed, whereby the pressure of contact between the upward and downward taper surfaces of said sliding bed and the downward and upward taper surfaces of said track base is adjusted by adjusting the gap between said sliding bed and said track base by said gap adjusting means.

5,011,301

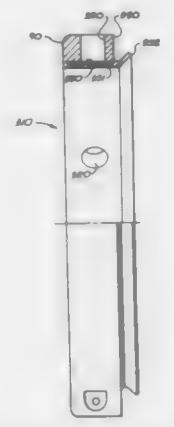
AUXILIARY SEALING SYSTEM

Howard W. Martinie, Simpsonville, S.C., assignor to Reliance Electric Company, Greenville, S.C.

Continuation of Ser. No. 179,272, Apr. 8, 1988, Pat. No. 4,906,111, which is a division of Ser. No. 915,503, Oct. 6, 1986, Pat. No. 4,763,904. This application Dec. 15, 1989, Ser. No. 451,505

Int. Cl.[5] F16C *33/72*

U.S. Cl. 384—140 **7 Claims**



1. Auxiliary sealing apparatus for a bearing assembly received about a rotatable shaft and including a circular member having securement means for securing said assembly to said shaft comprising:

a sealing ring element receivable about said circular member, said sealing ring element defining at least one radial opening therein; and

face sealing means of a predetermined configuration defined by said sealing ring element around the circumference of same and extending outwardly therefrom, said sealing means being mateable with a portion of said bearing assembly so that said sealing ring element opening may be moved into registry with said securement means for access thereto and moved out of registry therewith for sealing same while said face sealing means cooperates with said position of said bearing assembly to define a seal thereto.

5,011,302

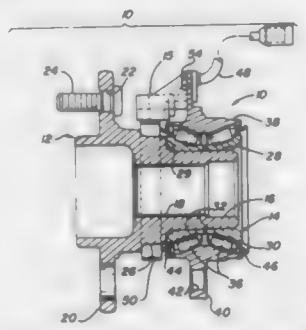
MOTOR VEHICLE HUB AND BEARING WITH INTEGRATED ANTI-LOCK BRAKE SENSOR MOUNTING

David M. Mott, Roseville, and Frank C. Rosiek, Royal Oak, both of Mich., assignors to The Budd Company, Troy, Mich.

Filed Jun. 25, 1990, Ser. No. 543,327

Int. Cl.[5] F16C *19/08;* **G01P** *3/48*

U.S. Cl. 384—448 **6 Claims**



1. A hub and bearing assembly for a motor vehicle of the type having an anti-lock braking system comprising:

a hub having means for affixing a wheel thereto and defining a cylindrical surface,

an exciter ring affixed to said hub and disposed on said cylindrical surface,

a sensor for said anti-lock braking system for providing an output related to the rotation of said wheel and said hub, and

a bearing pack for supporting said hub for rotation and including rolling bearing elements between at least one inner race coupled to said hub and at least one outer race coupled to a mounting flange, said mounting flange having means for mounting said bearing pack to a suspension structure and defining a pair of separated webs defining a notch therebetween with each of said webs defining an aperture for receiving mounting means for said sensor for directly engaging and mounting said sensor to provide a desired radial clearance between said exciter ring and said sensor.

5,011,303

INTEGRATED BEARING PROVIDED WITH A PULSER AND WITH A SENSOR FOR EQUIPPING A MOTOR VEHICLE WHEEL HUB

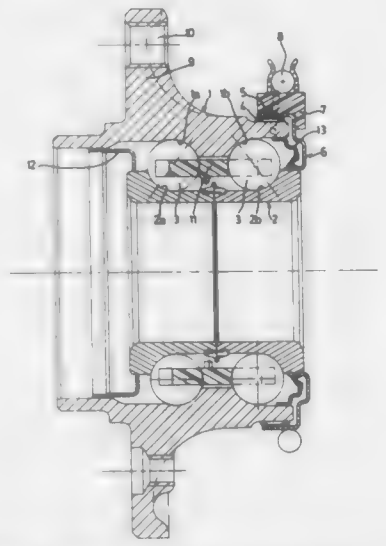
Fabrice Caron, Montigny-le-Bretonneux, France, assignor to SKF France, Clamart Cédex, France

Filed Jun. 22, 1990, Ser. No. 542,033

Claims priority, application France, Jul. 4, 1989, 89 08984

Int. Cl.[5] F16C *33/78*

U.S. Cl. 384—448 **10 Claims**



1. Integrated bearing intended for equipping a motor-vehicle wheel hub, comprising a rotary outer ring (1) and a stationary inner ring (2); at least one row of rolling elements (3) arranged between the outer and inner rings; an annular pulser (4) fixed to the rotary ring (1) in the vicinity of one of its ends; and a sensor (5) stationary relative to the stationary ring (2) and located opposite the pulser so as to be capable of measuring the rotational speed of the outer ring in relation to the inner ring of the bearing, characterized in that it comprises a substantially annular flange (6) delimited by an inner cylindrical rim (6*a*) fixed to the inner ring (2) and by an outer cylindrical rim (6*b*) which is coaxial relative to the inner rim and on the outside of which is mounted a sensor carrier (7) equipped with means (16) for fastening a connecting cable (8) connected to the sensor, the flange covering without contact the end of the outer ring (1) where the pulser is fastened and being equipped with an orifice (6*c*), through which the sensor is mounted opposite the pulser.

5,011,304

ROLLING BEARING

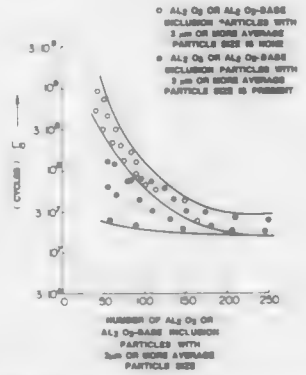
Yasuo Murakami; Yoichi Matsumoto; Shinjiro Ishii, all of Fujisawa; Ryurou Kurahashi, and Mitsuru Nakamura, both of Muroran, all of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 19, 1990, Ser. No. 555,240

Claims priority, application Japan, Jul. 21, 1989, 1-187561

Int. Cl.[5] F16C *19/00*

U.S. Cl. 384—492 **16 Claims**



1. A rolling bearing, wherein at least one of the races and the rolling element of the rolling bearing is made of a raw steel which is free from a Al_2O_3 or Al_2O_3-base inclusion particle with a 13 μm or more average particle size; but which includes 1 to 80 Al_2O_3 or Al_2O_3-base inclusion particles with a 3 μm or more average particle size for each tested area of 165 mm^2 of the raw steel.

5,011,305

CAGE FOR A SECTORIAL ANTIFRICTION BEARING

Bernhard Breuer, Garstadt, and Johannes Schottdorf, Hammelburg, both of Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schafer (KGaA), Fed. Rep. of Germany

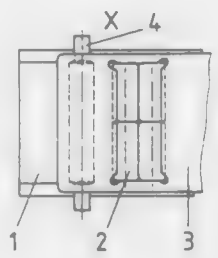
PCT No. PCT/DE88/00474, § 371 Date Mar. 30, 1989, § 102(e) Date Mar. 30, 1989, PCT Pub. No. WO89/01095, PCT Pub. Date Feb. 9, 1989

PCT Filed Jul. 30, 1988, Ser. No. 335,786

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1987, 8710514[U]

Int. Cl.[5] F16C *33/46;* **F01B** *3/00;* **F04B** *1/20*

U.S. Cl. 384—572 **8 Claims**



1. A cage for a sectorial antifriction bearing, the cage including a solid body in the shape of an arcuate sector having opposite circumferential ends, the cage also having opposite lateral sides, a plurality of parallel pockets extending in a direction across the solid cage body and toward the lateral sides, each pocket for receiving an antifriction bearing rolling element therein;

at least one support pin located toward at least each end of the cage body and extending parallel to the pockets and extending of a length to protrude beyond one lateral side of the cage for cooperating with a locating device for resetting the cage.

5,011,306

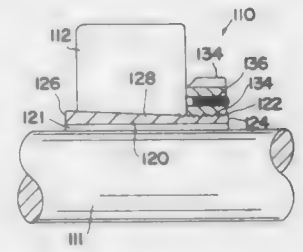
APPARATUS FOR MOUNTING A BEARING OR OTHER DEVICE AND TAPERED ADAPTER ONTO A SHAFT

Howard M. Martinie, Simpsonville, S.C., assignor to Reliance Electric Industrial Company, Greenville, S.C.

Filed Mar. 9, 1990, Ser. No. 491,300

Int. Cl.[5] F16C *27/04*

U.S. Cl. 384—585 **6 Claims**



1. An improved bearing assembly for securement to a shaft, comprising:

a tapered adapter of a size for receipt on said shaft, said adapter having a first end of lesser diameter and a second end of a diameter greater than said diameter of said first end and having a tapered outer surface therebetween, said first end of said adapter defining threads therearound for a portion of the length of same, and said adapter defining a radial opening therethrough and extending along the length thereof;

a bearing received about said adapter adjacent said first end of same;

a locknut received about said first end of said adapter in threaded engagement therewith, said locknut defining a plurality of threaded openings therethrough in a direction generally parallel to the length of said adapter; and

a plurality of elements received in said openings in threaded engagement therewith, said elements being capable collectively upon turning of generating a force adequate only to clamp said adapter to a shaft passing therethrough and seat the bearing on the adapter while being inadequate to move said bearing up the tapered surface of said adapter.

5,011,307

WIRE DOT PRINTER HEAD WITH ARMATURE GUIDES

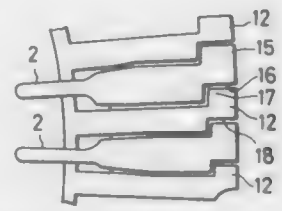
Isao Ohwada, Tamayama, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 133,549, Dec. 16, 1987, abandoned. This application Feb. 23, 1989, Ser. No. 315,205

Claims priority, application Japan, Apr. 20, 1987, 62-58635[U]

Int. Cl.[5] B41J *2/275*

U.S. Cl. 400—124 **3 Claims**



1. An improved head for a wire dot printer having a cylindrical housing in combination with a plurality of armatures located in a circumferential row and extending in radial directions within said housing, each of said armatures being supported at a radially outer end portion thereof for reciprocal rocking motion to actuate a print wire secured to a radially inner end portion thereof, and a guide member located between each pair of adjacent ones of said armatures for restraining movement of the adjacent armatures in directions other

than directions of the reciprocal rocking motion, wherein the improvement comprises:

each of said armatures being longitudinally asymmetrically shaped and having an outer end portion defining a laterally extending tab on one side and a recess on the other side; and

each of said guide members being longitudinally asymmetrically shaped and having an outer end portion defining a laterally extending tab on one side for fitting with the recess of an adjacent one of said armatures, and defining a recess on the other side for fitting with the laterally extending tab of an adjacent one of said armatures.

5,011,308

RELEASING TYPE DOT PRINTER HEAD

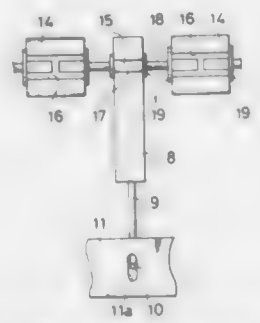
Masashi Shimosato, and Kuniaki Ochiai, both of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

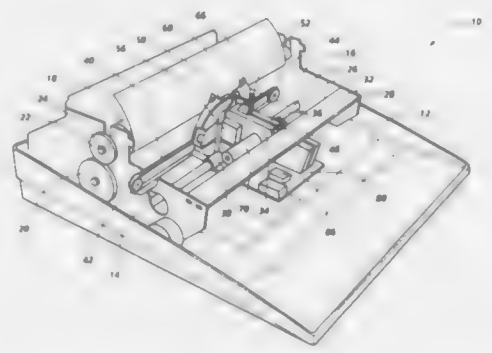
Filed May 10, 1989, Ser. No. 349,832

Claims priority, application Japan, May 10, 1988, 63-61484[U]; Jul. 5, 1988, 63-89359[U]

Int. Cl.[5] G41J *2/235*

U.S. Cl. 400—124 **8 Claims**





1. A releasing type dot print head comprising:

a plurality of cores which are fitted with electromagnetic coils;

a plurality of armatures having needles on one of their end parts, said needles comprising needle tips which define needle tip positions, said armatures being opposingly disposed with respect to said cores;

supporting parts disposed on both sides of the other end part of each of said armatures; and

elastic-member holding parts having openings for holding elastic members with limited play in the longitudinal direction of said armature when said elastic member is inserted into said openings said elastic-member holding parts being formed on said armatures and said supporting parts;

wherein at least one of said openings of said elastic-member holding parts formed on said armatures and said supporting parts is wider than the other openings of said elastic-member hodling parts for allowing additional play in the longitudinal direction of said armature, and wherein the play in the longitudinal direction of said armature allowed by said openings enable said needle tip positions to be disposed in fixed positions such that said needle tip positions act as standards when said elastic members are welded to said elastic-member holding parts.

5,011,309

RIBBON DRIVE FOR LOW COST QUIET IMPACT PRINTER

Egon S. Babler, Northbrook, and Alf J. Olsen, Elk Grove Village, both of Ill., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 18, 1990, Ser. No. 510,640

Int. Cl.[5] B41J *23/34*

U.S. Cl. 400—184 **10 Claims**

1. A serial impact printer comprising a support frame, a platen mounted for rotation upon said support frame, a print element having character imprinting portions disposed thereon, a print element selector for moving said print element to position a selected character imprinting portion at a printing position, a marking ribbon and a lift-off ribbon, each ribbon being selectively positionable between said print element and said platen, a hammer for moving a selected character imprinting portion for deforming said platen with a printing force, means for moving said hammer toward and away from said platen, and a carriage mounted for reciprocating movement generally parallel to said platen, said carriage supporting thereon said print element, said print element selector, said marking and lift-off ribbons, means for positioning said ribbons, means for advancing said marking ribbon, means for advancing said liftoff ribbon, said hammer, and said means for moving said hammer, the improvement comprising

said means for moving said hammer, said means for positioning said ribbons, said means for advancing said marking ribbon, and said means for advancing said lift-off ribbon includes a single D.C. motor which drives said hammer in both clockwise and in counterclockwise directions of rotation from a home positions, which positions and drives said means for advancing said marking ribbon in only one direction of rotation of said motor from said home position, and which positions and drives said lift-off ribbon in only the opposite direction of rotation of said motor from said home position, whereby at each hammer impact one of said ribbons is being impacted.

5,011,310

INKED RIBBON CARTRIDGE WITH REMOVABLE CARRIER MEMBER

Edelbert Wiechert, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 22, 1989, Ser. No. 396,924

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1988, 3829445

Int. Cl.[5] B41J *35/28*

U.S. Cl. 400—207 **4 Claims**

1. An inked ribbon cartridge for an image recording apparatus, said cartridge comprising the following:

a cassette housing;

a printing roller in a roller bracket in said housing, said printing roller having a longitudinal axis;

a carrier replaceable member insertable and lockable into, and removable from, said housing including an inked ribbon stored on two winding reels, said winding reels having respective longitudinal axes;

means for mounting said winding reels and said printing roller in said housing with their longitudinal axes parallel; and

at least one lock mechanism having at least one actuation means, disposed on said carrier member, for both unlocking and gripping said carrier member for removing said carrier member from said cassette housing;

two lateral parts, each accepting an axle end of each winding reel;

a guard member connecting the lateral parts and provided with a longitudinal recess means for receiving the printing roller; and

wherein said actuation means includes a pair of actuation elements, one of said pair arranged at each of the lateral parts.

5,011,311

DENTAL ALLOY

Brian C. Harris, 8 Garth Road, Kingston upon Thames, Surrey, England KT2, 5NY , and Raymond Cook, Flat 3, 68 Southcote Road, Bournemouth, England BH1 3SS

Filed Aug. 29, 1989, Ser. No. 400,594

Claims priority, application United Kingdom, Aug. 31, 1988, 8820552; Jun. 27, 1989, 8914689

Int. Cl.[5] C22C *5/04;* **B32B** *17/06, 15/00;* **A61C** *13/08*

U.S. Cl. 400—208 **12 Claims**

1. A dental alloy consisting essentially of 60 to 85% by weight palladium, 5 to 20% by weight copper, 3 to 15% by weight gallium, 0.5 to 7% by weight gold, 1 to 5% by weight tin, 0 to 2% by weight nickel, and 0.005 to 0.02% by weight of a grain refiner selected from ruthenium, rhenium, iridium and mixtures of at least two of these metals, wherein the sum of gold, tin, nickel, ruthenium, rhenium and iridium is from 5.5 to 10% by weight.

5,011,312

Patent Not Issued For This Number

5,011,313

PAPER FEED MECHANISM FOR A PRINTER

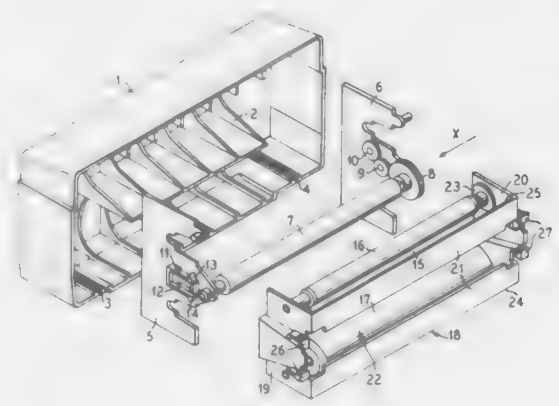
Hiroyuki Sato, Sumida, Japan, assignor to Seikosha Co., Ltd., Tokyo, Japan

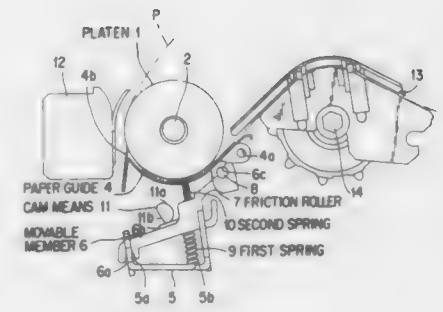
Filed Oct. 16, 1989, Ser. No. 421,869

Claims priority, application Japan, Oct. 20, 1988, 63-265046

Int. Cl.[5] B41J *11/50*

U.S. Cl. 400—605 **17 Claims**





1. A paper feed mechanism for feeding paper comprising:

a frame means;

a platen rotatably mounted on said frame means;

a friction feed means mounted on said frame means and having roller means movable between an operable position in which said roller means is in biasing engagement with said platen and a non-operable position in which said roller means is not biasingly urged toward said platen;

a tractor feed means juxtaposed to said platen;

drive means for driving said piaten and said tractor feed means;

actuating means having a first actuated position in which said drive means is operable to drive both said platen and said tractor feed means and a second actuated position in which said drive means is operable to drive said platen and does not drive said tractor feed means;

interconnecting means operably interconnected between said actuating means and said friction feed means such that when said actuating means is in said first actuated position, said friction feed means is disabled and said tractor feed means feeds said paper, and when said actuating means is in said second actuated position, said tractor feed means is disabled and said friction feed means feeds said paper;

said friction feed means comprising support means pivotably supporting roller means, said support means being movable between said operable and non-operable positions, cam means rotatable between a first cam position to effect positioning of said support means in said operable position and a second cam position to effect positioning of said support means in said non-operable position, said interconnecting means being operably connected between said

cam means and said lever such that pivotal movement of said lever rotates said cam means.

5,011,314

PAPER FEEDING DEVICE

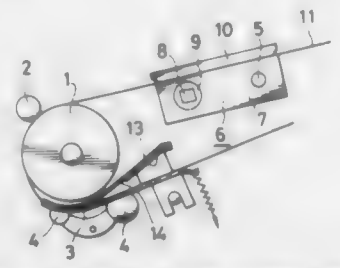
Shinichiro Fujii, Shizuoka, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 263,868, Oct. 28, 1988, abandoned. This application May 14, 1990, Ser. No. 522,086

Claims priority, application Japan, Oct. 30, 1987, 62-166447[U]

Int. Cl.[5] B41J *15/08*

U.S. Cl. 400—619 **2 Claims**



1. A paper feeding device for feeding paper, comprising:

a platen;

a paper pan extending along a lower portion of an outer periphery of said platen;

a tractor including a paper transport member having a circumferential speed set substantially equal to or a little lower than the circumferential speed of said platen;

a fulcrum shaft supporting said tractor thereon for pivotal motion between a pushing in position in which said tractor is directed toward the lower portion of the outer periphery of said platen and a pulling position in which said tractor is directed to an upper portion of the outer periphery of said platen;

a fixing means for alternatively fixing said tractor to the pushing in position or the pulling position; and

a thin piece extending along the lower portion of the outer periphery of said platen from an extension line of a paper feeding route of said tractor in the pushing in position between said platen and said tractor and resiliently contacting with an inner face of said paper pan, such that when said tractor is in said pushing in position, said thin piece is for guiding said paper to said lower portion of said outer periphery of the platen, and when said tractor is in said pulling position, said paper is supplied from between said thin piece and said paper pan, and said thin piece is for applying a force to said paper to displace said paper away from the platen such that said paper and said platen do not contact each other along at least said lower portion of said outer periphery of said platen under which said paper pan and said thin piece extend to thereby reduce a paper pulling force of said platen.

5,011,315

PRINTER

Toshiharu Kitagawa; Ryuji Nishiyama, both of Katano; Masaaki Takita, Ibaraki, and Yoshikazu Tsuru, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 155,074, Feb. 11, 1988, abandoned. This application Jun. 30, 1989, Ser. No. 373,701

Claims priority, application Japan, Feb. 18, 1987, 62-35039; Feb. 18, 1987, 62-35040

Int. Cl.[5] B41J *13/03*

U.S. Cl. 400—624 **2 Claims**

1. A printer comprising:

a pair of upper and lower chutes for guiding printer paper;

an idle roller provided on said upper chute;

a paper discharging motor bracket provided on said lower chute;

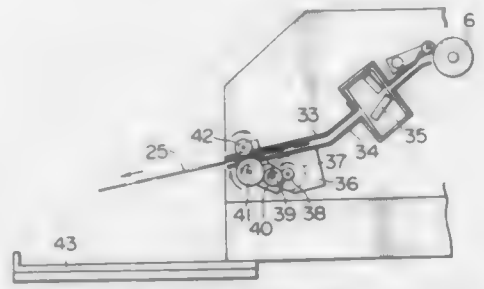
a motor mounted on said paper discharging motor bracket and having a rotary shaft;

a paper discharging gear fitted on the rotary shaft of said motor inside of said paper discharging motor bracket;

a fulcrum shaft arranged inside of said paper discharging motor bracket in parallel with the rotary shaft of said motor;

a U-like paper discharging lever disposed rotatably about said fulcrum shaft and having a forward end;

an intermediate gear provided inside of said paper discharging lever so as to be coaxial with said fulcrum shaft and to be rotatable about said fulcrum shaft, said intermediate gear making contact with said paper discharging gear;



a spring urging said paper discharging lever in a thrust direction so as to press the latter against said intermediate gear;

a pulley shaft arranged inside of said paper discharging lever at the forward end thereof in parallel with said fulcrum shaft;

a pulley gear meshed with said intermediate gear so as to be rotated about said pulley shaft while having one side surface; and

a paper discharging pulley fixed on said one side surface of said pulley gear so as to be rotatable about said pulley shaft and having a diameter greater than that of said pulley gear;

wherein said paper discharging lever is rotated by a driving force of said motor provided on said bracket to cause contact to occur between said idle roller and said paper discharging pulley, thereby discharging the paper.

5,011,316

HAND-HELD SOAP-HOLDER

Victor A. Damon, Bldg. 4, Suite 310, 533 S. Broad St., Meriden, Conn. 06450

Continuation-in-part of Ser. No. 526,241, May 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 363,407, May 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 175,337, Mar. 30, 1988, abandoned. This application Aug. 20, 1990, Ser. No. 569,709

Int. Cl.[5] A46B *5/02;* **A47J** *45/00;* **A45D** *42/14;* **A47B** *91/00*

U.S. Cl. 401—6 **20 Claims**

1. A hand-held soap-holder for attachment to a bar of soap; and comprising in combination:

finger-gripping means;

support-base means;

suction means;

implanting means; and

support-flap means;

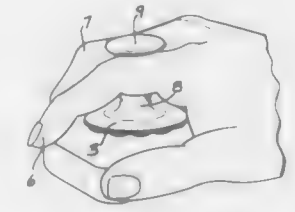
said finger-gripping means extending generally upwardly from said

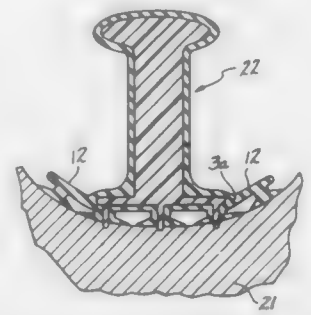
support-base means for use in securing said soap-holder in a user's hand;

said support-base means being of substantially rigid construction and being integrally positioned as to substantially underlie said finger-gripping means, substantially overlie said implanting means, and substantially overlie some portion of said suction means;

said suction means including an array of flexible suction cups disposed outwardly from beneath said soap-holder for attachment to a bar of soap;

said implanting means disposed downwardly from said support-base means for preventing transverse movement of the soap-holder on the surface of a bar of soap;





said support-flap means including at least one flexible portion, extending generally outwardly from said base-support means and substantially overlying some portion of said suction cups, whereby said flexible portion of said support-flap means is free to flex and bend, and whereby said flexible portion can conform and attach to the underlying surface of a bar of soap.

5,011,317

DISPENSER INCLUDING A TRANSLATABLE PISTON

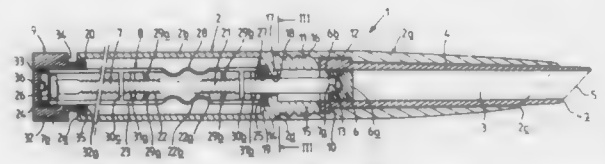
Jean-Louis Gueret, Paris, France, assignor to L'Oreal, Paris, France

Filed Feb. 2, 1990, Ser. No. 474,326

Claims priority, application France, Feb. 8, 1989, 89 01612

Int. Cl.[5] B43K *21/18*

U.S. Cl. 401—66 **14 Claims**



1. A dispenser for a product including a cylindrical reservoir for the product, said reservoir having a dispensing opening at one end thereof and a movable piston disposed therein for translation in said reservoir, drive means including a rod having one end connected to said piston, said drive means being actuatable by a user upon actuation of a maneuvering device to incrementally displace said rod, said maneuvering device being carried on a support element assocated with said drive means, said drive means including one end portion that is fixed relative to said reservoir and another end portion that is movable relative to said reservoir, said and portions being connected by an elastic zone, said maneuvering device by the user from an initial position of repose with said elastic zone returning said another end portion and maneuvering device to the initial position, means for restraining said rod against rotation relative to said support element, said rod and drive means having interengaging rack means including latching means for transmitting movement from said drive means to said rod, said latching means engaging said rod when in one position of rotation and disengaged from said rod when in another position of rotation relative to said latching means, wherein said reservoir is detachable from the support element onto which it is assembled, said support element being a tubular body, one end of which includes a means for attachment to the reservoir said reservoir including one and which surrounds said means for attachment, said body being closed at its end opposite the reservoir by a maneuvering device, said maneuvering device being a pushbutton capable of sliding in the tubular body, said drive means comprising a cage cast by molding of a relatively flexible plastic material, and comprising two lateral branches, said elastic zone comprises a median zone which is corrugated, in the plane of said branches.

5,011,318

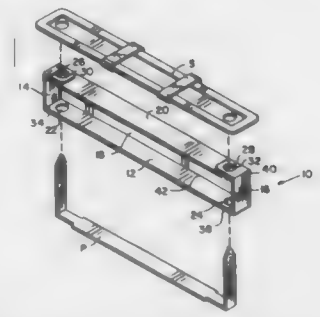
PAPER BINDING FASTENER

Peggy M. Gilmore, 1773 Palmer Rd., Washington C.H., Ohio 43160

Filed Mar. 29, 1989, Ser. No. 329,963

Int. Cl.[5] B42F *13/08*

U.S. Cl. 402—14 **3 Claims**



1. A paper binder fastener for use with a conventional pronged paper fastener, comprising:

a three sided rectangular channel member having parallel top and bottom sides connected by a transversely extending side wall;

said three sided rectangular channel member formed by two connected L-shaped members;

one of said L-shaped members having a pair of deformable U-shaped clamp members at opposite side edges in frictional clamping engagement with the other L-shaped member;

and

at least two pairs of holes formed in axial alignment at opposite ends of said top and bottom sides.

5,011,319

LOCKING MECHANISM FOR TELESCOPING TUBULAR POLES

Avraham Y. Levi, St. Paul, and Craig D. Quarberg, Brooklyn Park, both of Minn., assignors to A.C. Innovations, Inc., Bloomington, Minn.

Filed Jan. 2, 1990, Ser. No. 459,641

Int. Cl.[5] F16B *7/10*

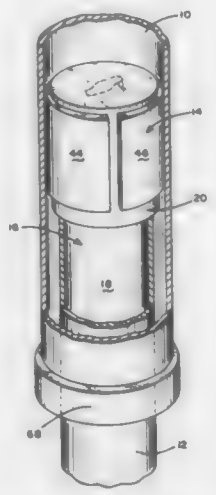
U.S. Cl. 403—109 **16 Claims**

1. Apparatus for releasibly locking inner and outer cylindrical telescoping tube segments against longitudinal movement relative to one another, comprising:

(a) a double lobed cam element attached to one end of said inner tube segment for rotation therewith; and

(b) first and second cam followers each being of substantially semi-circular cross-section and of a predetermined length dimension, each including an arcuate recess extending inward from a chordal edge and subtending an angle of about 90 degrees between a pair of stop surfaces located at opposed ends of said arcuate recess, said arcuate recesses in said first and second cam followers each receiving one

of said double lobes of said cam, said first and second cam followers and said cam being insertable into the bore of said outer tube segment, rotation of said cam in a first direction against one of said pair of stop surfaces spreading said cam followers apart from one another against the



inner wall of said outer tube segment and rotation of said cam in a direction opposite said first direction to the other of said pair of stop surfaces drawing said first and second cam followers together and out of contact with said inner wall of said outer tube segment.

5,011,320

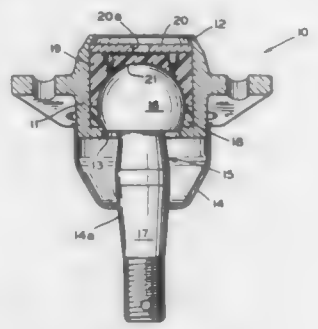
BEARING FOR A BALL AND SOCKET JOINT

Mickey L. Love, and Douglas V. Massey, both of Oklahoma City, Okla., assignors to Dana Corporation, Toledo, Ohio

Filed Dec. 20, 1989, Ser. No. 453,601

Int. Cl.[5] F16C *11/06*

U.S. Cl. 403—132 **17 Claims**



1. A ball and socket joint comprising:

a generally hollow socket member;

a ball member disposed within said socket member; and

a bearing disposed within said socket member including a body portion having a first and second ends, a bearing surface formed in said first end engaging and supporting said ball member, reservoir means formed in a surface of said second end including a central recess and a groove extending outwardly from said central recess along said surface of said second end, said reservoir means adapted to store a quantity of lubricant therein, and a passageway extending through said body portion from said bearing surface to said reservoir means groove, whereby lubricant is permitted to pass from said reservoir means to said bearing surface and said ball member.

5,011,321

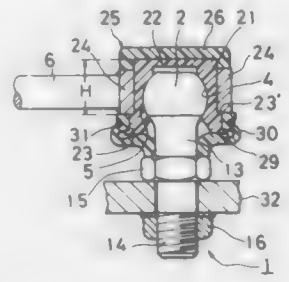
BALL JOINT FOR STABILIZER

Susumu Kidokoro, Fuji, Japan, assignor to Gotoh Seisakusho Co., Ltd., Fuji, Japan

Filed Sep. 13, 1990, Ser. No. 583,822

Int. Cl.[5] F16C *11/00*

U.S. Cl. 403—140 **5 Claims**



1. A ball joint for a stabilizer comprising a stud ball made of metal and having a spherical head and a pillow ball seat for swingably supporting said metal stud ball,

said pillow ball seat including:

a cylindrical ball seat member made of synthetic resin, permitting said spherical head of said stud ball to be pressure-fitted therein and having an annular spherical concave surface formed in the inner periphery thereof for swingably supporting said spherical head thereon;

a top wall portion provided integrally at the top of said ball seat member;

a cylindrical piece member made of metal and fitted on said ball seat member;

a disklike cap member made of synthetic resin fitted on said top wall portion of said ball seat member; and

means for securing said cap member to said top wall portion.

5,011,322

BALL JOINT

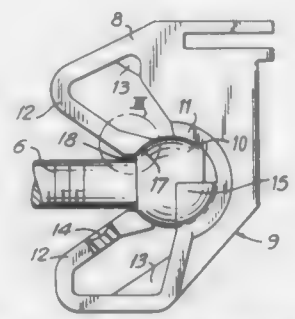
Friedrich Schauwecker, Pfullingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 13, 1989, Ser. No. 379,805

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1988, 8811059[U]

Int. Cl.[5] F16C *11/06*

U.S. Cl. 403—141 **6 Claims**



1. A ball joint comprising a ball stud including a shank and a ball formed at one end of said shank and having an outer surface; a ball socket for receiving said ball and including resilient arm means having an outer surface corresponding to said outer surface of said ball and engaging the same, said resilient arm means having on said outer surface thereof ridges and said ball stud having a substantially flat annular shoulder defining a transistion surface extending between said shank and said ball, said ridges engaging said annular shoulder upon a predetermined angular displacement of said ball to prevent displacement of said ball stud out of the socket.

5,011,3[illegible]

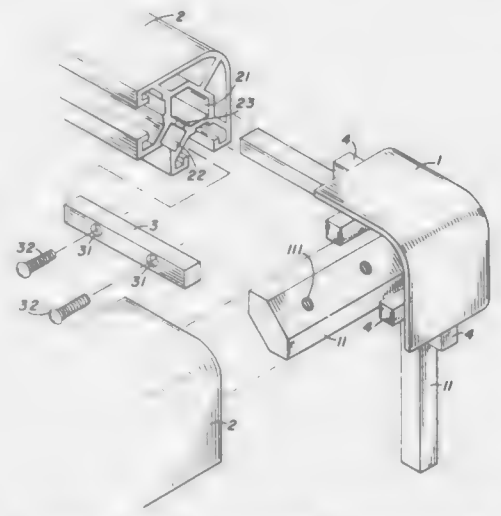
ANGLE COUPLING STRUCTURE FOR KNOCKDOWN CABINETS

Chih C. Liuo, 2Fl., No. 4, Lane 767, Ming Sheng E. Rd., Taipei, Taiwan

Filed Oct. 16, 1989, Ser. No. 421,766

Int. Cl.[5] F16D *1/00*

U.S. Cl. 403—172 **3 Claims**



1. An angle coupling structure for knockdown cabinets comprising:

an angle coupling (1);

a plurality of elongated connecting rods (11) fixed to said angle coupling and extending from said angle coupling, each connecting rod extending at a different angle to each other connecting rod, each connecting rod having a plurality of threaded screw holes (111) therein spaced along the length of each respective connecting rod;

a plurality of separate and unconnected elongated securing rods (3) equal in number to said plurality of elongated connecting rods, each securing rod having a plurality of unthreaded round holes (31) therein spaced along the length of each respective securing rod and spaced by an equal amount to the spacing of the screw holes in each respective connecting rod;

a plurality of elongated connectable sections (2), each connectable section having an elongated connecting rod retaining channel (21) therein having a cross sectional shape substantially corresponding to the cross sectional shape of one of said connecting rods for receiving one of said connecting rods therein, each connectable section having an elongated securing rod retaining channel (22) therein extending parallel to said connecting rod retaining channel, said securing rod retaining channel having a cross sectional shape substantially corresponding to the cross sectional shape of one of said securing rods for receiving one of said securing rods, each connectable section having a wall separating said connecting rod retaining channel from said securing rod retaining channel with a longitudinal slot (23) in said wall for providing continuous communication between the holes of a securing rod in said securing rod retaining channel and the holes of a connecting rod in said connecting rod retaining channel; and

a plurality of screws for extending through the holes of said securing rods and the longitudinal slots and for being threaded into the holes in said connecting rods whereby said securing rods are freely slidable along said securing rod retaining channels for lining up the holes of said securing rods and said connecting rods to closely connect said angle coupling to said connectable sections.

5,011,324

DETENT STRUCTURE HAVING A RETAINING LIP WITH A SMOOTH CONTINUOUS OUTER SURFACE FREE FROM STRESS-CONCENTRATING CORNERS

Gordon A. Putney, Lake Geneva, Wis., assignor to Snap-on Tools Corporation, Kenosha, Wis.

Filed May 14, 1990, Ser. No. 522,902

Int. Cl.[5] B25G *3/18*; F16B *21/07*

U.S. Cl. 403—328 **8 Claims**

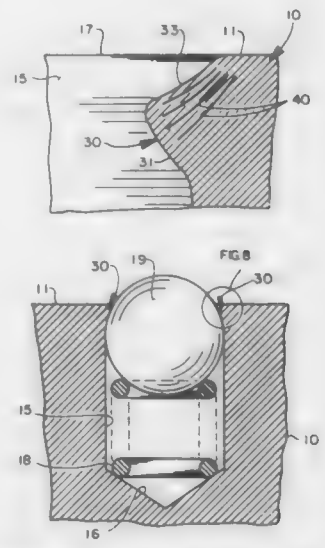
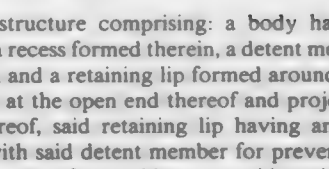


FIG. 8



1. Detent structure comprising: a body having an outer surface with a recess formed therein, a detent member disposed in said recess, and a retaining lip formed around the perimeter of said recess at the open end thereof and projecting laterally inwardly thereof, said retaining lip having an inner surface engageable with said detent member for preventing escape of said detent member from said recess, said retaining lip having a smooth continuous outer surface free of corners and extending from said outer surface of said body substantially to the lateral inner end of said retaining lip, said outer surface of said retaining lip being depressed axially inwardly of said recess with respect to said outer surface of said body.

5,011,325

MODULAR ELEMENT FOR DEFINING AREAS AND ROUTES ON CARRIAGE ROADS AND THE LIKE

Giuseppe Antonioli, Bellinzona, Switzerland, assignor to Wirtgen AG, Switzerland

Filed Sep. 7, 1989, Ser. No. 404,339

Claims priority, application Switzerland, Mar. 31, 1989, 01183/89

Int. Cl.[5] E01F *13/00, 15/00*

U.S. Cl. 404—6 **3 Claims**

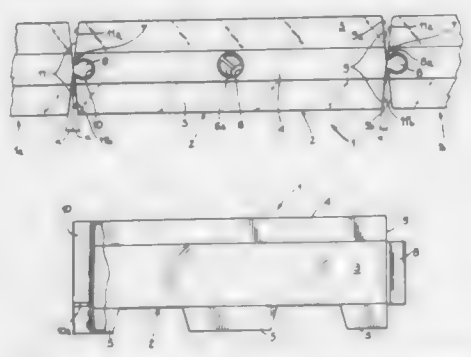
1. A modular element for defining areas and routes on roads and the like, comprising:

a plastic body having two opposite side walls joined by two ends, said side walls having a top portion, a base portion and a transverse section symmetrically diverging from said top portion towards a base portion;

joining means operating at opposite ends of said body to allow the modular element to be joined with a contiguous modular element;

said joining means having at one end a substantially cylindrical coupling lug integral with the plastic body, said cylindrical lug extending from and vertically along said one end surface of said body and having an undercut portion connecting the cylindrical portion with said one end surface, and at the other end a substantially cylindrical engagement seat formed in the other end, said seat extending vertically along said other end and being sized substan-

tially complementary to said coupling lug wherein said coupling lug of said modular element is positively engageable in a pivotable relationship with the engagement seat of a contiguous modular element;



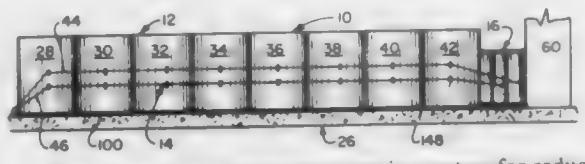
each end surface of the body being divided symmetrically into two half parts which diverge from each other to the side walls and form an angle with said side walls whereby a plurality of modular elements can be connected together to form barriers having a curvilinear shape.

5,011,326

NARROW STATIONARY IMPACT ATTENUATION SYSTEM

John F. Carney, III, Nashville, Tenn., assignor to State of Connecticut, Hartford, Conn.

Filed Apr. 30, 1990, Ser. No. 516,276
Int. Cl.[5] E01F *13/00, 15/00*
U.S. Cl. 404—6 **11 Claims**



1. A narrow stationary impact attenuation system for reducing the severity of vehicular collisions occasioned by an errant vehicle striking an immovable object at narrow hazard sites comprising:

a. crash cushion means operative for cushioning the shock of an errant vehicle striking the narrow stationary impact attenuation system;

b. lateral stability means extending the length of said crash cushion means on either side thereof and operative for providing lateral stability to said crash cushion means;

c. backup means positioned in juxtaposed relation to said crash cushion means at the rear thereof and operative to provide support for said crash cushion means at the rear thereof;

d. support means positioned in juxtaposed relation to said crash cushion means at the front thereof to anchor said lateral stability means at the front of said crash cushion means;

e. lateral deflection means mounted in supported relation at selected positions relative to said crash cushion and operative to limit the amount of lateral deflection that said crash cushion means is permitted to undergo when the narrow stationary impact attenuation system is struck by an errant vehicle under side impact conditions;

f. vehicle anti-vaulting means mounted in supported relation at selected positions relative to said crash cushion means and operative for preventing an errant vehicle that strikes the narrow stationary impact attenuation system from vaulting over or submarining under the narrow stationary impact attenuation system;

g. redirection means mounted in supported relation at selected positions relative to said crash cushion means and operative to effect in combination with said lateral stability means and said lateral deflection means the redirection into the traffic flow direction of an errant vehicle striking the narrow stationary impact attenuation system under side impact conditions; and

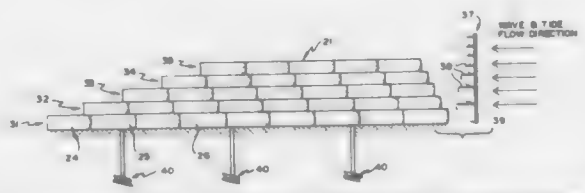
h. base means operative as the surface on which the narrow stationary impact attenuation system is emplaced.

5,011,327

EROSION BARRIER

E. Brandt Thiac, 10920 Airline Hwy., Apt 141, Baton Rouge, La. 70816

Filed Jun. 15, 1990, Ser. No. 538,616
Int. Cl.[5] E02B *3/06*
U.S. Cl. 405—28 **7 Claims**



1. For use with the shoreline of tidal water, an erosion barrier comprising a first barrier of a plurality of vertically stacked tiers of pneumatic tires cut in half and joined at their severed ends by bolt and nut connections, each tier of tires being staggered with each other tier above and below it, the tires being laid on their sides and joined to adjacent half tires at their abutting ends to form a tire line, said tire lines being vertically stacked tier upon tier in staggered overlying relationship, each half tire having arcuate spreader-connectors located one at at least each end and one intermediate the two ends, the spreaders of one line being joined to the spreaders of an adjacent line of a tier of tires by a bolt and nut connection, bracket connectors join the vertically adjacent line of interconnected tires of two lines of tires of a tier of tires through a bolted connection, strap connections joining the lines of interconnected tires between tiers of vertically stacked staggered lines of tires to form the tire barrier revetment, and a second barrier of the louvered type placed about 20–25 feet from the tire revetment, in the direction of tidal origin with the louvers being pivotally mounted vertically on the louvered barrier to unseat in the direction of inward or flood flow of tidal water and to seat against the barrier and with the ebb of tidal water to cause the louvers to remain closed to allow solids carried by the ebb water to build up and form with the tire barrier revetment an anti-erosion levee

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5,011,328

PERMEABLE BREAKWATER

Francis S. Atkinson, 6550 Orleans Ave., New Orleans, La. 70124, and William G. McDougal, P.O. Box 1418, Philomath, Oreg. 97370

Filed Jan. 23, 1989, Ser. No. 299,493
Int. Cl.[5] E02B *3/06*
U.S. Cl. 405—30 **23 Claims**

1. A permeable breakwater adapted for underwater installation offshore comprising:

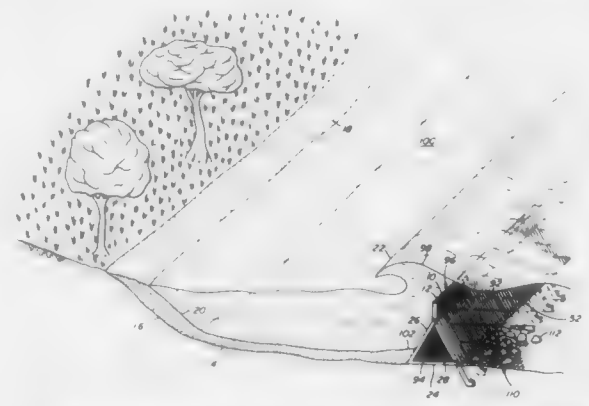
a base;

a seaward permeable wall projecting upward from the seaward side of said base;

a landward permeable wall having one end connected to said base and projecting upward from the landward side of said base and having another end attached to said seaward permeable wall, said landward and seaward permeable walls having apertures for the flow of water therethrough; and

a permeable wave wall projecting upwardly at an angle to said seaward permeable wall to reflect waves and dissipate wave energy;

said seaward permeable wall includes spaced anchor sections projecting from said seaward permeable wall, and



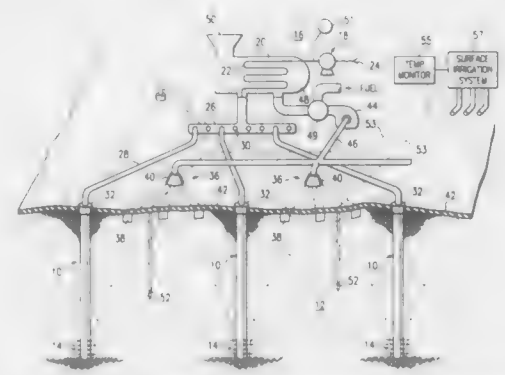
said anchor sections include a foot projecting at an angular deviation to said seaward permeable wall.

5,011,329

IN SITU SOIL DECONTAMINATION METHOD AND APPARATUS

Joseph M. Nelson, Wilmington, Del., and Garland R. Rau, Lewisville, Tex., assignors to Hrubetz Exploration Company, Dallas, Tex.

Filed Feb. 5, 1990, Ser. No. 458,084
Int. Cl.[5] E02D *3/11*
U.S. Cl. 405—128 **53 Claims**



1. A method for in situ decontamination of an earth site, comprising the steps of:

forming one or more wells in the contaminated site;

heating a gas;

pumping the heated gas down said well so that said gas permeates earth materials at the site and vaporizes earth moisture and contaminants therefrom;

controlling the gas temperature and injection rate to control recondensation of liquid ahead of a heat front; and

recovering vaporized contaminants at the surface of the site.

5,011,330

FOAM DISTRIBUTION APPARATUS

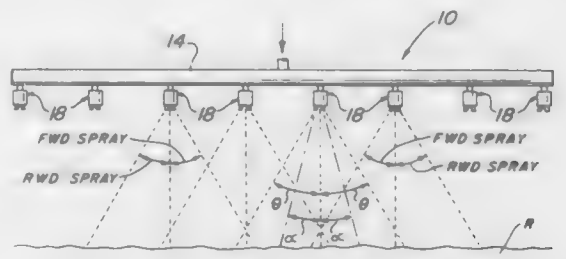
Paul A. Kittle, and David Manlowe, both of West Chester, Pa., assignors to Rusmar Incorporated, West Chester, Pa.

Filed Aug. 8, 1990, Ser. No. 564,367
Int. Cl.[5] B09B *1/00*
U.S. Cl. 405—129 **10 Claims**

1. In a system for laying a blanket of foam on a waste disposal landfill, the system including a vehicle for traversing the landfill and a foam generator carried by the vehicle, a foam distribution apparatus comprising:

an elongate manifold for mounting on the rear end of the vehicle transverse to the direction of movement of the vehicle having an inlet for receiving the foam from the generator;

a plurality of nozzle assemblies fixed to said manifold at spaced intervals along the length thereof, each assembly including a holder having a first bore communicating with said manifold for receiving the foam therefrom, second and third bores communicating with said first bore, and



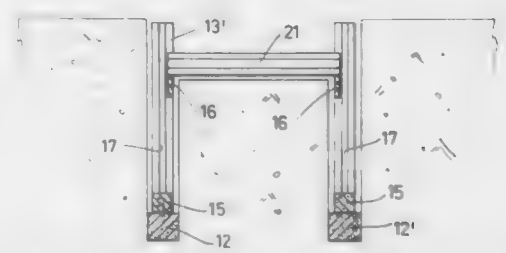
first and second spray nozzles communicating respectively with said second and third bores for producing a foam spray in first and second downward directions with respect to the direction of movement of the vehicle, the first direction being to one side and, forward, and the second direction being to the opposite side and rearward; whereby all sides of any projecting or recessed objects in the landfill are reached by the foam.

5,011,331

METHOD AND STRUCTURAL ELEMENTS FOR CONSTRUCTION UNDERGROUND GARAGES

Amedeo Clavarino, Viale Brianza, 12, 20127 Milano, Italy, assignor to Armedio Clavarino; Ferruccio Clavarino; Lucca Clavarino, all of Milan; Massino Medri and Umberto Capelli, both of Turin, all of, Italy

Filed Nov. 20, 1989, Ser. No. 439,294
Claims priority, application Italy, Nov. 25, 1988, 22734 A/88
Int. Cl.[5] E21D *10/00*
U.S. Cl. 405—149 **11 Claims**



1. A method for constructing underground garage parking units, comprising forming two parallel walls by sinking two rows of spaced pillars into the ground, and inserting a plurality of sheet piles between adjacent pillars in each row thereof, whereby each row of pillars and the sheet piles therebetween form one of said two walls, the lower sheet piles of each said plurality thereof being subsequently removable, thereafter digging a tunnel between said two walls, removing said lower sheet piles to uncover vertical portions of the earth at opposite sides of said tunnel, inserting a plurality of tubular elements from said tunnel into the vertical portions of earth thus uncovered, and removing the earth soil from inside the tubular elements to form garage parking units therein.

5,011,332

APPARATUS AND METHOD FOR INTRODUCING A CABLE-LIKE ELEMENT INTO A PIPE AND ELEMENTS SUITABLE THEREFOR

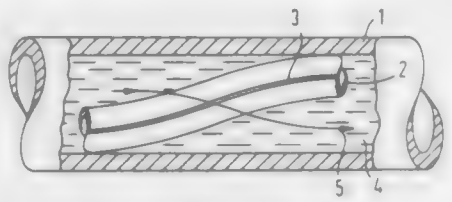
Dieter Kunze, Neuried, and Wolfgang Giebel, Planegg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 3, 1989, Ser. No. 431,198

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1988, 3842122

Int. Cl.[5] F16L *1/12*

U.S. Cl. 405—158 **30 Claims**



28. A cable-like element comprising:

an outer jacket having an exterior surface; and

a plurality of solid, radially extending projection means integrally formed on said exterior surface of said outer jacket for creating turbulence and thereby promoting oscillatory movement of said cable-like element in a selected direction in a pipe together with a flow of flowing agent moving in said pipe in said selected direction.

5,011,333

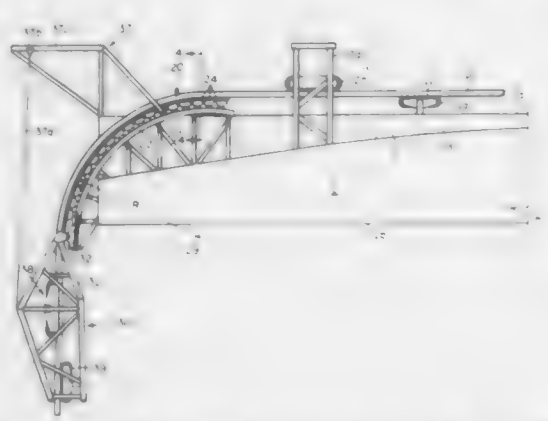
UNDERWATER PIPE LAYING APPARATUS

Glenn A. Lanan, Houston, Tex., assignor to Intec Engineering, Inc., Houston, Tex.

Filed Jul. 3, 1990, Ser. No. 547,294

Int. Cl.[5] F16L *1/14;* **B63B** *35/03*

U.S. Cl. 405—166 **20 Claims**



1. Apparatus for laying a continuous metal pipe along the bottom of a body of water from a surface vessel comprising:

means on said vessel for producing a continuous metal pipe in a substantially linear stress free condition and extending longitudinally toward one end of said vessel;

means defining a pipe overbending track structure adjacent said one end of said vessel, said overbending structure having an arcuate periphery in a vertical plane extending from a position overlying said vessel and aligned with said continuous metal pipe to said one end of said vessel;

pipe conveyor means mounted along said arcuate periphery of said overbending structure;

means on said overbending structure defining an arcuate track parallel to said arcuate periphery of said overbending structure;

carriage means movable along said arcuate track to any selected one of a plurality of positions;

a stinger frame straddling said overbending structure and having its forward end horizontally pivotally secured to said carriage means;

a first roller means carried by said stinger frame and engagable with the upper surface of said continuous pipe to bend said pipe into engagement with a selected portion of said pipe conveyor means determined by the selected position of said carriage means in said arcuate track;

a second roller means carried by said stinger frame in longitudinally spaced relationship to said first roller means and engagable with the bottom surface of said continuous pipe to reversely bend said pipe into a substantially linear configuration for discharge into the water; and

means for selectively positioning said carriage means along said arcuate track, thereby determining the entry angle of the continuous pipe into the water.

5,011,334

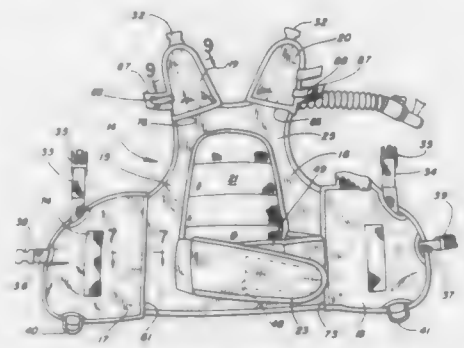
BUOYANCY COMPENSATOR WITH INTERCHANGEABLE ACCESSORIES

Marjorie Vorhauer, Spring Valley, Calif., assignor to Soniform, Inc., El Cajon, Calif.

Filed Jun. 22, 1989, Ser. No. 370,271

Int. Cl.[5] B63C *9/24*

U.S. Cl. 405—186 **14 Claims**



1. A buoyancy compensator comprising a vest having a back portion, right and left side flaps, and right and left shoulder flaps, a pocket removably inserted over one of the flaps, said one of said flaps extending into but not through said pocket, and means for removably attaching the pocket to said one flap.

5,011,335

METHOD FOR MAKING FOUNDATION FOR A JACKABLE PLATFORM, AND MEANS FOR CARRYING OUT THE METHOD

Svein Fjeld, Oslo, Norway, assignor to Norwegian Contractos A/S, Stabekk, Norway

PCT No. PCT/NO88/00042, § 371 Date Feb. 14, 1989, § 102(e) Date Feb. 14, 1989, PCT Pub. No. WO88/08902, PCT Pub. Date Nov. 17, 1988

PCT Filed May 13, 1988, Ser. No. 299,991

Claims priority, application Norway, May 14, 1988, 872007

Int. Cl.[5] E02B *17/00*

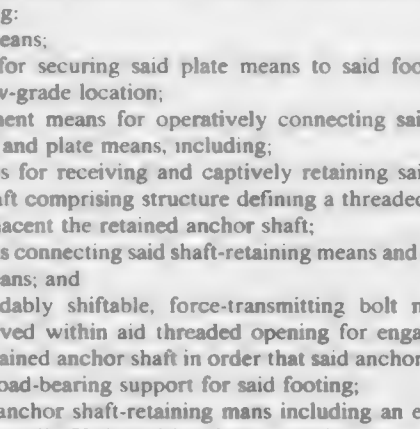
U.S. Cl. 405—204 **15 Claims**

1. A method for positioning, in a sea, a platform having a buoyant deck and having a plurality of legs extending downwardly from said platform, said plurality of legs being movable vertically relative to said platform and being spaced apart from one another in a predetermined manner, comprising the steps of:

arranging at least one vertically oriented tubular element on the sea bottom at a position corresponding to a position at which at least one of said plurality of legs is desired to be located;

at least partially filling said at least one tubular element with a filling material;

lowering said at least one of said plurality of legs relative to said platform until a bottom end of said at least one of said plurality of legs presses against said filling material which was previously filled into said at least one tubular element; and



raising said platform relative to said at least one of said plurality of legs so as to cause said platform to be elevated above the level of the sea.

5,011,336

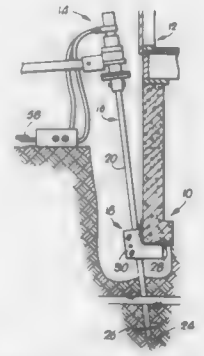
UNDERPINNING ANCHOR SYSTEM

Daniel Hamilton; Robert M. Hoyt, both of Centralia; Patricia J. Halferty, Columbia, and J. Thomas Odom, Centralia, all of Mo., assignors to A. B. Chance Company, Centralia, Mo.

Filed Jan. 16, 1990, Ser. No. 464,937

Int. Cl.[5] E02D *5/00*

U.S. Cl. 405—230 **11 Claims**



1. An underpinning bracket assembly adapted for interconnecting a foundation, footing or the like with an embedded earth anchor presenting an upstanding anchor shaft whereby the anchor will support the footing, said bracket assembly comprising:

plate means;

means for securing said plate means to said footing at a below-grade location;

attachment means for operatively connecting said anchor shaft and plate means, including;

means for receiving and captively retaining said anchor shaft comprising structure defining a threaded opening adjacent the retained anchor shaft;

means connecting said shaft-retaining means and said plate means; and

threadably shiftable, force-transmitting bolt means received within aid threaded opening for engaging said retained anchor shaft in order that said anchor becomes a load-bearing support for said footing;

said anchor shaft-retaining mans including an elongated, generally U-shaped bracket presenting an open lateral face with a top cross plate secured to the upper end thereof, said threaded opening being located through said top cross plate, and a retainer piece received within the open lateral face of said bracket.

5,011,337

MINE ROOF EXPANSION ANCHOR SHELL AND LEAF

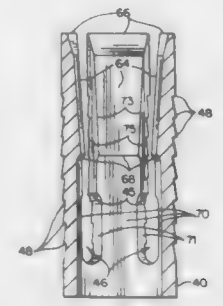
Carl A. Clark, and Raymond L. Wright, both of New York, N.Y., assignors to The Eastern Company, Naugatuck, Conn.

Division of Ser. No. 264,050, Oct. 28, 1988, Pat. No. 4,913,593. This application Apr. 7, 1989, Ser. No. 334,723

The portion of the term of this patent subsequent to Apr. 3, 2007, has been disclaimed.

Int. Cl.[5] E21D *20/02*

U.S. Cl. 405—261 **35 Claims**



15. A mine roof expansion anchor leaf of malleable iron having a lower end integrally attached to a ring-like base portion of an expansion anchor, and extending along an axis from said lower end to an upper end, said leaf comprising:

(a) an inner, an outer and two side surfaces, said side surfaces each having an inner edge at which said side surfaces meet said inner surface, and an outer edge at which said side surfaces meet said outer surface;

(b) said inner surface including a first portion extending from said upper end for a first axial distance, and a second portion extending from a juncture with said first portion to said lower end;

(c) said outer surface including a plurality of serrations formed as a substantially evenly spaced succession of steps lying in substantially evenly spaced, parallel planes extending laterally for the full width of said outer surface and joined by surface portions sloping outwardly toward said lower end, said serrations extending from said lower end for at least ⅓ of the distance to said upper end; and

(d) a first succession of said steps beginning at said lower end having a radial depth greater than the radial depth of a second succession of steps extending from said first succession toward said upper end of said leaf.

5,011,338

CANAL TRIMMING MACHINE

D. William Giroux, 694 Umpqua Place, LaConner, Wash. 98257; James N. Ferry, 21575 Bonanza Blvd., Elkhorn, Nebr. 68022; Kendall J. Kelly, 708 Normal, Woodbine, Iowa 51579; Thomas G. Bell, 608 S. Main St., Ida Grove, Iowa 51455; Conway P. Narby, 15 Calle Christina, Rancho Santa Margarita, Calif. 92588, and Gary L. Patburg, 3701 Mujica Pl., Brea, Calif. 92621

Filed Apr. 10, 1990, Ser. No. 507,615

Int. Cl.[5] E02B *5/02*

U.S. Cl. 405—268 **28 Claims**

1. An apparatus for trimming the bottom and sides of an earthen irrigation canal having water therein, comprising,

an elongated frame means extending transversely across the canal and having opposite ends, a forward end and a rearward end,

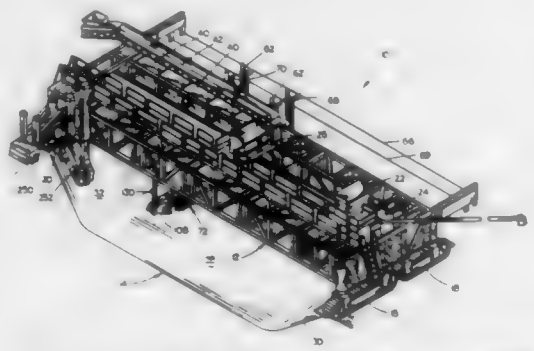
propulsion means on the ends of said elongated frame means for propelling said frame means at least forwardly along the length of the canal,

means for raising and lowering said frame means relative to said propulsion means,

a first trimmer means selectively longitudinally movably mounted on said frame means and having an elongated rotary trimmer mounted thereon, the longitudinal axis of said rotary trimmer being disposed parallel to the length of the canal for trimming at least a portion of the bottom and at least a portion of one of the sides of the canal as the first trimmer means is moved longitudinally on said frame means,

means for vertically moving said rotary trimmer,

said first trimmer means including a dredge pump means for



pumping the material trimmed by said rotary trimmer to a location outside of the canal,

an elongated spreader means mounted on said frame means rearwardly of said first trimmer means which is normally positioned in the water of the canal closely adjacent at least a portion of the trimmed canal to fill low spots in the trimmed canal with rock material,

hopper means on said frame means above said spreader means for storing rock material thereon,

means for supplying said rock material to said hopper means, and means connecting said hopper means with said spreader means for supplying said rock material to said spreader means.

5,011,339

PROCESS FOR DISTRIBUTION OF PIECES SUCH AS RIVETS, AND APPARATUS FOR CARRYING OUT THE PROCESS

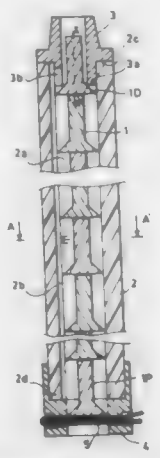
Jean-Marc Aurtoi, and Philippe Bornes, both of Flourens, France, assignors to Ste. Ateliers de la Haute-Garonne-ets Auriol et Cie, Balma, France

Filed Dec. 7, 1989, Ser. No. 447,501

Claims priority, application France, Dec. 8, 1988, 88 16292

Int. Cl.[5] B65G *53/016, 51/018*

U.S. Cl. 406—191 **6 Claims**



1. A process for dispensing identical pieces having a symmetry of revolution about an axis, comprising: providing a tube (2) having a hollow center (*2a*) and a shape corresponding to the transverse section of the greatest diameter of the pieces for assuring a peripheral guiding of said pieces at the level of this section, arranging the pieces one after another in the interior of the tube (2) with their axes of revolution extending along the longitudinal axis of said tube and feeding one end of said tube with a compressed fluid for assuring the transfer of the pieces toward an open dispensing end (*2d*) of said tube, admitting the compressed fluid into the one end of the tube behind the piece closest to said one end of the tube and distributing the fluid along the length of the tube through at least one longitudinal passageway (*2b*) on the internal surface of said tube and opening into the hollow center (*2a*) thereof for exerting the pressure of the fluid along the hollow center in the spaces (E) between the pieces, to the piece (1P) closest to the dispensing end on which said pressure acts for assuring the transfer toward the dispensing end (*2d*).

5,011,340

DOUBLE-SIDED CUTTING INSERT

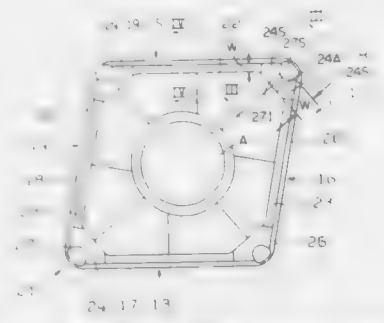
Lars T. Pettersson, Glen Rock, N.J., and Jörgen V. Wiman, Sandviken, Sweden, assignors to Sandvik AB, Sandviken, Sweden

Filed Sep. 26, 1989, Ser. No. 413,005

Claims priority, application Sweden, Sep. 26, 1988, 8803389

Int. Cl.[5] B23C *5/02*

U.S. Cl. 407—114 **10 Claims**



1. A double-sided cutting insert for chipforming machining comprising a generally polygonal body defining uppermost and lowermost planes, said body having upper and lower rake faces, clearance face means intersecting said upper and lower rake faces to define on each of said rake faces cutting edge means extending between adjacent corners of the body, each rake face including a plurality of corner chip faces located at respective corners of said insert and lying in an associated one of said uppermost and lowermost planes to define a chip deformer when in a cutting position and to define an insert support when facing a holder, and recessed surface means extending inwardly from said corner chip faces toward a center of the insert and being recessed relative to respective ones of said uppermost and lowermost planes, each rake face further including main chip faces disposed along respective ones of said cutting edges and being recessed relative to said corner chip faces.

5,011,341

TWO SPEED GEAR SYSTEM FOR POWER TOOL

Morton S. DeGroff, Stryker, Ohio, assignor to The Aro Corporation, Bryan, Ohio

Filed Nov. 9, 1989, Ser. No. 434,925

Int. Cl.[5] B23B *47/04*

U.S. Cl. 408—124 **5 Claims**

1. In a power tool having a rotary driven output spindle defining an axis, a motor having an output motor shaft axially aligned with the spindle, transmission means connecting the output motor shaft with the spindle, and control means for operating the motor, the power tool further comprising, in combination:

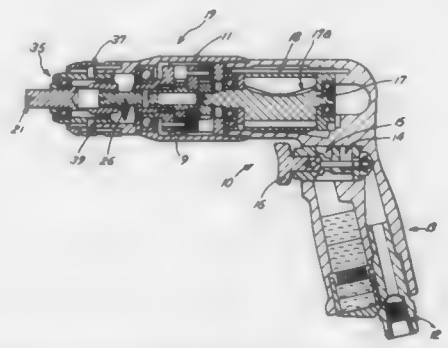
a two speed gear system incorporated in the transmission means to provide a first drive having a higher speed, lower torque output, and a second gear reduced drive having a higher torque output and lower speed output relative to the first drive, said two speed gear system also including means for selectively engaging the first or the second drive;

said system comprising:

an orbital gear member concentric with the axis and motor shaft;

a sun gear driven by the motor;

a planetary gear mounted on a plate concentric with the axis,



said sun gear continuously cooperative with the orbital gear member by means of the planetary gear to provide the second drive output from said plate, said sun gear also including axial gear means for cooperative direct driving engagement with the spindle in response to the means for selectively engaging the first drive;

said spindle also having a first axial gear means cooperative with the axial gear means of the sun gear;

said spindle further including second means for drivingly engaging the plate in the second drive position;

said means for selectively engaging including means for axially translating the spindle between the first drive position of engagement of the spindle and sun gear axial drive means and the second drive position of engagement of the spindle and plate.

5,011,342

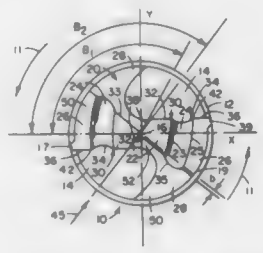
TWIST DRILL

George Hsu, Martinez, Ga., assignor to 501 Greenfield Industries, Inc., Evans, Ga.

Filed Mar. 14, 1988, Ser. No. 168,074

Int. Cl.[5] B23B *51/02*

U.S. Cl. 408—224 **34 Claims**



1. A twist drill comprising a fluted barrel portion having a point end and point surfaces formed on said point end, said point surfaces including an inner flank surface extending from the center of said point end to the inner extent of a groove surface, an outer flank surface extending from the outer diameter of said point end to the outer extent of said spiral groove surface and a split surface, said groove being formed along a generally circular path about the center axis of said drill.

5,011,343

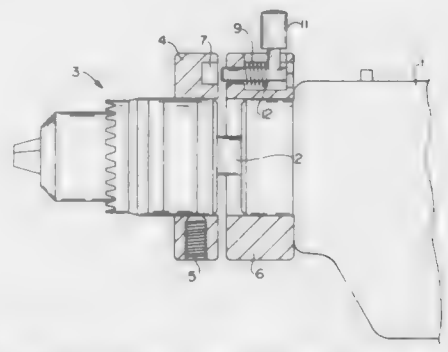
DRILLS

Oded Saban, and Yaron Berger, both of 5 Kashani Street, Ramat Aviv G, Israel

Filed Nov. 15, 1989, Ser. No. 436,639

Int. Cl.[5] B23B *31/06*

U.S. Cl. 408—240 **3 Claims**



1. In drilling apparatus which include at least one chuck having a drilling axis, an attachment comprising first and second collars the first of which is firmly connected with the exterior part of the chuck and has at its side which is directed away from the drill holding jaws a bow-shaped recess and elastic buffers in the recess at respective ends of the recess while the second collar is fitted on the body of the respective drilling apparatus, a driver body parallel to said axis extending from the second collar towards the said recess and means for engaging the driver body in said recess in the first collar.

5,011,344

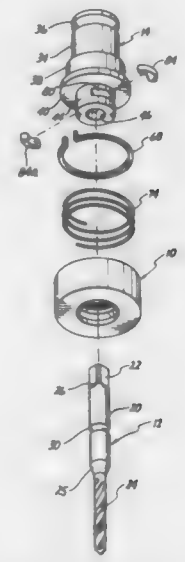
POSITIVE DRIVE ADAPTER

Allan S. Johnson, Newport Beach, Calif., assignor to Tapmatic Corporation, Irvine, Calif.

Continuation of Ser. No. 278,371, Dec. 1, 1988, abandoned. This application Aug. 27, 1990, Ser. No. 572,349

Int. Cl.[5] B23B *31/12*

U.S. Cl. 408—240 **4 Claims**



1. In a quick change holder having a longitudinal axis adapted for holding a tool which has an end part and which has a holding formation in the form of a groove in it spaced at a

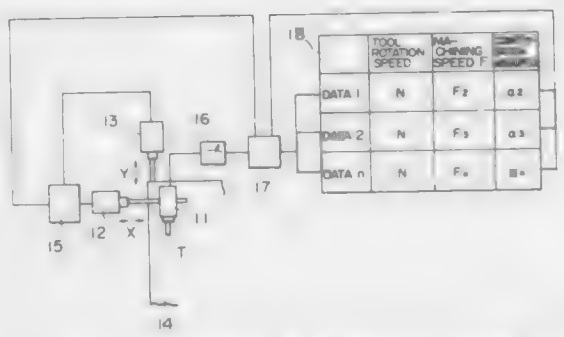
predetermined distance from the end of the tool, and comprising a body configured to receive the tool, including a portion to receive said end part of the tool, an axially moveable collar moveably mounted upon said body having at least one position for holding the tool and at least one position for releasing the tool from the holder and including a radially inner section, and at least one element contained in at least one slot defined in the body for engaging said groove in said tool in holding engagement when said collar is in said at least one position for holding the tool and for disengaging from the groove in the aforesaid tool to permit the aforesaid tool to be released from holding engagement when said collar is in said at least one release position, the improvement comprising said at least one element having an arcuate truncated toroidal configuration having a convex radially inner surface configured to engage a complementary section of the said holding formation in the form of a groove in the tool, the radially outer surface of said at least one element being convex, the collar having a radially inner surface including a substantially flat portion and a portion having a recess defined therein for receiving the convex radially outer surface of said at least one element in said at least one release position of the collar, whereby in said at least one release position said at least one element is movable radially outwardly into said recess in said inner surface of said collar by virtue of removal of said tool from engagement with said at least one element, and whereby in said at least one holding position said substantially flat portion of said collar engages with said radially outer surface of said at least one element to hold the radially inner surface of said at least one element in holding engagement with said complementary section of said holding formation in the form of a groove in said tool.

5,011,345

CONTOUR MACHINING METHOD AND APPARATUS FOR PRINTED CIRCUIT BOARD

Masao Nishigai, Ayase; Tamio Otani, Hadano; Yasuhiko Kanaya, Machida, and Tetsuo Murakami, Atsugi, all of Japan, assignors to Hitachi Seiko Co., Ltd., Tokyo, Japan

Filed Dec. 6, 1989, Ser. No. 446,588
Claims priority, application Japan, Dec. 12, 1988, 63-312018
Int. Cl.[5] B23C *1/00*
U.S. Cl. 409—132 **4 Claims**



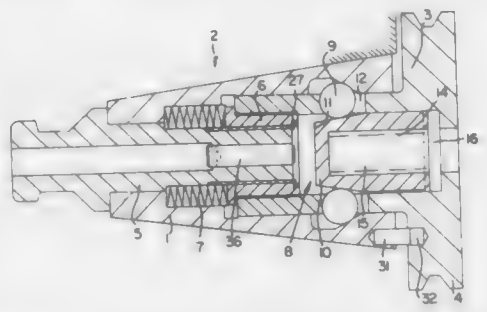
1. A method of machining the contour of a printed circuit board by effecting a relative feed movement between a rotating tool and the outer periphery of the printed circuit board, said method comprising: detecting the electrical current value of a drive motor for driving a spindle to which said tool is attached; and changing, when the detected electrical current value of said spindle drive motor has reached a predetermined current value immediately before tool breakage, the machining condition in such a manner as to reduce the electrical current value of said spindle drive motor and, at the same time, changing the tool diameter compensation amount to a value corresponding to the machining condition after the change.

5,011,346

MOUNTING DEVICE WITH CONICAL SHANK

Emile Pfalzgraf, Bouxwiller, France, assignor to E.P.B. Emile Pfalzgraf, Societe Anonyme, Bouxwiller, France

Filed Feb. 20, 1990, Ser. No. 486,876
Claims priority, application France, Jan. 23, 1990, 90 00901
Int. Cl.[5] B23C *9/00;* **B23B** *31/10*
U.S. Cl. 409—234 **13 Claims**



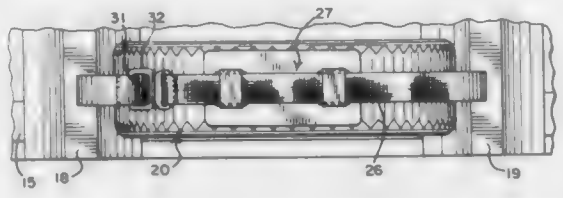
1. Mounting device with conical shank, particularly a 7/24ths cone, for cone-to-surface application for attachments, toolholders and tools, essentially constituted by a cone (1) for mounting in spindle (2), by a front part (3) having a portion thereof centered in the cone (1) and provided with a flange (4) for application via its rear face against the front face of the spindle (2), and by a knob (5) connecting for assembly the cone (1) and the front part (3) by means of an intermediate threaded element (6), on which bears an elastic unit (7) formed of Belleville washers intended to apply the cone (1) into the spindle (2) in locking position and mounted in compression between the said cone (1) and the front part (3), characterized in that between the cone and said portion is provided a device (8) for locking the mutual position of the cone (1) and the front part (3), in mounting position in the spindle (2) with application of the flange (4) against the face of the said spindle (2), by gripping at least two balls (9) between the said cone (1) and front part (3).

5,011,347

UNIVERSAL WHEEL RESTRAINING CLEAT AND STRAP ASSEMBLY FOR WHEEL CHOCKS

Robert L. Bullock, Antioch, Ill., assignor to Standard Car Truck Company, Park Ridge, Ill.

Filed Nov. 29, 1989, Ser. No. 443,244
Int. Cl.[5] B60P *3/077, 3/075*
U.S. Cl. 410—9 **11 Claims**



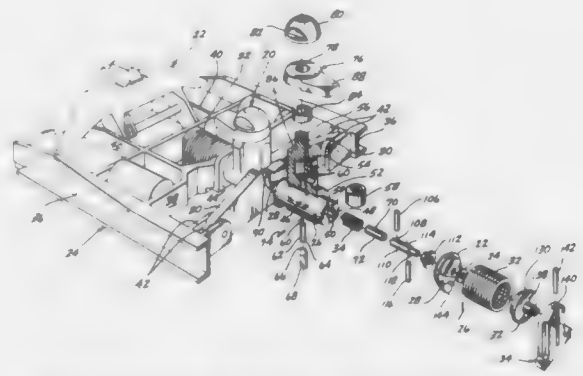
1. A wheel harness for use in a vehicle hold down apparatus in a railway car to secure a vehicle wheel having a pneumatic tire to the floor of the car, wherein a chock is secured to the floor at each side of the tire tread, and the harness is connected to the chocks, said harness including strap means of flexible, substantially non-stretchable material substantially circumferentially overlying the tire tread and connected to the chocks, and a substantially plate-like cleat carried on the strap and disposed on and substantially at the top of the tire tread, said cleat being molded of plastic having high strength and resilient characteristics, said resilient characteristics allowing the cleat to conform to the contour of the tire tread, said cleat having openings through which the strap is threaded, and projections on the tire contacting surface which produce a slip-free engagement with the tire tread when the strap is tightened.

5,011,348

AUTOMATICALLY RETRACTABLE CENTERLINE RESTRAINT

Tom M. Jensen, Kirkland, and Herbert E. Hamilton, Edmonds, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 15, 1989, Ser. No. 451,434
Int. Cl.[5] B60P *7/08*
U.S. Cl. 410—79 **14 Claims**



1. An automatically retractable restraint assembly for vertically restraining a body by engagement with a side of the body, the restraint assembly comprising:
a frame;
a shaft having a horizontal axis mounted in said frame for rotation about said horizontal axis;
a first head on said shaft that rotates with said shaft, said first head normally extending above said frame in an upright position and having a toggle extending outwardly therefrom to engage the side of and thereby vertically restrain the body;
a locking means on said shaft that rotates with said shaft, said locking means having a pair of contacting surfaces disposed on opposite sides of said horizontal axis of said shaft and a pair of projections disposed on opposite sides of said horizontal axis of said shaft;
a pair of release wings pivotally mounted to said frame on opposite sides of said horizontal axis of said shaft, each release wing having an extension in cooperative engagement with one of said contacting surfaces of said locking means to maintain said first head in its normally upright position, and whereby rotation of one of said release wings upon engagement by the body disengages said extension from said one of said contacting surfaces of said locking means to allow said first head to rotate downwardly into said frame upon engagement by the body, and whereby one of said projections engages the extension of the other of said release wings to lock said first head in a down position upon rotation of said first head into said frame below the bottom of the body;
a first biasing means for urging said first head back to its normally upright position after passage of the body; and
a second biasing means for urging said first head toward the body should the body attempt to move out of engagement with said toggle.

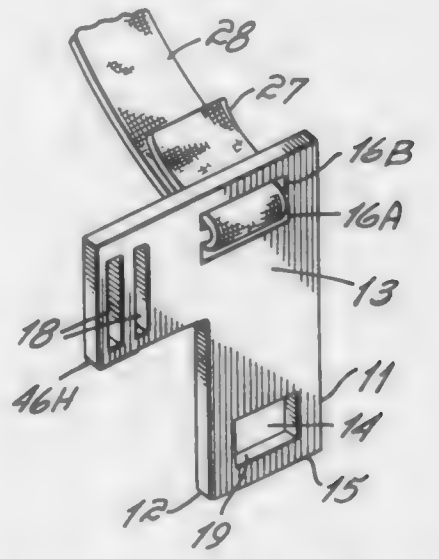
5,011,349

TAILGATE MOUNTED CARGO RETAINING DEVICE

Glenn McAndrews, 402 E. Warren St., Lebanon, Ohio 45036

Filed Mar. 21, 1990, Ser. No. 496,650
Int. Cl.[5] A44B *11/06;* **B60P** *7/04*
U.S. Cl. 410—102 **18 Claims**

1. A device for securably retaining cargo in a vehicle having a tailgate with latches on opposing sides of said tailgate, each of said latches including a latch tongue and a backplate fixture, in circumstances where the tailgate of the vehicle is lowered into a horizontal postion, said device comprising:
a plurality of straps; and
two end connector members for fastening said straps and engaging a respective latch, each end connector member including an upper portion with strap attaching means,, a lower portion being integral with said upper portion, and a latch tongue receiving aperture located in said lower portion, said latch receiving aperture having sufficient



penetrable area to releaseably engage a tailgate latch tongue; and
whereby each end connector member is releaseably engagable into said respective latch, during said engagement each said tongue extendably penetrates said respective aperture and coacts with said respective backplate fixture, and whereby said cargo is retained by said straps when said straps are attached to said end connector members and said end connector members are engaged with said respective latches to fixedly attach the end connector members to said tailgate.

5,011,350

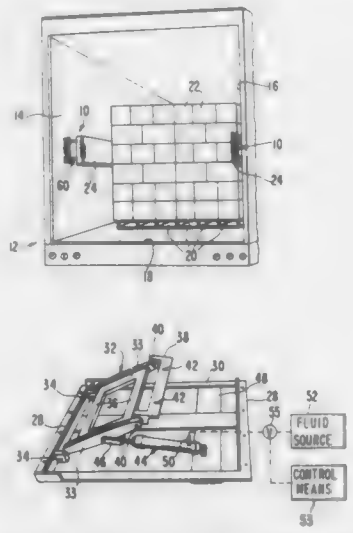
LOAD STABILIZING UNIT

Warren Brock, 5064-A N. Wishon, Fresno, Calif. 93704

Filed Jul. 12, 1989, Ser. No. 379,505
Int. Cl.[5] B61D *45/00*
U.S. Cl. 410—128 **6 Claims**

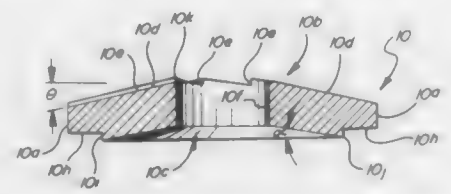
1. A stabilizing unit for a load carried on a vehicle having a side wall with an inner surface comprising:
a main frame adapted to be secured to the inner surface of the vehicle side wall, said main frame having a pair of side members;
a drive hinge having a pair of sides and pivotally mounted at one of said sides on one side member of the main frame;
a load stabilizing panel;
means pivotally coupling the panel to the other side of the drive hinge for movement from a retracted position in which the panel is adjacent to the inner surface of the side wall to an operative position spaced inwardly from the inner surface of the side wall against a load adjacent thereto; and

extensible means coupled with the drive hinge near the other side thereof and to the main frame near the other side



member of the main frame for releasably holding the panel in its operative position.

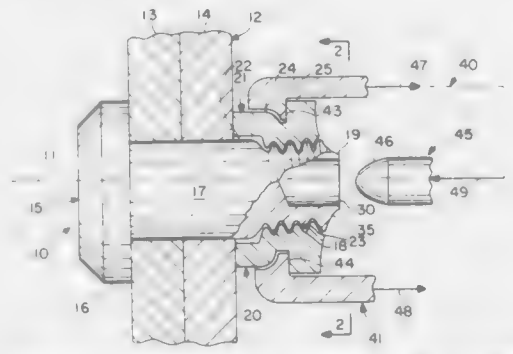
5,011,351
WEDGE LOCK DIE WASHER
Sydney L. Terry, 47 Pine Ct., Grosse Point Farms, Mich. 48236
Filed Mar. 19, 1990, Ser. No. 495,618
Int. Cl.[5] F16B *39/24, 39/282*
U.S. Cl. 411—144 **21 Claims**



1. A locking fastener comprising an annular washer member having flat wrenching sides at an outer periphery thereof, having a convexly conical upper annular face within said outer periphery, having a plurality of circumferentially spaced teeth means on its upper conical surface, and defining a circular seating surface on its lower annular surface.

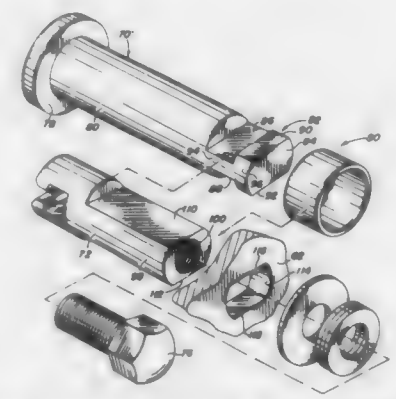
5,011,352
DEFLECTION TYPE THREAD LOCK FOR A THREADED FASTENER
Edwin E. Hatter, Torrance, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.
Filed Sep. 8, 1989, Ser. No. 404,697
Int. Cl.[5] F16B *39/02*
U.S. Cl. 411—271 **8 Claims**

1. A fastener having a central axis comprising:
a pin having a shank, a free end, an external thread adjacent to its free end, and a reduced cross-section near its free end;
a collar having a body, an axial passage through said body, an internal thread in said passage so proportioned and arranged as to engage the external thread on said pin, said internal and external threads being so shaped, proportioned and arranged that the collar can freely be run onto the pin and tightened down without impediment between said threads, and when said collar is assembled to said pin to leave at least some of said reduced cross-section exposed beyond said collar;
said body having a shoulder so disposed and arranged as to be engageable by pulling means, whereby with the collar tightened onto the pin, said pulling means may be engaged to said shoulder and deflector means may be forced in



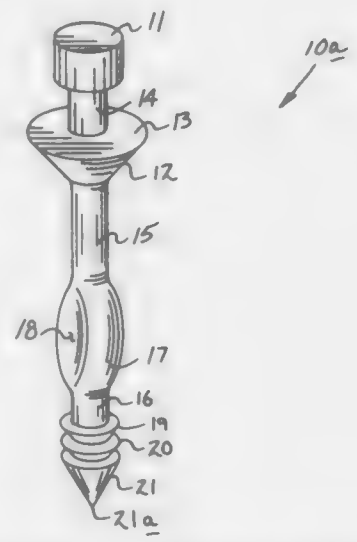
axial opposition to axial forces exerted by pulling means to deflect an end portion of the pin or of the collar into the axial path of the other to provide a thread lock to resist removal of the collar from the pin.

5,011,353
HIGH TEMPERATURE TURBINE ENGINE STRUCTURE
Gary L. Boyd, Tempe, Ariz., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.
Filed Dec. 6, 1988, Ser. No. 280,760
Int. Cl.[5] F16B *35/02*
U.S. Cl. 411—383 **12 Claims**



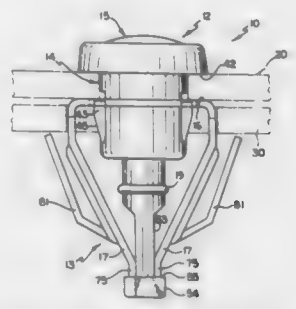
1. A high temperature hybrid ceramic/metallic fastener comprising:
an elongate ceramic portion having at one end thereof a head part of comparatively larger diameter, an integral elongate shank part of comparatively smaller diameter extending axially from said head part to an end termination portion thereof;
a metallic end fitting defining an axially extending thread defining feature, and reacting means for cooperating with a housing receiving said fastener for reacting torque applied to said end fitting via said thread defining feature;
said end fitting and said shank portion defining cooperating means for coaxially intersecuring one to the other to sustain an axially directed tensile force, whereby said ceramic portion is subjected only to said tensile force and is isolated by said torque reacting means from torque applied to said thread defining feature.

5,011,354
CONCRETE FASTENER APPARATUS
Ritch J. Brownlee, 4129 328th Pl. SE, Fall City, Wash. 98024
Filed Feb. 28, 1990, Ser. No. 486,294
Int. Cl.[5] F16B *15/00*
U.S. Cl. 411—439 **1 Claim**



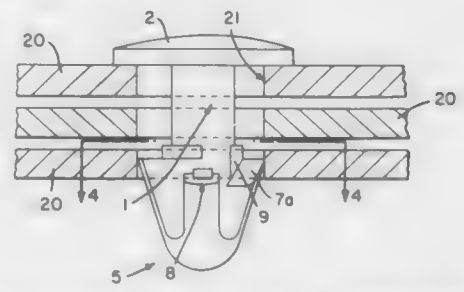
1. A concrete fastener for assembling a support member to a concrete substrate, wherein the fastener comprises,
an upper cylindrical first head member defined by a first head diameter, and
a first cylindrical shank defined by a shank diameter integrally and coaxially mounted to a bottom surface of the first head member, and
an inverted and truncated conical second head member integrally mounted to a lower terminal end of the first cylindrical shank, and
a second cylindrical shank integrally and coaxially mounted to a lower terminal end of the second head member, wherein the second cylindrical shank is defined by a shank diameter, and
an anchor means integrally and coaxially mounted to a lower terminal end of the second cylindrical shank for securement to the concrete substrate, and
a third cylindrical shank coaxially aligned with and mounted to a lower terminal end of the anchor member, wherein the third cylindrical shank is defined by a shank diameter, and wherein the anchor means extends beyond the second and third cylindrical shanks, and
wherein the conical second head member includes an upper annular surface spaced from and underlying the bottom surface of the first head member, and
wherein the anchor means is defined by an elliptical projection extending beyond the second and third cylindrical shanks, and
wherein the elliptical projection includes a concave elliptical recess formed on opposing sides of the elliptical projection to maintain geometrical integrity to the elliptical projection during enacting of the fastener through the support member, and
wherein a lower terminal end of the third cylindrical shank terminates in a plurality of inverted truncated conical anchors, and including a further terminal conical anchor terminating in a lower pointed end, wherein the anchors are defined by anchor diameters extending beyond and greater than the shank diameter of the third cylindrical shank.

5,011,355
PUSH BUTTON TYPE FASTENER RELEASABLE BY ROTATION
Inaba Motoshige, Kanagawa, Japan, assignor to VSI Corporation, Torrance, Calif.
PCT No. PCT/US89/00618, § 371 Date Oct. 6, 1989, § 102(e) Date Oct. 6, 1989, PCT Pub. No. WO89/07719, PCT Pub. Date Aug. 24, 1989
PCT Filed Feb. 15, 1989, Ser. No. 460,857
Claims priority, application Japan, Feb. 19, 1988, 63-35414
Int. Cl.[5] F16B *21/00*
U.S. Cl. 411—552 **5 Claims**



1. A push button type fastener comprising:
a stud assembly attachable to a moving side panel, said stud assembly including a stud with a cam at its tip, a wall portion at the rear position thereof and an engaging surface therebetween, and a spring; and
said cam having two planar surfaces spaced apart a distance;
a socket attachable to a fixed side panel, said socket including a base portion and a pair of resilient arms projecting angularly from said base portion and converging toward each other such that said base and said pair of arms substantially form a triangle, said resilient arms further having stopping surfaces at their tips;
wherein said stud can be pushed between said pair of resilient arms, against the yielding bias of the spring, and then released so that said engaging surface is stopped at said stopping surfaces and said panels are fastened together;
wherein said panels can be unfastened by rotating said stud;
and wherein said cam and said wall portion of said stud assembly are directly connected together in a twisted relation without any intervening structure and the portion of said cam that is immediately adjacent said wall portion forms said engaging surface, said engaging surface having a thickness substantially equal to the distance between the two planar surfaces of said cam.

5,011,356
PANEL FASTENER
Miguel C. Fernandez, Sao Paulo, Brazil, assignor to ITW-Mapri Industria e Comercio LTDA, Sao Paulo, Brazil
Filed Jan. 25, 1990, Ser. No. 469,905
Int. Cl.[5] F16B *21/00*
U.S. Cl. 411—553 **16 Claims**



1. A fastener for fastening together a plurality of overlap-

ping panels, having holes defined therein and through which said fastener is to be inserted for fastening said panels together, comprising:

a body portion having a longitudinal axis;

a head provided upon a first end of said body portion for engaging a first outer surface of a first one of said plurality of nanels when said fastener is inserted through said holes of said panels;

a pair of diametrically opposed resiliently flexible fingers provided upon a second end of said body portion for engaging a second outer surface of a second one of said plurality of panels when said fastener is inserted through said holes of said panels so as to fasten said panels together, between said head of said fastener and said flexible fingers, in such a state that said panels are disposed in a non-compressed overlapping state with respect to each other; and

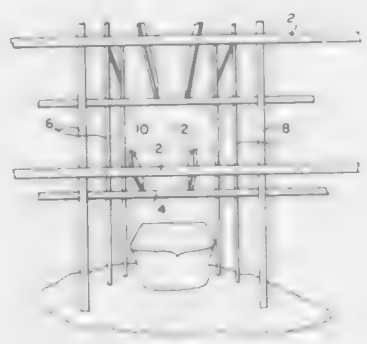
a pair of diametrically opposed inclined cam portions, provided upon said body portion at a position which is axially between said first and second ends of said body portion and within a plane substantially perpendicular to a plane within which said flexible fingers are disposed, for engaging said second outer surface of said second one of said plurality of panels when said fastener has been inserted through said holes of said panels so as to compress said overlapping panels together from said non-compressed state to a compressed, overlapped state when said fastener is rotated about said longitudinal axis thereof through means of an angular displacement of 90° from the position at which said flexible fingers engage said second outer surface of said second one of said panels.

5,011,357

BOAT/AUTO PARKING SYSTEM FOR MARINA

Richard Studler, 22 Cooper St., #1, Lake George, N.Y. 12845

Filed Jun. 9, 1989, Ser. No. 363,984
Int. Cl.[5] E04H *6/00*
U.S. Cl. 414—253 **16 Claims**



1. A method for parking boats and automobiles at marinas comprising the steps of:

providing a pallet having means thereon for receiving and supporting selectively either an automobile or a boat,

providing a storage area having a support structure,

placing a boat upon the pallet,

placing the pallet upon said support structure,

removing the pallet and the boat thereon from the storage area,

placing the boat and the pallet in the water,

removing the boat from the pallet,

placing an automobile upon the pallet, and,

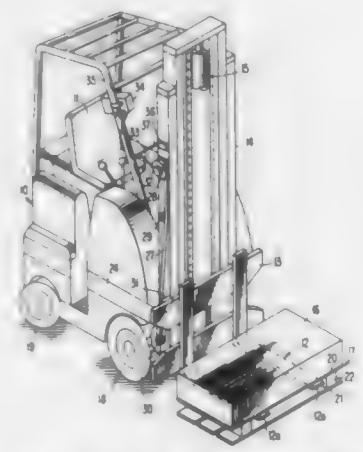
placing the pallet in the storage area.

5,011,358

HEIGHT INDICATOR FOR A FORK LIFT TRUCK

Eric T. Andersen, and Edward A. Andersen, both of Rte. 1, Box 138A, Barboursville, Va. 22923

Filed Oct. 25, 1988, Ser. No. 262,311
Int. Cl.[5] B65G *1/04*
U.S. Cl. 414—273 **18 Claims**



1. A height indicator for use on a fork lift truck of the type having a vertically positionable fork operatively associated therewith, said height indicator for indicating to an operator of the fork lift truck the position of the fork with respect to a particular shelf of a shelving system within a warehouse independently of a control system of the fork lift truck, said height indicator comprising:

programmable memory means for storing information regarding the vertical location of a plurality of shelves of a shelving system, said information including a storage height and a retrieve height for each of the plurality of shelves,

a first sensing means for tracking the vertical position of a fork of a fork lift truck and sending signals representative of the sensed vertical position,

comparing means that receives the signals from said sensing means for comparing the sensed vertical position of the fork to the stored information of the vertical location of the plurality of shelves stored in said programmable memory means, and

a first display means that receives signals from said comparing means for indicating to the operator as the fork is controlled by the operator when the fork is positioned within a preselected vertical range of a selected shelf of the plurality of shelves, said preselected vertical range encompassing both the storage height and the retrieve height for the selected shelf, whereby the operator can load or unload between the fork and the shelves based on the indication of the display means within the predetermined range.

5,011,359

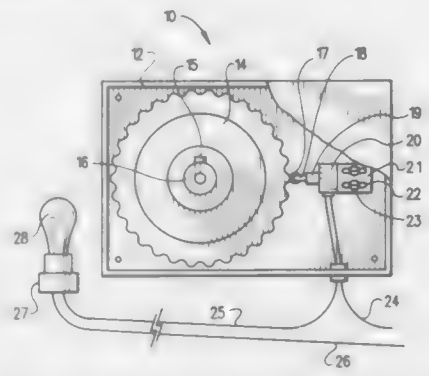
SILO ROTARY UNLOADER MONITOR

Edward McDonald, 270 S. Washington St., Lyndon Station, Wis. 53944

Filed Apr. 4, 1990, Ser. No. 503,950
Int. Cl.[5] B65G *65/38*
U.S. Cl. 414—289 **2 Claims**

1. In combination with a silo rotary unloader having a discharge chute, a stationary collector ring secured to said discharge chute, a suspension harness secured to said stationary collector ring, a rotary collector ring rotationally secured to said stationary collector ring, a frame secured to said rotary collector ring, a screw auger on said frame, drive means for rotating said screw auger and for rotating said rotary collector ring with respect to said stationary collector ring, a rotary monitor, comprising:

a wheel mounted for rotation with said rotary collector ring, said wheel having a cylindrical side wall provided with a sinusoidal wave pattern;



a limit switch mounted on said stationary collector ring, said limit switch having an actuating sensor biased into engagement with said sinusoidal wheel side wall; and

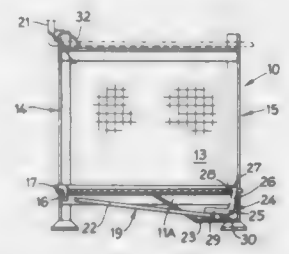
indicating means operably connected to said limit switch to indicate rotary speed of said wheel with respect to said stationary collector ring.

5,011,360

SELF-EMPTYING CONTAINER

David A. S. Abram, Troon, and Bruce W. Wishart, East Kilbride, both of Scotland, assignors to Empteezy Limited, West Lothian, Scotland

Filed Oct. 18, 1988, Ser. No. 259,264
Int. Cl.[5] B65G *65/00*
U.S. Cl. 414—424 **22 Claims**



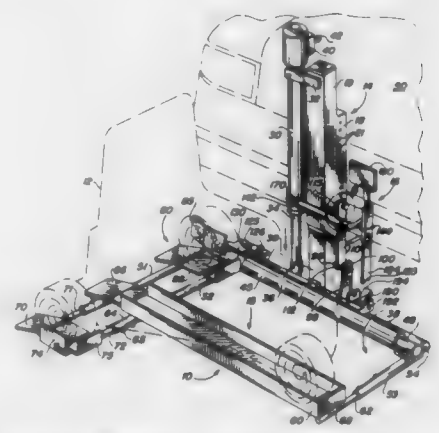
1. A self-emptying free standing container having a base and being adapted to be lifted by a mechanical lift apparatus, the container including relatively movable parts movable to allow emptying, a latch mechanism to normally hold said parts together to prevent emptying, said latch mechanism having a latch member and an actuator member which extends underneath and below the base and is pressure actuated to release the latch member, there being further provided at a lower portion of the container, support means to space the actuator from the ground during storage or loading and to prevent actuation thereof, wherein the support means includes a plurality of spaced support members which are fixed to the container and depend below a level of the actuator, said support members providing open peripheral spaces therebetween which enable the support members to straddle in use a raised surface and allow the actuator member to engage the raised surface to actuate release of the latch by pressure of the raised surface on the actuator member.

5,011,361

VEHICLE MOUNTABLE CARRIER FOR THREE-WHEELED SCOOTER AND THE LIKE

Edward A. Peterson, 3240 Delaware St., Chandler, Ariz. 85225

Filed Oct. 27, 1988, Ser. No. 263,243
Int. Cl.[5] B60P *9/00*
U.S. Cl. 414—462 **11 Claims**



1. A vehicle-attachable carrier for transporting an object comprising:

(a) a mast having a vertical lift apparatus associated therewith which life is selectively movable in an upward and downward direction said mast having an engagement member;

(b) means for detachably securing said mast to a vehicle;

(c) a platform operatively connected to said lift apparatus for supporting the object, said platform including a frame and pivotal from a horizontal position to a generally vertical position about a pivot axis; and

(d) a fold control means for controlling folding of said platform including:

(i) fold-up means for selectively engaging said engagement member, said fold-up means having a first position in engagement with said engagement member whereby said platform will pivot to said vertical position upon upward movement of said lift and a second position out of engagement with said engagement member; and

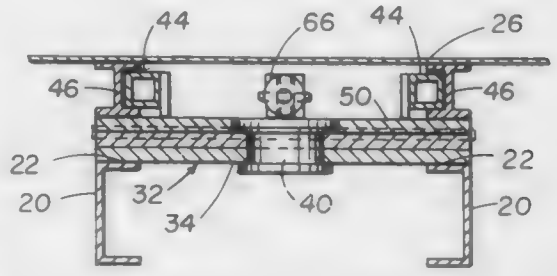
(ii) load responsive means responsive to the presence of an object supported on the platform for moving said fold-up means to said second position to maintain said platform in said horizontal position.

5,011,362

VEHICLE WITH MULTI-POSITIONABLE FLAT BED

Joseph A. Pijanowski, 14351 Irving St., Brooksville, Fla. 34609

Filed Sep. 29, 1989, Ser. No. 414,519
Int. Cl.[5] B60P *1/04*
U.S. Cl. 414—480 **7 Claims**



1. A roll-back flat-bed truck comprising a cab at the front end and a frame at the rear end and a flat bed secured thereto by securement means, the securement means including:

a hinge having a lower hinge half coupled to the frame

adjacent to the rear end of the frame and an upper hinge half coupled to the bed and a hinge pin coupling the hinge halves to allow tilting the upper hinge half and bed with respect to the lower hinge half and frame about a horizontal axis;

a swivel plate attached to the frame adjacent to the rear end of the frame and a swivel pin positioned in an aperture extending through the swivel plate and lower hinge half to allow swiveling of the bed with respect to the frame about a vertical axis;

an intermediate support attached to the upper surface of the upper hinge half with means to slidably couple the bed thereto to allow for rolling the bed longitudinally with respect to the intermediate support, hinge and frame;

first drive means to slide the bed longitudinally with respect to the intermediate support, hinge and frame;

second drive means to tilt the bed, intermediate support and upper hinge half with respect to the lower hinge half, swivel plate and frame; and

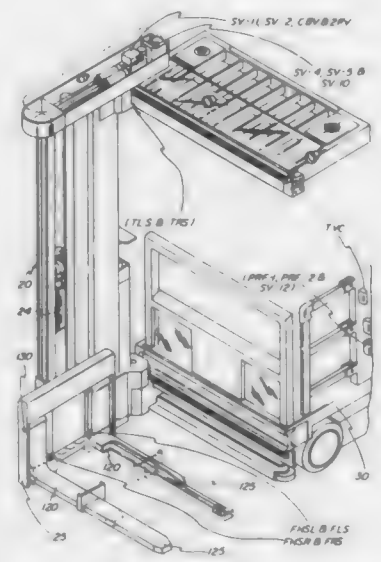
third drive means having a component adjacent to the front end of the intermediate support to swivel the bed, intermediate support and hinge with respect to the frame.

5,011,363

EXTEND AND RETRACT CONTROL FOR FORK LIFTS

Walter Conley, III, St. Marys; Ned E. Dammeyer, New Bremen, and Kim A. Klopfleisch, St. Marys, all of Ohio, assignors to Crown Equipment Corporation, New Bremen, Ohio

Filed Dec. 5, 1989, Ser. No. 446,222
Int. Cl.[5] B66F *9/06*
U.S. Cl. 414—666 **3 Claims**



1. In a materials handling vehicle including a power unit for moving the vehicle, a platform assembly supported on and being vertically movable relative to the power unit including an operator's station and controls for operating various functions of said vehicle, a load handler assembly mounted for traverse movement across the platform assembly from a home position to a limit position, a traverse motor for moving said load handler assembly across the platform assembly, fork carriage assembly mounted on and vertically moveable relative to the load handler assembly, extendable forks carried by said fork carriage assembly and movable by fork extension cylinders, and a control handle for controlling the traverse movement of the load handler assembly, the improvement comprising

means responsive to movement of the control handle for controlling a supply of hydraulic fluid to power the traverse motor and to extend and retract the forks,

means for sensing the direction of movement of the control handle,

means for indicating the direction the load handler assembly is facing,

limit switch means for sensing when the fork carriage assembly has moved to its limit position on either side of the platform assembly,

transfer valve means for transferring hydraulic fluid between the traverse motor and the fork extension cylinders,

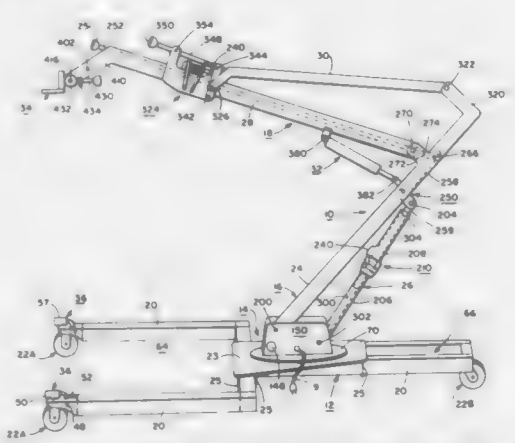
circuit means responsive to said control handle sensing means, said limit switch means and said direction indicating means for controlling said transfer valve whereby the movement of the load handler assembly and the extendable forks will be automatic in response to movement of the control handle.

5,011,364

PORTABLE ARTICLE HANDLING/SUPPORTING APPARATUS

John E. Anderson, 395 Blossom St., Fitchburg, Mass. 01420

Filed Nov. 30, 1989, Ser. No. 443,157
Int. Cl.[5] B66C *1/10*
U.S. Cl. 414—694 **17 Claims**



1. An article handling/supporting apparatus, comprising:

a. a base;

b. a turnable assembly rotatably mounted upon said base said turntable assembly including means for securing said turntable assembly in a preselected rotational position with respect to said base, and means for slightly varying and preselected rotational position of said turntable assembly after said securing means has secured said turntable in said preselected rotational position;

c. a boom, said boom being pivotally mounted adjacent one end thereof to said turntable assembly, means for securing said boom in a preselected position with respect to said turntable assembly, and means for slightly varying said preselected position of said boom after said securing means has secured said boom in said preselected position;

d. an arm, said arm being pivotally mounted adjacent one end thereof to said boom, means for securing said arm in a preselected position with respect to said boom, and means for slightly varying said preselected position of said arm after said securing means has secured said arm in said preselected position;

e. means adjacent an end of said arm for attaching an article thereto; and

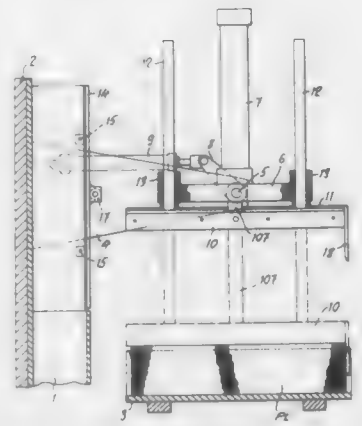
f. means for simultaneously releasing said securing means associated with said turntable assembly, said boom and said arm.

5,011,365

APPARATUS FOR FEEDING BUNDLES OF LAMINATIONS

Umberto Sassi, Varazze, Italy, assignor to SASSI S.r.l., Varazze, Italy

Filed May 24, 1989, Ser. No. 356,100
Claims priority, application Italy, May 25, 1988, 12486 A/88
Int. Cl.[5] B66C *1/00*
U.S. Cl. 414—737 **10 Claims**



1. An apparatus for feeding bundles of laminations (PL) to a machine that processes or uses bundles of laminations, said apparatus comprising a vertical feeding duct (**1**) into which vertically oriented bundles of laminations (PL) are introduced in sequence, said apparatus further comprising a movable grasping and transferring device (**10, 11**) for cyclically taking bundles of laminations (PL) from a magazine (**3**) located in a withdrawal station, and conveying said bundle of laminations (PL) over an opening of said feeding duct (**1**) in alignment with said feeding duct, and positioning said bundle into said duct, and wherein said grasping and transferring device consists of at least one permanent magnet (**10**), for grasping each bundle of laminations (PL) from a respective magazine (**3**) at said withdrawal station by simply contacting same with said at least one permanent magnet, movable abutment members (**14**) and means for shifting said abutment members between an inactive position in which said bundle of laminations (PL) are freely positioned over said opening of said feeding duct (**1**), and an active position in which said abutment members are positioned to engage and hold back said bundle of laminations (PL) positioned over said opening of said feeding duct, thus causing separation of said bundle of laminations (PL) from said at least one permanent magnet (**10**) upon retraction of said grasping and transferring device.

5,011,366

ULTRACLEAN ROBOTIC MATERIAL TRANSFER METHOD

Richard F. Miller, 10905 Eureka St., Boca Raton, Fla. 33428

Filed Jul. 31, 1989, Ser. No. 386,971
Int. Cl.[5] B65G *1/10*
U.S. Cl. 414—786 **4 Claims**

1. A method using a first and a second vacuum operated gas cylinder, connected cable drives, connected slide arm and connected rotating base to transfer material in an ultraclean environment comprising:

applying a first vacuum to a first side of the first gas cylinder;

applying a second vacuum that is of greater magnitude than the first vacuum to a second side of the first gas cylinder;

allowing a rod of the first gas cylinder to move a connected cable drive a distance defined by a stroke of the slide arm on smooth rod supports; and

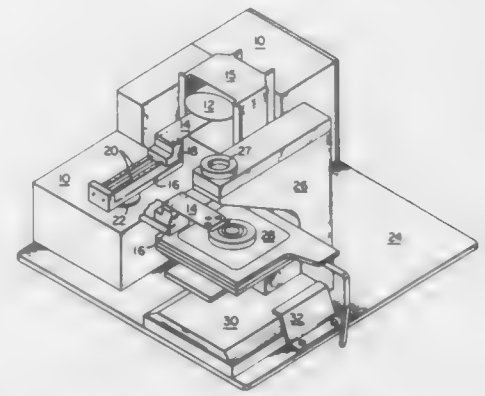
activating a vacuum force to a tongue supported by the side arm to pick up a wafer from a cassette;

causing the second vacuum of the first gas cylinder to decrease in magnitude below that of the first vacuum of the first gas cylinder;

allowing a rod of the first gas cylinder to move the connected cable drive a distance defined by a reverse stroke of the side arm on smooth rod supports;

applying a first vacuum to a first side of the second gas cylinder;

applying a second vacuum that is of greater magnitude than the first vacuum to a second side of the second gas cylinder;



allowing a rod of the second gas cylinder to move the connected cable drive a distance defined by a rotational arc of a pulley connected to the rotating base of the slide arm on smooth rod supports, thus rotating the slide arm and the tongue from the cassette to an inspection station:

releasing the vacuum force to the tongue to place the wafer on the inspection station; and

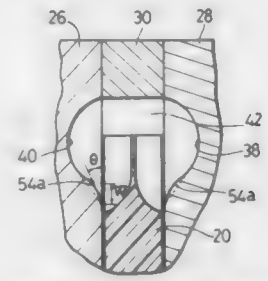
retracting the slide arm and tongue from the inspection station.

5,011,367

FUEL PUMP

Shigeru Yoshida, and Yoshimasa Ito, both of Obu, Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Obu, Japan

Filed Jan. 19, 1990, Ser. No. 467,566
Claims priority, application Japan, Jan. 31, 1989, 1-10395[U]
Int. Cl.[5] F04D *5/00*
U.S. Cl. 415—55.1 **13 Claims**



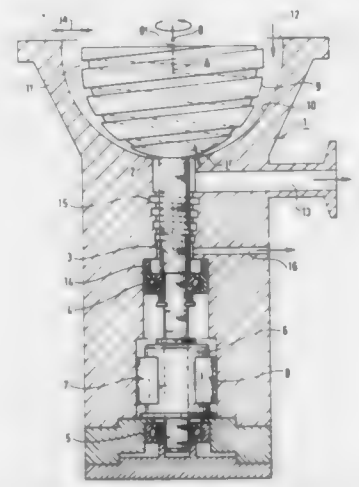
1. A fuel pump comprising impeller means having a plurality of vanes at an outer circumference thereof and a wall member surrounding said vanes and formed with fuel groove means to define a pump chamber, said fuel groove means comprises an outer circumference, an inner circumference, an intake portion and a discharge portion, wherein a portion of an edge of said inner circumference of said fuel groove intersecting said vanes at said discharge portion is chamfered in order to reduce shearing noise generated when the impeller vanes move across said intersecting groove edge portion.

5,011,368

VACUUM PUMP OF THE TYPE HAVING A GAEDE CHANNEL

Sébastien Frindel, Annecy le Vieux, and Luc Mathieu, Annecy, both of France, assignors to Alcatel Cit, Paris, France

Filed Jan. 8, 1990, Ser. No. 461,895
Claims priority, application France, Jan. 9, 1989, 89 00152
Int. Cl.[5] F01D *1/36*
U.S. Cl. 415—90 **4 Claims**



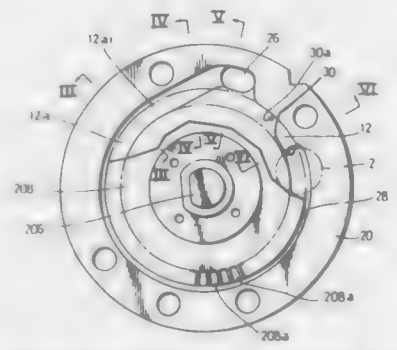
1. A vacuum pump of the type having a Gaede channel, the pump comprising a stator and a rotor driven to rotate inside the stator, the stator including a suction inlet and a delivery outlet, wherein the active portion of the rotor situated between the suction inlet and the delivery outlet is hemispherical in shape and is disposed inside a cavity of the stator which is likewise hemispherical in shape, the axis of rotation δ of said rotor coinciding with the axis of the hemispherical cavity of the stator, suction taking place at the large circle end of the hemispherical rotor via radial clearance j_a between the rotor and the stator, and delivery taking place at the pole end of the hemispherical rotor, an adjustment distance piece for axially positioning the rotor relative to the stator being provided so that the radial delivery clearance j_r is smaller than the radial suction clearance j_a.

5,011,369

REGENERATIVE PUMP

Koichi Mine, and Sigeru Suzuki, both of Obu, Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Obu, Japan

Filed Dec. 21, 1988, Ser. No. 287,324
Claims priority, application Japan, Dec. 28, 1987, 62-335238; Dec. 28, 1987, 62-335239; Dec. 28, 1987, 62-335240
Int. Cl.[5] F04D *17/06*
U.S. Cl. 415—55.1 **16 Claims**



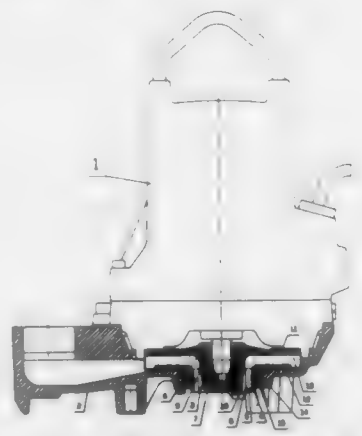
1. In a cascade pump mechanism including a plurality of impellers each having outer circumferential vane channels, a wall member having a wall portion surrounding each impeller from its axial and radial directions and defining a plurality of pump chambers in series, inlet and outlet holes formed through said wall member, a communication hole formed through each wall portion in the axial direction of said wall member, so as to communicate said pump chambers with each other, and circumferential grooves formed on the wall member in the axial direction to form a series of flow passages leading from said inlet hole to said outlet hole through said communication hole; the improvement wherein said flow passage in each pump chamber is provided at the side close to said communication hole to the next-stage pump chamber or close to said outlet hole with a passage portion so designed as to have a radial size such that a portion overlapping said vane channels is gradually narrowed; and said passage portion is so formed as to go gradually outward in the radial direction, so as to gradually increase a flow area toward the downstream side.

5,011,370

CENTRIFUGAL PUMP

Bengt Sodergard, Vasby, Sweden, assignor to ITT Corporation, New York, N.Y.

Filed Feb. 5, 1990, Ser. No. 475,461
Claims priority, application Sweden, Apr. 27, 1989, 8901534
Int. Cl.[5] F03B *11/08*
U.S. Cl. 415—121.1 **3 Claims**



1. A centrifugal pump for pumping liquids containing solid bodies and pollutions such as rags and other elongated objects and comprising:

a pump housing (2) having a central inlet (3);

a rotating impeller (6) being mounted in said housing and having cutting means (8), (9), and an insert part (4) within the pump inlet (3), said insert part (4) having grooves (5) whereby a cutting takes place between the cutting means (8), (9) and the edges of the grooves (5); said impeller (6) is a closed impeller with upper and lower cover discs (11) and (12) respectively, and intermediate vanes (13); said lower cover disc (12) having a collar (14) which surrounds the end of the insert part (4) heading the impeller (6), to provide a radial seal; and said lower cover disc (12) having a collar extension (15) which extends a distance inwards over the insert part (4), thus creating an axial seal.

5,011,371

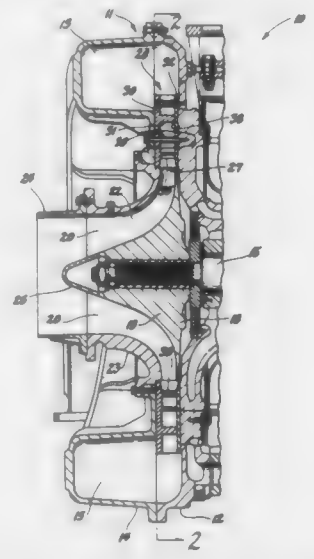
CENTRIFUGAL COMPRESSOR/PUMP WITH FLUID DYNAMICALLY VARIABLE GEOMETRY DIFFUSER

Paul Gottemoller, Lockport, Ill., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 44,008, Apr. 29, 1987, Pat. No. 4,815,935. This application Mar. 13, 1989, Ser. No. 322,751
The portion of the term of this patent subsequent to Mar. 28, 2006, has been disclaimed.
Int. Cl.[5] F04D *1/00*
U.S. Cl. 415—211.1 **8 Claims**

1. A centrifugal fluid machine having a vaned impeller with a peripheral annular outlet and a vaned diffuser having an annular inlet generally aligned with and surrounding the impeller outlet to receive therefrom fluid flow having velocity and direction varying in part as a function of impeller speed and differential pressure, the diffuser vanes having suction sides trailing in the direction of impeller rotation and being angled so as to be in general alignment with the overall direction of fluid flow during the fluid machine operating range from choke to surge/instability conditions, and the improvement wherein

the orientation of the suction sides of the vanes is more radial



than the fluid flow direction in the portion of the operating range near the surge/instability condition by an incidence angle sufficient to create stall bubbles along the vanes, suction sides in and adjacent to the throat at the diffuser inlet to forestall surge/instability by effectively fluid dynamically reducing the flow area of the diffuser throat near the surge/instability condition and thereby extending the operating fluid flow range of the fluid machine between the choke and surge/instability conditions, said incidence angle near the surge/instability condition having a value in excess of 3.5 degrees.

5,011,372

AERATION APPARATUS FOR POND

Nicholas B. Nigrelli, Cleveland, and David Wasmer, Newton, both of Wis., assignors to Nigrelli Systems, Inc., Kiel, Wis.

Filed Dec. 14, 1989, Ser. No. 450,426
The portion of the term of this patent subsequent to May 22, 2007, has been disclaimed.
Int. Cl.[5] F01D *9/02*
U.S. Cl. 415—211.2 **22 Claims**

1. A device for aerating water comprising:

a. an electric motor having an output shaft for rotating about a generally vertical axis;

b. a propeller tube having a lower end and an upper end and a central axis;

c. bracket means for joining the propeller tube to the motor;

d. float means connected to the propeller tube for suspending the device in a body of water;

e. a propeller mounted to the motor shaft and surrounded by the lower end of the propeller tube, the propeller creating an output stream of water within the propeller tube when the motor shaft rotates;

f. a diffuser plate;

g. extension means attached to the motor shaft for retaining the diffuser plate in the propeller tube and in the path of the water output stream; and

h. cap means mounted to the propeller tube upper end for directing the output stream of water from the propeller into a generally vertical column.

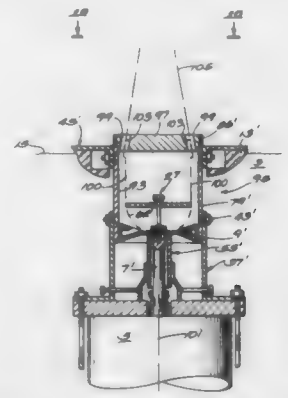
22. A method of aerating water comprising the steps of:

a. submerging a propeller and a propeller tube that surrounds the propeller into the water;

b. locating a diffuser plate in the propeller tube;

c. rotating the propeller about a generally vertical axis to create a generally hollow water output stream;

d. supporting the periphery of the diffuser plate with the interior surface of the hollow output stream at an equilibrium location whereat the force of the water output stream on the diffuser plate equals the weight of the diffuser plate, the water output stream flowing past the periphery of the diffuser plate and out of the propeller tube;



e. mounting a perforated cap in the propeller tube downstream of the propeller and the diffuser plate; and

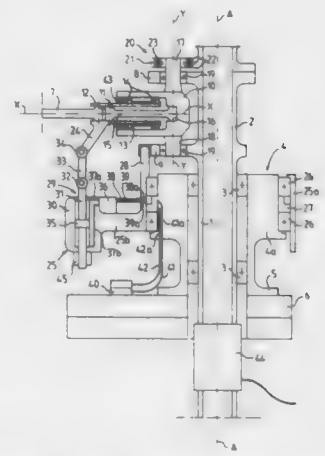
f. directing the water output stream through the perforated cap and into a generally vertical column having a predetermined pattern.

5,011,373

INDIVIDUAL PITCH CONTROL DEVICE FOR BLADES OF ROTORS OF ROTOR CRAFT BY MEANS OF ROTATING LINEAR JACKS

Jacques A. Aubry, Cabries, and Jean J. Mondet, Pelisanne, both of France, assignors to aerospatiale Societe Nationale Industrielle, Paris Cedex, France

Filed Sep. 11, 1989, Ser. No. 405,264
Claims priority, application France, Sep. 16, 1988, 88 12142
Int. Cl.[5] B63H *3/00;* **B64C** *11/00*
U.S. Cl. 416—108 **25 Claims**



1. An individual pitch control device for the blades (7) of a rotor of a rotor craft, said rotor having a plurality of independently controlled blades, comprising, for each blade (7) of the

rotor, a respective dual-action, electrohydraulic linear jack (29) with at least one body, controlling the collective, monocyclic and, if appropriate, multicyclic pitch in a rotating reference system of said blade, said jack (29) being driven in rotation with the rotor about an axis (A) thereof and disposed substantially longitudinally with respect to a rotor mast (1), and outside said rotor mast, wherein each jack (29) is implanted, via one of two elements formed by a respective cylinder (30) and rod (31), on a rotating support (25) surrounding the rotor mast (1) and driven in rotation with the rotor about the axis (A) thereof, whilst the other of said two elements of the jack (29) is connected to a pitch control lever (24) of the corresponding blade.

5,011,374

METHOD AND APPARATUS FOR BALANCING TURBINE ROTORS

Michael L. Miller, Westchester, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 121,710, Nov. 17, 1987, abandoned. This application Nov. 17, 1989, Ser. No. 437,318

Int. Cl.[5] F04D *29/66*

U.S. Cl. 416—144 **30 Claims**



1. A system for balancing a rotor in the low pressure stage of a turbine, the rotor having a shroud formed with a forward rail, an aft rail, an inner face and an outer face, comprising:

a balance clip, including:

(i) a clip body having a forward end and an aft end, said clip body being adapted to engage the inner face of the shroud;

(ii) a forward hook formed on said forward end of said clip body, said forward hook being adapted to fit onto the forward rail of the shroud;

(iii) an aft tab formed on said aft end of said clip body, said aft tab being adapted to engage the aft rail of the shroud;

crimping means engageable with said forward hook and said aft tab of said balance clip for bending said aft tab between a first position wherein said aft tab is oriented at an acute angle relative to said clip body and a second, crimped position wherein said aft tab is oriented substantially parallel to said clip body, said aft tab in said second, crimped position being effective to clamp the shroud between said clip body and said aft tab.

5,011,375

GAS-DYNAMIC PRESSURE-WAVE MACHINE WITH REDUCED NOISE AMPLITUDE

Andreas Mayer, Niederrohrdorf, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Feb. 7, 1990, Ser. No. 476,564

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1989, 3906551

Int. Cl.[5] F04F *11/02*

U.S. Cl. 417—64 **5 Claims**

1. A multiflow gas-dynamic pressure-wave machine, comprising:

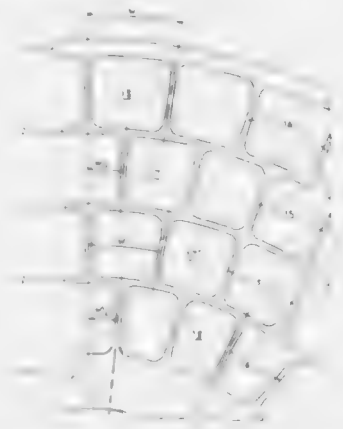
a rotor housing;

a rotor mounted in said housing for rotation about a rotational axis; and

air and gas housings respectively connected to opposite axial ends of said rotor housing, each of said air and gas housings having both intake ducts and discharge ducts for respectively supplying and discharging a gas flow of a gaseous working substance to and from said rotor,

wherein said rotor comprises:

(a) three substantially concentric pipes having axes extending parallel to said axis of rotation and dividing the gas flow through said rotor into four radially spaced concentric flows, and



(b) a plurality of substantially radially extending cell walls extending between adjacent ones of said concentric pipes to form a plurality of cells dividing each of said concentric flows into a plurality of circumferentially spaced flows,

wherein two radially outer ones of said concentric flows are divided to form a first equal number of said cells, and wherein two radially inner ones of said concentric flows are divided to form a second equal number of said cells, said second equal number of cells being smaller than said first equal number of cells.

5,011,376

VALVE CONTROL SYSTEM FOR AN AIR DISPLACEMENT TYPE PUMP

Kurt K. G. Henriksson, 328 - 8500 Ackroyd Rd., Richmond, British Columbia, Canada V6K 3H8 , and Raymond A. Breckner, 4695 Britania Dr., Richmond, British Columbia, Canada V6G 1K9

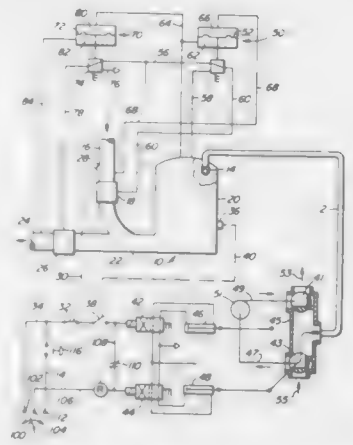
Filed Apr. 5, 1990, Ser. No. 504,838

Int. Cl.[5] F04F *1/02*

U.S. Cl. 417—145 **8 Claims**

1. A control system for an air displacement type pump, said pump comprising a tank, inlet line to said tank and an outlet line from said tank, an inlet valve in said inlet line and an outlet valve in said outlet line means for selectively applying positive or negative air pressure to said tank, means to actuate said outlet valve including means to compare pressure in said tank with pressure in said outlet line on the side of said outlet valve remote from said tank, said means to compare controlling said

means to actuate said outlet valve to maintain said outlet valve closed when said pressure in said outlet exceeds the pressure in



said tank and to open said outlet valve when the pressure in said tank exceeds the pressure in said outlet line.

5,011,377

SWASH-PLATE TYPE PISTON PUMP MOTOR

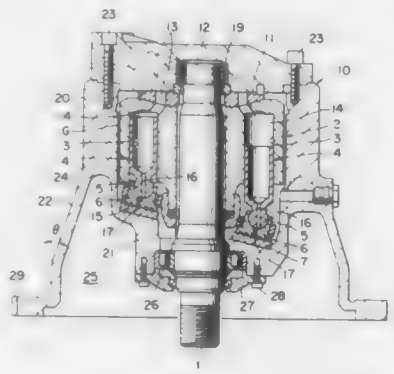
Toyoaki Sagawa; Makoto Sonoda, and Tokihiko Umeda, all of Kobe, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Filed Aug. 10, 1990, Ser. No. 566,531

Claims priority, application Japan, Sep. 12, 1988, 63-227682

Int. Cl.[5] F04B *1/10, 1/12, 1/20*

U.S. Cl. 417—269 **5 Claims**



1. A swash-plate type piston pump motor comprising:

an output shaft having first and second ends;

a cylinder rotor concentrically encompassing and coupled to said output shaft thereby to rotate unitarily therewith and having a plural number of cylinder bores formed therein around the output shaft with axial orientations parallel to the axis of the output shaft;

a number of pistons slidably fitted in respective cylinder bores, each piston at one end thereof and a head end of the respective cylinder bore forming therebetween a hydraulic pressure chamber;

a number of shoes coupled to the other ends of respective pistons in a manner to function as universal joints;

a swash plate of annular shape encompassing the output shaft and fixedly supported with an inclined orientation relative to the output shaft, said shoes being in pressing sliding contact with an inclined swash surface of said swash plate; and

a housing assembly enclosing the above named parts and comprising: a cylinder side peripheral wall means encompassing the cylindrical periphery of said cylinder rotor; an inner peripheral wall joined contiguously to said cylinder side peripheral wall and extending away therefrom toward said second end of the output shaft, said inner peripheral wall enclosing and fixedly supporting said swash plate and rotatably supporting the output shaft at a part thereof near said second end; an outer peripheral wall joined contiguously to said cylinder side peripheral wall on the outer side of and apart from said inner peripheral wall and flaring radially outwardly from the output shaft and in the direction of said second end, an annular space being formed between said inner and outer peripheral walls, said outer peripheral wall having at an extremity a motor mounting flange; and an end plate fixed to the end of said cylinder side peripheral wall remote from said motor mounting flange and rotatably supporting said first end of the output shaft, said end plate further supporting rotatably said cylinder rotor against thrust loads in the direction of said first end.

5,011,378

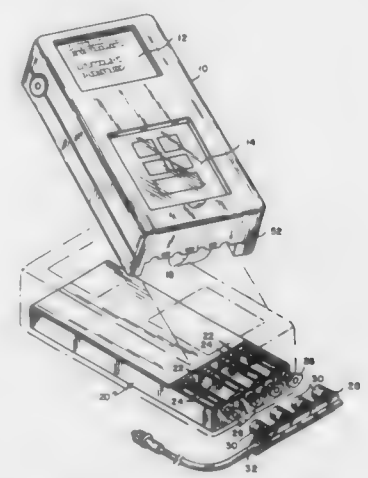
PUMP TUBE MOUNT AND CARTRIDGE FOR INFUSION PUMP

Eric W. Brown, Newport Beach, and Charles M. Kienholz, San Dimas, both of Calif., assignors to I-Flow Corporation, Irvine, Calif.

Continuation-in-part of Ser. No. 216,512, Jul. 8, 1988, Pat. No. 4,950,245. This application Jan. 24, 1989, Ser. No. 301,611

Int. Cl.[5] F04B *43/12*

U.S. Cl. 417—360 **17 Claims**



1. A pump tube mount comprising:

a front wall having a hollow outlet extending therefrom;

a rear wall having a hollow inlet;

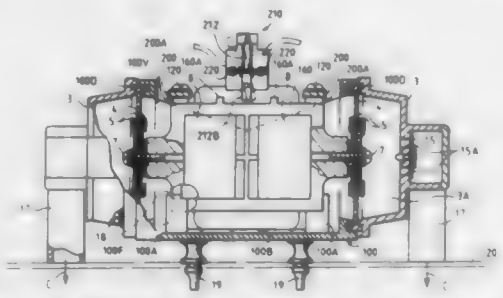
means for connecting said front wall to said rear wall at a fixed distance from one another;

a tube mounted between said front wall and said rear wall to provide fluid communication between the hollow outlet and the hollow inlet;

a rigid base portion supported by said connecting means beneath said tube and spaced apart from said front wall; and

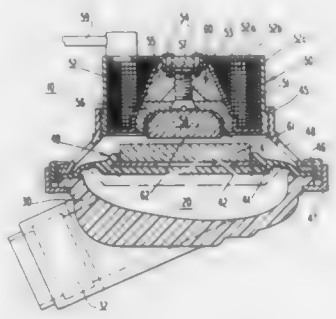
said rear wall extending downwards below the level of said rigid base portion and having tabs extending from the rear wall beneath said rigid base portion projecting forwards from the rear wall.

5,011,379
ELECTROMAGNETIC DIAPHRAGM PUMP
Atsuki Hashimoto, Tokyo, Japan, assignor to Nitto Kohki Co., Ltd., Tokyo, Japan
Filed Nov. 27, 1989, Ser. No. 441,277
Claims priority, application Japan, Dec. 15, 1988, 63-161890[U]
Int. Cl.[5] F04B *45/04, 39/14*
U.S. Cl. 417—360 **5 Claims**



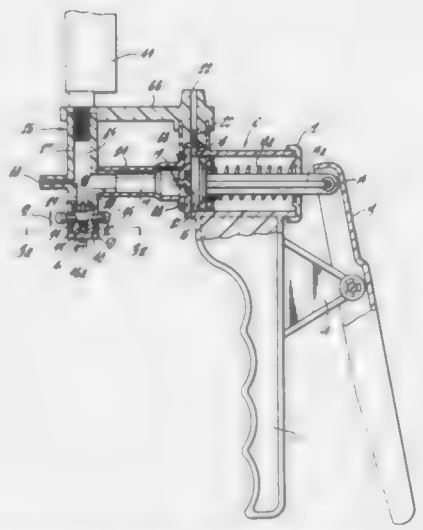
1. An electromagnetic diaphragm pump comprising a pair of diaphragms placed apart so as to be opposed to each other, a pair of closed diaphragm chambers having an intake valve and a discharge valve, each of which is partially comprised of said diaphragms, a vibrator shaped in a flat board having at least one magnet attached thereto, said vibrator being connected to said each diaphragm at opposite ends thereof and positioned at the middle of said pair of diaphragms, a pair of field core halves, each having a coil wound therearound, said field core halves being placed apart on both sides of the flat boardshaped vibrator so that the respective magnetic poles of the field core halves are opposed to said at least one magnet, a base member housing comprising a bottom plate and substantially parallel side walls which are formed in one piece, said housing having an open top, the bottom plate having protruding mounts thereon for positioning and mounting the pair of field core halves, which mounts are formed in one piece with the bottom plate, and the side walls being provided with fitting portions into which the pair of diaphragms are fitted, respectively, the pair of the closed diaphragm chambers being supported by the side walls outside thereof, the pair of the field core halves being fixed to the bottom plate individually in such a position that main side surfaces of the core halves are substantially parallel to the bottom plate.

5,011,380
MAGNETICALLY ACTUATED POSITIVE DISPLACEMENT PUMP
Steven G. Kovacs, Oldsmar, Fla., assignor to University of South Florida, Tampa, Fla.
Filed Jan. 23, 1989, Ser. No. 300,361
Int. Cl.[5] F04B *43/14*
U.S. Cl. 417—413 **17 Claims**



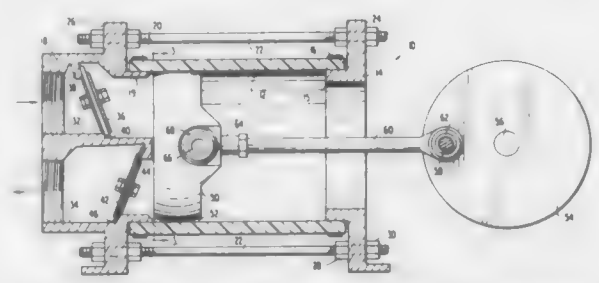
1. An apparatus for the pulsatile pumping of liquids comprising:
a pumping chamber having inlet and outlet valves, wherein one wall of said chamber comprises a flexible diaphragm, said diaphragm having a permanent magnet centrally disposed therein in coaxial alignment therewith;
electromagnetic means for repulsing said permanent diaphragm magnet from a starting position when current is supplied to said electromagnetic means; and
magnetic means for returning said diaphragm to its starting position when said current is interrupted.

5,011,381
HAND-HELD VACUUM PUMP VACUUM RELEASE
Theodore C. Neward, 9251 Archibald, Cucamonga, Calif. 91730
Filed Sep. 22, 1989, Ser. No. 411,332
The portion of the term of this patent subsequent to Feb. 21, 2006, has been disclaimed.
Int. Cl.[5] F04B *41/00, 39/10*
U.S. Cl. 417—440 **4 Claims**



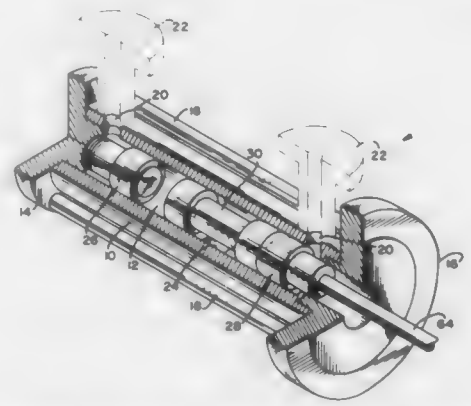
1. A hand-held vacuum pump, comprising
a cylinder for isolating a volume from the atmosphere and having an inlet port and an outlet port,
biased piston means for drawing a vacuum through the inlet port of the cylinder and including a piston which can be moved in the cylinder,
a handle assembly coupled with the cylinder and the piston means for moving the piston with respect to the cylinder, and
a vacuum release valve communicating with the inlet port of the cylinder and including a housing having an opening therein forming a cam surface, and further including a closure member with a cam arm which engages said cam surface and which closure member is rotatable within the housing to cause the closure member to move toward a valve seat in the housing for closing the vacuum release valve and which is moveable away from the valve seat as the arm moves along the cam surface to open the vacuum release valve, and torsion spring means connected between said arm and said housing of the vacuum release valve for biasing said arm and closure member in a rotational direction to axially cause the closure member manually to engage the valve seat and thereby close the vacuum release.

5,011,382
RECIPROCATING PISTON PUMP
George A. Thompson, 114 Demotte Ave., Daytona Beach, Fla. 32019
Filed Jan. 26, 1989, Ser. No. 301,551
Int. Cl.[5] F04B *39/14*
U.S. Cl. 417—571 **4 Claims**



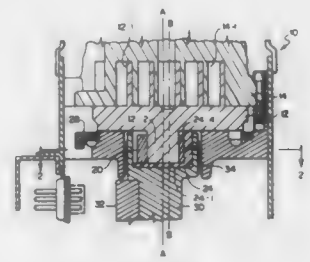
1. A reciprocating piston pump comprising first and second end caps having cylindrical hubs, a flexible resilient cylinder having opposite ends fitted over and secured to said hubs, respectively, inlet and outlet means disposed in said second end cap, adjustable interconnecting means connected between said first and second end caps for adjustable increasing the tension on said cylinder to compensate for wear on the internal surface of the cylinder and piston means having a partial spherical surface disposed in sliding engagement with said cylinder and having a diameter at least equal to an internal diameter of said cylinder.

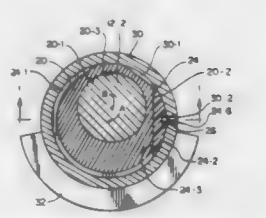
5,011,383
VALVE ASSEMBLY, FOR USE IN COMBINATION WITH A STRAIGHT-CYLINDER, GAS-COMPRESSION CHAMBER, AND IN COMBINATION THEREWITH
Robert A. Bennitt, Painted Post, N.Y., assignor to Dresser-Rand Company, Corning, N.Y.
Filed Jan. 2, 1990, Ser. No. 459,482
Int. Cl.[5] F04B *21/02*
U.S. Cl. 417—534 **12 Claims**



1. In combination with a straight-cylinder, gas compression chamber having end closures, a gas-control valve, comprising:
a ported valve seat;
a ported valve guard;
a ported valve plate interposed between said seat and guard; and
a bolt, for mounting of said seat, guard and plate thereon, having (a) external threads formed thereon, and (b) an annular shoulder formed thereabout; wherein
said seat, guard, and plate are centrally apertured;
said guard is set about said bolt; and against said shoulder;
said seat is internally threaded, (b) threadedly engaged with said bolt threads, and (c) has replaceable sealing means engaged with the periphery thereof;
said valve is reciprocably confined within, and sealingly engaged with the inner surface of, said gas-compression chamber;
said seat and guard are circular; and including
a dampening plate interposed between said valve plate and said valve guard; and wherein
said valve guard and said dampening plate have mutually confronting, peripheral surfaces;
said peripheral surface of said guard is circular; and
said peripheral surface of said dampening plate is trochoidal.

5,011,384
SLIDER BLOCK RADIAL COMPLIANCE MECHANISM FOR A SCROLL COMPRESSOR
Stefan H. Grunwald, Liverpool, and Howard H. Fraser, Jr., Lafayette, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Dec. 1, 1989, Ser. No. 444,238
Int. Cl.[5] F04C *18/04, 29/02*
U.S. Cl. 418—55.5 **12 Claims**





1. In a scroll compressor means having an orbiting scroll means including an axis, a fixed scroll means, crankshaft means having a first and a second end and adapted to rotate about an axis of said crankshaft means, a slider block radial compliance mechanism comprising:
a circular recess means formed in said first end of said crankshaft means;
bearing seat means fixedly located in said recess means and having a flat circular portion and an axially extending portion;
slider block means located in said recess means;
said recess means and said bearing seat means coacting with said slider block means to limit movement of said slider block means to substantially only relative reciprocating movement of said slider block means with respect to said bearing seat means; and
said slider block means and said orbiting scroll means coacting to permit relative rotary motion of said axis of said orbiting scroll means about said axis of said crankshaft means and said orbiting scroll means is moved with said slider block means when said slider block means moves in relative reciprocating movement in said recess means.

5,011,385

BEARING-AND DRIVE ARRANGEMENT OF A ROTARY PISTON INTERNAL COMBUSTION ENGINE

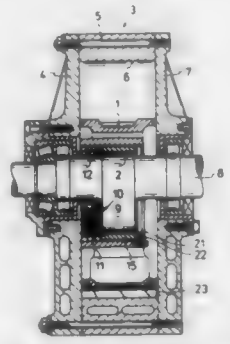
Dankwart Eiermann, Weissensberg, Fed. Rep. of Germany, assignor to Wankel GmbH, Berlin, Fed. Rep. of Germany

Filed May 17, 1990, Ser. No. 525,142

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1989, 3929813; Feb. 19, 1990, 4005023

Int. Cl.[5] F01C *21/08;* **F02B** *55/02*

U.S. Cl. 418—61.2 **7 Claims**



1. A bearing- and transmission drive arrangement of a rotary piston internal combustion engine having a housing consisting of two side parts and a casing mantle part with a dual-arc trochoidal-shaped casing mantle inner raceway surfacing as well as having an eccentric shaft that passes axially through the housing and that is journalled by the two side parts as well as including an eccentric upon the eccentric shaft upon which a triangular piston controlled by a synchronous transmission drive means has corners of the triangular piston sliding with continuous engagement along the casing mantle raceway inner surfacing and with which the synchronous drive transmission means consists of a hollow gear fixed stationary on the piston and a pinion fixed stationary in a side part and located concentrically around the eccentric shaft, the improvement comprising:

a tooth means of the hollow gear worked out of a bearing bore; a further bore means provided concentrically in the bearing bore extending from a side of the piston remote from the synchronous drive transmission means as far as to a hollow gear; said tooth means having a diameter located between tooth tips and tooth bases so that tooth butt ends remain; and a bearing sleeve 15 inserted upon the tooth butt ends so that passages result between the bearing sleeve, the tooth butt ends and the tooth bases.

5,011,386

ROTARY POSITIVE DISPLACEMENT MACHINE FOR INCOMPRESSIBLE MEDIA

Kurt Güttinger, Murten, Switzerland, assignor to Gutag Innovations AG, Murten, Switzerland

Filed Sep. 19, 1989, Ser. No. 409,324

Claims priority, application Switzerland, Sep. 20, 1988, 03493/88

Int. Cl.[5] F04C *2/04*

U.S. Cl. 418—59 **13 Claims**

1. A positive displacement machine for incompressible media, comprising:

a stationary housing;

a working chamber having inner and outer circumferential walls separated by a bottom surface, an inlet and an outlet, said working chamber being located in the stationary housing and having the configuration of a circular slot;

a land extending from said housing into the working chamber;

said inlet being separated from said outlet by said land;

a disk shaped rotor located within said housing and driven eccentrically relative to the housing;

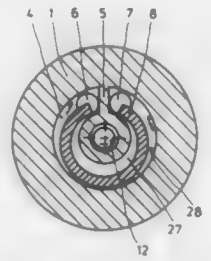
a circular displacer body located in said working chamber and being held on said disk shaped rotor so as to be driven eccentrically relative to the housing in a manner such that in operation the circular displacer carries out a circular motion limited by the circumferential walls of the working chamber;

the curvature of said displacer is dimensioned relative to the curvature of the working chamber so that the displacer contacts the inner and outer circumferential walls of the working chamber at a sealing line continuously progressing in operation, thereby dividing the working chamber into inner and outer work spaces, by which work spaces the medium is conveyed from the inlet to the outlet;

said displacer body being interrupted in the area of said land;

a coupling is provided for interconnecting the displacer body relative to the housing;

a wobble rod connected to said displacer body and a driving



crank connected to said wobble rod wherein said wobble rod as driven by said driving crank provides for the circular motion of the displacer body;

in the area of the land, the inner and outer work spaces communicate with each other at the inlet and the outlet;

the displacer body and the working chamber have an at least approximately circular configuration over the overwhelming part of their configuration;

the displacer body being arranged so as to seal over at least 360°;

wherein an end of said displacer body on an inlet side of the displacer body and the working chamber and an end of the displacer body on an outlet side of the displacer body and the working chamber, in an angular zone α of maximum 30°, each have significantly smaller radii of curvature than that of the overwhelming circumference.

5,011,387

ROTARY PISTON INTERNAL COMBUSTION ENGINE

Josef Speiser, Wasserburg, Fed. Rep. of Germany, assignor to Wankel GmbH, Berlin, Fed. Rep. of Germany

Filed Oct. 11, 1989, Ser. No. 420,053

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1988, 8812757[U]

Int. Cl.[5] F01C *21/04*

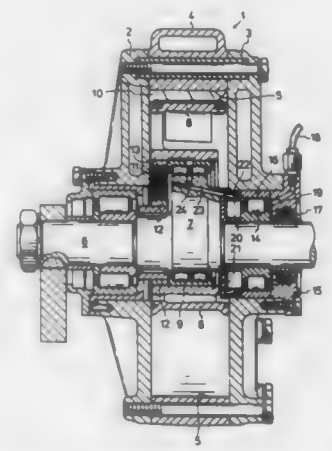
U.S. Cl. 418—94 **7 Claims**

1. A rotary piston internal combustion engine of trochoidal type of construction of which a housing consists of side parts and at least one mantle part with respectively dual-arc mantle runway inner surface, said housing having a shaft extending therein with at least one eccentric means per mantle runway inner surface in the housing with the shaft passing through the eccentric means, as well as including eccentric bearing means with roller bearings and including a triangular piston means journalled upon roller bearings of the eccentric bearing means and having piston corners thereof in sliding engagement along the pertaining mantle runway inner surface, and including a gear transmission means that controls and regulates rotation of the piston means and that is arranged between a side wall of one side part and the eccentric means, the improvement therewith comprising:

an oil-collector groove means as an oil-collector through arranged concentrically around the shaft on a side of the eccentric means remote from the gear transmission means;

a bore means provided at the location of the eccentricity maximum of the eccentric means extending at an incline radially outwardly into that oil-collector groove means;

a radial bore means terminating in the middle of the roller bearing of the eccentric bearing means and into which the inclined bore means opens; and



means provided stationary on the housing of the rotary piston internal combustion engine for conveying all of dosed lubricating oil to the eccentric bearing means and via the oil-collector trough extending in a full circle around the shaft.

5,011,388

OIL-FREE SCREW COMPRESSOR APPARATUS

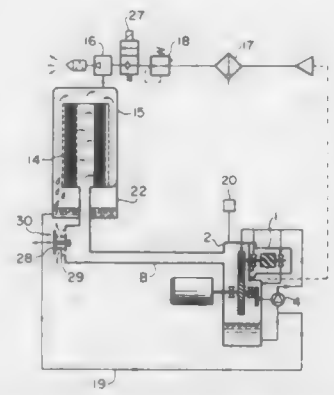
Masakazu Aoki, and Akira Suzuki, both of Shimizu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 25, 1989, Ser. No. 343,496

Claims priority, application Japan, Apr. 28, 1988, 63-107313

Int. Cl.[5] F04C *18/16, 29/02*

U.S. Cl. 418—95 **18 Claims**



1. An oil-free screw compressor apparatus comprising:

a gear case integrally mounted on the oil-free screw compressor and containing gears for driving a rotor shaft of said compressor, oil stored in a lower portion of said gear case being supplied therefrom to bearings and gears of said compressor, and oil, subsequent to lubrication of said bearings and gears, and gas leaking through an inner shaft seal mechanism of said compressor being discharged into said gear case;

a gear case exhaust pipe for preventing inner pressure of said gear case from increasing due to said gas leaking from said compressor, said gear case exhaust pipe being connected to said gear case;

a closed filter container containing a filter element for separating oil mist, said closed filter container being connected to said gear case exhaust pipe at a first side of said filter element; and

a vacuum ejector for making pressure at a second side of the filter element contained in said closed filter container negative pressure, said vacuum ejector having a suction port connected to said closed filter container at the second side of the filter element.

5,011,389

ROTOR FOR A ROTARY SCREW MACHINE

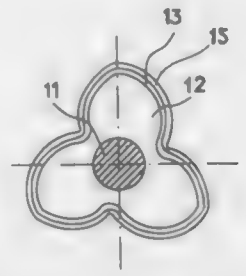
Karlis Timuska, Spånga, Sweden, assignor to Svenska Rotor Maskiner AB, Stockholm, Sweden

Continuation-in-part of Ser. No. 314,119, Feb. 1, 1989, abandoned. This application Mar. 8, 1989, Ser. No. 320,773

Claims priority, application Sweden, Sep. 5, 1986, 8603720; PCT Int'l Appl., Sep. 4, 1987, PCT/SE87/00397

Int. Cl.[5] F04C *29/00, 18/16*

U.S. Cl. 418—152 **23 Claims**



1. In a rotor for a rotary screw machine having helical lobes and intermediate grooves forming the working surface of the rotor, the rotor being axially limited by two radial end surfaces and having a core with a coating on at least said working surface, said coating comprising at least one layer of substantially uniform thickness and being made of plastic,

the improvement wherein:

said core includes a shaft of a first material and a rotor body of a second material mounted on said shaft, and the coefficient of thermal expansion of said plastic is 1 to 3 times as great as that of said second material, and the coefficient of thermal expansion of said second material is 1 to 6 times as great as that of said first material.

5,011,390

ROTARY VANE MACHINE HAVING STOPPER ENGAGING RECESS IN VANE MEANS

Hiroshi Sakamaki; Yukio Horikoshi; Takeshi Jinnouchi, and Kenji Tanzawa, all of Sakado, Japan, assignors to Eagle Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 197,548, May 23, 1988, Pat. No. 4,958,995, Continuation-in-part of Ser. No. 75,006, Jul. 17, 1987, abandoned, Continuation-in-part of Ser. No. 110,919, Oct. 21, 1987, abandoned, Continuation-in-part of Ser. No. 113,568, Oct. 26, 1987, abandoned, Continuation-in-part of Ser. No. 115,677, Oct. 31, 1987, abandoned. This application Aug. 16, 1989, Ser. No. 394,777

Claims priority, application Japan, Jul. 22, 1986, 61-111490[U]; Jul. 22, 1986, 61-170903; Oct 23, 1986, 61-161609[U]; Oct. 23, 1986, 61-161610[U]; Nov. 4, 1986, 61-168145[U]; Nov. 4, 1986, 61-168147[U]; Nov. 14, 1986, 61-269960[U]; Nov. 14, 1986, 61-269961; Nov. 17, 1986, 61-271934; Nov. 21, 1986, 61-178287[U]; Nov. 21, 1986, 61-178288[U]; Nov. 21, 1986, 61-276689; Nov. 21, 1986, 61-276690; Dec. 3, 1986, 61-185571[U]

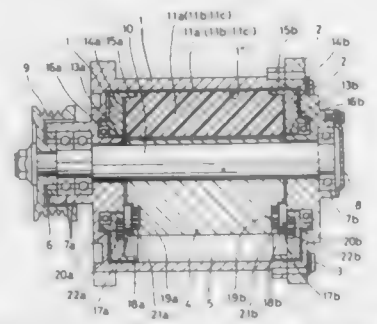
The portion of the term of this patent subsequent to Apr. 17, 2007, has been disclaimed.

Int. Cl.[5] F01C *1/344;* **F16C** *32/06*

U.S. Cl. 418—256 **21 Claims**

1. A rotary machine for handling a fluid comprising a housing means having a rotor chamber, said rotor chamber having

an inner peripheral surface, a rotor means rotatably mounted in said rotor chamber, said rotor means having an axis of rotation, said inner peripheral surface having an axis which is eccentric relative to said axis of rotation of said rotor means, said rotor means having a plurality of generally radially disposed vane slots, a plurality of vanes slidably mounted in said vane slots and operable to define variable volume chambers as said rotor means rotates and said vanes move generally radially in and out of said vane slots, said vanes having longitudinal ends and outer radial ends, recesses in said vanes opening up onto said longitudinal ends and opening up onto said outer radial ends, said recesses having recess walls having a thickness corresponding to the thickness of said vanes, one of said recess walls



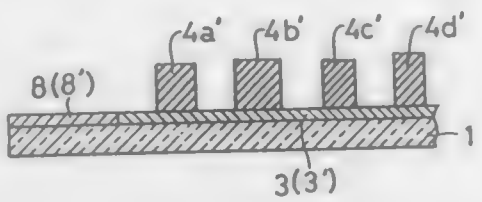
being an inner recess wall which extends generally parallel to said axis of rotation of said rotor means, retainer plate means disposed between said housing means and said longitudinal ends of said vanes, rotatable support means rotatably supporting said retainer plate means from said housing means, said retainer plate means having stopper means extending axially into said recesses in said vanes, said stopper means having an annular engageable surface, said annular engageable surface being engaged by said inner recess wall to limit the extent of outward radial movement of said vanes to preclude sliding contact between said vanes and said inner peripheral surface of said rotor chamber, said annular engageable surface having a center coincident with said central axis of said inner peripheral surface of said rotor chamber.

5,011,391

METHOD OF MANUFACTURING GAS DISCHARGE DISPLAY DEVICE

Sadanobu Kawasaki; Jun Koishikawa, both of Kanagawa, Japan, and Donald W. Kuty, Niagara Falls, N.Y., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 2, 1989, Ser. No. 317,717
Claims priority, application Japan, Mar. 2, 1988, 63-49438
Int. Cl.[5] H01J *9/24*
U.S. Cl. 445—24 **7 Claims**



1. A method of manufacturing a gas discharge display device comprising a pair of panel substrates arranged to oppose each other at a predetermined gap, at least one of said pair of panel substrates having on a surface thereof a plurality of electrodes which form discharge light-emitting display sections and an insulating barrier for defining the discharge light-emitting display sectioon, said pair of panel substrates being encapsulated by an encapsulating member, characterized in that the method of forming the insulating barrier comprises the sequential steps of:

(1) forming a slip, which contains, as the major component, finely divided electrically insulating solids which form a major constituent of the insulating barrier and an organic binder, into a green sheet;

(2) processing said green sheet by forming holes in the green sheet in an array corresponding to discharge areas such that the green sheet remaining between the holes defines the insulating barrier;

(3) laminating said processed green sheet to a predetermined position on at least one of said panel substrates; and

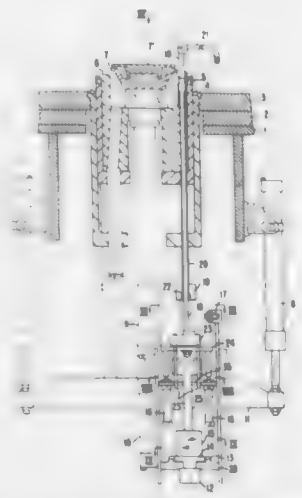
(4) firing said processed and laminated green sheet.

5,011,392

DRAIN EJECTOR IN A TIRE VULCANIZING MACHINE

Hideaki Katayama; Toshifumi Murakami, both of Nagasaki; Koji Soeda, Kobe; Yoshiya Kubota; Shoji Okamoto, both of Toyota; Akinori Kubota, Kobe; Michihito Kobayashi, Toyota, and Masaaki Ijiri, Aichi, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo and Sumitomo Rubber Industries Ltd., Hyogo, both of, Japan

Filed Mar. 2, 1990, Ser. No. 487,250
Claims priority, application Japan, Mar. 2, 1989, 1-48558
Int. Cl.[5] B29C *33/02, 35/02*
U.S. Cl. 425—35 **4 Claims**



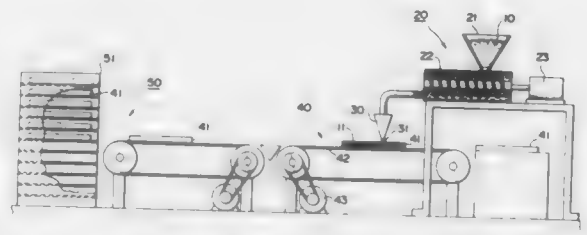
1. In a tire vulcanizing machine having a bladder, and a lower ring and a guide ring between which a lower edge portion of the bladder is clamped, an ejector for ejecting condensate of vulcanizing steam which has accumulated within the bladder to the outside of a tire supported in the machine, said ejector comprising: a drain extraction pipe elevatably and rotatably supported in the machine and extending through the lower ring and the guide ring clamping the lower edge portion of the bladder, a drain suction pipe extending horizontally from the top end portion of said drain extraction pipe and having a tip end portion bent downwards, elevation drive means and rotary drive means operatively connected to said drain extraction pipe for raising nd lowering and rotating said drain extraction pipe in the machine, and a rotary limit adjusting device provided in said rotary drive means for limiting the extend to which said drain extraction pipe is rotatable by said rotary drive means.

5,011,393

APPARATUS FOR MANUFACTURING SILICONE GEL SHEET

Motoyasu Nakanishi, Fujishi, Japan, assignor to Kabushiki Kaisha Cubic Engineering, Shimizushi, Japan

Division of Ser. No. 73,067, Jul. 13, 1987, Pat. No. 4,950,148.
This application Oct. 26, 1988, Ser. No. 262,878
Claims priority, application Japan, Jan. 31, 1987, 62-21254
Int. Cl.[5] B28B *7/36*
U.S. Cl. 425—89 **7 Claims**



1. An apparatus for manufacturing a silicone gel material, comprising:

a material supply means having:

a pair of tanks for separately storing and kneading first and second liquids which are used to prepare silicone gel material,

a feeder connected to said pair of tanks for feeding two kinds of liquids supplied from said tanks while kneading the liquids,

a debubbling unit connected to said feeder which has at least one debubbling tank for storing silicone gel material supplied from said feeder, means for removing air bubbles contained in silicone gel material in said tank by temporarily sealing said tank at a debubbling position and reducing the pressure within the tank, and means for causing silicone gel material in the tank to flow out of the tank by turning the tank upside down, and

a hopper provided at a position beneath the tank of said debubbling unit where said tank is turned upside down;

a nozzle connected to said hopper for receiving silicone gel material from said hopper and having a narrow and long discharge port which is horizontally elongated for discharging silicone gel material in a predetermined thickness;

a transfer unit having:

a lower film supplying means for supplying a lower film to move in a direction and below said discharge port of said nozzle to receive a film of silicone gel material thereon,

an upper film supplying means for supplying an upper film onto said film of silicone gel material at a point spaced from said discharge port of said nozzle in the direction of movement of said lower film,

upper and lower rollers spaced from said point in the direction of movement of said lower film and engaging the upper and lower films respectively for rolling the said upper and lower films and said film of silicone gel material into a laminated strip, and

a belt conveyor spaced from said rollers in the direction of movement of said lower film for receiving said laminated strip at a specified speed; and

a heating section having:

a heating tunnel through which said belt conveyor extends from an entrance to an exit and including heating means for gelling the silicone gel material of the laminated strip, and

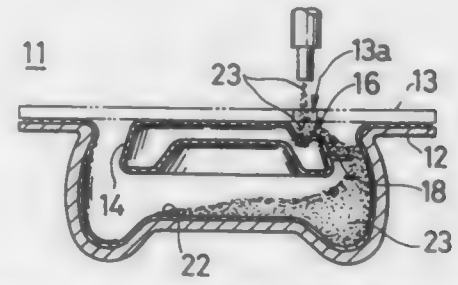
strip taking up means provided at the exit of said heating tunnel.

5,011,394

MOLD FOR SKIN COVERED FOAMED PLASTIC MOLDING

Hiroyuki Katagiri; Hisayoshi Mizuno, and Masami Mori, all of Ayase, Japan, assignors to Ikeda Bussan Co., Ltd., Kanagawa, Japan

Filed Mar. 28, 1989, Ser. No. 329,578
Claims priority, application Japan, Nov. 29, 1988, 63-301812
Int. Cl.[5] B29C *39/10, 45/14*
U.S. Cl. 425—117 **6 Claims**



1. A mold for skin covered foamed plastic molding, comprising:

a lower mold having a molding surface onto which a skin cover is to be placed, so that a liquid foam resin can be poured onto the skin cover;

an upper mold to be closed over the lower mold; and

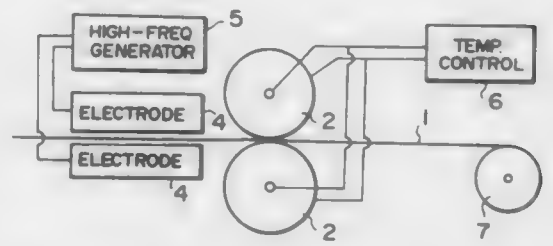
a middle mold to be placed between the upper mold and the lower mold, and having means for reducing pressure exterted by the liquid foam resin on the skin cover.

5,011,395

SURFACE SMOOTHING APPARATUS FOR MAGNETIC RECORDING MEDIUM

Toshio Kawamata, Odawara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 19, 1983, Ser. No. 515,154
Claims priority, application Japan, Aug. 12, 1982, 57-140168
Int. Cl.[5] B29C *59/04;* **B30B** *3/04*
U.S. Cl. 425—143 **3 Claims**



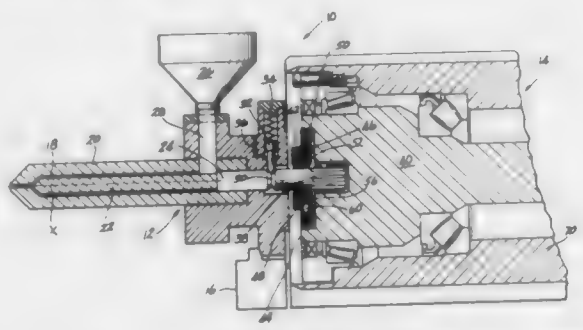
1. An apparatus for smoothing the surface of a flexible magnetic recording medium, said apparatus comprising at least one set of two rolls one of said two rolls being a metal roll, said metal roll being highly planished, and the other of said two rolls being a resilient roll; a high-frequency dielectric heater provided prior to said two rolls; and a temperature regulator for controlling the surface temperature of said rolls, whereby the magnetic recording medium is first passed through said high-frequency dielectric heater and then passed through and pressed between said rolls.

5,011,396

QUICK COUPLING DEVICE FOR EXCHANGING PLASTICIZING UNIT OF AN INJECTION MOLDING MACHINE

John Cosman, Bolton, and Victor Silaghi, Willowdale, both of Canada, assignors to Husky Injection Molding Systems, Ltd., Bolten, Canada

Filed Apr. 2, 1990, Ser. No. 502,748
Int. Cl.[5] B29C 45/46, 45/70
U.S. Cl. 425—190 9 Claims



1. In an injection molding machine, a removable plasticizing unit, said plasticizing unit including a barrel and a screw mounted in said barrel along an axis of injection, said screw having a shank portion; a drive unit including driving means mounted along said axis of injection for rotating an axially moving said screw within said barrel, said driving means having an end face; and coupling means for selectively securing said shank portion of said screw to said end face of said driving means, said coupling means including a first recess of depth X having a female spline located in said end face of said driving means about said axis of injection, a second recess of depth Y located in said end face about said first recess wherein X is greater than Y, a male spline located on the shank portion of said screw wherein said male spline and female spline are matching splines and collar means mounted in said second recess and rotatably movable between a first position and a second position, said collar means including an internal bore having a female spline substantially identical to said female spline in said end face of said driving means such that when said collar means is in said first position said female splines are aligned thereby allowing said male spline on said shank portion of said screw through said female spline on said collar means and into and out of said first recess so as to facilitate removal of said plasticizing unit from said molding machine and when said collar means is in said second position said female splines are non-aligned thereby locking said male screw spline in engagement with said female spline of said first recess.

5,011,397

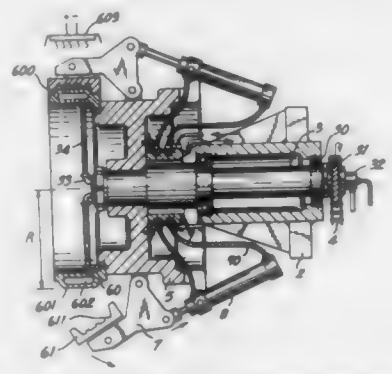
APPARATUS FOR PRODUCING PREVULCANIZED TREADS

Michel Remond, Ceyrat, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand Cedex, France

Division of Ser. No. 84,482, Aug. 12, 1987, which is a continuation of Ser. No. 782,365, Oct. 1, 1985, abandoned. This application Jul. 29, 1988, Ser. No. 226,069
Claims priority, application France, Oct. 4, 1984, 84 15362
Int. Cl.[5] B29D 30/52
U.S. Cl. 425—328 8 Claims

1. In an apparatus for manufacturing prevulcanized treads comprising first molding means for the sole of the tread, second molding means for the tread pattern and heating means for vulcanizing the tread, the first molding means defining in closed position at least in part a first quasi-cylindrical surface and the second molding means defining in said closed position at least in part a second coaxial quasi-cylindrical surface located radially outward of the first surface, the improvement comprising

(a) means for moving the second molding means from a spaced apart open position to said closed position, the first and second molding means in said closed position are



immovable with respect to each other and are imparted a movement of rotation around the axis of said surface, and

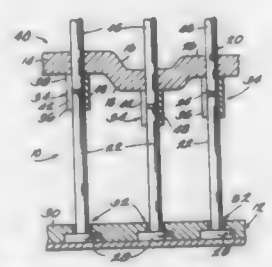
(b) the first and second molding means define during the molding and vulcanizing of the tread a continuous molding space arranged as a circular arc of less than 360°.

5,011,398

APPARATUS FOR LOST FOAM MOLDING AND METHOD OF ASSEMBLING SAME

Russell J. VanRens, Milwaukee, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 337,754, Apr. 13, 1989, abandoned.
This application Jul. 26, 1990, Ser. No. 561,290
Int. Cl.[5] B29C 33/30, 33/44
U.S. Cl. 425—444 15 Claims



1. A mold assembly comprising a mold apparatus including a mold member having a first side which is contoured to impart a shape to a component, a second side opposite said first side, an aperture extending between said first and second sides, an ejector pin positioned proximate said second side of said mold member and having a first end movable into sliding engagement within said aperture to become a portion of a surface including said first side, said ejector pin also being movable to effect movement of the component away from said mold member after the component is imparted with the shape, and means engaging said second side of said mold member adjacent said aperture and projecting outwardly from said second side for reducing destructive contact of said first end of said ejector pin with said second side of said mold member when said first end moves into said aperture.

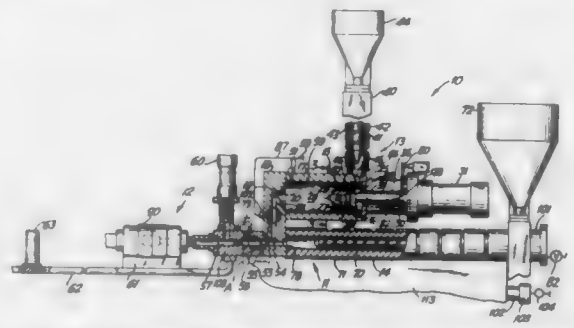
14. A method of assembling a mold apparatus including a mold member having a first side which is contoured to impart a shape to a component, a second side opposite said first side, a plurality of apertures extending between the first and second sides, a like plurality of ejector pins generally positioned adjacent the second side and having respective ends positioned to respectively move into the apertures and to become a portion of a surface including the first side, and also positioned to effect movement of the component away from the mold member, said method comprising the steps of providing a like plurality of assembly pins having respective ends positioned to respectively pass through the apertures, and providing a like plurality of sleeves respectively positioned to slide partially onto the ends of the ejector pins and to effect self support thereof on the respective ends of the ejector pins and with respective portions of the sleeves exposed to receive therein the respective ends of the assembly pins in axial alignment with the respective ejector pins in the sleeves, partially and respectively sliding the sleeves onto the ends of the ejector pins, positioning the second side of the mold member proximate to the sleeves, respectively inserting the assembly pin ends through the apertures from the first side of the mold member and into the exposed portions of the sleeves, and moving the mold member relative to the ejector pins so that the ejector pins move into the apertures.

5,011,399

HIGH CAPACITY INJECTION MOLDING APPARATUS

John J. Farrell, Greenbrook, N.J., assignor to BM Corp., Somerville, N.J.

Filed Nov. 2, 1989, Ser. No. 430,870
Int. Cl.[5] B29C 45/06
U.S. Cl. 425—557 18 Claims



1. An injection molding machine comprising; a piston and a cylinder, said piston being slidably disposed in said cylinder, and means for reciprocal movement of said piston in said cylinder, said cylinder having front and back parts and being formed with an orifice at the front part of the cylinder, said piston being formed with a bore, and piston valve means disposed in said bore so that there is selective communication between the back part of the cylinder and the front part of the cylinder, and means for providing molten thermoplastic material to the back part of the cylinder to accumulate the molten thermoplastic material in the back part, whereby the piston is moved towards said orifice to inject the thermoplastic material from the front part of the cylinder through the orifice to a mold assembly with the accumulation of the molten thermoplastic in the back part of the cylinder.

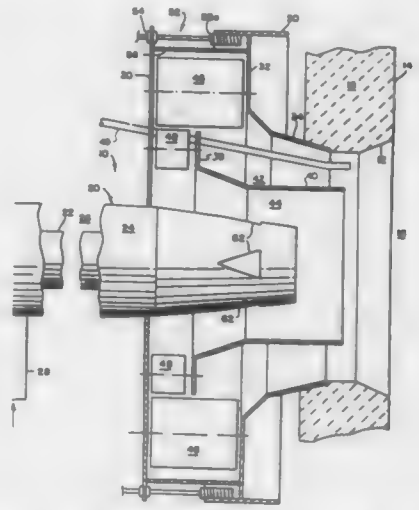
5,011,400

CONTROLLED FLOW SPLIT STEAM BURNER ASSEMBLY WITH SORBENT INJECTION

Joel Vatsky, Millburn, N.J., assignor to Foster Wheeler Energy Corporation, Clinton, N.J.

Continuation of Ser. No. 828,074, Feb. 3, 1986, abandoned, which is a continuation of Ser. No. 604,706, Apr. 27, 1984, abandoned. This application Dec. 29, 1986, Ser. No. 948,471
Int. Cl.[5] F23J 7/00
U.S. Cl. 431—4 21 Claims

1. A burner assembly for introducing fuel and air into an inlet passage formed through a furnace wall, said assembly comprising nozzle means having an outlet for discharging a mixture of air and fuel into said inlet passage, means for discharging air into said inlet passage in an inner and outer radially spaced path, each of which are radially spaced from said nozzle, and means for discharging sorbent into said inlet passage downstream of said nozzle outlet and downstream of the discharge area of said air from said radially outer path, said



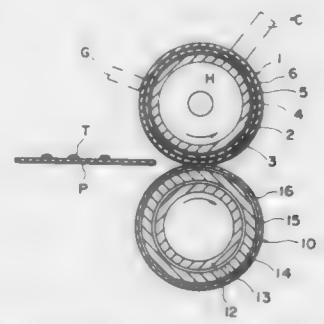
sorbent mixing with said air during their passage through said inlet passage before they enter the interior of said furnace.

5,011,401

ELASTIC ROTATABLE MEMBER AND FIXING APPARATUS

Masaaki Sakurai, Yokohama; Iichiro Yamamoto, Niiza; Masahiro Goto, Kawasaki; Tsukasa Kuge, and Michio Shigenobu, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 432,403, Nov. 6, 1989, abandoned, which is a continuation of Ser. No. 358,463, May 30, 1989, abandoned, which is a continuation of Ser. No. 94,418, Sep. 9, 1987, abandoned. This application May 14, 1990, Ser. No. 522,460
Claims priority, application Japan, Sep. 13, 1986, 61-216928
Int. Cl.[5] F27B 9/28
U.S. Cl. 432—60 34 Claims



1. An elastic rotatable member, comprising:

a base member;

an elastic material layer outside said base member;

a first primer layer between said base member and said elastic material layer;

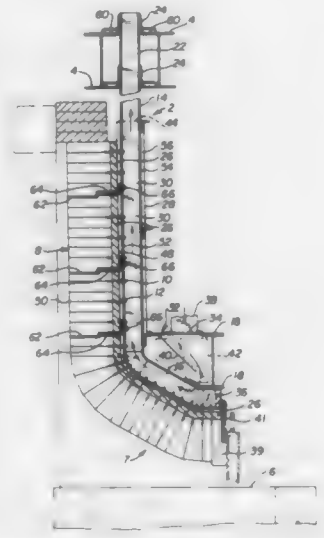
a resin layer outside said elastic material layer; and

a second primer layer between said elastic material layer and said resin layer;

wherein said first primer layer has a thermal conductivity which is larger than that of said second primer layer; and

wherein said elastic material layer is composed of an elastic material, and the elastic material layer has a thermal conductivity which is higher than that of the first primer layer.

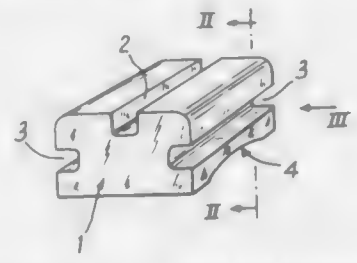
5,011,402
SUSPENDED FURNACE WALL
John A. Hammond, Washington, Pa., assignor to Frazier Simplex, Inc., Washington, Pa.
Filed Sep. 20, 1989, Ser. No. 410,090
Int. Cl.[5] F27D *1/12*; F23M *5/00*, *5/08*
U.S. Cl. 432—238 18 Claims



1. A suspended wall structure for use in a high temperature furnace comprising:
a plurality of spaced-apart, vertically extending columns;
means attached to lower portions and upper portions of the columns for supporting the columns within the furnace, wherein the upper portions of the columns are free to move in a lateral direction to accommodate thermal expansion and contraction;
a plurality of refractory members forming a refractory face along a first side of the columns;
thermal insulation means positioned between said refractory members and the first side of the columns;
hanger means for attaching said refractory members to the columns;
closure means for enclosing a second side of said columns, extending between adjacent columns and spaced from said thermal insulation means, forming a substantially continuous air chamber therealong; and
duct means communicating with said air chamber and with a source of mechanically drafter air to cause an air flow through said air chamber to cool said hanger means and columns.

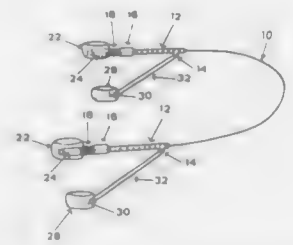
5,011,403
ORTHODONTIC BRACKET MADE FROM ZIRCONIUM OXIDE
Michael Sadoun, 3 avenue Séverine, 92400 Courbevoie, and Alain Decker, 113, avenue Gabriel Péri, 91700 Ste Genevieve des Bois, both of France
Filed Feb. 17, 1989, Ser. No. 311,913
Claims priority, application France, Feb. 19, 1988, 8802017
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—8 14 Claims

1. A nonporous ceramic bracket for bonding to the external face of a tooth consisting essentially of sintered small zirconium oxide particles partially stabilized by a transition metal



oxide, said bracket having a color and translucency substantially corresponding to those of said tooth.

5,011,404
APPLIANCE FOR CORRECTING DENTAL MALPOSITIONS
Enrico Losi, Milan, Italy, assignor to Franca Losi, Cinisello Balsamo, Italy, a part interest
Filed May 26, 1989, Ser. No. 357,937
Claims priority, application Japan, May 26, 1988, 63-20751
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—19 16 Claims



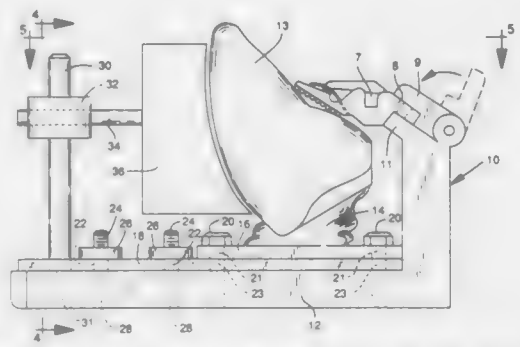
1. An appliance for correcting dental malpositions, comprising:
a metal wire arch for application to incisor and canine teeth;
at least one metal tube provided, in an intermediate part of said tube with a projection which is engaged by one of the two ends of a coil-spring wound around the tube while the other end engages a sleeve for fastening to a malpositioned tooth, said sleeve receiving a portion of the tube, said tube being provided with at least one hook projection; at said end, said metal wire arch is partially housed and freely movable within the tube, and said hook projection is connected by means of at least one rubber band to a hook projection provided on metal bands for fitting onto one or more teeth.

5,011,405
METHOD FOR DETERMINING ORTHODONTIC BRACKET PLACEMENT
Marc S. Lemchen, New York, N.Y., assignor to Dolphin Imaging Systems, Valencia, Calif.
Filed Jan. 24, 1989, Ser. No. 301,606
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—24 19 Claims

1. A method for determining orthodontic bracket placement on a malocclused tooth in a patient's jaw to correct the malocclusion comprising the steps of:
generating digital information defining the shape and location of the malocclused tooth with respect to the patient's jaw;
generating a mathematical model of the malocclused tooth as positioned in the jaw from the digitized information;
calculating the finish position in the jaw to which the malocclused tooth is to be moved from the digitized information; and

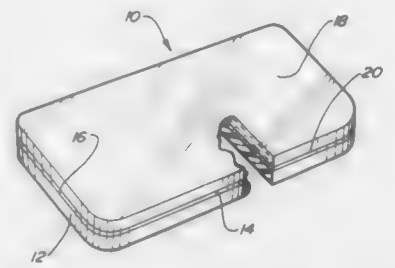
calculating the placement position of an orthodontic bracket on the malocclused tooth required in order to move the malocclused tooth to its finish position by a preselected orthodontic treatment.

5,011,406
ORTHODONTIC SETUP AND ARCHWIRE FIXING METHOD
Alexander J. Wildman, 2440 Willamette St., Eugene, Oreg. 97405
Continuation-in-part of Ser. No. 249,453, Sep. 26, 1988, Pat. No. 4,909,735. This application Jan. 29, 1990, Ser. No. 472,362
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—24 21 Claims



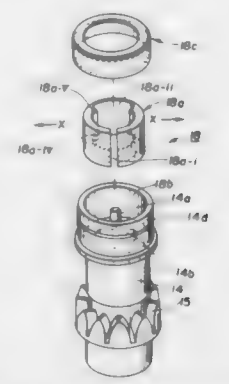
16. Apparatus for forming archwires to fit into archwire slots of orthodontic brackets arranged in a predetermined archform, the apparatus comprising:
a plurality of separate setup plate structures for mounting model teeth thereon;
an alignment fixture for positioning the setup plate structures thereon with the model teeth in a curved arrangement defining an archform; and
a plurality of archwire forming fixtures, each forming fixture being mountable on the alignment fixture in a predetermined relationship to one of the setup plate structures;
each archwire forming fixture including an archwire forming slot in a predetermined position so that the archwire forming slot has a predetermined relationship to the setup plate structure.

5,011,407
CUSTOM DENTAL IMPRESSION TRAY
Joseph Pelerin, 3051 E. Pontiac Rd., Auburn Hills, Mich. 48057
Filed May 22, 1989, Ser. No. 354,712
Int. Cl.[5] A61C *9/00*
U.S. Cl. 433—48 1 Claim



1. A custom impression dental tray assembly consisting of:
a sheet of thermosetting material becoming pliable at a temperature in the range of 115°–150° F. and rigid at the temperature of the mouth, said thermosetting material composed of polycapractone,
a separation layer having one side directly contacting, overlying, covering and attached to one side of said sheet of thermosetting material, said separation layer composed of a sheet of gauze,
a pliable wax covering on the other side of said separation layer, directly contacting said layer, said wax covering being moldable with said sheet of thermosetting material and having a substantially uniform thickness,
said sheet, said separation layer and said wax covering forming an integral structure,
wherein, after said tray assembly is heated and molded into the desired shape, said separation layer enables said separation layer and said wax covering to be removed from said sheet of thermosetting material which forms a custom impression tray.

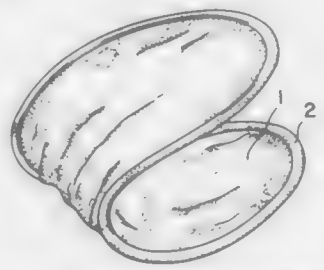
5,011,408
CHUCK DEVICE FOR DENTAL HANDPIECE
Takasuke Nakanishi, c/o Nakanishi Dental Mfg. Co., Ltd., 340 Kamihinata, Kanuma-shi, Tochigi-ken, Japan
Filed Dec. 22, 1988, Ser. No. 288,680
Claims priority, application Japan, Dec. 28, 1987, 62-329981
Int. Cl.[5] A61C *1/14*
U.S. Cl. 433—127 6 Claims



1. A chuck device for a dental handpiece comprising:
a dental tool for applying dental treatment,
a sleeve for fitting and securing said dental tool,
a push button having a cam surface adapted for detaching said dental tool, and
connecting-removal means for positively holding and securing said dental tool within said sleeve and for detaching said dental tool at the time of exchanging said dental tool,
said connecting-removal means including an elastic engagement member engaging with an engaging projection of said dental tool for positively holding and securing said dental tool within said sleeve, and attachment means for attaching said elastic engagement member to said sleeve, said elastic engagement member having a slit so that said elastic engagement member is extended apart about a portion thereof as fulcrum, said elastic engagement member being in the form of a cylinder, the inner surface of which is formed with shoulder sections for engaging and positively holding said engaging projection of said dental tool within the inside of said cylinder, said elastic engagement member being adapted to be extended apart substantially radially within an opening of said sleeve, said engaging projection abutting on and engaging with said shoulder sections for substantially the whole extend of said engaging portion, said engaging projection of said dental tool and said elastic engagement member normally engaging with each other in the non-extended state of said elastic engagement member for positively holding and securing said dental tool within said sleeve, said push button being thrust at the time of exchanging said dental tool for bringing said cam surface into abutment with said elastic engagement member to extend said elastic engagement member apart to release the engagement between said engagement projection of said dental tool and said

elastic engagement member to detach said dental tool from said sleeve.

5,011,409
POLYURETHANE INTRAORAL DAM
Norman Gray, Cary, N.C., assignor to Aukland (USA), Inc., Cary, N.C.
Filed Jan. 11, 1990, Ser. No. 463,541
Int. Cl.[5] A61C *5/14*
U.S. Cl. 433—136 **5 Claims**



1. In a unitary preassembled disposable intraoral dam having a flexible elastic membrane held taut about its periphery by a complimentary annular spring-like frame member, the improvement comprising an extrudable thermoplastic polyurethane composition, said composition being the reaction product of an aliphatic diisocyanate, a high molecular weight aliphatic polyether diol, said aliphatic polyether diol having a molecular weight in the range of about 600 to about 5,000, and a low molecular weight aliphatic diol containing about 2 to about 6 carbon atoms, wherein the molar ratio of said polyether diol to said aliphatic diol is in the range of about 0.3 to about 0.7.

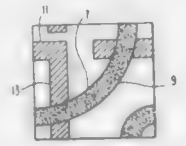
5,011,410
SILANE-TREATED METAL DENTAL ARTICLES
Scott R. Culler, Burnsville; Jon W. Fundingsland, Maplewood, both of Minn., and Dwight W. Jacobs, River Falls, Wis., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.
Filed Sep. 14, 1989, Ser. No. 407,365
Int. Cl.[5] A61C *13/08*
U.S. Cl. 433—208 **21 Claims**

1. A method for applying a layer of exogenous inorganic oxide to the surface of a metal dental article, which method comprises the steps of:
(a) coating at least a portion of the surface of the article with a coupling agent; and
(b) heating the coated surface at a temperature and for a time sufficient to convert the coating to a layer of exogenous inorganic oxide.

5,011,411
METHOD OF MAKING A NON-REPETITIVE MODULAR DESIGN
Andreas F. Loewy, 620 Coolidge St., Lafayette, La. 70503
Continuation-in-part of Ser. No. 195,032, May 17, 1988, abandoned. This application Oct. 31, 1989, Ser. No. 429,633
Int. Cl.[5] G09B *1/32*
U.S. Cl. 434—96 **50 Claims**

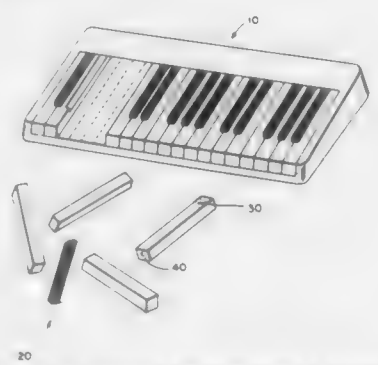
1. A method of making a non-repetitive modular design, comprising the steps of:
(a) providing a polygon, having a shape which is capable of being nested with other polygons of substantially identical shape and size and arranged to cover a surface, the polygon having vertices,
(b) selecting a plurality of points along one side of the polygon, the points being arranged in a symmetrical pattern around the midpoint of the side of the polygon, all of said points being distinct from said midpoint and distinct from said vertices,
(c) duplicating the pattern of points on the remaining sides of the polygon,
(d) drawing lines connecting pairs of said points, such that





each point is connected to one line, wherein the lines are drawn such that the resulting pattern does not have rotational symmetry,
(e) making a plurality of copies of the polygon prepared according to steps (a) through (d), and
(f) arranging said copies to cover said surface.

5,011,412
EDUCATIONAL KEYBOARD WITH REMOVABLE KEYS
Toni J. Rosenberg, 379 Harvard St., Cambridge, Mass. 02138
Filed Jul. 20, 1990, Ser. No. 556,025
Int. Cl.[5] G09B *15/04, 15/08, 15/00*
U.S. Cl. 434—227 **16 Claims**



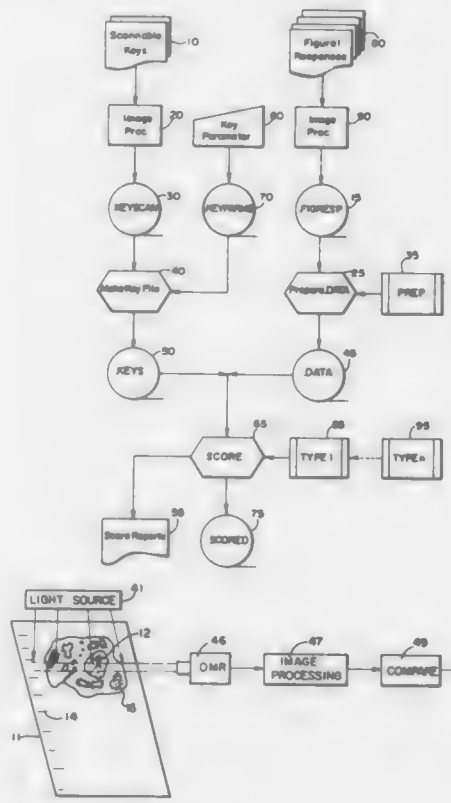
1. An educational musical keyboard and a corresponding set of musical keys substantially in the shape of standard musical keys including means borne on the keyboard and the keys cooperating to make musical tone generation of a given note possible only when the key corresponding to said note is inserted in its correct corresponding key slot on said keyboard.

5,011,413
MACHINE-INTERPRETABLE FIGURAL RESPONSE TESTING
John J. Ferris, Titusville; William Kraft, Cranbury; Winton H. Manning, Princeton, and Michael Martinez, Hopewell, all of N.J., assignors to Educational Testing Service, Princeton, N.J.
Filed Jul. 19, 1989, Ser. No. 382,716
Int. Cl.[5] G09B *7/00*
U.S. Cl. 434—358 **12 Claims**

1. An automatic testing system for determining a figural response to a test inquiry, comprising:
(a) a test sheet of predetermined dimensions and having a grid thereon, said grid defining a plurality of marking areas arranged in predetermined positions on said test sheet;

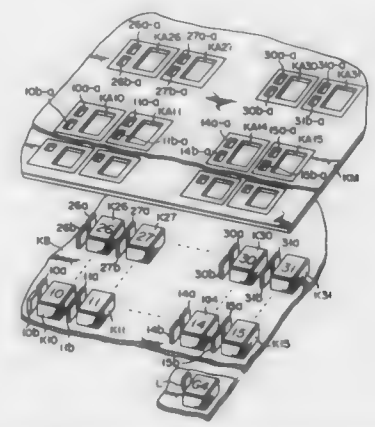
(b) a two-dimensional figural arrangement on said test sheet, said figural arrangement having a first optical reflectivity, said figural arrangement further being arranged within said grid and corresponding to at least one of said marking areas;
(c) response indicia of a second optical reflectivity created by a test taker in making a two dimensional figural response by overmarking selected response marking areas on said test sheet in relation to said figural arrangement;
(d) optical scanning means having different optical sensitivities to said first and second optical reflectivities for scanning said sheet to determine the positions of said response marking areas in at least two dimensions on said test sheet;
(e) memory means for storing key position data representative of at least one predetermined key marking area on said test sheet; and
(f) processing means for comparing said response marking areas with said key position data and generating an indication of the comparison.

8. A method of testing for figural responses to a test inquiry, comprising:



(a) presenting a test sheet of predetermined dimensions and having a grid thereon, said grid comprising a plurality of marking areas arranged in predetermined positions, said grid further comprising a two-dimensional figural arrangement thereon with a first optical reflectivity, said figural arrangement comprising part of said test inquiry;
(b) storing the position of at least one predetermined key marking area on said test sheet corresponding to a specified figural response to said test inquiry;
(c) instructing a test taker to make a figural response to said test inquiry, wherein said test taker provides at least one mark positioned on said sheet in relation to said figural arrangement, said mark having indicia of a second optical reflectivity;
(d) optically scanning said test sheet to determine the position of said mark made by the test taker in at least two dimensions and generating data representative of a position of said mark; and
(e) comparing said determined position and said stored position and generating a numerical indication of said comparison.

5,011,414
KEY-INPUT APPARATUS OR CAI SYSTEM
Yasuo Yoshizawa, Yonezawa; Hiroichi Kawaguchi, Chiba, and Kazunari Seto, Yokosuka, all of Japan, assignors to Yoshiki Industrial Co., Ltd, Yonezawa and Uchida Yoko Co., Ltd., Tokyo, both of, Japan
Continuation-in-part of Ser. No. 2,396, Dec. 15, 1986, abandoned. This application Jun. 30, 1989, Ser. No. 373,598
Claims priority, application Japan, Apr. 18, 1985, 60-83219
Int. Cl.[5] G09B *5/00, 7/07;* **G06F** *15/20*
U.S. Cl. 434—431 **5 Claims**



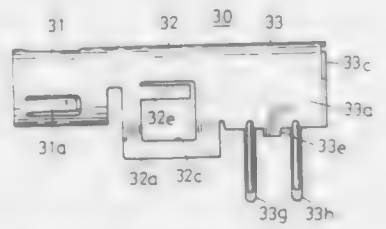
1. A key-input apparatus for a computer-aided instruction system, comprising:
a keyboard having a plurality of keys arranged in a matrix and in which a plurality of learning terminals are selectively assigned to said plurality of keys in correspondence with the arrangement of said learning terminals in a classroom, the number of said keys being more than that of said learning terminals in the classroom in both row and column directions;
first indication means for indicating a key of said keys on said keyboard corresponding to a calling terminal of said learning terminals;
second indication means for indicating an operated key of said keys on said keyboard corresponding to a called terminal of said learning terminals called by a teacher;
a table memory for storing the relationship between said keys of said keyboard and said learning terminals assigned thereto;
means for specifying the learning terminal corresponding to the operated key on said keyboard through said table memory; and
a plurality of key masks each of which is selectively put on said keyboard to identify on the keyboard only selected keys corresponding to the learning terminals arranged in the classroom so that the keys identified by each of said key masks coincide visually with the arrangement of the learning terminals in the classroom.

5,011,415
RIGHT ANGLE COAXIAL RECEPTACLE
Takao Suzuki, Oume; Mamoru Suzuki, Akishima, and Yasufumi Hayashi, Tachikawa, all of Japan, assignors to Japan Aviation Electronics Industry Limited, Tokyo, Japan
Filed Mar. 8, 1990, Ser. No. 490,315
Claims priority, application Japan, Mar. 31, 1989, 1-38917
Int. Cl.[5] H05K *1/00*
U.S. Cl. 439—63 **8 Claims**

1. A right angle coaxial receptacle comprising:
an external conductor including a forward portion having a plurality of resilient contact pieces formed at substantially

equiangular intervals about the center axis of said external conductor and a rear portion formed as a unitary structure with said forward portion and forming a housing portion that is semicyclindrical above said center axis on the side opposite from a printed circuit board on which said receptacle is to be mounted, said external conductor being formed as one piece by stamping it out of a resilient metallic plate through press work, at least one external conductor terminal extending down at right angles to said center axis from said rear portion of said external conductor at a position below said center axis;

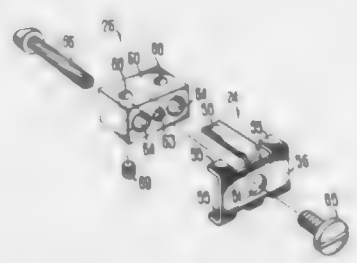
an insulator having a through hole coaxial with said center axis and received in said housing portion of said external conductor, said insulator having formed integrally with its rear end portion a substantially square pedestal portion protruding therefrom toward said printed circuit board at right angles to said center axis, said pedestal portion having a slot extending in the direction of said center axis



from the rear end face of said pedestal portion and communicating with said through hole; and

a center conductor composed of an engaging contact portion extending forwardly on said axis in said forward portion of said external conductor, a rod-like middle portion extending from the rear end of said engaging contact portion and inserted in said through hole of said insulator, and a center conductor terminal extending from the rear end of said middle portion, bent in an L-shape and projecting out through said slot at right angles to said center axis, said housing portion of said external conductor being substantially cylindrical and having a keep plate portion extending from the rear end edge of said housing portion at the top thereof to form its rear end face receiving the rear end of said insulator, and U-shaped resilient locking means extending from the lower end of said keep plate portion and surrounding said pedestal portion of said insulator from behind.

5,011,416
CABLE CONNECTING DEVICE
Robert H. Gladden, Jr., Norcross, and Phillip M. Thomas, Lake City, both of Ga., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Division of Ser. No. 358,991, May 26, 1989, abandoned. This application Apr. 2, 1990, Ser. No. 503,360
Int. Cl.[5] H01R *13/648*
U.S. Cl. 439—98 **5 Claims**

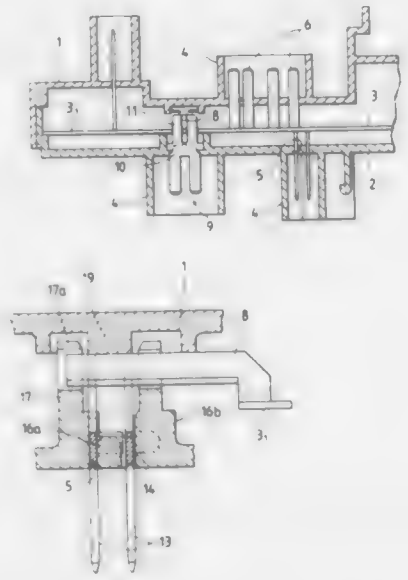


1. A device which is connectable to a cable and which is adapted to terminate strength member wires of said cable, said device including:

cable engagement clamping means for being secured to a cable jacket, said clamping means including a portion adapted to become engaged with and clamped to an outer surface of the plastic jacket of the cable and further including an upstanding portion which is substantially perpendicular to a longitudinal axis of the cable; and

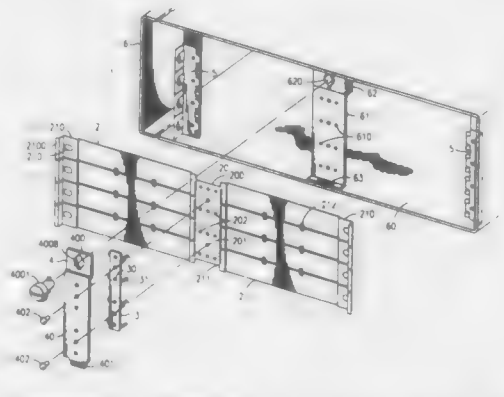
bonding block means adapted to be secured in engagement with said upstanding portion of said clamping means and spaced from said portion of said clamping means which engages the cable jacket along a radial line extending from the cable for securing strength members of the cable which are disposed between said upstanding portion and said bonding block means, said bonding block means also including at least one passageway for receiving an end portion of a ground wire.

5,011,417
STRUCTURE OF CONNECTION BETWEEN BUS BAR AND PRESS-CONNECTING BRANCH TERMINAL IN ELECTRIC CONNECTION BOX
Etsuji Matsumoto; Mamoru Araki, and Keiichi Ozaki, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Jun. 7, 1990, Ser. No. 534,564
Claims priority, application Japan, Jun. 9, 1989, 1-145302
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—76 **5 Claims**



1. A structure of connection between a bus bar and a press-connecting branch terminal in an electric connection box wherein a plurality of bus bars constituting a circuit are accommodated within a casing having an upper case and a lower case; a housing having at least one tab insertion hole at its bottom is formed on at least one of said upper and lower cases; a branch tab formed on one side portion of a press-connecting branch terminal is extended through said tab insertion hole into said housing to thereby constitute a connector insertion portion, and a desired one of said bus bars is press-fitted in and connected to a U-shaped slot formed in a press-connecting portion formed on the other side portion of said press-connecting terminal; said press-connecting branch terminal including a base plate portion, opposed press-connecting portions projecting from one side of said base plate portion and each having a U-shaped slot, and at least one branch tab projecting from the other side of said base plate portion; said structure comprising a first retaining means for retaining said press-connecting branch terminal in place when said upper and lower cases are coupled together, said first retaining means including a seat formed on a bottom of said housing for receiving said base plate portion and a press portion formed on an inner surface of said case disposed in opposed relation to said seat, and a second retaining means for retaining said press-connecting branch terminal in place when said base plate portion is press-fit in said seat, whereby said press-connecting branch terminal and the bus bar which are press-connected together are fixedly held between said seat and said press portion.

5,011,418
COMPUTER TERMINAL COVER ASSEMBLY
Thomas R. Perzentka, Jr., Lisle, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Aug. 2, 1990, Ser. No. 562,508
Int. Cl.[5] H05K *5/00*
U.S. Cl. 439—135 **11 Claims**



1. A backplane assembly for use with a computer terminal card cage having slots for receiving feature cards comprising means for shielding the card cage slots and having a plurality of filler members all with a common end releasably secured to the card cage and with each of said filler members corresponding with one of the card cage slots and having an opposite end extended across the one card cage slot for covering and shielding the one card cage slot, and means affixed to the card cage opposite said filler members common end and having spring members each corresponding with one of said filler members with each spring member formed for engaging said one filler member opposite end and wherein said engaging means have a plurality of protuberances each formed to maintain said one filler member opposite end in engagement with said corresponding spring member and wherein said protubernace is releasable with respect to said one filler member for enabling said corresponding spring member to exert a force for disengaging said one filler member opposite end to extend outward and free from the card cage.

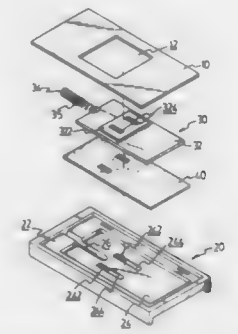
5,011,419
SAFETY SOCKET
Jack Maan, 4 Fl., No. 7-1, Chung Yang Erh St., Hsin Tien City, Taipei Hsien, Taiwan
Filed Dec. 21, 1989, Ser. No. 454,173
Int. Cl.[5] H01R *13/44*
U.S. Cl. 439—145 **3 Claims**

1. A safety socket comprising:

a cover plate having a rectangular opening thereon;

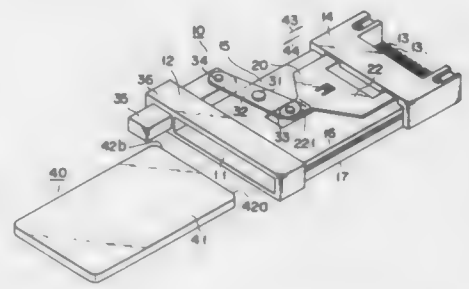
a base plate having a first recessed portion for receiving said cover plate, a second recessed portion being formed on said first recessed portion, said second recessed portion having a first pair of hot slots therein; and

a sliding means comprising a stepped plate and a combination of a spring and a guide-rod, said stepped plate having a raised plate extending from a top surface at a substantially intermediate position thereof and a second pair of hot slots thereon, said combination of spring and guide-rod being received in a channel provided on said base plate, said raised plate being confined to be displaceable within said opening of said cover plate, said stepped plate being slidable within said second recessed portion from a



safety position where said first pair of hot slots are blocked by said second pair of hot slots to a work position where said first pair of hot slots are aligned with said second pair of hot slots.

5,011,420
CONNECTOR APPARATUS HAVING AN EJECTING MECHANISM
Haruo Sakamoto, Yokohama, Japan, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Feb. 26, 1990, Ser. No. 484,972
Claims priority, application Japan, Mar. 1, 1989, 1-21982[U]
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—152 **3 Claims**



1. A connector apparatus to be connected to an IC pack comprising:

housing means for receiving and holding the IC pack inserted thereto,

connector means for contacting electrically to said inserted IC pack,

ejecting means for ejecting said inserted IC pack from said connector means having at least two ejecting arms having a U-shaped cross section, two opposing sections of said ejecting arm sandwiching said housing means, and the other section perpendicular to said opposing sections being arranged to contact with the front end of said IC pack, and

means for activating said ejecting means so as to eject said IC pack from said connector means.

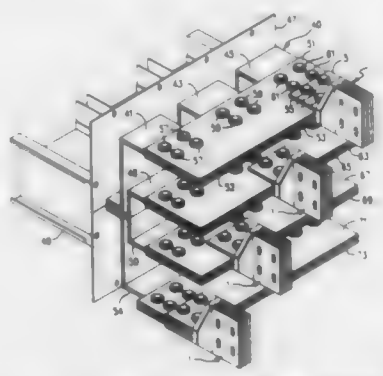
5,011,421
PLANE CHANGE CONNECTOR ASSEMBLY
Jonathan W. Duke, Lancaster, and Barry R. Richards, Greenwood, both of S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Mar. 5, 1990, Ser. No. 489,132
Int. Cl.[5] H01R *4/60, 25/00*
U.S. Cl. 439—213 **17 Claims**

7. A busbar connecting assembly for connecting a first three-

phase busway having multiple co-planar outwardly extending busbars for each phase, with the busbars for each phase spaced apart from one another and stacked in separate, parallel planes to a second, three-phase busway also having multiple co-planar outwardly extending busbars for each phase with the busbars for each phase spaced apart from one another and stacked in separate, parallel planes at a predetermined angle to the planes of said parallel planes of the first busway, the connecting assembly comprising:

a plane change member associated with each phase, each plane change member having a plurality of spaced-apart first coupling flanges parallel to a first plane, a planar joining member having two opposing sides, said joining member being in a plane perpendicular to said first coupling flanges and having said first coupling flanges cantilevered from one side of said joining member, a plurality of spaced-apart second coupling flanges parallel to a second plane which is at the predetermined angle to said first plane, and said second coupling flanges being cantilevered from the opposing side of said joining member;

connecting means associated with each phase, said associated connecting means for the first phase connecting the co-planar bars of the first phase of said first electrical components to said first coupling flanges of the associated plane change member for the first phase, and connecting the co-planar bars of the first phase of said second electrical component to said second coupling flanges of the associated plane change member for the first phase;



the associated connecting means for the second phase connecting the co-planar bars of the second phase of said first electrical component to said first coupling flanges of the associated plane change member for the second phase, and connecting the co-planar bars of the second phase of said second electrical component to said second coupling flange of the associated plane change member for the second phase;

the associated connecting means for the third phase connecting the co-planar bars of the third phase of said first electrical component to said first coupling flanges of the associated plane change member for the third phase, and connecting the co-planar bars of the third phase of said second electrical component to said second coupling flanges of the associated plane change member for the third phase;

a first ganging plate means associated with each phase, said first ganging plate means connecting the multiple co-planar bars of each phase of said first electrical component to the first coupling flanges of said associated plane change member for that phase;

a second ganging plate means associated with each phase, said second ganging plate means connecting the multiple co-planar bars associated with each phase of said second electrical component to the second coupling flanges of said associated plane change member for that phase;

first fastening means for securing said ganging plates to said coupling flanges; and

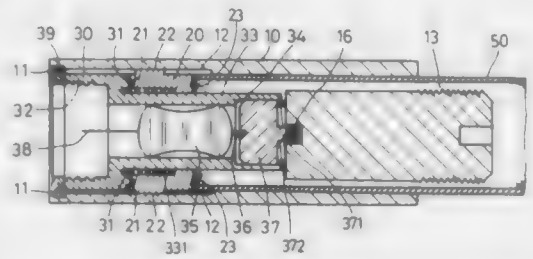
second fastening means for securing said co-planar bars to said ganging plate.

5,011,422

COAXIAL CABLE OUTPUT TERMINAL SAFETY PLUG DEVICE

Ming-Hwa Yeh, No. 2, Lane 8, Hsin An Rd., Shih Lin District, Taipei, Taiwan

Filed Aug. 13, 1990, Ser. No. 567,126
Int. Cl.[5] H01R *13/629, 13/66*
U.S. Cl. 439—307 **3 Claims**



1. A coaxial cable output terminal safety plug device comprising:

a plug comprising a round tube having an inner flange at the front end, two opposite, longitudinal grooves on the inner wall, and a cylindrical projection at the rear end, said cylindrical projection being designed in an outer diameter slightly smaller than said round tube and having three stop strips equidistantly connected between said round tube and said cylindrical projection, a driving tube and a threaded tube concentrically received therein, said driving tube having toothed portion at its front end and two opposite, raised strips on its outer wall surface respectively releasably engaged in said two longitudinal grooves, said threaded tube having a toothed portion at its rear end and releasably engaged with the threaded portion of said driving tube and an inner thread at its front end, a resistor mounting tube extending from the rear end of said threaded tube inserted in said driving tube for holding a resistor therein, a compression spring sleeved on said resistor mounting tube and set between said threaded tube and said driving tube, said resistor mounting tube having a stepped portion in larger inner diameter, said resistor having a rear end conductor fixedly connected to an element, said element having a projecting end sleeved with a spring and stopped between said element and the front end of said cylindrical projection; and

a driving tool comprising a handle having a front tube extending therefrom, said front tube having three longitudinal channels made at the front and three openings radially made on its periphery around a circle near the front end thereof.

5,011,423

PLUGGING DEVICE FOR THE ELECTRIC INITIATION OF AN AIRBAG PROVIDED WITH LOCKING MEANS TO PERMIT THE OPENING THEREOF WITHOUT TRIGGERING THE FUNCTIONING OF THE AIRBAG

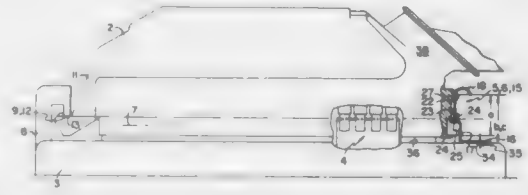
Werner Reuter, Erkrath, Fed. Rep. of Germany, assignor to Grote & Hartmann GmbH & Co. KG, Wuppertal, Fed. Rep. of Germany

Filed Oct. 30, 1989, Ser. No. 427,874
Claims priority, application Fed. Rep. of Germany, Nov. 4, 1988, 8813830[U]
Int. Cl.[5] H01R *13/703*
U.S. Cl. 439—341 **15 Claims**

1. In a plugging device for connecting at least one line of an electric switching arrangement for electrical initiation of an airbag, including first and second plugging device parts having contact elements for the line, and an auxiliary switching arrangement having first and second auxiliary contacts to prevent the initiation of the airbag when the plugging device is opened, the auxiliary switching arrangement including a short circuit bridge arrangement associated with the first and second auxiliary contacts so that when the first and second auxiliary contacts are closed in engagement with each other during opening movement of the plugging device, the short circuit bridge arrangement is also closed to bring about a short circuit to prevent the initiation of the airbag, the first auxiliary contact being movably held in the first plugging device part and the second auxiliary contact being immovably held in the second plugging device part, the first and second auxiliary contacts being closed at a predetermined first position during the opening movement of the plugging device, the contact elements being opened out of engagement with each other at a predetermined second position during the opening movement of the plugging device, the predetermined first position for closing the first and second auxiliary contacts being reached first during the opening movement of the plugging device before the predetermined second position for opening the contact elements so that the short circuit occurs to prevent the initiation of the airbag, an improvement comprising:

said plugging device including first and second casing parts with the first plugging device part being disposed in said first casing part, and the second plugging device part being disposed in said second casing part;

hinge means for connecting one end of said first casing part to one end of said second casing part so that said first casing part can pivot away from said second casing part during the opening movement of said plugging device;



delay opening means for retarding the pivoting of said first casing part during the opening movement of said plugging device at a predetermined third position disposed between said predetermined first and second position to allow a longer time to bring about the short circuit;

said delay opening means including a locking mechanism arranged at a distance from said hinge means on opposite ends of said first and second casing parts;

said locking mechanism including a grip part secured on the opposite end of said second casing part so that said grip part can be bent elastically away from the opposite end of said first casing part for first and second movement stages during the opening movement of said plugging device;

said grip part including locking means for engaging the opposite end of said first casing part to lock said first and second casing parts together in a closed position;

said grip part including stop means for engaging the opposite end of said first casing part to maintain said first casing part at said predetermined third position at an end of said first movement stage during the opening movement of said plugging device; and

said first casing part including holding means for engaging said grip part during said first movement stage so that said stop means is prevented from being pulled away from said first casing part when said grip part is bent elastically away from the opposite end of said first casing part to a first releasing position to open said plugging device;

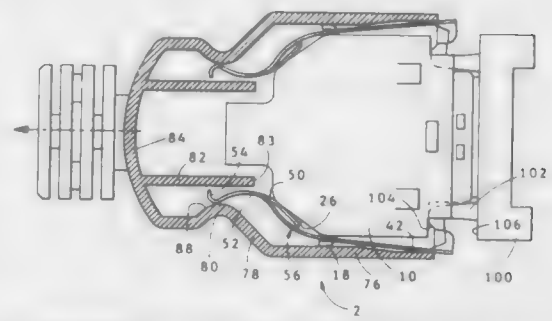
whereby at the end of said first movement stage, said grip part is again bent elastically away from the opposite end of said first casing part to a second releasing position to release said stop means to start said second movement stage so that said plugging device can be fully opened.

5,011,424

LATCH MECHANISM FOR ELECTRICAL CONNECTOR

Randy G. Simmons, Clemmons, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 1, 1989, Ser. No. 431,049
Int. Cl.[5] H01R *13/627*
U.S. Cl. 439—352 **5 Claims**



1. An electrical connector having an inner body section and an outer housing section, the inner body section having two latch arms operatively hinged to hinges provided on side walls thereof, and having forward of the hinges, latch arms having latching surfaces at forward ends which latch the connector to a complementary connector, the connector having rearward of the hinges, rotatable actuation arms; the connector being characterized in that:

the latch arms are stamped from a material having resilient characteristics, hinge receiving openings extend through the latch arms, the hinge receiving openings being dimensioned to received respective hinges therein, the rotatable actuation arms are provided on the latch arms and extend from the hinge receiving openings in a direction opposed to the latching surfaces,

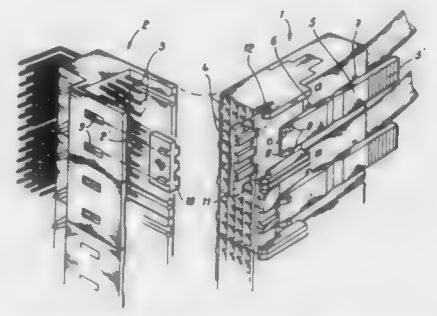
the rotatable actuation arms including on ends thereof, actuator sections having forwardly directed surfaces, while the housing include rearwardly facing camming surfaces disposed proximate to the forwardly facing surfaces, and in that the housing is axially movable relative to the inner body causing the camming surfaces to rotate the latch arms about the hinges, thereby unlatching the connector from the complementary connector.

5,011,425

CONNECTOR ASSEMBLY WITH LATCHING MEANS

Albertus Van Zanten, Dp's-Hertogenbosch, and Johannes Maria B. Van Woensel, Eg Rosmalen, both of Netherlands, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 6, 1990, Ser. No. 533,825
Claims priority, application Netherlands, Jun. 6, 1989, 8901438
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—353 **11 Claims**



1. A connector assembly comprising a plug-in connector and a socket connector adapted to mate with and detach from one another, the plug-in connector having at least one contact

member of a first type and the socket connector having at least one contact member of a second type, said contact members being adapted to cooperate when the connectors mate, wherein:

the plug-in connector having a housing of electrically insulating material, at least one lever-type locking element extending along an external side of said housing and having a first and second pivot point, spaced a part along the length of the connector, at least one projecting latching element provided at a first free end of said lever-type locking element near a mating side of the plug-in connector, said latching element projecting outward away from the housing, a second free end of said lever-type locking element being adapted for gripping and application of a force inward toward the housing; and

the socket connector also having a housing of electrically insulating material, at least one slotted opening in a side of said socket housing which can receive the projecting latching element from within the socket housing;

when the plug-in connector is inserted into the whereby when the plug-in connector is inserted into the socket connector, the first free end of the lever-type locking element extends within said socket connector housing along the side containing the slotted opening and the outwardly projecting latching element snaps into the slotted opening from within the socket housing to latch the two connectors together, and

whereby when the connectors are to be disconnected, a force directed inward toward the plug-in connector housing is exerted at the second free end of the lever-type locking element, said force causing the second free end to pivot about the second pivot point and the first free end to pivot about the first pivot point, so that the latching element moves away from the side of the socket connector housing in the same direction as the second free end of the lever-type locking element and disengages from the slotted opening.

5,011,426

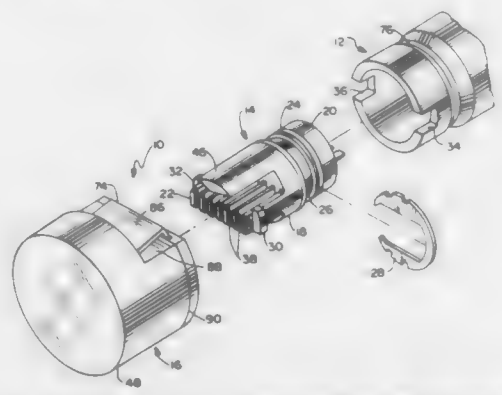
ELECTRICAL CONNECTOR ASSEMBLY FOR VEHICULAR SUSPENSION SYSTEM COMPONENT

Stephen A. Colleran; Edward J. Plocek, both of Lisle; Timothy R. Ponn, Aurora, and William D. Gruhn, Wheaton, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Feb. 2, 1990, Ser. No. 474,571

Int. Cl.[5] H01R *13/73*

U.S. Cl. 439—357 17 Claims



1. An electrical connector assembly for a vehicular suspension system component employed in a high vibration environment, said suspension system component including an open ended tip, electrical control means associated with said component for controlling selected operations of the suspension system component, the electrical connector assembly having a first connector with first terminals disposed in a first housing mounted adjacent the tip of the suspension system component and being operatively connected to the electrical control means and a second connector with second terminals disposed in a second housing mated with the first connector, wherein the improvement comprises:

portions of each said first terminal being insert molded into said first housing, such that said first housing defines a unitary matrix of nonconductive material surrounding, engaging and supporting portions of each said first terminal, said first housing includes an outer peripheral surface having n inwardly directed annular groove therein, a deflectable washer being seated in the groove of said first housing and securely engaging the suspension system component in the open ended tip for retaining the first housing therein, each said first terminal including a mounting end extending from the portion thereof insert molded in the first housing and into the suspension system component for electrical connection with the electrical control means therein and a mating end extending from the portion thereof insert molded in the first housing bent over a supporting portion of said first housing and generally toward the open ended tip of the suspension system component;

portions of each said second terminal being insert molded into said second housing such that second housing defines a unitary matrix of nonconductive material surrounding, supporting and engaging said portions of each said second terminal, said second housing being lockingly but releasably engageable over the exterior of the tip of said suspension system component, with a mating end of each said second terminal extending toward the open ended tip of said suspension system component for releasably electrically contacting a corresponding one of the first terminals of said first connector, whereby the insert molding of the first and second terminals in the respective first and second connectors achieves environmental sealing and accurate positioning of the terminals in the high vibration environment of said suspension system component.

5,011,427

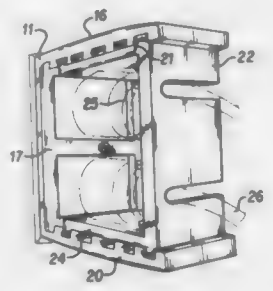
CORD PROTECTOR

Eugene Z. Martin, 1821 NW. 39th, Oklahoma City, Okla. 73118

Filed Mar. 13, 1990, Ser. No. 492,912

Int. Cl.[5] H01R *13/62*

U.S. Cl. 439—373 9 Claims



1. In an electrical outlet having a plurality of receptacles, said receptacles each providing for the removable installation of an electrical plug having two or more terminals, the combination comprising;

an apparatus to prevent the inadvertent removal of one or more of said plugs from one or more of said receptacles, including;

an outlet mounted bracket attachable in overlying relationship to said outlet by means of an outlet cover plate retaining screw,

said outlet mounted bracket having a first element and a second element,

said outlet mounted bracket first and second elements extending substantially perpendicularly from opposite ends of said outlet mounted bracket,

said outlet mounted bracket first and second elements including essentially planar and parallel facing surfaces and opposed surfaces,

said outlet mounted bracket containing a plurality of apertures each providing for the insertion of one said electrical plug therethrough and into said electrical receptacle,

a slidable member including a first element and a second element in substantially parallel relationship and perpendicularly extending from a central element positioned therebetween, said slidable member first element and second elements having facing and opposing surfaces,

said slidable member central element containing elongated indentations permitting the reception of an electrical cord but not allowing the passage of one said plug,

the major axes of said indentations substantially parallel to said slidable member first and second elements, and

slidably engageable mating connection means on said first and second elements of said bracket and slidable member.

5,011,428

TAPPING CONNECTOR FOR A SCREENED ELECTRIC CABLE

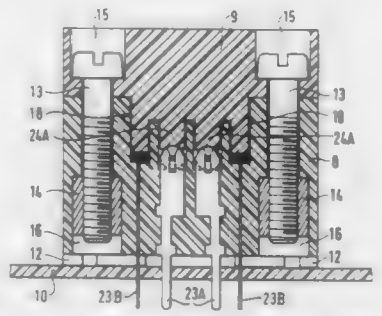
Jean-Paul Heng; Henri Guernet, both of Lyons, and André Marmonier, Bron, all of France, assignors to Entrulec S. A., Cedex, France

Filed Apr. 12, 1990, Ser. No. 507,808

Claims priority, application France, Apr. 14, 1989, 89 04970

Int. Cl.[5] H01R *4/24*

U.S. Cl. 439—394 3 Claims



1. A tapping connector for a screened multiwire electric cable comprising an outer covering around both a plurality of conductor wires which are electrically insulated from one another and electromagnetic screening forming a sheath around said conductor wires, and optionally around a drain conductor providing electrical continuity for the screening, an annular portion of the outer covering and at least a portion of the sheath forming the screen being removed from a selected position along the cable for receiving the connector, wherein the connector comprises at least two complementary portions which are separable to allow a cable to be put into a position passing between them and to enable the cable to be held stationary relative thereto when they are reassembled, the connector including a plurality of laterally spaced, parallel grooves on one face of one of said portions, which grooves are open at both ends and to the side facing a zone where the two portions meet, at least one of said grooves containing an insulation-piercing connection piece for making electrical connection with a corresponding one of the insulated conductor wires or with a drain conductor, and at least one other of said grooves containing a conducting connection piece constituting a tab for making contact with a drain conductor or a conducting link providing screening continuity, the other portion of the connector having laterally spaced male pushers penetrating into respective ones of the grooves for causing a drain conductor or a conducting link or a conductor wire to be held stationary in each groove and for causing electrical connection to be made therewith when the connector portions are pressed against each other.

5,011,429

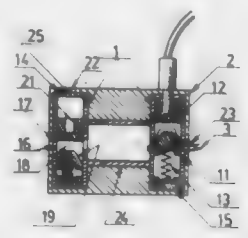
CONNECTION TERMINAL PLATE

Hai-Yung Ku, 8th Fl., No. 614, Lin Sen N. Road, Taipei, Taiwan

Filed Mar. 30, 1990, Ser. No. 501,702

Int. Cl.[5] H01R *4/24*

U.S. Cl. 439—409 3 Claims



1. A wire connection terminal block comprising a metal conducting terminal structure and insulator housing, wherein said terminal structure is positioned within the insulator, said terminal structure comprising:

a housing having two opposite sides with aligned wire holes each of said wire holes having a top rim with an oblique surface forming a wedge;

a movable block having a wire hole with a perimeter on two opposite, faces of the movable block, said perimeter of said wire hole on each said opposite face having a bottom rim with an oblique surface forming a concavity in said face of said moveable block; and

a compressing spring,

said compressing spring and movable block being accommodated within said housing, said housing having upper and lower openings, said upper opening being covered by a folding portion, said lower opening being covered by a plug, said wire hole of said movable block being normally displaced from said wire holes of said housing by said compressing spring, said wire holes of said housing and said moveable block being alignable when said compressing spring is compressed so that a wire can be inserted through said wire holes in said housing and said moveable block, an inserted wire being bent along said concavities on opposite faces of said moveable block, and a cover of the wire being pierced by said wedges at the top rims of the wire holes of said housing on sa d opposite faces of said moveable block when said compressing spring is released.

5,011,430

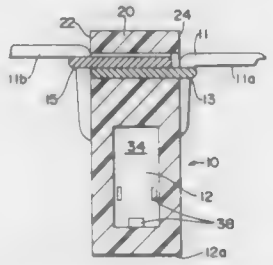
ELECTRICAL CONNECTOR HAVING CABLE STRAIN RELIEF

Louis Haitmanek, Florham Park, N.J., assignor to Thomas & Betts Corporation, Bridgewater, N.J.

Filed May 8, 1990, Ser. No. 520,697

Int. Cl.[5] H01R *13/58*

U.S. Cl. 439—456 5 Claims



1. An electrical connector assembly for terminating a transverse termination extent of an elongate multiconductor ribbon cable, said assembly comprising:

an elongate connector base having opposed upper and lower surfaces;

a plurality of contacts fixedly positioned in said base in a pre-determined pattern, said contacts having insulation-piercing extents extending above said upper surface of said base and connection extents adjacent said lower surface of said base;

an elongate cover movably supported over said base having a pair of longitudinal side walls, transverse end walls, and a lower cable engagement wall extending therebetween for affecting movement of said transverse termination extent of said cable into insulation-piercing connection with said contacts; and

an elongate leaf spring clip supported by and separate from said cover along a side wall of said pair and extending longitudinally therealong for supporting a further transverse extent of said cable longitudinally spaced from said transverse termination extent, said clip being spring-biased toward said side wall to secure said further transverse extent of said cable thereagainst in strain-relief fashion.

5,011,431

BASEPLATE FOR SUPPORTING A PLURALITY OF ELECTRIC CONNECTORS ON A MOTOR CAR

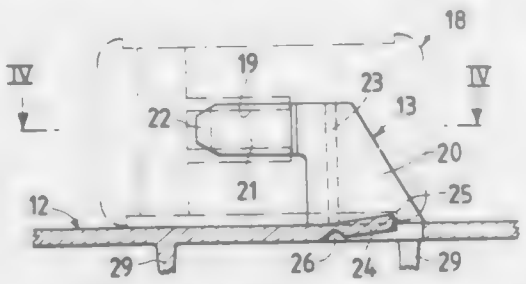
Renato Pasquali, Garbagnate, and Raffaele Drago, Milan, both of Italy, assignors to Alfa Lancia S.p.A., Arese, Italy

Filed Jan. 8, 1990, Ser. No. 462,050

Claims priority, application Italy, Jan. 10, 1989, 20422[U]

Int. Cl.[5] H01R *13/627*

U.S. Cl. 439—540 **11 Claims**



1. A supporting baseplate for electric conductors for use on a motor car, each of the conductors having first latching means for securing the conductors to said baseplate, said baseplate comprising a plate-like base casing which can be secured to a component part of the car, said plate-like base casing having at least one connector-supporting member projecting generally perpendicular from said base casing, said at least one connector-supporting member having second latching means for cooperating with said first latching means of a respective connector to retain the respective connector, said base casing further having a third latching means in correspondence with said at least one connector-supporting member for disconnectably securing the respective connector to said base casing.

5,011,432

COAXIAL CABLE CONNECTOR

Gayle A. Sucht, Mountain View, and John S. Mattis, Sunnyvale, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 485,798, Feb. 22, 1990, Pat. No. 4,952,174, which is a continuation of Ser. No. 351,738, May 15, 1989, abandoned. This application Aug. 28, 1990, Ser. No. 574,413

Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—584 **21 Claims**

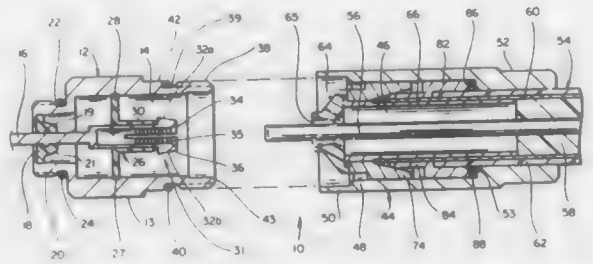
3. A threadably tightenable coaxial cable nut connector for installation on a prepared end of a coaxial cable including a center conductor, dielectric core disposed axially about the center conductor, an outer metal conductor jacket concentric with the center conductor and spaced therefrom by the dielectric core, and an outer protective plastic sheathing surrounding the outer metal jacket, the prepared end having the outer jacket and protective sheathing trimmed to expose a length of the center conductor, the connector comprising:

a threadably tightenable nut,

the nut defining an interior space including a mandrel assembly freely rotatable within the interior space until the nut is tightened upon installation; and

the mandrel assembly including:

mandrel means slideably mounted under said outer metal conductor jacket and plastic sheathing



ferrule means slideably mounted over said outer conductor jacket and plastic sheathing means and including collet fingers disposed over a portion of said mandrel means,

said mandrel means including ferrule collet closure means for closing the collet fingers of said ferrule means to cause them to compress said outer metal conductor jacket between said portion of said mandrel means and the collet fingers as said nut is tightened during installation of said connector to said prepared cable end.

5,011,433

MULTIPOLE CONNECTOR FOR CONTROL DEVICES IN UNDERGROUND WORKING

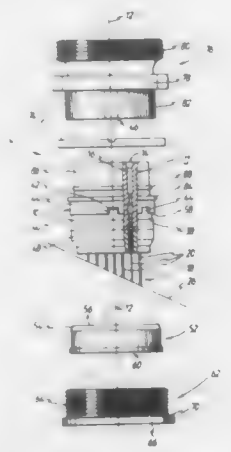
Otmar Pfeiffer; Guy Geuns, and Josef Welzel, all of Wuppertal, Fed. Rep. of Germany, assignors to Hermann Hemscheidt Maschinenfabrik GmbH & Co., Wuppertal, Fed. Rep. of Germany

Filed Oct. 17, 1989, Ser. No. 422,537

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1988, 3835756

Int. Cl.[5] H01R *13/44, 13/52*

U.S. Cl. 439—589 **12 Claims**



1. A multipole connector adapted to be led in a sealed manner through an opening in a wall of a casing of a control device used for underground working, comprising a contact holder made of a resilient material, securing parts on the contact holder for securing the contact holder in a sealed manner in the opening in the wall, a plurality of contact chambers extending through the contact holder parallel to one another in the direction of the longitudinal axis of the connector, a plurality of contact elements in the contact chambers with each contact element having at least one constriction engaging an annular web formed in the respective contact chamber, connecting pieces in the form of parallel soldering tabs on the contact elements arranged to project outwards from one side of the contact holder for the purpose of making connections, a slotted clamping ring disposed in an annular groove in the contact holder and surrounding the contact holder in the region of the constructions in the contact elements and the annular webs of the contact chambers, a positioning cam on the slotted clamping ring being disposed on the one hand in a recess in the contact holder and on the other hand in an axial slot in one of the securing parts.

5,011,434

FILTERED ELECTRICAL CONNECTOR

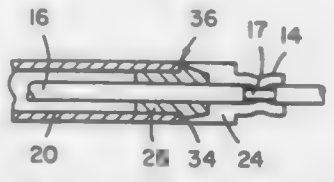
Christopher W. Blunt, Faversham, United Kingdom, assignor to Amphenol Corporation, Wallingford, Conn.

Filed Nov. 20, 1989, Ser. No. 438,868

Claims priority, application United Kingdom, Nov. 23, 1988, 8827349

Int. Cl.[5] H01R *13/66*

U.S. Cl. 439—620 **21 Claims**



1. A contact for use in a filtered electrical connector, said contact comprising:

a longitudinally extending electrically conductive body;

a pair of flanges projecting outwardly from said conductive body and spaced from one another along the length of said conductive body;

a capacitive casing which surrounds a portion of said electrically conductive body between said pair of spaced flanges; and

resilient conductive spacers held in compression between each end of said capacitive casing and an adjacent one of said spaced flanges to support said capacitive casing relative to said conductive body; wherein said contact further comprises:

a hollow shell extending from each of said pair of spaced flanges towards the adjacent end of said capacitive casing, each of said hollow shells overlying at least a part of the outer surface of said resilient conductive spacer between said flange from which said hollow shell extends and the adjacent end of said capacitive casing.

5,011,435

MODULAR JACK

Teresa A. Y. C. Seong, and Yap Y. Teck, both of Singapore, Singapore, assignors to Molex Incorporated, Lisle, Ill.

Filed Apr. 5, 1990, Ser. No. 504,768

Int. Cl.[5] H01R *13/00*

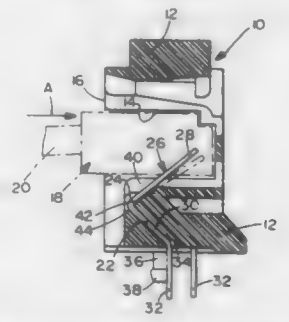
U.S. Cl. 439—676 **18 Claims**

1. A modular jack, comprising:

an insulating body having a plug insertion hole formed in a front end thereof for receiving therein a complementary plug having appropriate contact means, contact insertion holes in the body communicating with the plug insertion hole, and contact insertion slots int he body inside the plug insertion hole at entrances tot he contact insertion holes;

jack contacts inserted into the contact insertion holes with free end portions of the contacts exposed inside the plug insertion hole in the body for contacting the plug contact means; and

wherein a portion of each jack contact engages its respective contact insertion slot, the contact insertion slots being sized relative to the size of the jack contacts so that there



is provided an interference fit therebetween to prevent the jack contacts from backing out of the contact insertion holes.

5,011,436

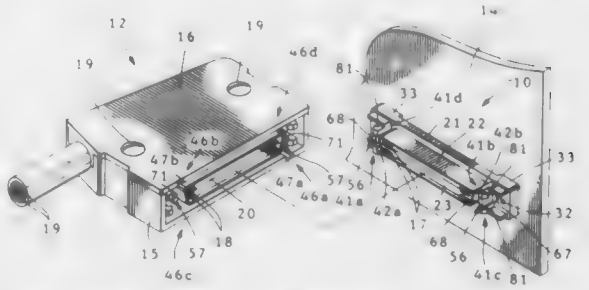
HERMAPHRODITIC KEYS

Mark H. Waters, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 270,489, Nov. 4, 1988, abandoned, which is a continuation of Ser. No. 90,293, Aug. 31, 1987, abandoned. This application Apr. 14, 1989, Ser. No. 338,533

Int. Cl.[5] H01R *13/64*

U.S. Cl. 439—681 **12 Claims**



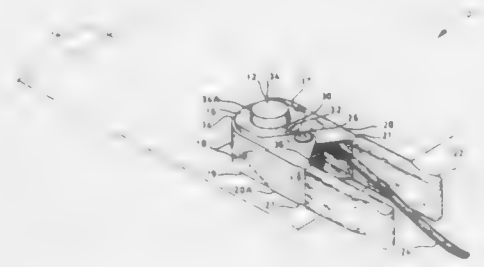
1. An electrical connector comprising:

a housing having contacts secured therein, said housing having at least a pair of members integral with and extending upwardly from a surface thereof;

a first keying system including at least one key supported by said housing and extending outwardly from said surface, said at least one key being adapted to cooperate with at least one opposing key on a complementary connector during mating of said connector and said complementary connector, and being adapted to be oriented in any selected one of a plurality of possible keying orientations to provide a given number of keying combinations between said connector and said complementary connector; and

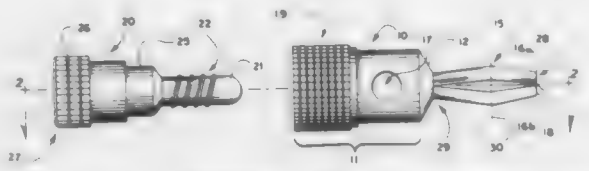
a second keying system including a pair of spaced projections integral with and extending upwardly from said surface along said pair of members for preventing said connector from mating with a complementary connector with which it is not intended to mate, said pair of spaced projections being symmetrically disposed about said surface and extending outwardly toward the periphery of said surface, said projections being adapted to be received within an aligned pair of spaced openings in a complementary connector with which said connector is intended to mate.

5,011,437
BATTERY TERMINAL CONNECTOR
Darvin C. Gibbons, 1528 Lakeview Cir., Morristown, Tenn. 37814
Filed Oct. 27, 1989, Ser. No. 427,709
Int. Cl.[5] H01R *11/24*
U.S. Cl. 439—759 **16 Claims**



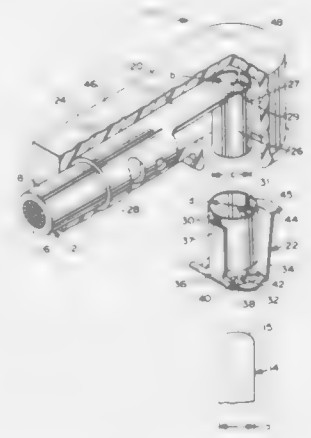
1. An improved connector for connecting an electrically conductive cable to the terminal post of a wet-cell storage battery to facilitate quick connection and disconnection therebetween, comprising:
attaching means for accomplishing physical and electrical connections to said electrically conductive cable;
opposably disposed operable jaw pieces containing inner lining walls of conductive material specially shaped and sized for circumscribing and contacting said terminal post of said storage battery;
positive electrical contact means for ensuring positive electrical connection between the two sides of said inner lining should said inner lining separate into two pieces physically;
biasing means for holding said inner lining clamped against said terminal post of said storage battery under constant tension; and
releasing means for opposably operating said jaw pieces against said biasing means to release said connector from contact with said terminal post of said storage battery.

5,011,438
METHOD FOR MANUFACTURING IMPROVED ELECTRICAL CONNECTOR
Jerry R. Awbrey, Winder, Ga., assignor to Esoteric Audio USA, Inc., Winder, Ga.
Filed Nov. 28, 1989, Ser. No. 442,052
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—825 **11 Claims**



1. A method of constructing an electrical connector comprising the steps of:
providing a slug;
shaping said slug into a cylinder having a characteristic longitudinal axis;
removing metal from a first end of said cylinder to form an elongated tip and a body portion adjoining said elongated tip;
boring into said elongated tip along said longitudinal axis to provide a hollow bore;
forming a multiplicity of tangs around said hollow bore in said elongated tip by making a plurality of cuts through said elongated tip along said longitudinal axis;
providing an insertion tool comprising a generally bell-shaped member and a shaft member attached to the concave surface of bell-shaped member at a first end and having a tapered tip at a second end of said chart member;
inserting said tapered tip of said insertion tool into said hollow bore in said elongated tip such that, as said tool is inserted, said tapered tip forces said multiplicity of tangs apart and said bell-shaped member subsequently forces said tangs back together; and
withdrawing said insertion tool.

5,011,439
SPRING CLIP ELECTRICAL CONNECTOR
Jeffrey J. Pawlicki, Downers Grove, Ill., assignor to Molex Incorporated, Lisle, Ill.
Filed Jan. 18, 1990, Ser. No. 466,810
Int. Cl.[5] H01R *13/187*
U.S. Cl. 439—847 **13 Claims**

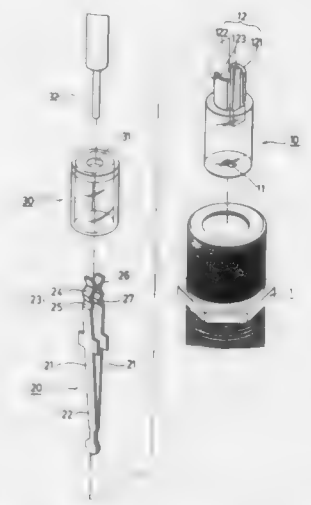


1. An electrical connector for mounting to a pin terminal in a high vibration environment, said connector including a connector terminal having a wire engaging end mounted to a wire and a mating end for engaging the pin terminal, wherein the improvement comprises:
the mating end of the connector terminal defines a split sleeve dimensioned to resiliently engage the pin terminal;
a spring clip comprising a split sleeve for sliding telescoping engagement over the split sleeve of the terminal, a pin engaging portion hingedly connected to the split sleeve of the spring slip and resiliently deflectable relative thereto, such that in an unbiased condition said pin engaging portion grippingly engages a pin disposed in the split sleeve of the terminal, and such that said pin engaging portion can be biased into a position to permit slidable movement of the split sleeve of the terminal over the pin the spring clip further including an actuator extending from the pin engaging portion for deflecting the pin engaging portion relative to the split sleeve of the spring clip.

5,011,440
WIRE CONNECTOR
Chun-Te Lee, No. 98-1, Chiu-She Lane, Chiu-She Li, Pei-Tun Dist., Taichung, Taiwan
Filed Sep. 10, 1990, Ser. No. 579,573
Int. Cl.[5] H01R *11/22*
U.S. Cl. 439—857 **2 Claims**

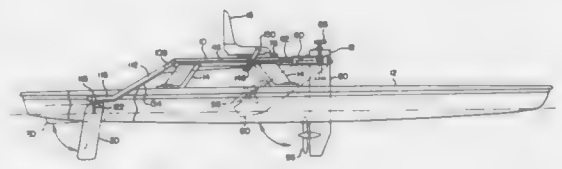
1. A wire connector including:
a first tubular member having a lower wall with a bottom through-hole and an upper wall with a top opening;
a second tubular member having a top wall with a top through-hole and a bottom wall with a bottom opening;

a pair of tongs joined at a bottom to form a V in profile and a top section with two bend portions, one on each tong, said two bend portions being abutting with each other, and said bottom joined section being adapted to be received in said first tubular member, said top section being adapted to be received in said second tubular member;
wherein the improvements are characterized by said first tubular member having a pair of opposed braces extending upward from said top wall, adjacent to said top opening,



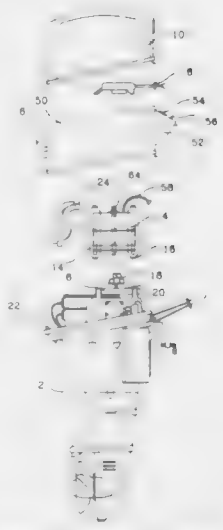
said pair of opposed braces preventing radial movement of said pair of tongs when said bottom joined section of said pair of tongs is seated in said first tubular member, and each of said bend portions of said pair of tongs being substantially W-shaped with a first upper bend and a second lower bend, said second lower bends being spaced apart and correspondingly curved towards each other, said first upper bends abutting each other, adjacent to said second lower bends and opposite said bottom joined section of said pair of tongs.

5,011,441
PEDAL OPERATED WATER CYCLE
John J. Foley, Lake Oswego; Ralph M. Eide, West Linn, and Ranald I. Macdonell, Tualatin, all of Oreg., assignors to Recreation Industries Company, Oak Grove, Oreg.
Continuation of Ser. No. 334,908, Apr. 7, 1989, abandoned. This application Sep. 11, 1990, Ser. No. 582,135
Int. Cl.[5] B63H *16/20*
U.S. Cl. 440—30 **11 Claims**



10. A water cycle comprising:
a pair of elongated parallel pontoons having forward and rearward ends,
a tubular main body member extending parallel with said pontoons and having an openn front end,
said body member having top, bottom and side wall surfaces with longitudinal guide portions formed in at least some of said wall surfaces,
at least one transverse support frame supporting said main body member centrally between said pontoons and thereabove,
forwardly facing seat means,
means mounting said seat means on said main body member for longitudinal adjustment for selectively locating a person on said cycle and providing a desired trim of the cycle on the water,
clamp means engageable with said guide portions for mounting said seat in its said selected adjusted position longitudinally of said body member,
a front removable longitudinal extension projecting in telescoping relation from the open end of said main body member and being adjustable longitudinally and removable relative to said main body member in non-rotatable engagement with said guide portions,
and an upright pedal drive propeller assembly on said extension adjustable with said extension to a selected pedaling distance from said seat.

5,011,442
AUXILIARY POWER GENERATION MEANS FOR OUTBOARD MOTORS
Laszlo Polcz, 878 Cabot Trail, Milton, Ontario, Canada L9T 3W3 , and Salvatore Sgro, 85 Clement Road, Etobicoke, Ontario, Canada M9R 1Z1
Filed Nov. 13, 1989, Ser. No. 435,054
Int. Cl.[5] B63H *21/26*
U.S. Cl. 440—900 **1 Claim**

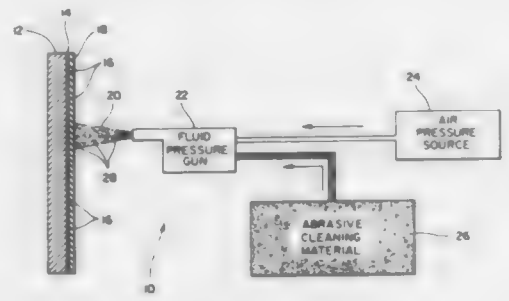


1. For use in outboard motors having a flywheel with a recoil starter mounted coaxially with facing sides adjacent to each other, an auxiliary power generation device comprising:
an alternator adapted for installation between said flywheel and said recoil starter, said alternator having a rotor shaft projecting from both ends of the alternator, for mounting coaxially with said flywheel and said recoil starter;
means mounted on the facing side of said flywheel for engaging means mounted on the near end of the rotor shaft of said alternator, whereby rotation of said flywheel produces rotation of said alternator rotor shaft, and vice versa;
means connecting said recoil starter with the other end of said rotor shaft.

5,011,443
CLEANING OF FLAT GLASS CRT FACEPLATE WITH INTERNAL ANTI-GLARE SURFACE
Yong S. Park, South Barrington, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.
Filed Jan. 2, 1990, Ser. No. 460,043
Int. Cl.[5] H01J *9/50*
U.S. Cl. 445—2 **10 Claims**

1. For use in re-using a flat glass faceplate in a color cathode ray tube (CRT) rejected during assembly, wherein the flat

glass faceplate includes a textured anti-glare finish as well as a plurality of layered video image producing and enhancing materials disposed on an inner surface thereof, a method for removing said layered materials and cleaning the inner surface of the flat glass faceplate comprising the steps of:



combining a gas under pressure with a solution containing small insoluble particles in forming a slurry; and

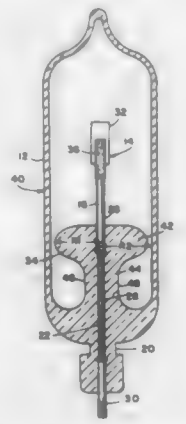
directing the slurry under pressure onto the inner surface of the flat glass faceplate for removing the layered materials therefrom without changing the texture of the anti-glare finish.

5,011,444

METHOD OF MAKING A LEAD-IN MOUNT AND SEAL

Nikolaos Barakitis, Salem, Mass., assignor to GTE Products Corporation, Danvers, Mass.

Division of [illegible]r. No. 342,063, Apr. 24, 1989, Pat. No. 4,970,425.
This application Aug. 1, 1990, Ser. No. 561,560
Int. Cl.[5] H01J *9/40*
U.S. Cl. 445—16 **4 Claims**



1. A method of manufacturing a thermal device comprising the steps of:

providing an envelope having an internal transverse cross-section of predetermined shape and dimensions;

forming a mount by providing a pair of lead-in conductors, forming a glass bead on said lead-in conductors, heating said glass bead to a softening point, forming said glass bead into a stem having a transverse portion having the cross-sectional shape of said envelope but with dimensions slightly less than that of said internal transverse cross-section and a tapering portion projecting from said transverse portion, moving said forming means to engage said softened glass bead, and removing said forming means from said mount;

sealing said envelope to said tapering portion of the mount at a point away from the transverse section;

exhausting said envelope; and

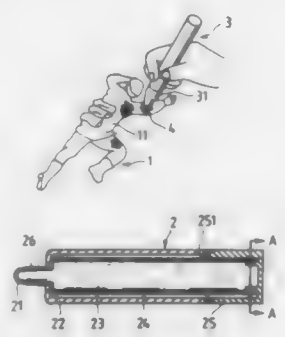
hermetically sealing said envelope.

5,011,445

COLOR MEMORY TOY SET

Norikazu Nakasuji, Aichi; Tsutomu Kito, Gifu, and Yutaka Shibahashi, Aichi, all of Japan, assignors to The Pilot Ink Co., Ltd., Aichi, Japan

Filed Feb. 8, 1990, Ser. No. 476,941
Claims priority, application Japan, Feb. 9, 1989, 1-14436[U]
Int. Cl.[5] A63H *33/22*
U.S. Cl. 446—14 **6 Claims**



1. A color memory toy set, comprising:

a color memory toy having a surface, at least one portion of said surface being provided with a color memory temperature-sensitive color changing layer colored with a coloring material comprising a color memory temperature-sensitive dye exhibiting hysteresis characteristics in response to temperature change between either (i) a colored state and a colorless state or (ii) a first color state and a second color state; and

at least one simulated writing pen, said simulated writing pen comprising a pen body with a metal simulated writing tip end and a hollow pipe, wherein hot water as a heat medium or pieces of ice or cold water as a chilling medium can be freely inserted and removed therefrom so as to respectively form a hot-pen or a cold-pen thereby;

wherein said hot-pen causes at least a part of an image to appear or disappear on said color memory temperature-sensitive layer by drawing an image on said layer whereby to change the color state of the drawn portion into a first state and said cold-pen causes at least a part of an image to appear or disappear on said color memory temperature-sensitive layer by drawing an image on said layer whereby to change the color state of the drawn portion to a second state.

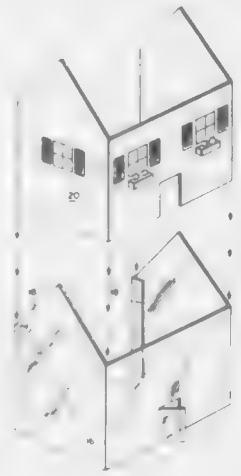
5,011,446

TRANSPARENT TOY HOUSE

Alec Feinberg, 4 Whiffletree Cir., Andover, Mass. 01810

Filed Nov. 6, 1989, Ser. No. 432,361
Int. Cl.[5] A63H *3/52, 33/00*
U.S. Cl. 446—85 **10 Claims**

1. A model of a structure having internal and external features comprising, a first plurality of fixedly attached transparent walls and a second plurality of fixedly attached transparent walls, said first and second plurality of walls removably engaged with each other, each of said walls having an inner side and an outer side, said walls shaped and sized to stimulate the walls of said structure, means bearing images of said features, and means for supporting said means bearing images of said features, said supporting means attached to said inner sides of the said walls, said means bearing images of said features



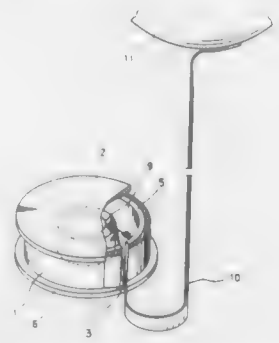
adapted to be removably supported on said supporting means with said images visible through said transparent walls.

5,011,447

BALLOON HOLDER

Hajime Watanabe, Saitama, Japan, assignor to Superloon K.K., Tokyo, Japan

Filed Jun. 21, 1990, Ser. No. 541,677
Claims priority, application Japan, Jun. 28, 1989, 1-76116[U]
Int. Cl.[5] A63H *3/06*
U.S. Cl. 446—220 **4 Claims**



1. A holder for attachment to a balloon comprising:

a shallow cylindrical external cap;

a cylindrical internal cap fitted into said external cap; each of said caps including a cylindrical sleeve having a disc shaped end flange extending beyond said sleeve;

a core having string wound thereon and stored under a free state having a movable axis of rotation inside of said external and internal caps;

each of said external and internal caps being equipped with a slit which communicates with each other when said external and internal caps are rotated, making it possible to pull out said string;

said internal cap having an outer wall and said external cap having an inner wall with said outer wall and said inner wall rotatable in close proximity to each other and spaced to clamp said string between said walls;

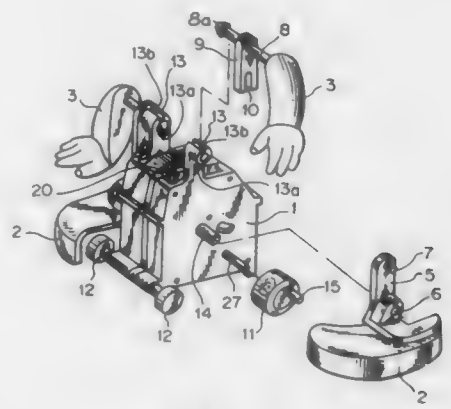
said external and internal caps and said core having a total weight thereof greater than the buoyancy of the balloon to be fitted.

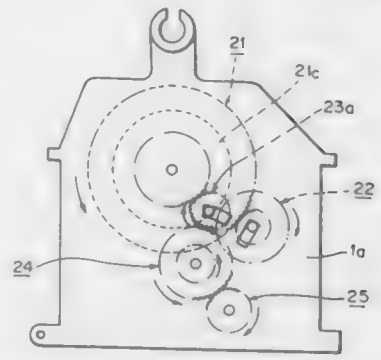
5,011,448

SPIRAL-SPRING-DRIVEN DOLL TOY

Kiyoji Asano, No. 2-14, Mibu-cho, Omochanomachi, 2-chome, Shimotsuga-gun, Tochigi-ken, Japan

Filed Dec. 4, 1989, Ser. No. 445,749
Claims priority, application Japan, Dec. 9, 1988, 63-159408[U]; Jul. 28, 1989, 1-88032[U]
Int. Cl.[5] A63H *11/10*
U.S. Cl. 446—293 **3 Claims**





1. A spiral spring-driven doll toy, comprising:

a housing having an upper portion and a plurality of bearings in said upper portion,

a gear mechanism provided within the housing,

a spiral spring connected with the gear mechanism for driving the gear mechanism,

a wheel shaft connected to the gear mechanism to be rotated by the gear mechanism,

two wheels fixed to said wheel shaft, said gear mechanism being structured so that said spiral spring is wound up by rotating said wheels backward and said wheels are rotated forward by said spiral spring when said wheels are released,

a wheel pin attached to each of said wheels eccentrically relative to said wheel shaft and extended in an axial direction from each of said wheels,

a plurality of leg portions rotatably mounted on said housing, each of said leg portions having a laterally extended leg pin and each of said leg portions having a groove therein for engagement with one of said wheel pins structured so that said leg portions are rotated to and fro when said wheels rotate, and

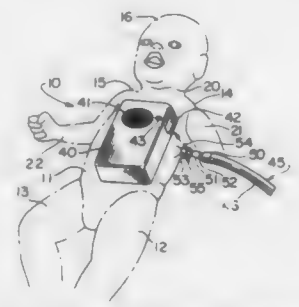
a plurality of arm portions, each of said arm portions having an individual arm shaft insertable in one of said bearings for rotatably mounting said arm portions on said housing, each of said arm portions also having an engaging piece with a recess and one of said leg pins engaging in said recess of one of said engaging pieces so when said leg portions are rotated to and fro said arm portions rotate oppositely to said leg portions.

5,011,449

APPENDAGE MOTION RESPONSIVE DOLL

John N. Handy, Long Beach, and Sterling S. Spector, Woodland Hills, both of Calif., assignors to Mattel, Inc., El Segundo, Calif.

Filed Mar. 26, 1990, Ser. No. 498,680
Int. Cl.[5] A63H *3/28*
U.S. Cl. 446—297 **8 Claims**



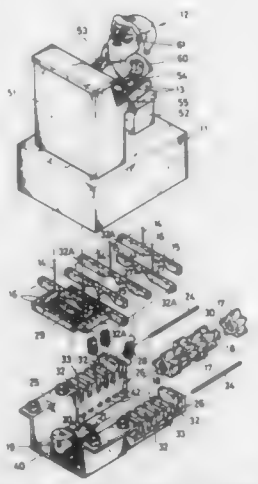
1. An appendage motion responsive doll comprising:
a torso portion;
a first appendage movably joined to said torso portion;
a first bend sensor coupled to said appendage and responsive to motion thereof; and
vocalizing means capable of producing a plurality of sound patterns coupled to said bend sensor for producing a selected one of said sound patterns corresponding to the degree of bending of said first bend sensor.

5,011,450

SOUND PRODUCING TOY WITH DRIVE MECHANISM FOR MOVABLE FIGURE

Francis Chen, P.O. Box 96-405, Taipei 10098, Taiwan

Filed Apr. 2, 1990, Ser. No. 502,794
Int. Cl.[5] A63H *5/00, 13/04*
U.S. Cl. 446—303 **4 Claims**



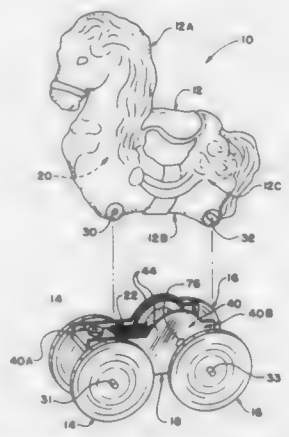
1. A toy combination comprising a base, a doll disposed upon said base, said doll including a plurality of movable parts, and a transmission device provided for manipulating a movement of said doll; said transmission device comprising:
a U-shaped frame being fixed on said base, a flat board being formed on a bottom of said U-shaped frame, a plurality of channels being formed on both side walls of said U-shaped frame;
a music bell being fixed on said flat board of said U-shaped frame, said music bell having a music code roller;
a cam shaft being coupled to said music code roller and being rotated in concert with said music code roller;
a plurality of cam wheels being disposed on said cam shaft;
a cam lever being provided upon each of said cam wheels, one end of each of said cam levers being received within a respective channel formed on said side walls of said U-shaped frame and being pivotally coupled therein, a plurality of holes being formed in an upper surface of each of said cam levers, a lower surface of each of said cam levers contacting with a respective cam wheel;
a plurality of rigid pull wires, one end of each of said rigid pull wires being connected with one of said movable parts of said doll, and the other end being connected with one of said holes formed on said upper surface of a respective cam lever; and
a plurality of springs, one end of each of said springs being connected with one of said cam levers, and the other end being coupled to a respective side wall of said Ushaped frame so that said cam levers are biased downward and so that said lower surfaces of said cam levers are biased to contact with said cam wheels; and
when said music code roller rotates, said cam shaft and said cam wheels being caused to rotate so that said cam levers are caused to move up and down by an engagement between said cam levers and said cam wheels, and so that said movable parts of said doll are caused to move up and down by said rigid pull wires.

5,011,451

MUSIC BOX SUBASSEMBLY AND A VEHICLE STRUCTURE INCLUDING THE SAME

Eugene S. Holtier, Olmsted Twp., Lorain County, Ohio, assignor to Those Characters From Cleveland, Inc., Cleveland, Ohio

Filed Feb. 28, 1990, Ser. No. 486,136
Int. Cl.[5] A63H *5/00, 17/34, 29/24;* **G10F** *1/06*
U.S. Cl. 446—409 **18 Claims**



1. A vehicle structure comprising a body with an internal cavity, a plurality of wheels connected with said body and adapted to enable said body portion to roll in forward and reverse directions along a surface, and a music generating device disposed in said internal cavity of said body;
said body having a fanciful external configuration;
said music generating device including a relatively rigid cylindrical member which is rotatable about a central axis thereof to enable said music generating device to generate music, and a first drive device which is rotatable about said central axis, said first drive device adapted to be engaged with said rigid cylindrical member to rotate said rigid cylindrical member therewith about said central axis;
a second drive device which is connected with at least one of said wheels, said second drive device being adapted selectively to engage said first drive device and to rotate said first drive device and said cylindrical member in one direction about said central axis when said one of said wheels rolls in at least one of said forward and reverse directions along the surface;

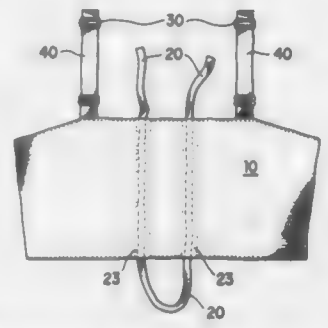
said first and second drive devices being relatively moveable between first and second orientations relative to each other, biasing means for biasing said first and second drive devices to said first orientation, said first and second drive devices being moveable to said second orientation against the force of said biasing means;
said second drive device being adapted to engage said first drive device and to rotate said first drive device and said cylindrical member in said one direction about said central axis when said first and second drive devices are in said second orientation and said one of said wheels rolls along the surface.

5,011,452

BREATHABLE BRASSIERE WITH ADJUSTABLE DRAWSTRING

Toby Kelly, 702 Pepperridge Rd., Bloomington, Ind. 47401

Filed Mar. 30, 1990, Ser. No. 502,418
Int. Cl.[5] A41C *3/00, 3/02*
U.S. Cl. 450—69 **20 Claims**



1. A brassiere comprising:
a substantially rectangular front panel constructed of non-stretch material, the front panel having opposed side ends;
a substantially rectangular continuous back panel constructed of stretch material, the back panel having opposed side ends, each said side end being connected to a side end of the front panel;
at least one drawstring provided in the front panel such that two drawstring ends extend out of the front panel at one edge thereof;
whereby when the drawstring ends are pulled away from the front panel, the front panel tightens; and
wherein the drawstring ends and the at least one drawstring are located in an area of the front panel which is substantially equidistant from the opposed side ends.

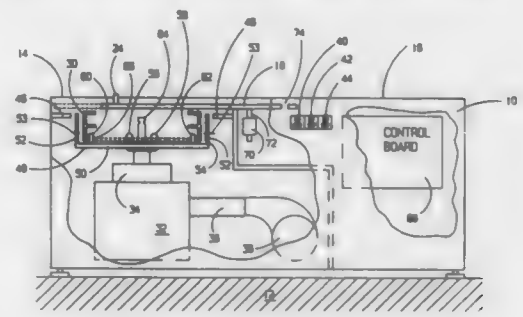
5,011,453

CENTRIFUGAL CRAB MEAT EXTRACTION APPARATUS

James M. Lapeyre, and George C. Lapeyre, both of New Orleans, La., assignors to The Laitram Corporation, New Orleans, La.

Continuation of Ser. No. 776,448, Sep. 16, 1985, abandoned. This application Jan. 28, 1987, Ser. No. 9,020
Int. Cl.[5] A22C *29/00*
U.S. Cl. 452—10 **17 Claims**

1. Apparatus for centrifugally extracting meat from crab bodies comprising:
a support structure;
rotary drive means supported by said support structure;
crab body holding means rotatably supported and releasably attached about a spin axis, said crab body holding means being driven by said drive means and being open at the top such that a plurality of crab bodies may be dropped or placed in said holding means, said crab body holding means further restraining a crab body in a selected orientation adjacent a meat passageway of said holding means, said selected orientation such that when said holding means spins around said spin axis, centrifugal forces on said crab bodies extracts crab meat through openings in the shell structure of said restrained crab body and propels said extracted meat from said holding means through said meat passageway;
meat receiving means operating in combination with said crab body holding means and located outward and peripherally of said holding means for collecting said extracted meat as it is propelled through said passageway, said meat receiving means having a spin axis coaxial and common with said crab body holding means and rotatably supported in an operating position and driven by said rotary drive means, and readily separable from said crab body holding means such that said meat receiving means may remain in said operating position when said crab body holding means is removed from said rotary drive means;
means for controlling said crab body holding means such that said crab body holding means may be accelerated from a non-spinning condition to a selected rotating speed at a first selected acceleration rate; and
means for decelerating said rotating crab body holding means.

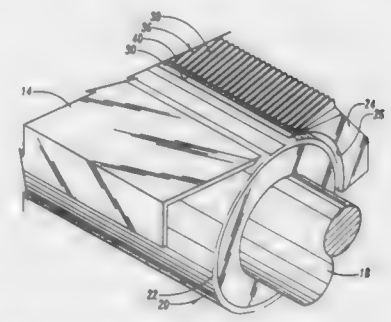


5,011,454

BLADE ATTACHMENT FOR MEAT SKINNING MACHINES

Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Filed Oct. 19, 1989, Ser. No. 423,849
Int. Cl.[5] A22B *5/16;* **A22C** *17/12*
U.S. Cl. 452—125 **1 Claim**



1. A meat skinning machine, comprising,
a frame,
a rotatably powered gripping roll having a cylindrical peripheral surface on said frame,
a plurality of meat gripping teeth on the peripheral surface of said gripping roll,
an elongated blade holding means on said frame extending parallel to said gripping roll and being positioned closely adjacent thereto,
an elongated blade secured to said blade holding means,
said blade having a forward edge portion protruding from said blade holding means and terminating in a sharp cutting edge which is closely adjacent the teeth on said gripping roll,

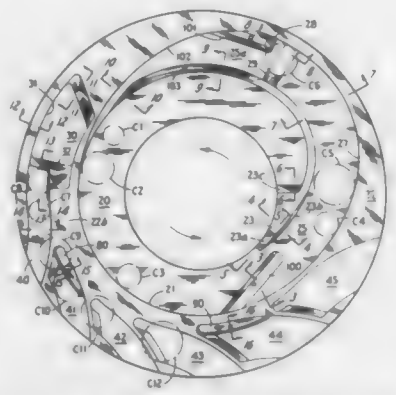
an elongated shoulder on said blade holding means,
said shoulder being comprised of a plurality of forwardly extending spaced teeth, said shoulder being a plate of solid continuous construction,
said plate having a base portion of solid construction with said spaced teeth being formed on the upper surface of said base portion,
said base portion having an inner edge, with said spaced teeth having outer spaced tips extending beyond said inner edge, with the forwardmost portions of said tips collectively comprising the forward edge of said plate,
said shoulder extending along said blade and being closely spaced rearwardly from said cutting edge of said blade to hold meat passing rearwardly thereover up and away from the teeth of said gripping roll as any membrane on said meat is severed from said meat by said cutting edge.

5,011,455

COIN SORTER WITH AUTOMATIC BAG-SWITCHING

James M. Rasmussen, Chicago, Ill., assignor to Cummins-Allison Corporation, Mt. Prospect, Ill.

Filed Feb. 12, 1990, Ser. No. 478,341
Int. Cl.[5] G07D *3/16*
U.S. Cl. 453—010 **8 Claims**



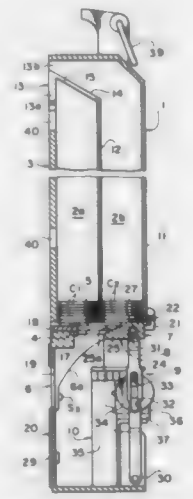
1. A coin sorting apparatus for receiving and sorting mixed coins by denomination, said apparatus comprising
a rotatable disc having a resilient surface for receiving said mixed denomination coins and imparting rotational movement to said mixed denomination coins,
means for rotating said disc,
a stationary guide plate having a contoured surface spaced slightly away from and generally parallel to said resilient surface of said rotatable disc, said guide plate including means for queuing the coins on said disc into a single file of coins, and a guiding edge which engages selected edges of the coins in said single file and guides said coins along a prescribed path where the positions of the engaged edges of the coins are determined by the diameters of the respective coins,
sorting means for discriminating among coins of different denominations and selecting coins of different denominations for discharge from said rotating disc at different locations around the periphery of said stationary guide plate,
said sorting means including at least two different selecting means for a prescribed coin denomination for discharging coins of that prescribed denomination at two different locations around the periphery of said guide plate, and
controllably actuatable shunting means associated with the first of said two different selecting means for shunting coins of said prescribed denomination past the first of said two different selecting means to the second of said two different selecting means so that said coins are discharged at the second of said two different locations.

5,011,456

COIN RECEIVING AND DISCHARGING APPARATUS

Osamu Kobayashi, Saitama; Mitsugu Mikami, Kawagoe; Kenji Nishiumi, Sakado, and Kenji Nakajima, Saitama, all of Japan, assignors to Kabushiki Kaisha Nippon Conlux, Japan

Filed Jun. 22, 1989, Ser. No. 370,245
Claims priority, application Japan, Jun. 22, 1988, 63-81680[U]; Jul. 9, 1988, 63-170035; Oct. 19, 1988, 63-135531[U]
Int. Cl.[5] G07D *1/00*
U.S. Cl. 453—32 **23 Claims**



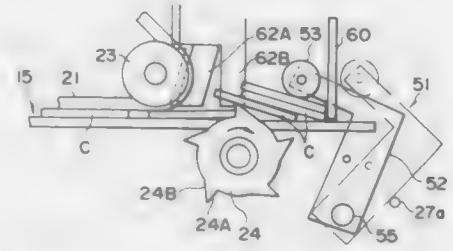
1. A coin receiving and discharging apparatus comprising a coin receiving unit and a coin discharging unit, said coin receiving unit and said coin discharging unit being removably coupled with each other:
wherein said coin receiving unit includes:
a housing vertically extending in the form of a hollow square pillar and having a front side, a rear side and left and sides, said housing being longer in depth than in width;
front and rear coin cases formed by dividing the interior of said housing with a partition plate extending in parallel with said front and rear sides of said housing for receiving coins in a horizontally piled state, said front and rear coin cases having respectively open lower ends positioned in one and the same horizontal plane;
a pair of coin inserting slits formed in an upper portion of said front side of said housing, and including a vertically elongated slit for inserting a coin therethrough into said front coin case and a horizontally elongated slit for inserting another coin therethrough into said rear coin case, said vertical and horizontal slits being combined with each other to form a T-shaped coin inlet;
coin introducing means provided in said housing for selectively introducing coins from said respective coin inserting slits into said front coin case and said rear coin case, and including a guide plate arranged to connect a lower edge of said horizontal slit and an upper end of said partition plate so as to incline downward toward said upper end, whereby a coin inserted through said horizontal slit is slid down on said guide plate and dropped into said rear coin case, and an elongated slit formed in said guide plate between said vertical slit and said upper end so as to enable another coin to vertically wholly enter from said vertical slit into said front coin case;
coin guiding means provided under said front and rear coin cases for selectively accepting one of two coins lying in the respective lowest layers in said front and rear coin cases and successively dropping said one coin into said coin discharging unit, said coin guiding means having a plate-like guide member horizontally secured to said respective open lower ends of said front and rear coin cases and having a coin passing hole the diameter of which is not less than a coin diameter and the central axis of which is positioned just under a lower end of said partition plate, and a sliding plate mounted on an upper surface of said guide member so as to be reciprocal forward/rearward between said open lower ends and said guide member and having a coin accepting hole which has a diameter not less than the coin diameter and an edge thickness substantially equal to a coin thickness and traverses right over said coin passing hole of said guide member when said sliding plate is reciprocated, said sliding plate having a socket formed in a lower surface thereof to open downward; and
wherein said coin discharging unit includes:
a coin discharging section detachably disposed under said coin guiding means of said coin receiving unit for discharging a coin dropped by said coin guiding means to the exterior of said coin discharging unit;
driving means detachably engaged with said socket of said sliding plate of said coin guiding means for horizontally reciprocating said sliding plate forward and rearward; and
controlling means for selectively controlling said driving means so that said sliding plate of said coin guiding means is moved to accept one of the coins in said front and rear coin cases into said coin accepting hole of said sliding plate and successively to drop the coin into said coin discharging section at each reciprocation of said sliding plate.

5,011,457

COIN STACKING APPARATUS

Ichiro Takatani, Hyogo; Nobuyuki Nakatani, Himeji, and Shigeru Minami, Hyogo, all of Japan, assignors to Glory Kogyo Kabushiki Kaisha, Hyogo, Japan

Continuation-in-part of Ser. No. 138,889, Dec. 28, 1987, Pat. No. 4,869,029. This application Sep. 5, 1989, Ser. No. 403,474
Claims priority, application Japan, Dec. 26, 1986, 61-308244
Int. Cl.[5] G07D *9/06;* **B65G** *57/30*
U.S. Cl. 453—61 **9 Claims**



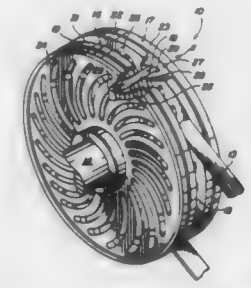
5. A coin stacking apparatus comprising:
conveyor means (**21**) for transporting coins (c) in a horizontal row along a coin guideway (**15**) leading to a coin stacking position adjacent to a vertically extending coin stacking space; and
means for stacking the coins at said coin stacking position into the coin stacking space, said means for stacking the coins comprising a stacking ratchet (**24**) rotatable about a horizontal axis perpendicular to the direction of said row, said ratchet having a series of teeth formed circumferentially thereon, each of said teeth having a non-sloping side (**24A**) and a sloping side (**24B**);
said stacking ratchet (**24**) being disposed at such a position immediately below the coin stacking space that a downstream part of the ratchet with respect to the direction of transporting coins is within a horizontal range of the coin stacking space and that the remaining upstream part of the ratchet is upstream of said horizontal range;
said ratchet being so disposed that each of the teeth has the non-sloping side (**24A**) thereof facing the coins being transported toward the coin stacking position and takes a position above said guideway (**15**) so as to be abutted against by the coins on the guideway, when each of the teeth is at a topmost position of the ratchet;
the arrangement of the teeth of the ratchet and the guideway being such that when a coin being transported abuts against the non-sloping side of each tooth at the topmost position, the ratchet is turned about its horizontal axis so as to cause the tooth at the topmost position to move obliquely downward into the horizontal range of the coin stacking space while causing the following tooth to move obliquely upward to the topmost position and then beyond the topmost position, for lifting a trailing part of the coin above the guideway by means of the sloping side of the following tooth with a leading part of the coin supported on the guideway and for feeding the coin into the coin stacking space with an attitude in which the trailing part is higher than the leading part.

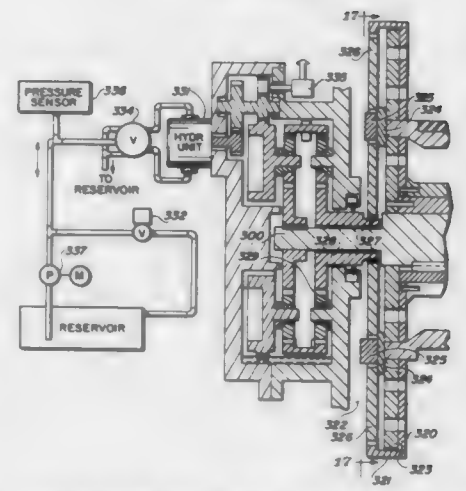
5,011,458

CONTINUOUSLY VARIABLE TRANSMISSION USING PLANETARY GEARING WITH REGENERATIVE TORQUE TRANSFER AND EMPLOYING BELT SLIP TO MEASURE AND CONTROL PULLEY TORQUE

Emerson L. Kumm, Tempe, Ariz., assignor to Kumm Industries, Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 269,471, Nov. 9, 1988, abandoned. This application Sep. 12, 1989, Ser. No. 406,975
Int. Cl.[5] F16H *9/10, 59/46*
U.S. Cl. 474—49 **24 Claims**





1. A continuously variable, regenerative transmission mechanically disposed intermediate a prime mover source of variable rotational power and variable unidirectional rotational speed output and a geared output shaft having a variable rotational rate and variable rotational direction, said regenerative transmission comprising:
(A) a continuously variable transmission assembly
(1) a first variable diameter pulley;
(2) a first actuator for establishing the diameter of said first variable diameter pulley;
(3) a second variable diameter pulley;
(4) a second actuator for establishing the diameter of said second variable diameter pulley; and
(5) a belt coupling said first and second variable diameter pulleys;

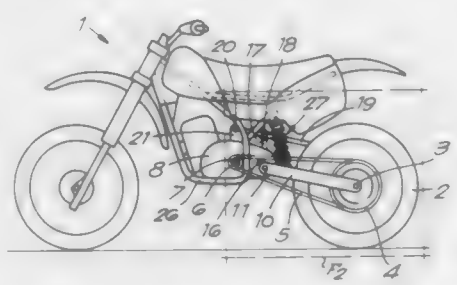
(B) an input shaft coupled to said first variable diameter pulley and to a prime mover;
(C) a sun gear shaft coupled to said second variable diameter pulley, said sun gear shaft carrying a high gear rotating therewith;
(D) a planetary gear assembly coupled to said sun gear shaft, said planetary gear assembly including:
(1) a sun gear rotating with said sun gear shaft;
(2) a planet carrier rotatably about said sun gear shaft axis;
(3) a plurality of planet gears carried by said planet carrier and meshing with said sun gear;
(4) a ring gear meshing with said planet gears; and
(5) a low gear rotating with said ring gear;
(E) transfer means coupling rotation of said input shaft to said planet carrier;
(F) an output shaft, said output shaft having an output gear rotating therewith;
(G) a high output gear rotatably carried by said output shaft, said high output gear being coupled to said high gear;
(H) a low output gear rotatably carried by said output shaft, said low output gear being coupled to said low gear;
(I) a high clutch adapted to selectively couple said high output gear to said output shaft;
(J) a low clutch adapted to selectively couple said low output gear to said output shaft; and
(K) control means including:
(1) means to sense the rate of rotation of said output gear, on said output shaft;
(2) means to give a desired rotational direction of said output gear, on said output shaft;
(3) means to sense the rotation-al direction of said output gear, on said output shaft;
(4) means to sense the rate of rotation of a prime mover;
(5) means to adjust the rate of rotation of a prime mover;
(6) means to actuate at least one of said high and low clutches; and
(7) means to adjust said first and second actuators to obtain a belt slip that corresponds to a pulley torque versus belt tension which results in rotation of said output gear in the desired direction at a rate according to a predetermined ratio of the rate of rotation of the prime mover with respect to the rate of rotation of said output gear.

5,011,459

WHEEL SUSPENSION FOR A WHEEL DRIVEN BY AN ENDLESS TRANSMISSION

Alfons Van De Vel, Kretenborg 39, B - 2580 Sint-Katelijne-Waver, Belgium

PCT No. PCT/BE89/00002, § 371 Date Sep. 6, 1989, § 102(e) Date Sep. 6, 1989, PCT Pub. No. WO89/06203, PCT Pub. Date Jul. 13, 1989
PCT Filed Jan. 6, 1989, Ser. No. 415,264
Claims priority, application Fed. Rep. of Germany, Jan. 7, 1988, 8800009
Int. Cl.[5] F16H *7/08;* **B62K** *25/02*
U.S. Cl. 474—101 **12 Claims**



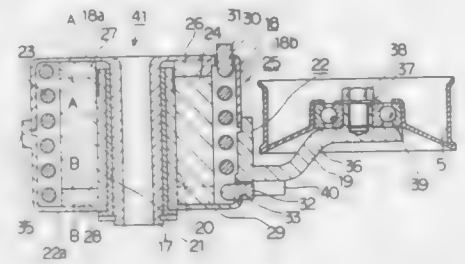
1. A wheel suspension for suspending a wheel relative to a vehicle part and driven by an endless transmission, comprising:
an endless element and two rotating elements supporting the endless element, a first of the rotating elements being rotatable with respect to the vehicle part around a first axis, a second of the rotating elements being rotatable around a second axis;
the suspension comprising two rocking arms each having first and second ends;
the wheel and the second rotating element of the transmission being rotatably supported between the first ends;
the suspension further comprising two levers rotatably connected to each other, a first of the levers being rotatably connected to the second ends around a rocking axis;
a second of the levers being rotatably connected to the vehicle part, the levers assuring that during rocking of the rocking arms, the rocking axis of the second ends is always located on a theoretical line drawn through the of the first rotating element and the second rotating element of the transmission, the distance between said rotating axes remaining at least approximately constant.

5,011,460

BELT TENSIONER WITH ELASTIC DAMPING FEATURE

Hideo Ouchi, Sagamihara, and Kouichi Sakai, Zama, both of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 9, 1990, Ser. No. 491,218
Claims priority, application Japan, Mar. 16, 1989, 1-62164; Apr. 14, 1989, 1-93052
Int. Cl.[5] F16H *7/12*
U.S. Cl. 474—133 **12 Claims**



1. A belt tensioner comprising a fixed shaft of a fixed member, a pivotal member adapted to be rotated about said fixed shaft as the center of rotation, a tension pulley provided at the end of an arm member extended radially from said pivotal member and pivotally mounted on said pivotal member by a pivot extending parallel to said fixed shaft, a spring having one end retained by said pivotal member and adapted for applying to said pivotal member a spring force pressing said tension pulley to a belt, and a solid damping device provided between said pivot member and said fixed member and having one axial end secured to said pivotal member and the other axial end secured to said fixed member, wherein a relative movement between said fixed member and said pivotal member causes said solid damping device to be twisted, and the deformation of said spring and the deformation of said solid damping device during usage are adapted to be set independently of each other.

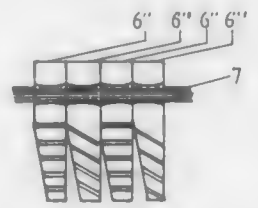
5,011,461

TRANSMISSION PROVIDED WITH A DRIVING BELT AND V-SHAPED PULLEYS

Theodorus M. J. Brouwers, De Kaatsheuvel, Netherlands, assignor to Van Doorne's Transmissie B.V., Netherlands

Filed Jan. 9, 1990, Ser. No. 462,266
Claims priority, application Netherlands, Feb. 3, 1989, 8900266
Int. Cl.[5] F16H *55/38;* **F16G** *5/20*
U.S. Cl. 474—188 **23 Claims**

1. Transmission provided with at least one driving belt and V-shaped pulleys in a wet environment, whereby said driving belt comprises a plurality of side by side transverse elements each provided with converging side faces for intermating with contact surfaces of said V-shaped pulleys, whereby said side faces of said transverse elements have a non-continuous surface provided with grooves located between ridges, whereby each



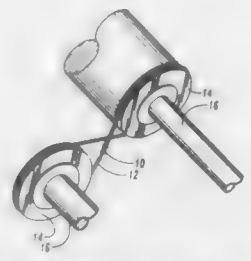
of said grooves has a width which is at least as large as one and a half-times the width of the ridges on either side thereof.

5,011,462

CONNECTOR FOR CONNECTIBLE BELT AND METHOD FOR USING SAME

Thomas R. Smith, Newton, Iowa, assignor to Pyramid, Inc., Newton, Iowa

Filed May 29, 1990, Ser. No. 529,946
Int. Cl.[5] F16G *15/00*
U.S. Cl. 474—255 **7 Claims**



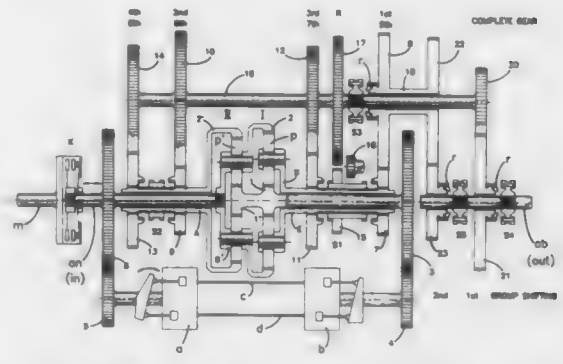
1. A belt connector for connecting first and second ends of an elongated belt, said first and second ends each comprising a loop formed from an elongated elastomeric loop member, said loop member having a hook engaging portion of predetermined cross sectional size; said connector comprising:
an elongated connected body having a fist J-shaped hook at one of its ends and a second J-shaped hook at the other of its ends; and
said first and second J-shaped hooks each forming an elongated hook slot having an inner end, said hook slot having a longitudinal axis and having a width smaller than said predetermined cross sectional size of said hook engaging portions of said elastomeric loop members of said first and second loops whereby hooking each of said first and second hook members over side hook engaging portions of said first and second loop members respectively, causes said hook engaging portion of said loop member to be compressed by each of said first and second J-shaped hooks into a compressed portion, the cross sectional shape of said compressed portion being elongated and having a longitudinal axis extending in the same direction as said longitudinal axis of said hook slot.

5,011,463

INFINITELY VARIABLE HYDROSTATIC MECHANICAL POWER SHIFT GEAR WITH GROUP SHIFTINGS

Friedrich Jarchow, Am Ruhrstein 37, 4300 Essen 1, and Peter Tenberge, Nelkenweg 8, 7990 Friedrichshafen, both of Fed. Rep. of Germany

Continuation of Ser. No. 160,905, Feb. 26, 1988, abandoned, which is a continuation-in-part of Ser. No. 10,451, Feb. 3, 1987, abandoned, which is a continuation of Ser. No. 842,488, Mar. 21, 1986, abandoned. This application Sep. 28, 1989, Ser. No. 414,098
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1985, 3512523; May 21, 1985, 3510265; Feb. 19, 1986, 3605203
Int. Cl.[5] F16H *47/04*
U.S. Cl. 475—74 **16 Claims**



1. An infinitely variable hydrostatic mechanical power shift gear consisting of a four shaft epicyclic gear including at least two planetary stages, each having a shaft, one of said shafts being an input shaft (in) which is connected via first gear wheels (6, 5), second gear wheels (4, 3) and an infinitely variable hydrostatic gear (a, b) with a second shaft (1, 1'), the two remaining shafts of said epicyclic gear being connecting shafts (E and A) which, in one extreme position of the hydrostatic gear, have the same speed and during adjustment of the hydrostatic gear into the other extreme position vary their speed in such a way that one (E) becomes constantly slower and the other (A) constantly faster, a pair of countershafts **19** and **18** and a plurality of gear pairs connecting one or the other of said shafts A and E to one or the other and said countershafts **19** and **18**, a plurality of clutches, each of said clutches being responsive to speed changes for selectively connecting one of said gear pairs between shafts to a shaft driven through said planetary stages to transmit motion between one of said shafts A or E to said countershaft **19** or to transmit motion between one of said shafts A or E to said countershaft **18**, an output gear on each of said shafts **18** and **19**, an output shaft having a pair of output receiving gears thereon, one output receiving gear engaging an output gear on countershaft **19** and the other engaging an output gear on countershaft **18** and clutch means on said output shaft for selectively connecting one or the other of said gears to said output shaft.

5,011,464

TWO-SPEED AUTOMATIC TRANSMISSION

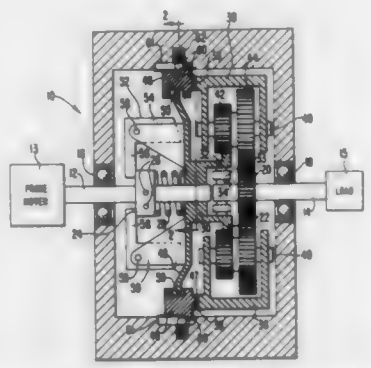
Robert C. White, San Diego, Calif., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Mar. 23, 1990, Ser. No. 498,211
Int. Cl.[5] F16H *3/44*
U.S. Cl. 475—260 **12 Claims**

1. A two speed transmission comprising:
an input shaft having a drive sun gear adapted to rotate about an axis;
an output shaft having a driven sun gear;
a planetary gear assembly having a planet carrier supporting a shaft containing a plurality of gears for engagement with said drive and driven sun gears respectively;
a clutch which prevents the output shaft from rotating at a

rotational speed less than the instantaneous rotational speed of the input shaft; and

a speed change mechanism including a non-rotating slide member which axially shifts in response to input shaft speed between a first axial position and a second axial position, said first axial position being effective to engage



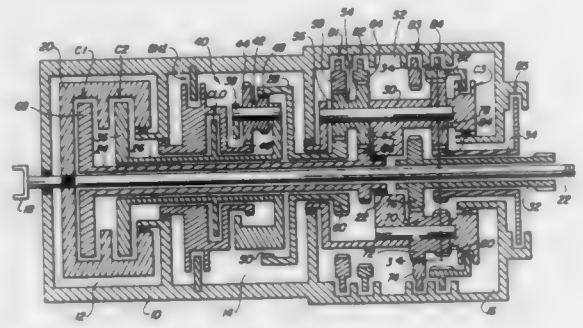
the planet gear carrier to prevent rotation of the planet gear carrier thereby to drive the output shaft at a rotational speed greater than the rotational speed of the input shaft, and said second axial position being effective to allow said planet gear carrier to rotate freely and the clutch to drive the output shaft at the rotational speed of the input shaft.

5,011,465

WIDE SPEED-RANGE MULTI-SPEED POWER SHIFT TRANSMISSION

Dennis L. Jeffries, Waterloo; Gordon L. Marquart, Jesup, both of Iowa, and Timothy J. Mattson, Golden Valley, Minn., assignors to Deere & Company, Moline, Ill.

Filed Apr. 20, 1990, Ser. No. 511,697
Int. Cl.[5] F16H *57/10*
U.S. Cl. 475—279 **14 Claims**



1. A vehicle transmission comprising:

(a) a transmission housing;

(b) an input shaft extending into said transmission housing;

(c) a main planetary carrier within said housing carrying a first set, a second set and a third set of planetary gears, at least the first and second of said three sets being comprised of double gears having first and second sides. the gears of said third set meshing with the second side of the gears of said second set;

(d) first and second clutches controlling power flow from said input shaft through first and second main drive paths to said main planetary carrier;

(e) a hi-lo planetary in said second main drive path;

(f) a first ring gear and a first sun gear meshing with the first side of said first set of planetary gears, said second main drive path providing lower to said first sun gear;

(g) first brake means for selectively braking said first ring gear against rotation relative to said housing;

(h) a second ring gear and a second sun gear meshing with the second side of said first set of planetary gears, said first main drive path providing power to said second sun gear;

(i) second brake means for selectively braking said second ring gear against rotation relative to said housing;

(j) a third ring gear and a third sun gear meshing with the first side of said second set of planetary gears;

(k) third brake means for selectively braking said third ring gear against rotation relative to said housing;

(l) a fourth ring gear and a fourth sun gear meshing with said third set of planetary gear;

(m) fourth brake means for selectively braking said fourth ring gear against rotation relative to said housing;

(n) fifth brake means for selectively braking said fourth sun gear against rotation relative to said housing;

(o) third clutch means for selectively clutching said fourth sun gear against rotation relative to said main planetary carrier; and

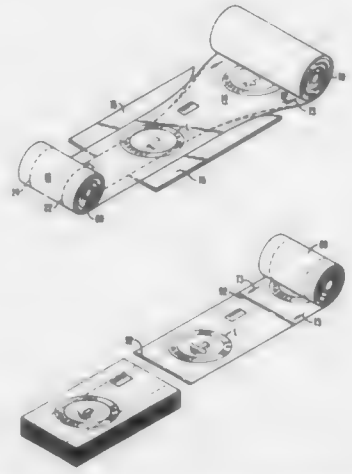
(p) an output shaft fixed for rotation with said fourth sun gear and extending out of said transmission.

5,011,466

METHOD OF MAKING A T-SHIRT GROCERY BAG HAVING A COUPON

Robert B. DeMatteis, Grass Valley, Calif., and Wayne A. Pflueger, Salt Lake City, Utah, assignors to Cupples Paper Bag Company, La Mirada, Calif.

Continuation-in-part of Ser. No. 185,633, Apr. 26, 1988, Pat. No. 4,909,636. This application Sep. 21, 1989, Ser. No. 410,697
The portion of the term of this patent subsequent to Mar. 20, 2007, has been disclaimed.
Int. Cl.[5] B31B *23/88, 37/88*
U.S. Cl. 493—188 **6 Claims**



1. A process of forming a coupon and a plastic bag, comprising the steps of:

imprinting a collapsed endless tube with coupon indicia adjacent an intended opening of said bag, said coupon being disposed approximately centrally of said endless tube, and said tube having a first and a second side edge;

imparting a first and a second "W" fold to said imprinted collapsed endless tube, each said imparted "W" fold being to a respective side edge of said bag and not under said imprinted coupon indicia;

sealing and severing said tubing to form a sealed bottom and a sealed top defining the bag, said bag including a side;

cutting said top to form said opening in said bag; and

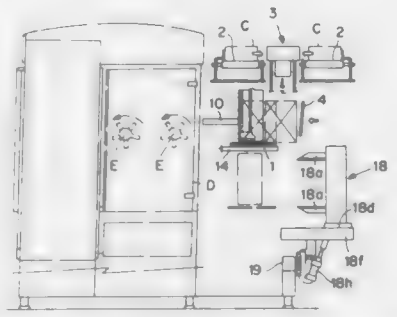
defining during said cutting step at least one detachable coupon overlying said coupon imprinted indicia whereby said bag is formed with a severable coupon.

5,011,467

TRANSPORT DEVICE FOR PACKING CONTAINER BLANKS

Paul Traegaardh, Tokyo, Japan, assignor to AB Tetra Pak, Lund, Sweden

Filed Aug. 31, 1989, Ser. No. 401,004
Claims priority, application Japan, Sep. 1, 1988, 63-220025
Int. Cl.[5] B32B *1/78*
U.S. Cl. 493—309 **4 Claims**



1. A transport device for packaging container blanks comprising:

vertically movable platform means for positioning a package of a plurality of flattened packaging container blanks covered with packaging material disposed around the plurality of flattened packaging container blanks;

cutting means for cutting the packaging material disposed around the plurality of flattened packaging container blanks to expose the flattened packaging container blanks for further processing;

main magazine means for stacking the plurality of exposed blanks after removal of the packaging material;

supply means for supplying individual blanks, one at a time from said main magazine means for further processing;

robot means including grasping means for grasping a predetermined number of blanks disposed on said platform and delivering said predetermined number of blanks to said main magazine; and

raising means receiving individual blanks from said supply means for opening said individual blanks into blanks which are parallelpiped in shape solely by pressure exerted on exterior corners of the individual blanks.

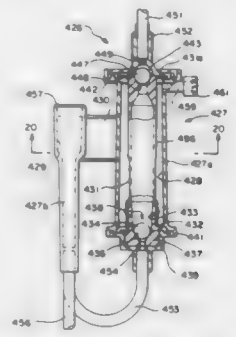
5,011,468

RETROPERFUSION AND RETROINFUSION CONTROL APPARATUS, SYSTEM AND METHOD

Ingemar H. Lundquist, Pebble Beach; Zoltan Tarczy-Hornoch, Berkeley, and Thomas J. Kardos, Laguna Beach, all of Calif., assignors to Retroperfusion Systems, Inc., Costa Mesa, Calif.

Continuation of Ser. No. 198,441, May 25, 1988, abandoned, which is a continuation-in-part of Ser. No. 120,591, Nov. 13, 1987, abandoned, which is a continuation-in-part of Ser. No. 56,401, May 29, 1987, abandoned. This application Apr. 16, 1990, Ser. No. 511,930
Int. Cl.[5] A61M *1/00*
U.S. Cl. 600—18 **12 Claims**

1. In a control apparatus for supplying arterial blood of a patient to the venous side of a patient's organ, the apparatus comprising a balloon catheter having a distal extremity and an inflatable balloon carried by the distal extremity, the catheter having a balloon inflation lumen in communication with the balloon and a blood flow lumen extending through the balloon, a blood pump having an inlet adapted to be connected to an arterial blood vessel of the patient and having an outlet adapted to be connected to a venous blood vessel of the patient, motorized means for operating the blood pump in synchronism with the operation of the heart and gas pressure generation means connected to the balloon inflation lumen for inflating and



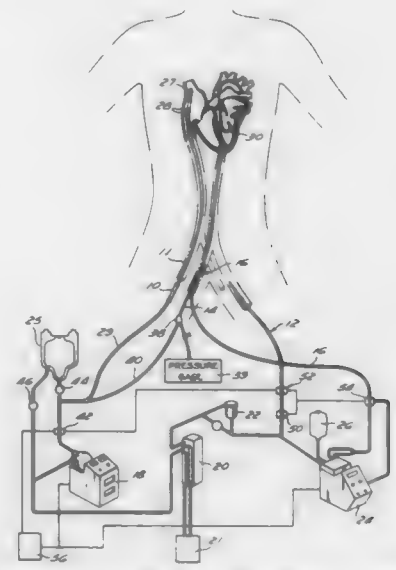
deflating the balloon out of synchronism with the motorized means for operating the blood pump.

5,011,469

PERIPHERAL CARDIOPULMONARY BYPASS AND CORONARY REPERFUSION SYSTEM

Gerald D. Buckberg; James V. Maloney, Jr., both of Los Angeles; Kenneth A. Jones, Lake Elsinore, and Weldon D. West, Mission Viejo, all of Calif., assignors to Shiley, Inc., Irvine, Calif.

Filed Aug. 29, 1988, Ser. No. 237,969
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—4 **35 Claims**



1. An extracorporeal bypass apparatus, comprising:

a venous catheter for insertion into a femoral vein, such catheter being sufficiently long and flexible to reach the atrium area of a patent's heart;

an arterial cannula;

a single pump connected between the venous catheter and the arterial cannula for withdrawing blood from a patient through said venous catheter and pumping it into a patient through the arterial cannula; and

a vent catheter for insertion into an artery sufficiently long and flexible to reach the left ventricle of the heart, said vent catheter being connected in parallel with the venous catheter connected to the pump in a manner such that the negative pressure developed by said pump is applied to the venous catheter and the vent catheter,

said venous catheter and said pump being constructed such that substantially all of the patient's blood which would normally be returned to the heart is bypassed through the

venous catheter, and the blood reaching the left ventricle of the heart is withdrawn through the vent catheter so that the ventricle is decompressed;

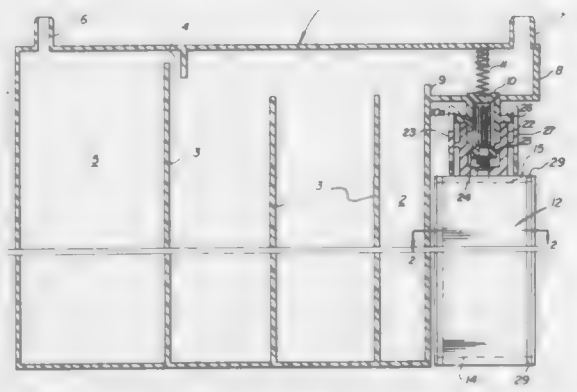
said vent catheter being a thin-walled flexible tube which has a coiled distal end, which is adapted to conform to a guide wire used in inserting the vent catheter.

5,011,470

COMBINED SURGICAL DRAINAGE AND AUTOTRANSFUSION APPARATUS

Robert J. Kurtz, New York, and Joseph LiCausi, Port Jefferson Station, both of N.Y., assignors to BioResearch, Inc., Farmingdale, N.Y.

Filed Aug. 29, 1990, Ser. No. 574,114
Int. Cl.[5] A61M *37/00, 1/00*
U.S. Cl. 604—4 **14 Claims**



10. An autotransfusion apparatus comprising, in combination, a drainage device including a collection chamber, a suction regulator for said drainage device, an inlet passageway in said drainage device communicating with said collection chamber, an outlet passageway to a suction source, a fluid retention chamber disposed in the fluid flow path between the inlet passageway and the collection chamber, an outlet opening in said fluid retention chamber, a collapsible autotransfusion bag, a single connector means on said autotransfusion bag, said single connector means extending through the outlet opening in said fluid retention chamber, and means operatively associated with said autotransfusion bag for maintaining the autotransfusion bag in an expanded condition, said single connector means having a passageway therein to provide an air flow path from the autotransfusion bag to the suction source and to provide a passageway for blood flow from the fluid retention chamber into the autotransfusion bag.

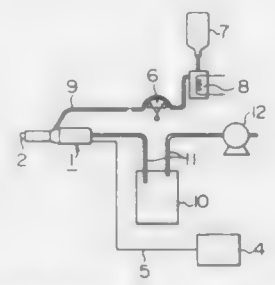
5,011,471

EXCRETIONS TREATING APPARATUS

Kazuoki Miyazaki, Odawara; Yasuo Noguchi; Naohiko Inoue, both of Yokohama, and Morito Idemoto, Yokohama, all of Japan, assignors to Sumitomo Bakelite Company Limited, Tokyo, Japan

PCT No. PCT/JP88/01319, § 371 Date Aug. 16, 1989, § 102(e) Date Aug. 16, 1989, PCT Pub. No. WO89/05612, PCT Pub. Date Jun. 29, 1989
PCT Filed Dec. 23, 1988, Ser. No. 399,549
Claims priority, application Japan, Dec. 24, 1987, 62-325506; May 17, 1988, 63-64020[U]
Int. Cl.[5] A61B *17/20*
U.S. Cl. 604—22 **18 Claims**

1. An excretions treating apparatus for evacuating excrements in a rectum comprising an insert accomodating a horn which is mechanically vibrated by ultrasonic oscillation means, irrigation means for injecting cleaning liquid into the rectum, and means for excreting and removing excrements which has



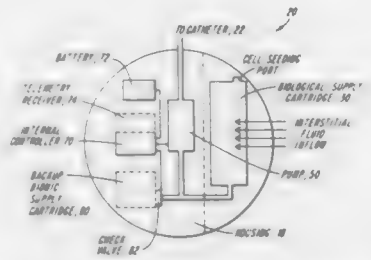
been crushed and emulsified, wherein said irrigation means includes a preheater for previously heating said cleaning liquid.

5,011,472

IMPLANTABLE DELIVERY SYSTEM FOR BIOLOGICAL FACTORS

Patrick Aebischer; Pierre M. Galletti, both of Providence; George Panol, Warwick, all of R.I., and Luigi Miracoli, Genoa, Italy, assignors to Brown University Research Foundation, Providence, R.I.

Filed Oct. 6, 1988, Ser. No. 240,939
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—50 **12 Claims**



1. A delivery device for delivering a biologically active factor to a subject, the device comprising: a cell reservoir means for receiving at least one active, factor-secreting cell, said means including a chamber having at least one semipermeable membrane, said membrane adapted to be held in contact with a source of body fluid for introducing body fluid into said reservoir means; and

pumping means for transporting a secreted active factor from said reservoir means to a selected region in a subject, whereby at least one active, factor-secreting cell is located within said reservoir means for secreting an active factor, which active factor is carried to said selected region via body fluid introduced into said reservoir through said membrane.

5,011,473

DEVICE FOR SECURING AND POSITIONING A WIRE TO A NEEDLE

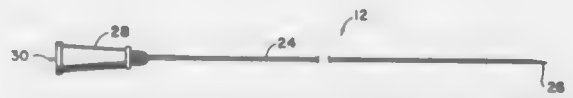
Roland F. Gatturna, Walpole, Mass., assignor to Mitek Surgical Products Inc., Dedam, Mass.

Filed Jun. 6, 1989, Ser. No. 362,013
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—51 **14 Claims**

1. A device for locking and positioning a probe wire for use with a straight, tubular cannula needle having a sharp point at a front end and a hub at a back end, wherein the hub has an open-ended longitudinal socket, the probe wire is slidably received in the cannula needle, and the probe wire has a J-shaped hook at its distal end which end assumes the straight configuration of the cannula needle when sheathed therein but assumes a hook configuration when pushed through the cannula needle, said device comprising:

(a) a clamp having a medial body, guide means and clamping means, said guide means longitudinally extending from a front end of said body, said clamping means longitudinally extending from a back end of said body, said clamping means having a frusto conical tip at its outer back end and a threaded portion at its inner front end, said guide means being sized and shaped to be received in the hub socket;

(b) a cap having a longitudinally disposed internal chamber that is open at a front end of said cap, said chamber having a frusto conical cavity at its inner back end and an internally threaded portion at its front end, wherein said frusto



conical cavity is configured to matingly receive said frusto conical tip, and said internally threaded portion is configured to receive said threaded portion of said clamping means; and

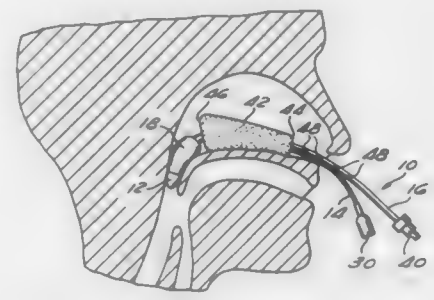
(c) said clamp and said cap each having a longitudinally-extending bore through which the probe wire is slidably received, said clamping means being designed (a) to permit the probe wire to slide in said bore when said cap is loosely threaded on said threaded portion of said clamping means and (b) to captively hold the probe wire when said cap is tightly threaded on said threaded portion of said clamping means.

5,011,474

METHODS FOR CONTROLLING NASAL HEMORRHAGING

H. George Brennan, 1137 Granville, Newport Beach, Calif. 92660

Continuation-in-part of Ser. No. 197,835, May 24, 1988, Pat. No. 4,883,465. This application May 2, 1989, Ser. No. 346,240
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—54 **6 Claims**



1. A method of controlling nasal hemorrhaging during a nasal operation or other nasal procedure without exerting direct pressure on the area of bleeding, comprising the steps of:

inserting a low pressure expandable sealing cuff into the nasal cavity of a patient through the anterior nares;

inflating said cuff to a sufficiently low intracuff pressure that will cause said cuff to occlude the choanae without causing damage to the mucosal tissue due to pressure necrosis;

absorbing the blood, mucous and other debris, collected in front of said expandable cuff within the nasal cavity; and

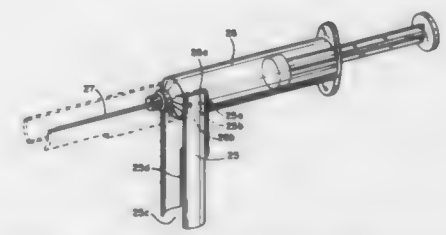
suctioning the blood, mucous and other debris, collected in front of said expansible cuff out of the nasal cavity.

5,011,475

PROTECTOR FOR INTRAVENOUS AND SYRINGE NEEDLES

Richard A. Olson, 210 W. Grant #122, Minneapolis, Minn. 55403

Filed Jun. 2, 1989, Ser. No. 360,770
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—192 **3 Claims**



1. A projector assembly for injection needles comprising,

a mounting hub,

a needle attached to said mounting hub,

an elongated hollow protective sheath member mounted on said hub to normally surround the entire needle, and having openings extending longitudinally along both sides thereof to permit the needle to be inserted into one of two conduits of an IV tube assembly in place in a patient's blood vessel,

the sheath being pivotally mounted on the mounting hub to permit pivotal retraction of the sheath from the needle on either side thereof to expose the needle for use and permit the sheath to be moved back into protective position around the needle after use and

a pair of respectively engageable positioning stop elements respectively mounted on the hub and the sheath for positively positioning the sheath in its desired protective position when said stop elements are engaged.

5,011,476

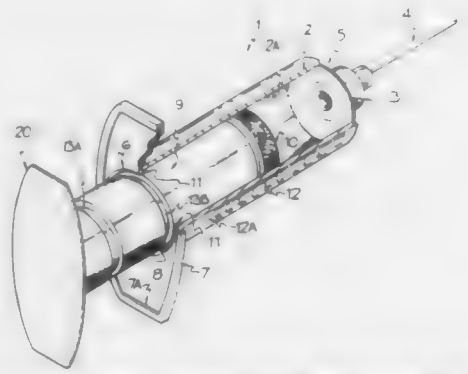
SINGLE FILL AND USE SYRINGE

Robert J. C. Foster, 6 Glasson Square, Mt. Waverley, Australia

PCT No. PCT/AU88/00230, § 371 Date Dec. 28, 1989, § 102(e) Date Dec. 28, 1989, PCT Pub. No. WO89/00057, PCT Pub. Date Jan. 12, 1989
PCT Filed Jun. 30, 1988, Ser. No. 455,419
Claims priority, application Australia, Jul. 2, 1987, PI2840
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **2 Claims**

1. A syringe (**1**) having a cylindrical barrel (**2**) and inside the barrel (**2**) a cylindrical plunger (**9**) with a resilient base (**10**) in sealing relation with the barrel (**2**), the plunger (**9**) having a first circumferential groove (**13***a*) and designed to engage an inwardly extending circumferential projection (**11**) disposed about the barrel (**2**) around its aperture (**8**) such that the first groove (**13***a*) engages the projection (**11**) to prevent withdrawal of the plunger (**9**) when base (**10**) bottoms on the end (**5**) of the barrel (**2**) and the plunger (a) having a second groove

(13*b*) designed to engage the projection (11) before the plunger (9) is pressed home and with the barrel having (2) a portion



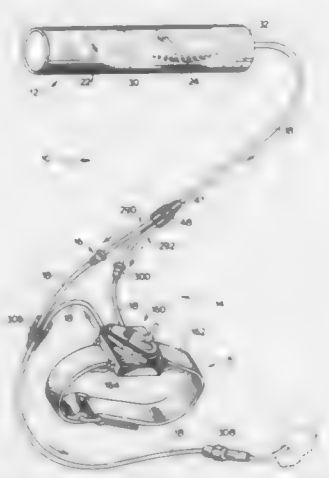
(12*a*) which is additional to a measured dose and greater than the travel of the plunger (9) between grooves (13*a*) and (13*b*).

5,011,477

CONTINUOUS/BOLUS INFUSOR

David A. Winchell, Spring Grove, and James L. Sertic, Grayslake, both of Ill., assignors to Baxter International Inc., Deerfield, Ill.

Filed Apr. 21, 1989, Ser. No. 341,527
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—132 15 Claims



1. An apparatus for dispensing a fluid comprising:

mechanical means for providing a source of fluid under pressure;

regulating means in fluid communication with the pressurized source of fluid for providing a constant flow rate of the fluid;

bolus dose means having a dose reservoir in fluid communication with the pressured source of fluid. the dose reservoir having an upper volume limit which represents the discrete dose limit of the bolus dose means, and a control means for manually expressing the fluid in the dose reservoir from the dose reservoir; and

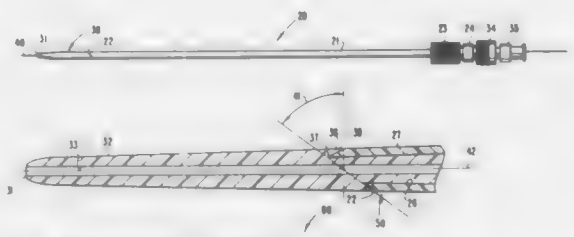
downstream tubing means in fluid communication with the regulating means and the dose reservoir such that the regulating means provides a constant maintenance flow of the fluid to the downstream tubing means while the bolus dose means provides a manually controllable bolus dose of the fluid to the downstream tubing means/

5,011,478

RECESSED DILATOR-SHEATH ASSEMBLY AND METHOD

Constantin Cope, Elkins Park, Pa., assignor to Cook Incorporation, Bloomington, Ind.

Filed Jan. 31, 1989, Ser. No. 304,887
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—165 6 Claims



1. A dilator-sheath assembly comprising:

a sheath having one end adapted to be inserted in the body;

a dilator within said sheath and having a distal end extending beyond the one end of the sheath, said dilator having a recess within which said one end of said sheath is received whereby said dilator shields said one end of said sheath when the dilator-sheath assembly is inserted in the body, said dilator having an annular spur extending around said dilator and contiguous to said one end of said sheath, said spur defining said recess.

5,011,479

COVER AND CONNECTOR FOR HYPODERMIC NEEDLE

Son Le, 372 Christopher Dr., San Francisco, Calif. 94131, and Phillip Yang, 1557 Midvale Ave., Los Angeles, Calif. 90024

Continuation of Ser. No. 418,270, Oct. 6, 1989, abandoned, and a continuation-in-part of Ser. No. 360,261, Jun. 2, 1989, abandoned. This application May 14, 1990, Ser. No. 523,298
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—198 13 Claims



1. A needle connecting apparatus for connecting a needle to a syringe and for covering the needle for disposal, the apparatus comprising:

a connector housing including a barrel defining an enclosure;

first mounting means on the connector housing for mounting the housing to a syringe body;

second mounting means on the connector housing and within the enclosure for mounting a base of a needle to the housing; and

a rigid needle cover movably mounted to and guided by the barrel of the connector housing for exposing a needle

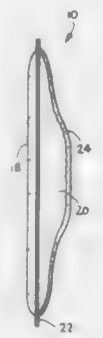
mounted to the connector housing when in a first position and for covering a needle mounted to the connector housing when in a second position.

5,011,480

ABSORBENT ARTICLE HAVING A NONWOVEN FRICTIONAL SURFACE FOR HOLDING THE ARTICLE IN PLACE AND A METHOD OF USE

Anthonette A. Gossens, Neenah, Wis., and Mary L. Schwer, New Milford, Conn., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 134,426, Dec. 17, 1987, abandoned. This application May 25, 1989, Ser. No. 358,320
The portion of the term of this patent subsequent to Feb. 7, 2006, has been disclaimed.
Int. Cl.[5] A61F *15/16*
U.S. Cl. 604—385.1 27 Claims



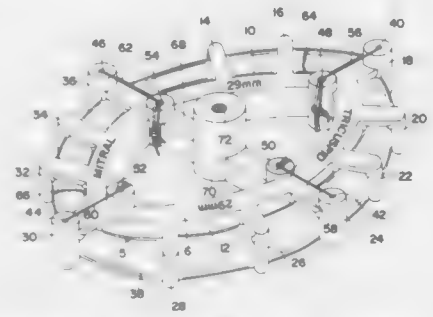
1. An absorbent article comprising first and second members cooperating to enclose an absorbent, one of said members being a fibrous, nonwoven web having an external frictional surface with a Sheffield smoothness rating of greater than 400, said frictional surface assisting in retaining said absorbent article in a desired position.

5,011,481

HOLDER FOR ANNULOPLASTY RING

David J. Myers, Garden Grove; Richard Leever, Pomona; Mary Gibbs, Garden Grove, all of Calif., and John T. M. Wright, Conifer, Colo., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Jul. 17, 1989, Ser. No. 380,345
Int. Cl.[5] A61F *2/24*
U.S. Cl. 606—1 14 Claims



1. A holder for an annuloplasty ring, comprising:

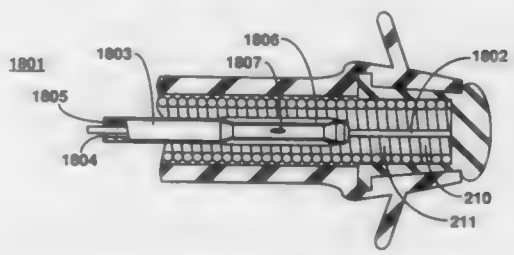
a holder member having an outer circumferential surface, said member provided with a plurality of fingers extending radially from said member, said fingers each comprising a segment extending radially from said holder member and a segment perpendicular to said radially extending segment and spaced radially outward of said outer circumferential surface, whereby an annuloplasty ring may be inserted between said circumferential surface and said perpendicular segments of said fingers.

5,011,482

APPARATUS FOR REMOVING AN ELONGATED STRUCTURE IMPLANTED IN BIOLOGICAL TISSUE

Louis Goode, Evans City; Frederick J. Shipko, Spring Church, and Neal E. Fearnot, West Lafayette, all of Pa., assignors to Cook Pacemaker Corporation, Leechburg, Pa.

Continuation-in-part of Ser. No. 298,100, Jan. 17, 1989, which is a continuation-in-part of Ser. No. 269,771, Nov. 9, 1988. This application May 3, 1989, Ser. No. 347,217
Int. Cl.[5] A61B *17/50*
U.S. Cl. 606—1 5 Claims



1. Lead removal apparatus for removing an implanted, cardiac pacemaker lead having a first longitudinal passageway therein, comprising:

control means having a distal end and a recess positioned about said distal end for inserting in said first longitudinal passageway of said implanted lead, said control means also including longitudinal passageway means for passing guide means therethrough;

expandable means positioned about said distal end and in said recess, sized for insertion in said first longitudinal passageway, and having a first position for securing said control means to said implanted lead to create a frictional engagement of the expandable means with said lead; and

said control means including a single longitudinal passageway for operating said expandable means to said first position.

5,011,483

COMBINED ELECTROSURGERY AND LASER BEAM DELIVERY DEVICE

Dennis Sleister, 11 Briarbrook Dr., East Greenwich, R.I. 02818

Filed Jun. 26, 1989, Ser. No. 371,744
Int. Cl.[5] A61B *17/32*
U.S. Cl. 606—37 17 Claims



1. Apparatus adapted to be coupled to a laser beam delivery device comprising:

a housing adapted to be coupled to the laser beam delivery device having means for receiving a laser beam from the

delivery device and for transmitting the laser beam to an area of medical treatment;

means disposed in the housing for receiving radio frequency electrical current and for transmitting the radio frequency electrical current to an applicator for providing the radio frequency electrical current to the area of medical treatment; and

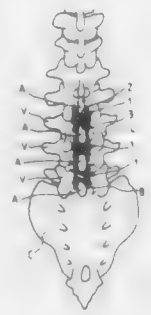
a waveguide attached to said housing comprising means for delivering the laser beam from said housing to the area of medical treatment and further comprising means for delivering the radio frequency electrical current along the waveguide to the area of medical treatment, said waveguide being adapted to be inserted into the lumen of an endoscope for insertion into a living being, the applicator being disposed at a distal end of said endoscope for supplying the radio frequency electrical current to the area of medical treatment.

5,011,484

SURGICAL IMPLANT FOR RESTRICTING THE RELATIVE MOVEMENT OF VERTEBRAE

Francis H. Bréard, 13, rue Friant, 75014 Paris, France

Filed Oct. 10, 1989, Ser. No. 418,661
Int. Cl.[5] A61B *17/56*; A61F *2/44*
U.S. Cl. 606—61 **14 Claims**



7. Surgical implant for preventing mutual contact between vertebrae of a vertebral column during flexions of the vertebral column, said surgical implant comprising:

an inter-vertebral insert means insertable between vertebral spines of successive vertebrae which form a section to be treated of the vertebral column, said inter-vertebral insert means having two end surfaces for respectively contacting the spines of the end vertebrae of said section of the vertebral column; and

retaining means associated with said inter-vertebral insert means and having portions to be passed over said spines of said two end vertebrae, said portions of said retaining means being so distant from the end surfaces of said inter-vertebral insert means that the retaining means allow the vertebrae to have a relative limited movement away from each other upon forward flexion of the vertebral column.

5,011,485

DEPILATORY DEVICE

Yair Daar, Moshav Galia, and Shimon Yahav, 90 Tchernokovsky Street, Rehovot, both of Israel

Filed Jul. 27, 1989, Ser. No. 385,881
Claims priority, application Israel, May 26, 1989, 90433
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—133 **4 Claims**

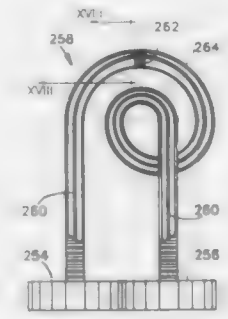
1. A human hair depilatory device comprising:

a hand held portable housing;

a hair engagement element arranged to be driven in rotational motion relative to skin bearing hair to be removed for engagement and removal of the hair from the skin; and

means for causing the hair engagement element to undergo vibration,

wherein said means for causing comprises at least one element mounted internally of the hair engagement element and



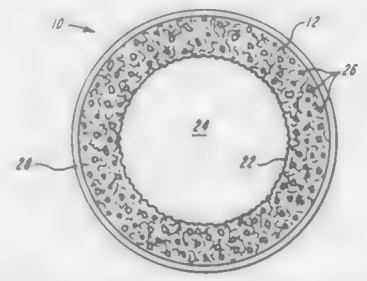
wherein said at least one element comprises a spacer disk eccentrically mounted on a stationary element located within the hair engagement element.

5,011,486

COMPOSITE NERVE GUIDANCE CHANNELS

Patrick Aebischer, Barrington, and Anastassios N. Salessiotis, Providence, both of R.I., assignors to Brown University Research Foundation, Providence, R.I.

Filed Nov. 18, 1988, Ser. No. 273,236
Int. Cl.[5] A61B *17/00*; A61F *2/04*
U.S. Cl. 606—152 **9 Claims**



1. A medical device for use in regenerating a severed nerve, said device comprising a tubular, biocompatible, porous, polymeric membrane containing an active factor incorporated within the walls of said membrane,

said device comprising an impermeable outer membrane surface and porous inner membrane surface through which said active factor may diffuse, and

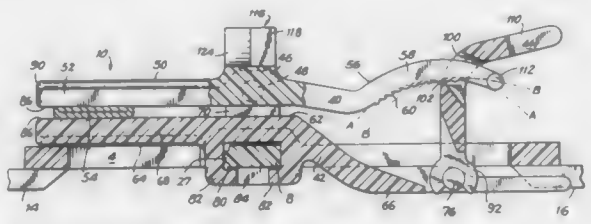
said membrane having openings adapted to receive the ends of said severed nerve, and an inner lumen through which said nerve may regenerate.

5,011,487

VASCULAR CLAMP ASSEMBLY

Daniel Shichman, Trumbull, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Jun. 24, 1987, Ser. No. 65,781
Int. Cl.[5] A61B *17/2*
U.S. Cl. 606—158 **16 Claims**



1. A vascular clamp assembly, which comprises:

first and second elongate members pivotally mounted together at a common pivot point, each of the first and second members including first and second end portions extending in opposite directions from the common pivot point, the first end portion of each member defining a vessel engaging surface, the vessel engaging surfaces being relatively positionable to receive therebetween and engage a blood vessel and to exert on the vessel a selectable holding force; and

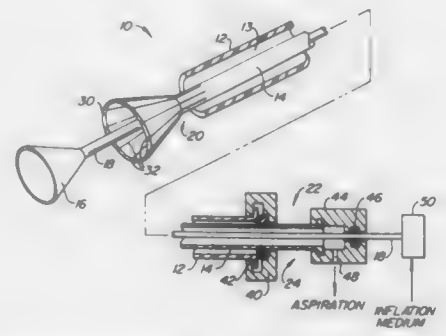
a tension adjustor member at least partially interposed between and transversely disposed to the second end portions of the first and second members, the tension adjustor member having a first end pivotally mounted on the second end portion of the second member, and a contact edge spaced from the pivotal first end and slidably engagable with the second end portion of the first member over an edge engaging surface thereof wherein the second end portion of the first member is curved over at least a portion of said edge engaging surface, the distance between the pivotal axis of the first end and the contact edge being greater than the distance between the pivotal axis of the first end and the edge engaging surface of the first member along a portion of the edge engaging surface to allow the tension adjustor member to be wedged between the second end portions of the first and second members in selectable positions with respect to the edge engaging surface, thereby effecting a positioning between the first end portions of the first and second members.

5,011,488

THROMBUS EXTRACTION SYSTEM

Robert Ginsburg, 2489 Alpine Rd., Menlo Park, Calif. 94025

Continuation of Ser. No. 280,859, Dec. 7, 1988, abandoned. This application Aug. 20, 1990, Ser. No. 569,751
Int. Cl.[5] A61M *25/00*
U.S. Cl. 606—159 **18 Claims**



1. A catheter system comprising:

an outer flexible tube having proximal and distal ends and a central lumen extending therethrough; and

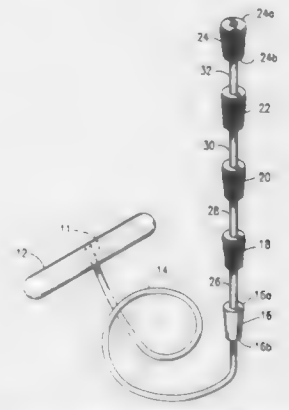
an inner flexible tube having proximal and distal ends and a central lumen extending therethrough, said inner flexible tube having an open distal tip which assumes an expanded configuration when unconstrained and being reciprocatably disposed in the central lumen of the outer flexible tube, wherein the length of the inner flexible tube is sufficient to extend beyond the proximal end of the central lumen in the outer flexible tube even when the open distal tip extends beyond the distal end of the outer flexible tube, whereby the tip is expended when extended beyond the distal end of the outer tube and collapsed when drawn within the distal end of the outer tube.

5,011,489

ENDOTHELIUM STRIPPER AND METHOD OF USING THE SAME

Mohamed E. M. Salem, Moharem Bake, Egypt, assignor to University of South Florida, Tampa, Fla.

Filed Oct. 5, 1989, Ser. No. 417,534
Int. Cl.[5] A61B *17/00*
U.S. Cl. 606—159 **16 Claims**



1. A surgical tool for removing the endothelium of a vein, comprising:

an elongate, flexible wire member having a proximal end and a distal end;

a head member, of frusto conical configuration, disposed at and fixedly secured to the distal end of said wire member; and

a distal end of said head member having a diameter greater than the diameter of a proximal end thereof;

a plurality of barb members formed on an outer surface of said head member;

said barb members being swept back at a predetermined angle to facilitate insertion of the head member into a vein;

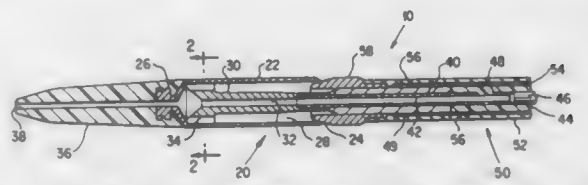
whereby retraction of said wire member and said head member strips the endothelium from said vein.

5,011,490

ENDOLUMINAL TISSUE EXCISION CATHETER SYSTEM AND METHOD

Robert E. Fischell, Dayton, Md., and Tim A. Fischell, Los Altos, Calif., assignors to Medical Innovative Technologies R&D Limited Partnership, Dayton, Md.

Filed Dec. 7, 1989, Ser. No. 447,187
Int. Cl.[5] A61B *7/22*
U.S. Cl. 606—159 **29 Claims**



1. A catheter system for the excision of obstructive tissue from within a vessel of a living body comprising:

a guide wire able to be advanced within a vessel in a living body such that the distal end of said guide wire is advanced beyond the obstructive tissue;

a cut/collect catheter having an interior lumen forming a passageway for said guide wire and which can be advanced over said guide wire until the distal end of said cut/collect catheter is situated beyond the tissue to be excised, said cut/collect catheter having a distal portion at which is located a single, concentric, hollow cylindrical cutting blade having a tissue collection chamber formed within its interior surface and said cutting blade having a cutting edge facing toward the proximal end of said cut/-

collect catheter for cutting obstructive tissue as said cut/collect catheter is pulled back in a retrograde direction; and,

a closing catheter which surrounds the cut/collect catheter for most if its length, said closing catheter being adapted to move slidably along said cut/collect catheter and said closing catheter having a tapered distal portion which is tapered in the distal direction and adapted to make secure contact against the proximal end of said cylindrical cutting blade of said cut/collect catheter after the obstructive tissue has been cut so as to secure the cut tissue within said collection chamber.

5,011,491

SURGICAL FORCEPS

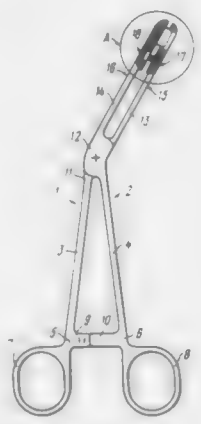
Sergei K. Doenko, Shakhtostroitelei, 20, kv. 52, and Alexandr Y. Shvartsman, Artema, 159, kv. 94, both of Donetsk, U.S.S.R.

Filed Feb. 16, 1990, Ser. No. 480,736

Claims priority, application U.S.S.R., Feb. 27, 1989, 4651605

Int. Cl.[5] A61B *17/28*

U.S. Cl. 606—207 **1 Claim**



1. A surgical forceps, comprising:

a first blade, incorporating:

a handle having a first end and a second end;

a circular rest for a finger, said rest being located at said first end of said handle;

a lock situated at said first end of said handle;

a jaw, comprising:

a shank having a first end and a second end, said first end being connected to said second end of said handle;

a rectangular plate having a longitudinal axis, a first end face and a second end face, a flat surface, a rectangular slit situated close to said first end face and arranged along said longitudinal axis of said rectangular plate, and a projection having a rectangular base, a convex surface, a height and a longitudinal axis, said projection being so arranged close to said second face that the longitudinal axis of said projection is square with the longitudinal axis of said rectangular plate, said second end face of said rectangular plate is connected to said second end of said shank;

a second blade, comprising:

a handle having a first end and a second end;

a circular rest for a finger, said rest being located at said first end of said handle;

a lock situated at said first end of said handle and adapted to interact with said lock of said first blade;

said second ends of said handles of said first and second blades hingedly joined together;

a jaw, comprising:

a shank having a first end and a second end, said first end being connected to said second end of said handle;

a rectangular plate having a longitudinal axis, a first end face and a second end face, and a flat surface that faces towards said flat surface of said rectangular plate of said jaw of said first blade, a rectangular projection having such geometric dimensions that are smaller than those of said rectangular slit of said rectangular plate of said jaw of said first blade, said projection being located on said flat surface nearby said first end face along said longitudinal axis, and a rectangular slot having a longitudinal axis and being congruent with said projection of said rectangular plate of said jaw of said first blade, said slot having a concave bottom and whose depth is smaller than said height of said projection congruent therewith, which slot is situated close to said first end face so that the longitudinal axis of the slot is square with said longitudinal axis of said rectangular plate.

5,011,492

SELF-ADHESIVE WOUND SUTURE PLASTER

Albert Heimerl, Hamburg; Dietrich Schulte, Pinneberg; Gabriela Götz, Hamburg, and Reiner Leutz, Reinbek, all of Fed. Rep. of Germany, assignors to Biersdorf AG, Hamburg, Fed. Rep. of Germany

Filed Jun. 17, 1988, Ser. No. 207,998

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1987, 3735894; Mar. 19, 1988, 3809348

Int. Cl.[5] A61B *17/04;* **A61L** *15/00*

U.S. Cl. 606—215 **6 Claims**

1. A self-adhesive wound suture plaster in strip form consisting essentially of an elastic carrier material carrying an adhesive, the carrier strip extending under the action of a pulling force and, after this action of force has ended, virtually returning completely to its original length, the carrier strip undergoing a length extension of between about 1 and 15% under the action of a pulling force of 5 N/cm.

5,011,493

MATERIAL FOR CONNECTING MEMBERS FOR INNER SOFT TISSUES AND ORGANS

Sergei I. Belykh, 2 Krestovsky pereulok, 4, kv. 66; Vladimir S. Gigauri, Leninsky prospekt, 144, korpus 5, kv. 56; Anatoly B. Davydov, ulitsa Krasny Kazanets, 19, korpus 1, kv. 283; Viktor V. Keshelava, ulitsa Zelenodolskaya, 17, korpus 4, kv. 68; Vyacheslav E. Mlynchik, ulitsa Oktyabrskaya, 38, korpus 1, kv. 43; Rustam I. Utyamyshev, prospekt Mira, 118, kv. 222, and Elizaveta V. Firsova, ulitsa Ostrovityanova, 27, korpus 2, kv. 93, all of Moscow, U.S.S.R.

Continuation of Ser. No. 769,621, Jul. 1, 1985. This application Oct. 2, 1987, Ser. No. 105,460

Claims priority, application U.S.S.R., Apr. 14, 1983, 3578808

Int. Cl.[5] A61B *17/08;* **A61F** *2/00*

U.S. Cl. 606—215 **5 Claims**

1. A method wherein members of soft tissue and inner organs located within a subject have been partially or completely separated and are thereafter reconnected, which comprises reconnecting the separated portions thereof with a biodegradable synthetic polymer, consisting essentially of a copolymer of N-vinylpyrrolidone and alkyl esters of acrylic and/or methacrylic acids containing 2 to 8 carbon atoms in the alkyl group, and having an intrinsic viscosity of from 0.3 to 0.8 dl/g in the following proportions of the components, in molar per cent:

N-vinylpyrrolidone	40–90
alkyl esters of acrylic or methacrylic acids	10–60.

5,011,494

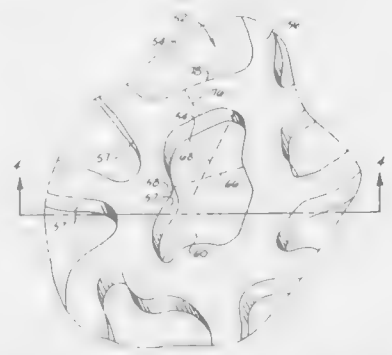
SOFT TISSUE IMPLANT WITH MICRON-SCALE SURFACE TEXTURE TO OPTIMIZE ANCHORAGE

Andreas F. von Recum, Six Mile, S.C., and Craig E. Campbell, Ridley Park, Pa., assignors to Clemson University, Clemson, S.C.

Continuation of Ser. No. 245,763, Sep. 16, 1988, abandoned. This application Apr. 20, 1990, Ser. No. 511,555

Int. Cl.[5] A61F *2/02, 2/06, 2/12, 2/24*

U.S. Cl. 623—11 **10 Claims**



1. A soft tissue implant device to be at least partially embedded at an implantation site in organic tissue of a living organism while promoting anchorage of the device at the implantation site and the growth of collagen at the implantation site, without causing encapsulation of the embedded portion of the device and without causing inflammatory tissue at the implantation site, the device comprising:

(a) a body;

(b) a surface layer secured to said body and extending over a sufficient portion of said body sot hat only said surface layer contacts the organic tissue at the implantation site;

(c) said surface layer defining a plurality of three-dimensional features;

(d) said feature defining an exterior surface for presenting itself to living cells in organic tissue at the implantation site;

(e) said exterior surface defining a plurality of spaces for presenting themselves to living cells adjacent said exterior surface;

(f) each said space having a bridging distance being the minimum distance an adjacent cell must stretch to span diametrically across said space, said bridging distance being measured in a direction parallel to said exterior surface at said space;

(g) said plurality of spaces having a mean bridging distance ranging from greater than 1.0 micron to less than 4.0 microns; and

(h) wherein said surface layer being produced by casting polymers, which are semifluid and cure over time, onto a surface produced on a glass substrate by selective etching of photoresist spincoated onto a chrome plated glass plate and which has been exposed to a light image followed by being etched down to the chrome and followed by the chrome being etched down to the glass substrate.

5,011,495

UNIQUE BONE REGENERATION TRICALCIUM PHOSPHATE

Jeffrey O. Hollinger, Glenwood, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 16, 1990, Ser. No. 481,094

Int. Cl.[5] A61F *2/28*

U.S. Cl. 623—16 **3 Claims**

1. A biodegradable implant for implanting in a bone cavity comprising a layered disc, each strata are layers of porous tricalcium phosphate; and said disc having a sintered matrix density substantially between 65 and 90% and pores in the range of 70 to 420 microns wherein the pores are omnidirectional for more rapid regeneration of new bone tissue into the disc.

5,011,496

PROSTHETIC JOINT

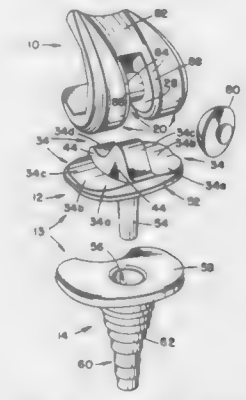
Mark R. Forte, Pine Brook, N.J., and Douglas G. Noiles, New Canaan, Conn., assignors to Joint Medical Products Corporation, Stamford, Conn.

Continuation of Ser. No. 151,429, Feb. 2, 1988, Pat. No. 4,888,021. This application Jul. 24, 1989, Ser. No. 384,264

The portion of the term of this patent subsequent to Dec. 19, 2006, has been disclaimed.

Int. Cl.[5] A61F *2/38, 2/30*

U.S. Cl. 623—20 **12 Claims**



1. A prosthetic joint for providing flexion motion between two bones comprising:

(a) a convex bearing component having a first bearing area and a contiguous second bearing area, the second bearing area being a surface of revolution about a first axis and having a radius of curvature which is less than the radius of curvature of the first bearing area; and

(b) a concave bearing component having a third bearing area for engagement during flexion with the first bearing area and a contiguous fourth bearing area for engagement with the second bearing area, the fourth bearing area being a surface of revolution about a second axis and having a radius of curvature which is less than the radius of curvature of the third bearing area;

wherein:

the radius of curvature of the second bearing area is substantially the same as the radius of curvature of the fourth bearing area so that the second and fourth bearing areas may be in congruent engagement with one another; and

the flexion axis of the joint is parallel to the first and second axes when the second and fourth bearing areas are in engagement.

5,011,497

JOINT PROSTHESIS

Jan-Ove Persson, Höör, and Per-Ingvar Branemark, Mölndal, both of Sweden, assignors to Atos Medical AB, Horby and Institutet for Tillampad Bioteknologi, Gothenburg, both of, Sweden

PCT No. PCT/SE88/00580, § 371 Date May 2, 1990, § 102(e) Date May 2, 1990, PCT Pub. No. WO89/03663, PCT Pub. Date May 5, 1989

PCT Filed Oct. 28, 1988, Ser. No. 473,992

Claims priority, application Sweden, Oct. 29, 1987, 8704211-5

Int. Cl.[5] A61F *2/42*

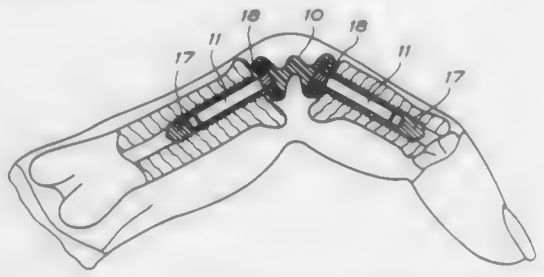
U.S. Cl. 623—21 **8 Claims**

1. A joint prosthesis configured to replace an existing joint comprising:

an elastomeric webbed joint section;

two screws with bores at ends adjacent to the elastomeric

webbed joint section, the screws configured to be received in the respective bones adjacent the joint;
two elongated pins characterized in that each pin has at one



end thereof a transverse flange, said flanges being embedded into opposite sides of the webbed joint section, and wherein each of said pins is adapted to be inserted into the bores of respective hollow screws.

5,011,498

CUTTING APPARATUS FOR THE CUTTING OF A ROUND CORNEAL DISC

Jorg H. Krumeich, Propst-Hellmich-Promenade 28, 4630 Bochum 6, and Norbert Quast, Gantenberg Strasse 18, 4300 Essen, both of Fed. Rep. of Germany

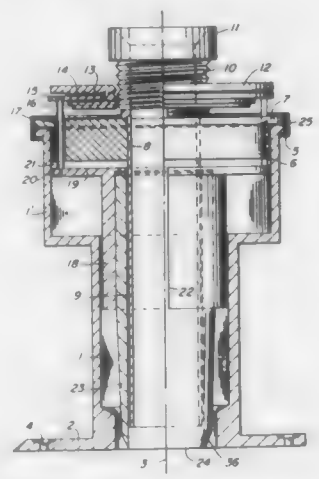
Continuation of Ser. No. 164,589, Mar. 7, 1988, abandoned. This application Jan. 16, 1990, Ser. No. 465,052

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1987, 3707004

Int. Cl.[5] A61B *17/32*

U.S. Cl. 606—166 **22 Claims**

17. A cutting apparatus for the excision of a corneal disc from a human eye, said apparatus comprising:
a hollow cylindrical cutting knife having a longitudinal central cylinder axis;
an exterior cylinder including on its end adjacent to the cornea during excision of a corneal disc a planar connection plate having a bore therethrough, said connection plate extending perpendicular to said cylinder axis;
a clip ring guidingly situated in a rear end portion of said cylinder for holding said cutting knife by a frictional fit;
means for rotating said cutting knife operatively connected to said clip ring, said means for rotating including a rotatable stopper having a central bore therethrough and guide cylinder fixed in said central bore of stopper, said guide cylinder having a handwheel on an exposed outer end thereof adapted for manipulation by an operator; and



means for axially moving said cutting knife operatively connected to said clip ring, said means for axially moving comprising first means threadedly engaged with said guide cylinder for axially adjusting the position of said cutting knife relative to said means for rotating,
whereby manipulation of said handwheel causes rotation of said cutting knife and separate manipulation of said first means causes axial movement of said cutting knife.

5,011,499

TANNING AGENT FORMULATION FOR MANUFACTURE OF SEMIFINISHED LEATHER PRODUCTS

Paul Rathfelder; Jozef Sagala, both of Boeblingen; Friedrich Landbeck, Holzgerlingen, and Heinz Matschkal, Gaertringen, all of Fed. Rep. of Germany, assignors to Schill & Seilacher GmbH & Co., Boeblingen, Fed. Rep. of Germany

Filed Apr. 3, 1989, Ser. No. 332,535

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1988, 3811267

Int. Cl.[5] C14C *3/08*

U.S. Cl. 8—94.33 **12 Claims**

1. A process for manufacturing a semifinished leather product, which comprises the steps of pickling a pelt and pretanning said pickled pelt with a tanning agent formulation obtained by reacting 1 mole of an aliphatic ω, ω'-dialedehyde having 2–8 carbon atoms in the form of an aqueous solution of about 3–60% strength with about 0.2–4 moles of a hydroxy compound of the formula I

$$R_1-\text{—}[(C_2H_4O)x\text{—}(C_3H_6O)y\text{—}(C_4H_8O)z]n\text{—}H \quad \text{(I)}$$

whereby
n is an integer from 0 to 10,
x+y+z is an integer from 1 to 20, wherein the alkoxy groups may be arranged in any order, and
R_1 is H, C_1-C_{12} alkyl, or C_1-C_{12} alkyl having one or more hydroxyl groups,
wherein n is not O for R^1=H.

5,011,500

PROCESS FOR DYEING KERATINOUS FIBRES AND DYE COMPOSITION EMPLOYING INDOLE DERIVATIVES AND DIRECT NITRO DYES

Jean F. Grollier, and Chantal Fourcadier, both of Paris, France, assignors to L'Oreal, Paris, France

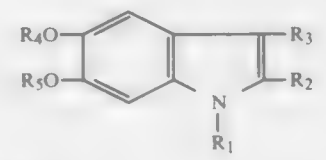
Filed Dec. 29, 1988, Ser. No. 291,771

Claims priority, application Luxembourg, Dec. 30, 1987, 87097

Int. Cl.[5] A61K *7/13*

U.S. Cl. 8—410 **37 Claims**

1. A process for dyeing keratinous fibers comprising applying to said fibers at least one composition (A) containing in a medium suitable for dyeing said fibers, (1) at least one indole derivative having the formula



(I)

wherein
R_1 represents hydrogen, lower alkyl or —$SiR_6R_7R_8$,
R_2 and R_3, each independently, represent hydrogen, lower alkyl, carboxyl, lower alkoxycarbonyl or —COO-$SiR_6R_7R_8$,
R_4 and R_5, each independently, represent hydrogen, linear or branched C_1-C_{20} alkyl, formyl, linear or branched C_2-C_{20} acyl, linear or branched C_3-C_{20} alkenoyl, $SiR_6R_7R_8$, —P(O) $(OR_9)_2$ or R_9OSO_2, or R_4 and R_5 together with the oxygen atoms to which they are attached form a ring optionally containing a carbonyl group, a methylene group, a thiocarbonyl group, a >P(O)OR_9 group or a >$CR_{10}R_{11}$ *group*,
R_9 and R_{10} represent hydrogen or lower alkyl, R_{11} represents lower alkoxy, monoalkylamino or dialkylamino, and
R_6, R_7 and R_8, each independently, represent linear or branched alkyl, and
the acid addition salt thereof with an inorganic or organic acid or the corresponding alkali metal, alkaline earth metal or amine salt thereof, said indole derivative being present in said composition (A) in an amount ranging from 0.01 to 5 percent by weight based on the total weight of said composition (A) and
(2) at least one substituted 2-nitro-paraphenylene diamine selected from the group consisting of 1-N-(β-hydroxyethyl)amino-2-nitro-4-N', N'-(bis-β-hydroxyethyl) aminobenzene and 1-N-(β-hydroxyethyl)amino-2-nitro-4-aminobenzene, present in an amount ranging from 0.01 to 5 percent by weight based on the total weight of said composition (A), and
developing a color on said fibers using an oxidizing system selected from the group consisting of:
(i) a source of iodide ions and hydrogen peroxide, in which case said composition (A) contains either (a) a source iodide ions or (b) hydrogen peroxide and the application of said composition (A) is preceded or followed by the application of composition (B) comprising in a medium suitable for dyeing said fibers
(a') hydrogen peroxide at a pH ranging from 2 to 12 when said composition (A) contains a source iodide ions, or
(b') a source of iodide ions at a pH ranging from 3 to 11 when said composition (A) contains hydrogen peroxide;
(ii) a nitrite source, in which case the application of said composition (A) is followed by the application of composition (B') comprising an aqueous composition having an acidic pH, said composition (A) or said composition (B') containing at least one said nitrite source;
(iii) an oxidizing agent selected from the group consisting of periodic acid, a periodate, sodium hypochlorite, potassium ferricyanide, silver oxide, Fenton's reagent, lead (IV) oxide, cesium (V) sulphate, ammonium persulfate and ferric chloride, said oxidizing agent being present in said composition (A) or being applied to said fibers simultaneously or sequentially in a composition (B'') comprising a medium suitable for dyeing said fibers and said oxidizing agent; and
(iv) an oxidizing agent selected from the group consisting of a permanganate and a dichromate, said oxidizing agent being present in an aqueous composition (B''') having a pH ranging from 2 to 10, said composition (B''') being applied to said fibers prior to the application of said composition (A) thereto.

5,011,501

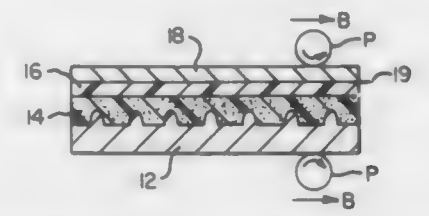
PROCESS FOR MAKING A SOLID STATE CELL

Dale R. Shackle; Denis G. Fauteux, and Jorgen S. Lundsgaard, all c/o The Mead Corporation, Mead World Headquarters, Courthouse Plaza Northeast, Dayton, Ohio 45463

Division of Ser. No. 343,976, Apr. 26, 1989. This application Dec. 18, 1989, Ser. No. 451,652

Int. Cl.[5] H01M *6/00*

U.S. Cl. 29—623.1 **6 Claims**



1. A process for making a solid state alkali metal cell capable of generating a discharge current per unit area greater than or equal to 50 milliampere per square centimeter at room temperature comprising the steps of:
coating a cathode composition layer comprising an active cathode material, an electrically conductive filler material, an alkali metal salt, an inert liquid solvent for said salt

and a polymerizable material onto a current collector layer;
coating an ionically conductive, polymerizable electrolyte composition layer onto said cathode composition layer;
partially or totally curing said cathode composition and said electrolyte composition; and
applying an alkali metal anode composition layer onto said electrolyte composition layer to form a cell assembly

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5,011,502
FUEL ADDITIVES
Atsushi Nasu, 99 Katako, Youkaichiba-shi, Chiba-ken, Japan
Filed Sep. 17, 1990, Ser. No. 583,143
Int. Cl.[5] C10L *1/32*
U.S. Cl. 44—300 **4 Claims**

1. A fuel additive prepared by (i) acidifying seawater, (ii) adding a strong alkali to the acidified seawater to raise the pH up to a high pH value, (iii) removing precipitates therefrom to obtain a solution and then (iv) removing water from the solution to recover the solids, and dissolving the recovered solids a medium miscible with a fuel to which said additive is to be applied.

5,011,503
FUEL COMPOSITIONS
John P. Buxton, Handbridge, United Kingdom, assignor to Shell Oil Company, Houston, Tex.
Filed Jan. 22, 1990, Ser. No. 468,306
Claims priority, application United Kingdom, Jun. 2, 1989, 8902549
Int. Cl.[5] C10L *1/18*
U.S. Cl. 44—322 **7 Claims**

1. A diesel-based fuel to which has been added a minor amount, sufficient to increase the cetane value of the fuel, of a perketal of the formula

$$R^2R^3C(OOR^1)_2$$

wherein R^1 is C_{4-10} tertiary alkyl group and R^2 and R^3 together with the attached C atom form a cycloalkane ring substituted by moieties selected from the group consisting of hydrogens, C_{1-4} alkyls, halogens, and mixtures thereof.

5,011,504
FUEL OIL ADDITIVES
Cyrus P. Henry, Claymont, and Michael W. J. West, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation of Ser. No. 405,589, Sep. 8, 1989, abandoned, which is a continuation of Ser. No. 204,154, May 31, 1988, abandoned, which is a continuation-in-part of Ser. No. 992,263, Oct. 23, 1986, abandoned. This application Jul. 27, 1990, Ser. No. 560,297
Int. Cl.[5] C10L *1/22*
U.S. Cl. 44—392 **11 Claims**

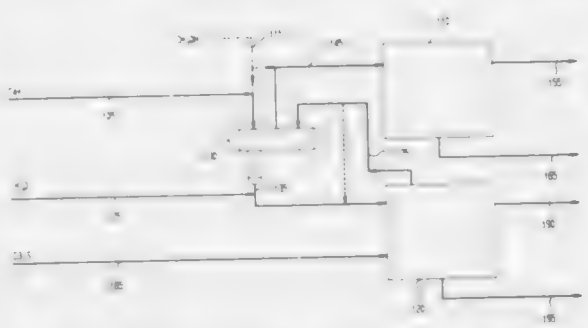
1. A fuel oil composition comprising fuel oil and an additive wherein said additive comprises an AB or ABA block copolymer wherein
the A block(s) consist essentially of polymerized monomers selected from the group consisting of acrylate and methacrylate monomers without amine groups wherein the ester is made from an alcohol having 4–60 carbon atoms, and
the B block consists essentially of polymerized monomers selected from the group consisting of acrylate and methacrylate monomers containing primary, secondary or tertiary amine groups, with other acrylate and methacrylate monomers, wherein
the copolymer contains at least 2 monomer units in each A block and from 2 to 500 amine monomers units in the B block with a concentration in the additive of 10–70% by weight copolymer in solvent, and a concentration of at least 0.5–500 mg/liter of said copolymer in said fuel oil.

5,011,505
FLOW IMPROVERS AND CLOUD POINT DEPRESSANTS
Kenneth Lewtas, and Jacqueline D. Bland, both of Wantage, United Kingdom, assignors to Exxon Chemical Patents Inc., Linden, N.J.
Filed Sep. 1, 1988, Ser. No. 239,788
Claims priority, application United Kingdom, Sep. 2, 1987, 8720606
Int. Cl.[5] C10L *1/18*
U.S. Cl. 44—393 **24 Claims**

1. A cloud point depressant and flow improvement additive suitable for fuel oil, crude oil or lubricating oil comprising either (1) a polymer derived from either a mixture of (a) monomers derived from unsaturated dicarboxylic acid monomers having alkyl groups of at least 8 carbon atoms of substantially only two different chain lengths, one being at least 5 carbon atoms longer than the other, or (b) monomers having an alkyl group of at least 8 carbon atoms of substantially only three different chain lengths, these chain lengths differing by at least 5 carbon atoms or (2) a polymer derived either (c) from a monomer having substantially only two alkyl groups of at least 8 carbon atoms, one being at least 5 carbon atoms longer than the other or (d) from a monomer having substantially only three alkyl groups of at least 8 carbon atoms, the chain lengths of each alkyl group differing by at least 5 carbon atoms from each other alkyl group; optionally co-polymerized with a spaced monomer

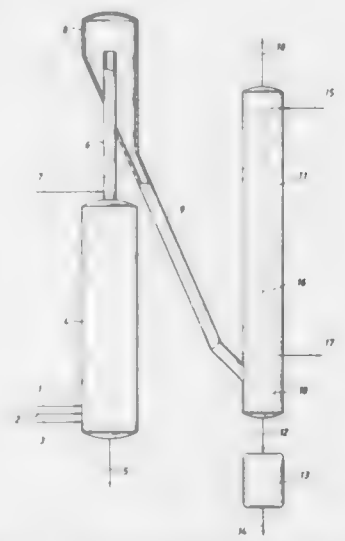
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5,011,506
INTEGRATED ETHERIFICATION AND ALKENE HYDRATION PROCESS
Mohsen N. Harandi, Lawrenceville, and Hartley Owen, Belle Mead, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.
Filed Sep. 29, 1989, Ser. No. 414,861
Int. Cl.[5] C10L *1/18*
U.S. Cl. 44—447 **12 Claims**



1. An integrated process for the production of high octane ethers, comprising:
extracting a methanol feedstream containing water and an aqueous isopropanol by-product effluent stream from a diisopropyl ether production zone with a hydrocarbon feedstream to a methyl tert-alkyl ether production zone, said feedstream containing isobutylene and/or isoamylene;
separating an aqueous raffinate stream after extraction containing a minor portion of both said isopropanol and methanol and an organic extract stream comprising said hydrocarbon feedstream containing a major portion of both dewatered methanol and dewatered isopropanol;
passing said organic stream to said tert-alkyl ether production zone in contact with acidic iso-olefin etherification catalyst under etherification conditions to produce an etherification effluent stream comprising tert-alkyl ethers of methanol and isopropanol, methyl isopropyl ether and unreacted hydrocarbons;
passing said aqueous raffinate stream, a fresh water feedstream and C_3 hydrocarbon feedstream containing propene to said diisopropyl ether production zone in contact with acidic olefin hydration and etherification catalyst under olefin hydration and etherification conditions to produce effluent streams from said diisopropyl ether production zone comprising diisopropyl ether stream, methyl isopropyl ether, said aqueous isopropanol by-product stream and unreacted C_3 hydrocarbons stream.

5,011,507
APPARATUS FOR COOLING AND PURIFYING A HOT GAS
Jacob H. Stil; Adrianus J. Ooms, and Bernardus H. Mink, all of The Hague, Netherlands, assignors to Shell Oil Company, Houston, Tex.
Division of Ser. No. 4,287, Jan. 6, 1987, Pat. No. 4,957,657, which is a continuation of Ser. No. 792,167, Oct. 25, 1985, abandoned, which is a continuation of Ser. No. 677,894, Dec. 4, 1984, abandoned, which is a continuation of Ser. No. 417,754, Sep. 13, 1982, abandoned. This application Jun. 16, 1990, Ser. No. 538,964
Claims priority, application Netherlands, Nov. 16, 1981, 8105169
Int. Cl.[5] C10K *1/00*
U.S. Cl. 48—62 R **16 Claims**

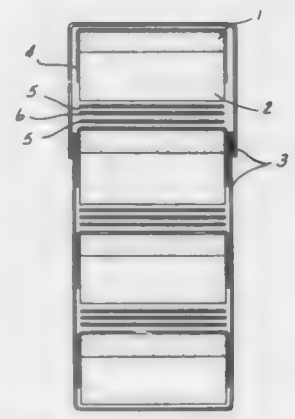


1. An apparatus for cooling and purifying a hot gas from a hydrocarbon gasification reactor containing sticky slag droplets and/or particles comprising:
(a) a substantially vertical supply pipe for the gas, in which the gas can flow upwards, in the wall of which pipe openings have been provided for injecting cold, clean synthesis gas,
(b) a flow-reversal vessel into which the top end of the supply pipe issues, the internal diameter of the vessel being larger than the internal diameter of the supply pipe, in which vessel the distance from the mouth of the supply pipe to the internal top boundary of the vessel is larger than the internal diameter of the supply pipe, while the bottom of the flow-reversal vessel slants downwards at an angle that is acute in relation to the substantially vertical supply pipe,
(c) a connecting pipe the top end of which is connected to the bottom of the flow-reversal vessel and the center line of which is at an acute angle to the vertical,
(d) a substantially vertically arranged heat exchanger comprising a flow-reversal chamber at its bottom end, the side wall of which is connected to the connecting pipe and the internal diameter of which is larger than the internal diameter of the connecting pipe,
(e) a discharge pipe for slag particles which is connected to the bottom of the flow-reversal chamber of the heat exchanger.

5,011,508
SHELLING-RESISTANT ABRASIVE GRAIN, A METHOD OF MAKING THE SAME, AND ABRASIVE PRODUCTS
Vernon M. Wald, and Robert S. Kirk, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Oct. 14, 1988, Ser. No. 258,196
Int. Cl.[5] B24D *3/00*
U.S. Cl. 51—293 **6 Claims**

1. A method of making ceramic abrasive grain characterized by having separated protuberant masses of inorganic material autogenously bonded to the surface thereof, said method comprising the steps of:
(a) providing a mass of first particles comprising alpha-alumina precursor material each particle of which is sinterable to an alpha-alumina-based abrasive grain;
(b) introducing into said mass second particles much finer than said first particles, said second particles being capable of autogenous bonding to the surface of said first particles upon sintering of said first particles; and
(c) heating said particles under sintering conditions to sinter said first particles and cause autogenous bonding of said second particles to the surface of each of said first particles.

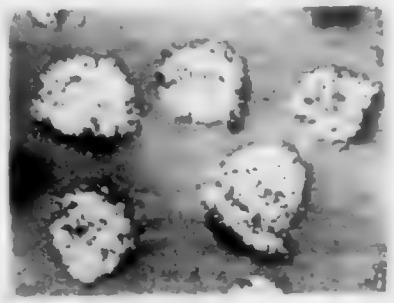
5,011,509
COMPOSITE COMPACT WITH A MORE THERMALLY STABLE CUTTING EDGE AND METHOD OF MANUFACTURING THE SAME
Robert H. Frushour, P.O. Box 818, Plymouth, Mich. 48170
Filed Aug. 7, 1989, Ser. No. 390,204
Int. Cl.[5] B24D *3/00*
U.S. Cl. 51—293 **7 Claims**



1. A composite body comprising:
a diamond material layer formed by chemical vapor deposition as a single, well bonded body and having a first surface;

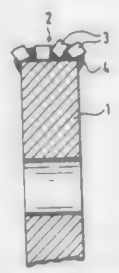
a substrate; and
the first surface of the diamond material layer and the substrate being bonded together under high pressure and high temperature.

5,011,510
COMPOSITE ABRASIVE-ARTICLES AND MANUFACTURING METHOD THEREFOR
Izumi Hayakawa, Kamakura, and Hiroshi Soboi, Tama, both of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan
Filed Sep. 21, 1989, Ser. No. 410,591
Claims priority, application Japan, Oct. 5, 1988, 63-252252
Int. Cl.[5] B24D *3/00*
U.S. Cl. 51—293 **7 Claims**



1. A method of manufacturing composite abrasive-articles comprising the following steps of:
mixing diamond abrasive or cubic boron nitride abrasive and metal powder;
molding the mixture into a uniform small piece of abrasive articles;
then or simultaneously with said molding, completely sintering said uniform small piece of abrasive articles which has been molded; and
mixing a completely sintered piece of abrasive articles which has been sintered and any of resin, metal, or glass having a low melting point, whereby the mixture is solidified into a predetermined shape.

5,011,511
GRINDING TOOL
Alexander Beck, Rebbergstrasse 34, CH-8113 Boppelsen, Switzerland
Filed Jul. 26, 1989, Ser. No. 385,735
Claims priority, application Switzerland, Jul. 27, 1988, 2854/88
Int. Cl.[5] B24B *1/00*
U.S. Cl. 51—295 **20 Claims**

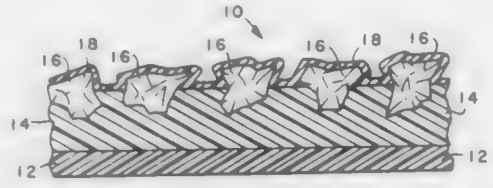


1. A material removing tool, particularly for removing material from hard objects, comprising a rigid carrier; particles of abrasive material adjacent a portion at least of said carrier, said portion of said carrier consisting of solderable material; and a binder of active solder rigidly joining said particles to said carrier.

5,011,512
COATED ABRASIVE PRODUCTS EMPLOYING NONABRASIVE DILUENT GRAINS
Vernon M. Wald; Richard A. Masson; Fredrick D. Brown, and David E. Broberg, all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 216,799, Jul. 8, 1988, abandoned. This application Jan. 25, 1990, Ser. No. 470,429
Int. Cl.[5] B24B *1/00*
U.S. Cl. 51—295 **20 Claims**

1. A coated abrasive article comprising a backing member having adherently bonded thereto by a bonding material a volume of particles as a layer, said particles consisting essentially of (a blend) of premium and having a Knoop hardness less than 200, said coated abrasive article having at least the same abrasive performance as the same abrasive article with all of said volume of particles consisting only of particles of said premium abrasive grains.

5,011,513
SINGLE STEP, RADIATION CURABLE OPHTHALMIC FINING PAD
Eugene Zador, Ballston Lake; Shyiguei Hsu, Watervliet; Wesley R. Kaczmarek, Ballston Lake; Sitaramaiah Ravipati, Latham; Stanley Supkis, Averill Park, and Richard H. Vogel, Saratoga Springs, all of N.Y., assignors to Norton Company, Worcester, Mass.
Filed May 31, 1989, Ser. No. 359,164
Int. Cl.[5] B24D *11/00*
U.S. Cl. 51—295 **23 Claims**



1. A coated abrasive material suitable for use as a single step fining pad comprising:
a flexible and dimensionally stable backing member;
an abrasive adhered to one surface of said backing member by a maker coat adhered to said backing member; and
an ultraviolet radiation-cured size coat overlying said abrasive grains and further adhering said abrasive grains to the maker coat, said size coat comprising a multifunctional urethane oligomer reinforced with an ultraviolet radiation transparent particulate filler having a hardness at least as great as silica.

5,011,514
CEMENTED AND CEMENTED/SINTERED SUPERABRASIVE POLYCRYSTALLINE BODIES AND METHODS OF MANUFACTURE THEREOF
Hyun S. Cho; Chien-Min Sung, both of Sandy; Leo Merrill, Orem; Sy-Hwa Chen, and Frank Csillag, both of Salt Lake City, all of Utah, assignors to Norton Company, Worcester, Mass.
Continuation-in-part of Ser. No. 226,049, Jul. 29, 1988. This application Jul. 11, 1989, Ser. No. 378,123
Int. Cl.[5] B24D *11/00*
U.S. Cl. 51—295 **39 Claims**

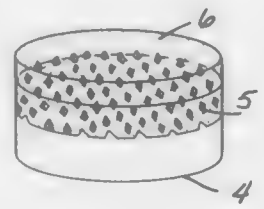
1. A thermally stable superabrasive product comprising a plurality of "metal coated superabrasive particles", said superabrasive particles having a hardness at least equal to that of diamond or cubic boron nitride, said metal being selected from Groups IVA, VA, VIA and alloys thereof, "said coating forming a matrix cementing said superabrasive particles together into a coherent mass" of high structural strength having a

predetermined configuration, said superabrasive particles comprising at least 70% by volume of said coherent mass, said



metal coating comprising about 4 to 30% of the volume of said coherent mass.

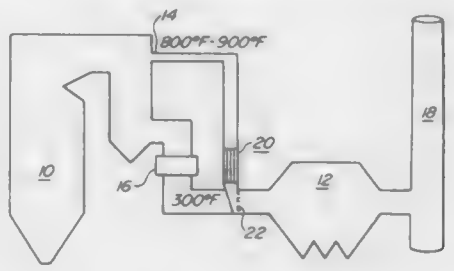
5,011,515
COMPOSITE POLYCRYSTALLINE DIAMOND COMPACT WITH IMPROVED IMPACT RESISTANCE
Robert H. Frushour, P.O. Box 818, Plymouth, Mich. 48170
Filed Aug. 7, 1989, Ser. No. 390,208
Int. Cl.[5] E21B *10/46*
U.S. Cl. 51—307 **6 Claims**



1. A cutting element comprising:
a substrate having a first surface;
the first surface being formed with surface irregularities having angularly disposed sidewalls in which the spacing between adjacent surface irregularities is less at the base of such irregularities than at the top end of such irregularities at the first surface of the substrate; and
a polycrystalline material layer having a cutting surface and an opposed mounting surface joined to the substrate, the mounting surface having surface irregularities complimentary to and contacting the surface irregularities in the substrate; and wherein
the concentration of the higher thermal expansion material substrate continuously and gradually decreases from the substrate into the lower thermal expansion polycrystalline material layer through the region of the surface irregularities.

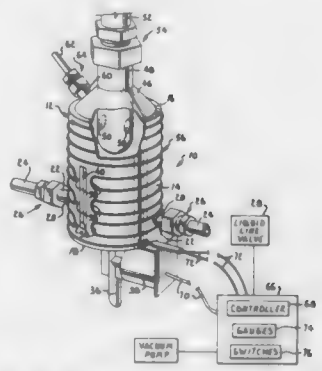
5,011,516
CATALYTIC OXIDATION OF SO_2 TO SO_3 IN THE PRESENCE OF FLY ASH
Ralph A. Altman, Chattanooga, Tenn.; John P. Gooch, and Edward B. Dismukes, both of Birmingham, Ala., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.
Filed Nov. 6, 1989, Ser. No. 432,068
Int. Cl.[5] B03C *1/00;* **C01B** *17/00*
U.S. Cl. 55—5 **11 Claims**

1. A combustion gas conditioning method whereby particulates are removed from the main stream of combustion gases containing sulfur dioxide in a flue by electrostatic precipitation means, said method comprising the steps of withdrawing from a location upstream of said electrostatic precipitation means a minor amount of the total volume of said combustion gases entering said flue, including the particulates associated with said minor amount of combustion gases; contacting said minor amount of combustion gases and particulates associated therewith with catalytic means to convert SO_2 contained therein to SO_3; and mixing said minor amount of combustion gases and SO_3 into said main stream of combustion gases and subjecting the mixture formed thereby to electrostatic precipitation; wherein said catalytic means is exposed to said combustion



gases within an open gas flow passage whereby particulates freely flow therethrough without substantially interfering with the catalytic conversion of SO_2 to SO_3 by said catalytic means.

5,011,517
SAMPLER FOR CHEMICAL VAPORS
Brian R. Cage, Shawnee, Kans., and Arbor D. Drinkwine, Kansas City, Mo., assignors to Midwest Research Institute, Kansas City, Mo.
Filed Feb. 12, 1990, Ser. No. 478,523
Int. Cl.[5] B01D *47/00*
U.S. Cl. 55—92 **5 Claims**

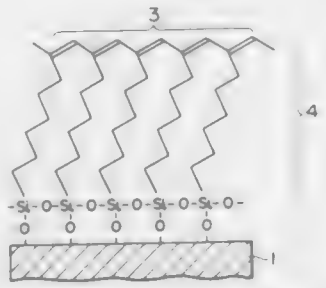


1. A method of extracting chemical vapor from air and concentrating the extracted vapor, said method comprising the steps of:
delivering a preselected quantity of scrubbing liquid to an enclosed receptacle having a substantially cylindrical wall;
introducing air into the receptacle tangentially to said wall to effect swirling of the air and carrying of the liquid therewith along the wall so that the liquid scrubs the air of chemical vapor therein;
terminating the introduction of air into the receptacle after a preselected time to permit the liquid with chemical vapor therein to settle in the receptacle; and
draining the liquid with the chemical vapor therein from the receptacle.

5,011,518
PERMSELECTIVE MEMBRANE AND PROCESS FOR PRODUCING THE SAME
Kazufumi Ogawa, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 5, 1990, Ser. No. 489,249
Claims priority, application Japan, Mar. 9, 1989, 1-057005
Int. Cl.[5] B01D *53/22, 71/28*
U.S. Cl. 55—158 **16 Claims**

1. A permselective membrane in a state of monomolecular film polymer or monomolecular built-up polymer, which com-

prises a polymer formed by subjecting a monomolecular film or a monomolecular built-up film of a substance containing at



least one polymerizable group and a functional group to polymerization by means of a catalyst or radiation irradiation.

5,011,519

IN-LINE FILTER AND TRAP STRUCTURE DEVICE FOR COMPRESSED AIR

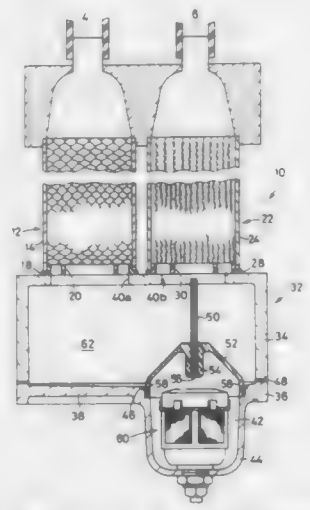
Sadao Maeda, Okazaki, Japan, assignor to Maeda Shell Service Co., Ltd. and J & M Co., Ltd., both of Aichi, Japan

Filed Nov. 21, 1989, Ser. No. 439,682

Claims priority, application Japan, Nov. 24, 1988, 63-152662[U]

Int. Cl.[5] B01D *19/00*

U.S. Cl. 55—216 **3 Claims**



1. An in-line filter and trap structure device for compressed air comprising first filter means which has a suitable first packing in a sleeve thereof, and second filter means which has a suitable second packing in a sleeve thereof, the first and second filter means being disposed parallel with each other on an air-tightly enclosed trap structure such that the first and second filter means extend in a vertical direction from a top wall of the trap structure, the trap structure having a trap chamber defined therewithin, and having a first and a second communication holes formed through a top wall of the trap chamber, the first and second filter means communicating with the trap chamber through the first and second communication holes, respectively, the compressed air being introduced from an intake conduit into the trap chamber through the first filter means, whereby vapor an/or liquid particles contained in the compressed air are condensed or coalesced and captured within the trap chamber, the compressed air from which the vapor or liquid particles have been separated being directed from the trap chamber into an outlet conduit through the second filter means, whereby the liquid particles remaining in the compressed air are vaporized,

said trap structure including a base which has a flat portion, and a sump portion which extends from said flat portion in a direction away from said trap chamber, so as to define a recess;

a conical hood which cooperates with said sump portion to define a reduced-pressure sump, said conical hood having a diameter which increases in an axial direction of said conical hood from said trap chamber toward said recess;

said conical hood having inlet holes formed through a large end portion thereof;

said flat portion having an inner surface which is inclined so that the liquid which has been separated from the compressed air and fallen on said inner surface is introduced into said reduced-pressure sump through said inlet holes, while flowing on an inner surface of said sump portion;

a venturi tube which is supported by and extends through a small end portion of said hood such that one end of said tube is positioned in said reduced-pressure sump, and the second end of said tube is positioned in said second communication hole through which the air flows from the trap chamber into said second filter means, said venturi tube sucking an atmosphere inside said reduced-pressure sump into said second filter means by an effect of the compressed air which flows from said trap chamber into said second filter means through said second communication hole; and

drain means provided in a bottom portion of said reduced-pressure sump, for discharging out of the reduced-pressure sump the trapped liquid introduced from said trap chamber into said reduced-pressure sump through said inlet holes.

5,011,520

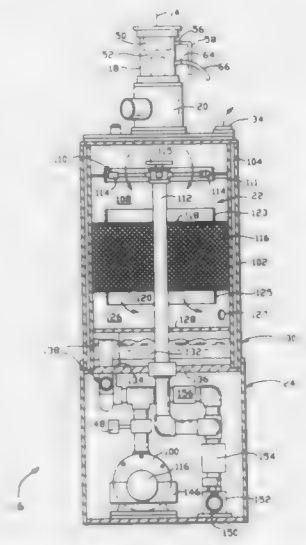
HYDRODYNAMIC FUME SCRUBBER

William J. Carr, San Jose, and Raymond S. Krummen, Los Gatos, both of Calif., assignors to Vector Technical Group, Inc., Santa Clara, Calif.

Filed Dec. 15, 1989, Ser. No. 451,306

Int. Cl.[5] B01D *47/08*

U.S. Cl. 55—228 **18 Claims**



1. A hydrodynamic fume scrubber for scrubbing a gaseous phase effluent with a scrubbing liquid, the fume scrubber comprising:

inlet means for receiving the particulate laden gaseous effluent into the scrubber and for providing a first effluent to scrubbing fluid interface,

negative pressure providing means for drawing a stream of the effluent passing from the inlet means into a first pressurized component of the scrubbing liquid in a manner generating negative pressure with respect to the effluent,

a main scrubbing chamber including:

means for receiving the first pressurized component of the scrubbing liquid and the effluent stream from the negative pressure providing means into an upper region of the chamber,

hydrodynamic spray means driven by a second pressurized component of the scrubbing liquid for hydrodynamically spraying the second component throughout the upper region of the chamber,

filter media means disposed in a central region of the chamber for filtering and mixing the effluent gas and scrubbing liquid thereby to promote dissolution of components within the effluent which are soluble in the scrubbing liquid,

a scrubbing liquid, scrubbed gas separation region within the chamber below the filter media means for separating and discharging scrubbed gas effluent collected therein,

splash plate means at the lower boundary of the separation region for further breaking up particle masses formed within the scrubbing liquid as it drips from a lower surface of the filter media means through the separation region,

scrubbing liquid reservoir means below the splash plate means in a lowermost region of the chamber for receiving excess scrubbing liquid,

the scrubber further comprising scrubbing liquid supply means for supplying scrubbing liquid to the scrubber from a source thereof, and discharge means for discharging scrubbing liquid from the reservoir means at a flow rate approximating the flow rate of scrubbing liquid incoming from the supply means.

5,011,521

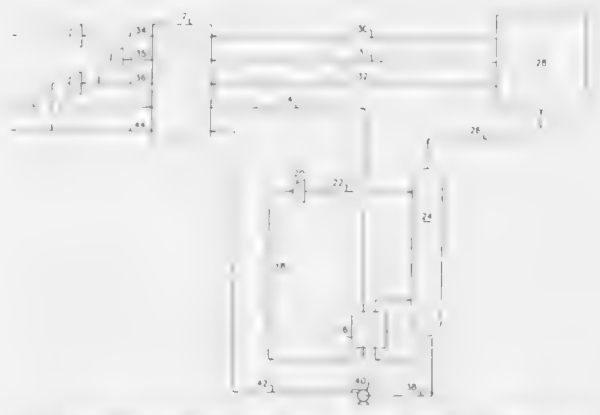
LOW PRESSURE STRIPPING PROCESS FOR PRODUCTION OF CRUDE HELIUM

Gerry N. Gottier, Emmaus, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 25, 1990, Ser. No. 471,252

Int. Cl.[5] F25J *3/00*

U.S. Cl. 62—11 **15 Claims**



1. A process for prefractionating a pressurized, helium-containing feed gas mixture to produce a helium-enriched stream comprising the steps of:

(a) liquefying and subcooling the pressurized, helium-containing feed gas mixture;

(b) expanding the liquefied, subcooled, pressurized, helium-containing feed gas mixture whereby said liquefied mixture is partially vaporized and thereby producing a partially vaporized frationation feed stream;

(c) stripping the partially vaporized frationation feed stream in a cryogenic distillation column thereby producing as an overhead, the helium-enriched stream, and a bottoms liquid, the helium-lean stream; and

(d) reboiling the cryogenic distillation column by vaporizing at least a portion of the helium-lean stream.

5,011,522

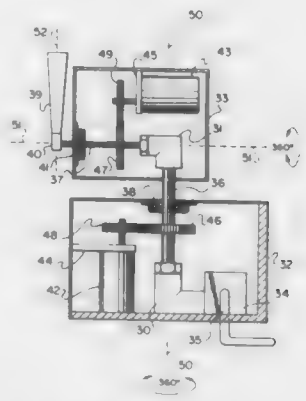
BLOWER FOR THE PRODUCTION OF A MIST OR THE LIKE

Toshimitsu Suzuki, Machida, Japan, assignor to Daichi Canada Inc., Montreal, Canada

Filed Sep. 1, 1989, Ser. No. 402,342

Int. Cl.[5] F25J *5/00*

U.S. Cl. 62—12 **20 Claims**



1. A blower comprising

a conduit means able to convey liquid CO_2 and

a support means, said conduit means having an inlet means suitable for introducing a liquid CO_2 therewithin and an outlet means able to discharge liquid CO_2 to the atmosphere so as to form a mist of the like, said inlet means being fixed to said support means, characterized in that, said outlet means is rotatably coupled to said inlet means, said outlet means being rotatable about a first axis of rotation and including a first conduit element and a second conduit element, wherein said first conduit element is rotatably coupled to said inlet means, wherein said second conduit element is rotatably coupled to said first conduit element and wherein said second conduit element is adapted to discharge liquid CO_2 to the atmosphere so as to form a mist or the like, said second conduit element being rotatable about an axis which is transverse to said first axis rotation.

5,011,523

PROCESS AND DEVICE FOR PRODUCING A YARN OR RIBBON FORMED FROM REINFORCEMENT FIBERS AND A THERMOPLASTIC ORGANIC MATERIAL

Giordano Roncato, and Robert Federowsky, both of Aix les Bains, France, assignors to Vetrotex Saint Gobain, Chamberry, France

Filed Oct. 27, 1989, Ser. No. 428,379

Claims priority, application France, Oct. 28, 1988, 88 14104

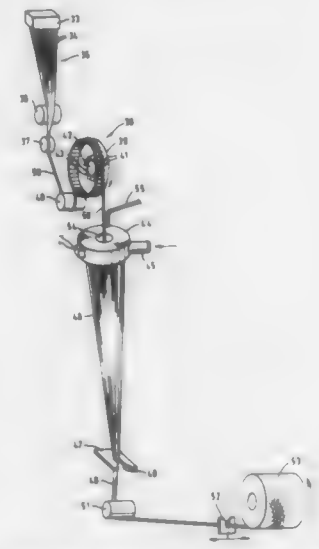
Int. Cl.[5] C03B *37/022*

U.S. Cl. 65—2 **23 Claims**

1. A process of production of a composite yarn or ribbon, comprising:

drawing reinforcement fibers from molten glass;

directing thermoplastic organic material around said reinforcement fiber for contact therewith;



forming a yarn or ribbon from the reinforcement fibers and thermoplastic organic material; and

collecting the yarn or ribbon.

5,011,524

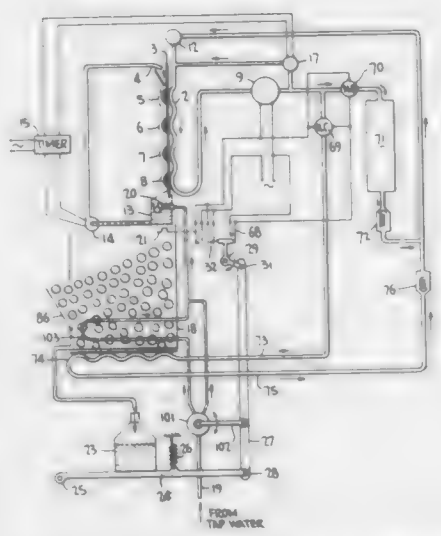
ICE MAKER AND WATER PURIFIER EMPLOYING PRE-COOLED MAKE-UP WATER

John D. Ruff, Alexandria, Va., assignor to Thermadyne, Inc., Alexandria, Va.

Continuation-in-part of Ser. No. 278,447, Dec. 1, 1988, Pat. No. 4,897,099. This application Jan. 29, 1990, Ser. No. 471,884

Int. Cl.[5] B01D *9/04*

U.S. Cl. 62—532 **6 Claims**



5. A method for providing a supply of purified ice and a supply of purified liquid water from a source of unpurified liquid water, said method comprising the steps of:

(a) cooling selected areas of at least one ice-forming surface to a temperature below the freezing temperature of water;

(b) directing a water stream of the unpurified liquid water over said selected areas to form ice at said selected areas while washing impurities away from the formed ice with said steam;

(c) collecting in a sump portions of said water stream that do not form said ice;

(d) recycling into said water stream portions of the water stream collected in step (c);

(e) adding additional unpurified water to said sump from said source to replace water formed as ice in step (b);

(f) increasing the temperature at said selected areas at various times to remove said ice from said ice-forming surface;

(g) collecting in a bin the ice removed in step (f);

(h) warming a portion of said bin at selected times to melt some of the ice therein into purified liquid water;

(i) collecting in a container the purified liquid water derived in step (h); and

(j) flowing unpurified water from said source to said sump through a heat exchanger in thermal contact with said ice in said bin at said selected times to assist said warming of said portion of said bin and pre-cool said additional unpurified water

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5,011,525

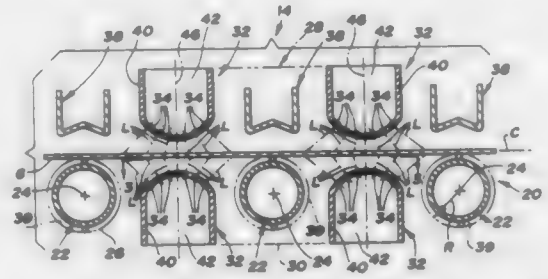
APPARATUS FOR HIGH EFFICIENT SYMMETRICAL QUENCHING OF ROLLER CONVEYED GLASS SHEETS

Ronald A. McMaster, Perrysburg, Ohio, assignor to Glasstech, Inc., Perrysburg, Ohio

Continuation of Ser. No. 473,912, Feb. 2, 1990, abandoned. This application Oct. 9, 1990, Ser. No. 594,684

Int. Cl.[5] C03B *35/18, 27/04*

U.S. Cl. 65—351 **10 Claims**



1. Apparatus for quenching a heated glass sheet, comprising:

a roller conveyor including horizontally extending conveyor rolls that convey the heated glass sheet in a direction of conveyance along a plane of conveyance, said conveyor rolls being spaced from each other along the direction of conveyance and having centers about which the conveyor rolls rotate to provide the conveyance, and each conveyor roll including an outer conveying surface and having a radius R;

upper and lower sets of blastheads located above and below the plane of conveyance in vertical alignment with each other, each blasthead having outlets through which quenching gas is supplied for impingement with the conveyed glass sheet with the locations of impingement from the upper and lower blastheads aligned with each other, said outlets each being located closer to the conveyed glass sheet than the conveyor roll radius R, each outlet having a hydraulic diameter D and providing a gas flow path having a length L between the outlet and the impingement of the gas flow path thereof with the conveyed glass sheet, each outlet having a characteristic length of L/D less than 6, the outlets being spaced in a pattern and oriented to provide the gas flow paths thereof with different angles of incidence at the impingement thereof with the conveyed glass sheet, and the outlets being spaced and oriented to provide impingement locations spaced at the glass sheet; and

a set of roll mimics located above the conveyor rolls in a vertically aligned relationship.

5,011,526

HERBICIDE COMPOSITIONS OF EXTENDED SOIL LIFE

Daniel L. Hyzak, Austin, Tex., and Reed A. Gray, Saratoga, Calif., assignors to ICI Americas Inc., Wilmington, Del.

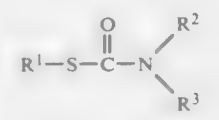
Division of Ser. No. 605,441, Apr. 30, 1984, Pat. No. 4,915,725, which is a continuation-in-part of Ser. No. 507,616, Jun. 24, 1983, abandoned, which is a continuation-in-part of Ser. No. 304,216, Sep. 21, 1981, abandoned, which is a continuation-in-part of Ser. No. 198,034, Oct. 17, 1980, abandoned, which is a continuation of Ser. No. 60,603, Jul. 27, 1979, abandoned, which is a continuation-in-part of Ser. No. 944,094, Sep. 20, 1978, abandoned. This application Jan. 22, 1990, Ser. No. 468,350

Int. Cl.[5] A01N *57/02*

U.S. Cl. 71—87 **19 Claims**

1. An herbicidal composition comprising

(a) an herbicidally effective amount of a thiolcarbamate having the formula



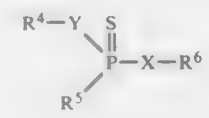
in which

R^1 is C_1–C_6 alkyl,

R^2 is C_1–C_6 alkyl,

R^3 is C_1–C_6 alkyl or cyclohexyl;

(b) a soil-life extending non-phytotoxic amount of an organophosphorus compound having the formula



in which

Y is oxygen or sulfur;

R^4 is C_1–C_6 alkyl other than tertiary butyl, optionally substituted with halo, or is C_3–C_6 alkenyl optionally substituted with cyano;

R^5 is C_1–C_4 alkyl, straight-chain C_1–C_6 alkoxy or C_1–C_4 alkylthio other than tertiary butylthio;

R^6 is C_1–C_4 alkyl substituted with one C_1–C_3 alkylthio group; C_5–C_7 cycloalkyl; C_1–C_4 alkylimino optionally substituted with one, two or three halogen atoms; phenyl optionally substituted with nitro, ortho-nitro and halo, C_1–C_3 alkylsulfinyl, α-pentynyl, or trifluoromethyl; benzyl optionally substituted with halo; or is $-(R^7)-\phi$ in which

R^7 is C_1–C_4 alkylene substituted with eith cyano or with one, two or three halogen atoms; and ϕ is phenyl substituted with halo when R_7 is substituted with cyano but is phenylthio substituted with halo when R_7 is substituted with one, two or three halogen atoms;

X is oxygen or sulfur; with the provisos that:

when R^6 is C_5–C_7 cycloalkyl, substituted or unsubstituted phenyl, or substituted or unsubstituted benzyl, then X must be oxygen;

when R^4 is allyl, Y is oxygen, and R^6 is para-nitrophenyl, then R^5 is other than methyl; and

when R^4 is methyl and R^6 is phenyl, then R^5 is other than C_1–C_4 alkylthio or ethoxy;

in an amount sufficient to extend the soil life of said thiolcarbamate; and

(c) a non-phytotoxic antidotally effective amount of an amide of a haloalkanoic acid.

5,011,527

HERBICIDAL HETEROCYCLIC SULFONAMIDES

Barry A. Wexler, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 29,434, Mar. 30, 1987, Pat. No. 4,906,278, which is a continuation-in-part of Ser. No. 874,307, Jun. 13, 1986, abandoned. This application Oct. 27, 1989, Ser. No. 427,678

Int. Cl.[5] A01N *43/66, 43/68;* **C07D** *401/12, 403/12*

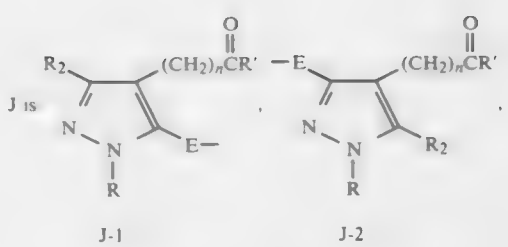
U.S. Cl. 71—93 **36 Claims**

1. A compound of Formula I

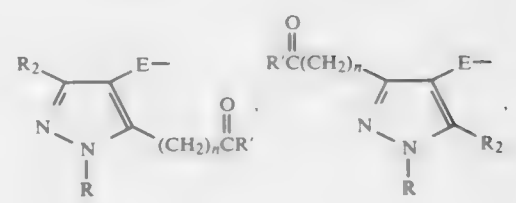


I

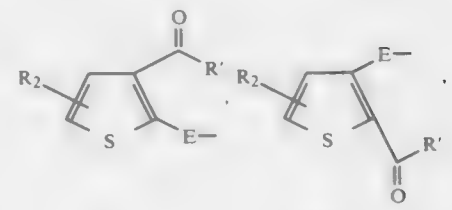
wherein



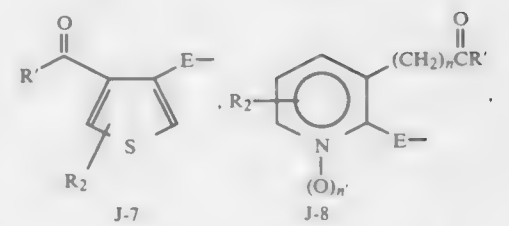
J-1 J-2



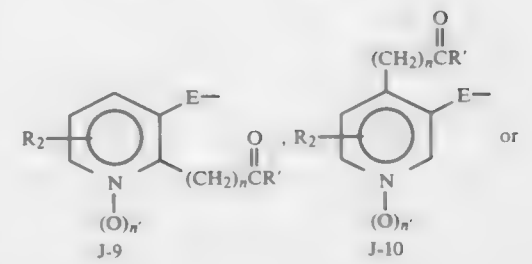
J-3 J-4



J-5 J-6

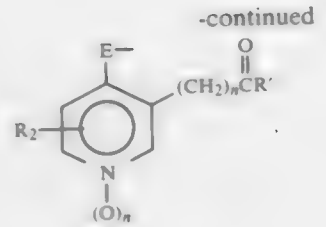


J-7 J-8



J-9 J-10

-continued



J-11

R is H, C_1–C_3 alkyl, phenyl, $SO_2NR_aR_b$, C_1–C_2 haloalkyl, C_2–C_4 alkoxyalkyl, C_2–C_3 cyanoalkyl, C_2–C_4 alkylthioalkyl, C_2–C_4 alkylsulfinylalkyl, C_2–C_4 alkylsulfinylalkyl, CO_2C_1–C_2 alkyl, C_1–C_4 alkylcarbonyl, C_1–C_2 alkylsulfonyl, C_3–C_4 alkenyl, C_3–C_4 alkynyl or C_1–C_2 alkyl substituted with CO_2C_1–C_2 alkyl;

R_1 is H or CH_3;

R_2 is H, C_1–C_3 alkyl, C_1–C_3 haloalkyl, halogen, nitro, C_1–C_3 alkoxy, $SO_2NR_cR_d$, C_1–C_3 alkythio, C_1–C_3 alkysulfinyl, C_1–C_3 alkylsulfonyl, CN, CO_2R_e, C_1–C_3 haloalkoxy, C_1–C_3 haloalkylthio, amino, C_1–C_2 alkylamino, di(CO_1C-$_3$alkyl) amino or C_1–C_2 alkyl substituted with C_1–C_2 alkoxy, C_1–C_2 haloalkoxy, C_1–C_2 alkylthio, C_1–C_2 haloalkylthio, CN, OH or SH;

R_a and R_b are independently C_1–C_2 alkyl;

R_c is H, C_1–C_4 alkyl, C_2–C_3 cyanoalkyl, methoxy or ethoxy;

R_d is H, C_1–C_4 alkyl or C_3–C_4 alkenyl; or

R_c and R_d may be taken together as $-(CH_2)_3-$, $-(CH_2$-$)_4-$, $-(CH_2)_5-$ or $-CH_2CH_2OCH_2CH_2-$;

R_e is C_1–C_4 alkyl, C_3–C_4 alkenyl, C_3–C_4 alkynyl, C_2–C_4 haloalkyl, C_1–C_2 cyanoalkyl, C_5–C_6 cycloalkyl, C_4–C_7 cycloalkylalkyl or C_2–C_4 alkoxyalkyl;

R′ is C_1–C_5 alkyl, C_1–C_5 haloalkyl, C_1–C_5 alkyl substituted with one or two R_3 groups, C_2–C_5 alkenyl, C_2–C_5 haloalkenyl, C_3–C_5 alkenyl substituted with one or two R_3 groups, C_3–C_5 alkenyl, C_3–C_5 haloalkynyl, C_3–C_5 alkynyl substituted with one or two R_3 groups, C_3–C_5 cycloalkyl, C_3–C_5 halocycloalkyl, C_3–C_5 cycloalkyl substituted with one or two R_4 groups, C_4–C_7 cycloalkylalkyl, C_4–C_7 halocycloalkylalkyl, C_4–C_7 cycloalkylalkyl substituted with one or two R_4 groups, phenyl or benzyl;

R_3 is C_1–C_3 alkoxy, C_1–C_3 alkylthio, C_1–C_3 haloalkoxy, C_1–C_3 alkylsulfinyl, C_1–C_3 alkylsulfonyl, CN, NO_2, OH, OR_5 or di-(C_1–C_3 alkyl)amino;

R_4 is C_1–C_3 alkyl, C_1–C_3 alkoxy, C_1–C_3 haloalkoxy, CN, NO_2, OH, OR_5 or di-(C_1–C_3 alkyl)amino;

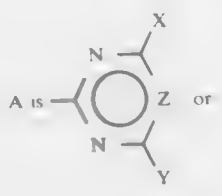
R_5 is SO_2CH_3, $Si(CH_3)_3$, C_2–C_3 alkylcarbonyl or CO_2C-$_1$–C_2 alkyl;

E is a single bond or CH_2;

W is O or S;

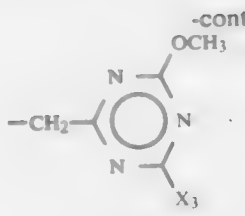
n is 0 or 1;

n′ is 0 or 1;



A-1

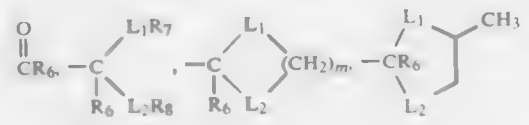
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A-6

X is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_2–C_4 haloalkoxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkylthio, C_1–C_4 alkylthio, C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino, di(C_1–C_3 alkyl)amino or C_3–C_5 cycloalkyl;

Y is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_2–C_4 haloalkoxy, C_1–C_4 haloalkylthio, C_1–C_4 alkylthio, C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino, di(C_1–C_3 alkyl)amino, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, C_2–C_5 alkylthioalkyl, C_1–C_4 haloalkyl, C_2–C_4 alkynyl, azido, cyano, C_2–C_5 alkylsulfinylalkyl, C_2–C_5 alkylsulfonylalkyl,



or $N(OCH_3)CH_3$;

m is 2 or 3;

L_1 and L_2 are independently O or S;

R_6 is H or C_1–C_3 alkyl;

R_7 and R_8 are independently C_1–C_3 alkyl;

Z is N; and

X_3 is CH_3 or OCH_3;

and their agriculturally suitable salts;

provided that

(a) when W is S, then R_1 is H, A is A-1 and Y is CH_3, OCH_3, OC_2H_5, CH_2OCH_3, C_2H_5, CF_3, SCH_3, $OCH_2CH{=}CH_2$, $OCH_2C{\equiv}CH$, $OCH_2CH_2OCH_3$, $CH(OCH_3)_2$ or 1,3-dioxolan-2-yl;

(b) when the total number of carbons of X and Y is greater than four, then the number of carbons of R must be less than or equal to two;

(c) when J is J-1, J-2, J-3, or J-4 then R′ is other than C_3–C_5 cycloalkyl or phenyl;

(d) when J is J-5, J-6, or J-7 wherein E is a single bond, then R′ is other than C_1–C_5 alkyl, C_3–C_5 alkenyl, phenyl, benzyl, cyclopentyl or C_4–C_7 cycloalkylalkyl;

(e) when the total number of carbon atoms of X and Y is greater than four, then the total number of carbon atoms of R_2 and R′ must be less than or equal to 7; and

(f) when J is J-5, J-6 or J-7 and E is CH_2, then R′ is other than C_1–C_5 alkyl.

13. An agriculturally suitable composition for controlling the growth of undesired vegetation comprising an effective amount of the compound of claim 1 and at least one of the following surfactant, solid or liquid diluent.

5,011,528

PUMPING LIQUID METALS

Joseph A. Mulcahy, Brooklin, Canada, assignor to J. Mulcahy Enterprises Inc., Whitby, Canada

Filed Jun. 8, 1990, Ser. No. 535,164

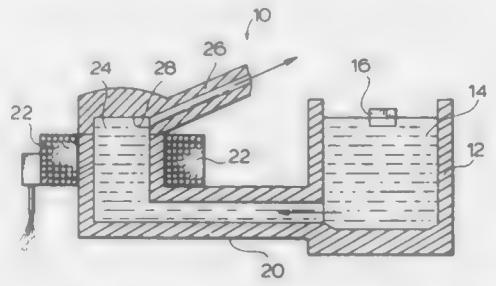
Int. Cl.[5] C22B *4/00*

U.S. Cl. 75—10.16 **6 Claims**

1. A method of elevating an electromagnetic liquid metal from enclosed zone to a location above said enclosed zone, which comprises:

feeding said electromagnetic liquid metal to said enclosed zone to fill and maintain said enclosed zone substantially filled with said electromagnetic liquid metal,

forming a magnetic field rotating around said enclosed zone of sufficient intensity to cause said liquid to rotate about an axis of rotation,



providing an upwardly-inclined enclosed path extending from said enclosed zone offset from said axis of rotation to said location, and

effecting said rotation of said liquid metal so as to generate sufficient velocity to deliver said liquid metal from said enclosed zone to said location along said enclosed path.

5,011,529

CURED SURFACES AND A PROCESS OF CURING

Kathryn E. Hogue, Corning; Srinivas H. Swaroop, and Raja R. Wusirika, both of Painted Post, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Mar. 14, 1989, Ser. No. 323,291

Int. Cl.[5] C22C *29/12*

U.S. Cl. 75—235 **15 Claims**



1. A cured porous sintered metal-metal oxide structure comprising sintered aluminum and additional metal powders, wherein said structure has an open porosity of 20–60% and contains a durable uniform cured aluminum oxide layer integral on and throughout said structure.

5,011,530

METALLIZING COMPOSITION FOR USE WITH CERAMICS

Kazuo Kondo, and Asao Morikawa, both of Aichi, Japan, assignors to NGK Spark Plug Co. Ltd., Japan

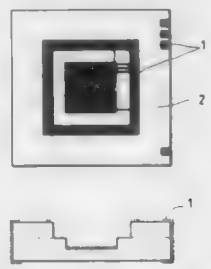
Filed Dec. 23, 1988, Ser. No. 289,339

Claims priority, application Japan, Dec. 24, 1987, 62-325290

Int. Cl.[5] B05B *7/00;* **H01B** *1/02, 1/06*

U.S. Cl. 106—1.13 **2 Claims**

1. A metallizing composition for use in ceramics which comprises 100 parts by weight of a CuO-Cu combination consisting of 30–70 wt % CuO and 70–30 wt % Cu, at least one inorganic component selected from among no more than 10 parts by weight of MnO_2 based on 100 parts by weight of the CuO-Cu combination, no more than 7 parts by weight of Pt based on 100 parts by weight of the CuO-Cu combination and no more than 5 parts by weight of Au based on 100 parts by weight of the CuO-Cu combination, an organic binder and a solvent, wherein the Cu particles have a size in the range of 0.5 –20 μm and consist of at least two classes of particles having different average sizes, selected from a group having an average size of 0.8 μm, a group having an average size of 3.2 μm, and a group having an average size of 15 μm.



5,011,531

METHOD AND APPARATUS FOR DEGASSING MOLTEN METAL UTILIZING RH METHOD

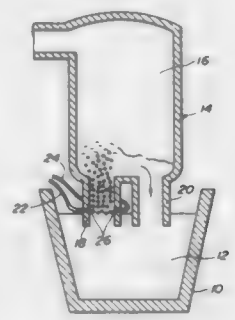
Kiyoshi Takahashi; Nobuyoshi Takashiba; Shinji Kojima; Haruji Okuda; Shigeru Ohmiya, and Ryuichi Ikeda, all of Okayama, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Continuation of Ser. No. 212,608, Jun. 28, 1988, abandoned. This application Dec. 27, 1989, Ser. No. 456,236

Claims priority, application Japan, Jun. 29, 1987, 62-159699

Int. Cl.[5] C21C *7/00*

U.S. Cl. 75—511 **8 Claims**



1. A method for degassing molten metal comprising the steps of:

establishing a path for circulating molten metal through a degassing chamber maintained under vacuum;

providing a high pressure has discharge pathway to said circulating path upstream of said degassing chamber for discharging high pressure gas into said molten metal;

providing a low pressure gas discharge pathway to said circulating path upstream of said degassing chamber for discharging said low pressure gas into said molten metal;

supplying a high pressure gas to said high pressure gas discharge pathway, the pressure of said high pressure gas adjusted to reach the center portion of said path;

supplying a low pressure gas to said low pressure gas discharge pathway, the pressure of said low pressure gas adjusted to reach the peripheral portion of said path,

forming a substantially uniform distribution of gases across said path with said high pressure gas in said center portion of said path and said low pressure gas in said peripheral portion of said path.

5,011,532
DISPERSED SYSTEMS AND METHOD OF MANUFACTURE

Richard C. Fuisz, Washington, D.C., assignor to Fuisz Pharmaceutical Ltd., Washington, D.C.

Continuation-in-part of Ser. No. 169,838, Mar. 18, 1988, Pat. No. 4,855,326, which is a continuation-in-part of Ser. No. 44,371, Apr. 20, 1987, abandoned. This application Dec. 13, 1988, Ser. No. 283,742

Int. Cl.[5] C09D *105/00*

U.S. Cl. 106—215 **12 Claims**

1. A mass of spun fibers consisting essentially of one or more sugars where the sugars are capable of being spun into fibers that are readily water-soluble, and an olegginous substance that in its separate state is hydrophobic, said olegginous substance being distributed on or incorporated in the fibers of said mass such that said mass of fibers when added to water disperses therein to form a colloidal or pseudo-colloidal dispersion.

5,011,533
METALLIC PIGMENT COMPOSITION

Teruaki Kuwajima, Higashiosaka; Satoshi Nagahata, Suita, and Akihiro Kanakura, Hirakata, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

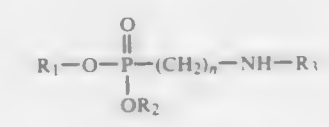
Filed Jun. 26, 1989, Ser. No. 380,594

Claims priority, application Japan, Jun. 24, 1988, 63-157651

Int. Cl.[5] C09C *1/62*

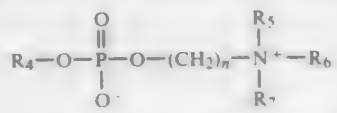
U.S. Cl. 106—404 **6 Claims**

1. A metallic pigment composition comprising a metallic pigment and a phosphorus compound selected from the group consisting of a phosphite represented by the following formula (I);



(I)

wherein R_1, R_2 and R_3, which are the same or different, represent a hydrogen atom, an alkyl group having 1 to 24 carbon atoms, a halogen-substituted alkyl group having 1 to 24 carbon atoms, an aryl group, a cycloalkyl group, an alkenyl group or an alkanol group, and n is an integer of 2 to 4, and a phosphobetain represented by the following formula (II):



(II)

wherein R_4, R_5, R_6 and R_7, which are the same or different, represent a hydrogen atom, an alkyl group having 1 to 24 carbon atoms, a halogen-substituted alkyl group having 1 to 24 carbon atoms, an aryl group, a cycloalkyl group, an alkenyl group or an alkanol group, n is the same as mentioned above.

5,011,534
CALCINED KAOLIN CLAY FILLER PIGMENT FOR ENHANCING OPACITY AND PRINTING PROPERTIES OF NEWSPRINT AND MECHANICAL PAPERS

Richard R. Berube, Holmdel, N.J.; John S. Babiec, Jr., Berwyn, Pa.; M. Phillip Jameson, Sommerville; Andrew R. Negele, Edison, both of N.J., and Mitchell J. Willis, Macon, Ga., assignors to Engelhard Corporation, Iselin, N.J.

Filed Feb. 14, 1990, Ser. No. 479,793

Int. Cl.[5] C04B *14/10*

U.S. Cl. 106—416 **3 Claims**

1. A method for making a low abrasion kaolin clay pigment suitable for filling paper produced from mechanical pulp which comprises selecting a kaolin crude composed of kaolin particles having a low crystallinity index, a G.E. brightness below 82%; a particle size distribution such that at least 75% by weight is finer than 2 microns; said kaolin containing at least 1.2%, by weight Fe_2O_3 and at least 2% by weight TiO_2, forming said selected crude clay into a dispersed aqueous pulp containing at least about 55% clay solids, centrifuging said pulp to remove grit, and, without subjecting the resulting degritted slip to bleaching or further particle size fractionation, spray drying said slip to produce pulverulent microspheres, pulverizing the microspheres, calcining the pulverized microspheres until the kaolin undergoes at least partially the characteristic kaolin exotherm, and repulverizing the resulting calcined clay having a G.E. brightness from 70 to 84%.

5,011,535
STABLE BORON RESINS OF HIGH SELECTIVE ABSORBENT POWER

Renato Carobbi, Pistoia, and Franco Innocenti, Bagno A Ripoli, both of Italy, assignors to Inalco S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 171,447, Mar. 21, 1988, Pat. No. 4,937,294. This application May 24, 1990, Ser. No. 527,837

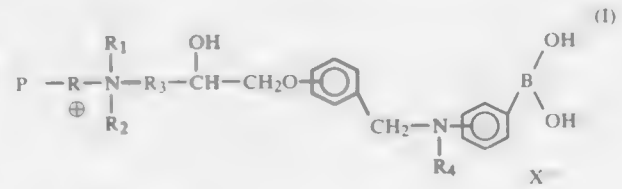
Claims priority, application Italy, Apr. 3, 1987, 19965 A/87

Int. Cl.[5] C13J *1/06*

U.S. Cl. 127—46.1 **7 Claims**

1. A method for purifying an aqueous lactulose syrup containing other carbohydrates, said method comprising the steps of:

(a) activating a boron resin of general formula (I)



(I)

in which:

P is a polyacrylic matrix,

R is $-(CH_2)_n-$ where n lies between 0 and 5,

R_1 and R_2, which can be the same or different, are C_1-C_5 alkyl,

R_3 is $-(C_nH_{2n})$ where n varies from 1 to 5,

R_4 is H or C_1-C_5 alkyl,

X^- is an anion chosen from halogens and hydroxyl; by salifying the resin with HCl 1N, then by treating with deionized water up to a pH value of the eluate higher than 5, then with NaOH 0.2N and finally with deionized water up to a pH value of the eluate lower than 9;

(b) contacting an aqueous lactulose syrup containing from 15% to 30% by wt. of lactulose and from 5% to 30% by wt. of other carbohydrates with said activated boron resin; and

(c) eluting the carbohydrates absorbed on the boron resin with water and then with HCl from 0.5N to 1N, separately collecting the eluates.

5,011,536
HANDLE FOR BABY WIPE CONTAINER

Mark V. Boom, 22627 Carolina, St. Clair Shores, Mich. 48080

Filed Aug. 24, 1990, Ser. No. 572,930

Int. Cl.[5] B08B *7/00*

U.S. Cl. 134—6 **8 Claims**

1. A method of utilizing a wipe to clean an infant comprising the steps of:

placing a handle on a wipe container;

placing the wipe container on one hand of a user such that the container is on an outer side of the one hand;

using the one hand to secure the infant's legs; and



using the user's other hand to remove wipes from the container and manipulate them to clean the infant.

5,011,537
PRESSURE GAUGE CLEANING METHOD

Gerald G. Voegele, St. Bonifacius, and William H. Penny, St. Anthony, both of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.

Filed Nov. 3, 1988, Ser. No. 266,528

Int. Cl.[5] B08B *9/04*

U.S. Cl. 134—22.11 **10 Claims**

1. A method for cleaning the interior surface of a pressure gauge, the gauge having a stem, a bore in the stem, and a pressure sensitive Bourdon Tube, closed at a distal end and connected at a proximal end at an angle to the bore at a port, the method comprising:

inserting a guide tool in the bore of the stem;

aligning the guide tool with the port;

inserting a flexible tubing through the guide tool and into the Bourdon tubing and

dispensing a fluid from the distal end of the flexible tube to flush the interior surfaces of the Bourdon Tube and the bore of the stem.

5,011,538
VISCOELASTIC CLEANING COMPOSITIONS AND METHODS OF USE THEREFOR

William L. Smith, Pleasanton, Calif., assignor to The Clorox Company, Oakland, Calif.

Division of Ser. No. 121,549, Nov. 17, 1987. This application Sep. 6, 1989, Ser. No. 403,553

Int. Cl.[5] B08B *9/02*

U.S. Cl. 134—22.13 **5 Claims**

1. A method for cleaning restrictions caused by organic materials in drain pipes comprising

(a) introducing to a drain pipe having an organic restriction therein a drain opening composition comprising a drain opening active and a viscoelastic thickening system wherein the composition has a relative elasticity of greater than about 0.03 sec/Pa a delivery percentage-of above about 75%, as determined by pouring a first quantity of composition through a second quantity of standing water and measuring an amount of undiluted product delivered, and a flow rate of less than about 150 mL/minute through a US 230 mesh screen;

(b) allowing the composition to remain in contact with the organic restriction material to react therewith; and

(c) rinsing the composition and restriction away.

5,011,539
DESCALING OF JACKET OF GLASS-LINED INSTRUMENTS

Teruo Matsuda, Chiba; Masayoshi Miki, and Hiromu Ochi, both of Ehime, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 14, 1989, Ser. No. 338,000

Claims priority, application Japan, Dec. 2, 1988, 62-306664; Feb. 2, 1989, 1-25292

Int. Cl.[5] C23F *1/44, 1/00*

U.S. Cl. 134—22.14 **11 Claims**

1. A method for descaling the inside of a jacket of a glass-lined instrument by circulating an aqueous hydrochloric acid solution containing at least one acid inhibitor selected from the group consisting of laurylamine, lauryldimethylamine and propargyl alcohol, which comprises the steps of:

(a) measuring a rate of hydrogen permeation through the jacket material or a test piece fitted to the circulation line of the aqueous hydrochloric acid solution;

(b) inserting the measured value into a previously established relationship between thickness of a steel plate and a rate of hydrogen permeation;

(c) estimating the rate of hydrogen permeated through the matrix of the instrument to the lining glass side from the relationship; and

(d) controlling the concentrations of the hydrochloric acid and the acid inhibitor, the descaling temperature or the descaling time so that the amount of hydrogen permeated through the matrix may not exceed 30 ml per m^2 of the matrix during the descaling.

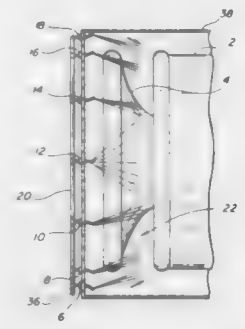
5,011,540
METHOD AND APPARATUS FOR CLEANING A GAS TURBINE ENGINE

Peter McDermott, 79 Thurleigh Road, London SW12, England

Filed Dec. 24, 1986, Ser. No. 946,360

Int. Cl.[5] B08B *3/02*

U.S. Cl. 134—23 **4 Claims**



1. A method of cleaning a compressor of a gas turbine engine comprising the steps of:

operating the engine at or near full engine speed and load;

injecting cleaning solution into the air intake area of the engine at a position of said air intake where the intake air velocity is relatively low; and

performing said injection at an entrance angle such that resultant air/cleaning solution mixture is injected in a pattern at an angle of approximately 60°.

5,011,541
CLEANING OF FOULED SPINNERET PARTS

Danny R. Leech, Waynesboro, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

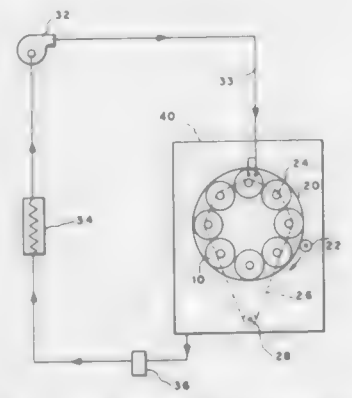
Filed May 30, 1989, Ser. No. 357,847

Int. Cl.[5] B08B *3/00*

U.S. Cl. 134—34 **4 Claims**

1. A process for cleaning parts of fouled spinneret assemblies, wherein polymeric residues and inorganic particles deposited during the spinning of synthetic organic fibers are

removed from the part, the process comprising, impacting a part of the fouled assembly with a substantially columnar jet of water for a time sufficient to remove the polymeric and inorganic residues from the part, the jet exiting from a nozzle being



located at a distance in the range of 0.5 to 10 centimeters from the surface of the piece being cleaned, the nozzle having an exit orifice diameter in the range of 0.01 to 0.1 centimeter and the water being supplied at a pressure just upstream of the exit orifice in the range of 17,000 to 69,000 kiloPascals.

5,011,542

METHOD AND APPARATUS FOR TREATING OBJECTS IN A CLOSED VESSEL WITH A SOLVENT

Peter Weil, Helene-Mayer-Ring 10, D-8000 Munich, Fed. Rep. of Germany

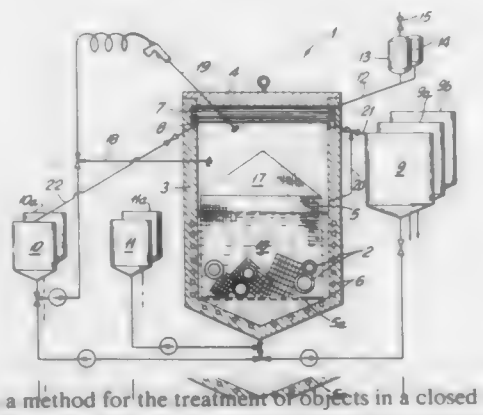
PCT No. PCT/EP88/00671, § 371 Date Mar. 9, 1989, § 102(e) Date Mar. 9, 1989, PCT Pub. No. WO89/01057, PCT Pub. Date Feb. 9, 1989

PCT Filed Jul. 21, 1988, Ser. No. 332,274

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1987, 3725565

Int. Cl.[5] B08B *3/02, 3/08, 3/10*

U.S. Cl. 134—38 **7 Claims**



1. In a method for the treatment of objects in a closed vessel with solvents for stripping enamel and removing coatings from the objects, in which the objects to be treated are treated for at least part of the time by immersion in solvents and subsequently washed by spraying in a solvent-free region of the vessel, the improvement which comprises that said method includes at least the following additional steps:

a) as solvents after closure of the treating vessels, a treating agent mixture with at least a preponderance of a solvent such as methylene chloride, and an amount of water in excess of that required to form an azeotropic mixture is used;

b) the treating agent mixture is heated to the boiling point of the mixture;

c) at the end of the treatment time, the settling and, if necessary, condensing solvent is removed from the treating vessel;

d) water is heated in the treating vessel and evaporated, whereby the water acts as a heat carrier;

e) the solvent on or in the coating or enamel residues and the objects to be treated is distilled off azeotropically from the system with water and removed before the vessel is opened.

5,011,543

THERMOCOUPLE TYPE TEMPERATURE SENSOR

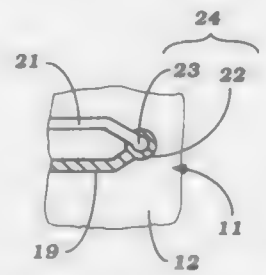
Hidetoshi Yokoi, Tokyo, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed May 19, 1988, Ser. No. 195,941

Claims priority, application Japan, May 22, 1987, 62-123662

Int. Cl.[5] H01L *35/28*

U.S. Cl. 136—211 **6 Claims**



1. A thermocouple comprised of a base, a first metal strip having an elongated portion extending from one end of said base and deposited on said base, a second metal strip having an elongated portion extending from said one end of said base and deposited on said base in spaced relationship to said first strip along at least a major portion of its length, the metals of said strips having different theoelectric characteristics, portions of said strips spaced from said one end of said base being in contacting relationship to form a thermocouple that generates an electrical potential across the unconnected ends of said strips at said one end of said base depending on the temperature at said contacting portions.

5,011,544

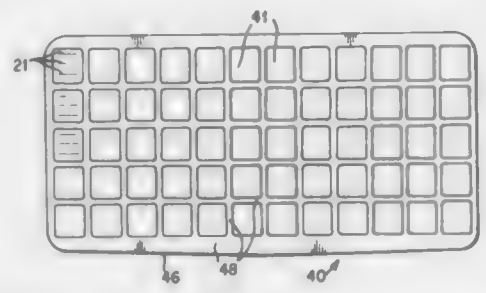
SOLAR PANEL WITH INTERCONNECTS AND MASKING STRUCTURE, AND METHOD

Edward M. Gaddy, Potomac, and Ramon Dominguez, Rockville, both of Md., assignors to Solarex Corporation, Rockville, Md.

Filed Sep. 8, 1989, Ser. No. 404,999

Int. Cl.[5] H01L *31/05, 31/052*

U.S. Cl. 136—246 **26 Claims**



1. A solar panel comprising:

a plurality of solar cells having radiation absorbing surfaces and opposed back surfaces;

conducting means for interconnecting the solar cells;

a transparent superstrate upon one surface of which the radiation absorbing surfaces are mounted; and

means upon a surface of said transparent superstrate for masking said interconnecting means and for masking the peripheral edge portions of said radiation absorbing surfaces of said solar cells so as to present a uniform visual appearance to the panel.

5,011,545

METHOD OF MANUFACTURING HARD-TO-WORK ALLOY ARTICLES SUCH AS OF INTERMETALLICS AND SUPERCONDUCTING COMPOUNDS

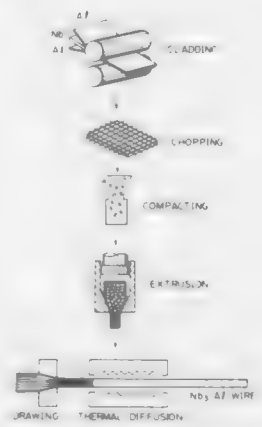
Senri Ikeda, 7-54 Miyamachi 3-chome; Sakae Saito, 5-5-304 Tsurugaya 2-chome, both of Sendai-shi, Miyagi-ken; Shuji Hanada, Sendai, and Hironobu Hoshi, Tokyo, all of Japan, assignors to Nippon Stainless Steel Co., Ltd., Tokyo; Senri Ikeda and Sakae Saito, both of Sendai, all of, Japan

Filed Sep. 18, 1989, Ser. No. 408,364

Claims priority, application Japan, Sep. 19, 1988, 63-234256

Int. Cl.[5] H01L *39/24;* **C22B** *7/00*

U.S. Cl. 148—11.5 F **10 Claims**



1. A method for manufacturing a hard-to-work alloy article comprising the steps of:

preparing a laminate member comprising a plurality of layers of different metals in a stoichiometric ratio for the intended alloy composition;

dividing the laminate member into pieces;

combining the pieces in a random arrangment to a body for plastic deformation;

subjecting the body to plastic deformation under pressure to form an article having a given shape and dimensions; and

applying a thermal diffusion treatment to the article.

5,011,546

WATER SOLUBLE SOLDER FLUX AND PASTE

Janice D. Frazier; Robert L. Jackson, both of San Jose, Calif., and Richard A. Reich, Georgetown, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 12, 1990, Ser. No. 508,740

Int. Cl.[5] B23K *35/34*

U.S. Cl. 148—23 **17 Claims**

1. An improved essentially non-corrosive, low toxicity, water-soluble, solder paste characterized by high tack and long tack life, consisting essentially of about 80% to 96% by weight of a solder metal powder; and about 4 to 20% by weight of a non-corrosive, water soluble flux, said water-soluble flux comprising a mixture of two non-corrosive, water-soluble components, one component being about 3 to 15% by weight of an organic moiety with a polar group selected from a group consisting of carboxylic acids, sulfonic acids, phosphoric acids, sulfate monoesters and phosphate esters or mixtures thereof, the other component being about 1 to 5% by weight of a non-halogenated amine.

5,011,547

ALUMINUM ALLOY COMPOSITE MATERIAL FOR BRAZING

Hideo Fujimoto, Ninomiya; Masakazu Hirano, Utsunomiya; Mituo Hashiura, and Toshiaki Murao, both of Kariya, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe and Nippondenso Company, Ltd., Kariya, both of, Japan

Filed Sep. 11, 1989, Ser. No. 405,292

Claims priority, application Japan, Sep. 12, 1988, 63-229679; Aug. 11, 1989, 1-208716

Int. Cl.[5] B23K *35/34*

U.S. Cl. 148—24 **12 Claims**

1. An aluminum alloy composite material for brazing, comprising:

a core member having two surfaces made of aluminum alloy, the content of Mg being restricted to 0.2% or less by weight as an impurity;

an Al-Si member clad on one surface of said core member; and

a supplying member made of aluminum alloy consisting essentially of 0.3% to 2.5% by weight of Mg and clad on the opposite surface of said core member.

5,011,548

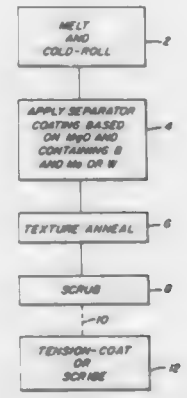
COMPOSITION FOR DEBORONIZING GRAIN-ORIENTED SILICON STEEL

Douglas C. Dean, Pittsburgh, Pa., assignor to Allegheny Ludlum Corporation, Pittsburgh, Pa.

Division of Ser. No. 57,559, Jun. 3, 1987, Pat. No. 4,798,873. This application Jul. 28, 1988, Ser. No. 225,689

Int. Cl.[5] C21D *1/70*

U.S. Cl. 148—27 **5 Claims**



1. A composition of matter for use in deboronizing grain-oriented silicon steel having boron therein, said composition being in the form selected from the group consisting of dry powder and aqueous slurry made therefrom, said composition consisting essentially of boron, on a dry-solids basis, 5 to 20% by weight of an agent selected from the group consisting of molybdenum compounds and tungsten compounds and the remainder magnesium oxide, wherein the composition contains, per one part by weight boron, at least 2 parts by weight of molybdenum or at least 4 parts by weight of tungsten.

5,011,549

HOMOEPITAXIAL GROWTH OF ALPHA-SIC THIN FILMS AND SEMICONDUCTOR DEVICES FABRICATED THEREON

Hua-Shuang Kong, Raleigh; Jeffrey T. Glass, Apex, and Robert F. Davis, Raleigh, all of N.C., assignors to North Carolina State University, Raleigh, N.C.

Division of Ser. No. 113,573, Oct. 26, 1987, Pat. No. 4,912,064. This application Oct. 16, 1989, Ser. No. 422,032

Int. Cl.[5] H01L *21/20, 21/203*

U.S. Cl. 148—33.1 **9 Claims**

1. A silicon carbide semiconductor product useful in the

fabrication of semiconductor devices which will operate at high powers, high frequencies, high radiation densities, and temperatures over 500° C., said product comprising:

a 6H SiC substrate having a flat interface surface that is



inclined more than one degree off axis with respect to a basal plane thereof substantially towards one of the <1120> directions; and

a 6H SiC thin film homoepitaxially deposited on said substrate interface surface.

5,011,550

LAMINATED STRUCTURE OF COMPOUND SEMICONDUCTORS

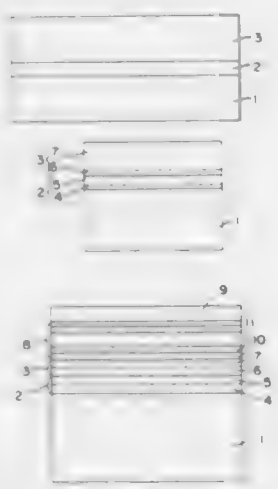
Fumihiro Konushi; Akinori Seki; Jun Kudo, and Masayoshi Koba, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 12, 1988, Ser. No. 193,400

Claims priority, application Japan, May 13, 1987, 62-117575; Jul. 6, 1987, 62-169162; Dec. 3, 1987, 62-306185

Int. Cl.[5] H01L *21/20*

U.S. Cl. 148—33.5 **6 Claims**



1. A laminated structure of compound semiconductors comprising a IV semiconductor underlying substrate, a first III-V compound semiconductor layer that is formed as an intermediate layer on said IV compound semiconductor underlying substrate, and a second III-V compound semiconductor layer that is formed on said intermediate layer, wherein the thermal expansion coefficients of said IV compound semiconductor underlying substrate, E_b, said first III-V compound semiconductor layer, E_{l1}, and said second III-V compound semiconductor layer, E_{l2}, have the following relationship: $E_{l1} > E_{l2} > E_b$.

5,011,551

PROTECTIVE COATING FOR STEEL SURFACES AND METHOD OF APPLICATION

Dario A. Emeric, Alexandria; Christopher E. Miller, Burke, and Bryan Westich, Woodbridge, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 288,357, Dec. 22, 1988. This application Sep. 1, 1989, Ser. No. 401,6[illegible]

Int. Cl.[5] C23C *22/13*

U.S. Cl. 148—248 **5 Claims**

1. A composition for converting corroded steel surfaces to a substrate suitable for accepting organic coatings comprising the following ingredients, with their respective volume or weight percentage ranges:

an aliphatic alcohol, 2–20% v/v
phosphoric acid, 5–15% v/v
an alkali nitrate, 0.3–3% w/v
tannic acid, 0.1–2% w/v
zinc nitrate, 0.3–3% w/v
surface active agent, 0.1–1% w/v and
water, softened balance

wherein % v/v denotes volume percent, e.g. ml per 100 ml of solution, and % w/v denotes weight percent, e.g. grams per 100 ml of solution.

5,011,552

METHOD FOR PRODUCING A RARE EARTH METAL-IRON-BORON PERMANENT MAGNET BY USE OF A RAPIDLY-QUENCHED ALLOY POWDER

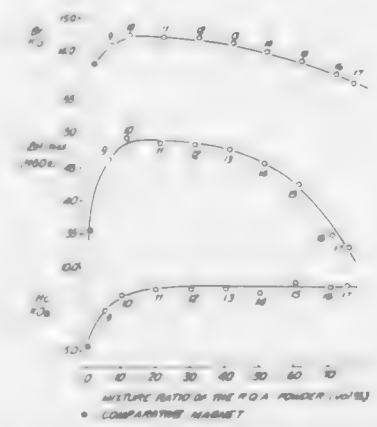
Tsutomu Otsuka, and Etsuo Otsuki, both of Miyagi, Japan, assignors to Tokin Corporation, Sendai, Japan

Continuation of Ser. No. 97,656, Sep. 18, 1987, abandoned. This application Nov. 17, 1989, Ser. No. 438,724

Claims priority, application Japan, Sep. 16, 1986, 61-217629; Jan. 30, 1987, 62-18709; Apr. 9, 1987, 62-85676; Apr. 11, 1987, 62-87917; May 18, 1987, 62-12[illegible]26

Int. Cl.[5] H01F *1/053*

U.S. Cl. 148—302 **12 Claims**



1. An iron-rare earth metal-boron permanent magnetic body with a high coercive force produced by liquid phase sintering, said magnetic body being characterized by a solid solution phase ranging up to about 70% by volume of said body, said solid solution phase being formed of at least one metal element (R) selected from the group consisting of yttrium and rare earth metals and at least one of boron (B) and a transition metal (T), with magnetic crystalline particles making up substantially the balance uniformly dispersed in said solid solution phase, each of said magnetic crystalline particles being a magnetic intermetallic compound represented by the chemical formula $R_2T_{14}B$, where R is at least one element selected from the group consisting of yttrium (Y) and rare earth metals, T being a transition metal but comprising Fe 50–100 wt. % of the transition metal present, said magnetic body being further

characterized in that the oxygen content does not exceed 2,000 ppm and that the body exhibits a maximum energy product of at least about 40 MGOe.

5,011,553

IRON-RICH METALLIC GLASSES HAVING HIGH SATURATION INDUCTION AND SUPERIOR SOFT FERROMAGNETIC PROPERTIES

V. R. V. Ramanan, Dover, N.J., assignor to Allied-Signal, Inc., Morris Township, N.J.

Filed Jul. 14, 1989, Ser. No. 379,762

Int. Cl.[5] H01L *41/06*

U.S. Cl. 148—403 **9 Claims**

1. A magnetic metallic glass alloy that is at least about 80% glassy and characterized by the presence, in combination of high saturation induction and high Curie temperature, having a composition described by the formula $Fe_aCo_bNi_cB_dSi_eC_f$, where "a" - "f" are in atom percent, "a" ranges from about 75 to about 81, "b" ranges from 0 to about 6, "c" ranges from about 2 to about 6, "d" ranges from about 11 to about 16, "e" ranges from 0 to about 4, and "f" ranges from 0 to about 4, with the provisos that (i) the sum of "b" and "c" may not be greater than about 8, (ii) "d" may not be greater than about 14 when "b" is zero, (iii) "e" may be zero only when "b" is greater than zero, and (iv) "f" is zero when "e" is zero.

5,011,554

RUTHENIUM ALUMINUM INTERMETALLIC COMPOUNDS

Robert L. Fleischer, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 26, 1989, Ser. No. 457,009

Int. Cl.[5] C22C *21/00*

U.S. Cl. 148—430 **18 Claims**

1. An intermetallic compound of ruthenium and aluminum comprising: about 40 to 51 atomic percent aluminum and the balance substantially ruthenium, the intermetallic compound having a high hardness up to about 1150° C., and good room temperature toughness.

5,011,555

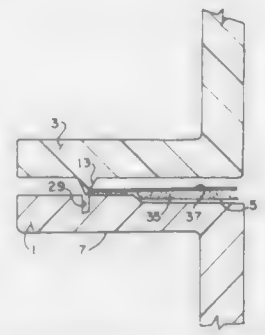
METHOD OF ULTRASONICALLY CUTTING AND SEALING THERMOPLASTIC WORKPIECES PARTICULARLY A FILTER

Thomas B. Sager, Newtown, Conn., assignor to Branson Ultrasonics Corporation, Danbury, Conn.

Filed Sep. 15, 1989, Ser. No. 407,638

Int. Cl.[5] B29C *65/08*

U.S. Cl. 156—73.1 **12 Claims**



1. A two step method for ultrasonically welding two pieces of thermoplastic material together with a membrane between said pieces, each piece having a peripheral rim; a first said piece having a continuous annular bead on the inside of the rim of said first piece; a second of said pieces having a continuous annular energy director on the inside of the rim of said second piece; said method comprising

a. placing said membrane over the inside of said first piece such that said membrane covers said bead, ultrasonically cutting said membrane and creating a groove in the rim of said first piece, and ultrasonically melting said bead so as to weld said membrane to said first piece; and

b. bringing together said first and second pieces so that said energy director lines up with said groove, and ultrasonically melting said energy director so that it fills said groove creating a strong weld between said pieces.

5,011,556

PROCESS FOR THE PRODUCTION OF POLYVINYLIDENE FLUORIDE LAMINATED PRODUCT

Takashi Yamaguchi, Yokkaichi; Tadahiko Tsutsumi, Suzuka, and Toshie Watanabe, Sendai, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Aug. 17, 1989, Ser. No. 394,968

Int. Cl.[5] B32B *31/02*

U.S. Cl. 156—83 **9 Claims**

1. A process for producing a laminated product of a polyvinylidene fluoride layer (A) and a rubber-like polymer layer (B) which comprises:

providing an adhesive containing (a) a rubber-like polymer, (b) one or more metal compounds selected from oxides and hydroxides of an element belonging to Groups II to IV of the Periodic Table, and (c) an organic solvent which is capable of dissolving or swelling said polyvinylidene fluoride layer (A), said rubber-like polymer layer (B), or both,

applying said adhesive to the surface of said polyvinylidene fluoride layer (A), said rubber-like polymer layer (B), or both and

pressing said polyvinylidene fluoride layer (A) and said rubber-like polymer layer (B) together to adhere them at a temperature not higher than the melting point of said polyvinylidene fluoride.

5,011,557

METHOD FOR FORMING JOINED SECTION OF OPTICAL BRANCH FIBERS PRODUCT, AND APPARATUS THEREFOR

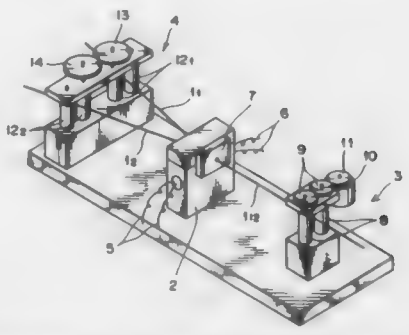
Hiroshi Tsugita, Ueda, and Takao Shimizu, Kousboku, both of Japan, assignors to Kurashiki Boseki Kabushiki Kaisha, Okayama and Chikuma Koki Co., Ltd., Nagano, both of, Japan

Filed Feb. 28, 1990, Ser. No. 486,103

Claims priority, application Japan, Mar. 1, 1989, 1-49028

Int. Cl.[5] D04H *3/08; G02B 6/26, 5/14*

U.S. Cl. 156—180 **4 Claims**



2. An apparatus for forming the joined section of a plurality of optical branch fibers, said apparatus comprising:

a die having a through-hole extending therethrough for shaping optical fibers drawn therethrough;

heating means operatively associated with said die for heating said die;

means for supplying a plurality of optical fibers to said die in amounts of a predetermined ratio corresponding to a

predetermined signal branching ratio of the intensities of light which will be transmitted by the fibers based on a distribution to the fibers of a given amount of light transmitted to the fibers, collectively; and

driving means for simultaneously drawing the plurality of fibers through the through-hole of said die.

5,011,558

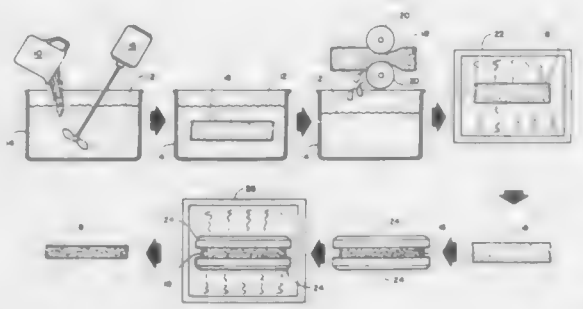
METHOD OF IMPROVING FOAM FIRE RESISTANCE THROUGH THE INTRODUCTION OF INORGANIC PARTICLES THEREINTO

Francis U. Hill, and Lola E. Crosswhite, both of San Diego, Calif., assignors to Sorrento Engineering Corporation, National City, Calif.

Division of Ser. No. 448,540, Dec. 11, 1989, Pat. No. 4,912,132, which is a continuation-in-part of Ser. No. 373,900, Jun. 30, 1989. This application Feb. 21, 1990, Ser. No. 478,825

Int. Cl.[5] **C09J** *5/02*

U.S. Cl. 156—307.5 **2 Claims**



1. The method of improving the flame resistance of open-cell polyimide foam products which comprises the steps of:

adding very finely divided non-metallic inorganic particles which are gel forming and insoluble in water and polar organic liquids, to water or a highly polar organic liquid to form a gel;

placing an open-cell synthetic resin foam product in said gel;

manipulating said foam product so as to substantially entirely fill said cells with gel;

removing said foam product; and

drying said foam product;

whereby said inorganic particles remain dispersed throughout said cells; and

compressing the dried foam product to a selected extent and heating the compressed foam product to a temperature at which the foam is stabilized at the compressed dimensions whereby a high density, rigid foam product results.

5,011,559

PROCESS FOR THE MANUFACTURE OF SHEETS OR PAGES WITH SEPARABLE SELF-ADHESIVE LABELS

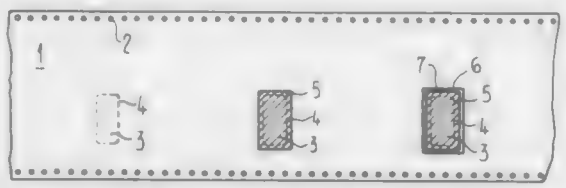
Willi Felix, Strengelbach, Switzerland, assignor to Jos. Hunkeler Ltd., Wikon, Switzerland

Continuation of Ser. No. 810,287, Jan. 27, 1986. This application Jun. 23, 1988, Ser. No. 210,398

Claims priority, application Switzerland, Mar. 29, 1984, 1605/84

Int. Cl.[5] **B32B** *31/12, 31/10, 31/06;* **B31F** *1/00*

U.S. Cl. 156—257 **14 Claims**



1. A process for manufacturing a first sheet containing at least on integral but separable self-adhesive label comprising the steps of:

a. creating at least one integral but separable label in said sheet by applying attenuating lines to said sheet,

b. applying an adhesive coating selectively to at least a portion of the area of said at least one label, and

c. applying to said adhesive coating a second, protective sheet to which the adhesive coating adheres significantly less to said at least one label, such that said protective sheet having edges, such that said protective sheet entirely covers said adhesive coating and that such that the edges of said protective sheet project beyond said adhesive coating,

wherein steps b. and c. are performed consecutively without interposition of step a.

5,011,560

METHOD OF ADHESION AND COMPOSITION THEREFOR

Yoshikazu Nakai, Itami, and Tsutomu Kubota, Mishima, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 928,656, Nov. 5, 1986, abandoned, which is a continuation of Ser. No. 700,673, Feb. 11, 1985, abandoned. This application Aug. 19, 1988, Ser. No. 234,159

Claims priority, application Japan, Feb. 13, 1984, 59-25691; Apr. 5, 1984, 59-68636; Jan. 8, 1985, 60-1800

Int. Cl.[5] **B32B** *1/10, 31/12;* **C08G** *18/42, 18/58*

U.S. Cl. 156—273.3 **5 Claims**

1. A method of adhesion which comprises (a) applying onto a substrate having a curved surface a liquid two-step reactive type tacky adhesive agent comprising (1) a non-solvent or high-solid isocyanate compound, (2) a curing agent therefor and (3) a component consisting of a vinyl compound having one photopolymerizable vinyl group per molecule and a vinyl compound having at least two photopolymerizable vinyl groups per molecule, the weight of the former vinyl compound being in the range of 30 to 100 weight % of component (3) and the porportion of component (3) being about 5 to 80 weight % of the total amount of the tacky adhesive agent, (b) irradiating the whole applied surface with light to develop tackiness at a glass transition temperature of the applied agent after irradiating with light not exceeding about 20° C., and (c) adhering the substrate to a material to be bonded to the said curved surface through the said adhesive agent without clamping, while the tackiness is retained, followed by curing at room temperature.

5,011,561

LABELLING MACHINE

Jean-Claude Carolus, Marcq-en-Baroeul, and Francois Delvinquiere, Lys-lez-Lannoy, both of France, assignors to Nord Techniques Etiquetage - SARL, Roubaix, France

Filed Oct. 19, 1989, Ser. No. 423,878

Claims priority, application France, Oct. 21, 1988, 88 14837

Int. Cl.[5] **B32B** *31/00*

U.S. Cl. 156—495 **1 Claim**

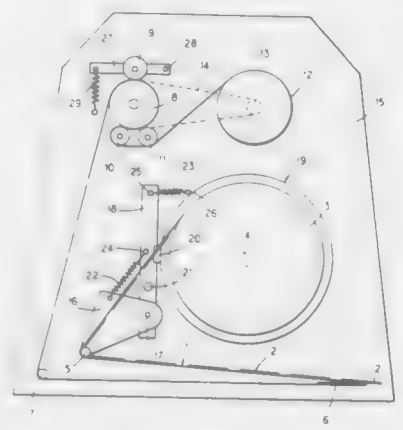
1. A labelling machine of the type comprising a supply reel, supplying a band carrying labels, a receiving reel for said band after stripping of the labels, a distribution plate placed close to two deviating bars deviating the band so that said band forms a sharp angle in its path between the first deviating bar, the distribution plate and the second deviating bar, and a band pulling system placed after the second deviating bar, wherein said machine comprises:

(a) an arm on one end of which is fixed the first deviating bar, said arm being mounted for pivoting about a first pin,

(b) a piece on which are mounted, on the one hand a stop member, and on the other hand, the first pin, said piece being itself mounted for pivoting about a second pin, fixed on a frame of the machine,

(c) a first return means, fast with the pivoting piece and the frame of the machine and capable of causing the piece to pivot about the second pin so that the stop member is directly or indirectly applied on a pivoting spindle of the supply reel,

(d) a second return means, fast with the pivoting piece and



the arm, and capable of causing the arm to pivot about the first pin, in such a way as to bring the first deviating bar closer to the stop member, and

(e) another stop member to restrict the pivoting movement therefore about the first pin.

5,011,562

APPARATUS FOR FORMING SEALED LENGTHS OF PLASTICS COATED TUBE

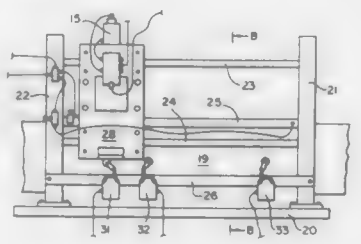
Itzhak Barnoach, London, England, assignor to Kitechnology B.V., Amsterdam, Netherlands

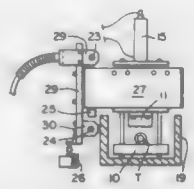
Filed Mar. 29, 1989, Ser. No. 330,258

Claims priority, application United Kingdom, Aug. 3, 1988, 8818464

Int. Cl.[5] **B32B** *31/18;* **B21D** *9/08*

U.S. Cl. 156—498 **5 Claims**





1. Apparatus for forming sealed lengths of plastics coated metal tube, said tube being a folded tubular strip of metal having longitudinal edges sealed together and extruded plastics material on inner and outer surfaces of the metal tube and containing a gas under pressure, the apparatus comprising a cooling bath having an inlet and an opposed outlet for passage of the tube through a cooling liquid adapted to cool the plastics material; clamping jaw means within the bath for clamping around to flatten and seal the tube; and control means positioned and arranged with respect to said clamping jaw means so as to (1) provide the actuating of said clamping jaw means at a first station adjacent the inlet to the bath, and (2) move said jaws along the bath with the tube clamped in said jaw means at a rate such that said jaw means exert no pulling action on the tube, and (3) release said jaw means from the tube upon reaching a second station downstream of the first station, and (4) return said jaw means to the first station.

5,011,563

AUTOMATIC TAPE AFFIXING APPARATUS

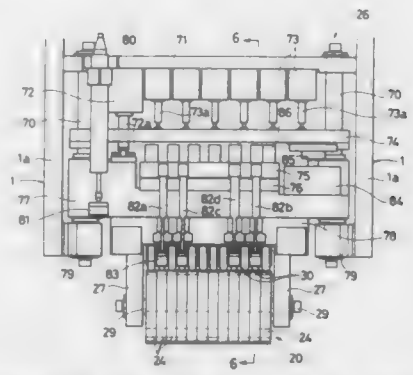
Nobuo Shinno, and Yasuhiro Ohnishi, both of Osaka, Japan, assignors to Shinnippon Koki Kabushiki Kaisha, Osaka, Japan

Filed May 15, 1989, Ser. No. 351,681

Claims priority, application Japan, May 18, 1988, 63-122811

Int. Cl.[5] **B32B** *31/00*

U.S. Cl. 156—574 **16 Claims**



1. A tape affixing head for an automatic tape affixing apparatus in which the tape affixing head is moveable in multiple directions for affixing tape on an affixing surface, said tape affixing head comprising:

a structure means mounting a tape supply reel and a take-up reel for said tape;

a roller carrier means moveable mounted on said structure means, said carrier means carrying a shaft, a plurality of rotatable and transversely moveable roller means on said shaft such that each of said roller means is separately transversely moveable relative to said shaft in a direction perpendicular to the axis of said shaft;

first cylinder means on said carrier means operable to apply a first pressing force to each of said roller means to thereby individually presss said roller means against said affixing surface; and

second cylinder means operably disposed between said structure means and said carrier means for applying a second pressing force to said carrier means such that said second cylinder means is thereby operable to apply said second pressing force simultaneously to all of said roller means while said first cylinder means applies said first pressing force to individual roller means.

5,011,564

EPITAXIAL GROWTH

Barbara G. Bryskiewicz; Tadeusz R. Bryskiewicz, both of Watertown; Ferdynand P. Dabkowski; Jacek Lacowski, both of Woburn, and Harry C. Gatos, Weston, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 121,513, Nov. 17, 1987, abandoned, which is a continuation of Ser. No. 868,136, May 28, 1986, abandoned. This application Mar. 17, 1989, Ser. No. 324,900

Int. Cl.[5] **C30B** *9/06*

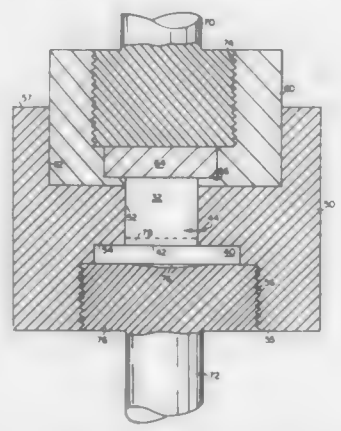
U.S. Cl. 156—624 **18 Claims**

1. The process of forming an equilibrium growth dispersion for use in the liquid epitaxial growth at a growth temperature of a compound including at least two constituents, the melting point of one of said constituents being higher than that of another of said constituents and the relative solubility of said constituents being such that cooling saturated solutions thereof tends to cause precipitation of particles of the solute constituent, said process comprising the steps of:

placing each of said constituents in a container in a quantity

such that the total relative proportions of constituents will provide a saturated solution of one of said constituents (the solute constituent) in another of said constituents (the solvent constituent) at said growth temperature;

heating said container with said constituents therein a temperature not less than the growth temperature to dissolve said constituents and maintaining said container with said container with said constituents therein at a temperature



not less than said growth temperature for a period of time sufficient to produce a solution of said solute constituent in said solvent constituent; and

rapidly quenching the contents of said container at a rate of cooling sufficiently rapid to prevent said precipitation of particles of said solute constituent and to form a said equilibrium growth dispersion comprising an essentially homogeneous dispersion of fine particles of said solute constituent in and throughout said solvent constituent.

5,011,565
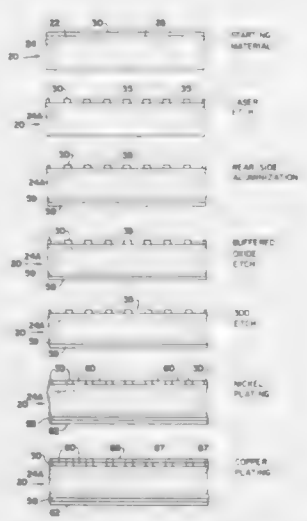
DOTTED CONTACT SOLAR CELL AND METHOD OF MAKING SAME

Christopher E. Dube, Arlington, and Ronald C. Gonsiorawski, Danvers, both of Mass., assignors to Mobil Solar Energy Corporation, Billerica, Mass.

Continuation-in-part of Ser. No. 447,211, Dec. 6, 1989, abandoned. This application May 17, 1990, Ser. No. 524,346

Int. Cl.[5] B44C *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—643 **32 Claims**



1. A method of forming an electrode grid on the front surface of a solar cell substrate comprising the following steps:

providing a silicon solar cell substrate having front and back surfaces, a p/n junction adjacent said front surface, and a dielectric coating on said front surface; and

subjecting said dielectric coating to a laser beam of an intensity and for a duration sufficient to remove selected portions of said dielectric coating and thereby form in said dielectric coating an electrode pattern comprising a a plurality of finger-like sections, with said said laser beam being controlled so that each of said fingers comprises a plurality of microscopically-sized holes in said dielectric coating with said holes being spaced from one another a selected distance not exceeding 20 microns.

5,011,566

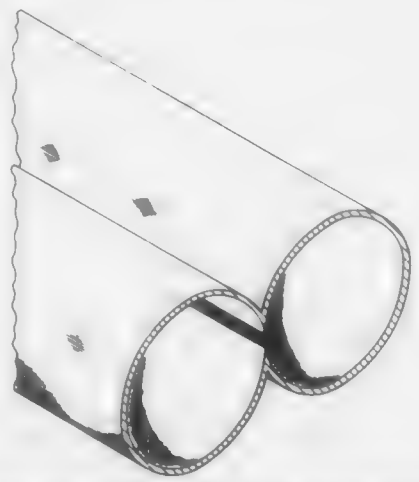
METHOD OF MANUFACTURING MICROSCOPIC TUBE MATERIAL

Wesley P. Hoffman, Lancaster, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 15, 1989, Ser. No. 324,280

Int. Cl.[5] C03C *25/06*

U.S. Cl. 156—643 **14 Claims**



1. A method for forming microscopic hollow tubes comprising the steps of:

positioning fibers having a diameter of about 1 micron to about 1000 microns and having a predetermined rate of oxidation at specific temperatures in a preform;

cleaning said fibers;

placing an inert environment about said fibers;

adjusting the temperature of said fibers to a deposition temperature of a tube material in the inert environment;

depositing said tube material on said fibers to coat said fibers, said tube material having a predetermined rate of oxidation at specific temperatures which is lower than the predetermined rate of oxidation at specific temperatures of said fibers;

placing the coated fibers in an oxidizing environment;

heating said fibers coated with said tube material in the oxidizing environment to a temperature at which the fibers oxidize at a rate which is at least 10 times faster than the rate of oxidation of said tube material in order to thereby remove said fibers from said tube material by oxidation without damaging the tube material and thereby forming said microscopic hollow tubes.

5,011,567

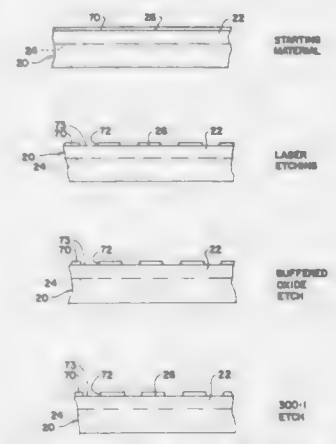
METHOD OF FABRICATING SOLAR CELLS

Ronald C. Gonsiorawski, Danvers, Mass., assignor to Mobil Solar Energy Corporation, Billerica, Mass.

Continuation of Ser. No. 447,211, Dec. 6, 1989, abandoned. This application Jul. 17, 1990, Ser. No. 555,659

Int. Cl.[5] H01L *71/306;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—643 **31 Claims**



1. A method of forming a pattern for metal deposition on a photovoltaic cell substrate comprising in sequence the steps of:

(a) providing a silicon substrate having a dielectric layer on one side thereof, said substrate having a P/N junction formed therein adjacent said one side;

(b) subjecting said dielectric layer to a laser beam of an intensity and for a duration sufficient to eliminate selected portions of said dielectric layer and thereby expose sections of said silicon substrate without forming apertures in said substrate extending through said P/N junction or otherwise causing degradation of said P/N junction, said selected portions of said dielectric layer being eliminated in an environment that is substantially free of gaseous, liquid or solid chemical etching substances; and

(c) immersing said silicon substrate in at least one selected etchant for a predetermined period of time, said etchant and period of time being selected so that said etchant will remove substantially all residual silicon nitride and silicon oxide deposits on the sections of said silicon substrate exposed by elimination of said selected portions of said dielectric layer.

5,011,568

USE OF SOL-GEL DERIVED TANTALUM OXIDE AS A PROTECTIVE COATING FOR ETCHING SILICON

Steven D. Braymen; Bradley A. Paulson, both of Ames, and Kenneth D. Goedken, Dubuque, all of Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Jun. 11, 1990, Ser. No. 535,595

Int. Cl.[5] H01L *21/306*

U.S. Cl. 156—647 **4 Claims**

1. A method of preparing thin film resonators, said method comprising:

growing a thermal oxide on both sides of a silicon wafer;

fabricating a thin film resonator device on top of said wafer;

patterning the SiO_2 on the back of said wafer so that SiO_2 windows on the backside line up with the devices on top;

applying a Ta_2O_3 sol-gel to the top over said device;

curing the Ta_2O_3 film to condense the sol-gel to a ceramic film; thereafter

etching through the SiO_2 windows with EDPW to the SiO_2 layer on the top.

5,011,569

THIN FILM ARTWORK COMPOUNDS

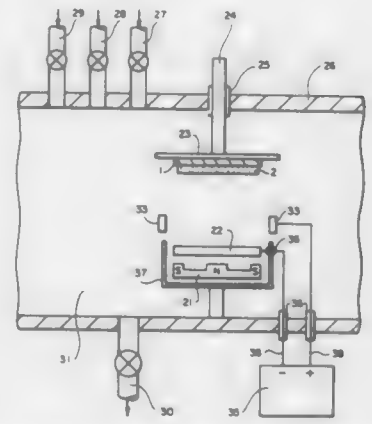
Wilfred C. Kittler, Jr., Thousand Oaks; Janos Czukor, Panorama City, and Darrell Stoddard, Malibu, all of Calif., assignors to Andus Corporation, Canoga Park, Calif.

Continuation of Ser. No. 10,873, Feb. 4, 1987, Pat. No. 4,911,785. This application Jan. 24, 1990, Ser. No. 469,879

The portion of the term of this patent subsequent to Mar. 27, 2007, has been disclaimed.

Int. Cl.[5] C23F *1/00;* **B44C** *1/22*

U.S. Cl. 156—656 **5 Claims**



1. A method of etching a thin film comprising oxidized and nonoxidized copper, comprising the steps of:

providing a thin film comprising copper oxide and nonoxidized copper metal;

disposing a mixture which comprises ammonium chloride and hydrogen peroxide on selected areas of the film to be etched so as to form a predetermined pattern thereon.

5,011,570

ID CARD, ID BOOKLET, AND MANUFACTURING METHOD THEREOF

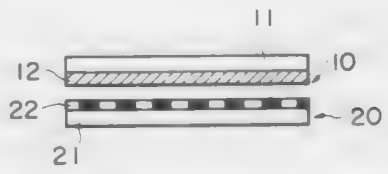
Keiji Ohbayashi, Hino, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Nov. 13, 1989, Ser. No. 435,945

Claims priority, application Japan, Nov. 21, 1988, 63-293977

Int. Cl.[5] B32B *7/00*

U.S. Cl. 156—310 **20 Claims**



1. A method of manufacturing an identity card comprising the steps of:

forming a colorant capable of absorbing light of a visible wavelength region on a first image recording layer;

forming a colorant capable of absorbing light of an infrared wavelength region on a second image recording layer; and

adhering said first and second image recording layers to each other to form a laminated structure.

5,011,571

METHOD FOR TREATING PHOTOGRAPHIC PROCESS WASTE LIQUOR THROUGH CONCENTRATION BY EVAPORATION AND APPARATUS THEREFOR

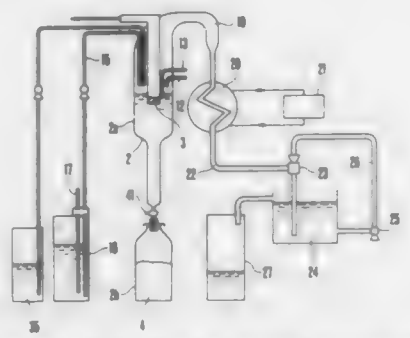
Kazuhiro Kobayashi; Shigeharu Koboshi; Nobutaka Goto; Masayuki Kurematsu, and Naoki Takabayashi, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Continuation of Ser. No. 131,651, Dec. 11, 1987, abandoned. This application Jan. 8, 1990, Ser. No. 463,929

Claims priority, application Japan, Dec. 17, 1986, 61-300510; Dec. 17, 1986, 61-302543

Int. Cl.[5] B01D *1/00*

U.S. Cl. 159—47.3 **9 Claims**



1. A method of treating photographic process waste liquor containing a component selected from the group consisting of thiosulfate, sulfites, and ammonium salts, through concentration by evaporation, consisting essentially of the steps:

(a) supplying waste liquor containing a component selected from the group consisting of thiosulfate, sulfites, and ammonium salts, to an evaporating vessel;

(b) evaporating liquid from photographic process waste liquor by heating the photographic process waste liquor in the upper part of said evaporating vessel;

(c) maintaining both a reduced pressure of 610 mm Hg or less and at least 5° C. differential between the temperature of the photographic process waste liquor in the upper part of the vessel and the temperature of the photographic process waste liquor in the bottom part of the evaporating vessel thereby concentrating the photographic waste liquor whereby solute precipitates; and

(d) allowing solute which precipitates from the photographic process waste liquor to settle toward said bottom part;

thereby to restrain decomposition of the solute and the formation of noxious cases.

5,011,572

TWO STAGE PROCESS FOR THE OXYGEN DELIGNIFICATION OF LIGNOCELLULOSIC FIBERS WITH PEROXIDE REINFORCEMENT IN THE FIRST STAGE

V. R. Parthasarathy; Meenaksi Sundaram; Hasan Jameel, all of Raleigh; Josef S. Gratzl, Cary, all of N.C., and Ronald J. Klein, Edison, N.J., assignors to FMC Corporation, Philadelphia, Pa. and North Carolina State University, Raleigh, N.C.

Filed May 19, 1989, Ser. No. 354,522

Int. Cl.[5] D21C *9/147, 9/16, 9/18*

U.S. Cl. 162—56 **10 Claims**

1. A process employing molecular oxygen for unbleached delignifying lignocellulose fibers in a slurry from a digester without significant loss of fiber strength consisting essentially of the steps of:

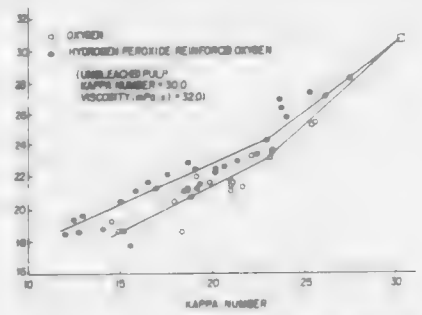
a. thickening the unbleached slurry from a digester by extracting therefrom a first liquor portion,

b. incorporating sufficient thickened slurry from step (a) into a first reaction mixture to provide a consistency of from about 8% to about 25% by weight fibers on an oven dry basis, said reaction mixture also containing sufficient alkalinity to be equivalent to from about 1.5% to about 4% sodium hydroxide and about 0.01% to about 1% of hydrogen peroxide based on the oven dry weight of fibers,

c. maintaining the first reaction mixture at a temperature of about 80° C. to about 110° C., for about 30 to about 60 minutes in the presence of molecular oxygen at a partial pressure of about 620 to 860 kPa,

d. thickening the first reaction mixture from step (c) by extracting therefrom a second liquor portion,

e. incorporating sufficient thickened slurry from step (d) into a second reaction mixture to provide a consistency of from about 8% to about 25% by weight fibers on an oven



dry basis, said reaction mixture also containing sufficient alkalinity to be equivalent to from about 1.5% to about 4% sodium hydroxide and 0% to 0.5% hydrogen peroxide,

f. maintaining the second reaction mixture at a temperature of about 70° C. to about 110° C. for about 30 to about 60 minutes in the presence of molecular oxygen at a partial pressure of about 170 to 860 kPa, and

g. recovering delignified fibers from the second reaction mixture, said delignified fibers having equal or increased strength compared with the fibers delignified by a single oxygen stage.

5,011,573

METHOD AND APPARATUS FOR CONTROL OF DRY-LINE ON THE WIRE OF A FOURDRINIER PAPER MACHINE

Antti J. Niemi, Yrjo Liipolantie 5, SF-02700 Kauniainen, Finland, assignor to Antti Johannes Niemi and Ulli Riitta Annelli Niemi, both of Kauniainen, Finland

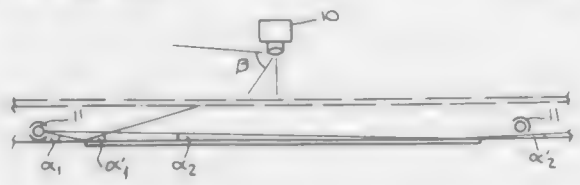
PCT No.; PCT/F187/00180, 371 Date Aug. 15, 1989, 102(e) Date Aug. 15, 1989, PCT Pub. No. WO88/05099, PCT Pub. Date Jul. 14, 1988

PCT Filed Dec. 30, 1987, Ser. No. 377,852

Claims priority, application Finland, Dec. 30, 1986, 865329

Int. Cl.[5] D21F *7/06*

U.S. Cl. 162—198 **8 Claims**



1. A method of controlling a dry line in a Fourdrinier paper machine on the basis of differing optical properties of the parts of the pulp web preceding and following the dry line, comprising: illuminating a wire with the pulp web at such a small angle with regard to its plane that when observing the pulp web from above, the direction of observing substantially deviates from the directions of mirror reflections from a surface of the pulp web, observing the pulp web in such a manner that the pulp web part preceding the dry line is found darker than the pulp web part following the dry line with an optoelectric camera forming a two-dimensional image of the web and material on it, thresholding and supplying the repeatedly outgoing electric image signal from the camera to a digital computer programmed to distinguish from each other such parts of the wire preceding and following, respectively the dry line, on the basis of information of the degree of brightness transmitted by said signal, and to determine the position of the dry line in a longitudinal direction of the paper machine having a wire moving in a longitudinal direction and the web, for different values of a transversal coordinate, and effecting control actions based upon the determined dry line position.

5,011,574

CREPING DOCTOR WITH TWO SUCTION CHAMBERS IN THE SUPPORT BEAM

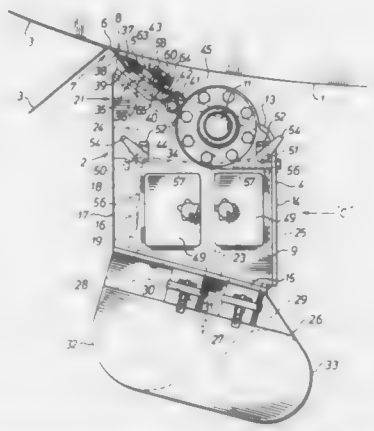
Tord G. Gustavsson, Forshaga; Harry I. Myrén, and Karl T. I. Silja, both of Karlstad, all of Sweden, assignors to Valmet Paper Machinery, Inc., Helsinki, Finland

Filed Feb. 28, 1990, Ser. No. 486,146

The portion of the term of this patent subsequent to Apr. 16, 2008, has been disclaimed.

Int. Cl.[5] D21G *3/04*

U.S. Cl. 162—281 **6 Claims**



1. A creping doctor for creping a soft paper web off a yankee cylinder, comprising a supporting beam adapted for mounting closely parallel to an envelope surface of a yankee cylinder said supporting beam being provided with an internal space, said internal space being divided into a first longitudinal suction chamber and a second longitudinal suction chamber; a doctor blade; a doctor holder mounted to the supporting beam; means for producing a subatmospheric pressure in the internal space of the supporting beam; a first suction connection connecting said first suction chamber of the supporting beam to an external dustgenerating space located between the doctor blade and the soft paper web creped off; a second suction connection connecting said second suction chamber of the supporting beam with an internal dust-generating space located between the doctor blade and the envelope surface of the yankee cylinder; and blowing means for intermittent cleaning of said suction connections and suction chambers from dust deposited therein during operation.

5,011,575

INCLINED MULTIPLYFORMER

Martin B. Keller, Hudson Falls, N.Y., assignor to Sandy Hill Corporation, Hudson Falls, N.Y.

Filed Jun. 14, 1990, Ser. No. 537,643

Int. Cl.[5] D21F *1/00*

U.S. Cl. 162—299 **1 Claim**

1. In a delivery system in a machine for forming a continuous multi-ply web upon a moving foraminous-forming wire, the combination of:

an endless forming wire having an upwardly-inclined run defining adjacent primary and secondary areas of a web-forming zone,

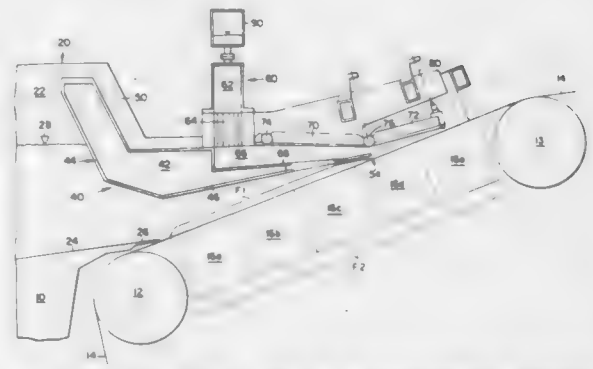
a primary opened headbox for delivering a primary slurry,

a pond regulator having an upper surface and being positionable within the primary headbox,

the upward angularization of the run of forming wire and a downward angularization of the pond regulator defining converging bottom and top walls of a primary approach passage with a forward edge of the pond regulator and the forming wire spaced below defining a primary slice,

a secondary closed headbox supported by and upwardly of the pond regulator for delivering a secondary slurry and including a secondary roof supported by and forwardly of the secondary headbox for defining a top wall of a secondary approach passage,

the upper surface of the pond regulator defining a bottom wall of the secondary approach passage,



the upper and bottom walls of the secondary approach passage converging relative to the forming wire in defining a secondary slice,

said secondary headbox including a perforated plate arranged above and substantially perpendicular to said secondary approach passage,

a two-part dewatering zone beneath the inclined run of the forming wire and divided between a primary forming length and a secondary forming length,

each part of the dewatering zone being provided with cooperant suction compartments for assisting in the web formation by the drainage of excess fluent media from the slurries through the forming wire with a resultant deposit of successive webs of fibers on the forming wire.

5,011,576

BREAST BOX NOZZLE FOR A PAPER MACHINE

Dieter Egelhof, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Continuation of Ser. No. 311,938, Feb. 16, 1989, abandoned. This application May 25, 1990, Ser. No. 529,780

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1988, 3804827

Int. Cl.[5] D21F *1/02*

U.S. Cl. 162—344 **2 Claims**

1. In a paper machine, a head box comprising:

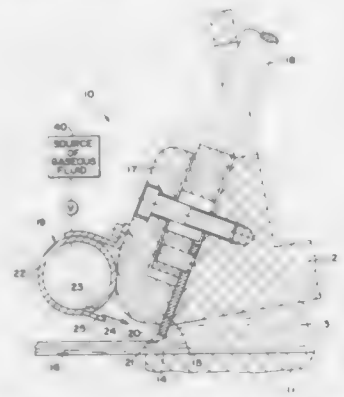
(a) a first and a second machine-wide stream-guiding walls with the first and second walls facing each other, the first and second machine-wide stream-guiding walls defining a nozzle-like and machine-wide pulp stock duct which forms a machine-wide pulp stock discharging gap which discharges a pulp stream in a direction;

(b) at least one of the first and second stream-guiding walls having a surface not touched by the pulp stock, the surface being located close to the pulp stock discharging gap;

(c) a source consisting of gaseous fluid connected to at least one gaseous fluid containing duct which extends at least partly across the width of the machine, the at least one gaseous fluid containing duct having a plurality of openings adapted to discharge a fluid onto the surface in a direction opposite to the direction of the pulp stream; and

at least one shutter for limiting one of the first and the second stream-guiding walls at the stream discharge gap and

a claw, wherein the shutter comprises the surface and the claw is positioned to overlap the shutter on a side not touched by the pulp stock, the claw having a cross section



which is rounded between its surface facing away from the shutter and the shutter, and wherein the duct is positioned and arranged for delivery of the gaseous fluid in a direction towards the shutter

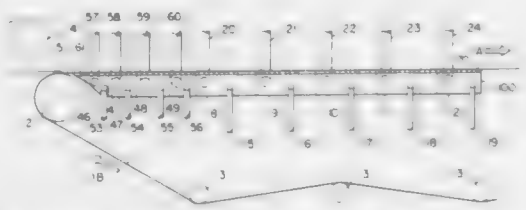
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5,011,577

PRESSURE CONTROL FORMING SECTION

Victor E. Hansen, Jacksonville, Fla.; David T. Smith, Monson; Douglas R. McPherson, East Longmeadow, both of Mass., and Richard H. Pitt, Carleton Place, Canada, assignors to JWI Ltd., Kanata, Canada

Filed Jun. 8, 1989, Ser. No. 362,938
Int. Cl.[5] D21F *1/48, 9/02*
U.S. Cl. 162—352 **28 Claims**



1. In a paper making machine having an open surface forming section, including at least a travelling continuous forming fabric which passes over a breast roll adjacent a head box having a head box slice through which aqueous stock is deposited onto the forming fabric, in which forming section the solids content rises from an initial low value as deposited from the head box through the head box slice onto the forming fabric to a value of from about 2% to about 4%, an apparatus for improving paper formation consisting essentially of in combination:

(a) a drainage means located beneath the forming fabric and which includes a first part, a second part, and a third part, and which extends from a point adjacent the head box slice to the end of the forming section;

(b) a foraminous support surface for the open surface forming fabric on the drainage means; and

(c) air supply means, including both vacuum pump means, air pressure pump means, and air pressure control means, whereby the air pressure in the drainage means is controlled,

wherein:

(i) the drainage means comprises either a single drainage box divided into a plurality of separate compartments by a plurality of air tight divisions extending across the width of the drainage box, each compartment of which is provided with a separate air supply means and a separate air pressure tight drainage means, or a plurality of contiguously adjacent drainage boxes which in effect forms a plurality of separate compartments, each of which extends across the width of the forming fabric, and each of which is provided with a separate air supply means and a separate air pressure tight drainage means;

(ii) the air supply means is structured and arranged to provide an air pressure in the compartments which decreases from a positive value above ambient atmospheric in the first part adjacent the headbox slice sufficient to hinder water drainage from the stock through the forming fabric but insufficient to interfere with paper formation on the forming fabric, to ambient atmospheric pressure in the second part and to a negative value of no more than 50 cms water gauge below ambient atmospheric pressure in the third part at the end of the forming section;

(iii) the foraminous support surface provides apertures through which the forming fabric drains, and a path through which the forming fabric moves which will cause a controlled level of uniformly spaced periodic harmonic agitation within the stock on the forming fabric, and provides an air pressure tight seal between the compartments and the forming fabric; and

(iv) the foraminous support surface over the third part of the drainage means comprises a slotted-type fabric cover comprising a series of spaced forming fabric supporting blades having a generally planar top surface transverse to the direction of travel of the forming fabric in a common essentially horizontal plane providing therebetween suction-accessible gaps in which the forming fabric is substantially unsupported and is drawn downward to form stock-agitating undulations in said gaps, said cover including water seal forming blades disposed intermediately in the gaps between the fabric supporting blades and having top surfaces transverse to the direction of travel of the forming fabric at a level lower than the top surfaces of the fabric supporting blades and at least forming water seals at the downward undulations of the forming fabric, thereby interrupting the suction temporarily to limit drainage while causing vertical agitation of fibers on the fabric passing through the forming section; wherein both the first, the last, and any intermediate blades placed over either an internal vacuum tight division or a pair of contiguous transverse walls of two adjacent drainage boxes are all forming fabric-supporting blades; and wherein sealing strips are interposed between the ends of the blades adjacent the lateral edges of the forming fabric;

(v) the foraminous support surface over the first and the second parts adjacent the head box slice includes a plurality of static support elements uniformly spaced so as to generate uniform periodic harmonic agitation in the stock;

(vi) the static support elements comprise a plurality of thin elongate blades having top fabric supporting faces extending across the full width of the forming fabric, together with sealing strips interposed between the ends thereof adjacent the lateral edges of the forming fabric,

(vii) the static support elements include at least one static support element in the first part having a top support face for the forming fabric which contributes to the desired level of periodic harmonic agitation in the stock, and which comprises a flat surface having a leading and a trailing portion in the direction of forming fabric travel separated by at least one shallow depression extending along the blade for the width of the forming fabric and wherein each of the leading and trailing portions, and of any flat portions intermediate shallow depressions, are of sufficient width in the direction of forming fabric travel to provide a hydraulic seal to the forming fabric; and

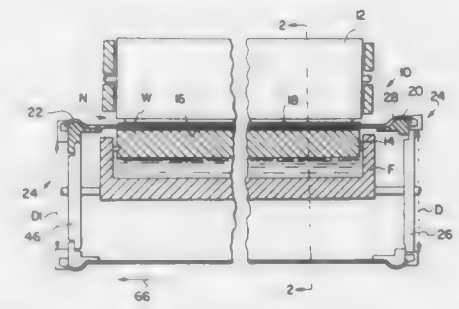
(viii) one of the plurality of thin elongate blades is placed both above either an internal transverse division in the drainage box or a pair of contiguous walls of adjacent drainage boxes and above the first wall of the first part of the drainage means.

5,011,578

EXTENDED NIP PRESS APPARATUS WITH BLANKET EDGE SEALS

David V. Lange, Beloit, and Scott E. Filzen, Eau Claire, both of Wis., assignors to Beloit Corporation, Beloit, Wis.

Filed Oct. 24, 1990, Ser. No. 602,602
Int. Cl.[5] D21F *3/02*
U.S. Cl. 162—358 **3 Claims**



1. An extended nip press apparatus for pressing water from a web of paper, said press apparatus comprising:

a press frame;

a backing roll rotatably supported relative to said frame;

an elongate shoe defining a concave surface, said concave surface cooperating with said backing roll for defining therebetween an extended nip for the passage therethrough of the web;

a blanket defining an endless loop, said blanket extending through said nip such that the web is disposed between said blanket and said backing roll, said blanket further defining a first and second lateral edge, said edges being spaced relative to each other;

edge seal means cooperating with said edges for sealing said edges of said blanket against egress of lubricant disposed between said shoe and said blanket;

said edge seal means including:

a head having an outside diameter and being rotatably secured to said frame;

an extension which extends from said head, said extension cooperating with said first edge of said blanket, said extension defining a duck's bill configuration in a cross-machine sectional view, such that said first edge of said blanket conforms to a surface defined by said extension, said surface having a first portion which undulates radially away from said head in an outward direction and a second portion which undulates radially inwardly towards said head in an outward direction; and

clamp means adjustably secured to said extension for clamping said first edge of said blanket to said extension, said clamp means defining a tapered surface which cooperates with said first edge such that said first edge is clamped between said tapered surface and said second portion so that flow of said lubricant from between said shoe and said blanket past said head is inhibited.

5,011,579

NEUTRAL OIL RECOVERY PROCESS FOR THE PRODUCTION OF NAPHTHENIC ACIDS

Gerald E. Davis, Berry, Ala., assignor to Merichem Company, Houston, Tex.

Filed Jan. 16, 1990, Ser. No. 465,445
Int. Cl.[5] B01D *3/06, 3/34*
U.S. Cl. 203—37 **8 Claims**

1. A process for treating a naphthenic fraction containing phenolics, neutral oils and sulfur compounds in the production of napthenic acid which comprises:

mixing with the naphthenic fraction a blend of sodium and potassium hydroxide in an amount sufficient to form a naphthenate salt of between 65% to 90% of the naphthenic acid present in the fraction, wherein the potassium hydroxide is at least 35% of the blend, to form a moist naphthenate stream;

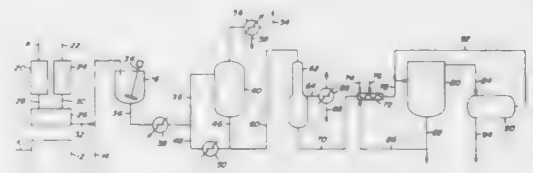
flashing water from the moist naphthenate stream at a temperature above 360° F. to produce a dewatered naphthenate stream;

flashing the neutral oils, phenolics and sulfur compound contaminants from the dewatered naphthenate stream; and

recovering said naphthenic acid having an acid number greater than 300.

5. A process for the recovery of naphthenic acids from a naphthenic acid containing fraction which comprises:

mixing a mixture of sodium and potassium hydroxide with a naphthenic acid containing fraction in an amount sufficient to form an alkali metal naphthenate of 70% to 80% of the naphthenic acid, potassium hydroxide being fro 40% to 50% of the hydroxide mixture, to form a water containing moist naphthenate stream;



flashing water from said moist naphthenate stream at a temperature above 360° F. to produce a dewatered naphthenate stream;

flashing neutral oils, phenolics and sulfur compound contaminants from the dewatered naphthenate stream to form a naphthenate stream;

acidifying said naphthenate stream to produce the naphthenic acids; and

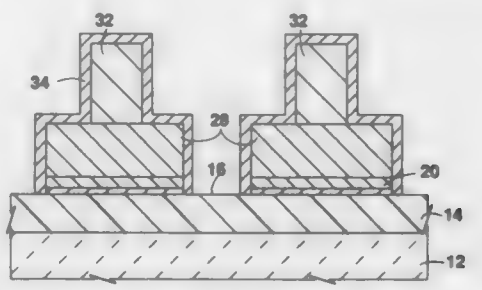
recovering said naphthenic acids having acid numbers greater than 300.

5,011,580

METHOD OF REWORKING AN ELECTRICAL MULTILAYER INTERCONNECT

Ju-Don T. Pan, Cupertino, Calif.; John W. Curry, II, Austin, Tex., and Laurence D. Schultz, Boise, Id., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex.

Continuation-in-part of Ser. No. 426,619, Oct. 24, 1989. This application Jun. 25, 1990, Ser. No. 543,317
Int. Cl.[5] C25D *5/02*
U.S. Cl. 204—15 **24 Claims**



1. A method of reworking an electrical multilayer interconnect comprising:

removing a defective metallization layer from the top of an interconnect substrate,

depositing an electrically conductive layer on the substrate,

forming a base plating mask on the electrically conductive layer,

plating a copper base into an opening in the base plating mask onto the electrically conductive layer,

stripping the base plating mask,

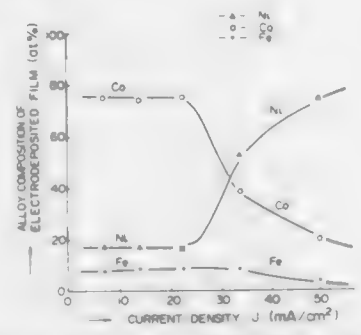
forming a pillar plating mask on top of the copper base,
plating an electrically conductive metal pillar into an opening in the pillar plating mask onto the top of the copper base,
stripping the pillar plating mask, and
stripping the electrically conductive layer below the stripped base plating mask.

5,011,581

PROCESS FOR PRODUCING A THIN ALLOY FILM HAVING HIGH SATURATION MAGNETIC FLUX DENSITY

Yuuji Omata, Ibaraki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 25, 1989, Ser. No. 412,221
Claims priority, application Japan, Sep. 28, 1988, 63-243016
Int. Cl.[5] C25D *3/56*
U.S. Cl. 204—38.4 **1 Claim**



1. A process for producing an FeCoNi alloy film exhibiting a high magnetic flux density, which comprises using a ternary FeCoNi alloy film or FeNi (Permalloy) film formed by evaporation as a material of a cathode, using an electrodepositing bath containing divalent ions of each of Fe, Co and Ni in a form of either or both of a sulfate and chloride, said bath containing a composition having ratios of the concentration of the divalent ions within the ranges of

$$0.05 \leqq [Co^{2+}]/[Ni^{2+}] \leqq 0.06 \text{ and}$$

$$0.05 \leqq [Fe^{2+}]/[Ni^{2+}] \leqq 2.0,$$

and electrodepositing the FeNiCo alloy film on said cathode at an electrodepositing current density J at the cathode of

$$1 < J < 60 \text{ (mA/cm}^2\text{)}$$

a bath of pH of

$$1.5 < pH < 5.5$$

and a bath temperature T of

$$15 \leqq T \leqq 60° \text{ C.}$$

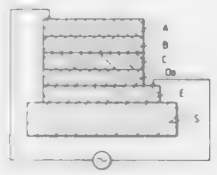
5,011,582

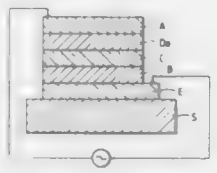
METHOD FOR PRODUCING ELECTROCHROMIC DEVICE WITH APPLICATION OF AC VOLTAGE BETWEEN THE ELECTRODE LAYERS

Satoru Oshikawa, Yokohama, and Tatsuo Niwa, Sakura, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 288,950, Dec. 23, 1988, abandoned. This application May 14, 1990, Ser. No. 522,451
Claims priority, application Japan, Jan. 5, 1988, 63-454; Sep. 14, 1988, 63-230694
Int. Cl.[5] G02F *1/23;* **C25B** *1/00*
U.S. Cl. 204—140 **17 Claims**

1. A method for producing an electrochromic device, comprising the steps of:
(a) preparing a 5-layered laminate structure consisting of:
A: electrode layer;
B: reductive coloring electrochromic layer;
C: ionic conductive layer;
D_0: dispersion layer consisting of metallic iridium or lower oxide thereof and a dispersion medium; and
E: electrode layer;
wherein at least one of the electrode layers A and E is transparent; and thereafter
(b) applying an AC voltage between the electrode layers A and E in a gas atmosphere containing oxygen or water vapor, thereby converting the metallic iridium or lower oxide thereof in the layer D_0 into oxide or higher oxide thereof.
8. A method for producing an electrochromic device, comprising the steps of:





(a) preparing a 5-layered laminate structure consisting of, in succession from the top:
A: electrode layer;
D_0: layer containing metallic iridium or lower oxide thereof;
C: ionic conductive layer;
B: reductive coloring electrochromic layer;
E: electrode layer; and
S: substrate;
wherein at least one of the electrode layers A and E is transparent; and thereafter
(b) applying an AC voltage between the electrode layers A and E in a gas atmosphere containing oxygen or water vapor, thereby converting the metallic iridium or lower oxide thereof in the layer D_0 into oxide or higher oxide thereof.

5,011,583

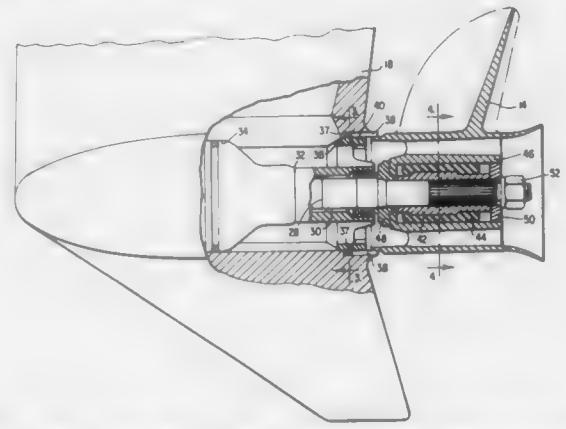
CORROSION PREVENTION FOR A MARINE PROPULSION SYSTEM

Hiroaki Tanbara, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Mar. 23, 1990, Ser. No. 497,969
Claims priority, application Japan, Mar. 31, 1989, 1-81300
Int. Cl.[5] B63H *5/06;* **C23F** *13/00*
U.S. Cl. 204—148 **9 Claims**

1. A method for using a sacrificial anode in a marine propulsion system to prevent corrosion comprising insulating a propeller of said system from said anode by mounting a propeller

of said system on a propeller shaft such that said propeller is not in electrical contact with said propeller shaft during periods of low thrust and can be in electrical contact with said propeller shaft during periods of high thrust.

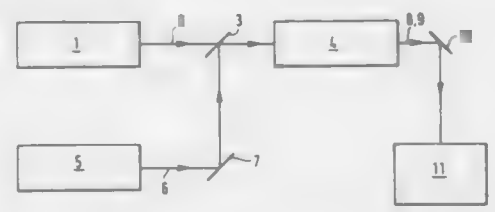


5,011,584

METHOD FOR SEPARATING A PREDETERMINED ISOTOPE OF AN ELEMENT FROM A GASEOUS COMPOUND CONTAINING SAID ELEMENT

Herman P. Godfried, Delden, Netherlands, assignor to Ultra-Centrifuge Nederland N.V., Almelo, Netherlands

Filed Aug. 31, 1989, Ser. No. 401,242
Claims priority, application Netherlands, Sep. 1, 1988, 8802160
Int. Cl.[5] B01D *5/00*
U.S. Cl. 204—157.22 **8 Claims**



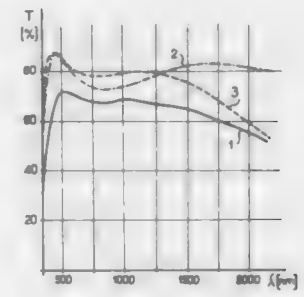
1. A method for separating a predetermined isotope of an element from a gaseous compound containing said element in which at least two isotopes of the element are present, comprising:
(a) providing a supply of said gaseous compound substantially all molecules of said compound are in one vibration state;
(b) providing at least two laser beams respectively for selectively exciting and further exciting molecules of said compound which contain the predetermined isotope, including interposing a medium-containing Raman cell between sources of the respective laser beams and said supply of gaseous compound and thereby converting the frequencies of said laser beams to different respective output frequencies by means of said Raman cell relative to the frequencies of said laser beams had as inputs to said cell; one of said laser beams as input to said cell being a train of very short pulses with a respective distance between each successive two such pulses, said distance being so short, and therefore pulse repetition frequency being so high, whereby the response of the medium in the Raman cell to the arrival of each said pulse in the cell is unfinished when the respective next said pulse arrives in the cell; and
(c) removing from said supply the predetermined isotope contained in said further excited molecules.

5,011,585

PROCESS FOR PRODUCING A TRANSPARENT LAYER WITH LOW RESISTIVITY

Jean-Pierre Brochot, Paris; Danielle Pilliss, Aulnay Sous Bois; Isabelle Wuest, Paris, all of France; Jean-Pierre Beaufays, Jemeppe Sur Sambre, and Maurice Darmont, Sambreville, both of Belgium, assignors to Saint-Gobain Vitrage, France

Filed Jul. 7, 1989, Ser. No. 376,711
Int. Cl.[5] C23C *14/54*
U.S. Cl. 204—192.130 **18 Claims**



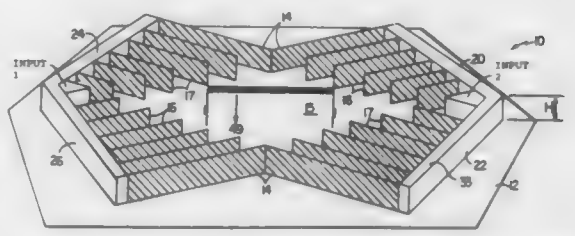
1. A process for coating a transparent substrate with a highly conductive, transparent layer having an indium based doped with tin and oxidized and having a resistivity less than 3.5×10^{-4} ohms.cm, comprising the following steps:
depositing a layer of indium tin oxide on glass at substoichiometric conditions by cathode sputtering from a target of an indium alloy comprising at least 2% tin by weight,
controlling said cathode sputtering to produce a layer having an intrinsic absorption coefficient that is equal to or greater than 7,500 cm^{-1} at a wavelength of 550 nm, and
heat treating said layer after deposition on said glass using a reducing phase.

5,011,586

CONSTRAINED UNIFORM FIELD GEL ELECTROPHORESIS

John D. Finney, Boston, and Michael J. Finney, Arlington, both of Mass., assignors to MJ Research, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 231,821, Aug. 12, 1988. This application Dec. 23, 1988, Ser. No. 289,966
Int. Cl.[5] G01N *27/26;* **B01D** *57/02*
U.S. Cl. 204—299 R **17 Claims**



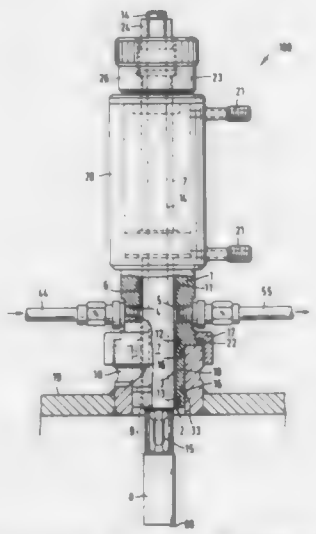
1. Gel electrophoresis apparatus for separating DNA molecules of high molecular weight comprising:
means for generating a first electric field and a second electric field, said fields being oriented transversely to each other, and
a gel box shaped and contoured to simultaneously form both said first and second fields into generally uniform electric fields, said gel box comprising a baffle means formed of electrically non-conducting material, said baffle means positioned and arranged to limit formation of a non-uniform electric field in said gel box.

5,011,587

APPARATUS FOR THE DETECTION OF CHEMICAL EQUALIZATION PROCESSES IN AN AQUEOUS SOLUTION

Wilhelm Schmidt, Lörrach, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 26, 1990, Ser. No. 484,715
Claims priority, application Switzerland, Mar. 2, 1989, 775/89
Int. Cl.[5] G01N *27/28*
U.S. Cl. 204—401 **12 Claims**



1. Apparatus for the detection of chemical equalization processes in aqueous solutions comprising an essentially cylindrical probe body, provided with at least one inlet and one outlet opening for calibrating or flushing liquids, which open into a calibrating chamber in the forward area of the probe body;

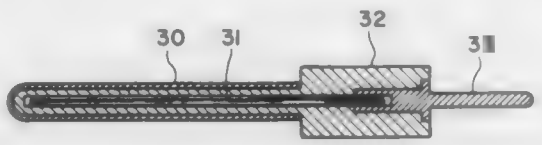
an immersion pipe axially displaceable in a bore of the probe body and including a protective cylinder with a front end into which an electrode is set, with the head of said electrode being located within a basket-like perforated area of the protective cylinder; and, an annular gap between the immersion pipe and the inner wall of the probe body which is sealed by at least three spaced apart gaskets located on the inner wall of the probe body, a distance between two adjacent gaskets being larger than the length of the perforated area of the protective cylinder, and a first gasket being located above the calibrating chamber and a second and third gasket being located under the calibrating chamber.

5,011,588

ION SELECTIVE DIP ELECTRODE ASSEMBLY

K. Jagan M. Rao, and K. Savitri Rao, both of 2 Baldwin Hill Pl., Moorestown, N.J. 08052

Continuation-in-part of Ser. No. 138,361, Dec. 26, 1987, abandoned, which is a continuation-in-part of Ser. No. 908,363, Sep. 17, 1986, abandoned. This application Mar. 15, 1989, Ser. No. 324,294
Int. Cl.[5] G01N *27/30*
U.S. Cl. 204—409 **3 Claims**



1. A dip electrode assembly of the ion-selective type used for the analytical determination of ion concentrations in a solution and comprising, in combination:

(a) A tube having a closed end and an open end and adapted for emersion of said closed end portion of said tube into a solution to be analyzed, said tube comprising a porous material having pores generally uniformly distributed there through, said pores communicating between the inside and the exterior of said tube, the maximum pore size of the pores in said tube being 100 microns in diameter;

(b) An electrode extending through said open end of said tube and adapted to be connected to an electrometer;

(c) Means for sealing said electrode to said tube adapted to permit connection of said electrode to an electrometer; and

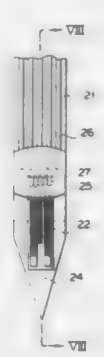
(d) A membrane matrix material comprising an organic plastic material comprising a nonvolatile solvent plasticizer and an ion-active material dissolved in said plasticizer, said plasticizer being essentially nonreactive with and a nonsolvent for said tube, said membrane matrix material impregnating the pores of said tube and directly contacting said electrode.

5,011,589

SOLUTION COMPONENT SENSOR DEVICE

Isao Amemiya; Tadashi Sakai, both of Yokohama, and Shigeki Uno, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 22, 1989, Ser. No. 411,112
Claims priority, application Japan, Sep. 30, 1988, 63-246442
Int. Cl.[5] G01N *27/333, 27/414*
U.S. Cl. 204—416 **9 Claims**



1. A sensor device for detecting a specified chemical component of a solution, comprising:

means for generating a potential corresponding to a concentration of a specified component of a solution;

reference means including an insulated-gate FET having a film insensitive to said component of the solution formed on the gate region, said insensitive film comprising a graft copolymer of a siloxane monomer and a comonomer other than a siloxane monomer which contains at least 1.5% by weight of siloxane groups; and

means for detecting a potential difference between the potential generating means and the reference means.

5,011,590

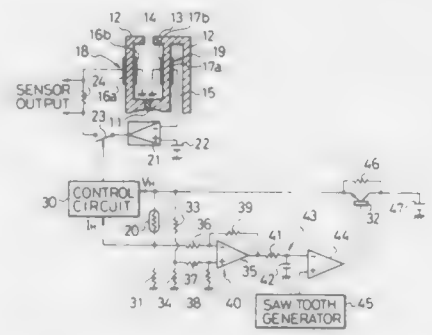
TEMPERATURE CONTROL DEVICE FOR OXYGEN CONCENTRATION SENSOR

Toyohei Nakajima, and Toshiyuki Mieno, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1988, Ser. No. 284,284
Claims priority, application Japan, Dec. 14, 1987, 62-316569
Int. Cl.[5] G01N *27/41, 27/409*
U.S. Cl. 204—425 **2 Claims**

1. In an oxygen concentration sensor having first and second solid oxygen ion conductive electrolytic members insulated from each other, a gas diffusion-limiting zone defined by said first and second solid electrolytic members and into which is introduced a gas in which the concentration of oxygen is to be examined, a first pair of electrodes on opposite sides of said first solid electrolytic member, a second pair of electrodes on opposite sides of said second electrolytic member, and means for supplying pumping current to said first solid electrolytic member in response to a voltage generated across said second pair of electrodes so that said current flows in said first solid electrolytic member between said first pair of electrodes to cause an oxygen ion flow in said first solid electrolytic member between said first pair of electrodes, whereby the concentration of oxygen present within said gas diffusion-limiting zone varies, and said voltage is responsive to the concentration of oxygen within said gas diffusion-limiting zone for varying said pumping current, whereby the concentration of oxygen in said gas is detected from the value of said pumping current, a temperature control device for controlling the temperature of said oxygen concentration sensor comprising:

an electrical heating element for heating said first and second solid electrolytic members;



a switching element serially connected to said electrical heating element and forming a series circuit together therewith;

a power supply for supplying a direct current voltage to said electrical heating element and said switching element;

current detecting means for constantly detecting heating current flowing in said electrical heating element;

driving means for selectively energizing said switching element with pulses of a predetermined repetition period having a duty factor corresponding to the value of said heating current detected by the current detecting means for selectively energizing and deenergizing said switching element; and,

a resistance connected between input and output terminals of said switching element for constantly supplying a small amount of current to said electrical heating element for detecting the resistance value of said electrical heating element irrespective of whether said switching element is energized or deenergized.

5,011,591

LARGE-PORED CRYSTALLINE TITANIUM MOLECULAR SIEVE ZEOLITES

Steven M. Kuznicki, Easton, Pa., assignor to Engelhard Corporation, Edison, N.J.

Division of Ser. No. 94,237, Sep. 8, 1987, Pat. No. 4,853,202. This application Jun. 5, 1989, Ser. No. 348,226
Int. Cl.[5] C01G *35/06*
U.S. Cl. 208—46 **6 Claims**

1. A process for conversion of an organic compound which comprises contacting the same at conversion conditions with a crystalline titaniumsilicate molecular sieve zeolite having a pore size of approximately 8 Angstrom units and a composition in terms of mole ratios of oxides as follows:

$$1.0 \pm 0.25\ M_{2/n}O : TiO_2 : y\ SiO_2 : z\ H_2O$$

wherein M is at least one cation having a valence of n, y is from 2.5 to 25, and z is from 0 to 100, said zeolite being characterized by an X-ray powder diffraction pattern having the lines and relative intensities set forth in Table I of the specification.

2. A process for reforming a naphtha which comprises contacting the same in the presence of added hydrogen and a hydrogenation/dehydrogenation component with a crystalline titaniumsilicate molecular sieve zeolite having a pore size of approximately 8 Angstrom units and a composition in terms of mole ratios of oxides as follows:

$$1.0 \pm 0.25\ M_{2/n}O : TiO_2 : y\ SiO_2 : z\ H_2O$$

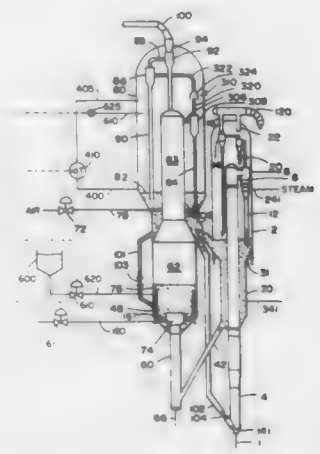
wherein M is at least one cation having a valence of n, y is from 2.5 to 25, and z is from 0 to 100, said zeolite being characterized by an X-ray powder diffraction pattern having the lines and relative intensities set forth in Table I of the specification.

5,011,592

PROCESS FOR CONTROL OF MULTISTAGE CATALYST REGENERATION WITH FULL THEN PARTIAL CO COMBUSTION

Hartley Owen, Belle Mead, N.J., and Paul H. Schipper, Wilmington, Del., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jul. 17, 1990, Ser. No. 554,309
Int. Cl.[5] C10G *11/00*
U.S. Cl. 208—113 **18 Claims**



1. A fluidized catalytic cracking process wherein a heavy hydrocarbon feed comprising hydrocarbons and sulfur and nitrogen compounds and having a boiling point above about 650 F. is catalytically cracked to lighter products comprising the steps of:

a. catalytically cracking the feed in a catalytic cracking zone operating at catalytic cracking conditions by contacting the feed with a source of hot regenerated catalyst to produce a cracking zone effluent mixture having an effluent temperature and comprising cracked products and spent cracking catalyst containing strippable hydrocarbons and coke containing nitrogen and sulfur compounds;

b. separating the cracking zone effluent mixture into a cracked product rich vapor phase and a solids rich phase comprising the spent catalyst and strippable hydrocarbons;

c. stripping the separated spent catalyst with a stripping gas to remove strippable compounds from spent catalyst and produce stripped catalyst;

d. regenerating said stripped catalyst in a primary regeneration stage, comprising a fast fluidized bed coke combustor having at least one inlet for primary combustion gas and for spent catalyst, and an overhead outlet for at least partially regenerated catalyst and flue gas, and also comprising a contiguous, superimposed, dilute phase transport riser having an opening at the base connective with the coke combustor and an outlet at an upper portion thereof

for discharge of partially regenerated catalyst and primary flue gas, at primary regeneration conditions adapted to completely afterburn CO formed during coke combustion to CO2, and sufficient to burn at least 40 % of the coke and sulfur compounds on the catalyst under oxidizing conditions while retaining at least 30% of the nitrogen compounds on said catalyst to produce partially regenerated catalyst containing nitrogen compounds and flue gas comprising SOx;

e. discharging and separating the primary flue gas from partially regenerated catalyst and collecting said partially regenerated catalyst as a second fluidized bed of partially regenerated catalyst in a secondary regeneration zone maintained at catalyst regeneration conditions and regenerating under partial CO oxidation conditions said partially regenerated catalyst to remove additional coke from said catalyst and to burn the nitrogen compounds present in said stripped catalyst under reducing conditions to produce regenerated catalyst and a secondary flue gas stream comprising at least 1 mole % CO; and

f. recycling to the catalytic cracking process hot regenerated catalyst from said second fluidized bed.

5,011,593

CATALYTIC HYDRODESULFURIZATION

Robert A. Ware, Wyndmoor, Pa., and Stephen S. Wong, Medford, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 20, 1989, Ser. No. 442,870

Int. Cl.[5] C10G *1/00*

U.S. Cl. 208—213 **19 Claims**

1. A process for the hydrodesulfurization of a aromatic hydrocarbon fraction having an aromatic content of at least 50 weight percent, which comprises contacting the fraction in the presence of hydrogen at a hydrogen partial pressure from 400 to 1200 psig, a temperature from 600° to 750° F and at a conversion relative to the initial boiling point of the hydrocarbon fraction of less than 10 percent by weight, with a hydrodesulfurization catalyst comprising a metal hydrogenation component and zeolite beta.

5,011,594

PROCESS FOR THE CONTINUOUS EXTRACTION OF MIXTURES OF ORGANIC SUBSTANCES WITH SUPERCRITICAL SOLVENTS

Eckhard Haeffner, Clausthal-Zellerfeld; Hedi Ben-Nasr, Gelsenkirchen; Bernd Knuth, Essen; Hubert Jasper, Haltern, and Klaus Reimann, Essen, all of Fed. Rep. of Germany, assignors to Fried. Krupp GmbH, Essen, Fed. Rep. of Germany

Filed Dec. 16, 1988, Ser. No. 285,387

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1987, 3743058

Int. Cl.[5] C10G *21/00*

U.S. Cl. 208—320 **33 Claims**

1. A process for continuous, supercritical phase extraction of a mixture of organic substances with at least one solvent in the supercritical state, which mixture includes at least one extractable organic substance capable of being taken up into the supercritical phase and having at least one of (a) a high boiling point and (b) a melting point or melting range but no boiling point, and which at least one solvent is selected from the group consisting of CO_2, propane, butane, pentane, petroleum ether, and water and therein the at least one solvent has a critical temperature, T_k, and has a critical pressure, P_k, the process comprising:

a. providing an extraction vessel comprised of an extraction column, the extraction column extending vertically, having a head portion at the upper end thereof and a sump portion at the lower end thereof, and having a temperature gradient which deceases from the sump portion to the head portion,

wherein the sump portion has a temperature effective to maintain extraction residue in a flowable state thereby permitting continuous removal thereof from the sump portion, and

wherein the head portion has a temperature effective to provide an optimum take up of the extractable substances into the at least one solvent in the critical state; and

b. extracting the mixture of organic substances with the at least one solvent in the supercritical state at a pressure, P, ranging from $P > P_k$ up to $P < 400$ bar and at a temperature, T, of at least $T > T_k$ to provide a charged fluid phase comprised of extracted substances, and an extraction residue.

5,011,595

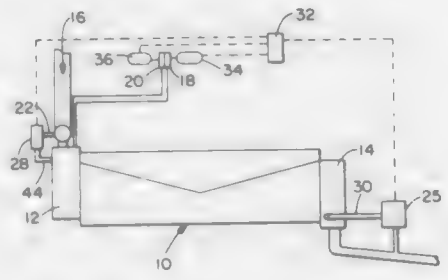
COMBINATION FEEDFORWARD-FEEDBACK FROTH FLOTATION CELL CONTROL SYSTEM

Gary F. Meenan, and Hayward Oblad, both of Bethel Park, Pa., assignors to Consolidation Coal Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 360,820, Jun. 2, 1989, abandoned. This application Aug. 2, 1990, Ser. No. 562,056

Int. Cl.[5] B03D *1/00, 1/02*

U.S. Cl. 209—166 **2 Claims**



1. A system apparatus for automatically controlling the recovery of solids from a feed slurry passing into a froth flotation cell to which additives are supplied to separate the solids from impurities with the solids and impurities having different light reflective characteristics and the impurities passing from the flotation cell as tailings comprising:

(a) a flotation cell apparatus comprising a flotation cell, means to feed said slurry containing said solids and impurities to said flotation cell, means for removing a fraction from said flotation cell containing a concentrated portion of said solids and means for removing a tailings fraction from said flotation cell containing a concentrated portion of impurities and a minor amount of said solids,

(b) a first means coacting with the feed slurry passing into the cell responsive to the light reflective characteristics of the solids, said first means comprising a first optoelectric detector having a transparent tube containing light emitting diode means for emitting light into the feed slurry and a photoconductor means for generating a signal in response to light reflected from the solids and means to send said signal to a controller means,

(c) a second means coacting with said feed slurry passing into the cell responsive to the light reflective characteristics of the impurities and comprising a second optoelectric detector having a transparent tube containing light emitting diode means for emitting light onto the feed slurry and a photoconductor means for generating a second signal in response to light reflected from the impurities and means to send said second signal to said controller means,

(d) said first and second detectors each have opaque barriers separating the diode means from the photoconductor means, the barrier in said first detector extending from between said diode means and said photoconductor means to at least the inner surface of the tube and the barrier in said second detector extending from between said diode means and said photoconductor means to a location spaced from the inner surface of the tube, and

(e) a third means coacting with the tailings having means responsive to the light reflective characteristics of the impurities and means to generate and send a feedback signal to said controller means of the impurities concentration of the tailings,

(f) said controller means comprising means to receive said signals from said first, second and third means and means to generate a control signal in response to said received signals,

(g) additive feed means for variably supplying said additives to the flotation cell comprising means to receive said control signal from said controller means and means to vary the addition of said additives to the flotation cell in response to said received control signal.

5,011,596

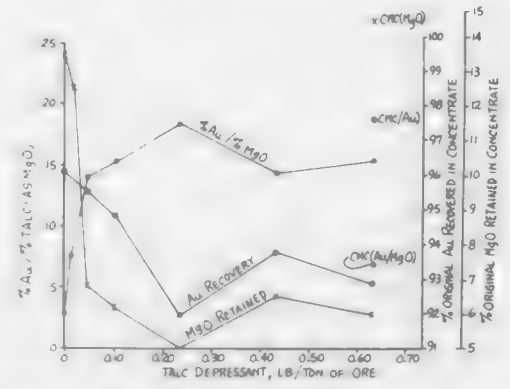
METHOD OF DEPRESSING READILY FLOATABLE SILICATE MATERIALS

Douglas R. Shaw, Denver, Colo., assignor to Weyerhaeuser Company, Tacoma, Wash.

Continuation-in-part of Ser. No. 489,118, May 5, 1990, abandoned. This application Sep. 19, 1990, Ser. No. 586,331

Int. Cl.[5] B03D *1/004, 1/106, 1/02*

U.S. Cl. 209—167 **28 Claims**



1. A method of depressing readily floatable silicate minerals in a froth flotation process of an ore containing said readily floatable silicate minerals and at least one value mineral which comprises subjecting a ground aqueous mineral pulp of said ore to froth flotation in the presence of a sufficient amount of a bacterial cellulose to depress the readily flotable silicate minerals into the flotation tailings and recovering the at least one value mineral in the froth.

5,011,597

SINGLE CELL VERTICAL STATIC FLOW FLOTATION UNIT

Anthony S. Canzoneri, 2408 Kentucky Ave., Kenner, La. 70063, and Ronald A. Boze, 19 Wisteria La., Covington, La. 70433

Continuation-in-part of Ser. No. 255,505, Oct. 11, 1988, abandoned. This application Jul. 25, 1989, Ser. No. 384,833

Int. Cl.[5] B01D *17/035*

U.S. Cl. 210—104 **11 Claims**

1. An apparatus for removing suspended matter from a liquid, comprising:

a substantially cylindrical vertically oriented vessel having a convex down bottom, a convex up top and a continuous side wall forming an interior chamber adapted to receive a flow of liquid having suspended matter therein, said vessel having a vertical axis;

an annular separation wall means having a central opening therein and being mounted in the vessel transversely to the vertical axis of the vessel for separating a lower gasification chamber from an upper degasification chamber;

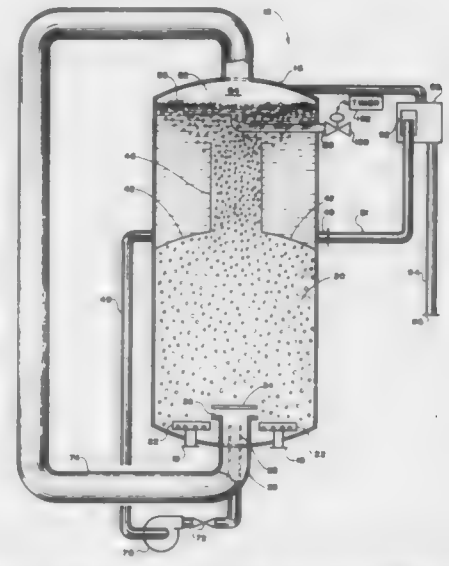
said degasification chamber formed above said separation wall means in fluid communication with the gasification chamber through said opening in said annular wall means;

means for introducing the flow of liquid into the gasification chamber;

means for introducing a flow of gas into the gasification chamber for attracting the suspended matter and for carrying the suspended matter upwardly to the gasification chamber;

means for concentrating the upwardly moving suspended matter extending vertically through at least a portion of the degasification chamber;

a skim collection means for collecting the suspended matter in the upper portion of the degasification chamber and delivering the skim outside of the vessel, said skim collection means being positioned at a level above said suspended matter concentrating means;



means for removing treated liquid from the vessel positioned in a lower part of the degasification chamber; and

a means for controlling a volume of skim collection by changing a volume of liquid in the vessel at predetermined intervals, wherein said means for controlling skim collection volume comprise a normally closed skim collection outlet valve means, an adjustable timer means operatively connected to said valve means, said timer means having a means to send intermittent signals to said valve means causing the valve means to open, and a normally open, vertically adjustable nozzle means connected to said treated liquid outlet means for maintaining a predetermined volume of liquid in the vessel.

5,011,598

DOMESTIC LEAD PURGING SYSTEM FOR TREATING STAGNATED WATER

Alan G. Nathanson, 15 Pettit Dr., Dix Hills, N.Y. 11746

Continuation-in-part of Ser. No. 301,981, Jan. 26, 1989, abandoned. This application Feb. 16, 1990, Ser. No. 480,791

Int. Cl.[5] E03B *7/04*

U.S. Cl. 210—136 **3 Claims**

1. A system for removing lead from a stagnated domestic hot and cold water system having a plurality of fixtures with a plurality of faucets, respectively, comprising:

(a) a plurality of cold water pipes containing stagnated domestic cold water and connected to a plurality of fixtures, respectively, said stagnated domestic cold water being reuseable and not having to be wastefully dumped;

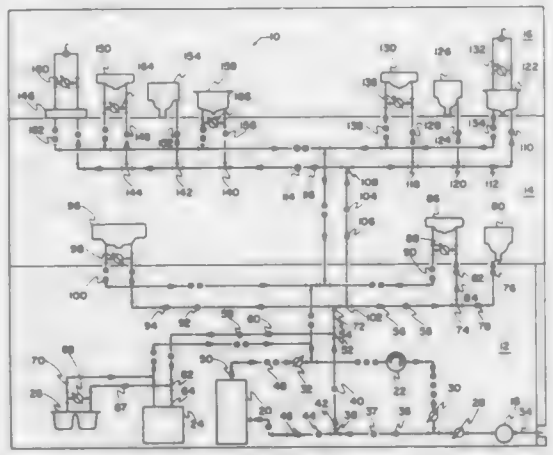
(b) a plurality of hot water pipes containing stagnated domestic hot water and connected to the plurality of fixtures, respectively, said stagnated domestic hot water being reuseable and never having to be wastefully dumped;

(c) means for fluidly connecting said plurality of cold water

pipes to said plurality of hot water pipes, respectively, so that said cold water can enter said plurality of hot water pipes, said connecting means include a plurality of crossover pipes so that said cold water can enter said hot water, when said fixtures are turned off, and a reverse flush is required;

(d) means for assuring that said cold water enters all of said plurality of hot water pipes and said hot water does not enter any of said plurality of cold water pipes, said assuring means include a plurality of check valves for assuring that an entire flow volume of said cold water enters all of said plurality of hot water pipes and that none of an entire flow volume of said hot water enters any of said plurality of cold water pipes, said plurality of check valves being located inside said plurality of crossover pipes, respectively, said plurality of check valves assuring that said cold water flows in a direction when it enters said plurality of crossover pipes to mix with said hot water;

(e) a hot water heater and means for circulating said cold water and said hot water through said plurality of cold



and hot water pipes when the plurality of faucets are closed so that the hot water and the cold water circulate in a reverse flow that assures that said hot water does not back up into the hot water heater, said circulating means including a circulation pump, said circulating pump circulating said cold water, as said cold water enters said hot water and achieving said reverse flow when said fixtures are not being used; and

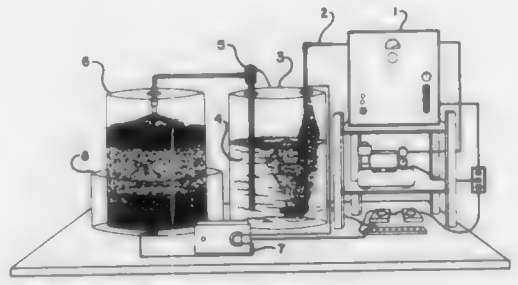
(f) means for removing sediment and numerous other water contaminants from said stagnated domestic hot and cold water system including lead which has been leached into said hot water by stagnation without having to flush the stagnated domestic hot and cold water, said sediment removing means being located such that all of said stagnated hot water and stagnated cold water passes through said sediment removal means and including a purifier, said purifier containing activated charcoal, and a plurality of filter screens wherein each successive filter of said plurality of filters contain a filter whose screen is lower in gauge than the previous screen so that the filtering becomes finer and finer.

5,011,599

SIMPLE SYSTEM FOR DECOMPOSING ATRAZINE IN WASTEWATER

Philip C. Kearney, Laurel; Mark T. Muldoon, Bowie, and Cathleen J. Somich, Laurel, all of Md., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 220,181, Jul. 8, 1988, Pat. No. 4,915,842.
This application Feb. 13, 1990, Ser. No. 479,804
Int. Cl.[5] C02F *1/78, 3/04*
U.S. Cl. 210—130 **2 Claims**



1. An atrazine wastewater disposal system, comprising:

means for producing 2-chloro-4,6-diamino-s-triazine from atrazine in an aqueous carrier solution by ozonating the atrazine; and,

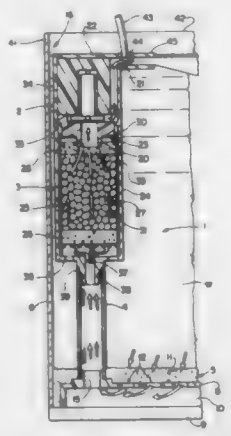
an organic-rich soil connected with the producing means for degrading the 2-chloro-4,6-diamino-s-triazine, the soil containing microorganisms capable of metabolizing the 2-chloro-4,6-diamino-s-triazine, the microorganisms comprising Pseudomonas sp. Strain A.

5,011,600

WATER FILTRATION SYSTEM FOR AQUARIUMS

Edmund J. Mowka, Jr.; Thomas A. Frakes, and Larry M. Pettengill, all of Mentor, Ohio, assignors to Aquarium Systems, Inc., Mentor, Ohio

Filed Jun. 14, 1989, Ser. No. 366,591
Int. Cl.[5] A01K *63/04*
U.S. Cl. 210—169 **8 Claims**



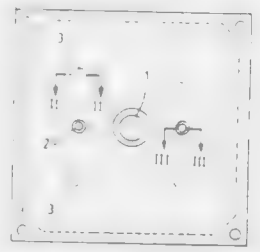
1. A filtration system for aquariums comprising a submersible electric water pump having a bottom pump inlet and a top pump outlet, a filter assembly, and undergravel filter means having a water lift tube extending upwardly therefrom, said filter assembly comprising a casing containing filter media, said casing having a casing outlet in one end in communication with said pump inlet, a single casing inlet in another end axially spaced from said one end, and means for releaseably connecting said single casing inlet to an upper open end of said water lift tube, said casing having a greater transverse cross-sectional interior area containing said filter media than the transverse internal cross-sectional area of said water lift tube.

5,011,601

FILTER PLATES FOR PLATE FILTER PRESSES

Oswald Busse, Aarbergen, Fed. Rep. of Germany, assignor to Passavant-Werke AG, Fed. Rep. of Germany

Filed Mar. 2, 1990, Ser. No. 487,043
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1989, 3906537
Int. Cl.[5] B01D *25/12*
U.S. Cl. 210—229 **5 Claims**



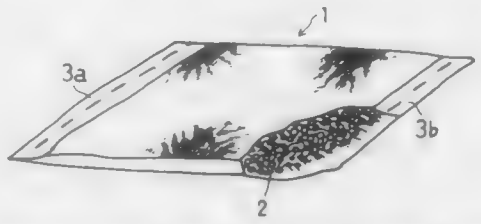
1. Filter plate for plate filter presses for freeing sewage sludge of water, which has a filtrate chamber over which a filter cloth is laid and from which a plurality of support bosses rise to a level approximately flush with an edge surrounding the filtration chamber, said bosses serving for support on neighboring filter plates, the improvement comprising the filter cloth being fastened only at some of the bosses and being laid loose over the other bosses.

5,011,602

ANTIBACTERIAL MATERIAL FOR WATER

Tuyoshi Totani, Tokyo; Tatuo Yamamoto, Inazawa, and Yasuo Kurihara, Nagoya, all of Japan, assignors to Shinagawanenryo Kabushikikaisha, Tokyo, Japan

Filed Jun. 7, 1989, Ser. No. 362,538
Claims priority, application Japan, Jun. 16, 1988, 63-149195
Int. Cl.[5] C02F *1/50*
U.S. Cl. 210—484 **4 Claims**



1. An antibacterial material for water which comprises a carrier containing an antibacterial agent and a fabric surrounding said carrier reducing oozing of said antibacterial agent, and keeping the surface of said agent free from dead microbial cells, said fabric having a basis weight from 10 to 180 g/m^2 which provides voids among a number of fibers to permit water and microorganisms contained therein to pass while preventing contaminants from passing therethrough.

5,011,603

CERAMIC FILTER

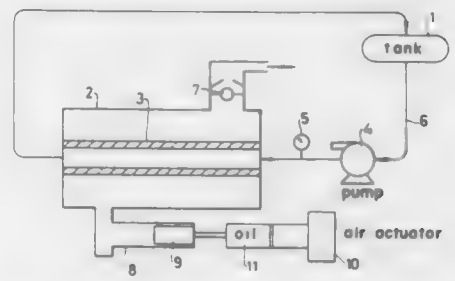
Yoshihisa Katoh, Toyota; Takashi Ogawa, and Mitsumasa Hasegawa, both of Kariya, all of Japan, assignors to Toshiba Ceramics Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 353,156, May 12, 1989, abandoned, and a continuation of Ser. No. 87,352, Aug. 20, 1987, abandoned.
This application Jan. 24, 1990, Ser. No. 469,712
Claims priority, application Japan, Aug. 20, 1986, 61-194590
Int. Cl.[5] B01D *39/16; C04B 37/00*
U.S. Cl. 210—490 **3 Claims**

1. A ceramic filter comprising a support layer having an inner surface for forming at least one filter passage and a filter layer on the inner surface of the support layer and having an inner surface functioning as a filter surface, the filter layer having a thickness of 10 to 40 microns from the support layer and comprising an intermediate layer coated on the inner surface of the support layer and an inner layer coated on the intermediate layer, the intermediate layer being made of alumina powder having a particle size of 2 to 10 microns and the inner layer being made of alumina powder having a particle size of 0.4 to 1 microns,

wherein all pores in the filter layer have a cumulative intrusion volume of 0.2 cc/g or less, pores having pore diameters of 0.1 to 3.0 microns have a cumulative intrusion volume of 0.1 cc/g or more, and pores ranging within a pore diameter width (W) of 0.1 microns around a center pore diameter (PD) have a cumulative intrusion volume (IV) which is 50% or more of the cumulative intrusion volume of all pores in the filter layer, and

wherein the support layer, intermediate layer and inner layer are heated together at a temperature sufficient to obtain the ceramic filter.



5,011,604

USE OF MICROALGAE TO REMOVE POLLUTANTS FROM POWER PLANT DISCHARGES

Edward W. Wilde, 1833 Pisgah Rd., North Augusta, S.C. 29841; John R. Benemann, 2741 O'Harte, San Pablo, Calif. 94806; Joseph C. Weissman, 2086 N. Porpoise Pt. La., and David M. Tillett, 911-3 Coquina La., both of Vero Beach, Fla. 32963

Filed Feb. 7, 1990, Ser. No. 476,182
Int. Cl.[5] C02F *3/32*
U.S. Cl. 210—602 **13 Claims**



9. A method for removing inorganic pollutants from the discharge from a power plant to an inlet of a body of water, said discharge having a higher temperature than said body of water whereby said discharge rides on said body of water until said discharge cools, said method comprising:

defining a zone in said body of water, said zone including said inlet and characterized by a set of physiochemical characteristics, said zone including said discharge;

confining said thermal discharge to said zone;

cultivating in said zone an algal colony having at least one strain of algae that dominates genetically other algal species in water having said set of physiochemical characteristics of said zone;

harvesting at least a portion of said algal colony to remove said pollutants from said body of water; and

innoculating said zone near said inlet with a fraction of said at least a portion of said harvested algal colony.

5,011,605

SEWAGE TREATMENT PLANT

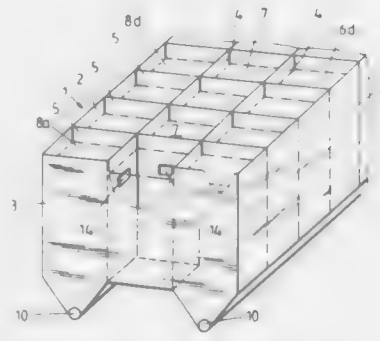
Stefan Pape, Recklinghausen, and Hans-Joachim Bassfeld, Wesel, both of Fed. Rep. of Germany, assignors to Envicon Luft- und Wassertechnik GmbH & Co. KG, Fed. Rep. of Germany

Filed Oct. 11, 1989, Ser. No. 426,077

Claims priority, application PCT Int'l Appl., Oct. 11, 1988, PCT/EP88/00910; Mar. 28, 1989, PCT/EP89/00327

Int. Cl.[5] **C02F** *3/02*

U.S. Cl. 210—615 **23 Claims**



23. A sewage treatment plant for waste water purification, comprising

a container,

a first partition located in the container dividing the container into a settling type treatment section means and a biological or chemical type treatment section means,

a plurality of additional partitions located in the settling type treatment section dividing the settling type treatment section into a plurality of chambers,

a plurality of additional partitions located in the biological or chemical type treatment section dividing the biological or chemical type treatment section into a plurality of chambers,

inlet means for introducing waste water to the container,

outlet means for removing treated waste water from the container,

linking means for linking adjacent chambers from either the same or a different section to one another as desired to form a desired flow path of water through the sewage treatment plant, and

removal means located in the settling type treatment section for removing deposited treatment sludge from the settling type treatment section.

5,011,606

Patent Not Issued For This Number

5,011,607

HEMODIAFILTRATION SYSTEM

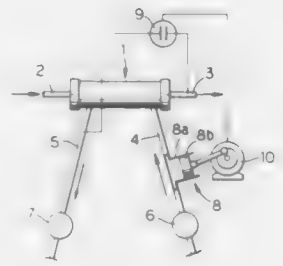
Toru Shinzato, 104, Daido, Naha-shi, Okinawa-ken, Japan, assignor to Toru Shinzato, Okinawa and Medecs Co. Ltd., Aichi, both of, Japan

Continuation of Ser. No. 479,101, Mar. 25, 1983, which is a continuation of Ser. No. 267,451, May 27, 1981, abandoned. This application Jun. 7, 1990, Ser. No. 534,221

Claims priority, application Japan, Feb. 24, 1979, 54-21180

Int. Cl.[5] **B01D** *61/24, 61/28, 61/32, 63/02*

U.S. Cl. 210—637 **8 Claims**



1. A process for purifying a body fluid by combined dialysis and filtration, comprising:

(a) flowing the body fluid to be purified past one side of a semi-permeable membrane;

(b) simultaneously flowing dialyzate past the opposite side of said semi-permeable membrane, said flowing steps (a) and (b) being under conditions sufficient to permit purification of the body fluid by dialysis;

(c) over a first time span, and concurrently with said dialysis, causing the pressure on the dialyzate side of said semi-permeable membrane to be less than the pressure on the body fluid side thereof, said first time span and said pressure difference being sufficient to force middle and small molecular weight molecules to travel from the body fluid side to the dialyzate side of said semi-permeable membrane by filtration;

(d) over a second time span, subsequent to said first time span and concurrently with said dialysis, causing the pressure on the dialyzate side of said semi-permeable membrane to be greater than the pressure on the body fluid side thereof, said second time span and said pressure difference being sufficient to cause infusion through said semi-permeable membrane of an amount of dialyzate which is compensatory for the amount of fluid passing from the body fluid side to the dialyzate side during said first time span; and

(e) repeating said steps (c) and (d) in a manner such that alternating pressure differences occur across the same portion of said semi-permeable membrane at a rate which ensures efficient combined filtration and dialysis.

5,011,608

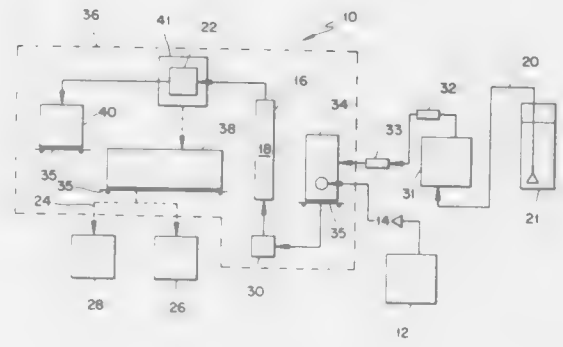
BIOGENIC AMINE ASSAY USING HPLC-ECD

Dragana Damjanovic, 10101 Saskatchewan Drive, Apt. 1601, Edmonton, Alberta, Canada T6E 4R6

Filed Nov. 18, 1988, Ser. No. 273,449

Int. Cl.[5] **B01D** *15/08*

U.S. Cl. 210—656 **60 Claims**



1. A method for the assaying of low concentrations of an oxidizable or reducible biogenic amine or derivative or metabolite thereof, comprising the steps of:

(a) preparing a sample of at least one said compound, said sample being suitable for quantitative analysis;

(b) injecting said sample into a high pressure liquid chromatography apparatus to thereby form a chromatogram, said apparatus including:

(1) a chromatography column containing a quantity of microparticulate material as a stationary phase;

(2) a mobile phase passing through said stationary phase, said mobile phase comprising the following components:

(a) from about 50 mM to about 250 mM of a buffer having a pH of from about 2 to about 8;

(b) from about 0.1 mM to about 10.0 mM of a chelating agent;

(c) from about 0.1 mM to about 10.0 mM of an alkyl sulfonate, said alkyl sulfonate having from about 4 to about 14 carbon atoms; and

(d) from about 0.1% to about 10% by volume methanol in water solution;

(3) an injector for injecting said sample;

(4) a pump for pumping said mobile phase through said stationary phase; and

(5) a guard column positioned upstream of said chromatography column;

(c) eluting said compounds from said chromatography column;

(d) passing said eluted compounds through an electrochemical detector cell thereby producing a current output from said detector;

(e) measuring and integrating the current output from said electrochemical detector to obtain a quantitative analysis of said compound; and

(f) maintaining a substantially constant base line noise at a sensitivity of said electrochemical detector cell sufficient to measure the quantity of said compound present in resting, human plasma by maintaining all portions of said apparatus contacting said mobile phase and said stationary phase substantially residue-free, wherein the signal to noise ratio of said current output is at least 2 to 1.

5,011,609

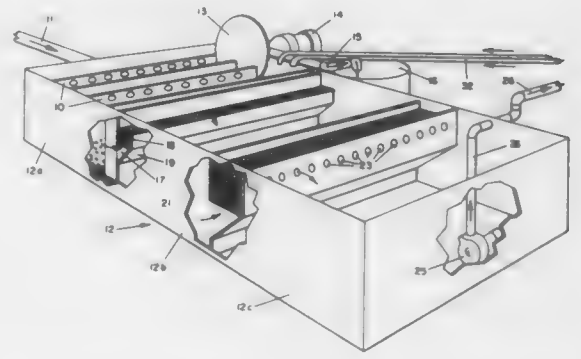
ULTRASORB SYSTEM

Ronald G. Fink, 191 Commodore Dr., Jupiter, Fla. 33477

Division of Ser. No. 144,412, Jan. 15, 1988, Pat. No. 4,859,329. This application May 25, 1989, Ser. No. 357,004

Int. Cl.[5] **C02F** *9/00*

U.S. Cl. 210—665 **4 Claims**



1. A method of decontaminating water in a closed loop system, said water containing oil, grease, grit and fuel in the form of heavy solids, smaller solids, free oil, emulsified oil, and large oil globules, said method comprising the steps of:

(a) separating the heavy solids from the water;

(b) coalescing the emulsified oil products;

(c) absorbing free oil by an absorption cartridge;

(d) coalescing oil product globules and separating solids in the low micron range;

(e) absorbing the large oil globules with a mechanical filter; whereby water having a greatly reduced oil, grease, grit and fuel levels is produced, thereby producing a semi-decontaminated water, said method further comprising the steps of:

(f) further filtering said semi-decontaminated water to remove any remaining contaminants; and,

(g) injecting chemicals from a chemical feed system into said semi-decontaminated water to prolong water life and lower bacteria build-up.

5,011,610

WATER TREATMENT METHOD

Frank S. Martin, Farmersville, and Gary L. Silver, Centerville, both of Ohio, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 2, 1990, Ser. No. 473,794

Int. Cl.[5] **C02F** *1/28*

U.S. Cl. 210—667 **3 Claims**

1. Method for treating contaminated waste water containing dissolved metals including barium, silver, lead palladium, copper, strontium, or vandium, for the partial or substantially complete extraction thereof, comprising (a) dispersing uniformly throughout said contaminated waste water in the absence of molecular oxygen finely divided calcium sulfite in excess amounts sufficient to provide unreacted calcium sulfite to function as an ion adsorption solid which adsorbs at least some of said metals, to yield an intimate reaction mixture thereof under conditions which cause a reduction and insolubilization of said metals by reaction of a portion of said calcium sulfite with said metals and (b) separating the unreacted portion of said calcium sulfite and the insolubilized metal reaction products from the waste water.

5,011,611

METHOD OF SEPARATION OF FURFURAL FROM DILUTED AQUEOUS SOLUTIONS

Karel Jerábek; Karel Setínek, and Frantisek Kastánek, all of Praha, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Praha, Czechoslovakia

Filed Dec. 15, 1989, Ser. No. 452,269

Claims priority, application Czechoslovakia, Dec. 16, 1988, 8371-88

Int. Cl.[5] B01D *15/00*

U.S. Cl. 210—674 **1 Claim**

1. A method for the separation of furfural from a diluted aqueous solution comprising contacting a furfural containing aqueous solution with a polymer adsorbent which comprises porous crosslinked copolymers of styrene and derivatives thereof having an internal surface area greater than 30 m^2/g and desorbing furfural from the adsorbent by contacting said adsorbent with at least one alcohol containing from 1–3 carbon atoms.

5,011,612

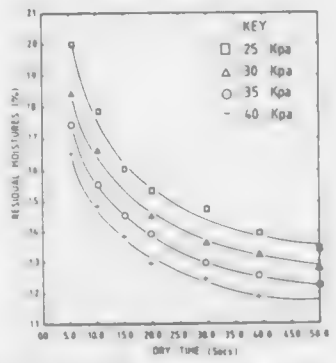
DEWATERING OF ALUMINA TRIHYDRATE

Mark Keeney, Bentley, Australia, assignor to Industrial Minerals Research & Development Pty. Ltd., Bentley and Nabalco Pty. Ltd., Sydney, both of, Australia

Filed Sep. 15, 1989, Ser. No. 407,667

Int. Cl.[5] B01D *37/03*

U.S. Cl. 210—712 **18 Claims**



1. A method which involves reducing the moisture content of an alumina trihydrate filter cake which is produced by filtering a slurry of alumina trihydrate solids obtained by the Bayer process in the processing of alumina, comprising contacting the alumina trihydrate filter cake with a product obtained by mixing an alkaline liquor and a C_8 to C_{20} fatty acid or fatty acid precursor or blend of said fatty acid and precursor.

5,011,613

METHOD FOR REGULATING THE RESIDUAL FREE CHLORINE IN WATER

Cathy Feray, Suresnes, and Conrad Hubele, L'Etang La Ville, both of France, assignors to Lyonnaise des Eaux, Paris, France

Filed Jan. 18, 1990, Ser. No. 466,908

Claims priority, application France, Feb. 16, 1989, 89 02042

Int. Cl.[5] C02F *1/76*

U.S. Cl. 210—739 **3 Claims**

1. A method for regulating the residual-free chlorine in drinking water wherein regulation is carried out by introducing a quantity of chlorine determined as a function of the chlorine demand upstream of a water treatment of storage line, while producing water in a distribution network having a residual-free chlorine content at a set point; wherein

the chlorine demand for the water at a treatment or storage line inlet is determined by accelerating, by heating to a preselected temperature, chlorine reactions with untreated water samples so as to obtain, over a period of time, from about 5–10 minutes, water having a residual-free chlorine content corresponding to a value required for drinking; wherein

heating allows for a measure of the chlorine demand due to compounds including ammonia, organic matter, and iron ions, whereby chlorine disinfection is completed within 10 minutes.

5,011,614

PROCESS FOR THE DECOMPOSITION OF EXPLOSIVE NITRIC ACID ESTERS DISSOLVED IN WASTEWATERS

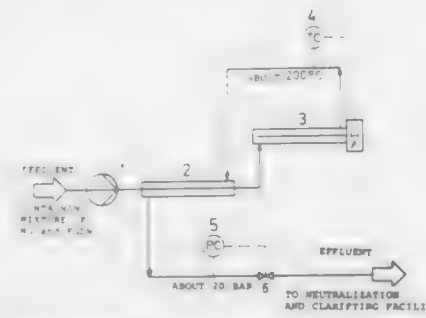
Wilhelm Gresser, Ludinghausen; Klaus Schelhase, Troisdorf-kriegdorf; Heinz Frisch, Haiger-Allendorf; Klaus Kaschel, Cologne; Berent Reinecke, and Wilhelm H. Trautmann, both of Burbach, all of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

Filed Apr. 20, 1989, Ser. No. 340,685

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1988, 3813184

Int. Cl.[5] C02F *1/72;* **C06B** *21/00*

U.S. Cl. 210—761 **19 Claims**



1. A process for the decomposition of explosive nitric acid esters dissolved in wastewaters obtained from the manufacture of explosives and not being biodegradable, which comprises heating the wastewater containing the nitric acid esters dissolved therein, while maintaining the wastewater under pressure and in the liquid phase, to temperatures of between 150° C. and 300° C. to decompose the nitric acid esters without explosion.

5,011,615

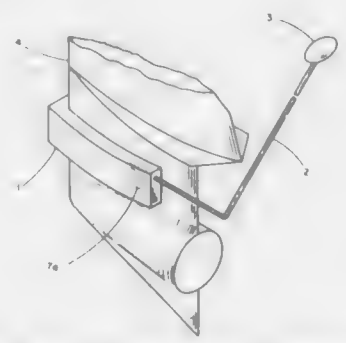
METHOD AND APPARATUS FOR INHIBITING ORGANISM GROWTH IN MARINE MOTORS

David J. Minderman, 25901 Rustic La., Westlake, Ohio 44145

Filed Nov. 13, 1989, Ser. No. 434,353

Int. Cl.[5] B01D *1/50, 21/14*

U.S. Cl. 210—764 **8 Claims**



1. A method for chemically treating statically contained water within cooling water passages of outboard or stern-drive motors, the method comprising:

providing a substance holder having a cavity being adapted for fluid communication with inlets of the cooling water passages;

placing a biocidic treatment substance in the cavity of the substance holder;

placing said substance holder over the inlets of said cooling water passages to seal the cooling water passages and cavity against egress of the treatment substance and the statically contained water; and,

diffusing said biocidic treatment substance throughout the statically contained water in said cooling water passages.

5,011,616

FINISH COMPOSITION FOR FINE DENIER POLYAMIDE YARN

Robert M. Marshall, Chesterfield, Va.; James C. Raybon, Jr., Columbia, and Robert W. Medeiros, Irmo, both of S.C., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Feb. 23, 1990, Ser. No. 484,132

Int. Cl.[5] D06M *13/17, 13/224, 13/256, 15/53*

U.S. Cl. 252—8.7 **16 Claims**

1. A finish composition for fine denier apparel polyamide yarn comprising an oil portion comprising

(a) 25 to 65 weight percent of an ester selected from the group consisting of n-butyl stearate, iso-butyl stearate, and combinations thereof, said ester being present in an effective amount to provide enhanced knitting performance of said yarn;

(b) 2 to 20 weight percent polyoxyethylene (9) perlargonate;

(c) 4 to 16 weight percent polyoxyethylene (3) cetyl-stearyl ether;

(d) 5 to 25 weight percent polyoxyethylene (25) castor oil;

(e) 0.2 to 2 weight percent tridecyl phosphate;

(f) 0.1 to 4 weight percent sodium dinonyl sulfosuccinate.

5,011,617

COMPLEX TOLYLENE POLUREA GREASE COMPOSITION AND PROCESS

Gian L. Fagan, Benicia, Calif., assignor to Chevron Research and Technology Company, San Francisco, Calif.

Filed Feb. 9, 1990, Ser. No. 478,130

Int. Cl.[5] C10M *1/10*

U.S. Cl. 252—18 **27 Claims**

1. A complex tolylene polyurea-thickened grease containing less than 7 parts per million 2,4-diaminotoluene.

12. A method for preparing a grease composition which comprises:

mixing a diisocyanate containing 4 to 32 carbon atoms, a polyamine containing 2 to 40 carbon atoms and a monoamine containing 1 to 30 carbon atoms with a major portion of a lubricating oil, the molar ratio of diisocyanate to polyamine to monoamine being 1:0–2:0.1–2;

maintaining said mixture at a temperature of 60° to 320° F. for a period of 0.5 to 10 hours;

thereafter adding an alkaline earth metal oxide or hydroxide, a carboxylic acid anhydride containing 2 to 20 carbon atoms and a promoting amount of water to said mixture;

thereafter milling said mixture to the consistency of grease.

5,011,618

PROCESS FOR PRODUCING AN OVERBASED SULFONATE

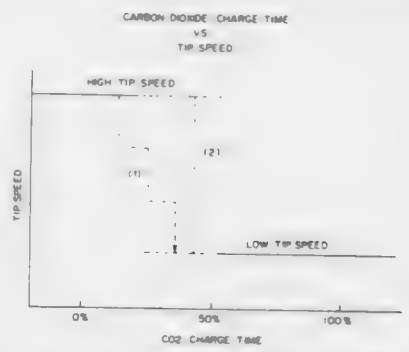
Brian L. Papke, Wappingers Falls, and Leonard S. Bartley, Jr., Newburgh, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 5, 1989, Ser. No. 402,283

Int. Cl.[5] C10M *135/10*

U.S. Cl. 252—33 **4 Claims**

1. In a process for preparing an overbased oil soluble calcium sulfonate having a TBN of 400 to 450 in which calcium base is added to a diluted calcium sulfonate mixture and stirred for a sufficient length of time at a temperature of 50° to 60° C., and CO_2 is added to the heated mixture which is filtered to recover the sulfonate product wherein the improvement comprises stirring the calcium base and calcium sulfonate mixture at a variable tip speed ranging from a high tip speed sufficient to ensure full CO_2 reactivity for a period of time until the CO_2 reactivity of the sulfonate mixture increases at which time the tip speed is reduced to the lowest tip speed at which full CO_2



reactivity maintained until said CO_2 has reacted with 75% to 85% of the calcium base in said sulfonate mixture, wherein the sulfonate product's filterability is enhanced and viscosity reduced.

5,011,619

Patent Not Issued For This Number

5,011,620

CLEANING COMPOSITION OF DIBASIC ESTER AND HYDROCARBON SOLVENT

Kenneth T. Dishart, and Mark C. Wolff, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 7, 1989, Ser. No. 392,996

Int. Cl.[5] C11D *9/30, 15/04, 17/00, 7/50*

U.S. Cl. 252—118 **10 Claims**

1. A cleaning composition designed for cleaning a printed circuit board consisting essentially of (1) a dibasic ester, (b) an aliphatic hydrocarbon solvent wherein the term hydrocarbon solvent excludes a terpene wherein a ratio of dibasic ester to hydrocarbon solvent is in a range from 5:95 to 25:75 by weight.

5,011,621

PAINT STRIPPER COMPOSITIONS CONTAINING N-METHYL-2-PYRROLIDONE AND RENEWABLE RESOURCES

Carl J. Sullivan, Exton, Pa., assignor to Arco Chemical Technology, Inc., Wilmington, Del.

Filed Jun. 4, 1990, Ser. No. 532,766

Int. Cl.[5] C09D *9/00;* **C11D** *7/50;* **C23G** *5/02*

U.S. Cl. 252—162 **18 Claims**

1. A coating remover composition based in part on renewable resources comprising:

(a) from about 20 to 80 weight percent of N-methyl-2-pyrrolidone;

(b) from about 20 to 80 weight percent of an oil selected from the group consisting of soybean, tall, tung, castor, sunflower, sesame, tallow, coconut, palm, cottonseed, peanut, olive, pine, linseed, rapeseed, corn, fish, whale and mixtures thereof;

(c) from 0 to about 50 weight percent of a cosolvent selected from the group consisting of one or more of aliphatic and aromatic hydrocarbons, terpenes, alcohols, glycols, carboxylic acids, aminoalcohols, nitriles, ethers, ketones, esters, glycol ethers, and glycol ether esters;

(d) from 0 to about 10 weight percent of a surfactant; and

(e) from 0 to about 15 weight percent of a thickener.

5,011,622

LIQUID CLEANING COMPOSITIONS AND PROCESS FOR THEIR PREPARATION

Frederik J. Schepers, Vlaardingen, Netherlands, assignor to Lever Brothers Company, Division of CONOPCO, Inc., New York, N.Y.

Filed Oct. 6, 1989, Ser. No. 418,048

Claims priority, application United Kingdom, Oct. 10, 1988, 8823705

Int. Cl.[5] C11D *3/08, 7/54;* B08B *7/02, 5/00*

U.S. Cl. 252—174.15 17 Claims

1. A liquid cleaning composition having about 5% by weight or less water comprising a liquid phase having from 1% to 90% by weight of a solid phase having a particle size of from 0.1 to 100 microns dispersed therein, wherein the solid phase comprises aluminosilicate, zeolite builder particles having the general formula $Na_Z(AlO_2)_Z(SiO_2)_Y \cdot X\ H_2O$ wherein Z and Y are integers of at least 6, the molar ratio of Z to Y is in the range from 1.0 to 0.5, and X is an integer from 6 to 189 such that the moisture content is from about 4% to about 20% by weight, which particles have been deactivated by treatment thereof with a solution of an ammonium or substituted ammonium compound such that the molar ratio of ammonium ions to sodium ions in the solution is from about 0.05:1 to about 0.8:1 resulting in a percentage mole exchange of ammonium ions for sodium ions of 1% to 38%, and which particles are thereafter heated to a temperature above 100° C. to reduce the water content thereof to below 24% by weight before being dispersed in the liquid phase.

5,011,623

NONLINEAR OPTICAL MATERIAL AND NONLINEAR OPTICAL DEVICE

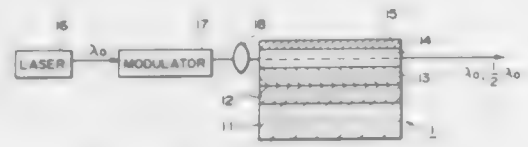
Kazuo Yoshinaga, Machida; Takashi Kai, Hadano; Koichi Egara, Tokyo; Yomishi Toshida, Yokohama; Hideaki Mitsutake, Tokyo; Koichi Sato, Atsugi, and Takeshi Miyazaki, Ebina, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 18, 1989, Ser. No. 381,277

Claims priority, application Japan, Jul. 20, 1988, 63-179097; Dec. 30, 1988, 63-334239

Int. Cl.[5] C09K *19/54*

U.S. Cl. 252—299.5 6 Claims

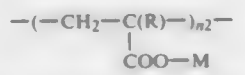


1. A nonlinear optical material, comprising:

a ferroelectric polymer liquid crystal and a nonlinear optical compound forming a solid solution, wherein

said nonlinear optical compound has a skeleton comprising a π-electron system and at least one member selected from the group consisting of electron-donating and electron-attracting groups, said nonlinear optical compound having a second order hyperpolarizability of at least 10×10^{-30} e.s.u.; and

said ferroelectric liquid crystal being a side chain-type polymer having a mesogen unit in its side chain represented by



wherein N2 is 5–5000, R is H, Cl or CH_3, and M is a mesogen unit including an asymmetric carbon atom.

5,011,624

ACRYLATE POLYMER-DISPERSED LIQUID CRYSTAL MATERIAL AND DEVICE MADE THEREFROM

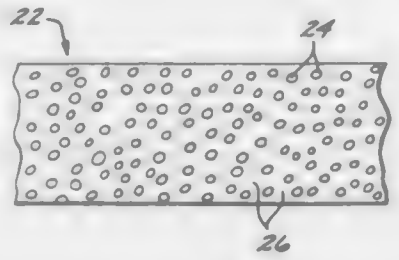
Frederick G. Yamagishi, 247 Mesa Ave., Newbury Park, Calif. 91320, and Leroy J. Miller, 8313 Hillary Dr., Canoga Park, Calif. 91304

Continuation of Ser. No. 139,402, Dec. 30, 1987, abandoned.

This application Dec. 19, 1989, Ser. No. 453,077

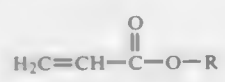
Int. Cl.[5] C09K *19/54*

U.S. Cl. 252—299.5 14 Claims



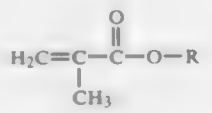
1. A composite material, comprising a plurality of droplets of a liquid crystal material within a matrix of a polymer formed by mixing and then polymerizing by photoinduced reaction a mixture consisting essentially of a photopolymerizable monomer, a photoinitiator, and a liquid crystal having a solubility in the polymer that is less than its solubility in the corresponding monomer, wherein the monomer is selected from the group consisting of

an ester having the structure



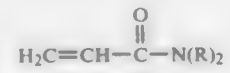
wherein R is selected from the group consisting of alkyl, aryl, hydroxyalkyl, and epoxyalkyl,

an ester having the structure



wherein R is selected from the group consisting of alkyl, aryl, hydroxyalkyl, and epoxyalkyl, and

an amide having the structure



wherein R is selected from the group consisting of alkyl, aryl, hydroxyalkyl, and epoxyalkyl.

5,011,625

AUTOTHERMAL STEAM REFORMING PROCESS

Joseph R. Le Blanc, Houston, Tex., assignor to The M. W. Kellogg Company, Houston, Tex.

Filed Dec. 11, 1989, Ser. No. 448,422

Int. Cl.[5] C10J *1/02;* C01B *3/38*

U.S. Cl. 252—376 6 Claims

1. A method for producing a raw ammonia synthesis gas from a fresh hydrocarbon feed which consists of:

(a) forming a first mixed feed comprising steam, a major portion of the fresh hydrocarbon feed, and an oxidant selected from the group consisting of air and oxygen-enriched air, introducing the first mixed feed to an exothermic catalytic steam reforming zone wherein there is produced a first reformed gas containing less than 1.0 volume percent, dry basis, residual hydrocarbon, and withdrawing the first reformed gas therefrom;

(b) forming a second mixed feed comprising steam and a remaining minor portion of the fresh hydrocarbon feed, introducing the second mixed feed to an endothermic catalytic steam reforming zone wherein there is produced a second reformed gas containing less than 4.0 volume percent, dry basis, residual hydrocarbon, and withdrawing the second reformed gas therefrom;

(c) combining the first and second reformed gases and cooling the combined first and second reformed gases by passing the combined gases in indirect heat exchange with the second mixed feed within the endothermic catalytic steam reforming zone whereby all of the heat required for the endothermic catalytic steam reforming of the second mixed feed therein is provided; and

(d) withdrawing and recovering the resulting cooled combined gases as raw ammonia synthesis gas product.

5,011,626

BARRIER MATERIALS FOR LASER DRILLING

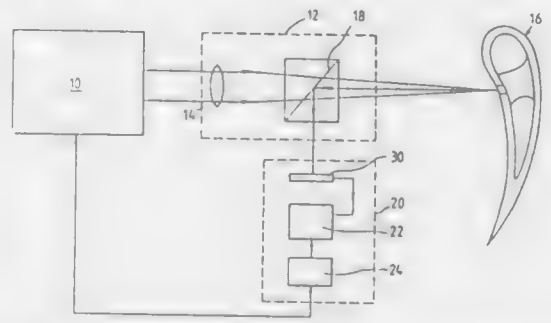
Kong Ma, Duluth, and John T. Pinder, Marietta, both of Ga., assignors to Rolls-Royce Inc., Greenwich, Conn.

Filed Jun. 13, 1988, Ser. No. 206,123

The portion of the term of this patent subsequent to Oct. 10, 2006, has been disclaimed.

Int. Cl.[5] F21V *9/00;* B01F *3/00;* B23K *26/04, 26/00*

U.S. Cl. 252—582 7 Claims



1. A barrier material for use in laser machining to protect a surface which is in the path of the laser beam from being machined, the barrier material comprising a thixotropic aqueous suspension of acrylamide and including, as a laser light dispersant, acrylic particles.

5,011,627

SCREEN-PRINTABLE PASTE FOR MANUFACTURING ELECTRICALLY CONDUCTIVE COATINGS

Klaus Lutz, Rodenbach; Hans-Joachim Baer, Frankfurt; Karl-Anton Starz, Rodenbach; Werner Leske, Gelnhausen, and Harry Mueller, Rodenbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 7, 1989, Ser. No. 319,683

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1988, 3809331

Int. Cl.[5] H01B *1/06*

U.S. Cl. 252—512 3 Claims

1. A screen-printable paste consisting essentially of 40 to 75% by weight of an electrically conductive metal powder selected from the group consisting of silver, aluminum, copper and mixtures thereof, 5 to 20% by weight of an organic synthetic resin and 5 to 55% by weight of an organic solvent for producing electrically conductive coatings on a flexible plastic sheet wherein a thermoplastic epoxy or phenoxy resin with an average molecular weight of 10,000 to 250,000 and an epoxy content of 0 to 1 equ./kg is the organic synthetic resin.

5,011,628

N,N'-DIARYLBENZAMIDINES USEFUL AS ULTRAVIOLET LIGHT ABSORBERS

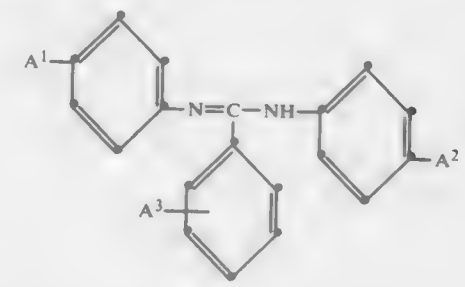
Isaac D. Cohen, Brooklyn, N.Y., and Joseph A. Virgilio, Wayne, N.J., assignors to Givaudan Corporation, Clifton, N.J.

Continuation-in-part of Ser. No. 207,088, Jun. 15, 1988, abandoned. This application Apr. 11, 1989, Ser. No. 336,286

Int. Cl.[5] F21V *9/04;* C07C *257/00, 229/00, 255/00*

U.S. Cl. 252—589 20 Claims

11. An ultraviolet-absorbing composition comprising a compound of the formula



I

wherein:

A^1 and A^2 may be the same or different and represent $-COOR^1$, $-CONR^1R^2$, $-C{\equiv}N$ or $-C_6H_5$;

A^3 represents —H, —OH, —OR, —Cl, $-NO_2$, $-C{\equiv}N$, $-C_6H_5$, or an alkyl group of one to five carbon atoms;

R^1 and R^2 may be the same or different and represent hydrogen or an alkyl group of one to ten carbon atoms; and,

R represents an alkyl group of one to ten carbon atoms,

and at least one organic material subject to degradation by ultraviolet light.

5,011,629

HYDROXYSTEARIC POLYESTERS OF GUERBET ALCOHOLS AS POLYCARBONATE LUBRICANTS

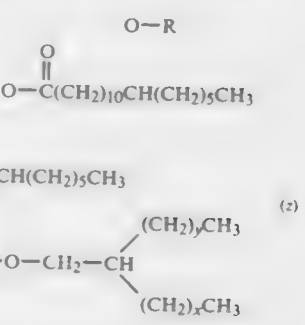
Raymond E. Bilbo, 1008 Olde Hinge Way, Sneville, Ga. 30278

Filed Apr. 17, 1989, Ser. No. 338,897

Int. Cl.[5] C11C *3/100*

U.S. Cl. 260—405 4 Claims

1. A compound conforming to the following structure;



(z)

Wherein;

x and y are independently integers from 2 to 33;

z is an integer ranging from 1 to 200;

R is selected from H, or —C(O)R';

R' is alkyl or aryl having from C1H3 to C40H82.

5,011,630

EMULSIFIABLE TRIGLYCERIDE COMPOSITIONS

Gary T. Martino, Dayton, and Martin M. Tessler, Edison, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Jun. 7, 1985, Ser. No. 742,664
Int. Cl.[5] C11C *3/04*
U.S. Cl. 260—410.7 4 Claims

1. A water dispersible triglyceride composition comprising the amidification reaction product of:

(a) an addition product of a triglyceride oil of an unsaturated fatty acid having at least 12 carbon atoms in the fatty acid chain and an olefin selected from the group consisting of acyclic olefinic carboxylic acids and the acid anyhydrides thereof having less than 10 carbon atoms in their carbon chains and wherein the double bond of the olefin is α,β- to the carboxylic acid group; and

(b) a water soluble monoamino-terminated blocked polyalkylene oxide having a molecular weight of at least about 300;

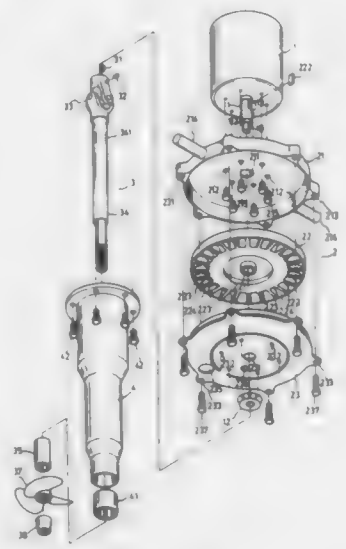
wherein the reaction product is dispersible and self-emulsifiable in water.

5,011,631

TURBO-JET AERATOR

Sean Hwang, Lung An No. 11, Chungho Tsun, Hsinshe Hsiang, Taichung Hsien, Taiwan

Filed Nov. 14, 1989, Ser. No. 436,292
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—30 1 Claim



1. A turbo-jet aerator comprising:

a motor;

a turbo-jet means having an upper cover, a turbine and a lower cover and connected to said motor, said upper cover being a cylindrical member with a center hole and threaded holes on the circumference and the surface, said lower cover being a cylindrical member with a center hole, threaded holes on the circumference and the surface, a sucking hole and an outlet on the surface, said turbine having a center hole and a plurality of equidistant radial leaves;

a stirring mechanism connected to said motor at one end and a fan at the other;

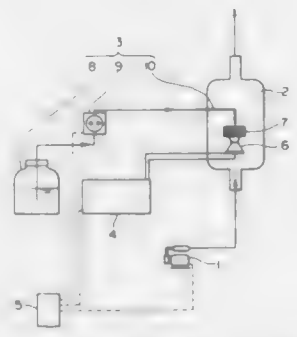
whereby when the motor is turned on, the turbine and the stirring mechanism will be rotated and recesses between leaves of said turbine will immediately reduce pressure inside said turbo-jet means and a large amount of air will be sucked in from the outside and ejected out through the outlet of said turbo-jet means and then the air will pass and dissolve into water of a pond.

5,011,632

ULTRASONIC FRAGRANCE GENERATION APPARATUS

Hisato Yano; Shusa Hashimoto, and Tsuyoshi Horiyama, all of Tokyo, Japan, assignors to Shimizu Construction Co., Ltd., Tokyo, Japan

Filed Feb. 7, 1990, Ser. No. 476,589
Claims priority, application Japan, Feb. 7, 1989, 1-[illegible]242
Int. Cl.[5] B01F *3/04*
U.S. Cl. 261—81 3 Claims



1. An ultrasonic fragrance generation apparatus comprising:

a fragrance solution vaporization vessel having an air inlet, a fragrant mist outlet, and a central line of air flow between said inlet and said outlet;

an air supply device supplying pressurized air through said air inlet;

an ultrasonic wave generation device located in said fragrance solution vaporization vessel along said central line of air flow;

a fragrance solution supply device supplying a fragrance solution to said ultrasonic wave generation device, said ultrasonic wave generation device including a vibrating surface by which the fragrance solution is vaporized within the fragrance solution vaporization vessel; and

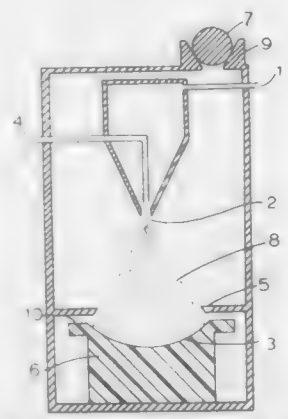
a vaporization promoting material disposed above and in contact with said vibrating surface, said vaporization promoting material being of relatively increased surface area for facilitating vaporization of the fragrance solution within said fragrance solution vaporization vessel.

5,011,633

METHOD OF CONTROLLING THE THICKNESS OF CAST LENSES

Charles W. Neefe, Big Spring, Tex., assignor to Sunsoft Lenses, Albuquerque, N. Mex.

Filed Dec. 11, 1989, Ser. No. 448,243
Int. Cl.[5] B29D *11/00*
U.S. Cl. 264—1.1 20 Claims



1. A method of controlling the thickness of a spin cast lens by the steps of, providing a pressure controlled source of an inert gas and a time controlled valve, supplying the pressure controlled inert gas to a spray nozzle for a predetermined time, and providing a liquid lens monomer to the spray nozel, allowing the liquid lens monomer to be atomized by the inert gas leaving the spray nozzle to form a cone shape pattern, placing a concave lens mold in the cone shaped spray to collect the atomized spray on the concave optical mold surface, allowing the inert gas to flow for the predetermined time thereby controlling the volume of monomer deposited on the optical mold surface then polymerizing the monomer while spinning the mold, thereby controlling the thickness of the finished lens.

5,011,634

MICROCAPSULES AND MICROCAPSULE PRODUCTION PROCESS

Gunter Pietsch, Isernhagen, and Karl-Heinz Schrader, Hanover, both of Fed. Rep. of Germany, assignors to Papierfabrik August Koehler AG, Oberkirch, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 169,630, Mar. 18, 1988, Pat. No. 4,965,025, which is a continuation-in-part of Ser. No. 922,591, Oct. 24, 1986, Pat. No. 4,824,823. This application Dec. 16, 1988, Ser. No. 285,506
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1987, 3743427; Jun. 1, 1988, 3818712
The portion of the term of this patent subsequent to Apr. 25, 2006, has been disclaimed.
Int. Cl.[5] B01J *13/16*
U.S. Cl. 264—47 37 Claims

1. A process for microencapsulating hydrophobic oils within discrete aminoplastic microcapsules, comprising the steps of:

combining a hydrophobic oil, a cationic compound, and an anionic sulphonated melamine/formaldehyde precondensate in an aqueous medium, wherein the oil is added under turbulent stirring conditions, to form a stable dispersion of said oil in said medium,

acidifying said aqueous medium,

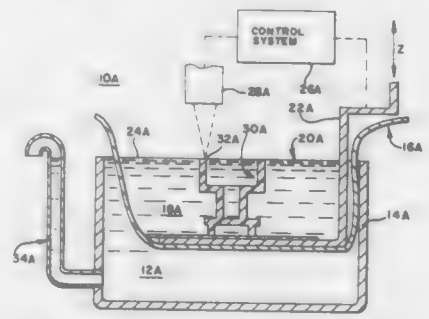
contacting an aminoplastic wall-forming compound with the dispersed oil of said acidified medium, under laminar stirring conditions, to form said microcapsules.

5,011,635

STEREOLITHOGRAPHIC METHOD AND APPARATUS IN WHICH A MEMBRANE SEPARATES PHASES

Edward J. Murphy, Arlington Heights; John J. Krajewski, Wheeling, and Robert E. Ansel, Hoffman Estates, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed May 18, 1989, Ser. No. 353,538
Int. Cl.[5] B29C *35/08, 41/00, 71/04*
U.S. Cl. 264—22 14 Claims



1. An apparatus for producing a three-dimensional object comprising means for containing a fluid phase positioned therein, a substantially impermeable, movable membrane positioned on top of the fluid phase in said first recited means, a radiation-polymerizable liquid organic phase positioned in the containing means on top of the membrane such that contact of the phase is inhibited, a radiation source positioned above the liquid organic phase adapted to radiate the liquid organic phase to form a polymerized organic layer, movable support means and means for forming and combining successive adjacent polymerized organic layers to form a three-dimensional object.

6. A method of producing a three-dimensional object comprising the steps of:

(a) providing a fluid phase in a container;

(b) providing a substantially impermeable, movable membrane positioned on top of the fluid phase;

(c) providing a radiation-polymerizable liquid organic phase positioned on top of the membrane, the liquid organic phase having an upper surface;

(d) providing a radiation source positioned above the upper surface;

(e) exposing at least a portion of the upper surface to radiation in an amount effective to at least partially polymerize the liquid organic phase at and just below the upper surface to form an at least partially polymerized organic layer;

(f) covering the at least partially polymerized organic layer with additional liquid organic phase, the additional liquid organic phase having an upper surface;

(g) exposing at least a portion of the upper surface to radiation in an amount effective to at least partially polymerize the additional liquid organic phase at and just below the upper surface to form another at least partially polymerized organic layer; and

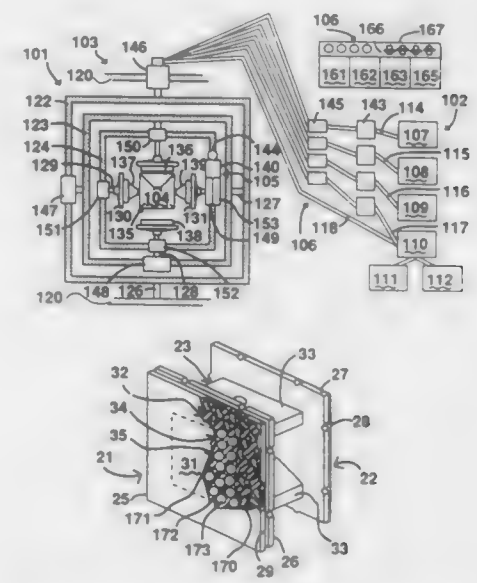
(h) repeating steps (f) and (g) to form a three-dimensional object.

5,011,636

STRUCTURAL UNIT AND METHOD FOR MOLDING SAME

LeRoy Payne, 3300 Nicholas La., Molt, Mont. 59057

Continuation-in-part of Ser. No. 271,717, Nov. 19, 1988, Pat. No. 4,909,718, which is a continuation-in-part of Ser. No. 202,267, Jun. 6, 1988, Pat. No. 4,956,135, which is a continuation-in-part of Ser. No. 890,742, Jul. 30, 1986, Pat. No. 4,749,533, which is a division of Ser. No. 766,498, Aug. 19, 1985, Pat. No. 4,671,753. This application Mar. 19, 1990, Ser. No. 495,621
Int. Cl.[5] B29C *41/06, 41/52;* B32B *5/20*
U.S. Cl. 264—40.7 30 Claims



1. An integrally molded plastic structural unit including spaced support members joined by a web section disposed therebetween, each of said support members including spaced face sections and an intermediate section therebetween, each face section including a stressed hard outer skin, said intermediate section including a peripheral frame section of high density, said web section including high density connector mem-

bers extending between adjoining face sections of said spaced support members, each of said support members including mateable sections along at least two edges thereof, each of said mateable sections including at least five alternating raised and recessed areas forming an asymmetrical pattern along the length of each mateable section, the pattern being the same or a reverse pattern thereof along each mateable section of the same unit and of adjacent units with which it will be assembled, said mateable sections extending beyond said face sections or being recessed below said face sections on said edges of said unit a substantially equal distance; whereby adjacent units are interconnected by engaging a recessed mateable section of one unit with a raised mateable section of an adjacent unit or vice versa.

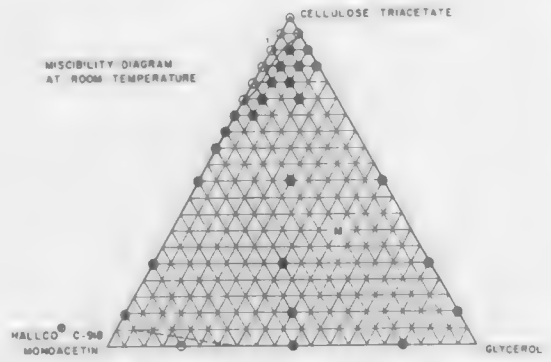
30. A continuous method of molding a structural unit including the steps of continuously advancing raw materials from a plurality of reservoirs independently to a mixing chamber located closely adjacent to a mold assembly including separable mold sections, introducing said raw materials into said mixing chamber, passing a freshly formed mixture flowing from said mixing chamber directly into a cavity of said adjacent mold assembly in a preselected and monitored flow rate profile, rotating said mold assembly about at least three intersecting axes in a preselected and monitored rotational profile, initially flowing said mixture over surfaces of said mold cavity by said rotational movement to form a hard skin surface, flowing additional quantities of said mixture to peripheral edges of said mold cavity, forming therewith an integral high density peripheral frame section, monitoring and coordinating in a preselected profile the delivery of raw materials to said mixing chamber, the resulting mixture flowing therefrom and the multiple axis rotation of said mold assembly, separating said mold sections of said mold assembly after said unit has formed said mold cavity, removing a molded unit from said separated mold sections, closing said mold sections and repeating said steps to form a multiplicity of such molded units on a continuing basis.

5,011,637

PREPARING CELLULOSE ESTER MEMBRANES FOR GAS SEPARATION

Dana C. Overman, III, Vallejo; Jee I. Kau, Concord, and Robert D. Mahoney, Danville, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 23, 1989, Ser. No. 301,000
Int. Cl.[5] B29C *67/20*; D01F *2/02*
U.S. Cl. 264—41 **10 Claims**



1. A process for preparing a semi-permeable cellulose ester membrane, which process comprises the steps of:

A. forming a non-harmful or non-deleterious mixture comprising:

i. at least one cellulose ester, and

ii. at least one non-harmful or non-deleterious solvent selected from the group consisting essentially of glycol monoacetate, glycerol diacetate, glycerol triacetate, and mixtures thereof, in an amount itself sufficient to solubilize the cellulose ester at the membrane fabrication temperature;

B. heating the mixture to a temperature at which the mixture becomes a homogeneous fluid;

C. extruding, molding, or casting the homogeneous fluid into the form of a semi-permeable membrane;

D. passing the membrane through one or more quench zones wherein the membrane gels and solidifies; and

E. passing the membrane through one or more leach zones, one or more anneal zones or a combination thereof in which at least a portion of the solvent and optional non-solvent is removed from the membrane;

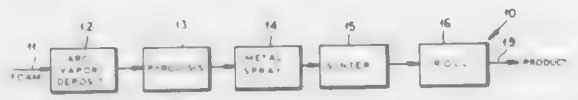
wherein the semi-permeable membrane so formed is useful for gas separation.

5,011,638

METHOD OF MAKING OPEN-PORE STRUCTURES

Eduard Pinkhasov, Eastchester, N.Y., assignor to Vapor Technologies, Inc., Mt. Vernon, N.Y.

Continuation-in-part of Ser. No. 208,886, Jun. 17, 1988, Pat. No. 4,975,230. This application Dec. 9, 1988, Ser. No. 283,174
The portion of the term of this patent subsequent to Dec. 4, 2007, has been disclaimed.
Int. Cl.[5] C04B *33/32*; B22D *23/00*
U.S. Cl. 264—59 **18 Claims**



1. A method of fabricating an open-pore structure, comprising:

(a) depositing by arc vapor deposition on and in an openwork synthetic-resin pyrolyzable support a coating of at least one material selected from the group which consists of metals, semiconductors and ceramics by juxtaposing said support with a pair of electrodes at least one of which is composed of at least one element of said material, advancing said electrodes into contact to strike an electric arc between said electrodes and evaporate said element from said one of said electrodes and effect deposition of said material on said support, and evacuating a space in which said support is juxtaposed with such electrodes prior to or during deposition of said coating, whereby a fraction of a total amount of said material adapted to ultimately form said open-pore structure is deposited in the form of said coating;

(b) spraying onto at least one of said support and said coating in at least one spray-deposition operation a quantity of said material sufficient to make up the remainder of said total amount;

(c) pyrolyzing said support after at least one of step (a) and step (b) to form an openwork skeleton consisting essentially of said material; and

(d) sintering said skeleton into a coherent body constituting said open-pore structure.

5,011,639

METHOD FOR THE PREPARATION OF A SINTERED BODY OF SILICON CARBIDE

Nobuaki Urasato; Minoru Takamizawa; Akira Hayashida; Hiromi Ohsaki, and Jiyunitirow Maruta, all of Niigata, Japan, assignors to Shin-Etsu Chemical Co. Ltd., Ote, Japan

Continuation of Ser. No. 179,480, Apr. 8, 1988, abandoned, which is a continuation-in-part of Ser. No. 43,603, Apr. 28, 1987, abandoned. This application Dec. 12, 1989, Ser. No. 453,038
Claims priority, application Japan, Jun. 5, 1986, 61-130914
Int. Cl.[5] C04B *35/56*
U.S. Cl. 264—65 **7 Claims**

1. A method for the preparation of a sintered body of silicon carbide having a relative density of at least 90% and an electric volume resistivity in the range from 10^{10} to 10^{13} ohm-cm, which comprises the steps of:

(a) pyrolyzing a methyl hydrogen silane represented by the general formula

$$(CH_3)_aSi_bH_c$$

wherein b is 1,2 or 3, 2b+1 is not less than a, a is not less than b,2b+1 is not less than c, c is a positive integer and a+c is equal to 2b+2, in the vapor phase to give a β-type silicon carbide powder;

(b) admixing the β-type silicon carbide powder with boron or a boron compound in an amount in the range of 0.1 to 5.0% by weight as boron to give a uniform powdery mixture;

(c) molding the powdery mixture by compression molding to give a green body; and

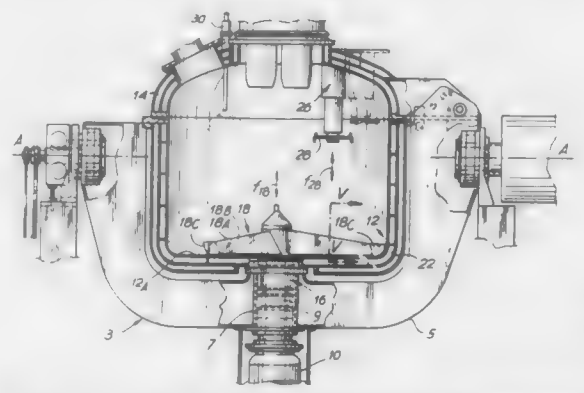
(d) heating the green body under normal pressure in an atmosphere of a rare gas containing nitrogen in a concentration in the range from 0.01 to 2% by volume at a temperature in the range from 1800° to 2200° C. to effect sintering of the green body.

5,011,640

PROCESS FOR SPHERONIZATION AND DEVICE FOR IMPLEMENTING SAID PROCESS

Aldo Zanchetta, Lucca, Italy, assignor to Zanchetta & C. s.r.l., Lucca, Italy

Filed Mar. 1, 1990, Ser. No. 486,772
Claims priority, application Italy, Mar. 1, 1989, 9356 A/89
Int. Cl.[5] B29B *9/08*
U.S. Cl. 264—69 **15 Claims**



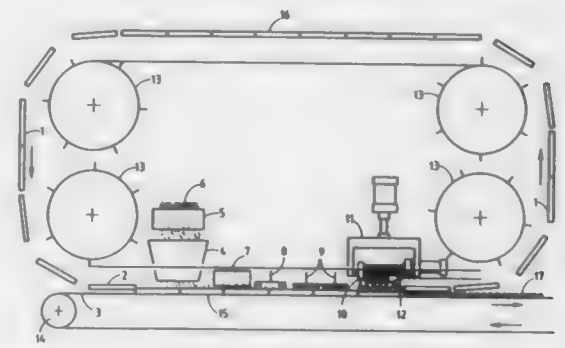
1. A process of spheronization, that is to say of production of bulk material in the form of small-diameter spheres from pulverulent materials, wherein: one or more powders are placed in a leaktight vessel having a substantially vertical axis and comprising a bottom blade rotating about an axis parallel to the axis of said vessel, and a single or multiple spheronizing rotating tool having a substantially discoidal form; wherein said powders are mutually mixed by means of the rotation of said bottom blade, a binder solution being added thereto; and wherein the composition of powders and binder solution is spheronized by immersing said spheronizing tool in said composition and causing it to rotate simultaneously with said blade.

5,011,641

PREPARATION OF SHAPED AGGLOMERATED PARTICULATE MATERIAL

Marcel Buhler, Tolochenaz, and Jean-Michel Martin, Valeyres/Rances, both of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Continuation-in-part of Ser. No. 203,267, Jun. 7, 1988, Pat. No. 4,936,200. This application Dec. 12, 1989, Ser. No. 448,885
Claims priority, application Switzerland, Jun. 25, 1987, 2392/87
Int. Cl.[5] B29C *43/06*
U.S. Cl. 264—109 **13 Claims**



1. A process for shaping particulate material into individual shaped articles comprising:

conveying plates containing apertures therethrough on a surface for forming, by reason of the plate apertures and the forming surface, article shaping cells;

feeding particulate material to be shaped to the cells;

conveying the plates containing the material on the forming surface in the cells to a tamping and ejecting means and then conveying the plates and material and the tamping and ejecting means in a downstream direction in synchronization;

tamping the material in the cells with the tamping and ejecting means while conveying the plates and the material and the tamping and ejecting means for obtaining tamped material in the cells on the forming surface;

displacing the plates away from the forming surface while conveying the plates and tamped material and the tamping and ejecting means and while maintaining the tamped material in contact with the forming surface with the tamping and ejecting means thereby ejecting the tamped material from the plates and providing individual shaped articles of material on the forming surface; and then

disengaging the tamping and ejecting means from the plates and returning the tamping and ejecting means upstream to be conveyed downstream again in synchronization with the plates and material for tamping and ejecting material.

5,011,642

METHOD OF MAKING EXTRUDED ARTICLE

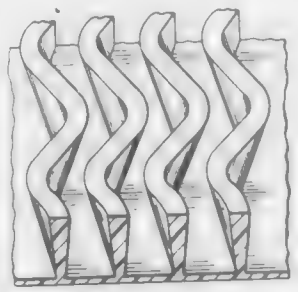
Dennis G. Welygan; Ronald O. Zemke, and Walter W. Pawlikowski, Jr., all of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 210,745, Jun. 23, 1988, abandoned, which is a division of Ser. No. 58,565, Jun. 5, 1987, Pat. No. 4,828,902. This application Nov. 13, 1989, Ser. No. 434,583
Int. Cl.[5] B29C *47/14*
U.S. Cl. 264—167 **8 Claims**

1. A process for making an extruded article comprising:

(a) extruding an extrudable plastic mass having a conformable state and being convertible to a cured state to form an elongate extruded structure having a base element and a plurality of elongate rib elements, said rib elements each having an attachment end and a free end with the attachment end in contact with said base element along its entire length, said rib elements being thicker at said free ends than at said attachment ends, the extrusion rate of said

base element and said attachment ends of said rib elements being the same but being sufficiently slower than the extrusion rate of said free ends of said rib elements so that said free ends of said rib elements will undulate as said extruded structure is extruded;



(b) permitting said free ends of said rib elements to undulate without distortion of said base element while said plastic mass is in said conformable state; and

(c) converting said plastic mass from said conformable state to said cured state while maintaining the undulations in said free ends of said rib elements.

5,011,643

PROCESS FOR MAKING ORIENTED, SHAPED ARTICLES OF PARA-ARAMID/THERMALLY-CONSOLIDATABLE POLYMER BLENDS

Hung H. Yang, Richmond, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 13, 1989, Ser. No. 337,507

Int. Cl.[5] D01D *5/28*

U.S. Cl. 264—171 **13 Claims**



1. A process for making thermally-consolidatable oriented, shaped articles containing a substantially continuous phase of para-aramid polymer in the direction of orientation comprising the steps of:

forming under agitation a liquid solution of said para-aramid polymer having an inherent viscosity of at least about 3 dl/g and a thermoplastic polymer in a common solvent, said solution having a total article-forming polymer concentration sufficient that the solution is bi-phasic and comprises an anisotropic phase and an isotropic phase, at least, about 55% and less than about 80% by weight said article-forming polymers being said para-aramid polymer and at least about 20% and less than about 45% by weight of said article forming polymers being said thermoplastic polymer, said anisotropic and isotropic phases being interdispersed and said anisotropic phase being present in domains with the size of the domains being on the average less than about 300 microns;

orienting the anisotropic phase of said bi-phasic liquid solution; and

removing said solvent to produce oriented shaped articles.

5,011,644

PROCESS FOR PRODUCING GEL FIBER

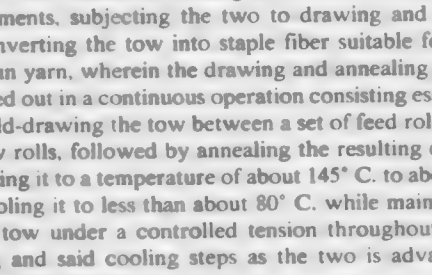
Masahiro Haruta, Tokyo; Hirohide Munakata; Satoshi Yuasa, both of Yokohama, and Yoko Yoshinaga, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 938,283, Dec. 5, 1986, abandoned. This application Apr. 24, 1989, Ser. No. 342,665

Claims priority, application Japan, Dec. 11, 1985, 60-277032

Int. Cl.[5] D01F *6/26*

U.S. Cl. 264—184 **8 Claims**



1. A process for producing a gel fiber, comprising a step (N) of spinning a solution containing as a constituent component for a gel at least one polymer having at least one monomer unit selected from the group consisting of N-n-propylacrylamide, N-n-propylmethacrylamide, N-iso-propylacrylamide, N-iso-propylmethacrylamide, N-cyclopropylacrylamide, N-cyclopropylmethacrylamide, N,N-ethylmethylacrylamide, N,N-diethylacrylamide, N-acrylpyrrolidine, N-acrylpiperidine, to solidify the solution into a fiber, and the step (M) of effecting crosslinking of the fiber to form a gel which can be swelled or shrunk reversibly by a thermal action in the presence of a liquid.

5,011,645

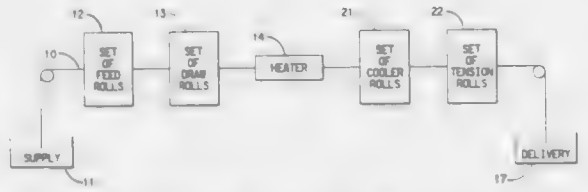
PROCESS FOR PREPARING NYLON STAPLE FIBER

Alfred H. Thompson, Jr., Seaford, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 4, 1989, Ser. No. 347,052

Int. Cl.[5] D01D *5/16;* **D01F** *6/60*

U.S. Cl. 264—210.7 **5 Claims**



1. Process for preparing nylon staple fibers having high load bearing tenacity, including the steps of melt-spinning nylon polymer into filaments, forming a tow from a multiplicity of the filaments, subjecting the two to drawing and annealing, and converting the tow into staple fiber suitable for forming into spun yarn, wherein the drawing and annealing of the tow is carried out in a continuous operation consisting essentially of first cold-drawing the tow between a set of feed rolls and a set of draw rolls, followed by annealing the resulting drawn tow by heating it to a temperature of about 145° C. to about 200° C. and cooling it to less than about 80° C. while maintaining the drawn tow under a controlled tension throughout both said heating and said cooling steps as the two is advanced by a further set of rolls.

5,011,646

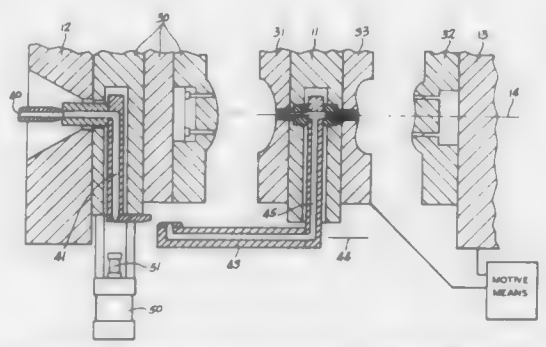
METHOD AND APPARATUS FOR INJECTION MOLDING USING A MOVABLE SPRUE BAR

Rene Bertschi, Toronto, Canada, assignor to Husky Injection Molding Systems Ltd., Bolton, Canada

Filed Feb. 24, 1989, Ser. No. 314,894

Int. Cl.[5] B29C *45/12*

U.S. Cl. 264—297.2 **15 Claims**



1. A method for injection molding a plastic material which comprises: providing a stationary first machine platen and a movable second machine platen; providing a stack mold having a horizontal central axis, a movable center section, at least one first mold cavity between the first platen and the center section, and at least one second mold cavity between the second platen and the center section; opening and closing said stack mold in a direction parallel to the horizontal central axis; injecting plastic material into said mold cavities via an injection nozzle, a first runner system communicating with the injection nozzle, a sprue bar communicating with the first runner system and a second runner system communicating with the sprue bar and located in the center section; and relatively moving said sprue bar and at least one of the first and second runner systems to engage and disengage the sprue bar and said at least one of the first and second runner systems by relative movement in a direction perpendicular to the horizontal central axis of the stack mold, wherein the engagement is sufficient to insure a tight seal between the sprue bar and said at least one of the first and second runner systems; and moving the sprue bar and stack mold relative to each other in a direction parallel to the horizontal central axis upon opening and closing the stack mold.

5,011,647

INTERNAL MOLD RELEASE COMPOSITIONS

Louis W. Meyer, Livingston; Robert Carswell, Lake Jackson, both of Tex., and J. Alan Vanderhider, Fruthwilen, Switzerland, assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 466,826, Feb. 16, 1983, abandoned, and a continuation-in-part of Ser. No. 570,141, Jan. 12, 1984, Pat. No. 4,876,019. This application Jun. 21, 1989, Ser. No. 369,581

Int. Cl.[5] B29C *33/60, 45/00*

U.S. Cl. 264—300 **63 Claims**

1. A process comprising reacting a polyisocyanate in a closed mold with an active hydrogen-containing composition comprising

(A) a material having an average of at least about 2 active hydrogen-containing groups per molecule and a weight from about 500 to about 5000 per active hydrogen-containing group, said composition having dissolved therein

(B) from about 0.5 to about 10 parts by weight per 100 parts by weight of component (A) of a metal salt of an organic material containing at least one carboxylic acid group and a saturated or unsaturated aliphatic hydrocarbon chain having at least about 7 carbon atoms wherein, said metal is selected from Groups I-B, II-B, IV-B, V-B, VI-B, VII-B or VIII of the Periodic Table of the Elements;

said composition containing a sufficient quantity of at least one aliphatic primary and/or secondary amine-containing material such that component (B) is soluble in said composition, wherein

said composition is devoid of an organic material containing at least one carboxylic acid group, phosphorus-containing acid group or boron-containing acid group or mixture of such materials wherein said organic material contains a siloxane chain or contains at least one terminal or pendant saturated or unsaturated aliphatic hydrocarbon chain containing at least about 7 carbon atoms.

2. The process of claim 1 wherein component (B) is represented by the structure

$$M^{n+}(^{-}OCR)_n$$

wherein M represents the metal, R represents an organic group containing a terminal or pendant saturated or unsaturated aliphatic hydrocarbon chain containing at least about 7 carbon atoms, and n is equal to the valance of the metal.

3. The process of claim 2 which is a reaction injection molding process.

5,011,681

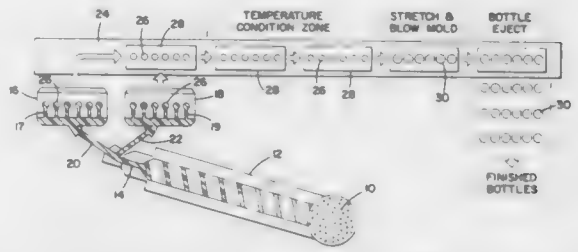
SYSTEM, METHOD AND APPARATUS FOR HOT FILL PET CONTAINER

Lawrence E. Garver, and Gregory L. Kimbrough, both of Columbia, S.C., assignors to Van Dorn Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 310,779, Feb. 14, 1989, abandoned, which is a continuation-in-part of Ser. No. 269,881, Nov. 10, 1988, abandoned, which is a continuation of Ser. No. 2,165, Jan. 12, 1987, abandoned. This application Nov. 13, 1989, Ser. No. 435,688

Int. Cl.[5] B29C *49/04, 49/06, 49/64*

U.S. Cl. 264—521 **20 Claims**



1. A one stage process for forming from PET material and in the absence of a heat set step, a PET container for use in hot fill applications comprising the sequential steps of:

(a) drying said PET material to a moisture content of less than about 0.02% by weight and maintaining said PET material such that its dew point is less than about minus 35° F. in an enclosed space;

(b) plasticizing said PET material while said PET material is maintained at said moisture content less than about 0.02% by weight.

(c) injecting or extruding at an initial temperature of about 520° F. to 550° F., said PET material in the dried plasticized form into a preform mold to form a preform of a hollow, generally cylindrical configuration with a closed end and having wall sections between interior and exterior surfaces of predetermined wall thicknesses along the length thereof, and rapidly cooling said PET material in said preform mold at a rate sufficiently fast to prevent spherulite growth but sufficiently long in duration to permit adding additional PET material to said mold to compensate for volumetric contraction of said PET material;

(d) transferring said preform from said preform mold to a

conditioning station when the surface temperature of said preform has been cooled in said preform mold to about 230° F. to 260° F.;

(e) equilibriating the temperature through the wall sections of said preform in said conditioning station to a substantially uniform temperature between about 210° F. to 230° F. over a time period sufficient to develop a crystallite formation; and

(f) stretching and blow molding said preform in a blow mold into a desired container shape, said stretching and blowing commencing when said preform is at said temperature of about 210° F. to 230° F. and completed when the temperature of said container is about 50° F. to 150° F. whereby a thermally stable container with a haze transmission of less than about 5% throughout and a crystallite formation of at least about 30% is produced; said container having a shrinkage of no greater than 2 to 5% in any dimension when hot filled with products at about 195° F. in a hot fill process where said container is sealed within about 5 to about 15 seconds from the time it is hot filled.

5,011,649

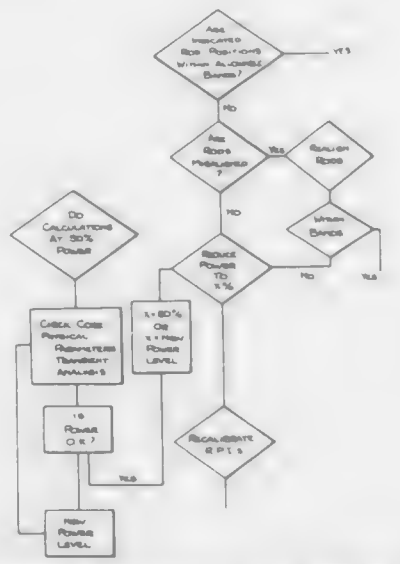
CALIBRATION OF ROD POSITION INDICATORS

Arthur P. Ginsberg, 249-22 57th Ave., Little Neck, N.Y. 11362, and James P. Mooney, Crosby Ave., Brewster, N.Y. 10509

Filed Dec. 15, 1989, Ser. No. 451,100

Int. Cl.[5] G21C *7/36*

U.S. Cl. 376—215 **7 Claims**



1. A procedure for calibration of a rod position indicator in a nuclear reactor having movable control rods without total shutdown of the reactor, comprising: noting that the indicated position of a rod differs from a demand position of the rod by an extent exceeding a predetermined error range, determining that the rod is actually within the predetermined error range; calculating an amount of power reduction at which said rod can be properly and safely fully inserted for the purpose of calibration of the rod position indicator; reducing power by the calculated amount, and; fully inserting the rod and calibrating the rod position indicator while withdrawing the rod.

5,011,650

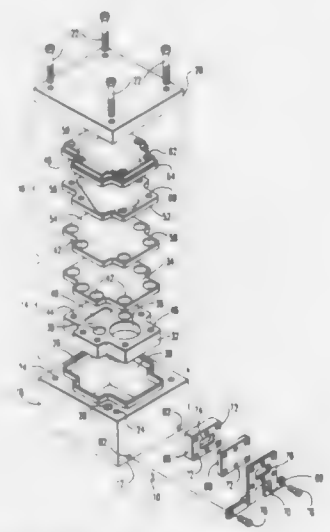
NUCLEAR POWER GENERATING STATION EQUIPMENT QUALIFICATION APPARATUS

Arnold H. Fero, Plum Borough, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 104,733, Oct. 5, 1987, Pat. No. 4,876,058. This application Oct. 31, 1988, Ser. No. 265,066

Int. Cl.[5] G21C *17/00*

U.S. Cl. 376—247 **19 Claims**



1. In a nuclear power plant having an object piece of qualified equipment, an apparatus for monitoring said object piece of qualified equipment, comprising:

(a) passive means for detecting a gamma ray does of radiation received by the object piece;

(b) means for determining a thermal history of the object piece;

(c) means for detecting neutron-induced fission;

(d) a plurality of monitor blocks, said gamma ray detection means, said thermal history determining means and said fission detection means enclosed in one of said monitor blocks, each of said monitor blocks having first sealing means for individually sealing said each monitor block; and

(e) means for housing said monitor blocks in close proximity to the object piece, said housing means having a body portion and a cover portion, a cavity being formed in said body portion and said monitor blocks being disposed in said cavity.

5,011,651

ARRANGEMENT FOR TRANSFERRING FUEL RODS FROM A FIRST RECEPTACLE TO A SECOND RECEPTACLE

Norbert Hardt; Hakan Sterner, both of Hanover; Gerhard Wetzka, Veitshöchheim, and Burkart Schulte, Minden, all of Fed. Rep. of Germany, assignors to Deutsche Gesellschaft für Wiederaufarbeitung von Kernbrennstoffen mbH, Hanover, Fed. Rep. of Germany

Filed Sep. 18, 1989, Ser. No. 408,524

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1988, 3831773

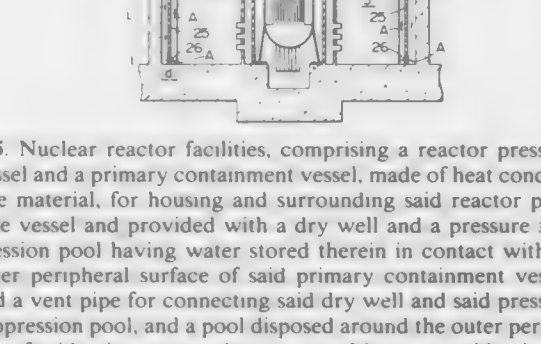
Int. Cl.[5] G21F *7/00;* **G21C** *19/32*

U.S. Cl. 376—261 **2 Claims**

1. In a fuel rod loading system having a canister and an arrangement for loading the canister with irradiated fuel rods through a pass-through opening formed in the wall of a nuclear facility, the canister having a receiving opening and being docked at one side of said wall so as to cause the openings to be aligned with each other, the arrangement comprising:

a trough-shaped receptacle defining a longitudinal axis and being mounted at the other side of said wall so as to be aligned with said openings;

a trough-shaped insert movable between a first position in said canister wherein said insert is empty to a second position in said receptacle;



said insert defining an upwardly directed elongated opening extending parallel to said axis for loading the fuel rods into said insert when said insert is in said second position; and,

drive means for moving said insert loaded with fuel rods from said second position through said openings and into said canister.

5,011,652

NUCLEAR POWER FACILITIES

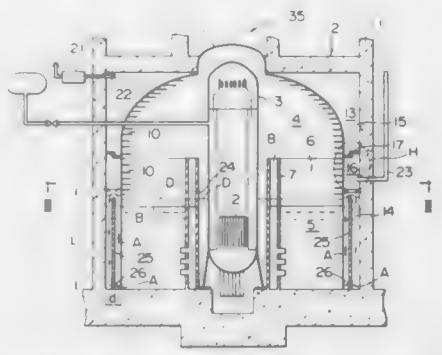
Kenji Tominaga, Tokyo; Minoru Miki, Hitachi; Tooru Takahashi, Hitachi; Tetsuo Horiuchi, Hitachi; Hideo Morishima, Hitachi; Takashi Nakayama, Hitachi; Kumiaki Moriya, Hitachi; Masaki Matsumoto, Katsuta; Minoru Akita, Hitachi; Tsuyoshi Niino, Hitachi; Kanehiro Ochiai, Hitachi; Akihiko Shiozawa, Hitachi; Yuichi Uchiyama, Hitachi; Toyoharu Yasuno, Usuki; Kenji Moriya, Hitachi; Shouichirou Kinoshita, Hitachi; Kazuo Kage, Yokohama, and Ryuji Kubota, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Engineering Co., Ltd., Ibaraki, both of, Japan

Filed Sep. 18, 1987, Ser. No. 98,530

Claims priority, application Japan, Sep. 19, 1986, 61-219467; Sep. 19, 1986, 61-219468; Sep. 19, 1986, 61-219469; Feb. 4, 1987, 62-22354; Feb. 9, 1987, 62-26289; Feb. 12, 1987, 62-28259; Mar. 6, 1987, 62-50089; Mar. 18, 1987, 62-60949

Int. Cl.[5] G21C *15/18*

U.S. Cl. 376—283 **26 Claims**



5. Nuclear reactor facilities, comprising a reactor pressure vessel and a primary containment vessel, made of heat conductive material, for housing and surrounding said reactor pressure vessel and provided with a dry well and a pressure suppression pool having water stored therein in contact with an inner peripheral surface of said primary containment vessel, and a vent pipe for connecting said dry well and said pressure suppression pool, and a pool disposed around the outer periphery of said primary containment vessel between said primary containment vessel and a reactor building and having water stored therein in contact with an outer peripheral surface of said primary containment vessel, wherein said pool is disposed between said pressure suppression pool and a biological shield wall surrounding the outer periphery thereof and has a gap distance such that a ratio d/L of the pool water depth L with respect to a gap distance d of a cylindrical portion between said primary containment vessel and said biological shield is 15/100 or above, and said pool has a heat-sink function for the pressure suppression pool water.

5,011,653

HIGH TEMPERATURE REACTOR UTILIZING A GRAPHITE REFLECTOR

Winfried Wachholz, Gorxheimertal, Fed. Rep. of Germany, assignor to Hochtemperatur-Reaktorbau GmbH, Mannheim, Fed. Rep. of Germany

Filed Feb. 14, 1989, Ser. No. 310,663

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1988, 3804643

Int. Cl.[5] G21C *19/42*

U.S. Cl. 376—313 **15 Claims**

1. A high temperature reactor comprising a cylindrical core cavity defined by a graphite reflector exhibiting a roof reflector, a side reflector and a bottom reflector, wherein suitable metal atoms or molecules capable of bonding volatile iodine and cesium iodide are incorporated individually by compounds of said metals into an upper part of said roof reflector said suitable metals are highly diluted and dissolved in a cracked binder material of said roof reflector graphite, wherein said metal atoms or molecules are alkaline earth metals or rare earths.

5,011,654

PRODUCTION OF FLAT PRODUCTS

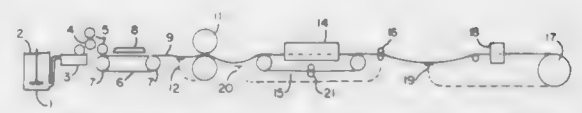
Roy Mathers, 29 Hawarden Road, Hope, Wrexham, Clwyd, Wales, Great Britain

Filed Jul. 25, 1990, Ser. No. 557,961

Claims priority, application United Kingdom, Jul. 29, 1989, 8917402

Int. Cl.[5] G22F *5/00*

U.S. Cl. 419—3 **3 Claims**



1. A continuous process for producing strip products which comprises forming an aqueous slurry of a powder mixture which exhibit a tendency to expand during sintering and a film-forming cellulose derivative, producing from this slurry a self-supporting strip, feeding this self-supporting strip onto an endless moving belt by which the strip is transported into and through a sinter furnace, and controlling the speeds at which the strip enters and leaves the furnace in a sense to impose in the strip as it passes through the furnace a tensile force in its direction of travel, the tensile force imposed being related to the expected or actual increase in strip length occasioned by expansion of the strip during the sintering process and being such as to prevent ridging of the strip which would otherwise be caused by such expansion.

5,011,655

PROCESS OF FORMING A COMPOSITE STRUCTURE

William L. Mankins, Huntington, W. Va., assignor to INCO Alloys International, Inc., Huntington, W. Va.

Filed Dec. 22, 1989, Ser. No. 455,498

Int. Cl.[5] B22F *3/00*

U.S. Cl. 419—8 **20 Claims**

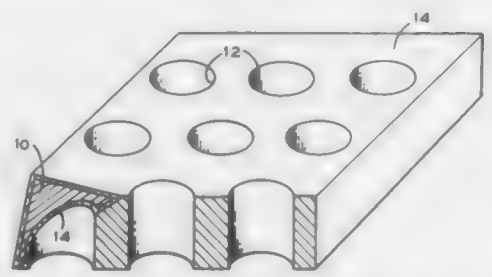
1. A process of manufacturing a thin metallic body composite structure comprising:

cleaning an inner layer of a first metal to remove oxides and promote metallurgical bonding, said inner layer having a

plurality of penetrating holes piercing the thickness of said inner layer,

filling said penetrating holes with metal powder of a second metal,

placing two outer layers of said second metal on opposite sides of said cleaned and filled inner layer to form a sandwich structure.



heating said sandwich structure in a non-oxidizing atmosphere to a temperature at which recrystalization will occur in said sandwich structure, and

hot working said sandwich structure by reducing thickness of said sandwich structure to form said composite structure.

5,011,656

STEELS FOR HOT WORKING PRESS TOOLS

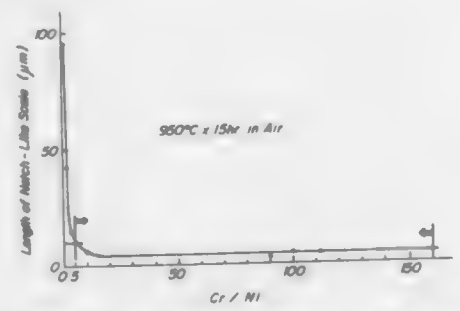
Manabu Ohori; Noriaki Koshizuka; Yoshihiro Kataoka, and Shuzo Ueda, all of Chiba, Japan, assignors to Kawaski Steel Corporation, Japan

Filed Dec. 15, 1988, Ser. No. 284,706

Claims priority, application Japan, Apr. 20, 1988, 63-95436

Int. Cl.[5] C22C *38/22, 38/44*

U.S. Cl. 420—109 3 Claims



1. A steel for a hot working press tool used for continuously reducing a slab width consisting essentially of C: 0.05–0.35 wt %, Si: 0.80–2.5 wt %, Mn: 0.10–2.0 wt %, Cr: 7.0–13.0 wt %, Mo: 0.50–3.0 wt %, V: 0.10–0.60 wt %, N: 0.005–0.10 wt %, the balance being iron and inevitable impurities, and satisfying a Cr equivalent of not more than 16 represented by the following equation:

$$Cr\ \text{equivalent} = Cr + 6Si + 4\text{-}Mo + 11V - 40C - 2Mn - 30N(\text{wt \%})$$

5,011,657

Patent Not Issued For This Number

5,011,658

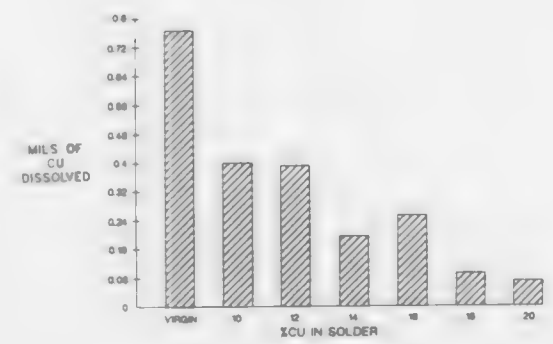
COPPER DOPED LOW MELT SOLDER FOR COMPONENT ASSEMBLY AND REWORK

Daniel S. Niedrich, Apalachin, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 31, 1989, Ser. No. 359,315

Int. Cl.[5] C22C *13/00*

U.S. Cl. 420—558 3 Claims



1. A low melting temperature solder composition, wherein the solder is nominally comprised of about 54 wt. % tin/26 wt. % lead/20 wt. % indium, and doped with about 0.12 to about 0.20 wt. % copper.

5,011,659

CASTABLE CORROSION RESISTANT ALLOY

John H. Culling, St. Louis, Mo., assignor to Carondelet Foundry Company, St. Louis, Mo.

Filed Mar. 22, 1990, Ser. No. 497,584

Int. Cl.[5] C22C *30/00*

U.S. Cl. 420—582 10 Claims

1. A castable corrosion resistant alloy having improved weldability and high tensile elongation consisting essentially of:

Nickel	28–34% by weight
Chromium	22–26%
Molybdenum	3.3–4.4%
Tungsten	2–3%
Copper	1–3%
Silicon	0.2–0.9%
Manganese	0.3–1.3%
Carbon	up to about 0.05%
Thiobium	up to about 0.3%
Aluminum	up to about 0.25%
Vanadium	up to about 0.25%

-continued

Titanium	up to about 0.2%
Iron	essentially the balance.

5,011,660

METHOD OF STERILIZING MEDICAL GRADE FILM

Arthur A. Arena, Trenton, N.J., assignor to Huls America Inc., Piscataway, N.J.

Continuation of Ser. No. 37,043, Apr. 10, 1987, Pat. No. 4,839,233. This application Nov. 28, 1988, Ser. No. 276,645

Int. Cl.[5] A61L *2/08*

U.S. Cl. 422—22 14 Claims

1. A method of sterilizing a medical grade film comprising exposing the film to high energy radiation, wherein the film comprises a vinyl chloride resin containing sufficient barium sulfate to prevent discoloration of said film when exposed to said radiation.

5,011,661

CONTACT LENS CARE SET

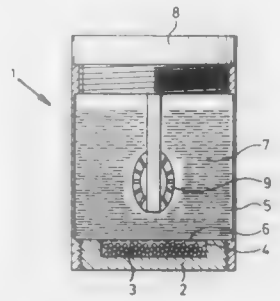
Horst Schäfer, Aschaffenburg-Obernau; Gerhard Ludwig, Stromberg, and Rainer Sunderdiek, Aschaffenburg-Schweinheim, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 140,950, Dec. 29, 1987, abandoned, which is a continuation of Ser. No. 883,964, Jul. 10, 1986, abandoned. This application Oct. 18, 1989, Ser. No. 423,654

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1985, 3524659; Sep. 11, 1985, 3532433

Int. Cl.[5] A61K *9/24, 9/58;* A61L *2/18*

U.S. Cl. 422—30 11 Claims



1. A method for disinfecting a contact lens which comprises immersing the lens in an aqueous solution of H_2O_2, the H_2O_2 being present in sufficient concentration to substantially sterilize the lens, and adding to the solution, before the H_2O_2 has substantially sterilized the lens, a tablet comprising catalase and a polymeric coating which dissolves gradually in the aqueous solution of H_2O_2, said polymeric coating effecting release of the catalase which is retarded for at least 30 minutes after the addition of said tablet to the aqueous H_2O_2 solution, wherein the polymeric coating contains a polymer selected from the group consisting of hydroxypropylmethylcellulose phthalate polymer, a polymer from methacrylic acid or methacrylate esters, a copolymer from methacrylic acid and methacrylate esters and a copolymer from methyl vinyl ether and maleic anhydride, wherein the polymeric coating additionally contains triacetin for further control of the release of the catalase, whereby the lens so treated is suitable for application to the eye of a human without diluting the solution obtained after the catalase has decomposed any residual H_2O_2, or without rinsing the lens.

11. A contact lens care set comprising an aqueous solution containing a sterilizing effective amount of H_2O_2 and a neutralizing agent in the form of a tablet, said tablet comprising catalase and a polymeric coating comprising a polymer selected from the group consisting of hydroxypropylmethylcellulose phthalate polymer, a polymer from methacrylic acid or methacrylate esters, a copolymer from methacrylic acid and methacrylate esters and a copolymer from methyl vinyl ether and maleic anhydride, wherein the polymeric coating additionally contains triacetin, the polymeric coating effecting release of the catalase which is retarded for at least 30 minutes after the addition of said tablet to the aqueous solution.

5,011,662

DISSOLUTION TESTING MACHINE

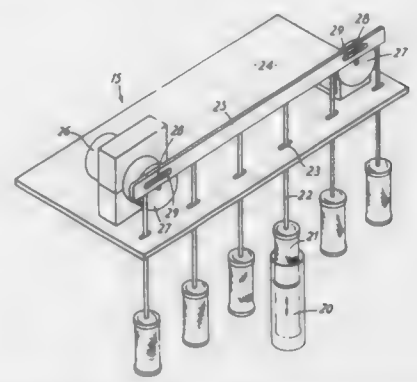
Akbar Noormohammadi, 153 Earlifield Road, London SW18; Robert E. Dodd, 40 Fir Tree Ave., Wallingford Oxon OX10 OPD, both of England; Arnold H. Beckett, 16 Crestbrook Ave., Palmers Green, London 13, United Kingdom, and Grahame K. J. Geeves, The Cobbles St. Marys Rd., Ascot, Berks, England

Continuation of Ser. No. 585,394, Mar. 2, 1984, abandoned. This application Jul. 2, 1987, Ser. No. 70,145

Claims priority, application United Kingdom, Mar. 4, 1983, 83 06055

Int. Cl.[5] G01N *31/00*

U.S. Cl. 422—68.1 9 Claims



1. In a dissolution testing machine consisting essentially of a container for a liquid, a fluid passable holder for a sample, support means for supporting said holder within said container, and drive means for said holder and said support means;

the improvement wherein the fluid passable holder comprises resilient gauze fabric at a bottom portion thereof to prevent abrasion of a sample when it is contacted therewith, and wherein the drive means is for moving said support means in such a manner that said holder is vertically reciprocated within said container without rotation about an axis so that liquid in said container flushes into and out of the holder, thereby causing a sample in the holder to move up and down in response to liquid flushing into and out of said holder.

5,011,663

MULTITEST-TUBE FOR CLINICAL CHEMISTRY ANALYSIS FOR SEVERAL SIMULTANEOUS TESTS

Alberto Innocenti, Florence, Italy, assignor to S [illegible] A C s.r.l., Florence, Italy

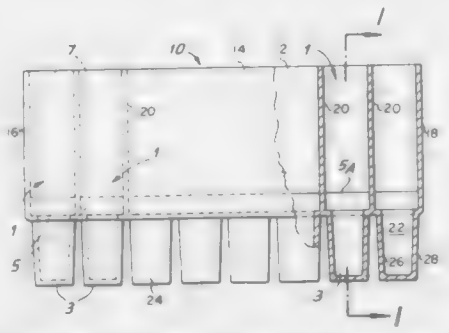
Continuation of Ser. No. 76,541, Jul. 22, 1987, abandoned. This application Aug. 13, 1990, Ser. No. 567,688

Int. Cl.[5] B01L *3/00*

U.S. Cl. 422—102 3 Claims

1. A multi test-tube construction for clinical test tube analysis comprising: a planar front wall; a planar rear wall substantially parallel to said front wall: first and second planar side walls, substantially perpendicular to said front and rear walls, each side wall being connected to said front and rear walls; a plurality of intermediate side wall members, substantially parallel to said side walls, positioned between and connected to said front and rear walls forming a plurality of cells with said front and rear walls, the outermost of said plurality of interme-

diate side wall members forming outermost cells with said first and second planar side walls and said front and rear walls; a plurality of lower portions, each lower portion being associated with each cell, each said lower portion having a bottom wall, a lower portion planar front wall connected to said front wall, a lower portion planar rear wall, a first lower portion planar side wall and a second lower portion planar side wall, said lower portion planar side walls being each connected to one of said first side wall, second side wall or intermediate side wall; a plurality of side portions associated with each cell, each side portion being connected to said rear wall and said lower portion rear wall, each of said side portions forming a cavity



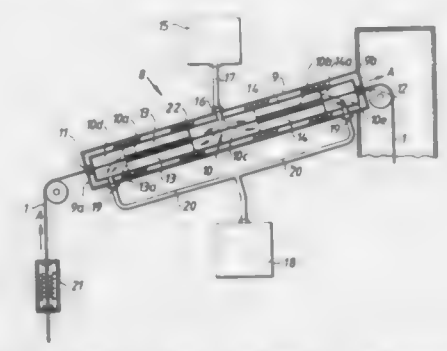
region between said rear wall and corresponding said lower rear wall portion with an edge separating each of said side portions from said lower portion in a horizontal direction for storage of a sample to be tested, each of said walls being transparent so as to allow optical sensing and visual inspection, reagents positioned in respective cavities of said side portions overflowing into said lower portion, holding a sample or the like, upon oscillation about a horizontal longitudinal axis, of the multi test-tube construction, of suitable amplitude and frequency allowing investigation of a plurality of samples or reagents in the corresponding plurality of cells under uniform conditions.

5,011,664

ARRANGEMENT FOR THE STERIILIZATION OF A TRAVELLING MATERIAL WEB

Pär Olanders, Lund, Sweden, assignor to Roby Teknik AB, Lund, Sweden

Filed Sep. 28, 1988, Ser. No. 250,269
Claims priority, application Sweden, Oct. 9, 1987, 8703903
Int. Cl.[5] A61L *2/20*
U.S. Cl. 422—292 **8 Claims**



1. Apparatus for gas-phase sterilizing a travelling material web comprising:

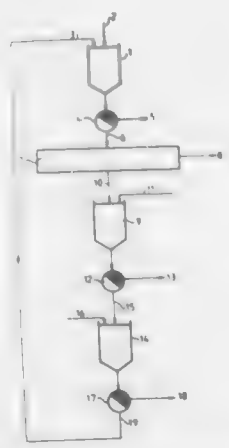
an elongated chamber having an inlet at one end and an outlet at the opposite end, said inlet and outlet being aligned to allow a material web to extend along a predetermined path into the chamber through the inlet and out of the chamber through the outlet, said chamber having interior walls spaced apart on opposite sides of said path, first conduit means for introducing a sterilizing gas into said chamber and second conduit means for withdrawing gas from said chamber, said first and second conduit means being spaced apart longitudinally of said chamber, said chamber including constriction means for accelerating the sterilizing gas along the path and for forcing the sterilizing gas to flow in close contact with the material web at very high speed as the gas flows from the first conduit means to the second conduit means to ensure that the sterilizing gas contacts and is uniformly distributed over the whole width of the material web so that effective sterilization of the entire material web takes place, said constriction means including a pair of plates extending outwardly from said interior walls toward said path, said plates being positioned between said first and second conduit means, and a heating device positioned in front of the inlet to the chamber so that the material web will be subjected to heat from the heating device prior to entering the chamber.

5,011,665

NONPOLLUTING RECOVERY OF RARE EARTH VALUES FROM RARE EARTH MINERALS/ORES

Francinet Cailly, Paris, and Yves Mottot, Tremblay/Les Gonesse, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Mar. 5, 1990, Ser. No. 487,926
Claims priority, application France, Mar. 3, 1989, 89 02757
Int. Cl.[5] C01F *17/00*
U.S. Cl. 423—21.5 **33 Claims**



1. A process for the recovery of rare earth values from a rare earth mineral, comprising (a)

leaching/decomposing such rare earth mineral with a solution of nitric acid to solubilize the rare earth values contained therein, (b) optionally separating insoluble residue from the resulting leach solution, (c) separating the rare earth values from said leach solution, (d) treating the leach solution thus stripped of rare earth values with a hydroxide of a metallic cation M to precipitate solubilized impurities and separating the thus precipitated impurities therefrom, (e) treating the resulting purified solution with sulfuric acid to precipitate metal sulfates and separating the thus precipitated sulfates therefrom to regenerate said nitric acid solution, and (f) optionally recycling such regenerated solution of nitric acid to said leaching-/decomposition step (a).

5,011,666

METHOD FOR PURIFYING TiO_2 ORE

Tze Chao, Newark, and George H. Senkler, Jr., Hockessin, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 28, 1988, Ser. No. 225,431
Int. Cl.[5] C22B *34/10*
U.S. Cl. 423—82 **26 Claims**

1. Process for purifying TiO_2 ore containing impurities of iron, alkali metal, alkaline earth metal, rare earth metal, aluminum, phosphorus, thorium, uranium, chromium, manganese, silicon, vanadium, and yttrium, said process consisting essentially of subjecting the ore to two or more leaching treatments, said leaching treatment:

(a) alternating between use of an aqueous solution of a mineral acid and an aqueous solution of an alkali metal compound selected from the group consisting essentially of alkali metal carbonates, hydroxides or mixtures thereof, and wherein the treatment with a mineral acid occurs first, and

(b) being conducted at a temperature, pressure, and time, and with an amount and concentration of an aqueous solution of a mineral acid and an aqueous solution of an alkali metal compound, which are sufficient to solubilize substantially the iron, alkali metal, alkaline earth metal, rare earth metal, aluminum, phosphorus, thorium, uranium, chromium, manganese, silicon, vanadium, and yttrium impurities present to form a leachate, and wherein the leachate formed is removed prior to the next leaching treatment.

5,011,667

SELF-BOUND SODIUM CHABAZITE AGGREGATES AND METHODS FOR PREPARATION THEREOF

Steven M. Kuznicki, Easton, Pa., and John R. Whyte, Jr., New York, N.Y., assignors to Engelhard Corporation, Iselin, N.J.

Filed Sep. 8, 1988, Ser. No. 242,014
Int. Cl.[5] C01B *33/34*
U.S. Cl. 423—118 **3 Claims**

1. A process for making monolithic bodies of finely divided particles of naturally-occurring chabazite bonded with crystals of synthetic chabazite including the steps of:

(a) forming a mixture comprising finely divided chabazite ore and a sodium aluminum silicate gel into monolithic bodies, the get having a composition such that the molar ratio of silicon to aluminum is between 1.0 and 1.5 and the ratio of sodium to silicon ranges from 0.35 to 0.55;

(b) recovering the resulting monolithic bodies;

(c) and heating said bodies in the presence of water to a temperature above 80° C. for a period of time of sufficient duration to convert said gel to additional chabazite, thereby producing monolithic bodies of finely divided particles of naturally-occurring chabazite bonded with crystals of synthetic chabazite.

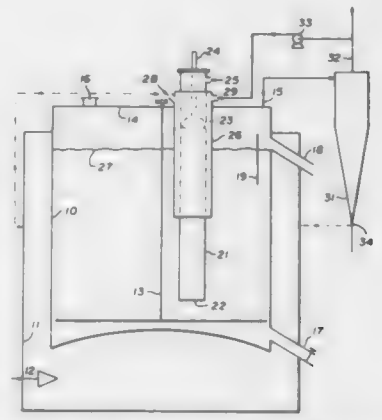
5,011,668

CALCINATION APPARATUS

David J. Ball, and Edward Varney, both of Nottingham, Great Britain, assignors to United States Gypsum Company, Chicago, Ill.

Continuation of Ser. No. 144,693, Jan. 13, 1988, abandoned, which is a continuation of Ser. No. 507, Jan. 5, 1987, abandoned. This application Mar. 2, 1989, Ser. No. 318,498
Claims priority, application United Kingdom, Jan. 7, 1986, 8600275
Int. Cl.[5] F27B *15/00;* **C04B** *11/00, 11/02*
U.S. Cl. 423—171 **7 Claims**

1. A method for calcining calcium sulphate dihydrate by heating material in a bed by the direct introduction of a hot as through a tube extending downwardly into the bed, in which the temperature of the hot gas is reduced before it directly contacts the material in the bed by indirect heat exchange through the wall of the tube with at least one relatively cool substance compatible with the material of the bed, said substance or substances themselves being separate from the material of the bed during the initial heat exchange but contacting said material before the latter is contacted by the hot gas and at a higher level of the bed than does the hot gas.



5,011,669

PROCESS FOR PRODUCING A ROD-FORM SILICA

Katsuyoshi Tsuchiya, Minamata, and Kaneo Noake, Yokohama, both of Japan, assignors to Chisso Corporation, Japan

Filed Jan. 24, 1990, Ser. No. 469,314
Claims priority, application Japan, Jan. 25, 1989, 1-15472
Int. Cl.[5] C01B *33/146*
U.S. Cl. 423—338 **9 Claims**



1. A process for producing a rod-shaped silica, which comprises adding 45 to 200 parts by weight of water to 100 parts by weight of a silicic acid ester and agitating at 40° C. or lower to form a sol of the resulting hydrolyzate of silicic acid ester, adding 35 to 150 parts by weight of the sol and a surfactant to 100 parts by weight of a hydrophobic medium to form an emulsion, and subjecting the emulsion to a temperature increase at two stages, the first temperature increase being by 5° to 30° C. at a rate of 10° to 200° C./min. or less and the second temperature increase being by 3° to 20° C. at a rate of 0.5° to 10° C./min., to form a rod-shaped silica.

5,011,670

INTEGRATED REFORMER PROCESS FOR THE PRODUCTION OF CARBON BLACK

Ruth A. Davis, Allentown; David M. Nicholas, New Tripoli; Dale D. Smith; Shoou-I Wang, both of Allentown, and Richard A. Wright, Macungie, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

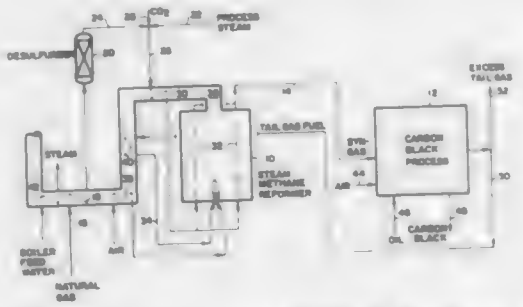
Filed Mar. 7, 1989, Ser. No. 320,206
Int. Cl.[5] C01B *31/62;* **C09C** *1/48*
U.S. Cl. 423—450 **2 Claims**

1. A process for the production of carbon black from a hydrocarbon feedstock comprising:

(a) reforming a hydrocarbon fuel into a predominantly hy-

drogen and carbon monoxide containing synthesis gas with steam in a catalytic elevated temperature reformation reaction.

(b) pyrolyzing and partially oxidizing said hydrocarbon feedstock in the presence of the combustion of said synthesis gas and an oxidant gas to produce a carbon black containing tailgas wherein the heat of pyrolysis is provided by the combustion of said synthesis gas.



(c) quenching said tailgas and recovering said carbon black from said tailgas;

(d) utilizing tailgas after carbon black recovery to provide said elevated temperature for the reforming of said hydrocarbon fuel wherein at least a portion of said tailgas after carbon black recovery is combusted with a second oxidant gas to produce said elevated temperature

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5,011,671

CERIC OXIDE WITH NEW MORPHOLOGICAL CHARACTERISTICS AND METHOD FOR OBTAINING SAME

Jean-Luc Le Loarer, La Rochelle, France, assignor to Rhone-Poulenc Chimie, Courbevoie, France

Filed Jun. 29, 1988, Ser. No. 213,189

Claims priority, application France, Jun. 29, 1987, 87 09122

Int. Cl.[5] C01F *17/00*

U.S. Cl. 423—592 **27 Claims**

1. A method for obtaining a ceric oxide having a specific surface of at least 15 m^2/g, measured after calcination at a temperature of between 800° and 900° C., said method comprising preparing a ceric hydroxide precipitate by reacting a solution of cerium salt, a base, and optionally, an oxidizing agent, the amount of base being selected such that the pH of the resulting reaction medium is greater than 7; (ii) separating the ceric hydroxide precipitate; optionally (iii) washing the ceric hydroxide precipitate; (iv) placing the ceric hydroxide in suspension in water or in an aqueous solution of a decomposable base; (v) heating the suspension or solution in a closed chamber to a temperature and pressure lower than the critical temperature and critical pressure thereof; (vi) cooling the suspension or solution and returning it to about atmospheric pressure; (vii) separating the resulting ceric hydroxide; and (viii) calcining the separated ceric hydroxide.

5,011,672

PROCESS FOR PRODUCING POTASSIUM MANGANATE

D. Manuel O. G. Garcia, Oviedo, Spain, assignor to Industrial Quimica Del Nalon, S.A., Oviedo, Spain

Continuation of Ser. No. 49,696, May 14, 1987, abandoned. This application May 1, 1989, Ser. No. 353,145

Claims priority, application Spain, May 16, 1986, 555072

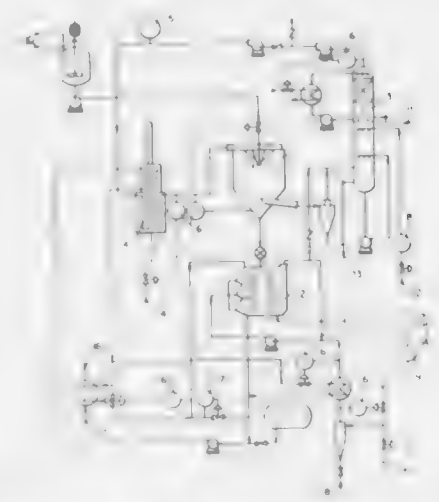
Int. Cl.[5] C01G *45/12*

U.S. Cl. 423—599 **32 Claims**

1. A process for preparing potassium manganate (K_2MnO_4) comprising the steps of:

(a) mixing a starting material containing a manganese ore having manganese in the form of manganese dioxide or manganese with a valency lower than or equal to 4 + with a first solution of potassium hydroxide in water to form a second solution having a mole ratio of potassium hydroxide to manganese in the approximate range of 2 to 3; and

(b) atomizing said second solution into drops into a heated oxidizing gas stream in a first reactor vessel having a wall, said drops of said atomized second solution being of a



sufficiently small size and the temperature of said oxidizing gas stream being sufficiently high that said drops lose water and solidify to a powder prior to contacting said wall, whereby said manganese is oxidized so said powder comprises potassium hypomanganate and potassium manganate

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5,011,673

ZIRCONIUM OXIDE POWDER

Gangolf Kriechbaum, Freigericht; Peter Kleinschmit, Hanau, and Doris Peuckert, Hofheim, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 31, 1988, Ser. No. 264,585

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1987, 3737064

Int. Cl.[5] C01G *25/02*

U.S. Cl. 423—608 **1 Claim**

1. Crystalline zirconium oxide powder with a BET surface area in the range of 10 to 20 m^2/g, a primary particle size of 0.1 to 0.5 μm consisting essentially of and a monoclinic crystal structure, and a content of Y_2O_3 of 1 to 10% by weight and/or 1 to 10% by weight MgO coprecipitated with the zirconium dioxide, wherein the crystalline zirconium oxide powder exhibits a particle size distribution of 90% between 0.1 and 1 μm.

5,011,674

METHOD OF PRODUCING TITANIUM OXIDES

Masafumi Yoshimoto, Sakai; Tadao Nakatsuji, Kashibacho, and Kazuhiko Nagano, Sakai, all of Japan, assignors to Sakai Chemical Industry Co., Ltd., Osaka, Japan

Division of Ser. No. 357,599, May 26, 1989. This application Nov. 20, 1989, Ser. No. 438,001

Claims priority, application Japan, May 28, 1988, 63-131076

Int. Cl.[5] C01G *23/047*

U.S. Cl. 423—610 **4 Claims**

1. A method for producing titanium oxides for use as a catalyst carrier or a molded catalyst which comprises: adding a solution of an alkali at a rate of not more than about 0.05 moles/l per mole of titanium tetrachloride to an aqueous solution of titanium tetrachloride having a concentration of not more than 0.8 mole/l at a temperature of 50°-70° C., to thereby substantially thermally hydrolyze the titanium tetrachloride to produce titanium hydroxide; and then drying and calcining the titanium hydroxide at a temperature of 300°-700° C.

5,011,675

CONVERSION EFFICIENCY IN TRICKLE BED REACTORS

Patricia Haure; Peter L. Silveston; Robert R. Hudgins, all of Waterloo, Canada, and Maxime Bellut, Nancy Cedex, France, assignors to University of Waterloo, Waterloo, Canada

Filed Mar. 15, 1988, Ser. No. 168,239

Claims priority, application United Kingdom, Mar. 16, 1987, 8706203

Int. Cl.[5] C10G *47/02*

U.S. Cl. 423—659 **18 Claims**

1. A method of effecting a chemical reaction in a trickle bed reactor by flowing liquid and gaseous streams over a bed of solids which comprises:

first flowing said liquid stream downwardly over said bed of solids at a flow rate which is less than that necessary to maintain said bed of solids completely wetted to cause the formation of stagnant liquid pockets in said bed and exposure of dry solids to said flowing gas stream for a period of time which permits said chemical reaction to continue,

then flowing said liquid stream downwadly over said bed of solids at a higher flow rate than that necessary to maintain said bed of solids completely wetted and for a period of time sufficient to rewet the solids completely, quench any hot spots which have developed in said bed and to flush out stagnant regions of the bed, and

subsequently repeating said steps of lesser flow rate flow of said liquid stream over said bed of particles and higher flow rate of said liquid stream over said bed of particles, whereby said chemical reaction is effected more efficiently than flowing said liquid stream over said bed of particles at a constant flow rate which is at least that necessary to maintain said bed of particles completely wetted.

5,011,676

METHOD TO DIRECTLY RADIOLABEL ANTIBODIES FOR DIAGNOSTIC IMAGING AND THERAPY

Mathew L. Thakur, Cherry Hill, N.J., assignor to Thomas Jefferson University, Philadelphia, Pa.

Filed Mar. 27, 1990, Ser. No. 499,790

Int. Cl.[5] A61K *39/395*

U.S. Cl. 424—1.1 **20 Claims**

1. A method for directly labeling proteins with radionuclides for use in diagnostic imaging and therapy comprising the steps of incubating a protein-containing solution with a solution of sodium ascorbate; adding a required quantity of reduced radionuclide to said incubated protein-containing solution and incubating.

5,011,677

RADIOACTIVE GLASS MICROSPHERES

Delbert E. Day, Rolla, and Gary J. Ehrhardt, Columbia, both of Mo., assignors to The Curators of the University of Missouri, Columbia, Mo.

Division of Ser. No. 673,123, Nov. 19, 1984, Pat. No. 4,789,501. This application Aug. 18, 1988, Ser. No. 234,017

Int. Cl.[5] A61K *43/00;* **A61N** *5/00;* **C03C** *12/00*

U.S. Cl. 424—1.1 **45 Claims**

1. A radioactive microsphere for radiation therapy of a mammal comprising a biologically compatible glass material containing at least one beta or gamma radiation emitting isotope distributed substantially throughout the glass which emits a therapeutic intensity and amount of beta or gamma radiation, and a balance of elements selected from the group consisting of elements that do not become radioactive upon neutron irradiation and elements that have a half-like that is sufficiently short so that the elements do not emit a significant amount of beta or gamma radiation at the time of administration, the microsphere having a chemical durability such that subsequent to administration of the microsphere to the mammal, the microsphere will not release a significant amount of the radiation emitting radioisotope into the mammal's system.

5,011,678

COMPOSITION AND METHOD FOR ADMINISTRATION OF PHARMACEUTICALLY ACTIVE SUBSTANCES

Yu-chang J. Wang; William A. Lee, both of Los Altos, and Blair Narog, Palo Alto, all of Calif., assignors to California Biotechnology Inc., Mountain View, Calif.

Filed Feb. 1, 1989, Ser. No. 305,520

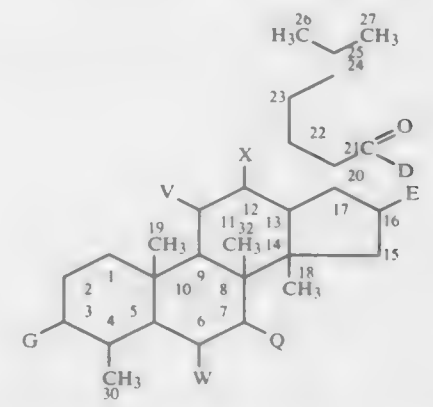
Int. Cl.[5] A61K *9/12, 9/14, 37/02*

U.S. Cl. 424—45 **43 Claims**

1. A nonaqueous, dry powder composition for the transmucosal administration of pharmaceutically active substance, comprising a particular suspension of:

(a) a medically effective amount of a polypeptide drug and

(b) a biocompatible steroid of the formula



wherein a dashed line represents a single or double bond;

D represents a group having a molecular weight below 600 daltons which renders an effective amount of said steroid water soluble within the range of about pH 2 to about pH 12;

E represents OAc, OH, a lower alkyl group or a lower heteroalkyl group;

G represents OAc, OH, a lower alkyl group or a lower heteroalkyl group;

W represents OAc or H; and

Q, V, and X, each individually, represent OH or H, said steroid (i) containing two to three polar functions, exclusive of the function represented by D; and (ii) being capable of increasing the permeation of a human or animal mucosal surface by a pharmaceutically active substance, in an amount effective to increase the permeability of said body surface to a pharmaceutically active substance; and

wherein said particulate suspension is suspended in a biocompatible (hydro/fluoro) carbon propellant.

5,011,679

RAW HIDE HAVING A COATING CONTAINING AN INORGANIC PYROPHOSPHATE

Henry C. Spanier, West Milford, and Ilassey O. Ekpo, Newark, both of N.J., assignors to Nabisco Brands, Inc., East Hanover, N.J.

Filed May 30, 1989, Ser. No. 358,149

Int. Cl.[5] A61K *7/20*

U.S. Cl. 424—57 **5 Claims**

1. Process for the prevention of tartar accumulation on the teeth of a dog, comprising chewing or eating by the dog of a tartar inhibiting amount of raw hide which contains an edible coating comprising an effective antitartar amount of at least one alkali metal inorganic pyrophosphate, the amount of said at least one alkali metal inorganic pyrophosphate being sufficient to deliver from about 0.2 to about 5 weight percent, based

on the total weight of the raw hide containing at least one alkali metal inorganic pyrophosphate, of P_2O_7, said at least one alkali metal inorganic pyrophosphate being water soluble, the raw hide containing an edible coating containing at least one alkali metal inorganic pyrophosphate being slightly acid to near neutral, and the raw hide containing an edible coating containing at least one alkali metal inorganic pyrophosphate being chewable, tough and flexible.

5,011,680

SOLID COSMETIC PREPARATION

Toshiyuki Suzuki, Ichikawa; Masahide Nohta, Sakura; Akira Shigeta, Tokyo; Yoshimitsu Ina, Funabashi, and Manami Nozawa, Chiba, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 837,615, Mar. 7, 1986, abandoned. This application Jun. 15, 1988, Ser. No. 208,792

Claims priority, application Japan, Mar. 13, 1985, 60-50124; Sep. 6, 1985, 60-196973; Sep. 6, 1985, 60-196974

Int. Cl.[5] A61K *7/025, 31/21, 31/08*

U.S. Cl. 424—64 18 Claims

1. A solid cosmetic preparation comprising a blend of (A) from 99.9 to 90 percent by weight of at least one cosmetic component and (B) from 0.1 to 10 percent by weight of a mixture of triglycerides, said mixture of triglycerides comprising mixed acid triglycerides having as fatty acid residues in the same molecule,

(a) at least one straight chain, saturated C_{20}–C_{26} fatty acid group and

(b) at least one unsaturated C_{16}–C_{22} fatty acid group,

said fatty acid residues of said mixture of triglycerides comprising 15 to 70 percent by weight of straight chain, saturated C_{20}–C_{26} fatty acid groups and 20 to 60 percent by weight of unsaturated C_{16}–C_{22} fatty acid groups, said cosmetic component (A) being different from said mixture of triglycerides (B) and the saturated fatty acid residues of said mixed acid triglycerides not having a branched chain.

5,011,681

FACIAL CLEANSING COMPOSITIONS

Susan L. Ciotti, Derby; Eric G. Spengler, Cheshire, and George E. Deckner, Trumbull, all of Conn., assignors to Richardson-Vicks, Inc., Shelton, Conn.

Filed Oct. 11, 1989, Ser. No. 419,895

Int. Cl.[5] A61K *7/02*

U.S. Cl. 424—81 10 Claims

1. A cleansing composition for removing make-up in the form of an oil-in-water emulsion comprising:

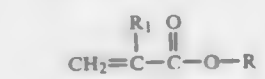
a. from about 0.5% to about 10% of a surfactant with an HLB greater than about 10 selected from the group consisting of anionic, nonionic, zwitterionic, amphoteric and ampholytic surfactants and mixtures thereof;

b. from about 2% to 30% of polyalphaolefin of the formula:

$R_1—C{=}C—R_2$

wherein R_1 and R_2 are independently from about C_{20} to about C_{30} alkyl, wherein said polyalphaolefin has a viscosity of from about 2 to about 4 centistokes at 100° C.; and

c. from about 0.025% to about 0.75% of a carboxylic copolymer comprising polymers of a monomeric mixture containing 95.9 to 98.8 weight percent of an olefinically unsaturated carboxylic monomer selected from the group consisting of acrylic, methacrylic and ethacrylic acids, about 1 to about 3.5 weight percent of an acrylate ester of the formula:



wherein R is an alkyl radical containing 10 to 30 carbon atoms and R_1 is hydrogen, methyl or ethyl, and 0.1 to 0.6 weight percent of a polymerizable cross-linking polyalkenyl polyether of a polyhydric alcohol containing more than one alkenyl ether group per molecule wherein the parent polyhydric alcohol contains at least 3 carbon atoms and at least 3 hydroxyl groups.

5,011,682

HYPOPHOSPHITE-CONTAINING COTELOMERS AS ANTITARTAR AGENTS

David L. Elliott, Hawthorne; Catherine L. Howie, Parsippany, both of N.J., and Peter G. Montague, Rugby, England, assignors to Conopco, Inc., New York, N.Y.

Filed Apr. 18, 1990, Ser. No. 510,651

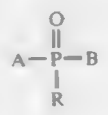
Int. Cl.[5] A61K *7/16, 7/18*

U.S. Cl. 424—52 17 Claims

1. An oral composition comprising:

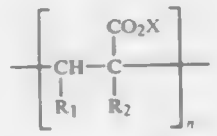
(i) a fluoride source present in an effective amount to reduce caries; and

(ii) a polymer present in an effective amount to control build-up of tartar, said polymer having the formula I:



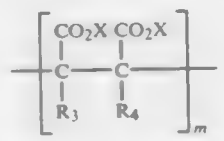
(I)

wherein A is a random polymeric residue comprising at least one unit of structure II,



(II)

and at least one unit of structure III, different from a unit of structure II,



(III)

and B is hydrogen or a residue A; m and n are integers sufficient to provide polymer of weight averaged molecular weight ranging from about 400 to about 5000; m and n in residue A may each be the same or different from respective m and n in residue B; R is an—OX, where X is selected from the group consisting of hydrogen, alkali metal, alkaline earth metal, transition metal, ammonium, alkyl amine, alkanolammonium residues and mixtures thereof; R_1, R_2, R_3 and R_4 are hydrogen, methyl, ethyl radicals or combinations thereof.

5,011,683

AGGREGATION PHEROMONES OF THE DRIEDFRUIT BEETLE, *CARPOPHILUS HEMIPTERUS*

Robert J. Bartelt, East Peoria, and Patrick F. Dowd, Peoria, both of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

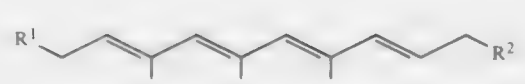
Filed Nov. 25, 1988, Ser. No. 275,863

The portion of the term of this patent subsequent to Apr. 16, 2008, has been disclaimed.

Int. Cl.[5] A07N *25/00, 27/00;* C07C *9/00*

U.S. Cl. 424—84 7 Claims

1. A substantially pure compound having the structure:



wherein R^1 and R^2 are independently selected from the group consisting of hydrogen and lower alkyl.

5,011,684

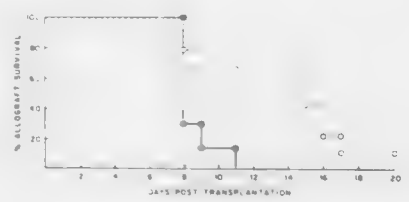
LYSING OR BLOCKING UNWANTED CELLS WITH IL-2 RECEPTOR-SPECIFIC BINDING SUBSTANCE

Terry B. Strom, Brookline, Mass., assignor to Beth Israel Hospital Association, Boston, Mass.

Filed Sep. 5, 1985, Ser. No. 772,893

Int. Cl.[5] A61K *39/395*

U.S. Cl. 424—85.2 6 Claims



1. A method of treating a mammal suffering from a nonmalignant, disease state-producing immune response characterized by a proliferative burst of lymphocytes having on their surfaces IL-2 receptors, said method comprising administering to said mammal, during said proliferative burst, a cell-lysing or IL-2 blocking amount of a monoclonal antibody to the IL-2 receptor, whereby said IL-2 receptor-bearing lymphocytes are lysed or blocked and memory T-lymphocytes and resting T-lymphocytes of said mammal are spared.

5,011,685

BACULOVIRUS PROTEINS AND VIRAL PESTICIDES CONTAINING SAME

Robert R. Granados, Ithaca, N.Y., assignor to Boyce Thompson Institute for Plant Research, Inc., Ithaca, N.Y.

Division of Ser. No. 426,795, Oct. 25, 1989, Pat. No. 4,973,667, which is a continuation of Ser. No. 178,259, Apr. 6, 1988, abandoned. This application Sep. 10, 1990, Ser. No. 580,083

Int. Cl.[5] A61K *35/76;* A01N *63/00*

U.S. Cl. 424—93 7 Claims

1. A viral pesticide comprising a nuclear polyhedrosis virus and a viral factor which enhances infectivity, said factor comprising a baculovirus protein free of occlusion bodies which protein breaks down the physical structure of the peritrophic membrane of lepidopterous larvae through the degration of structural glycoproteins.

5,011,686

THROMBUS SPECIFIC CONJUGATES

Roy H. L. Pang, Medway, Mass., assignor to Creative Biomolecules, Inc., Hopkinton, Mass.

Continuation of Ser. No. 99,242, Sep. 21, 1987, abandoned. This application Nov. 15, 1989, Ser. No. 437,769

Int. Cl.[5] A61K *37/02, 37/48, 37/547*

U.S. Cl. 424—94.1 11 Claims

1. A method for imparting to an injectable reagent an affinity for an intravascular thrombus, said method comprising the step of linking to said injectable reagent a fibrin binding domain comprising a protein having an affinity for fibrin and a sequence identical or homologous to the FA, FB, FC, FD, or FE fragments of protein A or portion thereof, a protein analog thereof having at least about 5% to 50% of the fibrin affinity of fragment B of Protein A, or an oligomer of the protein or the protein analog.

5,011,687

PURIFIED MULLERIAN INHIBITING SUBSTANCE AND PROCESS FOR TREATING HUMAN OVARIAN CANCER CELLS

Patricia K. Donahoe, Weston, and David A. Swann, Lexington, both of Mass., assignors to The General Hospital Corporation, Boston, Mass.

Continuation of Ser. No. 620,546, Jun. 18, 1984, abandoned, which is a continuation of Ser. No. 303,516, Sep. 18, 1981, abandoned, which is a continuation of Ser. No. 71,316, Aug. 30, 1979, abandoned. This application Oct. 29, 1985, Ser. No. 792,233

Int. Cl.[5] A61K *35/48*

U.S. Cl. 424—559 2 Claims

1. A purified form of Mullerian Inhibiting Substance (MIS) which, when isolated from testicular tissue comprises a glycoprotein having the following characteristics:

(a) an activity of at least 1 as measured by the Mullerian regression organ culture assay, which is substantially free of testicular tissue and of proteinaceous material capable of degrading said MIS;

(b) a cytotoxicity index of greater than 0.25 towards synchronously growing cells in a cell culture of a human ovarian papillary serous cystadenocarcinoma, when said cell culture is populated at a density between 50 and 100 cells per well, but showing no statistically significant cytotoxicity towards non-Mullerian human gliobastomas or against human fibroblasts;

(c) molecular weight about 70,000 daltons;

(d) carbohydrate fraction: mannose, galactose, glucasamine, and N-acetylneuraminic acid; and

(e) peptide fraction: 80–90 weight percent amino acids.

5,011,688

LIQUID COMPOSITION FOR THE RELIEF OF PREMENSTRUAL AND MENSTRUAL DISCOMFORTS

Henry D. Calam, 251 Furnace Dock Rd., Peekskill, N.Y. 10566, and Hans A. Schaeffer, 14 Pallant Ave., Linden, N.J. 07036

Continuation-in-part of Ser. No. 309,078, Feb. 2, 1989, abandoned, which is a continuation of Ser. No. 74,548, Jul. 17, 1987, abandoned. This application May 8, 1990, Ser. No. 523,036

Int. Cl.[5] A61K *9/08, 47/00*

U.S. Cl. 424—195.1 12 Claims

1. A liquid composition for the relief of premenstrual and menstrual discomfort comprising, as active pharmaceutical agents, an effective amount of an analgesic, an antihistamine, and a diuretic, said active agents being unpleasant in taste, and dissolved in a liquid vehicle, said composition containing 5–25 percent by volume alcohol and being flavored with active flavoring elements of citrus, vanilla, and mint, said active flavoring ingredients being present in an amount sufficient to mask the unpleasant taste of the pharmaceutically active agents.

5,011,689

COMPOSITION OF MATTER AND METHOD FOR TREATING POISON IVY

T. Paul Misenko, 1093 Barbd La., Bristolville, Ohio 44402, assignor to T. Paul Misenko, Bristolville, Ohio

Continuation of Ser. No. 169,305, Mar. 17, 1988, abandoned. This application Dec. 11, 1989, Ser. No. 449,471

Int. Cl.[5] A61K *35/78*

U.S. Cl. 424—195.1 6 Claims

1. A method for reducing rash formation and itching of skin caused by poison ivy comprising breaking up a plant of the genus Plantago to release the sap therein and to form a fibrous pulp containing sap and applying an effective amount of said sap-containing pulp to the affected area of skin.

5,011,690

SPHEROIDAL SILICA

Michael J. Garvey, Wirral; Ian C. Griffiths, Merseyside, and John H. S. Rennie, Cheshire, all of England, assignors to Unilever Patent Holdings B.V., Rotterdam, Netherlands

Continuation of Ser. No. 937,112, Dec. 2, 1986, Pat. No. 4,778,667. This application Jun. 6, 1988, Ser. No. 202,563

Claims priority, application United Kingdom, Jun. 5, 1987, 8713263

Int. Cl.[5] A61K *9/08, 9/50, 7/46;* **B32B** *5/16*

U.S. Cl. 424—401 **13 Claims**

1. Process for the preparation of porous silica spheroids having a particle size in the range 1 to 400 microns and axial ratios of 1:1 to 1:12 and containing included material selected from the group consisting of perfumes, flavouring materials, pigments, germicides, bactericides, fungicides, bleaching agents, skin benefit agents, therapeutic agents and mixtures thereof, said process comprising the steps of

(i) mixing together (a) an aqueous, stabilized silica sol containing dispersed therein said included material in an amount of 0.02 to 50% by weight of the silica and (b) an aqueous solution of a polymer which is not adsorbed by the silica, so as to form a phase separated system comprising silica droplets containing said included material in a polymer-rich continuous phase, and

(ii) condensing the silica sol to aggregate the droplets to form said porous silica spheroids containing the included material.

5,011,691

OSTEOGENIC DEVICES

Hermann Oppermann; Thangavel Kuberasampath, both of Medway; David C. Rueger, West Roxbury, and Engin Ozkaynak, Milford, all of Mass., assignors to Stryker Corporation, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 232,630, Aug. 15, 1988, which is a continuation-in-part of Ser. No. 179,406, Apr. 8, 1988, Pat. No. 4,968,590. This application Feb. 23, 1989, Ser. No. 315,342

Int. Cl.[5] C07K *13/00, 15/00;* **A61K** *37/00;* **C12P** *21/00*

U.S. Cl. 424—423 **37 Claims**

1. An osteogenic device for implantation in a mammal comprising osteogenic protein dispersed within a biocompatible, in vivo biodegradable matrix defining pores of a dimension sufficient to permit influx, proliferation and differentiation of migratory progenitor cells from the body of said mammal,

the improvement wherein said osteogenic protein is produced by expression of recombinant DNA in a host cell, and comprises a pair of polypeptide chains, each of which has an amino acid sequence sufficiently duplicative of the sequence of COP-5 or COP-7 such that said pair of polypeptide chains, when disulfide bonded to produce a dimeric species, has a conformation capable of inducing endochondral bone formation in association with said matrix when implanted in a mammal.

5,011,692

SUSTAINED PULSEWISE RELEASE PHARMACEUTICAL PREPARATION

Keiji Fujioka; Shigeji Sato; Yoshihiro Takada; Yoshio Sasaki, and Nobuhiko Tamura, all of Ibaraki, Japan, assignors to Sumitomo Pharmaceuticals Company, Limited, Osaka, Japan

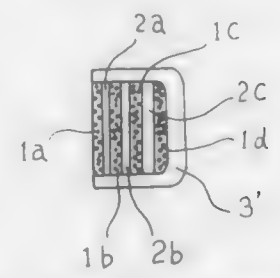
Filed Dec. 23, 1986, Ser. No. 946,158

Claims priority, application Japan, Dec. 28, 1985, 60-297550; Nov. 14, 1986, 61-272542

Int. Cl.[5] A61F *2/00*

U.S. Cl. 424—426 **20 Claims**

1. A sustained pulsewise-release pharmaceutical dosage form means for embedding beneath skin which embedded administration comprises (a) drug-containing polymeric material layers (layers A) and polymeric material layers free from the drug in question or containing only a slight and significantly smaller amount of the same (layers B) disposed alternatingly, and (b) a surface extending in a direction perpendicular to the layers and



coated in its entirety with a polymeric material which is insoluble or scarcely soluble in water and in body fluids.

5,011,693

HAEMOSTATIC AGENTS

Martin Whitefield, London, England, assignor to Diomed Developments Limited, Hitchin, England

Continuation-in-part of Ser. No. 264,073, Oct. 28, 1988, abandoned. This application Oct. 24, 1989, Ser. No. 425,874

Claims priority, application United Kingdom, Oct. 24, 1988, 8824850

Int. Cl.[5] A61R *9/66*

U.S. Cl. 424—455 **12 Claims**

1. A gel for topical application as a hemostatic agent consisting essentially of a solution in water of basic ferric sulphate at a concentration within the range 6 to 20% w/v Fe(III) and sufficient for hemostatic activity, the said solution containing sufficient sulphate and colloidal silicon dioxide to gel the solution.

5,011,694

PHARMACEUTICAL DOSAGE UNIT FORMS WITH DELAYED RELEASE

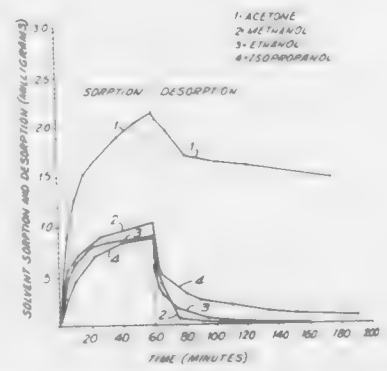
Eberhard Nuernberg, Uttenreuth-Weiher, and Josef Pfeuffer, Bad Koenigshofen, both of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Aug. 1, 1989, Ser. No. 388,120

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1988, 3827214

Int. Cl.[5] A61K *9/20*

U.S. Cl. 424—464 **6 Claims**



1. A method for making a delayed release pharmaceutical dosage unit form which comprises contacting, at a temperature from 18° C. to 50° C. and for a time between 5 minutes and 24 hours, a gas phase comprising the vapor of a lower alcohol having 1 to 4 carbon atoms with a matrix which comprises a compressed mixture of a powdered active pharmaceutical and a powdered polymer selected from the group consisting of polymers of acrylate esters, polymers of methacrylate esters, and vinyl ester polymers.

5,011,695

STERILIZATION OF BLOOD AND ITS DERIVATIVES WITH VITAMINS

Herbert Dichtelmuller, Sulzbach/Ts., and Wolfgang Stephan, Dreieich, both of German Democratic Rep., assignors to Biotest Pharma GmbH, Dreieich, Fed. Rep. of Germany

Filed Feb. 16, 1989, Ser. No. 311,483

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1988, 3805459

Int. Cl.[5] A61K *35/14, 35/16;* **C12N** *7/06*

U.S. Cl. 424—529 **21 Claims**

1. A method for sterilizing a lipid-coated-virus-containing member selected from the group consisting of blood, a blood derivative, plasma or a plasma derivative consisting essentially of treating said member with an agent selected from the group consisting of vitamin A, vitamin E, vitamin B_6, vitamin B_{12} and vitamin C or a mixture thereof.

5,011,696

MALT FLAVOR MATERIAL AND PREPARATION THEREOF

Gerhard J. Haas, Woodcliff Lake, and Karen G. Heller, Livingston, both of N.J., assignors to Kraft General Foods, Inc., Glenview, Ill.

Filed Mar. 12, 1990, Ser. No. 491,794

Int. Cl.[5] A23L *1/22*

U.S. Cl. 426—28 **14 Claims**

1. A process for producing a heat-stable, low volatile, yeast fermented malt flavorant comprising:

(a) preparing a mixture containing distillers malt flour with 0 to 25% gelatin, by weight;

(b) adding water to the mixture of step (a) to produce a slurry containing 20% to 50% by weight solids;

(c) heating the slurry to a first temperature of from about 40° C. to about 55° C. for a first time period of about 15 minutes to about 180 minutes;

(d) diluting the slurry to about 10% to about 35% solids;

(e) heating the slurry to a second temperature of from about 50° C. to about 65° C.;

(f) holding the slurry at the second temperature for a second time period of from about 15 minutes to about 120 minutes;

(g) fermenting the slurry with yeast at a fermenting temperature of from about 25° C. to about 40° C. for a fermenting time period of from about 24 hours to about 120 hours; and

(h) heating the slurry at a temperature and for a period of time sufficient to inactivate the yeast.

5,011,697

INHIBITING DEVELOPMENT OF MUTAGENS AND CARCINOGENS

Ronald C. Jones, Briafcliff Manor, and John H. Weisburger, White Plains, both of N.Y., assignors to American Health Foundation, Dana Road, N.Y.

Continuation-in-part of Ser. No. 659, Jan. 6, 1987, Pat. No. 4,777,052. This application Aug. 6, 1988, Ser. No. 227,628

Int. Cl.[5] A23L *1/305, 1/314, 3/34*

U.S. Cl. 426—92 **20 Claims**

1. A method of inhibiting the development of mutagens/carcinogens during the cooking of a protein containing foodstuff comprising applying L-proline to the foodstuff in an amount sufficient to inhibit the development of mutagens/carcinogens during the cooking of the foodstuff, and cooking the foodstuff with the L-proline thereon.

5,011,698

BREATHABLE MICROPOROUS FILM AND METHODS FOR MAKING IT

Mitchell K. Antoon, Jr., and David J. Hill, both of Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 500,975, Mar. 9, 1990, which is a division of Ser. No. 224,632, Jul. 28, 1988, Pat. No. 4,923,650. This application Nov. 5, 1990, Ser. No. 608,785

Int. Cl.[5] B65B *25/04*

U.S. Cl. 426—395 **2 Claims**

1. A container capable of creating within it substantially no loss of water vapor yet substantially free flow of O_2 and CO_2 gases to the atmosphere in the presence of respiring fresh fruit, vegetable, or flowers, that is constructed of a substantially gas-impermeable material having a gas-permeable panel in one or more of its walls to provide the flow of O_2 and CO_2 gases but yet a substantial barrier to water vapor through its walls, where the panel is composed of a breathable microporous film comprising 20 to 37% by weight of a polymer or copolymer of an alpha-olefin having 1-8 carbons or mixtures thereof, 60 to 75% by weight of calcium carbonate or glass beads having particle sizes of 10 to 25 micrometers, 0.1 to 3.0% by weight of calcium stearate, and 0 to 2% by weight of a UV light-oxygen, and heat stabilizer, said breathable film composition having been produced by preparing a melt blend containing said ingredients and maintaining the moisture level of the blend below 700 ppm prior to forming a casting therefrom, forming a casting from said melt blend and then, based on the polymer or copolymer used, stretching the casting to produce oriented film in two directions from about 1.5 to 7 times in each direction in a temperature range of from about 20° to 160° C., each oriented film having a Gurley porosity (method B, ASTM D-726) of 0.1 second to 85 seconds so that the film has good air and water vapor transmission rate but is substantially impenetrable by liquid water.

5,011,699

PROCESS FOR STERILIZING FOOD STUFFS

Hisateru Mitsuda, Kyoto; Hiroshi Ohminami, Nara, and Haruko Nagasawa, Kyoto, all of Japan, assignors to Japan Food Industry Association Inc., Kyoto, Japan

Filed Sep. 7, 1989, Ser. No. 404,334

Int. Cl.[5] A23B *4/16, 5/10, 7/144*

U.S. Cl. 426—320 **4 Claims**

3. A process for sterilizing and freezing food stuffs comprising the steps of

putting food stuffs in a refrigerator,

feeding a mixture of ozone gas and carbon dioxide gas into said refrigerator to sterilize the food stuffs, said mixture having a mixing ratio in weight of carbon dioxide gas to ozone gas ranging from 2 to 1 through 1 to 2, and

freezing the food stuffs after the food stuffs have been sterilized.

5,011,700

SYRUP DELIVERY SYSTEM FOR CARBONATED BEVERAGES

Keith W. Gustafson, Station 1101, Lake Arrowhead, Waleska, Ga. 30183; George W. Kalet, 2892 Wynfair Dr., Marietta, Ga. 30062, and Martin S. Taylor, Station 1083, Lake Arrowhead, Waleska, Ga. 30183

Filed Aug. 11, 1989, Ser. No. 392,779

Int. Cl.[5] B01F *3/04*

U.S. Cl. 426—477 **9 Claims**

6. A method for mixing a carbonate beverage comprising the steps of:

(a) carbonating water with a source of CO_2 gas;

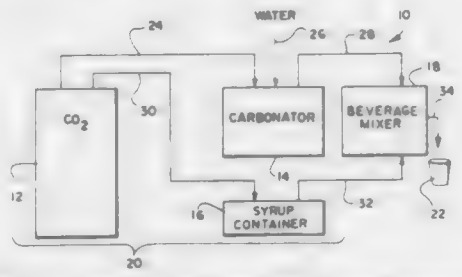
(b) delivering the carbonated water to a beverage mixer through a carbonated water inlet line;

(c) delivering beverage syrup to the beverage mixer through a syrup inlet line by:

i. connecting the syrup inlet line of the beverage mixer to

a syrup container comprising a collapsible bag containing the syrup which bag is located inside a rigid drum and which bag has connector means for connection to the syrup inlet line; and

ii. connecting an outlet line from a source of pressurizing



fluid to a fitting on the rigid drum which fitting communicates with a space between the rigid drum and the collapsible bag so that the source of pressurizing fluid collapses the bag and forces the syrup out of the bag, through the connector means, through the syrup inlet line, and into the beverage mixer.

5,011,701

LOW CALORIE FOOD PRODUCTS HAVING SMOOTH, CREAMY, ORGANOLEPTIC CHARACTERISTICS

Cynthia C. Baer, Arlington Heights; Gregory S. Buliga, Mt. Prospect; Gerard L. Hassenheutti, Highland Park; George A. Henry, Wilmette; Alice A. Heth, Evanston; Linda K. Jackson, Lincolnshire; Jill M. Kennedy-Tolstedt, DesPlaine; Phillip J. Kerwin, Wilmette; Mark S. Miller, Arlington Heights; Elizabeth M. Parker, DesPlaines; Neela K. Paul, Clarendon Hills; David G. Pechak, Glen Ellyn; Gary F. Smith, Highland Park, and Vernon C. Witte, Naperville, all of Ill., assignors to Kraft General Foods, Inc., Glenview, Ill.

Continuation-in-part of Ser. No. 292,568, Dec. 30, 1988, and Ser. No. 81,115, Aug. 3, 1987, abandoned, which is a continuation-in-part of Ser. No. 658,618, Oct. 9, 1984, Pat. No. 4,684,533, said Ser. No. 292,568, is a continuation-in-part of Ser. No. 188,283, Apr. 29, 1988, abandoned, Ser. No. 177,184, Apr. 4, 1988, abandoned, and Ser. No. 24,507, Mar. 1, 1987, Pat. No. 4,762,726, which is a continuation-in-part of Ser. No. 567,096, Dec. 30, 1983, Pat. No. 4,563,360, and Ser. No. 567,277, Dec. 30, 1983, Pat. No. 4,559,233. This application Aug. 18, 1989, Ser. No. 395,800

Int. Cl.[5] A23L *1/0534, 1/24, 1/308*

U.S. Cl. 426—573 **5 Claims**

1. A method for preparing a low fat or substantially fat-free food product comprising the steps of heating and repeatedly shearing at least two times an aqueous dispersion consisting of from about 3 to about 10 weight percent of microcrystalline cellulose and from about 90 to about 97 weight percent water in a high shear zone having a pressure drop of at least 12,000 psi to fragment the microcrystalline cellulose to submicron sized microcrystalline cellulose fragments and reagglomerating the crystalline cellulose fragments under high shear conditions to produce an aqueous dispersion of porous microreticulated microcrystalline particles having a void volume at least about 25 volume percent, a mean particle size in the range of from about 5 to about 20 microns, and a particle size distribution such that at least about 75 weight percent of the particles have a maximum dimension of less than about 25 microns,

combining said microreticulated microcrystalline cellulose dispersion with from about 2 to about 33 weight percent of xanthan gum, based on the dry weight of said microreticulated microcrystalline cellulose dispersion, and

blending said xanthan stabilized microreticulated microcrystalline cellulose dispersion with additional food components to provide a low fat or fat-free food product comprising from about 0.25 to about 4 weight percent of dispersed microreticulated microcrystalline cellulose, from about 50 to about 99 weight percent of water, from about 1 to about 35 weight percent of carbohydrates, from about 0 to about 10 weight percent protein, and less than about 7 weight percent triglycerides.

5,011,702

PROCESS FOR PRODUCING TEXTURED PROTEIN FOOD MATERIALS

Kimie Tamaki, Tokyo; Tsuguaki Nishiya, Sayama, and Kiyoshi Tatsumi, Iruma, all of Japan, assignors to Snow Brand Milk Products Co., Ltd., Sapporo, Japan

Filed Jan. 17, 1990, Ser. No. 466,641

Int. Cl.[5] A23C *21/00*

U.S. Cl. 426—583 **5 Claims**

1. A process for producing textured protein food materials consisting essentially of the steps heating a solution containing whey protein as the major component, and freezing the solution in a stationary state to obtain textured protein food materials.

5,011,703

LOW FAT, LOW CHOLESTEROL RAW MEAT PRODUCT

Dallas V. Chapman, 200 Union Street, The Junction, Newcastle, N.S.W. 2300, Australia

Continuation of Ser. No. 257,570, Oct. 14, 1988, abandoned, which is a division of Ser. No. 46,886, Feb. 25, 1987, Pat. No. 4,778,682. This application Feb. 23, 1990, Ser. No. 483,651

Claims priority, application Australia, Jun. 28, 1985, PHO1263; Sep. 30, 1985, PHO2677

Int. Cl.[5] A23L *1/317*

U.S. Cl. 426—646 **26 Claims**

1. A comminuted, self-binding, raw meat product having reduced fat and cholesterol content, as compared with naturally occurring meat of food animals, prepared by a process comprising:

(a.) arranging raw meat from a slaughtered food animal, containing naturally-occurring fat and cholesterol, in a thin layer;

(b.) exposing said thin meat layer to ultraviolet light;

(c.) comminuting said exposed raw meat in contact with a chilled surface in the presence of iced water, edible acid, sodium chloride, and food phosphates for a period of time whereby a portion of said fat and cholesterol are separated from said comminuted meat and adhere to said chilled surface, and then

(d.) removing said comminuted meat from the fat and cholesterol adhering to said chilled surface.

5,011,704

FUDGE SAUCE AND FROZEN CONFECTION

Michael S. Smagula, Plainsboro, N.J., and Michael R. Tancredi, New Milford, Conn., assignors to Kraft General Foods, Inc., Glenview, Ill.

Filed Jan. 31, 1990, Ser. No. 473,269

Int. Cl.[5] A23G *3/00*

U.S. Cl. 426—660 **19 Claims**

1. A ready-to-eat dessert comprising a frozen confection and a fudge sauce flowable at freezer temperature, the fudge sauce being an aqueous mixture comprising mixed saccharides, modified food starch, fat and hydrophilic colloids, wherein the dynamic viscosity of the sauce is less than 5×10^4 poise at $-12°$ C. and is relatively stable in viscosity over a temperature range of from $-10°$ C. to $+10°$ C., the slope of the plot of temperature versus the logarithm to the base 10 of dynamic viscosity being within the range of from $-0.1/°$ C. to $-0.001/°$ C.

5,011,705

PLASMA PROCESSING METHOD

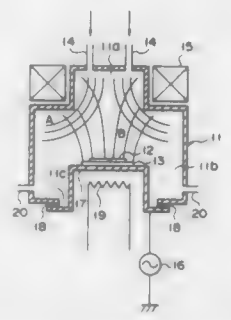
Susumu Tanaka, Hachioji, Japan, assignor to Tel Sagami Limited, Kanagawa, Japan

Filed Apr. 25, 1989, Ser. No. 342,900

Claims priority, application Japan, Apr. 28, 1988, 63-105924

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—39 **11 Claims**



1. A plasma processing method employed in a plasma processing apparatus wherein said apparatus comprises a susceptor with a surface for mounting an object to be treated within a treatment container, and means for forming an electric field within said treatment container such that said electric field creates lines of electric force which cross the mounting surface of the susceptor, said method comprising the steps of:

arranging an annular coil for forming a magnetic field wherein said magnetic field has magnetic lines of force within said treatment container, wherein said coil is positioned so the axis of said coil substantially crosses said mounting surface of said susceptor; and the magnetic lines of force are generated at a place remote from said susceptor;

introducing a cleaning gas into said treatment container; and

forming said electric field and said magnetic field within said treatment container so as to generate plasma from said cleaning gas for cleaning the inner space of said treatment container with said plasman.

5,011,706

METHOD OF FORMING COATINGS CONTAINING AMORPHOUS SILICON CARBIDE

Leo Tarhay, Sanford, and Kenneth G. Sharp, Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

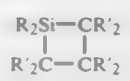
Filed Apr. 12, 1989, Ser. No. 336,927

Int. Cl.[5] B05D *3/06;* **C23C** *16/32, 16/50*

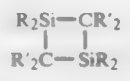
U.S. Cl. 427—39 **14 Claims**

1. A method of forming a continuous coating on a structure, the method comprising:

introducing sufficient quantity of a vapor into an evacuated chamber containing the structure to provide a vapor pressure in the chamber of 0.001 to 300 Torr, the vapor comprising a silicon-containing cyclobutane selected from the group consisting of silacyclobutanes represented by the formula



and 1,3-disilacyclobutanes represented by the formula



where, in both formulas, each R is independently selected from the group consisting of hydrogen, fluorine, and hydrocarbon radicals having 1 to 4 carbon atoms and each R' is independently selected from the group consisting of hydrogen and hydrocarbon radicals having 1 to 4 carbon atoms;

inducing decomposition of the silicon-containing cyclobutane in the chamber by effecting a plasma discharge within the chamber containing the structure.

5,011,707

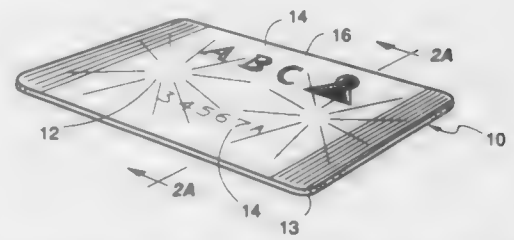
METHOD FOR APPLYING ADHESIVE TO A HOLOGRAM FILM

Russell W. Schell, 4612 Gregory St., McHenry, Ill. 60050, and Anthony R. Losacco, 1025 E. Maple St., Lombard, Ill. 60148

Division of Ser. No. 326,889, Mar. 21, 1989, Pat. No. 4,971,646. This application Oct. 2, 1990, Ser. No. 591,747

Int. Cl.[5] B05D *3/00*

U.S. Cl. 427—39 **11 Claims**



1. A method for applying an adhesive to a hologram film including the steps of: passing the hologram film between electrical corona treatment rollers; passing the hologram film past a primer or sizing station; and then applying melted adhesive to the hologram film.

5,011,708

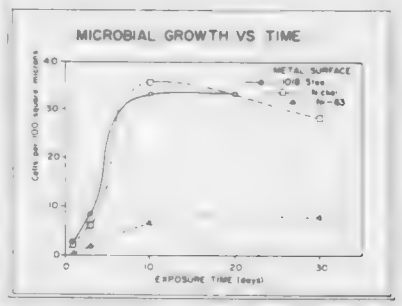
USE OF RADIOACTIVE NICKEL-63 TO INHIBIT MICROBIALLY INDUCED CORROSION

James L. Kelly, and Ralph J. Reda, both of Charlottesville, Va., assignors to University of Virginia Alumni Patents Foundation, Charlottesville, Va.

Filed Jun. 6, 1989, Ser. No. 362,000

Int. Cl.[5] C23C *14/00, 10/00, 26/00*

U.S. Cl. 427—443.1 **12 Claims**



1. A method for the prevention of microbially induced corrosion or fouling of a substrate, comprising the step of:

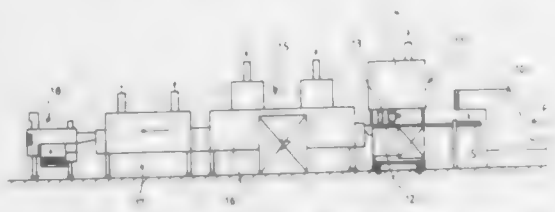
including in or coating on the substrate, prior to its exposure to an environment, an amount of nickel-63 effective to prevent the growth of microorganisms on the substrate; and thereafter exposing the substrate to the environment which contains sufficient microorganisms, and for a period of time which would be expected to cause corrosion or fouling of the substrate if not treated.

5,011,709

METHOD FOR MODIFYING THE SURFACE STATE OF MATERIALS, IN PARTICULAR OF THE PAPER AND/OR CARD TYPE

Romain Arbogast, Nevers, and Albert Gervie, Lozanne, both of France, assignors to Oris, Lyons, France

Filed Oct. 4, 1988, Ser. No. 253,431
Claims priority, application France, Oct. 5, 1987, 87 13733
Int. Cl.[5] B05D 3/06
U.S. Cl. 427—56.1 7 Claims



1. A method of modifying the surface state of a print medium, the method comprising the steps of:

simultaneously applying a plurality of printing fluids on the surface of the print medium in such a manner as to provide dusting zones on the medium suitable for retaining dusting powder particles which adhere exclusively on said zones, dusting a dusting powder onto said medium including said dusting zones;

removing excess dusting powder by means of a flow of air, and heating the medium to fix the printing fluids and the dusting powder particles retained thereby, said heating being equivalent to the use of radiation at a wavelength of 2.5-3.8 μ;

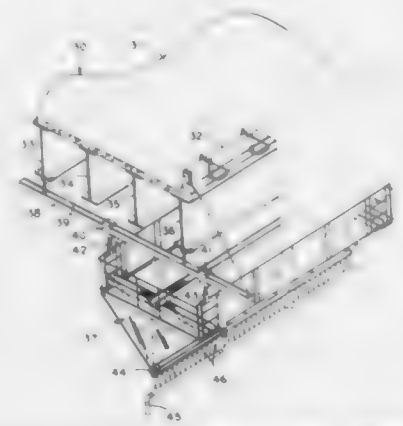
wherein said dusting powder is constituted by a substance which melts on heating and which is set after subsequent cooling, and wherein said heating step is performed in an atmosphere of hot air at a temperature of at least about 115° C. sufficient to melt said dusting powder and having a degree of humidity not less than 85% and sufficient to counter a large drop in the humidity of the medium under the effect of the heating, the temperature of the surface of said print medium not exceeding about 90° C. during said heating.

5,011,710

BRIDGE MAINTENANCE METHOD AND EQUIPMENT

John F. Harrison, 2579 Prairie Ave., Holland, Mich. 49424

Filed Nov. 10, 1988, Ser. No. 269,470
Int. Cl.[5] E04G 1/18, 1/00; B24C 9/00
U.S. Cl. 427—142 7 Claims



1. A method of removing and then applying surface material on structural components, comprising

supporting an enclosure adjacent certain of said components to include a surface of at least one of said components in an at least partially enclosed space,

suspending walkway means in said enclosed space, and processing said surface from said walkway means; and

establishing a conveyor conduit at the lower extremity of said enclosure, and applying a vacuum to said conduit to remove gaseous and particulate material from said enclosure and maintain reduced pressure within said enclosure.

5,011,711

METHOD FOR POST-TREATMENT OF ELECTROPLATED STEEL SHEETS FOR SOLDERING

Katsumi Kanda; Junichi Fujimoto; Masashi Ichishima; Takao Nishimura, and Yoshikazu Kondo, all of Yamaguchi, Japan, assignors to Toyo Kohan Co., Ltd., Chiyoda, Japan

Filed Jul. 13, 1989, Ser. No. 379,172
Int. Cl.[5] B05D 3/04, 3/10
U.S. Cl. 427—334 25 Claims

1. A method for post-treating plated steel sheet for soldering which comprises the steps of (1) coating said sheet with an aqueous post-treatment solution having a pH of from 3 to 10 and comprising at least one water-soluble or water-dispersible material selected from the group consisting of

a. condensates of fatty higher alcohols, alkylphenols or fatty acids with ethylene oxides,

b. polyethylene glycol-alkylamines,

c. esters of sorbitan and fatty acids,

d. surfactants prepared from polypropylene glycol and polyethylene glycol,

e. amides of fatty acid and diethanol amine,

f. esters of sucrose and fatty acids,

g. saponificates of lanolin alcohol or lanolin fatty acid,

h. abietic acid,

i. benzoic acid,

j. saturated fatty acids having 12 to 24 carbon atoms,

k. unsaturated fatty acids having 12 to 24 carbon atoms,

l. alcohols having 2 to 400 carbon atoms,

m. esters of fatty acids,

n. derivatives of benzotriazoles,

o. metalates, ammonium salts and amine salts of material h. through n.,

p. paraffin waxes, and

q. phosphoric esters,

said solution containing from 2 to 100 g/liter of any of said materials other than phosphoric esters, and/or from 5 to 200 g/liter of phosphoric esters, and further comprising from 2 to 100 g/liter of at least one water-soluble or water-dispersed organic fluoro compound of the formula

$$C_nF_{2n+1}R_1R_2$$

where

R_1 is methylene, ethylene or a direct bond;

R_2 (which is introduced to increase the water-solubility or water-dispersibility) is a radical of acrylic esters, methacrylic esters, phosphoric esters, or carboxylic esters, or an ethylene oxide adduct, and

n is an integer from 2 to 30,

in which up to one-third of the fluorine atoms can optionally be replaced by hydrogen atoms, and (2) drying said solution to obtain a coating thickness in the range of from 0.01 to 2 μm.

5,011,712

FORMALDEHYDE-FREE HEAT RESISTANT BINDERS FOR NONWOVENS

Ronald Pangrazi, Flemington, and James L. Walker, Whitehouse Station, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Filed Mar. 16, 1989, Ser. No. 324,071
Int. Cl.[5] B05D 3/02
U.S. Cl. 427—389.9 16 Claims

1. In a process for preparing a heat resistant nonwoven product comprising the steps of:

(a) impregnating a nonwoven web with an aqueous binder;

(b) removing excess binder;

(c) drying and curing the mat;

the improvement which comprises utilizing as the binder an emulsion polymer having a glass transition temperature (Tg) of +10° to +50° C., said polymer consisting essentially of 100 parts by weight of C_1-C_4 alkyl acrylate or methacrylate ester monomers or mixtures thereof or styrene/acrylate monomers, 0.5 to 5 parts of a hydroxyalkyl acrylate or methacrylate, 3 to 6 parts of methyl acrylamido glycolate methyl ether; and 0.1 to 3 parts of a multifunctional comonomer.

5,011,713

USE OF PERFLUOROPOLYETHER DERIVATIVES IN THE FORM OF AN AQUEOUS EMULSION FOR PROTECTING STONY MATERIALS FROM ATMOSPHERIC AGENTS

Daria Lenti, and Mario Visca, both of Alessandria, Italy, assignors to Ausimont S.R.L., Milan, Italy

Filed Apr. 7, 1989, Ser. No. 334,521
Claims priority, application Italy, Apr. 8, 1988, 20127 A/88
Int. Cl.[5] B05D 3/02
U.S. Cl. 427—393.6 12 Claims

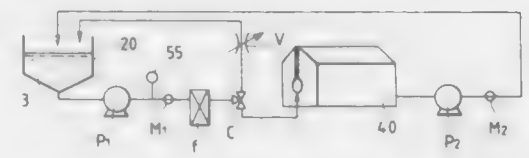
1. A process for protecting marble, stone, tiles, cement, gypsum, or wood and other analogous materials utilized in particular in the building industry from the deteriorating action of atmospheric agents and pollutants, by applying onto said materials a protective agent comprising a microemulsion of perfluoropolyethers containing functionalized groups and, optionally, peroxide bridges in the chain.

5,011,714

METHOD OF APPLYING A LIQUID TO A MOVING WEB

Shinsuke Takahashi; Norio Shibata, and Tsunehiko Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 491,991, Mar. 12, 1990. This application Jun. 21, 1990, Ser. No. 541,674
Claims priority, application Japan, Mar. 16, 1989, 1-62274
Int. Cl.[5] H01F 10/02; B05D 1/18
U.S. Cl. 427—434.3 3 Claims



1. A method for applying a liquid to a moving web with an extruder apparatus including an extruder, a first pump for pumping coating liquid from a storage tank to an inlet of said extruder, and a second pump for returning excess coating liquid from said extruder to said tank, comprising:

a first step of simultaneously pumping a first quantity of coating liquid from said tank with a first pump, returning a second quantity of coating solution from said first pump to said tank, and passing a third quantity of coating liquid from said first pump to said second pump, bypassing said extruder, thence returning said third quantity to said tank; and

a subsequent second step of simultaneously pumping said first quantity of coating liquid from said tank to said inlet of said extruder, coating said second quantity of coating liquid with said extruder on said moving web, and returning said third quantity of coating liquid from said extruder to said liquid storage tank with said second pump.

5,011,715

TWO STAGE METHOD FOR OPERATING AUTODEPOSITION BATH

Ronald W. Broadbent, Horsham, Pa., assignor to Henkel Corporation, Ambler, Pa.

Continuation of Ser. No. 287,197, Dec. 20, 1988, abandoned. This application Jun. 22, 1990, Ser. No. 542,674
Int. Cl.[5] C23C 26/00
U.S. Cl. 427—443.1 20 Claims

1. A method of operating an autodeposition bath, comprising the steps of:

(a) providing a bath comprising (i) stable, autodepositable polymer, (ii) acid in sufficient quantity to maintain the pH of the bath at not more than about 4, (iii) a soluble oxidant in sufficient quantity to maintain the redox potential of the bath at least about 425 mv more oxidizing than a silver-saturated silver chloride electrode, and (iv) a concentration of soluble iron less than a specific value;

(b) contacting the bath provided in step (a) with ferriferous active metal surface, so as to cause autodeposition of polymer thereon and to cause the concentration of soluble iron in the bath to increase, while simultaneously maintaining the redox potential of the bath at least about 425 mv more oxidizing than a silver-saturated silver chloride electrode by supplying additional soluble oxidant to the bath as needed, until the concentration of soluble iron in the bath exceeds said specific value; and

(c) contacting the bath, after completion of step (b), with additional amounts of ferriferous active metal surface, so as to cause autodeposition of polymer on the active metal surface from the bath while simultaneously maintaining the redox potential of the bath at a value not less than about 272 mv and not more than about 375 mv more oxidizing than a silver-saturated silver chloride electrode by supplying additional soluble oxidant to the bath as needed,

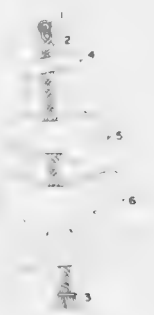
wherein the average rate of increase of soluble iron in the bath, per unit area of active metal coated, during step (c) of the process is less than during step (b).

5,011,716

HOLDER FOR BARRETTES

Diane Allen, 373 Coolidge Ave., Oceanside, N.Y. 11572

Filed Apr. 30, 1990, Ser. No. 516,475
Int. Cl.[5] A45D 8/34
U.S. Cl. 428—4 2 Claims



1. A holder for barrettes, comprising a mounting ring, adapted to be mounted on a wall,

a length of braided hair looped through the mounting ring and

an elastic band, mounted on the end of said braided hair, to

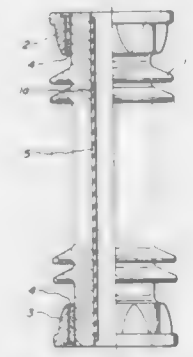
hold the loose ends together wherein a number of barrettes are mounted on the length of braided hair for easy inspection and selection.

5,011,717

EXPLOSION PREVENTING PORCELAIN HOLLOW INSULATOR

Tsutomu Moriya, Chita; Yasunori Matsuura, Kasugai, and Takao Nakamura, Iwakura, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Jul. 5, 1989, Ser. No. 375,478
Claims priority, application Japan, Jul. 7, 1988, 63-170291
Int. Cl.[5] H01B *17/00*
U.S. Cl. 428—34.4 3 Claims



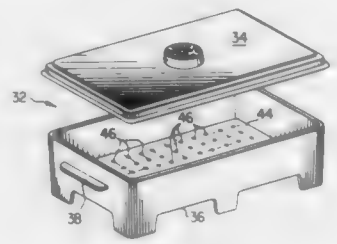
1. A hollow porcelain insulator comprising an elastic insulating layer adhered to the inner wall surface thereof, said elastic insulating layer having a tensile strength of at least 150 kg/cm^2 at room temperature and a thickness of at least 2 mm.

5,011,718

METHOD AND APPARATUS FOR REDUCING RESIDUAL LEVELS OF ETHYLENE OXIDE IN REPEATEDLY STERILIZED POLYMERIC DEVICES

William H. Patterson, Jacksonville, Tex., assignor to Monarch Products, Inc., Jacksonville, Tex.

Filed May 4, 1988, Ser. No. 189,972
Int. Cl.[5] A61L *2/00*
U.S. Cl. 428—35.7 7 Claims



1. A medical device capable of being repeatedly sterilized with ethylene oxide without warping or melting and without build-up of residual levels of ethylene oxide therein, comprising:

a polymeric base having generally rigid sides dimensioned for receiving medical instruments and apertures for allowing ethylene oxide to pass through said polymeric base;

a polymeric lid for covering said polymeric base to define a polymeric container for medical instruments; said lid having an aperture therein to allow passage of ethylene oxide, wherein ethylene oxide comes in contact with both the exterior and interior surfaces of said container; and

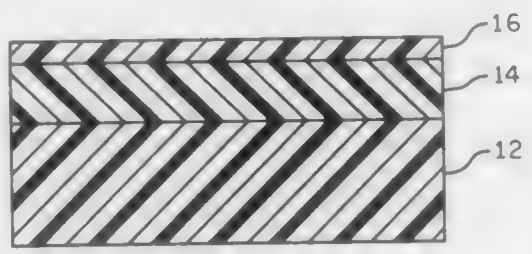
a coating of dense material formed over the interior and exterior surfaces of said polymeric base and said polymeric lid, said coating having the characteristic of inhibiting penetration of the interior and exterior surfaces of said polymeric base and said polymeric lid by the ethylene oxide, thereby reducing build-up of residual levels of the ethylene oxide on the interior and exterior surfaces of said polymeric base and said polymeric lid.

5,011,719

POLYMERIC COMPOSITIONS AND FILMS

Russell P. Gehrke, Neenah; Richard E. Johnson, Jr., Appleton, and Yong J. Kim, Neenah, all of Wis., assignors to American National Can Company, Chicago, Ill.

Continuation-in-part of Ser. No. 802,910, Nov. 29, 1985, Pat. No. 4,764,404. This application Jul. 27, 1987, Ser. No. 78,122
Int. Cl.[5] B29D *22/00*
U.S. Cl. 428—35.7 82 Claims



1. A multiple layer film, comprising:

(a) a first layer, the composition of said first layer being a blend of (i) as a first component, 40% to 80% by weight of a first polypropylene, as a copolymer containing 1 to 8 weight percent random moieties of ethylene, (ii) as a second component, 5% to 50% by weight of a first ethylene butene-1 copolymer containing 85 to 95 mole percent ethylene, and (iii) a third component providing elastomeric properties and being selected from the group consisting of ethylene propylene copolymer, polybutylene, polyisobutylene, ethylene propylene diene monomer terpolymer, styrene butadiene styrene copolymer, styrene ethylene butylene styrene copolymer, styrene isoprene styrene copolymer, polybutene-1, and isobutylene isoprene copolymer; and

(b) a second layer, the composition of said second layer being a blend of (i) a second polypropylene polymer containing up to 7 weight percent random moieties of ethylene and (ii) 5% to 50% by weight of a second ethylene butene-1 copolymer containing 85 to 95 mole percent ethylene,

wherein the random moiety ethylene content in said polypropylene in said second layer is at least 1 weight percent less than the random moiety ethylene content in said polypropylene in said first layer

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5,011,720

MULTILAYER CONTAINERS AND METHOD OF MAKING SAME

Saleh A. Jabarin, Holland, Ohio, assignor to Owens-Illinois Plastic Products Inc., Toledo, Ohio

Filed Jul. 10, 1989, Ser. No. 377,392
Int. Cl.[5] B65D *25/00*
U.S. Cl. 428—36.6 10 Claims

1. A container having a wall with at least two layers bonded together without a separate adhesive layer, one layer being a support layer that is a blend of a polyolefin and a polymer having a polar group that is a maleic anhydride functionalized block copolymer of styrene and ethylene/butylene, and the other layer being a barrier layer that is a polyamide or an ethylene/vinyl alcohol copolymer.

5,011,721

CHEMORHEOLOGICALLY TAILORED MATRIX RESIN FORMULATIONS AND THEIR USE IN MAKING PRE-IMPREGNATED FIBERS AND IN FABRICATING COMPOSITE PARTS

Owen H. Decker, Okesa, Okla., and Neal A. Mumford, Brigham, Utah, assignors to Thiokol Corporation, Ogden, Utah

Filed Oct. 16, 1989, Ser. No. 422,989
Int. Cl.[5] C08J *5/24*; C08L *63/00*
U.S. Cl. 428—36.9 36 Claims

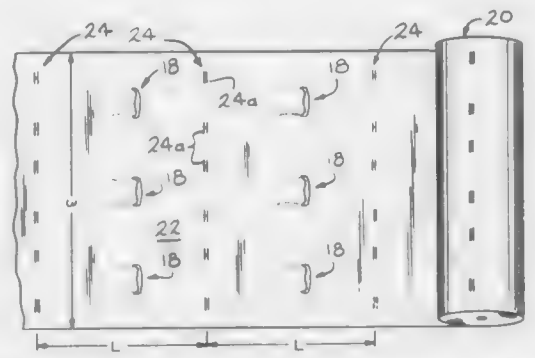
1. A chemorheologically viscosity tailored matrix resin formulation for use in forming prepregs and filament wound composite articles and having a specified viscosity profile comprising a curable epoxy matrix resin and an effective amount of a reactive resin curing agent reactive at room temperature and a latent resin curing agent substantially non-reactive at room temperature but activated upon heating or radiation such that the matrix resin formulation is adapted upon formulation to have a viscosity sufficiently low enough to enable the matrix resin to impregnate a filament or fiber at room temperature without the necessity for the application of heat or solvent and which, upon standing at room temperature after impregnation into the fiber or filament to form a prepreg composition, rises in viscosity to a viscosity level sufficiently high to prevent excessive bleed of the matrix resin from winding tension upon spooling of the prepreg yet of sufficiently low enough viscosity to allow the prepreg to tack and drape in order to nestle and set during winding of a filament wound composite article from said prepreg after room temperature storage of the spooled prepreg material, and which matrix resin in the prepreg experiences a reduction in viscosity upon heating the prepreg composition, to a viscosity minimum sufficient low to allow the matrix resin in the heated prepreg to flow and substantially eliminate the formation of voids in the winding of a composite article from said prepreg yet not so low as to permit bleeding of the matrix resin from the prepreg and with the continued application of heat to the filament wound composite article to permit the matrix resin in the filament wound composite article to cure to a hardened or gelled state.

5,011,722

RECTANGULAR PAPERBOARD PACKAGE AND METHOD OF MAKING SAME

Yun H. Chung, Toledo, and Dennis E. Chung, Sylvania, both of Ohio, assignors to Chung Packaging Company, Perrysburg, Ohio

Continuation-in-part of Ser. No. 195,367, May 13, 1988, Pat. No. 4,813,545, which is a continuation of Ser. No. 887,562, Jul. 17, 1986, abandoned. This application Mar. 21, 1989, Ser. No. 326,380
Int. Cl.[5] B32B *3/10*
U.S. Cl. 428—43 29 Claims



1. A longitudinally extending sheet of paperboard material for use in constructing a plurality of generally rectangular paperboard packages, said sheet comprising:

a plurality of uniformly longitudinally spaced indexing means;

each indexing means including at least one precut peg receiving portion;

a plurality of longitudinally spaced apart tear line means, with a separate tear line means located between each longitudinally successive pair of indexing means, each tear line means defining an openable portion of said sheet and being spaced from each of said indexing means.

5,011,723

OPTICAL INFORMATION RECORDING MEDIUM

Makoto Harigaya, Hiratsuka; Yukio Ide, Mishima; Katsuyuki Yamada, Yokohama, and Hiroko Iwasaki, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 20, 1989, Ser. No. 382,186
Claims priority, application Japan, Jul. 20, 1988, 63-179186; Mar. 24, 1989, 1-70585; Jun. 6, 1989, 1-142086
Int. Cl.[5] B32B *3/02*
U.S. Cl. 428—64 9 Claims

7. The phase-change type optical information recording medium comprising a substrate and a recording layer formed thereon, which recording layer comprises a phase-transition type compound consisting of 6 elements, having a chalcopyrite structure, represented by the following formula (I):

$$X \cdot Y \cdot Z_2 \quad (I)$$

wherein X represents one or two elements selected from the group consisting of elements belonging to the groups Ib and IIb in a periodic table; Y represents one or two elements selected from the group consisting of elements belonging to the groups IIIb, IVb, and Vb in a periodic table; and Z represents one or two elements selected from the group consisting of elements belonging to the groups Vb and VIb in a periodic table, which combination is selected from the group consisting of:

$(I_{1-x}I'_x)\text{-}(III_{1-y}III'_y)\text{-}(VI_{1-z}VI'_z)_2$,
$(I_{1-x}I'_x)\text{-}(III_{1-y}V_y)\text{-}(VI_{1-z}VI'_z)_2$,
$(II_{1-x}II'_x)\text{-}(IV_{1-y}IV'_y)\text{-}(V_{1-z}V'_z)_2$,
$(II_{1-x}II_x)\text{-}(III_{1-y}III'_y)\text{-}(VI_{1-z}VI'_z)_2$,
$(I_{1-x}II_x)\text{-}(IV_{1-y}IV'_y)\text{-}(V_{1-z}V'_z)_2$,
$(I_{1-x}I_x)\text{-}(III_{1-y}IV_y)\text{-}(VI_{1-z}VI'_z)_2$,
$(II_{1-x}I'_x)\text{-}(III_{1-y}III'_y)\text{-}(V_{1-z}VI_z)_2$,
$(II_{1-x}II'_x)\text{-}(III_{1-y}IV_y)\text{-}(V_{1-z}VI_z)_2$,
$(II_{1-x}II'_x)\text{-}(IV_{1-y}IV_y)\text{-}(V_{1-z}VI_z)_2$,
$(II_{1-x}II'_x)\text{-}(III_{1-y}IV_y)\text{-}(V_{1-z}VI_2)_2$, and
$(I_{1-x}II_x)\text{-}(III_{1-y}IV_y)\text{-}(V_{1-z}VI_z)_2$;

wherein I, II, III, VI, V and VI each represents an element of the group Ib, IIb, IIIb, VIb, Vb and VIb, respectively in the periodic table; I', II', III', IV', V' and VI' each represents a different element from the I, II, III, IV, V and VI in the same group; and $0<x<1$, $0<y<1$, and $0<z<1$.

5,011,724

SELF-ADHESIVE COVER FILM

Jürgen-Albin Wille, Hamburg, Fed. Rep. of Germany, assignor to Beiersdorf Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Jun. 2, 1989, Ser. No. 360,512
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1988, 3822186
Int. Cl.[5] B32B *7/14*, *7/12*, *3/04*
U.S. Cl. 428—130 15 Claims

1. A sheet on one face having spaced parallel stripes of adhesive and adhesive-free stripes, the sheet being folded laterally to form longitudinal pleats, the inside of each pleat being substantially adhesive-free, whereby the sheet in folded form is covered on one face with adhesive but can be laterally extended to form a wider sheet with alternating adhesive-coated and adhesive-free stripes.

5,011,725

SUBSTRATES WITH DENSE METAL VIAS PRODUCED AS CO-SINTERED AND POROUS BACK-FILLED VIAS

Brian C. Foster, Sutton, Mass., assignor to Ceramics Process Systems Corp., Milford, Mass.

Continuation-in-part of Ser. No. 53,323, May 22, 1987, and Ser. No. 207,394, Jun. 16, 1988. This application Mar. 6, 1989, Ser. No. 319,625

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—137 20 Claims



1. A package device comprising a substrate and a via in the substrate, the via having a refractory solids composition comprising 80–97% refractory metal, 2–15% alumina, 0–5% sintering aid, and 0–5% bonding additive, and being essentially glass-free.

5,011,726

LOW TEMPERATURE SEALING ADHESIVE COMPOSITION

Adem Chich, Kearny; Steven S. Lalwani, Upper Montclair; Steven C. Bettoli; Louis L. Grube, both of Bound Brook, and Alfredo A. Bondoc, South Bound Brook, all of N.J., assignors to GAF Building Materials Corporation, Wayne, N.J.

Division of Ser. No. 292,408, Dec. 30, 1988, Pat. No. 4,923,913.

This application Feb. 21, 1990, Ser. No. 482,522

Int. Cl.[5] B32B *11/00, 25/14*

U.S. Cl. 428—141 12 Claims

1. In a roofing covering having an adhesive composition applied thereto, the improvement which comprises the adhesive composition comprising

(a) a hard asphaltic bitumen fraction having a penetration number at 77° F. of from 0 to 30 dmm and a softening point of from about 150° to 220° F.; and

(b) an elastomeric composition comprising a thermoplastic elastomer and a plasticizer, said plasticizer having a flash-point equal to or greater than 250° F. and a boiling point equal to or greater than 250° F. and being present in an amount from about 1 to 80 percent by weight of the elastomeric composition;

wherein the amount of plasticizer in the adhesive composition is such that the mixture has a penetration number of from 30 to 100 dmm at 130° F. and a softening point of 140° to 230° F. and wherein the amount of bitumen fraction is from about 99 to 80 percent by weight and the amount of elastomeric composition is from abut 1 to 20 percent by weight, based on the total amount of bitumen and elastomeric composition.

5,011,727

POLYIMIDE RESIN LAMINATE IMPROVED IN SLIDABILITY

Masaro Kido, and Tetsuo Yoshioka, both of Ohtsu, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 11, 1989, Ser. No. 406,387

Claims priority, application Japan, Sep. 9, 1988, 63-227145

Int. Cl.[5] B32B *33/00*

U.S. Cl. 428—141 7 Claims

1. A polyimide resin laminate improved in slidability comprising a polyimide resin film and at least one activated fluorine resin film, wherein undulations of 0.03–5 μm in height are formed on at least the outer surface of the aforementioned at least one activated fluorine resin film facing outward from the polyimide resin film side.

5,011,728

MOLDING METHOD FOR MANUFACTURE OF A RESIN MOLDED PART

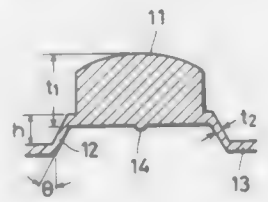
Eiji Imae, and Yasuo Imura, both of Osaka, Japan, assignors to Suehiro Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 258,056, Oct. 14, 1988, abandoned. This application Jan. 17, 1990, Ser. No. 465,539

Claims priority, application Japan, Oct. 8, 1986, 61-239798

Int. Cl.[5] B32B *3/00;* H01H *13/06*

U.S. Cl. 428—156 4 Claims



1. A resin molded part comprising:

a base;

one or more flexible and movable push-button-shaped thick projections formed integrally with said base; and

thin wall portions continued from the peripheral edges of the button-shaped thick projections to said base, said thin wall portions being 0.1 to 0.2 mm in thickness and having an inclination of 40–60°.

5,011,729

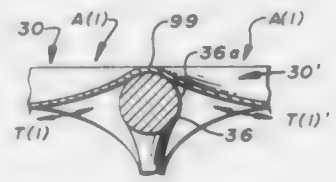
VACUUM INSULATED PANELS WITH CONCAVE SURFACES ON THE SURFACE LAYERS

Ian R. McAllister, 2040 West 12th Avenue, Vancouver, B.C., Canada V6J-2G2

Filed Nov. 15, 1989, Ser. No. 436,824

Int. Cl.[5] B32B *1/04;* B65D *90/06*

U.S. Cl. 428—167 21 Claims



2. An insulating panel, comprising:

(a) an outer, continuous membrane forming a top surface and a bottom surface on said panel;

(b) an internal rigid frame enclosed within said continuous membrane, said rigid frame supporting said top surface and said bottom surface of said panel;

(c) a vacuum space enclosed within said continuous membrane;

(d) a plurality of biaxially curved, concave surfaces formed on said continuous membrane and located on said top surface and said bottom surface of said panel, each said biaxially curved, concave surface being freely supported by said rigid frame and being loaded in tension when exposed to ambient atmospheric pressure, each said biaxially curved, concave surface having selected dimensions, and transverse and longitudinal curvatures such that the developed tensile stresses on adjacent said biaxially curved, concave surfaces are substantially equal, and;

(e) a plurality of arcuate paths formed on said continuous membrane between adjacent said biaxially curved, concave surfaces, whereby differential tensile stresses on adjacent said biaxially curved concave surfaces may be offset.

5,011,730

BULK POLYMERIZED CYCLOOLEFIN CIRCUIT BOARDS

Lindwood P. Tenney, Birmingham, Ala.; David J. Smith, Sheffield Lake, Ohio; Dennis J. Janda, Parma, Ohio, and Dennis A. Barnes, Medina, Ohio, assignors to B. F. Goodrich, Akron, Ohio

Continuation of Ser. No. 85,489, Aug. 14, 1987, abandoned. This application Apr. 11, 1989, Ser. No. 336,373

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—209 38 Claims

1. A dielectric support for electronic components comprising a crosslinked copolymer having a Tg (Hdt) above about 100° C. and a dielectric constant value in the range from 2.3 MHz to 3.2 MHz, wherein said crosslinked copolymer is made by the bulk polymerization of polymerizable monomer,

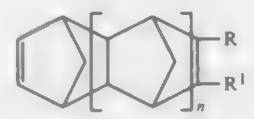
wherein from about 80 weight percent to about 100 weight percent of said polymerizable monomer is composed of a first monomer and other monomer,

wherein said other monomer is different from said first monomer,

wherein said first monomer and said other monomer are selected from monomers which conform to Formulas II and III:



II



III

where n is 1-10, R and R^1 are (1) independently selected from hydrogen, alkyl groups of 1 to 12 carbon atoms, alkylene groups of 2 to 12 carbon atoms, cycloalkyl groups of 6 to 20 carbon atoms and aryl groups of 6 to 20 carbon atoms or (2) are combined together to form saturated and unsaturated cyclic groups containing 4–7 carbon atoms with the two ring carbon atoms connected thereto and

wherein from at least about 5 weight percent of said polymerizable monomer is of Formulas II and III wherein (1) R or R^1 provide mono-unsaturated alkylene groups having 2 to 4 carbon atoms and cycloalkylene groups having 6–20 carbon atoms or (2) R and R^1 together form mono-unsaturated cyclic groups of 4 to 7 carbon atoms with the two ring carbon atoms connected thereto.

5,011,731

SHEET MATERIAL

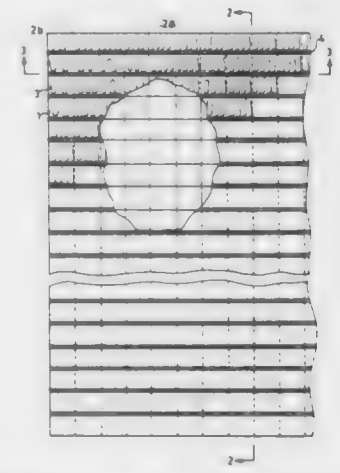
Haruka Nakamori, and Hiroshi Ito, both of Tokyo, Japan, assignors to Daiki Co., Ltd., Tokyo, Japan

Filed Jul. 28, 1989, Ser. No. 387,514

Claims priority, application Japan, Aug. 2, 1988, 63-102010[U]; Sep. 13, 1988, 63-227373; Nov. 10, 1988, 63-282602; Nov. 18, 1988; 63-292027; Nov. 18, 1988, 63-292028; Nov. 18, 1988, 63-292029

Int. Cl.[5] D03D *13/00*

U.S. Cl. 428—222 13 Claims



1. A sheet material comprising a base sheet formed of at least one sheet of a paper and a plurality of threads embedded within the base sheet, interposed between the sheets of paper or bonded to the surface of the base sheet.

5,011,732

GLASS CERAMIC SUBSTRATE HAVING ELECTRICALLY CONDUCTIVE FILM

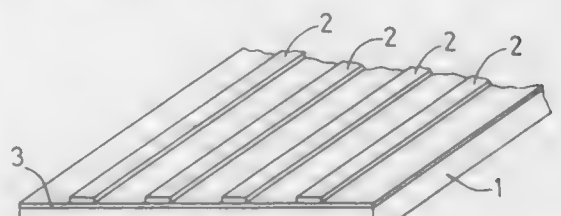
Yukihisa Takeuchi; Masayasu Ishikawa, both of Nagoya, and Koji Kimura, Komaki, all of Japan, assignors to NGK Insulators, Ltd., Aichi, Japan

Filed Jul. 17, 1989, Ser. No. 380,318

Claims priority, application Japan, Jul. 26, 1988, 63-185760

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—209 13 Claims



1. A glass ceramic substrate containing mica, which has an electrically conductive film formed thereon, comprising:

a bonding layer made of a material including at least silicon oxide, which is formed on a portion of at least one of the surfaces of said glass ceramic substrate containing mica; and

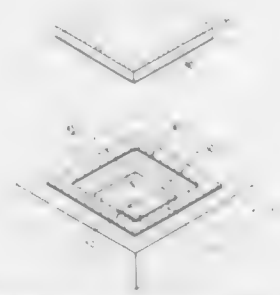
said electrically conductive film being formed on said bonding layer, and having a major component consisting of at least one element selected from the group consisting of aluminum, tungsten, molybdenum, titanium, tantalum and chromium.

5,011,733
PROCESS FOR COATING METALLIC SUBSTRATE
Tadayoshi Hiraki; Osamu Iwase; Hirosi Oosumimoto; Shinji Sugiura; Ichiro Tabushi; Masafumi Kume; Takashi Udagawa; Komaharu Matsui, and Yasuhiro Fujii, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan
Continuation of Ser. No. 50,480, May 18, 1987, abandoned, which is a division of Ser. No. 907,212, Sep. 12, 1986, abandoned. This application Jan. 9, 1989, Ser. No. 298,343
Claims priority, application Japan, Sep. 17, 1985, 60-205115
Int. Cl.[5] C25D *13/04, 13/10, 13/12;* B32B *27/38*
U.S. Cl. 428—336 20 Claims

1. A process for coating a metallic substrate, which comprises applying on a metallic substrate an electrocoating paint, applying thereon a barrier coat comprising a film-forming thermoplastic resin other than a modified polyolefin resin and capable of forming a barrier coat film having a static glass transition temperature of −30° to −60° C. and ann elongation at break of 300 to 800% in an atmosphere of −20° C., said thermoplastic resin being at least one film-forming thermoplastic resin selected from the group consisting of styrene-butadiene copolymers, polybutadienes, acrylonitrile-butadiene copolymers, polybutenes, acrylic resins, natural rubber, polychloroprenes, methyl methacrylate-butadiene copolymers and polyvinylidene chloridesa and then applying thereon a top coating paint, the film thickness of the barrier coat being 1 to 20 μ in terms of the thickness of the dried film, and the acrylic resins being copolymers of at least one monomer selected from the group consisting of acrylic esters and methacrylic esters, each of homopolymers of the acrylic esters and the methacrylic esters having a static glass transition temperature of 0° C. or lower, and the amount of these esters whose homopolymers have a static glass transition temperature of −40° C. or lower constituting 60% by weight or more of the total monomer mixture.

20. The metallic substrate coated according to a process of claim 1.

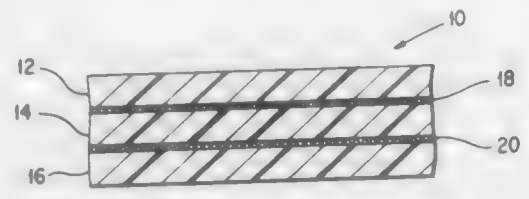
5,011,734
CERAMIC SUBSTRATE
Kazuo Kondo, and Asao Morikawa, both of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan
Filed Dec. 28, 1988, Ser. No. 290,941
Claims priority, application Japan, Dec. 28, 1987, 62-201397
Int. Cl.[5] B32B *15/04*
U.S. Cl. 428—336 5 Claims



1. A ceramic substrate which comprises a fired ceramic sheet that has on its surface a metallized layer made of Au or Cu, or Au-Pt, Au-Pd, Cu-Pt or Cu-Pd alloy that is overlaid with a plating layer consisting essentially of Ni.

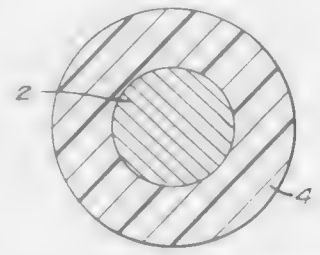
2. A ceramic substrate according to claim 1 wherein said Ni plating layer has a thickness of 2 to 4 μm.

5,011,735
HIGHLY FORMABLE LAMINATES
Henry G. Schirmer, Spartanburg, S.C., assignor to W. R. Grace & CO., Duncan, S.C.
Division of Ser. No. 109,900, Oct. 19, 1987, Pat. No. 4,853,287. This application Apr. 7, 1989, Ser. No. 335,070
Int. Cl.[5] C09J *7/02*
U.S. Cl. 428—349 5 Claims



1. A thermoplastic laminate comprising:
(a) a first film, disposed as one surface of the laminate, comprising an outer layer of propylene homopolymer or copolymer, and an inner layer of ethylene-vinyl acetate copolymer.
(b) a second film comprising outer layers of ethylene-vinyl acetate copolymer, and a core layer between and bonded to said outer layers, of vinylidene chloride copolymer;
(c) a third film, disposed as another surface of the laminate, comprising ethylene polymer or copolymer; and
(d) at least one of said first, second, and third films being a hot blown film having a layer of high molecular weight material

5,011,736
CROSSLINKABLE FLAME RETARDANT COMPOSITION OF POLYPHENYLENE ETHER AND ELASTOMERS
Visvaldis Abolins, Delmar, N.Y.; Joseph E. Betts, Westport, Conn.; Fred F. Holub, Schenectady, and Gim F. Lee, Jr., Albany, both of N.Y., assignors to General Electric Co., Selkirk, N.Y.
Division of Ser. No. 847,201, Apr. 2, 1986, Pat. No. 4,900,768, which is a continuation of Ser. No. 525,785, Aug. 23, 1983, abandoned. This application Dec. 29, 1989, Ser. No. 458,854
Int. Cl.[5] C08K *5/523, 5/51;* B32B *5/16*
U.S. Cl. 428—407 33 Claims

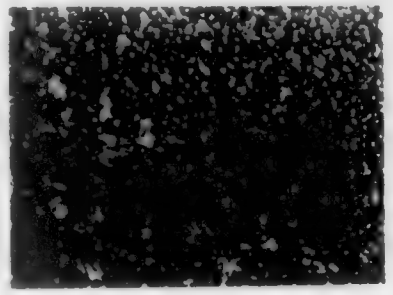


1. An electrically conductive article, comprising a metallic conductor, at least a portion of the surface of which is covered with an electrically insulating layer of a heat or radiation curable flame retardant composition comprising an admixture of
(a) a polyphenylene ether resin;
(b) an alkenyl aromatic elastomer;
(c) an amount of an aromatic phosphate flame retardant agent effective to improve the flame retardancy of (a) and (b); and
(d) an amount of a crosslinking agent effective to cause crosslinking between (a) and (b).

5,011,737
GLOSSY FINISH FIBER REINFORCED MOLDED PRODUCT AND PROCESSES OF CONSTRUCTION
Wayne W. Smith, Harrisburg, Pa., and Gerald W. Miller, Cincinnati, Ohio, assignors to C. H. Masland & Sons, Carlisle, Pa.
Division of Ser. No. 314,896, Feb. 24, 1989, Pat. No. 4,948,661, which is a continuation-in-part of Ser. No. 71,969, Jul. 10, 1987, Pat. No. 4,950,439. This application Jun. 1, 1990, Ser. No. 531,693
Int. Cl.[5] B29C *51/02, 51/14;* B32B *31/20, 33/00*
U.S. Cl. 428—409 3 Claims

1. A fibrous reinforced thermoplastic composite having the surface appearance value recorded at 20° and 60° gloss angle measurement for ASTM standard D-523 exceeding 10 and 50, respectively, and including a nucleating agent for enhancing the gloss thereof comprising a heat and pressure consolidated non-needled, non-woven web which prior to consolidation comprised a mixture of reinforcing fibers and matrix-providing thermoplastic fibers and to which prior to consolidation no liquid binder had been applied.

5,011,738
PROCEDURE FOR THE APPLICATION OF A PTFE-BASED SELF-LUBRICATING COATING ON A BEARING ELEMENT, AND THE BEARINGS THUS OBTAINED
Claude Saclier, Seynod-Annecy, France, assignor to S.N.R. Roulements, Annecy Cedex, France
Filed Jul. 3, 1989, Ser. No. 374,780
Claims priority, application France, Jul. 1, 1988, 88 08913
Int. Cl.[5] B32B *27/00;* B05D *3/00*
U.S. Cl. 428—422 8 Claims



1. A process for the application of a PTFE-based, self-lubricating coating on a steel bearing element whose nickel and chrome contents are less than 5%, comprising:
(i) subjecting the element to a preparatory treatment in which crystal nuclei are formed;
(ii) subjecting the element subsequently to a phosphatization treatment producing a microcrystalline layer composed of an iron and manganese compound; and
(iii) coating the element with PTFE between said crystals.

5,011,739
MOISTURE STABLE BIASABLE TRANSFER MEMBERS AND METHOD FOR MAKING SAME
Paul L. Nielsen, and John C. Wilson, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 2, 1989, Ser. No. 416,100
Int. Cl.[5] G03G *15/06*
U.S. Cl. 428—425.8 29 Claims

1. A member for electrically cooperating with a photoconductive surface to attract charged toner particles from the surface towards the member comprising a conductive substrate capable of supporting a uniform bias potential thereon and at least one coating comprising a resilient crosslinked elastomeric polyurethane formed by reacting:
(a) a polyisocyanate prepolymer comprising the reaction product of:
(i) an aliphatic polyisocyanate, and
(ii) a polyether polyol selected from the group consisting of a polyalkylene glycol having 2 to 3 carbon atoms in the alkylene group; and
(b) a hardening mixture comprising:
(i) a polyether polyol selected from the group consisting of a polyalkylene glycol having 2 or 3 carbon atoms in the alkylene group and,
(ii) as a conductivity control agent for controlling the resistivity of the elastomeric polyurethane, from 0.01 to 3.0 weight percent based on the total weight of (b) of a complex of an oligoether glycol selected from the group consisting of di-tri- and tetraethylene glycol with an ionizable alkali metal salt selected from the group consisting of sodium iodide, lithium iodide and sodium thiocyanate,
the coating being in electrical contact with the conductive substrate and having an electrical resistivity such that the coating is capable of transmitting a bias potential from the substrate to the outer periphery of the coating.

5,011,740
COATING MATERIALS CURING AT ROOM TEMPERATURE
Johan Rietberg, and Johannes C. Van Roon, both of Zwolle, Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands
Division of Ser. No. 274,770, Nov. 23, 1988, Pat. No. 4,970,096. This application Sep. 4, 1990, Ser. No. 577,110
Claims priority, application Netherlands, Nov. 28, 1987, 8702858
Int. Cl.[5] B32B *27/00*
U.S. Cl. 428—500 9 Claims

9. Coated substrate obtained by a process comprising the steps of
applying a resin composition coating to a substrate wherein said coating includes
(I) 20–85 parts by weight of an alkoxy group containing polymer consisting of
(a) 1–40 wt. % (C_1–C_6) alkoxy methyl ether or acryl- or methacryl-amide
(b) 20–85wt. % (C_1–C_{12}) alkyl esters of acrylic or methacrylic acid
(c) 0–40 wt. % hydroxyalkyl (meth)acrylate, acrylic or methacrylic acid, acryl- or methacrylamide or mixtures thereof
(d) 0–50 wt. % vinylaromatic compound and
(e) 0–40 wt. % other monomers
(2) 0–80 parts by weight of hydroxy, carboxy or amide containing polymer and
(3) 15–60 parts by weight of organic solvents; and curing said coating at a temperature between 5° and 60° C. in the presence of an acid catalyst.

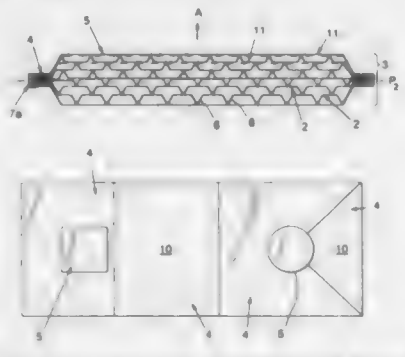
5,011,741
LINERBOARD CONTAINING RECYCLED NEWSPRINT
Roger P. Hoffman, Green Bay, Wis., assignor to Green Bay Packaging, Inc., Green Bay, Wis.
Filed Mar. 20, 1990, Ser. No. 496,814
Int. Cl.[5] B30B *21/06*
U.S. Cl. 428—503.1 11 Claims

1. A linerboard comprising a first ply of cellulosic fibers, a second ply bonded to said first ply and composed substantially solely of deinked oil newsprint, said newsprint is substantially free of fines and fibers having a length less than 50 microns and a dry strength additive impregnated in said second ply, said additive characterized by the ability to increase the internal strength of said second ply and improve the bond between said plies.

5,011,742
ARTICLE FOR CONTROLLING THE OXYGEN CONTENT IN TANTALUM MATERIAL
James A. Fife, Box 151, R.D. 2, Douglassville, Pa. 19518, and Robert A. Hard, Box 196, R.D. 1, Oley, Pa. 19547
Continuation of Ser. No. 412,419, Sep. 26, 1989, Pat. No. 4,960,471. This application Jul. 2, 1990, Ser. No. 547,729
Int. Cl.[5] B22F 7/04
U.S. Cl. 428—558 13 Claims

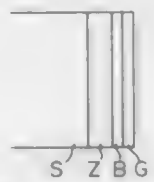
1. An article for controlling the oxygen content in tantalum material comprising a getter composite material of a getter metal encapsulated in tantalum.

5,011,743
PAD INCLUDING HEAT SINK AND THERMAL INSULATION AREAS
William M. Sheridan, St. Louis, and Raymond E. Ragland, Union, both of Mo., assignors to ATD Corporation, St. Louis, Mo.
Filed Jan. 22, 1990, Ser. No. 468,425
Int. Cl.[5] B32B 15/00
U.S. Cl. 428—600 31 Claims



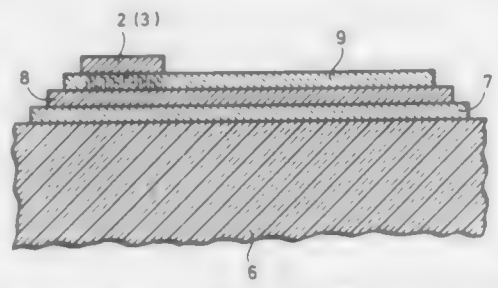
1. A pad including thermal insulation and heat sink areas, comprising:
a plurality of layers of metal foil forming a stack wherein said layers are arranged one above another in a vertical direction, said stack including at least one heat sink area and at least one thermal insulating area adjacent to said heat sink area, said layers providing better heat condition in said vertical direction at said heat sink area than at said insulating area, at least two of said layers including a plurality of embossments therein separating said layers in said insulating area so as to provide gaps therebetween, one of said layers in said insulating area being adjacent to and not metallurgically bonded to another one of said layers, said heat sink area comprising a compressed portion of said stack.

5,011,744
BLACK SURFACE TREATED STEEL SHEET
Katushi Saito; Yoshio Shindou; Toshimichi Murata; Fumio Yamazaki, and Takashi Shimazu, all c/o Kimitsu Factory of Nippon Steel Corporation, of 1, Kimitsu, Kimitsu-shi, Japan
Division of Ser. No. 84,727, Aug. 12, 1987, Pat. No. 4,861,441. This application May 11, 1989, Ser. No. 350,436
Claims priority, application Japan, Aug. 18, 1986, 61-192613; Sep. 6, 1986, 61-208863; Dec. 16, 1986, 61-299200
Int. Cl.[5] B32B 15/04
U.S. Cl. 428—623 10 Claims



1. A black-colored zinc composite-plated steel sheet which comprises a steel sheet or a plated steel sheet, a colored composite-plating film produced by cathodic electrolyzation, comprising metallic zinc or a zinc alloy and an oxide(s) or hydrated oxide(s) of a coloring metal (Me) and zinc at a coverage of 0.1 to 5 g/m^2 provided on said steel sheet and a transparent top coat of 3 μm or less thick provided on said colored composite-plating film, said coloring metal (Me) is selected from the group consisting of Ni, Fe and mixtures thereof.

5,011,745
GLAZING HAVING CONTACT STRIPS ON A SUBSTRATE
Anton Dietrich, Wiesenfelden; Klaus Hartig, Ronneburg; Hans-Christian Schaefer, Langenselbold, and Joachim Szczyrbowski, Regensburg, all of Fed. Rep. of Germany, assignors to Leybold Aktiengesellschaft, Hanau I, Fed. Rep. of Germany
Division of Ser. No. 881,712, Jul. 3, 1986, Pat. No. 4,830,876. This application Jan. 24, 1989, Ser. No. 301,199
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1985, 35436948
Int. Cl.[5] B32B 17/06
U.S. Cl. 428—630 17 Claims



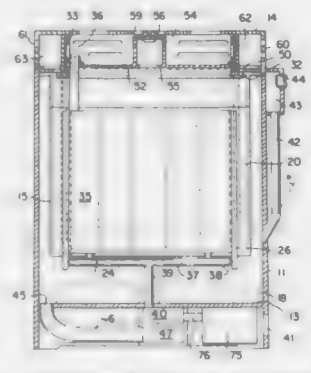
1. Transparent sheet with an electrically conductive surface coating, said sheet comprising
a glass substrate,
a silver layer,
a metal coating comprising nickel on said silver layer,
a surface layer of dielectric oxide on said metal coating on said silver layer,
at least one contact strip on said surface layer, said contact strip comprising a metal which is diffused from said contact strip through said surface layer to establish electrical contact between said contact strip and said silver layer

5,011,746
Patent Not Issued For This Number

5,011,747
METAL/AIR BATTERY WITH PULSED GAS BUBBLING
David S. Strong, Battersea, and John A. Dawson, Amherstview, both of Canada, assignors to Alcan International Limited, Montreal, Canada
Continuation of Ser. No. 269,062, Nov. 9, 1988, abandoned. This application May 4, 1990, Ser. No. 518,286
Int. Cl.[5] H01M 12/04
U.S. Cl. 429—27 5 Claims

1. A metal-air battery comprising:
(a) a tank defining a reservoir for liquid electrolyte;
(b) one or more metal-air cells disposed for immersion in electrolyte, each cell including at least one air cathode having a first surface disposed for contact with electrolyte and a second surface exposed to air and a metal anode disposed for immersion in electrolyte in facing spaced relation to the first cathode surface to constitute therewith an anode-cathode pair electrically coupled by electrolyte;

(c) a bubbler tube extending horizontally in the electrolyte reservoir beneath each cell and serving to inject gas bubbles into electrolyte between the anode and cathode of each cell, and



(d) means for providing a flow of gas only to the bubbler tube(s), said gas being substantially free of any said electrolyte, and
(e) means for pulsating the flow of gas passing through the bubbler tube.

5,011,748
RECHARGEABLE BATTERY CATHODE FROM P2-PHASE SODIUM COBALT DIOXIDE
Lawrence W. Shacklette, Maplewood; Linda B. Townsend, Sparta, and Taiguang R. Jow, Morris, all of N.J., assignors to Allied-Signal, Morris Township, Morris County, N.J.
Continuation-in-part of Ser. No. 112,847, Oct. 23, 1987, abandoned. This application May 12, 1989, Ser. No. 350,967
Int. Cl.[5] H07M 4/52
U.S. Cl. 429—50 37 Claims

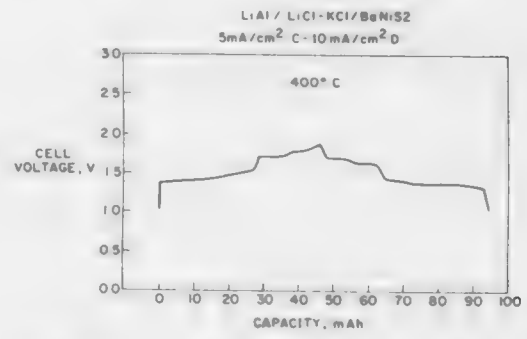
1. An improved battery of the type which includes a cathode means, an anode means and an electrolyte, the improvement comprising a cathode means comprising Na_xCoO_2 in the P2 phase characterized in that the change in x during a charge/-discharge cycle, Δx, is greater than about 0.37.

5,011,749
THIN RIBBONLIKE FLEXIBLE RECHARGEABLE ZINC/HALIDE CELL
Joost Manassen, Rehovot, Israel, and Israel Cabasso, Syracuse, N.Y., assignors to Yeda Research and Development Co., Ltd., Rehovot, Israel
Filed Jul. 10, 1989, Ser. No. 377,443
Int. Cl.[5] H01M 10/36
U.S. Cl. 429—101 26 Claims

1. A rechargeable zinc halide electrolyte electrochemical cell comprising a laminate of the sequence:
a. an electrically conducting chemically inert material;
b. a membrane matrix formed of an hydrophilic polymer matrix in which is immobilized a zinc halide electrolyte; and
c. an electrically conducting layer adapted to absorb and absorb halogen.

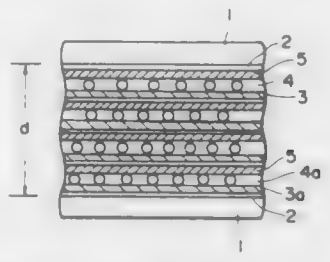
5,011,750
HIGH TEMPERATURE RECHARGEABLE MOLTEN SALT CELL
Edward J. Plichta, Howell, and Wishvender K. Behl, Ocean, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Jul. 5, 1990, Ser. No. 549,176
Int. Cl.[5] H01M 10/39
U.S. Cl. 429—112 6 Claims

1. A high temperature rechargeable molten salt cell comprising a member of the group consisting of lithium, lithium aluminum alloy, lithium silicon alloy, sodium, potassium, calcium, magnesium, an alkali metal, a group II A element, a group II A alloy and composite mixtures thereof, as the anode, a chemical compound of the composition XYS_2 wherein X is an element selected from the group consisting of Be, Mg, Ca, Sr, Ba and



Ra and Y is an element selected from the group consisting of Fe, Co, and Ni as the cathode active material and a member of the group consisting of a molten salt, and a eutectic mixture of metal halides, carbonates, nitrates and oxalates as the electrolyte.

5,011,751
ELECTROCHEMICAL DEVICE
Sachiko Yoneyama, Yokohama; Toshiyuki Ohsawa, Kawasaki; Okitoshi Kimura, Tokyo, and Toshiyuki Kabata, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Jun. 21, 1989, Ser. No. 369,122
Claims priority, application Japan, Jun. 21, 1988, 63-151110; Aug. 9, 1988, 63-197173
Int. Cl.[5] H01M 6/18, 2/16
U.S. Cl. 429—192 15 Claims

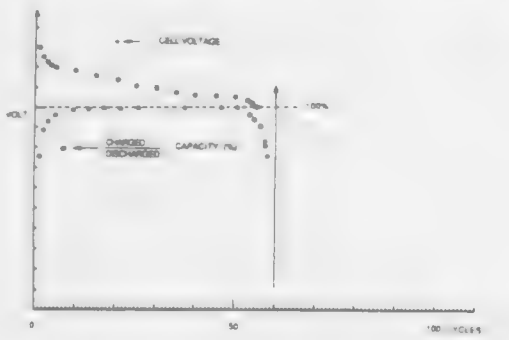


1. An electrochemical device comprising:
at least a pair of electrodes; and
a solid or solid-like composite electrolyte interposed therebetween, comprising uniformly spherical particles having a flatness ratio of 0–5% which are dispersed in said solid or solid-like composite electrolyte.

5,011,752
RECHARGEABLE ALKALINE MANGANESE DIOXIDE-ZINC CELL HAVING IMPROVED CUMULATIVE CAPACITY
Karl Kordesch, Lakewood, Ohio; Josef Gsellmann, Graz, Austria, and Klaus Tomantschger, Mississauga, Canada, assignors to Battery Technologies Inc., Mississauga, Canada
Filed Aug. 30, 1989, Ser. No. 400,712
Claims priority, application Hungary, Aug. 31, 1988, 4507/88
Int. Cl.[5] H01M 4/50
U.S. Cl. 429—206 29 Claims

1. A rechargeable alkaline electrochemical cell having an anode, an alkaline electrolyte, and a manganese dioxide cathode, in which cell the cathode has been preconditioned before the cell is finally assembled and sealed;

wherein said manganese dioxide material of said cathode is a preconditioned MnOx material having an oxidation state



at the time when said cell is finally assembled and sealed such that x is between 1.70 and 1.90.

5,011,753

PHOTORESIST COMPOSITIONS CONTAINING POLYAMIDES POLYBENZOXA FROM BIS((AMINOHYDROXYPHENYL)HEXAFLUOROISOPROPYL)DIPHENYL ETHERS

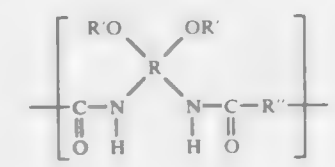
Werner H. Mueller, Greenwich, and Dinesh N. Khanna, W. Warwick, both of R.I., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No.327,761, Mar. 23, 1989, Pat. No. 4,939,215. This application Feb. 7, 1990, Ser. No. 476,332

Int. Cl.[5] **G03F** *9/00;* **G03C** *1/52*

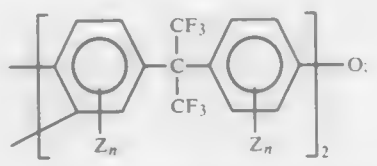
U.S. Cl. 430—4 **11 Claims**

1. A positive photoresist composition comprising a polyamide comprising the following recurring structure in the polymer chain:

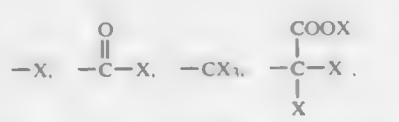


wherein:

(1) R is a tetravalent aromatic moiety of the formula:



(2) R′ is a monovalent moiety independently selected from:



X is hydrogen or a substituent independently selected from: substituted or unsubstituted lower alkyl of 1 to 8 carbons and substituted or unsubstituted phenyl; Z is independently selected from chloro, bromo, fluoro, iodo and lower alkyl of 1 to 6 carbons; n is independently 0 or 1; and

(3) R″ is selected from a substituted or unsubstituted alkylene, alicyclic or arylene moiety, said composition further containing a radiation sensitizer.

5,011,754

PIGMENT-TRANSFER SHEETS AND METHOD FOR DECORATING HEAT-RESISTANT ARTICLES

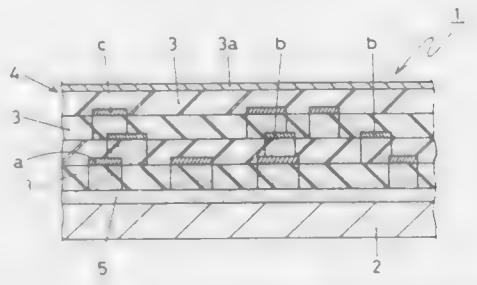
Masayuki Ono, Tokai, Japan, assignor to INAX Corporation, Aichi, Japan

Filed Apr. 24, 1990, Ser. No. 513,776

Claims priority, application Japan, Apr. 26, 1989, 1-106818

Int. Cl.[5] **G03C** *1/90, 11/12, 11/20*

U.S. Cl. 430—15 **20 Claims**



1. A decorating pigment-transfer sheet for decorating heatresistant articles, which comprises a water-absorbing substrate sheet, a water-soluble paste layer placed on the substrate sheet, at least one photosensitive resin layer placed on the paste layer and having adhesive dot photoimages, and a glaze-containing pigment layer deposited on the adhesive dot images of each photosensitive layer, whereby the pigment layer having good gradation and high resolution in compliance with the photo-images.

5,011,755

PHOTOINITIATOR MIXTURES CONTAINING A TITANOCENE AND A 3-KETOCOUMARIN

Ottmar Rohde, Basel; Armin Schaffner, Cudrefin; Martin Riediker, Riehen, and Kurt Meier, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 145,431, Jan. 19, 1988, abandoned. This application Jan. 30, 1990, Ser. No. 473,135

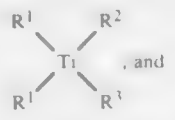
Claims priority, application Switzerland, Feb. 2, 1[illegible]7, 360/87

Int. Cl.[5] **G03F** *7/038, 7/30, 7/38, 7/40*

U.S. Cl. 430—18 **18 Claims**

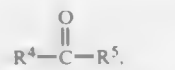
1. A composition comprising

(a) a titanocene photoinitiator of the formula I



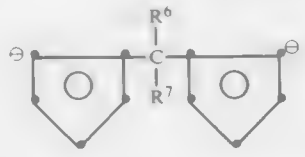
(I)

(b) a 3-ketocoumarin of the formula II



(II)

in which both R^1 independently of one another are unsubstituted or C_1-C_6alkyl- or C_1-C_6alkoxy-substituted cyclopentadienyl$^{\ominus}$, indenyl$^{\ominus}$ or 4,5,6,7-tetrahydroindenyl$^{\ominus}$ or together are a radical of the formula III

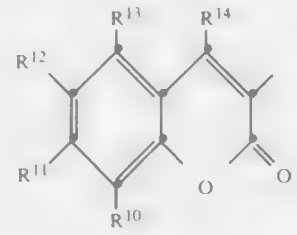


(III)

R^6 and R^7 independently of one another being hydrogen or methyl, R^2 is a 6-membered carbocyclic aromatic ring or a 5-membered or 6-membered heterocyclic aromatic ring, which in at least one of the two ortho-positions relative to the metal-carbon bond is substituted by a fluorine atom or by a $-CF_2R$ group, R being a fluorine atom or methyl. R^3 is as defined for R^2 or, additionally, can be halogen, cyanate, thiocyanate, azide or cyanide, $-OR^8$ or $-SR^9$, R^8 being hydrogen, C_1-C_6alkyl, phenyl, acetyl or trifluoroacetyl and R^9 being C_1-C_6alkyl or phenyl, or R^2 and R^3 together form a radical of the formula IV

$$-Q-Y-Q- \qquad (IV),$$

in which Q is a 6-membered carbocyclic aromatic radical or a 5-membered or 6-membered heterocyclic aromatic radical, the two bonds each being in the ortho-position relative to the bridge Y and each meta-position relative to the bridge Y being substituted by a fluorine atom or a $-CF_2R$ group, and Y is a direct bond, $-O-$, $-S-$, $-SO_2-$, $-CO-$, $-CH_2-$ or $-C(CH_3)_2-$, R^4 is a radical of the formula V

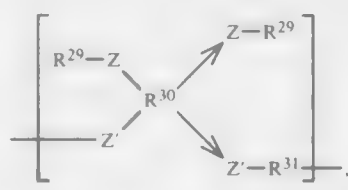


(V)

R^5 is C_1-C_{20}alkyl, cycloalkyl having 5-7 ring carbon atoms, phenyl or naphthyl which are unsubstituted or substituted by one to three C_1-C_6-alkyl groups, C_1-C_6alkoxy groups or halogen atoms or by one diphenylamino or C_1-C_6dialkylamino group, or is C_7-C_9aralkyl, a radical $-(CH=CH)_a-C_6H_5$ or a radical of the formula V, a is 1 or 2, and R^{10}, R^{11}, R^{12}, R^{13} and R^{14} independently of one another are hydrogen, C_1-C_6alkyl, C_1-C_6alkoxy, phenyl, tolyl, xylyl or benzyl and R^{11} can additionally also be a group $-NR^{15}R^{16}$ or $-OR^{15}$, wherein R^{15} and R^{16} independently of one another are hydrogen or C_1-C_6alkyl, it also being possible for two or three of the radicals R^{10}, R^{11}, R^{12} and R^{13} together with the ring carbon atoms, to which they are attached, to form a fused ring having 5 or 6 ring atoms or a fused ring system having 5-membered or 6-membered rings.

8. A composition comprising the components (a) and (b) according to claim 1 and, as a component (c), ethylenically unsaturated monomers or prepolymers.

9. A composition according to claim 8, containing, as component (c), a polymer precursor which has identical or different recurring structural units of the formula VIII



(VIII)

and reacts on heating to give a thermally stable ring structure, in which formula R^{29} is a radical having a photopolymerizable olefinic double bond, R^{30} is a tetravalent aromatic radical after removal of the four functional groups, two functional groups in each case being adjacent and the arrows representing structural isomerism, R^{31} is a divalent aliphatic, cycloaliphatic or mononuclear or polynuclear aromatic radical, it being possible for aromatic radicals R^{31} to carry one of the groups $-CONH_2$ or $-COOH$ in the ortho-position relative to the bond Z′, the Z are a covalent or ionic bond element and the Z′ are a covalent bond element, with the proviso that, on heating of the photopolymerizable composition, Z and Z′ alone, or together with $-CONH_2$ or $-COOH$ groups contained in R^{31}, give a thermally stable ring structure, with elimination of R^{29}.

14. A composition according to claim 9, additionally containing, as a component (d), an acrylic acid ester, methacrylic acid ester, allyl ether or allyl ester or partial esters of these acids with a polyol.

15. A process for producing images or protective layers, comprising the steps of

(i) applying a layer of a composition according to claim 14 to a substrate,

(ii) imagewise exposure of the system,

(iii) with or without a thermal pretreatment, in order to pre-harden the exposed areas,

(iv) developing the system and

(v) thermally cyclizing the component (c).

5,011,756

STORAGE OF OPTICAL INFORMATION USING PHOTOCHIROPTICAL EFFECT

David E. Nikles, Middlesex, N.J., assignor to Hoechst Celanese Corp., Somerville, N.J.

Filed Feb. 27, 1990, Ser. No. 486,031

Int. Cl.[5] **G03L** *11/00, 1/00;* **C09K** *19/00;* **B32B** *3/02*

U.S. Cl. 430—19 **10 Claims**

1. An optical information medium comprised of an optical information layer, wherein the optical information layer is comprised of a material at least a portion of which is treated with and selectively interacts with circularly polarized light to form a distinguishable product and which new product is distinguishable from said material on the basis of optical activity.

5,011,757

ELECTROPHOTOGRAPHIC PHOTORECEPTOR CONTAINING A FLUORENE DERIVATIVE

Yutaka Akasaki; Katsumi Nukada, and Katsuhiro Sato, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

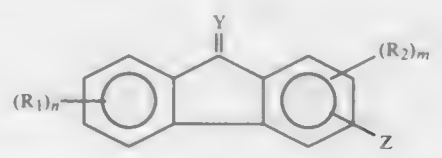
Filed Nov. 15, 1989, Ser. No. 436,875

Claims priority, application Japan, Nov. 16, 1988, 63-287613; Nov. 16, 1988, 63-287618; Nov. 16, 1988, 63-287620; Nov. 16, 1988, 63-287621

Int. Cl.[5] **G03G** *5/06, 5/14*

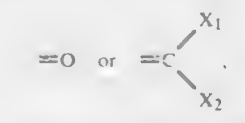
U.S. Cl. 430—58 **15 Claims**

1. An electrophotographic photoreceptor comprising a conductive substrate and a photosensitive layer on the conductive substrate, wherein the photosensitive layer comprises a charge generating agent and a compound of formula (I):

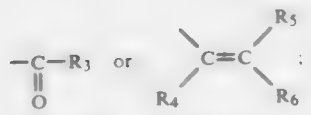


(I)

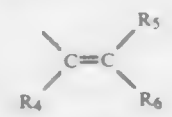
wherein R_1 and R_2 each represents a hydrogen atom, an alkyl group, an aryl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a nitro group, a halogen atom, an alkylcarbonyl group or an arylcarbonyl group; Y represents



X_1 and X_2 may be the same or different groups and are selected from a cyano group or an alkoxycarbonyl group; Z represents



R_3 represents a substituted or unsubstituted aryl or nitrogen-containing heterocyclic group; R_4, R_5 and R_6 each represents a hydrogen atom, an alkyl group, an aralkyl group, an aryl group or a heterocyclic group; when Z is the



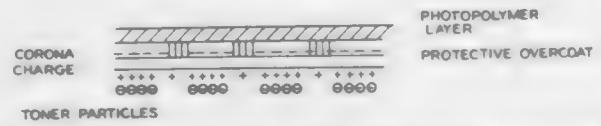
group, R_1 and R_2 are other than the alkylcarbonyl group; m is 0 or 1; n is 0 to 2; and when n is 2, the R_1 groups may be the same or different.

5,011,758

USE OF A LIQUID ELECTROPHOTOGRAPHIC TONER WITH AN OVERCOATED PERMANENT MASTER IN ELECTROSTATIC TRANSFER

Robert H. Detig, Berkeley Heights, and David P. Bujese, Butler, both of N.J., assignors to Olin Hunt Specialty Products Inc., West Paterson, N.J.

Continuation-in-part of Ser. No. 160,254, Feb. 25, 1988, Pat. No. 4,859,557. This application Jul. 31, 1989, Ser. No. 387,044
The portion of the term of this patent subsequent to Aug. 22, 2006, has been disclaimed.
Int. Cl.[5] **G03G** *13/22*
U.S. Cl. 430—100 **28 Claims**



1. A method of fabricating a toned pattern on an electrically isolated receiving surface, comprising the steps of:

(a) coating a conductive substrate with a photopolymer material that will undergo an increase in resistivity upon exposure to a source of actinic radiation;

(b) forming a permanent latent image on the photopolymer material by exposing to an actinic radiation source to form electrostatically contrasted non-imaged areas and an exposed latent image;

(c) coating the photopolymer material with a low friction protective overcoated material;

(d) charging the protective overcoated material so that a charge is retained above the unexposed areas of the photopolymer material;

(e) developing the electrostatic latent image area by applying charged liquid electrophotographic toner particles to the protective overcoated material, the charged liquid electrophotographic toner particles being directed to the protective transparent overcoat material above the unexposed areas of the photopolymer material to form a developed image;

(f) establishing an electric field between the photopolymer material and the receiving surface;

(g) placing the receiving surface adjacent to the photopolymer material; and

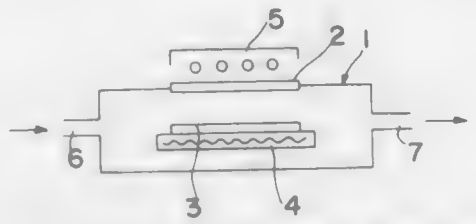
(h) transferring the developed image from the protective overcoated material at a point of transfer to the receiving surface to form non-imaged areas and a transferred toner particle image in an imaged area.

5,011,759

SEMICONDUCTOR ELEMENT AND METHOD OF FORMING SAME AND ARTICLE IN WHICH SAID ELEMENT IS USED

Hajime Hitotsuyanagi; Nobuhiko Fujita; Hideo Itozaki; Syoji Nakagama; Saburo Tanaka, and Kazuhiko Fukushima, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 177,904, Apr. 1, 1988, abandoned, which is a continuation of Ser. No. 844,027, Mar. 25, 1986, abandoned. This application Aug. 8, 1989, Ser. No. 391,734
Claims priority, application Japan, Mar. 28, 1985, 60-65513; Mar. 28, 1985, 60-65514; Mar. 28, 1985, 60-65515; Jun. 3, 1985, 60-120176
Int. Cl.[5] **G03G** *5/082;* **B05D** *3/06*
U.S. Cl. 430—128 **4 Claims**



1. A method of forming an a-SiGe:H film, which can be used in semiconductor elements, which comprises forming a film by a mercury-sensitized photochemical gas phase vapor deposition method with ultraviolet rays having wavelengths of 0.3 μm or less as a light source, wherein a member selected from the group consisting of SiH_4, Si_2H_6 and SiF_4, together with GeH_4 or GeF_4, are used as raw material gases and are introduced with hydrogen as a diluent gas into a film-forming chamber so that a volume ratio of the hydrogen gas to the total gas volume is within the range of 0.25 to 0.60, and the film being formed under the conditions of a film-forming pressure of 0.1 to 20 Torr, an intensity of the ultraviolet rays of 10 to 500 mW/cm^2, and a substrate temperature of 150° to 250° C.

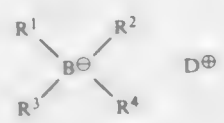
5,011,760

PHOTOPOLYMERIZABLE COMPOSITION

Jun Yamaguchi, Shizuoka; Masaki Okazaki, and Yoshio Inagaki, both of Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 250,191, Sep. 28, 1988, abandoned. This application May 11, 1990, Ser. No. 522,406
Claims priority, application Japan, Sep. 28, 1987, 62-243464
Int. Cl.[5] **G03F** *7/029*
U.S. Cl. 430—281 **3 Claims**

1. A photopolymerizable composition which consists essentially of (a) a polymerizable compound having at least one ethylenic unsaturated bond, and (b) a salt formed by an organic cationic dye compound and an organic boron compound anion, wherein the salt is represented by the following formula (I), with the organic cationic dye compound ($D\oplus$) being represented by the following formula (II):



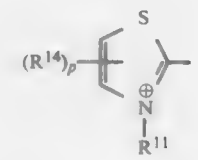
(I)

wherein $D\oplus$ represents a cationic dye; and R^1, R^2, R^3 and R^4, which may be the same or different, each represents an alkyl group, an aryl group, an aralkyl group, an alkaryl group, an alkenyl group, an alkynyl group, an alicyclic group, a heterocyclic group, an allyl group, or a group derived therefrom, and two or more of the substituent groups R^1 to R^4 can combine to form a cyclic structure.

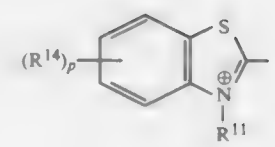
$$\phi\oplus - L = \Psi \quad \text{(II)}$$

wherein ϕ and Ψ, which may be the same or different, each represents a heterocyclic ring containing at least one nitrogen atom, and L represents a methine group, or a tri-, penta-, hepta- or nona-methine group formed by linking methine groups one after another by conjugated double bonds, each of which may be substituted, provided that L combines with at least either ϕ or Ψ to form a ring, wherein the heterocyclic ring represented by ϕ and Ψ is represented by the following formula ϕI to ϕXVI wherein each formula is represented by its corresponding structure bearing the positive charge

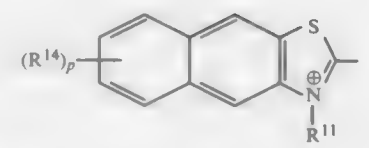
ϕI



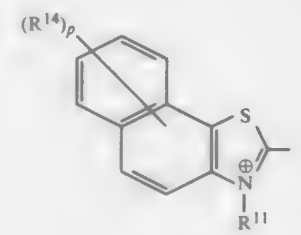
ϕII



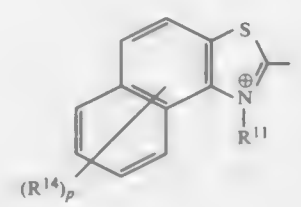
ϕIII



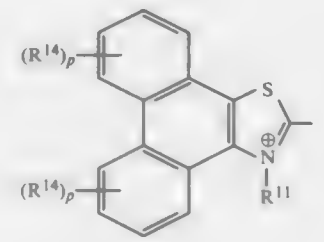
ϕIV



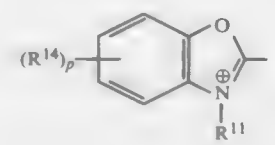
ϕV



ϕVI

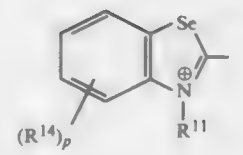


ϕVII

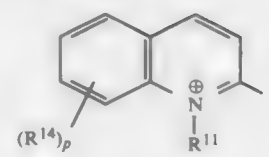


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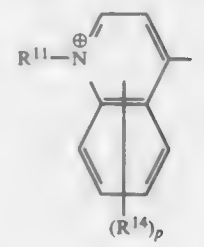
ϕVIII



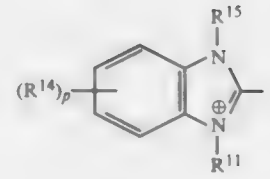
ϕIX



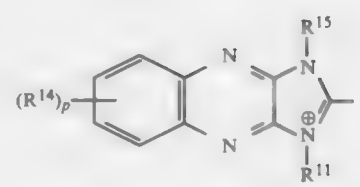
ϕX



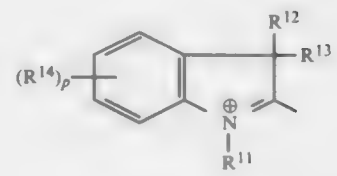
ϕXI



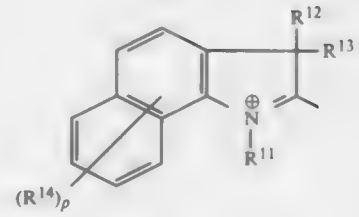
ϕXII



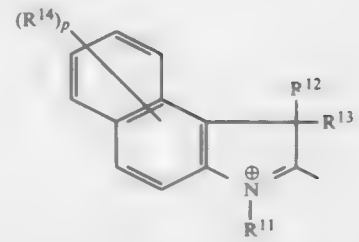
ϕXIII



ϕXIV

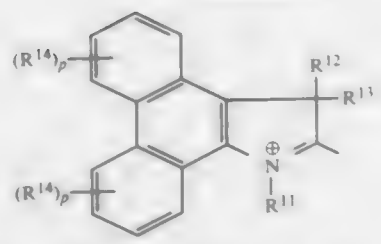


ϕXV



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φXVI



wherein the group represented by R^{11} or R^{15} in the heterocyclic ring of formula φI to φXVI is a substituted or unsubstituted alkyl, aryl or alkenyl group, provided that when R^{11} or R^{15} combines with L to form a ring, it corresponds to a divalent linking group represented by Z, wherein Z is a divalent linking group for completing a ring by combining with φ or Ψ,

R^{12} or R^{13} is a unsubstituted or substituted alkyl group or unsubstituted or substituted aryl group,

R^{14} is an alkyl group, an aryl group, a heterocyclic ring residual group, a halogen atom, an alkoxy group, an aryloxy group, an alkylthio group, an arylthio group, an alkylcarbonyl group, an arylcarbonyl group, an alkyloxycarbonyl group, an aryloxycarbonyl group, an alkylcarbonyloxy group, an arylcarbonyloxy group, an alkylamido group, an arylamido group, an alkylcarbamoyl group, an arylamino group, an alkylsulfonyl group, an arylsulfonyl group, an alkylsulfonamido group, an arylsulfonamido group, an alkylsulfamoyl group, an arylsulfamoyl group, a cyano group or a nitro group,

and p is an integer of 0 to 4, and when p is 2 or more, plural R^{14}'s may be the same or different from each other.

5,011,761

PROCESS FOR MAKING METALLIZED HOLES IN A DIELECTRIC SUBSTRATE BY VACUUM DEPOSITION OF METALS AND THE PRODUCT OBTAINED THEREBY

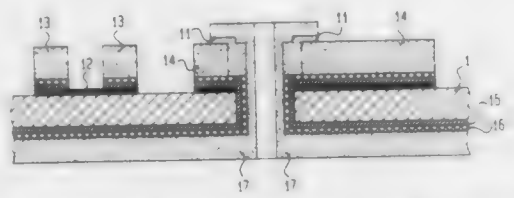
Tarcisio Cagnin, Milan, and Giampiero Ferraris, Como, both of Italy, assignors to Siemens Telecommunicazioni S.p.A., Milan, Italy

Filed Feb. 27, 1989, Ser. No. 316,365

Claims priority, application Italy, Mar. 18, 1988, 19830 A/88

Int. Cl.[5] G03C *5/00*; **C25D** *5/02*

U.S. Cl. 430—312 **14 Claims**



1. A process for forming metallized holes in a dielectric substrate having conductive and/or resistive paths on one side, hereinafter called the front, the other side being called hereinafter the back, comprising the following steps in succession:

(a) electrogalvanic growth of the conductive and/or resistive paths delimited by a first photosensitive lacquer on said front,

(b) drilling of the substrate and forming of holes,

(c) covering of the front with a second negative photosensitive lacquer and exposing said second negative photosensitive lacquer with a mask and developing it to form uncovered rings of said conductive and/or resistive paths coinciding with the holes,

(d) electrogalvanic growth of metal on the front and forming of metal rivets protruding inside the holes as extensions of said conductive and/or resistive paths,

(e) removal of said second photosensitive lacquer and completing of conductive and/or resistive paths,

(f) deposition on the back of metals which also spread over the side walls of said holes until they unite electrically with the protrusions of said metal rivets,

(g) covering of the front with said second photosensitive lacquer and development with said mask, and

(h) electrogalvanic growth of metal on the back, side walls of the holes and the front in the zones not covered by said second photosensitive lacquer.

5,011,762

PHOTOSENSITIVE COMPOSITIONS HAVING ENHANCED PHOTOPOLYMERIZATION RATE

Rong-Jer Lee, Yun-Lin; Chein-Dhau Lee, Hsinchu, and Wen-Shin Shen, Hwa-Lien, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, China

Filed Aug. 14, 1990, Ser. No. 567,136

Int. Cl.[5] G03C *1/725*

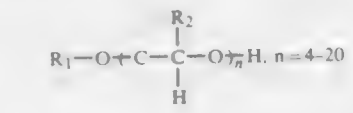
U.S. Cl. 430—281 **6 Claims**

1. A photosensitive composition which utilizes ultraviolet light to initiate a free radical addition reaction, comprising at least:

(a) a material having unsaturated carbon-carbon double bonds which undergoes free radical polymerization;

(b) a photoinitiator which produces free radicals when irradiated with ultraviolet light; and

(c) a photosensitivity accelerator of the formula



wherein R_1 is hydrogen, linear alkyl or acyl groups having 1 to 20 carbon atoms, R_2 is hydrogen or methyl, and added in a quantity of from 0.1 to 5% of the whole photosensitive material mixture.

5,011,763

METHOD FOR PROCESSING A SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Kiyoshi Morimoto, and Yoshihiro Fujita, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 27, 1988, Ser. No. 263,228

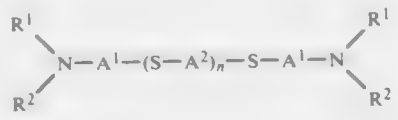
Claims priority, application Japan, Oct. 29, 1987, 62-274095; Nov. 2, 1987, 62-277580

Int. Cl.[5] G03C *7/00, 7/42*

U.S. Cl. 430—393 **14 Claims**

1. A method for processing a silver halide color photographic material comprising developing, followed by either bleaching in a bleaching solution or bleach-fixing in a bleach-fixing solution an imagewise exposed silver halide color photographic material, wherein at least one bleach-accelerating agent represented by formula (I) is contained in said bleaching solution, bleach-fixing solution or prebath thereof after color development in an amount of from 1×10^{-5} to 1×10^{-1} mol per liter of the processing solution, or is contained in said color photographic material:

(I)



wherein R^1 and R^2, which may be the same or different, each represents a hydrogen atom or an unsubstituted alkyl group, or R^1 and R^2 may combine with each other to form a heterocyclic ring; A^1 and A^2, which may be the same or different, each represents an alkylene group having from 2 to 5 carbon atoms which may be substituted; and n represents an integer from 2 to 6.

5,011,764

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL WHICH FORMS A COLOR PHOTOGRAPHIC IMAGE WITH IMPROVED PRESERVABILITY

Nobuo Sakai, and Minoru Sakai, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 7, 1988, Ser. No. 178,937

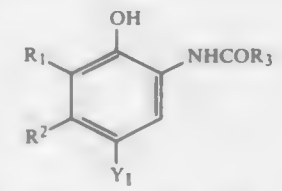
Claims priority, application Japan, Apr. 7, 1987, 62-85449

Int. Cl.[5] G03C *1/46, 1/38*

U.S. Cl. 430—505 **26 Claims**

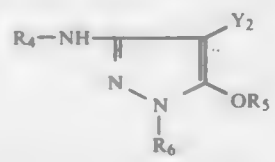
1. A silver halide color photographic material comprising a support having thereon at least one red-sensitive silver halide emulsion layer, at least one green-sensitive silver halide emulsion layer and at least one blue-sensitive silver halide emulsion layer, where the red-sensitive halide emulsion layer contains a disperson of oleophilic fine particles which is obtained by emulsifying or dispersing a solution containing at least one cyan coupler represented by the general formula (I) and at least one water-insoluble and organic solvent-soluble homopolymer or copolymer composed of at least one recurring unit having no acid group in the main chain or side chain thereof, the green-sensitive silver halide emulsion layer contains at least one magenta coupler represented by the general formula (II) or (III), the blue-sensitive silver halide emulsion layer contains at least one yellow coupler represented by the general formula (IV), and the silver halide color photographic material contains at least one compound represented by the eh general formula (B) incorporated in a red-sensitive silver halide emulsion layer:

(I)



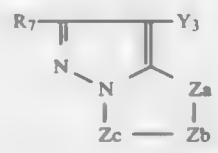
where R_1 represents a hydrogen atom or a halogen atom; R_2 represents an alkyl group; R_3 represents a ballast group; and Y_1 represents a hydrogen atom or a group released at the time of coupling reaction with an oxidation product of a developing agent (hereafter simply referred to as a releasing group),

(II)



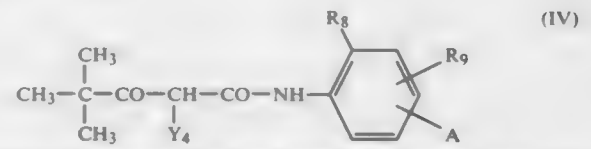
where R_4 represents an aryl group; R_5 represents a hydrogen atom, an aliphatic or aromatic acyl group or an aliphatic or aromatic sulfonyl group; R_6 represents an aryl group; and Y_2 represents a hydrogen atom or a releasing group,

(III)

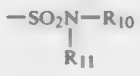


wherein R_7 represents a hydrogen atom or a substitutent; Y_3 represents a hydrogen atom or a releasing group; Za, Zb and Zc each represents a methine group, a substituted methine group, =N—or —NH—, one of the Za—Zb bond and the Zb—Zc bond being a double bond and the other being a single bond; when the Zb—Zc bond is a carbon-carbon double bond, the Zb—Zc bond may be a part of a condensed aromatic ring; R_7 or Y_3 may also form a polymer including a dimer or more; and when Za, Zb or Zc is a substituted methine group, the substituted methine group may form a polymer including a dimert or more,

(IV)

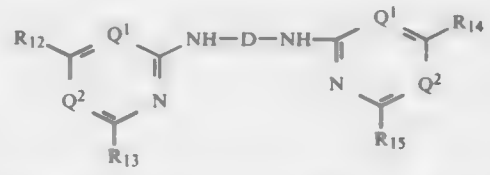


where R_8 represents a halogen atom or an alkoxy group; R_8 represents a hydrogen atom, a halogen atom or an alkoxy group; A represents $-NHCOR_{10}$, $-NHSO_2R_{10}$, $-SO_2NHR_{10}$, $-COOR_{10}$ or

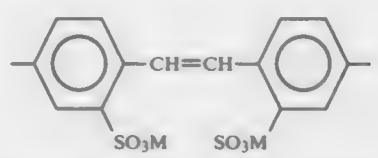


(wherein R_{10} and R_{11} each represents an alkyl group); and Y_4 represents a hydrogen atom or a releasing agent,

(B)



where D represents a divalent aromatic group represented by the following formula:



wherein M represents a hydrogen atom or a cation capable of imparting water solubility; R_{12}, R_{13}, R_{14} and R_{15}, which may be the same or different, each represents a hydrogen atom, a hydroxy group, an alkoxy group, an aryloxy group, a halogen atom, a heterocyclic group, a mercapto group, an alkylthio group, an arylthio group, a heterocyclic thio group, an amino group, an alkylamine group, a cyclohexylamino group, an arylamino group, a heterocyclic amino group, an aralkylamino group or an aryl group; and Q^1 and Q^2 each represents —N= or —CH= and at least one of Q^1 and Q^2 is —N=.

5,011,765

DYE FORMING COUPLER FOR PHOTOGRAPHIC USE

Kimie Tachibana, Hino, and Yutaka Kaneko, Sagamihara, both of Japan, assignors to Konica Corporation, Tokyo, Japan

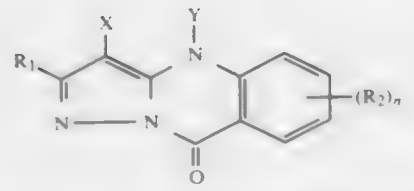
Division of Ser. No. 284,522, Dec. 15, 1988, abandoned. This application Jun. 22, 1990, Ser. No. 541,463

Claims priority, application Japan, Feb. 15, 1988, 63-32094

Int. Cl.[5] G03C *7/38*

U.S. Cl. 430—548 **4 Claims**

1. A silver halide photographic light-sensitive material comprising a support having thereon a silver halide emulsion layer containing a dye-forming coupler represented by Formula I:

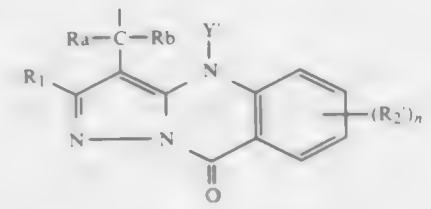


wherein R_1 and R_2 individually represent a hydrogen atom or a substituent selected from the group consisting of an alkyl group, an aryl group, an anilino group, an acylamino group, a sulfonamido group, an alkylthio group, an arylthio group, an alkenyl group, a cycloalky group, a halogen atom, a cycloalkenyl group, an alkinyl group, a heterocyclic group, a sulfonyl group, a sulfinyl group, a phosphonyl group, an acyl group, a carbamoyl group, a sulfamoyl group, a cyano group, an alkoxy group, a sulfonyloxy group, an aryloxy group, a heterocyclic-oxy group, a siloxy group, an acyloxy group, a carbamoyloxy group, an amino group, an alkylamino group, an imido group, a ureido group, a sulfamoylamino group, an alkoxycarbonylamino group, an aryloxycarbonylamino group, an alkoxtcarbonyl group, an aryloxycarbonyl group, a heterocyclic thio group, a thioureido group, a carboxyl group, a hydroxy group, a mercapto group, a nitro group, a sulfonic acid group, a spiro compound residue and a bridged hydrocarbon compound residue;

wherein Y is hydrogen or a group capable of splitting off after said coupler is coupled with the oxidized product of the color developing agent;

n is an integer of zero to 4, provided that the R_2s may be the same or different from each other when n is 2, 3 or 4;

X represents an atom or a group selected from the group consisting of a halogen atom, an alkoxy group, an aryloxy group, a heterocyclic-oxy group, an acyloxy group, a sulfonyloxy group, an alkylcarbonyloxy group, an aryloxycarbonyloxy group, an alkyloxalyloxy group, an alkoxyoxalyloxy group, an alkylthio group, an arylthio group, a heterocyclic-thio group, an alkyloxythiocarbonylthio group, an acylamino group, a nitrogen-containing heterocyclic group linked on a nitrogen atom, an alkyloxycarbonylamino group, a carboxyl group and a group represented by the formula:



wherein R_1', R_2' and Y' are selected from the same group from which said R_1, R_2 and Y are selected; and Ra and Rb individually represent a hydrogen atom, an aryl group, an alkyl group or a heterocylic group, with the proviso that said atom or group represented by X is capable of being split off upon reaction with the oxidized product of a color developing agent.

5,011,766

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Shuji Kida, Hino; Hiroshi Kita; Shigeto Hirabayashi, both of Hachioji, and Yutaka Kaneko, Sagamihara, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jan. 4, 1990, Ser. No. 460,803

Claims priority, application Japan, Jan. 18, 1989, 1-9272

Int. Cl.[5] G03C *1/08*

U.S. Cl. 430—558 **7 Claims**

1. A silver halide color photographic light-sensitive material comprising a red light sensitive silver halide emulsion layer containing a pyrazoloazole type cyan coupler having a group represented by Formula 1 which is directly bonded to the azole ring of said pyrazoloazole coupler:

$$-(X=Y)n-R_1 \qquad (1)$$

wherein X and Y each is a substituted or unsubstituted methine group or a nitrogen atom; R_1 is a hydrogen atom or a substituent; and n is an integer of 1 or 2, provided that two of Xs and two of Ys may be the same or different from each other when n is 2, and two of either X, Y and R_1 are allowed to be bonded to each other to form a ring other than a benzene ring.

5,011,767

SILVER HALIDE PHOTOGRAPHIC EMULSION

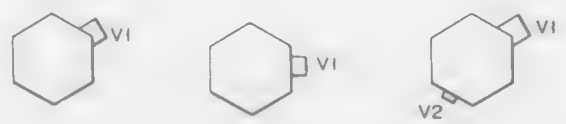
Seiji Yamashita, and Shunji Takada, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 17, 1989, Ser. No. 352,960

Claims priority, application Japan, May 18, 1988, 63-121443

Int. Cl.[5] G03C *1/02*

U.S. Cl. 430—567 **6 Claims**



1. A silver halide emulsion comprising junctioned grains having substantially one junction per grain that occupy 70% or more of a total projected area of all grains, each of said junction grains comprises a substrate grain and substantially one epitaxially grown portion junctioned on the substrate grain, and crystal structures of the substrate grain and the epitaxially grown portion of the junctioned grain have a rock-salt type structure, wherein said rock-salt type structure comprises silver bromide, silver chloride, silver bromoiodide, silver bromochloride or silver chlorobromoiodide, which are prepared by the following steps:

adding a spectral sensitizing dye selected from the group consisting of cyanine, merocyanine, complex cyanine, complex merocyanine, oxol, hemioxonol, styryl, merostyryl and streptocyanine, or an adsorptive photographic additive, in an amount of 150% or more of the saturated adsorption quantity of silver halide crystals used as substrate grains, and

adding soluble silver salt and soluble halide or fine silver halide grains to perform physical ripening and epitaxial growth of silver halide.

5,011,768

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Tadashi Ogawa, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 28, 1988, Ser. No. 291,021

Claims priority, application Japan, Dec. 28, 1987, 62-335573

Int. Cl.[5] G03C *1/02*

U.S. Cl. 430—569 **6 Claims**

1. A silver halide light-sensitive photographic material comprising a support having thereon at least one photographic layer containing a chemically sensitized and spectrally sensitized silver halide emulsion, wherein said silver halide emulsion comprises silver chlorobromide crystal grains having within the crystal grain at least a two phase structure, each phase of which differing in silver bromide content by not less than 10 mol. % and wherein said crystal grains are formed in a grain forming stage at a pH of not less than 7.6 and not more than 10.8 essentially in the absence of ammonia.

5,011,769

METHODS FOR DETECTING NUCLEIC ACID SEQUENCES

Peter Duck, and Robert Bender, both of Ottawa, Canada, assignors to Meiogenics U.S. Limited Partnership, Columbia, Md.

Continuation-in-part of Ser. No. 805,279, Dec. 5, 1985, Pat. No. 4,876,187. This application Apr. 29, 1988, Ser. No. 187,814

The portion of the term of this patent subsequent to Oct. 24, 2006, has been disclaimed.

Int. Cl.[5] C12Q *1/68, 1/42;* G01N *33/566;* C07H *15/12*

U.S. Cl. 435—6 **12 Claims**

1. A method for detecting a single-stranded target nucleic acid which comprises:

(a) obtaining the single-stranded target nucleic acid;

(b) forming a reaction mixture which includes the target nucleic acid and a complementary single-stranded nucleic acid probe under conditions which allow the target nucleic acid and the probe to hybridize to each other and form a double-stranded, target-probe complex, the probe being present in molar excess relative to the target and having the structure

$$[NA_1\text{- R - }NA_2]_n$$

wherein NA_1 and NA_2 are DNA sequences, wherein R is a scissile nucleic acid linkage, and wherein n is an integer from 1 to 10;

(c) treating the double-stranded, target-probe complex from step (b) so as to cleave the probe within a predetermined sequence of the scissile nucleic acid linkage and thereby form at least one intact DNA-containing oligonucleotide fragment from the probe, such fragment being, or being treated so as to be, no longer capable of remaining hybridized to the target nucleic acid;

(d) repeating steps (b) and (c); and

(e) detecting the intact DNA-containing fragments so formed and thereby detecting the single-stranded target nucleic acid.

5,011,770

DNA DETECTION METHOD

Viola T. Kung, Menlo Park; Peter A. Nagainis, San Jose, and Edward L. Sheldon, III, Menlo Park, all of Calif., assignors to Molecular Devices, Inc., Palo Alto, Calif.

Division of Ser. No. 285,895, Dec. 15, 1988, which is a continuation-in-part of Ser. No. 93,361, Sep. 4, 1987. This application Jul. 24, 1990, Ser. No. 558,252

Int. Cl.[5] C12Q *1/18, 1/00;* G01N *33/53;* C12N *11/02*

U.S. Cl. 435—6 **18 Claims**

1. A method for quantitatively detecting ssDNA in a sample, said method comprising:

combining, in an assay medium, said sample and assay components for detecting said ssDNA, said components comprising: a high affinity single-tranded DNA binding protein labeled with a detectable label (d1-BP), a high affinity single-stranded DNA binding protein labeled with a specific binding pair member (BP-sbpm) and an immobilized complementary specific binding pair member complementary to said sbpm-BP (s'bpm), whereby a DNA complex forms between any ssDNA in said sample and said binding proteins, and said BP-sbpm binds to said immobilized s'bpm; and

detecting immobilized detectable label as indicative of the presence of ssDNA in said sample.

5,011,771

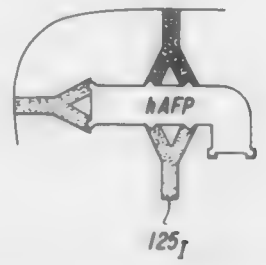
MULTIEPITOPIC IMMUNOMETRIC ASSAY

Dominique Bellet, Paris, France, and Jack R. Wands, Waban, Mass., assignors to The General Hospital Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 599,560, Apr. 12, 1984, abandoned. This application Sep. 24, 1987, Ser. No. 102,766

Int. Cl.[5] C12N *5/00;* G01N *33/53, 33/545;* C12Q *1/00*

U.S. Cl. 435—7.94 **12 Claims**



1. An immunometric assay for a multivalent antigen in a sample, comprising:

(a) forming a mixture of said sample with multiple immobilized monoclonal antibodies against different epitopes on said antigen, and incubating said mixture for a time and under conditions sufficient to allow said antigen in said sample to bind to said multiple immobilized monoclonal antibodies;

(b) adding to said mixture after said incubation of step (a) a detectably labeled monoclonal soluble antibody which is identical to one of said multiple immobilized monoclonal antibodies, and incubating the new resulting mixture for a time and under conditions sufficient to allow said detectably labeled monoclonal soluble antibody to bind to said antigen;

(c) separating detectably labeled monoclonal antibody bound to said antigen from detectably labeled monoclonal soluble antibody; and

(d) detecting either said detectably labeled monoclonal antibody bound to said antigen, or detecting detectably labeled monoclonal soluble antibody not bound to said antigen;

wherein any one of said multiple immobilized monoclonal antibodies shows, by itself, substantially less binding towards said antigen in said immunometric assay, when used with itself

or another monoclonal antibody in soluble labeled form, than when used with multiple immobilized monoclonal antibodies in combination.

5,011,772

HIGH YIELD PROTEIN PRODUCTION SYSTEM

Paul A. Recsei, New York, N.Y., assignor to Public Health Research Institute of the City of N.Y., New York, N.Y.

Filed Feb. 5, 1988, Ser. No. 152,635
Int. Cl.[5] C12P *21/00, 21/02;* C12N *15/00*
U.S. Cl. 435—69.1 34 Claims

1. Recombinant cloning vector for expression and secretion of a predetermined protein in a transformant microbial host comprising an autonomously replicatable expression vector which can transform a microbial host and express and secrete a predetermined protein therein, the vector comprising a hybrid DNA sequence having at least two DNA sequences; a first sequence which codes for a preprolysostaphin amino acid sequence necessary and sufficient to allow protein secretion, and a second sequence which codes for the predetermined protein, wherein the second sequence is insertable into the vector so as to be located adjacent to and oriented on the 3' side of the first sequence.

5,011,773

HUMAN ESTERASE D, ITS USES AND A PROCESS OF PURIFICATION

Wen-Hwa Lee, and Eva Y-H.P. Lee, both of San Diego, Calif., assignors to The Reagents of the University of California, Berkeley, Calif.

Filed Aug. 31, 1987, Ser. No. 91,547
Int. Cl.[5] C12P *21/06, 21/04, 19/34;* C01N *15/00;* C12H *15/12;* C07K *3/00*
U.S. Cl. 435—69.1 11 Claims

1. A DNA sequence selected from the group consisting of a cDNA encoding human esterase D and, fragments thereof which encode proteins having the enzymatic activity of esterase D.

5,011,774

DIDEOXYINOSINE BY ENZYMATIC DEAMINATION OF DIDEOXYADENOSINE

Vittorio Farina, West Hartford, Conn.; Daniel A. Benigni, Elbridge, and Paul R. Brodfuehrer, Syracuse, both of N.Y., assignors to Bristol-Myers Squibb Co., New York, N.Y.

Continuation-in-part of Ser. No. 74,844, Jul. 17, 1987. This application Feb. 28, 1990, Ser. No. 486,701
Int. Cl.[5] C12P *19/38, 19/40;* C12N *9/96, 9/78*
U.S. Cl. 435—87 3 Claims

1. An improved method for selectively producing β-(D)-2',3'-dideoxyinosine which comprises treatment of an α-and β-anomeric mixture of (D)-2',3'-dideoxyadenosine with adenosine deaminase while monitoring conversion of the preferantially deaminated β-anomer to control reduction time and minimize α-anomer deamination thereby maximizing production of β-(D)-2'-3'-dideoxyinosine which is recovered from the enzymatic reaction mixture.

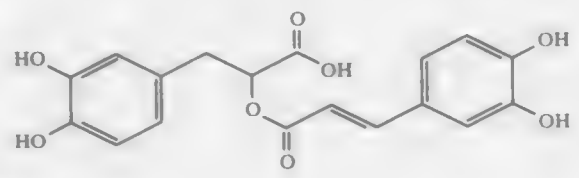
5,011,775

ENZYMATIC PROCESS FOR THE PREPARATION OF ROSMARINIC ACID

Nagaraj N. Rao, Bangalore, India; Christian Wandrey, Juelich, Fed. Rep. of Germany; Maike Petersen, Neuss, Fed. Rep. of Germany, and August W. Alfermann, Erkrath, Fed. Rep. of Germany, assignors to Forschungszentrum Juelich GmbH, Juelich, Fed. Rep. of Germany

Filed Dec. 13, 1989, Ser. No. 448,130
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1988, 3841914
Int. Cl.[5] C12P *7/40, 7/56, 7/62;* C07C *69/732*
U.S. Cl. 435—135 15 Claims

1. A process for the production of rosmarinic acid of the formula



comprising the steps of:

forming 3-(3,4-dihydroxyphenyl)-lactic acid by enzymatic reduction of ketodopa in the presence of dehydrogenase and $NADH_2$,

enzymatically reacting 3-(3,4-dihydroxy-phenyl)-lactic acid with caffeoyl-coenzyme A in the presence of rosmarinic acid synthase to produce rosmarinic acid,

separating the rosmarinic acid produced from the unreacted 3-(3,4-dihydroxyphenyl)-pyruvic acid, 3-(3,4-dihydroxy-phenyl)-lactic acid, dehydrogenase and rosmarinic acid synthase; and

recycling the unreacted 3-(3,4-dihydroxyphenyl)-pyruvic acid, 3-(3,4-dihydroxyphenyl)-lactic acid, dehydrogenase and rosmarinic acid synthase to the reaction mixture.

5,011,776

SHUTTLE VECTOR, UTILIZING THE *E. COLI* ASPARAGINE SYNTHETASE GENE, AND CAPABLE OF DOMINANT TRANSFECTION AND AMPLIFICATION IN ANIMAL CELLS

Clifford P. Stanners, Baie d'Urfé , and Mireille Cartier, Pierrefonds, both of Canada, assignors to The Royal Institution for the Advancement of Learning (McGill University), Montreal, Canada

Filed Feb. 11, 1988, Ser. No. 154,912
Int. Cl.[5] C12N *15/64, 15/85, 15/69, 5/10*
U.S. Cl. 435—172.3 1 Claim

1. A method for dominant selection and amplification of a vector in animal cells which are asparagine independent for growth, said method comprising,

(1) transforming an animal cell with a shuttle vector comprising,

(a) DNA sequences which render said vector capable of selection and growth in bacterial cells and expression of inserted nucleotide sequences in animal cells, and

(b) the *E.Coli* gene AsnA coding for asparagine synthetase, and

(c) an optional heterologous gene for which high level expression is desired,

(2) selecting transformed cells containing said shuttle vector by growing the cells in a culture medium lacking asparagine and containing albizziin, wherein cells expressing the *E.Coli* AsnA gene are resistant to albizziin,

(3) selecting transformed cells containing multiple copies of said shuttle vector by growing said transformed cells in a culture medium containing increasing concentrations of β-aspartyl hydroxamate.

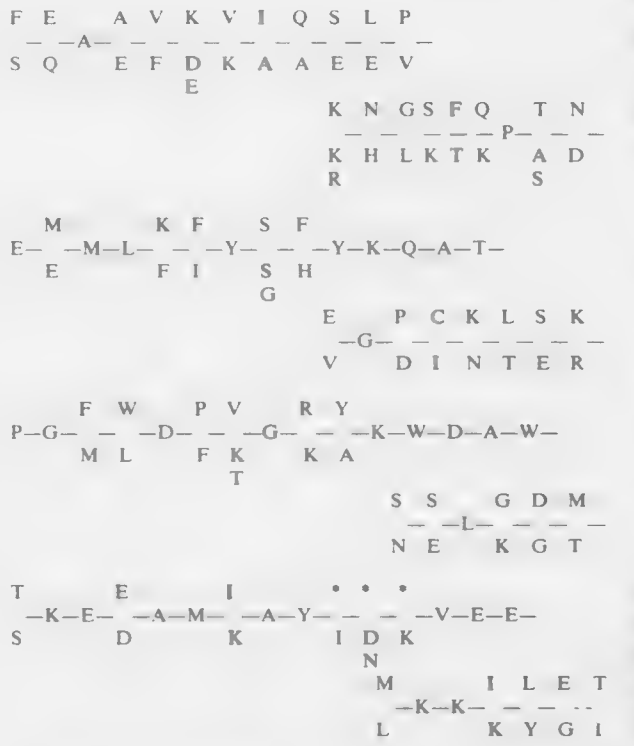
5,011,777

VECTORS ENCODING BRAIN DERIVABLE POLYPEPTIDE FACTORS

Mohammed Shoyab, Seattle; Hans Marquardt, Mercer Island, and George J. Todaro, Seattle, all of Wash., assignors to Oncogen, Seattle, Wash.

Division of Ser. No. 823,159, Jan. 27, 1986, Pat. No. 4,963,485, which is a continuation-in-part of Ser. No. 766,864, Aug. 15, 1985, Pat. No. 4,806,492, which is a continuation-in-part of Ser. No. 694,712, Jan. 25, 1985, Pat. No. 4,714,683. This application Jun. 29, 1990, Ser. No. 546,248
Int. Cl.[5] C12N *15/09*
U.S. Cl. 435—172.3 6 Claims

1. A DNA expression construct comprising a DNA sequence encoding a first polypeptide sequence having at least one epitopic site cross reactive with a second polypeptide found in mammalian brain capable of specifically binding to the diazepam receptor in vitro, said first polypeptide including substantially the following sequence or a physiologically active fragment of at least about 30 amino acids thereof:



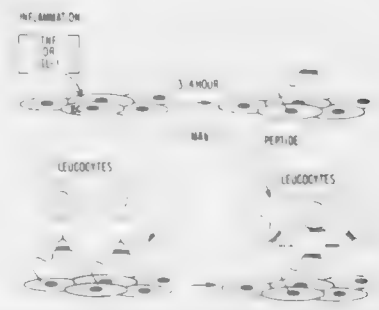
where plurality of amino acids at a site indicates that any amino acid at that site may be substituted by any other amino acid at that site and an asterisk (*) intends a bond may be employed at that site, said DNA sequence joined in proper orientation to at least one of a promoter other than the wild-type promoter, a terminator other than the wild-type terminator, or a replication system other than the wild-type replication system.

5,011,778

MONOCLONAL ANTIBODIES DIRECTED TO IL-1 ACTIVATED ENDOTHELIAL CELLS AND MEDICAMENTS EMPLOYING THE MONOCLONAL ANTIBODIES

Walter Newman, and Diane O. Wilson, both of Rockville, Md., assignors to Otsuka Pharmaceutical Co., Ltd., Rockville, Md.

Filed May 23, 1989, Ser. No. 355,701
Int. Cl.[5] C12N *5/20;* C07K *15/28;* A61K *39/00*
U.S. Cl. 435—240.27 6 Claims



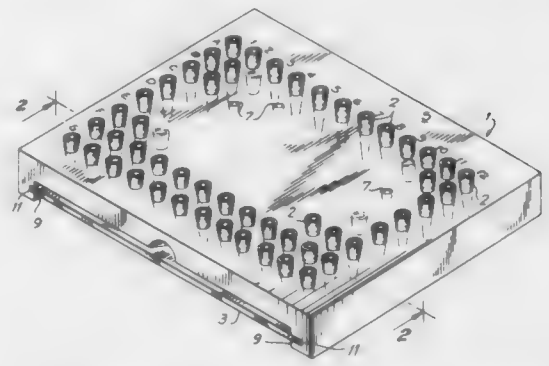
1. A hybridoma having all the identifying characteristics of hybridoma cell line 7A9 having ATCC Deposit No. HB 10135.

5,011,779

APPARATUS FOR RAPID DEPOSITION OF TEST SAMPLES ON AN ABSORBENT SUPPORT

Jonathan Maimon, Rego Park, N.Y., assignor to Long Island Jewish Medical Center, New Hyde Park, N.Y.

Continuation of Ser. No. 146,570, Jan. 21, 1988, abandoned. This application Oct. 2, 1989, Ser. No. 418,784
Int. Cl.[5] C12M *1/32*
U.S. Cl. 435—293 4 Claims



1. A non-vacuum apparatus for mass processing of test samples comprising a guide and positioning means having a top and side surfaces wherein one of the sides has a horizontal groove constructed so as to slidably receive an absorbent material support frame and in the top there are a plurality of openings disposed in a rectangular pattern; an absorbent material support frame slidably mounted in said groove below said openings for movement into and out of said means, said frame having a pair of rectangular frame members hingedly connected together in overlying relationship with at least an upper frame member having an aperture therein; and a planar absorbent array support removably mounted in said frame between said frame members and below said openings for receiving liquid test samples therefrom under gravity within said aperture of said upper frame member.

5,011,780

IN VITRO EMBRYO CULTURE TECHNIQUE

Margaret M. Perry, Edinburgh, Scotland, assignor to The Agricultural and Food Research Council, London, England

Filed Jun. 17, 1988, Ser. No. 208,366

Claims priority, application United Kingdom, Jun. 19, 1987, 8714426

Int. Cl.[5] C12N *15/00*

U.S. Cl. 435—317.1 1 Claim

1. A process for the in vitro culture of an avian embryo up to blastoderm formation, during embryonic morphogenesis and during embryonic growth to hatch, the process comprising culturing an avian embryo by a process comprising culturing a fertilized avian ovum, having a surrounding capsule of dense albumen, partially subemreged in culture medium in a first container sealed with a film having low gas permeability and not naturally associated with an resultant avian egg, up to blastoderm formation, subsequently culturing the avian embryo by a process comprising incubating said avian embryo during embryonic mrophogenesis in a culture medium in a liquid-filled liquid-impermeable second container sealed with a partially gas permeable film, and subsequently culturing the resultant avian embryo by a process comprising incubating said avian embryo during the embryonic growth phase in a closed second or third container, there being an air space above the embryo, the air space being separated from the external atmosphere by a partially gas permeable film, said incubating continuing until said embryo hatches.

5,011,781

AUTORADIOGRAPHY ENHANCER AND METHOD OF USE

Coleman Bess, Chestnut Hill, Mass., assignor to Electron Microscope Supplies Corporation, Chestnut Hill, Mass.

Division of Ser. No. 124,827, Nov. 24, 1987, Pat. No. 4,871,480. This application Jul. 31, 1989, Ser. No. [illegible]7,506

Int. Cl.[5] C09K *11/04*; G01N *23/00*; G03C *1/00*; G21G *4/00*

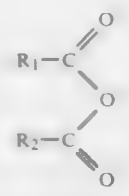
U.S. Cl. 436—57 12 Claims

1. A method of autofluorography comprising the steps of

a. preparing a separation medium containing radiolabelled materials to be identified;

b. enhancing said prepared separation medium by soaking said separation medium in an excess of an enhancer solution, said enhancer solution being reuseable and comprising

1. about 5-95% by weight of an acid anhydride of the formula



where R_1 and R_2 are selected from a group consisting of straight chain, branch chain, and substituted alkyl groups;

2. about 0.01-25% by weight of a water miscible acid; and

3. about 0.01-25% by weight of a scintillation fluor;

c. decanting said excess of said enhancer solution from said separation medium wherein said excess is available for reuse;

d. drying said separation medium; and

e. exposing a photographic emulsion to said enhanced separation medium, thereby forming an autofluorograph.

5,011,782

METHOD OF MAKING PASSIVATED ANTIREFLECTIVE COATING FOR PHOTOVOLTAIC CELL

Walter R. Lamb, Sunnyvale, and Darrell Griffin, Stratford, both of Calif., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Mar. 31, 1989, Ser. No. 332,287

Int. Cl.[5] H01L *31/18*

U.S. Cl. 437—2 9 Claims



1. A method of fabricating a point contact photovoltaic cell comprising the steps of

(a) providing a semicondcutor substrate,

(b) oxidizing the surfaces of said semiconductor substrate,

(c) forming a plurality of doped regions of p-conductivity type and n-conductivity type in a first major surface of said substrate;

(d) forming first and second metallization layers for interconnecting said plurality of doped regions,

(e) depositing silicon nitride on said first and second metallization layers as an etchant protection layer,

(f) thinning said substrate by etching a second major surface opposite from said first major surface, and

(g) forming a layer of antireflective material on said second major surface.

5,011,783

FORMING SELECTIVE SINGLE CRYSTAL REGIONS IN INSULATED POCKETS FORMED ON SILICON BY ENERGY BEAMS AND DEVICES FORMED IN THE POCKETS

Tsutomu Ogawa, Tokyo; Hajime Kamioka, Yokohama; Seiichiro Kawamura, and Junji Sakurai, both of Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 342,646, Apr. 24, 1989, abandoned, which is a continuation of Ser. No. 233,890, Aug. 18, 1988, abandoned, which is a continuation of Ser. No. 105,495, Oct. 2, 1987, abandoned, which is a continuation of Ser. No. 943,843, Dec. 22, 1986, abandoned, which is a continuation of Ser. No. 823,[illegible]39, Jan. 31, 1986, abandoned, which is a continuation of Ser. No. 706,896, Feb. 28, 1985, abandoned, which is a continuation of Ser. No. 454,078, Dec. 28, 1982, abandoned. This application Jul. 16, 1990, [illegible]r. No. 553,361

Claims priority, application Japan, Dec. 28, 1981, 56-211191

Int. Cl.[5] C30B *33/00*, *1/02*; H01L *21/263*

U.S. Cl. 437—19 8 Claims

1. A method for producing a semiconductor device having a substrate, comprising the steps of:

(a) forming a first insulating layer on the substrate, the insulating layer having a plurality of concave portions;

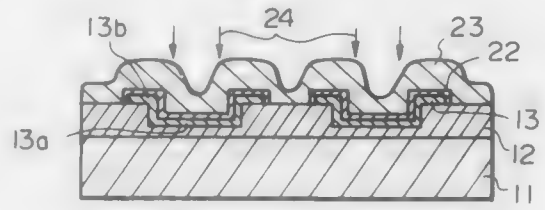
(b) forming a non-single crystalline silicon layer on the surface of the first insulating layer, the non-single crystalline silicon layer having a first portion and second portion, the first portion extending from the bottom and along the sides of the concave portions and terminating at the second portion located at the surface of the first insulating layer and located between the concave portions, the thickness of the first portion being greater than the thickness of the second portion;

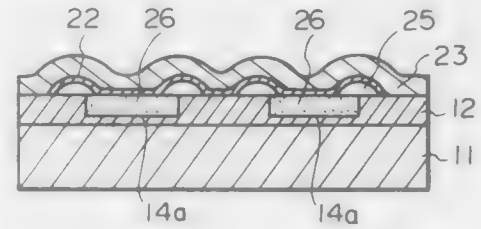
(c) patterning the non-single crystalline silicon layer at the surface of the first insulating layer;

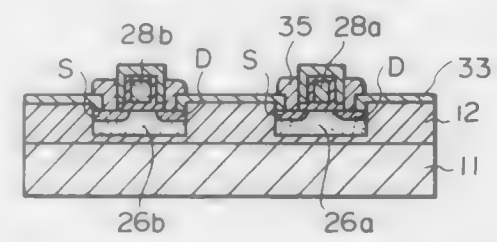
(d) covering the patterned non-single crystalline silicon layer with a second insulating layer;

(e) irradiating the patterned non-single crystalline silicon layer and the second insulating layer with an energy ray in a substantially vertical direction to melt the patterned non-single crystalline silicon layer such that the first portion of the non-single crystalline silicon layer having higher energy abosorptivity than that of the second portion and flows into the concave portions and then the second portion of the non-crystalline silicon layer melts and flows, and at the same time, the molten silicon layer of the first portion being solidified, thereby forming single crystalline regions in the concave portions, the volume of the patterned non-single crystalline silicon layer being substantially equal to that of the concave portions, the single crystalline regions being level with the top surface of the first insulating layer; and

(f) forming semiconductor elements in the single crystalline regions.







5,011,784

METHOD OF MAKING A COMPLEMENTARY BICMOS PROCESS WITH ISOLATED VERTICAL PNP TRANSISTORS

Kola N. Ratnakumar, San Jose, Calif., assignor to Exar Corporation, San Jose, Calif.

Division of Ser. No. 146,934, Jan. 21, 1988. This application Jul. 20, 1990, Ser. No. 556,231

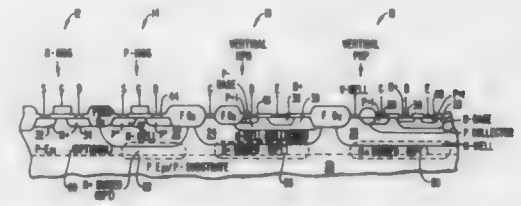
Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—34 10 Claims

1. In a method for forming CMOS transistors and NPN transistors on a single wafer, said method including the step of forming an N well as the collector of an NPN vertical transistor, an improvement for forming at least one isolated, vertical PNP transistor comprising the steps of:

forming an N-well to contain said PNP transistor during said step of forming an NPN vertical transistor collector;

implanting N type material to form an N base of said PNP transistor;



implanting a P type material at an energy greater than 300 keV for singly ionized material or greater than 150 kV for doubly ionized material to form a collector of said PNP transistor; and

forming a P region as an emitter of said PNP transistor.

5,011,785

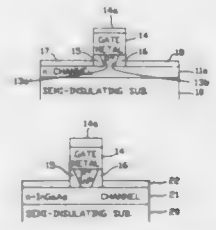
INSULATOR ASSISTED SELF-ALIGNED GATE JUNCTION

Richard Nguyen, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 30, 1990, Ser. No. 605,623

Int. Cl.[5] H01L *21/04*

U.S. Cl. 437—41 11 Claims



1. An improved process for fabricating a junction field effect transistor having a high transconductance, low capacitance and low leakage comprising:

providing a semi-insulating substrate having an n channel thereon;

placing a photoresist layer in a predetermine pattern on said n channel to function as a mask;

etching away of the masked n channel layer to a desired depth to define a wedge-shaped n region extending thereabove;

depositing a layer of insulator over the entire substrate including insulator regions of the deposited insulator that completely abut the sides of said wedge-shaped region; removing the photoresist layer, said insulator regions entirely covering the sides of said wedge-shaped region;

creating a p^+n junction system by p^+ diffusion in said wedge-shaped n region which is the gate region of the JFET, said insulator regions entirely covering the sides of said $p+n$ junction system to distinguish from the open-junction of the conventional self-aligned gate JFET;

depositing a gate patterned metal layer on top of the wedge-shaped p^+n junction system area which partially extends over said insulator regions of said deposited insulator;

removing said deposited insulator down to said n channel with the exception of said insulator regions; and

evaporating source and drain metal electrodes on said n channel layer and gate metal electrodes on said wedge-shaped p^+n junction system area to create a self-aligned gate JFET without an opened-junction region.

5,011,786

METHOD OF MANUFACTURING A HYBRID CIRCUIT KLEMENT

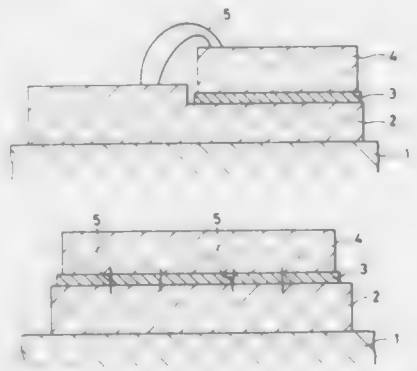
Satoru Isoda; Osamu Tomisawa, and Hiroaki Kawakubo, all of Hyogo, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Division of Ser. No. 72,305, Jul. 13, 1987, Pat. No. 4,902,555. This application Jun. 23, 1989, Ser. No. 370,940

Claims priority, application Japan, Jul. 11, 1986, 61-164191; Jul. 11, 1986, 61-164198

Int. Cl.[5] H01L *21/70. 29/28*

U.S. Cl. 437—51 7 Claims



1. A method of manufacturing a hybrid circuit element, said method of manufacturing being a type using electrical conductors, said method comprising the steps of:

forming an insulating layer on a silicon layer to thereby form a semiconductor element;

forming a redox electrical element on said insulating layer by using redox materials;

forming a metal wiring pattern on said redox electrical element to create electrodes by using a mask which is formed through energy beam exposure;

juxtaposing said redox electrical element and said semiconductor element together; and

electrically connecting said two elements to each other with said electrical conductors.

5,011,787

PRODUCTION OF AN INTEGRATED MEMORY CELL

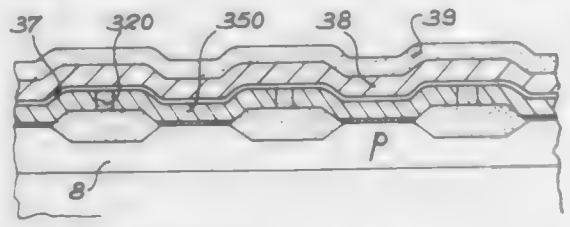
Pierre Jeuch, Seyssins, France, assignor to Commissariat a L'Energie Atomique, Paris, France

Filed Jul. 7, 1989, Ser. No. 376,626

Claims priority, application France, Jul. 13, 1988, 88 09559

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—52 10 Claims



1. Method to produce an EPROM or EEPROM type integrated memory cell on a semi-conductive substrate comprising a matrix of memory points electrically insulated from each other, each memory point comprising a source, a drain, a floating gate, a control grid and a channel situated under the floating gate, the source and the drain being situated on both sides of the floating gate, the floating gate of each memory point being laterally distant and insulated along a first direction from one or two other floating gates, said method comprising a stage for forming lateral insulations of the floating gates along the first direction by insulating relief patterns followed by a stage for forming the actual floating gates by depositing and etching.

5,011,788

PROCESS OF MANUFACTURING SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE AND PRODUCT FORMED THEREBY

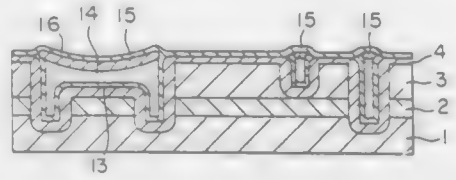
Mikinori Kawaji, Hino; Toshihiko Takakura; Akihisa Uchida, both of Koganei; Shigeo Kuroda, Ome; Yoichi Tamaki, Kokubunji; Takeo Shiba, Kodaira; Kazuhiko Sagara, Tokyo, and Masao Kawamura, Fuchu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 11,932, Feb. 6, 1987, Pat. No. 4,819,054, which is a continuation-in-part of Ser. No. 824,929, Jan. 31, 1986, abandoned, which is a continuation of Ser. No. 536,519, Sep. 28, 1983, abandoned, which is a continuation-in-part of Ser. No. 670,976, Nov. 13, 1984, abandoned. This application Dec. 15, 1988, Ser. No. 284,557

Claims priority, application Japan, Sep. 29, 1982, 57-168355; Nov. 11, 1983, 58-210834

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—67 21 Claims



1. A process of manufacturing a semiconductor integrated circuit device comprising the steps of:

(a) grooving a Si substrate at a portion to be used as an inactive wiring region of said integrated circuit device to form a pair of isolation grooves;

(b) grooving said pair of isolation grooves and an area therebetween, simultaneously so as to form two first grooves and a second groove, shallower than said first grooves, between the first grooves;

(c) forming a first insulating film extending on a surface of said first and second grooves; and

(d) forming wirings over said first insulating film extending on a surface of the first and second grooves, so that said first insulating film and said first and second grooves minimize parasitic capacitance between said wirings and said substrate.

5,011,789

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

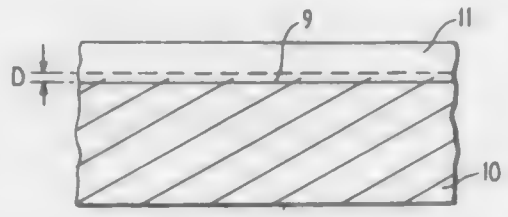
Gordon P. Burns, Southampton, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 4, 1986, Ser. No. 904,090

Claims priority, application United Kingdom, Sep. 6, 1985, 8522195; Dec. 6, 1985, 8530053

Int. Cl.[5] H01L *21/20, 21/324*

U.S. Cl. 437—81 17 Claims



1. A method of manufacturing a semiconductor device comprising the steps of

passing a stream of hydrogen gas over a silicon body, said silicon body being at a first temperature below 900 degrees Celsius to prevent at least one of diffusion and outgassing from said silicon body,

applying a heat pulse to said silicon body to heat said silicon body form said first temperature to a second temperature above 1000 degrees Celsius, said heat pulse cleaning surfaces of said silicon body at said second temperature,

maintaining said heat pulse at said second temperature for time ranging from 15 to 120 seconds,

passing a silicon carrier gas over said silicon body during said heat pulse to deposit an epitaxial silicon layer on said silicon body at said second temperature, and

reducing temperature below a minimum temperature for depositing silicon at the end of said heat pulse.

5,011,790

METHOD OF MANUFACTURING CUBIC BORON NITRIDE P-N JUNCTION BODY

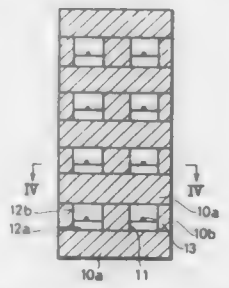
Junji Degawa, and Kazuwo Tsuji, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 2, 1989, Ser. No. 317,946

Claims priority, application Japan, Mar. 3, 1988, 63-51009

Int. Cl.[5] H01L *21/22;* C30B *29/38*

U.S. Cl. 437—134 11 Claims



1. A method of manufacturing a cubic boron nitride p-n junction body, comprising the following steps:

(a) providing a boron nitride source material,

(b) preparing cubic boron nitride seed crystals (1) having a certain conductivity type semiconductor property,

(c) preparing a solvent material containing 0.1 to 5.0 wt. % of a doping material for causing a conductivity type opposite to that of said seed crystals and being capable of dissolving boron nitride,

(d) enclosing each of said seed crystals individually and uniformly on all sides in a body of said solvent material,

(e) enclosing on all sides each of said bodies of solvent material having a seed crystal enclosed therein, in said boron nitride source material

(f) growing cubic boron nitride having a conductivity type semiconductor property opposite to that of said seed crystals, on said seed crystals under thermodynamically stable conditions for cubic boron nitride at a temperature exceeding the melting point of said solvent material, whereby a spontaneous nucleation outside said seed crystals is avoided to cause a uniform rapid growth all around each seed crystal.

5,011,791

FUSIBLE LINK WITH BUILT-IN REDUNDANCY

Sal T. Mastroianni, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 3, 1989, Ser. No. 305,575

Int. Cl.[5] H01L *21/441, 21/44*

U.S. Cl. 437—180 6 Claims

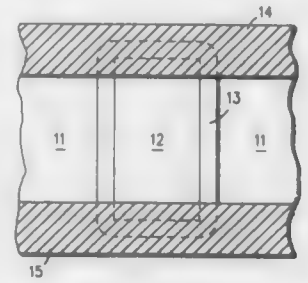
1. A method of making a fusible sidewall spacer, comprising the steps of:

providing a semiconductor substrate;

forming a dielectric layer on the substrate;

patterning a transition having four sides in the dielectric layer;

forming a fusible material on the dielectric layer; and



partially removing the fusible material to form the fusible sidewall spacer along the transition in the dielectric layer.

5,011,792

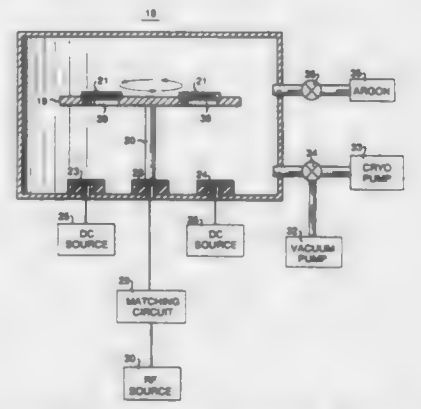
METHOD OF MAKING OHMIC LOW RESISTANCE WSB CONTACTS TO III-V SEMICONDUCTOR MATERIALS

Ranjan Dutta, Lawrenceville, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 12, 1990, Ser. No. 478,875

Int. Cl.[5] H01L *21/283*

U.S. Cl. 437—184 7 Claims



1. The method of making an electronic device comprising the steps of applying a metal film to a substrate of III-V material so as to make a substantially ohmic contact thereto characterized in that:

tungsten and antimony are deposited by sputtering onto the substrate so as to form the metal film.

5,011,793

VACUUM DEPOSITION USING PRESSURIZED REFLOW PROCESS

Hisaharu Obinata, Hatano, Japan, assignor to Nihon Shinku Gijutsu Kabushiki Kaisha, Kanagawa, Japan

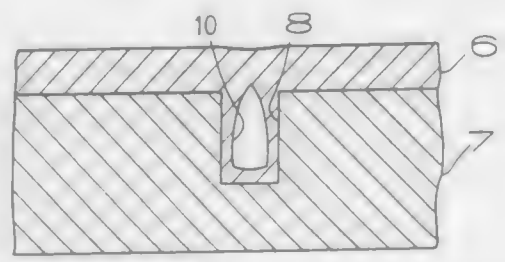
Filed Jun. 19, 1990, Ser. No. 540,163

Int. Cl.[5] H01L *21/90*

U.S. Cl. 437—203 9 Claims

1. A method of forming a thin film on a substrate having one or more recesses without void being generated in each recess, comprising the steps of forming the thin film on the substrate in a vacuum atmosphere, heating the thin film formed on the substrate to cause it to be melted and to close the entrance of

each recess by the melted material, and exposing the melted material of the thin film to a pressurized gas so that the melted



material is filled into each recess of the substrate thereby removing voids in each recess.

5,011,794

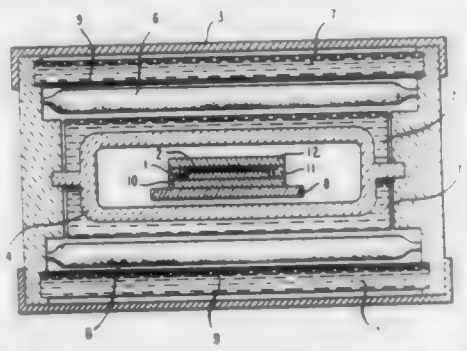
PROCEDURE FOR RAPID THERMAL ANNEALING OF IMPLANTED SEMICONDUCTORS

Karen A. Grim, Reading, Pa.; Shobha Singh, Summit, N.J.; LeGrand G. Van Uitert, Morristown, N.J., and George J. Zydzik, Columbia, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 1, 1989, Ser. No. 345,923

Int. Cl.[5] H01L *21/00, 21/02, 21/18, 21/20*

U.S. Cl. 437—247 **56 Claims**



1. A process for fabricating a semiconductor device, which comprises

subjecting to a Rapid Thermal Anneal (RTA) a wafer of semiconductor material having dopant ions implanted into at least one selected area of at least one surface thereof and a layer of an encapsulating material over the said surface, the said RTA including in succession, a pre-anneal step, a main annealing step and a post-anneal step, the pre-anneal step being conducted at a temperature and for a period sufficient to reduce any thermal shock to the semiconductor material which may result from the main-annealing step, the said pre-anneal temperature being lower than a peak temperature of the main annealing step, the main annealing step being conducted at a temperature and for a period sufficient to remove damage caused to the said surface by the ion implantation and to activate dopant ions in said at least one selected area of the said surface of the wafer, and a post-anneal step being conducted at a temperature and for a period sufficient to relieve stresses which may result from the main-annealing step,

wherein prior to said RTA, enclosing the wafer within a cavity of a container (hereinafter referred to as a "black-box") comprising a base, an annular guard ring and a lid, said base, guard ring and lid comprising black-body material stable under annealing conditions.

5,011,795

HUMAN TPA PRODUCTION USING VECTORS CODING FOR DHFR PROTEIN

Arthur D. Levinson, Hillsborough; Diane Pennica, Burlingame; William J. Kohr, San Mateo; Gordon A. Vehar, San Carlos; David V. Goeddel, Hillsborough, all of Calif.; Elizabeth M. Yelverton, Seattle, Wash., and Christian C. Simonsen, Saratoga, Calif., assignors to Genentech, Inc., San Francisco, Calif.

Continuation of Ser. No. 149,032, Jan. 27, 1988, abandoned, which is a continuation of Ser. No. 149,990, Jan. 27, 1988, abandoned, which is a continuation of Ser. No. 459,153, Jan. 19, 1983, abandoned. This application Mar. 22, 1990, Ser. No. 499,201

Int. Cl.[5] C12P *21/00, 19/34*; **C12N** *15/00, 5/00*

U.S. Cl. 435—69.2 **10 Claims**

1. A method for preparing tPA in host cells which method comprises:

(a) transfecting said host cells with a plasmid effective in expressing DNA sequences encoding a DHFR protein and tPA protein contained therein;

(b) growing the host cells under conditions such that said tPA protein is produced in amounts of at least 0.1 pg of tPA per cell per day; and

(c) recovering said tPA from said cells.

5,011,796

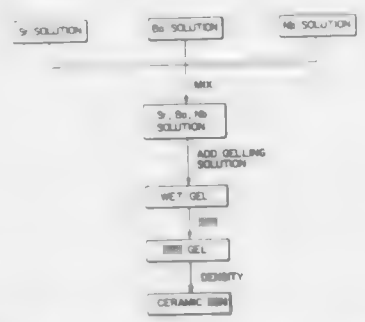
SOL-GEL PREPARATION OF POLYCRYSTALLINE STRONTIUM BARIUM NIOBATE (SBN)

Keith Bridger, Washington, D.C.; Lorianne Jones, Cockeysville, and Stephen R. Winzer, Ellicott City, both of Md., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Oct. 23, 1989, Ser. No. 425,666

Int. Cl.[5] C03C *3/00*

U.S. Cl. 501—12 **40 Claims**



1. A method for the production of polycrystalline strontium barium niobate materials having a substantially 100 percent tungsten bronze structure, the method comprising forming a solution of Sr, Ba and Nb alkoxides in an alcoholic solvent, gelling the solution, drying the gelled solution, and densifying the dried gel.

5,011,797

COMPOSITION AND METHOD FOR RADIATION SYNOVECTOMY OF ARTHRITIC JOINTS

Delbert E. Day, Rolla, and Gary J. Ehrhardt, Columbia, both of Mo., assignors to The Curators of the University of Missouri, Columbia, Mo.

Division of Ser. No. 150,154, Jan. 29, 1988, Pat. No. 4,889,707. This application Sep. 15, 1989, Ser. No. 408,115

Int. Cl.[5] C03C *12/00, 3/095*

U.S. Cl. 501—33 **19 Claims**

1. A nonradioactive microsphere adapted for radiation synovectomy on arthritic joints in a mammal comprising a biologically compatible glass material selected from the group consisting of magnesium aluminosilicate and aluminosilicate and containing an isotope selected from the group consisting of samarium, holmium, erbium, dysprosium, and rhenium chemically dissolved in and distributed substantially uniformly throughout said glass material and which, upon being subjected to an effective amount of neutron irradiation, will produce a beta emitting radioisotope selected from the group consisting of samarium-153, holmium-166, erbium-169, dysprosium-165, rhenium-186 and rhenium-188.

5,011,798

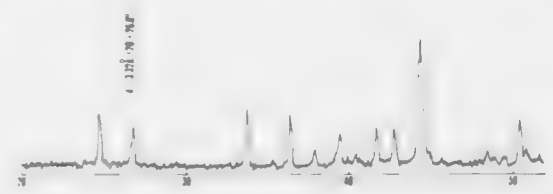
CHROMIUM ADDITIVE AND METHOD FOR PRODUCING CHROMIUM ALLOY USING THE SAME

Minoru Sasabe, Chiba; Masao Imamura, Yamagata; Yasunobu Yoshida, Yamagata; Shinya Andoh, Yamagata, and Hiroshi Miyake, Yamagata, all of Japan, assignors to Tosoh Corporation, Shinnanyo, Japan

Filed Sep. 28, 1989, Ser. No. 413,501

Int. Cl.[5] C22C *1/02, 1/03*

U.S. Cl. 501—87 **8 Claims**



1. A chromium additive of the formula $Cr_xC_yO_z$, wherein $0.04 \leqq y \leqq 0.35$, and $0.03 \leqq z \leqq 0.30$ for $x=1$, said additive having an X ray diffraction peak at $d=3.32$ Å ($2\theta=26.8°$).

5,011,799

IN SITU PRODUCTION OF SILICON CARBIDE REINFORCED CERAMIC COMPOSITES

Asoke C. Das Chaklander, 1788 Acadia Road, Vancouver, British Columbia, Canada V6T 1B3, and Sankar Das Gupta, 29 Sullivan Street, Toronto, Ontario, Canada M5T 1B8

Continuation-in-part of Ser. No. 409,054, Sep. 19, 1989, abandoned. This application Sep. 14, 1990, Ser. No. 582,388

Int. Cl.[5] C04B *35/10, 35/14, 35/56*

U.S. Cl. 501—89 **18 Claims**

1. A process for making alumina-SiC composite ceramic powder comprising forming a mixture of alumino-silicates and carbon particles as precursor material, reacting said mixture at a temperature of above 1500° C. to transform said mixture into said composite ceramic powder having Al_2O_3 and SiC as major phases.

5,011,800

PROCESS FOR MAKING MOLYBDENUM DISILICIDE OR MOLYBDENUM DISILICIDE/ALUMINA COMPOSITIONS

Rudolf Abramovici, Depew, and George T. Hida, North Tonawanda, both of N.Y., assignors to Benchmrk Structural Ceramics Corporation, Amherst, N.Y.

Filed Mar. 26, 1990, Ser. No. 499,038

Int. Cl.[5] C04B *35/58*

U.S. Cl. 501—96 **20 Claims**

1. A process for preparing a molybdenum disilicide composition, comprising the steps of sequentially:

(a) providing a composition comprised of from about 12 to about 34 weight percent of molybdenum oxide, from about 10 to about 29 weight percent of silica, from about 12 to about 36 weight percent of metallic component, and from about 15 to about 60 weight percent of inorganic diluent, wherein:

1. at least about 90 weight percent of said composition consists of a mixture of said molybdenum oxide, said silica, said metallic component, and said inorganic diluent;
2. said composition contains less than about 2.0 weight of liquid;
3. said metal component is selected from the group consisting of aluminum, magnesium, and mixtures of of aluminum and magnesium;
4. said inorganic diluent is a salt of a metallic compound which has a solubility in cold water of at least 20 grams per 100 cubic centimeters of said cold water;
5. said inorganic diluent does not decompose at a temperature of from about 1,500 to about 2,000 degrees centigrade; and
6. at a temperature of from about 1,500 to about 2,000 degrees centrigrade, said inorganic diluent is nonreactive with material selected from the group consisting of molybdenum oxide, molybdenum dislicide, silica, silicon, aluminum, alumina, magnesium, magnesia, molybdenum, and mixtures thereof;

(b) igniting said composition, thereby causing a self-propagating, metallothermic, exothermic combustion reaction to occur and producing a combusted composition;

(c) cooling the combusted composition; and

(d) washing the cooled, combusted composition with water.

5,011,801

POLYMERIC ETHYLENE-BRIDGED CHLOROSILAZANES, PROCESS FOR THEIR PREPARATION, CERAMIC MATERIALS WHICH CAN BE PREPARED FROM THEM CONTAINING SILICON NITRIDE, AND THEIR PREPARATION

Tilo Vaahs; Marcellus Peuckert, and Martin Brück, all of P.O. Box 80 03 20, D-6230 Frankfurt am Main 80, Fed. Rep. of Germany

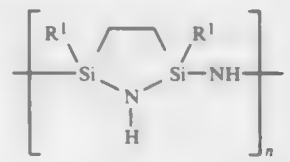
Filed Nov. 30, 1989, Ser. No. 444,816

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1988, 3840770

Int. Cl.[5] C04B *35/46, 35/48*

U.S. Cl. 501—97 **14 Claims**

1. A process for the preparation of polymeric ethylene-bridged chlorosilazanes, which comprises reacting an oligosilazane of the general formula (I)



(I)

in which n is about 2 to about 12, with at least one of the chlorosilanes $Cl_2R^2Si—CH_2CH_2—SiR^2Cl_2$, $Cl_3Si—CH_2—CH_2—SiR^3Cl_2$, R^4SiCl_3 or R^5SiHCl_2 at 30° C. to 300° C., where R^1 to R^5 are C_1–C_6-alkyl or C_2–C_6-alkenyl groups, which may be identical or different.

5,011,802

COKING TAR IMPREGNATED REFRACTORY PRODUCTS

Orville Hunter, Jr., Columbia; James L. Hill, and David E. Potts, both of Mexico, all of Mo., assignors to A.P. Green Industries, Inc., Mexico, Mo.

Filed Jan. 22, 1990, Ser. No. 468,167

Int. Cl.[5] C04B *35/04*

U.S. Cl. 501—100 **7 Claims**

1. In a process for coking tar impregnated refractory products wherein said products are heated in a furnace to a temperature sufficient to cause emission of volatile constituents from the tar and for a time sufficient to remove substantially all of the volatile constituents from the products, the improvement comprising,

heating the refractory products in a muffle within the furnace while maintaining a positive pressure within the muffle during emission of the volatile constituents, and

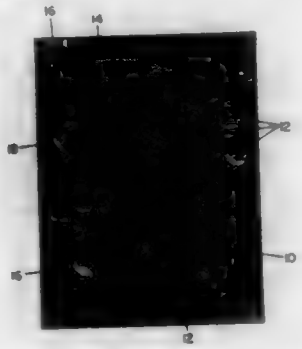
thereafter cooling the refractory products in a substantially non-oxidizing atmosphere.

5,011,803

LEAD MAGNESIUM NIOBATE CERAMIC DIELECTRICS HAVING LOW SINTERING TEMPERATURES

Hyun D. Park, Chelmsford, Mass., and Joseph D. Nance, Honea Path, S.C., assignors to Kemet Electronics Corporation, Greenville, S.C.

Filed Jan. 10, 1990, Ser. No. 463,308
Int. Cl.[5] C04B *35/46*
U.S. Cl. 501—136 **12 Claims**



1. A lead magnesium niobate perovskite-rich dielectric material which is capable of being formed from a mixture of oxide powders which is sintered at relatively low temperatures, comprising:

(a) lead-containing oxide component (expressed in terms of oxides) consisting essentially of 2 to 5 weight percent MgO, 15 to 30 weight percent Nb_2O_5, 0.5 to 7 weight percent Fe_2O_3, 0.5 to 5 weight percent WO_3 and PbO wherein the amount of lead (based on the total lead in the dielectric material) is between about 85 to 110 atomic percent of that required on a stoichiometric basis to satisfy the relationship:

$$xPb(Mg_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3\text{-}yPb(Fe_{\frac{1}{2}}Nb_{\frac{1}{2}})O_3\text{-}zPb(Fe_{\frac{2}{3}}W_{\frac{1}{3}})O_3$$

(based on the total iron and niobium in the dielectric material) wherein x is between about 0.8 and 0.92, y is between about 0.005 and 0.165 and z is between about 0.035 and 0.075; wherein the atomic ratio of tungsten to iron (based on the total tungsten and iron in the dielectric material) is less than about 0.49:1; and wherein the atomic ratio of magnesium to niobium (based on the total magnesium and niobium in the dielectric material) is between about 0.55:1 and 0.42:1,

(b) cadmium component (expressed in terms of CdO) in an amount of about 1 to 5 weight percent based on the dielectric material,

(c) transition metal component (expressed in terms of oxides) of at least one of TiO_2, ZrO_2 and HfO_2, said transition metal component being in an amount sufficient to increase the insulation resistance of an otherwise identical material but not containing the transition metal component, and

(d) sintering aid residue (expressed in terms of oxides) in an amount of about 0.2 to 2 weight percent based on the total weight of the material, said sintering aid residue comprising one or more of GeO_2, SiO_2, Bi_2O_3, ZnO, Al_2O_3, CuO and B_2O_3, which as the sintering aid are provided in combination with PbO such that the sintering aid has a melting point of between about 650° and 900° C.

5,011,804

CERAMIC DIELECTRIC COMPOSITIONS AND METHOD FOR IMPROVING SINTERABILITY

Horacio E. Bergna, Wilmington, and Ian Burn, Hockessin, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 28, 1990, Ser. No. 506,964
Int. Cl.[5] C04B *35/46*
U.S. Cl. 501—138 **13 Claims**

1. A method for enhancing the sinterability of ceramic dielectric composition comprising uniform coated particles of ceramic powder according to the steps of:

(a) mixing sintering flux component precursors with the ceramic powder whereby the flux component precursors form a uniform coating comprising primarily zinc borate on each particle wherein said coating comprises less than about 50% by weight of the coated particle; and

(b) drying and optionally calcining the coated particles.

5,011,805

DEHYDROGENATION, DEHYDROCYCLIZATION AND REFORMING CATALYST

Ralph M. Dessau, Edison, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 389,214, Aug. 3, 1989, Pat. No. 4,929,792, which is a division of Ser. No. 283,779, Dec. 13, 1988, Pat. No. 4,867,864. This application Mar. 7, 1990, Ser. No. 489,993
Int. Cl.[5] B01J *29/30*
U.S. Cl. 502—66 **39 Claims**

1. A non-acidic calcined catalyst composition comprising 0.01 to 30 weight percent of a reforming dehydrogenation/hydrogenation metal and zeolite beta in a non-acidic form, wherein zeolite beta is characterized by a framework silica:alumina ratio of 10 to 200.

2. The catalyst of claim 1, wherein the metal is a Group VIII metal.

4. The catalyst of claim 1, wherein said zeolite beta contains boron and wherein said boron ranges from 0.1 to 5 weight percent.

5. The catalyst of claim 1, wherein the non-acidic form includes an element selected from the group consisting of Group IA and Group IIA of the Periodic Table.

5,011,806

CATALYST COMPOSITION FOR THE HYDROGENATION OF CARBOXYLIC ACID ESTERS

Gether Irick, Jr., Gray; Patricia N. Mercer, Kingsport, and Kenneth E. Simmons, Blountville, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 309,641, Feb. 13, 1989, Pat. No. 4,929,777. This application Feb. 5, 1990, Ser. No. 474,920
Int. Cl.[5] B01J *21/06, 23/06, 23/10, 23/72*
U.S. Cl. 502—202 **5 Claims**

3. A catalyst composition comprising as the essential ingredients chemically-mixed, copper-titanium oxide of the formula

$$Cu_xTi_yO_z$$

wherein x, y, and z represent atomic ratios and x is about 0.01 to 0.75, y is about 0.99 to 0.25, and z is about 1.99 to 1.25 and an oxide of lanthanum or zinc.

5,011,807

CATALYSTS FOR THE PRODUCTION OF ETHYLENE OXIDE

Percy Hayden, Guisbrough, and Harry Pinnegar, Stockton-on-Tees, both of England, assignors to Imperial Chemical Industries plc, London, England

Filed Aug. 29, 1989, Ser. No. 400,133
Claims priority, application United Kingdom, Aug. 30, 1988, 8820500; Sep. 7, 1988, 8820975; Oct. 12, 1988, 8823919; Dec. 16, 1988, 8829343
Int. Cl.[5] B01J *27/055, 27/051, 27/047;* **C07D** *301/10*
U.S. Cl. 502—218 **7 Claims**

1. A catalyst for the production of ethylene oxide by the oxidation of ethylene with oxygen which consists essentially of silver supported on a porous heat resisting support, a group VI A transition metal selected from the group consisting of chromium, molybdenum and tungsten, an alkali metal selected from potassium, rubidium and cesium, and sulphur, said catalyst including 3 to 50% by weight of silver and 0.1 to 5 gram atoms of the transition metal, 0.1 to 10 gram atoms of sulphur and 0.1 to 15 gram atoms of the alkali metal per million grams of catalyst.

5,011,808

OXYCHLORINATION CATALYST COMPOSITION AND AN OXYCHLORINATION PROCESS USING IT

John D. Scott, Nr. Northwich, Great Britain, assignor to Imperial Chemical Industries PLC, England

Filed Dec. 13, 1989, Ser. No. 449,771
Claims priority, application United Kingdom, Dec. 20, 1988, 8829706
Int. Cl.[5] B01J *27/122*
U.S. Cl. 502—225 **3 Claims**

1. Oxychlorination catalyst composition comprising a mixture of metallic chlorides carried on a support therefor, wherein said mixture of metallic chlorides consists essentially of a mixture of copper chloride, magnesium chloride, and potassium chloride in which the level of copper is within the range of from 3 to 9% by weight based on the weight of said catalyst composition, the level of magnesium is within the range of from 0.2 to 3% by weight based on the weight of said catalyst composition, and the level of potassium within the range of from 0.2 to 3% by weight based on the weight of said catalyst composition, and wherein said catalyst composition provides a Cu:Mg:K atomic ratio of 1:0.1 to 1.0:0.1 to 1.0.

5,011,809

PREPARATION OF A SILVER CATALYST

Klaus Herzog, Ludwigshafen; Karl-Heinz Boehning, Darmstadt; Heinrich Aichinger, Mannheim; Juergen Plueckhan; Wolf D. Mross, both of Frankenthal, and Matthias Schwarzmann, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 29, 1990, Ser. No. 471,544
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1989, 3905578
Int. Cl.[5] B01J *21/04, 23/04, 23/50*
U.S. Cl. 502—348 **5 Claims**

1. In a two-stage process for preparing a carrier supported catalyst which contains silver and an alkali metal wherein the initial carrier supported catalyst is prepared in a first stage to contain metallic silver and may also contain the light alkali metal lithium, and this initial catalyst is then doped in a second stage with an impregnating solution containing a heavy alkali metal cation selected from the group consisting of sodium, potassium, rubidium and cesium, the improvement which comprises:

using in said second stage an impregnating solution which contains said heavy alkali metal and one or more nitrates of the formula

$$R^+NO_3^-$$

where R^+ is an ammonium, hydrazinium, C_1-C_{12}-monoalkylammonium, C_2-C_{12}-dialkylammonium, C_3-C_{12}-trialkylammonium or C_4-C_{12}-tetraalkylammonium cation.

5,011,810

PLATE-SHAPED CATALYST AND METHOD OF PRODUCING SAME

Takashi Michimoto; Yukinari Nakamoto; Kazuhiko Kuwada, and Nobuyoshi Ishida, all of Hiroshima, Japan, assignors to Babcock Hitachi Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1989, Ser. No. 335,422
Claims priority, application Japan, Oct. 7, 1988, 63-253037
Int. Cl.[5] B01J *32/00, 35/04*
U.S. Cl. 502—439 **13 Claims**

1. A plate-shaped catalyst, comprising:

an expanded metal strip having roughened surfaces;

said surface roughened expanded metal strip having a catalytic layer coated on each entire surface thereof;

said expanded metal strip having the catalytic layer formed thereon further having convex and concave portions adjoining one another and separated by a predetermined distance; and

the surfaces of said catalytic layer being formed with waveshapes having a predetermined pitch.

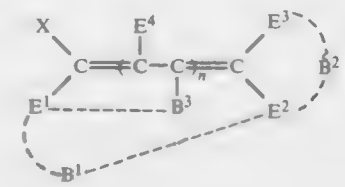
5,011,811

IN SITU DYE GENERATION FOR THERMAL TRANSFER PRINTING

Leslie Shuttleworth, Webster, N.Y., and Michael J. McManus, Peabody, Mass., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 7, 1990, Ser. No. 490,116
Int. Cl.[5] B41M *5/035, 5/18, 5/22, 5/26*
U.S. Cl. 503—201 **28 Claims**

14. A process for forming a dye image comprising imagewise transferring an electrophile from a donor element comprising a support bearing said electrophile to a receiver element comprising a support bearing a coupler compound capable of reacting with said electrophile to form an arylidene dye, and reacting said electrophile with said coupler compound to form said dye image, wherein said electrophile has the following structure:



wherein

X is halogen, substituted or unsubstituted alkylsulfonyloxy, substituted or unsubstituted arylsulfonyloxy, or substituted or unsubstituted acyloxy,

E^1, E^2, E^3, and E^4 are each independently hydrogen, substituted or unsubstituted alkyl or alkenyl having up to about six carbon atoms, substituted or unsubstituted aryl having up to about ten carbon atoms, halogen, cyano, benzoxazolyl, nitro, —CO_2R, —COR, —$CONH_2$, —CONHR, —CONRR, or —SO_2R, wherein each R is independently substituted or unsubstituted alkyl or alkenyl having up to about six carbon atoms, or substituted or unsubstituted aryl having up to about ten carbon atoms, with the proviso that at least two of the E groups are other than hydrogen, alkyl, alkenyl, aryl or halogen;

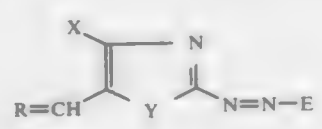
B^1 and B^2 represent the atoms necessary to complete optional five- or six-member rings formed with carbonyl moieties of E^1, E^2 or E^3;

B^3 represents hydrogen or the atoms necessary to complete

an optional five- or six-member ring with a carbonyl moiety of E^1;
and n is zero or one.

5,011,812
THERMAL TRANSFER PRINTING
Roy Bradbury, Cheshire, England, assignor to Imperial Chemical Industries, London, England
Filed Jul. 18, 1989, Ser. No. 381,260
Claims priority, application United Kingdom, Jul. 20, 1988, 8817220
Int. Cl.[5] B41M *5/035, 5/26*
U.S. Cl. 503—227 **17 Claims**

1. A thermal transfer printing sheet comprising a substrate having a coating comprising a binder and at least one azo dye of Formula I:

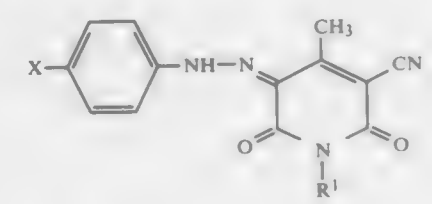


I

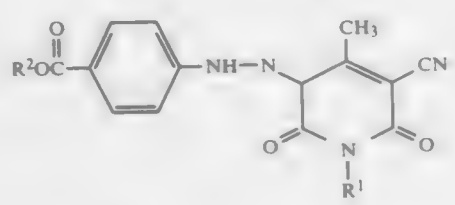
wherein;
R is the residue of an active methylene compound;
X is hydrogen; halogen; optionally substituted alkyl; optionally substituted aryl or optionally substituted heteroaryl;
Y is -S- or a group of the formula $>N-R^1$ wherein R^1 represents hydrogen or an optionally substituted C_{1-4}-alkyl; and
E is the residue of a coupling component.

5,011,813
THERMAL TRANSFER PRINTING
Roy Bradbury, St. Helens; Peter A. Gemmell, and Richard A. Hann, both of Ipswich, all of England, assignors to Imperial Chemical Industries PLC, London, United Kingdom
Filed Mar. 19, 1990, Ser. No. 495,414
Claims priority, application United Kingdom, Mar. 23, 1989, 8906821
Int. Cl.[5] B41M *5/035, 5/26*
U.S. Cl. 503—227 **7 Claims**

1. A thermal transfer printing sheet comprising a substrate having a coating comprising a mixture of dyes of 20–50% of Formula I and of 80–50% of Formula II.



I



II

wherein:
R^1 is C_{1-12}-alkyl;
X is halogen; and
R^2 is aryl or C_{1-4}-alkyl unsubstituted or substituted by C_{1-4}-alkoxy, C_{1-4}-alkoxy-C_{1-4}-alkoxy or aryl.

5,011,814
THERMAL DYE TRANSFER RECEIVING ELEMENT WITH POLYETHYLENE OXIDE BACKING LAYER
Daniel J. Harrison, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 27, 1990, Ser. No. 485,676
Int. Cl.[5] B41M *5/035, 5/26*
U.S. Cl. 503—227 **17 Claims**

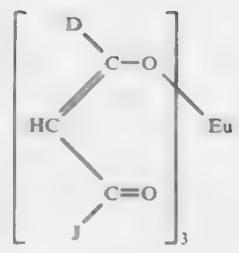
10. In a process of forming a dye transfer image in a dye-receiving element comprising:
(a) removing an individual dye-receiving element comprising a support having on one side thereof a polymeric dye image-receiving layer and on the other side thereof a backing layer from a stack of dye-receiving elements;
(b) moving said individual dye-receiving element to a thermal printer printing station and into superposed relationship with a dye-donor element comprising a support having thereon a dye-containing layer so that the dye-containing layer of the donor element faces the dye image-receiving layer of the receiving element; and
(c) imagewise-heating said dye-donor element and thereby transferring a dye image to said individual dye-receiving element;
the improvement wherein said backing layer comprises a mixture of polyethylene oxide and submicron colloidal inorganic particles, said mixture not containing more than about 20 wt. % polyethylene oxide.

5,011,815
THERMAL TRANSFER DYESHEET
Nicholas C. Beck, Manningtree; Peter A. Gemmell, and Richard A. Hann, both of Ipswich, all of Great Britain, assignors to Imperial Chemical Industries plc, London, England
Filed Nov. 9, 1989, Ser. No. 433,785
Claims priority, application United Kingdom, Nov. 11, 1988, 8826456
Int. Cl.[5] B41M *5/035, 5/26*
U.S. Cl. 503—227 **6 Claims**

4. A method for improving the stability of a colour print formed by dye-diffusion thermal transfer printing, which comprises placing against the print, a panel of transfer coat supported on a substrate, the panel comprising a dye-absorbent binder which is substantially free from any thermally transferable materials, and heating at least those areas of the print to which one or more dyes have been transferred, thereby to cause absorption by said panel of dye molecules at the surface of the print.

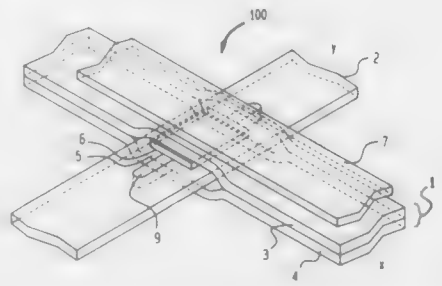
5,011,816
RECEIVER FOR THERMALLY-TRANSFERABLE FLUORESCENT EUROPIUM COMPLEXES
Gary W. Byers, and Derek D. Chapman, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 13, 1990, Ser. No. 493,077
Int. Cl.[5] B41M *5/035, 5/26*
U.S. Cl. 503—227 **12 Claims**

5. In a process of forming a transfer image comprising:
(a) imagewise-heating a donor element comprising a support having on one side thereof a layer comprising a material dispersed in a polymeric binder, and
(b) transferring an image to a receiving element comprising a support having thereon an image-receiving layer to form said transfer image,
the improvement wherein said material is a 6-coordinate europium(III) complex and said image-receiving layer also contains a monodentate or bidentate ligand capable of reacting with said 6-coordinate europium(III) complex to form a higher coordinate complex, said 6-coordinate europium(III) complex having the formula:



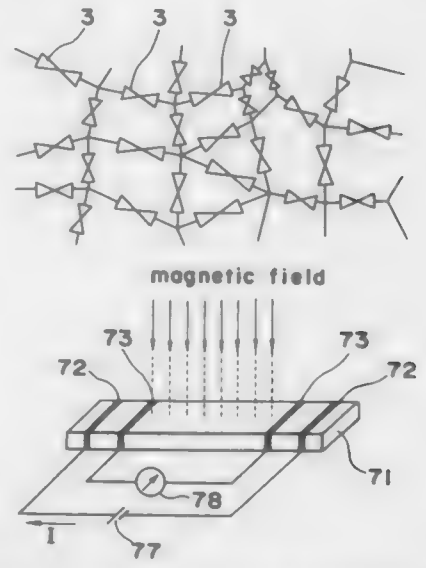
wherein:
D is a substituted or unsubstituted, aromatic, 5-or 6-membered carbocyclic or heterocyclic moiety; and
J is $-CF_3$, $-CH_3$, $-CH_2F$ or $-CHF_2$.

5,011,817
MAGNETIC MEMORY USING SUPERCONDUCTOR RING
Yasuharu Hidaka, and Takashi Inoue, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Jan. 27, 1989, Ser. No. 302,673
Claims priority, application Japan, Jan. 29, 1988, 63-20606; Jan. 29, 1988, 63-20607
Int. Cl.[5] G11C *11/44*
U.S. Cl. 505—1 **4 Claims**



1. A magnetic memory element using a superconductive ring comprising:
a first wire of superconductive material extending in a first direction;
a second wire of superconductive material extending in a second direction so as to form a cross-over area between said first and second wires;
a ferromagnetic film disposed between said first and second wires at said cross-over area and having a uniaxial anisotrophy along said second direction;
a third wire of superconductive material extending in said first direction and sandwiching said ferromagnetic film and said second wire at said cross-over area, said third wire being contacted with said first wire so as to form a ring portion at said cross-over area;
a fourth wire of conductive material extending in a first direction on said first wire;
a first means for reversing a magnetized direction of said ferromagnetic film by applying first and second currents to said second and fourth wires, respectively;
a second means for tilting said magnetized direction of said ferromagnetic film by applying a pulse current to said second wire so as to cause a diamagnetic current in said ring portion of said first and third wires;
a third means for detecting a direction of said diamagnetic current by applying a bias current to said first and third wires from the same direction, a critical current of said third wire being larger than that of said first wire but smaller than said bias current so as to switch a superconductive state of said ring portion into a normal conductive state when the sum of said diamagnetic current and a partial current of said bias current passing through said first wire at said ring portion exceeds a critical current of said first wire at said ring portion.

5,011,818
SENSING A MAGNETIC FIELD WITH A SUPER CONDUCTIVE MATERIAL THAT EXHIBITS MAGNETO RESISTIVE PROPERTIES
Shoei Katoka, Tokyo; Shuhei Tsuchimoto, Nara; Hideo Nojima, Nara; Ryusuke Kita, Nara, and Masaya Nagata, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jul. 29, 1988, Ser. No. 226,067
Claims priority, application Japan, Jul. 29, 1987, 62-189346; Jul. 29, 1987, 62-189347; Aug. 1, 1987, 62-193014; Aug. 1, 1987, 62-193016; Aug. 1, 1987, 62-193017; Aug. 1, 1987, 62-193018; Aug. 3, 1987, 62-194167; Aug. 3, 1987, 62-194168; Aug. 3, 1987, 62-194169; Aug. 5, 1987, 62-195896; Sep. 17, 1987, 62-233369; Dec. 8, 1987, 62-310085; Dec. 16, 1987, 62-319523; Dec. 28, 1987, 62-333592
Int. Cl.[5] H01B *12/02;* **H01L** *39/12, 39/16;* **G01R** *33/035*
U.S. Cl. 324—248 **28 Claims**

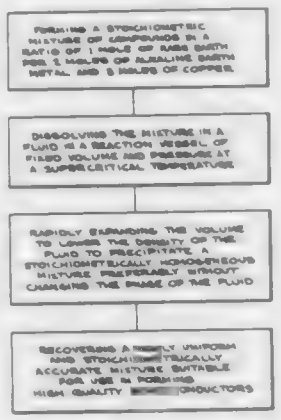


1. A method for sensing a magnetic field which comprises:
(a) applying a magnetic field to a superconductive material having grain boundaries, the application of said magnetic field being accompanied with a phase transition of said superconductive material from a superconductive phase to a normal conductive phase; and
(b) sensing said magnetic field by detecting a change in the resistance of said superconductive material which change in resistance is accompanied with the phase transition of said superconductive material from the superconductive phase to the normal conductive phase.

5,011,819
PROCESS USING SUPERCRITICAL CONDITIONS FOR PRODUCING HIGHLY ACCURATE AND HOMOGENEOUS POWDER MIXTURE USEFUL IN FABRICATION OF HIGH QUALITY CERAMIC SUPERCONDUCTORS
Jacques Leibovitz, San Jose, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jun. 2, 1988, Ser. No. 201,706
Int. Cl.[5] B01D *3/06;* **H01L** *39/12*
U.S. Cl. 505—1 **11 Claims**

1. A process for forming a uniform and homogeneous mixture of a plurality of ceramic precursor compounds in a desired stoichiometric ratio as a precipitate from a fluid under supercritical processing conditions, the process comprising:

(a) dissolving a stoichiometric mixture of compounds in a fluid confined in a fixed first volume at a first density and supercritical temperature, the mixture of compounds containing from 1 to 25 weight per cent less than the saturation amount of the least soluble compound in the fluid at said first density and supercritical temperature; and
(b) rapidly expanding the volume in which said fluid is confined to a second fixed volume without changing the phase of the fluid, thereby lowering the density of the

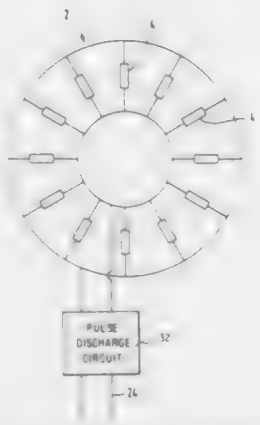


fluid and causing said stoichiometric mixture of compounds to precipitate as a uniform and stoichiometrically accurate mixture of said compounds;
wherein said stoichiometric mixture of compounds, when subsequently heated in the presence of oxygen, will form a high quality superconductor material because of the uniform and homogeneous distribution of the precipitated components in a stoichiometrically accurate ratio throughout the mixture.

5,011,820
SUPERCONDUCTING CURRENT ACCUMULATOR WITH PULSED OUTPUT

Peter Ehrhart; Andreas Gründel, both of Munich; Götz Heidelberg, Starnberg-Percha, and Wener Weck, Starnberg, all of Fed. Rep. of Germany, assignors to Heidelberg Motor GmbH Gesellschaft für Energiekonverter, Starnberg, Fed. Rep. of Germany

PCT No. PCT/EP88/01051, § 371 Date Jul. 20, 1989, § 102(e) Date Jul. 20, 1989, PCT Pub. No. WO89/05033, PCT Pub. Date Jun. 1, 1989
PCT Filed Nov. 18, 1988, Ser. No. 391,519
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1987, 3739411
Int. Cl.[5] H01B *12/00*
U.S. Cl. 505—1 **37 Claims**

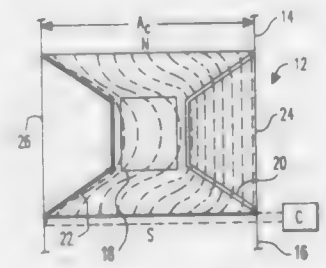


5. A current accumulator for accumulating electrical energy and for supplying a current consumer with electrical current, comprising:
a superconducting accumulator coil having thin superconductors; and
pulse discharge means for selectively connecting the accumulator coil to the current consumer to supply the current consumer with DC pulses of high energy and short duration, the pulse discharge means including at least one switch which is opened and closed at high frequency and which electrically connects the accumulator coil to the current consumer when that at least one switch is closed.

5,011,821
METHOD AND APPARATUS FOR GENERATING ELECTRICITY

Charley E. McCullough, Peters Township, Washington County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 21, 1989, Ser. No. 341,453
Int. Cl.[5] H01H *47/00*
U.S. Cl. 505—1 **19 Claims**

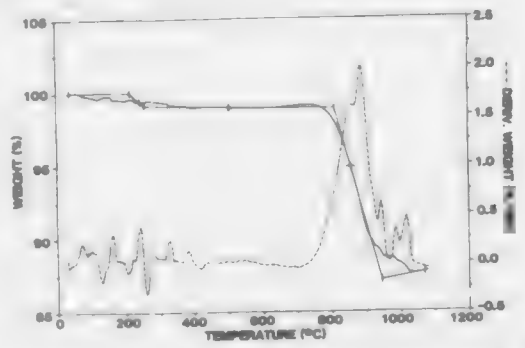


1. An electric power generating device comprising:
a magnetic field source generating a magnetic field;
a bundle of conductors disposed in the magnetic field;
a pair of magnetic field shunts disposed on opposite sides of the bundle of conductors, each of the pair of shunts including a layer of superconductive material which is normally maintained at a temperature sufficient to achieve a superconducting state thereof; and
means for cycling the layers of superconductive material into and out of the superconducting state and out of phase with each other, thereby shifting the magnetic field back and forth across the bundle of conductors to produce an electromagnetic force.

5,011,822
PREPARATION OF A UNIFORM MIXED METAL OXIDE AND SUPERCONDUCTIVE OXIDES

Timothy J. Barder, Addison, Ill., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Jan. 10, 1989, Ser. No. 296,267
Int. Cl.[5] C01F *1/00, 17/00;* **C01G** *1/00*
U.S. Cl. 505—1 **10 Claims**

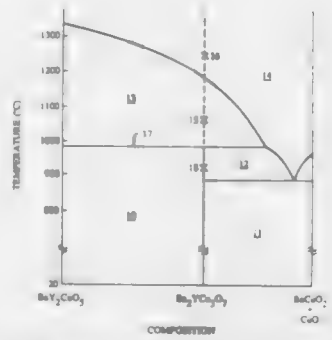


1. A method for producing a uniform mixed metal oxide comprising:
(a) dissolving metals as their salts of a carboxylic acid in an aliphatic alcohol in the substantial absence of water, said metals are in the same proportions as in the corresponding mixed metal oxide produced in step(c);
(b) co-precipitating said metals as their oxalates by mixing the alcohol solution of (a) with oxalic acid; (c) separating the co-precipitated metal oxalates of (b) and calcining said oxalates in air or oxygen above about 500° C. to convert said oxalates to the corresponding metal oxides.

5,011,823
FABRICATION OF OXIDE SUPERCONDUCTORS BY MELT GROWTH METHOD

Sungho Jin, Millington; Richard C. Sherwood, New Providence, and Thomas H. Tiefel, Piscataway, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 62,529, Jun. 12, 1979, abandoned. This application Nov. 27, 1987, Ser. No. 126,083
Int. Cl.[5] B05D *5/12*
U.S. Cl. 505—1 **18 Claims**



1. A method of fabricating a body that comprises a superconductive oxide of nominal composition $Ba_{2-x}M_{1-y}X_{x+y}Cu_3O_{7\pm\delta}$, where M is selected from the group consisting of Y, Eu, La, and combinations thereof, the optional X is different from Ba and M and is selected from the group consisting of the elements of atomic number 57–71, Sc, Ca and Sr, with $0 \leqq x+y \leqq 1$ and $0 \leqq \delta < 0.5$, and with Ba and M being at least 50% unsubstituted, wherein the method comprises
a) providing a quantity of precursor material comprising an oxide of one or more of Ba, Cu, M and X, associated with the precursor material is a phase diagram comprising a solid-liquid region and a liquid regions, and a solidus temperature;
b) heating the precursor material such that at least a portion thereof is at a temperture above the solidus temperature and is a liquid;
c) cooling at least a part of the liquid precursor material to a temperature below the solidus temperature such that re-solidified precursor material results, the rate of cooling selected such that at least a substantial portion of the re-solidified precursor material comprises elongate grains, associated with a given elongate grain being a long axis and an aspect ratio, at least a substantial fraction of the elongate grains measuring at least about 10 μm along the long axis and having an aspect ratio of at least 10:1; and
d) heat treating the re-solidified precursor material in an oxygen-containing atmosphere such that the superconductive oxide is produced from the re-solidified precursor material.

5,011,824
RECTAL MOTILIN PREPARATION

Tomoaki Masada; Yasuhiko Ueno; Eiji Hayakawa; Hirotake Naganuma; Mitsuru Terajima; Tokuyuki Kuroda; Katsuichi Shuto, and Shunji Ichikawa, all of Shizuoka, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1989, Ser. No. 436,058
Claims priority, application Japan, Nov. 16, 1988, 63-289564; Jul. 3, 1989, 64-171604
Int. Cl.[5] A61K *37/24, 37/36*
U.S. Cl. 514—13 **16 Claims**

1. A pharmaceutical composition for rectal administration comprising a therapeutically effective quantity of motilin together with a pH controller capable of adjusting the pH value of the patient's intrarectal fluid to 8.0 to 10.0.

5,011,825
PEPTIDES INFLUENCING DIURESIS AND NATRIURESIS, A PROCESS FOR THEIR PREPARATION, AGENTS CONTAINING THEM, AND THEIR USE

Wolfgang König, Hofheim am Taunus; Gerhard Breipohl; Rolf Geiger, both of Frankfurt am Main; Jochen Knolle, Kriftel, and Max Hropot, Flörsheim am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 59,842, Jun. 9, 1987, abandoned. This application Jan. 8, 1990, Ser. No. 463,782
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1986, 3619633
Int. Cl.[5] C07K *7/06;* **A61K** *37/64*
U.S. Cl. 514—18 **13 Claims**

1. A compound of formula I

$$R^N—L—N—B^3—R^C \quad (I)$$

in which
R^N represents a radical of the formula II;

(II)

R^2 represents hydrogen or a radical of the formula R—[A]$_n$—NH—;
R^3 denotes amino, guanidino, (C_1–C_3)-alkylamino or di-(C_1–C_3)-alkylamino;
m denotes an integer from 1 to 6;
A represents a radical of the formula —NH—CR^4R^5—CO—;
R denotes hydrogen, (C_1–C_6)-alkanoyl, (C_7–C_{11})-aroyl, in which the aromatic moiety is unsubstituted or mono- or disubstituted by (C_1–C_4)-alkyl, (C_1–C_4)-alkoxy, (C_1–C_4)-alkylthio, halogen, carbamoyl, (C_1–C_4)-alkoxycarbonyl and/or sulfamoyl, or is monosubstituted by methylenedioxy, or denotes (C_5–C_7)-cycloalkyl-(C_1–C_3)-alkanoyl or (C_6–C_{14})-aryl-(C_1–C_3)-alkanoyl, where a —CH_2 group in the radicals where R is not a hydrogen can be replaced by —O— or —S—;
n is 0 or, if p=1, n represents 1;
R^4 and R^5 are identical or different and denote hydrogen, (C_1–C_6)-alkyl or (C_7–C_{11})-aralkanoyl;
L represents Pro, D-Pro or a radical of the formula —N-H—$CH(R^6)$—CO—;
R^6 denotes (C_1–C_6)-alkyl which is unsubstituted or monosubstituted by hydroxyl, (C_1–C_6)-alkoxy, (C_1–C_6)-alkoxycarbonyl, carbamoyl or R-NH, R being as defined above but cannot be hydrogen, or denotes (C_7–C_{11})-aralkyl which is unsubstituted or monosubstituted on the aromatic ring by (C_1–C_6)-alkoxy, or denotes 3-indolymethyl;

N represents Pro, D-Pro or a radical of the formula —N-H—CH(R^7)—CO—;
R^7 denotes (C_1–C_6)-alkyl which is unsubstituted or monosubstituted by hydroxyl, (C_1–C_6)-alkoxy, (C_1–C_6)-alkoxycarbonyl, carbamoyl or R-NH, R being as defined above but cannot be hydrogen, or denotes (C_7–C_{11})-aralkyl which is unsubstituted or monosubstituted on the aromatic ring by (C_1–C_6)-alkoxy, or denotes 3-indolymethyl;
B^2 represents Arg, D-Arg, Lys or D-Lys;
R^C represents a radical of the formula $-NR^9-CH(R^8)-(CO)_p-R^1$;
R^8 is defined as R^7, with CH, CH_2 or CH_3 radicals which are present in the β-position with respect to —NH— optionally being monohydroxylated, and
R^9 denotes hydrogen; or
R^8 and R^9 together denote $-[CH_2]_3-$ or $[CH_2]_4$;
p is 0 or 1
R^1 represents hydrogen, hydroxyl or (C_1–C_6)-alkoxy in the case of p = 0;
R^1 represents OR^{10} or $NR^{10}R^{11}$ in the case of p = 1; and
R^{10} and R^{11} are identical or different and denote hydrogen, (C_1–C_6)-alkyl or (C_7–C_{11})-aralkyl; or $NR^{10}R^{11}$ represents pyrrolidino, piperidino or morpholino; or
p is 1, or if n = 0, p represents 0;
R and R^1 together denote a bond, and the other radicals are as defined above,
and its physiologically tolerated salts.

5,011,826

AQUEOUS DIALYSIS AND RINSING SOLUTION FOR INTRAPERITONEAL ADMINISTRATION

Volker Steudle, and Volker Bartz, both of Giessen, Fed. Rep. of Germany, assignors to Fresenius AG, Bad Homburg, Fed. Rep. of Germany

Filed Apr. 10, 1989, Ser. No. 335,921
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1988, 3812525
Int. Cl.[5] A61K *9/08, 31/70, 33/06, 33/14*
U.S. Cl. 514—23 **13 Claims**

1. Aqueous dialysis and rinsing solution for intraperitoneal administration containing electrolytes, an osmotically active substance and optional additives, characterized in that galactose is the sole osmotically active substance and is present in a concentration of 1–70 g/l.

9. Aqueous dialysis and rinsing solution for intraperitoneal administration containing electrolytes, osmotically active substances and optional additives, characterized in that galactose and glucose are the sole osmotically active substances and are present in a total concentration of 1–70 g/l.

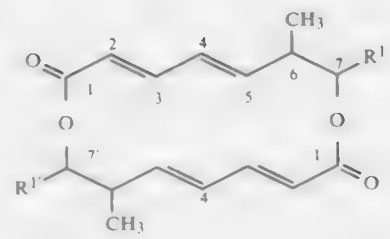
5,011,827

ELAIOPHYLINE DERIVATIVES, COMPOSITIONS CONTAINING THEM AND THE USE THEREOF AS ANTHELMINTIC AGENTS

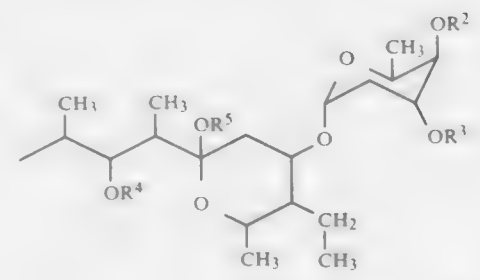
Gerhard Kretzschmar, Bad Soden am Taunus; Dieter Düwel, Hofheim am Taunus; Susanne Grabley, Königstein/Taunus; Peter Hammann, Kelkheim; Gerhard Seibert, Darmstadt; Hartmut Voelskow, Hattersheim am Main, and Carlo Giani, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

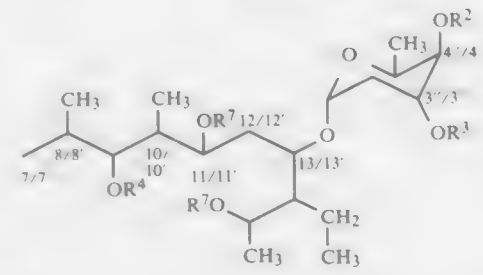
Filed Oct. 28, 1988, Ser. No. 263,753
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1987, 3736960
Int. Cl.[5] A61K *31/70;* **C07H** *17/08*
U.S. Cl. 514—32 **9 Claims**

1. An elaiophyline derivative of the formula I

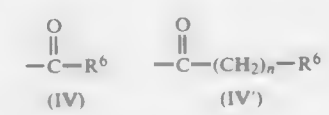

(I)

where the C-13 C double bonds in the macrodielide ring of the compound of the formula I can also be hydrogenated and in which
R^1 is a radical of the formula II or III

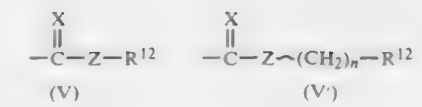

(II)


(III)

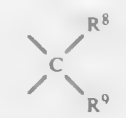
in which
R^2 and r^3 are identical or different and denote hydrogen or a radical of the formula IV or IV'


(IV) (IV')

in which
n denotes 1 to 3 and
R^6 denotes C_1–C_{15}-alkyl, C_2–C_{15}-alkenyl, C_2–C_{15}-alkynyl, C_3–C_9-cycloalkyl, a radical selected from the group consisting of phenyl, naphthyl, thiophene, furan, pyridine, pyrimidine and pyrazine, where said radical can be substituted by halogen, nitro, cyano, hydroxyl, C_1–C_4-alkyl or C_1–C_4-alkoxy and where for the case in which R^3 is hydrogen, R^2 is also hydrogen,
or in which
R^2 and R^3 are identical and denote C_1–C_4-alkyl, benzyl, allyl, methoxyethoxymethyl, methoxymethyl, β-trimethylsilylethoxymethyl, trimethylsilyl, triethylsilyl, dimethylphenylsilyl, dimethylcyclohexylsilyl or dimethyl tertiary butylsilyl
or
R^2 and R^3 denote sulfonates of the formula SO_2R
in which
R^{10} denotes C_1–C_{10}-aklyl, phenyl or p-tolyl
or
R^2 and R^3 represent a radical of the formula V or V'


(V) (V')

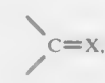
in which
n denotes 1 to 3
X denotes oxygen or sulfur
R^{12} denotes C_1–C_{15}-alkyl, C_3–C_9-cycloalkyl, phenyl, napthyl, pyridyl, pyrimidyl or pyrazinyl, where the phenyl, napthyl, pyridyl, pyrimidyl or pyrazinyl radicals can be substituted by halogen, nitro, cyano or C_1–C_4-alkoxy and
Z denotes oxygen, —N—H or a radical —N—R^{12} or —N—$(CH_2)_n$— R^{12}, where n and R^{12} have the above-mentioned meanings
or in which
R^2 and R^3 together represent a radical of the formula VI


(VI)

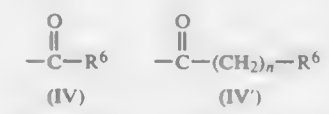
in which
R^8 and R^9 are identical or different and denote hydrogen or unbranched C_1–C_{10}-alkyl or where
R^8 and R^9 represent an alkylene chain, which together with the carbon atom carrying it, forms a 5-, 6- or 7-membered ring
or in which
R^2 and R^3, for the case in which R^1 is a radical of the formula II, are identical and represent a radical of the formula VIII

(VIII)

in which
X denotes oxygen or sulfur
or
R^2 and R^3, for the case in which R^1 is a radical of the formula II, together represent a radical of the formula



wherein
X denotes oxygen or sulfur
and in which
R^4, provided that R^2 and R^3 are hydrogen, denotes hydrogen or, for the case in which R^2 and R^3 do not denote hydrogen, is hydrogen or a radical of the formula IV or IV'


(IV) (IV')

n and R^6 have the above-mentioned meanings
and
R^5 is hydrogen or a radical of the formula $-(CH_2)_n-R^6$
where
n and R^6 have the above-mentioned meanings
and in which
R^7 denotes hydrogen or—provided that R^2, R^3 and R^4 do not simultaneously denote hydrogen—forms a radical of the formula IV or IV'—as defined above—
and in which
$R^{1'}$ has the same meaning as R^1, where the two radicals R^1 and $R^{1'}$ can be substituted both by identical—except for the radicals R^4 and R^5 and for the case in which R^2 and R^3 together form a radical of the formula VI—and different substituents, with the exception that when R^1 is a radical of the formula II in which R^2 and R^3 form a radical of the formula VIII or in which R^2 and R^3 together form a radical of the formula >C=X, for $R^{1'}$ the radicals R^2 and R^3 in the radical of the formula II or III are not simultaneously hydrogen,
excluding elaiophyline itself, elaiophyline having a hydrogenated macrodiolide ring, and also compounds of the formula I, wherein the macrodiolide ring is hydrogenated or unhydrogenated and in which R^1 and $R^{1'}$ are identical or different and represent a radical of the formula II or III, wherein R^2 and R^3 denote hydrogen or acetyl and R^4 and R^5 or R^7 denote hydrogen and likewise also excluding the compounds of the formula I in which the macrodiolide ring is unhydrogenated and wherein R^1 and $R^{1'}$ simultaneously represent a radical of the formula II, wherein R^2, R^3 and R^4 denote hydrogen and wherein
R^5 denotes a radical of the formula $-(CH_2)_n-R^6$ where n and R^6 have the above-mentioned meanings.

4. A pharmaceutical composition for use in the treatment of anthelmintic disorders comprising a therapeutically effective amount of at least one of the elaiophyline derivatives of the formula I as claimed in claim 1, wherein the C—C double bonds in the macrodiolide ring of the compound of the formula (I) can also be hydrogenated and in which
R^1 is a radical of the formula II or III, in which R^2 and R^3 are identical or different and denote hydrogen, or a radical of the formula IV or IV' in which
n denotes 1 to 3 and
R^6 denotes C_1–C_{15}-alkenyl, C_2–C_{15}-alkynyl, C_3–C_9-cycloalkyl, aryl or heteroaryl radical selected from the group consisting of phenyl, naphthyl, thiophene, furan, pyridine, pyrimidine or pyrazine, wherein said aryl and heteroaryl radicals can be substituted by halogen, nitro, cyano, hydroxyl, C_1–C_4-alkyl or C_1–C_4-alkoxy and where for the case in
which R^3 is hydrogen, R^2 is also hydrogen,
or in which
R^2 and R^3 are identical and denote C_1–C_4-alkyl, benzyl, allyl, methoxyethoxymethyl, methoxymethyl, β-trimethylsilylethoxymethyl, trimethylsilyl, triethylsilyl, dimethylphenylsilyl, dimethylcyclohexylsilyl or dimethyl tertiary butylsilyl
or
R^2 and R^3 denote sulfonates of the formula SO_2R^{10}
in which
R^{10} denotes C_1–C_{10}-alkyl, phenyl or p-tolyl
or
R^2 and R^3 represent a radical of the formula V or V'
in which
n denotes 1 to 3
X denotes oxygen or sulfur
R^{12} denotes C_1–C_{15}-alkyl, C_3–C_9-cycloalkyl, phenyl, napthyl, pyridyl, pyrimidyl or pyrazinyl, where the phenyl, napthyl, pyridyl, pyrimidyl or pyrazinyl radicals can be substituted by halogen, nitro, cyano or C_1–C_4-alkoxy and
denotes oxygen, —N—H or a radical —N—R^{12} or —N—(CH_2)—
R^{12}, where n and R^{12} have the above-mentioned meanings
or in which
R^2 and R^3 together represent a radical of the formula VI
in which
R^8 and R^9 are identical or different and denote hydrogen or unbranched C_1–C_{10}-alkyl or where
R^8 and R^9 represent an alkylene chain, which together with the carbon atom carrying it, forms a 5-, 6- or 7-membered ring

or in which

R^2 and R^3, for the case in which R^1 is a radical of the formula II, are identical and represent a radical of the formula VIII

in which

X denotes oxygen or sulfur

or

R^2 and R^3, for the case in which R^1 is a radical of the formula II, together represent a radical of the formula

$$\geqq C=X,$$

wherein

X denotes oxygen or sulfur

and in which

R^4, provided that R^2 and R^3 are hydrogen, denotes hydrogen or, for the case in which R^2 and R^3 do not denote hydrogen, is hydrogen or a radical of the formula IV or IV'

n and R^6 have the above-mentioned meanings

and

R^5 is hydrogen or a radical of the formula $-(CH_2)_n-R^6$

where

n and R^6 have the above-mentioned meanings

and in which

R^7 denotes hydrogen or—provided that R^2, R^3 and R^4 do not simultaneously denote hydrogen—forms a radical of the formula IV or IV' as defined above—

and in which

$R^{1'}$, has the same meaning as R^1, where the two radicals R^1 and $R^{1'}$ can be substituted both by identical-13 except for the radicals R^4 and R^5 and for the case in which R^2 and R^3 together form a radical of the formula VI—and different substituents, with the exception that when R^1 is a radical of the formula II in which R^2 and R^3 form a radical of the formula VIII or in which R^2 and R^3 together form a radical of the formula $>C=X$, for $R^{1'}$ the radicals R^2 and R^3 in the radical of the formula II or III are note simultaneously hydrogen,

excluding elaiophyline, together with an inert carrier.

7. A method for treating a patient suffering from an anthelmintic disease which comprises administering to said patient a therapeutic amount of a pharmaceutical composition as claimed in claim 4.

5,011,828

IMMUNOSTIMULATING GUANINE DERIVATIVES, COMPOSITIONS AND METHODS

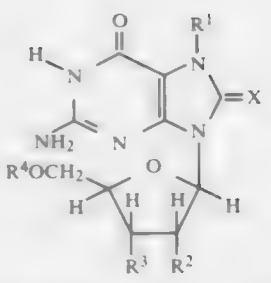
Michael Goodman, 6455 Calle de Lagrima, Rancho Santa Fe, Calif. 92067; William Weigle, 13750 Ruette Le Parc, Apt. C, Del Mar, Calif. 92014; Stanley Bell, 732 Braeburn La., Narberth, Pa. 19072; Robert Chen, 39 Beverly Dr., Belle Mead, N.J. 08502; Roland K. Robins, 3 Titan, Irvine, Calif. 92715, and William J. Hennen, 2306 Long Dr., Bryan, Tex. 77802

Continuation-in-part of Ser. No. 798,629, Nov. 15, 1985, Pat. No. 4,746,651, which is a continuation-in-part of Ser. No. 546,679, Nov. 1, 1983, Pat. No. 4,643,992. This application May 5, 1988, Ser. No. 190,697

Int. Cl.[5] A61K *31/70;* **C08B** *31/00*

U.S. Cl. 514—45 **29 Claims**

1. A substituted guanine nucleoside derivative that corresponds to the formula



wherein X is O, S, Se or NCN;

R^1 is a straight, cyclic or branch chained hydrocarbyl radical having a length greater than an ethyl group and less than a decyl group;

R^2 and R^3 are the same or different radicals selected from the group consisting of hydrogen, hydroxyl, lower alkoxy, lower alkanoyloxy, and benzoxy or R^2 and R^3 together constitute a lower alkylidenedioxy radical;

R^4 is a radical selected from the group consisting of hydrogen, lower alkanoyl, and benzoyl; and

the pharmaceutically acceptable, non-toxic base addition salts thereof.

5,011,829

PHARMACEUTICAL COMPOSITION AND METHOD OF INHIBITING VIRUS

Martin S. Hirsch, Newton, and Victoria A. Johnson, Boston, both of Mass., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Jun. 2, 1989, Ser. No. 360,439

Int. Cl.[5] A61K *31/70, 31/445*

U.S. Cl. 514—50 **21 Claims**

1. A method of treating an HIV infected patient which comprises administering to said patient a combination of 3'-azido-3'-deoxythymidine and N-butyl deoxynojirimycin, or their pharmaceutically acceptable salts, in an amount which achieves antiviral efficacy and which yields a dose level which produces a combination index less than 1.

5,011,830

ORAL COMPOSITIONS HAVING IMPROVED ANTICALCULUS PROPERTIES CONTAINING PYROPHOSPHATE AND AN ACRYLIC ACID POLYMER

Giles J. Leonard, Oxford, and Michael L. Marberry, Cincinnati, both of Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 375,211, Jul. 3, 1989, abandoned, which is a continuation of Ser. No. 129,268, Dec. 7, 1987, abandoned. This application Jul. 16, 1990, Ser. No. 554,936

Int. Cl.[5] A61K *7/18, 7/16*

U.S. Cl. 424—57 **13 Claims**

1. An anticalculus oral composition comprising:

(a) a safe and effective amount of a pyrophosphate salt or a mixture of said salts;

(b) a safe and effective amount of polyacrylic acid or copolymers of acrylic acid and another monomer or mixtures thereof;

(c) a safe and effective amount of a water soluble fluoride ion source; and

(d) a pharmaceutically acceptable carrier.

5,011,831

DERIVATIVES OF QUINOLINECARBOXYLIC ACID

Masahiro Kise; Masahiko Kitano, both of Kyoto; Masakuni Ozaki, Joyo; Kenji Kazuno, Rittocho; Masahito Matsuda, Otsu; Ichiro Shirahase, Kyoto, and Yoshifumi Tomii, Katano, all of Japan, assignors to Nippon Shinyaku Co. Ltd., Japan

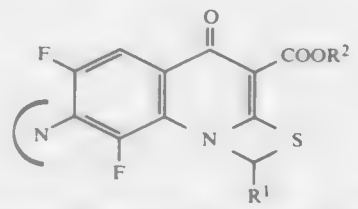
Filed Nov. 7, 1988, Ser. No. 267,938

Claims priority, application Japan, Nov. 7, 1987, 62-281551

Int. Cl.[5] A61K *31/395;* **C07D** *513/04*

U.S. Cl. 514—210 **21 Claims**

1. A compound of the formula (I)



[I]

or a pharmaceutically acceptable salt thereof wherein R^1 is hydrogen, straight or branch chain lower alkyl of phenyl unsubstituted or substituted by one or more halo moieties; R^2 is hydrogen or straight or branch chain lower alkyl; and



is pyrrolidino, piperidino, piperazino, morpholino or thiomorpholino unsubstituted or substituted by straight or branch chain alkyl of 1 to 4 carbon atoms, amino or mono- or dialkylamino wherein the alkyl moiety is straight or branch chain of 1 to 4 carbon atoms.

5,011,832

2-BIPHENYL-CARBAPENEM ANTIBACTERIAL AGENTS

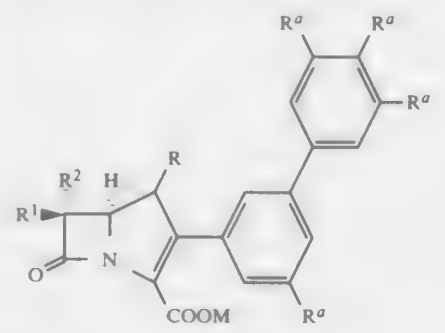
Frank P. Dininno, Old Bridge, and Thomas N. Salzmann, North Plainfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 26, 1990, Ser. No. 544,281

Int. Cl.[5] C07D *487/01;* **A61K** *31/40*

U.S. Cl. 514—210 **28 Claims**

1. Carbapenem compounds of the formula:



(I)

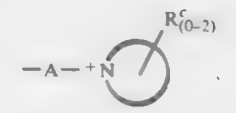
wherein:

R is H or CH_3,

R^1 and R^2 are independently H, CH_3—, CH_3CH_2—, $(CH_3)_2CH$—, $HOCH_2$—, $CH_3CH(OH)$—, $(CH_3)_2C(OH)$—, $FCH_2CH(OH)$—, $F_2CHCH(OH)$—, $F_3CCH(OH)$—, $CH_3CH(F)$—, CH_3CF_2—, or $(CH_3)_2C(F)$—;

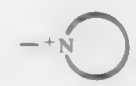
R^a are independently selected from the group consisting of hydrogen and the radicals set out below, provided that one but not more than one R^a is selected from type I substituents and not more than four R^a radicals are other than hydrogen:

(a)



where

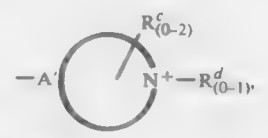
is $(CH_2)_m$—Q—$(CH_2)_n$, where m is 0 to 6 and n is 1 to 6 and Q is a covalent bond, O, S, SO, SO_2, NH, $-SO_2NH-$, $-NHSO_2-$, —CONH—, —NHCO—, $-SO_2N(C_1-C_4alkyl)-$, $-N(C_1-C_4alkyl)SO_2-$, $-CON(C_1-C_4alkyl)-$, $-N(C_1-C_4alkyl)CO-$, —CH=CH—, —CO—, —OC(O)—, —C(O)O— or $N(C_1-C_4alkyl)$ and $(CH_2)_m$ is attached to the biphenyl moiety;



is a 5- or 6-membered monocyclic heterocycle or an 8-, 9- or 10-membered bicyclic heterocycle, the heterocycle containing a first nitrogen in an aromatic 5- or 6-membered first ring, with attachment of the heterocycle to A by way of said first nitrogen and said first nitrogen is quaternary by virtue of the attachment and ring bonds, with the first ring containing 0 or 1 of either O or S, with the first ring containing 0 to 3 additional nitrogen atoms, with the first ring optionally fused to a 3- or 4-membered moiety to form the optional second ring, with the the moiety containing at least one carbon atom, with the moiety containing 0 or 1 of either O or S, with the moiety containing 0 to 2 nitrogen atoms, and with the moiety being saturated or unsaturated and the second ring aromatic or non-aromatic;

is R^a as defined under II below, hydrogen, or $-NR^yR^z$ (where R^y and R^z are defined in II below), but independently selected from R^a and from each other if more than one R^c is present, and is attached to a carbon ring atom or a nitrogen heteroatom the valency of which is not satisfied by the ring bonds;

(b)



where



is a 5 or 6-membered monocyclic heterocycle or an 8-, 9- or 10-membered bicyclic heterocycle, the heterocycle containing a first nitrogen in an aromatic 5- or 6-membered first ring, with said first nitrogen quaternary by virtue of a substituent R^d in addition to the ring bonds thereto, with said first nitrogen neutral in the absence of a substituent R^d, with attachment of the heterocycle to A' by way of a carbon atom of a ring, with the first ring containing 0 or 1 of either O or S, with the first ring containing 0 to 2 additional nitrogen atoms, with the first ring optionally fused to a 3- or 4-membered moiety to form the optional second ring, with the moiety containing at least one carbon atom, with the moiety containing 0 or 1 of either O or S, with the moiety containing 0 to 2 nitrogen atoms, and with the moiety being saturated or

unsaturated and the second ring aromatic or non-aromatic;

R^c is defined above;

R^d is hydrogen, NH_2, 0 or C_1–C_4alkyl (where the alkyl group is optionally mono-substituted with R^q as defined under IIc below);

A′ is $(CH_2)_m$—Q—$(CH_2)_n$, where m is 0 to 6 and n is 0 to 6, Q is given above, and when m and n are 0 then Q is not a covalent bond;

(c) $—A_p—N^+R^yR^z(R^w)_{(0-1)}(R^z)$

where

R^y and R^z are as defined under II below.

R^y and R^z may further be together a C_2–C_4 alkylidene radical to form a ring (optionally mono-substituted with R^q as defined below) interrupted by $N(O)R^e$ or $N^+(R^q)_2$ (where R^e is hydrogen, C_1–C_4alkyl or C_1–C_4alkyl mono-substituted with R^q as defined below),

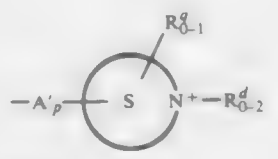
R^w is hydrogen, C_{1-4} alkyl, O^-, NH_2 or absent in which case the N+ is neutral,

R^w, R^y and R^z may further together form a C_5–C_{10} tertiary alkylidene radical which with N^+ forms a bicyclic ring, where the tertiary alkylidene radical is optionally mono-substituted with R^q as defined below and where the tertiary carbon of the tertiary alkylidene radical is optionally replaced with nitrogen, N^+R^e (where R^e is defined above), or $N^+—O^-$,

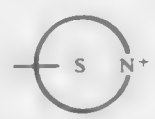
p is 0 or 1, and

A is as defined above;

(d)



where



is a 5- or 6-membered monocyclic heterocycle or an 8-, 9- or 10-membered bicyclic heterocycle, the heterocycle containing a first nitrogen in a first ring, with the first ring saturated or unsaturated and non-aromatic, with the first nitrogen quaternary by virtue of one or two substituents R^d in addition to the ring bonds thereto, with the first nitrogen alternatively neutral by virtue of zero or one substituents R^d in addition to the ring bonds thereto, with attachment of the heterocycle to A′ by way of a carbon atom or non-quaternary nitrogen atom of a ring, with the first ring containing in addition to carbon and the first nitrogen 0 to 1 of a member selected from the group consisting of the non-quaternary nitrogen of attachment, O, S, S(O), $S(O)_2$ and NR^e where R^e is defined above, with the first ring optionally fused to a 2-, 3- or 4-membered moiety to form the optional second ring, with the moiety optionally containing in addition to carbon the non-quaternary nitrogen of attachment, and with the moiety saturated or unsaturated and the second ring non-aromatic;

R^d is defined above and where more than one R^d is present on a nitrogen, at least one R^d is hydrogen or C_1-C_4alkyl;

A′ is defined above; and

p is defined above;

R^q is defined below;

II.

(a) a trifluoromethyl group: $—CF_3$;

(b) a halogen atom: —Br, —Cl, —F, or —I;

(c) C_1–C_4 alkoxy radical: $—OC_{1-4}$ alkyl, wherein the alkyl is optionally mono-substituted by R^q, where

R^q is a member selected from the group consisting of —OH, $—OCH_3$, —CN, $C(O)NH_2$, $OC(O)NH_2$, CHO, $—OC(O)N(CH_3)_2$, $—SO_2NH_2$, $—SO_2N(CH_3)_2$, $—SOCH_3$, $—SO_2CH_3$, —F, $—CF_3$, $—COOM^a$ (where M^a is hydrogen, alkali metal, methyl or phenyl), tetrazolyl (where the point of attachment is the carbon atom of the tetrazole ring and one of the nitrogen atoms is mono-substituted by Ma as defined above) and $—SO_3M^b$ (where M^b is hydrogen or an alkali metal);

(d) a hydroxy group: —OH;

(e) a carbonyloxy radical: $—O(C═O)R^s$, where

R^s is C_{1-4} alkyl or phenyl, each of which is optionally mono-substituted by R^q as defined above;

(f) a carbamoyloxy radical: $—O(C═O)N(R^y)R^z$ where

R^y and R^z are independently H, C_{1-4} alkyl (optionally mono-substituted by R^q as defined above), together a 3- to 5-membered alkylidene radical to form a ring (optionally substituted with R^q as defined above) or together a 2- to 4-membered alkylidene radical, interrupted by —O—, —S—, —S(O)— or $—S(O)_2—$, to form a ring (where the ring is optionally mono-substituted with Rq as defined above);

(g) a sulfur radical: $—S(O)_n—R^s$ where n=0–2, and R^s is defined above.

(h) a sulfamoyl group: $—SO_2N(R^y)R^z$ where R^y and R^z are as defined above ,

(i) azido: N_3

(j) a formamido group: $—N(R^t)(C═O)H$,

where

R^t is is H or C_{1-4} alkyl, and the alkyl thereof is optionally mono-substituted by R^q as defined above;

(k) a (C_1–C_4 alkyl)carbonylamino radical: $—N(R^t)(C═O)C_{1-4}$ alkyl, where R^t is as defined above, and the alkyl group is also optionally mono-substituted by R^q as defined above;

(l) a (C_1–C_4 alkoxy) carbonylamino radical: $—N(R^t)(C═O)OC_{1-4}$ alkyl, where R^t is as defined above, and the alkyl group is also optionally mono-substituted by R^q as defined above;

(m) a ureido group: $—N(R^t)(C═O)N(R^y)R^z$ where R^t, R^y and R^z are as defined above;

(n) a sulfonamido group: $—N(R^t)SO_2R^s$, where R^s and R^t are as defined above;

(o) a cyano group: —CN;

(p) a formyl or acetalized formyl radical: $—(C═O)H$ or $—CH(OCH_3)_2$;

(q) (C_1–C_4 alkyl)carbonyl radical wherein the carbonyl is acetalized: $—C(OCH_3)_2C_{1-4}$ alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;

(r) carbonyl radical: $—(C═O)R^s$, where R^s is as defined above;

(s) a hydroximinomethyl radical in which the oxygen or carbon atom is optionally substituted by a C_1–C_4 alkyl group: $—(C═NOR^z)R^y$ where R^y and R^z are as defined above, except they may not be joined together to form a ring;

(t) a (C_1–C_4 alkoxy)carbonyl radical: $—(C═O)OC_{1-4}$ alkyl, where the alkyl is optionally mono-substituted by R^q as defined above;

(u) a carbamoyl radical: $—(C═O)N(R^y)R^z$ where R^y and R^z are as defined above;

(v) an N-hydroxycarbamoyl or N(C_1–C_4 alkoxy)carbamoyl radical in which the nitrogen atom may be additionally substituted by a C_1–C_4 alkyl group: $—(C═O)—N(OR^y)R^z$ where R^y and R^z are as defined above, except they may not be joined together to form a ring;

(w) a thiocarbamoyl group: $—(C═S)N(R^y)(R^z)$ where R^y and R^z are as defined above;

(x) carboxyl: $—COOM^b$, where M^b is as defined above;

(y) thiocyanate: —SCN;

(z) trifluoromethylthio: $—SCF_3$;

(aa) tetrazolyl, where the point of attachment is the carbon atom of the tetrazole ring and one of the nitrogen atoms is mono-substituted by hydrogen, an alkali metal or a C_1–C_4 alkyl optionally substituted by R^q as defined above;

(ab) an anionic function selected from the group consisting of: phosphono $[P═O(OM^b)_2]$; alkylphosphono $\{P═O(OM^b)—[O(C_1$-C_4 alkyl)]$\}$; alkylphosphinyl $[P═O(OM^b)—(C_1$-C_4alkyl)]; phosphoramido $[P═O(OM^b)N(R^y)R^z$ and $P═O(OM^b)NHR^x]$; sulfino (SO_2M^b); sulfo (SO_3M^b); acylsulfonamides selected from the structures $CONM^bSO_2R^x$, $CONM^bSO_2N(R^y)R^z$, $SO_2NM^bCON(R^y)R^z$; and SO_2NM^bCN, where

R^x is phenyl or heteroaryl, where heteroaryl is a monocyclic aromatic hydrocarbon group having 5 or 6 ring atoms, in which a carbon atom is the point of attachment, in which one of the carbon atoms has been replaced by a nitrogen atom, in which one additional carbon atom is optionally replaced by a heteroatom selected from O or S, and in which from 1 to 2 additional carbon atoms are optionally replaced by a nitrogen heteroatom, and where the phenyl and heteroaryl are optionally mono-substituted by R^q, as defined above; M^b is as defined above; and R^y and R^z are as defined above;

(ac) C_5–C_7 cycloalkyl group in which one of the carbon atoms in the ring is replaced by a heteroatom selected from O, S, NH or N(C_1–C_4 alkyl) and in which one additional carbon atom may be replaced by NH or N(C_1–C_4 alkyl), and in which at least one carbon atom adJacent to each nitrogen heteroatom has both of its attached hydrogen atoms replaced by one oxygen thus forming a carbonyl moiety and there are one or two carbonyl moieties present in the ring;

(ad) C_2–C_4 alkenyl radical, optionally mono-substituted by one of the substituents (a) to (ac) above and phenyl which is optionally substituted by R^q as defined above;

(ae) C_2–C_4 alkynyl radical, optionally mono-substituted by one of the substituents (a) to (ac) above;

(af) C_1–C_4 alkyl radical;

(ag) C_1–C_4 alkyl mono-substituted by one of the substituents (a) - (ac) above;

(ah) a 2-oxazolidinonyl moiety in which the point of attachment is the nitrogen atom of the oxazolidinone ring, the ring oxygen atom is optionally replaced by a heteroatom selected from —S— and $>NR^t$ (where R^t is as defined above) and one of the saturated carbon atoms of the oxazolidinone ring is optionally mono-substituted by one of the substituents (a) to (ag) above;

M is selected from:

(i) hydrogen;

(ii) a pharmaceutically acceptable esterifying group or removable carboxyl protecting group;

(iii) an alkali metal or other pharmaceutically acceptable cation; or

(iv) a negative charge which is balanced by a positively charged group.

5,011,833

NOVEL DERIVATIVES OF 6,11-DIHYDRO-DIBENZO(C,F)(1,2,5)-THIADIAZEPINE 5,5-DIOXIDE, SALTS THEREOF AND APPROPRIATE PROCESSES FOR THE PREPARATION THEREOF

Franco Borsini; Alberto Meli; Giovanna Volterra, all of Firenze; Danilo Giannotti, Lucca, and Vittorio Pestellini, Firenze, all of Italy, assignors to A. Menarini Industrie Farmaceutiche Riunite, Florence, Italy

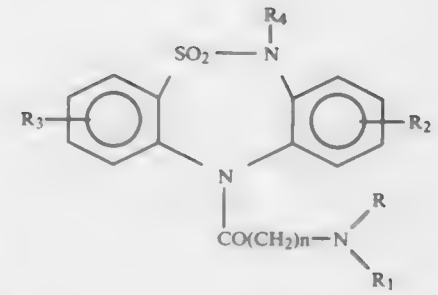
Filed Aug. 11, 1989, Ser. No. 393,517

Claims priority, application Italy, Aug. 12, 1988, 9466 A/88

Int. Cl.[5] **C07D** *285/36;* **A61K** *31/55*

U.S. Cl. 511—211 **9 Claims**

1. A novel derivative of 11-carbonyl-6,11-dihydrodibenzo[c,f][1,2,5]thiadiazepine 5,5-dioxide of the general formula



wherein

R and R_1, which can be different, represent a hydrogen atom or a (C_1–C_5)alkyl or (C_1–C_4)hydroxyalkyl group, or R and R_1 together can form a 5-membered and/or 6-membered heterocyclic ring which may contain a further heteroatom,

R_2 and R_3, which can be different, represent a hydrogen atom, a (C_1–C_3)alkoxy, (C_1–C_3)alkyl, nitro, amino or (C_1–C_3)alkylamino, halogen, halogenoalkyl or hydroxyl group,

R_4 represents a hydrogen atom or a (C_1–C_4)alkyl, alkylaryl or (C_1–C_6)alkylamino group, and n assumes values of 0, 1 or 2.

5,011,834

PCP RECEPTOR LIGANDS AND THE USE THEREOF

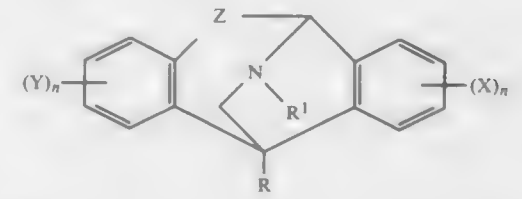
Eckard Weber, Portland; John F. W. Keana, and Peter Barmettler, both of Eugene, all of Oreg., assignors to State of Oregon, acting by and through the Oregon State Board of Higher Education, acting for and on behalf of the Oregon Health Sciences University and the University of Oregon, Portland, Oreg.

Filed Apr. 14, 1989, Ser. No. 337,858

Int. Cl.[5] **A61K** *31/55*

U.S. Cl. 514—212 **26 Claims**

1. A method of treating or preventing neuronal loss, comprising administering to an animal in need of such treatment a compound of the formula:



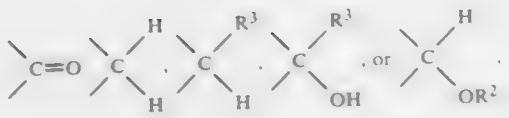
wherein:

R is hydrogen, C_2–C_6 acyl, C_1–C_6 alkyl, aryl, C_1–C_6 alkoxycarbonyl, C_7–C_{10} aralkyl, C_2–C_6 alkenyl, C_3–C_{15} dialkylaminoalkyl, C_1–C_6 hydroxyalkyl, C_2–C_6 alkynyl, C_3–C_{15} trialkylsilyl, C_4–C_{10} alkylcycloalkyl, or C_3–C_6 cycloalkyl;

R^1 is hydrogen, C_1–C_6 alkyl, C_2C_6 alkenyl, C_{7-C10} aralkyl, C_1–C_6 alkoxy or C_3–C_{15} dialkylaminoalkyl;

X and Y are independently selected from the group consisting of chloro, fluoro, bromo, iodo, C_1–C_6 alkoxy, C_2–C_6-dialkoxymethyl, C_1–C_6 alkyl, cyano, C_3–C_{15} dialkylaminoalkyl, carboxy, carboxamido, C_1–C_6 haloalkyl, C_1–C_6 haloalkylthio, allyl, aralkyl, C_3–C_6 cycloalkyl, aroyl, aralkoxy, C_2–C_6 acyl, aryl, substituted aryl, C_1–C_6 alkylthio, C_1–C_6 alkylsulfonyl, C_1–C_6 haloalkylsulfonyl, C_1–C_6 alkylsulfinyl, C_1–C_6 haloalkylsulfinyl, arylthio, C_1–C_6 haloalkoxy, amino, C_1–C_6 alkylamino, C_2–C_{15} dialkylamino, hydroxy, carbamoyl, C_1–C_6 N-alkIcarbamoyl, C_2–C_{15} N,N-dialkylcarbamoyl, nitro and C_2–C_{15} dialkylsulfamoyl;

Z represents a group selected from



wherein R^2 is hydrogen, C_1–C_6 alkyl, C_2–C_6 alkenyl, aralkyl, C_4–C_{15} dialkylaminoalkyl, C_2–C_6 acyl, aroyl, or aralkanoyl, and R^3 is C_1–C_6 alkyl, C_2–C_6 alkenyl, phenyl, aralkyl or C_3–C_{15} dialkylaminoalkyl; and

n is an integer selected from 0 (X or Y is hydrogen, respectively), 1, 2, 3, or 4;

or a pharmaceutically acceptable salt thereof;

wherein said compound exhibits a high binding activity with respect to the PCP receptor in mammalian nerve cells, and wherein said compound is administered in an amount effective to treat or prevent said neuronal loss.

5,011,835

SUBSTITUTED TRIAZOLOPYRIDAZINES, PHARMACEUTICAL COMPOSITIONS AND USE

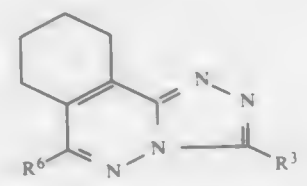
Norton P. Peet, Cincinnati, Ohio, and Shyam Sunder, Indianapolis, Ind., assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed Feb. 7, 1990, Ser. No. 476,195

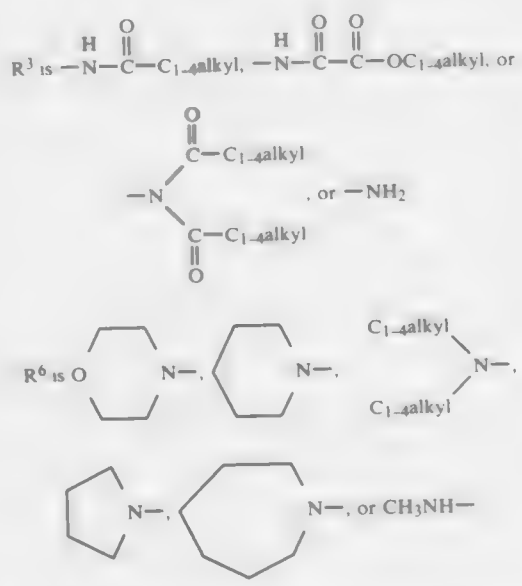
Int. Cl.[5] **A61K** *31/50, 31/55;* **C07D** *487/04*

U.S. Cl. 514—212 **19 Claims**

1. A compound of the formula:



or the pharmaceutically acceptable acid addition salts thereof, wherein



19. A pharmaceutical composition in unit dosage form comprising a pharmaceutical carrier and a compound according to claim 1.

5,011,836

AGENTS FOR THE TREATMENT OF ACUTE AND CHRONIC OBSTRUCTIVE RESPIRATORY PASSAGE DISEASES

Wolfgang Eberlein; Wolfhard Engel; Gerhard Mihm; Klaus Rudolf, all of Biberach; Henri Doods, Wathausen, and Norbert Mayer, Biberach, all of Fed. Rep. of Germany, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany

Filed Nov. 17, 1989, Ser. No. 438,827

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1988, 3838912

Int. Cl.[5] **A61K** *31/55*

U.S. Cl. 514—217 **4 Claims**

1. A method for the treatment of obstructive respiratory passage disorders in a patient which comprises administering to the patient a therapeutically effective amount of an agent selected from the group consisting of 5,11-dihydro-11-[[(1-methyl-4-piperidinyl)-amino]carbonyl]-6H-dibenz[b,e]azepin-6-one (Compound A); 5,11-dihydro-11-[(1-methyl-4-piperidinyl)acetyl]-6H-dibenz[b,e]azepin-6-one (Compound B); 5,11-dihydro-11-[(4-methyl-1-piperazinyl)acetyl]6H-dibenz[b,e]azepin-6-one (Compound C); a combination of Compound A and Compound B; a combination of Compound A and Compound C; a combination of Compound B and Compound C; and a combination of Compound A, Compound B and Compound C.

or a physiologically active enantiomer of the agent,

or a physiologically acceptable salt of the agent with an inorganic or organic acid.

5,011,837

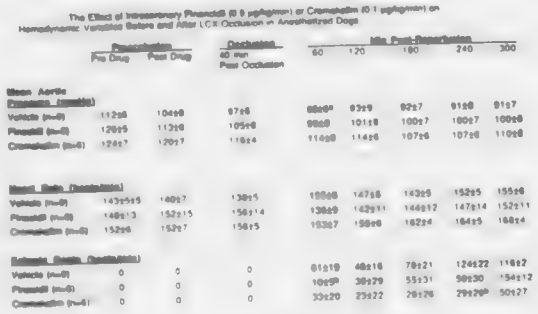
ARYL CYANOGUANIDINES: POTASSIUM CHANNEL ACTIVATORS AND METHOD OF MAKING SAME

Karnail Atwal; John R. McCullough, both of Newtown, Pa., and Gary J. Grover, Stockton, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

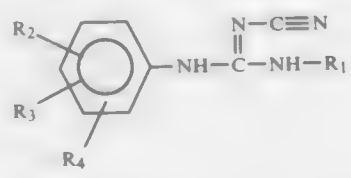
Continuation-in-part of Ser. No. 230,209, Aug. 9, 1988, abandoned. This application May 8, 1989, Ser. No. 349,021

Int. Cl.[5] **C07D** *295/12;* **C07C** *255/00, 239/00*

U.S. Cl. 514—227.8 **36 Claims**

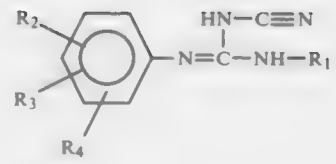


1. Compounds having the formula

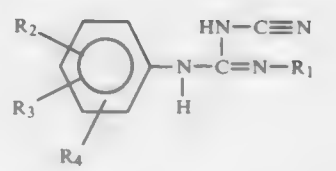


Ia

and its possible tautomers

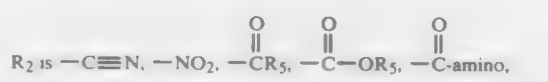


and



including pharmaceutically acceptable salts

wherein R_1 is alkyl, alkenyl, alkynyl, haloalkyl, cycloalkyl, aryl, arylalkyl or cycloalkylalkyl;



R_3 and R_4 are each independently selected from —R_2, hydrogen, alkyl, alkenyl, alkynyl, haloalkyl, halo, alkoxy, —NHalkyl, —N—(alkyl)$_2$, —S—alkyl, —O—arylalkyl, —S—arylalkyl or —S—aryl, —O—aryl, —NHarylalkyl.

5,011,838

PHARMACOLOGICALLY ACTIVE 2-SUBSTITUTED 3-(2-ETHOXYETHYL) IMIDAZO(4,5-B)PYRIDINES AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Giani Roberto; Parini Ettore; Borsa Massimiliano, and Lavezzo Antonio, all of Milan, Italy, assignors to Dompé Farmaceutici S.p.A., Milan, Italy

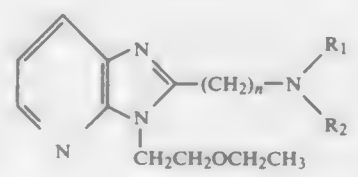
Filed May 7, 1990, Ser. No. 519,995

Claims priority, application Fed. Rep. of Germany, May 8, 1989, 3915025

Int. Cl.[5] **A61K** *31/44, 31/535;* **C07D** *471/04*

U.S. Cl. 514—234.2 **7 Claims**

1. A 2-substituted 3-(2-ethoxyethyl)imidazo [4,5-b] pyridine compound of the formula



wherein n is an integer of from 1 to 5 inclusive, and R_1 and R_2 each represents a saturated or unsaturated alkyl radical containing from 1 to 4 carbon atoms or they may form, together with the adjacent nitrogen atom, a heterocyclic ring selected from the group consisting of pyrrolidine, morpholine and piperidine, wherein said heterocyclic ring may be substituted by a C_1–C_3 alkyl group, or a non-toxic pharmaceutically acceptable acid addition salt thereof.

5,011,839

3(2H)PYRIDAZINONES FOR ANTAGONISTIC AGENT AGAINST SRS-A

Keizo Tanikawa; Ryozo Saloda, both of Funabashi; Sakuya Tanaka, Minamisaitama, and Kenichi Shikada, Saitama, all of Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

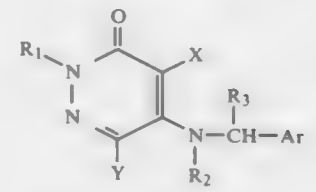
Filed Dec. 4, 1989, Ser. No. 444,953

Claims priority, application Japan, Dec. 20, 1988, 63-321476; Oct. 20, 1989, 1-274661

Int. Cl.[5] **A61K** *31/50;* **C07D** *401/00*

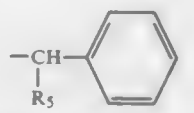
U.S. Cl. 514—247 **8 Claims**

1. A 3(2H)pyridazinone of the formula:

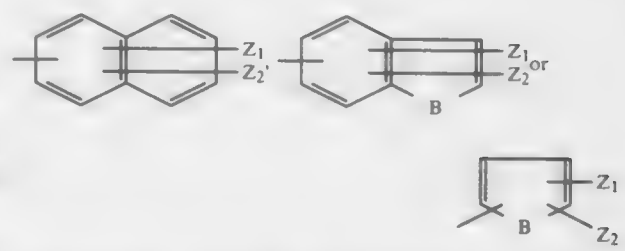


(I)

wherein R_1 is hydrogen, 2-propenyl, or straight chained or branched C_1–C_4 alkyl; each of R_2 and R_3 which may be the same or different, is hydrogen, or straight chained or branched C_1–C_3 alkyl; X is chlorine, or bromine; Y is hydrogen, halogen, nitro, amino, or —AR_4 wherein A is oxygen, or sulfur, and R_4 is hydrogen, straight chained, branched or cyclic C_1–C_8 alkyl, or



wherein R_5 is hydrogen, or straight chained or branched C_1–C_4 alkyl; and Ar is



wherein each of Z_1 and Z_2 which may be the same or different, is hydrogen, halogen, straight or branched C_1–C_4 alkyl, or —OR_6 wherein R_6 is straight or branched C_1–C_4 alkyl, and B is oxygen, sulfur, or —N=C— (to form a quinoline or pyridine ring); or a pharmaceutically acceptable salt thereof.

8. An antagonistic agent against SRS-A comprising an effective amount of a 3(2H)pyridazinone of the formula I as defined in claim 1 or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier.

5,011,840

IMIDAZOLIDINEDIONE DERIVATIVES IN DIABETES TREATMENT

Reinhard Sarges, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

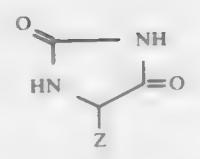
PCT No. PCT/US86/02514, § 371 Date May 5, 1989, § 102(e) Date May 5, 1989

PCT Filed Nov. 24, 1986, Ser. No. 435,529

Int. Cl.[5] **A61K** *31/495, 31/44;* **C07D** *237/30, 471/06*

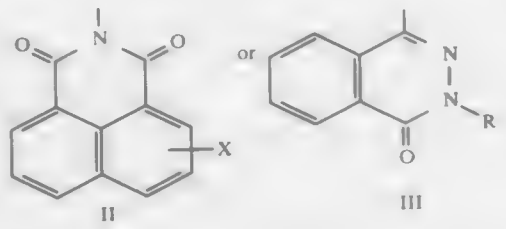
U.S. Cl. 514—248 **18 Claims**

1. A 5-substituted imidazolidinedione compound of the formula:



I

or a base salt thereof with a pharmacologically acceptable cation, wherein Z is



II III

wherein

X is hydrogen, fluorine, chlorine, bromine, nitro, trifluoromethyl, C_1-C_4 alkyl or C_1-C_4 alkoxy; and

R is naphthylmethyl, furfuryl, thenyl or phenylalkyl having from one to three carbon atoms in the alkyl moiety wherein said phenylalkyl is optionally substituted with one or two identical or non-identical substituents on the phenyl ring, said identical substituents being fluorine, chlorine, bromine, trifluoromethyl, C_1-C_4 alkyl or C_1-C_4 alkoxy and said non-identical substituents being fluorine, chlorine, bromine, methyl, methoxy or trifluoromethyl.

18. A method for treating a diabetic subject to prevent or alleviate chronic complications arising in said subject, which comprises administering to said diabetic subject an effective amount of a compound as claimed in claim **1**.

5,011,841

TREATMENT OF DEPRESSION

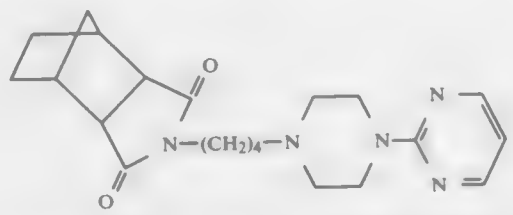
Karen A. Scappaticci, New York, N.Y., assignor to Pfizer Inc., New York, N.Y.

Filed Nov. 14, 1989, Ser. No. 436,405

Int. Cl.[5] **A61K** *31/50, 31/495*

U.S. Cl. 514—253 **5 Claims**

1. A method for treating depressive disorder in a human in need of said treatment which comprises administering to said human an antidepressive effective amount of a compound of the formula



or a pharmaceutically acceptable acid addition salt thereof.

5,011,842

2-(HETEROCYCLYLALKYL)IMIDAZOPYRIDINES FOR TREATING ALLERGIC DISEASES

Frans E. Janssens, Bonheiden; Francois M. Sommen, Wortel; Joseph L. G. Torremans, Beerse, and Gaston, S. M. Diels, Ravels, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

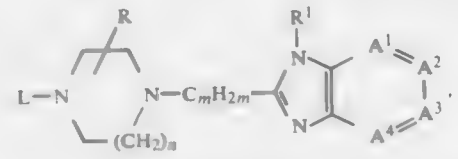
Division of Ser. No. 211,652, Jun. 27, 1988, Pat. No. 4,946,843. This application Aug. 2, 1990, Ser. No. 561,833

Claims priority, application United Kingdom, Jul. 10, 1987, 8716313

Int. Cl.[5] **A61K** *31/495, 31/55;* **C07D** *403/14, 487/06*

U.S. Cl. 514—253 **20 Claims**

1. A method of treating allergic diseases in warm-blooded animals suffering from the same, which method comprises the systemic administration to warm blooded animals of an effective anti-allergic amount of compound of the formula:



(I)

a pharmaceutically acceptable acid addition salt or a stereochemically isomeric form thereof, wherein:

$-A^1=A^2-A^3=A^4-$ represents a bivalent radical of the formula:

—N=CH—CH=CH— (a-1);

—CH=N—CH=CH— (a-2);

—CH=CH—N=CH— (a-3) or;

—CH=CH—CH=N— (a-4).

wherein one or two hydrogen atoms in said radicals (a-1)–(a-4) may, each independently from each other, be replaced by halo, C_{1-6}alkyl, C_{1-6}alkyloxy, trifluoromethyl, or hydroxy;

R represents hydrogen or C_{1-6}alkyl;

R^1 represents hydrogen, C_{1-10}alkyl, C_{3-6}cycloalkyl, Ar^1, C_{1-6}alkyl substituted with one or two Ar^1 radicals, or a radical of the formula —Alk—G—R^2,

wherein:

Ar^1 represents phenyl; phenyl substituted with 1, 2, or 3 substituents each independently selected from halo, hydroxy, nitro, cyano, trifluoromethyl, C_{1-6}alkyl, C_{1-6}alkyloxy, C_{1-6}alkylthio, mercapto, amino, mono- and di(C_{1-6}alkyl)amino, carboxyl, C_{1-6}alkyloxycarbonyl, and C_{1-6}alkylcarbonyl; thienyl; halothienyl; furanyl; C_{1-6}alkyl substituted furanyl; pyridinyl; pyrimidinyl; pyrazinyl; thiazolyl; imidazolyl; or imidazolyl substituted with C_{1-6}alkyl;

Alk represents C_{1-6}alkanediyl;

G represents O, S, or NR^3, wherein R^3 represents hydrogen, C_{1-6}alkylcarbonyl, C_{1-6}alkyloxycarbonyl, or Ar^2—C_{1-6}alkyl;

Ar^2 represents phenyl or phenyl substituted with 1, 2, or 3 substitutents each independently selected from halo, hydroxy, nitro, cyano, trifluoromethyl, C_{1-6}alkyl, C_{1-6}alkyloxy, C_{1-6}alkylthio, mercapto, amino, mono- and di(C_{1-6}alkyl)amino, carboxyl, C_{1-6}alkyloxycarbonyl and C_{1-6}alkylcarbonyl; and

R^2 represents hydrogen; C_{2-6}alkenyl; C_{2-6}alkenyl substituted with Ar^2; C_{3-6}alkynyl; Ar^1; C_{1-6}alkyl; or C_{1-6}alkyl substituted with Ar^1, hydroxy, C_{1-6}alkyloxy, carboxyl, C_{1-6}alkyloxycarbonyl, Ar^2-oxycarbonyl, or Ar^2—C_{1-6}alkyloxycarbonyl, wherein $Ar^1$and Ar^2 are as defined above;

m represents a number having a value of from 1 to 4;

n represents a number having value of from 1 to 2; and

L represents a radical of the formula:

—Alk—R^4 (b-1);

—Alk—Y—R^5 (b-2); or

—*Alk*—Z^1—(C=*X*)—Z^2—R^6 (b-3)

wherein:

Alk is as defined above;

Y represents O, S, NR^8, wherein R^8 represents hydrogen, C_{1-6}alkyl, C_{1-6}alkylcarbonyl, or Ar^1-carbonyl, wherein Ar^1 is as defined above;

$Z^1$and Z^2 each independently represent O, S, NR^9, or a direct bond, wherein R^9 represents hydrogen or C_{1-6}alkyl;

X represents O, S, or NR^{10}, wherein R^{10} represents hydrogen, C_{1-6}alkyl, or cyano; and

R^4, R^5, and R^6 represent Het,

wherein Het represents:

(i) an optionally substituted five- or six-membered heterocyclic ring containinged 1, 2, 3, or 4 heteroatoms selected from the group consisting of oxygen, sulfur, and nitrogen, provided that no more than two oxygens or sulfurs are present; or

(ii) an optionally substituted five- or six-membered heterocyclic ring containing 1 2 heteroatoms selected from the group consisting of oxygen, sulfur, and nitrogen, being fused with an optionally substituted five- or six-membered ring through two ring carbon atoms or one ring carbon and one ring nitrogen atom, containing ion the remainder of the fused ring only carbon atoms; or

(iii) an optionally substituted five- or six-membered heterocyclic ring containing 1 or 2 heteroatoms selected from the group consisting of oxygen, sulfur, and nitrogen, being fused with an optionally substituted five- or six membered heterocyclic ring through two ring carbon atoms or one ring carbon and one ring nitrogen atom, containing in the remainder of the fused ring 1 or 2 heteroatoms selected from the group consisting of oxygen, sulfur and nitrogen;

wherein:

Het may optionally be substituted with up to 4 substituents when Het is a monocyclic ring system, and wherein Het may optionally be substituted with up to 5 substituents when Het is a bicyclic ring system, said substituents of Het being selected from the group consisting of a bivalent radical =X; halo; isocyanato; isothiocyanato; nitro; cyano; trifluoromethyl; a radical of formula —A; a radical of formula —Y—A; or a radical of formula $-A^1-C(=X)-Z^2-A$;

wherein:

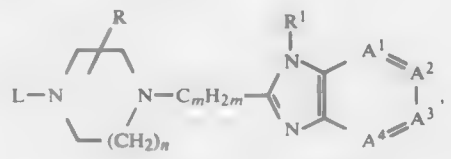
=X is as defined above;

A represents hydrogen, Ar^2, or C_{1-6}alkyl being optionally substituted with Ar^2, C_{1-6}alkyloxy, Ar^2—O, hydroxy, or C_{1-6}alkyloxycarbonyl; and

Y, Z^1, and Z^2 each have the meaning as defined above;

provided that (i) when in the radical —Y—A, A is hydrogen, then Y is other than a direct bond, or (ii) when in the radical $-Z^1-C(=X)-Z^2-A$, A is hydrogen and Z^1 is NR^9, O, or S, then Z^2 is other than O or S.

8. A compound of the formula:



(I)

a pharmaceutically acceptable acid addition salt or a stereochemically isomeric form thereof, wherein:

$-A^1=A^2-A^3=A^4-$ represents a bivalent radial of the formula:

—N=CH—CH=CH— (a-1);

—CH=N—CH=CH— (a-2);

—CH=CH—N=CH— (a-3); or

—CH=CH—CH=N— (a-4),

wherein one or two hydrogen atoms in said radicals (a-1)–(a-4) may, each independently from each other, be replaced by halo, C_{1-6}alkyl, C_{1-6}alkyloxy, trifluoromethyl, or hydroxy;

R represents hydrogen or C_{1-6}alkyl;

R^1represents hydrogen, C_{1-10}alkyl, C_{3-6}cycloalkyl, Ar^1, C_{1-6}alkyl substituted with one or two Ar^1 radicals, or a radical of the formula —Alk—G—R^2,

wherein:

Ar^1 represents phenyl; phenyl substituted with 1, 2, or 3 substitutents each independently selected from halo, hydroxy, nitro, cyano, trifluoromethyl, C_{1-6}alkyl, C_{1-6}alkyloxy, C_{1-6}alkylthio, mercapto, amino, mono- and di(C_{1-6}alkyl)amino, carboxyl, C_{1-6}alkyloxycarbonyl, and C_{1-6}alkylcarbonyl; thienyl; halothienyl; furanyl; C_{1-6}alkyl substituted furanyl; pyridinyl; pyrimidinyl; pyrazinyl; thiazolyl; imidazolyl; or imidazolyl substituted with C_{1-6}alkyl;

Alk represents C_{1-6}alkanediyl;

G represents O, S, or NR^3, wherein R^3 represents hydrogen, C_{1-6}alkylcarbonyl, C_{1-6}alkyloxycarbonyl, or Ar^2—C_{1-6}alkyl;

Ar^2 represents phenyl or phenyl substituted with 1, 2, or 3 substitutents each independently selected from halo, hydroxy, nitro, cyano, trifluoromethyl, C_{1-6}alkyl, C_{1-6}alkyloxy, C_{1-6}alkylthio, mercapto, amino, mono- and di(C_{1-6}alkyl)amino, carboxyl, C_{1-6}alkyloxycarbonyl and C_{1-6}alkylcarbonyl; and

R^2 represents hydrogen; C_{2-6}alkynyl; C_{2-6}alkenyl substituted with Ar^2; C_{3-6}alkynyl; Ar^1; C_{1-6}alkyl; or C_{1-6}alkyl substituted with Ar^1, hydroxy, C_{1-6}alkyloxy, carboxyl, C_{1-6}alkyloxycarbonyl, Ar^2-oxycarbonyl, or Ar^2—C_{1-6}alkyloxycarbonyl, wherein Ar^1 and Ar^2 are as defined above;

m represents a number having a value of from 1 to 4;

n represents a number having a value of from 1 to 2; and

L represents a radical of the formula:

—Alk—R^4 (b-1);

—Alk—Y—R^5 (b-2); or

—Alk—Z^1—(C=X)—Z^2—R^6 (b-3),

wherein:

Alk is as defined above;

Y represents O, S, NR^8, wherein R^8 represents hydrogen, C_{1-6}alkyl, C_{1-6}alkylcarbonyl, or Ar^1-carbonyl, wherein Ar^1 is as defined above;

Z^1 and Z^2 each independently represent O, S, NR^9, or a direct bond, wherein R^9 represents hydrogen or C_{1-6}alkyl;

X represents O, S, or NR^{10}, wherein R^{10} represents hydrogen, C_{1-6}alkyl, or cyano; and

R^4, R^5, and R^6 represent Het,

wherein Het represents:

(i) an optionally substituted five- or six-membered heterocyclic ring containinged 1, 2, 3, or 4 heteroatoms selected from the group consisting of oxygen, sulfur, and nitrogen, provided that no more than two oxygens or sulfurs are present; or

(ii) an optionally substituted five- or six-membered heterocyclic ring containing 1 or 2 heteroatoms selected from the group consisting of oxygen, sulfur, and nitrogen, being fused with an optionally substituted five- or six-membered ring through two ring carbon atoms or one ring carbon and one ring nitrogen atom, containing in the remainder of the fused ring only carbon atoms; or

(iii) an optionally substituted five- or six-membered heterocyclic ring containing 1 or 2 heteroatoms selected

from the group consisting of oxygen, sulfur, and nitrogen, being fused with an optionally substituted five- or six-membered heterocyclic ring through two ring carbon atoms or one ring carbon and one ring nitrogen atom, containing in the remainder of the fused ring 1 or 2 heteroatoms selected from the group consisting of oxygen, sulfur and nitrogen;

wherein:

Het may optionally be substituted with up to 4 substituents when Het is a monocyclic ring system, and wherein Het may optionally be substituted with up to 5 substituents when Het is a bicyclic ring system, said substituents of Het being selected from the group consisting of a bivalent radical =X; halo; isocyanato; isothiocyanato; nitro; cyano; trifluoromethyl; a radical of formula —A; a radical of formula —Y—A; or a radical of formula $—Z^1—C(=X)—Z^2—A$;

wherein:

=X is as defined above;

A represents hydrogen, Ar^2, or C_{1-6}alkyl being optionally substituted with Ar^2, C_{1-6}alkyloxy, $Ar^2—O$, hydroxy, or C_{1-6}alkyloxycarbonyl; and

Y, Z^1, and Z^2 each have the meaning as defined above;

provided that (i) when in the radical —Y—A, A is hydrogen, then Y is other than a direct bond, or (ii) when in the radical $—Z^1—C(=X)—Z^2—A$, A is hydrogen and Z^1 is NR^9, O, or S, then Z^2 is other than O or S.

5,011,844

SUBSTITUTED 4-AZATRICYCLO(22.3.1.0^{4,9})OCTACOS-18-ENE DERIVATIVES, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Theodor Fehr, Dornach, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Aug. 25, 1989, Ser. No. 399,673

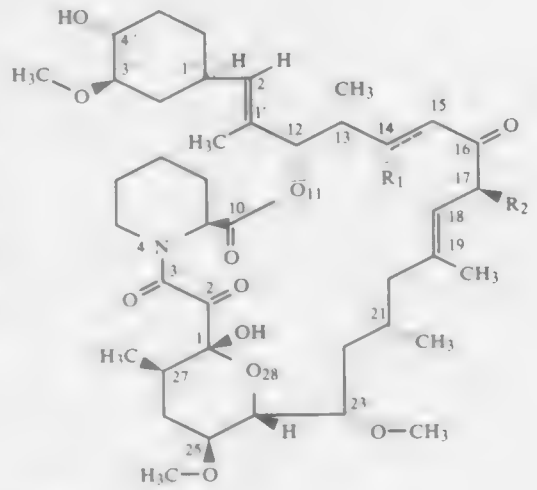
Claims priority, application United Kingdom, Aug. 26, 1988, 8820348; May 31, 1989, 8912432

Int. Cl.^{5} A61K *31/395;* **C07D** *498/16;* **C12P** *17/18*

U.S. Cl. 514—291 **9 Claims**

1. A compound of formula I

I



wherein

either

R_1 is hydroxy,

R_2 is allyl or n-propyl and

there is a single bond between the carbon atoms numbered 14 and 15

or

R_1 is missing,

R_2 is allyl and

there is a double bond between the carbon atoms numbered 14 and 15.

6. A method for the prevention or treatment of conditions requiring immunosuppression or of inflammatory conditions, such as

(a) the prevention and treatment of

resistance in situations of organ or tissue transplantation e.g. of heart, kidney, liver, bone marrow and skin,

graft-versus-host disease, such as following bone marrow grafts,

autoimmune diseases such as rheumatoid arthritis, systemic Lupus erythematosus, Hashimoto's thyroidis, multiple sclerosis, Myasthenia gravis, diabetes type I and uveitis,

cutaneous manifestations of immunologically-mediated illnesses, such as Alopecia areata, and

(b) the treatment of inflammatory and hyperproliferative skin diseases, such as psoriasis, atopical dermatitis, contact dermatitis and further eczematous dermatitises, seborrhoeic dermatitis, Lichen planus, Pemphigus, bullous Pemphigoid, Epidermolysis bullosa, urticaria, angioedemas, vasculitides, erythemas, cutaneous eosinophilias, Lupus erythematosus and acne, comprising administering a therapeutically effective amount of a compound according to claim 1 together with a pharmaceutically acceptable carrier or diluent to a subject in need of such treatment.

5,011,843

TREATMENT OF GLAUCOMA USING PHOSPHODIESTERASE INHIBITORS

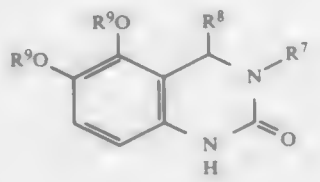
John W. Sbell, Hillsborough, Calif., assignor to Iolab Corporation, Claremont, Calif.

Division of Ser. No. 200,809, May 31, 1988, Pat. No. 4,975,428. This application Jun. 1, 1990, Ser. No. 531,729

Int. Cl.^{5} A61K *31/505*

U.S. Cl. 514—259 **2 Claims**

1. A method of lowering intraocular pressure in a mammal which comprises administering to the eye of said mammal a pharmaceutical composition comprising a therapeutically effective amount of a phosphodiesterase inhibitor of the following formula:



wherein

R^7 is hydrogen provided that R^7 is hydrogen only when the dotted line linkage represents a saturated bond;

R^8 is hydrogen, lower alkyl, cycloalkyl having 4–8 carbon atoms, cycloalkylalkyl wherein the cycloalkyl group has 4–8 carbon atoms and the alkyl group has 1–3 carbon atoms, haloalkyl having 1–3 halogen atoms and 1–4 carbon atoms, norbornyl and norbornylmethyl;

R^9 is lower alkyl,

and the dotted line linkage represents a saturated bond or a double bond.

5,011,845

CYCLIC DIESTERS OF 4-HYDROXY-1,3-BENZENEDIMETHANOL AND COMPOSITIONS AND METHODS EMPLOYING SUCH COMPOUNDS

David J. Blythin, North Caldwell; Ho-Jane Shue, Pine Brook, and Ashit K. Ganguly, Upper Montclair, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

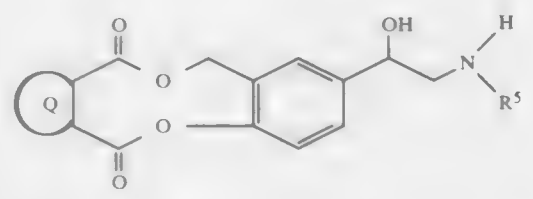
Filed Jun. 13, 1990, Ser. No. 537,385

Int. Cl.^{5} A61K *31/44, 31/365;* **C07D** *321/00, 498/14*

U.S. Cl. 514—291 **18 Claims**

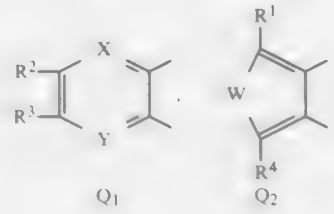
1. A compound of the formula

I



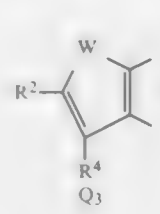
wherein

R^5 represents C_1 to C_6-alkyl or the group $—(CH_2)_n—Z—(CH_2)_m—Ar$ wherein Z represents O, S or $—CH_2—$ and Ar is phenyl, optionally substituted by one or two groups selected from the group consisting of hydrogen, C_1 to C_6-alkyl, C_1 to $C_{6\text{-}alkoxy}$, *Cl, F, Br, I,* NO_2, CF_3, CN, $R^6—S(O)_x$, $R^7—CO—$, $(R^8R^9)NCO—$ and phenyl, wherein x is 0, 1 or 2, and each R^6, R^7, R^8 and R^9 is independently C_1 to C_6 alkyl or two adjacent groups on Ar may form together an additional fused benzenoid ring; n and m independently represent integers of from 1 to 8; and ring Q represents one of the rings Q_1, Q_2, Q_3 or Q_4 below:

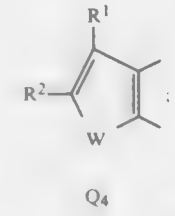


Q_1

Q_2



or



Q_3 Q_4

X is N or C—R^1;

Y is N or C—R^4;

W represents O or S;

each of R^1, R^2, R^3 and R^4 is independently selected from hydrogen, C_1 to C_6-alkyl, C_1 to C_6-alkoxy Cl, F, Br, I NO_2, CF_3, CN, $R^{10}—S(O)_y—$, $R^{11}—CO—$, $(R^{12}R^{13})N—CO—$ or phenyl, wherein y is 0, 1 or 2 and each of R^{10}, R^{11}, R^{12} and R^{13} is independently C_1 to C_6-alkyl, or, in the ring Q_1, two adjacent groups, i.e. R^1R^2, R^2R^3 or R^3R^4, may form together an additional fused benzenoid ring; or a pharmaceutically acceptable acid addition salt thereof.

5,011,846

MEDICAMENT COMPOSITIONS DERIVED FROM QUINOLIZINE AND QUINOLIZINONE AND METHODS OF USE THEREOF

Maurice W. Gittos, Plobsheim, France; Francis P. Miller, Loveland; Stephen M. Sorensen, Cincinnati, both of Ohio; John R. Fozard, Hegenheim; Paul Moser, Strasbourg, both of France; Michael G. Palfreyman, and Hsien Cheng, both of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

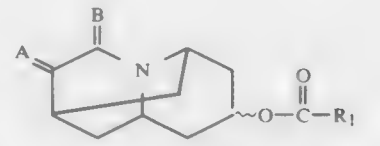
Continuation of Ser. No. 313,119, Feb. 21, 1989, abandoned. This application May 16, 1990, Ser. No. 527,676

Claims priority, application France, Feb. 23, 1988, 88 400415; Feb. 23, 1988, 88 400418; Feb. 23, 1988, 88 400416; Feb. 23, 1988, 88 400417; Jan. 11, 1989, 89 100392

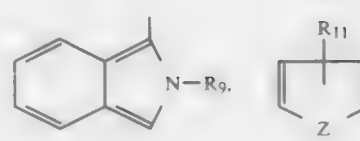
Int. Cl.^{5} A61K *471/18*

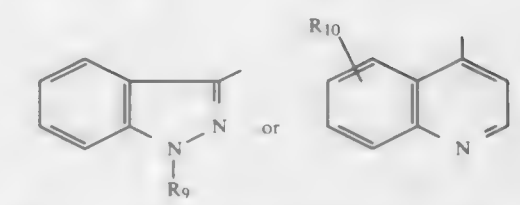
U.S. Cl. 514—294 **15 Claims**

1. A pharmaceutical composition suitable for use in the treatment of anxiety, psychosis, glaucoma, and for stimulating gastric motility comprising a pharmaceutically acceptable carrier in admixture with a compound of the formula



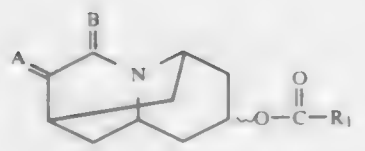
wherein A is H_2, O, (H)(OH), $(OH)_2$ or N—OH; B is H_2, (H)(CH_3), (H)($CH_2NR_3R_4$) or CH_2 wherein R_3 and R_4 are C_{2-4} alkyl or are combined to give tetramethylene, pentamethylene or $—CH_2CH_2—O—CH_2CH_2$; R_1 is



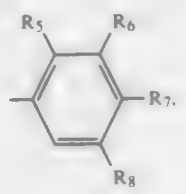


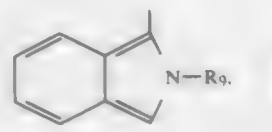
wherein Z is NR_9, O or S; R_5, R_6 and R_8 are each hydrogen, halogen, C_{1-3} alkyl or C_{1-3} alkoxy; R_7 is hydrogen, amino, (C_{1-4} alkyl)amino, (C_{1-4} alkyl)$_2$amino, alkoxy, or nitro; R_9 is hydrogen, C_{1-4} alkyl or phenyl (C_{1-2} alkyl); R_{10} is hydrogen, halogen, C_{1-4} alkyl, C_{1-4} alkoxy, hydroxyl, cyano or $—CONH_2$; R_{11} is hydrogen, halogen, C_{1-4} alkyl or phenyl; the wavy line indicates that the configuration of the oxygen substituent on the ring can be endo or exo; and the pharmaceutically acceptable acid addition and quarternary ammonium salts of the aforesaid compounds.

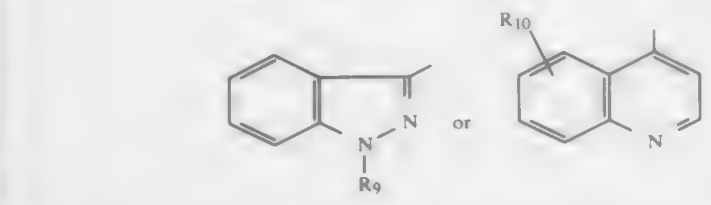
3. A method for the treatment of anxiety comprising administering to a patient in need thereof of an effective amount of a compound of the formula



wherein A is H_2, O, (H)(OH), $(OH)_2$ or N—OH; B is H_2, $(H)(CH_3)$, $(H)(CH_2NR_3R_4)$ or CH_2 wherein R_3 and R_4 are C_{2-4} alkyl or are combined to give tetramethylene, pentamethylene or $—CH_2CH_2—O—CH_2CH_2—$; R_1 is

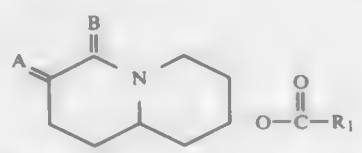




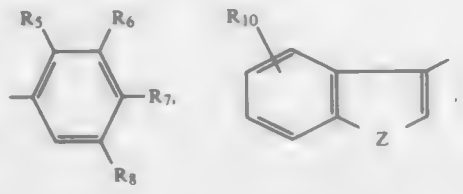


wherein Z is NR_9, O or S; R_5, R_6 and R_8 are each hydrogen, halogen, C_{1-3} alkyl or C_{1-3} alkoxy; R_7 is hydrogen, amino, $(C_{1-4}$ alkyl)amino, $(C_{1-4}$ alkyl)$_2$amino, alkoxy or nitro; R_9 is hydrogen, C_{1-4} alkyl or phenyl (C_{1-2} alkyl); R_{10} is hydrogen, halogen, C_{1-4} alkyl, C_{1-4} alkoxy, hydroxy, cyano or $—CONH_2$; R_{11} is hydrogen, halogen, C_{1-4} alkyl or phenyl; the wavy line indicates that the configuration of the oxygen substituent on the ring can be endo or exo; and the pharmaceutically acceptable acid addition and quarternary ammonium salts of the aforesaid compounds.

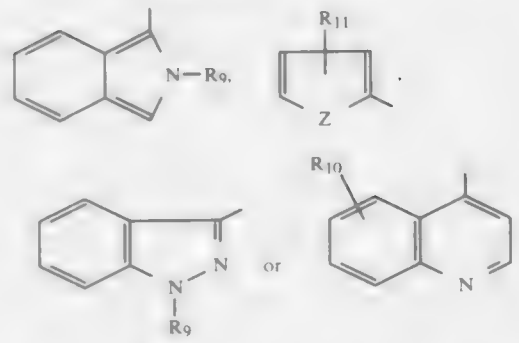
5. A method for the treatment of psychosis comprising administering to a patient in need thereof an effective amount of a compound of the formula



wherein A is H_2, O, (H)(OH), $(OH)_2$ or N—OH; B is H_2, $(H)(CH_3)$, $(H)(CH_2NR_3R_4)$ or CH_2 wherein R_3 and R_4 are C_{2-4} alkyl or are combined to give tetramethylene, pentamethylene or $—CH_2CH_2—O—CH_2CH_2—$; R_1 is

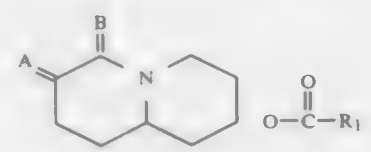


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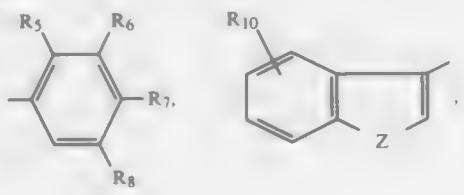


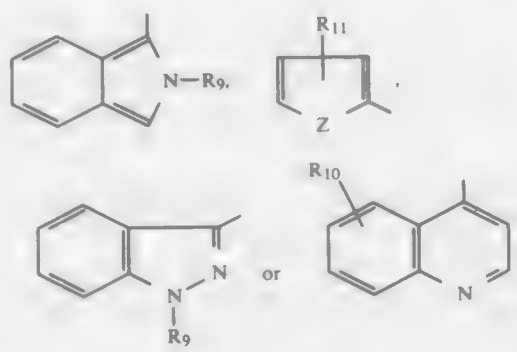
wherein Z is NR_9, O or S; R_5, R_6 and R_8 are each hydrogen, halogen, C_{1-3} alkyl or C_{1-3} alkoxy; R_7 is hydrogen, amino, $(C_{1-4}$ alkyl)amino, $(C_{1-4}$ alkyl)$_2$amino, alkoxy or nitro; R_9 is hydrogen, C_{1-4} alkyl or phenyl (C_{1-2} alkyl); R_{10} is hydrogen, halogen, C_{1-4} alkyl, C_{1-4} alkoxy, hydroxy, cyano or $—CONH_2$; R_{11} is hydrogen, halogen, C_{1-4} alkyl or phenyl; the wavy line indicates that the configuration of the oxygen substituent on the ring can be endo or exo; and the pharmaceutically acceptable acid addition and quarternary ammonium salts of the aforesaid compounds.

7. A method for stimulating gastric motility comprising administering to a patient in need thereof an effective amount of a compound of the formula:



wherein A is H_2, O, (H)(OH), $(OH)_2$ or N—OH; B is H_2, $(H)(CH_3)$, $(H)(CH_2NH_3R_4)$ or CH_2 wherein R_3 and R_4 are C_{2-4} alkyl or are combined to give tetramethylene, pentamethylene or $—CH_2CH_2—O—CH_2CH_2—$; R_1 is





wherein Z is NR_9, O or S; R_5, R_6 and R_8 are each hydrogen, halogen, C_{1-3} alkyl or C_{1-3} alkoxy; R_7 is hydrogen, amino, $(C_{1-4}$ alkyl)amino, $(C_{1-4}$ alkyl)$_2$amino, alkoxy or nitro; R_9 is hydrogen, C_{1-4} alkyl or phenyl (C_{1-2} alkyl); R_{10} is hydrogen, halogen, C_{1-4} alkyl, C_{1-4} alkoxy, hydroxy, cyano or $—CONH_2$; R_{11} is hydrogen, halogen, C_{1-4} alkyl or phenyl; the wavy line indicates that the configuration of the oxygen substituent on the ring can be endo or exo; and the pharmaceutically acceptable acid addition and quarternary ammonium salts of the aforesaid compounds.

5,011,847

2,5-DIARYL TETRAHYDROFURANS AND ANALOGS THEREOF AS PAF ANTAGONISTS

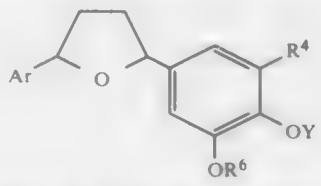
Tesfaye Biftu, Parlin; Mitree M. Ponpipom, Branchburg, and Nirindar N. Girotra, Parlin, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 8, 1989, Ser. No. 362,909

Int. Cl.[5] C07D *405/04*; A61K *31/44*

U.S. Cl. 514—336 **11 Claims**

1. A compound of the following structural formula



or a pharmaceutically acceptable salt thereof wherein;

Ar is selected from the group consisting of pyridyl, and 2,3-dimethoxypyridyl;

R^4 is $S(O)_n R^2$, in which n is 0, 1 or 2, and

R^2 is selected from the group consisting of

(a) C_{2-6}alkyl,

(b) Substituted C_{1-6}alkyl wherein the substituent is selected from the group consisting of hydroxy, amino, N-C_{1-4}alkylamino, and N,N-di-C_{1-4}alkylamino, and

(c) C_{1-6}alkylcarbonyl-C_{1-6}alkyl;

Y is selected from the group consisting of

(a) C_{1-12}alkyl,

(b) C_{1-6}hydroxyalkyl,

(c) C_{1-6}alkoxy-C_{1-6}alkyl,

(d) amino-C_{1-6}alkyl, and

(e) N-substituted or N,N-disubstituted amino-C_{1-6}alkyl wherein the substituents are each individually C_{1-6}alkyl;

R^6 is substituted C_{1-6}alkyl wherein the substituent is selected from the group consisting of hydroxy, amino, N-C_{1-4}alkylamino, and N,N-di-C_{1-4}alkyamino, wherein the relationship of the substituents at positions 2 and 5 of the tetrahydrofuran includes all stereoisomers.

9. A method of antagonizing the effects of PAF in a subject in need thereof which comprises administering to said subject a nontoxic therapeutically effective amount of a compound according to claim 1.

5,011,848

1.4-DIHYDRO PYRIDINES

Claudio Semeraro, Bresso; Dino Micheli, Carpi; Daniele Pieraccioli; Giovanni Gaviraghi, both of Verona, all of Italy, and Allan D. Borthwick, London, England, assignors to Glaxo, S.p.A., Verona, Italy

Division of Ser. No. 767,593, Aug. 20, 1985, Pat. No. 4,801,599.

This application Jan. 23, 1989, Ser. No. 300,022

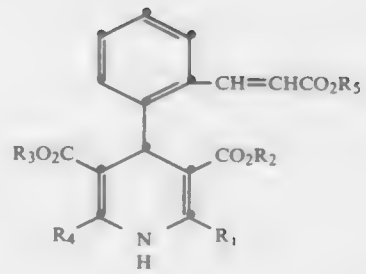
Claims priority, application Italy, Aug. 22, 1984, 22383 A/84; Jul. 5, 1985, 21460 A/85

The portion of the term of this patent subsequent to Jan. 31, 2006, has been disclaimed.

Int. Cl.[5] A61K *31/455*

U.S. Cl. 514—356 **27 Claims**

1. A composition for treating hypertension, comprising an effective amount of at least one compound of the formula:



wherein,

R_1 and R_4 independently represent a C_{1-4} alkyl group;

R_2 and R_3 independently represent a C_{1-6} straight or branched alkyl chain which may be interrupted by an oxygen atom;

R_5 represents a straight or branched chain C_{1-13} alkyl group or a C_{5-8} cycloalkyl group which cycloalkyl group may be substituted by a C_{1-13} alkyl group, and a physiologically acceptable carrier.

5,011,849

COMPOUNDS FOR TREATING AND PREVENTING COGNITIVE DISEASES AND DEPRESSION AND METHODS OF MAKING SAME

Walter Gassner, Bottmingen; René Imhof, Gipf-Oberfrick, and Emilio Kyburz, Reinach, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

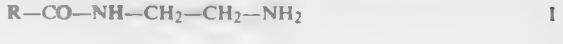
Filed Jul. 21, 1989, Ser. No. 383,777

Claims priority, application Switzerland, Jui. 28, 1988, 2871/88

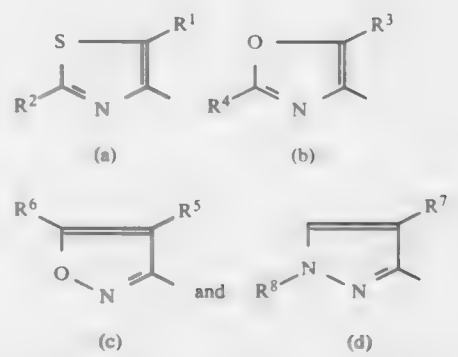
Int. Cl.[5] C07D *277/56, 263/40, 233/90*; A61K *31/425*

U.S. Cl. 514—365 **13 Claims**

1. A compound comprising an ethylenediamine monoamide derivative of the formula



I



in which R^1 is phenyl, monohalophenyl, monolower-alkylphenyl, monolower-alkoxyphenyl, monotrifluoromethylphenyl, monocyanophenyl, dihalophenyl, furyl, thienyl, monohalothienyl or monophenyl-lower-alkoxyphenyl in which said monophenyl residue in unsubstituted or substituted with halogen, lower-alkyl, lower-alkoxy, nitro, cyano or hydroxy, R^2 is hydrogen, halogen or amino, R^3, R^5 and R^7 each are phenyl, monohalophenyl, dihalophenyl, thienyl, furyl or monohalofuryl, R^4 and R^6 each are hydrogen or amino and R^8 is hydrogen or lower-alkyl,

or a pharmaceutically acceptable acid addition salt of the compound of formula I.

5,011,850

SUBSTITUTED DIAZOLYLALKYL-CARBINOLS, A PROCESS FOR THEIR PREPARATION AND THEIR USE AS ANTIMYCOTIC AGENTS

Hans-Ludwig Elbe; Erik Regel, both of Wuppertal; Karl H. Büchel, Burscheid; Klaus Schaller, Wuppertal, and Manfred Plempel, Haan, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft Leverkusen, Fed. Rep. of Germany

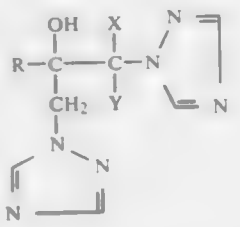
Continuation of Ser. No. 578,238, Feb. 8, 1984, abandoned. This application Oct. 6, 1986, Ser. No. 915,435

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1983, 3307218

Int. Cl.[5] A61K *31/41;* C07D *249/08*

U.S. Cl. 514—383 15 Claims

1. A substituted diazolylalkyl-carbinol of the formula



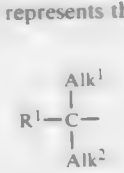
in which

X represents hydrogen or methyl,

Y represents straight-chain or branched alkyl with 1 to 4 carbon atoms, and

R represents phenyl or phenyl which is mono- or di-substituted by identical or different substituents selected from fluorine, chlorine, methyl, trifluoromethoxy, phenyl, chlorophenyl and chlorophenoxy, or

R represents the grouping



wherein

Alk^1 is methyl, and

Alk^2 is methyl, or

Alk^1 and Alk^2, together with the carbon atom to which they are bonded, represent cyclobutyl,

R^1 represents methyl, chlorophenyl or benzyl which is mono-or di-substituted in the phenyl part by identical or different substituents selected from fluorine and chlorine.

5,011,851

IMIDAZOLE CARBOXYLIC ACIDS AND ESTERS AND INHIBITION OF BLOOD PLATELET AGGREGATION THEREWITH

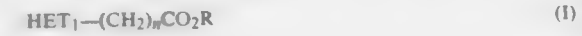
Nicholas A. Meanwell, East Hampton, Conn., assignor to Bristol-Myers Squibb Co., New York, N.Y.

Continuation-in-part of Ser. No. 479,506, Feb. 13, 1990, abandoned. This application Jun. 20, 1990, Ser. No. 540,988

Int. Cl.[5] C07D *233/64, 233/84;* A61K *31/415*

U.S. Cl. 514—400 11 Claims

1. A compound of Formula I



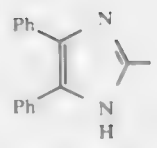
(I)

wherein

n is 6 to 9;

R is hydrogen or lower alkyl or an alkali metal ion; and

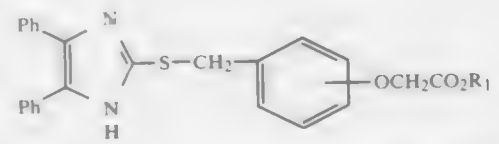
HET_1 is the heterocyclic radical



4,5-diphenyl-lH-imidazol-3-yl.

5. The method for inhibiting blood platelet aggregation in a mammal which comprises administering a therapeutically effective amount of a compound of claim 1.

9. A compound of Formula VIII



wherein R_1 is hydrogen, lower alkyl or an alkali metal ion, and the radical $—OCH_2CO_2R_1$ is attached in the 3 or 4 ring position.

5,011,852

LIQUID ORAL PHARMACEUTICAL COMPOSITIONS OF NON-STEROIDAL ANTI-INFLAMMATORY DRUGS

Moo K. Park, Rockville, Md., and Henry C. Caldwell, Ambler, Pa., assignors to Applied Analytical Industries, Inc., Wilmington, N.C.

Division of Ser. No. 223,420, Jul. 25, 1988, Pat. No. 4,918,103. This application Mar. 6, 1990, Ser. No. 488,955

Int. Cl.[5] A61K *31/40*

U.S. Cl. 514—419 9 Claims

1. A single phase, non-aqueous, liquid dosage unit pharmaceutical composition for oral administration comprising a therapeutic but nontoxic dose of a nonsteroidal anti-inflammatory agent selected from the group consisting of, an indoleacetic acid derivative and a pyrroleacetic acid derivative and an edible oil comprising an ester of glycerol or propylene glycol with 2 or 3 C_6-C_{12} fatty acids in the absence of ethanol.

5,011,853

COMPOUNDS FOR TREATMENT OF CHOLINERGIC NEUROTOXINS

John W. Olney, Ladue, Mo., assignor to Washington University, St. Louis, Mo.

Continuation-in-part of Ser. No. 398,721, Aug. 25, 1989. This application Jan. 26, 1990, Ser. No. 470,825

Int. Cl.[5] A01N *43/16;* A61K *31/35*

U.S. Cl. 514—454 18 Claims

1. A method for reducing or preventing neurotoxicity, comprising administering to a susceptible mammal a therapeutically effective amount of a muscarinic anti-cholinergic agent which readily penetrates the blood-brain barrier and which has an M1/M2 receptor affinity ratio that is substantially higher than the affinity ratio of atropine for such receptors, wherein the muscarinic anti-cholinergic agent reduces or prevent the neurotoxic brain damage that would otherwise be caused by a cholinergic neurotoxin.

5,011,854

HYDROXAMIC ACID DERIVATIVES AND USE THEREOF IN COMBATTING LIPOXYGENASE-MEDIATED DISEASES

Mitsuru Takahashi, Kanagawa; Shigeto Kitamura; Hiroshi Kase, both of Tokyo; Masaji Kasai; Isao Kawamoto, both of Kanagawa; Takao Iida; Hiroshi Sano, both of Tokyo; Hiromitsu Saito, Kanagawa; Koji Yamada, Tokyo, and Chikara Murakata, Saitama, all of Japan, assignors to Kyowa Hakko Kogyo Co. Ltd., Tokyo, Japan

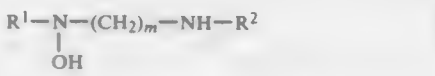
Filed Dec. 7, 1989, Ser. No. 281,050

Claims priority, application Japan, Sep. 12, 1987, 62-311692

Int. Cl.[5] A61K *31/24, 31/16;* C07C *233/00, 235/00*

U.S. Cl. 514—541 7 Claims

1. A hydroxamic acid compound represented by the formula (I) or a salt thereof:



(I)

wherein R^1 represent a hydrogen atom, or a substituted or unsubstituted alkanoyl group, R^2 represents ■ alkanoyl, substituted lower alkanoyl or substituted lower alkyl group, and m represents an integer of 3 to 7, wherein the substituent on the substituted alkanoyl, the substituted lower alkanoyl and the substituted lower alkyl is a hydroxycarbonyl group or a lower alkoxycarbonyl group.

7. A method for treating diseases caused by lipoxygenase-mediated metabolites, which comprises administering to a human an effective amount of a pharmaceutical composition comprising a hydroxamic acid compound defined in claim 1 and a pharmaceutically acceptable carrier.

5,011,855

COSMETIC AND DERMATOLOGICAL COMPOSITIONS CONTAINING γ-LINOLENIC ACID

Helmut Traitler, and Heike Winter, both of Vevey, Switzerland, assignors to Nestec S. A., Vevey, Switzerland

Division of Ser. No. 542,149, Oct. 14, 1983, Pat. No. 4,703,060, which is a continuation-in-part of Ser. No. 482,429, Apr. 6, 1983, abandoned. This application May 8, 1989, Ser. No. 348,712

Int. Cl.[5] A61K *31/20*

U.S. Cl. 514—558 9 Claims

1. A cosmetic composition containing from 1 % to 30% by weight of an oil extracted from pips of Ribes genus fruits selected from the group consisting of *Ribes nigrum, Ribes rubrum, Ribes ovacrispa, Ribes grossularia,* hybrids thereof and combinations thereof containing at least 4% by weight of γ-linolenic acid and being substantially free from waxes, odorous compounds, colorings and free fatty acids.

5,011,856

USE OF PROSTAGLANDIN F3 ALPHA AS AN OCULAR HYPOTENSIVE AGENT

David A. Woodward, El Toro, Calif., assignor to Allergan, Inc., Irvine, Calif.

Filed Mar. 12, 1990, Ser. No. 491,546

Int. Cl.[5] A61K *31/557, 31/215;* A01N *37/08;* C07C *405/00*

U.S. Cl. 514—573 3 Claims

3. An ophthalmic solution comprising a therapeutically effective amount of $PGF_{3\alpha}$ or a pharmaceutically acceptable salt thereof, in admixture with a non-toxic, ophthalmically acceptable liquid vehicle packaged in a container suitable for metered application.

5,011,857

METHOD OF INHIBITING INTERLEUKIN-1 RELEASE

George Ku, Cincinnati, and Niall Doherty, West Chester, both of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 151,521, Feb. 18, 1988, Pat. No. 4,870,101, which is a continuation-in-part of Ser. No. 26,587, Mar. 17, 1987, abandoned. This application Jul. 28, 1989, Ser. No. 387,328

Int. Cl.[5] A01H *33/02*

U.S. Cl. 514—653 5 Claims

1. A method of inhibiting the release of inerleukin-1 in animals which comprises administering to an animal in need thereof an amount of 2,4-di-isobutyl-6-(N,N-dimethylaminomethyl)-phenol effective in inhibiting the release of interleukin-1.

5,011,858

THERAPY WITH COENZYME Q_{10} OF PATIENTS HAVING AIDS OR OTHER RETROVIRAL DISEASES

Per H. Langsjoen, Temple; Karl A. Folkers, Austin, and Peter H. Langsjoen, Bullard, all of Tex., assignors to The Board of Regents, The University of Texas System, Austin, Tex.

Continuation-in-part of Ser. No. 33,301, Mar. 30, 1987, abandoned. This application Sep. 21, 1987, Ser. No. 99,363

Int. Cl.[5] A61K *31/12*

U.S. Cl. 514—690 16 Claims

1. A method for treating symptoms of acquired immune deficiency syndrome or AIDS-related complex, said method an amount of Coenzyme Q_{10} effective to alleviate the symptoms.

5,011,859

DI- AND TETRA-FLUORO ANALOGS OF SQUALENE AS INHIBITORS OF SQUALENE EPOXIDASE

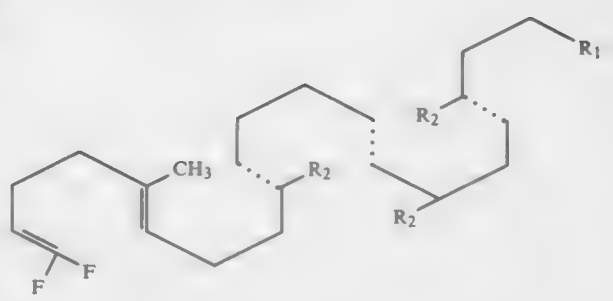
Esa T. Jarvi; Michael L. Edwards, both of Cincinnati, and James R. McCarthy, West Chester, all of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed Mar. 30, 1990, Ser. No. 502,203

Int. Cl.[5] C07C *17/26, 21/18;* A61K *31/35*

U.S. Cl. 514—739 7 Claims

1. A compound of the formula



wherein

each dotted line independently may be either a single or double bond,

R_1 is $—CH{=}CF_2$, $—CH{=}CR_3R_4$ or $—R_5—OH$, wherein R_3 and R_4 are alkylene, and

each R_2 is independently hydrogen or methyl.

2. A method of lowering plasma cholesterol in a patient in need thereof comprising administering to said patient an effective hypocholesterolemic amount of a compound of claim 1.

5,011,860

ARYL-SUBSTITUTED NAPHTHYRIDINE AND PYRIDOPYRAZINE DERIVATIVES AND THEIR USE IN TREATING HYPERPROLIFERATIVE SKIN DISEASES

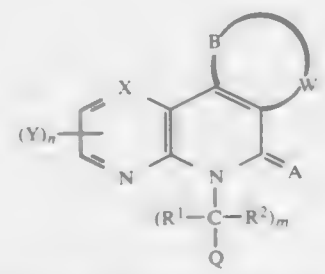
David J. Blythin, North Caldwell, and Ho-Jane Shue, Pine Brook, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 193,330, May 12, 1988, Pat. No. 4,866,061, which is a division of Ser. No. 946,118, Dec. 23, 1986, Pat. No. 4,760,073, which is a continuation-in-part of Ser. No. 851,068, Apr. 11, 1986, abandoned. This application Jun. 26, 1989, Ser. No. 371,181

Int. Cl.[5] A61K *31/435, 31/495;* C07D *471/04, 251/12*

U.S. Cl. 514—861 8 Claims

1. A compound having the structural formula



and pharmaceutically acceptable salts thereof, wherein

X represents CH or N;

A represents O or S;

m is an integer of from 0 to 2;

n is an integer of from 0 to 2;

R^1 and R^2 are the same or different and each is independently selected from H or alkyl containing 1 to 6 carbon atoms;

W represents $—N(R^4)—$, —NH—, $—N(COR^4)—$, or $—N(-SO_2R^4)—$ {wherein R^4 is alkyl containing 1 to 6 carbon atoms};

B represents alkylene having from 2 to 8 carbon atoms, which alkylene may be optionally substituted with a group selected from —OH, —F, alkyl having from 1 to 4 carbon atoms, $—CH_2OH$, —CHO, $—CO_2H$, $—COR^3$ {wherein R^3 is selected from $—NHR^4$, $—N(R^4)_2$ or $—OR^4$ and R^4 is as defined above}, or —CN, with the proviso that OH or F is not on the carbon adjacent to W;

Q represents an aryl group containing from 6 to 15 carbon atoms or an aromatic heterocyclic group containing from 3 to 14 carbon atoms and having at least one O, S, or N in the ring, which aryl or aromatic heterocyclic group can optionally be substituted with up to 3 substituents Y as defined below; and each Y substituent is independently selected from —OH, hydroxymethyl, alkyl containing from 1 to 6 carbon atoms, halo, $—NO_2$, alkoxy containing 1 to 6 carbon atoms, $—CF_3$, —CN, cycloalkyl containing 3 to 7 carbon atoms, alkenyloxy containing from 3 to 6 carbon atoms, alkynyloxy containing from 3 to 6 carbon atoms, $—S(O)_p—R^4$ {wherein R^4 is as defined above and p is an integer of from 0 to 2}, $—CO—R^5$ {wherein R^5 represents —OH, $—NH_2$, $—NHR^4$, $—N(R^4)_2$ or $—OR^4$ in which R^4 is as defined above}, $—O—D—COR^5$ wherein D represents alkylene having from 1 to 4 carbon atoms and R^5 is as defined above, $—NH_2$, $—NHR^4$, $—N(R^4)_2$ wherein R^4 is as defined above or —NHCOH.

2. A pharmaceutical composition comprising a compound according to claim 1 and a pharmaceutically acceptable carrier.

5,011,861

MEMBRANES FOR SOLID PHASE PROTEIN SEQUENCING

James M. Coull, Acton; Darryl J. Rappin, North Billerica; Hubert Koester, Concord; Malcolm G. Pluskal, Bedford; Michael J. Steuck, North Reading, and Alex G. Bonner, Lexington, all of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Jun. 28, 1988, Ser. No. 212,430

Int. Cl.[5] C08G *18/14*

U.S. Cl. 521—53 16 Claims

1. A flexible, polymeric, porous membrane suitable for use with solid phase protein sequencing processes, said membrane having functional groups that covalently link peptides and proteins to the membrane surface.

5,011,862

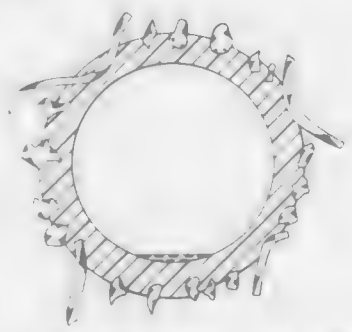
COATING MEDIA CONTAINING LOW DENSITY COMPOSITE OPACIFIERS

George E. Melber, Depew, and Leon Wolinski, Checktowago, both of N.Y., assignors to Pierce & Stevens Corporation, Buffalo, N.Y.

Division of Ser. No. 225,755, Jul. 29, 1988, which is a continuation-in-part of Ser. No. 28,119, Mar. 19, 1987, Pat. No. 4,722,943, which is a continuation-in-part of Ser. No. 103,203, Oct. 1, 1987, Pat. No. 4,829,094, which is a continuation-in-part of Ser. No. 103,204, Oct. 1, 1987, Pat. No. 4,843,104, which is a division of Ser. No. 28,119, Mar. 19, 1987, Pat. No. 4,772,943. This application Jun. 6, 1989, Ser. No. 362,312

Int. Cl.[5] C08J *9/22, 9/32*

U.S. Cl. 521—54 7 Claims



1. A coating medium for application to a substrate comprising a film forming binder and a composite opacifier, said composite opacifier comprising expanded thermoplastic resin microspheres having an inorganic opacifying constituent adhered to and embedded in the surface thereof.

5,011,863

PROCESS FOR THE PREPARATION OF EXPANDABLE POLYMER BEADS AND MATERIALS DERIVED THEREFROM

Hugues Godfrin, Vimy, France, assignor to Atochem, Paris La Defense, France

Filed Jul. 19, 1990, Ser. No. 553,815

Claims priority, application France, Jul. 19, 1989, 89 09704

Int. Cl.[5] C08J *9/20*

U.S. Cl. 521—56 12 Claims

1. In a process for the preparation of expandable polymer beads comprising (a) the polymerization in aqueous suspension, at a temperature of between 80° C. and 150° C., at a pressure of between 1 and 20 bars, for a period of between 6 and 20 hours, of at least one vinylaromatic monomer in the presence of an effective quantity of at least one polymerization initiator and of an effective quantity of at least one suspension stabilizer, and (b) the addition of an effective quantity of at least one blowing agent, the improvement which comprises performing the polymerization in the presence, in relation to the vinylaromatic monomer(s), of 0.01% to 0.6% by weight of at least one polyethylene wax and of 0.005% to 0.1% by weight of at least one nonionic surface-active agent having an HLB (hydrophile-lipophile balance) value of between 7 and 16.

5,011,864

WATER ABSORBENT LATEX POLYMER FOAMS CONTAINING CHITOSAN (CHITIN)

Steven F. Nielsen, Charlotte, N.C., and Dai W. Kim, Chatham, N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Continuation-in-part of Ser. No. 434,376, Nov. 9, 1989. This application Jun. 4, 1990, Ser. No. 533,243

The portion of the term of this patent subsequent to Feb. 5, 2008, has been disclaimed.

Int. Cl.[5] C08J *9/28*

U.S. Cl. 521—70 25 Claims

1. A water absorbent latex polymer foam containing chitin prepared by the process of:

a. preparing a foamable latex polymer material;

b. foaming said latex polymer material to form a latex foam material;

c. blending both water absorbent polymer products and chitin products with the latex foam material; and

d. drying the latex foam material containing the water absorbent polymer and chitin within its structure to form a water absorbent latex polymer foam containing chitin.

5,011,865

REDUCTION OF SILICONE FOAM DENSITY USING BUFFERS

Donald S. Johnson, Scotia, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Apr. 2, 1990, Ser. No. 503,355

Int. Cl.[5] C08J *9/00*

U.S. Cl. 521—82 11 Claims

1. A method for preparing a silicone foam having a reduced density of about 5 to about 6 pounds per cubic foot, comprising the step of agitating a mixture of ingredients comprising by weight:

(A) a silicone composition, comprising by weight:

(1) 100 parts of a vinyl-terminated polydiorganosiloxane of the formula:

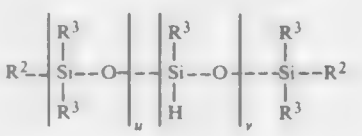


wherein R and R^1 are selected from the group consisting of substituted or unsubstituted hydrocarbon radicals of from 1 to 20 carbon atoms, such that the polymer contains from 0.0002 to 3% by weight vinyl and x varies such that the viscosity of the polymer varies from 100 to 1,000,000 centipoise at 25° C.;

(2) about 0.5 to about 5 parts by weight of an aqueous buffer solution having a pH in the range of about 9 to about 10; and

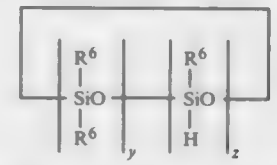
(3) about 25 to about 140 parts per million of a platinum catalyst;

(B) about 2.5 to about 20 parts of a substantially linear hydride polysiloxane having the formula



wherein R^2 is selected independently from the group consisting of hydrogen, alkyl radicals of from 1 to 8 carbon atoms, halo substituted alkyl radicals of from from 1 to 8 carbon atoms, aryl radicals of from 6 to 14 carbon atoms, and halo substituted aryl radicals of from 6 to 14 carbon atoms; and R^3 is selected from the group consisting of alkyl radicals of from 1 to 8 carbon atoms, aryl radicals of from 6 to 14 carbon atoms, halo aryl radicals of from 6 to 14 carbon atoms, and haloalkyl radicals of from 3 to 8 carbon atoms; u and v are integers which can vary sufficiently to provide a hydride polysiloxane having a viscosity of from about 5 to about 10,000 centipoise at 25° C.;

(C) about 0.1 to about 15 parts of a cyclic hydride polysiloxane having the general formula:



wherein R^6 may be independently hydrogen, an alkyl radical of from 1 to 8 carbon atoms, an aryl radical from 6 to 14 carbon atoms, or a haloalkyl radical of 3 to 8 carbon atoms; y is an integer having a value of 0 to 5 inclusive, z is an integer having a value of from 1 to 8 inclusive, and the sum of y and z has a value of 3 to 8 inclusive; and

(D) about 0.1 about 5 parts of a hydroxyl source selected from the group consisting of water, organic alcohol, or a mixture of the foregoing.

5,011,866

INSULATING ALKENYL AROMATIC POLYMER FOAM

Kyung W. Suh, Granville, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 8, 1989, Ser. No. 433,644

Int. Cl.[5] C08J *9/08*

U.S. Cl. 521—97 10 Claims

1. An alkenyl aromatic thermoplastic synthetic resinous elongate foam body comprising the body having a machine direction and a transverse direction and defining a plurality of closed noninterconnecting gas-containing cells therein, the cells having an average cell size of from about 0.01 to about 0.3 millimeters when measured across a minimum cross-sectional dimension of the body, the body being of a generally uniform cellular structure without substantial discontinuities, the body having a cross-sectional area of at least 8 square inches (51.6 square centimeters) with a minimum cross-sectional dimension of at least about 0.25 inch (6.35 millimeters), a water vapor permeability not greater than about 1.8 perm inch (3.02 metric perm centimeters) a density of from about 1.0 to about 6.0 pounds per cubic foot (16 to 96 kilograms/cubic meter) with the further limitations that the cells contain, as gas, at least 70 percent by weight of a compound selected from the group consisting of 1,1,1-trifluoroethane and 1,1,1,2-tetrafluoroethane and that any change in dimension in any direction be about four percent or less when measured by the test designated ASTM D2126/C578.

5,011,867

ELECTRON-BEAM CURED EMULSION PRESSURE-SENSITIVE ADHESIVES

Prakash Mallya; Sebastian S. Plamthottam, both of Pasadena, and Yehuda Ozari, Arcadia, all of Calif., assignors to Avery International Corporation, Pasadena, Calif.

Continuation of Ser. No. 101,943, Sep. 28, 1987, abandoned. This application Dec. 28, 1988, Ser. No. 292,654

Int. Cl.[5] C09J *133/08, 133/02;* C08F *265/06*

U.S. Cl. 522—109 33 Claims

1. A cured pressure-sensitive adhesive composition having increased elevated temperature shear properties as compared to the uncured adhesive, said adhesive comprising an electron-beam cured linear emulsion polymer having a glass transition temperature of at least 20° C. below the use temperature, said linear emulsion polymer formed at a temperature less than

about 20° C. and of at least one first monomer which, when homopolymerized, has a glass transition temperature less than about −25° C. and at least one second monomer which, when homopolymerized, has a glass transition temperature greater than about −25° C., said linear emulsion polymer cured by exposure to electron-beam radiation at a dosage of up to abut 100 kGy and sufficient to increase the 70° C. shear of the emulsion polymer to at least about 10 kiloseconds while maintaining a 180° peel at least about 250 N/m and loop tack of at least about 200 N/m at an adhesive coat weight of from about 40 to about 60 g/m^2.

5,011,868

DENTURE STABILIZER

James J. Keegan, Bloomfield, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 1, 1989, Ser. No. 444,473

Int. Cl.^{5} A61K *6/00*; C08L *1/00*; A61C *13/23*

U.S. Cl. 523—120 **30 Claims**

1. A denture adhesive base composition comprising a substantially anhydrous mixture of from about 20 to about 25 percent by weight of a cationic acrylamide polymer, from about 50 to about 60 percent by weight of sodium carboxymethylcellulose and from about 20 to about 25 percent by weight of ethylene oxide polymer.

5,011,869

SELF-LEVELING SILICONE SEALANT COMPOSITIONS AND METHODS FOR MAKING SAME

John W. Dean, Guilderland, N.Y., and Melvin D. Beers, Hudson, Ohio, assignors to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 154,479, Feb. 8, 1988, abandoned, which is a continuation of Ser. No. 716,073, Mar. 26, 1985, abandoned. This application Aug. 29, 1989, Ser. No. 401,527

Int. Cl.^{5} C08K *5/17*

U.S. Cl. 523—213 **33 Claims**

1. A self-leveling, curable composition, consisting essentially of:

(a) an acyloxy-terminated polydiorganosiloxane,

(b) an effective amount of metal-containing condensation catalyst,

(c) from about 25 parts per million to about 200 parts per million of dihexylamine, and

(d) sufficient fumed silica treated with cyclopolysiloxanes or silazanes to provide reinforcement.

5,011,870

THERMALLY CONDUCTIVE ORGANOSILOXANE COMPOSITIONS

Adam L. Peterson, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Feb. 8, 1989, Ser. No. 308,151

Int. Cl.^{5} C08K *3/28*

U.S. Cl. 523—220 **3 Claims**

1. In an organosiloxane composition comprising a polyorganosiloxane and a finely divided solid thermally conductive filler, the improvement comprising the presence in said composition of a mixture of thermally conductive fillers comprising (1) from 20 to 60 weight percent, based on the weight of said mixture, of a first filler consisting essentially of aluminum nitride having an average particle size no larger than one micron and (2) at least one additional thermally conductive filler having an average particle size of from 10 to 100 microns. where said mixture constitutes from 40 to 85 percent of the total weight of said composition.

5,011,871

IMPACT RESISTANT THERMOPLASTIC MOLDING COMPOSITION AND USE THEREOF

Rainer Bueschl, Roedersheim-Gronau; Adolf Echte, Ludwigshafen; Konrad Schulte, Schifferstadt, and Hans Mittnacht, Weinheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 15, 1989, Ser. No. 323,753

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1988, 3811014

Int. Cl.^{5} C08L *51/04*

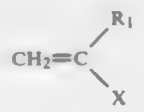
U.S. Cl. 523—436 **8 Claims**

1. An impact resistant thermoplastic molding composition containing, each percentage being based on A + B,

A: from 80 to 55% by weight of a hard matrix of a copolymer containing at lest 95% by weight of units of aromatic vinyl monomer a_{11} of from 8 to 10 carbon atoms and of at least one comonomer a_{12} of a proportion of 0.1 to 1.95% by weight, based on A, and

B: from 45 to 20% by weight of a soft phase which, uniformly dispersed in the hard matrix, has an average particle diameter d_{50} (volume average) of from 3.5 to 9 μm,

as obtained by solution polymerization, mass polymerization or initial mass polymerization followed by aqueous dispersion polymerization of the mixture of monomers a_{11} and a_{12} in the presence of elastomer (rubber) and subsequent isolation of the useful product, wherein the comonomer a_{12} has the general Formula I



(I)

where

X is -OR^2 or -COOR^2,

R^1 is hydrogen or methyl and

R^2 is substituted alkyl of from 1 or 2 to 10 carbon atoms with at least one OH, epoxy, cyano, furfuryl or morpholino group or wherein a_{12} is selected from the group consisting of acrylamide, methacrylamide, N-methylacrylamide, and N-methylmethacrylamide.

5,011,872

THERMALLY CONDUCTIVE CERAMIC/POLYMER COMPOSITES

Carol A. Latham, Lakewood, and Michael F. McGuiggan, Shaker Heights, both of Ohio, assignors to The Carborudum Company, Niagara Falls, N.Y.

Continuation of Ser. No. 135,785, Dec. 21, 1987. This application Mar. 22, 1989, Ser. No. 327,067

Int. Cl.^{5} C08L *63/00*

U.S. Cl. 523—440 **10 Claims**

1. A thermal conductive polymer composition comprising a mixture of a polymer and a thermally conductive filler material, said filler material having a median particle size of between about 130 to 260 microns and a size distribution characterized by the formula:

$$\frac{\% < (M - 60)}{\% > (M + 60)} > 0.60$$

where % represents the wt. % of the particles below or above the median particle size and M represents the median particle size in microns.

5,011,873

MOLDING POLYAMIDE RESIN COMPOSITION

Isao Nomura, Hiratsuka, and Kazuo Yamamiya, Chigasaki, both of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Oct. 24, 1989, Ser. No. 425,980

Int. Cl.^{5} C08K *7/14*

U.S. Cl. 523—466 **8 Claims**

1. A molding polyamide resin composition comprising

(A) 50 to 99 parts by weight of a polyamide resin derived from xylylenediamine as a main diamine component and an alpha,omega-straight chain aliphatic dicarboxylic acid as a main dicarboxylic acid component,

(B) 1 to 50 parts by weight of polyhexamethyleneadipamide resin,

(C) 5 to 85 parts by weight, per 100 parts by weight of components (A) and (B) combined, of a thermosetting resin powder having an average

particle diameter of 1 to 800 micrometers, and

(D) 5 to 200 parts by weight, per 100 parts by weight of components (A) and (B) combined, of glass fibers,

the total amount of the polyamide resin components (A) and (B) being 100 parts by weight.

5,011,874

CELLULOSE ESTER/POLYMER COMBINATIONS, AND THEIR PREPARATION AND USE

Lutz Hoppe, Walsrode; Wolfgang Koch; Erhard Lühmann, both of Bomlitz, and Michael Piepho, Elze, all of Fed. Rep. of Germany, assignors to Wolff Walsrode Aktiengesellschaft, Walsrode, Fed. Rep. of Germany

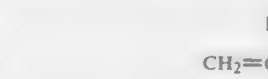
Filed Oct. 10, 1989, Ser. No. 419,070

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1988, 3836779

Int. Cl.^{5} C08L *1/00, 1/14*; C08G *63/48*; C08C *63/91*

U.S. Cl. 524—30 **12 Claims**

1. Dry free-flowing cellulose ester-polymer particles consisting essentially of cellulose ester A, polymer B, and a water-insoluble nonionic dispersing agent, free of volatile constituents, the particles being 0.1 to 10 mm in size, the polymer B being formed of monomer of the formula



(I)

in which

R^1 denotes a hydrogen atom or a methyl group and

R^2 denotes a hydrogen, an alkyl radical with 1–20 carbon atoms, a cycloalkyl radical with 5 or 6 carbon atoms, $-(CH_2-CH_2-O)_n-R^3$ (where R^3 is H, CH_3 or C_2H_5 and n = 2–50), $-C_6H_5$ or $-CH_2C_6H_5$.

5,011,875

CORROSION RESISTANT, WATER EXPANDABLE COMPOSITION

Yuji Yamamoto; Hideyuki Shigematsu, both of Hiroshima; Hiroshi Tanaka, Aichi; Ryo Ashikawa, Aichi, and Tatsuo Ishida, Aichi, all of Japan, assignors to Hiroshima Kasei Ltd. and Mitsubishi Jidosha Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Continuation of Ser. No. 176,192, Apr. 1, 1988, abandoned. This application Mar. 26, 1990, Ser. No. 501,389

Int. Cl.^{5} C08J *5/18, 7/04*; C08L *23/16, 47/00*

U.S. Cl. 524—45 **7 Claims**

1. A corrosion resistant, water expandable composition comprising:

(A) 100 parts by weight of at least one ethylene-propylene terpolymer;

(B) 10–200 parts by weight of a water-absorbable material; and

(C) 5–30 parts by weight of a corrosion inhibitor.

5,011,876

PNEUMATIC TIRES

Robert J. Blythe, and Paul G. Scally, both of Birmingham, England, assignors to Sumitomo Rubber Industries Limited, Hyogo, Japan

Filed Feb. 2, 1989, Ser. No. 305,947

Int. Cl.^{5} C08K *5/09*

U.S. Cl. 524—77 **15 Claims**

1. A pneumatic tire, with improved steering response, comprising:

a tread portion comprised of an elastomeric composition, said composition containing as a steering response substance a long chain hydroxy fatty acid with 1 to 6 hydroxy groups or a derivative thereof, or an intercondensed or intra-condensed form thereof whereby frictional grip on wet road surfaces is not reduced as a result of improved steering response, the steering response substance having a melting point in the range of 50 to 130° C.

5,011,877

COPOLYESTERS FROM 4,4'-BIPHENYLDICARBOXYLIC ACID, 1,4-CYCLOHEXANEDIMETHANOL AND 1,6-HEXANEDIOL

John C. Morris, and Winston J. Jackson, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 289,343, Dec. 23, 1988, Pat. No. 4,959,450. This application Jun. 8, 1990, Ser. No. 545,806

Int. Cl.^{5} C08K *5/49*

U.S. Cl. 524—115 **11 Claims**

1. A composition comprising:

(i) about 30 to 99 weight percent of a copolyester comprising

(A) an acid component comprising repeating units of at least 80 mol % 4,4'-biphenyldicarboxylic acid, and

(B) a glycol component comprising repeating units of about 95–30 mol % 1,6-hexanediol, and about 5–70 mol % 1,4-cyclohexanedimethanol,

wherein the total mol % of acid component and glycol component are each 100 mol %, and

(ii) about 1 to 70 weight percent of at least one property modifier selected from 6,6-nylon, a poly(ether-imide), a polyphenylene oxide, a polyphenylene oxide/polystyrene blend, a different polyester, a polyphenylene sulfide, a polyphenylene sulfide/sulfone blend, a poly(ester-carbonate), a polycarbonate, a polysulfone ether, a poly(ether-ketone) of aromatic dihydroxy compounds, a phosphorus compound, a halogen compound, a halogen compound in combination with an antimony compound, talc, mica, poly(1,4-phenylene terephthalamide), a glass fiber, and a carbon fiber.

5,011,878

COPOLYESTERS FROM 4,4'-BIPHENYLDICARBOXYLIC ACID, 1,4-CYCLOHEXANEDIMETHANOL, AND 1,4-BUTANEDIOL

John C. Morris, and Winston J. Jackson, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 289,298, Dec. 23, 1988, Pat. No. 4,956,448. This application Jun. 4, 1990, Ser. No. 532,836

Int. Cl.^{5} C08K *5/49*

U.S. Cl. 524—115 **11 Claims**

1. A composition comprising:

(i) about 30 to 99 weight percent of a copolyester comprising

(A) an acid component comprising repeating units of at least 80 mol % 4,4'-biphenyldicarboxylic acid, and

(B) a glycol component comprising repeating units of about 95–30 mol % 1,6-hexanediol, and about 5–70 mol % 1,4-cyclohexanedimethanol,

wherein the total mol % of acid component and glycol component are each 100 mol %, and

(ii) about 1 to 70 weight percent of at least one property modifier selected from 6,6-nylon, a poly(ether-imide), a polyphenylene oxide, a polyphenylene oxide/polystyrene blend, a different polyester, a polyphenylene sulfide, a polyphenylene sulfide/sulfone blend, a poly(ester-carbonate), a polycarbonate, a polysulfono ether, a poly(ether-ketone) of aromatic dihydroxy compounds, a phosphorus compound, a halogen compound, a halogen compound in combination with an antimony compound, talc, mica, poly(1,4-phenylene terephthalamide), a glass fiber, and a carbon fiber.

5,011,879

ENGINEERING PLASTIC COMPOSITION AND AN ARTICLE MADE OF THE SAME

Toshio Uesaka, Kyoto; Akihiro Niki; Makoto Ohsuga; Toranosuke Saito; Hiroki Tsunomachi; Makoto Yamaguchi; Kazuo Doyama, and Daishiro Kishimoto, all of Osaka, Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha and Kabushiki Kaisha Sanko Kaihatsu Kagaku Kenkyusho, both of Osaka, Japan

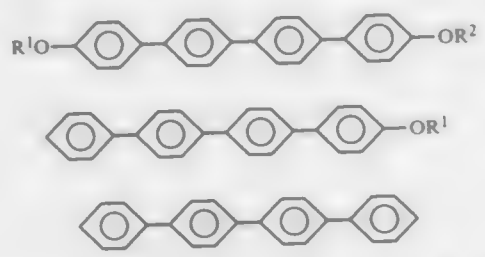
Filed May 25, 1989, Ser. No. 356,725

Claims priority, application Japan, May 26, 1988, 63-129174; May 26, 1988, 63-129175; May 26, 1988, 63-129176; May 26, 1988, 63-129177; Aug. 31, 1988, 63-216873; Aug. 31, 1988, 63-216875; Nov. 30, 1988, 63-304605; Nov. 30, 1988, 63-304606; Nov. 30, 1988, 63-304607; Nov. 30, 1988, 63-304608; Jan. 25, 1989, 1-15682

Int. Cl.[5] **C08K** *5/10, 5/06, 5/05, 5/01*

U.S. Cl. 524—290 **10 Claims**

1. An engineering plastic composition comprising an engineering plastic material, wherein said engineering plastic material is at least one selected from the group consisting of polyetherimide, polyarylketone, polysulfone, polyarylenesulfide, polyarylate, liquid crystal polyester, polyamide-imide, polycarbonate, and polyphenyleneoxide, and at least one p-quaterphenyl derivative selected from the group consisting of the compounds of formula I, II, and III:



[I]

[II]

[III]

, wherein R^1 and R^2, independently, are —H, —$COCH_3$, —CH_2CH_2OH, —$CH_2CH_2OCOCH_3$, —$CH_2CH(CH_3)OH$, —$CH_2CH(CH_3)OCOCH_3$, or alkyl containing from 1 to 15 carbon atoms,

wherein said p-quaterphenyl derivative is present in an amount of from 0.1 to 15 parts by weight for each 100 parts by weight of said engineering plastic material.

5,011,880

FIRE RETARDENT AND WATER BLOCKING FILLING COMPOSITIONS FOR CABLES

Jacques Cornibert, Ile des Soeurs, and Jorg-Hein Walling, Beaconsfield, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

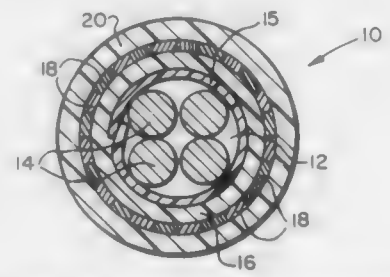
Continuation-in-part of Ser. No. 75,176, Jul. 20, 1987, abandoned. This application May 4, 1989, Ser. No. 347,131

Int. Cl.[5] **C08K** *5/06, 3/10;* **D02G** *3/00;* **H01B** *7/18*

U.S. Cl. 524—371 **10 Claims**

1. A composition for a cable in which:

the composition is fiber free and comprises in admixture and in parts by weight, 100 parts of amorphous polypropylene, from 10 to 70 parts of aluminum trihydrate or magnesium hydroxide, and an organic halogenated material and antimony trioxide, the organic halogenated material comprising decabromodiphenyloxide, bromated diphenyl ether, tetrabromophthalic anhydride, chlorendic anhydride or hexachlorocyclopentadiene and an aggregate of the halogenated material and antimony trioxide being from 5 to 30



parts, such that the composition is fire retardant and water resistant; and

the amorphous polypropylene provides a continuous phase throughout the composition and has a low molecular weight to provide the composition with grease-like or jelly-like properties at room temperature.

5,011,881

AQUEOUS THERMOPLASTIC COATING COMPOSITION FOR PLASTICS MATERIALS AND COATING METHOD USING SAME

Yasuhiro Fujii, Kanagawa; Masaru Mitsuji, Zama, and Junichi Kajima, Hiratsuka, all of Japan, assignors to Kansai Paint Company, Limited, Hyogo, Japan

Filed Jan. 16, 1990, Ser. No. 465,705

Claims priority, application Japan, Jan. 18, 1989, 1-9433

Int. Cl.[5] **C08L** *75/04*

U.S. Cl. 524—457 **5 Claims**

1. An aqueous thermoplastic coating composition for coating plastics substrates, the composition consisting essentially of:

(A) an aqueous acrylic resin and

(B) a urethane resin emulsion,

the component (B) being a self-emulsifiable urethane emulsion prepared by subjecting a urethane prepolymer to reaction for chain extension by water and emulsification after or during neutralization of the urethane prepolymer with a tertiary amine, the urethane prepolymer consisting essentially of (i) an aliphatic and/or an alicyclic diisocyanate, (ii) a polyether diol and/or polyester diol both having a number-average molecular weight of about 500 to about 5000, (iii) a low-molecular weight polyhydroxyl compound and (iv) a dimethylolalkanoic acid in NCO/OH equivalent ratio of 1.1–1.9:1, the amount of the component (A) being about 1 to about 12% by weight and the amount of the component (B) being about 99 to about 88% by weight, based on the combined weight (calculated as solids) of the two components.

5,011,882

AQUEOUS COATING COMPOSITION

Naohito Shingo, Katano, and Takahito Kishida, Yao, both of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed May 20, 1988, Ser. No. 197,447

Claims priority, application Japan, May 20, 1987, 62-122733

Int. Cl.[5] **C08L** *51/00*

U.S. Cl. 524—504 **5 Claims**

1. An aqueous coating composition comprising

(A) 100 parts by weight of an acrylic resin powder having an acid value of 15 to 200,

(B) 25 to 900 parts by weight of an acrylic graft polymer having an acid value of 20 to 100, which is composed of a polymer portion (1) having an acid value of not more than 15 and an acrylic polymer portion (2) having an acid value of 40 to 200, and

(C) 3 to 900 parts by weight of a curing agent for curing the component (A), the component (B) or both the components (A) and (B).

5,011,883

STABILIZED POLYMER LATEX COMPOSITION

Igor Aksman, Dover, Del., assignor to ICI Americas Inc., Wilmington, Del.

Filed Feb. 7, 1990, Ser. No. 476,192

Int. Cl.[5] **C08L** *67/00, 33/06;* **C08G** *63/49, 63/52*

U.S. Cl. 524—513 **23 Claims**

1. A stabilized aqueous polymer latex composition comprising:

(A) polymeric latex particles:

(B) a protective colloid; and

(C) a poly(oxyalkylene)-containing alkyd resin which is the reaction product of:

(i) at least one poly(oxyalkylene) compound with hydroxyl and groups;

(ii) at least one polyol;

(iii) at least one polycarboxylic acid, chloride or anhydride; and

(iv) at least one monocarboxylic acid.

21. A latex composition in accordance with claim 1 wherein the weight ratio of alkyd resin to protective colloid is between about 4:1 and about 1:12.

22. A latex composition in accordance with claim 21 wherein the weight ratio of alkyd resin to protective colloid is between about 2:1 and about 1:8.

23. A latex composition in accordance with claim 22 wherein the weight ratio of alkyd resin to protective colloid is between about 4:3 and about 1:6.

5,011,884

BLENDS OF THERMOTROPIC POLYMERS WITH POLYESTERS AND POLYCARBONATE

Bernhard Rosenau, Neustadt; Bernd Hisgen, Limburgerhof; Gerhard Heinz, Weisenheim; Hans-Georg Braun, Gruenstadt; Dietrich Lausberg, and Hartmut Zeiner, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 31, 1989, Ser. No. 401,236

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1988, 3831873

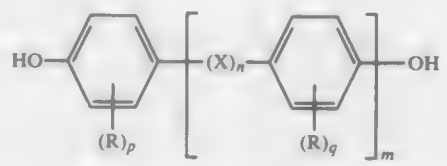
Int. Cl.[5] **C08L** *69/00, 67/02, 67/03, 67/04*

U.S. Cl. 524—537 **8 Claims**

1. A polymeric molding composition, containing:

(a) 20–70% by weight of a thermotropic liquid-crystalline polymer,

(b) 10–50% by weight of a polycarbonate which is a polycondensate obtainable by reacting a carbonic acid derivative with an aromatic bisphenol of the formula:



wherein X is alkylene or aralkylene of 1–20 carbon atoms, —SO_2—, —S—, —O— or —CO—, n is 0 or 1, m is 0, 1 or 2, p and q are each 0–4, and R is C_1–C_6-alkyl, C_1–C_4 alkoxy, halogen or phenyl,

(c) 10–50% by weight of a polyester, which is obtained from the polycondensation of one or more alkylene glycols of 2–20 carbon atoms and one or more aromatic dicarboxylic acids or esters thereof, the weight percentages (a), (b) and (c) adding up to 100, and

(d) up to 60% by weight, based on the total amount of proportions (a), (b) and (c), of further polymers, fillers, reinforcing agents, processing aids and other additives.

5,011,885

METHODS FOR THE PRODUCTION OF MICROCAPSULES USING FUNCTIONALIZED ISOCYANATE

Jing-Den Chen, Spring Valley; Kerry Kovacs, Centerville; Margaret T. Thomas, Medway, and Rong-Chang Liang, Centerville, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Oct. 27, 1989, Ser. No. 428,098

Int. Cl.[5] **C08L** *75/04*

U.S. Cl. 524—591 **18 Claims**

1. A method for preparing microcapsules which comprises:

preparing an aqueous dispersion or emulsion of a hydrophobic oily core material containing a polyvalent isocyanate, a polyvalent isothiocyanate, or an adduct containing at least one of said polyvalent isocyanate and said polyvalent isothiocyanate, said polyvalent isocyanate and said polyvalent isothiocyanate having an anionic moiety; and

forming capsule walls around the droplets of said oily core material.

5,011,886

PROCESS FOR PRODUCING MODIFIED PHENOLIC RESIN BONDING AGENTS AND USE THEREOF FOR PRODUCING PARTICLE BOARD

Adolf Buschfeld, Alpen; Matthias Lattekamp, Rheinberg; Gerd Ripkens, Kamp-Lintfort, and Hans Schittek, Neukirchen-Vluyn, all of Fed. Rep. of Germany, assignors to Rwe-Dea Aktiengesellschaft fur Mineraloel und Chemie, Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 681,538, Dec. 14, 1984, abandoned. This application Feb. 26, 1990, Ser. No. 488,469

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1983, 3346153

Int. Cl.[5] **C08K** *3/20*

U.S. Cl. 524—596 **16 Claims**

1. A process for preparing a product aqueous solution of a high molecular weight phenol-formaldehyde condensation resin of reduced viscosity which comprises:

adding to a charge aqueous solution of a phenol-formaldehyde condensation resin having a viscosity above 300 mPa.s (at 20° C.) with a solids content of 20 to 65 weight percent and containing about 2 to about 16 weight percent alkali, urea in amount of 5 to 50 weight percent, based on said resin solution.

5,011,887

THERMOPLASTIC RESIN COMPOSITION

Isao Sasaki; Naoki Yamamoto, both of Hiroshima, and Akira Yanagase, Otake, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1989, Ser. No. 320,533

Claims priority, application Japan, Mar. 10, 1988, 63-57039

Int. Cl.[5] **C08L** *51/08*

U.S. Cl. 525—63 **14 Claims**

1. A thermoplastic resin composition comprising:

95–5% by weight of a sulfur-containing thermoplastic polymer (A) selected from the group consisting of polyphenylene sulfide, and polysulfone and

5–95% by weight of a compound-rubber-based graft copolymer (B) which is produced by the graft polymerization of one or more vinyl monomers onto compound rubber particles having an average particle diameter of 0.08–0.6 μm and structures in which 10–90% by weight of a polyorganosiloxane rubber component and 90–10% by weight of a polyalkyl(meth)acrylate rubber component are tangled together so as not to be separable from each other and the total amount of the polyorganosiloxane

rubber component and polyalkyl(meth)acrylate rubber component is 100% by weight.

5,011,888

VULCANIZED RUBBER COMPOSITION

Fumio Tsutsumi, Yokkaichi; Akihiko Morikawa, Tsu; Mitsuhiko Sakakibara, Yokkaichi; Noboru Oshima, Suzuka; Tatsuro Hamada; Tatsuo Fujimaki, both of Higashimurayama, and Masayuki Ohashi, Suginami, all of Japan, assignors to Japan Synthetic Rubber Co. and Bridgestone Corp., both of Tokyo, Japan

Continuation of Ser. No. 291,320, Dec. 28, 1988, abandoned, which is a continuation of Ser. No. 925,048, Oct. 30, 1986, abandoned. This application Dec. 6, 1989, Ser. No. 449,308

Claims priority, application Japan, Oct. 30, 1985, 60-243640

Int. Cl.[5] **C08L** *9/06, 53/02*

U.S. Cl. 525—98 **3 Claims**

1. A vulcanized rubber composition containing not less than 20% by weight, based on the rubber component, of a block copolymer composed of polymer or copolymer block units (A) and random copolymer block units (B), said polymer or copolymer block units (A) being obtained by singly polymerizing a conjugated diolefine or copolymerizing the conjugated diolefine and a monovinyl aromatic hydrocarbon using a lithium initiator and containing not more than 10% by weight of bound monovinyl aromatic hydrocarbon and said random copolymer block (B) being obtained by copolymerizing the conjugated diolefine and the monovinyl aromatic hydrocarbon and containing 15 to 80% by weight of bound monovinyl aromatic hydrocarbon, wherein:

(i) the block copolymer contains not less than 10% by weight of each of the block units (A) and the block units (B);

(ii) the total content of the bound monovinyl aromatic hydrocarbon is from 10 to 40% by weight;

(iii) the average content of the vinyl bonds in the conjugated diolefine portions is from 20 to 70% and

(iv) the polymerizable terminals of the block copolymer are reacted with an isocyanate compound, wherein the isocyanate compound is employed in an amount of 0.2 to 10 equivalents in terms of isocyanate groups per one mole of lithium atom of said lithium initiator.

5,011,889

POLYMER, MIXTURE COMPRISING POLYPHENYLENE ETHER, POLYESTER, AND STYRENE POLYMER

Wilhelmus Hamersma, Bergen op Zoom, Netherlands; Roger W. Avakian, Brasschaat, and Christian Bailly, Kalmthout, both of Belgium, assignors to General Electric Co., Selkirk, N.Y.

Filed Nov. 19, 1987, Ser. No. 122,954

Claims priority, application Netherlands, Dec. 8, 1986, 8603112

Int. Cl.[5] **C08F** *8/30, 71/12*

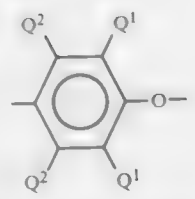
U.S. Cl. 525—133 **7 Claims**

1. A polymer mixture which comprises:

(A) a polyphenylene ether or a mixture thereof with a polystryrene, and

(B) a polyester or a mixture of two or more polyesters, and

(C) a styrene polymer with side chains consisting entirely or partly of cyclic imino ether groups, wherein the polyphenylene ether is a homopolymer or copolymer having the formula



wherein each Q^1 is individually selected from the group consisting of halogen, primary or secondary lower alkyl, phenyl, haloalkyl, amino alkyl, hydrocarbonoxy, and halohydrocarbonoxy, in which at least two carbon atoms separate the halogen and oxygen atoms, and each Q^2 is individually selected from the group consisting of hydrogen, halogen, primary or secondary lower alkyl, phenyl, haloalkyl, hydrocarbonoxy, and halohydrocarbonoxy as defined for Q^1.

5,011,890

POLYACETAL RESINS CONTAINING NON-MELTABLE POLYMER STABILIZERS

Ernest R. Novak, Vienna, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 17, 1989, Ser. No. 327,664

The portion of the term of this patent subsequent to Mar. 21, 2006, has been disclaimed.

Int. Cl.[5] **C08F** *283/06;* **C08K** *5/47;* **C42L** *61/00*

U.S. Cl. 525—154 **24 Claims**

1. A thermoplastic polyacetal composition consisting essentially of

(a) 0.05–3 weight percent of at least one non-meltable polymer selected from the group consisting of polymers containing formaldehyde reactive hydroxyl groups, polymers containing formaldehyde reactive nitrogen groups, and polymers containing both formaldehyde reactive hydroxyl groups and formaldehyde reactive nitrogen groups, provided that the atoms in the backbone of the polymer to which the formaldehyde reactive groups are attached, directly or indirectly, are separated from each other, on average, by not more than twenty chain atoms, and further provided that the amount of the formaldehyde reactive nitrogen groups attached, directly or indirectly, to the atoms which are in the backbone of the polymer is at least three times as great as the amount of formaldehyde reactive nitrogen groups present in the backbone of the polymer and

(b) 97–99.95 weight percent of at least one polyacetal polymer,

provided that the above-stated percentages are based on the total amount of components (a) and (b) only and further provided that the polymer of component (a) has a number average particle size in the composition of less than 10 microns.

5,011,891

ELASTOMER POLYMER BLENDS

Lawrence Spenadel, Westfield; Joel H. Grosser, Perth Amboy, and Stephen M. Dwyer, Howell, all of N.J., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 321,367, Mar. 9, 1989, abandoned, which is a division of Ser. No. 835,211, Mar. 3, 1986, Pat. No. 4,843,129. This application Aug. 21, 1990, Ser. No. 570,993

Int. Cl.[5] **C08L** *23/16, 23/12, 23/06*

U.S. Cl. 525—211 **9 Claims**

1. A composition comprising:

(a) at least one elastomer copolymer comprising ethylene and at least one other alpha olefin, having a weight average molecular weight of at least 20,000 and having at least one of M_w/M_n less than 2 and M_z/M_w less than 1.8, wherein at least two portions of essentially each copolymer chain of said copolymer, each portion comprising at least 5 wt. % of the chain, differ in composition from one another by at least about 5 wt. % ethylene;

(b) a first plastic composition different from said first plastic composition; and

(c) a second plastic composition.

5,011,892

HYDROPHILIC SWELLABLE GRAFT COPOLYMERS, THEIR PREPARATION AND USE

Friedrich Engelhardt, and Ulrich Riegel, both of Frankfurt am Main, Fed. Rep. of Germany, assignors to Cassella AG, Frankfurt am Main, Fed. Rep. of Germany

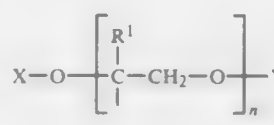
Filed Mar. 26, 1990, Ser. No. 498,722

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1989, 3911433

Int. Cl.[5] **C08F** *283/06*

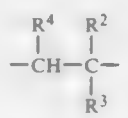
U.S. Cl. 525—404 **14 Claims**

1. Hydrophilic, swellable graft copolymers composed, in random distribution, of 0.5 to 20% by weight of radicals of the general formula I



(I)

79 to 99% by weight of radicals containing at acidic group, of the general formula II

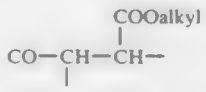


(II)

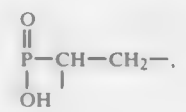
and 0.1 to 2% by weight of radicals of a crosslinking agent which are derived from monomers having at least two olefinically unsaturated double bonds, where

X denotes (C_1–C_{22})-alkyl, aryl, aralkyl or Y

Y denotes $COCH_3$, CH_2COOR^2, $COCH_2CH_2COOH$,



$COOR^2$, $CH_2COCH_2COOR^2$, SO_3H or

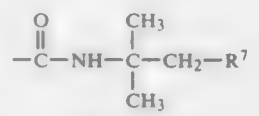


n denotes 2 to 300,

R^1 denotes hydrogen or methyl

R^2 independently of one another denotes hydrogen, methyl or ethyl

R^3 denotes the carboxyl group, the sulphonyl group, the phosphonyl group which optionally may be esterified with alkanol having 1 to 4 carbon atoms, or denotes a group of the formula



in which R^7 represents the sulphonyl group or the phosphonyl group, and R^4 denotes hydrogen, methyl, ethyl or the carboxyl group.

5,011,893

METHOD FOR PRODUCING A BLOCK COPOLYAMIDE

Masaaki Miyamoto; Hidemi Nakanishi, and Takayoshi Tanaka, all of Kitakyushu, Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Aug. 7, 1989, Ser. No. 390,217

Claims priority, application Japan, Aug. 17, 1988, 63-203195

Int. Cl.[5] **C08L** *77/00*

U.S. Cl. 525—420.5 **5 Claims**

1. A method for producing a block copolyamide, which comprises polycondensing a prepolymer prepared from a dimerized fatty acid and a diamine and having a number average molecular weight of from 1,000 to 50,000, with a polyamide material other than said prepolymer component wherein said polyamide material is an at least three-membered ring lactam, a polymerizable ω-amino acid or a salt obtained by the reaction of a dibasic acid with a diamine or a prepolymer of said polyamide material.

5,011,894

BLENDS OF A POLY(ARYL ETHER KETONE) AND A POLYARYLATE

Lloyd M. Robeson, Whitehouse Station, and James E. Harris, Piscataway, both of N.J., assignors to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 295,114, Jan. 9, 1989, and a continuation of Ser. No. 87,175, Aug. 17, 1987, abandoned, and a continuation of Ser. No. 797,765, Nov. 14, 1985, abandoned, and a continuation of Ser. No. 625,915, Jun. 29, 1984, abandoned. This application Aug. 22, 1989, Ser. No. 396,849

Int. Cl.[5] **C08F** *20/00*

U.S. Cl. 525—437 **15 Claims**

1. A blend comprising a crystalline poly(aryl ether ketone) and a liquid crystalline polyarylate selected from the group consisting of:

(a) a homopolymer of p-hydroxybenzoic acid,

(b) a copolymer of p-hydroxybenzoic acid, terephthalic and isophthalic acids and 4,4′-biphenol,

(c) a copolymer of p-hydroxybenzoic acid and 6-hydroxy-2-naphthoic acid in a 75/25 molar ratio,

(d) a copolyester obtained by polymerizing p-acetoxybenzoic acid in a polyethylene terephthalate matrix and;

(e) a copolymer of p-hydroxybenzoic acid, terephthalic acid and 4,4′-biphenol.

5,011,895

PRECIPITATION POLYMERIZATION OF COPOLYMERS OF A VINYL LACTAM AND A POLYMERIZABLE CARBOXYLIC ACID USING SUB-SURFACE FEEDING

Jenn S. Shih, Paramus; Terry E. Smith, Morristown; John Zamora, Paramus, and Minas Economidis, Passaic, all of N.J., assignors to GAF Chemicals Corporation, Wayne, N.J.

Filed Jun. 4, 1990, Ser. No. 532,843

Int. Cl.[5] **C08F** *2/00, 26/00*

U.S. Cl. 526—88 **10 Claims**

1. A precipitation polymerization process for making fine, white, powdered copolymers of vinyl pyrrolidone and acrylic acid which comprises:

(a) charging a reactor with a solvent in which the copolymer product is substantially insoluble over the entire compositional range of the copolymers, and a polymerization initiator, which is heated to 50° to 150° C., and agitated; and

(b) simultaneously feeding said vinyl pyrrolidone and acrylic acid monomers in the weight ratio of about 3:1 to 10:1, respectively, into said reactor below the surface of the solvent over a period of about 1 to 9 hours while continuing to agitate the reaction mixture to control the exother-

mic heating of the reaction solution and to precipitate the copolymer as a fine, white powder from solution to produce a reaction product having up to about 40% solids.

5,011,896

SYNDIOTACTIC 1,2-POLYBUTADIENE SYNTHESIS IN AN AQUEOUS MEDIUM

Anthony J. Bell, Stow, and Eilert A. Ofstead, Cuyahoga Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 10, 1990, Ser. No. 579,650
Int. Cl.[5] C08F *2/22, 136/06*
U.S. Cl. 526—92 **16 Claims**

1. In the process of synthesizing syndiotactic 1,2-polybutadiene in an aqueous medium by polymerizing 1,3-butadiene with a catalyst system which contains a transition metal compound, an organoaluminum compound, and carbon disulfide: the improvement which comprises reducing the melting point of the syndiotactic 1,2-polybutadiene by conducting said process in the presence of at least one aromatic aldehyde selected from the group consisting of (a) 4-(alkylamino)benzaldehydes, (b) 4-(dialkylamino)benzaldehydes, (c) 2,4-di-(alkoxy)benzaldehydes, (d) 2,6-di-(alkoxy)benzaldehydes, (e) 2,4,6-tri-(alkoxy)-benzaldehydes and (f) 4-(1-azacycloalkyl)benzaldehydes.

5,011,897

PROCESS FOR PREPARING VINYL CHLORIDE POLYMER USING HYDROXYPHENYL MONOMERS

Tadashi Amano, Ibaraki, and Junichi Watanabe, Ageo, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 158,620, Feb. 22, 1988, abandoned. This application May 8, 1989, Ser. No. 348,511
Claims priority, application Japan, Mar. 6, 1987, 62-51641
Int. Cl.[5] C08F *2/20*
U.S. Cl. 526—202 **6 Claims**

1. A process for preparing a vinyl chloride containing polymer, comprising:

suspension polymerizing vinyl chloride or a vinyl monomer mixture containing vinyl chloride in an aqueous medium; and

adding an antioxidant dispersion consisting essentially of from about 5 to 50% by weight of an antioxidant having a melting point of not lower than 30° C. and selected from the group consisting of triethylene glycol-bis[3-(3-t-butyl-5-methyl-4-hydroxyphenyl)-propionate], n-oxtadecyl-3-(4'-hydroxy- 3',5'-di-t-butylphenyl)propionate, t-butylhydroxyanisole, 3,5-di-t-butyl-4-hydroxytolune, and 1,6-hexanediol-bis[3-(3,5-di-t-butyl-4-hydroxyphenyl)propionate] and a suspending agent which is a water-soluble polyvinyl alcohol having a saponification degree of 60 to 98% and a polymerization degree of 600 to 3000 in water to the polymerization system, wherein said antioxidant dispersion has been heated once to a temperature not lower than the melting point of the antioxidant and then cooled, prior to addition of the dispersion to the polymerization system.

5,011,898

ACRYLIC AMPHOTERIC POLYMERS

Robert P. Foss, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 176,806, Apr. 1, 1988, abandoned, which is a division of Ser. No. 377,373, May 12, 1982, Pat. No. 4,943,888
Int. Cl.[5] C08F *2/00*
U.S. Cl. 526—234 **4 Claims**

1. Amphoteric polymer derived from:

(a) 20 to 90 mol percent of acrylic acid units,

(b) 10 to 30 mol percent of N,N-dimethylaminoethyl methacrylate or N,N-diethylaminoethyl methacrylate units, and

(c) 0 to 70 mole percent of units from one or more members of the group consisting of C_{1-8} alkyl acrylate, C_{1-8} alkyl methacrylate, 2-hydroxyethyl acrylate, 2-hydroxyethyl methacrylate, 2-hydroxypropyl acrylate and 2-hydroxypropyl methacrylate; said polymer prepared by copolymerizing (a), (b) and (c), in solution, in the presence of a strong acid selected from the group consisting of nitric acid, sulfuric acid and hydrochloric acid, in a quantity sufficient to protonate the amine group of (b),

the polymer characterized further by having (i) a molar ratio of (a) to (b) of at least 2 to 1, and (ii) substantially no betaine-type contaminant.

5,011,899

COPOLY(AROMATIC SULFONE CARBONATE - AROMATIC ALKYLCARBONATE) - POLYSILOXANE BLOCK COPOLYMER

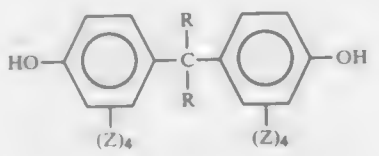
Paul D. Sybert, Pittsfield, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Aug. 15, 1989, Ser. No. 394,710
Int. Cl.[5] C08G *77/04*
U.S. Cl. 528—26 **10 Claims**

1. A polysulfonecarbonate-siloxane block copolymer derived from the reaction products of:

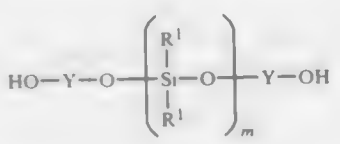
(a) bis-(3,5-dimethyl-4-hydroxyphenyl)sulfone;

(b) a dihydric phenol represented by the formula:

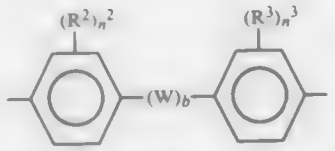


wherein each R is independently selected from the group consisting of hydrogen, monovalent hydrocarbon radicals and halogenated hydrocarbon radicals, each Z being independently selected from the group consisting of hydrogen, lower alkyl radicals and halogen radicals;

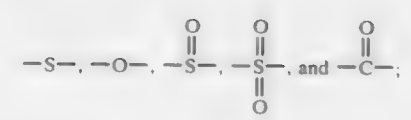
(c) a siloxane compound represented by the formula:



wherein m is on average from 5 to 90, each R^1 is independently selected from the group consisting of monovalent hydrocarbon radicals, halogenated hydrocarbon radicals and cyanoalkyl radicals, Y is represented by the formula:



wherein R^2 is independently selected from the group consisting of halogen, monovalent hydrocarbon, and monovalent hydrocarbonoxy radicals; R^3 is independently selected from the group consisting of halogen, monovalent hydrocarbon, and monovalent hydrocarbonoxy radicals; W is selected from the group consisting of divalent hydrocarbon radicals,



n^2 and n^3 are independently selected from the group consisting of integers having a value of from 0 to 4 inclusive; and b is either 0 or 1; and

(d) a carbonate precursor.

5,011,900

CURABLE COMPOSITION

Sadao Yukimoto; Toshifumi Hirose; Hiroshi Wakabayashi, and Katsuhiko Isayama, all of Hyogo, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 7, 1989, Ser. No. 362,714
Claims priority, application Japan, Jun. 10, 1988, 63-144014
Int. Cl.[5] C08F *283/00*
U.S. Cl. 525—477 **10 Claims**

1. A curable composition comprising (A) 100 parts by weight of an oxyalkylene polymer having at least one silicon-containing group in which a hydroxyl group and/or hydrolyzable group is or are bonded to the silicon atom, said polymer being crosslinkable by formation of a siloxane bond, (B) from 0.1 to 20 parts by weight of a compound having one silanol group per molecule and/or a compound capable of forming a compound having one silanol group per molecule on reacting with moisture, and (C) from 0.1 to 20 parts by weight of a compound having an air oxidative curing unsaturated group.

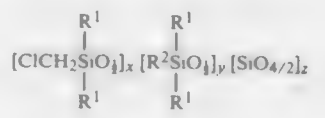
5,011,901

POLYORGANOSILOXANE WITH CHLOROMETHYL GROUPS

Yoshimi Fukutani, Chiba, Japan, assignor to Dow Corning Toray Silicone, Tokyo, Japan

Continuation-in-part of Ser. No. 355,511, May 23, 1989, abandoned. This application Nov. 13, 1989, Ser. No. 434,202
Claims priority, application Japan, May 25, 1988, 63-127284; Nov. 10, 1988, 63-284650
Int. Cl.[5] C08G *77/24*
U.S. Cl. 528—42 **8 Claims**

1. Polyorganosiloxane with a molecular weight of 500 to 500,000 which has the following general formula



in which R^1 is a monovalent hydrocarbon group having 1 to 6 carbon atoms; R^2 is a hydrogen atom or a monovalent hydrocarbon group having 1 to 6 carbon atoms; x and z are positive numbers; y is zero or a positive number; and x, y, and z have values such that their ratios are $0.3 \leqq (x+y)/z \leqq 4$; and $\text{zero} \leqq y/x \leqq 100$.

5,011,902

CO-CATALYST SYSTEM FOR PREPARING POLYURETHANE BASED PLYWOOD-PATCH COMPOSITIONS

Millard E. Foucht, Stone Mountain, Ga., assignor to Georgia-Pacific Resins, Inc., Atlanta, Ga.

Filed Nov. 1, 1989, Ser. No. 430,048
Int. Cl.[5] C08G *18/22*
U.S. Cl. 528—55 **50 Claims**

1. A process for preparing a polyurethane elastomer consisting essentially of the step of reacting a polyol selected from polyether polyols and polyester polyols with an organic polyisocyanate wherein the ratio of NCO groups to hydroxyl groups is greater than about 1.00 to 1 in the presence of a catalytic amount of a co-catalyst system, said co-catalyst system consisting essentially of an organo-bismuth compound and at least one organo-metallic compound, wherein said at least one organo-metallic compound contains a metal selected from the group consisting of zinc, antimony, lithium and combinations thereof and wherein the bismuth contained in said organo-bismuth compound and said metal contained in said organo-metallic compound are present in an effective mole ratio of bismuth to said metal, with the proviso that if said metal is zinc then said effective mole ratio is from about 1:4 to about 1:1, with the proviso that if said metal is antimony then said effective mole ratio is from about 1:1.1 to about 1:0.4, and with the proviso that if said metal is lithium then said effective mole ratio is from about 1:6.6 to less than about 1:1.6.

5,011,903

ENCAPSULATING AND PATCHING ELASTOMER FOR CONCRETE REPAIRS AND METHOD OF MAKING THE SAME

Frank M. Lymburner, Romeo, and Charles M. Peterson, Franklin, both of Mich., assignors to Peterson Elastomers, Inc., Pontiac, Mich.

Continuation of Ser. No. 792,574, Oct. 29, 1985, abandoned. This application Jan. 7, 1988, Ser. No. 145,635
Int. Cl.[5] C08G *18/48, 18/34, 18/32*
U.S. Cl. 528—76 **1 Claim**

1. An encapsulating and patching elastomer for concrete repairs, and protection, said elastomer comprising: a two component urethane system including a polyol reacted with a diisocyanate or a mixture of diisocyanates and a hindered amine, said elastomer having a hardness of over 50 on the Share A scale said polyol being selected from the group including proprylene oxide adducts of diols and triols, caprolactone-based multifunctional polyols, and polytetramethylene ether glycol, said hindered amine being an oligomeric diamine, said oligomeric diamine being polytetramethylene oxide-di-p-aminobenzoate.

5,011,904

EPOXY RESIN COMPOSITIONS BASED ON ALKOXYLATED PHENOLS

Michael B. Cavitt, Lake Jackson; Dennis L. Steele, and David J. Duncan, both of Freeport, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 20, 1989, Ser. No. 439,211
Int. Cl.[5] C08G *59/06, 59/08*
U.S. Cl. 528—103 **13 Claims**

1. An epoxy-containing composition which comprises a mixture of

(I) a product having an average of more than one vicinal epoxide group per molecule which results from dehydrohalogenating the product resulting from reacting

(A) a mixture of

(1) the product resulting from reacting

(a) at least one compound having an average of more than one aromatic hydroxyl group per molecule; with

(b) at least one alkylene oxide having from 2 to about 4 carbon atoms per molecule in an amount which provides a ratio of moles of component (b) to aromatic hydroxyl groups contained in component (a) of from about 1:1 to about 8:1; and

(2) at least one compound having an average of more than one aliphatic hydroxyl group per molecule which compound is free of aromatic rings, wherein components (1) and (2) are present in amounts such that from about 30 to about 70 percent of the hydroxyl groups are contributed by component (1) and from about 70 to about 30 percent of the hydroxyl groups are contributed by component (2) the percentages being based upon the total amount of hydroxyl groups contributed by components (1) and (2); with

(B) at least one epihalohydrin wherein the ratio of moles of

epihalohydrin per hydroxyl group contained in components (1) and)2) is from about 1.08:1 to about 1.7:1; and (II) at least one aromatic or cycloaliphatic epoxy resin having an average of more than one vicinal epoxide group per molecule and having a degree of polymerization of from about 1 to about 14.

5,011,905

POLYIMIDE OLIGOMERS AND BLENDS

Hyman R. Lubowitz, Rolling Hills Estates, Calif., and Clyde H. Sheppard, Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.

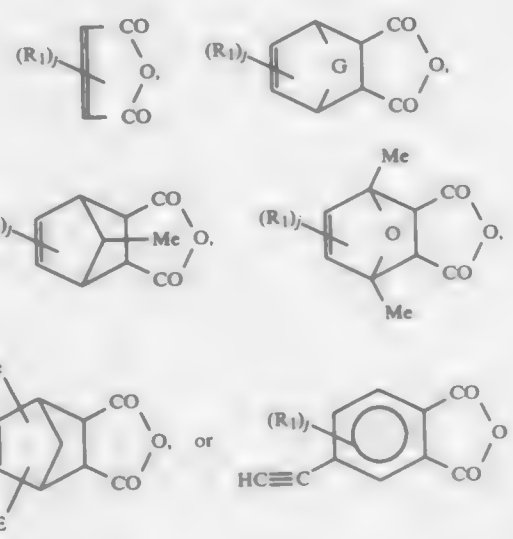
Continuation of Ser. No. 46,376, May 4, 1987, and a continuation-in-part of Ser. No. 810,818, Dec. 17, 1985, abandoned, said Ser. No. 46,376, is a continuation-in-part of Ser. No. 715,801, Mar. 22, 1985, abandoned, which is a continuation-in-part of Ser. No. 536,264, Sep. 17, 1983, abandoned, said Ser. No. 810,818, is a continuation-in-part of Ser. No. 536,350, Sep. 27, 1983, abandoned, which is a continuation-in-part of Ser. No. 519,394, Aug. 3, 1983, abandoned. This application Aug. 13, 1990, Ser. No. 566,999

Int. Cl.[5] C08G *73/12*

U.S. Cl. 528—170 **30 Claims**

1. A monofunctional crosslinkable, thermoplastic, polyimide oligomer which is the product formed by reacting under an inert gas atmosphere a mixture comprising:

(a) two moles of a crosslinkable monoanhydride selected from the group consisting of:



wherein

Me=methyl;

G=—O—, —SO_2—, —CH_2—, —S—;

E=allyl or methallyl;

R_1=lower alkoxy, aryl, substituted aryl, lower alkyl, substituted alkyl, aryloxy, or halogen; and

j=0, 1, or 2;

(b) n+1 moles of a polyaryl diamine having terminal amino groups, the diamine including alternating aryl radicals (—Ar—) connected together by alternating ether (—O—) and sulfone (—L—) linkages, wherein each sulfone linkage (—L—) is selected from the group consisting of —SO_2—, —S—, —CO—, —$(CF_3)_2C$—, and —$(CH_3)_2C$—, so that the dimaine has a general formula:

$$H_2N—Ar—O—Ar—L—Ar—O]_mAr—NH_2$$

wherein

Ar=an aromatic radial, and

m=a small integer greater than or equal to 1; and

(c) n moles of at least one dianhydride, wherein n=an integer selected so that the oligomer prossesses thermoplastic properties and has an average formula weight of between about 5,000 to 40,000.

5,011,906

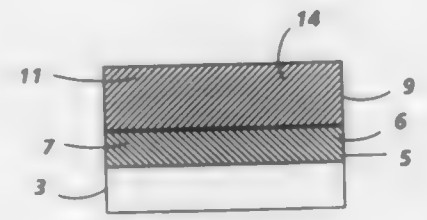
PHOTOCONDUCTIVE IMAGING MEMBERS WITH N,N-BIS(BIARYLYL)ANILINE CHARGE TRANSPORT POLYMERS

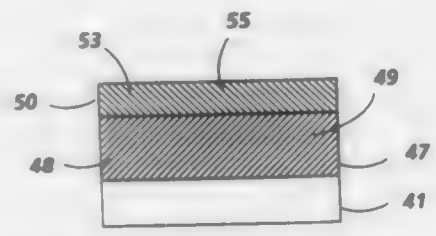
Beng S. Ong, Mississauga; Barkev Keoshkerian, Thornhill, and Giuseppa Baranyi, Mississauga, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 332,206, Apr. 3, 1989, Pat. No. 4,937,165. This application Mar. 30, 1990, Ser. No. 501,697

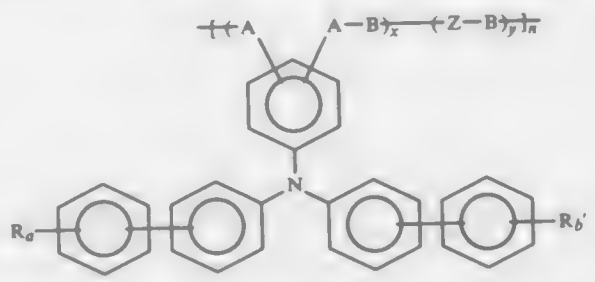
Int. Cl.[5] C08G *63/02, 12/00*; G03G *15/02*

U.S. Cl. 528—176 **15 Claims**





1. A polymer with the repeating mer units of the formula



wherein A and B are independently selected from bifunctional linkages; Z is alkylenedioxy, arylenedioxy, or substituted derivatives thereof; R and R' are alkyl, aryl, alkoxy, aryloxy, or halogen; x and y are mole fractions wherein x is greater than zero and the sum of x and y is equal to 1.0; a and b are the numbers 0, 1 or 2; and n represents the number of monomer units.

5,011,907

MOLECULES WITH ENHANCED ELECTRONIC POLARIZABILITIES BASED ON "DEFECT"-LIKE STATES IN CONJUGATED POLYMERS

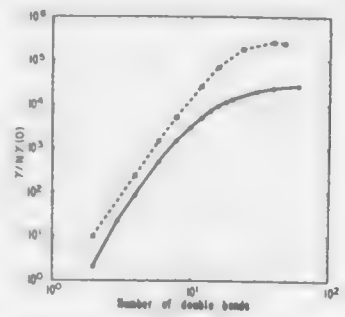
David N. Beratan, S. Pasadena, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 10, 1989, Ser. No. 418,611

Int. Cl.[5] C08G *6/02*

U.S. Cl. 528—220 **23 Claims**

1. A highly conjugated organic polymer having a changed hyperpolarizability, said polymer comprising a chain of alternating single and double bonds or alternating single and triple



bonds, characterized by the presence of a moiety in the chain which donates or accepts electrons.

5,011,908

POLYMER POLYOL COMPOSITIONS AND THEIR USE IN THE PREPARATION OF POLYURETHANE FOAMS

Stanley L. Hager, Crosslanes, W. Va., assignor to Arco Chemical Technology, Inc., Wilmington, Del.

Continuation of Ser. No. 217,645, Jul. 12, 1988, abandoned. This application Mar. 1, 1990, Ser. No. 486,916

Int. Cl.[5] C08K *5/06*

U.S. Cl. 528—392 **13 Claims**

1. A polymer polyol which comprises:

(1) a high functionality polyalkylene oxide polyol or polyol blend with an equivalent weight between about 1000 and about 3000 and an ethylene oxide content ranging from about 8% to about 25% wherein said polyol or polyol blend is present in an amount from about 30 to about 90 weight percent based on the total weight of the polymer polyol;

(2) a polyalkylene oxide polyol with a molecular weight between about 450 and about 30,000 and having a poly(oxyethylene) content greater than 70% wherein said polyalkylene oxide polyol is present in an amount from about 1 to about 10 weight percent based on the total weight of the polymer polyol; and

(3) a stably dispersed polymer formed by the in situ polymerization of ethylenically unsaturated monomers within component (1) and/or component (2); wherein said polymer is present in an amount from about 2 to about 50 weight percent based on the total weight of the polymer polyol, wherein the mixture of (1) and (2) has an average nominal functionality of about 3.0 or greater and wherein the polymer polyol affords enhanced latitude for varying formulation components in the manufacture of flexible polyurethane foams with broad load and density ranges.

5,011,909

NOVEL COMPOSITIONS AND PROCESS FOR INHIBITING DIGESTION IN BLOOD-SUCKING INSECTS

Dov Borovsky, Vero Beach, and David A. Carlson, Gainsville, both of Fla., assignors to University of Florida, Gainsville, Fla. and The United States of America as represented by the Department of Agriculture, Washington, D.C.

Filed Apr. 7, 1989, Ser. No. 335,169

Int. Cl.[5] A61K *37/38*; C07K *13/00*

U.S. Cl. 530—328 **4 Claims**

1. A peptide selected from the group consisting of

(1) H_2NYDPAP$_6$COOH;

(2) H_2NDYPAP$_6$COOH; and

(3) H_2NPAP$_6$COOH; or salts, or prodrugs thereof.

5,011,910

REAGENT AND METHOD FOR DETERMINING ACTIVITY OF RETROVIRAL PROTEASE

Garland R. Marshall, and Mihaly V. Toth, both of Clayton, Mo., assignors to Washington University, St. Louis, Mo.

Filed Dec. 28, 1989, Ser. No. 458,060

Int. Cl.[5] A61K *39/02*

U.S. Cl. 530—329 **2 Claims**

1. A fluorogenic substrate for retroviral protease having the chemical structure

X—Thr—Ile—Nle—Phe(Y)—Gln—Arg—NH_2

wherein X is a fluorogenic group which is capable of being attached to said Thr and conferring fluorescence on said substrate and Y is an acceptor which is capable of providing intramolecular quenching of said fluorescence.

5,011,911

Patent Not Issued For This Number

5,011,912

HYBRIDOMA AND MONOCLONAL ANTIBODY FOR USE IN AN IMMUNOAFFINITY PURIFICATION SYSTEM

Thomas P. Hopp, and Kathryn S. Prickett, both of Seattle, Wash., assignors to Immunex Corporation, Seattle, Wash.

Division of Ser. No. 944,261, Dec. 19, 1986, Pat. No. 4,851,341. This application Apr. 10, 1989, Ser. No. 335,255

Int. Cl.[5] C12P *21/00*; C12N *5/00*

U.S. Cl. 530—387 **4 Claims**

3. A monoclonal antibody that binds the peptide DYKDDDDK only in the presence of a divalent metal cation selected from the group consisting of Ca^{++}, Mg^{++}, Mn^{++}, Cu^{++}, Ni^{++}, Zn^{++}, Cd^{++}, and.

5,011,913

DIPHOSPHONATE-DERIVATIZED MACROMOLECULES

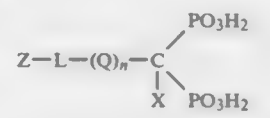
James J. Benedict, Norwich, N.Y.; Charles R. Degenhardt, Cincinnati, and James W. Poser, Fairfield, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 750,103, Jun. 28, 1985, Pat. No. 4,830,847. This application May 11, 1989, Ser. No. 350,420

Int. Cl.[5] C07K *17/06*; A61K *43/00, 39/44*; C07F *9/38*

U.S. Cl. 530—390 **6 Claims**

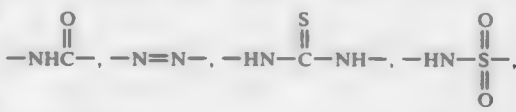
1. Diphosphonate-derivatized macromolecules of the formula

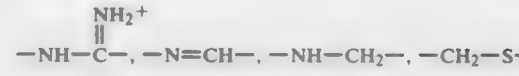


wherein

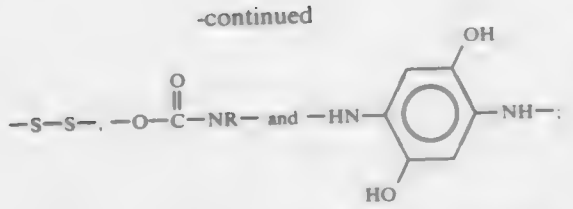
Z is a macromolecule selected from the group consisting of proteins and polypestides and further contains one or more reactive end groups selected from the group consisting of -NH_2, -COOH, -SH, CHO, -S—S, -OH, phenol, guanidino, imidazole or indole, and mixtures thereof;

L is a linking moiety selected from the group consisting of





-continued



Q is a spacing group selected from the group consisting of C_1–C_{12} alkyl substituted aryl, unsubstituted aryl or C_1 to C_{12} alkyl, where n is 0 or 1; and X is selected from the group consisting of H, OH, NH_2, C_1–C_{12} alkyl substituted or unsubstituted amino, halogen or C_1–C_4 alkyl; and the pharmaceutically-acceptable salts of these derivatized macromolecules.

5,011,914

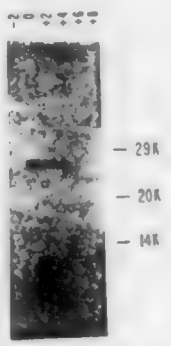
PURIFIED CILIARY NEUROTROPHIC FACTOR

Franklin D. Collins, 582 Locust Pl., Boulder, Colo. 80302, and Leu-Fen Lin, 854 Braun Ct., Golden, Colo. 80401

Filed Jan. 5, 1989, Ser. No. 293,851

Int. Cl.[5] C07K *3/14, 3/18, 3/24, 3/28*

U.S. Cl. 530—399 **1 Claim**



1. A method for purifying sciatic nerve ciliary neurotrphic factor and the specific activity of said factor by at least about 25,000 fold from crude sciatic nerve extract comprising:

lowering the pH of the crude nerve extract to form a first precipitate;

removing and discarding said first precipitate from the lowered pH extract;

raising the pH of said extract to about 6.3;

adding ammonium sulfate to the raised pH extract;

chromatofocusing a solution containing a second precipitate obtained from the 30% to 60% ammonium sulfate containing solution;

subjecting fractions obtained by chromatofocusing to sodium dodecyl sulfate polyacrylamide gel electrophoresis; and

performing reversed-phase high-performance liquid chromatography on the sodium dodecyl sulphate polyacrylamide gel electrophoresis eluate.

5,011,915

PROCESS FOR PURIFYING RECOMBINANT HEPATITIS ANTIGENS

Shigeko Yamazaki, Hatfield, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 26, 1987, Ser. No. 113,582

Int. Cl.[5] C07K *3/26*

U.S. Cl. 530—414 **15 Claims**

1. A method of substantially purifying recombinant preS1/S2/S hepatitis B antigen, or portion thereof immunochemically reactive with antibodies specific to natural hepatitis surface antigen, comprising the steps of

(a) taking an aliquot of yeast membrane associated antigen extract;

(b) removing the debris of the extract of step (a) by centrifugation;

(c) subjecting the supernatant to diafiltration in the presence of a solution comprising guanidine-HCl of concentrations varying during the diafiltration from between about 7M and 1M, said solution effective to release undesired yeast membrane-bound proteins, and thereafter removing said undesired yeast membrane-bound proteins to yield washed yeast membrane as a retentate product;

(d) subjecting the retentate product of step (c) to a second solution comprising a buffered solution containing octoxynol-9.5 at a concentration of between about 0.1% (w/v) and about 1% (w/v), said second solution effective to release the membrane-bound surface antigen;

(e) subjecting the surface antigen released in step (d) to diafiltration in a third solution to promote passage of said surface antigen across the diafiltration membrane, yielding a filtrate;

(f) treating the filtrate with a quantity of denaturing agent in the presence of a reducing agent effective to solubilize said filtrate; and

(g) removing the denaturing agent and the reducing agent, yielding a substantially purified recombinant pre-S1/S2/S hepatitis B antigen, or portion thereof immunochemically reactive with antibodies specific to natural hepatitis surface antigen.

5,011,916

PREPARATION OF 99M TC RADIOPHARMACEUTICALS

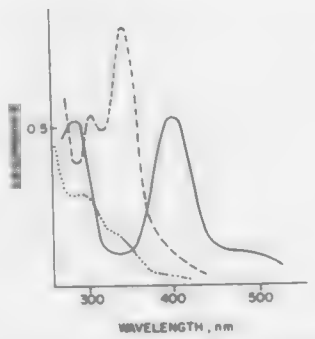
John Bonnyman, Nunawading, and John Baldas, Rosanna East, both of Australia, assignors to Commonwealth of Australia, Phillip, Australia

Division of Ser. No. 241,471, Sep. 7, 1988, Pat. No. 4,923,969, which is a division of Ser. No. 774,592, Aug. 23, 1985, Pat. No. 4,851,515. This application Jan. 5, 1990, Ser. No. 461,398

Claims priority, application Australia, Dec. 29, 1983, PG3034

Int. Cl.[5] C01G *57/00*

U.S. Cl. 534—14 **5 Claims**



1. A method of producing a ^{99m}TcN-labelled product, which comprises the steps of:

(a) reacting a compound of the formula

$$R^+[^{99m}TcNX_4]^-$$

wherein R^+ represents a cation and X represents a halo group by

(b) adding a monoclonal antibody or antibody fragment to form the ^{99m}TcN-labelled product; and

(c) isolating the ^{99m}TcN-labelled product.

5,011,917

PROCESS FOR PREPARING A STABILIZED COMPOSITION OF A LITHIUM AZO COMPOUND

Konrad Opitz, Liederbach, Fed. Rep. of Germany, and Marcos Segal, Suzano, Brazil, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

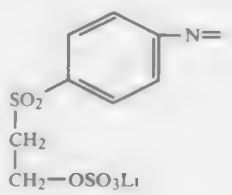
Continuation-in-part of Ser. No. 173,716, Mar. 25, 1988, Pat. No. 4,939,242. This application Oct. 10, 1989, Ser. No. 419,201

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1987, 3710176

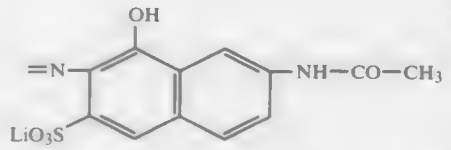
Int. Cl.[5] C09B *62/51, 62/507, 67/26;* **D06P** *1/384*

U.S. Cl. 534—583 **8 Claims**

1. A process for the preparation of a pH-stabilized, liquid, aqueous dyestuff composition in which the dyestuff consists essentially of the lithium azo compound of formula (1)



1



the composition having an Na-content of less than 0.2% by weight, based on the lithium azo compound of formula (1), which process comprises:

(a) diazotizing the lithium salt of 4-(β-sulfatoethylsulfonyl)-aniline in a mineral acid aqueous solution or in a mineral acidic aqueous solution containing a water-miscible organic solvent by means of an essentially sodium-free derivative of nitrous acid as the diazotizing agent,

(b) coupling the thus diazotized lithium salt of 4-(β-sulfatoethylsulfonyl)-aniline in that solution with the lithium salt of 1-hydroxy-7-acetylamino-naphthalene-3-sulfonic acid, and

(c) subsequent to that diazotizing step, adding to that solution a buffering substance for adjusting and maintaining the pH of that composition at a value between 3 and 6.5, the amount of buffering substance added amounting to 0.5 to 5 % by weight of said composition.

5,011,918

POLYSACCHARIDES CONTAINING AROMATIC ALDEHYDES AND THEIR DERIVATIZATION VIA AMINE-ALDEHYDE INTERACTIONS

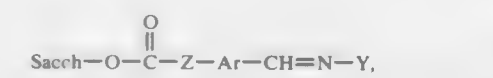
Robert L. Bilimers, Stockton, N.J.; David M. Del Giudice, Hamden, Conn., and Martin M. Tessler, Edison, N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Division of Ser. No. 338,827, Apr. 14, 1989, which is a division of Ser. No. 112,634, Oct. 26, 1987, Pat. No. 4,866,151. This application Jan. 25, 1990, Ser. No. 470,276

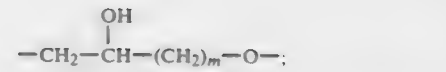
Int. Cl.[5] C08B *11/16, 30/18, 31/14, 33/04, 35/04, 37/00*

U.S. Cl. 536—18.7 **23 Claims**

1. A polysaccharide derivative having the structure Sacch-O-Z-Ar-CH=N-Y or



where Saccho-O- represents a polysaccharide molecule; Z is $-(CH_2)_n-$or



Ar is a divalent aromatic group; Y is a monovalent group derived from a water-soluble substituted or unsubstituted aromatic compound containing only one free primary amine group; n is one or greater; and m is zero or greater.

5,011,919

MODIFIED HEPARINS AND OBTENTION PROCESS

Fernando Fussi, Lugano, Switzerland; Víctor B. Díaz, and Richardo H. Dománico, both of Buenos Aires, Argentina, assignors to Ajorca S.A., Buenos Aires, Argentina

Filed Jan. 27, 1989, Ser. No. 302,361

Int. Cl.[5] C08B *37/00;* **A61K** *31/00*

U.S. Cl. 536—21 **3 Claims**

1. A method of producing a modified heparin having antithrombotic activity for oral administration, characterized by the presence of an acyl ester in the amino group of the glucosamine and in the hydroxy group 3 in the uronyl residue, comprising of the step of treating water insoluble heparin-quaternary ammonium complexes with organic chlorides or anhydrides in an homogeneous phase of organic solvents in the presence of an acyl-carrier catalyst, and at a temperature range of between room temperature and 80° C.

5,011,920

DISIALOFUCOGANGLIOSIDE IMMUNOGEN AND FUCOGANGLIOSIDE MONOSIALOSYL LE^a II

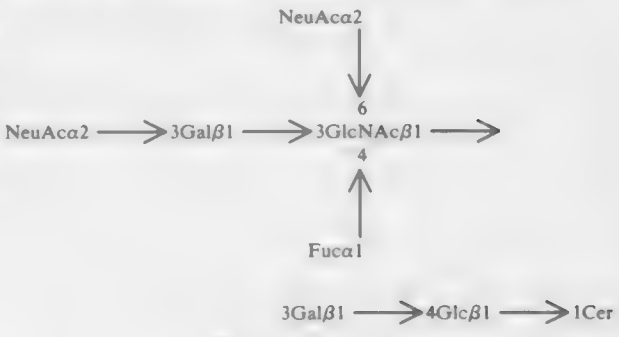
Sen-itiroh Hakomori, Mercer Island, Wash.; Yasuo Fukushi, Sendai, Japan; Edward D. Nudelman, and Steven B. Levery, both of Seattle, Wash., assignors to Fred Hutchinson Cancer Research Center, Seattle, Wash.

Division of Ser. No. 824,172, Jan. 30, 1986, Pat. No. 4,851,511. This application May 5, 1989, Ser. No. 348,688

Int. Cl.[5] C07H *5/00;* **C07K** *15/28;* **A61K** *39/00;* **G01N** *33/53*

U.S. Cl. 536—53 **2 Claims**

1. The substantially purified fucoganglioside disialosyl Le^a which has the structure



5,011,921

Patent Not Issued For This Number

5,011,922

PROCESS FOR PURIFYING SUCROSE FATTY ACID ESTERS

Shusaku Matsumoto, Kyoto; Yoshio Hatakawa, Higashiosaka, and Akihiko Nakajima, Kyoto, all of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Jun. 23, 1989, Ser. No. 371,892

Claims priority, application Japan, Jun. 27, 1988, 63-158930

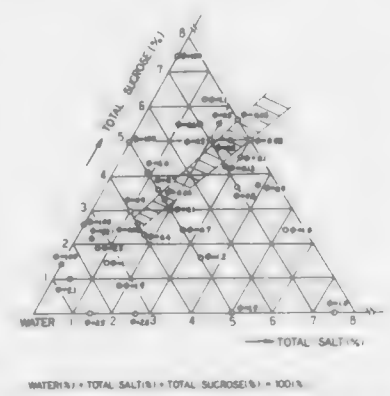
The portion of the term of this patent subsequent to Feb. 26, 2008, has been disclaimed.

Int. Cl.[5] C07H *1/00, 13/00;* **C08B** *37/00;* **C13D** *3/00*

U.S. Cl. 536—119 **25 Claims**

1. A process for removing a volatile material from a reaction mixture in synthesis of a sucrose fatty acid ester by a reaction

of sucrose and a fatty acid alkyl ester in an organic solvent, said reaction mixture containing sucrose fatty acid ester, unreacted sucrose, unreacted fatty acid alkyl ester, a catalyst, a soap, a fatty acid and the organic solvent as a volatile material, which comprises adjusting the reaction mixture to a neutral pH re-



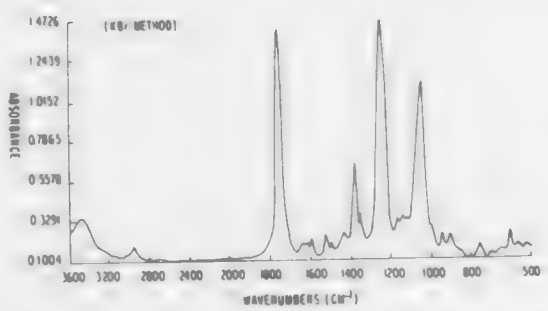
gion, adding water, a neutral salt and sucrose to the reaction mixture to transfer the volatile material into the aqueous phase with precipitation of the sucrose fatty acid ester, unreacted fatty acid alkyl ester, soap and fatty acid, and separating the resulting precipitate.

5,011,923

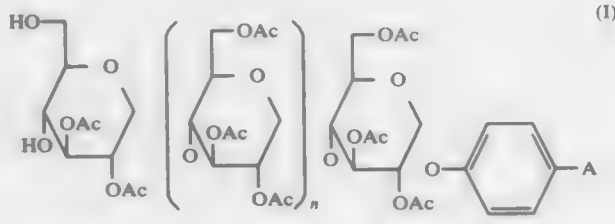
POLYACETYL OLIGOSACCHARIDE DERIVATIVES

Mitsunori Ono, Kanagawa, and Nobuo Suzuki, Saitama, both of Japan, assignors to Fuji Photo Film., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 352,432, May 16, 1989, abandoned. This application Feb. 21, 1990, Ser. No. 483,315
Claims priority, application Japan, May 17, 1988, 63-120198; May 20, 1988, 63-123045; Jun. 9, 1988, 63-142587
Int. Cl.[5] **C07H** *15/00, 17/00*
U.S. Cl. 536—17.9 **3 Claims**



1. A polyacetyl oligosaccharide derivative represented by formula (I)


(I)

wherein A represents a nitro group or an amino group; Ac represents an acetyl group (CH_3CO—); and n represents an integer of from 0 to 7.

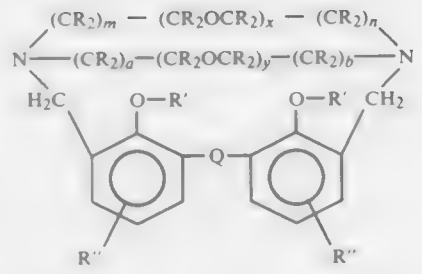
5,011,924

CHROMOGENIC CRYPTAHEMISPHERANDS AND THEIR PREPARATION

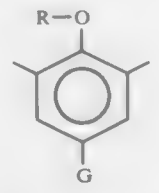
Donald J. Cram, Los Angeles, Calif.; Eddy Chapoteau, Brooklyn, N.Y.; Bronislaw P. Czech, Peekskill, N.Y.; Carl R. Gebauer, Crompond, N.Y.; Roger C. Helgeson, Canuga Park, Calif.; Anand Kumar, Southfields, and Koon-Wah Leong, Ossining, both of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y. and The Regents of The University of California, Berkeley, Calif.

Division of Ser. No. 38,681, Apr. 15, 1987, Pat. No. 4,859,606. This application May 9, 1989, Ser. No. 349,465
Int. Cl.[5] **C07D** *498/08, 273/00*
U.S. Cl. 540—469 **5 Claims**

1. A chromogenic cryptahemispherand having the structure

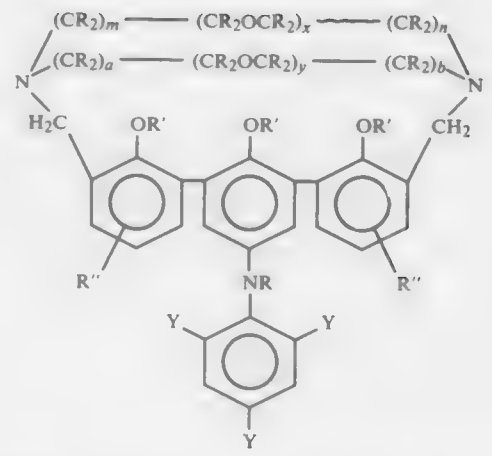


wherein:
R, same or different, is hydrogen, lower alkyl, lower alkylidene, lower alkenyl, allyl or aryl;
R′, same or different, is lower alkyl, lower alkylidene, lower alkenyl, allyl or aryl;
R″, same or different, is hydrogen, lower alkyl, lower alkylidene, lower alkenyl, allyl or aryl;
Q is a chromogenic moiety capable of providing a detectable response upon the complexation of said compound with a test cation in a test sample, and has the structure

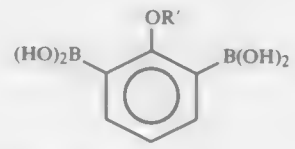


wherein G is 2,4,6-trinitroanilino; 2,6-dinitro-4-trifluoromethylanilino; 2,4-dinitro-6-trifluoromethylanilino; 4-nitroanilino; 4-nitrophenylazo; 4-nitrostyryl; and 4-benzoquinonmonoimino;
a, b, m and n, same or different, are 1 to 3;
x is 1 to 4; and
y is 1 to 4.

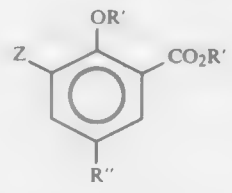
4. A process for the preparation of a chromogenic cryptahemispherand (I) having the formula


(I)

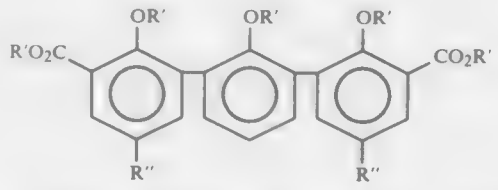
in which:
R, same or different, is hydrogen, lower alkyl, lower alkylidene, lower alkenyl, allyl or aryl;
R′, same or different, is lower alkyl, lower alkylidene, lower alkenyl, allyl or aryl;
R″, same or different, is hydrogen, lower alkyl, lower alkylidene, lower alkenyl, allyl or aryl;
Y, same or different, is an electron withdrawing group selected from the group consisting of CN_1, NO_2, CF_3 or COOR;
x is 1 to 4; and
y is 1 to 4;
said process comprising the steps of:
(a) providing a compound (II) having the formula


(II)

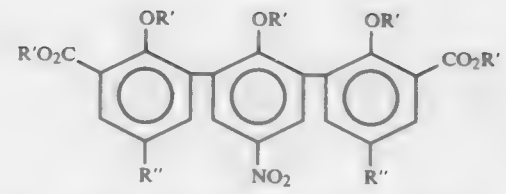
(b) providing a compound (III) having the formula


(III)

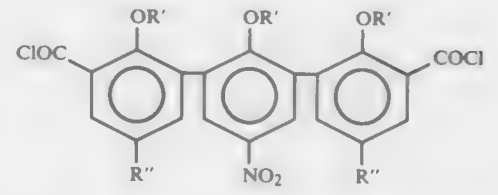
in which Z is halogen;
(c) reacting compounds (II) and (III) in the presence of a catalyst to form a compound (IV) having the formula


(IV)

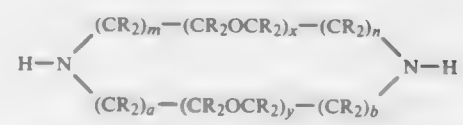
(d) nitrating compound (IV) to obtain a compound (V) having the formula


(V)

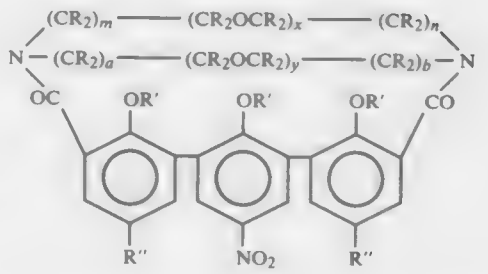
(e) reacting compound (V) with a methylating agent followed by hydrolysis and chlorination to obtain a compound (VI) having the formula


(VI)

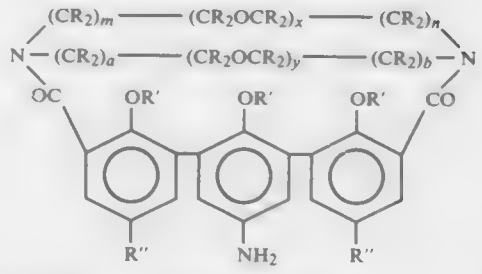
(f) reacting compound (VI) with a compound (VII) having the formula


(VII)

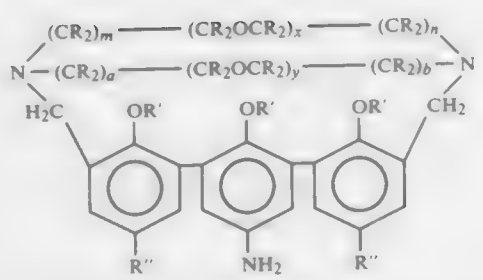
to form a compound (VIII) having the formula


(VIII)

(g) reducing compound (VIII) to form a compound (IX) having the formula


(IX)

(h) reducing compound (IX) to form compound (X) having the formula



(X)

(i) reacting compound (X) with an aryl chloride to form compound (I).

5,011,925

MORPHOLINOAMIDO EDTA DERIVATIVES

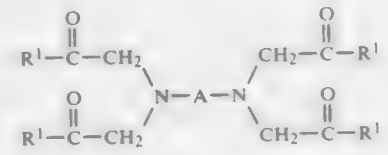
Raghavan Rajagopalan, Maryland Heights, and Muthunadar P. Periasamy, Creve Coeur, both of Mo., assignors to Mallinckrodt, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 321,265, Mar. 9, 1989, abandoned. This application Sep. 5, 1989, Ser. No. 402,623

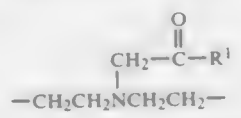
Int. Cl.[5] **C07D** *295/00, 417/00, 413/00, 241/04*

U.S. Cl. 544—58.1 **5 Claims**

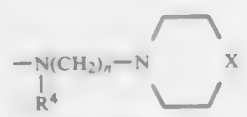
1. A complexing agent of the formula:



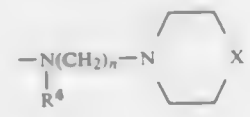
wherein A is —CHR^2—CHR^3— or



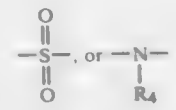
R^1 groups may be the same or different and are selected from —O^- and



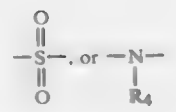
wherein R^4 is hydrogen, alkyl, hydroxyalkyl, alkoxyalkyl, aminoalkyl or acylamino wherein the carbon-containing portions contain from 1 to about 6 carbon atoms, wherein at least one of said R^1 groups is



n is between 1 and 6;



X is —O—, —S—,



and which members are unsubstituted or substituted by hydroxy, alkyl, aryl, hydroxyalkyl, aminoalkyl, aminoaryl, alkylamino, or carbamoyl wherein the substitutents contain from 1 to about 6 carbon atoms; and

R^2 and R^3 may be the same or different and are hydrogen, alkyl having from 1 to about 6 carbon atoms, phenyl or benzyl or $R^2$and R^3 joined together form a ring having 5, 6, or 7 members.

5,011,926

NICKEL-BASED DUAL CATALYST SYSTEMS EFFECTIVE IN SUPPRESSING CARBON DIOXIDE FORMATION DURING DIETHYLENE GIYCOL AMINATION

John F. Knifton, Austin, Tex., assignor to Texaco Chemical Company, White Plains, N.Y.

Filed Jun. 25, 1990, Ser. No. 543,017

Int. Cl.[5] **C07D** *295/023*

U.S. Cl. 544—106 **9 Claims**

1. A process for simultaneously producing morpholine and DIGLYCOLAMINE ® amine while suppressing CO_2 formation comprising the steps of:

reacting anhydrous diethylene glycol with ammonia in the presence of added hydrogen over a dual nickel-based catalyst system comprising a nickel-chromium oxide catalyst in combination with an oxide-supported nickel catalyst at a temperature of from about 150° C. to about 300° C. and a pressure of about 200 psig to about 5000 psig, and

isolating said morpholine compound and said DIGLYCOLAMINE ® amine from the reaction products.

5,011,927

PREPARATION OF 2-AMINO-4-FLUOROPYRIMIDINE DERIVATIVES

Gerhard Hamprecht, Weinheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

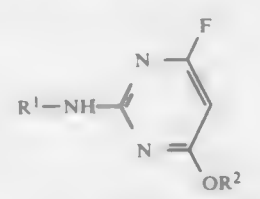
Filed Dec. 18, 1989, Ser. No. 452,106

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1989, 3900471

Int. Cl.[5] **C07D** *239/47*

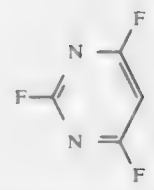
U.S. Cl. 544—320 **12 Claims**

1. A process for the preparation of a 2-amino-4-fluoropyrimidine derivative of the general formula I



I

where R^1 is hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, phenyl or benzyl, it being possible for the aromatic rings to be substituted once to three times by radicals inert to the reaction conditions, R^2 is one of the R^1 radicals with the exception of hydrogen, by reaction of 2,4,6-trifluoropyrimidine (II)

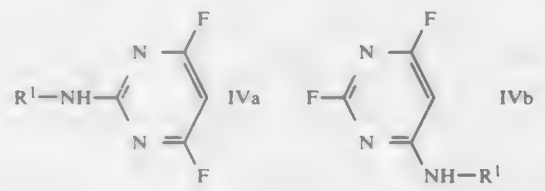


II

in an aprotic polar organic solvent with an amine of the formula III

$$R^1—NH_2 \qquad \text{III}$$

to give the 2-aminodifluoropyrimidine derivative of the formula IVa mixed with IVb



IVa IVb

separation of IVa out of the resulting reaction mixture and subsequent reaction of IVa with an alcohol of the formula V

$$R^2—OH \qquad \text{V}$$

in the presence of a base at from 0° to 180° C. to give the 2-amino-4-fluoropyrimidine derivative I, which comprises carrying out the reaction of 2,4,6-trifluoropyrimidine II with the amine III at from −80° C. to −15° C., and reacting the 2-aminodifluoropyrimidine derivative IVa with the alcohol V in the presence of an organic base to give the 2-amino-4-fluoropyrimidine derivative I.

5,011,928

ANALGESIC AND ANTIINFLAMMATORY DERIVATIVES OF 1-ACYL-4-ARYLALKYLPIPERAZINES

Aurelio O. Venero, and Antonio T. Avello, both of Vizcaya, Spain, assignors to Fabrica Espanola de Productos Quimicos Y Farmeceuti Cos S.A. (FAES), Spain

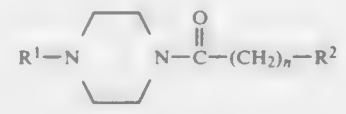
Filed Feb. 28, 1990, Ser. No. 486,098

Claims priority, application European Pat. Off., Feb. 28, 1989, 89500021.4

Int. Cl.[5] **C07D** *403/12, 401/12, 405/12, 409/12*

U.S. Cl. 544—373 **5 Claims**

1. Compounds of structural formula I:



I

wherein

the substituent R^1 is methyl, ethyl, 1-methyl-ethyl or 2-phenylethyl,

n=0, 1 or 2,

R^2 is selected from the group consisting of one of the following radicals:

4-chlorophenyl, 3-chlorophenyl, 2-chlorophenyl, 4-methylphenyl, 3-methylphenyl, 2-methylphenyl, 4-hydroxyphenyl, 3-hydroxyphenyl, 2-hydroxyphenyl, 4-fluorophenyl, 3-fluorophenyl, 2-fluorophenyl, 4-acetoxyphenyl, 3-acetoxyphenyl, 2-acetoxyphenyl, 4-methoxyphenyl, 3-methoxyphenyl, 2-methoxyphenyl, 4-aminophenyl, 3-aminophenyl, 2-aminophenyl, 4-nitrophenyl, 3-nitrophenyl, 2-nitrophenyl, 3-thienyl, 2-furyl, 3-furyl, 2-pyridinyl, 3-pyridinyl, 4-pyridinyl, 2-thiazolyl, 3-methyl-2-thienyl, 5-methyl-2-thienyl, 5-methyl-3-methoxy-2-thienyl, 5-phenyl-3-methoxy-2-thienyl, 2-tetrahydrothienyl, 2-tetrahydrofuryl, 3-tetrahydrothienyl, 1H-2-isoindolyl-1,3(2H)-dioxo, 1-(1H-2-isoindolyl-1,3(2H)-dioxo)-ethyl, 1H-2-isoindolyl-1,3(2H)-dioxo-4,4a,5,6,7,7a-hexahydro, 1H-2-isoindolyl-1,3(2H)-dioxo-4,4a,7,7a-tetrahydro, 1H-2-isoindolyl-1,3(2H)-dioxo-4-nitro, 1H-2-isoindolyl-1,3(2H)-dioxo-4-amino, 1H-pyrrolyl-2,5-dihydro-2,5-dioxo, 1-pyrrolidinyl-2,5-dioxo, 8-azaspiro<4,5>decan-8-yl-7,9-dioxo, 1,2-benzoisothiazol-2-yl-6-carboxy-3(2H)oxo 1,1-dioxide, 1,2-benzoisothiazol-2-yl-3(2H)oxo 1,1-dioxide, 1,2-benzoisothiazol-2-yl-6-nitro-3(2H)oxo 1,1-dioxide, 1,2-benzoisothiazol-2-yl-6-amino-3(2H)oxo 1,1-dioxide, 1,2-benzoisothiazol-2-yl-6-acetylamino-3(2H)oxo 1,1-dioxide, 1-2-benzoisothiazol-2-yl-6-(methylsulfonylamino)-3(2H)oxo 1,1-dioxide, phenoxy, 4-methylphenoxy, 4-chlorophenoxy, 4-fluorophenoxy, 4-chloro-2-methylphenoxy, 4-acetoxyphenoxy, 3-acetoxyphenoxy, 4-hydroxyphenoxy, 3-hydroxyphenoxy, 4-aminophenoxy, 3-aminophenoxy, 4-nitrophenoxy, 3-nitrophenoxy, 3-methoxyphenoxy, amino, acetylamino, methylsulfonylamino, 2-(2-thienyl)-1-ethenyl, 2-(3-thienyl)-1-ethenyl, 2-(3-methyl-2-thienyl)-1-ethenyl, 2-(5-methyl-2-thienyl)-1-ethenyl, 2-(5-methyl-3-methoxy-2-thienyl)-1-ethenyl, 2-(5-phenyl-3-methoxy-2-thienyl)-1-ethenyl, 2-(5-chloro-2-thienyl)-1-ethenyl, 2-(3-chloro-2-thienyl)-1-ethenyl, 2-(3-hydroxy-2-thienyl)-1-ethenyl, 1-amino-ethyl, 1-acetylamino-ethyl and 1-(methylsulfonylamino)-ethyl and the physiologically acceptable salts of such compounds.

5,011,929

SYNTHESIS OF MANNOJIRIMYCIN DERIVATIVES

George W. J. Fleet, and Ian Bruce, both of Oxford, United Kingdom, assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 352,068, May 15, 1989, abandoned. This application Oct. 11, 1989, Ser. No. 419,806

Int. Cl.[5] **C07F** *7/02;* **C07D** *211/36*

U.S. Cl. 546—14 **6 Claims**

1. A method for the synthesis of 6-epihomomannojirimycin comprising

a. Reacting 2-azido-7-O-tert-butyl-dimethylsilyl-2-deoxy-b 3,4-O-isopropylidene-D-glycero-D-talo-heptono-1,5-lactone with trifluoromethanesulfonic anhydride to give an azidotriflate,

b. Subjecting the azidotriflate to palladium catalyzed reductive hydrogenation to form a bicyclic lactone,

c. Reducing the bicyclic lactone with lithium aluminum hydride to give a protected iminoheptitol, and

d. Removing the protecting groups from the iminoheptitol by acid hydrolysis to give 6-epihomomannojirimycin.

5,011,930

QUINOLINE TYPE MEVALONOLACTONES

Yoshihiro Fujikawa; Mikio Suzuki; Hiroshi Iwasaki, all of Funabashi; Mitsuaki Sakashita, and Masaki Kitahara, both of Shitaoka, all of Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

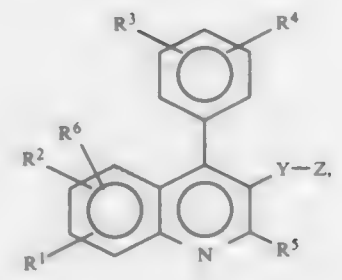
Division of Ser. No. 233,752, Aug. 19, 1988. This application Feb. 23, 1990, Ser. No. 483,720

Claims priority, application Japan, Aug. 20, 1987, 62-207224; Jan. 26, 1988, 63-15585

Int. Cl.[5] **C07D** *215/00, 221/06*

U.S. Cl. 546—101 **7 Claims**

1. A compound of the formula



wherein R^1 is hydrogen, 5-fluoro, 6-fluoro, 7-fluoro, 8-fluoro, 5-chloro, 6-chloro, 7-chloro, 8-chloro, 5-bromo, 6-bromo, 7-bromo, 8-bromo, 5-methyl, 6-methyl, 7-methyl, 8-methyl, 5-methoxy, 6-methoxy, 7-methoxy, 8-methoxy, 5-trifluoromethyl, 6-trifluoromethyl, 7-trifluoromethyl, 8-trifluoromethyl, 6-trifluoromethoxy, 6-difluoromethoxy, 8-hydroxyethyl, 5-hydroxy, 6-hydroxy, 7-hydroxy, 8-hydroxy, 6-ethyl, 6-n-butyl or 7-dimethylamino;

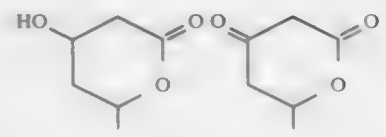
R^2, R^3 and R^6 are hydrogen,

R^4 is hydrogen, 4'-chloro or 4'-fluoro,

R^5 is i-propyl or cyclopropyl,

Y is (E) —CH=CH—, and

Z is



—$CH(OH)CH_2CH(OH)CH_2CO_2R^{12}$, —$CH(OH)CH_2C(O)CH_2CO_2R^{12}$ or —$CH(OH)CH_2C(OR^{13})_2CH_2CO_2R^{12}$, wherein R^{12} is hydrogen, physiologically hydrolyzable alkyl, NH_4, sodium, potassium, ½ calcium, or a hydrate of lower alkylamine, di-lower alkylamine or tri-lower alkylamine; two R^{13} are independently primary or secondary C_{1-6} alkyl; or two R^{13} together form —$(CH_2)_2$— or —$CH_2)_3$—.

7. The compound (E)-3,5-dihydroxy-7-[7',8'-(1'',3''-butadienyl)-2'-cyclopropyl-4'-(4''-fluorophenyl)-quinolin-3'-yl]-hept-6-enoic acid, a lactone formed by the condensation of the carboxylic acid with hydroxy at the 5-position, or a sodium salt or C_{1-3} alkyl ester of the carboxylic acid.

5,011,931

PROCESS FOR THE PREPARATION OF 1-METHYL-3-METHYLTHIO-4-QUINOLONE AND THE SULFINYL, AND SULFONYL ANALOGS THEREOF

Lachlan MacLean; David L. Roberts, both of Nottinghamshire; Kenneth Barron, Tyne and Wear; Kenneth J. Nichol, and Albert E. Harrison, boht of Nottinghamshire, all of Great Britain, assignors to The Boots Company PLC, Nottingham, England

PCT No. PCT/GB88/00952, § 371 Date Jun. 23, 1989, § 102(e) Date Jun. 23, 1989, PCT Pub. No. WO89/04827, PCT Pub. Date Jun. 1, 1989

PCT Filed Nov. 7, 1988, Ser. No. 378,216

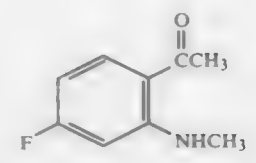
Claims priority, application United Kingdom, Nov. 18, 1987, 87/26950

Int. Cl.[5] **C07D** *215/316;* **C07C** *233/15*

U.S. Cl. 546—155 **3 Claims**

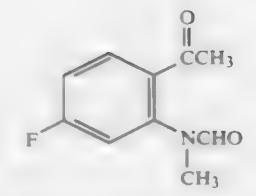
1. A process to prepare a compound of formula I in which n is 0 comprising the following stages:

(a) formylating a compound of formula V



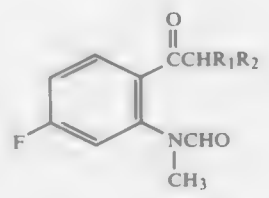
V

to give a compound of formula IV



IV

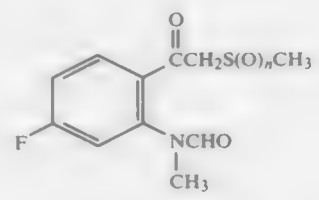
(b) reacting the product of stage (a) with a halogenating agent to give a compound of formula III



III

in which R_1 is halo and R_2 is halo or hydrogen;

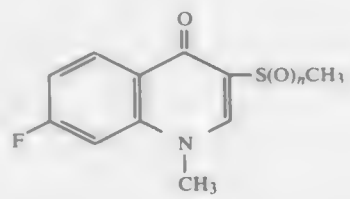
(c) reacting the product of stage (b) with a sulphur nucleophile in the form of a methanethiolate anion to give a compound of formula II



II

in which n is 0; and

(d) cyclising the product of stage (c) in the presence of an organic or inorganic base to give the compound of formula I



I

in which n is 0.

5,011,932

ANTHELMINTIC PYRIDINYL ACYLHYDRAZONES DERIVATIVES

Douglas L. Rector, Kalamazoo; George A. Conder, Richland, and Sylvester D. Folz, Kalamazoo, all of Mich., assignors to Upjohn Company, Kalamazoo, Mich.

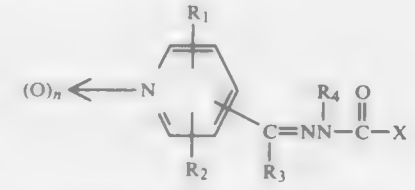
PCT No. PCT/US86/00072, § 371 Date Oct. 3, 1986, § 102(e) Date Oct. 3, 1986

Continuation-in-part of Ser. No. 715,425, Mar. 25, 1985, abandoned, which is a continuation-in-part of Ser. No. 700,375, Feb. 11, 1985, abandoned. This PCT application Jan. 23, 1986, Ser. No. 934,575

Int. Cl.[5] **C07D** *405/12, 409/12, 213/76*

U.S. Cl. 546—268 **11 Claims**

1. A compound, hydrate thereof or pharmaceutically acceptable salt thereof of the formula



I

wherein X is selected from (a) hydrogen; (b) C_1–C_{10} alkyl; (c) C_2–C_6 alkenyl; (d) C_2–C_6 alkynyl; (e) cyclo(C_3–C_{10})alkyl optionally substituted with one, 2 or 3 C_1–C_4 alkyl, C_2–C_4 alkenyl, C_1–C_4 alkoxy, trifluoromethyl, or halo; (j) C_2–C_6 alkoxyalkyl; (k) cyclo(C_3–C_{10})alkyl(C_1–C_4)alkyl; (l) phenyl(C_1–C_4)alkyl optionally substituted with one, 2 or 3 C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, or trifluoromethyl; (m) phenoxy(C_1–C_4)alkyl optionally substituted with C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, or trifluoromethyl; (n) naphthyl(C_1–C_3)alkyl optionally substituted with one or 2 C_1–C_4 alkyl, C_1–C_4 alkoxy, halo, or trifluoromethyl; (u) phenyl optionally substituted with one, 2 or 3 C_1–C_4 alkyl, C_1–C_3 alkoxy, halo, trifluoromethyl, C_2–C_6 dialkylamino, C_1–C_3 alkylthio, nitro, or phenoxy optionally substituted with one, 2 or 3 C_1–C_4 alkyl, C_1–C_3 alkoxy, halo, or trifluoromethyl; (v) phenyl optionally substituted with the divalent C_1–C_2 alkylenedioxy; (w) naphthyl optionally substituted with one or 2 C_1–C_4 alkyl, C_1–C_3 alkoxy, halo, trifluoromethyl, C_2–C_6 dialkylamino, C_1–C_3 alkylthio, nitro; (x) bridged polycyclic hydrocarbon substituents of six to 10 nuclear carbons, optionally substituted with one, 2 or 3 (C_1–C_3) alkyl groups; (y) perhalo(C_1–C_7)alkyl;

wherein R_1 and R_2, being the same or different, are hydrogen; hydroxy; C_1–C_4 alkyl; C_1–C_3 alkoxy; C_1–C_3 alkylthio; halo or trifluoromethyl;

wherein R_3 is hydrogen; C_1–C_4 alkyl; cyclo(C_3–C_6)alkyl optionally substituted with one, 2 or 3 C_1–C_3 alkyl; phenyl optionally substituted with one, 2 or 3 C_1–C_4 alkyl, halo, trifluoromethyl, or C_1–C_3 alkoxy; phenyl(C_1–C_3)alkyl optionally substituted with one, 2 or 3 C_1–C_4 alkyl, halo, trifluoromethyl, or C_1–C_3 alkoxy; or 1,3-dioxacyclohexan-5-yl;

wherein R_4 is hydrogen;

wherein n is zero or one;

with the overall proviso that when R_1 and R_2 are both hydrogen, R_3 is hydrogen or alkyl, and n is zero, X is other than (b) C_1–C_{10} alkyl, (e) cyclo(C_1–C_{10})alkyl, (l) phenyl(C_1–C_4)alkyl optionally substituted with halo or C_1–C_4 alkoxy, or (u) phenyl optionally substituted with halo or C_1–C_4 alkoxy;

other than:

benzoic acid [(2-ethyl-4-pyridiny)methylene]hydrazide;

4-dimethylamino benzoic acid (4-pyridinylmethylene)hydrazide;

4-methylbenzoic acid (2-pyridinylmethylene)hydrazide;

4-methylbenzoic acid (2-pyridinylmethylene)hydrazide 1-oxide;

4-methylbenzoic acid (4-pyridinylmethylene)hydrazide;

3,4-dimethoxybenzoic acid [(2-ethyl-4-pyridinyl)methylene]hydrazide;

4-t-butylbenzoic acid(3-pyridinylmethylene)hydrazide;

benzoic acid (α-2-pyridinylbenzylidene)hydrazide;

2-nitrobenzoic acid (4-pyridinylmethylene)hydrazide;

2-nitrobenzoic acid (2-pyridinylmethylene)hydrazide;

2-nitrobenzoic acid (3-pyridinylmethylene)hydrazide;

4-nitrobenzoic acid [(2-ethyl-4-pyridinyl)methylene]hydrazide;

4-nitrobenzoic acid [1-(4-pyridinyl)ethylidene]hydrazide;

2,4,5-trichlorophenoxyacetic acid (4-pyridinylmethylene)-hydrazide;

2,4,5-trichlorophenoxyacetic acid (3-pyridinylmethylene)-hydrazide;

2,4,5-trichlorophenoxyacetic acid (2-pyridinylmethylene)-hydrazide;

2,4-dichlorophenoxyacetic acid (4-pyridinylmethylene)hydrazide;

2,4-dichlorophenoxyacetic acid (3-pyridinylmethylene)hydrazide;

2,4-dichlorophenoxyacetic acid (2-pyridinylmethylene)hydrazide;

4-chlorophenoxyacetic acid (4-pyridinylmethylene)hydrazide;

4-chlorophenoxyacetic acid (3-pyridinylmethylene)hydrazide;

4-chlorophenoxyacetic acid (2-pyridinylmethylene)hydrazide;

1-napthylacetic acid [1-(3-pyridinyl)ethylidene]hydrazide;

1-napthylacetic acid [1-(4-pyridinyl)ethylidene]hydrazide;

1-napthylacetic acid [1-(2-pyridinyl)ethylidene]hydrazide;

1-napthylacetic acid (2-pyridinylmethylene)hydrazide;

1-napthylacetic acid (3-pyridinylmethylene)hydrazide; and

1-napthylacetic acid (4-pyridinylmethylene)hydrazide.

5,011,933

NITRATION OF PHENYL TRIAZOLINONES

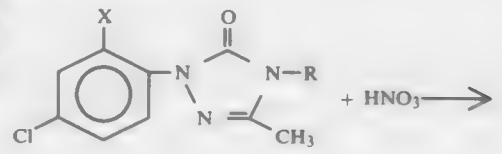
John H. Hoare, Hamilton Square, and Marc Halfon, Cranberry, both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Feb. 26, 1990, Ser. No. 485,106

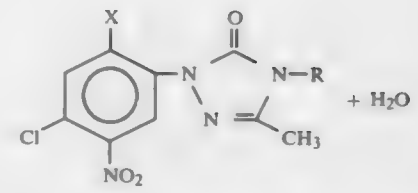
Int. Cl.[5] **C07D** *249/12*

U.S. Cl. 548—263.2 **7 Claims**

1. Process for the nitration of a compound of formula I below with nitric acid in sulfuric acid, according to the following general equation:



(I)



where X is a Cl or F and R is haloalkyl, in which the improvement comprises carrying out said reaction in fuming sulfuric acid.

5,011,934

PROCESS FOR PREPARING 1-ALKYLIMIDAZOLES

Heinz-Guenther Schulte; Jeffrey L. Narum, both of Santa Rosa, and Michael R. Johnson, Rohnert Park, all of Calif., assignors to Henkel Research Corporation, Santa Rosa, Calif.

Filed Jun. 19, 1990, Ser. No. 540,037
Int. Cl.[5] C07D *233/58*
U.S. Cl. 548—335 9 Claims

1. A process for preparing a 1-alkylimidazole comprising the steps of: (1) heating a mixture comprised of an imidazole, a base, and a non-reactive aromatic solvent to a temperature of from about 75° C. to about 115° C.; (2) adding to said heated mixture from about 0.8 to about 1.0 moles of an alkyl halide per mole of said imidazole over a period of from about 1 hr to about 5 hours to produce a reaction mixture; (3) maintaining the temperature of said reaction mixture for period of time sufficient to produce a product mixture comprising a solution of said 1-alkylimidazole in said solvent and inorganic material; and, (4) separating said inorganic material from said solution.

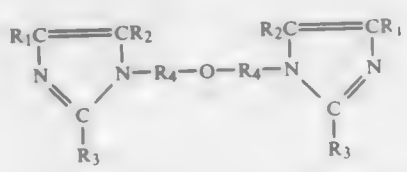
5,011,935

IMIDAZOLE ETHER COMPOUNDS

Keiichi Nakatani, and Nobuyasu Nakasugi, both of Kyoto, Japan, assignors to San-Apro Limited, Tokyo, Japan

Filed Jun. 27, 1989, Ser. No. 371,774
Claims priority, application Japan, Jun. 27, 1988, 63-158919
Int. Cl.[5] C07D *403/12*
U.S. Cl. 548—336 2 Claims

1. An imidazole ether compound of the formula (1):



(1)

wherein R_1, R_2 and R_3 are each hydrogen, methyl or ethyl group, and R_4 is ethylene, n-propylene or isopropylene group.

5,011,936

PROCESS FOR REFINING 1,3-DIMETHYL-2-IMIDAZOLIDINONE

Tadashi Kobayashi; Mitsuo Wada; Shouzi Obuchi, all of Omuta, and Hiroshi Takayanagi, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Mar. 7, 1989, Ser. No. 319,698
Claims priority, application Japan, Jan. 4, 1988, 63-78186; Aug. 3, 1988, 63-52493; Aug. 2, 1989, 1-27373
Int. Cl.[5] C07D *233/32*
U.S. Cl. 548—343 14 Claims

1. A process for refining 1,3-dimethyl-2-imidazolidinone which comprises the step of bringing 1,3,dimethyl-2-imidazolidinone into contact with a composite salt containing at least two composition components selected from the group consisting of MgO, SiO_2 and Al_2O_3.

8. A process for refining 1,3 dimethyl-2-imidazolidinone comprising the step of contacting 1,3 dimethyl-2-imidazolidinone with a hydrated composite salt, wherein said salt is selected from the group consisting of (a) a hydrated composite salt including SiO_2 and MgO, and (b) a hydrated composite salt including at least one first component selected from the group consisting of SiO_2 and MgO and at least one second component selected from the group consisting of alkaline metal oxides, alkaline earth metal oxides, amphoteric oxides and carbon group oxides.

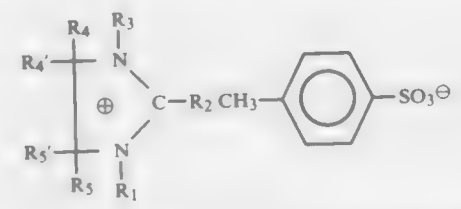
5,011,937

TOLUENE SULFONATE SALTS OF 2-ALKYL IMIDAZOLINES

Cheruthur Govindan, Wadsworth, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 14, 1988, Ser. No. 270,709
Int. Cl.[5] C07D *233/10, 233/14;* C08K *5/34*
U.S. Cl. 548—354 6 Claims

1. A compound represented by the graphic formula:



wherein R^1 and R^3 are each selected from the group consisting of hydrogen, C_1-C_2 alkyl and hydroxy (C_2-C_4) alkyl, R_2 is C_6-C_{22} alkyl, and R_4, R_4', R_5 and R_5' are each selected from the group consisting of hydrogen, C_1-C_2 alkyl, hydroxy (C_1-C_2) alkyl and phenyl.

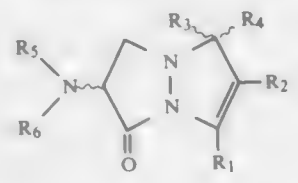
5,011,938

7-SUBSTITUTED BICYCLIC PYRAZOLIDINONES

Charles J. Barnett; Richard E. Holmes; Louis N. Jungheim, all of Indianapolis; Sandra K. Sigmund, Carmel, and Robert J. Ternansky, Noblesville, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 418,782, Oct. 2, 1989, Pat. No. 4,940,718, which is a continuation of Ser. No. 103,488, Sep. 30, 1987, abandoned, which is a continuation-in-part of Ser. No. 862,906, May 14, 1986, abandoned, which is a continuation-in-part of Ser. No. 729,021, Apr. 30, 1985, abandoned. This application Apr. 3, 1990, Ser. No. 503,574
Int. Cl.[5] C07D *231/00*
U.S. Cl. 548—359 10 Claims

1. A compound of the formula:



wherein:

either R_1 or R_2 is hydrogen, halo, C_1 to C_6 alkyl, C_1 to C_6 substituted alkyl, perfluoro C_2 to C_4 alkyl, C_7 to C_{12} phenylalkyl, C_7 to C_{12} substituted phenylalkyl, phenyl, substituted phenyl, nitro or cyano; a group of the formula

$$-CX_3$$

wherein

X is fluoro, chloro, bromo or iodo; a group of the formula

$$-S(O)_z-R_7$$

wherein

Z is 0, 1 or 2 and R_7 is C_1 to C_6 alkyl, C_1 to C_6 substituted alkyl, C_2 to C_7 alkenyl, C_2 to C_7 alkynyl, phenyl, substituted phenyl, C_7 to C_{12} phenylalkyl, C_7 to C_{12} substituted phenylalkyl, or (disubstituted)amino; a group of the formula

$$-COR_8$$

wherein

R_8 is hydrogen, C_1 to C_6 alkyl, C_1 to C_6 substituted alkyl, perfluoro C_2 to C_4 alkyl, trihalomethyl, C_7 to C_{12} arylalkyl, C_7 to C_{12} substituted arylalkyl, phenyl, substituted phenyl, amino, (monosubstituted)amino, or (disubstituted-)amino; a group of the formula

$$-C(=N-OR_8')-R_8$$

wherein

R_8 is as defined above and R_8, ' is hydrogen, C_1 to C_6 alkyl, C_2 to C_7 alkenyl, C_2 to C_7 alkynyl, phenyl, substituted phenyl, C_7 to C_{12} phenylalkyl, C_7 to C_{12} substituted phenylalkyl; a group of the formula

$$-COOR_9$$

wherein

R_9 is hydrogen, an organic or inorganic cation, C_1 to C_6 alkyl, C_1 to C_6 substituted alkyl, C_7 to C_{12} arylalkyl, C_7 to C_{12} substituted arylalkyl, phenyl, substituted phenyl, a carboxy-protecting group, or a non-toxic, metabolically-labile, ester-forming group; a group of formula

$$-PO_3(R_{10})_2$$

wherein

R_{10} is hydrogen, an organic or inorganic cation, C_1 to C_6 alkyl, C_1 to C_6 substituted alkyl, C_7 to C_{12} arylalkyl, C_7 to C_{12} substituted arylalkyl, phenyl, or substituted phenyl; a group of the formula

$$-OR_{11}$$

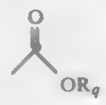
wherein

R_{11} is hydrogen, C_1 to C_6 alkyl, C_1 to C_6 substituted alkyl, C_7 to C_{12} phenylalkyl, C_7 to C_{12} substituted phenylalkyl, phenyl, substituted phenyl, or C_1 to C_7 acyl; or a group of the formula

$$-NR_{12}R_{13}$$

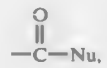
wherein

R_{12} and R_{13} are the same or different and are hydrogen, C_1 to C_6 alkyl, C_1 to C_6 substituted alkyl, C_7 to C_{12} phenylalkyl, C_7 to C_{12} substituted phenylalkyl, phenyl, substituted phenyl, C_1 to C_7 acyl, or a group of the formula



wherein

R_q is C_1 to C_6 alkyl, C_7 to C_{12} phenylalkyl or phenyl; or one of R_{12} and R_{13} is hydrogen and the other is a group of the formula



wherein

Nu is (monosubstituted)amino, (disubstituted)amino, C_1 to C_6 alkylthio, C_2 to C_7 alkenylthio, C_1 to C_6 substituted alkylthio, phenylalkylthio, C_7 to C_1 phenylalkylthio, or C_7 to C_{12} substituted phenylalkylthio, C_1 to C_6 alkyl alcohol, C_1 to C_6 substituted alkyl alcohol, phenyl alcohol, substituted phenyl alcohol, C_7 to C_{12} phenylalkyl alcohol, or C_7 to C_{12} substituted phenylalkyl alcohol;

and the other of R_1 or R_2 is a group of the formula

$$-COOR_{14}$$

wherein

R_{14} is hydrogen, an organic or inorganic cation, a carboxy-protecting group or a non-toxic, metabolicallylabile ester-forming group; and

R_3 and R_4 are the same or different and are hydrogen, C_1 to C_6 alkyl, C_1 to C_6 substituted alkyl, C_7 to C_{12} arylalkyl, C_7 to C_{12} substituted arylalkyl, phenyl, substituted phenyl or a group of the formula

$$-COOR_{15}$$

wherein

R_{15} has the same definition as R_9;

R_5 and R_6 are:

(1) each hydrogen; or

(2) different and are either hydrogen or an amino-protecting group.

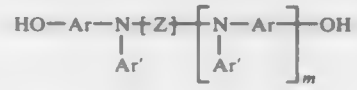
5,011,939

HYDROXY FUNCTIONALIZED ARYLAMINE COMPOUNDS

William W. Limburg, Penfield; John F. Yanus; Dale S. Renfer, both of Webster; Richard L. Schank, Pittsford, all of N.Y., and Beng S. Ong, Mississauga, Canada, assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 198,254, May 24, 1988, which is a continuation-in-part of Ser. No. 61,247, Jun. 10, 1987, abandoned. This application May 23, 1989, Ser. No. 355,728
Int. Cl.[5] C07D *209/82;* C07C *211/00, 209/00*
U.S. Cl. 548—440 3 Claims

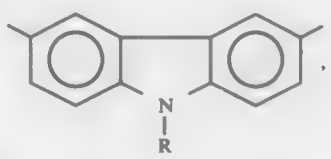
1. A hydroxy arylamine compound represented by the formula:

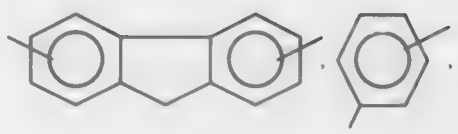


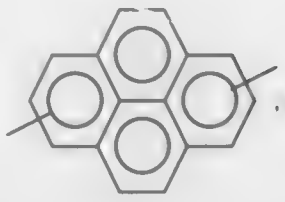
wherein:

m is 0 or 1,

Z is selected from the group consisting of:

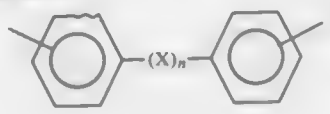




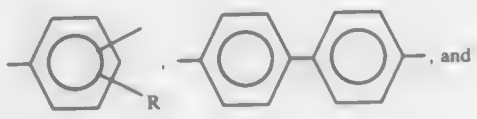


, and

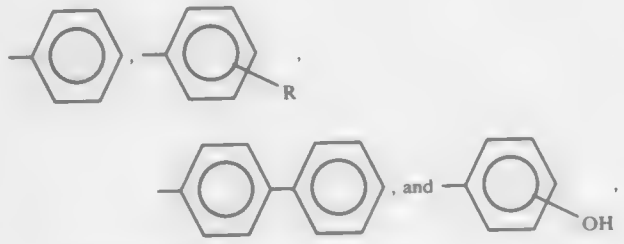
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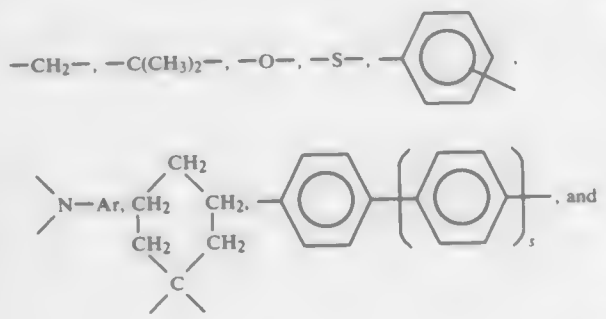
n is 0 or 1,
Ar is selected from the group consisting of:



R is selected from the group consisting of $-CH_3$, $-C_2H_5$, $-C_3H_7$, and $-C_4H_9$, Ar' is selected from the group consisting of:



X is selected from the group consisting of:



s is 0, 1 or 2,
said hydroxy arylamine compound being free of any segment having the formula:

$$-C{\equiv}C)_n C{\equiv}C-$$

where n=0 or 1, in one or more aromatic rings directly between an —OH group and the nearest nitrogen atom.

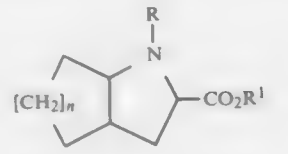
5,011,940

PROCESS FOR THE PREPARATION OF BICYCLIC AMINO CARBOXYLIC ACIDS, INTERMEDIATES IN THIS PROCESS, AND THEIR USE

Hansjörg Urbach, Taunus, and Rainer Henning, Hattersheim am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 1, 1988, Ser. No. 214,457
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1987, 3722007
Int. Cl.[5] C07D *209/02*
U.S. Cl. 548—452 19 Claims

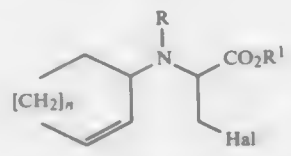
1. A process for the preparation of a compound of the formula I



(I)

in which
n=1, 2 or 3;
R denotes (C_1-C_6) -alkanoyl, (C_6-C_{10})-aryl-(C_1-C_4)-alkanoyl, (C_6-(C_{10})-aroyl, (C_1-C_6)-alkoxycarbonyl, (C_7-C_{11})-aralkyloxycarbonyl or, if not covered by the above definition, R is a urethane type protecting grup selected from Pyoc (4-pyridylmethyloxycarbonyl), Fmoc (9-fluoroenylmethyloxycarbonyl), Tcboc (2,2,2-trichloro-t-butyloxycarbonyl), Z (benzyloxycarbonyl), Box (t-butyloxycarbonyl), Ddz (α,α-dimethyl3,5-dimethyloxybenzyloxycarbonyl), Bpoc (1-(4-biphenylyl)-1-methyl-ethyloxycarbonyl), Adoc (1-adamantyloxycarbonyl), Msc (methyl-sulfonyl-ethyloxycarbonyl), Moc (4-methyl-oxybenzyloxycarbonyl), $Z(NO_2)$ (4-nitrobenzyloxy-carbonyl), $Z(Hal)_n$ (halogenosubstituted benzyloxycarbonyl), Dobz (4-dihydroxyborylbenzyloxycarbonyl), Iboc (isobornyloxycarbonyl), Adpoc (1-(1-0adamantyl)-1-methyl-ethyloxycarbonyl), Mboc (1-methylcyclobutyloxy-carbonyl) and 1,4-dimethylpyridyloxycarbonyl; and
R^1 denotes (C_1-C_6)-alkyl, (C_3-C_7)-cycloalkyl, (C_7-C_{11})-aralkyl, p-nitrobenzyl, p-methoxybenzyl, p-bromobenzyl, p-chlorobenzyl, 4-picolyl or benzoylmethyl,

which comprises radical cyclization of a compound of the formula II



(II)

in which n, R and R^1 are as defined above, and Hal denotes chlorine, bromine or iodine with at least one trialkylstannane in an aprotic solvent at a temperature of from −20° C. to 120° C.

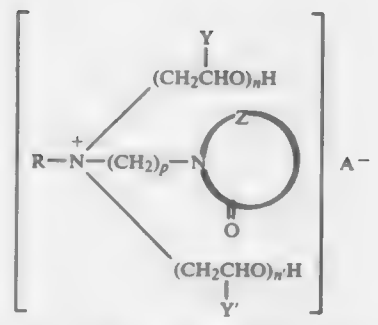
5,011,941

QUATERNIZED NITROGEN CONTAINING COMPOUNDS

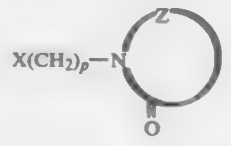
Ratan K. Chaudhuri, Butler; David J. Tracy, Lincoln Park, and Robert B. Login, Oakland, all of N.J., assignors to GAF Chemicals Corporation, Wayne, N.J.

Division of Ser. No. 370,226, Jun. 22, 1989. This application Sep. 14, 1990, Ser. No. 582,289
Int. Cl.[5] C07D *207/12, 211/76, 295/12*
U.S. Cl. 548—550 4 Claims

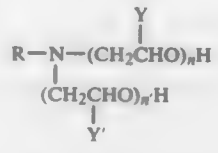
1. The process of synthesizing the compound having the formula



wherein n and n' are each independently integers having a value of from 1 to 25; p is an integer having a value of from 1 to 4; Y and Y' are each independently H or CH_3; R is linear alkyl, alkenyl, or amidoalkyl having from 8 to 22 carbon atoms and is optionally substituted with C_1 to C_4 alkyl; Z is linear alkylene having from 3 to 8 carbon atoms and is optionally substituted with lower alkyl and A^- is an anion which comprises reacting under anhydrous conditions a N-haloalkyl lactam of the formula



with a slight excess of a tertiary amine having the formula



wherein p, Z, R, Y, Y', n and n' are as defined and X is a halogen atom; said reaction being carried out under a pressure of from about 0 to about 50 psig and at a temperature not in excess of 85° C. to produce the corresponding addition product as a quaternized ammonium halide and optionally reacting said quaternized ammonium halide with a sulfate or sulfonate ion exchange agent to provide the corresponding sulfate or sulfonate salt.

5,011,942

PROCESS FOR RACEMIZING AN ENANTIOMER OF 5,6-DIHYDRO-4-ALKYLAMINO-4H-THIENO(OR FURO) [2,3-B]-THIOPYRAN-2-SULFONAMIDE-7,7-DIOXIDE

Thomas J. Blacklock, Clark; Edward J. J. Grabowski, Westfield, and Paul Sohar, Warren, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 5, 1990, Ser. No. 474,868
Int. Cl.[5] C07D *495/06*
U.S. Cl. 549—23 18 Claims

1. A process for racemizing the pharmacologically less active enantiomer of a 5,6-dihydro-4-alkylamino-4H-thieno (or furo) [2,3-b] thiopyran-2-sulfonamide-7,7-dioxide which comprises HEATING an N-acyl derivative thereof in the presence of a base, selected from the group consisting of: (a) formamide used as a solvent; (b) an anhydrous base selected from tri(C_{1-3}alkyl)-amine and an alkali metal C_{1-3}alkoxide in a protic solvent; followed by deacylation.

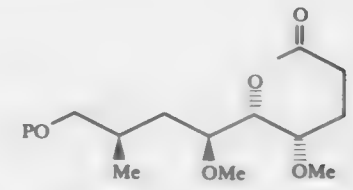
5,011,943

FK-506 C_{10}–C_{24} PROCESS INTERMEDIATES

Zhaoyin Wang, Pierrefonds, Canada, assignor to Merck Frosst Canada, Inc., Kirkland, Canada

Filed Aug. 28, 1989, Ser. No. 399,206
Int. Cl.[5] C07D *309/30, 319/06;* C07C *69/767, 43/15*
U.S. Cl. 549—214 10 Claims

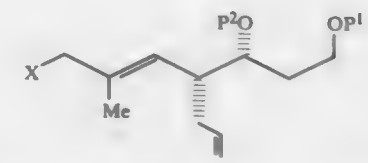
1. A compound of the formula:



XIII

where P is a hydroxy protecting group selected from: trisubstituted silyl, benzyl and protected benzyl, and aroyl and alkanoyl.

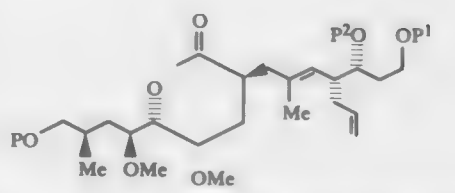
3. A compound of the formula:



XXII

where X is a halide and P1 and P2 are hydroxy protecting groups independently selected from: trisubstituted silyl, benzyl and protected benzyl, and aroyl and alkanoyl; or P1 and P2 may be combined to form an aromatic methine diradical.

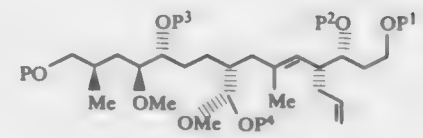
5. A compound of the formula:



XXIII

where P, P1 and P2 are hydroxy protecting groups independently selected from: trisubstituted silyl, benzyl and protected benzyl, and aroyl and alkanoyl; or P1 and P2 may be combined to form an aromatic methine diradical.

7. A compound of the formula:



XXVI

where P, P^1, P^2, P^3 and P^4 are independently hydrogen or hydroxy protecting groups independently selected from: trisubstituted silyl, benzyl and protected benzyl, and aroyl and alkanoyl; with the proviso that P^3 and P^4 are different, or P^1 and P^2 may be combined to form an aromatic methine diradical.

5,011,944

SUBSTITUTED ALPHA-PYRONES

Vratislav Kvita, Reinach; Marcus Baumann, Basel; Walter Fischer, Reinach; Carl W. Mayer, Riehen, all of Switzerland, and Thomas Allmendinger, Steinen, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

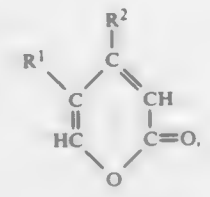
Filed May 24, 1989, Ser. No. 356,825

Claims priority, application Switzerland, May 27, 1988, 2008/88; Jul. 19, 1988, 2753/88

Int. Cl.[5] C07D *309/32*

U.S. Cl. 549—214 **5 Claims**

1. A compound of the formula I



(I)

in which R^1 is $—CF_3$ or $—COOR^3$ and R^3 is the radical of a C_1-C_{18} alcohol diminished by a hydroxyl group, and R^2 is —F, —Br, —Cl, —CN, $—CF_3$, C_1-C_{18}alkyl, C_2-C_{18}alkenyl, C_2-C_{18}alkynyl, C_1-C_{18}alkoxy, C_1-C_{18}alkylthio, C_1-C_{18}alkylsulfonyl, C_6-C_{16}aryl, C_7-C_{24}alkaryl, C_7-C_{12}aralkyl, C_8-C_{24}alkaralkyl, C_6-C_{16}aryloxy, C_6-C_{16}arylthio, C_6-C_{16}arylsulfonyl, C_7-C_{24}alkaryloxy, C_7-C_{20}alkarylthio, C_7-C_{24}alkarylsulfonyl, C_7-C_{12}aralkyloxy, C_7-C_{12}aralkylthio, C_7-C_{12}aralkylsulfonyl, C_8-C_{24}alkaralyloxy, C_8-C_{24}alkaralylthio, C_8-C_{24}alkaralylsulfonyl, secondary amine having 2 to 24 C atoms or trialkylsilyl or trialkoxysilyl each of which has 3 to 18 C atoms wherein aryl is phenyl or naphthyl.

5,011,945

CONTINUOUS PROCESS FOR THE PRODUCTION OF MALEIC ANHYDRIDE

Hassan Taheri, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 91,440, Aug. 31, 1987, abandoned, and a continuation-in-part of Ser. No. 194,137, May 16, 1988, abandoned. This application Nov. 22, 1989, Ser. No. 440,309

Int. Cl.[5] C07D *307/60*

U.S. Cl. 549—260 **7 Claims**

1. A continuous process for the vapor-phase oxidation of a butane feedstock to produce maleic anhydride in high yield wherein catalyst productivity is within the range of from about 0.12 to about 0.18, measured in pounds of maleic anhydride produced per pound of catalyst per hour, which process comprises:

(a) contacting a nonflammable reactor feed consisting essentially of about 4 to about 10 mole % n-butane, about 10 to about 18 mole % oxygen, and the balance carbon oxides, wherein ratio of carbon monoxide to carbon dioxide is at least 1:1, with an oxidation catalyst comprising vanadium-phosphorus-oxygen, and a co-metal comprising molybdenum, wherein phosphorus-to-vanadium atomic ratio is in the range of from about 0.8:1 to about 2:1 and molybdenum-to-vanadium atomic ratio is in the range of from about 0.001:1 to about 0.2:1;

(b) oxidizing said n-butane in continuous recycle method in a reaction zone, said reaction zone having a feed end and an exit end, wherein volumetric space velocity is in the range of from about 1000 to about 3000/hour per pass, n-butane conversion to maleic anhydride per pass is in the range of from about 20 to 35 mole %, oxygen conversion per pass is from about 30 to about 70 mole %, reaction catalyst temperature is within the range of from about 830° F. to about 900° F., wherein an alkyl ester of orthophosphoric acid and water are continuously added to said reactor feed, and wherein said catalyst is graded along at least a portion of said reaction zone with minimum reactivity nearest the feed end of said reaction zone and maximum reactivity nearest the exit end of said reaction zone;

(c) withdrawing from said reaction zone an effluent comprising maleic anhydride, by-product oxygenated hydrocarbons, carbon oxides, unreacted n-butane and oxygen;

(d) separating a major portion of maleic anhydride and oxygenated hydrocarbon by-products from said effluent:

(e) removing from said effluent remaining after recovery of maleic anhydride and oxygenated hydrocarbons a purge stream at a rate substantially corresponding to the rate of build-up of carbon oxides in the reaction zone; and

(f) recycling effluent remaining after removal of the purge stream to the reaction zone with addition of make-up gases comprising n-butane and oxygen.

5,011,946

PROCESS FOR PREPARING D,L-LACTIDE

Joachim Hess, Bingen; Klaus R. Muller, Ingelheim, and Manfred Muller, Bickenbach, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Filed May 25, 1990, Ser. No. 529,022

Claims priority, application Fed. Rep. of Germany, May 26, 1989, 3917178

Int. Cl.[5] C07D *319/12*

U.S. Cl. 549—274 **5 Claims**

1. A process for preparing D,L-lactide which comprises:

(a) dissolving D-lactide and L-lactide in a solvent or a mixture of solvents capable of forming an azeotrope with water, to produce a starting solution;

(b) filtering the starting solution;

(c) concentrating the filtered starting solution, to produce a residual solution;

(d) cooling the residual solution until a crystalline precipitate of D,L-lactide forms;

(e) separating the crystalline precipitate from the remainder of the residual solution; and

(f) drying the crystalline precipitate.

5,011,947

ANTIHYPERCHOLESTEROLEMIC ALKYLENE COMPOUNDS

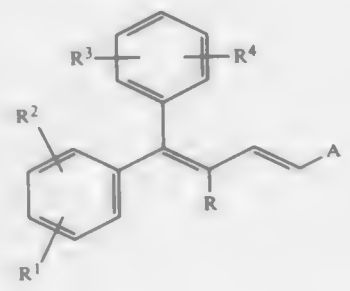
John D. Catt, Southington, and John J. Wright, Guilford, both of Conn., assignors to Bristol-Myers, New York, N.Y.

Continuation of Ser. No. 236,579, Aug. 25, 1988, abandoned. This application Jun. 12, 1990, Ser. No. 538,583

Int. Cl.[5] C07D *301/36;* **C09F** *7/08*

U.S. Cl. 549—292 **14 Claims**

1. A compound of the formula



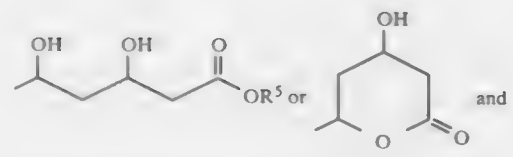
I

wherein

R^1, R^2, R^3 and R^4 each are independently hydrogen, halogen, C_{1-4} alkyl, C_{1-4} alkoxy or trifluoromethyl;

R is C_{1-7} alkyl, C_{3-6} cycloalkyl, fluoromethyl, difluoromethyl or trifluoromethyl;

A is



and

R^5 is hydrogen, a hydrolyzable ester group or a cation to form a non-toxic pharmaceutically acceptable salt.

5,011,948

INTERMEDIATES FOR THE PRODUCTION OF EPIPODOPHYLLOTOXIN AND RELATED COMPOUNDS AND PROCESSES FOR THE PREPARATION AND USE THEREOF

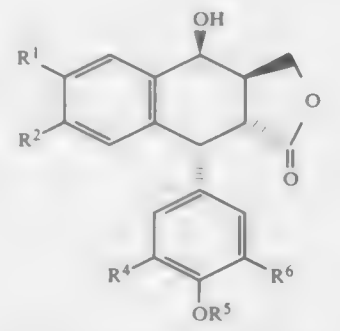
Dolatrai M. Vyas, Madison, Conn., and Paul M. Skonezny, Clay, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 245,108, Sep. 16, 1988, Pat. No. 4,866,189, which is a division of Ser. No. 76,513, Jul. 22, 1987, Pat. No. 4,795,819, which is a division of Ser. No. 907,442, Sep. 15, 1986, Pat. No. 4,728,740, which is a division of Ser. No. 722,932, Apr. 12, 1985, Pat. No. 4,644,072. This application Jul. 14, 1989, Ser. No. 379,747

Int. Cl.[5] C07D *493/04, 307/92;* **C07C** *255/47*

U.S. Cl. 549—298 **3 Claims**

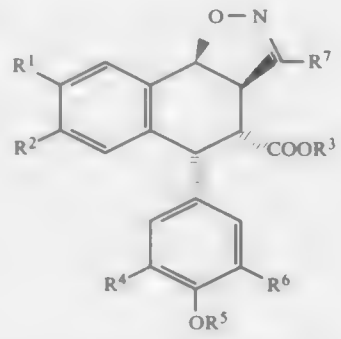
1. A process for the preparation of a compound of the formula



XII

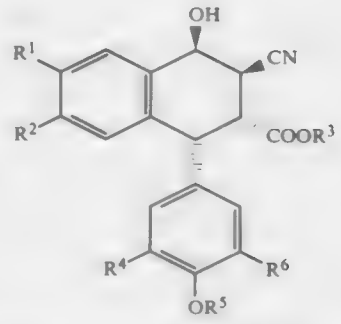
wherein R^1 and R^2 each are independently hydrogen or (lower)alkoxy, or R^1 and R^2, taken together, is methylenedioxy; R^4 and R^6 each are independently hydrogen or (lower)alkoxy; and R^5 is hydrogen or a phenol-protecting group, or a pharmaceutically acceptable addition salt thereof, comprising the steps of:

(a) cleaving an isoxazole ring of the formula



X

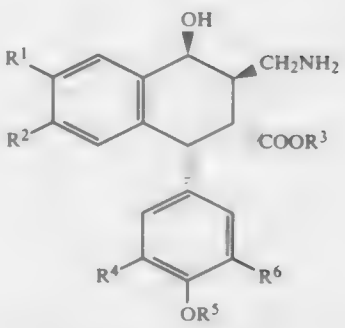
wherein R^1, R^2, R^3, R^4, R^5 and R^6 are as defined above, and R^7 is hydrogen, halogen, (lower)alkoxycarbonyl, carboxyl, cyano, trimethylsilyl, phenylsulfonyl orphenoxycarbonyl in which the phenyl ring of R^7 may contain one or two substituents independently selected from (lower)alkyl, halogen, (lower)alkoxy and trifluoromethyl, to produce a compound of the formula



XIc

wherein R^1, R^2, R^3, R^4, R^5 and R^6 are as defined above;

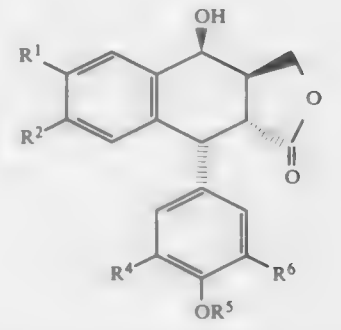
(b) selectively reducing the nitrile of Formula XIc to produce a compound of the formula



XId

wherein R^1, R^2, R^3, R^4, R^5 and R^6 are as defined above, or a salt thereof; and, if R^3 is a carboxyl-protecting group, removing said carboxyl-protecting group to produce a compound of the Formula XId wherein R^3 is hydrogen; and

(c) cyclizing the compound of Formula XId by diazotization of the amino radical followed by lactonization to produce a compound of the formula

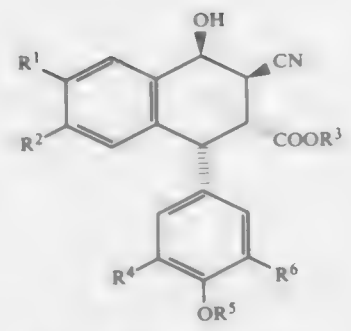


XII

wherein R^1, R^2, R^4, R^5 and R^6 are as defined above.

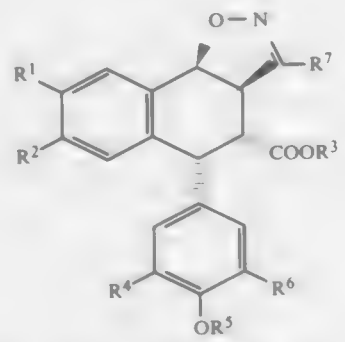
3. A process for the preparation of a compound of the formula

XIc



wherein R^1 and R^2 each are independently hydrogen or (lower)alkoxy, or R^1 and R^2, taken together, is methylenedioxy; R^3 is hydrogen or a carboxyl-protecting group; R^4 and R^6 each are independently hydrogen or (lower)alkoxy; and R^5 is hydrogen or a phenol-protecting group; or an addition salt thereof, comprising the step of cleaving the isoxazole ring of the formula

X



wherein R^7 is halogen; and R^1, R^2, R^3, R^4, R^5 and R^6 are as defined above, by selective reduction to produce said compound of Formula XIc.

5,011,949

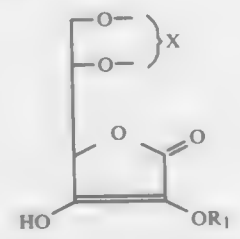
ASCORBIC ACID DERIVATIVE

Toshio Satoh; Yasunori Niiro; Hisao Kakegawa, and Hitoshi Matsumoto, all of Tokushima, Japan, assignors to Nippon Hypox Laboratories, Inc., Tokyo, Japan

Filed Jul. 20, 1989, Ser. No. 382,771
Int. Cl.[5] C07D *307/33, 307/06*
U.S. Cl. 549—315 **7 Claims**

1. An ascorbic acid derivative represented by the formula:

(Ia)



wherein R_1 is $-CH_2-CO-CH_3$ and $-CH_2-CO-C_2H_5$ and X represents two hydrogen atoms or $=C(CH_3)_2$.

5,011,950

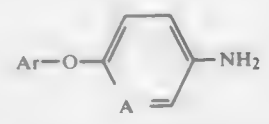
AROMATIC AMINE DERIVATIVES

Daisuke Fukuoka, Iwakuni; Katsuya Takahashi, Ohtake, and Isao Hashimoto, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

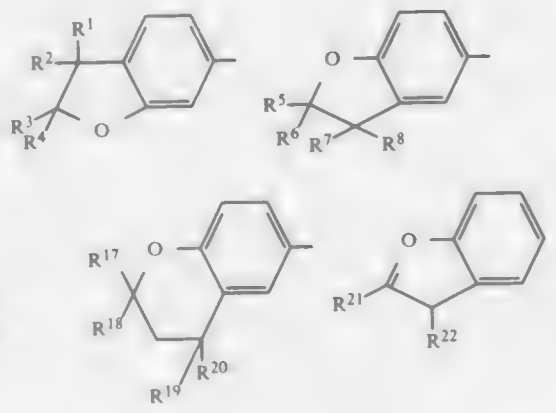
Filed Feb. 2, 1988, Ser. No. 151,594
Claims priority, application Japan, Feb. 5, 1987, 62-23553
Int. Cl.[5] C07D *307/80*
U.S. Cl. 549—336 **1 Claim**

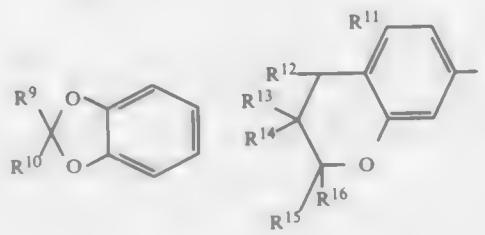
1. An aromatic amine compound of the formula (I):

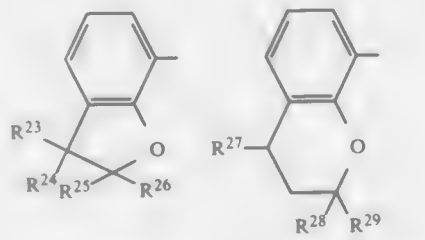
(I)

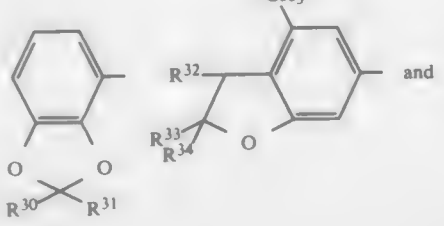


wherein Ar is a radical selected from the group consisting of





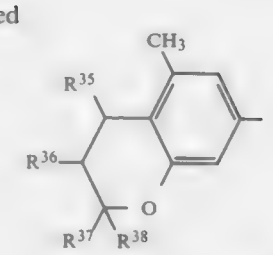




and



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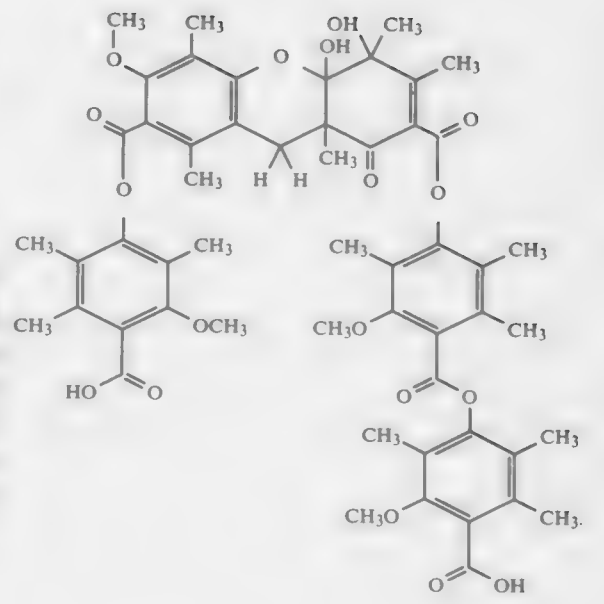


wherein R^1 to R^{15} and R^{17} to R^{38} may be the same or different and are independently selected from the group consisting of hydrogen, lower alkyl radicals, and lower alkoxy radicals, R^{16} is selected from the group consisting of hydrogen, lower alkyl radicals, lower alkoxy radicals and hydroxyl, with the proviso that R^2 and R^3, R^6 and R^7, R^9 and R^{10}, R^{11} and R^{15}, or R^{15} and R^{16} may, taken together, represent an alkylene chain, which may be substituted with a lower alkyl radical, to form a 5- or 6-membered ring with the carbon atoms to which they are attached, R^{11} and R^{12} may, taken together, represent an ethylene dioxyl radical, or R^{14} and R^{15} may, taken together, represent a dichloromethylene radical; and

A is



wherein X is a nitro radical.



5,011,951

SYNTHESIS OF ARTEMISININELACTOL DERIVATIVES

Peter Buchs, Bioggio, Switzerland, and Arnold Brossi, Bethesda, Md., assignors to World Health Organization, Switzerland, Switzerland

Filed Feb. 27, 1989, Ser. No. 316,282
Claims priority, application United Kingdom, Feb. 25, 1988, 8804372
Int. Cl.[5] C07D *321/02*
U.S. Cl. 549—348 **6 Claims**

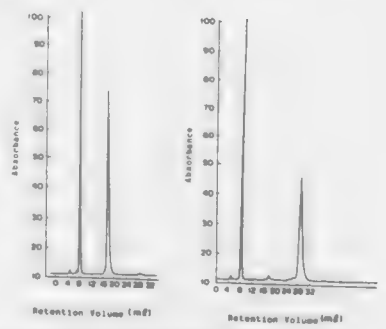
1. A process for conversion of the α-epimer of arteether to the β-epimer, the process comprising subjecting the α-epimer to an acid catalysed isomerization reaction.

5,011,952

PHOSPHOLIPASE A2 INHIBITOR

Tadashi Yoshida, Toyono; Keizo Inoue, Koto; Hitoshi Arita, Kawanishi; Shigeru Matsutani, Hashimoto; Jun'ichi Shoji, Hirakata, and Yoshimi Kawamura, Minoo, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Apr. 30, 1990, Ser. No. 516,982
Claims priority, application Japan, Apr. 28, 1989, 1-109939
Int. Cl.[5] C07D *311/82*
U.S. Cl. 549—393 **1 Claim**



1. A compound of the formula:

5,011,953

METHOD FOR PREPARING EPICHLOROHYDRINS

Takehisa Nakanishi, Takaishi; Eiji Koga, Izumi, and Isao Fukada, Takaishi, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Nov. 8, 1989, Ser. No. 433,118
Claims priority, application Japan, Nov. 9, 1988, 63-281349; Feb. 7, 1989, 1-26579
Int. Cl.[5] C07D *301/19*
U.S. Cl. 549—529 **29 Claims**

1. A method for preparing an epichlorohydrin which comprises reacting allyl chloride or 2-alkylallyl chloride in which the alkyl radical has 1 to 3 carbon atoms with an alkyl hydroperoxide in the presence of a modified catalyst formed by substituting hydrocarbon groups, alkoxy groups, acyl groups, acyloxy groups, carbamoyloxy groups, amino groups or organosilyloxy groups for 1 to 50% of the silanol groups of a catalyst having titanium atoms and having on the same carrier 1 to 6 silanol groups per square nanometer thereof.

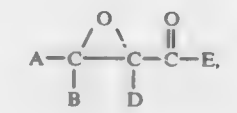
5,011,954

EPOXIDES AND THEIR PREPARATION

Ming-Hong Hung, and Paul R. Resnick, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 30, 1989, Ser. No. 401,668
Int. Cl.[5] C07D *303/38*
U.S. Cl. 549—548 **1 Claim**

1. The epoxide of the formula



in which each of A and B is independently selected from CF_3, $CClF_2$, and C_2F_5; D is selected from H, CF_3, F, Cl, and Br; and E is selected from F, Cl, Br, COOR wherein R is lower alkyl, COOH, and COOM wherein M is alkali metal.

5,011,955

SUBSTITUTED 1,1,1-TRIARYL-2,2,2-TRIFLUOROETHANES AND PROCESSES FOR THEIR SYNTHESIS

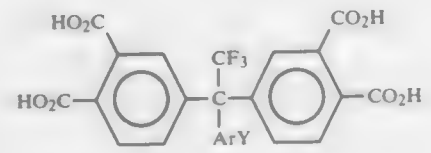
William B. Alston, 4668 Windfall Rd., Medina, Ohio 44256, and Roy F. Gratz, 902 Sylvania Ave., Fredericksburg, Va. 22401

Division of Ser. No. 292,049, Dec. 30, 1988, Pat. No. 4,912,238. This application Oct. 10, 1989, Ser. No. 419,554

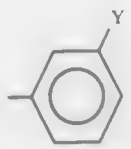
Int. Cl.[5] C07C *15/16;* **C09B** *11/04, 11/06*

U.S. Cl. 552—101 **1 Claim**

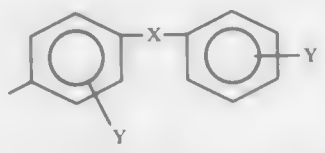
1. A process for preparing



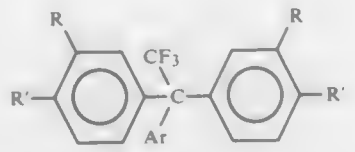
wherein ArY is



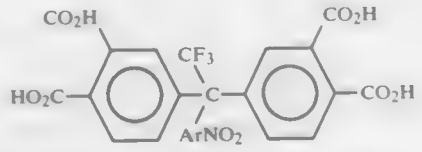
Y-substituted polycyclic aromatic hydrocarbons or substituted



wherein Y is ϕ-O, ϕ-S, ϕ-SO_2, ϕ-PH, ϕ_2-P, ϕHN, ϕ_2N or NO_2 and X is O, S, SO_2, NH, PH, Nϕ, Pϕ, C═O, CH_2 or $CH\phi_2$ which comprises oxidation of



in the presence of HNO_3, forming the oxidized product



which is subjected to a nucleophilic displacement reaction comprising reacting said oxidized product to Y radical containing nucleophilic reagents, wherein Y has the same meaning as above.

5,011,956

POLYMER LATEXES CONTAINING METAL IONS AND COMPLEXES

Warren T. Ford, 217 S. Ridge, Stillwater, Okla. 74078; Rama S. Chandran, 2 Aquarius Ct., Apt. 7, Somerville, N.J. 08876-4910; Mahmoud Hassanein, 101 - 5N. University Pl., Stillwater, Okla. 74078, and Hayrettin Turk, P.O. Box 1113, Stillwater, Okla. 74076

Division of Ser. No. 212,172, Jun. 27, 1988, Pat. No. 4,857,493. This application Jul. 6, 1989, Ser. No. 376,400

Int. Cl.[5] C07C *97/18*

U.S. Cl. 552—304 **10 Claims**

1. A method of catalysis of a chemical reaction by use of charged polymer latex particles comprising the steps of:

(a) preparing an aqueous colloidal suspension of charged polymer latex particles of from about 0.01 to about 1.5 micrometers in diameter which contain from about 0.01 to about 3.0 millimoles of metal complex per gram of dry polymer, wherein the polymer may be either uncrosslinked, or crosslinked with up to 25 mole percent of a polyfunctional monomer; and

(b) contacting reactants in the presence of said aqueous colloidal suspension prepared in step (a), thus catalyzing their reaction.

5,011,957

ANTIMONY MERCAPTIDE ESTERS AND METHODS OF PREPARING THE SAME

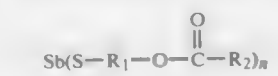
Howard F. Efner, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 245,784, Sep. 16, 1988, Pat. No. 4,923,643. This application Mar. 12, 1990, Ser. No. 491,963

Int. Cl.[5] C07F *9/90*

U.S. Cl. 556—77 **17 Claims**

1. An antimony mercaptide ester having the formula



wherein R_1 is selected from hydrocarbylene groups having from 2 to 18 carbon atoms, R_2 is selected from hydrocarbyl groups having from 1 to 35 carbon atoms and n is 5.

5,011,958

PROCESS FOR PREPARING HIGHER ORDER CUPRATE COMPLEXES

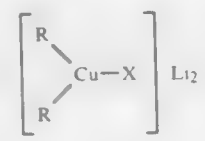
Arthur L. Campbell, Glenview; James R. Behling, Lindenhurst; John S. Ng, Chicago, and Kevin A. Babiak, Evanston, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Continuation of Ser. No. 219,427, Jul. 14, 1988, abandoned, which is a division of Ser. No. 59,294, Jun. 8, 1987, Pat. No. 4,785,124. This application Oct. 25, 1989, Ser. No. 427,067

Int. Cl.[5] C07F *1/08*

U.S. Cl. 556—110 **6 Claims**

1. A process for substituting a hydrocarbon group from a cuprate complex to an epoxide through a carbon to carbon bond comprising, preparing a higher order cuprate complex by bringing into reactive contact under an argon atmosphere a first cuprate complex of the formula:



or

$[R-Cu-(CN_2)]Li_2N(R^1)_4$

wherein

(a) X is —CN, —SCN, —OSO_2CF_3, or —S—phenyl;

(b) each R is independently lower alkyl, alkenyl, phenyl, naphthyl, phenanthryl, or thienyl, provided that (i) each of the aforementioned radicals is optionally substituted with non-interfering substituents and (ii) only one R in the first cuprate complex may be alkenyl, phenyl, naphthyl, phenanthryl, or thienyl; and

(c) each R^1 is independently lower alkyl; with a stannane compound of the formula;

$R_fSn(R^2)_3$

wherein each R^2 represents independently lower alkyl and R_f is a carbanion for carbon to carbon bond formation of the formula:

$(R^2)_3Sn-CH=CH-$

whereby R_f replaces at least one R on the first cuprate complex to form a higher order cuprate complex and reacting said higher order cuprate complex with an epoxide to substitute R_f from the higher order cuprate complex to the epoxide through a carbon to carbon bond.

5,011,959

1,2-DIAMINOCYCLOHEXANE-PLATINUM COMPLEXES WITH ANTITUMOR ACTIVITY

Abdul R. Khokhar; Robert A. Newman, and Irwin H. Krakoff, all of Houston, Tex., assignors to The Board of Regents, The University of Texas System, Austin, Tex.

Filed Nov. 17, 1986, Ser. No. 932,176

Int. Cl.[5] C07F *15/00;* **A01N** *43/04, 55/02;* **A61K** *31/28*

U.S. Cl. 556—137 **24 Claims**

1. A water-soluble square-planar cis-platinum(II) four-coordinate complex having the formula:

trans-R,R-DACH Pt(II) X_2

or

trans-R,R-DACH Pt(II) Y

wherein X is a monovalent cation, selected from the group consisting of galacturonato and N,N-dimethylglycinato; wherein Y is a divalent cation selected from the group consisting of citraconato, 1,1-cyclobutanedicarboxylato, 1,1-cyclopropanedicarboxylato, and Z-iminodiacetato where Z is bound to nitrogen and is ethyl, propyl, isopropyl, n-butyl, sec-butyl, ter-butyl, n-amyl, isoamyl or OH.

5,011,960

WIRING PATTERN DETECTION METHOD AND APPARATUS

Moritoshi Ando; Hiroshi Oka, and Satoshi Iwata, all of Atsugi, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 9, 1989, Ser. No. 349,270

Claims priority, application Japan, May 20, 1988, 63-124118; Jul. 28, 1988, 63-188918

Int. Cl.[5] G01B *11/24;* **G01N** *21/00*

U.S. Cl. 356—376 **16 Claims**

1. A method of a detection of a wiring pattern using a triangulation method to detect a height thereof, comprising steps of:

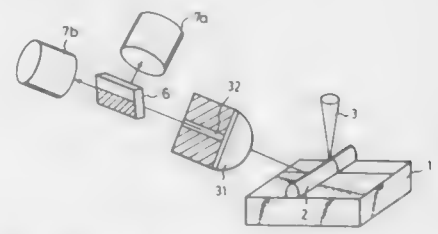
illuminating a wiring pattern to be detected on a substrate by a scanned light beam from a light source;

blur-focusing light reflected from the wiring pattern and the substrate through a focusing lens at a focal point of the focusing lens;

separating the blur-focused reflected light into reflected light and transmitted light, each light having a different direction, through a beam-splitter, entered by the blur-focused reflected light;

detecting the separated reflected light and transmitted light using optical sensors, respectively;

measuring a difference in light intensity of the reflected light and the transmitted light; and



determining from the measured difference an upper threshold value and a lower threshold value relative to a height of the wiring pattern.

5,011,961

METHOD OF MAKING ORGANOSILBUTADIYNE POLYMERS

Roberto Bortolin, Barry, Italy, and Bhukandas Parbhoo, Midland, Mich., assignors to Dow Corning Limited, Barry, Wales

Filed Jun. 13, 1990, Ser. No. 537,843

Int. Cl.[5] C07F *7/08*

U.S. Cl. 556—431 **8 Claims**

1. A method of making polymers having the general formula $R'-[(R)_2Si-C\equiv C-C\equiv C]_n(R)_2SiR'$ wherein R is selected from the group consisting of hydrogen, hydrocarbon groups and substituted hydrocarbon groups, R' is selected from the group consisting of a hydroxyl group, halogen atoms, hydrogen, hydrocarbon groups and substituted hydrocarbon groups and n denotes an integer greater than 1 comprising (A) reacting $HC\equiv C-C\equiv CH-OZ$ with allkyllithium in a molar ratio of 1:3 wherein Z denotes an alkyl group having up to 6 carbon atoms followed by (B), further reacting the product of (A) with one or more dihalosilanes.

5,011,962

PROCESS FOR PREPARING ORGANOSILOXANES

Gerhard Staiger, Altölling; Johann Müller, and Walter Doskocil, both of Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed May 30, 1990, Ser. No. 530,380

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1989, 3918337

Int. Cl.[5] C07F *7/08, 7/10*

U.S. Cl. 556—453 **9 Claims**

1. A process for preparing organosiloxanes (1) of the general formula

$R_{4-n}{}^1Si(OSiR_3)_n$,

in which R is selected from the group consisting of a hydrogen atom, a monovalent hydrocarbon radical having from 1 to 18 carbon atoms per radical and a substituted monovalent hydrocarbon radical having from 1 to 18 carbon atom per radical, R1 is selected from the group consisting of R and a chlorine atom, and n is 3 or 4, which comprises reacting an organodisiloxane (2) of the general formula

$(R_3Si)_2O$,

with a chlorosilane (3) of the general formula

$R_{4-n}SiCl_n$,

in which R and n are the same as above, in the presence of phosphonitrile chlorides (4) and a cocatalyst (5), in which the cocatalyst (5) is used concomitantly with the phosphonitrile chlorides (4) and is selected from the group consisting of amides of the general formula

X-C(O)-R^2.

in which R^2 is selected from the group consisting of a hydrogen atom, a monovalent hydrocarbon radical having from 1 to 8 carbon atoms per radical and a substituted monovalent hydrocarbon radical having from 1 to 8 carbon atom per radical, and X is selected from th consisting of a radical of the formula R^2_2N- and



where R^2 is the same as above and R^3 is a divalent hydrocarbon radical having from 5 to 7 carbon atoms per radical, urea, urea derivatives of the general formula

X-C(O)-X,

where X is the same as above and cyanuric acid.

5,011,963

TERMINAL PERFLUOROALKYLSILANE COMPOUNDS

Kazufumi Ogawa; Hideharu Tamura, both of Kadoma; Toshinobu Ishihara, Chiyoda; Yasuhisa Tanaka, Chiyoda, and Mikio Endou, Chiyoda, all of Japan, assignors to Matsushita Electric Ind., Co., Ltd., Osaka and Shin-etsu Chemical Co., Ltd., Tokyo, both of, Japan

Filed Feb. 9, 1989, Ser. No. 307,968
Claims priority, application Japan, Feb. 9, 1988, 63-27952
Int. Cl.[5] C07F *7/08, 7/18*
U.S. Cl. 556—485 **4 Claims**

1. A terminal perfluoroalkylsilane compound having the general formula;

$$F(CF_2)_m(CH_2)_nSi(CH_3)_pX_{3-p}$$

wherein m, n, and p are each integers; m = 1 to 8, m + n = 13 to 32, and p = 0 to 2; and X is a halogen atom selected from I, Br and Cl, or is an alkoxy group.

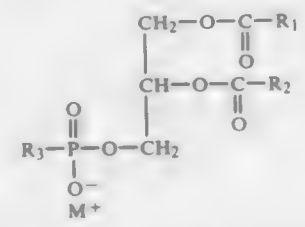
5,011,964

NOVEL DIACYLGLYCEROPHOSPHORIC ACID ESTERS AND USE THEREOF AS SUBSTRATES IN ENZYME ASSAYS

Dennis C. Mynarcik; Owen W. Griffith, both of New York, N.Y., and Gordon F. Fairclough, Jr., Norwalk, Conn., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Apr. 6, 1990, Ser. No. 505,695
Int. Cl.[5] C07F *9/02, 9/10*; C12Q *1/42*
U.S. Cl. 558—179 **8 Claims**

1. Diacylglycerophosphoric acid ester having the following structural formula:



wherein R_1 R_2 are organic groups where at least one of them or the combination of them causes the compound to be insoluble in water, R_3 is a chromogenic head group which is released in enzymatic cleavage by phospholipase D from cabbage to form a chromophore or a molecule which reacts with diazotizing agent to form a chromophore and contains substituted phenol or naphthol or substituted naphthol of substituted umbelliferone and M^+ is a balancing cation.

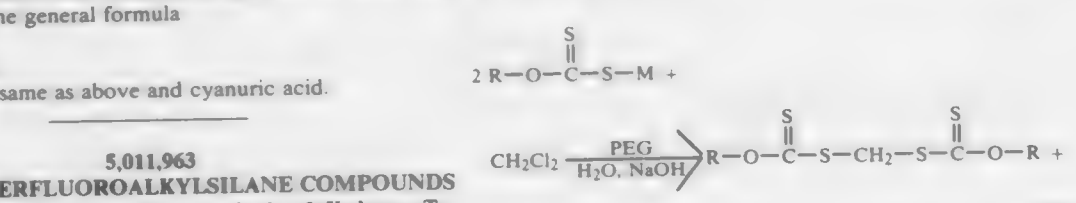
5,011,965

PROCESS FOR PRODUCTION OF METHYLENE BISXANTHATES

Eugenio A. Saphores; Arturo G. Gleisner, both of Vina del Mar; Juan C. Vega, and Wladimir A. Mardones, both of Santiago, all of Chile, assignors to Establecimientos Industriales Quimicos Oxiquim S.A., Vina del Mar, Chile

Filed Apr. 28, 1989, Ser. No. 344,912
Int. Cl.[5] C07C *327/36*
U.S. Cl. 558—245 **11 Claims**

1. A process for producing a methylene bisxanthate, comprising reacting an aqueous solution of an alkaline xanthate with methylene chloride in the presence of PEG with terminal alcoholic groups as a phase transfer catalyst in accordance with the following formula:



2 MCl.

wherein R is an alkyl group containing from one to six carbon atoms and M is an alkaline metal; and separating the resulting methylene bisxanthate reaction product from other components of the reaction mixture.

5,011,966

LOW PHOSGENE METHOD FOR PREPARING AROMATIC BISCHLOROFORMATES

James M. Silva, Clifton Park, and Thomas J. Fyvie, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 22, 1988, Ser. No. 222,879
Int. Cl.[5] C07C *68/02, 69/96*
U.S. Cl. 558—268 **13 Claims**

1. A method for preparing an aromatic bischloroformate composition which comprises effecting contact at a temperature in the range of about 15°–50° C. between at least one dihydroxyaromatic compound, phosgene, water, an alkali or alkaline earth metal base and a substantially inert, substantially water-insoluble organic liquid, the total molar ratios of phosgene and base to dihydroxyaromatic compound being in the ranges of about 1.1–1.5:1 and about 2.0–2.4:1, respectively, and the total volume ratio of aqueous phase to organic liquid being in the range of about 0.5–1.0:1; said contact being effected by:

preparing a mixture of dihydroxyaromatic compound, organic liquid and about 5–15% of the total base employed;

passing phosgene into said mixture for a period of about 10–30 minutes;

simultaneously introducing the remainder of the base, at a constant rate initially to attain a pH of the aqueous phase of said mixture above a value in the range of 8–11;

discontinuing base addition while continuing phosgene addition;

resuming base addition when the measured pH falls below said pH value, said resumed base addition being at a rate about 5–10% in excess of the amount required to convert the phosgene then being introduced to bischloroformates;

ceasing base addition when phosgene addition is completed, and recovering said bischloroformate composition.

5,011,967

METHOD FOR PREPARING AROMATIC BISCHLOROFORMATE COMPOSITIONS

James M. Silva, Clifton Park, N.Y., and Robert A. Pyles, Evansville, Ind., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 917,751, Oct. 10, 1986, Pat. No. 4,737,573. This application Dec. 4, 1987, Ser. No. 128,848
Int. Cl.[5] C07C *68/02, 69/96*
U.S. Cl. 558—281 **10 Claims**

1. A method for preparing an aromatic bischloroformate composition which comprises passing phosgene into a heterogeneous mixture consisting essentially of water, a substantially inert, substantially water-insoluble organic liquid and at least one dihydroxyaromatic compound in a tank reactor and simultaneously introducing an aqueous alkali or alkaline earth metal base solution at a rate to maintain the aqueous phase of said mixture at a pH in the range of 8–11; the temperature of said mixture being maintained in the range of about 15°–50° C., the volume ratio of aqueous to organic phase at the conclusion of phosgenation being in the range of about 0.4–1.0:1 and the total amount of phosgene employed being at least about 1.1 mole per mole of dihydroxyaromatic compound; said mixture being agitated under conditions at least sufficient to prevent segregation of the aqueous and organic liquid phases.

5,011,968

PROCESS FOR THE PREPARATION OF 3-CYANO-3,5,5-TRIMETHYLCYCLOHEXANONE

Jon C. Thunberg, Milford, N.H., and Walter B. Begonis, Reading, Mass., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Feb. 6, 1990, Ser. No. 475,051
Int. Cl.[5] C07C *253/10*
U.S. Cl. 558—341 **17 Claims**

1. A process for the preparation of isophorone nitrile comprising:

a reacting isophorone with hydrogen cyanide in the presence of a quaternary ammonium hydroxide catalyst selected from the group consisting of tetramethylammonium hydroxide, tetraethylammonium hydroxide and tetrabutylammonium hydroxide in a mole ratio of isophorone: hydrogen cyanide: catalyst of about 2.00–3.00: 1.00: 0.005–0.01 and at a temperature of at least about 110° C.

b adjusting the temperature of the resulting mixture to about 110° C. –150° C. to decompose remaining catalyst;

c sparging with an inert gas at a temperature of about 100° C.–200° C. to remove the resulting quaternary ammonium catalyst decomposition product;

d acidifying the mixture with an acid selected from the group consisting of acetic acid, sulfuric acid and phosphoric acid, and sparging with an inert gas to eliminate residual cyanide.

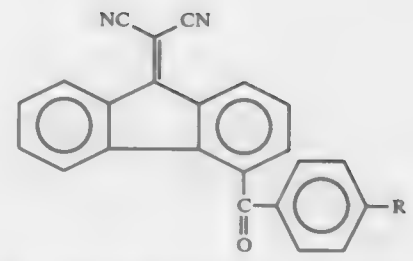
5,011,969

FLUORENE DERIVATIVE AND PROCESS FOR PREPARATION THEREOF

Yutaka Akasaki; Katsumi Nukada, and Katsuhiro Sato, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1989, Ser. No. 436,880
Claims priority, application Japan, Nov. 16, 1988, 63-287614
Int. Cl.[5] C07C *255/50*
U.S. Cl. 558—402 **2 Claims**

1. A fluorene derivative represented by formula (I):



(I)

wherein R represents an alkyl group having 1 to 8 carbon atoms, a phenyl group or a C_1–C_8 alkyl-subsitiuted phenyl group.

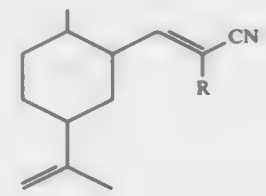
5,011,970

NITRILES USEFUL IN PERFUME

Willem Lenselink, Voorthuizen, Netherlands, assignor to PFW(Nederland)B.V., Amersfoort, Netherlands

Continuation of Ser. No. 569,649, Jan. 10, 1984, abandoned, which is a continuation of Ser. No. 351,088, Feb. 22, 1982, which is a division of Ser. No. 123,581, Feb. 22, 1980, Pat. No. 4,336,204, which is a division of Ser. No. 20,308, Mar. 14, 1929, Pat. No. 4,235,805. This application Nov. 28, 1986, Ser. No. 936,930
Int. Cl.[5] C07C *255/31*
U.S. Cl. 558—430 **6 Claims**

1. A compound having the structural formula:



wherein R is hydrogen or an alkyl radical of 1 to 6 carbon atoms.

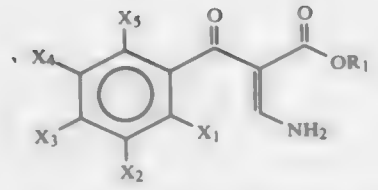
5,011,971

PROCESS FOR THE PREPARATION OF SUBSTITUTED 3-AMINO-2 (BENZOYL)-ACRYLIC ACID ESTERS, AND A PROCESS FOR THE PREPARATION OF INTERMEDIATES FOR ANTIBACTERIAL ACTIVE COMPOUNDS FROM THESE COMPOUNDS

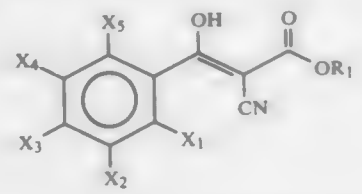
Karl Baumann, Wien, and Klaus Fitzinger, Freistadt, both of Austria, assignors to Chemie Linz Gesellschaft m.b.H., Linz, Austria

Filed Jun. 8, 1989, Ser. No. 363,198
Claims priority, application Austria, Jun. 9, 1988, 1495/88
Int. Cl.[5] C07C *227/04*
U.S. Cl. 560—38 **8 Claims**

1. A process for the preparation of a substituted 3-amino-2-(benzoyl)-acrylic acid ester of the formula I



in which R_1 denotes an alkyl radical having 1 to 4 C atoms, X_1 denotes halogen, and X_2, X_3, X_4 and X_5 denote hydrogen or halogen, comprising selectively reducing, with hydrogen in the presence of a hydrogenation catalyst in a solvent or diluent, a corresponding substituted 2-cyano-3-hydroxy-3-hydroxy-3(phenyl)-acrylic acid ester of the formula II



in which R_1, X_1, X_2, X_3, X_4 and X_5 are as defined above.

5,011,972

BISESTERS OF UNSATURATED CARBOXYLIC ACIDS, THEIR PRODUCTION AND THEIR USE IN CURABLE MIXTURES

Helmut-Martin Meier, Ratingen-Eggerscheidt; Harald Pielartzik, Krefeld; Leo Morbitzer, Cologne; Hanns-Peter Müller, Bergisch-Gladbach, and Dietrich Braun, Darmstadt-Arheilgen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

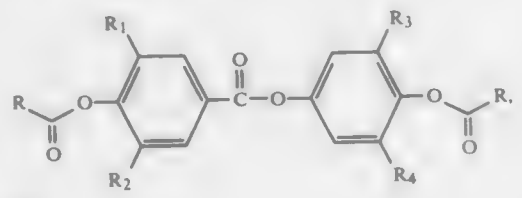
Filed Aug. 28, 1989, Ser. No. 398,991

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1988, 3830453

Int. Cl.[5] C07C *69/76*

U.S. Cl. 560—66 **4 Claims**

1. Bisesters of unsaturated carboxylic acids corresponding to the following formula



in which

R_1, R_2, R_3 and R_4 independently of one another represent hydrogen, halogen or C_{1-6} alkyl and

R represents residues of unsaturated aliphatic carboxylic acids.

5,011,973

NOVEL PROCESS FOR PRODUCING BISCHOLINE-DISULFONATE DERIVATIVES

Yasuyuki Suzuki; Noboru Takagawa; Mikio Kawabata; Mariko Hayashi; Akiko Takagi; Takako Wakamiya, and Isamu Saikawa, all of Toyama, Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

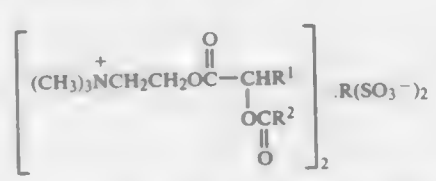
Continuation of Ser. No. 111,108, Oct. 20, 1987, abandoned, which is a continuation of Ser. No. 842,069, Feb. 20, 1986, abandoned, which is a continuation of Ser. No. 485,617, Apr. 18, 1983, abandoned. This application May 15, 1989, Ser. No. 352,610

Claims priority, application Japan, Apr. 19, 1982, 57-64075

Int. Cl.[5] C07C *69/66*

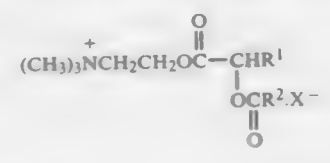
U.S. Cl. 560—185 **9 Claims**

1. A process for producing bischoline-disulfonate derivatives represented by Formula (I):



(I)

wherein R^1 and R^2 each represent a lower alkyl group and R is a naphthalene group, which comprises reacting a trimethylammonium salt derivative represented by Formula (II):



(II)

wherein X is a removable group taken from the class consisting of halogens, sulfonic acid residues, alkylsulfuric acid residues, and alkylphosphate residues; with a disulfonic acid represented by Formula (III):

$$R(SO_3H)_2 \quad \text{(III)}$$

in the presence of a lower aliphatic alcohol.

5,011,974

PROCESS FOR THE PREPARATION OF DERIVATIVE OF 2-DIETHYLAMINO-1-METHYLETHYL-1-HYDROXY-(BICYCLOHEXYL)-2-CARBOXYLATE

Franco Sbarbaro, S. Olcese, Italy, assignor to Laboratori Guidotti, Pisa, Italy

Continuation of Ser. No. 27,085, Mar. 16, 1987, abandoned, which is a continuation of Ser. No. 479,646, Mar. 28, 1983, abandoned. This application Mar. 1, 1989, Ser. No. 318,520

Claims priority, application Italy, Apr. 1, 1983, 20538 A/83

Int. Cl.[5] C07C *69/74*

U.S. Cl. 560—118 **4 Claims**

1. A process for the preparation of the citrate, maleate, or fumarate of 2-diethylamino-1-methylethyl cis-1-hydroxy-(bicyclohexyl)-2-carboxylate consisting essentially of the following steps:

(a) reacting cis-1-hydroxyl-(bicyclohexyl)-2-carboxylic acid with 1-diethylamino-2-chloropropane in the presence of a hydrogen chloride acceptor; and then

(b) subjecting the reaction product obtained from step (a) to a thermal treatment to cause isomerization; and then

(c) reacting the material obtained from step (b) with phosphoric acid; and then

(d) separating a solid crystalline product from the reaction mixture obtained from step (c);

(e) treating the solid crystalline product obtained from step (d) with a base;

(g) reacting the product from step (e) with an organic acid selected from the group consisting of citric acid, maleic acid and fumaric acid to form a crystalline precipitate of the corresponding salt.

5,011,975

(TRANS 1-PROPENYL)DISULFIDE DERIVATIVE AND PROCESS FOR PREPARING THE SAME

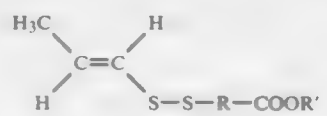
Tokiyuki Hiramitsu, Kitaibaraki, and Ken-ichi Sakamoto, Toyama, both of Japan, assignors to Nippon Miktron Limited, Tokyo, Japan

Filed Jul. 17, 1989, Ser. No. 380,468

Int. Cl.[5] C07C *321/00*; C07F *7/08, 9/02*

U.S. Cl. 560—147 **8 Claims**

1. A process for preparing a (trans 1-propenyl)disulfide derivative represented by the following general formula:

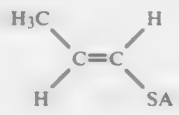


(I)

, wherein R is a lower alkylene group and R′ is a hydrogen atom or a carboxyl protective group, which comprises allowing a carboxylic acid thiol derivative represented by the following general formula:

$$AS—R—COOR' \quad \text{[II]}$$

, wherein R and R′ have the same meanings as defined above and A is a thiol protective group releasable by a halogenating agent, to react with a trans 1-propenethiol derivative represented by the following general formula:



(III)

, wherein A has the same meanings as defined above, in the presence of a halogenating agent.

5,011,976

INTERMEDIATE FOR THE PREPARATION OF DEFEROXAMINE

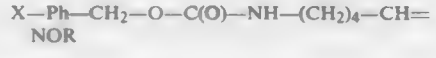
Peter G. M. Wuts, Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jul. 6, 1990, Ser. No. 548,717

Int. Cl.[5] C07C *271/00*

U.S. Cl. 560—159 **5 Claims**

1. A compound of Formula I



wherein

X is a C_1-C_4 alkyl, —O(C_1-C_4 alkyl), a halogen or hydrogen;

R is X—Ph—CH_2— or hydrogen.

5,011,977

TRANSESTERIFICATION OF ALKOXYESTERS

Glenn C. Jones, and William D. Nottingham, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 179,167, Apr. 8, 1988, Pat. No. 4,898,969. This application Nov. 22, 1989, Ser. No. 440,629

Int. Cl.[5] C07C *69/66*

U.S. Cl. 560—187 **4 Claims**

1. Composition of matter selected from the group consisting of:

2,2,4-trimethyl-1,3-pentanediol mono 3-ethoxypropionate ester,

2,2,4-trimethyl-1,3-pentanediol di-3-ethoxypropionate ester, and

2,2,4-trimethyl-1,3-pentanediol mixed isobutyrate and 3-ethoxypropionate esters.

5,011,978

COPOLYMERS AS THICKENERS AND MODIFIERS FOR LATEX SYSTEMS

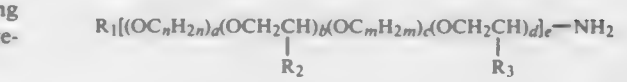
Milagros C. Barron, Red Bank, Tenn.; Ronald L. Swope, Fort Oglethorpe, Ga.; John M. Wilkerson, III, Hixson, and Charles G. Ruffner, Chattanooga, both of Tenn., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Division of Ser. No. 318,140, Mar. 2, 1989, Pat. No. 4,916,183, which is a continuation-in-part of Ser. No. 46,458, May 6, 1987, abandoned. This application Dec. 29, 1989, Ser. No. 458,872

Int. Cl.[5] C07C *69/52*

U.S. Cl. 560—221 **4 Claims**

1. A co-polymerizable monomer comprising the reaction product of a nonionic surfactant of the formula



where R_1 is C_8 to C_{20} alkyl, a C_8 to C_{20} alkylphenyl or a di(C_8 to C_{20} alkyl)phenyl, n and m are independently selected from 2 to 4, a and c are independently selected from the range of 0 to 100, provided that a+c is within the range of 2 to 100; R_2 and R_3 are independently selected from CH_3 or CH_2CH_3, b and d are independently selected from the range of 0 to 50, provided that b+d is within the range of 0 to 50; and e is from 1 to 50; wherein the sum of a+c is always greater than the sum of b+d; with isocyanatoethylmethacrylate or alpha-, alpha-, dimethyl-m-isopropenyl benzyl isocyanate.

5,011,979

PROCESS FOR PREPARING METHACRYLATES OF FLUORINATED ALCOHOLS

Guglielmo Gregorio; Lamberto Roberti, both of Milan, and Ezio Strepparola, Bergamo, all of Italy, assignors to Ausimont S.R.L., Milan, Italy

Filed Apr. 23, 1990, Ser. No. 513,219

Claims priority, application Italy, Apr. 24, 1989, 20269 A/89

Int. Cl.[5] C07C *69/52*

U.S. Cl. 560—223 **11 Claims**

1. A process for preparing methacrylate of fluorinated alcohols, comprising the fluorinated alcohol is reacted with a methacrylic acid excess in the presence of a phosphoric anhydride excess, at a temperature ranging from 30° to 150° C.

5,011,980

PROCESS FOR PREPARATION OF ALLYL ACETATE

Kenichi Sano; Kenichiro Maki, and Hideyuki Kamei, all of Oita, Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Sep. 27, 1989, Ser. No. 413,498
Claims priority, application Japan, Sep. 29, 1988, 63-242471
Int. Cl.[5] C07C *67/05*
U.S. Cl. 560—245 9 Claims

1. A process for the gas phase synthesis of allyl acetate, which comprises reacting propylene, acetic acid and oxygen in the gas phase in the presence of a catalyst prepared by impregnating a catalyst carrier with an aqueous solution of a palladium salt and a salt of at least one metal selected from the group consisting of copper, lead, ruthenium and rhenium in an amount corresponding to 90 to 95% of the water absorption of the carrier, treating the impregnated carrier with an aqueous solution of an alkali metal salt in an amount corresponding to 120 to 500% of the water absorption of the carrier to precipitate water-insoluble compounds of palladium and at least one metal selected from the group consisting of copper, lead, ruthenium and rhenium on the catalyst carrier, treating the metal compounds-deposited carrier with a reducing agent to convert the compounds to the corresponding metals, and further supporting an alkali metal acetate on the carrier.

5,011,981

PEROXIDE MONOMER AND A POLYMER THEREFROM

Noriyuki Tsuboniwa, Higashiosaka; Satoshi Urano, and Ryuzo Mizuguchi, both of Yawata, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Jun. 3, 1988, Ser. No. 201,964
Claims priority, application Japan, Jun. 4, 1987, 62-142092; Jun. 4, 1987, 62-142093
Int. Cl.[5] C07C *179/20*
U.S. Cl. 560—302 4 Claims

1. A peroxide monomer having the formula:

$$CH_2{=}CR{-}A{-}OO{-}B \quad (I)$$

wherein R represents a hydrogen atom or an alkyl having 1 to 5 carbon atoms, A represents —NH—CO—, —CO—NH—CO—, or —CO—O— CH_2CH_2—NH—CO—, and B represents a moiety which has excluded the group (—OOH) from a hydroperoxide.

5,011,982

PROCESS FOR THE PREPARATION OF 6-METHYL-3,4-DIHYDRO-1,2,3-OXATHIAZIN-4-ONE 2,2-DIOXIDE AND ITS NON-TOXIC SALTS AND THE ACETOACETAMIDE-N-SULFONIC ACID (SALTS) WHICH OCCUR AS INTERMEDIATE(S) IN THIS PROCESS

Karl Clauss, Kelkheim; Adolf Linkies, Frankfurt am Main, and Dieter Reuschling, Butzbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 300,763, Jan. 23, 1989, abandoned, which is a continuation of Ser. No. 870,001, Jun. 3, 1986, abandoned, which is a division of Ser. No. 714,177, Mar. 20, 1985, Pat. No. 4,607,100. This application Apr. 16, 1990, Ser. No. 512,021
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1984, 3410439
Int. Cl.[5] C07C *143/155*
U.S. Cl. 562—38 20 Claims

1. A process for the preparation of acetoacetamide-N-sulfonic acid or a salt thereof, which comprises reacting in an inert organic solvent a salt of sulfamic acid, selected from the group consisting of ammonium, primary, secondary, tertiary and quaternary ammonium salts of sulfamic acid, which is partially soluble therein, with at least the equimolar amount of diketene as an acetoacetylating agent resulting in the formation of a salt of the acetoacetamide-N-sulfonic acid or, after subsequently liberating the free acid by addition of a strong acid resulting in acetoacetamide-N-sulfonic acid.

5,011,983

PREPARATION AND REACTIONS OF OMEGA-HALOSULFONYL PERFLUOROALKANESULFONATES

Fred E. Behr, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 23, 1987, Ser. No. 6,110
Int. Cl.[5] C07C *303/00*
U.S. Cl. 562—113 11 Claims

1. Fluorinated, omega-chlorosulfonyl perfluoroalkanesulfonate and omega-fluorosulfonyl perfluoroalkanesulfonate compounds having the formula:

$$XSO_2R_fSO_3M$$

wherein R_f is a divalent perfluoroalkylene radical containing two to five backbone carbon atoms or a divalent perfluorocycloalkylene radical containing four to seven ring atoms, R_f is optionally substituted by one or more straight chain, branched, or cyclic perfluoroalkyl groups of one to twelve carbon atoms, X is Cl or F, and M is a salt-forming cation.

5,011,984

MANUFACTURING METHOD FOR 2-HYDROXYNAPHTHALENE-6-CARBOXYLIC ACID

Ryuzo Ueno, Nishinomiya; Yoshiyasu Masada, Hirakata, and Toru Mori, Takarazuka, all of Japan, assignors to Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo, Osaka, Japan

Continuation of Ser. No. 327,515, Mar. 22, 1989, abandoned, which is a continuation of Ser. No. 76,298, Jul. 22, 1987, abandoned. This application Apr. 12, 1990, Ser. No. 508,530
Claims priority, application Japan, Jul. 25, 1986, 61-176254
Int. Cl.[5] C07C *51/15*
U.S. Cl. 562—425 8 Claims

1. A process for the preparation of 2-hydroxynaphthalene-6-carboxylic acid by reacting substantially anhydrous potassium beta-naphtholate with carbon dioxide in a reaction vessel and in the presence of a reaction medium that does not substantially dissolve the potassium beta-naphtholate to give 2-hydroxynaphthalene-6-carboxylic acid, the improvement which comprises dispersing said carbon dioxide during the reaction into the reaction mixture through a blow nozzle and removing beta-naphthol and water in the vapor phase along with the outgoing carbon dioxide gas.

5,011,985

LEVO-CIPROFIBRATE

Eugene H. Cordes, Town of Radnor, Pa.; George J. Ellames, Alnwick, England; John M. Herbert, Alnwick, England, and David I. Smith, Alnwick, England, assignors to Sterling Drug Inc., New York, N.Y.

Filed May 11, 1990, Ser. No. 522,607
Int. Cl.[5] C07C *59/54*
U.S. Cl. 562—469 5 Claims

1. (1)-(−)-2-[4-(2,2-Dichlorocyclopropyl)phenoxy]-2-methylpropionic acid or a pharmaceutically acceptable salt thereof.

5,011,986

DEXTRO-CIPROFIBRATE

Eugene H. Cordes, Radnor, Pa.; George J. Ellames, Alnwick, England; John M. Herbert, Alnwick, England, and David I. Smith, Alnwick, England, assignors to Sterling Drug Inc., New York, N.Y.

Filed May 11, 1990, Ser. No. 522,620
Int. Cl.[5] C07C *59/54*
U.S. Cl. 562—469 5 Claims

1. (d)-(+)-2-[4-(2,2-Dichlorocyclopropyl)phenoxy)-2-methylpropionic acid or a pharmaceutically acceptable salt thereof.

5,011,987

PROCESS FOR MANUFACTURING HIGH-PURITY O-TOLUIC ACID

Nobuyuki Tokura; Tadayoshi Takefumi; Shunichi Matsumoto, and Yoshihiro Shiokawa, all of Kurashiki, Japan, assignors to Mitsubishi Gas Chemical Company, Tokyo, Japan

Filed May 15, 1990, Ser. No. 523,868
Claims priority, application Japan, May 17, 1989, 64-121590
Int. Cl.[5] C07C *51/42*
U.S. Cl. 562—494 15 Claims

1. A process for the manufacture of high purity o-toluic acid which comprises:

subjecting an oxidation product of o-xylene to distillation to remove therefrom low boiling point components such as unreacted o-xylene and benzoic acid, and high boiling point components, of which the major component is o-methybenzyl o-toluate, thus obtaining crude o-toluic acid,

treating said crude o-toluic acid with ammonia of an amount 1 to 1.2 mole equivalent of o-phthalic acid contained in said crude o-toluic acid, and

subjecting the product thus treated to distillation.

5,011,988

RECOVERY OF IDA AND GLAUBER'S SALT FROM WASTE CRYSTAL LIQUORS

Jon C. Thunberg, Milford, N.H., assignor to W. R. Grace & Co.-Conn., Conn.

Filed Oct. 11, 1989, Ser. No. 419,920
Int. Cl.[5] C07C *227/42*
U.S. Cl. 562—554 54 Claims

1. A process for separating iminodiacetic acid and sodium sulfate decahydrate from a starting aqueous solution comprising iminodiacetic acid and sodium sulfate, said process comprising the steps of:

a. forming a slurry which is a solid mixture of iminodiacetic acid and sodium sulfate decahydrate, and a mother liquor; and

b. separating the solid mixture from the mother liquor.

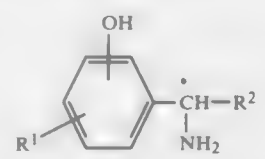
5,011,989

OPTICALLY ACTIVE HYDROXYBENZYLAMINE

Yukio Yoneyoshi, Otsu; Gohfu Suzukamo, Ibaraki, both of Japan, and Yoji Sakito, Montreal, Canada, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Oct. 3, 1988, Ser. No. 251,789
Claims priority, application Japan, Oct. 9, 1987, 62-256017
Int. Cl.[5] C07F *5/00*
U.S. Cl. 564—8 9 Claims

1. An optically active amine-boron compound obtained from an optically active amine represented by the formula (I)



(I)

wherein R^1 denotes a hydrogen atom, lower alkyl group or lower alkoxy group; R^2 denotes a lower alkyl group; * signifies an asymmetric carbon atom; and the hydroxyl group is located on the phenyl at the ortho- or metaposition relative to the asymmetric carbon atom, and a boron hydride compound.

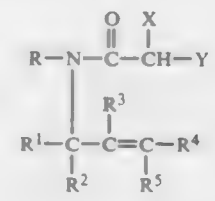
5,011,990

PROCESS FOR THE PREPARATION OF N-ALLYLAMIDES FROM O-ALLYLIMIDATES

Raymond A. Felix, 5949 Ralston Ave., Richmond, Calif. 94805

Filed Dec. 27, 1988, Ser. No. 291,082
Int. Cl.[5] C07C *233/13*
U.S. Cl. 564—161 14 Claims

1. A process for the manufacture of a compound having the formula



I

wherein,

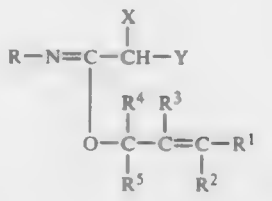
R is an unsubstituted or substituted aromatic group or an unsubstituted or substituted aliphatic group;

each of R^1, R^2, R^3, R^4 and R^5 is independently selected from hydrogen. $C_{1\text{-}4}$ alkyl or phenyl;

X is halogen; and

Y is halogen or an unsubstituted or substituted aromatic group;

which process comprises the rearrangement of a compound having the formula



II

wherein R, R^1, R^2, R^3, R^4, R^5, X and Y are defined above, by treatment of said compound II with a catalytic amount of a palladium(O) transition metal catalyst.

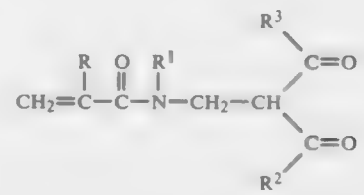
5,011,991

2-((METH)ACRYLAMIDOMETHYL)-1,3-DIKETONES

Bernhard Nick, Ludwigshafen; Kaspar Bott, Mannheim, and Guenther Schulz, Bad Duerkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 2, 1989, Ser. No. 360,989
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1988, 3819455
Int. Cl.[5] C07C *235/00*
U.S. Cl. 564—204 3 Claims

1. A 2-[(meth)acrylamidomethyl]-1,3-diketone of the general formula (I)



(I)

where R, R^1, R^2 and R^3 are each independently of the others defined as follows:

R as hydrogen or methyl,

R^1 as hydrogen, methyl or ethyl,

R^2 and R^3 each as alkyl of from 1 to 6 carbon atoms or unsubstituted aryl of from 6 to 20 carbon atoms or a phenyl radical substituted by one halogen radical or one phenyl radical or one or two alkyl radicals, R^2 and R^3 being identical to or different from each other.

5,011,992

PHARMACOLOGICALLY ACTIVE SUBSTITUTED BENZAMIDES

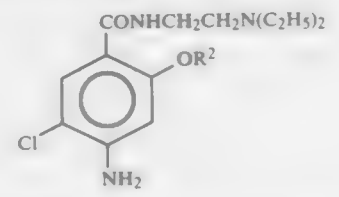
Ivo Monkovic, Fayetteville, and David Willner, Dewitt, both of N.Y., assignors to Bristol-Myers Squibb Comany, New York, N.Y.

Continuation of Ser. No. 876,020, Jun. 19, 1986, abandoned, which is a continuation-in-part of Ser. No. 729,513, May 6, 1985, Pat. No. 4,808,624, which is a continuation-in-part of Ser. No. 625,742, Jun. 28, 1984, abandoned. This application Aug. 22, 1989, Ser. No. 397,650

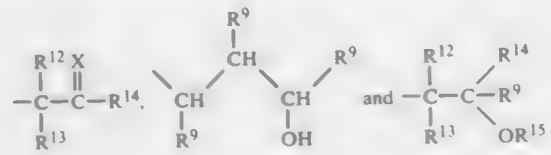
Int. Cl.[5] **C07C** *233/00, 241/00, 321/00*

U.S. Cl. 564—167 **17 Claims**

1. A compound having the formula



wherein R^2 is selected from the group consisting of



in which

R^9, R^{12} and R^{13} are independently selected from hydrogen and (lower) alkyl;

R^{14} is selected from hydrogen, (lower) alkyl and hydrazino; or R^{12} and R^{14}, taken together with the carbon atoms to which they are attached, may form a 5 to 7-membered cycloalkane ring;

R^{15} is hydrogen; and

X is oxygen;

or a pharmaceutically acceptable salt, hydrate, solvate or quaternary ammonium salt thereof.

5,011,993

METHOD FOR THE PREPARATION OF α[[(1,1-DIMETHYLETHYL)AMINO]METHYL]-4-HYDROXY-1,3-BENZENEDIMETHANOL

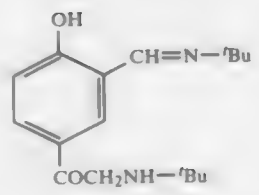
Esther Babad, West Orange; Nicholas Carruthers, Springfield, and Martin Steinman, Livingston, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 431,264, Nov. 3, 1989, Pat. No. 4,952,729, which is a division of Ser. No. 903,813, Sep. 5, 1986, abandoned. This application Apr. 20, 1990, Ser. No. 512,232

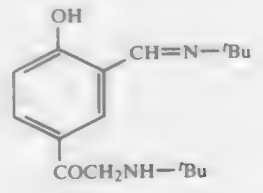
Int. Cl.[5] **C07C** *249/02, 251/24*

U.S. Cl. 564—273 **6 Claims**

1. A compound of the formula

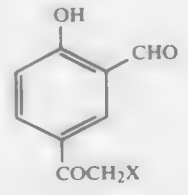


2. A method for the preparation of a compound of the formula



VI

which comprises reacting a 5-(haloacetyl)-2-hydroxy-benzaldehyde compound of the formula



III

wherein X is bromo or chloro with 1,1-dimethylethanamine in an organic solvent in an inert atmosphere.

5,011,994

COLORLESS KETIMINES THEIR PREPARATION AND THEIR USE AS CROSS-LINKING AGENT

Tamme Bartels, and Wincenty L. S. Pilaszek, both of Tholen, Netherlands, assignors to Alzo N.V., Arnhem, Netherlands

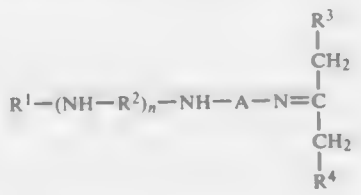
Filed Apr. 2, 1987, Ser. No. 35,117

Claims priority, application Netherlands, Apr. 3, 1986, 8600847

Int. Cl.[5] **C07C** *251/08*

U.S. Cl. 564—278 **10 Claims**

1. A compound comprising a ketimine or an adduct of a ketimine and a compound reactive with secondary amino groups, the ketimine or the ketimine precursor of the adduct having the formula

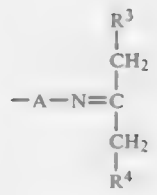


(I)

wherein

A = a saturated, branched or non-branched, divalent aliphatic hydrocarbon group having at most 12 carbon atoms and containing at least three carbon atoms in a linear chain between —NH— and —N=,

R^1 = alkyl or cycloalkyl having at most 20 carbon atoms, or —A—NH_2, or



R^2 = alkylene or cycloalkylene containing at most 12 carbon atoms,

R^3 = alkyl containing 1–4 carbon atoms,

R^4 = alkyl containing 1–4 carbon atoms,

n = 0, 1, 2, or 3,

with the proviso that R^3 and R^4 together do not contain more than 5 carbon atoms.

5,011,995

PROCESS FOR THE PREPARATION OF OPTICALLY ACTIVE SECONDARY AMINES

Henoit Pugin, Münchenstein; Gerardo Rimos, Arlesheim, and Felix Spindler, Starrkirch-Wil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

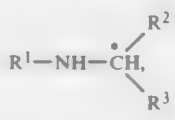
Filed Jul. 19, 1988, Ser. No. 221,403

Claims priority, application Switzerland, Jul. 31, 1987, 2870/87

Int. Cl.[5] **C07C** *209/88*

U.S. Cl. 564—302 **11 Claims**

1. A process for the preparation of optically active secondary N-aliphatic amines of the formula I



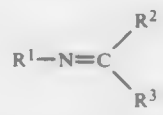
(I)

in which R^1 is linear or branched C_1–C_{12}alkyl, cycloalkyl having 3 to 8 ring C atoms, heterocycloalkyl which is linked via a C atom and has 3 to 8 ring atoms and 1 or 2 heteroatoms selected from the group consisting of O, S and NR^4, a C_7–C_{16}aralkyl or C_1–C_{12}alkyl which is substituted by the cycloalkyl or heterocycloalkyl or heteroaryl mentioned each of which can be unsubstituted or substituted by C_1–C_{12}alkyl, C_1–C_{12}alkoxy, C_1–C_{12}alkylthio, C_1–C_6halogenoalkyl, halogen, —OH, —CN, C_6–C_{12}aryl, C_6–C_{12}aryloxy, C_6–C_{12}arylthio, C_7–C_{16}aralkyl, C_7–C_{16}aralkoxy or C_7–C_{16}aralkylthio, it being possible for the aryl radicals in turn to be substituted by C_1–C_4—alkyl, C_1–C_4alkoxy, C_1–C_4alkylthio, halogen, —OH, —CN, —$CONR^4R^5$ or —$COOR^4$, secondary amino having 2 to 24 C atoms,



R^5 being H or independently being as defined for R^4 and R^4 being C_1–C_{12}alkyl, phenyl or benzyl, or R^4 and R^5 together being tetramethylene, pentamethylene or 3-oxapentylene; R^2 and R^3 are different from one another and are C_1–C_{12}alkyl which is unsubstituted or substituted by —OH, —CN, halogen, C_1–C_{12}alkoxy, benzyloxy, secondary amino having 2 to 24 C atoms,

or —$COOR^4$, or are cycloalkyl having 3–8 ring C atoms, C_6–C_{12}aryl which is unsubstituted or substituted as above for R^1 where the latter is aralkyl and aryl, or C_7–C_{16}aralkyl or —$CONR^4R^5$ or —$COOR^4$ in which R^4 and R^5 are as defined above; or R^1 is as defined above and R^2 and R^3 together are alkylene which has 2 to 5 C atoms and is, if appropriate, interrupted by 1 or 2 —O—, —S— or —NR^4— groups, and/or is unsubstituted or substituted by =O or as above for R^2 and R^3 when the latter are alkyl, and/or is condensed with benzene, furan, thiophene or pyrrole which is unsubstituted or substituted as mentioned above for the aryl radicals, or R^2 is as defined above and R^1 and R^3 together are alkylene which has 2 to 5 C atoms and is, if appropriate, interrupted by 1 or 2 —O—, —S— or —NR^4— groups, and/or is unsubstituted or substituted by =O or as above for R^2 and R^3 when the latter are alkyl, and/or is condensed with benzene, furan, thiophene or pyrrole which is unsubstituted or substituted as defined above, and * is predominant R-configuration or S-configuration, by the asymmetric catalysed hydrogenation of prochiral ketimines of the formula II



(II)

in which R^1, R^2 and R^3 are as defined above, in the presence of complex salts of a noble metal having chiral ligands, which comprises carrying out the hydrogenation at a temperature from −20° to 80° C. and under a hydrogen pressure from 10^5 Pa to 10^7 Pa and adding to the reaction mixture catalytic amounts of an iridium compound of the formula III or IIIa



(III)

or



(IIIa)

in which X is two olefin ligands or a diene ligand, Y is a chiral diphosphine the secondary phosphine groups of which are attached through 2–4 C atoms and which, together with the Ir atom, forms a 5-membered, 6-membered or 7-membered ring, or Y is a chiral diphosphinite the phosphinite groups of which are attached via 2 C atoms and which, together with the Ir atom, forms a 7-membered ring, Z is Cl, Br or I and A⊖ is the anion of an oxygen acid or complex acid.

5,011,996

PROCESS FOR THE PREPARATION OF AMINES

Wolfgang Kiel, Odenthal, and Heinz Ziemann, Leichlingen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

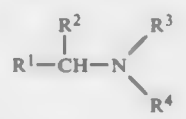
Filed Jul. 5, 1989, Ser. No. 375,762

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1988, 3824519; Oct. 13, 1988, 3834848

Int. Cl.[5] **C07C** *209/24, 209/26, 209/28*

U.S. Cl. 564—321 **18 Claims**

1. A process for the preparation of amines of the formula



in which

R^1, R^2 and R^3 independently of one another denote hydrogen, straight-chain or branched C_1–C_{12}-alkyl, C_3–C_8-cycloalkyl, C_6–C_{12}-aryl or C_7–C_{10}-aralkyl and

R^4 represents hydrogen, straight-chain or branched C_1–C_{20}-alkyl, C_6–C_{12}-aryl, C_3–C_8-cycloalkyl or C_7–C_{10}-aralkyl,

where at least one of the radicals R^1 to R^4 represents aryl or aralkyl which are monosubstituted to trisubstituted by halogen in the aromatic moiety,

by catalytic hydrogenation of reaction products of oxo compounds of the formula



and nitrogen compounds of the formula

$$R^3—NH—R^4$$

with the abovementioned meanings for R^1 to R^4, which is characterized in that a Ni-containing and/or Co-containing catalyst is employed and that the reaction is carried out in the presence of organic sulphur compounds of the formula

$$R^5—S(=O)_n—R^6$$

which

R^5 and R^6 independently of one another denote straight-chain or branched C_1–C_{12}-alkyl, hydroxy-C_2–C_{12}-alkyl, carboxy-C_1–C_{12}-alkyl or phenyl and furthermore

R^5 and R^6 together may represent —CH=CH—CH=CH—, —$(CH_2)_4$—, —$(CH_2)_5$—, —$(CH_2)_5$—, —$(CH_2)_2$—S—$(CH_2)_2$— or —$(CH_2)_2$—O—$(CH_2)_2$—

R^6 additionally may denote hydrogen or CO-C_1–C_{12}-alkyl and

n assumes the value 0 or 1.

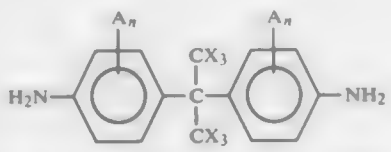
5,011,997

PROCESS FOR BIS(4-AMINOPHENYL)HEXAFLUOROPROPANE

James R. Hazen, Coventry, and William R. Lee, E. Providence, both of R.I., assignors to Hoechst Celanese Corp., Somerville, N.J.

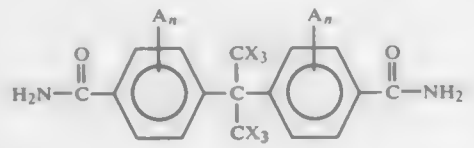
Filed Oct. 7, 1987, Ser. No. 105,857
Int. Cl.[5] **C07C** *211/50, 209/50*
U.S. Cl. 564—335 **7 Claims**

1. A process for the preparation of a substituted or unsubstituted aromatic diamine having the formula:



wherein: A is a substituent which is independently selected from lower alkyl of 1 to 3 carbons, chloro or fluoro; n is an integer independently selected from 0 to 2; X is a halogen selected from chloro and fluoro; comprising:

(1) a first step of dispersing in an alkaline reaction medium an aromatic diamide of the formula:



wherein A, n and X have the meanings set forth above;

(2) a second step of contacting said diamide with an alkali metal hypohalite in an amount effective to rearrange said diamide to said diamine; and

(3) subjecting said reaction mixture of said second step to reducing conditions whereby any reaction by-product formed in said second step is converted to said diamine.

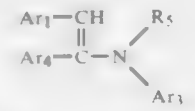
5,011,998

AROMATIC TERTIARY AMINES, ENAMINES, DEOXYBENZOINS AND BENZILS

Allan S. Hay, 5015 Glencairn Ave., Montreal, Quebec H3W 2B3, and Martino Paventi, 11786 28th Avenue, Montreal, Quebec H1E 9Z7, both of Canada

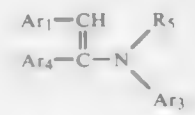
Filed Jan. 6, 1990, Ser. No. 475,992
Int. Cl.[5] **C07C** *211/45, 211/55*
U.S. Cl. 564—384 **2 Claims**

1. An enamine of formula (V):



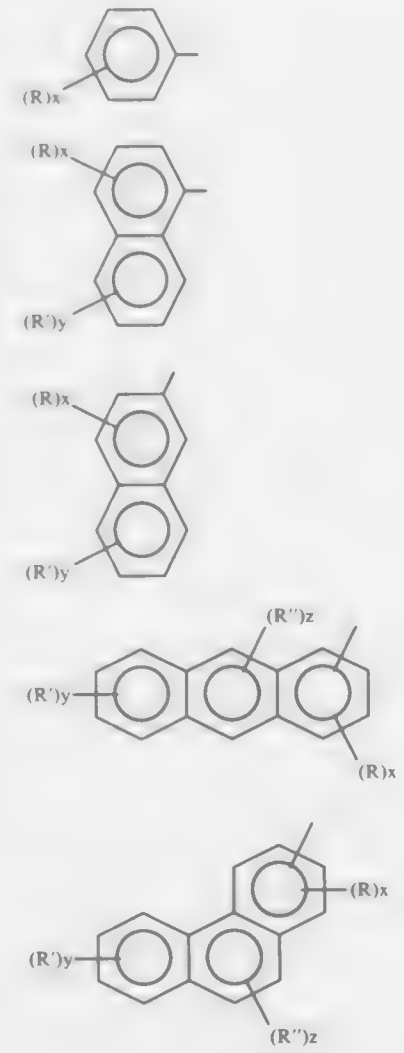
(V)

wherein Ar_1, Ar_3 and Ar_4 are each aromatic radicals independently senamine of formula (V):

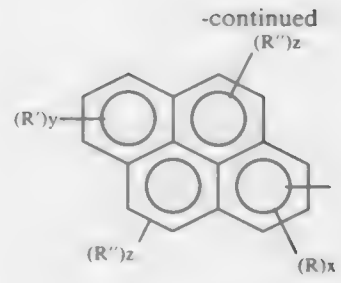


(V)

wherein Ar_1, Ar_3 and Ar_4 are each aromatic radicals independently selected from:



-continued



x and y are integers independently selected from 0, 1, 2 or 3 and z is an integer independently selected from 0, 1 or 2 and R, R′ and R″ are each independently selected from halogen atoms selected from F, Cl and Br; alkyl of 1 to 6 carbon atoms, alkenyl of 2 to 6 carbon atoms; aryl of 6 to 12 carbon atoms; aralkyl of 7 to 18 carbon atoms, aralkenyl of 8 to 18 carbon atoms, alkoxy of 1 to 6 carbon atoms, thioalkoxy of 1 to 6 carbon atoms; aryloxy of 6 to 12 carbon atoms and thioaryloxy of 6 to 12 carbon atoms, and R_5 is alkyl of 1 to 8 carbon atoms or a radical Ar_6, wherein Ar_6 is an aromatic radical as defined for Ar_1, Ar_3 and Ar_4 above.

5,011,999

PROCESS OF PREPARING NON-CYCLIC POLYALKYLENEPOLYAMINES EMPLOYING GROUP VB METAL CATALYSTS

Robert G. Bowman; George E. Hartwell; David C. Molzahn, all of Midland, Mich.; Enrique G. Ramirez, and John E. Lastovica, Jr., both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 23, 1989, Ser. No. 314,528
Int. Cl.[5] **C07C** *209/16, 209/64;* **C07D** *295/023, 295/13*
U.S. Cl. 564—479 **26 Claims**

1. A process for preparing non-cyclic polyalkylenepolyamines comprising contacting a difunctional aliphatic alcohol and a reactant amine in the presence of a catalyst under reaction conditions such that a mixture of polyalkylenepolyamines enriched in non-cyclic products is formed, the catalyst containing (a) a niobium phosphate or tantalum phosphate wherein the mole ratio f phosphorus to niobium or tantalum is no greater than about 1.3 or mixtures thereof, or (b) mixtures of said niobium and/or tantalum phosphates with a Group VB metal oxide.

5,012,000

TOTAL SYNTHESIS OF CHIRAL 2-AMINO-1,3-DIOLS

Carl R. Illig, and Alexander L. Weis, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 30, 1989, Ser. No. 428,799
Int. Cl.[5] **C07C** *209/42*
U.S. Cl. 564—489 **3 Claims**

1. A process for the preparation of chiral 2-amino-1,3-diols comprising the steps of:

A. Performing an aldol condensation with a 3-haloacetylated chiral oxazolidinone with an aldehyde using conditions which preserve the chirality of the resulting aldol condensation product;

B. Treating the aldol condensation product with an alkali metal azide;

C. Treating the product of step B with a borohydride reagent to produce a chiral 2-azido-1,3-diol product; and

D. Reducing the azide of step C to an amine to produce the chiral 2-amino-1,3 diol product.

5,012,001

TRIARYL SULFONIUM PHOTOINITIATORS

James V. Crivello, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 771,744, Sep. 3, 1985, abandoned. This application Apr. 30, 1990, Ser. No. 516,842
Int. Cl.[5] **C07F** *9/02, 5/02;* **C07C** *317/10, 321/30*
U.S. Cl. 568—13 **7 Claims**

1. Arylsulfonium salts having the formula

$$MF_6^- + R^6Q(—R^7Q—)_cR^7—\underset{\displaystyle R^6}{\overset{\displaystyle |}{S}}—R^7(—QR^7—)_cQR^6$$

where R^6 is phenyl or naphthyl, R^7 is an aromatic radical selected from phenylene or naphthylene or an aromatic radical selected from phenylene or naphthylene substituted with one or more radicals selected from the class consisting of —CH_3, —OCH_3, —CO_2H, —Br, —Cl and No_2, Q is selected from =S→O, —S— and mixtures thereof, M is a transition metal or a metalloid, and c is an integer equal to 1 to 3 inclusive.

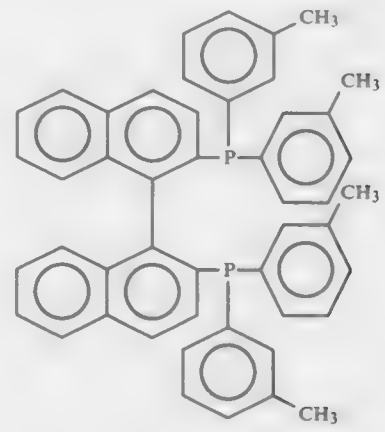
5,012,002

2,2′-BIS(DI-(M-TOLYL)PHOSPHINO)-1,1′-BINAPHTHYL

Hidenori Kumobayashi, Kanagawa, and Takanao Taketomi, Chiba, both of Japan, assignors to Takasago International Corporation, Tokyo, Japan

Filed Jun. 15, 1990, Ser. No. 538,805
Claims priority, application Japan, Jun. 16, 1989, 1-154277
Int. Cl.[5] **C07F** *9/02*
U.S. Cl. 568—17 **1 Claim**

1. 2,2′-Bis[di-(m-tolyl)phosphino]-1,1′-binaphthyl represented by formula (I):



(I)

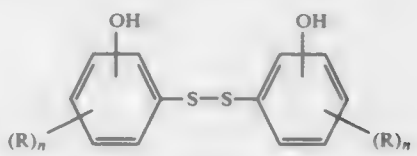
5,012,003

PROCESS FOR PREPARING DITHIOBISPHENOLS

David H. Steinberg, Bronx, and John J. Luzzi, Carmel, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

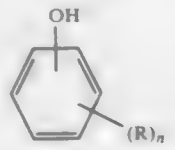
Filed Oct. 28, 1988, Ser. No. 264,286
Int. Cl.[5] **C07C** *148/02*
U.S. Cl. 568—123 **13 Claims**

1. A process for preparing compounds of the formula



wherein each R is independently selected from the group consisting of C_1–C_{18} alkyl, C_5–C_{12} cycloalkyl, C7–C9 aralkyl

or C_7–C_9 aralkyl substituted by C_1–C_{12} alkyl, wherein the substituents on the respective phenol groups are the same and n is 1–3; which comprises reacting a phenol of the formula



wherein R and n are as previously defined, with an alkali metal hydride, an alkaline earth metal hydride or mixtures thereof; and reacting the product thereof with sulfur monochloride.

5,012,004

ETHER COMPOUNDS AND THEIR PRODUCTION, AND INSECTICIDAL AND/OR ACARICIDAL COMPOSITIONS CONTAINING THEM

Junya Takahashi, Hyogo; Sumio Nishida, Takarazuka; Izumi Fujimoto, Minoo; Yoshinori Shono, Toyonaka, and Hiroaki Fujimoto, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

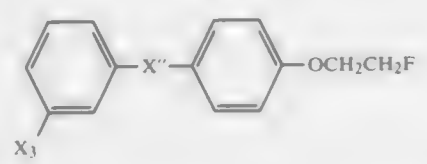
Filed Nov. 2, 1988, Ser. No. 265,892

Claims priority, application Japan, Nov. 4, 1987, 62-279585; Dec. 7, 1987, 62-310343; Jun. 1, 1988, 62-136021

Int. Cl.[5] C07C *319/00*

U.S. Cl. 568—53 **5 Claims**

1. An ether compound of the formula:



wherein X_3 is a hydrogen atom or a fluorine atom and X'' is an oxygen atom, a sulfur atom or a methylene group.

5,012,005

CONVERSION OF 1,3-DIOXANES TO 4-OXAALDEHYDES

Wolfgang Hoelderich, 18c Mannheimer Strasse, and Franz Merger, 25 Max-Slevogt-Strasse, both of 6710 Frankenthal, Fed. Rep. of Germany

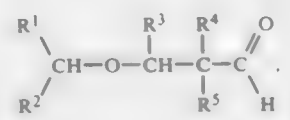
Continuation of Ser. No. 188,229, Apr. 29, 1988, abandoned. This application Jul. 27, 1989, Ser. No. 385,925

Claims priority, application Fed. Rep. of Germany, May 12, 1987, 3715755

Int. Cl.[5] C07C *45/00*; C07D *335/00, 307/02*

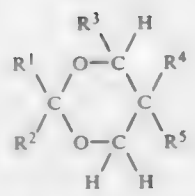
U.S. Cl. 568—427 **11 Claims**

1. A process for preparing a 4-oxaaldehyde of the formula (I)



(I)

which comprises isomerizing a 1,3-dioxane of the formula (II)



(II)

in the presence of an acidic metal oxide catalyst that has been obtained by treatment with an inorganic acid, where R^1, R^2, R^4, and R^5 in the formulae (I) and (II) are identical or different and are each hydrogen, a straight-chain or branched alkyl, alkenyl or alkynyl radical of not more than 18 carbon atoms, a cycloalkyl or cycloalkenyl radical of 5 to 8 carbon atoms, an aryl, alkylaryl, aralkyl, aralkenyl or alkenylaryl radical of 5 to 16 carbon atoms or a heterocyclic radical and moreover R^1 and R^2 and/or R^4 and R^5 together with the carbon atom to which they are bonded may form a cycloalkane, cycloalkene or a heterocyclic structure, and the stated radicals may furthermore carry substituents which are inert under the reaction conditions, and R^3 in the formulae I and II is hydrogen or straight-chain or branched alkyl.

5,012,006

PREPARATION OF 2,2-DIALKYLPROPIONALDEHYDES

Werner Bertleff, Viernheim, and Dieter Koeffer, Weinheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

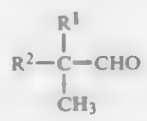
Filed Jan. 18, 1990, Ser. No. 466,931

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1989, 3902892

Int. Cl.[5] C07C *45/49, 45/50*

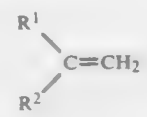
U.S. Cl. 568—451 **4 Claims**

1. In a process for the preparation of 2,2-dialkylpropionaldehydes of formula I



I

wherein R^1 and R^2 are each C_1–C_4-alkyl, by hydroformylation of 1,1-dialkylethylenes of formula II



II

wherein R^1 and R^2 are defined as above, with cobalt carbonyl complex catalysts, formed from cobalt or cobalt compounds and water gas under the reaction conditions

the improvement which comprises

(a) carrying out said reaction in the presence of a water-containing solvent in which water is soluble or at least partially soluble, with the water content of the reaction mixture being from 0.1 to 20% by weight, or

(b) carrying out said reaction in the presence of a lactone which can have one or more C_1–C_4-alkyl substituents, or of an aliphatic or cycloaliphatic sulfone.

5,012,007

METHOD FOR PRODUCING 1-INDANONE DERIVATIVES

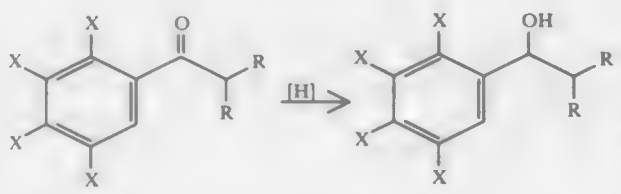
Varadaraj Elango, 4175 Crenshaw Dr., Corpus Christi, Tex. 78413

Filed Oct. 5, 1989, Ser. No. 417,376

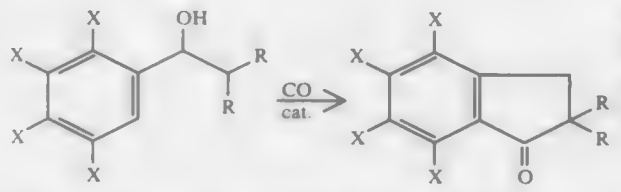
Int. Cl.[5] C07C *45/49*

U.S. Cl. 508—311 **17 Claims**

4. A method for the production of 2,2-diorgano-1-indanones comprising reducing a ketone with a reducing agent containing available hydrogen or with hydrogen gas in the presence of a hydrogenation catalyst to produce an alcohol, in accordance with the following equation:



and reacting said alcohol with carbon monoxide in the presence of a Lewis acid catalyst in accordance with the following equation:



wherein the R's in the foregoing equations are the same or different with each being alkyl containing 1 to 18 carbon atoms, phenyl or naphthyl either unsubstituted or with at least one ring carbon atom bonded to an X group other than hydrogen as hereinafter defined, and the X's are the same or different, with each being hydrogen, hydroxy, —R^1, —OR^1, —$N(R^1)_2$ or —SR^1 wherein the R^1's are the same or different with each being an alkyl group containing 1 to 18 carbon atoms, phenyl or naphthyl.

5,012,008

SUPPORTED AMORPHOUS PHASE HETEROGENEOUS CATALYSTS FOR BIPHASIC HYDROFORMYLATION

Russell S. Drago, 2281 NW. 24th Ave., Gainesville, Fla. 32605; Mark J. Barnes, 104 The Bunkers, Aiken, S.C. 29801, and Michael J. Naughton, 7301-69 W. University Ave., Gainesville, Fla. 32607

Filed Jan. 8, 1990, Ser. No. 461,828

Int. Cl.[5] C07C *45/50*

U.S. Cl. 568—454 **12 Claims**

1. In the hydroformylation of olefins having 2 to 6 carbon atoms to produce normal aldehydes which comprises contacting a gaseous mixture of said olefin, carbon monoxide and hydrogen in vapor phase with a supported liquid phase heterogeneous catalyst comprising a carrier having disposed thereon a non-volatile liquid film containing a rhodium complex, the improvement which comprises contacting said olefin at temperatures of 80° C. to 100° C. under a gas pressure of 1 to 5 atmospheres to obtain a product selectivity to normal aldehyde product of at least 95%.

5,012,010

T-ETHYL-1,5-DIMETHYLHEXYLPEROXY ACID ESTERS

Shuji Suyama, and Tomoyuki Nakamura, both of Chita, Japan, assignors to Nippon Oil and Fats Company, Limited, Tokyo, Japan

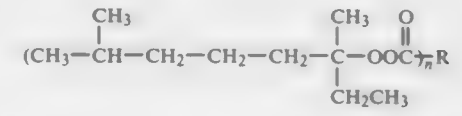
Filed Sep. 14, 1989, Ser. No. 407,107

Claims priority, application Japan, Sep. 20, 1988, 63-233395; Oct. 12, 1988, 63-254773; Dec. 9, 1988, 63-310186

Int. Cl.[5] C07C *409/00*

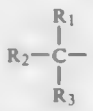
U.S. Cl. 568—561 **2 Claims**

1. 1-ethyl-1,5-dimethylhexyl peroxy acid ester represented by the following formula (I):

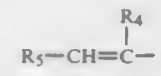


(I)

wherein n is 1 or 2, and when n is 1, R is a cyclohexyl group, a cyclohexenyl group, a phenyl group,



group (in which R_1 and R_2 are the same or different and represent a hydrogen atom or an alkyl group having a carbon number of 1–8, R_3 is a hydrogen atom, an alkyl group having a carbon number of 1–8, an alkoxy group having a carbon number of 1–6, a phenyl group, or a phenoxy group) or



group (in which R_4 and R_5 are the same or different and represent a hydrogen atom or an alkyl group having a carbon number of 1–4), and when n is 2, R is an alkylene group having a carbon number of 1–10, a cyclohexylene group or a phenylene group.

5,012,011

FLUORINATED VINYL ETHER

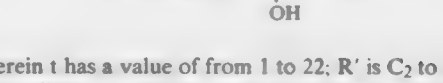
Kou-Chang Liu, Wayne, and Paul D. Taylor, West Milford, both of N.J., assignors to GAF Chemicals Corporation, Wayne, N.J.

Filed Oct. 20, 1989, Ser. No. 424,472

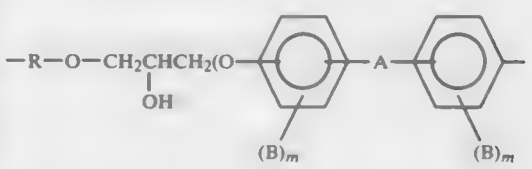
Int. Cl.[5] C07C *43/215, 43/225*

U.S. Cl. 568—610 **5 Claims**

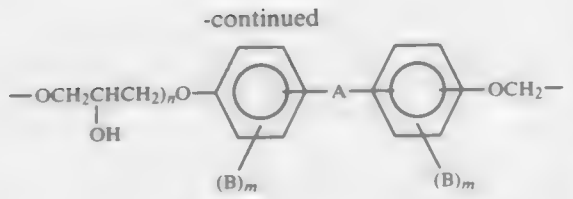
1. The fluorinated vinyl ether having the formula:



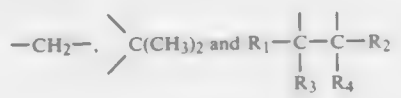
wherein t has a value of from 1 to 22; R' is C_2 to C_{20} alkylene, alkoxyalkylene, arylene or aryloxyalkylene which radicals are optionally fluorinated; R'' is a divalent radical having from 1 to 100 carbon atoms and is selected from the group of alkylene, arylene, alkarylene, aralkylene which groups are optionally substituted with lower alkyl or the radical



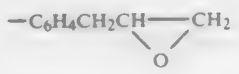
-continued



wherein R is a polyvalent linear, branched or cyclic hydrocarbon radical having from 2 to 20 carbon atoms, optionally substituted with alkyleneoxy; A is a divalent radical selected from the group of



where each of R_1, R_2, R_3 and R_4 is independently hydrogen or



B is lower alkyl; m has a value of from 0 to 4 and n has a value of from 0 to 20.

5,012,012

ALKOXYLATION CATALYST

Hirofumi Nakamura, Narashino; Yuichi Nakamoto, Nagareyama, and Yuji Fujimori, Narashino, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Division of Ser. No. 248,954, Sep. 26, 1988, abandoned. This application Apr. 25, 1989, Ser. No. 342,906

Claims priority, application Japan, Sep. 29, 1987, 62-242499

Int. Cl.[5] C07C *41/03*

U.S. Cl. 568—618 **18 Claims**

1. A method of producing an alkylene oxide adduct of an organic compound having one or more active hydrogen which comprises reacting an organic compound having one or more active hydrogen with an alkylene oxide in the presence of an alkoxylation catalyst consisting essentially of magnesium oxide modified by the addition of at least one metal ion selected from the group consisting of Al^{3+}, Ga^{3+}, In^{3+}, Tl^{3+}, Co^{3+}, Sc^{3+}, La^{3+}, or Mn^{2+}.

5,012,013

PROCESS FOR THE PURIFICATION OF ALKYLENE OXIDE ADDUCTS

Ignaz Wimmer, and Siegfried Billenstein, both c/o Hoechst Aktiengesellschaft, P.O. Box 80 03 20, D-6230 Frankfurt am Main 80, Fed. Rep. of Germany

Filed Apr. 26, 1990, Ser. No. 516,133

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1989, 3913937

Int. Cl.[5] C07C *41/34*

U.S. Cl. 568—621 **9 Claims**

1. A process for the purification of an alkylene oxide adduct which has been prepared using halogen-containing metal catalysts and contains halogen-containing compounds and also metals as impurities, which comprises

(a) bringing the alkylene oxide adduct which is to be purified into contact at elevated temperature with at least 1.05 times the stoichiometric amount, relative to the amount of halogen present in the adduct, of an alkali metal compound from the group consisting of oxides, hydroxides and alcoholates,

(b) adjusting the pH of the alkaline product from step (a) to a maximum of 7 with an acid, with the proviso that the product then obtained contains at least 0.1% by weight of water, relative to the weight of product,

(c) freeing the product obtained after steps (a) and (b) from water and other solvents for the salts which were formed in steps (a) and (b) and are insoluble in the alkylene oxide adduct, and

(d) isolating the desired pure alkylene oxide adduct from the product obtained in step (c), this product comprising essentially alkylene oxide adduct and the abovementioned salts, by separating off the said salts.

5,012,014

CATALYST PRETREATMENT FOR OLEFIN HYDRATION

Jonathan E. Child, Sewell; Byung C. Choi, and Francis P. Ragonese, both of Cherry Hill, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Apr. 26, 1990, Ser. No. 515,029

Int. Cl.[5] C07C *41/05, 29/04*

U.S. Cl. 568—695 **10 Claims**

1. In the process for the production of diisopropyl ether or isopropanol by hydration of feedstock containing propene, which comprises contacting the propene feedstock and water in a hydration zone with porous solid metal oxide acidic olefin hydration catalyst under olefins hydration conditions, the improvement which comprises:

pretreating the porous solid catalyst prior to contacting with the propene feedstock with a wetting agent containing at least one polar aliphatic oxygenated hydrocarbon to substantially wet said solid catalyst and sorb said wetting agent into pores of said solid catalyst.

5,012,015

PROCESS FOR PRODUCING 2,4-DICHLORO-3-ALKYL-6-NITROPHENOL

Masanobu Terao, Hyogo; Yuzo Maegawa; Yasuyoshi Ueda, both of Osaka; Kiyoyasu Hashimoto, Nara, and Takashi Omura, Hyogo, all of Japan, assignors to Daiei Chemical Co., Ltd., Hyogo and Sumitomo Chemical Co., Ltd., Osaka, both of, Japan

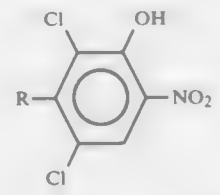
Filed Mar. 7, 1989, Ser. No. 319,718

Claims priority, application Japan, Mar. 9, 1988, 63-55593; Apr. 5, 1988, 63-84347; Apr. 5, 1988, 63-84348

Int. Cl.[5] C07C *205/26, 205/20*

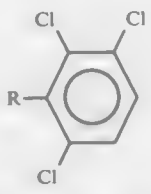
U.S. Cl. 568—709 **10 Claims**

1. A process for producing a 2,4-dichloro-3-alkyl-6-nitrophenol represented by the following formula (I),



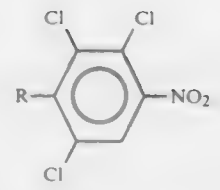
(I)

wherein R is a straight or branched alkyl group having 1 to 8 carbon atoms, which comprises (a) steps of nitrating a trichlorobenzene represented by the following formula (III),



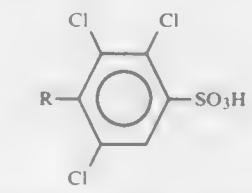
(III)

wherein R is as defined above, with mixed acid at a temperature of 0° to 60° C. to obtain a nitro-trichlorobenzene represented by the following formula (II),



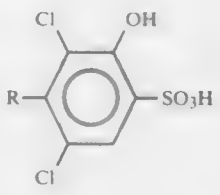
(II)

wherein R is as defined above, and hydrolyzing the nitrotrichlorobenzene of the formula (II) in a solvent using an alkali at a temperature of 20° to 150° C., or (b) steps of hydrolyzing a trichlorobenzenesulfonic acid, represented by the following formula (V),



(V)

wherein R is as defined above, or a salt thereof, in a solvent using an alkali at a temperature of 110° to 130° C. to obtain a hydroxydichlorobenzenesulfonic acid represented by the following formula (IV),



(IV)

wherein R is as defined above, or a salt thereof, and nitrating the hydroxy-dichlorobenzene sulfonic acid of the formula (IV), or a salt thereof, with nitric acid at a temperature of 0° to 100° C.

5,012,016

PROCESS FOR PREPARING TETRAPHENOLIC COMPOUNDS

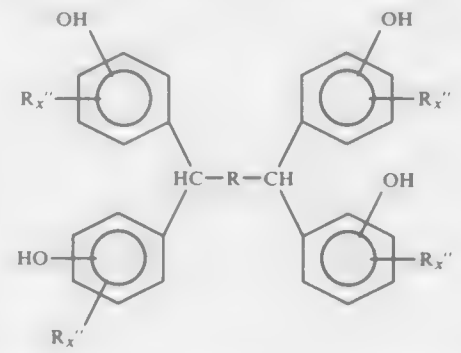
Simon M. K. Li, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 20, 1990, Ser. No. 495,980

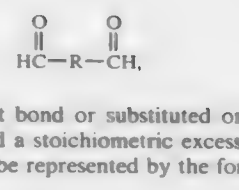
Int. Cl.[5] C07C *39/12, 37/20*

U.S. Cl. 568—720 **18 Claims**

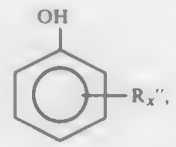
1. A process for preparing a tetraphenol of the formula



the process comprising contacting, in a reaction mixture at a temperature within the range of about 30° to about 120° C., a dialdehyde of the formula



in which R is a direct bond or substituted or unsubstituted C_{1-20} hydrocarbyl, and a stoichiometric excess of a phenolic compound which can be represented by the formula



in which each R'' is selected from noninterfering substituents and x is an integer from 0 to 5, in the presence of a catalytic amount of an acid-functional cationic exchange resin catalyst.

5,012,017

PHENOXYPHENOXYPROPIONATES, INTERMEDIATES THEREOF AND METHODS OF PREPARATION

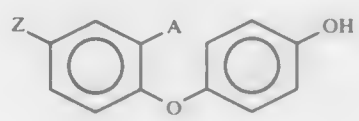
Jon A. Orvik; Norman M. Pearson, both of Walnut Creek, Calif.; Anthony P. Haag, Midland, Mich.; Timothy J. Adaway, Midland, Mich.; Larry D. Kershner, Midland, Mich., and Andrew S. Kende, Pittsford, N.Y., assignors to DowElanco, Indianapolis, Ind.

Continuation-in-part of Ser. No. 233,385, Aug. 18, 1988, abandoned, which is a continuation-in-part of Ser. No. 138,279, Dec. 28, 1987, abandoned. This application Feb. 21, 1989, Ser. No. 313,665

Int. Cl.[5] C07C *37/00*

U.S. Cl. 568—803 **9 Claims**

1. A method of preparing a phenoxyphenol compound of the formula



(III)

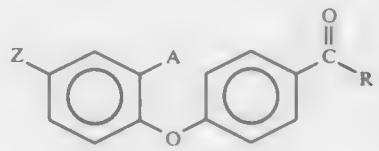
wherein

Z is Br of H; and

A is halogen

comprising:

(a) contacting a phenoxyphenone compound of the formula

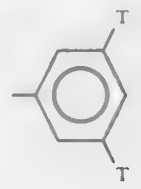


(I)

wherein

Z and A are as defined before and

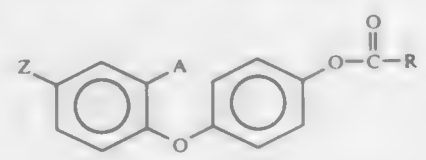
R is phenyl or substituted phenyl of the formula



wherein

T is independently H or halogen

with peroxide in the presence of an acid catalyst to form a phenoxyphenol ester of the formula



(II)

wherein

Z, A, and R are as previously defined; and

(b) converting the phenoxyphenyl ester (II) to the phenoxyphenol (III).

5,012,018

POLYPRENYL COMPOSITION OR COMPOUNDS AND PROCESS FOR THE PRODUCTION THEREOF

Yasuyuki Tanaka, Hachioji; Koichi Ibata; Masao Mizuno, both of Kurashiki; Yoichi Ninagawa, Hasaki, and Takashi Nishida, Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Okayama, Japan

Continuation-in-part of Ser. No. 371,487, Apr. 23, 1982, abandoned, which is a continuation-in-part of Ser. No. 324,636, Nov. 24, 1981, abandoned. This application Sep. 25, 1984, Ser. No. 654,526

Claims priority, application Japan, Nov. 28, 1980, 55-168747

Int. Cl.[5] C07C *29/32, 33/02*

U.S. Cl. 568—909.5 **42 Claims**

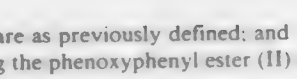
1. A process for producing at least one mammalian dolichol or its precursor of the following formula:



(V)

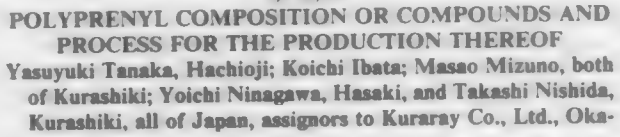
wherein Z represents a group of the formula $-CH_2OH$ or its functional precursor group, n is an integer of 11 to 19,

a trans-isoprene unit, and



represents a cis-isoprene unit,

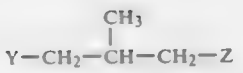
which comprises reacting at least one polyprenyl compound of the following general formula



(III)

wherein X represents a leaving atom or group, n is as defined above, and the expression of the trans- and cis-isoprene units is as defined above,

with a compound of the general formula



(IV)

wherein Y represents a lithium atom or MgHal in which Hal is a halogen atom, and Z is as defined above,

to form a compound of formula (V); and when Z represents the functional precursor group, converting said group, if required, into $-CH_2OH$, said reaction being carried out in the presence of a copper catalyst, the amount of the copper catalyst ranging from 0.001 to 1.0 equivalent per mole of the compound of formula (III), and at a temperature of about −30° C. to about 30° C.

5,012,019

PROCESS FOR PURIFYING AROMATIC NITRATION PRODUCTS

Robert W. Mason, Lake Charles; Peter C. Imm, Sulphur; Paul J. Craney, Lake Charles; Thomas W. Offill, Lake Charles, and Robert T. Brooker, Lake Charles, all of La., assignors to Olin Corporation, Cheshire, Conn.

Filed Jan. 26, 1990, Ser. No. 449,259

Int. Cl.[5] C07C *205/11*

U.S. Cl. 568—934 **3 Claims**

2. A continuous process for separating water from an aqueous aromatic nitration product mixture which comprises the steps of:

(a) contacting said water in said aqueous aromatic nitration product mixture with magnesium nitrate trihydrate for a time sufficient to form magnesium nitrate pentahydrate or magnesium nitrate hexahydrate,

(b) removing the magnesium nitrate pentahydrate or magnesium nitrate hexahydrate from the product mixture,

(c) heating said magnesium nitrate pentahydrate or magnesium nitrate hexahydrate to an elevated temperature sufficient to form magnesium nitrate trihydrate and water, and

(d) repeating steps (a) through (c) in a continuous fashion including adding the magnesium nitrate trihydrate formed in step (c) to satisfy at least a portion of the step (a) requirement for magnesium nitrate trihydrate.

5,012,020

NOVEL VI ENHANCING COMPOSITIONS AND NEWTONIAN LUBE BLENDS

Andrew Jackson, Princeton, and Margaret M. Wu, Belle Mead, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed May 1, 1989, Ser. No. 345,606

The portion of the term of this patent subsequent to May 2, 2006, has been disclaimed.

Int. Cl.[5] C07C *2/10, 2/02*

U.S. Cl. 585—10 **14 Claims**

1. A liquid lubricant viscosity index improver composition comprising branched C_{30}–C_{10000} hydrocarbons having a branch ratio of less than 0.19 and viscosity at 100° C. between 100 cS and 20,000 cS.

5,012,021

PROCESS FOR THE PRODUCTION OF ALKYLAROMATIC HYDROCARBONS USING SOLID CATALYSTS

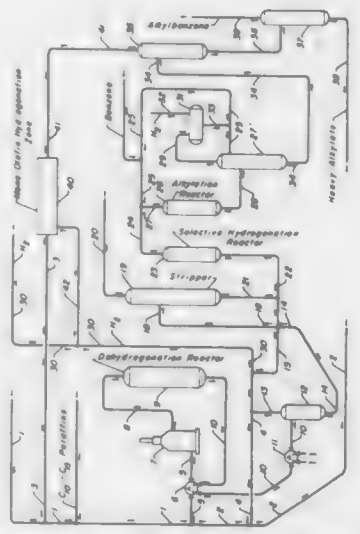
Bipin V. Vora, Darien, and Paul R. Cottrell, Arlington Heights, both of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 290,479, Dec. 29, 1988, abandoned. This application Sep. 18, 1990, Ser. No. 584,214

Int. Cl.[5] C07C *2/66*

U.S. Cl. 585—315 **7 Claims**

1. In a process for the production of an alkylaromatic hydrocarbon by the reaction of an aromatic hydrocarbon with monoolefinic hydrocarbons in the presence of paraffinic hydrocarbons wherein a C_6–C_{22} paraffinic hydrocarbon feed and a recycle stream are combined and the combined stream is passed through a dehydrogenation reaction zone maintained at dehydrogenation conditions effective to produce a vapor phase dehydrogenation reactor effluent stream comprising C_6-minus light hydrocarbons, C_6–C_{22} paraffinic hydrocarbons, C_6–C_{22} monoolefinic hydrocarbons, C_6–C_{22} diolefinic hydrocarbons and hydrogen, that is cooled and partially condensed to form a vapor-liquid dehydrogenation reactor zone effluent that is passed to a vapor-liquid separation zone to separate said vapor-liquid dehydrogenation reactor effluent stream into a vapor phase process stream comprising hydrogen and a liquid phase process stream comprising dissolved hydrogen, C_6-minus light hydrocarbons, C_6–C_{22} diolefinic hydrocarbons, C_6–C_{22} paraffinic hydrocarbons and C_6–C_{22} monoolefinic hydrocarbons which is passed with a hydrogen feedstream through a selective hydrogenation reaction zone containing a selective hydrogenation catalyst that is maintained at selective hydrogenation conditions, wherein said amount of hydrogen in said hydrogen feedstream is selected to convert substantially all of said C_6–C_{22} diolefins to the corresponding monoolefinic hydrocarbons and to produce a selective hydrogenation reaction zone effluent stream substantially free of C_6–C_{22} diolefinic hydrocarbons and said liquid phase process stream is passed through a stripping zone operated at conditions to selectively



separate C_6-minus light hydrocarbons and produce a hydrogenated effluent stream comprising C_6–C_{22} paraffinic hydrocarbons and C_6–C_{22} monoolefinic hydrocarbons that is passed with an aromatic hydrocarbon stream into an alkylation zone maintained at alkylation-promoting conditions to alkylate said aromatic hydrocarbon and to produce and alkylation zone effluent stream comprising alkylaromatic hydrocarbons and C_6–C_{22} paraffinic hydrocarbons that is passed to an alkylation separation section to recover an alkylaromatic hydrocarbon stream and said recycle stream; the improvement wherein, the recycle stream is saturated, said liquid phase process stream is passed first to said stripping zone, and a liquid phase effluent from said stripping zone is passed directly to said selective hydrogenation reaction zone and the effluent from said selective hydrogenation zone is passed directly without intermediate separation from said selective hydrogenation zone into said alkylation zone, said alkylation zone contains a solid alkylation catalyst, said alkylation zone effluent contains C_6–C_{22} monoolefinic hydrocarbons and said recycle stream is passed from said separation section through a monoolefinic hydrocarbon hydrogenation zone and contacted with a hydrogenation catalyst at hydrogenation conditions to convert essentially all of said monoolefinic hydrocarbons to paraffinic hydrocarbons and completely saturate said recycle stream.

5,012,022

LUBRICANTS COMPRISING NOVEL CYCLOPENTANES, CYCLOPENTADIENES, CYCLOPENTENES, AND MIXTURES THEREOF AND METHODS OF MANUFACTURE

Clifford G. Venier, and Edward W. Casserly, both of The Woodlands, Tex., assignors to Pennzoil Products Company, Houston, Tex.

Continuation-in-part of Ser. No. 909,305, Sep. 19, 1986, Pat. No. 4,721,823, and a continuation-in-part of Ser. No. 170,654, Mar. 15, 1988, abandoned. This application Mar. 15, 1989, Ser. No. 323,749

Int. Cl.[5] C07C *13/11, 13/08*

U.S. Cl. 585—20 **29 Claims**

1. A synthetic lubricating composition comprising cyclopentane substituted by at least two hydrocarbyl groups having 4 to 36 carbon atoms, and an effective amount of at least one lubricating oil additive selected from the group consisting of pour point depressants, viscosity index improvers, dispersants, load carrying agents, rust inhibitors, anti-oxidants, and mixtures thereof.

5,012,023

LUBRICANTS COMPRISING NOVEL CYCLOPENTANES, CYCLOPENTADIENES, CYCLOPENTENES, AND MIXTURES THEREOF AND METHODS OF MANUFACTURE

Clifford G. Venier, and Edward W. Casserly, both of The Woodlands, Tex., assignors to Pennzoil Products Company, Houston, Tex.

Continuation-in-part of Ser. No. 909,305, Sep. 19, 1986, Pat. No. 4,721,823, and a continuation-in-part of Ser. No. 170,652, Mar. 15, 1988, abandoned. This application Mar. 15, 1989, Ser. No. 323,906

Int. Cl.[5] C07C *13/11, 13/08*

U.S. Cl. 585—20 **17 Claims**

1. A synthetic lubricating composition comprising:

(A) A synthetic lubricant comprising:

(1) a hydrocarbyl substituted cyclopentane;

(2) a hydrocarbyl substituted cyclopentadiene;

(3) a hydrocarbyl substituted cyclopentene; or

(4) mixtures in any proportions of (1), (2), and (3); in admixture with

(B) a natural lubricant or a synthetic lubricant other than a member of (A); and

(C) an effective amount of at least one lubricating oil additive selected from the group consisting of pour point depressants, viscosity index improvers, dispersants, load carrying agents, rust inhibitors, anti-oxidants, and mixtures thereof.

5,012,024

PREPARATION OF A DIMETHYLNAPHTHALENE

David L. Sikkenga, Wheaton; Ian C. Zaenger, Glen Ellyn, and Gregory S. Williams, Naperville, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 210,999, Jun. 24, 1988, abandoned. This application Feb. 27, 1989, Ser. No. 316,309

Int. Cl.[5] C07C *5/00*

U.S. Cl. 585—320 **29 Claims**

1. A method for preparing a dimethylnaphthalene, comprising: contacting a first feedstock comprising at least one dimethyltetralin in liquid form with a solid dehydrogenation catalyst in a reaction vessel at a temperature in the range of from about 200° C. to about 300° C. at a pressure that is sufficiently high to maintain the first feedstock substantially in the liquid phase, to thereby effect conversion of the aforesaid dimethyltetralin in an equilibrium dehydrogenation reaction to form hydrogen and a first liquid product comprising a dimethylnaphthalene formed from each aforesaid dimethyltetralin, and removing a substantial portion of the hydrogen being formed in the dehydrogenation reaction from the reaction vessel dur-

ing the reaction to thereby shift the aforesaid equilibrium toward the formation of the dimethylnaphthalene product

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5,012,025

MOLECULAR RESTRUCTURING CATALYST

Viswanatha Sankaran, 6A D'Silva Rd., Madras 600004, India

Filed Aug. 23, 1989, Ser. No. 397,775
Int. Cl.[5] C07C *2/20, 2/22*
U.S. Cl. 585—415 **10 Claims**

1. A process for the chemical restructuring of substantially gaseous hydrocarbon feed stream materials consisting of compounds of hydrogen and carbon containing one to four carbon atoms to form chemically restructured hydrocarbon products having a greater molecular weight than said feed stream materials characterized by contacting said hydrocarbon feed stream materials with a catalyst support impregnated with a catalyst comprising a copper salt in the presence of anhydrous aluminum chloride, thereby producing chemically restructured hydrocarbon products of greater molecular weight than said feed stream materials.

5,012,026

TURBULENT FLUID BED PARAFFIN CONVERSION PROCESS

Amos A. Avidan, Yardley, Pa.; Margaret Nemet-Mavrodin, Cherry Hill, and Jorge L. Soto, Westville, both of N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Feb. 14, 1989, Ser. No. 310,136
Int. Cl.[5] C07C *5/00*
U.S. Cl. 585—417 **24 Claims**

1. A fluidized bed catalytic process for the conversion of a feedstock comprising paraffins into a product stream containing olefins and aromatics comprising the steps of:

(a) maintaining a fluidized bed of catalyst particles under paraffin aromatization conditions in a turbulent sub-transport flow regime;

(b) controlling the relative concentration of catalyst particles having a major dimension of less than 32 microns at between 10 and 50 weight percent, said catalyst particles having an apparent particle density of about 0.9 to 1.6 grams per cubic centimeter and a size range of about 1 to 150 microns, and an average catalyst catalyst particle size of about 20 to 100 microns;

(c) charging said feedstock to said fluidized bed at a rate sufficient to provide a superficial fluid velocity within said fluid bed of about 0.3 to about 2 meters per second; and

(d) recovering hydrocarbon product containing a major amount of olefins and aromatics.

5,012,027

DUAL PROFILE SURFACE-IMPREGNATED DEHYDROGENATION CATALYST AND PROCESS

Hayim Abrevaya, Wilmette, and Tamotsu Imai, Mt. Prospect, both of Ill., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 289,137, Dec. 23, 1988, Pat. No. 4,880,764, which is a continuation-in-part of Ser. No. 221,977, Jul. 20, 1988, Pat. No. 4,827,072, which is a division of Ser. No. 131,882, Dec. 11, 1987, Pat. No. 4,786,625, which is a continuation-in-part of Ser. No. 18,541, Feb. 25, 1987, Pat. No. 4,716,143, which is a continuation-in-part of Ser. No. 871,356, Jun. 6, 1986, abandoned. This application Nov. 9, 1989, Ser. No. 435,150
Int. Cl.[5] C07C *2/00, 4/00, 5/00*
U.S. Cl. 585—443 **24 Claims**

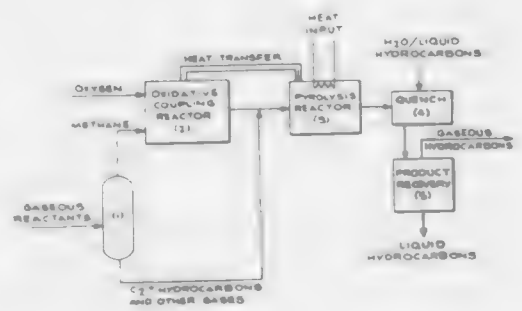
1. A catalytic composite comprising a first component selected from Group IA and Group IIA elements of the Periodic Table of the Elements or mixtures thereof, a second component selected from iridium, osmium, or mixtures thereof, a third component selected from one or more elements of Group IVA of the Periodic Table of the Elements, platinum, and a support having a nominal dimension (d) of from about 50 to 10,000 microns, the catalytic composite characterized in that the platinum is surface-impregnated upon the support such that the average concentration of the platinum in the outer 0.2 d layer of the support is at least 2.0 times the average concentration of the platinum in the 0.4 d core of the support, in that the second component is surface-impregnated upon the support such that the average concentration of the second component in the outer 0.2 d layer of the support is at least 2.5 times the average concentration of the second component in the 0.4 d core of the support, and in that the ratio of said outer 0.2 d layer platinum average concentration to said 0.4 d core platinum average concentration is not more than 0.8 times the ratio of said outer 0.2 d layer second component average concentration to said 0.4 d core second component average concentration.

5,012,028

PROCESS FOR UPGRADING LIGHT HYDROCARBONS USING OXIDATIVE COUPLING AND PYROLYSIS

Victor Gupta; Christopher L. Bodolus, both of Cleveland Heights; Christos Paparizos, Willowick, and Wilfrid G. Shaw, Lyndhurst, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Jul. 11, 1986, Ser. No. 884,474
Int. Cl.[5] C07C *2/00*
U.S. Cl. 585—500 **22 Claims**



1. A process for converting a gaseous reactant comprising methane or natural gas to higher molecular weight hydrocarbon products comprising:

(1) contacting said gaseous reactant with an oxidative coupling catalyst at a reaction temperature in the range of about 500° C. to about 1100° C. for an effective period of time to form an intermediate product comprising ethane, ethylene or a mixture thereof; and

(2) pyrolyzing said intermediate product at a temperature in the range of about 900° C. to about 1500° C. for an effective period of time to form said higher molecular weight hydrocarbon products using sensible heat generated during the formation of said intermediate product.

5,012,029

CONVERSION OF METHANE

Scott Han, Lawrenceville; Daniel J. Martenak, Trenton, both of N.J.; Robert E. Palermo, New Hope, and Dennis E. Walsh, Richboro, both of Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Oct. 16, 1989, Ser. No. 422,367
Int. Cl.[5] C07C *2/02*
U.S. Cl. 585—500 **12 Claims**

1. In a method comprising preparing a feed mixture of methane and oxygen gas or air, said mixture containing about 3 to about 15 volume percent O_2, and reacting said mixture at 150 to 3000 psig and at 350° to 500° C. whereby selectively forming said methanol, the improvement comprising, in combination:

including in said feed mixture an amount up to about 5 volume percent of a reaction modifier having 2 to 6 carbon atoms, said amount being effective to redirect said selectivity from methanol to-liquid hydrocarbons; and,

reacting said feed mixture with included modifier in the presence of a catalyst comprising a crystalline aluminosilicate zeolite having a silica to alumina ratio of at least 12 and a Constraint Index of 1 to 12, thereby directly forming a mixture of organic compounds including unreacted methane and liquid hydrocarbons.

5,012,030

PROCESS FOR PREPARING POLYBUTENES WITH INCREASED REACTIVITY

Kelley R. Lane, Winfield, and Wayne P. Schammel, Naperville, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Oct. 10, 1989, Ser. No. 418,855
Int. Cl.[5] C07C *2/02*
U.S. Cl. 585—527 **6 Claims**

1. A process for preparation for viscous, liquid polybutene polymers with increased reactivity which have a vinylidene structure of at least 50 wt. % and are of a weight average molecular weight of from about 1,000 to about 10,000, which process comprises:

(a) feeding a butane-butene stream into a suitable reactor at a reaction temperature within the range of from about −20° C. to about +50° C., at a pressure to maintain said feedstream in a liquid state;

(b) feeding into said reactor a catalyst consisting essentially of $AlCl_3$ and a liquid organic nitro compound which is unreactive with said aluminum chloride and does not neutralize the Lewis acid, wherein said $AlCl_3$ of said catalyst is present in a range of from about 0.02 wt. % to about 0.20 wt. % of total weight of said butane-butene stream, wherein said $AlCl_3$ is solubilized in said liquid organic nitro compound to form a homogeneous catalyst and said $AlCl_3$ solubilized in said liquid organic nitro compound is present in a range of from about 2.3 wt. % to about 57 wt. % of the weight of $AlCl_3$ plus said organic nitro compound;

(c) polymerizing butenes of said butane-butene stream in the presence of said catalyst to prepare a polybutene having at least 50 wt. % vinylidene structure and a weight average molecular weight in the range of from about 1,000 to 10,000; and

(d) separating said polybutene from said reaction mixture.

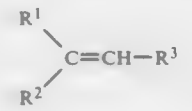
5,012,031

PROCESS FOR THE PREPARATION OF TERT.-OLEFINS

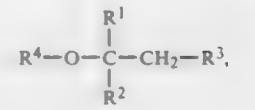
Bernhard Schleppinghoff; Hans-Ludwig Niederberger; Christian Gabel, all of Dormagen; Peter M. Lange, Leverkusen, and Alfred Mitschker, Odenthal-Holz, all of Fed. Rep. of Germany, assignors to EC Erdoelchemie GmbH, Cologne and Bayer Aktiengesellschaft, Leverkusen, both of, Fed. Rep. of Germany

Filed Mar. 7, 1989, Ser. No. 320,262
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1988, 3808498
Int. Cl.[5] C07C *1/24*
U.S. Cl. 585—639 **19 Claims**

1. A process for the preparation of tert.-olefins of the formula



by cleavage of their alkyl ethers of the formula



wherein, in the two formulae,

R^1, R^2, R^3 and R^4 independently of one another denote straight-chain or branched C_1-C_4-alkyl and R^3 can additionally denote hydrogen,

at an elevated temperature over styrene/divinylbenzene resins, containing sulphonic acid groups, as catalysts, characterized in that the catalysts used are those which have a macroporous structure and the polymer matrices of which have an internal surface area of at least 400 m^2/g, a pore volume (porosity) of 0.6–2.5 ml/g and a mean pore diameter of 40–1000 Å, and have sulphonation values of 1–2.5 milliequivalent/g.

5,012,032

Patent Not Issued For This Number

5,012,033

ISOPARAFFIN-OLEFIN ALKYLATION PROCESS AND CATALYST COMPOSITION THEREOF

Jonathan E. Child, Sewell, N.J.; Albin Huss, Jr., Chadds Ford; Clinton R. Kennedy, West Chester, both of Pa.; David O. Marler, Deptford, N.J., and Samuel A. Tabak, Wenonah, N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Continuation-in-part of Ser. No. 254,524, Oct. 6, 1988, Pat. No. 4,954,325, and a continuation-in-part of Ser. No. 98,176, Sep. 18, 1987, abandoned, which is a continuation-in-part of Ser. No. 890,268, Jul. 29, 1986, abandoned. This application Jan. 25, 1990, Ser. No. 470,016
Int. Cl.[5] C07C *2/58, 2/60*
U.S. Cl. 585—722 **24 Claims**

1. An isoparaffin-olefin alkylation process which comprises reacting isoparaffin and olefin under alkylation conditions in the presence of a Lewis acid-promoted catalyst to provide an alkylate product, wherein said catalyst comprises a zeolite characterized by an X-ray diffraction pattern including interplanar d-spacings as set forth in Table A of the specification.

5,012,034

PROCESS FOR SEPARATING STYRENE FROM STYRENE-CONTAINING HYDROCARBON STREAMS

David A. Weingaertner, Houston, and Lynn H. Slaugh, Cypress, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 7, 1989, Ser. No. 390,007
The portion of the term of this patent subsequent to Aug. 7, 2007, has been disclaimed.
Int. Cl.[5] C07C 7/00
U.S. Cl. 585—806 11 Claims

1. A process for extracting styrene from a styrene-containing feedstock which comprises:
(a) reacting said feedstock with an anthracene at a temperature ranging from about 175 to about 275° C. to form a styrene adduct with anthracene,
(b) separating said adduct from the feedstock,
(c) heating said separated adduct at a temperature of from between about 250 to about 450° C. to produce a mixture comprising anthracene and styrene, and
(d) individually separating styrene and anthracene from the mixture formed in step (c).

5,012,035

POLYPHTHALATECARBONATE MEMBRANES FOR AROMATICS/SATURATES SEPARATION

Guido Sartori; W. S. Winston Ho, both of Annandale, and Robert E. Noone, Neshanic Station, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Jul. 11, 1990, Ser. No. 550,914
Int. Cl.[5] C07C 7/144
U.S. Cl. 585—819 8 Claims

1. A method for separating mixtures of aromatics and non-aromatics into aromatic-enriched and non-aromatic-enriched streams comprising:
(a) contacting said aromatics/non-aromatics mixture with one side of a polyphthalatecarbonate membrane, and
(b) selectively permeating the aromatic components of the mixture through the membrane.

5,012,036

POLYARYLATE MEMBRANES OR AROMATICS/SATURATES SEPARATION (C-2415)

Guido Sartori; W. S. Winston Ho, both of Annandale, and Robert E. Noone, Neshanic Station, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Jul. 11, 1990, Ser. No. 550,916
Int. Cl.[5] C07C 7/144
U.S. Cl. 585—819 9 Claims

1. A method for separating mixtures of aromatics and non-aromatics into aromatic-enriched and non-aromatic-enriched streams comprising:
(a) Contacting said aromatics/non-aromatics mixture with one side of a polyarylate membrane, and
(b) selectively permeating the aromatic components of the mixture through the membrane.

5,012,037

INTEGRATED THERMAL SWING-PRESSURE SWING ADSORPTION PROCESS FOR HYDROGEN AND HYDROCARBON RECOVERY

Kishore J. Doshi, Somers; Michael J. Mitariten, Peekskill, both of N.Y., and Michael Whysall, Wilrijk, Belgium, assignors to UOP, Des Plaines, Ill.

Filed Jan. 10, 1990, Ser. No. 463,315
Int. Cl.[5] C07C 7/12
U.S. Cl. 585—822 39 Claims

34. A hydrocarbon conversion process comprising:
(a) passing a reactor feed comprising feed hydrocarbons and a recycle stream as hereinafter characterized, to a reaction zone maintained at effective conditions to convert the feed hydrocarbons to product hydrocarbons, said product hydrocarbons having a different chemical composition than the feed hydrocarbons and having a C_1–C_5 hydrocarbon fraction and a C_6+ hydrocarbon fraction, and withdrawing a reactor product comprising hydrogen and the product hydrocarbons;
(b) passing at least a portion of the reactor product through a first adsorption zone containing solid adsorbent at a temperature sufficient to adsorb at least a portion of the C_6+ hydrocarbon fraction and withdrawing a first adsorption effluent stream comprising hydrogen and at least a portion of the C_1–C_5 hydrocarbons fraction;
(c) passing the first adsorption effluent stream through a second adsorption zone containing solid adsorbent at a pressure sufficient to adsorb at least a portion of the C_1-C_5 hydrocarbon fraction and withdrawing a second adsorption effluent stream comprising hydrogen;
(d) heating at least a substantial portion of the second adsorption effluent to a temperature sufficient to desorb at least a portion of the C_6+ hydrocarbon fraction, passing the heated portion to said first adsorption zone and withdrawing a first desorption effluent stream comprising hydrogen and at least a portion of the C_6+ hydrocarbon fraction;
(e) reducing the pressure in the second adsorption zone to a pressure sufficient to desorb at least a portion of the C_1-C_5 hydrocarbon fraction therefrom and withdrawing a second desorption effluent comprising at least a portion of the C_1–C_5 hydrocarbon fraction; and
(f) passing a portion of the first desorption effluent stream to the reaction zone to comprise the recycle stream.

5,012,038

ZEOLITIC PARA-XYLENE SEPARATION WITH DIETHYLTOLUENE HEAVY DESORBENT

Hermann A. Zinnen, Evanston, Ill., assignor to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 197,740, May 23, 1988, Pat. No. 4,864,069. This application Aug. 3, 1989, Ser. No. 389,024
The portion of the term of this patent subsequent to Sep. 5, 2006, has been disclaimed.
Int. Cl.[5] C07C 7/12
U.S. Cl. 585—828 12 Claims

1. A process for separating p-xylene from a mixture comprising C_9 aromatic hydrocarbons, p-xylene and at least one other isomer of xylene which process comprises contacting said mixture with an adsorbent crystalline aluminosilicate containing a Group IA or IIA metal ion at exchangeable cationic sites at adsorption conditions to effect the selective adsorption of said p-xylene by said adsorbent and to produce a raffinate stream comprising the less strongly adsorbed C_9 hydrocarbons and said other xylene isomers and contacting said adsorbent with a desorbent comprising at least about 40 wt. % of individual isomers selected from the group consisting of 2,3-diethyltoluene, 2,5-diethyltoluene and 2,6-diethyltoluene and mixtures thereof at desorption conditions, to effect the removal of p-xylene from said adsorbent as an extract stream.

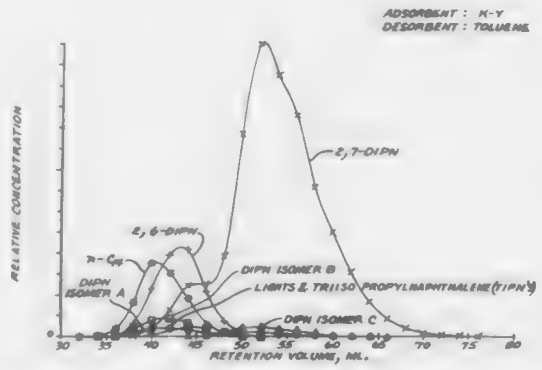
5,012,039

SEPARATION OF 2,7 DIISOPROPYLNAPHTHALENE FROM A FEED MIXTURE COMPRISING VARIOUS DIISOPROPYLNAPHTHALENE ISOMERS WITH A ZEOLITE ADSORBENT

Timothy J. Barder, Addison, Ill., assignor to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 322,329, Mar. 10, 1989, Pat. No. 4,929,796. This application Apr. 16, 1990, Ser. No. 509,694
The portion of the term of this patent subsequent to May 29, 2007, has been disclaimed.
Int. Cl.[5] C07C 7/13
U.S. Cl. 585—828 4 Claims

1. A process for separating 2, 7 diisopropylnaphthalene (DIPN) from a feed mixture comprising, 2, 7 DIPN and at least one other DIPN isomer, which process comprises contacting, at adsorption conditions, said feed with an adsorbent comprising a Y zeolite which has been at least partially exchanged at exchangeable sites, with potassium cations, to effect the adsorption of 2, 7 DIPN and thereafter recovering the 2, 7 DIPN by desorption, under desorption conditions, with a desorbent, comprising an aromatic hydrocarbon.



5,012,040

SOMACLONAL VARIANTS OF NICOTIANA GLUTINOSA

Robert J. Whitaker, Burlington, N.J., assignor to DNA Plant Technology Corporation, Cinnaminson, N.J. and Firmenich SA, Geneva, Switzerland

Filed Oct. 12, 1988, Ser. No. 256,515
Int. Cl.[5] A01H 5/00
U.S. Cl. 800—200 12 Claims

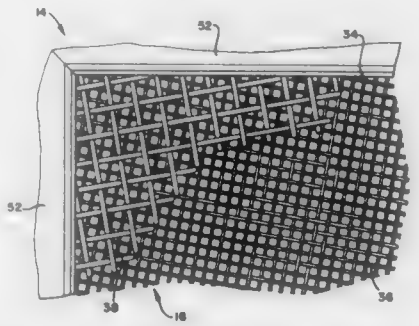
1. A somaclonal variant *Nicotiana glutinosa* plant which produces at least about 800 mg of sclareol per kg of fresh plant weight and derivatives thereof which produce at least about 800 mg of sclareol per kg of fresh plant weight.

5,012,041

SCREENED WINDOW FOR SHIELDED ENCLOSURE

Richard E. Sims, Arlington Hgts., and Joseph C. Weibler, West Chicago, both of Ill., assignors to The Curran Company, Glendale Heights, Ill.

Filed Jun. 22, 1989, Ser. No. 369,717
Int. Cl.[5] H05K *9/00*
U.S. Cl. 174—35 MS 20 Claims



9. A window for the window opening of an electromagnetic interference shielded enclosure comprising:

an electrically conductive frame defining the periphery of the window and defining a frame sight opening;

said frame including inner and outer screen mounting structures located adjacent the opposite sides of the frame;

said frame including mounting means for mounting the frame in the window opening;

a first wire cloth screen mounted in one of said screen mounting structures and covering said window sight opening;

a second wire cloth screen mounted in the other of said screen mounting structures and covering said window sight opening; and

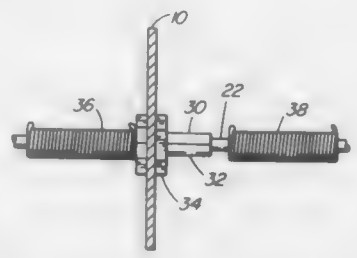
said first screen having a mesh count between about twenty and one hundred percent larger than the mesh count of said second screen.

5,012,042

CABLE ENTRY DEVICE FOR EMI SHIELDED CABINETS

Harley R. W. Summach, Ashton, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 28, 1990, Ser. No. 545,167
Int. Cl.[5] H05K *9/00*
U.S. Cl. 174—35 C 5 Claims



1. A cable entry device for admitting a shielded cable into an EMI shielded cabinet, comprising:

an electrically conductive first member including an elongate semicylindrical shell having a transverse integral flange;

an electrically conductive second member similar to the first member;

the members cooperating together to form, from the semicylindrical shells, an elongate cylindrical shell having an internal diameter selected to provide electrical contact with a shield of the shielded cable and to form, from the integral flanges, a transverse face to abut with the cabinet;

means for compressing the semicylindrical shells onto the shield; and

means for securing the transverse face to a bulkhead of the cabinet;

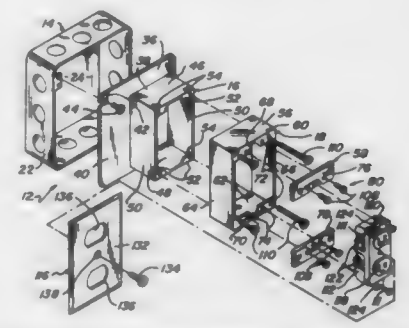
wherein the means for securing comprises external threads adjacent the flange carried on the elongate semicylindrical shells and a nut for engaging the external threads and wherein the flange is positioned approximately midway along the elongate semicylindrical shells.

5,012,043

ADJUSTABLE OUTLET BOX ASSEMBLY AND METHOD OF APPLICATION

Michael R. Seymour, 3516 N. Clarence, Wichita, Kans. 67204

Filed Feb. 21, 1989, Ser. No. 312,716
Int. Cl.[5] H02G *3/08*
U.S. Cl. 174—57 33 Claims



1. An adjustable outlet box assembly secured to a support member adapted to receive a cover panel material secured to the support member and abutting said adjustable outlet box assembly, comprising:

(a) an outlet box assembly secured to the support member;

(b) a box cover assembly connected to said outlet box assembly having a receptacle box member extended outwardly toward the to be installed cover panel material; and

(c) a variable depth ring assembly having a variable ring member telescopingly mounted about said receptacle box member, a keeper plate assembly positioned adjacent said variable ring member, and a plate anchor assembly to anchor said keeper plate assembly against the variable ring member and adjustable connector means mounted between said keeper plate assembly and said variable ring member and engagable with said receptacle box member; whereby said adjustable connector means is operable to move said variable ring member relative to said receptacle box member to place an outer surface of said variable ring member in a predetermined adjacent position relative to the cover panel member to be installed.

5,012,044

ASSEMBLY INCLUDING A LIGHT ALLOY PROFILED MEMBER HAVING ONE OR MORE INSULATED ELECTRICAL CONDUCTORS AND PROCESS FOR FORMATION THEREOF

Jean-Claude Guyard, Le Croisic, France, assignor to Norsk Hydro a.s, Oslo, Norway

PCT No. PCT/NO89/00006, § 371 Date Nov. 8, 1989, § 102(e) Date Nov. 8, 1989, PCT Pub. No. WO89/06858, PCT Pub. Date Jul. 27, 1989
PCT Filed Jan. 11, 1989, Ser. No. 399,484
Claims priority, application France, Jan. 12, 1988, 88 00272
Int. Cl.[5] H01B *7/00, 13/00;* H02G *5/00;* H01R *25/14*
U.S. Cl. 174—98 26 Claims

1. An assembly comprising:

a linearly elongated profiled section of light alloy material, said section including linearly elongated, integrally connected walls defining a cavity, at least one of said walls

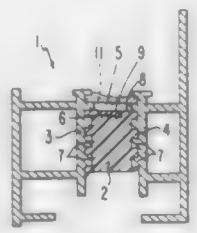
having integral therewith linearly elongated parallel projections extending into said cavity;

an electrically insulating material molded into said cavity and solidified therein to from a solidified insulating filling that is intimately adhered to said section by said projections being rigidly embedded in said solidified insulating filling; and

at least one linearly elongated conductor intimately adhered to and embedded in said solidified insulating filling, said conductor being of the identical light alloy material as said section, being electrically insulated therefrom and being employable as an insulated conductor insulated by said solidified insulating filling, and extending parallel to said section said at least one conductor and said solidified insulating filling having respective bared outer surfaces.

14. A process of forming an assembly including a linearly elongated section of light alloy material and at least one linearly elongated electrical conductor of identical light alloy material electrically insulated from said section and capable of use as an insulated conductor, said process comprising:

extruding or drawing as a unitary, integral structure said



linearly elongated section including linearly elongated, integrally connected walls and a linearly elongated provisional wall connected to at least one of said walls of said section, such that said walls and said provisional wall define a cavity, with at least one of said walls having integral therewith linearly elongated parallel projections extending into said cavity, and with said provisional wall having integral therewith at least one linearly elongated projection extending into said cavity;

molding an electrically insulating material into said cavity and solidifying said insulating material to form a solidified insulating filling intimately adhered to said section and to said provisional wall by said projections being rigidly embedded in said solidified insulating filling; and

removing said provisional wall, thereby maintaining said at least one projection thereof rigidly embedded in said solidified insulating material as said at least one conductor electrically insulated from said section and employable as an insulated conductor insulated by said solidified insulating filling, and also thereby baring respective outer surfaces of said at least one conductor and said solidified insulating filling.

5,012,045

CABLE WITH AN OVERALL SHIELD

Kazuhiro Sato, Tochigi, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 1, 1989, Ser. No. 317,593

Claims priority, application Japan, Mar. 3, 1988, 63-50384; Jun. 14, 1988, 63-146578

Int. Cl.[5] H01B *7/34*

U.S. Cl. 174—106 R **7 Claims**

1. A shielded cable, comprising:

an assembly of one or more core wires; and

a shielding member including a plurality of element wires braided around said assembly, each of said element wires comprising:



a conductor of high conductivity; and

stainless steel strands woven around said conductor.

5,012,046

CABLE ENTRY DEVICE FOR ELECTRIC APPLIANCES

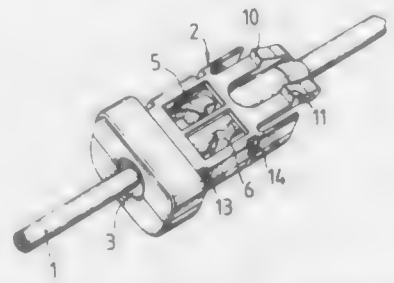
Barry Gobin, Spennymoor, United Kingdom, assignor to Electrolux Northern Limited, Newton Aycliffe, United Kingdom

Filed Jun. 22, 1989, Ser. No. 370,264

Claims priority, application United Kingdom, Jun. 23, 1988, 8814968

Int. Cl.[5] H02G *3/22, 15/007;* **H01R** *13/58*

U.S. Cl. 174—135 **4 Claims**



1. A cable entry device comprising a body in the form of a one-piece molding made from a resilient plastic material, said body including first and second body portions, at least one locking tab for locking said body portions to each other in a closed position, at least one of said body portions incorporating a pair of spaced apart cable grips for gripping a cable and resisting withdrawal of the cable from said body, a flexible and resilient web interconnecting said body portions and serving to bias said body portions into an open position, said web including an aperture for receiving the cable and constituting a hinge about which said body portions are angularly displaceable about an axis which is transverse relative to the longitudinal extent of the cable, and at least one retaining catch molded integrally with said web for retaining said body in an appliance.

5,012,047

MULTILAYER WIRING SUBSTRATE

Akihiro Dohya, Tokyo, Japan, assignor to NEC Corporation, Minato, Japan

Continuation of Ser. No. 178,013, Apr. 5, 1988, abandoned. This application Feb. 16, 1990, Ser. No. 481,726

Claims priority, application Japan, Apr. 6, 1987, 62-82845

Int. Cl.[5] H01B *7/34;* **H05K** *7/20*

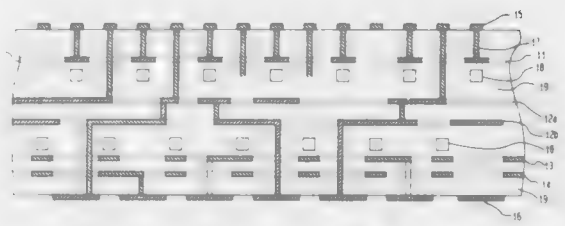
U.S. Cl. 174—250 **14 Claims**

1. A multilayer wiring substrate comprising:

a ground layer of mesh pattern;

a signal wiring layer;

an insulating layer providing insulation between said ground layer and said signal wiring layer; and



a plurality of hollows provided inside said insulating layer and disposed along said mesh pattern.

5,012,048

POSITION INDICATING DEVICE

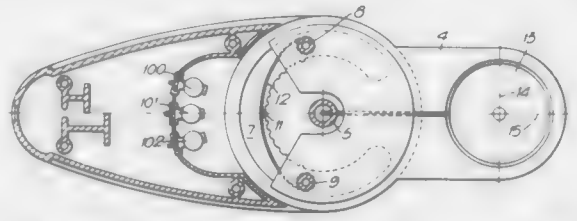
Stephen G. McGonigal, Hemel Hempstead, and Lindsay MacDonald, Buzzard, both of Great Britain, assignors to Crosfield Electronics Limited, London, England

Filed Jun. 20, 1989, Ser. No. 369,393

Claims priority, application United Kingdom, Jun. 21, 1988, 8814735

Int. Cl.[5] G08C *21/00*

U.S. Cl. 178—18 **7 Claims**



1. A manual position indicating device comprising a body portion that can be moved by hand across a surface; a support member movably mounted to said body portion, said support member including a graticule and associated signal generating or detecting means for interaction with position determining apparatus, whereby the relative positions of said graticule and said body portion are selected by suitably moving said support member and said body portion relatively to one another; and locking means for locking said support member relative to said body portion in a number of different positions.

5,012,049

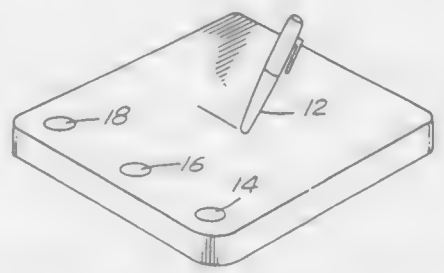
POSITION DETERMINING APPARATUS

J. Alan Schier, 7105 Owens St., Twunga, Calif. 91042

Continuation-in-part of Ser. No. 292,947, Jan. 3, 1989, Pat. No. 4,885,433. This application Oct. 12, 1989, Ser. No. 420,352

Int. Cl.[5] G08C *21/00*

U.S. Cl. 178—19 **5 Claims**



1. A position determining apparatus for locating the position of a transmitter known to be located on a predetermined line, comprising:

(a) transmitter means for transmitting modulated signals, said transmitter means comprising a transmitter located on said predetermined line;

(b) at least two spaced apart signal receiving means for receiving said modulated signals transmitted by said transmitter means for converting said signals to first output signals and then for transmitting said first output signals;

(c) a first detector means for receiving and analyzing said first output signals from said signal receiving means in order to determine the phase of said output signals and then to generate and transmit a second output signal corresponding thereto;

(d) computation means for receiving said second output signal and for determining the position of said transmitter means along said predetermined line.

5,012,050

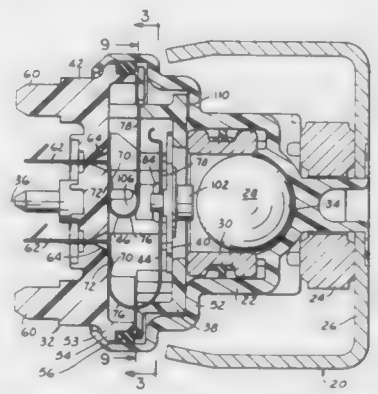
DUAL POLE SWITCH ASSEMBLY FOR AN INERTIA ACTUATED SWITCH

Michael R. Sewell, Chatham, Canada, assignor to Siemens Automotive Limited, Chatham, Canada

Filed Feb. 23, 1990, Ser. No. 483,860

Int. Cl.[5] H01H *35/14*

U.S. Cl. 200—61.45 R **12 Claims**



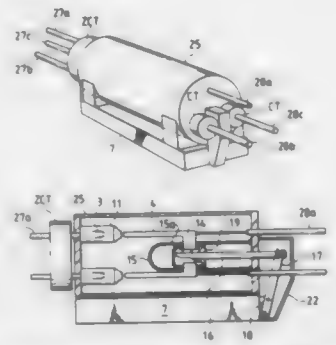
1. In an inertia switch device in which a normally restrained inertial mass overcomes its restraint in response to a predetermined velocity change, such as a deceleration, to displace the actuator of an electrical switch assembly via which the device gives a signal of the occurrence of such a predetermined velocity change, the improvement which comprises said electrical switch assembly comprising a contact enclosure containing a set of two, resiliently deflectable electrical contacts both of which contacts are disposed in resiliently deflected conditions within said contact enclosure to a predetermined spacing distance so long as the device does not experience such predetermined velocity change, said actuator being disposed on said electrical switch assembly for displacement along a predetermined path of travel with respect to said set of contacts for acting upon said set of contacts when such predetermined velocity change occurs, one of said two electrical contacts being further resiliently deflected in response to displacement of said actuator along said predetermined path of travel upon occurrence of such predetermined velocity change to engage and also further resiliently deflect the other contact of said set thereby creating switch closure of said set causing the device to give a signal indicative of the occurrence of such predetermined velocity change.

5,012,051

THREE-PHASE COMMON CONTAINER-TYPE CIRCUIT BREAKER

Masanori Tsukushi; Osamu Koyanagi; Yasuharu Seki; Tokio Goto, and Yukio Kurosawa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 9, 1989, Ser. No. 433,956
Claims priority, application Japan, Nov. 14, 1988, 63-285690
Int. Cl.[5] H01H *33/56*
U.S. Cl. 200—148 B 5 Claims



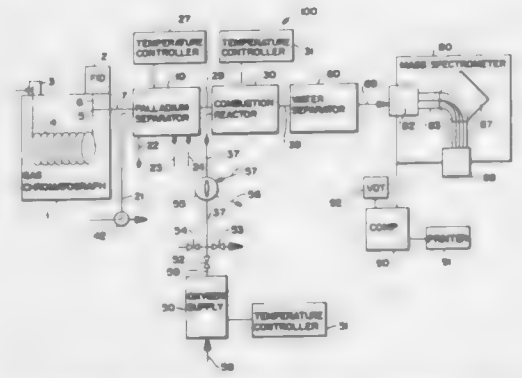
1. A three-phase common container-type circuit breaker in which breaker units (3, 4) of three phases are accommodated in a common container (25), both ends of each of these breaker units are extended out of the container via lead conductors (27*a*, 27*b*, 27*c*, 28*a*, 28*b*, 28*c*), and a common operation unit (7) for driving the breaker units of three phases is provided on an outside of the container, wherein said breaker units of three phases and said lead conductors at both ends thereof are arranged on imaginary straight lines that are in parallel each other nearly passing through vertexes of an equilateral triangle, and said operation unit is juxtaposed at a position opposed to one side (28*b*–28*c*) of said equilateral triangle.

5,012,052

ISOTOPE-RATIO-MONITORING GAS CHROMATOGRAPHY-MASS SPECTROMETRY APPARATUS AND METHOD

John M. Hayes, Bloomington, Ind., assignor to Indiana University Foundation, Bloomington, Ind.

Filed Mar. 22, 1988, Ser. No. 173,297
Int. Cl.[5] H01J *49/26*
U.S. Cl. 250—288 22 Claims



1. A method for determining isotopic abundances of at least one substance in a mixture in a single continuous process, comprising the steps of:

mixing the mixture with a first carrier gas;

introducing the mixture and first carrier gas into a gas chromatograph to resolve the mixture into at least one discrete substance mixed with the first carrier gas;

eluting said at least one discrete substance and first carrier gas from said gas chromatograph to an interface;

separating in said interface all of said first carrier gas from said at least one discrete substance such that all of said discrete substance remains within said interface for further processing;

combusting said discrete substance to form a combustion product mixture having a plurality of combustion products; and

directing at least one of said combustion products to an isotopic mass spectrometer for determination of isotopic abundances;

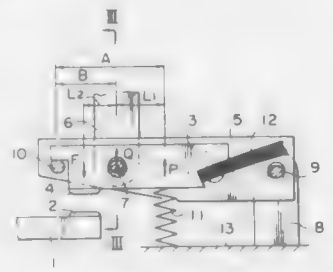
wherein said at least one discrete substance is eluted from said gas chromatograph in a discrete band having a measurable width, and the width of said band is not substantially increased as said at least one discrete substance moves through said interface to said mass spectrometer.

5,012,053

CONTACT DEVICE FOR A SWITCH

Wasaburo Murai, Osaka, Japan, assignor to Terasaki Denki Sangyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 21, 1989, Ser. No. 326,283
Claims priority, application Japan, Mar. 24, 1988, 63-68241
Int. Cl.[5] H01H *3/60, 1/52*
U.S. Cl. 200—288 5 Claims



1. In a contact structure for a switching device comprising; a stationary contact rod having a stationary contact; a movable contact arm rotatably supported by a pivot on a movable contact support member;

a movable contact provided at one side of said movable contact arm in relation to said pivot;

said stationary and movable contacts forming butt contacts;

said movable contact arm connected to a flexible conductor defining an electrical path when said switching device is closed or opened;

a mechanical link means engaging said movable contact support member for closing or opening said electrical path;

a contact spring means provided on said movable contact arm to bias said movable contact toward said stationary contact so as to produce a mechanical pressure there between when said switching device is closed;

a stopper means provided on said movable contact support member to prevent the rotation of said movable contact arm about said pivot when said switching device is opened and permits rotation of said movable contact arm about said pivot when said switching device is closed;

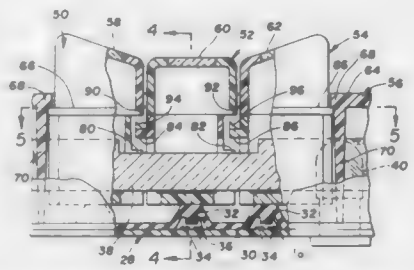
the improvement comprising said stopper means being located so as to engage with said one side of said movable contact arm, and said contact spring means being provided between another side of said movable contact arm in relation to said pivot and a stationary portion of said switching device thereby biasing said movable contact arm toward opening and eliminating chatter.

5,012,054

CLOSELY SPACED BACK-LIT PUSH BUTTON ARRAY

Mark Z. Rada; John W. Willis, and Marta E. Stewart, all of Kokomo, Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed May 14, 1990, Ser. No. 522,696
Int. Cl.[5] H01H *9/16*
U.S. Cl. 200—314 4 Claims



1. A switch panel assembly including a housing having an aperture in one face thereof, a switch array mounted in said housing opposite said aperture to define a housing cavity therebetween, a longitudinal array of partially translucent push button elements disposed in said cavity and extending in part through said aperture, and longitudinal lightpipe means disposed in said cavity for back-lighting said button elements during low ambient lighting conditions, the improvement wherein:

each of the button elements is longitudinally retained by two or more interlocking key and keyway features formed on said housing and lateral sidewalls of said button elements; and

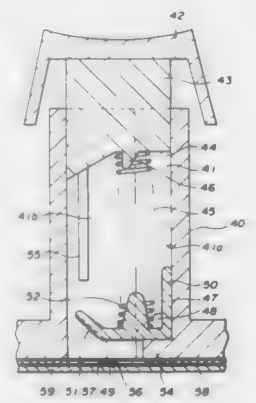
juxtaposed longitudinal sidewalls of said button elements have interleaved laterally extending tab and recess features within said cavity which operate to substantially prevent detectable light in said cavity from exiting the cavity between adjacent button elements.

5,012,055

SPRING LOADED PUSH-BUTTON SWITCH HAVING PREDICTABLE SWITCHING TIME DESPITE VARYING SPRING CHARACTERISTICS

Toshimasa Matsui, Iwaki, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1989, Ser. No. 435,221
Claims priority, application Japan, Dec. 12, 1988, 63-160388[U]
Int. Cl.[5] H01H *13/28*
U.S. Cl. 200—408 2 Claims



1. A push button switch comprising:

a switch housing;

an operating member slideably received in said housing, wherein sliding said operating member in a first direction a certain distance into said housing actuates said switch;

a substantially cylindrical shaped spring means having a first end contacting said operating member and extending within said housing so that sliding said operating member in said first direction initially compresses said spring means;

a rocker element having first and second arms, said rocker element being located within said housing, said rocker element being pivotable about a pivot point such that said first arm and said second arm move in substantially opposite directions when said rocker arm pivots about said pivot point, said spring means having a second end contacting said rocker element proximate to said pivot point such that said rocker element is in a substantially non-tilted position when said operating member is at a substantially fully extended normal position, said second arm being arranged on said rocker element so as to be substantially parallel to said cylindrical shaped spring means, said second arm contacting an inner wall of said housing when said rocker element is in said substantially non-tilted position to restrict said rocker element from tilting in a first direction;

a push pin connected to said operating member and extending within said housing, said push pin not contacting said first arm of said rocker element when said operating member is in said fully extended normal position, said push pin contacting said first arm of said rocker element when said operating member is displaced a first distance into said housing by a force applied to a first end of said operating member so as to cause said rocker element to initially tilt a first amount in a second direction, opposite to said first direction, due to a force applied to said first arm by said push pin,

said push pin causing said rocker element to have an increased tilt when said operating member is displaced by a second distance so as to cause said spring means to buckle due to said increased tilt of said rocker element, wherein buckling of said spring means causes said rocker element to fully tilt without additional depression of said operating member; and

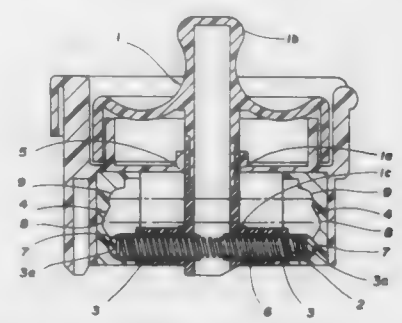
electrical contacting means being actuated by said rocker element when said rocker element is in its fully tilted position, said electrical contacting means for making or breaking an electrical circuit.

5,012,056

CONTROL DEVICE FOR USE IN AN ELECTRICAL SWITCH

Thomas Abel, and Klaus Hirschfeld, both of Luedenscheid, Fed. Rep. of Germany, assignors to Firma Leopold Kostal GmbH & Co. KG, Luedenscheid, Fed. Rep. of Germany

Filed Oct. 10, 1989, Ser. No. 418,511
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1988, 3834390
Int. Cl.[5] H01H *25/06*
U.S. Cl. 200—519 23 Claims



1. A control device for an electrical switch with an actuation element that is mounted in a housing in such a way that it can be angularly and axially displaced, as well as at least one latching pin which can be influenced by the actuation element and

that is likewise mounted in the housing in such a way that the at least one latching pin can be angularly and axially displaced, that is spring loaded, and that has at least one latching track system assigned to it, whereby the at least one latching track system includes latching tracks having molded pathways running in axial and angular directions, through which the at least one latching pin is driven during displacement of the actuation element and whereby the molded pathways each are provided with several indented rest positions assigned to different switch settings, including in at least one of the latching tracks (4), at least one additional molded pathway (12) which runs inclined to the actuation directions of the at least one latching pins (3), which during a displacement of the at least one latching pin (3) in one of the actuation directions necessarily and simultaneously produces a displacement of the at least one latching pin (3) in the other actuation direction.

5,012,057

TRIGGER SWITCH

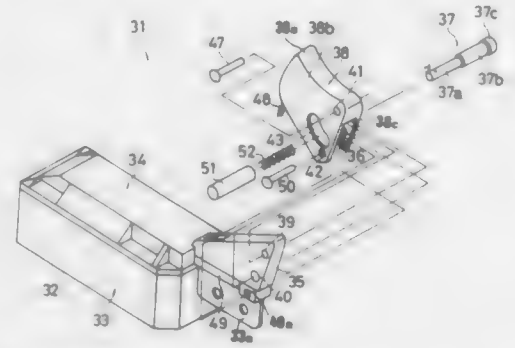
Tsutomu Inuyama, Yatsuka, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Mar. 15, 1989, Ser. No. 323,024

Claims priority, application Japan, Mar. 15, 1988, 63-33266[U]

Int. Cl.[5] H01H *13/02*

U.S. Cl. 200—522 **3 Claims**



1. A trigger switch, comprising:

a grip member having a lock pin receiving hole;

a trigger member made of resin material and having a front end adapted to be pressed and a side wall;

a metallic pivot pin passing through said grip member for pivotally attaching said trigger member to said grip member;

trigger spring means for urging said front end of said trigger member away from said grip member;

an electric switch main body adapted to be actuated by pivotal movement of said trigger member;

a metallic lock plate fixedly secured to said side wall of said trigger member and provided with a slot having an expanded portion and a narrow portion, said lock plate being spaced from said pivot pin;

a lock pin passing through said lock pin receiving hole of said grip member and said slot provided in said lock plate so as to be axially movable, said lock pin having a large diameter portion and a small diameter portion, the large diameter portion of which can be received in said expanded portion of said slot but which cannot be received in said narrow portion of said slot;

lock pin spring means normally urging said large diameter portion of said lock pin into said expanded portion of said slot; and

a cap fitting over the small diameter portion of the lock pin against which a force can be applied against the urging of the lock pin spring means.

5,012,058

MAGNETRON WITH FULL WAVE BRIDGE INVERTER

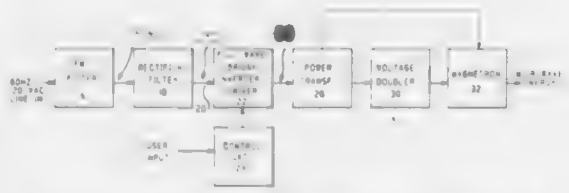
Peter H. Smith, deceased, late of Anchorage, Ky. by Pamela S. Smith, executor , assignor to General Electric Company, Louisville, Ky.

Continuation of Ser. No. 138,138, Dec. 28, 1987, abandoned.

This application Aug. 1, 1989, Ser. No. 390,491

Int. Cl.[5] H05B *6/64*

U.S. Cl. 219—10.55 B **3 Claims**



1. A microwave energy generating system comprising:

a magnetron operable to generate microwave energy for cooking;

a power transformer having a primary winding and a magnetron powering secondary winding connected to supply power to said magnetron;

a full wave bridge inverter circuit with first and second input lines and first and second output lines, said first output line connected to a first end of said primary winding, said second output line connected to a second end of said primary winding, said inverter circuit having first, second, third, and fourth switches, each of said switches having an input terminal, output terminal, and a control terminal, each control terminal operable to close and open its associated switch, said inverter circuit further having a control circuit for controlling all of said switches by their control terminals such that,

during a series of first time intervals:

said first switch is closed to operatively connect said first input line to said second output line, said fourth switch is closed to operatively connect said second input line to said first output line, and said second and third switches are open, the closure of said first and fourth switches causing current flow in a first direction in said primary winding.

and such that during a series of second time intervals, alternating with said first time intervals:

said second switch is closed to operatively connect said second input line to said second output line, said third switch is closed to operatively connect said first input line to said first output line, and said first and fourth switches are open, the closure of said second and third switches causing current flow in a second direction, opposite to said first direction in said primary winding;

and wherein said first and second switches extend in series between said first input line and said second input line and said third and fourth switches extend in series between said first input line and said second input line, and wherein said control terminals of said first and third switches float with respect to said second and fourth switches, and further comprising an isolated drive circuit, and wherein said control circuit is operable to control said first and third switches by way of said isolated drive circuit applying signals to the control terminals of said first and third switches and wherein said isolated drive circuit includes a first capacitor which charges up when said second switch is closed and wherein the charge of said first capacitor closes said first switch responsive to said control circuit, and wherein said isolated drive circuit includes a second capacitor which charges up when said fourth switch is closed and wherein the charge of said second capacitor closes said third switch responsive to said control circuit.

5,012,059

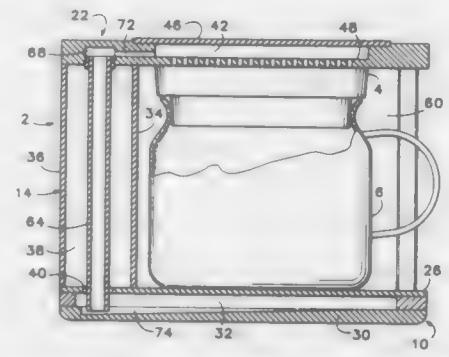
APPLIANCE FOR HEATING WATER BY MICRO WAVE POWER

John M. Boatman, Portland, Oreg., assignor to Donald C. Riddle, Portland and William M. Bernard, Jr., Beaverton, both of, Oreg., part interest to each

Filed May 10, 1989, Ser. No. 350,611

Int. Cl.[5] H05B *6/80*

U.S. Cl. 219—10.55 E **8 Claims**



1. An appliance for dispensing hot water, comprising:

wall means defining a reservoir for receiving water to be heater, a filling aperture for introducing water into the reservoir, a heating chamber located at least partially above the reservoir, and a discharge aperture for allowing heated water to leave the heating chamber, the wall means comprising first wall means bounding the reservoir horizontally and second wall means which define the heating chamber and bound the reservoir vertically at its top, the reservoir having a bottom surface,

a tube extending in the reservoir and defining a passage having first and second open ends, the first end of the passage being close to the bottom surface of the reservoir and the passage being in open communication with the reservoir by way of its first end and not otherwise and opening into the heating chamber at its second end, and

a plug for sealing the filling aperture,

at least part of the wall means being substantially transparent to electromagnetic radiation within a range of wavelengths that is selected to be such that electromagnetic radiation in that range is absorbed by water, so that when the appliance is exposed to electromagnetic radiation in the selected range of wavelengths, water in the reservoir is heated and is forced from the reservoir through the passage into the heating chamber, where it is further heated and is discharged from the heating chamber by way of the discharge aperture.

5,012,060

PERMANENT MAGNET THERMAL GENERATOR

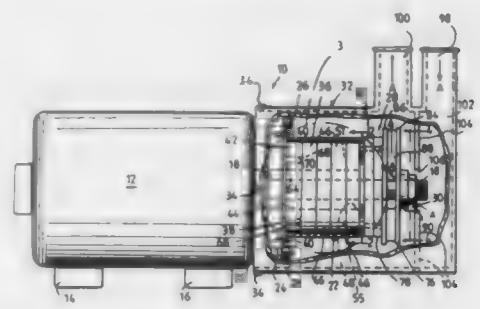
Frank J. Gerard, 501 Heath Ave., North Lithicum, Md. 21090, and Frank Gerard, 12020 Brooknoll Rd., Kingsville, Md. 21087

Filed Sep. 11, 1989, Ser. No. 405,188

Int. Cl.[5] H05B *6/10*

U.S. Cl. 219—10.51 **9 Claims**

1. A permanent magnet thermal generator comprising at least one stationary permanent magnet, said stationary permanent magnet comprising a disc with a front surface and a rear surface with the front surface having both a north and a fourth magnetic pole located thereon and with the rear surface having both a south and a north magnetic pole located thereon with the north magnetic pole on the rear surface being located behind the fourth magnetic pole on the front surface and the south magnetic pole on the rear surface being located behind the north magnetic pole on the front surface, a rotatable rotor located adjacent said permanent magnet for rotating in the magnetic flux produced by said permanent magnet, said rotatable rotor comprising a non-ferrous heated member located in position to be heated by said permanent magnet and means for moving fluid as said rotatable rotor rotates, and housing means



located around said rotor for confining a fluid around said rotor.

5,012,061

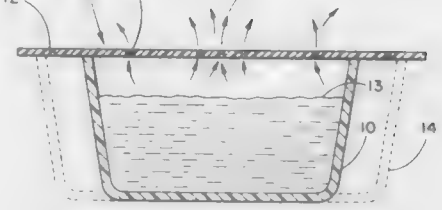
MICROWAVE SAFETY LID

Emmett H. Lesser, 17255 N. Creek La., Farmington, Minn. 55024

Filed Jul. 9, 1990, Ser. No. 549,949

Int. Cl.[5] H05B *6/80*

U.S. Cl. 219—10.55 E **4 Claims**



1. A universal microwave-permeable safety lid for use with an open top microwave heating vessel comprising:

a substantially planar microwave permeable member which when placed on the open top of a microwave heating vessel forms a barrier except for a plurality of relatively small gas and vapor permeable openings therethrough which allow the vessel to retain an amount of heated vapors and gases within the lid at ambient pressure and to provide for the venting of vapors and gases, above ambient pressure;

wherein the lid is in a shape describing a corresponding vessel geometry and the openings are in a pattern which distributes the venting over the cover area;

wherein the lid is of a size large enough to accommodate a plurality of sizes of open vessels substantially of the geometry described by the lid, the opening pattern further being configured to accommodate the distributive venting of vessels of several sizes;

the lid being further provided with at least one integral handle configured to extend beyond the side-wall of the vessel; and

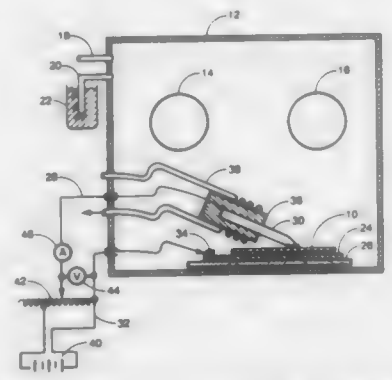
wherein the plurality of openings are configured in the shape of back-to-back frusto-conical sections, such that they are easily cleansed, the minimum diameter occurring central to the thickness of the lid.

5,012,062

ARC-TEXTURED HIGH EMITTANCE RADIATOR SURFACES

Bruce A. Banks, Olmsted Township, Cuyahoga County, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 18, 1989, Ser. No. 381,240
Int. Cl.[5] B23H 9/00
U.S. Cl. 219—69.11 14 Claims



10. A method of producing a durable high thermal emittance surface on a niobium radiator containing about 1% zirconium comprising

covering a portion of the surface of said radiator with a sheath of inert gas,

forming an arc at said surface of said radiator in said sheath, and

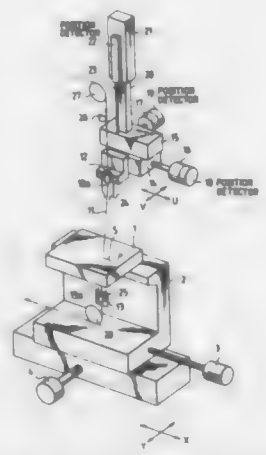
selectively moving said arc over said surface thereby texturing the same.

5,012,063

TAPER MACHINING DEVICE IN WIRE-CUT ELECTRICAL DISCHARGE APPARATUS

Tasuku Kawanabe, and Juzo Kuriyama, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Sep. 28, 1989, Ser. No. 413,684
Claims priority, application Japan, Oct. 5, 1988, 63-251403
Int. Cl.[5] B23H 7/[illegible]
U.S. Cl. 219—69.12 4 Claims



1. A taper machining device in a wire electrical discharge machining apparatus for affecting taper machining to a workpiece, comprising:

an upper wire guide and a lower wire guide for supporting a wire electrode in its slanting extension;

upper and lower nozzles integrally provided with the upper and lower wire guides, respectively, for ejecting a machining liquid to the workpiece; and

regulating means,

said wire electrical discharge machining apparatus comprising a worktable extending in a first horizontal plane for mounting the workpiece thereon, a slider extending in a second horizontal plane parallel with said first horizontal plane, drive means for moving the slider in said second horizontal plane and in a vertical direction, the upper wire guide being provided at the slider;

at least one of the upper and lower wire guides and its integrally provided nozzle being horizontally movable, the wire electrode and the workpiece being relatively movable and providing a machining gap therebetween, the wire electrode having an upper bending point at the upper wire guide and a lower bending point at the lower wire guide, and

said regulating means for regulating movement of one of the upper and lower bending points within an imaginary conical body, to thereby avoid mechanical interference between the wire electrode and the upper and lower nozzles, an apex of the imaginary conical body bending defined by a remaining one of the lower and upper bending points as a reference point and the apical angle of the apex being twice as large as an allowable maximum inclination angle of the wire electrode, said regulating means further comprising position detectors for detecting at least one of a vertical and horizontal position of the slider, the position detectors generating signals indicative of said positions, and control means connected to the position detectors for controlling the drive means in response to the signal from the position detectors, said control means comprising:

(a) means for detecting a vertical position of the slider;

(b) first means for computing a wire guide span length between the upper and lower wire guides in accordance with the detected vertical position of the slider;

(c) second means for computing a relative horizontal offsetting length between the upper and lower wire guides when the slider is at the vertical position;

(d) third means for computing a maximum inclination angle at the vertical position of the slider;

(e) comparison means for comparing the maximum inclination angle with the allowable maximum inclination angle of the wire electrode; and

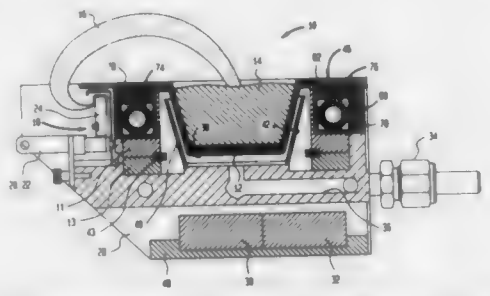
(f) means for driving the drive means when the allowable maximum inclination angle is greater than the maximum inclination angle to change at least one of the parameters consisting of the vertical position of the slider and the relative horizontal offsetting length between the upper and lower wire guides.

5,012,064

ELECTRON BEAM EVAPORATION SOURCE

Ping Chang, Danville, and P. A. Joel Smith, San Pablo, both of Calif., assignors to The BOC Group, Inc., New Providence, N.J.

Filed Jun. 29, 1990, Ser. No. 546,269
Int. Cl.[5] B23K 15/00
U.S. Cl. 219—121.15 5 Claims



1. In an electron beam evaporation source having, a crucible for containing an evaporant, electron beam gun means generating an electron beam impacting the evaporant at an impact area thereof for evaporating the evaporant, a pair of pole pieces located along opposite sides of the crucible, magnetic field means transversely connecting the pole pieces and generating a magnetic field across the pole pieces for vertically deflecting the electron beam through an arc of about 270° and into the crucible, and magnetic positioning means for selectively deflecting the electron beam in a horizontal plane so that the impact area of the electron beam on the evaporant may be repositioned to fully utilize the evaporant, the improvement comprising:

the magnetic deflection means comprising a quadrapole having a set of two opposite pairs of electromagnets, attached end to end in a square-like configuration, located so that the electron beam passes between the two pairs of electromagnets, wired and oriented such that the electromagnets of one of the pairs of electromagnets act in concert to deflect the electron beam in a first direction, parallel to the pole pieces, and the electromagnets of the other of the pairs of electromagnets act in concert to deflect the electron beam in a second direction, transverse to the pole pieces, to provide a substantially uniform magnetic deflection field to horizontally deflect the electron beam and thereby to prevent substantial distortion of the impact area that would otherwise occur when repositioned;

the pole pieces having a preselected thickness and a preselected separation to produce a reduced vertical gradient in the flux density of the magnetic field above the electron beam evaporation source sufficient to prevent lengthening of the impact area that would otherwise occur when the electron beam is deflected in the first direction and away from the electron beam gun means;

the pole pieces producing tail regions in the impact area at the extreme transverse positions of deflection of the electron beam in the second direction; and

a pair of surface dipoles connected, at one end, to the pole pieces at an angle of about 45 degrees and positioned along the pole pieces so that the electron beam passes between the other of the ends of the pair of surface dipoles when in an essentially vertical location of the arc of the electron beam to substantially prevent the formation of the tail regions in the impact area at the extreme transverse positions of deflection of the electron beam in the second direction, whereby the maintenance of the impact area substantially free of distortion, lengthening, and the formation of tail regions will ensure that the size of the impact area and thus, the power density of the electron beam at the impact area and the evaporation rate of the evaporant will remain essentially constant in any position of the electron beam.

5,012,065

INDUCTIVELY COUPLED PLASMA TORCH WITH LAMINAR FLOW COOLING

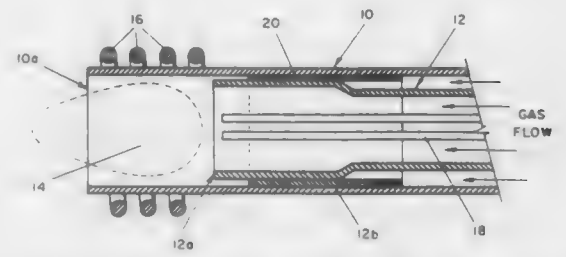
Gary D. Rayson, and Yang Shen, both of Las Cruces, N. Mex., assignors to New Mexico State University Technology Transfer Corporation, Las Cruces, N. Mex.

Filed Nov. 20, 1989, Ser. No. 440,233
Int. Cl.[5] B23K 9/00
U.S. Cl. 219—121.52 16 Claims

1. An inductively coupled gas plasma torch comprising:

an outer tubular sleeve and an inner tubular sleeve, said inner tubular sleeve being positioned concentrically within and spaced inwardly from said outer tubular sleeve, said outer and inner sleeves being adapted to receive a coolant gas flowing between said sleeves and a plasma gas flowing within said inner sleeve, said outer sleeve and said inner sleeve each including a discharge end, said discharge end of said inner sleeve being spaced longitudinally inwardly from said discharge end of said outer sleeve whereby there is provided a heating zone between said discharge ends of said outer and inner sleeves, said inner sleeve being stepped up in diameter along a portion of its length extending from said discharge end of said inner sleeve, and

a tubular insert having inner and outer surfaces and having a discharge end and an inlet end, said tubular insert being positioned concentrically and snugly fitted between said outer tubular sleeve and said portion of said inner tubular sleeve having a stepped up diameter, said insert further



including multiple longitudinal linear gas flow channels opening outwardly from said outer surface of said insert;

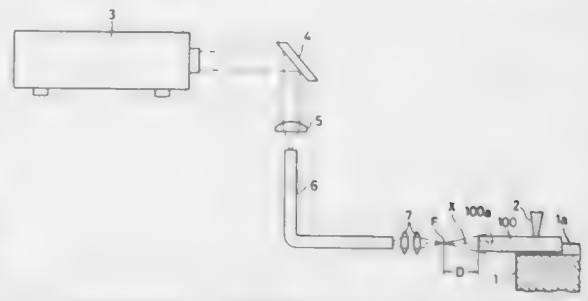
whereby coolant gas introduced into said torch between said inner and outer tubular sleeves is constrained to flow through said gas flow channels of said tubular insert and emerges therefrom in a laminar flow that extends along said inner surface of said outer sleeve through said heating zone.

5,012,066

METHOD OF AND APPARATUS FOR MANUFACTURING EYELESS SUTURE NEEDLE

Kanji Matsutani, and Tadashi Otsuka, both of Takanezawa, Japan, assignors to Matsutani Seisakusho Co., Ltd., Takanezawa, Japan

Filed Aug. 15, 1990, Ser. No. 567,763
Claims priority, application Japan, Aug. 31, 1989, 1-223123
Int. Cl.[5] B23K 26/00
U.S. Cl. 219—121.68 13 Claims



1. A method of manufacturing an eyeless suture needle, comprising the steps of:

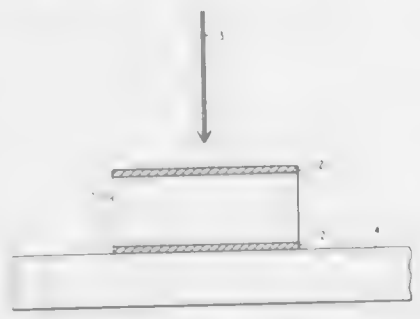
(a) forming a mounting hole in a proximal end face of a needle material in such a manner that said mounting hole extends along an axis of said needle material, a gut being adapted to be inserted into and fixed to said mounting hole; and

(b) applying an energy beam to the proximal end face of said needle material to anneal a proximal end portion of said needle material.

5,012,067
DIAMOND CUTTING METHOD

Junichi Sato, Tokyo, and Minoru Shimizu, Osaka, both of Japan, assignors to Showa Denko K.K., Tokyo and Osaka Kongo Seito Co., Ltd., Osaka, both of, Japan

Filed Oct. 20, 1989, Ser. No. 424,447
Claims priority, application Japan, Oct. 20, 1988, 63-265780
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.72 17 Claims

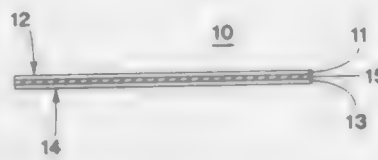


1. A method of processing a diamond workpiece, comprising forming a metallic membrane or layer on at least one surface of the diamond workpiece and then machining the diamond workpiece with a laser beam.

5,012,068
SUSCEPTOR FOR CONVERTING MICROWAVE ENERGY INTO HEAT AND METHOD OF USE

Alan R. Anderson, 707 Pheasant Run, West Chester, Pa. 19382

Filed Nov. 15, 1989, Ser. No. 436,729
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—10.55 M 32 Claims

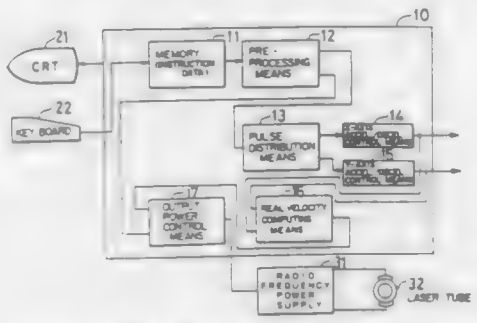


1. A process of preparing food in a microwave oven, comprising:
(a) determining the wattage of said oven;
(b) locating a susceptor means for converting microwave energy into heat in said oven, said susceptor means having a microwave interactive material integrally associated therewith; and
(c) placing a container of food in the oven directly on top of the susceptor means, said container comprising a material substantially transparent to microwave energy,
wherein said susceptor means has two opposing faces of differing susceptibility to microwave energy, a more insulating face and a less insulating face, said susceptor means positioned with its less insulating face in contact with the container in a low power oven and its more insulating face in contact with the container in a high power oven.

5,012,069
POWER CONTROL METHOD IN A CNC LASER MACHINING SYSTEM

Takeji Arai, Minamitsuru, Japan, assignor to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP89/00041, § 371 Date Sep. 6, 1989, § 102(e) Date Sep. 6, 1989, PCT Pub. No. WO89/07035, PCT Pub. Date Aug. 10, 1989
PCT Filed Jan. 18, 1989, Ser. No. 415,233
Claims priority, application Japan, Jan. 29, 1988, 63-018603
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.62 9 Claims

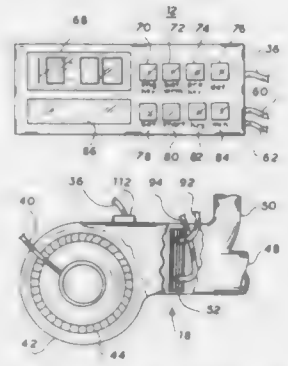


1. A power control method in a (computerized numerical control CNC) laser machining system including a CNC apparatus and a laser machining apparatus for machining a workpiece, said method comprising the step of:
lowering a machining velocity, and at the same time,
lowering an output power of a laser beam by reducing both a pulse duty ratio and a pulse frequency.

5,012,070
VEHICLE PREHEATING SYSTEM USING EXISTING VEHICLE HEATING SYSTEM

Mark E. Reed, Pierre, S. Dak., assignor to Durkin-Reed, Inc., Pierre, S. Dak.

Continuation-in-part of Ser. No. 357,213, May 25, 1989. This application Apr. 10, 1990, Ser. No. 506,817
Int. Cl.[5] B60L *1/02*
U.S. Cl. 219—202 12 Claims

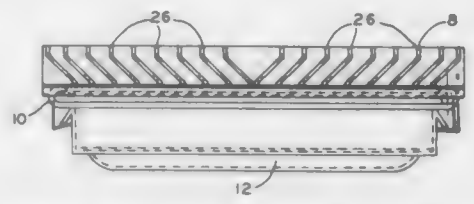


1. In a vehicle having a body defining an engine compartment separated from a passenger compartment by a firewall, a liquid cooled internal combustion engine in the engine compartment, a storage battery forming a component of the vehicle electrical system, a heater assembly having a core adapted to receive heated liquid from the engine through water conduit passageways and including electrically driven fan means powered by the vehicle electrical system for discharging heated air from the heater core into the passenger compartment, the improvement comprising;
said heater assembly including a housing having at least one outlet for said discharging of heated air,
said fan means when operated defining an air flow path directing air from said heater housing through said outlet,
an electrical resistance heating unit disposed externally of said heater assembly housing and disposed adjacent said water conduit passageways,
said heating unit operable to generate heat upon the application of electrical current,
valve means disposed in said conduit passageways to reroute said liquid from said engine to said electrical resistance heating unit,
an electrical connection on said vehicle adapted to be supplied with alternating current from an external source,
electrical circuits between said electrical connection and said heater assembly,
said circuits including a first circuit joined to said electrical resistance heating unit and a second circuit joined to said fan means,
said electrical circuits including means to utilize said supplied electrical current through said second circuit to operate said fan means and through said first circuit to operate said heating unit, whereby
externally supplied alternating current is capable of operating both said electrical resistance heater unit and said fan means to preheat the confines of the vehicle passenger compartment.

5,012,071
GREASE SPLATTER CAPTURE SHIELD

Mitchell C. Henke, Fort Wayne, Ind., assignor to Lincoln Foodservice Products, Inc., Fort Wayne, Ind.

Filed Nov. 14, 1989, Ser. No. 436,383
Int. Cl.[5] F27D *7/04*; F24C *15/12*; A47J *36/38*
U.S. Cl. 219—400 3 Claims



1. A splatter capture shield for a baking pan adapted for use in an impingement oven, said capture shield comprising:
a plurality of elongate shield elements, reach said shield element including a vertically straight air flow receiving portion adapted for receiving heated, columnated jets of air, said shield elements also having slanted portions arranged to be vertically overlapping whereby vaporized particles flowing upward through said capture shield tend to deposit on one of said shield elements, and said shield elements being spaced apart to allow air to flow through substantially all of said capture shield.

5,012,072
CONFORMABLE FUSING SYSTEM

Robert G. Martin, Irondequoit, and Alan M. Litman, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

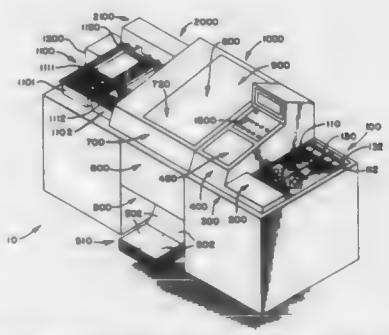
Filed May 14, 1990, Ser. No. 522,934
Int. Cl.[5] G03G *15/20*
U.S. Cl. 219—469 12 Claims

4. In an electrostatic copying machine having fusing apparatus of the type defining a nip through which support material bearing toner images is moved in a given direction for fusing the toner images onto the support material, the fusing apparatus comprising:
a heater roll disposed transverse the direction of movement of the support material, the heater roll having a longitudinal direction and a hoop direction, being stiff in the longitudinal direction and conforming in the hoop direction,
a core supporting the heater roll, the heater roll being disposed about the circumference of the core, the core including a rigid shaft, a sleeve disposed about the shaft, and a plurality of flexible fingers interconnecting the shaft and the sleeve, the fingers adapted for compression toward the shaft, and
a back up roll disposed transverse the direction of movement of the support material, the back up roll being stiff in the longitudinal direction and conforming in the hoop direction, the engagement of the heater roll and the back up roll defining an elongated, essentially flat nip.

5,012,073
DATA CARD AND MAILER DATA MATCH/INSERTER SYSTEM

Donald W. Hewitt, Roseville, and David D. Seibel, Bloomington, both of Minn., assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 866,941, May 27, 1986, Pat. No. 4,734,380, which is a division of Ser. No. 482,964, Apr. 8, 1983, Pat. No. 4,622,671, which is a continuation-in-part of Ser. No. 469,891, Feb. 25, 1983, abandoned. This application May 20, 1987, Ser. No. 53,608
Int. Cl.[5] G06F *15/20*
U.S. Cl. 235—375 74 Claims



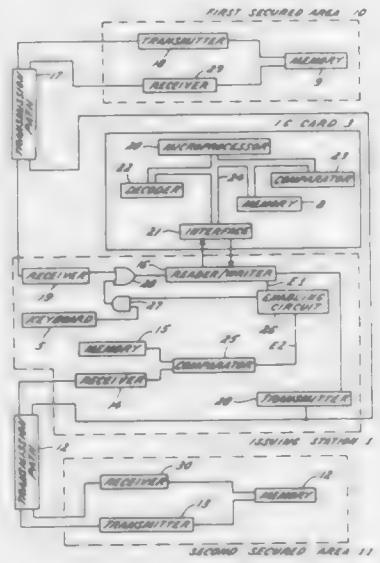
1. An inserter system for attaching a card of generally planar, rectangular configuration to a form at a predetermined card attachment location thereon by inserting first and second diagonally opposite corners of the card into corresponding first and second card-corner receiving apertures provided in the form and defining the said card attaching location thereof, said apertures being spaced apart by a distance less than the diagonal dimension of the card between said first and second diagonally opposite corners thereof, comprising:
a card inserter mechanism including means for receiving and releasably retaining a card in a first position,
means for positioning a mailer form with the said card attachment location thereof aligned with and substantially parallel to and displaced from said first position of the releasably retained card to be inserted therein,
said inserter mechanism further including means for supporting said card in a central portion thereof and means for engaging said card adjacent said first and second diagonally opposite corners for deflecting said corners beyond said first position and towards said form, and
means for actuating said receiving and supporting means to release said card and for actuating said deflection means to deflect said diagonally opposite corners of said card about said central support means to enable insertion of said first and second diagonally opposite corners of said card into the said corresponding apertures of the card attachment location of said mailer form aligned therewith, and for thereafter displacing said central support to permit said card to flex to its original planar configuration with the said diagonally opposite corners thereof projecting through the said corresponding apertures and underlying the form, thereby attaching the card to the form.

5,012,074

APPARATUS FOR SECURING AN IC-CARD ISSUING STATION

Shigeo Masada, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 16, 1988, Ser. No. 168,695
Claims priority, application Japan, Mar. 24, 1987, 62-69830
Int. Cl.[5] G06F *15/30*
U.S. Cl. 235—379 13 Claims



1. A system at an issuing station for issuing IC cards in which the card manufacturer records a manufacturing code in the card and separately transmits the manufacturing code to an issuing station from a secured source, said system comprising in combination:

manufacturer authorization checking means responsive to the manufacturing code recorded in said card and including means for receiving the manufacturing code from the manufacturer, said manufacturer authorization checking means including means for comparing the received and recorded manufacturing codes, and means for producing an authorized card signal when a match is detected between said received and recorded manufacturing codes, thereby identifying the presence of an authorized card;

issuer validity checking means for receiving an issuer identification code from a secured control room and comparing the received issuer identification code with an issuer identification code stored in a memory at the issuing station, said issuer validity checking means producing an issuer authorized signal when a match is detected between said received and stored issuer identification codes; and

means responsive to the presence of both said authorized card and issuer authorized signals for enabling said issuing station to record information in and issue said card.

5,012,075

PORTABLE CONTAINER FOR VALUABLE ITEMS

Brian G. Hutchison, Dundee, Scotland, and Ian Gahan, Perthshire, Great Britain, assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 26, 1989, Ser. No. 456,514
Claims priority, application United Kingdom, Sep. 15, 1989, 89209407
Int. Cl.[5] G06F *15/30*; E05G *1/00*
U.S. Cl. 235—379 10 Claims

1. The combination of a container for valuable items and a container receiving means for receiving said container, said container comprising:

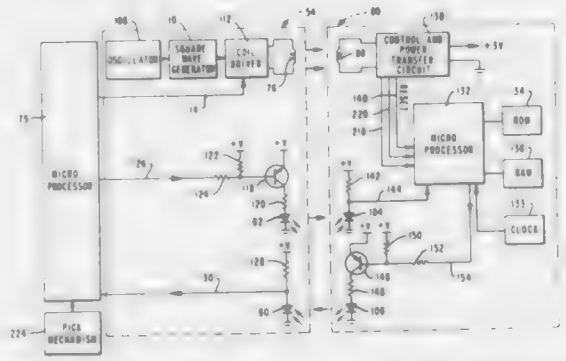
door means for said container, said door means having opened and closed positions relative to said container receiving means so as to enable the transfer of items to take place out of or into said container when said container is operatively positioned in said container receiving means and said door means is in said opened position;

data storing means for storing data;

switch means operatively associated with said door means to actuate said switch means when said door means is opened;

real time clock means for providing date and time of day data;

data processing means for processing data associated with said container; and



battery means for supplying power to said data storage means, said data processing means, and said real time clock means during a period when said container is not inserted in said container receiving means;

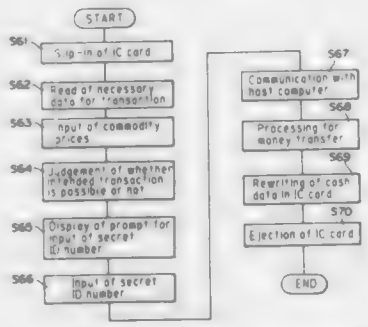
said data processing means being effective in response to actuation of said switch means during said period to store in said data storing means data indicating the date and time of day when said door means was opened to cause said actuation.

5,012,076

TRANSACTION METHOD WHEREIN TRANSACTION AMOUNT IS COMPARED WITH ACCOUNT BALANCE BEFORE ID IS ENTERED

Yasuhisa Yoshida, Owariasahi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 1, 1989, Ser. No. 317,397
Claims priority, application Japan, Mar. 2, 1988, 63-47559
Int. Cl.[5] G06F *15/30*
U.S. Cl. 235—379 2 Claims



1. A method for transferring funds from a user's account using a portable storage means, comprising the steps of:

reading a first fund data stored in said portable storage means using a terminal data reading means which is connected to an automatic transaction control means, said first fund data indicating a balance of transferable fund, said transferable fund being a fund contained within an account which is available for fund withdrawal;

entering a transaction amount data into a terminal data entry means which is connected to said automatic transaction control means, said transaction amount data indicating an amount of money to be withdrawn by fund transfer from said transferable fund;

comparing said entered transaction amount data with said read first data using said automatic transfer control means;

requesting a user specific authorization code into a terminal data entry means if and only if said entered transaction amount is less than said read first data;

entering an authorization code into said terminal data entry means only if said entered transaction amount was less than said read first data;

reading data from said terminal entry means which identifies a destination bank account after said entering of said authorization code;

transferring an amount of funds from said transferable fund to said destination bank account and storing a record of said transfer, said transferring being performed by said automatic transfer control means after said entering of said authorization code; and

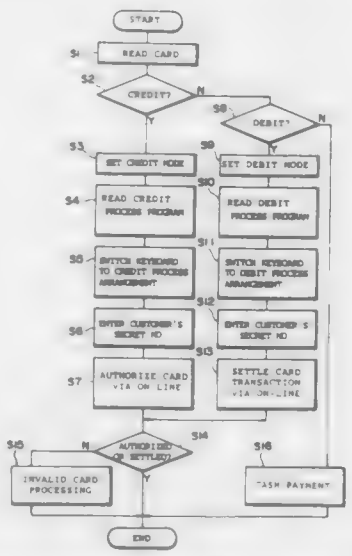
updating said first fund data stored in said portable storage means by subtracting said transferred amount from said read first data and storing the result in said portable storage means for subsequent use.

5,012,077

CREDIT AND DEBIT CARD PROCESSING TERMINAL

Kimio Takano, Muko, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Sep. 29, 1988, Ser. No. 250,553
Claims priority, application Japan, Oct. 7, 1987, 62-253242
Int. Cl.[5] G06F *15/21*; G06K *7/01*
U.S. Cl. 235—380 4 Claims



1. A credit and debit card processing terminal, comprising:

a processor comprising a credit processor for effecting credit card processing on the basis of data stored on a credit card and a debit processor for effecting debit card processing on the basis of data stored on a debit card;

(b) a card discriminator for automatically discriminating whether a card to be used is a credit card or a debit card by reading said data stored on said card; and

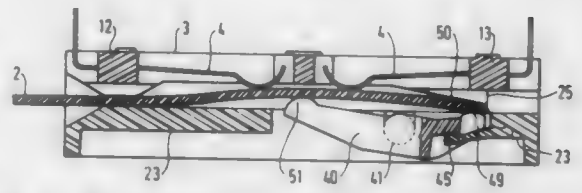
(c) a processing activator for activating any one of said processors in response to said data automatically discriminated by said card discriminator.

5,012,078

IC CARD READER HAVING LEVER THAT BENDS CARD ONTO IC CONTACTS

Michel Pernet, Pontarlier, France, assignor to Alcatel Cit, Paris, France

Filed Jun. 28, 1989, Ser. No. 372,738
Claims priority, application France, Jul. 1, 1988, 88 08934
Int. Cl.[5] G06K *7/06*
U.S. Cl. 235—441 3 Claims



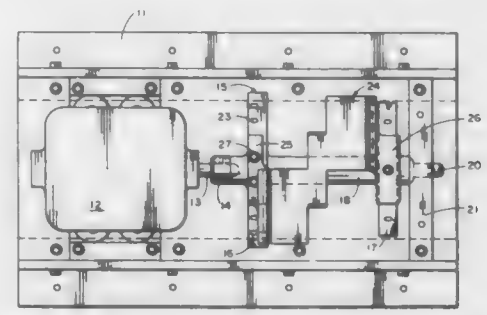
1. An IC card reader comprising: a contact frame, card positioning and guide means carried by said contact frame including an inlet portion and an end-of-stroke portion for guiding an inserted card into a card insertion movement into the IC card reader and positioning opposite ends of said IC card when said IC card is fully inserted in said contact frame, and contact elements for providing electrical connection, conducting pads on a face of said IC card, whereby circuits are established with an apparatus containing the IC card reader, said IC card reader further comprising: a rocking lever having a central pivot on said contact frame, and an actuating cam on one side of the central pivot against which said IC card, upon being inserted, comes to bear at the end of the IC card insertion stroke, thereby pivoting the lever from a rest position to a pressure-applying position, a pressure cam on the opposite side of said central pivot for bearing against the IC card in about a center part thereof relative to the length of the card and on the face thereof opposite said face bearing said conducting pads, when the rocking lever is in its pressure-applying position, thereby bending the IC card between said inlet portion and said end-of-stroke portion and giving the card a convex curvature towards the contact elements and pressing thereagainst to insure circuit completion between the conducting pads on the IC card and the contact elements, and resilient returns means for returning the rocker lever to its rest position when the rocking lever is free of engagement with said inserted IC card.

5,012,079

BAR CODE SCANNER MIRROR ASSEMBLY

Ishwar Singh, Winter Springs, and William Senkevich, Longwood, both of Fla., assignors to LazerData Corporation, Orlando, Fla.

Filed Nov. 13, 1989, Ser. No. 435,158
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—467 8 Claims



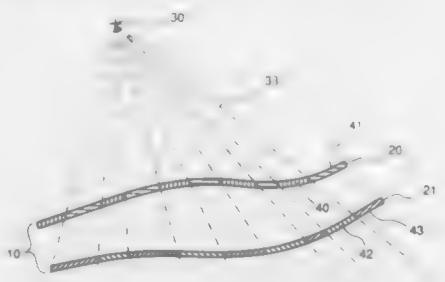
1. A rotatable bar code scanner mirror assembly comprising:

a rotatable mirror support frame;

a plurality of mirrors, each mirror mounted to said support frame in a different intersecting plane to at least one other mirror mounted to said support frame;

each said mirror being shaped to have a pair of generally flat offset portions, each offset from the other on opposite sides of a center axis and said offset portions being connected with a center mirror portion whereby a return beam can reflected off the offset portions and the outgoing beam is reflected off the center portion such that the outgoing and return laser beams use the same scanner mirror assembly and the returning signals are substantially maximized and balanced in amplitude by the offset portions of the mirror.

5,012,080
DIRECTIONAL PARTICLE FILTER
Daniel T. Griscom, 90 Wallace St., #2, Somerville, Mass. 02144
Filed Apr. 19, 1990, Ser. No. 511,107
Int. Cl.[5] G02B *5/22*
U.S. Cl. 250—505.1 **29 Claims**



1. A directional particle filter for selectively blocking specific particles whose projected paths intersect a predetermined point relative to the filter comprising

a plurality of non-intersecting surfaces arranged in layers, each surface comprising multiple units, combinations of said units forming passing and blocking tuples, each tuple comprising one unit from each of said surfaces such that the projected path of any specific particle through the filter traverses a single tuple,

all of said blocking and passing tuples being so arranged that the projected path of each specific particle through the filter that intersects said predetermined point relative to the filter traverses a blocking tuple, and the projected paths of specific particles through the filter that do not intersect said predetermined point traverse passing and blocking tuples,

said units being further arranged such that no specific particle deflected by said units passes through said filter.

5,012,081
STRAPDOWN STELLAR SENSOR AND HOLOGRAPHIC LENS THEREFOR
Douglas R. Jungwirth, Reseda; A. Phillip Simpson, Rancho Palos Verdes; Mitsuo Kawahara, Perris; Seymour Levine, Topanga, and John M. Kennel, Santa Ana, all of Calif., assignors to Northrop Corporation, Hawthorne, Calif.
Filed Jun. 22, 1989, Ser. No. 369,790
Int. Cl.[5] G01J *1/20*
U.S. Cl. 250—203.6 **22 Claims**

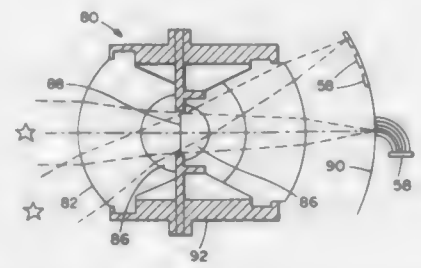
1. A strapdown star tracker for generating navigational navigational information from an assumed position given by an inertial measurement unit aboard a vehicle, and said star tracker being adapted to be strapped down to the vehicle as it moves, comprising

viewing means having an entrance aperture and a field of view for simultaneously focussing radiation from a plurality of stellar objects, or other heavenly bodies, separated one from another by an angular displacement,

means for strapping down said viewing means in a fixed orientation in said vehicle,

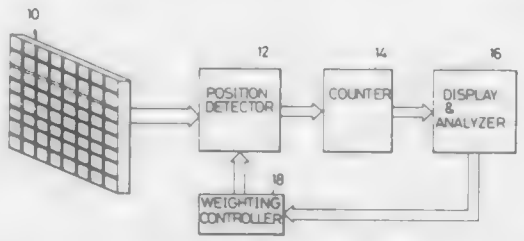
means for converting the focussed radiation to plurality of detectable electrical signals one for each stellar object or heavenly body, and

means coupled to said converting means and responsive to



each said electrical signal for deriving inertial measurement unit correctional information from said electrical signal and for applying the correctional information to the assumed position.

5,012,082
TWO-DIMENSIONAL INCIDENT POSITION DETECTOR DEVICE FOR LIGHT OR RADIATION
Mitsuo Watanabe, Hamamatsu, Japan, assignor to Hamamatsu Photonics K.K., Japan
Filed Feb. 23, 1990, Ser. No. 483,637
Claims priority, application Japan, Mar. 1, 1989, 1-48800; Jan. 29, 1990, 2-18199
Int. Cl.[5] G01D *21/00*
U.S. Cl. 250—208.2 **10 Claims**



1. A two-dimensional incident position detector device for radiation comprising:

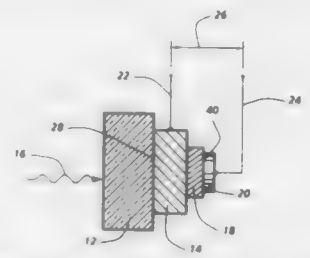
(a) a detector array including a plurality of detection cells in two-dimension arrangement;

(b) comparator means for comparing an output from a noticed detection cell among said detection cells with outputs from all other detection cells adjacent to said noticed cell; and

(c) incident position determining means for determining a position of said noticed cell as an incident position of radiation when the output from said noticed cell is larger than the outputs from all adjacent detection cells.

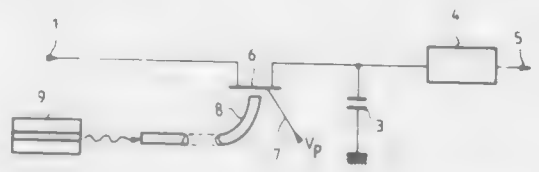
5,012,083
LONG WAVELENGTH INFRARED DETECTOR WITH HETEROJUNCTION
Tak-Kin Chu, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jun. 18, 1990, Ser. No. 539,958
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—211 J **20 Claims**

1. In a photovoltaic detector having a substrate, a first semiconductor layer on the substrate, a semiconductor overlay forming a rectifying junction with the first semiconductor layer and heterojunction means interfaced between the overlay and the first semiconductor layer for establishing a resistance across the rectifying junction, the improvement residing in said heterojunction means being made of a class of material having properties interrelated with those of the first semiconductor



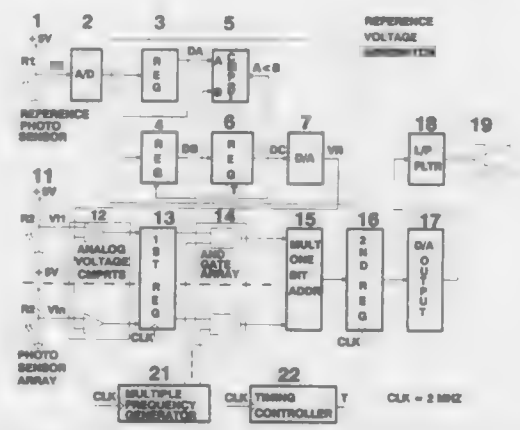
layer substantially limiting radiation absorption thereto while increasing said resistance across the rectifying junction.

5,012,084
MICROWAVE SAMPLE-AND-HOLD UNIT WITH TRANSISTOR
Christian Guiberteau, Longoumeau; Stéphane Ruggeri, Viry, and Michèle Le Paih, Bievres, all of France, assignors to Thomson Composants Microondes, Puteaux, France
Filed Jan. 25, 1990, Ser. No. 470,141
Claims priority, application France, Feb. 7, 1989, 8901532
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—211 R **10 Claims**



1. A microwave sample--and-hold unit, comprising a switch placed between the input of an electrical signal and a storage capacitor, wherein the switch is a field-effect transistor provided with an optical control device on its channel region, and wherein the transistor is biased on its gate by a DC voltage V_p which keeps the transistor at a point close to its threshold, independently of the value of the input signal.

5,012,085
SELF ADAPTIVE AND SHADOW SENSITIVE ELECTRONIC MUSICAL INSTRUMENT
Ben-I Kyi, 1272 Mt. Quail Cir., San Jose, Calif. 95120
Filed Sep. 28, 1989, Ser. No. 413,628
Int. Cl.[5] G01V *9/04*
U.S. Cl. 250—221 **1 Claim**



1. A Self adaptive and shadow sensitive electronic musical instrument generates music when shadow over any one of photo sensors, comprising:

a reference photo sensor means for generating a voltage V1 which is in proportion to the intensity of the ambient light;

an A/D converter means connected to the reference photo sensor means for converting V1 from analog voltage to digital voltage;

a reference voltage generator means for generating the brightest light intensity value DC within a certain amount of time T, where T is generated from the timing controller;

a D/A converter means for converting the brightest intensity value DC to an analog voltage VR which is called reference voltage;

photo sensor array means for generating voltages VI for photo sensors, where the voltage VIi for photo sensor i depends on the intensity of the light above the corresponding photo sensor;

analog voltage comparators means for comparing voltages VI with the said reference voltage VR, when the voltage VIi is higher than the reference voltage VR, which means a shadow is above the photo sensor, then the output of the corresponding comparator is logical one; otherwise, the output is logical zero;

a first register means for synchronizing the outputs from analog voltage comparators;

a multiple frequency generator means for generating frequencies for corresponding photo sensors;

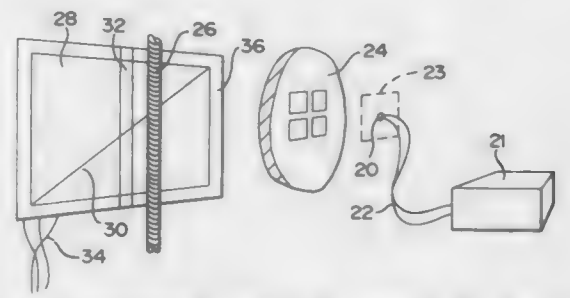
AND gate array means connected to the first register means and to the multiple frequency generator means for performing logical AND operations of which a logical one is output for each corresponding shaded photo sensors;

a multiple one bit adder means for adding all the outputs of AND gate array that the result will be the sum of all shaded photo sensors frequencies;

a second register 3 means for intermediately storing the result of said multiple one bit adder; and

an output D/A converter means connected to the register 16 means for generating an analog voltage which is corresponding to the digital value of said second register 16.

5,012,086
OPTOELECTRONIC PICKUP FOR STRINGED INSTRUMENTS
Timothy J. Barnard, 2141 Crystal Lk. Ct. Dr., #0-269, Utica, Mich. 48087
Filed Oct. 4, 1989, Ser. No. 416,967
Int. Cl.[5] G01V *9/04*
U.S. Cl. 250—222.1 **28 Claims**



1. An optoelectronic pickup for detecting the displaced position of a string having a longitudinal axis relative to a fixed point and translating the relative position of the string into an electrical output signal, comprising:

(a) a means for producing collimated illumination, said illumination radiating along an axis and impinging on the surface of the string and nearby surrounding adjacent areas to the string; and

(b) a detector for detecting the collimated illumination which passes around said string, and also for detecting the resultant shadow cast by said string, said detector includ-

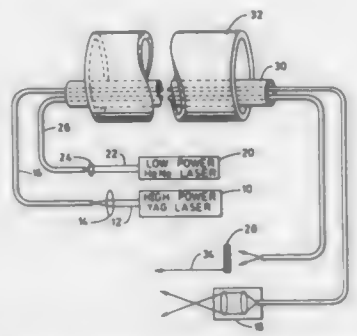
ing a photodetector having an active area which is substantially perpendicular to the axis of the collimated illumination, said photodetector being responsive to illumination and shadows and also being capable of translating the relative portions of each of the illuminated area and shadow area into an electrical signal, whereby the total illumination of the active area of said detector has a direct linear relationship to the relative position of said string over the maximum displacement range of said string during normal operation and having an electrical output signal proportional to illuminated area of said photodetector.

5,012,087

FIBER OPTIC SAFETY SYSTEM

Todd J. Rockstroh, Maineville, and SeethaRamaiah Mannava, Cincinnati, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Apr. 13, 1989, Ser. No. 337,788
Int. Cl.[5] H01J *5/16*; G01N *21/00*
U.S. Cl. 250—227.15 **16 Claims**



1. Apparatus for detecting a failure in a laser power transmitting optical fiber, the apparatus comprising:

a single safety detector optical fiber extending along the laser power transmitting optical fiber substantially the entire length thereof;

a jacketing tube, said laser power transmitting fiber and said safety detector fiber being contained within said tube such that laser energy leakage from said laser power transmitting fiber within said tube will cause a failure of said safety detector fiber; and

means for sensing a failure of said safety detector fiber indicative of a failure of said laser power transmitting fiber, said sensing means being positioned at an emergent end of said safety detector optical fiber, proximate to an output end of the laser power transmitting optical fiber.

5,012,088

HIGH PERFORMANCE FIBER OPTIC SENSOR

James H. Cole, 9404 Fairpine La., Great Falls, Va. 22066, and Ira J. Bush, 1063 Point View St., Los Angeles, Calif. 90035

Filed Mar. 31, 1989, Ser. No. 330,914
Int. Cl.[5] H01J *5/16*
U.S. Cl. 250—227.19 **14 Claims**

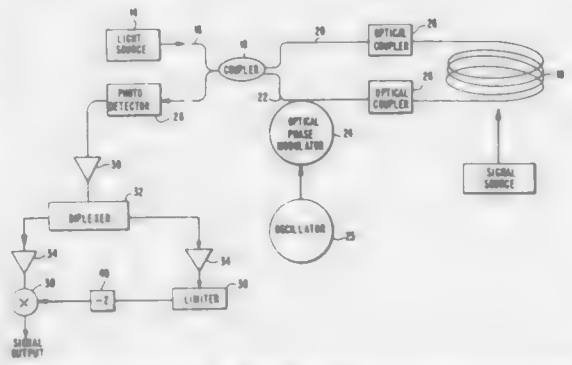
1. A method for measuring high frequency analog signals of low amplitude using optical sensors to convert such signals into electrical signals containing the analog information comprising the steps of:

(a) arranging a fiber optic coil made of single mode fiber optic material so as to have optical path modified by the analog signals;

(b) using polarizing preserving fibers made out of single mode fiber optic material in said fiber optical coil to operate as a depolarizer;

(c) Injecting counter rotating beams of low coherence light into the coil to be modulated by the analog signals;

(d) converting the light beams into electrical signals containing the analog information; and



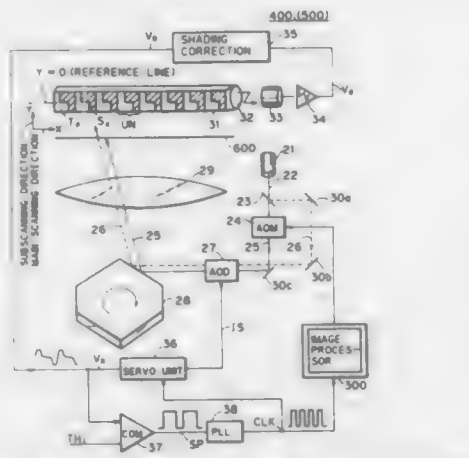
(e) demodulating the electrical signals to recover the analog information.

5,012,089

SCANNING BEAM CONTROL SYSTEM AND OPTICAL SCALE STRUCTURE USEFUL THERETO

Yasuo Kurusu; Masamichi Cho; Shinichi Nagata; Kunio Tomohisa, and Hiroyuki Shirota, all of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Oct. 24, 1989, Ser. No. 426,304
Claims priority, application Japan, Oct. 24, 1988, 63-2677817
Int. Cl.[5] H01J *3/14*
U.S. Cl. 250—235 **21 Claims**



1. A system for controlling scanning of a photobeam along scanning lines defined on an object plane, comprising:

means for generating first and second photobeams propagating in parallel with each other, and first deflector means electrically controllable for deflecting said first and second photobeams in a first direction;

second deflector means for periodically deflecting said first and second photobeans in a second direction;

separator means for separating said first and second photobeams from each other so that said first photobeam is directed to said object plane and said second photobeam is directed to a predetermined first space region;

scale means provided at said first space region for receiving said second photobeam, having a first surface on which a periodic scale pattern extending in said second direction is formed, wherein said periodic scale pattern essentially consists of a linear periodic array of unit patterns each of which includes a spatial combination of first and second areas whose optical characters are different from each other, and a combination boundary of said first and second areas includes a first portion parallel to said second direction,

photoelectric means for receiving a light transmitted from said scale means and photo-electrically converting said light into a first electric signal;

circuit means for receiving said fist electric signal and calculating a first difference between a level of said first electric signal and a first threshold level to generate a second electric signal in accordance with said first difference; and

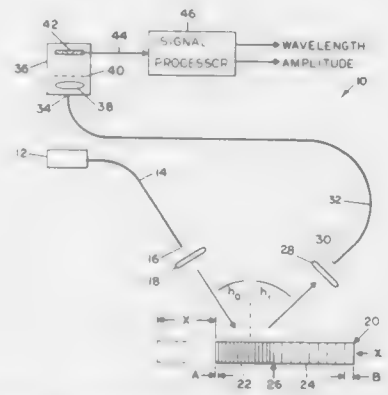
means for transmitting said second electric signal to said first deflector means in order to change respective deflection angles of said first and second photobeams in said first direction.

5,012,090

OPTICAL GRATING SENSOR AND METHOD OF MONITORING HAVING A MULTI-PERIOD GRATING

William B. Spillman, Jr., Charlotte, Vt., assignor to Simmonds Precision Products, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 308,239, Feb. 9, 1989, which is a continuation-in-part of Ser. No. 192,716, May 11, 1988, Pat. No. 4,874,941. This application May 5, 1989, Ser. No. 348,341
The portion of the term of this patent subsequent to Oct. 17, 2006, has been disclaimed.
Int. Cl.[5] H01J *3/14*
U.S. Cl. 250—237 G **42 Claims**



1. An optical transducer comprising:

a diffraction grating having a variable grating period;

means responsive to a physical parameter coupled to said diffraction grating to apply a force thereto to strain said diffraction grating in response to the physical parameter;

means for irradiating said diffraction grating at a first predetermined angle with broadband optical radiation, said means for irradiating comprising an optical fiber; and

means for detecting a change in a characteristic of the light diffracted from said diffraction grating as a consequence of the strain experienced by said diffraction grating.

5,012,091

PRODUCTION LOGGING TOOL FOR MEASURING FLUID DENSITIES

Gordon L. Moake, Houston, Tex., assignor to Halliburton Logging Services, Inc., Houston, Tex.

Filed Feb. 27, 1990, Ser. No. 485,703
Int. Cl.[5] G01V *5/12*
U.S. Cl. 250—266 **18 Claims**

1. A method of determining the density of fluids in a well borehole susceptible of difference in fluid density along the well borehole comprising the steps of:

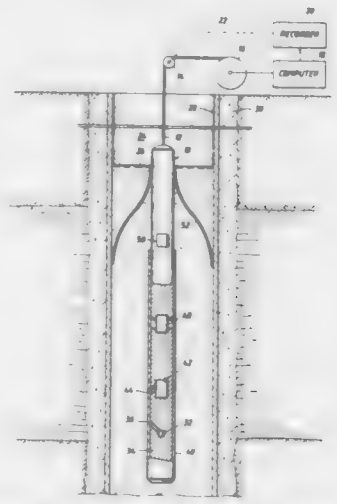
(a) positioning a sonde supported radiation source in a well borehole;

(b) positioning a first sonde supported radiation detector in the well borehole and similar but more remotely spaced second and third radiation detectors in the well borehole;

(c) emitting radiation from the source to interact with electrons of fluids in the well borehole wherein the radiation interacts with the fluid of the well borehole;

(d) measuring the count rate at the first, second, and third detectors as a result of emitting radiation from the source to thereby obtain first, second, and third count rates from the three respective detectors; and

(e) from the three measured count rates, determining the fluid density of fluid which is closer to the first detector



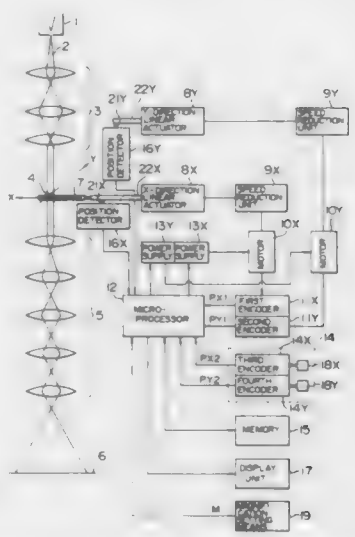
and separately the density of fluid which is nearer the third detector wherein the determinations are substantially independent of response to the materials at the sidewall of the well borehole as a result of radiation impingement thereof.

5,012,092

METHOD AND APPARATUS FOR FINE MOVEMENT OF SPECIMEN STAGE OF ELECTRON MICROSCOPE

Hiroyuki Kobayashi, Mito; Shigeru Izawa, and Motohide Ukiana, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 26, 1989, Ser. No. 456,522
Claims priority, application Japan, Dec. 27, 1988, 63-327783
Int. Cl.[5] H01J *37/26*
U.S. Cl. 250—311 **12 Claims**



1. An apparatus for fine movement of a specimen stage of an electron microscope, comprising:

an electron beam optical system for irradiating a specimen mounted on said specimen stage with an electron beam and forming on a viewing screen a magnified image of said specimen;

a drive unit for moving said specimen stage in X and perpendicular Y directions on a plane substantially perpendicular to the optical axis of said electron beam optical system;

means for setting a value of enlargement magnification, M, of said electron beam microscope;

a first pulse generator circuit for generating a pulse signal PX1 which accords, in number of pulses, with the distance said specimen stage moves in said X direction, and a pulse signal PY1 which accords, in number of pulses, with the distance said specimen stage moves in said Y direction;

input means for instructing movement of said specimen stage and therefore the magnified image of said specimen as viewed on said viewing screen by a desired distance in at least one of said X and Y directions;

a second pulse generator circuit for generating a pulse signal PX2 which accords, in number of pulses, with said instructed movement in the X direction by said input means, and a pulse signal PY2 which accords, in number of pulses, with said instructed movement in the Y direction by said input means; and

drive control means for sending control signals to said drive unit after said input means instructs movement of said specimen stage by said drive unit until the following equations are satisfied:

$PX2 \cdot K/M = PX1$

$PY2 \cdot K/M = PY1$

where K is a constant.

5,012,093

CLEANING DEVICE FOR WIRE ELECTRODE OF CORONA DISCHARGER

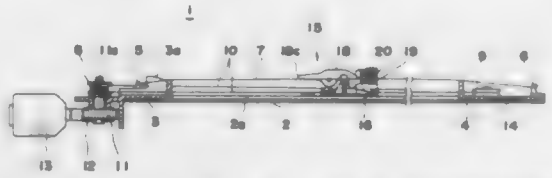
Tadafumi Shimizu, Osaka, Japan, assignor to Minolta Camera Co., Ltd., Osaka, Japan

Filed Aug. 28, 1989, Ser. No. 399,621

Claims priority, application Japan, Aug. 29, 1988, 63-214474; Aug. 29, 1988, 63-214475; Aug. 29, 1988, 63-214476

Int. Cl.[5] H01T *19/04*

U.S. Cl. 250—324 **31 Claims**



1. A cleaning device for wire electrode which extends linearly under tension for corona discharger comprising:

cleaning member for cleaning the wire electrode through contact therewith;

drive means for moving the wire electrode and the cleaning member relative to each other; and

control means for controlling the drive means in such a manner that after activating the drive means in a direction for the cleaning operation that the drive means is momentarily deactivated and then activated in said direction again.

5,012,094

ELECTROSTATIC CHARGING APPARATUS AND METHOD

Thomas A. Hamade, P.O. Box 2963, Farmington Hills, Mich. 48333

Filed Feb. 5, 1990, Ser. No. 475,366

Int. Cl.[5] H01T *19/00*

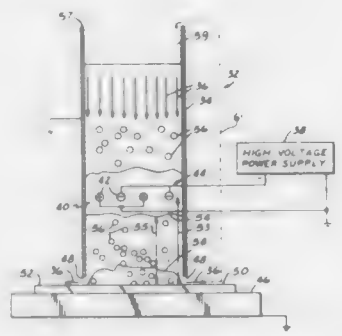
U.S. Cl. 250—324 **8 Claims**

4. An apparatus for optimally electrically charging a receptor, said apparatus utilizing a gaseous fluid, said apparatus comprising:

a housing having a first end and a second end;

a charger grid member connected with said housing, said charger grid member comprising a plurality of charger grid electrodes, adjacent charger grid electrodes of said plurality of charger grid electrodes being uniformly mutually separated a predetermined distance, said plurality of charger grid electrodes forming a charger grid within said housing between said first end and said second end thereof;

kilovoltage means electrically connected with said charger grid member for selectively electrifying said plurality of charger grid electrodes so as to produce a substantially uniform electric field therebetween, said electric field exclusively establishing a corona in the gaseous fluid, spacing and voltage difference between each adjacent charger grid electrode of said plurality of charger grid electrodes cooperating with a predetermined geometry of said plurality of charger grid electrodes to provide an electric field having an electric field strength between adjacent charger grid electrodes that is at least substantially near, but not including, that electric field strength which would result in spark-over between said adjacent charger grid electrodes;



gaseous fluid mover means for moving the gaseous fluid at a predetermined flow rate through said housing between said first end and said second end thereof;

positioning means adjacent said second end of said housing for positioning the receptor at a predetermined location relative to said charger grid; and

gaseous fluid port means located adjacent said second end of said housing for allowing the gaseous fluid to exit said second end of housing while simultaneously moving over the receptor, and further for routing a predetermined portion of said gaseous fluid exiting said second end of said housing back to said first end of said housing;

wherein said charger grid provides a substantially uniform corona across a cross-section of said housing and imparts a charge onto the gaseous fluid as the gaseous fluid moves from said first end of said housing to said second end of said housing, and the gaseous fluid thereupon at least in part contributes to optimal charging of the receptor as the gaseous fluid exits said housing.

5,012,095

RADIATION IMAGE RECORDING AND READ-OUT APPARATUS

Kazuo Horikawa, and Ichirou Miyagawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 143,919, Jan. 14, 1988, Pat. No. 4,847,499. This application Jan. 13, 1989, Ser. No. 296,733

Claims priority, application Japan, Mar. 19, 1988, 63-66740; Mar. 19, 1988, 63-66746; Mar. 19, 1988, 63-66748

The portion of the term of this patent subsequent to Jul. 11, 2006, has been disclaimed.

Int. Cl.[5] G01N *23/04*

U.S. Cl. 250—327.2 **11 Claims**

4. A radiation image recording and read-out apparatus comprising:

(i) a recording belt composed of an endless belt provided with a stimulable phosphor layer,

(ii) a group of rollers, around which said recording belt is applied, including two sets of roller sections spaced apart from each other by a predetermined distance, for conveying and circulating said recording belt between said two sets of roller sections along said predetermined distance,

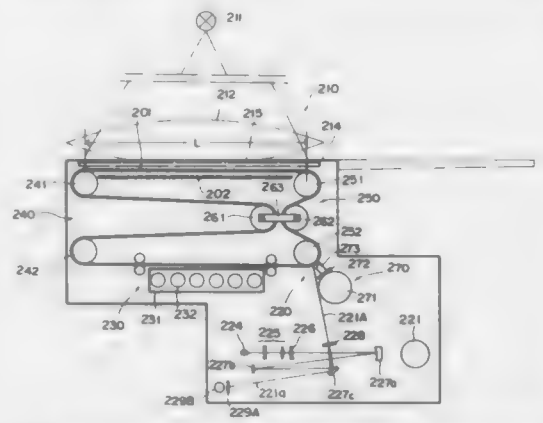
(iii) an image recording section for exposing said stimulable phosphor layer to radiation which has passed through an object to have a radiation image of the object stored on said stimulable phosphor layer,

(iv) an image read-out section provided with a stimulating ray source for emitting stimulating rays for scanning said stimulable phosphor layer carrying said radiation image stored thereon, and a photoelectric read-out means for obtaining an electric image signal by reading out light emitted by said stimulable phosphor layer, which light is emitted in proportion to the stored radiation energy when said stimulable phosphor layer is scanned and stimulated with the stimulating rays, and

(v) an erasing section for eliminating radiation energy remaining on said stimulable phosphor layer prior to recording a next image on said stimulable phosphor layer after a preceding radiation image is read out therefrom at said image read-out section,

wherein the improvement comprises:

(a) said predetermined distance between said two sets of the roller sections being made 1-1.5 times as long as the length



of the largest single image which can be recorded in said image recording section, and each of said roller sections being composed of two roller subsections separated from each other in such a way that an imaginary line joining the separated roller subsections is normal to an imaginary line joining said two sets of roller sections separated by said predetermined distance,

(b) said group of rollers being provided with an idle roller section moveable from a position between said two roller subsections of one of said two sets of roller section, and a position between said two roller subsections of the other of said two sets of roller sections, said idle roller sections being moveable such that a portion of said recording belt can be maintained stationary at said image recording section while a portion of the remainder of said recording belt concurrently can be moved past said image read-out section,

(c) said image recording section being provided so as to face said recording belt moving between a roller subsection of one of said two sets of the roller sections and a roller subsection of the other of said two sets of roller sections, which roller subsections face each other, and

(d) said image read-out section being positioned such that scanning of said stimulating rays is carried out on a portion of said stimulable phosphor layer present on a roller in said group of rollers, which roller does not belong to said idle roller section.

5,012,096

DIGITAL X-RAY APPARATUS

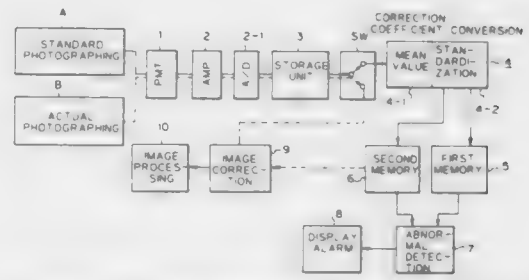
Shiro Takeda, Sagamihara; Fumihiro Namiki, Machida; Yuuichi Sugiyama, Chigasaki; Nobuhiro Iwase; Shinji Tadaki, both of Atsugi, and Nagaaki Koshino, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 18, 1990, Ser. No. 525,055

Claims priority, application Japan, May 20, 1989, 1-127583; May 20, 1989, 1-127582; Jun. 7, 1989, 1-144819

Int. Cl.[5] G01N *23/03*

U.S. Cl. 250—327.2 **13 Claims**



1. A digital X-ray apparatus for exposing X-rays transmitted through an object to a photostimulable phosphor plate, for scanning the photostimulable phosphor plate by an excitation beam to produce X-ray image data, and for obtaining an X-ray image, said digital X-ray apparatus comprising:

switch means for switching between a standard photographing mode and an actual photographing mode;

correction coefficient conversion means for converting the X-ray image data to image data having a standardized lightness;

first storage means for storing an initial correction coefficient after standardization in said correction coefficient conversion means;

second storage means for storing a current correction coefficient after standardization in said correction coefficient conversion means;

detection means for comparing a value of the current correction coefficient from said second storage means with a value of the initial correction coefficient from said first storage means, and for detecting whether or not a difference between the value of the current correction coefficient at each picture element and the value of the initial correction coefficient at each picture element exceeds a predetermined threshold value; and

generation means for displaying a number of abnormal picture elements detected by said detection means and for generating an alarm message when the number of abnormal picture elements exceeds a predetermined number, the predetermined number being defined by a ratio of the number of abnormal picture elements to a number of all the picture elements.

5,012,097

RADIATION MEASURING APPARATUS

Minoru Oda, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1989, Ser. No. 372,769

Claims priority, application Japan, Oct. 7, 1988, 63-253174

Int. Cl.[5] G01T *1/17, 1/00, 1/15;* **G01J** *5/00*

U.S. Cl. 250—336.1 **4 Claims**

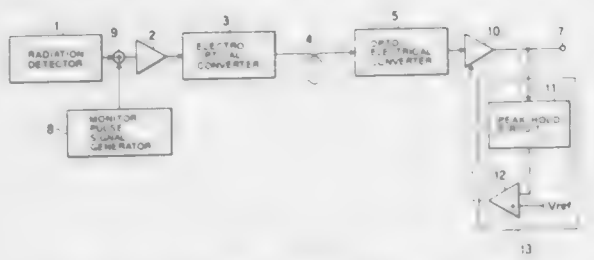
1. A radiation apparatus comprising

a radiation detector which outputs a measurement pulse signal having a pulse height in accordance with detected radiation energy;

a monitor pulse signal generator which generates a monitor pulse signal having a polarity reverse to that of said measurement pulse signal and a pulse height of a fixed value;

an adder which adds said measurement pulse signal and said monitor pulse signal;

an amplifier which amplifies the output signal of said adder;
an electro-optical converter which converts an output signal of said amplifier into an optical signal;
an optical fiber which transmits said optical signals;
an opto-electrical converter which converts an optical signal from said optical fiber into an electrical signal;



a gain controlled amplifier which is supplied with an output signal of said opto-electrical converter; and
a monitor pulse signal detecting circuit which detects a wave height of said monitor pulse signal from an output signal of said gain controlled amplifier and controls the gain of said gain controlled amplifier using the detected wave height signal.

5,012,098

PHOTOMULTIPLIER WITH INFRARED SENSITIVITY

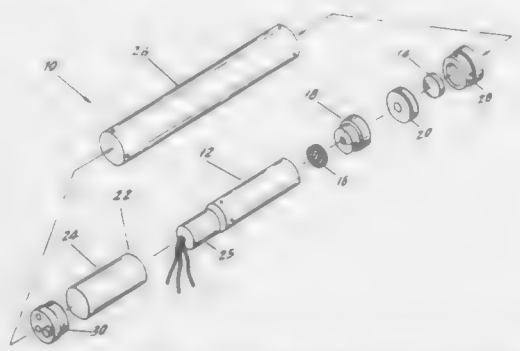
Joseph Lindmayer, Potomac, Md., assignor to Quantex Corporation, Rockville, Md.

Continuation-in-part of Ser. No. 147,215, Jan. 22, 1988, Pat. No. 4,879,186, which is a continuation-in-part of Ser. No. 870,809, Jun. 6, 1986, Pat. No. 4,830,875, which is a continuation-in-part of Ser. No. 786,095, Oct. 10, 1985, Pat. No. 4,705,952. This application Feb. 21, 1989, Ser. No. 313,171

The portion of the term of this patent subsequent to Nov. 10, 2004, has been disclaimed.

Int. Cl.[5] G01J *1/00, 1/58;* **H05B** *33/00;* **B66D** *1/14*

U.S. Cl. 250—339 **19 Claims**



1. A photomultiplier assembly with extended sensitivity, comprising:
a photomultiplier usefully responsive to electromagnetic energy in a first wavelength region; and
active pre-charged photon energy conversion means for receiving electromagnetic energy of wavelengths longer than said first wavelength region and in a region to which said photomultiplier is insensitive and emitting electromagnetic energy in said first wavelength region in response thereto;
said photomultiplier and energy conversion means being arranged such that the emission of electromagnetic energy in said first wavelength region from said energy conversion means is directed into said photomultiplier, whereby said photomultiplier provides information concerning incident electromagnetic energy of wavelengths longer than said first wavelength.

5,012,099

INTRUSION DETECTION AND IDENTIFICATION ARRANGEMENT FOR LAND VEHICLES

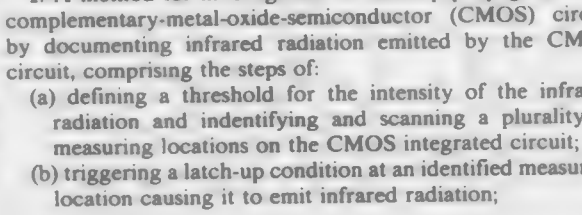
Serge Paturel, Orsay, and Francois Magne, Paris, both of France, assignors to U.S. Philips Corp., New York, N.Y.

Continuation of Ser. No. 355,094, May 18, 1989, which is a continuation of Ser. No. 136,250, Dec. 18, 1987 both abandoned. This application May 1, 1990, Ser. No. 519,351

Claims priority, application France, Dec. 23, 1986, 86 18050

Int. Cl.[5] G08G *1/17*

U.S. Cl. 250—342 **4 Claims**



1. An arrangement for detecting and identifying a land vehicle having an undercarriage with turning elements as it passes a reference plane comprising:
a plurality of n pyro-electric detectors for detecting passive infrared radiation which are arranged vertically and adjacent to each other in such manner so as to define in the reference plane n adjacent detection sub-beams having respective sight angles $\theta_{s/n}$ of the order of a few degrees, the sight angle θ_s of said beam being taken in a direction towards the ground from a horizontal line of the reference plane at a height of approximately 1 meter;
an optical system for focusing said sub-beams in said reference plane;
each of said pyro-electric detectors being connected to an analog processing chain including amplifier means and a band-pass filter;
a digital signal processing chain connected to said analog chain which includes sample-and-hold means to recover at least the undercarriage of said vehicle in the form of a curve as a function of time in accordance with which each turning element of the undercarriage assumes the shape of and identifiable characteristic pulse, and
means for detecting the number of pyro-electric detectors that are supplying a signal to indicate the distance of the vehicle from the detector.

5,012,100

METHOD AND APPARATUS FOR INVESTIGATING THE LATCH-UP PROPAGATION IN COMPLEMENTARY-METAL-OXIDE SEMICONDUCTOR (CMOS) CIRCUITS

Erich Plies, and Joerg Quincke, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 3, 1989, Ser. No. 346,920

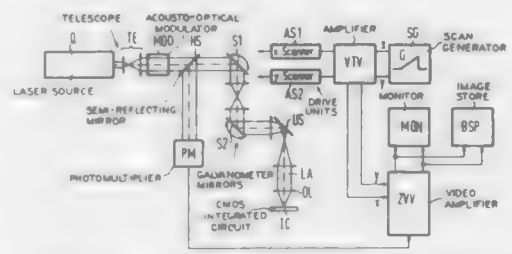
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1988, 3819488

Int. Cl.[5] G01J *5/00;* **H04N** *3/00, 7/18*

U.S. Cl. 250—342 **14 Claims**

1. A method for investigation of latch-up propagation in a complementary-metal-oxide-semiconductor (CMOS) circuit by documenting infrared radiation emitted by the CMOS circuit, comprising the steps of:
(a) defining a threshold for the intensity of the infrared radiation and indentifying and scanning a plurality of measuring locations on the CMOS integrated circuit;
(b) triggering a latch-up condition at an identified measuring location causing it to emit infrared radiation;

(c) measuring the time interval between the triggering of the latch-up condition and the infrared radiation reaching the predetermined threshold level;



(d) recording the identity of the measuring location and the measured time interval; and
(e) repeating the steps (b) through (d) for each of the remaining measuring locations.

5,012,101

OPTICAL APPARATUS AND METHOD

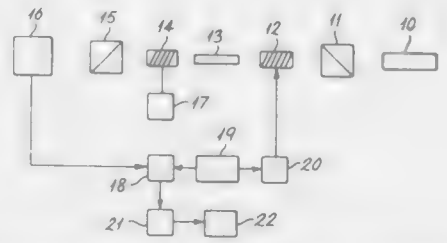
David M. Goodall, Huntington, and David K. Lloyd, Bath, both of England, assignors to National Research Development Corporation, London, England

Filed Nov. 21, 1989, Ser. No. 440,425

Claims priority, application United Kingdom, Oct. 24, 1986, 8625530

Int. Cl.[5] G01N *21/21*

U.S. Cl. 250—343 **7 Claims**



1. Apparatus for use in the analysis of optically-active materials comprising:
a radiation source, container means for a sample of material under examination through which radiation from said radiation source passes to a detector,
polariser means disposed between said radiation source and said container means,
analyser means disposed between said detector and said container, and
modulation means disposed between said polariser and said container to modulate the rotation of the polarisation of radiation from said radiation source
wherein:
said radiation source is a solid state device, and
said polariser means and said analyser means have a depolarisation ratio of the order of 10^{-5} to 10^{-6}.

5,012,102

METHODS OF PRODUCING VACUUM DEVICES AND INFRARED DETECTORS WITH A GETTER

David J. Gowlett, Hampshire, England, assignor to U.S. Philips Corp., New York, N.Y.

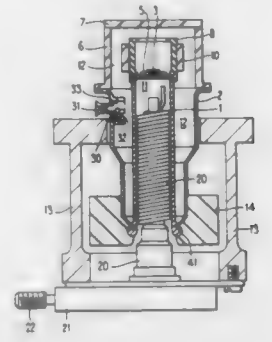
Filed May 7, 1990, Ser. No. 521,786

Claims priority, application United Kingdom, May 10, 1989, 8910754

Int. Cl.[5] G12B *15/00*

U.S. Cl. 250—352 **10 Claims**

1. A method of producing a vacuum device having a vacuum space in a chamber of the device, comprising the steps of (a) providing a porous getter in an evacuation tube which forms an outlet of the chamber, (b) evacuating the chamber to produce the vacuum space by means of a vacuum pump connected to the evacuation tube, (c) heating the getter in the evacuation tube so as to activate chemically the getter material and (d) disconnecting the vacuum pump and sealing the evacuation-tube outlet of the chamber while leaving the chemically-active getter in communication with the vacuum space of the chamber to getter gases from the evacuated chamber, characterised in that the step (a) comprises providing the



getter as at least one movable body of the getter material in the evacuation tube, in that step (b) comprises heating the getter body in the evacuation tube at a location distant from the chamber, after which the movable getter body is moved closer to the chamber before sealing the evacuation-tube outlet, and in that the evacuation-tube outlet comprises a vacuum-permeable screen which inhibits passage of the getter material into the chamber.

5,012,103

RADIATION DETECTOR

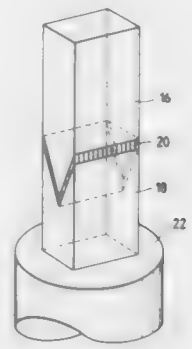
Eiichi Tanaka, and Hiroshi Uchida, both of Shizuoka, Japan, assignors to Hamamatsu Photonics Kabushiki Kaisha, Shizuoka, Japan

Filed Oct. 6, 1989, Ser. No. 418,184

Claims priority, application Japan, Oct. 28, 1988, 63-272373

Int. Cl.[5] G01T *1/20*

U.S. Cl. 250--368 **4 Claims**



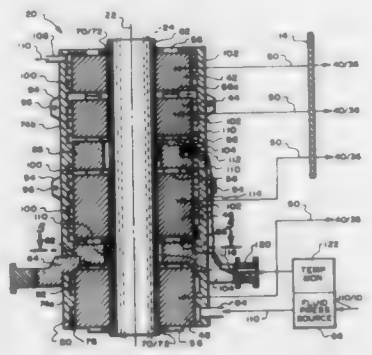
1 A radiation detector including:
a scintillator for producing scintillation light in response to radiation applied thereto, said scintillator having a light output portion being in the shape of a single saw tooth;
a light guide for introducing scintillation light outputted from said scintillator, said light guide having a light input portion being dented so as to conform to said light output portion of said scintillator; and
a photodetector for detecting scintillation light outputted from said light guide.

5,012,104

THERMALLY STABLE MAGNETIC DEFLECTION ASSEMBLY AND METHOD OF MAKING SAME

Lydia J. Young, Palo Alto, Calif., assignor to Etec Systems, Inc., Hayward, Calif.

Filed May 17, 1990, Ser. No. 524,508
Int. Cl.[5] H01J *3/32, 37/147, 37/30*
U.S. Cl. 250—396 ML **11 Claims**



1. For a beam column of a lithography machine, a thermally stable magnetic deflection assembly comprising,

a plurality of magnetic coils each formed of conductors wound on a toroidal coil form of non-metallic thermally stable material,

each coil being coated with a highly thermally conductive potting material,

a hollow pipe of non-metallic thermally stable material,

said coils being stacked on said pipe,

means for vertically spacing each coil from each other, and

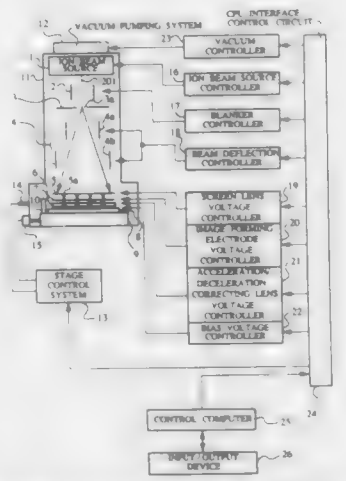
means for maintaining said assembly at a selected temperature.

5,012,105

MULTIPLE-IMAGING CHARGED PARTICLE-BEAM EXPOSURE SYSTEM

Masaaki Ando; Masaaki Matsuzaka, both of Fujisawa, and Masahiro Saita, Zushi, all of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1990, Ser. No. 471,280
Claims priority, application Japan, Feb. 2, 1989, 1-24506; Feb. 2, 1989, 1-24507; Feb. 2, 1989, 1-24508
Int. Cl.[5] H01J *37/00*
U.S. Cl. 250—398 **13 Claims**



1. In a multiple-imaging charged particle-beam exposure system including a charged particle beam source, a blanker for deflecting a charged particle beam emitted from said charged particle beam source, an object aperture for shaping the cross-section of the charged particle beam emerging from said blanker, deflector means for deflecting the charged particle beam emerging from said object aperture, and a screen lens having a number of lens apertures formed therethrough for dividing the charged particle beam deflected by said deflector into a plurality of beams, wherein exposure on an object to be exposed is effected,

the improvement comprising:

image forming means interposed between said screen lens and said object for focusing charged particle beams emerging from said screen lens to form images at said image forming means;

acceleration/deceleration correcting means interposed between said image forming means and said object for controlling divergency of said images formed at said image forming means by correcting acceleration or deceleration of charged particle beams emerging from said image forming means, the charged particle beams emerging from said acceleration/deceleration correcting means forming images on said object; and

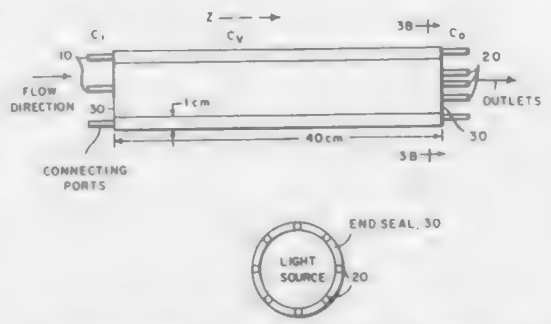
bias voltage control means for applying a bias voltage relative to a potential at said image forming means to a surface of said object.

5,012,106

AXI-SYMMETRICAL FLOW REACTOR FOR ^{196}HG PHOTOCHEMICAL ENRICHMENT

Mark W. Grossman, Belmont, Mass., assignor to GTE Products Corporation, Danvers, Mass.

Filed Dec. 23, 1988, Ser. No. 289,639
Int. Cl.[5] B01D *59/00*
U.S. Cl. 250—438 **9 Claims**



1. In a photochemical reactor useful for the isotopic enrichment of a predetermined isotope of mercury, said reactor consisting of a pair of concentric spaced-apart sleeves, said spacing defining an annular gap therebetween, which gap is sealed at each end thereof, said reactor utilizing reactor flow parallel to the central axis of the annular gap;

the improvement comprising: creating axisymmetrical reactor flow with respect to the central axis of the annular gap, by placing a plurality of entrance and exit ports on the respective annular gap seals of said reactor.

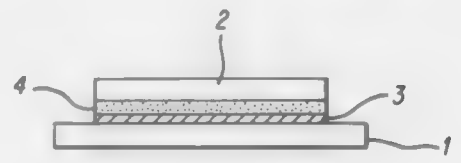
5,012,107

RADIATION IMAGE STORAGE PANEL

Akiko Kano; Satoshi Honda, and Kuniaki Nakano, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jun. 5, 1989, Ser. No. 361,198
Claims priority, application Japan, Jun. 13, 1988, 63-143639
Int. Cl.[5] G01N *21/64, 21/00*
U.S. Cl. 250—484.1 **12 Claims**

1. A radiation image storage panel which comprises a support and a light-shielding layer having a light transmittance of 5% or less for a light having a wavelength of 500 nm to 900 nm, a light-scattering layer having a light reflective index of 40% or more for a light having a wavelength of 300 nm to 900 nm and a stimulable phosphor layer that does not contain a binder formed on the support in succession.

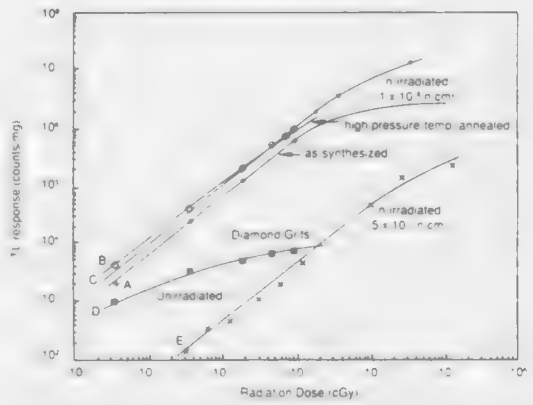


5,012,108

DETECTION OF NUCLEAR RADIATION

Tom L. Nam, 114 Sixth Avenue, Bez Valley, Johannesburg, Transvaal; Rex J. Keddy, Bevan Road, Rivonia, Transvaal, and Jacques P. Sellschop, 60 Greenhills Road, Greenside, Johannesburg, Transvaal, all of South Africa

Filed Jun. 22, 1989, Ser. No. 370,195
Claims priority, application South Africa, Jul. 6, 1988, 88/4841
Int. Cl.[5] G01T *1/11*
U.S. Cl. 250—484.1 **10 Claims**



1. A method of detecting, counting or otherwise measuring radiation includes the steps of irradiating a diamond containing single substitutional paramagnetic nitrogen with a high dose of neutrons or electrons, exposing the irradiated diamond to the nuclear radiation to cause electrons or holes to be trapped at lattice imperfections within the diamond crystal structure, heating the diamond to cause it to luminesce and utilising the luminescence as a means for the detection, counting or measurement of the nuclear radiation.

5,012,109

CHARGED PARTICLE BEAM APPARATUS

Hiroyasu Shichi, Koganei; Setsuo Nomura, Tokyo, and Eisuke Mitani, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 11, 1989, Ser. No. 378,286
Claims priority, application Japan, Jul. 15, 1988, 63-175024
Int. Cl.[5] H01J *37/256*
U.S. Cl. 250—491.1 **5 Claims**

1. A charged particle beam apparatus comprising:

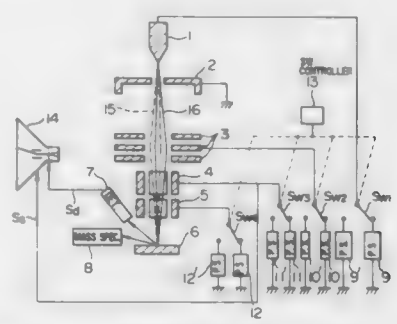
charged particle beam generating means for generating an ion beam and an electron beam as charged particle beams;

a focusing lens system for finely focusing the generated charged particle beam;

a charged particle beam deflecting system for deflecting the focused charged particle beam;

a specimen subjected to irradiation thereof with the charged particle beam;

confirming means for confirming the deviation of the irradiation positions of the ion beam and the electron beam on the specimen from each other; and



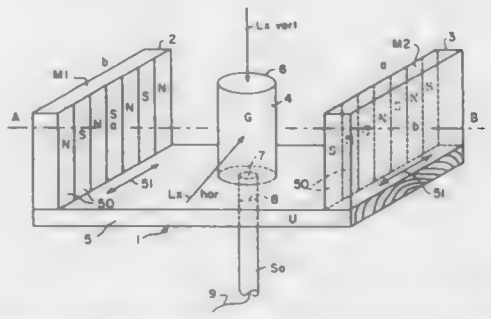
coincidence means for making the irradiation positions of the ion beam and the electron beam on the specimen coincident with each other.

5,012,110

SUBSTRATE AND PROCESS AND APPARATUS FOR THE PRODUCTION THEREFOR

Konrad E. Wropp, Via Storta 78, CH-6645 Brione S/M, Switzerland

Continuation-in-part of Ser. No. 37,752, Apr. 13, 1987, abandoned. This application Aug. 1, 1989, Ser. No. 388,778
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1986, 3612315
Int. Cl.[5] H01J *37/00*
U.S. Cl. 250—492.1 **21 Claims**



1. A process for the manufacture of a synthetic homeopathic substrate for use in treating biological systems comprising the steps of:

placing a substrate between opposing sets of magnets, said opposing sets of magnets having a connection axis and defining therebetween a magnetic field having magnetic field axes wherein said magnetic field axes are oriented toward one another in the longitudinal direction;

feeding information energy from a first energy field to said substrate along a path transverse to said connection axis of said opposing sets of magnets; and

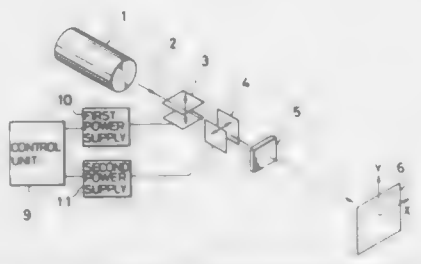
oscillating said information energy from said first energy source as it is fed to said substrate wherein said information energy is impressed on said substrate altering the absorption properties of said substrate such that said substrate will thereafter impart said information energy to a biological system upon transfer of said substrate to said biological system.

5,012,111

ION BEAM IRRADIATION APPARATUS

Kazuhiro Ueda, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 15, 1989, Ser. No. 366,539
Claims priority, application Japan, Jun. 21, 1988, 63-154108
Int. Cl.[5] G21K *1/043*
U.S. Cl. 250—492.3 8 Claims



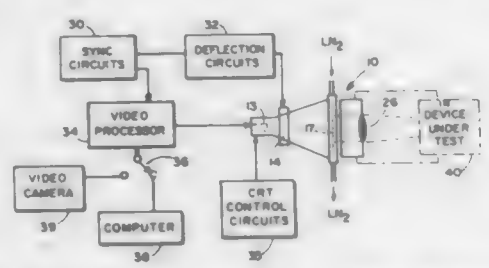
1. An ion beam irradiation apparatus comprising:
a particle accelerator for developing an ion beam;
first deflection means disposed in the path of said ion beam, for deflecting said ion beam in a first direction perpendicular to the axis of the path of said ion beam;
second deflection means disposed in the path of said ion beam, for deflecting said ion beam in a second direction perpendicular to the axis of the path of said ion beam and perpendicular to said first direction in which the path of said ion beam is deflected by said first deflection means;
a first power supply for supplying a first exciting current having a first ac component and a first dc bias component to said first deflection means;
a second power supply for supplying a second exciting current having a second ac component and a second dc bias component to said second deflection means; and
control means for varying magnetic fields developed by said first and second deflection means in response to the amplitude and phase of said first and second ac components and the polarity and magnitude of said first and second dc bias components and thereby controlling the size and the direction scanned by said ion beam.

5,012,112

INFRARED SCENE PROJECTOR

Graham W. Flint, Albuquerque, N. Mex.; Harold A. Papazian, and Ludwig G. Wolfert, both of Littleton, Colo., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Feb. 21, 1989, Ser. No. 313,082
Int. Cl.[5] H01J *1/46*
U.S. Cl. 250—493.1 18 Claims



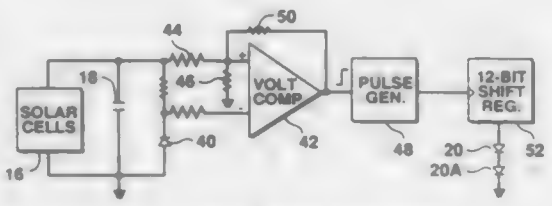
1. A system for producing dynamic scenes represented by infrared radiations comprising:
(a) a cathode ray tube including
(i) an elongate evacuated envelope,
(ii) an electron gun at one end of said envelope for producing an electron beam,
(iii) a window transparent to infrared radiations disposed at the other end of said envelope;
(iv) a luminescent phosphor layer on said window, said phosphor emitting infrared radiations upon excitation by said electron beam from said gun,
(v) grid means for modulating said electron beam intensity, and
(vi) means for deflecting said electron beam;
(b) scanning means for producing a raster on said phosphor layer and connected to said deflecting means; and
(c) means for generating a video signal representative of a dynamic scene and having an output connected to cathode ray tube modulating grid means for producing a representation of said dynamic scene by infrared radiation from said layer.

5,012,113

INFRARED SYSTEM FOR MONITORING MOVEMENT OF OBJECTS

Kenneth H. Valentine, San Diego, Calif.; Diedre D. Falter, and Kelly G. Falter, both of Knoxville, Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Apr. 28, 1989, Ser. No. 345,069
Int. Cl.[5] H04B *10/04*
U.S. Cl. 250—493.1 21 Claims



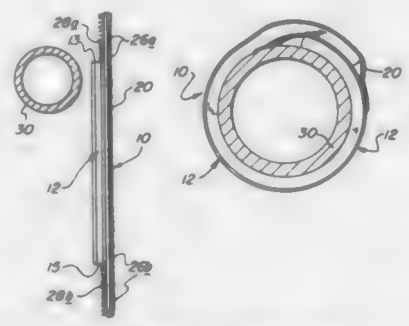
1. An infrared transmitter, which comprises:
a source of direct current;
an energy storage capacitor connected to said source for producing a voltage to power said transmitter;
a voltage-controlled switch means connected to said capacitor for operation by said voltage; and
an infrared emitter connected to said switch means for receiving power therefrom whereby infrared light is produced from said emitter when said switch means is switched to an on state.

5,012,114

RADIATION SHIELD

Fred U. Sisson, Jr., Westfield, Mass., assignor to Charles H. Yanke, River Hills, Wis., a part interest

Filed Jun. 28, 1989, Ser. No. 372,900
Int. Cl.[5] G21F *3/02*
U.S. Cl. 250—519.1 14 Claims



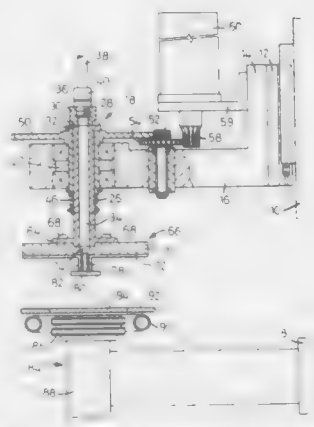
1. A gamma radiation shield comprising;
(a) a wrappable sheet of gamma radiation-shielding material comprising a core sheet containing lead powder, at least one side of the wrappable sheet being faced with a facing sheet of a thermoplastic synthetic organic polymeric material, the wrappable sheet having a first edge and an opposite second edge spaced from the first edge, first segment of the wrappable sheet adjacent the first edge defining a first terminal portion of the wrappable sheet and second segment of the wrappable sheet adjacent the second edge defining a second terminal portion of the wrappable sheet; and
(b) one or more releasable contact-fasteners affixed to the wrappable sheet and having first and second locking portions, the first locking portions being located in the first terminal portion, the second locking portions being located in the second terminal portion and at least some of the contact-fasteners extending in a direction transversely of at least one of the first and second edges whereby the degree of overlap of the first and second terminal portions are adjusted to accommodate radiation-emitting structures of different sizes;
the radiation shield being dimensioned and configured to be wrapped around a gamma radiation-emitting structure in a shielding position in which the first terminal portion contacts the second terminal portion, the radiation shield thereby encircling at least a part of the radiation-emitting structure, the first and second locking portions being dimensioned and configured to engage each other in locking contact when the radiation shield is in its shielding position, to thereby secure the radiation shield to the structure.

5,012,115

DEVICE FOR OPTICALLY DETECTING HOLD POSITION OF ELECTRONIC COMPONENT WITH DUAL EMITTERS

Koichi Asai, Nagoya; Mamoru Tsuda, Okazaki; Yasuo Muto, Chiryu; Sinsuke Suhara, Kariya, and Tousuke Kawada, Chiryu, all of Japan, assignors to Fuji Machine Mfg. Co., Ltd., Aichi, Japan

Filed Feb. 15, 1990, Ser. No. 480,592
Claims priority, application Japan, Feb. 27, 1989, 1-46255
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—561 16 Claims



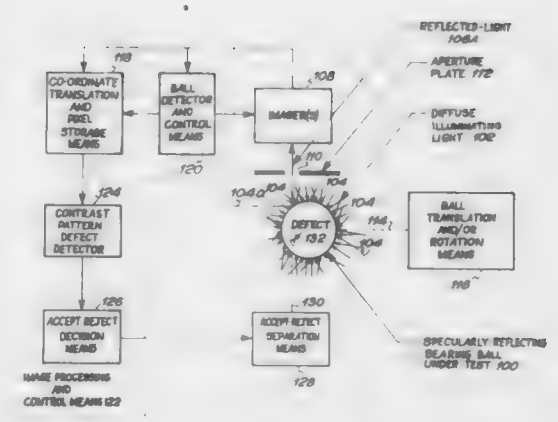
1. A detecting device for detecting a position of an electronic component in which the component is held by a holder, comprising:
a first light emitter for emitting a first radiation toward a vicinity of said electronic component;
a second light emitter disposed in the vicinity of said holder, for absorbing said first radiation, and emitting a second radiation having a wavelength different from that of said first radiation, toward said electronic component; and
photoelectric means disposed on one of opposite sides of said electronic component which is remote from said second light emitter, said photoelectric means being insensitive to said first radiation and receiving a projection image of said electronic component formed by said second radiation.

5,012,116

SYSTEM FOR INSPECTING BEARING BALLS FOR DEFECTS

John P. Russell, 107 W. Richland St., Summerville, S.C. 29483

Filed Oct. 12, 1989, Ser. No. 422,102
Int. Cl.[5] G01N *21/88*
U.S. Cl. 250—572 26 Claims



1. In a system for inspecting a bearing ball for the presence of a defect in the normally specularly-reflecting convex surface thereof; wherein said system comprises first means including a diffuser having an aperture therein for illuminating at least a portion of said convex surface with diffuse light, thereby to reflect a light-contrast pattern of a defect, if present, with respect to a diffuse-light background reflected from said normally specularly-reflecting portion of said surface, and second means, including light-imaging means positioned to be responsive to only that light reflected from said portion of said surface which has passed through said aperture, for detecting the presence of a defect-indicating light-contrast pattern; the improvement wherein:
(a) said light-imaging means includes at least one one-dimensional imager positioned in cooperative relationship with said aperture to detect only a linear slice of said specularly-reflected light which has passed through said aperture, said linear slice being oriented substantially parallel to a first direction; and
(b) said second means further includes third means for moving said bearing ball past said aperture by simultaneously rotating said bearing ball at a given angular velocity about an axis which is oriented in a second direction substantially perpendicular to said first direction while linearly translating said bearing ball at a certain translational velocity in a third direction which is oriented substantially perpendicular to both said first and second directions, and wherein said certain translational velocity has a value which is determined in accordance with a given function of the value of said given angular velocity that results in light specularly-reflected from substantially all points on an entire hemispheric surface of said bearing ball being detected by said one one-dimensional imager in response to said bearing ball, in passing by said aperture, rotating through a predetermined angle which is substantially less in value than 360°.

5,012,117

PROCESS AND APPARATUS FOR THE AUTOMATIC NON-CONTACT SURFACE INSPECTION OF CYLINDRICAL PARTS

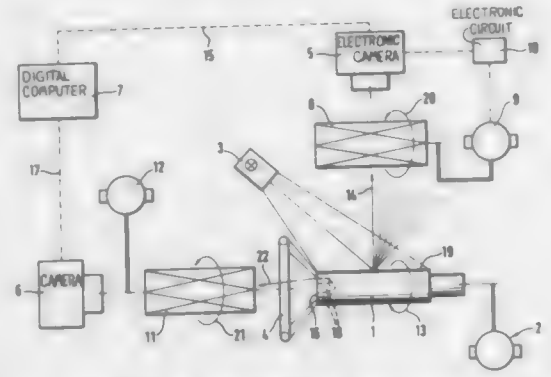
Nandor Karafa, Wuppertal, and Lutz Liebers, Essen, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt Am Main, Fed. Rep. of Germany

Filed Sep. 7, 1989, Ser. No. 404,239

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1988, 3831401

Int. Cl.[5] G01N *21/88*

U.S. Cl. 250—572 21 Claims



1. An apparatus for the automatic non-contact surface inspection of cylindrical parts comprising, in combination:

a slewing mechanism (2) driven by an electric motor and accommodating said parts (1) to be inspected;

at least one source of light (3, 4) to illuminate said part (1) to be inspected;

at least one electronic camera (5, 6) scanning the surface of said parts (1) to be inspected one after the other at a time interval; and,

a digital computer (7) succeeding said electronic camera (5, 6) and serving to evaluate the image information transmitted by the latter wherein a first source of light (3) illuminates the barrel surface (19) of said parts to be inspected and a first one of said camera (5) for the relevant scanning and a second said source of light (4) to illuminate the front surface (16) of said part to be inspected and a second one of said camera (6) for the relevant scanning.

5,012,118

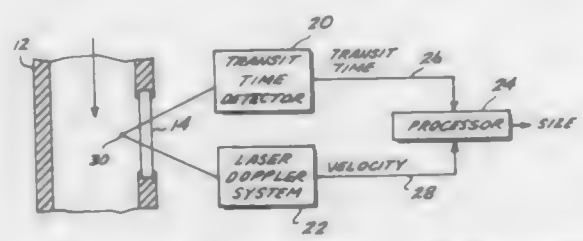
APPARATUS AND METHOD FOR PARTICLE ANALYSIS

Fritz K. Preikschat, 16020 Lake Hills Boulevard, Bellevue, Wash. 98008, and Ekhard Preikschat, 9048 41st St., Bellevue, Wash. 98004

Filed Dec. 13, 1989, Ser. No. 450,603

Int. Cl.[5] G01N *15/06*

U.S. Cl. 250—574 14 Claims



1. An apparatus for analyzing particles contained in a fluent medium, the apparatus comprising:

illumination means comprising a laser and an optical system for receiving light from the laser and focusing the light at a focal spot in the fluent medium;

detection means for detecting optical pulses resulting from the backscattering of light by particles in the focal spot, and for producing an electrical transit time signal that comprises a series of electrical pulses, the length of each electrical pulse corresponding to the time required for a particle to pass through the focal spot;

a receiver system for receiving light from a region that includes the focal spot, and for producing an electrical velocity signal corresponding to the velocity of particles within said region; and

processing means for receiving the transit time and velocity signals, and for combining the transit time and velocity signals to produce data representing the sizes of particles passing through the focal spot.

5,012,119

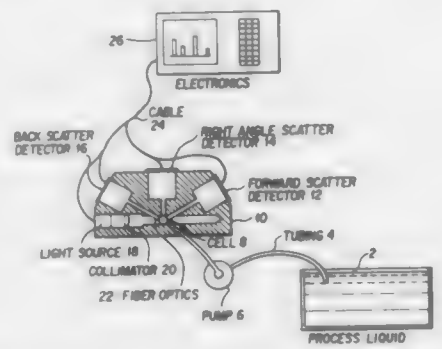
METHOD AND APPARATUS FOR MONITORING PARTICLES USING BACK-SCATTERED LIGHT WITHOUT INTERFERENCE BY BUBBLES

Walter Rhiner, Cupertino, Calif., assignor to Xinix, Inc., Santa Clara, Calif.

Filed May 19, 1989, Ser. No. 353,963

Int. Cl.[5] G01N *15/07, 21/49*

U.S. Cl. 250—574 8 Claims



1. A detecting system for measuring and discriminating between particles and bubbles within a liquid medium comprising:

(a) a source of light for generating a light beam;

(b) a cell containing a sampling volume to be analyzed and positioned so that said sampling volume is illuminated by said light beam and scatters said light;

(c) sensing means to collect said scattered light and to separate said scattered light into its forward and/or right angle scattering, and back scattering components;

(d) separate detectors positioned to separately receive each scattered light component and to convert each said component to electrical signals proportional to the intensity of the light detected;

(e) signal processing means for determining the size and quantity of particles and bubbles within said sampling volume based upon the unique signature generated by bubbles in the back scatter channel.

5,012,120

LOAD CONTROL SYSTEM AND METHOD FOR DISCONNECTING SUB-BUS FROM MAIN-BUS

Yoshiji Minagawa; Hiroshi Shirakawa; Hiroshi Yamazaki, and Yoshiaki Ito, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 94,649, Sep. 9, 1987, Pat. No. 4,963,763. This application Apr. 30, 1990, Ser. No. 516,581

Claims priority, application Japan, Sep. 9, 1986, 61-212461; Sep. 12, 1986, 1-215450; Nov. 13, 1986, 61-270306

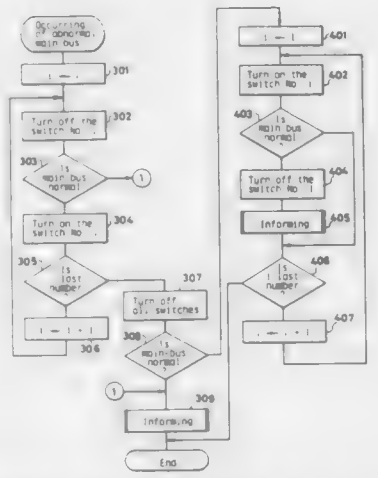
Int. Cl.[5] H04Q *3/00*

U.S. Cl. 307—35 4 Claims

1. A method for detecting and disconnecting an abnormal sub-bus from a main-bus in a data network system comprising:

disconnecting a sub-bus from the main-bus by operating a switching circuit when an abnormal detection signal is issued in a detecting circuit for detecting an abnormal signal sent to the sub-bus,

discriminating whether the sub-bus is abnormal or not by receiving a signal from a controller connected to the sub-bus when the sub-bus is disconnected,



connecting the sub-bus to the main-bus by operating the switching circuit when the sub-bus is not abnormal, and maintaining the switching circuit open when the sub-bus is abnormal.

5,012,121

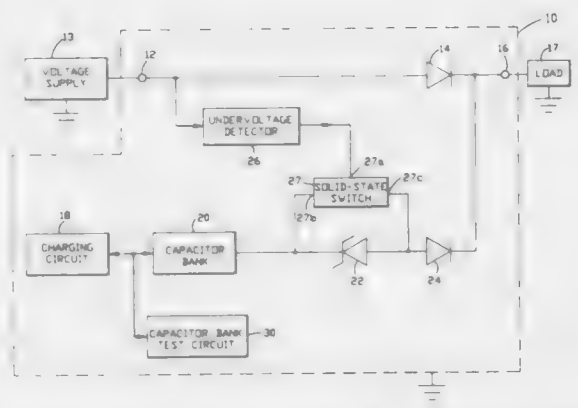
ELECTRICAL POWER SUPPLY FOR SHORT TERM POWER INTERRUPTIONS

Russell E. Hammond, La Jolla; Robert L. Northup, San Diego, both of Calif.; Alan G. Shimp, and Francis B. Fassnacht, both of Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 22, 1990, Ser. No. 497,464

Int. Cl.[5] H02J *9/06;* H02M *3/06*

U.S. Cl. 307—64 23 Claims



1. A direct current power supply for providing electrical energy during momentary power interruptions between a load and an electrical power source having a supply voltage, comprising:

a capacitor having an initial voltage charge at least as great as said supply voltage;

a first zener diode having a cathode operably coupled to said capacitor and an anode;

a first diode having an anode operably coupled to said anode of said first zener diode, and a cathode;

a solid state switch having a power input operably coupled between said capacitor and said cathode of said first zener diode, a power output operably coupled between said anode of said first zener diode and said anode of said first diode, an enabling input which when triggered by an enabling signal, causes said solid state switch to conduct electricity from said power input to said power output;

a second diode having an anode and a cathode operably coupled to said cathode of said first diode; and

enabling means operably coupled between said enabling input of said solid state switch and said anode of said second diode for providing said enabling signal to said enabling input of said solid state switch when said supply voltage is below a predetermined supply voltage level.

5,012,122

CIRCUIT TO INHIBIT VOLTAGE AND CURRENT RETURNS TO THE ELECTRIC POWER DISTRIBUTION LINE IN AN INVERTER-TYPE POWER PLANT

Salvatore Lentini, and Giuseppe Patti, both of Palermo, Italy, assignors to Italtel Societa Italiana Telecommunicazioni s.p.a., Milan, Italy

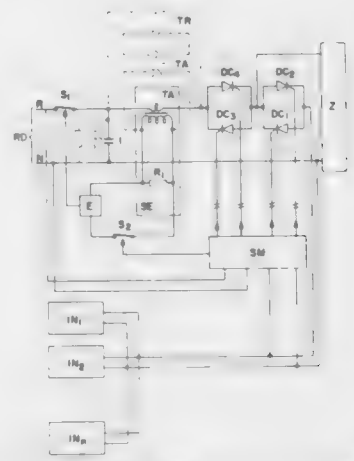
PCT No. PCT/EP88/00327, § 371 Date Oct. 20, 1989, § 102(e) Date Oct. 20, 1989, PCT Pub. No. WO88/09075, PCT Pub. Date Nov. 17, 1988

PCT Filed Apr. 4, 1988, Ser. No. 424,241

Claims priority, application Italy, May 14, 1987, 20511 A/87

Int. Cl.[5] H02J *9/04*

U.S. Cl. 307—66 8 Claims



1. A circuit for inhibiting voltage and current from returning to the electric distribution line in inverter-type power plants including one or more inverters connected in parallel and feeding a load through a first set of static switches, a first section to connect the load to the electric distribution line through a second set of static switches; a supervisory control circuit for controlling the first set of static switches and the second set of static switches, depending on the condition of the inverters, to connect to the load to be fed and to the electric distribution line, respectively, the circuit comprising:

an electric probe for outputting a voltage or a current when a current return to the electric distribution line is detected;

a ballast impedance for causing a current to flow through said electric probe when the second set of static switches is in a closed condition due to a fault; and

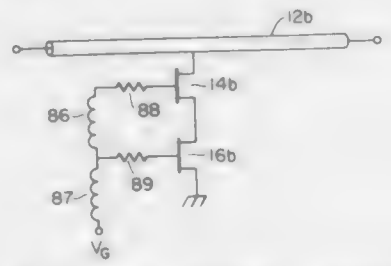
an energizing circuit for activating the first section according to an output from said electric probe, said output being controlled by contacts of a second section operated by the supervisory control circuit.

5,012,123

HIGH-POWER RF SWITCHING SYSTEM

Yalcin Ayasli, Lexington, and Peter J. Katzin, Arlington, both of Mass., assignors to Hittite Microwave, Inc., Woburn, Mass.

Filed Mar. 29, 1989, Ser. No. 330,114
Int. Cl.[5] H03K *17/10*
U.S. Cl. 307—112 14 Claims



1. A switching system for controlling rf energy through an rf transmission medium, comprising:

a plurality of semiconductor switching devices connected in a series configuration with the primary electrodes connected in series;

means for providing a graduated bias on the control electrodes of said devices to establish an equal control voltage on each device between its control electrode and one of its primary electrodes for increasing the voltage capacity of said switching system and the power capacity of said rf transmission medium;

said means for providing a graduated bias including a voltage divider network connected across the control electrodes of said semiconductor devices; and

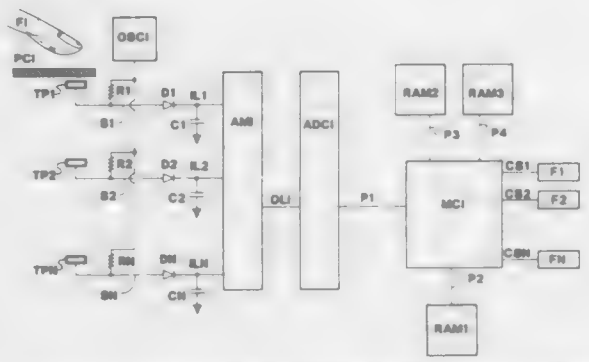
said voltage divider network including a plurality of series-connected inductors.

5,012,124

TOUCH SENSITIVE CONTROL PANEL

Jerrell P. Hollaway, 1330 Meadowbrook Rd., NE., Palm Bay, Fla. 32905

Filed Jul. 24, 1989, Ser. No. 383,427
Int. Cl.[5] H01H *35/00*
U.S. Cl. 307—116 18 Claims



1. A touch sensitive control apparatus comprising, in combination:

an oscillator producing an oscillation output signal;

a plurality of touch-responsive sensors coupled in circuit with said oscillator and producing respective analog signals associated with touch-dependent modifications of the oscillation output signal produced by said oscillator;

an analog-to-digital converter which converts analog signals produced by said sensors into respective digital signals representative thereof; and

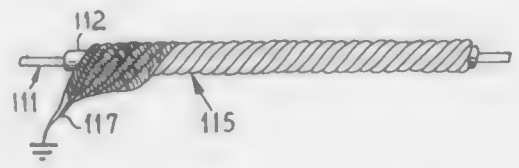
a digital computer which processes said respective digital signals and generates an output associated with a selected one of said sensors on the basis of a prescribed relationship among the analog signals produced by plural ones of said sensors.

5,012,125

SHIELDED ELECTRICAL WIRE CONSTRUCTION, AND TRANSFORMER UTILIZING THE SAME FOR REDUCTION OF CAPACITIVE COUPLING

David W. Conway, Cedar Rapids, Iowa, assignor to Norand Corporation, Cedar Rapids, Iowa

Filed Jun. 3, 1987, Ser. No. 57,956
Int. Cl.[5] H01B *7/18*
U.S. Cl. 307—149 52 Claims



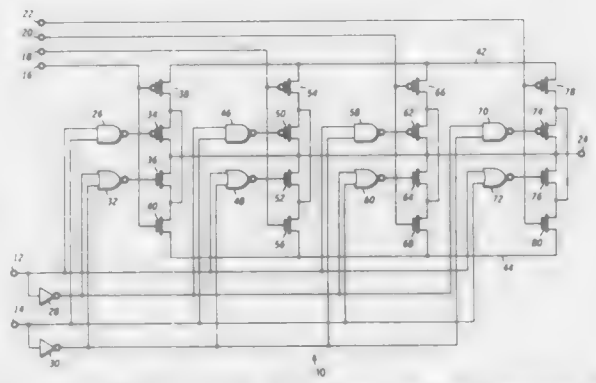
1. A transformer construction comprising magnetic core means with a primary winding linking said magnetic core means, said primary winding having shield means formed of multiple shield wires substantially enclosing the primary winding, each shield wire having electrical insulation means covering the shield wire and electrically insulating such shield wire from the other shield wires of the shield, the shield wires having respective adjacent first ends electrically connected to ground potential and being otherwise in open circuit insulated relationship so as to provide a shield having the properties of a Faraday Shield for said primary winding.

5,012,126

HIGH SPEED CMOS MULTIPLEXER HAVING REDUCED PROPAGATION DELAY

David W. Feldbaumer, Chandler, and Barry B. Heim, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 4, 1990, Ser. No. 533,206
Int. Cl.[5] G06F *3/14*
U.S. Cl. 307—243 20 Claims



1. A multiplexer circuit for selecting one of a plurality of input signals under control of a digital select signal and having an output for providing an output signal inverted with respect to the selected input signal, comprising:

a plurality of processing channels each having exactly first, second, third and fourth transistors serially coupled between first and second sources of operating potential, said first transistor being coupled to said first source of operating potential, said second transistor being coupled between said first transistor and the output, said third transistor being coupled to the output, said fourth transistor being coupled between said third transistor and said second source of operating potential, said first and fourth transistors and being alternately enabled by one of the plurality of input signals; and

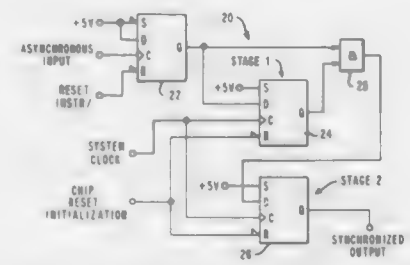
selector means responsive to the digital select signal and having a plurality of outputs for providing a plurality of output signals which enable said second and third transistors of one of said plurality of processing channels while disabling said second and third transistors of the other ones of said plurality of processing channels.

5,012,127

SYNCHRONIZER CIRCUIT WITH ASYNCHRONOUS CLEARING

Dennis E. Gates, and Bret S. Weber, both of Wichita, Kans., assignors to NCR Corporation, Dayton, Ohio

Filed Sep. 24, 1987, Ser. No. 100,499
Int. Cl.[5] H03K *5/13, 3/01*
U.S. Cl. 307—269 7 Claims



1. A synchronizer circuit with asynchronous clearing comprising:

a latch having a data input for receiving an asynchronous input signal that is to be synchronized to a system clock signal and having an output for providing a latched asynchronous input signal, said latch also having a reset input for receiving a clearing signal which resets the output of said latch;

a first stage synchronizer having inputs for receiving said latched asynchronous input signal and a system clock signal and an output for providing a system clock synchronized version of said asynchronous input signal;

a coincidence gate having one input connected to the output of said latch and another input connected to the output of said first stage synchronizer for providing at its output a signal which is a function of the coincidence of the signals at its inputs; and

a second stage synchronizer having inputs for receiving the output signal from said coincidence gate and the system clock signal and an output for providing a second system clock synchronized version of said asynchronous input signal such that receipt of a reset input signal by said latch clears the output from said first and second stage synchronizers upon receipt of the next system clock signal.

5,012,128

HIGH SPEED PUSH-PULL DRIVER HAVING CURRENT MIRROR PULL-DOWN

Yuen H. Chan, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 24, 1990, Ser. No. 469,116
Int. Cl.[5] H03K *3/01, 19/086*
U.S. Cl. 307—270 9 Claims

1. A driver circuit comprising a source of dual phase switching signals, one of said signal phases providing a relative voltage transition from a low value to a high value while the other of said signal phases provides a relative voltage transition from a high value to a low value,

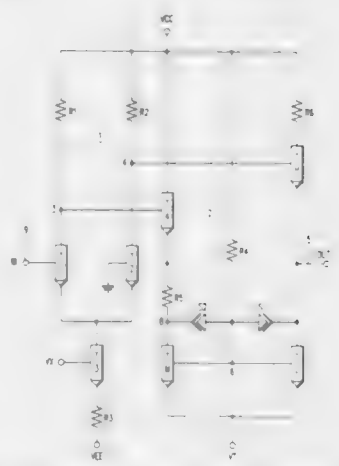
a first emitter follower transistor connected to receive said one signal phase,

a second emitter follower transistor connected to receive said other signal phase,

a current mirror comprising third and fourth transistors having commonly connected emitters and commonly connected bases,

the emitter of said first emitter follower being connected to the collector of said third transistor,

the emitter of said second emitter follower being connected to the collector of said fourth transistor,



a biasing current source connected to said third and fourth transistors for biasing said third and fourth transistors in conductive states at all times, and

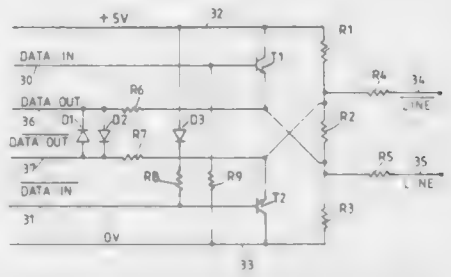
means connected to said third and fourth transistors for preventing saturation therein.

5,012,129

LINE DRIVER

Mark J. Basten, Halesowen, United Kingdom, assignor to Lucas Industries Public Limited Company, Birmingham, England

Filed May 30, 1990, Ser. No. 530,884
Claims priority, application United Kingdom, May 31, 1989, 8912461
Int. Cl.[5] H03K *1/00*
U.S. Cl. 307—270 7 Claims



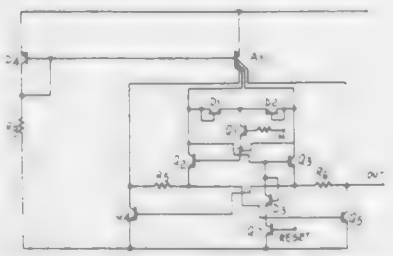
1. A line driver for driving first and second lines, said line driver comprising first and second emitter followers and a biasing resistor network, said first and second emitter followers having first and second inputs, respectively, for receiving complementary input signals and first and second outputs, respectively, for connection to the first and second lines, respectively, said second emitter follower being complementary to said first emitter follower, said biasing resistor network being connected to said first and second outputs.

5,012,130

SMALL AREA AND LOW CURRENT DRAIN FREQUENCY DIVIDER CELL FOR INTEGRATED CIRCUITS

Paolo Menegoli, Verona; Marco Morelli, Livorno, and Francesco Tricoli, Milano, all of Italy, assignors to SGS-Thomson Microelectronics srl, Milan, Italy

Filed Aug. 15, 1989, Ser. No. 394,226
Claims priority, application Italy, Aug. 31, 1988, 21791 A/88
Int. Cl.[5] H03K *3/289, 3/288, 21/02*
U.S. Cl. 307—272.2 **17 Claims**



1. A frequency divider cell for integrated circuits, characterized in that it comprises:

a power supply;

a pair of control transistors and a pair of storage transistors, each transistor having a collector, an emitter and a base electrode, all of the collector electrodes being directly coupled to said power supply, the emitter electrodes of the storage transistors being coupled to a reference potential and the emitter electrodes of the control transistors being coupled to the base electrodes of the storage transistors, the control transistor collector and base electrodes being cross-coupled and the strorage transistor collector and base electrodes being also cross-coupled;

respective resistors coupling each the emitter electrode of a control transistor with the collector electrode of a storage transistor;

a first and a second diode coupled back to back in series between the respective collector electrodes of the control transistors;

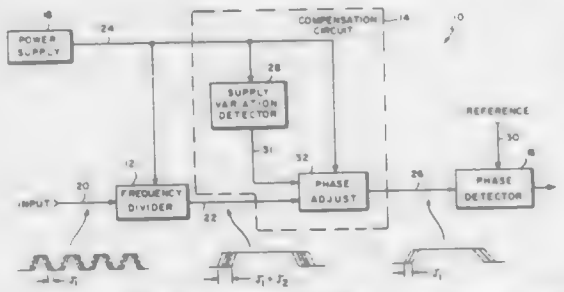
a command transistor having an emitter electrode coupled to a reference potential, a collector electrode coupled to the common coupling point of the two diodes, and a base electrode operating as an input pin of the frequency divider cell.

5,012,131

POWER SUPPLY NOISE COMPENSATION FOR A HIGH FREQUENCY PHASE DETECTOR

James W. Maben, Brookline, and Raymond G. Brown, Nashua, both of N.H., assignors to Sanders Associates, N.H.

Filed Dec. 19, 1988, Ser. No. 286,597
Int. Cl.[5] H03K *3/01, 5/00*
U.S. Cl. 307—296.4 **16 Claims**



1. An apparatus which compensates for errors in the time position of state transitions which occur in a signal output from a digital frequency divider, the errors in the digital frequency divider originating as variations in a power supply voltage connected to provide power to the digital frequency divider, the apparatus comprising:

A. detecting means, for detecting variations in the power supply voltage, and for providing a detected variations signals;

B. a differential transistor pair, receiving the detected variations signal at a first one of the transistors, and receiving the digital frequency divider output signal at a second one of the transistors, and the differential transistor pair providing a compensated signals corresponding to the digital frequency divider output signal having the detected variation in the power supply voltage removed; and

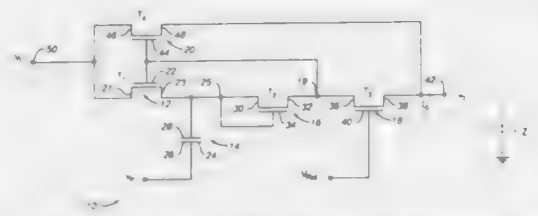
C. compensation network means, connected between the detecting means and the differential transistor pair, for adjusting the compensated signal for impedance variations as the operating frequency of the frequency divider changes.

5,012,132

DUAL MODE HIGH VOLTAGE COUPLER

Ping Wang, Saratoga, Calif., assignor to Xicor, Inc., Milpitas, Calif.

Filed Oct. 5, 1989, Ser. No. 417,594
Int. Cl.[5] H03K *3/01, 17/56;* **H02M** *3/18*
U.S. Cl. 307—296.1 **16 Claims**



1. A dual mode high voltage coupler responsive to an input voltage having a first mode for developing a predetermined level of metered output current for application to a load having an unknown impedance and a second mode for causing the direct coupling of said input voltage to said load, said coupler comprising:

means responsive to the present voltage across said load for coupling a predetermined metered current to said load independent of the impedance of said load so long as said voltage across said load is equal to or less than a predetermined value; and

means for coupling said input voltage directly to said load whenever said voltage across said load is greater than said predetermined value.

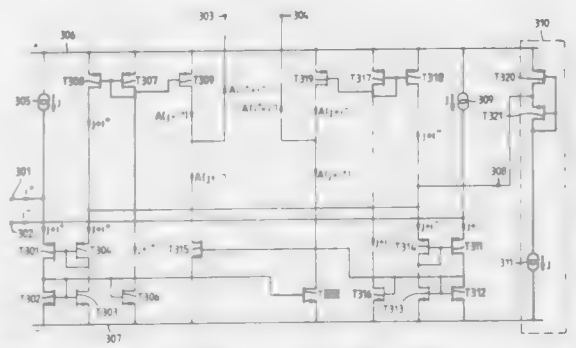
5,012,133

CIRCUIT ARRANGEMENT FOR PROCESSING SAMPLED ANALOG ELECTRICAL SIGNALS

John B. Hughes, Sussex, England, assignor to U. S. Philips Corporation, New York, N.Y.

Filed Feb. 13, 1990, Ser. No. 479,502
Claims priority, application United Kingdom, Feb. 17, 1989, 8903704
Int. Cl.[5] G05F *3/24*
U.S. Cl. 307—352 **10 Claims**

2. A circuit arrangement for processing sampled analogue electrical signals, each sample being in the form of a current, the circuit arrangement comprising; means for combining, in predetermined proportions, an input sample current in a present sample period with current(s) derived from input sample current(s) in one or more preceding sample periods, and means for deriving a processed output signal from a combined current produced by the combining means in successive sample periods; a plurality of circuit modules, each circuit module having a current input for receiving a bi-directional input signal current and a current output for supplying a bi-directional output signal current, means for adding a bias current to the bi-directional input signal current to produce a uni-directional current for processing by the circuit module and means for subtracting a suitably scaled bias current from the processed uni-direc-



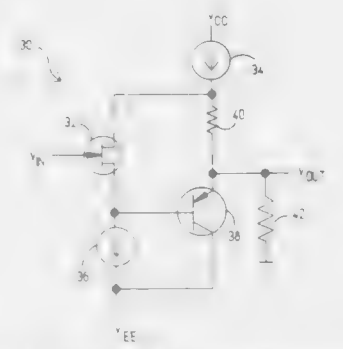
tional current to produce a bi-directional signal current at the current output of the circuit module, and in which in at least one of the circuit modules the current input comprises a current conveyor circuit.

5,012,134

DC BOOTSTRAPPED UNITY GAIN BUFFER

Robert B. Kimura, Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 2, 1990, Ser. No. 487,556
Int. Cl.[5] H03K *19/02, 19/094*
U.S. Cl. 307—446 **9 Claims**



1. A buffer for providing approximately unity gain to a signal applied thereto, comprising:

a field effect transistor, wherein said signal is applied to the gate of said field effect transistor, said field effect transistor having a drain-source voltage;

a first current source, connected to said field effect transistor, said first current source having a first current value;

a transistor, having a base connected to said field effect transistor;

a second current source, connected to said field effect transistor, said second current source having a current value greater than said first current value; and

a resistor, connected between said second current source and said transistor for maintaining said drain-source voltage at a relatively constant value and wherein said drain-source voltage is relatively independent of said signal.

5,012,135

LOGIC GATES WITH A PROGRAMMABLE NUMBER OF INPUTS

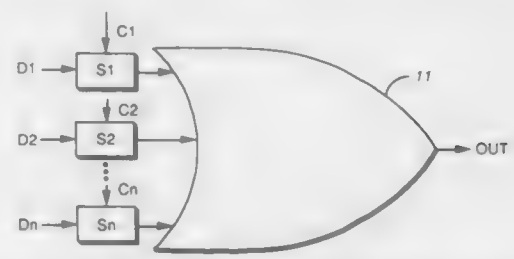
Cecil H. Kaplinsky, Palo Alto, Calif., assignor to Plus Logic, Inc., Santa Clara, Calif.

Filed May 12, 1989, Ser. No. 351,437
Int. Cl.[5] H03K *19/094*
U.S. Cl. 307—465 **27 Claims**

1. A programmable logic gate that may be programmed to accept all or a selected subset of input signals for signal summation, the gate coprising:

(a) signal summation means having a plurality of input terminals and an output terminal, for receiving a data input signal or a logical zero input signal at each input terminal and for forming the logical sum of the data input signals and the logical zero signals and for issuing this sum as an output signal at the output terminal; and

(b) a plurality of individually programmable switches, each programmable switch having a data input terminal, a control input terminal and an output terminal, with each output terminal being connected to one of the input terminals of the summation means, each data input terminal receiving a data input signal, and each control input terminal receiving a control signal that has a first state and a second state, where receipt of a control signal in the first



state causes the output terminal of that switch to issue the data input signal and receipt of a control signal in the second state causes the output terminal of that switch to issue a logical zero signal,

wherein each said programmable switch comprises:

(1) a first pass transistor of a channel type having an input terminal, a pass terminal and an output terminal, the transistor receiving said data input signal at its input terminal, receiving said control signal at its pass terminal, and having its output terminal connected to one of said input terminals of said summation means; and

(2) a second pass transistor that has the same channel type and the same terminals as the first pass transistor, having its input terminal connected to a logical zero signal, receiving the logical complement of said control signal at its pass terminal, and having its output terminal connected to the output terminal of the first pass transistor.

5,012,136

HIGH SPEED ECL TO CMOS TRANSLATOR HAVING REDUCED POWER CONSUMPTION

Robert Dixon, Tempe; Golnaz Kaveh, Chandler, and Walter Seelbach, Fountain Hills, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 4, 1989, Ser. No. 445,529
Int. Cl.[5] H03K *19/092, 19/08*
U.S. Cl. 307—475 **13 Claims**

2. A circuit responsive to an input logic signal for providing an output signal having predetermined logic levels at an output, comprising:

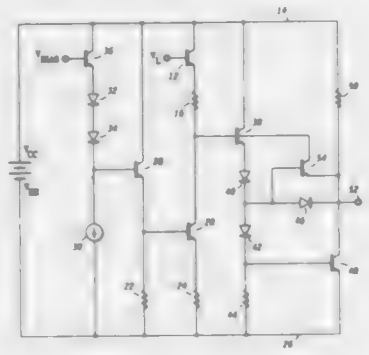
first means coupled between first and second power supply conductors for developing a first potential at a first node, said first potential having first and second states in response to first and second states of the input logic signal and operating substantially independent of variations in the supply voltage of said first and second power supply conductors;

second means coupled to said first node of said first means for conducting a first current between said first and second power supply conductors and developing a second potential at a second node in response to said first state of said first potential;

third means coupled for receiving said second potential developed at said second node of said second means and

providing the output signal at the output of the circuit; and

fourth means coupled between the output of the circuit and said first node of said first means for developing a feedback signal proportional to the magnitude of said first



current flowing through said second means and applying said feedback signal to said first node for controlling the magnitude of said first state of said first potential to limit the magnitude of said first current flowing through said second means to a predetermined value.

5,012,137

ECL-CMOS CONVERTER

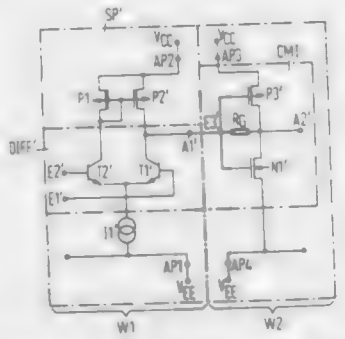
Ernst Muellner, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 17, 1989, Ser. No. 380,593

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1988, 3825010

Int. Cl.[5] H03K *19/92, 19/3, 19/86, 17/10*

U.S. Cl. 307—475 **15 Claims**



1. ECL-CMOS converter for converting ECL levels into CMOS levels, comprising a voltage-to-current converter connected in series with a current-to-voltage converter, first and second inputs of the voltage-to-current converter being first and second inputs of the ECL-CMOS converter and an output of the current-to-voltage converter being an output of the ECL-CMOS converter; the current-to-voltage converter containing a feedback CMOS inverter stage; a first input of the feedback CMOS inverter stage forming an input of the current-to-voltage converter and being connected via a feedback element to an output of the CMOS inverter stage; the output of the CMOS inverter stage forming the output of the current-to-voltage converter; a second input of the CMOS inverter stage being connected to a third terminal point and a third input thereof being connected to a fourth terminal point; and the feedback CMOS inverter stage also containing an enhancement p-channel MOS field effect transistor and an enhancement n-channel MOS field effect transistor; a first terminal of the enhancement p-channel field effect transistor being connected to the second input of the CMOS inverter stage; a first terminal of the enhancement n-channel MOS field effect transistor being connected to the third input of the MOS inverter stage; the first input of the CMOS inverter stage being directly connected to a gate terminal of the p-channel enhancement MOS field effect transistor and to a gate terminal of the n-channel enhancement MOS field effect transistor; a second terminal of the p-channel enhancement MOS field effect transistor and a second terminal of the n-channel enhancement MOS field effect transistor each being connected to the output of the CMOS inverter stage; the third terminal point being connected to the second supply voltage and the fourth terminal point being connected to the first supply voltage.

5,012,138

INTERFACE CIRCUIT FOR ASYCHRONOUS DATA TRANSFER

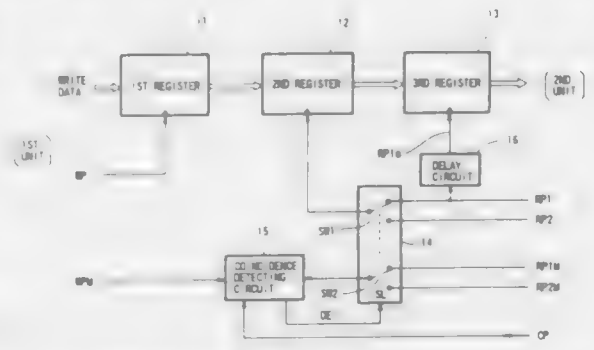
Takashi Suzuki, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Jul. 25, 1989, Ser. No. 384,637

Claims priority, application Japan, Jul. 26, 1988, 63-186468

Int. Cl.[5] H03K *19/0175, 19/00, 3/01*

U.S. Cl. 307—475 **5 Claims**



1. An interface circuit comprising:

(a) a first register for reading in input data by a first pulse signal;

(b) a second register for reading in an output of said first register by a second pulse signal which is asynchronous with said first pulse signal, wherein said second pulse signal can be arbitrarily generated at any predetermined generation timing;

(c) phase difference detecting means for detecting whether or not a phase difference between phases of said first and second pulse signals is within a predetermined range; and

(d) selecting means for selecting a predetermined generation timing for said second pulse signal when said phase difference detecting means detects that said phase difference is within the predetermined range.

5,012,139

FULL WAVE RECTIFIER/AVERAGING CIRCUIT

David M. Susak, Chandler, and Scott K. Bader, Mesa, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Oct. 30, 1989, Ser. No. 428,671

Int. Cl.[5] G06G *7/12;* **H03K** *5/00;* **H03F** *3/04*

U.S. Cl. 307—490 **10 Claims**

1. A circuit for providing rectification and average of an applied input signal comprising:

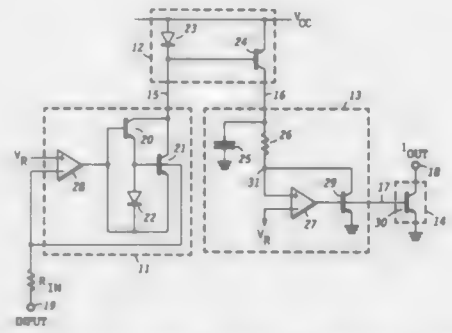
rectification means responsive to the input signal for providing a first signal at an output, said first signal being a full wave rectified version of the input signal;

a current mirror having an input coupled to said rectification means for providing a second signal at an output in response to said first signal;

an operational amplifier having an inverting terminal coupled to a first reference voltage, a non-inverting terminal, and an output terminal;

a transistor having a collector coupled to said non-inverting terminal of said operational amplifier, a base coupled to said output terminal of said operational amplifier, and an emitter coupled to a supply voltage terminal;

resistor coupled between said output of said current mirror and said non-inverting terminal of said operational amplifier;



capacitive means coupled between said output of said current mirror and said first supply voltage terminal wherein said operational amplifier, said transistor, said resistive means and said capacitive means comprise an averaging circuit; and

output means coupled to said output terminal of said operational amplifier for providing an output signal at an output terminal of the circuit.

5,012,140

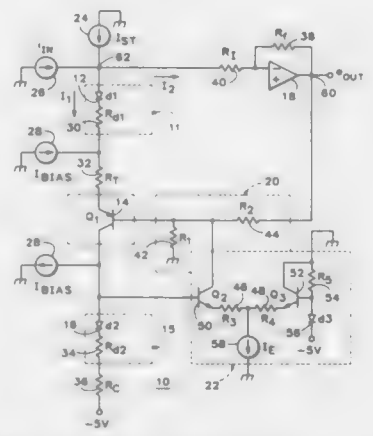
LOGARITHMIC AMPLIFIER WITH GAIN CONTROL

Glenn Bateman, Redmond, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Mar. 19, 1990, Ser. No. 495,191

Int. Cl.[5] G06G *7/10, 7/24, 7/12*

U.S. Cl. 307—491 **17 Claims**



1. A logarithmic amplifier comprising:

(a) a first non-linear element having an input terminal for receiving an input signal current and an output terminal;

(b) a first transistor having a first controlled terminal coupled to the output terminal of the first non-linear element, a second controlled terminal and a control terminal;

(c) a second non-linear element having an input terminal coupled to the second controlled terminal of the first transistor and an output terminal;

(d) a load element having a first terminal coupled to the output terminal of the second non-linear element and a second terminal coupled to a first source of supply voltage;

(e) a feedback network having an input terminal coupled to the input terminal of the second non-linear element and an output terminal coupled to the control terminal of the first transistor;

(f) means for amplifying having an input terminal coupled to the input terminal of the first non-linear element and an output terminal for providing a logarithmic output voltage and;

(g) an attenuation network for attenuating the logarithmic output voltage and applying the attenuated output voltage to the control terminal of the first transistor.

5,012,141

SIGNAL DELAY DEVICE USING CMOS SUPPLY VOLTAGE CONTROL

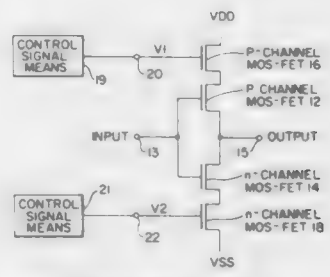
Norio Tomiiwa, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 760,332, Jul. 29, 1985, abandoned. This application Dec. 21, 1988, Ser. No. 289,479

Claims priority, application Japan, Jul. 31, 1984, 59-160784; Jul. 31, 1984, 59-160785; Jul. 31, 1984, 59-160786; Nov. 26, 1984, 59-179551[U]; Dec. 18, 1984, 59-267050; Dec. 21, 1984, 59-270431

Int. Cl.[5] H03R *5/12*

U.S. Cl. 307—594 **9 Claims**



1. A signal delay device comprising:

CMOS gate circuit means having an input terminal to which a binary input signal to be delayed is applied, an output terminal from which a delayed signal is derived and power voltage supply terminals to which operation power voltages from operation power voltage sources are applied; and

voltage control means connected in a power supplying path for said CMOS gate circuit means in association with at least one MOS-FET of said CMOS gate circuit means for controlling voltage applied to said CMOS gate circuit means;

control signal means for providing a user-adjustable control signal corresponding to a desired delay time, said control signal being applied to said voltage control means for the control of the applied voltage;

the voltage applied to said CMOS gate circuit means being controlled in response to the control signal applied to said voltage control means, the amount of delay in the binary input signal between said input and output terminals of said CMOS gate circuit means thereby being controlled.

5,012,142

DIFFERENTIAL CONTROLLED DELAY ELEMENTS AND SKEW CORRECTING DETECTOR FOR DELAY-LOCKED LOOPS AND THE LIKE

Jeffrey L. Sonntag, Muhlenberg Twp., Berks County, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 28, 1989, Ser. No. 387,458

Int. Cl.[5] H03K *5/13*

U.S. Cl. 307—602 **12 Claims**

1. A variable delay element with an input and an output, formed in an integrated circuit, for delaying signals, the delay varying in response to a control signal, having:

a first capacitive means; and

a first variable coupling means, having an output coupling to the output of the variable delay element, for variably

coupling the output of the variable delay element to the first capacitive means in response to the control signal;

wherein the delay element is characterized by: the first capacitive means having first and second capacitors and the first variable coupling means having first and second transistors of opposite conductivity types, connected



between corresponding first and second capacitors and the output of the first variable coupling means;

wherein the delay of the variable delay element is dependent on the control signal and the amount of coupling by the first variable coupling means, such that the amount of coupling varies proportionally with the desired delay of the variable delay element.

5,012,143

INTEGRATED DELAY LINE

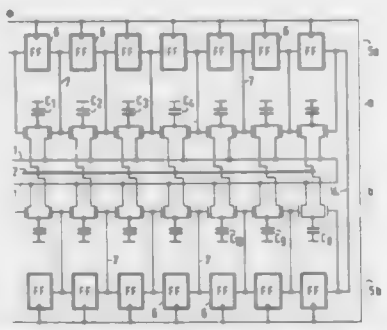
Arnoldus J. J. Boudewijns, Eindhoven, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

Filed Oct. 4, 1989, Ser. No. 417,976

Claims priority, application Netherlands, Feb. 15, 1989, 8900363

Int. Cl.[5] H03K *17/16, 17/693*

U.S. Cl. 307—606 **4 Claims**



1. An integrated circuit having a delay line arranged at a surface of a semiconductor body and comprising a series of signal storage capacitances, an input line for supplying signals and a read-out line for reading out the stored signals, a plurality of pairs of transistors, which are each coupled to a signal storage capacitance and of which a transistor, designated the read-in transistor, comprises a switch between the capacitance and the read-in line, while the other transistor, designated the read-out transistor, comprises a switch between the capacitance and the read-out line, and further comprising a digital shift register having a plurality of outputs which are connected to control electrodes of the transistors, characterized in that the delay line comprises at least two adjacent parts with a common centrally-arranged part of the read-out line therebetween, the signal storage capacitances and the associated pairs of transistors and parts of the shift register being located on both sides of said parts of the read-out line in such a manner that on both sides of said part of the read-out line the signal storage capacitances with their coupled transistors of one of the parts of the delay line are located between the read-out line and the associated part of the shift register.

5,012,144

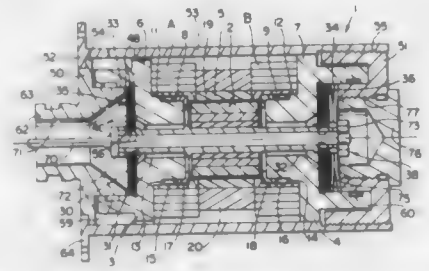
LINEAR DIRECT DRIVE MOTOR

Thomas W. Huitema, Galesburg; William H. Eiszner, Jr., Portage; Stanley D. Heeres, and Robert D. Vanderlaan, both of Kalamazoo, all of Mich., assignors to Pneumo Abex Corporation, Boston, Mass.

Filed Jan. 27, 1989, Ser. No. 371,936

Int. Cl.[5] H02K *41/00*

U.S. Cl. 310—14 **50 Claims**



1. A linear drive motor comprising a pair of axially spaced relatively fixed stator poles, armature means mounted for axial movement between said stator poles, magnet means surrounding said armature means in radially spaced relation therefrom, coil means surrounding portions of said stator poles, and centering spring means for supporting said armature means for coaxial movement relative to said stator poles.

5,012,145

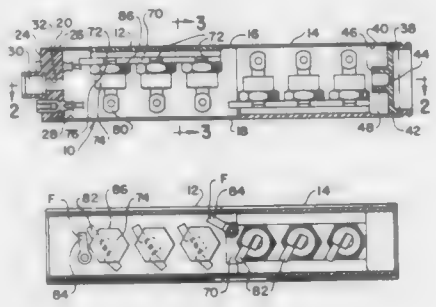
ROTATING RECTIFIER ASSEMBLY FOR BRUSHLESS GENERATOR

Gary A. Frantz, Belvidere; Mohd A. Aleem, Roscoe; Loren Rademacher, and Lee R. Rateike, both of Rockford, all of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 30, 1989, Ser. No. 429,045

Int. Cl.[5] H02K *11/00;* **H02M** *1/00*

U.S. Cl. 310—68 D **8 Claims**



7. A rotary rectifier assembly comprising:

a tubular housing having an interior wall, at least part of which is formed of insulating material;

opposed elongated, inverted T-shaped slots in said wall part;

elongated buses in said slots; and

a plurality of prepackaged diodes mounted on each of said buses by a packaged diode terminal so as to be electrically connected to the corresponding bus and projecting out of the corresponding slot.

5,012,146

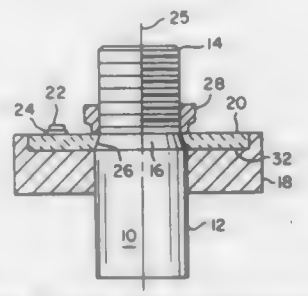
BEVELED GENERATOR SHAFT FOR IMPROVED HEAT TRANSFER

John J. Tumpey, Oakhurst, N.J., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Dec. 7, 1989, Ser. No. 447,324

Int. Cl.[5] H02K *9/22;* **F28F** *9/08*

U.S. Cl. 310—68 D **16 Claims**



1. An electric machine which generates an output signal from an exciter signal, comprising:

a shaft having a first section, a second section and a beveled section between said first and second sections, said second section having a smaller outer diameter than said first section;

a substrate having an internal radial surface which is angled similarly to said beveled section of said shaft

at least one heat dissipating component mounted on said substrate which generates the exciter signal; and

means secured to said shaft for securing said substrate onto said shaft such that said beveled internal radial surface of said substrate mates with said beveled section of said shaft to provide a heat conduction path for said substrate to said shaft.

5,012,147

DOMESTIC VIBRATION APPARATUS WITH LEVER DRIVE

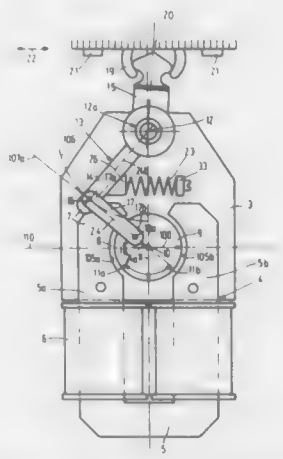
Leo Bertram, Stolberg, Fed. Rep. of Germany; Hugo Schemmann, Schaesberg, Netherlands, and Romuald L. Bukoschek, Klagenfurt, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 28, 1989, Ser. No. 373,367

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1988, 3822332

Int. Cl.[5] B20B *19/02;* **F16D** *3/00;* **F16F** *15/12*

U.S. Cl. 310—80 **40 Claims**



1. A domestic vibration apparatus in which movements of a two-pole permanent magnet (9) forming a rotor is a stator arrangement energized by means of coils produce a vibratory movement of a vibration tool via a lever system (13) coupled to the movements of the rotor (9), a return - sprint force acting on the lever system (13) to preload the drive system comprising the lever system (13) and the rotor (9) in such a way that the rotor (9) can oscillate about a rest position, the lever system (13) comprising a two-arm swing lever and being connected to an eccentrically disposed pin of the rotor (9), characterized in that

the two-pole permanent magnet rotor (9) is without pole-pieces and is arranged in the U-shaped stator of a single-phase synchronous motor, and

a first lever arm (14) of the two-arm swing lever (13) and the rotor (9) are interconnected by a connecting rod (17) which at one end is articulated to the first lever arm (14) by means of a connecting-rod joint (16) and at its other end is eccentrically articulated to the rotor (9) by means of a crank pin (18*a*).

5,012,148

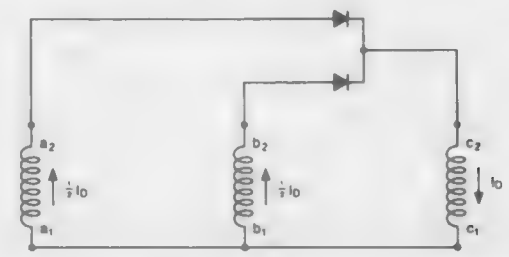
AC MACHINE SYSTEM WITH INDUCED DC FIELD

Joseph Vithayathil, 3217 Johnson Ave., Apt. 2, San Luis Obispo, Calif. 93401

Filed Sep. 14, 1989, Ser. No. 407,211

Int. Cl.[5] H02K *19/02*

U.S. Cl. 310—165 **14 Claims**



1. An AC machine system with induced DC field comprising:

an AC machine, whose rotor has coils and rectifying elements, to provide DC excitation, to create DC excited magnetic poles on the rotor, to enable operation at the synchronous speed, as defined hereinafter,

the said machine having stator circuits, either of single phase, or having a plurality of phases, which when energized as required, create a rotating magnetic field system, which has as constituents, a main rotating field system whose speed is defined herein as the synchronous speed of the machine, and an auxiliary rotating field system whose speed is different from the synchronous speed as defined, and

a power supply system to provide the power and control requirements of the said machine.

5,012,149

ASSEMBLED COMMUTATOR FOR AN ELECTRIC MOTOR

Georg Strobl, Repulse Bay, Hong Kong, assignor to Johnson Electric S.A., La Chaux de Fonds, Switzerland

Filed Jan. 18, 1989, Ser. No. 298,028

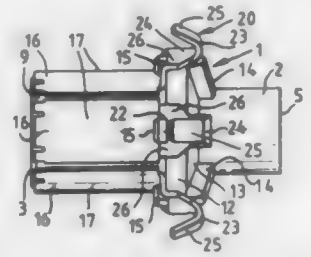
Claims priority, application United Kingdom, Jan. 19, 1988, 8801093; Feb. 15, 1988, 8803444

Int. Cl.[5] H02K *13/04*

U.S. Cl. 310—234 **6 Claims**

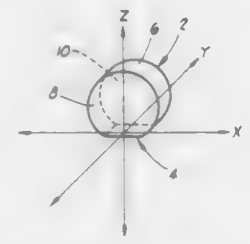
1. An assembled commutator comprising a preformed cylindrical base, the base comprising a cylindrical portion having a collar at one end, a plurality of commutator segments mounted on the base, each segment comprising a brush contacting portion which is supported by the cylindrical portion of the base, and a generally radially extending connector portion for hot connection to an armature coil wire, the connector portion being supported by the collar, wherein an aperture is formed in said connector portion and a projection is provided on the collar, the projection being received in the aperture to locate

the segment on the base in the region of the collar, wherein the projection is provided on a wall of the collar, the wall extending radially away from the cylindrical base portion, and



wherein the projection is spaced from the cylindrical base portion by the thickness of a portion of the segment, with the portion of the segment fitting between the projection on the collar and the cylindrical base portion.

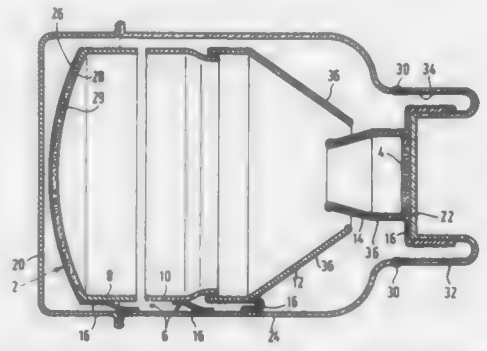
5,012,151
THERMALLY MATCHED STRIP MOUNTED RESONATOR AND RELATED MOUNTING METHOD
Errol P. EerNisse, Salt Lake City, and Roger W. Ward, Park City, both of Utah, assignors to Halliburton Company, Duncan, Okla.
Filed Sep. 12, 1989, Ser. No. 406,168
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—346 **24 Claims**



1. A resonator assembly, comprising:
a rigid support having a selected linear locus of connection and further having a thermal expansion coefficient for said locus;
a rigid crystal including a surface encompassing an active region of said crystal, said surface having a selected chord thereacross spaced from the center of said active region, wherein said crystal has a thermal expansion coefficient for said selected chord equivalent to said thermal expansion coefficient for said locus; and
rigid connector means for rigidly connecting said crystal to said support along said locus and chord, said rigid connector means having a thermal expansion coefficient equivalent to said thermal expansion coefficients for said locus and said chord.

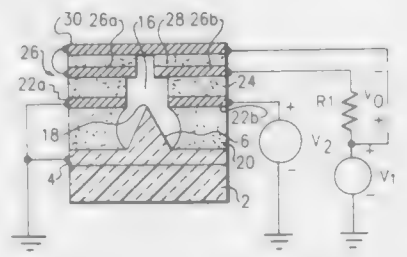
5,012,152
IMAGE INTENSIFIER TUBE COMPRISING COATED ELECTRODES
Petrus G. H. J. Smits, Heerlen, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.
Filed Jan. 8, 1990, Ser. No. 461,887
Claims priority, application Netherlands, Jan. 9, 1989, 8900038
Int. Cl.[5] H01J *19/28*
U.S. Cl. 313—107 **5 Claims**

1. An image intensifier tube, comprising an electron-optical system for imaging photoelectrons emanating from an entrance screen onto an exit screen, which electron-optical system includes metal parts provided with a coating layer, characterized in that the coating layer contains aluminium phosphate glass



which is deposited in a comparatively thin layer on surfaces of metal parts to be coated.

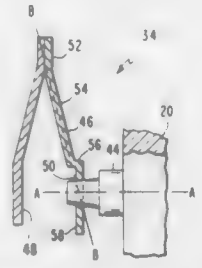
5,012,153
SPLIT COLLECTOR VACUUM FIELD EFFECT TRANSISTOR
Gary M. Atkinson, 1012 - 7th St., #15, Santa Monica, Calif. 90403, and M. DuChesne Courtney, 15127 Blackhawk, Mission Hills, Calif. 91345
Filed Dec. 22, 1989, Ser. No. 455,217
Int. Cl.[5] H01J *21/16;* **H03K** *3/353*
U.S. Cl. 313—336 **21 Claims**



1. A vacuum field effect transistor (FET), comprising:
an emitter configured to emit a current flow,
a collector positioned in the path of said current flow, said collector having conductive and nonconductive portions,
a steering electrode means disposed generally between the emitter and collector, and
means for applying an electrical signal to said steering electrode for steering the current flow between the collector's conductive and nonconductive portions.

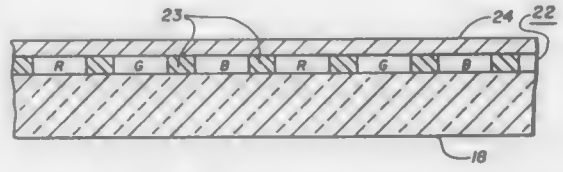
5,012,154
COLOR PICTURE TUBE HAVING IMPROVED SHADOW MASK-FRAME ASSEMBLY SUPPORT
Frank R. Ragland, Jr., Lancaster, Pa., assignor to RCA Licensing Corporation, Princeton, N.J.
Filed Dec. 1, 1989, Ser. No. 444,215
Int. Cl.[5] H01J *29/07*
U.S. Cl. 313—406 **10 Claims**

1. In a color picture tube including an evacuated glass envelope having a rectangular faceplate panel, said panel including a shadow mask assembly mounted therein by support means located at peripherally spaced positions within said panel, said support means at each of said spaced positions including a stud attached to said glass envelope, and a spring interconnected with said shadow mask assembly, said spring having an aperture therein engaging said stud, the improvement comprising
said spring including a first portion interconnected with said shadow mask assembly, an elongated second portion extending from said first portion toward said stud, a third portion interconnected with said second portion and including an aperture engaging said stud, and an offset



section that positions the center of said aperture on a central longitudinal plane of said second portion.

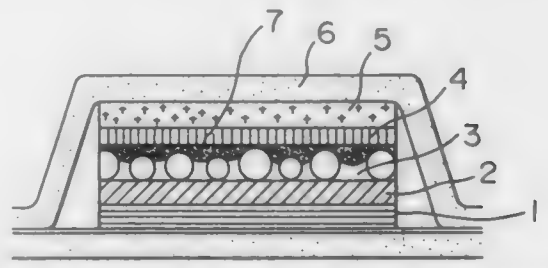
5,012,155
SURFACE TREATMENT OF PHOSPHOR PARTICLES AND METHOD FOR A CRT SCREEN
Pabitra Datta, Cranbury; Ronald N. Friel, Hamilton Square, both of N.J., and Robert P. Thompson, Millersville, Pa., assignors to RCA Licensing Corp., Princeton, N.J.
Division of Ser. No. 287,358, Dec. 21, 1988. This application Dec. 22, 1989, Ser. No. 455,069
Int. Cl.[5] H01J *29/10, 29/28*
U.S. Cl. 313—461 **6 Claims**



1. A CRT comprising an electrophotographically manufactured luminescent viewing screen and means for selectively exciting areas of said screen to luminescence, said screen comprising picture elements of color-emitting phosphors arranged in color groups, each element of a color group comprising dry-powdered phosphor particles emissive to light in a particular portion of the visible spectrum, said dry-powdered phosphor particles being coated with a surface charge-controlling polymeric material to control the triboelectric charge characteristics of said phosphor particles during the manufacturing of said screen, said polymeric material being selected from the group consisting of gelatin, poly(ethyloxazoline), polyamide, polyvinylpyridine, polybutylmethylmethacrylate, polyvinyl alcohol, polyisobutylmethacrylate, poly (trifluorethyl methacrylate), and nitrocellulose.

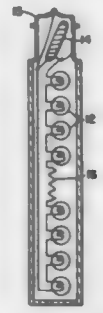
5,012,156
DISPERSION-TYPE ELECTROLUMINESCENCE DEVICE
Hidekimi Kadokura; Hiroshi Yoshitake, and Masayoshi Tanahashi, all of Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
PCT No. PCT/JP88/00984, § 371 Date May 24, 1989, § 102(e) Date May 24, 1989, PCT Pub. No. WO89/03163, PCT Pub. Date Apr. 6, 1989
PCT Filed Sep. 28, 1988, Ser. No. 362,459
Claims priority, application Japan, Sep. 29, 1987, 62-247425
Int. Cl.[5] H01J *63/04*
U.S. Cl. 313—509 **1 Claim**

1. A dispersion-type electroluminescence device comprising a back electrode layer and, laminated thereon, an insulator layer, a luminous layer and a transparent electrode layer wherein dented portions present in the upper part of the luminous layer are coated with a resin composition having a dielectric constant which is at least about 5 but lower than that of the dielectric resin composition, which is at least 15, used for formation of the luminous layer and which is, the thickness of coating of the dielectric resin composition formed in the



dented portions of the luminous layer being not greater than about 5μ over a peak of the highest projecting portion of the luminous layer.

5,012,157
LONG-LIFE LUMINAIRES
John F. Walton, 6853 Strata St., McLean, Va. 22101, and Al R. Roshdieh, 688 College Pkwy., Rockville, Md. 20850
Continuation-in-part of Ser. No. 37,229, Apr. 10, 1987, abandoned. This application Oct. 18, 1988, Ser. No. 259,320
The portion of the term of this patent subsequent to Nov. 1, 2005, has been disclaimed.
Int. Cl.[5] H01J *7/44;* **H05B** *39/10, 41/46*
U.S. Cl. 315—66 **3 Claims**

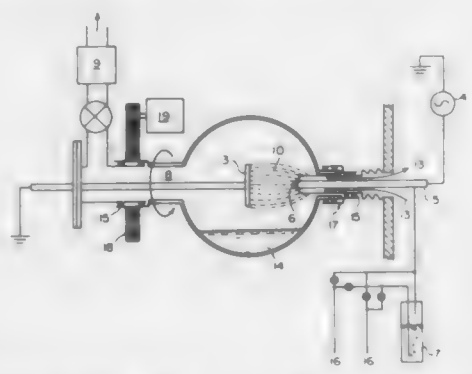


2. A long-life luminaire for signs powered by power company standard voltages for use in emergencies, comprising:
a first string of individual long-life, low-voltage light bulbs having electrical ends electrically connected in series;
means for connecting said string across a source of electrical energy;
a resistor connected in series with said string of bulbs;
said resistor having a resistance approximately equal to that of one of said bulbs when at incandescent temperature; and
at least one varistor connected across said electrical ends of the entire string of the long-life, low-voltage lamps only.

5,012,158
PLASMA CVD APPARATUS
Isao Nakatani, and Takao Furubayashi, both of Funabashi, Japan, assignors to National Research Institute for Metals, Tokyo, Japan
Continuation-in-part of Ser. No. 77,673, Jul. 23, 1987, abandoned. This application Dec. 18, 1989, Ser. No. 451,766
Claims priority, application Japan, Jul. 25, 1986, 61-173833; Jul. 25, 1986, 61-173834; Dec. 20, 1988, 63-319429
Int. Cl.[5] H01J *7/24*
U.S. Cl. 315—111.21 **19 Claims**

1. A plasma CVD apparatus comprising: a rotatable plasma reaction vessel; a starting gas introducing pipe for introducing a starting gas thereinto;

an ambient gas introducing pipe opening into said reaction vessel for introducing an ambient gas thereinto;
an exhaust pipe opening out of said reaction vessel;
means for applying a high frequency electric field to the interior of said reaction vessel;
a starting gas blowing port means on said starting gas introducing pipe within said reaction vessel; and



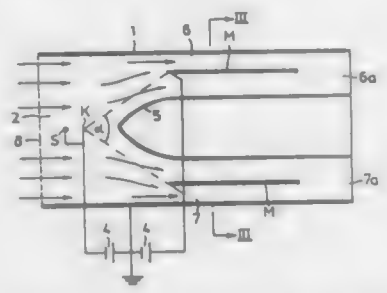
a cooling means in direct heat exchange relation with said port means for cooling said port means wherein said starting gas introducing pipe and said exhaust pipe are located in opposition to each other on a rotating axis of said reaction vessel.

5,012,159

ARRANGEMENT FOR TRANSPORTING AIR

Vilmos Török, Lidingö, and Andrzej Loreth, Åkersberga, both of Sweden, assignors to Astra Vent AB, Stockholm, Sweden

PCT No. PCT/SE88/00365, § 371 Date Nov. 15, 1989, § 102(e) Date Nov. 15, 1989, PCT Pub. No. WO89/00355, PCT Pub. Date Jan. 12, 1989
PCT Filed Jul. 1, 1988, Ser. No. 438,427
Claims priority, application Sweden, Jul. 3, 1987, 8702752
Int. Cl.[5] H01J *7/24;* **H01T** *23/00*
U.S. Cl. 315—111.91 **24 Claims**



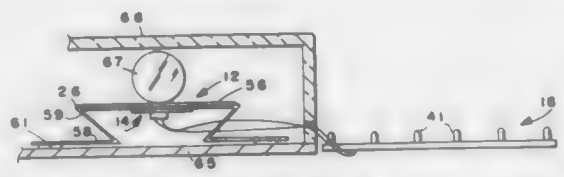
1. An arrangement for transporting and optionally, at the same time, cleansing air, comprising a corona electrode (K) at least one target electrode (M) spaced from said corona electrode, a d.c. voltage source (4), said corona electrode and said at least one target electrode being connected to respective terminals of said source, and in which arrangement the configuration of the corona electrode and the voltage of the voltage source are such that an ion-generating corona discharge occurs at the corona electrode, and further comprising a housing having housing walls (1,5) and an inlet opening (2) in which the corona electrode (K) is substantially centrally positioned, and an air-flow path which extends from said inlet opening (2) and in which said at least one target electrode (M) is positioned so as to be located at a considerable distance from and symmetrically in relation to the centre line passing through the inlet opening (2), so that lines extending between the corona electrode (K) and said at least one target electrode (M) define a substantial angle (α), characterized in that the housing is configured so that the airflow path downstream of the inlet opening (2) and the corona electrode (K) branches outwardly towards said at least one target electrode (M) to form at least one air-flow channel (6,7), in which each channel contains the respective target electrode (M) and in which each channel is located at a distance from the centre line through the inlet opening (2), so that air entering through the inlet opening (2) is forced out towards said at least one target electrode (M) and so that at least the major part of the air is prevented by the housing wall (5) from continuing straight forwards along the extension of the centre line through the inlet opening (2).

5,012,160

ACCORDION MOUNT FOR SOLAR CELLS INCLUDING POINT-OF-PURCHASE DISPLAY WITH LEDS

Kathleen D. Dunn Thompson, Colorado Springs, Colo., assignor to Colorado Instruments, Inc., Colorado Springs, Colo.

Filed Apr. 13, 1989, Ser. No. 337,419
Int. Cl.[5] H05B *37/02, 41/36*
U.S. Cl. 315—149 **16 Claims**



1. An energy converting assembly for operative association with a light source mounted in a housing, comprising:
(a) a solar cell,
(b) mounting and spacing means for mounting said solar cell and for occupying space between a light source and a housing for the light source, and having a first portion and a second portion remote from aid first portion;
(c) means for holding said solar cell on said first portion of said mounting means;
(d) means disposed on said mounting means second portion for connecting said mounting means to the housing for the light source, so that the solar cell is positioned by the mounting means in close proximity with the light source, with the mounting and spacing means occupying space between the housing and the light source;
(e) a display electrically connected to said solar cell, and powered thereby when the solar cell receives light rom the light source; and wherein said mounting and spacing means comprises sheet material having first and second faces, and an undulating configuration between first and second opposite side edges thereof, said first portion comprising part of said first face at an undulation substantially centrally between said first and second side edges.

5,012,161

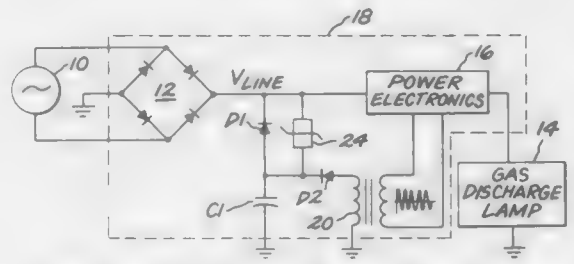
POWER FACTOR CORRECTION CIRCUIT

Joseph C. Borowiec, and Sayed-Amr El-Hamamsy, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 5, 1989, Ser. No. 295,624
Int. Cl.[5] H05B *41/24*
U.S. Cl. 315—247 **10 Claims**

1. A circuit for obtaining a high power factor electronically, comprising:
a filter capacitor;
capacitor pre-charging means, including a varistor electrically connected in series with said filter capacitor, coupled to an alternating current line voltage for precharging said filter capacitor to a pre-selected DC voltage level;
a power factor correction winding coupled to said capacitor for maintaining the DC voltage level across said capacitor above said pre-selected DC voltage level; and

coasting device means for supplying load current from said capacitor to a load alternately with the line voltage, said



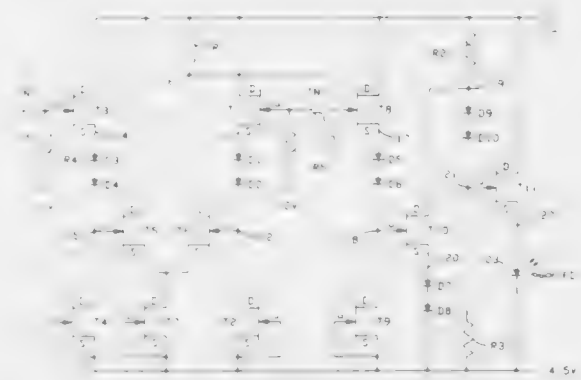
coasting device means being conductive when the voltage level across said capacitor exceeds the line voltage.

5,012,162

LIGHT EMITTING DIODE TRANSMITTER CIRCUIT WITH TEMPERATURE COMPENSATION

Cornell S. L. Chun, Eagan, Minn., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Apr. 13, 1990, Ser. No. 508,450
Int. Cl.[5] H05B *39/04*
U.S. Cl. 315—309 **11 Claims**



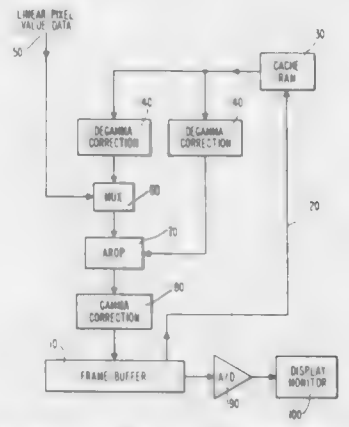
1. A light emitting diode circuit having first, second and third nodes comprising,
first and second terminal means each of which receive a different reference potential thereon comprising,
interface means for receiving an input signal and for providing a drive signal therefrom,
circuit means comprising first field-effect-transistor means which operates in a switching mode and which has its gate coupled to receive said drive signal and its drain-to-source path coupled between a first node, and one of said terminal means,
temperature compensating means coupled across said first and second terminal means comprising,
first resistive means coupled between said first terminal and said first node,
temperature compensating means coupled between said first and second nodes and in series with said first resistive means,
second resistive means coupled between said second node and said second terminal and in series with said temperature compensation means,
second field effect transistor means which has its gate coupled to said second node and its drain-to-source path coupled between said first terminal and said third node, and
light emitting diode means coupled between said third node and said second terminal and in series with said drain-to-source path of said second field effect transistor means.

5,012,163

METHOD AND APPARATUS FOR GAMMA CORRECTING PIXEL VALUE DATA IN A COMPUTER GRAPHICS SYSTEM

Byron A. Alcorn, Ft. Collins; Robert W. Cherry, Loveland; Mark D. Coleman, Fort Collins; Brian D. Rauchfuss, Fort Collins, and Gary L. Taylor, Fort Collins, all of Colo., assignors to Hewlett-Packard Co., Palo Alto, Calif.

Filed Mar. 16, 1990, Ser. No. 495,235
Int. Cl.[5] G09G *1/04;* **H04N** *5/202, 9/69;* **G06F** *15/00*
U.S. Cl. 315—383 **27 Claims**



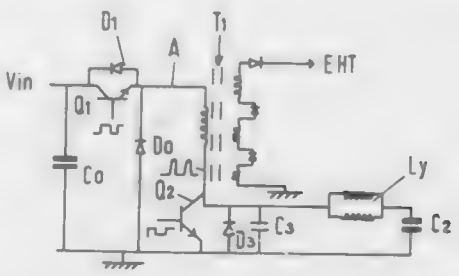
1. A circuit for providing gamma correction of an input to a monitor, comprising:
logic means responsive to said input for directly generating upper bits of a gamma corrected data word representing pixel intensity;
shifter means responsive to the logic means and said input for directly generating lower bits of the gamma corrected data word representing pixel intensity; and
combining means responsive to an output of the logic means and an output of the shifter means for directly generating intermediate bits of the gamma corrected data word representing pixel intensity, said gamma corrected data word being output to said monitor for display.

5,012,164

HORIZONTAL DEFLECTION AND EHT GENERATOR CIRCUIT

John Butterfield, Wilsden; Stephen Moorhouse, Cullingworth, and Stewart Marlow, Bolton, all of United Kingdom, assignors to Microvitec plc, Bradford, England

Filed May 9, 1990, Ser. No. 520,752
Claims priority, application United Kingdom, May 10, 1989, 8910728
Int. Cl.[5] H01J *29/70*
U.S. Cl. 315—411 **6 Claims**



1. A horizontal deflection and EHT generator circuit, comprising a transformer having a primary winding and a secondary winding, the primary winding having first and second terminals, a horizontal deflection coil having first and second ends, the first end of the deflection coil being connected to said

second terminal of the primary winding, a supply terminal for connection to a supply line, a first switching means directly connecting said supply terminal to the first terminal of the primary winding, a second switching means connected to said second terminal of the primary winding, a capacitor means connected to said second end of the deflection coil, and a unidirectional element connecting said first terminal of the primary winding to said supply terminal to enable energy recovery to the supply line through said unidirectional element during and following retrace.

5,012,165

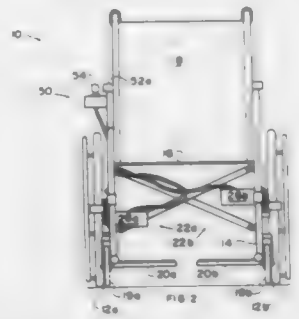
CONVEYANCE WITH ELECTRONIC CONTROL FOR LEFT AND RIGHT MOTORS

Lloyd L. Lautzenhiser, Box 244, Nobel, Ontario, P0G 1G0, and John L. Lautzenhiser, 4929 Malden Road, Windsor, Ontario, N9E 3T7, both of Canada

Division of Ser. No. 927,273, Nov. 4, 1986. This application Feb. 21, 1990, Ser. No. 482,461

Int. Cl.[5] H02P *7/00*

U.S. Cl. 318—53 **21 Claims**



1. A conveyance (**10**) having first (**12***a*) and second (**12***b*) propulsion elements, and having first (**26***a* or **232***a*) and second (**26***b*, etc.) motors that are operatively connected to said first and second propulsion elements, the improvement which comprises:

motor control means (**332***a*, **334***a*, or **336***a*), being connected to said first and second motors and to a source (**60**) of power, for separately and variably supplying power to said first and second motors;

manual control means (**352**), being operatively connected to said motor control means, for selectively and variably controlling said motor control means; and

change limiting means (**223**), being operatively connected to said motor control means, for limiting the rate of change in differences in power supplied to said first and second motors, while permitting larger rates of change in power supplied to said motors when rates of changes in power supplied to said first and second motors are generally equal.

5,012,166

CONTROL SYSTEM FOR BRUSHLESS DC MOTOR

Nobuyoshi Ushijima, Odawara; Hiroshi Masuda, Hiratsuka; Akira Ishibashi, Tokyo; Masahiko Satou, Odawara; Toshiyuki Haruna, Odawara; Norikazu Takayama, Odawara, and Yoshinobu Kudou, Minamiashigara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 4, 1990, Ser. No. 460,990

Claims priority, application Japan, Jan. 18, 1989, 1-7822

Int. Cl.[5] H02P *7/00*

U.S. Cl. 318—254 **34 Claims**

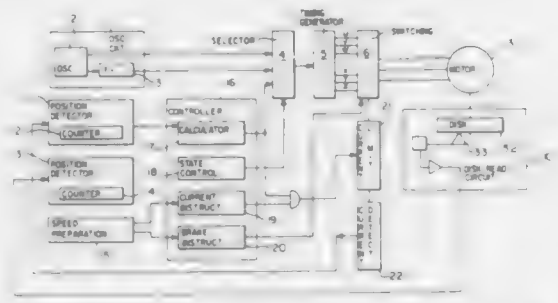
1. A control method for brushless DC motor having a rotor, a plurality of magnetic poles and coils of a plurality of phases, wherein current is applied sequentially through said phases so as to rotate said rotor and the method is performed during each portion of one revolution of said motor generally equal to the time of one revolution dividedly by the number of phases, comprising the steps of:

applying a current to only one of said phases;

temporarily stopping said applying of said current of said one phase;

thereafter reapplying said current to only the same phase as in the step of stopping without applying said current to the other coils during said one portion of one revolution;

measuring the state of rise of said current when it begins to flow to said phase during said reapplying;



detecting the position of one of said magnetic poles that is located at a position opposite to said one phase, based on said measured state of the rise of said current from said step of measuring;

in response to said detecting the position of said one magnetic pole, determining whether the flow of said current is to be switched over to a next phase or not switched;

thereafter switching said current over to the next phase when said current is determined to be switched over to the next phase; and

repeating said proceeding steps after a prescribed interval.

5,012,167

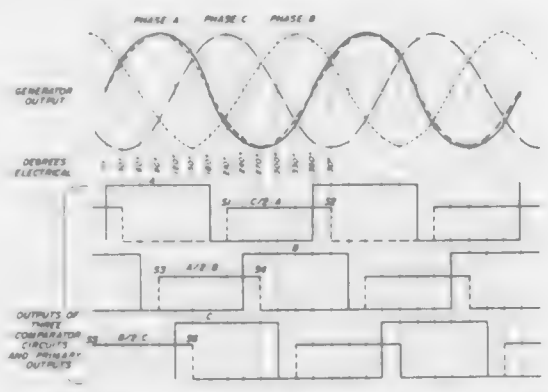
SINUSOIDAL SIGNAL DECODER FOR 12-STEP MOTOR COMMUTATION

Howard F. Hendricks, Harleysville, Pa., assignor to Penn Engineering & Manufacturing Corp., Danboro, Pa.

Continuation of Ser. No. 116,160, Nov. 3, 1987, abandoned. This application Mar. 30, 1990, Ser. No. 488,478

Int. Cl.[5] H02K *29/12*

U.S. Cl. 318—254 **6 Claims**



1. In an electric motor having a device for decoding sinusoidal signal from a motor shaft generator to derive a 12-step commutation, comprising:

a. means for generating three sinusoidal output signals connected to the motor shaft, said signals being out of phase 120 electrical degrees and producing an output voltage proportional to the angle of said motor shaft;

b. three voltage comparator circuits, each connected to receive a pair of said three sinusoidal output signals;

c. means for combining the outputs of said three voltage comparator circuits with said three sinusoidal output signals to yield six equally spaced and non-overlapping voltage outputs;

d. a PROM, detecting commutation switch points from said six voltage outputs, for producing twelve torque angles per rotor revolution for said 12-step commutation;

e. a drive amp signaled by said PROM; and

f. stator coils energized by said drive amp.

6. A method of producing a 12-step commutation switching signal in an electric motor, comprising the steps of:

a. generating three sinusoidal output signals with a shaft-mounted generator;

b. combining said three output signals into three pairs;

c. comparing the value of each pair of the output signals using a 2:1 weighing resistor network to achieve three signals from the comparison of each of the three pairs; and

d. combining the three sinusoidal output signals with the three signals resulting from said comparison step by the process of EXCLUSIVE-ORing to yield a total of six output signals for said 12-step commutation.

5,012,168

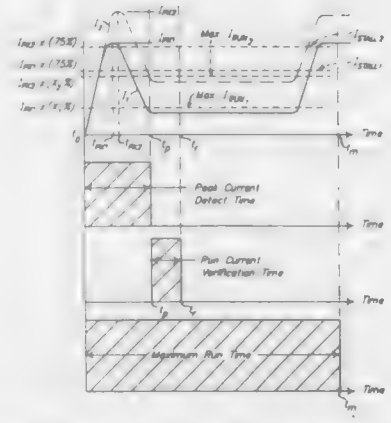
METHOD AND APPARATUS FOR DETECTING STALL CURRENT IN AN ENERGIZED ELECTRIC MOTOR

Paul C. Dara, Warren; Clair E. Mitchell, Detroit, and David J. Rutkowski, Grosse Ile, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Feb. 20, 1990, Ser. No. 481,921

Int. Cl.[5] H02H *3/08*

U.S. Cl. 318—434 **27 Claims**



1. A method of detecting stall current in an energized electric motor, comprising the steps of:

energizing said motor;

periodically sampling the current drawn by said motor during a first predetermined period of time immediately following the commencement of the energizing step;

determining a peak current value from said samplings for said first predetermined period of time;

multiplying said determined peak current value by a first predetermined fraction to derive a stall current reference value;

continuing to periodically sample said current drawn by said motor during the time it is energized to determine run current values;

comparing each run current value with said stall current reference value; and

deenergizing said motor when said compared run current values exceed said stall current reference value.

5,012,169

MOTOR DRIVE SYSTEM

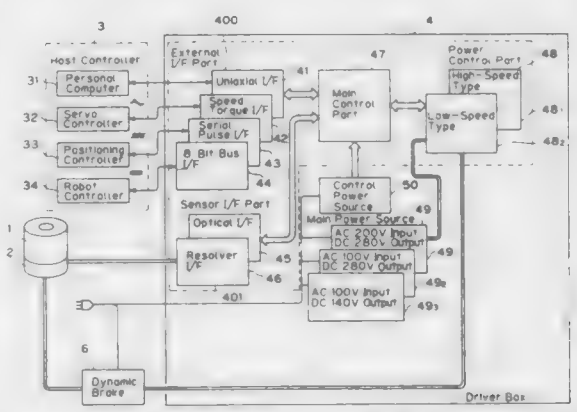
Yutaka Ono; Yasuhiko Muramatsu; Hideo Banzai; Yoichi Kikukawa; Shigeru Hashida; Shotaro Shindo; Haruo Higuchi; Hiroyuki Shinomiya; Mitsuhiro Nikaido, and Koichi Sato, all of Tokyo, Japan, assignors to Yokogawa Electric Corporation, Tokyo, Japan

Filed Jul. 6, 1989, Ser. No. 376,323

Claims priority, application Japan, Jul. 20, 1988, 88/96180[U]; Jul. 26, 1988, 88/98879[U]; Aug. 29, 1988, 88/112928[U]; Apr. 4, 1989, 89/84614[U]

Int. Cl.[5] G05B *19/405*

U.S. Cl. 318—568 **23 Claims**



1. In a motor drive system operating for feedback control of a motor having one or more coils, the improvement comprising

a first interface part comprising a plurality of interfaces according to the kind of host controller for generating command signals;

a sensor interface part comprising an interface of a sensor for detecting rotations of said motor and generating a detection signal;

a main control part for generating a control signal to effect feedback control of said motor according to a command signal received from said first interface part and a detection signal received from said sensor interface part; and

a power control part for amplifying a current according to said control signal and for feeding the amplified current to said one or more coils of said motor; wherein

said first interface part, said sensor interface part, said main control part and said power control part are separate and modularized as cards; and wherein

said motor comprises a stator provided with a salient pole with a plurality of teeth formed on a tip thereof; and a rotor with a plurality of teeth formed at positions opposite to said plurality of teeth formed on said salient pole of said stator; and wherein a permanent magnet is provided and wherein said one or more coils and said permanent magnet together generate a magnetic field; and wherein each component of said motor is modularized.

5,012,170

MECHANICAL STABILIZATION SYSTEM WITH COUNTER-ROTATING NESTED ROTORS

Gérard Atlas, Mercey, France, assignor to Societe Europeenne de Propulsion, Suresnes, France

Filed Jan. 26, 1990, Ser. No. 470,826

Claims priority, application France, Jan. 31, 1989, 89 01216

Int. Cl.[5] B64G *1/38*

U.S. Cl. 318—611 **11 Claims**

1. A mechanical stabilization system with counter-rotating nested rotors, the system comprising:

a support to be stabilized;

a working rotor mounted on the support by means of bearings and fixed to a working member for which at least one

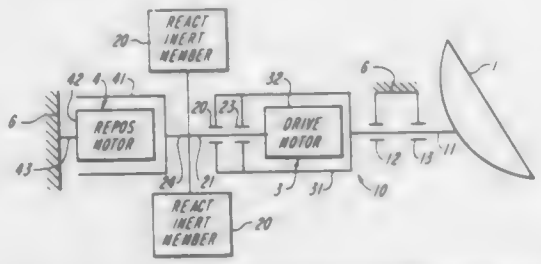
parameter defining the rotation of the working rotor is variable as a function of time;

a reaction rotor concentric with the working rotor, mounted on the working rotor by means of bearings and fixed to a reaction inertia member;

a first electric motor interposed between the working rotor and the reaction rotor and rotating the working rotor and the reaction rotor in opposite directions; and

a low power second electric motor interposed between the reaction rotor and the support, wherein the system further comprises,

a detector interposed between the working rotor and the support in order to measure said parameter defining the rotation of the working rotor and on which a predetermined law of motion as a function of time is imposed;



a first servo-control circuit receiving signals from the first detector in order to modify the operating characteristics of the first motor so as to cause said predetermined law of motion to be complied with;

a second detector interposed between the reaction rotor and the support;

a second servo-control circuit synchronous with the first servo-control circuit and receiving signals from the second detector in order to servo-control the low power second electric motor in order to reposition the reaction rotor and correct drift arising in the correcting motion of the reaction rotor in particular due to friction in the bearings; and wherein

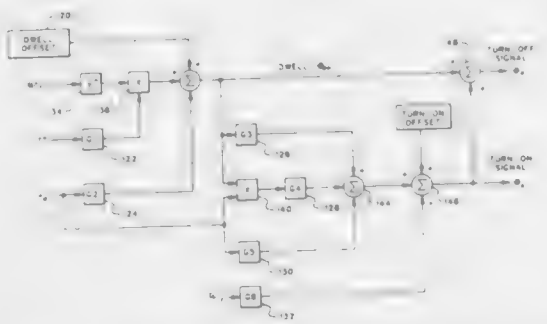
an amplitude of rotation of the working rotor about its mean position is greater than several rotations.

5,012,171

CONTROL SYSTEM FOR HIGH SPEED SWITCHED RELUCTANCE MOTOR

James W. Sember, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed May 9, 1989, Ser. No. 351,505
Int. Cl.[5] H02P 8/00
U.S. Cl. 318—696 6 Claims



1. A method of controlling a switched reluctance motor during high speed operation in response to a torque command T*, the method comprising the steps of:

rendering ineffective any control loop response to a current command;

setting a dwell angle of the desired motor current as a function of the torque command, the motor velocity and the magnitude of source voltage;

computing a turn-on angle for the desired motor current as a function of the dwell angle, the source voltage and the motor velocity; and

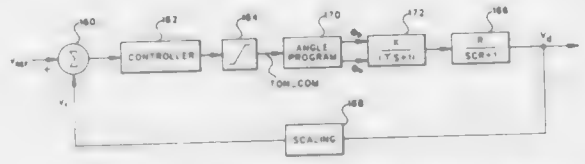
generating a turn-off angle for the desired motor current as the sum of the dwell angle and the turn-on angle.

5,012,172

CONTROL SYSTEM FOR SWITCHED RELUCTANCE MOTOR OPERATING AS A POWER GENERATOR

James W. Sember, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed May 9, 1989, Ser. No. 351,491
Int. Cl.[5] H02P 8/00
U.S. Cl. 318—696 8 Claims



1. A method for operating a multi-phase switched reluctance motor in a generator mode, the motor having a first plurality of stator poles wound with phase windings and a second plurality of salient rotor poles, the phase windings being connected by selectably controllable switches to a direct current (DC) bus and with each phase winding including commutation means for conducting current when the switches are disabled, the method comprising the steps of:

gating the switches for a selected phase winding into conduction whereby current is caused to flow in the winding and in said DC bus in a first direction;

disabling the switches when winding current reaches a preselected magnitude whereby current in the winding is directed, by way of said commutation means, to the DC bus to effect current flow in said bus in a direction opposite to said first direction; and

regulating the voltage at the DC bus, when said motor is operating in the generator mode, by varying the instant at which the switches are gated into conduction as a function of the angular displacement between the associated stator pole and a corresponding rotor pole.

5,012,173

CASING STRUCTURE FOR AN AMPLIFIER UNIT FOR AN AC SPINDLE

Yoshiki Fujioka, and Tatsuo Shinohara, both of Yamanashi, Japan, assignors to Fanuc Ltd., Yamanashi, Japan

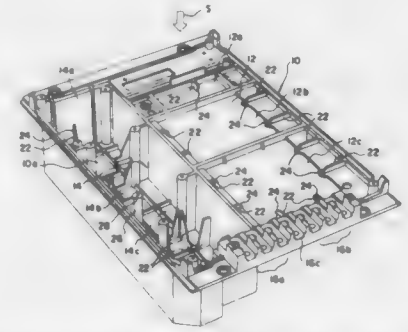
PCT No. PCT/JP88/00589, § 371 Date Dec. 29, 1988, § 102(e) Date Dec. 29, 1988, PCT Pub. No. WO88/10533, PCT Pub. Date Dec. 29, 1988
PCT Filed Jun. 16, 1988, Ser. No. 334,275
Claims priority, application Japan, Jun. 16, 1987, 62-148012
Int. Cl.[5] H02P 7/63; H05K 7/20
U.S. Cl. 318—727 6 Claims

1. An amplifier unit for an AC spindle, formed between an AC spindle motor and a power source, having a plurality of circuit components which make up an electric amplifier and a casing for accommodating therein said circuit components, said casing comprising:

a housing means having an opening at an upper portion thereof for receiving said plurality of circuit components;

fixing seat means formed at predetermined positions on said housing means for respectively receiving attachments of said plurality of circuit components; and

positioning plate means formed at predetermined positions on said housing means for respectively guiding said plurality of circuit components so that said circuit component attachments are aligned with and respectively seated on said fixing seat means, wherein the positioning plate means of said casing is a lengthwise, thin plate-shaped rib having



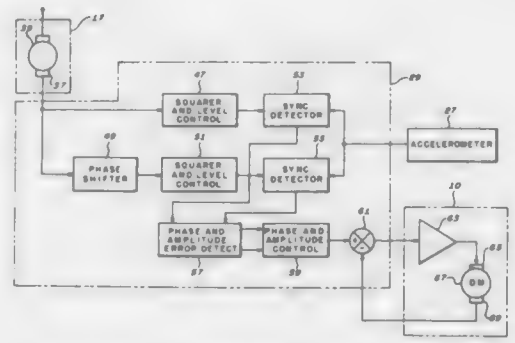
an inclined surface declining toward said predetermined positions.

5,012,174

METHOD AND APPARATUS FOR COUNTERING VIBRATIONS OF A PLATFORM

Charles M. Adkins; James R. Brazell; Gerard T. Mayer, and Henry C. Stacey, all of Charlottesville, Va., assignors to Sperry Marine Inc., Charlottesville, Va.

Filed Jun. 20, 1988, Ser. No. 209,251
Int. Cl.[5] B64C 17/06
U.S. Cl. 318—649 8 Claims



1. An apparatus for countering vibrations of a platform induced by a mechanically oscillating mass mounted on the platform and driven by a motor comprising:

motor pick-off means at said motor for providing electrical signals representative of said oscillating mass movements;

a counter mass mechanically coupled to said platform;

oscillator means for mechanically oscillating said counter mass,

oscillator pick-off means at said oscillator means for providing signals representative of mechanical movements of said counter mass;

drive input means at said oscillator means for receiving electrical signals to mechanically drive said counter mass;

accelerometer means mounted on said platform for providing electrical signals representative of platform vibrations; and

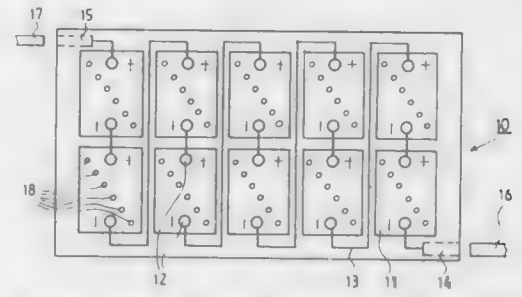
vibration control means coupled to receive signals from said motor pick-off means, signals from said oscillator pick-off means, and signals from said accelerometer means for providing signals to said drive input means that cause said oscillator means to mechanically drive said counter mass in a manner to induce vibrations of said platform that counter vibrations of said platform induced by oscillations of said oscillating mass.

5,012,175

MEANS FOR ACID-FILLING AND FORMING

Toivo Kärnä, Porvoo, and Kalevi Lind, Tampere, both of Finland, assignors to Neste Oy, Finland

Filed Oct. 13, 1989, Ser. No. 421,275
Int. Cl.[5] H02J 7/00
U.S. Cl. 320—2 8 Claims



1. Apparatus for filling and forming batteries, the apparatus comprising

a frame for holding a plurality of storage batteries simultaneously;

a duct system being formed within the frame and being arranged to contact cells of respective ones of the batteries, said duct system serving to supply acid to each cell simultaneously; and

a battery charging circuit with electrical conductors supported by said frame, the circuit being operative to supply charging current to the batteries; and

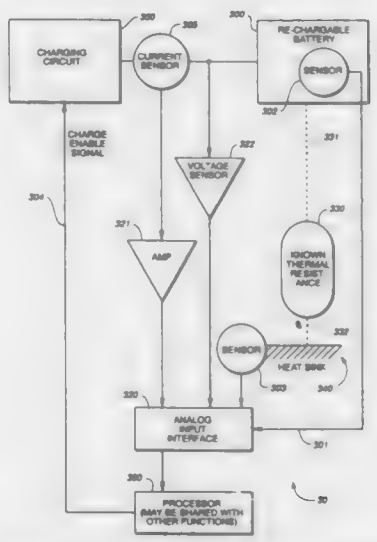
wherein the batteries are connected by their respective terminals to the conductors of said circuit upon an installing of the batteries in said frame.

5,012,176

APPARATUS AND METHOD FOR CALORIMETRICALLY DETERMINING BATTERY CHARGE STATE

David H. LaForge, Kensington, Calif., assignor to Baxter International, Inc., Deerfield, Ill.

Filed Apr. 3, 1990, Ser. No. 503,837
Int. Cl.[5] G01N 27/46; H02J 7/00
U.S. Cl. 320—31 19 Claims



1. An apparatus for determining the state of charge of a rechargeable battery comprising:

charging means, coupled to the battery, for charging the battery;

current sensing means, coupled between said charging

means and the battery, for sensing the current entering the battery;

heat detecting means, coupled to the battery, for detecting the heat emanating from the battery during charging; and

processing means, coupled to said current sensing means and to said heat detecting means, including a mathematical charge acceptance model providing the relationship between a charge acceptance percentage and the state of charge of the battery, for calculating the state of charge of the battery from the current entering the battery, the heat detected by said heat detecting means, and said charge acceptance model, wherein said heat is the complement of said charge acceptance percentage.

11. A method for determining the state of charge of a rechargeable battery comprising:

mathematically modeling the relationship between the charge acceptance percentage and the state of charge of the battery;

charging the battery;

detecting the current entering the battery;

detecting the heat emanating from the battery during charging, said heat flux being the complement of the charge acceptance percentage; and

storing said charge acceptance model in a processor and calculating the state of charge of the battery from the current entering the battery, the heat detected and said charge acceptance model.

5,012,177

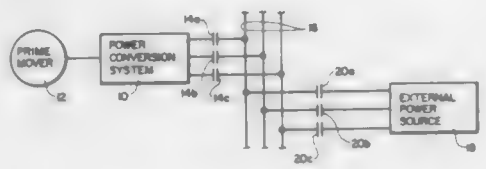
POWER CONVERSION SYSTEM USING A SWITCHED RELUCTANCE MOTOR/GENERATOR

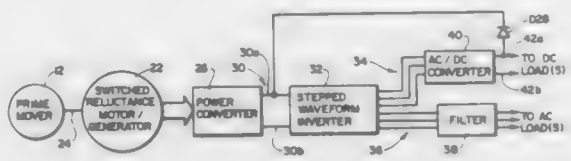
P. John Dhyanchand; Sunil Patel; Chai-Nam Ng, and Vietson Nguyen, all of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 19, 1989, Ser. No. 452,349

Int. Cl.[5] H02P *9/04;* **H02K** *23/52;* **H02M** *5/458, 1/12*

U.S. Cl. 322—10 **11 Claims**





1. A power conversion system operable in a generating mode to convert motive power supplied by a prime mover into electrical power and in a starting mode to convert electrical power supplied by a power source into motive power, comprising:

a switched reluctance motor/generator having a motive power shaft coupled to the prime mover during operation in the generating mode and an electrical winding;

a first electrical power converter coupled to the electrical winding;

a second electrical power converter coupled to the first electrical power converter by a DC link;

means for coupling a load bus to the second power converter during operation in the generating mode, and for coupling the power source to either of the first and second power converters during operation in the starting mode; and

means coupled to the power converters for operating same whereby the motor/generator develops electrical power in the generating mode which is rectified by the first power converter to produce DC power, the DC power being converted by the second power converter into output power and whereby DC power is provided on the DC link during operation in the starting mode which is in turn used by the first power converter to cause the motor/generator to develop motive power.

5,012,178

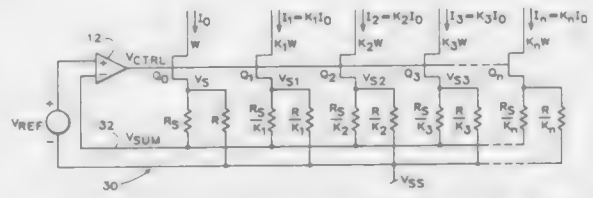
LOW NOISE DAC CURRENT SOURCE TOPOLOGY

Frederick G. Weiss, Newberg, and Daniel G. Knierim, Beaverton, both of Oreg., assignors to TriQuint Semiconductor, Inc., Beaverton, Oreg.

Filed Mar. 19, 1990, Ser. No. 495,177

Int. Cl.[5] G05F *3/30*

U.S. Cl. 323—269 **7 Claims**



1. An electrical circuit that provides an output current, comprising:

multiple current source means for producing respective multiple currents;

current sensing means for sensing each of the multiple currents and sensing an increase i_δ in the magnitude of one of the multiple currents, the current sensing means producing an indication signal that is indicative of i_δ; and

compensation means responsive to the indication signal for providing to each one of the current source means a compensation signal in response to which the multiple current source means adjusts the multiple currents to substantially offset i_δ and thereby substantially reduce a presence of i_δ in the output current.

5,012,179

FLYBACK TRANSFORMER WITH INTEGRALLY FORMED RESONANCE CAPACITOR

Mitunso Okumura, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Jun. 14, 1989, Ser. No. 365,773

Claims priority, application Japan, Jun. 15, 1988, 63-147534; Jun. 16, 1988, 63-148585

Int. Cl.[5] H01F *15/14;* **H04N** *3/195*

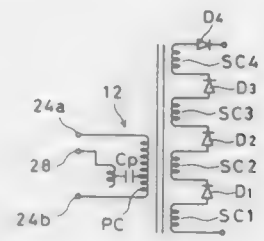
U.S. Cl. 323—355 **12 Claims**

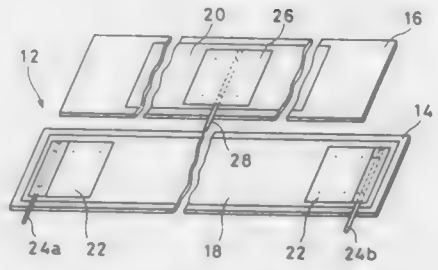
1. A flyback transformer, comprising:

a first wound unit which comprises a second insulation sheet wound and laminated on a first insulation sheet, said first wound unit including a first conductor which is formed on one surface of said first insulation sheet and extended in a longitudinal direction thereof, two first terminals which are fixed to said first conductor, a second conductor which is formed on one surface of said second insulation sheet, and a second terminal which is fixed to said second conductor;

a first primary coil being formed by said first conductor between said two first terminals and a first resonance capacitor which is connected to said primary coil being formed between said first and second conductors, said first resonance capacitor and said primary coil forming a resonance circuit having a predetermined resonance frequency; and

a secondary coil which is disposed on said first wound unit.





5,012,180

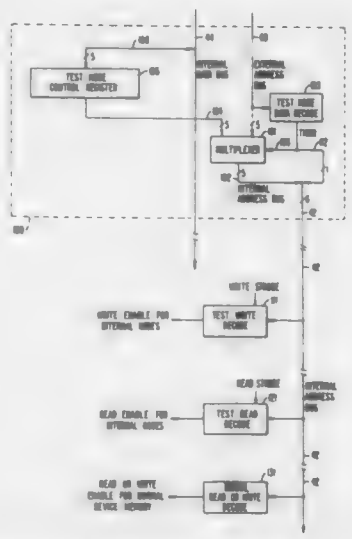
SYSTEM FOR TESTING INTERNAL NODES

Monte J. Dalrymple, Fremont; Lois F. Brubaker, Newark, and Don Smith, Los Gatos, all of Calif., assignors to Zilog, Inc., Campbell, Calif.

Filed May 17, 1988, Ser. No. 194,857

Int. Cl.[5] G01R *31/28*

U.S. Cl. 324—73.1 **16 Claims**



1. In an integrated circuit device having internal data and address buses respectively connectable to external data and address buses, and having normally accessible internal nodes addressable by normal addresses from the external address bus, the improvement comprising a test mode means (**100, 111, 121**) in the integrated circuit device for enabling external access of predetermined and normally inaccessible internal test nodes in the integrated circuit device, said test mode means comprising:

a test mode decode means (**103**) responsive to an address from the external address bus for outputting a control signal to set the integrated circuit device in either a normal state or a test mode state, the normal state resulting from the address being one of the normal addresses and the test mode state resulting from the address being a predetermined address for initiating a test mode;

a test mode control register means (**105**) for storing an address of a predetermined internal test node, said address being obtainable from the external data bus;

a multiplexer means (**101**) responsive to the control signal for connecting the internal address bus (**102**) to the external address bus for receiving the normal addresses when in the normal state, and connecting to the test mode control register means for receiving the address of a predetermined internal test node when in the test mode state; and

test node decoder means (**111, 121**) responsive to the control signal and the address of the predetermined internal test node for enabling the transfer of test data from the predetermined internal test node to the internal data bus, thereby allowing the normally inaccessible test node to be accessible from outside the device.

5,012,181

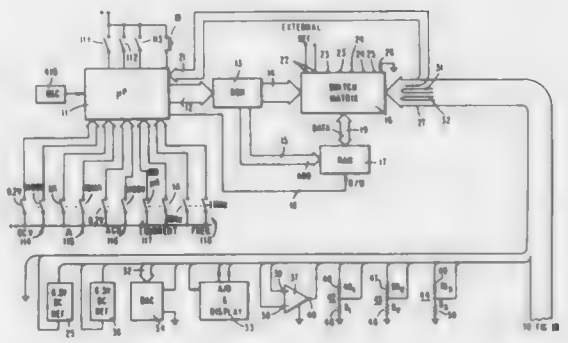
APPARATUS FOR AND METHOD OF INTERNALLY CALIBRATING AN ELECTRICAL CALIBRATOR

Larry E. Eccleston, Edmonds, Wash., assignor to John Fluke Mfg. Co., Inc., Wash.

Filed Jan. 29, 1987, Ser. No. 8,234

Int. Cl.[5] G01R *35/00, 19/25, 15/12;* **H03M** *1/10*

U.S. Cl. 324—74 **37 Claims**



1. A calibrated source for supplying a calibrated electric parameter over plural ranges to a device to be calibrated comprising

internal components for deriving the parameter over the plural ranges, an internal voltage reference, digital-to-analog converter means, a memory, analog comparison means, and analog-to-digital converter means,

first means for connecting the internal components in circuit with the internal voltage reference, analog-to-digital converter means, comparison means and memory for writing data signals into the memory indicative of calibration

correction factors for the internal components as applicable to the internal components, and

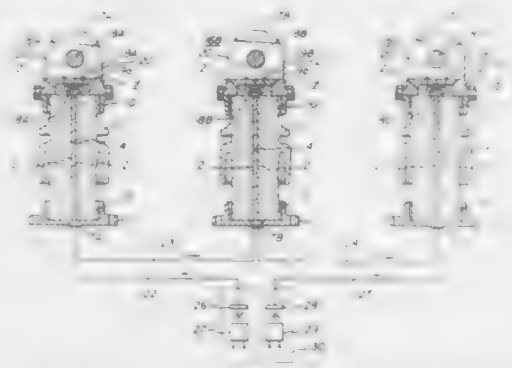
second means for connecting the internal components in circuit with the memory and digital-to-analog converter means so the digital-to-analog converter means responds to the stored data signals indicative of the calibration correction factors to modify the value of the parameter supplied to the device by the internal components so the supplied parameter is corrected in accordance with the calibration correction for the parameter.

5,012,182

ELECTRICAL MEASURING DEVICE

Toshisada Fujiki, Kasugai; Taikichi Kondo, Gifu; Yoshinori Furukawa, Tokoname; Kazuaki Kato, Chita; Akimichi Okimoto, and Kenji Tsuge, both of Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Division of Ser. No. 34,150, Apr. 1, 1987, Pat. No. 4,894,609.
This application Oct. 18, 1989, Ser. No. 423,781
Claims priority, application Japan, Aug. 7, 1985, 60-174554; Aug. 7, 1985, 60-174555; Aug. 7, 1985, 60-174556
Int. Cl.[5] G01R *1/20, 19/00;* H01B *17/00*
U.S. Cl. 324—96 2 Claims



1. An insulator for electric measurement, comprising a porcelain insulator body with a built-in optical transmission medium extending therethrough in an axial direction thereof, a conductor-holding fixture secured to one end of the insulator body, a current transformer mounted on the conductor-holding fixture so as to couple with a conductor carried by the conductor holding fixture, a load resistor connected to output current of the current transformer, an electro-optic sensor mounted on the conductor-holding fixture and coupled to voltage across the load resistor, and metal base secured to the opposite end of the insulator body and carrying an optical fiber cable connector, said optical transmission medium having one end thereof coupled to said electro-optic sensor and the opposite end thereof coupled to said optical fiber cable connector.

5,012,183

ELECTROOPTIC EFFECT ELEMENT AND ELECTRICAL SIGNAL WAVEFORM MEASURING APPARATUS USING THE SAME

Youzo Kawano, Ebina; Tadashi Takahashi, Atsugi; Yasuhiko Shimura, Hatano, and Yukihiro Takahashi, Atsugi, all of Japan, assignors to Anritsu Corporation, Tokyo, Japan

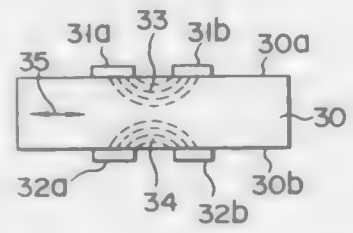
PCT No. PCT/JP89/01071, § 371 Date Jul. 10, 1989, § 102(e) Date Jul. 10, 1989, PCT Pub. No. WO88/12831, PCT Pub. Date Dec. 28, 1989
PCT Filed Oct. 21, 1988, Ser. No. 391,548
Claims priority, application Japan, Jun. 22, 1988, 63-154327
Int. Cl.[5] G01R *19/00, 23/16*
U.S. Cl. 324—96 5 Claims

1. A coplanar electrooptic effect element, comprising:

a substrate comprised of a material having an electrooptic effect, said substrate having opposite major surfaces and a Z axis which extends medially of said major surfaces;

a pair of first coplanar strips, formed on one surface of said substrate, for forming a high-frequency electric field in a region between said first coplanar strips near said one surface; and

a pair of second coplanar strips, formed on the other surface of said substrate and sandwiching said substrate together in relation to said first coplanar strips, for forming another electric field in a region between said second coplanar



strips near said other surface, said other field being different from the high-frequency electric field formed by said first coplanar strips near said one surface;

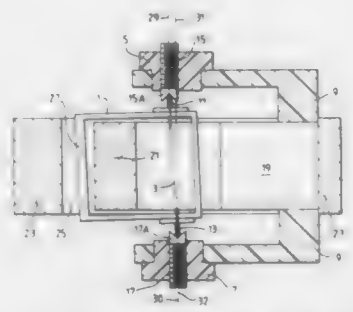
wherein the direction of said high-frequency field and said other field become parallel to the Z axis of said substrate near a center of said first coplanar strips and said second coplanar strips.

5,012,184

ADJUSTMENT OF DISPOSITION OF ROTATION AXIS IN MOVING COIL MEASURING INSTRUMENTS TO CORRECT FOR THEIR NON-IDEAL OPERATION

Alan G. Burgess, Stafford, England, assignor to GEC Alsthom Limited, England

Filed Feb. 21, 1990, Ser. No. 482,524
Claims priority, application United Kingdom, Mar. 3, 1989, 8904886
Int. Cl.[5] G01R *1/02, 1/10*
U.S. Cl. 324—146 5 Claims



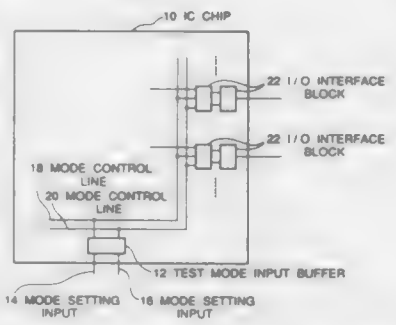
1. A moving coil measuring instrument comprising: a moving coil supported for rotation about an axis defined by a pair of spaced support members mounted on a frame member of the instrument, at least one of said support members being controllably movable relative to said frame member while mounted thereon so as to reposition said one support member relative to said frame member and thereby permit adjustment of the position of one end of said axis defined by said one support member in a direction substantially perpendicular to said axis.

5,012,185

SEMICONDUCTOR INTEGRATED CIRCUIT HAVING I/O TERMINALS ALLOWING INDEPENDENT CONNECTION TEST

Kazuyoshi Ohfuji, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 16, 1989, Ser. No. 421,883
Claims priority, application Japan, Oct. 14, 1988, 63-258414
Int. Cl.[5] G01R *31/28*
U.S. Cl. 324—158 R 10 Claims



1. A semiconductor integrated circuit comprising a plurality of input/output terminals, at least one mode setting input terminal, a test mode input circuit having at least one mode setting input connected to said at least one mode setting input terminal to receive at least one mode setting signal and for generating at least one mode control signal, a plurality of test buffer circuits provided for said input/output terminals in one-to-one relation and each having a first terminal connected to a corresponding input/output terminal, and a second terminal connected to receive a signal to be supplied from an internal circuit of the integrated circuit to the corresponding input-/output terminal or to output to an internal circuit of the integrated circuit a signal inputted through the corresponding input/output terminal from an external circuit of the integrated circuit, each test buffer circuit also including at least one mode control input connected to receive said at least one mode control signal from the test mode input circuit and operating to supply a predetermined output signal to the corresponding input/output terminal when the mode control signal is in a first condition, so that the predetermined output signal is outputted from all the input/output terminals, each test buffer circuit also operating when the mode control signal is in a second condition different from the first condition to output to the second terminal a signal supplied to the first terminal in the case of said second terminal being connected to output to the internal circuit of the integrated circuit the signal inputted through the corresponding input/output terminal from an external circuit of the integrated circuit, or to output to the first terminal a signal supplied to the second terminal in the case of said second terminal being connected to receive the signal to be supplied to the corresponding input/output terminal from an external circuit of the integrated circuit.

5,012,186

ELECTRICAL PROBE WITH CONTACT FORCE PROTECTION

K. Reed Gleason, Portland, Oreg., assignor to Cascade Microtech, Inc., Beaverton, Oreg.

Filed Jun. 8, 1990, Ser. No. 535,737
Int. Cl.[5] G01R *31/02*
U.S. Cl. 324—158 P 16 Claims

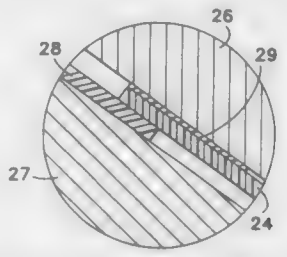
13. A probe for testing an electrical circuit on a device under test, said probe comprising:

(a) a probe mount;

(b) a conductive probe tip attached to said probe mount for electrically contacting said device under test with a contact force by movement of at least one of said probe mount and said device under test toward the other along a direction of advancement, said probe mount and said device under test having a spatial proximity relative to each other along said direction of advancement which increases with said movement;

(c) interconnecting means movably attaching said probe tip to said probe mount for permitting movement of said probe tip relative to said probe mount substantially parallel to said direction of advancement;

(d) said interconnecting means including means automatically responsive to said spatial proximity, along said direction of advancement, between said probe mount and said



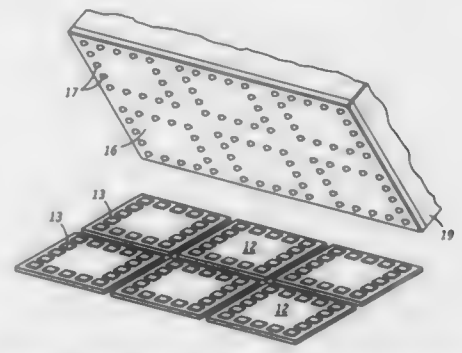
device under test for establishing a first rate of increase in said contact force as said spatial proximity increases to a predetermined spatial proximity through a first range of advancement, and thereafter establishing a second rate of increase in said contact force which is less than said first rate of increase as said spatial proximity increases beyond said predetermined spatial proximity through a second range of advancement which is greater than said first range of advancement.

5,012,187

METHOD FOR PARALLEL TESTING OF SEMICONDUCTOR DEVICES

Hugh W. Littlebury, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 3, 1989, Ser. No. 431,344
Int. Cl.[5] G01R *1/02, 1/067*
U.S. Cl. 324—158 P 8 Claims



1. A method of testing a plurality of semiconductor memory chips which are separated from a semiconductor wafer in which they were formed in parallel comprising the steps of: providing a tester which is capable of parallel testing memory devices; providing a flexible membrane having a plurality of probe bumps which are coupled to the tester; placing the individual memory chips on a receiver plate, wherein the receiver plate has a plurality of vacuum ports for holding the memory chips; testing access time of the plurality of memory chips in parallel; and storing information relating to location of memory chips which pass the test.

5,012,188

VELOCITY DETECTOR FOR DETECTING VELOCITY FROM POSITION DETECTOR OUTPUTTING A PAIR OF ORTHOGONAL SIGNALS

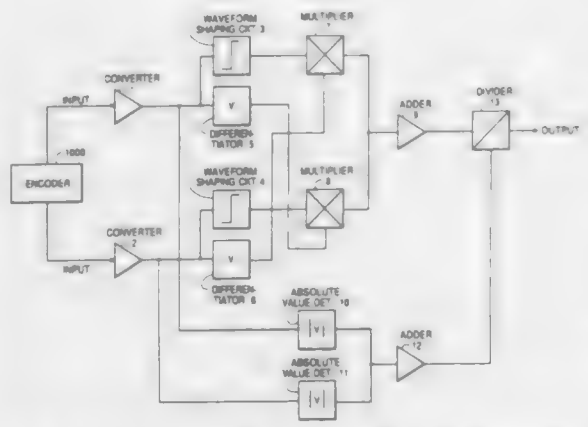
Keishi Kubo, Moriguchi; Hiroyuki Nagano, and Saburo Kubota, both of Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 8, 1989, Ser. No. 433,211

Claims priority, application Japan, Nov. 10, 1988, 63-284522

Int. Cl.[5] G01P *3/44, 3/481, 3/50*

U.S. Cl. 324—160 **1 Claim**



1. A velocity detector for obtaining the velocity based on first and second sinusoidal signals output from a position detector, said sinusoidal signals differing in phase by 90° from each other according to position displacement, said velocity detector comprising:

first and second converters for respectively receiving and converting the first and second signals output from the position detector into first and second respective electrical signals;

first and second waveform shaping circuits for respectively receiving and waveform shaping said first and second electrical signals from said first and second converters and for providing respective outputs therefrom;

first and second differentiators for respectively receiving and differentiating said first and second electrical signal output from said first and second converters and for providing respective outputs therefrom;

first and second multipliers for obtaining the product of the signals from said first and second waveform shaping circuits and said first and second differentiators, said first multiplier multiplying said output of said first waveform shaping circuit and said second differentiator and said second multiplier multiplying the output of said first differentiator and second waveform shaping circuit;

a first adder for receiving outputs of said first and second multipliers and for providing an output corresponding to the sum thereof;

first and second absolute value detectors for respectively receiving said two signals output from said first and second converters and for providing respective outputs therefrom which correspond to the absolute value of the signals input thereto;

a second adder for receiving said outputs of said first and second absolute value detectors and for providing an output corresponding to the sum thereof;

a divider for receiving said output signals from said first and second adders and for providing an output corresponding to the quotient of said outputs of said first and second adders, said output corresponding to the detected velocity.

5,012,189

METHOD FOR DERIVING INFORMATION REGARDING STRESS FROM A STRESSED FERROMAGNETIC MATERIAL

David C. Jiles, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed May 22, 1989, Ser. No. 354,819

Int. Cl.[5] G01B *7/24;* **G01R** *33/18*

U.S. Cl. 324—209 **6 Claims**

1. A method for deriving information regarding stress from a stressed ferromagnetic material comprising:

from an unstressed sample of the ferromagentic material obtaining reference anhysteretic and hysteresis measures for said unstressed sample;

obtaining an anhysteretic magnetization curve for a selected portion of the material;

obtaining a hysteresis magnetization curve for the same portion of the material;

comparing anhysteretic and hysteresis measures from the obtained curves with the reference anhysteretic and hysteresis measures; and

deriving information regarding stress in the stressed ferromagnetic material by the comparison of measures in the stressed and unstressed materials.

5,012,190

APPARATUS FOR MULTI-CHANNEL MEASUREMENT OF WEAK MAGNETIC FIELDS WITH SQUIDS AND SUPERCONDUCTING GRADIOMETERS ON INDIVIDUAL DETACHABLE ASSEMBLIES, AND METHOD OF MANUFACTURE

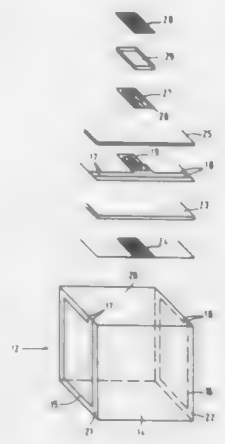
Olaf H. Dössel, Tangstedt, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 19, 1988, Ser. No. 260,107

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1987, 3735668

Int. Cl.[5] G01R *33/02;* **H01L** *39/24*

U.S. Cl. 324—248 **14 Claims**



1. Apparatus for multichannel measurement of weak magnetic fields having assigned to each channel an assembly, which is arranged on a base carrier (**30**) and comprises a superconductive quantum interferences device (SQUID) (**6, 27**), a gradiometer of the first or higher order having at least one gradiometer coil (**15, 16, 37**) serving to detect the magnetic field, at least one coupling-in coil (**9, 19, 38**) serving to couple the field into the SQUID, superconductive connecting leads (**10, 17, 18, 41**) between the gradiometer coil and the coupling-in coil, and a modulation coil (**7, 26**), the gradiometer coil, the coupling-in coil and the SQUID being made of thin-film structures, said apparatus further having an evaluation device (**11**) serving to evaluate the signals generated in each channel by the SQUIDs, characterized in that a separate plate (**29**) is provided for each channel, on which the SQUID (**6, 27**) and the modulation coil (**7, 26**) are deposited, in that the assembly provided for each channel comprising the gradiometer coil (**15, 16, 37**), connecting leads (**10, 17, 18, 41**) and coupling-in coil (**9, 19, 38**) is in each case deposited on a separate gradiometer carrier (**12, 32**), and in that an insulating layer is applied to the gradiometer carrier over said coupling-in coil and the separate plate is attached detachably on the insulating layer of the separate gradiometer carrier, and the separate gradiometer carriers are attached detachably to a base carrier (**30**).

5,012,191

GRADIENT COIL SYSTEM FOR A NUCLEAR MAGNETIC RESONANCE TOMOGRAPHY APPARATUS

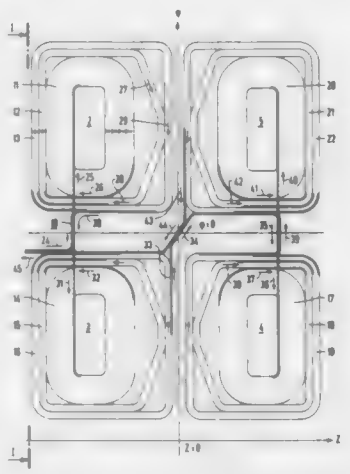
Horst Siebold, and Konrad Meier, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 28, 1989, Ser. No. 442,211

Claims priority, application European Pat. Off., Nov. 28, 1988, 88119826

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—318 **5 Claims**



1. A gradient coil system for use in a nuclear magnetic resonance tomography apparatus having means for generating a fundamental magnetic field in a volume and oriented in the z-direction of an x-y-z coordinate system, said gradient coil system comprising:

a hollow cylindrical carrier disposed in said volume and having a longitudinal axis extending in said z-direction and having two radially spaced cylindrical coil carrying surfaces;

a first set of four saddle coils for generating an x-gradient in said volume wound on one of said coil carrying surfaces of said carrier;

a second set of four saddle coils for generating a y-gradient in said volume wound on the other of said coil carrying surfaces of said carrier; and

each saddle coil in said first and second sets consisting of three sub-coils formed by a cable conductor wound exclusively with convex curvature on said carrier, said three sub-coils including a middle coil and said middle coil having an arced portion facing the plane $z=0$ which approximates an arc of an ellipse.

5,012,192

GRADIENT COIL SYSTEM FOR A NUCLEAR RESONANCE TOMOGRAPHY APPARATUS

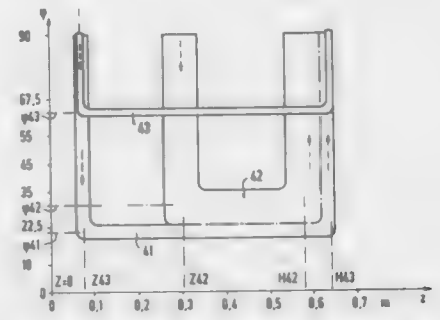
Horst Siebold, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 28, 1989, Ser. No. 442,077

Claims priority, application European Pat. Off., Nov. 28, 1988, 88119828

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—318 **3 Claims**



1. A gradient coil system for a nuclear magnetic resonance tomography apparatus, said apparatus including means for generating a fundamental magnetic field, in a volume, in the direction of the z-axis of an x-y-z coordinate system, said gradient coil system having a symmetry plane in the x-y plane of said x-y-z coordinate system and comprising:

first saddle coil means for generating an x-gradient field in said volume and second saddle coil means for generating a y-gradient field in said volume;

each of said first and second saddle coil means containing four main coils which are split arc saddle coils arranged on the same imaginary cylindrical surface having a radius p;

each of said main coils of said first and second saddle coil means consisting of two elementary saddle coils one inside the other;

each elementary saddle coil having a front coil arc substantially parallel to said x-y plane and spaced a distance Z therefrom, a rear coil arc substantially parallel to said x-y plane and spaced a distance H therefrom, and two straight coil sections connecting said front and rear coil arcs, said straight coil sections extending in the z-direction and defining an aperture angle α therebetween in the x-y plane and an angle ϕ in the x-y plane relative to the x-axis, and each elementary saddle coil having a predetermined number of ampere turns AT;

said straight coil sections and said rear arcs of the two elementary coils forming each main coil being disposed substantially against each other;

a pair of auxiliary saddle coils allocated to each of the main coils of each of said first and second saddle coil means;

each auxiliary saddle coil having a front auxiliary coil arc substantially parallel to said x-y plane and spaced a respective distance Z_{aux} therefrom, a rear auxiliary coil arc substantially parallel to said x-y plane and spaced a respective distance H_{aux} therefrom, and two straight auxiliary coil sections connecting said front and rear auxiliary coil arcs, said straight auxiliary coil sections extending in the z-direction and defining a respective auxiliary coils aperture angle α_{aux} therebetween and a respective angle ϕ_{aux} in the x-y plane relative to the x-axis, and each auxiliary saddle coil having a respective predetermined number of ampere turns AT_{aux};

said straight auxiliary coil section and said rear auxiliary arcs of the auxiliary saddle coils forming a pair being disposed substantially against each other;

each of said auxiliary coil arcs being disposed on a same further imaginary cylindrical surface having a radius π_{aux}, with $\pi \neq \pi_{aux}$;

each of said auxiliary coils being angularly centered relative to the main coil allocated thereto; and

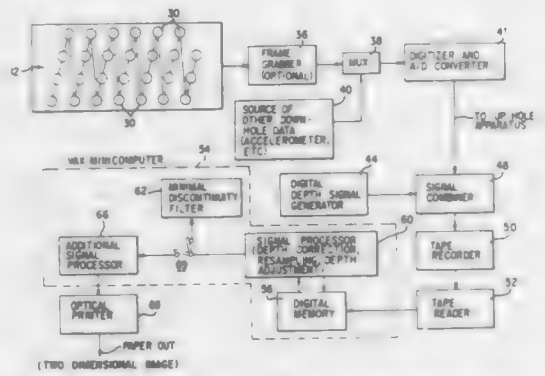
the quantities AT, Z, H and ϕ which define the gradient field for each of said elementary saddle coils forming said main coils and the respective quantities AT_{aux}, Z_{aux}, H_{aux}, and ϕ_{aux} which define the gradient field for each auxiliary coil being matched to each other so that noise terms C(n,m) of a series development of said gradient fields are substantially eliminated.

5,012,193

METHOD AND APPARATUS FOR FILTERING DATA SIGNALS PRODUCED BY EXPLORATION OF EARTH FORMATIONS

Min-Yi Chen, West Redding, Conn., assignor to Schlumberger Technology Corp., New York, N.Y.

Filed Nov. 1, 1989, Ser. No. 430,207
Int. Cl.[5] G01V *3/20*
U.S. Cl. 324—366 **16 Claims**



1. In a method for producing a two-dimensional image of a characteristic of an area of a wall of an earth formation:

moving along said wall in a first direction a two-dimensional array of sensors responsive to said characteristic to produce a signal level at each sensor representative of the value of said characteristic in the portion of said wall adjacent thereto, wherein said array comprises a plurality of sets of one or more sensors, some of said sets being at different positions in said array as measured along said first direction, and at least one of the sensors of at least one of said sets being differently positioned from all of the sensors in at least one of the other of said sets, as measured along a second direction transverse to said first direction;

sampling said signal levels at all of said sensors of said sets at each of a succession of sampling times, to produce successive original frames of sensor signal samples;

processing said samples and applying said samples to a two-dimensional display device in sets such that said processed samples of each of said original frames control points in said display which are in a geometric pattern corresponding to the geometric pattern of said sets of sensors in said array, whereby noise affecting each of said sensors substantially equally during any of said sampling times produces an artifact in said image having a form corresponding to said pattern of said array of sensors; and

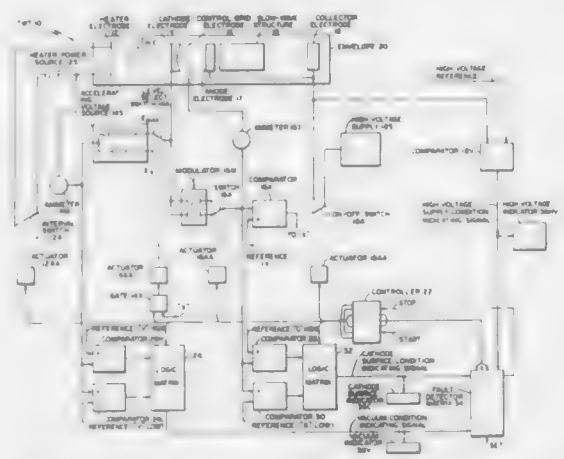
prior to said applying of said processed samples to said image-display device, generating from said samples a correcting signal n, and subtracting it from each of said samples, to reduce any such artifact in said image, wherein the values of n are generated such as to minimize abrupt discontinuites between values of those samples which are produced in different original frames by sensors at the same position along said first direction, and wherein the values of n so subtracted are equal for all samples produced at the same sampling time.

5,012,194

METHOD TESTING ELECTRON DISCHARGE TUBES

Philip L. Licter, Nashua, N.H., and John K. Waterman, Newton Corner, Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Sep. 5, 1989, Ser. No. 402,732
Int. Cl.[5] H01J *9/42;* **G01R** *31/00*
U.S. Cl. 324—405 **12 Claims**



1. A method of testing an electron discharge device comprising the steps of:

(a) applying an accelerating field between a cathode electrode and a heater electrode in a properly evacuated envelope for a predetermined warm-up period;

(b) measuring current flow between the heater electrode and the cathode electrode at a predetermined time interval after the predetermined warm-up period;

(c) monitoring to ensure the current at the predetermined time interval is between a pair of predetermined values indicative of current in a poor vacuum and current in an extremely poor vacuum, respectively; and

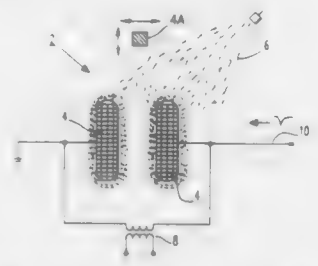
(d) producing a vacuum condition indicating signal indicative of the state of vacuum in the envelope.

5,012,195

METHOD FOR IMPROVING THE ELECTRICAL STRENGTH OF VAPOR-MIST DIELECTRICS

Ronald T. Harrold, Murryville Boro, Pa., assignor to ABB Power T&D Company, Inc., Blue Bell, Pa.

Filed Dec. 28, 1989, Ser. No. 458,264
Int. Cl.[5] B01R *31/12*
U.S. Cl. 324—553 **12 Claims**



1. A method for improving the electrical strength of vapor mist dielectric comprising:

providing electrodes generally parallelly spaced, a mist supply disposed proximate to said electrodes and an ionization means;

generating mist droplets from said mist supply with said electrodes surrounded by a gaseous dielectric;

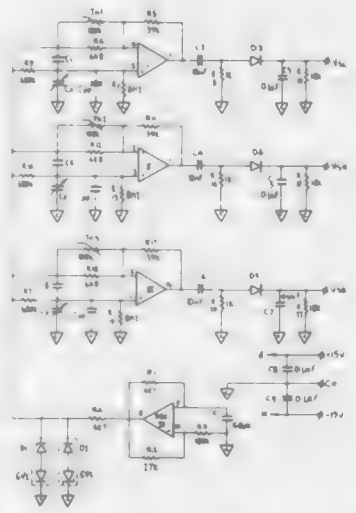
ionizing the gaseous dielectric, charging the droplets and depositing said mist at regions of high electrical stress; and applying system voltage after ionizing the gaseous dielectic, and charging said droplets.

5,012,196

CAPACITANCE SENSOR ARRANGEMENT

Jan Baranski, Nedlands, Australia, assignor to The University of Western Australia, Australia

Continuation of Ser. No. 126,457, Nov. 30, 1987, abandoned. This application Oct. 20, 1989, Ser. No. 425,385
Claims priority, application Australia, Dec. 5, 1986, PH9363
Int. Cl.[5] G01R *27/26*
U.S. Cl. 324—662 **16 Claims**



1. A capacitance sensing arrangement for indicating the distance of an object from a surface, including sensing means located in said object and oscillator means for generating an alternating signal Vosc, said sensing means being connected in an electrical circuit including a variable capacitor having a capacitance Cx dependent on said distance, a reference capacitor for providing a reference capacitance CL, circuit means for providing a polarizing voltage Vp, and means connected to said variable capacitor for producing an output voltage V_S responsive to said variable and reference capacitances and to said polarizing voltage in accordance with the equation

$$V_S = KxVosc\frac{C_{xp} + Cx}{C_{xp} + C_x + C_L} - V_P$$

where Kx is the amplifier gain of said output voltage providing means, and C_{xp} is a fixed parasitic capacitance between the circuit and ground, and means for calculating said distance from said sensor output voltage V_S.

5,012,197

APPARATUS AND METHOD FOR DETERMINING THE RELATIVE PERCENTAGES OF COMPONENTS IN A MIXTURE

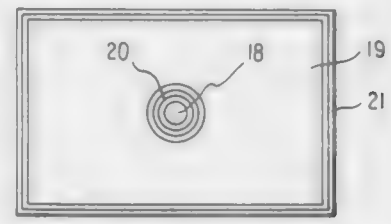
Volkhard Seiffert; Gerd Ihlenfeld, and Klaus Bienert, all of Krausenstrasse 54A, D-3000 Hannover 1, Fed. Rep. of Germany

Filed Apr. 12, 1989, Ser. No. 337,051
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1988, 3812959
Int. Cl.[5] G01N *27/02*
U.S. Cl. 324—696 **11 Claims**

1. In an apparatus for determining the percentages of individual components of a mixture having at lest two components of different electrical conductivities, said apparatus including at least two sensors connectable across an a.c. voltage source, and being arranged such that the mixture is introducible therebetween, the improvement wherein each sensor comprises:

a pin electrode having a first sensing surface for electrical contact with said mixture, and

a plate electrode having a second sensing surface, said plate electrode being electrically insulated from said mixture, wherein



the area of said second sensing surface is larger than the area of said first sensing surface;

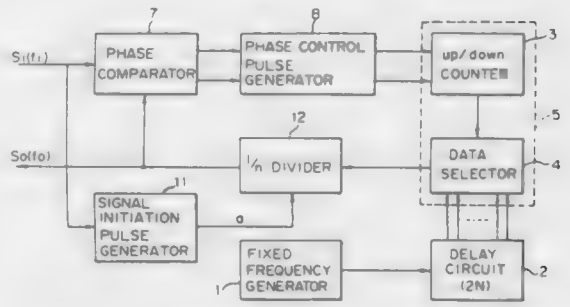
said pin electrode and said plate electrode of each sensor are each connected to the same potential of said voltage source.

5,012,198

DIGITAL PLL CIRCUIT HAVING REDUCED LEAD-IN TIME

Hiroshi Okada, Tokyo; Noritaka Saitoh, Kawasaki; Hidetomo Akabane, Kawasaki, and Shintaro Tashiro, Kawasaki, all of Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan

Filed Sep. 27, 1989, Ser. No. 413,487
Claims priority, application Japan, Sep. 29, 1988, 63-242472
Int. Cl.[5] H03K *5/00, 5/13, 5/22*
U.S. Cl. 328—155 **5 Claims**



1. A digital PLL circuit for outputting a clock signal phase-synchronized with an input signal comprising:

a fixed frequency generator generating an output signal having a frequency which is n-times as large as a frequency f_0 of the clock signal, a delay circuit generating a plurality of signals formed by giving predetermined and various phase differences to the output signal of said fixed frequency generator, a phase changing circuit successively selecting one of said plurality of signals depending on a control input to output the selected signal, a divider dividing a frequency of the output signal of said phase changing circuit by n to output said clock signal, a phase comparator comparing a phase of said clock signal with a phase of said input signal, and a phase control pulse generator outputting a control signal to said phase changing circuit depending on a result of comparison of said phase comparator, characterized in that

said divider being able to be set to a predetermined state in which said divider raises said clock signal, and that

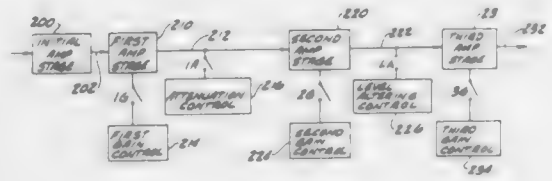
the digital PLL circuit further comprises a signal initiation pulse generator generating a signal to set said divider to said predetermined state depending on said input signal initiation.

5,012,199

MULTI-STAGE MUSICAL INSTRUMENT AMPLIFIER HAVING DISTORTION MODES

George A. McKale, St. Louis, Mo., assignor to St. Louis Music, Inc., St. Louis, Mo.

Filed Sep. 8, 1989, Ser. No. 404,595
Int. Cl.[5] H03G *3/08*
U.S. Cl. 330—51 **22 Claims**



22. A preamplifier for audio frequency electrical signals generated by a musical instrument such as a guitar, said preamplifier comprising:

a plurality of cascaded amplifier stages for receiving electrical signals generated by a musical instrument and providing an output signal;

means for selectively attenuating the output of one or more of the stages;

means for selectively modifying the gain of one or more of the stages;

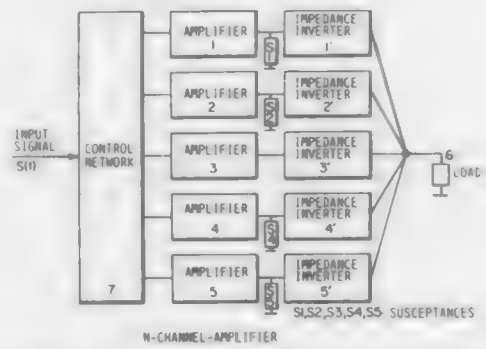
means for selectively activating the attenuating means and modifying means to provide a first mode in which all stages provide an increase in power to supply a substantially linear signal as the output signal and to provide a second mode in which all stages provide an increase in power to supply a substantially nonlinear saturated signal with increased harmonic content as the output signal.

5,012,200

METHOD AND SYSTEM FOR THE LINEAR AMPLIFICATION OF SIGNALS

Karl Meinzer, Marburg, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 252,491, Sep. 30, 1988, abandoned. This application Oct. 20, 1989, Ser. No. 424,665
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1987, 3733374
Int. Cl.[5] H03F *3/68*
U.S. Cl. 330—124 R **3 Claims**



1. A method for the linear amplification of signals, comprising the following steps:

(a) forming an uneven number of at least three amplifier impedance inverter units by separately feeding an output signal of each of an uneven number of at least three individual amplifiers to an input of a respective impedance inverter;

(b) connecting outputs of said uneven number of at least three amplifier impedance inverter units to a common load;

(c) controlling said uneven number of at least three individual amplifiers through an input control network; and

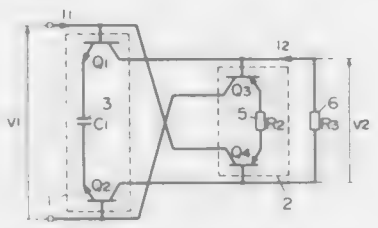
(d) connecting shunt susceptances to output terminals of an even number of said at least three individual amplifiers, in order to compensate a reactive loading of said even number of said amplifiers, for improving the amplification efficiency.

5,012,201

VARIABLE IMPEDANCE CIRCUIT

Yoichi Morita, Moriyama; Hiroshi Komori, Takatsuki, and Akio Yokoyama, Nagaokakyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 25, 1989, Ser. No. 426,229
Claims priority, application Japan, Oct. 25, 1988, 63-268430; May 16, 1989, 1-120354
Int. Cl.[5] H03F *3/45;* **H03H** *11/00*
U.S. Cl. 330—252 **13 Claims**



1. A variable impedance circuit comprising:

a first differential amplifier circuit having an input terminal pair, an output terminal pair and impedance element connected between emitters of a transistor pair;

a second differential amplifier circuit having an input terminal pair and an output terminal pair;

means for connecting said output terminal pair of said first differential amplifier circuit to said input terminal pair of said second differential amplifier circuit;

means for connecting said output terminal pair of said second differential amplifier circuit to said input terminal pair of said first differential amplifier circuit; and,

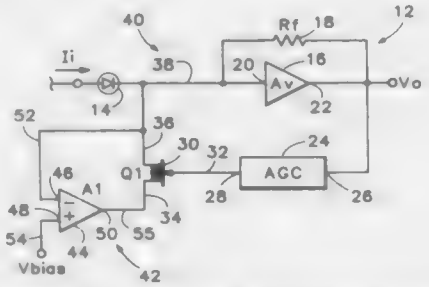
a resistance element connected between said input terminal pair of said second differential amplifier circuit.

5,012,202

LOW IMPEDANCE AUTOMATIC GAIN CONTROL CIRCUIT

Stewart S. Taylor, Beaverton, Oreg., assignor to TriQuint Semiconductor, Inc., Beaverton, Oreg.

Filed Mar. 15, 1990, Ser. No. 494,077
Int. Cl.[5] H03F *3/08;* **H03G** *3/30;* **H01J** *40/14*
U.S. Cl. 330—284 **11 Claims**



9. A method for increasing the dynamic range of a main

amplifier having an output terminal for providing an output voltage proportional to an input current received at an input terminal, said method comprising the steps of:

generating a control signal which varies in response to the amplifier output voltage;

applying the control signal to a FET having an impedance which varies in response to the control signal;

connecting one side of said FET to the input terminal of the main amplifier to shunt input current therethrough;

driving one side of said FET with a second amplifier; and

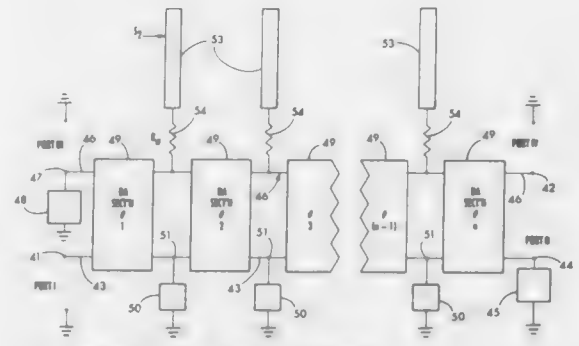
using the signal on another side of said FET as a feedback signal for said second amplifier, such that the impedance of said FET is lowered.

5,012,203

DISTRIBUTED AMPLIFIER WITH ATTENUATION COMPENSATION

James B. Beyer, Madison, Wis., and Steven Deibele, Albuquerque, N. Mex., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Dec. 27, 1989, Ser. No. 457,270
Int. Cl.[5] H03F *3/60*
U.S. Cl. 330—286 **33 Claims**



17. A distributed amplifier comprising:

(a) an input line comprising a series of transmission line sections electrically joined at nodes;

(b) an output line comprising a series of transmission line sections electrically joined at nodes;

(c) a plurality of amplifying circuits connected between nodes on the input and output lines to provide an amplified signal from the input line to the output line;

(d) a plurality of input line attenuation compensation circuits each connected to the input line at a node, each attenuation compensation circuit including a FET and means for biasing the FET in a common-gate configuration with the source and drain of the FET being connected electrically from the input line through an impedance to ground.

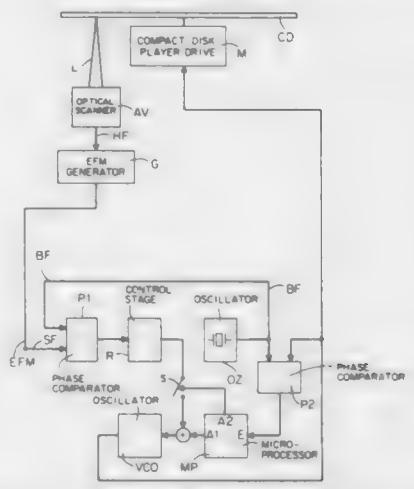
5,012,204

PHASE CONTROL CIRCUIT FOR REGULATING A CD PLAYER DRIVE

Dieter Storz, Lauterbach, and Baas, Dieter, Kehl, both of Fed. Rep. of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

PCT No. PCT/EP89/00590, § 371 Date Feb. 12, 1990, § 102(e) Date Feb. 12, 1990, PCT Pub. No. WO89/12932, PCT Pub. Date Dec. 18, 1989
PCT Filed May 26, 1989, Ser. No. 460,930
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1988, 3820477
Int. Cl.[5] H03L *7/087;* **G11B** *19/28*
U.S. Cl. 331—11 **12 Claims**

1. A phase control circuit comprising: a first phase comparator having a first input and a second input; a source of input frequency connected to said first input of said first comparator; a source of reference frequency connected to said second input of said first phase comparator; said first phase comparator having an output comparing said input frequency with said reference frequency; a first control stage with input connected to the output of said first phase comparator; a controlled oscillator with input connected to an output of said first control stage; a second control stage with output connected to the input of said oscillator; a second phase comparator with first input connected to an output of said oscillator; said second phase comparator having a second input connected to said source of reference frequency; said second control stage having an input connected to an output of said second phase comparator, said first control stage being separated from said oscillator to provide automatic compensation for the phase control circuit; said second control stage having an output varying until the frequency at the output of said oscillator equals the reference frequency; said output of said second control stage retaining a level corresponding to when the oscillator output frequency equals the reference frequency subsequent to compensation independent of the output from said second phase comparator and subsequent to reconnecting said first control stage to the input of said oscillator.

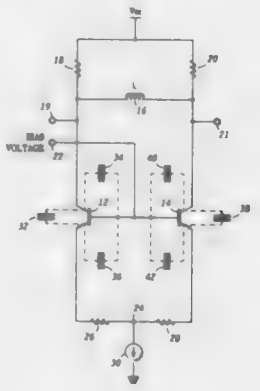


5,012,205

BALANCED SPURIOUS FREE OSCILLATOR

William J. Howell, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 2, 1990, Ser. No. 547,258
Int. Cl.[5] H03L *7/00*
U.S. Cl. 331—117 R **5 Claims**



1. A balanced oscillator circuit having first and second outputs, comprising:

transistor circuit means for providing first and second output

signals at the first and second outputs, said transistor circuit means including;

a first transistor having a collector, a base, and an emitter, said collector being coupled to a first supply voltage terminal and to the first output said base being coupled to an input terminal to which a bias potential is applied, and said emitter being coupled to a first node;

a second transistor having a collector, a base and an emitter, said collector being coupled to said first supply voltage terminal and to the second output, said base being coupled to said base of said first transistor of said transistor circuit means, and said emitter being coupled to said first node, said first and second transistors having parasitic capacitances associated therewith;

a current source coupled between said first node and a second supply voltage terminal: and

inductive means coupled between the first and second outputs, said inductive means and said parasitic capacitances determining the frequency of oscillation of said first and second output signals wherein said parasitic capacitances associated with said first and second transistors are varied in value in response to said bias potential thereby varying said frequency of oscillation of said first and second output signals.

5,012,206

INDUCTIVE PROXIMITY SWITCH

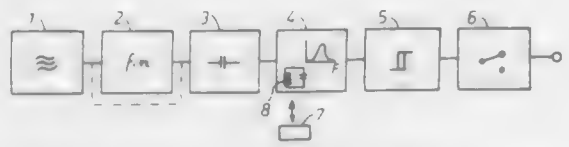
Burkhard Tigges, Sundern, Fed. Rep. of Germany, assignor to Werner Turck GmbH & Co. KG, Halver, Fed. Rep. of Germany

Filed Apr. 20, 1990, Ser. No. 511,767

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1989, 3912946

Int. Cl.[5] H03K *17/95*

U.S. Cl. 331—65 **25 Claims**



1. An inductive proximity switch comprising:

oscillator means for producing an oscillator output signal having a substantially constant frequency and a substantially constant amplitude;

sensor resonant circuit means adapted to be influenced by the approach of electrically conductive nonmagnetic nonferrous (NF) objects and ferromagnetic (FE) objects, and having a natural resonant frequency when it is uninfluenced by the approach of an object; and

coupling means for loosely coupling the oscillator output signal to the sensor resonant circuit means such that there is substantially no interaction between the oscillator means and the sensor resonant circuit means;

wherein the frequency of the oscillator output signal and the natural resonant frequency of the sensor resonant circuit means are set to deviate from each other by a predetermined frequency deviation.

5,012,207

VARIABLE RELUCTANCE TRANSDUCER PROCESSING CIRCUIT FOR PROVIDING AN OUTPUT UNAFFECTED BY LOW FREQUENCY COMPONENTS

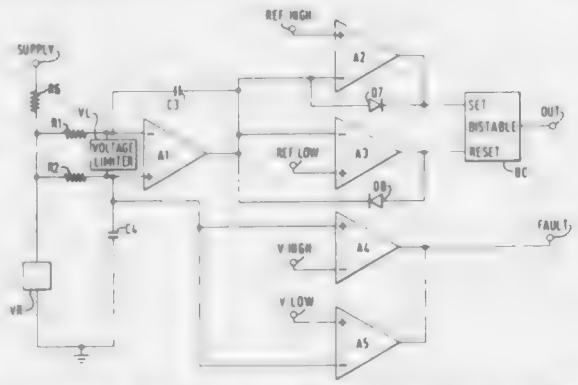
Karl Edwards, Birmingham, England, assignor to Lucas Industries Public Limited Company, Birmingham, England

Filed Oct. 4, 1989, Ser. No. 416,775

Claims priority, application United Kingdom, Oct. 6, 1988, 8823501; Feb. 22, 1989, 8903984

Int. Cl.[5] G01P *3/48, 3/54;* **G01N** *27/72;* **G01B** *7/14*

U.S. Cl. 324—166 **3 Claims**



1. A circuit for processing an output signal from a variable reluctance transducer, the transducer output signal varying at high frequency but possibly including a low frequency component, the circuit comprising an input receiving said transducer output signal from the variable reluctance transducer (VR), and a comparing means having a first input receiving said transducer signal and a second input receiving said transducer signal via a low pass filter so that the comparing means provides an output representing the high frequency transducer signal and substantially unaffected by any said low frequency component therein, in which the comparing means comprises an integrator which integrates the difference between the signals applied to its two inputs.

5,012,208

QUADRATURE MODULATOR HAVING COMPENSATION FOR LOCAL OSCILLATOR LEAK

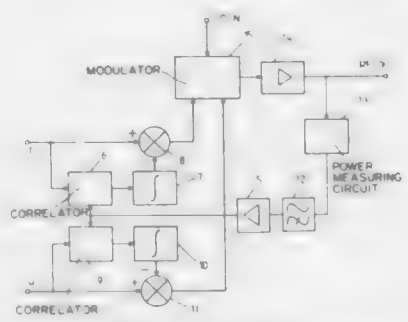
Jarmo Mäkinen, Espoo, and Reino Talarmo, Riihimäki, both of Finland, assignors to Telenokia Oy, Finland

Filed Apr. 10, 1990, Ser. No. 506,781

Claims priority, application Finland, Apr. 11, 1989, 891717

Int. Cl.[5] H04L *27/36*

U.S. Cl. 332—103 **5 Claims**



1. A quadrature modulator comprising

means for the compensation of a local oscillator leak signal in an output signal of the modulator, which means add different compensation voltages to two modulation signals, and

regulating means for the regulation of the intensity of the compensation voltages irrespective of each other on the basis of a correlation between the amplitude variation in the output signal and the corresponding modulation signal.

5,012,209

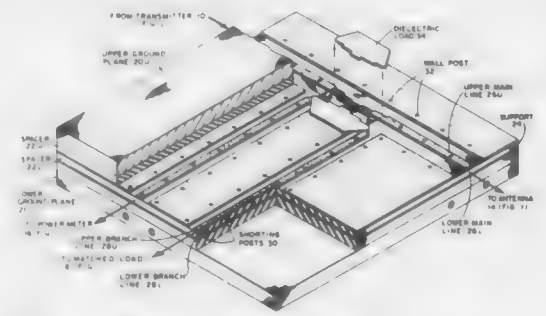
BROADBAND STRIPLINE COUPLER

John A. Lantagne, Salem, N.H.; Edward G. Johnson, Woburn, and Michael J. Virostko, Townsend, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Jan. 12, 1990, Ser. No. 464,066

Int. Cl.[5] H01P *5/18*

U.S. Cl. 333—116 **13 Claims**



3. A directional coupler comprising:

(a) a ground plane;

(b) a dielectric material;

(c) circuitry, such circuitry being separated from the ground plane by the dielectric material, the circuitry comprising:

(i) a main line conductor having a coupling edge portion;

(ii) a branch line conductor having a coupling edge portion facing the coupling edge portion of the main line conductor, such coupling edge portions being separated from each other in a coupling region of the coupler, the separation varying in distance over the coupling region; and

(iii) a dielectric load associated with, and disposed adjacent, a portion of each one of the main line and branch line conductors, such dielectric load having an edge portion shaped to conform with the edge portion of the line conductor associated therewith and disposed to partially overlap the edge portion of the associated line conductor.

5,012,210

COMB-LINE BAND-PASS FILTERS IN THE MICROWAVE FIELD

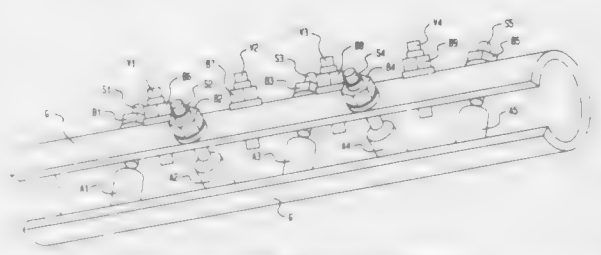
Franco Marconi, Monza, and Nicolo' De Stena, Cernusco S/Naviglio, both of Italy, assignors to Siemens Telecomunicazioni S.p.A., Milan, Italy

Filed Dec. 5, 1989, Ser. No. 446,022

Claims priority, application Italy, Dec. 21, 1988, 23033 A/88

Int. Cl.[5] H01P *1/205, 1/207*

U.S. Cl. 333—209 **7 Claims**



1. A microwave band-pass filter comprising:

a wave guide having a longitudinal axis and a circular cross section;

a plurality of resonators spaced alternatingly with a plurality of coupling means in series along the longitudinal axis of the wave guide, said resonators and coupling means being arranged alternatingly in successive planes transverse to the longitudinal axis, wherein each of said resonators includes a rod and a tuning screw aligned along a common resonator axis which are coupled to and extend into the wave guide; and

said resonators being arranged in said wave guide such that the resonator axis of each resonator is rotated in relation to that of a successive resonator by a constant modulus angle between 0 degrees and 90 degrees.

5,012,211

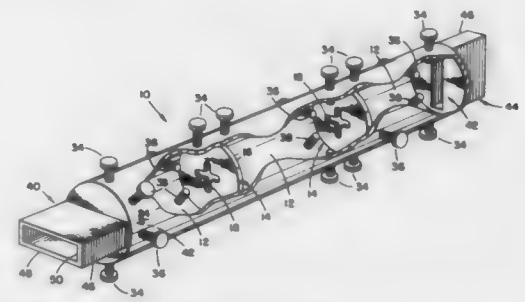
LOW-LOSS WIDE-BAND MICROWAVE FILTER

Frederick A. Young, Huntington Beach, and Roy K. Rikimaru, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Sep. 2, 1987, Ser. No. 92,347

Int. Cl.[5] H01P *1/208*

U.S. Cl. 333—212 **5 Claims**



1. A microwave filter comprising:

a series of cavities interconnected in a cascade fashion between an input port and an output port of said filter, each of said cavities having a circular cylindrical shape;

a plurality of irises, individual ones of said irises being located at interfaces between successive ones of said cavities, each iris having an aperture configuration for coupling two orthogonal electromagnetic waves between cavities;

a first of said cavities being bounded at one end thereof by an end wall located at said input port and, at a second end thereof, by an iris located at the interface with the next cavity; a last one of said cavities being bounded at a second end thereof by an end wall located at said output port and, at a first end thereof, by an iris located at the interface with the preceding cavity;

an input transition located at said input port and an output transition located at said output port, each of said transitions comprising a section of rectangular waveguide opening into an end wall of a cavity; and wherein

each of said cavities has a length selected to sustain a TE_{113} mode of electromagnetic wave within the cavity, and

in each cavity, the diameter of a cavity is smaller than the length thereof by a factor of 0.26 for increased bandwidth and decreased transmission loss.

5,012,212

OPEN RESONATOR FOR ELECTROMAGNETIC WAVES HAVING A POLARIZED COUPLING REGION

Toshiaki Matsui, Tokyo, and Kenichi Araki, Nara, both of Japan, assignors to Communications Reseach Laboratory Ministry of Posts and Telecommunications, Koganei, Japan

Filed Oct. 7, 1988, Ser. No. 255,019

Claims priority, application Japan, Oct. 7, 1987, 62-251469

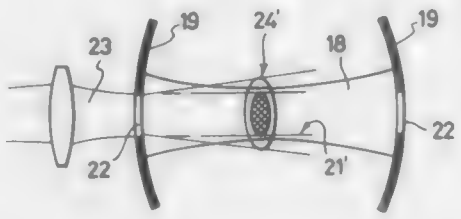
Int. Cl.[5] H01P *7/06*

U.S. Cl. 333—227 **8 Claims**

1. An open resonator for electromagnetic waves comprising:

a pair of reflecting mirrors placed on a common optical axis so as to form a resonant structure, at least one mirror of

said pair of reflecting mirrors being spherical, each mirror of said pair of reflecting mirrors having a center portion provided with a circular coupling region having a diameter substantially the same as or slightly smaller than a diameter of a beam of incident electromagnetic waves propagating in a resonant mode on said reflecting mirrors; and



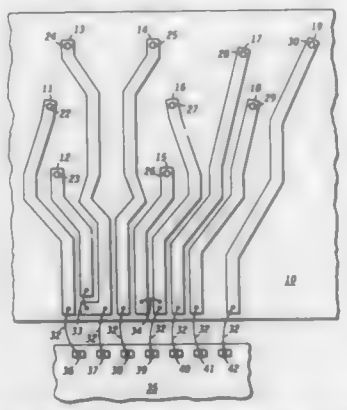
a plurality of conductor stripes disposed in parallel to each other in each of said circular coupling regions, said parallel stripes being arranged at intervals of 1/20 to 1/500 of a wavelength of said incident electromagnetic waves propagating in said open resonator said plurality of conductor stripes in one of said circular coupling regions, which is on an input side mirror of said pair of reflecting mirrors, being disposed in parallel to a plane of polarization of said incident electromagnetic wave.

5,012,213

PROVIDING A PGA PACKAGE WITH A LOW REFLECTION LINE

Chi-Tsou Tsai, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 19, 1989, Ser. No. 452,488
Int. Cl.[5] H01P *5/00*
U.S. Cl. 333—247 **6 Claims**



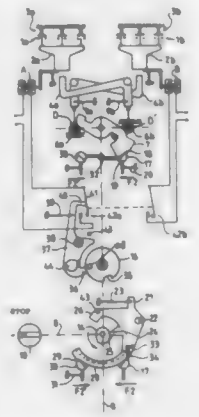
6. A method of converting two adjacent conductive lines of a pin grid array package to a low reflection line, comprising: wire bonding the two adjacent conductive lines together at an end adjacent a semiconductor device mounting area; and using the two wire bonded adjacent conductive lines as a low reflection line for a fast edge rate signal.

5,012,214

LOCK MECHANISM FOR A LIMITING CONTACT MAKER

André Faffart, Nanterre, France, assignor to Telemecanique, France

Filed Nov. 16, 1989, Ser. No. 437,070
Claims priority, application France, Nov. 17, 1988, 88 14919
Int. Cl.[5] H01H *75/00*
U.S. Cl. 335—6 **13 Claims**



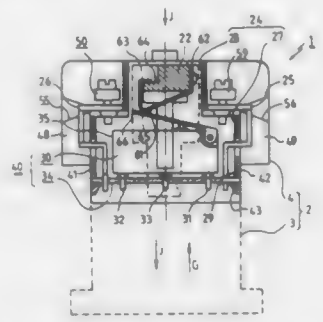
1. A lock mechanism for a limiting contact maker, of the kind comprising at least one set of power switches which may be closed and opened by a control electromagnet, further comprising two levers acting on at least one pusher block for actuating the switches, these two levers being articulated about two respective shafts and each having a bearing surface formed preferably by a roller urges on a profile of a rotary cam by resilient means, means being provided for causing this cam to pass from a locked automatic operational position in which the width of the cam in line with the bearing surface is maximum and the levers are held away from the pusher, towards a tripped position in which this width is minimum and in which the levers act on the pusher block for holding the switches open.

5,012,215

PROTECTED SWITCH CONTACTOR APPARATUS

Noël Floc'h, Val De Reuil Le Vaudreuil, France, assignor to Telemecanique, France

Filed Feb. 20, 1990, Ser. No. 481,536
Claims priority, application France, Feb. 21, 1989, 89 02215
Int. Cl.[5] H01H *67/02*
U.S. Cl. 335—132 **11 Claims**



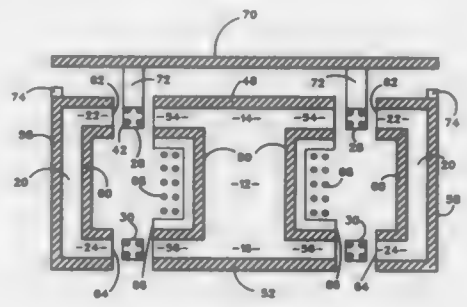
1. A contactor apparatus comprising a body having an upper wall, a lower wall, a front wall, a rear wall and two opposite lateral walls, each comprising a lower part and an upper part which is offset inwardly with respect to the lower part and which is connected to the upper part by means of a transversal portion which extends substantially parallel to the upper wall, said body further comprising two rows of insulating partitions which extend parallel to the front wall from the transversal portion and from the upper parts of the lateral walls, thus forming therebetween a first plurality of cells and a second plurality of cells respectively facing the cells of the first plurality, each cell containing a connecting terminal mounted on a corresponding transversal portion, the lower parts of the lateral walls delimiting an internal volume comprising first and second superimposed chambers partially separated by at least one printed circuit board which is extending parallel to the upper walls, said first chamber containing an electromagnet and said second chamber lodging at least one micro-switch component which is disposed in a zone located between two facing cells, which is mechanically and electrically connected to the printed circuit board and which comprises actuating means oriented towards said upper wall, the upper parts of the lateral walls delimiting with the upper walls a third chamber which communicates with the second chamber and wherein a rack actuated by the electromagnet is mechanically coupled to said actuating means, at least a first terminal of first plurality and a second terminal of the second plurality which is located in front of the first terminal being electrically connected to the printed circuit board.

5,012,216

SUPERCONDUCTIVE GRAVIMETER

Korda K. D. Jin, Brea, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 153,740, Feb. 8, 1988, Pat. No. 4,904,971. This application Feb. 23, 1990, Ser. No. 484,143
Int. Cl.[5] H01F *7/22*
U.S. Cl. 335—216 **4 Claims**



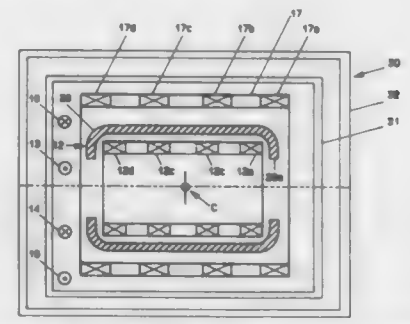
1. A superconductive gravimeter comprising:
a first magnetic element having a first surface;
a first layer of superconductive material on said first surface, defining a first region for entering magnetic flux and a first region for ieaving magnetic flux;
a second magnetic element having a second surface;
a second layer of superconductive material on said second surface, defining a second region for entering magnetic flux and a second region for leaving magnetic flux, said second entering region lying proximate said first leaving region, and said second leaving region lying proximate said first entering region;
means for carrying a current between said second entering region and said first leaving region, or means for carrying a current between said first entering region and said second leaving region, in a direction perpendicular to the direction from said entering region to said leaving region;
a third layer of superconductive material, supported by said current carrying means, proximate said second layer of superconductive material;
means for mesauring variations in magnetic flux between said second layer of superconductive material and said third layer of superconductive material.

5,012,217

INTGRATED ACTIVE SHIELDED MAGNET SYSTEM

Alex Palkovich, Oxford; John M. Bird, Oxon, both of England, and Ratson Morad, Zichron Yakov, Israel, assignors to Elscint Ltd., Haifa, Israel

Filed Apr. 23, 1990, Ser. No. 512,358
Claims priority, application Israel, Apr. 23, 1989, 090050
Int. Cl.[5] H01F *7/00*
U.S. Cl. 335—301 **17 Claims**



1. An integrated shielding arrangement for solenoid type cryogenic super conducting magnets such as used in magnetic resonance (MR) systems to reduce the fringe magnetic fields generated by the solenoid magnet, said arrangement comprising:
a dewar having an inner wall and outer wall,
a first solenoid coil within said dewar for generating a first large static magnet field in a central bore of said magnet of the MR system, said field having a first lines of force extending in a first direction,
a second solenoid coil within said dewar for generating an opposite going second magnetic field with second lines of force extending in an opposite direction to the first lines of force to cancel at least some of the first lines force external to the first solenoid to decrease fringe field effects, said second magnetic field also tending to decrease the lines of force in the central bore,
first means for reducing the reluctance to flux lines located between the first and second solenoid coil to enable energizing the second coil with a lower current to assure less of a decrease in the central bore compared to the reduction of the magnetic field at the central bore when the first means for reducing the reluctance is absent, and
second means for reducing the reluctance to flux lines located external to the second solenoid coil.

5,012,218

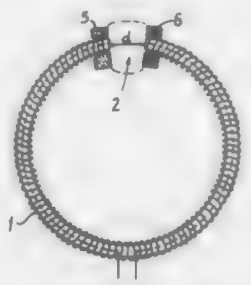
DEVICE FOR MEASURING AN ELECTRIC CURRENT USING A SOLENOID WITH REGULAR PITCH IN THE FORM OF A TORUS

Robert Haug, Orsay; Zhong-Jun He, Massy, and Roger Hahn, Gif-sur-Yvette, all of France, assignors to Centre National de la Recherche Scientifique, Paris, France

Continuation of Ser. No. 275,702, Nov. 25, 1988, abandoned, which is a continuation of Ser. No. 4,247, Jan. 5, 1987, abandoned, which is a continuation of Ser. No. 698,378, Feb. 5, 1985, abandoned. This application Sep. 25, 1989, Ser. No. 411,259
Claims priority, application France, Feb. 6, 1984, 84 01754
Int. Cl.[5] H01F *27/30, 40/06*
U.S. Cl. 336—174 **3 Claims**

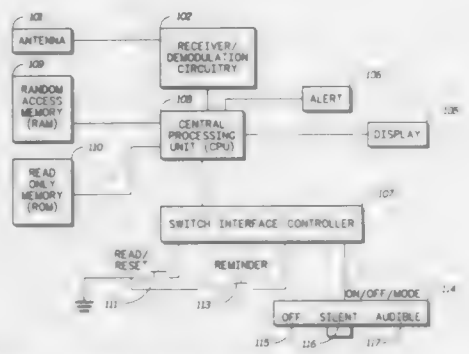
1. A device for measuring electric current comprising:
(a) a toric core having a gap that establishes a pair of opposed end faces;
(b) a continuous conductor having terminal ends and wound around said core in contiguous turns forming a toric solenoid interrupted by said gap, and said solenoid having first and second ends adjacent the respective end faces of the core;
(c) the conductor at each end of the solenoid passing

through the core and extending along the axis thereof from the opposed end faces of the core such that the terminal ends of the conductor are located diametrically opposite the gap; and



(d) a first compensation coil serially connected to said first end of the solenoid, said first coil overlying the first end of the solenoid to which the first coil is connected.

5,012,219
MESSAGE REMINDER ALERT FOR SELECTIVE CALL RECEIVER
Courtney S. Henry, Coconut Creek, Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 13, 1989, Ser. No. 421,035
Int. Cl.[5] H04Q *1/30*
U.S. Cl. 340—311.1 **31 Claims**

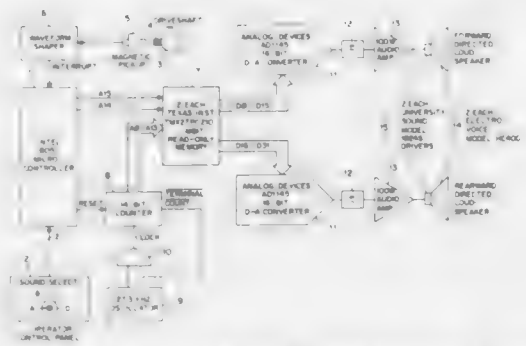


16. An electronic device comprising:
storage means for storing a message;
output means for presenting said stored message;
alert means for providing a periodic alert for said stored message; and
user selectable control means for activating and deactivating said alert means, said periodic alert continuing if said user selectable control means has been activated even after said stored message has been presented by said output means.

5,012,220
SOLAR POWERED PAGING DEVICE
Moses Miller, c/o Ralph Hutchinson, 26400 Southfield Rd., Lathrup Village, Mich. 48076
Filed Oct. 4, 1989, Ser. No. 416,957
Int. Cl.[5] H04Q *1/30*
U.S. Cl. 340—311.1 **7 Claims**

1. A solar powered paging device having at least one battery, said paging device comprising:
a pager;
a module having at least one strip of solar cells, a pair of electrical contacts and means for electrically connecting said at least one strip to said pair of electrical contacts, said means for electrically connecting comprising at least two springs;
means for demountably attaching said module to said pager, said means for attaching having a second means for electrically connecting said pair of electrical contacts to said at least one battery, said second means for electrically connecting including a pair of electrically conductive posts extending outwardly from said pager and means for receiving said posts, said means for receiving mounted to said module: and
a tray for supporting said at least one solar module, said tray having means for receiving said at least one strip of solar cells;
each of said at least two springs extending through a respective opening in said tray, said at least two springs extending between said electrical contacts and said at least one strip of solar cells.

5,012,221
EMERGENCY VEHICLE AUDIBLE WARNING SYSTEM AND METHOD
Max Neuhaus, New York, and Frederick G. Reinagel, Buffalo, both of N.Y., assignors to Siren Sounds, Inc., Englewood Cliffs, N.J.
Filed Mar. 24, 1989, Ser. No. 328,407
Int. Cl.[5] G08B *3/00*
U.S. Cl. 340—384 E **46 Claims**

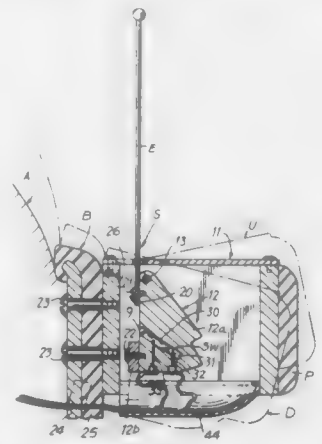


1. An audible warning system for an emergency vehicle, having sound projection means for emitting warning sound externally of the vehicle to persons in the vicinity of the vehicle, and means for defining a plurality of sound phrases to be projected, the means for defining comprising means for automatically interspersing a period of silence between said sound phrases, whereby vehicle personnel are enabled to hear warning sounds from exterior of the vehicle.

5,012,222
PROXIMITY WARNING DEVICE FOR PROTECTION OF A PARKED VEHICLE
Steve Gavrilis, 1720 65th St., Brooklyn, N.Y. 11204
Filed Apr. 6, 1990, Ser. No. 506,417
Int. Cl.[5] B60Q *5/00*
U.S. Cl. 340—436 **2 Claims**

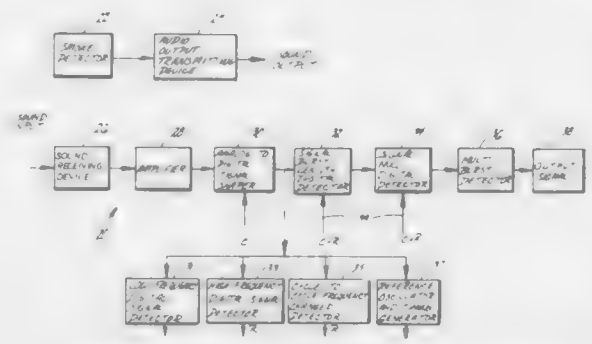
1. A proximity warning device for protection of a parked vehicle comprising a sensor assembly, the sensor assembly comprising a relatively heavy body having a lighter elongated feeler element affixed to and projecting from the body, a housing for the sensor assembly, means for affixing the housing to a vehicle bumper, pivot means for pivotally supporting the sensor assembly in the housing for pivotal oscillation about a horizontal pivotal axis which is substantially perpendicular to the lengthwise dimension of the vehicle, the location of the pivotal axis being so selected that, when the housing is affixed to a bumper of a parked vehicle and the sensor assembly influenced only by gravity, the sensor assembly assumes a neutral orientation in which the feeler element is substantially vertical in the direction of its elongation regardless of whether the surface on which the vehicle is parked is horizontal or inclined in the lengthwise direction of the vehicle, ht e housing having an upper opening through which the feeler element upwardly projects with a substantial portion of the feeler element being above the housing and which permits the feeler element to

oscillate in either direction from the neutral, substantially vertical orientation, the sensor assembly further comprising a liquid metal electrical switch integral with the rest of the sensor assembly, liquid metal switch comprising a channel which is downwardly inclined away from the vehicle in the direction of the lengthwise dimension of the vehicle when the sensor assembly is in said neutral orientation, a pair of electrical contact means received in the channel at respective locations spaced from each other in the lengthwise dimension of



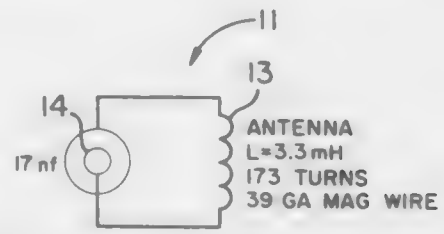
the channel, and a quantity of liquid metal received in the channel sufficient to contact only one of the electrical contact means when the sensor assembly is in said neutral orientation and sufficient to contact both of said electrical contact means when the feeler element is pushed toward the vehicle by external means sufficiently to substan tially decrease the inclination of the channel, and respective electrically conductive wires electrically connected to each of the contact means and adapted to comprise an electrical circuit including alarm means responsive to closing of the liquid metal switch.

5,012,223
SOUND ACTIVATED DEVICE & METHOD
Charles A. Griebell, Trumbull, and Christie Petrides, Monroe, both of Conn., assignors to Black & Decker, Inc., Newark, Del.
Filed Feb. 23, 1990, Ser. No. 483,700
Int. Cl.[5] G08B *1/00*; H04Q *1/30*; G10K *11/00*
U.S. Cl. 340—531 **11 Claims**



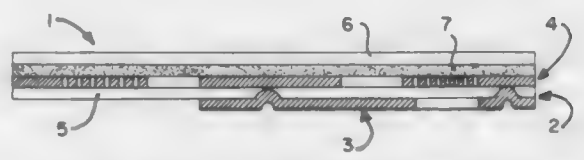
1. A method of activating a device in response to detecting the emission of a sound wave having predetermined characteristics comprising the steps of:
generating an analog electrical signal having informational characteristics indicative of the emitted sound;
converting the analog signal into a digital signal containing the informational characteristics contained within the emitted sound;
detecting the presence of the digital signal in a first time period, which first time period is identical to the time period in which the detected sound wave is generated;
detecting the absence of the digital signal in a second time period, which second time period is identical to the time period in which the detected sound wave is absent;
repeating the two detecting steps to ensure that the emitted sound wave has the predetermined characteristic; and
activating a device in response to transmission of the digital signal containing informational characteristics contained within the emitted signal.

5,012,224
AUDIBLE TAG FOR MAGNETIC ELECTRONIC ARTICLE SURVEILLANCE SYSTEMS
Frank Drucker, Tamarac, Fla., assignor to Sensormatic Electronics Corporation, Deerfield Beach, Fla.
Continuation of Ser. No. 446,322, Dec. 5, 1989, abandoned. This application Aug. 3, 1990, Ser. No. 563,828
Int. Cl.[5] G08B *13/18*
U.S. Cl. 340—551 **15 Claims**



9. An electronic article surveillance system comprising:
means for transmitting a magnetic field;
and a tag comprising:
antenna means responsive to said magnetic field; and piezoelectric means responsive to said antenna means for generating an audible acoustic signal.

5,012,225
SYSTEM FOR DEACTIVATING A FIELD-SENSITIVE TAG OR LABEL
Peter Gill, Long Valley, N.J., assignor to Checkpoint Systems, Inc., Thorofare, N.J.
Filed Dec. 15, 1989, Ser. No. 451,294
Int. Cl.[5] G08B *13/18*
U.S. Cl. 340—572 **20 Claims**



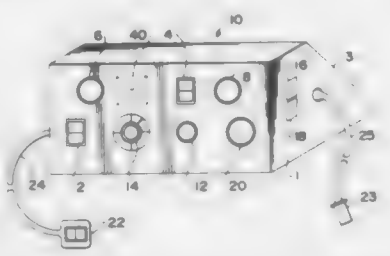
15. A method for protecting an article using an electronic security system, comprising:
providing a field-sensitive tag including a resonant circuit, and a deactivating layer in contact with at least portions of said resonant circuit and incorporating means for physically opening a portion of said resonant circuit in contact with said deactivating layer;
positioning said field-sensitive tag within portions of said article to be protected; and
deactivating said field-sensitive tag following a purchase of said article by physically opening said portion of the resonant circuit in contact with the deactivating layer.

5,012,226

SAFETY ALERTNESS MONITORING SYSTEM

Samuel D. Love, 13510 Old Indian Head Rd., Brandywine, Md. 20613

Filed Feb. 23, 1990, Ser. No. 483,635
Int. Cl.[5] G08B *23/00;* **B60Q** *1/00;* **H01H** *47/00*
U.S. Cl. 340—576 **42 Claims**



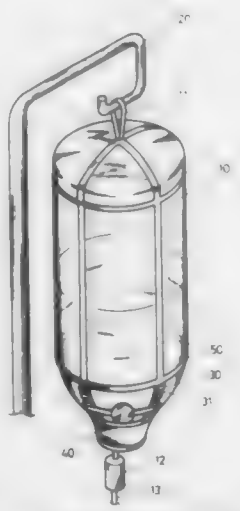
1. A safety alertness monitoring system comprising:
a housing;
timer means located in said housing, for counting a first predetermined time period and a second predetermined time period after counting said first predetermined time period;
first alarm means, located in said housing, for sounding a first alarm after said first predetermined time period is counted by said timer means;
second alarm means, located in said housing, for sounding a second alarm after said second predetermined time period is counted by said timer means;
resetting means for resetting said timer means, said resetting means causing said timer means to begin counting said first predetermined time period when actuated; and
attaching means for removably attaching said system to a power supply whereby said system is portable.

5,012,227

WARNING DEVICE FOR LIQUID LEVEL IN DRIPPING BOTTLE

Chou K. Jung, No. 16-2, Alley 12, Lane 106, Pao Chien Road, Chung Ho City Taipei Hsien, Taiwan

Filed Oct. 23, 1989, Ser. No. 425,671
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—618 **2 Claims**



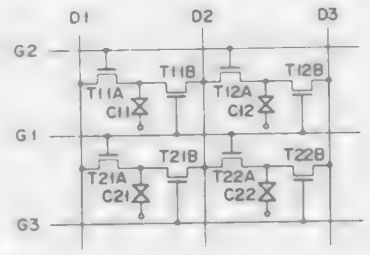
1. In combination, a liquid-containment bottle (**10**) adapted to be hung in a vertical position for intravenous injection of a contained liquid into a patient, said bottle including a lower liquid discharge neck portion that converges toward the bottle axis in the downward direction;
a frame structure encircling the neck portion of the bottle, said frame structure including two downwardly-extending strips (**30**) lying against the bottle surface in spaced-apart relation, each said strip having a plural number of transverse grooves (**31**) spaced therealong;
a liquid level detecting alarm unit that includes a sensor body adapted for removable attachment, and also positioned flat against the outer surface of the bottle, and a flexible belt structure connected to said sensor body;
said belt structure comprising two oppositely-extending flat belt sections, each belt section having a first end thereof connected to the sensor body and a second free end thereof spaced from the sensor body;
each belt section having a width dimension such that the width dimension of the belt section is the same as the width dimension of each said groove (**31**); whereby the sensor body can be positioned against the bottle surface with one of the flat belt sections snapped into a groove in one of the strips, and with the other flat belt section snapped into a groove in the other strip;
said belt sections being detachably connected to the strips so that belt sections are in a taut condition supporting the sensor body against the bottle surface.

5,012,228

METHOD OF OPERATION FOR AN ACTIVE MATRIX TYPE DISPLAY DEVICE

Kiyoshi Masuda, Tokorozawa; Shigeto Kobda; Shigenobu Sakai, both of Tokyo; Kazuo Kimura, Tokorozawa, and Tomoyoshi Nomura, Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone, Tokyo, Japan

Continuation of Ser. No. 224,080, Jul. 25, 1988, abandoned. This application Jul. 10, 1990, Ser. No. 551,034
Claims priority, application Japan, Aug. 4, 1987, 62-193763
Int. Cl.[5] G09G *3/36*
U.S. Cl. 340—702 **1 Claim**



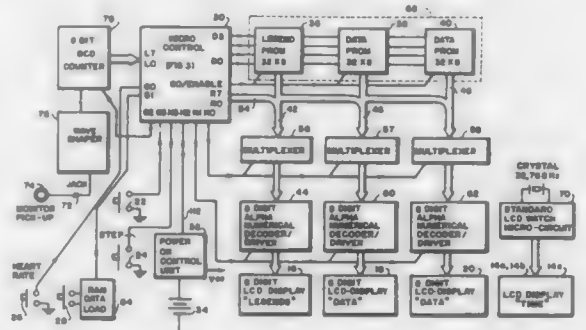
1. A method of operation for an active matrix type display device including:
an m number ($m \geq 2$) of pixel array blocks arranged in a row direction, each pixel array block having a plurality of display elements (Cij; $i = 1,2, \ldots k$; $j = 1 \ldots n$) arranged as a K rows × n columns ($K \geq 2$, $n \geq 1$) array;
a $K+1$ number of scanning lines ($G1, \ldots, GK+1$) arranged in said row direction in each pixel array block to supply scanning signals for selectively scanning the corresponding display elements;
a $j+1$ number of data lines ($D1 \ldots Dj+1$) arranged in a column direction in each pixel array block to supply data signals to the corresponding display elements and located in an intersecting fashion to said scanning lines; and
first and second switching elements (TKnA, TKnB) connected between the data lines and the corresponding display element and independently connected to two adjacent scanning lines, respectively, between which the respective display element for the first and second switching elements is located, whereby different display data input routes are established relative to the display elements via two adjacent data lines in a $j+1$ number of data lines, said method comprising the step of enabling the display elements on a respective row which are included into said plurality of display elements in the matrix array constituted by the pixel array block to display back-up and normal display data for respective odd-and-even-numbered frames, and including the steps of:
(a) sequentially writing normal red, green and blue display data into the corresponding display elements on one row, while at the same time sequentially writing back-up red, green and blue display data into diagonally adjacent corresponding display elements, in accordance with scanning signals selected by a common scanning line, relative to display elements, located between one row and another adjacent row; and
(b) writing the normal red, green and blue display data into said diagonally adjacent display elements, in place of said back-up red, green and blue display data, in accordance with scanning signals selected by another scanning line adjacent to said scanning line.

5,012,229

USER WEARABLE PERSONAL/MEDICAL INFORMATION DEVICE

Charles A. Lennon, 37 Park Ave., New York, N.Y. 10016, and George Lowe, Bergenfield, N.J., assignors to Charles A. Lennon, New York, N.Y.

Continuation of Ser. No. 44,010, Apr. 29, 1987, abandoned. This application Oct. 11, 1988, Ser. No. 256,231
Int. Cl.[5] G09F *9/00*
U.S. Cl. 340—706 **7 Claims**



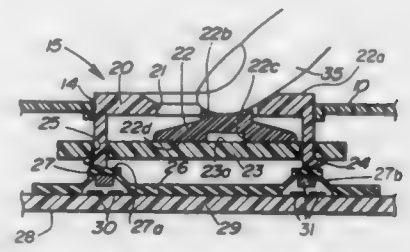
1. A personal/medical information device capable of being carried on a person, comprising:
display means including
information display means for providing a display of items of vital personal or medical information pertaining to the person, and
legend display means for displaying items of identifying legends in association with the items of vital information displayed by said information display means;
operate switch means for initiating displays of said items of vital information and said items of identifying legends by said display means;
storing means including
detachably mountable read only memory means for storing at certain first address locations preset items of vital personal or medical information data and preset items of associated legend data, wherein items of items of vital information data and associated legend data can be read out for display from the first address locations of the read only memory means, and read/write memory means for storing at certain address locations different from said first address locations, items of other information data and associated items of identifying legend data that can be set and updated by the person, and including data input means coupled to the read/write memory means for enabling the person to set and update only the other information and associated legend data, wherein said items of other information and associated legend data can be read out for display from the second address locations of the read/-write memory means; and
processor means responsive to said operate switch means for reading out said items of vital information data, other information data and associated identifying legend data, selectively from one of said first address locations of the read only memory means and said second address locations of the read/write memory means, and for enabling the display of the selected information data and legend data by said display means.

5,012,230

INPUT DEVICE FOR DIGITAL PROCESSOR BASED APPARATUS

Shiro Yasuda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 5, 1988, Ser. No. 177,940
Claims priority, application Japan, Apr. 7, 1987, 62-85211
Int. Cl.[5] G09G *5/08*
U.S. Cl. 340—706 **21 Claims**



1. A data input device comprising:
a controller assembly including a manually accessible movable member having a manually accessible section and a slider section integrally formed with said manually accessible section and slidably supported on a supporting base, said slider section being in a form of a disk, said manually accessible section being formed on said slider section and having a finger-receiving portion for receiving at least a portion of a finger of a user, said supporting base having a plane surface at an upper side thereof for contacting a plane surface of a lower side of said slider section, said supporting base permitting manual movement of said movable member in a direction generally perpendicular to the direction of the slide on said supporting base in response to a manual depression force for inputting data, said controller assembly also including a guide means defining an area of unbiased sliding motion of said movable member on said supporting base;
a resilient means for resiliently supporting said controller assembly at a plurality of supporting points, said resilient means being deformable in response to the depression force; and
electric means, responsive to deformation of said resilient means, for generation an output signal indicative of input data corresponding to the position of said movable member, at which position said inputting force is exerted.

5,012,231

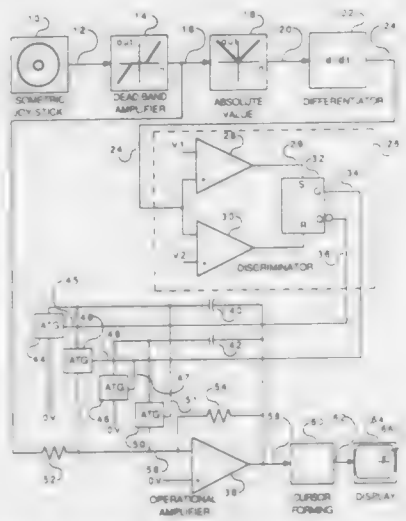
METHOD AND APPARAUS FOR CURSOR MOTION HAVING VARIABLE RESPONSE

Lee Felsenstein, Berkeley, Calif., assignor to Golemics, Inc., Berkeley, Calif.

Filed Dec. 20, 1988, Ser. No. 287,102
Int. Cl.[5] G09G *5/08*
U.S. Cl. 340—709 **8 Claims**

1. A graphic cursor positioning device comprising:
input means responsive to operator actuation to generate a first cursor movement signal,
signal processing means acting upon said first cursor movement signal to produce a corresponding second cursro movement signal,
display means capable of presenting a variably positioned cursor indicia display,

cursor generating means connected to said display means so as to cause movement of said cursor indicia in correspondence to said second cursor movement signal,



said signal processing means including means for providing differing time response characteristics of said cursor indicia movement in correspondence to an increase or decrease of said first cursor movement signal.

5,012,232

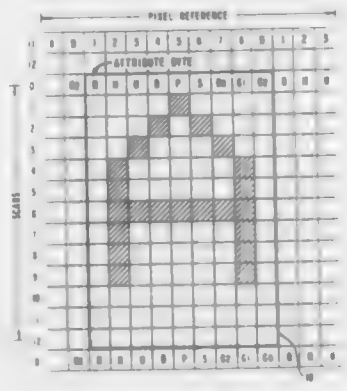
BIT MAPPED MEMORY PLANE WITH CHARACTER ATTRIBUTES FOR VIDEO DISPLAY

Richard J. Fadem, Roslyn Heights, N.Y., assignor to NCR Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 938,474, Dec. 5, 1986, abandoned. This application Jul. 28, 1988, Ser. No. 225,430

Int. Cl.[5] G06F *3/14*

U.S. Cl. 340—750 **15 Claims**



1. A video display controller for controlling the display of characters stored in a bit plane memory, each character being arranged in a set number of scan lines with a set number of data bits in each scan line, one scan line of data bits in each character being attribute bits of its character, the characters to be displayed being arranged in rows, with a set number of characters per row, said video display controller comprising:

data bus means for receiving data bytes from the bit plane memory, each of said data bytes including the data bits of a single scan line of a character to be displayed;

shifting means having an input connected to said data bus means and an output, said shifting means for sequentially placing each data bit of a data byte on its output;

selecting means connected to said data bus means for selecting attribute bytes from said data bus means, each of said attribute bytes having the attribute bits of its corresponding character to be displayed, said selecting means comprising:

register means for storing the attribute bytes of an entire row of characters to be displayed, said register means having an input for receiving an attribute byte and an output for outputting an attribute byte; and

a multiplexer having a first input connected to said data bus means, a second input connected to the output of said register means and an output connected to the input of said register means, said multiplexer for multiplexing the attribute bytes of an entire row of characters to be displayed to said register means, and for sequentially multiplexing the attribute byte on the output of said register means back to its input after each scan line of a character to be displayed; and

attribute logic means having a first input connected to the output of said shifting means and a second input connected to said selecting means, said attribute logic means for applying the attribute bits of an attribute byte to the data bits of a scan line of a corresponding character to be displayed.

5,012,233

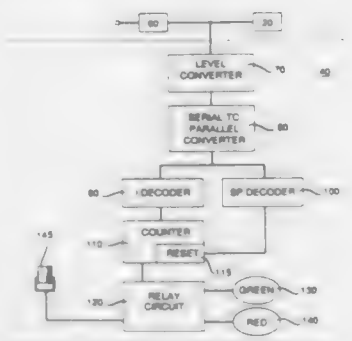
COMMUNICATION SYSTEM COMPRISING A REMOTELY ACTIVATED SWITCH

Stephen D. Poulsen Jr., Basking Ridge, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 7, 1989, Ser. No. 404,299

Int. Cl.[5] G05B *23/02*

U.S. Cl. 340—825.18 **14 Claims**



1. A communication system, comprising:

means for producing digital signals;

means for receiving digital signals;

a communication medium for conveying signals from the producing to the receiving means;

activating means capable of opening or closing an external circuit when said activating means are energized;

control means adapted to receive signals from the communication medium, the control means being further adapted to energize the activating means in response to signals received from said communication medium, such that when the control means receive a sequence of digital bits having predetermined properties, the activating means are energized; and

means for electrically powering the control means such that the activating means can be energized independently of whether the receiving means are powered ON or OFF,

Characterized in that

the control means comprise:

(a) means for receiving, from the producing means via the communication medium, signals representing alphanumeric characters;

(b) a converter for converting received signals to parallel binary representations of alphanumeric characters, whereby characters encoded in the received signals may be converted, the converter having output terminals;

(c) a first decoder for producing an output pulse in response to the appearance, at the output terminals of the converter, of a converted activating character;

(d) a counter for producing an output pulse after a designated number of output pulses from the first decoder;

(e) a second decoder for resetting the counter whenever a converted resetting character appears at the output terminals of the converter; and

(f) means for energizing the activating means whenever an output pulse is produced by the counter.

5,012,234

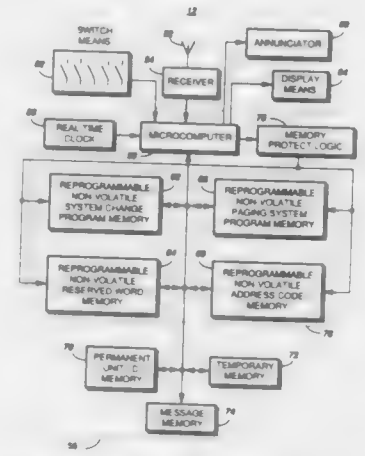
USER ACTIVATED MEMORY PROGRAMMING AUTHORIZATION IN A SELECTIVE CALL RECEIVER

Randi L. Dulaney, Boca Raton, and Pamela A. Rakolta, Lake Worth, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 4, 1989, Ser. No. 347,549

Int. Cl.[5] G08B *5/22*

U.S. Cl. 340—825.44 **19 Claims**



2. A method for user initiated alteration of a memory in a selective call receiver, using reconfiguration information corresponding to the memory alteration selected by the user and transmitted from an external source, said method comprising the steps of:

generating, for a predetermined programming time interval, a programming authorization signal activated by the user;

receiving the transmitted reconfiguration information; and

altering the memory in response to the received reconfiguration information only in the presence of the programming authorization signal.

5,012,235

PAGING RECEIVER WITH CONTINUOUSLY TUNABLE ANTENNA AND RF AMPLIFIER

Andrew A. Andros, Spring, Tex., and Thomas J. Campana, Jr., Chicago, Ill., assignors to Telefind Corporation, Coral Gables, Fla.

Continuation-in-part of Ser. No. 110,514, Oct. 20, 1987, Pat. No. 4,851,830. This application Mar. 28, 1989, Ser. No. 329,543

Int. Cl.[5] H04Q *1/00*

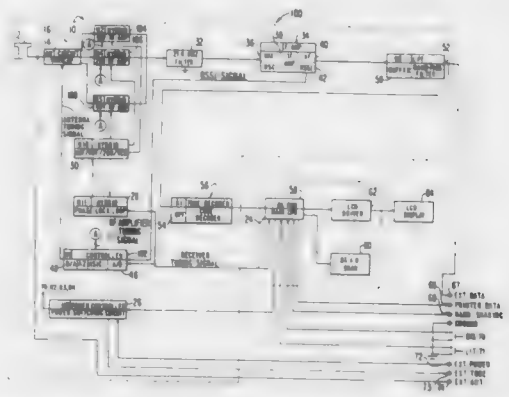
U.S. Cl. 340—825.44 **33 Claims**

1. A RF paging receiver which is tunable to channels to receive pages comprising characters to be displayed with the pages being transmitted in at least one licensed frequency band with each frequency band containing a plurality of FM channels in which signal strength of the pages on received channels in the at least one frequency band varies as a result of variable antenna gain comprising:

(a) a tunable antenna having a reception bandwidth spanning the at least one frequency band with the antenna being tunable in response to an antenna tuning signal to achieve maximum antenna gain for a received channel in the at least one licensed frequency band;

(b) a RF tuner, coupled to the tunable antenna, which is tunable for receiving individual channels from the at least one frequency band in response to varying a receiver tuning signal specifying reception of one of the channels within the at least one frequency band, the RF tuner comprising at least one RF amplifier with each RF amplifier for amplifying a page received on any channel within at least one frequency band, each RF amplifier having an operating bandwidth which is narrower in frequency than the at least one frequency band of channels applied to the RF amplifier and which is shiftable to center the operating bandwidth within the at least one frequency band of channels applied to the RF amplifier on the specified channel in response to an RF amplifier tuning signal;

(c) an IF signal processing means, coupled to the RF tuner



and to the receiver tuning signal, for producing an intermediate frequency signal, for providing the antenna tuning signal which is a function of the intermediate frequency signal during operation of the RF tuner to tune the antenna to achieve maximum antenna gain in response to receiving a specified channel from one of the channels within the at least one frequency band, and for producing the RF amplifier tuning signal by a summation of a signal which is a function of a magnitude of the intermediate frequency signal and a signal which is a function of a magnitude of the receiver tuning signal;

(d) a display for displaying the characters within the received page; and

(e) a controller, coupled to the intermediate frequency signal, for controlling generation of the receiver tuning signal to cause the RF tuner to receive a specified channel from the at least one frequency band and display of received characters in pages on the channel on the display.

5,012,236

ELECTROMAGNETIC ENERGY TRANSMISSION AND DETECTION APPARATUS

Philip R. Troyk, Morton Grove, and Glenn A. DeMichele, Chicago, both of Ill., assignors to Trovan Limited, Isle of Man, United Kingdom

Filed May 26, 1989, Ser. No. 358,310

Int. Cl.[5] H04Q *1/00*; **H01F** *5/00*

U.S. Cl. 340—825.54 **32 Claims**

1. An electromagnetic transmission and detection apparatus for transmitting a high intensity electromagnetic field and detecting the presence of a low intensity electromagnetic field emanating from an external source despite the presence of said high intensity electromagnetic field, comprising:

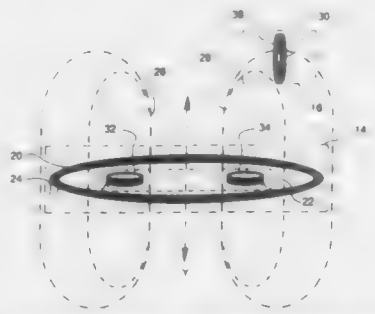
a support means;

means for generating a first electrical signal for use in creating said high intensity electromagnetic field;

a transmitter coil affixed to said support means for receiving said first electrical signal and transmitting said high inten-

sity electromagnetic field, said transmitter coil including one or more conductive windings circumscribing a substantially polygonal volume of space having a central axis, said transmitter coil being adapted to generate a magnetic flux field within said volume;

first and second receiver coils disposed within said volume of space at significantly separated points and adapted to have linking relationships with portions of said flux field, said first and second receiver coils being electrically connected to each other in a differential circuit relationship such that the magnitude of electrical signals induced in said first and second receiver coils by electromagnetic



energy transmitted by said transmitter coil are substantially equal and opposite to each other, whereby electromagnetic energy generated by said external source and passing through at least one of said first and second receiver coils will induce an electrical signal of greater magnitude in one receiver coil than will be induced in the other receiver coil and cause a current to flow in said differential circuit which corresponds to the energy generated by said external source; and

means responsive to said current flowing in said differential circuit and operative to indicate a measure of the energy generated by said external source.

5,012,237

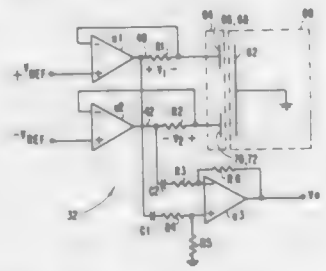
REFLECTED ELECTROSTATIC FIELD ANGLE RESOLVER

Mark A. Rosswurm, Columbus, Ind., assignor to Cummins Electronics Company, Inc., Columbus, Ind.

Filed May 26, 1989, Ser. No. 358,651

Int. Cl.[5] G08C *19/10*

U.S. Cl. 340—870.37 **17 Claims**



1. An electrostatic angle resolver comprising:

(a) a DC charge source means;

(b) stator means for producing a patterned electrostatic field, said stator means connected directly to said DC charge source means;

(c) rotor means within the field of said stator means, said rotor means connected to a potential reference; and

(d) circuit means for measuring current flow from said DC charge source means to said stator means and producing a dQ/dt signal indicative of rotor movement within the patterned electrostatic field emanating from said stator.

5,012,238

ABSOLUTE ENCODER

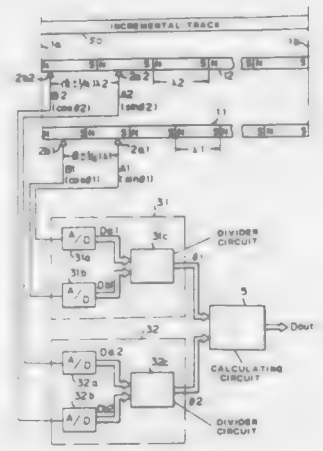
Yoshinori Hayashi, and Kenzaburou Iijima, both of Shizuoka, Japan, assignors to Yamaha Corporation, Japan

Filed Sep. 1, 1989, Ser. No. 402,218

Claims priority, application Japan, Sep. 2, 1988, 63-220035

Int. Cl.[5] H03M *1/22*

U.S. Cl. 341—15 **5 Claims**



1. An absolute encoder comprising:

at least a first and a second signal track, said first and second signal tracks having associated therewith, respectively, a first and second periodic signal, each of said first and second periodic signals having a respective repetition number associated therewith and the repetition number of said first periodic signal having no common factor with the repetition number of said second periodic signal;

a first and a second group of sensors, each group including at least two respective sensors, ech group of sensors arranged facing a respective one of said signal tracks for detecting said periodic signal thereof,

at least two respective A/D converters connected to each said sensor group for outputting signal level data corresponding to said periodic signal; and

an absolute position data producing means connected to said A/D converters for producing, on the basis of said signal level data, an absolute position data indicative of the absolute position of said sensors relative to a starting position of said signal tracks.

5,012,239

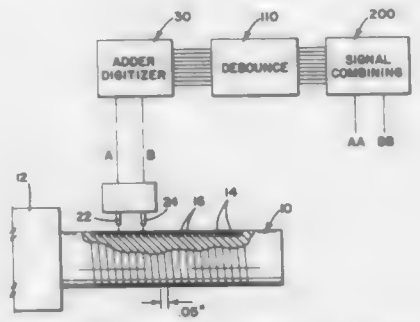
HIGH RESOLUTION POSITION SENSOR CIRCUIT

Elmer L. Griebeler, Chester Township, Geauga County, Ohio, assignor to Visa-Trak Corporation, Cleveland, Ohio

Filed Aug. 21, 1989, Ser. No. 396,356

Int. Cl.[5] H03M *1/30*

U.S. Cl. 341—15 **13 Claims**



1. An object position signal creation apparatus for use with an object having a surface having regularly alternating strips of material disposed over a portion of said object comprising:

at least one transducer pair positioned proximate said surface, said transducer pair producing a pair of input position signals in quadrature varying cyclically, with one cycle of said signals corresponding to one strip alternation width indicative of the position of said object, said input position signals being placed on a first input position signal line and a second input position signal line;

an adder means connected between said first and second input position signal lines and comprising a plurality of terminals, each terminal carrying an adder output signal;

reference signal means producing a reference signal on a reference signal line;

a plurality of comparator means receiving said adder output signals and said reference signal, comparing each of said adder output signals to said reference signal and having a digital output indicative of the results of each said comparison whereby a plurality of digital comparison signals having two states are created, the change of state of each such digital comparison signal corresponding to a discrete object position wherein movement of said object causes singly ordered successive digital comparison signal state changes between logically adjacent digital comparison signals;

debounce circuit means for receiving said plurality of digital comparison signals and for masking all digital comparison signal state changes between digital comparison signals not logically adjacent, to generate a plurality of debounce digital comparison signals; and,

output logic means combining said plurality of debounce digital comparison signals into new digital position signals.

5,012,240

PARALLEL TO SERIAL CONVERTER WITH COMPLEMENTARY BIT INSERTION FOR DISPARITY REDUCTION

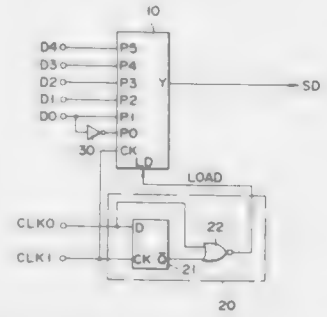
Shoichi Takahashi; Sayohiko Ichiki; Masatoshi Yorozu; Seiji Kunishige; Taro Shibagaki, all of Tokyo; Fumihiko Shimizu, Yokohama; Fumio Fujioka, and Toshinori Kondo, both of Tokyo, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo and Kabushiki Kaisha Toshiba, Kawasaki, both of, Japan

Filed Jun. 26, 1990, Ser. No. 544,259

Claims priority, application Japan, Dec. 28, 1988, 63-333611; Dec. 28, 1988, 63-333612

Int. Cl.[5] H03M *9/00*

U.S. Cl. 341—101 **10 Claims**



1. A signal conversion circuit comprising:

parallel input/serial output type of shift register means supplied with an input signal having a first number (n) of bits for converting a parallel signal to a serial signal the parallel signal containing the input data and constituted by a second predetermined number (n+k) of bits which is at least one (k) bit more than the first predetermined number (n), said shift register means having at least the second predetermined number of input terminals (n+k), and the first predetermined number (n) of successive input terminals of said shift register means being supplied with the input signal;

inverting circuit means for inverting at least one bit of the input signal to apply an inverted bit signal to at least one of the input terminals of the shift register means; and

timing circuit means for providing to the shift register means a first timing signal for permitting the input signal and the inverted signal to be loaded into the shift register means and a second timing signal for permitting the loaded signal to be read out of the shift register means at a predetermined rate.

5,012,241

METHOD FOR DETERMINING AND PROCESSING CORRECTION VALUES FOR SELF-CALIBRATING A/D AND D/A CONVERTERS, AND CALCULATING REGISTER FOR PERFORMING THE METHOD

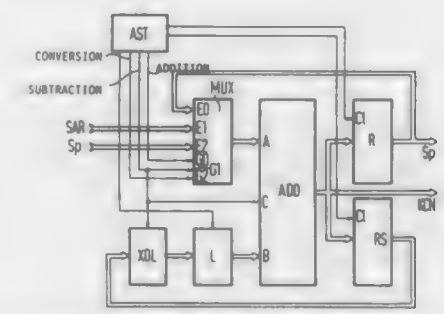
Franz Kuttner, Villach, Austria, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 29, 1989, Ser. No. 415,059

Claims priority, application European Pat. Off., Sep. 30, 1988, 88116235.8

Int. Cl.[5] H03M *1/10*

U.S. Cl. 341—120 **9 Claims**



1. Method for determining and processing correction values according to the principle of successive approximation for self-calibrating A/D and D/A converters, which comprises:

(A) in a calibration phase, beginning with the most significant network element,

(Aa) measuring error terms with a calibration and correction network controlled by a successive approximation register in combination with a calculating register for each weighted network element of a binary weighted converter network controlled by the successive approximation register, by comparison with the sum of all of the lower-weighted network elements;

(Ab) calculating a correction value for each weighted network element of the converter network as one-half the difference of the associated error term and the sum of all of the correction values for higher-weighted network elements, with the calculating register having a sum register; and

(Ac) storing each calculated correction value in a memory; and

(B) in a conversion phase, beginning with the most significant network element,

(Ba) retrieving the associated correction value from the memory and adding the correction value to the contents of the sum register upon setting of a weighted network element,

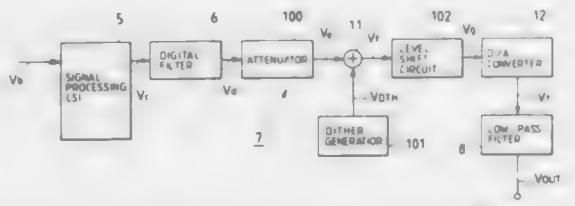
(Bb) outputting the correction value at the calibration and correction network; and

(Bc) adding the correction value to the contents of the sum register or discarding the correction value as a function of a comparator decision.

5,012,242
INPUT DATA PROCESSOR FOR D/A CONVERTER UTILIZING DITHERING

Junichi Yoshio, and Masami Suzuki, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 12, 1990, Ser. No. 491,992
Claims priority, application Japan, Jul. 10, 1989, 1-177624
Int. Cl.[5] H03M *1/00*
U.S. Cl. 341—131 5 Claims

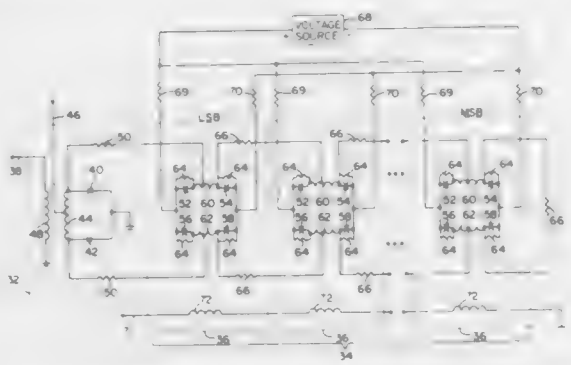


1. An input data processor for a D/A converter for processing digital data which is input to a D/A converter, said digital data corresponding to an alternating signal of the type which crosses a zero level, said processor comprising:
a dither signal adder for adding a dither signal to said digital signal, and to provide a dithered digital signal; and
a level shift circuit for shifting a level of said dithered digital signal, by an amount sufficient to prevent said dithered digital signal from crossing said zero level.

5,012,243
SUPERCONDUCTING ANALOG-TO-DIGITAL CONVERTER WITH FLOATING FOUR-JUNCTION SQUID BIDIRECTIONAL COUNTER

Gregory S. Lee, Los Angeles, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Aug. 24, 1989, Ser. No. 397,932
Int. Cl.[5] H03M *1/00, 1/20;* H03K *3/00*
U.S. Cl. 341—133 24 Claims

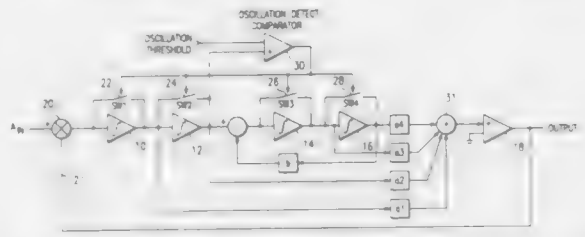


1. A superconducting counting analog-to-digital converter, comprising:
a superconducting quantum interference device (SQUID) quantizer;
means for applying a varying analog signal to the SQUID quantizer; and
a bidirectional binary counter having a plurality of stages of floating four-junction SQUID flip-flops connected together in a cascade arrangement from the least significant bit (LSB) to the most significant bit (MSB);
wherein the quantizer generates up-count and down-count voltage pulses for increasing and decreasing values of the analog signal and the bidirectional binary counter algebraically counts the voltage pulses, increasing the binary count when up-count pulses are received and decreasing the binary count when down-count pulses are received.

5,012,244
DELTA-SIGMA MODULATOR WITH OSCILLATION DETECT AND RESET CIRCUIT

David R. Wellard, Limerick, Ireland; Donald A. Kerth; Bruce P. Del Signore, both of Austin, Tex., and Eric J. Swanson, Buda, all of Tex., assignors to Crystal Semiconductor Corporation, Austin, Tex.

Filed Oct. 27, 1989, Ser. No. 429,214
Int. Cl.[5] H03M *3/00*
U.S. Cl. 341—143 28 Claims

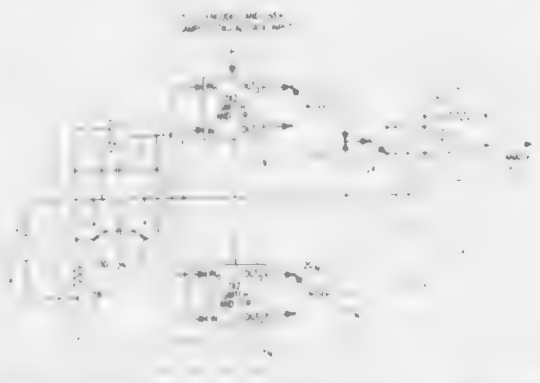


1. An instability detect/correction circuit for an analog modulator in an analog-to-digital converter, the analog modulator having at least two cascaded filter sections, the detect/correction circuit comprising:
a comparator circuit for comparing the operating characteristics of the modulator with a predetermined reference to determine if the analog modulator is operating at or near an unstable condition;
at least one zeroing circuit disposed on at least one of the filter sections and operable to substantially zero the associated filter section to remove accumulated information therefrom, said zeroing circuit operating in response to generation of an instability detection signal; and
a control circuit for generating said instability detection signal for a predetermined amount of time in response to said comparator circuit determining that the modulator is operating at or near an unstable condition.

5,012,245
INTEGRAL SWITCHED CAPACITOR FIR FILTER/DIGITAL-TO-ANALOG CONVERTER FOR SIGMA-DELTA ENCODED DIGITAL AUDIO

Jeffrey W. Scott, Temple, and Thayamkulangara R. Viswanathan, Wyomissing, both of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 4, 1989, Ser. No. 417,219
Int. Cl.[5] H03M *1/66*
U.S. Cl. 341—150 9 Claims

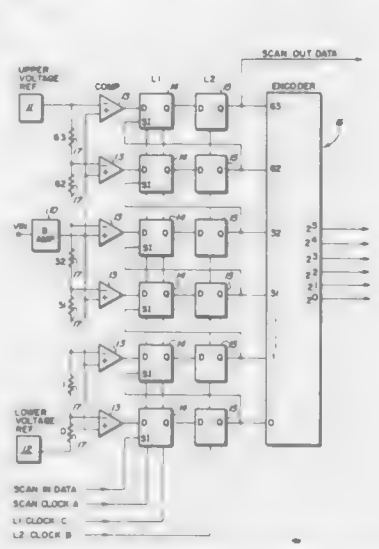


1. In an integrated circuit, a circuit for converting single bit digital input data into analog form, characterized by:
a shift register, having N-taps, for shifting the digital input data;
a plurality of signal capacitors, corresponding to the taps on the shift register, each signal capacitor having a predetermined capacitance and one end coupling to a summing node; and,
a 2×2 switch, responsive to the corresponding tap on the shift register, having two inputs for selectively coupling one of two voltage references to the other end of the signal capacitors depending on the state of the corresponding tap of the shift register and two outputs;
a 2:1 switch for coupling the corresponding one of the plurality of signal capacitors to either of the outputs of the 2×2 switch in response to the state of a clock signal;
wherein signals on the summing node are analog signals corresponding to the digital input data and the capacitances of the signal capacitors represent corresponding tap weight coefficients of a finite impulse response filter.

5,012,246
BICMOS ANALOG-TO-DIGITAL CONVERTER WITH MINIMIZED METASTABILITY

Paul W. Chung, San Jose; Karl R. Hense, Los Altos, both of Calif., and Kim Y. Nguyen, Williston, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 31, 1990, Ser. No. 472,974
Int. Cl.[5] H03M *1/36*
U.S. Cl. 341—160 9 Claims

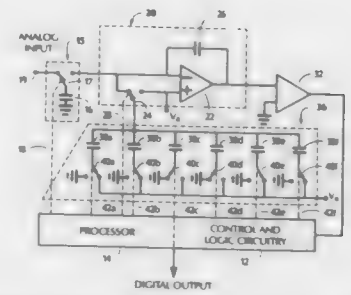


1. An analog-to-digital converter with minimized metastability, comprising:
a plurality of bipolar comparators, each providing from an analog input signal a differential output signal;
a plurality of latch means, providing from the output signal of a corresponding comparator a respective one of a plurality of preselected equal-step binary levels, each latch means comprising,
an edge-triggered dynamic latch for sensing and amplifying a respective one of said output signals to CMOS level;
a static latch; and
transfer gate means responsive solely to the output of the dynamic latch for transferring the respective one of said output signals from the dynamic latch to said static latch only if such output signal is not metastable; and
a plurality of AND gates for receiving the data from the latch means in the form of a thermometer code based on the binary levels and translating the thermometer code into a one hot code.

5,012,247
SWITCHED-CAPACITOR ANALOG-TO-DIGITAL CONVERTER WITH AUTOCALIBRATION

Norman G. Dillman, El Paso, Tex., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 21, 1988, Ser. No. 274,104
Int. Cl.[5] H03M *1/50, 1/10*
U.S. Cl. 341—172 26 Claims



1. An apparatus for providing an analog-to-digital conversion, comprising:
sampling circuit means for receiving an analog signal;
integrator means communicating with said sampling circuit means for integrating said analog signal;
comparator means communicating with said integrator means for comparing an output signal from said integrator means with a reference signal;
discharge circuit means including a plurality of capacitors communicating with said integrator means for receiving and transferring charge from and to said integrator means;
power means communicating with said discharge circuit means; and
processing means communicating with said discharge circuit means for processing information generated by charging and discharging at least a first capacitor of said plurality of capacitors with an amount of charge to determine a digital representation having a number of digital bits of said analog signal, wherein a total absolute amount of charge transferred relative to said plurality of capacitors including said first capacitor remains substantially the same during each cycle in the determination of digital bits using at least said first capacitor.

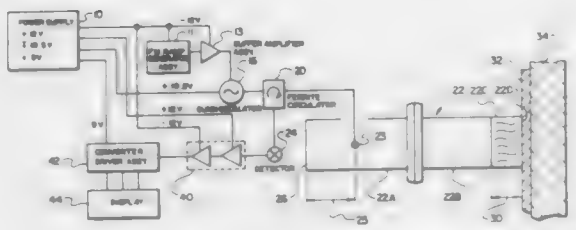
5,012,248
RADAR ABSORPTION MATERIAL THICKNESS TESTING DEVICE

John R. Munro; William R. Jost, both of Simi Valley, and Francis M. Ash, Jr., Burbank, all of Calif., assignors to Lockheed Corporation, Calabasas, Calif.

Continuation of Ser. No. 566,260, Dec. 28, 1988, abandoned. This application Apr. 3, 1987, Ser. No. 35,280
Int. Cl.[5] G01S *13/34*
U.S. Cl. 342—22 5 Claims

1. A device for determining radar absorption material coating thickness comprising:
a radiating element assembly for transmitting RF energy to and receiving reflected RF energy from said material;
detector means coupled to said radiating element adapted to sense said reflected RF energy from said coating and provide a visual display in the form of a voltage representative of the amount of said reflected RF energy said detector means having a time constant;
a source of frequency modulated RF signal said frequency modulated RF signal at a frequency significantly higher than said time constant of said detector means;
circulating means coupled to said radiating element, detector means, and said source of frequency modulated RF signal, said circulating means adapted to direct said source of RF modulated RF signal to said radiating element

assembly and said reflected RF energy to said detector means; and



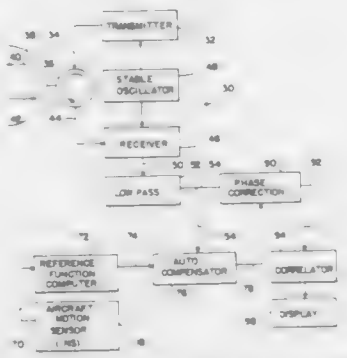
power means coupled to said detector means and said source of frequency modulated RF signal.

5,012,249

SYNTHETIC APERTURE RADAR SYSTEM HAVING A THIRD ORDER TUNED AUTO COMPENSATOR FOR RESIDUAL ANTENNA MOTION AND METHOD FOR ITS USE

Yuen-Kwok Chan, Scarsdale, N.Y., assignor to The Boeing Company, Seattle, Wash.

Filed Nov. 28, 1989, Ser. No. 442,242
Int. Cl.[5] G01S *13/90*
U.S. Cl. 342—25 **15 Claims**



1. In a SAR system that receives reflections of radar signals from a target region, wherein such signals are combined with position signals from a motion sensor indicating antenna position, with the reflected signals and the position signals being integrated into range lines that may be combined to form a radar image, and wherein there may be residual motion between the antenna and the motion sensor, a method of correcting the position signals from the motion sensor to compensate for the amplitude and phase of antenna residual motion that may cause phase corruption in the radar image, the method comprising the steps of:

a. transforming a received radar signal into a range line having a plurality of azimuth positions,

b. transforming said received signal into a frequency spectrum f indicating the reflectivity of point reflectors at said azimuth positions, wherein one point reflector is located at each azimuth position, and wherein each point reflector is represented by a complex number having a certain magnitude and phase angle;

c. sampling the range line for substantially symmetric sets of point reflectors separated consecutively from each other by a distance corresponding to a frequency θ, wherein said frequency corresponds to a mode of residual vibration of the antenna, and wherein said substantially symmetric set includes a main lobe point reflector, a pair of first order point reflectors, and a pair of second order point reflectors, each of said point reflectors being represented by a complex number, with said main lobe point reflector being centrally positioned between said pairs of first and second order point reflectors,

d. calculating a product of a predetermined threshold with the greater magnitude of the two complex numbers $f(x-\theta)$ and $f(x+\theta)$, representing the pair of first order point reflectors,

e. comparing the product with the magnitude of the complex number $f(x)$ representing the main lobe point reflector,

f. establishing first and second criteria of a symmetry relation, depending upon whether the magnitude of the complex number representing the main lobe point reflector is greater or less than the product of the predetermined threshold with the greater magnitude of the two complex numbers representing the pair of first order point reflectors,

g. determining whether the complex numbers representing the main lobe point reflector, the pair of first order point reflectors, and the pair of second order point reflectors meet the first or second symmetry relation, depending upon the result of the comparison of step e,

h. calculating estimates of the amplitude and phase of the antenna residual motion, depending upon the result of the comparison of step e,

i. generating an antenna residual motion signal therefrom, and

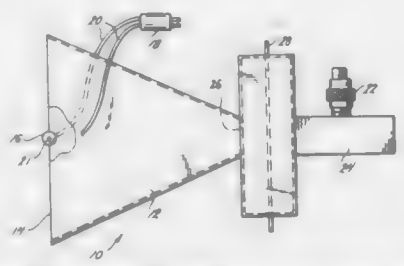
j. combining the antenna residual motion signal with the position signals from the motion sensor, to correct for antenna residual motion between the motion sensor and the antenna.

5,012,250

RADIATOR OF MICROWAVE AND INFRARED ENERGY TO SIMULATE TARGET

Kenny B. Foley, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 30, 1990, Ser. No. 516,374
Int. Cl.[5] G01S *7/50, 7/40*
U.S. Cl. 342—53 **20 Claims**



1. A test device for simulating the infrared and microwave signatures of a dual spectrum target comprising:

an electromagnetic horn having throat and flare portions,

a source of infrared radiation,

means for mounting said source at the intersection of the horizontal and vertical axes of the mouth end of the flare portion of said horn,

means for heating said source

means for absorbing infrared energy and transmitting microwave energy juxtaposed the throat of said horn, and

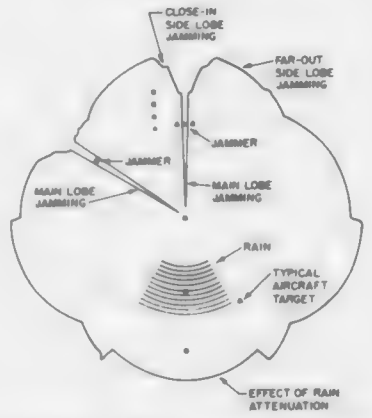
means for exciting said horn, so that the infrared and microwave signatures coincide.

5,012,251

RADAR CAPABILITY DISPLAY APPARATUS

Peter D. Kennedy, Mesa, and Wayne M. Blasi, Phoenix, both of Ariz., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 31, 1990, Ser. No. 533,239
Int. Cl.[5] G01S *7/04, 7/22, 7/40*
U.S. Cl. 342—176 **9 Claims**



1. A radar capability display apparatus comprising in combination:

a scanning radar system transmitting search beams in a surveillance region, said scanning radar system receiving return echoes for each beam angle, range and time, said scanning radar system quantitatively measuring the characteristics of said return echoes, said scanning radar system includes a sidelobe blanking arrangement which utilizes an auxiliary wide beam antenna, an auxiliary receiver, and a controllable video signal inhibitor, said video signal inhibitor including a means for substituting an estimated signal for each echo signal that is deleted by blanking so that the remaining signals in the dwell can be processed and then indicating the fraction of range cells that is blanked in each beam dwell and,

a signal processing computer operatively connected to said scanning radar system to receive and process the characteristics of said return echoes for each beam angle, range and time, said signal processing computer having stored therein programs derived from radar theory equations, said signal processing computer processing and relating said radar theory equations with the characteristics of said return echoes to determine the nature of the interference signal, said signal processing computer processing said interference signal to determine the degree of degradation of said radar system performance, said signal processing computer providing to said radar system a capability signal which establishes the range at which a given type of target can be detected as a function of beam angle around said radar system, said signal processing computer providing a capability signal for each beam angle and thereby providing a radar capability display which depicts the range at which a specified type of target can be detected in each direction within said surveillance region.

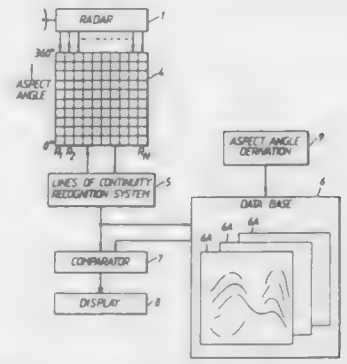
5,012,252

METHODS OF RECOGNIZING TARGETS

Alistair R. Faulkner, Harold Wood, United Kingdom, assignor to GEC Avionics Limited, Rochester, United Kingdom

Filed Jun. 18, 1986, Ser. No. 895,004
Claims priority, application United Kingdom, Jun. 28, 1985, 8516426
Int. Cl.[5] G01S *13/88, 13/10*
U.S. Cl. 342—192 **2 Claims**

1. Apparatus for recognizing a target comprising: a data base containing a respective record, for each of different known types of object; means for recording peaks of amplitude at different ranges obtained from radar returns representing successive range sweeps across a known object as seen from different angles; a processing means for identifying, from said recorded amplitude peaks, lines of continuity in the peaks of amplitude extending through successive range sweeps, with said lines of continuity being representative of major reflection points on the known object; means for comparing the said lines of continuity to derive first spatial information, for each known object, representative of the relative positions of the respective



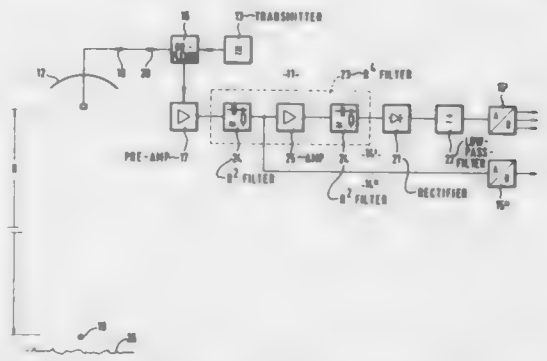
major reflection points, and for storing in said data base the said first spatial information in the said respective record; a pulse radar for producing signals representing range sweeps across an unidentified object; and comparator means for comparing corresponding second spatial information from at least one range sweep received from an unidentified object with the first spatial information recorded for each type of object in the data base to ascertain whether the unidentified object belongs to one of the known types.

5,012,253

RADAR RECEIVER

Manfred Schuster, Eckental, and Harald Wich, Rothenbach, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Fed. Rep. of Germany

Filed Oct. 13, 1989, Ser. No. 420,956
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1988, 3837348
Int. Cl.[5] G01S *13/32*
U.S. Cl. 342—203 **4 Claims**



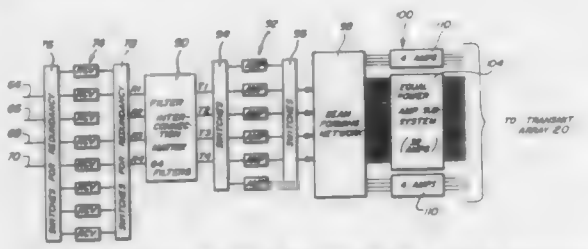
1. A radar receiver having a receiving channel; comprising a high pass filter of the second order which is operated only in a linear characteristics curve range so as to act as an R^4-filter, said filter comprising a series circuit of two R^2-filters, with each R^2-filter including a high pass filter of the first order, and wherein a clutter receiving channel is coupled to and branched off intermediate said two R^2-filters and the output of said high pass filter of the second order being coupled to a demodulating rectifier.

5,012,254

PLURAL LEVEL BEAM-FORMING NETOWRK

James D. Thompson, Manhattan Beach, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 34,460, Mar. 26, 1987, Pat. No. 4,924,234. This application Sep. 25, 1989, Ser. No. 411,810
The portion of the term of this patent subsequent to May 8, 2007, has been disclaimed.
Int. Cl.[5] H01Q *3/22*
U.S. Cl. 342—373 10 Claims



1. A beam-forming network for producing, from at least one transmit signal, a plurality of output signals having a predetermined relationship with respect to one another for providing a predetermined excitation pattern to an array of radiating elements in an antenna system, comprising:

a first line for carrying the transmit signal; and,

a set of second lines spaced from one another and operatively disposed at an angle to and crossing the first line so as to define cross-over points therewith, each of the second lines being coupled to the first line at the cross-over points such that a portion of the electromagnetic energy of the transmit signal carried by the first line is transferable to each of the second lines, each of the second lines having an output adapted to be placed in electromagnetic communication with the array,

the first line having first and second portions spaced apart from one another and respectively defining first and second levels displaced from one another, and

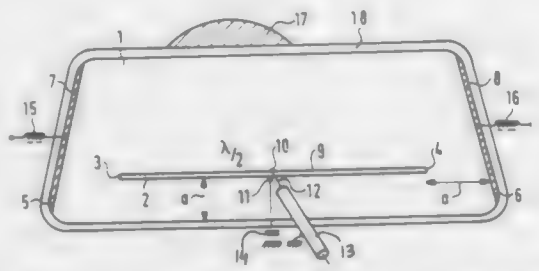
the set of second lines having first and second subsets of second line overlying each other and respectively arranged adjacent to said first and second level, the first and second subsets of second lines being respectively associated with the first and second portions of the first line, such that the first subset of second lines is coupled to the first portion of the first line, and the second subset of second lines is coupled to the second portion of the first line.

5,012,255

COMBINATION ANTENNA AND WINDSHIELD HEATER

Hubert Becker, Hildesheim, Fed. Rep. of Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Mar. 7, 1989, Ser. No. 319,978
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1988, 3808401
Int. Cl.[5] H01Q *1/02*
U.S. Cl. 343—704 9 Claims



1. Tinted motor vehicle windshield having a pair of current supply busses and a tinting vapor-deposited transparent metal coating extending between said supply busses, applied to a glass or plastic substrate,

wherein said supply busses (7,8) are arranged along parallel opposing edges of a vapor-coated region of said windshield;

said metal coating is formed with an essentially rectangular slot (2) therein, having a width and a length between a pair of ends (3,4) said slot extending substantially perpendicular to said supply busses, thereby defining a slot antenna,

a middle point (10) of a first side of the slot is connected to an inner conductor (12) of a coaxial cable;

a middle point (11) of a second side of the slot is coupled to the outer conductor (13) of the coaxial cable;

the slot length and width are so dimensioned, in dependence upon the dielectric constant of the glass or plastic substrate,

that the antenna formed by the slot has an electrical value in an FM reception band on the order of $\lambda/2$,

while the slot has a width, between said first and second sides, which width is kept very small with respect to the value $\lambda/2$, and

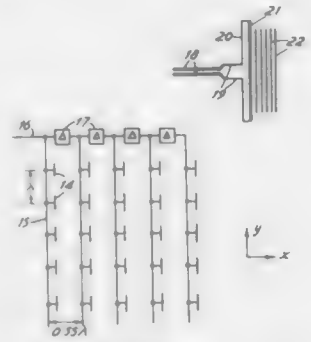
the slot ends (3,4) approach said supply busses no closer than a spacing a which is small with respect to the half-wavelength $\lambda/2$.

5,012,256

ARRAY ANTENNA

Mark C. D. Maddocks, Reigate, United Kingdom, assignor to British Broadcasting Corporation, London, England

PCT No. PCT/GB87/00329, § 371 Date Jan. 26, 1988, § 102(e) Date Jan. 26, 1988, PCT Pub. No. WO87/07772, PCT Pub. Date Dec. 17, 1987
PCT Filed May 13, 1987, Ser. No. 146,373
Claims priority, application United Kingdom, Jun. 2, 1986, 8613322
Int. Cl.[5] H01Q *21/06, 19/30, 3/30*
U.S. Cl. 343—754 26 Claims



1. An array antenna, comprising

a microstrip structure, comprising a groundplane, a front plane parallel to the groundplane and a dielectric layer sandwiched between said groundplane and said front plane;

an array of dipoles lying on the front plane; and

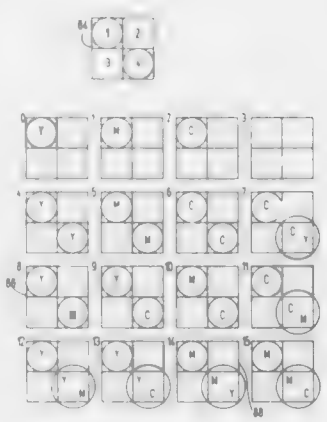
means for squinting the main beam of the array away from a broadside direction at an acute angle relative to the normal to said front plane, said squinting means comprising said groundplane and a plurality of parasitic elements arranged substantially parallel to one another adjacent to each dipole of the dipole array, in an asymmetric pattern with respect to each dipole, said groundplane extending beneath the dipole array and the parasitic elements, said dipole array and said plurality of parasitic elements defining a radiating conductive pattern and said parasitic elements lying with said dipole array in said front plane.

5,012,257

INK JET COLOR GRAPHICS PRINTING

David J. Lowe, and Thomas B. Pritchard, both of Vancouver, Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 16, 1990, Ser. No. 495,011
Int. Cl.[5] B41J *2/21*
U.S. Cl. 346—1.1 20 Claims



1. In a color liquid ink printing system wherein units of liquid ink are deposited on a substrate, a method of printing a pixel of graphics data so as to prevent bleeding of the liquid ink across color field boundaries, the method comprising:

defining as an image superpixel an area of the substrate corresponding to the pixel and consisting of a 2 by 2 array of cells;

within the superpixel, selecting a diagonally adjacent pair of the cells; and

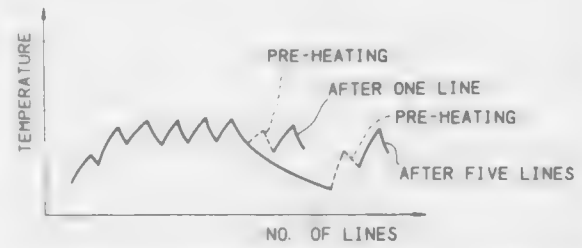
depositing first and second respective units of ink on two diagonally adjacent areas of the substrate corresponding to the selected pair of cells, while leaving white two diagonally adjacent areas of the substrate in positions corresponding to the nonselected pair of cells in the superpixel.

5,012,258

DENSITY CONTROLLED THERMAL PRINT HEAD

Eiichi Sasaki, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 15, 1988, Ser. No. 284,542
Claims priority, application Japan, Dec. 16, 1987, 62-318227; Oct. 7, 1988, 63-253201
Int. Cl.[5] G01D *15/10*
U.S. Cl. 346—1.1 8 Claims



1. A device for driving a thermal print head provided with a plurality of heat-producing elements arranged in the form of a single array, comprising:

counting means for counting the number of void data in an image signal to be supplied to said thermal print head for each of said plurality of heat-producing elements; and

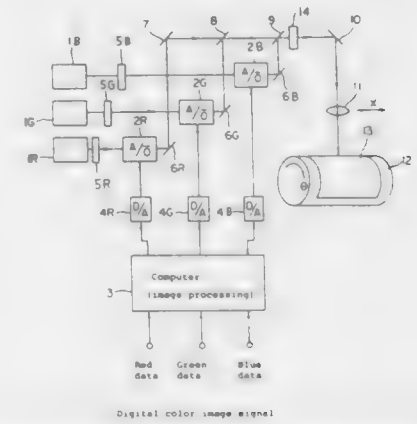
adjusting means for adjusting a respective level of a preheat energy to be applied to each of said plurality of heat-producing elements in accordance with the count of void data counted by said counting means for each of said plurality of heat-producing elements.

5,012,259

COLOR RECORDER WITH GAS LASER BEAM SCANNING

Tsuyoshi Hattori; Masanao Tanaka, and Syoji Matsuzaka, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jan. 23, 1989, Ser. No. 300,339
Claims priority, application Japan, Jan. 28, 1988, 63-17605
Int. Cl.[5] H04N *1/21;* G03C *7/46*
U.S. Cl. 346—108 13 Claims



1. A color image forming system comprising the combination of:

a multi-layer light-sensitive color photographic material having at least one layer of light-sensitive silver halide color photographic material containing silver chloride in an amount of 90 to 100 mole %; and

an optical scanning exposure apparatus for scanning said multi-layer light-sensitive silver halide color photographic material;

said optical scanning exposure apparatus including:

an He-Cd gas laser generating blue light and used as a blue light source for said scanning; and

an He-Ne gas laser generating green light and used as a green light source for said scanning.

5,012,260

IMAGE FORMING APPARATUS FOR OSCILLATING THE RECORDING HEAD AND FIXING SAME WITH RESPECT TO A RECORDING MEDIUM

Shigeru Yoshimura, Yokohama; Tetsuo Suzuki, Kawasaki, and Makoto Takemura, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 310,008, Feb. 9, 1989, abandoned, which is a continuation of Ser. No. 49,166, May 13, 1987, abandoned, which is a division of Ser. No. 844,132, Mar. 26, 1986, Pat. No. 4,692,778. This application Jun. 1, 1990, Ser. No. 532,107
Claims priority, application Japan, Mar. 28, 1985, 60-65103; Mar. 28, 1985, 60-65106; Mar. 28, 1985, 60-65108; Mar. 28, 1985, 60-65112; Mar. 28, 1985, 60-65114; Mar. 28, 1985, 60-65116; Mar. 28, 1985, 60-65117; Mar. 28, 1985, 60-65118; Mar. 28, 1985, 60-65119; Mar. 28, 1985, 60-65120; Mar. 28, 1985. 60-65121
Int. Cl.[5] B41J *2/01;* G01D *15/24*
U.S. Cl. 346—139 R 12 Claims

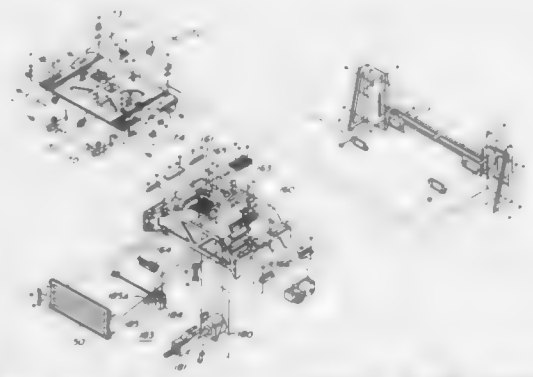
1. An image forming apparatus comprising:

recording means for recording an image on a recording medium;

means for providing a reference surface;

oscillating means, coupled to said recording means, for oscillating said recording means toward and away from the recording medium, wherein said oscillating means

permits said recording means to pivot so as to abut said reference surface following movement of said recording means toward the recording medium by said oscillating means; and



fixing means for preventing oscillation of said recording means by said oscillating means and for fixing said recording means with respect to the recording medium only when said recording means is away from the recording medium.

5,012,261

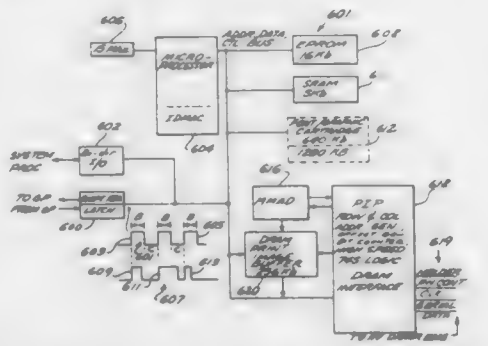
PRINTING APPARATUS AND METHOD

Alfred L. Fulton; Kishor M. Lakhani; Scott D. Sampson, and Kent Lowman, all of Huntsville, Ala., assignors to SCI Systems, Inc., Huntsville, Ala.

Division of Ser. No. 51,046, May 15, 1987, Pat. No. 4,851,864. This application Mar. 22, 1989, Ser. No. 327,256

Int. Cl.[5] G01D *15/00*

U.S. Cl. 346—159 **14 Claims**



1. A printer for printing vehicular transportation documents, said printer comprising, in combination, a print engine, feeder means for feeding document forms to be printed into said print engine, and computer control means programmed for controlling the printing of vehicular transportation passenger information on said forms by said print engine, in which said print engine includes a stationary print head with an array of spot-forming openings spanning the width of one of said forms, a firing circuit for selectively creating ionization at each of said openings, input energization means for said firing circuit, said energization means including input pulse forming means, and control means responsive to operator control for varying the width of each of said pulses by the same amount to vary the darkness of images formed by said print engine.

5,012,262

STROBE DRIVING DEVICE FOR USE IN CAMERA HAVING ZOON LENS

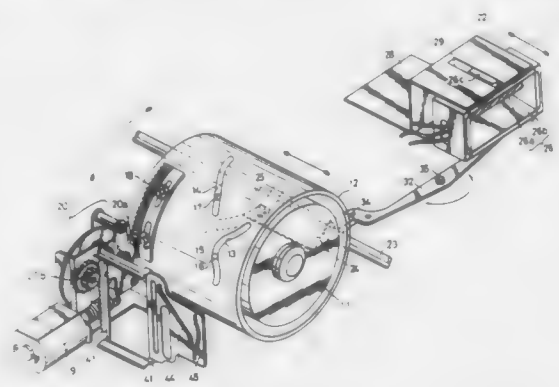
Makoto Mogamiya, and Tahei Morisawa, both of Tokyo, Japan, assignors to Asahi Kogala Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1989, Ser. No. 413,108

Claims priority, application Japan, Sep. 29, 1988, 63-245594

Int. Cl.[5] G03B *15/03*

U.S. Cl. 354—149.1 **10 Claims**



6. A strobe driving device comprising:

a zoom photographing lens;

a zoom strobe device disposed side by side with said zoom photographing lens with their respective optical axes being parallel to each other, said zoom strobe device having a movable member;

a cam member for driving said zoom photographing lens; and

an interlocking lever which transmits the movement of said cam member to the movable member of said zoom strobe device, said lever having a pivot point halfway between said zoom photographing lens and said zoom strobe device.

5,012,263

BELT DRIVE

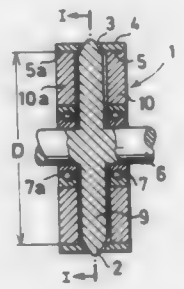
Bernward Tull, and Hans-Dieter Pusch, both of Aalen, Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Jun. 18, 1990, Ser. No. 539,240

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1989, 3920182

Int. Cl.[5] G03B *9/28;* **F16H** *55/30*

U.S. Cl. 354—241 **10 Claims**



10. A focal plane shutter for a photogrammetric camera, the shutter comprising:

a frame;

slit means movably mounted in said frame and defining a slit;

belt drive means for driving said slit means to move said slit, said belt drive including:

a belt having a plurality of perforations formed therein;

a drive pulley having a plurality of radially extending projections formed thereon for engaging said perforations;

drive means for rotatively driving said drive pulley so as to enable said drive pulley to impart movement to said belt at said perforations;

said belt having an inside surface facing toward said drive pulley;

a member mounted on said drive means and defining a supporting surface means for supporting said belt at said inside surface laterally of said projections;

rotating decoupling means interposed between said supporting surface means and said drive means so as to permit said supporting surface means to rotate independently of said drive pulley; and,

said member having a first diameter defined by said supporting surface means; said pulley having a second diameter measured between said projections; and, said first diameter being greater than said second diameter.

5,012,264

COUPLING DEVICE AND POWER DEVICE FOR SUPPLYING ELECTRICAL POWER AS THE COUPLING IS ESTABLISHED

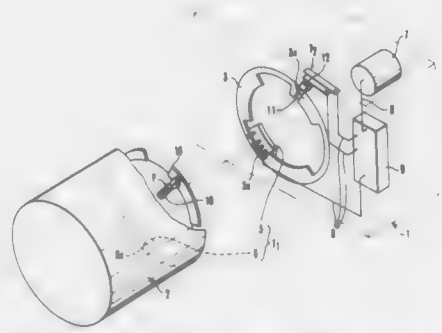
Masatoshi Nagano, and Kenichi Kawamoto, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 234,513, Aug. 22, 1988, abandoned, which is a division of Ser. No. 175,591, Mar. 28, 1988, abandoned, which is a continuation of Ser. No. 51,042, May 15, 1987, abandoned. This application Jan. 26, 1990, Ser. No. 471,698

Claims priority, application Japan, May 16, 1986, 61-110849; May 21, 1986, 61-076741

Int. Cl.[5] G03B *17/12*

U.S. Cl. 354—286 **25 Claims**



1. A system for connecting a first functional body with a second functional body which is releasably attachable to said first functional body, comprising:

(1) said first functional body including:

(a) a mount portion to be connected with said second functional body; and

(b) a lock member supported movably relative to said first functional body for locking said second functional body; and

(2) said second functional body including:

(a) a mount portion to be connected with said first functional body, said mount portion having a mount pawl for mounting;

(b) an engaging portion formed on said mount pawl to engage with said lock member; and

(c) detecting means for detecting that said lock member is engaged with said engaging portion, said detecting means issuing an output by which the connection between said first functional body and said second functional body is judged.

5,012,265

PANHEAD

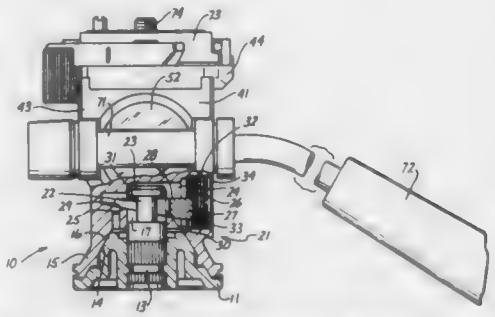
Koichiro Nakatani, Tokyo, Japan, assignor to Velbon International Corporation, Torrance, Calif.

Filed Jan. 26, 1989, Ser. No. 302,011

Claims priority, application Japan, Feb. 22, 1988, 63-6890

Int. Cl.[5] G03B *17/00*

U.S. Cl. 354—293 **7 Claims**



1. In a panning head for a photographic tripod having a base and a panning body with first and second opposing bearing surfaces respectively for relative rotation about a pan axis, the improvement comprising:

a male element on one of said base and panning body extending along said axis into a cavity in the other of said base and panning body, said male element having a third bearing surface and said other having an opening transverse to said axis including a fourth bearing surface; and

wedge means interposed between said third and fourth bearing surfaces and displaceable transversely to said pan axis for adjusting the frictional engagement between said bearing surfaces to a degree determined by the position of said wedge means, thereby setting the degree of effort required to turn said panning body on said base.

5,012,266

APPARATUS FOR PROCESSING LIGHT-SENSITIVE MATERIALS

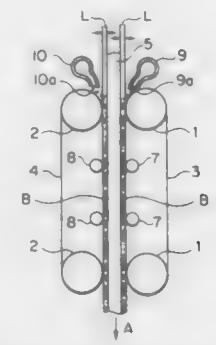
Kiyoshi Sato; Shinichi Ohtani, and Mikio Kawasaki, all of Tokyo, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jul. 18, 1990, Ser. No. 555,060

Claims priority, application Japan, Jul. 28, 1989, 1-195647

Int. Cl.[5] G03D *5/04*

U.S. Cl. 354—319 **3 Claims**



1. An apparatus for processing a sheet-shaped silver halide photographic light sensitive material having a hydrophilic colloidal layer on a substrate, comprising:

feed means for feeding developing solution containing hydroquinones;

conveying means including a pair of conveying belts disposed to face each other with a gap, wherein the gap is made so that the pair of conveying belts hold the developing solution therebetween; and

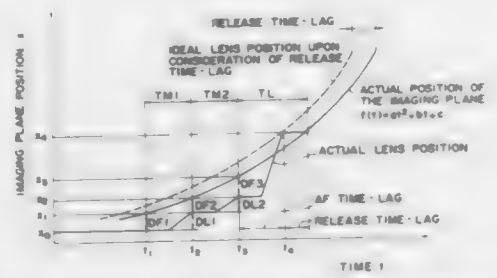
the conveying means conveying the sheet-shaped material

with the developing solution between the pair of conveying belts.

5,012,267
FOCUS ADJUSTING APPARATUS

Masaki Higashihara, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 259,783, Oct. 19, 1988, abandoned.
This application May 2, 1990, Ser. No. 519,251
Claims priority, application Japan, Oct. 21, 1987, 62-263728
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—402 14 Claims



1. A focus adjusting apparatus in which a detection of a defocus amount by a focus detection circuit and lens driving according to said defocus amount are repeatedly effected, said apparatus, comprising:

(a) a data introducing circuit for introducing (1) at least a first defocus amount obtained in a latest focus detection operation and second and third defocus amounts obtained in focus detection operations effected one and two times previous to said latest focus detection operation, and (2) time data representing the actual time at which the focus detection operations were performed;

(b) a calculation circuit or (1) performing a first calculation to determine coefficients of a functional equation having a power greater than one wherein said equation represents movement of the imaging plane, said coefficients being determined on the basis of said first, second, and third defocus amounts and time data corresponding thereto, and for (2) performing a second calculation in which the imaging plane position or a lens driving amount corresponding to said imaging plane position is determined on the basis of the functional equation, coefficients of which have been determined by said first calculation; and

(c) a lens driving circuit for driving the lens on the basis of the result of said second calculation.

5,012,268
EXPOSURE CONTROL DEVICE FOR INTERCHANGEABLE LENS CAMERA

Isamu Hirai, Tokyo, Japan, assignor to Asaha Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 394,287, Aug. 11, 1989, abandoned, which is a continuation of Ser. No. 309,896, Feb. 8, 1989, abandoned, which is a continuation of Ser. No. 129,205, Dec. 7, 1987, abandoned. This application Jun. 5, 1990, Ser. No. 534,327
Claims priority, application Japan, Dec. 5, 1986, 61-288903
Int. Cl.[5] G03B *7/091, 7/20*
U.S. Cl. 354—410 17 Claims

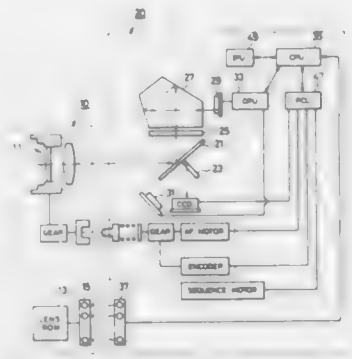
1. In an exposure control device in which, in determining a correct amount of exposure for an interchangeable-lens camera using a photometric output ip obtained through a photographing lens, correction is effected such that said photometric output ip and an open-aperture F number A_{vmin} of said photographing lens system satisfy the proportional relation:

$$2A_{vmin} \propto 1/ip$$

the improvement comprising:

means for obtaining an amount of correction mv_1 to correct a deviation from said proportional relation attributed to a difference in optical characteristics between different camera bodies and a difference in focal length between different photographing lenses, wherein said amount of correction is determined according to a characteristic equation in which said amount of correction is inversely proportional to focal length and in which there is a coefficient of proportionality, said coefficient being predetermined such that said deviation from said proportional relation is substantially zero for one of said different camera bodies with each one of said different photographing lens, said obtaining means further comprising means for storing said coefficient in said one camera body, and means for storing said focal length in said one lens; and

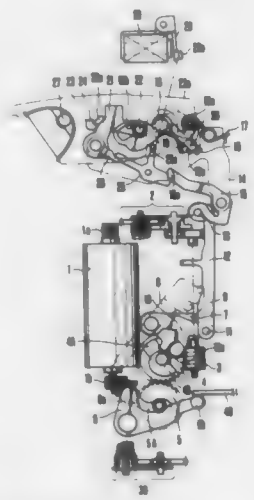
means for correcting said deviation from said proportional relation according to said amount of correction.



5,012,269
CAMERA

Yoichi Tosaka, and Shoji Kaihara, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1989, Ser. No. 375,952
Claims priority, application Japan, Jul. 6, 1988, 63-167967
Int. Cl.[5] G03B *7/00*
U.S. Cl. 354—419 5 Claims



1. A camera comprising:

(a) a flash device arranged to be movable between a pop-up position and a retracted position;

(b) a first moving mechanism for moving said flash device from said retracted position to said pop-up position;

(c) a charging mechanism for charging a shutter to bring said shutter from a state of having completed photographing into a state of being ready for photographing; and

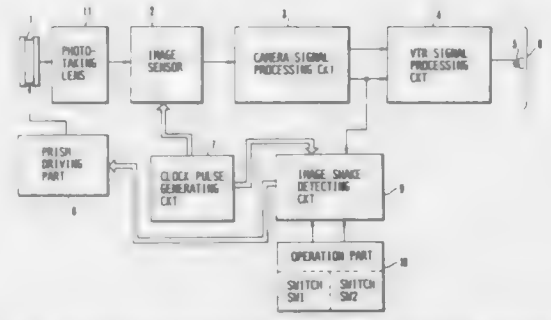
(d) a second moving mechanism for moving said flash device from said pop-up position to said retracted position, said second moving mechanism being arranged to move said flash device from said pop-up position to said retracted position in association with a charging action of said charging mechanism,

wherein an action of said second moving mechanism to move said flash device to said retracted position is arranged to be completed prior to completion of the charging action of said charging mechanism.

5,012,270
IMAGE SHAKE DETECTING DEVICE

Masayoshi Sekine; Toshiyuki Nakajima, both of Tokyo; Takashi Kai, Kanagawa; Katsuji Yoshimura, Shizuoka, and Masamichi Toyama, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 6, 1989, Ser. No. 319,658
Claims priority, application Japan, Mar. 10, 1988, 63-057670; Apr. 15, 1988, 63-092695; Apr. 15, 1988, 63-092697; May 19, 1988, 63-123625; Oct. 27, 1988, 63-269554
Int. Cl.[5] G03B *7/08*
U.S. Cl. 354—430 56 Claims



1. An image shake detecting device for detecting a shake of an image on an image sensing plane on the basis of an image signal output from image sensing means, comprising:

a) first detection means for detecting the displacement of the image on the basis of an image signal corresponding to a first detection area set on said image sensing plane;

b) second detection means for detecting the displacement of the image on the basis of an image signal corresponding to a second detection area set on said image sensing plane;

c) switching means for selecting one of said first detection means and said second detection means; and

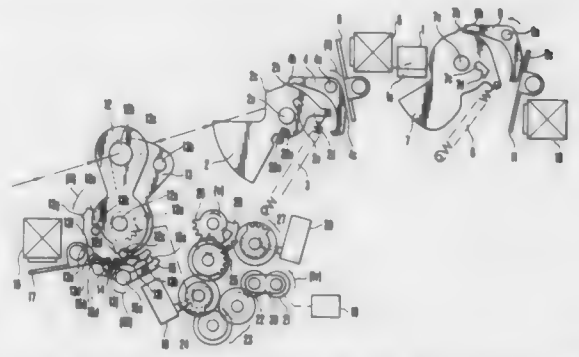
d) image shake detecting means for computing the shake of the image on the basis of an output of said first detection means or said second detection means selected by said switching means.

5,012,271
EXPOSURE CONTROL DEVICE

Akimasa Nishimura, Kanagawa; Shigeo Ogura, Tokyo; Ryosuke Miyamoto, Kanagawa; Nobuo Tezuka, Kanagawa, and Nobuo Fukushima, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 165,739, Mar. 9, 1988, abandoned. This application May 14, 1990, Ser. No. 523,262
Claims priority, application Japan, Mar. 12, 1987, 62-057353; Mar. 12, 1987, 62-057354; Mar. 25, 1987, 62-070928
Int. Cl.[5] G03B *7/08*
U.S. Cl. 354—456 12 Claims

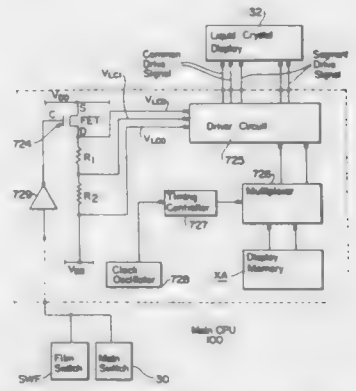
1. An image sensing device comprising an image sensor, a light receiving photo-sensitive element other than said image sensor, and control means receiving the output signals of said image sensor and said light receiving photo-sensitive element, and responsive to indication of relatively high speed continuous or still photography for controlling an accumulating state of photoelectric information of said image sensor with an exposure control signal formed by using both the light receiving element output signal and the image sensor output signal during still photography and for controlling the accumulating state of photoelectric information of said image sensor with said control signal during high speed continuous photography.



5,012,272
INDICATION CONTROL UNIT FOR AN ELECTRONICALLY CONTROLLED CAMERA

Yasushi Tabata, Ichikawa; Takeo Kobayashi, Tokyo; Norio Numako, Tochigi, and Katsutoshi Nagai, Kawaguchi, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 374,075, Jun. 30, 1989. This application Jul. 26, 1989, Ser. No. 385,531
Claims priority, application Japan, Jun. 30, 1988, 63-87118; Jun. 30, 1988, 63-87119; Jun. 30, 1988, 63-87120; Jun. 30, 1988, 63-163895; Jun. 30, 1988, 63-163896; Jun. 30, 1988, 63-163897; Jun. 30, 1988, 63-163898; Jun. 30, 1988, 63-163899; Jul. 26, 1988, 63-186549
Int. Cl.[5] G03B *17/18, 1/00*
U.S. Cl. 354—465 24 Claims



1. An indication control unit for an electronically controlled camera, comprising:

means for indicating photographic information;

means for supplying electrical power to said indicator means for indicating;

means for detecting the presence of film in said camera;

means for switching said camera between an operable, picture taking state and an inoperable, non-picture taking state; and

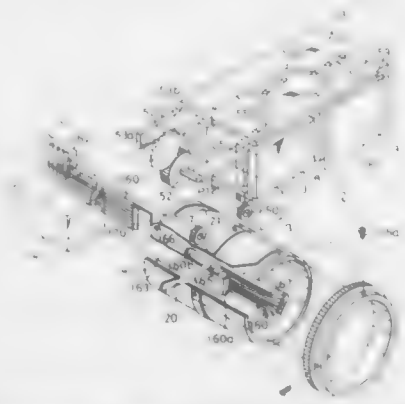
means for disabling said means for supplying electrical power if said camera is in said inoperable, non-picture taking state and said film presence detecting means fails to detect film in said camera.

5,012,273

LENS SHUTTER TYPE OF CAMERA INCLUDING ZOOM LENS

Susso Nakamura; Etsuro Nishio, and Haruo Ishii, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 144,030, Jan. 7, 1988, Pat. No. 4,944,030.
This application Feb. 14, 1990, Ser. No. 486,915
Claims priority, application Japan, May 12, 1986, 61-108278; May 12, 1986, 61-108279; May 28, 1986, 61-80861; Jun. 2, 1986, 61-83932; Jun. 2, 1986, 61-127496; Jun. 21, 1986, 61-145470; Jun. 26, 1986, 61-150995; Aug. 15, 1986, 61-125045; Aug. 22, 1986, 61-196911; Aug. 29, 1986, 61-132658; Aug. 29, 1986, 61-132659; Aug. 29, 1986, 61-132660; Aug. 29, 1986, 61-132661; May 12, 1987, 62-00293; May 28, 1987, 61-80862
Int. Cl.[5] G03B *5/00, 7/00*
U.S. Cl. 354—485 27 Claims



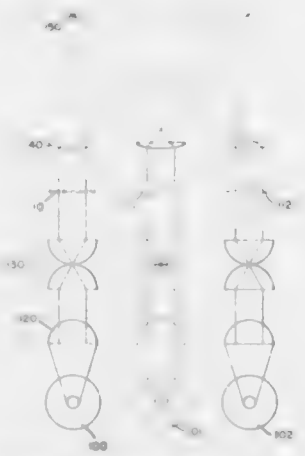
1. In a lens shutter type of camera having a flexible printed circuit board (FPC) for conducting camera operational signals from a camera body to a shutter block attached to an axially movable lens barrel, a guide plate for said FPC, said guide plate comprising means for guiding movement of said FPC as said lens barrel moves axially.

5,012,274

ACTIVE MATRIX LCD IMAGE PROJECTION SYSTEM

Eugene Dolgoff, 936 Roxbury Dr., Westbury, N.Y. 11590

Continuation-in-part of Ser. No. 140,233, Dec. 31, 1987, abandoned. This application Dec. 23, 1988, Ser. No. 290,040
Int. Cl.[5] G09G *3/36*
U.S. Cl. 340—702 All Claims



1. A video display system, comprising:
a liquid crystal display (LCD) device having a plurality of pixels arranged in a matrix for forming an image;
a solid state storage element associated with each pixel for storing a respective pixel control signal;
control means associated with said solid state storage elements for controlling the operation thereof, said control means, storage elements and LCD forming an active matrix LCD, said active matrix including dead spaces;
means for maintaining color registration of pixel images; and
means for directly projecting the image formed by said LCD onto a viewing area while maintaining color registration such that registered pixel images are caused to eliminate dead spaces between pixels.

5,012,275

RIGHT-TO-LEFT SCANNING SYSTEM FOR COPYING DOCUMENTS OR BOUND BOOKS

Edward C. Bock, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 19, 1990, Ser. No. 495,193
Int. Cl.[5] G03B *27/32, 27/52*
U.S. Cl. 355—25 4 Claims



1. An optical scanning and imaging system for scan/illuminating a document placed on a document platen and for projecting an image along an optical path onto a photosensitive image medium to form a latent image of the document thereon, said optical scanning and imaging system comprising, in combination an illumination and imaging assembly including:
a document illumination lamp, and a scan mirror, said assembly adapted to move beneath said platen in a scanning mode in a right-to-left scan operation beginning at a start of scan position S_0 coinciding with the right edge of the document,
said illumination and imaging assembly further including a photosensor means adapted to detect the right edge of the document to be scanned and to generate a signal indicating such detection, and
control means adapted to enable a right-to-left scanning operation beginning at the start of scan position S_0 upon receipt of the detection signal from the photosensor means.

5,012,276

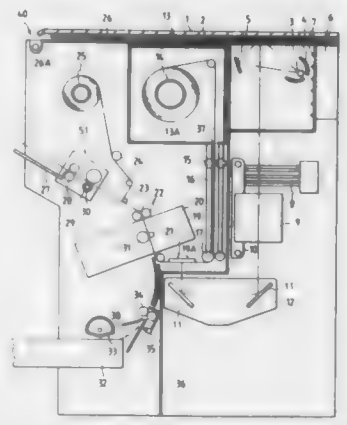
IMAGE RECORDING APPARATUS

Yoshinori Endo, Toyota, and Kenji Sakakibara, Ichinomiya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Japan

Filed Aug. 17, 1989, Ser. No. 395,359
Claims priority, application Japan, Aug. 19, 1988, 63-206875
Int. Cl.[5] G03B *27/32*
U.S. Cl. 355—27 5 Claims

1. An image recording apparatus for producing an output color image on an image recording medium, the output image corresponding to an image of an original, the apparatus comprising:
an exposure unit having a light source and providing an exposure zone, the exposure unit irradiating light from the light source toward the original and applying the light from the original toward the image recording medium positioned at the exposure zone for producing a latent image thereon, an optical path being defined from the light source to the exposure zone;

an optical system provided between the light source and the exposure zone and at the optical path, the optical system having a color tone controlling member comprising optical filters, each of the filters being insertable and retractable with respect to the optical path, the filters defining a color tone of the output image in the image recording medium;



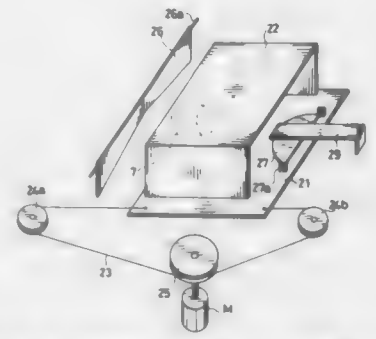
a developer unit positioned downstream of the exposure zone for developing the latent image; and
color tone compensation means for compensating the color tone defined by the filters, the compensating means being connected to the filters and controlling one of light irradiation amount of the light source and an exposure speed in accordance with an insertion amount of the optical filters with respect to the optical path.

5,012,277

IMAGE EXPOSURE DEVICE

Haruhiro Hyodo, and Hideyuki Kurahashi, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 18, 1989, Ser. No. 453,397
Claims priority, application Japan, Dec. 20, 1988, 63-322993
Int. Cl.[5] G03B *27/52, 27/72*
U.S. Cl. 355—55 20 Claims



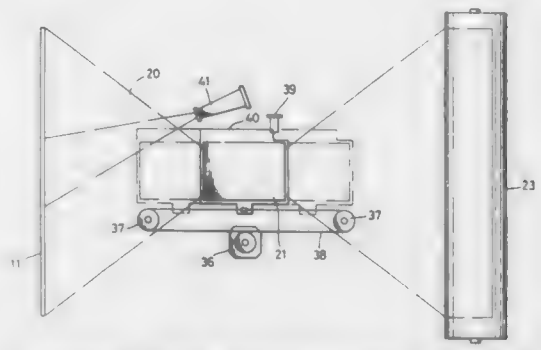
1. A device for exposing a document image and projecting a reflected light therefrom to a projection surface through a lens, comprising:
supporting means for supporting a document;
irradiating means for irradiating a light on a document image of the document supported by said supporting means;
a projection surface on which the document image is to be projected;
a lens for receiving a reflected light from the document image and passing the reflected light onto said projection surface;
lens driving means for moving said lens to change a size ratio of a projected image on said projection surface relative to the document image; and,
first and second shielding members for compensating a non-uniformity of a light amount irradiated on said projection surface, said first shielding member being disposed on an optical path between said supporting means and said lens when the size ratio is less than a predetermined first ratio, and said second shielding member being disposed on an optical path between said lens and said projection surface when the size ratio is greater than a predetermined second ratio.

5,012,278

DOCUMENT DENSITY DETECTOR APPARATUS

Shuji Yamada, Hyogo, and Hironori Ando, Osaka, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jun. 22, 1989, Ser. No. 369,946
Claims priority, application Japan, Jun. 25, 1988, 63-157710; Aug. 31, 1988, 63-217855
Int. Cl.[5] G03B *27/52*
U.S. Cl. 355—55 14 Claims



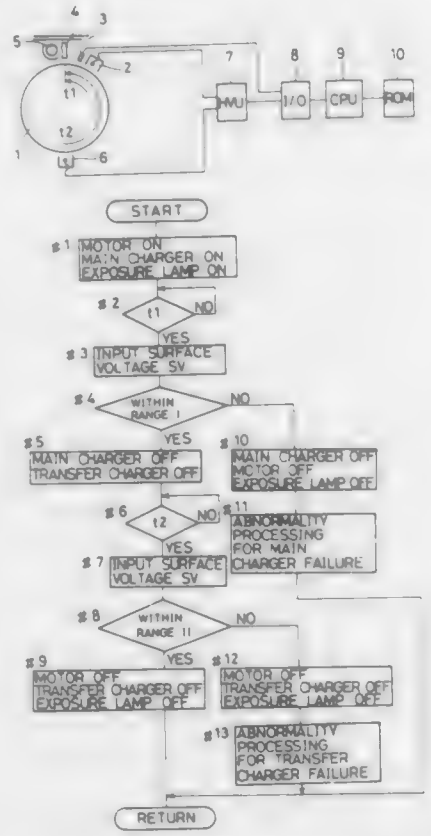
1. A document density detector apparatus to be used for an image forming apparatus in which a focal lens is disposed in an optical pass for guiding light reflected from the surface of a document, to the surface of a light receiving body, and a light sensor for detecting the density of the document is fixed outside of an area through which the light reflected from the surface of the document passes before illuminating a predetermined surface of said light receiving body, and in which an image of the document formed on said light receiving body may be enlarged or reduced at the desired magnification by moving said focal lens along the optical pass in the direction toward the document or toward said light receiving body, comprising:
reference position setting means for setting a reference position of said focal lens such that said light sensor receives the light reflected from the document without light interception by said focal lens;
first judging means for supplying a first judging signal when there is set copying magnification which causes said focal lens to be moved from said reference position toward a position nearer to the document;
second judging means for supplying a second judging signal when, before image forming, there is set a mode for executing automatic detection of the density of a document; and
lens moving means for receiving said signals and for moving said focal lens to said reference position when said lens moving means receives said first and second judging signals from said first and second judging means, said light sensor being operable to sense the density of a document when said focal lens is at said reference position.

5,012,279

ABNORMALITY-DETECTING METHOD FOR AN ELECTROSTATIC IMAGE-RECORDING MACHINE

Yoshihiro Nakajima, Osaka, and Akihiro Takada, Neyagawa, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jun. 14, 1989, Ser. No. 365,617
Claims priority, application Japan, Jun. 30, 1988, 63-163142; Jun. 30, 1988, 63-163143; Jun. 30, 1988, 63-163144; Jun. 30, 1988, 63-163145; Jun. 30, 1988, 63-163146
Int. Cl.[5] G03G *15/00, 15/06, 15/16, 15/052*
U.S. Cl. 355—205 3 Claims



1. A method for detecting an abnormality of a developing roller of a photostatic image-recording machine which includes a photoreceptor drum, a charging system for charging the photoreceptor drum, a developing roller for transferring toner power from the developing roller to the drum by a voltage difference between a bias voltage of the developing roller and a charger voltage of the photoreceptor drum, and a potentiometer means for controlling the charging voltage of the photoreceptor drum, the method comprising the steps of:

rotating the photoreceptor drum;

charging the photoreceptor drum using the charging system;

activating the developing roller with a bias voltage;

detecting the surface voltage of the photoreceptor drum using the potentiometer means when the part of the photoreceptor drum that has been charged by the charging system and has transferred the toner powder from the developing roller with the bias voltage comes to the potentiometer means;

comparing the detected surface voltage with a reference voltage range, the reference voltage range being a predetermined range for a normally operating charging system and developing roller; and

judging that the developing roller is abnormal when the detected surface voltage is out of the reference voltage range;

wherein the surface voltage of the photoreceptor drum is detected three times, the first time being after the photoreceptor drum is charged by the charging system, the second time being after the photoreceptor drum has transferred the toner powder from the developing roller with the minimum value of the bias voltage, and the third time being after the photoreceptor drum has transferred the toner powder from the developing roller with the maximum value of the bias voltage;

a reference voltage range is predetermined for each of the three times; and

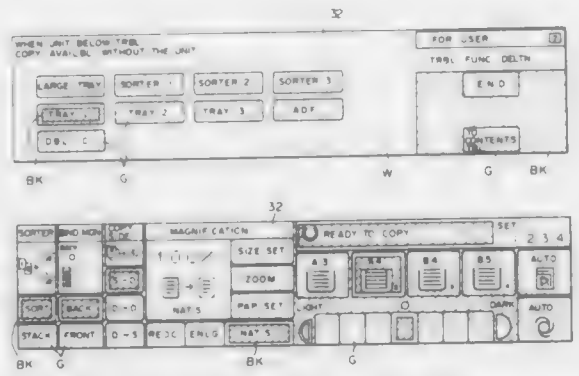
the developing roller is judged abnormal when any one of the detected surface voltage values is out of the corresponding reference voltage range.

5,012,280

COPIER WHICH DELETES INOPERATIVE FUNCTIONS FROM CONTROL PANEL

Takashi Tsutsumi, Tokyo; Shozo Miyawaki, Urawa, and Kouichi Kanaya, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 1, 1989, Ser. No. 430,588
Claims priority, application Japan, Nov. 9, 1988, 63-283375
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—206 12 Claims



1. A function selectable operating panel of a copying apparatus having an operation mode for setting a function selected from a plurality of functions of the copying apparatus, the operating panel comprising;

a display surface provided with a touch panel sensor means for designating a function from said plurality of functions;

the designated function being deleted from the display surface for prohibiting use of the designated function when the designated function is determined to be inoperative.

5,012,281

IMAGE FORMING APPARATUS HAVING A JAM COUNTER ADAPTED TO BE DISABLED UNTIL A READY FOR COPY STATE IS CONFIRMED

Keiji Kusumoto; Hirokazu Yamada, and Hiroyuki Ideyama, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 26, 1988, Ser. No. 224,142
Claims priority, application Japan, Jul. 27, 1987, 62-188494; Jul. 27, 1987, 62-1888495; Jul. 27, 1987, 62-188496; Sep. 14, 1987, 62-230456
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—206 16 Claims

1. An image forming apparatus comprising:

(a) image producing means for producing an image on a sheet medium, the image producing means comprising

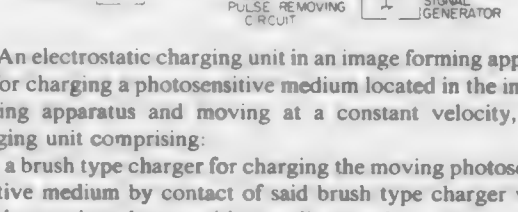
sheet supply means capable of successively supplying sheet media,

an image producing stage for producing an image on each of the sheet media supplied from said sheet supply means,

sheet discharge means for discharging from said image producing stage each of the sheet media each having an image produced thereon,

(b) detecting means for detecting an occurrence of jamming of a sheet medium between said sheet supply means and said sheet discharge means,

(c) a jam counter operative to count the number of occurrences of jamming of said sheet medium, said jam counter being activated to increment a counter value each time an occurrence of jamming is detected by said detecting means, and



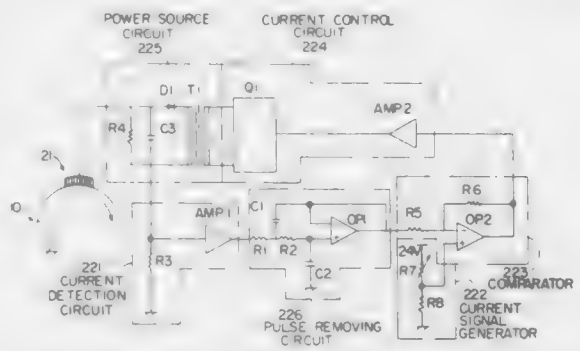
(d) control means for monitoring the operational conditions of said image producing means to confirm a ready to copy state responsive to a sheet medium supplied from said sheet supply means after an occurrence of jamming of a sheet medium has been detected by said detecting means, and prohibiting said jam counter from incrementing the counter value until the ready for copy state is confirmed, thereby preventing the jam counter from dual counting.

5,012,282

BRUSH CONTACT TYPE CHARGING UNIT IN AN IMAGE FORMING APPARATUS

Masahiro Wanou, Kawasaki; Masatoshi Kimura, Ebina, and Junzo Nakajima, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 11, 1989, Ser. No. 295,557
Claims priority, application Japan, Feb. 25, 1988, 63-43223
Int. Cl.[5] G03G *15/02*
U.S. Cl. 355—219 18 Claims



1. An electrostatic charging unit in an image forming apparatus, for charging a photosensitive medium located in the image forming apparatus and moving at a constant velocity, the charging unit comprising:

(a) a brush type charger for charging the moving photosensitive medium by contact of said brush type charger with the moving photosensitive medium; and

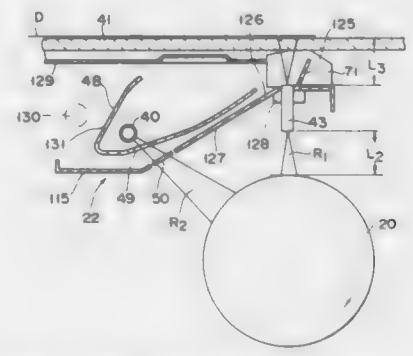
(b) a constant-current regulated power supply for supplying a current to the moving photosensitive medium through said brush type charger and controlling the current so as to flow constantly, said constant-current regulated power supply including a pulse current removing circuit for making the current flow free from the constant flow control of the current when the current changes in a state of pulse.

5,012,283

COPYING APPARATUS HAVING A LAMP TO FORM OR ERASE AN IMAGE

Mamoru Shimono; Tomoyuki Asada; Taiichi Kawaguchi; Yoichi Taya, all of Yokohama; Kouji Yukinaga, Kawasaki; Susumu Nomura, Kawasaki, and Hajime Tagawa, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 17, 1990, Ser. No. 466,674
Claims priority, application Japan, Jan. 20, 1989, 1-11614
Int. Cl.[5] G03G *15/04*
U.S. Cl. 355—229 4 Claims



1. An image forming apparatus comprising:

lamp means for emitting light to an original and forming an electrostatic latent image on an image carrier by using light reflected from said original, said lamp means having a plurality of light-emitting portions and non-light-emitting portions which are alternately linearly connected to each other; and

reflector means for directing the light emitted from said lamp means toward the original, said reflector means having a plurality of openings formed in opposition to said lamp means and permitting part of the light emitted from said lamp means to pass through the openings such that part of the light is directed to said image carrier, to erase the electrostatic latent image remaining on the image carrier, and a plurality of connecting portions formed in opposition only to the non-light-emitting portions of said lamp means and located between adjacent said openings.

5,012,284

MAGNIFICATION ADJUSTMENT FOR COMPUTER FORMS

John W. Daughton, and Robert L. Sklut, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 29, 1989, Ser. No. 414,797
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—243 15 Claims

1. A printing machine in which the magnification of an image of an original document having a plurality of equally spaced holes in at least one marginal edge thereof is adjusted for a selected size sheet, including:

input means for inputting the total number of holes along one marginal edge of the original document and the width of the original document in a direction substantially perpendicular to the edge of the original document having the holes therein and the selected size sheet;

calculating means, responsive to said input means, for deter-

mining the magnification of the image for the selected size sheet; and

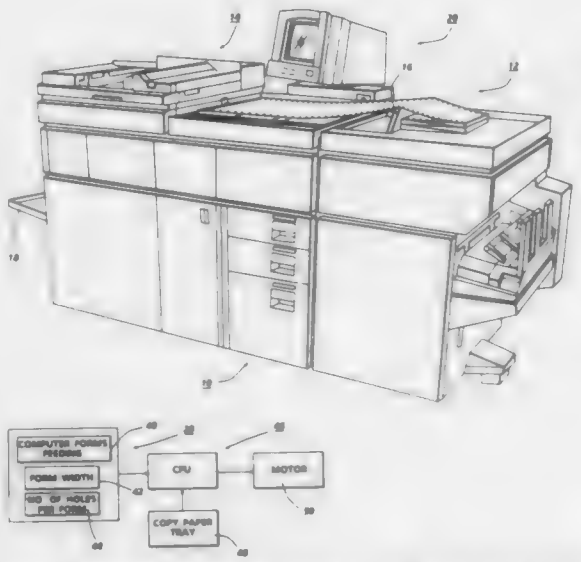


image forming means, responsive to said calculating means, for forming the image of the original document with the magnification adjusted for the selected size sheet.

5,012,285

DEVELOPING APPARATUS INCLUDING A PARTITIONING ARRANGEMENT FOR PARTITIONING THE TONER ACCOMMODATING TANK

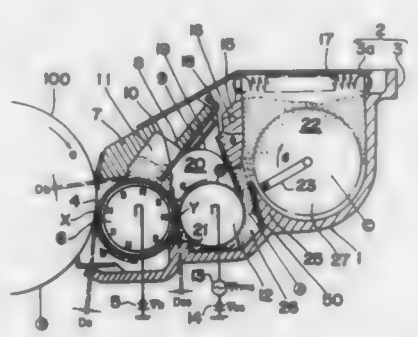
Tateki Oka; Naoki Toyoshi; Tomoaki Yokoyama; Hiroshi Mizuno; Hiroshi Murasaki; Akihito Ikegawa; Kouichi Etou, and Shuichi Nakagawa, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 6, 1988, Ser. No. 191,122

Claims priority, application Japan, May 8, 1987, 62-113185; Nov. 19, 1987, 62-292464; Dec. 29, 1987, 62-334029; Apr. 30, 1988, 63-109870

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—245 **16 Claims**



1. A developing apparatus comprising: a toner hopper in which is positioned an agitating member, a rotatably driven toner holding member arranged at an opening of said toner hopper, a regulating member contacting said toner holding member under pressure, toner held in said toner hopper being transported by rotation of said toner holding member while said regulating member regulates the transport of said toner by removing excess toner from said toner holding member, said toner hopper including a small chamber positioned near said toner holding member and a supplementary chamber in which is located said agitating member, said supplementary chamber supplying toner to said small chamber, and partition means positioned between said small chamber and said supplementary chamber for permitting toner to be supplied from the supplementary chamber to the small chamber and for substantially preventing the excess toner removed by the regulating member from being returned from the small chamber to the supplementary chamber.

5,012,286

IMAGE FORMING APPARATUS HAVING DEVICE FOR DETECTING CONCENTRATION OF DEVELOPING AGENT

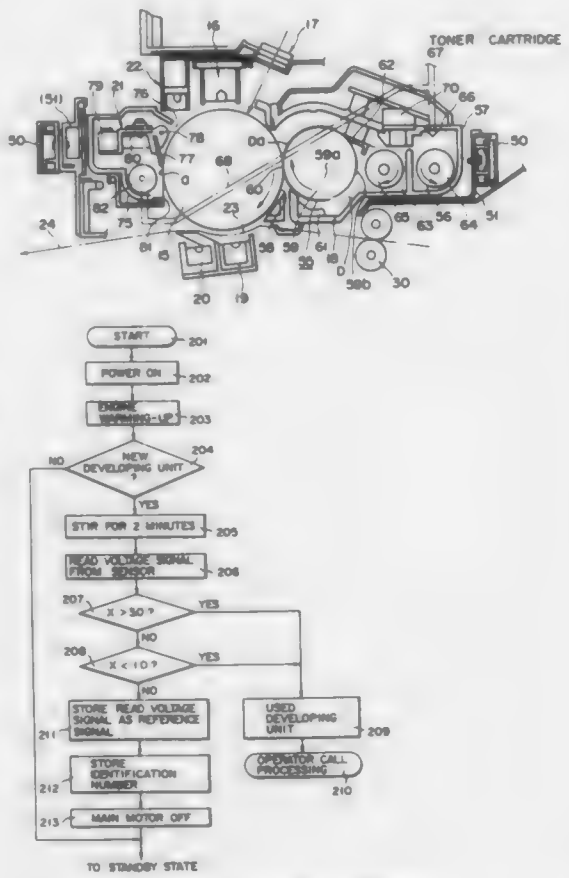
Hisaaki Kawano, Kawasaki; Yasufumi Tanimoto, Fujisawa, and Kouji Ishida, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 29, 1988, Ser. No. 226,195

Claims priority, application Japan, Jul. 31, 1987, 62-191613

Int. Cl.[5] G03G *21/00, 15/06*

U.S. Cl. 355—246 **16 Claims**



1. An image forming apparatus comprising:

means for forming a latent image;

means for developing the latent image with a developing agent, which is detachably mounted in said image forming apparatus and has an identification data unique to said developing means, the developing agent being preset to a predetermined initial toner concentration before said developing means is mounted in said apparatus and the toner concentration being varied from the initial toner concentration in a developing process;

means for detecting the toner concentration of the developing agent to generate first and second concentration signals which correspond to the initial and varied toner concentrations, respectively;

means for transferring the identification data and the concentration signal;

means for storing reference data, and for receiving and comparing the transferred identification data and concentration signals to the reference data, the identification data and the first concentration signal being stored as the reference data in said storing means when the identification data is different from the reference data; and

means for comparing the second concentration signal with the first concentration signal, to supply the toner to said developing mans and maintain the developing agent within a predetermined toner concentration range.

5,012,287

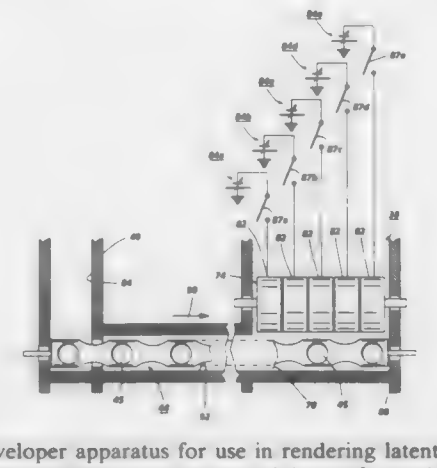
COMPACT TWO-COMPONENT DEVELOPMENT SYSTEM WITH ZONAL TONER DISPENSER CONTROL

John F. Knapp, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 26, 1990, Ser. No. 484,297

Int. Cl.[5] G03G *15/09*

U.S. Cl. 355—253 **18 Claims**



1. Developer apparatus for use in rendering latent electrostatic images visible on an image receiving surface, said apparatus comprising:

a supply of toner;

a developer member supported remotely from said supply of toner;

means for conveying toner from said supply for deposition on said developer member;

a toner feed roll structure supported adjacent said developer member in the path of movement of said toner being conveyed from said supply of toner; and

means for effecting transfer of toner from said toner feed roll structure to said developer member only in those areas thereof where toner has been depleted during a development interval.

5,012,288

DRY TONER DEVELOPMENT

Serge M. Tavernier, Lint; Robert F. Janssens, Geel, and Jan A. Zwijsen, Wilrijk, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Nov. 29, 1988, Ser. No. 277,641

Claims priority, application European Pat. Off., Dec. 7, 1987, 8702422.9

Int. Cl.[5] G03G *15/06*

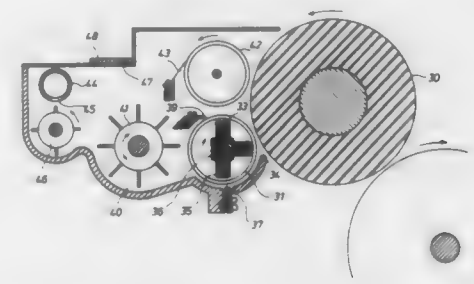
U.S. Cl. 355—259 **20 Claims**

1. A method for touchdown development of an electrostatic image present on a recording surface with dry toner particles, which comprises the following steps:

(1) providing a mixture of magnetic carrier particles and separate triboelectrical chargeable toner particles that adhere electrostatically to said carrier particles, said carrier particles having a specific resistance higher than about 10^{12} ohm cm;

(2) applying a layer of said mixture onto the surface of a rotating electrically conductive member while attracting said carrier particles to said electrically conductive member by magnetic force, said layer constituting a magnetic brush of magnetic carrier particles carrying electrostatically adhering toner particles;

(3) selectively transferring by electrostatic attraction toner particles from said conductive member onto the surface of a separate donor member separated from the conductive member surface by an air gap by applying a DC voltage across said gap to create an electric field between the member surfaces, to thereby form a toner particle layere free of carrier particles on said donor member surface, said donor member surface having a surface resistivity not



higher than 10^{13} ohm/square and such rotating conductive member comprises at least a surface layer directed towards the donor member of a material having a specific resistance lower than 10^{2} ohm.cm.; and

(4) advancing said donor member surface with the transferred toner particle layer thereon to bring the toner layer into touchdown contact with said recording surface to develop thereon said electrostatic charge image, said donor member surface being so advanced with respect to said recording surface that there is no substantial relative movement between the donor member surface and said recording surface at the point of touchdown contact.

5,012,289

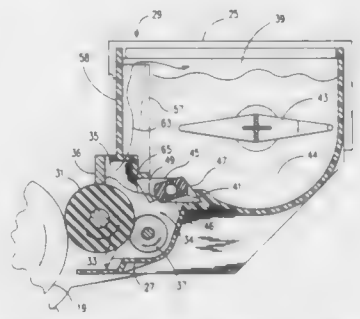
TONER METERING APPARATUS

Charles S. Aldrich; Steven L. Applegate; James A. Craft; James J. Molloy, all of Lexington, and Michael L. Pawley, Nicholasville, all of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 11, 1989, Ser. No. 392,680

Int. Cl.[5] G03G *00/00*

U.S. Cl. 355—260 **12 Claims**



1. A developer apparatus for supplying toner to an electrostatically charged imaging surface comprising:

a supply chamber for containing a supply of toner;

a developer chamber;

developer means for removing toner from the developer chamber to the electrostatically charged surface, the developer means including a rotatable developer roller and a doctor blade for metering the amount of toner removed from the developer chamber to the charged imaging surface;

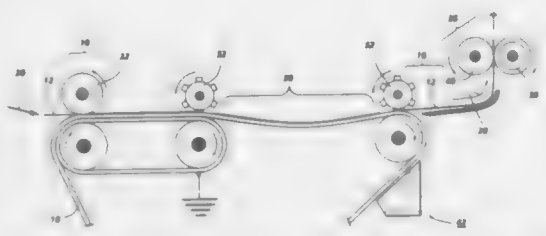
metering means for supplying toner from the supply chamber to the developer chamber and for removing toner from the developer chamber back to the supply chamber when the level of the toner in the developer chamber exceeds an equilibrium level.

5,012,290

INCREASED TRANSFERENCE OF A TONER IMAGE ON TO A COPY SHEET BY USING A ZERO TENSION LOOP APPLIED AFTER COROTRON TRANSFER

John S. Berkes, Webster, and Frank J. Bonsignore, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 1, 1990, Ser. No. 561,395
Int. Cl.[5] G03G *15/14*
U.S. Cl. 355—271 **27 Claims**



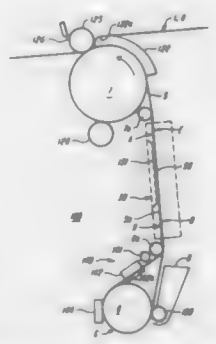
1. A printing machine of a type having a toner image interposed between a flexible member and a sheet, including:
means for transferring the toner image from the flexible member to the sheet;
means for separating the sheet from the flexible member; and
means, located intermediate the transferring means and the separating means, for providing relative motion between the sheet and the flexible member for improving transfer efficiency.

5,012,291

POWDER TRANSPORT, FUSING AND IMAGING APPARATUS

William R. Buchan, Pocasset; Robert A. Moore, Waquoit; Wendell J. Caley, Jr., Quincy; Mark A. Gilmore, Allston, and David M. Hudson, Chelmsford, all of Mass., assignors to Delphax Systems, Randolph, Mass.

Filed May 23, 1989, Ser. No. 355,994
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—271 **40 Claims**



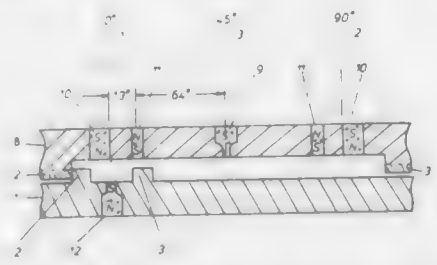
1. An improved printing system of the type wherein a support member moves between first and second stations within the system, to transfer a toner image, wherein the improvement resides in that
said support member includes a dielectric surface for receiving said electrostatic latent image and said toner, and wherein said dielectric surface includes a subsurface layer of an elastomeric softness effective to conform to an image-receiving print medium having a characteristic surface roughness, and a non-tacky surface layer of low surface free energy which coats said first subsurface layer.

5,012,292

DEVICE FOR SETTING THE ROTOR OF A ROTARY SWITCH

Gerd Ruff, Heidelberg, Fed. Rep. of Germany, assignor to Teldix GmbH, Heidelberg, Fed. Rep. of Germany

PCT No. PCT/EP87/00165, § 371 Date Sep. 26, 1988, § 102(e) Date Sep. 26, 1988, PCT Pub. No. WO87/06063, PCT Pub. Date Oct. 8, 1987
PCT Filed Mar. 25, 1987, Ser. No. 249,372
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1986, 3610228
Int. Cl.[5] H01F *7/08*
U.S. Cl. 335—253 **8 Claims**



1. In a device for setting the rotor of a rotary switch into three possible positions, namely first and second end positions and a center position wherein: drive systems equipped with windings disposed at the stator are actuated to effect this setting, with each drive system being provided with two series-connected windings of which a first winding, if the respective drive system is actuated, rotates the rotor from a momentary one of said end positions into an auxiliary position associated with the center position; a magnetic detent moment curve is active in the auxiliary position and, after the respective drive system has been switched off, centers the rotor in the center position (Pos. 3); and, a respective second winding of each drive system, if the respective drive system is actuated, moves the rotor into the other end position; the improvement wherein: each drive system is actuatable by way of only one conductor pair; the auxiliary position lies closer to the first end position than to the center position; the detent moment curve is configured, by employing an additional permanent magnet on the stator side, so that, in this auxiliary position, after the respective drive system has been switched off, a moment driving in the direction of the center position rotates the rotor into the center position and said rotor is centered there; and each second winding is configured such that it becomes effective if the respective drive system is actuated again and rotates the rotor at least into the vicinity of its second end position.

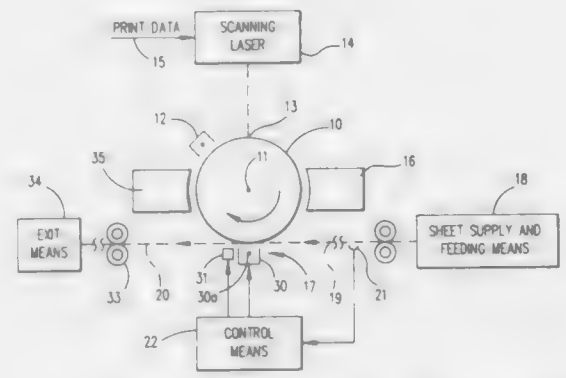
5,012,293

TRANSFER STATION CONTROL IN AN ELECTROPHOTOGRAPHIC REPRODUCTION DEVICE

Charles S. Aldrich; Stanley Dyer, and Gregory L. Ream, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 24, 1989, Ser. No. 398,855
Int. Cl.[5] G03G *15/00, 15/16*
U.S. Cl. 355—274 **10 Claims**

1. In an electrophotographic reproduction device having an imaging station, a developer station, and a transfer station including transfer corona means and illumination means that is spaced from a moving photoconductor, at which transfer station a toner image is transferred from the surface of said photoconductor to the adjacent surface of a sheet of moving transfer material that is in a position intermediate said transfer station and said photoconductor, a method for controlling said transfer station, comprising; electrically charging said moving photoconductor prior to passing to the imaging station,
selectively discharging the photoconductor at the imaging station to form a latent image thereon,
applying toner to said latent image on the photoconductor at the developer station,
providing a supply of transfer sheets,
feeding sheets from said supply of sheets to said transfer station, one sheet at a time, and in synchronism with the arrival of a toner image at said transfer station,
determining the position of said fed sheet of transfer material as the fed sheet moves from said supply of sheets toward said transfer station,
controlling said transfer station in a first manner to produce the transfer of toner from said photoconductor to a surface of said transfer material so long as a fed sheet is in a position intermediate said photoconductor and said transfer station, said transfer station in said first manner of control being effective to provide a first level of energization of said transfer corona means to produce an electrical effect on said photoconductor,
controlling said transfer station in a second manner so long as a fed sheet is not in a position intermediate said photoconductor and said transfer station, said transfer station in said second manner of control being effective to provide a second level, lower than said first level, of energization of



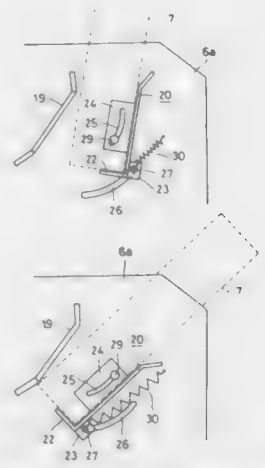
said transfer corona means to produce said electrical effect on said photoconductor,
to thereby produce a substantially similar electrical effect on said photoconductor both when a sheet of transfer material is in a position intermediate the photoconductor and the transfer station, and when no sheet of transfer material is intermediate the photoconductor and the transfer station,
emitting discharging illumination to which said photoconductor is sensitive from the illumination means at the transfer station,
controlling said illumination means to produce a substantially similar discharging effect on said photoconductor both when a sheet of transfer material is in a position intermediate the photoconductor and the transfer station, and when no sheet of transfer material is intermediate the photoconductor and the transfer station,
reusing said photoconductor to sequentially carry a plurality of toner images to said transfer station,
feeding a like plurality of sheets from said supply of sheets to said transfer station, one sheet at a time, and in synchronism with the arrival of said plurality of toner images at said transfer station, and
sequentially controlling said transfer station in said first and said second manner as said plurality of sheets are fed to said transfer station.

5,012,294

MOVABLE GUIDE MEMBER IN A RECEIVING DEVICE OF AN IMAGE FORMING APPARATUS

Junya Sasabe, Kobe, and Masao Sugimori, Hirakata, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Oct. 31, 1989, Ser. No. 429,418
Claims priority, application Japan, Nov. 11, 1988, 63-286309
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—309 **11 Claims**



1. An image forming apparatus comprising:
a body for performing an image forming operation; and
a receiving device provided on the rear part of the body for receiving a paper feeding member, the receiving device comprising
a guide member which supports a received paper feeding member as the guide member shifts between a first position wherein the paper feeding member is brought into a sharply inclined position, and a second position wherein the paper feeding member is held in a lowered position, and
spring means for biasing the guide member to the first position when the guide member is not supporting a received paper feeding member and for biasing the guide member against the weight of a received paper feeding member when the guide member is brought into the second position due to the weight of the paper feeding member.

5,012,295

SHEET PROCESSING DEVICE AND IMAGE RECORDING APPARATUS USING THE SAME

Masatoshi Ikkatai, Kawasaki; Atsutomo Yoshizawa, Tokyo, and Toshio Honma, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 216,425, Jul. 8, 1988, abandoned. This application May 14, 1990, Ser. No. 522,454
Claims priority, application Japan, Jul. 13, 1987, 62-106373[U]; Jul. 13, 1987, 62-106374[U]; Jul. 13, 1987, 62-173046
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—311 **29 Claims**

1. An image recording apparatus for recording an image on a recording sheet, comprising:
roll-like recording sheet holding means for holding a roll of recording sheet material;
cut recording sheet holding means for holding a pre-cut first recording sheet;
cutting means for cutting a second recording sheet from the roll of recording sheet material;
recording means for recording an image on a selected one of the first recording sheet and the second recording sheet;
first size recording sheet receiving means for receiving the selected recording sheet after recording by said recording mans when the selected recording sheet has a first size;

second size recording sheet receiving means for receiving the selected recording sheet after recording by said recording means when the selected recording sheet has a second size different from the first size; and



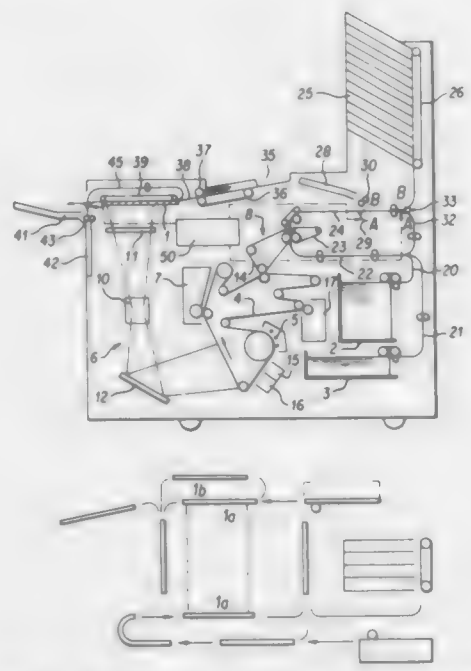
guide means for guiding the selected recording sheet selectively to either said first or second size sheet receiving means in accordance with the size of the selected recording sheet.

5,012,296

METHOD OF AND COPYING MACHINE FOR COPYING ORIGINALS IN ORDER ON BOTH SIDES OF RECEIVING SHEETS

Johannes H. T. Dinnissen, and Augustinus W. M. Lambregts, both of Venlo, Netherlands, assignors to OCE-Nederland B.V., Netherlands

Filed Mar. 9, 1989, Ser. No. 321,191
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—320 **4 Claims**



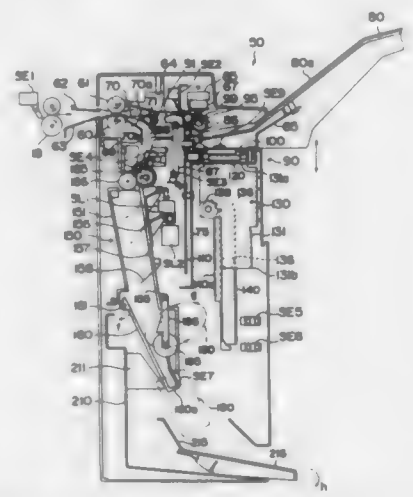
1. Method of copying at least one group of four originals in order on both sides of receiving sheets, in which, in a first cycle, images are successively applied to one side of a number of blank receiving sheets at a fixed location, the resulting single-sided copies are placed in a circulating path, turned over, and returned to the fixed location where, in a second cycle, images are successively applied to the other side of the receiving sheets, the improvement comprising in said first cycle an image of first original is applied at least twice and the same number of times, an image of said third original is applied to separate blank receiving sheets, and said second cycle for the same number of times an image of the second original and then the same number of times an image of the fourth original are applied to the blank side of the returned single-sided copies, the two cycles being repeated as necessary to make subsequent copies of that group of originals.

5,012,297

SHEET STORING APPARATUS PROVIDED FOR A COPYING MACHINE

Hiroki Yamashita; Keichi Kinoshita; Toshio Matsui; Wataru Kurahashi, and Katsuya Yasuda, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 311,065, Feb. 16, 1989. This application Jul. 2, 1990, Ser. No. 547,242
Claims priority, application Japan, Feb. 18, 1988, 63-35895; Feb. 18, 1988, 63-35897; May 21, 1988, 63-124666; May 21, 1988, 63-124667; May 21, 1988, 63-124668
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—321 **7 Claims**



1 A sheet storing apparatus, comprising:
an image forming means for forming a visible image on a sheet;
a tray for receiving sheets having visible images thereon;
shift means for reciprocating said tray in the direction perpendicular to the ejection of sheets;
detecting means for detecting the amount of the sheets received on said tray;
drive means for driving said shift means, every time a predetermined number of image formations are executed;
control means for stopping the image formation when said detecting means detects that the amount of the sheets is more than a predetermined amount; and
inhibiting means for inhibiting the operation of said control means until the predetermined number of image formations has been executed.

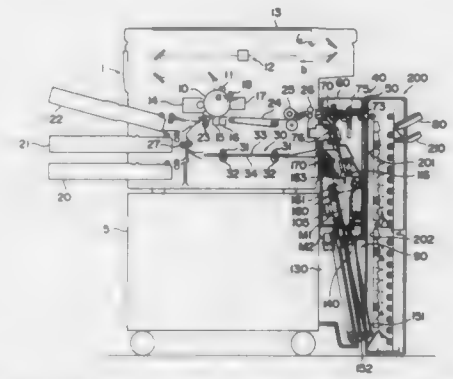
5,012,298

SHEET TRANSPORTING APPARATUS PROVIDED FOR A COPYING MACHINE

Akiyoshi Johdai, Osaka; Kazuhito Ozawa, Kani, and Toshio Matsui, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 30, 1989, Ser. No. 400,727
Claims priority, application Japan, Aug. 31, 1988, 63-217304; Aug. 31, 1988, 63-217305
Int. Cl.[5] G03G *15/02*
U.S. Cl. 355—323 **10 Claims**

1. A sheet transporting apparatus for receiving sheets ejected from an image forming apparatus and transporting the sheets, comprising:
an outlet for sheets, at which a sheet handling apparatus can be attached;
first transporting means which can transport sheets ejected from said image forming apparatus in a first direction, to said outlet, and reverse the sheets, in a second direction, from said outlet;
means for diverting the travel of sheets, which is disposed in the vicinity of said outlet and movable between a first position where sheets transported in the first direction by said first transporting means are guided to said sheet handling apparatus attached at said outlet and a second position where the sheets are guided to a space other than said sheet handling apparatus;
second transporting means for receiving sheets transported in the second direction by said first transporting means and transporting the sheets;



a sheet storing unit wherein sheets transported by said second transporting means are collected and stored;
refeeding means for feeding sheets stored in said sheet storing unit to said image forming apparatus; and
control means of said first transporting means and said diverting means, having a first mode wherein said diverting means is set to the first position in order to transport sheets ejected from said image forming apparatus in the first direction by said first transporting means to said sheet handling apparatus through said outlet and a second mode wherein said diverting means is set to the second position in order to transport sheets ejected from said image forming apparatus in the first direction and then in the second direction by said first transporting means and further transport the sheets to said sheet storing unit by said second transporting means.

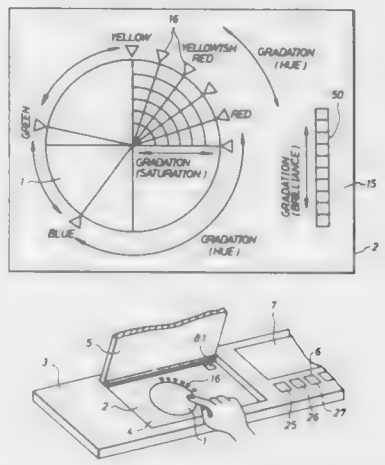
5,012,299

COLOR ADJUSTMENT APPARATUS FOR COLOR COPYING MACHINE

Tadahide Sawamura, Tokyo; Yoko Nakamura, Kawasaki, and Fumiyo Kojima, Mitaka, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 12, 1988, Ser. No. 256,861
Claims priority, application Japan, Oct. 16, 1987, 62-261357; Mar. 7, 1988, 63-52981; Mar. 8, 1988, 63-54663; Jun. 1, 1988, 63-134721
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—326 **31 Claims**

11. A color adjustment apparatus for a color picture image reproducing machine, comprising:
(a) a color chart for visually representing all real colors in terms of color elements of saturations and hue,
(b) a key structure adjacent said color chart for detecting a color pressed on color chart;
(c) a storage means for storing reference data of each of exposure data, charging data and development bias data all of which relate to one of said colors on said color chart;
(d) a retrieving means connected to said touch-key structure and said storage means for retrieving from said storage means reference data relating to two colors corresponding to two pressed points on said color chart;
(e) a calculating means for receiving difference data between said inputted reference data for two pressed points on said color chart and for calculating at least one of exposure data, charge data, and development bias data on the basis of said reference data,



(f) an instruction means for instructing an execution of a copying operation to said reproducing machine on the basis of said calculation of at least one of said exposure data, said charge data and said development bias data, and
(g) a substituting means for substituting said calculation of at least one of said exposure data, said charge data and said development bias data for said reference data of said storage means, on every completion of said copying operation.

5,012,300

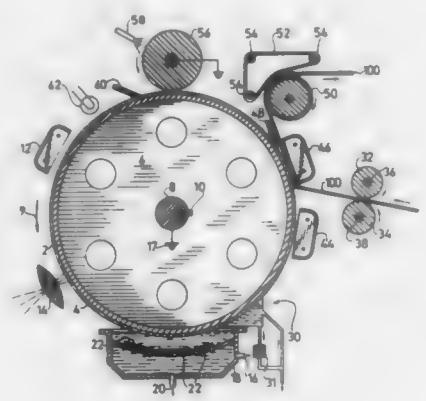
TWO-COLOR IMAGING SYSTEM AND PROCESS

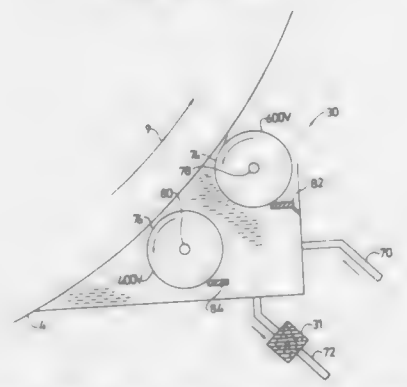
Moshe Levanon; Israel Grossinger; Yossi Adam, all of Rehovot, Israel, and Benzion Landa, Edmonton, Canada, assignors to Spectrum Sciences B.V., Rotterdam, Netherlands

Continuation-in-part of Ser. No. 202,569, Jun. 6, 1988, abandoned. This application Nov. 8, 1988, Ser. No. 268,855
Int. Cl.[5] G03G *15/01, 15/10*
U.S. Cl. 355—328 **50 Claims**

17. An imaging system comprising:
means for forming an image having adjacent first and second areas respectively containing first and second types of pigmented particles and desirably uncolored background areas;
means for removing unwanted pigmented particles from said background regions and also undesirably removing pigment from the juncture of said first and second areas so

that they are undesirably separated by third areas relatively free of particles of said first and second types; and





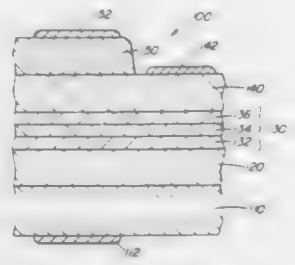
means for causing flow of the image into said third areas, thereby to at least partially eliminate said third areas.

5,012,301

THREE TERMINAL SEMICONDUCTOR DEVICE

Jingming Xu, Etobicoke, Canada; Mark A. Sweeney, St. Paul, Minn., and Derek J. Day, Los Gatos, Calif., assignors to Northern Telecom Limited, Montreal, Canada

Filed Feb. 22, 1990, Ser. No. 484,040
Int. Cl.[5] H01L *27/12, 29/00, 33/00, 27/14*
U.S. Cl. 357—4 **8 Claims**



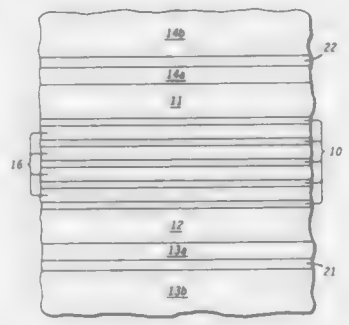
1. A semiconductor device, comprising:
a semiconductor body comprising:
a first layer of a narrow bandgap semiconductor;
a second layer of a narrow bandgap semiconductor; and
a substantially two-dimensional quantum well resonator between the first layer of a narrow bandgap semiconductor and the second layer of a narrow bandgap semiconductor, the quantum well resonator comprising a first layer of a wide bandgap semiconductor, a second layer of a wide bandgap semiconductor, and a third layer of a narrow bandgap semiconductor between the first layer of a wide bandgap semiconductor and the second layer of a wide bandgap semiconductor;
all of said layers having a common conductivity polarity;
an electrical contact to the first layer of a narrow bandgap semiconductor;
an electrical contact to the second layer of a narrow bandgap semiconductor; and
a field plate for applying a non-uniform electric field to the quantum well resonator, the field plate being disposed on one of the first layer of a narrow bandgap semiconductor and the second layer of a narrow bandgap semiconductor, being located adjacent to the electrical contact to that layer, and being substantially parallel to the quantum well resonator.

5,012,302

ENHANCED CONDUCTIVITY QUANTUM WELL HAVING RESONANT CHARGE COUPLING

Herb Goronkin, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 30, 1990, Ser. No. 501,590
Int. Cl.[5] H01L *27/12, 45/00, 29/00, 33/00*
U.S. Cl. 357—4 **10 Claims**



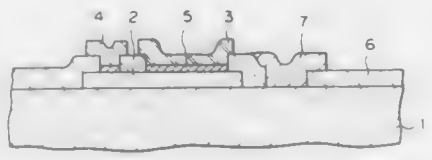
1. A resonant superlattice conductor comprising:
a barrier layer;
a first layer of material positioned on the barrier layer and having a first and second energy level;
at least one monoatomic layer positioned over the first layer having optical phonons at an energy level substantially equal to the difference between the first and second energy levels of the first layer of material; and
a second layer of material positioned on the monoatomic layers having the same energy levels as the first layer of material.

5,012,303

SUPERCONDUCTING DEVICE

Hirotaka Tamura, Atsugi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 364,316, Jun. 9, 1989, abandoned, which is a continuation of Ser. No. 937,455, Dec. 2, 1986, abandoned, which is a continuation of Ser. No. 676,826, Nov. 30, 1984, abandoned. This application Feb. 9, 1990, Ser. No. 478,030
Claims priority, application Japan, Nov. 30, 1983, 58-224311
Int. Cl.[5] H01L *27/12, 39/22, 49/02, 29/72*
U.S. Cl. 357—5 **1 Claim**



1. A superconducting device comprising:
an insulating substrate;
an active semiconductor layer formed on said insulating substrate and having a window formed therein;

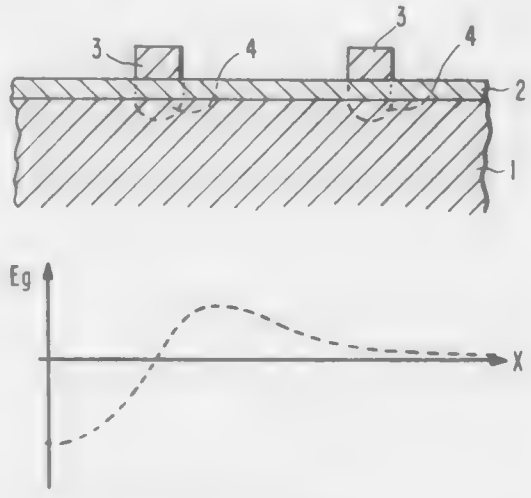
a base region formed of a superconductor in said window in said active semiconductor layer;
a tunnel oxide layer formed on said superconductor at the top of said window;
a superconductor electrode formed on said tunnel oxide layer;
means, in contact with said base region, for injecting quasiparticles into said superconductor, including an emitter region formed of a first portion of said active semiconductor layer;
a collector region, formed of a second portion of said active semiconductor layer, in contact with said base region and including a barrier layer formed on said superconductor for providing a barrier, said collector region capturing quasiparticles from said base region, and having a barrier height higher than the Fermi level of said base region for substantially blocking Cooper pairs from said base region and lower than the energy of the quasiparticles injected into said base region by said means for injecting quasiparticles, so that the injected quasiparticles pass over said barrier in said collector region, a normally conducting electrode being formed on said barrier layer, said barrier height of said barrier layer being substantially the same height as the energy gap of said superconductor.

5,012,304

SEMICONDUCTOR DEVICES HAVING STRAIN-INDUCED LATERAL CONFINEMENT OF CHARGE CARRIERS

Kathleen Kash, Freehold, and John M. Worlock, Fair Haven, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Mar. 16, 1989, Ser. No. 324,311
Int. Cl.[5] H01L *29/000, 49/000, 29/240, 29/960*
U.S. Cl. 357—007 **1 Claim**



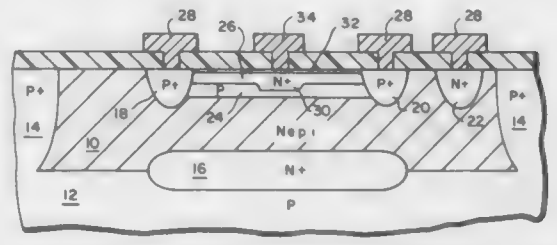
1. A semiconductor device comprising
a semiconductor base layer,
a confinement layer formed on said semiconductor base layer for vertically confining charge carriers in said base layer, said confinement layer having a top planar surface,
and means for creating in said base layer a permanent strain field for providing permanent lateral spatial confinement of charge carriers in said base layer, said means consisting only of a strained semiconductor layer having a patterned shape formed directly on the top planar surface of said confinement layer for creating in said base layer a permanent strain field corresponding to said patterned shape for providing permanent lateral spatial confinement of charge carriers in said base layer as determined by said permanent strain field, said strained semiconductor layer having a patterned shape consisting of spaced-apart elements that cover only some portions of the top surface of said confinement layer, with spaces between said elements to leave the remaining portions of the top surface of said confinement layer uncovered by said strained semiconductor layer.

5,012,305

HIGH SPEED JUNCTION FIELD EFFECT TRANSISTOR FOR USE IN BIPOLAR INTEGRATED CIRCUITS

Wadie N. Khadder; James P. Vokac, and Robert C. Dobkin, all of Santa Clara County, Calif., assignors to Linear Technology Corporation, Milpitas, Calif.

Continuation-in-part of Ser. No. 931,263, Nov. 17, 1986, abandoned. This application Jul. 13, 1990, Ser. No. 553,181
Int. Cl.[5] H01L *29/80, 29/04, 23/48*
U.S. Cl. 357—22 **6 Claims**



1. A high speed junction field effect transistor comprising
a silicon semiconductor body region of one conductivity type,
first and second regions of opposite conductivity type formed in a surface of said body region extending into said body of one conductivity type and spaced from each other, said first and second regions forming a source and a drain of said transistor,
a thin channel region of said opposite conductivity type in said body region and interconnecting said first and second regions,
a thin surface gate layer of said one conductivity type overlying said channel region and extending from said first region to said second region, and
a surface contact on said surface gate layer extending between said first and second regions and electrically isolated from said body region, said surface contact comprising a polycrystalline silicon layer of said one conductivity type and extending over the entire surface of the surface gate layer and having a conductivity greater than the conductivity of said thin surface gate layer, said body region beneath said channel region and said surface contact comprising electrically separate gates for said transistor, and
an aluminum metal contact on said polycrystalline silicon layer.

5,012,306

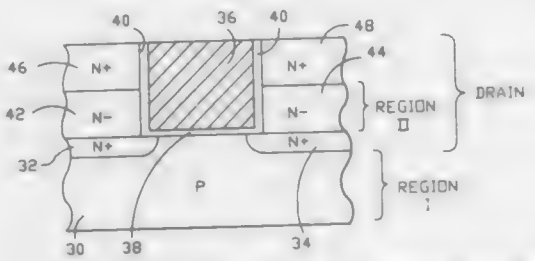
HOT-CARRIER SUPPRESSED SUB-MICRON MISFET DEVICE

Aloysious F. Tasch, Jr.; Hyungsoon Shin, and Christine M. Maziar, all of Austin, Tex., assignors to Board or Regents, The University of Texas System, Austin, Tex.

Filed Sep. 22, 1989, Ser. No. 410,979
Int. Cl.[5] H01L *29/10, 29/68*
U.S. Cl. 357—23.4 **44 Claims**

1. A sub-micron MISFET structure comprising a doped semiconductor body, doped source and drain regions formed in a major surface of said semiconductor body with a channel region therebetween, a gate overlying said channel region and spaced therefrom by a layer of insulative material, and a first additional doped region abutting said drain region away from said channel region and forming part of the drain element of

the MISFET structure, said additional doped region being of the same conductivity type as said drain region, and the dopant



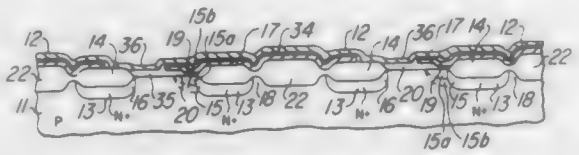
concentration in said additional region being less than the dopant concentration in said drain region.

5,012,307

ELECTRICALLY-ERASABLE, ELECTRICALLY-PROGRAMMABLE READ-ONLY MEMORY

Manzur Gill, Rosharon; Sebastiano D'Arrigo, and Sung-Wei Lin, both of Houston, all of Tex., assignors to Texas Instruments Incoprorated, Dallas, Tex.

Continuation of Ser. No. 219,530, Jul. 15, 1988, abandoned. This application Mar. 15, 1990, Ser. No. 494,060
Int. Cl.[5] H01L *29/68, 29/34;* **G11C** *11/34*
U.S. Cl. 357—23.5 **10 Claims**



1. An electrically programmable read-only memory cell formed at a face of a semiconductor layer of a first conductivity type, comprising:

first and second source/drain regions formed at said face to be of a second conductivity type opposite said first conductivity type, a channel region of said semiconductor layer spacing apart said source/drain regions;

a differentially grown source/drain insulator region formed over at least said first source/drain region;

a thin tunnel insulator layer formed on said face to be adjacent said first source/drain region;

a laterally isolating thick insulator region formed on said face adjacent each of said first and second source/drain regions, each said laterally isolating insulator region isolating a respective one of said source/drain regions from a source/drain region of a next adjacent cell;

said channel region, said first source-drain insulator region and said thick insulator regions being linearly arranged in one direction, a floating gate conductor insulatively disposed over at least a portion of said channel region, over said first source/drain insulator region, to adjoin said thin tunnel insulator layer, and completely over, in said one direction, said laterally isolating insulator region;

a control gate conductor insulatively disposed adjacent said floating gate conductor and capacitively coupled thereto at least over said isolating insulator region; and

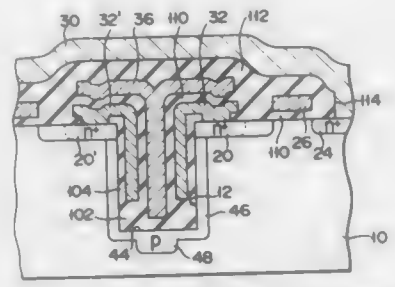
channel isolating thick insulator regions formed at said face adjacent said channel region and adapted to isolate said channel region from channel regions of adjacent cells.

5,012,308

SEMICONDUCTOR MEMORY DEVICE

Katsuhiko Hieda, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 767,848, Aug. 21, 1985, abandoned. This application Jul. 11, 1988, Ser. No. 220,369
Claims priority, application Japan, Aug. 27, 1984, 59-178071
Int. Cl.[5] H01L *29/78, 29/92, 27/02*
U.S. Cl. 357—23.6 **8 Claims**



3. A semiconductor memory device comprising:

(a) a semiconductive substrate of a first conductivity type, having grooves each of which has side walls and a bottom portion; and

(b) memory cells formed on said substrate, each of said memory cells comprising;

a transistor formed on said substrate and having a semiconductive source region of a second conductivity type, and

a capacitor buried in said groove, said capacitor having,

a first conductive layer connected to said source region and having a layer portion extending in said groove along the side wall of said groove;

a second conductive layer insulatively provided in said groove to oppose said first layer to allow said first layer to store charge carriers in response to a voltage applied therebetween, said second layer serving as a common electrode for memory capacitors formed on said substrate, and

a semiconductive diffusion layer of the first conductivity type, formed in said substrate to surround said groove and having an impurity concentration which is so changed as to define a heavily-doped region which is partially positioned at the bottom portion of said groove, wherein said diffusion layer comprises:

a lightly-doped diffusion layer of the first conductivity type formed in said substrate to contain therein said groove; and

a heavily-doped diffusion layer formed in said substrate to be positioned at a substantially central position of the bottom portion of said groove, wherein two first conductive layers of capacitors of two neighboring memory cells are provided together in said groove in such a manner that said second layer is insulatively sandwiched therebetween in said groove, and wherein said heavily-doped diffusion layer has a width which substantially corresponds to a distance between said two first conductive layers.

5,012,309

SEMICONDUCTOR MEMORY DEVICE COMPRISING CAPACITOR PORTIONS HAVING STACKED STRUCTURES

Akio Nakayama, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1990, Ser. No. 512,230
Claims priority, application Japan, Aug. 30, 1989, 1-223417
Int. Cl.[5] H01L *29/68, 27/10, 23/48*
U.S. Cl. 357—23.6 **8 Claims**

1. A semiconductor memory device including a field effect transistor having one and the other impurity regions formed on a semiconductor substrate, an interconnection layer connected to one of the impurity regions of the field effect transistor, and

a capacitor portion connected to the other impurity region and having a stacked structure, comprising:

a semiconductor substrate of a first conductivity type having a major surface,

a plurality of word lines formed on said major surface and extending in a first direction,

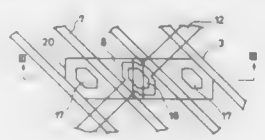
a plurality of bit lines formed on said word lines and extending in a second direction intersecting with said first direction,

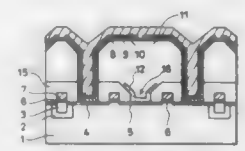
a plurality of active regions formed on said major surface of the semiconductor substrate and aligned at least at a predetermined interval in a third direction intersecting with said first and second directions, each of said active regions substantially forming a plane rectangle, and

a plurality of memory cells arranged at intersection points of said word lines and said bit lines,

each of said memory cells comprising,

one and the other impurity regions of a second conductivity type formed spaced apart from each other in said active regions so as to define a channel region with a





part of said major surface of said active region being a channel surface,

a gate electrode formed through a gate insulating film on said channel surface so as to be connected with said word lines,

said bit line being electrically in contact with said one impurity region and being formed insulated above said gate electrode,

an insulation layer formed on said bit lines and said word lines and having a concave opening comprising a bottom surface exposing a surface of said other impurity region and a side surface extending approximately perpendicular to said major surface of the semiconductor substrate,

a storage node is formed on said bottom surface of the concave opening and having a bottom wall portion electrically in contact with said other impurity region and a sidewall portion formed on said side surface of the concave opening,

a dielectric film on said storage node, and

a cell plate formed on said storage node through said dielectric film.

5,012,310

SEMICONDUCTOR MEMORY HAVING STACKED CAPACITOR

Shinichiro Kimura, Hachioji; Yoshifumi Kawamoto, Kanagawa; Toru Kaga, Urawa, and Hideo Sunami, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 133,475, Dec. 15, 1987, abandoned. This application Aug. 13, 1990, Ser. No. 566,315
Claims priority, application Japan, Feb. 6, 1987, 62-24529
Int. Cl.[5] H01L *29/68, 27/02, 23/48*
U.S. Cl. 357—23.6 **20 Claims**

1. A semiconductor memory comprising:

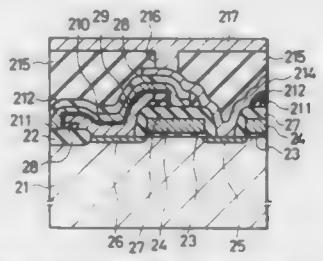
a semiconductor substrate;

a plurality of word lines;

a plurality of data lines intersecting said word lines;

an insulated gate field effect transistor connected at a gate electrode thereof to a respective one of said word lines and at one of a source and a drain region thereof is connected to one of the data lines intersecting said word line; and

a capacitor connected at a first electrode thereof to the other one of said source and drain regions of said insulated gate field effect transistor, said capacitor having a first insulating film interposed between said first electrode and a second electrode thereof to form a capacitance, the second electrode of said capacitor being defined by a conductive layer provided on said semiconductor substrate, said conductive layer having an upper surface which has formed thereon a second insulating film and has a side



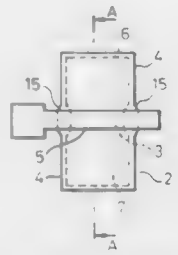
wall which has formed thereon a third insulating film, said second and third insulation films being interposed between said conductive layer and said data line, wherein said data line and said one of the source and drain regions are connected together through a contact hole in an interlayer insulating film which interlayer insulating film is interposed between said second and third insulating films and said data line, said contact hole being disposed above said gate electrode, and wherein the second electrode of said capacitor is insulated from and extends over the gate electrode.

5,012,311

SEMICONDUCTOR THIN FILM DEVICE WITH THICK INSULATOR AT GATE EDGE

Takehide Shirato, Hiratsuka, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 11,814, Feb. 6, 1987, abandoned. This application Oct. 10, 1989, Ser. No. 418,965
Claims priority, application Japan, Feb. 7, 1986, 61-025022
Int. Cl.[5] H01L *29/78, 27/12*
U.S. Cl. 357—23.7 **5 Claims**



1. A semiconductor device comprising:

an insulating substrate;

an island-shaped single-crystalline semiconductor layer provided on the insulating substrate;

an insulating layer provided on an exposed surface of the single-crystalline semiconductor layer; and

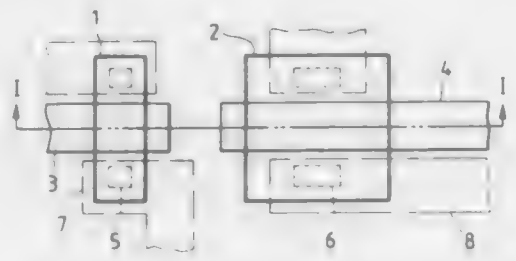
a conductor pattern provided on the single-crystalline semiconductor layer, with the insulating layer therebetween, and said conductor pattern extending to said insulating substrate, said insulating layer which is provided at an edge and a side region of the single-crystalline semiconductor layer below the conductor pattern, being selectively formed with a larger thickness than at a top and remaining side portions of the single-crystalline semiconductor layer.

5,012,312

SEMICONDUCTOR INTEGRATED CIRCUIT AND A PROCESS FOR PRODUCING THE SAME

Yoshifumi Kawamoto, Kanagawa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 25, 1988, Ser. No. 261,843
Claims priority, application Japan, Nov. 2, 1987, 62-275819
Int. Cl.[5] H01L *29/06, 29/68, 27/04*
U.S. Cl. 357—23.11 **18 Claims**



1. A semiconductor integrated circuit device comprising:

a first active area in a principal surface region of a semiconductor substrate of a predetermined conductivity type including at least one first MOS semiconductor device, said first MOS semiconductor device having a channel region of a first dimensional width;

a second active area adjacent to said first active area, in said principal surface region of said semiconductor substrate, including at least one second MOS semiconductor device formed therein, said second MOS semiconductor device having a channel region of a second dimensional width narrower than said first dimensional width;

an isolation area formed on said semiconductor substrate between at least said first and second MOS semiconductor devices which are adjacently disposed;

an insulating film formed in said isolation area, wherein said insulating film has formed first and second sidewalls on opposing sides thereof, said first sidewall contacting the channel region of said first MOS semiconductor device and said second sidewall contacting the channel region of said second MOS semiconductor device thereby effecting isolation therebetween; and

first and second channel stoppers, formed in said principal surface region of said semiconductor substrate, including first and second semiconductor regions, respectively, of the same conductivity type as that of said semiconductor substrate and both being disposed so as to be in contact with and at least underlie different portions of a lower surface of said insulating film so that said insulating film lower surface is substantially completely covered thereby, wherein said first channel stopper underlies said insulating film and extends along said first sidewall of said insulating film, in contact therewith, so as to effect an impurity concentration by that part of said channel stopper on the sidewall which is greater than the concentration of impurities effected with respect to said second channel stopper in the channel region on said second sidewall of said insulating film.

5,012,313

INSULATED GATE SEMICONDUCTOR DEVICE

Tatsuhiko Fujihira, Kanagawa, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Dec. 28, 1988, Ser. No. 291,463
Claims priority, application Japan, Dec. 28, 1987, 62-199984[U]; May 6, 1988, 63-110105
Int. Cl.[5] H01L *29/78*
U.S. Cl. 357—23.13 **19 Claims**

1. An insulated gate semiconductor device having a gate protection circuit comprising:

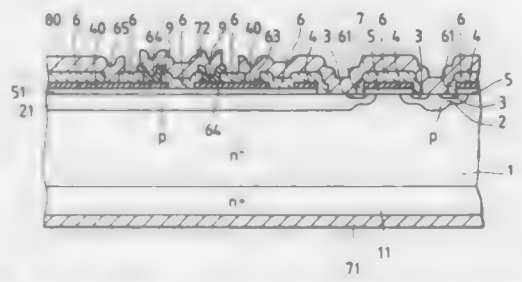
a substrate of a first conductivity type having upper and lower surfaces;

a first region of a second conductivity type formed in the upper surface of the substrate;

a source region of the first conductivity type formed in the upper surface of the substrate and surround by said first

a gate insulating layer overlying an end portion of said source region, a portion of said first region adjoining said source region and said upper surface of said substrate adjoining said portion;

a gate layer overlying said gate insulating layer, a channel being formed in said portion of said first region;



first layer means overlying the gate insulation layer and being laterally spaced from the gate layer, said first layer means having a first plurality of spaced polysilicon layers with a first predetermined resistance;

second layer means having a second plurality of spaced polysilicon layers with a second predetermined resistance higher than said first predetermined resistance, each one of the second plurality of polysilicon layers overlying a respective one of the first plurality of polysilicon layers to form a corresponding pair of diodes therewith; and

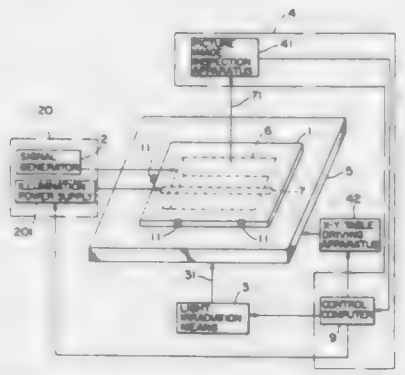
means for connecting the pair of diodes back to back in series for protecting the gate insulating layer from electrostatic destruction caused by a sudden voltage surge supplied to the gate layer.

5,012,314

LIQUID CRYSTAL DISPLAY RESTORING APPARATUS

Toshio Tobita; Shigeru Yachi, and Eishi Gofuku, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Mar. 30, 1990, Ser. No. 501,858
Claims priority, application Japan, Mar. 31, 1989, 1-83275
Int. Cl.[5] H01L *29/78, 21/265;* **G09G** *3/20;* **G02F** *1/13*
U.S. Cl. 357—23.12 **10 Claims**



1. An apparatus for adjusting threshold voltages of thin film transistors in a liquid crystal display including a plurality of liquid crystal display elements, each element having a corresponding thin film transistor, comprising:

display driving means for driving a liquid crystal display element, the element including a thin film transistor having a threshold voltage and controlling the brightness of the element;

a picture element inspection apparatus for comparing the brightness of said liquid crystal display element relative to a reference brightness; and

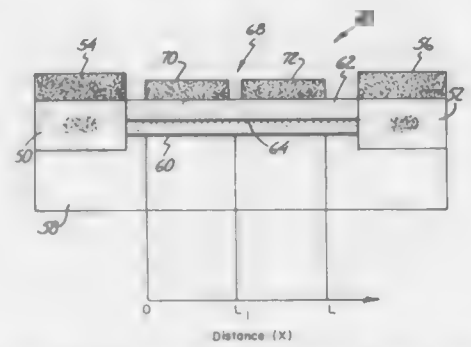
threshold voltage adjusting means including a light source for adjusting the threshold voltage of said thin film transistor when the brightness of the corresponding display element differs from the reference brightness by irradiating the thin film transistor with a quantity of light from said light source in response to the brightness comparison by said picture element inspection apparatus.

5,012,315

SPLIT-GATE FIELD EFFECT TRANSISTOR

Michael Shur, Golden Valley, Minn., assignor to Regents of University of Minnesota, St. Paul, Minn.

Filed Jan. 9, 1989, Ser. No. 295,083
Int. Cl.[5] H01L *29/78, 29/86*
U.S. Cl. 357—23.14 **3 Claims**



1. A method of decreasing carrier transit time in a transistor including a drain region, a single conducting channel region, a source region, and first and second gate contacts overlying the channel region, comprising the steps of:

applying an electric field to the single conducting channel region by applying voltages to the gate contacts which overlie the channel region in a single plane; and

varying a vector component of the electric field in the channel region in a direction from the source region to the drain region as a function of position in the direction from the source region to the drain region by applying a first voltage to the first gate contact overlying the channel region and separated from the channel region by an insulator which has an insulator thickness and applying a second voltage to the second gate contact overlying the channel region and separated from the channel region by the insulator, wherein the first voltage is different from the second voltage and the first and second gate contacts are separated from each other by a distance generally less than the insulator thickness.

5,012,316

MULTIAXIAL TRANSDUCER INTERCONNECTION APPARATUS

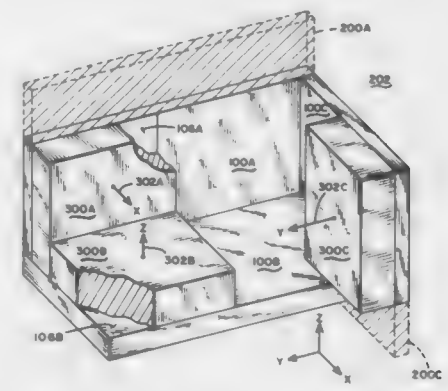
Emanuel H. Silvermint, Shoreview, Minn., assignor to Cardiac Pacemakers, Inc., St. Paul, Minn.

Filed Mar. 28, 1989, Ser. No. 329,533
Int. Cl.[5] H01L *29/84*
U.S. Cl. 357—26 **10 Claims**

1. A mounting apparatus for multiaxial transducer including at least two transducer die elements having bonding pads comprising:

(a) a base having at least two orthogonal mounting surfaces; and

(b) at least two identical substrate modules electrically interconnected to each other, each having a plurality of identical tracks, and each of which is mounted to a respective



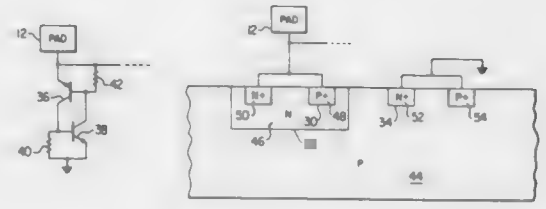
one of the mounting surfaces each including a mounting region for mounting respective one of the die elements.

5,012,317

ELECTROSTATIC DISCHARGE PROTECTION CIRCUIT

Robert N. Rountre, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 27,103, Mar. 13, 1987, abandoned, which is a continuation of Ser. No. 851,179, Apr. 14, 1986, abandoned. This application Jun. 27, 1988, Ser. No. 213,499
Int. Cl.[5] H01L *29/740, 29/900, 27/20;* **H02H** *9/00*
U.S. Cl. 357—[illegible] **9 Claims**



1. An electrostatic discharge protection device formed at a face of a semiconductor body, for conducting electrostatic discharge current from a terminal to a reference potential, comprising:

a first region of semiconductor material of a first conductivity type formed at said face of said semiconductor body, and in conductive interface with said terminal;

a second region of semiconductor material of a second conductivity type within which said first region is disposed;

a third region of semiconductor material of the first conductivity type disposed adjacent said second region;

a fourth region of semiconductor material of the second conductivity type disposed within said third region, said fourth region formed at said face of said semiconductor body, and in conductive interface with said reference potential; and

a first ohmic connection between said terminal and said second region;

wherein, responsive to a voltage applied to said terminal of a polarity relative to said reference potential so as to forward bias the junction between said first and second regions, and of sufficient magnitude to break down the junction between said second and third regions, current is conducted between said terminal and said reference po-

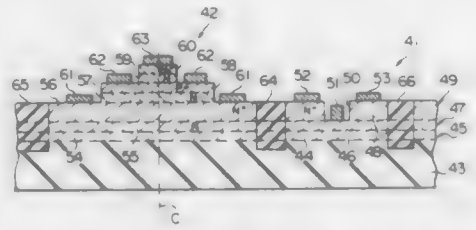
tential substantially in a direction parallel to said face through said third region.

5,012,318

HYBRID SEMICONDUCTOR DEVICE IMPLEMENTED BY COMBINATION OF HETEROJUNCTION BIPOLAR TRANSISTOR AND FIELD EFFECT TRANSISTOR

Kazuhiko Honjo, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 1, 1989, Ser. No. 401,161
Claims priority, application Japan, Sep. 5, 1988, 63-222833; Sep. 5, 1988, 63-222834
Int. Cl.[5] H01L *29/205, 27/07*
U.S. Cl. 357—43 24 Claims



1. A hybrid semiconductor device fabricated on a semi-insulating substrate of a first compound semiconductor material, comprising:

a first multiple-level structure formed of a first group of compound semiconductor materials and providing a Schottky gate type field effect unipolar transistor together with a gate electrode and source and drain electrodes, a first section of said first multiple-level structure having the upper-most level provided by a first portion of a common layer, said first multiple-level structure including a first multiple-level structure including a first layer of n-type gallium arsenide formed on said semi-insulating substrate and the first portion of said common layer of heavily doped n-type gallium arsenide formed on the first layer;

a second multiple-level structure formed of a second group of compound semiconductor materials and providing a bipolar transistor together with emitter, base and collector electrodes, said second multiple-level structure having the lowest level provided by a second portion of said common layer; and

isolating means penetrating said common layer and said first multiple-level structure for providing an electrical isolation between said unipolar transistor and said bipolar transistor, in which said first portion is substantially coextensive with said second portion, and in which a second section of said first multiple-level structure is overlain by said second multiple-level structure.

5,012,319

INTEGRATED ELECTRONIC ASSEMBLY COMPRISING A TRANSMISSION LINE

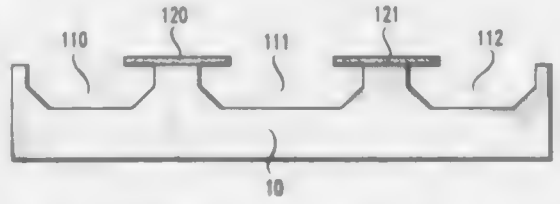
Douglas R. Dykaar, Gillette, and Anthony F. J. Levi, Summit, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 14, 1990, Ser. No. 523,093
Int. Cl.[5] H01L *29/06, 23/48, 29/80, 39/12*
U.S. Cl. 357—55 8 Claims

1. Integrated electronic assembly comprising (i) a semiconductor substrate having a first major surface and a second major surface that is substantially parallel to the first major surface; (ii) insulating material; and (iii) conductive means that signal-transmissively connect a first and second region of the assembly, the first region being spaced apart from the second region; wherein the conductive means comprise an elongate conductive body that is in contact with the insulating material, the insulating material is disposed such that the elongate conductive body is spaced apart from the semiconductor substrate, and associated with the conductive means are an effective dielectric constant and a length;

characterized in that

the semiconductor substrate comprises a recess or recesses configured such that at least a portion of the insulating material is spaced apart from the semiconductor substrate, such that the effective dielectric constant associated with



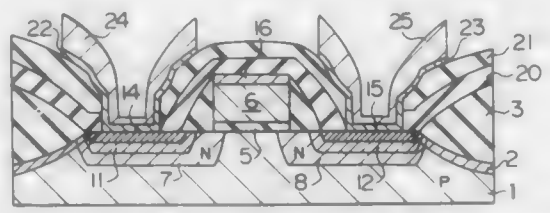
at least a major portion of the length of the conductive means is substantially uniform and substantially lower than an effective dielectric constant associated with the conductive means of a comparison electronic assembly that is identical to said integrated electronic assembly except that the comparison assembly's semiconductor substrate does not comprise any recesses.

5,012,320

SEMICONDUCTOR DEVICE HAVING HIGH-RELIABLE INTERCONNECTIONS WITH TITANIUM SILICIDE FILM

Kouji Yamazaki, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Aug. 21, 1989, Ser. No. 397,015
Claims priority, application Japan, Aug. 24, 1988, 63-211219
Int. Cl.[5] H01L *23/48*
U.S. Cl. 357—67 11 Claims



1. A semiconductor device fabricated on a silicon substrate, comprising:

(a) a transistor having impurity regions formed in a surface portion of said semiconductor substrate,

(b) a control electrode provided over that area which is between said impurity regions for causing carriers to travel from one of the impurity regions to another impurity region, and

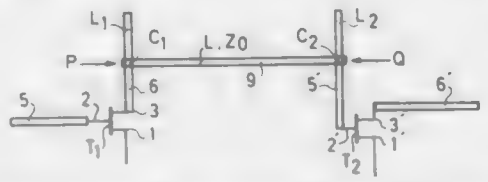
(c) an interconnection coupled at one end thereof to one of said impurity regions of said transistor for providing a conduction path, in which said control electrode is formed by a titanium silicide film containing oxygen atoms in the form of a titanium oxide throughout said titanium silicide film.

5,012,321

INTERCONNECTION DEVICE BETWEEN THE CELLS OF A PRE-IMPLANTED HYPERFREQUENCY INTEGRATED CIRCUIT

John Magarshack, Rueil Malmaison, France, assignor to Thomson-CSF, Paris, France

Filed Jul. 26, 1984, Ser. No. 634,435
Claims priority, application France, Jul. 29, 1983, 83 12540
Int. Cl.[5] H01L *27/095*
U.S. Cl. 357—71 10 Claims



1. Interconnection device between the cells of a hyperfrequency integrated circuit pre-implanted in a semiconductor material, the cells being formed of active and passive components which comprise metallizations on the upper surface of the chip of semiconductor material, wherein the coupling between the component of a first cell and a component of a second cell is capacitive, said device comprising:

at least one microstrip in ohmic contact with a metallization of said first cell component and at least one microstrip in ohmic contact with a metallization of said second cell component, said microstrips being supported by the upper surface of said semiconductor material;

at least one insulating layer, deposited on the upper surface of the semiconductor material and said microstrips which supports said material;

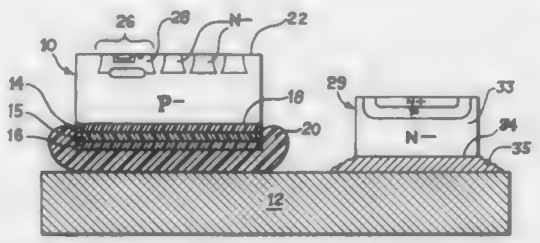
at least one microstrip line supported by said insulating layer, said microstrip line partially covering the said microstrips supported by said semiconductor material in order to form a capacitive linking.

5,012,322

SEMICONDUCTOR DIE AND MOUNTING ASSEMBLY

Paul A. Guillotte, Worcester; Paul Panaccione, Barre; Thomas J. Martiska, Shrewsbury, and Jay J. Gagnon, Holden, all of Mass., assignors to Allegro Microsystems, Inc., Worcester, Mass.

Filed May 18, 1987, Ser. No. 50,662
Int. Cl.[5] H01L *23/28*
U.S. Cl. 357—72 6 Claims



1. A semiconductor die and mounting assembly comprising:

(a) a semiconductor die having an electronic device formed in one major face thereof;

(b) at least one uniform cured-liquid dielectric-resin coating self adhered directly to the other major face of said die;

(c) a solid mounting support; and

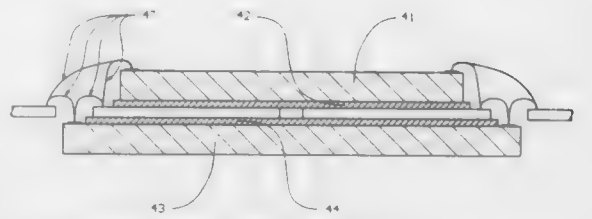
(d) a bonding agent disposed directly between said at least one dielectric coating and said support.

5,012,323

DOUBLE-DIE SEMICONDUCTOR PACKAGE HAVING A BACK-BONDED DIE AND A FACE-BONDED DIE INTERCONNECTED ON A SINGLE LEADFRAME

Warren M. Farnworth, Nampa, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Nov. 20, 1989, Ser. No. 439,243
Int. Cl.[5] H01L *23/16, 39/02, 23/48, 29/44*
U.S. Cl. 357—75 1 Claim



1. A semiconductor package comprising:

a first rectangular, wafer-like semiconductor die, and a second rectangular, wafer-like semiconductor die that is rectangularly smaller than said first die in at least one dimension, each die having two pair of substantially planarly parallel edges, each pair of parallel edges being perpendicular to the other pair, a lower surface consisting of a substrate, and an upper surface with integrated circuitry constructed thereon, said circuitry being electrically accessible via die wire bonding pads which, on each die, are arranged in a pair of columns, each of which is located on the die's upper surface, adjacent one of a single pair of planarly parallel edges;

a leadframe having a plurality of leads, each lead having an extension that is continuous therewith, each extension lying in a plane common to all other extensions and having both an upper and lower surface, the lower surfaces of at least some of said extensions providing a lower die attach region for said first die, and the upper surfaces of at least some of said extensions providing an upper die attach region for said second die, said extensions being routed such that they neither touch nor overlap one another, and so that they terminate in only one of a pair of wire bonding zones, each of said wire bonding zones consisting of a plurality of lead extension ends located on the perimeter of a aperture with said leadframe, said upper die attach region spanning the distance between said pair of wire bonding zones, said lower die attach region extending into, but not beyond, each wire bonding zone, the upper surface of said first die being insulatedly and adhesively attached to said lower die-attach region such that each column of wire bonding pads on said first die is located within a single aperture, the lower surface of said second die being insulatedly and adhesively attached to said upper die-attach region such that each column of wire bonding pads on said second die is located adjacent to a single aperture, each aperture being associated with only one column of wire bonding pads of each die;

a plurality of bonding wires, each of which interconnects one lead extension end with at least one die wire bonding pad which pertains to a column of bonding pads that is either within the aperture (for said first die) or adjacent to the aperture (for said second die) to which that extension pertains, bonding wires which interconnect die wire bonding pads on said first die passing through that aperture; and

a plastic body which encapsulates said first and second dice, said lead extensions and said bonding wires, but not said leads.

5,012,324

FLAT BODY, PARTICULARLY FOR USE AS A HEAT SINK FOR ELECTRONIC POWER COMPONENTS

Woifram Martin, Birkenfeld, and Brigitte Waibel, Pforzheim, both of Fed. Rep. of Germany, assignors to Doduco GmbH and Co. Dr. Eugen Durrwachter, Pforzheim, Fed. Rep. of Germany

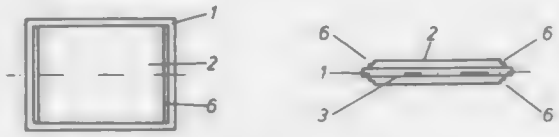
PCT No. PCT/EP88/00564, § 371 Date Feb. 24, 1989, § 102(e) Date Feb. 24, 1989, PCT Pub. No. WO89/00339, PCT Pub. Date Jan. 12, 1989

PCT Filed Jun. 27, 1988, Ser. No. 328,154

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1987, 3721958

Int. Cl.[5] H01L *23/36*

U.S. Cl. 357—81 **17 Claims**



1. A flat body, particularly for use as a heat sink for electronic power components, consisting of a ceramic slab, which is covered on both sides by metal plates which are firmly joined to the ceramic slab throughout their contact surface,

characterized in that the metal plates have provided on at least two edges of the peripheral margins, a strip reduced in thickness to improve resistance to thermal shock.

5,012,325

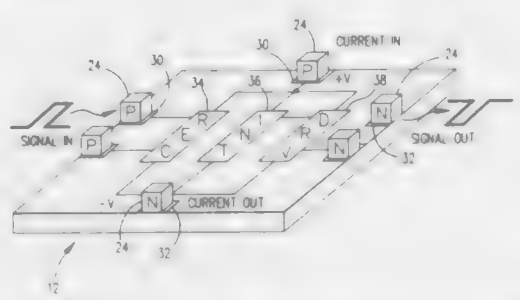
THEROMELECTRIC COOLING VIA ELECTRICAL CONNECTIONS

Mohanlal S. Mansuria, Coral Springs; Joseph M. Mosley, Boca Raton; Richard D. Musa, Boca Raton, and Vito J. Tuozzolo, Boca Raton, all of Fla., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Apr. 24, 1990, Ser. No. 513,655

Int. Cl.[5] H01L *23/02*

U.S. Cl. 357—81 **20 Claims**



1. A thermoelectrically cooled integrated circuit package comprising

a thermally conductive dielectric substrate,

an input connecting portion supported by said dielectric substrate,

an output connecting portion supported by said dielectric substrate, and

an integrated circuit chip including an input terminal and an output terminal,

said input terminal being electrically connected to said input connecting portion via a first conductive material, and

said output terminal being electrically connected to said output connecting portion via a second conductive material

said first conductive material and said second conductive material thermoelectrically cooling said integrated circuit chip when a signal passes through said first conductive material and said second conductive material.

5,012,326

TELEVISION SIGNAL TRANSMITTING AND RECEIVING SYSTEM

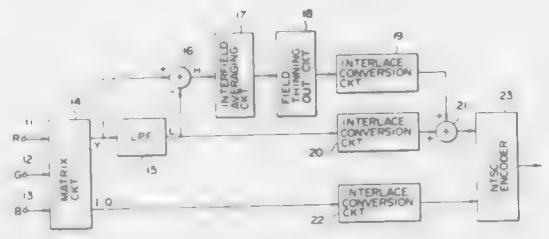
Noriya Sakamoto, Yokohama; Kiyoyuki Kawai, Yokosuka, and Seijiro Yasuki, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 1, 1989, Ser. No. 387,998

Claims priority, application Japan, Aug. 23, 1988, 63-207443

Int. Cl.[5] H04N *7/12*

U.S. Cl. 358—11 **11 Claims**



3. A television signal transmitting device comprising:

a signal separating means for separating a luminance signal of a noninterlaced format into a horizontal high frequency component having frequencies not lower than a predetermined horizontal frequency and a horizontal low frequency component below the predetermined horizontal frequency;

first interlace conversion means, including at least a field thinning out means and a field delaying means, for converting the horizontal high frequency component separated by said signal separating means to an interlaced signal, said field thinning out means thinning out alternate fields of the horizontal high frequency component and said delaying means delaying an output signal of said field thinning out means on alternate horizontal scanning lines by a time equal to one field interval to thereby distribute a signal of one field to two fields;

second interlace conversion means for converting the horizontal low frequency component separated by said signal separating means to an interlaced signal by a line thinning out process; and

transmitting means for combining and transmitting output signals of said first and second interlace conversion means.

5,012,327

CIRCUIT FOR AND METHOD OF DETECTING A COLOR FIELD SEQUENCE OF A COLOR VIDEO SIGNAL

Thomas S. Bishop, Golden, Colo., assignor to Ampex Corporation, Redwood City, Calif.

Filed Sep. 9, 1988, Ser. No. 242,946

Int. Cl.[5] H04N *9/44*

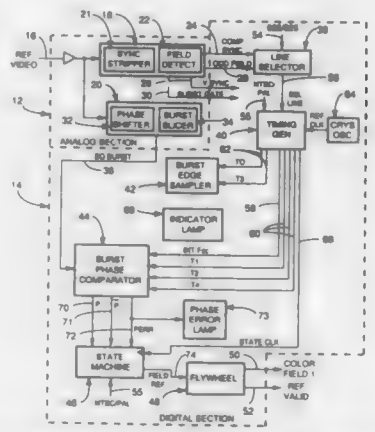
U.S. Cl. 358—17 **23 Claims**

1. A method for digitally detecting a color field in a color field sequence of a color video signal having a horizontal sync and a color burst which have a given phase relationship with a color subcarrier, comprising:

determining the location in time of at least one cycle within the color burst of a video line relative to the leading edge of the same video line's horizontal sync;

supplying at least one sample pulse during said at least one cycle;

generating in response to said at least one sample pulse at least one selected value within said cycle of the color burst which value is indicative of the phase relationship of the color burst relative to the horizontal sync in the same video line; and



detecting the sequence of occurrence of successive selected values to determine said color field in the color field sequence.

5,012,328

TELEVISION RECEIVER WHICH INCLUDES A MEMORY FOR STORING A FIELD IMAGE WHICH CAN BE PERIODICALLY DISPLAYED AS A STILL PICTURE

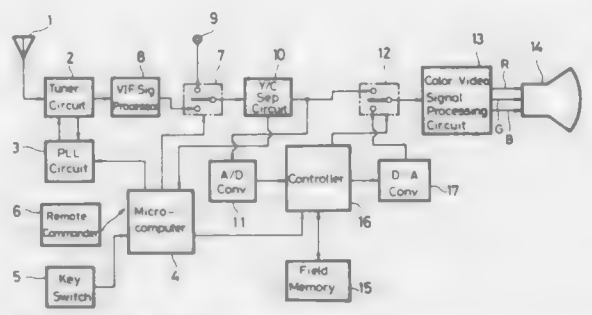
Satoshi Ishiguro, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 18, 1989, Ser. No. 353,768

Claims priority, application Japan, May 24, 1988, 63-126608; May 25, 1988, 63-127889

Int. Cl.[5] H04N *9/74, 5/14, 5/262*

U.S. Cl. 358—22 **7 Claims**



1. Television apparatus comprising:

(a) switching means for selecting a plurality of input video signals;

(b) memory means comprising a Random Access Memory for storing one of said plurality of input video signals selected by said switching means at a first speed;

(c) first control means for controlling reading and writing timings of said video signal at said memory means, said first control means generating control signals composed of; a first control singal for writing at said first speed a still image of said video signal in said memory means within a first period of time during a predetermined period;

a second control signal for stopping the writing of said still image of said video signal in said memory means; and a third control signal for repeatedly reading at said first speed said still image from said memory means during a second period of time which is longer than said first period of time;

(d) second control means for controlling said switching means so as to generate a switching motion within said second period of time when said switching means receives a signal for selecting said video signal; and

(e) displaying said output of said memory means at said first speed and wherein said apparatus operates in a single mode without a floppy disc.

5,012,329

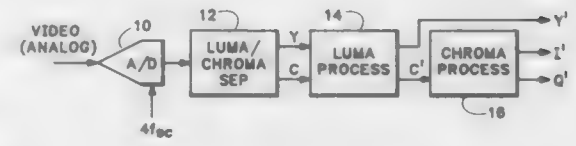
METHOD OF ENCODED VIDEO DECODING

Stuart E. Lang, Montville, N.J., and Jon Fairhurst, Grass Valley, Calif., assignors to Dubner Computer Systems, Inc., Paramus, N.J. and The Grass Valley Group, Inc., Nevada City, Calif.

Filed Feb. 21, 1989, Ser. No. 300,453

Int. Cl.[5] H04N *9/64*

U.S. Cl. 358—31 **58 Claims**



1. A decoder for an encoded video signal comprising:

means for filtering the encoded video signal in at least two dimensions to separate the encoded video signal into a luminance signal and a chrominance signal, the chrominance signal having two components;

means for filtering the luminance signal to produce a corrected luminance signal as a function of edges and peaks in the chrominance signal; and

means for filtering the chrominance signal to produce a corrected chrominance signal having enhanced chrominance edges as a function of edges in the chrominance signal.

5,012,330

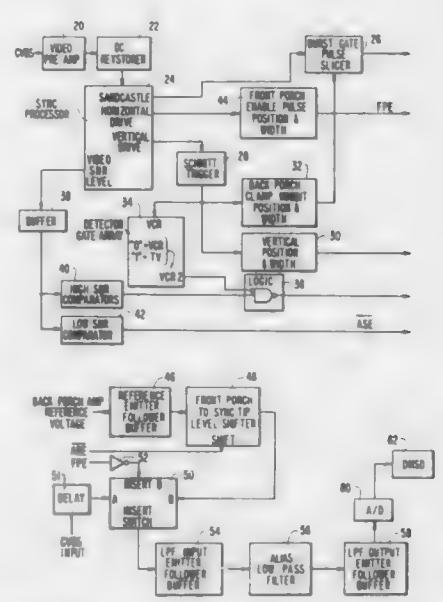
ARTIFICIAL FRONT PORCH INSERTION CIRCUIT

Anthony R. Bugni, Knoxville, Tenn., assignor to North American Philips Corporation, New York, N.Y.

Filed Aug. 14, 1989, Ser. No. 393,[illegible]

Int. Cl.[5] H04N *5/16, 9/72*

U.S. Cl. 35[illegible]—34 **6 Claims**



1. A circuit for ensuring that the level of a front porch in each line of a color video signal is at a predetermined proper level, said circuit comprising:

means for detecting the beginning of a front porch in a line of said color video signal and for providing a first control

signal for a predetermined period of time in response thereto;

means for detecting whether said color video signal is missing or is very noisy and for generating a second control signal in response thereto;

means for generating an artificial front porch signal having a signal level at said predetermined proper level and, in response to said second control signal, at a second predetermined level substantially similar to the signal level of a horizontal synchronizing pulse in said color video signal; and

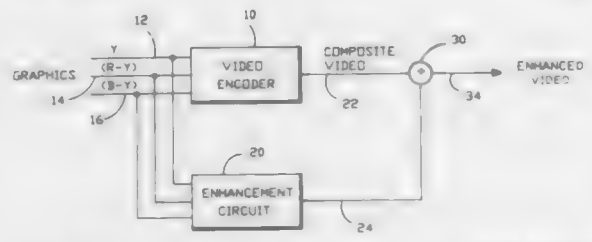
switching means coupled to receive said color video signal and said artificial front porch signal, said switching means applying said color video signal or, alternatively, in response to said first control signal, said artificial front porch signal to a color decoder circuit, whereby the front porch in each line of said color video signal is replaced by said artificial front porch signal.

5,012,331

GRAPHICS ENCODER VIDEO ENHANCEMENT

Daniel L. Schuster, Portland, Oreg., assignor to Magni Systems, Inc., Beaverton, Oreg.

Filed Jun. 23, 1989, Ser. No. 370,915
Int. Cl.[5] H04N *9/64*
U.S. Cl. 358—37 **8 Claims**



7. A video graphics signal enhancement circuit for forming an enhanced signal to be added to a composite signal to form an enhanced video signal for a video standard wherein said video standard has a certain legal chroma bandwidth and luminance bandwidth, said circuit comprising

means for receiving a first luminance signal, a first chrominance difference signal and a second chrominance difference signal, and

means for forming said enhanced signal which contains color differences that exceed said video standard legal chroma bandwidth and which is within said video standard legal luminance bandwidth.

5,012,332

CORRECTING DATA READING DEVICE IN A DIGITAL CONVERGENCE CORRECTING DEVICE

Makoto Shiomi; Kosuke Ozeki, both of Yokohama; Michitaka Ohsawa; Kuninori Matsumi, both of Fujisawa, and Tadahiro Kawagishi, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Video Engineering, Inc., Kanagawa, both of, Japan

Filed Jan. 26, 1989, Ser. No. 301,954
Claims priority, application Japan, Jan. 28, 1988, 63-15998
Int. Cl.[5] H04N *9/16*
U.S. Cl. 358—64 **7 Claims**

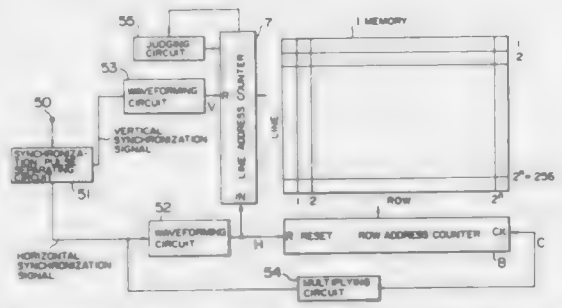
1. A correcting data reading device in a digital convergence correcting device comprising:

an image screen for displaying an image;

a correcting data storing memory for storing convergence correcting data corresponding to a plurality of points on said image screen as digital correction data to be used for effecting convergence correction, said convergence correcting data further corresponding to a position on horizontal and vertical scanning lines of said image screen;

first address signal forming means for generating a first address signal for reading out convergence correcting data from said correcting data storing memory which corresponds to a horizontal scanning direction of said image screen, and for supplying said generated first address signal to said correcting data storing memory;

second address signal forming means for generating a second address signal for reading out convergence correcting data from said correcting data storing memory which corresponds to a vertical scanning direction of said image screen, and for supplying said generated second address signal to said correcting data storing memory;



last address signal fixing means for determining that the second generated address signal supplied to said correcting data storing memory by said second address signal forming means is a last address signal and for repeatedly supplying said last address signal to said correcting data storing memory after having determined that the second generated address signal supplied to said correcting data storing memory is the last address signal; and

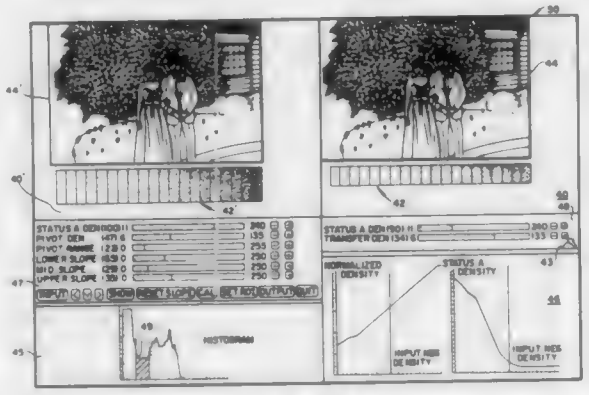
reset means for supplying a reset signal for resetting said second address signal forming means when vertical scanning on said image screen is terminated.

5,012,333

INTERACTIVE DYNAMIC RANGE ADJUSTMENT SYSTEM FOR PRINTING DIGITAL IMAGES

Hsien-Che Lee, Penfield; Martin C. Kaplan, and Robert M. Goodwin, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 5, 1989, Ser. No. 293,838
Int. Cl.[5] G03F *3/08;* **H04N** *1/46*
U.S. Cl. 358—80 **7 Claims**



1. An interactive dynamic range adjustment method for digital images comprising the steps of:

(a) converting an R,G,B digital image signal into luminance image signals;

(b) low pass filtering the luminance image signals to provide low frequency component luminance image signals;

(c) subtracting the low frequency component luminance image signals from the luminance image signals to provide high frequency component luminance image signals;

(d) modifying, interactively, the low frequency components of the luminance image signals by mapping through a mapping curve to a density space;

(e) recombining the modified low frequency and high frequency components of the luminance image signals of steps (c) and (d);

(f) mapping the recombined modified low and high frequency components of the luminance image signals of (e) through a paper shape curve;

(g) mapping an R,G,B digital image signals of step (a) through a paper shape curve;

(h) transforming the mapped R,G,B signals of step (g) into chrominance image signals;

(i) combining the luminance image signals of step (f) and the chrominance image signals of step (h); and

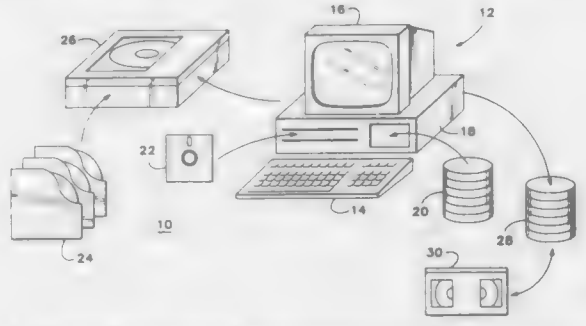
(j) transforming the combined signals from (i) to R,G,B image signals to provide an interactively adjusted digital image.

5,012,334

VIDEO IMAGE BANK FOR STORING AND RETRIEVING VIDEO IMAGE SEQUENCES

William Etra, Fort Lee, N.J., assignor to Dubner Computer Systems, Inc., Paramus, N.J.

Filed Jan. 29, 1990, Ser. No. 471,335
Int. Cl.[5] H04N *7/18*
U.S. Cl. 358—102 **12 Claims**



1. A video image bank for storing a plurality of video motion picture image sequences and automatically accessing one of the stored image sequences, said video image bank comprising:

video storage means containing a library of video motion picture image sequences;

library index means containing an index of the video storage means;

means for accessing the library index to automatically identify an initial set of image sequences;

display means for displaying a still frame for each video motion picture image sequence of the initial set; and

means for selecting one of the image sequences from the initial set.

5,012,335

OBSERVATION AND RECORDING SYSTEM FOR A POLICE VEHICLE

Alija Cohodar, P.O. Box 380074, Miami, Fla. 33138

Filed Jun. 27, 1988, Ser. No. 211,996
Int. Cl.[5] H04N *7/18, 5/30*
U.S. Cl. 358—108 **11 Claims**

1. A recording system to be used in combination with a police automobile or like vehicle, said system comprising:

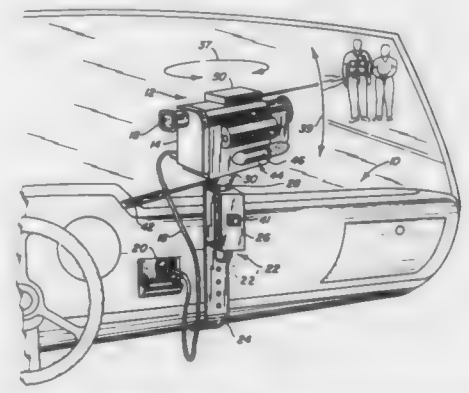
a video camera disposed on the vehicle in an operative position sufficient to view surrounding exterior areas about the vehicle,

mounting means secured to an interior of the vehicle and connected in supporting engagement to said video camera for mounting thereof in said operative position,

said mounting means including a universal coupling movably connected to said video camera and structured for both substantially horizontal and vertical travel of the video camera and selective disposition relative to a preferred field of view exteriorly of the vehicle,

said universal coupling further structured for removable attachment and support of said video camera on the vehicle,

a power supply connected at least in part to said camera for the electrically powering thereof, and



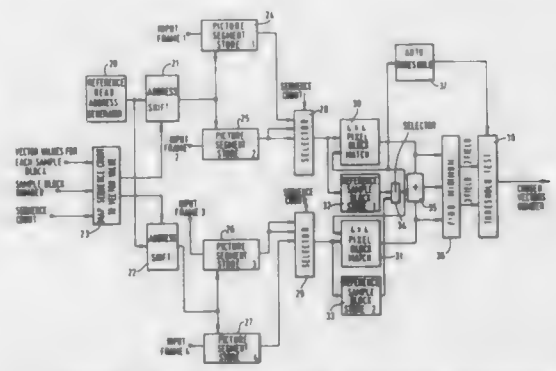
a positioning means mounted on selective personnel to be observed and on said video camera in connection with said mounting means and structured for automatically positioning said video camera for continuous viewing of the selected personnel while moving or stationary on the exterior of the vehicle.

5,012,336

MOTION DEPENDENT VIDEO SIGNAL PROCESSING

Clive H. Gillard, Cheneham, United Kingdom, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 20, 1990, Ser. No. 513,087
Claims priority, application United Kingdom, Apr. 27, 1989, 8909646
Int. Cl.[5] H04N *7/01*
U.S. Cl. 358—140 **8 Claims**



1. A motion compensated video standards converter for converting a video signal conforming with a first video standard to a converted video signal conforming with a second video standard, said video signal being provided as a sequence of intervals selected from fields and frames, each of said interval being arranged in a plurality of blocks each representing a portion of an image represented by said video signal and each including a plurality of pixels, comprising:

means for deriving a corresponding plurality of motion vectors for each of a plurality of blocks in respective first and second intervals of said video signal representing motion of the image portion represented by said each of said plurality of blocks by comparing said each of said plurality of blocks in said first and second intervals with a plurality of blocks in respective intervals of said video signal adjacent thereto;

means for deriving a respective motion vector for each pixel in said each of said plurality of blocks by selecting said respective motion vector from said corresponding plurality of motion vectors based upon a luminance match of said each pixel with pixels in previous and following intervals of said video signal relative to the interval including said each pixel, pointed to by respective ones of said corresponding plurality of motion vectors; and

means for deriving a respective motion vector for each of a plurality of pixels in an interval of said converted video signal which is temporally nearest to said respective first and second intervals by comparing motion vectors derived for said respective first and second intervals.

5,012,337

MOTION DEPENDENT VIDEO SIGNAL PROCESSING

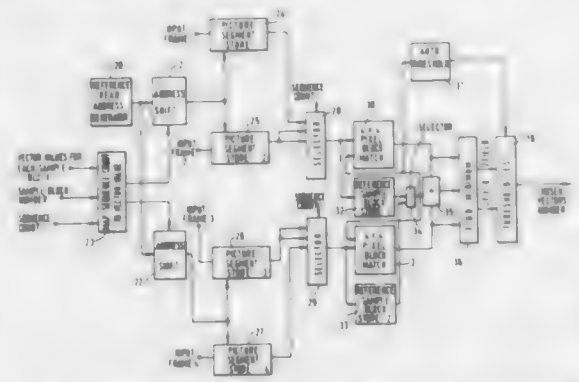
Clive H. Gillard, Basing Stoke, United Kingdom, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 20, 1990, Ser. No. 513,086

Claims priority, application United Kingdom, Apr. 27, 1989, 8909644

Int. Cl.[5] H04N *7/01*

U.S. Cl. 358—140 **12 Claims**



1. In a motion compensated video standards converter for converting a video signal conforming with a first video standard to a converted video signal conforming with a second video standard, said video signal being provided as a sequence of intervals selected from fields and frames, each of said intervals being arranged in a plurality of blocks each representing a portion of an image represented by said video signal and comprising a plurality of pixels, comprising:

means for deriving a plurality of motion vectors for each of a plurality of blocks in a first interval of said video signal representing motion of the image portion represented by said each of said plurality of blocks between said first interval and an adjacent interval of said video signal by comparing said each of said plurality of blocks with a plurality of blocks in said adjacent interval;

means for deriving a respective motion vector from said plurality of motion vectors for each pixel in said each of said plurality of blocks in said first interval by luminance matching said each pixel with the pixels having respective positions in previous and following intervals of said video signal pointed to by said plurality of motion vectors from the position of said each pixel in said first interval;

means for detecting the occurrence of a luminance mismatch between a pixel in said first interval and all of the pixels in the respective previous and following intervals pointed to by respective ones of said plurality of motion vectors from the position of said each pixel in said first interval; and

means responsive to the detection of a luminance mismatch for deriving said respective motion vector by luminance matching said pixel in said first interval for which a luminance mis-match has occurred with the pixels in only one of said previous and following intervals having respective positions therein pointed to by said plurality of motion vectors from the position of said pixel in said first interval.

5,012,338

TELETEXT DECODERS

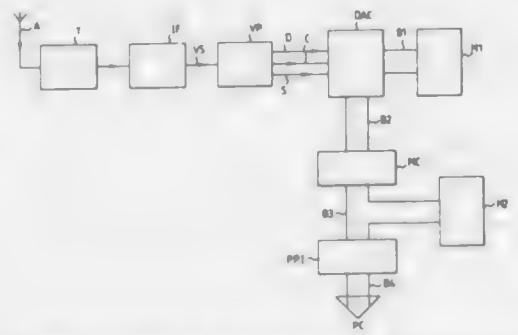
Andrew K. Davies, Purley, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 7, 1990, Ser. No. 534,775

Claims priority, application United Kingdom, Jun. 16, 1989, 8913903

Int. Cl.[5] H04N *7/87, 7/04*

U.S. Cl. 358—147 **10 Claims**



1. A teletext decoder for use in a receiver which is suitable for receiving teletext transmissions of a type in which coded data pulses in the form of teletext data packets are transmitted in a television signal in television lines where no picture signals representing normal picture information are present, said teletext decoder comprising first memory means for storing received data packets in a given numerical sequence order and characterised by means for indicating whether each data packet has been received in the correct given numerical sequence order, further means being provided for overwriting a data packet which is indicated as having been received out of its given numerical sequence order with a data packet having the same packet address which has been received in its correct given numerical sequence order.

5,012,339

FIELD DISCRIMINATION CIRCUIT

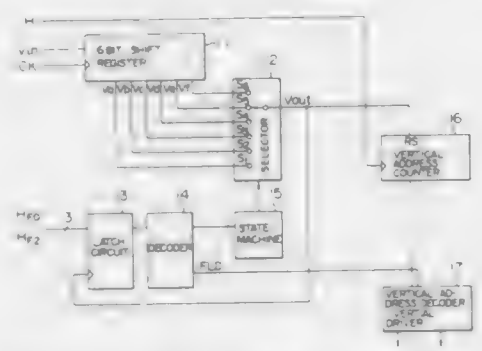
Takatsugu Kurata, Ibaraki, and Takuya Nishide, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 23, 1989, Ser. No. 425,107

Claims priority, application Japan, Oct. 28, 1988, 63-273549

Int. Cl.[5] H04N *5/04*

U.S. Cl. 358—148 **3 Claims**



1. A field discrimination circuit comprising:

a shift register of at least six bits for shifting a vertical synchronizing signal Vin by at least six pulses within one horizontal scanning period;

a selector for selecting one vertical synchronizing signal from at least six vertical synchronizing signals shifted by said shift register;

a phase detector for detecting the phase of the vertical synchronizing signal selected by said selector; and

a decoder and a state machine for performing field discrimination and further altering the selection of the vertical synchronizing signal by said selector in accordance with the phase of the vertical synchronizing signal selected by said selector.

5,012,340

METHOD AND CIRCUIT FOR DERIVING H AND V SYNCHRONIZING PULSES FROM A TRI-LEVEL HDTV SYNCHRONIZING SIGNAL

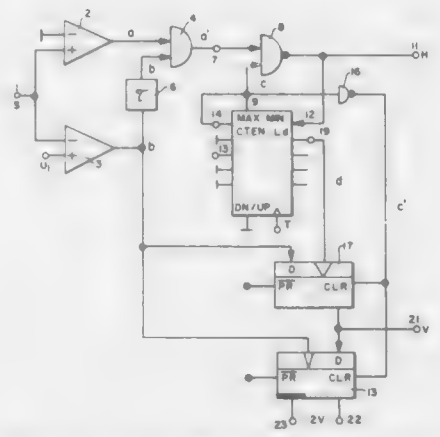
Reinhard Kirschenstein, Rossdorf, Fed. Rep. of Germany, assignor to BTS Broadcast Television Systems GmbH, Darmstadt, Fed. Rep. of Germany

Filed Oct. 6, 1989, Ser. No. 418,136

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1988, 3834865

Int. Cl.[5] H04N *5/06*

U.S. Cl. 358—150 **5 Claims**



1. A method of deriving H and V frequency synchronizing pulses from a tri-level HDTV synchronizing pulse signal, comprising the steps of:

comparing a tri-level HDTV synchronizing pulse signal with a first reference voltage and thereby obtaining a first pulse signal (a, a') containing the positive pulses of said tri-level synchronizing signal;

producing a second pulse signal (c) from said tri-level synchronizing signal by suppressing all negative pulses and all but the line-beginning positive pulses of said tri-level signal and causing the negative state of said second pulse signal (c) to have a duration of at least half of a television line interval;

producing H frequency synchronizing pulses by logically correlating said first pulse signal (a, a') with said second pulse signal (c) and causing each of said H frequency pulses to time the beginning of a negative state of said second pulse signal (c);

comparing said tri-level synchronizing signal with a second reference voltage (U_1) lying between said first reference voltage and the negative peak value of said synchronizing signal to produce a third pulse signal (b) containing only the negative pulses of said tri-level synchronizing signal;

producing a fourth pulse signal (d) for deriving picture field synchronizing pulses of V frequency by logical correlation of said second and third pulse signals (c, b), and logically correlating them and said fourth pulse signal (d) so that upon coincidence of positive pulse values of said third (b) and fourth (d) pulse signals the leading edges of said picture field synchronizing pulses are produced and the trailing edges of said picture field synchronizing signals are produced upon coincidence of negative pulse values of said second (c) and third (b) pulse signals, and

producing a picture frame synchronizing signals (2V) by logical correlation of said picture field synchronizing signal (V) with said third pulse signal (b) and said second pulse signal (c) so that the leading edges of said frame synchronizing signal (2V) are produced by coincidence of a positive pulse of said field synchronizing signal (V) and a positive-going edge of said third pulse signal (b) and the trailing edges of pulses of said frame synchronizing signal (2V) are produced by inverting one of said second and third pulse signals and thereby detecting coincidence of a negative pulse of said third pulse signal (b) and a positive-going edge of said second pulse signal (c).

5,012,341

NOISE REDUCTION CIRCUIT FOR VIDEO CONTROL EMPHASIS SIGNAL

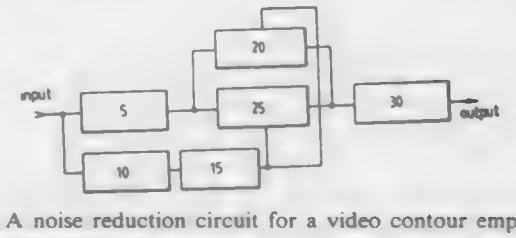
Hae-Yong Choi, Suwon, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 9, 1989, Ser. No. 363,972

Claims priority, application Rep. of Korea, Jun. 11, 1988, 1988-7064

Int. Cl.[5] H04N *5/213*

U.S. Cl. 358—167 **30 Claims**



1. A noise reduction circuit for a video contour emphasis signal, comprising:

means for amplifying a video input signal;

means for detecting the mean voltage value of a contour signal within said video input signal;

first means for controlling noise reduction level by changing the mean voltage value detected by said detecting means;

positive and negative noise reduction means for eliminating positive and negative noise signals, respectively, from the contour signal, after the contour signal, positive noise signal and negative noise signal have been amplified by said amplifying means to a level controlled by said first controlling means; and

second means for controlling the output level of the contour signal by eliminating the positive and negative noise signals from signals supplied by said positive and negative noise reduction means, respectively.

5,012,342

VIDEO PRIORITIZER AND MIXER

Richard Olsen, Littleton, and William Gross, Northborough, both of Mass., assignors to Prime Computer, Inc., Natick, Mass.

Continuation of Ser. No. 131,927, Dec. 11, 1987, abandoned, which is a continuation of Ser. No. 835,998, Mar. 4, 1986, abandoned. This application Jun. 30, 1988, Ser. No. 374,650

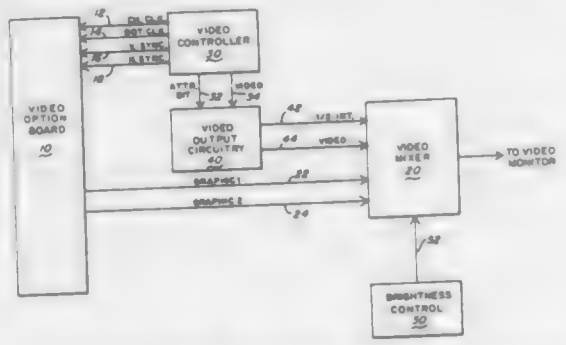
Int. Cl.[5] H04N *5/272*

U.S. Cl. 358—181 **5 Claims**

1. A control circuit for a video monitor having a plurality of pixels comprising:

means for applying digital signals from a video source and a graphic source to said circuit, the digital signals being applied to the circuit from the graphic source at a given instant being a coded graphic intensity level indication for a given pixel of the monitor and the digital signals from the video source being at least indicative of the presence of a video signal for such pixel;

decoder means responsive to a signal from said video source being present for inhibiting the display of graphics at said pixel, permitting video to be displayed, and to a signal from the video source not being present for providing a decoded intensity indication for a graphics display, said decoder means having first and second decoders, said first



decoder processing digital signals from the video source and said second decoder processing digital signals from the graphics source; and

means responsive to a decoded intensity level indication for generating an analog signal to control the intensity level of the given pixel.

5,012,343

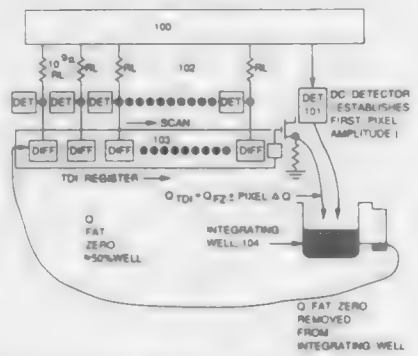
CCD DELTA-MODULATION FOCAL PLANE

William E. Jensen, San Pedro, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 29, 1989, Ser. No. 461,516

Int. Cl.[5] H04N *3/14, 5/335*

U.S. Cl. 358—213.11 **3 Claims**



1. A focal plane array for use with a scanned imaging system which has a source of video signals and a display system, said focal plane array comprising:

a means for establishing a first pixel amplitude of said video signals, said establishing means receiving said video signals from said source, and outputting a first charge which is a measure of said first pixel amplitude, wherein said establishing means comprises a DC detector which establishes said first pixel amplitude by performing DC detection and measurement on said video signals received from said source;

a means for detecting scene pixel amplitudes of the video signals from said source, said detecting means receiving said video signals from said source and outputting a plurality of second charges representing the scene pixel amplitudes of the video signals, wherein said detecting means comprises an array of scanning detectors which receives said video signals from said source, each of said scanning detectors outputting one of the plurality of second charges which represents a scene pixel amplitude of said video signals;

a means for producing a third charge which represents a fat zero by integrating said first charge from said establishing means said fat zero being a quantity of charge which, when subtracted from the plurality of second charges, leaves a plurality of fourth charges which represent analog differences between scene pixel amplitudes; and

a means for subtracting the fat zero from the plurality of second charges, said subtracting means subtracting the third charge, received from the producing means, from the plurality of second charges, received from the detecting means, to produce said plurality of fourth charges, said subtracting means outputting said plurality of fourth charges to said display system, said fourth charges representing said video signals with expanded dynamic range since they depict encoded analog differences between scene pixel amplitudes.

5,012,344

SOLID-STATE IMAGE PICKUP DEVICE HAVING SHARED OUTPUT LINE FOR PHOTOELECTRIC CONVERSION VOLTAGE

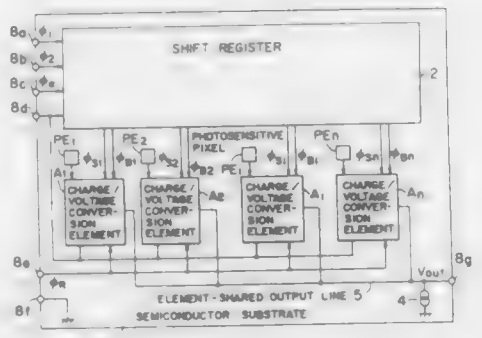
Hiroshige Goto, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 26, 1989, Ser. No. 385,159

Claims priority, application Japan, Jul. 26, 1988, 63-186366; Nov. 4, 1988, 63-279105

Int. Cl.[5] H04N *3/14*

U.S. Cl. 358—213.11 **8 Claims**



1. A solid-state image pickup device in which a plurality of photosensitive pixels produce signal charges corresponding to a quantity of an incident light, a shift register responsive to an external pulse input to generate a predetermined control pulse, a plurality of charge/voltage conversion elements provided in correspondence with said plurality of photosensitive pixels, respectively, and an element-shared output line for the external output of said plurality of charge/voltage conversion elements, are integrated on a semiconductor substrate,

wherein said charge/voltage conversion elements respond to the predetermined control pulse generated from said shift register to detect quantities of integration of signal charges generated from corresponding photosensitive pixels and reference levels of the quantity of integration to convert these values detected to voltages, to therefore sequentially output them onto said element-shared output line.

5,012,345

FILM REGISTRATION APPARATUS AND METHOD

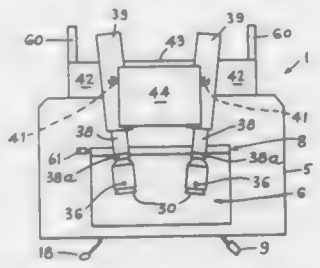
Trevor P. Elworthy, Buckinghamshire, England, assignor to Protocol Engineering PLC, Hertfordshire, England

Continuation of Ser. No. 300,524, Jan. 23, 1989, abandoned. This application Jul. 31, 1990, Ser. No. 563,739

Claims priority, application United Kingdom, Jan. 26, 1988, 8801691

Int. Cl.[5] H04N *3/36*

U.S. Cl. 358—214 **30 Claims**



1. Apparatus for registering exposed films having cooperating image areas, comprising in combination:

(a) platform means for supporting said films to be registered,

(b) punch means cooperating with said platform means and adapted to punch registration holes in a first one of said films disposed on said platform means at locations outside an image area of said first film, and

(c) electronic means for producing an image of at least one selected part of said first film, said electronic means including:

(1) at least one imaging means for producing video signals representing said image of said at least one selected part of said first film,

(ii) means mounting said imaging means for movement with respect to said platform means for positioning said imaging means opposite said at least one selected part of said first film for viewing said part,

(iii) at least one video display unit for displaying said image, and

(iv) means connecting said imaging means to said visual display unit for transmitting said video signals to said visual display unit for display of said image.

5,012,346

ILLUMINATION SYSTEM FOR A FILM SCANNER

Donald DeJager; Andrew F. Kurtz; David Kessler, all of Rochester, and Leslie G. Moore, Jr., Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 16, 1989, Ser. No. 421,894

Int. Cl.[5] H04N *3/36, 5/253, 9/11;* **G03B** *27/58*

U.S. Cl. 358—214 **13 Claims**

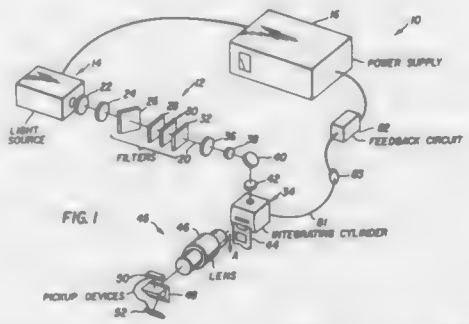


FIG. 1

1. An illumination system for a film scanner, said system being adapted to provide a line of illumination on a film which is supported for movement in a film gate of the scanner, said system comprising:

a light source which is adapted to provide a light beam along an optical path in said system;

filter means for receiving said light beam from said source and for controlling the spectral content of light issuing therefrom for different types of film, said filter means including shaping filter means selectively insertable in said light path for substantially conforming at least one spectral region to the peak spectral density of a corresponding film dye in a particular type of film; and

an integrating cylinder for receiving said light beam from said filter means and for producing a line of diffuse illumination on said film.

5,012,347

IMAGE STABILIZING APPARATUS FOR A PORTABLE VIDEO CAMERA

Antoine Fournier, 218 rue Félix-Faure, F-76620 Le Havre, France

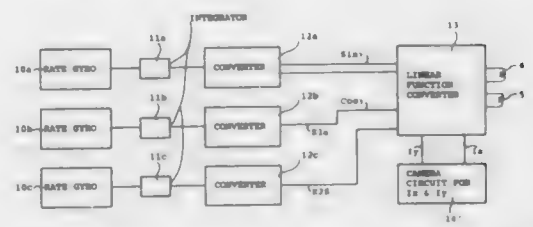
PCT No. PCT/EP88/00045, § 371 Date Aug. 28, 1989, § 102(e) Date Aug. 28, 1989, PCT Pub. No. WO88/05623, PCT Pub. Date Jul. 28, 1988

PCT Filed Jan. 22, 1988, Ser. No. 399,524

Claims priority, application France, Jan. 22, 1987, 87 00720

Int. Cl.[5] H04N *5/228, 5/225;* **G02B** *13/16;* **G03B** *39/00*

U.S. Cl. 358—222 **8 Claims**



1. An image stabilization apparatus for a portable video camera comprising: lens means, having an optical axis z, for projecting an image onto a plane extending in x and y directions perpendicular to said optical axis z; photosensitive means, responsive to x and y direction scanning signals, for analyzing said image along x and y axes; electrical means for supplying said x and y direction scanning signals; and at least one measuring means for supplying signal values to said electrical means to control said x and y direction scanning signals, said at least one measuring means including gyrometric means for sensing the angular velocity of the camera body about one of said x, y and z axes and producing a corresponding output value, and integrator means, responsive to said output value from said gyrometric means, for deriving an angle of rotation value from said angular velocity value and for feeding said angle of rotation value to said electrical means to control said x and y scanning signals, said integrator means supplying an integrated output value of said angular velocity value for rapid movements of said camera body and providing a slow automatic return to zero of its output value when said angular velocity value is low.

5,012,348

TERMINAL DEVICE FOR PICTURE COMMUNICATION

Günther Witzel, Rödermark; Bruno Widmann, Stadecken-Elsheim, and Franz Müller, Eppertshausen, all of Fed. Rep. of Germany, assignors to Telenorma GmbH, Frankfurt, Fed. Rep. of Germany

Filed Feb. 13, 1990, Ser. No. 479,538

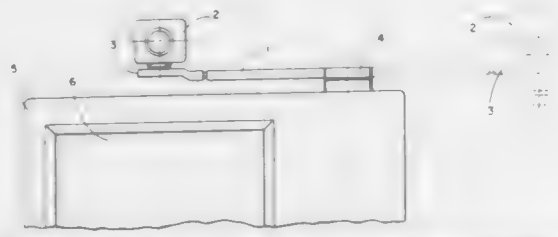
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1989, 8902287[U]

Int. Cl.[5] H04N *5/30*

U.S. Cl. 358—229 **8 Claims**

1. Terminal device for picture communication, having a vertical picture screen enclosed in a housing having a horizontal top and bottom and vertical sidewalls and a video camera for image transmission of the participant and for photographing of objects and documents comprising:

an elongated pivot arm;
swivel means mounted on the top of the housing above the picture screen and attached to one end of said pivot arm for horizontally adjustably swinging said pivot arm in a 180 degree arc about a vertical axis;
a flat camera plate;



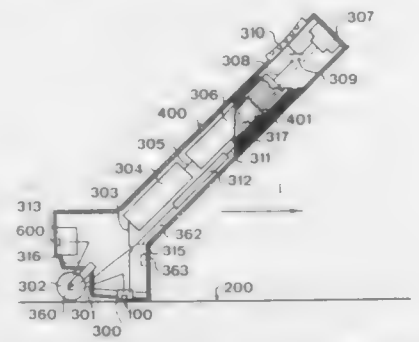
means rotatably mounting said camera plate to the other end of said pivot arm for adjustably swinging said camera plate in a vertical arc about a horizontal axes; and
means rotatably mounting the camera on said camera plate for adjustably rotating the camera in an arc parallel to the plane of the camera plate about a third axis.

5,012,349

METHOD AND PORTABLE DEVICE FOR DETECTION, STORAGE AND FOR EVENTUAL PROCESSING AND REPRODUCTION OF GRAPHIC SYMBOLS APPEARING ON ANY TYPE OF CARRIER

Stefan G. de Fay, 60 Rue Fondary, Paris 15 eme, France

PCT No. PCT/FR87/00251, § 371 Date Aug. 8, 1988, § 102(e) Date Aug. 8, 1988, PCT Pub. No. WO88/02586, PCT Pub. Date Apr. 7, 1988
PCT Filed Jun. 26, 1987, Ser. No. 210,494
Claims priority, application France, Oct. 6, 1986, 86 13896
Int. Cl.[5] H04N *1/04, 1/23;* **G06K** *9/22*
U.S. Cl. 358—296 **29 Claims**



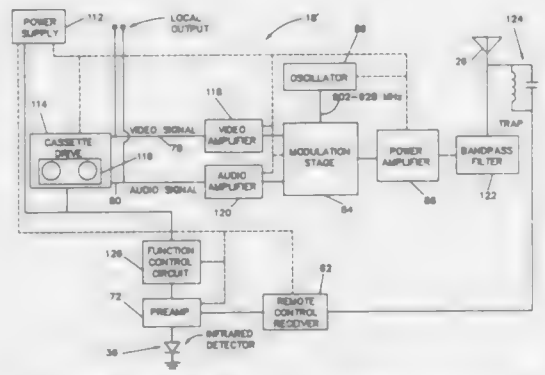
1. A process of manually displaying a movable and independently portable assembly without material guidance for the purpose of reading and storing visual data appearing on a first unspecified carrier and reproducing said visual data on a second unspecified carrier, the process being of the type wherein said assembly comprises a reading head and a printing head and according to which, furthermore:
the assembly is placed to confront the first carrier,
the assembly is moved along a selected linear path on said first carrier,
graphic symbols in said path are read by the reading head,
the graphic symbols read by the reading head are transcoded into electrical data signals,
the data signals are introduced into a memory, characterized in that the assembly is portable and independent and contains a memory and its own energy source, and:
the assembly is moved along said path in one direction only at an unspecified speed,
the graphic symbols read by said reading head extend over a width the minimum value of which is of the order of the smallest dimension of a standard line of words or ideograms,
the transcoded data signals are fed from the reading head into the memory as a function of the extent of the displacement of the assembly,
subsequently, the assembly is placed to confront the said second carrier,
the assembly is then moved along a linear path on said second carrier in only one direction at an unspecified speed,
the stored data signals are then extracted at a speed correlated with the extent of displacement of the assembly,
the extracted data signals are transcoded into electrical signals and fed to the printing head,
printing on said second carrier with said printing head symbols by depositing ink on the said second carrier with said printing head in response to the received electrical signals at a speed correlated with the extent of displacement of the assembly relative to said second carrier,
the operation in progress, whether reading or printing, is interrupted when the assembly is stopped,
the operation in progress, whether reading or printing is interrupted when the assembly is displaced in the direction opposite to that originally selected.

5,012,350

TELEVISION LOCAL WIRELESS TRANSMISSION AND CONTROL

Donald A. Streck, [illegible]32 Country Dr., Ojai, Calif. 93023, and Jerry R. Iggulden, 21600 Cleardale St., Newhall, Calif. 91321, assignors to Jerry R. Iggulden, Santa Clarita and Donald A. Streck, Ojai, both of, Calif., a part interest

Division of Ser. No. 96,929, Sep. 15, 1987, Pat. No. 4,916,532.
This application Dec. 27, 1989, Ser. No. 457,574
Int. Cl.[5] H04N *5/76*
U.S. Cl. 358—335 **10 Claims**



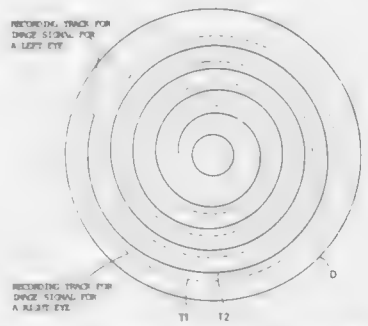
1. A wirelessly broadcasting video cassette recorder comprising:
a) video cassette drive means for playing a video cassette to produce a pure audio signal and a pure video signal therefrom;
b) video amplifier means for receiving and amplifying said pure video signal to produce an amplified video signal therefrom;
c) audio amplifier means for receiving and amplifying said pure audio signal to produce an amplified audio signal therefrom;
d) oscillator means for producing a carrier frequency in the 902–928 MHz band;
e) modulation means connected to said video amplifier means, said audio amplifier means and said oscillator means for modulating said carrier frequency with said amplified video and audio signals to produce a broadcast signal;
f) power amplifier means connected to said modulation means for amplifying said broadcast signal to a power level sufficient for local broadcasting;
g) transmitting antenna means connected to said power amplifier means for transmitting said amplified broadcast signal; and,
h) power supply means operably connected for supplying power to said video cassette drive means, said video amplifier means, said audio amplifier means, said oscillator means, said modulation means and said power amplifier means.

5,012,351

STEREOSCOPIC VIDEO DISC RECORD AND RECORDING AND REPRODUCING APPARATUS THEREFOR

Haruo Isono; Minoru Yasuda, both of Tokyo; Hiroshi Watanabe, Osaka; Tateo Toyama, Osaka; Toshiaki Hioki, Osaka; Yoshihiko Morita, Osaka, and Makoto Yamada, Osaka, all of Japan, assignors to Nippon Hoso Kyokai and Sanyo Electric Co., Ltd., both of, Japan

Filed Jun. 28, 1988, Ser. No. 243,558
Claims priority, application Japan, Nov. 4, 1986, 61-262294
Int. Cl.[5] G11B *7/00;* **H04N** *5/781*
U.S. Cl. 358—342 **12 Claims**



1. A stereoscopic video disc record having two tracks of image information recorded in an optically readable manner on the same side of a disc substrate, comprising:
a first recording track formed in a spiral fashion on said disc substrate and having continuous serially recorded optically readable image information for only a right eye; and
a second recording track formed in a spiral fashion on said disc substrate adjacent to and in parallel with said first recording track and having corresponding optically readable image information for only a left eye continuously serially recorded in a timing synchronized with said image information for a right eye recorded on said first recording track.

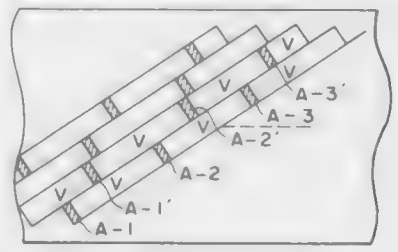
5,012,352

DIGITAL SIGNAL RECORDING APPARATUS TIME-DIVISION MULTIPLEXING VIDEO AND AUDIO SIGNALS

Katsuji Yoshimura, Hamamatsu; Kenichi Nagasawa, Kawasaki; Motokazu Kashida, Musashino, and Akihiro Shikakura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1988, Ser. No. 228,594
Claims priority, application Japan, Aug. 10, 1987, 62-199533; Aug. 10, 1987, 62-199534; Aug. 21, 1987, 62-208613; Dec. 18, 1987, 62-320587
Int. Cl.[5] H04N *5/82*
U.S. Cl. 358—343 **4 Claims**

1. A digital signal recording apparatus, comprising:
(a) first means for forming digital video data;
(b) second means for forming digital audio data;
(c) third means for forming (a) video synchronizing blocks each of which comprises a predetermined number of digital video data and synchronizing data, and (b) audio synchronizing blocks each of which comprises a predetermined number of digital audio data and synchronizing data; and
(d) recording means for recording said video synchronizing blocks and said audio synchronizing blocks in tracks formed on a recording medium, said tracks being aligned in a direction of travel of said recording medium, said recording means including time-division multiplexing means for time-division multiplexing a predetermined



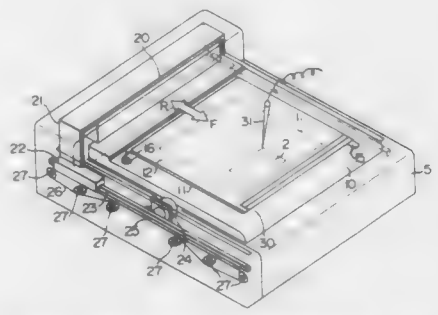
number of said video synchronizing blocks and a predetermined number of said audio synchronizing blocks to produce a data sequence for each of said tracks, said time-division multiplexing means producing different data sequences for neighboring tracks.

5,012,353

APPARATUS FOR READING ORIGINAL

Eiji Yoshino, Odawara; Yasumasa Matsuda, Tokyo, and Takahiro Yamada, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 3, 1988, Ser. No. 201,869
Claims priority, application Japan, Jun. 4, 1987, 62-1[illegible]343; Jul. 8, 1987, 62-168680; Nov. 30, 1987, 62-30022[illegible]
Int. Cl.[5] H04N *1/04*
U.S. Cl. 358—401 **7 Claims**



1. An original reading apparatus comprising:
an original platen for laying thereon an original with a surface to be read thereof being directed upward;
a reading region inputting means for assigning a reading region of the original from an upper side of the surface to be read thereof; and
a reading means for electronically reading at least the reading region of the original while discriminating between the reading region and a region of the original other than the reading region in accordance with an output from said reading region inputting means and for converting the reading region into an image information, whereby an operator may directly observe the surface of the original to be read for confirmation from the upper side thereof so that the reading region is assigned and read out;
wherein said reading region inputting means includes an electromagnetic induction type digitizer arranged on a lower side of and adjacent to the original, and an electromagnetic means for assigning coordinates of the reading region of the original to said digitizer from the upper side of the original.

5,012,354

TRAVELLING CARRIAGE DRIVING APPARATUS

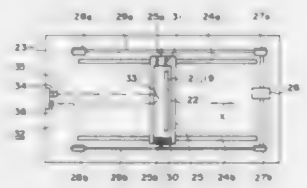
Keishin Tsuchiya, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

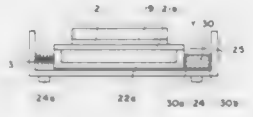
Filed Apr. 20, 1989, Ser. No. 340,789

Claims priority, application Japan, Apr. 27, 1988, 63-56893[U]; Jun. 8, 1988, 63-76263[U]

Int. Cl.[5] H04N *1/04*

U.S. Cl. 358—474 26 Claims





1. A travelling carriage driving apparatus comprising.

a unit controlled so as to be always located in a predetermined position;

a travelling carriage accommodating said unit;

guide means for allowing said travelling carriage to be freely reciprocated;

deviation detecting means for detecting a deviation of said unit from said predetermined position during the movement of said travelling carriage, said deviation of said unit occurring when said travelling carriage is being moved;

unit position adjusting means, coupled to said unit and said travelling carriage, for moving, in a predetermined direction, said unit accommodated in said travelling carriage; and

controlling means for controlling said unit position adjusting means in accordance with said detected deviation of said unit which is moving along with said travelling carriage so that said unit is located in said predetermined position.

5,012,355

ROTARY HEAD TYPE MAGNETIC RECORDING/REPRODUCING APPARATUS WITH READ-AFTER-WRITE FEATURE

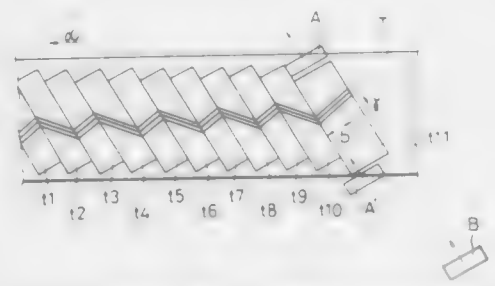
Yuji Taga, and Masashi Katoh, both of Kakuda, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1989, Ser. No. 401,322

Claims priority, application Japan, Nov. 25, 1988, 63-153250[U]

Int. Cl.[5] G11B *27/36, 15/14, 5/27*

U.S. Cl. 360—31 5 Claims



1. A rotary head device for recording on a tape comprising:

a rotary drum which rotates in at least one direction;

a first recording/reproducing head mounted on a surface of the rotary drum;

a second recording/reproducing head mounted on the surface of the rotary drum at a position opposing the first recording/reproducing head;

a first playback head for playing back data recorded on the tape by the first recording/reproducing head and mounted on the surface of the drum at a position between the first recording/reproducing head and the second recording/reproducing head; and

a second playback head for playing back data recorded on the tape by the second recording/reproducing head and mounted on the surface of the drum at a position opposing the first playback head;

wherein when the rotary drum rotates in a direction for recording on the tape, on each rotation of the drum, the first playback head scans the tape prior to the second recording/reproducing head scanning the tape.

5,012,356

SWITCHING CIRCUIT

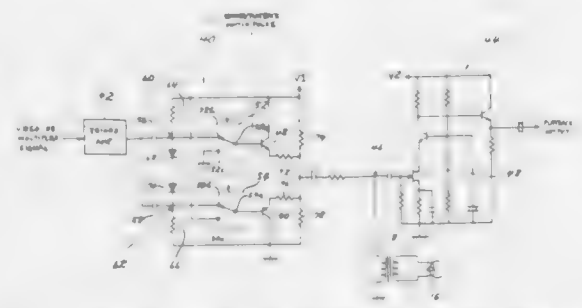
Yositeru Kosaka, Zushi, Japan, assignor to Victor Company of Japan, Limited, Kanagawa, Japan

Filed Feb. 22, 1990, Ser. No. 483,470

Claims priority, application Japan, Feb. 28, 1989, 1-47882

Int. Cl.[5] G11B *15/12, 27/02;* H04N *9/79*

U.S. Cl. 360—61 5 Claims



1. A switching circuit for interrupting a signal path to a recording head comprising:

complementary emitter-follower means comprising first and second transistors;

a power source terminal to which a DC bias voltage for linearly driving said first and second transistors is applied;

signal inputting means connected to said power source terminal and comprising first and second input connecting points to which said DC bias voltages is applied; and

switching means comprising first and second switches each having a single movable contact which is operated by a switching pulse signal and two stationary contacts, said movable contact of said first switch and said movable contact of said second switch being respectively connected to a base of said first transistor and a base of said second transistor, one of said stationary contacts of said first switch and one of said stationary contacts of said second switch being respectively connected to said first and second input connecting points of said signal inputting means, the other stationary contact of said first switch and the other stationary contact of said second switch being connected such that said first and second transistors are inversely biased upon interruption of the signal path.

5,012,357

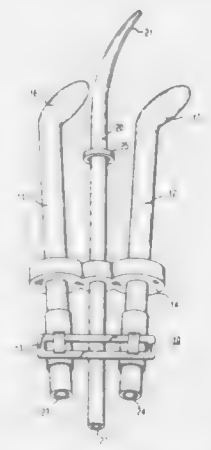
CT COMPATIBLE INTRACAVITY RADIATION APPLICATOR WITH AFTERLOADING SHIELDING

Sonja L. Schoeppel, Whitmore Lake, Mich.; Kenneth J. Weeks, Chapel Hill, N.C., and Kent R. Pruss, Ann Arbor, Mich., assignors to University of Michigan, Ann Arbor, Mich.

Filed Mar. 20, 1989, Ser. No. 325,604

Int. Cl.[5] A61N *5/10*

U.S. Cl. 378—65 18 Claims



1. An arrangement for applying a therapeutic radiation emitted from a radiation source to a predetermined region of tissue within a cavity in the body of a living being, the arrangement comprising:

applicator means formed of an imaging-transparent material and having a hollow handle portion having an opening for obtaining access to the interior thereof, said opening being arranged at a first end of said applicator means, and being coupled at a second end thereof to a hollow head portion, said hollow head portion being arranged at a predetermined angle with respect to a longitudinal axis of said hollow handle portion;

dummy source carrier means having a body formed of imaging-transparent material, said dummy source carrier means being provided with dummy central core means formed on an imaging-transparent material and having a bore therein for accommodating a dummy substitute of the radiation source;

dummy source carrier handle means pivotally coupled to said dummy source carrier means for facilitating insertion of said dummy source carrier means through said opening of said hollow handle portion of said applicator means and through to said hollow head portion thereof; and

source carrier means having a body provided with a central core means having a bore therein for accommodating the radiation source, and a respectively associated shield means affixed to said central core means for blocking the radiation emitted by the radiation source, said shield means having a predetermined configuration which corresponds to a predetermined radiation pattern.

5,012,358

TRACKING CONTROL APPARATUS FOR USE WITH MAGNETIC TAPE HAVING VIDEO TRACK AND CONTROL TRACK

Yoshiaki Kohsaka, Fukaya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 29, 1989, Ser. No. 330,285

Claims priority, application Japan, Mar. 31, 1988, 63-76050

Int. Cl.[5] G11B *5/52, 15/467*

U.S. Cl. 360—70 11 Claims

7. A tracking control apparatus for use with magnetic tape having a video tack and a control track, comprising:

a capstan motor adapted to be rotated at a predetermined speed to transport the magnetic tape at a constant speed;

speed signal generating means for generating a speed signal corresponding to the rotating speed of said capstan motor;

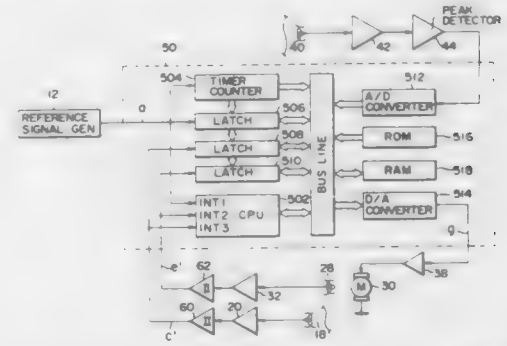
timer means for providing time data;

frequency calculating means for calculating the rotation frequency of said capstan motor in accordance with an interval of time of generation of the speed signal based on the time data provided from said timer means when the speed signal is generated;

reference signal generating means for generating a predetermined reference signal in association with the time data;

control signal reproducing means for reproducing a control signal from the control track in association with the time data;

phase error calculating means for calculating a rotation



phase error of said capstan motor on the basis of the difference between time data provided from said timer means when the reference signal is generated by said reference signal generating means and time data provided from said timer means when the control signal is reproduced by said control signal reproducing means;

control data calculating means for calculating control data for said capstan motor from the rotation frequency and the rotation phase error of said capstan motor;

video-signal reproducing means for reproducing a video signal from the video track of the magnetic tape;

level detecting means for detecting a predetermined level of the video signal reproduced by said video-signal reproducing means; and

means for providing to said capstan motor the control data so that the level of the video signal detected by said level detecting means becomes maximum.

5,012,359

MAGNETIC DISK APPARATUS

Takashi Kohno; Osami Matsushita, both of Ibaraki; Michiaki Ida; Katsuaki Kikuchi, both of Tsuchiura; Taro Sonoda, Ibaraki, and Yuzo Yamaguchi, Tsuchiura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 5, 1989, Ser. No. 446,281

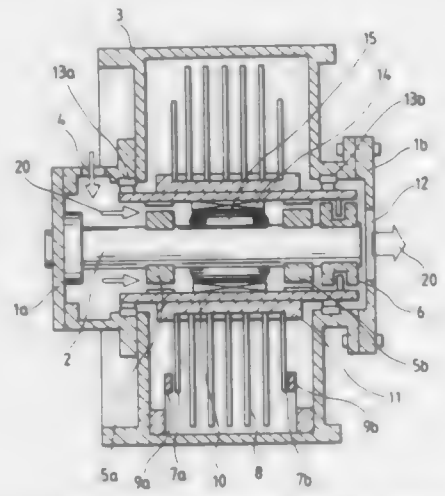
Claims priority, application Japan, Dec. 14, 1988, 63-313871

Int. Cl.[5] G11B *17/02, 17/32*

U.S. Cl. 360—71 9 Claims

1. In a magnetic disk apparatus equipped with a plurality of magnetic disks that are laminated, a spindle for said magnetic

disks and bearings for supporting said spindle, the improvement characterized in that said bearings are magnetic bearings



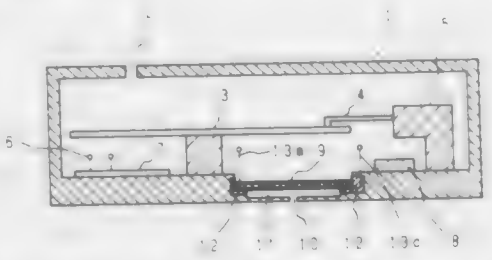
for supporting said spindle without contact by magnetic attracting or repulsing force.

5,012,360

DEHUMIDIFIER FOR MAGNETIC DISC APPARATUS

Shiro Yamauchi, and Naotake Rito, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 7, 1988, Ser. No. 268,235
Claims priority, application Japan, Jan. 19, 1988, 63-009968
Int. Cl.[5] G11B *33/14*
U.S. Cl. 360—97.02 20 Claims



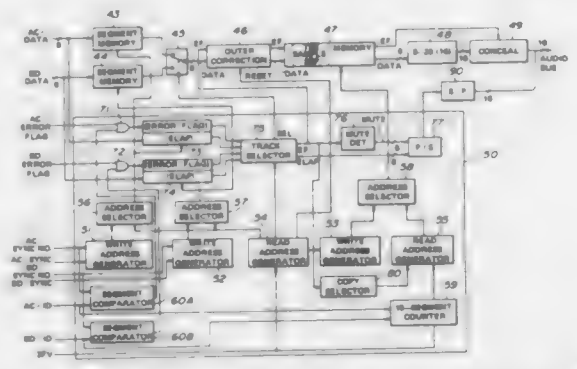
1. In a magnetic disc apparatus comprising housing providing an enclosure for a magnetic disc, a disc drive means for rotating said magnetic disc, a magnetic transducer head, and an actuator for positioning the magnetic transducer head over the magnetic disc, said housing having at least one vent aperture extending therethrough, dehumidifying means disposed within the enclosure, for removing excess moisture that passes through the vent into the enclosure, said dehumidifying means comprising a hydrogen ion conductor disposed intermediate a pair of porous electrodes located adjacent said at least one vent aperture and a reversible moisture absorbent capable of carrying out respiration of moisture absorption and evolution, and which cooperates with said hydrogen ion conductor disposed intermediate said pair of porous electrodes to insure that the enclosure of the magnetic disc apparatus maintains a dehumidified atmosphere.

5,012,361

DATA SIGNAL REPRODUCING APPARATUS FOR HELICAL SCAN RECORDING

Nobuhiro Chiba, and Yoshihiro Murakami, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 7, 1989, Ser. No. 334,556
Claims priority, application Japan, Apr. 8, 1988, 63-86675
Int. Cl.[5] H04N *5/78*
U.S. Cl. 360—38.1 5 Claims



1. Apparatus for reproducing data signals recorded on helical tracks in accordance with a format in which each track forms part of a segment and contains a plurality of sectors of data, and a plurality of segments form a field, one of said plurality of sectors having sector data that is identical with another of said plurality of sectors within the same segment, one of said plurality of segments having segment data that is identical with another of said segments within the same field, said apparatus comprising;

first detection means for detecting changes in said identical sector data during reproduction,

second detection means for detecting changes in said identical segment data during reproduction,

error detection means connected to said first detection means and to said second detection means for detecting that said identical segment data has changed without said identical sector data being changed and for generating an error signal, and

means for forming a corrected or concealed replica of said identical sector data and said identical segment data in response to said error signal.

5,012,362

APPARATUS FOR POSITIONING A TRANSDUCER FOR RECORDING, REPRODUCING OR ERASING INFORMATION ON A MEDIUM

Masatoshi Ida, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

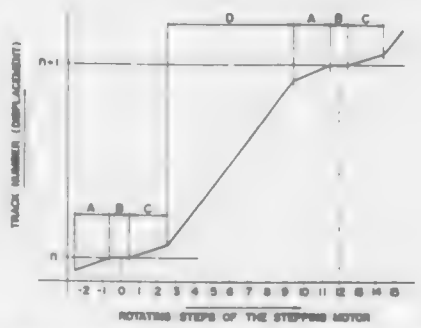
Filed Jun. 10, 1988, Ser. No. 205,165
Claims priority, application Japan, Jun. 19, 1987, 62-152967; Jun. 27, 1987, 62-160144; Jul. 6, 1987, 62-168032
Int. Cl.[5] G11B *5/596*
U.S. Cl. 360—77.04 21 Claims

1. An apparatus for positioning a transducer for recording, reproducing or erasing information on a medium comprising:

a transducer support carriage for advancing said transducer in a predetermined direction;

driving force generating means for generating driving force to bring about a displacement of said transducer support carriage; and

motion converting means operatively connected to said driving force generating means and to said transducer support carriage for converting a primary input motion from said driving force generating means to a secondary output motion transmitted by said motion converting means to said transducer support carriage, said motion converting means having a motion conversion characteristic including sluggish characteristic regions where a zero or minute secondary output motion corresponds linearly to a rated primary input motion; first characteristic regions adjacent to said sluggish characteristic regions, where a relatively small secondary output motion corresponds linearly to the rated primary input motion; and second characteristic regions linking up said first characteristic regions, where a relatively large secondary output motion corresponds to the rated primary input motion.

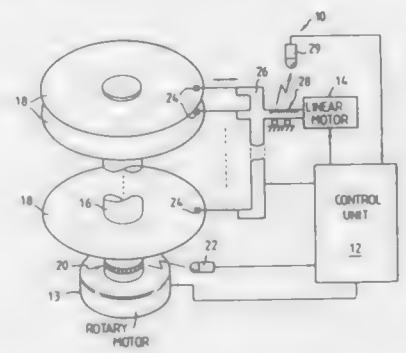


5,012,363

SERVO PATTERN WRITING METHOD FOR A DISK STORAGE DEVICE

Shingi Mine, Yokohama; Yoichi Miwa, Machida, and Hiroyuki Ono, Fujisawa, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 1, 1989, Ser. No. 305,268
Claims priority, application Japan, Feb. 3, 1988, 63-14288
Int. Cl.[5] G11B *5/596*
U.S. Cl. 360—77.05 11 Claims



1. A method for writing a servo pattern onto a data surface in a disk storage device, said disk storage device including disks having radials, said servo pattern providing a track and a sector positions information, said method including the steps of:

writing first and second base patterns onto a data surface of a base patterns written disk, said first base pattern being arranged along at least one radial of the disk and written at intervals along the radial, and having the same radial interval as the radial interval of the tracks to be written, said second base pattern being arranged at each position of the sector to be written along the radius direction continuously;

assembling said base patterns written disk with other unwritten disks into a disk device; and

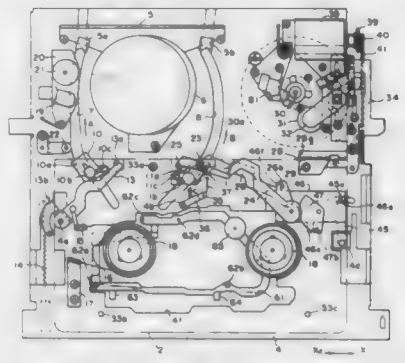
writing the servo pattern onto the data surface of the other un-written disks, based on the first and second base patterns on the base patterns written disk.

5,012,364

TAPE-LOADING MECHANISM FOR A MAGNETIC RECORDING/REPRODUCING APPARATUS FOR SELECTIVE USE OF TAPE CASSETTES OF TWO DIFFERENT SIZES

Hiromichi Hirayama, Yokohama; Masato Mihara, Hiratsuka, and Mitsuo Harumatsu, Ota, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Aug. 23, 1989, Ser. No. 397,686
Claims priority, application Japan, Aug. 23, 1988, 63-208781
Int. Cl.[5] G11B *5/008, 5/027*
U.S. Cl. 360—94 5 Claims



1. In a recording/reproducing apparatus for selective use with a relatively large-size tape cassette and a relatively small-size tape cassette which is smaller than the large-size tape cassette, in combination:

(a) a main chassis which lies substantially in a principal plane;

(b) first positioning means on the main chassis for positioning the large-size tape cassette thereon;

(c) a floating chassis mounted to the main chassis for displacement in a direction at right angles with the principal plane of the main chassis;

(d) second positioning means on the floating chassis for positioning the small-size tape cassette thereon;

(e) head means provided on the main chassis;

(f) tape loader means movably mounted to the main chassis for pulling out a tape from the large-size tape cassette positioned on the first positioning means, or from the small-size tape cassette positioned on the second positioning means, and for holding the tape against the head means;

(g) drive means;

(h) a floating-chassis drive linkage connecting the drive means to the floating chassis for moving the latter relative to the main chassis between a working position, where the floating chassis has the small-size tape cassette positioned on the second positioning means thereon, and a retracted position where the floating chassis is out of contact with the large-size tape cassette positioned on the first positioning means on the main chassis, the floating chassis being held in the working position; and

(i) a tape loader drive linkage connecting the drive means to the tape loader means for moving the latter from a first tape-unloading position where the tape loader means engages the tape of the large-size tape cassette positioned on the first positioning means or second tape-unloading position where the tape loader means engages the tape of the small-size tape cassette positioned on the second positioning means to a tape-loading position where the tape loader means loads the tape, taken out from the large-or small-size tape cassette, against the head means, the tape loader drive linkage being partly in the path of the movement of the floating chassis between the working and the retracted positions only when holding the tape loader means in the second tape-unloading position, the tape

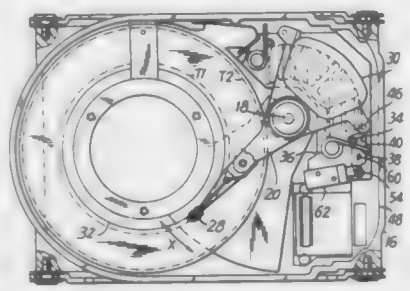
ally relative to said axis in response to movement of said head arm, and an elongated member extending between said head carriage and said head arm for cooperating with said sliding member for allowing said head arm to gently move toward said lower position.

5,012,371

DISK DRIVE CRASH STOP/ACTUATOR LATCH

Christopher A. Pollard, Monument, and James W. Boeckner, Jr., Broomfield, both of Colo., assignors to MiniScribe Corporation, Longmont, Colo.

Filed Feb. 22, 1989, Ser. No. 314,408
Int. Cl.[5] G11B *5/54, 21/22*
U.S. Cl. 360—105 22 Claims



1. A limit stop/latching assembly in a disk storage system having a movable actuator carriage, said assembly comprising:
crash stop means for limiting travel of said actuator carriage at a fixed stop position and having a first abutment surface defining said stop position;
a stop member movable with said actuator carriage in a path of travel of said actuator carriage to abut said first abutment surface at said stop position;
latch means having a second abutment surface for selectively latching said stop member at said stop position, said latch means including first and second mounting pins and a latch member; and
means for moving said latch means between a free position out of said path of said stop member and a latched position with said second abutment surface abutting said stop member and facing said first abutment surface across said path to latch said stop member at said stop position, said moving means moving said latch member about said first mounting pin in rotary travel such that movement of said latch means is confined by said second mounting pin.

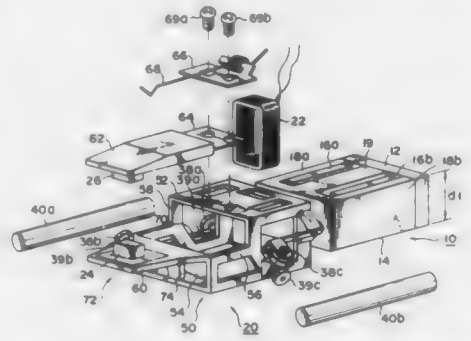
5,012,372

HEAD ACCESS MECHANISM FOR MOVING HEADS

Akihiro Isomura and Toshihiro Sugaya, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 19, 1988, Ser. No. 259,824
Claims priority, application Japan, Oct. 20, 1987, 62-264185
Int. Cl.[5] G11B *21/08*
U.S. Cl. 360—106 18 Claims

1. A head access mechanism for accessing at least one head to a destination track on a disk, comprising:
first generating means fixedly arranged, for generating a first magnetic field, including:
a single E-shaped yoke member having two side extending portions and a central extending portion;
a single I-shaped yoke member which is coupled to distal ends of said two side extending portions and said central extending portion so as to form a magnetic circuit; and
magnetic field generating means for generating the first magnetic field in said magnetic circuit; and
carriage means for carrying a first head, including:
second generating means for generating a second magnetic field and receiving a propulsive force;
a casing which is fixed to said second magnetic field generating means and is capable of housing said first generating means; and
head supporting means arranged to said casing means at a position opposite to said generating means, for supporting said first head, said carriage means moving together with



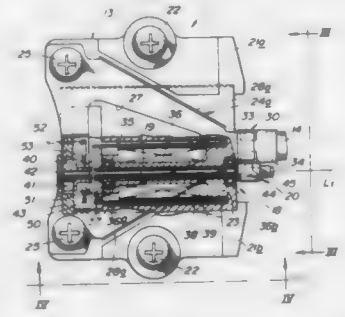
said first head in accordance with the propulsive force generated by interaction between the first and second magnetic fields, a center of gravity of said carriage means being present substantially on a line along which the propulsive force acts.

5,012,373

APPARATUS FOR POSITIONING A MAGNETIC HEAD ON A HEAD DRUM

Etsuro Saito, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 20, 1988, Ser. No. 287,393
Claims priority, application Japan, Dec. 24, 1987, 62-327782
Int. Cl.[5] G11B *5/52*
U.S. Cl. 360—107 10 Claims



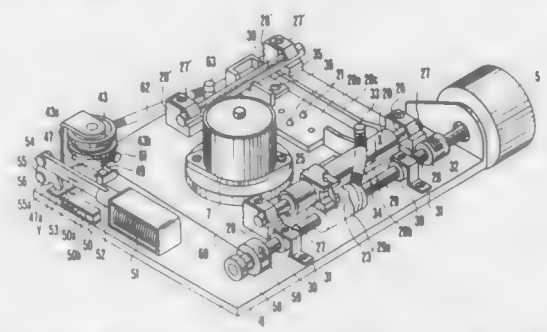
1. On a head drum rotatable about a central axis thereof, a rotary head device comprising:
magnetic head means for recording and/or reproducing signals on a magnetic tape adjacent a peripheral surface of said head drum;
head support means attached to said drum for supporting said magnetic head means for movement therewith in directions substantially parallel with said central axis;
rotary motor means including a drive element rotatable about an axis of rotation extending radially outward with respect to said central axis of the drum, and means for rotating said drive element in response to a control signal applied to said rotary motor means;
thrust bearing means for absorbing an axial thrust of said drive element resulting from rotation of said drum; and
rotation converting means coupled with said drive element of said rotary motor means and with said head support means for converting rotation of said drive element into movement of said head support means and said magnetic head means therewith in said direction substantially parallel with said central axis of said head drum.

5,012,374

RECORDING AND/OR REPRODUCING APPARATUS IN WHICH THE POSITION OF HEAD MEANS RELATIVE TO THE RECORD BEARING MEDIUM IS CONTROLLED BETWEEN TWO POSITIONS

Masaya Maeda, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 245,997, Sep. 14, 1988. This application Dec. 5, 1989, Ser. No. 446,435
Claims priority, application Japan, Jul. 20, 1983, 58-132536; Jul. 20, 1983, 58-132537; Jul. 20, 1983, 58-132538; Jul. 20, 1983, 58-132539; Jul. 20, 1983, 58-132540; Jul. 20, 1983, 58-132541
Int. Cl.[5] G11 *5/55, 5/56, 21/08, 21/12*
U.S. Cl. 360—109 16 Claims



1. A recording and/or reproducing apparatus using a disc-shaped record bearing medium, comprising:
(a) recording and/or reproducing head means for recording and/or reproducing signals on the record bearing medium, said head means being positionable in a protruding position in which said head means protrudes toward the record bearing medium, and a retracted position in which said head means is retracted from the record bearing medium;
(b) head carrying means, mounting said head means thereon, for moving said head means in a radial direction of the record bearing medium for changing a recording track on the record bearing medium;
(c) guide means, including a guide shaft disposed in said radial direction, for linearly guiding the movement of said head carrying means along said radial direction, said head carrying means being rotatable about a rotating axis formed by said guide shaft; and
(d) control means for controlling the position of said head means between said protruding position of said head means protruding toward the record bearing medium and said retracted position of said head means retracting from the record bearing medium, by the rotating of said head carrying means around said guide shaft.

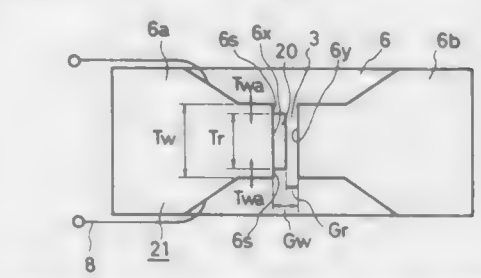
5,012,375

WIDE-WRITE, NARROW-READ, SINGLE-GAP MAGNETIC HEAD

Masaru Nishimura, Hyogo, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan

Filed Sep. 1, 1989, Ser. No. 401,762
Claims priority, application Japan, Sep. 2, 1988, 63-220062
Int. Cl.[5] G11B *5/23, 5/147*
U.S. Cl. 360—119 5 Claims

1. A wide-write, narrow-read, single-gap magnetic head comprising:
a substantially U-shaped magnetic core with opposed end faces of a pair of legs having a substantially equal width; and
a magnetic material attached to one of said end faces to form a read gap with the other end face,



said magnetic material having a saturated flux density lower than that of said magnetic core, and

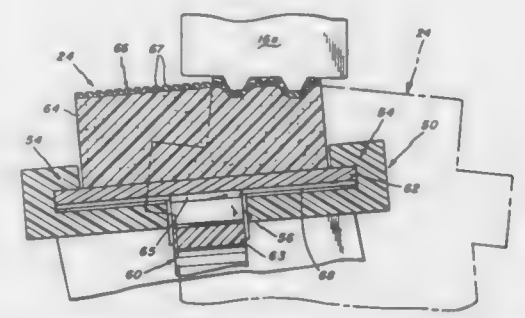
said read gap having a read track width smaller than a write track width made by said opposed end faces.

5,012,376

TAPE HEAD CLEANER CARTRIDGE HAVING A MESH CLEANING LAYER

Kyriacos Joannou, Wayland; Kenneth Wilson, Lexington, and Alan B. Lowry, Canton, all of Mass., assignors to Pericomp Corporation, Natick, Mass.

Division of Ser. No. 108,062, Oct. 14, 1987, Pat. No. 4,875,125. This application Sep. 21, 1989, Ser. No. 410,288
Int. Cl.[5] G11B *5/41*
U.S. Cl. 360—128 9 Claims



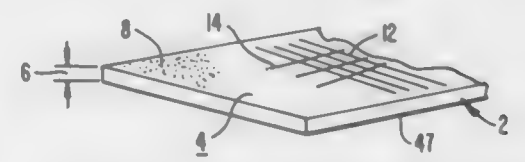
1. A cleaning pad for cleaning a magnetic tape head and supported in a tape head cleaner cartridge, said cleaning pad comprising, a support base, a resilient layer of a soft compressible material, means securing the resilient layer on the support base, a mesh layer and means securing the mesh layer on the resilient layer on the side thereof remote from said support base, said mesh layer providing the contact surface for the head and said resilient layer providing a small pressure to urge the mesh layer into such contact.

5,012,377

HOMOGENEOUS MAGNETIC HEAD CLEANING MATERIAL

Mohammed Siddiq, and I-Huan Lo, both of San Jose, Calif., assignors to Tandy Corporation, Fort Worth, Tex.

Continuation of Ser. No. 182,829, Apr. 18, 1988, abandoned. This application Dec. 15, 1989, Ser. No. 453,148
Int. Cl.[5] G11B *5/41*
U.S. Cl. 360—128 31 Claims



1. A magnetic head cleaner, for removing contaminant from a magnetic head, comprising:
a strip of homogeneous polymeric material having a length,

a cleaning surface and at least one of the following cleaning attributes:

(a) the cleaning surface having a matte finish with an average roughness of about 0.1 μm to about 1.0 μm; and

(b) the cleaning surface having grooves formed therein transverse to the length.

5,012,378

MAGNETIC TAPE CASSETTE HAVING REEL BRAKE STRUCTURE PROVIDING IMPROVED DUST PROOFING

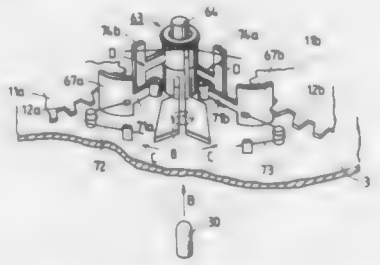
Shozo Onmori; Daisuke Takahashi, and Kengo Oishi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co. Ltd., Kanagawa, Japan

Division of Ser. No. 318,866, Mar. 6, 1989. This application Jul. 5, 1990, Ser. No. 549,571

Claims priority, application Japan, Mar. 11, 1988, 63-31697[U]; Mar. 25, 1988, 63-69850; Mar. 30, 1988, 63-40982[U]

Int. Cl.[5] G11B *23/087*

U.S. Cl. 360—132 3 Claims



1. A magnetic tape cassette housing a pair of tape winding bodies around which a magnetic tape is wound, the magnetic tape being pulled exteriorly of the cassette for recording the playback, comprising: a reel brake for preventing rotation of said tape winding bodies, said reel brake comprising a pair of engaging pawl members each pivotally supported at one end thereof and having a free means for urging said free ends of said panel members in a direction to cause said free ends to engage a gear portion formed on a flange of respective one of said tape winding bodies, and a pair of rotatable body portions each having an abutment portion and an operating portion, both of which extend from said rotatable body portion radially of said body portion, said abutment potions being engageable with a respective one of said engaging pawl member intermediate the length of said pawl members so as to move said free ends said pawl members out of engagement with said gear portions, each said abutment portion having generally a T shape with a base end joined to a respective body portion, and a distal bar-like portion extending in a direction of thickness of said cassette, a first end of said distal bar-like portion being engageable with the corresponding one of said engaging pawl members, a brake release insertion member being insertable into said cassette through a hole extending through a wall of said cassette so as to engage each of said operating portions to move said abutment portions, means for urging said rotatable body portions in such directions as to hold said operating portions in contact with each other to close said hole, each of said abutment portions urging a respective one of said engaging pawl members to move said free ends of said engaging pawl members out of engagement with said gear portions when said operating portions are moved away from each other, said operating portions not moving with movement of said engaging pawls.

5,012,379

MAGNETIC TAPE CASSETTE HAVING DUST BLOCKING MEMBER FOR PREVENTING ENTRY OR DUST THROUGH BRAKE RELEASE LEVER HOLE

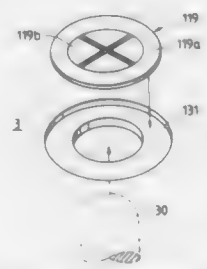
Shozo Onmori; Daisuke Takahashi, and Kengo Oishi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 318,866, Mar. 6, 1989. This application Jul. 5, 1990, Ser. No. 549,321

Claims priority, application Japan, Mar. 11, 1988, 63-31697[U]; Mar. 25, 1988, 63-69850; Mar. 30, 1988, 63-40982[U]

Int. Cl.[5] G11B *23/087*

U.S. Cl. 360—132 6 Claims



1. A magnetic tape cassette housing a pair of tape winding bodies around which a magnetic tape is wound, comprising: reel brake means for preventing angular movement of said tape winding bodies, said reel brake means being rotatable between a first position wherein said brake means is engaged with at least one of said tape winding bodies and a second position wherein said reel brake means is disengaged from said tape winding bodies, a hole being formed through a wall of the cassette so that a brake release lever can pass through the hole and engage said reel brake means to rotate said reel brake means from said first position to said second position; and a flexible dust-blocking member disposed over said hole, said dust-blocking member being divided into separable segments in such a manner as to allow the brake release lever to pass through said dust blocking member.

5,012,380

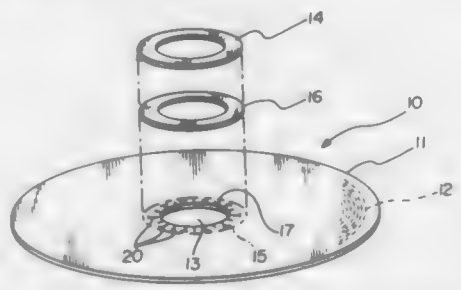
ARTICLE SURVEILLANCE PROTECTION OF FLEXIBLE MAGNETIC COMPUTER DATA STORAGE DISKS

Peter J. Harissis, Rush, and Jeffrey P. Serbicki, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 24, 1989, Ser. No. 398,021

Int. Cl.[5] G11B *5/82, 23/03, 15/04*

U.S. Cl. 360—135 8 Claims



1. A computer disk having article surveillance protection comprising:

a flexible disk substrate having a central aperture and having a series of slits formed in the substrate around the periphery of the central aperture;

a magnetic recording material formed on the surface of the disk on at least one side thereof for recording of data on the disk;

and a surveillance marker comprised of an extended length of ferromagnetic material formed around at least a substantial portion of the periphery of the central aperture and integrally bonded to said disk substrate overlying the slits formed in the substrate, said slits being adapted to provide tear-initiation sites which operate to induce tearing of said flexible substrate in the event of an attempt to remove said marker from said substrate after said marker has been integrally bonded to said substrate.

5,012,381

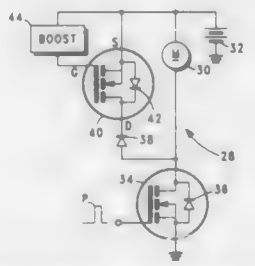
MOTOR DRIVE CIRCUIT WITH REVERSE-BATTERY PROTECTION

Robert S. Elliott, Barrington, Ill., and Kim R. Gauen, Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 13, 1989, Ser. No. 406,627

Int. Cl.[5] H02H *3/18;* H02J *7/00*

U.S. Cl. 361—84 8 Claims



1. In a system having an inductive load that is powered by a battery, a load drive circuit with reverse-battery protection, comprising

a first switch coupling the battery to the load so as to establish a path for current through the load;

means defining a path for recirculating current around the load, including a recirculating diode and a transistor switch coupled in series with the recirculating diode and the load such that substantially all the recirculating current flows through the recirculating diode and the transistor switch; and

bias means coupled to the transistor switch for turning the transistor switch on when the battery is coupled to the load with its nominal polarity, and for holding the transistor switch off in response to the battery being coupled to the load with a reverse polarity.

5,012,382

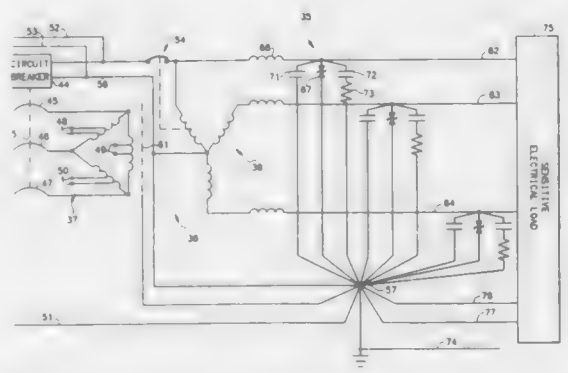
LOW IMPEDANCE POWER CONDITIONER APPARATUS AND METHOD

William D. Carpenter, Del Mar; Randy J. Redding, and Robert C. McLoughlin, both of San Diego, all of Calif., assignors to Teal Electronics Corporation, San Diego, Calif.

Filed Jun. 14, 1990, Ser. No. 537,579

Int. Cl.[5] H02H *7/20*

U.S. Cl. 361—93 39 Claims



1. Power conditioning apparatus comprising:

electrical power input connection means;

low impedance transformer means having input means coupled to said power input means and having output means; and

power output connection means coupled to said transformer output means and adapted to be coupled to a load having a duty cycle of less than fifty percent;

said transformer being sized based on impedance, independent of thermal characteristics for high current, low duty cycle applications where instantaneous power requirements are greater than 10KVA, the steady state power rating of said transformer being no more than one-half of the maximum instantaneous power requirement of the load.

5,012,383

LIGHTNING ARRESTOR INSULATOR AND METHOD OF PRODUCING THE SAME

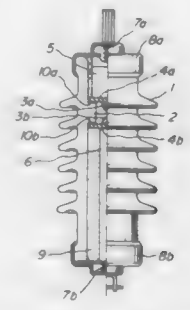
Shoji Seike; Toshiyuki Mima, both of Nagoya, and Masayuki Nozaki, Aichi, all of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Continuation of Ser. No. 327,610, Mar. 23, 1989, abandoned. This application Jul. 27, 1990, Ser. No. 561,234

Claims priority, application Japan, Mar. 23, 1988, 63-67311; Jun. 14, 1988, 63-144583

Int. Cl.[5] H02H *9/06*

U.S. Cl. 361—120 9 Claims



1. A lightning arrestor insulator having a discharge gap portion and an arrestor ZnO element device both within a body of the insulator, comprising: projected discharge electrodes arranged in the inside of the insulator body, the discharge gap portion being formed of a heat resistant protrusion arranged in the inside of the insulator body and surrounding the discharge electrodes, the protrusion being a separate or integral part of the insulator body;

a pair of metal plates and/or electrically conductive ceramic plates sandwiching the protrusion from both sides thereof and electrically connected to the discharge electrodes, the pair of plates being joined and airtightly sealed to the protrusion with an inorganic glass; and

a ceramic cylinder surrounding the projected electrodes between the pair of plates for firmly supporting the pair of plates.

5,012,384

LOAD CIRCUIT FOR A DIFFERENTIAL DRIVER

Thomas Chew, San Francisco, Calif., assignor to Advanced Micro Device, Inc., Sunnyvale, Calif.

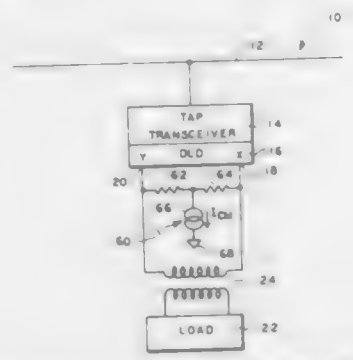
Filed Feb. 20, 1990, Ser. No. 482,284

Int. Cl.[5] H01H *47/00*

U.S. Cl. 361—159 22 Claims

1. An improved output circuit for use with a differential driver of the type adapted to drive a load including a parallel inductance and resistance coupled across a pair of output terminals of said driver, said driver being arranged to provide first and second equal currents at said terminals for deriving a zero volt output across said load when in a first state, and for providing a third current to one said terminal for deriving a voltage magnitude across said load when in a second state, said

third current causing a residual magnetizing current in said inductance which produces an undesired kickback voltage to be produced across load resistance during the transition from said second state to said first stage, said output circuit being arranged to substantially reduce said kickback voltage and comprising:



impedance means coupled across said output terminals; and common mode current source means coupled to said impedance means for sinking a portion of said residual magnetizing current during said transition to reduce the amount of said residual magnetizing current flowing through said load resistance during said transition

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5,012,385

STRUCTURE FOR ARRANGING ELECTRICAL DOUBLE-LAYER CAPACITOR CELLS

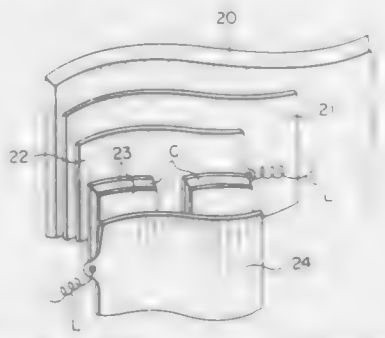
Ken Kurabayashi, Chigasaki; Yoshinobu Tsuchiya, Fujisawa, and Yoriaki Niida, Yamato, all of Japan, assignors to Isuzu Motors Limited, Tokyo, Japan

Filed May 7, 1990, Ser. No. 519,597

Claims priority, application Japan, Jul. 29, 1989, 1-197826

Int. Cl.[5] H01G *4/38, 9/00*

U.S. Cl. 361—328 **6 Claims**



1. A structure for arranging an electrical double-layer capacitor cell comprising:

a first electrode plate adhered to a surface of a tabular member in an electrically nonconductive manner;

an electrical double-layer capacitor cell adhered to said first electrode plate in an electrically conductive manner; and

a second electrode plate adhered to said electrical double-layer capacitor cell in an electrically conductive manner.

5,012,386

HIGH PERFORMANCE OVERMOLDED ELECTRONIC PACKAGE

Michael B. McShane, and Paul Lin, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 27, 1989, Ser. No. 4[illegible],089

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—386 **24 Claims**

1. An electronic package comprising:

a substrate having:

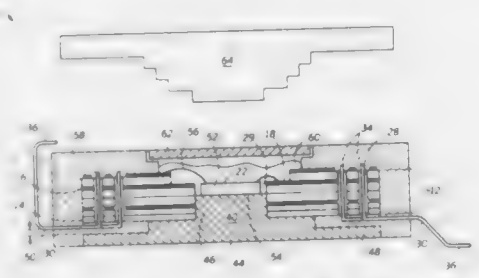
a plurality of planar layers, where at least one layer is a dielectric layer and where at least one layer is an electrically conductive layer;

at least one hole through the plurality of layers; and

a cavity within the layers;

a lead having a proximal end and a distal end, where the proximal end pierces the hole through the plurality of layers, where the proximal end is additionally electrically connected to the electrically conductive layer;

a thermally conductive insert adjacent to the dielectric layer, where the insert has a first side and a second side,



where a die area is present on the first side which is exposed through the cavity within the layers;

an electronic component having a front surface and a back surface, where its back surface is mounted on the die area of the thermally conductive insert and where the front surface is electrically connected to the electrically conductive layer; and

a body of dielectric material surrounding the substrate and the electronic component, where the distal end of the lead and at least a portion of the second side of the thermally conductive insert are not surrounded by the body.

5,012,387

PRINTED CIRCUIT BOARD WITH HEAT DISSIPATING DEVICE

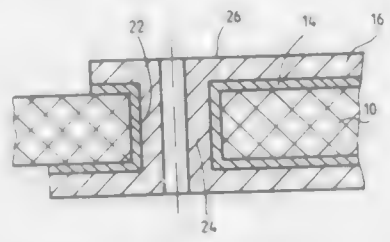
Hans Ohlenburger, Uberlingen/Bodensee, Fed. Rep. of Germany, assignor to Bodenseewerk Geratetechnik GmbH, Fed. Rep. of Germany

Filed Apr. 18, 1989, Ser. No. 339,680

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1988, 3813364

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—388 **6 Claims**



1. A printed circuit board comprising:

a printed circuit board core having two opposite sides;

a copper layer located on said two opposite sides of said printed circuit board core;

a pure aluminum layer covering said copper layer in direct contact therewith on both said opposite sides of said printed circuit board core;

a predetermined number of circuit components mounted on said pure aluminum layer on one of said two opposite sides of said printed circuit board core;

said printed circuit board core containing a predetermined number of throughbores extending between said two opposite sides;

said copper layer located on said two opposite sides and said pure aluminum layer covering said copper layer on said two opposite sides of said printed circuit board core, extending through said predetermined number of throughbores; and

selected ones of said circuit components physically contacting the pure aluminum layer and covering selected ones of said thoughbores.

5,012,388

ELECTRODE STRUCTURE OF A CHIP TYPE ELECTRONIC COMPONENT

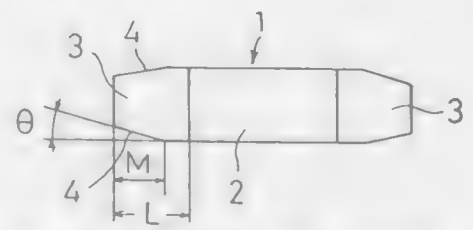
Akira Kabeshita, Hirakata; Tokuhito Hamane, Nara, and Yoshifumi Kitayama, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 20, 1989, Ser. No. 425,840

Claims priority, application Japan, Oct. 20, 1988, 63-264525

Int. Cl.[5] H05K *7/02*

U.S. Cl. 361—400 **10 Claims**



1. A chip type electronic component comprising:

a main body having opposite first and second end surfaces and a lower surface, said lower surface of said main body defining a first plane; and,

first and second electrode portions respectively connected to said first and second end surfaces of said main body;

wherein each of said first and second electrode portions comprises a lower surface;

wherein each lower surface of said first and second electrode portions comprises a first planar face extending adjacent said main body in a second plane which is substantially parallel to the first plane defined by said main body, and a second planar face extending adjacent said first planar face in a third plane which extends upwardly at an angle relative the second plane away from said main body.

5,012,389

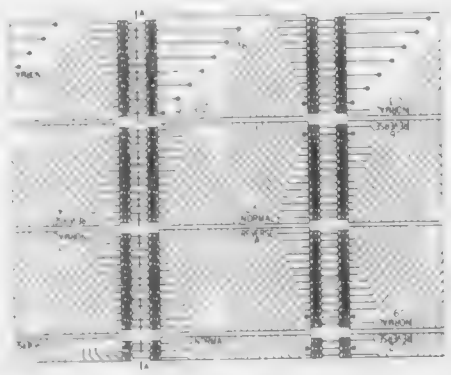
BOARD WIRING PATTERN FOR A HIGH DENSITY MEMORY MODULE

Richard A. Perry, Charlotte, N.C., assignor to Hand Held Products, Inc., Charlotte, N.C.

Filed Dec. 14, 1988, Ser. No. 284,238

Int. Cl.[5] H05K *7/02*

U.S. Cl. 361—409 **34 Claims**



9. A memory module comprising:

a plurality of memory chips and a mounting surface therefor, each chip including a plurality of signal pins for power, ground, control, address and data signals and at least one enable pin for selecting said chip, said memory chips being mounted on said mounting surface in an array of rows and columns;

said mounting surface including a first serpentine pattern of parallel conductors which connect corresponding ones of said signal pins on one end of a first chip to the opposite end of a second chip in the same row and previous column as said first chip, to the opposite end of a third chip in the next row and same column as said second chip, to the one end of a fourth chip in the same row and next column as said third chip, to the one end of a fifth chip in the same column and next row as said fourth chip, and to the opposite end of a sixth chip in the same row and previous column as said fifth chip.

5,012,390

MOUNTING AND CONNECTION SYSTEM FOR ELECTRICAL COMMUNICATIONS EQUIPMENT

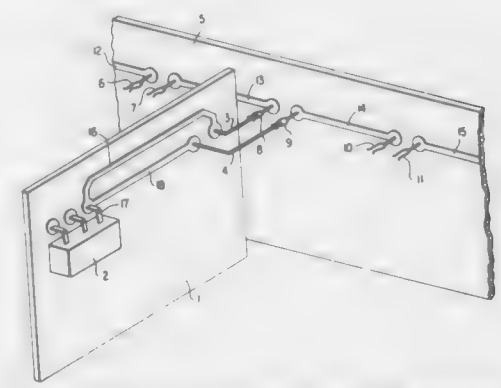
Kurt Erbele, Weissach im Tal, Fed. Rep. of Germany, assignor to ANT Nachrichtentechnik GmbH, Backnang, Fed. Rep. of Germany

Filed Jan. 9, 1989, Ser. No. 295,131

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1988, 3800978

Int. Cl.[5] H05K *1/14*

U.S. Cl. 361—413 **3 Claims**



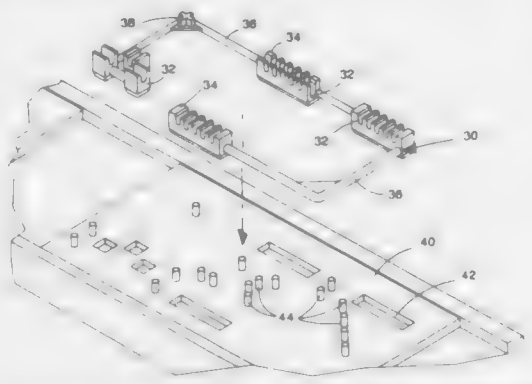
1. In a mounting and connection system for electrical communications equipment comprising: a plurality of plug-in modules, each provided with electrical components and with at least one pin connector having a plurality of contact pins for providing connections to said components; a circuit board which is provided with a plurality of adjacent socket connectors, each including a plurality of socket contacts, matingly engaging a respective said pin connector of a respective said plug-in modules; a plurality of bus bar conductor sections disposed on said circuit board and extending between adjacent ones of said socket connectors, with each said bus bar conductor section connecting only one socket contact of a respective one of said socket connectors with only one said socket contact of an adjacent said socket connector; and a respective conductive connection between the respective two of said contact pins of each of said pin connectors which engage in the two contact sockets of the associated said socket connector which are connected to the respective associated ones of said bus bar conductor sections; the improvement wherein each of said conductive connections includes a first conductor extending from a first of said two contact pins of the respective said pin connector to a terminal pin of an electrical component of the respective plug-in module, and a second conductor extending from said terminal pin to a second of said two contact pins of the respective said pin connector.

5,012,391

MOLDED ELECTRICAL INTERCONNECTION SYSTEM

Albert N. Schultz, Jr., Hiddenite, and Paul D. Zakary, Winston-Salem, both of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 17, 1989, Ser. No. 395,382
Int. Cl.[5] H02B 1/20; H01R 9/09
U.S. Cl. 361—428 1 Claim



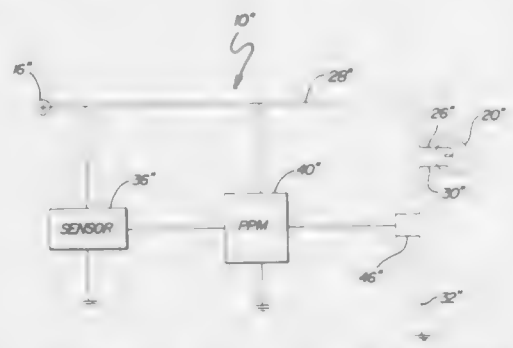
1. A molded electrical interconnection system comprising:
a template having mounted thereon pins and a separable wire organizing frame which includes wire retaining blocks with grooves,
a wire harness having a plurality of bare conductors laced to said frame and pins to form electrical grids, said conductors being either in a common plane or parallel to said common plane said conductors contacting said grooves and pins;
free ends of said conductors being bent normal to said common plane with terminals attached thereto; and
an encapsulant formed from reaction injection molded material encapsulating said template, and wire harness but not the free ends said free ends interconnecting electrical components mounted to said system.

5,012,392

AUTOMATIC BATTERY POWERED VIDEO LIGHT

Peter A. Hochstein, 2966 River Valley Dr., Troy, Mich. 48098

Continuation-in-part of Ser. No. 310,307, Feb. 13, 1989, Pat. No. 4,959,755. This application May 22, 1990, Ser. No. 527,039
Int. Cl.[5] G03B 15/02; H05B 39/04; G05F 1/00
U.S. Cl. 362—4 15 Claims



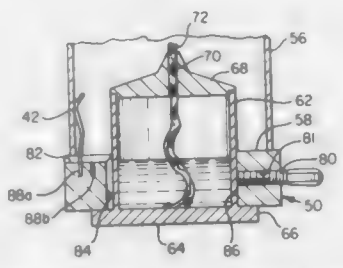
1. A portable light assembly adapted to be connected to a device and directed toward an object, said assembly comprising: battery power means for supplying d.c. power; radiant means connected to said battery power means for producing radiant energy to illuminate an object; control means connected between said battery power means and said radiant means for receiving a control signal and for switching d.c. power to said radiant means controlling the intensity of illumination by said radiant means; said control means including sensor means for sensing ambient light and reflected radiant energy from the scene indicative of brightness of the object and for producing said control signal, pulse modulator means for receiving said d.c. power and connected to and responsive to the sensed brightness by said sensor means for producing said control signal comprising pulses and for con-trolling the duty cycle of said pulses to control the intensity of illumination by said radiant means, and switching means connected to said power means and said radiant means for receiving said control signal and for switching power to said radiant means controlling the brightness, said switching means including a transistor operating in switch mode for switching the d.c. power to said radiant means.

5,012,393

BASE FOR BOTTLE LAMP

Earl A. Knipe, R.R. Box 58, Warsaw, Ill. 62379, and Jan B. Knipe, Box 131A, Fowler, Ill. 62338

Filed Aug. 2, 1990, Ser. No. 562,012
Int. Cl.[5] F21L 19/00
U.S. Cl. 362—163 17 Claims



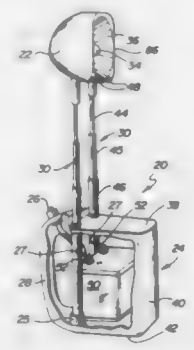
3. In a base for supporting glass chimney means:
glass cutting means projecting from said base for cutting a glass chimney means;
a row of angularly spaced openings in said base; and,
plural spring members each having one end portion reversibly mountable in said openings and an opposite end portion projecting from said base for supporting engagement with said chimney means.

5,012,394

HAND PORTABLE LIGHT WITH EXTENDABLE LAMP HOUSING

John G. Woodward, 5736 Cobb Creek Rd., Rochester, Mich. 48064

Filed Nov. 15, 1988, Ser. No. 271,429
Int. Cl.[5] F21L 7/00; F21S 1/12
U.S. Cl. 362—198 20 Claims



1. A free-standing hand portable light of the electric flashlight or electric lantern type with an extendable lamp housing comprising:
a free-standing lightweight, portable, readily movable base housing easily lifted by one hand;
a lightweight electrical lamp housing coupled to said base housing and easily movable by hand with respect to said base housing;

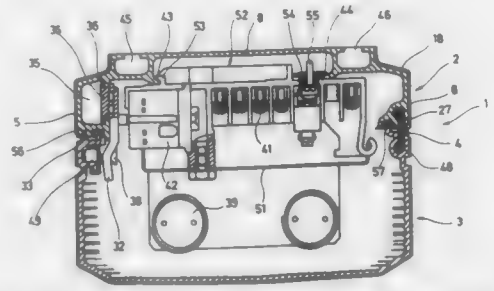
first and second telescopically collapsible arms spaced apart from one another, each said arm having a first end and a second end, the first end of each said arm being rigidly attached to said base housing, said telescopically collapsible arms allowing said electrical lamp housing to be telescopically positioned at any one of several user settable distances away from the base housing when said light is in use; and
pivot means for permitting said lamp housing to be swiveled with respect to the second ends of said first and second collapsible arms said pivot means allowing said lamp housing to be rotatably positioned at any one of several user-settable positions to direct illumination from said lamp housing in a desired direction.

5,012,395

MODULAR EXPLOSION PROTECTED LAMP FIXTURE MEETING "INCREASED SAFETY" STANDARDS

Lothar Wettengel, Künzelsau, and Eberhard Langer, Ingelfingen-Criesbach, both of Fed. Rep. of Germany, assignors to Rstahl Schaltgeräte GmbH, Kunzelsau, Fed. Rep. of Germany

Filed Mar. 26, 1990, Ser. No. 498,991
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1989, 3911900
Int. Cl.[5] F21V 21/00
U.S. Cl. 362—222 23 Claims



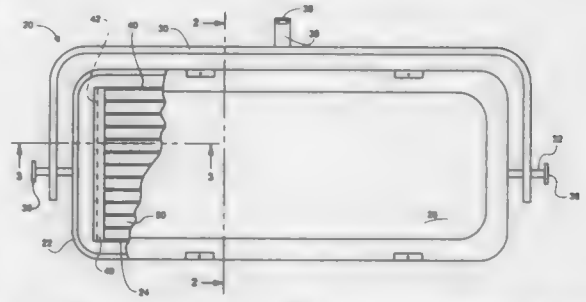
1. Modular, environmentally protected lamp fixture meeting "increased safety" standards, having
a housing (1) including a unitary, elongated trough-like body portion (2) formed with side walls (5, 6, 7), each having a rim, and a bottom (8);
a light pervious cover (3);
a hinge (4) secured to the trough-like body portion and the cover, respectively, and pivotably connecting said body portion and said cover.
said cover, when in closed position against said body portion, engaging one of the rims of the body portion;
sealing means (56) between said cover and said body portion along said rim;
electrical operating elements (39, 41, 42) for operation of a lamp means located in said housing; and
holding and support means (52) located in said housing for holding and supporting said electrical operating elements,
wherein, in accordance with the invention,
the trough-like portion (2) comprises an elongated profiled extruded structure of predetermined length, defining open ends and two respectively parallell side walls (5, 6);
wherein said profiled extrusion structure has a cross section of generally U shape defining two generally parallel leg portions (21, 22), forming said side walls, and a bottom connecting portion (23), unitary with said leg portions;
the free ends of said leg portions defining two portions of said rim which extend in a longitudinal direction;
wherein said profiled extrusion structure, adjacent the rim of one of said leg portions (22), is formed with a groove (24) shaped and dimensioned to receive one wing of said hinge (4);
and two end caps (11) are provided, secured to and sealed on the open ends of the extruded structure.

5,012,396

METHOD OF APPARATUS FOR ILLUMINATING TELEVISION STUDIO AND VIDEO TAPE PRODUCTION FACILITIES

Paul D. Costa, Burlingame, San Mateo, Calif.

Continuation of Ser. No. 177,099, Apr. 4, 1988, abandoned. This application Sep. 21, 1989, Ser. No. 410,258
Int. Cl.[5] F21S 3/00; F21K 2/00
U.S. Cl. 362—224 4 Claims



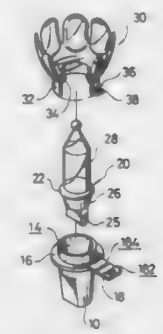
1. A method for illuminating a television studio and video tape production facilities comprising the steps of,
a. mounting a plurality of fixtures at spaced locations around the studio, each fixture including an array of fluorescent tubes, each tube having a formulation of phosphors coating the interior surface of the tube for generating fluorescent and phosphorescent light emissions at frequencies having a color spectrum suitable for illuminating television and video production without a filter or filter system,
b. energizing said tubes with electrical current pulses provided by an electrical ballast having an operational frequency in the range of from 10,000 to 100,000 cycles per second for stimulating sustained fluorescent and phosphorescent light emission from the phosphor coatings on the interior surface of the tubes,
c. directing light rays from the tubes away from the fixtures and inwardly towards the studio.

5,012,397

SOCKET AND CHANGEABLE BULB HOUSING SNAP FASTENER FOR CHRISTMAS LIGHT STRINGS

Jeou N. Tseng, No. 539, Sec. 4, Chung Hua Rd., Hsin Chu City, Taiwan

Filed Aug. 15, 1990, Ser. No. 567,800
Int. Cl.[5] F21V 17/06
U.S. Cl. 362—237 2 Claims



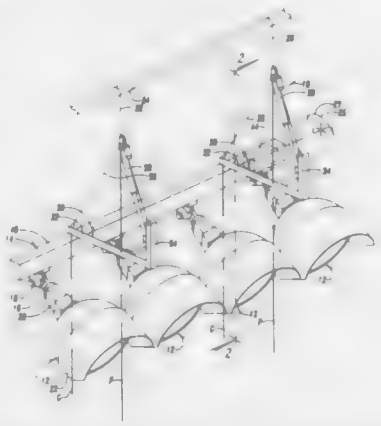
1. A socket and changeable bulb housing snap fastener for Christmas light strings, comprising a socket and a bulb, said bulb comprising a lighting element and an insert having two leads mounted thereon which are electrically connected to said lighting element, a hole being centrally formed on said socket for receiving said insert, the improvement comprising:
an annular outer flange being formed on said socket;
at least one tongue of insulating material extending radially and outwardly from a periphery of said outer flange, a

substantially rectangular slot being formed on each said tongue adjacent to a free end of each said tongue, a V-shaped groove being formed on an upper side of each said tongue at an end opposite to said free end and extending transversely to a length of each said tongue;

a bulb housing having a hollow annular engaging portion for engaging with said socket, an annular inner flange being formed on an uppermost portion of an inner periphery of said engaging portion, said engaging portion receiving an upper portion of said socket and resting on said annular outer flange, while said annular inner flange rest on an upper surface of said insert;

a corresponding number of T-shaped male members having a snapping head being formed relative to each said tongue on an outer periphery of said annular engaging portion of said bulb housing, each said slot having a width slightly less than a maximum width of said snapping head of said T-shaped male member, each said slot being engageable with each corresponding said T-shaped male member by bending each said tongue upwardly about said V-shaped groove and pushing each said tongue against each corresponding said T-shaped male member, such that each respective said snapping head is forced through each corresponding said slot.

5,012,398
LIGHT BAR LEVELER
Robert D. Jones, Oskaloosa, and David M. Demeyer, Colfax, both of Iowa, assignors to Musco Corp., Oskaloosa, Iowa
Filed Jan. 18, 1990, Ser. No. 466,916
Int. Cl.[5] F21V *21/14*
U.S. Cl. 362—250 **5 Claims**



1. A leveling means for maintaining or adjusting the orientation of a support member suspended from a suspension means having a longitudinal axis which is generally horizontally positioned, and to which is mounted one or more light fixtures, comprising:

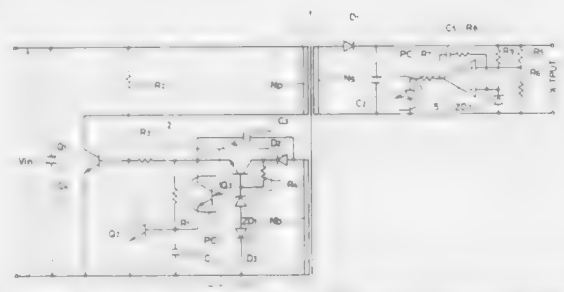
a bracket means attached to the support member and having a distal end extended outwardly from the support member;

a pulley means attached to the suspension means;

a cable means attached at one opposite end to the distal end of the bracket means, and extending through the pulley means to the support member at its other opposite end; and

an extendable and retractable actuator means attached at opposite ends between generally the distal end of the bracket means and the pulley means.

5,012,399
SELF-OSCILLATION TYPE CONVERTER
Hiroshi Takemura, and Yasuji Okamoto, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan
Filed Dec. 7, 1989, Ser. No. 447,216
Claims priority, application Japan, Dec. 9, 1988, 63-312645
Int. Cl.[5] H02M *3/338*
U.S. Cl. 363—18 **8 Claims**



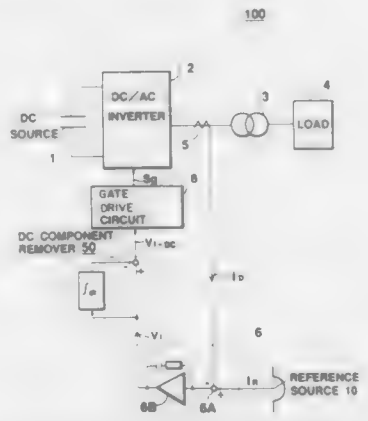
1. A self-oscillation type converter comprising a transformer having a primary winding and a feedback winding, and a switching transistor having a control electrode and being connected to the primary winding of the transformer, a voltage generated in the feedback winding of said transformer being fed back to the control electrode of said switching transistor, comprising in the following order:

constant current means for receiving a voltage generated in said feedback winding and supplying a constant current through a control resistor to said control electrode of the switching transistor in response to said voltage generated in the feedback winding,

time constant means for receiving an output of said constant current means and defining a time period which starts from generation of said voltage in said feedback winding and continues until the end of a turning-on time period of said switching transistor, and

switching means for receiving an output of said time constant means and forcibly turning off said switching transistor according to said output of said time constant means.

5,012,400
DC/AC POWER CONVERTING APPARATUS INCLUDING DC COMPONENT REMOVER
Nobuyuki Yasuda, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 21, 1989, Ser. No. 410,057
Claims priority, application Japan, Sep. 26, 1988, 63-238815
Int. Cl.[5] H02M *07/537, 1/12*
U.S. Cl. 363—95 **8 Claims**



1. A power converting apparatus comprising:

means for supplying DC (direct current) power;

DC-to-AC inverting means for inverting the DC power into AC (alternating current) power;

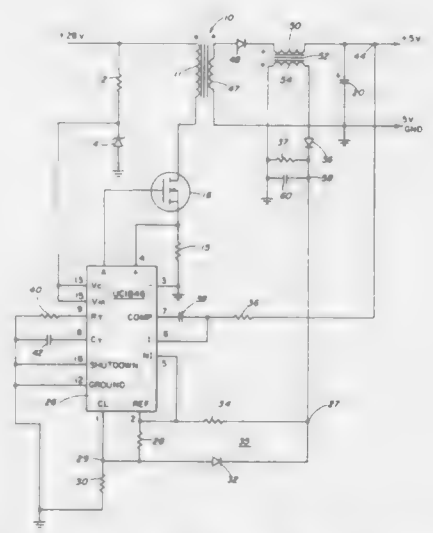
transformer means for transforming the AC power to obtain desirable AC power;

detecting means for detecting an output signal from the DC-to-AC inverting means to produce an output detection signal;

calculating means for performing a control calculation for the DC-to-AC inverting means to enable the output detection signal to follow a reference signal by generating a first output instruction signal; and,

DC component removing means, located in a feedback loop between the calculating means and the DC-to-AC inverting means, for removing a DC component from the first output instruction signal to derive a second output instruction signal such that the inverting operation of the DC-to-AC inverting means is controlled based upon the second output instruction signal to prevent DC magnetization of the transformer means.

5,012,401
SWITCHING POWER SUPPLY WITH FOLDBACK CURRENT LIMITING
Francis M. Barlage, Tucson, Ariz., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.
Filed Mar. 19, 1990, Ser. No. 495,8[illegible]
Int. Cl.[5] H02M *7/537*
U.S. Cl. 363—97 **23 Claims**



1. In a switching power supply, apparatus comprising in combination:

a transformer having a primary side comprising at least one primary winding and a secondary side comprising at least one secondary winding, the secondary side being adapted to provide an output signal for use by an external load and a feedback signal for use in internal current limiting; and

current limiting means, comprising a series combination of a resistor and a diode connected to the secondary side to receive the feedback signal such that the diode is reverse-biased in reference to the feedback signal and is interposed between the resistor and the secondary side, for preventing current flow through the diode when the feedback signal exceeds a predetermined level during normal operation of the power supply and for permitting current flow through the diode when the feedback signal is less than the predetermined level, the current limiting means being operative in response to the feedback signal and a reference voltage signal to prevent or permit current flow through the diode.

5,012,402
SYSTEM FOR MODIFYING A MACHINE'S PROGRAM AT A REMOTE LOCATION
Yasuo Akiyama, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan
Filed Dec. 16, 1988, Ser. No. 285,508
Claims priority, application Japan, Dec. 17, 1987, 62-317478
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—192 **5 Claims**

2. A method for controlling a device at a first location, the method comprising the steps of:

providing a programmable sequencer for driving and controlling the device,

performing a modification of the device at the first location,

performing a modification of the program for the programmable sequencer at the first location to thereby produce a modified program,

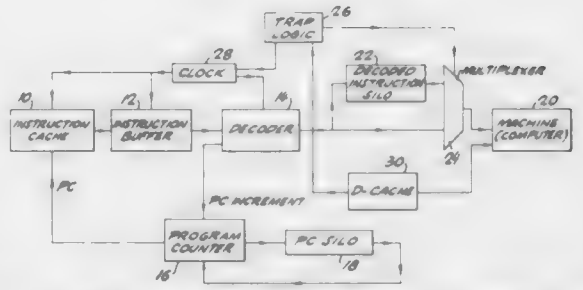
sending contents of the modified program to a computer at a second location,

checking and correcting contents of the modified program at the second location to thereby produce a corrected program,

sending the corrected program to the sequencer at the first location, and

inputting the corrected program to the sequencer at the first location.

5,012,403
APPARATUS AND METHOD FOR REPLAYING DECODED INSTRUCTIONS
James B. Keller, Arlington; Kevin L. Ladd, West Townsend, and James J. Reisert, Boxborough, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Apr. 1, 1988, Ser. No. 176,613
Int. Cl.[5] G06F *9/30, 9/40*
U.S. Cl. 364—200 **9 Claims**



1. A method of replaying instructions to a computer said instructions being decoded by a decoder, and said instructions occurring during a trap shadow, which is a time between an instruction which has caused a trap occurrence and issuance of a trap handler address, the method comprising the steps of:

siloing the decoded instructions in the sequence that they are output by the decoder, for a period of time at least equal to said trap shadow;

issuing a trap handler address;

freezing further decoding of succeeding instructions by the decoder upon issuance of the trap handler address;

replaying said siloed decoded instructions to the computer upon issuance of the trap handler address; and

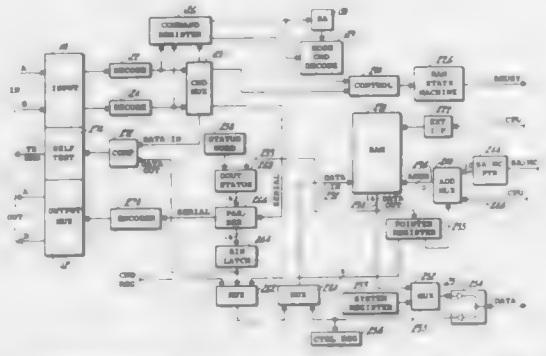
unfreezing the decoder to permit the decoder to continue decoding of the succeeding instructions after the siloed decoded instructions have been replayed.

5,012,404

INTEGRATED CIRCUIT REMOTE TERMINAL STORES INTERFACE FOR COMMUNICATION BETWEEN CPU AND SERIAL BUS

John W. Pressprich, Woodland Park, Colo., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 28, 1988, Ser. No. 263,748
Int. Cl.[5] G06F *13/00, 13/14, 13/16, 13/36*
U.S. Cl. 364—200 10 Claims



1. An integrated circuit system comprising at least one integrated circuit for interfacing between a serial bus and a CPU and comprising:

an input-output section connected to said serial bus and comprising decoding means for decoding bus commands;

chip control means, responsive to said decoding means, for controlling various components of said integrated circuit;

memory control means, connected to said chip control means, for controlling memory addresses in an integrated circuit memory, and;

host interface means for passing signals to and from said CPU connected to said integrated circuit system, characterized in that:

said memory control means controls an on-chip two-input memory located on the same chip as said chip and memory control means and controls the flow of memory addresses along a first path extending from said host interface means to said memory and along a second path extending from said input-output section through command decoding means and pointer assignment means to an address port on said on-chip memory;

said chip control means controls a set of data paths having a first branch extending from said host interface means through a first set of controllable devices to a data input port in said on-chip memory, a second branch extending from said input-output section through a set of controllable devices to said data input port, a third branch extending from a data output port in said on-chip memory to an output encoder and thereafter to output bus interface means external to said integrated circuit, a fourth branch extending from said data output port to said host interface means, and a fifth branch extending from said data output port through at least one controllable device to said address port, whereby output data may be converted to an address;

a set of control lines extend from said CPU to CPU interface command means in said integrated circuit for control by said CPU of read and write operations between said CPU and said on-chip memory;

said memory comprises a pointer section containing up to a predetermined number of address pointers for indicating the location of data blocks within a receive storage section of memory for the storage of messages received from said serial bus and for indicating the location of blocks within a transmit storage section of memory for the storage of messages to be sent onto said serial bus, both of said storage sections being subdividable by pointer assignment into a set of at least two storage subsections, whereby said memory is configurable by said CPU through pointer assignment;

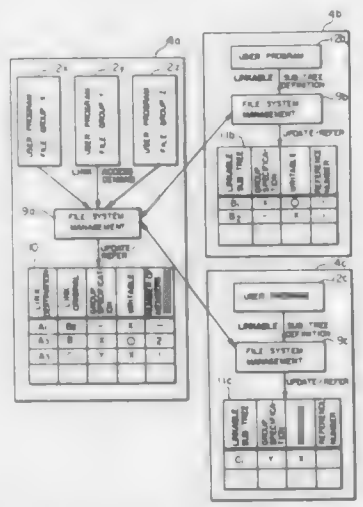
said integrated circuit further includes assignment means responsive to a serial bus command, for assigning a pointer to serial bus data to be stored in said memory, whereby data may be selectively stored in one of said storage subsections.

5,012,405

FILE MANAGEMENT SYSTEM FOR PERMITTING USER ACCESS TO FILES IN A DISTRIBUTED FILE SYSTEM BASED ON LINKAGE RELATION INFORMATION

Takashi Nishikado; Megumu Kondo, both of Kawasaki; Kazuhiko Fukuoka, Machida, and Fumiya Murata, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 109,317, Oct. 19, 1987, abandoned.
This application Aug. 3, 1989, Ser. No. 389,260
Claims priority, application Japan, Oct. 17, 1986, 61-24525
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—200 17 Claims



1. A file management system for managing a plurality of tree structure files, each of said tree structure files including one directory file and at least one branch file directed by said directory file, said file management system comprising:

a plurality of processing means each having first memory means for storing a set of tree structure files; and

line means, connected to said plurality of processing means, for transmitting data or commands between each of said plurality of processing means;

wherein at least a first one of said plurality of processing means includes

linking means for providing linkage relation between a first file in said tree structure files in said first one of said processing means and a second file in said tree structure files in a second one of said plurality of processing means in response to a linkage request from an user,

second memory means for storing said linkage relation between said first file and said second file together with an indicator indicating a group of one or more users including said user for which said linkage relation is valid, and

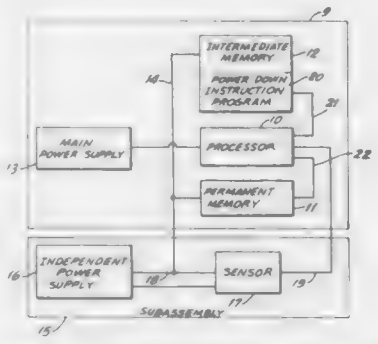
means for judging, in response to a request to access a file directed by said second file through said first file from a first user, whether said request is permissible by checking whether linkage relation between said first file and said second file is valid for said first user by searching said indicator in said second memory means.

5,012,406

LINE OF POWER INTERRUPTION IN PREDETERMINED AREA OF INTERNAL PERMANENT MEMORY

Pierre J. Martin, Caracas, Venezuela, assignor to Power Card Supply, Caracas, Venezuela

Filed Apr. 19, 1988, Ser. No. 183,674
Int. Cl.[5] G06F *1/30*
U.S. Cl. 364—200 10 Claims



1. In a computer supplied by an electric power source and comprising at least an internal intermediate memory for retaining parts of a work in progress while it is operated on by the computer during various states of the computer and an internal permanent memory utilized by the computer to store completed parts of the work in progress through transfer along internal channels, both of which memories are used during normal computer operation, the improvement comprising:

an independent source of power,

detecting means for indicating an interruption of energy supply from said electric power source,

means for reserving memory address locations in said internal permanent memory,

means for switching, in response to detection of said interruption, the independent source of power into operation in relation with said computer,

means responsive to the detecting means for determining the state of the computer operating on the work in progress at the time of interruption, and

means for providing special austere orderly powering down instructions to terminate external computer interfaces and to automatically transfer identically the state of the computer including all work in progress as it exists at the time of interruption to said reserved memory address locations in said internal permanent memory through the normally used internal channels with an indication in the computer of said interruption of said power source, said means for switching then disconnecting said independent source of power.

5,012,407

COMPUTER SYSTEM WHICH ACCESSES OPERATING SYSTEM INFORMATION AND COMMAND HANDLERS FROM OPTICAL STORAGE VIA AN AUXILIARY PROCESSOR AND CACHE MEMORY

Charles A. Finn, 26762 SW. 124 Ct., Naranja, Fla. 33032

Filed Dec. 11, 1984, Ser. No. 680,477
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—200 6 Claims

1. A computer system comprising:

host processing means for processing instructions and data;

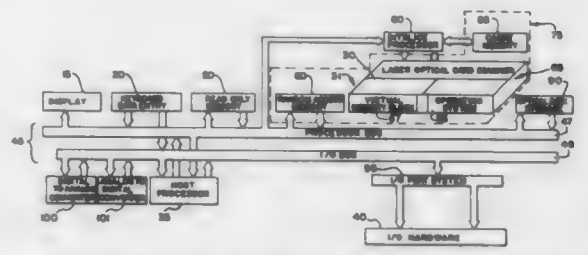
first memory means for storing instructions and data;

a processor bus connecting said host processing means and said first memory means;

auxiliary processing means connected to said processor bus, cache memory means, and optical storage means, and controlled by said host processing means for retrieving information stored in said optical storage means and for storing said retrieved information in said cache memory means;

said host processing means accessing the information stored in said cache memory means via said processor bus, storing the accessed information in the first memory means, and controlling operation of said computer system based upon the accessed information stored in said first memory means;

said optical storage means having scanning means and a write once, read many times optical storage medium for storing operating system information which controls normal operation of said computer system, and for storing



command handler information comprising a plurality of command handlers which control said computer system in response to a user entered command; and

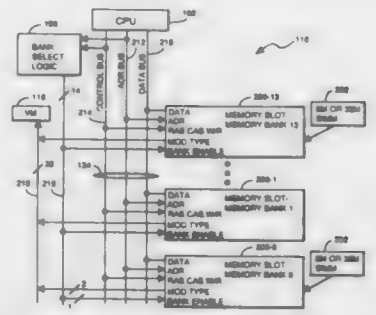
said host processing means controlling said auxiliary processing means to retrieve said operating system information from said optical storage means to control normal operation of said computer system upon initialization of said computer system, and further controlling said auxiliary processing means to retrieve said command handler information from said optical storage means to control the operation of said computer system in response to the user entered command.

5,012,408

MEMORY ARRAY ADDRESSING SYSTEM FOR COMPUTER SYSTEMS WITH MULTIPLE MEMORY ARRAYS

David G. Conroy, Maynard, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 15, 1990, Ser. No. 494,780
Int. Cl.[5] G06F *13/00*
U.S. Cl. 364—200 8 Claims



1. A computer memory system, comprising:

address bus means for transmitting sets of address signals, each set of address signals defining an address in a predefined address space;

a plurality of memory module slot means, coupled to said address bus means, for receiving memory modules; each memory module slot means including means for receiving a corresponding memory module enable signal; at least one of said memory module slot means including means for receiving at least two different types of memory modules having differing amounts of memory storage;

memory management means, coupled to said plurality of memory module slot means, for assigning an address range

to each memory module slot means solely on the basis of a type of memory module, if any, inserted therein, each said assigned address range being independent of which type of memory modules, if any, are inserted in other ones of said memory module slot means; and

decoder means coupled to said address bus means and said plurality of memory module slot means, for decoding each said set of address signals, and for generating a memory module enable signal corresponding to one of said memory module slot means whenever said set of address signals define an address in one of said predefined address ranges assigned to said plurality of memory module slot means;

wherein each said memory module slot means has a fixed, predefined address range assigned thereto for each different type of memory module which it has means for receiving, and said assigned address ranges for memory module slot means with memory modules inserted therein need not be contiguous;

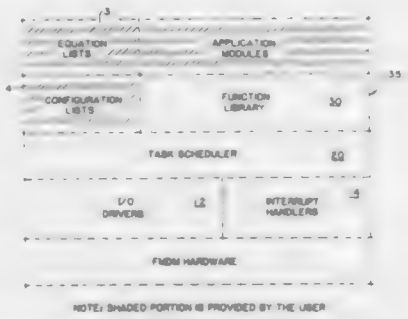
whereby memory modules can be inserted in any selected ones of said memory module slot means without regard to the corresponding address ranges assigned thereto.

5,012,409

OPERATING SYSTEM FOR A MULTI-TASKING OPERATING ENVIRONMENT

Mitchell S. Fletcher, 17432 N. 60th Dr., Glendale, Ariz. 85308, and Richard P. Semma, 8501 E. Lee Pl., Tucson, Ariz. 85715

Filed Mar. 10, 1988, Ser. No. 166,334
Int. Cl.[5] G06F *9/00, 9/46*
U.S. Cl. 364—200 **5 Claims**



1. A task scheduler system, including an array of priority queues for use in a real time multitasking operating system including equation lists, configuration lists, a function library, input and output drivers, user-created task definition lists of major and minor tasks, including major and minor task elements, and interrupt handlers, initialized to have programmable timer interrupts, comprising:

(a) means for task scheduling according to priority wherein upon the completion of each library function the priority queues are interrogated and the highest priority task segment is found whose requested resource is available and executed and wherein task segments in the same priority queue are executed in round-robin fashion,

and wherein the task scheduling means further includes means for maintaining the status of all major tasks in the system in the states of unlocked and done, unlocked and active, unlocked and waiting, locked and active, or locked and waiting including means for locking tasks into a mode of operation so as to only allow the locked task to execute overriding the normal state of priority execution, and wherein the task scheduling means still further includes waiting means for suspending operation on a task that requires completion of a library function; and

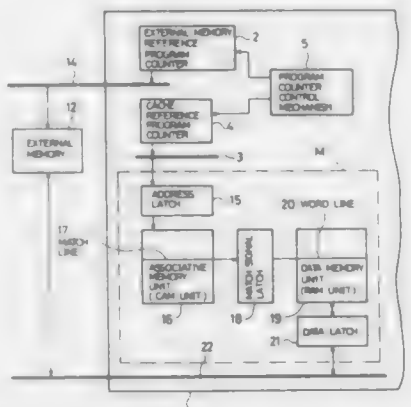
(b) means for task creation responsive to programmable timer interrupts including means for interrogating the task definition lists and means for creating all major and minor task elements from the task definition lists so as to create major and minor tasks which are added to the priority queues.

5,012,410

DATA PROCESSOR WITH INSTRUCTION CACHE MEMORY

Tatsuya Ueda, Itamishi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 2, 1988, Ser. No. 227,290
Claims priority, application Japan, Aug. 5, 1987, 62-196805
Int. Cl.[5] G06F *13/00*
U.S. Cl. 364—200 **8 Claims**



1. A microprocessor system having a microprocessor and coupled to an external memory comprising:

a first address bus for transmitting an address to the external memory;

a first register coupled to said first address bus for outputting the address to said first address bus;

a cache for storing a plurality of addresses and a corresponding plurality of data;

a second address bus, coupled to said cache, for transmitting the address to said cache;

a second register, coupled to said second address bus, for outputting the address to said second address bus;

a data bus, coupled to said external memory and to said cache, for transmitting data between said external memory and said microprocessor;

a third register, coupled to said cache and to said data bus, for transmitting data between said data bus and said cache memory;

means, coupled to said first and second registers, for issuing a control signal wherein said control signal updates a contents of said second register, with a next address during a cache read of a previous address while maintaining a content of said first register for data being read from said cache and begins a cache read of said next address using an updated contents of said second register once a data stored at said previous address is output from said cache to said third register.

5,012,411

APPARATUS FOR MONITORING, STORING AND TRANSMITTING DETECTED PHYSIOLOGICAL INFORMATION

Charles J. Policastro, 2122 Old Forde Way, Lansdale, Pa. 19446; Edmond J. Dougherty, Philadelphia, Pa., and Martin J. Dowling, Haddonfield, N.J., assignors to Charles J. Policastro, Lansdale, Pa.

Filed Jul. 23, 1985, Ser. No. 757,965
Int. Cl.[5] A61B *5/04*
U.S. Cl. 364—413.06 **19 Claims**

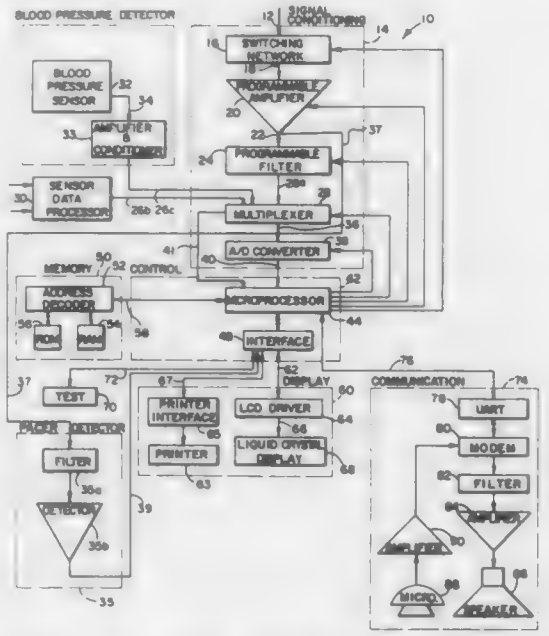
1. A portable, completely self-contained, battery-powered, microprocessor controlled, diagnostic quality apparatus small in size so as to be carried or worn by a patient or other user for monitoring, storing and transmitting detected physiological information of a person being monitored, the apparatus comprising:

means for sequentially receiving analog signals corresponding to heart activity from at least five different cardiac sensors attached at different locations on the body of the person being monitored to provide diagnostic quality cardiac information;

means for receiving analog electrical signals corresponding to blood pressure of the person being monitored from at least one sensor;

means for converting the received analog signals corresponding to heart activity and to blood pressure to a series of digital pulses at a predetermined sampling rate;

memory means for receiving and storing the digital pulses in predetermined memory locations, the memory means being of the circular type and of a predetermined size capable of storing digital pulses equivalent to at least three minutes of diagnostic quality physiological activity so that when the memory means is filled with stored digital pulses, further digital pulses which are received are stored in the memory means by deleting previously stored digital



pulses on a first-in, first-out basis, the memory means including means for preventing the deletion of at least a portion of the stored digital pulses corresponding to a period of physiological activity preceding the happening of an event, the memory means continuing to store digital pulses corresponding to physiological activity subsequent to the happening of the event until the memory means is filled, whereupon no further digital pulses are stored;

means for recalling the stored digital pulses from the memory means;

means for receiving the recalled digital pulses from the memory means, for converting the digital pulses to analog signals and for displaying the analog signals to provide a graphic representation of the physiological information;

means for receiving the recalled digital pulses from the memory means and for transmitting the digital pulses to a remote location over a communications system; and

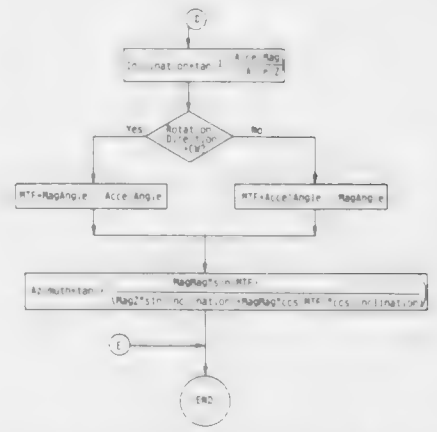
means for receiving control signals from the remote location over the communications system and for converting the control signals into digital control pulses, the digital control pulses controlling operation of the apparatus and transferring data to the apparatus.

5,012,412

METHOD AND APPARATUS FOR MEASUREMENT OF AZIMUTH OF A BOREHOLE WHILE DRILLING

Walter A. Helm, Plainville, Conn., assignor to Teleco Oilfield Services Inc., Meriden, Conn.

Filed Nov. 22, 1988, Ser. No. 275,115
Int. Cl.[5] E21B *47/022*
U.S. Cl. 364—422 **29 Claims**



1. A method for determining the azimuth angle of a borehole being drilled by instruments contained downhole in a tool in the drillstring, including the steps of:

rotating the drillstring;

sensing with accelerometer means while the drillstring is rotating the instantaneous acceleration components of gx and gz at the location of the tool;

sensing with magnetometer means while the drillstring is rotating the instantaneous magnetic field components of hx and hz at the location of the tool wherein the components gz and hz are along the axis of the drillstring, the component gx being orthogonal to gz and the component hx being orthogonal to hz;

determining the rotation rate of the drillstring;

determining the direction of the rotation of the drillstring;

determining azimuth angle from at least one of the equivalent relationships

$$\text{Azimuth} = \tan^{-1}\left[\frac{\sin(\theta)\sin(\phi)}{\sin(inc)\cos(\theta) + \cos(inc)\sin(\theta)\cos(\phi)}\right]$$

$$\text{Azimuth} = \tan^{-1}\left[\frac{\sin(\phi)}{\sin(inc)\cos(\theta) + \cot(inc)\cos(\phi)}\right]$$

$$\text{Azimuth} = \tan^{-1}\left[\frac{\sin(\phi)}{\sin(inc)\frac{Hz}{|Hx|} + \cos(inc)\cos(\phi)}\right]$$

$$\text{Azimuth} = \tan^{-1}\left[\frac{|Hx|\sin(\phi)}{Hz\sin(inc) + |Hx|\cos(inc)\cos(\phi)}\right]$$

where

θ = the angle between the tool axis and the earth's magnetic field vector which is determined as a function of $|Hx|$ and Hz;

ϕ = the phase angle between the fundamental frequency component hx and gx;

INC = the angle between the tool axis and the earth's gravity vector which is determined as a function of $|Gx|$ and Gz;

Hz = the time average of hz;

$|Hx|$ = the magnitude of the first discrete fourier transform coefficient of hx; and

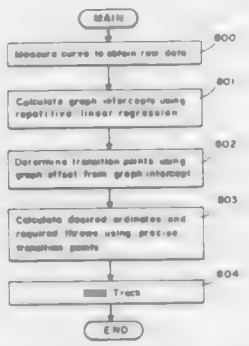
|Gx| = the magnitude of the first discrete fourier transform coefficient of gx.

5,012,413

RAILROAD TRACK CURVE LINING APPARATUS AND METHOD

Dennis A. Sroka, and William E. Perry, both of Ludington, Mich., assignors to Pandrol Jackson, Inc., Ludington, Mich.

Filed Jul. 27, 1988, Ser. No. 225,040
Int. Cl.[5] G06F *15/20;* **E01B** *35/10*
U.S. Cl. 364—424.01 **20 Claims**



1. An apparatus for lining a railroad track comprising:
a vehicle assembly for traveling along a railroad track,
shifting means for laterally shifting the railroad track;
measuring means carried by said vehicle assembly for measuring initial track ordinates as said vehicle assembly travels along said track;
computer means for calculating an ideal track shape as a function of said initial track ordinates, said computer means including:
memory means for receiving and storing the initial track ordinates;
means for detecting sequences of relatively constant ordinate values indicative of tangent and curve track segments;
means for performing a plurality of linear regressions on varying sequences of ordinate values for each spiral track segment between segments of relatively constant ordinate values;
selecting means for selecting one of the linear regressions associated with each spiral as the best fit linear regression;
means for finding the points of intersection between each best-fit linear regression and the relatively constant value at either end thereof;
means for locating the track transition points as a function of the points of intersection, the transition points being distinct from said intersection points; and
means for calculating the desired track ordinates as a function of the tangent and curve information and the transition points; and
control means for causing said shifting means to move the track responsive to said desired ordinate values as said vehicle assembly travels along the track.

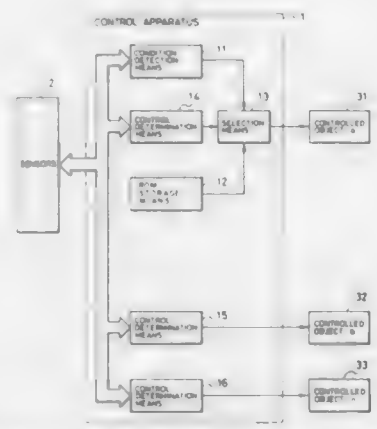
5,012,414

VEHICLE CONTROL APPARATUS

Mitsuaki Ishii, and Masaaki Miyazaki, both of Hyogo, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Continuation of Ser. No. 125,661, Nov. 25, 1987, abandoned. This application Nov. 13, 1989, Ser. No. 434,574
Claims priority, application Japan, Nov. 25, 1986, 61-281201
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—424.03 **6 Claims**

1. An apparatus for controlling a vehicle comprising:
sensor means (2) for sensing conditions at various parts of the vehicle, and for outputting information in accordance with the sensed conditions;
an object (31–33) which is to be controlled;
control determination means (14–16), coupled to said sensor means, for storing predetermined control specifications, and for generating a first control signal for said object in accordance with the output information from said sensors means and said stored predetermined control specifications;
condition detection means (11), coupled to said sensors, for detecting output information therefrom, and for outputting a predetermined control signal when the detected output information from said sensor means represents a predetermined sensed condition which is improbable in practical use;



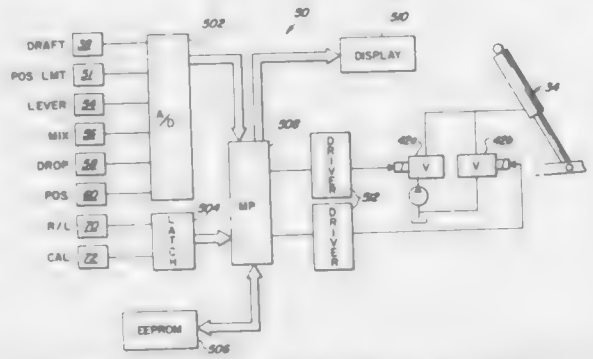
storage means (12) for storing identifying data which corresponds to the predetermined control specifications stored in said control determination means, said storage means including means for reading out said stored identifying data as a second control signal for said object; and
selection means (13), in response to said condition detection means, for selectively applying one of said first and second control signals to said object, whereby an operator who applies the predetermined condition which is improbable in practical use can ascertain the predetermined control specifications stored in said control determination means by observing the operation of said object which will be controlled by said second control signal.

5,012,415

CONTROL SYSTEM CALIBRATION

Thomas E. Boe, Grundy County; Mark A. Bergene; Carl E. Kittle, both of Cedar Falls, and Gregory E. Sparks, Waterloo, all of Iowa, assignors to Deere & Company, Moline, Ill.

Division of Ser. No. 294,537, Jan. 6, 1989, Pat. No. 4,931,967. This application Jan. 23, 1990, Ser. No. 469,655
Int. Cl.[5] A01B *63/112*
U.S. Cl. 364—424.07 **3 Claims**



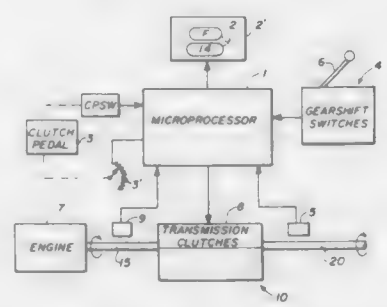
1 In a hitch control system having a rockshaft hydraulic cylinder for moving the hitch under th control of a control valve, a control unit for controlling operation of the control valve in response to movement of an operator-movable command lever and in response to at least one sensed parameter such as a draft force parameter and a hitch position parameter, and a display connected to the control unit, the control unit comprising:
means for storing control valve parameters associated with different volumes of rockshaft cylinders;
means for storing index values, each index value being associated with a particular volume of a rockshaft cylinder and with at least one of the stored control valve parameters;
means for selectively displaying a certain one of the stored index values depending upon the position of the command lever; and
means for selecting said at least one of said stored control valve parameters which is associated with the displayed index value, the control unit controlling the control valve as a function of the sensed parameter, the command lever and the selected control valve parameters.

5,012,416

MEDIUM SPEED TRANSMISSION SHUTTLE SHIFTING

Garth H. Bulgrien, Ephrata, Pa.; Jim E. Goodbar, Coffeyville, Kans., and Paul W. Johnson, Boulder, Colo., assignors to Ford New Holland, Inc., New Holland, Pa. and Deere & Company, Moline, Ill.

Division of Ser. No. 444,312, Dec. 1, 1989, abandoned. This application Dec. 18, 1989, Ser. No. 452,020
Int. Cl.[5] B60K *41/08*
U.S. Cl. 364—424.1 **13 Claims**



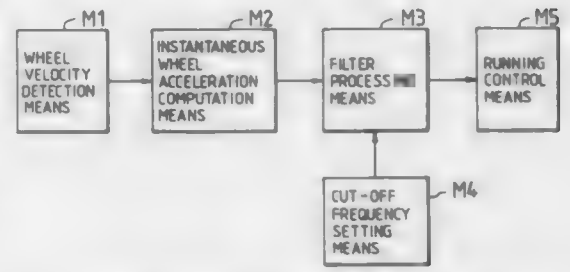
1. A method of controlling vehicle deceleration during shuttle shifting of a transmission having an initial clutch set for selectively connecting an engine driven input drive shaft in driving relationship with a first plurality of shafts, a final clutch set for selectively connecting a second plurality of shafts in driving relationship with an output shaft for driving the vehicle, and an intermediate clutch set for selectively connecting the first plurality of shafts in driving relationship with said second plurality of shafts, first gears on said first plurality of shafts for driving all of said first plurality of shafts at the same speed when any clutch of said initial clutch set is energized, and second gears on said first plurality of shafts for driving said second plurality of shafts at different speeds relative to the speeds of said first plurality of shafts when any one clutch of said set of intermediate clutches is energized, said method comprising:
energizing the one clutch in said initial set of clutches corresponding to the slowest speed of operation of said first plurality of shafts;
energizing the one clutch in said intermediate set of clutches corresponding to the slowest speed of operation of said second plurality of shafts such that said transmission is placed in the lowest available speed of operation;
energizing a first clutch in said final set of clutches corresponding to the slowest speed of operation of said output shaft in the direction of movement of said vehicle;
sensing vehicle speed; and
modulating the pressure exerted by said first clutch of said final set of clutches to decelerate the speed of movement of said vehicle.

5,012,417

MOTOR VEHICLE RUNNING CONTROL APPARATUS

Takashi Watanabe; Shusaku Fujimoto, both of Kariya, and Kazunori Sakai, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Mar. 6, 1989, Ser. No. 319,202
Claims priority, application Japan, Mar. 4, 1988, 63-52278
Int. Cl.[5] B60T *8/32*
U.S. Cl. 364—426.02 **22 Claims**



1. A vehicle control apparatus for a vehicle having a set of road wheels including drive wheels and driven wheels, the apparatus comprising:
means for controlling a running condition of said vehicle based upon wheel acceleration signals and wheel velocity signals; and
wheel acceleration signal generating means for generating said wheel acceleration signals and said wheel velocity signals, said wheel acceleration signals representing respective values of rotational acceleration of each of said road wheels of said vehicle, said wheel velocity signals representing respective values of rotational velocity of said wheels, said wheel acceleration signal generating means comprising for each wheel:
wheel velocity detection means for detecting a velocity of said each wheel and producing data representing said wheel velocity,
instantaneous wheel acceleration computation means for computing successive values of instantaneous wheel acceleration from said wheel velocity data, and for outputting said successive values as an instantaneous wheel acceleration signal,
filter processing means for excluding high frequency components from said instantaneous wheel acceleration signal which are above a predetermined filter cut-off frequency and thereby outputting said wheel acceleration signal,
filter cut-off setting means for setting said filter cut-off frequency in accordance with a specific condition of said wheel, in which said wheels comprise drive wheels and driven wheels, and said filter cut-off setting means setting said cut-off frequency to a first predetermined value when said wheel acceleration is computed for a drive wheel and to a second predetermined value when said wheel acceleration is computed for a driven wheel, said first predetermined value being lower than said second predetermined value.

5,012,418

VEHICLE OPERATING AND SPEED REGULATING DEVICE

Petzold, Rainer, Friedrichshafen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

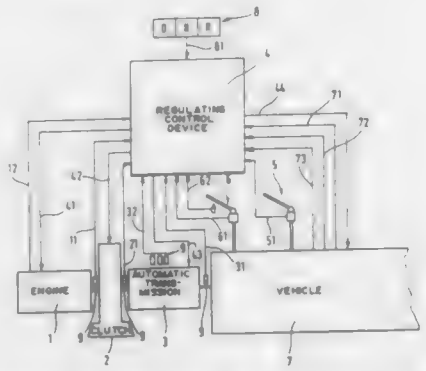
PCT No. PCT/EP87/00159, § 371 Date Aug. 18, 1988, § 102(e) Date Aug. 18, 1988, PCT Pub. No. WO87/05867, PCT Pub. Date Oct. 8, 1987

PCT Filed Mar. 20, 1987, Ser. No. 273,038

Claims priority, application PCT Int'l Appl., Mar. 27, 1986, PCT/EP86/00185

Int. Cl.[5] B60K *41/08, 41/28;* **G05D** *13/66*

U.S. Cl. 364—426.04 7 Claims



1. Apparatus for controlling the acceleration and deceleration of a motor vehicle having an engine, an automatic transmission, a clutch coupling the engine with the transmission, and gas and brake pedals in order to optimize engine performance and to maintain a given vehicle speed established by operation of the pedals, comprising

(a) means for continuously sensing the position of the brake pedal;

(b) means for continuously sensing the position of the gas pedal;

(c) means for continuously sensing the speed of the vehicle and the operating conditions of the engine, clutch, and transmission, respectively;

(d) first means for continuously calculating a power difference, a gradient for power change and the engine load and speed change in accordance with the sensed positions of the brake and gas pedals and with the sensed vehicle speed and operating conditions of the engine, clutch and transmission;

(e) second means for continuously calculating a transmission position in accordance with a new engine speed resulting from said calculation of engine speed; and

(f) means for producing control signals delivered to the engine, clutch and transmission to control the operation thereof for acceleration and deceleration of the vehicle, whereby a desired vehicle speed is maintained

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5,012,419

SYSTEM AND METHOD FOR AUTOMATICALLY CONTROLLING VEHICLE SPEED TO DESIRED CRUISE SPEED

Isao Yamamoto, Kanagawa, Japan, assignor to Nissan Motor Company, Ltd., Japan

Filed Dec. 22, 1988, Ser. No. 288,083

Claims priority, application Japan, Dec. 28, 1987, 62-329579

Int. Cl.[5] B60K *31/00*

U.S. Cl. 364—426.04 10 Claims

10. A method of automatically controlling speed of a vehicle to a desired cruise speed, comprising the steps of:

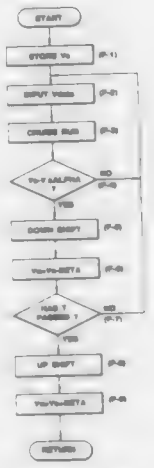
(a) detecting current vehicle speed;

(b) storing an indication of desired cruise speed for the vehicle;

(c) deriving an indication of the difference between the detected current vehicle speed and the indication of stored cruise speed;

(d) adjusting an operating variable of a driving force adjusting mechanism of an engine of the vehicle in response to the indication of the speed difference so that the vehicle speed substantially coincides with the stored cruise speed;

(e) determining whether the detected current vehicle speed is less than the stored cruise speed by a first predetermined value;



(f) shifting down a transmission mechanism of the vehicle when the detected vehicle speed is less than the stored cruise speed by the first predetermined value and simultaneously updating the stored cruise speed to reduce the stored cruise speed by a second predetermined value; and

(g) adjusting the vehicle speed so that it substantially coincides with the updated cruise speed.

5,012,420

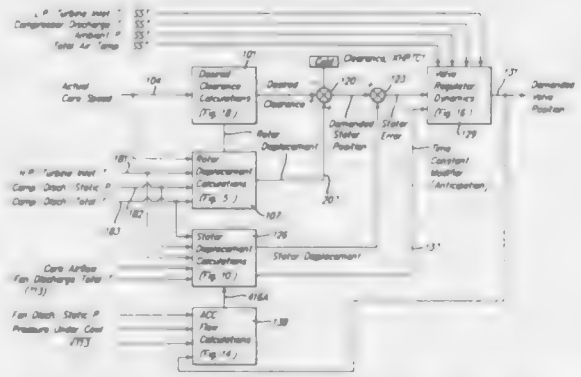
ACTIVE CLEARANCE CONTROL FOR GAS TURBINE ENGINE

Roger C. Walker, Fairfield; Scott P. Reese, West Chester; David L. Joyce, Middletown, and David A. Kastrup, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Mar. 31, 1988, Ser. No. 175,894

Int. Cl.[5] F02C *7/12, 7/18;* **F01D** *25/08*

U.S. Cl. 364—431.02 38 Claims



4. A clearance control for a gas turbine engine, comprising:

(a) means for calculating first, steady-state, turbine rotor and casing temperatures, based on measurements of selected engine operating characteristics;

(b) means for modifying the first temperatures, based on the respective behaviors of the first temperatures;

(c) means for calculating turbine rotor and casing diameters, based on the modified temperatures of (b);

(d) means for computing a desired clearance between the rotor and casing based on engine speed; and

(e) means for adjusting temperature of the casing in order to attain the desired clearance.

5,012,421

VEHICLE CONTROL APPARATUS

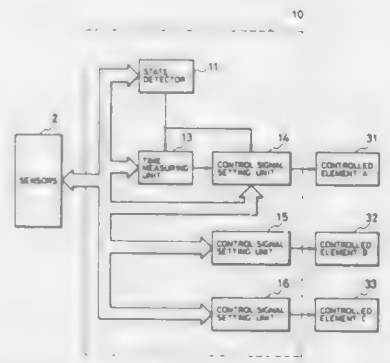
Mitsuaki Ishii, Hyogo, Japan, assignor to Mitsubishi Denki K. K., Tokyo, Japan

Continuation of Ser. No. 124,522, Nov. 24, 1987, abandoned. This application Apr. 27, 1989, Ser. No. 344,526

Claims priority, application Japan, Nov. 24, 1986, 61-280419

Int. Cl.[5] F02B *3/00*

U.S. Cl. 364—431.10 5 Claims



1. A control apparatus for a vehicle, which apparatus can be rapidly tested prior to being placed in normal use, comprising:

a plurality of sensors for detecting respective operating conditions at various portions of said vehicle, including an engine of said vehicle;

a plurality of controlled elements operated in response to output signals of said sensors;

time measuring means for measuring a fixed time interval from a predetermined point in time;

state detection means for detecting when an output signal of at least one of said sensors is in a predetermined improbable state which would not occur in normal operation of said control apparatus after said apparatus has been placed in normal use; and

control determination means for reading output information from said sensor and processing said information in accordance with a predetermined procedure, with the output information of at least a first one of said sensors normally having no effect on the respective controlled element for said time interval measured by said time measuring means, said control determined means, upon detection of said improbable state which would not occur in normal operation by said state detection means, applying the output information of said first sensor to control said respective controlled element independently of said time determined by said time measuring means, and prior to the elapse of said time interval.

5,012,422

CONTROLLING ENGINE FUEL INJECTION

Shinsuke Takahashi, Yokohama; Teruji Sekozawa, Kawasaki, and Motohisa Funabashi, Sagamihara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 25, 1989, Ser. No. 301,363

Claims priority, application Japan, Jan. 29, 1988, 63-17062

Int. Cl.[5] F02B *3/00*

U.S. Cl. 364—431.050 31 Claims

1. An engine fuel injection control method for use in an electronic fuel injection controller for an engine, which is designed to control the fuel supply quantity by measuring and calculating engine running conditions, said method comprising the steps of:

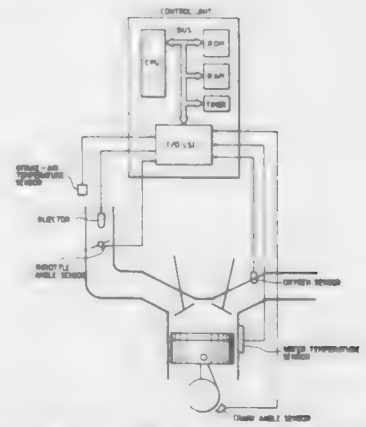
(A) experimentally determining, at a central location for many engines, the relationship between accurately measured air flow and at least one of engine running conditions over the operating range of the engine;

(B) storing said relationship in a readable look-up table associated with the measured engine;

(C) measuring throttle angle and producing a throttle angle signal;

(D) measuring crank angle and producing a crank angle signal;

(E) measuring water temperature and producing a water temperature signal;



(F) measuring intake air temperature and producing an intake air temperature signal;

(G) measuring the oxygen content in the exhaust gas and producing an oxygen content signal;

(H) calculating an estimated value of the engine running condition from at least some of said signals;

(I) determining the air flow from said look-up table and said calculated value for the engine running condition;

(J) controlling the fuel supply quantity based upon said air flow; and

(K) continuously repeating at least one of said steps C, D., E. F. G and said steps H, I, J in order during the running of the engine.

5,012,423

BACK-UP FLY BY WIRE CONTROL SYSTEM

Stephen S. Osder, Scottsdale, Ariz., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Apr. 17, 1989, Ser. No. 338,624

Int. Cl.[5] B64C *13/16*

U.S. Cl. 364—432 26 Claims

1. A back-up fly by wire control system comprising:

input control means for controlling at least on flight characteristic of an aircraft;

linear transmission means, connected to and responsive to said input control means, for generating an output proportional to the degree of input control applied to said input control means;

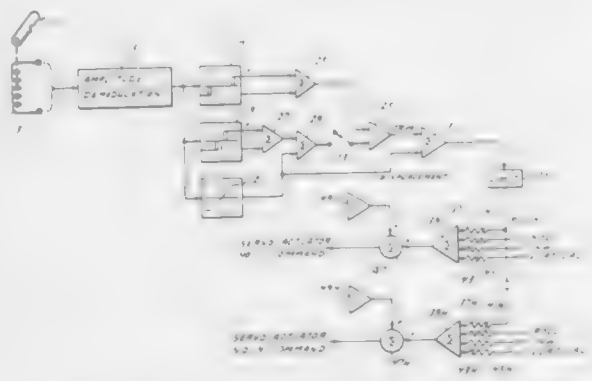
first step transmission means, connected to and responsive to said input control means, for generating a constant output when said input control means is set to the magnitude limit of its control, said constant output having a polarity indicative of the polarity of said limit, and for generating no output when said input control means is set to less than a maximum limit of control;

second step transmission means, connected to and responsive to said input control means, for generating a constant output rate when said output control means exceeds a prespecified limit of control said constant output rate having a polarity indicative of the polarity of said prespec-

ified limit, and for generating no output when said input control means is set to less than said prespecified limit of control;

limitation means for limiting the amplitude of a control signal;

control coupling means, connected to said linear transmission means, said first and said second step transmission means, and said limitation means for constantly coupling



said linear transmission means and said first step transmission means to said limitation means, and for switchably coupling said second step transmission means to said limitation means; and,

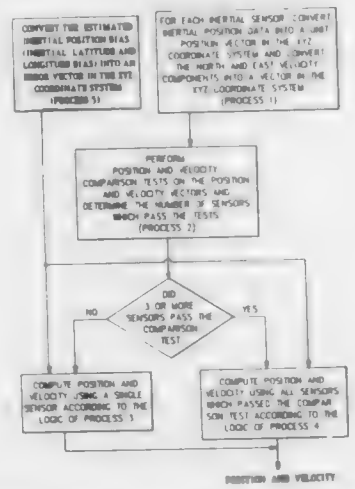
selective actuator means, connected to said limitation means, for weighting control signals received from said control means, summing said weighted control signals with a time integral position signal, and acting upon said summed weighted control signals.

5,012,424

MULTIPLE SENSOR SYSTEM AND METHOD

David W. Dodson, Glendale, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 22, 1989, Ser. No. 313,927
Int. Cl.[5] G05D *1/10;* **G01C** *21/00*
U.S. Cl. 364—449 **10 Claims**



5. A multiple sensor method of computing position and velocity from data from a first sensor unit and a second sensor unit and a third sensor unit, comprising the steps of:

resolving the data from the first sensor unit and the data from the second sensor unit and the data from the third sensor unit into a common XYZ coordinate system for obtaining a unit position vector and a horizontal velocity vector for each of the three sensor units;

comparing in a comparison test each unit position vector with a corresponding unit position vector of a selective prior reading thereof for each of the three sensor units;

comparing in the comparison test each velocity vector with a corresponding velocity vector of a selective prior reading for each of the three sensor units;

determining by using a selective comparison process which sensor units pass the comparison tests of the comparisons of each of the three sensor units and which sensor unit is closest to passing if not passing;

computing position and velocity using a first selective computing process if all three sensor units do not pass their comparison tests and using data from one sensor unit either passing its comparison tests or being closest to passing if not passing, or computing position and velocity using a second selective computing process and using data from all three sensor units if all three sensor units pass their comparison tests;

storing an inertial position bias as an error vector in the XYZ coordinate system, and

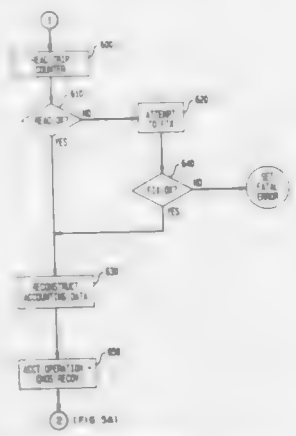
transforming the unit position vector and the horizontal velocity vector as computed to a geodetic latitude/longitude system for use by a user.

5,012,425

EPM HAVING AN IMPROVEMENT IN NON-VOLATILE STORAGE OF ACCOUNTING DATA

Nanette Brown, Orange, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 30, 1988, Ser. No. 292,194
Int. Cl.[5] G07B *17/02*
U.S. Cl. 364—464.02 **7 Claims**



1. A postage meter comprising:

a microcomputer operating under control of a microcomputer program;

a non-volatile memory connected to said microcomputer for storing accounting data;

printing means for printing an indicia, said indicia including a value;

said printing means being operatively connected to said microcomputer and wherein printing of said value is accounted for by said microcomputer, said accounting data being stored in said non-volatile memory;

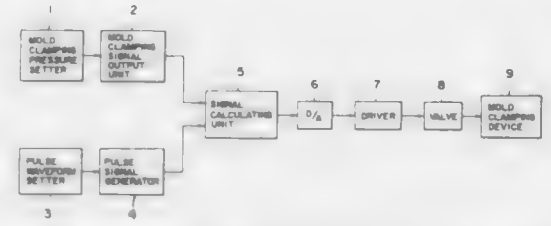
said non-volatile memory having a first plurality of buffers comprising an accounting data store for storing updated accounting data at predetermined intervals, a second plurality of buffers comprising a print counter store and a third plurality of buffers comprising a store for storing the indicia value; wherein current accounting data is calculated from previously updated accounting data stored in said first plurality of buffers, said print counter data store in said second plurality of buffers and the indicia value.

5,012,426

METHOD AND APPARATUS FOR CONTROLLING INJECTION COMPRESSION MOLDING

Susumu Harada, and Hiroshi Kumazaki, both of Numazu, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1989, Ser. No. 340,067
Claims priority, application Japan, Apr. 20, 1988, 63-97196
Int. Cl.[5] G06F *15/00;* **B29C** *47/92*
U.S. Cl. 364—476 **6 Claims**



1. Apparatus for controlling injection compression molding comprising:

a mold clamping pressure setter for setting the mold clamping pressure of said injection compression molding;

a pulse waveform setter which sets a pressure waveform which varies a pressure set by said mold clamping setter in accordance with an interval after starting mold closing;

a digital pulse signal generator for outputting the pressure set by said mold clamping pressure setter as an electric signal representing a pressure waveform;

a signal calculating unit for converting said electric signal into a signal commensurate with a preset pressure waveform;

a digital analog converter for converting said digital pulse signal into an analog signal; and

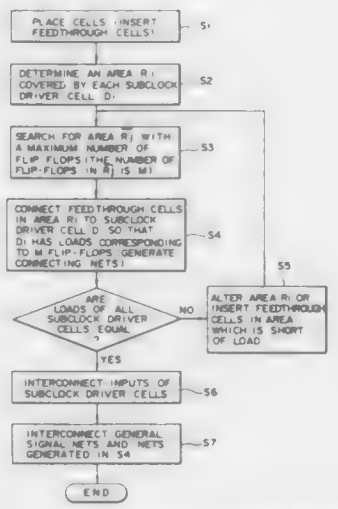
driving means for driving a mold clamping device in response to said analog signal.

5,012,427

SEMICONDUCTOR INTEGRATED CIRCUIT AND METHOD OF MANUFACTURING THE SAME

Mototaka Kuribayashi, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 30, 1989, Ser. No. 303,261
Claims priority, application Japan, Jan. 30, 1988, 63-20305; Mar. 23, 1988, 63-67108
Int. Cl.[5] G06F *15/60, 15/20*
U.S. Cl. 364—490 **10 Claims**



1. A method of manufacturing a semiconductor integrated circuit device, comprising the steps of:

forming, on a semiconductor chip, a plurality of cell arrays including at least one cell array having at least one main cell and at least one feed-through cell;

arranging a plurality of clock driver cells on said plurality of cell arrays so that at least one of said clock driver cells is provided in each of said cell arrays;

determining the number of said main cells in each of said cell arrays which are to be driven by said clock driver cells;

detecting the maximum number of said main cells which it is determined are to be driven in the above step;

calculating the difference between the detected maximum number of said main cells and the total number of said main cells included in each of said cell arrays; and

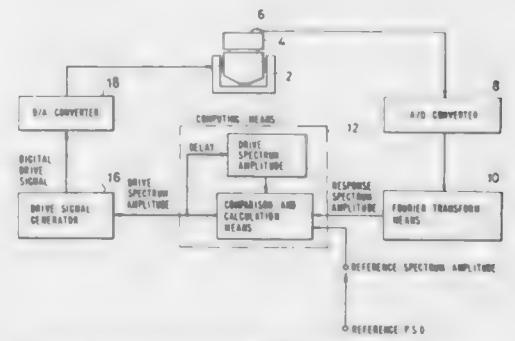
connecting, to said clock driver cells, said feed-through cells, the number of which corresponds to the calculated difference, so that loads imposed on said clock driver cells are made substantially uniform.

5,012,428

VIBRATION CONTROL SYSTEM

Kazuyoshi Ueno, Nishinomiya, and Katsushi Imoto, Itami, both of Japan, assignors to IMV Corporation, Osaka, Japan

Filed Jul. 13, 1989, Ser. No. 379,391
Claims priority, application Japan, Nov. 25, 1988, 63-298506
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—508 **11 Claims**



1. Vibration control system, comprising:

sensing means for sensing a movement of a test object;

an A/D converter for converting a detected signal from said sensing means into a digital response signal;

Fourier transform means which converts the digital response signal into a response spectrum amplitude signal and outputs the response spectrum amplitude signal;

means for generating a reference spectrum amplitude signal from a given reference power spectral density data;

computing means which calculate a drive spectrum amplitude using the response spectrum amplitude and said reference spectrum amplitude signal, and outputs a drive spectrum amplitude signal;

random phase generating means for outputting a signal representing a set of random phases;

multiplying means which calculates a drive spectrum by multiplying components of the drive spectrum amplitude signal by the random phase factor signal from the random phase generating means;

inverse Fourier transform means which converts the drive spectrum into a time domain signal;

phase shift means for shifting the phase of the time domain signal;

windowing means for windowing the time domain signal to obtain a windowed time domain signal;

said random phase generating means, said multiplying means, said inverse Fourier transform means, said phase shift means and said windowing means including means for repeating their operation to obtain plural windowed time domain signals; and

overlapping means which overlaps the plural windowed time domain signals for outputting a digital drive signal;

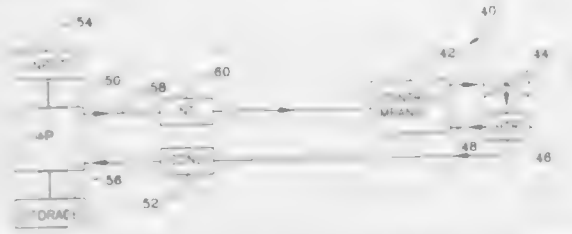
a D/A converter for converting the digital drive signal from the overlapping means into an analog drive signal and for outputting the analog signal to control the operation of a vibration generator.

5,012,429

METHOD AND APPARATUS FOR OPTIMIZATION OF FEEDWATER HEATER LIQUID LEVEL

Joel B. Lantz, Bedford Heights, Ohio, assignor to Neundorfer, Inc., Willoughby, Ohio

Filed Jan. 17, 1989, Ser. No. 298,346
Int. Cl.[5] G01F *23/22*; F16K *31/02*
U.S. Cl. 364—509 **29 Claims**



1. A control apparatus for maintaining optimum water levels in a feedwater heater of the type including an outer shell and an internal tubing structure, for receiving and condensing into water in the shell, steam from a steam turbine for heating feedwater that is flowing through the tubing structure to a steam boiler which supplies steam to the turbine, and for discharging liquid water from the shell while maintaining certain water levels in the bottom of the shell and in a drains subcooler portion of said feedwater heater, said apparatus comprising:

first means for storing, as a function of boiler load, breakpoint water level setpoint data and for calculating operating water level setpoint data from said breakpoint water level setpoint data, said breakpoint water level setpoint data having been determined from breakpoints of a plurality of curves, each representing a drains cooler approach temperature vs. water level setpoint characteristic for a predetermined boiler load;

water level sensing means for providing water level data corresponding to water levels measured in the bottom of the shell of said feedwater heater;

control means responsive to said operating water level setpoint data from said first means for receiving and responding to said water level data from said water level sensing means for controlling a discharge valve to discharge liquid water from the shell of said feedwater heater to control said liquid water level in the shell of said feedwater heater; and

boiler load determining means for determining said boiler load and for providing boiler load data to said first means,

said first means operable for establishing operating water level setpoints for said control means as a function of said boiler load data,

thereby providing boiler load-responsive level control for said feedwater heater for optimizing operation thereof.

5,012,430

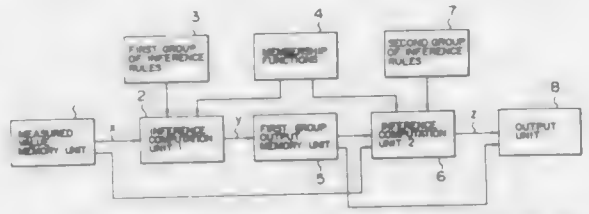
FUZZY INFERENCE-BASED DIGITAL CONTROL METHOD AND APPARATUS

Akito Sakurai, Hachioji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 2, 1987, Ser. No. 92,137
Claims priority, application Japan, Sep. 3, 1986, 61-207275
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—513 **11 Claims**

1. In a digital control method including the steps of taking measurable state variable values of a controlled object as inputs or said state variable values and values computed from said state variables as inputs, computing values of fuzzy variables obtained from implication rules for fuzzy interference, expressed in the form of conditional statements, using said input variables as fuzzy variables, and controlling said controlled object according to the result of said computing, a fuzzy inference-based digital control method comprising, in said computing step:

a first step of computing fuzzy variables representing the state of the controlled object on the basis of selected ones



of input measurable variable values in accordance with predetermined implication rules of a group regarding attributes of said controlled object; and

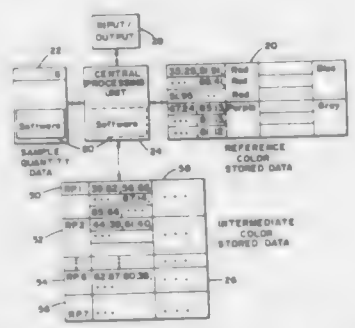
a second step of computing control variable values for the controlled object from inputs including at least the fuzzy variables determined by said first step, in accordance with predetermined implication rules of another group regarding a control output to be applied to the controlled object.

5,012,431

OBJECTIVE COLOR NOTATION SYSTEM

Ralph Stanziola, Neshanic Station, N.J., assignor to Colwell/General, Inc., Minneapolis, Minn.

Continuation of Ser. No. 175,519, Mar. 31, 1988, abandoned.
This application Feb. 2, 1990, Ser. No. 476,122
Int. Cl.[5] G01J *3/46*
U.S. Cl. 364—526 **21 Claims**



13. A system for generating color sample data comprising:

(a) first storage means for storing photometric characteristics of a set of reference colors and for storing data indicative of a number of intermediate colors to be generated;

(b) central processing means electrically interconnected with the first storage means, a second storage means, and an output means and under software control for:

(i) accessing the data stored in the first storage means;

(ii) computing proportions of each reference color comprisin each intermediate color for which reflectance data is to be generated; and

(iii) computing reflectance data at each wavelength for which reference color photometric characteristics are stored in said first storage means for each intermediate color;

(c) second storage means electrically interconnected with the central processing means and output means for storing the reflectance data computed for each intermediate color; and

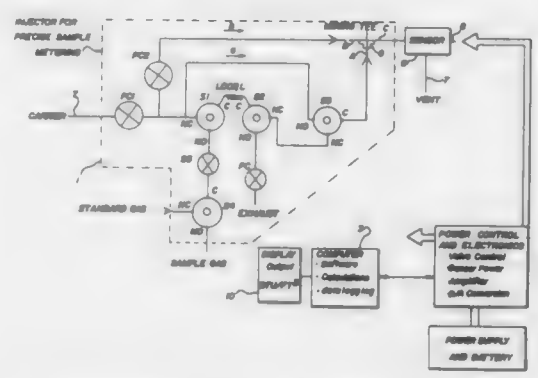
(d) output means for accessing and outputting the data stored in said second storage means.

5,012,432

MICROCALORIMETER SENSOR FOR THE MEASUREMENT OF HEAT CONTENT OF NATURAL GAS

Joseph R. Stetter; Melvin W. Findlay, both of Naperville, and Chongshan Yue, Chicago, all of Ill., assignors to Gas Research Institute, Chicago, Ill.

Filed Jun. 13, 1989, Ser. No. 365,460
Int. Cl.[5] G01N *25/22*
U.S. Cl. 364—557 **20 Claims**



1. An apparatus for measuring the BTU content of a sample gas, said apparatus comprising,

a catalytic sensor means for sensing the heat content of a gas,

processing means operatively associated with said sensor means for calculating and display means for displaying the heat content of gas in contact with said sensor,

first flow control means for providing a predetermined flow of a carrier gas into contact with said sensor means for establishing and storing a baseline reference signal of heat content of the carrier gas in said processing means,

second flow control means having measuring means therein for providing a precise gas volume chamber and valve means connected with said measuring means whereby a standard gas is injected into said measuring means to provide a metered sample of standard gas, said second flow control means including means for mixing the metered sample of standard gas with carrier gas and for passing the sample of standard gas and carrier gas into contact with the sensor means to provide and store a further reference signal of heat content in said processing means, and whereby a sample gas is subsequently injected into said measuring means to provide a metered sample of sample gas to be mixed with carrier gas and the mixed sample gas and carrier gas passed into contact with the sensor means to provide a signal to enable said processing means to calculate the heat content of the sample gas.

5,012,433

MULTISTAGE CLIPPING METHOD

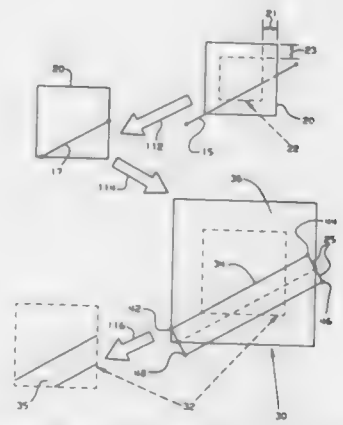
Robert M. Callahan, Woodstock; Bruce C. Hempel, Tivoli, and Bob C. Liang, West Hurley, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 9, 1989, Ser. No. 364,524
Continuation of Ser. No. 43,067, Apr. 27, 1987 abandoned.
Int. Cl.[5] G06F *15/62*
U.S. Cl. 364—518 **15 Claims**

1. A method for performing clipping in a graphic workstation by a multistage technique, wherein said method operates on geometric data in said workstation, said data having size characteristics, said method comprising the steps of:

establishing a first clipping region larger than a desired field of view;

defining a virtual viewport which is a mapping transformation of said first clipping region, said virtual viewport being defined for accurately clipping geometric primitives; and



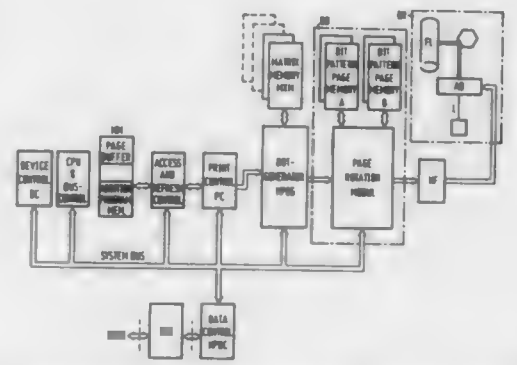
selecting said first clipping region based on said size characteristics of the data being processed.

5,012,434

APPARATUS AND METHOD FOR SELECTIVE ROTATION OF DATA PRINTED BY A MATRIX PRINTER

Kurt Zietlow, Erding, and Ernst Engst, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 314,300, Feb. 21, 1989, abandoned, which is a continuation of Ser. No. 816,905, Jan. 8, 1986, abandoned. This application Jul. 12, 1989, Ser. No. 378,508
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—523 **9 Claims**



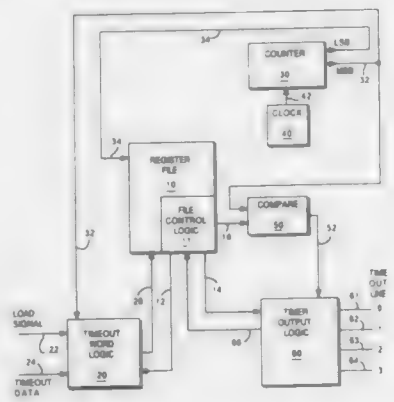
1. A method for representing a page of graphical symbols printed by an electro-photographic matrix printer, with a selected angular rotation, including the steps of, storing said page as a page of graphical symbols to be printed in a bit pattern page memory as bits in a bit pattern arranged in columns and rows, said page memory storing said page of graphical symbols in the form of a plurality of blocks, in which the orientation of the blocks is rotated and the bit patters of said blocks is not rotated, and driving said printer with said bit pattern for printing in line-by-line fashion for generating said page to be printed by reading out said bits from said bit pattern page memory in a predetermined sequence, with the orientation of the bits within the blocks being rotated, to produce a selectively rotated representation of said page to be printed through normal line-by-line operation of said printer.

5,012,435

MULTIPLE EVENT TIMER CIRCUIT

Roger N. Bailey; Robert L. Mansfield, and Alexander K. Spencer, all of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 17, 1988, Ser. No. 273,295
Int. Cl.[5] G06F *9/18;* G04B *23/12*
U.S. Cl. 364—569 22 Claims



21. A timer comprising:

counter means for repetitively providing a current output, each having an iteratively increasing sequence of bits relative to a preceding output;

a plurality of load signal means each for providing a load signal specifying a current output from the counter means and including means for specifying a timeout period;

a plurality of register means each connected to an individual and unique one of said load signal means and for forming a timeout data word from said current counter means output and said specified time period from its connected load signal means and each including means for storing its respective timeout data word; and

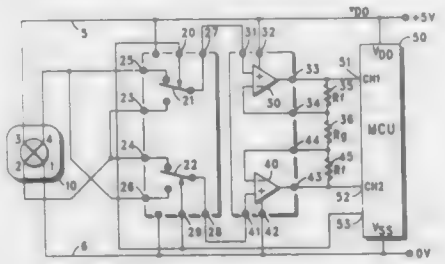
comparison means for comparing each successive counter means output with the timeout data word in each of said register means and providing a timeout signal when any one timeout data word is equal to the compared counter means output.

5,012,436

SENSOR ARRANGEMENT WITH AMPLIFIER OFFSET CANCELLATION

Michel Burri, Geneva, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 5, 1989, Ser. No. 417,416
Claims priority, application United Kingdom, Oct. 28, 1988, 8825257
Int. Cl.[5] G01L *27/00;* H03F *1/02*
U.S. Cl. 364—571.02 1 Claim



1. A method of processing sensor signals including the steps of:

connecting during a first measurement stage first and second signals provided by the sensor to respective ones of first and second amplifier means;

reversing the connections to the first and second amplifier means during a second measurement stage to provide two pairs of amplifier output signals;

storing signals derived from the two pairs of amplifier output signals;

combining the stored signals to substantially cancel amplifier offset voltages; and

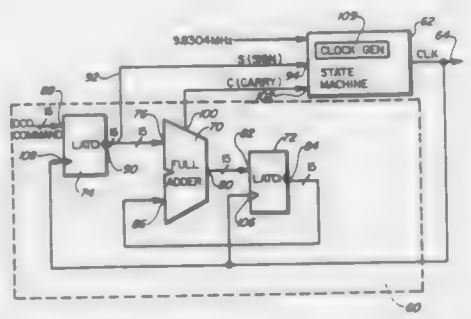
subtracting the stored signals of each pair from one another within their pairs so that in each pair, signals derived from the first output of the sensor are subtracted from the signals derived from the second output and the results of the subtractions are combined.

5,012,437

DIGITALLY CONTROLLED OSCILLATOR

Bradley J. Recker; Derrick I. Roe, both of Rockford, and Christopher J. Rozman, Park Ridge, all of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 29, 1989, Ser. No. 442,899
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—701 11 Claims



1. A digitally controlled oscillator (DCO) which develops an oscillator signal responsive to a digital period command signal consisting of a series of bits provided on input lines, comprising:

a binary full adder having a first set of inputs coupled to the input lines, a second set of inputs, a set of summation outputs and a carry output;

a latch having a set of latch inputs each coupled to one of the summation outputs of the binary full adder, a clock input and a set of latched outputs each coupled to one of the second set of inputs of the binary full adder wherein the binary full adder sums the bits of the period command signal with bits appearing at the latched outputs and provides a summed value to the summation and carry outputs; and

a finite state machine coupled to the carry output of the binary full adder and to the clock input of the latch wherein the finite state machine produces the oscillator signal whereby such signal has a period determined by the period command signal.

5,012,438

RECIPROCAL ARITHMETIC CIRCUIT WITH ROM TABLE

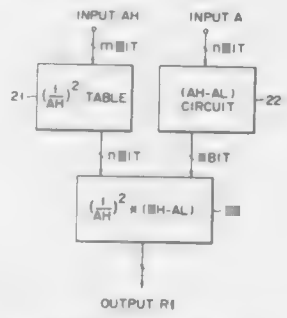
Akira Yamaguchi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 30, 1989, Ser. No. 443,357
Claims priority, application Japan, Dec. 8, 1988, 63-310707
Int. Cl.[5] G06F *7/52*
U.S. Cl. 364—765 12 Claims

1. A reciprocal arithmetic circuit comprising:

first memory means, including a conversion table, for storing approximate information items corresponding to the reciprocals of the squares of upper-bit data AH of divisors, for converting the upper-bit data AH of a predetermined divisor A supplied as an address to the first memory means into an approximation of the squared reciprocal $(1/AH)^2$ of the upper-bit data AH of divisor A, and for outputting the approximation;

subtracter means for deriving a difference between the upper-bit data AH and lower-bit data AL of the divisor A (AH − AL); and



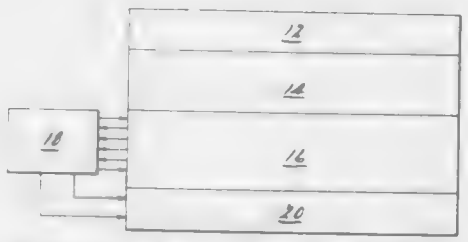
multiple means connected to receive an output of said first memory means and an output of said subtracter means, for deriving the product $(1/AH)^2.(AH-AL)$ to make the output of said first memory means more nearly equal to the reciprocal 1/A of the divisor A.

5,012,439

METHOD AND APPARATUS FOR PERFORMING DIVISION

J. Gregory Nash; Milos Ercegovac, both of Los Angeles, and Thomas Lang, Woodland Hills, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Dec. 29, 1986, Ser. No. 947,169
Int. Cl.[5] G06F *7/52, 7/38*
U.S. Cl. 364—766 15 Claims



1. An apparatus for generating a quotient from a dividend and a divisor by recursive subtraction operations without using carry propagation during each subtraction operation, said apparatus comprising:

means, for generating a plurality of quotient digits from said divisor and said dividend, including a division recursion circuit for performing recursive subtraction operations on said dividend;

quotient selection circuit electrically connected to said division recursion circuit for expressing each of said quotient digits as a logical zero or as a logical one with a sign; and

quotient conversion circuit electrically connected to said quotient selection circuit for representing said quotient in two's complement notation.

5,012,440

OUTER PRODUCT OPTICAL INTERFEROMETER WITH MASK

Jonathan D. Cohen, Hanover, Md., assignor to The United States of America as represented by the Director, National Security Agency, Washington, D.C.

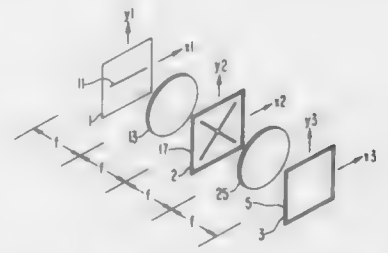
Filed Mar. 1, 1989, Ser. No. 318,027
Int. Cl.[5] G06E *3/00;* G06G *7/19;* G01B *9/02*
U.S. Cl. 364—837 3 Claims

1. An outer product interferometer, comprising:

a light source located in an input plane having one-dimensional extent along an axis;

means for detection located in an output plane;

means for imaging light from said input plane to said plane; and



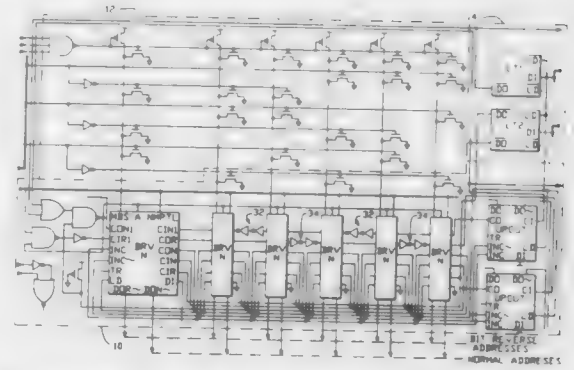
a mask located in the Fourier transform plane of said imaging means, said mask being opaque except for segments of two nonparallel lines, with neither of said lines being perpendicular to said axis of said light source.

5,012,441

APPARATUS FOR ADDRESSING MEMORY WITH DATA WORD AND DATA BLOCK REVERSAL CAPABILITY

Refael Retter, Haifa, Israel, assignor to Zoran Corporation, Santa Clara, Calif.

Filed Nov. 24, 1986, Ser. No. 933,815
Int. Cl.[5] G06F *12/02, 7/544*
U.S. Cl. 364—900 3 Claims



1. Memory addressing circuitry comprising:

a first binary counter comprising a plurality of serially connected binary cells,

a second binary counter comprising a plurality of serially connected binary cells,

a first bus for loading a count into said first and second binary counters,

an address bus for receiving count from said first and second counters, said binary cells of said counters being connected to said address bus whereby the least significant bits of one counter correspond to the most significant bits of the other counter whereby addresses from said two counters increment in opposite directions, and address mode means for controlling the application of addresses from said first and second binary counters to said address bus.

5,012,442

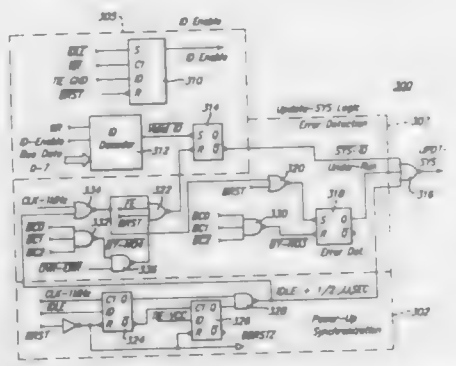
BUS RECEIVER POWER-UP SYNCHRONIZATION AND ERROR DETECTION CIRCUIT

John M. McCambridge, Northville, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 19, 1988, Ser. No. 286,196
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—900 4 Claims

1. A power-up synchronization and error detection appara-

tus of an addressable bus receiver for synchronizing receipt of asynchronously transferred parallel word messages from a serial to parallel conversion system of said bus receiver and for further transferring of said parallel words to an end user device, said receiver having input terminals coupled to a data link which transfers serially digital messages from a bus transmitter, the but transmitter broadcasting separate serial messages of a distinctive number of words to said receiver and to a plurality of other addressable bus receivers, said receiver responding to serial messages containing a chosen number of words, said other receivers responding to messages containing a different number of words, each of said messages being preceded and succeeded by a fixed number of IDLE bits used for distinguishing each message placed on said data link, one of said words of each message containing address information for use by said receiver and said other receivers in receiving said messages from said bus transmitter, said serial to parallel conversion system of said receiver also providing: (1) a system clock signal for use in synchronizing synchronous sequential circuits of said apparatus, (2) an IDLE signal for indicating transmission of IDLE bits, (3) a system buffered reset (BRST) signal for resetting sequential logic circuits of said apparatus during power-up and restart of operations, (4) a write (WR) pulse signal following the formation of each parallel word, (5) a framing error (FE) pulse signal for indicating a missing stop bit in the serially transferred data from the link, (6) an over range error (OVR-ERR) signal which responds to each serial bit received, and (7) word-1 to word-N (BC-0 to BC-B) signals that designate the word content of each message, said apparatus comprising:



(a) power-up synchronization logic means having input terminals for receiving said BRST, said IDLE and said clock (CLK) signals regardless of the content of said parallel word message transferred from said serial to parallel data conversion system of said receiver during power up of said receiver and producing therefrom at an output terminal a disabling IDLE+½ microsecond signal after receipt of a chosen number of rising edges of IDLE pulse signals which synchronizes receipt of said parallel word messages to said IDLE pulse signals said IDLE+½ microsecond signal being an enabling signal used in said receiver to inhibit transfer of said parallel words to the end user device until after the occurrence of said chosen number of rising edges of said IDLE pulse signals;

(b) address logic circuit means adapted to receive at input terminals inverse signals of IDLE, WR and BRST along with parallel word messages from said data conversion system and producing therefrom at an output terminal a system identification (SYS-ID) signal representing a match between an address word contained in the parallel message and a corresponding hardwired address within said address logic circuit means, said SYS-ID signal also being used to enable transfer of said parallel words to the end user if a match occurs or to disable transfer if a match does not occur;

(c) error detection logic mean shaving input terminals adapted to receive signals of BCO-BCN, WR, FE, BRST, OVR ERR, CLK from said data conversion system and said IDLE+½ microsecond signal from said power-up and synchronization logic means and producing therefrom at an output terminal an error signal if any of the designated input signals combine in a chosen manner that would hinder transfer of said parallel word messages to the end user device; and

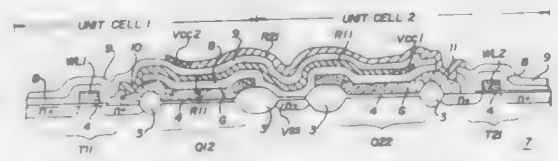
(d) an update system logic means adapted to receive at input terminals said IDLE+½ microsecond signal, said SYS-ID signal and said error signal and producing at an output terminal an enabling update conjunctive signal representing an enabling signal which allows the further transfer of said parallel word messages to the end-user device if the sum of said IDLE+½ microsecond signal, said SYS-ID signal and said error signal causes an enabling signal at the output of said update system logic means.

5,012,443

SEMICONDUCTOR STATIC RAM INCLUDING LOAD RESISTORS FORMED ON DIFFERENT LAYERS

Taiji Ema, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Dec. 6, 1988, Ser. No. 280,473
Claims priority, application Japan, Dec. 9, 1987, 62-311578
Int. Cl.[5] G11C *5/02, 5/06*
U.S. Cl. 365—51 **11 Claims**



1. A semiconductor static random access memory device formed on a semiconductor substrate and a plurality of insulation layers formed over said semiconductor substrate, said semiconductor static random access memory device, comprising:

a plurality of unit cell pairs, wherein each of said unit cell pairs includes a first unit cell and a second unit cell which are arranged adjacent in a data-line direction, each first unit cell and each second unit cell comprises a flip-flop which is formed by a pair of inverter circuits, each inverter circuit includes a field effect transistor formed on said substrate and a load resistor, and load resistors of each first unit cell and load resistors of each second unit cell are formed on different insulation layers and have respectively a layer pattern extending over a substrate surface of an adjacent unit cell within each of said unit cell pairs.

5,012,444

OPPOSED FIELD MAGNETORESISTIVE MEMORY SENSING

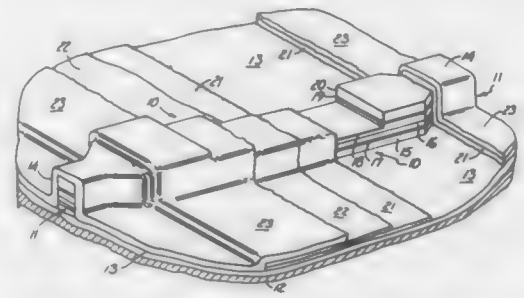
Allan T. Hurst, Jr., Anoka, Minn., and Arthur V. Pohm, Ames, Iowa, assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 4, 1990, Ser. No. 504,777
Int. Cl.[5] G11C *11/15*
U.S. Cl. 365—173 **36 Claims**

1. A method for sensing magnetic states of magnetic bit structures each comprising a memory film of a magnetoresistive, anisotropic, magnetic material between first and second terminal portions thereof and each having a word line conductor located across an electrical insulating layer from its said memory film which extends over a pair of opposite edges of that said memory film with each said edge extending between said first and second terminal portions, said memory film of each magnetic bit structure having an easy axis of magnetization oriented substantially along that direction in which its corresponding said word line conductor extends with directions of magnetization along said easy axis determining said magnetic states of that said magnetic bit structure, said memory film of each magnetic bit structure having portions thereof

sufficiently near either of its said pair of opposite edges exhibiting magnetizations therein oriented substantially parallel to said edges with such edge magnetizations directed at least partially in substantially a common direction, said method comprising:

providing a selected activation current through a first said word line conductor in a direction which results in that



magnetic field due thereto in said memory film of a corresponding first said magnetic bit structure being oriented substantially opposite said common direction; and

sensing a change in electrical resistance due to said activation current between said

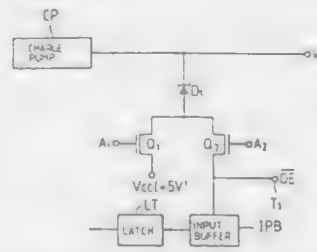
first magnetic bit structure first and second terminal portions to provide a signal representative thereof.

5,012,445

PROGRAMMABLE READ ONLY MEMORY BEING CAPABLE OF CONTROLLING INTERNAL WRITING VOLTAGE OF EXTERNAL VOLTAGE

Ujiie Kazuaki, and Shinji Nabetani, both of Tokyo, Japan, assignors to Hitachi, Ltd. and Hitachi VLSI Engineering Co., both of Tokyo, Japan

Filed Jul. 28, 1988, Ser. No. 225,314
Claims priority, application Japan, Oct. 13, 1987, 62-257877
Int. Cl.[5] G11C *7/00, 11/40, 16/04, 16/06*
U.S. Cl. 365—189.06 **24 Claims**



24. A semiconductor memory device including a plurality of nonvolatile storage elements each of which requires a predetermined voltage to write a data into a nonvolatile storage element, a first external terminal for receiving an external writing control signal and a second external terminal for receiving an external output control signal for controlling output of a stored data in a nonvolatile storage element, said semiconductor memory device comprising:

voltage generating means for generating a first voltage;

voltage limiting means coupled to said voltage generating means and including an internal reference node and means for limiting said first voltage to a limited voltage in accordance with a second voltage applied to said internal reference node;

external voltage providing means coupled to said first external terminal and to said internal reference node, and including means for providing an internal voltage corresponding to an external voltage applied to said second external terminal to said internal reference node;

switching means coupled to said internal reference node and to mode selection means and responsive to a mode selection signal from said mode selection means for providing a reference voltage to said internal reference node so that said limited voltage becomes substantially equal to said predetermined voltage, wherein said switching means allows said limited voltage to change to a voltage having smaller absolute value than that of said predetermined voltage in accordance with said external voltage in a state which said switching means does not provide said reference voltage to said internal reference node; and

said mode selection means including:

timing signal generating means coupled to said first external terminal, and including means responsive to a change from a first level to a second level in a control signal to be applied to said first external terminal for generating a first operation signal and means responsive to a change from said second level to said first level in said control signal for generating a second operation signal;

first holding means coupled to said second external terminal and responsive to said first operation signal for holding data applied on said second external terminal;

second holding means coupled to said second external terminal and responsive to said second operations signal for holding data applied on said second external terminal; and

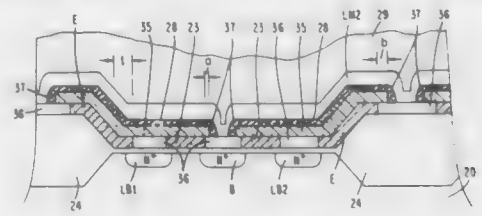
mode select circuit coupled to said first and second holding means and for generating said mode selection signal in accordance with the held data in said first and second holding means.

5,012,446

LARGE-SCALE EPROM MEMORY WITH A HIGH COUPLING FACTOR

Albert Bergemont, La Tronche, France, assignor to SGS-Thomson Microelectronics S.A., Gentilly, France

Filed Aug. 11, 1989, Ser. No. 392,325
Claims priority, application France, Aug. 11, 1988, 88 10963
Int. Cl.[5] G11C *11/40;* **H01L** *29/68*
U.S. Cl. 365—185 **5 Claims**



1. A memory array comprising

plural floating gate transistors each including a source, drain, control gate and floating gate;

word lines (LM1, LM2) extending along a first direction, called row direction, interconnecting the control gates (25) of the floating gate transistors;

bit lines (LB1, LB2) extending along a second direction, called column direction, interconnecting the drains of the floating gate transistors;

a constant-potential line (B) extending along a column and formed by diffusion of a first conductivity type interconnecting the sources of the floating gate transistors, the constant-potential line being arranged between each pair of bit lines, all the constant-potential lines being at the same potential;

an isolation area (24) extending along a column arranged on a side of each bit line opposite to one of the constant-potential lines;

a conductive pad (E) covering longitudinal sides of the isolation areas (24), said pad (E) being made of the same material as the material forming the floating gates (23) of the floating gate transistors;

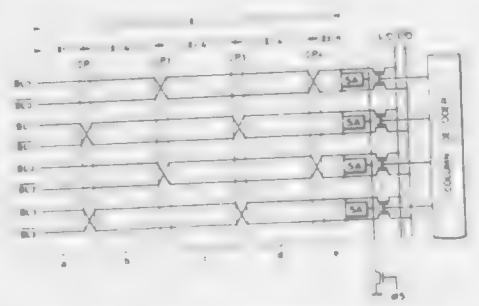
a conductive area (35) connecting the floating gate (23) of each transistor to the corresponding pad, the conductive area being superposed with the corresponding word line from which it is separated by an isolation layer (28).

5,012,447

BIT LINE STRUCTURE FOR A DYNAMIC TYPE SEMICONDUCTOR MEMORY DEVICE

Yoshio Matsuda, and Kazuyasu Fujishima, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1988, Ser. No. 276,741
Claims priority, application Japan, Nov. 28, 1987, 62-300977
Int. Cl.[5] G11C *5/06, 11/40*
U.S. Cl. 365—206 **14 Claims**



1. A semiconductor memory device comprising.

a plurality of memory cells arranged in a matrix constituted by rows and columns for storing charges representing information;

a plurality of bit line pairs each constituted of a pair of bit lines said bit lines provided corresponding to the rows of said plurality of memory cells and connected to said memory cells of the corresponding rows; and

a plurality of sense amplifier means arranged corresponding to said plurality of bit line pairs for detecting, when the charges representing information of said memory cells are read, a potential difference appearing on said bit line pair; wherein

each of said plurality of bit line pairs comprises an even number of intersecting portions, said intersecting portions being arranged such that one of the bit lines constituting each said bit line pair is adjacent one of the bit lines constituting a neighboring one of said bit line pairs for a first length and is adjacent the other one of the bit lines constituting said neighboring bit line pair for a second length; and the other one of the bit lines constituting the bit line pair is adjacent said one of the bit lines of said neighboring bit line pair for said second length and is adjacent said other of the bit lines of said neighboring bit line pair for said second length.

5,012,448

SENSE AMPLIFIER FOR A ROM HAVING A MULTILEVEL MEMORY CELL

Shigeki Matsuoka, Suita; Hiizu Okubo, Nishinomiya, and Daisuke Kosaka, Takarazuka, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

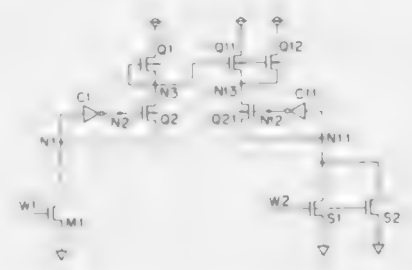
Division of Ser. No. 940,017, Dec. 10, 1986, abandoned. This application Jul. 15, 1988, Ser. No. 220,976
Claims priority, application Japan, Dec. 13, 1985, 60-280567; Sep. 25, 1986, 61-227396
The portion of the term of this patent subsequent to Jun. 14, 2002, has been disclaimed.
Int. Cl.[5] G11C *17/18*
U.S. Cl. 365—208 **7 Claims**

1. A sense circuit comprising:

at least one multilevel memory transistor having one of at least first and second possible memory states which are identifiable by respective first and second levels of current flowing therethrough, respectively, said at least one memory transistor including a first terminal for receiving a first activation signal, a second terminal connected to a first node and a third terminal connected to a first reference potential;

at least a pair of first and second reference transistors which pass current having said first and second levels, respectively, under the same biasing condition as that of said memory transistor, each of said reference transistors including a first terminal for receiving a second activation signal, a second terminal connected to a second node and a third terminal connected to said first reference potential;

first current supplying means connected between said first node and a second reference potential for supplying a



predetermined amount of current to said memory transistor when said first activation signal is supplied; and

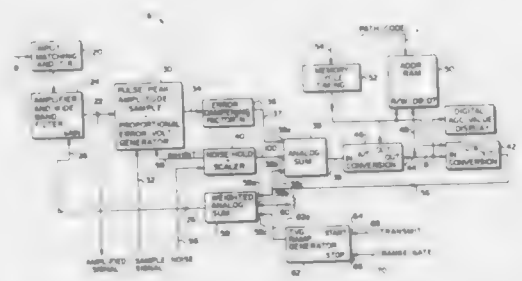
second current supplying means connected between said second node and said second reference potential and also connected to said first current supplying means for supplying approximately twice said predetermined amount of current to said reference transistors when said second activation signal is supplied.

5,012,449

SONIC FLOW METER

John D. Todd, Falmouth, Mass., assignor to Ferranti O.R.E. Inc., Falmouth, Mass.

Filed Jun. 30, 1989, Ser. No. 374,265
Int. Cl.[5] G01S *15/00*
U.S. Cl. 367—89 **4 Claims**



1. A flow meter comprising:

(A) a plurality of sonic transducers, at least a plurality of which are operable as transmitting transducers and at least a plurality of which are operable as receiving transducers, transducers, each of the transmitting transducers being operable to transmit sonic pulses along a different sonic path associated therewith through a fluid to an associated receiving transducer, each receiving transducer responding to the reception of a sonic pulse to generate a transducer output representative thereof;

(B) a driver for alternately driving each transmitting transducer individually to transmit sonic pulses along the sonic path associated therewith, each sonic pulse transmission defining the beginning of a new cycle of operation;

(C) an amplifier, having an output port, a gain-control port adapted to receive a gain-control signal, and an input port adapted to receive an amplifier input, for amplifying the amplifier input with a gain determined by the gain-control signal to generate an amplifier output;

(D) means for selectively coupling the amplifier input port to receive the transducer output of the receiving transducer associated with the sonic path associated with the transmitting transducer currently being driven by the driver;

(E) an AGC circuit responsive to the amplified signal to generate therefrom an AGC signal representing an AGC value associated with the path taken by the sonic pulse from which the amplified signal resulted;

(F) memory means responsive to the AGC signal to store the AGC value represented thereby separately from each AGC value associated with another path;

(G) means for (i) retrieving from the memory means, for use during a given cycle of operation in which the driver drives a given transmitting transducer, the AGC value represented by the AGC signal during a previous cycle in which the driver drove the given transmitting transducer and (ii) generating a retrieved-value signal from the retrieved AGC value;

(H) a TVG circuit for generating a TVG signal that changes monotonically during a time interval between the time at which the driver sends a pulse and the time at which a receiving transducer receives it;

(I) gain-control means responsive to the retrieved-value signal for generating a gain-control signal dependent thereon and applying the gain-control signal to the gain-control port of the amplifier during the given cycle of operation, the gain-control means also being responsive to the TVG signal so that the gain-control signal depends on both the TVG signal and retrieved-value signal; and

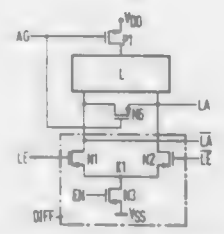
(J) measurement means responsive to the amplifier output for measuring the time intervals between transmission of sonic pulses and reception thereof, for comparing the time intervals for different paths, for computing therefrom the flow rate of the fluid flowing through the paths, and for generating an indication of the flow rate.

5,012,450

READ AMPLIFIER FOR STATIC MEMORIES IN CMOS TECHNOLOGY

Hans-Juergen Mattausch, Kirchheim; Klaus Althoff, Munich, and Gerd Neuendorf, Germering, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Siemens Aktiengesellschaft, Munich, both of, Fed. Rep. of Germany

Filed Jul. 8, 1988, Ser. No. 222,006
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1987, 3727558
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—2[illegible] **11 Claims**



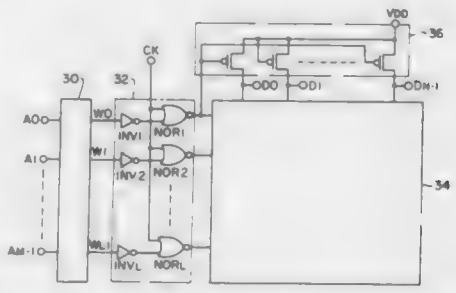
1. A read amplifier comprising at least one load component (L), at least one differential amplifier component (DIFF) and a compensation transistor (N6), characterized in that a switching transistor (P1) is directly connected between said load component (L) and a voltage source V_{DD}; said switching transistor disconnecting the operating voltage during a preloading phase and turning it on during an interpretation phase; and a gate terminal of said switching transistor (P1) forms a first circuit input (AG) in common with a gate terminal of said compensation transistor (N6), wherein said switching transistor (P1) is a p-channel field effect switching transistor which has a source terminal which is connected to the voltage source (V_{DD}) and has a drain terminal which is connected to said load component (L), wherein first and second p-channel field effect transistors (P2, P2', P2''; P3, P3', P3'') form one load component (L); source terminals of said p-channel field effect transistors (P2, P2', P2''; P3, P3', P3'') are connected to the drain terminal of said switching transistor (P1); and the drain terminals of said first and second p-channel field effect transistors (P2, P2', P2''; P3, P3', P3'') respectively, provide the first and the second outputs of said read amplifier (LA, $\overline{LA}$), and wherein the gates of said switching and compensating transistors are connected together.

5,012,451

ROM CIRCUIT

Hyeong-keun An; Young-cheol Kim; Seok-jeong Lee, all of Seoul, and Jung-jae Yu, Pusan, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyunggi-do, Rep. of Korea

Filed Mar. 12, 1990, Ser. No. 492,097
Claims priority, application Rep. of Korea, Feb. 20, 1990, 90-2072
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—230.05 **10 Claims**



1. A ROM circuit, having M address lines and N output lines, comprising:

a decoder for generating 2^M bit word signals according to M bit address signals input on said M address lines;

a gate means for selectively supplying said 2^M bit word signals to 2^M word lines according to a clock signal;

a memory cell array for storing the desired data according to a combinational existence of MOS transistors at predetermined cross sections of said word lines and said output lines; and

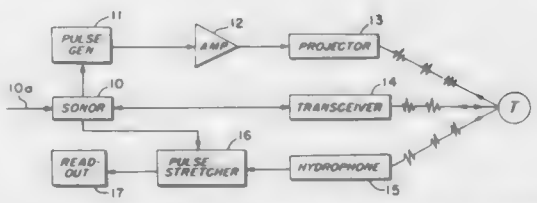
a precharged means for precharging said output lines according to said clock signal.

5,012,452

PULSE TRANSFORMATION SONAR

Clarence S. Johnson, San Diego, and Clarence G. Blanc, Escondido, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 1, 1972, Ser. No. 249,080
Int. Cl.[5] H04K *3/00*
U.S. Cl. 367—1 **9 Claims**



1. A system permitting the audio analysis of broadband ultrasonic energy comprising:

means for projecting pulses of said broadband ultrasonic energy;

means for receiving reflected pulses of said broadband ultrasonic energy;

means connected to the receiving means for dividing the

entire bandwidth of said reflected pulses of said broadband ultrasonic energy and for translating its information content into the acoustic spectrum; and

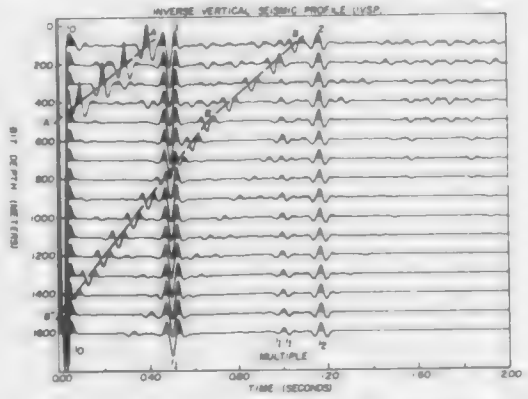
means coupled to the dividing and translating means for providing a real-time representation of said acoustic spectrum.

5,012,453

INVERSE VERTICAL SEISMIC PROFILING WHILE DRILLING

Lewis J. Katz, 3521 Westwood Dr., Salt Lake City, Utah 84109

Filed Apr. 27, 1990, Ser. No. 516,115
Int. Cl.[5] G01V *1/36*
U.S. Cl. 367—57 **26 Claims**



26. A system for compiling inverse vertical seismic profiles and pseudo reflection seismograms utilizing the transmitted pulses and the secondary reflectances of a seismic signal produced by a seismic source within a borehole, comprising:

a downhole seismic source position able at a first depth position;

means for adjusting the depth position of said downhole seismic source in said borehole to a plurality of depth positions differing from said first depth position;

a seismic sensor positionable transversely away from said borehole and within sensing distance from said downhole seismic source;

recording means for recording data comprising direct waves, primary reflectances and secondary reflectances of seismic signals produced by said downhole seismic source;

autocorrelating means for autocorrelating recordings made by said recording means while said seismic source is at a particular depth position and producing a plurality of autocorrelation functions corresponding to different depth positions,

computing means for stacking said autocorrelation functions produced by said autocorrelating means to produce stacked autocorrelation functions at each of said different depth positions to produce an inverse vertical seismic profile and for stacking a plurality of said stacked autocorrelation functions corresponding to said different depth positions to produce a pseudo reflection seismogram; wherein

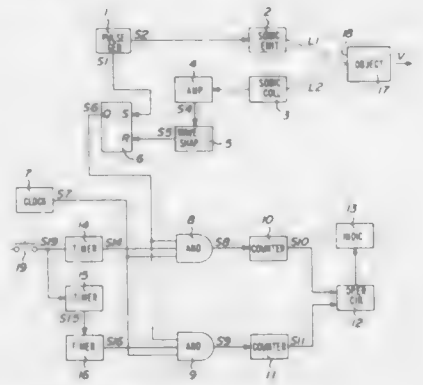
said autocorrelating means and said computing means are positionable at the site of said borehole and produce said autocorrelation functions, stacked autocorrelation functions, and inverse vertical seismic profile in approximately real time.

5,012,454

ULTRASONIC LOW RANGE SPEED METER

Tadao Okazaki, Hamakita, Japan, assignor to Fujie Bussan Kabushiki Kaisha, Japan

Filed Apr. 23, 1990, Ser. No. 512,900
Claims priority, application Japan, Sep. 26, 1989, 1-250351
Int. Cl.[5] G01S *15/00*
U.S. Cl. 367—89 **4 Claims**



1. An ultrasonic speed meter comprising

a pulse generator,

a clock pulse generator,

a detection head connected to said pulse generator and including an ultrasonic emitter and an ultrasonic collector both directed towards a sound reflective face of a mobile object performing a linear displacement,

first means for gating clock pulses over a first operation period,

second means for gating clock pulses over a second operation period,

a flip-flop having a set terminal connected to said pulse generator, a reset terminal responsive to a signal from said collector of said detection head, and an output terminal connected to said first and second gating means,

means for fixing the interval between said first and second operation periods,

a first counter connected to said first gating means and, after counting said clock pulses past said first gating means during said first operation period, generative of a first count value which indicates an average distance between said detection head and said reflective face of said mobile object during said first operation period,

a second counter connected to said second gating means and, after counting said clock pulses past said second gating means during said second operation period, generative of a second count value which indicates an average distance between said detection head and said reflective face of said mobile object during said second operation period, and

an operational circuit connected to said first and second counters for calculating an average speed of said linear displacement during said interval set by said fixing means on the basis of said first and second count values.

5,012,455

SECURITY DOOR WITH IMPROVED SESNOR FOR DETECTING UNAUTHORIZED PASSAGE

Milan Schwarz, La Verne, and Robert Mayer, Pleasanton, both of Calif., assignors to Revolving Door Control, Inc., Claremont, Calif.

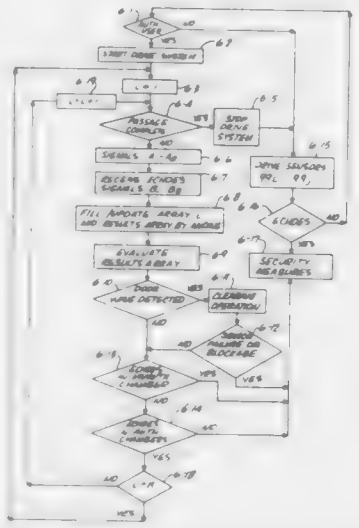
Filed Oct. 11, 1989, Ser. No. 419,760
Int. Cl.[5] G08B *13/16*
U.S. Cl. 367—93 **27 Claims**

1. A control system for a security door of the type having a housing with a first portal and a second portal, a door member rotatably disposed in the housing and having a plurality of wings which, in cooperation with the housing, define a plurality of compartments moveable between the first and second portals in response to rotation of the door member, the control system comprising:

means for rotating the door member to move a selected compartment from one of the first and second portals to the other of the first and second portals;

sensing means disposed in the housing for emitting energy waves into the housing between the first and second portals, for detecting echoes of the energy waves due to any objects of persons in the housing and outputting a signal indicative of an echo or no echo;

detection means for determining the position of the selected compartment; and



controller means, connected to the sensing means and to the detection means, for driving the sensing means and the means for rotating in response to identification of an authorized user, and for detecting passage of any objects or persons in any of the compartments other than the selected compartment based on the position of the selected compartment and the detection of any echoes by the sensing means,

wherein the sensing means comprises multiple sensors, each of the sensors receiving a driving signal from the controller means for generating successive bursts of waves, wherein the bursts occur at varying cycle times.

5,012,456

Patent Not Issued For This Number

5,012,457

AQUATIC TRANSDUCER SYSTEM

Thomas R. Mitchell, 2520 Rubidoux Blvd., Riverside, Calif. 92509, and Robert E. Landesman, 598 W. Huntington Dr., Arcadia, Calif. 91006

Filed Sep. 11, 1989, Ser. No. 405,749
Int. Cl.[5] H04R *9/00*
U.S. Cl. 367—175 **48 Claims**

1. An underwater transducer system for a body of water, comprising:

(a) a housing;

(b) means for positioning the housing in the water;

(c) a diaphragm in the housing;

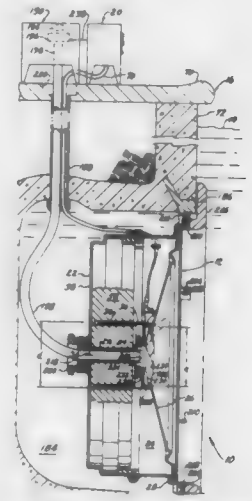
(d) means for connecting an outer edge of the diaphragm to the housing, at least one side of the diaphragm being in direct contact with the water;

(e) a coil assembly having at least one turn of a conductive material about a coil axis, opposite ends of the conductive material forming a pair of coil terminals;

(f) means for rigidly affixing the coil assembly to the diaphragm, the coil assembly being movable within the housing, comprising:

(i) a tubular member extending to one end of the coil assembly, the tubular member having a cylindrical inside surface concentric with the coil axis; and

(ii) a centrally located boss portion formed in the diaphragm, the boss portion having a cylindrical outside surface in locating engagement with the inside surface of the tubular member;



(g) a magnetic field magnet in the housing for producing a magnetic field, and having an associated annular slot for receiving the coil assembly, the magnetic field intersecting the conductive material of the coil assembly, whereby a voltage between the coil terminals is correlated with sound waves in the water; and

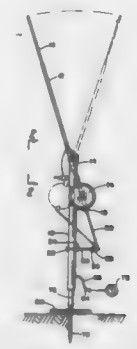
(h) a cylindrical strip of a lubricative plastic material located within the annular slot for preventing contact between the coil assembly and the magnet by sliding contact between the strip and the coil assembly.

5,012,458

RACING GATE FOR KITES

Arlen J. Lowrance, 7655 E. 41st St., Tulsa, Okla. 74145

Filed Sep. 5, 1989, Ser. No. 402,653
Int. Cl.[5] G04B *47/00;* **A63H** *27/08*
U.S. Cl. 368—10 **6 Claims**



1. A gate comprising an upright standard having an upper end and a lower end, the lower end supporting the standard from the ground, an elongated wand having an upper end and a lower end, means for pivotally attaching the wand above its lower end to the standard adjacent its upper end, resilient means connected from the lower end of said wand to said standard for maintaining said wand in a normally upright condition.

5,012,459

DATA RECORDER

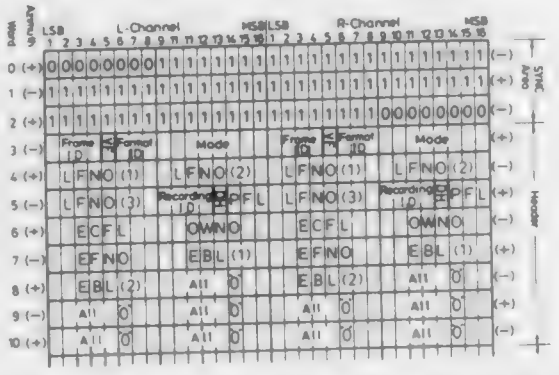
Kentaro Odaka, Tokyo; Shinya Ozaki, Kanagawa; Masaki Yamada, Kanagawa; Yoshizumi Inazawa, Kanagawa, and Hiroshi Ishibashi, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 210,229, Jun. 23, 1988, abandoned. This application Jun. 11, 1990, Ser. No. 536,074

Claims priority, application Japan, Jun. 29, 1987, 62-161924

Int. Cl.[5] G11B *5/09*

U.S. Cl. 360—32 **20 Claims**



1. A method of recording digital data signals in a main data area in a series of track pairs on a recording medium comprising the steps of;

receiving digital information signals from an external source and dividing them into frames, each frame corresponding to a different pair of tracks to be recorded on the recording medium;

for each of the two tracks forming each frame, generating header portions, having identical contents, which are each arranged to be recorded before the digital information signals in the respective tracks; and

recording the digital information signals and the header portions in the main data area in a series of pairs of tracks on the recording medium according to a predetermined, digital audio tape recorder (DAT) format.

5,012,460

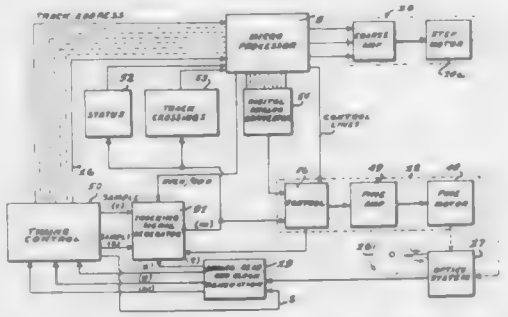
RAM HEAD POSITIONING AND TRACKING SYSTEM

Steve S. Popovich; Russell A. Meyer; William J. Stanis, all of Colorado Springs; Christopher Miller, Manitou Springs, and Gary R. Mitchell, Woodland Park, all of Colo., assignors to Information Storage, Inc., Colorado Springs, Colo.

Filed May 31, 1985, Ser. No. 739,514

Int. Cl.[5] G11B *7/00, 7/007*

U.S. Cl. 369—32 **7 Claims**



1. A random access memory optical read/wire head positioning and tracking system for information storage media comprising;

Media carrying means having a plurality of tracks formed by the deposition in the media in multiple sector format of a plurality of optically readable pits and wherein the readable pits in each sector include a plurality of tracking pit pairs interspersed at intervals between groups of other serially deposited readable pits and wherein the pits of the pairs are bilaterally offset from the center line of the track to which they are related;

Central control means having a track address output;

An optical-system carrying head movable with respect to the media, wherein the optical system comprises a light source directed to the media and means responsive to light reflected from the pits to produce an electrical signal;

Open loop incremental actuator means responsive to the output of the control means and operable connected to the head for coarse positioning of the head in step movements transversely of the tracks; and

A read/write head transverse velocity servomechanism loop, including motor means operable connected to the head, responsive to the central control means and the said electrical signals produced by light reflected from the pits to position the head over an addressed track.

5,012,461

DISK RECORDING APPARATUS FOR RE-ESTABLISHING A RECORDING MODE AT A DESIRED ADDRESS

Tadao Yoshida, Kanagawa, and Ryo Ando, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

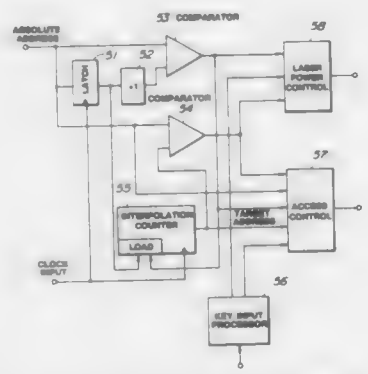
PCT No. PCT/JP88/00196, § 371 Date Oct. 21, 1988, § 102(e) Date Oct. 21, 1988, PCT Pub. No. WO88/06785, PCT Pub. Date Sep. 7, 1988

PCT Filed Feb. 24, 1988, Ser. No. 273,335

Claims priority, application Japan, Feb. 27, 1987, 62-44825

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—44.33 **4 Claims**



1. In a disk recording apparatus for recording information by projecting a laser beam having an adjustable power level on a predetermined one of a plurality of tracks in an optically recordable disk on which absolute addresses have been recorded in advance, said disk recording apparatus being operative to read said absolute addresses indicative of a position of said laser beam on said optically recordable disk; a system for re-establishing a recording mode at a desired recording position in said predetermined one of said plurality of tracks of said laser beam after the occurrence of an undesired track jump of said laser beam, comprising:

detecting means for detecting an undesired track jump of said laser beam from said predetermined one of said plurality of tracks to another track during a recording operation;

address counting means for maintaining a current address in said predetermined one of said plurality of tracks after the occurrence of said undesired track jump by counting clock signals synchronized with the absolute addresses read by said disk recording apparatus indicating a current address of said laser beam;

first power adjusting means for adjusting the power level of said laser beam to a non-recording level upon the detection of said undesired track jump by said detecting means;

repositioning means for repositioning said laser beam to a different track of said optically recordable disk after said undesired track jump;

comparing means for comparing the absolute addresses read by the disk recording apparatus from said different track of said optically recordable disk with said current address maintained by said address counting means to detect coincidence thereof; and

second power adjusting means for increasing the adjustable power level of the laser beam to a recording level after detection of coincidence of one of said absolute addresses and said current address by said comparing means.

5,012,462

DISC PLAYER HAVING LOCKING MECHANISM FOR PICKUP

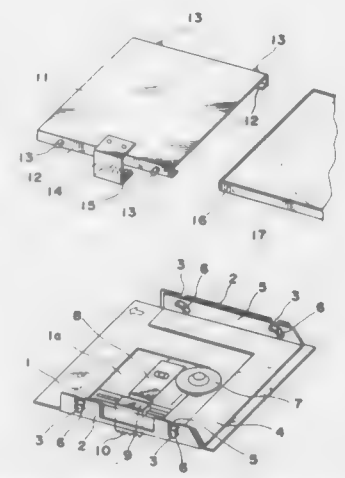
Hirayuki Tsujita, Gifu, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Jul. 1, 1988, Ser. No. 214,344

Claims priority, application Japan, Jul. 3, 1987, 62-102852[U]

Int. Cl.[5] G11B *33/02, 17/022*

U.S. Cl. 369—77.1 **6 Claims**



1. A disc player which comprises a pickup for displacement in a radial direction of a disc by a driving means, an engaging portion formed on said pickup, a holder for holding said disc and which is displaced vertically immediately following loading and unloading of a disc in said disc player, and a stopper portion formed on said holder, whereby during unloading, said stopper portion of said holder engages said engaging portion of said pickup to prevent said pickup from displacement, said stopper portion and said engaging portion being vertically separated from each other through said vertical displacement of said holder following loading for allowing displacement of said pickup.

5,012,463

OPTICAL READ/WRITE STORAGE SYSTEM FOR FLEXIBLE MEDIA HAVING BERNOULLI STABILIZATION AT THE OPTICAL HEAD

Stephen W. Farnsworth, Berthoud; David R. Dodds, Boulder; Slobodan R. Perera, Boulder, and K. John Stahl, Boulder, all of Colo., assignors to Bernoulli Optical Systems Company, Boulder, Colo.

Filed Mar. 14, 1988, Ser. No. 167,652

Int. Cl.[5] G11B *7/00*

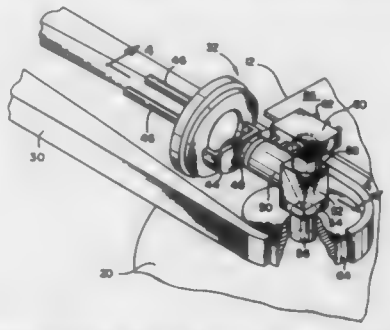
U.S. Cl. 369—100 **1 Claim**

1. An optical read/write storage system for reading and writing data to and from flexible optical media, comprising:

optical means for providing focused light onto said flexible media and for receiving reflected light from said flexible media;

first Bernoulli stabilization means, positioned proximate said flexible media, for providing primary Bernoulli stabilization of said flexible media while reading and writing data, said first stabilization means having an opening providing access to said flexible media; and

second Bernoulli stabilization means, connected to said optical means and positioned proximate said flexible media, for providing fine Bernoulli stabilization of said flexible media in the immediate region surrounding said optical means so that said optical means need not be moved substantially toward or away from said media in order to maintain said light focused on said media, said second Bernoulli stabilization means comprising a body member having an aperture through which said focused light is directed, said body member having a first flat surface around said aperture, said first flat surface lying in a plane generally parallel to said flexible media, and said body member having a second surface extending away from said first surface outside of said plane so that Bernoulli stabilization of said flexible media in the area of said first surface is created when said media is moving relative to said first surface.



5,012,464

COMPUTER-CONTROLLED LASER IMAGING SYSTEM WITH AUTOMATIC BEAM START AT LINE BEGINNING

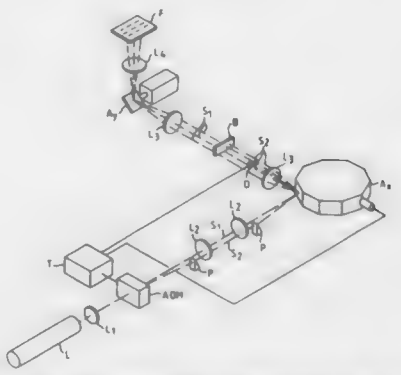
Hans J. Vedder, Puchheim, and Hans Krenn, Grasbrunn, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Mar. 8, 1989, Ser. No. 320,778

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1988, 3807659

Int. Cl.[5] G11B *7/085, 7/125*

U.S. Cl. 369—116 **7 Claims**



1. A computer-controlled laser imaging system for switching on a laser imaging beam at the beginning of a line of an image surface, the system comprising:

a laser and lens for emitting a laser-light beam;

an acoustic/optical modulator for receiving and modulating the beam into a primary beam of first-order diffraction

corresponding to the desired image and for separating in a y-direction transverse to the x-direction from the laser-light beam an unmodulated 0th-order secondary beam for use in determining line start;

a first telescopic lens system and a rotary polygonal mirror for deflecting the modulated beam in the x-direction of the line to be written;

means for receiving the secondary beam and focusing same through the first lens system on the mirror in registration with the primary modulated beam, whereby the primary and secondary beams cross on the mirror;

a second telescopic lens system and a projecting lens for receiving the deflected main beam and casting same on the image surface;

a photodetector in the second lens system positioned in the secondary beam and also positioned to intercept the primary beam generally at the beginning of a line; and

circuit means connected between the photodetector and the modulator for initiating modulation when the photodetector is impinged by the beams.

5,012,465

INTERCONNECTION SYSTEM FOR INTERCONNECTING CONNECTION UNITS AND A CENTRAL SWITCHING FACILITY

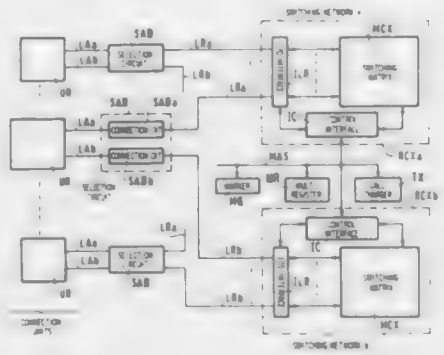
Didier Helou, Saint Cyr L'Ecole; Jean-Yves Peron, Lannion; René Coutin, Guingamp, and Georges Thiebaut, Perros Guirec, all of France, assignors to Alcatel Cit, Paris, France

Filed Feb. 2, 1990, Ser. No. 473,755

Claims priority, application France, Feb. 2, 1989, 89 01348

Int. Cl.[5] H04Q *11/04*; H04J *3/00*

U.S. Cl. 370—58.1 **3 Claims**



1. An interconnection system for interconnecting connection units and a central switching facility, said central switching facility being duplicated and constituted by two switching networks, each connection unit being connected to both switching networks via a selection circuit comprising two connection circuits, each connection circuit being connected by an access link to the connection unit and by a network link to one of the switching networks, said network and access links being two-way multiplex links having frames of fixed length;

wherein each connection circuits has two operation modes: a normal operation mode and a message operation mode, the latter consisting in receiving messages from the switching networks and sending messages to the switching networks; each mode being activated by frames sent form the switching networks to the connection circuits, each frame comprising 16-bit time slots providing: 8 data bits, 5 transparent bits, and 3 check bits; a first one of the check bits being a connection circuit operation mode bit having a value 0 for a normal operation mode and a value 1 for message operation mode; the value of the first check bit being fixed by the switching network in each time slot that it transmits towards the connection circuit;

and wherein each message comprises a multiframe of order thirty-two, said first check bit having the value 1 for only one time slot out of the time slots transmitted by the switching network to the connection circuit, and likewise for one time slot out of the time slots delivered by the connection circuit to the switching network, the value 1 being maintained for thirty-one frames and replaced by the value 0 during the thirty-second frame of a multiframe; said message being conveyed by the second check bit; and the third check bit conveying a cyclic redundancy check of order thirty-two, calculated over all of the bits conveyed by the frames of the multiframe.

5,012,466

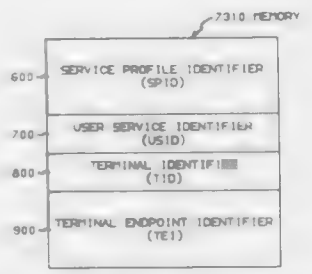
CALL SERVICE INITIALIZATION ARRANGEMENT

Rolfe E. Buhrke, Westchester; Robert B. Dianda, Wheaton; Leo R. Katzenstein, Naperville, all of Ill.; Michael B. McClurkan, Little Rock, Ark., and John S. Tsai, Naperville, Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 108,249, Oct. 13, 1987, abandoned. This application Dec. 11, 1989, Ser. No. 449,653

Int. Cl.[5] H04J *3/24*

U.S. Cl. 370—62 **18 Claims**



1. An initialization method for a switch connectable via a single line to a plurality of terminals, said switch including means for storing a plurality of service profiles each defining a set of call services, said method comprising

said switch receiving on said line a first identifier defining one of said plurality of terminals and a second identifier defining one of said plurality of service profiles,

in response to receipt of said first and second identifiers, said switch enabling for said one terminal a set of call services defined by said one service profile,

in response to receipt of said second identifier, said switch determining a third identifier distinguishing said one service profile from any other service profiles defining sets of call services enabled for ones of said plurality of terminals, and

after determining said third identifier, said switch transmitting said third identifier to said one terminal and thereafter addressing said one terminal using said third identifier.

5,012,467

METHOD AND APPARATUS FOR COLLISION DETECTION IN A LOCAL AREA NETWORK TRANSCEIVER

Ronald C. Crane, Mountain View, Calif., assignor to 3Com Corporation, Santa Clara, Calif.

Filed Oct. 10, 1989, Ser. No. 418,080

Int. Cl.[5] H04J *3/02*

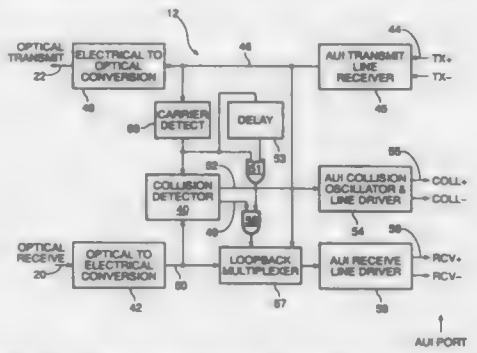
U.S. Cl. 370—85.3 **5 Claims**

1. A method for detecting collisions of packets of Manchester coded binary data comprising:

preselecting a period of time between expected transitions of a Manchester coded binary data signal to serve as a timing window;

transmitting a Manchester coded binary data signal, each said Manchester coded binary data signal having a transition at a repetitive expected time interval relative to a previous transition;

receiving said Manchester coded binary data signal; and



producing a packet collision signal whenever said transitions of said Manchester coded binary data fail to appear during said timing window.

5,012,468

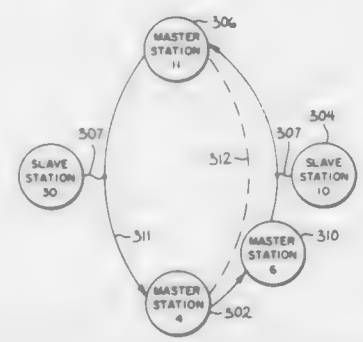
MASTER SLAVE INDUSTRIAL TOKEN PASSING NETWORK

Stuart B. Siegel, Canton, and Jeffery C. Marriott, Ann Arbor, both of Mich., assignors to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed Dec. 28, 1989, Ser. No. 458,108

Int. Cl.[5] H04J *3/24*

U.S. Cl. 370—85.5 **5 Claims**



1. A method of communicating over a network formed by at least one master and slave station interconnected by a communications medium, comprising the steps of:

(a) passing a master token to each of the master stations in a predetermined order;

(b) enabling each master station to send a message on the network when it has possession of the master token;

(c) successively passing a solicit token to each of said master stations in a predetermined order;

(d) enabling each master station to send a solicit message on the network when it has possession of both the solicit token and the master token, said solicit message being directed to a recipient station connected to the communications medium but not one of those stations yet receiving the master token;

(e) enabling the recipient station which receives the solicit message to become one of said plurality of stations receiving the master token and the solicit token if the recipient station is a master station; and

(f) enabling the recipient station which receives the solicit message to send a negative acknowledgment message on the communications medium if the recipient station is a slave station, without becoming one of said plurality of stations receiving the master token.

5,012,469

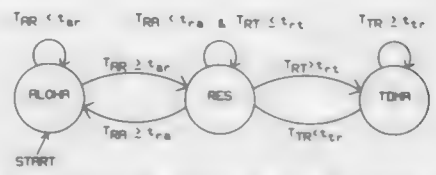
ADAPTIVE HYBRID MULTIPLE ACCESS PROTOCOLS

Karamvir Sardana, 49/42 Punjabi Bagh, New Delhi 110 026, India

Filed Jul. 29, 1988, Ser. No. 226,210

Int. Cl.[5] H04J *3/16*

U.S. Cl. 370—95.3 **23 Claims**



10. A communications station for use on a single channel, time division, multiple access network, said single channel being divided into a plurality of time slots, said communications station comprising in combination;

selectable Aloha protocol means for transmitting and receiving message information packets using an Aloha protocol;

selectable Reservation protocol means for transmitting and receiving message information packets using a Reservation protocol;

selectable TDMA protocol means for transmitting and receiving message information packets using a TDMA protocol;

first switching means for switching between said Aloha protocol means and said Reservation protocol means; and

second switching means for switching between said Reservation protocol means and said TDMA protocol means.

5,012,470

DATA TERMINAL EQUIPMENT AND DATA TRANSMISSION CONTROL METHOD

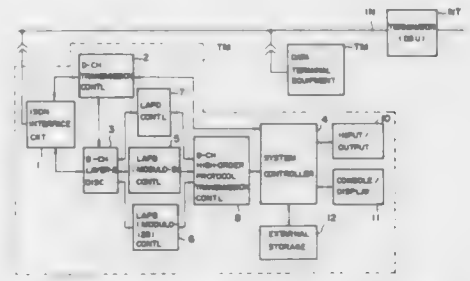
Toshifumi Shobu, Atsugi; Hiroshi Shibata, Zama, and Fumihiro Ogasawara, Ebina, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 8, 1989, Ser. No. 404,634

Claims priority, application Japan, Sep. 22, 1988, 63-236360; Oct. 7, 1988, 63-252113; Feb. 13, 1989, 1-31235; May 9, 1989, 1-114134

Int. Cl.[5] H04J *3/12*; H04Q *11/04*

U.S. Cl. 370—110.1 **20 Claims**



1. A data terminal equipment which is coupled to an integrated services digital network through an access line and uses a hierarchical protocol in conformity to an OSI reference standard model, comprising:

first data link protocol means for providing a link access procedure balanced (LAPB) modulo-8 data link protocol;

second data link protocol means for providing an LAPB modulo-128 data link protocol;

third data link protocol means for providing a link access procedure for a data channel (LAPD) data link protocol;

protocol determining means for determining a data link protocol to be used by referring to an address field and a control field of a call set-up signal which is supplied from a second data terminal equipment; and

data link protocol activating means, coupled to said first, second and third means and

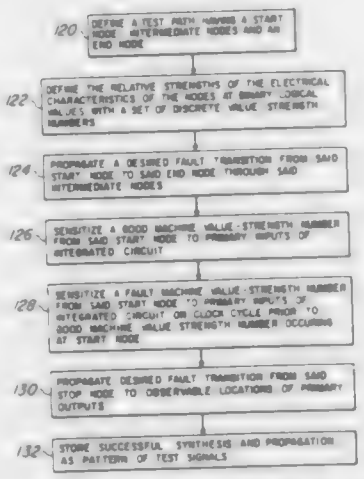
said protocol determining means, for selecting and activating one of said first, second and third means on the basis of the result provided by said protocol determining means.

5,012,471

VALUE-STRENGTH BASED TEST PATTERN GENERATOR AND PROCESS

Theo J. Powell, Dallas; John I. Hickman, Cooper, and Jeri J. Crowley, Garland, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 30, 1988, Ser. No. 252,289
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—27 **4 Claims**



1. A process of generating patterns of test signals that test stuck-at faults in semiconductor integrated circuits, said integrated circuits including field effect transistors, some of which have different electrical characteristics, said test signals being applied to said semiconductor integrated circuits, said integrated circuits including plural primary inputs and plural primary outputs and having plural internal nodes indirectly energizable from said primary inputs and indirectly readable from said primary outputs, said process comprising the steps of:

(a) defining a relative strength of the electrical characteristics of said nodes at binary logic values with a set of discrete value-strength numbers;

(b) selecting a said node of said integrated circuit;

(c) assigning a value-strength number representing a desired stuck-at fault to said selected node;

(d) attempting to sensitize said assigned value-strength number to a pattern of input signals to be applied to said primary inputs, said sensitizing including sensitizing value-strength numbers from said selected node to said primary inputs;

(e) attempting to propagate said assigned value-strength number to a pattern of output signals to be read from said primary outputs, said propagating including propagating value-strength numbers from said selected node to said primary outputs;

(f) indicating whether said attempting to sensitize and attempting to propagate successfully located a test pattern of logical states at said primary inputs and outputs to indicate said value-strength number at said selected node; and

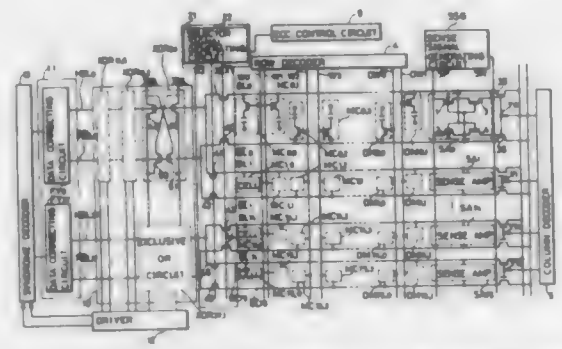
(g) repeating said steps (a) through (f) for every node of said integrated circuit.

5,012,472

DYNAMIC TYPE SEMICONDUCTOR MEMORY DEVICE HAVING AN ERROR CHECKING AND CORRECTING CIRCUIT

Kazutami Arimoto; Kiyohiro Furutani, and Koichiro Mashiko, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1988, Ser. No. 288,218
Claims priority, application Japan, Dec. 25, 1987, 62-332542
Int. Cl.[5] G06F *11/10*
U.S. Cl. 371—40.1 **18 Claims**



1. A semiconductor memory device having error correcting means incorporated in a memory cell array, comprising:

a plurality of m bit line pair groups, each group having a plurality of n adjacent bit line pairs, wherein m and n are integers greater than 1;

error correcting means having a plurality of m circuit elements for correcting any erroneous potential appearing on a bit line pair; and

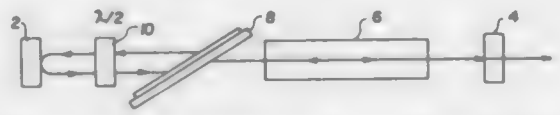
switching means for selectively connecting each of said plurality of n bit line pairs contained in each of said bit line pair groups to respective ones of said circuit elements of said error correcting means.

5,012,473

FIXED WAVELENGTH LASER USING MULTIORDER HALFWAVE PLATE

Herman E. Reedy, Adams Township, Butler County, Pa., assignor to II-VI Incorporated, Saxonburg, Pa.

Filed Dec. 13, 1989, Ser. No. 450,157
Int. Cl.[5] H01S *3/098*
U.S. Cl. 372—19 **16 Claims**



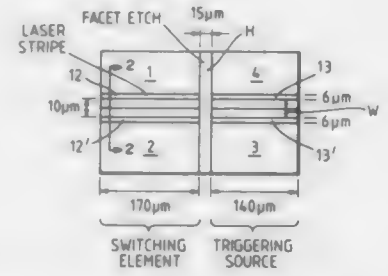
1. A laser adapted to operate at a constant predetermined wavelength comprising: a highly reflective, rear mirror at one end of a laser cavity, an output coupler spaced from and aligned with said rear mirror at an outlet end of said laser cavity, an active laser medium positioned between and in alignment with said rear mirror and said output coupler, a thin film polarizer intermediate said rear mirror and said active laser medium, and a multiorder halfwave plate positioned between and aligned with said rear mirror and said thin film polarizer, with said halfwave plate designed to rotate incident light beams traveling therethrough by 180° at said predetermined wavelength and to rotate incident light beams traveling therethrough by an amount other than 180° at wavelengths other than said predetermined wavelength, and with said thin film polarizer designed to reflect substantially all of the S-polarization of incident light beams, to transmit substantially all of the P-polarization of incident light beams at said predetermined wavelength, and to transmit less than substantially all of the P-polarization of incident light beams at wavelengths other than said predetermined wavelength.

5,012,474

POLARIZATION SWITCHING IN ACTIVE DEVICES

Ian H. White, Cambridge, and Richard S. Linton, Chester, both of England, assignors to British Telecommunications public limited company, London, England

PCT No. PCT/GB89/00236, § 371 Date Oct. 16, 1989, § 102(e) Date Oct. 16, 1989, PCT Pub. No. WO89/08937, PCT Pub. Date Sep. 21, 1989
PCT Filed Mar. 9, 1989, Ser. No. 424,232
Claims priority, application United Kingdom, Mar. 9, 1988, 8805620
Int. Cl.[5] H01S *3/103*
U.S. Cl. 372—27 **46 Claims**



1. A bistable polarisation source comprising:

a semiconductor injection laser providing optical gain in two waveguiding paths,

the waveguiding paths extending substantially parallel to one another at a small enough separation to enable the fields of optical radiation in the two paths to overlap,

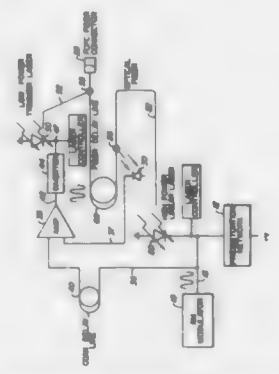
the laser being switchable between first and second states in which the direct optical output of the laser is predominantly TE polarised and predominantly TM polarised respectively.

5,012,475

ANALOG COMPENSATION SYSTEM FOR LINEAR LASERS

Bruce D. Campbell, Portola Valley, Calif., assignor to Wavelength Lasers, Inc., Sunnyvale, Calif.

Filed Apr. 17, 1990, Ser. No. 510,390
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—29 **17 Claims**



1. An error compensation system comprising:

a first laser;

modulation means coupled to the first laser for providing an output signal to drive the first laser to cause it to emit modulated light;

an optical fiber disposed to receive light from the first laser;

tap means coupled to the optical fiber for removing a desired amount of light from the optical fiber;

sensing means disposed in proximity to the tap for detecting the light removed from the optical fiber and in response providing a first signal;

comparator means connected to the sensing means to receive the first signal and connected to the modulation means to receive the output signal, and in response thereto provide an error correction signal;

a second laser connected to receive the error correction signal and in response emit modulated light; and

summing means connected to receive the light from the second laser and combine it with light from the first laser on the optical fiber; and

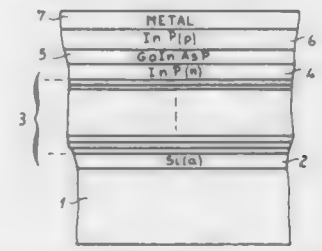
detector means coupled to the summing means to receive the combined light from the first and second laser and to generate an output signal with the desired modulation without the distortions.

5,012,476

DEVICE OF SEMICONDUCTOR MATERIALS FORMED ON A SUBSTRATE HAVING A DIFFERENT LATTICE PARAMETER AND APPLICATION TO A LASER

Manijeh Razeghi, Gif sur Yvette; Martin Defour, Courbevoie; Franck Omnes; Philippe Maurel, both of Les Ulis; Robert Blondeau, Ablis, and Michel Krakowski, Paris, all of France, assignors to Thomson-CSF, Paris, France

PCT No. PCT/FR88/00269, § 371 Date Jan. 11, 1989, § 102(e) Date Jan. 11, 1989, PCT Pub. No. WO88/10007, PCT Pub. Date Dec. 15, 1988
PCT Filed May 27, 1988, Ser. No. 313,974
Claims priority, application France, Jun. 2, 1987, 87 07709
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **11 Claims**



1. Device of semiconductor materials comprising:

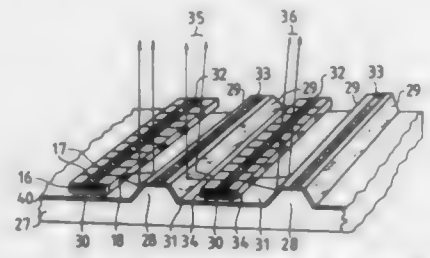
a diamond substrate (1);

at least one silicon layer (2) deposited on one face of the substrate;

a series of layers of semiconductor compounds forming a matching superlattice (3), which are deposited on the silicon layer (2) and in which layers thereof located nearest the silicon layer (2) have a first lattice parameter which is little different from that of the silicon layer (2) and in which most distant layers thereof have a second lattice parameter;

a component of semiconductor material (c) juxtaposed to the superlattice (3) in which at least a layer thereof located nearest the superlattice (3) has a lattice parameter which is little different from that of the second lattice parameter.

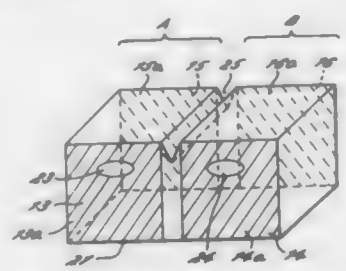
5,012,477
OPTOELECTRONIC POWER DEVICE AND FABRICATION METHOD THEREOF
Guy Mesquida, Forges les Bains, and Bernard Groussin, Orsay, both of France, assignors to Thomson Composants Microondes, Puteaux, France
Filed Nov. 13, 1989, Ser. No. 435,986
Claims priority, application France, Nov. 15, 1988, 88 14799
Int. Cl.[5] H01S 3/19
U.S. Cl. 372—50 8 Claims



1. An optoelectronic power device for emitting coherent light generated by a plurality of elementary lasers associated in strips of lasers, said device being formed of an integrated circuit, supported by a substrate made of semiconductor materials, and comprising:
at least one array of elementary semiconductor lasers having parallel, longitudinal flanks and formed by epitaxial growth on the substrate,
a plurality of layers, including an emitting strip for emitting a beam of coherent light in a plane thereof, constituting each of the elementary lasers, each of the emitting strips being mutually parallel and extending perpendicular to the parallel, longitudinal flanks of the array of lasers and producing two beams of coherent light at each end thereof, the beams being parallel to a plane of the substrate, and
at least one reflecting bar, parallel to the array of lasers and adjacent at least one end of each of the emitting strips, said bar being etches in relief in the substrate to provide the at least one reflecting bar with inclined, longitudinal flanks and having a height at least equal to that of the array so that the flanks of the reflecting bar from reflectors that reflect the beams, emitted by the strips, substantially perpendicularly to the plane of the substrate,
wherein said integrated circuit is complemented by at least one first metallization deposited on the array of lasers, and a second metallization for electrical supply of the lasers of the array, and
wherein the at least one reflecting bar has, perpendicularly to a longitudinal axis thereof, a substantially semi-circular section, a semi-circular surface thereof forming the inclined flanks of the at least one reflecting bar and being metallized by a metallization to increase reflectivity.

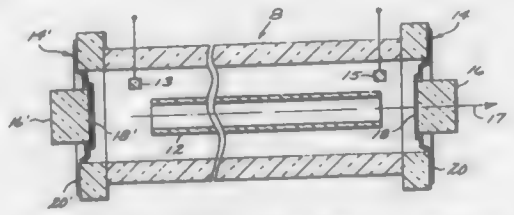
5,012,478
MONOLITHIC MULTIPLE BEAM SEMICONDUCTOR LASER
Ryo Hattori; Hitoshi Kagawa, and Masaki Mori, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 25, 1989, Ser. No. 412,095
Claims priority, application Japan, Sep. 27, 1988, 63-243375
Int. Cl.[5] H01S 3/19
U.S. Cl. 372—50 5 Claims

1. A monolithic laser having at least two laser sections for producing at least a low output power beam and a high output power beam, the monolithic laser comprising, in combination:
a cavity for the low power beam having front and rear facets coated to have reflectances in the range between about 25% and 33%, the low power cavity also having a rated output power which is coordinated with the front and rear facet reflectances to produce output radiation at a predetermined wavelength;
a cavity for the high power beam having front and rear facets, the front facet being coated to have a reflectance in the range between about 1% and 4%, the rear facet being



coated to have a reflectance in the range of about 50% to 65%, the high power cavity having a rated output power coordinated with the reflectances of said front and rear facets to produce radiation when operated at the rated power which is within about 1 nm of the predetermined wavelength of the low power beam.

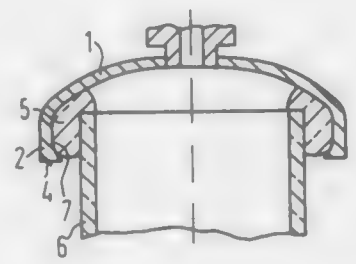
5,012,479
ULTRAVIOLET METAL VAPOR LASER HAVING HARD SEALED INTERNAL MIRRORS
William F. Hug, 382 E. California Blvd., Pasadena, Calif. 91106, and Manfred R. Otto, 1016 Corinthian Way, Pomona, Calif. 91767
Continuation-in-part of Ser. No. 142,019, Jan. 11, 1988. This application Aug. 1, 1989, Ser. No. 388,148
Int. Cl.[5] H01S 3/22
U.S. Cl. 372—56 1 Claim



1. An ultraviolet metal vapor laser tube comprising:
a. an elongated envelope;
b. an active laser medium consisting of helium gas and cadmium vapor and being contained in said elongated envelope;
c. an output coupling mirror assembly which is disposed on one end of said elongated envelope and which is formed from a glass substrate which has a thickness in the range of 3.0 to 10.0 millimeters and transmits at least 85% of light energy at a wavelength of 325 nanometers, said glass substrate having a partially reflecting multilayer dielectric coating formed on its inner surface, said partially reflecting multilayer dielectric coating being optimally transmissive to light energy within the ultraviolet spectrum;
d. a reflector mirror assembly which is disposed on the opposite end of said elongated envelope and which is formed from a glass substrate which has a reflecting multilayer dielectric coating formed on its inner surface, said reflecting multilayer dielectric coating being substantially reflective to light energy at a wavelength of 325 nanometers;
e. first mounting means for mounting said output coupling mirror assembly at one end of the elongated envelope, said first mounting means having a first metal flange member which has an aperture formed therein;
f. second mounting means for mounting said reflector mirror at the other end of the elongated envelope, said second mounting means having a second metal flange member which has an aperture formed therein; and

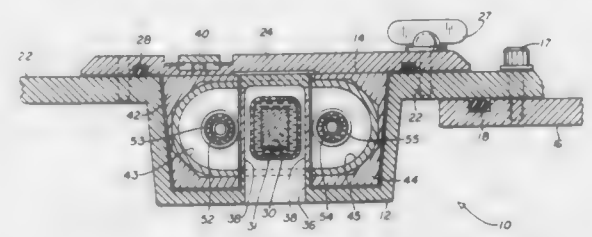
g. a glass solder which bonds said output coupling mirror assembly and said reflector mirror assembly to said first and second metal flange members, respectively, whereby said output coupling mirror assembly, said reflector mirror assembly, said glass solder and said first and second metal flange members have coefficients of thermal expansion which are substantially equal.

5,012,480
GAS LASER
Hans Krueger, Munich, and Wolfgang Welsch, Baldham, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Apr. 2, 1990, Ser. No. 502,912
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1989, 3912609
Int. Cl.[5] H01S 3/03
U.S. Cl. 372—61 10 Claims



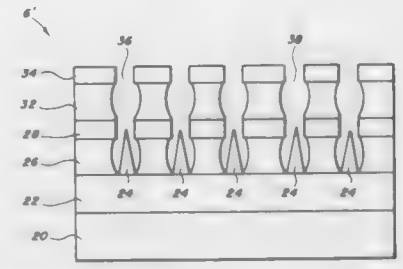
1. In a gas laser device of the type in which a hollow tube of a material selected from the group consisting of glass and ceramic is closed at one end with a cap which is soldered to the tube, the improvement for providing improved adhesion of the solder and a durable gas-tight connection between the tube and the cap, wherein:
the cap is metal and comprises an end portion over and covering the one end of the tube and a shaped portion extending from said end portion over a portion of the tube adjacent the one end of the tube, said shaped portion including a free edge and a marginal section extending between said end portion and said free edge, said free edge lying closer to the tube than said marginal section; and
the glass solder comprises lead borate and fills the space between the shaped portion and the end portion of the tube.

5,012,481
FLASHLAMP LINE REPLACEABLE UNIT
Carlos A. Casteleiro, Orlando, Fla., assignor to Martin Marietta Corporation, Bethesda, Md.
Filed Mar. 9, 1990, Ser. No. 491,010
Int. Cl.[5] H01S 3/093
U.S. Cl. 372—72 21 Claims



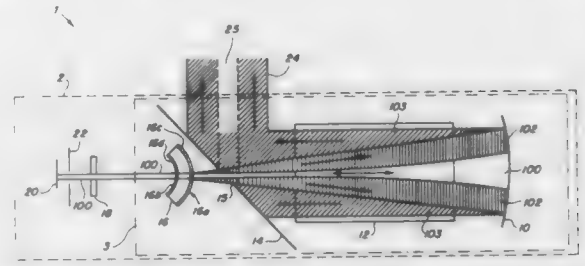
1. A laser arrangement utilizing a pair of interfitting housing members, with one of said housing members serving to support a non-cylindrically shaped solid state laser material, and the other of said housing members having at least one reflective cavity surface in which pumping means are supported, said pumping means serving, when energized, to produce excitation in said laser material, said one housing member being contiguous to an optical bed in which a resonator is contained, said housing members being fully operational to produce a useful output, said pumping means being replaceable when said housing members have been separated, such replacement of said pumping means being accomplishable without disturbing the alignment of said solid state laser material and without accessing the clean volume of said optical bed.

5,012,482
GAS LASER AND PUMPING METHOD THEREFOR USING A FIELD EMITTER ARRAY
Henry F. Gray, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sep. 12, 1990, Ser. No. 581,620
Int. Cl.[5] H01S 3/09
U.S. Cl. 372—74 12 Claims



1. A method for electron pumping a gas laser, comprising the steps of:
locating afield emitter array within a laser cavity envelope having a laser active gas, said field emitter array having a plurality of conducting layers and having an insulating layer between any two of said conducting layers;
applying a variable first predetermined voltage to said field emitter array effective to cause said array to emit a plurality of electrons from said field emitter array effective to pump said laser active gas to cause said system to lase.

5,012,483
NARROW-BANDWIDTH DIFFRACTION-LIMITED COUPLED STABLE-UNSTABLE RESONATOR LASER CAVITY
John F. Reintjes, Alexandria, Va.; Lawrence L. Tankersley, Annapolis; David G. Cooper, Riva, both of Md., and James L. Dexter, Alexandria, VA, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sep. 27, 1990, Ser. No. 589,142
Int. Cl.[5] H01S 3/08
U.S. Cl. 372—95 12 Claims



1. A laser cavity providing high power laser radiation with diffraction-limited divergence and narrow-bandwidth, comprising:
a stable laser cavity operating on a low order TEM mode and providing narrow bandwidth laser radiation;
an unstable laser cavity disposed within said stable laser cavity; and

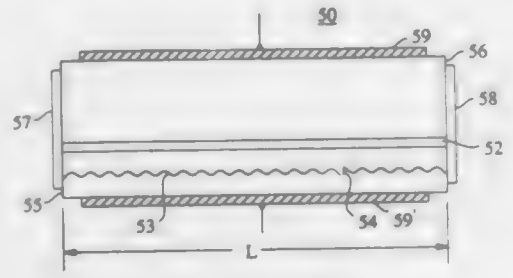
an optical coupler located within said stable laser cavity and coupled to said unstable laser cavity for coupling said narrow bandwidth laser radiation from said stable laser cavity to said unstable laser cavity.

5,012,484

ANALOG OPTICAL FIBER COMMUNICATION SYSTEM, AND LASER ADAPTED FOR USE IN SUCH A SYSTEM

Edward J. Flynn, Summit; Leonard J-P Ketelsen, Fanwood, and Charles B. Roxlo, Bridgewater, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 2, 1990, Ser. No. 459,922
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—96 **12 Claims**



1. A semiconductor laser comprising

(a) a semiconductor body forming a radiation cavity of length L defined by a front facet and a back facet, associated with each of said facets being a reflectivity, and associated with the cavity during operation of the laser is a photon density and a gain;

(b) a diffraction grating; and

(c) contact means facilitating flowing an electrical current through the semiconductor body; characterized in that the laser further comprises

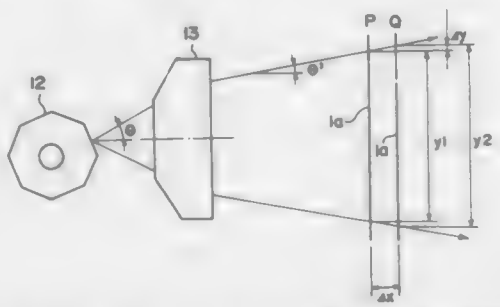
(d) means adapted for producing a non-uniform photon density in the cavity, with the density of photons being larger in the portion of the cavity that is adjacent to the back facet of the cavity (to be referred to as the "back" portion) than it is in the remaining portion of the cavity (to be referred to as the "front" portion), such that during operation of the laser the gain in the back portion is substantially independent of the current through the semiconductor body whereas the gain in the front portion of the cavity is a function of the current through the semiconductor body.

5,012,485

LASER BEAM SCANNING APPARATUS

Naoto Ohmori, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 8, 1989, Ser. No. 404,956
Claims priority, application Japan, Sep. 10, 1988, 63-226961
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—108 **4 Claims**



1. A laser beam scanning apparatus for beam scanning a medium with a laser beam being deflected by a deflector, comprising:

a first mirror provided with a surface for reflecting the laser beam, after being deflected by the deflector along a first light path;

a second mirror with a surface provided for reflecting the laser beam from the first mirror for folding a light path between the first mirror and the medium in such a relationship that the first light path between the deflector and the first mirror is not intersected with a second light path between the second mirror and the medium, and

the first and second mirrors being positioned so as to fulfill the following conditions:

$$0<\theta_1<45°$$

$$\theta_1<\theta_2<90° \quad 2\theta_1<90°$$

where θ_1 and θ_2 represent angles between respectively the first and second mirror surfaces thereof and a plane perpendicular to a beam scanning plane from the deflector to the first mirror,

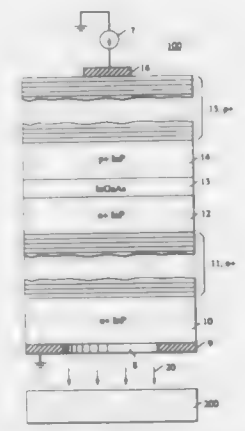
the first and second mirrors are movable, respectively, for adjusting a length of a scanning line on the medium, wherein when one of the first and second mirrors is moved during adjusting, said moved mirror has a lesser shift amount of the scanning line on the medium in a direction perpendicular to the scanning line as compared with a movement of the other mirror.

5,012,486

VERTICAL CAVITY SEMICONDUCTOR LASER WITH LATTICE-MISMATCHED MIRROR STACK

Sergey Luryi, Bridgewater, and Ya-Hong Xie, Flemington, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 6, 1990, Ser. No. 506,413
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **18 Claims**



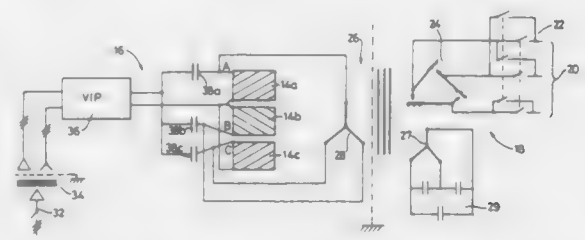
1. A semiconductor laser structure comprising an active semiconductor layer upon which a cladding layer and a mirror stack have been grown, the mirror stack comprising a plurality of semiconductor layers at least one of which is lattice-mismatched with respect to another contiguous thereto.

5,012,487

INDUCTION MELTING

John H. Simcock, Droitwich, Great Britain, assignor to Inductotherm Europe Limited, Hereford & Worcester, United Kingdom

Filed Oct. 18, 1989, Ser. No. 423,320
Claims priority, application United Kingdom, Jun. 14, 1989, 8913620
Int. Cl.[5] H05B *6/06*
U.S. Cl. 373—147 **15 Claims**



1. Induction melting apparatus including a vessel for holding a melt of molten metal, induction coil means operatively associated with the vessel, and power supply means for providing power input to the induction coil means, said input having a melting component at a first preselected frequency for operatively holding the melt at a preselected temperature by induction heating and an agitation component at a second preselected and different frequency for agitation of the melt by inducing turbulence therein; the power supply means comprising an agitation power supply circuit operatively supplying current to the coil means at said second frequency, and a melting power supply circuit including series resonant means through which the melting component is operatively applied to the coil means at said first frequency at the same time as the agitation component is applied thereto, each said supply circuit including means for regulating said component respective thereto independently of and without affecting the other of said components.

5,012,488

CRUCIBLE FOR INDUCTIVE HEATING

Otto W. Stenzel, Gründau, Fed. Rep. of Germany, assignor to Leybold Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 5, 1990, Ser. No. 489,042
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1989, 3940029
Int. Cl.[5] H05B *6/24*
U.S. Cl. 373—156 **11 Claims**

1. A crucible for the induction heating of materials, which comprises:

a plurality of vertical segments having at least two parts with different conductivity, a first part facing away from the material which is made of an electrically poor conductor, and a second part facing toward the material which is made of an electrically good conductor, in which the thickness of the vertical segment satisfies the equation:

$$\kappa < \frac{2}{\pi f \mu_0 b^2}$$

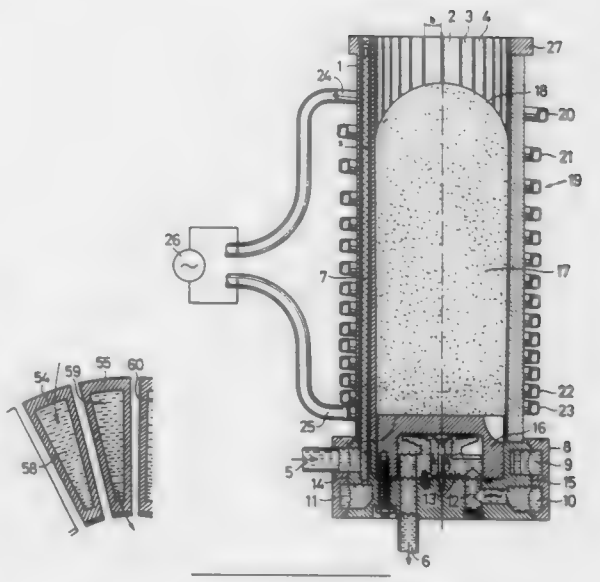
where

κ = specific electrical conductivity of the first part

f = frequency of the a.c. current flowing through the induction coil

μ_0 = magnetic permeability in vacuo

b = thickness of the vertical segment; and an induction coil wrapped around the vertical segments.

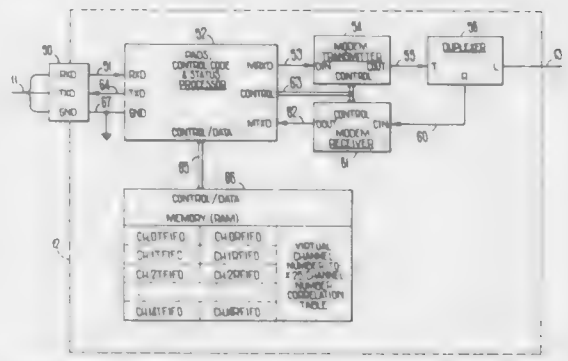


5,012,489

METHOD FOR SENDING A PLURALITY OF DATA CHANNELS OVER A SINGLE COMMUNICATIONS LINE

Richard J. Burton, Buford; John A. Copeland, III, Dunwoody; John W. Jerrim; Toby L. Nixon, both of Duluth; Martin H. Sauser, Jr., Atlanta; Robert E. Weatherford, Jr., Norcross, all of Ga.; Larry D. Becker, Walton Beach, Fla., and David F. Strawn, Marietta, Ga., assignors to Hayes Microcomputer Products, Inc., Norcross, Ga.

Filed Nov. 7, 1988, Ser. No. 267,963
Int. Cl.[5] H04L *5/02, 5/14*
U.S. Cl. 375—8 **24 Claims**



1. In a data transfer system containing a data terminal equipment (DTE) and a data communications equipment (DCE), a method for sending commands and data from said DTE to said DCE, comprising the steps of:

(A) defining a plurality of data channels for transferring said data from said DTE to said DCE, only a single data channel of said plurality of data channels being selected at any time;

(B) performing a data transfer procedure comprising:

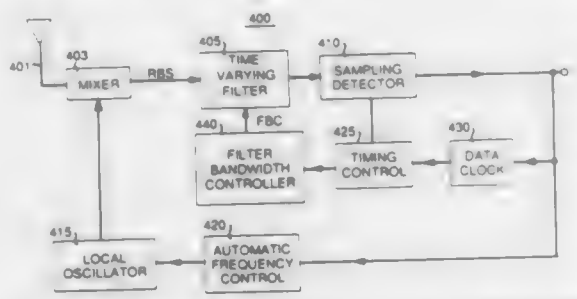
(1) identifying a predetermined data channel by which said data is to be transferred;
(2) if said predetermined data channel is not enabled then delaying the transfer of said data until said predetermined data channel has been enabled by said DCE;
(3) if said predetermined data channel is enabled but not selected then selecting said predetermined data channel;
(4) inspecting each character of said data to be sent to said DCE;
(5) if said character is not one of a predetermined set of characters, then sending said character to said DCE;
(6) if said character is one of said predetermined set of characters then generating a first character corresponding to said character, sending the ASCII character DC2 to said DCE, and sending said first character to said DCE; and
(C) performing a command procedure comprising:
(1) sending said DC2 character to said DCE; and
(2) performing at least one of the following: sending a code AN, where A is a predetermined value and N is a channel number, to enable channel N, sending a code BN, where B is a predetermined value, to select said predetermined channel, and sending at least one character of a command to said DCE.

5,012,490

VARYING BANDWIDTH DIGITAL SIGNAL DETECTOR

Robert E. Myer, Denville, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 26, 1989, Ser. No. 456,897
Int. Cl.[5] H04B *15/00*
U.S. Cl. 375—58 **13 Claims**



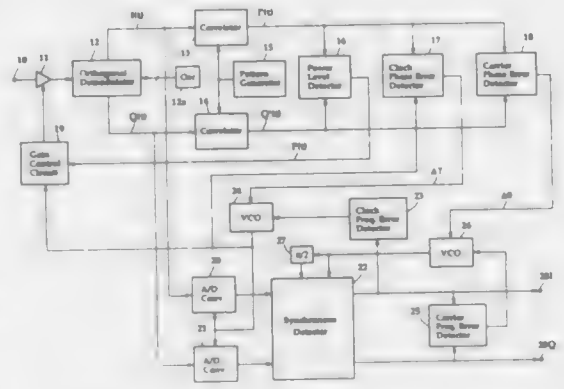
8. A communication system for exchanging information signals over a plurality of channels comprising:
a plurality of transmitters each responsive to an information signal having a plurality of levels and transitions between the levels occurring at predetermined intervals for generating a prescribed band signal having a distinct carrier modulated by the information signal, the prescribed bands forming a set of overlapping frequency band channels, and
at least one receiver comprising:
means for receiving the set of overlapping frequency band channel signals including a signal having a first carrier signal modulated by a first information signal,
means responsive to the received signals for forming a demodulated signal including a component corresponding to the first information signal,
means for detecting the levels of the demodulated signal between the transitions of the first information signal,
means responsive to the detected levels of the demodulated signal for synchronizing the demodulated signal forming means to the first carrier frequency, and
means responsive to the detected levels of the demodulated signal for synchronizing the detecting means to the transitions of the first information signal,
the detecting means including:
means for restricting the demodulated signal to a first bandwidth at the transition instants of the first information signal and to a second narrower bandwidth between the transitions of the first information signal, and
means for sampling the demodulated signal from the bandwidth limiting means during the second narrower bandwidth of the demodulated signal to form a signal corresponding to the first information signal.

5,012,491

PREAMABLE DETECTION CIRCUIT FOR DIGITAL COMMUNICATIONS SYSTEM

Motoya Iwasaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 7, 1989, Ser. No. 390,040
Claims priority, application Japan, Aug. 5, 1988, 63-195911
Int. Cl.[5] H04B *1/26*
U.S. Cl. 375—96 **10 Claims**



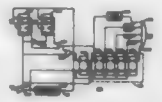
1. A preamble detection circuit for a receive end of a transmission system in which a preamble containing a predetermined bit pattern and a digital signal are modulated upon orthogonal carriers and transmitted in a series of burst signals from a transmit end of the system, said receive end comprising symbol clock generator means for generating a local clock pulse, sampler means for sampling orthogonal signals in response to said local clock pulse, variable-frequency carrier generator means for generating first local orthogonal carriers having variable frequency and phase, and synchronous detector means for synchronously detecting the transmitted symbols from outputs of said sampler means with said first local orthogonal carriers, said circuit comprising:
orthogonal demodulator means for noncoherently detecting the transmitted burst signals with second local orthogonal carriers of constant frequency equal to the frequency of the transmitted orthogonal carriers, said second local orthogonal carriers tending to deviate in phase over a predetermined range from the transmitted orthogonal carriers, said orthogonal demodulator means generating in-phase and quadrature output signals as said orthogonal signals;
means for generating a local bit pattern corresponding to the bit pattern contained in said preamble;
first and second correlators, the first correlator providing a correlation calculation between the local bit pattern and the in-phase output signal and the second correlator providing a correlation calculation between the local bit pattern and the quadrature output signal;
carrier phase error detector means connected to the outputs of the first and second correlators for detecting a carrier phase error of the second local orthogonal carriers with respect to the transmitted carriers and controlling said variable-frequency carrier generator means with the detected carrier phase error; and
clock phase error detector means connected to be responsive to one of the outputs of the first and second correlators and to the output of the symbol clock generator means for detecting a clock phase error of the local clock pulse with respect to symbols contained in the transmitted burst signals and controlling the symbol clock generator means with the detected clock phase error.

5,012,492

APPARATUS AND METHOD FOR DETECTING A CARRIER SIGNAL

Daniel W. Sexton, and Timothy J. Williams, both of Charlottesville, Va., assignors to GE Fanuc Automation North America, Inc., Charlottesville, Va.

Filed Sep. 29, 1989, Ser. No. 415,691
Int. Cl.[5] H03D *3/04*
U.S. Cl. 375—82 **9 Claims**



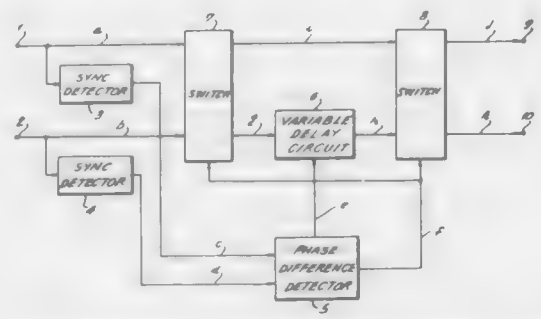
1. A carrier detection circuit for detecting the presence of a carrier signal including a sequence of first symbols exhibiting a first frequency and second symbols exhibiting a second frequency, said circuit comprising:
threshold detecting means, responsive to said carrier signal, for generating a first carrier detect pulse exhibiting a first logic state each time one of said first and second symbols exhibits a voltage exceeding a predetermined threshold level and otherwise generating a first carrier detect pulse exhibiting a second logic state; and
carrier detection pulse generating means, coupled to said threshold detecting means, for generating a second carrier detect pulse only if each of a plurality of consecutive first carrier detect pulses exhibits said first logic state.

5,012,493

PHASE DIFFERENCE-ADJUSTING CIRCUIT

Ichiro Hirai, and Toru Amano, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Jul. 18, 1989, Ser. No. 381,598
Claims priority, application Japan, Jul. 18, 1988, 63-177025
Int. Cl.[5] H04L *1/02, 7/04*
U.S. Cl. 375—100 **4 Claims**



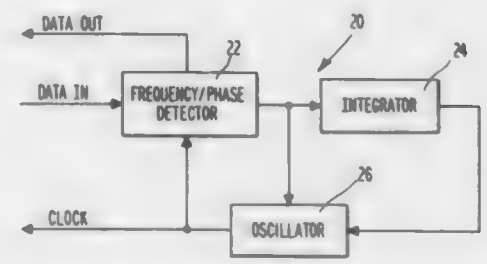
1. A phase-adjusting circuit for adjusting the phase relation between input data strings supplied via input lines, comprising:
sync detecting means provided for each of said lines, for generating frame sync detection signals by detecting frame sync signals of said input data strings;
means responsive to said frame sync detection signals for detecting a first data string having a largest delay of the input data strings;
phase difference-detecting means for detecting phase differences between said first data string and remaining data strings other than the first data string to produce phase difference signals for said remaining data strings;
line connecting signal-generating means responsive to said phase difference signals for generating line connecting signals;
variable-delay means responsive to said phase difference signals for outputting delayed data strings by giving delays to said remaining data strings;
first switching means responsive to said line connecting signals for delivering said remaining data strings to said variable-delay means and for outputting said first data string in an undelayed state; and
second switching means responsive to said line connecting signals for delivering said first data string and said delayed data strings to output lines corresponding to said input lines.

5,012,494

METHOD AND APPARATUS FOR CLOCK RECOVERY AND DATA RETIMING FOR RANDOM NRZ DATA

Benny W. H. Lai, San Jose, and Richard C. Walker, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 7, 1989, Ser. No. 432,869
Int. Cl.[5] H04L *7/033*
U.S. Cl. 375—120 **24 Claims**



13. A phase detector for detecting the phase difference between a random NRZ data signal and a clock signal, comprising:
sampling means, connected to receive said clock signal and said data signal, for sampling said data signal in response to said clock signal and for generating a number of consecutive samples of said data signal; and
determination means, connected to said sampling means, for determining whether the phase of said clock signal is definite or indefinite in relation to said consecutive samples, for assigning a definite phase relationship whenever said phase is determined to be indefinite, wherein phase assignment is made in response to the frequency relationship between said data signal and said clock signal, and for generating a phase signal representative of the determined phase relationships.

5,012,495

SWITCH AND CIRCUIT BREAKER COMBINATION DEVICE

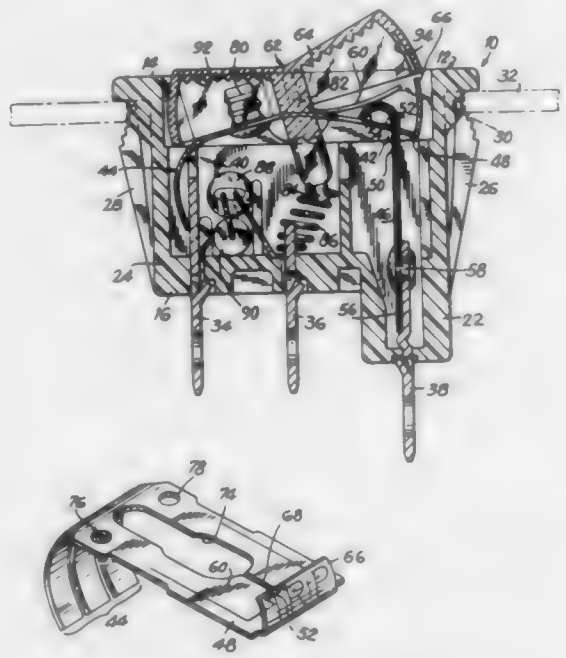
Ronald G. Munroe, Hallandale, Fla., and Christopher J. Sedlmayr, New York, N.Y., assignors to Eagle Electric Mfg. Co. Inc., Long Island City, N.Y.

Filed Mar. 19, 1990, Ser. No. 495,495
Int. Cl.[5] H01H *37/00, 71/16*
U.S. Cl. 337—3 **15 Claims**

1. A device for protecting an electrical load from electrical current overload, comprising:
(a) a housing;
(b) electrical switching means on the housing and including an actuatable switch element movable between open and closed positions to respectively prevent and enable electrical current to flow through the switching means;
(c) resettable circuit breaker means in the housing for interrupting current flow to the load in response to a current overload, and for preventing resumption of the current flow until the breaker means is reset, said breaker means being electrically connected in series with the switching means and including a latch element and a resettable trip element, said latch element being movable along a path in response to the current overload from a latched position to a tripped position in which the latch and trip elements

are respectively latched and unlatched relative to each other;

(d) actuator means for resetting the trip element from the tripped to the latched position, and for simultaneously moving the switch element from the closed to the open position to prevent current from flowing to the load during resetting, said actuator means being further operative for moving the switch element from the open to the closed position while maintaining the trip element in the latched position to enable current to resume flowing to the load



after resetting, said actuator means including an actuator mounted on the housing for manual displacement;

(e) means for mounting the switch element on the actuator for joint displacement therewith; and

(f) means for mounting the trip element on the actuator for joint displacement therewith during resetting, said trip element being biasingly urged for displacement relative to the actuator away from said path to the tripped position and maintained at a distance from and out of engagement with, the latch element until the breaker means is reset.

5,012,496

DROP COUNTING SYSTEM

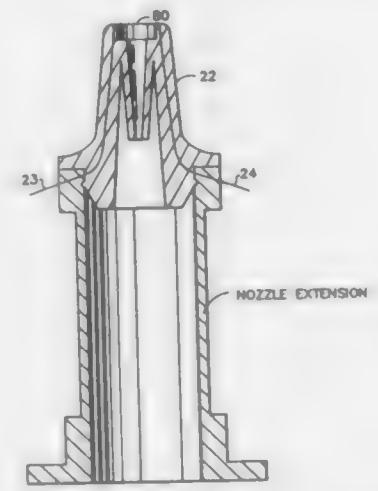
Robert N. Weinreb, Rancho Santa Fe; Jerzy J. Lewak, Del Mar, and Andreas W. Dreber, San Diego, all of Calif., assignors to Acumetric, Inc., San Diego, Calif.

Filed Nov. 7, 1989, Ser. No. 433,014
Int. Cl.[5] A61M *5/172*
U.S. Cl. 377—21 **26 Claims**

1. An electronic drop counting device, including:

a. sensor means, coupled to a source of fluid, for generating a distinctive signal upon the separation of a drop of fluid as it separates from the source of fluid;

b. detection means, coupled to the sensor means, for receiving the output of the sensor means, detecting each distinctive signal, and generating a drop pulse in response to such detection.

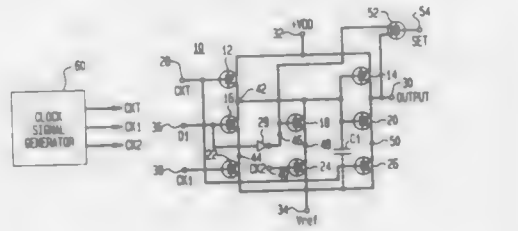


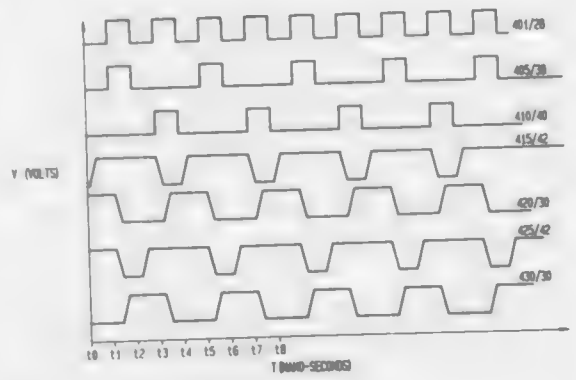
5,012,497

HIGH SPEED FREQUENCY DIVIDER CIRCUIT

Swye N. Lee, Lawrenceville, N.J., assignor to David Sarnoff Research Center, Inc., Princeton, N.J.

Filed Jan. 25, 1990, Ser. No. 470,273
Int. Cl.[5] H03K *23/44*
U.S. Cl. 377—118 **34 Claims**





1. A frequency divider comprising:

storing means;

means for receiving a first frequency signal;

means for receiving at least one clock signal having a frequency that is a sub-multiple of the first frequency;

an output being adapted to be set to first and second logic states;

means responsive to the first frequency signal and the at least one sub-multiple frequency clock signal for generating a sub-multiple frequency signal at the output comprising:

means responsive to the first frequency signal for placing the storing means in a set condition;

means responsive to the at least one sub-multiple frequency signal for placing the storing means in a reset condition;

means responsive to the storing means being in its reset condition for setting the output to the first logic state; and

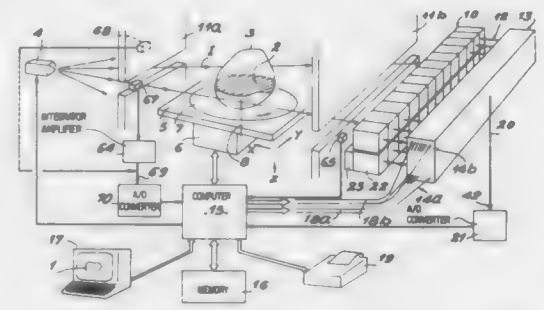
means jointly responsive to the storing means being in its set condition and the first frequency signal for resetting the output to the second logic state.

5,012,498

X-RAY TOMOGRAPHY DEVICE

Marc Cuzin, La Tronche, and Francis Glasser, Jarrie, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 24, 1989, Ser. No. 300,896
Claims priority, application France, Jan. 25, 1988, 88-00784
Int. Cl.[5] A61B *6/00;* **H05G** *1/34;* **F16K** *3/00*
U.S. Cl. 378—22 **8 Claims**



1. An X-ray tomography device for obtaining the image of at least one plane cutting, of an object, comprising:

an X-ray source for supplying high-energy pulses at a predetermined frequency;

a primary collimator for directing the high-energy pulses so that the high-energy pulses traverse the object close to a cutting plane;

at least one bar of photoelectric measuring detectors for receiving the high-energy pulses which have been attenuated by the object and have passed through a secondary collimator, these photoelectric detectors respectively supplying electric detection pulses representative of the attenuated energy pulses originating from the object;

display and processing means connected to the photoelectric measuring detectors so as to supply an image of said at least one plane cutting;

means for translating and moving the object;

the display and processing means include a set of integrator-amplifier circuits connected to the photoelectric measuring detectors, each integrator-amplifier circuit having means for controlling an integration period;

a computer connected to a memory and to said display means and having control outputs respectively connected to the integrator-amplifier circuits, the memory of the computer containing a sequencing and processing program so as to control each integrator-amplifier circuit so that each electric detection pulse supplied by a corresponding photoelectric detector is integrated during a first rough measurement period and so as to integrate this electric detection pulse on at least one second correction detection pulse from the next electric detection pulse;

each integrator-amplifier circuit supplying an analog to digital converter a first rough measurement pulse and a second correction pulse having duration corresponding to the first rough measurement period and the at least one second correction period, the amplitude of the first rough measurement pulse representative of the energy of the attenuated energy pulses originating from the object which are received by the photoelectric measuring detectors, the amplitude of the second pulse being representative of the drag of the electric detection pulses supplied by the photoelectric measuring detectors and any possible radiation from the object, the analog to digital converter having one output connected to the computer so as to supply numerical values respectively representative of the amplitudes of the first rough measurement pulse and of the second correction pulse;

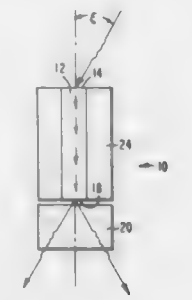
the computer processing these numerical values for each electric detection pulse so as to supply one actual numerical value measuring the energy of the attenuated energy pulse received by the photoelectric measuring detectors, this actual numerical value being recorded in the memory, the actual numerical values thus recorded for all the photoelectric measuring detectors being used by the computer so as to control display of the image of said at least one plane cutting by the display means and wherein the amplitude of the second correction pulse is also representative of the stray current of the photoelectric measuring detectors.

5,012,499

GAMMA RAY DETECTING DEVICE USING DISLOCATION-FREE CRYSTAL

Victor Vali, Laguna Hills, and David B. Chang, Tustin, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 19, 1989, Ser. No. 423,830
Int. Cl.[5] G21K *1/06*
U.S. Cl. 378—84 **10 Claims**



1. A γ-ray detector comprising:

a dislocation-free single crystal having an input surface and a transmission surface at opposite ends thereof;

an active shield surrounding the crystal and functioning as an anticoincidence counter; and

γ-ray detector means disposed adjacent the transmission surface of the crystal for receiving and detecting γ-rays of a predetermined wavelength incident on the input surface of the crystal at a specific Bragg angle and transmitted through the crystal.

5,012,500

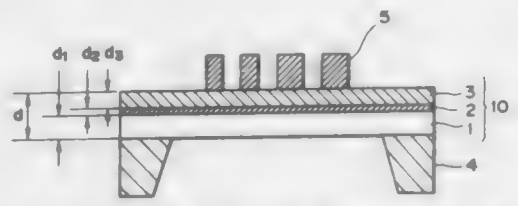
X-RAY MASK SUPPORT MEMBER, X-RAY MASK, AND X-RAY EXPOSURE PROCESS USING THE X-RAY MASK

Yutaka Watanabe, Atsugi; Yasuaki Fukuda, Hadano, and Shigetaro Ogura, Tama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1988, Ser. No. 290,624
Claims priority, application Japan, Dec. 29, 1987, 62-335224
Int. Cl.[5] G21K *5/00*
U.S. Cl. 378—35 **36 Claims**

1. An X-ray mask support member comprising a support frame, and a support membrane which is held on said support frame and includes X-ray-transmissive membranes laminated in

multiple layers, wherein said support membrane comprises and holds between the multiple layers at least one layer of a transmissive membrane T having an electrical resistivity of 1×10^{-6} Ω-cm or less.

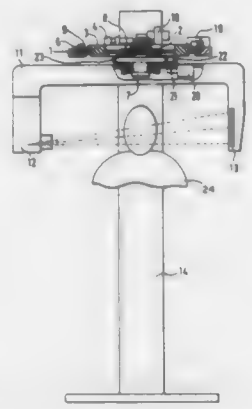


5,012,501

APPARATUS FOR PRODUCING PANORAMIC X-RAY IMAGE PROJECTIONS

Juhani Palonen, and Hannu Purhonen, both of Espoo, Finland, assignors to Instrumentarium Corp., Finland

Filed Mar. 28, 1990, Ser. No. 500,181
Claims priority, application Finland, Sep. 14, 1989, 894339
Int. Cl.[5] A61B *6/14*
U.S. Cl. 378—38 **4 Claims**



1. An apparatus for producing panoramic X-ray image projections from a certain section of a dental arch shaped object, said apparatus comprising a fixed body (1), a movable supporting arm (11) whose opposite ends are fitted with an X-ray source (12) and a film holder (13) on the opposite sides of an object (24) to be imaged, means (20l4 23) for setting supporting arm (11) in a rotating motion around the object, and means (2, 4, 15) for setting the centre of this rotating motion in a linear movement in dependence on the angular position of supporting arm (11), characterized in that the apparatus further includes means (3, 6, 10) for selecting the direction of linear motion (translatory motion).

5,012,502

METHOD FOR DETERMINING DEGREE OF INTERCONNECTION OF SOLDER JOINTS USING X-RAY INSPECTION

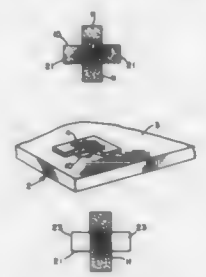
John Battin, Poway, and Thomas Stroebel, San Diego, both of Calif., assignors to IRT Corporation, San Diego, Calif.

Filed Jun. 18, 1990, Ser. No. 539,132
Int. Cl.[5] G01B *15/06;* **B23K** *31/12*
U.S. Cl. 378—58 **27 Claims**

1. A method of determining the quality of solder interconnection of a solder joint between a first electrical member and a second electrical member by X-ray inspection comprising:

forming a first indicator feature at a first solder joint location of said first electrical member, said first indicator feature having a first set of parameters comprising size, shape and orientation;

forming a second indicator feature at a second solder joint location of said second electrical member, said second indicator feature having a second set of parameters comprising size, shape and orientation of which at least one of said second set of parameters is different from that of said first set of parameters, so that at least one edge of both said first and said second indicator features are visible in an X-ray image of said solder joint, and so that melting of solder deposited on said first indicator feature when said solder is in contact with said second indicator feature will cause said solder to flow and solidify upon cooling to



cover all of said first indicator feature and all of said second indicator feature; and

taking an X-ray image of said solder joint;

inspecting said X-ray image to determine whether said solder has fully covered said first indicator feature and said second indicator feature, whereby quality of said solder joint interconnection is determined to be good if said solder flowed to fully cover both indicator features, and quality of said solder joint interconnection being determined to be poor if said solder did not flow to fully cover both indicator features.

5,012,503

METHOD FOR STERILIZATION OF POLYVINYL ALCOHOL GEL BY GAMMA-RAY

Masao Nambu; Tadayuki Onishi, both of Yokohama, and Masayuki Onohara, Ibaraki, all of Japan, assignors to Sumitomo Bakelite Company, Ltd. and Nippon Oil Company, Ltd., both of Minato, Japan

PCT No. PCT/JP87/00847, § 371 Date Jul. 1, 1988, § 102(e) Date Jul. 1, 1988, PCT Pub. No. WO88/03414, PCT Pub. Date May 19, 1988
PCT Filed Nov. 4, 1987, Ser. No. 233,660
Claims priority, application Japan, Nov. 5, 1986, 61-261794
Int. Cl.[5] G21K *5/00*
U.S. Cl. 378—64 **3 Claims**

1. A method for sterilization of polyvinyl alcohol gel while decreasing by-product deterioration rates to about 0.0095% or less comprising: irradiating with γ-ray,

(A) a hydrogel obtained by freezing thawing an aqueous polyvinyl alcohol solution so that the number of times of accumulative freezing amounts to 2–8 times, or

(B) a hydrogel in a range of dehydration rate of 3–30% obtained by subjecting an aqueous polyvinyl alcohol solution in the frozen state to vacuum partial dehydration; wherein the irradiation dosage of γ-ray is from about 3.5 to about 7 Mrad.

5,012,504

AUTOMATIC BRIGHTNESS COMPENSATION FOR FLUOROGRAPHY SYSTEMS

James A. McFaul, Waukesha; David L. McDaniel, Dousman, and Barry F. Belanger, Elm Grove, all of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Dec. 26, 1989, Ser. No. 456,447
Int. Cl.[5] H05G *1/44, 1/34, 1/32, 1/64*
U.S. Cl. 378—108 **14 Claims**

1. In an X-ray imaging system having a device that emits an X-ray beam, means responsive to the X-ray beam for producing a signal representing an image produced by the X-ray beam, and means for digitizing the signal into a series of discrete picture elements each of which having a brightness level; the improvement comprising a circuit for deriving an average brightness level including:

means for determining whether picture elements in the series are within a predefined region in the image;

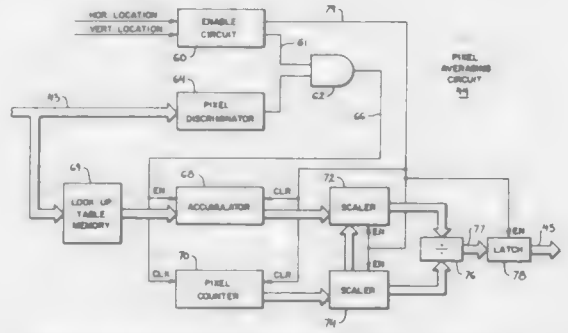
a threshold detector which determines the relationship of picture element brightness levels to a predetermined value;

accumulator means, responsive to both said means for determining and said threshold detector, for producing a summation of the brightness levels of selected picture elements;

means for counting the number of selected picture elements, the brightness levels of which are summed by said accumulator means;

means for scaling the summation of selected picture element brightness levels and the selected picture element count by a common factor; and

means for dividing the scaled summation of selected picture element brightness levels by the scaled selected picture element count to derive the average brightness level.

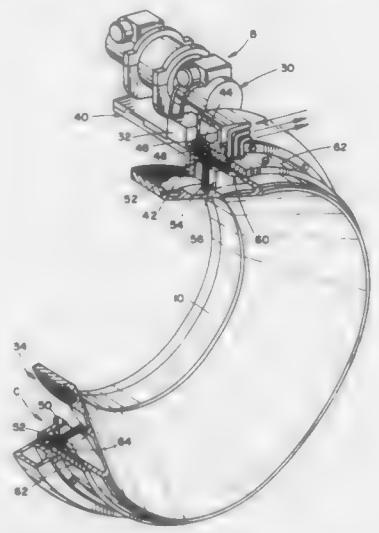


5,012,505

FLUIDIC SLIP RING FOR CT SCANNERS

Anton Z. Zupancic, Kirtland; Anthony Palermo, Chesterland, and Robert E. Levar, Willoughby, all of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio

Filed May 19, 1989, Ser. No. 354,384
Int. Cl.[5] A61B *6/03;* **H01J** *1/42*
U.S. Cl. 378—130 **18 Claims**



11. A CT scanner comprising:

a patient receiving region defined within a stationary frame;

a fluid cooled x-ray tube mounted on a rotating frame for rotation about the patient receiving region, the x-ray tube having an x-ray window through which x-rays are transmitted across the patient receiving region;

a radiation detection means for detecting radiation which has traversed the patient receiving region;

an image reconstruction means for reconstructing an image representation from signals generated by the x-ray detection means;

a fluid slip ring for providing fluid communication between the rotating and stationary frames, the fluidic slip ring including:

a rotating annular portion having first and second circumferential cooling fluid channels defined therein;

a stationary annular portion surrounding the rotatable portion in a generally mating relationship with the channels;

a sealing means for preventing cooling fluid flow out of the channels between the rotating and stationary annular portions;

a first fluid passage through the stationary annular portion with a first aperture in alignment with the first channel and a second passage through the stationary annular portion having an aperture in alignment with the second channel;

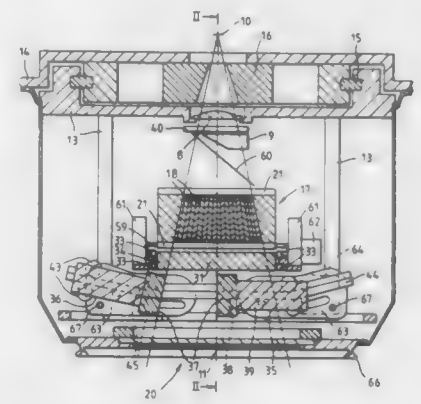
a cooling fluid circulating means for circulating a cooling fluid through the fluidic slip ring between the stationary and rotating frames, the stationary annular portion passages being operatively connected with the cooling fluid circulating means, whereby cooling fluid flows through one of the first passages into the first channel, flows from the first channel to the rotating frame, absorbs x-ray tube heat, flows from the rotating frame back to the second channel, and flows through the second stationary annular portion passage.

5,012,506

MULTILEAF COLLIMATOR

Francis J. Span, Eindhoven, Netherlands, and Brian S. Driver, Langley Green, Great Britain, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 7, 1988, Ser. No. 255,073
Claims priority, application United Kingdom, Oct. 28, 1987, 8925254
Int. Cl.[5] G21K *1/02*
U.S. Cl. 378—152 **13 Claims**



1. A collimator for a beam of penetrating radiation emitted from a substantially point source of radiation, said collimator comprising

(a) first and second pluralities of adjacent pairs of wedge-shaped leaves, said first and said second pluralities being disposed in opposition,

wherein adjacent leaves of each of said first and second pluralities are disposed side-by-side in a fan-shaped configuration, said configuration converging substantially

toward an apex at an effective point location of the source of radiation, and

wherein each of said wedge-shaped leaves is disposed for translational displacement in a direction transverse to radiation from the source of radiation on a first support structure, said leaves of each pair being independently displaced toward and away from one another,

(b) bearing means disposed between each leaf and said support structure for bearing said leaf,

(c) motive means for displacing each leaf independently of one another,

(d) readout means for determining position of each of said leaves,

(e) a first pair of opposed block diaphragm leaves disposed in said radiation at a side of said first and second pluralities opposite to said source of radiation, said first pair of opposed block diaphragm leaves being disposed on a second support structure for independent translational displacement toward and away from each other in a first direction transverse to said radiation,

(f) a second pair of opposed block diaphragm leaves disposed in said radiation at said side of said first and second pluralities opposite to said source of radiation, and second pair of opposed block diaphragm leaves being disposed on a third support structure for independent translational displacement toward and away from each other in a second direction transverse to said radiation, said second direction being at right angles to said first direction, and

(g) displacement means for moving each of said first pair of opposed block diaphragm leaves and said second pair of opposed block diaphragm leaves respectively toward and away from each other,

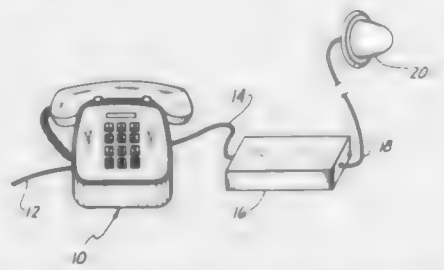
wherein the inner end surface of one of said first and second pairs of opposed block diaphragm leaves are planar, and wherein said translational displacement of said one of said first and second pairs of opposed block diaphragm leaves includes a rotational displacement so that said planar end surfaces are maintained parallel to beams of said radiation for all displacement positions of said one of said first and second pairs of opposed block diaphragm leaves.

5,012,507

TELEPHONE ACTIVATED EMERGENCY LIGHT SYSTEM

Suzanne E. Leighton, 20160 Palomar, Lake Elsinore, Calif. 92330; Raymond J. Kemp, P.O. Box 1216, Wildomar, Calif. 92395, and Philip D. Hawkins, Norco, Calif., assignors to Raymond J. Kemp, Wildomar and Suzanne E. Leighton, Lake Elsinore, both of, Calif.

Filed Mar. 6, 1989, Ser. No. 318,840
Int. Cl.[5] H04M *11/04*
U.S. Cl. 379—37 **13 Claims**



1. A system for facilitating the location of premises originating a distress telephone call by personnel responding to such call, comprising:

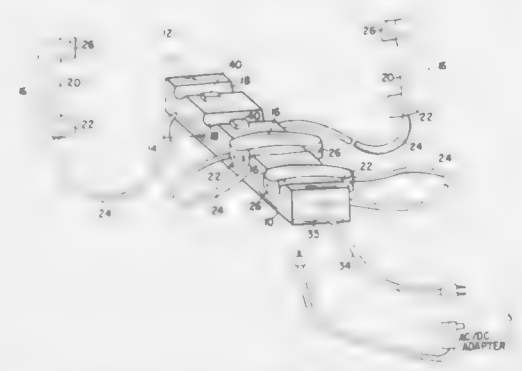
first means for continuously monitoring the dialing of telephone calls from the premises including discriminator means selectively responsive to the dialing of a particular sequence indicative of a distress call while ignoring all other dialing and switch means actuated upon such selective response, whereby indicator means may be enabled by said switch means for guiding personnel arriving into the general vicinity to the originating premises.

5,012,508

TELEPHONIC SPEECH TRAINING DEVICE

Harry C. Gibbens, Jr., 11327 Louise Ave., Lynwood, Calif. 90262-3113

Filed Oct. 31, 1989, Ser. No. 429,622
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—52 **2 Claims**



1. A telephone speech training device, comprising a box adopted for placement on a table top, said box having a horizontal length dimension defining a longitudinal axis and a horizontal width dimension defining a transverse axis; said box having an upper face; a plural number of upwardly facing saddles spaced apart along said box upper face in the direction of the box longitudinal axis; each saddle comprising a groove extending parallel to the box transverse axis along the box upper face; a plural number of telephone handsets, one for each saddle; each saddle being configured to underlie and support a telephone handset in an inactive standby position; each handset comprising an elongated housing, a microphone located in said housing at one end thereof, and a speaker located in said housing at the other end thereof; a number of individual amplifiers in said box, each said amplifier having an input and an output; first wiring connections between each microphone and an amplifier input; second wiring connections between each speaker and an amplifier output; a flexible signal cord extending from each telephone handset to a point on the box in the vicinity of the saddle for the respective handset; each flexible signal cord containing a first wiring connection associated with the respective microphone, and a second wiring connection associated with the respective speaker; a power supply cord extending from the box for connection to a household outlet; and electrical connections within the box between the power supply cord and the amplifiers for supply current to said amplifiers; said flexible signal cords and said amplifiers constituting the sole electrical links between the various handsets.

5,012,509

COMMUNICATION CONFERENCE APPARATUS AND METHOD FOR REMOTE CONFERENCING

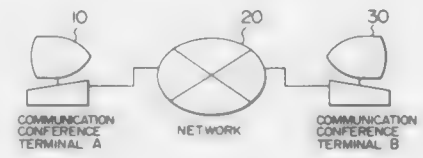
Koozoo Nakamura, Hitachiota, and Seizi Maruo, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 20, 1989, Ser. No. 453,930
Claims priority, application Japan, Dec. 23, 1988, 63-323333
Int. Cl.[5] H04N *1/42*
U.S. Cl. 379—53 **19 Claims**

1. A communication conference apparatus in which a plurality of communication conference terminals, each including input means for entering materials used for conferences, a display unit and an audio input-output unit, are connected through a communication network for holding a conference between separated partners by exchanging sounds and images between said separated partners, wherein each of said communication conference terminals comprises:

means for memorizing materials used for conference;

means for registering at least a conference host identifier, conference identifier and conference partner identifier at setup of a conference; and



means for identifying, for management, a specific conference by a logical AND operation of said conference host identifier, said conference identifier and said conference partner identifier which have been registered.

5,012,510

DYNAMIC CALLBACK TECHNIQUE

Randolph J. Schaubs, Stone Mountain, and David J. Naddor, Doraville, both of Ga., assignors to Scientific Atlantic Inc., Alantic, Ga.

Filed Apr. 27, 1988, Ser. No. 186,908
Int. Cl.[5] H04M *11/00;* **H04N** *17/00*
U.S. Cl. 379—92 **12 Claims**

1. A method of dynamically transferring stored data from a remote unit having a digital identifier comprising a plurality of bits arranged in a predetermined order to a central location over a communication network, the method comprising the steps of:

(a) shifting the bits of the digital identifier in a predetermined manner into a counter in order to generate a callback time within a callback period of predetermined length, the callback time being determined by the count generated by shifting the bits into said counter and the bits being shifted into said counter beginning with the least significant bit of the digital identifier;

(b) calling back said central location at the callback time;

(c) transferring the stored data to said central location if said remote unit is connected to said central location when calling back;

(d) waiting for a time period equal to the callback period before calling back to said central location if said remote unit is not connected to said central location when calling back; and

(e) repeating steps (c) and (d) until said remote unit is connected to said central location so as to transfer stored data.

5,012,511

METHOD OF AND SYSTEM FOR CONTROL OF SPECIAL SERVICES BY REMOTE ACCESS

John P. Hanle, Silver Spring, Md., and James E. Curry, Herndon, Va., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Filed Apr. 6, 1990, Ser. No. 505,386
Int. Cl.[5] H04M *3/54*
U.S. Cl. 379—211 **20 Claims**

1. In a telecommunications system having a plurality of switching means interconnected by trunks, a plurality of subscriber stations arranged in groups with each group being served by one of said switching means, a plurality of subscriber lines connecting each switching means with the group of subscriber stations served thereby, a switching network in each switching means for establishing communication paths between calling subscriber stations and called subscriber stations addressed by the calling stations, at least one of said switching means including means for providing special services to subscriber stations served thereby, computer means associated with said switching means and adapted to respond to input signals to generate recent change signals to program switch translation variables in said switching means, and terminals connected to said computer means for entering programming orders, the improvement comprising:

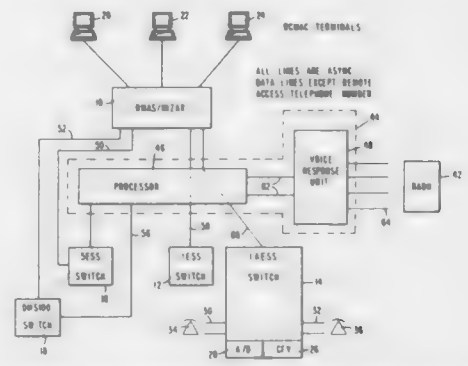
adjunct means associated with said computer means and connected to at least one of said switching means which includes means for providing special services to subscriber stations served thereby;

a multiline hunt group associated with a Remote Access Directory Number (RADN);

said adjunct means including:

voice response means connected to said multiline hunt group; and

processor means responsive to subscriber identification and stored class of service information (a) for recognizing that



a special service is to be provided to a subscriber station connected to one of said switch means including means for providing special services to subscriber stations served thereby, and (b) for generating a signal for programming said switch means in the circuit to said subscriber station so as to effect the modification necessary to provide the special service to that subscriber station; and

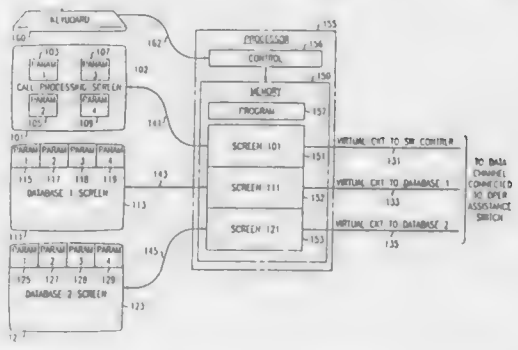
said processor means being connected between said computer means and at least one of said switch means for transmitting to said switch means signals from said computer means for programming switch translation variables originated by said terminals connected to said computer means.

5,012,512

TELEPHONE OPERATOR AND AGENT TO DATABASE COMMUNICATION ARRANGEMENT

Richard J. Basso, Naperville; Randall S. Hansen, St Charles; Edward P. Kolasa, Streamwood; Mark L. Reynolds, Wheaton, and Chun P. Tam, Naperville, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 30, 1990, Ser. No. 502,091
Int. Cl.[5] H04M *3/60, 3/64*
U.S. Cl. 379—218 **11 Claims**



1. In an operator assistance switching system comprising a display device, an input device, and memory for storing image

data for a display, a method of processing an operator assistance call comprising the steps of:

responsive to receipt of a call in said operator assistance switching system, displaying call processing data, including a group of parameters, for said call in a call processing display and storing image data for controlling said call processing display;

responsive to a first input received from said input device, requesting additional data from a database and displaying said additional data and said parameters on a database display and storing image data for controlling said database display;

responsive to a second input received from said input device, modifying one of said parameters in said database display and automatically modifying said image data for controlling said database display and said call processing display to control displays including said modified parameter

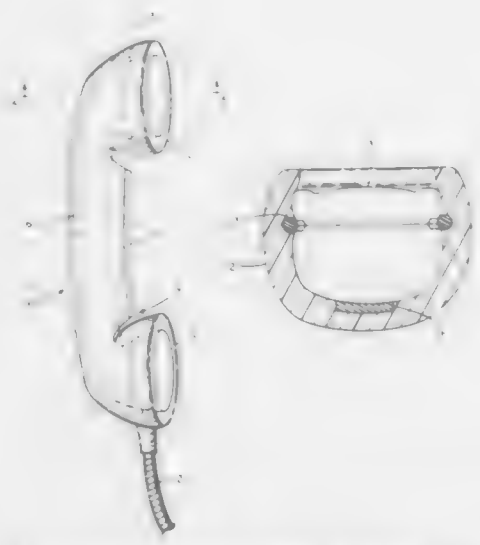
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5,012,513

TELEPHONE HANDSET COVER

George L. Dale, P.O. Box 3526, Lacey, Wash. 98503, and Robert E. Brown, Olympia, Wash., assignors to George L. Dale, Lacey, Wash.

Filed Aug. 1, 1989, Ser. No. 388,245
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—451 **21 Claims**



1. A telephone handset cover comprising:

(a) a grip cover comprised of an impact energy absorbing material for covering the handgrip portion of a telephone handset;

(b) two endcovers connected to either end of said grip cover for covering the receiver and transmitter portions of said handset, said endcovers comprised of an impact energy absorbing material and having a groove engaging lip molded therein for secure and correct placement of the handset cover upon said handset; and

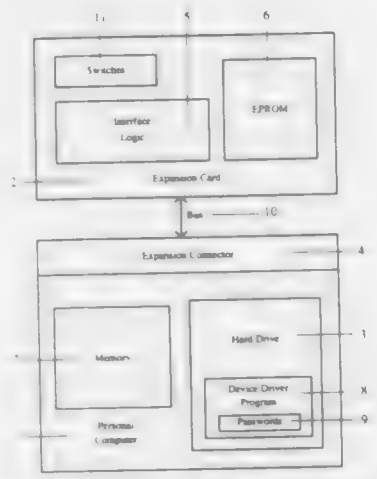
(c) a grip cover closure.

5,012,514

HARD DRIVE SECURITY SYSTEM

Paul Renton, 14926 20th SW., Seattle, Wash. 98166

Filed Jun. 26, 1990, Ser. No. 543,429
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—4 **16 Claims**



1. A security system for controlling access to a personal computer, said computer containing a hard drive, a random access memory, and at least one expansion slot, comprising:

an expansion card for insertion into said expansion slot;

a file residing on said hard drive containing the established passwords of the security system;

said expansion card containing a read only memory for storing a first program having a first portion for altering the interrupt table of the personal computer so as to establish said first program as a part of the disk drive management interrupt of said computer, and further operative to write into a new location in said random access memory the initial values of the interrupt table altered by said first portion of said first program;

said first program having a second portion operative to store in said random access memory one or more flags indicative of the status of the security system;

said first program having a third portion responsive to said one or more flags and the disk drive management interrupt of said computer, operative to deny access to any floppy disk drives while said flags indicate that the security system is active by returning an error code to said computer;

a second program existing upon, and executed from, said hard drive, operative to read said file existing upon said hard drive containing the established passwords of the security system, and operative to request and verify a password against said file, and operative to deny access to the computer system until a valid password is entered, and further operative to modify said one or more flags in said random access memory so as to reflect the current status of the security system.

5,012,515

SECURITY METHOD FOR A DISTRIBUTED DATA PROCESSING SYSTEM

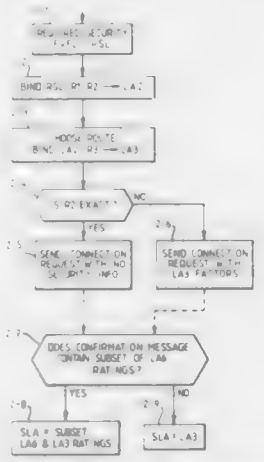
David G. McVitie, Congleton, United Kingdom, assignor to International Computers Limited, London, England

Filed Jun. 14, 1990, Ser. No. 537,609
Claims priority, application United Kingdom, Jul. 20, 1989, 8916586
Int. Cl.[5] H04L *9/00*; **G06F** *7/04*
U.S. Cl. 380—49 **2 Claims**

1. A method of operating a distributed data processing system comprising a plurality of servers, each server having security information indicating its own view of security levels in the system, the method comprising the steps:

(a) sending a message from a first server to a second server, the message containing security information derived from the security information maintained by the first server;

(b) upon receipt of said message at the second server, combining the security information in the message with the security information maintained by the second server, to form combined security information indicating an overall security level for the connection as viewed by the second server;



(c) sending a further message back from the second server to the first server, the further message containing said combined security information, and

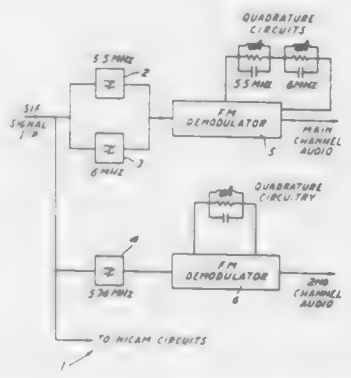
(d) upon receipt of said further message at the first server combining the security information in the further message with the security information maintained by the first server, to form further combined security information indicating an overall security level for the connection as viewed by the first server.

5,012,516

SWITCHING CIRCUITRY

David W. Walton, Otley, and Roger Harrison, Halifax, both of England, assignors to Ferguson Limited, Enfield, United Kingdom

PCT No. PCT/GB89/00443, § 371 Date Feb. 27, 1990, § 102(e) Date Feb. 27, 1990, PCT Pub. No. WO89/10671, PCT Pub. Date Nov. 2, 1989
PCT Filed Apr. 26, 1989, Ser. No. 438,472
Claims priority, application United Kingdom, Apr. [illegible], 1988, 8810048
Int. Cl.[5] H04H *5/00*
U.S. Cl. [illegible]—3 **4 Claims**



1. Automatic switching circuitry for use in receiving NICAM signals, comprising:

filter means for receiving NICAM signals and passing signals of a certain band;

a quadrature phase shift key decoder coupled to receive signals passed by said filter means and for producing a decoded NICAM signal;

oscillator means for generation of a plurality of signals of different frequencies coupled to said quadrature phase shift key decoder;

a demultiplexer means receiving the decoded NICAM output signals of the quadrature phase shift key decoder for generating a mute signal responsive to no output signal from the quadrature phase shift key decoder and for generating an audio output signal responsive thereto; and

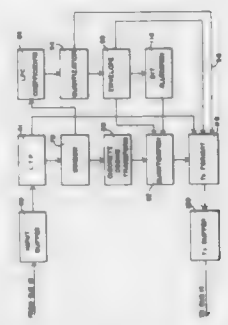
control logic means responsive to sensing a mute signal generated by said demultiplexer means for switching said filter means and oscillator means between various values until the quadrature phase shift key decoder produces a decoded NICAM output signal.

5,012,517

ADAPTIVE TRANSFORM CODER HAVING LONG TERM PREDICTOR

Philip J. Wilson, and Harprit Chhatwal, both of San Diego, Calif., assignors to Pacific Communication Science, Inc., San Diego, Calif.

Filed Apr. 18, 1989, Ser. No. 339,991
Int. Cl.[5] G01L *5/00*
U.S. Cl. 381—31 **31 Claims**



1. Apparatus for removing the periodicity from a speech signal in a transform coder prior to the quantization of said speech signal, which speech signal is a sampled time domain speech signal composed of information samples, said transform coder sequentially segregating said speech signal into blocks of information samples, comprising:

filter means for filtering each of said blocks of samples to remove spurious peaks;

clipping means for enhancing certain samples contained in said blocks necessary to determine pitch;

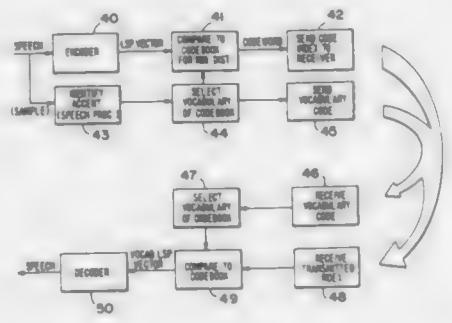
function means for generating an autocorrelation function of each of said sample blocks after it has been operated upon by said clipping means;

pitch means for determining the maximum value in said autocorrelation function;

LTP means for determining long term predictor parameters in relation to said maximum value and other values contained in said autocorrelation function; and

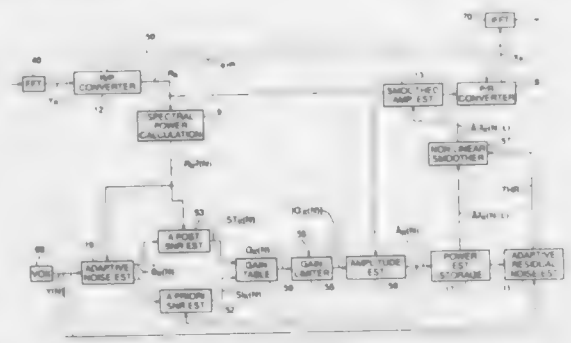
a difference means for calculating a periodicity value for each sample in said block wherein the calculation of said periodicity value is based upon said maximum value and said long term predictor parameter and for generating a revised block of difference samples by subtracting said periodicity value from the corresponding sample.

5,012,518
LOW-BIT-RATE SPEECH CODER USING LPC DATA REDUCTION PROCESSING
Yu J. Liu, Wharton, and Joseph Rothweiler, Cranford, both of N.J., assignors to ITT Corporation, New York, N.Y.
Division of Ser. No. 385,644, Jul. 26, 1989, Pat. No. 4,975,956.
This application Aug. 16, 1990, Ser. No. 570,126
Int. Cl.[5] G10L *5/00*
U.S. Cl. 381—42 **4 Claims**



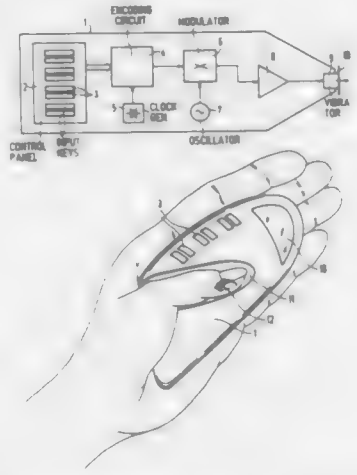
1. In a speech coder system of the type having an encoder for converting input speech signals into spectral coefficients in successive frames, and for encoding said spectral coefficients into quantized vector indexes,
an improvement comprising a codebook for storing a vocabulary of codewords in the form of respectively defined vector indexes corresponding to words to be spoken as input speech signals to said encoder, and means for comparing the quantized vector indexes output from said encoder to the codewords of said codebook and outputting the defined vector indexes corresponding thereto with a minimum distortion for transmission.

5,012,519
NOISE REDUCTION SYSTEM
Shabtai Adlersberg, Petah-Tikva; Yoram Stettiner, Ramat-Hasharon; Mendel Aizner, Rishon-Le-Zion, and Alberto Berstein, Beer Sheeva, all of Israel, assignors to The DSP Group, Inc., San Jose, Calif.
Continuation of Ser. No. 150,752, Feb. 1, 1988, abandoned. This application Jan. 5, 1990, Ser. No. 463,950
Claims priority, application Israel, Dec. 25, 1987, 84948
Int. Cl.[5] G10L *5/00*
U.S. Cl. 381—47 **10 Claims**



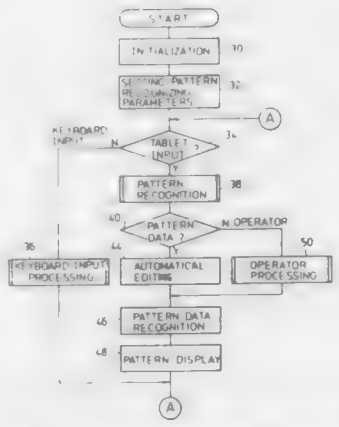
1. A digital processing method for reducing the noise in noisy speech signals, including the steps of:
(a) generating background noise estimates from noisy speech and storing said background noise estimates;
(b) generating adaptive current noise estimates from current noisy speech signals and stored background noise estimates;
(c) generating current gain estimates from adaptive current noise estimates and past speech estimates; and
(d) using current gain estimates and current noisy speech to obtain current speech estimates,
wherein said step of using adaptive current noise estimates and past speech estimates to obtain current gain estimates includes the step of limiting the lower limit of the gain estimate to eliminate musical noise, and
wherein said step of generating adaptive current noise estimates includes employing results of a speech/no speech decision from information obtained from current signal input to distinguish said noisy speech from background noise.

5,012,520
HEARING AID WITH WIRELESS REMOTE CONTROL
Gerhard Steeger, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Apr. 25, 1989, Ser. No. 342,870
Claims priority, application Fed. Rep. of Germany, May 6, 1988, 3815598
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—68 **15 Claims**



1. A hearing aid system comprising:
hearing aid means adapted to be disposed in the region of the ear of user for assisting the user in recognition of sound having frequencies in the normal human audible sound range, said hearing aid means including at least one adjustable component;
wireless control means adapted to be held in the hand of said user for generating an information-containing signal corresponding to information entered by said user for adjusting said adjustable component of said hearing aid means;
a vibrator in said wireless control means for generating an acoustic control signal including said information containing signal, said vibrator vibrating at a frequency outside of said normal human audible sound range having a contact surface adapted for contact with the skin of the user to acoustically transmit said acoustic control signal via the body of said user; and
receiver means included in said hearing aid means for receiving said acoustic control signal after transmission through the body of said user and for converting said acoustic control signal into an electrical control signal for adjusting said adjustable component.

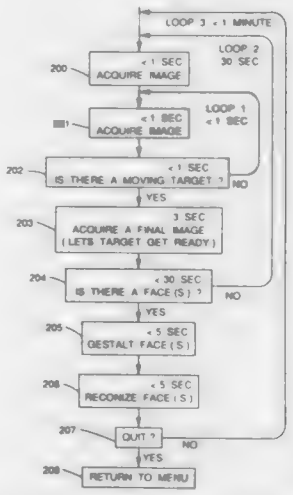
5,012,521
CONTEXT-BASE INPUT/OUTPUT SYSTEM
Yasuo Endo; Shinji Akimichi; Tadayoshi Hirose; Motonori Furukawa, and Kyoko Yoshida, all of Chuo, Japan, assignors to Takenaka Corporation, Japan
Filed Dec. 29, 1988, Ser. No. 291,619
Claims priority, application Japan, Mar. 18, 1988, 63-65524
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—1 **16 Claims**



1. A context-base input/output system comprising:
input means having an electronic pen and a tablet for converting a locus which was drawn by said electronic pen on said tablet into dot data and inputting said dot data;
first determining means based on the inputted dot data for determining what of at least segment, circle and arc is expressed by said locus;
display means based on the determination result of said first determining means for displaying the pattern expressed by said locus in a display unit;
memory means for memorizing graphic processing commands corresponding to a plurality of predetermined patterns for graphic processing, respectively;
second determining means based on the determination result of said first determining means for determining whether or not said predetermined patterns stored in said memory means are expressed by said locus and identifying any expressed predetermined patterns; and
processing means based on the determination result of said second determining means for graphic processing in response to the graphic processing commands corresponding to said predetermined patterns identified by said second determining means.

5,012,522
AUTONOMOUS FACE RECOGNITION MACHINE
Laurence C. Lambert, Bedford, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Dec. 8, 1988, Ser. No. 282,227
Int. Cl.[5] G06K *9/00, 9/20;* **H04N** *7/18;* **G07D** *7/00*
U.S. Cl. 382—2 **1 Claim**

1. A face recognition video system which locates and recognizes a human face in a video scene which has an input scene size of about 512 by 480 pixels and a random background, wherein said face recognition video system identifies said human face with a set of stored characteristics which are correlated with known human faces, said face recognition video system comprising:
a camera which receives said video scene and outputs it in an analog electrical signal;
a means for converting analog signals into digital signals, said converting means receiving and converting said analog electrical signal from said camera into a digital electrical signal;
a means for applying an elliptical mask to said video scene around a location of said human face for recognizing and identifying human faces, said applying means receiving said digital electrical signal from said converting means and locating said human face within that video scene by searching for and extracting detected facial characteristics within said video scene, said applying means then applying said elliptical mask around the location of the human face and defining a detected gestalt-face within said video scene with a minimum facial size of 64 by 64 pixels by identifying said detected facial characteristics using the detected facial characteristics of whole human faces by comparing said detected facial characteristics of said detected gestalt face with said set of stored face characteristics and outputting a name associated with the stored face characteristics which successfully correlates with said detected gestalt face, wherein said applying means comprises a Micro Vax computer which has a memory which has said set of stored face characteristics stored therein



along with a set of names of said known human faces, said Micro Vax computer being electrically connected with said converting means to receive said digital electrical signal thereby, said Micro Vax computer searching said video scene for detected facial characteristics beginning with a search for a pair of eyes in said video scene, said Micro Vax computer outputting a signal to indicate that there are no human faces in said video scene when no pair of eyes are detected, said Micro Vax computer continuing to look for said facial characteristics once a human face is detected until it has sufficient detected facial characteristics to form said detected gestalt face which may be compared with said set of stored face characteristics and to identify said human face in said video scene thereby; and
and a means for displaying said name produced by said applying means, said displaying means being electrically connected with said applying means to receive said name therefrom.

5,012,523
DIMENSION CHECKING METHOD
Kenichi Kobayashi, Tokyo, and Shougo Matsui, Sagamihara, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 023,743, Mar. 9, 1987, abandoned. This application Dec. 29, 1988, Ser. No. 291,358
Claims priority, application Japan, Mar. 10, 1986, 61-051960
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—8 **6 Claims**

1. A method for checking dimensions of patterns comprising the steps of:
a first process for selecting patterns of a predetermined shape from a number of patterns having various kinds of shapes; and

a second process for determining whether or not each of the selected patterns is formed with a predetermined dimension, wherein said first process comprises the steps of

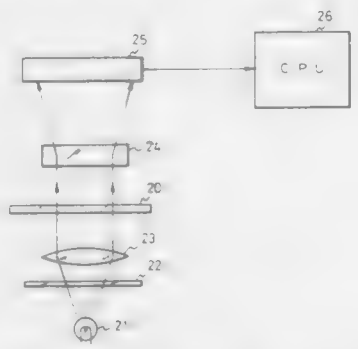
determining dimensions of each pattern by scanning the pattern along a center of the pattern to obtain pulse signals, a time width of each pulse signal corresponding to dimensions of each pattern, and

selecting patterns by excluding patterns having dimensions larger than a predetermined range of dimensions;

wherein the second process comprises the steps of

determining a position of a center of gravity of each selected pattern,

determining an upper limit pattern image and a lower limit pattern image for each selected pattern,



superimposing said upper and lower limit pattern images on a profile of each selected pattern, centers of gravity of each upper and lower limit pattern images being superimposed with the center of gravity of each selected pattern, and

determining an acceptability of each selected pattern based upon whether or not each selected pattern is determined to be within a range of the upper limit pattern image and the lower limit pattern image wherein the range of the upper limit pattern image and the lower limit pattern image is smaller than the predetermined range of dimensions of the first process.

5,012,524

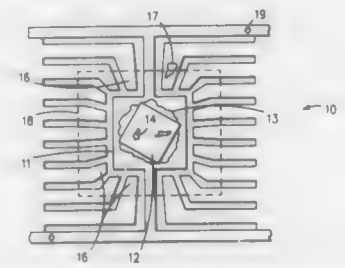
AUTOMATIC INSPECTION METHOD

Christopher J. Le Beau, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 27, 1989, Ser. No. 315,645

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—8 **7 Claims**



1. A method for automatically inspecting semiconductor die comprising:

obtaining an image of the semiconductor die;

performing a direction edge enhancement and selecting a first and a second threshold value of an edge enhanced image;

conditionally dilating the second threshold value with the first threshold value to conditionally grow prominent edge features; and

determining the semiconductor die location and rotation by correlating discrete die perimeter edge points, wherein the discrete die perimeter edge points are weighted, shifted and summed to perform the correlating.

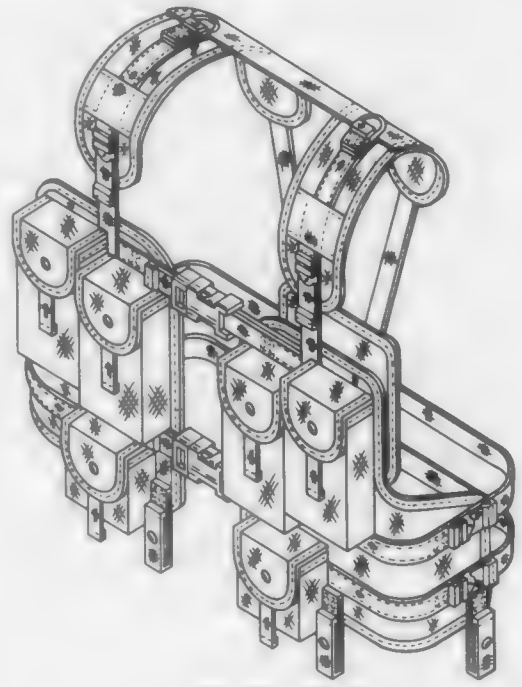
DESIGN PATENTS

GRANTED APR. 30, 1991

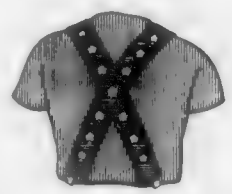
ERRATA

For CLASS	See PATENT NO.
D08-331	316,486

316,472
ADJUSTABLE VEST
John M. Flanagan, 1008 Hiller Rd., McKinleyville, Calif. 95521
Filed Jan. 17, 1989, Ser. No. 297,999
Term of patent 14 years
U.S. Cl. D2—154

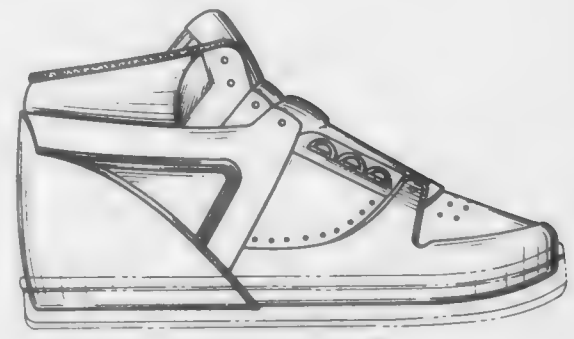


316,473
COMBINED SHIRT AND SUSPENDERS
Richard C. Weidman, and W. Jeffrey Weidman, both of 12020 Greywing Sq., #A3, Reston, Va. 22091
Filed Aug. 4, 1986, Ser. No. 892,776
Term of patent 14 years
U.S. Cl. D2—209





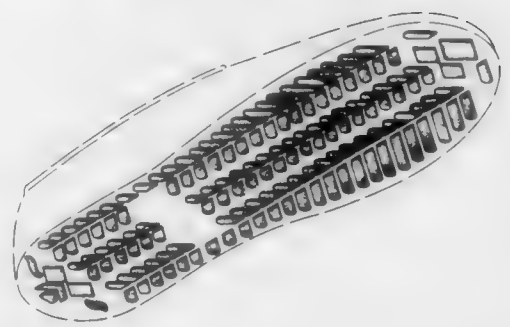
316,474
SHOE UPPER
Robert Y. Greenberg, Woodland Hills, Calif., assignor to L.A. Gear, Inc., Los Angeles, Calif.
Filed Jun. 17, 1988, Ser. No. 208,394
Term of patent 14 years
U.S. Cl. D2—314



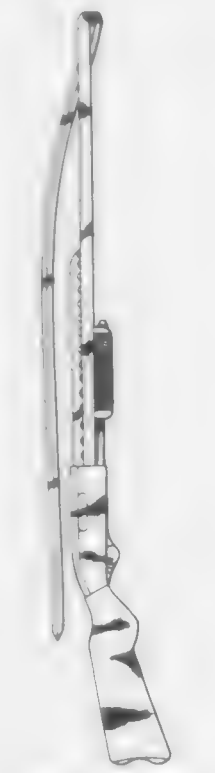
316,475
SHOE UPPER
Kimberly A. McKinstry, Redondo Beach, Calif., assignor to L.A. Gear, Inc., Los Angeles, Calif.
Filed Jan. 25, 1990, Ser. No. 470,059
Term of patent 14 years
U.S. Cl. D2—314



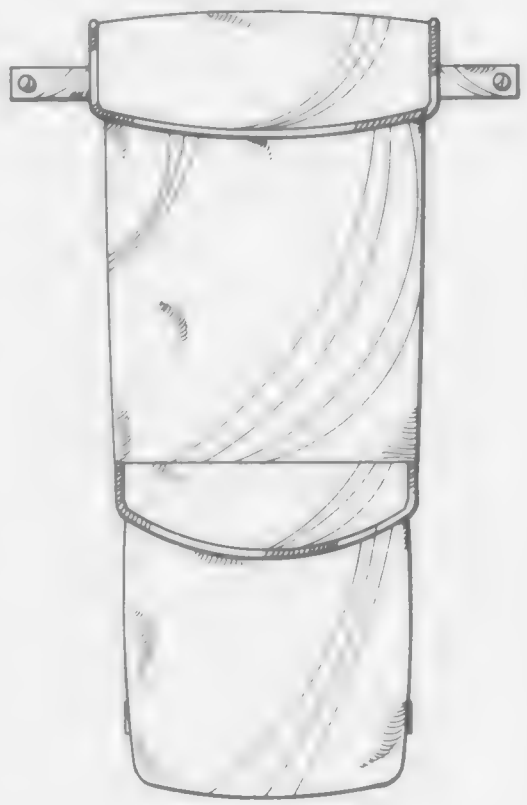
316,476
TREAD DESIGN FOR FOOTWEAR
Barry Brinker, Cincinnati, Ohio, assignor to 'totes', incorporated, Loveland, Ohio
Filed May 23, 1990, Ser. No. 528,114
Term of patent 14 years
U.S. Cl. D2—320



316,477
NECKTIE
Bruce Johnson, 613 Guadalajara Cir., Irving, Tex. 75062
Filed Jun. 27, 1988, Ser. No. 211,676
Term of patent 14 years
U.S. Cl. D2—608



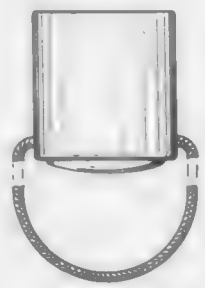
316,479
POCKET FOR CRUTCHES
Gregg L. Miller, 544 Brimfield St., Clinton, N.Y. 13323
Filed Nov. 8, 1988, Ser. No. 268,526
Term of patent 14 years
U.S. Cl. D3—11



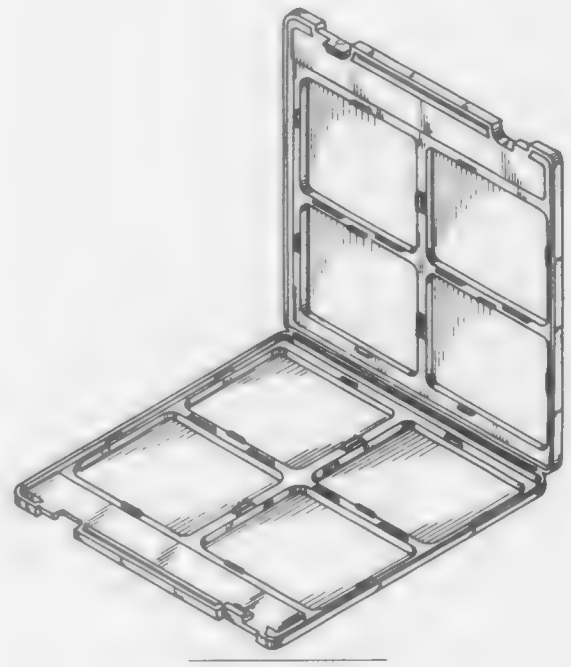
316,478
HANDWARMER
Paul B. Brunner, and Karen L. T. Brunner, both of Box 10, Ovando, Mont. 59854
Filed Mar. 6, 1987, Ser. No. 22,629
Term of patent 14 years
U.S. Cl. D2—610



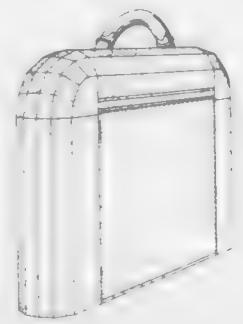
316,480
UMBRELLA HANDLE
Ann S. Cain, Cincinnati, Ohio, assignor to 'totes', incorporated, Loveland, Ohio
Filed Feb. 27, 1990, Ser. No. 485,732
Term of patent 14 years
U.S. Cl. D3—12



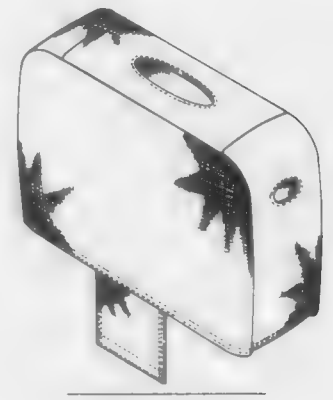
316,481
CASE
Noriaki Kunimune, Higashiosaka, and Yukio Wada, Kyoto, both of Japan, assignors to Kunimune Kogyosho Co., Ltd., Osaka, Japan
Filed Jan. 22, 1988, Ser. No. 146,794
Claims priority, application Japan, Sep. 24, 1987, 62-38876
Term of patent 14 years
U.S. Cl. D3—35



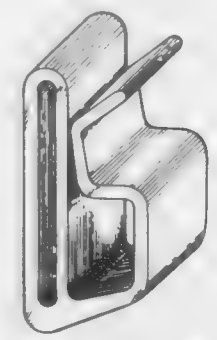
316,482
CASE
Maria Boitani, Via Bissolati 54, Rome 00187, Italy
Filed Jan. 14, 1987, Ser. No. 3,249
Claims priority, application Italy, Aug. 6, 1986, 36008 II/86[U]
Term of patent 14 years
U.S. Cl. D3—76



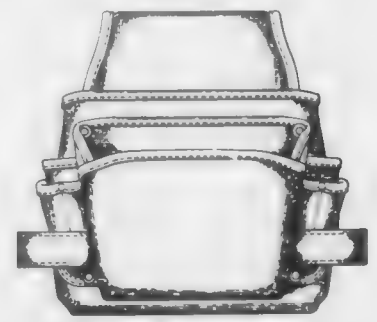
316,483
SUITCASE COVER
Dennis A. Haack, Troy, Ohio, assignor to Pro-Tex-Tor, Inc., Cincinnati, Ohio
Filed Sep. 19, 1988, Ser. No. 245,534
Term of patent 14 years
U.S. Cl. D3—76



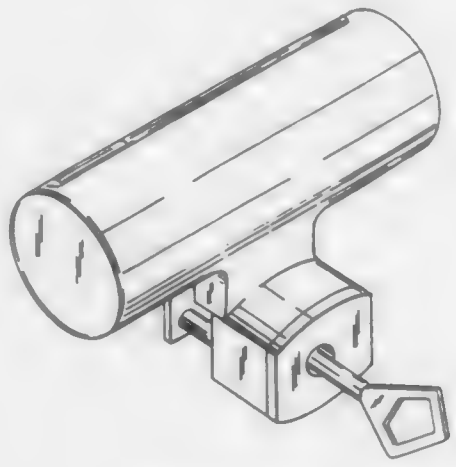
316,484
DIVER'S BELT CATCH BAG HOOK
James B. Kounis, and Zane E. Tully, both of South Lake, Australia, assignors to Times Three Pty. Limited, Australia
Filed Oct. 28, 1988, Ser. No. 264,187
Term of patent 14 years
U.S. Cl. D3—104



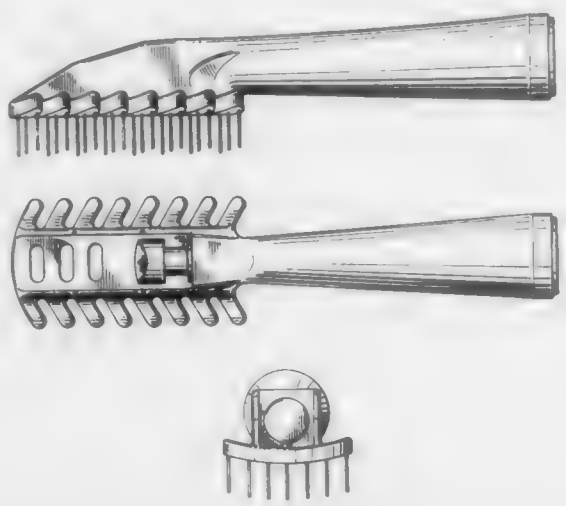
316,485
COMBINED NAIL AND TOOL BAG
Brett P. Seber, Laguna Niguel, Calif., assignor to McGuire-Nicholas Company, Inc., City of Commerce, Calif.
Filed Mar. 27, 1989, Ser. No. 329,101
The portion of the term of this patent subsequent to Apr. 16, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D3—105



316,486
AUTOMOBILE GEAR SELECTOR LOCK
Gerhard Schadner, Birger Jarls-gatan 120 C, S-114 20 Stockholm, and Agneta Nordberg, Nidarosgatan 5, S-164 34 Spånga, both of Sweden
Filed Sep. 15, 1988, Ser. No. 245,058
Claims priority, application Sweden, Mar. 25, 1988, 88-0767
Term of patent 14 years
U.S. Cl. D8—331



316,487
COMBINED HAIR BRUSH AND HAIR SPRAY DISPENSER
Horst M. Recchelbacher, Minneapolis, Minn., assignor to AVEDA Corporation, Minneapolis, Minn.
Filed Mar. 7, 1988, Ser. No. 165,134
Term of patent 14 years
U.S. Cl. D4—114



316,488
CLEANING BRUSH FOR THE URETHRA OR THE LIKE
Nils Stormby, Malmö , Sweden, assignor to Medscand AB, Malmo, Sweden
Filed Dec. 8, 1987, Ser. No. 129,977
Claims priority, application Sweden, Jun. 11, 1987, 87-1356
Term of patent 14 years
U.S. Cl. D4—131



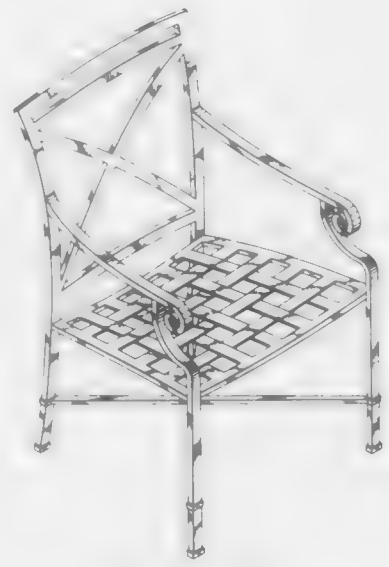
316,489
CHAISE
Richard Frinier, Long Beach, Calif., assignor to Brown Jordan Company, El Monte, Calif.
Filed Jan. 20, 1988, Ser. No. 145,118
Term of patent 14 years
U.S. Cl. D6—361



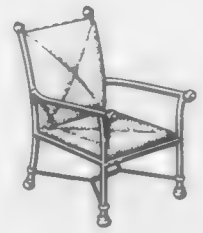
316,490
CHAISE LOUNGE
Leo Martin, 260 NW. 25th St., Miami, Fla. 33127
Continuation of Ser. No. 119,409, Nov. 12, 1987, abandoned.
This application Jun. 27, 1988, Ser. No. 174,336
Term of patent 14 years
U.S. Cl. D6—361



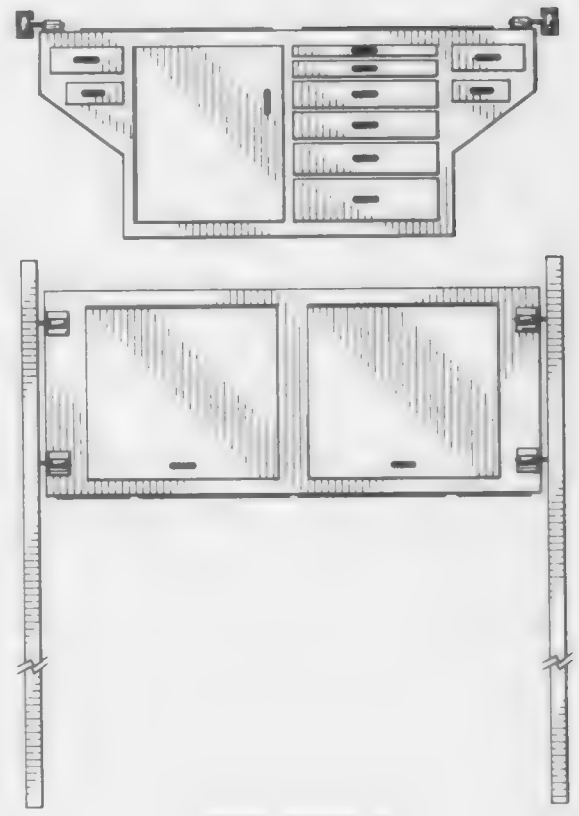
316,491
CHAIR
Richard Frinier, Long Beach, Calif., assignor to Brown Jordan Company, El Monte, Calif.
Filed Jan. 12, 1988, Ser. No. 143,143
Term of patent 14 years
U.S. Cl. D6—379



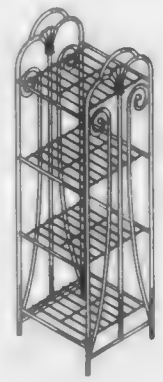
316,492
CHAIR
Leo Martin, 260 NW. 25th St., Miami, Fla. 33127
Continuation of Ser. No. 119,406, Nov. 12, 1987, abandoned.
This application Jun. 27, 1988, Ser. No. 174,335
Term of patent 14 years
U.S. Cl. D6—379



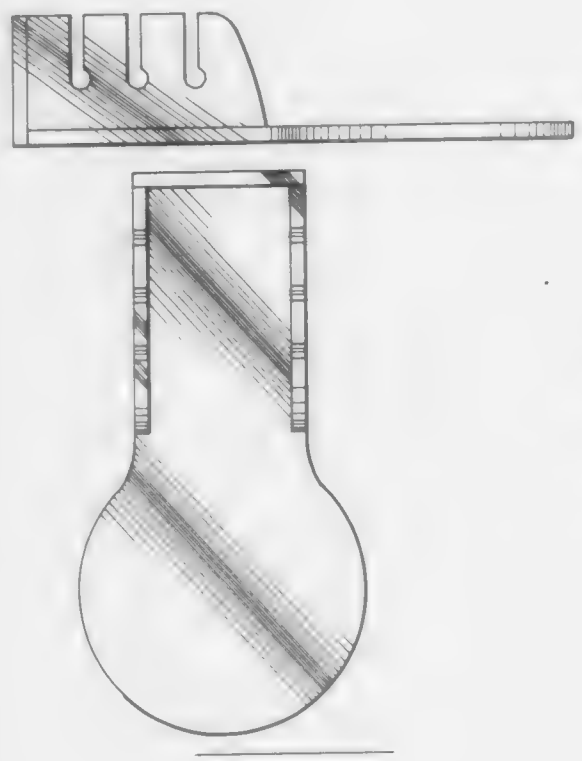
316,493
MOVEABLE TOOL BOX
Domenic G. Martino, 127 N. Bellevue Ave., Langhorne, Pa. 19047
Filed Sep. 2, 1988, Ser. No. 239,849
Term of patent 14 years
U.S. Cl. D6—400



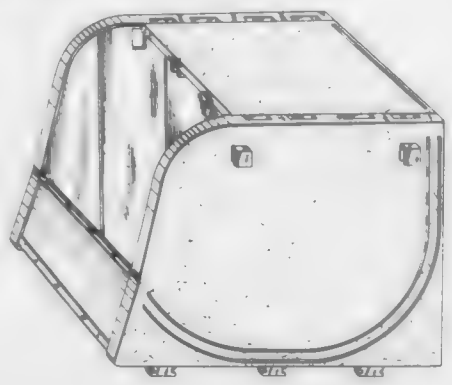
316,494
SHELF UNIT
Peter M. Y. Kee, Happy Valley, Hong Kong, assignor to Rosalco, Inc., Louisville, Ky.
Filed Jul. 31, 1990, Ser. No. 560,319
Term of patent 14 years
U.S. Cl. D6—465



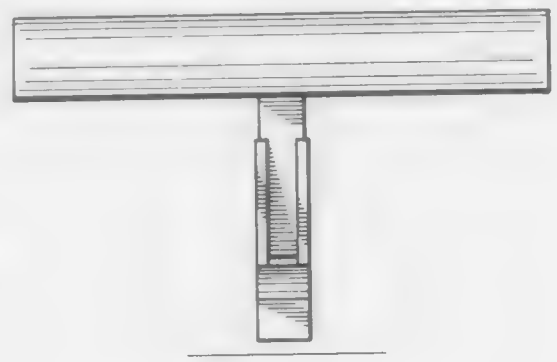
316,495
DISPLAY STAND FOR DINNERWARE
Carolyn M. Cervone, 10416 Monrovia Rd., Overland Park, Kans. 66215
Filed Jul. 6, 1988, Ser. No. 215,930
Term of patent 14 years
U.S. Cl. D6—467



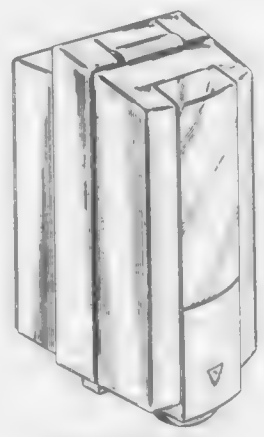
316,496
STACKING DISPLAY BIN
Israel Diamond, Franklin Square, N.Y., assignor to Merchandising Display Corporation, Englewood Cliffs, N.J.
Filed Jan. 25, 1988, Ser. No. 147,922
Term of patent 14 years
U.S. Cl. D6—475



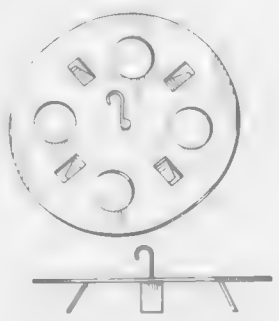
316,497
FOOT REST
Dean Hyland, Jr., 156 Dorrance Ave., Buffalo, N.Y. 14218
Filed Mar. 2, 1988, Ser. No. 162,853
Term of patent 14 years
U.S. Cl. D6—502



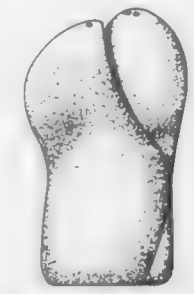
316,498
SOAP DISPENSER OR THE LIKE
Michael Barry, Stanford, Calif., assignor to Johnson & Johnson Medical, Inc., Arlington, Tex.
Filed Feb. 16, 1989, Ser. No. 311,683
Term of patent 14 years
U.S. Cl. D6—542



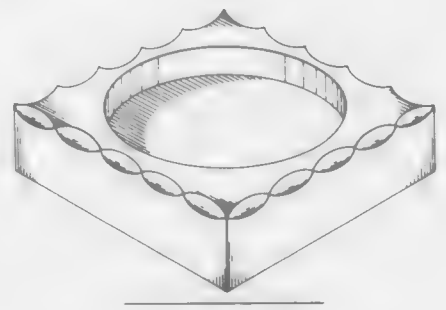
316,499
HOLDER FOR COOKING ARTICHOKES
Terri M. Coffey, 750 E. Stillwater No. 174, Fallon, Nev. 89406
Filed Sep. 7, 1988, Ser. No. 241,274
Term of patent 14 years
U.S. Cl. D7—409



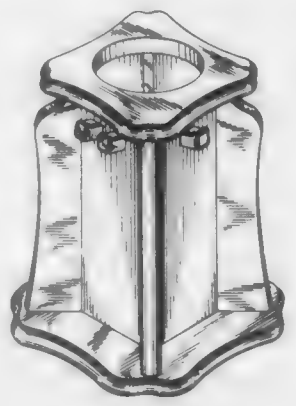
316,500
COMBINATION SALT AND PEPPER SHAKER
Amanda F. Courage, Hill End House, Tillington, Petworth, Sussex, GU28 9QA, England
Filed Oct. 2, 1984, Ser. No. 657,393
Claims priority, application United Kingdom, Jun. 4, 1984, 1020063
The portion of the term of this patent subsequent to Mar. 30, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—591



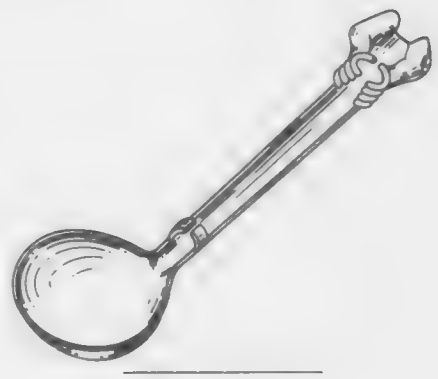
316,501
DECORATIVE DRINK COASTER
Norman R. Pinette, Jr., 159 Forest Ave., Seekonk, Mass. 02771
Filed Jul. 8, 1988, Ser. No. 216,455
The portion of the term of this patent subsequent to Apr. 9, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—624



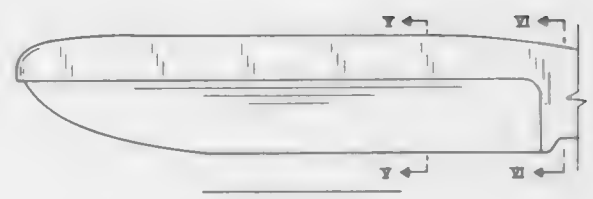
316,502
WOODEN GADGET ORGANIZER
Jane Ancona, and Bruce Ancona, both of New York, N.Y., assignors to M. Kamenstein, Inc., White Plains, N.Y.
Filed Sep. 10, 1990, Ser. No. 579,993
Term of patent 14 years
U.S. Cl. D7—641



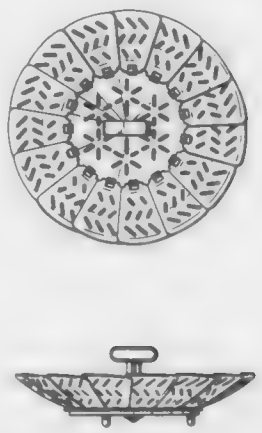
316,503
COMBINED SPOON AND STRAW HOLDER
Kevin M. O'Grady, P.O. Box 48390, Niles, Ill. 60648
Filed Feb. 23, 1988, Ser. No. 159,560
Term of patent 14 years
U.S. Cl. D7—643



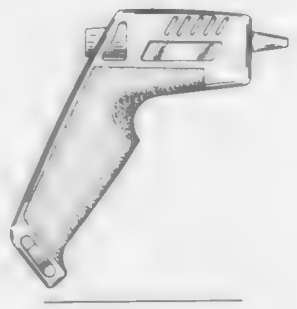
316,504
KNIFE BLADE
Burt W. Kemp, Paris, Tenn., assignor to Robert W. Chilcutt, Paris, Tenn.
Filed May 31, 1988, Ser. No. 200,772
Term of patent 14 years
U.S. Cl. D7—649



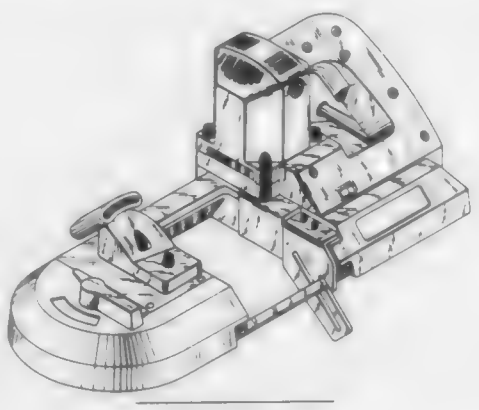
316,505
ADJUSTABLE COLANDER FOR STEAMING FOOD
Ivan Y. C. Chow, Wanchai, Hong Kong, assignor to Maxpat Trading & Marketing (Far East) Ltd., Hong Kong, Hong Kong
Filed Aug. 9, 1988, Ser. No. 230,219
Claims priority, application United Kingdom, Feb. 11, 1988, 1048465
Term of patent 14 years
U.S. Cl. D7—667



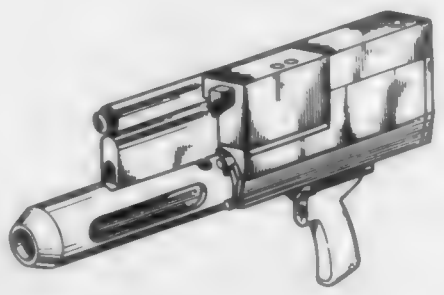
316,506
HAND-HELD HOT MELT DISPENSER
Octavio K. Nüsse, and Wolf-Dieter Krause, both of Münster, Fed. Rep. of Germany, assignors to Black & Decker Inc., Newark, Del.
Filed Aug. 11, 1988, Ser. No. 231,419
Term of patent 14 years
U.S. Cl. D8—30



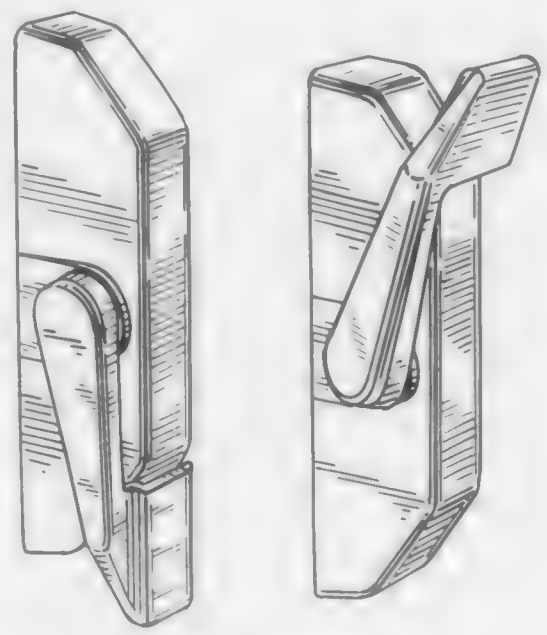
316,507
PORTABLE BAND SAW
Fusao Fushiya; Katsuyasu Ito, and Yoshinori Shibata, all of Anjo, Japan, assignors to Makita Electric Works, Ltd., Anjo, Japan
Filed May 13, 1988, Ser. No. 193,644
Claims priority, application Japan, Nov. 18, 1987, 62-47216
Term of patent 14 years
U.S. Cl. D8—64



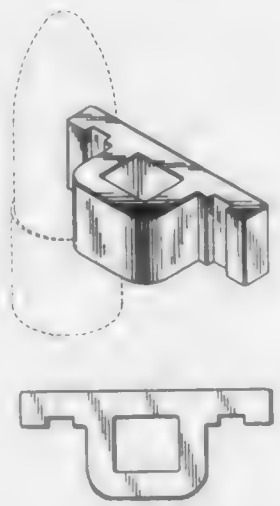
316,508
AIRFEED PECK DRILL
John F. Stewart; Joseph F. Carter; James A. Maass, and Russell D. Richardson, all of Lexington, S.C., assignors to Cooper Industries, Inc., Houston, Tex.
Filed Oct. 30, 1987, Ser. No. 116,123
Term of patent 14 years
U.S. Cl. D8—68



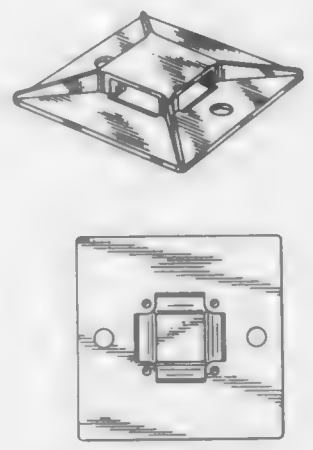
316,509
WINDOW LOCK
Douglas A. Nolte, Owatonna, Minn., assignor to Truth Incorporated, Owatonna, Minn.
Filed Jan. 17, 1989, Ser. No. 297,[illegible]
Term of patent 14 years
U.S. Cl. D8—337



316,510
LIGHT HOLDER
Willrad C. Duty, 3049 Bronson Dr., and Michael T. Hegland, 7604 Spring Lake Rd., both of Mounds View, Minn. 55432
Filed Mar. 8, 1989, Ser. No. 3[illegible],362
Term of patent 14 years
U.S. Cl. D8—373

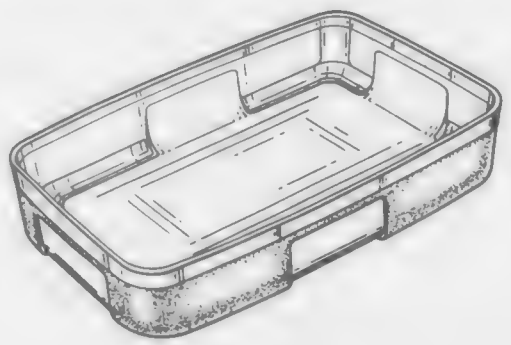


316,511
CABLE TIE MOUNT
Frederick E. White, Jr., Marietta, Ga., assignor to Panduit Corp., Tinley Park, Ill.
Filed Aug. 21, 1989, Ser. No. 397,155
Term of patent 14 years
U.S. Cl. D8—373



316,512
CONNECTOR FOR PICTURE FRAMES OR THE LIKE
Robert T. Pistorius, 19 Peak St., Lake Ronkonkoma, N.Y. 11779
Filed May 2, 1988, Ser. No. 189,608
Term of patent 14 years
U.S. Cl. D8—382

316,513
FOOD CONTAINER OR THE LIKE
Martin J. Wolff, North Providence, R.I., assignor to Dart Industries Inc., Deerfield, Ill.
Filed Nov. 18, 1988, Ser. No. 275,021
Term of patent 14 years
U.S. Cl. D9—431



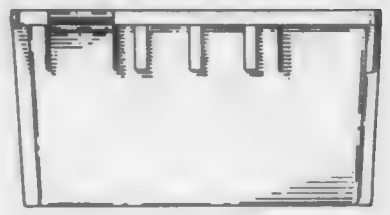
316,514
COMBINED BOTTLE AND CAP
Kay E. Wiseman, Burnham, and Brian E. Kichenside, Bushey Heath, both of England, assignors to Chesebrough-Pond's U.S.A. Co., division Conopco, Inc., Greenwich, Conn.
Filed Dec. 19, 1988, Ser. No. 286,546
Claims priority, application United Kingdom, Jun. 20, 1988, 1051636
Term of patent 14 years
U.S. Cl. D9—409



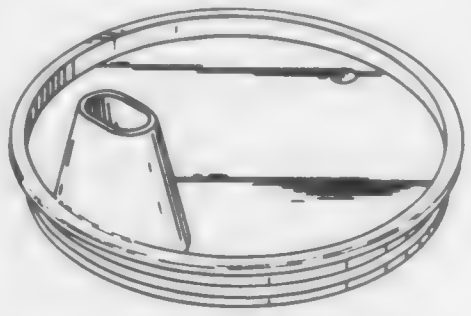
316,515
POTATO CARTON
Richard J. Walsh, Merrill, and Dale W. Waldren, Klamath Falls, both of Oreg., assignors to Basin Produce Corp., Tulelake, Calif.
Filed Jul. 24, 1989, Ser. No. [illegible],969
Term of patent 14 years
U.S. Cl. D9—423



316,516
CONTAINER
Charles Poirier, Cté Bellechasse, Canada, assignor to IPL Inc., St. Damien Bellechasse, Canada
Filed Jul. 18, 1989, Ser. No. 381,511
Term of patent 14 years
U.S. Cl. D9—424



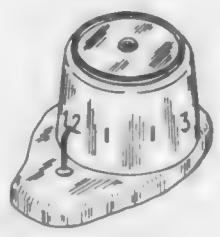
316,517
CLOSURE
Peter Coy, 3510 S. Wakefield St., Fairlington Mews, Arlington, Va. 22206
Filed Jun. 17, 1988, Ser. No. 208,277
Term of patent 14 years
U.S. Cl. D9—447



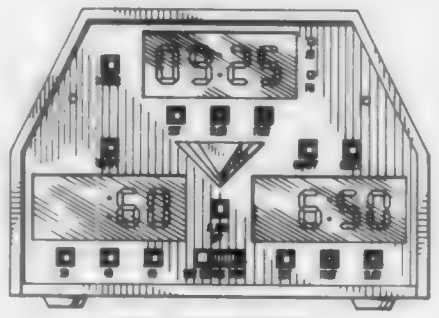
316,518
HOUSING FOR AN AIR FRESHENER
Earl Hoyt, Franklin Lakes, N.J., assignor to Reckitt & Colman Products Limited, Burlington Lane, England
Filed Jun. 29, 1989, Ser. No. 374,223
Term of patent 14 years
U.S. Cl. D9—447



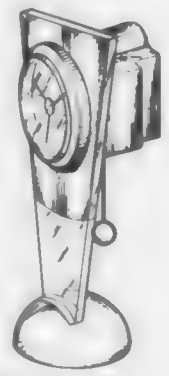
316,519
DIGITAL CLOCK
E. Lakin Phillips, 2733 Centreville Rd., Herndon, Va. 22071
Filed May 25, 1988, Ser. No. 185,934
Term of patent 14 years
U.S. Cl. D10—15



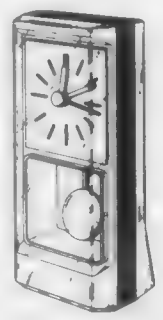
316,520
MULTI TIME CLOCK
Henry F. Luwisch, Sr., Rte. 1, Box 482 M, Cut Off, La. 70345
Filed May 18, 1988, Ser. No. 195,528
Term of patent 14 years
U.S. Cl. D10—15



316,521
CLOCK
Mitsue Shirai, Iwamuro, Japan, assignor to Twin Bird Industrial Company Limited, Niigataken, Japan
Filed Nov. 24, 1987, Ser. No. 124,772
Claims priority, application Japan, Aug. 6, 1987, 62-32165
Term of patent 14 years
U.S. Cl. D10—21



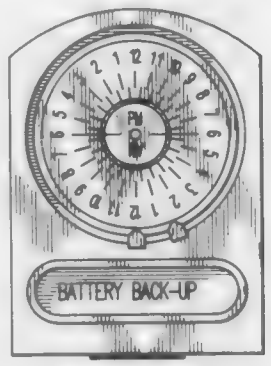
316,522
CLOCK
Siegfried Hölterscheidt, Hückelhoven, Fed. Rep. of Germany, assignor to Walter Henkels GmbH, Fed. Rep. of Germany
Filed Mar. 21, 1988, Ser. No. 171,516
Claims priority, application Fed. Rep. of Germany, Jan. 9, 1988, MR 182
Term of patent 14 years
U.S. Cl. D10—24



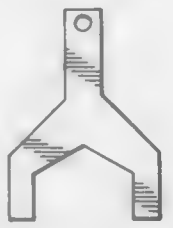
316,523
WRISTWATCH
Yoshio Hirabayashi, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan
Filed Apr. 6, 1988, Ser. No. 178,958
Claims priority, application Japan, Nov. 9, 1987, 62-45726
Term of patent 14 years
U.S. Cl. D10—32



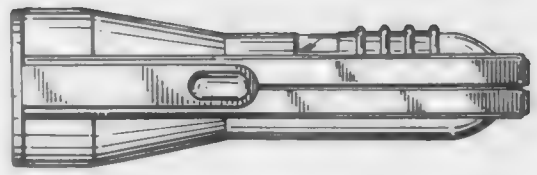
316,524
CONSTANT CYCLE ELECTRIC TIMER
Keith Ericson, 808 Forest Acres Dr., Nashville, Tenn. 37220
Filed May 18, 1988, Ser. No. 195,524
Term of patent 14 years
U.S. Cl. D10—40



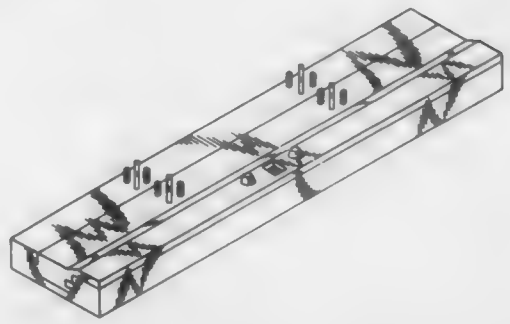
316,525
MEASURING GAUGE FOR WRENCH SIZING
Robert Waddell, Clifton Royal, R.R. #2, Kings Country, New Brunswick, Canada E0G 1N0 , and Roger N. Orser, P.O. Box 538, Grand Bay, New Brunswick, Canada E0G 1W0
Filed Oct. 5, 1988, Ser. No. 254,014
Term of patent 14 years
U.S. Cl. D10—64



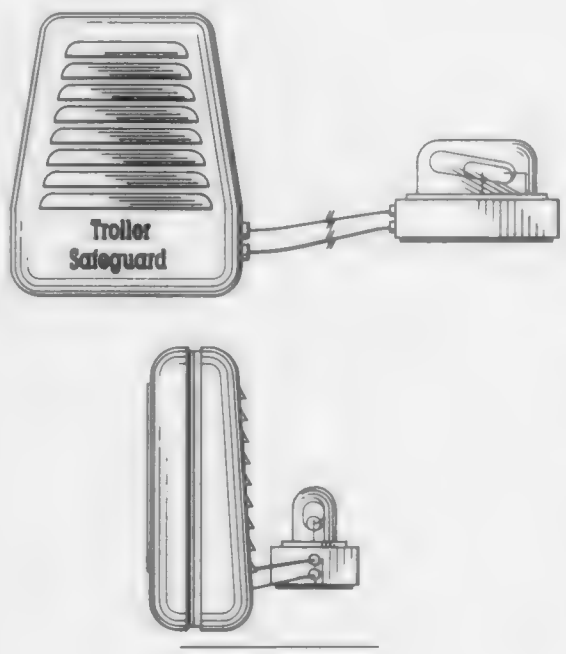
316,526
ULTRASONIC DISTANCE ESTIMATOR
Ram Shalvi, Hong Kong, Hong Kong, assignor to Solar Wide Industrial Limited, Kowloon, Hong Kong
Filed May 24, 1989, Ser. No. 356,921
Claims priority, application United Kingdom, Nov. 28, 1988, 1055286
Term of patent 14 years
U.S. Cl. D10—70



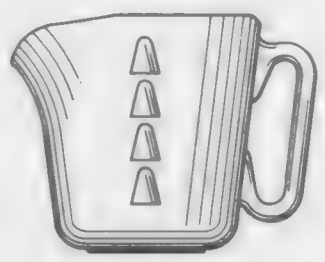
316,527
ANALYTIC COLORMETRIC INSTRUMENT
Robert G. Neuman, Philadelphia, Pa., assignor to Exocell, Inc., Philadelphia, Pa.
Continuation-in-part of Ser. No. 245,423, Sep. 16, 1988, Division of Ser. No. 245,259, Sep. 16, 1988. This application Nov. 9, 1988, Ser. No. 269,556
Term of patent 14 years
U.S. Cl. D10—81



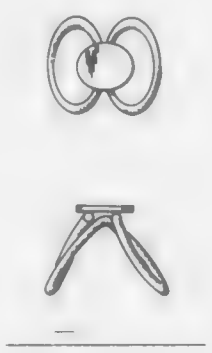
316,528
TROLLING MOTOR TILT POSITION ALARM
Samuel D. Wilson, Jr., 1523 Foxdale Dr., Murfreesboro, Tenn. 37130
Filed Dec. 9, 1988, Ser. No. 282,298
Term of patent 14 years
U.S. Cl. D10—106



316,529
MEASURING VESSEL
Wellington E. Beckman, Sr., 8920 ½ Dexter, Tampa, Fla. 33604
Filed Jan. 6, 1989, Ser. No. 294,503
Term of patent 14 years
U.S. Cl. D10—46.2



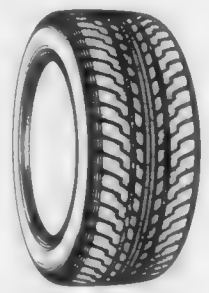
316,530
BOW CLASP
Leyman E. Clifton, 1038 Northcliffe Dr., NW., Atlanta, Ga. 30318
Filed Jan. 4, 1988, Ser. No. 140,597
Term of patent 14 years
U.S. Cl. D11—202



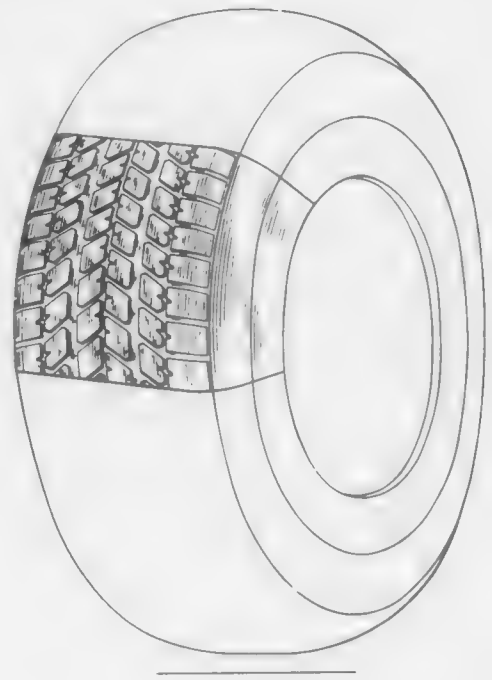
316,531
VAN
Vahe Karapetian, 4801 Los Feliz Blvd., Los Angeles, Calif. 90027
Filed Feb. 16, 1988, Ser. No. 156,083
Term of patent 14 years
U.S. Cl. D12—99



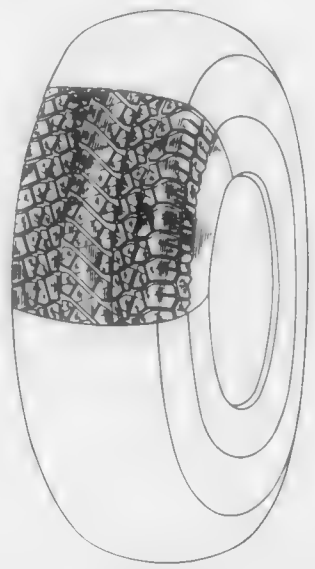
316,532
AUTOMOBILE TIRE
Toru Tsuda, and Shinichi Watanabe, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Feb. 9, 1989, Ser. No. 308,691
Claims priority, application Japan, Sep. 30, 1988, 63-38192
Term of patent 14 years
U.S. Cl. D12—147



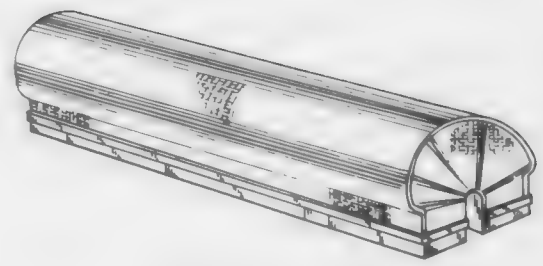
316,533
TIRE
Laurie W. Killian, Cuyahoga Falls, Ohio, assignor to The Uniroyal Goodrich Tire Company, Akron, Ohio
Filed Apr. 17, 1989, Ser. No. 339,426
Term of patent 14 years
U.S. Cl. D12—147



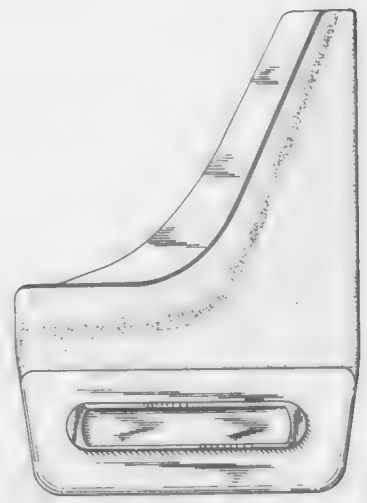
316,534
TIRE
John A. Hutz, Orchard Lake, Mich., assignor to The Uniroyal Goodrich Tire Company, Akron, Ohio
Filed Apr. 17, 1989, Ser. No. 339,4[illegible]
Term of patent 14 years
U.S. Cl. D12—147



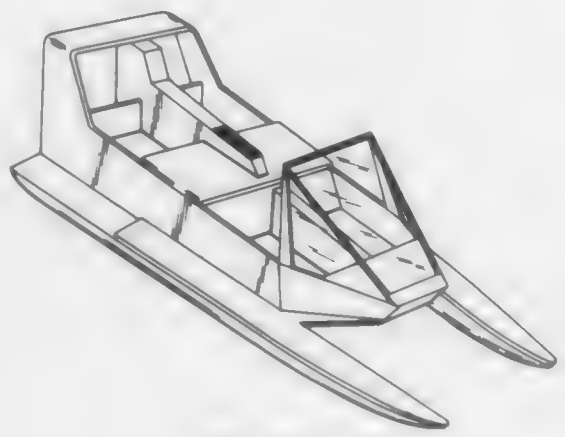
316,535
WINDOW PAD
George M. Fenn, 4630 Mission Blvd., San Diego, Calif. 92109
Filed Jun. 27, 1988, Ser. No. 213,972
Term of patent 14 years
U.S. Cl. D12—155



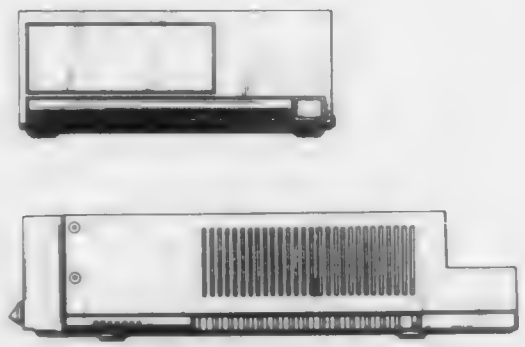
316,536
COMBINED AUTOMOBILE SPLASH GUARD AND DISPLAY UNIT
Pierre Charet, and Duke Kraai, both of Miami, Fla., assignors to Rally Manufacturing, Inc., Miami, Fla.
Filed Feb. 3, 1988, Ser. No. 151,793
The portion of the term of this patent subsequent to Jan. 2, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—185



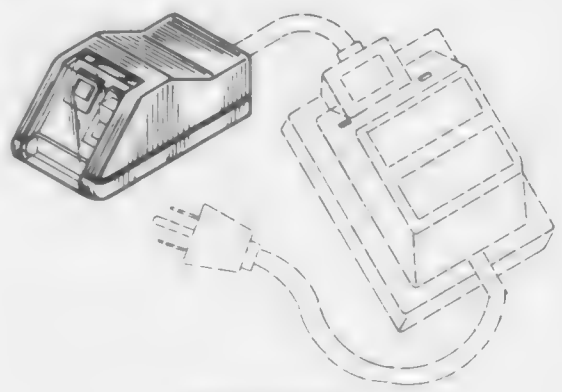
316,537
POWER BOAT
Adam E. Prystupa, 3200 W. Lawn Ave., Tampa, Fla. 33611
Filed May 8, 1989, Ser. No. 348,649
Term of patent 14 years
U.S. Cl. D12—300



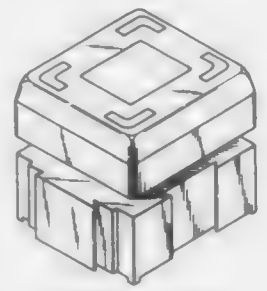
316,538
AUDIO POWER SUPPLY
Farad Azima, Stonehill, England, assignor to Mission International Limited, Cambridgeshire, England
Filed Apr. 26, 1988, Ser. No. 186,200
Claims priority, application United Kingdom, Nov. 13, 1987, 1046324
Term of patent 14 years
U.S. Cl. D13—110



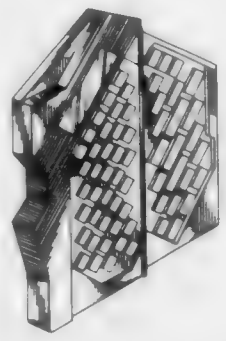
316,539
ELECTRICAL SWITCH FOR A SURGE PROTECTOR
Thomas W. Judd, and Edward L. Hames, both of Peterborough, N.H., assignors to Curtis Manufacturing Company, Inc., Jaffrey, N.H.
Filed Jan. 6, 1989, Ser. No. 294,496
Term of patent 14 years
U.S. Cl. D13—158



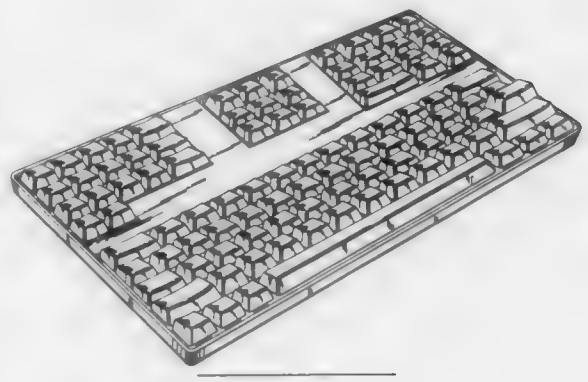
316,540
PUSH BUTTON SWITCH
Kenichi Hirose, Tokyo, Japan, assignor to Nihon Kaiheiki Kogyu Kabushiki Kaisha, Japan
Filed Mar. 31, 1989, Ser. No. 330,884
Claims priority, application Japan, Dec. 21, 1988, 63-49758
Term of patent 14 years
U.S. Cl. D13—171



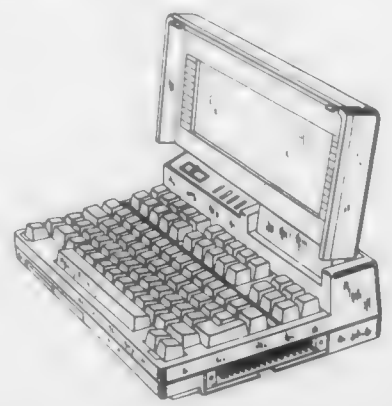
316,541
HAND-HELD DATA ENTRY TERMINAL
Leslie W. Roberts, Tucson, Ariz., assignor to Impetus, Inc., Tucson, Ariz.
Filed Feb. 6, 1989, Ser. No. 274,040
Term of patent 14 years
U.S. Cl. D14—100



316,542
COMPUTER KEYBOARD
James H. Vesley, Yorktown, Va., assignor to nView Corporation, Newport News, Va.
Filed Jun. 5, 1989, Ser. No. 361,120
Term of patent 14 years
U.S. Cl. D14—100



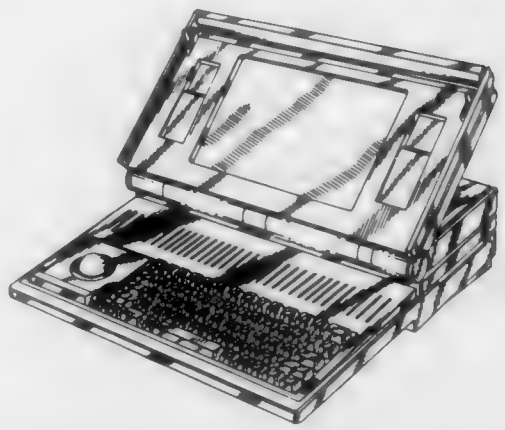
316,543
PORTABLE COMPUTER
Thomas R. Grimm, Troy; LaVaughn F. Watts, Jr., and Hermon L. Pope, Jr., both of Temple, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed May 31, 1988, Ser. No. 200,498
Term of patent 14 years
U.S. Cl. D14—106



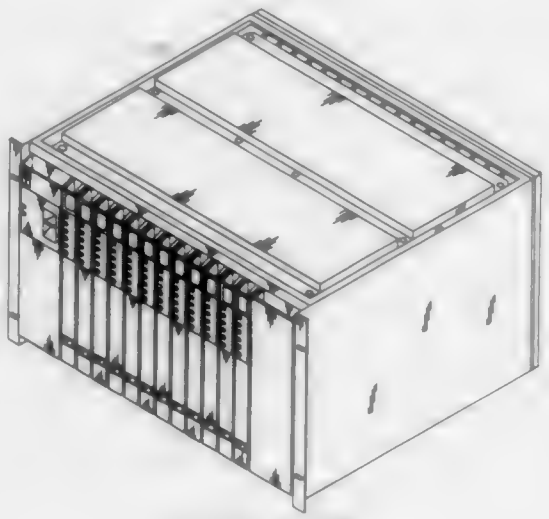
316,544
PORTABLE COMPUTER OR SIMILAR ARTICLE
Hartmut H. Esslinger, Los Gatos; Eric I. Gruenberg, Soquel, and James R. Stewart, San Jose, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Jan. 23, 1989, Ser. No. 299,718
The portion of the term of this patent subsequent to Apr. 30, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—106



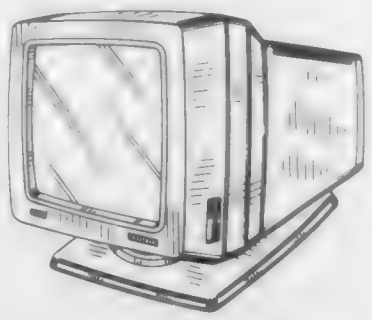
316,545
PORTABLE COMPUTER OR SIMILAR ARTICLE
Hartmut H. Esslinger, Los Gatos; Eric I. Gruenberg, Soquel, and James R. Stewart, San Jose, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Jan. 23, 1989, Ser. No. 299,720
The portion of the term of this patent subsequent to Apr. 30, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—106



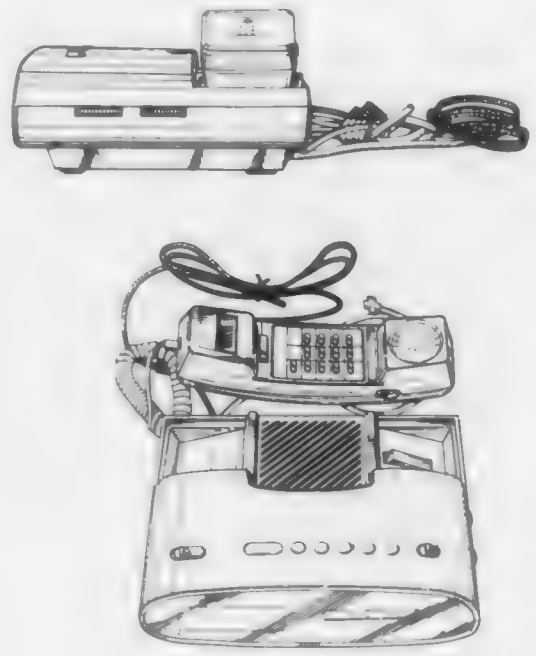
316,546
RACK OF MODEMS
Gilbert Pedinielli, Nice, and Daniel Riebelet, St. Barnabe, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 10, 1989, Ser. No. 322,818
Claims priority, application France, Sep. 13, 1988, 88 5[illegible]9
Term of patent 14 years
U.S. Cl. D14—107



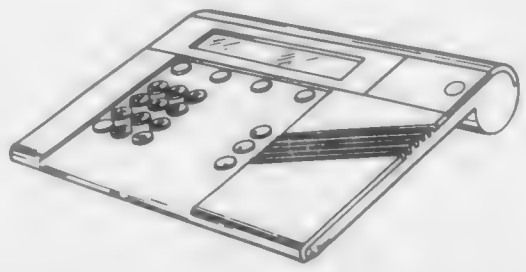
316,547
VIDEO DISPLAY MONITOR
Robert Faranda, Acton, Mass.; Hirotomi Teranishi, Monterey, Calif., and Bernard Maurer, Melrose, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Apr. 23, 1987, Ser. No. 67,081
The portion of the term of this patent subsequent to Feb. 12, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—113



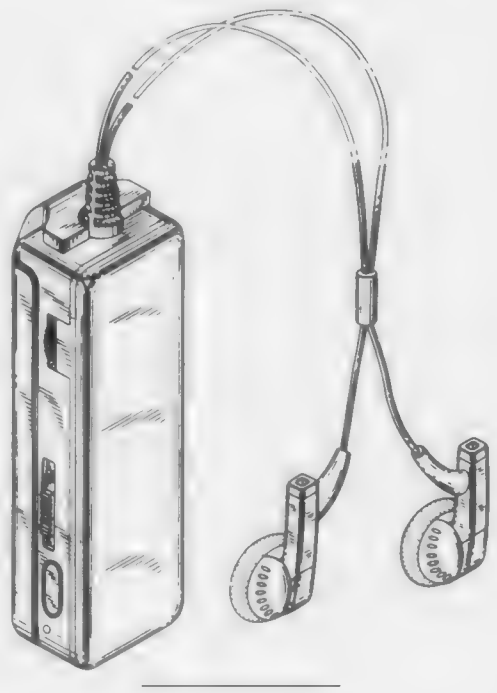
316,548
COMBINED TELEPHONE, DIGITAL CLOCK AND RADIO
Wai C. Yeung, Chai Wan, Hong Kong, assignor to Goly Industrial Company Limited, Hong Kong
Filed Jul. 17, 1990, Ser. No. 553,265
Claims priority, application United Kingdom, Jan. 18, 1990, 2004096
Term of patent 14 years
U.S. Cl. D14—144



316,549
KEYBOARD FOR STAFF LOCATOR SYSTEMS
Jan E. H. Hampf, Särö , Sweden, assignor to Tateco AB, Gothenburg, Sweden
Filed Apr. 19, 1988, Ser. No. 183,181
Claims priority, application Sweden, Oct. 26, 1987, 872424
Term of patent 14 years
U.S. Cl. D14—159



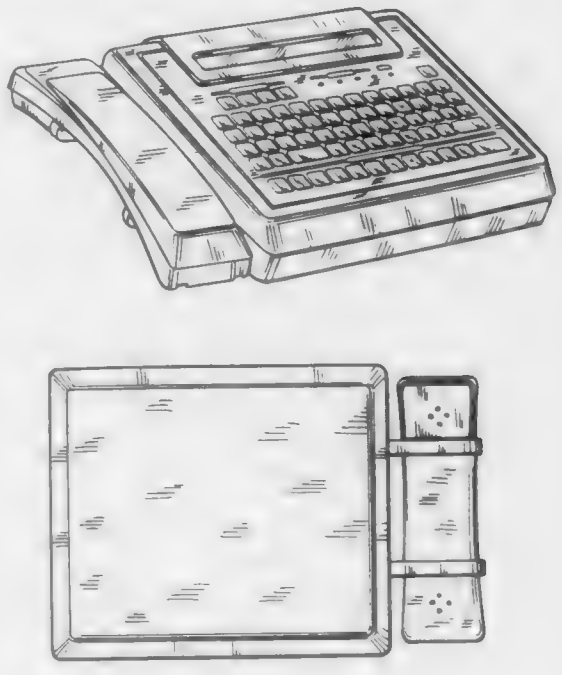
316,550
COMBINED EARPHONE AND RECEIVER
Takashi Sogabe, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Nov. 7, 1988, Ser. No. 267,784
Claims priority, application Japan, May 23, 1988, 63-20206
Term of patent 14 years
U.S. Cl. D14—168



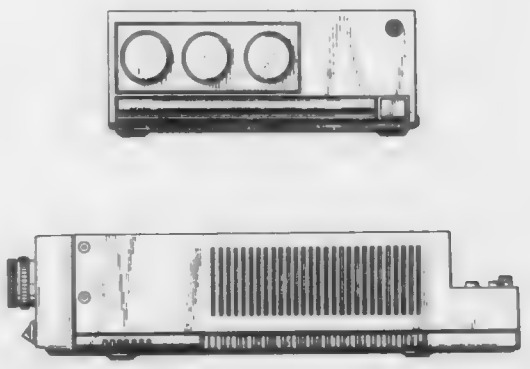
316,551
HEADPHONE
Kazuo Ichikawa, Kokubunji, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Dec. 29, 1988, Ser. No. 291,857
Claims priority, application Japan, Jun. 29, 1988, 63-25960
Term of patent 14 years
U.S. Cl. D14—205



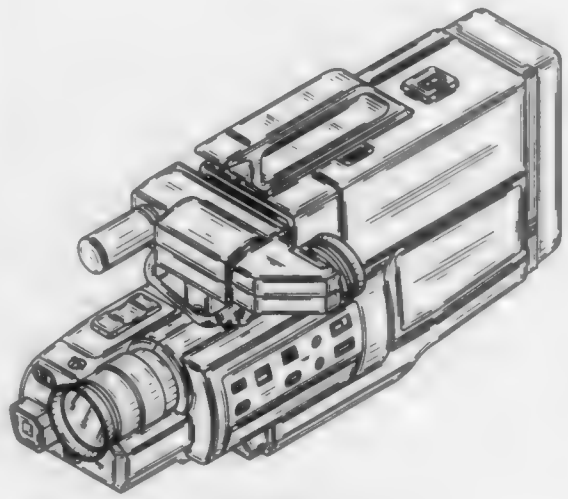
316,552
TELEPHONE EXCHANGER
Orlando Miozzo, Via A. Ferrero, 9, 35133 Padova, Italy
Filed Jan. 8, 1990, Ser. No. 461,780
Claims priority, application Int'l Pat. Institute, Aug. 7, 1989, DM/014303
Term of patent 14 years
U.S. Cl. D14—241



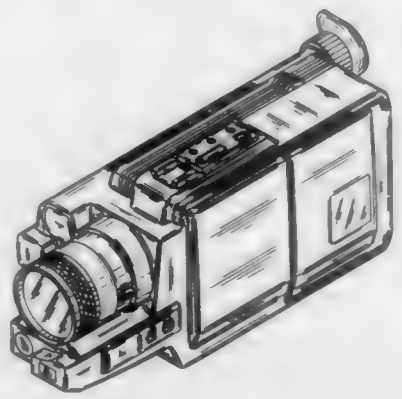
316,553
AUDIO AMPLIFIER
Farad Azima, Huntingdon, England, assignor to Mission International Limited, Cambridgeshire, England
Filed Apr. 26, 1988, Ser. No. 186,196
Claims priority, application United Kingdom, Nov. 13, 1987, 1046321
Term of patent 14 years
U.S. Cl. D14—265



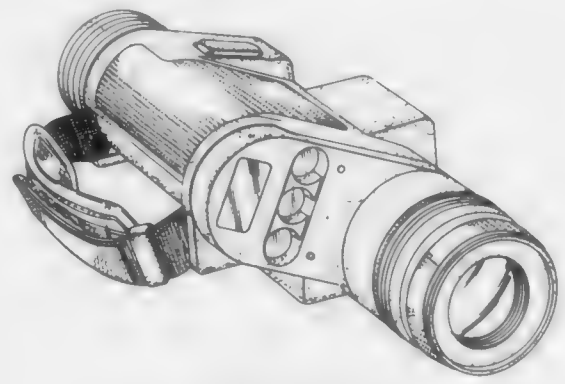
316,554
COMBINED VIDEO CAMERA AND VIDEO TAPE RECORDER
Hiroshi Ooi, and Sho Okamura, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed May 23, 1988, Ser. No. 197,806
Claims priority, application Japan, Nov. 30, 1987, 62-49292
Term of patent 14 years
U.S. Cl. D16—202



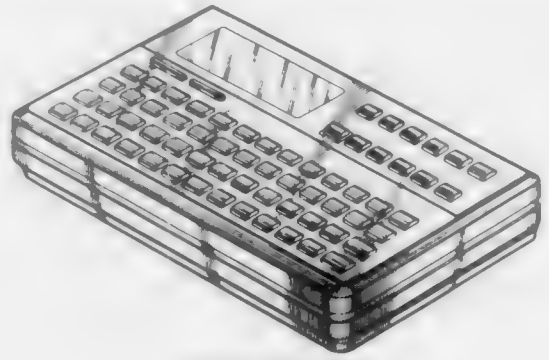
316,555
COMBINED VIDEO CAMERA AND VIDEO TAPE RECORDER
Hiroshi Ooi, and Atsuko Hattori, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jun. 8, 1988, Ser. No. 204,182
Claims priority, application Japan, Dec. 11, 1987, 62-50843
Term of patent 14 years
U.S. Cl. D16—202



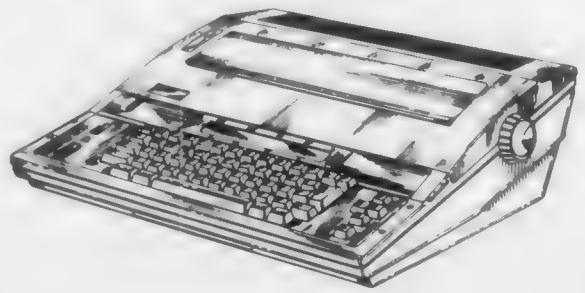
316,556
CAMERA WITH WRIST STRAP
Alan G. Reddig, Rochester, N.Y.; James S. Couch, Powell, and Robert W. Mervar, Columbus, both of Ohio, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 16, 1988, Ser. No. 169,186
Term of patent 14 years
U.S. Cl. D16—200



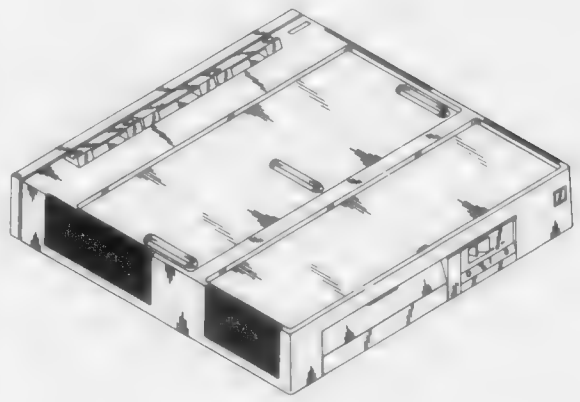
316,557
PORTABLE WORD PROCESSOR
Yukinori Ido, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Nov. 25, 1988, Ser. No. 276,465
Claims priority, application Japan, Jun. 9, 1988, 63-22841
Term of patent 14 years
U.S. Cl. D18—1



316,558
TYPEWRITER
Paul M. Pierce, Syracuse, N.Y., assignor to Smith Corona Corporation, Cortland, N.Y.
Filed Jan. 6, 1989, Ser. No. 294,544
Term of patent 14 years
U.S. Cl. D18—1

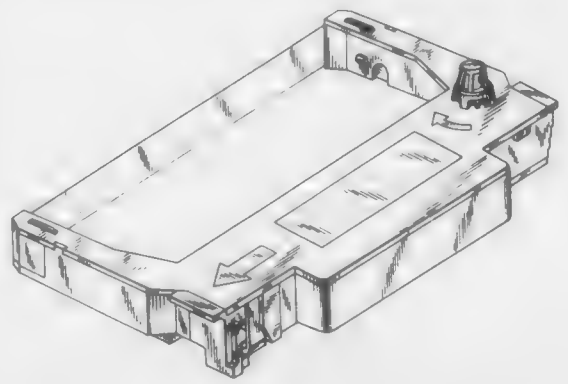


316,559
CONTROL UNIT FOR ELECTRONIC CASH REGISTER OR THE LIKE
Timothy D. Wetzel, Durham, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 3, 1989, Ser. No. 292,961
The portion of the term of this patent subsequent to Feb. 16, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—4

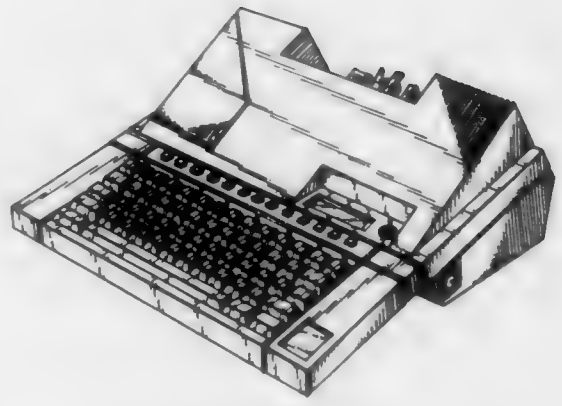


316,560
Patent Not Issued For This Number

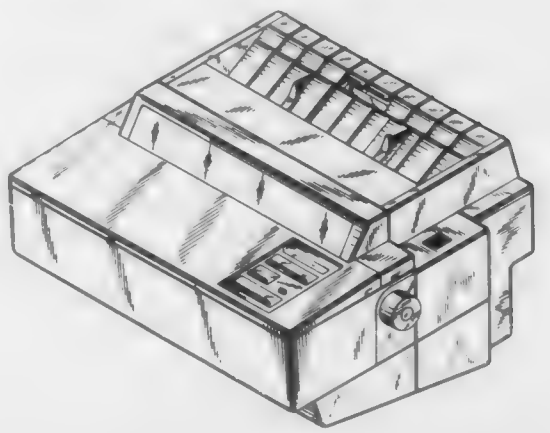
316,561
INK RIBBON CARTRIDGE
Akira Koyabu, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan
Filed Oct. 5, 1989, Ser. No. 418,619
Claims priority, application Japan, Apr. 17, 1989, 1-14216
Term of patent 14 years
U.S. Cl. D18—12



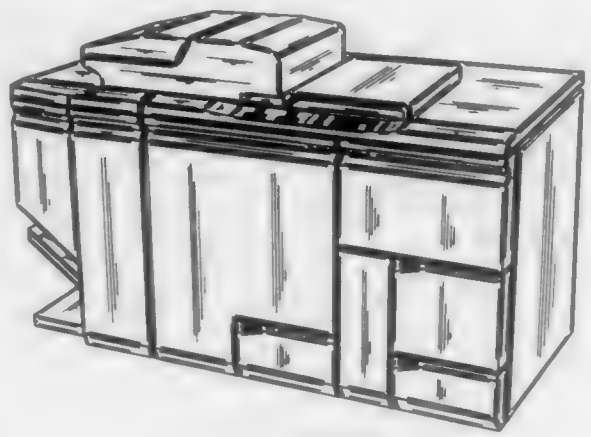
316,562
TAPE PRINTING MACHINE
Nancy Lavander, Lauderdale, Minn., assignor to Varitronic Systems, Inc., Minneapolis, Minn.
Filed Mar. 4, 1988, Ser. No. 164,113
Term of patent 14 years
U.S. Cl. D18—13



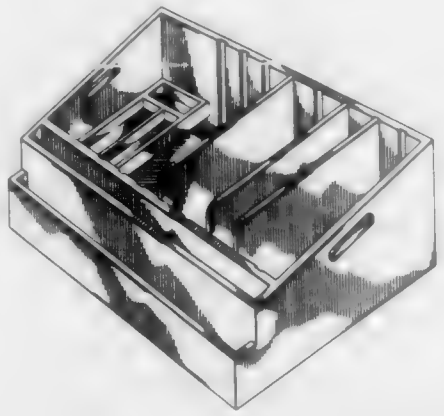
316,563
PRINTER
Friedrich F. Frenkler, Tokyo; Hitoshi Igarashi, and Kaneko Isao, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Jun. 14, 1988, Ser. No. 206,630
Claims priority, application Japan, Jan. 25, 1988, 63-2554
Term of patent 14 years
U.S. Cl. D18—13



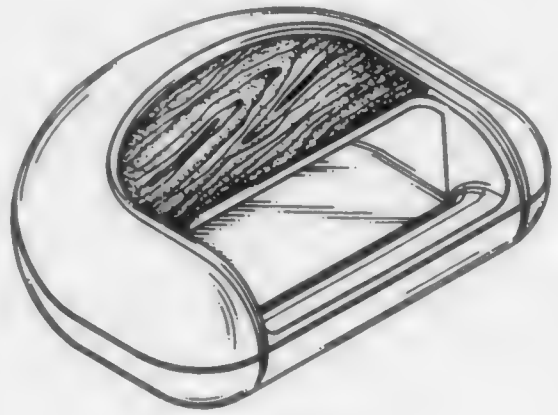
316,564
COPYING MACHINE
Mikio Kosako; Atsuko Hattori, and Yasuhiko Mano, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jul. 13, 1989, Ser. No. 380,074
Term of patent 14 years
U.S. Cl. D18—39



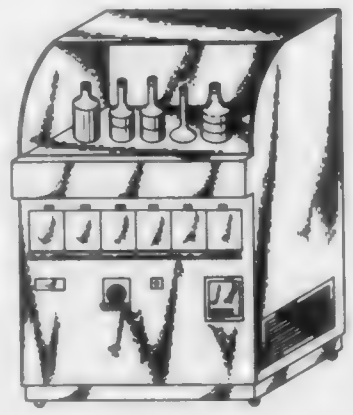
316,565
COMBINED PORTABLE HOLDER FOR FILE AND ASSORTED DESK ARTICLES
Z. Lee Rust, 8530 N. 22nd Ave., No. 1121, Phoenix, Ariz. 85021
Filed Jun. 8, 1988, Ser. No. 204,557
Term of patent 14 years
U.S. Cl. D19—75



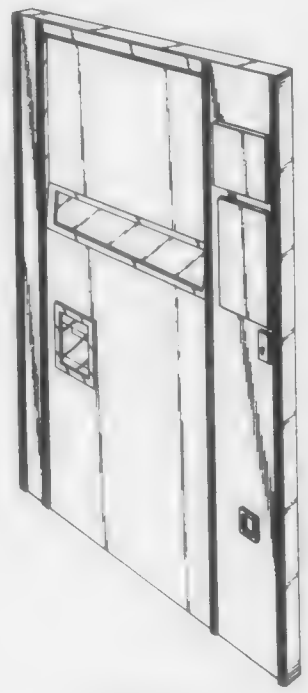
316,566
PAPER CLIP CONTAINER
Jam Sun, No. 39, Lane 106, Sec. 7, Yen-Ping N. Rd., Taipei, Taiwan
Filed Jul. 14, 1988, Ser. No. 218,610
Term of patent 14 years
U.S. Cl. D19—75



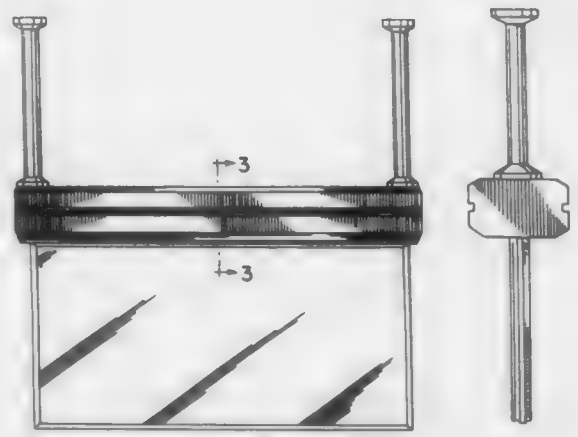
316,567
MIXED DRINK MACHINE
James Beckles, 3614 Dryden Ct., Virginia Beach, Va. 23462
Filed Feb. 16, 1988, Ser. No. 155,748
Term of patent 14 years
U.S. Cl. D20—5



316,568
BEVERAGE VENDING MACHINE FRONT PANEL
Walter L. Koch, Ormond Beach, Fla., assignor to Gross-Given Manufacturing Company, St. Paul, Minn.
Filed May 9, 1988, Ser. No. 192,306
Term of patent 14 years
U.S. Cl. D20—8



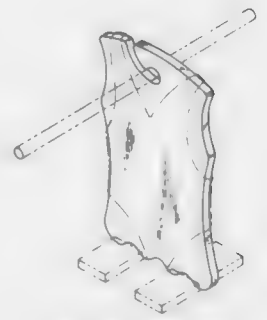
316,569
DISPLAY SIGN
William E. Leggate, Richmond, and Michael G. Sirois, Ottawa, both of Canada, assignors to Popmedia Ltd., Ottawa, Canada
Filed Nov. 4, 1988, Ser. No. 267,004
Claims priority, application Canada, May 6, 1988, 06-05-88-2
Term of patent 14 years
U.S. Cl. D20—10



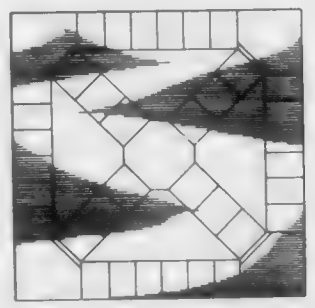
316,570
IDENTIFICATION TAG HOLDER
Jerl A. Golden, 3745 Olive Ave., Long Beach, Calif. 90807
Filed Sep. 22, 1988, Ser. No. 247,599
Term of patent 14 years
U.S. Cl. D20—22



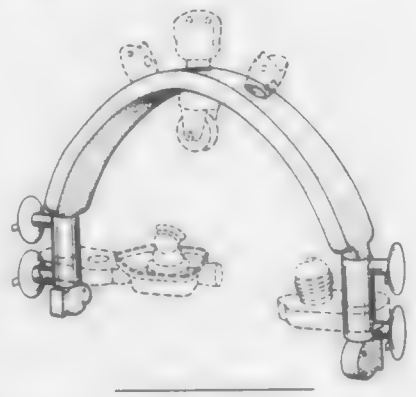
316,571
DISPLAY FORM
D. J. Romero-Comas, and Maria Soledad-Duran, both of Edificio Fuenteclara (Soto-Moraleja), Acobendas (Madrid), Spain
Filed Aug. 16, 1988, Ser. No. 232,876
Term of patent 14 years
U.S. Cl. D20—29



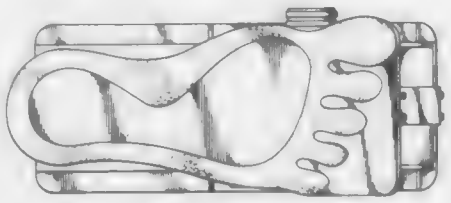
316,572
GAME BOARD
Richard Aube, Longueuil, Canada, assignor to Les Entreprises Aube et Khacho Inc., Sherbrooke, Canada
Filed Mar. 23, 1988, Ser. No. 171,933
Claims priority, application Canada, Jan. 22, 1988, 22-01-88-1
Term of patent 14 years
U.S. Cl. D21—34

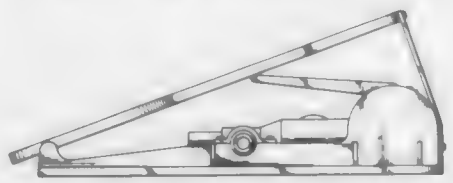


316,573
BATH ARCH
Maryann Finiw, Brooklyn, and David M. Williams, New York, both of N.Y., assignors to The Child Growth and Development Corporation, New York, N.Y.
Filed Mar. 22, 1988, Ser. No. 171,616
Term of patent 14 years
U.S. Cl. D21—59

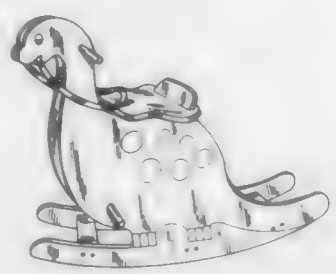


316,574
WATER BALL GAME CONTROL VALVE
Mark W. Fuller, Studio City; Alan S. Robinson, El Monte, and John Werner, Sunland, all of Calif., assignors to Wet Enterprises, Inc., Burbank, Calif.
Filed Apr. 11, 1988, Ser. No. 180,014
Term of patent 14 years
U.S. Cl. D21—59

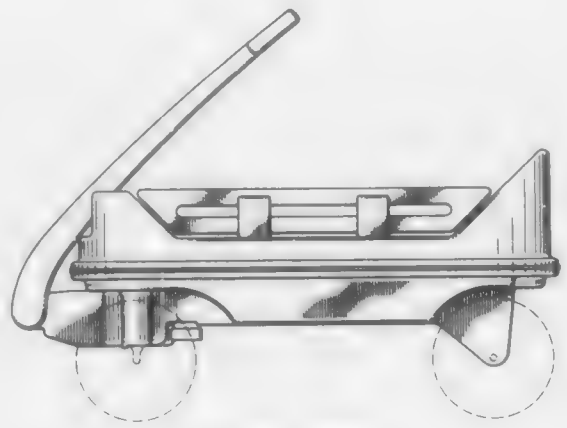




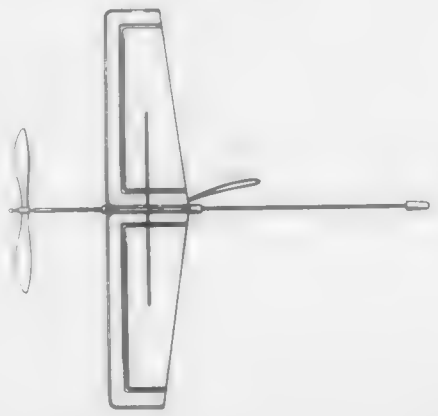
316,575
SIMULATIVE ROCKING TOY
Nancy Warren, Greensboro, N.C., assignor to Rosalco, Inc., Louisville, Ky.
Filed Oct. 2, 1989, Ser. No. 416,265
Term of patent 14 years
U.S. Cl. D21—68



316,576
WAGON
Maarten W. VanHuystee, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Aug. 17, 1989, Ser. No. 395,095
Term of patent 14 years
U.S. Cl. D21—71



316,577
MODEL KITE OR THE LIKE
John J. Kovats, Fernandina Beach, Fla., assignor to Space Adventures, Incorporated, Jacksonville, Fla.
Filed May 9, 1989, Ser. No. 349,504
Term of patent 14 years
U.S. Cl. D21—88



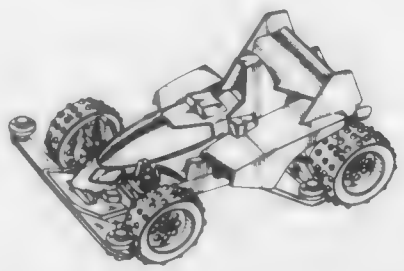
316,578
TOY KITE
John J. Kovats, Fernandina Beach, Fla., assignor to Space Adventures, Incorporated, Jacksonville, Fla.
Division of Ser. No. 289,782, Dec. 27, 1988. This application Jul. 12, 1990, Ser. No. 551,754
Term of patent 14 years
U.S. Cl. D21—88



316,579
SELF REVERSING TOP
Jimmie M. Dally, 11875 Freeman Ave., Hawthorne, Calif. 90250
Filed Apr. 18, 1988, Ser. No. 182,758
Term of patent 14 years
U.S. Cl. D21—95



316,580
TOY RACING CAR
Hiroyuki Yoshino, Shizuoka, Japan, assignor to Kabushiki Kaisha Tamiya Mokei, Japan
Filed Aug. 15, 1989, Ser. No. 393,770
Term of patent 14 years
U.S. Cl. D21—137



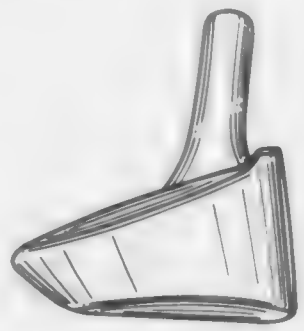
316,581
FLOATING TOY DUCK
Martin M. Trossman, Orchard Park, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Aug. 15, 1988, Ser. No. 232,614
Term of patent 14 years
U.S. Cl. D21—160



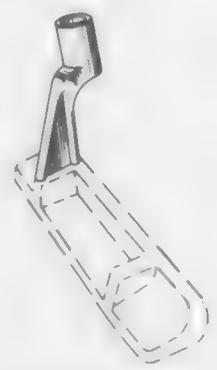
316,582
MOUSE FIGURE
Clara W. Preston, 7658 E. Rte. 29, Mechanicsburg, Ohio 43044
Filed Oct. 24, 1988, Ser. No. 261,648
Term of patent 14 years
U.S. Cl. D21—188



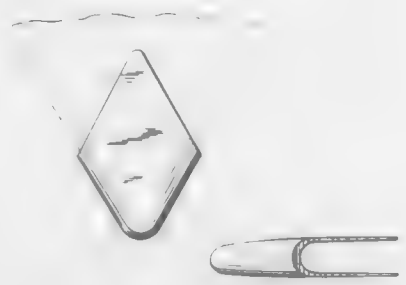
316,583
GOLF CLUB HEAD
Steven J. Mahaffey, Hampden, Mass., and Gary H. Houlston, Salem, S.C., assignors to Spalding & Evenflo Companies, Inc., Tampa, Fla.
Filed Jul. 21, 1988, Ser. No. 222,[illegible]
Term of patent 14 years
U.S. Cl. D21—214



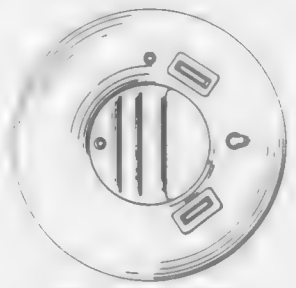
316,[illegible]
HOSEL FOR A GOLF CLUB HEAD
Anthony J. Antonious, 205 E. Joppa Rd., Towson, Md. 21204
Filed Apr. 17, 1986, Ser. No. 856,101
Term of patent 14 years
U.S. Cl. D21—221



316,585
WATER SPORT BOARD SAFETY TIP
David Skedeleski, and Eric Arakawa, both of Aiea, Hi., assignors to Surfco of Hawaii, Aiea, Hi.
Filed Jul. 18, 1989, Ser. No. 381,169
Term of patent 14 years
U.S. Cl. D21—230



316,586
FLOAT WITH WATER SQUIRTER
Leon H. Tager, San Carlos, and William R. Storey, Sunnyvale, both of Calif., assignors to Poolmaster, Inc., Menlo Park, Calif.
Filed Sep. 22, 1989, Ser. No. 411,071
Term of patent 14 years
U.S. Cl. D21—237



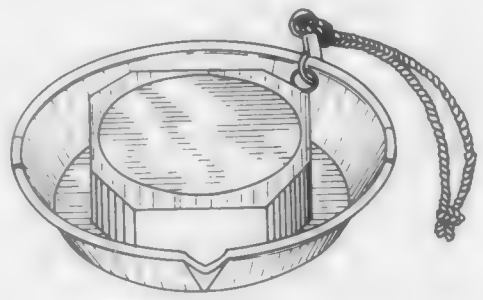
316,587
HANDGUN
Harry W. Sanford, 2171 Highland Oaks Dr., Arcadia, Calif. 91722
Filed Nov. 3, 1987, Ser. No. 116,507
Term of patent 14 years
U.S. Cl. D22—104



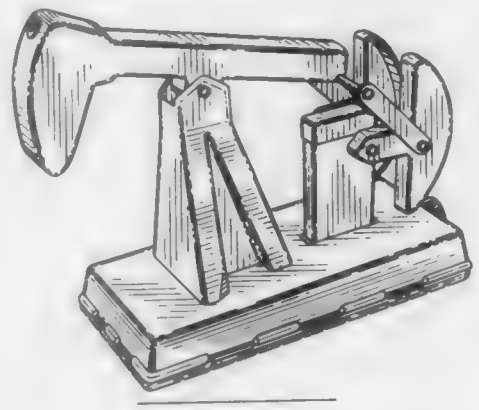
316,588
BOW RISER WITH THUMBHOLE
Dennis N. Highby, Sidney, Nebr., assignor to Cabela's Inc., Sidney, Nebr.
Filed May 5, 1989, Ser. No. 347,795
Term of patent 14 years
U.S. Cl. D22—107



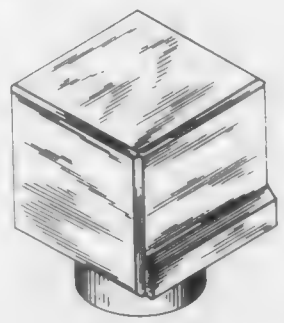
316,589
BAIT PREPARATION CONTAINER
Lester N. Blackiston, 6 N. 18th St., Richmond, Va. 23223
Filed Feb. 23, 1988, Ser. No. 159,182
Term of patent 14 years
U.S. Cl. D22—136



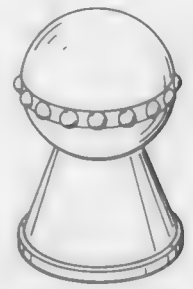
316,590
GARDEN SPRINKLER
LeRoy D. Stucky, 207 Fescue Dr., Inman, Kans. 67546
Filed Sep. 19, 1988, Ser. No. 245,539
Term of patent 14 years
U.S. Cl. D23—215



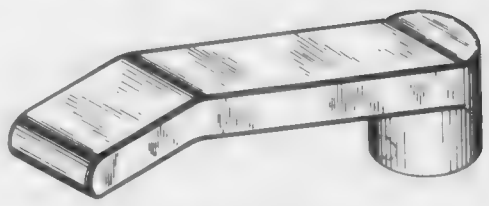
316,591
FAUCET HANDLE OR THE LIKE
Christian Ragonot, Paris, France, assignor to Jacob Delafon, Paris, France
Filed Nov. 30, 1988, Ser. No. 278,313
Claims priority, application France, Sep. 5, 1988, [illegible] 5478
Term of patent 14 years
U.S. Cl. D23—250



316,592
FAUCET HANDLE
Franz W. Jans, Offenbach am Main, Fed. Rep. of Germany, assignor to Jado Bathroom and Hardware Manufacturing Corp., Camarillo, Calif.
Division of Ser. No. 52,957, May 22, 1987, Pat. No. Des. 310,709. This application Mar. 5, 1990, Ser. No. 487,806
Term of patent 14 years
U.S. Cl. D23—250



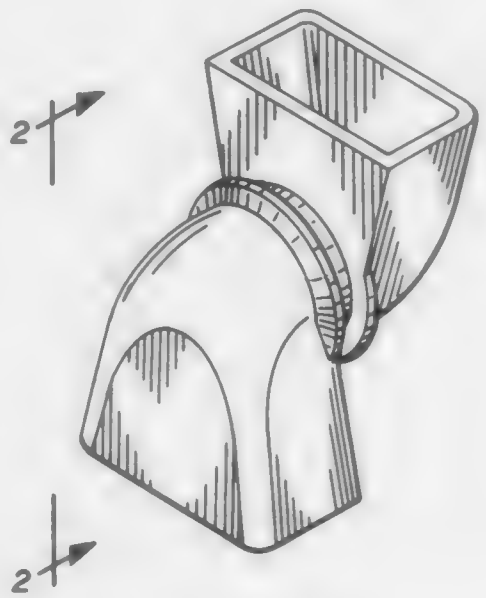
316,593
SPOUT
Herbert V. Kohler, Jr., Kohler; Mary J. Reid, Sheboygan; Bruce M. Sauter, Kohler, and Alan D. Bengtson, Sheboygan, all of Wis., assignors to Kohler Co., Kohler, Wis.
Filed Jan. 12, 1988, Ser. No. 144,442
Term of patent 14 years
U.S. Cl. D23—255



316,594
SHOWER DRAIN HAIR-TRAP
David Y. Yuen, 1825 Paseo Azul, Rowland Heights, Calif. 91748
Filed Nov. 13, 1987, Ser. No. 119,992
Term of patent 14 years
U.S. Cl. D23—261



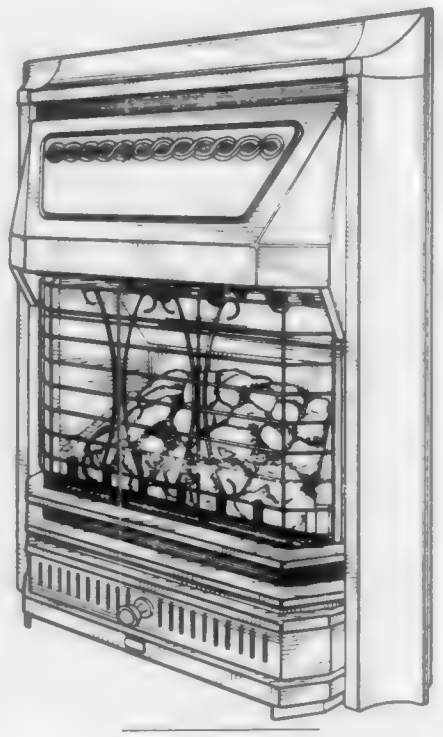
316,595
VENTILATOR FOR VEHICLE BODIES
Charles J. Sauber, 10 N. Sauber Rd., Virgil, Ill. 60182
Division of Ser. No. 337,490, Apr. 13, 1989, Pat. No. 4,909,134.
This application Sep. 26, 1989, Ser. No. 412,877
Term of patent 14 years
U.S. Cl. D23—324



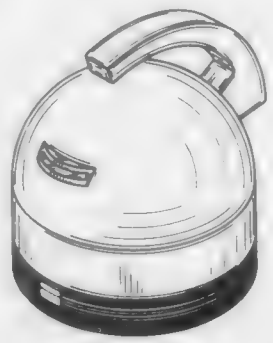
316,596
FAN HEATER
Mitsugu Ooki; Kiminori Yamaguchi, and Shinichi Yokoyama, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Dec. 20, 1989, Ser. No. 455,735
Claims priority, application Japan, Jun. 21, 1989, 1-22910
Term of patent 14 years
U.S. Cl. D23—335



316,597
GAS FIRED HEATER
Martin L. Smith, Birmingham, and Alan Constable, Warwickshire, both of England, assignors to Valor Heating Limited, London, England
Filed Apr. 15, 1988, Ser. No. 182,322
Claims priority, application United Kingdom, Oct. 20, 1987, 1 745 699
Term of patent 14 years
U.S. Cl. D23—342



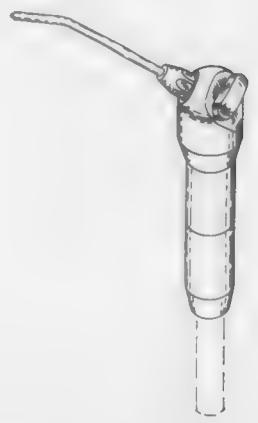
316,598
SUPERSONIC HUMIDIFIER
Shinichi Morooka, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Jan. 3, 1989, Ser. No. 292,726
Claims priority, application Japan, Aug. 3, 1988, 63-31115
Term of patent 14 years
U.S. Cl. D23—356

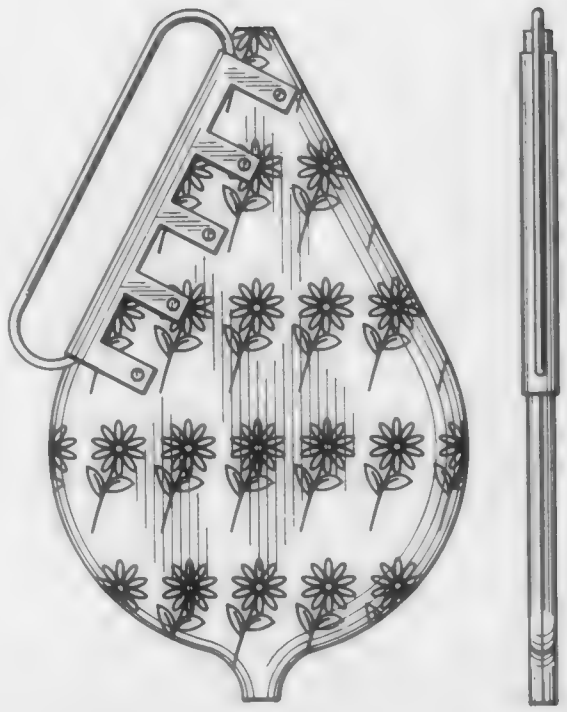


316,599
PORTABLE ELECTRICAL FAN
Jui-Shang Wang, Taipei, Taiwan, assignor to Duracraft Corporation, Sudbury, Mass.
Filed Aug. 9, 1989, Ser. No. 391,325
The portion of the term of this patent subsequent to Feb. 26, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—378

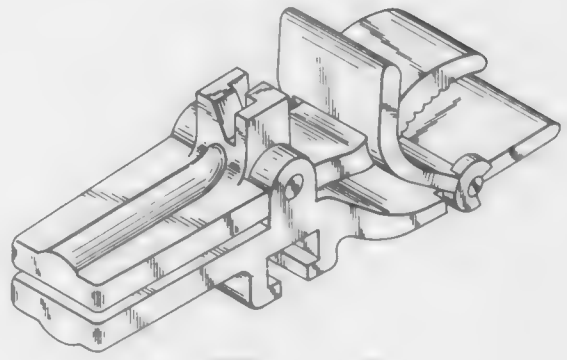


316,600
DENTAL SYRINGE
George K. Austin, Jr., and Pierre LaPlante, both of Newberg, Oreg., assignors to A-Dec, Inc., Newberg, Oreg.
Filed Mar. 2, 1989, Ser. No. 318,801
Term of patent 14 years
U.S. Cl. D24—14



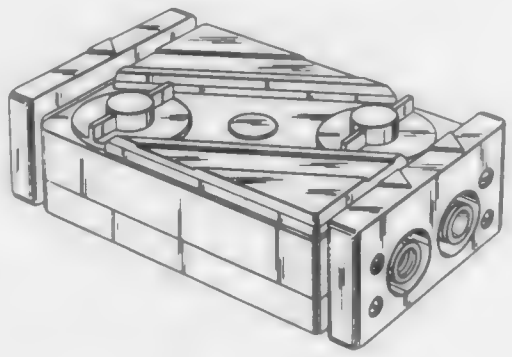


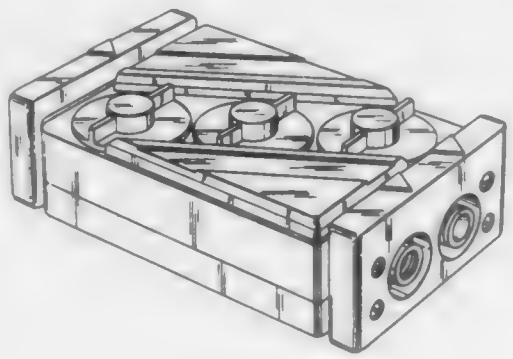
316,601
SURGICAL VASCULAR CLAMP
Daniel Shichman, Trumbull, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.
Continuation-in-part of Ser. No. 65,781, Jun. 24, 1987. This application Dec. 16, 1988, Ser. No. 285,869
Term of patent 14 years
U.S. Cl. D24—27



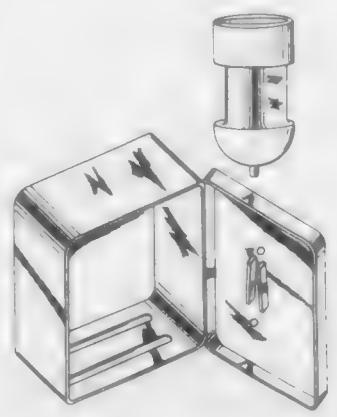
316,602
URINARY BAG COVER
Thelma L. Dungan, and Richard E. Dungan, both of 417 S. Bouziden, Moore, Okla. 73160
Filed Mar. 7, 1988, Ser. No. 164,646
Term of patent 14 years
U.S. Cl. D24—54

316,603
AUTOMATIC VENTILATOR
Thomas F. Fangrow, Jr., Corona, Calif., assignor to Life Support Projects, Inc., Irvine, Calif.
Filed Sep. 9, 1988, Ser. No. 242,473
Term of patent 14 years
U.S. Cl. D24—53





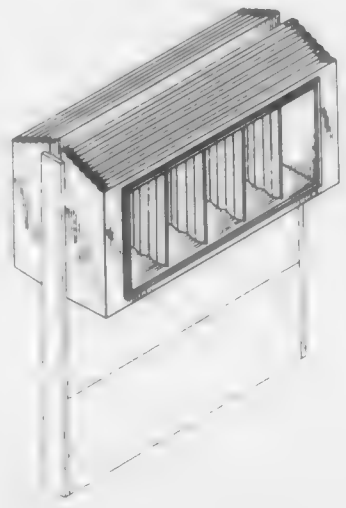
316,604
COMBINED DOUCHE DISPENSER BOTTLE AND STORAGE CABINET
Mary E. Reynolds, P.O. Box 446, Breckenridge, Tex. 7[illegible]24
Filed Sep. 6, 1988, Ser. No. 240,239
Term of patent 14 years
U.S. Cl. D24—59



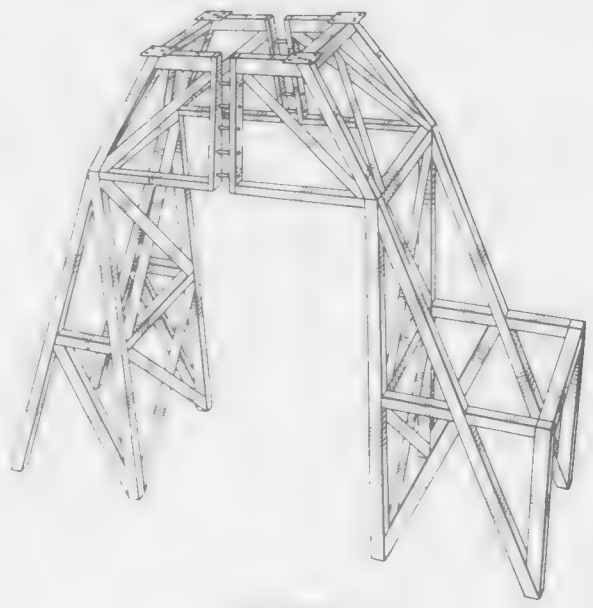
316,605
DECORATIVE GLASS PANEL
Norbert J. Guetle, Jr., Cincinnati, Ohio, and Marlin Greene, Redmond, Wash., assignors to Pease Industries, Inc., Fairfield, Ohio
Filed Jan. 30, 1989, Ser. No. 302,863
Term of patent 14 years
U.S. Cl. D25—103



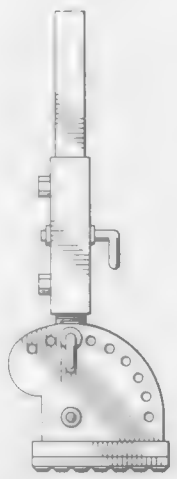
316,606
MAIL WALL TILE
Frank A. Friedman, San Francisco, Calif., assignor to Herman Miller, Inc., Zeeland, Mich.
Filed Feb. 19, 1988, Ser. No. 158,150
Term of patent 14 years
U.S. Cl. D25—138



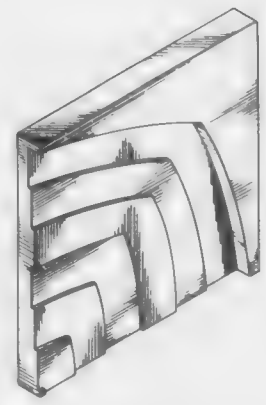
316,607
STEEL CONSTRUCTION SUPPORT
Nils Y. Harde, P.O. Box 22113, S-200 63, Malmo, Sweden
Filed Oct. 13, 1987, Ser. No. 108,039
Claims priority, application Sweden, Apr. 13, 1987, 87-0834
Term of patent 14 years
U.S. Cl. D25—66



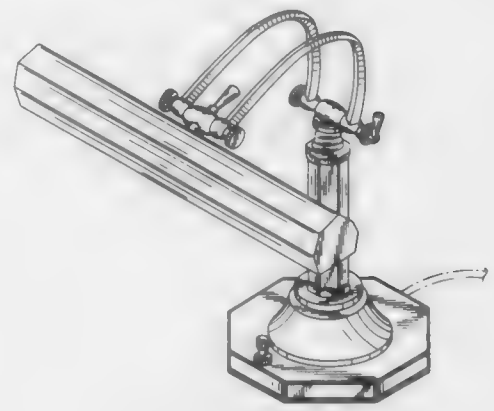
316,608
LADDER LEVELING ATTACHMENT
John E. Wagner, 233 Milbank Ave., Greenwich, Conn. 06830
Filed Jan. 31, 1989, Ser. No. 304,411
Term of patent 14 years
U.S. Cl. D25—68



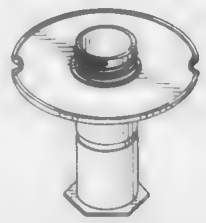
316,609
TILE
Sergio Stocca, Opicina, Italy, assignor to Candusso F.lli s.r.l. - Bilicbora, Monfalcone, Italy
Filed Sep. 7, 1988, Ser. No. 243,101
Term of patent 14 years
U.S. Cl. D25—138



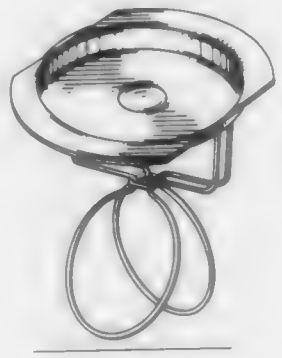
316,610
ADJUSTABLE TABLE LAMP
Craig A. Winn, 1035 Watsoncenter Rd., Carson, Calif. 90745
Filed Jan. 31, 1989, Ser. No. 304,116
Term of patent 14 years
U.S. Cl. D26—65



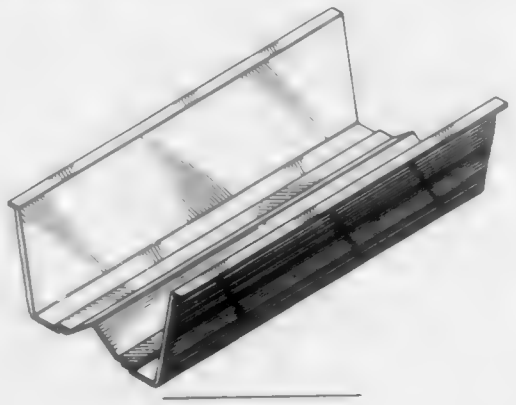
316,611
HANDLE FOR SURGERY LAMP
Charles Spina, Ross, Calif., assignor to MDT Corporation, Torrance, Calif.
Filed Mar. 18, 1988, Ser. No. 170,413
Term of patent 14 years
U.S. Cl. D26—113



316,612
LIGHT BULB ATTACHMENT FOR SUPPORTING SCENTED FRAGRANT OIL OR THE LIKE
Marcia J. Scott, 414½ Truman, NE., Albuquerque, N. Mex. 87108
Filed May 27, 1988, Ser. No. 199,578
Term of patent 14 years
U.S. Cl. D26—113



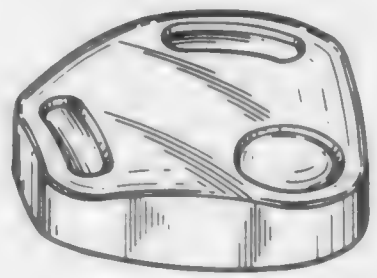
316,613
LIGHT FIXTURE LENS
Frank Stein, 1600 Parker Ave., Fort Lee, N.J. 07024
Filed Apr. 5, 1988, Ser. No. 177,777
Term of patent 14 years
U.S. Cl. D26—122



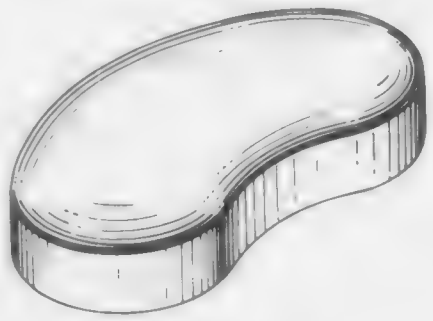
316,614
LIGHTER OR THE LIKE
Kaname Ichikawa, Tokyo, Japan, assignor to Modern Royal Co., Ltd., Tokyo, Japan
Filed Feb. 2, 1990, Ser. No. 473,706
Claims priority, application Japan, Dec. 20, 1989, 1-46135
Term of patent 14 years
U.S. Cl. D27—154



316,615
TABLET
Peter J. Rue, Little Hallingbury; Glenda Spray, Long Eaton, and Fiona R. Bird, Welwyn, all of England, assignors to Glaxo Group Limited, London, England
Filed Oct. 19, 1988, Ser. No. 259,602
Claims priority, application United Kingdom, Apr. 26, 1988, 1050278; Apr. 26, 1988, 1050280
Term of patent 14 years
U.S. Cl. D28—2



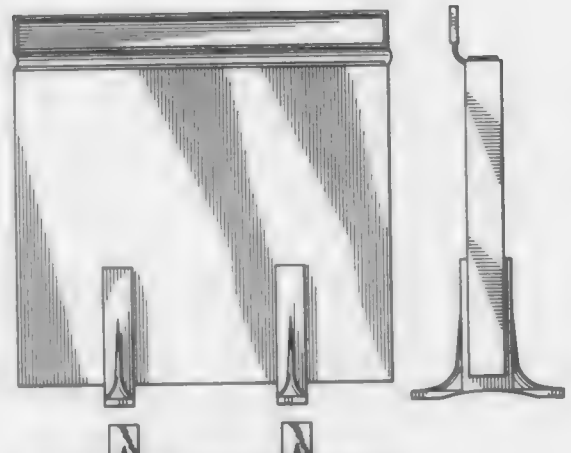
316,616
TABLET
Stewart T. Leslie, and Eric G. Nicol, both of Cambridge, United Kingdom, assignors to Euroceltique, S.A., Luxembourg
Filed Dec. 23, 1985, Ser. No. 812,390
Claims priority, application United Kingdom, Jun. 22, 1985, 1027486
Term of patent 14 years
U.S. Cl. D28—2



316,617
COMBINED TOOTHPICK AND FLOSSER
Ying S. Cheung, Flat A, 3rd Floor, Ashley Mansion, 10-14 Ashley Road, Tsim Sha Tsui, Kowloon, Hong Kong
Filed Mar. 29, 1990, Ser. No. 501,172
Claims priority, application United Kingdom, Nov. 10, 1989, 2002401
Term of patent 14 years
U.S. Cl. D28—64



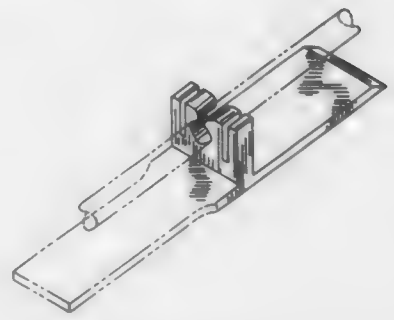
316,618
GRILL CLEANING DEVICE
Margaret A. Lullie, and Anthony J. Lullie, both of 871 N.W. 203 St., Miami, Fla. 33169
Filed Jun. 22, 1988, Ser. No. 209,789
Term of patent 14 years
U.S. Cl. D32—35



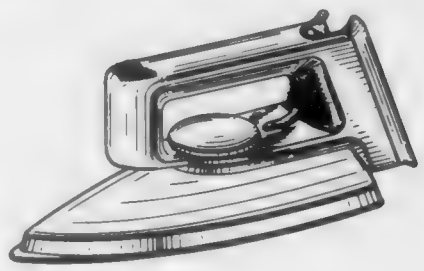
316,619
POOL CLEANING TOOL
Charles P. Richardson, and Linda M. Richardson, both of 1201 Vassor Cir., Plano, Tex. 75075
Filed Aug. 12, 1988, Ser. No. 231,245
Term of patent 14 years
U.S. Cl. D32—35



316,620
BOOT SCRAPER
Richard F. Magor, 3455 Grand Valley Canal Rd., Clifton, Colo. 81520
Filed Feb. 28, 1989, Ser. No. 316,676
Term of patent 14 years
U.S. Cl. D32—47



316,621
ELECTRIC IRON
Gerrit-Jan Van Surksum, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 22, 1988, Ser. No. 159,023
Claims priority, application Benelux, Aug. 28, 1987, 62467-02
Term of patent 14 years
U.S. Cl. D32—70



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF APRIL, 1991

NOTE —Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Chance Company: *See—*
Hamilton, Daniel; Hoyt, Robert M.; Halferty, Patricia J.; and Odom, J. Thomas, 5,011,336, Cl. 405-230.000.

A.C. Innovations, Inc.: *See—*
Levi, Avraham Y.; and Quarberg, Craig D., 5,011,319, Cl. 403-109.000.

A. Menarini Industrie Farmaceutiche Riunite: *See—*
Meli, Alberto; Volterra, Giovanna; Giannotti, Danilo; and Pestellini, Vittorio, 5,011,833, Cl. 511-211.000.

A.P. Green Industries, Inc.: *See—*
Hunter, Orville, Jr.; Hill, James L.; and Potts, David E., 5,011,802, Cl. 501-100.000.

A.R.T. of Asheboro, Ltd.: *See—*
Hayes, Franklin A.; and Sexton, Harold E., 5,011,103, Cl. 248-99.000.

Aalderink, Friedrich, to Eno Electronic GmbH. Arrangement for the generation of a yarn having fancy twists arranged and/or formed at random. 5,010,721, Cl. 57-11.000.

AB Tetra Pak: *See—*
Traegaardh, Paul, 5,011,467, Cl. 493-309.000.

ABB Power T&D Company, Inc.: *See—*
Harrold, Ronald T., 5,012,195, Cl. 324-553.000.

ABB Stromberg Teollisuus Oy: *See—*
Savonjousi, Aslak, 5,011,088, Cl. 241-21.000.
Savonjousi, Aslak, 5,011,090, Cl. 241-21.000.

Abel, Don E. Garden hose concealing arrangement including independently usable lid. 5,011,034, Cl. 220-23.860.

Abel, Thomas; and Hirschfeld, Klaus, to Leopold Kostal GmbH & Co. KG, Firma. Control device for use in an electrical switch. 5,012,056, Cl. 200-519.000.

Abolins, Visvaldis; Betts, Joseph E.; Holub, Fred F.; and Lee, Gim F., Jr., to General Electric Co. Crosslinkable flame retardant composition of polyphenylene ether and elastomers. 5,011,736, Cl. 428-407.000.

Abram, David A. S.; and Wishart, Bruce W., to Empteezy Limited. Self-emptying container. 5,011,360, Cl. 414-424.000.

Abramovici, Rudolf; and Hida, George T., to Benchmrk Structural Ceramics Corporation. Process for making molybdenum disilicide or molybdenum disilicide/alumina compositions. 5,011,800, Cl. 501-96.000.

Abrevaya, Hayim; and Imai, Tamotsu, to UOP. Dual profile surface-impregnated dehydrogenation catalyst and process. 5,012,027, Cl. 585-443.000.

AC Greiff Ytbehandling AB: *See—*
Loof, Ingemar, 5,011,085, Cl. 239-690.000.

Accurate Box Company, Inc.: *See—*
Plunkett, Robert L., 5,011,070, Cl. 229-109.000.

Ace Medical Inc.: *See—*
Rambo, Robert D.; and Yorke, John A., 5,010,902, Cl. 128-888.000.

Ackley, Robert E., to Span-America Medical Systems, Inc. Multilayer supplemental support pad. 5,010,610, Cl. 5-481.000.

Acumetric, Inc.: *See—*
Weinreb, Robert N.; Lewak, Jerzy J.; and Dreher, Andreas W., 5,012,496, Cl. 377-21.000.

Acurex Corporation: *See—*
Knuth, William H.; and Beveridge, John H., 5,010,730, Cl. 60-246.000.

Adam, Yossi: *See—*
Levanon, Moshe; Grossinger, Israel; Adam, Yossi; and Landa, Benzion, 5,012,300, Cl. 355-328.000.

Adamson, Arthur P.; Butler, Lawrence; and Wall, Robert A., to General Electric Company. Geared counterrotating turbine/fan propulsion system. 5,010,729, Cl. 60-226.100.

Adaway, Timothy J.: *See—*
Orvik, Jon A.; Pearson, Norman R.; Haag, Anthony P.; Adaway, Timothy J.; Kershner, Larry D.; and Kende, Andrew S., 5,012,017, Cl. 568-803.000.

Adessi, Alfred A. Multi-purpose safety exercise apparatus. 5,011,140, Cl. 272-118.000.

Adkins, Charles M.; Brazell, James R.; Mayer, Gerard T.; and Stacey, Henry C., to Sperry Marine Inc. Method and apparatus for countering vibrations of a platform. 5,012,174, Cl. 318-649.000.

Adler, Robert J.: *See—*
Palepu, Prakash T.; Wu, Cheng-Kuang; and Adler, Robert J., 5,011,022, Cl. 209-155.000.

Adlersberg, Shabtai; Stettiner, Yoram; Aizner, Mendel; and Berstein, Alberto, to DSP Group, Inc., The. Noise reduction system. 5,012,519, Cl. 381-47.000.

Adolph Coors Company: *See—*
Moen, Bruce A.; and Cook, Harold, Jr., 5,011,037, Cl. 220-271.000.

Advanced Micro Device, Inc.: *See—*
Chew, Thomas, 5,012,384, Cl. 361-159.000.

Advanced Technology Systems, Inc.: *See—*
Agbede, Robert O., 5,010,694, Cl. 51-429.000.

Aebischer, Patrick; Galletti, Pierre M.; Panol, George; and Miracoli, Luigi, to Brown University Research Foundation. Implantable delivery system for biological factors. 5,011,472, Cl. 604-50.000.

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Vedder, Hans J.; and Krenn, Hans, 5,012,464, Cl. 369-116.000.

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Tavernier, Serge M.; Janssens, Robert F.; and Zwijsen, Jan A., 5,012,288, Cl. 355-259.000.

Agresta, Frank J., to WPM, Inc. Accessory faucet having quick attaching means. 5,010,922, Cl. 137-359.000.

Agricultural and Food Research Council, The: *See—*
Perry, Margaret M., 5,011,780, Cl. 435-317.100.

Aichinger, Heinrich: *See—*
Herzog, Klaus; Boehning, Karl-Heinz; Aichinger, Heinrich; Plueckhan, Juergen; Mross, Wolf D.; and Schwarzmann, Matthias, 5,011,809, Cl. 502-348.000.

Air Products and Chemicals, Inc.: *See—*
Davis, Ruth A.; Nicholas, David M.; Smith, Dale D.; Wang, Shoou-I; and Wright, Richard A., 5,011,670, Cl. 423-450.000.
Gottier, Gerry N., 5,011,521, Cl. 62-11.000.

Airhart, Tom P., to Atlantic Richfield Company. Characterization of the full elastic effect of the near surface on seismic waves. 5,010,976, Cl. 181-108.000.

Aisan Kogyo Kabushiki Kaisha: *See—*
Mine, Koichi; and Suzuki, Sigeru, 5,011,369, Cl. 415-55.100.
Yoshida, Shigeru; and Ito, Yoshimasa, 5,011,367, Cl. 415-55.100.

Aisin Aw Co., Ltd.: *See—*
Tsukamoto, Kazumasa; Ishikawa, Kazunori; Taniguchi, Takuji; Iwatsuki, Kunihiro; and Taga, Yutaka, 5,010,991, Cl. 192-3.300.

Aisin Seiki Kabushiki Kaisha: *See—*
Okumura, Nobuo; and Miura, Atsuyuki, 5,010,737, Cl. 62-6.000.

Aiso, Keiji: *See—*
Takahashi, Mineo; Nakayama, Susumu; Yamashima, Osamu; Suzuki, Satoshi; Harada, Toshihiko; and Aiso, Keiji, 5,010,642, Cl. 29-868.000.

Aizner, Mendel: *See—*
Adlersberg, Shabtai; Stettiner, Yoram; Aizner, Mendel; and Berstein, Alberto, 5,012,519, Cl. 381-47.000.

Ajorca S.A.: *See—*
Fussi, Fernando; Diaz, Victor B.; and Domanico, Richardo H., 5,011,919, Cl. 536-21.000.

Akabane, Hidetomo: *See—*
Okada, Hiroshi; Saitoh, Noritaka; Akabane, Hidetomo; and Tashiro, Shintaro, 5,012,198, Cl. 328-155.000.

Akasaki, Yutaka; Nukada, Katsumi; and Sato, Katsuhiro, to Fuji Xerox Co., Ltd. Electrophotographic photoreceptor containing a fluorene derivative. 5,011,757, Cl. 430-58.000.

Akasaki, Yutaka; Nukada, Katsumi; and Sato, Katsuhiro, to Fuji Xerox Co., Ltd. Fluorene derivative and process for preparation thereof. 5,011,969, Cl. 558-402.000.

Akihama, Shigeyuki; Kobayashi, Mikio; Suenaga, Tatsuo; Fukumoto, Toshiyuki; Taniguchi, Yoshikazu; and Nakagawa, Hiroaki, to Kajima Corporation. Curtain wall. 5,010,705, Cl. 52-477.000.

Akimichi, Shinji: *See—*
Endo, Yasuo; Akimichi, Shinji; Hirose, Tadayoshi; Furukawa, Motonori; and Yoshida, Kyoko, 5,012,521, Cl. 382-1.000.

Akishino, Katsuo: *See—*
Ishida, Tetsuro; Danno, Yoshiaki; Akishino, Katsuo; and Fukui, Toyoaki, 5,010,863, Cl. 123-339.000.

Akita, Minoru: *See—*
Tominaga, Kenji; Miki, Minoru; Takahashi, Tooru; Horiuchi, Tetsuo; Morishima, Hideo; Nakayama, Takashi; Moriya, Kumiaki; Matsumoto, Masaki; Akita, Minoru; Niino, Tsuyoshi; Ochiai, Kanehiro; Shiozawa, Akihiko; Uchiyama, Yuichi; Yasuno, Toyoharu; Moriya, Kenji; Kinoshita, Shouichirou; Kage, Kazuo; and Kubota, Ryuji, 5,011,652, Cl. 376-283.000.

Akiyama, Yasuhiro: *See—*
Ohkita, Masao; Akiyama, Yasuhiro; Takikawa, Makito; and Arayama, Yoshihiko, 5,012,366, Cl. 360-102.000.

Akiyama, Yasuo, to Murata Kikai Kabushiki Kaisha. System for modifying a machine's program at a remote location. 5,012,402, Cl. 364-192.000.

Aksman, Igor, to ICI Americas Inc. Stabilized polymer latex composition. 5,011,883. Cl. 524-513.000.

Aktiebolaget Electrolux *See—*
Tolf, Anders K. H., and Stridh, Keijo A., 5,010,920, Cl. 137-565.000.
Alaurent, Jacques. Fastening member for a curtain telescopic rod 5,011,030, Cl. 211-105.600.
Albert-Frankenthal AG *See—*
Weisbrod, Norbert; and Kobler, Norbert, 5,010,815, Cl. 101-217.000
Alberts, Jack B.; and McNeely, Michael D., to Keystone International Holdings Corp. Shock absorbing sealing means for flow control devices. 5,011,116, Cl. 251-334.000
Albrecht, David E. Check valve. 5,010,916, Cl. 137-454.200.
Alcan International Limited *See—*
Strong, David S.; and Dawson, John A., 5,011,747, Cl. 429-27.000
Alcatel Cit: *See—*
Frindel, Sebastien; and Mathieu, Luc, 5,011,368, Cl. 415-90.000
Helou, Didier; Peron, Jean-Yves; Coutin, Rene, and Thiebaut, Georges, 5,012,465, Cl. 370-58.100.
Pernet, Michel, 5,012,078, Cl. 235-441.000
Alcorn, Byron A.; Cherry, Robert W.; Coleman, Mark D.; Rauchfuss, Brian D.; and Taylor, Gary L., to Hewlett-Packard Co. Method and apparatus for gamma correcting pixel value data in a computer graphics system. 5,012,163, Cl. 315-383.000
Aldrich, Charles S.; Applegate, Steven L.; Craft, James A.; Molloy, James J.; and Pawley, Michael L., to International Business Machines Corporation. Toner metering apparatus. 5,012,289, Cl. 355-260.000
Aldrich, Charles S.; Dyer, Stanley, and Ream, Gregory L., to International Business Machines Corporation. Transfer station control in an electrophotographic reproduction device. 5,012,293, Cl. 355-274.000
Aleem, Mohd A. *See—*
Frantz, Gary A.; Aleem, Mohd A.; Rademacher, Loren; and Rateike, Lee R., 5,012,145, Cl. 310-68.00D
Alfa Lancia S.p.A *See—*
Pasquali, Renato; and Drago, Raffaele, 5,011,431, Cl. 439-540.000
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Bischoff, Gilbert; Breitwieser, Karl, and Emmel, Eckhard, 5,011,234, Cl. 303-4.000.
Karafa, Nandor, and Liebers, Lutz, 5,012,117, Cl. 250-572.000
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Guillotte, Paul A.; Panaccione, Paul; Martiska, Thomas J., and Gagnon, Jay J., 5,012,322, Cl. 357-72.000
Allen-Bradley Company, Inc.: *See—*
Siegel, Stuart B., and Marriott, Jeffery C., 5,012,468, Cl. 370-85.500
Allen, Diane. Holder for barrettes. 5,011,716, Cl. 428-4.000
Allergan, Inc. *See—*
Woodward, David A., 5,011,856, Cl. 514-573.000.
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Shacklette, Lawrence W., Townsend, Linda B., and Jow, Taiguang R., 5,011,748, Cl. 429-50.000.
Allied-Signal Inc. *See—*
Barder, Timothy J., 5,011,822, Cl. 505-1.000
Barlage, Francis M., 5,012,401, Cl. 363-97.000
Boyd, Gary L., 5,011,353, Cl. 411-383.000
Brown, Arthur K., Jr., 5,011,238, Cl. 303-116.000.
Marshall, Robert M.; Raybon, James C., Jr., and Medeiros, Robert W., 5,011,616, Cl. 252-8.700.
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Tumpey, John J., 5,012,146, Cl. 310-68.00D.
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Ohkita, Masao; Akiyama, Yasuhiro, Takikawa, Makito, and Arayama, Yoshihiko, 5,012,366, Cl. 360-102.000
Ohwada, Isso, 5,011,307, Cl. 400-124.000
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Alston, William B., and Gratz, Roy F. Substituted 1,1,1-triaryl-2,2,2-trifluoroethanes and processes for their synthesis. 5,011,955, Cl. 552-101.000.
Althoff, Klaus: *See—*
Mattausch, Hans-Juergen; Althoff, Klaus; and Neuendorf, Gerd, 5,012,450, Cl. 365-208.000.
Altman, Ralph A.; Gooch, John P.; and Dismukes, Edward B., to Electric Power Research Institute, Inc. Catalytic oxidation of SO_2 to SO_3 in the presence of fly ash. 5,011,516, Cl. 55-5.000
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Amano, Tadashi; and Watanabe, Junichi, to Shin-Etsu Chemical Co., Ltd. Process for preparing vinyl chloride polymer using hydroxyphenyl monomers. 5,011,897, Cl. 526-202.000.
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Amemiya, Isao, Sakai, Tadashi, and Uno, Shigeki, to Kabushiki Kaisha Toshiba. Solution component sensor device. 5,011,589, Cl. 204-416.000.
American Environmental Systems, Inc. *See—*
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Gottschalk, Stephen C., 5,010,640, Cl. 29-602.100
Lane, Kelley R., and Schammel, Wayne P., 5,012,030, Cl. 585-527.000
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Sikkenga, David L., Zaenger, Ian C.; and Williams, Gregory S., 5,012,024, Cl. 585-320.000
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AMP Incorporated *See—*
Bowen, Terry P., and Rowlette, John R., 5,011,255, Cl. 350-96.190
Schultz, Albert N., Jr., and Zakary, Paul D., 5,012,391, Cl. 361-428.000
Simmons, Randy G., 5,011,424, Cl. 439-352.000
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An, Hyeong-keun, Kim, Young-cheol, Lee, Seok-jeong, and Yu, Jung-jae, to Samsung Electronics Co., Ltd. ROM circuit. 5,012,451, Cl. 365-230.050
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Andersen, Eric T., and Andersen, Edward A. Height indicator for a fork lift truck. 5,011,358, Cl. 414-273.000
Anderson, Alan R. Susceptor for converting microwave energy into heat and method of use. 5,012,068, Cl. 219-10.55M.
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Anderson, David S., to General Mills, Inc. Container with lid closure having an improved flared stand feature. 5,011,006, Cl. 206-45.240.
Anderson, Jim L., Beltz, Terry W.; and Taylor, Raymond E., to Nestec S.A. Ravioli machine. 5,010,807, Cl. 99-450.600
Anderson, John E. Portable article handling/supporting apparatus. 5,011,364, Cl. 414-694.000.
Ando, Hironori *See—*
Yamada, Shuji, and Ando, Hironori, 5,012,278, Cl. 355-55.000.
Ando, Masaaki, Matsuzaka, Masaaki, and Saita, Masahiro, to Nippon Seiko Kabushiki Kaisha. Multiple-imaging charged particle-beam exposure system. 5,012,105, Cl. 250-398.000
Ando, Moritoshi, Oka, Hiroshi; and Iwata, Satoshi, to Fujitsu Limited. Wiring pattern detection method and apparatus. 5,011,960, Cl. 356-376.000
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Schierling, Roland; and Dohse, Hans-Peter, 5,010,858, Cl. 123-179.00P
Andros, Andrew A., and Campana, Thomas J., Jr., to Telefind Corporation. Paging receiver with continuously tunable antenna and RF amplifier. 5,012,235, Cl. 340-825.440.
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Antonioli, Giuseppe, to Wirtgen AG. Modular element for defining areas and routes on carriage roads and the like. 5,011,325, Cl. 404-6.000
Antonious, Anthony J. Weight distribution for golf club head. 5,011,151, Cl. 273-164.000
Antoon, Mitchell K., Jr., and Hill, David J., to Hercules Incorporated. Breathable microporous film and methods for making it. 5,011,698, Cl. 426-395.000
Antos, John M. *See—*
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Apple Computer, Inc: *See—*
Gruenberg, Eric I., Stewart, James R.; and Halicho, James J., 5,011,198, Cl. 292-41.000
Applegate, Steven L.. *See—*
Aldrich, Charles S.; Applegate, Steven L.; Craft, James A.; Molloy, James J., and Pawley, Michael L., 5,012,289, Cl. 355-260.000
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Park, Moo K.; and Caldwell, Henry C., 5,011,852, Cl. 514-419.000.
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Stobbs, Thomas J.; Patel, Kishor J., Fritz, Frank M., Knutson, Dale A., and Janecke, James P., 5,011,113, Cl. 251-129.160
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Aquarium Systems, Inc. *See—*
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Arai, Koichi, to Arai Machinery Corporation. Conical element for filtering and separation. 5,011,023, Cl. 209-400.000
Arai Machinery Corporation: *See—*
Arai, Koichi, 5,011,023, Cl. 209-400.000.
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Arbogast, Romain, and Gervie, Albert, to Oris. Method for modifying the surface state of materials, in particular of the paper and/or card type. 5,011,709, Cl. 427-56.100.
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Arena, Arthur A., to Huls America Inc. Method of sterilizing medical grade film. 5,011,660, Cl. 422-22.000
Arikawa, Tetsuro, to Nippon A.B.S, Ltd. Anti-skid control apparatus for a vehicle braking system. 5,011,235, Cl. 303-96.000
Arimoto, Kazutami, Furutani, Kiyohiro, and Mashiko, Koichiro, to Mitsubishi Denki Kabushiki Kaisha. Dynamic type semiconductor memory device having an error checking and correcting circuit. 5,012,472, Cl. 371-40.100
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Yoshida, Tadashi, Inoue, Keizo, Arita, Hitoshi; Matsutani, Shigeru; Shoji, Jun'ichi, and Kawamura, Yoshimi, 5,011,952, Cl. 549-393.000
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Jadvar, Hossein; and Arzbaecher, Robert C., 5,010,888, Cl. 128-696.000
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Tabata, Yasushi; Kobayashi, Takeo, Numako, Norio; and Nagai, Katsutoshi, 5,012,272, Cl. 354-465.000
Asai, Koichi, Tsuda, Mamoru, Muto, Yasuo, Sunara, Sinsuke; and Kawada, Tousuke, to Fuji Machine Mfg. Co., Ltd. Device for optically detecting hold position of electronic component with dual emitters. 5,012,115, Cl. 250-561.000
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Asano, Kiyoji Spiral-spring-driven doll toy. 5,011,448, Cl. 446-293.000.
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Asea Brown Boveri Ltd.: *See—*
Mayer, Andreas, 5,011,375, Cl. 417-64.000.
ASGCO Manufacturing, Inc. *See—*
Gibbs, A. Todd, 5,011,002, Cl. 198-497.000.
Ash, Francis M., Jr.: *See—*
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Ashikawa, Ryo: *See—*
Yamamoto, Yuji; Shigematsu, Hideyuki; Tanaka, Hiroshi; Ashikawa, Ryo; and Ishida, Tatsuo, 5,011,875, Cl. 524-45.000.
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Lanfranco, Antonello, 5,010,638, Cl. 29-596.000.
Assaad, Mahmoud C.; and Harrison, Danny E., to Goodyear Tire & Rubber Company, The. Tire incorporating a bead ring comprising round wire disposed in the shape of a parallelogram. 5,010,938, Cl. 152-539.000.
Assaf, Gad, to Geophysical Engineering Company. Centrifugal heat engine and method for using the same. 5,010,735, Cl. 60-669.000.
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Torok, Vilmos; and Loreth, Andrzej, 5,012,159, Cl. 315-111.910.
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Asuka, Masahiro; Yokota, Shinjiro; Tonogouchi, Makoto; and Kasai, Mitsuo, to Ube Industries, Inc. Process and apparatus for incinerating wet refuse. 5,010,830, Cl. 110-347.000.
AT&T Bell Laboratories: *See—*
Basso, Richard J.; Hansen, Randall S.; Kolasa, Edward P.; Reynolds, Mark L.; and Tam, Chun P., 5,012,512, Cl. 379-218.000.
Buhrke, Rolfe E.; Dianda, Robert B.; Katzenstein, Leo R., McClurkan, Michael B.; and Tsai, John S., 5,012,466, Cl. 370-62.000.
Dutta, Ranjan, 5,011,792, Cl. 437-184.000.
Dykaar, Douglas R.; and Levi, Anthony F. J., 5,012,319, Cl. 357-55.000.
Edwards, Christopher A.; and Presby, Herman M., 5,011,254, Cl. 350-96.180.
Flynn, Edward J.; Ketelsen, Leonard J.; and Roxlo, Charles B., 5,012,484, Cl. 372-96.000.
Gladden, Robert H., Jr.; and Thomas, Phillip M., 5,011,416, Cl. 439-98.000.
Grim, Karen A.; Singh, Shobha; Van Uitert, LeGrand G., and Zydzik, George J., 5,011,794, Cl. 437-247.000
Jin, Sungho; Sherwood, Richard C.; and Tiefel, Thomas H., 5,011,823, Cl. 505-1.000.
Luryi, Sergey; and Xie, Ya-Hong, 5,012,486, Cl. 372-45.000.
Marx, M. Fred, 5,011,260, Cl. 350-96.230.
Myer, Robert E., 5,012,490, Cl. 375-58.000.
Perzentka, Thomas R., Jr., 5,011,418, Cl. 439-135.000.
Poulsen, Stephen D., Jr., 5,012,233, Cl. 340-825.180.
Scott, Jeffrey W.; and Viswanathan, Thayamkulangara R., 5,012,245, Cl. 341-150.000.
Sonntag, Jeffrey L., 5,012,142, Cl. 307-602.000.
ATD Corporation: *See—*
Sheridan, William M.; and Ragland, Raymond E., 5,011,743, Cl. 428-600.000
Atkinson, Francis S.; and McDougal, William G. Permeable breakwater. 5,011,328, Cl. 405-30.000
Atkinson, Gary M.; and Courtney, M. DuChesne. Split collector vacuum field effect transistor. 5,012,153, Cl. 313-336.000.
Atkinson, Gordon E., and Bailey, James C., to Vernay Laboratories, Inc. Normally closed duckbill valve assembly. 5,010,925, Cl. 137-847.000.
Atlantic Richfield Company: *See—*
Airhart, Tom P., 5,010,976, Cl. 181-108.000.
Cornette, H. Mitchell, 5,010,964, Cl. 175-4.510
Atlas, Gerard, to Societe Europeenne de Propulsion. Mechanical stabilization system with counter-rotating nested rotors. 5,012,170, Cl. 318-611.000.
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Godfrin, Hugues, 5,011,863, Cl. 521-56.000.
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Kouda, Masanori, Suzuki, Minoru, Okamura, Tetsuya; and Tobisawa, Toshihisa, 5,010,923, Cl. 137-625.340.
Atwal, Karnail; McCullough, John R., and Grover, Gary J., to E. R. Squibb & Sons, Inc. Aryl cyanoguanidines potassium channel activators and method of making same. 5,011,837, Cl. 514-227.800.
Aubry, Jacques A.; and Mondet, Jean J., to Societe Nationale Industrielle et Aerospatiale. Individual pitch control device for blades of rotors of rotor craft by means of rotating linear jacks. 5,011,373, Cl. 416-108.000.
Auchinleck, Geoffrey F.; McEwen, James A.; Osborne, John C.; and Bussani, Carlo R. Lower limb positioning apparatus and surgical drape. 5,010,900, Cl. 128-855.000.
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Hall, Erich; and Schorwerth, Helmut, 5,010,636, Cl. 29-446.000.
August Bilstein GmbH & Co. KG *See—*
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Gray, Norman, 5,011,409, Cl. 433-136.000
Aurtoi, Jean-Marc; and Bornes, Philippe, to Ste. Ateliers de la Haute-Garonne-ets Auriol et Cie. Process for distribution of pieces such as

rivets, and apparatus for carrying out the process 5,011,339, Cl 406-191.000
Ausiello, Francesco P., and Ricco, Mario, to Weber S r l Perfected diesel engine electromagnetic fuel injector 5,011,082, Cl 239-585.000
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Lenti, Daria, and Visca, Mario, 5,011,713, Cl 427-393.600
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Svensson, E. Gunnar, 5,011,211, Cl 296-97.100
Auweter, Helmut, Horn, Dieter, Lilge, Dieter, and Wortmann, Juergen, to BASF Aktiengesellschaft. Fiber-optical sensor 5,011,279, Cl 356-28.500
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Hamersma, Wilhelmus, Avakian, Roger W., and Bailly, Christian, 5,011,889, Cl 525-133.000
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Averill, David B. Golf tee retrieving system 5,011,150, Cl 273-162.00C
Avery International Corporation. *See—*
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Awbrey, Jerry R., to Esoteric Audio USA, Inc. Method for manufacturing improved electrical connector 5,011,438, Cl 439-825.000
Ayash, Yalein, and Katzin, Peter J., to Hittite Microwave, Inc. High-power rf switching system 5,012,123, Cl 307-112.000
Azpurua, Diana M., and Azpurua, Francisco J. Reptile cage apparatus 5,010,845, Cl 119-17.000
Azpurua, Francisco J. *See—*
Azpurua, Diana M., and Azpurua, Francisco J., 5,010,845, Cl 119-17.000
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Babad, Esther, Carruthers, Nicholas, and Steinman, Martin, to Schering Corporation. Method for the preparation of α^1[[(1,1-dimethylethyl)-)amino]methyl]-4-hydroxy-1,3-benzenedimethanol 5,011,993, Cl 564-273.000
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Michimoto, Takashi, Nakamoto, Yukinari, Kuwada, Kazuhiko, and Ishida, Nobuyoshi, 5,011,810, Cl 502-439.000
Babcock & Wilcox Company, The. *See—*
Berthold, John W., 5,010,770, Cl 73-702.000
Babiak, Kevin A. *See—*
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Babler, Egon S., and Olsen, Alf J., to Xerox Corporation. Ribbon drive for low cost quiet impact printer 5,011,309, Cl 400-184.000
Bachman, David L. *See—*
Roop, Donald E., Bachman, David L., Mezey, Eugene J., and Bartram, Philip W., 5,011,293, Cl 366-173.000
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Baer, Cynthia C., Buliga, Gregory S., Hassenheutti, Gerard L., Henry, George A., Heth, Alice A., Jackson, Linda K., Kennedy-Tolstedt, Jill M., Kerwin, Phillip J., Miller, Mark S., Parker, Elizabeth M., Paul, Neela K., Pechak, David G., Smith, Gary F., and Witte, Vernon C., to Kraft General Foods, Inc. Low calorie food products having smooth, creamy, organoleptic characteristics. 5,011,701, Cl 426-573.000
Baer, Hans-Joachim. *See—*
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Becker, Hubert, 5,012,255, Cl. 343-704.000.

Blin, Philippe, Weber, George; and Barbe, Jacques, to Institut de Recherces de la Siderurgie Francaise "IRSID". Device for continuously casting liquid metal between two rolls. 5,010,948, Cl. 164-428.000.

Bloeck, Margarete. *See*—
Werner, Martin, Bloeck, Margarete, and Bichsel, Heinz, 5,011,657, Cl. 420-538.000.

Blondeau, Robert. *See*—
Razeghi, Manijeh; Defour, Martin; Omnes, Franck; Maurel, Philippe, Blondeau, Robert; and Krakowski, Michel, 5,012,476, Cl. 372-45.000.

Bloodline Technology. *See*—
Bredesen, Mark S.; and Schmerler, Elliott D., 5,010,889, Cl. 128-715.000.

Bloom, John J., Jr., to Caterpillar Inc. Indicating apparatus for a coupling. 5,010,962, Cl. 172-430.000.

Blunt, Christopher W., to Amphenol Corporation. Filtered electrical connector. 5,011,434, Cl. 439-620.000.

Blythe, Robert J.; and Scally, Paul G., to Sumitomo Rubber Industries Limited. Pneumatic tires. 5,011,876, Cl. 524-77.000.

Blythin, David J.; Shue, Ho-Jane; and Ganguly, Ashit K., to Schering Corporation. Cyclic diesters of 4-hydroxy-1,3-benzenedimethanol and compositions and methods employing such compounds. 5,011,845, Cl. 514-291.000.

Blythin, David J.; and Shue, Ho-Jane, to Schering Corporation. Aryl-substituted naphthyridine and pyridopyrazine derivatives and their use in treating hyperproliferative skin diseases. 5,011,860, Cl. 514-861.000.

BM Corp.: *See*—
Farrell, John J., 5,011,399, Cl. 425-557.000.

Board of Regents, The University of Texas System, The: *See*—
Khokhar, Abdul R.; Newman, Robert A.; and Krakoff, Irwin H., 5,011,959, Cl. 556-137.000.
Langsjoen, Per H.; Folkers, Karl A.; and Langsjoen, Peter H., 5,011,858, Cl. 514-690.000.
Stevens, Kathleen R.; and Connor, Thomas H., 5,011,020, Cl. 206-570.000.
Tasch, Aloysious F., Jr.; Shin, Hyungsoon; and Maziar, Christine M., 5,012,306, Cl. 357-23.400.

Boatman, John M., to Riddle, Donald C.; and Bernard, William M., Jr., part interest to each. Appliance for heating water by microwave power. 5,012,059, Cl. 219-10.55E.

BOC Group, Inc., The: *See*—
Chang, Ping; and Smith, P. A. Joel, 5,012,064, Cl. 219-121.150.

Bock, Edward C., to Xerox Corporation. Right-to-left scanning system for copying documents or bound books. 5,012,275, Cl. 355-25.000.

Bock, Robert E., to Illinois Tool Works, Inc. Glide assembly with inside holding clip. 5,010,621, Cl. 16-39.000.

Bodenseewerk Geratetechnik GmbH: *See*—
Ohlenburger, Hans, 5,012,387, Cl. 361-388.000.

Bodolus, Christopher L.: *See*—
Gupta, Victor; Bodolus, Christopher L.; Paparizos, Christos; and Shaw, Wilfrid G., 5,012,028, Cl. 585-500.000.

Bodziak, Douglas P.; Hunder, Ray A.; Roth, Steven P.; Grovender, Steven L.; and Molenda, Robert P., to Minnesota Mining & Manufacturing Company. Hexagonal pad. 5,011,186, Cl. 281-12.000.

Boe, Thomas E.; Bergene, Mark A.; Kittle, Carl E.; and Sparks, Gregory E., to Deere & Company. Control system calibration. 5,012,415, Cl. 364-424.070.

Boeckner, James W., Jr.: *See*—
Pollard, Christopher A.; and Boeckner, James W., Jr., 5,012,371, Cl. 360-105.000.

Boehning, Karl-Heinz: *See*—
Herzog, Klaus; Boehning, Karl-Heinz; Aichinger, Heinrich; Plueckhan, Juergen; Mross, Wolf D.; and Schwarzmann, Matthias, 5,011,809, Cl. 502-348.000.

Boehringer Ingelheim GmbH: *See*—
Hess, Joachim; Muller, Klaus R.; and Muller, Manfred, 5,011,946, Cl. 549-274.000.

Boeing Company, The: *See*—
Chan, Yuen-Kwok, 5,012,249, Cl. 342-25.000.
Glancy, Jerry L.; and Birch, John C., 5,011,200, Cl. 292-113.000.
Jensen, Tom M.; and Hamilton, Herbert E., 5,011,348, Cl. 410-79.000.
Lubowitz, Hyman R.; and Sheppard, Clyde H., 5,011,905, Cl. 528-170.000.
McLaren, Douglas; and Orr, William W., 5,011,098, Cl. 244-134.00B.

Boenko, Sergei K.; and Shvartsman, Alexandr Y. Surgical forceps. 5,011,491, Cl. 606-207.000.

Bolton, Theodore S., and Tobin, Curtis L., Sr., to Carrier Corporation. Actuation mechanism for vent and exhaust doors. 5,010,742, Cl. 62-262.000.

Bondoc, Alfredo A.: *See*—
Chich, Adem, Lalwani, Steven S.; Bettoli, Steven C.; Grube, Louis L.; and Bondoc, Alfredo A., 5,011,726, Cl. 428-141.000.

Bonko, Mark L.; and Lopp, Loran C., Jr., to Goodyear Tire & Rubber Company, The. Agricultural tire and tread lug therefor. 5,010,935, Cl. 152-209.00B.

Bonner, Alex G.: *See*—
Coull, James M.; Rappin, Darryl J.; Koester, Hubert; Pluskal, Malcolm G.; Steuck, Michael J.; and Bonner, Alex G., 5,011,861, Cl. 521-53.000.

Bonnyman, John; and Baldas, John, to Commonwealth of Australia. Preparation of 99m Tc radiopharmaceuticals. 5,011,916, Cl. 534-14.000.

Bonsignore, Frank J.: *See*—
Berkes, John S.; and Bonsignore, Frank J., 5,012,290, Cl. 355-271.000.

Bonus Games: *See*—
Lovell, John G., Sr., and Owens, Garry W., 5,011,157, Cl. 273-238.000.

Boom, Mark V. Handle for baby wipe container. 5,011,536, Cl. 134-6.000.

Boots Company PLC, The: *See*—
MacLean, Lachlan; Roberts, David L.; Barron, Kenneth; Nichol, Kenneth J.; and Harrison, Albert E., 5,011,931, Cl. 546-155.000.

Booz, George W.: *See*—
Thornton, Peter B.; Cone, Stanley H.; and Booz, George W., 5,010,663, Cl. 38-52.000.

Borck, Gerald-Wolfgang; Ell, Manfred; and Erhardt, Hans-Dieter, to BASF Aktiengesellschaft. Packaging for articles, in particular those having a right parallelepiped shape. 5,011,014, Cl. 206-387.000.

Borg-Warner Automotive, Inc.: *See*—
Huntley, Peter, 5,010,989, Cl. 192-0.033.

Boris, Frederick, Jr., to Lori Corporation. Interchangeable core lock. 5,010,753, Cl. 70-371.000.

Bornes, Philippe: *See*—
Aurtoi, Jean-Marc; and Bornes, Philippe, 5,011,339, Cl. 406-191.000.

Borom, Marcus P.; Szala, Lawrence E.; Brun, Milivoj; Miller, Steven A.; and Mourer, David P., to General Electric Company. Molten metal transfer tube. 5,011,049, Cl. 222-590.000.

Borovsky, Dov; and Carlson, David A., to University of Florida; and United States of America, Agriculture. Novel compositions and process for inhibiting digestion in blood-sucking insects. 5,011,909, Cl. 530-328.000.

Borowiec, Joseph C.; and El-Hamamsy, Sayed-Amr, to General Electric Company. Power factor correction circuit. 5,012,161, Cl. 315-247.000.

Borthwick, Allan D.: *See*—
Semeraro, Claudio; Micheli, Dino; Pieraccioli, Daniele; Gaviraghi, Giovanni; and Borthwick, Allan D., 5,011,848, Cl. 514-356.000.

Bortolin, Roberto; and Parbhoo, Bhukandas, to Dow Corning Limited. Method of making organosilbutadiyne polymers. 5,011,961, Cl. 556-431.000.

Bose, Ajit K.; and Strater, Kurt F., to Union Camp Corporation. Halter top bag. 5,011,298, Cl. 383-8.000.

Boser, Werner; Sieg, Giselher; and Wedekind, Robert, to Dom-Sicherheitstechnik GmbH & Co. KG. Lock cylinder with electromagnetic tumbler. 5,010,750, Cl. 70-276.000.

Bosier, Maurice H.; and Dixon, Gerald, to International Business Machines Corporation. Magnetic head/support assembly and access mechanism for a disk file. 5,012,368, Cl. 360-104.000.

Bott, Kaspar: *See*—
Nick, Bernhard; Bott, Kaspar; and Schulz, Guenther, 5,011,991, Cl. 564-204.000.

Bottum, Edward W.: *See*—
Sobieski, John L.; and Bottum, Edward W., 5,011,105, Cl. 248-219.100.

Boudewijns, Arnoldus J. J., to U.S. Philips Corp. Integrated delay line. 5,012,143, Cl. 307-606.000.

Boudreau, Michael P.; Jacoby, Randall W.; and Laughlin, James L., to Kirschner Medical Corporation. Orthopedic fixation device. 5,010,881, Cl. 128-76.00R.

Boudreau, Robert A.; and Rideout, William C., to GTE Laboratories Incorporated. Uptapered single-mode optical fiber package for optoelectronic components. 5,011,247, Cl. 350-96.200.

Bourland, Joe D.; Barbs, Charles F.; Geddes, Leslie A.; Tacker, Willis A., Jr.; and Graber, George P., to Purdue Research Foundation. Pressure mapping system with capacitive measuring pad. 5,010,772, Cl. 73-862.040.

Bowen, Charles G.; and Dolce, Anthony B., to Transkrit Corporation. Continuous mailer assembly. 5,011,069, Cl. 229-69.000.

Bowen, Sandy W. Putting practice device. 5,011,154, Cl. 273-192.000.

Bowen, Terry P.; and Rowlette, John R., to AMP Incorporated. Holographic optical fiber coupler. 5,011,255, Cl. 350-96.190.

Bowman, Robert G.; Hartwell, George E.; Molzahn, David C.; Ramirez, Enrique G.; and Lastovica, John E., Jr., to Dow Chemical Company, The. Process of preparing non-cyclic polyalkylenepolyamines employing group VB metal catalysts. 5,011,999, Cl. 564-479.000.

Boyce Thompson Institute for Plant Research, Inc.: *See*—
Granados, Robert R., 5,011,685, Cl. 424-93.000.

Boyd, Bruce D.; Geoghegan, Robert J.; Metz, Barbara A.; Rosen, Karen L.; Rosen, Richard D.; Bally, Alex; and Sears, Ronald J., to Amos Press, Inc. Protective coin holder. 5,011,005, Cl. 206-0.810.

Boyd, Gary L., to Allied-Signal Inc. High temperature turbine engine structure. 5,011,353, Cl. 411-383.000.

Boyer, Gregory J. Lightweight insulating partition. 5,010,943, Cl. 160-351.000.

Boze, Ronald A.: *See*—
Canzoneri, Anthony S.; and Boze, Ronald A., 5,011,597, Cl. 210-104.000.

Bradbury, Roy, to Imperial Chemical Industries. Thermal transfer printing. 5,011,812, Cl. 503-227.000.

Bradbury, Roy; Gemmell, Peter A.; and Hann, Richard A., to Imperial Chemical Industries PLC. Thermal transfer printing. 5,011,813, Cl. 503-227.000.

Braden Industries: *See*—
Braden, Joe T., 5,010,847, Cl. 119-18.000.

Braden, Joe T., to Braden Industries. Calf feeder bottle for dry feed. 5,010,847, Cl. 119-18.000.

Bradley, Eric M.; and Mathis, Ronald F., to General Dynamics Corp., Electronics Divn. Wide linear dynamic range optical modulator. 5,011,264, Cl. 350-162.240.

Braemert, Peter; and Britzke, Ingo, to Hubner Gummi - und Kunststoff GmbH. Articulated bridge gangway between railroad cars. 5,010,614, Cl. 14-71.100.

Branemark, Per-Ingvar: *See*—
Persson, Jan-Ove; and Branemark, Per-Ingvar, 5,011,497, Cl. 623-21.000.

Branson Ultrasonics Corporation: *See*—
Sager, Thomas B., 5,011,555, Cl. 156-73.100.

Braun, Dietrich: *See*—
Meier, Helmut-Martin; Pielartzik, Harald; Morbitzer, Leo; Muller, Hanns-Peter; and Braun, Dietrich, 5,011,972, Cl. 560-66.000.

Braun, Hans-Georg: *See—*
Rosenau, Bernhard, Hisgen, Bernd, Heinz, Gerhard; Braun, Hans-Georg; Lausberg, Dietrich; and Zeiner, Hartmut, 5,011,884, Cl. 524-537.000.

Braymen, Steven D.; Paulson, Bradley A.; and Goedken, Kenneth D., to Iowa State University Research Foundation, Inc. Use of sol-gel derived tantalum oxide as a protective coating for etching silicon. 5,011,568, Cl. 156-647.000.

Brazell, James R.: *See—*
Adkins, Charles M.; Brazell, James R.; Mayer, Gerard T.; and Stacey, Henry C., 5,012,174, Cl. 318-649.000

Breard, Francis H. Surgical implant for restricting the relative movement of vertebrae. 5,011,484, Cl. 606-61.000.

Breckner, Raymond A.: *See—*
Henriksson, Kurt K. G.; and Breckner, Raymond A., 5,011,376, Cl. 417-145.000.

Bredesen, Mark S.; and Schmerler, Elliott D., to Bloodline Technology. Intelligent stethoscope. 5,010,889, Cl. 128-715.000.

Breed, Allen K.: *See—*
Husby, Harald S.; Breed, Allen K.; and Thuen, Ted, 5,011,182, Cl. 280-735.000.

Breed Automotive Technology, Inc.: *See—*
Husby, Harald S.; Breed, Allen K.; and Thuen, Ted, 5,011,182, Cl. 280-735.000.

Breipohl, Gerhard: *See—*
Konig, Wolfgang; Breipohl, Gerhard, Geiger, Rolf; Knolle, Jochen; and Hropot, Max, 5,011,825, Cl. 514-18.000.

Breitwieser, Karl: *See—*
Bischoff, Gilbert; Breitwieser, Karl; and Emmel, Eckhard, 5,011,234, Cl. 303-4.000

Brennan, H. George. Methods for controlling nasal hemorrhaging. 5,011,474, Cl. 604-54.000

Brett, J. Ford, and Warren, Tommy M., to Amoco Corporation. Method of making imbalanced compensated drill bit. 5,010,789, Cl. 76-108.200.

Breuer, Bernhard; and Schottdorf, Johannes, to FAG Kugelfischer Georg Schafer (KGaA). Cage for a sectorial antifriction bearing. 5,011,305, Cl. 384-572.000.

Bridger, Keith; Jones, Lorianne; and Winzer, Stephen R., to Martin Marietta Corporation. Sol-gel preparation of polycrystalline strontium barium niobate (SBN). 5,011,796, Cl. 501-12.000

Bridgestone Corp: *See—*
Tsutsumi, Fumio; Morikawa, Akihiko; Sakakibara, Mitsuhiko; Oshima, Noboru; Hamada, Tatsuro, Fujimaki, Tatsuo, and Ohashi, Masayuki, 5,011,888, Cl. 525-98.000.

Briggs, Anne: *See—*
Perruzza, Cathleen; and Briggs, Anne, 5,011,057, Cl. 224-158.000.

Bright, James A: *See—*
Matouka, Michael F.; Rajput, Yudh V.; Wilkey, Paul D., and Bright, James A., 5,011,237, Cl. 303-115.000.

Brinz, Joseph A. Adjustable sailboard boom handle apparatus. 5,010,932, Cl. 114-39.200.

Bristol-Myers: *See—*
Catt, John D., and Wright, John J., 5,011,947, Cl. 549-292.000.

Bristol-Myers Company: *See—*
Vyas, Dolatrai M.; and Skonezny, Paul M., 5,011,948, Cl. 549-298.000.

Bristol-Myers Squibb Co.: *See—*
Carrie, Tony R.; and Newton, Robert A., 5,011,283, Cl. 356-246.000.
Farina, Vittorio; Benigni, Daniel A.; and Brodfuehrer, Paul R., 5,011,774, Cl. 435-87.000.
Meanwell, Nicholas A., 5,011,851, Cl. 514-400.000
Monkovic, Ivo; and Willner, David, 5,011,992, Cl. 564-167.000.

Britax Child-Care Products Pty. Ltd.: *See—*
Flynn, David P.; and Oretti, John E., 5,010,598, Cl. 2-410.000.

British Broadcasting Corporation: *See—*
Maddocks, Mark C. D., 5,012,256, Cl. 343-754.000.

British Railways Board: *See—*
Hodgson, William H., Stanworth, Colin G.; and Thompson, David J., 5,011,077, Cl. 238-283.000.

British Steel plc. *See—*
Hodgson, William H.; Stanworth, Colin G.; and Thompson, David J., 5,011,077, Cl. 238-283.000.

British Telecommunications public limited company: *See—*
Wettengel, Paul F.; and Bishop, Kevin M., 5,011,257, Cl. 350-96.200.
White, Ian H.; and Linton, Richard S., 5,012,474, Cl. 372-27.000.

Britzke, Ingo: *See—*
Braemert, Peter; and Britzke, Ingo, 5,010,614, Cl. 14-71.100.

Broadbent, Ronald W., to Henkel Corporation. Two stage method for operating autodeposition bath. 5,011,715, Cl. 427-443.100.

Broberg, David E.: *See—*
Wald, Vernon M.; Masson, Richard A.; Brown, Fredrick D.; and Broberg, David E., 5,011,512, Cl. 51-295.000.

Brochot, Jean-Pierre; Pillias, Danielle; Wuest, Isabelle; Beaufays, Jean-Pierre; and Darmont, Maurice, to Saint-Gobain Vitrage. Process for producing a transparent layer with low resistivity. 5,011,585, Cl. 204-192.130.

Brock, Warren. Load stabilizing unit. 5,011,350, Cl. 410-128.000.

Brodfuehrer, Paul R.: *See—*
Farina, Vittorio; Benigni, Daniel A.; and Brodfuehrer, Paul R., 5,011,774, Cl. 435-87.000.

Broerman, Steven E.: *See—*
York, Michael L.; and Broerman, Steven E., 5,010,736, Cl. 62-5.000.

Broitman, Kalman: *See—*
Laskaris, Michael A.; Broitman, Kalman; Teske, Richard E.; Miller, David L.; and Sulmone, Michael, 5,010,870, Cl. 123-576.000.

Brooker, Robert T.: *See—*
Mason, Robert W., Imm, Peter C., Craney, Paul J.; Offill, Thomas W.; and Brooker, Robert T., 5,012,019, Cl. 568-934.000.

Broselow, James B. Therapeutic apparatus. 5,010,656, Cl. 33-759.000.

Brosius, Peter, to August Bilstein GmbH & Co. KG. Jack. 5,011,118, Cl. 254-126.000.

Brossi, Arnold: *See—*
Buchs, Peter; and Brossi, Arnold, 5,011,951, Cl. 549-348.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Endo, Yoshinori; and Sakakibara, Kenji, 5,012,276, Cl. 355-27.000.
Kawanabe, Tasuku, and Kuriyama, Juzo, 5,012,063, Cl. 219-69.120.
Taki, Kazunari, 5,011,248, Cl. 350-96.110.

Broussard, Thomas. Internal combustion engine with twin combustion chambers. 5,010,860, Cl. 123-256.000.

Brouwers, Theodorus M. J., to Van Doorne's Transmissie B.V. Transmission provided with a driving belt and V-shaped pulleys. 5,011,461, Cl. 474-188.000.

Brown, Arlon R. Anti-assault device. 5,011,044, Cl. 222-78.000.

Brown, Arthur K., Jr., to Allied-Signal Inc. Master cylinder with integrated adaptive braking and traction control system. 5,011,238, Cl. 303-116.000.

Brown, Dale A.; and Roerig, Arnold J., to Beloit Corporation. Controlled deflection roll with heat barrier. 5,010,633, Cl. 29-113.200

Brown, Darryl L., and Kirkpatrick, Terence. Conformable weighted conditioning garment. 5,010,596, Cl. 2-228.000.

Brown, Eric W.; and Kienholz, Charles M., to I-Flow Corporation. Pump tube mount and cartridge for infusion pump. 5,011,378, Cl. 417-360.000.

Brown, Fredrick D.: *See—*
Wald, Vernon M.; Masson, Richard A.; Brown, Fredrick D.; and Broberg, David E., 5,011,512, Cl. 51-295.000.

Brown, Lauren. Expandable shock protected carrying case. 5,010,988, Cl. 190-104.000.

Brown, Nanette, to Pitney Bowes Inc. EPM having an improvement in non-volatile storage of accounting data. 5,012,425, Cl. 364-464.020.

Brown, Philip A. Freight carrier. 5,010,973, Cl. 180-213.000.

Brown, Ralph W.; Beach, Sammie C.; and Peter, Gary R., to White Consolidated Industries, Inc. Ice maker with thermal protection. 5,010,738, Cl. 62-135.000.

Brown, Raymond G.: *See—*
Maben, James W., and Brown, Raymond G., 5,012,131, Cl. 307-296.400

Brown, Robert E.: *See—*
Dale, George L., and Brown, Robert E., 5,012,513, Cl. 379-451.000.

Brown University Research Foundation: *See—*
Aebischer, Patrick; Galletti, Pierre M.; Panol, George; and Miracoli, Luigi, 5,011,472, Cl. 604-50.000.
Aebischer, Patrick; and Salessiotis, Anastassios N., 5,011,486, Cl. 606-152.000

Brownlee, Ritch J. Concrete fastener apparatus. 5,011,354, Cl. 411-439.000.

Brubaker, Lois F.: *See—*
Dalrymple, Monte J.; Brubaker, Lois F.; and Smith, Don, 5,012,180, Cl. 324-73.100.

Bruce, Charles W., to United States of America, Army. Fast response, high sensitivity manometric wind sensor. 5,010,771, Cl. 73-861.180.

Bruce, Ian: *See—*
Fleet, George W. J.; and Bruce, Ian, 5,011,929, Cl. 546-14.000.

Bruchu, Todd W.: *See—*
Evans, Harold H.; and Bruchu, Todd W., 5,010,708, Cl. 52-656.000.

Bruck, Martin: *See—*
Vaahas, Tilo; Peuckert, Marcellus; and Bruck, Martin, 5,011,801, Cl. 501-97.000.

Brun, Milivoj: *See—*
Borom, Marcus P.; Szala, Lawrence E.; Brun, Milivoj; Miller, Steven A., and Mourer, David P., 5,011,049, Cl. 222-590.000.

Bryskiewicz, Barbara G.; Bryskiewicz, Tadeusz R.; Dabkowski, Ferdynand P.; Lacowski, Jacek; and Gatos, Harry C., to Massachusetts Institute of Technology. Epitaxial growth. 5,011,564, Cl. 156-624.000.

Bryskiewicz, Tadeusz R.: *See—*
Bryskiewicz, Barbara G.; Bryskiewicz, Tadeusz R.; Dabkowski, Ferdynand P.; Lacowski, Jacek; and Gatos, Harry C., 5,011,564, Cl. 156-624.000.

BTS Broadcast Television Systems GmbH: *See—*
Kirschenstein, Reinhard, 5,012,340, Cl. 358-150.000.

Buchan, William R.; Moore, Robert A.; Caley, Wendell J., Jr.; Gilmore, Mark A.; and Hudson, David M., to Delphax Systems. Powder transport, fusing and imaging apparatus. 5,012,291, Cl. 355-271.000.

Buchel, Karl H.: *See—*
Elbe, Hans-Ludwig; Regel, Erik; Buchel, Karl H.; Schaller, Klaus; and Plempel, Manfred, 5,011,850, Cl. 514-383.000.

Buchs, Peter; and Brossi, Arnold, to World Health Organization. Synthesis of artemisininelactol derivatives. 5,011,951, Cl. 549-348.000.

Buchser, William J., to Whirlpool Corporation. Surface mounting spring clip. 5,011,101, Cl. 248-27.300.

Buckberg, Gerald D.; Maloney, James V., Jr.; Jones, Kenneth A.; and West, Weldon D., to Shiley, Inc. Peripheral cardiopulmonary bypass and coronary reperfusion system. 5,011,469, Cl. 604-4.000.

Budd Company, The: *See—*
Mott, David M.; and Rosiek, Frank C., 5,011,302, Cl. 384-448.000.

Bueschl, Rainer; Echte, Adolf; Schulte, Konrad; and Mittnacht, Hans, to BASF Aktiengesellschaft. Impact resistant thermoplastic molding composition and use thereof. 5,011,871, Cl. 523-436.000.

Buffo, Flavio, to Uteco S.p.A. Flexo & Converting Machinery. Multicolor flexographic machine with a device for automatically loading and unloading block-holding rollers. 5,010,813, Cl. 101-178.000.

Bugni, Anthony R., to North American Philips Corporation. Artificial front porch insertion circuit. 5,012,330, Cl. 358-34.000.

Buhler, Marcel; and Martin, Jean-Michel, to Nestec S.A. Preparation of shaped agglomerated particulate material. 5,011,641, Cl. 264-109.000.

Buhrke, Rolfe E.; Dianda, Robert B.; Katzenstein, Leo R.; McClurkan, Michael B.; and Tsai, John S., to AT&T Bell Laboratories. Call service initialization arrangement. 5,012,466, Cl. 370-62.000.

Bujese, David P.: *See—*
Detig, Robert H.; and Bujese, David P., 5,011,758, Cl. 430-100.000.

Bukoschek, Romuald L.: *See—*
Bertram, Leo; Schemmann, Hugo; and Bukoschek, Romuald L., 5,012,147, Cl. 310-80.000.

Bulgrien, Garth H.; Goodbar, Jim E.; and Johnson, Paul W., to Ford New Holland, Inc.; and Deere & Company. Medium speed transmission shuttle shifting. 5,012,416, Cl. 364-424.100.

Buliga, Gregory S.: *See—*
Baer, Cynthia C.; Buliga, Gregory S.; Hassenheutti, Gerard L.; Henry, George A.; Heth, Alice A.; Jackson, Linda K.; Kennedy-Tolstedt, Jill M.; Kerwin, Phillip J.; Miller, Mark S.; Parker, Elizabeth M.; Paul, Neela K., Pechak, David G.; Smith, Gary F.; and Witte, Vernon C., 5,011,701, Cl. 426-573.000.

Bull, S.A.: *See—*
Dehaine, Gerard, 5,010,949, Cl. 165-76.000.

Bullock, Robert L., to Standard Car Truck Company. Universal wheel restraining cleat and strap assembly for wheel chocks. 5,011,347, Cl. 410-9.000.

Bunce, Martin C.; Helps, David W.; Jenkins, Leonard A.; and Noke, Adrian C., to CMB Foodcan plc. Vending systems for hot foods. 5,011,042, Cl. 221-150.00A.

Bunge, Eric L.: *See—*
Horton, James M.; and Bunge, Eric L., 5,011,241, Cl. 312-330.100.

Bunney, Leroy R. Rotary log sorter. 5,011,024, Cl. 209-517.000.

Burgess, Alan G., to GEC Alsthom Limited. Adjustment of disposition of rotation axis in moving coil measuring instruments to correct for their non-ideal operation. 5,012,184, Cl. 324-146.000.

Burke, John T., to Lanxide Technology Company, LP. Investment casting technique for the formation of metal matrix composite bodies and products produced thereby. 5,010,945, Cl. 164-97.000.

Burlington Industries, Inc.: *See—*
Coltrane, Jack D.; and Kushner, Joseph R., 5,011,021, Cl. 206-620.000.

Burn, Ian: *See—*
Bergna, Horacio E.; and Burn, Ian, 5,011,804, Cl. 501-138.000.

Burns, Gordon P., to U.S. Philips Corporation. Method of manufacturing a semiconductor device. 5,011,789, Cl. 437-81.000.

Burri, Michel, to Motorola, Inc. Sensor arrangement with amplifier offset cancellation. 5,012,436, Cl. 364-571.020.

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Ikkatai, Masatoshi; Yoshizawa, Atsutomo; and Honma, Toshio, 5,012,295, Cl. 355-311.000.
Maeda, Masaya, 5,012,374, Cl. 360-109.000.
Nagano, Masatoshi; and Kawamoto, Kenichi, 5,012,264, Cl. 354-286.000.
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Nakayama, Hiroki; Kitagishi, Nozomu; Hattori, Jun; Suda, Shigeyuki; and Horiuchi, Akihisa, 5,011,272, Cl. 350-427.000.
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Caron, Fabrice, to SKF France. Integrated bearing provided with a pulser and with a sensor for equipping a motor vehicle wheel hub. 5,011,303, Cl. 384-448.000.
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Carr, William J.; and Krummen, Raymond S., to Vector Technical Group, Inc. Hydrodynamic fume scrubber. 5,011,520, Cl. 55-228.000
Carrie, Tony R.; and Newton, Robert A., to Bristol-Myers Squibb Co. Flow cell support device. 5,011,283, Cl. 356-246.000
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Bolton, Theodore S., and Tobin, Curtis L., Sr., 5,010,742, Cl. 62-262.000
Grunwald, Stefan H.; and Fraser, Howard H., Jr., 5,011,384, Cl. 418-55.500.
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Tanaka, Kikuji, and Hanzawa, Kohtaro, 5,010,799, Cl. 84-627.000
Yoshida, Satoshi, 5,010,800, Cl. 84-646.000
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Chan, Yuen H., to International Business Machines Corporation. High speed push-pull driver having current mirror pull-down. 5,012,128, Cl. 307-270.000
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Chun, Cornell S.L., to Unisys Corporation. Light emitting diode transmitter circuit with temperature compensation. 5,012,162, Cl. 315-309.000.
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Pugin, Benoit, Ramos, Gerardo; and Spindler, Felix, 5,011,995, Cl. 564-302.000.
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Schafer, Horst; Ludwig, Gerhard; and Sunderdiek, Rainer, 5,011,661, Cl. 422-30.000
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Clark, Paul H. Sucker rod coupling breaking tool. 5,010,635, Cl. 29-426.500
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Connor, John K.; Connor, Charles M., Jr., and Stroup, H. B., Jr., 5,010,673, Cl. 40-661.000.
Colleran, Stephen A., Plocek, Edward J., Ponn, Timothy R.; and Gruhn, William D., to Molex Incorporated. Electrical connector assembly for vehicular suspension system component. 5,011,426, Cl. 439-357.000.
Collins, Franklin D.; and Lin, Leu-Fen. Purified ciliary neurotrophic factor. 5,011,914, Cl. 530-399.000.
Colorado Instruments, Inc.. *See*—
Dunn Thompson, Kathleen D., 5,012,160, Cl. 315-149.000
Coltrane, Jack D., and Kushner, Joseph R., to Burlington Industries, Inc. Easy unpacking deep container. 5,011,021, Cl. 206-620.000.
Columbus, Richard L., to Eastman Kodak Company. Pipette and liquid transfer apparatus for dispensing liquid for analysis. 5,010,930, Cl. 141-1.000.
Colvin, David P.; Whitney, Raymond A., Marsh, Bernard R.; Kline, William M.; Rizzo, Ronald R., and Orlosky, Mark E., to Triangle Research and Development Corp., Johns Hopkins University, and Medical Evaluation Devices & Instruments Corp. Body lumen measuring instrument. 5,010,892, Cl. 128-774.000.
Colwell/General, Inc.: *See*—
Stanziola, Ralph, 5,012,431, Cl. 364-526.000.
Commissariat a l'Energie Atomique. *See*—
Cuzin, Marc; and Glasser, Francis, 5,012,498, Cl. 378-22.000.
Jeuch, Pierre, 5,011,787, Cl. 437-52.000
Commonwealth of Australia. *See*—
Bonnyman, John; and Baldas, John, 5,011,916, Cl. 534-14.000
Thorncraft, David A.; Kennedy, David R., Rashleigh, Scott C., and Dabbs, Timothy P., 5,011,252, Cl. 350-96.150
Communications Research Laboratory Ministry of Posts and Telecommunications. *See*—
Matsui, Toshiaki; and Araki, Kenichi, 5,012,212, Cl. 333-227.000.
Compagnie Generale des Etablissements Michelin. *See*—
Remond, Michel, 5,011,397, Cl. 425-328.000
Conder, George A.: *See*—
Rector, Douglas L., Conder, George A., and Folz, Sylvester D., 5,011,932, Cl. 546-268.000.
Cone, Stanley H. *See*—
Thornton, Peter B., Cone, Stanley H., and Booz, George W., 5,010,663, Cl. 38-52.000
Thornton, Peter B., Woodworth, Fred P., and Cone, Stanley H., 5,011,183, Cl. 280-743.000
Conley, Walter, III, Dammeyer, Ned E.; and Klopfleisch, Kim A., to Crown Equipment Corporation. Extend and retract control for fork lifts. 5,011,363, Cl. 414-666.000
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Connor, John K., Connor, Charles M., Jr., and Stroup, H. B., Jr., 5,010,673, Cl. 40-661.000
Connor, John K., Connor, Charles M., Jr., and Stroup, H. B., Jr., to Collectors Products Corporation. Plastic card holder. 5,010,673, Cl. 40-661.000.
Connor, Thomas H. *See*—
Stevens, Kathleen R., and Connor, Thomas H., 5,011,020, Cl. 206-570.000
Conopco, Inc. *See*—
Elliott, David L.; Howie, Catherine L., and Montague, Peter G., 5,011,682, Cl. 424-52.000
Conroy, David G., to Digital Equipment Corporation. Memory array addressing system for computer systems with multiple memory arrays. 5,012,408, Cl. 364-200.000
Consolidation Coal Company. *See*—
Meenan, Gary F., and Oblad, Hayward, 5,011,595, Cl. 209-166.000
Continental Aktiengesellschaft. *See*—
Hermann, Dietmar; and Schmidt, Helmbrecht, 5,011,163, Cl. 277-26.000.
Conway, David W., to Norand Corporation. Shielded electrical wire construction, and transformer utilizing the same for reduction of capacitive coupling. 5,012,125, Cl. 307-149.000
Cook, Harold, Jr.. *See*—
Moen, Bruce A.; and Cook, Harold, Jr., 5,011,037, Cl. 220-271.000
Cook Incorporation. *See*—
Cope, Constantin, 5,011,478, Cl. 604-165.000

Cook Pacemaker Corporation *See—*
Goode, Louis, Shipko, Frederick J., and Fearnot, Neal E., 5,011,482, Cl. 606-1.000

Cook, Raymond *See—*
Harris, Brian C., and Cook, Raymond, 5,011,311, Cl. 400-208.000

Cook, Walter R. Self-propelled vehicle. 5,011,171, Cl. 280-221.000

Cooper, David G. *See—*
Reintjes, John F.; Tankersley, Lawrence L.; Cooper, David G.; and Dexter, James L., 5,012,483, Cl. 372-95.000.

Cooper Industries, Inc. *See—*
Chin, Arthur H. T.; and Schmitz, Thomas R., 5,010,952, Cl. 166-75.100
Knapp, Ralph E., 5,010,657, Cl. 33-770.000.

Cope, Constantin, to Cook Incorporation. Recessed dilator-sheath assembly and method. 5,011,478, Cl. 604-165.000

Copeland, John A., III *See—*
Burton, Richard J.; Copeland, John A., III; Jerrim, John W.; Nixon, Toby L.; Sauser, Martin H., Jr.; Weatherford, Robert E., Jr.; Becker, Larry D.; and Strawn, David F., 5,012,489, Cl. 375-8.000

Coppom, Rex R. *See—*
Yehl, James E.; and Coppom, Rex R., 5,010,777, Cl. 73-864.810

Cordes, Eugene H.; Ellames, George J.; Herbert, John M.; and Smith, David I., to Sterling Drug Inc. Levo-ciprofibrate. 5,011,985, Cl. 562-469.000

Cordes, Eugene H.; Ellames, George J.; Herbert, John M.; and Smith, David I., to Sterling Drug Inc. Dextro-ciprofibrate. 5,011,986, Cl. 562-469.000

Cornell Research Foundation, Inc. *See—*
Gvaryahu, Gadi, and Cunningham, Danis L., 5,010,851, Cl. 119-174.000
Mynarcik, Dennis C.; Griffith, Owen W.; and Fairclough, Gordon F., Jr., 5,011,964, Cl. 558-179.000

Cornette, H. Mitchell, to Atlantic Richfield Company. Method and apparatus for orienting wellbore perforations. 5,010,964, Cl. 175-4.510.

Cornibert, Jacques; and Walling, Jorg-Hein, to Northern Telecom Limited. Fire retardent and water blocking filling compositions for cables. 5,011,880, Cl. 524-371.000

Corning Incorporated: *See—*
Hogue, Kathryn E.; Swaroop, Srinivas H.; and Wusirika, Raja R., 5,011,529, Cl. 75-235.000.
Miller, William J.; Truesdale, Carlton M.; Weidman, David L.; and Young, Donald R., Jr., 5,011,251, Cl. 350-96.150

Coronet-Werke Heinrich Schlerf GmbH *See—*
Weihrauch, Georg, 5,011,230, Cl. 300-21.000

Corradetti, Anthony A.; Gargiulo, Edward P.; Krauss, Leland L.; and Hooley, Robert W., to Du Pont de Nemours, E. I., and Company. Housing for an opto-electronic device. 5,011,246, Cl. 350-96.200

Corsi, Louis V. Trimmer guard and guide assembly. 5,010,720, Cl. 56-320.100.

Cosman, John; and Silaghi, Victor, to Husky Injection Molding Systems, Ltd. Quick coupling device for exchanging plasticizing unit of an injection molding machine. 5,011,396, Cl. 425-190.000

Cosme, Peter A. Drawer guide assembly. 5,011,242, Cl. 312-344.100

Costa, Paul D. Method of apparatus for illuminating television studio and video tape production facilities. 5,012,396, Cl. 362-224.000

Cottrell, Paul R. *See—*
Vora, Bipin V.; and Cottrell, Paul R., 5,012,021, Cl. 585-315.000.

Coull, James M.; Rappin, Darryl J.; Koester, Hubert; Pluskal, Malcolm G.; Steuck, Michael J.; and Bonner, Alex G., to Millipore Corporation. Membranes for solid phase protein sequencing. 5,011,861, Cl. 521-53.000

Courtney, M. DuChesne: *See—*
Atkinson, Gary M.; and Courtney, M. DuChesne, 5,012,153, Cl. 313-336.000.

Coutin, Rene. *See—*
Helou, Didier; Peron, Jean-Yves; Coutin, Rene.; and Thiebaut, Georges, 5,012,465, Cl. 370-58.100

Covington, Michael J.; and Orsborn, Jesse H., to J. I. Case Company. System for mounting and supporting harvesting units of a cotton harvester. 5,010,718, Cl. 56-40.000

Cox, Michael J., to Rolls-Royce PLC. Method for evaluating the working line characteristics of a compressor of a gas turbine engine. 5,010,727, Cl. 60-39.060

Cox, Robert A., Jr. Cooler for live well with recirculated water. 5,010,681, Cl. 43-57.000.

Craft, James A. *See—*
Aldrich, Charles S.; Applegate, Steven L.; Craft, James A.; Molloy, James J.; and Pawley, Michael L., 5,012,289, Cl. 355-260.000

Craig, Jason S. Folding device for apparel. 5,011,052, Cl. 223-37.000

Cram, Donald J.; Chapoteau, Eddy; Czech, Bronislaw P.; Gebauer, Carl R.; Helgeson, Roger C.; Kumar, Anand, and Leong, Koon-Wah, to Technicon Instruments Corporation; and University of California, The Regents of The. Chromogenic cryptahemispherands and their preparation. 5,011,924, Cl. 540-469.000.

Cramer, Hans, to H. Krantz GmbH & Co. Roll for spreading and guiding a fabric web. 5,011,060, Cl. 226-15.000.

Crane, Ronald C., to 3Com Corporation. Method and apparatus for collision detection in a local area network transceiver. 5,012,467, Cl. 370-85.300.

Craney, Paul J. *See—*
Mason, Robert W.; Imm, Peter C.; Craney, Paul J.; Offill, Thomas W.; and Brooker, Robert T., 5,012,019, Cl. 568-934.000.

Creative Biomolecules, Inc. *See—*
Pang, Roy H. L., 5,011,686, Cl. 424-94.100.

Crivello, James V., to General Electric Company. Triaryl sulfonium photoinitiators. 5,012,001, Cl. 568-13.000

Croft, Eugene B. Corner finishing tool. 5,010,618, Cl. 15-235.700

Crosfield Electronics Limited *See—*
Gibbs, Ronald, 5,011,245, Cl. 350-6.500
McGonigal, Stephen G.; and MacDonald, Lindsay, 5,012,048, Cl. 178-18.000

Crossley, David W. *See—*
Bernstein, Michael S.; Crossley, David W.; and Lerner, Michael I., 5,010,606, Cl. 4-572.000

Crosswhite, Lola E. *See—*
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Crow, Tommi L. Device to support and protect documents. 5,011,039, Cl. 220-357.000

Crowley, Jeri J. *See—*
Powell, Theo J.; Hickman, John I.; and Crowley, Jeri J., 5,012,471, Cl. 371-27.000

Crown Equipment Corporation *See—*
Conley, Walter, III; Dammeyer, Ned E.; and Klopfleisch, Kim A., 5,011,363, Cl. 414-666.000

Cruysberghs, Rudiger, to I P R S. Dispensing apparatus. 5,011,047, Cl. 222-396.000

Crystal Semiconductor Corporation *See—*
Wellard, David R.; Kerth, Donald A.; Del Signore, Bruce P.; and Swanson, Eric J., 5,012,244, Cl. 341-143.000

Crystal Spring Colony Farms Ltd *See—*
Kleinsasser, Jonathan R., 5,010,849, Cl. 119-53.000

Csillag, Frank *See—*
Cho, Hyun S.; Sung, Chien-Min; Merrill, Leo; Chen, Sy-Hwa; and Csillag, Frank, 5,011,514, Cl. 51-295.000.

Culler, Scott R. Fundingsland, Jon W., and Jacobs, Dwight W., to Minnesota Mining and Manufacturing Co. Silane-treated metal dental articles. 5,011,410, Cl. 433-208.000

Culling, John H., to Carodelet Foundry Company. Castable corrosion resistant alloy. 5,011,659, Cl. 420-582.000.

Cummins-Allison Corporation *See—*
Rasmussen, James M., 5,011,455, Cl. 453-010.000

Cummins Electronics Company, Inc. *See—*
Rosswurm, Mark A., 5,012,237, Cl. 340-870.370

Cummins Engine Company, Inc. *See—*
Perr, J. Victor, 5,011,079, Cl. 239-95.000

Cunningham, Danis L. *See—*
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Cupples Paper Bag Company *See—*
DeMatteis, Robert B.; and Pflueger, Wayne A., 5,011,466, Cl. 493-188.000

Curran Company, The *See—*
Sims, Richard E.; and Weibler, Joseph C., 5,012,041, Cl. 174-35.0MS

Curry, James E. *See—*
Hanle, John P.; and Curry, James E., 5,012,511, Cl. 379-211.000

Curry, John W., II *See—*
Pan, Ju-Don T.; Curry, John W., II; and Schultz, Laurence D., 5,011,580, Cl. 204-15.000

Cuzin, Marc; and Glasser, Francis, to Commissariat a l'Energie Atomique. X-ray tomography device. 5,012,498, Cl. 378-22.000.

Czech, Bronislaw P. *See—*
Cram, Donald J.; Chapoteau, Eddy; Czech, Bronislaw P.; Gebauer, Carl R.; Helgeson, Roger C.; Kumar, Anand; and Leong, Koon-Wah, 5,011,924, Cl. 540-469.000.

Czukor, Janos. *See—*
Kittler, Wilfred C., Jr.; Czukor, Janos; and Stoddard, Darrell, 5,011,569, Cl. 156-656.000.

D.E.M. Controls of Canada *See—*
D'Amato, Mark, 5,011,004, Cl. 198-791.000.

Daar, Yair, and Yahav, Shimon. Depilatory device. 5,011,485, Cl. 606-133.000

Dabbs, Timothy P. *See—*
Thorncraft, David A.; Kennedy, David R.; Rashleigh, Scott C.; and Dabbs, Timothy P., 5,011,252, Cl. 350-96.150.

Dabkowski, Ferdynand P. *See—*
Bryskiewicz, Barbara G.; Bryskiewicz, Tadeusz R.; Dabkowski, Ferdynand P.; Lacowski, Jacek; and Gatos, Harry C., 5,011,564, Cl. 156-624.000.

Dabuzhsky, Leonid V.; and Lerner, Moisey M. Sole for reactive distribution of stress on the foot. 5,010,662, Cl. 36-28.000.

Dai-Ichi Kogyo Seiyaku Co., Ltd *See—*
Matsumoto, Shusaku; Hatakawa, Yoshio; and Nakajima, Akihiko, 5,011,922, Cl. 536-119.000.

Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Suzuki, Daiji; and Sudo, Yasuhiro, 5,011,126, Cl. 271-227.000.

Daichi Canada Inc.: *See—*
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Daiei Chemical Co., Ltd.: *See—*
Terao, Masanobu, Maegawa, Yuzo; Ueda, Yasuyoshi; Hashimoto, Kiyoyasu; and Omura, Takashi, 5,012,015, Cl. 568-709.000.

Daiichi Denshi Kogyo Kabushiki Kaisha: *See—*
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Daiki Co., Ltd.: *See—*
Nakamori, Haruka; and Ito, Hiroshi, 5,011,731, Cl. 428-222.000.

Daimatsu Kagaku Kogyo Co., Ltd.: *See—*
Matsuguchi, Noboru; and Matsuguchi, Tadaski, 5,011,190, Cl. 283-101.000.

Daimler-Benz AG *See—*
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Zweigart, Gerhard, Greiner, Ferdinand; Baumert, Heinz; Scheiffele, Peter, and Nowak, Manfred, 5,011,213, Cl. 296-97.130.

Daimler-Benz Aktiengesellschaft *See—*
Jurgens, Gunter, Pickard, Jurgen, and Sell, Werner, 5,010,986, Cl. 188-250.00H

Dainippon Screen Mfg. Co., Ltd. *See—*
Kurusu, Yasuo; Cho, Masamichi; Nagata, Shinichi, Tomohisa, Kunio; and Shirota, Hiroyuki, 5,012,089, Cl. 250-235.000.

Daiwa Can Company *See—*
Shishikura, Toshibumi, 5,010,814, Cl. 101-211.000.

Dale, George L., and Brown, Robert E., to Dale, George L. Telephone handset cover. 5,012,513, Cl. 379-451.000

Dalrymple, Monte J.; Brubaker, Lois F.; and Smith, Don, to Zilog, Inc. System for testing internal nodes. 5,012,180, Cl. 324-73.100.

D'Amato, Mark, to D.E.M. Controls of Canada. Conveyor drive assembly. 5,011,004, Cl. 198-791.000

Damjanovic, Dragana. Biogenic amine assay using HPLC-ECD. 5,011,608, Cl. 210-656.000

Dammeyer, Ned E. *See—*
Conley, Walter, III; Dammeyer, Ned E.; and Klopfleisch, Kim A., 5,011,363, Cl. 414-666.000

Damon, Victor A. Hand-held soap-holder. 5,011,316, Cl. 401-6.000.

Dana Corporation *See—*
Love, Mickey L.; and Massey, Douglas V., 5,011,320, Cl. 403-132.000

Danner, Edward L.; and Picken, Alan D., to Van Dresser Corporation. Headliner. 5,011,218, Cl. 296-214.000

Danno, Yoshiaki *See—*
Ishida, Tetsuro, Danno, Yoshiaki, Akishino, Katsuo, and Fukui, Toyoaki, 5,010,863, Cl. 123-339.000

Dara, Paul C.; Mitchell, Clair E.; and Rutkowksi, David J., to Ford Motor Company. Method and apparatus for detecting stall current in an energized electric motor. 5,012,168, Cl. 318-434.000.

Darmont, Maurice *See—*
Brochot, Jean-Pierre, Pillias, Danielle, Wuest, Isabelle, Beaufays, Jean-Pierre, and Darmont, Maurice, 5,011,585, Cl. 204-192.130.

D'Arrigo, Sebastiano *See—*
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Das Chaklander, Asoke C., and Das Gupta, Sankar. In situ production of silicon carbide reinforced ceramic composites. 5,011,799, Cl. 501-89.000.

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Das Chaklander, Asoke C.; and Das Gupta, Sankar, 5,011,799, Cl. 501-89.000

Datta, Pabitra; Friel, Ronald N.; and Thompson, Robert P., to RCA Licensing Corp. Surface treatment of phosphor particles and method for a CRT screen. 5,012,155, Cl. 313-461.000.

Daughton, John W.; and Sklut, Robert L., to Xerox Corporation. Magnification adjustment for computer forms. 5,012,284, Cl. 355-243.000

Daverio AG *See—*
Maier, Willy, and Bachmann, Thomas, 5,011,131, Cl. 271-289.000

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Davidoff of Geneva, Inc. *See—*
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Davies, Andrew K., to U.S. Philips Corporation. Teletext decoders. 5,012,338, Cl. 358-147.000.

Davies, Donald C. Glove support apparatus. 5,011,053, Cl. 223-78.000.

Davis, Gerald E., to Merichem Company. Neutral oil recovery process for the production of naphthenic acids. 5,011,579, Cl. 203-37.000.

Davis, Robert F. *See—*
Kong, Hua-Shuang; Glass, Jeffrey T.; and Davis, Robert F., 5,011,549, Cl. 148-33.100

Davis, Ruth A.; Nicholas, David M.; Smith, Dale D.; Wang, Shoou-I; and Wright, Richard A., to Air Products and Chemicals, Inc. Integrated reformer process for the production of carbon black. 5,011,670, Cl. 423-450.000.

Davydov, Anatoly B. *See—*
Belykh, Sergei I.; Gigauri, Vladimir S.; Davydov, Anatoly B.; Keshelava, Viktor V.; Mlynchik, Vyacheslav E.; Utyamyshev, Rustam I.; and Firsova, Elizaveta V., 5,011,493, Cl. 606-215.000.

Daw Technologies, Inc.: *See—*
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Daw, Terry L., and Procter, David F., to Daw Technologies, Inc. Modular wall system. 5,010,702, Cl. 52-241.000.

Dawson, John A. *See—*
Strong, David S., and Dawson, John A., 5,011,747, Cl. 429-27.000.

Day, Delbert E., and Ehrhardt, Gary J., to University of Missouri, The Curators of the. Radioactive glass microspheres. 5,011,677, Cl. 424-1.100.

Day, Delbert E.; and Ehrhardt, Gary J., to University of Missouri, The Curators of the. Composition and method for radiation synovectomy of arthritic joints. 5,011,797, Cl. 501-33.000.

Day, Derek J. *See—*
Xu, Jingming; Sweeney, Mark A.; and Day, Derek J., 5,012,301, Cl. 357-4.000

Deamicis, Ferdinando. Portable garbage container. 5,011,168, Cl. 280-47.260

Dean, Douglas C., to Allegheny Ludlum Corporation. Composition for deboronizing grain-oriented silicon steel. 5,011,548, Cl. 148-27.000.

Dean, John W.; and Beers, Melvin D., to General Electric Company. Self-leveling silicone sealant compositions and methods for making same. 5,011,869, Cl. 523-213.000.

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Decker, Alain: *See—*
Sadoun, Michael; and Decker, Alain, 5,011,403, Cl. 433-8.000.

Decker, Owen H.; and Mumford, Neal A., to Thiokol Corporation. Chemorheologically tailored matrix resin formulations and their use in making pre-impregnated fibers and in fabricating composite parts. 5,011,721, Cl. 428-36.900.

Deckner, George E.: *See—*
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Deere & Company: *See—*
Boe, Thomas E.; Bergene, Mark A.; Kittle, Carl E.; and Sparks, Gregory E., 5,012,415, Cl. 364-424.070.
Bulgrien, Garth H.; Goodbar, Jim E.; and Johnson, Paul W., 5,012,416, Cl. 364-424.100
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de Fay, Stefan G. Method and portable device for detection, storage and for eventual processing and reproduction of graphic symbols appearing on any type of carrier. 5,012,349, Cl. 358-296.000.

Defour, Martin: *See—*
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Degawa, Junji, and Tsuji, Kazuwo, to Sumitomo Electric Industries, Ltd. Method of manufacturing cubic boron nitride p-n junction body. 5,011,790, Cl. 437-134.000.

Degenhardt, Charles R.: *See—*
Benedict, James J.; Degenhardt, Charles R.; and Poser, James W., 5,011,913, Cl. 530-390.000.

DeGroff, Morton S., to Aro Corporation, The. Two speed gear system for power tool. 5,011,341, Cl. 408-124.000.

Degussa Aktiengesellschaft: *See—*
Kriechbaum, Gangolf; Kleinschmit, Peter, and Peuckert, Doris, 5,011,673, Cl. 423-608.000.
Lutz, Klaus; Baer, Hans-Joachim; Starz, Karl-Anton; Leske, Werner; and Mueller, Harry, 5,011,627, Cl. 252-512.000.

Dehaine, Gerard, to Bull, S.A. Device for fastening together under pressure two pieces, one to the other. 5,010,949, Cl. 165-76.000.

Deibele, Steven: *See—*
Beyer, James B.; and Deibele, Steven, 5,012,203, Cl. 330-286.000.

DeJager, Donald; Kurtz, Andrew F.; Kessler, David; and Moore, Leslie G., Jr., to Eastman Kodak Company. Illumination system for a film scanner. 5,012,346, Cl. 358-214.000.

de Kanawati, Gisleine C.; and Philot, George G., to Mara Teixeira De Freitas. Head supporting and sustaining apparatus. 5,010,898, Cl. 128-845.000.

Delco Electronics Corporation: *See—*
Nakanishi, Todd G.; and Taylor, Matthew F., 5,011,062, Cl. 228-1.100.
Rada, Mark Z.; Willis, John W.; and Stewart, Marta E., 5,012,054, Cl. 200-314.000.

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DeLorme, Dale J. Can disposal apparatus. 5,010,810, Cl. 100-49.000.

Deloy, Joseph T.: *See—*
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Delphax Systems: *See—*
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Del Signore, Bruce P.: *See—*
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Delvinquiere, Francois: *See—*
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DeMatteis, Robert B.; and Pflueger, Wayne A., to Cupples Paper Bag Company. Method of making a T-shirt grocery bag having a coupon. 5,011,466, Cl. 493-188.000.

Demeyer, David M.: *See—*
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DeMichele, Glenn A.: *See—*
Troyk, Philip R.; and DeMichele, Glenn A., 5,012,236, Cl. 340-825.540.

Dennison Stationery Products Company: *See—*
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Depraetere, Raymond: *See—*
Sabatier, Andre; and Depraetere, Raymond, 5,011,196, Cl. 285-367.000

Depuydt, Kent T.; and Tikalsky, Joseph S., to Zimpro Passavant Environmental Systems, Inc. Control valve with displacement-compensating seal. 5,011,114, Cl. 251-144.000.

Derman, Jay S. Stud or bolt locking device. 5,010,748, Cl. 70-164.000.

Desai, Praful C., to Smith International, Inc. Milling apparatus with replaceable blades. 5,010,967, Cl. 175-406.000.

DeSantis, Raymond P., to PTX-Pentronix, Inc. Linearly movable tool or work handling unit. 5,010,824, Cl. 104-23.001.

Design Research, Inc *See*—
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Murphy, Edward J., Krajewski, John J., and Ansel, Robert E., 5,011,635, Cl. 264-22.000

Despins, Maurice, and Carveth, William, to Omnimart Distributions Inc. Seam cutter. 5,010,650, Cl. 30-304.000

Dessau, Ralph M., to Mobil Oil Corporation. Dehydrogenation, dehydrocyclization and reforming catalyst. 5,011,805, Cl. 502-66.000

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Hardt, Norbert, Sterner, Hakan, Wetzka, Gerhard, and Schulte, Burkart, 5,011,651, Cl. 376-261.000

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Halsey, Brenton S., Jr., and Larson, Arthur C., 5,010,701, Cl. 52-233.000

Dianda, Robert B. *See*—
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Janssens, Frans E., Sommen, Francois M., Torremans, Joseph I. G., and Diels, Gaston, S. M., 5,011,842, Cl. 514-253.000

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Conroy, David G., 5,012,408, Cl. 364-200.000
Keller, James B., Ladd, Kevin L., and Reisert, James J., 5,012,403, Cl. 364-200.000

Dillman, Norman G., to Hewlett-Packard Company. Switched-capacitor analog-to-digital converter with autocalibration. 5,012,247, Cl. 341-172.000.

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Dinnissen, Johannes H. T., and Lambregts, Augustinus W. M., to OCE-Nederland B.V. Method of and copying machine for copying originals in order on both sides of receiving sheets. 5,012,296, Cl. 355-320.000

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Whitefield, Martin, 5,011,693, Cl. 424-455.000

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Bower, Maurice H., and Dixon, Gerald, 5,012,368, Cl. 360-104.000

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Khadder, Wadie N., Vokac, James P., and Dobkin, Robert C., 5,012,305, Cl. 357-22.000

Dr. Ing. h.c.F. Porsche AG *See*—
Heireth, Hermann, and Messerschmidt, Dieter, 5,010,994, Cl. 192-103.00B

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Dodd, Robert E. *See*—
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Dolgoff, Eugene. Active matrix LCD image projection system. 5,012,274, Cl. 340-702.000

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Boser, Werner, Sieg, Giselher, and Wedekind, Robert, 5,010,750, Cl. 70-276.000

Domanico, Richardo H. *See*—
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Dombrowski, Kenneth J., and Ergun, Joseph, to Chamberlain Group, Inc., The. Garage door operator with plastic drive belt. 5,010,688, Cl. 49-362.000

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Roberto, Gian, Ettore, Parini, Massimiliano, Borsa, and Antonio, Lavezzo, 5,011,838, Cl. 514-234.200

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Donnell, Kenneth D. Microphone mount. 5,010,803, Cl. 84-743.000

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Bowman, Robert G., Hartwell, George E., Molzahn, David C., Ramirez, Enrique G., and Lastovica, John E., Jr., 5,011,999, Cl. 564-479.000
Cavitt, Michael B., Steele, Dennis L., and Duncan, David J., 5,011,904, Cl. 528-103.000
Langhorst, Martin A., 5,011,606, Cl. 210-635.000
Meyer, Louis W., Carswell, Robert, and Vanderhider, J. Alan, 5,011,647, Cl. 264-300.000
Overman, Dana C., III, Kau, Jee I., and Mahoney, Robert D., 5,011,637, Cl. 264-41.000
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Dow Corning Corporation *See*—
Peterson, Adam L., 5,011,870, Cl. 523-220.000
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Henley, Gary D., Milner, Larry B., and Dowdy, Clifford A., 5,010,876, Cl. 128-6.000.

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Orvik, Jon A., Pearson, Norman R., Haag, Anthony P., Adaway, Timothy J., Kershner, Larry D., and Kende, Andrew S., 5,012,017, Cl. 568-803.000.

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Weinreb, Robert N.; Lewak, Jerzy J.; and Dreher, Andreas W., 5,012,496, Cl. 377-21.000.

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Dugas, Michael R.: *See*—
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Duke, Jonathan W., and Richards, Barry R., to Westinghouse Electric Corp. Plane change connector assembly. 5,011,421, Cl. 439-213.000.

Dulaney, Randi L.; and Rakolta, Pamela A., to Motorola, Inc. User activated memory programming authorization in a selective call receiver. 5,012,234, Cl. 340-825.440.

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Chao, Tze, and Senkler, George H., Jr., 5,011,666, Cl. 423-82.000.
Corradetti, Anthony A.; Gargiulo, Edward P., Krauss, Leland L.; and Hooley, Robert W., 5,011,246, Cl. 350-96.200.
Dishart, Kenneth T., and Wolff, Mark C., 5,011,620, Cl. 252-118.000.
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Hung, Ming-Hong; and Resnick, Paul R., 5,011,954, Cl. 549-548.000
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Kawasaki, Sadanobu; Koishikawa, Jun; and Kuty, Donald W., 5,011,391, Cl. 445-24.000.
Leech, Danny R., 5,011,541, Cl. 134-34.000.
Novak, Ernest R., 5,011,890, Cl. 525-154.000.
Sakamoto, Haruo, 5,011,420, Cl. 439-152.000.
Thompson, Alfred H., Jr., 5,011,645, Cl. 264-210.700.
Van Zanten, Albertus; and Van Woensel, Johannes M. B., 5,011,425, Cl. 439-353.000.
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E.P.B. Emile Pfalzgraf, Societe Anonyme: *See*—
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Sakamaki, Hiroshi; Horikoshi, Yukio, Jinnouchi, Takeshi; and Tanzawa, Kenji, 5,011,390, Cl. 418-256.000

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Oriola, Ralph; Romine, Charles F., and Meisner, Edward O., 5,011,121, Cl. 267-64.110.

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Byers, Gary W.; and Chapman, Derek D., 5,011,816, Cl. 503-227.000.
Columbus, Richard L., 5,010,930, Cl. 141-1.000.
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Harrison, Daniel J., 5,011,814, Cl. 503-227.000.
Illig, Carl R.; and Weis, Alexander L., 5,012,000, Cl. 564-489.000
Irick, Gether, Jr.; Mercer, Patricia N.; and Simmons, Kenneth E., 5,011,806, Cl. 502-202.000.
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Lee, Hsien-Che; Kaplan, Martin C.; and Goodwin, Robert M., 5,012,333, Cl. 358-80.000.
McLeod, Andrew E.; Fields, Gaines C.; and Sanders, Donald J., 5,010,908, Cl. 134-168.00C
Morris, John C.; and Jackson, Winston J., Jr., 5,011,877, Cl. 524-115.000.
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Barnett, Charles J.; Holmes, Richard E.; Jungheim, Louis N.; Sigmund, Sandra K.; and Ternansky, Robert J., 5,011,938, Cl. 548-359.000.

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Elliott, David L.; Howie, Catherine L.; and Montague, Peter G., to Conopco, Inc. Hypophosphite-containing cotelomers as antitartar agents. 5,011,682, Cl. 424-52.000.

Elliott, Robert S., and Gauen, Kim R., to Motorola, Inc. Motor drive circuit with reverse-battery protection. 5,012,381, Cl. 361-84.000.

Elscint Ltd. *See*—
Palkovich, Alex; Bird, John M.; and Morad, Ratson, 5,012,217, Cl. 335-301.000.

Elworthy, Trevor P., to Protocol Engineering PLC. Film registration apparatus and method. 5,012,345, Cl. 358-214.000.

Ema, Taji, to Fujitsu Limited. Semiconductor static ram including load resistors formed on different layers. 5,012,443, Cl. 365-51.000.

Emeric, Dario A.; Miller, Christopher E.; and Westich, Bryan, to United States of America, Army. Protective coating for steel surfaces and method of application. 5,011,551, Cl. 148-248.000.

Emmel, Eckhard. *See*—
Bischoff, Gilbert; Breitwieser, Karl; and Emmel, Eckhard, 5,011,234, Cl. 303-4.000.

Empi, Inc. *See*—
Maurer, Donald D.; and Mattson, Stacy D., 5,010,895, Cl. 128-788.000.

Empteezy Limited. *See*—
Abram, David A. S.; and Wishart, Bruce W., 5,011,360, Cl. 414-424.000.

Endo, Yasuo, Akimichi, Shinji, Hirose, Tadayoshi, Furukawa, Motonori, and Yoshida, Kyoko, to Takenaka Corporation. Context-base input/output system. 5,012,521, Cl. 382-1.000.

Endo, Yoshinori, and Sakakibara, Kenji, to Brother Kogyo Kabushiki Kaisha. Image recording apparatus. 5,012,276, Cl. 355-27.000.

Endou, Mikio. *See*—
Ogawa, Kazufumi; Tamura, Hideharu; Ishihara, Toshinobu; Tanaka, Yasuhisa; and Endou, Mikio, 5,011,963, Cl. 556-485.000.

Engel, Wolfhard. *See*—
Eberlein, Wolfgang; Engel, Wolfhard; Mihm, Gerhard; Rudolf, Klaus; Doods, Henri; and Mayer, Norbert, 5,011,836, Cl. 514-217.000.

Engelhard Corporation. *See*—
Berube, Richard R.; Babiec, John S., Jr.; Jameson, M. Phillip; Negele, Andrew R.; and Willis, Mitchell J., 5,011,534, Cl. 106-416.000.
Kuznicki, Steven M., 5,011,591, Cl. 208-46.000.
Kuznicki, Steven M.; and Whyte, John R., Jr., 5,011,667, Cl. 423-118.000.

Engelhardt, Friedrich, and Riegel, Ulrich, to Cassella AG. Hydrophilic swellable graft copolymers, their preparation and use. 5,011,892, Cl. 525-404.000.

Engst, Ernst. *See*—
Zietlow, Kurt; and Engst, Ernst, 5,012,434, Cl. 364-523.000.

Eno Electronic GmbH. *See*—
Aalderink, Friedrich, 5,010,721, Cl. 57-11.000.

Entrelec S.A. *See*—
Heng, Jean-Paul; Guernet, Henri; and Marmonier, Andre, 5,011,428, Cl. 439-394.000.

Envicon Luft- und Wassertechnik GmbH & Co. KG. *See*—
Pape, Stefan; and Bassfeld, Hans-Joachim, 5,011,605, Cl. 210-615.000.

Eppinette, Horace, to Flexi-Hitch, Inc. Adjustable trailer coupling. 5,011,176, Cl. 280-479.300.

Erbele, Kurt, to ANT Nachrichtentechnik GmbH. Mounting and connection system for electrical communications equipment. 5,012,390, Cl. 361-413.000.

Ercegovac, Milos. *See*—
Nash, J. Gregory; Ercegovac, Milos; and Lang, Thomas, 5,012,439, Cl. 364-766.000.

Ergun, Joseph. *See*—
Dombrowski, Kenneth J.; and Ergun, Joseph, 5,010,688, Cl. 49-362.000.

Erhardt, Hans-Dieter. *See*—
Borck, Gerald-Wolfgang; Ell, Manfred; and Erhardt, Hans-Dieter, 5,011,014, Cl. 206-387.000.

Esoteric Audio USA, Inc. *See*—
Awbrey, Jerry R., 5,011,438, Cl. 439-825.000.

Esparza, Raymond R. *See*—
Teehter, Ronald R.; Mangialardi, Gregg M.; and Esparza, Raymond R., 5,010,651, Cl. 30-376.000.

Establecimientos Industriales Quimicos Oxiquim S.A. *See*—
Saphores, Eugenio A.; Gleisner, Arturo G.; Vega, Juan C.; and Mardones, Wladimir A., 5,011,965, Cl. 558-245.000.

Etec Systems, Inc. *See*—
Young, Lydia J., 5,012,104, Cl. 250-396.0ML.

Etou, Kouichi. *See*—
Oka, Tateki; Toyoshi, Naoki; Yokoyama, Tomoaki; Mizuno, Hiroshi; Murasaki, Hiroshi; Ikegawa, Akihito; Etou, Kouichi; and Nakagawa, Shuichi, 5,012,285, Cl. 355-245.000.

Etra, William, to Dubner Computer Systems, Inc. Video image bank for storing and retrieving video image sequences. 5,012,334, Cl. 358-102.000.

Ettore, Parini. *See*—
Roberto, Giani; Ettore, Parini; Massimiliano, Borsa; and Antonio, Lavezzo, 5,011,838, Cl. 514-234.200.

Evans, Harold H., and Bruchu, Todd W., to Anderson Corporation. Corner lock. 5,010,708, Cl. 52-656.000.

Evans, John, to Design Research, Inc. Garment bag cover. 5,010,987, Cl. 190-26.000.

Exar Corporation. *See*—
Ratnakumar, Kola N., 5,011,784, Cl. 437-34.000.

Exxon Chemical Patents Inc. *See*—
Lewtas, Kenneth; and Bland, Jacqueline D., 5,011,505, Cl. 44-393.000.

Exxon Production Research Company. *See*—
Bednar, John M., 5,010,956, Cl. 166-344.000.

Exxon Research and Engineering Company. *See*—
Sartori, Guido; Ho, W. S. Winston; and Noone, Robert E., 5,012,035, Cl. 585-819.000.
Sartori, Guido; Ho, W. S. Winston; and Noone, Robert E., 5,012,036, Cl. 585-819.000.
Spenadel, Lawrence; Grosser, Joel H.; and Dwyer, Stephen M., 5,011,891, Cl. 525-211.000.

Eyecare One Corp. *See*—
Van Slett, Peter J., 5,011,027, Cl. 211-13.000.

Fabrica Espanola de Productos Quimicos y Farmeceuti Cos S.A. (FAES): *See*—
Venero, Aurelio O.; and Avello, Antonio T., 5,011,928, Cl. 544-373.000.

Fadem, Richard J., to NCR Corporation. Bit mapped memory plane with character attributes for video display. 5,012,232, Cl. 340-750.000.

Faffart, Andre, to Telemecanique. Lock mechanism for a limiting contact maker. 5,012,214, Cl. 335-6.000.

FAG Kugelfischer Georg Schafer (KGaA): *See*—
Breuer, Bernhard; and Schottdorf, Johannes, 5,011,305, Cl. 384-572.000.

Fagan, Gian L., to Chevron Research and Technology Company. Complex tolylene polurea grease composition and process. 5,011,617, Cl. 252-18.000.

Fairclough, Gordon F., Jr.: *See*—
Mynarcik, Dennis C.; Griffith, Owen W.; and Fairclough, Gordon F., Jr., 5,011,964, Cl. 558-179.000.

Fairhurst, Jon: *See*—
Lang, Stuart E.; and Fairhurst, Jon, 5,012,329, Cl. 358-31.000.

Falcoz, Marc: *See*—
Carneiro, Armadno; Falcoz, Marc; and Michel, Robert, 5,010,993, Cl. 192-84.00R.

Falk, David O., to Marathon Oil Company. Gel composition and method of treatment. 5,010,954, Cl. 166-295.000.

Falter, Diedre D.: *See*—
Valentine, Kenneth H.; Falter, Diedre D.; and Galter, Kelly G., 5,012,113, Cl. 250-493.100.

Fang, Roger C., to Tatung Company of America, Inc. Adjustable frame. 5,011,104, Cl. 248-125.000.

Fanshtein, Valentin N. *See*—
Neroznikov, Jury I.; Rudakov, Ivan P.; Fanshtein, Valentin N.; Medyanik, Vladimir A.; and Gavrilova, Valentina V., 5,010,963, Cl. 173-105.000.

Fanuc Ltd.: *See*—
Arai, Takeji, 5,012,069, Cl. 219-121.620.
Fujioka, Yoshiki; and Shinohara, Tatsuo, 5,012,173, Cl. 318-727.000.

Farina, Vittorio, Benigni, Daniel A.; and Brodfuehrer, Paul R., to Bristol-Myers Squibb Co. Dideoxyinosine by enzymatic deamination of dideoxyadenosine. 5,011,774, Cl. 435-87.000.

Farley, David L. Anatomically conformable foam support pad. 5,010,609, Cl. 5-464.000.

Farnsworth, Stephen W.; Doods, David R.; Perera, Slobodan R.; and Stahl, K. John, to Bernoulli Optical Systems Company. Optical read/write storage system for flexible media having bernoulli stabilization at the optical head. 5,012,463, Cl. 369-100.000.

Farnworth, Warren M., to Micron Technology, Inc. Double-die semiconductor package having a back-bonded die and a face-bonded die interconnected on a single leadframe. 5,012,323, Cl. 357-75.000.

Farrell, John J., to BM Corp. High capacity injection molding apparatus. 5,011,399, Cl. 425-557.000.

Farrell, Patrick V., to Wisconsin Alumni Research Foundation. Optical correlator method and apparatus for particle image velocimetry processing. 5,011,278, Cl. 356-28.000.

Fassauer, Arthur L. Air-floated cutting apparatus with overhead grass catcher. 5,010,716, Cl. 56-12.100.

Fassnacht, Francis B. *See*—
Hammond, Russell E.; Northup, Robert L.; Shimp, Alan G.; and Fassnacht, Francis B., 5,012,121, Cl. 307-64.000.

Faulkner, Alistair R., to GEC Avionics Limited. Methods of recognizing targets. 5,012,252, Cl. 342-192.000.

Fauteux, Denis G. *See*—
Shackle, Dale R.; Fauteux, Denis G.; and Lundsgaard, Jorgen S., 5,011,501, Cl. 29-623.100.

Fearnot, Neal E. *See*—
Goode, Louis; Shipko, Frederick J.; and Fearnot, Neal E., 5,011,482, Cl. 606-1.000.

Federowsky, Robert: *See*—
Roncato, Giordano; and Federowsky, Robert, 5,011,523, Cl. 65-2.000.

Fee, David M. *See*—
Lammers, Bryan G.; and Fee, David M., 5,010,984, Cl. 188-71.500.

Fehr, Theodor, to Sandoz Ltd. Substituted 4-azatricyclo(22.3.1.0^{4,9})octacos-18-ene derivatives, their preparation and pharmaceutical compositions containing them. 5,011,844, Cl. 514-291.000.

Feild, Alexander R. *See*—
Kapolnek, Michael R.; Feild, Alexander R.; Hartle, Robert T.; and Holmes, Hillard R., 5,010,951, Cl. 165-104.260.

Feinberg, Alec. Transparent toy house. 5,011,446, Cl. 446-85.000.

Feldbaumer, David W.; and Heim, Barry B., to Motorola, Inc. High speed CMOS multiplexer having reduced propagation delay. 5,012,126, Cl. 307-243.000.

Felix, Raymond A. Process for the preparation of N-allylamides from O-allylimidates. 5,011,990, Cl. 564-161.000.

Felix, Willi, to Jos. Hunkeler Ltd. Process for the manufacture of sheets or pages with separable self-adhesive labels. 5,011,559, Cl. 156-257.000.

Felsenstein, Lee, to Golemics, Inc. Method and apparatus for cursor motion having variable response. 5,012,231, Cl. 340-709.000.

Feray, Cathy, and Hubele, Conrad, to Lyonnaise des Eaux. Method for regulating the residual free chlorine in water. 5,011,613, Cl. 210-739.000.

Ferguson Limited: *See*—
Walton, David W.; and Harrison, Roger, 5,012,516, Cl. 381-3.000.

Fernandez, Miguel C., to ITW-Mapri Industria e Comercio LTDA. Panel fastener. 5,011,356, Cl. 411-553.000.

Fero, Arnold H., to Westinghouse Electric Corp. Nuclear power generating station equipment qualification apparatus. 5,011,650, Cl. 376-247.000.

Ferranti O.R.E. Inc.: *See*—
Todd, John D., 5,012,449, Cl. 367-89.000.

Ferrara, Daniel A. Potato chip maker including apparatus for centrifugally removing cooking oil from any product. 5,010,805, Cl. 99-353.000.

Ferraris, Giampiero: *See*—
Cagnin, Tarcisio; and Ferraris, Giampiero, 5,011,761, Cl. 430-312.000.

Ferris, John J.; Kraft, William; Manning, Winton H.; and Martinez, Michael, to Educational Testing Service. Machine-interpretable figural response testing. 5,011,413, Cl. 434-358.000.

Ferry, James N.: *See*—
Giroux, D. William; Ferry, James N.; Kelly, Kendall J.; Bell, Thomas G.; Narby, Conway P.; and Patburg, Gary L., 5,011,338, Cl. 405-268.000.

Fields, Gaines C.: *See*—
McLeod, Andrew E.; Fields, Gaines C.; and Sanders, Donald J., 5,010,908, Cl. 134-168.00C.

Fife, James A.; and Hard, Robert A. Article for controlling the oxygen content in tantalum material. 5,011,742, Cl. 428-558.000.

Filsinger, Karl-Heinz: *See*—
Spiegel, Nikolaus; Filsinger, Karl-Heinz; and Hirth, Roland, 5,011,125, Cl. 271-183.000.

Filzen, Scott E.: *See*—
Lange, David V.; and Filzen, Scott E., 5,011,578, Cl. 162-358.000.

Findlay, Melvin W.: *See*—
Stetter, Joseph R.; Findlay, Melvin W.; and Yue, Chongshan, 5,012,432, Cl. 364-557.000.

Fink, Mathias; Cancre, Fabriee, and Pesque, Patrick, to U.S. Philips Corporation. Ultrasonic echograph with controllable phase coherence. 5,010,885, Cl. 128-660.070.

Fink, Ronald G. Ultrasorb system. 5,011,609, Cl. 210-665.000.

Finn, Charles A. Computer system which accesses operating system information and command handlers from optical storage via an auxiliary processor and cache memory. 5,012,407, Cl. 364-200.000.

Finney, John D.; and Finney, Michael J., to MJ Research, Inc. Constrained uniform field gel electrophoresis. 5,011,586, Cl. 204-299.00R.

Finney, Michael J.: *See*—
Finney, John D.; and Finney, Michael J., 5,011,586, Cl. 204-299.00R.

Firmenich SA: *See*—
Whitaker, Robert J., 5,012,040, Cl. 800-200.000.

Firsova, Elizaveta V.: *See*—
Belykh, Sergei I.; Gigauri, Vladimir S.; Davydov, Anatoly B.; Keshelava, Viktor V.; Mlynchik, Vyacheslav E.; Utyamyshev, Rustam I.; and Firsova, Elizaveta V., 5,011,493, Cl. 606-215.000.

Fischell, Robert E.; and Fischell, Tim A., to Medical Innovative Technologies R&D Limited Partnership. Endoluminal tissue excision catheter system and method. 5,011,490, Cl. 606-159.000.

Fischell, Tim A. *See*—
Fischell, Robert E.; and Fischell, Tim A., 5,011,490, Cl. 606-159.000.

Fischer, Walter. *See*—
Kvita, Vratislav; Baumann, Marcus; Fischer, Walter; Mayer, Carl W.; and Allmendinger, Thomas, 5,011,944, Cl. 549-214.000.

Fischerwerke Artur Fischer GmbH & Co. KG. *See*—
Ziegler, Manfred; and Koerner, Edmund, 5,011,015, Cl. 206-387.000.

Fishman, David A.; and Hone, Jon D., to United States of America, Air Force. Method of forming dimples in a conductive substrate. 5,010,757, Cl. 72-60.000.

Fitzinger, Klaus: *See*—
Baumann, Karl; and Fitzinger, Klaus, 5,011,971, Cl. 560-38.000.

Fjeld, Svein, to Norwegian Contractos A/S. Method for making foundation for a jackable platform, and means for carrying out the method. 5,011,335, Cl. 405-204.000.

Fleet, George W. J.; and Bruce, Ian, to Monsanto Company. Synthesis of mannojirimycin derivatives. 5,011,929, Cl. 546-14.000.

Fleischer, Robert L., to General Electric Company. Ruthenium aluminum intermetallic compounds. 5,011,554, Cl. 148-430.000.

Fletcher, Mitchell S.; and Semma, Richard P. Operating system for a multi-tasking operating environment. 5,012,409, Cl. 364-200.000.

Flexi-Hitch, Inc.: *See*—
Eppinette, Horace, 5,011,176, Cl. 280-479.300.

Flexible Steel Lacing Company. *See*—
Gladding, Alfred E., 5,011,003, Cl. 198-728.000.

Flint, Graham W.; Papazian, Harold A.; and Wolfert, Ludwig G., to Martin Marietta Corporation. Infrared scene projector. 5,012,112, Cl. 250-493.100.

Floc'h, Noel, to Telemecanique. Protected switch contactor apparatus. 5,012,215, Cl. 335-132.000.

Fluck, Rene, to SIG Schweizerische-Industrie-Gesellschaft. Method and apparatus for conveying articles, particularly wafer-shaped food products. 5,010,715, Cl. 53-447.000.

Flynn, David P., and Oretti, John E., to Britax Child-Care Products Pty. Ltd. Safety helmet. 5,010,598, Cl. 2-410.000.

Flynn, Edward J.; Ketelsen, Leonard J.; and Roxlo, Charles B., to AT&T Bell Laboratories. Analog optical fiber communication system, and laser adapted for use in such a system. 5,012,484, Cl. 372-96.000.

FMC Corporation: *See—*
Hoare, John H., and Halfon, Marc, 5,011,933, Cl 548-263.200.
Parthasarathy, V. R., Sundaram, Meenakshi, Jameel, Hasan, Gratzl, Josef S., and Klein, Ronald J., 5,011,572, Cl. 162-56.000.
Foisy, Robert L., to Sprague Electric Company. Method for attaching a fuse wire to a lead frame. 5,011,067, Cl. 228-241.000.
Foley, John J., Eide, Ralph M., and Macdonell, Ranald L., to Recreation Industries Company. Pedal operated water cycle. 5,011,441, Cl. 440-30.000.
Foley, Kenny B., to United States of America, Navy. Radiator of microwave and infrared energy to simulate target. 5,012,250, Cl. 342-53.000.
Folkers, Karl A. *See—*
Langsjoen, Per H., Folkers, Karl A., and Langsjoen, Peter H., 5,011,858, Cl. 514-690.000.
Folsom, Mark, to Whittaker Ordnance, Inc. Explosive initiator with angled fiber optic input. 5,010,822, Cl. 102-201.000.
Folz, Sylvester D. *See—*
Rector, Douglas L.; Conder, George A., and Folz, Sylvester D., 5,011,932, Cl. 546-268.000.
Forbes, Alexander D., and Forbes, Sheena C. Pedal cycle and motorcycle trailer. 5,011,170, Cl. 280-204.000.
Forbes, Sheena C. *See—*
Forbes, Alexander D.; and Forbes, Sheena C., 5,011,170, Cl. 280-204.000.
Ford Motor Company. *See—*
Dara, Paul C., Mitchell, Clair E., and Rutkowksi, David J., 5,012,168, Cl. 318-434.000.
Logothetis, Eleftherios, and Soltis, Richard E., 5,010,762, Cl. 73-116.000.
Ojala, William K., 5,010,856, Cl. 123-90.360.
Ford New Holland, Inc.: *See—*
Bulgrien, Garth H., Goodbar, Jim E., and Johnson, Paul W., 5,012,416, Cl. 364-424.100.
Ford, Warren T., Chandran, Rama S., Hassanein, Mahmoud, and Turk, Hayrettin. Polymer latexes containing metal ions and complexes. 5,011,956, Cl. 552-304.000.
Foresight Industries, Inc.: *See—*
Gray, Daniel W., and Jewett, Thomas E., 5,010,710, Cl. 52-742.000.
Forschungszentrum Juelich GmbH. *See—*
Rao, Nagaraj N., Wandrey, Christian, Petersen, Maike, and Alfermann, August W., 5,011,775, Cl. 435-135.000.
Forschungszentrum Julich GmbH: *See—*
Mallek, Heinz, 5,010,828, Cl. 110-256.000.
Forte, Mark R., and Noiles, Douglas G., to Joint Medical Products Corporation. Prosthetic joint. 5,011,496, Cl. 623-20.000.
Fortunato, Michael, and Fortunato, Michael A. Method of playing a chess game. 5,011,159, Cl. 273-260.000.
Fortunato, Michael A.: *See—*
Fortunato, Michael; and Fortunato, Michael A., 5,011,159, Cl. 273-260.000.
Foss, Robert P., to Du Pont de Nemours, E. I., and Company. Acrylic amphoteric polymers. 5,011,898, Cl. 526-234.000.
Foster, Brian C., to Ceramics Process Systems Corp. Substrates with dense metal vias produced as co-sintered and porous back-filled vias. 5,011,725, Cl. 428-137.000.
Foster, Robert J. C. Single fill and use syringe. 5,011,476, Cl. 604-110.000.
Foster Wheeler Energy Corporation: *See—*
Vatsky, Joel, 5,011,400, Cl. 431-4.000.
Foucht, Millard E., to Georgia-Pacific Resins, Inc. Co-catalyst system for preparing polyurethane based plywood-patch compositions. 5,011,902, Cl. 528-55.000.
Fourcadier, Chantal. *See—*
Grollier, Jean F.; and Fourcadier, Chantal, 5,011,500, Cl. 8-410.000.
Fournier, Antoine. Image stabilizing apparatus for a portable video camera. 5,012,347, Cl. 358-222.000.
Fowler, John T., to Digicourse, Inc. Apparatus and method for determining azimuth, pitch and roll. 5,010,653, Cl. 33-356.000.
Fozard, John R.: *See—*
Gittos, Maurice W.; Miller, Francis P.; Sorensen, Stephen M.; Fozard, John R.; Moser, Paul, Palfreyman, Michael G.; and Cheng, Hsien, 5,011,846, Cl. 514-294.000.
Frakes, Thomas A.: *See—*
Mowka, Edmund J., Jr.; Frakes, Thomas A.; and Pettengill, Larry M., 5,011,600, Cl. 210-169.000.
Framatome: *See—*
Guironnet, Louis, 5,011,206, Cl. 294-86.410.
Francis, Nicholas J.; and Stewart, Vernon E. Compact disc container. 5,011,010, Cl. 206-307.000.
Frantz, Gary A.; Aleem, Mohd A.; Rademacher, Loren; and Rateike, Lee R., to Sundstrand Corporation. Rotating rectifier assembly for brushless generator. 5,012,145, Cl. 310-68.00D.
Fraser, Howard H., Jr.: *See—*
Grunwald, Stefan H.; and Fraser, Howard H., Jr., 5,011,384, Cl. 418-55.500.
Frazier, Janice D.; Jackson, Robert L.; and Reich, Richard A., to International Business Machines Corporation. Water soluble solder flux and paste. 5,011,546, Cl. 148-23.000.
Frazier Simplex, Inc.: *See—*
Hammond, John A., 5,011,402, Cl. 432-238.000.
Fred Hutchinson Cancer Research Center: *See—*
Hakomori, Sen-itiroh; Fukushi, Yasuo, Nudelman, Edward D.; and Levery, Steven B., 5,011,920, Cl. 536-53.000.
Fresenius AG: *See—*
Steudle, Volker; and Bartz, Volker, 5,011,826, Cl. 514-23.000.
Fried. Krupp GmbH. *See—*
Haeffner, Eckhard, Ben-Nasr, Hedi; Knuth, Bernd, Jasper, Hubert; and Reimann, Klaus, 5,011,594, Cl. 208-320.000.
Friedman, Robert H., and Surles, Billy W., to Texaco Inc. Sand consolidation methods. 5,010,953, Cl. 166-288.000.
Friel, Ronald N. *See—*
Datta, Pabitra, Friel, Ronald N.; and Thompson, Robert P., 5,012,155, Cl. 313-461.000.
Friesen, Randolph K., and Wight, J. David A. Truck box cover. 5,011,214, Cl. 296-100.000.
Frindel, Sebastien, and Mathieu, Luc, to Alcatel Cit. Vacuum pump of the type having a Gaede channel. 5,011,368, Cl. 415-90.000.
Frisbee, Claude M., to J. I. Case Company. Angle-tilt-pitch mechanism for dozer blade. 5,010,961, Cl. 172-821.000.
Frisch, Heinz. *See—*
Gresser, Wilhelm, Schelhase, Klaus; Frisch, Heinz; Kaschel, Klaus, Reinecke, Berent, and Trautmann, Wilhelm H., 5,011,614, Cl. 210-761.000.
Fritz, Frank M. *See—*
Stobbs, Thomas J., Patel, Kishor J.; Fritz, Frank M.; Knutson, Dale A.; and Janecke, James P., 5,011,113, Cl. 251-129.160.
Frushour, Robert H. Composite compact with a more thermally stable cutting edge and method of manufacturing the same. 5,011,509, Cl. 51-293.000.
Frushour, Robert H. Composite polycrystalline diamond compact with improved impact resistance. 5,011,515, Cl. 51-307.000.
Fuchs, Karl-Heinz. *See—*
Graf, Lothar; and Fuchs, Karl-Heinz, 5,011,046, Cl. 222-321.000.
Fuisz Pharmaceutical Ltd. *See—*
Fuisz, Richard C., 5,011,532, Cl. 106-215.000.
Fuisz, Richard C., to Fuisz Pharmaceutical Ltd. Dispersed systems and method of manufacture. 5,011,532, Cl. 106-215.000.
Fuji Electric Co., Ltd. *See—*
Fujihira, Tatsuhiko, 5,012,313, Cl. 357-23.130.
Fuji Jukogyo Kabushiki Kaisha. *See—*
Nakazato, Wataru, and Takase, Akira, 5,010,784, Cl. 74-498.000.
Fuji Kiko Company, Ltd. *See—*
Asano, Yasushi; and Kataumi, Yoshimasa, 5,010,782, Cl. 74-512.000.
Fuji Machine Mfg. Co., Ltd.: *See—*
Asai, Koichi; Tsuda, Mamoru; Muto, Yasuo; Suhara, Sinsuke; and Kawada, Tousuke, 5,012,115, Cl. 250-561.000.
Fuji Photo Film Co., Ltd. *See—*
Horikawa, Kazuo, and Miyagawa, Ichirou, 5,012,095, Cl. 250-327.200.
Kawamata, Toshio, 5,011,395, Cl. 425-143.000.
Morimoto, Kiyoshi; and Fujita, Yoshihiro, 5,011,763, Cl. 430-393.000.
Ogawa, Tadashi, 5,011,768, Cl. 430-569.000.
Onmori, Shozo; Takahashi, Daisuke; and Oishi, Kengo, 5,012,378, Cl. 360-132.000.
Onmori, Shozo; Takahashi, Daisuke; and Oishi, Kengo, 5,012,379, Cl. 360-132.000.
Ono, Mitsunori, and Suzuki, Nobuo, 5,011,923, Cl. 536-17.900.
Sakai, Nobuo; and Sakai, Minoru, 5,011,764, Cl. 430-505.000.
Takahashi, Shinsuke; Shibata, Norio; and Sato, Tsunehiko, 5,011,714, Cl. 427-434.300.
Yamaguchi, Jun, Okazaki, Masaki; and Inagaki, Yoshio, 5,011,760, Cl. 430-281.000.
Yamashita, Seiji; and Takada, Shunji, 5,011,767, Cl. 430-567.000.
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Fujii, Shinichiro, to Tokyo Electric Co., Ltd. Paper feeding device. 5,011,314, Cl. 400-619.000.
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Ema, Taiji, 5,012,443, Cl. 365-51.000.
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Fulton, Alfred L.; Lakhani, Kishor M., Sampson, Scott D., and Lowman, Kent, to SCI Systems, Inc. Printing apparatus and method. 5,012,261, Cl. 346-159.000.
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Fuss, Heinrich. Method of manufacturing a double-walled tube. 5,011,064, Cl. 228-151.000.
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Gannon, James M., and Gannon, Germaine A. View-through information converter. 5,011,191, Cl. 283-115.000
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Garver, Lawrence E., and Kimbrough, Gregory L., to Van Dorn Company. System, method and apparatus for hot fill PET container. 5,011,648, Cl. 264-521.000
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Abolins, Visvaldis, Betts, Joseph E., Holub, Fred F., and Lee, Gim F., Jr., 5,011,736, Cl. 428-407.000
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Clements, Martin A., 5,010,913, Cl. 137-322.000
Crivello, James V., 5,012,001, Cl. 568-13.000
Dean, John W., and Beers, Melvin D., 5,011,869, Cl. 523-213.000
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Hamersma, Wilhelmus, Avakian, Roger W., and Bailly, Christian, 5,011,889, Cl. 525-133.000
Johnson, Donald S., 5,011,865, Cl. 521-82.000
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McFaul, James A., McDaniel, David L., and Belanger, Barry F., 5,012,504, Cl. 378-108.000
Miller, Michael L., 5,011,374, Cl. 416-144.000
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Sember, James W., 5,012,171, Cl. 318-696.000
Sember, James W., 5,012,172, Cl. 318-696.000
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Sybert, Paul D., 5,011,899, Cl. 528-26.000
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Gibbens, Harry C., Jr. Telephonic speech training device. 5,012,508, Cl. 379-52.000
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Gibbs, A. Todd, to ASGCO Manufacturing, Inc. Scraper apparatus for conveyor belts. 5,011,002, Cl. 198-497.00a
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Gill, Peter, to Checkpoint Systems, Inc. System for deactivating a field-sensitive tag or label. 5,012,225, Cl. 340-572.000.
Gillard, Clive H., to Sony Corporation. Motion dependent video signal processing. 5,012,336, C.. 358-140.000.
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Gilmore, Peggy M. Paper binding fastener. 5,011,318, Cl. 402-14.000.
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Ginsburg, Robert. Thrombus extraction system. 5,011,488, Cl. 606-159.000
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Gittos, Maurice W.; Miller, Francis P.; Sorensen, Stephen M.; Fozard, John R., Moser, Paul; Palfreyman, Michael G.; and Cheng, Hsien, to Merrell Dow Pharmaceuticals Inc. Medicament compositions derived from quinolizine and quinolizinone and methods of use thereof. 5,011,846, Cl. 514-294.000.
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Gladden, Robert H., Jr.; and Thomas, Phillip M., to AT&T Bell Laboratories. Cable connecting device. 5,011,416, Cl. 439-98.000.
Gladding, Alfred E., to Flexible Steel Lacing Company. Full diameter hinge rod and notched harvester fastener. 5,011,003, Cl. 198-728.000.
Glamm, Paul R., to American Standard Inc. Incremental electrically actuated valve. 5,011,112, Cl. 251-129.110.
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Kong, Hua-Shuang, Glass, Jeffrey T.; and Davis, Robert F., 5,011,549, Cl. 148-33.100
Glasser, Francis. *See*—
Cuzin, Marc; and Glasser, Francis, 5,012,498, Cl. 378-22.000.
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McMaster, Ronald A., 5,011,525, Cl. 65-351.000.
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Semeraro, Claudio; Micheli, Dino; Pieraccioli, Daniele; Gavriaghi, Giovanni, and Borthwick, Allan D., 5,011,848, Cl. 514-356.000.
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Glover, Chris A. Gaiter for bicycling. 5,010,597, Cl. 2-242.000.
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Godfried, Herman P., to Ultra-Centrifuge Nederland N.V. Method for separating a predetermined isotope of an element from a gaseous compound containing said element. 5,011,584, Cl. 204-157.220.
Godfrin, Hugues, to Atochem. Process for the preparation of expandable polymer beads and materials derived therefrom. 5,011,863, Cl. 521-56.000.
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Goench, Mahmut I. Nail clipping encompassing container to retain nail clippings. 5,010,644, Cl. 30-28.000.
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Bartosiak, George; Siskovic, Christopher; Tap, Henry H.; Paris, Sam, and Goldberg, Arthur E., 5,011,296, Cl. 374-131.000.
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Ho, Kwang S., 5,010,734, Cl. 60-517.000.
Golemics, Inc. *See*—
Felsenstein, Lee, 5,012,231, Cl. 340-709.000.
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Herrington, Fox J.; and Goncarovs, Alex, 5,010,627, Cl. 24-400.000.
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Dube, Christopher E.; and Gonsiorawski, Ronald C., 5,011,565, Cl. 156-643.000.
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Lee, Hsien-Che; Kaplan, Martin C.; and Goodwin, Robert M., 5,012,333, Cl. 358-80.000.
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Assaad, Mahmoud C.; and Harrison, Danny E., 5,010,938, Cl. 152-539.000.
Bell, Anthony J.; and Ofstead, Eilert A., 5,011,896, Cl. 526-92.000.
Bonko, Mark L.; and Lopp, Loran C., Jr., 5,010,935, Cl. 152-209.00B.
Gordon, Eugene I., to Photon Imaging Corp. Color page scanner using fiber optic bundle and a photosensor array. 5,011,261, Cl. 350-96.250.
Goronkin, Herb, to Motorola, Inc. Enhanced conductivity quantum well having resonant charge coupling. 5,012,302, Cl. 357-4.000.
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Gotoh Seisakusho Co., Ltd. *See*—
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Gottemoller, Paul, to General Motors Corporation. Centrifugal compressor/pump with fluid dynamically variable geometry diffuser. 5,011,371, Cl. 415-211.100.
Gottler, Gerry N., to Air Products and Chemicals, Inc. Low pressure stripping process for production of crude helium. 5,011,521, Cl. 62-11.000.
Gottschalk, Stephen C., to Amoco Corporation. Method for improving a wiggler. 5,010,640, Cl. 29-602.100.
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Kretzschmar, Gerhard; Duwel, Dieter; Grabley, Susanne; Hammann, Peter; Seibert, Gerhard; Voelskow, Hartmut; and Giani, Carlo, 5,011,827, Cl. 514-32.000.
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Blacklock, Thomas J.; Grabowski, Edward J. J.; and Sohar, Paul, 5,011,942, Cl. 549-23.000.
Graf, Lothar; and Fuchs, Karl-Heinz, to Ing. Erich Pfeiffer GmbH & Co. KG. Pump dispenser having valved presuction chamber and outlet. 5,011,046, Cl. 222-321.000.
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Bejean, Alain; and Graillat, Gerard, 5,011,179, Cl. 280-615.000.
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Grant, Dale A., to Wormald U.S., Inc. Electromagnetic valve operator. 5,010,911, Cl. 137-68.100.

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Lang, Stuart E.; and Fairhurst, Jon, 5,012,329, Cl. 358-31.000.

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Eklund, Dan; and Grasten, Markku, 5,010,839, Cl. 118-122.000.

Gratz, Roy F. *See*—
Alston, William B.; and Gratz, Roy F., 5,011,955, Cl. 552-101.000.

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Parthasarathy, V. R.; Sundaram, Meenakshi; Jameel, Hasan; Gratzl, Josef S.; and Klein, Ronald J., 5,011,572, Cl. 162-56.000.

Gray, Daniel W.; and Jewett, Thomas F., to Foresight Industries, Inc. Ground rod driver. 5,010,710, Cl. 52-742.000.

Gray, Henry F., to United States of America, Navy. Gas laser and pumping method therefor using a field emitter array. 5,012,482, Cl. 372-74.000.

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Hyzak, Daniel L.; and Gray, Reed A., 5,011,526, Cl. 71-87.000.

Gray, Thomas C. Impact scraping tool for scraping material from surfaces. 5,010,647, Cl. 30-169.000.

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Gregorio, Guglielmo; Roberti, Lamberto; and Strepparola, Ezio, to Ausimont S.R.L. Process for preparing methacrylates of fluorinated alcohols. 5,011,979, Cl. 560-223.000.

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Gresser, Wilhelm; Schelhase, Klaus; Frisch, Heinz; Kasehel, Klaus; Reinecke, Berent; and Trautmann, Wilhelm H., to Dynamit Nobel AG. Process for the decomposition of explosive nitric acid esters dissolved in wastewaters. 5,011,614, Cl. 210-761.000.

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Griebell, Charles A.; and Petrides, Christie, to Black & Decker, Inc. Sound activated device and method. 5,012,223, Cl. 340-531.000.

Griffin, Darrell. *See*—
Lamb, Walter R.; and Griffin, Darrell, 5,011,782, Cl. 437-2.000.

Griffith, James M. *See*—
Passafaro, James D.; and Griffith, James M., 5,010,886, Cl. 128-660.030.

Griffith, Jerry T.; and Pleva, Scott J., to I.T.V. Aerospace and Defense Company. Hole profile gaging systems. 5,010,658, Cl. 33-784.000.

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Mynarcik, Dennis C.; Griffith, Owen W.; and Fairclough, Gordon F., Jr., 5,011,964, Cl. 558-179.000.

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Garvey, Michael J.; Griffiths, Ian C.; and Rennie, John H. S., 5,011,690, Cl. 424-401.000.

Grim, Karen A.; Singh, Shobha; Van Uttert, LeGrand G.; and Zydzik, George J., to AT&T Bell Laboratories. Procedure for rapid thermal annealing of implanted semiconductors. 5,011,794, Cl. 437-247.000.

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Grollier, Jean F.; and Fourcadier, Chantal, to L'Oreal. Process for dyeing keratinous fibres and dye composition employing indole derivatives and direct nitro dyes. 5,011,500, Cl. 8-410.000.

Gross, William. *See*—
Olsen, Richard; and Gross, William, 5,012,342, Cl. 358-181.000.

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Keim, Walter, 5,010,927, Cl. 139-89.000.

Grosser, Joel H. *See*—
Spenadel, Lawrence; Grosser, Joel H.; and Dwyer, Stephen M., 5,011,891, Cl. 525-211.000.

Grosshauser, Heinrich K., to Koenig & Bauer Aktiengesellschaft. Method and apparatus for flexographic printing. 5,010,817, Cl. 101-350.000.

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Levanon, Moshe; Grossinger, Israel; Adam, Yossi; and Landa, Benzion, 5,012,300, Cl. 355-328.000.

Grossman, Mark W., to GTE Products Corporation. Axi-symmetrical flow reactor for ^{196}Hg photochemical enrichment. 5,012,106, Cl. 250-438.000.

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Reuter, Werner, 5,011,423, Cl. 439-341.000.

Groussin, Bernard. *See*—
Mesquida, Guy; and Groussin, Bernard, 5,012,477, Cl. 372-50.000.

Grovender, Steven L. *See*—
Bodziak, Douglas P.; Hunder, Ray A.; Roth, Steven P.; Grovender, Steven L.; and Molenda, Robert P., 5,011,186, Cl. 281-12.000.

Grover, Gary J. *See*—
Atwal, Karnail; McCullough, John R.; and Grover, Gary J., 5,011,837, Cl. 514-227.800.

Grube, Louis L. *See*—
Chich, Adem; Lalwani, Steven S.; Bettoli, Steven C.; Grube, Louis L.; and Bondoc, Alfredo A., 5,011,726, Cl. 428-141.000.

Gruenberg, Eric I.; Stewart, James R.; and Halicho, James J., to Apple Computer, Inc. Handle latch assembly. 5,011,198, Cl. 292-41.000.

Gruhn, William D. *See*—
Colleran, Stephen A.; Plocek, Edward J.; Ponn, Timothy R.; and Gruhn, William D., 5,011,426, Cl. 439-357.000.

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Ehrhart, Peter; Grundel, Andreas; Heidelberg, Gotz; and Weck, Wener, 5,011,820, Cl. 505-1.000.

Grunwald, Stefan H., and Fraser, Howard H., Jr., to Carrier Corporation. Slider block radial compliance mechanism for a scroll compressor. 5,011,384, Cl. 418-55.500.

Gsellmann, Josef. *See*—
Kordesch, Karl; Gsellmann, Josef; and Tomantschger, Klaus, 5,011,752, Cl. 429-206.000.

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Gueret, Jean-Louis, to L'Oreal. Dispenser including a translatable piston. 5,011,317, Cl. 401-66.000.

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Guiberteau, Christian; Ruggeri, Stephane; and Le Path, Michele, to Thomson Composants Microondes. Microwave sample-and-hold unit with transistor. 5,012,084, Cl. 250-211.00R.

Guillotte, Paul A.; Panaccione, Paul; Martiska, Thomas J.; and Gagnon, Jay J., to Allegro Microsystems, Inc. Semiconductor die and mounting assembly. 5,012,322, Cl. 357-72.000.

Guironnet, Louis, to Framatome; and Cogema. Device for extracting foreign pieces or particles from fuel assemblies of a nuclear reactor. 5,011,206, Cl. 294-86.410.

Gupta, Victor; Bodolus, Christopher L.; Paparizos, Christos; and Shaw, Wilfrid G., to Standard Oil Company, The. Process for upgrading light hydrocarbons using oxidative coupling and pyrolysis. 5,012,028, Cl. 585-500.000.

Gustafson, Keith W.; Kalet, George W.; and Taylor, Martin S. Syrup delivery system for carbonated beverages. 5,011,700, Cl. 426-477.000.

Gustavsson, Tord G.; Myren, Harry I.; and Silja, Karl T.I., to Valmet Paper Machinery, Inc. Creping doctor with two suction chambers in the support beam. 5,011,574, Cl. 162-281.000.

Gutag Innovations AG. *See*—
Guttinger, Kurt, 5,011,386, Cl. 418-59.000.

Guttinger, Kurt, to Gutag Innovations AG. Rotary positive displacement machine for incompressible media. 5,011,386, Cl. 418-59.000.

Guttinger, Peter; and Langen, Marinus J.M. Load accumulator having positive drive conveyor. 5,011,132, Cl. 271-315.000.

Guyard, Jean-Claude, to Norsk Hydro A.S. Assembly including a light alloy profiled member having one or more insulated electrical conductors and process for formation thereof. 5,012,044, Cl. 174-98.000.

Gvaryahu, Gadi; and Cunningham, Danis L., to Cornell Research Foundation, Inc. Methods of raising commercial animals. 5,010,851, Cl. 119-174.000.

H. Krantz GmbH & Co. *See*—
Cramer, Hans, 5,011,060, Cl. 226-15.000.

Haag, Anthony P. *See*—
Orvik, Jon A.; Pearson, Norman R.; Haag, Anthony P.; Adaway, Timothy J.; Kershner, Larry D.; and Kende, Andrew S., 5,012,017, Cl. 568-803.000.

Haas, Gerhard J.; and Heller, Karen G., to Kraft General Foods, Inc. Malt flavor material and preparation thereof. 5,011,696, Cl. 426-28.000.

Haas, Richard C. *See*—
Stokley, Charles O.; and Haas, Richard C., 5,010,966, Cl. 175-66.000.

Haber, William; and Takeshita, Jack. Visor-cap. 5,010,590, Cl. 2-12.000.

Haeck, Paul J. *See*—
Lowe, Peter E.; Muller, Peter H.; Coleman, Michael D.; and Haeck, Paul J., 5,011,199, Cl. 292-92.000.

Haeffner, Eckhard; Ben-Nasr, Hedi; Knuth, Bernd; Jasper, Hubert; and Reimann, Klaus, to Fried. Krupp GmbH. Process for the continuous extraction of mixtures of organic substances with supercritical solvents. 5,011,594, Cl. 208-320.000.

Hager, Stanley L., to Arco Chemical Technology, Inc. Polymer polyol compositions and their use in the preparation of polyurethane foams. 5,011,908, Cl. 528-392.000.

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Ishida, Takao; Hagiwara, Hiroshi; and Kakumu, Ichizo, 5,010,692, Cl. 51-283.00R.

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Haug, Robert; He, Zhong-Jun; and Hahn, Roger, 5,012,218, Cl. 336-174.000.

Hattmanek, Louis, to Thomas & Betts Corporation. Electrical connector having cable strain relief. 5,011,430, Cl. 439-456.000.

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Laskaris, Michael A.; Broitman, Kalman; Teske, Richard E.; Miller, David L.; and Sulmone, Michael, 5,010,870, Cl. 123-576.000.

Hale, Phillip L., to Glaser, Richard E., a part interest. Test fitting adapter for refrigerant lines. 5,010,743, Cl. 62-292.000.

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Hamilton, Daniel; Hoyt, Robert M.; Halferty, Patricia J.; and Odom, J. Thomas, 5,011,336, Cl. 405-230.000.

Halfhide, Frans L. Particulate fuel burner and method of operation. 5,010,831, Cl. 110-347.000.

Halfon, Marc. *See*—
Hoare, John H.; and Halfon, Marc, 5,011,933, Cl. 548-263.200.

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Hall, Charles E.; and Roop, Stevie C., to Medeco Security Locks, Inc. High security post lock. 5,010,745, Cl. 70-32.000.

Hall, Erich; and Schorwerth, Helmut, to Audi AG. Method for preconditioning belts on belt drives. 5,010,636, Cl. 29-446.000.

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EerNisse, Errol P.; and Ward, Roger W., 5,012,151, Cl. 310-346.000.

Halliburton Logging Services, Inc. *See*—
Moake, Gordon L., 5,012,091, Cl. 250-266.000.

Halsey, Brenton S., Jr.; and Larson, Arthur C., to Diamond Occidental Forest, Inc. Corner system for log cabin siding. 5,010,701, Cl. 52-233.000.

Hamada, Tatsuro. *See*—
Tsutsumi, Fumio; Morikawa, Akihiko; Sakakibara, Mitsuhiko; Oshima, Noboru; Hamada, Tatsuro; Fujimaki, Tatsuo; and Ohashi, Masayuki, 5,011,888, Cl. 525-98.000.

Hamada, Tetsuro; Sano, Shoichi; and Furukawa, Yoshimi, to Honda Giken Kogyo Kabushiki Kaisha. Steering system for vehicles. 5,010,971, Cl. 180-140.000.

Hamade, Thomas A. Electrostatic charging apparatus and method. 5,012,094, Cl. 250-324.000.

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Watanabe, Mitsuo, 5,012,082, Cl. 250-208.200.

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Tanaka, Eiichi; and Uchida, Hiroshi, 5,012,103, Cl. 250-368.000.

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Kabeshita, Akira; Hamane, Tokuhito; and Kitayama, Yoshifumi, 5,012,388, Cl. 361-400.000.

Hambleton, Larry G.; Sears, Claude L.; and Offutt, Elmer B., to Labconco Corporation. Method and apparatus for drying glassware. 5,010,660, Cl. 34-92.000.

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Hamilton, Daniel, Hoyt, Robert M.; Halferty, Patricia J.; and Odom, J. Thomas, to A. B. Chance Company. Underpinning anchor system. 5,011,336, Cl. 405-230.000.

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Hamilton, Herbert E. *See*—
Jensen, Tom M.; and Hamilton, Herbert E., 5,011,348, Cl. 410-79.000.

Hamilton, Thomas A.; Kerrigan, Michael M.; and Wilson, John A., to Unisys Corporation. Multiple document detector. 5,011,127, Cl. 271-262.000.

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Kretzschmar, Gerhard; Duwel, Dieter; Grabley, Susanne; Hammann, Peter; Seibert, Gerhard; Voelskow, Hartmut; and Giani, Carlo, 5,011,827, Cl. 514-32.000.

Hammond, John A., to Frazier Simplex, Inc. Suspended furnace wall. 5,011,402, Cl. 432-238.000.

Hammond, Russell E.; Northup, Robert L.; Shimp, Alan G.; and Fassnacht, Francis B., to United States of America, Navy. Electrical power supply for short term power interruptions. 5,012,121, Cl. 307-64.000.

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Kida, Shuji, Kita, Hiroshi, Hirabayashi, Shigeto, and Kaneko, Yutaka, 5,011,766, Cl. 430-558.000

Hirai, Ichiro, and Amano, Toru, to NEC Corporation. Phase difference-adjusting circuit. 5,012,493, Cl. 375-100.000

Hirai, Isamu, to Asaha Kogaku Kogyo Kabushiki Kaisha. Exposure control device for interchangeable lens camera. 5,012,268, Cl 354-410.000

Hirakami, Kiyomi. *See*—
Takahashi, Hisao, Yamane, Kaoru; Hirakami, Kiyomi, and Ikeda, Kazuo, 5,011,201, Cl. 296-203.000

Hiraki, Tadayoshi, Iwase, Osamu, Oosumimoto, Hirosi, Sugiura, Shinji, Tabushi, Ichiro, Kume, Masafumi, Udagawa, Takashi, Matsui, Komaharu; and Fujii, Yasuhiro, to Kansai Paint Co., Ltd. Process for coating metallic substrate. 5,011,733, Cl. 428-336.000.

Hiramatsu, Takeo, and Niiyama, Tsunefumi. Automatic transmission control pressure regulator having speed sensitive valve arrangement. 5,010,786, Cl. 74-867.000.

Hiramitsu, Tokiyuki, and Sakamoto, Ken-ichi, to Nippon Miktron Limited. Novel (trans 1-propenyl)disulfide derivative and process for preparing the same. 5,011,975, Cl. 560-147.000.

Hirano, Masakazu. *See*—
Fujimoto, Hideo, Hirano, Masakazu, Hashiura, Mituo, and Murao, Toshiaki, 5,011,547, Cl. 148-24.000.

Hiratsuka, Katsuo, Odaka, Yoshiyuki, and Yoshida, Takeshi, to SSMC Inc. Quick feed drive unit having an electromagnetic clutch, a worm, worm wheel, and pattern wheel for feeding a sewn cloth in a perforating sewing machine. 5,010,832, Cl. 112-68.000

Hirayama, Hiromichi; Mihara, Masato, and Harumatsu, Mitsuo, to Victor Company of Japan, Ltd. Tape-loading mechanism for a magnetic recording/reproducing apparatus for selective use of tape cassettes of two different sizes. 5,012,364, Cl. 360-94.000

Hirmann, Georg. Drive system. 5,010,969, Cl. 180-8.100.

Hiroi, Masakazu. *See*—
Naito, Masataka; Hiroi, Masakazu, and Hayakawa, Kimiaki, 5,011,130, Cl. 271-288.000

Hirose, Tadayoshi. *See*—
Endo, Yasuo; Akimichi, Shinji; Hirose, Tadayoshi, Furukawa, Motonori, and Yoshida, Kyoko, 5,012,521, Cl. 382-1.000.

Hirose, Tokuzo. Floating raceway, floating water storage tank, composite floating raceway, marine paddy farming device, floating hydroponic farming device, and vessel. 5,010,837, Cl. 114-256.000.

Hirose, Toshifumi. *See*—
Yukimoto, Sadao, Hirose, Toshifumi, Wakabayashi, Hiroshi, and Isayama, Katsuhiko, 5,011,900, Cl. 525-477.000

Hiroshima Kasei Ltd.. *See*—
Yamamoto, Yuji, Shigematsu, Hideyuki, Tanaka, Hiroshi, Ashikawa, Ryo, and Ishida, Tatsuo, 5,011,875, Cl. 524-45.000

Hirsch, Martin S.; and Johnson, Victoria A., to G.D. Searle & Co. Pharmaceutical composition and method of inhibiting virus. 5,011,829, Cl. 514-50.000.

Hirschfeld, Klaus. *See*—
Abel, Thomas; and Hirschfeld, Klaus, 5,012,056, Cl. 200-519.000

Hirth, Roland. *See*—
Spiegel, Nikolaus, Filsinger, Karl-Heinz, and Hirth, Roland, 5,011,125, Cl. 271-183.000

Hirzel, Suzy C. Paper clip with vertical panel. 5,010,629, Cl. 24-67.900

Hisgen, Bernd *See*—
Rosenau, Bernhard; Hisgen, Bernd; Heinz, Gerhard; Braun, Hans-Georg; Lausberg, Dietrich; and Zeiner, Hartmut, 5,011,884, Cl. 524-537.000.

Hitachi Engineering Co., Ltd. *See*—
Tominaga, Kenji; Miki, Minoru; Takahashi, Tooru; Horiuchi, Tetsuo; Morishima, Hideo; Nakayama, Takashi; Moriya, Kumiaki; Matsumoto, Masaki; Akita, Minoru; Niino, Tsuyoshi; Ochiai, Kanehiro; Shiozawa, Akihiko; Uchiyama, Yuichi; Yasuno, Toyoharu; Moriya, Kenji; Kinoshita, Shouichirou; Kage, Kazuo; and Kubota, Ryuji, 5,011,652, Cl. 376-283.000.

Hitachi, Ltd. *See*—
Aoki, Masakazu; and Suzuki, Akira, 5,011,388, Cl. 418-95.000.
Kawaji, Mikinori; Takakura, Toshihiko; Uchida, Akihisa; Kuroda, Shigeo; Tamaki, Youichi; Shiba, Takeo; Sagara, Kazuhiko; and Kawamura, Masao, 5,011,788, Cl. 437-67.000.
Kawamoto, Yoshifumi, 5,012,312, Cl. 357-23.110.
Kazuaki, Ujiie; and Nabetani, Shinji, 5,012,445, Cl. 365-189.060.
Kimura, Shinichiro; Kawamoto, Yoshifumi; Kaga, Toru; and Sunami, Hideo, 5,012,310, Cl. 357-23.600.
Kobayashi, Hiroyuki, Izawa, Shigeru; and Ukiana, Motohide, 5,012,092, Cl. 250-311.000.
Kohno, Takashi; Matsushita, Osami; Ida, Michiaki; Kikuchi, Katsuaki; Sonoda, Taro; and Yamaguchi, Yuzo, 5,012,359, Cl. 360-71.000.
Nakamura, Koozoo; and Maruo, Seizi, 5,012,509, Cl. 379-53.000.
Nishikado, Takashi, Kondo, Megumu; Fukuoka, Kazuhiko; and Murata, Fumiya, 5,012,405, Cl. 364-200.000.
Ogino, Masanori, Iwahara, Yoshiaki, Tamura, Yuzo; and Kuroda, Shoji, 5,011,277, Cl. 353-94.000.
Sakurai, Akito, 5,012,430, Cl. 364-513.000.
Shichi, Hiroyasu; Nomura, Setsuo; and Mitani, Eisuke, 5,012,109, Cl. 250-491.100.
Shiomi, Makoto; Ozeki, Kosuke; Ohsawa, Michitaka; Matsumi, Kuninori; and Kawagishi, Tadahiro, 5,012,332, Cl. 358-64.000.
Takahashi, Shinsuke; Sekozawa, Teruji; and Funabashi, Motohisa, 5,012,422, Cl. 364-431.050.
Tominaga, Kenji; Miki, Minoru; Takahashi, Tooru; Horiuchi, Tetsuo; Morishima, Hideo; Nakayama, Takashi; Moriya, Kumiaki; Matsumoto, Masaki; Akita, Minoru; Niino, Tsuyoshi; Ochiai, Kanehiro; Shiozawa, Akihiko; Uchiyama, Yuichi; Yasuno, Toyoharu; Moriya, Kenji; Kinoshita, Shouichirou; Kage, Kazuo; and Kubota, Ryuji, 5,011,652, Cl. 376-283.000.
Tsukushi, Masanori; Koyanagi, Osamu; Seki, Yasuharu; Goto, Tokio; and Kurosawa, Yukio, 5,012,051, Cl. 200-148.00B.
Ushijima, Nobuyoshi, Masuda, Hiroshi; Ishibashi, Akira; Satou, Masahiko; Haruna, Toshiyuki; Takayama, Norikazu; and Kudou, Yoshinobu, 5,012,166, Cl. 318-254.000.
Yoshida, Yasuhisa, 5,012,076, Cl. 235-379.000.
Yoshino, Eiji, Matsuda, Yasumasa; and Yamada, Takahiro, 5,012,353, Cl. 358-401.000.

Hitachi Metals, Ltd. *See*—
Nogami, Shingo, Yashiro, Toshinori, Okitsu, Toshio, Furushima, Kiyoshi; and Korenaga, Itsuo, 5,010,946, Cl. 164-312.000.

Hitachi Seiko Co., Ltd. *See*—
Nishigai, Masao; Otani, Tamio, Kanaya, Yasuhiko; and Murakami, Tetsuo, 5,011,345, Cl. 409-132.000.

Hitachi Video Engineering, Inc. *See*—
Shiomi, Makoto, Ozeki, Kosuke, Ohsawa, Michitaka, Matsumi, Kuninori; and Kawagishi, Tadahiro, 5,012,332, Cl. 358-64.000.

Hitachi VLSI Engineering Co. *See*—
Kazuaki, Ujiie; and Nabetani, Shinji, 5,012,445, Cl. 365-189.060.

Hitotsuyanagi, Hajime, Fujita, Nobuhiko, Itozaki, Hideo, Nakagama, Syoji, Tanaka, Saburo, and Fukushima, Kazuhiko, to Sumitomo Electric Industries, Ltd. Semiconductor element and method of forming same and article in which said element is used. 5,011,759, Cl. 430-128.000.

Hittite Microwave, Inc. *See*—
Ayasli, Yalcin, and Katzin, Peter J., 5,012,123, Cl. 307-112.000.

Hmiel, Luke A. *See*—
Barcza, William K., Berger, Curtis W., and Hmiel, Luke A., 5,011,080, Cl. 239-265.390.

Ho, Kwang S., to Goldstar Co., Ltd. Cooling system for a stirling engine. 5,010,734, Cl. 60-517.000.

Ho, W. S. Winston *See*—
Sartori, Guido; Ho, W. S. Winston; and Noone, Robert E., 5,012,035, Cl. 585-819.000.
Sartori, Guido; Ho, W. S. Winston; and Noone, Robert E., 5,012,036, Cl. 585-819.000.

Hoare, John H., and Halfon, Marc, to FMC Corporation. Nitration of phenyl triazolinones. 5,011,933, Cl. 548-263.200.

Hochstein, Peter A. Automatic battery powered video light. 5,012,392, Cl. 362-4.000.

Hochtemperatur-Reaktorbau GmbH. *See*—
Wachholz, Winfried, 5,011,653, Cl. 376-313.000.

Hodgson, William H., Stanworth, Colin G., and Thompson, David J., to British Steel plc, and British Railways Board. Railways. 5,011,077, Cl. 238-283.000.

Hoechst Aktiengesellschaft. *See*—
Clauss, Karl, Linkies, Adolf, and Reuschling, Dieter, 5,011,982, Cl. 562-38.000.
Konig, Wolfgang; Breipohl, Gerhard; Geiger, Rolf; Knolle, Jochen; and Hropot, Max, 5,011,825, Cl. 514-18.000.
Kretzschmar, Gerhard; Duwel, Dieter; Grabley, Susanne; Hammann, Peter; Seibert, Gerhard; Voelskow, Hartmut; and Giani, Carlo, 5,011,827, Cl. 514-32.000.
Opitz, Konrad; and Segal, Marcos, 5,011,917, Cl. 534-583.000.
Urbach, Hansjorg; and Henning, Rainer, 5,011,940, Cl. 548-452.000.

Hoechst Celanese Corp. *See*—
Hazen, James R.; and Lee, William R., 5,011,997, Cl. 564-335.000.
Mueller, Werner H.; and Khanna, Dinesh N., 5,011,753, Cl. 430-4.000.
Nielsen, Steven F.; and Kim, Dai W., 5,011,864, Cl. 521-70.000.
Nikles, David E., 5,011,756, Cl. 430-19.000.

Hoelderich, Wolfgang; and Merger, Franz. Conversion of 1,3-dioxanes to 4-oxaaldehydes. 5,012,005, Cl. 568-427.000.

Hoffman, Roger P., to Green Bay Packaging, Inc. Linerboard containing recycled newsprint. 5,011,741, Cl. 428-503.100.

Hoffman, Wesley P., to United States of America, Air Force. Method of manufacturing microscopic tube material. 5,011,566, Cl. 156-643.000.

Hoffmann, Joachim, to Andreas Stihl. Cutterhead for a vegetation cutter apparatus. 5,010,649, Cl. 30-276.000.

Hoffmann-La Roche Inc. *See*—
Gassner, Walter; Imhof, Rene; and Kyburz, Emilio, 5,011,849, Cl. 514-365.000.

Hogue, Kathryn E. Swaroop, Srinivas H., and Wusirika, Raja R., to Corning Incorporated. Cured surfaces and a process of curing. 5,011,529, Cl. 75-235.000.

Holbrook, Russell W., to Pitney Bowes Inc. Jam clearance apparatus for sheetfeeding device. 5,011,129, Cl. 271-274.000.

Holloway, Jerrell P. Touch sensitive control panel. 5,012,124, Cl. 307-116.000.

Holler, Roger A. *See*—
Travor, Bruce W., and Holler, Roger A., 5,011,097, Cl. 244-3.210.

Hollinger, Jeffrey O., to United States of America, Army. Unique bone regeneration tricalcium phosphate. 5,011,495, Cl. 623-16.000.

Holmes, Hillard R. *See*—
Kapolnek, Michael R.; Feild, Alexander R.; Hartle, Robert T.; and Holmes, Hillard R., 5,010,951, Cl. 165-104.260.

Holmes, Richard F. *See*—
Barnett, Charles J.; Holmes, Richard E.; Jungheim, Louis N.; Sigmund, Sandra K.; and Ternansky, Robert J., 5,011,938, Cl. 548-359.000.

Holtter, Eugene S., to Those Characters From Cleveland, Inc. Music box subassembly and a vehicle structure including the same. 5,011,451, Cl. 446-409.000.

Holub, Fred F. *See*—
Abolins, Visvaldis; Betts, Joseph E.; Holub, Fred F.; and Lee, Gim F., Jr., 5,011,736, Cl. 428-407.000.

Honda Giken Kogyo Kabushiki Kaisha. *See*—
Hamada, Tetsuro; Sano, Shoichi; and Furukawa, Yoshimi, 5,010,971, Cl. 180-140.000.
Nakajima, Toyohei; and Mieno, Toshiyuki, 5,011,590, Cl. 204-425.000.
Noji, Akio; Kamimura, Kenji; and Tsuzuki, Sadachika, 5,011,288, Cl. 356-375.000.

Honda, Satoshi. *See*—
Kano, Akiko; Honda, Satoshi; and Nakano, Kuniaki, 5,012,107, Cl. 250-484.100.

Hone, Jon D. *See*—
Fishman, David A.; and Hone, Jon D., 5,010,757, Cl. 72-60.000.

Honeywell Inc. *See*—
Dodson, David W., 5,012,424, Cl. 364-449.000.
Hurst, Allan T., Jr.; and Pohm, Arthur V., 5,012,444, Cl. 365-173.000.

Honjo, Kazuhiko, to NEC Corporation. Hybrid semiconductor device implemented by combination of heterojunction bipolar transistor and field effect transistor. 5,012,318, Cl. 357-43.000.

Honma, Mikio. *See*—
Takarabe, Isamu; Honma, Mikio; and Hayakawa, Hatsuo, 5,011,209, Cl. 296-65.100.

Honma, Toshio. *See*—
Ikkatai, Masatoshi; Yoshizawa, Atsutomo; and Honma, Toshio, 5,012,295, Cl. 355-311.000.

Hooley, Robert W. *See*—
Corradetti, Anthony A.; Gargiulo, Edward P.; Krauss, Leland L.; and Hooley, Robert W., 5,011,246, Cl. 350-96.200.

Hooser, Steven M. Portable stump remover. 5,010,931, Cl. 144-2.00N.

Hopp, Thomas P.; and Prickett, Kathryn S., to Immunex Corporation. Hybridoma and monoclonal antibody for use in an immunoaffinity purification system. 5,011,912, Cl. 530-387.000.

Hoppe, Lutz; Koch, Wolfgang; Luhmann, Erhard; and Piepho, Michael, to Wolff Walsrode Aktiengesellschaft. Cellulose ester/-polymer combinations, and their preparation and use. 5,011,874, Cl. 524-30.000.

Hopper, Clayton I., to Astro-Tec Manufacturing, Inc. Perforate projection screen. 5,011,263, Cl. 350-125.000.

Hora, Peter. *See*—
Laucht, Horst; Baur, Richard; Werner, Bernd; Nilsson, Karl E.; and Hora, Peter, 5,011,181, Cl. 280-731.000.

Horibe, Tatsutake. *See*—
Kawasaki, Yoshio; Horibe, Tatsutake; Morita, Takayuki; Nakamura, Haruyoshi; Ohashi, Kengo; and Miyazaki, Tsutomu, 5,011,000, Cl. 198-465.100.

Horikawa, Kazuo; and Miyagawa, Ichirou, to Fuji Photo Film Co., Ltd. Radiation image recording and read-out apparatus. 5,012,095, Cl. 250-327.200.

Horikoshi, Yukio. *See*—
Sakamaki, Hiroshi; Horikoshi, Yukio; Jinnouchi, Takeshi; and Tanzawa, Kenji, 5,011,390, Cl. 418-256.000.

Horiuchi, Akihisa. *See*—
Nakayama, Hiroki; Kitagishi, Nozomu; Hattori, Jun; Suda, Shigeyuki; and Horiuchi, Akihisa, 5,011,272, Cl. 350-427.000.

Horiuchi, Tetsuo. *See*—
Tominaga, Kenji; Miki, Minoru; Takahashi, Tooru; Horiuchi, Tetsuo; Morishima, Hideo; Nakayama, Takashi; Moriya, Kumiaki; Matsumoto, Masaki; Akita, Minoru; Niino, Tsuyoshi; Ochiai, Kanehiro; Shiozawa, Akihiko; Uchiyama, Yuichi; Yasuno, Toyoharu; Moriya, Kenji; Kinoshita, Shouichirou; Kage, Kazuo; and Kubota, Ryuji, 5,011,652, Cl. 376-283.000.

Horiyama, Tsuyoshi *See*—
Yano, Hisato; Hashimoto, Shusa; and Horiyama, Tsuyoshi, 5,011,632, Cl. 261-81.000.

Horn, Dieter. *See*—
Auweter, Helmut; Horn, Dieter; Lilge, Dieter; and Wortmann, Juergen, 5,011,279, Cl. 356-28.500.

Horton, Don. Spring actuated safety cartridge. 5,010,674, Cl. 42-70.110.

Horton, James M., and Bunge, Eric L. Adjustable storage system for audio and/or video media. 5,011,241, Cl. 312-330.100.

Hoshi, Hironobu: *See*—
Ikeda, Senri; Saito, Sakae; Hanada, Shuji; and Hoshi, Hironobu, 5,011,545, Cl. 148-11.50F.

Hosoi, Kiyonori *See*—
Satoh, Toyomi; Hosoi, Kiyonori; Kinoshita, Katsuji; Murata, Shinjiro; Fukatsu, Shunzo; and Ichikawa, Tooru, 5,011,019, Cl. 206-530.000.

Hosokawa, Yoshiaki; Kanoh, Masaki; Maekawa, Takashi; and Nakayasu, Hirofumi, to Fujitsu Limited. Printer having an ink ribbon shift apparatus. 5,011,312, Cl. 400-225.000.

Hougard, Erling, to OS Plastic A/S. Flowerpot. 5,010,687, Cl. 47-79.000.

Houston Advanced Research Center. *See*—
Krishnan, Shankar; Hansen, George P.; Hauge, Robert H.; Margrave, John L.; and Rey, Charles A., 5,011,295, Cl. 374-126.000.

Howell, William J., to Motorola, Inc. Balanced spurious free oscillator. 5,012,205, Cl. 331-117.00R.

Howie, Catherine L.: *See*—
Elliott, David L.; Howie, Catherine L.; and Montague, Peter G., 5,011,682, Cl. 424-52.000.

Howland, John J.: *See*—
Trapasso, Timothy; and Howland, John J., 5,011,292, Cl. 366-161.000.

Hoyle, Jack W. Solar energy intensifier and collector system. 5,010,873, Cl. 126-440.000.

Hoyt, Robert M.: *See*—
Hamilton, Daniel; Hoyt, Robert M.; Halferty, Patricia J.; and Odom, J. Thomas, 5,011,336, Cl. 405-230.000.

Hropot, Max: *See*—
Konig, Wolfgang; Breipohl, Gerhard; Geiger, Rolf; Knolle, Jochen; and Hropot, Max, 5,011,825, Cl. 514-18.000.

Hrubetz Exploration Company. *See*—
Nelson, Joseph M.; and Rau, Garland R., 5,011,329, Cl. 405-128.000.

Hsu, George, to 501 Greenfield Industries, Inc. Twist drill. 5,011,342, Cl. 408-224.000.

Hsu, Shyiguei *See*—
Zador, Eugene; Hsu, Shyiguei; Kaczmarek, Wesley R.; Ravipati, Sitaramaiah; Supkis, Stanley; and Vogel, Richard H., 5,011,513, Cl. 51-295.000.

Hubele, Conrad. *See*—
Feray, Cathy; and Hubele, Conrad, 5,011,613, Cl. 210-739.000.

Hubner Gummi - und Kunststoff GmbH: *See*—
Braemert, Peter; and Britzke, Ingo, 5,010,614, Cl. 14-71.100.

Hudgins, Robert R.: *See*—
Haure, Patricia; Silveston, Peter L.; Hudgins, Robert R.; and Bellut, Maxime, 5,011,675, Cl. 423-659.000.

Hudson, David M. *See*—
Buchan, William R.; Moore, Robert A.; Caley, Wendell J., Jr.; Gilmore, Mark A.; and Hudson, David M., 5,012,291, Cl. 355-271.000.

Hug, William F.; and Otto, Manfred R. Ultraviolet metal vapor laser having hard sealed internal mirrors. 5,012,479, Cl. 372-56.000.

Hughes Aircraft Company. *See*—
Miller, Leroy J.; Smith, Willis H., Jr.; Lackner, Anna M.; and Margerum, J. David, 5,011,267, Cl. 350-340.000.
Nash, J. Gregory; Ercegovac, Milos; and Lang, Thomas, 5,012,439, Cl. 364-766.000.
Smith, Ronald T.; and Hegg, Ronald G., 5,011,244, Cl. 350-3.750.
Thompson, James D., 5,012,254, Cl. 342-373.000.
Vali, Victor; and Chang, David B., 5,012,499, Cl. 378-84.000.
Young, Frederick A.; and Rikimaru, Roy K., 5,012,211, Cl. 333-212.000.

Hughes, John B., to U.S. Philips Corporation. Circuit arrangement for processing sampled analog electrical signals. 5,012,133, Cl. 307-352.000.

Hughes, Norman S.: *See*—
Doyle, Walter M.; and Hughes, Norman S., 5,011,243, Cl. 350-1.200.

Hugron, Denis P. Anchoring post assembly. 5,010,698, Cl. 52-160.000.

Hugunin, Harvey W. Stall enclosure for all-weather golf driving range. 5,011,152, Cl. 273-176.00R.

Huitema, Thomas W.; Eiszner, William H., Jr.; Heeres, Stanley D.; and Vanderlaan, Robert D., to Pneumo Abex Corporation. Linear direct drive motor. 5,012,144, Cl. 310-14.000.

Huls America Inc.: *See*—
Arena, Arthur A., 5,011,660, Cl. 422-22.000.

Hunder, Ray A., Bettenhausen, Larry A., Miles, Alden R.; Mittelstadt, William A.; Dwyer, Stephen H.; and Hanson, Gary R., to Minnesota Mining and Manufacturing Company. Binding system for connected fan folded sheets. 5,011,187, Cl. 281-15.100.

Hunder, Ray A.: *See*—
Bodziak, Douglas P.; Hunder, Ray A.; Roth, Steven P.; Grovender, Steven L.; and Molenda, Robert P., 5,011,186, Cl. 281-12.000.

Hung, Ming-Hong, and Resnick, Paul R., to Du Pont de Nemours, E. I., and Company. Epoxides and their preparation. 5,011,954, Cl. 549-548.000.

Hung, Wu-Hu. Hooking frame of a window/bathroom curtain. 5,010,942, Cl. 160-349.100.

Hung, Yau Y. Method of measuring displacement between points on a test object. 5,011,280, Cl. 356-35.500.

Hunter, Orville, Jr.; Hill, James L.; and Potts, David E., to A.P. Green Industries, Inc. Coking tar impregnated refractory products. 5,011,802, Cl. 501-100.000.

Huntley, Peter, to Borg-Warner Automotive, Inc. Clutch control for high-response continuously variable transmission. 5,010,989, Cl. 192-0.033.

Hurst, Allan T., Jr.; and Pohm, Arthur V., to Honeywell Inc. Opposed field magnetoresistive memory sensing. 5,012,444, Cl. 365-173.000.

Husby, Harald S.; Breed, Allen K.; and Thuen, Ted, to Breed Automotive Technology, Inc. Velocity change sensor with contact retainer. 5,011,182, Cl. 280-735.000.

Husky Injection Molding Systems Ltd.: *See*—
Bertschi, Rene, 5,011,646, Cl. 264-297.200.
Cosman, John; and Silaghi, Victor, 5,011,396, Cl. 425-190.000.

Huss, Albin, Jr.: *See*—
Child, Jonathan E.; Huss, Albin, Jr.; Kennedy, Clinton R.; Marler, David O.; and Tabak, Samuel A., 5,012,033, Cl. 585-722.000.

Hutchins, Harry L.: *See*—
Youngblood, Dale; and Hutchins, Harry L., 5,011,117, Cl. 254-30.000.

Hutchison, Brian G.; and Gahan, Ian, to NCR Corporation. Portable container for valuable items. 5,012,075, Cl. 235-379.000.

Hwang, Sean. Turbo-jet aerator. 5,011,631, Cl. 261-30.000.

Hyodo, Haruhiro; and Kurahashi, Hideyuki, to Minolta Camera Kabushiki Kaisha. Image exposure device. 5,012,277, Cl. 355-55.000.

Hyzak, Daniel L.; and Gray, Reed A., to ICI Americas Inc. Herbicide compositions of extended soil life. 5,011,526, Cl. 71-87.000.

I-Flow Corporation: *See*—
Brown, Eric W.; and Kienholz, Charles M., 5,011,378, Cl. 417-360.000.

I.P.R.S.: *See*—
Cruysberghs, Rudiger, 5,011,047, Cl. 222-396.000.

Iame, Eiji; and Imura, Yasuo, to Suehiro Industrial Co., Ltd. Molding method for manufacture of a resin molded part. 5,011,728, Cl. 428-156.000.

Ibata, Koichi: *See*—
Tanaka, Yasuyuki; Ibata, Koichi; Mizuno, Masao, Ninagawa, Yoichi; and Nishida, Takashi, 5,012,018, Cl. 508-909.500.

Ichikawa, Shunji. *See*—
Masada, Tomoaki; Ueno, Yasuhiko; Hayakawa, Eiji; Naganuma, Hirotake; Terajima, Mitsuru; Kuroda, Tokuyuki; Shuto, Katsuichi; and Ichikawa, Shunji, 5,011,824, Cl. 514-13.000.

Ichikawa, Tooru: *See*—
Satoh, Toyomi; Hosoi, Kiyonori; Kinoshita, Katsuji; Murata, Shinjiro; Fukatsu, Shunzo; and Ichikawa, Tooru, 5,011,019, Cl. 206-530.000.

Ichiki, Sayohiko: *See*—
Takahashi, Shoichi; Ichiki, Sayohiko; Yorozu, Masatoshi; Kunishige, Seiji; Shibagaki, Taro; Shimizu, Fumihiko; Fujioka, Fumio; and Kondo, Toshinori, 5,012,240, Cl. 341-101.000.

Ichishima, Masashi: *See*—
Kanda, Katsumi; Fujimoto, Junichi; Ichishima, Masashi; Nishimura, Takao; and Kondo, Yoshikazu, 5,011,711, Cl. 427-334.000.

ICI Americas Inc.: *See*—
Aksman, Igor, 5,011,883, Cl. 524-513.000.
Hyzak, Daniel L., and Gray, Reed A., 5,011,526, Cl. 71-87.000.

Ida, Masatoshi, to Olympus Optical Co., Ltd. Apparatus for positioning a transducer for recording, reproducing or erasing information on a medium. 5,012,362, Cl. 360-77.040.

Ida, Michiaki: *See*—
Kohno, Takashi; Matsushita, Osami; Ida, Michiaki; Kikuchi, Katsuaki; Sonoda, Taro; and Yamaguchi, Yuzo, 5,012,359, Cl. 360-71.000.

Ide, Yukio: *See*—
Harigaya, Makoto; Ide, Yukio; Yamada, Katsuyuki, and Iwasaki, Hiroko, 5,011,723, Cl. 428-64.000.

Idemoto, Morito: *See*—
Miyazaki, Kazuoki; Noguchi, Yasuo; Inoue, Naohiko; and Idemoto, Morito, 5,011,471, Cl. 604-22.000.

Ideyama, Hiroyuki: *See*—
Kusumoto, Keiji; Yamada, Hirokazu; and Ideyama, Hiroyuki, 5,012,281, Cl. 355-206.000.

Iggulden, Jerry R.: *See*—
Streck, Donald A.; and Iggulden, Jerry R., 5,012,350, Cl. 358-335.000.

Ihlenfeld, Gerd: *See*—
Seiffert, Volkhard; Ihlenfeld, Gerd; and Bienert, Klaus, 5,012,197, Cl. 324-696.000.

IHT, Inc.: *See*—
Miller, Archie M., 5,010,604, Cl. 4-519.000.

II-VI Incorporated *See*—
Reedy, Herman E., 5,012,473, Cl. 372-19.000
Iida, Takao *See*—
Takahashi, Mitsuru; Kitamura, Shigeto; Kase, Hiroshi; Kasai, Masaji; Kawamoto, Isao; Iida, Takao; Sano, Hiroshi; Saito, Hiromitsu; Yamada, Koji; and Murakata, Chikara, 5,011,854, Cl. 514-541.000
Iijima, Kenzaburou *See*—
Hayashi, Yoshinori; and Iijima, Kenzaburou, 5,012,238, Cl. 341-15.000
Iimuro, Ikuro; Matsushita, Toshiki; and Furuya, Toshihiro; to Juki Corporation Clutch type roller feed for a sewing machine needle thread 5,010,834, Cl. 112-302.000
IIT Research Institute *See*—
Lucero, Daniel P.; and Hendrickson, Susan K., 5,010,776, Cl. 73-863.230
Ijiri, Masaaki *See*—
Katayama, Hideaki; Murakami, Toshifumi; Soeda, Koji; Kubota, Yoshiya; Okamoto, Shoji; Kubota, Akinori; Kobayashi, Michihito; and Ijiri, Masaaki, 5,011,392, Cl. 425-35.000
Ikeda Bussan Co., Ltd *See*—
Katagiri, Hiroyuki; Mizuno, Hisayoshi; and Mori, Masami, 5,011,394, Cl. 425-117.000
Ikeda, Kazuo *See*—
Takahashi, Hisao; Yamane, Kaoru; Hirakami, Kiyomi; and Ikeda, Kazuo, 5,011,201, Cl. 296-203.000
Ikeda, Ryuichi *See*—
Takahashi, Kiyoshi; Takashiba, Nobuyoshi; Kojima, Shinji; Okuda, Haruji; Ohmiya, Shigeru; and Ikeda, Ryuichi, 5,011,541, Cl. 75-511.000
Ikeda, Senri; Saito, Sakae; Hanada, Shuji; and Hoshi, Hironobu; to Nippon Stainless Steel Co., Ltd.; Ikeda, Senri; and Saito, Sakae Method of manufacturing hard-to-work alloy articles such as of intermetallics and superconducting compounds 5,011,545, Cl. 148-11.50F
Ikeda, Shigeru *See*—
Mochizuki, Toshihei; and Ikeda, Shigeru, 5,010,934, Cl. 144-175.000
Ikeda, Tetsuo; and Nemoto, Akira; to Taehi-S Co., Ltd. Headrest 5,011,226, Cl. 297-403.000
Ikegawa, Akihito *See*—
Oka, Tateki; Toyoshi, Naoki; Yokoyama, Tomoaki; Mizuno, Hiroshi; Murasaki, Hiroshi; Ikegawa, Akihito; Etou, Kouichi; and Nakagawa, Shuichi, 5,012,285, Cl. 355-245.000
Ikkatai, Masatoshi, Yoshizawa, Atsutomo; and Honma, Toshio; to Canon Kabushiki Kaisha Sheet processing device and image recording apparatus using the same 5,012,295, Cl. 355-311.000
Illig, Carl R.; and Weis, Alexander L.; to Eastman Kodak Company Total synthesis of chiral 2-amino-1,3-diols 5,012,000, Cl. 564-489.000
Illinois Tool Works, Inc *See*—
Beck, Robert E., 5,010,621, Cl. 16-39.000
Imai, Tamotsu *See*—
Abrevaya, Hayim; and Imai, Tamotsu, 5,012,027, Cl. 585-443.000
Imamura, Masao *See*—
Sasabe, Minoru; Imamura, Masao; Yoshida, Yasunobu; Andoh, Shinya; and Miyake, Hiroshi, 5,011,798, Cl. 501-87.000
Imhof, Rene *See*—
Gassner, Walter; Imhof, Rene; and Kyburz, Emilio, 5,011,849, Cl. 514-365.000
Imm, Peter C *See*—
Mason, Robert W.; Imm, Peter C.; Craney, Paul J.; Offill, Thomas W.; and Brooker, Robert T., 5,012,019, Cl. 568-934.000
Immunex Corporation *See*—
Hopp, Thomas P.; and Prickett, Kathryn S., 5,011,912, Cl. 530-387.000
Imoto, Katsushi *See*—
Ueno, Kazuyoshi; and Imoto, Katsushi, 5,012,428, Cl. 364-508.000
Impact Systems, Inc *See*—
Typpo, Pekka M., 5,010,766, Cl. 73-159.000
Imperial Chemical Industries *See*—
Bradbury, Roy, 5,011,812, Cl. 503-227.000
Imperial Chemical Industries plc *See*—
Beck, Nicholas C.; Gemmell, Peter A.; and Hann, Richard A., 5,011,815, Cl. 503-227.000
Bradbury, Roy; Gemmell, Peter A.; and Hann, Richard A., 5,011,813, Cl. 503-227.000
Hayden, Percy; and Pinnegar, Harry, 5,011,807, Cl. 502-218.000
Scott, John D., 5,011,808, Cl. 502-225.000
Imperial Products, Inc *See*—
Geoffrey, David C., 5,010,690, Cl. 49-468.000
Imura, Yasuo *See*—
Iame, Eiji; and Imura, Yasuo, 5,011,728, Cl. 428-156.000
IMV Corporation *See*—
Ueno, Kazuyoshi; and Imoto, Katsushi, 5,012,428, Cl. 364-508.000
Ina, Yoshimitsu *See*—
Suzuki, Toshiyuki; Nohta, Masahide; Shigeta, Akira; Ina, Yoshimitsu; and Nozawa, Manami, 5,011,680, Cl. 424-64.000
Inagaki, Yoshio *See*—
Yamaguchi, Jun; Okazaki, Masaki; and Inagaki, Yoshio, 5,011,760, Cl. 430-281.000
Inalco S p A *See*—
Carobbi, Renato; and Innocenti, Franco, 5,011,535, Cl. 127-46.100
INAX Corporation *See*—
Ono, Masayuki, 5,011,754, Cl. 430-15.000
Inazawa, Yoshizumi *See*—
Odaka, Kentaro; Ozaki, Shinya; Yamada, Masaki; Inazawa, Yoshizumi; and Ishibashi, Hiroshi, 5,012,459, Cl. 360-32.000
INCO Alloys International, Inc *See*—
Mankins, William L., 5,011,655, Cl. 419-8.000
Indiana University Foundation *See*—
Hayes, John M., 5,012,052, Cl. 250-288.000
Induetotherm Europe Limited *See*—
Simcock, John H., 5,012,487, Cl. 373-147.000
Industrial Minerals Research & Development Pty Ltd *See*—
Keeney, Mark, 5,011,612, Cl. 210-712.000
Industrial Quimica del Nalon, S A *See*—
Garcia, D. Manuel O. G., 5,011,672, Cl. 423-599.000
Industrial Technology Research Institute *See*—
Lee, Rong-Jer; Lee, Chein-Dhau; and Shen, Wen-Shin, 5,011,762, Cl. 430-281.000
Information Storage, Inc *See*—
Popovich, Steve S.; Meyer, Russell A.; Stanis, William J.; Miller, Christopher; and Mitchell, Gary R., 5,012,460, Cl. 369-32.000
Ing. Erich Pfeiffer GmbH & Co. KG *See*—
Graf, Lothar; and Fuchs, Karl-Heinz, 5,011,046, Cl. 222-321.000
Ingraham, Ronald D.; Nykerk, Todd M.; and Strom, Peter H.; to Nartron Corporation Combination vehicular braking and accessory control system 5,010,972, Cl. 180-178.000
Innocenti, Alberto; to S E A C S r l Multitest-tube for clinical chemistry analysis for several simultaneous tests 5,011,663, Cl. 422-102.000
Innocenti, Franco *See*—
Carobbi, Renato; and Innocenti, Franco, 5,011,535, Cl. 127-46.100
Inoue, Hideo *See*—
Suzuki, Shigeaki; and Inoue, Hideo, 5,010,594, Cl. 2-206.000
Inoue, Keizo *See*—
Yoshida, Tadashi; Inoue, Keizo; Arita, Hitoshi; Matsutani, Shigeru; Shoji, Junichi; and Kawamura, Yoshimi, 5,011,952, Cl. 549-393.000
Inoue, Naohiko *See*—
Miyazaki, Kazuoki; Noguchi, Yasuo; Inoue, Naohiko; and Idemoto, Morito, 5,011,471, Cl. 604-22.000
Inoue, Nobuhiro; to Taehi-S Co. Ltd. Structure for fixing the terminal end of carpet in automotive seat 5,011,210, Cl. 296-69.000
Inoue, Takashi *See*—
Hidaka, Yasuharu; and Inoue, Takashi, 5,011,817, Cl. 505-1.000
Institut de Recherces de la Siderurgie Francaise "IRSID" *See*—
Blin, Philippe; Weber, George; and Barbe, Jacques, 5,010,948, Cl. 164-428.000
Institutet for Tillampad Bioteknologi *See*—
Persson, Jan-Ove; and Branemark, Per-Ingvar, 5,011,497, Cl. 623-21.000
Instrumentarium Corp *See*—
Palonen, Juhani; and Purhonen, Hannu, 5,012,501, Cl. 378-38.000
Intec Engineering, Inc *See*—
Lanan, Glenn A., 5,011,333, Cl. 405-166.000
International Business Machines Corporation *See*—
Aldrich, Charles S.; Applegate, Steven L.; Craft, James A.; Molloy, James J.; and Pawley, Michael I., 5,012,289, Cl. 355-260.000
Aldrich, Charles S.; Dyer, Stanley; and Ream, Gregory L., 5,012,293, Cl. 355-274.000
Bailey, Roger N.; Mansfield, Robert L.; and Spencer, Alexander K., 5,012,435, Cl. 364-569.000
Bosier, Maurice H.; and Dixon, Gerald, 5,012,368, Cl. 360-104.000
Callahan, Robert M.; Hempel, Bruce C.; and Liang, Bob C., 5,012,433, Cl. 364-518.000
Chan, Yuen H., 5,012,128, Cl. 307-270.000
Chung, Paul W.; Hense, Karl R.; and Nguyen, Kim Y., 5,012,246, Cl. 341-160.000
Frazier, Janice D.; Jackson, Robert L.; and Reich, Richard A., 5,011,546, Cl. 148-23.000
Mansuria, Mohanlal S.; Mosley, Joseph M.; Musa, Richard D.; and Tuozzolo, Vito J., 5,012,325, Cl. 357-81.000
Mine, Shingi; Miwa, Yoichi; and Ono, Hiroyuki, 5,012,363, Cl. 360-77.050
Niedrich, Daniel S., 5,011,658, Cl. 420-558.000
International Computers Limited *See*—
McVittie, David G., 5,012,515, Cl. 380-49.000
InterTherapy, Inc *See*—
Passafaro, James D.; and Griffith, James M., 5,010,886, Cl. 128-660.030
Inuyama, Tsutomu; to Omron Tateisi Electronics Co. Trigger switch 5,012,057, Cl. 200-522.000
Inuzuka, Tokushige *See*—
Hashimoto, Toru; Kamura, Hitoshi; Yoshida, Katutoshi; Jimbo, Takeshi; and Inuzuka, Tokushige, 5,010,862, Cl. 123-339.000
Iolab Corporation *See*—
Shell, John W., 5,011,843, Cl. 514-259.000
Iowa State University Research Foundation, Inc *See*—
Braymen, Steven D.; Paulson, Bradley A.; and Goedken, Kenneth D., 5,011,568, Cl. 156-647.000
Iles, David C., 5,012,189, Cl. 324-209.000
Iqbal, Muhammad; to Kohler Co. Fluid control valve 5,010,917, Cl. 137-454.600
Irick, Gether, Jr.; Mercer, Patricia N.; and Simmons, Kenneth E.; to Eastman Kodak Company Catalyst composition for the hydrogenation of carboxylic acid esters 5,011,806, Cl. 502-202.000.
IRT Corporation *See*—
Battin, John; and Stroebel, Thomas, 5,012,502, Cl. 378-58.000

Isayama, Katsuhiko *See*—
Yukimoto, Sadao; Hirose, Toshifumi; Wakabayashi, Hiroshi; and Isayama, Katsuhiko, 5,011,900, Cl. 525-477.000
Ishi, Kozo: *See*—
Yoshimura, Hiroshi; Fujiwara, Takuji; Ishi, Kozo; and Takemoto, Kazuo, 5,010,990, Cl. 192-3.300
Ishibashi, Akira *See*—
Ushijima, Nobuyoshi; Masuda, Hiroshi; Ishibashi, Akira; Satou, Masahiko; Haruna, Toshiyuki; Takayama, Norikazu; and Kudou, Yoshinobu, 5,012,166, Cl. 318-254.000
Ishibashi, Hiroshi *See*—
Odaka, Kentaro; Ozaki, Shinya; Yamada, Masaki; Inazawa, Yoshizumi; and Ishibashi, Hiroshi, 5,012,459, Cl. 360-32.000
Ishida, Kouji: *See*—
Kawano, Hisaaki; Tanimoto, Yasufumi; and Ishida, Kouji, 5,012,286, Cl. 355-246.000
Ishida, Nobuyoshi *See*—
Michimoto, Takashi; Nakamoto, Yukinari; Kuwada, Kazuhiko; and Ishida, Nobuyoshi, 5,011,810, Cl. 502-439.000
Ishida, Takao; Hagiwara, Hiroshi; and Kakumu, Ichizo, to Sintobrator, Ltd Polishing device 5,010,692, Cl. 51-283.00R
Ishida, Tatsuo *See*—
Yamamoto, Yuji; Shigematsu, Hideyuki; Tanaka, Hiroshi; Ashikawa, Ryo; and Ishida, Tatsuo, 5,011,875, Cl. 524-45.000
Ishida, Tetsuro; Danno, Yoshiaki; Akishino, Katsuo; and Fukui, Toyoaki, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha Apparatus for preventing engine from stalling 5,010,863, Cl. 123-339.000.
Ishida, Tsuyoshi *See*—
Matsuo, Yukito; and Ishida, Tsuyoshi, 5,010,997, Cl. 198-349.700
Ishiguro, Satoshi; to Sony Corporation Television receiver which includes a memory for storing a field image which can be periodically displayed as a still picture 5,012,328, Cl. 358-22.000
Ishihara, Toshinobu *See*—
Ogawa, Kazufumi; Tamura, Hideharu; Ishihara, Toshinobu; Tanaka, Yasuhisa; and Endou, Mikio, 5,011,963, Cl. 556-485.000
Ishii, Haruo: *See*—
Nakamura, Susao; Nishio, Etsuro; and Ishii, Haruo, 5,012,273, Cl. 354-485.000.
Ishii, Mitsuaki; and Miyazaki, Masaaki; to Mitsubishi Denki K K Vehicle control apparatus 5,012,414, Cl. 364-424.030
Ishii, Mitsuaki; to Mitsubishi Denki K K Vehicle control apparatus 5,012,421, Cl. 364-431.100
Ishii, Shinjiro *See*—
Murakami, Yasuo; Matsumoto, Yoichi; Ishii, Shinjiro; Kurahashi, Ryurou; and Nakamura, Mitsuru, 5,011,304, Cl. 384-492.000
Ishikawa, Kazunori *See*—
Tsukamoto, Kazumasa; Ishikawa, Kazunori; Taniguchi, Takuji; Iwatsuki, Kunihiro; and Taga, Yutaka, 5,010,991, Cl. 192-3.300
Ishikawa, Masayasu *See*—
Takeuchi, Yukihisa; Ishikawa, Masayasu; and Kimura, Koji, 5,011,732, Cl. 428-209.000
Isobe, Keijiro *See*—
Moriya, Hideshige; Kitahara, Hiroshi; Minami, Shohei; Isobe, Keijiro; Nakata, Yoshinori; and Tanaka, Chiaki, 5,010,879, Cl. 128-69.000.
Isoda, Satoru; Tomisawa, Osamu; and Kawakubo, Hiroaki, to Mitsubishi Denki K.K. Method of manufacturing a hybrid circuit element 5,011,786, Cl. 437-51.000
Isomura, Akihiro; and Sugaya, Toshihiro, to Kabushiki Kaisha Toshiba Head access mechanism for moving heads 5,012,372, Cl. 360-106.000
Isono, Haruo, Yasuda, Minoru; Watanabe, Hiroshi; Toyama, Tateo; Hioki, Toshiaki; Morita, Yoshihiko; and Yamada, Makoto, to Nippon Hoso Kyokai; and Sanyo Electric Co., Ltd. Stereoscopic video disc record and recording and reproducing apparatus therefor. 5,012,351, Cl. 358-342.000
Isshiki, Masao; and Kumazawa, Takeshi, to Kabushiki Kaisha Toshiba Air conditioning apparatus having audible sound level control function 5,010,739, Cl. 62-158.000
Isuzu Motors Limited *See*—
Kurabayashi, Ken; Tsuchiya, Yoshinobu; and Nuda, Yoriaki, 5,012,385, Cl. 361-328.000.
Matsuoka, Hiroshi, 5,010,861, Cl. 123-271.000
Italtel Societa Italiana Telecommunicazioni S.p.A.: *See*—
Lentini, Salvatore; and Patti, Giuseppe, 5,012,122, Cl. 307-66.000
Itgenshorst, Dieter: *See*—
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Ito, Hiroshi *See*—
Nakamori, Haruka; and Ito, Hiroshi, 5,011,731, Cl. 428-222.000.
Ito, Shinichi *See*—
Sakano, Chikashi; Nakada, Senichi; Shimizu, Masao; Ito, Shinichi; and Yamamoto, Toshiyoshi, 5,010,664, Cl. 38-77.700.
Ito, Yoshiaki *See*—
Minagawa, Yoshiji; Shirakawa, Hiroshi; Yamazaki, Hiroshi; and Ito, Yoshiaki, 5,012,120, Cl. 307-35.000.
Ito, Yoshimasa *See*—
Yoshida, Shigeru; and Ito, Yoshimasa, 5,011,367, Cl. 415-55.100.
Itoh, Hiroshi: *See*—
Takada, Mitsuru; Itoh, Hiroshi; Takahashi, Tokeyuki; and Funahashi, Makoto, 5,010,787, Cl. 74-867.000.
Itoh, Toshio; and Narita, Yasuhide; to Kabushiki Kaisha Tokai Denki Seisakusho Mounting mechanism of wheel cap 5,011,232, Cl. 301-37.00P.
Itozaki, Hideo *See*—
Hitotsuyanagi, Hajime; Fujita, Nobuhiko; Itozaki, Hideo; Nakagama, Syoji; Tanaka, Saburo; and Fukushima, Kazuhiko, 5,011,759, Cl. 430-128.000.
ITT Corporation *See*—
Liu, Yu J.; and Rothweiler, Joseph, 5,012,518, Cl. 381-42.000
Sodergard, Bengt, 5,011,370, Cl. 415-121.100
ITW-Mapri Industria e Comercio I TDA *See*—
Fernandez, Miguel C., 5,011,356, Cl. 411-553.000
Iwahara, Yoshiaki *See*—
Ogino, Masanori; Iwahara, Yoshiaki; Tamura, Yuzo; and Kuroda, Shoji, 5,011,277, Cl. 353-94.000
Iwamoto, Masakatsu, to Ryusyo Industrial Co., Ltd Apparatus for measuring refractive power of eye 5,011,276, Cl. 351-211.000
Iwasa, Yoshio *See*—
Ogami, Etsuo; and Iwasa, Yoshio, 5,010,855, Cl. 123-90.310
Ogami, Etsuo; and Iwasa, Yoshio, 5,010,859, Cl. 123-195.00C
Iwasaki, Hiroko *See*—
Harigaya, Makoto; Ide, Yukio; Yamada, Katsuyuki; and Iwasaki, Hiroko, 5,011,723, Cl. 428-64.000
Iwasaki, Hiroshi *See*—
Fujikawa, Yoshihiro, Suzuki, Mikio; Iwasaki, Hiroshi; Sakashita, Mitsuaki; and Kitahara, Masaki, 5,011,930, Cl. 546-101.000
Iwasaki, Motoya, to NEC Corporation. Preamable detection circuit for digital communications system 5,012,491, Cl. 375-96.000
Iwase, Nobuhiro *See*—
Takeda, Shiro; Namiki, Fumihiro; Sugiyama, Yuuichi; Iwase, Nobuhiro; Tadaki, Shinji; and Koshino, Nagaaki, 5,012,096, Cl. 250-327.200
Iwase, Osamu *See*—
Hiraki, Tadayoshi; Iwase, Osamu; Oosummoto, Hiroshi; Sugiura, Shinji; Tabushi, Ichiro; Kume, Masafumi; Udagawa, Takashi; Matsui, Komaharu; and Fujii, Yasuhiro, 5,011,733, Cl. 428-336.000
Iwata, Satoshi *See*—
Ando, Moritoshi; Oka, Hiroshi; and Iwata, Satoshi, 5,011,960, Cl. 356-376.000
Iwata, Toshio *See*—
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Izaguirre, Lowell F., Sr., and Perotti, Jose M. to Cam-Stat, Inc Control to operate a forced air blower 5,011,073, Cl. 236-11.000
Izawa, Shigeru *See*—
Kobayashi, Hiroyuki; Izawa, Shigeru; and Ukiana, Motohide, 5,012,092, Cl. 250-311.000
Izumi, Kouji: *See*—
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Izumida, Kouji: *See*—
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J I Case Company: *See*—
Covington, Michael J., and Orsborn, Jesse H., 5,010,718, Cl. 56-40.000.
Frisbee, Claude M., 5,010,961, Cl. 172-821.000
J & M Co., Ltd.: *See*—
Maeda, Sadao, 5,011,519, Cl. 55-216.000
J. M. Voith GmbH *See*—
Egelhof, Dieter, 5,011,576, Cl. 162-344.000
Musselmann, Walter, 5,011,065, Cl. 228-170.000
J. Mulcahy Enterprises Inc *See*—
Mulcahy, Joseph A., 5,011,528, Cl. 75-10.160.
Jabarin, Saleh A., to Owens-Illinois Plastic Products Inc Multilayer containers and method of making same. 5,011,720, Cl. 428-36.600
Jackson, Andrew; and Wu, Margaret M., to Mobil Oil Corporation Novel VI enhancing compositions and Newtonian lube blends 5,012,020, Cl. 585-10.000.
Jackson, Gregory T.: *See*—
Lorenz, Robert D.; and Jackson, Gregory T., 5,010,773, Cl. 73-862.040.
Jackson, Linda K.: *See*—
Baer, Cynthia C.; Buliga, Gregory S.; Hassenheutti, Gerard L.; Henry, George A.; Heth, Alice A.; Jackson, Linda K.; Kennedy-Tolstedt, Jill M.; Kerwin, Phillip J.; Miller, Mark S.; Parker, Elizabeth M.; Paul, Neela K.; Pechak, David G.; Smith, Gary F.; and Witte, Vernon C., 5,011,701, Cl. 426-573.000.
Jackson, Robert L.: *See*—
Frazier, Janice D.; Jackson, Robert L.; and Reich, Richard A., 5,011,546, Cl. 148-23.000
Jackson, Winston J., Jr.: *See*—
Morris, John C.; and Jackson, Winston J., Jr., 5,011,877, Cl. 524-115.000.
Morris, John C.; and Jackson, Winston J., Jr., 5,011,878, Cl. 524-115.000
Jacobs Chuck Technology Corporation *See*—
Jordan, Paul T., 5,011,167, Cl. 279-62.000.
Jacobs, Dwight W.: *See*—
Culler, Scott R.; Fundingsland, Jon W.; and Jacobs, Dwight W., 5,011,410, Cl. 433-208.000.
Jacoby, Randall W.: *See*—
Boudreau, Michael P.; Jacoby, Randall W.; and Laughlin, James L., 5,010,881, Cl. 128-76.00R.
Jadvar, Hossein; and Arzbaecher, Robert C., to Arzco Medical Electronics, Inc. Method and apparatus for detection of posterior ischemia. 5,010,888, Cl. 128-696.000.
Jakes, Tad E.: *See*—
Souza, Dennis M.; and Jakes, Tad E., 5,011,036, Cl. 220-263.000.

Jameel, Hasan: *See—*
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Jameson, M. Phillip: *See—*
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Janda, Dennis J.: *See—*
Tenney, Lindwood P.; Smith, David J.; Janda, Dennis J.; and Barnes, Dennis A., 5,011,730, Cl. 428-209.000.

Janecke, James P. *See—*
Stobbs, Thomas J.; Patel, Kishor J.; Fritz, Frank M.; Knutson, Dale A.; and Janecke, James P., 5,011,113, Cl. 251-129.160.

Janssen Pharmaceutica N.V.: *See—*
Janssens, Frans E.; Sommen, Francois M.; Torremans, Joseph L. G.; and Diels, Gaston, S. M., 5,011,842, Cl. 514-253.000.

Janssens, Frans E.; Sommen, Francois M.; Torremans, Joseph L. G.; and Diels, Gaston, S. M., to Janssen Pharmaceutica N.V. 2-(heterocyclylalkyl)imidazopyridines for treating allergic diseases. 5,011,842, Cl. 514-253.000.

Janssens, Robert F.: *See—*
Tavernier, Serge M.; Janssens, Robert F.; and Zwijsen, Jan A., 5,012,288, Cl. 355-259.000.

Janus, Jonny. Belted tire for vehicles. 5,010,937, Cl. 152-531.000.

Japan Air Lines Co., Ltd.: *See—*
Suzuki, Shigeaki; and Inoue, Hideo, 5,010,594, Cl. 2-206.000.

Japan Aviation Electronics Industry Limited: *See—*
Suzuki, Takao, Suzuki, Mamoru; and Hayashi, Yasufumi, 5,011,415, Cl. 439-63.000.

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Mitsuda, Hisateru; Ohminami, Hiroshi, and Nagasawa, Haruko, 5,011,699, Cl. 426-320.000.

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Tsutsumi, Fumio; Morikawa, Akihiko; Sakakibara, Mitsuhiko; Oshima, Noboru; Hamada, Tatsuro; Fujimaki, Tatsuo; and Ohashi, Masayuki, 5,011,888, Cl. 525-98.000.

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Yamaguchi, Takashi, Tsutsumi, Tadahiko; and Watanabe, Toshie, 5,011,556, Cl. 156-83.000.

Jarchow, Friedrich; and Tenberge, Peter. Infinitely variable hydrostatic mechanical power shift gear with group shiftings. 5,011,463, Cl. 475-74.000.

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Bunce, Martin C.; Helps, David W.; Jenkins, Leonard A., and Noke, Adrian C., 5,011,042, Cl. 221-150.00A.

Jenn, Chin S. Single handle mixing faucet. 5,010,924, Cl. 137-625.470.

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Jennings, Harold, Jr.; and Jennings, Carol A., 5,011,059, Cl. 225-35.000.

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Burton, Richard J.; Copeland, John A., III; Jerrim, John W.; Nixon, Toby L.; Sauser, Martin H., Jr.; Weatherford, Robert E., Jr.; Becker, Larry D.; and Strawn, David F., 5,012,489, Cl. 375-8.000.

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Gray, Daniel W.; and Jewett, Thomas E., 5,010,710, Cl. 52-742.000.

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Yagi, Isao, 5,010,732, Cl. 60-413.000.

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Sakamaki, Hiroshi; Horikoshi, Yukio; Jinnouchi, Takeshi; and Tanzawa, Kenji, 5,011,390, Cl. 418-256.000.

Joannou, Kyriacos, Wilson, Kenneth; and Lowry, Alan B., to Pericomp Corporation. Tape head cleaner cartridge having a mesh cleaning layer. 5,012,376, Cl. 360-128.000.

Johdai, Akiyoshi; Ozawa, Kazuhito; and Matsui, Toshio, to Minolta Camera Kabushiki Kaisha. Sheet transporting apparatus provided for a copying machine. 5,012,298, Cl. 355-323.000.

John Crane UK Limited: *See—*
Watts, Christopher J., 5,011,166, Cl. 277-88.000.

John Fluke Mfg. Co., Inc.: *See—*
Eccleston, Larry E., 5,012,181, Cl. 324-74.000.

John, Sau-hoi N.: *See—*
Campbell, Arthur L.; Behling, James R.; John, Sau-hoi N.; and Babiak, Kevin A., 5,011,958, Cl. 556-110.000.

Johns Hopkins University: *See—*
Colvin, David P.; Whitney, Raymond A.; Marsh, Bernard R.; Kline, William M.; Rizzo, Ronald R.; and Orlosky, Mark E., 5,010,892, Cl. 128-774.000.

Johnson, Alan W., to Sauer-Sundstrand Inc. Hydrostatic transmission with hydraulic bypass and air bleed. 5,010,733, Cl. 60-453.000.

Johnson, Allan S., to Tapmatic Corporation. Positive drive adapter. 5,011,344, Cl. 408-240.000.

Johnson, Bruce; and Whitney, Robert, to EBW, Inc. Two stage automatic shut off valve. 5,010,915, Cl. 137-423.000.

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Johnson, Dennis C.: *See—*
Towley, Carl K., III; and Johnson, Dennis C., 5,011,141, Cl. 272-123.000.

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Johnson, Edward G.: *See—*
Lantagne, John A.; Johnson, Edward G.; and Virostko, Michael J., 5,012,209, Cl. 333-116.000.

Johnson Electric S.A.: *See—*
Strobl, Georg, 5,012,149, Cl. 310-234.000.

Johnson, Melvin H.; Krauss, Leland L.; and Landman, Dirk, to Du Pont de Nemours, E. I., and Company. Package for an opto-electronic component. 5,011,256, Cl. 350-96.200.

Johnson, Michael R.: *See—*
Schulte, Heinz-Guenther; Narum, Jeffrey L.; and Johnson, Michael R., 5,011,934, Cl. 548-335.000.

Johnson, Paul W.: *See—*
Bulgrien, Garth H.; Goodbar, Jim E.; and Johnson, Paul W., 5,012,416, Cl. 364-424.100.

Johnson, Richard E., Jr.: *See—*
Gehrke, Russell P.; Johnson, Richard E., Jr.; and Kim, Yong J., 5,011,719, Cl. 428-35.700.

Johnson, Victoria A.: *See—*
Hirsch, Martin S.; and Johnson, Victoria A., 5,011,829, Cl. 514-50.000.

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Smith, Gordon M.; and Van Der Wiel, Hans M., 5,011,115, Cl. 251-161.000.

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Forte, Mark R., and Noiles, Douglas G., 5,011,496, Cl. 623-20.000.

Jones, Glenn C., and Nottingham, William D., to Eastman Kodak Company. Transesterification of alkoxyesters. 5,011,977, Cl. 560-187.000.

Jones, Kenneth A. *See—*
Buckberg, Gerald D.; Maloney, James V., Jr.; Jones, Kenneth A.; and West, Weldon D., 5,011,469, Cl. 604-4.000.

Jones, Lorianne: *See—*
Bridger, Keith; Jones, Lorianne; and Winzer, Stephen R., 5,011,796, Cl. 501-12.000.

Jones, Raymond. Tennis training device. 5,011,143, Cl. 273-29.00A.

Jones, Robert D., and Demeyer, David M., to Musco Corp. Light bar leveler. 5,012,398, Cl. 362-250.000.

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Jordan, Paul T., to Jacobs Chuck Technology Corporation. Chuck jaw. 5,011,167, Cl. 279-62.000.

Jorgensen, Terje; Strand, Oddbjorn E.; and Asbjornsen, Odd A., to Norsk Hydro A.S. Method and apparatus for performing automatic particle analysis. 5,011,285, Cl. 356-335.000.

Jos. Hunkeler Ltd.: *See—*
Felix, Willi, 5,011,559, Cl. 156-257.000.

Jost, William R.: *See—*
Munro, John R.; Jost, William R.; and Ash, Francis M., Jr., 5,012,248, Cl. 342-22.000.

Jow, Taiguang R.: *See—*
Shacklette, Lawrence W.; Townsend, Linda B.; and Jow, Taiguang R., 5,011,748, Cl. 429-50.000.

Joy, John R., to Williams International Corporation. Solid fuel turbine engine. 5,010,728, Cl. 60-39.464.

Joy Technologies Inc.: *See—*
O'Neill, Michael L.; Moore, Stephen P.; and Pendolino, Eugene F., 5,011,229, Cl. 299-91.000.

Joyce, David L.: *See—*
Walker, Roger C.; Reese, Scott P., Joyce, David L.; and Kastrup, David A., 5,012,420, Cl. 364-431.020.

Joyer, Richard A. Screw-on button. 5,010,625, Cl. 24-90.00R.

Juki Corporation: *See—*
Iimuro, Ikuro; Matsushita, Toshiki; and Furuya, Toshihiro, 5,010,834, Cl. 112-302.000.

Jung, Chou K. Warning device for liquid level in dripping bottle. 5,012,227, Cl. 340-618.000.

Jungheim, Louis N.: *See—*
Barnett, Charles J.; Holmes, Richard E.; Jungheim, Louis N.; Sigmund, Sandra K., and Ternansky, Robert J., 5,011,938, Cl. 548-359.000.

Jungwirth, Douglas R., Simpson, A. Phillip; Kawahara, Mitsuo; Levine, Seymour; and Kennel, John M., to Northrop Corporation. Strapdown stellar sensor and holographic lens therefor. 5,012,081, Cl. 250-203.600.

Jurgens, Gunter; Pickard, Jurgen; and Sell, Werner, to Daimler-Benz Aktiengesellschaft. Brakeband. 5,010,986, Cl. 188-250.00H.

JWI Ltd.: *See—*
Hansen, Victor E.; Smith, David T.; McPherson, Douglas R.; and Pitt, Richard E., 5,011,577, Cl. 162-352.000.

Kabata, Toshiyuki: *See—*
Yoneyama, Sachiko; Ohsawa, Toshiyuki; Kimura, Okitoshi; and Kabata, Toshiyuki, 5,011,751, Cl. 429-192.000.

Kabeshita, Akira; Hamane, Tokuhito, and Kitayama, Yoshifumi, to Matsushita Electric Industrial Co., Ltd. Electrode structure of a chip type electronic component. 5,012,388, Cl. 361-400.000.

Kabushiki Kaisha Cubic Engineering: *See—*
Nakanishi, Motoyasu, 5,011,393, Cl. 425-89.000.

Kabushiki Kaisha Hosokawa Yoko. *See—*
Satoh, Toyomi; Hosoi, Kiyonori; Kinoshita, Katsuji, Murata, Shinjiro; Fukatsu, Shunzo; and Ichikawa, Tooru, 5,011,019, Cl. 206-530.000.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Fujimoto, Hideo, Hirano, Masakazu; Hashiura, Mituo; and Murao, Toshiaki, 5,011,547, Cl. 148-24.000.
Nose, Kazuo; Yamamoto, Hiroyuki; Koike, Shiro; Shimomura, Masakazu; Tsubono, Hajime; Kitagawa, Soichi, Fujisaki, Yasumasa; Maeda, Yasushi; Wakebe, Tetsuya; and Katayama, Yasuyuki, 5,010,756, Cl. 72-9.000.

Kabushiki Kaisha Nippon Conlux: *See—*
Kobayashi, Osamu; Mikami, Mitsugu; Nishiumi, Kenji; and Nakajima, Kenji, 5,011,456, Cl. 453-32.000.

Kabushiki Kaisha Sanko Kaihatsu Kagaku Kenkyusho: *See—*
Uesaka, Toshio; Niki, Akihiro; Ohsuga, Makoto; Sato, Toranosuke; Tsunomachi, Hiroki; Yamaguchi, Makoto; Doyama, Kazuo; and Kishimoto, Daishiro, 5,011,879, Cl. 524-290.000.

Kabushiki Kaisha Tokai Denki Seisakusho: *See—*
Itoh, Toshio; and Narita, Yasuhide, 5,011,232, Cl. 301-37.00P.

Kabushiki Kaisha Toshiba: *See—*
Amemiya, Isao; Sakai, Tadashi; and Uno, Shigeki, 5,011,589, Cl. 204-416.000.
Goto, Hiroshige, 5,012,344, Cl. 358-213.110.
Hieda, Katsuhiko, 5,012,308, Cl. 357-23.600.
Isomura, Akihiro; and Sugaya, Toshihiro, 5,012,372, Cl. 360-106.000.
Isshiki, Masao, and Kumazawa, Takeshi, 5,010,739, Cl. 62-158.000.
Kawano, Hisaaki; Tanimoto, Yasufumi; and Ishida, Kouji, 5,012,286, Cl. 355-246.000.
Kohsaka, Yoshiaki, 5,012,358, Cl. 360-70.000.
Kuribayashi, Mototaka, 5,012,427, Cl. 364-490.000.
Matsuo, Yukito; and Ishida, Tsuyoshi, 5,010,997, Cl. 198-349.700.
Sakamoto, Noriya, Kawai, Kiyoyuki; and Yasuki, Seijiro, 5,012,326, Cl. 358-11.000.
Shimono, Mamoru; Asada, Tomoyuki; Kawaguchi, Taiichi; Taya, Yoichi; Yukinaga, Kouji, Nomura, Susumu; and Tagawa, Hajime, 5,012,283, Cl. 355-229.000.
Takahashi, Shoichi; Ichiki, Sayohiko; Yorozu, Masatoshi; Kunishige, Seiji; Shibagaki, Taro; Shimizu, Fumihiko; Fujioka, Fumio, and Kondo, Toshinori, 5,012,240, Cl. 341-101.000.
Yamaguchi, Akira, 5,012,438, Cl. 364-765.000.
Yasuda, Nobuyuki, 5,012,400, Cl. 363-95.000.

Kabushiki Kaisha Toyda Jidoshokki Seisakusho: *See—*
Kawasaki, Yoshio; Horibe, Tatsutake; Morita, Takayuki; Nakamura, Haruyoshi; Ohashi, Kengo; and Miyazaki, Tsutomu, 5,011,000, Cl. 198-465.100.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Yasui, Yoshiharu, Nakane, Katsumi; Suzuki, Osamu; and Kimbara, Masahiko, 5,010,725, Cl. 57-281.000.

Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo: *See—*
Ueno, Ryuzo; Masada, Yoshiyasu; and Mori, Toru, 5,011,984, Cl. 562-425.000.

Kabushiki Kaisha Universal. *See—*
Okada, Kazuo, 5,010,995, Cl. 194-219.000.

Kaczmarek, Wesley R.: *See—*
Zador, Eugene; Hsu, Shyiguei; Kaczmarek, Wesley R.; Ravipati, Sitaramaiah; Supkis, Stanley; and Vogel, Richard H., 5,011,513, Cl. 51-295.000.

Kadokura, Hidekimi; Yoshitake, Hiroshi; and Tanahashi, Masayoshi, to Sumitomo Chemical Company, Limited. Dispersion-type electroluminescence device. 5,012,156, Cl. 313-509.000.

Kadomatsu, Sigenari: *See—*
Kobayashi, Keiichi, Moriwaki, Masazumi; Kadomatsu, Sigenari; Fujie, Yuji; and Kawamoto, Masanobu, 5,010,601, Cl. 4-236.000.

Kaga, Toru: *See—*
Kimura, Shinichiro; Kawamoto, Yoshifumi; Kaga, Toru; and Sunami, Hideo, 5,012,310, Cl. 357-23.600.

Kaganowicz, Grzegorz, to General Electric Company. Inorganic alignment layer for liquid crystal devices and method of forming. 5,011,268, Cl. 350-341.000.

Kagawa, Hitoshi: *See—*
Hattori, Ryo; Kagawa, Hitoshi; and Mori, Masaki, 5,012,478, Cl. 372-50.000.

Kage, Kazuo: *See—*
Tominaga, Kenji; Miki, Minoru; Takahashi, Tooru; Horiuchi, Tetsuo; Morishima, Hideo; Nakayama, Takashi; Moriya, Kumiaki; Matsumoto, Masaki, Akita, Minoru; Niino, Tsuyoshi; Ochiai, Kanehiro; Shiozawa, Akihiko, Uchiyama, Yuichi, Yasuno, Toyoharu; Moriya, Kenji, Kinoshita, Shouichirou, Kage, Kazuo, and Kubota, Ryuji, 5,011,652, Cl. 376-283.000.

Kai, Takashi. *See—*
Sekine, Masayoshi; Nakajima, Toshiyuki; Kai, Takashi; Yoshimura, Katsuji; and Toyama, Masamichi, 5,012,270, Cl. 354-430.000.
Yoshinaga, Kazuo, Kai, Takashi; Egara, Koichi; Toshida, Yomishi, Mitsutake, Hideaki; Sato, Koichi, and Miyazaki, Takeshi, 5,011,623, Cl. 252-299.500.

Kaihara, Shoji: *See—*
Tosaka, Yoichi; and Kaihara, Shoji, 5,012,269, Cl. 354-419.000.

Kaiser Optical Systems: *See—*
Tedesco, James M.; Owen, Harry, and Chang, Byung J., 5,011,284, Cl. 356-301.000.

Kajima Corporation: *See—*
Akihama, Shigeyuki; Kobayashi, Mikio, Suenaga, Tatsuo, Fukumoto, Toshiyuki; Tamiguchi, Yoshikazu; and Nakagawa, Hiroaki, 5,010,705, Cl. 52-477.000

Kajima, Junichi. *See—*
Fujii, Yasuhiro, Mitsuji, Masaru; and Kajima, Junichi, 5,011,881, Cl. 524-457.000.

Kajimura, Kazuo: *See—*
Nakamura, Masaharu; and Kajimura, Kazuo, 5,010,717, Cl. 56-17.600.

Kakegawa, Hisao: *See—*
Satoh, Toshio; Niiro, Yasunori, Kakegawa, Hisao; and Matsumoto, Hitoshi, 5,011,949, Cl. 549-315.000.

Kakizaki Mfg. Co., Ltd.: *See—*
Kakizaki, Takeyoshi, 5,011,041, Cl. 220-507.000.

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Kakumu, Ichizo: *See—*
Ishida, Takao, Hagiwara, Hiroshi; and Kakumu, Ichizo, 5,010,692, Cl. 51-283.00R.

Kalaam, Shaik M., to Safeco Mfg. Limited. Fire fighter's coat having improved sleeve construction. 5,010,591, Cl. 2-93.000.

Kalet, George W.: *See—*
Gustafson, Keith W.; Kalet, George W.; and Taylor, Martin S., 5,011,700, Cl. 426-477.000.

Kalina, Benjamin F. Escape door system. 5,011,215, Cl. 296-146.000.

Kallmann, Jurgen, to Palitex Project Company GmbH. Method of random doffing wound packages from two sides of a textile yarn processing machine. 5,011,092, Cl. 242-35.50A.

Kamei, Hideyuki: *See—*
Sano, Kenichi; Maki, Kenichiro; and Kamei, Hideyuki, 5,011,980, Cl. 560-245.000.

Kamimura, Kenji: *See—*
Noji, Akio; Kamimura, Kenji; and Tsuzuki, Sadachika, 5,011,288, Cl. 356-375.000.

Kamioka, Hajime. *See—*
Ogawa, Tsutomu; Kamioka, Hajime; Kawamura, Seiichiro; and Sakurai, Junji, 5,011,783, Cl. 437-19.000.

Kamura, Hitoshi: *See—*
Hashimoto, Toru; Kamura, Hitoshi, Yoshida, Katutoshi; Jimbo, Takeshi; and Inuzuka, Tokushige, 5,010,862, Cl. 123-339.000.

Kanakura, Akihiro: *See—*
Kuwajima, Teruaki; Nagahata, Satoshi; and Kanakura, Akihiro, 5,011,533, Cl. 106-404.000.

Kanamori, Katsuhiko: *See—*
Kikuo, Kanaya; Kanamori, Katsuhiko, and Masuda, Ryosuke, 5,010,774, Cl. 73-862.040.

Kanaya, Kouichi: *See—*
Tsutsumi, Takashi; Miyawaki, Shozo, and Kanaya, Kouichi, 5,012,280, Cl. 355-206.000.

Kanaya, Yasuhiko: *See—*
Nishigai, Masao; Otani, Tamio; Kanaya, Yasuhiko; and Murakami, Tetsuo, 5,011,345, Cl. 409-132.000.

Kanda, Katsumi; Fujimoto, Junichi, Ichishima, Masashi; Nishimura, Takao; and Kondo, Yoshikazu, to Toyo Kohan Co., Ltd. Method for post-treatment of electroplated steel sheets for soldering. 5,011,711, Cl. 427-334.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Kido, Masaro, and Yoshioka, Tetsuo, 5,011,727, Cl. 428-141.000.
Yukimoto, Sadao; Hirose, Toshifumi; Wakabayashi, Hiroshi, and Isayama, Katsuhiko, 5,011,900, Cl. 525-477.000.

Kaneko, Yutaka: *See—*
Kida, Shuji; Kita, Hiroshi; Hirabayashi, Shigeto; and Kaneko, Yutaka, 5,011,766, Cl. 430-558.000.
Tachibana, Kimie; and Kaneko, Yutaka, 5,011,765, Cl. 430-548.000.

Kania, Jozef. Apparatus for cutting metal and plastic sheet. 5,010,795, Cl. 83-607.000.

Kano, Akiko; Honda, Satoshi; and Nakano, Kuniaki, to Konica Corporation. Radiation image storage panel. 5,012,107, Cl. 250-484.100.

Kanoh, Masaki: *See—*
Hosokawa, Yoshiaki; Kanoh, Masaki; Maekawa, Takashi; and Nakayasu, Hirofumi. 5,011,312, Cl. 400-225.000.

Kansai Paint Company, Limited: *See—*
Fujii, Yasuhiro; Mitsuji, Masaru; and Kajima, Junichi. 5,011,881, Cl. 524-457.000.
Hiraki, Tadayoshi; Iwase, Osamu; Oosummoto, Hiroshi; Sugiura, Shinji; Tabushi, Ichiro; Kume, Masafumi; Udagawa, Takashi; Matsui, Komaharu; and Fujii, Yasuhiro. 5,011,733, Cl. 428-336.000.

Kao Corporation: *See—*
Suzuki, Toshiyuki; Nohta, Masahide; Shigeta, Akira; Ina, Yoshimitsu; and Nozawa, Manami. 5,011,680, Cl. 424-64.000.

Kaplan, Martin C.: *See—*
Lee, Hsien-Che; Kaplan, Martin C.; and Goodwin, Robert M. 5,012,333, Cl. 358-80.000.

Kaplinsky, Cecil H., to Plus Logic, Inc. Logic gates with a programmable number of inputs. 5,012,135, Cl. 307-465.000.

Kapolnek, Michael R.; Feild, Alexander R.; Hartle, Robert T.; and Holmes, Hillard R., to Lockhead Missiles & Space Company, Inc. Graded-groove heat pipe. 5,010,951, Cl. 165-104.260.

Karafa, Nandor, and Liebers, Lutz, to Alfred Teves GmbH. Process and apparatus for the automatic non-contact surface inspection of cylindrical parts. 5,012,117, Cl. 250-572.000.

Karasawa, Yonenobu: *See—*
Shiina, Toshio; Miyamoto, Keiko; Izumi, Kouji; Hayashi, Yasuro; Karasawa, Yonenobu; Uematsu, Satoru; and Sei, Naoki. 5,010,605, Cl. 4-542.000.

Kardos, Thomas J.: *See—*
Lundquist, Ingemar H.; Tarczy-Hornoch, Zoltan; and Kardos, Thomas J. 5,011,468, Cl. 600-18.000.

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Bauhof, Karl. 5,011,219, Cl. 296-221.000.

Kasai, Masaji: *See—*
Takahashi, Mitsuru; Kitamura, Shigeto; Kase, Hiroshi; Kasai, Masaji; Kawamoto, Isao; Iida, Takao; Sano, Hiroshi; Saito, Hiromitsu; Yamada, Koji; and Murakata, Chikara. 5,011,854, Cl. 514-541.000.

Kasai, Mitsuo: *See—*
Asuka, Masahiro; Yokota, Shinjiro; Tonegouchi, Makoto; and Kasai, Mitsuo. 5,010,830, Cl. 110-347.000.

Kaschel, Klaus: *See—*
Gresser, Wilhelm; Schelhase, Klaus; Frisch, Heinz; Kaschel, Klaus; Reinecke, Berent; and Trautmann, Wilhelm H. 5,011,614, Cl. 210-761.000.

Kase, Hiroshi: *See—*
Takahashi, Mitsuru; Kitamura, Shigeto; Kase, Hiroshi; Kasai, Masaji; Kawamoto, Isao; Iida, Takao; Sano, Hiroshi; Saito, Hiromitsu; Yamada, Koji; and Murakata, Chikara. 5,011,854, Cl. 514-541.000.

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Kastanek, Frantisek: *See—*
Jerabek, Karel; Setinek, Karel; and Kastanek, Frantisek. 5,011,611, Cl. 210-674.000.

Kastrup, David A.: *See—*
Walker, Roger C.; Reese, Scott P.; Joyce, David L.; and Kastrup, David A. 5,012,420, Cl. 364-431.020.

Katagiri, Hiroyuki; Mizuno, Hisayoshi; and Mori, Masami, to Ikeda Bussan Co., Ltd. Mold for skin covered foamed plastic molding. 5,011,394, Cl. 425-117.000.

Kataoka, Yoshihiro: *See—*
Ohori, Manabu; Koshizuka, Noriaki; Kataoka, Yoshihiro; and Ueda, Shuzo. 5,011,656, Cl. 420-109.000.

Kataumi, Yoshimasa: *See—*
Asano, Yasushi; and Kataumi, Yoshimasa. 5,010,782, Cl. 74-512.000.

Katayama, Hideaki; Murakami, Toshifumi; Soeda, Koji; Kubota, Yoshiya; Okamoto, Shoji; Kubota, Akinori; Kobayashi, Michihito; and Ijiri, Masaaki, to Mitsubishi Jukogyo Kabushiki Kaisha; and Sumitomo Rubber Industries Ltd. Drain ejector in a tire vulcanizing machine. 5,011,392, Cl. 425-35.000.

Katayama, Yasuyuki: *See—*
Nose, Kazuo; Yamamoto, Hiroyuki; Koike, Shiro; Shimomura, Masakazu; Tsubono, Hajime; Kitagawa, Seiichi; Fujisaki, Yasumasa; Maeda, Yasushi; Wakebe, Tetsuya; and Katayama, Yasuyuki. 5,010,756, Cl. 72-9.000.

Kato, Kazuaki: *See—*
Fujiki, Toshisada; Kondo, Taikichi; Furukawa, Yoshinari; Kato, Kazuaki; Okimoto, Akimichi; and Tsuge, Kenji. 5,012,182, Cl. 324-96.000.

Kato, Sakae, to Tachi-S Co., Ltd. Lumbar support device for vehicle seat. 5,011,223, Cl. 297-284.000.

Kato, Shinichi, to Olympus Optical Co., Ltd. Intravascular endoscope apparatus. 5,010,875, Cl. 128-6.000.

Kato, Yuichi; and Miyagawa, Masazumi, to Ohi Seisakusho Co., Ltd. Handle assembly for use with door locking device. 5,011,202, Cl. 292-336.300.

Katoh, Masashi: *See—*
Taga, Yuji; and Katoh, Masashi. 5,012,355, Cl. 360-31.000.

Katoh, Yoshihisa; Ogawa, Takashi; and Hasegawa, Mitsumasa, to Toshiba Ceramics Co., Ltd. Ceramic filter. 5,011,603, Cl. 210-490.000.

Katoka, Shoei; Tsuchimoto, Shuhei; Nojima, Hideo; Kita, Ryusuke; and Nagata, Masaya, to Sharp Kabushiki Kaisha. Sensing a magnetic field with a super conductive material that exhibits magneto resistive properties. 5,011,818, Cl. 324-248.000.

Kattleman, Harry C., to Motorola, Inc. Tolerance compensating end plug. 5,011,012, Cl. 206-328.000.

Katz, Lewis J. Inverse vertical seismic profiling while drilling. 5,012,453, Cl. 367-57.000.

Katzenstein, Leo R.: *See—*
Buhrke, Rolfe E.; Dianda, Robert B.; Katzenstein, Leo R.; McClurkan, Michael B.; and Tsai, John S. 5,012,466, Cl. 370-62.000.

Katzin, Peter J.: *See—*
Ayashi, Yalcin; and Katzin, Peter J. 5,012,123, Cl. 307-112.000.

Kau, Jee I.: *See—*
Overman, Dana C., III; Kau, Jee I.; and Mahoney, Robert D. 5,011,637, Cl. 264-41.000.

Kaveh, Golnaz: *See—*
Dixon, Robert; Kaveh, Golnaz; and Seelbach, Walter. 5,012,136, Cl. 307-475.000.

Kawabata, Mikio: *See—*
Suzuki, Yasuyuki; Takagawa, Noboru; Kawabata, Mikio; Hayashi, Mariko; Takagi, Akiko; Wakamiya, Takako; and Saikawa, Isamu. 5,011,973, Cl. 560-185.000.

Kawada, Susumu: *See—*
Uemura, Satoshi; Kawada, Susumu; Sekine, Yoshitada; and Miyauchi, Tatsuo. 5,010,634, Cl. 29-407.000.

Kawada, Tousuke: *See—*
Asai, Koichi; Tsuda, Mamoru; Muto, Yasuo; Suhara, Sinsuke; and Kawada, Tousuke. 5,012,115, Cl. 250-561.000.

Kawagishi, Tadahiro: *See—*
Shiomi, Makoto; Ozeki, Kosuke; Ohsawa, Michitaka; Matsumi, Kuninori; and Kawagishi, Tadahiro. 5,012,332, Cl. 358-64.000.

Kawaguchi, Hiroichi: *See—*
Yoshizawa, Yasuo; Kawaguchi, Hiroichi; and Seto, Kazunari. 5,011,414, Cl. 434-431.000.

Kawaguchi, Tauchi: *See—*
Shimono, Mamoru; Asada, Tomoyuki; Kawaguchi, Tauchi; Taya, Yoichi; Yukinaga, Kouji; Nomura, Susumu; and Tagawa, Hajime. 5,012,283, Cl. 355-229.000.

Kawahara, Mitsuo: *See—*
Jungwirth, Douglas R.; Simpson, A. Phillip; Kawahara, Mitsuo; Levine, Seymour; and Kennel, John M. 5,012,081, Cl. 250-203.600.

Kawai, Kiyoyuki: *See—*
Sakamoto, Noriya; Kawai, Kiyoyuki; and Yasuki, Seijiro. 5,012,326, Cl. 358-11.000.

Kawaji, Mikinori; Takakura, Toshihiko; Uchida, Akihisa; Kuroda, Shigeo; Tamaki, Yoichi; Shiba, Takeo; Sagara, Kazuhiko; and Kawamura, Masao, to Hitachi, Ltd. Process of manufacturing semiconductor integrated circuit device and product formed thereby. 5,011,788, Cl. 437-67.000.

Kawakubo, Hiroaki: *See—*
Iseda, Satoru; Tomisawa, Osamu; and Kawakubo, Hiroaki. 5,011,786, Cl. 437-51.000.

Kawamata, Toshio, to Fuji Photo Film Co., Ltd. Surface smoothing apparatus for magnetic recording medium. 5,011,395, Cl. 425-143.000.

Kawamoto, Isao: *See—*
Takahashi, Mitsuru; Kitamura, Shigeto; Kase, Hiroshi; Kasai, Masaji; Kawamoto, Isao; Iida, Takao; Sano, Hiroshi; Saito, Hiromitsu; Yamada, Koji; and Murakata, Chikara. 5,011,854, Cl. 514-541.000.

Kawamoto, Kenichi: *See—*
Nagano, Masatoshi; and Kawamoto, Kenichi. 5,012,264, Cl. 354-286.000.

Kawamoto, Masanobu: *See—*
Kobayashi, Keiichi; Moriwaki, Masazumi; Kadomatsu, Sigenari; Fujie, Yuji; and Kawamoto, Masanobu. 5,010,601, Cl. 4-236.000.

Kawamoto, Yoshifumi, to Hitachi, Ltd. Semiconductor integrated circuit and a process for producing the same. 5,012,312, Cl. 357-23.110.

Kawamoto, Yoshifumi: *See—*
Kimura, Shinichiro; Kawamoto, Yoshifumi; Kaga, Toru; and Sunami, Hideo. 5,012,310, Cl. 357-23.600.

Kawamura, Masao: *See—*
Kawaji, Mikinori; Takakura, Toshihiko; Uchida, Akihisa; Kuroda, Shigeo; Tamaki, Yoichi; Shiba, Takeo; Sagara, Kazuhiko; and Kawamura, Masao. 5,011,788, Cl. 437-67.000.

Kawamura, Seiichiro: *See—*
Ogawa, Susumu; Kamioka, Hajime; Kawamura, Seiichiro; and Sakurai, Junji. 5,011,783, Cl. 437-19.000.

Kawamura, Yoshimi: *See—*
Yoshida, Tadashi; Inoue, Keizo; Arita, Hitoshi; Matsutani, Shigeru; Shoji, Junichi; and Kawamura, Yoshimi. 5,011,952, Cl. 549-393.000.

Kawanabe, Tasuku, and Kuriyama, Juzo, to Brother Kogyo Kabushiki Kaisha. Taper machining device in wire-cut electrical discharge apparatus. 5,012,063, Cl. 219-69.120.

Kawano, Hisaaki; Tanimoto, Yasufumi; and Ishida, Kouji, to Kabushiki Kaisha Toshiba. Image forming apparatus having device for detecting concentration of developing agent. 5,012,286, Cl. 355-246.000.

Kawano, Youzo; Takahashi, Tadashi; Shimura, Yasuhiko; and Takahashi, Yukihiro, to Anritsu Corporation. Electrooptic effect element and electrical signal waveform measuring apparatus using the same. 5,012,183, Cl. 324-96.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Nitta, Shigemitsu. 5,011,194, Cl. 285-41.000.
Sagawa, Toyoaki; Sonoda, Makoto; and Umeda, Tokihiko. 5,011,377, Cl. 417-269.000.

Kawasaki, Mikio: *See—*
Sato, Kiyoshi; Ohtani, Shinichi; and Kawasaki, Mikio. 5,012,266, Cl. 354-319.000.

Kawasaki, Sadanobu; Koishikawa, Jun; and Kuty, Donald W., to Du Pont de Nemours, E. I., and Company. Method of manufacturing gas discharge display device. 5,011,391, Cl. 445-24.000.

Kawasaki Steel Corporation: *See—*
Takahashi, Kiyoshi; Takashiba, Nobuyoshi; Kojima, Shinji; Okuda, Haruji; Ohmiya, Shigeru; and Ikeda, Ryuichi. 5,011,531, Cl. 75-511.000.
Yukumoto, Masao; Ozawa, Michiharu; and Yamane, Hiroshi. 5,010,947, Cl. 164-428.000.

Kawasaki, Yoshio; Horibe, Tatsutake; Morita, Takayuki; Nakamura, Haruyoshi, Ohashi, Kengo; and Miyazaki, Tsutomu, to Kabushiki Kaisha Toyda Jidoshokki Seisakusho; and Nisshinbo Industries, Inc. Bobbin carrier in spinning machine. 5,011,000, Cl. 198-465.100.

Kawase, Shinji; and Yorisue, Shyozo, to Precision Fukuhara Works, Ltd. Method of constructing plating pile knit fabric and sinker therefor. 5,010,744, Cl. 66-93.000.

Kawaski Steel Corporation: *See—*
Ohori, Manabu; Koshizuka, Noriaki; Kataoka, Yoshihiro; and Ueda, Shuzo. 5,011,656, Cl. 420-109.000.

Kazmierczak, Irvin J.: *See—*
Sardano, Peter A.; and Kazmierczak, Irvin J. 5,011,124, Cl. 271-35.000.

Kazuaki, Ujiie; and Nabetani, Shinji, to Hitachi, Ltd.; and Hitachi VLSI Engineering Co. Programmable read only memory being capable of controlling internal writing voltage of external voltage. 5,012,445, Cl. 365-189.060.

Kazuno, Kenji: *See—*
Kise, Masahiro; Kitano, Masahiko; Ozaki, Masakuni; Kazuno, Kenji; Matsuda, Masahito, Shirahase, Ichiro; and Tomii, Yoshifumi. 5,011,831, Cl. 514-210.000.

Keana, John F. W.: *See—*
Weber, Eckard; Keana, John F. W.; and Barmettler, Peter. 5,011,834, Cl. 514-212.000.

Kearney, Philip C.; Muldoon, Mark T.; and Somich, Cathleen J., to United States of America, Agriculture. Simple system for decomposing atrazine in wastewater. 5,011,599, Cl. 210-130.000.

Keddy, Rex J.: *See—*
Nam, Tom L.; Keddy, Rex J.; and Sellschop, Jacques P. 5,012,108, Cl. 250-484.100.

Keegan, James J., to Warner-Lambert Company. Denture stabilizer. 5,011,868, Cl. 523-120.000.

Keeney, Mark, to Industrial Minerals Research & Development Pty. Ltd.; and Nabalco Pty. Ltd. Dewatering of alumina trihydrate. 5,011,612, Cl. 210-712.000.

Keffeler, Paul J. Medication dispenser with removable liner. 5,011,018, Cl. 206-532.000.

Keim, Walter, to Grosse Webereimaschinen GmbH. Hold-down device for Jacquard-controlled looms. 5,010,927, Cl. 139-89.000.

Keller, James B.; Ladd, Kevin L.; and Reisert, James J., to Digital Equipment Corporation. Apparatus and method for replaying decoded instructions. 5,012,403, Cl. 364-200.000.

Keller, Martin B., to Sandy Hill Corporation. Inclined multiplyformer. 5,011,575, Cl. 162-299.000.

Kelley, James O.; and Goodman, Steven F., to Milcare, Inc. Segmented side wall cart. 5,011,240, Cl. 312-250.000.

Kelly, James L.; and Reda, Ralph J., to University of Virginia Alumni Patents Foundation. Use of radioactive nickel-63 to inhibit microbially induced corrosion. 5,011,708, Cl. 427-443.100.

Kelly, Kendall J.: *See—*
Giroux, D. William; Ferry, James N.; Kelly, Kendall J.; Bell, Thomas G.; Narby, Conway P.; and Patburg, Gary L. 5,011,338, Cl. 405-268.000.

Kelly, Toby. Breathable brassiere with adjustable drawstring. 5,011,452, Cl. 450-69.000.

Kemble, David: *See—*
Kurth, Herman; Kemble, David; and Ubungen, Romeo N. 5,010,926, Cl. 138-149.000.

Kemet Electronics Corporation: *See—*
Park, Hyun D.; and Nance, Joseph D. 5,011,803, Cl. 501-136.000.

Kemp, Raymond J.: *See—*
Leighton, Suzanne E.; Kemp, Raymond J.; and Hawkins, Philip D. 5,012,507, Cl. 379-37.000.

Kende, Andrew S.: *See—*
Orvik, Jon A.; Pearson, Norman R.; Haag, Anthony P.; Adaway, Timothy J.; Kershner, Larry D.; and Kende, Andrew S. 5,012,017, Cl. 568-803.000.

Kenimer, Barry K. Absorbent replenishable garage mat. 5,011,007, Cl. 206-205.000.

Kennedy, Clinton R.: *See—*
Child, Jonathan E.; Huss, Albin, Jr.; Kennedy, Clinton R.; Marler, David O.; and Tabak, Samuel A. 5,012,033, Cl. 585-722.000.

Kennedy, David R.: *See—*
Thorncraft, David A.; Kennedy, David R.; Rashleigh, Scott C.; and Dabbs, Timothy P. 5,011,252, Cl. 350-96.150.

Kennedy, Paul G., to CFPI Inc. Hand guard for firearms. 5,010,676, Cl. 42-71.010.

Kennedy, Peter D.; and Blasi, Wayne M., to United States of America, Air Force. Radar capability display apparatus. 5,012,251, Cl. 342-176.000.

Kennedy-Tolstedt, Jill M.: *See—*
Baer, Cynthia C.; Buliga, Gregory S.; Hassenheutti, Gerard L.; Henry, George A.; Heth, Alice A.; Jackson, Linda K.; Kennedy-Tolstedt, Jill M.; Kerwin, Phillip J.; Miller, Mark S.; Parker, Elizabeth M.; Paul, Neela K.; Pechak, David G.; Smith, Gary F.; and Witte, Vernon C. 5,011,701, Cl. 426-573.000.

Kennel, John M.: *See—*
Jungwirth, Douglas R.; Simpson, A. Phillip; Kawahara, Mitsuo; Levine, Seymour; and Kennel, John M. 5,012,081, Cl. 250-203.600.

Kenner, Donald A. Environmental monitoring well housing and protection method. 5,010,957, Cl. 166-379.000.

Keoshkerian, Barkev: *See—*
Ong, Beng S.; Keoshkerian, Barkev; and Baranyi, Giuseppa. 5,011,906, Cl. 528-176.000.

Kerrigan, Michael M.: *See—*
Hamilton, Thomas A.; Kerrigan, Michael M.; and Wilson, John A. 5,011,127, Cl. 271-262.000.

Kershner, Larry D.: *See—*
Orvik, Jon A.; Pearson, Norman R.; Haag, Anthony P.; Adaway, Timothy J.; Kershner, Larry D.; and Kende, Andrew S. 5,012,017, Cl. 568-803.000.

Kerth, Donald A.: *See—*
Wellard, David R.; Kerth, Donald A.; Del Signore, Bruce P.; and Swanson, Eric J. 5,012,244, Cl. 341-143.000.

Kerwin, Phillip J.: *See—*
Baer, Cynthia C.; Buliga, Gregory S.; Hassenheutti, Gerard L.; Henry, George A.; Heth, Alice A.; Jackson, Linda K.; Kennedy-Tolstedt, Jill M.; Kerwin, Phillip J.; Miller, Mark S.; Parker, Elizabeth M.; Paul, Neela K.; Pechak, David G.; Smith, Gary F.; and Witte, Vernon C. 5,011,701, Cl. 426-573.000.

Keshelava, Viktor V.: *See—*
Belykh, Sergei I.; Gigauri, Vladimir S.; Davydov, Anatoly B.; Keshelava, Viktor V.; Mlynchik, Vyacheslav E.; Utyamyshev, Rustam I.; and Firsova, Elizaveta V. 5,011,493, Cl. 606-215.000.

Kessler, David: *See—*
DeJager, Donald; Kurtz, Andrew F.; Kessler, David; and Moore, Leslie G., Jr. 5,012,346, Cl. 358-214.000.

Ketelsen, Leonard J.: *See—*
Flynn, Edward J.; Ketelsen, Leonard J.; and Roxlo, Charles B. 5,012,484, Cl. 372-96.000.

Kettelson, Ernest S.: *See—*
Narcisi, Henry R.; and Kettelson, Ernest S. 5,010,806, Cl. 99-357.000.

Keystone International Holdings Corp.: *See—*
Alberts, Jack B.; and McNeely, Michael D. 5,011,116, Cl. 251-334.000.

Khadder, Wadie N.; Vokac, James P.; and Dobkin, Robert C., to Linear Technology Corporation. High speed junction field effect transistor for use in bipolar integrated circuits. 5,012,305, Cl. 357-22.000.

Khanna, Dinesh N.: *See—*
Mueller, Werner H.; and Khanna, Dinesh N. 5,011,753, Cl. 430-4.000.

Khokhar, Abdul R.; Newman, Robert A.; and Krakoff, Irwin H., to Board of Regents, The University of Texas System, The. 1,2-diaminocyclohexane-platinum complexes with antitumor activity. 5,011,959, Cl. 556-137.000.

Kida, Shuji; Kita, Hiroshi; Hirabayashi, Shigeto; and Kaneko, Yutaka, to Konica Corporation. Silver halide color photographic light-sensitive material. 5,011,766, Cl. 430-558.000.

Kidd, Garry B., to Chrysler Corporation. Tray for transporting vehicle turbochargers. 5,011,011, Cl. 206-319.000.

Kido, Masaro; and Yoshioka, Tetsuo, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Polyimide resin laminate improved in slidability. 5,011,727, Cl. 428-141.000.

Kidokoro, Susumu, to Gotoh Seisakusho Co., Ltd. Ball joint for stabilizer. 5,011,321, Cl. 403-140.000.

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Kiel, Wolfgang; and Ziemann, Heinz, to Bayer Aktiengesellschaft. Process for the preparation of amines. 5,011,996, Cl. 564-321.000.

Kienholz, Charles M.: *See—*
Brown, Eric W.; and Kienholz, Charles M. 5,011,378, Cl. 417-360.000.

Kikuchi, Katsuaki: *See—*
Kohno, Takashi; Matsushita, Osami; Ida, Michiaki; Kikuchi, Katsuaki; Sonoda, Taro; and Yamaguchi, Yuzo. 5,012,359, Cl. 360-71.000.

Kikukawa, Yoichi: *See—*
Ono, Yutaka; Muramatsu, Yasuhiko; Banzai, Hideo; Kikukawa, Yoichi; Hashida, Shigeru; Shindo, Shotaro; Higuchi, Haruo; Shinomiya, Hiroyuki; Nikaido, Mitsuhiro; and Sato, Koichi. 5,012,169, Cl. 318-568.000.

Kikuo, Kanaya; Kanamori, Katsuhiko; and Masuda, Ryosuke, to Yokohama Rubber Co., Ltd., The. Distribution type tactile sensor. 5,010,774, Cl. 73-862.040.

Kim, Dai W.: *See—*
Nielsen, Steven F.; and Kim, Dai W. 5,011,864, Cl. 521-70.000.

Kim, Yong J.: *See—*
Gehrke, Russell P.; Johnson, Richard E., Jr.; and Kim, Yong J. 5,011,719, Cl. 428-35.700.

Kim, Young-cheol: *See—*
An, Hyeong-keun; Kim, Young-cheol; Lee, Seok-jeong; and Yu, Jung-jae. 5,012,451, Cl. 365-230.050.

Kimbara, Masahiko *See*—
Yasui, Yoshiharu; Nakane, Katsumi; Suzuki, Osamu; and Kimbara, Masahiko, 5,010,725, Cl. 57-281.000

Kimberly-Clark Corporation *See*—
Gossens, Anthonette A.; and Schwer, Mary L., 5,011,480, Cl. 604-385.100

Kimbrough, Gregory L. *See*—
Garver, Lawrence E.; and Kimbrough, Gregory L., 5,011,648, Cl. 264-521.000

Kimura, Hiroshi *See*—
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Kimura, Kazuo *See*—
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Kimura, Koji *See*—
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Kimura, Masatoshi *See*—
Wanou, Masahiro; Kimura, Masatoshi; and Nakajima, Junzo, 5,012,282, Cl. 355-219.000

Kimura, Okitoshi *See*—
Yoneyama, Sachiko; Ohsawa, Toshiyuki; Kimura, Okitoshi; and Kabata, Toshiyuki, 5,011,751, Cl. 429-192.000

Kimura, Robert B., to Hewlett-Packard Company DC bootstrapped unity gain buffer 5,012,134, Cl. 307-446.000

Kimura, Shinichiro; Kawamoto, Yoshifumi; Kaga, Toru; and Sunami, Hideo, to Hitachi, Ltd. Semiconductor memory having stacked capacitor 5,012,310, Cl. 357-23.600

Kimast, Leonard L. Radiator safety cap 5,011,040, Cl. 220-375.000

King, Ian J., and Chow, Michael P., to Westinghouse Electric Corp. Automatic pseudokeyphasor generator 5,010,769, Cl. 73.660.000

King, William J. Blind for arched windows 5,010,939, Cl. 160-84.100

Kinoshita, Katsuji *See*—
Satoh, Toyomi; Hosoi, Kiyonori; Kinoshita, Katsuji; Murata, Shinjiro; Fukatsu, Shunzo; and Ichikawa, Tooru, 5,011,019, Cl. 206-530.000

Kinoshita, Keiichi *See*—
Yamashita, Hiroki; Kinoshita, Keiichi; Matsui, Toshio; Kurahashi, Wataru; and Yasuda, Katsuya, 5,012,297, Cl. 355-321.000

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Tominaga, Kenji; Miki, Minoru; Takahashi, Tooru; Horiuchi, Tetsuo; Morishima, Hideo; Nakayama, Takashi; Moriya, Kumiaki; Matsumoto, Masaki; Akita, Minoru; Sano, Tsuyoshi; Ochiai, Kanehiro; Shiozawa, Akihiko; Uchiyama, Yuichi; Yasuno, Toyoharu; Moriya, Kenji; Kinoshita, Shouichirou; Kage, Kazuo; and Kubota, Ryuji, 5,011,652, Cl. 376-283.000

Kinoshita, Yoshimi *See*—
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Kirin Beer Kabushiki Kaisha *See*—
Sakamoto, Yuji; Umeda, Seiichi; and Ogishima, Hiroaki, 5,010,685, Cl. 47-57.600

Kirk, Michael P., and Good, Blake W., to Chrysler Corporation Retaining assembly for throttle and speed control cables 5,010,781, Cl. 74-502.400

Kirk, Robert S. *See*—
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Kirkpatrick, Terence *See*—
Brown, Darryl L.; and Kirkpatrick, Terence, 5,010,596, Cl. 2-228.000

Kirschenstein, Reinhard, to BTS Broadcast Television Systems GmbH Method and circuit for deriving H and V synchronizing pulses from a tri-level HDTV synchronizing signal 5,012,340, Cl. 358-150.000

Kirschner Medical Corporation *See*—
Boudreau, Michael P.; Jacoby, Randall W.; and Laughlin, James L., 5,010,881, Cl. 128-76.00R

Kiryu, Masato *See*—
Nagai, Harushige; Kiryu, Masato; Sasaki, Takeshi; and Saotome, Akira, 5,011,096, Cl. 242-199.000

Kise, Masahiro; Kitano, Masahiko; Ozaki, Masakuni; Kazuno, Kenji; Matsuda, Masahito; Shirahase, Ichiro; and Tomii, Yoshifumi, to Nippon Shinyaku Co. Ltd. Derivatives of quinolinecarboxylic acid 5,011,831, Cl. 514-210.000

Kish, Edward J., and Smith, Joseph E. Steam-producing orchard heater 5,010,872, Cl. 126-59.500

Kishida, Takahito *See*—
Shingo, Naohito; and Kishida, Takahito, 5,011,882, Cl. 524-504.000

Kishimoto, Daishiro *See*—
Uesaka, Toshio; Niki, Akihiro; Ohsuga, Makoto; Saito, Toranosuke; Tsunomachi, Hiroki; Yamaguchi, Makoto; Doyama, Kazuo; and Kishimoto, Daishiro, 5,011,879, Cl. 524-290.000

Kissau, Gerd *See*—
Vock, Friedrich; Kissau, Gerd; and Warnke, Klaus, 5,011,089, Cl. 241-21.000

Kita, Hiroshi *See*—
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Kitagawa, Soichi *See*—
Nose, Kazuo; Yamamoto, Hiroyuki; Koike, Shiro; Shimomura, Masakazu; Tsubono, Hajime; Kitagawa, Soichi; Fujisaki, Yasumasa; Maeda, Yasushi; Wakebe, Tetsuya; and Katayama, Yasuyuki, 5,010,756, Cl. 72-9.000

Kitagawa, Toshiharu; Nishiyama, Ryuji; Takita, Masaaki; and Tsuru, Yoshikazu, to Matsushita Electric Industrial Co., Ltd. Printer 5,011,315, Cl. 400-624.000

Kitagishi, Nozomu *See*—
Nakayama, Hiroki; Kitagishi, Nozomu; Hattori, Jun; Suda, Shigeyuki; and Horiuchi, Akihisa, 5,011,272, Cl. 350-427.000

Kitahara, Hiroshi *See*—
Moriya, Hideshige; Kitahara, Hiroshi; Minami, Shohei; Isobe, Keijiro; Nakata, Yoshinori; and Tanaka, Chiaki, 5,010,879, Cl. 128-69.000

Kitahara, Masaki *See*—
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Kitamura, Shigeto *See*—
Takahashi, Mitsuru; Kitamura, Shigeto; Kase, Hiroshi; Kasai, Masaji; Kawamoto, Isao; Iida, Takao; Sano, Hiroshi; Sato, Hiromitsu; Yamada, Koji; and Murakata, Chikara, 5,011,854, Cl. 514-541.000

Kitamura, Yoshiharu, to NHK Spring Co., Ltd. Shaft locking device 5,010,983, Cl. 188-67.000

Kitano, Hirohisa *See*—
Saito, Itaru; Matsubara, Ken; Shingaki, Kouichi; Masuda, Tomohiko; and Kitano, Hirohisa, 5,011,271, Cl. 350-356.000

Kitano, Masahiko *See*—
Kise, Masahiro; Kitano, Masahiko; Ozaki, Masakuni; Kazuno, Kenji; Matsuda, Masahito; Shirahase, Ichiro; and Tomii, Yoshifumi, 5,011,831, Cl. 514-210.000

Kitayama, Yoshifumi *See*—
Kabeshita, Akira; Hamane, Tokuhito; and Kitayama, Yoshifumi, 5,012,388, Cl. 361-400.000

Kitechnology B.V. *See*—
Barnoach, Itzhak, 5,011,562, Cl. 156-498.000

Kito, Tsutomu *See*—
Nakasuji, Norikazu; Kito, Tsutomu; and Shibahashi, Yutaka, 5,011,445, Cl. 446-14.000

Kittle, Carl F. *See*—
Boe, Thomas E.; Bergene, Mark A.; Kittle, Carl F.; and Sparks, Gregory F., 5,012,415, Cl. 364-424.070

Kittle, Paul A. and Manlowe, David, to Rusmar Incorporated Foam distribution apparatus 5,011,330, Cl. 405-129.000

Kittler, Wilfred C., Jr.; Czukor, Janos; and Stoddard, Darrell, to Andus Corporation Thin film artwork compounds 5,011,569, Cl. 156-656.000

Klager, Earl F. Hydrostatic spindle device 5,010,794, Cl. 82-147.000

Kleeblatt, Schmuel, to Cerafer S.A.R.L. Co. Metallurgical vessel slide valve 5,011,051, Cl. 222-600.000

Klein, Ronald J. *See*—
Parthasarathy, V. R. Sundaram; Meenakshi, Jameel; Hasan; Gratzl, Josef S.; and Klein, Ronald J., 5,011,572, Cl. 162-56.000

Kleinsasser, Jonathan R., to Crystal Spring Colony Farms Ltd. Feeder for animals 5,010,849, Cl. 119-53.000

Kleinschmit, Peter *See*—
Kriechbaum, Gangolf; Kleinschmit, Peter; and Peuckert, Doris, 5,011,673, Cl. 423-608.000

Kline, Joel I. and Armstrong, Mindy S. Apparatus for mobilizing a patient's toes 5,010,878, Cl. 128-25.00R

Kline, Kevin B., to Lawler Manufacturing Co., Inc. Thermostatic mixing valve with thermostat failure compensation 5,011,074, Cl. 236-12.130

Kline, William M. *See*—
Colvin, David P.; Whitney, Raymond A.; Marsh, Bernard R.; Kline, William M.; Rizzo, Ronald R.; and Orlosky, Mark E., 5,010,892, Cl. 128-774.000

Klopfleisch, Kim A. *See*—
Conley, Walter, III; Dammeyer, Ned E.; and Klopfleisch, Kim A., 5,011,363, Cl. 414-666.000

Knapp, John F., to Xerox Corporation Compact two-component development system with zonal toner dispenser control 5,012,287, Cl. 355-253.000

Knapp, Ralph F., to Cooper Industries, Inc. Tape measure end hook 5,010,657, Cl. 33-770.000

Knapp, William C. *See*—
Barnett, Richard I. and Knapp, William C., 5,010,608, Cl. 5-453.000

Knierim, Daniel G. *See*—
Weiss, Frederick G.; and Knierim, Daniel G., 5,012,178, Cl. 323-269.000

Knifton, John F., to Texaco Chemical Company Nickel-based dual catalyst systems effective in suppressing carbon dioxide formation during diethylene glycol amination 5,011,926, Cl. 544-106.000

Knipe, Earl A. and Knipe, Jan B. Base for bottle lamp 5,012,393, Cl. 362-163.000

Knipe, Jan B. *See*—
Knipe, Earl A.; and Knipe, Jan B., 5,012,393, Cl. 362-163.000

Knittel, Richard D. Roof gutter attachment 5,010,696, Cl. 52-12.000

Knoll International, Inc. *See*—
van Hekken, Hendrik R.; and Latone, Thomas L., 5,011,227, Cl. 297-434.000

Knolle, Jochen *See*—
Konig, Wolfgang; Breipohl, Gerhard; Geiger, Rolf; Knolle, Jochen; and Hropot, Max, 5,011,825, Cl. 514-18.000

Knuth, Bernd *See*—
Haeffner, Eckhard; Ben-Nasr, Hedi; Knuth, Bernd; Jasper, Hubert; and Reimann, Klaus, 5,011,594, Cl. 208-320.000

Knuth, William H., and Beveridge, John H., to Acurex Corporation Gas-fed hybrid propulsion system 5,010,730, Cl. 60-246.000

Knutson, Dale A. *See*—
Stobbs, Thomas J.; Patel, Kishor J.; Fritz, Frank M.; Knutson, Dale A.; and Janecke, James P., 5,011,113, Cl. 251-129.160.

Koba, Masayoshi *See*—
Konushi, Fumihiro; Seki, Akinori; Kudo, Jun; and Koba, Masayoshi, 5,011,550, Cl. 148-33.500

Kobayashi, Hiroyuki; Izawa, Shigeru; and Ukiana, Motohide, to Hitachi, Ltd. Method and apparatus for fine movement of specimen stage of electron microscope 5,012,092, Cl. 250-311.000.

Kobayashi, Kazuhiro, Koboshi, Shigeharu; Goto, Nobutaka; Kurematsu, Masayuki; and Takabayashi, Naoki, to Konica Corporation. Method for treating photographic process waste liquor through concentration by evaporation and apparatus therefor. 5,011,571, Cl. 159-47.300.

Kobayashi, Keiichi; Moriwaki, Masazumi; Kadomatsu, Sigenari; Fujie, Yuji; and Kawamoto, Masanobu, to Toto Ltd.; and Nifco Inc. Mechanism for opening and closing toilet seat and cover. 5,010,601, Cl. 4-236.000.

Kobayashi, Kenichi; and Matsui, Shougo, to Fujitsu Limited. Dimension checking method. 5,012,523, Cl. 382-8.000.

Kobayashi, Michihito *See*—
Katayama, Hideaki, Murakami, Toshifumi; Soeda, Koji; Kubota, Yoshiya, Okamoto, Shoji, Kubota, Akinori, Kobayashi, Michihito, and Ijiri, Masaaki, 5,011,392, Cl. 425-35.000.

Kobayashi, Mikio *See*—
Akihama, Shigeyuki; Kobayashi, Mikio; Suenaga, Tatsuo, Fukumoto, Toshiyuki; Taniguchi, Yoshikazu; and Nakagawa, Hiroaki, 5,010,705, Cl. 52-477.000.

Kobayashi, Osamu, Mikami, Mitsugu; Nishiumi, Kenji; and Nakajima, Kenji, to Kabushiki Kaisha Nippon Conlux Coin receiving and discharging apparatus 5,011,456, Cl. 453-32.000

Kobayashi, Tadashi, Wada, Mitsuo, Obuchi, Shouzi; and Takayanagi, Hiroshi, to Mitsui Toatsu Chemicals, Inc. Process for refining 1,3-dimethyl-2-imidazolidinone. 5,011,936, Cl. 548-343.000.

Kobayashi, Takeo *See*—
Tabata, Yasushi, Kobayashi, Takeo; Numako, Norio, and Nagai, Katsutoshi, 5,012,272, Cl. 354-465.000

Kobler, Norbert *See*—
Weisbrod, Norbert, and Kobler, Norbert, 5,010,815, Cl. 101-217.000

Koboshi, Shigeharu *See*—
Kobayashi, Kazuhiro; Koboshi, Shigeharu, Goto, Nobutaka; Kurematsu, Masayuki, and Takabayashi, Naoki, 5,011,571, Cl. 159-47.300

Koch, Wolfgang *See*—
Hoppe, Lutz, Koch, Wolfgang, Luhmann, Erhard, and Piepho, Michael, 5,011,874, Cl. 524-30.000.

Koeffer, Dieter *See*—
Bertleff, Werner, and Koeffer, Dieter, 5,012,006, Cl. 568-451.000

Koenig & Bauer Aktiengesellschaft *See*—
Grosshauser, Heinrich K., 5,010,817, Cl. 101-350.000.

Koerner, Edmund *See*—
Ziegler, Manfred; and Koerner, Edmund, 5,011,015, Cl. 206-387.000

Koester, Hubert *See*—
Coull, James M.; Rappin, Darryl J.; Koester, Hubert; Pluskal, Malcolm G.; Steuck, Michael J.; and Bonner, Alex G., 5,011,861, Cl. 521-53.000

Koga, Eiji *See*—
Nakanishi, Takehisa; Koga, Eiji, and Fukada, Isao, 5,011,953, Cl. 549-529.000

Kohda, Shigeto *See*—
Masuda, Kiyoshi, Kohda, Shigeto, Sakai, Shigenobu, Kimura, Kazuo, and Nomura, Tomoyoshi, 5,012,228, Cl. 340-702.000

Kohler Co. *See*—
Iqbal, Muhammad, 5,010,917, Cl. 137-454.600.

Kohno, Takashi; Matsushita, Osami, Ida, Michiaki; Kikuchi, Katsuaki, Sonoda, Taro; and Yamaguchi, Yuzo, to Hitachi, Ltd. Magnetic disk apparatus 5,012,359, Cl. 360-71.000

Kohr, William J. *See*—
Levinson, Arthur D.; Pennica, Diane; Kohr, William J.; Vehar, Gordon A.; Goeddel, David V.; Yelverton, Elizabeth M.; and Simonsen, Christian C., 5,011,795, Cl. 435-69.200

Kohsaka, Yoshiaki, to Kabushiki Kaisha Toshiba Tracking control apparatus for use with magnetic tape having video track and control track 5,012,358, Cl. 360-70.000.

Koike, Shiro *See*—
Nose, Kazuo, Yamamoto, Hiroyuki, Koike, Shiro; Shimomura, Masakazu, Tsubono, Hajime, Kitagawa, Soichi; Fujisaki, Yasumasa, Maeda, Yasushi; Wakebe, Tetsuya; and Katayama, Yasuyuki, 5,010,756, Cl. 72-9.000

Koshikawa, Jun *See*—
Kawasaki, Sadanobu, Koshikawa, Jun, and Kuty, Donald W., 5,011,391, Cl. 445-24.000

Kojima, Fumiyo *See*—
Sawamura, Tadahide, Nakamura, Yoko, and Kojima, Fumiyo, 5,012,299, Cl. 355-326.000

Kojima, Shinji *See*—
Takahashi, Kiyoshi, Takashiba, Nobuyoshi; Kojima, Shinji; Okuda, Haruji; Ohmiya, Shigeru; and Ikeda, Ryuichi, 5,011,531, Cl. 75-511.000

Kolasa, Edward P. *See*—
Basso, Richard J.; Hansen, Randall S.; Kolasa, Edward P.; Reynolds, Mark L.; and Tam, Chun P., 5,012,512, Cl. 379-218.000

Komatsu Zenoah Company: *See*—
Nakamura, Masaharu; and Kajimura, Kazuo, 5,010,717, Cl. 56-17.600.

Komori, Hiroshi: *See*—
Morita, Yoichi; Komori, Hiroshi; and Yokoyama, Akio, 5,012,201, Cl. 330-252.000.

Kondo, Kazuo; and Morikawa, Asao, to NGK Spark Plug Co. Ltd. Metallizing composition for use with ceramics. 5,011,530, Cl. 106-1.130.

Kondo, Kazuo; and Morikawa, Asao, to NGK Spark Plug Co., Ltd. Ceramic substrate. 5,011,734, Cl. 428-336.000.

Kondo, Megumu: *See*—
Nishikado, Takashi; Kondo, Megumu; Fukuoka, Kazuhiko; and Murata, Fumiya, 5,012,405, Cl. 364-200.000.

Kondo, Taikichi: *See*—
Fujiki, Toshisada; Kondo, Taikichi; Furukawa, Yoshinari; Kato, Kazuaki; Okimoto, Akimichi; and Tsuge, Kenji, 5,012,182, Cl. 324-96.000.

Kondo, Toshinori: *See*—
Takahashi, Shoichi; Ichiki, Sayohiko, Yorozu, Masatoshi; Kunishige, Seiji; Shibagaki, Taro, Shimizu, Fumihiko, Fujioka, Fumio; and Kondo, Toshinori, 5,012,240, Cl. 341-101.000.

Kondo, Yoshikazu: *See*—
Kanda, Katsumi; Fujimoto, Junichi; Ichishima, Masashi; Nishimura, Takao; and Kondo, Yoshikazu, 5,011,711, Cl. 427-334.000.

Kone Elevator GmbH: *See*—
Heikkinen, Urho J., 5,010,981, Cl. 187-20.000.

Kong, Hua-Shuang; Glass, Jeffrey T.; and Davis, Robert F., to North Carolina State University Homoepitaxial growth of Alpha-SiC thin films and semiconductor devices fabricated thereon. 5,011,549, Cl. 148-33.100.

Konica Corporation: *See*—
Hattori, Tsuyoshi; Tanaka, Masanao; and Matsuzaka, Syoji, 5,012,259, Cl. 346-108.000.
Kano, Akiko; Honda, Satoshi; and Nakano, Kuniaki, 5,012,107, Cl 250-484.100.
Kida, Shuji; Kita, Hiroshi; Hirabayashi, Shigeto; and Kaneko, Yutaka, 5,011,766, Cl. 430-558.000
Kobayashi, Kazuhiro; Koboshi, Shigeharu, Goto, Nobutaka; Kurematsu, Masayuki; and Takabayashi, Naoki, 5,011,571, Cl. 159-47.300.
Ohbayashi, Keiji, 5,011,570, Cl. 156-310.000.
Sato, Kiyoshi; Ohtani, Shinichi; and Kawasaki, Mikio, 5,012,266, Cl. 354-319.000
Tachibana, Kimie; and Kaneko, Yutaka, 5,011,765, Cl. 430-548.000.

Konig, Wolfgang; Breipohl, Gerhard, Geiger, Rolf, Knolle, Jochen; and Hropot, Max, to Hoechst Aktiengesellschaft Peptides influencing diuresis and natriuresis, a process for their preparation, agents containing them, and their use. 5,011,825, Cl. 514-18.000.

Konstant, Anthony N. Crossbar system for rack. 5,011,031, Cl. 211-191.000.

Konushi, Fumihiro; Seki, Akinori, Kudo, Jun, and Koba, Masayoshi, to Sharp Kabushiki Kaisha. Laminated structure of compound semiconductors. 5,011,550, Cl. 148-33.500.

Kopecky, Ivyl D., to Haybuster Manufacturing Inc. Cellulose fiberization apparatus. 5,011,091, Cl. 241-259.100

Kordesch, Karl; Gsellmann, Josef, and Tomantschger, Klaus, to Battery Technologies Inc. Rechargeable alkaline manganese dioxide-zinc cell having improved cumulative capacity. 5,011,752, Cl 429-206.000.

Korenaga, Itsuo. *See*—
Nogami, Shingo; Yashiro, Toshinori, Okitsu, Toshio; Furushima, Kiyoshi; and Korenaga, Itsuo, 5,010,946, Cl. 164-312.000

Korthuis, Scott A., to Korvan Industries, Inc. Method and system for automatically steering along row crops. 5,010,719, Cl. 56-10.200

Korvan Industries, Inc.. *See*—
Korthuis, Scott A., 5,010,719, Cl. 56-10.200

Kosaka, Daisuke *See*—
Matsuoka, Shigeki; Okubo, Hiizu, and Kosaka, Daisuke, 5,012,448, Cl. 365-208.000.

Kosaka, Yositeru, to Victor Company of Japan, Limited. Switching circuit. 5,012,356, Cl. 360-61.000

Koshino, Nagaaki *See*—
Takeda, Shiro, Namiki, Fumihiro, Sugiyama, Yuuichi, Iwase, Nobuhiro, Tadaki, Shinji, and Koshino, Nagaaki, 5,012,096, Cl 250-327.200

Koshizuka, Noriaki. *See*—
Ohori, Manabu; Koshizuka, Noriaki, Kataoka, Yoshihiro, and Ueda, Shuzo, 5,011,656, Cl. 420-109.000

Kouda, Masanori, Suzuki, Minoru, Okamura, Tetsuya, and Tobisawa, Toshihisa, to Atsugi Motor Parts Company, Limited Structure of an electromagnetic valve for opening and closing a fluid flow passage. 5,010,923, Cl. 137-625.340.

Kovacs, Kerry *See*—
Chen, Jing-Den; Kovacs, Kerry, Thomas, Margaret T.; and Liang, Rong-Chang, 5,011,885, Cl. 524-591.000

Kovacs, Steven G., to University of South Florida Magnetically actuated positive displacement pump 5,011,380, Cl. 417-413.000.

Koyanagi, Osamu *See*—
Tsukushi, Masanori; Koyanagi, Osamu, Seki, Yasuharu, Goto, Tokio; and Kurosawa, Yukio, 5,012,051, Cl. 200-148.00B.

Kraft General Foods, Inc.: *See*—
Baer, Cynthia C.; Buliga, Gregory S.; Hassenheutti, Gerard L.; Henry, George A.; Heth, Alice A.; Jackson, Linda K.; Kennedy-Tolstedt, Jill M.; Kerwin, Phillip J.; Miller, Mark S.; Parker,

Elizabeth M.; Paul, Neela K., Pechak, David G., Smith, Gary F.; and Witte, Vernon C., 5,011,701, Cl. 426-573.000.
Haas, Gerhard J., and Heller, Karen G., 5,011,696, Cl. 426-28.000.
Smagula, Michael S.; and Tancredi, Michael R., 5,011,704, Cl. 426-660.000.

Kraft, William: *See—*
Ferris, John J.; Kraft, William; Manning, Winton H., and Martinez, Michael, 5,011,413, Cl. 434-358.000.

Krajewski, John J.: *See—*
Murphy, Edward J.; Krajewski, John J.; and Ansel, Robert E., 5,011,635, Cl. 264-22.000.

Krakoff, Irwin H.: *See—*
Khokhar, Abdul R.; Newman, Robert A., and Krakoff, Irwin H., 5,011,959, Cl. 556-137.000.

Krakowski, Michel: *See—*
Razeghi, Manijeh, Defour, Martin; Omnes, Franck; Maurel, Philippe, Blondeau, Robert; and Krakowski, Michel, 5,012,476, Cl. 372-45.000.

Krauss, Leland L.: *See—*
Corradetti, Anthony A.; Gargiulo, Edward P.; Krauss, Leland L.; and Hooley, Robert W., 5,011,246, Cl. 350-96.200.
Johnson, Melvin H.; Krauss, Leland L.; and Landman, Dirk, 5,011,256, Cl. 350-96.200.

Krenn, Hans: *See—*
Vedder, Hans J.; and Krenn, Hans, 5,012,464, Cl. 369-116.000.

Kretzschmar, Gerhard; Duwel, Dieter; Grabley, Susanne, Hammann, Peter; Seibert, Gerhard; Voelskow, Hartmut, and Giani, Carlo, to Hoechst Aktiengesellschaft. Elaiophyline derivatives, compositions containing them and the use thereof as anthelmintic agents. 5,011,827, Cl. 514-32.000.

Kriechbaum, Gangolf; Kleinschmit, Peter; and Peuckert, Doris, to Degussa Aktiengesellschaft. Zirconium oxide powder. 5,011,673, Cl. 423-608.000.

Krishnan, Shankar; Hansen, George P., Hauge, Robert H.; Margrave, John L.; and Rey, Charles A., to Houston Advanced Research Center. Method and apparatus to simultaneously measure emissivities and thermodynamic temperatures of remote objects. 5,011,295, Cl. 374-126.000.

Kropp, Konrad E. W. Substrate and process and apparatus for the production therefor. 5,012,110, Cl. 250-492.100.

Krueger, Hans; and Welsch, Wolfgang, to Siemens Aktiengesellschaft. Gas laser. 5,012,480, Cl. 372-61.000.

Krumeich, Jorg H.; and Quast, Norbert. Cutting apparatus for the cutting of a round corneal disc. 5,011,498, Cl. 606-166.000.

Krummen, Raymond S.: *See—*
Carr, William J.; and Krummen, Raymond S., 5,011,520, Cl. 55-228.000.

Kryptonite Corporation: *See—*
Zane, Michael S.; and Zane, Peter L., 5,010,746, Cl. 70-39.000.

Ku, George; and Doherty, Niall, to Merrell Dow Pharmaceuticals Inc. Method of inhibiting interleukin-1 release. 5,011,857, Cl. 514-653.000.

Ku, Hai-Yung. Connection terminal plate. 5,011,429, Cl. 439-409.000.

Kuberasampath, Thangavel: *See—*
Oppermann, Hermann; Kuberasampath, Thangavel, Rueger, David C.; and Ozkaynak, Engin, 5,011,691, Cl. 424-423.000.

Kubis, Heribert; and Winter, Josef, to MAN Nutzfahrzeuge Aktiengesellschaft. Cylinder head sealing element for reciprocating piston engines. 5,010,853, Cl. 123-41.840.

Kubo, Keishi; Nagano, Hiroyuki; and Kubota, Saburo, to Matsushita Electric Industrial Co., Ltd. Velocity detector for detecting velocity from position detector outputting a pair of orthogonal signals. 5,012,188, Cl. 324-160.000.

Kubota, Akinori: *See—*
Katayama, Hideaki; Murakami, Toshifumi; Soeda, Koji; Kubota, Yoshiya; Okamoto, Shoji; Kubota, Akinori; Kobayashi, Michihito; and Ijiri, Masaaki, 5,011,392, Cl. 425-35.000.

Kubota, Ryuji: *See—*
Tominaga, Kenji; Miki, Minoru; Takahashi, Tooru; Horiuchi, Tetsuo; Morishima, Hideo; Nakayama, Takashi; Moriya, Kumiaki; Matsumoto, Masaki; Akita, Minoru; Niino, Tsuyoshi; Ochiai, Kanehiro; Shiozawa, Akihiko; Uchiyama, Yuichi; Yasuno, Toyoharu; Moriya, Kenji, Kinoshita, Shouichirou; Kage, Kazuo; and Kubota, Ryuji, 5,011,652, Cl. 376-283.000

Kubota, Saburo: *See—*
Kubo, Keishi, Nagano, Hiroyuki; and Kubota, Saburo, 5,012,188, Cl. 324-160.000.

Kubota, Tsutomu *See—*
Nakai, Yoshikazu; and Kubota, Tsutomu, 5,011,560, Cl. 156-273.300.

Kubota, Yoshiya: *See—*
Katayama, Hideaki; Murakami, Toshifumi; Soeda, Koji; Kubota, Yoshiya; Okamoto, Shoji, Kubota, Akinori, Kobayashi, Michihito; and Ijiri, Masaaki, 5,011,392, Cl. 425-35.000

Kudlac, Barbara L. Platform having a notch and plug member therefor. 5,010,826, Cl. 108-25.000.

Kudo, Jun: *See—*
Konushi, Fumihiro; Seki, Akinori; Kudo, Jun; and Koba, Masayoshi, 5,011,550, Cl. 148-33.500.

Kudou, Yoshinobu: *See—*
Ushijima, Nobuyoshi; Masuda, Hiroshi; Ishibashi, Akira; Satou, Masahiko; Haruna, Toshiyuki, Takayama, Norikazu, and Kudou, Yoshinobu, 5,012,166, Cl. 318-254.000.

Kuge, Tsukasa: *See—*
Sakurai, Masaaki; Yamamoto, Iichiro; Goto, Masahiro; Kuge, Tsukasa; and Shigenobu, Michio, 5,011,401, Cl. 432-60.000.

Kulkarni, Prabhakar Method and apparatus for treatment of hazardous waste in absence of oxygen. 5,010,829, Cl. 110-346.000.

Kumar, Anand *See—*
Cram, Donald J., Chapoteau, Eddy, Czech, Bronislaw P., Gebauer, Carl R., Helgeson, Roger C., Kumar, Anand, and Leong, Koon-Wah, 5,011,924, Cl. 540-469.000.

Kumazaki, Hiroshi: *See—*
Harada, Susumu, and Kumazaki, Hiroshi, 5,012,426, Cl. 364-476.000

Kumazawa, Takeshi. *See—*
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Kume, Masafumi *See—*
Hiraki, Tadayoshi; Iwase, Osamu; Oosumimoto, Hiroshi; Sugiura, Shinji, Tabushi, Ichiro; Kume, Masafumi, Udagawa, Takashi, Matsui, Komaharu; and Fujii, Yasuhiro, 5,011,733, Cl. 428-336.000

Kumm, Emerson L., to Kumm Industries, Inc. Continuously variable transmission using planetary gearing with regenerative torque transfer and employing belt slip to measure and control pulley torque 5,011,458, Cl. 474-49.000

Kumm Industries, Inc. *See—*
Kumm, Emerson L., 5,011,458, Cl. 474-49.000.

Kummer Freres SA Fabrique de machines *See—*
Leiber, Hans J., 5,010,793, Cl. 82-19.000.

Kumobayashi, Hidenori, and Taketomi, Takanao, to Takasago International Corporation. 2,2'-bis(di-(m-tolyl)phosphino)-1,1'-binaphthyl 5,012,002, Cl. 568-17.000.

Kung, Viola T., Nagainis, Peter A.; and Sheldon, Edward L., III, to Molecular Devices, Inc. DNA detection method. 5,011,770, Cl. 435-6.000

Kunishige, Seiji: *See—*
Takahashi, Shoichi, Ichiki, Sayohiko; Yorozu, Masatoshi, Kunishige, Seiji; Shibagaki, Taro; Shimizu, Fumihiko, Fujioka, Fumio, and Kondo, Toshinori, 5,012,240, Cl. 341-101.000.

Kunitake, Yoshikuni; and Harita, Yasuhiro, to Mitsui Engineering & Shipbuilding Co., Ltd. Semi-submerged glass boat. 5,010,835, Cl. 114-66.000

Kunze, Dieter; and Giebel, Wolfgang, to Siemens Aktiengesellschaft. Apparatus and method for introducing a cable-like element into a pipe and elements suitable therefor. 5,011,332, Cl. 405-158.000.

Kurabayashi, Ken, Tsuchiya, Yoshinobu; and Niida, Yoriaki, to Isuzu Motors Limited. Structure for arranging electrical double-layer capacitor cells 5,012,385, Cl. 361-328.000.

Kurahashi, Hideyuki *See—*
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Kurahashi, Ryurou *See—*
Murakami, Yasuo, Matsumoto, Yoichi, Ishii, Shinjiro; Kurahashi, Ryurou, and Nakamura, Mitsuru, 5,011,304, Cl. 384-492.000.

Kurahashi, Wataru *See—*
Yamashita, Hiroki; Kinoshita, Keichi; Matsui, Toshio; Kurahashi, Wataru, and Yasuda, Katsuya, 5,012,297, Cl. 355-321.000.

Kuraray Co., Ltd.. *See—*
Tanaka, Yasuyuki; Ibata, Koichi; Mizuno, Masao; Ninagawa, Yoichi; and Nishida, Takashi, 5,012,018, Cl. 568-909.500.

Kurashiki Boseki Kabushiki Kaisha: *See—*
Tsugita, Hiroshi; and Shimizu, Takao, 5,011,557, Cl. 156-180.000.

Kurata, Takatsugu, and Nishide, Takuya, to Matsushita Electric Industrial Co., Ltd. Field discrimination circuit. 5,012,339, Cl. 358-148.000.

Kurematsu, Masayuki: *See—*
Kobayashi, Kazuhiro; Koboshi, Shigeharu; Goto, Nobutaka; Kurematsu, Masayuki; and Takabayashi, Naoki, 5,011,571, Cl. 159-47.300

Kuribayashi, Mototaka, to Kabushiki Kaisha Toshiba. Semiconductor integrated circuit and method of manufacturing the same. 5,012,427, Cl. 364-490.000.

Kurihara, Yasuo. *See—*
Totani, Tuyoshi; Yamamoto, Tatuo; and Kurihara, Yasuo, 5,011,602, Cl. 210-484.000.

Kuriyama, Juzo: *See—*
Kawanabe, Tasuku; and Kuriyama, Juzo, 5,012,063, Cl. 219-69.120.

Kuroda, Shigeo: *See—*
Kawaji, Mikinori; Takakura, Toshihiko; Uchida, Akihisa; Kuroda, Shigeo; Tamaki, Yoichi; Shiba, Takeo; Sagara, Kazuhiko; and Kawamura, Masao, 5,011,788, Cl. 437-67.000.

Kuroda, Shoji: *See—*
Ogino, Masanori; Iwahara, Yoshiaki; Tamura, Yuzo; and Kuroda, Shoji, 5,011,277, Cl. 353-94.000.

Kuroda, Tokuyuki. *See—*
Masada, Tomoaki; Ueno, Yasuhiko; Hayakawa, Eiji; Naganuma, Hirotake; Terajima, Mitsuru, Kuroda, Tokuyuki, Shuto, Katsuchi, and Ichikawa, Shunji, 5,011,824, Cl. 514-13.000.

Kurosawa, Yukio: *See—*
Tsukushi, Masanori; Koyanagi, Osamu; Seki, Yasuharu; Goto, Tokio; and Kurosawa, Yukio, 5,012,051, Cl. 200-148.00B.

Kurth, Herman; Kemble, David; and Ubungen, Romeo N. Insulation access aperture liner. 5,010,926, Cl. 138-149.000.

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DeJager, Donald; Kurtz, Andrew F.; Kessler, David; and Moore, Leslie G., Jr., 5,012,346, Cl. 358-214.000.

Kurtz, Robert J.; and LiCausi, Joseph, to BioResearch, Inc. Combined surgical drainage and autotransfusion apparatus. 5,011,470, Cl. 604-4.000.

Kurusu, Yasuo; Cho, Masamichi; Nagata, Shinichi; Tomohisa, Kunio; and Shirota, Hiroyuki, to Dainippon Screen Mfg. Co., Ltd. Scanning

beam control system and optical scale structure useful thereto 5,012,089, Cl. 250-235.000

Kushner, Joseph R. *See—*
Coltrane, Jack D.; and Kushner, Joseph R., 5,011,021, Cl. 206-620.000

Kusumoto, Keiji; Yamada, Hirokazu, and Ideyama, Hiroyuki, to Minolta Camera Kabushiki Kaisha. Image forming apparatus having a jam counter adapted to be disabled until a ready for copy state is confirmed 5,012,281, Cl. 355-206.000

Kuttner, Franz, to Siemens Aktiengesellschaft. Method for determining and processing correction values for self-calibrating A/D and D/A converters, and calculating register for performing the method. 5,012,241, Cl. 341-120.000

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Kawasaki, Sadanobu, Koishikawa, Jun, and Kuty, Donald W., 5,011,391, Cl. 445-24.000.

Kuwada, Kazuhiko. *See—*
Michimoto, Takashi; Nakamoto, Yukinari; Kuwada, Kazuhiko; and Ishida, Nobuyoshi, 5,011,810, Cl. 502-439.000

Kuwajima, Teruaki, Nagahata, Satoshi; and Kanakura, Akihiro, to Nippon Paint Co., Ltd. Metallic pigment composition. 5,011,533, Cl. 106-404.000.

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Ueyama, Masayuki; and Kuwana, Minoru, 5,011,273, Cl. 350-429.000

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Kvita, Vratislav, Baumann, Marcus; Fischer, Walter; Mayer, Carl W.; and Allmendinger, Thomas, to Ciba-Geigy Corporation. Substituted α-pyrones 5,011,944, Cl. 549-214.000

Kyburz, Emilio *See—*
Gassner, Walter; Imhof, Rene, and Kyburz, Emilio, 5,011,849, Cl. 514-365.000.

Kychakoff, George; and Ort, Gene P., to Wyerehaeuser Company. Apparatus for detecting carryover particles in the interior of a furnace 5,010,827, Cl. 110-185.000

Kyi, Ben-I. Self adaptive and shadow sensitive electronic musical instrument 5,012,085, Cl. 250-221.000.

Kyoritsu Gokin Mfg. Co., Ltd *See—*
Matsumoto, Kozo; and Asakawa, Hiroyoshi, 5,011,083, Cl. 239-590.500.

Kyowa Hakko Kogyo Co., Ltd. *See—*
Masada, Tomoaki, Ueno, Yasuhiko; Hayakawa, Eiji; Naganuma, Hirotake, Terajima, Mitsuru, Kuroda, Tokuyuki, Shuto, Katsuchi, and Ichikawa, Shunji, 5,011,824, Cl. 514-13.000
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La-Z-Boy Chair Company *See—*
LaPointe, Larry P., 5,011,220, Cl. 297-89.000.

Laboratori Guidotti: *See—*
Sbarbaro, Franco, 5,011,974, Cl. 560-118.000

Labrum, Randall C. Resilient door knob 5,011,204, Cl. 292-347.000

Lacey, Edward H. Feeder for seed cleaner. 5,011,025, Cl. 209-618.000.

LaChance, Nancy: *See—*
LaChance, Robert J., Jr., and LaChance, Nancy, 5,011,156, Cl. 273-237.000

LaChance, Robert J., Jr., and LaChance, Nancy. Board game apparatus 5,011,156, Cl. 273-237.000.

Lackner, Anna M.. *See—*
Miller, Leroy J.; Smith, Willis H., Jr.; Lackner, Anna M.; and Margerum, J. David, 5,011,267, Cl. 350-340.000.

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Bryskiewicz, Barbara G., Bryskiewicz, Tadeusz R.; Dabkowski, Ferdynand P.; Lacowski, Jacek; and Gatos, Harry C., 5,011,564, Cl. 156-624.000

Lacza, Joseph. Method of playing a probability game. 5,011,160, Cl. 273-268.000.

Ladd, Kevin L.: *See—*
Keller, James B., Ladd, Kevin L.; and Reisert, James J., 5,012,403, Cl. 364-200.000.

LaForge, David H., to Baxter International, Inc. Apparatus and method for calorimetrically determining battery charge state. 5,012,176, Cl. 320-31.000.

Lai, Benny W. H., and Walker, Richard C., to Hewlett-Packard Company Method and apparatus for clock recovery and data retiming for random NRZ data. 5,012,494, Cl. 375-120.000.

Laitram Corporation, The. *See—*
Lapeyre, James M.; and Lapeyre, George C., 5,011,453, Cl. 452-10.000

Lakhani, Kishor M.: *See—*
Fulton, Alfred L., Lakhani, Kishor M.; Sampson, Scott D.; and Lowman, Kent, 5,012,261, Cl. 346-159.000.

Lalwani, Steven S.. *See—*
Chich, Adem; Lalwani, Steven S., Bettoli, Steven C.; Grube, Louis L.; and Bondoc, Alfredo A., 5,011,726, Cl. 428-141.000.

Lamb, Mark A. Home traction device. 5,010,880, Cl. 128-71.000.

Lamb, Walter R.; and Griffin, Darrell, to Electric Power Research Institute. Method of making passivated antireflective coating for photovoltaic cell. 5,011,782, Cl. 437-2.000

Lambert, Laurence C., to United States of America, Air Force. Autonomous face recognition machine. 5,012,522, Cl. 382-2.000.

Lambregts, Augustinus W. M.. *See—*
Dinnissen, Johannes H. T.; and Lambregts, Augustinus W. M., 5,012,296, Cl. 355-320.000.

Lamle, Stewart M. Video card game. 5,011,146, Cl. 273-85.0CP.

Lammers, Bryan G.; and Fee, David M., to Caterpillar Inc. Power transfer assembly with one-piece retainer ring. 5,010,984, Cl. 188-71.500.

Lanan, Glenn A., to Intec Engineering, Inc. Underwater pipe laying apparatus. 5,011,333, Cl. 405-166.000

Landa, Benzion: *See—*
Levanon, Moshe; Grossinger, Israel, Adam, Yossi, and Landa, Benzion, 5,012,300, Cl. 355-328.000

Landbeck, Friedrich. *See—*
Rathfelder, Paul; Sagala, Jozef; Landbeck, Friedrich; and Matschkal, Heinz, 5,011,499, Cl. 8-94.330.

Landberg, Jakob: *See—*
Jensen, Aage, Stingsen, Jeppe; and Landberg, Jakob, 5,010,612, Cl. 8-149.100

Landesman, Robert E.: *See—*
Mitchell, Thomas R., and Landesman, Robert E., 5,012,457, Cl. 367-175.000

Landman, Dirk: *See—*
Johnson, Melvin H.; Krauss, Leland L., and Landman, Dirk, 5,011,256, Cl. 350-96.200.

Lane, Kelley R.; and Schammel, Wayne P., to Amoco Corporation. Process for preparing polybutenes with increased reactivity. 5,012,030, Cl. 585-527.000.

Lanfranco, Antonello, to Aspera S.r.l. Method for the assembly of small electrical machines. 5,010,638, Cl. 29-596.000

Lang, Stuart E., and Fairhurst, Jon, to Dubner Computer Systems, Inc.; and Grass Valley Group, Inc., The. Method of encoded video decoding. 5,012,329, Cl. 358-31.000.

Lang, Thomas: *See—*
Nash, J. Gregory; Ercegovac, Milos, and Lang, Thomas, 5,012,439, Cl. 364-766.000.

Lange, David V., and Filzen, Scott E., to Beloit Corporation. Extended nip press apparatus with blanket edge seals. 5,011,578, Cl. 162-358.000.

Lange, Peter M.: *See—*
Schleppinghoff, Bernhard; Niederberger, Hans-Ludwig; Gabel, Christian; Lange, Peter M., and Mitschker, Alfred, 5,012,031, Cl. 585-639.000.

Langen, Marinus J. M.: *See—*
Guttinger, Peter, and Langen, Marinus J. M., 5,011,132, Cl. 271-315.000.

Langer, Eberhard: *See—*
Wettengel, Lothar; and Langer, Eberhard, 5,012,395, Cl. 362-222.000.

Langford, Frederick. Waterslide with uphill run and flotation device therefor. 5,011,134, Cl. 272-56.50R

Langhorst, Martin A., to Dow Chemical Company, The. Hydrodynamic chromatography method 5,011,606, Cl. 210-635.000

Langsjoen, Per H.; Folkers, Karl A.; and Langsjoen, Peter H., to Board of Regents, The University of Texas System, The. Therapy with coenzyme Q_{10} of patients having AIDS or other retroviral diseases. 5,011,858, Cl. 514-690.000.

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Lanham, Terry M. Electro-acoustic connector for amplified musical instruments. 5,010,802, Cl. 84-743.000.

Lanham, William E., to APV Baker Inc. Spiral conveyor oven. 5,010,808, Cl. 99-443.00C.

Lantagne, John A.; Johnson, Edward G.; and Virostko, Michael J., to Raytheon Company. Broadband stripline coupler. 5,012,209, Cl. 333-116.000.

Lantz, Joel B., to Neundorfer, Inc. Method and apparatus for optimization of feedwater heater liquid level. 5,012,429, Cl. 364-509.000.

Lanxide Technology Company, LP. *See—*
Burke, John T., 5,010,945, Cl. 164-97.000.
Claar, Terry D., 5,011,063, Cl. 228-122.000.

Lapeyre, George C.: *See—*
Lapeyre, James M.; and Lapeyre, George C., 5,011,453, Cl. 452-10.000.

Lapeyre, James M.; and Lapeyre, George C., to Laitram Corporation, The. Centrifugal crab meat extraction apparatus. 5,011,453, Cl. 452-10.000.

LaPointe, Larry P., to La-Z-Boy Chair Company. Chair mechanism. 5,011,220, Cl. 297-89.000.

Larreategui, Fred E. Inflatable child holder 5,011,056, Cl. 224-159.000.

Larson, Arthur C.: *See—*
Halsey, Brenton S., Jr.; and Larson, Arthur C., 5,010,701, Cl. 52-233.000.

Laser Precision Corporation *See—*
Doyle, Walter M.; and Hughes, Norman S., 5,011,243, Cl. 350-1.200

Laskaris, Michael A.; Broitman, Kalman, Teske, Richard E.; Miller, David L., and Sulmone, Michael, to Hale Fire Pump Company. Portable engine-pump assembly. 5,010,870, Cl. 123-576.000.

Lassiter, Wallace R., to R. J. Reynolds Tobacco Company. Method and apparatus for detecting loose ends of cigarettes. 5,010,904, Cl. 131-280.000.

Lastovica, John E., Jr.: *See*—
Bowman, Robert G., Hartwell, George E., Molzahn, David C., Ramirez, Enrique G., and Lastovica, John E., Jr., 5,011,999, Cl. 564-479.000.

Latham, Carol A.; and McGuigan, Michael F., to Carborudum Company, The. Thermally conductive ceramic/polymer composites. 5,011,872, Cl. 523-440.000.

Latone, Thomas L.: *See*—
van Hekken, Hendrik R.; and Latone, Thomas L., 5,011,227, Cl. 297-434.000.

Lattekamp, Matthias: *See*—
Buschfeld, Adolf; Lattekamp, Matthias; Ripkens, Gerd, and Schittek, Hans, 5,011,886, Cl. 524-596.000.

Laucht, Horst, Baur, Richard, Werner, Bernd; Nilsson, Karl E.; and Hora, Peter, to Messerschmitt-Boelkow-Blohm GmbH, and Bayern-Chemie Gesellschaft fuer Flugchemische Antriebe. Steering wheel mounted air bag module including electromagnetically shielded sensor. 5,011,181, Cl. 280-731.000.

Laughlin, James L.: *See*—
Boudreau, Michael P.; Jacoby, Randall W., and Laughlin, James L., 5,010,881, Cl. 128-76.00R.

Laurel Bank Machines Co., Ltd.: *See*—
Tsuji, Keiji, 5,011,128, Cl. 271-263.000.

Lausberg, Dietrich: *See*—
Rosenau, Bernhard; Hisgen, Bernd; Heinz, Gerhard; Braun, Hans-Georg; Lausberg, Dietrich; and Zeiner, Hartmut, 5,011,884, Cl. 524-537.000.

Lautzenhiser, John L.: *See*—
Lautzenhiser, Lloyd L., and Lautzenhiser, John L., 5,012,165, Cl. 318-53.000.

Lautzenhiser, Lloyd L.; and Lautzenhiser, John L. Conveyance with electronic control for left and right motors. 5,012,165, Cl. 318-53.000.

Lawler Manufacturing Co., Inc.: *See*—
Kline, Kevin B., 5,011,074, Cl. 236-12.130.

Layton, Michael R., to Litton Systems, Inc. Fiber optic sensor array. 5,011,262, Cl. 350-96.290.

LazerData Corporation: *See*—
Singh, Ishwar, and Senkevich, William, 5,012,079, Cl. 235-467.000.

Le, Son; and Yang, Phillip. Cover and connector for hypodermic needle. 5,011,479, Cl. 604-198.000.

Le, Tri C., to Baroid Technology, Inc. BOP seal with improved metal inserts. 5,011,110, Cl. 251-1.100.

Leander, Leif, to VMK Fish Machinery AB. Apparatus for packaging fishes in cans. 5,010,713, Cl. 53-142.000.

Le Baud, Patrice, to Societe d'Etudes Techniques et d'Entreprises Generales-Sodeteg. Device for multimeasurement of vertical position variation and a level-setting system equipped with said device. 5,010,768, Cl. 73-299.000.

Le Beau, Christopher J., to Motorola, Inc. Automatic inspection method. 5,012,524, Cl. 382-8.000.

Le Blanc, Joseph R., to M W Kellogg Company, The. Autothermal steam reforming process. 5,011,625, Cl. 252-376.000.

Leco Corporation: *See*—
Verel, Edward A., 5,011,050, Cl. 222-600.000.

Lee, C. S.: *See*—
Ream, Stanley L., Lee, C. S., Lim, G. C., and Fukae, Kenneth, 5,011,282, Cl. 356-153.000.

Lee, Chein-Dhau: *See*—
Lee, Rong-Jer, Lee, Chein-Dhau; and Shen, Wen-Shin, 5,011,762, Cl. 430-281.000.

Lee, Chun-Te: Wire connector. 5,011,440, Cl. 439-857.000.

Lee, Eva Y. P.: *See*—
Lee, Wen-Hwa; and Lee, Eva Y. P., 5,011,773, Cl. 435-69.100.

Lee, Gim F., Jr.: *See*—
Abolins, Visvaldis, Betts, Joseph E., Holub, Fred F., and Lee, Gim F., Jr., 5,011,736, Cl. 428-407.000.

Lee, Gregory S., to TRW Inc. Superconducting analog-to-digital converter with floating four-junction squid bidirectional counter. 5,012,243, Cl. 341-133.000.

Lee, Hsien-Che; Kaplan, Martin C.; and Goodwin, Robert M., to Eastman Kodak Company. Interactive dynamic range adjustment system for printing digital images. 5,012,333, Cl. 358-80.000.

Lee, Jimmy L., to Zenion Industries, Inc. Air ionization system for internal combustion engines. 5,010,869, Cl. 123-539.000.

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Lee, Swye N., to David Sarnoff Research Center, Inc. High speed frequency divider circuit. 5,012,497, Cl. 377-118.000.

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Lee, William A.: *See*—
Wang, Yu-chang J.; Lee, William A., and Narog, Blair, 5,011,678, Cl. 424-45.000.

Lee, William R.: *See*—
Hazen, James R., and Lee, William R., 5,011,997, Cl. 564-335.000.

Lee, Woodrow W., to United States of America, Navy. Launching projectiles with hydrogen gas generated from titanium-water reactions. 5,010,804, Cl. 89-7.000.

Leech, Danny R., to Du Pont de Nemours, E. I., and Company. Cleaning of fouled spinneret parts. 5,011,541, Cl. 134-34.000.

Leever, Richard: *See*—
Myers, David J.; Leever, Richard; Gibbs, Mary; and Wright, John T. M., 5,011,481, Cl. 606-1.000.

Leiber, Hans J., to Kummer Freres SA Fabrique de machines. Machining apparatus for precise turning of an outside surface. 5,010,793, Cl. 82-19.000.

Leibovitz, Jacques, to Hewlett-Packard Company. Process using supercritical conditions for producing highly accurate and homogeneous powder mixture useful in fabrication of high quality ceramic superconductors. 5,011,819, Cl. 505-1.000.

Leighton, Suzanne E., Kemp, Raymond J., and Hawkins, Philip D., to Kemp, Raymond J.; and Leighton, Suzanne E. Telephone activated emergency light system. 5,012,507, Cl. 379-37.000.

Le Loarer, Jean-Luc, to Rhone-Poulenc Chimie. Ceric oxide with new morphological characteristics and method for obtaining same. 5,011,671, Cl. 423-592.000.

Lemchen, Marc S., to Dolphin Imaging Systems. Method for determining orthodontic bracket placement. 5,011,405, Cl. 433-24.000.

Lennon, Charles A., and Lowe, George, to Lennon, Charles A. User wearable personal/medical information device. 5,012,229, Cl. 340-706.000.

Lenselink, Willem, to PFW(Nederland)B.V. Nitriles useful in perfume. 5,011,970, Cl. 558-430.000.

Lenti, Daria, and Visca, Mario, to Ausimont S.r.l. Use of perfluoropolyether derivatives in the form of an aqueous emulsion for protecting stony materials from atmospheric agents. 5,011,713, Cl. 427-393.600.

Lentini, Salvatore; and Patti, Giuseppe, to Italtel Societa Italiana Telecomunicazioni S.p.A. Circuit to inhibit voltage and current returns to the electric power distribution line in an inverter-type power plant. 5,012,122, Cl. 307-66.000.

Leonard, Giles J.; and Marberry, Michael L., to Proctor & Gamble Company, The. Oral compositions having improved anticalculus properties containing pyrophosphate and an acrylic acid polymer. 5,011,830, Cl. 424-57.000.

Leong, Koon-Wah: *See*—
Cram, Donald J.; Chapoteau, Eddy; Czech, Bronislaw P., Gebauer, Carl R., Helgeson, Roger C., Kumar, Anand; and Leong, Koon-Wah, 5,011,924, Cl. 540-469.000.

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Abel, Thomas, and Hirschfeld, Klaus, 5,012,056, Cl. 200-519.000.

Le Path, Michele: *See*—
Guiberteau, Christian, Ruggeri, Stephane; and Le Path, Michele, 5,012,084, Cl. 250-211.00R.

Lerner, Michael I.: *See*—
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Dabuzhsky, Leonid V., and Lerner, Moisey M., 5,010,662, Cl. 36-28.000.

Leske, Werner: *See*—
Lutz, Klaus, Baer, Hans-Joachim; Starz, Karl-Anton; Leske, Werner, and Mueller, Harry, 5,011,627, Cl. 252-512.000.

Lesser, Emmett H. Microwave safety lid. 5,012,061, Cl. 219-10.55E.

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Heimerl, Albert; Schulte, Dietrich; Gotz, Gabriela; and Leutz, Reiner, 5,011,492, Cl. 606-215.000.

Levanon, Moshe; Grossinger, Israel; Adam, Yossi, and Landa, Benzion, to Spectrum Sciences B.V. Two-color imaging system and process. 5,012,300, Cl. 355-328.000.

Levar, Robert E.: *See*—
Zupancic, Anton Z.; Palermo, Anthony; and Levar, Robert E., 5,012,505, Cl. 378-130.000.

Leveen, Harry H. Apparatus for deep heating of cancer. 5,010,897, Cl. 128-804.000.

Lever Brothers Company, division of CONOPCO, Inc.: *See*—
Schepers, Frederik J., 5,011,622, Cl. 252-174.150.

Levery, Steven B.: *See*—
Hakomori, Sen-itiroh; Fukushi, Yasuo; Nudelman, Edward D.; and Levery, Steven B., 5,011,920, Cl. 536-53.000.

Levi, Anthony F. J.: *See*—
Dykaar, Douglas R.; and Levi, Anthony F. J., 5,012,319, Cl. 357-55.000.

Levi, Avraham Y.; and Quarberg, Craig D., to A C Innovations, Inc. Locking mechanism for telescoping tubular poles. 5,011,319, Cl. 403-109.000.

Levine, Seymour: *See*—
Jungwirth, Douglas R.; Simpson, A. Phillip; Kawahara, Mitsuo; Levine, Seymour; and Kennel, John M., 5,012,081, Cl. 250-203.600.

Levinson, Arthur D.; Pennica, Diane; Kohr, William J.; Vehar, Gordon A.; Goeddel, David V.; Yelverton, Elizabeth M.; and Simonsen, Christian C., to Genentech, Inc. Human tPA production using vectors coding for DHFR protein. 5,011,795, Cl. 435-69.200.

Lewak, Jerzy J.: *See*—
Weinreb, Robert N.; Lewak, Jerzy J.; and Dreher, Andreas W., 5,012,496, Cl. 377-21.000.

Lewallen, Sandra, to General Motors Corporation. Concealed integrated seat cargo screen. 5,011,208, Cl. 296-37.160.

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Chen, Hsiang M.; Lewis, Paul; and Wilson, Donald S., 5,011,108, Cl. 248-550.000.

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Dietrich, Anton; Hartig, Klaus; Schaefer, Hans-Christian; and Szczyrbowski, Joachim, 5,011,745, Cl. 428-630.000.
Stenzel, Otto W., 5,012,488, Cl. 373-156.000.

Li, Simon M. K., to Shell Oil Company. Process for preparing tetraphenolic compounds. 5,012,016, Cl. 568-720.000.

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Callahan, Robert M.; Hempel, Bruce C., and Liang, Bob C., 5,012,433, Cl. 364-518.000.

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Chen, Jing-Den; Kovacs, Kerry; Thomas, Margaret T., and Liang, Rong-Chang, 5,011,885, Cl. 524-591.000.

Libman Company, The: *See*—
Berti, Enzo, 5,010,616, Cl. 15-159.00R.

LiCausi, Joseph: *See*—
Kurtz, Robert J., and LiCausi, Joseph, 5,011,470, Cl. 604-4.000.

Licter, Philip L.; and Waterman, John K., to Raytheon Company. Method testing electron discharge tubes. 5,012,194, Cl. 324-405.000.

Lieber, Winfried, and Eder, Thomas, to Siemens Aktiengesellschaft. Method for aligning two waveguide fiber ends and an apparatus for performing the method. 5,011,259, Cl. 350-96.210.

Liebers, Lutz: *See*—
Karafa, Nandor; and Liebers, Lutz, 5,012,117, Cl. 250-572.000.

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Auweter, Helmut, Horn, Dieter, Lilge, Dieter; and Wortmann, Juergen, 5,011,279, Cl. 356-28.500.

Lim, G. C.: *See*—
Ream, Stanley L., Lee, C. S.; Lim, G. C.; and Fukae, Kenneth, 5,011,282, Cl. 356-153.000.

Limburg, William W., Yanus, John F.; Renfer, Dale S.; Schank, Richard L., and Ong, Beng S., to Xerox Corporation. Hydroxy functionalized arylamine compounds. 5,011,939, Cl. 548-440.000.

Lin, Jui C., to Taiwan Fu Hsing Industry Co., Ltd. Locking device for an auxiliary lock. 5,010,749, Cl. 70-190.000.

Lin, Leu-Fen: *See*—
Collins, Franklin D., and Lin, Leu-Fen, 5,011,914, Cl. 530-399.000.

Lin, Paul: *See*—
McShane, Michael B.; and Lin, Paul, 5,012,386, Cl. 361-386.000.

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Gill, Manzur, D'Arrigo, Sebastiano, and Lin, Sung-Wei, 5,012,307, Cl. 357-23.500.

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Henke, Mitchell C., 5,012,071, Cl. 219-400.000.

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Kitagawa, Toshiharu, Nishiyama, Ryuji, Takita, Masaaki, and Tsuru, Yoshikazu, 5,011,315, Cl. 400-624.000
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Ogawa, Kazufumi, 5,011,518, Cl. 55-158.000
Omata, Yuuji, 5,011,581, Cl. 204-38.400
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Maurer, Donald D.; and Mattson, Stacy D., to Empi, Inc. Expandable vaginal electrode. 5,010,895, Cl. 128-788.000
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Sasabe, Junya, and Sugimori, Masao, 5,012,294, Cl. 355-309.000.
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Miyake, Hiroshi: *See—*
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Han, Scott; Martenak, Daniel J.; Palermo, Robert E.; and Walsh, Dennis E., 5,012,029, Cl. 585-500.000
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Tominaga, Kenji; Miki, Minoru; Takahashi, Tooru; Horiuchi, Tetsuo; Morishima, Hideo; Nakayama, Takashi; Moriya, Kumiaki; Matsumoto, Masaki; Akita, Minoru; Niino, Tsuyoshi; Ochiai, Kanehiro; Shiozawa, Akihiko; Uchiyama, Yuichi; Yasuno, Toyoharu; Moriya, Kenji, Kinoshita, Shouichirou; Kage, Kazuo; and Kubota, Ryuji, 5,011,652, Cl. 376-283.000.

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Tominaga, Kenji; Miki, Minoru; Takahashi, Tooru; Horiuchi, Tetsuo; Morishima, Hideo; Nakayama, Takashi; Moriya, Kumiaki; Matsumoto, Masaki; Akita, Minoru; Niino, Tsuyoshi; Ochiai, Kanehiro; Shiozawa, Akihiko; Uchiyama, Yuichi; Yasuno, Toyoharu; Moriya, Kenji, Kinoshita, Shouichirou; Kage, Kazuo; and Kubota, Ryuji, 5,011,652, Cl 376-283.000.

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Ludwig, Henry F., 5,011,072, Cl. 229-120.230

Morrison, Peter A., to United States of America, Navy. Linear propelling separator. 5,010,823, Cl. 102-307.000.

Morton International, Inc.: *See—*
Candore, Amedeo, 5,010,999, Cl. 198-456.000.

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Gittos, Maurice W.; Miller, Francis P.; Sorensen, Stephen M.; Fozard, John R., Moser, Paul; Palfreyman, Michael G.; and Cheng, Hsien, 5,011,846, Cl. 514-294.000.

Mosley, Joseph M.: *See—*
Mansuria, Mohanlal S.; Mosley, Joseph M.; Musa, Richard D.; and Tuozzolo, Vito J., 5,012,325, Cl. 357-81.000.

Motorola, Inc.. *See—*
Burn, Michel, 5,012,436, Cl. 364-571.020.
Dixon, Robert; Kaveh, Golnaz; and Seelbach, Walter, 5,012,136, Cl. 307-475.000.
Dulaney, Randi L.; and Rakolta, Pamela A., 5,012,234, Cl. 340-825.440.
Elliott, Robert S.; and Gauen, Kim R., 5,012,381, Cl. 361-84.000.
Feldbaumer, David W.; and Heim, Barry B., 5,012,126, Cl. 307-243.000.
Goronkin, Herb, 5,012,302, Cl. 357-4 000.
Henry, Courtney S., 5,012,219, Cl. 340-311 100.
Howell, William J., 5,012,205, Cl. 331-117.00R
Kattleman, Harry C., 5,011,012, Cl. 206-328.000.
Le Beau, Christopher J., 5,012,524, Cl 382-8.000.
Littlebury, Hugh W., 5,012,187, Cl. 324-158.00P.
Mastroianni, Sal T., 5,011,791, Cl. 437-180.000.
McShane, Michael B.; and Lin, Paul, 5,012,386, Cl. 361-386.000.
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Tsai, Chi-Taou, 5,012,213, Cl 333-247.000.

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Mottot, Yves: *See—*
Cailly, Francinet; and Mottot, Yves, 5,011,665, Cl 423-21.500.

Mourer, David P. *See—*
Borom, Marcus P.; Szala, Lawrence E., Brun, Milivoj, Miller, Steven A., and Mourer, David P., 5,011,049, Cl 222-590.000

Mowka, Edmund J., Jr., Frakes, Thomas A., and Pettengill, Larry M., to Aquarium Systems, Inc. Water filtration system for aquariums. 5,011,600, Cl. 210-169.000

Mross, Wolf D.. *See—*
Herzog, Klaus; Boehning, Karl-Heinz; Aichinger, Heinrich, Plueckhan, Juergen, Mross, Wolf D.; and Schwarzmann, Matthias, 5,011,809, Cl. 502-348.000

Mueller, Harry: *See—*
Lutz, Klaus; Baer, Hans-Joachim; Starz, Karl-Anton; Leske, Werner, and Mueller, Harry, 5,011,627, Cl 252-512.000

Mueller, Karl F. to Ciba-Geigy Corporation Dimethylacrylamide-copolymer hydrogels with high oxygen permeability. 5,011,275, Cl 351-160.00H

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Muellner, Ernst, to Siemens Aktiengesellschaft. ECL-CMOS converter 5,012,137, Cl 307-475.000

Mulcahy, Joseph A., to J Mulcahy Enterprises Inc Pumping liquid metals 5,011,528, Cl 75-10.160

Muldoon, Mark T. *See—*
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Muller, Franz. *See—*
Witzel, Gunther; Widmann, Bruno; and Muller, Franz, 5,012,348, Cl 358-229.000.

Muller, Hanns-Peter. *See—*
Meier, Helmut-Martin; Pielartzik, Harald, Morbitzer, Leo, Muller, Hanns-Peter; and Braun, Dietrich, 5,011,972, Cl 560-66.000

Muller, Johann. *See—*
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Muller, Klaus R. *See—*
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Muller, Manfred. *See—*
Hess, Joachim, Muller, Klaus R.; and Muller, Manfred, 5,011,946, Cl 549-274.000

Muller, Peter H. *See—*
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Decker, Owen H.; and Mumford, Neal A., 5,011,721, Cl 428-36.900

Munakata, Hirohide. *See—*
Haruta, Masahiro; Munakata, Hirohide; Yuasa, Satoshi; and Yoshinaga, Yoko, 5,011,644, Cl 264-184.000

Mungo, Keith. *See—*
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Munro, John R.; Jost, William R., and Ash, Francis M., Jr., to Lockheed Corporation. Radar absorption material thickness testing device 5,012,248, Cl. 342-22.000

Munroe, Ronald G., and Sedlmayr, Christopher J., to Eagle Electric Mfg. Co Inc Switch and circuit breaker combination device. 5,012,495, Cl 337-3.000.

Murai, Wasaburo, to Terasaki Denki Sangyo Kabushiki Kaisha Contact device for a switch. 5,012,053, Cl. 200-288.000.

Murakami, Tetsuo: *See—*
Nishigai, Masao; Otani, Tamio; Kanaya, Yasuhiko; and Murakami, Tetsuo, 5,011,345, Cl. 409-132.000.

Murakami, Toshifumi: *See—*
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Murakami, Yasuo; Matsumoto, Yoichi; Ishii, Shinjiro; Kurahashi, Ryurou, and Nakamura, Mitsuru, to Nippon Seiko Kabushiki Kaisha Rolling bearing. 5,011,304, Cl. 384-492.000.

Murakami, Yoshihiro: *See—*
Chiba, Nobuhiro; and Murakami, Yoshihiro, 5,012,361, Cl 360-38.100.

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Takahashi, Mitsuru; Kitamura, Shigeto; Kase, Hiroshi; Kasai, Masaji, Kawamoto, Isao; Iida, Takao, Sano, Hiroshi; Saito, Hiromitsu, Yamada, Koji, and Murakata, Chikara, 5,011,854, Cl 514-541.000.

Muramatsu, Yasuhiko: *See—*
Ono, Yutaka, Muramatsu, Yasuhiko; Banzai, Hideo; Kikukawa, Yoichi, Hashida, Shigeru; Shindo, Shotaro; Higuchi, Haruo, Shinomiya, Hiroyuki; Nikaido, Mitsuhiro; and Sato, Koichi, 5,012,169, Cl. 318-568.000.

Murao, Toshiaki. *See—*
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Murasaki, Hiroshi: *See—*
Oka, Tateki; Toyoshi, Naoki; Yokoyama, Tomoaki; Mizuno, Hiroshi, Murasaki, Hiroshi, Ikegawa, Akihito; Etou, Kouichi; and Nakagawa, Shuichi, 5,012,285, Cl. 355-245.000.

Murata, Fumiya: *See—*
Nishikado, Takashi; Kondo, Megumu; Fukuoka, Kazuhiko; and Murata, Fumiya, 5,012,405, Cl. 364-200.000.

Murata Kikai Kabushiki Kaisha: *See—*
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Murata Manufacturing Co., Ltd.: *See—*
Okumura, Mitunao, 5,012,179, Cl. 323-355.000.
Takemura, Hiroshi; and Okamoto, Yasuji, 5,012,399, Cl. 363-18.000.

Murata, Shinjiro: *See—*
Satoh, Toyomi; Hosei, Kiyonori; Kinoshita, Katsuji; Murata, Shinjiro; Fukatsu, Shunzo; and Ichikawa, Tooru, 5,011,019, Cl. 206-530.000

Murata, Toshimichi: *See—*
Saito, Katushi; Shindou, Yoshio; Murata, Toshimichi; Yamazaki, Fumio, and Shimazu, Takashi, 5,011,744, Cl. 428-623.000.

Murphy, Edward J., Krajewski, John J.; and Ansel, Robert E., to DeSoto, Inc Stereolithographic method and apparatus in which a membrane separates phases 5,011,635, Cl 264-22.000.

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Jones, Robert D.; and Demeyer, David M., 5,012,398, Cl 362-250.000.

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Myer, Robert E., to AT&T Bell Laboratories. Varying bandwidth digital signal detector. 5,012,490, Cl. 375-58.000.

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Gustavsson, Tord G.; Myren, Harry I.; and Silja, Karl T I., 5,011,574, Cl. 162-281.000.

Nabalco Pty. Ltd.. *See—*
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Nabetani, Shinji: *See—*
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Nabisco Brands, Inc. *See—*
Simelunas, William, and Deloy, Joseph T., 5,010,838, Cl. 118-19.000
Spanier, Henry C., and Ekpo, Bassey O., 5,011,679, Cl. 424-57.000.

Naddor, David J.. *See—*
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Nagahata, Satoshi: *See—*
Kuwajima, Teruaki; Nagahata, Satoshi; and Kanakura, Akihiro, 5,011,533, Cl. 106-404.000

Nagai, Harushige; Kiryu, Masato; Sasaki, Takeshi, and Saotome, Akira, to Victor Company of Japan, Ltd Tape cassette. 5,011,096, Cl. 242-199.000.

Nagai, Katsutoshi: *See—*
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Nagaimis, Peter A.: *See—*
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Nagano, Hiroyuki: *See—*
Kubo, Keishi, Nagano, Hiroyuki; and Kubota, Saburo, 5,012,188, Cl. 324-160.000

Nagano, Kazuhiko: *See—*
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Nagano, Masatoshi; and Kawamoto, Kenichi, to Canon Kabushiki Kaisha. Coupling device and power device for supplying electrical power as the coupling is established. 5,012,264, Cl. 354-286.000.

Naganuma, Hirotake. *See—*
Masada, Tomoaki; Ueno, Yasuhiko; Hayakawa, Eiji; Naganuma, Hirotake; Terajima, Mitsuru, Kuroda, Tokuyuki; Shuto, Katsuichi; and Ichikawa, Shunji, 5,011,824, Cl. 514-13.000.

Nagasawa, Haruko. *See—*
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Nagasawa, Kenichi: *See—*
Yoshimura, Katsuji, Nagasawa, Kenichi; Kashida, Motokazu; and Shikakura, Akihiro, 5,012,352, Cl 358-343.000.

Nagata, Kojiro, to Tachi-S Co., Ltd. Suspension device for seat. 5,011,109, Cl 248-564.000.

Nagata, Masaya. *See—*
Katoka, Shoei; Tsuchimoto, Shuhei; Nojima, Hideo; Kita, Ryusuke; and Nagata, Masaya, 5,011,818, Cl. 324-248.000

Nagata, Shinichi: *See—*
Kurusu, Yasuo; Cho, Masamichi; Nagata, Shinichi; Tomohisa, Kunio; and Shirota, Hiroyuki, 5,012,089, Cl 250-235.000

Naito, Masataka; Hiroi, Masakazu; and Hayakawa, Kimiaki, to Canon Kabushiki Kaisha. Sheet sorter. 5,011,130, Cl. 271-288.000.

Nakada, Seiichi: *See—*
Sakano, Chikashi; Nakada, Seiichi; Shimizu, Masao; Ito, Shinichi; and Yamamoto, Toshiyoshi, 5,010,664, Cl. 38-77.700.

Nakagama, Syoji: *See—*
Hitotsuyanagi, Hajime; Fujita, Nobuhiko; Itozaki, Hideo; Nakagama, Syoji, Tanaka, Saburo; and Fukushima, Kazuhiko, 5,011,759, Cl. 430-128.000.

Nakagawa, Hiroaki: *See—*
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Nakagawa, Shuichi: *See—*
Oka, Tateki, Toyoshi, Naoki; Yokoyama, Tomoaki; Mizuno, Hiroshi; Murasaki, Hiroshi; Ikegawa, Akihito; Etou, Kouichi; and Nakagawa, Shuichi, 5,012,285, Cl. 355-245.000.

Nakai, Yoshikazu, and Kubota, Tsutomu, to Takeda Chemical Industries, Ltd. Method of adhesion and composition therefor. 5,011,560, Cl. 156-273.300.

Nakajima, Akihiko: *See—*
Matsumoto, Shusaku; Hatakawa, Yoshio; and Nakajima, Akihiko, 5,011,922, Cl. 536-119.000.

Nakajima, Junzo: *See—*
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Nakajima, Kenji: *See—*
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Nakajima, Toshiyuki: *See—*
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Nakajima, Toyohei; and Mieno, Toshiyuki, to Honda Giken Kogyo Kabushiki Kaisha. Temperature control device for oxygen concentration sensor. 5,011,590, Cl 204-425.000.

Nakajima, Yoshihiro, and Takada, Akihiro, to Mita Industrial Co., Ltd. Abnormality-detecting method for an electrostatic image-recording machine. 5,012,279, Cl. 355-205.000.

Nakamori, Haruka; and Ito, Hiroshi, to Daiki Co., Ltd. Sheet material. 5,011,731, Cl. 428-222.000.

Nakamoto, Yuichi: *See—*
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Nakamoto, Yukinari: *See—*
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Nakamura, Haruyoshi: *See—*
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Nakamura, Masaharu; and Kajimura, Kazuo, to Komatsu Zenoah Company. Oscillating-type mowing apparatus. 5,010,717, Cl 56-17.600.

Nakamura, Mitsuru: *See—*
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Nakamura, Susao; Nishio, Etsuro, and Ishii, Haruo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Lens shutter type of camera including zoom lens. 5,012,273, Cl. 354-485.000.

Nakamura, Takao: *See—*
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Nakamura, Tomoyuki: *See—*
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Nakamura, Yoko: *See—*
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Nakane, Katsumi: *See—*
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Nakanishi, Hidemi: *See—*
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Nakanishi, Motoyasu, to Kabushiki Kaisha Cubic Engineering Apparatus for manufacturing silicone gel sheet 5,011,393, Cl. 425-89.000

Nakanishi, Takasuke. Chuck device for dental handpiece. 5,011,408, Cl. 433-127.000.

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Nakanishi, Todd G.; and Taylor, Matthew F., to Delco Electronics Corporation. Ultrasonic welding mask. 5,011,062, Cl. 228-1.100.

Nakano, Kuniaki: *See—*
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Nakasugi, Nobuyasu. *See*—
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Nakasuji, Norikazu; Kito, Tsutomu; and Shibahashi, Yutaka, to Pilot Ink Co., Ltd., The. Color memory toy set 5,011,445, Cl 446-14.000
Nakata, Yoshinori *See*—
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Nakatani, Isao; and Furubayashi, Takao, to National Research Institute for Metals. Plasma CVD apparatus 5,012,158, Cl. 315-111.210
Nakatani, Kenichi, and Nakasugi, Nobuyasu, to San-Apro Limited Imidazole ether compounds 5,011,935, Cl. 548-336.000
Nakatani, Koichiro, to Velbon International Corporation Panhead 5,012,265, Cl. 354-293.000.
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Nakatsuji, Tadao *See*—
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Nakayama, Akio, to Mitsubishi Denki Kabushiki Kaisha Semiconductor memory device comprising capacitor portions having stacked structures 5,012,309, Cl. 357-23.600
Nakayama, Hiroki, Kitagishi, Nozomu, Hattori, Jun, Suda, Shigeyuki, and Horiuchi, Akihisa, to Canon Kabushiki Kaisha Compact zoom lens 5,011,272, Cl. 350-427.000.
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Nakazato, Wataru, and Takase, Akira, to Fuji Jukogyo Kabushiki Kaisha Electrical connecting device for a steering wheel of a motor vehicle. 5,010,784, Cl 74-498.000
Nam, Tom L., Keddy, Rex J., and Sellschop, Jacques P Detection of nuclear radiation 5,012,108, Cl 250-484.100
Nambu, Masao; Onishi, Tadayuki, and Onohara, Masayuki, to Sumitomo Bakelite Company, Ltd., and Nippon Oil Company, Ltd Method for sterilization of polyvinyl alcohol gel by γ-ray 5,012,503, Cl 378-64.000
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Narby, Conway P *See*—
Giroux, D. William, Ferry, James N., Kelly, Kendall J., Bell, Thomas G., Narby, Conway P., and Patburg, Gary L., 5,011,338, Cl 405-268.000
Narcisi, Henry R., and Kettelson, Ernest S Machine to fast cook pasta and similar foods 5,010,806, Cl 99-357.000
Narita, Yasuhide *See*—
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Narog, Blair *See*—
Wang, Yu-chang J., Lee, William A., and Narog, Blair, 5,011,678, Cl 424-45.000
Nartron Corporation *See*—
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Narum, Jeffrey L *See*—
Schulte, Heinz-Guenther; Narum, Jeffrey L., and Johnson, Michael R., 5,011,934, Cl 548-335.000
Nash, J. Gregory, Ercegovac, Milos, and Lang, Thomas, to Hughes Aircraft Company Method and apparatus for performing division 5,012,439, Cl 364-766.000
Nass, Thomas O. Laboratory animal feeder cover 5,010,846, Cl. 119-18.000.
Nasu, Atsushi Fuel additives. 5,011,502, Cl 44-300.000
Nathanson, Alan G Domestic lead purging system for treating stagnated water 5,011,598, Cl. 210-136.000
National Research Development Corporation *See*—
Goodall, David M., and Lloyd, David K., 5,012,101, Cl 250-343.000.
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Nakatani, Isao, and Furubayashi, Takao, 5,012,158, Cl 315-111.210
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Barron, Milagros C.; Swope, Ronald L.; Wilkerson, John M., III, and Ruffner, Charles G., 5,011,978, Cl 560-221.000
Bilimers, Robert L., Del Giudice, David M.; and Tessler, Martin M., 5,011,918, Cl 536-18.700.
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Pangrazi, Ronald; and Walker, James L., 5,011,712, Cl 427-389.900
Naughton, Michael J *See*—
Drago, Russell S., Barnes, Mark J.; and Naughton, Michael J., 5,012,008, Cl. 568-454.000
NCR Corporation: *See*—
Fadem, Richard J., 5,012,232, Cl. 340-750.000
Gates, Dennis E., and Weber, Bret S., 5,012,127, Cl 307-269.000.
Hutchison, Brian G., and Gahan, Ian, 5,012,075, Cl 235-379.000
Neamtu, Nicolae, to Gillette Company, The Shaving system 5,010,646, Cl 30-50.000
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Dohya, Akihiro, 5,012,047, Cl 174-250.000.
Hidaka, Yasuharu; and Inoue, Takashi, 5,011,817, Cl 505-1.000
Hirai, Ichiro, and Amano, Toru, 5,012,493, Cl. 375-100.000.
Honjo, Kazuhiko, 5,012,318, Cl. 357-43.000.
Iwasaki, Motoya, 5,012,491, Cl 375-96.000
Ohfuji, Kazuyoshi, 5,012,185, Cl. 324-158.00R.
Yamazaki, Kouji, 5,012,320, Cl. 357-67.000.
Neefe, Charles W., to Sunsoft Lenses. Method of controlling the thickness of cast lenses 5,011,633, Cl. 264-1.100.
Negele, Andrew R., *See*—
Berube, Richard R., Babiec, John S., Jr., Jameson, M Phillip; Negele, Andrew R.; and Willis, Mitchell J., 5,011,534, Cl 106-416.000
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Nelson, Marvin I., and Reedy, John S. Damping control device. 5,011,111, Cl 251-54.000
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Nelson, Walter Polishing mitten 5,010,617, Cl 15-227.000.
Nemet-Mavrodin, Margaret *See*—
Avidan, Amos A., Nemet-Mavrodin, Margaret, and Soto, Jorge L., 5,012,026, Cl 585-417.000.
Nemoto, Akira, to Tachi-S Co Ltd Structure of a movable headrest 5,011,225, Cl 297-408.000
Nemoto, Akira *See*—
Ikeda, Tetsuo, and Nemoto, Akira, 5,011,226, Cl 297-403.000
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Karna, Toivo, and Lind, Kalevi, 5,012,175, Cl 320-2.000
Nestec S A *See*—
Anderson, Jim L., Beltz, Terry W., and Taylor, Raymond E., 5,010,807, Cl 99-450.600
Buhler, Marcel, and Martin, Jean-Michel, 5,011,641, Cl 264-109.000
Trattler, Helmut; and Winter, Heike, 5,011,855, Cl 514-558.000
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Mattausch, Hans-Juergen, Althoff, Klaus; and Neuendorf, Gerd, 5,012,450, Cl 365-208.000
Neugent, John J Bicycle pump bracket 5,011,055, Cl 224-39.000
Neuhaus, Max, and Reinagel, Frederick G, to Siren Sounds, Inc Emergency vehicle audible warning system and method 5,012,221, Cl 340-384.00E
Neundorfer, Inc *See*—
Lantz, Joel B., 5,012,429, Cl 364-509.000.
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Rayson, Gary D.; and Shen, Yang, 5,012,065, Cl 219-121.520
Neward, Theodore C Hand-held vacuum pump vacuum release. 5,011,381, Cl 417-440.000
Newman, Robert A *See*—
Khokhar, Abdul R., Newman, Robert A., and Krakoff, Irwin H., 5,011,959, Cl 556-137.000
Newman, Walter, and Wilson, Diane O., to Otsuka Pharmaceutical Co., Ltd Monoclonal antibodies directed to IL-1 activated endothelial cells and medicaments employing the monoclonal antibodies 5,011,778, Cl 435.240.270
Newton, Robert A *See*—
Carne, Tony R., and Newton, Robert A., 5,011,283, Cl. 356-246.000
Ng, Chai-Nam *See*—
Dhyanchand, P John; Patel, Sunil, Ng, Chai-Nam; and Nguyen, Vietson, 5,012,177, Cl 322-10.000.
NGK Insulators, Ltd *See*—
Fujiki, Toshisada, Kondo, Taikichi; Furukawa, Yoshinari; Kato, Kazuaki, Okimoto, Akimichi, and Tsuge, Kenji, 5,012,182, Cl 324-96.000
Moriya, Tsutomu; Matsuura, Yasunori; and Nakamura, Takao, 5,011,717, Cl 428-34.400.
Seike, Shoji; Mima, Toshiyuki; and Nozaki, Masayuki, 5,012,383, Cl 361-120.000
Takeuchi, Yukihisa; Ishikawa, Masayasu, and Kimura, Koji, 5,011,732, Cl. 428-209.000.
NGK Spark Plug Co. Ltd.. *See*—
Kondo, Kazuo; and Morikawa, Asao, 5,011,530, Cl 106-1.130.
Kondo, Kazuo; and Morikawa, Asao, 5,011,734, Cl. 428-336.000.
Nguyen, Kim Y.. *See*—
Chung, Paul W.; Hense, Karl R.; and Nguyen, Kim Y., 5,012,246, Cl. 341-160.000.

Nguyen, Richard, to United States of America, Navy. Insulator assisted self-aligned gate junction 5,011,785, Cl 437-41.000.
Nguyen, Vietson *See*—
Dhyanchand, P John, Patel, Sunil; Ng, Chai-Nam; and Nguyen, Vietson, 5,012,177, Cl. 322-10.000.
NHK Spring Co., Ltd *See*—
Kitamura, Yoshiharu, 5,010,983, Cl 188-67.000
NI Industries, Inc. *See*—
Hempelmann, Heinrich J., and Manier, Eugene P., 5,010,857, Cl. 123-90.390
Nichol, Kenneth J. *See*—
MacLean, Lachlan, Roberts, David L.; Barron, Kenneth; Nichol, Kenneth J., and Harrison, Albert E., 5,011,931, Cl. 546-155.000.
Nicholas, David M *See*—
Davis, Ruth A., Nicholas, David M.; Smith, Dale D.; Wang, Shoou-I; and Wright, Richard A., 5,011,670, Cl 423-450.000
Nicholson, J Dudley, and Secretan, Stanley. Wheelchair 5,011,175, Cl. 280-304.100
Nick, Bernhard; Bott, Kaspar; and Schulz, Guenther, to BASF Aktiengesellschaft. 2-((meth)acrylamidomethyl)-1,3-diketones. 5,011,991, Cl. 564-204.000
Niederberger, Hans-Ludwig *See*—
Schleppinghoff, Bernhard, Niederberger, Hans-Ludwig; Gabel, Christian, Lange, Peter M., and Mitschker, Alfred, 5,012,031, Cl. 585-639.000
Niedrich, Daniel S., to International Business Machines Corporation. Copper doped low melt solder for component assembly and rework. 5,011,658, Cl. 420-558.000
Nielsen, Paul L., and Wilson, John C., to Eastman Kodak Company Moisture stable biasable transfer members and method for making same 5,011,739, Cl 428-425.800
Nielsen, Steven F; and Kim, Dai W., to Hoechst Celanese Corp Water absorbent latex polymer foams containing chitosan (chitin) 5,011,864, Cl 521-70.000
Niemi, Antti J., to Niemi, Antti Johannes, and Niemi, Ulli Riitta Annelli Method and apparatus for control of dry-line on the wire of a fourdrinier paper machine 5,011,573, Cl 162-198.000
Niemi, Antti Johannes *See*—
Niemi, Antti J., 5,011,573, Cl 162-198.000
Niemi, Ulli Riitta Annelli *See*—
Niemi, Antti J., 5,011,573, Cl 162-198.000.
Nifco Inc *See*—
Kobayashi, Keiichi, Moriwaki, Masazumi; Kadomatsu, Sigenari, Fujie, Yuji, and Kawamoto, Masanobu, 5,010,601, Cl 4-236.000.
Nightingale, Douglas J., to Rolls-Royce Inc. Constant volume connector 5,011,195, Cl. 285-302.000
Nigrelli, Nicholas B., and Wasmer, David, to Nigrelli Systems, Inc Aeration apparatus for pond 5,011,372, Cl. 415-211.200
Nigrelli Systems, Inc *See*—
Nigrelli, Nicholas B., and Wasmer, David, 5,011,372, Cl 415-211.200
Nihon Shinku Gijutsu Kabushiki Kaisha *See*—
Obinata, Hisaharu, 5,011,793, Cl 437-203.000
Niida, Yoriaki *See*—
Kurabayashi, Ken, Tsuchiya, Yoshinobu, and Niida, Yoriaki, 5,012,385, Cl 361-328.000
Niino, Tsuyoshi *See*—
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Niiro, Yasunori *See*—
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Niiyama, Tsunefumi *See*—
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Nikaido, Mitsuhiro *See*—
Ono, Yutaka; Muramatsu, Yasuhiko; Banzai, Hideo, Kikukawa, Yoichi, Hashida, Shigeru, Shindo, Shotaro; Higuchi, Haruo, Shinomiya, Hiroyuki, Nikaido, Mitsuhiro; and Sato, Koichi, 5,012,169, Cl. 318-568.000
Niki, Akihiro *See*—
Uesaka, Toshio; Niki, Akihiro, Ohsuga, Makoto; Saito, Toranosuke; Tsunomachi, Hiroki; Yamaguchi, Makoto; Doyama, Kazuo, and Kishimoto, Daishiro, 5,011,879, Cl 524-290.000
Nikles, David E., to Hoechst Celanese Corp. Storage of optical information using photochiroptical effect. 5,011,756, Cl. 430-19.000.
Nikon Corporation *See*—
Oshikawa, Satoru, and Niwa, Tatsuo, 5,011,582, Cl. 204-140.000.
Nilsson, Karl E *See*—
Laucht, Horst, Baur, Richard, Werner, Bernd; Nilsson, Karl E., and Hora, Peter, 5,011,181, Cl 280-731.000.
Nilsson, Leif Portable unisex urinal. 5,010,599, Cl. 4-144.200.
Ninagawa, Yoichi *See*—
Tanaka, Yasuyuki, Ibata, Koichi, Mizuno, Masao; Ninagawa, Yoichi, and Nishida, Takashi, 5,012,018, Cl 568-909.500.
Nippon A B S, Ltd. *See*—
Arikawa, Tetsuro, 5,011,235, Cl 303-96.000.
Nippon Hoso Kyokai *See*—
Isono, Haruo, Yasuda, Minoru; Watanabe, Hiroshi; Toyama, Tateo; Hioki, Toshiaki; Morita, Yoshihiko; and Yamada, Makoto, 5,012,351, Cl. 358-342.000.
Takahashi, Shoichi; Ichiki, Sayohiko; Yorozu, Masatoshi; Kunishige, Seiji, Shibagaki, Taro; Shimizu, Fumihiko, Fujioka, Fumio; and Kondo, Toshinori, 5,012,240, Cl. 341-101.000.
Nippon Hypox Laboratories, Inc.. *See*—
Satoh, Toshio; Niiro, Yasunori; Kakegawa, Hisao; and Matsumoto, Hitoshi, 5,011,949, Cl 549-315.000.
Nippon Miktron Limited: *See*—
Hiramitsu, Tokiyuki; and Sakamoto, Ken-ichi, 5,011,975, Cl. 560-147.000.
Nippon Oil Company, Ltd.: *See*—
Nambu, Masao; Onishi, Tadayuki; and Onohara, Masayuki, 5,012,503, Cl 378-64.000.
Nippon Oil and Fats Company, Limited *See*—
Suyama, Shuji; and Nakamura, Tomoyuki, 5,012,010, Cl 568-561.000.
Nippon Paint Co., Ltd.: *See*—
Kuwajima, Teruaki; Nagahata, Satoshi, and Kanakura, Akihiro, 5,011,533, Cl. 106-404.000
Shingo, Naohito; and Kishida, Takahito, 5,011,882, Cl 524-504.000
Tsuboniwa, Noriyuki; Urano, Satoshi; and Mizuguchi, Ryuzo, 5,011,981, Cl. 560-302.000
Nippon Seiko Kabushiki Kaisha: *See*—
Ando, Masaaki; Matsuzaka, Masaaki, and Saita, Masahiro, 5,012,105, Cl. 250-398.000.
Murakami, Yasuo; Matsumoto, Yoichi; Ishii, Shinjiro; Kurahashi, Ryurou; and Nakamura, Mitsuru, 5,011,304, Cl. 384-492.000.
Nomura, Yasunori, and Mitsue, Naoki, 5,011,233, Cl 301-108.00R.
Ouchi, Hideo; and Sakai, Kouichi, 5,011,460, Cl. 474-133.000.
Nippon Shinyaku Co. Ltd.: *See*—
Kise, Masahiro; Kitano, Masahiko, Ozaki, Masakuni; Kazuno, Kenji; Matsuda, Masahito, Shirahase, Ichiro; and Tomii, Yoshifumi, 5,011,831, Cl. 514-210.000.
Nippon Stainless Steel Co., Ltd *See*—
Ikeda, Senri; Saito, Sakae; Hanada, Shuji; and Hoshi, Hironobu, 5,011,545, Cl. 148-11.50F.
Nippon Telegraph and Telephone: *See*—
Masuda, Kiyoshi; Kohda, Shigeto: Sakai, Shigenobu; Kimura, Kazuo; and Nomura, Tomoyoshi, 5,012,228, Cl 340-702.000.
Nippondenso Company, Ltd.. *See*—
Fujimoto, Hideo; Hirano, Masakazu; Hashiura, Mituo, and Murao, Toshiaki, 5,011,547, Cl 148-24.000
Watanabe, Takashi; Fujimoto, Shusaku; and Sakai, Kazunori, 5,012,417, Cl. 364-426.020
Nish, Terry E., and McCray, Cecil R., to Servi-Tech, Inc. Multi-use fill height test devices. 5,010,760, Cl 73-1.00H
Nishida, Sumio: *See*—
Takahashi, Junya; Nishida, Sumio; Fujimoto, Izumi; Shono, Yoshinori; and Fujimoto, Hiroaki, 5,012,004, Cl 568-53.000.
Nishida, Takashi *See*—
Tanaka, Yasuyuki; Ibata, Koichi; Mizuno, Masao; Ninagawa, Yoichi; and Nishida, Takashi, 5,012,018, Cl. 568-909.500
Nishide, Takuya *See*—
Kurata, Takatsugu; and Nishide, Takuya, 5,012,339, Cl. 358-148.000.
Nishigai, Masao; Otani, Tamio; Kanaya, Yasuhiko; and Murakami, Tetsuo, to Hitachi Seiko Co., Ltd. Contour machining method and apparatus for printed circuit board. 5,011,345, Cl 409-132.000.
Nishikado, Takashi; Kondo, Megumu; Fukuoka, Kazuhiko; and Murata, Fumiya, to Hitachi, Ltd File management system for permitting user access to files in a distributed file system based on linkage relation information. 5,012,405, Cl 364-200.000
Nishimura, Akimasa; Ogura, Shigeo; Miyamoto, Ryosuke; Tezuka, Nobuo; and Fukushima, Nobuo, to Canon Kabushiki Kaisha. Exposure control device 5,012,271, Cl. 354-456.000.
Nishimura, Masaru, to Mitsubishi Denki K K. Wide-write, narrow-read, single-gap magnetic head. 5,012,375, Cl. 360-119.000.
Nishimura, Takao *See*—
Kanda, Katsumi; Fujimoto, Junichi, Ichishima, Masashi, Nishimura, Takao; and Kondo, Yoshikazu, 5,011,711, Cl 427-334.000.
Nishio, Etsuro. *See*—
Nakamura, Susao; Nishio, Etsuro, and Ishii, Haruo, 5,012,273, Cl 354-485.000.
Nishiumi, Kenji: *See*—
Kobayashi, Osamu; Mikami, Mitsugu; Nishiumi, Kenji, and Nakajima, Kenji, 5,011,456, Cl 453-32.000
Nishiya, Tsuguaki *See*—
Tamaki, Kimie; Nishiya, Tsuguaki, and Tatsumi, Kiyoshi, 5,011,702, Cl. 426-583.000.
Nishiyama, Ryuji *See*—
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Nissan Chemical Industries Ltd *See*—
Fujikawa, Yoshihiro; Suzuki, Mikio; Iwasaki, Hiroshi; Sakashita, Mitsuaki; and Kitahara, Masaki, 5,011,930, Cl 546-101.000
Tanikawa, Keizo; Saloda, Ryozo, Tanaka, Sakuya; and Shikada, Kenichi, 5,011,839, Cl. 514-247.000.
Nissan Motor Co., Ltd.: *See*—
Matsuda, Toshiro, 5,010,974, Cl. 180-233.000
Suehiro, Urabe; Masayuki, Honma, and Tohru, Kamibeppu, 5,010,854, Cl. 123-52.0MV.
Sugano, Kazuhiko; and Ueki, Akihiro, 5,010,788, Cl. 74-868.000.
Uemura, Satoshi; Kawada, Susumu, Sekine, Yoshitada; and Miyauchi, Tatsuo, 5,010,634, Cl 29-407.000
Yamamoto, Isao, 5,012,419, Cl 364-426.040.

Nissan Motor Company, Ltd. of No. 2: *See—*
Ogami, Etsuo, and Iwasa, Yoshio, 5,010,855, Cl. 123-90.310
Ogami, Etsuo; and Iwasa, Yoshio, 5,010,859, Cl. 123-195.00C.

Nisshinbo Industries, Inc.: *See—*
Kawasaki, Yoshio; Horibe, Tatsutake, Morita, Takayuki, Nakamura, Haruyoshi; Ohashi, Kengo, and Miyazaki, Tsutomu, 5,011,000, Cl. 198-465.100.
Yasui, Yoshiharu, Nakane, Katsumi; Suzuki, Osamu, and Kimbara, Masahiko, 5,010,725, Cl. 57-281.000

Nitta, Shigemitsu, to Kawasaki Jukogyo Kabushiki Kaisha Flexible pipe connecting device for high temperature fluid 5,011,194, Cl. 285-41.000.

Nitto Kohki Co., Ltd.: *See—*
Hashimoto, Atsuki, 5,011,379, Cl. 417-360.000

Niwa, Tatsuo: *See—*
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Nixon, Toby L.: *See—*
Burton, Richard J.; Copeland, John A., III, Jerrim, John W., Nixon, Toby L., Sauser, Martin H., Jr.; Weatherford, Robert E., Jr., Becker, Larry D.; and Strawn, David F., 5,012,489, Cl. 375-8.000

Noake, Kaneo: *See—*
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Nogami, Shingo; Yashiro, Toshinori, Okitsu, Toshio, Furushima, Kiyoshi, and Korenaga, Itsuo, to Hitachi Metals, Ltd. Die casting cylinder 5,010,946, Cl. 164-312.000.

Noguchi, Yasuo: *See—*
Miyazaki, Kazuoki; Noguchi, Yasuo; Inoue, Naohiko, and Idemoto, Morito, 5,011,471, Cl. 604-22.000

Nohl, Andre, to Spectra-Physics, Inc. Nonsymmetrical valve 5,010,921, Cl. 137-625.460

Nohta, Masahide: *See—*
Suzuki, Toshiyuki; Nohta, Masahide, Shigeta, Akira, Ina, Yoshimitsu, and Nozawa, Manami, 5,011,680, Cl. 424-64.000

Noiles, Douglas G.: *See—*
Forte, Mark R., and Noiles, Douglas G., 5,011,496, Cl. 623-20.000

Noji, Akio, Kamimura, Kenji, and Tsuzuki, Sadachika, to Honda Giken Kogyo Kabushiki Kaisha Position control system for unmanned automated vehicle 5,011,288, Cl. 356-375.000

Nojima, Hideo: *See—*
Katoka, Shoei, Tsuchimoto, Shuhei, Nojima, Hideo, Kita, Ryusuke, and Nagata, Masaya, 5,011,818, Cl. 324-248.000

Noke, Adrian C.: *See—*
Bunce, Martin C., Helps, David W., Jenkins, Leonard A., and Noke, Adrian C., 5,011,042, Cl. 221-150.00A

Nomura, Isao, and Yamamiya, Kazuo, to Mitsubishi Gas Chemical Company, Inc. Molding polyamide resin composition 5,011,873, Cl. 523-466.000

Nomura, Setsuo: *See—*
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Nomura, Susumu: *See—*
Shimono, Mamoru, Asada, Tomoyuki, Kawaguchi, Taiichi, Taya, Yoichi, Yukinaga, Kouji, Nomura, Susumu, and Tagawa, Hajime, 5,012,283, Cl. 355-229.000

Nomura, Tomoyoshi: *See—*
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Nomura, Yasunori, and Mitsue, Naoki, to Nippon Seiko Kabushiki Kaisha Cap for hub unit and hub unit for axle of automobile 5,011,233, Cl. 301-108.00R

Noone, Robert E.: *See—*
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Sartori, Guido; Ho, W. S. Winston, and Noone, Robert E., 5,012,036, Cl. 585-819.000

Noormohammadi, Akbar; Dodd, Robert E., Beckett, Arnold H., and Geeves, Grahame K. J. Dissolution testing machine 5,011,662, Cl. 422-68.100

Norand Corporation: *See—*
Conway, David W., 5,012,125, Cl. 307-149.000

Nord Techniques Etiquetage - SARL: *See—*
Carolus, Jean-Claude, and Delvinquiere, Francois, 5,011,561, Cl. 156-495.000.

Norden, H. Peter, Jr. Secur a door police lock 5,010,747, Cl. 70-94.000

Noritsu Kenkyu Center Co., Ltd.: *See—*
Azuma, Yoshifumi, 5,011,094, Cl. 242-72.100

Norsk Hydro A.S.: *See—*
Guyard, Jean-Claude, 5,012,044, Cl. 174-98.000
Jorgensen, Terje, Strand, Oddbjorn E., and Asbjornsen, Odd A., 5,011,285, Cl. 356-335.000.

North American Philips Corporation: *See—*
Bugni, Anthony R., 5,012,330, Cl. 358-34.000

North Carolina State University: *See—*
Kong, Hua-Shuang, Glass, Jeffrey T., and Davis, Robert F., 5,011,549, Cl. 148-33.100
Parthasarathy, V. R.; Sundaram, Meenaksi, Jameel, Hasan, Gratzl, Josef S., and Klein, Ronald J., 5,011,572, Cl. 162-56.000

Northern Telecom Limited: *See—*
Cornibert, Jacques; and Walling, Jorg-Hein, 5,011,880, Cl. 524-371.000
Summach, Harley R. W., 5,012,042, Cl. 174-35.00C
Xu, Jingming; Sweeney, Mark A., and Day, Derek J., 5,012,301, Cl. 357-4.000.

Northrop Corporation: *See—*
Jungwirth, Douglas R.; Simpson, A. Phillip, Kawahara, Mitsuo; Levine, Seymour; and Kennel, John M., 5,012,081, Cl. 250-203.600.

Northup, Robert L.: *See—*
Hammond, Russell E.; Northup, Robert L.; Shimp, Alan G.; and Fassnacht, Francis B., 5,012,121, Cl. 307-64.000.

Norton Company: *See—*
Cho, Hyun S., Sung, Chien-Min; Merrill, Leo; Chen, Sy-Hwa, and Csillag, Frank, 5,011,514, Cl. 51-295.000.
Zador, Eugene, Hsu, Shyiguei; Kaczmarek, Wesley R.; Ravipati, Sitaramaiah, Supkis, Stanley, and Vogel, Richard H., 5,011,513, Cl. 51-295.000.

Norwegian Contractos A/S: *See—*
Fjeld, Svein, 5,011,335, Cl. 405-204.000.

Nose, Kazuo, Yamamoto, Hiroyuki, Koike, Shiro; Shimomura, Masakazu; Tsubono, Hajime, Kitagawa, Seiichi; Fujisaki, Yasumasa, Maeda, Yasushi; Wakebe, Tetsuya, and Katayama, Yasuyuki, to Kabushiki Kaisha Kobe Seiko Sho. Method of and apparatus for controlling shape of rolled material on multi-high rolling mill 5,010,756, Cl. 72-9.000

Nottingham, William D.: *See—*
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Novak, Ernest R., to Du Pont de Nemours, E. I., and Company Polyacetal resins containing non-meltable polymer stabilizers 5,011,890, Cl. 525-154.000

Nowak, Manfred: *See—*
Zweigart, Gerhard, Greiner, Ferdinand, Baumert, Heinz, Scheiffele, Peter, and Nowak, Manfred, 5,011,213, Cl. 296-97.130

Nozaki, Masayuki: *See—*
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Nozawa, Manami: *See—*
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Nudelman, Edward D.: *See—*
Hakomori, Sen-itiroh, Fukushi, Yasuo, Nudelman, Edward D., and Levery, Steven B., 5,011,920, Cl. 536-53.000

Nuernberg, Eberhard, and Pfeuffer, Josef, to Rohm GmbH Pharmaceutical dosage unit forms with delayed release 5,011,694, Cl. 424-464.000

Nukada, Katsumi: *See—*
Akasaki, Yutaka; Nukada, Katsumi, and Sato, Katsuhiro, 5,011,757, Cl. 430-58.000
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Numako, Norio: *See—*
Tabata, Yasushi; Kobayashi, Takeo; Numako, Norio, and Nagai, Katsutoshi, 5,012,272, Cl. 354-465.000

Numata, Kazuki, and Ochiai, Kiyoshi, to Sumitomo Rubber Industries, Ltd. Radial tire including a narrow groove in the tread shoulder 5,010,936, Cl. 152-209.00R

Nykerk, Todd M.: *See—*
Ingraham, Ronald D., Nykerk, Todd M., and Strom, Peter H., 5,010,972, Cl. 180-178.000

OBE-Werk Ohnmacht & Baumgartner GmbH & Co. KG: *See—*
Wagner, Reiner 5,011,274, Cl. 351-121.000

Obinata, Hisaharu, to Nihon Shinku Gijutsu Kabushiki Kaisha Vacuum deposition using pressurized reflow process 5,011,793, Cl. 437-203.000

Oblad, Hayward: *See—*
Meenan, Gary F., and Oblad, Hayward, 5,011,595, Cl. 209-166.000

Obuchi, Shouzi: *See—*
Kobayashi, Tadashi, Wada, Mitsuo, Obuchi, Shouzi, and Takayanagi, Hiroshi, 5,011,936, Cl. 548-343.000

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Dinnissen, Johannes H. T., and Lambregts, Augustinus W. M., 5,012,296, Cl. 355-320.000

Ochi, Hiromu: *See—*
Matsuda, Teruo, Miki, Masayoshi, and Ochi, Hiromu, 5,011,539, Cl. 134-22.140

Ochiai, Kanehiro: *See—*
Tominaga, Kenji, Miki, Minoru, Takahashi, Tooru, Horiuchi, Tetsuo, Morishima, Hideo, Nakayama, Takashi; Moriya, Kumiaki, Matsumoto, Masaki, Akita, Minoru, Nino, Tsuyoshi, Ochiai, Kanehiro, Shiozawa, Akihiko, Uchiyama, Yuichi, Yasuno, Toyoharu, Moriya, Kenji, Kinoshita, Shouichirou, Kage, Kazuo, and Kubota, Ryuji, 5,011,652, Cl. 376-283.000

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Numata, Kazuki, and Ochiai, Kiyoshi, 5,010,936, Cl. 152-209.00R

Ochiai, Kuniaki: *See—*
Shimosato, Masashi, and Ochiai, Kuniaki, 5,011,308, Cl. 400-124.000

Oda, Masao, Kinoshita, Yoshimi, and Hayama, Masahiro, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for forming thin film 5,010,842, Cl. 118-723.000

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Hiratsuka, Katsuo; Odaka, Yoshiyuki, and Yoshida, Takeshi, 5,010,832, Cl. 112-68.000.

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Hamilton, Daniel; Hoyt, Robert M.; Halferty, Patricia J.; and Odom, J. Thomas, 5,011,336, Cl. 405-230.000.

Offill, Thomas W.: *See—*
Mason, Robert W.; Imm, Peter C.; Craney, Paul J.; Offill, Thomas W.; and Brooker, Robert T., 5,012,019, Cl. 568-934.000.

Offutt, Elmer B.: *See—*
Hambleton, Larry G.; Sears, Claude L.; and Offutt, Elmer B., 5,010,660, Cl. 34-92.000

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Bell, Anthony J.; and Ofstead, Eilert A., 5,011,896, Cl. 526-92.000.

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Ogami, Etsuo; and Iwasa, Yoshio, to Nissan Motor Company, Ltd. of No. 2. Chain cover for V-type engine 5,010,859, Cl. 123-195.00C.

Ogasawara, Fumihiro: *See—*
Shobu, Toshifumi; Shibata, Hiroshi; and Ogasawara, Fumihiro, 5,012,470, Cl. 370-110.100

Ogasawara, Junichi: *See—*
Hikichi, Tooru; and Ogasawara, Junichi, 5,012,370, Cl. 360-105.000.

Ogawa, Kazufumi, to Matsushita Electric Industrial Co., Ltd. Permselective membrane and process for producing the same. 5,011,518, Cl. 55-158.000.

Ogawa, Kazufumi; Tamura, Hideharu; Ishihara, Toshinobu; Tanaka, Yasuhisa, and Endou, Mikio, to Matsushita Electric Ind., Co., Ltd.; and Shin-Etsu Chemical Co., Ltd. Terminal perfluoroalkylsilane compounds 5,011,963, Cl. 556-485.000.

Ogawa, Tadashi, to Fuji Photo Film Co., Ltd. Silver halide photographic material 5,011,768, Cl. 430-569.000

Ogawa, Takashi: *See—*
Katoh, Yoshihisa, Ogawa, Takashi; and Hasegawa, Mitsumasa, 5,011,603, Cl. 210-490.000

Ogawa, Tsutomu; Kamioka, Hajime; Kawamura, Seiichiro; and Sakurai, Junji, to Fujitsu Limited Forming selective single crystal regions in insulated pockets formed on silicon by energy beams and devices formed in the pockets 5,011,783, Cl. 437-19.000

Ogino, Masanori, Iwahara, Yoshiaki, Tamura, Yuzo, and Kuroda, Shoji, to Hitachi, Ltd. Multi-screen projector. 5,011,277, Cl. 353-94.000.

Ogishima, Hiroaki: *See—*
Sakamoto, Yuji, Umeda, Seiichi; and Ogishima, Hiroaki, 5,010,685, Cl. 47-57.600

Ogura, Shigeo: *See—*
Nishimura, Akimasa, Ogura, Shigeo, Miyamoto, Ryosuke; Tezuka, Nobuo, and Fukushima, Nobuo, 5,012,271, Cl. 354-456.000.

Ogura, Shigetaro: *See—*
Watanabe, Yutaka, Fukuda, Yasuaki, and Ogura, Shigetaro, 5,012,500, Cl. 378-35.000

Ohashi, Kengo: *See—*
Kawasaki, Yoshio; Horibe, Tatsutake; Morita, Takayuki, Nakamura, Haruyoshi, Ohashi, Kengo, and Miyazaki, Tsutomu, 5,011,000, Cl. 198-465.100.

Ohashi, Masayuki: *See—*
Tsutsumi, Fumio, Morikawa, Akihiko; Sakakibara, Mitsuhiko; Oshima, Noboru; Hamada, Tatsuro, Fujimaki, Tatsuo; and Ohashi, Masayuki, 5,011,888, Cl. 525-98.000

Ohata, Akira, to Toyota Jidosha Kabushiki Kaisha Nonlinear feedback control method and apparatus for an internal combustion engine. 5,010,866, Cl. 123-436.000.

Ohba, Noriko: *See—*
Wakita, Naohide, Uemura, Tsuyoshi; Ohnishi, Hiroyuki; Ohba, Noriko, and Ota, Isao, 5,011,269, Cl. 350-350.00S.

Ohbayashi, Keiji, to Konica Corporation. ID card, ID booklet, and manufacturing method thereof. 5,011,570, Cl. 156-310.000.

Ohfuji, Kazuyoshi, to NEC Corporation Semiconductor integrated circuit having I/O terminals allowing independent connection test. 5,012,185, Cl. 324-158.00R.

Ohi Seisakusho Co., Ltd.: *See—*
Kato, Yuichi; and Miyagawa, Masazumi, 5,011,202, Cl. 292-336.300.
Takarabe, Isamu; Honma, Mikio; and Hayakawa, Hatsuo, 5,011,209, Cl. 296-65.100.

Ohkita, Masao; Akiyama, Yasuhiro; Takikawa, Makito; and Arayama, Yoshihiko, to Alps Electric Co., Ltd. Magnetic head supporting device. 5,012,366, Cl. 360-102.000

Ohlenburger, Hans, to Bodenseewerk Geratetechnik GmbH. Printed circuit board with heat dissipating device. 5,012,387, Cl. 361-388.000.

Ohminami, Hiroshi: *See—*
Mitsuda, Hisateru; Ohminami, Hiroshi, and Nagasawa, Haruko, 5,011,699, Cl. 426-320.000.

Ohmiya, Shigeru: *See—*
Takahashi, Kiyoshi; Takashiba, Nobuyoshi; Kojima, Shinji; Okuda, Haruji; Ohmiya, Shigeru; and Ikeda, Ryuichi, 5,011,531, Cl. 75-511.000.

Ohmori, Naoto, to Minolta Camera Kabushiki Kaisha. Laser beam scanning apparatus. 5,012,485, Cl. 372-108.000.

Ohnishi, Hiroyuki: *See—*
Wakita, Naohide; Uemura, Tsuyoshi; Ohnishi, Hiroyuki; Ohba, Noriko; and Ota, Isao, 5,011,269, Cl. 350-350.00S.

Ohnishi, Yasuhiro: *See—*
Shinno, Nobuo; and Ohnishi, Yasuhiro, 5,011,563, Cl. 156-574.000.

Ohori, Manabu; Koshizuka, Noriaki; Kataoka, Yoshihiro; and Ueda, Shuzo, to Kawasaki Steel Corporation. Steels for hot working press tools. 5,011,656, Cl. 420-109.000.

Ohsaki, Hiromi: *See—*
Urasato, Nobuaki; Takamizawa, Minoru; Hayashida, Akira; Ohsaki, Hiromi; and Maruta, Jiyunitirow, 5,011,639, Cl. 264-65.000.

Ohsawa, Michitaka: *See—*
Shiomi, Makoto; Ozeki, Kosuke; Ohsawa, Michitaka; Matsumi, Kuninori; and Kawagishi, Tadahiro, 5,012,332, Cl. 358-64.000

Ohsawa, Toshiyuki: *See—*
Yoneyama, Sachiko; Ohsawa, Toshiyuki; Kimura, Okitoshi; and Kabata, Toshiyuki, 5,011,751, Cl. 429-192.000.

Ohshima, Kazuyoshi: *See—*
Sugasawara, Seiji; Tsuneki, Ken; Ohshima, Kazuyoshi; Nakayama, Yojiro; Hayakawa, Tatsuya; and Tamura, Seiichiro, 5,011,029, Cl. 211-104.000.

Ohsuga, Makoto: *See—*
Uesaka, Toshio; Niki, Akihiro; Ohsuga, Makoto; Saito, Toranosuke; Tsunomachi, Hiroki; Yamaguchi, Makoto; Doyama, Kazuo; and Kishimoto, Daishiro, 5,011,879, Cl. 524-290.000.

Ohtani, Shinichi: *See—*
Sato, Kiyoshi; Ohtani, Shinichi; and Kawasaki, Mikio, 5,012,266, Cl. 354-319.000.

Ohwada, Isao, to Alps Electric Co., Ltd. Wire dot printer head with armature guides. 5,011,307, Cl. 400-124.000.

Oishi, Kengo: *See—*
Onmori, Shozo; Takahashi, Daisuke; and Oishi, Kengo, 5,012,378, Cl. 360-132.000.
Onmori, Shozo; Takahashi, Daisuke; and Oishi, Kengo, 5,012,379, Cl. 360-132.000.

Ojala, William K., to Ford Motor Company. Engine finger follower type rocker arm assembly. 5,010,856, Cl. 123-90.360.

Oka, Hiroshi: *See—*
Ando, Moritoshi; Oka, Hiroshi; and Iwata, Satoshi, 5,011,960, Cl. 356-376.000.

Oka, Tateki; Toyoshi, Naoki; Yokoyama, Tomoaki; Mizuno, Hiroshi; Murasaki, Hiroshi; Ikegawa, Akihito, Etou, Kouichi, and Nakagawa, Shuichi, to Minolta Camera Kabushiki Kaisha. Developing apparatus including a partitioning arrangement for partitioning the toner accommodating tank. 5,012,285, Cl. 355-245.000.

Okada, Hiroshi; Saitoh, Noritaka; Akabane, Hidetomo; and Tashiro, Shintaro, to Mitsubishi Rayon Company, Ltd. Digital PLL circuit having reduced lead-in time 5,012,198, Cl. 328-155.000.

Okada, Kazuo, to Kabushiki Kaisha Universal. Slot machine. 5,010,995, Cl. 194-219.000.

Okada, Yoshio, and Takano, Toshihiko, to Sharp Kabushiki Kaisha. Optical harmonic generator. 5,011,250, Cl. 350-96.120.

Okamoto, Shoji: *See—*
Katayama, Hideaki, Murakami, Toshifumi; Soeda, Koji; Kubota, Yoshiya; Okamoto, Shoji, Kubota, Akinori, Kobayashi, Michihito; and Ijiri, Masaaki, 5,011,392, Cl. 425-35.000.

Okamoto, Yasuji: *See—*
Takemura, Hiroshi; and Okamoto, Yasuji, 5,012,399, Cl. 363-18.000.

Okamura, Tetsuya: *See—*
Kouda, Masanori; Suzuki, Minoru; Okamura, Tetsuya; and Tobisawa, Toshihisa, 5,010,923, Cl. 137-625.340.

Okazaki, Masaki: *See—*
Yamaguchi, Jun; Okazaki, Masaki; and Inagaki, Yoshio, 5,011,760, Cl. 430-281.000.

Okazaki, Tadao, to Fujie Bussan Kabushiki Kaisha Ultrasonic low range speed meter. 5,012,454, Cl. 367-89.000.

Okimoto, Akimichi: *See—*
Fujiki, Toshisada; Kondo, Taikichi, Furukawa, Yoshinari; Kato, Kazuaki; Okimoto, Akimichi; and Tsuge, Kenji, 5,012,182, Cl. 324-96.000.

Okitsu, Toshio: *See—*
Nogami, Shingo; Yashiro, Toshinori; Okitsu, Toshio; Furushima, Kiyoshi, and Korenaga, Itsuo, 5,010,946, Cl. 164-312.000.

Okubo, Hiizu: *See—*
Matsuoka, Shigeki; Okubo, Hiizu; and Kosaka, Daisuke, 5,012,448, Cl. 365-208.000.

Okuda, Haruji: *See—*
Takahashi, Kiyoshi; Takashiba, Nobuyoshi; Kojima, Shinji, Okuda, Haruji; Ohmiya, Shigeru; and Ikeda, Ryuichi, 5,011,531, Cl. 75-511.000.

Okumura, Mitunao, to Murata Manufacturing Co., Ltd. Flyback transformer with integrally formed resonance capacitor. 5,012,179, Cl. 323-355.000.

Okumura, Nobuo; and Miura, Atsuyuki, to Aisin Seiki Kabushiki Kaisha. Multi-headed cryopump apparatus 5,010,737, Cl. 62-6.000.

Olanders, Par, to Roby Teknik AB. Arrangement for the sterilization of a travelling material web. 5,011,664, Cl. 422-292.000.

Olin Corporation: *See—*
Mason, Robert W.; Imm, Peter C.; Craney, Paul J.; Offill, Thomas W.; and Brooker, Robert T., 5,012,019, Cl. 568-934.000.

Olin Hunt Specialty Products Inc.: *See—*
Dettig, Robert H.; and Bujese, David P., 5,011,758, Cl. 430-100.000.

Olney, John W., to Washington University. Compounds for treatment of cholinergic neurotoxins. 5,011,853, Cl. 514-454.000.

Olsen, Alf J.: *See—*
Babler, Egon S.; and Olsen, Alf J., 5,011,309, Cl. 400-184.000.

Olsen, Flemming. Optical system for laser marking. 5,011,253, Cl. 350-96.180.

Olsen, Richard; and Gross, William, to Prime Computer, Inc. Video prioritizer and mixer. 5,012,342, Cl. 358-181.000.

Olson, Craig W. Publication reference-aid system apparatus therefor 5,011,189, Cl. 283-81.000

Olson, Richard A. Protector for intravenous and syringe needles. 5,011,475, Cl. 604-192.000

Ol'Sonora Trading Company Inc.: *See*—
Skiles, John R., Jr., 5,010,592, Cl. 2-93.000.

Olympus Optical Co., Ltd.: *See*—
Ida, Masatoshi, 5,012,362, Cl. 360-77.040.
Kato, Shinichi, 5,010,875, Cl. 128-6.000

Omata, Yuuji, to Matsushita Electric Industrial Co., Ltd. Process for producing a thin alloy film having high saturation magnetic flux density. 5,011,581, Cl. 204-38.400.

Omen Metal Products: *See*—
Schwartz, Moshe; and Avni, Noam, 5,010,751, Cl. 70-276.000

Omnes, Franck: *See*—
Razeghi, Manijeh; Defour, Martin; Omnes, Franck, Maurel, Philippe; Blondeau, Robert; and Krakowski, Michel, 5,012,476, Cl. 372-45.000

Omnimart Distributions Inc.: *See*—
Despins, Maurice; and Carveth, William, 5,010,650, Cl. 30-304.000

Omron Tateisi Electronics Co.: *See*—
Inuyama, Tsutomu, 5,012,057, Cl. 200-522.000.
Takano, Kimio, 5,012,077, Cl. 235-380.000.

Omura, Takashi: *See*—
Terao, Masanobu; Maegawa, Yuzo, Ueda, Yasuyoshi, Hashimoto, Kiyoyasu, and Omura, Takashi, 5,012,015, Cl. 568-709.000

Oncogen: *See*—
Shoyab, Mohammed, Marquardt, Hans; and Todaro, George J., 5,011,777, Cl. 435-172.300

O'Neill, Michael L.; Moore, Stephen P., and Pendolino, Eugene F., to Joy Technologies Inc. Miner cutting bit holding apparatus. 5,011,229, Cl. 299-91.000

Ong, Beng S., Keoshkerian, Barkev, and Baranyi, Giuseppa, to Xerox Corporation. Photoconductive imaging members with N,N-bis(biarylyl)aniline charge transport polymers. 5,011,906, Cl. 528-176.000.

Ong, Beng S.: *See*—
Limburg, William W.; Yanus, John F., Renfer, Dale S., Schank, Richard L., and Ong, Beng S., 5,011,939, Cl. 548-440.000

Onishi, Kazuhiko, to Suzuki Jidosha Kogyo Kabushiki Kaisha. Exhausting apparatus of four-cycle four-cylinder engine. 5,010,731, Cl. 60-313.000.

Onishi, Tadayuki: *See*—
Nambu, Masao; Onishi, Tadayuki; and Onohara, Masayuki, 5,012,503, Cl. 378-64.000.

Onmori, Shozo; Takahashi, Daisuke, and Oishi, Kengo, to Fuji Photo Film Co., Ltd. Magnetic tape cassette having reel brake structure providing improved dust proofing. 5,012,378, Cl. 360-132.000

Onmori, Shozo; Takahashi, Daisuke, and Oishi, Kengo, to Fuji Photo Film Co., Ltd. Magnetic tape cassette having dust blocking member for preventing entry or dust through brake release lever hole. 5,012,379, Cl. 360-132.000.

Ono, Hiroyuki: *See*—
Mine, Shingi; Miwa, Yoichi; and Ono, Hiroyuki, 5,012,363, Cl. 360-77.050

Ono, Masayuki, to INAX Corporation. Pigment-transfer sheets and method for decorating heat-resistant articles. 5,011,754, Cl. 430-15.000.

Ono, Mitsunori; and Suzuki, Nobuo, to Fuji Photo Film Co., Ltd. Polyacetyl oligosaccharide derivatives. 5,011,923, Cl. 536-17.900.

Ono, Yutaka; Muramatsu, Yasuhiko, Banzai, Hideo; Kikukawa, Yoichi; Hashida, Shigeru, Shindo, Shotaro, Higuchi, Haruo; Shinomiya, Hiroyuki; Nikaido, Mitsuhiro; and Sato, Koichi, to Yokogawa Electric Corporation. Motor drive system. 5,012,169, Cl. 318-568.000

Onohara, Masayuki: *See*—
Nambu, Masao; Onishi, Tadayuki, and Onohara, Masayuki, 5,012,503, Cl. 378-64.000.

Ooms, Adrianus J.: *See*—
Stil, Jacob H., Ooms, Adrianus J., and Mink, Bernardus H., 5,011,507, Cl. 48-62.00R

Oosumimoto, Hiroshi: *See*—
Hiraki, Tadayoshi; Iwase, Osamu; Oosumimoto, Hiroshi, Sugiura, Shinji, Tabushi, Ichiro; Kume, Masafumi; Udagawa, Takashi, Matsui, Komaharu, and Fuji, Yasuhiro, 5,011,733, Cl. 428-336.000.

Opitz, Konrad, and Segal, Marcos, to Hoechst Aktiengesellschaft. Process for preparing a stabilized composition of a lithium azo compound. 5,011,917, Cl. 534-583.000

Oppermann, Hermann; Kuberasampath, Thangavel; Rueger, David C., and Ozkaynak, Engin, to Stryker Corporation. Osteogenic devices. 5,011,691, Cl. 424-423.000.

Oretti, John E.: *See*—
Flynn, David P., and Oretti, John E., 5,010,598, Cl. 2-410.000

Oriola, Ralph; Romine, Charles F.; and Meisner, Edward O., to Eagle-Picher Industries, Inc. Seal for gas spring. 5,011,121, Cl. 267-64.110

Orion Machinery Co., Ltd.: *See*—
Takeuchi, Toru; and Matsugawa, Minoru, 5,010,844, Cl. 119-14.250.

Oris: *See*—
Arbogast, Romain; and Gervie, Albert, 5,011,709, Cl. 427-56.100

Orlosky, Mark E.: *See*—
Colvin, David P., Whitney, Raymond A.; Marsh, Bernard R.; Kline, William M., Rizzo, Ronald R.; and Orlosky, Mark E., 5,010,892, Cl. 128-774.000.

Orr, William W.: *See*—
McLaren, Douglas, and Orr, William W., 5,011,098, Cl. 244-134.00B

Orsborn, Jesse H.: *See*—
Covington, Michael J., and Orsborn, Jesse H., 5,010,718, Cl. 56-40.000

Ort, Gene P.: *See*—
Kychakoff, George; and Ort, Gene P., 5,010,827, Cl. 110-185.000.

Orvik, Jon A., Pearson, Norman R., Haag, Anthony P.; Adaway, Timothy J., Kershner, Larry D., and Kende, Andrew S., to DowElanco. Phenoxyphenoxypropionates, intermediates thereof and methods of preparation. 5,012,017, Cl. 568-803.000

OS Plastic A/S: *See*—
Hougard, Erling, 5,010,687, Cl. 47-79.000.

Osaka Kongo Seito Co., Ltd.: *See*—
Sato, Junichi; and Shimizu, Minoru, 5,012,067, Cl. 219-121.720

Osborne, John C.: *See*—
Auchinleck, Geoffrey F.; McEwen, James A.; Osborne, John C.; and Bussani, Carlo R., 5,010,900, Cl. 128-855.000

Osder, Stephen S., to McDonnell Douglas Corporation. Back-up fly by wire control system. 5,012,423, Cl. 364-432.000

Oshikawa, Satoru, and Niwa, Tatsuo, to Nikon Corporation. Method for producing electrochromic device with application of AC voltage between the electrode layers. 5,011,582, Cl. 204-140.000

Oshima, Noboru: *See*—
Tsutsumi, Fumio, Morikawa, Akihiko; Sakakibara, Mitsuhiko, Oshima, Noboru, Hamada, Tatsuro, Fujimaki, Tatsuo, and Ohashi, Masayuki, 5,011,888, Cl. 525-98.000.

Ostma Maschinenbau GmbH: *See*—
Odenthal, Heinz F., 5,010,712, Cl. 53-55.000.

Ota, Hiroyuki: *See*—
Terada, Takao; Ota, Hiroyuki; Makita, Shigeru; Herpichboehm, Bernd G., Sierra, George H., Summers, Robert B., and Wathington, Thomas M., 5,011,290, Cl. 356-423.000.

Ota, Isao: *See*—
Wakita, Naohide, Uemura, Tsuyoshi, Ohnishi, Hiroyuki; Ohba, Noriko, and Ota, Isao, 5,011,269, Cl. 350-350.00S

Otani, Tamio: *See*—
Nishigai, Masao, Otani, Tamio, Kanaya, Yasuhiko, and Murakami, Tetsuo, 5,011,345, Cl. 409-132.000

Otsuka Pharmaceutical Co., Ltd.: *See*—
Newman, Walter, and Wilson, Diane O., 5,011,778, Cl. 435-240.270.

Otsuka, Tadashi: *See*—
Matsutani, Kanji, and Otsuka, Tadashi, 5,012,066, Cl. 219-121.680.

Otsuka, Tsutomu, and Otsuki, Etsuo, to Tokin Corporation. Method for producing a rare earth metal-iron-boron permanent magnet by use of a rapidly-quenched alloy powder. 5,011,552, Cl. 148-302.000.

Otsuki, Etsuo: *See*—
Otsuka, Tsutomu, and Otsuki, Etsuo, 5,011,552, Cl. 148-302.000.

Otto, Manfred R.: *See*—
Hug, William F., and Otto, Manfred R., 5,012,479, Cl. 372-56.000

Ouchi, Hideo, and Sakai, Kouichi, to Nippon Seiko Kabushiki Kaisha. Belt tensioner with elastic damping feature. 5,011,460, Cl. 474-133.000

Outboard Marine Corporation: *See*—
VanRens, Russell J., 5,011,398, Cl. 425-444.000.

Overman, Dana C., III; Kau, Jee I.; and Mahoney, Robert D., to Dow Chemical Company, The. Preparing cellulose ester membranes for gas separation. 5,011,637, Cl. 264-41.000

Owe, Takeshi, and Mizoshita, Yoshifumi, to Fujitsu Limited. Head suspension mechanism of a recording apparatus with a constant flying height. 5,012,369, Cl. 360-104.000.

Owen, Harry: *See*—
Tedesco, James M.; Owen, Harry; and Chang, Byung J., 5,011,284, Cl. 356-301.000.

Owen, Hartley; and Schipper, Paul H., to Mobil Oil Corporation. Process for control of multistage catalyst regeneration with full then partial CO combustion. 5,011,592, Cl. 208-113.000

Owen, Hartley: *See*—
Harandi, Mohsen N., and Owen, Hartley, 5,011,506, Cl. 44-447.000.

Owens, Garry W.: *See*—
Lovell, John G., Sr.; and Owens, Garry W., 5,011,157, Cl. 273-238.000

Owens-Illinois Plastic Products Inc.: *See*—
Jabarin, Saleh A., 5,011,720, Cl. 428-36.600.

Oxy-Dry Corporation: *See*—
Uribe, Diego; Driskill, Paul, and Hantscho, Rolf, 5,010,819, Cl. 101-425.000

Ozaki, Keiichi: *See*—
Matsumoto, Etsuji, Araki, Mamoru; and Ozaki, Keiichi, 5,011,417, Cl. 439-76.000

Ozaki, Masakuni: *See*—
Kise, Masahiro, Kitano, Masahiko; Ozaki, Masakuni; Kazuno, Kenji, Matsuda, Masahito; Shirahase, Ichiro; and Tomii, Yoshifumi, 5,011,831, Cl. 514-210.000

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Odaka, Kentaro; Ozaki, Shinya; Yamada, Masaki; Inazawa, Yoshizumi, and Ishibashi, Hiroshi, 5,012,459, Cl. 360-32.000.

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Daw, Terry L., and Procter, David F., 5,010,702, Cl. 52-241.000.

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Benedict, James J., Degenhardt, Charles R., and Poser, James W., 5,011,913, Cl. 530-390.000.

Proctor & Gamble Company, The *See—*
Leonard, Giles J., and Marberry, Michael L., 5,011,830, Cl. 424-57.000.

Progressive Tool & Industries Co. *See—*
Stoutenburg, Robert R., Dugas, Michael R., and Hazelton, Mark W., 5,011,068, Cl. 228-4.100.

Protocol Engineering PLC *See—*
Elworthy, Trevor P., 5,012,345, Cl. 358-214.000.

Pruss, Kent R. *See—*
Schoeppel, Sonja L.; Weeks, Kenneth J.; and Pruss, Kent R., 5,012,357, Cl. 378-65.000.

PTX-Pentronix, Inc. *See—*
DeSantis, Raymond P., 5,010,824, Cl. 104-23.001.

Public Health Research Institute of the City of N.Y.: *See—*
Reesei, Paul A., 5,011,772, Cl. 435-69.100.

Pugh, Robert W., Jr *See—*
Polyak, Mark; and Pugh, Robert W., Jr., 5,010,882, Cl. 128-79.000.

Pugin, Benoit, Ramos, Gerardo, and Spindler, Felix, to Ciba-Geigy Corporation Process for the preparation of optically active secondary amines. 5,011,995, Cl. 564-302.000.

Purdue Research Foundation: *See—*
Bourland, Joe D., Barbs, Charles F; Geddes, Leslie A.; Tacker, Willis A., Jr.; and Graber, George P., 5,010,772, Cl. 73-862.040.

Purhonen, Hannu: *See—*
Palonen, Juhani; and Purhonen, Hannu, 5,012,501, Cl. 378-38.000.

Purnell, Victor J. Joystick. 5,011,149, Cl. 273-148.00B.

Pusch, Hans-Dieter: *See—*
Tull, Bernward; and Pusch, Hans-Dieter, 5,012,263, Cl. 354-241.000.

Putney, Gordon A., to Snap-on Tools Corporation. Detent structure having a retaining lip with a smooth continuous outer surface free from stress-concentrating corners. 5,011,324, Cl. 403-328.000.

Pyles, Robert A.: *See—*
Silva, James M.; and Pyles, Robert A., 5,011,967, Cl. 558-281.000.

Pyramid, Inc.: *See—*
Smith, Thomas R., 5,011,462, Cl. 474-255.000.

Quada Internationale Ltd. *See—*
Mauffette, Claude, 5,011,054, Cl. 223-88.000.

Quantex Corporation: *See—*
Lindmayer, Joseph, 5,012,098, Cl. 250-339.000.

Quarberg, Craig D.. *See—*
Levi, Avraham Y.; and Quarberg, Craig D., 5,011,319, Cl. 403-109.000.

Quast, Norbert: *See—*
Krumeich, Jorg H.; and Quast, Norbert, 5,011,498, Cl. 606-166.000.

Queen's University at Kingston: *See—*
Barnett, Richard I.; and Knapp, William C., 5,010,608, Cl. 5-453.000.

Quincke, Joerg: *See—*
Plies, Erich; and Quincke, Joerg, 5,012,100, Cl. 250-342.000.

R. J. Reynolds Tobacco Company. *See—*
Lassiter, Wallace R., 5,010,904, Cl. 131-280.000.

Rada, Mark Z.; Willis, John W.; and Stewart, Marta E., to Delco Electronics Corporation. Closely spaced back-lit push button array. 5,012,054, Cl. 200-314.000.

Rademacher, Loren: *See—*
Frantz, Gary A.; Aleem, Mohd A.; Rademacher, Loren; and Rateike, Lee R., 5,012,145, Cl. 310-68.00D.

Ragland, Frank R., Jr., to RCA Licensing Corporation Color picture tube having improved shadow mask-frame assembly support. 5,012,154, Cl. 313-406.000.

Ragland, Raymond E.: *See—*
Sheridan, William M., and Ragland, Raymond E., 5,011,743, Cl. 428-600.000.

Ragonese, Francis P.: *See—*
Child, Jonathan E.; Choi, Byung C.; and Ragonese, Francis P., 5,012,014, Cl. 568-695.000.

Rajagopalan, Raghavan, and Periasamy, Muthunadar P., to Mallinckrodt, Inc. Morpholinoamido EDTA derivatives. 5,011,925, Cl. 544-58.100.

Rajput, Yudh V.: *See—*
Matouka, Michael F.; Rajput, Yudh V.; Wilkey, Paul D.; and Bright, James A., 5,011,237, Cl. 303-115.000.

Rakolta, Pamela A.. *See—*
Dulaney, Randi L.; and Rakolta, Pamela A., 5,012,234, Cl. 340-825.440.

Ramanan, V. R. V., to Allied-Signal, Inc Iron-rich metallic glasses having high saturation induction and superior soft ferromagnetic properties 5,011,553, Cl. 148-403.000.

Rambo, Robert D.; and Yorke, John A., to Ace Medical Inc Compression orb. 5,010,902, Cl. 128-888.000.

Ramirez, Enrique G.: *See—*
Bowman, Robert G.; Hartwell, George E.; Molzahn, David C.; Ramirez, Enrique G.; and Lastovica, John E., Jr., 5,011,999, Cl. 564-479.000.

Ramos, Gerardo: *See—*
Pugin, Benoit; Ramos, Gerardo; and Spindler, Felix, 5,011,995, Cl. 564-302.000.

Rankin, J. Cameron. Sports device. 5,011,138, Cl. 272-117.000.

Rankin, William J. Folding travel cage. 5,010,848, Cl. 119-26.000.

Ransburg Corporation: *See—*
Sonnleitner, Adolf H.; and Bergmann, Karl H., 5,011,086, Cl. 239-691.000.

Rao, K. Jagan M.; and Rao, K. Savitri Ion selective dip electrode assembly 5,011,588, Cl. 204-409.000.

Rao, K. Savitri: *See—*
Rao, K. Jagan M.; and Rao, K. Savitri, 5,011,588, Cl. 204-409.000.

Rao, Nagaraj N.; Wandrey, Christian; Petersen, Maike; and Alfermann, August W., to Forschungszentrum Juelich GmbH. Enzymatic process for the preparation of rosmarinic acid. 5,011,775, Cl. 435-135.000.

Rappin, Darryl J.: *See—*
Coull, James M.; Rappin, Darryl J.; Koester, Hubert; Pluskal, Malcolm G.; Steuck, Michael J.; and Bonner, Alex G., 5,011,861, Cl. 521-53.000.

Rashleigh, Scott C.: *See—*
Thorncraft, David A.; Kennedy, David R.; Rashleigh, Scott C.; and Dabbs, Timothy P., 5,011,252, Cl. 350-96.150.

Rasmussen, James M., to Cummins-Allison Corporation Coin sorter with automatic bag-switching. 5,011,455, Cl. 453-010.000.

Rateike, Lee R.: *See—*
Frantz, Gary A.; Aleem, Mohd A.; Rademacher, Loren; and Rateike, Lee R., 5,012,145, Cl. 310-68.00D.

Rathfelder, Paul; Sagala, Jozef; Landbeck, Friedrich; and Matschkal, Heinz, to Schill & Seilacher GmbH & Co Tanning agent formulation for manufacture of semifinished leather products. 5,011,499, Cl. 8-94.330.

Ratnakumar, Kola N.; to Exar Corporation. Method of making a complementary BiCMOS process with isolated vertical PNP transistors. 5,011,784, Cl. 437-34.000.

Rau, Garland R. *See*—
Nelson, Joseph M.; and Rau, Garland R., 5,011,329, Cl. 405-128.000.

Rauchfuss, Brian D. *See*—
Alcorn, Byron A.; Cherry, Robert W.; Coleman, Mark D.; Rauchfuss, Brian D.; and Taylor, Gary L., 5,012,163, Cl. 315-383.000.

Ravipati, Sitaramaiah. *See*—
Zador, Eugene; Hsu, Shyiguei; Kaczmarek, Wesley R.; Ravipati, Sitaramaiah; Supkis, Stanley; and Vogel, Richard H., 5,011,513, Cl. 51-295.000.

Rawlings, David A.; and Potter, William D.; to Smith & Nephew Associated Companies plc. Surgical dressing. 5,010,883, Cl. 128-155.000.

Raybon, James C., Jr. *See*—
Marshall, Robert M.; Raybon, James C., Jr.; and Medeiros, Robert W., 5,011,616, Cl. 252-8.700.

Raychem Corp. *See*—
Diaz, Stephen H., 5,011,249, Cl. 350-96.110.
Sueht, Gayle A.; and Mattis, John S., 5,011,432, Cl. 439-584.000.

Rayson, Gary D.; and Shen, Yang; to New Mexico State University Technology Transfer Corporation. Inductively coupled plasma torch with laminar flow cooling. 5,012,065, Cl. 219-121.520.

Raytheon Company. *See*—
Lantagne, John A.; Johnson, Edward G.; and Virostko, Michael J., 5,012,209, Cl. 333-116.000.
Licter, Philip L.; and Waterman, John K., 5,012,194, Cl. 324-405.000.

Razeghi, Manijeh; Defour, Martin; Omnes, Franck; Maurel, Philippe; Blondeau, Robert; and Krakowski, Michel; to Thomson-CSF. Device of semiconductor materials formed on a substrate having a different lattice parameter and application to a laser. 5,012,476, Cl. 372-45.000.

RCA Licensing Corp. *See*—
Datta, Pabitra; Friel, Ronald N.; and Thompson, Robert P., 5,012,155, Cl. 313-461.000.
Ragland, Frank R., Jr., 5,012,154, Cl. 313-406.000.

Reagents of the University of California, The. *See*—
Lee, Wen-Hwa; and Lee, Eva Y. P., 5,011,773, Cl. 435-69.100.

Ream, Gregory L. *See*—
Aldrich, Charles S.; Dyer, Stanley; and Ream, Gregory L., 5,012,293, Cl. 355-274.000.

Ream, Stanley L.; Lee, C. S.; Lim, G. C.; and Fukae, Kenneth; to Amada Company, Limited. Laser beam path alignment apparatus for laser processing machines. 5,011,282, Cl. 356-153.000.

Rebsamen, Arthur; to Machinenfabrik Schweiter AG. Method and apparatus for producing packages. 5,010,724, Cl. 57-270.000.

Recker, Bradley J.; Roe, Derrick I.; and Rozman, Christopher J.; to Sundstrand Corporation. Digitally controlled oscillator. 5,012,437, Cl. 364-701.000.

Recreation Industries Company. *See*—
Foley, John J.; Eide, Ralph M.; and Macdonell, Ranald I., 5,011,441, Cl. 440-30.000.

Recsei, Paul A.; to Public Health Research Institute of the City of N.Y. High yield protein production system. 5,011,772, Cl. 435-69.100.

Rector, Douglas L.; Conder, George A.; and Folz, Sylvester D.; to Upjohn Company. Anthelmintic pyridinyl acylhydrazones derivatives. 5,011,932, Cl. 546-268.000.

Reda, Ralph J. *See*—
Kelly, James L.; and Reda, Ralph J., 5,011,708, Cl. 427-443.100.

Redding, Randy J. *See*—
Carpenter, William D.; Redding, Randy J.; and McLoughlin, Robert C., 5,012,382, Cl. 361-93.000.

Reece, Roger R. Post anchor apparatus. 5,011,107, Cl. 248-545.000.

Reed, Mark E.; to Durkin-Reed, Inc. Vehicle preheating system using existing vehicle heating system. 5,012,070, Cl. 219-202.000.

Reedy, Herman E.; to II-VI Incorporated. Fixed wavelength laser using multiorder halfwave plate. 5,012,473, Cl. 372-19.000.

Reedy, John S. *See*—
Nelson, Marvin I.; and Reedy, John S., 5,011,111, Cl. 251-54.000.

Reese, Scott P. *See*—
Walker, Roger C.; Reese, Scott P.; Joyce, David L.; and Kastrup, David A., 5,012,420, Cl. 364-431.020.

Refrigeration Research, Inc. *See*—
Sobieski, John L.; and Bottum, Edward W., 5,011,105, Cl. 248-219.100.

Regel, Erik. *See*—
Elbe, Hans-Ludwig; Regel, Erik; Buchel, Karl H.; Schaller, Klaus; and Plempel, Manfred, 5,011,850, Cl. 514-383.000.

Reich, Richard A. *See*—
Frazier, Janice D.; Jackson, Robert L.; and Reich, Richard A., 5,011,546, Cl. 148-23.000.

Reimann, Klaus. *See*—
Haeffner, Eckhard; Ben-Nasr, Hedi; Knuth, Bernd; Jasper, Hubert; and Reimann, Klaus, 5,011,594, Cl. 208-320.000.

Reinagel, Frederick G. *See*—
Neuhaus, Max; and Reinagel, Frederick G., 5,012,221, Cl. 340-384.00E.

Reinecke, Berent. *See*—
Gresser, Wilhelm; Schelhase, Klaus; Frisch, Heinz; Kaschel, Klaus; Reinecke, Berent; and Trautmann, Wilhelm H., 5,011,614, Cl. 210-761.000.

Reiner, Michael. *See*
Toepfer, Bernhard; and Reiner, Michael, 5,011,236, Cl. 303-100.000.

Reintjes, John F.; Tankersley, Lawrence L.; Cooper, David G.; and Dexter, James L.; to United States of America, Navy. Narrow-bandwidth diffraction-limited coupled stable-unstable resonator laser cavity. 5,012,483, Cl. 372-95.000.

Reisert, James J. *See*—
Keller, James B.; Ladd, Kevin L.; and Reisert, James J., 5,012,403, Cl. 364-200.000.

Reithofer, Jurgen. *See*—
Rodi, Anton; Blasius, Udo; Reithofer, Jurgen; and May, Karl-Heinz, 5,010,812, Cl. 101-148.000.

Reliance Electric Company. *See*—
Martinie, Howard W., 5,011,301, Cl. 384-140.000.

Reliance Electric Industrial Company. *See*—
Martinie, Howard M., 5,011,306, Cl. 384-585.000.

Remond, Michel; to Compagnie Generale des Etablissements Michelin. Apparatus for producing prevulcanized treads. 5,011,397, Cl. 425-328.000.

Renfer, Dale S. *See*—
Limburg, William W.; Yanus, John F.; Renfer, Dale S.; Schank, Richard L.; and Ong, Beng S., 5,011,939, Cl. 548-440.000.

Rennex, Brian G. Energy-efficient running brace. 5,011,136, Cl. 272-70.000.

Rennie, John H. S. *See*—
Garvey, Michael J.; Griffiths, Ian C.; and Rennie, John H. S., 5,011,690, Cl. 424-401.000.

Renton, Paul. Hard drive security system. 5,012,514, Cl. 380-4.000.

Research Equipment Corporation. *See*—
Harris, Eric W., 5,011,281, Cl. 356-37.000.

Resnick, Paul R. *See*—
Hung, Ming-Hong; and Resnick, Paul R., 5,011,954, Cl. 549-548.000.

Retroperfusion Systems, Inc. *See*—
Lundquist, Ingemar H.; Tarezy-Hornoch, Zoltan; and Kardos, Thomas J., 5,011,468, Cl. 600-18.000.

Retter, Refael; to Zoran Corporation. Apparatus for addressing memory with data word and data block reversal capability. 5,012,441, Cl. 364-900.000.

Reuschling, Dieter. *See*—
Clauss, Karl; Linkies, Adolf; and Reuschling, Dieter, 5,011,982, Cl. 562-38.000.

Reuter, Werner; to Grote & Hartmann GmbH & Co. KG. Plugging device for the electric initiation of an airbag provided with locking means to permit the opening thereof without triggering the functioning of the airbag. 5,011,423, Cl. 439-341.000.

Revolving Door Control, Inc. *See*—
Schwarz, Milan; and Mayer, Robert, 5,012,455, Cl. 367-93.000.

Rey, Charles A. *See*—
Krishnan, Shankar; Hansen, George P.; Hauge, Robert H.; Margrave, John L.; and Rey, Charles A., 5,011,295, Cl. 374-126.000.

Reynolds, Mark L. *See*—
Basso, Richard J.; Hansen, Randall S.; Kolasa, Edward P.; Reynolds, Mark L.; and Tam, Chun P., 5,012,512, Cl. 379-218.000.

Rhiner, Walter; to Ximix, Inc. Method and apparatus for monitoring particles using back-scattered light without interference by bubbles. 5,012,119, Cl. 250-574.000.

Rhone-Poulenc Chimie. *See*—
Cailly, Francinet; and Mottot, Yves, 5,011,665, Cl. 423-21.500.
Le Loarer, Jean-Luc, 5,011,671, Cl. 423-592.000.

Ricco, Mario. *See*—
Ausiello, Francesco P.; and Ricco, Mario, 5,011,082, Cl. 239-585.000.

Richards, Barry R. *See*—
Duke, Jonathan W.; and Richards, Barry R., 5,011,421, Cl. 439-213.000.

Richardson, Larry D.; and Pohlman, Tommy M. Method of and apparatus for continuously treating comminuted synthetic plastic containers and products having contaminants bonded thereto for recycling purposes. 5,011,087, Cl. 241-5.000.

Richardson-Vicks, Inc. *See*—
Ciotti, Susan L.; Spengler, Eric G.; and Deckner, George E., 5,011,681, Cl. 424-81.000.

Ricoh Company, Ltd. *See*—
Harigaya, Makoto; Ide, Yukio; Yamada, Katsuyuki; and Iwasaki, Hiroko, 5,011,723, Cl. 428-64.000.
Matsuoka, Shigeki; Okubo, Hiruzu; and Kosaka, Daisuke, 5,012,448, Cl. 365-208.000.
Sasaki, Eiichi, 5,012,258, Cl. 346-1.100.
Sawamura, Tadahide; Nakamura, Yoko; and Kojima, Fumiyo, 5,012,299, Cl. 355-326.000.
Shina, Toshio; Miyamoto, Keiko; Izumi, Kouji; Hayashi, Yasuro; Karasawa, Yonenobu; Uematsu, Satoru; and Sei, Naoki, 5,010,605, Cl. 4-542.000.
Shobu, Toshifumi; Shibata, Hiroshi; and Ogasawara, Fumihiro, 5,012,470, Cl. 370-110.100.
Suzuki, Takumi; and Uehara, Kiyohiro, 5,011,266, Cl. 350-335.000.
Tsuchiya, Keishin, 5,012,354, Cl. 358-474.000.
Tsutsumi, Takashi; Miyawaki, Shozo; and Kanaya, Kouichi, 5,012,280, Cl. 355-206.000.
Yoneyama, Sachiko; Ohsawa, Toshiyuki; Kimura, Okitoshi; and Kabata, Toshiyuki, 5,011,751, Cl. 429-192.000.

Riddle, Donald C. *See*—
Boatman, John M., 5,012,059, Cl. 219-10.55E.

Rideout, William C. *See*—
Boudreau, Robert A.; and Rideout, William C., 5,011,247, Cl. 350-96.200.

Riding, Richard D. Water treating device, or similar article. 5,010,912, Cl. 137-268.000.

Rieder, Heinz; and Schwaiger, Max; to Sentop Rieder und Schwaiger Gesellschaft m.b.H. Incremental measuring system. 5,010,655, Cl. 33-706.000.

Riediker, Martin. *See*—
Rohde, Ottmar; Schaffner, Armin; Riediker, Martin; and Meier, Kurt, 5,011,755, Cl. 430-18.000.

Riedl, Franz; to Wacker-Werke GmbH & Co. KG. Vibrator. 5,010,778, Cl. 74-61.000.

Riegel, Ulrich. *See*—
Engelhardt, Friedrich; and Riegel, Ulrich, 5,011,892, Cl. 525-404.000.

Rietberg, Johan; and Van Roon, Johannes C.; to Stamicarbon B.V. Coating materials curing at room temperature. 5,011,740, Cl. 428-500.000.

Rikimaru, Roy K.: *See*—
Young, Frederick A.; and Rikimaru, Roy K., 5,012,211, Cl. 333-212.000.

Ringspann GmbH. *See*—
Maurer, Ruprecht, 5,010,992, Cl. 192-70.270.

Ripka, Chester D. *See*—
Backus, Robert J.; Chopko, Robert A.; Drucker, Alan S.; and Ripka, Chester D., 5,010,740, Cl. 62-217.000.

Ripkens, Gerd. *See*—
Buschfeld, Adolf; Lattekamp, Matthias; Ripkens, Gerd; and Schittek, Hans, 5,011,886, Cl. 524-596.000.

Rito, Naotake. *See*—
Yamauchi, Shiro; and Rito, Naotake, 5,012,360, Cl. 360-97.020.

Ritter, Helmut, to Heberlein Maschinenfabrik AG. Air nozzle for the interlacing of multifilament yarns. 5,010,631, Cl. 28-274.000.

Rivest, Daniel J. Hydroponic system. 5,010,686, Cl. 47-62.000.

Riviezzo, Anthony L.; to Tracker Marine Corporation. Livewell valve for fishing boats. 5,010,836, Cl. 114-255.000.

Rizzo, Ronald R. *See*—
Colvin, David P.; Whitney, Raymond A.; Marsh, Bernard R.; Kline, William M.; Rizzo, Ronald R.; and Orlosky, Mark E., 5,010,892, Cl. 128-774.000.

Robert Bosch GmbH. *See*—
Schauwecker, Friedrich, 5,011,322, Cl. 403-141.000.
Sedlmayr, Joachim, 5,010,982, Cl. 188-4.00B.

Roberti, Lamberto. *See*—
Gregorio, Guglielmo; Roberti, Lamberto; and Strepparola, Ezio, 5,011,979, Cl. 560-223.000.

Roberto, Giani; Ettore, Parini, Massimiliano, Borsa; and Antonio, Lavezzo, to Dompe Farmaceutici S.p.A. Pharmacologically active 2-substituted 3-(2-ethoxyethyl) imidazo[4,5-b]pyridines and pharmaceutical compositions containing them. 5,011,838, Cl. 514-234.200.

Roberts, David L. *See*—
MacLean, Lachlan; Roberts, David L.; Barron, Kenneth; Nichol, Kenneth J.; and Harrison, Albert E., 5,011,931, Cl. 546-155.000.

Roberts, James M. *See*—
Roberts, Rose H.; and Roberts, James M., 5,011,158, Cl. 273-256.000.

Roberts, Rose H., and Roberts, James M. Numismatic coin game. 5,011,158, Cl. 273-256.000.

Robeson, Lloyd M.; and Harris, James E., to Amoco Corporation. Blends of a poly(aryl ether ketone) and a polyarylate. 5,011,894, Cl. 525-437.000.

Robins, Roland K.: *See*—
Goodman, Michael; Weigle, William; Bell, Stanley; Chen, Robert; Robins, Roland K.; and Hennen, William J., 5,011,828, Cl. 514-45.000.

Robles, Carlos, to Plasticos Cream, S.A. Cushioned framed article. 5,010,666, Cl. 40-154.000.

Roby Teknik AB: *See*—
Olanders, Par, 5,011,664, Cl. 422-292.000.

Rockstroh, Todd J.; and Mannava, SeethaRamaiah, to General Electric Company. Fiber optic safety system. 5,012,087, Cl. 250-227.150.

Rockwell International Corporation: *See*—
Jin, Korda K. D., 5,012,216, Cl. 335-216.000.
Wallschlaeger, Alan R., Sr., 5,010,818, Cl. 101-415.100.

Rodi, Anton; Blasius, Udo; Reithofer, Jurgen; and May, Karl-Heinz, to Heidelberger Druckmaschinen AG. Electronic device for controlling a printing machine. 5,010,812, Cl. 101-148.000.

Roe, Derrick I.: *See*—
Recker, Bradley J.; Roe, Derrick I.; and Rozman, Christopher J., 5,012,437, Cl. 364-701.000.

Roerig, Arnold J.: *See*—
Brown, Dale A.; and Roerig, Arnold J., 5,010,633, Cl. 29-113.200.

Rohde, Ottmar; Schaffner, Armin; Riediker, Martin; and Meier, Kurt, to Ciba-Geigy Corporation. Photoinitiator mixtures containing a titanocene and a 3-ketocoumarin. 5,011,755, Cl. 430-18.000.

Rohm GmbH: *See*—
Nuernberg, Eberhard; and Pfeuffer, Josef, 5,011,694, Cl. 424-464.000.

Rollman, Bruce L. Patient dosage regimen compliance bottle cap. 5,011,032, Cl. 215-230.000.

Rolls-Royce Inc.: *See*—
Ma, Kong; and Pinder, John T., 5,011,626, Cl. 252-582.000.
Nightingale, Douglas J., 5,011,195, Cl. 285-302.000.

Rolls-Royce PLC: *See*—
Cox, Michael J., 5,010,727, Cl. 60-39.060.

Romero, Ysmael E., to Seattle Bike Supply. Crank arm for a bicylce. 5,010,785, Cl. 74-594.100.

Romine, Charles F.: *See*—
Oriola, Ralph; Romine, Charles F.; and Meisner, Edward O., 5,011,121, Cl. 267-64.110.

Roncato, Giordano; and Federowsky, Robert, to Vetrotex Saint Gobain. Process and device for producing a yarn or ribbon formed from reinforcement fibers and a thermoplastic organic material. 5,011,523, Cl. 65-2.000.

Roop, Donald E.; Bachman, David L.; Mezey, Eugene J.; and Bartram, Philip W., to United States of America, Army. Emulsifier mixing cell. 5,011,293, Cl. 366-173.000.

Roop, Stevie C.: *See*—
Hall, Charles E.; and Roop, Stevie C., 5,010,745, Cl. 70-32.000.

Rosen, Karen L.: *See*—
Boyd, Bruce D.; Geoghegan, Robert J.; Metz, Barbara A.; Rosen, Karen L.; Rosen, Richard D.; Bally, Alex; and Sears, Ronald J., 5,011,005, Cl. 206-0.810.

Rosen, Richard D.: *See*—
Boyd, Bruce D.; Geoghegan, Robert J.; Metz, Barbara A.; Rosen, Karen L.; Rosen, Richard D.; Bally, Alex; and Sears, Ronald J., 5,011,005, Cl. 206-0.810.

Rosenau, Bernhard; Hisgen, Bernd; Heinz, Gerhard; Braun, Hans-Georg; Lausberg, Dietrich; and Zeiner, Hartmut, to BASF Aktiengesellschaft. Blends of thermotropic polymers with polyesters and polycarbonate. 5,011,884, Cl. 524-537.000.

Rosenberg, Toni J. Educational keyboard with removable keys. 5,011,412, Cl. 434-227.000.

Roshdieh, Al R.: *See*—
Walton, John F.; and Roshdieh, Al R., 5,012,157, Cl. 315-66.000.

Rosiek, Frank C.: *See*—
Mott, David M.; and Rosiek, Frank C., 5,011,302, Cl. 384-448.000.

Ross-Clunis, Robert A. Adjustable height bicycle seat mechanism. 5,011,174, Cl. 280-287.000.

Ross, Victor, Jr.: *See*—
Ross, Victor, Sr.; and Ross, Victor, Jr., 5,010,941, Cl. 160-330.000.

Ross, Victor, Sr.; and Ross, Victor, Jr. Golf cart drop curtain. 5,010,941, Cl. 160-330.000.

Rossato, Mark: *See*—
Zoland, Martin; and Rossato, Mark, 5,011,188, Cl. 281-30.000.

Rosswurm, Mark A.; to Cummins Electronics Company, Inc. Reflected electrostatic field angle resolver. 5,012,237, Cl. 340-870.370.

Roth, Steven P.: *See*—
Bodziak, Douglas P.; Hunder, Ray A.; Roth, Steven P.; Grovender, Steven L.; and Molenda, Robert P., 5,011,186, Cl. 281-12.000.

Roth, Thomas. Electrical service center. 5,011,033, Cl. 220-3.940.

Rothweiler, Joseph: *See*—
Liu, Yu J.; and Rothweiler, Joseph, 5,012,518, Cl. 381-42.000.

Rountre, Robert N., to Texas Instruments Incorporated. Electrostatic discharge protection circuit. 5,012,317, Cl. 357-38.000.

Rowlette, John R.: *See*—
Bowen, Terry P.; and Rowlette, John R., 5,011,255, Cl. 350-96.190.

Roxlo, Charles B.: *See*—
Flynn, Edward J.; Ketelsen, Leonard J.; and Roxlo, Charles B., 5,012,484, Cl. 372-96.000.

Royal Institution for the Advancement of Learning (McGill University), The: *See*—
Stanners, Clifford P.; and Cartier, Mireille, 5,011,776, Cl. 435-172.300.

Rozman, Christopher J.: *See*—
Recker, Bradley J.; Roe, Derrick I.; and Rozman, Christopher J., 5,012,437, Cl. 364-701.000.

Rstahl Schaltgerate GmbH: *See*—
Wettengel, Lothar; and Langer, Eberhard, 5,012,395, Cl. 362-222.000.

Rudakov, Ivan P.: *See*—
Neroznikov, Jury I.; Rudakov, Ivan P.; Fanshtein, Valentin N.; Medyanik, Vladimir A.; and Gavrilova, Valentina V., 5,010,963, Cl. 173-105.000.

Rudolf, Klaus: *See*—
Eberlein, Wolfgang; Engel, Wolfhard; Mihm, Gerhard; Rudolf, Klaus; Doods, Henri; and Mayer, Norbert, 5,011,836, Cl. 514-217.000.

Rueger, David C.: *See*—
Oppermann, Hermann; Kuberasampath, Thangavel; Rueger, David C.; and Ozkaynak, Engin, 5,011,691, Cl. 424-423.000.

Ruff, Gerd, to Teldix GmbH. Device for setting the rotor of a rotary switch. 5,012,292, Cl. 335-253.000.

Ruff, John D., to Thermadyne, Inc. Ice maker and water purifier employing pre-cooled make-up water. 5,011,524, Cl. 62-532.000.

Ruffner, Charles G.: *See*—
Barron, Milagros C.; Swope, Ronald L.; Wilkerson, John M., III; and Ruffner, Charles G., 5,011,978, Cl. 560-221.000.

Ruggeri, Stephane: *See*—
Guiberteau, Christian; Ruggeri, Stephane; and Le Paih, Michele, 5,012,084, Cl. 250-211.00R.

Rusmar Incorporated: *See*—
Kittle, Paul A.; and Manlowe, David, 5,011,330, Cl. 405-129.000.

Russell, David F.; and Mungo, Keith, to Lucas Industries Public Limited Company. Disc assemblies for vehicle disc brakes. 5,010,985, Cl. 188-218.0XL.

Russell, John P. System for inspecting bearing balls for defects. 5,012,116, Cl. 250-572.000.

Rutkowksi, David J.: *See*—
Dara, Paul C.; Mitchell, Clair E.; and Rutkowksi, David J., 5,012,168, Cl. 318-434.000.

Rutstrom, Lawrence L.: *See—*
Meyers, Frank; and Rutstrom, Lawrence L., 5,011,122, Cl. 267-154.000.

Rwe-Dea Aktiengesellschaft fur Mineraloel und Chemie *See—*
Buschfeld, Adolf; Lattekamp, Matthias; Ripkens, Gerd; and Schittek, Hans, 5,011,886, Cl. 524-596.000.

Ryusyo Industrial Co., Ltd.: *See—*
Iwamoto, Masakatsu, 5,011,276, Cl. 351-211.000.

S E A C S.r.l.: *See—*
Innocenti, Alberto, 5,011,663, Cl. 422-102.000.

S.N.R Roulements: *See—*
Sachet, Claude, 5,011,738, Cl. 428-422.000.

S.O.F.O Engineering & Distributing Co.: *See—*
Johstoneaux, Raphael B., 5,010,867, Cl. 123-511.000.

Saban, Oded, and Berger, Yaron. Drills. 5,011,343, Cl. 408-240.000.

Sabatier, Andre ; and Depraetere, Raymond. Union for fluid conduits, in particular for high purity gas. 5,011,196, Cl. 285-367.000.

Saccon, Gino. Animal trap. 5,010,682, Cl. 43-81.000.

Sachet, Claude, to S.N.R. Roulements. Procedure for the application of a PTFE-based self-lubricating coating on a bearing element, and the bearings thus obtained. 5,011,738, Cl. 428-422.000.

Sadoun, Michael; and Decker, Alain. Orthodontic bracket made from zirconium oxide. 5,011,403, Cl. 433-8.000.

Safeco Mfg. Limited: *See—*
Kalaam, Shaik M., 5,010,591, Cl. 2-93.000.

Safety 1st, Inc.: *See—*
Bernstein, Michael S.; Crossley, David W.; and Lerner, Michael I., 5,010,606, Cl. 4-572.000.

Sagala, Jozef: *See—*
Rathfelder, Paul; Sagala, Jozef; Landbeck, Friedrich; and Matschkal, Heinz, 5,011,499, Cl. 8-94.330.

Sagara, Kazuhiko: *See—*
Kawaji, Mikinori; Takakura, Toshihiko; Uchida, Akihisa; Kuroda, Shigeo; Tamaki, Yoichi; Shiba, Takeo, Sagara, Kazuhiko; and Kawamura, Masao, 5,011,788, Cl. 437-67.000.

Sagawa, Toyoaki, Sonoda, Makoto, and Umeda, Tokihiko, to Kawasaki Jukogyo Kabushiki Kaisha. Swash-plate type piston pump motor. 5,011,377, Cl. 417-269.000.

Sager, Thomas B., to Branson Ultrasonics Corporation. Method of ultrasonically cutting and sealing thermoplastic workpieces particularly a filter. 5,011,555, Cl. 156-73.100.

Saikawa, Isamu: *See—*
Suzuki, Yasuyuki; Takagawa, Noboru, Kawabata, Mikio; Hayashi, Mariko; Takagi, Akiko, Wakamiya, Takako; and Saikawa, Isamu, 5,011,973, Cl. 560-185.000.

Sailer, Michael P. Seat and harness device. 5,010,850, Cl. 119-96.000.

Saint-Gobain Vitrage: *See—*
Brochot, Jean-Pierre; Pilhias, Danielle; Wuest, Isabelle; Beaufays, Jean-Pierre; and Darmont, Maurice, 5,011,585, Cl. 204-192.130.

St. Louis Music, Inc.: *See—*
McKale, George A., 5,012,199, Cl. 330-51.000.

Saita, Masahiro: *See—*
Ando, Masaaki; Matsuzaka, Masaaki; and Saita, Masahiro, 5,012,105, Cl. 250-398.000.

Saito, Etsuro, to Sony Corporation. Apparatus for positioning a magnetic head on a head drum. 5,012,373, Cl. 360-107.000.

Saito, Hiromitsu: *See—*
Takahashi, Mitsuru; Kitamura, Shigeto; Kase, Hiroshi, Kasai, Masaji, Kawamoto, Isao; Iida, Takao; Sano, Hiroshi, Saito, Hiromitsu, Yamada, Koji; and Murakata, Chikara, 5,011,854, Cl. 514-541.000.

Saito, Itaru; Matsubara, Ken; Shingaki, Kouichi; Masuda, Tomohiko; and Kitano, Hirohisa, to Minolta Camera Kabushiki Kaisha. Light shutter arrays for forming images. 5,011,271, Cl. 350-356.000.

Saito, Katushi, Shindou, Yoshio, Murata, Toshimichi, Yamazaki, Fumio; and Shimazu, Takashi. Black surface treated steel sheet. 5,011,744, Cl. 428-623.000.

Saito, Sakae: *See—*
Ikeda, Senri; Saito, Sakae; Hanada, Shuji; and Hoshi, Hironobu, 5,011,545, Cl. 148-11.50F.

Saito, Takeshi: *See—*
Yokomizo, Shojiro; Izumida, Kouji; Saito, Takeshi; and Yanamoto, Yutaka, 5,010,759, Cl. 72-393.000.

Saito, Toranosuke. *See—*
Uesaka, Toshio; Niki, Akihiro; Ohsuga, Makoto, Saito, Toranosuke, Tsunomachi, Hiroki; Yamaguchi, Makoto, Doyama, Kazuo; and Kishimoto, Daishiro, 5,011,879, Cl. 524-290.000.

Saitoh, Noritaka *See—*
Okada, Hiroshi; Saitoh, Noritaka; Akabane, Hidetomo; and Tashiro, Shintaro, 5,012,198, Cl. 328-155.000.

Sakai Chemical Industry Co., Ltd. *See—*
Yoshimoto, Masafumi, Nakatsuji, Tadao, and Nagano, Kazuhiko, 5,011,674, Cl. 423-610.000.

Sakai, Kazunori: *See—*
Watanabe, Takashi; Fujimoto, Shusaku; and Sakai, Kazunori, 5,012,417, Cl. 364 426.020.

Sakai, Kouichi *See—*
Ouchi, Hideo; and Sakai, Kouichi, 5,011,460, Cl. 474-133.000.

Sakai, Minoru: *See—*
Sakai, Nobuo, and Sakai, Minoru, 5,011,764, Cl. 430-505.000.

Sakai, Nobuo, and Sakai, Minoru, to Fuji Photo Film Co., Ltd. Silver halide color photographic material which forms a color photographic image with improved preservability. 5,011,764, Cl. 430-505.000.

Sakai, Shigenobu *See—*
Masuda, Kiyoshi; Kohda, Shigeto; Sakai, Shigenobu, Kimura, Kazuo; and Nomura, Tomoyoshi, 5,012,228, Cl. 340-702.000.

Sakai, Tadashi: *See—*
Amemiya, Isao; Sakai, Tadashi; and Uno, Shigeki, 5,011,589, Cl. 204-416.000.

Sakakibara, Kenji: *See—*
Endo, Yoshinori, and Sakakibara, Kenji, 5,012,276, Cl. 355-27.000.

Sakakibara, Mitsuhiko: *See—*
Tsutsumi, Fumio; Morikawa, Akihiko; Sakakibara, Mitsuhiko; Oshima, Noboru; Hamada, Tatsuro, Fujimaki, Tatsuo; and Ohashi, Masayuki, 5,011,888, Cl. 525-98.000.

Sakamaki, Hiroshi; Horikoshi, Yukio; Jinnouchi, Takeshi; and Tanzawa, Kenji, to Eagle Industry Co., Ltd. Rotary vane machine having stopper engaging recess in vane means. 5,011,390, Cl. 418-256.000.

Sakamoto, Haruo, to Du Pont de Nemours, E. I., and Company. Connector apparatus having an ejecting mechanism. 5,011,420, Cl. 439-152.000.

Sakamoto, Ken-ichi: *See—*
Hiramitsu, Tokiyuki; and Sakamoto, Ken-ichi, 5,011,975, Cl. 560-147.000.

Sakamoto, Noriya; Kawai, Kiyoyuki; and Yasuki, Seijiro, to Kabushiki Kaisha Toshiba. Television signal transmitting and receiving system. 5,012,326, Cl. 358-11.000.

Sakamoto, Yuji; Umeda, Seiichi; and Ogishima, Hiroaki, to Kirin Beer Kabushiki Kaisha. Artificial seed comprising a sustained-release sugar granule. 5,010,685, Cl. 47-57.600.

Sakano, Chikashi, Nakada, Seiichi; Shimizu, Masao; Ito, Shinichi; and Yamamoto, Toshiyoshi, to Matsushita Electric Industrial Co., Ltd. Steam iron having a solenoid driven pump and heated evaporation chamber for providing steam and operable for further providing extra steam at specified intervals. 5,010,664, Cl. 38-77.700.

Sakashita, Mitsuaki *See—*
Fujikawa, Yoshihiro, Suzuki, Mikio; Iwasaki, Hiroshi; Sakashita, Mitsuaki, and Kitahara, Masaki, 5,011,930, Cl. 546-101.000.

Sakashita, Shigeo, to Casio Computer Co., Ltd. Electronic musical instrument with a tone parameter control function. 5,010,801, Cl. 84-735.000.

Sakito, Yoji: *See—*
Yoneyoshi, Yukio; Suzukamo, Gohfu; and Sakito, Yoji, 5,011,989, Cl. 564-8.000.

Sakurai, Akito, to Hitachi, Ltd. Fuzzy inference-based digital control method and apparatus. 5,012,430, Cl. 364-513.000.

Sakurai, Junji: *See—*
Ogawa, Tsutomu; Kamioka, Hajime; Kawamura, Seiichiro; and Sakurai, Junji, 5,011,783, Cl. 437-19.000.

Sakurai, Masaaki, Yamamoto, Iichiro; Goto, Masahiro; Kuge, Tsukasa; and Shigenobu, Michio, to Canon Kabushiki Kaisha. Elastic rotatable member and fixing apparatus. 5,011,401, Cl. 432-60.000.

Salco Product Inc.: *See—*
Schultz, Francis R., 5,011,038, Cl. 220-320.000.

Salem, Mohamed E. M., to University of South Florida. Endothelium stripper and method of using the same. 5,011,489, Cl. 606-159.000.

Salessiotis, Anastassios N. *See—*
Aebischer, Patrick; and Salessiotis, Anastassios N., 5,011,486, Cl. 606-152.000.

Saloda, Ryozo: *See—*
Tanikawa, Keizo, Saloda, Ryozo, Tanaka, Sakuya; and Shikada, Kenichi, 5,011,839, Cl. 514-247.000.

Salomon S.A.: *See—*
Bejean, Alain; and Graillat, Gerard, 5,011,179, Cl. 280-615.000.

Salzmann, Thomas N.: *See—*
Dininno, Frank P.; and Salzmann, Thomas N., 5,011,832, Cl. 514-210.000.

Sampson, Scott D.: *See—*
Fulton, Alfred L., Lakhani, Kishor M., Sampson, Scott D.; and Lowman, Kent, 5,012,261, Cl. 346-159.000.

Samsung Electronics Co., Ltd.: *See—*
An, Hyeong-keun; Kim, Young-cheol; Lee, Seok-jeong, and Yu, Jung-jae, 5,012,451, Cl. 365-230.050.
Choi, Hae-Yong, 5,012,341, Cl. 358-167.000.

San-Apro Limited *See—*
Nakatani, Kenichi; and Nakasugi, Nobuyasu, 5,011,935, Cl. 548-336.000.

Sanders Associates: *See—*
Maben, James W.; and Brown, Raymond G., 5,012,131, Cl. 307-296.400.

Sanders, Donald J.: *See—*
McLeod, Andrew E., Fields, Gaines C.; and Sanders, Donald J., 5,010,908, Cl. 134-168.00C

Sanderson, Stanley W. Trailer hitch apparatus. 5,011,178, Cl. 280-483.000.

Sandoz Ltd.: *See—*
Fehr, Theodor, 5,011,844, Cl. 514-291.000.

Sandvik AB *See—*
Pettersson, Lars T., and Wiman, Jorgen V., 5,011,340, Cl. 407-114.000.

Sandy Hill Corporation *See—*
Keller, Martin B., 5,011,575, Cl. 162-299.000.

Sankaran, Viswanatha Molecular restructuring catalyst. 5,012,025, Cl. 585-415.000.

Sano, Hiroshi: *See—*
Takahashi, Mitsuru; Kitamura, Shigeto; Kase, Hiroshi, Kasai, Masaji, Kawamoto, Isao, Iida, Takao; Sano, Hiroshi; Saito, Hiromitsu, Yamada, Koji; and Murakata, Chikara, 5,011,854, Cl. 514-541.000.

Sano, Kenichi, Maki, Kenichiro; and Kamei, Hideyuki, to Showa Denko K.K. Process for preparation of allyl acetate. 5,011,980, Cl. 560-245.000.

Sano, Shoichi: *See—*
Hamada, Tetsuro; Sano, Shoichi; and Furukawa, Yoshimi, 5,010,971, Cl. 180-140.000.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Tanbara, Hiroaki, 5,011,583, Cl. 204-148.000.

Sanyo Electric Co., Ltd.: *See—*
Isono, Haruo; Yasuda, Minoru; Watanabe, Hiroshi; Toyama, Tateo; Hioki, Toshiaki, Morita, Yoshihiko; and Yamada, Makoto, 5,012,351, Cl. 358-342.000
Tsujita, Hirayuki, 5,012,462, Cl. 369-77.100.

Saotome, Akira: *See—*
Nagai, Harushige; Kiryu, Masato; Sasaki, Takeshi; and Saotome, Akira, 5,011,096, Cl. 242-199.000

Saphores, Eugenio A.; Gleisner, Arturo G., Vega, Juan C.; and Mardones, Wladimir A., to Establecimientos Industriales Quimicos Oxiquim S.A. Process for production of methylene bisxanthates. 5,011,965, Cl. 558-245.000.

Sapp, Michael D.; and Gaskey, Donald R., Jr., to Textron Inc. Leaf blower back pack frame. 5,011,058, Cl. 224-261.000.

Saratoga Spa & Bath: *See—*
Maiuccoro, John V., and Gardenier, John, 5,010,699, Cl. 52-169.800.

Sarda, Jean-Claude. Web tensioning device for printing press. 5,010,816, Cl. 101-228.000.

Sardana, Karamvir Adaptive hybrid multiple access protocols. 5,012,469, Cl. 370-95.300

Sardano, Peter A.; and Kazmierczak, Irvin J., to Xerox Corporation. Retard feeder retard pad mounting. 5,011,124, Cl. 271-35.000.

Sargent, Charles L.; Antos, John M.; and Biba, Scott I., to Thetford Corporation. Toilet with pulsed flow of flush water. 5,010,602, Cl. 4-432.000.

Sarges, Reinhard, to Pfizer Inc. Imidazolidinedione derivatives in diabetes treatment. 5,011,840, Cl. 514-248.000.

Sartori, Guido; Ho, W. S. Winston; and Noone, Robert E., to Exxon Research and Engineering Company. Polyphthalatecarbonate membranes for aromatics/saturates separation. 5,012,035, Cl. 585-819.000.

Sartori, Guido; Ho, W. S. Winston, and Noone, Robert E., to Exxon Research and Engineering Company. Polyarylate membranes or aromatics/saturates separation (C-2415). 5,012,036, Cl. 585-819.000.

Sasabe, Junya; and Sugimori, Masao, to Mita Industrial Co., Ltd. Movable guide member in a receiving device of an image forming apparatus. 5,012,294, Cl. 355-309.000.

Sasabe, Minoru; Imamura, Masao; Yoshida, Yasunobu; Andoh, Shinya; and Miyake, Hiroshi, to Tosoh Corporation. Chromium additive and method for producing chromium alloy using the same. 5,011,798, Cl. 501-87.000

Sasaki, Eiichi, to Ricoh Company, Ltd. Density controlled thermal print head. 5,012,258, Cl. 346-1.100.

Sasaki, Isao; Yamamoto, Naoki, and Yanagase, Akira, to Mitsubishi Rayon Co., Ltd. Thermoplastic resin composition. 5,011,887, Cl. 525-63.000.

Sasaki, Takeshi: *See—*
Nagai, Harushige; Kiryu, Masato; Sasaki, Takeshi; and Saotome, Akira, 5,011,096, Cl. 242-199.000

Sasaki, Yoshio: *See—*
Fujioka, Keiji, Sato, Shigeji; Takada, Yoshihiro; Sasaki, Yoshio; and Tamura, Nobuhiko, 5,011,692, Cl. 424-426.000.

Sassi S.r.l.: *See—*
Sassi, Umberto, 5,011,365, Cl. 414-737.000.

Sassi, Umberto, to Sassi S.r.l. Apparatus for feeding bundles of laminations. 5,011,365, Cl. 414-737.000.

Sato, Hiroyuki, to Seikosha Co., Ltd. Paper feed mechanism for a printer. 5,011,313, Cl. 400-605.000.

Sato, Junichi; and Shimizu, Minoru, to Showa Denko K.K.; and Osaka Kongo Seito Co., Ltd. Diamond cutting method. 5,012,067, Cl. 219-121.720.

Sato, Katsuhiro: *See—*
Akasaki, Yutaka, Nukada, Katsumi; and Sato, Katsuhiro, 5,011,757, Cl. 430-58.000.
Akasaki, Yutaka; Nukada, Katsumi; and Sato, Katsuhiro, 5,011,969, Cl. 558-402.000.

Sato, Kazuhiro, to Sumitomo Electric Industries, Ltd. Cable with an overall shield. 5,012,045, Cl. 174-106.00R.

Sato, Kiyoshi; Ohtani, Shinichi; and Kawasaki, Mikio, to Konica Corporation. Apparatus for processing light-sensitive materials. 5,012,266, Cl. 354-319.000.

Sato, Koichi: *See—*
Ono, Yutaka; Muramatsu, Yasuhiko; Banzai, Hideo; Kikukawa, Yoichi; Hashida, Shigeru; Shindo, Shotaro; Higuchi, Haruo; Shinomiya, Hiroyuki, Nikaido, Mitsuhiro; and Sato, Koichi, 5,012,169, Cl. 318-568.000.
Yoshinaga, Kazuo; Kai, Takashi; Egara, Koichi; Toshida, Yomishi; Mitsutake, Hideaki; Sato, Koichi; and Miyazaki, Takeshi, 5,011,623, Cl. 252-299.500.

Sato, Masahiko: *See—*
Yamazaki, Shunpei; and Sato, Masahiko, 5,011,270, Cl. 350-350.00S.

Sato, Shigeji: *See—*
Fujioka, Keiji; Sato, Shigeji, Takada, Yoshihiro; Sasaki, Yoshio; and Tamura, Nobuhiko, 5,011,692, Cl. 424-426.000.

Sato, Tsunehiko: *See—*
Takahashi, Shinsuke; Shibata, Norio; and Sato, Tsunehiko, 5,011,714, Cl. 427-434.300.

Satoh, Toshio; Niiro, Yasunori; Kakegawa, Hisao; and Matsumoto, Hitoshi, to Nippon Hypox Laboratories, Inc. Ascorbic acid derivative. 5,011,949, Cl. 549-315.000.

Satoh, Toyomi; Hosoi, Kiyonori; Kinoshita, Katsuji; Murata, Shinjiro; Fukatsu, Shunzo; and Ichikawa, Tooru, to Kabushiki Kaisha Hosokawa Yoko. Container for packaging medicine. 5,011,019, Cl. 206-530.000.

Satou, Masahiko: *See—*
Ushijima, Nobuyoshi; Masuda, Hiroshi; Ishibashi, Akira; Satou, Masahiko; Haruna, Toshiyuki; Takayama, Norikazu; and Kudou, Yoshinobu, 5,012,166, Cl. 318-254.000.

Sauder, Robert A., to Thermal Ceramics, Inc. Insulation and the provision thereof. 5,010,706, Cl. 52-506.000.

Sauer-Sundstrand Inc.: *See—*
Johnson, Alan W., 5,010,733, Cl. 60-453.000.

Sauser, Martin H., Jr.: *See—*
Burton, Richard J.; Copeland, John A., III; Jernim, John W.; Nixon, Toby L.; Sauser, Martin H., Jr.; Weatherford, Robert E., Jr.; Becker, Larry D.; and Strawn, David F., 5,012,489, Cl. 375-8.000.

Savonjousi, Aslak, to ABB Stromberg Teollisuus Oy. Control method for a chip refiner. 5,011,088, Cl. 241-21.000.

Savonjousi, Aslak, to ABB Stromberg Teollisuus Oy. Method for controlling a chip refiner. 5,011,090, Cl. 241-21.000.

Sawamura, Tadahide; Nakamura, Yoko; and Kojima, Fumiyo, to Ricoh Company, Ltd. Color adjustment apparatus for color copying machine. 5,012,299, Cl. 355-326.000.

Sbarbaro, Franco, to Laboratori Guidotti. Process for the preparation of derivative of 2-diethylamino-1-methylethyl-1-hydroxy-(bicyclohexyl)-2-carboxylate. 5,011,974, Cl. 560-118.000.

Scally, Paul G.: *See—*
Blythe, Robert J.; and Scally, Paul G., 5,011,876, Cl. 524-77.000.

Scappaticci, Karen A., to Pfizer Inc. Treatment of depression. 5,011,841, Cl. 514-253.000.

Schaefer, Hans-Christian. *See—*
Dietrich, Anton, Hartig, Klaus; Schaefer, Hans-Christian; and Szczyrbowski, Joachim, 5,011,745, Cl. 428-630.000.

Schaeffer, Hans A.: *See—*
Calam, Henry D.; and Schaeffer, Hans A., 5,011,688, Cl. 424-195.100.

Schafer, Horst; Ludwig, Gerhard; and Sunderdiek, Rainer, to Ciba-Geigy Corporation. Contact lens care set. 5,011,661, Cl. 422-30.000.

Schaffner, Armin: *See—*
Rohde, Ottmar; Schaffner, Armin; Riediker, Martin; and Meier, Kurt, 5,011,755, Cl. 430-18.000.

Schaller, Klaus: *See—*
Elbe, Hans-Ludwig; Regel, Erik; Buchel, Karl H.; Schaller, Klaus; and Plempel, Manfred, 5,011,850, Cl. 514-383.000.

Schammel, Wayne P.: *See—*
Lane, Kelley R.; and Schammel, Wayne P., 5,012,030, Cl. 585-527.000.

Schank, Richard L.: *See—*
Limburg, William W.; Yanus, John F., Renfer, Dale S.; Schank, Richard L.; and Ong, Beng S., 5,011,939, Cl. 548-440.000

Schaubs, Randolph J.; and Naddor, David J., to Scientific Atlantic Inc. Dynamic callback technique. 5,012,510, Cl. 379-92.000.

Schauwecker, Friedrich, to Robert Bosch GmbH. Ball joint. 5,011,322, Cl. 403-141.000.

Scheiffele, Peter: *See—*
Zweigart, Gerhard; Greiner, Ferdinand; Baumert, Heinz; Scheiffele, Peter; and Nowak, Manfred, 5,011,213, Cl. 296-97.130.

Schelhase, Klaus: *See—*
Gresser, Wilhelm; Schelhase, Klaus; Frisch, Heinz; Kaschel, Klaus; Reinecke, Berent; and Trautmann, Wilhelm H., 5,011,614, Cl. 210-761.000.

Schell, Russell W.; and Losacco, Anthony R. Method for applying adhesive to a hologram film. 5,011,707, Cl. 427-39.000.

Schemmann, Hugo: *See—*
Bertram, Leo; Schemmann, Hugo; and Bukoschek, Romuald L., 5,012,147, Cl. 310-80.000.

Schepers, Frederik J., to Lever Brothers Company, division of CONOPCO, Inc. Liquid cleaning compositions and process for their preparation. 5,011,622, Cl. 252-174.150.

Schering Corporation: *See—*
Babad, Esther; Carruthers, Nicholas; and Steinman, Martin, 5,011,993, Cl. 564-273.000.
Blythin, David J.; Shue, Ho-Jane; and Ganguly, Ashit K., 5,011,845, Cl. 514-291.000.
Blythin, David J.; and Shue, Ho-Jane, 5,011,860, Cl. 514-861.000.

Scheurer, Raymond, to Davidoff of Geneva, Inc. Cigar storage and transportation container. 5,011,009, Cl. 206-270.000.

Schier, J. Alan. Position determining apparatus. 5,012,049, Cl. 178-19.000.

Schierling, Roland; and Dohse, Hans-Peter, to Andreas Stihl. Starter arrangement for an internal combustion engine. 5,010,858, Cl. 123-179.00P.

Schildge, Adam T., Jr. Cable-stay roof for stadium or arena and method of construction of same. 5,010,695, Cl. 52-6.000.

Schill & Seilacher GmbH & Co.: *See—*
Rathfelder, Paul, Sagala, Jozef; Landbeck, Friedrich; and Matschkal, Heinz, 5,011,499, Cl. 8-94.330.

Schipper, Paul H.: *See—*
Owen, Hartley; and Schipper, Paul H., 5,011,592, Cl. 208-113.000.

Schirmer, Henry G., to W. R. Grace & Co. Highly formable laminates. 5,011,735, Cl. 428-349.000.

Schittek, Hans: *See—*
Buschfeld, Adolf; Lattekamp, Matthias; Ripkens, Gerd; and Schittek, Hans, 5,011,886, Cl. 524-596.000.

Schleppinghoff, Bernhard; Niederberger, Hans-Ludwig; Gabel, Christian; Lange, Peter M.; and Mitschker, Alfred, to EC Erdoelchemie GmbH; and Bayer Aktiengesellschaft. Process for the preparation of tert.-olefins. 5,012,031, Cl. 585-639.000.

Schlumberger Technology Corp.: *See*—
Chen, Min-Yi, 5,012,193, Cl. 324-366.000.
Meek, Dale E.; and Hansen, Merlin D., 5,010,958, Cl. 166-382.000.

Schmelzer, Robert, to Tracto-Technik Paul Schmidt Maschinenfabrik KG. Self-propelled ram boring machine. 5,010,965, Cl. 175-19.000.

Schmerler, Elliott D.: *See*—
Bredesen, Mark S.; and Schmerler, Elliott D., 5,010,889, Cl. 128-715.000.

Schmidt, Helmbrecht: *See*—
Hermann, Dietmar, and Schmidt, Helmbrecht, 5,011,163, Cl. 277-26.000.

Schmidt, Wilhelm, to Ciba-Geigy Corporation. Apparatus for the detection of chemical equalization processes in an aqueous solution. 5,011,587, Cl. 204-401.000.

Schmitz, Thomas R.: *See*—
Chin, Arthur H. T.; and Schmitz, Thomas R., 5,010,952, Cl. 166-75.100.

Schneider, William J. Road simulation device. 5,010,763, Cl. 73-117.000.

Schoeppel, Sonja L.; Weeks, Kenneth J.; and Pruss, Kent R., to University of Michigan. CT compatible intracavity radiation applicator with afterloading shielding. 5,012,357, Cl. 378-65.000.

Schorwerth, Helmut: *See*—
Hall, Erich; and Schorwerth, Helmut, 5,010,636, Cl. 29-446.000.

Schottdorf, Johannes: *See*—
Breuer, Bernhard; and Schottdorf, Johannes, 5,011,305, Cl. 384-572.000.

Schrader, Karl-Heinz: *See*—
Pietsch, Gunter; and Schrader, Karl-Heinz, 5,011,634, Cl. 264-47.000.

Schulte, Burkart: *See*—
Hardt, Norbert; Sterner, Hakan; Wetzka, Gerhard; and Schulte, Burkart, 5,011,651, Cl. 376-261.000.

Schulte, Dietrich: *See*—
Heimerl, Albert; Schulte, Dietrich; Gotz, Gabriela; and Leutz, Reiner, 5,011,492, Cl. 606-215.000.

Schulte, Heinz-Guenther; Narum, Jeffrey L.; and Johnson, Michael R., to Henkel Research Corporation. Process for preparing 1-alkylimidazoles. 5,011,934, Cl. 548-335.000.

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Bueschl, Rainer; Echte, Adolf; Schulte, Konrad; and Mittnacht, Hans, 5,011,871, Cl. 523-436.000.

Schultz, Albert N., Jr.; and Zakary, Paul D., to AMP Incorporated. Molded electrical interconnection system. 5,012,391, Cl. 361-428.000.

Schultz, Francis R., to Saleo Product Inc. Hopper car inlet opening protector. 5,011,038, Cl. 220-320.000.

Schultz, Laurence D.: *See*—
Pan, Ju-Don T.; Curry, John W., II; and Schultz, Laurence D., 5,011,580, Cl. 204-15.000.

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Nick, Bernhard; Bott, Kaspar; and Schulz, Guenther, 5,011,991, Cl. 564-204.000.

Schuster, Daniel L., to Magni Systems, Inc. Graphics encoder video enhancement. 5,012,331, Cl. 358-37.000.

Schuster, Manfred; and Wich, Harald, to Diehl GmbH & Co. Radar receiver. 5,012,253, Cl. 342-203.000.

Schwaiger, Max: *See*—
Rieder, Heinz; and Schwaiger, Max, 5,010,655, Cl. 33-706.000.

Schwarten, Jerry C. Mausoleum construction. 5,010,697, Cl. 52-134.000.

Schwartz, Moshe; and Avni, Noam, to Omen Metal Products. Safe device and mechanism for operating the same. 5,010,751, Cl. 70-276.000.

Schwarz, Milan; and Mayer, Robert, to Revolving Door Control, Inc. Security door with improved sensor for detecting unauthorized passage. 5,012,455, Cl. 367-93.000.

Schwarzmann, Matthias: *See*—
Herzog, Klaus; Boehning, Karl-Heinz; Aichinger, Heinrich; Plueckhan, Juergen; Mross, Wolf D.; and Schwarzmann, Matthias, 5,011,809, Cl. 502-348.000.

Schwer, Mary L.: *See*—
Gossens, Anthonette A.; and Schwer, Mary L., 5,011,480, Cl. 604-385.100.

SCI Systems, Inc.: *See*—
Fulton, Alfred L.; Lakhani, Kishor M.; Sampson, Scott D.; and Lowman, Kent, 5,012,261, Cl. 346-159.000.

Scientific Atlantic Inc.: *See*—
Schaubs, Randolph J.; and Naddor, David J., 5,012,510, Cl. 379-92.000.

SciMed Life Systems, Inc.: *See*—
Voegele, Gerald G.; and Penny, William H., 5,011,537, Cl. 134-22.110.

Scott, Jeffrey W.; and Viswanathan, Thayamkulangara R., to AT&T Bell Laboratories. Integral switched capacitor FIR filter digital-to-analog converter for sigma-delta encoded digital audio. 5,012,245, Cl. 341-150.000.

Scott, John D., to Imperial Chemical Industries PLC. Oxychlorination catalyst composition and an oxychlorination process using it. 5,011,808, Cl. 502-225.000.

Seagate Technology, Inc.: *See*—
Toensing, Eyvand E., 5,012,367, Cl. 360-104.000.

Sears, Claude L.: *See*—
Hambleton, Larry G.; Sears, Claude L.; and Offutt, Elmer B., 5,010,660, Cl. 34-92.000.

Sears, Ronald J.: *See*—
Boyd, Bruce D.; Geoghegan, Robert J.; Metz, Barbara A.; Rosen, Karen L.; Rosen, Richard D.; Bally, Alex; and Sears, Ronald J., 5,011,005, Cl. 206-0.810.

Seattle Bike Supply: *See*—
Romero, Ysmael E., 5,010,785, Cl. 74-594.100.

Secretan, Stanley: *See*—
Nicholson, J. Dudley; and Secretan, Stanley, 5,011,175, Cl. 280-304.100.

Sedlmayr, Christopher J.: *See*—
Munroe, Ronald G.; and Sedlmayr, Christopher J., 5,012,495, Cl. 337-3.000.

Sedlmayr, Joachim, to Robert Bosch GmbH. Method and apparatus for improving vehicle traction and roadability. 5,010,982, Cl. 188-4.00B.

Seelbach, Walter: *See*—
Dixon, Robert; Kaveh, Golnaz; and Seelbach, Walter, 5,012,136, Cl. 307-475.000.

Segal, Marcos: *See*—
Opitz, Konrad; and Segal, Marcos, 5,011,917, Cl. 534-583.000.

Sei, Naoki: *See*—
Shima, Toshio; Miyamoto, Keiko; Izumi, Kouji; Hayashi, Yasuro; Karasawa, Yonenobu; Uematsu, Satoru; and Sei, Naoki, 5,010,605, Cl. 4-542.000.

Seibel, David D.: *See*—
Hewitt, Donald W.; and Seibel, David D., 5,012,073, Cl. 235-375.000.

Seibert, Gerhard: *See*—
Kretzschmar, Gerhard; Duwel, Dieter; Grabley, Susanne; Hammann, Peter; Seibert, Gerhard; Voelskow, Hartmut; and Giani, Carlo, 5,011,827, Cl. 514-32.000.

Seiffert, Volkhard; Ihlenfeld, Gerd; and Bienert, Klaus. Apparatus and method for determining the relative percentages of components in a mixture. 5,012,197, Cl. 324-696.000.

Seike, Shoji; Mima, Toshiyuki; and Nozaki, Masayuki, to NGK Insulators, Ltd. Lightning arrestor insulator and method of producing the same. 5,012,383, Cl. 361-120.000.

Seikosha Co., Ltd.: *See*—
Sato, Hiroyuki, 5,011,313, Cl. 400-605.000.

Seki, Akinori: *See*—
Konushi, Fumihiro; Seki, Akinori; Kudo, Jun; and Koba, Masayoshi, 5,011,550, Cl. 148-33.500.

Seki, Yasuharu: *See*—
Tsukushi, Masanori; Koyanagi, Osamu; Seki, Yasuharu; Goto, Tokio; and Kurosawa, Yukio, 5,012,051, Cl. 200-148.00B.

Sekiguchi, Shoji: *See*—
Tamamura, Hisashi; and Sekiguchi, Shoji, 5,011,265, Cl. 350-173.000.

Sekine, Masayoshi; Nakajima, Toshiyuki; Kai, Takashi; Yoshimura, Katsuji; and Toyama, Masamichi, to Canon Kabushiki Kaisha. Image shake detecting device. 5,012,270, Cl. 354-430.000.

Sekine, Yoshitada: *See*—
Uemura, Satoshi; Kawada, Susumu; Sekine, Yoshitada; and Miyauchi, Tatsuo, 5,010,634, Cl. 29-407.000.

Sekisui Kagaku Kogyo Kabushiki: *See*—
Uesaka, Toshio; Niki, Akihiro; Ohsuga, Makoto; Saito, Toranosuke; Tsunomachi, Hiroki; Yamaguchi, Makoto; Doyama, Kazuo; and Kishimoto, Daishiro, 5,011,879, Cl. 524-290.000.

Sekozawa, Teruji: *See*—
Takahashi, Shinsuke; Sekozawa, Teruji; and Funabashi, Motohisa, 5,012,422, Cl. 364-431.050.

Sell, Werner: *See*—
Jurgens, Gunter; Pickard, Jurgen; and Sell, Werner, 5,010,986, Cl. 188-250.00H.

Selleck, Albert B. Fire pin shield. 5,010,675, Cl. 42-70.110.

Sellschop, Jacques P.: *See*—
Nam, Tom L.; Keddy, Rex J.; and Sellschop, Jacques P., 5,012,108, Cl. 250-484.100.

Sember, James W., to General Electric Company. Control system for high speed switched reluctance motor. 5,012,171, Cl. 318-696.000.

Sember, James W., to General Electric Company. Control system for switched reluctance motor operating as a power generator. 5,012,172, Cl. 318-696.000.

Semeraro, Claudio; Micheli, Dino; Pieraccioli, Daniele; Gaviraghi, Giovanni; and Borthwick, Allan D., to Glaxo S.p.A. 1,4-dihydro pyridines. 5,011,848, Cl. 514-356.000.

Semiconductor Energy Laboratory Co., Ltd.: *See*—
Yamazaki, Shunpei; and Sato, Masahiko, 5,011,270, Cl. 350-350.00S.

Semma, Richard P.: *See*—
Fletcher, Mitchell S.; and Semma, Richard P., 5,012,409, Cl. 364-200.000.

Senkevich, William: *See*—
Singh, Ishwar; and Senkevich, William, 5,012,079, Cl. 235-467.000.

Senkler, George H., Jr.: *See*—
Chao, Tze; and Senkler, George H., Jr., 5,011,666, Cl. 423-82.000.

Sensormatic Electronics Corporation: *See*—
Drucker, Frank, 5,012,224, Cl. 340-551.000.

Sentop Rieder und Schwaiger Gesellschaft m.b.H.: *See*—
Rieder, Heinz; and Schwaiger, Max, 5,010,655, Cl. 33-706.000.

Seong, Teresa A.Y.C.; and Teck, Yap Y., to Molex Incorporated. Modular jack. 5,011,435, Cl. 439-676.000.

Serbicki, Jeffrey P.: *See*—
Harissis, Peter J.; and Serbicki, Jeffrey P., 5,012,380, Cl. 360-135.000.

Sertic, James L.: *See*—
Winchell, David A.; and Sertic, James L., 5,011,477, Cl. 604-132.000.

Servi-Tech, Inc.: *See*—
Nish, Terry E.; and McCray, Cecil R., 5,010,760, Cl. 73-1.00H.

Setinek, Karel: *See*—
Jerabek, Karel; Setinek, Karel; and Kastanek, Frantisek, 5,011,611, Cl. 210-674.000.

Seto, Kazunari: *See*—
Yoshizawa, Yasuo; Kawaguchi, Hiroichi; and Seto, Kazunari, 5,011,414, Cl. 434-431.000.

Sewell, Michael R., to Siemens Automotive Limited. Dual pole switch assembly for an inertia actuated switch. 5,012,050, Cl. 200-61.45R.

Sexton, Daniel W.; and Williams, Timothy J., to GE Fanuc Automation North America, Inc. Apparatus and method for detecting a carrier signal. 5,012,492, Cl. 375-82.000.

Sexton, Harold E.: *See*—
Hayes, Franklin A.; and Sexton, Harold E., 5,011,103, Cl. 248-99.000.

Seymour, Michael R. Adjustable outlet box assembly and method of application. 5,012,043, Cl. 174-57.000.

Sgro, Salvatore: *See*—
Polez, Laszlo; and Sgro, Salvatore, 5,011,442, Cl. 440-900.000.

SGS-Thomson Microelectronics S.r.l.: *See*—
Menegoli, Paolo; Morelli, Marco; and Tricoli, Francesco, 5,012,130, Cl. 307-272.200.

SGS-Thomson Microelectronics S.A.: *See*—
Bergemont, Albert, 5,012,446, Cl. 365-185.000.

Shackle, Dale R.; Fauteux, Denis G.; and Lundsgaard, Jorgen S. Process for making a solid state cell. 5,011,501, Cl. 29-623.100.

Shacklette, Lawrence W.; Townsend, Linda B.; and Jow, Taiguang R., to Allied-Signal. Rechargeable battery cathode from P2- phase sodium cobalt dioxide. 5,011,748, Cl. 429-50.000.

Sharp Kabushiki Kaisha: *See*—
Katoka, Shoei; Tsuchimoto, Shuhei; Nojima, Hideo; Kita, Ryusuke; and Nagata, Masaya, 5,011,818, Cl. 324-248.000.
Konushi, Fumihiro; Seki, Akinori; Kudo, Jun; and Koba, Masayoshi, 5,011,550, Cl. 148-33.500.
Okada, Yoshio; and Takano, Toshihiko, 5,011,250, Cl. 350-96.120.

Sharp, Kenneth G.: *See*—
Tarhay, Leo; and Sharp, Kenneth G., 5,011,706, Cl. 427-39.000.

Shaw, Douglas R., to Weyerhaeuser Company. Method of depressing readily floatable silicate materials. 5,011,596, Cl. 209-167.000.

Shaw, Wilfrid G.: *See*—
Gupta, Victor; Bodolus, Christopher L.; Paparizos, Christos; and Shaw, Wilfrid G., 5,012,028, Cl. 585-500.000.

Sheldon, Edward L., III: *See*—
Kung, Viola T.; Nagarajan, Peter A.; and Sheldon, Edward L., III, 5,011,770, Cl. 435-6.000.

Shell, John W., to Iolab Corporation. Treatment of glaucoma using phosphodiesterase inhibitors. 5,011,843, Cl. 514-259.000.

Shell Oil Company: *See*—
Buxton, John P., 5,011,503, Cl. 44-322.000.
Li, Simon M. K., 5,012,016, Cl. 568-720.000.
Stil, Jacob H.; Ooms, Adrianus J.; and Mink, Bernardus H., 5,011,507, Cl. 48-62.00R.
Weingaertner, David A.; and Slaugh, Lynn H., 5,012,034, Cl. 585-806.000.

Shen, Wen-Shin: *See*—
Lee, Rong-Jer; Lee, Chein-Dhau; and Shen, Wen-Shin, 5,011,762, Cl. 430-281.000.

Shen, Yang: *See*—
Rayson, Gary D.; and Shen, Yang, 5,012,065, Cl. 219-121.520.

Sheppard, Clyde H.: *See*—
Lubowitz, Hyman R.; and Sheppard, Clyde H., 5,011,905, Cl. 528-170.000.

Sheridan, William M.; and Ragland, Raymond E., to ATD Corporation. Pad including heat sink and thermal insulation areas. 5,011,743, Cl. 428-600.000.

Sherwood, Richard C.: *See*—
Jin, Sungho; Sherwood, Richard C.; and Tiefel, Thomas H., 5,011,823, Cl. 505-1.000.

Shiba, Takeo: *See*—
Kawaji, Mikinori; Takakura, Toshihiko; Uchida, Akihisa; Kuroda, Shigeo; Tamaki, Yoichi; Shiba, Takeo; Sagara, Kazuhiko; and Kawamura, Masao, 5,011,788, Cl. 437-67.000.

Shibagaki, Taro: *See*—
Takahashi, Shoichi; Ichiki, Sayohiko; Yorozu, Masatoshi; Kunishige, Seiji; Shibagaki, Taro; Shimizu, Fumihiko; Fujioka, Fumio; and Kondo, Toshinori, 5,012,240, Cl. 341-101.000.

Shibahashi, Yutaka: *See*—
Nakasuji, Norikazu; Kito, Tsutomu; and Shibahashi, Yutaka, 5,011,445, Cl. 446-14.000.

Shibata, Hiroshi: *See*—
Shobu, Toshifumi; Shibata, Hiroshi; and Ogasawara, Fumihiro, 5,012,470, Cl. 370-110.100.

Shibata, Norio: *See*—
Takahashi, Shinsuke; Shibata, Norio; and Sato, Tsunehiko, 5,011,714, Cl. 427-434.300.

Shichi, Hiroyasu; Nomura, Setsuo; and Mitani, Eisuke, to Hitachi, Ltd. Charged particle beam apparatus. 5,012,109, Cl. 250-491.100.

Shichman, Daniel, to United States Surgical Corporation. Vascular clamp assembly. 5,011,487, Cl. 606-158.000.

Shigematsu, Hideyuki: *See*—
Yamamoto, Yuji; Shigematsu, Hideyuki; Tanaka, Hiroshi; Ashikawa, Ryo; and Ishida, Tatsuo, 5,011,875, Cl. 524-45.000.

Shigenobu, Michio: *See*—
Sakurai, Masaaki; Yamamoto, Iichiro; Goto, Masahiro; Kuge, Tsukasa; and Shigenobu, Michio, 5,011,401, Cl. 432-60.000.

Shigeta, Akira: *See*—
Suzuki, Toshiyuki; Nohta, Masahide; Shigeta, Akira; Ina, Yoshimitsu; and Nozawa, Manami, 5,011,680, Cl. 424-64.000.

Shih, Jenn S.; Smith, Terry E.; Zamora, John; and Economidis, Minas, to GAF Chemicals Corporation. Precipitation polymerization of copolymers of a vinyl lactam and a polymerizable carboxylic acid using sub-surface feeding. 5,011,895, Cl. 526-88.000.

Shiina, Toshio; Miyamoto, Keiko; Izumi, Kouji; Hayashi, Yasuro; Karasawa, Yonenobu; Uematsu, Satoru; and Sei, Naoki, to Ricoh Company, Ltd. Body massaging apparatus of water current type. 5,010,605, Cl. 4-542.000.

Shikada, Kenichi: *See*—
Tanikawa, Keizo; Saloda, Ryozo; Tanaka, Sakuya; and Shikada, Kenichi, 5,011,839, Cl. 514-247.000.

Shikakura, Akihiro: *See*—
Yoshimura, Katsuji; Nagasawa, Kenichi; Kashida, Motokazu; and Shikakura, Akihiro, 5,012,352, Cl. 358-343.000.

Shiley, Inc.: *See*—
Buckberg, Gerald D.; Maloney, James V., Jr.; Jones, Kenneth A.; and West, Weldon D., 5,011,469, Cl. 604-4.000.

Shimazu, Takashi: *See*—
Saito, Katushi; Shindou, Yoshio; Murata, Toshimichi; Yamazaki, Fumio; and Shimazu, Takashi, 5,011,744, Cl. 428-623.000.

Shimizu Construction Co., Ltd.: *See*—
Yano, Hisato; Hashimoto, Shusa; and Horiyama, Tsuyoshi, 5,011,632, Cl. 261-81.000.

Shimizu, Fumihiko: *See*—
Takahashi, Shoichi; Ichiki, Sayohiko; Yorozu, Masatoshi; Kunishige, Seiji; Shibagaki, Taro; Shimizu, Fumihiko; Fujioka, Fumio; and Kondo, Toshinori, 5,012,240, Cl. 341-101.000.

Shimizu, Masao: *See*—
Sakano, Chikashi; Nakada, Seiichi; Shimizu, Masao; Ito, Shinichi; and Yamamoto, Toshiyoshi, 5,010,664, Cl. 38-77.700.

Shimizu, Minoru: *See*—
Sato, Junichi; and Shimizu, Minoru, 5,012,067, Cl. 219-121.720.

Shimizu, Tadafumi, to Minolta Camera Co., Ltd. Cleaning device for wire electrode of corona discharger. 5,012,093, Cl. 250-324.000.

Shimizu, Takao: *See*—
Tsugita, Hiroshi; and Shimizu, Takao, 5,011,557, Cl. 156-180.000.

Shimomura, Masakazu: *See*—
Nose, Kazuo; Yamamoto, Hiroyuki; Koike, Shiro; Shimomura, Masakazu; Tsubono, Hajime; Kitagawa, Soichi; Fujisaki, Yasumasa; Maeda, Yasushi; Wakebe, Tetsuya; and Katayama, Yasuyuki, 5,010,756, Cl. 72-9.000.

Shimono, Mamoru; Asada, Tomoyuki; Kawaguchi, Taiichi; Taya, Yoichi; Yukinaga, Kouji; Nomura, Susumu; and Tagawa, Hajime, to Kabushiki Kaisha Toshiba. Copying apparatus having a lamp to form or erase an image. 5,012,283, Cl. 355-229.000.

Shimosato, Masashi; and Ochiai, Kuniaki, to Tokyo Electric Co., Ltd. Releasing type dot printer head. 5,011,308, Cl. 400-124.000.

Shimp, Alan G.: *See*—
Hammond, Russell E.; Northup, Robert L.; Shimp, Alan G.; and Fassnacht, Francis B., 5,012,121, Cl. 307-64.000.

Shimura, Yasuhiko: *See*—
Kawano, Youzo; Takahashi, Tadashi; Shimura, Yasuhiko; and Takahashi, Yukihiro, 5,012,183, Cl. 324-96.000.

Shin-Etsu Chemical Co., Ltd.: *See*—
Amano, Tadashi; and Watanabe, Junichi, 5,011,897, Cl. 526-202.000.
Ogawa, Kazufumi; Tamura, Hideharu; Ishihara, Toshinobu; Tanaka, Yasuhisa; and Endou, Mikio, 5,011,963, Cl. 556-485.000.
Urasato, Nobuaki; Takamizawa, Minoru; Hayashida, Akira; Ohsaki, Hiromi; and Maruta, Jiyunitirow, 5,011,639, Cl. 264-65.000.

Shin, Hyungsoon: *See*—
Tasch, Aloysious F., Jr.; Shin, Hyungsoon; and Maziar, Christine M., 5,012,306, Cl. 357-23.400.

Shinagawanenryo Kabushikikaisha: *See*—
Totani, Tuyoshi; Yamamoto, Tatuo; and Kurihara, Yasuo, 5,011,602, Cl. 210-484.000.

Shindo, Shotaro: *See*—
Ono, Yutaka; Muramatsu, Yasuhiko, Banzai, Hideo; Kikukawa, Yoichi; Hashida, Shigeru; Shindo, Shotaro; Higuchi, Haruo; Shinomiya, Hiroyuki, Nikaido, Mitsuhiro; and Sato, Koichi, 5,012,169, Cl. 318-568.000.

Shindou, Yoshio: *See*—
Saito, Katushi; Shindou, Yoshio; Murata, Toshimichi; Yamazaki, Fumio; and Shimazu, Takashi, 5,011,744, Cl. 428-623.000.

Shingaki, Kouichi: *See*—
Saito, Itaru; Matsubara, Ken; Shingaki, Kouichi; Masuda, Tomohiko; and Kitano, Hirohisa, 5,011,271, Cl. 350-356.000.

Shingo, Naohito; and Kishida, Takahito, to Nippon Paint Co., Ltd. Aqueous coating composition. 5,011,882, Cl. 524-504.000.

Shinnippon Koki Kabushiki Kaisha: *See*—
Shinno, Nobuo; and Ohnishi, Yasuhiro, 5,011,563, Cl. 156-574.000.
Shinno, Nobuo; and Ohnishi, Yasuhiro, to Shinnippon Koki Kabushiki Kaisha. Automatic tape affixing apparatus. 5,011,563, Cl. 156-574.000.

Shinohara, Tatsuo: *See*—
Fujioka, Yoshiki; and Shinohara, Tatsuo, 5,012,173, Cl. 318-727.000.

Shinomiya, Hiroyuki: *See—*
Ono, Yutaka; Muramatsu, Yasuhiko, Banzai, Hideo; Kikukawa, Yoichi; Hashida, Shigeru; Shindo, Shotaro, Higuchi, Haruo, Shinomiya, Hiroyuki, Nikaido, Mitsuhiro, and Sato, Koichi, 5,012,169, Cl. 318-568.000.
Shinzato, Toru, to Shinzato, Toru, and Medecs Co. Ltd. Hemodiafiltration system. 5,011,607, Cl. 210-637.000
Shiokawa, Yoshihiro: *See—*
Tokura, Nobuyuki; Takefumi, Tadayoshi; Matsumoto, Shunichi, and Shiokawa, Yoshihiro, 5,011,987, Cl. 562-494.000
Shiomi, Makoto, Ozeki, Kosuke; Ohsawa, Michitaka, Matsumi, Kuninori, and Kawagishi, Tadahiro, to Hitachi, Ltd., and Hitachi Video Engineering, Inc. Correcting data reading device in a digital convergence correcting device. 5,012,332, Cl. 358-64.000.
Shionogi & Co., Ltd. *See—*
Yoshida, Tadashi, Inoue, Keizo; Arita, Hitoshi, Matsutani, Shigeru, Shoji, Jun'ichi; and Kawamura, Yoshimi, 5,011,952, Cl. 549-393.000.
Shiozawa, Akihiko *See—*
Tominaga, Kenji, Miki, Minoru; Takahashi, Tooru, Horiuchi, Tetsuo; Morishima, Hideo, Nakayama, Takashi, Moriya, Kumiaki, Matsumoto, Masaki, Akita, Minoru, Ninno, Tsuyoshi, Ochiai, Kanehiro, Shiozawa, Akihiko, Uchiyama, Yuichi, Yasuno, Toyoharu, Moriya, Kenji, Kinoshita, Shouichirou; Kage, Kazuo, and Kubota, Ryuji, 5,011,652, Cl. 376-283.000
Shipko, Frederick J. *See—*
Goode, Louis, Shipko, Frederick J., and Fearnot, Neal E., 5,011,482, Cl. 606-1.000.
Shirahase, Ichiro *See—*
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Shirakawa, Hiroshi *See—*
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Shirato, Takehide, to Fujitsu Limited. Semiconductor thin film device with thick insulator at gate edge. 5,012,311, Cl. 357-23.700
Shirota, Hiroyuki *See—*
Kurusu, Yasuo; Cho, Masamichi; Nagata, Shinichi, Tomohisa, Kunio; and Shirota, Hiroyuki, 5,012,089, Cl. 250-235.000
Shishikura, Toshibumi, to Daiwa Can Company. Method of non-overlap halftone-dot printing of colored original on cylindrical container outer surface. 5,010,814, Cl. 101-211.000
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Smith, Peter H., deceased (by Smith, Pamela S., executor), to General Electric Company. Magnetron with full wave bridge inverter. 5,012,058, Cl. 219-10.55B
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Steinberg, David H. and Luzzi, John J., to Ciba-Geigy Corporation. Process for preparing dithiobisphenols. 5,012,003, Cl. 568-123.000.
Steinman, Martin. *See*—
Babad, Esther Carruthers, Nicholas, and Steinman, Martin, 5,011,993, Cl. 564-273.000.
Stenzel, Otto W., to Leybold Aktiengesellschaft. Crucible for inductive heating. 5,012,488, Cl. 373-156.000.
Stepan, Jiri. Arrangement for cutting and/or stripping apparatuses. 5,010,797, Cl. 83-883.000.
Stephan, Wolfgang. *See*—
Diehtelmuller, Herbert, and Stephan, Wolfgang, 5,011,695, Cl. 424-529.000.
Sterling Drug Inc. *See*—
Cordes, Eugene H., Ellames, George J., Herbert, John M., and Smith, David I., 5,011,985, Cl. 562-469.000.
Cordes, Eugene H., Ellames, George J., Herbert, John M., and Smith, David I., 5,011,986, Cl. 562-469.000.
Stern & Stern Industries, Inc. *See*—
Thornton, Peter B., Cone, Stanley H., and Booz, George W., 5,010,663, Cl. 38-52.000.
Thornton, Peter B., Woodworth, Fred P., and Cone, Stanley H., 5,011,183, Cl. 280-743.000.
Sterner, Hakan. *See*—
Hardt, Norbert, Sterner, Hakan, Wetzka, Gerhard, and Schulte, Burkart, 5,011,651, Cl. 376-261.000.
Stetter, Joseph R., Findlay, Melvin W., and Yue, Chongshan, to Gas Research Institute. Microcalorimeter sensor for the measurement of heat content of natural gas. 5,012,432, Cl. 364-557.000.
Stettiner, Yoram. *See*—
Adlersberg, Shabtai, Stettiner, Yoram, Aizner, Mendel, and Berstein, Alberto, 5,012,519, Cl. 381-47.000.
Steuck, Michael J. *See*—
Coull, James M., Rappin, Darryl J., Koester, Hubert, Pluskal, Malcolm G., Steuck, Michael J., and Bonner, Alex G., 5,011,861, Cl. 521-53.000.
Steudle, Volker, and Bartz, Volker, to Fresenius AG. Aqueous dialysis and rinsing solution for intraperitoneal administration. 5,011,826, Cl. 514-23.000.
Stevens, Carl T., Jr. Decorative necktie knot cover. 5,010,593, Cl. 2-152.00R.
Stevens, Kathleen R.; and Connor, Thomas H., to Board of Regents, The University of Texas System, The. Cytotoxic agent containment kit. 5,011,020, Cl. 206-570.000.
Stevens, S. Scott. Robotic end effector for grasping objects. 5,011,207, Cl. 294-88.000.
Stewart, James R. *See*—
Gruenberg, Eric L.; Stewart, James R., and Halicho, James J., 5,011,198, Cl. 292-41.000.
Stewart, Marta E.: *See*—
Rada, Mark Z., Willis, John W., and Stewart, Marta E., 5,012,054, Cl. 200-314.000.
Stewart, Vernon E. *See*—
Francis, Nicholas J., and Stewart, Vernon E., 5,011,010, Cl. 206-307.000.
Stewart, William R., to McDonnell Douglas Corporation. Rotating sealant applicator. 5,010,841, Cl. 118-711.000.
Steyr-Daimler-Puch AG: *See*—
Sommer, Hans D., 5,010,975, Cl. 180-248.000.
Stil, Jacob H., Ooms, Adrianus J., and Mink, Bernardus H., to Shell Oil Company. Apparatus for cooling and purifying a hot gas. 5,011,507, Cl. 48-62.00R.
Stingsen, Jeppe. *See*—
Jensen, Aage, Stingsen, Jeppe, and Landberg, Jakob, 5,010,612, Cl. 8-149.100.
Stobbs, Thomas J.; Patel, Kishor J., Fritz, Frank M., Knutson, Dale A., and Janecke, James P., to Applied Power Inc. Fluid control valve. 5,011,113, Cl. 251-129.160.
Stoddard, Darrell: *See*—
Kittler, Wilfred C., Jr., Czukor, Janos, and Stoddard, Darrell, 5,011,569, Cl. 156-656.000.
Stokley, Charles O.; and Haas, Richard C., to Chalkbus, Inc. Drilling method. 5,010,966, Cl. 175-66.000.
Stonehouse, David R., to Dennison Stationery Products Company. Flip chart pad. 5,010,671, Cl. 40-594.000.
Storz, Dieter, and Baas, Dieter, to Deutsche Thomson-Brandt GmbH. Phase control circuit for regulating a CD player drive. 5,012,204, Cl. 331-11.000.
Stoutenburg, Robert R., Dugas, Michael R., and Hazelton, Mark W., to Progressive Tool & Industries Co. Automotive body framing system. 5,011,068, Cl. 228-4.100.
Stradley, Carolyn A. Separable pants with integral underpants. 5,010,595, Cl. 2-227.000.
Strand, Oddbjorn E. *See*—
Jorgensen, Terje, Strand, Oddbjorn E.; and Asbjornsen, Odd A., 5,011,285, Cl. 356-335.000.
Strater, Kurt F.. *See*—
Bose, Ajit K., and Strater, Kurt F., 5,011,298, Cl. 383-8.000.
Strawn, David F.: *See*—
Burton, Richard J.; Copeland, John A., III; Jerrim, John W.; Nixon, Toby L., Sauser, Martin H., Jr.; Weatherford, Robert E., Jr., Becker, Larry D.; and Strawn, David F., 5,012,489, Cl. 375-8.000.

Streck, Donald A.; and Iggulden, Jerry R., to Iggulden, Jerry R.; and Streck, Donald A., a part interest. Television local wireless transmission and control. 5,012,350, Cl. 358-335.000.
Strepparola, Ezio. *See*—
Gregorio, Guglielmo; Roberti, Lamberto; and Strepparola, Ezio, 5,011,979, Cl. 560-223.000.
Stridh, Keijo A.: *See*—
Tolf, Anders K. H.; and Stridh, Keijo A., 5,010,920, Cl. 137-565.000.
Strobl, Georg, to Johnson Electric S.A. Assembled commutator for an electric motor. 5,012,149, Cl. 310-234.000.
Stroebel, Thomas: *See*—
Battin, John, and Stroebel, Thomas, 5,012,502, Cl. 378-58.000.
Strom, Peter H. *See*—
Ingraham, Ronald D.; Nykerk, Todd M.; and Strom, Peter H., 5,010,972, Cl. 180-178.000.
Strom, Terry B., to Beth Israel Hospital Association. Lysing or blocking unwanted cells with IL-2 receptor-specific binding substance. 5,011,684, Cl. 424-85.200.
Strong, David S.; and Dawson, John A., to Alcan International Limited. Metal/air battery with pulsed gas bubbling. 5,011,747, Cl. 429-27.000.
Stroup, H. B., Jr.: *See*—
Connor, John K., Connor, Charles M., Jr.; and Stroup, H. B., Jr., 5,010,673, Cl. 40-661.000.
Stryker Corporation: *See*—
Oppermann, Hermann; Kuberasampath, Thangavel; Rueger, David C., and Ozkaynak, Engin, 5,011,691, Cl. 424-423.000.
Studler, Richard. Boat/auto parking system for marina. 5,011,357, Cl. 414-253.000.
Stutz, Michael; and Modinger, Thomas, to TRW Repa GmbH. Locking means for a drive member of a passive safety-belt system. 5,011,185, Cl. 280-804.000.
Subramanian, Naranammalpuram S., to Hawkins Cookers Limited. Pressure regulating system for use in pressure cookers and pressure cooker having the same. 5,011,035, Cl. 220-203.000.
Sucht, Gayle A.; and Mattis, John S., to Raychem Corporation. Coaxial cable connector. 5,011,432, Cl. 439-584.000.
Suda, Shigeyuki. *See*—
Nakayama, Hiroki; Kitagishi, Nozomu; Hattori, Jun; Suda, Shigeyuki; and Horiuchi, Akihisa, 5,011,272, Cl. 350-427.000.
Sudo, Yasuhiro: *See*—
Suzuki, Daiji; and Sudo, Yasuhiro, 5,011,126, Cl. 271-227.000.
Suehiro Industrial Co., Ltd.: *See*—
Iame, Eiji, and Imura, Yasuo, 5,011,728, Cl. 428-156.000.
Suehiro, Urabe; Masayuki, Honma; and Tohru, Kamibeppu, to Nissan Motor Co., Ltd. Intake apparatus for V-type 8-cyl internal combustion engine. 5,010,854, Cl. 123-52.0MV.
Suenaga, Tatsuo. *See*—
Akihama, Shigeyuki; Kobayashi, Mikio; Suenaga, Tatsuo; Fukumoto, Toshiyuki, Taniguchi, Yoshikazu; and Nakagawa, Hiroaki, 5,010,705, Cl. 52-477.000.
Sugano, Kazuhiko; and Ueki, Akihiro, to Nissan Motor Co., Ltd. Automatic automotive transmission having 4-2 downshift sequence valve. 5,010,788, Cl. 74-868.000.
Sugasawara, Seiji, Tsuneki, Ken; Ohshima, Kazuyoshi; Nakayama, Yojiro; Hayakawa, Tatsuya, and Tamura, Seiichiro, to Sugatsune Industrial Co., Ltd. Coat lift hanger. 5,011,029, Cl. 211-104.000.
Sugatsune Industrial Co., Ltd.. *See*—
Sugasawara, Seiji; Tsuneki, Ken, Ohshima, Kazuyoshi; Nakayama, Yojiro, Hayakawa, Tatsuya; and Tamura, Seiichiro, 5,011,029, Cl. 211-104.000.
Sugaya, Toshihiro: *See*—
Isomura, Akihiro; and Sugaya, Toshihiro, 5,012,372, Cl. 360-106.000.
Sugimori, Masao: *See*—
Sasabe, Junya; and Sugimori, Masao, 5,012,294, Cl. 355-309.000.
Sugiura, Shinji. *See*—
Hiraki, Tadayoshi; Iwase, Osamu; Oosumimoto, Hirosi; Sugiura, Shinji; Tabushi, Ichiro; Kume, Masafumi; Udagawa, Takashi; Matsui, Komaharu; and Fujii, Yasuhiro, 5,011,733, Cl. 428-336.000.
Sugiyama, Yuuichi: *See*—
Takeda, Shiro; Namiki, Fumihiro; Sugiyama, Yuuichi; Iwase, Nobuhiro; Tadaki, Shinji; and Koshino, Nagaaki, 5,012,096, Cl. 250-327.200.
Suh, Kyung W., to Dow Chemical Company, The. Insulating alkenyl aromatic polymer foam. 5,011,866, Cl. 521-97.000.
Suhara, Sinsuke: *See*—
Asai, Koichi; Tsuda, Mamoru; Muto, Yasuo; Suhara, Sinsuke; and Kawada, Tousuke, 5,012,115, Cl. 250-561.000.
Sullivan, Carl J., to Arco Chemical Technology, Inc. Paint stripper compositions containing N-methyl-2-pyrrolidone and renewable resources. 5,011,621, Cl. 252-162.000.
Sulmone, Michael: *See*—
Laskaris, Michael A.; Brottman, Kalman; Teske, Richard E.; Miller, David L.; and Sulmone, Michael, 5,010,870, Cl. 123-576.000.
Sumitomo Bakelite Company Limited: *See*—
Miyazaki, Kazuoki, Noguchi, Yasuo; Inoue, Naohiko; and Idemoto, Morito, 5,011,471, Cl. 604-22.000.
Nambu, Masao; Onishi, Tadayuki; and Onohara, Masayuki, 5,012,503, Cl. 378-64.000.
Sumitomo Chemical Company, Limited: *See*—
Kadokura, Hidekimi; Yoshitake, Hiroshi; and Tanahashi, Masayoshi, 5,012,156, Cl. 313-509.000.
Matsuda, Teruo; Miki, Masayoshi; and Ochi, Hiromu, 5,011,539, Cl. 134-22.140.
Takahashi, Junya; Nishida, Sumio; Fujimoto, Izumi; Shono, Yoshinori; and Fujimoto, Hiroaki, 5,012,004, Cl. 568-53.000.
Terao, Masanobu; Maegawa, Yuzo; Ueda, Yasuyoshi; Hashimoto, Kiyoyasu; and Omura, Takashi, 5,012,015, Cl. 568-709.000.
Yoneyoshi, Yukio; Suzukamo, Gohfu; and Sakito, Yoji, 5,011,989, Cl. 564-8.000.
Sumitomo Electric Industries, Ltd.: *See*—
Degawa, Junji; and Tsuji, Kazuwo, 5,011,790, Cl. 437-134.000.
Hitotsuyanagi, Hajime; Fujita, Nobuhiko; Itozaki, Hideo; Nakagama, Syoji; Tanaka, Saburo; and Fukushima, Kazuhiko, 5,011,759, Cl. 430-128.000.
Sato, Kazuhiro, 5,012,045, Cl. 174-106.00R.
Sumitomo Pharmaceuticals Company, Limited: *See*—
Fujioka, Keiji; Sato, Shigeji; Takada, Yoshihiro; Sasaki, Yoshio; and Tamura, Nobuhiko, 5,011,692, Cl. 424-426.000.
Sumitomo Rubber Industries Limited: *See*—
Blythe, Robert J.; and Scally, Paul G., 5,011,876, Cl. 524-77.000.
Katayama, Hideaki; Murakami, Toshifumi; Soeda, Koji; Kubota, Yoshiya; Okamoto, Shoji; Kubota, Akinori, Kobayashi, Michihito; and Ijiri, Masaaki, 5,011,392, Cl. 425-35.000.
Numata, Kazuki; and Ochiai, Kiyoshi, 5,010,936, Cl. 152-209.00R.
Summach, Harley R. W., to Northern Telecom Limited. Cable entry device for EMI shielded cabinets. 5,012,042, Cl. 174-35.00C.
Summers, Robert B.: *See*—
Terada, Takao; Ota, Hiroyuki; Makita, Shigeru; Herpichboehm, Bernd G.; Sierra, George H.; Summers, Robert B.; and Watlington, Thomas M., 5,011,290, Cl. 356-423.000.
Sunami, Hideo: *See*—
Kimura, Shinichiro; Kawamoto, Yoshifumi; Kaga, Toru; and Sunami, Hideo, 5,012,310, Cl. 357-23.600.
Sundaram, Meenaksi: *See*—
Parthasarathy, V. R.; Sundaram, Meenaksi; Jameel, Hasan; Gratzl, Josef S.; and Klein, Ronald J., 5,011,572, Cl. 162-56.000.
Sunder, Shyam: *See*—
Peet, Norton P.; and Sunder, Shyam, 5,011,835, Cl. 514-212.000.
Sunderdiek, Rainer: *See*—
Schafer, Horst; Ludwig, Gerhard; and Sunderdiek, Rainer, 5,011,661, Cl. 422-30.000.
Sundstrand Corporation: *See*—
Dhyanchand, P. John; Patel, Sunil; Ng, Chai-Nam; and Nguyen, Vietson, 5,012,177, Cl. 322-10.000.
Frantz, Gary A.; Aleem, Mohd A.; Rademacher, Loren; and Ratcike, Lee R., 5,012,145, Cl. 310-68.00D.
Recker, Bradley J.; Roe, Derrick I.; and Rozman, Christopher J., 5,012,437, Cl. 364-701.000.
White, Robert C., 5,011,464, Cl. 475-260.000.
Sung, Chien-Min: *See*—
Cho, Hyun S.; Sung, Chien-Min; Merrill, Leo; Chen, Sy-Hwa; and Csillag, Frank, 5,011,514, Cl. 51-295.000.
Sunsoft Lenses: *See*—
Neefe, Charles W., 5,011,633, Cl. 264-1.100.
Superior Industries International, Inc.: *See*—
Cohen, Bernard; Caplan, Don B.; and Edwards, Edward G., 5,010,761, Cl. 73-40.700.
Superloon K.K.: *See*—
Watanabe, Hajime, 5,011,447, Cl. 446-220.000.
Supkis, Stanley: *See*—
Zador, Eugene; Hsu, Shyiguei; Kaczmarek, Wesley R.; Ravipati, Sitaramaiah; Supkis, Stanley; and Vogel, Richard H., 5,011,513, Cl. 51-295.000.
Surles, Billy W.: *See*—
Friedman, Robert H.; and Surles, Billy W., 5,010,953, Cl. 166-288.000.
Susak, David M.; and Bader, Scott K., to Motorola Inc. Full wave rectifier/averaging circuit. 5,012,139, Cl. 307-490.000.
Suyama, Shuji; and Nakamura, Tomoyuki, to Nippon Oil and Fats Company, Limited. T-ethyl-1,5-dimethylhexylperoxy acid esters. 5,012,010, Cl. 568-561.000.
Suzukamo, Gohfu: *See*—
Yoneyoshi, Yukio; Suzukamo, Gohfu; and Sakito, Yoji, 5,011,989, Cl. 564-8.000.
Suzuki, Akira: *See*—
Aoki, Masakazu; and Suzuki, Akira, 5,011,388, Cl. 418-95.000.
Suzuki, Daiji; and Sudo, Yasuhiro, to Dai Nippon Insatsu Kabushiki Kaisha. Automatic sheet stack loading mechanism of sheet feeding apparatus. 5,011,126, Cl. 271-227.000.
Suzuki, Daisuke: *See*—
Furukawa, Kazunari; and Suzuki, Daisuke, 5,010,977, Cl. 181-160.000.
Suzuki Jidosha Kogyo Kabushiki Kaisha: *See*—
Onishi, Kazuhiko, 5,010,731, Cl. 60-313.000.
Suzuki, Mamoru: *See*—
Suzuki, Takao; Suzuki, Mamoru; and Hayashi, Yasufumi, 5,011,415, Cl. 439-63.000.
Suzuki, Masami: *See*—
Yoshio, Junichi; and Suzuki, Masami, 5,012,242, Cl. 341-131.000.
Suzuki, Mikio: *See*—
Fujikawa, Yoshihiro; Suzuki, Mikio; Iwasaki, Hiroshi; Sakashita, Mitsuaki; and Kitahara, Masaki, 5,011,930, Cl. 546-101.000.
Suzuki, Minoru: *See*—
Kouda, Masanori; Suzuki, Minoru; Okamura, Tetsuya; and Tobisawa, Toshihisa, 5,010,923, Cl. 137-625.340.
Suzuki, Nobuo: *See*—
Ono, Mitsunori; and Suzuki, Nobuo, 5,011,923, Cl. 536-17.900.

Suzuki, Osamu: *See—*
Yasui, Yoshiharu; Nakane, Katsumi, Suzuki, Osamu; and Kimbara, Masahiko, 5,010,725, Cl. 57-281.000

Suzuki, Satoshi. *See—*
Takahashi, Mineo; Nakayama, Susumu; Yamashima, Osamu; Suzuki, Satoshi; Harada, Toshihiko; and Aiso, Keiji, 5,010,642, Cl. 29-868.000.

Suzuki, Shigeaki; and Inoue, Hideo, to Japan Air Lines Co., Ltd. Dampening mask for use in aircraft. 5,010,594, Cl. 2-206.000.

Suzuki, Sigeru: *See—*
Mine, Koichi; and Suzuki, Sigeru, 5,011,369, Cl 415-55.100.

Suzuki, Takao; Suzuki, Mamoru; and Hayashi, Yasufumi, to Japan Aviation Electronics Industry Limited. Right angle coaxial receptacle. 5,011,415, Cl 439-63.000.

Suzuki, Takashi, to Yamaha Corporation. Interface circuit for asychronous data transfer. 5,012,138, Cl 307-475.000.

Suzuki, Takumi; and Uehara, Kiyohiro, to Ricoh Company, Ltd. Liquid crystal display device. 5,011,266, Cl. 350-335.000.

Suzuki, Tetsuo: *See—*
Yoshimura, Shigeru; Suzuki, Tetsuo; and Takemura, Makoto, 5,012,260, Cl. 346-139.00R.

Suzuki, Toshimitsu, to Daichi Canada Inc. Blower for the production of a mist or the like. 5,011,522, Cl. 62-12.000.

Suzuki, Toshiyuki; Nohta, Masahide; Shigeta, Akira; Ina, Yoshimitsu; and Nozawa, Manami, to Kao Corporation. Solid cosmetic preparation. 5,011,680, Cl. 424-64.000.

Suzuki, Yasuyuki; Takagawa, Noboru, Kawabata, Mikio, Hayashi, Mariko; Takagi, Akiko; Wakamiya, Takako, and Saikawa, Isamu, to Toyama Chemical Co., Ltd. Novel process for producing bischolinedisulfonate derivatives. 5,011,973, Cl. 560-185.000.

Svenska Rotor Maskiner AB. *See—*
Timuska, Karlis, 5,011,389, Cl 418-152.000.

Svensson, E. Gunnar, to Autopart Sweden AB. Sun visor for motor vehicles. 5,011,211, Cl. 296-97.100.

Swann, David A. *See—*
Donahoe, Patricia K.; and Swann, David A., 5,011,687, Cl 424-559.000

Swanson, Eric J. *See—*
Wellard, David R.; Kerth, Donald A., Del Signore, Bruce P., and Swanson, Eric J., 5,012,244, Cl 341-143.000

Swaroop, Srinivas H.: *See—*
Hogue, Kathryn E.; Swaroop, Srinivas H.; and Wusirika, Raja R., 5,011,529, Cl. 75-235.000

Swart, Nicholaas C., to Heuft-Qualiplus B.V. Method and an apparatus for checking an object for the presence of filling compound 5,011,289, Cl 356-394.000

Sweeney, Donald C. Adjustable arrow holder 5,011,028, Cl 211-60.100

Sweeney, Mark A.: *See—*
Xu, Jingming, Sweeney, Mark A., and Day, Derek J., 5,012,301, Cl 357-4.000.

Swiss Aluminium Ltd.: *See—*
Werner, Martin, Bloeck, Margarete; and Bichsel, Heinz, 5,011,657 Cl. 420-538.000.

Swope, Ronald L. *See—*
Barron, Milagros C.; Swope, Ronald L.; Wilkerson, John M., III; and Ruffner, Charles G., 5,011,978, Cl 560-221.000

Sybert, Paul D., to General Electric Company. Copoly(aromatic sulfone carbonate - aromatic alkylcarbonate) - polysiloxane block copolymer 5,011,899, Cl. 528-26.000.

Szala, Lawrence E. *See—*
Borom, Marcus P.; Szala, Lawrence E.; Brun, Milivoj; Miller, Steven A.; and Mourer, David P., 5,011,049, Cl 222-590.000

Szczyrbowski, Joachim. *See—*
Dietrich, Anton, Hartig, Klaus; Schaefer, Hans-Christian; and Szczyrbowski, Joachim, 5,011,745, Cl. 428-630.000

Tabak, Samuel A. *See—*
Child, Jonathan E.; Huss, Albin, Jr., Kennedy, Clinton R., Marler, David O.; and Tabak, Samuel A., 5,012,033, Cl 585-722.000

Tabata, Yasushi; Kobayashi, Takeo; Numako, Norio, and Nagai, Katsutoshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Indication control unit for an electronically controlled camera 5,012,272, Cl. 354-465.000.

Tabushi, Ichiro: *See—*
Hiraki, Tadayoshi, Iwase, Osamu, Oosumimoto, Hiroshi, Sugiura, Shinji; Tabushi, Ichiro, Kume, Masafumi, Udagawa, Takashi, Matsui, Komaharu, and Fujii, Yasuhiro, 5,011,733, Cl 428-336.000

Tachi-S Co., Ltd. *See—*
Ikeda, Tetsuo, and Nemoto, Akira, 5,011,226, Cl. 297-403.000
Inoue, Nobuhiro, 5,011,210, Cl 296-69.000.
Kato, Sakae, 5,011,223, Cl 297-284.000
Nagata, Kojiro, 5,011,109, Cl. 248-564.000.
Nemoto, Akira, 5,011,225, Cl 297-408.000

Tachibana, Kimie, and Kaneko, Yutaka, to Konica Corporation. Dye forming coupler for photographic use 5,011,765, Cl 430-548.000

Tacker, Willis A., Jr. *See—*
Bourland, Joe D.; Barbs, Charles F.; Geddes, Leslie A., Tacker, Willis A., Jr., and Graber, George P., 5,010,772, Cl. 73-862.040

Tackett, Donald L. W. Security door block 5,011,203, Cl 292-343.000

Tadaki, Shinji. *See—*
Takeda, Shiro, Namiki, Fumihiro; Sugiyama, Yuuichi; Iwase, Nobuhiro, Tadaki, Shinji, and Koshino, Nagaaki, 5,012,096, Cl 250-327.200.

Taga, Yuji; and Katoh, Masashi, to Alps Electric Co., Ltd. Rotary head type magnetic recording/reproducing apparatus with read-after-write feature. 5,012,355, Cl. 360-31.000

Taga, Yutaka *See—*
Tsukamoto, Kazumasa; Ishikawa, Kazunori; Taniguchi, Takuji, Iwatsuki, Kunihiro; and Taga, Yutaka, 5,010,991, Cl. 192-3.300

Tagawa, Hajime *See—*
Shimono, Mamoru; Asada, Tomoyuki; Kawaguchi, Taiichi; Taya, Yoichi, Yukinaga, Kouji; Nomura, Susumu; and Tagawa, Hajime, 5,012,283, Cl 355-229.000

Taheri, Hassan, to Amoco Corporation. Continuous process for the production of maleic anhydride 5,011,945, Cl 549-260.000.

Taiwan Fu Hsing Industry Co., Ltd. *See—*
Lin, Jui C., 5,010,749, Cl 70-190.000
Lin, Ruey J., 5,010,752, Cl. 70-277.000.

Takabayashi, Naoki *See—*
Kobayashi, Kazuhiro; Koboshi, Shigeharu; Goto, Nobutaka, Kurematsu, Masayuki; and Takabayashi, Naoki, 5,011,571, Cl 159-47.300

Takada, Akihiro *See—*
Nakajima, Yoshihiro; and Takada, Akihiro, 5,012,279, Cl 355-205.000

Takada, Mitsuru, Itoh, Hiroshi; Takahashi, Tokuyuki, and Funahashi, Makoto, to Toyota Jidosha Kabushiki Kaisha. Hydraulic control device for automatic transmission for vehicle adapted to engage clutch at different speed according to engine output power 5,010,787, Cl 74-867.000.

Takada, Shunji: *See—*
Yamashita, Seiji, and Takada, Shunji, 5,011,767, Cl 430-567.000

Takada, Yoshihiro *See—*
Fujioka, Keiji; Sato, Shigeji; Takada, Yoshihiro; Sasaki, Yoshio, and Tamura, Nobuhiko, 5,011,692, Cl. 424-426.000.

Takagawa, Noboru *See—*
Suzuki, Yasuyuki, Takagawa, Noboru, Kawabata, Mikio; Hayashi, Mariko, Takagi, Akiko, Wakamiya, Takako, and Saikawa, Isamu, 5,011,973, Cl 560-185.000.

Takagi, Akiko *See—*
Suzuki, Yasuyuki; Takagawa, Noboru, Kawabata, Mikio; Hayashi, Mariko; Takagi, Akiko, Wakamiya, Takako, and Saikawa, Isamu, 5,011,973, Cl 560-185.000.

Takahashi, Daisuke *See—*
Onmori, Shozo; Takahashi, Daisuke; and Oishi, Kengo, 5,012,378, Cl 360-132.000
Onmori, Shozo; Takahashi, Daisuke; and Oishi, Kengo, 5,012,379, Cl. 360-132.000

Takahashi, Hisao; Yamane, Kaoru; Hirakami, Kiyomi, and Ikeda, Kazuo, to Mazda Motor Corporation. Front structure of vehicle body 5,011,201, Cl 296-203.000

Takahashi, Junya; Nishida, Sumio; Fujimoto, Izumi, Shono, Yoshinori, and Fujimoto, Hiroaki, to Sumitomo Chemical Company, Limited. Ether compounds and their production, and insecticidal and/or acaricidal compositions containing them 5,012,004, Cl. 568-53.000.

Takahashi, Katsuya *See—*
Fukuoka, Daisuke, Takahashi, Katsuya; and Hashimoto, Isao, 5,011,950, Cl 549-336.000

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Husby, Harald S.; Breed, Allen K.; and Thuen, Ted, 5,011,182, Cl 280-735 000

Thunberg, Jon C ; and Begoms, Walter B , to W R Grace & Co.-Conn. Process for the preparation of 3-cyano-3,5,5-trimethylcyclohexanone. 5,011,968, Cl 558-341 000

Thunberg, Jon C , to W R Grace & Co -Conn Recovery of IDA and Glauber's salt from waste crystal liquors 5,011,988, Cl. 562-554.000.

Thurston, William R. *See*—
Peck, Jeffrey A., and Thurston, William R., 5,010,678, Cl. 43-17 000

Tiefel, Thomas H *See*—
Jin, Sungho; Sherwood, Richard C , and Tiefel, Thomas H , 5,011,823, Cl 505-1.000

Tiemsanjai, Phaichitr *See*—
Udomkesmalee, Suraphol, and Tiemsanjai, Phaichitr, 5,011,155, Cl 273-200 00A

Tigges, Burkhard, to Werner Turck GmbH & Co KG. Inductive proximity switch 5,012,206, Cl 331-65 000.

Tikalsky, Joseph S *See*—
Depuydt, Kent T , and Tikalsky, Joseph S , 5,011,114, Cl 251-144 000

Tillett, David M *See*—
Wilde, Edward W , Benemann, John R ; Weissman, Joseph C ; and Tillett, David M , 5,011,604, Cl. 210-602 000

Timuska, Karlis, to Svenska Rotor Maskiner AB Rotor for a rotary screw machine. 5,011,389, Cl. 418-152.000.

Tischer, Michael M Fishing lure and fish hook 5,010,679, Cl 43-42.040

Tisma Machine Corporation *See*—
Tisma, Steven, 5,010,929, Cl 141-1.000.

Tisma, Steven, to Tisma Machine Corporation Fast acting double loading system for automatic packaging machine. 5,010,929, Cl 141-1 000

Tittl, Jakob, to Carl-Zeiss-Stiftung Apparatus for detecting the temperature of an object on a coordinate measuring apparatus 5,011,297, Cl 374-141 000

Tobin, Curtis L , Sr *See*—
Bolton, Theodore S., and Tobin, Curtis L , Sr , 5,010,742, Cl. 62-262.000

Tobisawa, Toshihisa *See*—
Kouda, Masanori, Suzuki, Minoru, Okamura, Tetsuya, and Tobisawa, Toshihisa, 5,010,923, Cl 137-625 340

Tobita, Toshio, Yachi, Shigeru, and Gofuku, Eishi, to Mitsubishi Denki Kabushiki Kaisha Liquid crystal display restoring apparatus. 5,012,314, Cl 357-23 120

Todaro, George J *See*—
Shoyab, Mohammed, Marquardt, Hans, and Todaro, George J., 5,011,777, Cl 435-172 300

Todd, John D., to Ferranti O R E Inc Sonic flow meter. 5,012,449, Cl. 367-89.000

Toensing, Eyvand E , to Seagate Technology, Inc Removable ball staked head gimbal assembly 5,012,367, Cl 360-104.000

Toepfer, Bernhard, and Reiner, Michael, to Daimler-Benz AG. Process for carrying out a load-dependent brake regulation of brakes on a vehicle having an anti-lock system. 5,011,236, Cl. 303-100.000

Togoshi, Hideaki, to Chiyoda Kogyo Co., Ltd. Bending machine 5,010,758, Cl 72-157 000.

Tohru, Kamibeppu *See*—
Suehiro, Urabe; Masayuki, Honma; and Tohru, Kamibeppu, 5,010,854, Cl. 123-52 0MV

Tokin Corporation *See*—
Otsuka, Tsutomu; and Otsuki, Etsuo, 5,011,552, Cl. 148-302.000.

Tokura, Nobuyuki, Takefumi, Tadayoshi; Matsumoto, Shunichi, and Shokawa, Yoshihiro, to Mitsubishi Gas Chemical Company Process for manufacturing high-purity o-toluic acid. 5,011,987, Cl. 562-494 000

Tokyo Electric Co., Ltd *See*—
Fujii, Shinichiro, 5,011,314, Cl. 400-619.000
Shimosato, Masashi, and Ochiai, Kuniaki, 5,011,308, Cl 400-124.000.

Toland, Jonathan S. Garden hose spout 5,011,084, Cl 239-602.000.

Tolf, Anders K. H., and Stridh, Keijo A., to Aktiebolaget Electrolux. Device for emptying water from a dishwasher. 5,010,920, Cl. 137-565.000.

Tolsma, Jay, to General Motors Corporation. Reed valve having variable length petal. 5,010,918, Cl. 137-512.150.

Tom Wheatley Valve Co. *See*—
Partridge, Charles C., 5,010,919, Cl. 137-527.400.

Tomantschger, Klaus *See*—
Kordesch, Karl; Gsellmann, Josef; and Tomantschger, Klaus, 5,011,752, Cl. 429-206.000.

Tomii, Yoshifumi *See*—
Kise, Masahiro; Kitano, Masahiko; Ozaki, Masakuni; Kazuno, Kenji; Matsuda, Masahito; Shirahase, Ichiro; and Tomii, Yoshifumi, 5,011,831, Cl. 514-210.000.

Tominaga, Kenji; Miki, Minoru; Takahashi, Tooru; Horiuchi, Tetsuo; Morishima, Hideo; Nakayama, Takashi; Moriya, Kumiaki; Matsumoto, Masaki; Akita, Minoru; Niino, Tsuyoshi; Ochiai, Kanehiro; Shiozawa, Akihiko; Uchiyama, Yuichi; Yasuno, Toyoharu; Moriya, Kenji; Kinoshita, Shouichirou; Kage, Kazuo; and Kubota, Ryuji, to Hitachi, Ltd., and Hitachi Engineering Co., Ltd. Nuclear power facilities. 5,011,652, Cl. 376-283.000.

Tomisawa, Norio, to Yamaha Corporation Signal delay device using CMOS supply voltage control. 5,012,141, Cl. 307-594 000.

Tomisawa, Osamu *See*—
Isoda, Satoru; Tomisawa, Osamu; and Kawakubo, Hiroaki, 5,011,786, Cl. 437-51.000.

Tomohisa, Kunio *See*—
Kurusu, Yasuo; Cho, Masamichi, Nagata, Shinichi; Tomohisa, Kunio; and Shirota, Hiroyuki, 5,012,089, Cl. 250-235.000.

Tonogouchi, Makoto *See*—
Asuka, Masahiro; Yokota, Shinjiro; Tonogouchi, Makoto; and Kasai, Mitsuo, 5,010,830, Cl. 110-347.000.

Topy Kogyo Kabushiki Kaisha *See*—
Yokomizo, Shojiro; Izumida, Kouji, Saito, Takeshi; and Yanamoto, Yutaka, 5,010,759, Cl 72-393 000

Torok, Vilmos, and Loreth, Andrzej, to Astra Vent AB. Arrangement for transporting air. 5,012,159, Cl. 315-111 910

Torremans, Joseph L. G. *See*—
Janssens, Frans E., Sommen, Francois M ; Torremans, Joseph L. G.; and Diels, Gaston, S M , 5,011,842, Cl 514-253 000

Tosaka, Yoichi; and Kathara, Shoji, to Canon Kabushiki Kaisha Camera 5,012,269, Cl. 354-419 000

Toshiba Ceramics Co., Ltd. *See*—
Katoh, Yoshihisa; Ogawa, Takashi, and Hasegawa, Mitsumasa, 5,011,603, Cl 210-490.000.

Toshiba Kikai Kabushiki Kaisha *See*—
Harada, Susumu; and Kumazaki, Hiroshi, 5,012,426, Cl 364-476.000

Toshida, Yomishi *See*—
Yoshinaga, Kazuo, Kai, Takashi, Egara, Koichi, Toshida, Yomishi, Mitsutake, Hideaki; Sato, Koichi, and Miyazaki, Takeshi, 5,011,623, Cl 252-299.500.

Tosoh Corporation *See*—
Sasabe, Minoru, Imamura, Masao, Yoshida, Yasunobu; Andoh, Shinya; and Miyake, Hiroshi, 5,011,798, Cl 501-87 000.

Totani, Tuyoshi; Yamamoto, Tatuo; and Kurihara, Yasuo, to Shinagawanenryo Kabushikikaisha. Antibacterial material for water. 5,011,602, Cl. 210-484.000

Toth, Joel D. Fireplace grate with adjustable ash pan 5,010,874, Cl. 126-543.000.

Toth, Mihaly V. *See*—
Marshall, Garland R.; and Toth, Mihaly V., 5,011,910, Cl. 530-329.000.

Toto Ltd. *See*—
Kobayashi, Kenichi; Moriwaki, Masazumi, Kadomatsu, Sigenari, Fujie, Yuji; and Kawamoto, Masanobu, 5,010,601, Cl 4-236 000

Towley, Carl K , III, to Lumex, Inc Assisted dip/chin exercise device. 5,011,139, Cl. 272-118.000.

Towley, Carl K., III, and Johnson, Dennis C , to Lumex, Inc Bench press with adjustable safety/range limiting bars. 5,011,141, Cl. 272-123.000.

Townsend Engineering Company *See*—
Townsend, Ray T., 5,011,454, Cl 452-125.000

Townsend, Linda B *See*—
Shacklette, Lawrence W ; Townsend, Linda B.; and Jow, Taiguang R., 5,011,748, Cl. 429-50 000

Townsend, Ray T , to Townsend Engineering Company. Blade attachment for meat skinning machines. 5,011,454, Cl. 452-125.000.

Toyama Chemical Co., Ltd. *See*—
Suzuki, Yasuyuki; Takagawa, Noboru, Kawabata, Mikio; Hayashi, Mariko, Takagi, Akiko, Wakamiya, Takako; and Saikawa, Isamu, 5,011,973, Cl 560-185.000.

Toyama, Masamichi *See*—
Sekine, Masayoshi, Nakajima, Toshiyuki; Kai, Takashi; Yoshimura, Katsuji; and Toyama, Masamichi, 5,012,270, Cl. 354-430.000.

Toyama, Tateo *See*—
Isono, Haruo; Yasuda, Minoru; Watanabe, Hiroshi, Toyama, Tateo; Hioki, Toshiaki; Morita, Yoshihiko, and Yamada, Makoto, 5,012,351, Cl. 358-342.000.

Toyo Kohan Co., Ltd. *See*—
Kanda, Katsumi; Fujimoto, Junichi, Ichishima, Masashi, Nishimura, Takao; and Kondo, Yoshikazu, 5,011,711, Cl. 427-334.000.

Toyoshi, Naoki *See*—
Oka, Tateki, Toyoshi, Naoki, Yokoyama, Tomoaki, Mizuno, Hiroshi, Murasaki, Hiroshi, Ikegawa, Akihito, Etou, Kouichi, and Nakagawa, Shuichi, 5,012,285, Cl. 355-245.000

Toyota Jidosha Kabushiki Kaisha *See*—
Ohata, Akira, 5,010,866, Cl. 123-436.000
Takada, Mitsuru, Itoh, Hiroshi, Takahashi, Tokuyuki, and Funahashi, Makoto, 5,010,787, Cl. 74-867.000
Tsukamoto, Kazumasa, Ishikawa, Kazunori, Taniguchi, Takuji, Iwatsuki, Kunihiro, and Taga, Yutaka, 5,010,991, Cl. 192-3.300
Watanabe, Takashi, Fujimoto, Shusaku, and Sakai, Kazunori, 5,012,417, Cl. 364-426.020

Tracker Marine Corporation *See*—
Riviezzo, Anthony L., 5,010,836, Cl. 114-255.000

Tracto-Technik Paul Schmidt Maschinenfabrik KG *See*—
Schmelzer, Robert, 5,010,965, Cl. 175-19.000

Tracy, David J *See*—
Chaudhuri, Ratan K., Tracy, David J., and Login, Robert B., 5,011,941, Cl. 548-550.000

Traegaardh, Paul, to AB Tetra Pak Transport device for packing container blanks 5,011,467, Cl. 493-309.000

Trattler, Helmut, and Winter, Heike, to Nestec S.A. Cosmetic and dermatological compositions containing γ-linolenic acid 5,011,855, Cl. 514-558.000

Transkrit Corporation *See*—
Bowen, Charles G., and Dolce, Anthony B., 5,011,069, Cl. 229-69.000

Trapasso, Timothy, and Howland, John J Liquid pumping, mixing and dispensing apparatus 5,011,292, Cl. 366-161.000

Trautmann, Wilhelm H *See*—
Gresser, Wilhelm, Schelhase, Klaus, Frisch, Heinz, Kaschel, Klaus, Reineeke, Berent, and Trautmann, Wilhelm H., 5,011,614, Cl. 210-761.000

Travor, Bruce W., and Holler, Roger A., to United States of America, Navy Vehicle steering device 5,011,097, Cl. 244-3.210

Treleven, Robert E., to W R Grace & Co.-Conn. Infrared drying system 5,010,659, Cl. 34-41.000

Triangle Research and Development Corp *See*—
Colvin, David P., Whitney, Raymond A., Marsh, Bernard R., Kline, William M., Rizzo, Ronald R., and Orlosky, Mark E., 5,010,892, Cl. 128-774.000

Tricoli, Francesco *See*—
Menegoli, Paolo, Morelli, Marco, and Tricoli, Francesco, 5,012,130, Cl. 307-272.200

Trinity Industries, Inc *See*—
Hesch, Harold E., 5,010,825, Cl. 105-378.000

TriQuint Semiconductor, Inc *See*—
Taylor, Stewart S., 5,012,202, Cl. 330-284.000
Weiss, Frederick G., and Knierim, Daniel G., 5,012,178, Cl. 323-269.000

Trovan Limited *See*—
Troyk, Philip R., and DeMichele, Glenn A., 5,012,236, Cl. 340-825.540

Troyk, Philip R., and DeMichele, Glenn A., to Trovan Limited Electromagnetic energy transmission and detection apparatus 5,012,236, Cl. 340-825.540

Truesdale, Carlton M *See*—
Miller, William J., Truesdale, Carlton M., Weidman, David L., and Young, Donald R., Jr., 5,011,251, Cl. 350-96.150

TRW Inc *See*—
Lee, Gregory S., 5,012,243, Cl. 341-133.000

TRW Repa GmbH *See*—
Stutz, Michael, and Modinger, Thomas, 5,011,185, Cl. 280-804.000

Tsai, Chi-Taou, to Motorola, Inc. Providing a PGA package with a low reflection line 5,012,213, Cl. 333-247.000

Tsai, John S *See*—
Buhrke, Rolfe E., Dianda, Robert B., Katzenstein, Leo R., McClurkan, Michael B., and Tsai, John S., 5,012,466, Cl. 370-62.000

Tseng, Jeou N Socket and changeable bulb housing snap fastener for Christmas light strings 5,012,397, Cl. 362-237.000

Tsuboniwa, Noriyuki, Urano, Satoshi, and Mizuguchi, Ryuzo, to Nippon Paint Co., Ltd. Novel peroxide monomer and a polymer therefrom. 5,011,981, Cl. 560-302.000

Tsubono, Hajime *See*—
Nose, Kazuo, Yamamoto, Hiroyuki, Koike, Shiro, Shimomura, Masakazu, Tsubono, Hajime, Kitagawa, Soichi, Fujisaki, Yasumasa, Maeda, Yasushi, Wakebe, Tetsuya, and Katayama, Yasuyuki, 5,010,756, Cl. 72-9.000.

Tsuchimoto, Shuhei *See*—
Katoka, Shoei, Tsuchimoto, Shuhei, Nojima, Hideo, Kita, Ryusuke, and Nagata, Masaya, 5,011,818, Cl. 324-248.000

Tsuchiya, Katsuyoshi, and Noake, Kaneo, to Chisso Corporation. Process for producing a rod-form silica 5,011,669, Cl. 423-338.000

Tsuchiya, Keishin, to Ricoh Company, Ltd. Travelling carriage driving apparatus. 5,012,354, Cl. 358-474.000.

Tsuchiya, Yoshinobu *See*—
Kurabayashi, Ken, Tsuchiya, Yoshinobu, and Niida, Yoriaki, 5,012,385, Cl. 361-328.000.

Tsuda, Mamoru *See*—
Asai, Koichi, Tsuda, Mamoru, Muto, Yasuo, Suhara, Sinsuke, and Kawada, Tousuke, 5,012,115, Cl. 250-561.000

Tsuge, Kenji *See*—
Fujiki, Toshisada, Kondo, Taikichi, Furukawa, Yoshinari, Kato, Kazuaki, Okimoto, Akimichi, and Tsuge, Kenji, 5,012,182, Cl. 324-96.000.

Tsugita, Hiroshi, and Shimizu, Takao, to Kurashiki Boseki Kabushiki Kaisha, and Chikuma Koki Co., Ltd. Method for forming joined section of optical branch fibers product, and apparatus therefor 5,011,557, Cl. 156-180.000

Tsuji, Kazuwo *See*—
Degawa, Junji, and Tsuji, Kazuwo, 5,011,790, Cl. 437-134.000

Tsuji, Keiji, to Laurel Bank Machines Co., Ltd. Apparatus for detecting the thickness of sheets 5,011,128, Cl. 271-263.000

Tsujita, Hirayuki, to Sanyo Electric Co., Ltd. Disc player having locking mechanism for pickup 5,012,462, Cl. 369-77.100

Tsukamoto, Kazumasa, Ishikawa, Kazunori, Taniguchi, Takuji, Iwatsuki, Kunihiro, and Taga, Yutaka, to Aisin Aw Co., Ltd., and Toyota Jidosha Kabushiki Kaisha Lock-up clutch control device for a torque converter 5,010,991, Cl. 192-3.300

Tsukushi, Masanori, Koyanagi, Osamu, Seki, Yasuharu, Goto, Tokio, and Kurosawa, Yukio, to Hitachi, Ltd. Three-phase common container-type circuit breaker 5,012,051, Cl. 200-148.00B

Tsuneki, Ken *See*—
Sugasawara, Seiji Tsuneki, Ken, Ohshima, Kazuyoshi, Nakayama, Yojiro, Hayakawa, Tatsuya, and Tamura, Seiichiro, 5,011,029, Cl. 211-104.000

Tsunomachi, Hiroki *See*—
Uesaka, Toshio, Niki, Akihiro, Ohsuga, Makoto, Saito, Toranosuke, Tsunomachi, Hiroki, Yamaguchi, Makoto, Doyama, Kazuo, and Kishimoto, Daishiro, 5,011,879, Cl. 524-290.000

Tsuru, Yoshikazu *See*—
Kitagawa, Toshiharu, Nishiyama, Ryuji, Takita, Masaaki, and Tsuru, Yoshikazu, 5,011,315, Cl. 400-624.000

Tsutsumi, Fumio, Morikawa, Akihiko, Sakakibara, Mitsuhiko, Oshima, Noboru, Hamada, Tatsuro, Fujimaki, Tatsuo, and Ohashi, Masayuki, to Japan Synthetic Rubber Co., and Bridgestone Corp. Vuleanized rubber composition 5,011,888, Cl. 525-98.000

Tsutsumi, Tadahiko *See*—
Yamaguchi, Takashi, Tsutsumi, Tadahiko, and Watanabe, Toshie, 5,011,556, Cl. 156-83.000

Tsutsumi, Takashi, Miyawaki, Shozo, and Kanaya, Kouichi, to Ricoh Company, Ltd. Copier which deletes inoperative functions from control panel 5,012,280, Cl. 355-206.000

Tsuzuki, Sadachika *See*—
Noji, Akio, Kamimura, Kenji, and Tsuzuki, Sadachika, 5,011,288, Cl. 356-375.000

Tull, Bernward, and Pusch, Hans-Dieter, to Carl-Zeiss-Stiftung Belt drive 5,012,263, Cl. 354-241.000

Tumpey, John J., to Allied-Signal Inc. Beveled generator shaft for improved heat transfer 5,012,146, Cl. 310-68.00D

Tuozzolo, Vito J *See*—
Mansuria, Mohanlal S., Mosley, Joseph M., Musa, Richard D., and Tuozzolo, Vito J., 5,012,325, Cl. 357-81.000

Turk, Hayrettin *See*—
Ford, Warren T., Chandran, Rama S., Hassanein, Mahmoud, and Turk, Hayrettin, 5,011,956, Cl. 552-304.000

Typpo, Pekka M., to Impact Systems, Inc. Error compensation for measuring gauges 5,010,766, Cl. 73-159.000

Ube Industries, Inc *See*—
Asuka, Masahiro, Yokota, Shinjiro, Tonogouchi, Makoto, and Kasai, Mitsuo, 5,010,830, Cl. 110-347.000

Ubungen, Romeo N *See*—
Kurth, Herman, Kemble, David, and Ubungen, Romeo N., 5,010,926, Cl. 138-149.000

Uchida, Akihisa *See*—
Kawaji, Mikinori, Takakura, Toshihiko, Uchida, Akihisa, Kuroda, Shigeo, Tamaki, Yoichi, Shiba, Takeo, Sagara, Kazuhiko, and Kawamura, Masao, 5,011,788, Cl. 437-67.000

Uchida, Hiroshi *See*—
Tanaka, Eiichi, and Uchida, Hiroshi, 5,012,103, Cl. 250-368.000

Uchida Yoko Co., Ltd. *See*—
Yoshizawa, Yasuo, Kawaguchi, Hiroichi, and Seto, Kazunari, 5,011,414, Cl. 434-431.000

Uchiyama, Yuichi *See*—
Tominaga, Kenji, Miki, Minoru, Takahashi, Tooru, Horiuchi, Tetsuo, Morishima, Hideo, Nakayama, Takashi, Moriya, Kumiaki, Matsumoto, Masaki, Akita, Minoru, Ninno, Tsuyoshi, Ochiai, Kanehiro, Shiozawa, Akihiko, Uchiyama, Yuichi, Yasuno, Toyoharu, Moriya, Kenji, Kinoshita, Shouichirou, Kage, Kazuo, and Kubota, Ryuji, 5,011,652, Cl. 376-283.000

Udagawa, Takashi *See*—
Hiraki, Tadayoshi, Iwase, Osamu, Oosumimoto, Hiroshi, Sugiura, Shinji, Tabushi, Ichiro, Kume, Masafumi, Udagawa, Takashi, Matsui, Komaharu, and Fujii, Yasuhiro, 5,011,733, Cl. 428-336.000

Udomkesmalee, Suraphol, and Tiemsanjai, Phaichitr. Golf practice device. 5,011,155, Cl. 273-200.00A.

Ueda, Kazuhiro, to Mitsubishi Denki Kabushiki Kaisha. Ion beam irradiation apparatus. 5,012,111, Cl. 250-492.300.

Ueda, Shuzo *See*—
Ohori, Manabu, Koshizuka, Noriaki, Kataoka, Yoshihiro, and Ueda, Shuzo, 5,011,656, Cl. 420-109.000

Ueda, Tatsuya, to Mitsubishi Denki Kabushiki Kaisha. Data processor with instruction cache memory. 5,012,410, Cl. 364-200.000.

Ueda, Yasuyoshi *See*—
Terao, Masanobu, Maegawa, Yuzo, Ueda, Yasuyoshi, Hashimoto, Kiyoyasu, and Omura, Takashi, 5,012,015, Cl. 568-709.000.

Uehara, Kiyohiro *See*—
Suzuki, Takumi, and Uehara, Kiyohiro, 5,011,266, Cl. 350-335.000.

Ueki, Akihiro *See*—
Sugano, Kazuhiko, and Ueki, Akihiro, 5,010,788, Cl. 74-868.000.

Uematsu, Satoru. *See*—
Shuna, Toshio, Miyamoto, Keiko; Izumi, Kouji; Hayashi, Yasuro; Karasawa, Yonenobu, Uematsu, Satoru; and Sei, Naoki, 5,010,605, Cl. 4-542.000

Uemura, Satoshi, Kawada, Susumu, Sekine, Yoshitada; and Miyauchi, Tatsuo, to Nissan Motor Company, Ltd. Vehicle assembly method and apparatus 5,010,634, Cl. 29-407.000.

Uemura, Tsuyoshi *See*—
Wakita, Naohide, Uemura, Tsuyoshi; Ohnishi, Hiroyuki; Ohba, Noriko, and Ota, Isao, 5,011,269, Cl. 350-350.00S.

Ueno, Kazuyoshi, and Imoto, Katsushi, to IMV Corporation. Vibration control system. 5,012,428, Cl. 364-508.000.

Ueno, Ryuzo, Masada, Yoshiyasu, and Mori, Toru, to Kabushiki Kaisha Ueno Seiyaku Oyo Kenkyujo Manufacturing method for 2-hydroxynaphthalene-6-carboxylic acid. 5,011,984, Cl. 562-425.000.

Ueno, Yasuhiko *See*—
Masada, Tomoaki; Ueno, Yasuhiko; Hayakawa, Eiji; Naganuma, Hirotake; Terajima, Mitsuru, Kuroda, Tokuyuki, Shuto, Katsuichi, and Ichikawa, Shunji, 5,011,824, Cl. 514-13.000.

Uesaka, Toshio, Niki, Akihiro, Ohsuga, Makoto; Saito, Toranosuke; Tsunomachi, Hiroki; Yamaguchi, Makoto; Doyama, Kazuo; and Kishimoto, Daishiro, to Sekisui Kagaku Kogyo Kabushiki; and Kabushiki Kaisha Sanko Kaihatsu Kagaku Kenkyusho. Engineering plastic composition and an article made of the same. 5,011,879, Cl. 524-290.000

Ueyama, Masayuki; and Kuwana, Minoru, to Minolta Camera Kabushiki Kaisha. Lens barrel of a zoom lens. 5,011,273, Cl. 350-429.000.

Ukiana, Motohide *See*—
Kobayashi, Hiroyuki; Izawa, Shigeru; and Ukiana, Motohide, 5,012,092, Cl. 250-311.000.

Ultra-Centrifuge Nederland N V *See*—
Godfried, Herman P., 5,011,584, Cl. 204-157.220.

Ultra Precision Manufacturing, Ltd *See*—
Herron, Ross W., and Beard, Garry E., 5,010,779, Cl. 74-493.000.

Umeda, Seiichi *See*—
Sakamoto, Yuji, Umeda, Seiichi, and Ogishima, Hiroaki, 5,010,685, Cl. 47-57.600

Umeda, Tokihiko *See*—
Sagawa, Toyoaki, Sonoda, Makoto; and Umeda, Tokihiko, 5,011,377, Cl. 417-269.000.

Unilever Patent Holdings B V *See*—
Garvey, Michael J., Griffiths, Ian C.; and Rennie, John H. S., 5,011,690, Cl. 424-401.000

Union Camp Corporation *See*—
Bose, Ajit K.; and Strater, Kurt F., 5,011,298, Cl. 383-8.000.

Unisys Corporation *See*—
Chun, Cornell S. L., 5,012,162, Cl. 315-309.000.
Hamilton, Thomas A., Kerrigan, Michael M.; and Wilson, John A., 5,011,127, Cl. 271-262.000.
Sisler, John R., 5,010,641, Cl. 29-830.000.

United States Gypsum Company: *See*—
Ball, David J., and Varney, Edward, 5,011,668, Cl. 423-171.000.

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Agriculture *See*—
Bartelt, Robert J.; and Dowd, Patrick F., 5,011,683, Cl. 424-84.000.
Borovsky, Dov; and Carlson, David A., 5,011,909, Cl. 530-328.000
Kearney, Philip C., Muldoon, Mark T.; and Somich, Cathleen J., 5,011,599, Cl. 210-130.000
Air Force: *See*—
Fishman, David A.; and Hone, Jon D., 5,010,757, Cl. 72-60.000.
Hoffman, Wesley P., 5,011,566, Cl. 156-643.000.
Jensen, William E., 5,012,343, Cl. 358-213.110.
Kennedy, Peter D.; and Blasi, Wayne M., 5,012,251, Cl. 342-176.000.
Lambert, Laurence C., 5,012,522, Cl. 382-2.000.
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Bruce, Charles W., 5,010,771, Cl. 73-861.180.
Emeric, Dario A.; Miller, Christopher E.; and Westich, Bryan, 5,011,551, Cl. 148-248.000.
Hollinger, Jeffrey O., 5,011,495, Cl. 623-16.000.
Plichta, Edward J.; and Behl, Wishvender K., 5,011,750, Cl. 429-112.000.
Roop, Donald E.; Bachman, David L.; Mezey, Eugene J.; and Bartram, Philip W., 5,011,293, Cl. 366-173.000.
Connecticut: *See*—
Carney, John F., III, 5,011,326, Cl. 404-6.000.
Director, National Security Agency: *See*—
Cohen, Jonathan D., 5,012,440, Cl. 364-837.000.
Energy: *See*—
Martin, Frank S.; and Silver, Gary L., 5,011,610, Cl. 210-667.000.
National Aeronautics and Space Administration: *See*—
Banks, Bruce A., 5,012,062, Cl. 219-69.110.
Beratan, David N., 5,011,907, Cl. 528-220.000.
Navy: *See*—
Chu, Tak-Kin, 5,012,083, Cl. 250-211.00J.
Foley, Kenny B., 5,012,250, Cl. 342-53.000.
Gray, Henry F., 5,012,482, Cl. 372-74.000.
Hammond, Russell E., Northup, Robert L.; Shimp, Alan G.; and Fassnacht, Francis B., 5,012,121, Cl. 307-64.000.
Johnson, Clarence S.; and Blanc, Clarence G., 5,012,452, Cl. 367-1.000.
Lee, Woodrow W., 5,010,804, Cl. 89-7.000
Morrison, Peter A., 5,010,823, Cl. 102-307.000.
Nguyen, Richard, 5,011,785, Cl. 437-41.000.
Reintjes, John F.; Tankersley, Lawrence L.; Cooper, David G.; and Dexter, James L., 5,012,483, Cl. 372-95.000.
Travor, Bruce W.; and Holler, Roger A., 5,011,097, Cl. 244-3.210.

U.S. Philips Corporation: *See*—
Bertram, Leo; Schemmann, Hugo; and Bukoschek, Romuald L., 5,012,147, Cl. 310-80.000.
Boudewijns, Arnoldus J. J., 5,012,143, Cl. 307-606.000.
Burns, Gordon P., 5,011,789, Cl. 437-81.000.
Davies, Andrew K., 5,012,338, Cl. 358-147.000.
Dossel, Olaf H., 5,012,190, Cl. 324-248.000.
Fink, Mathias; Cancre, Fabrice; and Pesque, Patrick, 5,010,885, Cl. 128-660.070.
Gowlett, David J., 5,012,102, Cl. 250-352.000.
Hughes, John B., 5,012,133, Cl. 307-352.000.
Paturel, Serge; and Magne, Francois, 5,012,099, Cl. 250-342.000.
Smits, Petrus G. H. J., 5,012,152, Cl. 313-107.000.
Span, Francis J.; and Driver, Brian S., 5,012,506, Cl. 378-152.000.

United States Surgical Corporation: *See*—
Shichman, Daniel, 5,011,487, Cl. 606-158.000.

United Technologies Corporation: *See*—
Barcza, William K., Berger, Curtis W.; and Hmiel, Luke A., 5,011,080, Cl. 239-265.390.
Pressprich, John W., 5,012,404, Cl. 364-200.000.

University of British Columbia, The: *See*—
Dunwoody, Andrew B., 5,011,180, Cl. 280-707.000.

University of California, The Regents of The: *See*—
Cram, Donald J.; Chapoteau, Eddy; Czech, Bronislaw P.; Gebauer, Carl R.; Helgeson, Roger C.; Kumar, Anand; and Leong, Koon-Wah, 5,011,924, Cl. 540-469.000.

University of Florida: *See*—
Borovsky, Dov; and Carlson, David A., 5,011,909, Cl. 530-328.000.

University of Michigan: *See*—
Schoeppel, Sonja L.; Weeks, Kenneth J.; and Pruss, Kent R., 5,012,357, Cl. 378-65.000.

University of Minnesota, Regents of: *See*—
Shur, Michael, 5,012,315, Cl. 357-23.140.

University of Missouri, The Curators of the: *See*—
Day, Delbert E.; and Ehrhardt, Gary J., 5,011,677, Cl. 424-1.100.
Day, Delbert E.; and Ehrhardt, Gary J., 5,011,797, Cl. 501-33.000.

University of South Florida: *See*—
Kovacs, Steven G., 5,011,380, Cl. 417-413.000.
Salem, Mohamed E. M., 5,011,489, Cl. 606-159.000.

University of Virginia Alumni Patents Foundation: *See*—
Kelly, James L.; and Reda, Ralph J., 5,011,708, Cl. 427-443.100.

University of Waterloo: *See*—
Haure, Patricia; Silveston, Peter L.; Hudgins, Robert R.; and Bellut, Maxime, 5,011,675, Cl. 423-659.000.

University of Western Australia, The: *See*—
Baranski, Jan, 5,012,196, Cl. 324-662.000.

Uno, Shigeki: *See*—
Amemiya, Isao; Sakai, Tadashi; and Uno, Shigeki, 5,011,589, Cl. 204-416.000.

UOP: *See*—
Abrevaya, Hayim; and Imai, Tamotsu, 5,012,027, Cl. 585-443.000.
Barder, Timothy J., 5,012,039, Cl. 585-828.000
Doshi, Kishore J.; Mitariten, Michael J.; and Whysall, Michael, 5,012,037, Cl. 585-822.000.
Vora, Bipin V.; and Cottrell, Paul R., 5,012,021, Cl. 585-315.000.
Zinnen, Hermann A., 5,012,038, Cl. 585-828.000.

Uphold, James D.: *See*—
Pfohl, Robert L.; and Uphold, James D., 5,010,890, Cl. 128-773.000.

Upjohn Company: *See*—
Rector, Douglas L.; Conder, George A.; and Folz, Sylvester D., 5,011,932, Cl. 546-268.000.
Wuts, Peter G. M., 5,011,976, Cl. 560-159.000.

Urano, Satoshi: *See*—
Tsuboniwa, Noriyuki; Urano, Satoshi; and Mizuguchi, Ryuzo, 5,011,981, Cl. 560-302.000.

Urasato, Nobuaki; Takamizawa, Minoru; Hayashida, Akira; Ohsaki, Hiromi; and Maruta, Jiyunitirow, to Shin-Etsu Chemical Co., Ltd. Method for the preparation of a sintered body of silicon carbide. 5,011,639, Cl. 264-65.000.

Urbach, Hansjorg; and Henning, Rainer, to Hoechst Aktiengesellschaft. Process for the preparation of bicyclic amino carboxylic acids, intermediates in this process, and their use. 5,011,940, Cl. 548-452.000.

Uribe, Diego; Driskill, Paul; and Hantscho, Rolf, to Oxy-Dry Corporation. Blanket cleaning apparatus with selectively engageable flicker bar. 5,010,819, Cl. 101-425.000.

Ushijima, Nobuyoshi; Masuda, Hiroshi; Ishibashi, Akira; Satou, Masahiko; Haruna, Toshiyuki; Takayama, Norikazu; and Kudou, Yoshinobu, to Hitachi, Ltd. Control system for brushless DC motor. 5,012,166, Cl. 318-254.000.

Uteco S.p.A. Flexo & Converting Machinery: *See*—
Buffo, Flavio, 5,010,813, Cl. 101-178.000.

Utyamyshev, Rustam I.: *See*—
Belykh, Sergei I.; Gigauri, Vladimir S.; Davydov, Anatoly B.; Keshelava, Viktor V.; Mlynchik, Vyacheslav E.; Utyamyshev, Rustam I.; and Firsova, Elizaveta V., 5,011,493, Cl. 606-215.000.

Vaahas, Tilo; Peuckert, Marcellus; and Bruck, Martin. Polymeric ethylene-bridged chlorosilazanes, process for their preparation, ceramic materials which can be prepared from them containing silicon nitride, and their preparation. 5,011,801, Cl. 501-97.000.

Vald. Henriksen A/S: *See*—
Jensen, Aage; Stingsen, Jeppe; and Landberg, Jakob, 5,010,612, Cl. 8-149.100.

Valentine, Kenneth H.; Falter, Diedre D., and Galter, Kelly G., to Martin Marietta Energy Systems, Inc. Infrared system for monitoring movement of objects. 5,012,113, Cl. 250-493.100.

Valeo: *See—*
Carneiro, Armadno; Falcoz, Marc; and Michel, Robert, 5,010,993, Cl. 192-84.00R.

Vali, Victor; and Chang, David B., to Hughes Aircraft Company. γ-ray detecting device using dislocation-free crystal. 5,012,499, Cl. 378-84.000.

Valkenburg, Neal V.: *See—*
Pearlman, Mort; and Valkenburg, Neal V., 5,010,703, Cl. 52-288.000.

Valmet Paper Machinery Inc.: *See—*
Eklund, Dan; and Grasten, Markku, 5,010,839, Cl. 118-122.000.
Gustavsson, Tord G., Myren, Harry I.; and Silja, Karl T. I., 5,011,574, Cl. 162-281.000.

Van Doorne's Transmissie B.V.: *See—*
Brouwers, Theodorus M. J., 5,011,461, Cl. 474-188.000.

Van Dorn Company: *See—*
Garver, Lawrence E.; and Kimbrough, Gregory L., 5,011,648, Cl. 264-521.000.

Van Dresser Corporation: *See—*
Danner, Edward L.; and Picken, Alan D., 5,011,218, Cl. 296-214.000.

Van Derdoes, Arthur E.; and Van Derdoes, Jerry A. Expandable metal tracheostomy band. 5,010,884, Cl. 128-207.170.

Van Derdoes, Jerry A.: *See—*
Van Derdoes, Arthur E.; and Van Derdoes, Jerry A., 5,010,884, Cl. 128-207.170.

Vanderhider, J. Alan: *See—*
Meyer, Louis W., Carswell, Robert; and Vanderhider, J. Alan, 5,011,647, Cl. 264-300.000.

Vanderlaan, Robert D.: *See—*
Huitema, Thomas W.; Eiszner, William H., Jr.; Heeres, Stanley D., and Vanderlaan, Robert D., 5,012,144, Cl. 310-14.000.

Van Der Wiel, Hans M.: *See—*
Smith, Gordon M.; and Van Der Wiel, Hans M., 5,011,115, Cl. 251-161.000.

Van De Vel, Alfons. Wheel suspension for a wheel driven by an endless transmission. 5,011,459, Cl. 474-101.000.

Vandiver, Robert L. Variable flow valve. 5,011,075, Cl. 236-48.00R.

van Hekken, Hendrik R.; and Latone, Thomas L., to Knoll International, Inc. Adjustable footrest for a chair. 5,011,227, Cl. 297-434.000.

Van Meter, Dennis E.: *See—*
Sparks, James D.; and Van Meter, Dennis E., 5,010,783, Cl. 74-527.000.

VanRens, Russell J., to Outboard Marine Corporation. Apparatus for lost foam molding and method of assembling same. 5,011,398, Cl. 425-444.000.

Van Roon, Johannes C.: *See—*
Rietberg, Johan; and Van Roon, Johannes C., 5,011,740, Cl. 428-500.000.

Van Slett, Peter J., to Eyecare One Corp. Suspension system for displaying eyeglass frames. 5,011,027, Cl. 211-13.000.

Van Uitert, LeGrand G.: *See—*
Grim, Karen A.; Singh, Shobha; Van Uitert, LeGrand G.; and Zydzik, George J., 5,011,794, Cl. 437-247.000.

Van Woensel, Johannes M. B.: *See—*
Van Zanten, Albertus; and Van Woensel, Johannes M. B., 5,011,425, Cl. 439-353.000.

Van Zanten, Albertus, and Van Woensel, Johannes M. B., to Du Pont de Nemours, E. I., and Company. Connector assembly with latching means. 5,011,425, Cl. 439-353.000.

Vapor Technologies, Inc.: *See—*
Pinkhasov, Eduard, 5,011,638, Cl. 264-59.000.

Varney, Edward. *See—*
Ball, David J., and Varney, Edward, 5,011,668, Cl. 423-171.000.

Vatsky, Joel, to Foster Wheeler Energy Corporation. Controlled flow split steam burner assembly with sorbent injection. 5,011,400, Cl. 431-4.000.

Vaughan, Robert A., to Standard Products Company, The. Glass run channel. 5,010,689, Cl. 49-440.000.

Vector Technical Group, Inc.: *See—*
Carr, William J.; and Krummen, Raymond S., 5,011,520, Cl. 55-228.000.

Vedder, Hans J.; and Krenn, Hans, to Agfa-Gevaert AG. Computer-controlled laser imaging system with automatic beam start at line beginning. 5,012,464, Cl. 369-116.000.

Vega, Juan C.: *See—*
Saphores, Eugenio A.; Gleisner, Arturo G.; Vega, Juan C.; and Mardones, Wladimir A., 5,011,965, Cl. 558-245.000.

Vehar, Gordon A.: *See—*
Levinson, Arthur D.; Pennica, Diane; Kohr, William J.; Vehar, Gordon A.; Goeddel, David V., Yelverton, Elizabeth M., and Simonsen, Christian C., 5,011,795, Cl. 435-69.200.

Velbon International Corporation. *See—*
Nakatani, Koichiro, 5,012,265, Cl. 354-293.000.

Venero, Aurelio O., and Avello, Antonio T., to Fabrica Espanola de Productos Quimicos y Farmeceuti Cos S.A. (FAES). Analgesic and antiinflammatory derivatives of 1-acyl-4-arylalkylpiperazines. 5,011,928, Cl. 544-373.000.

Venier, Clifford G.; and Casserly, Edward W., to Pennzoil Products Company. Lubricants comprising novel cyclopentanes, cyclopentadienes, cyclopentenes, and mixtures thereof and methods of manufacture. 5,012,022, Cl. 585-20.000.

Venier, Clifford G.; and Casserly, Edward W., to Pennzoil Products Company. Lubricants comprising novel cyclopentanes, cyclopentadienes, cyclopentenes, and mixtures thereof and methods of manufacture. 5,012,023, Cl. 585-20.000.

Verel, Edward A., to Leco Corporation. Stepped gate safety arrangement. 5,011,050, Cl. 222-600.000.

Vernay Laboratories, Inc.: *See—*
Atkinson, Gordon E.; and Bailey, James C., 5,010,925, Cl. 137-847.000.

Verney Carron, Claude. Plug for shotgun or rifle barrel using black powder. 5,010,677, Cl. 42-77.000.

Versa Companies: *See—*
Bear, Philip N., 5,011,120, Cl. 266-240.000.

Veser, Franz. Transfer tool and cover-strip magazine for drawing coils into stators of electric motors. 5,010,639, Cl. 29-734.000.

Vetrotex Saint Gobain: *See—*
Roncato, Giordano, and Federowsky, Robert, 5,011,523, Cl. 65-2.000.

Vezzoli, Emilio: *See—*
Marzoli, Pietro B.; and Vezzoli, Emilio, 5,010,623, Cl. 19-145.500.

Victor Company of Japan, Ltd.: *See—*
Hirayama, Hiromichi; Mihara, Masato; and Harumatsu, Mitsuo, 5,012,364, Cl. 360-94.000.
Kosaka, Yositeru, 5,012,356, Cl. 360-61.000.
Nagai, Harushige; Kiryu, Masato, Sasaki, Takeshi; and Saotome, Akira, 5,011,096, Cl. 242-199.000.

Viertel, Lothar; and Welter, Patrick, to Gebr. Happich GmbH. Sun visor and support structure for motor vehicles. 5,011,212, Cl. 296-97.900.

Vigano, Vittorio, to Plastiver S.A.S. Di Giovanni e Vittorio Vigano & C. System and method for collating book and pamphlet signatures and the like. 5,011,123, Cl. 270-54.000.

Virgilio, Joseph A.: *See—*
Cohen, Isaac D.; and Virgilio, Joseph A., 5,011,628, Cl. 252-589.000.

Virostko, Michael J.: *See—*
Lantagne, John A.; Johnson, Edward G.; and Virostko, Michael J., 5,012,209, Cl. 333-116.000.

Visa-Trak Corporation: *See—*
Griebeler, Elmer L., 5,012,239, Cl. 341-15.000.

Visca, Mario: *See—*
Lenti, Daria, and Visca, Mario, 5,011,713, Cl. 427-393.600.

Viswanathan, Thayamkulangara R.: *See—*
Scott, Jeffrey W., and Viswanathan, Thayamkulangara R., 5,012,245, Cl. 341-150.000.

Vitacomm, Ltd.: *See—*
Pfohl, Robert L., and Uphold, James D., 5,010,890, Cl. 128-773.000.

Vithayathil, Joseph. AC machine system with induced DC field. 5,012,148, Cl. 310-165.000.

VMK Fish Machinery AB: *See—*
Leander, Leif, 5,010,713, Cl. 53-142.000.

Vock, Friedrich; Kissau, Gerd; and Warnke, Klaus, to BASF Lacke+-Farben AG. Dispersing process and stirred ball mill for carrying out this process. 5,011,089, Cl. 241-21.000.

Voegele, Gerald G., and Penny, William H., to SciMed Life Systems, Inc. Pressure gauge cleaning method. 5,011,537, Cl. 134-22.110.

Voelskow, Hartmut: *See—*
Kretzschmar, Gerhard; Duwel, Dieter; Grabley, Susanne; Hammann, Peter; Seibert, Gerhard, Voelskow, Hartmut; and Giani, Carlo, 5,011,827, Cl. 514-32.000.

Vogel, Richard H.: *See—*
Zador, Eugene; Hsu, Shyiguei; Kaczmarek, Wesley R.; Ravipati, Sitaramaiah; Supkis, Stanley; and Vogel, Richard H., 5,011,513, Cl. 51-295.000.

Voith, Donald J., to Water Services of America, Inc. Ball strainer for circulating ball cleaning system. 5,010,950, Cl. 165-95.000.

Vokac, James P.: *See—*
Khadder, Wadie N.; Vokac, James P.; and Dobkin, Robert C., 5,012,305, Cl. 357-22.000.

Volterra, Giovanna. *See—*
Meli, Alberto; Volterra, Giovanna; Giannotti, Danilo; and Pestellini, Vittorio, 5,011,833, Cl. 511-211.000.

Von Duprin, Inc.: *See—*
Lowe, Peter E.; Muller, Peter H.; Coleman, Michael D.; and Haeck, Paul J., 5,011,199, Cl. 292-92.000.

von Recum, Andreas F.; and Campbell, Craig E., to Clemson University. Soft tissue implant with micron-scale surface texture to optimize anchorage. 5,011,494, Cl. 623-11.000.

Vora, Bipin V.; and Cottrell, Paul R., to UOP. Process for the production of alkylaromatic hydrocarbons using solid catalysts. 5,012,021, Cl. 585-315.000.

Vorhauer, Marjorie, to Soniform, Inc. Buoyancy compensator with interchangeable accessories. 5,011,334, Cl. 405-186.000.

Vortec Corporation: *See—*
York, Michael L.; and Broerman, Steven E., 5,010,736, Cl. 62-5.000.

VSI Corporation: *See—*
Motoshige, Inaba, 5,011,355, Cl. 411-552.000.

Vyas, Dolatrai M.; and Skonezny, Paul M., to Bristol-Myers Company. Intermediates for the production of epipodophyllotoxin and related compounds and processes for the preparation and use thereof. 5,011,948, Cl. 549-298.000.

W. R. Grace & Co.: *See—*
Schirmer, Henry G., 5,011,735, Cl. 428-349.000.

W. R. Grace & Co.-Conn.: *See—*
Thunberg, Jon C.; and Begonis, Walter B., 5,011,968, Cl. 558-341.000
Thunberg, Jon C., 5,011,988, Cl. 562-554.000.

Treleven, Robert E., 5,010,659, Cl. 34-41.000.

Wachholz, Winfried, to Hochtemperatur-Reaktorbau GmbH. High temperature reactor utilizing a graphite reflector. 5,011,653, Cl. 376-313.000.

Wacker-Chemie GmbH: *See—*
Staiger, Gerhard; Muller, Johann; and Doskocil, Walter, 5,011,962, Cl. 556-453.000.

Wacker-Werke GmbH & Co. KG: *See—*
Riedl, Franz, 5,010,778, Cl. 74-61.000.

Wada, Mitsuo: *See—*
Kobayashi, Tadashi; Wada, Mitsuo; Obuchi, Shouzi; and Takayanagi, Hiroshi, 5,011,936, Cl. 548-343.000.

Wagner, Reiner, to OBE-Werk Ohnmacht & Baumgartner GmbH & Co. KG. Eyeglass frame comprising a screw joint which is protected from becoming loose. 5,011,274, Cl. 351-121.000.

Waibel, Brigitte. *See—*
Martin, Wolfram; and Waibel, Brigitte, 5,012,324, Cl. 357-81.000.

Wakabayashi, Hiroshi: *See—*
Yukimoto, Sadao, Hirose, Toshifumi; Wakabayashi, Hiroshi; and Isayama, Katsuhiko, 5,011,900, Cl. 525-477.000.

Wakamiya, Takako: *See—*
Suzuki, Yasuyuki; Takagawa, Noboru; Kawabata, Mikio; Hayashi, Mariko; Takagi, Akiko, Wakamiya, Takako; and Saikawa, Isamu, 5,011,973, Cl. 560-185.000.

Wakebe, Tetsuya: *See—*
Nose, Kazuo; Yamamoto, Hiroyuki; Koike, Shiro; Shimomura, Masakazu; Tsubono, Hajime; Kitagawa, Soichi; Fujisaki, Yasumasa; Maeda, Yasushi; Wakebe, Tetsuya; and Katayama, Yasuyuki, 5,010,756, Cl. 72-9.000.

Wakita, Naohide; Uemura, Tsuyoshi; Ohnishi, Hiroyuki; Ohba, Noriko; and Ota, Isao, to Matsushita Electric Industrial Co., Ltd. Method of driving a ferroelectric liquid crystal matrix panel. 5,011,269, Cl. 350-350.00S.

Wald, Vernon M.; and Kirk, Robert S., to Minnesota Mining and Manufacturing Company. Shelling-resistant abrasive grain, a method of making the same, and abrasive products. 5,011,508, Cl. 51-293.000.

Wald, Vernon M.; Masson, Richard A.; Brown, Fredrick D.; and Broberg, David E., to Minnesota Mining and Manufacturing Company. Coated abrasive products employing nonabrasive diluent grains. 5,011,512, Cl. 51-295.000.

Walker, James K.: *See—*
Spencer, James T., III; and Walker, James K., 5,010,833, Cl. 112-262.100.

Walker, James L.: *See—*
Pangrazi, Ronald; and Walker, James L., 5,011,712, Cl. 427-389.900.

Walker, Richard C.: *See—*
Lai, Benny W. H.; and Walker, Richard C., 5,012,494, Cl. 375-120.000.

Walker, Roger C., Reese, Scott P.; Joyce, David L.; and Kastrup, David A., to General Electric Company. Active clearance control for gas turbine engine. 5,012,420, Cl. 364-431.020.

Wall, Robert A.: *See—*
Adamson, Arthur P.; Butler, Lawrence; and Wall, Robert A., 5,010,729, Cl. 60-226.100.

Walling, Jorg-Hein: *See—*
Cornibert, Jacques; and Walling, Jorg-Hein, 5,011,880, Cl. 524-371.000.

Wallschlaeger, Alan R., Sr., to Rockwell International Corporation. Tensionless plate lock-up. 5,010,818, Cl. 101-415.100.

Walsh, Dennis E.: *See—*
Han, Scott; Martenak, Daniel J.; Palermo, Robert E.; and Walsh, Dennis E., 5,012,029, Cl. 585-500.000.

Walton, David W.; and Harrison, Roger, to Ferguson Limited. Switching circuitry. 5,012,516, Cl. 381-3.000.

Walton, John F.; and Roshdieh, Al R. Long-life luminaires. 5,012,157, Cl. 315-66.000.

Wandrey, Christian: *See—*
Rao, Nagaraj N.; Wandrey, Christian; Petersen, Maike; and Alfermann, August W., 5,011,775, Cl. 435-135.000.

Wands, Jack R.: *See—*
Bellet, Dominique; and Wands, Jack R., 5,011,771, Cl. 435-7.940.

Wang, Ping, to Xicor, Inc. Dual mode high voltage coupler. 5,012,132, Cl. 307-296.100.

Wang, Shoou-I: *See—*
Davis, Ruth A.; Nicholas, David M.; Smith, Dale D.; Wang, Shoou-I; and Wright, Richard A., 5,011,670, Cl. 423-450.000.

Wang, Yu-chang J.; Lee, William A.; and Narog, Blair, to California Biotechnology Inc. Composition and method for administration of pharmaceutically active substances. 5,011,678, Cl. 424-45.000.

Wang, Zhaoyin, to Merck Frosst Canada, Inc. FK-506 C_{10}–C_{24} process intermediates. 5,011,943, Cl. 549-214.000.

Wankel GmbH: *See—*
Eiermann, Dankwart, 5,011,385, Cl. 418-61.200.
Speiser, Josef, 5,011,387, Cl. 418-94.000.

Wanou, Masahiro; Kimura, Masatoshi; and Nakajima, Junzo, to Fujitsu Limited. Brush contact type charging unit in an image forming apparatus. 5,012,282, Cl. 355-219.000.

Ward, Roger W.: *See—*
EerNisse, Errol P.; and Ward, Roger W., 5,012,151, Cl. 310-346.000.

Ware, Robert A.; and Wong, Stephen S., to Mobil Oil Corporation. Catalytic hydrodesulfurization. 5,011,593, Cl. 208-213.000.

Warner-Lambert Company: *See—*
Keegan, James J., 5,011,868, Cl. 523-120.000.

Warnke, Klaus: *See—*
Vock, Friedrich; Kissau, Gerd; and Warnke, Klaus, 5,011,089, Cl. 241-21.000.

Warren, Tommy M.: *See—*
Brett, J. Ford; and Warren, Tommy M., 5,010,789, Cl. 76-108.200.

Washburn, Billy D. Window sill armrest for motor vehicles. 5,010,996, Cl. 296-153.000.

Washington University: *See—*
Marshall, Garland R.; and Toth, Mihaly V., 5,011,910, Cl. 530-329.000.
Olney, John W., 5,011,853, Cl. 514-454.000.

Wasmer, David: *See—*
Nigrelli, Nicholas B.; and Wasmer, David, 5,011,372, Cl. 415-211.200.

Watanabe, Hajime, to Superloon K.K. Balloon holder. 5,011,447, Cl. 446-220.000.

Watanabe, Hiroshi: *See—*
Isono, Haruo; Yasuda, Minoru; Watanabe, Hiroshi; Toyama, Tateo; Hioki, Toshiaki; Morita, Yoshihiko; and Yamada, Makoto, 5,012,351, Cl. 358-342.000.

Watanabe, Junichi: *See—*
Amano, Tadashi; and Watanabe, Junichi, 5,011,897, Cl. 526-202.000.

Watanabe, Mitsuo, to Hamamatsu Photonics K.K. Two-dimensional incident position detector device for light or radiation. 5,012,082, Cl. 250-208.200.

Watanabe, Takashi; Fujimoto, Shusaku; and Sakai, Kazunori, to Nippondenso Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Motor vehicle running control apparatus. 5,012,417, Cl. 364-426.020.

Watanabe, Toshie: *See—*
Yamaguchi, Takashi; Tsutsumi, Tadahiko; and Watanabe, Toshie, 5,011,556, Cl. 156-83.000.

Watanabe, Yutaka; Fukuda, Yasuaki; and Ogura, Shigetaro, to Canon Kabushiki Kaisha. X-ray mask support member, X-ray mask, and X-ray exposure process using the X-ray mask. 5,012,500, Cl. 378-35.000.

Water Services of America, Inc.: *See—*
Voith, Donald J., 5,010,950, Cl. 165-95.000.

Waterloo Industries, Inc.: *See—*
Meisner, Edward; Ballone, Michael P.; and Park, Young, 5,011,013, Cl. 206-373.000.

Waterman, John K.: *See—*
Licter, Philip L.; and Waterman, John K., 5,012,194, Cl. 324-405.000.

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Henry, Cyrus P.; and West, Michael W. J., 5,011,504, Cl. 44-392.000.

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Duke, Jonathan W.; and Richards, Barry R., 5,011,421, Cl. 439-213.000.
Fero, Arnold H., 5,011,650, Cl. 376-247.000.
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King, Ian J.; and Chow, Michael P., 5,010,769, Cl. 73-660.000
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Shaw, Douglas R., 5,011,596, Cl. 209-167.000.

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Whitefield, Martin, to Diomed Developments Limited. Haemostatic agents. 5,011,693, Cl. 424-455.000.

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Colvin, David P.; Whitney, Raymond A.; Marsh, Bernard R.; Kline, William M.; Rizzo, Ronald R.; and Orlosky, Mark E., 5,010,892, Cl. 128-774.000.

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Bock, Edward C., 5,012,275, Cl. 355-25.000.
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Knapp, John F., 5,012,287, Cl. 355-253.000.
Limburg, William W.; Yanus, John F.; Renfer, Dale S.; Schank, Richard L.; and Ong, Beng S., 5,011,939, Cl. 548-440.000.
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Yamada, Koji: *See*—
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Yamamoto, Yuji; Shigematsu, Hideyuki, Tanaka, Hiroshi, Ashikawa, Ryo, and Ishida, Tatsuo, to Hiroshima Kasei Ltd., and Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Corrosion resistant, water expandable composition. 5,011,875, Cl. 524-45.000.

Yamane, Hiroshi: *See*—
Yukumoto, Masao; Ozawa, Michiharu, and Yamane, Hiroshi, 5,010,947, Cl. 164-428.000.

Yamane, Kaoru: *See*—
Takahashi, Hisao; Yamane, Kaoru; Hirakami, Kiyomi, and Ikeda, Kazuo, 5,011,201, Cl. 296-203.000.

Yamashima, Osamu: *See*—
Takahashi, Mineo; Nakayama, Susumu, Yamashima, Osamu; Suzuki, Satoshi; Harada, Toshihiko, and Aiso, Keiji, 5,010,642, Cl 29-868.000.

Yamashita, Hiroki, Kinoshita, Keichi; Matsui, Toshio; Kurahashi, Wataru; and Yasuda, Katsuya, to Minolta Camera Kabushiki Kaisha. Sheet storing apparatus provided for a copying machine. 5,012,297, Cl. 355-321.000

Yamashita, Seiji; and Takada, Shunji, to Fuji Photo Film Co., Ltd. Silver halide photographic emulsion. 5,011,767, Cl. 430-567.000.

Yamauchi, Shiro; and Rito, Naotake, to Mitsubishi Denki Kabushiki Kaisha. Dehumidifier for magnetic disc apparatus. 5,012,360, Cl 360-97.020.

Yamazaki, Fumio: *See*—
Saito, Katushi; Shindou, Yoshio; Murata, Toshimichi, Yamazaki, Fumio, and Shimazu, Takashi, 5,011,744, Cl 428-623.000

Yamazaki, Hiroshi: *See*—
Minagawa, Yoshiji; Shirakawa, Hiroshi; Yamazaki, Hiroshi, and Ito, Yoshiaki, 5,012,120, Cl 307-35.000

Yamazaki, Kouji, to NEC Corporation. Semiconductor device having high-reliable interconnections with titanium silicide film. 5,012,320, Cl 357-67.000.

Yamazaki, Shigeko, to Merck & Co., Inc. Process for purifying recombinant hepatitis antigens. 5,011,915, Cl 530-414.000

Yamazaki, Shunpei; and Sato, Masahiko, to Semiconductor Energy Laboratory Co., Ltd. Liquid crystal electro-optical device and manufacturing method therefor. 5,011,270, Cl. 350-350.00S

Yanagase, Akira: *See*—
Sasaki, Isao; Yamamoto, Naoki; and Yanagase, Akira, 5,011,887, Cl 525-63.000.

Yanamoto, Yutaka: *See*—
Yokomizo, Shojiro; Izumida, Kouji; Saito, Takeshi, and Yanamoto, Yutaka, 5,010,759, Cl 72-393.000

Yang, Hung H., to Du Pont de Nemours, E. I., and Company. Process for making oriented, shaped articles of para-aramid/thermally-consolidatable polymer blends. 5,011,643, Cl 264-171.000

Yang, Phillip: *See*—
Le, Son, and Yang, Phillip, 5,011,479, Cl. 604-198.000.

Yanke, Charles H. *See*—
Sisson, Fred U., Jr., 5,012,114, Cl. 250-519.100.

Yannuzzi, Gilbert N., Jr.: *See*—
Black, Richard A., Jr.; and Yannuzzi, Gilbert N., Jr., 5,011,299, Cl 383-126.000.

Yano, Hisato; Hashimoto, Shusa; and Horiyama, Tsuyoshi, to Shimizu Construction Co., Ltd. Ultrasonic fragrance generation apparatus 5,011,632, Cl. 261-81.000.

Yanus, John F.: *See*—
Limburg, William W.; Yanus, John F., Renfer, Dale S.; Schank, Richard L., and Ong, Beng S., 5,011,939, Cl 548-440.000.

Yashiro, Toshinori. *See*—
Nogami, Shingo; Yashiro, Toshinori; Okitsu, Toshio; Furushima, Kiyoshi; and Korenaga, Itsuo, 5,010,946, Cl 164-312.000

Yasuda, Katsuya: *See*—
Yamashita, Hiroki; Kinoshita, Keichi, Matsui, Toshio, Kurahashi, Wataru; and Yasuda, Katsuya, 5,012,297, Cl. 355-321.000

Yasuda, Minoru: *See*—
Isono, Haruo; Yasuda, Minoru; Watanabe, Hiroshi; Toyama, Tateo, Hioki, Toshiaki; Morita, Yoshihiko; and Yamada, Makoto, 5,012,351, Cl 358-342.000

Yasuda, Nobuyuki, to Kabushiki Kaisha Toshiba. DC/AC power converting apparatus including DC component remover. 5,012,400, Cl 363-95.000

Yasuda, Shiro, to Sony Corporation. Input device for digital processor based apparatus. 5,012,230, Cl. 340-706.000.

Yasui, Yoshiharu; Nakane, Katsumi; Suzuki, Osamu; and Kimbara, Masahiko, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, and Nisshinbo Industries, Inc. System for transporting roving bobbins between roving and spinning processes. 5,010,725, Cl. 57-281.000

Yasuki, Seijiro: *See*—
Sakamoto, Noriya, Kawai, Kiyoyuki; and Yasuki, Seijiro, 5,012,326, Cl. 358-11.000.

Yasuno, Toyoharu *See*—
Tominaga, Kenji, Miki, Minoru; Takahashi, Tooru; Horiuchi, Tetsuo, Morishima, Hideo; Nakayama, Takashi, Moriya, Kumiaki, Matsumoto, Masaki; Akita, Minoru, Niino, Tsuyoshi, Ochiai, Kanehiro, Shiozawa, Akihiko; Uchiyama, Yuichi; Yasuno, Toyoharu, Moriya, Kenji, Kinoshita, Shouichirou, Kage, Kazuo, and Kubota, Ryuji, 5,011,652, Cl. 376-283.000.

Yates, George, Jr *See*—
Yates, Paul M., Yates, George R.; and Yates, George, Jr., 5,011,222, Cl. 297-195.000.

Yates, George R *See*—
Yates, Paul M., Yates, George R., and Yates, George, Jr., 5,011,222, Cl. 297-195.000.

Yates, Paul M., Yates, George R.; and Yates, George, Jr. Orthotic cycle saddle. 5,011,222, Cl. 297-195.000.

Yazaki Corporation *See*—
Matsumoto, Etsuji, Araki, Mamoru; and Ozaki, Keiichi, 5,011,417, Cl. 439-76.000
Takahashi, Mineo; Nakayama, Susumu; Yamashima, Osamu, Suzuki, Satoshi; Harada, Toshihiko, and Aiso, Keiji, 5,010,642, Cl 29-868.000

Yeda Research and Development Co., Ltd.: *See*—
Manassen, Joost; and Cabasso, Israel, 5,011,749, Cl 429-101.000

Yeh, Ming-Hwa. Coaxial cable output terminal safety plug device 5,011,422, Cl 439-307.000.

Yehi, James E., and Coppom, Rex R., to American Environmental Systems, Inc. Apparatus and method for establishing selected environmental characteristics. 5,010,777, Cl. 73-864.810.

Yelverton, Elizabeth M *See*—
Levinson, Arthur D.; Pennica, Diane; Kohr, William J.; Vehar, Gordon A., Goeddel, David V.; Yelverton, Elizabeth M., and Simonsen, Christian C., 5,011,795, Cl. 435-69.200

Yen, Richard C K. Apparatus for removing a soft stopper from a container. 5,010,790, Cl 81-3.450.

Yokogawa Electric Corporation *See*—
Ono, Yutaka, Muramatsu, Yasuhiko; Banzai, Hideo, Kikukawa, Yoichi; Hashida, Shigeru, Shindo, Shotaro, Higuchi, Haruo; Shinomiya, Hiroyuki, Nikaido, Mitsuhiro; and Sato, Koichi, 5,012,169, Cl 318-568.000

Yokohama Rubber Co., Ltd., The *See*—
Kikuo, Kanaya, Kanamori, Katsuhiko; and Masuda, Ryosuke, 5,010,774, Cl 73-862.040.

Yokoi, Hidetoshi, to Yamaha Hatsudoki Kabushiki Kaisha. Thermocouple type temperature sensor. 5,011,543, Cl 136-211.000

Yokomizo, Shojiro, Izumida, Kouji, Saito, Takeshi; and Yanamoto, Yutaka, to Topy Kogyo Kabushiki Kaisha. Wheel rim shaping apparatus having a single cotter supportable at both ends thereof 5,010,759, Cl. 72-393.000.

Yokota, Shinjiro *See*—
Asuka, Masahiro, Yokota, Shinjiro, Tonogouchi, Makoto, and Kasai, Mitsuo, 5,010,830, Cl 110-347.000.

Yokoyama, Akio *See*—
Morita, Yoichi, Komori, Hiroshi; and Yokoyama, Akio, 5,012,201, Cl 330-252.000

Yokoyama, Tadashi, to Mitsubishi Denki Kabushiki Kaisha. Magnetic disc filter apparatus. 5,012,365, Cl. 360-97.030.

Yokoyama, Tomoaki *See*—
Oka, Tateki, Toyoshi, Naoki, Yokoyama, Tomoaki; Mizuno, Hiroshi; Murasaki, Hiroshi, Ikegawa, Akihito, Etou, Kouichi; and Nakagawa, Shuichi, 5,012,285, Cl. 355-245.000.

Yoneyama, Sachiko, Ohsawa, Toshiyuki; Kimura, Okitoshi, and Kabata, Toshiyuki, to Ricoh Company, Ltd. Electrochemical device 5,011,751, Cl 429-192.000.

Yoneyoshi, Yukio, Suzukamo, Gohfu, and Sakito, Yoji, to Sumitomo Chemical Company, Limited. Optically active hydroxybenzylamine 5,011,989, Cl. 564-8.000.

Yorisue, Shyozo *See*—
Kawase, Shinji, and Yorisue, Shyozo, 5,010,744, Cl. 66-93.000

York, Michael L., and Broerman, Steven E., to Vortec Corporation. Cooling system for enclosures. 5,010,736, Cl. 62-5.000.

Yorke, John A *See*—
Rambo, Robert D., and Yorke, John A., 5,010,902, Cl. 128-888.000.

Yorozu, Masatoshi *See*—
Takahashi, Shoichi, Ichiki, Sayohiko, Yorozu, Masatoshi; Kunishige, Seiji, Shibagaki, Taro, Shimizu, Fumihiko, Fujioka, Fumio, and Kondo, Toshinori, 5,012,240, Cl 341-101.000.

Yoshida, Katutoshi *See*—
Hashimoto, Toru; Kamura, Hitoshi, Yoshida, Katutoshi, Jimbo, Takeshi, and Inuzuka, Tokushige, 5,010,862, Cl. 123-339.000

Yoshida Kogyo K K *See*—
Yamagata, Hiroshi, 5,010,628, Cl 24-405.000.

Yoshida, Kyoko *See*—
Endo, Yasuo; Akimichi, Shinji, Hirose, Tadayoshi, Furukawa, Motonori, and Yoshida, Kyoko, 5,012,521, Cl 382-1.000

Yoshida, Satoshi, to Casio Computer Co., Ltd. Electronic musical instrument capable of selecting between fret and fretless modes. 5,010,800, Cl. 84-646.000

Yoshida, Shigeru; and Ito, Yoshimasa, to Aisan Kogyo Kabushiki Kaisha. Fuel pump. 5,011,367, Cl 415-55.100

Yoshida, Tadao; and Ando, Ryo, to Sony Corporation. Disk recording apparatus for re-establishing a recording mode at a desired address. 5,012,461, Cl 369-44.330

Yoshida, Tadashi; Inoue, Keizo; Arita, Hitoshi; Matsutani, Shigeru; Shoji, Junichi; and Kawamura, Yoshimi, to Shionogi & Co., Ltd. Phospholipase A2 inhibitor. 5,011,952, Cl. 549-393.000.

Yoshida, Takeshi: *See*—
Hiratsuka, Katsuo; Odaka, Yoshiyuki; and Yoshida, Takeshi, 5,010,832, Cl. 112-68.000.

Yoshida, Yasuhisa, to Hitachi, Ltd. Transaction method wherein transaction amount is compared with account balance before ID is entered. 5,012,076, Cl. 235-379.000.

Yoshida, Yasunobu: *See*—
Sasabe, Minoru; Imamura, Masao; Yoshida, Yasunobu; Andoh, Shinya; and Miyake, Hiroshi, 5,011,798, Cl. 501-87.000.

Yoshiki Industrial Co., Ltd: *See*—
Yoshizawa, Yasuo; Kawaguchi, Hiroichi; and Seto, Kazunari, 5,011,414, Cl. 434-431.000.

Yoshimoto, Masafumi; Nakatsuji, Tadao; and Nagano, Kazuhiko, to Sakai Chemical Industry Co., Ltd. Method of producing titanium oxides. 5,011,674, Cl. 423-610.000.

Yoshimura, Hiroshi; Fujiwara, Takuji; Ishi, Kozo; and Takemoto, Kazuo, to Mazda Motor Corporation. Slip control system for lockup torque converter. 5,010,990, Cl. 192-3.300.

Yoshimura, Katsuji; Nagasawa, Kenichi; Kashida, Motokazu; and Shikakura, Akihiro, to Canon Kabushiki Kaisha. Digital signal recording apparatus time-division multiplexing video and audio signals. 5,012,352, Cl. 358-343.000.

Yoshimura, Katsuji: *See*—
Sekine, Masayoshi; Nakajima, Toshiyuki; Kai, Takashi; Yoshimura, Katsuji, and Toyama, Masamichi, 5,012,270, Cl. 354-430.000.

Yoshimura, Shigeru; Suzuki, Tetsuo; and Takemura, Makoto, to Canon Kabushiki Kaisha. Image forming apparatus for oscillating the recording head and fixing same with respect to a recording medium. 5,012,260, Cl. 346-139.00R

Yoshinaga, Kazuo, Kai, Takashi; Egara, Koichi; Toshida, Yomishi; Mitsutake, Hideaki, Sato, Koichi; and Miyazaki, Takeshi, to Canon Kabushiki Kaisha. Nonlinear optical material and nonlinear optical device. 5,011,623, Cl. 252-299.500

Yoshinaga, Yoko *See*—
Haruta, Masahiro; Munakata, Hirohide; Yuasa, Satoshi; and Yoshinaga, Yoko, 5,011,644, Cl. 264-184.000.

Yoshino, Eiji; Matsuda, Yasumasa, and Yamada, Takahiro, to Hitachi, Ltd. Apparatus for reading original. 5,012,353, Cl. 358-401.000.

Yoshio, Junichi; and Suzuki, Masami, to Pioneer Electronic Corporation. Input data processor for D/A converter utilizing dithering. 5,012,242, Cl. 341-131.000.

Yoshioka, Tetsuo *See*—
Kido, Masaro, and Yoshioka, Tetsuo, 5,011,727, Cl 428-141.000.

Yoshitake, Hiroshi *See*—
Kadokura, Hidekimi; Yoshitake, Hiroshi; and Tanahashi, Masayoshi, 5,012,156, Cl. 313-509.000

Yoshizawa, Atsutomo. *See*—
Ikkatai, Masatoshi, Yoshizawa, Atsutomo; and Honma, Toshio, 5,012,295, Cl. 355-311.000

Yoshizawa, Yasuo; Kawaguchi, Hiroichi; and Seto, Kazunari, to Yoshiki Industrial Co., Ltd, and Uchida Yoko Co., Ltd. Key-input apparatus or CAI system. 5,011,414, Cl. 434-431.000.

Young, Donald R., Jr *See*—
Miller, William J.; Truesdale, Carlton M.; Weidman, David L.; and Young, Donald R., Jr., 5,011,251, Cl. 350-96.150.

Young, Frederick A., and Rikimaru, Roy K., to Hughes Aircraft Company. Low-loss wide-band microwave filter. 5,012,211, Cl. 333-212.000.

Young, Lydia J., to Etec Systems, Inc. Thermally stable magnetic deflection assembly and method of making same. 5,012,104, Cl. 250-396.0ML.

Young, Ronald E. Stall and pasture vacuum machine. 5,010,620, Cl. 15-347.000.

Youngblood, Dale; and Hutchins, Harry L. Post puller. 5,011,117, Cl 254-30.000

Yu, Jung-jae *See*—
An, Hyeong-keun, Kim, Young-cheol; Lee, Seok-jeong; and Yu, Jung-jae, 5,012,451, Cl 365-230.050.

Yuasa, Satoshi. *See*—
Haruta, Masahiro, Munakata, Hirohide; Yuasa, Satoshi; and Yoshinaga, Yoko, 5,011,644, Cl. 264-184.000.

Yue, Chongshan: *See*—
Stetter, Joseph R.; Findlay, Melvin W.; and Yue, Chongshan, 5,012,432, Cl 364-557.000

Yukimoto, Sadao; Hirose, Toshifumi; Wakabayashi, Hiroshi; and Isayama, Katsuhiko, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Curable composition. 5,011,900, Cl. 525-477.000.

Yukinaga, Kouji: *See*—
Shimono, Mamoru; Asada, Tomoyuki; Kawaguchi, Taiichi; Taya, Yoichi; Yukinaga, Kouji; Nomura, Susumu; and Tagawa, Hajime, 5,012,283, Cl. 355-229.000.

Yukumoto, Masao; Ozawa, Michiharu; and Yamane, Hiroshi, to Kawasaki Steel Corporation. Twin cooling roll apparatus for producing rapidly solidified metal strip. 5,010,947, Cl. 164-428.000.

Zador, Eugene; Hsu, Shyigue; Kaczmarek, Wesley R.; Ravipati, Sitaramaiah; Supkis, Stanley; and Vogel, Richard H., to Norton Company. Single step, radiation curable ophthalmic lining pad. 5,011,513, Cl. 51-295.000.

Zaenger, Ian C.: *See*—
Sikkenga, David L.; Zaenger, Ian C., and Williams, Gregory S., 5,012,024, Cl. 585-320.000

Zahnradfabrik Friedrichshafen, AG.: *See*—
Petzold, Rainer, 5,012,418, Cl 364-426.040.

Zakary, Paul D.: *See*—
Schultz, Albert N., Jr.; and Zakary, Paul D., 5,012,391, Cl. 361-428.000.

Zamora, John: *See*—
Shih, Jenn S.; Smith, Terry E.; Zamora, John; and Economidis, Minas, 5,011,895, Cl. 526-88.000.

Zanchetta, Aldo, to Zanchetta & C. S r.l. Process for spheronization and device for implementing said process. 5,011,640, Cl 264-69.000.

Zanchetta & C. S.r.l.: *See*—
Zanchetta, Aldo, 5,011,640, Cl. 264-69.000.

Zane, Michael S.; and Zane, Peter L., to Kryptonite Corporation. Bicycle lock. 5,010,746, Cl. 70-39.000.

Zane, Peter L.: *See*—
Zane, Michael S.; and Zane, Peter L., 5,010,746, Cl. 70-39.000.

Zeiner, Hartmut: *See*—
Rosenau, Bernhard; Hisgen, Bernd; Heinz, Gerhard; Braun, Hans-Georg; Lausberg, Dietrich; and Zeiner, Hartmut, 5,011,884, Cl. 524-537.000.

Zeligson, Stephen J. Advertising device for airliner seat back or snack tray table. 5,010,668, Cl. 40-324.000.

Zemke, Ronald O.: *See*—
Welygan, Dennis G.; Zemke, Ronald O.; and Pawlikowski, Walter W., Jr., 5,011,642, Cl. 264-167.000.

Zenion Industries, Inc.: *See*—
Lee, Jimmy L., 5,010,869, Cl. 123-539.000.

Zenith Electronics Corporation: *See*—
Park, Yong S., 5,011,443, Cl. 445-2.000.

Ziegler, Manfred; and Koerner, Edmund, to Fischerwerke Artur Fischer GmbH & Co. KG. Container for magnetic tape cassettes with set displacing spring means. 5,011,015, Cl. 206-387.000.

Ziemann, Heinz: *See*—
Kiel, Wolfgang; and Ziemann, Heinz, 5,011,996, Cl. 564-321.000.

Zietlow, Kurt; and Engst, Ernst, to Siemens Aktiengesellschaft. Apparatus and method for selective rotation of data printed by a matrix printer. 5,012,434, Cl. 364-523.000.

Zilog, Inc.: *See*—
Dalrymple, Monte J.; Brubaker, Lois F., and Smith, Don, 5,012,180, Cl. 324-73.100

Zimpro Passavant Environmental Systems, Inc.: *See*—
Depuydt, Kent T.; and Tikalsky, Joseph S., 5,011,114, Cl. 251-144.000.

Zinnen, Hermann A., to UOP. Zeolitic para-xylene separation with diethyltoluene heavy desorbent. 5,012,038, Cl. 585-828.000

Zohler, Steven R., to Carrier Corporation. High performance heat transfer tube for heat exchanger. 5,010,643, Cl. 29-890.048.

Zoland, Martin; and Rossato, Mark. Folder. 5,011,188, Cl. 281-30.000.

Zoran Corporation: *See*—
Retter, Refael, 5,012,441, Cl. 364-900.000.

Zupancic, Anton Z.; Palermo, Anthony; and Levar, Robert E., to Picker International, Inc. Fluidic slip ring for CT scanners. 5,012,505, Cl. 378-130.000.

Zweigart, Gerhard; Greiner, Ferdinand; Baumert, Heinz; Scheiffele, Peter; and Nowak, Manfred, to Daimler-Benz AG. Swivel bearing for a sun visor. 5,011,213, Cl. 296-97.130.

Zwijsen, Jan A.: *See*—
Tavernier, Serge M.; Janssens, Robert F.; and Zwijsen, Jan A., 5,012,288, Cl. 355-259.000.

Zydzik, George J.: *See*—
Grim, Karen A.; Singh, Shobha; Van Uitert, LeGrand G., and Zydzik, George J., 5,011,794, Cl. 437-247.000.

3Com Corporation: *See*—
Crane, Ronald C., 5,012,467, Cl. 370-85.300.

501 Greenfield Industries, Inc.: *See*—
Hsu, George, 5,011,342, Cl 408-224.000

501 Multivac Sepp Haggnemuller KG: *See*—
Medwed, Emmerich; and Wiest, Engelbert, 5,010,714, Cl. 53-412.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF APRIL, 1991

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Automotive Products plc: *See*—
Bass, Richard A., Re. 33,578, Cl. 60-594.000.

Bass, Richard A., to Automotive Products plc. Hydraulic master cylinder assembly. Re. 33,578, Cl. 60-594.000.

Elings, Virgil B.: *See*—
Nicoli, David F.; and Elings, Virgil B., Re. 33,581, Cl. 435-7.200.

Fraioli, Joseph. Infrared dehydrator unit for minced fish. Re. 33,580, Cl. 426-242.000.

Mazur, Edward J.: *See*—
Voltmer, Helmut; Schwenzer, Alfred F.; and Mazur, Edward J., Re. 33,579, Cl. 156-552.000.

New Jersey Machine Inc.: *See*—
Voltmer, Helmut; Schwenzer, Alfred F.; and Mazur, Edward J., Re. 33,579, Cl. 156-552.000.

Nicoli, David F.; and Elings, Virgil B. Immunoassay using optical interference detection. Re. 33,581, Cl. 435-7.200.

Schwenzer, Alfred F.: *See*—
Voltmer, Helmut; Schwenzer, Alfred F.; and Mazur, Edward J., Re. 33,579, Cl. 156-552.000

Voltmer, Helmut; Schwenzer, Alfred F.; and Mazur, Edward J., to New Jersey Machine Inc. Literature applying mechanism. Re. 33,579, Cl. 156-552.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Barkan, Edward D.: *See*—
Shepard, Howard M., Barkan, Edward D.; and Swartz, Jerome, B1 4,845,350, Cl. 235-472.000.

Bhaskar, Kasi S.; Carlson, Alden J.; Couper, Alastair N.; Lambert, Dennis L.; and Scott, Marshall H., to John Fluke Mfg. Co., Inc. Test apparatus for electronic assemblies employing a microprocessor. B1 4,455,654, 4-30-91, Cl. 371-16.200.

Bonsky, Elmer C.: *See*—
Curtis, Lawrence A.; and Bonsky, Elmer C., B1 3,723,656, Cl. 379-82.000.

Carlson, Alden J.: *See*—
Bhaskar, Kasi S.; Carlson, Alden J.; Couper, Alastair N.; Lambert, Dennis L.; and Scott, Marshall H., B1 4,455,654, Cl. 371-16.200.

Couper, Alastair N.: *See*—
Bhaskar, Kasi S.; Carlson, Alden J.; Couper, Alastair N.; Lambert, Dennis L.; and Scott, Marshall H., B1 4,455,654, Cl. 371-16.200.

Curtis, Lawrence A.; and Bonsky, Elmer C., to Virsonic Corporation. Telephone answering system. B1 3,723,656, 4-30-91, Cl. 379-82.000.

Excello Specialty Company, The: *See*—
Isaksen, Robert A.; Frappier, David E.; and Jones, Wallace R., B1 4,604,302, Cl. 427-208.600.

Fischer & Porter Company: *See*—
Schmoock, Roy F., B1 4,420,982, Cl. 73-861.120.

Frappier, David E.: *See*—
Isaksen, Robert A.; Frappier, David E.; and Jones, Wallace R., B1 4,604,302, Cl. 427-208.600.

Isaksen, Robert A.; Frappier, David E.; and Jones, Wallace R., to Excello Specialty Company, The. Method of manufacturing water deflector for vehicle doors. B1 4,604,302, 4-30-91, Cl. 427-208.600.

John Fluke Mfg. Co., Inc.: *See*—
Bhaskar, Kasi S.; Carlson, Alden J.; Couper, Alastair N.; Lambert, Dennis L.; and Scott, Marshall H., B1 4,455,654, Cl. 371-16.200.

Jones, Wallace R.: *See*—
Isaksen, Robert A.; Frappier, David E.; and Jones, Wallace R., B1 4,604,302, Cl. 427-208.600.

Kremkau, William P., to W. R. Grace & Co. Film laminates having a reirradiated layer. B1 4,044,187, 4-30-91, Cl. 428-212.000.

Lambert, Dennis L.: *See*—
Bhaskar, Kasi S.; Carlson, Alden J.; Couper, Alastair N.; Lambert, Dennis L.; and Scott, Marshall H., B1 4,455,654, Cl. 371-16.200.

Schmoock, Roy F., to Fischer & Porter Company. Unitary electromagnetic flowmeter with sealed coils. B1 4,420,982, 4-30-91, Cl. 73-861.120.

Scott, Marshall H.: *See*—
Bhaskar, Kasi S.; Carlson, Alden J.; Couper, Alastair N.; Lambert, Dennis L.; and Scott, Marshall H., B1 4,455,654, Cl. 371-16.200.

Shepard, Howard M.; Barkan, Edward D.; and Swartz, Jerome, to Symbol Technologies Inc. Narrow-bodied, single- and twin-windowed portable laser scanning head for reading bar code symbols. B1 4,845,350, 4-30-91, Cl. 235-472.000.

Swartz, Jerome: *See*—
Shepard, Howard M.; Barkan, Edward D.; and Swartz, Jerome, B1 4,845,350, Cl. 235-472.000.

Symbol Technologies Inc.: *See*—
Shepard, Howard M.; Barkan, Edward D.; and Swartz, Jerome, B1 4,845,350, Cl. 235-472.000.

Virsonic Corporation: *See*—
Curtis, Lawrence A.; and Bonsky, Elmer C., B1 3,723,656, Cl. 379-82.000.

W. R. Grace & Co.: *See*—
Kremkau, William P., B1 4,044,187, Cl. 428-212.000.

LIST OF DESIGN PATENTEES

A-Dec, Inc.: *See*—
Austin, George K., Jr.; and LaPlante, Pierre, 316,600, Cl. D24-14.000.

A-VEDA Corporation: *See*—
Recchelbacher, Horst M., 316,487, Cl. D4-114.000.

Ancona, Bruce: *See*—
Ancona, Jane; and Ancona, Bruce, 316,502, Cl. D7-641.000.

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Courage, Amanda F. Combination salt and pepper shaker. 316,500, 4-30-91, Cl. D7-591.000.
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Faranda, Robert; Teranishi, Hirotomi; and Maurer, Bernard, to Digital Equipment Corporation. Video display monitor. 316,547, 4-30-91, Cl. D14-113.000.
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Frimer, Richard, to Brown Jordan Company. Chaise. 316,489, 4-30-91, Cl. D6-361.000.
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Esslinger, Hartmut H.; Gruenberg, Eric I.; and Stewart, James R., 316,545, Cl. D14-106.000.
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Ichikawa, Kazuo, to Sony Corporation. Headphone. 316,551, 4-30-91, Cl. D14-205.000.

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Kosako, Mikio; Hattori, Atsuko; and Mano, Yasuhiko, to Sharp Corporation. Copying machine. 316,564, 4-30-91, Cl. D18-39.000.
Kounis, James B.; and Tully, Zane E., to Times Three Pty. Limited. Diver's belt catch bag hook. 316,484, 4-30-91, Cl. D3-104.000.
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Miller, Gregg L. Pocket for crutches. 316,479, 4-30-91, Cl. D3-11.000.
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Pierce, Paul M., to Smith Corona Corporation. Typewriter. 316,558, 4-30-91, Cl. D18-1.000.
Pinette, Norman R., Jr. Decorative drink coaster. 316,501, 4-30-91, Cl. D7-624.000.
Pistorius, Robert T. Connector for picture frames or the like. 316,512, 4-30-91, Cl. D8-382.000.
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Richardson, Russell D.: *See*—
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Richarson, Charles P.; and Richardson, Linda M. Pool cleaning tool. 316,619, 4-30-91, Cl. D32-35.000.
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Kordes, Wilhelm, 7,510, Cl. 21.000
Warriner, William A., 7,508, Cl. 7.000.
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CLASSIFICATION OF PATENTS

ISSUED APRIL 30, 1991

NOTE —First number, class; second number, subclass; third number, patent number

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151	5,010,613
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602.1	5,010,640
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393	5,011,505
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62	5,010,686
79	5,010,687

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241	5,010,702
288	5,010,703
308	5,010,704
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447	5,010,715

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320.1	5,010,720

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210	5,010,723
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39.464	5,010,728
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413	5,010,732
453	5,010,733
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246	5,010,741
262	5,010,742
292	5,010,743
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93	5,011,527

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40.7	5,010,761
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117	5,010,763
151	5,010,764
153	5,010,765
159	5,010,766
253	5,010,767
299	5,010,768
660	5,010,769
702	5,010,770
861.12	B1 4,420,982
861.18	5,010,771
862.04	5,010,772
	5,010,773
	5,010,774
862.33	5,010,775
863.23	5,010,776
864.81	5,010,777

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493	5,010,779
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502.4	5,010,781
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527	5,010,783
594.1	5,010,785
867	5,010,786
	5,010,787
868	5,010,788

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235	5,011,529
511	5,011,531

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58.1	5,010,792

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147	5,010,794

CLASS 83

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865	5,010,796
883	5,010,797

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627	5,010,[illegible]99
646	5,010,[illegible]00
735	5,010,[illegible]01
743	5,010,[illegible]02
	5,010,[illegible]03

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450.6	5,010,[illegible]07

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49	5,010,810

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3.1	5,010,811
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178	5,010,813
211	5,010,814
217	5,010,815
228	5,010,816
350	5,010,817
415.1	5,010,818
425	5,010,819
484	5,010,820

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215	5,011,532
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416	5,011,534

CLASS 108

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CLASS 110

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256	5,011,828
346	5,011,829
347	5,011,830
	5,011,831

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262.1	5,010,833
302	5,010,834

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39.2	5,010,932
66	5,010,835
255	5,010,836
256	5,010,837

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122	5,010,839
421	5,010,840
711	5,010,841
723	5,010,842

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18	5,010,846
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174	5,010,851

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90.39	5,010,857
179 P	5,010,858
195 C	5,010,859
256	5,010,860
271	5,010,861
339	5,010,862
	5,010,863
414	5,010,864
424	5,010,865
436	5,010,866
511	5,010,867
527	5,010,868
539	5,010,869
576	5,010,870

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543	5,010,874

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	5,010,876
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69	5,010,879
71	5,010,880
76 R	5,010,881
79	5,010,882
87 B	5,010,877
155	5,010,883
207.17	5,010,884
660.03	5,010,886
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696	5,010,887
	5,010,888
715	5,010,889
731	5,010,891
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774	5,010,892
782	5,010,893
785	5,010,894
788	5,010,895
798	5,010,896
804	5,010,897
844	5,010,871
845	5,010,898
849	5,010,899
855	5,010,900
880	5,010,901
888	5,010,902

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280	5,010,904

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272	5,010,905
323	5,010,906

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22.11	5,011,537
22.13	5,011,538
22.14	5,011,539
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168 C	5,010,908

CLASS 135

901	5,010,909

CLASS 136

211	5,011,543
246	5,011,544

CLASS 137

1	5,010,910
68.1	5,010,911
268	5,010,912
322	5,010,913
359	5,010,922
423	5,010,915
454.2	5,010,916
454.6	5,010,917
512.15	5,010,918
527.4	5,010,919
565	5,010,920
625.34	5,010,923
625.46	5,010,921
625.47	5,010,924
847	5,010,925

CLASS 138

149	5,010,926

CLASS 139

89	5,010,927

CLASS 141

1	5,010,929
	5,010,930
64	5,010,928

CLASS 144

2 N	5,010,931
175	5,010,934
336	5,010,933

CLASS 148

11.5 F	5,011,545
23	5,011,546
24	5,011,547
27	5,011,548
33.1	5,011,549
33.5	5,011,550
248	5,011,551
302	5,011,552
403	5,011,553
430	5,011,554

CLASS 152

209 B	5,010,935
209 R	5,010,936
531	5,010,937
539	5,010,938

CLASS 156

73.1	5,011,555
83	5,011,556
180	5,011,557
257	5,011,559
273.3	5,011,560
307.5	5,011,558
310	5,011,570
495	5,011,561
498	5,011,562
552	Re.33,579

574 5,011,563
624 5,011,564
643 5,011,565
5,011,566
5,011,567
647 5,011,568
656 5,011,569

CLASS 159

47 3 5,011,571

CLASS 160

84 1 5,010,939
168 1 5,010,940
330 5,010,941
349 1 5,010,942
351 5,010,943
354 5,010,944

CLASS 162

56 5,011,572
198 5,011,573
281 5,011,574
299 5,011,575
344 5,011,576
352 5,011,577
358 5,011,578

CLASS 164

97 5,010,945
312 5,010,946
428 5,010,947
5,010,948

CLASS 165

76 5,010,949
95 5,010,950
104.26 5,010,951

CLASS 166

75.1 5,010,952
288 5,010,953
295 5,010,954
298 5,010,955
344 5,010,956
379 5,010,957
382 5,010,958

CLASS 169

37 5,010,959

CLASS 172

1 5,010,960
430 5,010,962
821 5,010,961

CLASS 173

105 5,010,963

CLASS 174

35 C 5,012,042
35 MS 5,012,041
57 5,012,043
98 5,012,044
106 R 5,012,045
135 5,012,046
250 5,012,047

CLASS 175

4 51 5,010,964
19 5,010,965
66 5,010,966
406 5,010,967

CLASS 177

118 5,010,968

CLASS 178

18 5,012,048
19 5,012,049

CLASS 180

8.1 5,010,969
79 1 5,010,970
140 5,010,971
178 5,010,972
213 5,010,973
233 5,010,974
248 5,010,975

CLASS 181

108 5,010,976
160 5,010,977

CLASS 182

153 5,010,978
214 5,010,979
236 5,010,980

CLASS 187

20 5,010,981

CLASS 188

4 B 5,010,982
67 5,010,983
71 5 5,010,984
218 XL 5,010,985
250 H 5,010,986

CLASS 190

26 5,010,987
104 5,010,988

CLASS 192

0.033 5,010,989
3 3 5,010,990
5,010,991
70 27 5,010,992
84 R 5,010,993
103 B 5,010,994

CLASS 194

219 5,010,995

CLASS 198

349 7 5,010,997
372 5,010,998
456 5,010,999
465 1 5,011,000
468 2 5,011,001
497 5,011,002
728 5,011,003
791 5,011,004

CLASS 200

61 45 R 5,012,050
148 B 5,012,051
288 5,012,053
314 5,012,054
408 5,012,055
519 5,012,056
522 5,012,057

CLASS 203

37 5,011,579

CLASS 204

15 5,011,580
38 4 5,011,581
140 5,011,582
148 5,011,583
157 22 5,011,584
192.130 5,011,585
299 R 5,011,586
401 5,011,587
409 5,011,588
416 5,011,589
425 5,011,590

CLASS 206

0.81 5,011,005
45 24 5,011,006
205 5,011,007
242 5,011,008
270 5,011,009
307 5,011,010
319 5,011,011
328 5,011,012
373 5,011,013
387 5,011,014
5,011,015
456 5,011,016
494 5,011,017
530 5,011,019
532 5,011,018
570 5,011,020
620 5,011,021

CLASS 208

46 5,011,591
113 5,011,592
213 5,011,593
320 5,011,594

CLASS 209

155 5,011,022
166 5,011,595
167 5,011,596
400 5,011,023
517 5,011,024
618 5,011,025
675 5,011,026

CLASS 210

104 5,011,597
130 5,011,599
136 5,011,598
169 5,011,600
229 5,011,601
484 5,011,602
490 5,011,603
602 5,011,604
615 5,011,605
635 5,011,606
637 5,011,607
656 5,011,608
665 5,011,609
667 5,011,610
674 5,011,611
712 5,011,612
739 5,011,613
761 5,011,614
764 5,011,615

CLASS 211

13 5,011,027
60 1 5,011,028
104 5,011,029
105 6 5,011,030
191 5,011,031

CLASS 215

230 5,011,032

CLASS 219

10.51 5,012,060
10.55 B 5,012,058
10.55 E 5,012,059
5,012,061
10.55 M 5,012,068
69.11 5,012,062
69.12 5,012,063
121.15 5,012,064
121.52 5,012,065
121.62 5,012,069
121.68 5,012,066
121.72 5,012,067
202 5,012,070
400 5,012,071
469 5,012,072

CLASS 220

3.94 5,011,033
23.86 5,011,034
203 5,011,035
263 5,011,036
271 5,011,037
320 5,011,038
357 5,011,039
375 5,011,040
507 5,011,041

CLASS 221

150 A 5,011,042

CLASS 222

63 5,011,043
78 5,011,044
318 5,011,045
321 5,011,046
396 5,011,047
455 5,011,048
590 5,011,049
600 5,011,050
5,011,051

CLASS 223

37 5,011,052
78 5,011,053
88 5,011,054

CLASS 224

39 5,011,055
158 5,011,057
159 5,011,056
261 5,011,058

CLASS 225

35 5,011,059

CLASS 226

15 5,011,060

CLASS 228

1 1 5,011,061
5,011,062
4.1 5,011,068
122 5,011,063
151 5,011,064
170 5,011,065
180.2 5,011,066
241 5,011,067

CLASS 229

69 5,011,069
109 5,011,070
117 5,011,071
120.23 5,011,072

CLASS 235

375 5,012,073
379 5,012,074
5,012,075
5,012,076
380 5,012,077
441 5,012,078
467 5,012,079
472 B1 4,845,350

CLASS 236

11 5,011,073
12 13 5,011,074
48 R 5,011,075
49 4 5,011,076

CLASS 238

283 5,011,077

CLASS 239

1 5,011,078
95 5,011,079
265.39 5,011,080
569 5,011,081
585 5,011,082
590.5 5,011,083
602 5,011,084
690 5,011,085
691 5,011,086

CLASS 241

5 5,011,087
21 5,011,088
5,011,089
5,011,090
259 1 5,011,091

CLASS 242

35 5 A 5,011,092
56 R 5,011,093
72 1 5,011,094
199 5,011,096

CLASS 244

3.21 5,011,097
134 B 5,011,098
153 R 5,011,099
5,011,100

CLASS 248

27 3 5,011,101
37 3 5,011,102
99 5,011,103
125 5,011,104
219 1 5,011,105
237 5,011,106
545 5,011,107
550 5,011,108
564 5,011,109

CLASS 250

203 6 5,012,081
208 2 5,012,082
211 J 5,012,083
211 R 5,012,084
221 5,012,085
222 1 5,012,086
227 15 5,012,087
227 19 5,012,088
235 5,012,089
237 G 5,012,090
266 5,012,091
288 5,012,052
311 5,012,092
324 5,012,093
5,012,094
327 2 5,012,095
5,012,096
336 1 5,012,097
339 5,012,098
342 5,012,099
5,012,100
343 5,012,101
352 5,012,102
368 5,012,103
396 ML 5,012,104
398 5,012,105
438 5,012,106
484 1 5,012,107
5,012,108
491.1 5,012,109
492.1 5,012,110
492.3 5,012,111
493.1 5,012,112
5,012,113
505.1 5,012,080
519.1 5,012,114
561 5,012,115
572 5,012,116
5,012,117
574 5,012,118
5,012,119

CLASS 251

1.1 5,011,110
54 5,011,111
129.11 5,011,112
129.16 5,011,113
144 5,011,114
161 5,011,115
334 5,011,116

CLASS 252

8.7 5,011,616
18 5,011,617
33 5,011,618
118 5,011,620
162 5,011,621
174.15 5,011,622
299.5 5,011,623
5,011,624
376 5,011,625
512 5,011,627
582 5,011,626
589 5,011,628

CLASS 254

30 5,011,117
126 5,011,118
420 5,011,119

CLASS 260

405 5,011,629
410 7 5,011,630

CLASS 261

30 5,011,631
81 5,011,632

CLASS 264

1 1 5,011,633
22 5,011,635
40 7 5,011,636
41 5,011,637
47 5,011,634
59 5,011,638
65 5,011,639
69 5,011,640
109 5,011,641
167 5,011,642
171 5,011,643
184 5,011,644
210 7 5,011,645
297 2 5,011,646
300 5,011,647
521 5,011,648

CLASS 266

240 5,011,120

CLASS 267

64 11 5,011,121
154 5,011,122

CLASS 270

54 5,011,123

CLASS 271

35 5,011,124
183 5,011,125
227 5,011,126
262 5,011,127
263 5,011,128
274 5,011,129
288 5,011,130
289 5,011,131
315 5,011,132

CLASS 272

33 B 5,011,133
56.5 R 5,011,134
67 5,011,135
70 5,011,136
71 5,011,137
117 5,011,138
118 5,011,139
5,011,140
5,011,141
5,011,142

CLASS 273

29 5,011,144
29 A 5,011,143
72 R 5,011,145
85 CP 5,011,146
126 A 5,011,147
144 B 5,011,148
148 B 5,011,149
162 C 5,011,150
164 5,011,151
176 R 5,011,152
186 A 5,011,153
192 5,011,154
200 A 5,011,155
237 5,011,156
238 5,011,157
256 5,011,158
260 5,011,159
268 5,011,160
349 5,011,161

CLASS 277

11 5,011,162
26 5,011,163
40 5,011,164
80 5,011,165
88 5,011,166

CLASS 279

62 5,011,167

CLASS 280

47.26 5,011,168
202 5,011,169
204 5,011,170
221 5,011,171
281.1 5,011,172
287 5,011,174
304.1 5,011,175
479.3 5,011,176
482 5,011,177
483 5,011,178
615 5,011,179
707 5,011,180
731 5,011,181
735 5,011,182
743 5,011,183
766.1 5,011,184
804 5,011,185

CLASS 281

12 5,011,186
15 1 5,011,187
30 5,011,188

CLASS 283

81 5,011,189
101 5,011,190
115 5,011,191

CLASS 285

23 5,011,192
31 5,011,193
41 5,011,194
102 5,011,195
367 5,011,196

CLASS 289

1 5 5,011,197

CLASS 292

41 5,011,198
92 5,011,199
113 5,011,200
336 3 5,011,202
343 5,011,203
347 5,011,204

CLASS 293

5 5,011,205

CLASS 294

86 41 5,011,206
88 5,011,207

CLASS 296

37 16 5,011,208
65 1 5,011,209
69 5,011,210
97 1 5,011,211
97 13 5,011,213
97 9 5,011,212
100 5,011,214
146 5,011,215
153 5,010,996
164 5,011,216
203 5,011,201
5,011,217
214 5,011,218
221 5,011,219

CLASS 297

89 5,011,220
191 5,011,221
195 5,011,222
284 5,011,223
339 5,011,224
403 5,011,226
408 5,011,225
434 5,011,227
442 5,011,228

CLASS 299

91 5,011,229

CLASS 300

21 5,011,230

CLASS 301

37 AT 5,011,231
37 P 5,011,232
108 R 5,011,233

CLASS 303

4 5,011,234
96 5,011,235
100 5,011,236
115 5,011,237
116 5,011,238

CLASS 307

35 5,012,120
64 5,012,121
66 5,012,122
112 5,012,123
116 5,012,124
149 5,012,125
243 5,012,126
269 5,012,127
270 5,012,128
5,012,129
272.2 5,012,130
296.1 5,012,132
296.4 5,012,131
352 5,012,133
446 5,012,134
465 5,012,135
475 5,012,136
5,012,137
5,012,138
490 5,012,139
491 5,012,140
594 5,012,141
602 5,012,142
606 5,012,143

CLASS 310

14 5,012,144
68 D 5,012,145

5,012,146
80 5,012,147
165 5,012,148
234 5,012,149
346 5,012,151

CLASS 312

248 5,011,239
250 5,011,240
330 1 5,011,241
344 1 5,011,242

CLASS 313

107 5,012,152
336 5,012,153
406 5,012,154
461 5,012,155
509 5,012,156

CLASS 315

66 5,012,157
111.21 5,012,158
111.91 5,012,159
149 5,012,160
247 5,012,161
309 5,012,162
383 5,012,163
411 5,012,164

CLASS 318

53 5,012,165
254 5,012,166
5,012,167
434 5,012,168
568 5,012,169
611 5,012,170
649 5,012,174
696 5,012,171
5,012,172
727 5,012,173

CLASS 320

2 5,012,175
31 5,012,176

CLASS 322

10 5,012,177

CLASS 323

269 5,012,178
355 5,012,179

CLASS 324

73.1 5,012,180
74 5,012,181
96 5,012,182
5,012,183
146 5,012,184
158 P 5,012,186
5,012,187
158 R 5,012,185
160 5,012,188
166 5,012,207
209 5,012,189
248 5,011,818
5,012,190
318 5,012,191
5,012,192
366 5,012,193
405 5,012,194
553 5,012,195
662 5,012,196
696 5,012,197

CLASS 328

155 5,012,198

CLASS 330

51 5,012,199
124 R 5,012,200
252 5,012,201
284 5,012,202
286 5,012,203

CLASS 331

11 5,012,204
65 5,012,206
117 R 5,012,205

CLASS 332

103 5,012,208

CLASS 333

116 5,012,209
209 5,012,210
212 5,012,211
227 5,012,212
247 5,012,213

CLASS 335

6 5,012,214
132 5,012,215
216 5,012,216
253 5,012,292
301 5,012,217

CLASS 336

174 5,012,218

CLASS 337

3 5,012,495

CLASS 340

311 1 5,012,219
5,012,220
384 E 5,012,221
436 5,012,222
531 5,012,223
551 5,012,224
572 5,012,225
576 5,012,226
618 5,012,227
702 5,012,228
5,012,274
706 5,012,229
5,012,230
709 5,012,231
750 5,012,232
825 18 5,012,233
825 44 5,012,234
5,012,235
825 54 5,012,236
870 37 5,012,237

CLASS 341

15 5,012,238
5,012,239
101 5,012,240
120 5,012,241
131 5,012,242
133 5,012,243
143 5,012,244
150 5,012,245
160 5,012,246
172 5,012,247

CLASS 342

22 5,012,248
25 5,012,249
53 5,012,250
176 5,012,251
192 5,012,252
203 5,012,253
373 5,012,254

CLASS 343

704 5,012,255
754 5,012,256

CLASS 346

1.1 5,012,257
5,012,258
108 5,012,259
139 R 5,012,260
159 5,012,261

CLASS 350

1.2 5,011,243
3 75 5,011,244
6 5 5,011,245
96 11 5,011,248
5,011,249
96 12 5,011,250
96 15 5,011,251
5,011,252
96 18 5,011,253
5,011,254
96 19 5,011,255
96 2 5,011,246
5,011,247
96 20 5,011,256
5,011,257
5,011,258
96 21 5,011,259
96 23 5,011,260
96 25 5,011,261
96 29 5,011,262
125 5,011,263
162 24 5,011,264
173 5,011,265
335 5,011,266
340 5,011,267
341 5,011,268
350 S 5,011,269
5,011,270
356 5,011,271
427 5,011,272
429 5,011,273

CLASS 351

121 5,011,274
160 H 5,011,275
211 5,011,276

CLASS 353

94 5,011,277

CLASS 354

149.1 5,012,262
241 5,012,263
286 5,012,264
293 5,012,265
319 5,012,266
402 5,012,267
410 5,012,268
419 5,012,269
430 5,012,270
456 5,012,271
465 5,012,272
485 5,012,273

CLASS 355

25 5,012,275
27 5,012,276
55 5,012,277
5,012,278
205 5,012,279
206 5,012,280
5,012,281
219 5,012,282
229 5,012,283
243 5,012,284
245 5,012,285
246 5,012,286
253 5,012,287
259 5,012,288
260 5,012,289
271 5,012,290
5,012,291
274 5,012,293
309 5,012,294
311 5,012,295
320 5,012,296
321 5,012,297
323 5,012,298
326 5,012,299
328 5,012,300

CLASS 356

28 5,011,278
28.5 5,011,279
35 5 5,011,280
37 5,011,281
153 5,011,282
246 5,011,283
301 5,011,284
335 5,011,285
343 5,011,286
356 5,011,287
375 5,011,288
376 5,011,960
394 5,011,289
423 5,011,290

CLASS 357

4 5,012,301
5,012,302
5 5,012,303
22 5,012,305
23.11 5,012,312
23 12 5,012,314
23.13 5,012,313
23.14 5,012,315
23 4 5,012,306
23 5 5,012,307
23 6 5,012,308
5,012,309
5,012,310
23.7 5,012,311
26 5,012,316
38 5,012,317
43 5,012,318
55 5,012,319
67 5,012,320
71 5,012,321
72 5,012,322
75 5,012,323
81 5,012,324
5,012,325
007 5,012,304

CLASS 358

11 5,012,326
17 5,012,327
22 5,012,328
31 5,012,329
34 5,012,330
37 5,012,331
64 5,012,332
80 5,012,333
102 5,012,334
108 5,012,335
140 5,012,336
5,012,337
147 5,012,338
148 5,012,339
150 5,012,340
167 5,012,341
181 5,012,342
213.11 5,012,343
5,012,344
214 5,012,345
5,012,346
222 5,012,347
229 5,012,348
296 5,012,349
335 5,012,350
342 5,012,351
343 5,012,352
401 5,012,353
474 5,012,354

CLASS 360

31 5,012,355
32 5,012,459
38.1 5,012,361
61 5,012,356
70 5,012,358
71 5,012,359
77 04 5,012,362
77 05 5,012,363
94 5,012,364
97 02 5,012,360
97 03 5,012,365
102 5,012,366
104 5,012,367
5,012,368
105 5,012,369
5,012,370
5,012,371
106 5,012,372
107 5,012,373
109 5,012,374
119 5,012,375
128 5,012,376
5,012,377
132 5,012,378
5,012,379
135 5,012,380

CLASS 361

84 5,012,381
93 5,012,382
120 5,012,383
159 5,012,384
328 5,012,385
386 5,012,386
388 5,012,387
400 5,012,388
409 5,012,389
413 5,012,390
428 5,012,391

CLASS 362

4 5,012,392
163 5,012,393
198 5,012,394
222 5,012,395
224 5,012,396
237 5,012,397
250 5,012,398

CLASS 363

18 5,012,399
95 5,012,400
97 5,012,401

CLASS 364

192 5,012,402
200 5,012,403
5,012,404
5,012,405
5,012,406
5,012,407
5,012,408
5,012,409
5,012,410
413.06 5,012,411
422 5,012,412
424.01 5,012,413
424.03 5,012,414
424.07 5,012,415
424.1 5,012,416
426.02 5,012,417
426.04 5,012,418
5,012,419
431.02 5,012,420
431.050 5,012,422
431.10 5,012,421
432 5,012,423
449 5,012,424
464 02 5,012,425
476 5,012,426
490 5,012,427
508 5,012,428
509 5,012,429
513 5,012,430
518 5,012,433
523 5,012,434
526 5,012,431
557 5,012,432
569 5,012,435
571 02 5,012,436
701 5,012,437
765 5,012,438
766 5,012,439
837 5,012,440
900 5,012,441
5,012,442

CLASS 365

51 5,012,443
173 5,012,444
185 5,012,446
189.06 5,012,445
206 5,012,447
208 5,012,448
5,012,450
230.05 5,012,451

CLASS 366

91 5,011,291
161 5,011,292
173 5,011,293

CLASS 367

1 5,012,452
57 5,012,453
89 5,012,449
5,012,454
93 5,012,455
175 5,012,457

CLASS 368

10 5,012,458

CLASS 369

32 5,012,460
44.33 5,012,461
77.1 5,012,462
100 5,012,463
116 5,012,464

CLASS 370

58.1 5,012,465
62 5,012,466
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74 5,012,482
95 5,012,483
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108 5,012,485

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211 5,012,511
218 5,012,512
451 5,012,513

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CLASS 382

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448 5,011,302
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572 5,011,305
585 5,011,306

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605 5,011,313
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CLASS 403

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CLASS 410

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559 5,011,687

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19 5,011,783
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52 5,011,787
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81 5,011,789
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184 5,011,792
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24 5,011,391
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293 5,011,448
297 5,011,449
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	5,012,302	5,011,133	5,011,843	08 :	5,010,777	5,011,898	17 :	5,010,651
	5,012,401	5,011,137	5,011,856	5,010,954	5,011,954		5,010,652
	5,012,409	5,011,153	5,011,867	5,011,037	11 :	5,011,532		5,010,688
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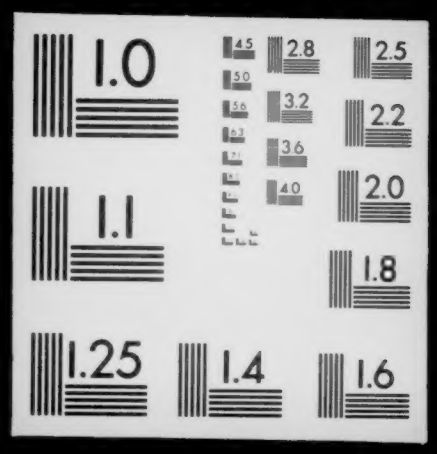
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